0.1 Introduction

This is the PDF version of the documentation for the Xojo (Real Studio) Plug-in from Monkeybread Software Germany.

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* 14.2.40 SupportFormatXar 2841
* 14.2.41 SupportFormatZip 2841
* 14.2.42 SupportFormatZipSeekable 2841
* 14.2.43 SupportFormatZipStreamable 2841
* 14.2.45 FormatCapabilities as Integer 2842
* 14.2.46 HasEncryptedEntries as Integer 2842
* 14.2.47 HeaderPosition as Int64 2842
* 14.2.49 kEncryptionDontKnow = -1 2843
* 14.2.50 kEncryptionUnsupported = -2 2843
* 14.2.51 kFormatCapabilitiesEncryptData = 1 2843
* 14.2.52 kFormatCapabilitiesEncryptMetaData = 2 2843
* 14.2.53 kFormatCapabilitiesNone = 0 2843

– 14.3.1 class ArchiverMBS 2844
  * 14.3.3 Constructor 2844
  * 14.3.4 Destructor 2844
  * 14.3.5 NewReader as ArchiveReaderMBS 2844
  * 14.3.6 NewWriter as ArchiveWriterMBS 2844
  * 14.3.8 BZLibVersion as String 2845
  * 14.3.9 Handle as Integer 2845
  * 14.3.10 Lasterror as Integer 2845
* 14.3.11 LibVersion as Integer
* 14.3.12 LibVersionDetails as String
* 14.3.13 LibVersionString as String
* 14.3.14 LZ4Version as String
* 14.3.15 LzmaVersion as String
* 14.3.16 Open as Boolean
* 14.3.17 ZLibVersion as String
* 14.3.18 Passphrase(byref password as String) as Boolean
* 14.3.21 kArchiveEOF = 1
* 14.3.22 kArchiveFailed = -25
* 14.3.23 kArchiveFatal = -30
* 14.3.24 kArchiveOK = 0
* 14.3.25 kArchiveRetry = -10
* 14.3.26 kArchiveWarn = -20
* 14.3.27 kFilterBZip2 = 2
* 14.3.28 kFilterCompress = 3
* 14.3.29 kFilterGRZip = 12
* 14.3.30 kFilterGZip = 1
* 31.42.5 kFilterLRZip = 10
* 14.3.32 kFilterLZ4 = 13
* 14.3.33 kFilterLZip = 9
* 14.3.34 kFilterLZMA = 5
* 14.3.35 kFilterLZOP = 11
* 14.3.36 kFilterNone = 0
* 14.3.37 kFilterProgram = 4
* 14.3.38 kFilterRPM = 8
* 14.3.39 kFilterUU = 7
* 14.3.40 kFilterXZ = 6
* 14.3.41 kFormat7Zip = & he0000
* 14.3.42 kFormatAr = & h70000
* 14.3.43 kFormatArBsd = & h70002
* 31.52.10 kFormatArGnu = & h70001
* 14.3.45 kFormatBaseMask = & hff0000
* 14.3.46 kFormatCab = & hc0000
* 14.3.47 kFormatCpio = & h10000
* 14.3.48 kFormatCpioAfioLarge = & h10006
* 14.3.49 kFormatCpioBinBe = & h10003
* 14.3.50 kFormatCpioBinLe = & h10002
* 14.3.51 kFormatCpioPosix = & h10001
* 14.3.52 kFormatCpioSvr4Crc = & h10005
* 14.3.53 kFormatCpioSvr4Nocrc = & h10004
* 14.3.54 kFormatEmpty = & h60000
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* 14.3.55 kFormatIso9660 = & h40000
* 14.3.56 kFormatIso9660Rockridge = & h40001
* 14.3.57 kFormatLha = & h50000
* 14.3.58 kFormatMtree = & h80000
* 14.3.59 kFormatRar = & h90000
* 14.3.60 kFormatRaw = & h20000
* 14.3.61 kFormatShar = & h20000
* 14.3.62 kFormatSharBase = & h20001
* 53.3.7 kFormatSharDump = & h20002
* 14.3.64 kFormatTar = & h30000
* 14.3.65 kFormatTarGnutar = & h30004
* 14.3.66 kFormatTarPaxInterchange = & h30002
* 14.3.67 kFormatTarPaxRestricted = & h30003
* 14.3.68 kFormatTarUstar = & h30001
* 14.3.69 kFormatWarc = & h40000
* 14.3.70 kFormatXar = & h40000
* 14.3.71 kFormatZip = & h50000

– 14.4.1 class ArchiveWriterMBS

* 14.4.3 AddFilter(FilterCode as Integer)
* 14.4.4 AddFilterB64encode
* 14.4.5 AddFilterByName(Name as String)
* 14.4.6 AddFilterBZip2
* 14.4.7 AddFilterCompress
* 14.4.8 AddFilterGRZip
* 14.4.9 AddFilterGZip
* 14.4.10 AddFilterLRZip
* 14.4.11 AddFilterLZ4
* 14.4.12 AddFilterLZip
* 14.4.13 AddFilterLZMA
* 14.4.14 AddFilterLZOP
* 14.4.15 AddFilterNone
* 14.4.16 AddFilterProgram(Command as String)
* 14.4.17 AddFilterUUEncode
* 14.4.18 AddFilterXZ
* 14.4.19 Close
* 14.4.20 Constructor
* 14.4.21 CreateFile(File as FolderItem) as boolean
* 14.4.22 Destructor
* 14.4.23 Fail
* 124.10.11 FinishEntry
* 14.4.25 SetFormat(FormatCode as Integer)
* 14.4.26 SetFormat7Zip
* 14.4.27 SetFormatArBsd
* 14.4.28 SetFormatArSvr4
* 14.4.29 SetFormatByExtension(FileName as String, defaultExtension as String = "")
* 14.4.30 SetFormatByName(Name as String)
* 14.4.31 SetFormatCpio
* 14.4.32 SetFormatCpioNewc
* 14.4.33 SetFormatGnutar
* 14.4.34 SetFormatIso9660
* 14.4.35 SetFormatMTree
* 14.4.36 SetFormatMTreeClassic
* 14.4.37 SetFormatPax
* 14.4.38 SetFormatPaxRestricted
* 14.4.39 SetFormatRaw
* 14.4.40 SetFormatShar
* 14.4.41 SetFormatSharDump
* 14.4.42 SetFormatUstar
* 44.3.35 SetFormatV7tar
* 14.4.44 SetFormatWArc
* 14.4.45 SetFormatXar
* 14.4.46 SetFormatZip
* 14.4.47 SetPassphrase(Password as String)
* 14.4.48 WriteData(data as MemoryBlock) as Int64
* 14.4.49 WriteData(data as Ptr, Size as Int64) as Int64
* 14.4.50 WriteData(data as string) as Int64
* 14.4.51 WriteHeader(Entry as ArchiveEntryMBS)
* 44.7.30 ZipSetCompressionDeflate
* 14.4.53 ZipSetCompressionStore
• 72 Encryption and Hash

  – 72.2.1 class Argon2MBS
    * 72.2.3 Calc(type as Integer = 0) as String
    * 72.2.4 Constructor
    * 72.2.5 Destructor
    * 72.2.6 Verify(Hash as String, type as Integer = 0) as boolean
    * 72.2.8 AssociatedData as String
    * 72.2.9 Cost as Integer
    * 72.2.10 Flags as Integer
    * 72.2.11 Lanes as Integer
    * 72.2.12 LastError as Integer
    * 72.2.13 LastErrorMessage as String
    * 72.2.14 MemoryCost as Integer
    * 72.2.15 OutputLength as Integer
    * 72.2.16 Password as String
    * 72.2.17 Salt as String
    * 72.2.18 Secret as String
    * 72.2.19 Threads as Integer
    * 72.2.20 Version as Integer
    * 72.2.22 kErrorAdPtrMismatch = -21
    * 72.2.23 kErrorAdTooLong = -9
    * 72.2.24 kErrorAdTooShort = -8
    * 72.2.25 kErrorAllocateMemoryCbkNull = -24
    * 72.2.26 kErrorDecodingFail = -32
    * 72.2.27 kErrorDecodingLengthFail = -34
    * 72.2.28 kErrorEncodingFail = -31
    * 72.2.29 kErrorFreeMemoryCbkNull = -23
    * 72.2.30 kErrorIncorrectParameter = -25
    * 72.2.31 kErrorIncorrectType = -26
    * 72.2.32 kErrorLanesTooFew = -16
    * 72.2.33 kErrorLanesTooMany = -17
    * 72.2.34 kErrorMemoryAllocationError = -22
    * 72.2.35 kErrorMemoryTooLittle = -14
    * 72.2.36 kErrorMemoryTooMuch = -15
    * 72.2.37 kErrorMissingArgs = -30
    * 72.2.38 kErrorOk = 0
    * 72.2.39 kErrorOutPtrMismatch = -27
    * 72.2.40 kErrorOutputPtrNull = -1
    * 72.2.41 kErrorOutputTooLong = -3
    * 72.2.42 kErrorOutputTooShort = -2
    * 72.2.43 kErrorPpwdPtrMismatch = -18
* 72.2.44 kErrorPwdTooLong = -5
* 72.2.45 kErrorPwdTooShort = -4
* 72.2.46 kErrorSaltPtrMismatch = -19
* 72.2.47 kErrorSaltTooLong = -7
* 72.2.48 kErrorSaltTooShort = -6
* 72.2.49 kErrorSecretPtrMismatch = -20
* 72.2.50 kErrorSecretTooLong = -11
* 72.2.51 kErrorSecretTooShort = -10
* 72.2.52 kErrorThreadFail = -33
* 72.2.53 kErrorThreadsTooFew = -28
* 72.2.54 kErrorThreadsTooMany = -29
* 72.2.55 kErrorTimeTooLarge = -13
* 72.2.56 kErrorTimeTooSmall = -12
* 72.2.57 kErrorVerifyMismatch = -35
* 72.2.58 kFlagClearMemory = 4
* 72.2.59 kFlagClearPassword = 1
* 72.2.60 kFlagClearSecret = 2
* 72.2.61 kFlagDefault = 4
* 72.2.62 kMaxAssociatedDataLength = 0
* 72.2.63 kMaxLanes = 0
* 72.2.64 kMaxMemory = 0
* 72.2.65 kMaxOutputLength = 0
* 72.2.66 kMaxPasswordLength = 0
* 72.2.67 kMaxSaltLength = 0
* 72.2.68 kMaxSecretLength = 0
* 72.2.69 kMaxThreads = 1
* 72.2.70 kMaxTime = 1
* 72.2.71 kMinAssociatedDataLength = 0
* 72.2.72 kMinLanes = 1
* 72.2.73 kMinMemory = 8
* 72.2.74 kMinOutputLength = 4
* 72.2.75 kMinPasswordLength = 0
* 72.2.76 kMinSaltLength = 0
* 72.2.77 kMinSecretLength = 0
* 72.2.78 kMinThreads = 1
* 72.2.79 kMinTime = 1
* 72.2.80 kSyncPoints = 4
* 72.2.81 kTypeD = 0
* 72.2.82 kTypeI = 1
* 72.2.83 kVersion10 = 0
* 72.2.84 kVersion13 = 0
### 13 Apple Type Services for Fonts

- **Globals**
  - 13.1.1 ATSFontActivateFileMBS(File as FolderItem, OnlyLocal as boolean, Options as Integer, byref FontHandle as Integer) as Integer
  - 13.1.2 ATSFontActivateStringMBS(FontData as string, OnlyLocal as boolean, Options as Integer, byref FontHandle as Integer) as Integer
  - 13.1.3 ATSFontCountMBS as Integer
  - 13.1.4 ATSFontDeactivateMBS(FontHandle as Integer, Options as Integer) as Integer
  - 13.1.5 ATSFontFamilyFindFromNameMBS(name as String) as ATSFontFamilyMBS
  - 13.1.6 ATSFontFamilyFindFromQuickDrawNameMBS(qdname as string) as ATSFontFamilyMBS
  - 13.1.7 ATSFontFindFromContainerMBS(FontContainerHandle as Integer) as ATSFontMBS()
  - 13.1.8 ATSFontFindFromNameMBS(name as String) as ATSFontMBS
  - 13.1.9 ATSFontFindFromPostScriptNameMBS(name as String) as ATSFontMBS
  - 13.1.10 ATSFontGenerationMBS as Integer
  - 13.1.11 ATSFontNotifyMBS(Action as Integer) as Integer
  - 13.1.12 ATSUFindFontFromNameMBS(name as string, code as Integer, platform as Integer, script as Integer, language as Integer) as Integer
  - 13.1.13 ATSUFindFontNameMBS(FontID as Integer, code as Integer, platform as Integer, script as Integer, language as Integer) as string
  - 13.1.14 GetATSFontFamilyFromFontFamilyMBS(font as FontFamilyMBS) as ATSFontFamilyMBS
  - 13.1.15 GetATSFontFromFontMBS(font as ATSFontMBS) as ATSUFontFamilyMBS
  - 13.1.16 GetFontFamilyFromATSFontFamilyMBS(font as ATSFontFamilyMBS) as FontFamilyMBS
  - 13.1.17 GetFontFromATSFontMBS(font as ATSFontMBS) as FontMBS

- **13.2.1 class ATSFontFamilyIteratorMBS**
  - 13.2.3 NextFontFamily as ATSFontFamilyMBS
  - 13.2.4 Reset
  - 13.2.6 Handle as Integer
  - 13.2.7 Lasterror as Integer

- **13.3.1 class ATSFontFamilyMBS**
  - 13.3.3 Font(QuickDrawStyle as Integer) as ATSFontMBS
  - 13.3.5 Encoding as Integer
  - 13.3.6 GenerationCount as Integer
  - 13.3.7 Handle as Integer
  - 13.3.8 Lasterror as Integer
  - 13.3.9 Name as CFStringMBS
  - 13.3.10 QuickDrawName as String
  - 13.3.11 Release as Boolean
- 13.4.1 class ATSFontGlyphListMBS
  * 13.4.3 close
  * 13.4.4 Item(index as Integer) as ATSFontGlyphMBS
  * 13.4.6 Count as Integer

- 13.5.1 class ATSFontGlyphMBS
  * 13.5.3 CaretX as Integer
  * 13.5.4 CharIndex as Integer
  * 13.5.5 DeltaY as single
  * 13.5.6 GlyphID as Integer
  * 13.5.7 IdealAdvanceX as single
  * 13.5.8 IdealAdvanceY as single
  * 13.5.9 IdealOtherSideBearingX as single
  * 13.5.10 IdealOtherSideBearingY as single
  * 13.5.11 IdealSideBearingX as single
  * 13.5.12 IdealSideBearingY as single
  * 41.12.3 IdealValues as boolean
  * 13.5.14 IdealX as single
  * 13.5.15 LayoutFlags as Integer
  * 13.5.16 ScreenDeviceAdvanceX as single
  * 13.5.17 ScreenDeviceAdvanceY as single
  * 13.5.18 ScreenHeight as Integer
  * 13.5.19 ScreenOtherSideBearingX as single
  * 13.5.20 ScreenOtherSideBearingY as single
  * 13.5.21 ScreenSideBearingX as single
  * 13.5.22 ScreenSideBearingY as single
  * 13.5.23 ScreenTopLeftX as single
  * 13.5.24 ScreenTopLeftY as single
  * 13.5.25 ScreenValues as boolean
  * 13.5.26 ScreenWidth as Integer
  * 13.5.27 ScreenX as Integer

- 13.6.1 class ATSFontIteratorMBS
  * 13.6.3 NextFont as ATSFontMBS
  * 13.6.4 Reset
  * 13.6.6 Handle as Integer
  * 13.6.7 Lasterror as Integer
  * 13.6.8 Release as Boolean

- 13.7.1 class ATSFontListMBS
  * 13.7.3 close
  * 13.7.4 FontID(index as Integer) as Integer
  * 13.7.5 FontName(index as Integer, fontnameindex as Integer) as ATSFontNameMBS
  * 13.7.6 FontNameCount(index as Integer) as Integer
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* 13.7.7 Update 2771
* 13.7.9 Count as Integer 2771
* 13.7.10 Lasterror as Integer 2771

- 13.8.1 class ATSFontMBS 2772
  * 13.8.3 File as folderitem 2772
  * 13.8.4 FontFamilyResource as string 2772
  * 13.8.5 HorizontalMetrics(Optionflags as Integer = 0) as ATSFontMetricsMBS 2772
  * 13.8.6 VerticalMetrics(Optionflags as Integer = 0) as ATSFontMetricsMBS 2772
  * 13.8.8 GenerationCount as Integer 2773
  * 13.8.9 Handle as Integer 2773
  * 13.8.10 Lasterror as Integer 2773
  * 13.8.11 Name as string 2773
  * 13.8.12 PostscriptName as string 2774
  * 13.8.13 Release as Boolean 2774

- 13.9.1 class ATSFontMetricsMBS 2775
  * 13.9.3 Ascent as single 2775
  * 13.9.4 AvgAdvanceWidth as single 2775
  * 13.9.5 CapHeight as single 2775
  * 13.9.6 Descent as single 2775
  * 13.9.7 ItalicAngle as single 2776
  * 13.9.8 Leading as single 2776
  * 13.9.9 maxAdvanceWidth as single 2776
  * 13.9.10 MinLeftSideBearing as single 2776
  * 13.9.11 MinRightSideBearing as single 2776
  * 13.9.12 StemHeight as single 2777
  * 13.9.13 StemWidth as single 2777
  * 13.9.14 UnderlinePosition as single 2777
  * 13.9.15 UnderlineThickness as single 2777
  * 13.9.16 XHeight as single 2777

- 13.10.1 class ATSFontNameMBS 2778
  * 13.10.3 FindEncoding(platform as Integer, script as Integer, language as Integer) as Integer 2778
  * 13.10.5 LanguageCode as Integer 2778
  * 13.10.6 Name as String 2778
  * 13.10.7 NameCode as Integer 2779
  * 13.10.8 PlatformCode as Integer 2779
  * 13.10.9 ScriptCode as Integer 2779

- 13.11.1 class ATSFontNotificationMBS 2782
  * 13.11.3 Close 2782
  * 13.11.4 Create(flags as Integer) 2782
  * 13.11.6 Handle as Integer 2782
13.11.7 Lasterror as Integer
13.11.8 Release as Boolean
13.11.10 Changed()

13.12.1 class ATSPartEventsMBS

13.12.3 CubicClosePath as Integer
13.12.4 CubicCurveTo(x1 as Double, y1 as Double, x2 as Double, y2 as Double, x3 as Double, y3 as Double) as Integer
13.12.5 CubicLineTo(x as Double, y as Double) as Integer
13.12.6 CubicMoveTo(x as Double, y as Double) as Integer
13.12.7 QuadraticClosePath as Integer
13.12.8 QuadraticCurve(x1 as Double, y1 as Double, CX as Double, CY as Double, x2 as Double, y2 as Double) as Integer
13.12.9 QuadraticLine(x1 as Double, y1 as Double, x2 as Double, y2 as Double) as Integer
13.12.10 QuadraticNewPath as Integer

13.13.1 class ATSUStyleMBS

13.13.3 clear
13.13.4 CompareStyles(other as ATSUStyleMBS) as Integer
13.13.5 Copy as ATSUStyleMBS
13.13.6 CopyAttributes(destination as ATSUStyleMBS)
13.13.7 Create
13.13.8 GlyphGetCubicPaths(pathEvents as ATSPartEventsMBS, glyphID as Integer) as Integer
13.13.9 GlyphGetQuadraticPaths(pathEvents as ATSPartEventsMBS, glyphID as Integer)
13.13.10 IsEmpty as boolean
13.13.11 OverwriteAttributes(destination as ATSUStyleMBS)
13.13.12 SetBooleanAttribute(value as boolean, AttributeTag as Integer)
13.13.13 SetFixedAttribute(value as Double, AttributeTag as Integer)
13.13.14 SetFractAttribute(value as Double, AttributeTag as Integer)
13.13.15 SetIntegerAttribute(value as Integer, AttributeTag as Integer)
13.13.16 SetPtrAttribute(value as memoryblock, AttributeTag as Integer)
13.13.17 SetShortAttribute(value as Integer, AttributeTag as Integer)
13.13.18 UnderwriteAttributes(destination as ATSUStyleMBS)
13.13.20 Handle as Integer
13.13.21 Lasterror as Integer
13.13.22 Release as Boolean
13.13.23 Bold as boolean
13.13.24 Condensed as boolean
13.13.25 Extended as boolean
13.13.26 FontID as Integer
13.13.27 ForceHanging as boolean
* 13.13.28 ImposedWidth as Double
* 13.13.29 Italic as boolean
* 13.13.30 Language as Integer
* 13.13.31 LineFlushFactor as Integer
* 13.13.32 NoCaretAngle as boolean
* 13.13.33 NoLigatureSplit as boolean
* 13.13.34 NoOpticalAlignment as boolean
* 13.13.35 NoSpecialJustification as boolean
* 13.13.36 Reference as Integer
* 13.13.37 Size as Double
* 13.13.38 SuppressCrossKerning as boolean
* 13.13.39 TextColor as Color
* 13.13.40 Tracking as Double
* 13.13.41 Underline as boolean
* 13.13.42 VerticalCharacter as Integer

– 13.14.1 class ATSUTabMBS
* 13.14.3 Position as Integer
* 13.14.4 Type as Integer
* 13.14.6 kCenterTab = 1
* 13.14.7 kLeftTab = 0
* 13.14.8 kRightTab = 2

– 13.15.1 class ATSUTextLayoutMBS
* 13.15.3 BreakLine(iLineStart as Integer, iLineWidth as Double, iUseAsSoftLineBreak as boolean) as Integer
* 13.15.4 clearLayoutCache(iLineStart as Integer)
* 13.15.5 clearSoftLineBreaks(iRangeStart as Integer, iRangeLength as Integer)
* 13.15.6 Copy(dest as ATSUTextLayoutMBS)
* 13.15.7 CopyLayoutControls(destination as ATSUTextLayoutMBS)
* 13.15.8 Create
* 13.15.9 CreateTextLayoutWithText(text as string, iTextOffset as Integer, iTextLength as Integer, iTextTotalLength as Integer, iNumberOfRuns as Integer, iRunLengths as memoryblock, iStyles as memoryblock)
* 13.15.10 DrawText(iLineOffset as Integer, iLineLength as Integer, iLocationX as Double, iLocationY as Double)
* 13.15.11 GetSoftLineBreaks(iRangeStart as Integer, iRangeLength as Integer) as memoryblock
* 13.15.12 GetTabs(iMaxTabCount as Integer = 100) as ATSUTabMBS()
* 13.15.13 GlyphInfo(iTextOffset as Integer, iTextLength as Integer, style as ATSUStyleMBS, iForcingAntiAlias as boolean, iAntiAliasSwitch as boolean) as ATSFontGlyphListMBS
* 13.15.14 HighlightText(iTextBasePointX as Double, iTextBasePointY as Double, iHighlightStart as Integer, iHighlightLength as Integer)
* 13.15.15 Idle
* 13.15.16 MeasureText(iTextOffset as Integer, iTextLength as Integer, byref oTextBefore as Double, byref oTextAfter as Double, byref oAscent as Double, byref oDescent as Double)
2808
* 13.15.17 MeasureTextImage(iLineOffset as Integer, iLineLength as Integer, iLocationX as Double, iLocationY as Double, byref left as Integer, byref top as Integer, byref width as Integer, byref height as Integer) as boolean
2809
* 13.15.18 SetBooleanLayoutControl(value as boolean, AttributeTag as Integer)
2810
* 13.15.19 SetCGContext(CGContextHandle as Integer)
2810
* 13.15.20 SetFixedLayoutControl(value as Double, AttributeTag as Integer)
2811
* 13.15.21 SetFractLayoutControl(value as Double, AttributeTag as Integer)
2811
* 13.15.22 SetHighlightingMethod(HighlightMethod as Integer, red as Double, green as Double, blue as Double, alpha as Double)
2811
* 13.15.23 SetPtrLayoutControl(value as memoryblock, AttributeTag as Integer)
2812
* 13.15.24 SetRunStyle(style as ATSUStyleMBS, iRunStart as Integer, iRunLength as Integer)
2812
* 13.15.25 SetShortLayoutControl(value as Integer, AttributeTag as Integer)
2812
* 13.15.26 SetSoftLineBreak(iLineBreak as Integer)
2812
* 13.15.27 SetTabs(tabs() as ATSUTabMBS)
2812
* 13.15.28 SetTextPointerLocation(text as string, iTextOffset as Integer, iTextLength as Integer, iTextTotalLength as Integer)
2813
* 13.15.29 TextLength as Integer
2814
* 13.15.30 TextOffset as Integer
2814
* 13.15.31 TextTotalLength as Integer
2814
* 13.15.32 UnhighlightText(iTextBasePointX as Double, iTextBasePointY as Double, iHighlightStart as Integer, iHighlightLength as Integer)
2815
* 13.15.34 Handle as Integer
2815
* 13.15.35 Lasterror as Integer
2815
* 13.15.36 Release as Boolean
2815
* 13.15.37 Text as String
2815
* 13.15.38 Ascent as Double
2816
* 13.15.39 Descent as Double
2816
* 13.15.40 FlushFactor as Double
2816
* 13.15.41 JustFactor as Double
2816
* 13.15.42 Language as Integer
2816
* 13.15.43 LineAscent(offset as Integer) as Double
2817
* 13.15.44 LineDescent(offset as Integer) as Double
2817
* 13.15.45 LineDirection as boolean
2817
* 13.15.46 LineFlushFactor(offset as Integer) as Double
2818
* 13.15.47 LineJustFactor(offset as Integer) as Double
2818
* 13.15.48 LineRotation(offset as Integer) as Double
2818
* 13.15.49 LineWidth(offset as Integer) as Double
2819
* 13.15.50 Reference as Integer
2819
* 13.15.51 Rotation as Double
2820
* 13.15.52 TransientFontMatching as boolean 2820
* 13.15.54 kInvertHighlighting = 0 2821
* 13.15.55 kRedrawHighlighting = 1 2821
• 47 CoreAudio

  – 47.1.1 class AudioPlayThruMBS
    * 47.1.3 Constructor
    * 47.1.4 Constructor(InputDeviceID as Integer, OutputDeviceID as Integer, BufferSizeWish as Integer = 0)
    * 47.1.5 Init(InputDeviceID as Integer, OutputDeviceID as Integer, BufferSizeWish as Integer = 0)
    * 47.1.6 IsRunning as boolean
    * 47.1.7 SetInputDeviceAsCurrent(DeviceID as Integer)
    * 47.1.8 SetOutputDeviceAsCurrent(DeviceID as Integer)
    * 47.1.9 Start
    * 47.1.10 Stop
    * 47.1.12 Lasterror as Integer
    * 47.1.13 Volume as Double


• 15 Audio

  -- 15.1.1 class AUPlayerMBS
  * 15.1.3 ChannelMap as Integer()
  * 15.1.4 Data as Memoryblock
  * 15.1.5 LoadFile(file as folderitem, InputChannels as Integer = 2, OutputChannels as Integer = 2) as boolean
  * 15.1.6 LoadFileMT(file as folderitem, InputChannels as Integer = 2, OutputChannels as Integer = 2) as boolean
  * 15.1.7 Pause
  * 15.1.8 Play
  * 15.1.9 Reset
  * 15.1.10 setChannelMap(values() as Integer)
  * 15.1.11 updateEQ(eqBands() as Double)
  * 15.1.12 updateEQ(eqBands() as single)
  * 15.1.14 ClientFormatString as String
  * 15.1.15 ConverterHandle as Integer
  * 15.1.16 CurrentDeviceID as UInt32
  * 15.1.17 CurrentTime as Double
  * 15.1.18 DataIsFloat as Boolean
  * 15.1.19 DataIsInterleaved as Boolean
  * 15.1.20 DataIsNativeEndian as Boolean
  * 15.1.21 DataIsPCM as Boolean
  * 15.1.22 DataIsSignedInteger as Boolean
  * 15.1.23 DataNumberChannels as Integer
  * 15.1.24 DataNumberChannelStreams as Integer
  * 15.1.25 DataNumberInterleavedChannels as Integer
  * 15.1.26 DataSampleWordSize as Integer
  * 15.1.27 DefaultDeviceID as UInt32
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    * 16.3.13 Info as AuthorizationItemSetMBS
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* 16.3.36 errAuthorizationInvalidPointer = -60004
* 16.3.37 errAuthorizationInvalidRef = -60002
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* 16.3.39 errAuthorizationInvalidTag = -60003
* 16.3.40 errAuthorizationSuccess = 0
* 16.3.41 errAuthorizationToolEnvironmentError = -60032
* 16.3.42 errAuthorizationToolExecuteFailure = -60031
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* 16.3.44 kAuthorizationExternalFormLength = 32
* 16.3.45 kAuthorizationFlagCanNotPreAuthorize = 1
* 16.3.46 kAuthorizationFlagDefaults = 0
* 16.3.47 kAuthorizationFlagDestroyRights = 8
* 16.3.48 kAuthorizationFlagExtendRights = 2
* 16.3.49 kAuthorizationFlagInteractionAllowed = 1
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    * 120.1.3 Browse(InterfaceIndex as Integer, Protocol as Integer, servicetype as string, domain as string = "", flags as Integer = 0) as boolean
    * 120.1.4 Constructor(client as AvahiClientMBS)
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    * 120.1.7 Client as AvahiClientMBS
    * 120.1.8 Handle as Integer
    * 120.1.10 AllForNow(type as string)
    * 120.1.11 CacheExhausted(type as string)
    * 120.1.12 Failure(error as string, errorcode as Integer)
    * 120.1.13 ServiceFound(InterfaceIndex as Integer, protocol as Integer, name as string, type as string, domain as string, flags as Integer)
    * 120.1.14 ServiceRemoved(InterfaceIndex as Integer, protocol as Integer, name as string, type as string, domain as string, flags as Integer)
    * 120.1.16 kInterfaceAny = -1
    * 120.1.17 kProtocolAny = -1
    * 120.1.18 kProtocolIPv4 = 0
    * 120.1.19 kProtocolIPv6 = 1
  - 120.2.1 class AvahiClientMBS
    * 120.2.3 Available as boolean
    * 120.2.4 Constructor(flags as Integer = 0)
    * 120.2.5 Destructor
    * 120.2.6 DomainName as string
    * 120.2.7 HostName as string
    * 120.2.8 Poll
    * 120.2.9 Version as string
    * 120.2.11 Handle as Integer
    * 120.2.13 Collision
    * 120.2.14 Connecting
    * 120.2.15 Failure(error as string, errorcode as Integer)
    * 120.2.16 Registering
    * 120.2.17 Running
    * 120.2.19 kClientIgnoreUserConfig = 1
    * 120.2.20 kClientNoFail = 2
  - 120.3.1 class AvahiDomainBrowserMBS
    * 120.3.3 BrowseDomains(InterfaceIndex as Integer, Protocol as Integer, domain as string = "", BrowserType as Integer = 0, flags as Integer = 0) as boolean
    * 120.3.4 Constructor(client as AvahiClientMBS)
    * 120.3.5 Destructor
    * 120.3.7 Client as AvahiClientMBS
* 120.3.8 Handle as Integer
* 120.3.10 AllForNow
* 120.3.11 CacheExhausted
* 120.3.12 DomainFound(InterfaceIndex as Integer, protocol as Integer, domain as string, flags as Integer)
* 120.3.13 DomainRemoved(InterfaceIndex as Integer, protocol as Integer, domain as string, flags as Integer)
* 120.3.14 Failure(error as string, errorcode as Integer)
* 120.3.16 kBrowseTypeBrowse = 0
* 120.3.17 kBrowseTypeBrowseDefault = 1
* 120.3.18 kBrowseTypeBrowseLegacy = 4
* 120.3.19 kBrowseTypeRegister = 2
* 120.3.20 kBrowseTypeRegisterDefault = 3
* 120.3.21 kInterfaceAny = -1
* 120.3.22 kProtocolAny = -1
* 120.3.23 kProtocolIPv4 = 0
* 120.3.24 kProtocolIPv6 = 1

– 120.4.1 class AvahiResolverMBS
  * 120.4.3 Constructor(client as AvahiClientMBS)
  * 120.4.4 Destructor
  * 120.4.5 Resolve(InterfaceIndex as Integer, Protocol as Integer, name as string, servicetype as string, domain as string, flags as Integer = 0) as boolean
  * 120.4.7 Client as AvahiClientMBS
  * 120.4.8 Handle as Integer
  * 120.4.10 Failure(error as string, errorcode as Integer)
  * 120.4.11 Found(interfaceIndex as Integer, Protocol as Integer, name as string, type as string, domain as string, hostname as string, port as Integer, address as string, txt as string, flags as Integer)
  * 120.4.13 kResultCached = 1
  * 120.4.14 kResultLocal = 8
  * 120.4.15 kResultMultiCast = 4
  * 120.4.16 kResultOurOwn = 16
  * 120.4.17 kResultStatic = 32
  * 120.4.18 kResultWideArea = 2

– 120.5.1 class AvahiTypeBrowserMBS
  * 120.5.3 BrowseTypes(InterfaceIndex as Integer, Protocol as Integer, domain as string = "", flags as Integer = 0) as boolean
  * 120.5.4 Constructor(client as AvahiClientMBS)
  * 120.5.5 Destructor
  * 120.5.7 Client as AvahiClientMBS
  * 120.5.8 Handle as Integer
  * 120.5.10 AllForNow
* 120.5.11 CacheExhausted
* 120.5.12 Failure(error as string, errorcode as Integer)
* 120.5.13 TypeFound(InterfaceIndex as Integer, protocol as Integer, type as string, domain as string, flags as Integer)
* 120.5.14 TypeRemoved(InterfaceIndex as Integer, protocol as Integer, type as string, domain as string, flags as Integer)
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* 120.5.17 kProtocolAny = -1
* 120.5.18 kProtocolIPv4 = 0
* 120.5.19 kProtocolIPv6 = 1
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    • 17.1.3 allExportPresets as string()
    • 17.1.4 available as boolean
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    • 17.1.6 AVAssetExportPreset1920x1080 as string
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    • 17.1.10 AVAssetExportPresetAppleM4A as string
    • 17.1.11 AVAssetExportPresetAppleM4V1080pHD as string
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    • 17.1.14 AVAssetExportPresetAppleM4VAppleTV as string
    • 17.1.15 AVAssetExportPresetAppleM4VCellular as string
    • 17.1.16 AVAssetExportPresetAppleM4ViPod as string
    • 17.1.17 AVAssetExportPresetAppleM4VWiFi as string
    • 17.1.18 AVAssetExportPresetAppleProRes422LPCM as string
    • 17.1.19 AVAssetExportPresetPassthrough as string
    • 17.1.20 cancelExport
    • 17.1.21 Constructor(asset as AVAssetMBS, presetName as string)
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    • 17.1.23 determineCompatibleFileTypes(tag as Variant = nil)
    • 17.1.24 exportAsynchronously(tag as Variant = nil)
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    • 17.1.29 outputFileExtension as string
    • 17.1.30 setMetadata(items() as AVMetadataItemMBS)
    • 17.1.31 supportedFileTypes as string()
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17.1.47 presetName as string
17.1.48 progress as Double
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17.1.50 status as Integer
17.1.51 videoComposition as AVVideoCompositionMBS
17.1.52 timeRange as CMTimeRangeMBS
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17.1.55 AVAssetExportSessionStatusCompleted = 3
17.1.56 AVAssetExportSessionStatusExporting = 2
17.1.57 AVAssetExportSessionStatusFailed = 4
17.1.58 AVAssetExportSessionStatusUnknown = 0
17.1.59 AVAssetExportSessionStatusWaiting = 1

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17.2.3 assetImageGeneratorWithAsset(asset as AVAssetMBS) as AVAssetImageGeneratorMBS
17.2.4 available as boolean
17.2.5 AVAssetImageGeneratorApertureModeCleanAperture as string
17.2.6 AVAssetImageGeneratorApertureModeEncodedPixels as string
17.2.7 AVAssetImageGeneratorApertureModeProductionAperture as string
17.2.8 cancelAllCGImageGeneration
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17.2.23 AVAssetImageGeneratorCancelled = 2
17.2.24 AVAssetImageGeneratorFailed = 1
* 17.2.25 AVAssetImageGeneratorSucceeded = 0

- 17.3.1 class AVAssetMBS
  * 17.3.3 assetWithData(Data as MemoryBlock, Options as Dictionary = nil) as AVAssetMBS
  * 17.3.4 assetWithData(Data as String, Options as Dictionary = nil) as AVAssetMBS
  * 17.3.5 assetWithFile(file as folderitem) as AVAssetMBS
  * 17.3.6 assetWithURL(URL as string) as AVAssetMBS
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  * 17.3.10 availableMetadataFormats as string()
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  * 17.3.12 chapterMetadataGroupsBestMatchingPreferredLanguages as AVTimedMetadataGroupMBS()
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  * 17.3.14 chapterMetadataGroupsWithTitleLocale(locale as NSLocaleMBS, commonKeys() as string) as AVTimedMetadataGroupMBS()
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  * 17.3.18 duration as CMTimeMBS
  * 17.3.19 loadValuesAsynchronouslyForKeys(keys() as string, tag as Variant = nil)
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  * 17.3.21 metadata as AVMetadataItemMBS()
  * 17.3.22 metadataForFormat(Format as string) as AVMetadataItemMBS()
  * 17.3.23 naturalSize as CGSizeMBS
  * 17.3.24 preferredTransform as CGAffineTransformMBS
  * 17.3.25 readTimeCodeObjects as AVTimeCodeMBS()
  * 17.3.26 readTimeCodes as String()
  * 17.3.27 statusOfValueForKey(key as string, byref error as NSErrorMBS) as Integer
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  * 17.3.36 creationDate as AVMetadataItemMBS
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* 17.5.19 AVAssetReaderStatusCompleted = 2
* 17.5.20 AVAssetReaderStatusFailed = 3
* 17.5.21 AVAssetReaderStatusReading = 1
* 17.5.22 AVAssetReaderStatusUnknown = 0

- 17.6.1 class AVAssetReaderOutputMBS
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- 17.9.1 class AVAssetReaderTrackOutputMBS
  * 17.9.3 assetReaderTrackOutputWithTrack(track as AVAssetTrackMBS, outputSettings as dictionary) as AVAssetReaderTrackOutputMBS
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  * 17.9.5 outputSettings as dictionary
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- 17.10.1 class AVAssetReaderVideoCompositionOutputMBS
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– 20.2.1 class BarcodeScannerMBS
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* 20.2.4 Scan(p as picture, lines() as Integer) as boolean
* 20.2.6 Barcode as String
* 20.2.7 CheckDigits as Boolean
* 20.2.8 LastBarcode as String
* 20.2.9 LastPicture as Picture
* 20.2.10 MinimumLength as Integer
* 20.2.11 Mode as Integer
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  - 21.1 Globals
    * 21.1.1 DecodeBase64MBS(s as string) as string
    * 21.1.2 EncodeBase64MBS(s as string, breakposition as Integer, breakstring as string) as string
    * 21.1.3 uuDecodeMBS(data as string, byref name as string, byref mode as Integer) as string
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  - 21.2.1 class Base64MBS
    * 21.2.3 DecodeBase64(s as string) as string
    * 21.2.4 EncodeBase64(s as string, breakposition as Integer, breakstring as string) as string
    * 21.2.6 Yield as Boolean
    * 21.2.8 Finished(wascanceled as boolean)
    * 21.2.9 Start
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• 33 Cocoa Controls

  - 45.1.1 class Bevelbutton
    * 45.1.3 NSButtonMBS as NSButtonMBS
113 Math

113.2.1 class BigNumberMBS

113.2.3 Abs as BigNumberMBS

113.2.4 Add(other as BigNumberMBS, round as boolean = true) as BigNumberMBS

113.2.5 BitAnd(other as BigNumberMBS) as BigNumberMBS

113.2.6 BitOr(other as BigNumberMBS) as BigNumberMBS

113.2.7 BitXOr(other as BigNumberMBS) as BigNumberMBS

113.2.8 Constructor

113.2.9 Constructor(other as BigNumberMBS)

113.2.10 Constructor(value as Currency)

113.2.11 Constructor(value as Double)

113.2.12 Constructor(value as Int32)

113.2.13 Constructor(value as Int64)

113.2.14 Constructor(value as Single)

113.2.15 Constructor(value as String)

113.2.16 Constructor(value as UInt32)

113.2.17 Constructor(value as UInt64)

113.2.18 Divide(other as BigNumberMBS, round as boolean = true) as BigNumberMBS

113.2.19 E as BigNumberMBS

113.2.20 Equals(other as BigNumberMBS) as Boolean

113.2.21 Exp(value as BigNumberMBS) as BigNumberMBS

113.2.22 Floor as BigNumberMBS

113.2.23 Frac as BigNumberMBS

113.2.24 GetStringValue(Base as Integer = 10, scientific as boolean = false, scientificFrom as Integer = 15, round as Integer = -1, TrimZeros as Boolean = true, comma as String = ".") as String

113.2.25 HalfPi as BigNumberMBS

113.2.26 Ln(value as BigNumberMBS) as BigNumberMBS

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113.2.30 Max as BigNumberMBS

113.2.31 Min as BigNumberMBS

113.2.32 Modulate(other as BigNumberMBS) as BigNumberMBS

113.2.33 Modulate2 as Integer

113.2.34 Multiply(other as BigNumberMBS, round as boolean = true) as BigNumberMBS

113.2.35 Multiply(value as Integer) as BigNumberMBS

113.2.36 Multiply(value as UInt32) as BigNumberMBS

113.2.37 Nan as BigNumberMBS

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• 113.2.63 Operator_MultiplyRight(other as BigNumberMBS) as BigNumberMBS 16488
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* 113.2.84 IsNegative as Boolean
* 113.2.85 IsZero as Boolean
* 113.2.86 StringValue as String
* 113.2.87 UInt64Value as UInt64
* 113.2.88 VariantValue as Variant
* 113.2.89 StringValue(Base as Integer) as String
• 62 Declare

  - 62.1.1 class BlockMBS

    * 62.1.3 Close

    * 62.1.4 GetBlockB(tag as Variant = nil) as Integer

    * 62.1.5 GetBlockBI(tag as Variant = nil) as Integer

    * 62.1.6 GetBlockBII(tag as Variant = nil) as Integer

    * 62.1.7 GetBlockBIII(tag as Variant = nil) as Integer

    * 62.1.8 GetBlockBIV(tag as Variant = nil) as Integer

    * 62.1.9 GetBlockV(tag as Variant = nil) as Integer

    * 62.1.10 GetBlockVI(tag as Variant = nil) as Integer

    * 62.1.11 GetBlockVII(tag as Variant = nil) as Integer

    * 62.1.12 GetBlockVIII(tag as Variant = nil) as Integer

    * 62.1.13 GetBlockVIII(tag as Variant = nil) as Integer

    * 62.1.15 AsyncBoolResult as Boolean

    * 62.1.16 Synchronous as Boolean

    * 62.1.18 BlockB(Async as boolean, tag as Variant) as boolean

    * 62.1.19 BlockBII(Async as boolean, tag as Variant, value as Integer) as boolean

    * 62.1.20 BlockBIII(Async as boolean, tag as Variant, value1 as Integer, value2 as Integer) as boolean

    * 62.1.21 BlockBIV(Async as boolean, tag as Variant, value1 as Integer, value2 as Integer, value3 as Integer) as boolean

    * 62.1.22 BlockBIVIII(Async as boolean, tag as Variant, value1 as Integer, value2 as Integer, value3 as Integer, value4 as Integer) as boolean

    * 62.1.23 BlockV(Async as boolean, tag as Variant)

    * 62.1.24 BlockVI(Async as boolean, tag as Variant, value as Integer)

    * 62.1.25 BlockVII(Async as boolean, tag as Variant, value1 as Integer, value2 as Integer) as boolean

    * 62.1.26 BlockVIII(Async as boolean, tag as Variant, value1 as Integer, value2 as Integer, value3 as Integer)

    * 62.1.27 BlockVIII(Async as boolean, tag as Variant, value1 as Integer, value2 as Integer, value3 as Integer, value4 as Integer)
• 72 Encryption and Hash
  
  72.3.1 class BlowfishMBS
  
  72.3.3 Decrypt(iodata as memoryblock)
  72.3.4 Decrypt(key as string, data as string) as string
  72.3.5 DecryptCBC(data as string, byref temp as memoryblock) as string
  72.3.6 DecryptCBC(idata as memoryblock, odata as memoryblock, offset as Integer, length as Integer, ivec as memoryblock)
  72.3.7 DecryptCFB64(data as string, byref temp as memoryblock) as string
  72.3.8 DecryptCFB64(idata as memoryblock, odata as memoryblock, offset as Integer, length as Integer, ivec as memoryblock, byref num as Integer)
  72.3.9 DecryptECB(data as string) as string
  72.3.10 DecryptECB(idata as memoryblock, odata as memoryblock, offset as Integer)
  72.3.11 DecryptOFB64(data as string, byref temp as memoryblock) as string
  72.3.12 DecryptOFB64(idata as memoryblock, odata as memoryblock, offset as Integer, length as Integer, ivec as memoryblock, byref num as Integer)
  72.3.13 Encrypt(iodata as memoryblock)
  72.3.14 Encrypt(key as string, data as string) as string
  72.3.15 EncryptCBC(data as string, byref temp as memoryblock) as string
  72.3.16 EncryptCBC(idata as memoryblock, odata as memoryblock, offset as Integer, length as Integer, ivec as memoryblock)
  72.3.17 EncryptCFB64(data as string, byref temp as memoryblock) as string
  72.3.18 EncryptCFB64(idata as memoryblock, odata as memoryblock, offset as Integer, length as Integer, ivec as memoryblock)
  72.3.19 EncryptECB(data as string) as string
  72.3.20 EncryptECB(idata as memoryblock, odata as memoryblock, offset as Integer)
  72.3.21 EncryptOFB64(data as string, byref temp as memoryblock) as string
  72.3.22 EncryptOFB64(idata as memoryblock, odata as memoryblock, offset as Integer, length as Integer, ivec as memoryblock)
  72.3.23 SetKey(key as string)
• 128 Pictures Import and Export

  – ?? Globals

    * 128.1.1 BMPStringtoPictureMBS(data as string) as picture
    * 128.1.2 Split1BitFileMBS(f as folderitem, fc as folderitem, fn as folderitem, fy as folderitem, fk as folderitem, width as Integer, height as Integer, CallbackTarget as object, CacheSizeRead as Integer, CacheSizeWrite as Integer) as Integer
    * 128.1.3 Split1BitFileMBS(f as folderitem, fc as folderitem, fn as folderitem, fy as folderitem, fk as folderitem, width as Integer, height as Integer, CallbackTarget as object, CacheSizeRead as Integer, CacheSizeWrite as Integer, ReadLines as Integer, WriteLines as Integer) as Integer
• 158 System
  
  - 158.2.1 module BuildConstantsMBS
    * 158.2.3 Date = "21. 5.2018"
    * 158.2.4 DateTime = "Mon May 21 08:16:51 2018"
    * 158.2.5 Day = 21
    * 158.2.6 Hour = 8
    * 158.2.7 Minute = 16
    * 158.2.8 Month = 5
    * 158.2.9 Second = 51
    * 158.2.10 Time = " 8:16:51"
    * 158.2.11 Year = 2018
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  - 45.2.1 control ButtonMBS
    - * 45.2.3 ImageDisabled as Picture
    - * 45.2.4 ImageMouseOver as Picture
    - * 45.2.5 ImageNormal as Picture
    - * 45.2.6 ImagePressed as Picture
    - * 45.2.7 ImagePressedDisabled as Picture
    - * 45.2.8 ImagePressedMouseOver as Picture
    - * 45.2.9 Sticky as Boolean
    - * 45.2.10 TestEnabled as Boolean
    - * 45.2.11 TestMouseOver as Boolean
    - * 45.2.12 TestPressed as Boolean
    - * 150.1.54 Toggle as Boolean
    - * 45.2.14 Value as Boolean
    - * 45.2.16 Action(x as Integer, y as Integer)
    - * 45.2.17 EnableMenuItems
    - * 45.2.18 MenuAction(HitItem as MenuItem) As Boolean
    - * 45.2.19 MouseDown(x as Integer, y as Integer, Modifiers as Integer) As Boolean
    - * 45.2.20 MouseDrag(x as Integer, y as Integer)
    - * 45.2.21 MouseUp(x as Integer, y as Integer)
    - * 45.2.22 ScaleFactorChanged(NewFactor as Double)
• 43 Compression
  - ?? Globals
    * 43.1.1 CompressBZip2MBS(buf as string, level as Integer) as string
    * 43.1.7 CompressLZWMBS(buf as string) as string
    * 43.1.3 CompressZLibMBS(buf as string, level as Integer) as string
    * 43.1.4 CompressZLibMBS(buf as string, level as Integer, byref error as Integer) as string
    * 43.1.2 DecompressBZip2MBS(buf as string, size as Integer) as string
    * 43.1.8 DecompressLZWMBS(buf as string, size as Integer) as string
    * 43.1.5 DecompressZLibMBS(buf as string, size as Integer) as string
    * 43.1.6 DecompressZLibMBS(buf as string, size as Integer, byref error as Integer) as string
• 43 Compression

- 43.2.1 class BZip2CompressMBS
  * 43.2.3 Close
  * 43.2.4 Constructor(BufferSize as Integer=20000)
  * 43.2.5 EndZip
  * 43.2.6 GetOutput as string
  * 43.2.7 InitZip(level as Integer)
  * 43.2.8 InputAvail as Integer
  * 43.2.9 OutputSize as Integer
  * 43.2.10 ProcessZip(Flush as boolean=false)
  * 43.2.11 SetInput(data as Memoryblock) as boolean
  * 43.2.12 SetInput(data as string) as boolean
  * 43.2.14 Error as Integer
  * 43.2.15 OutputBufferSize as Integer
  * 43.2.16 TotalInput as UInt64
  * 43.2.17 TotalOutput as UInt64
  * 43.2.18 Version as String
  * 43.2.20 kCONFIG_ERROR = -9
  * 43.2.21 kDATA_ERROR = -4
  * 43.2.22 kDATA_ERROR_MAGIC = -5
  * 43.2.23 kFINISH = 2
  * 43.2.24 kFINISH_OK = 3
  * 43.2.25 kFLUSH = 1
  * 43.2.26 kFLUSH_OK = 2
  * 43.2.27 kIO_ERROR = -6
  * 43.2.28 kMEM_ERROR = -3
  * 43.2.29 kOK = 0
  * 43.2.30 kOUTBUFF_FULL = -8
  * 43.2.31 kPARAM_ERROR = -2
  * 43.2.32 kRUN = 0
  * 43.2.33 kRUN_OK = 1
  * 43.2.34 kSEQUENCE_ERROR = -1
  * 43.2.35 kSTREAM_END = 4
  * 43.2.36 kUNEXPECTED_EOF = -7

- 43.3.1 class BZip2DecompressMBS
  * 43.3.3 Close
  * 43.3.4 Constructor(BufferSize as Integer=20000)
  * 43.3.5 EndZip
  * 43.3.6 GetOutput as string
  * 43.3.7 InitZip
  * 43.3.8 InputAvail as Integer
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* 43.3.15 OutputBufferSize as Integer 7460
* 43.3.16 TotalInput as UInt64 7460
* 43.3.17 TotalOutput as UInt64 7461
* 43.3.18 Version as String 7461
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* 43.3.21 kDATA_ERROR = -4 7461
* 43.3.22 kDATA_ERROR_MAGIC = -5 7461
* 43.3.23 kFINISH = 2 7462
* 43.3.24 kFINISH_OK = 3 7462
* 43.3.25 kFLUSH = 1 7462
* 43.3.26 kFLUSH_OK = 2 7462
* 43.3.27 kIO_ERROR = -6 7462
* 43.3.28 kMEM_ERROR = -3 7462
* 43.3.29 kOK = 0 7463
* 43.3.30 kOUTBUFF_FULL = -8 7463
* 43.3.31 kPARAM_ERROR = -2 7463
* 43.3.32 kRUN = 0 7463
* 43.3.33 kRUN_OK = 1 7463
* 43.3.34 kSEQUENCE_ERROR = -1 7463
* 43.3.35 kSTREAM_END = 4 7464
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– 43.4.1 class BZip2FileMBS
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* 43.4.4 Flush 7465
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* 43.4.7 Read(data as Integer) as string 7466
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* 43.4.11 ErrorMessage as String 7466
* 43.4.12 Handle as Integer 7466
* 43.4.13 Lasterror as Integer 7466
* 43.4.14 Version as String 7467
24 Calendar

- 24.1.1 class CalAlarmMBS
  * 24.1.3 Constructor
  * 24.1.4 triggerDateRelativeTo(currentdate as date) as date
  * 24.1.6 absoluteTrigger as date
  * 24.1.7 acknowledged as date
  * 24.1.8 action as String
  * 24.1.9 emailAddress as String
  * 24.1.10 relatedTo as String
  * 24.1.11 relativeTrigger as Double
  * 24.1.12 sound as String
  * 24.1.13 url as string
  * 24.1.15 CalAlarmActionDisplay="DISPLAY"
  * 24.1.16 CalAlarmActionEmail="EMAIL"
  * 24.1.17 CalAlarmActionProcedure="PROCEDURE"
  * 24.1.18 CalAlarmActionSound="AUDIO"

- 24.2.1 class CalAttendeeMBS
  * 24.2.3 Constructor
  * 24.2.5 address as String
  * 24.2.6 commonName as String
  * 24.2.7 Handle as Integer
  * 24.2.8 status as String
  * 24.2.10 CalAttendeeStatusAccepted="ACCEPTED"
  * 24.2.11 CalAttendeeStatusDeclined="DECLINED"
  * 24.2.12 CalAttendeeStatusNeedsAction="NEEDS-ACTION"
  * 24.2.13 CalAttendeeStatusTentative="TENTATIVE"
46 CoreAnimation

- 46.1.1 class CALayerMBS
  - 46.1.3 addSublayer(layer as CALayerMBS)
  - 46.1.4 available as boolean
  - 46.1.5 Constructor
  - 46.1.6 display
  - 46.1.7 displayIfNeeded
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  - 46.1.13 renderInContext(CGContextHandle as Integer) as boolean
  - 46.1.14 renderInPicture(Pic as Picture) as boolean
  - 46.1.15 setNeedsDisplay
  - 46.1.16 setNeedsDisplayInRect(r as CGRectMBS)
  - 46.1.17 setNeedsLayout
  - 46.1.18 sublayers as CALayerMBS()
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  - 46.1.22 anchorPointZ as Double
  - 46.1.23 AutoresizingMask as Integer
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  - 46.1.25 borderColor as Variant
  - 46.1.26 borderWidth as Double
  - 46.1.27 bounds as CGRectMBS
  - 46.1.28 className as string
  - 46.1.29 classPath as string
  - 46.1.30 contents as Variant
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  - 46.1.37 frame as CGRectMBS
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  - 46.1.40 mask as CALayerMBS
  - 46.1.41 masksToBounds as Boolean
  - 46.1.42 minificationFilterBias as Double
* 46.1.43 modelLayer as CALayerMBS
* 46.1.44 needsDisplay as boolean
* 46.1.45 needsDisplayOnBoundsChange as boolean
* 46.1.46 needsLayout as boolean
* 46.1.47 opacity as Double
* 46.1.48 Opaque as boolean
* 46.1.49 position as CGRectMBS
* 46.1.50 preferredFrameSize as CGSizeMBS
* 46.1.51 presentationLayer as CALayerMBS
* 46.1.52 rasterizationScale as Double
* 46.1.53 shadowColor as Variant
* 46.1.54 shadowOffset as CGSizeMBS
* 46.1.55 shadowOpacity as Double
* 46.1.56 shadowPath as Variant
* 46.1.57 shadowRadius as Double
* 46.1.58 shouldRasterize as Boolean
* 46.1.59 superlayer as CALayerMBS
* 46.1.60 zPosition as Double
* 46.1.62 kCALayerBottomEdge = 4
* 46.1.63 kCALayerHeightSizable = 16
* 46.1.64 kCALayerLeftEdge = 1
* 46.1.65 kCALayerMaxXMargin = 4
* 46.1.66 kCALayerMaxYMargin = 32
* 46.1.67 kCALayerMinXMargin = 1
* 46.1.68 kCALayerMinYMargin = 8
* 46.1.69 kCALayerNotSizable = 0
* 46.1.70 kCALayerRightEdge = 2
* 46.1.71 kCALayerTopEdge = 8
* 46.1.72 kCALayerWidthSizable = 2
• 72 Encryption and Hash

- ?? Globals

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- 23.5.1 class CBCharacteristicMBS
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  * 23.5.13 kPropertyBroadcast = 1
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- 23.7.1 class CBL2CAPChannelMBS
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- 23.9.1 class CBMutableCharacteristicMBS
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  * 23.9.5 setDescriptors(Descriptors() as CBDescriptorMBS)
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  * 23.9.13 kReadEncryptionRequired = 4
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- 23.10.1 class CBMutableDescriptorMBS
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- 23.11.1 class CBMutableServiceMBS
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- 23.12.1 class CBPeerMBS
* 23.12.3 Available as boolean
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– 23.13.1 class CBPeripheralManagerMBS

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* 23.13.42 kStatePoweredOff = 4
* 23.13.43 kStatePoweredOn = 5
* 23.13.44 kStateResetting = 1
* 23.13.45 kStateUnauthorized = 3
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– 23.14.1 class CBPeripheralMBS
  * 23.14.3 Available as boolean
  * 23.14.4 Constructor(Peripheral as CBPeripheralMBS)
  * 23.14.5 Destructor
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  * 23.14.7 discoverDescriptorsForCharacteristic(Characteristic as CBCharacteristicMBS)
  * 23.14.8 discoverIncludedServices(includedServiceUUIDs() as CBUUIDMBS = nil, service as CBServiceMBS)
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72.6.20 kCCHmacAlgSHA384 = 3
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28.2.19 addScaleBackground(bgRadius as Integer, fillColor as color, edgeWidth as Integer, edgeColor as color, scaleRadius as Integer, startAngle as Double, endAngle as Double)

28.2.20 addScaleBackground(bgRadius as Integer, fillColor as Integer, edgeWidth as Integer = 0, edgeColor as Integer = -1, scaleRadius as Integer = -2147483647)

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  * 28.5.12 getCoor(value as Double) as Integer
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28.5.28 `setColors` (axisColor as Integer, labelColor as Integer = & hffff0002, titleColor as Integer = -1, tickColor as Integer = -1)
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28.5.31 `setFormatCondition` (condition as string, operand as Double = 0)
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28.5.33 `setLabelAlignment` (alignment as Integer, minLabelSpace as Integer = 3)
28.5.34 `setLabelFormat` (formatString as string)
28.5.35 `setLabelGap` (d as Integer)
28.5.36 `setLabelOffset` (offset as Double)
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28.5.38 `setLabel` (labels() as string) as CDTextBoxMBS
28.5.39 `setLabelStep` (majorTickStep as Integer, minorTickStep as Integer = 0, majorTickOffset as Integer = 0, minorTickOffset as Integer = -2147483647)
28.5.40 `setLabelStyle` (font as string = ", fontsize as Double = 8, fontcolor as Integer = & hffff0002, fontAngle as Double = 0) as CDTextBoxMBS
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28.5.46 `setLogScale` (formatString as string = ")
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* 28.8.213 kCross2Symbol = 9
* 28.8.214 kCrossSymbol = 8
* 28.8.215 kDashLine = \& h0505
* 28.8.216 kDataColor = \& hFFFE0008
* 28.8.217 kDefaultShading = 0
* 28.8.218 kDepth = 2
* 28.8.219 kDiamondPointer = 0
* 28.8.220 kDiamondShape = 2
* 28.8.221 kDiamondSymbol = 2
* 28.8.222 kDirectionHorizontal = 0
* 28.8.223 kDirectionHorizontalVertical = 2
* 28.8.224 kDirectionVertical = 1
* 28.8.225 kDotDashLine = \& h05050205
* 28.8.226 kDotLine = \& h0202
* 28.8.227 kEndPoint = 3
* 28.8.228 kErrorDiffusion = 2
* 28.8.229 kExponentialRegression = -1
* 28.8.230 kFlatShading = 1
* 28.8.231 kForcePalette = 1
* 28.8.232 kGaussianFilter = 9
* 28.8.233 kGIF = 1
* 28.8.234 kGlassSphere2Shape = 16
* 172.11.3 kGlassSphereShape = 15
* 28.8.236 kGlobalGradientShading = 3
* 28.8.237 kGridLinesZ = \& h2000
* 28.8.238 kHammingFilter = 11
* 28.8.239 kHanningFilter = 10
* 28.8.240 kHermiteFilter = 4
* 28.8.241 kHLOCDefault = 0
* 28.8.242 kHLOCOpenClose = 1
* 28.8.243 kHLOCUpDown = 2
* 28.8.244 kInvertedTriangleShape = 6
* 28.8.245 kInvertedTriangleSymbol = 6
* 28.8.246 kJPG = 2
* 28.8.247 kLanczosFilter = 8
* 28.8.248 kLeft = 4
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* 28.8.251 kLinearFilter = 1
* 28.8.252 kLinearRegression = 1
* 28.8.253 kLineColor =& hFFFF0001
* 28.8.254 kLinePointer = 4
* 28.8.255 kLinePointer2 = 7
* 28.8.256 kLocalGradientShading = 2
* 28.8.257 kLogarithmicRegression = -2
* 28.8.258 kMitchellFilter = 6
* 28.8.259 kMonotonicAuto = 4
* 28.8.260 kMonotonicNone = 0
* 28.8.261 kMonotonicX = 1
* 28.8.262 kMonotonicXY = 3
* 28.8.263 kMonotonicY = 2
* 28.8.264 kNoAntiAlias = 0
* 28.8.265 kNoGlare = 1
* 28.8.266 kNoLegend = 2
* 28.8.267 kNoPalette = 2
* 28.8.268 kNormalGlare = 3
* 28.8.269 kNormalLegend = 0
* 28.8.270 kNoShape = 0
* 28.8.271 kNoSymbol = 0
* 28.8.272 kOrderedDither = 1
* 28.8.273 kOverlay = 0
* 28.8.274 kPalette =& hFFFF0000
* 28.8.275 kPDF = 7
* 28.8.276 kPencilPointer = 5
* 28.8.277 kPercentage = 4
* 28.8.278 kPixelScale = 0
* 28.8.279 kPlotAreaZ =& h1000
* 28.8.280 kPNG = 0
* 28.8.281 kQTIMG = 9
* 28.8.282 kQuadraticFilter = 2
* 28.8.283 kQuantize = 0
* 28.8.284 kRadialAxisScale = 2
* 28.8.285 kRadialShading = 7
* 28.8.286 kRectangularFrame = 4
* 28.8.287 kRectangularShading = 2
* 28.8.288 kReducedGlare = 2
* 28.8.289 kReverseLegend = 1
* 28.8.290 kRight = 6
* 28.8.291 kRightTriangleShape = 4
* 28.8.292 kRightTriangleSymbol = 4
* 28.8.293 kRingShading = 8
* 28.8.294 kRoundedEdgeNoGlareShading = 5
* 28.8.295 kRoundedEdgeShading = 6
* 77.8.42 kSameAsMainColor = & hFFFF0007
* 28.8.297 kSide = 3
* 28.8.298 kSideLayout = 0
* 28.8.299 kSincFilter = 7
* 28.8.300 kSmoothShading = 0
* 28.8.301 kSolidSphereShape = 17
* 28.8.302 kSquareShape = 1
* 28.8.303 kSquareSymbol = 1
* 28.8.304 kStack = 1
* 28.8.305 kSVG = 5
* 28.8.306 kSVGZ = 6
* 28.8.307 kTextColor = & hFFFF0002
* 28.8.308 kTop = 8
* 28.8.309 kTopCenter = 8
* 28.8.310 kTopLeft = 7
* 28.8.311 kTopLeft2 = 10
* 28.8.312 kTopRight = 9
* 28.8.313 kTopRight2 = 11
* 28.8.314 kTransparent = & hFF000000
* 28.8.315 kTriangleShape = 3
* 28.8.316 kTriangleSymbol = 3
* 28.8.317 kTriangularFrame = 3
* 28.8.318 kTriangularPointer = 1
* 28.8.319 kTriangularPointer2 = 6
* 28.8.320 kTriangularShading = 1
* 28.8.321 kTryPalette = 0
* 28.8.322 kWMP = 3
* 28.8.323 kXAxisAtOrigin = 1
* 28.8.324 kXAxisScale = 1
* 28.8.325 kXAxisSymmetric = 1
* 28.8.326 kXAxisSymmetricIfNeeded = 2
* 28.8.327 kXYAxisAtOrigin = 3
* 28.8.328 kXYAxisSymmetric = 16
* 28.8.329 kXYAxisSymmetricIfNeeded = 32
* 28.8.330 kYAxisAtOrigin = 2
* 28.8.331 kYAxisScale = 2
* 28.8.332 kYAxisSymmetric = 4
* 28.8.333 kYAxisSymmetricIfNeeded = 8
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– 28.9.1 class CDBaseMeterMBS

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* 28.18.30 addChaikinOscillator(height as Integer, ColorValue as Integer) as CDXYChartMBS 4692
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* 28.18.51 addFastStochastic(height as Integer, period1 as Integer, period2 as Integer, ColorValue1 as color, ColorValue2 as color) as CDXYChartMBS
* 28.18.52 addFastStochastic(height as Integer, period1 as Integer, period2 as Integer, ColorValue1 as Integer, ColorValue2 as Integer) as CDXYChartMBS
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* 28.18.61 addMACD(height as Integer, period1 as Integer, period2 as Integer, period3 as Integer, ColorValue as Integer, signalColor as Integer, divColor as Integer) as CDXYChartMBS
* 28.18.62 addMainChart(height as Integer) as CDXYChartMBS
* 28.18.63 addMassIndex(height as Integer, ColorValue as color, upColor as color, downColor as color) as CDXYChartMBS
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* 28.18.65 addMedianPrice(ColorValue as color) as CDLineLayerMBS
* 28.18.66 addMedianPrice(ColorValue as Integer) as CDLineLayerMBS
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* 28.18.72 addNVI(height as Integer, period as Integer, ColorValue as Integer, signalColor as Integer) as CDXYChartMBS
* 28.18.73 addOBV(height as Integer, ColorValue as color) as CDXYChartMBS
* 28.18.74 addOBV(height as Integer, ColorValue as Integer) as CDXYChartMBS
* 28.18.75 addParabolicSAR(accInitial as Double, accIncrement as Double, accMaximum as Double, symbolType as Integer, symbolSize as Integer, fillColor as color, edgeColor as color) as CDLineLayerMBS
* 28.18.76 addParabolicSAR(accInitial as Double, accIncrement as Double, accMaximum as Double, symbolType as Integer, symbolSize as Integer, fillColor as Integer, edgeColor as Integer) as CDLineLayerMBS 4710
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* 28.18.95 addSlowStochastic(height as Integer, period1 as Integer, period2 as Integer, ColorValue1 as Integer, ColorValue2 as Integer) as CDXYChartMBS 4717
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* 28.18.127 **setDateLabelFormat**(yearFormat as string, firstMonthFormat as string, otherMonthFormat as string, firstDayFormat as string, otherDayFormat as string, firstHourFormat as string, otherHourFormat as string)

* 28.18.128 **setDateLabelSpacing**(labelSpacing as Integer)

* 28.18.129 **setLegendStyle**(font as string, fontSize as Double, fontColor as color, bgColor as color)

* 28.18.130 **setLegendStyle**(font as string, fontSize as Double, fontColor as Integer, bgColor as Integer)

* 28.18.131 **setLogScale**(b as Boolean)

* 28.18.132 **setMargins**(leftMargin as Integer, topMargin as Integer, rightMargin as Integer, bottomMargin as Integer)

* 28.18.133 **setNumberLabelFormat**(formatString as string)

* 28.18.134 **setPercentageAxis** as CDAxisMBS

* 28.18.135 **setPlotAreaBorder**(borderColor as color, borderGap as Integer)

* 28.18.136 **setPlotAreaBorder**(borderColor as Integer, borderGap as Integer)

* 28.18.137 **setPlotAreaStyle**(bgColor as color, majorHGridColor as color, majorVGridColor as color, minorHGridColor as color, minorVGridColor as color)

* 28.18.138 **setPlotAreaStyle**(bgColor as Integer, majorHGridColor as Integer, majorVGridColor as Integer, minorHGridColor as Integer, minorVGridColor as Integer)

* 28.18.139 **setToolTipDateFormat**(monthFormat as string, dayFormat as string, hourFormat as string)

* 28.18.140 **setXAxisStyle**(font as string, fontSize as Double, fontColor as color, fontAngle as Double)

* 28.18.141 **setXAxisStyle**(font as string, fontSize as Double, fontColor as Integer, fontAngle as Double)

* 28.18.142 **setYAxisStyle**(font as string, fontSize as Double, fontColor as color, bgColor as color)

* 28.18.143 **setYAxisStyle**(font as string, fontSize as Double, fontColor as Integer, bgColor as Integer)

– 28.19.1 **class** CDFinanceSimulatorMBS

* 28.19.3 **Constructor**(seed as Integer, startTime as Double, endTime as Double, resolution as Integer)

* 28.19.4 **Constructor**(seed as string, startTime as Double, endTime as Double, resolution as Integer)

* 28.19.5 **getCloseData** as CDArrayMBS

* 28.19.6 **getHighData** as CDArrayMBS

* 28.19.7 **getLowData** as CDArrayMBS

* 28.19.8 **getOpenData** as CDArrayMBS

* 28.19.9 **getTimeStamps** as CDArrayMBS

* 28.19.10 **getVolData** as CDArrayMBS

– 28.20.1 **class** CDHLOCLayerMBS
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* 28.20.3 setColorMethod(colorMethod as Integer, riseColor as color, fallColor as color, leadValue as Double = -1.7E308) 4742
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  * 28.23.3 addCustomAggregateLabel(dataItem as Integer, label as string, font as string = "", fontSize as Double = 8, fontColor as Integer = & hffffff0002, fontAngle as Double = 0) as CDTextBoxMBS 4749
  * 28.23.4 addCustomAggregateLabel(dataItem as Integer, label as string, font as string, fontSize as Double, fontColor as color, fontAngle as Double = 0) as CDTextBoxMBS 4750
  * 28.23.5 addCustomDataLabel(dataSet as Integer, dataItem as Integer, label as string, font as string = "", fontSize as Double = 8, fontColor as Integer = & hffffff0002, fontAngle as Double = 0) as CDTextBoxMBS 4750
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  * 28.23.11 addDataSet(data as CDArrayMBS, colorvalue as Integer = -1, name as string = ") as CDDataSetMBS 4753
  * 28.23.12 addDataSet(data() as Double, colorvalue as color, name as string = "") as CDDataSetMBS 4754
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* 28.23.21 getHTMLImageMap(url as string, queryFormat as string = "", extraAttr as string = "", offsetX as Integer = 0, offsetY as Integer = 0) as string
* 28.23.22 getImageCoor(dataSet as Integer, dataItem as Integer = & h80000001, offsetX as Integer = 0, offsetY as Integer = 0) as string
* 28.23.23 getImageCoor2(dataItem as Integer, offsetX as Integer = 0, offsetY as Integer = 0) as string
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* 28.23.25 getNearestXValue(target as Double) as Double
* 28.23.26 getXCoor(value as Double) as Integer
* 28.23.27 getXIndexOf(xValue as Double, tolerance as Double = 0) as Integer
* 28.23.28 getYCoor(value as Double, axis as boolean=true) as Integer
* 28.23.29 getYCoor(value as Double, axis as CDAxisMBS) as Integer
* 28.23.30 moveBack(layer as CDLayerMBS=nil)
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* 28.23.34 setAggregateLabelStyle(font as string = "", fontSize as Double = 8, fontcolor as Integer as CDTextBoxMBS
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* 28.23.39 setBorderColor(colorvalue as Integer, lightingEffect as Integer = 0)
* 28.23.40 setBorderColor(colorvalue as color, lightingEffect as Integer = 0)
* 28.23.41 setBorderColor(colorvalue as Integer, lightingEffect as Integer = 0)
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* 28.61.32 addCandleStickLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, riseColor as Integer = -1, fallColor as Integer = 0, edgeColor as Integer = & hffff0001) as CDCandleStickLayerMBS 5029

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* 28.61.37 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, colorValue as color) as CDHLOCLayerMBS 5034

* 28.61.38 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, colorValue as Integer = -1) as CDHLOCLayerMBS 5035

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* 28.61.43 addInterLineLayer(line1 as CDLineObjMBS, line2 as CDLineObjMBS, color12 as color, color21 as color) as CDInterLineLayerMBS 5041

* 28.61.44 addInterLineLayer(line1 as CDLineObjMBS, line2 as CDLineObjMBS, color12 as Integer, color21 as Integer = -1) as CDInterLineLayerMBS 5041

* 28.61.45 addLineLayer(data as CDArrayMBS, colorvalue as color, name as string = "", depth as Integer = 0) as CDLineLayerMBS 5042

* 28.61.46 addLineLayer(data as CDArrayMBS, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDLineLayerMBS 5042

* 28.61.47 addLineLayer(data() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDLineLayerMBS 5043

* 28.61.48 addLineLayer(data() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDLineLayerMBS 5043

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* 28.61.51 addScatterLayer(xData() as Double, yData() as Double, name as string, symbol as Integer, symbolSize as Integer, fillColor as color, edgeColor as color) as CDScatterLayerMBS

* 28.61.52 addScatterLayer(xDate() as date, yData() as Double, name as string = "", symbol as Integer = 1, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDScatterLayerMBS

* 28.61.53 addScatterLayer(xDate() as date, yDate() as date, name as string, symbol as Integer, symbolSize as Integer, fillColor as color, edgeColor as color) as CDScatterLayerMBS

* 28.61.54 addScatterLayer(xDate() as date, yDate() as Double, name as string = "", symbol as Integer = 1, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDScatterLayerMBS

* 28.61.55 addScatterLayer(xDate() as date, yDate() as Double, name as string, symbol as Integer, symbolSize as Integer, fillColor as color, edgeColor as color) as CDScatterLayerMBS

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* 28.61.57 addSplineLayer(data() as Double, colorvalue as color, name as string = "") as CDSplineLayerMBS

* 28.61.58 addSplineLayer(data() as Double, colorvalue as Integer = -1, name as string = "") as CDSplineLayerMBS

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* 28.61.60 addStepLineLayer(data() as Double, colorvalue as color, name as string = "") as CDStepLineLayerMBS

* 28.61.61 addStepLineLayer(data() as Double, colorvalue as Integer = -1, name as string = "") as CDStepLineLayerMBS

* 28.61.62 addTrendLayer(Data() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDTrendLayerMBS

* 28.61.63 addTrendLayer(Data() as Double, colorvalue as Integer = -1, name as string = "") as CDTrendLayerMBS

* 28.61.64 addTrendLayer(Data() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDTrendLayerMBS

* 28.61.65 addTrendLayer(Data() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDTrendLayerMBS

* 28.61.66 addTrendLayer(dates() as date, colorvalue as color, name as string = "", depth as Integer = 0) as CDTrendLayerMBS

* 28.61.67 addTrendLayer(dates() as date, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDTrendLayerMBS

* 28.61.68 addTrendLayer(dates() as date, yData() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDTrendLayerMBS

* 28.61.69 addTrendLayer(dates() as date, yData() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDTrendLayerMBS
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* 28.61.71 addTrendLayer(xData() as Double, yData() as Double, colorValue as Integer = -1, name as string = "", depth as Integer = 0) as CDTrendLayerMBS 5061
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* 51.2.19 kCGEventMaskOtherMouseDown = & h2000000
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- 124.7.3 Constructor(Context as CLContextMBS, Flags as UInt64, ImageFormat as CLImageFormatMBS, Width as Integer, Height as Integer, Depth as Integer, RowPitch as Integer, SlicePitch as Integer, HostPtr as Memoryblock = nil)

- 124.7.4 Constructor(Context as CLContextMBS, Flags as UInt64, ImageFormat as CLImageFormatMBS, Width as Integer, Height as Integer, RowPitch as Integer, HostPtr as Memoryblock = nil)

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- 124.7.24 kMapWrite = 2

- 124.7.25 kMemoryAllocHostPtr = 16

- 124.7.26 kMemoryCopyHostPtr = 32

- 124.7.27 kMemoryReadOnly = 4

- 124.7.28 kMemoryReadWrite = 1

- 124.7.29 kMemoryTypeBuffer = &h10F0

- 124.7.30 kMemoryTypeImage2D = &h10F1

- 124.7.31 kMemoryTypeImage3D = &h10F2

- 124.7.32 kMemoryUseHostPtr = 8

- 124.7.33 kMemoryWriteOnly = 2
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    17.97.25 Flags as Integer
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    17.97.27 IsIndefinite as Boolean
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    17.97.29 IsNegativeInfinity as Boolean
* 17.97.30 IsNumeric as Boolean
* 17.97.31 IsPositiveInfinity as Boolean
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* 17.97.33 Seconds as Double
* 17.97.34 Timescale as Integer
* 17.97.35 Value as Int64
* 17.97.37 kCMTimeFlags_HasBeenRounded = 2
* 17.97.38 kCMTimeFlags_ImpliedValueFlagsMask = 28
* 17.97.39 kCMTimeFlags_Indefinite = 16
* 17.97.40 kCMTimeFlags_NegativeInfinity = 8
* 17.97.41 kCMTimeFlags_PositiveInfinity = 4
* 17.97.42 kCMTimeFlags_Valid = 1
* 17.97.43 kCMTimeMaxTimescale = & h7fffffff
* 17.97.44 kCMTimeRoundingMethod_Default = 1
* 17.97.45 kCMTimeRoundingMethod_QuickTime = 4
* 17.97.46 kCMTimeRoundingMethod_RoundAwayFromZero = 3
* 17.97.47 kCMTimeRoundingMethod_RoundHalfAwayFromZero = 1
* 17.97.48 kCMTimeRoundingMethod_RoundTowardNegativeInfinity = 6
* 17.97.49 kCMTimeRoundingMethod_RoundTowardPositiveInfinity = 5
* 17.97.50 kCMTimeRoundingMethod_RoundTowardZero = 2

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* 17.98.4 Constructor(start as CMTimeMBS, duration as CMTimeMBS)
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* 17.98.7 Description as string
* 17.98.8 Equal(range1 as CMTimeRangeMBS, range2 as CMTimeRangeMBS) as boolean
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* 17.98.15 Union(range1 as CMTimeRangeMBS, range2 as CMTimeRangeMBS) as CMTimeRangeMBS
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  - 44.1.10 predicate as NSPredicateMBS
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  - 44.2.3 attributedStringFromContact(contact as CNContactMBS, DefaultAttributes as Dictionary = nil) as NSAttributedStringMBS
  - 44.2.4 attributedStringFromContact(contact as CNContactMBS, Style as Integer, DefaultAttributes as Dictionary = nil) as NSAttributedStringMBS
  - 44.2.5 available as Boolean
  - 44.2.6 CNContactPropertyAttribute as String
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  - 44.2.9 descriptorForRequiredKeysForStyle(Style as Integer) as CNKeyDescriptorMBS
  - 44.2.10 nameOrderForContact(contact as CNContactMBS) as Integer
  - 44.2.11 stringFromContact(contact as CNContactMBS) as String
  - 44.2.12 stringFromContact(contact as CNContactMBS, Style as Integer) as String
  - 44.2.14 Handle as Integer
  - 44.2.15 Style as Integer
  - 44.2.17 CNContactDisplayNameOrderFamilyNameFirst = 2
  - 44.2.18 CNContactDisplayNameOrderGivenNameFirst = 1
  - 44.2.19 CNContactDisplayNameOrderUserDefault = 0
  - 44.2.20 CNContactFormatterStyleFullName = 0
  - 44.2.21 CNContactFormatterStylePhoneticFullName = 1

- 44.3.1 class CNContactMBS
  - 44.3.3 areKeysAvailable(keyDescriptors() as CNKeyDescriptorMBS) as Boolean
  - 44.3.4 available as Boolean
  - 44.3.5 CNContactBirthdayKey as String
  - 44.3.6 CNContactDatesKey as String
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* 41.13.15 kColorSyncConversionGridPoints as string
* 41.13.16 kColorSyncConversionInpChan as string
* 41.13.17 kColorSyncConversionMatrix as string
* 41.13.18 kColorSyncConversionOutChan as string
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* 41.13.20 kColorSyncConversionParamCurve1 as string
* 41.13.21 kColorSyncConversionParamCurve2 as string
* 41.13.22 kColorSyncConversionParamCurve3 as string
* 41.13.23 kColorSyncConversionParamCurve4 as string
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* 41.13.25 kColorSyncConvertThreadCount as string
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* 41.13.28 kColorSyncPreferredCMM as string
* 41.13.29 kColorSyncProfile as string
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* 41.13.31 kColorSyncRenderingIntentAbsolute as string
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* 41.13.36 kColorSyncTransformInfo as string
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* 41.13.38 kColorSyncTransformDeviceToDevice as string
* 41.13.39 kColorSyncTransformDeviceToPCS as string
* 41.13.40 kColorSyncTransformDstSpace as string
* 41.13.41 kColorSyncTransformFullConversionData as string
* 41.13.42 kColorSyncTransformGamutCheck as string
* 41.13.43 kColorSyncTransformParametricConversionData as string
* 41.13.44 kColorSyncTransformPCSToDevice as string
* 41.13.45 kColorSyncTransformPCSToPCS as string
* 41.13.46 kColorSyncTransformSimplifiedConversionData as string
* 41.13.47 kColorSyncTransformSrcSpace as string
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* 41.13.52 kColorSync16BitFloat = 4
* 41.13.53 kColorSync16BitInteger = 3
* 41.13.54 kColorSync1BitGamut = 1
41.13.55 kColorSync32BitFloat = 7
41.13.56 kColorSync32BitInteger = 5
41.13.57 kColorSync32BitNamedColorIndex = 6
41.13.58 kColorSync8BitInteger = 2
41.13.59 kColorSyncAlphaFirst = 4
41.13.60 kColorSyncAlphaInfoMask = & h1F
41.13.61 kColorSyncAlphaLast = 3
41.13.62 kColorSyncAlphaNone = 0
41.13.63 kColorSyncAlphaNoneSkipFirst = 6
41.13.64 kColorSyncAlphaNoneSkipLast = 5
41.13.65 kColorSyncAlphaPremultipliedFirst = 2
41.13.66 kColorSyncAlphaPremultipliedLast = 1
41.13.67 kColorSyncByteOrder16Big = 12288
41.13.68 kColorSyncByteOrder16Little = 4096
41.13.69 kColorSyncByteOrder32Big = 16384
41.13.70 kColorSyncByteOrder32Little = 8192
41.13.71 kColorSyncByteOrderDefault = 0
41.13.72 kColorSyncByteOrderMask = & h7000
• **55 CoreText**

- **55.2.1** class `CTFontCollectionMBS`
  - **55.2.3** Available as boolean
  - **55.2.4** Constructor
  - **55.2.5** `CopyWithFontDescriptors(queryDescriptors() as CTFontDescriptorMBS, options as dictionary) as CTFontCollectionMBS`
  - **55.2.6** `CreateCopyWithFontDescriptors(original as CTFontCollectionMBS, queryDescriptors() as CTFontDescriptorMBS, options as dictionary) as CTFontCollectionMBS`
  - **55.2.7** `CreateFromAvailableFonts(options as Dictionary) as CTFontCollectionMBS`
  - **55.2.8** `CreateWithFontDescriptors(queryDescriptors() as CTFontDescriptorMBS, options as dictionary) as CTFontCollectionMBS`
  - **55.2.9** ExclusionDescriptors as `CTFontDescriptorMBS()`
  - **55.2.10** `FontAttribute(attributeName as string, options as Integer) as Dictionary()`
  - **55.2.11** `FontAttribute(attributeNames() as string, options as Integer) as Dictionary()`
  - **55.2.12** kCTFontCollectionDisallowAutoActivationOption as string
  - **55.2.13** kCTFontCollectionIncludeDisabledFontsOption as string
  - **55.2.14** kCTFontCollectionRemoveDuplicatesOption as string
  - **55.2.15** `MatchingFontDescriptors(options as dictionary = nil) as CTFontDescriptorMBS()`
  - **55.2.16** `MatchingFontDescriptorsForFamily(familyName as string, options as dictionary = nil) as CTFontCollectionMBS()`
  - **55.2.17** `MatchingFontDescriptorsSorted(tag as Variant) as CTFontDescriptorMBS()`
  - **55.2.18** `MutableCopy as CTMutableFontCollectionMBS`
  - **55.2.19** `QueryDescriptors as CTFontDescriptorMBS()`
  - **55.2.20** `kCTFontCollectionCopyDefaultOptions = 0`
  - **55.2.21** `kCTFontCollectionCopyStandardSort = 2`
  - **55.2.22** `kCTFontCollectionCopyUnique = 1`

- **55.3.1** class `CTFontDescriptorMBS`
  - **55.3.3** `AttributeValue(key as string) as Variant`
  - **55.3.4** `AttributeValueValues as Dictionary`
  - **55.3.5** Available as boolean
  - **55.3.6** Constructor
  - **55.3.7** `CopyWithAttributes(attributeValues as Dictionary) as CTFontDescriptorMBS`
  - **55.3.8** `CopyWithFamily(family as String) as CTFontDescriptorMBS`
  - **55.3.9** `CopyWithFeature(featureTypeID as Integer, featureSelectorID as Integer) as CTFontDescriptorMBS`
  - **55.3.10** `CopyWithSymbolicTraits(symTraitValue as Integer, symTraitMask as Integer) as CTFontDescriptorMBS`
  - **55.3.11** `CopyWithVariation(variationIdentifier as Integer, variationValue as Double) as CTFontDescriptorMBS`
  - **55.3.12** `CreateCopyWithFamily(original as CTFontDescriptorMBS, family as String) as CTFontDescriptorMBS`
55.3.13 CreateCopyWithSymbolicTraits(original as CTFontDescriptorMBS, symTraitValue as Integer, symTraitMask as Integer) as CTFontDescriptorMBS
55.3.14 CreateWithAttributes(attributeValues as Dictionary) as CTFontDescriptorMBS
55.3.15 CreateWithNameAndSize(Name as string, Size as Double = 0.0) as CTFontDescriptorMBS
55.3.16 kCTFontBaselineAdjustAttribute as string
55.3.17 kCTFontCascadeListAttribute as string
55.3.18 kCTFontCharacterSetAttribute as string
55.3.19 kCTFontDescriptorMatchingCurrentAssetSize as string
55.3.20 kCTFontDescriptorMatchingDescriptors as string
55.3.21 kCTFontDescriptorMatchingError as string
55.3.22 kCTFontDescriptorMatchingPercentage as string
55.3.23 kCTFontDescriptorMatchingResult as string
55.3.24 kCTFontDescriptorMatchingSourceDescriptor as string
55.3.25 kCTFontDescriptorMatchingTotalAssetSize as string
55.3.26 kCTFontDescriptorMatchingTotalDownloadedSize as string
55.3.27 kCTFontDisplayNameAttribute as string
55.3.28 kCTFontDownloadableAttribute as string
55.3.29 kCTFontEnabledAttribute as string
55.3.30 kCTFontFamilyNameAttribute as string
55.3.31 kCTFontFeaturesAttribute as string
55.3.32 kCTFontFeatureSettingsAttribute as string
55.3.33 kCTFontFixedAdvanceAttribute as string
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55.3.36 kCTFontMacintoshEncodingsAttribute as string
55.3.37 kCTFontMatrixAttribute as string
55.3.38 kCTFontNameAttribute as string
55.3.39 kCTFontOrientationAttribute as string
55.3.40 kCTFontPriorityAttribute as string
55.3.41 kCTFontRegistrationScopeAttribute as string
55.3.42 kCTFontSizeAttribute as string
55.3.43 kCTFontStyleNameAttribute as string
55.3.44 kCTFontTraitsAttribute as string
55.3.45 kCTFontURLAttribute as string
55.3.46 kCTFontVariationAttribute as string
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55.3.49 MatchingFontDescriptors(mandatoryAttributes() as String) as CTFontDescriptorMBS()
55.3.51 DisplayName as String
- 55.3.52 FamilyName as String
- 55.3.53 File as FolderItem
- 55.3.54 FontSize as Double
- 55.3.55 Name as String
- 55.3.56 StyleName as String
- 55.3.57 URL as String
- 55.3.59 kCTFontDescriptorMatchingDidBegin = 0
- 55.3.60 kCTFontDescriptorMatchingDidFailWithError = 8
- 55.3.61 kCTFontDescriptorMatchingDidFinish = 1
- 55.3.62 kCTFontDescriptorMatchingDidFinishDownloading = 6
- 55.3.63 kCTFontDescriptorMatchingDidMatch = 7
- 55.3.64 kCTFontDescriptorMatchingDownloading = 5
- 55.3.65 kCTFontDescriptorMatchingStalled = 3
- 55.3.66 kCTFontDescriptorMatchingWillBeginDownloading = 4
- 55.3.67 kCTFontDescriptorMatchingWillBeginQuerying = 2
- 55.3.68 kCTFontFormatBitmap = 5
- 55.3.69 kCTFontFormatOpenTypePostScript = 1
- 55.3.70 kCTFontFormatOpenTypeTrueType = 2
- 55.3.71 kCTFontFormatPostScript = 4
- 55.3.72 kCTFontFormatTrueType = 3
- 55.3.73 kCTFontFormatUnrecognized = 0
- 55.3.74 kCTFontOrientationDefault = 0
- 55.3.75 kCTFontOrientationHorizontal = 1
- 55.3.76 kCTFontOrientationVertical = 2
- 55.3.77 kCTFontPriorityComputer = 30000
- 55.3.78 kCTFontPriorityDynamic = 50000
- 55.3.79 kCTFontPriorityNetwork = 20000
- 55.3.80 kCTFontPriorityProcess = 60000
- 55.3.81 kCTFontPrioritySystem = 10000
- 55.3.82 kCTFontPriorityUser = 40000

- 55.4.1 class CTFontMBS
  - 55.4.3 AdvancesForGlyphs(orientation as Integer, glyphs() as Integer) as Double
  - 55.4.4 AdvancesForGlyphs(orientation as Integer, glyphs() as Integer, boundingRects() as CGSizeMBS) as Double
  - 55.4.5 AttributeValue(key as string) as Variant
  - 55.4.6 Available as boolean
  - 55.4.7 AvailableTables(options as Integer) as String()
  - 55.4.8 BoundingRectsForGlyphs(orientation as Integer, glyphs() as Integer) as CGRectMBS
  - 55.4.9 BoundingRectsForGlyphs(orientation as Integer, glyphs() as Integer, boundingRects() as CGRectMBS) as CGRectMBS
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* 55.4.11 CreateCopyWithAttributes(size as Double, Matrix as CGAffineTransformMBS, fontAttributes as CTFontDescriptorMBS) as CTFontMBS 9747
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* 55.4.13 CreatePathForGlyph(glyph as Integer, transform as CGAffineTransformMBS) as CGPathMBS 9749
* 55.4.14 CreateUIFontForLanguage(Type as Integer, size as Double = 0.0, language as string = "") as CTFontMBS 9749
* 55.4.15 CreateWithFamily(size as Double, Matrix as CGAffineTransformMBS, family as string) as CTFontMBS 9749
* 55.4.16 CreateWithFontDescriptor(descriptor as CTFontDescriptorMBS, size as Double = 0.0, matrix as CGAffineTransformMBS = nil, options as Integer = 0) as CTFontMBS 9750
* 55.4.17 CreateWithGraphicsFont(graphicsFont as CGFontMBS, size as Double = 0.0, matrix as CGAffineTransformMBS = nil, attributeValues as CTFontDescriptorMBS = nil) as CTFontMBS 9750
* 55.4.18 CreateWithName(name as string, size as Double = 0.0, matrix as CGAffineTransformMBS = nil, options as Integer = 0) as CTFontMBS 9751
* 55.4.19 CreateWithPlatformFont(ATSFontHandle as Integer, size as Double = 0.0, matrix as CGAffineTransformMBS = nil, attributeValues as CTFontDescriptorMBS = nil) as CTFontMBS 9751
* 55.4.20 CreateWithQuickdrawInstance(name as String, identifier as Integer = 0, Style as Integer = 0, size as Double = 0.0) as CTFontMBS 9752
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* 55.4.30 kCTBaselineClassIdeographicCentered as string 9755
* 55.4.31 kCTBaselineClassIdeographicHigh as string 9755
* 55.4.32 kCTBaselineClassIdeographicLow as string 9756
* 55.4.33 kCTBaselineClassMath as string 9756
* 55.4.34 kCTBaselineClassRoman as string 9756
* 55.4.35 kCTBaselineOriginalFont as string 9756
* 55.4.36 kCTBaselineReferenceFont as string 9756
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* 55.4.39 kCTFontDesignerNameKey as string 9757
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* 55.4.42 kCTFontFeatureSelectorDefaultKey as string
* 55.4.43 kCTFontFeatureSelectorIdentifierKey as string
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* 55.4.45 kCTFontFeatureSelectorSettingKey as string
* 55.4.46 kCTFontFeatureTypeExclusiveKey as string
* 55.4.47 kCTFontFeatureTypeIdentifierKey as string
* 55.4.48 kCTFontFeatureTypeNameKey as string
* 55.4.49 kCTFontFeatureTypeSelectorsKey as string
* 55.4.50 kCTFontFullNameKey as string
* 55.4.51 kCTFontLicenseNameKey as string
* 55.4.52 kCTFontLicenseURLNameKey as string
* 55.4.53 kCTFontManufacturerNameKey as string
* 55.4.54 kCTFontPostScriptCIDNameKey as string
* 55.4.55 kCTFontPostScriptNameKey as string
* 55.4.56 kCTFontSampleTextNameKey as string
* 55.4.57 kCTFontStyleNameKey as string
* 55.4.58 kCTFontSubFamilyNameKey as string
* 55.4.59 kCTFontTrademarkNameKey as string
* 55.4.60 kCTFontUniqueNameKey as string
* 55.4.61 kCTFontVariationAxisDefaultValueKey as string
* 55.4.62 kCTFontVariationAxisIdentifierKey as string
* 55.4.63 kCTFontVariationAxisMaximumValueKey as string
* 55.4.64 kCTFontVariationAxisMinimumValueKey as string
* 55.4.65 kCTFontVariationAxisNameKey as string
* 55.4.66 kCTFontVendorURLNameKey as string
* 55.4.67 kCTFontVersionNameKey as string
* 55.4.68 LigatureCaretPositions(glyph as Integer) as Double()
* 55.4.69 Name(nameKey as string) as String
* 55.4.70 Name(nameKey as string, byref language as string) as String
* 55.4.71 OpticalBoundsForGlyphs(glyphs() as Integer, boundingRects() as CGRectMBS, options as Integer = 0) as CGRectMBS
* 55.4.72 OpticalBoundsForGlyphs(glyphs() as Integer, options as Integer = 0) as CGRectMBS
* 55.4.73 PlatformFont(byref fontAttributes as CTFontDescriptorMBS) as Integer
* 55.4.74 SupportedLanguages as String()
* 55.4.75 Table(table as string, options as Integer) as Memoryblock
* 55.4.76 VariationAxes as Dictionary()
* 55.4.77 VerticalTranslationsForGlyphs(glyphs() as Integer) as CGSizeMBS()
* 55.4.79 Ascent as Double
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**55.4.83** Descent as Double

**55.4.84** DisplayName as String

**55.4.85** FamilyName as String

**55.4.86** File as FolderItem

**55.4.87** FontDescriptor as CTFontDescriptorMBS

**55.4.88** FullName as String

**55.4.89** GlyphCount as Integer

**55.4.90** Leading as Double

**55.4.91** Matrix as CGAffineTransformMBS

**55.4.92** PostScriptName as String

**55.4.93** Size as Double

**55.4.94** SlantAngle as Double

**55.4.95** StringEncoding as UInt32

**55.4.96** SymbolicTraits as UInt32

**55.4.97** Traits as Dictionary

**55.4.98** UnderlinePosition as Double

**55.4.99** UnderlineThickness as Double

**55.4.100** UnitsPerEm as UInt64

**55.4.101** URL as String

**55.4.102** Variation as Dictionary

**55.4.103** XHeight as Double

**55.4.105** kCTFontOptionsDefault = 0

**55.4.106** kCTFontOptionsPreferSystemFont = 4

**55.4.107** kCTFontOptionsPreventAutoActivation = 1

**55.4.108** kCTFontTableAcnt = "acnt"

**55.4.109** kCTFontTableAnkr = "ankr"

**55.4.110** kCTFontTableAvar = "avar"

**55.4.111** kCTFontTableBASE = "BASE"

**55.4.112** kCTFontTableBdat = "bdat"

**55.4.113** kCTFontTableBhed = "bhed"

**55.4.114** kCTFontTableBloc = "bloc"

**55.4.115** kCTFontTableBsln = "bsln"

**55.4.116** kCTFontTableCFF = "CFF"

**55.4.117** kCTFontTableCmap = "cmap"

**55.4.118** kCTFontTableCvar = "cvar"

**55.4.119** kCTFontTableCvt = "cvt"

**55.4.120** kCTFontTableDSIG = "DSIG"

**55.4.121** kCTFontTableEBDT = "EBDT"

**55.4.122** kCTFontTableEBLC = "EBLC"

**55.4.123** kCTFontTableEBSC = "EBSC"

**55.4.124** kCTFontTableFdesc = "fdesc"
55.4.125 kCTFontTableFeat = "feat" 9776
55.4.126 kCTFontTableFmtx = "fmtx" 9776
55.4.127 kCTFontTableFpgm = "fpgm" 9776
55.4.128 kCTFontTableFvar = "fvar" 9776
55.4.129 kCTFontTableGasp = "gasp" 9776
55.4.130 kCTFontTableGDEF = "GDEF" 9776
55.4.131 kCTFontTableGlyf = "glyf" 9777
55.4.132 kCTFontTableGPOS = "GPOS" 9777
55.4.133 kCTFontTableGSUB = "GSUB" 9777
55.4.134 kCTFontTableGvar = "gvar" 9777
55.4.135 kCTFontTableHdmx = "hdmx" 9777
55.4.136 kCTFontTableHead = "head" 9777
55.4.137 kCTFontTableHhea = "hhea" 9777
55.4.138 kCTFontTableHmtx = "hmtx" 9778
55.4.139 kCTFontTableHsty = "hsty" 9778
55.4.140 kCTFontTableJSTF = "JSTF" 9778
55.4.141 kCTFontTableJust = "just" 9778
55.4.142 kCTFontTableKern = "kern" 9778
55.4.143 kCTFontTableKerx = "kerx" 9778
55.4.144 kCTFontTableLcar = "lcar" 9778
55.4.145 kCTFontTableLoca = "loca" 9779
55.4.146 kCTFontTableLtag = "ltag" 9779
55.4.147 kCTFontTableLTSH = "LTSH" 9779
55.4.148 kCTFontTableMaxp = "maxp" 9779
55.4.149 kCTFontTableMort = "mort" 9779
55.4.150 kCTFontTableMorx = "morx" 9779
55.4.151 kCTFontTableName = "name" 9779
55.4.152 kCTFontTableOpbd = "opbd" 9780
55.4.153 kCTFontTableOptionExcludeSynthetic = 1 9780
55.4.154 kCTFontTableOptionNoOptions = 0 9780
55.4.155 kCTFontTableOS2 = "OS/2" 9780
55.4.156 kCTFontTablePCLT = "PCLT" 9780
55.4.157 kCTFontTablePost = "post" 9780
55.4.158 kCTFontTablePrep = "prep" 9781
55.4.159 kCTFontTableProp = "prop" 9781
55.4.160 kCTFontTableSbit = "sbit" 9781
55.4.161 kCTFontTableSbix = "sbix" 9781
55.4.162 kCTFontTableTrak = "trak" 9781
55.4.163 kCTFontTableVDMX = "VDMX" 9781
55.4.164 kCTFontTableVhea = "vhea" 9782
55.4.165 kCTFontTableVmtx = "vmtx" 9782
55.4.166 kCTFontTableVORG = "VORG" 9782
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* 55.4.167 kCTFontTableZapf = "Zapf"
* 55.4.168 kCTFontUIFontAlertHeader = 18
* 55.4.169 kCTFontUIFontApplication = 9
* 55.4.170 kCTFontUIFontControlContent = 26
* 55.4.171 kCTFontUIFontEmphasizedSystem = 3
* 55.4.172 kCTFontUIFontEmphasizedSystemDetail = 20
* 55.4.173 kCTFontUIFontLabel = 10
* 55.4.174 kCTFontUIFontMenuItem = 12
* 55.4.175 kCTFontUIFontMenuItemCmdKey = 14
* 55.4.176 kCTFontUIFontMenuItemMark = 13
* 55.4.177 kCTFontUIFontMenuTitle = 11
* 55.4.178 kCTFontUIFontMessage = 23
* 55.4.179 kCTFontUIFontMiniEmphasizedSystem = 7
* 55.4.180 kCTFontUIFontMiniSystem = 6
* 55.4.181 kCTFontUIFontNone = -1
* 55.4.182 kCTFontUIFontPalette = 24
* 55.4.183 kCTFontUIFontPushButton = 16
* 55.4.184 kCTFontUIFontSmallEmphasizedSystem = 5
* 55.4.185 kCTFontUIFontSmallSystem = 4
* 55.4.186 kCTFontUIFontSmallToolbar = 22
* 55.4.187 kCTFontUIFontSystem = 2
* 55.4.188 kCTFontUIFontSystemDetail = 19
* 55.4.189 kCTFontUIFontToolbar = 21
* 55.4.190 kCTFontUIFontToolTip = 25
* 55.4.191 kCTFontUIFontUser = 0
* 55.4.192 kCTFontUIFontUserFixedPitch = 1
* 55.4.193 kCTFontUIFontUtilityWindowTitle = 17
* 55.4.194 kCTFontUIFontViews = 8
* 55.4.195 kCTFontUIFontWindowTitle = 15

– 55.5.1 class CTFrameMBS
  * 55.5.3 Available as boolean
  * 55.5.4 Constructor
  * 55.5.5 Draw(context as CGContextMBS)
  * 55.5.6 kCTFrameClippingPathsAttributeName as string
  * 55.5.7 kCTFramePathClippingPathAttributeName as string
  * 55.5.8 kCTFramePathFillRuleAttributeName as string
  * 55.5.9 kCTFramePathWidthAttributeName as string
  * 55.5.10 kCTFrameProgressionAttributeName as string
  * 55.5.11 LineOrigins(location as Integer, length as Integer) as CGPointMBS()
  * 55.5.12 Lines as CTLineMBS()
  * 55.5.14 FrameAttributes as Dictionary
* 55.5.15 Path as CGPathMBS
* 55.5.16 StringRangeLength as Integer
* 55.5.17 StringRangeLocation as Integer
* 55.5.18 VisibleStringRangeLength as Integer
* 55.5.19 VisibleStringRangeLocation as Integer
* 55.5.21 kCTFramePathFillEvenOdd = 0
* 55.5.22 kCTFramePathFillWindingNumber = 1
* 55.5.23 kCTFrameProgressionLeftToRight = 2
* 55.5.24 kCTFrameProgressionRightToLeft = 1
* 55.5.25 kCTFrameProgressionTopToBottom = 0

- 55.6.1 class CTFramesetterMBS
  * 55.6.3 Available as boolean
  * 55.6.4 Constructor
  * 55.6.5 CreateFrame(location as Integer, length as Integer, path as CGPathMBS, frameAttributes as dictionary = nil) as CTFrameMBS
  * 55.6.6 CreateWithAttributedString(s as CFAttributedStringMBS) as CTFramesetterMBS
  * 55.6.7 SuggestFrameSizeWithConstraints(location as Integer, length as Integer, frameAttributes as dictionary, constraints as CGSizeMBS, byref fitRangeLocation as Integer, byref fitRangeLength as Integer) as CGSizeMBS
  * 55.6.9 TypeSetter as CTTypesetterMBS

- 55.7.1 class CTGlyphInfoMBS
  * 55.7.3 Available as boolean
  * 55.7.4 Constructor
  * 55.7.5 CreateWithCharacterIdentifier(cid as Integer, collection as Integer, baseString as string) as CTGlyphInfoMBS
  * 55.7.6 CreateWithGlyph(glyph as Integer, font as CTFontMBS, baseString as string) as CTGlyphInfoMBS
  * 55.7.7 CreateWithGlyphName(glyphName as string, font as CTFontMBS, baseString as string) as CTGlyphInfoMBS
  * 55.7.9 CharacterCollection as Integer
  * 55.7.10 CharacterIdentifier as Integer
  * 55.7.11 GlyphName as String
  * 55.7.13 kCTAdobeCNS1CharacterCollection = 1
  * 55.7.14 kCTAdobeGB1CharacterCollection = 2
  * 55.7.15 kCTAdobeJapan1CharacterCollection = 3
  * 55.7.16 kCTAdobeJapan2CharacterCollection = 4
  * 55.7.17 kCTAdobeKorea1CharacterCollection = 5
  * 55.7.18 kCTCharacterCollectionAdobeCNS1 = 1
  * 55.7.19 kCTCharacterCollectionAdobeGB1 = 2
  * 55.7.20 kCTCharacterCollectionAdobeJapan1 = 3
  * 55.7.21 kCTCharacterCollectionAdobeJapan2 = 4
  * 55.7.22 kCTCharacterCollectionAdobeKorea1 = 5
55.7.23 kCTCharacterCollectionIdentityMapping = 0
55.7.24 kCTIdentityMappingCharacterCollection = 0

55.8.1 class CTLineMBS
* 55.8.3 Available as boolean
* 55.8.4 Bounds(options as Integer = 0) as CGRectMBS
* 55.8.5 Constructor
* 55.8.6 CreateJustifiedLine(justificationFactor as Double, justificationWidth as Double) as CTLineMBS
* 55.8.7 CreateTruncatedLine(width as Double, truncationType as Integer, truncationToken as CTLineMBS = nil) as CTLineMBS
* 55.8.8 CreateWithAttributedString(s as CFAttributedStringMBS) as CTLineMBS
* 55.8.9 Draw(context as CGContextMBS)
* 55.8.10 GlyphRuns as CTRunMBS()
* 55.8.11 ImageBounds(context as CGContextMBS) as CGRectMBS
* 55.8.12 OffsetForStringIndex(charIndex as Integer, byref secondaryOffset as Double) as Double
* 55.8.13 PenOffsetForFlush(flushFactor as Double, flushWidth as Double) as Double
* 55.8.14 StringIndexForPosition(position as CGPointMBS) as Integer
* 55.8.15 TypographicBounds(byref ascent as Double, byref descent as Double, byref leading as Double) as Double
* 55.8.17 GlyphCount as Integer
* 55.8.18 StringRangeLength as Integer
* 55.8.19 StringRangeLocation as Integer
* 55.8.20 TrailingWhitespaceWidth as Double
* 55.8.22 kCTLineBoundsExcludeTypographicLeading = 1
* 55.8.23 kCTLineBoundsExcludeTypographicShifts = 2
* 55.8.24 kCTLineBoundsUseGlyphPathBounds = 8
* 55.8.25 kCTLineBoundsUseHangingPunctuation = 4
* 55.8.26 kCTLineBoundsUseOpticalBounds = 16
* 55.8.27 kCTLineTruncationEnd = 1
* 55.8.28 kCTLineTruncationMiddle = 2
* 55.8.29 kCTLineTruncationStart = 0

55.9.1 class CTMutableFontCollectionMBS
* 55.9.3 Constructor
* 55.9.4 SetExclusionDescriptors(descriptors() as CTFontDescriptorMBS)
* 55.9.5 SetQueryDescriptors(descriptors() as CTFontDescriptorMBS)

55.10.1 class CTParagraphStyleMBS
* 55.10.3 Available as boolean
* 55.10.4 Constructor
* 55.10.5 Create as CTParagraphStyleMBS
* 55.10.6 Create(settings() as CTParagraphStyleSettingMBS) as CTParagraphStyleMBS
55.10.7 CreateCopy as CTParagraphStyleMBS
55.10.8 CreateWithAlignment(Alignment as Integer) as CTParagraphStyleMBS
55.10.9 TabStops as CTTextTabMBS()
55.10.11 Alignment as Integer
55.10.12 BaseWritingDirection as Integer
55.10.13 DefaultTabInterval as Double
55.10.14 FirstLineHeadIndent as Double
55.10.15 HeadIndent as Double
55.10.16 LineBoundsOptions as Integer
55.10.17 LineBreakMode as Integer
55.10.18 LineHeightMultiple as Double
55.10.19 LineSpacingAdjustment as Double
55.10.20 MaximumLineHeight as Double
55.10.21 MaximumLineSpacing as Double
55.10.22 MinimumLineHeight as Double
55.10.23 MinimumLineSpacing as Double
55.10.24 ParagraphSpacing as Double
55.10.25 ParagraphSpacingBefore as Double
55.10.26 TailIndent as Double
55.10.28 kCTLineBreakByCharWrapping = 1
55.10.29 kCTLineBreakByClipping = 2
55.10.30 kCTLineBreakByTruncatingHead = 3
55.10.31 kCTLineBreakByTruncatingMiddle = 5
55.10.32 kCTLineBreakByTruncatingTail = 4
55.10.33 kCTLineBreakByWordWrapping = 0
55.10.34 kCTParagraphStyleSpecifierAlignment = 0
55.10.35 kCTParagraphStyleSpecifierBaseWritingDirection = 13
55.10.36 kCTParagraphStyleSpecifierDefaultTabInterval = 5
55.10.37 kCTParagraphStyleSpecifierFirstLineHeadIndent = 1
55.10.38 kCTParagraphStyleSpecifierHeadIndent = 2
55.10.39 kCTParagraphStyleSpecifierLineBoundsOptions = 17
55.10.40 kCTParagraphStyleSpecifierLineBreakMode = 6
55.10.41 kCTParagraphStyleSpecifierLineHeightMultiple = 7
55.10.42 kCTParagraphStyleSpecifierLineSpacing = 10
55.10.43 kCTParagraphStyleSpecifierLineSpacingAdjustment = 16
55.10.44 kCTParagraphStyleSpecifierMaximumLineHeight = 8
55.10.45 kCTParagraphStyleSpecifierMaximumLineSpacing = 14
55.10.46 kCTParagraphStyleSpecifierMinimumLineHeight = 9
55.10.47 kCTParagraphStyleSpecifierMinimumLineSpacing = 15
55.10.48 kCTParagraphStyleSpecifierParagraphSpacing = 11
55.10.49 kCTParagraphStyleSpecifierParagraphSpacingBefore = 12
55.10.50 kCTParagraphStyleSpecifierTabStops = 4
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- 55.10.51 kCTParagraphStyleSpecifierTailIndent = 3
- 55.10.52 kCTTextAlignmentCenter = 2
- 55.10.53 kCTTextAlignmentJustified = 3
- 55.10.54 kCTTextAlignmentLeft = 0
- 55.10.55 kCTTextAlignmentNatural = 4
- 55.10.56 kCTTextAlignmentRight = 1
- 55.10.57 kCTWritingDirectionLeftToRight = 0
- 55.10.58 kCTWritingDirectionNatural = -1
- 55.10.59 kCTWritingDirectionRightToLeft = 1

- 55.11.1 class CTParagraphStyleSettingMBS
  - 55.11.3 SetTextTabs(textTabs() as CTTextTabMBS)
  - 55.11.5 doubleValue as Double
  - 55.11.6 intValue as Integer
  - 55.11.7 Spec as Integer

- 55.12.1 class CTRunDelegateMBS
  - 55.12.3 Available as boolean
  - 55.12.4 Close
  - 55.12.5 Constructor
  - 55.12.7 Close
  - 55.12.8 GetAscent as Double
  - 55.12.9 GetDescent as Double
  - 55.12.10 GetWidth as Double

- 55.13.1 class CTRunMBS
  - 55.13.3 Advances as CGSizeMBS()
  - 55.13.4 Available as boolean
  - 55.13.5 Constructor
  - 55.13.6 Draw(context as CGContextMBS, location as Integer, length as Integer = 0)
  - 55.13.7 Glyphs as Integer()
  - 55.13.8 ImageBounds(context as CGContextMBS, location as Integer, length as Integer) as CGRectMBS
  - 55.13.9 Positions as CGPointMBS()
  - 55.13.10 StringIndices as Integer()
  - 55.13.11 TypographicBounds(location as Integer, length as Integer, byref ascent as Double, byref descent as Double, byref leading as Double) as Double
  - 55.13.12 AttributeValues as Dictionary
  - 55.13.14 GlyphCount as Integer
  - 55.13.15 Status as Integer
  - 55.13.16 StringRangeLength as Integer
  - 55.13.17 StringRangeLocation as Integer
  - 55.13.18 TextMatrix as CGAffineTransformMBS
  - 55.13.20 kCTRunStatusHasNonIdentityMatrix = 4
* 55.13.21 kCTRunStatusNonMonotonic = 2
* 55.13.22 kCTRunStatusNoStatus = 0
* 55.13.23 kCTRunStatusRightToLeft = 1

- 55.14.1 class CTTextTabMBS
  * 55.14.3 Available as boolean
  * 55.14.4 Constructor
  * 55.14.5 Create(alignment as Integer, location as Double, options as Dictionary = nil) as CTTextTabMBS
  * 55.14.6 kCTTabColumnTerminatorsAttributeName as string
  * 55.14.8 Alignment as Integer
  * 55.14.9 Location as Double
  * 55.14.10 Options as Dictionary

- 55.15.1 class CTTypesetterMBS
  * 55.15.3 Available as boolean
  * 55.15.4 Constructor
  * 55.15.5 CreateLine(location as Integer, length as Integer, offset as Double = 0.0) as CTLineMBS
  * 55.15.6 CreateWithAttributedString(s as CFAttributedStringMBS) as CTTypesetterMBS
  * 55.15.7 CreateWithAttributedString(s as CFAttributedStringMBS, options as dictionary) as CTTypesetterMBS
  * 55.15.8 kCTTypesetterOptionDisableBidiProcessing as string
  * 55.15.9 kCTTypesetterOptionForcedEmbeddingLevel as string
  * 55.15.10 SuggestClusterBreak(startIndex as Integer, width as Double) as Integer
  * 55.15.11 SuggestClusterBreak(startIndex as Integer, width as Double, offset as Double) as Integer
  * 55.15.12 SuggestLineBreak(startIndex as Integer, width as Double) as Integer
  * 55.15.13 SuggestLineBreak(startIndex as Integer, width as Double, offset as Double) as Integer
• 57 CUPS
  - 57.1.1 class CUPSDestinationMBS
    * 57.1.3 Options as CUPSOptionMBS()
    * 57.1.5 Instance as String
    * 57.1.6 isDefault as Boolean
    * 57.1.7 Name as String
  - 57.3.1 class CUPSJobMBS
    * 57.3.3 CompletedTime as Date
    * 57.3.4 CreationTime as Date
    * 57.3.5 Dest as String
    * 57.3.6 Format as String
    * 57.3.7 ID as Integer
    * 57.3.8 Priority as Integer
    * 57.3.9 ProcessingTime as Date
    * 57.3.10 Size as Integer
    * 57.3.11 State as Integer
    * 57.3.12 Title as String
    * 57.3.13 User as String
  - 57.4.1 module CUPSMBS
    * 57.4.3 CancelJob(name as string, job as Int32)
    * 57.4.4 GetDefault as string
    * 57.4.5 GetDestinations as CUPSDestinationMBS()
    * 57.4.6 GetJobs(name as string, OnlyMyJobs as boolean, whichjobs as Integer) as CUP- SJobMBS()
    * 57.4.7 GetPassword(prompt as string) as string
    * 57.4.8 GetPPD(name as string) as string
    * 57.4.9 LastError as Integer
    * 57.4.10 LastErrorString as string
    * 57.4.11 PrintData(name as string, Data as String, Title as string) as Integer
    * 57.4.12 PrintFile(name as string, file as folderitem, title as string) as Integer
    * 57.4.13 PrintFile(name as string, file as folderitem, title as string, options() as CUPSOptionMBS) as Integer
    * 57.4.14 PrintFiles(name as string, files() as folderitem, title as string) as Integer
    * 57.4.15 PrintFiles(name as string, files() as folderitem, title as string, options() as CUPSOptionMBS) as Integer
    * 57.4.16 Server as string
    * 57.4.17 SetDefaultPrinter(printer as string)
    * 57.4.18 SetServer(server as string)
    * 57.4.19 SetUser(user as string)
    * 57.4.20 User as string
    * 57.4.22 kJobAborted = 8
* 57.4.23 kJobCanceled = 7
* 57.4.24 kJobCompleted = 9
* 57.4.25 kJobHeld = 4
* 57.4.26 kJobIDAll = -1
* 57.4.27 kJobIDCurrent = 0
* 57.4.28 kJobPending = 3
* 57.4.29 kJobProcessing = 5
* 57.4.30 kJobStopped = 6
* 57.4.31 kPrinterAUTHENTICATED = & h400000
* 57.4.32 kPrinterBIND = & h0400
* 57.4.33 kPrinterBW = & h0004
* 57.4.34 kPrinterCLASS = & h0001
* 57.4.35 kPrinterCOLLATE = & h0080
* 57.4.36 kPrinterCOLOR = & h0008
* 57.4.37 kPrinterCOMMANDS = & h800000
* 57.4.38 kPrinterCOPIES = & h0040
* 57.4.39 kPrinterCOVER = & h0200
* 57.4.40 kPrinterDEFAULT = & h20000
* 57.4.41 kPrinterDELETE = & h100000
* 57.4.42 kPrinterDISCOVERED = & h1000000
* 57.4.43 kPrinterDUPLEX = & h0010
* 57.4.44 kPrinterFAX = & h40000
* 57.4.45 kPrinterIMPLICIT = & h10000
* 57.4.46 kPrinterLARGE = & h4000
* 57.4.47 kPrinterLOCAL = & h0000
* 57.4.48 kPrinterMEDIUM = & h2000
* 57.4.49 kPrinterMFP = & h4000000
* 57.4.50 kPrinterNotShared = & h200000
* 57.4.51 kPrinterOPTIONS = & h6fffc
* 57.4.52 kPrinterPUNCH = & h0100
* 57.4.53 kPrinterREJECTING = & h800000
* 57.4.54 kPrinterREMOTE = & h0002
* 57.4.55 kPrinterSCANNER = & h2000000
* 57.4.56 kPrinterSMALL = & h1000
* 57.4.57 kPrinterSORT = & h0800
* 57.4.58 kPrinterSTAPLE = & h0020
* 57.4.59 kPrinterVARIABLE = & h8000
* 57.4.60 kStatusAttributes = & h040B
* 57.4.61 kStatusAttributesNotSettable = & h0413
* 57.4.62 kStatusBadRequest = & h0400
* 57.4.63 kStatusCharset = & h040D
* 57.4.64 kStatusCompressionError = & h0410
* 57.4.65 kStatusCompressionNotSupported = & h040F
* 57.4.66 kStatusConflict = & h040E
* 57.4.67 kStatusDeviceError = & h0504
* 57.4.68 kStatusDocumentAccessError = & h0412
* 57.4.69 kStatusDocumentFormat = & h040A
* 57.4.70 kStatusDocumentFormatError = & h0411
* 57.4.71 kStatusErrorJobCanceled = & h0508
* 57.4.72 kStatusForbidden = & h0401
* 57.4.73 kStatusGone = & h0407
* 57.4.74 kStatusIgnoredAllNotifications = & h0416
* 57.4.75 kStatusIgnoredAllSubscriptions = & h0414
* 57.4.76 kStatusInternalError = & h0500
* 57.4.77 kStatusMultipleJobsNotSupported = & h0509
* 57.4.78 kStatusNotAccepting = & h0506
* 57.4.79 kStatusNotAuthenticated = & h0402
* 57.4.80 kStatusNotAuthorized = & h0403
* 57.4.81 kStatusNotFound = & h0406
* 57.4.82 kStatusNotPossible = & h0404
* 57.4.83 kStatusOK = 0
* 57.4.84 kStatusOKButCancelSubscription = 6
* 57.4.85 kStatusOKConflict = 2
* 57.4.86 kStatusOKEventsComplete = 7
* 57.4.87 kStatusOKIgnoredNotifications = 4
* 57.4.88 kStatusOKIgnoredSubscriptions = 3
* 57.4.89 kStatusOKSubst = 1
* 57.4.90 kStatusOKTooManyEvents = 5
* 57.4.91 kStatusOperationNotSupported = & h0501
* 57.4.92 kStatusPrinterBusy = & h0507
* 57.4.93 kStatusPrinterIsDeactivated = & h050A
* 57.4.94 kStatusPrintSupportFileNotFound = & h0417
* 57.4.95 kStatusRedirectionOtherSite = & h200
* 57.4.96 kStatusRequestEntity = & h0408
* 57.4.97 kStatusRequestValue = & h0409
* 57.4.98 kStatusSeeOther = & h280
* 57.4.99 kStatusServiceUnavailable = & h0502
* 57.4.100 kStatusTemporaryError = & h0505
* 57.4.101 kStatusTimeout = & h0405
* 57.4.102 kStatusTooManySubscriptions = & h0415
* 57.4.103 kStatusURIScheme = & h040C
* 57.4.104 kStatusVersionNotSupported = & h0503
* 57.4.105 kWhichJobsActive = 0
* 57.4.106 kWhichJobsAll = -1
• 57.4.107 kWhichJobsComplete = 1

– 57.6.1 class CUPSOptionMBS
  • 57.6.3 Name as String
  • 57.6.4 Value as String
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  – 58.1.1 class CURLEmailMBS 9907
    * 58.1.3 AddAttachment(data as MemoryBlock, name as string, type as string = "", InlineID as string = "") 9908
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    * 58.1.6 AddBcc(email as string, name as string) 9910
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    * 58.1.8 AddHeader(header as string) 9911
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    * 58.1.10 AddTo(email as string, name as string) 9911
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    * 58.1.17 EmailSource as string 9913
    * 58.1.18 Headers as String() 9914
    * 58.1.19 ReplyTOs as String() 9914
    * 58.1.20 SetFrom(email as string, name as string) 9914
    * 58.1.21 SetServer(server as string, UseSSL as boolean) 9915
    * 58.1.22 TOs as String() 9915
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* 58.10.494 kIPRESOLVE_WHATEVER=0
* 58.10.495 kNETRC_IGNORED=0
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* 58.13.27 kErrorCallPerform = -1
* 58.13.28 kErrorInternalError = 4
* 58.13.29 kErrorOK = 0
* 58.13.30 kErrorOutOfMemory = 3
* 58.13.31 kErrorRecursiveAPICall = 8
* 58.13.32 kErrorUnknownOption = 6
* 58.13.33 kPipeHTTP1 = 1
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– 58.16.1 class CURLNSSLBackendMBS
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* 58.16.8 ID as Integer
* 58.16.9 Name as String
* 58.16.11 kErrorNoBackends = 3
* 58.16.12 kErrorOK = 0
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* 58.16.14 kErrorUnknownBackend = 1
* 58.16.15 kSSLBackendAXTLS = 10
* 58.16.16 kSSLBackendDarwinSSL = 9
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* 58.16.18 kSSLBackendGSKIT = 5
* 58.16.19 kSSLBackendMBEDTLS = 11
* 58.16.20 kSSLBackendNone = 0
- 58.16.21 kSSLBackendNSS = 3
- 58.16.22 kSSLBackendOpenSSL = 1
- 58.16.23 kSSLBackendPolarSSL = 6
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  - 58.17.19 SupportsGSSAPI as Boolean
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* 58.18.4 FileName as String
* 58.18.5 FileType as Integer
* 58.18.6 Flags as Integer
* 58.18.7 GID as Integer
* 58.18.8 GroupString as String
* 58.18.9 HardLinks as Integer
* 58.18.10 HasFileName as Boolean
* 58.18.11 HasFileType as Boolean
* 58.18.12 HasGID as Boolean
* 58.18.13 HasHardLinks as Boolean
* 58.18.14 HasPermissions as Boolean
* 58.18.15 HasSize as Boolean
* 58.18.16 HasTime as Boolean
* 58.18.17 HasUID as Boolean
* 58.18.18 IsDirectory as Boolean
* 58.18.19 IsFile as Boolean
* 58.18.20 Permissions as Integer
* 58.18.21 PermissionString as String
* 58.18.22 Size as Int64
* 58.18.23 Target as String
* 58.18.24 Time as Int64
* 58.18.25 TimeString as String
* 58.18.26 UID as Integer
* 58.18.27 UserString as String
* 58.18.29 FileTypeDeviceBlock = 3
* 58.18.30 FileTypeDeviceChar = 4
* 58.18.31 FileTypeDirectory = 1
* 58.18.32 FileTypeDoor = 7
* 58.18.33 FileTypeFile = 0
* 58.18.34 FileTypeNamedPipe = 5
* 58.18.35 FileTypeSocket = 6
* 58.18.36 FileTypeSymlink = 2
* 58.18.37 FileTypeUnknown = 8
* 58.18.38 FlagKnownFileName = 1
* 58.18.39 FlagKnownFileType = 2
* 58.18.40 FlagKnownGID = 32
* 58.18.41 FlagKnownHardLinks = 128
* 58.18.42 FlagKnownPermissions = 8

58.18.3 Date as Date
58.18.4 FileName as String
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58.18.12 HasGID as Boolean
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58.18.14 HasPermissions as Boolean
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58.18.19 IsFile as Boolean
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58.18.26 UID as Integer
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58.18.33 FileTypeFile = 0
58.18.34 FileTypeNamedPipe = 5
58.18.35 FileTypeSocket = 6
58.18.36 FileTypeSymlink = 2
58.18.37 FileTypeUnknown = 8
58.18.38 FlagKnownFileName = 1
58.18.39 FlagKnownFileType = 2
58.18.40 FlagKnownGID = 32
58.18.41 FlagKnownHardLinks = 128
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- 58.18.44 FlagKnownTime = 4
- 58.18.45 FlagKnownUID = 16

- 58.19.1 class CURLSListMBS
  - 58.19.3 Item(index as Integer) as string
  - 58.19.4 List as String()
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- 58.20.1 class CURLSMBS
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  - 58.20.15 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string)
  - 58.20.16 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer)
  - 58.20.17 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Number4 as Integer)
  - 58.20.18 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Text4 as string)
  - 58.20.19 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string)
  - 58.20.20 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string, FormOption4 as Integer, Number4 as Integer)
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* 58.20.23 FormAddFile(fieldName as String, fileName as String, fileContent as string, ContentType as String = "")
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* 58.20.27 GetInfoAppConnectTime as Double
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* 58.20.34 GetInfoCookieList as CURLSListMBS
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* 58.20.36 GetInfoFileTime as Integer
* 58.20.37 GetInfoFTPEntryPath as string
* 58.20.38 GetInfoHeaderSize as Integer
* 58.20.39 GetInfoHTTPAuthAvail as Integer
* 58.20.40 GetInfoHTTPConnectCode as Integer
* 58.20.41 GetInfoHTTPVersion as integer
* 58.20.42 GetInfoLastSocket as Integer
* 58.20.43 GetInfoLocalIP as string
* 58.20.44 GetInfoLocalPort as Integer
* 58.20.45 GetInfoNameLookupTime as Double
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  - 58.21.18 kEncoding7bit = "7bit"
  - 58.21.19 kEncoding8bit = "8bit"
  - 58.21.20 kEncodingBase64 = "base64"
  - 58.21.21 kEncodingBinary = "binary"
  - 58.21.22 kEncodingNone = ""
  - 58.21.23 kEncodingQuotedPrintable = "quoted-printable"
  - 58.21.24 kMimeTypeGIF = "image/gif"
  - 58.21.25 kMimeTypeHTML = "text/html"
  - 58.21.26 kMimeTypeJPEG = "image/jpeg"
  - 58.21.27 kMimeTypePDF = "application/pdf"
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  - 58.21.29 kMimeTypeSVG = "image/svg+xml"
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* 58.23.29 kErrorOK = 0 10471
* 58.23.30 kErrorOutOfMemory = 3 10471
* 58.23.31 kErrorRecursiveAPICall = 8 10471
* 58.23.32 kErrorUnknownOption = 6 10472
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* 17.100.50 kCVPixelFormatType_24BGR = "24BG"
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* 17.100.66 kCVPixelFormatType_4444YpCbCr10 = "v410"
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* 17.100.68 kCVPixelFormatType_48RGB = "b48r"
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* 120.9.123 kCWPHYMode11n = 4
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* 120.9.136 kCWSecurityModeWPA2_Enterprise = 5
* 120.9.137 kCWSecurityModeWPA2_PSK = 3
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* 63.32.34 SW_MAXIMIZE = 3
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* 63.32.62 WS_EX_LEFT = & h00000000
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* 63.32.74 WS_EX_STATICEDGE = & h00020000
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* 63.32.82 WS_MAXIMIZE = & h01000000
* 63.32.83 WS_MAXIMIZEBOX = & h00010000
* 63.32.84 WS_MINIMIZE = & h20000000
* 63.32.85 WS_MINIMIZEBOX = & h00020000
* 63.32.86 WS_OVERLAPPED = & h00000000
* 63.32.87 WS_OVERLAPPEDWINDOW = & h00CF0000
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* 63.32.92 WS_TABSTOP = & h00010000
* 63.32.93 WS_THICKFRAME = & h00040000
* 63.32.94 WS_TILED = & h00000000
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  * 66.14.29 TXT as DNSTXTRecordMBS
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66.15.1 class DNSRPRRecordMBS
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  * 66.16.3 intermediate as String
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  - **120.20.1** class DNSServiceAddrInfoMBS
    - **120.20.3** AddrInfo(InterfaceIndex as Integer, protocol as Integer, HostName as string) as boolean
    - **120.20.4** Available as boolean
    - **120.20.6** ServiceAddrInfo(Flags as Integer, InterfaceIndex as Integer, ErrorCode as Integer, AddressFamily as Integer, IP as string, SockAddr as MemoryBlock, HostName as string, ttl as Integer)
    - **120.20.8** kAddressFamilyIPv4 = 2
    - **120.20.9** kAddressFamilyIPv6 = 30
    - **120.20.10** kProtocolAuto = 0
    - **120.20.11** kProtocolIPv4 = 1
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  - **120.21.1** class DNSServiceBaseMBS
    - **120.21.3** Available as boolean
    - **120.21.4** Close
    - **120.21.5** ConstructFullName(Service as string, regtype as string, domain as string) as string
    - **120.21.6** GetDaemonVersion as Integer
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    - **120.21.11** Lasterror as Integer
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    - **120.21.14** kErrorAlreadyRegistered = -65547
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    - **120.21.27** kErrorNoAuth = -65555
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– 120.22.1 class DNSServiceBrowseMBS
  * 120.22.3 Browse(IntefaceIndex as Integer, servicetype as string, domain as string) as boolean

– 120.22.5 ServiceBrowse(Flags as Integer, InterfaceIndex as Integer, ErrorCode as Integer, ServiceName as string, RegType as string, Domain as string)

– 120.23.1 class DNSServiceDiscoveryBrowseMBS
  * 120.23.3 Available as boolean
  * 120.23.4 Browse(servicetype as string, domain as string) as boolean
  * 120.23.5 Close
  * 120.23.6 Running as boolean
  * 120.23.8 Handle as Integer

– 120.23.10 ServiceBrowse(message as Integer, name as string, type as string, domain as string, flags as Integer)

– 120.24.1 class DNSServiceDiscoveryDomainEnumerationMBS
* 120.24.3 Available as boolean 16979
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* 120.25.9 Handle as Integer 16984
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  - 66.17.1 class DNSServiceQueryRecordMBS

    * 66.17.3 QueryRecord(InterfaceIndex as Integer, FullName as string, rrType as Integer, rrClass as Integer, Flags as Integer = 0) as boolean

    * 66.17.5 ServiceQueryRecord(flags as Integer, InterfaceIndex as Integer, ErrorCode as Integer, Fullname as string, rrType as Integer, rrClass as Integer, Length as Integer, Data as string, ttl as Integer)
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  - 120.29.1 class DNSServiceRegisterMBS
    * 120.29.3 AddRecord(rrType as Integer, TXTRecord as string, ttl as Integer)
    * 120.29.4 Register(Flags as Integer, interfaceIndex as Integer, servicename as string, service-type as string, domain as string, host as string, port as Integer, txtRecord as string) as boolean
    * 120.29.5 RemoveRecord
    * 120.29.6 UpdateRecord(TXTRecord as string, ttl as Integer)
    * 120.29.8 ServiceRegistration(flags as Integer, errorcode as Integer, Name as string, RegType as string, Domain as string)
  
  - 120.30.1 class DNSServiceRegisterRecordMBS
    * 120.30.3 RegisterRecord(Flags as Integer, interfaceIndex as Integer, fullname as string, rrtype as Integer, rrClass as Integer, data as string, ttl as Integer) as boolean
    * 120.30.4 UpdateRecord(TXTRecord as string, ttl as Integer)
    * 120.30.6 ServiceRegistration(flags as Integer, errorcode as Integer)
  
  - 120.31.1 class DNSServiceResolveMBS
    * 120.31.3 Resolve(InterfaceIndex as Integer, servicename as string, servicetype as string, domain as string) as boolean
    * 120.31.5 ServiceResolve(Flags as Integer, InterfaceIndex as Integer, ErrorCode as Integer, Fullname as string, Hosttarget as string, Port as Integer, TxtRecord as string)
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- 66.18.1 class DNSSOARecordMBS
  * 66.18.3 expire as Integer
  * 66.18.4 minimum as Integer
  * 66.18.5 mname as String
  * 66.18.6 refresh as Integer
  * 66.18.7 retry as Integer
  * 66.18.8 rname as String
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- 66.19.1 class DNSSocketAddressMBS
  * 66.19.3 address as String
  * 66.19.4 data as Memoryblock
  * 66.19.5 Family as Integer
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- 66.20.1 class DNSRVRecordMBS
  * 66.20.3 port as Integer
  * 66.20.4 priority as Integer
  * 66.20.5 target as String
  * 66.20.6 weight as Integer

- 66.21.1 class DNSTXTRecordMBS
  * 66.21.3 Strings(index as Integer) as string
  * 66.21.5 Count as Integer

- 66.22.1 module DNSUtilMBS
  * 66.22.3 ClassNumber(dnsClass as string, byref n as Integer) as boolean
  * 66.22.4 ClassString(dnsclass as Integer) as string
  * 66.22.5 Lookup(name as string, dnsclass as Integer, dnsType as Integer) as DNSReplyMBS
  * 66.22.6 LookupMT(name as string, dnsclass as Integer, dnsType as Integer) as DNSReplyMBS
  * 66.22.7 TypeNumber(dnsType as string, byref n as Integer) as boolean
  * 66.22.8 TypeString(dnstype as Integer) as string
  * 66.22.10 ClassALL = & hff
  * 66.22.11 ClassANY = & hff
  * 66.22.12 ClassCHAOS = 3
  * 66.22.13 ClassCSNET = 2
  * 66.22.14 ClassHESIOD = 4
  * 66.22.15 ClassINTERNET = 1
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* 66.22.19 TypeAFSDB = & h12
* 66.22.20 TypeALL = & hff
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* 66.22.23 TypeAXFR = & hfc
* 66.22.24 TypeCNAME = 5
* 66.22.25 TypeGPOS = & h1b
* 66.22.26 TypeHINFO = & h0d
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* 66.22.29 TypeKEY = & h19
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* 66.22.32 TypeMAILB = & hfd
* 66.22.33 TypeMB = 7
* 66.22.34 TypeMD = 3
* 66.22.35 TypeMF = 4
* 66.22.36 TypeMG = 8
* 66.22.37 TypeMINFO = & h0e
* 66.22.38 TypeMR = 9
* 66.22.39 TypeMX = & h0f
* 66.22.40 TypeNS = 2
* 66.22.41 TypeNSAP = & h16
* 66.22.42 TypeNSAPPTR = & h17
* 66.22.43 TypeNULL = & h0a
* 66.22.44 TypeNXT = & h1c
* 66.22.45 TypePTR = & h0c
* 66.22.46 TypePX = & h1a
* 66.22.47 TypeRP = & h11
* 66.22.48 TypeRT = & h15
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* 66.22.50 TypeSOA = 6
* 66.22.51 TypeSRV = & h21
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– 66.23.1 class DNSWKSPRecordMBS
  * 66.23.3 Map(index as Integer) as Integer
  * 66.23.5 address as String
* 66.23.6 maplength as Integer
* 66.23.7 protocol as Integer
– 66.24.1 class DNSX25RecordMBS
* 66.24.3 psdnAddress as String
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  - 85.1.1 class DOMAbstractViewMBS
    * 85.1.3 document as DOMDocumentMBS
  - 85.2.1 class DOMAttrMBS
    * 85.2.3 name as String
    * 85.2.4 ownerElement as DOMElementMBS
    * 85.2.5 specified as boolean
    * 85.2.7 value as String
  - 85.4.1 class DOMCharacterDataMBS
    * 85.4.3 appendData(arg as string)
    * 85.4.4 deleteData(offset as Integer, count as Integer)
    * 85.4.5 insertData(offset as Integer, arg as string)
    * 85.4.6 length as Integer
    * 85.4.7 replaceData(offset as Integer, count as Integer, arg as string)
    * 85.4.8 substringData(offset as Integer, count as Integer) as string
    * 85.4.10 data as string
  - 85.6.1 class DOMCounterMBS
    * 85.6.3 identifier as String
    * 85.6.4 listStyle as String
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  - 85.7.1 class DOMCSSCharsetRuleMBS
    * 85.7.3 encoding as String
  - 85.8.1 class DOMCSSFontFaceRuleMBS
    * 85.8.3 style as DOMCSSStyleDeclarationMBS
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  - 85.10.1 class DOMCSSMediaRuleMBS
    * 85.10.3 cssRules as DOMCSSRuleListMBS
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    * 85.10.6 media as DOMMediaListMBS
  - 85.11.1 class DOMCSSPageRuleMBS
    * 85.11.3 style as DOMCSSStyleDeclarationMBS
    * 85.11.5 selectorText as String
  - 85.12.1 class DOMCSSPrimitiveValueMBS
    * 85.12.3 getCounterValue as DOMCounterMBS
    * 85.12.4 getRectValue as DOMRectMBS
* 85.12.5 getRGBColorValue as DOMRGBColorMBS
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Play

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SetAspectRatio(AspectRatio as Integer)

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SetAudioStream(index as Integer)

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SetSPDIFDataOutDevice(Device as Integer)

SetSubPictureStream(index as Integer)

SetTime(timecode as Integer, time as Integer, frames as Integer)

SetTimeEventRate(rate as Integer)

SetTitle(Title as Integer)

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* 70.34.117 Create3DView(Base3DAnnot as Integer, Name as string, SetAsDefault as boolean, Matrix as memoryblock, CamDistance as Double, RenderingMode as Integer, LightingSheme as Integer) as Integer
* 70.34.118 CreateAnnotAP(annot as Integer) as Integer
* 70.34.119 CreateArticleThread(ThreadName as string) as Integer
* 70.34.120 CreateArticleThreadAnsi(ThreadName as string) as Integer
* 70.34.121 CreateAxialShading(sX as Double, sY as Double, eX as Double, eY as Double, SCenter as Double, SColor as Integer, EColor as Integer, Extend1 as Boolean, Extend2 as boolean) as Integer
* 70.34.122 CreateBarcodeField(Name as string, Parent as Integer, PosX as Double, PosY as Double, Width as Double, Height as Double, Barcode as DynaPDFBarcodeMBS) as Integer
* 70.34.123 CreateButton(Name As String, Caption as string, Parent as Integer, PosX as Double, PosY as Double, Width as Double, Height as Double) as Integer
* 70.34.124 CreateButtonAnsi(Name As String, Caption as string, Parent as Integer, PosX as Double, PosY as Double, Width as Double, Height as Double) as Integer
* 70.34.125 CreateCheckBox(Name as string, ExpValue as string, Checked as boolean, Parent as Integer, PosX as Double, PosY as Double, Width as Double, Height as Double) as Integer
* 70.34.126 CreateCIEColorSpace(Base as Integer, WhitePoint as memoryblock, BlackPoint as memoryblock, Gamma as memoryblock, Matrix as memoryblock) as Integer
* 70.34.127 CreateColItemDate(EmbFile as Integer, Key as string, Value as Integer, Prefix as string) as boolean
* 70.34.128 CreateColItemNumber(EmbFile as Integer, Key as string, Value as Double, Prefix as string) as boolean
* 70.34.129 CreateColItemString(EmbFile as Integer, Key as string, Value as string, Prefix as string) as boolean
* 70.34.130 CreateColItemStringAnsi(EmbFile as Integer, Key as string, Value as string, Prefix as string) as boolean
* 70.34.131 CreateCollection(View as Integer) as boolean
* 70.34.132 CreateCollectionField(ColumnType as Integer, Column as Integer, Name as String, Key as string, Visible as boolean, Editable as boolean) as Integer
* 70.34.133 CreateCollectionFieldAnsi(ColumnType as Integer, Column as Integer, Name as String, Key as string, Visible as boolean, Editable as boolean) as Integer
* 70.34.134 CreateComboBox(Name as string, Sort as boolean, Parent as Integer, PosX as Double, PosY as Double, Width as Double, Height as Double) as Integer
* 70.34.135 CreateDeviceNColorSpace(Colorants() as string, PostScriptFunc as string, AlternateColorSpace as Integer, Handle as Integer) as Integer
* 70.34.136 CreateDeviceNColorSpaceAnsi(Colorants() as string, PostScriptFunc as string, AlternateColorSpace as Integer, Handle as Integer) as Integer
* 70.34.137 CreateExtGState(e as dynapdfExtGStateMBS) as Integer
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* 70.34.138 CreateGoToAction(DestType as Integer, PageNum as Integer, a as Double, b as Double, c as Double, d as Double) as Integer
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* 70.34.139 CreateGoToAction(NamedDest as Integer) as Integer
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* 70.34.140 CreateGoToEAction(Location as Integer, Source as string, SrcPage as Integer, Target as string, DestName as string, DestPage as Integer, NewWindow as boolean) as Integer
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* 70.34.141 CreateGoToRAction(File as folderitem, PageNum as Integer) as Integer
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* 70.34.142 CreateGoToRAction(FilePath as string, PageNum as Integer) as integer
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* 70.34.143 CreateGoToRActionEx(File as folderitem, DestName as string, NewWindow as boolean) as Integer
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* 70.34.144 CreateGoToRActionEx(FilePath as string, DestName as string, NewWindow as boolean) as integer
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* 70.34.145 CreateGoToRActionExU(File as folderitem, DestName as string, NewWindow as boolean) as Integer
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* 70.34.146 CreateGoToRActionExU(FilePath as string, DestName as string, NewWindow as boolean) as integer
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* 70.34.147 CreateGroupField(Name as string, Parent as Integer) as Integer
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* 70.34.148 CreateHideAction(Field as Integer, Hide as boolean) as Integer
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* 70.34.149 CreateICCBasedColorSpace(File as folderitem) as Integer
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* 70.34.150 CreateICCBasedColorSpaceEx(Buffer as Memoryblock) as Integer
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* 70.34.151 CreateICCBasedColorSpaceEx(Buffer as string) as Integer
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* 70.34.152 CreateImage(file as folderitem, format as Integer) as boolean
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* 70.34.153 CreateImpDataAction(DataFile as folderitem) as Integer
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* 70.34.154 CreateIndexedColorSpace(Base as Integer, Handle as Integer, ColorTable as memoryblock, NumColors as Integer) as Integer
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* 70.34.155 CreateJSAction(Script as string) as Integer
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* 70.34.156 CreateJSActionAnsi(Script as string) as Integer
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* 70.34.157 CreateLaunchAction(OP as Integer, FileName as folderitem, DefDir as string, Param as string, NewWindow as boolean) as Integer
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* 70.34.158 CreateLaunchActionEx(File as folderitem, NewWindow as boolean) as Integer
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* 70.34.159 CreateListBox(Name as string, Sort as boolean, Parent as Integer, PosX as Double, PosY as Double, Width as Double, Height as Double) as Integer
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* 70.34.160 CreateNamedAction(Action as Integer) as Integer
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* 70.34.161 CreateNamedDest(Name as string, DestPage as Integer, DestType as Integer, a as Double, b as Double, c as Double, d as Double) as Integer
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* 70.34.162 CreateNamedDestAnsi(Name as string, DestPage as Integer, DestType as Integer, a as Double, b as Double, c as Double, d as Double) as Integer
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* 70.34.163 CreateNewPDF(OutPDF as folderitem = nil) as boolean
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* 70.34.164 CreateOCG(name as string, DisplayInUI as boolean, Visible as boolean, Intent as Integer) as Integer
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* 70.34.165 CreateOCGAnsi(name as string, DisplayInUI as boolean, Visible as boolean, Intent as Integer) as Integer
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* 70.34.166 CreateOCMD(Visibility as Integer, OCGs() as Integer) as Integer
* 70.34.167 CreateRadialShading(sX as Double, sY as Double, R1 as Double, eX as Double, eY as Double, R2 as Double, SCenter as Double, SColor as Integer, EColor as Integer, Extend1 as boolean, Extend2 as boolean) as Integer
* 70.34.168 CreateRadioButton(Name as string, ExpValue as string, Checked as boolean, Parent as Integer, PosX as Double, PosY as Double, Width as Double, Height as Double) as Integer
* 70.34.169 CreateResetAction as Integer
* 70.34.170 CreateSeparationCS(Colorant as string, Alternate as Integer, Handle as Integer, ColorValue as Integer) as Integer
* 70.34.171 CreateSeparationCSAnsi(Colorant as string, Alternate as Integer, Handle as Integer, ColorValue as Integer) as Integer
* 70.34.172 CreateSetOCGStateAction(On() as UInt32, Off() as UInt32, Toggle() as UInt32, PreserveRB as boolean) as Integer
* 70.34.173 CreateSigField(Name as string, Parent as Integer, PosX as Double, PosY as Double, Width as Double, Height as Double) as Integer
* 70.34.174 CreateSigFieldAP(SigField as Integer) as Integer
* 70.34.175 CreateSoftMask(TranspGroup as UInt32, MaskType as Integer, BackColor as UInt32) as Integer
* 70.34.176 CreateStdPattern(Pattern as Integer, LineWidth as Double, Distance as Double,LineColor as Integer, BackColor as Integer) as Integer
* 70.34.177 CreateStructureTree as boolean
* 70.34.178 CreateSubmitAction(Flags as Integer, URL as string) as Integer
* 70.34.179 CreateTable(AllocRows as UInt32, NumCols as UInt32, width as Double, DefRowHeight as Double) as DynaPDFTableMBS
* 70.34.180 CreateTextField(Name as string, Parent as Integer, Multiline as boolean, MaxLen as Integer, PosX as Double, PosY as Double, Width as Double, Height as Double) as Integer
* 70.34.181 CreateURIAction(URL as string) as Integer
* 70.34.182 DecryptPDF(File as folderitem, PwdType as Integer, Password as string) as Integer
* 70.34.183 DecryptPDFAnsi(Path as string, PwdType as Integer, Password as string) as Integer
* 70.34.184 DeleteAcroForm
* 70.34.185 DeleteActionFromObj(ObjType as Integer, ActHandle as Integer, ObjHandle as Integer) as Boolean
* 70.34.186 DeleteActionFromObjEx(ObjType as Integer, ObjHandle as Integer, ActIndex as Integer) as Boolean
* 70.34.187 DeleteAnnotation(Handle as Integer) as Boolean
* 70.34.188 DeleteAnnotationFromPage(PageNum as UInt32, Handle as UInt32) as boolean
* 70.34.189 DeleteAppEvents(ApplyEvent as Boolean, TOCApplEvent as Integer) as Integer
* 70.34.190 DeleteBookmark(ABmk as Integer) as Integer
* 70.34.191 DeleteEmbeddedFile(handle as Integer) as boolean
* 70.34.192 DeleteField(Field as Integer) as Boolean
* 70.34.193 DeleteFieldEx(URL as string) as Boolean
* 70.34.194 DeleteJavaScripts(DelJavaScriptActions as boolean)
* 70.34.195 DeleteOCGFromAppEvent(Handle as UInt32, Events as Integer, Categories as Integer, DelCategoryOnly as Boolean) as Boolean
* 70.34.196 DeleteOutputIntent(Index as Integer) as Integer
* 70.34.197 DeletePage(PageNum as Integer) as Boolean
* 70.34.198 DeletePageLabels
* 70.34.199 DeleteSeparationInfo(AllPages as boolean) as boolean
* 70.34.200 DeleteTemplate(handle as Integer) as Boolean
* 70.34.201 DeleteTemplateEx(index as Integer) as Boolean
* 70.34.202 DeleteXFAForm
* 70.34.203 DrawArc(PosX as Double, PosY as Double, Radius as Double, StartAngle as Double, EndAngle as Double) as Boolean
* 70.34.204 DrawArcEx(PosX as Double, PosY as Double, Width as Double, Height as Double, StartAngle as Double, EndAngle as Double) as Boolean
* 70.34.205 DrawChord(PosX as Double, PosY as Double, Width as Double, Height as Double, StartAngle as Double, EndAngle as Double, FillMode as Integer) as Boolean
* 70.34.206 DrawCircle(PosX as Double, PosY as Double, Radius as Double, FillMode as Integer) as Boolean
* 70.34.207 DrawPie(PosX as Double, PosY as Double, Width as Double, Height as Double, StartAngle as Double, EndAngle as Double, FillMode as Integer) as Boolean
* 70.34.208 EditPage(PageNum as Integer) as Boolean
* 70.34.209 EditTemplate(index as Integer) as Boolean
* 70.34.210 EditTemplate2(handle as Integer) as Boolean
* 70.34.211 Ellipse(PosX as Double, PosY as Double, Width as Double, Height as Double, FillMode as Integer) as Boolean
* 70.34.212 EnableMutex(Value as boolean)
* 70.34.213 EncryptPDF(File as folderitem, OpenPwd as string, OwnerPwd as string, KeyLen as Integer, Restrict as Integer) as Integer
* 70.34.214 EncryptPDFAnsi(Path as string, OpenPwd as string, OwnerPwd as string, KeyLen as Integer, Restrict as Integer) as Integer
* 70.34.215 EndContinueText as Boolean
* 70.34.216 EndLayer as boolean
* 70.34.217 EndPage as Boolean
* 70.34.218 EndPattern as Boolean
* 70.34.219 EndTemplate as Boolean
* 70.34.220 EnumDocFonts as Integer
* 70.34.221 EnumDocFontsCount as Integer
* 70.34.222 EnumHostFonts as Integer
* 70.34.223 EnumHostFontsCount as Integer
* 70.34.224 EnumHostFontsEx as Integer
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* 70.34.225 EnumHostFontsExCount as Integer 11792
* 70.34.226 ExchangeBookmarks(Bmk1 as Integer, Bmk2 as Integer) as Boolean 11792
* 70.34.227 ExchangePages(first as Integer, second as Integer) as Boolean 11792
* 70.34.228 ExtractPageText(RemoveText as boolean = false) as String 11792
* 70.34.229 ExtractPageTextRect(Left as Double, Top as Double, Right as Double, Bottom as Double, RemoveText as boolean = false) as String 11793
* 70.34.230 ExtractText(PageNum as Integer, Flags as Integer, rect as DynaPDFRectMBS = nil, byref text as string) as Boolean 11793
* 70.34.231 FileAttachAnnot(PosX as Double, PosY as Double, Icon as Integer, Author as string, Desc as string, File as folderitem, Compress as boolean) as Integer 11794
* 70.34.232 FileAttachAnnotEx(PosX as double, PosY as double, Icon as integer, Author as string, Desc as string, Filename as String, FileBuffer as MemoryBlock, Compress as boolean) as Integer 11794
* 70.34.233 FileAttachAnnotEx(PosX as double, PosY as double, Icon as integer, Author as string, Desc as string, Filename as String, FileBuffer as String, Compress as boolean) as Integer 11794
* 70.34.234 FileLink(PosX as Double, PosY as Double, Width as Double, Height as Double, FileLink as string) as Integer 11794
* 70.34.235 FileLinkAnsi(PosX as Double, PosY as Double, Width as Double, Height as Double, FileLink as string) as Integer 11795
* 70.34.236 FindBookmark(DestPage as Integer, Text as string) as Integer 11795
* 70.34.237 FindBookmarkAnsi(DestPage as Integer, Text as string) as Integer 11795
* 70.34.238 FindEmbeddedFile(Name as string) as Integer 11796
* 70.34.239 FindField(Name as string) as Integer 11796
* 70.34.240 FindFieldAnsi(Name as string) as Integer 11796
* 70.34.241 FindLinkAnnot(URL as string) as Integer 11796
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* 70.34.243 FinishSignature(PKCS7 as Memoryblock) as boolean 11797
* 70.34.244 FinishSignature(PKCS7 as string) as boolean 11797
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* 70.34.249 FreeImageBuffer 11799
* 70.34.250 FreeImageObj(Handle as UInt32) as boolean 11799
* 70.34.251 FreePDF as Boolean 11799
* 70.34.252 FreeTextAnnot(PosX as Double, PosY as Double, Width as Double, Height as Double, Author as string, Text as string, Align as Integer) as Integer 11799
* 70.34.253 FreeTextAnnotAnsi(PosX as Double, PosY as Double, Width as Double, Height as Double, Author as string, Text as string, Align as Integer) as Integer 11800
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* 70.34.255 GetActionHandle(ObjType as Integer, ObjHandle as UInt32, ActIndex as UInt32) as Integer 11800
70.34.256 GetActionType(ActHandle as Integer) as Integer
70.34.257 GetActionTypeEx(ObjType as Integer, ObjHandle as Integer, ActIndex as Integer) as Integer
70.34.258 GetActiveFont as Integer
70.34.259 GetAllocBy as Integer
70.34.260 GetAnnot(ahandle as Integer) as DynaPDFAnnotationMBS
70.34.261 GetAnnotBBBox(ahandle as Integer) as DynaPDFRectMBS
70.34.262 GetAnnotCount as Integer
70.34.263 GetAnnotEx(ahandle as Integer) as DynaPDFAnnotationExMBS
70.34.264 GetAnnotFlags as Integer
70.34.265 GetAnnotLink(Handle as Integer) as string
70.34.266 GetAnnotType(Handle as Integer) as Integer
70.34.267 GetAscent as Double
70.34.268 GetBBBox(boundary as Integer) as DynaPDFRectMBS
70.34.269 GetBidiMode as Integer
70.34.270 GetBookmark(ahandle as Integer) as DynaPDFBookmarkMBS
70.34.271 GetBookmarkCount as Integer
70.34.272 GetBorderStyle as Integer
70.34.273 GetBuffer as string
70.34.274 GetBufferMemory as Memoryblock
70.34.275 GetCapHeight as Double
70.34.276 GetCharacterSpacing as Double
70.34.277 GetCheckBoxChar as Integer
70.34.278 GetCheckBoxCharEx(Field as Integer) as Integer
70.34.279 GetCheckBoxDefState(Field as Integer) as Integer
70.34.280 GetCMap(index as Integer) as DynaPDFColorSpaceMBS
70.34.281 GetCMapCount as Integer
70.34.282 GetColorSpace as Integer
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70.34.285 GetCompressionFilter as Integer
70.34.286 GetCompressionLevel as Integer
70.34.287 GetContent as string
70.34.288 GetDefBitsPerPixel as Integer
70.34.289 GetDescent as Double
70.34.290 GetDocInfo(dinfo as Integer) as string
70.34.291 GetDocInfoCount as Integer
70.34.292 GetDocInfoEx(index as Integer, byref DInfo as Integer, byref key as string, byref value as string) as Integer
70.34.293 GetDocumentColorSpaces as DynaPDFColorSpaceMBS()
70.34.294 GetDocUsesTransparency(Flags as UInt32 = 0) as boolean
70.34.295 GetDrawDirection as Integer
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* 70.34.296 GetDynaPDFVersion as string
* 70.34.297 GetEmbeddedFile(Handle as Integer, byref FileSpec as dynapdfFileSpecMBS, De-
compress as boolean) as boolean
* 70.34.298 GetEmbeddedFileCount as Integer
* 70.34.299 GetEMFPatternDistance as Double
* 70.34.300 GetErrLogMessage(index as Integer) as DynaPDFErrorMBS
* 70.34.301 GetErrLogMessageCount as Integer
* 70.34.302 GetErrorMessage as string
* 70.34.303 GetErrorMode as Integer
* 70.34.304 GetField(index as Integer) as DynaPDFFieldMBS
* 70.34.305 GetFieldBackColor as Integer
* 70.34.306 GetFieldBorderColor as Integer
* 70.34.307 GetFieldBorderStyle(Field as Integer) as Integer
* 70.34.308 GetFieldBorderWidth(aField as Integer) as Double
* 70.34.309 GetFieldChoiceValue(Field as Integer, ValIndex as Integer) as DynaPDFChoice-
ValueMBS
* 70.34.310 GetFieldColor(Field as Integer, ColorType as Integer, byref ColorSpace as Integer,
byref ColorValue as Integer) as Integer
* 70.34.311 GetFieldCount as Integer
* 70.34.312 GetFieldEx(index as Integer) as DynaPDFFieldExMBS
* 70.34.313 GetFieldExpValCount(Field as Integer) as Integer
* 70.34.314 GetFieldExpValue(Field as Integer) as string
* 70.34.315 GetFieldExpValueEx(Field as Integer, ValIndex as Integer, byref Value as string,
byref ExpValue as string, byref Selected as boolean) as Boolean
* 70.34.316 GetFieldFlags(Field as Integer) as Integer
* 70.34.317 GetFieldGroupType(Field as Integer) as Integer
* 70.34.318 GetFieldHighlightMode(Field as Integer) as Integer
* 70.34.319 GetFieldIndex(Field as Integer) as Integer
* 70.34.320 GetFieldMapName(Field as Integer) as string
* 70.34.321 GetFieldName(Field as Integer) as string
* 70.34.322 GetFieldOrientation(Field as Integer) as Integer
* 70.34.323 GetFieldTextColor as Integer
* 70.34.324 GetFieldToolTip(Field as Integer) as string
* 70.34.325 GetFieldToolTip(Field as Integer) as string
* 70.34.326 GetFieldType(Field as Integer) as Integer
* 70.34.327 GetFillColor as Integer
* 70.34.328 GetFontCount as Integer
* 70.34.329 GetFontEx(index as Integer) as DynaPDFFontMBS
* 70.34.330 GetFontInfoEx(index as Integer) as DynaPDFFontInfoMBS
* 70.34.331 GetFontOrigin as Integer
* 70.34.332 GetFontSearchOrder as Integer()
* 70.34.334 GetFontWeight as Integer
* 70.34.335 GetFTextHeight(Align as Integer, aText as string) as Double
* 70.34.336 GetFTextHeightAnsi(Align as Integer, aText as string) as Double
* 70.34.337 GetFTextHeightEx(Width as Double, Align as Integer, aText as string) as Double
* 70.34.338 GetFTextHeightExAnsi(Width as Double, Align as Integer, aText as string) as Double
* 70.34.339 GetGlyphIndex(Index as UInt32) as Integer
* 70.34.340 GetGlyphOutline(Index as UInt32) as DynaPDFGlyphOutlineMBS
* 70.34.341 GetGoToAction(index as Integer, Decompress as Boolean = false, ImageParseFlags as Integer = & h00000080) as DynaPDFGoToActionMBS
* 70.34.342 GetGoToRAction(index as Integer, Decompress as Boolean = false, ImageParseFlags as Integer = & h00000080) as DynaPDFGoToActionMBS
* 70.34.343 GetGStateFlags as Integer
* 70.34.344 GetHideAction(index as Integer) as DynaPDFHideActionMBS
* 70.34.345 GetIconColor as Integer
* 70.34.346 GetImageBuffer as string
* 70.34.347 GetImageBufferMemory as memoryblock
* 70.34.348 GetImageCount(File as folderitem) as Integer
* 70.34.349 GetImageCount(Path as string) as Integer
* 70.34.350 GetImageCountEx(Buffer as Memoryblock) as Integer
* 70.34.351 GetImageCountEx(Buffer as string) as Integer
* 70.34.352 GetImageHeight(Handle as Integer) as Integer
* 70.34.353 GetImageObj(Handle as UInt32, Flags as Integer) as DynaPDFImageMBS
* 70.34.354 GetImageObjCount as Integer
* 70.34.355 GetImageWidth(Handle as Integer) as Integer
* 70.34.356 GetImportDataAction(index as Integer, Decompress as Boolean = false, ImageParseFlags as Integer = & h00000080) as DynaPDFImportDataActionMBS
* 70.34.357 GetImportFlags as Integer
* 70.34.358 GetImportFlags2 as Integer
* 70.34.359 GetInBBox(PageNum as Integer, Boundary as Integer) as DynaPDFRectMBS
* 70.34.360 GetInDocInfo(DInfo as Integer, byref value as string) as Integer
* 70.34.361 GetInDocInfoCount as Integer
* 70.34.362 GetInDocInfoEx(index as Integer, byref DInfo as Integer, byref key as string, byref value as string) as Integer
* 70.34.363 GetInEncryptionFlags as Integer
* 70.34.364 GetInFieldCount as Integer
* 70.34.365 GetInIsCollection as Integer
* 70.34.366 GetInIsEncrypted as Integer
* 70.34.367 GetInIsSigned as Integer
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* 70.34.369 GetInIsXFAForm as Integer
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* 70.34.372 GetInPageCount as Integer 11827
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* 70.34.374 GetInPrintSettings as DynapdfPrintSettingsMBS 11828
* 70.34.375 GetInRepairMode as Integer 11828
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* 70.34.377 GetIsTaggingEnabled as boolean 11828
* 70.34.378 GetItalicAngle as Double 11828
* 70.34.379 GetJavaScript(Handle as Integer) as string 11829
* 70.34.380 GetJavaScriptAction(Handle as Integer) as string 11829
* 70.34.381 GetJavaScriptAction(ObjType as Integer, ObjHandle as Integer, ActIndex as Integer, byref ObjEvent as Integer) as string 11829
* 70.34.382 GetJavaScriptActionEx(index as Integer) as DynaPDFJavaScriptActionMBS 11829
* 70.34.383 GetJavaScriptCount as Integer 11830
* 70.34.384 GetJavaScriptEx(Name as string) as string 11830
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* 70.34.388 GetLanguage as string 11830
* 70.34.389 GetLastTextPosX as Double 11831
* 70.34.390 GetLastTextPosY as Double 11831
* 70.34.391 GetLaunchAction(index as Integer, Decompress as Boolean = false, ImageParseFlags as Integer = &h00000080) as DynaPDFLaunchActionMBS 11831
* 70.34.392 GetLayerConfig(Index as Integer) as DynaPDFLayerConfigMBS 11831
* 70.34.393 GetLayerConfigCount as Integer 11832
* 70.34.394 GetLeading as Double 11832
* 70.34.395 GetLineCapStyle as Integer 11832
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* 70.34.398 GetLinkHighlightMode as Integer 11832
* 70.34.399 GetLogMetafileSize(FileName as folderitem) as DynapdfRectMBS 11833
* 70.34.400 GetLogMetafileSizeEx(Buffer as Memoryblock) as DynaPDFRectMBS 11833
* 70.34.401 GetLogMetafileSizeEx(Buffer as string) as DynapdfRectMBS 11833
* 70.34.402 GetMatrix(byref Matrix as DynapdfMatrixMBS) as Boolean 11833
* 70.34.403 GetMaxFieldLen(TxtField as Integer) as Integer 11834
* 70.34.404 GetMetaConvFlags as Integer 11834
* 70.34.405 GetMetadata(ObjType as Integer, Handle as Integer) as String 11834
* 70.34.406 GetMissingGlyphs as UInt32() 11834
* 70.34.407 GetMissingGlyphsString as String 11834
* 70.34.408 GetMiterLimit as Double 11835
* 70.34.409 GetMovieAction(index as Integer, Decompress as Boolean = false, ImageParseFlags as Integer = & h00000080) as DynaPDFFieldMBS
* 70.34.410 GetNamedAction(index as Integer) as DynaPDFNamedActionMBS
* 70.34.411 GetNamedDest(index as Integer) as DynaPDFNamedDestMBS
* 70.34.412 GetNamedDestCount as Integer
* 70.34.413 GetNeedAppearance as boolean
* 70.34.414 GetObjActionCount(ObjType as Integer, ObjHandle as Integer) as Integer
* 70.34.415 GetObjActions(ObjType as Integer, ObjHandle as Integer, byref Actions as DynaPDFObjActionsMBS) as Integer
* 70.34.416 GetOCG(Handle as UInt32) as DynaPDFOCGMBS
* 70.34.417 GetOCGContUsage(Handle as UInt32) as DynaPDFOCGContUsageMBS
* 70.34.418 GetOCGCount as Integer
* 70.34.419 GetOCGUsageUserName(Handle as UInt32, Index as UInt32, byref Name as String) as Boolean
* 70.34.420 GetOCUINode(Node as Integer) as DynaPDFOCUINodeMBS
* 70.34.421 GetOpacity as Double
* 70.34.422 GetOrientation as Integer
* 70.34.423 GetOutputIntent(Index as Integer) as DynaPDFOutputIntentMBS
* 70.34.424 GetOutputIntentCount as Integer
* 70.34.425 GetPage(PageNum as UInt32) as DynaPDFPageMBS
* 70.34.426 GetPageAnnot(index as Integer) as DynaPDFAnnotationMBS
* 70.34.427 GetPageAnnotCount as Integer
* 70.34.428 GetPageAnnotEx(index as Integer) as DynaPDFAnnotationExMBS
* 70.34.429 GetPageColorSpaces as DynaPDFColorSpaceMBS()
* 70.34.430 GetPageCoords as Integer
* 70.34.431 GetPageCount as Integer
* 70.34.432 GetPageField(Index as Integer) as DynaPDFFieldMBS
* 70.34.433 GetPageFieldCount as Integer
* 70.34.434 GetPageFieldEx(Index as Integer) as DynaPDFFieldExMBS
* 70.34.435 GetPageHeight as Double
* 70.34.436 GetPageLabel(index as Integer, byref Label as DynapdfPageLabelMBS) as boolean
* 70.34.437 GetPageLabelCount as Integer
* 70.34.438 GetPageLayout as Integer
* 70.34.439 GetPageMode as Integer
* 70.34.440 GetPageNum as Integer
* 70.34.441 GetPageText(stack as DynaPDFStackMBS) as boolean
* 70.34.442 GetPageWidth as Double
* 70.34.443 GetPDFVersion as Integer
* 70.34.444 GetPNGVersion as String
* 70.34.445 GetPrintSettings as DynapdfPrintSettingsMBS
* 70.34.446 GetResetAction(Handle as UInt32) as DynaPDFResetFormActionMBS
* 70.34.447 GetResolution as Integer 11844
* 70.34.448 GetSaveNewImageFormat as boolean 11844
* 70.34.449 GetSeparationInfo(byref Colorant as string, byref ColorSpace as Integer) as boolean 11844
* 70.34.450 GetSpaceWidth(FontHandle as Integer, FontSize as Double) as Double 11844
* 70.34.451 GetStrokeColor as Integer 11845
* 70.34.452 GetSubmitAction(Handle as UInt32) as DynaPDFSubmitFormActionMBS 11845
* 70.34.453 GetSysFontInfo as DynaPDFSysFontMBS 11845
* 70.34.454 GetSysFontInfo(PostscriptName as String) as DynaPDFSysFontMBS 11846
* 70.34.455 GetSysFontInfos as DynaPDFSysFontMBS() 11846
* 70.34.456 GetSysFontInfos(Name as String) as DynaPDFSysFontMBS() 11847
* 70.34.457 GetTabLen as Integer 11847
* 70.34.458 GetTemplCount as Integer 11848
* 70.34.459 GetTemplHandle as Integer 11848
* 70.34.460 GetTemplHeight(Handle as Integer) as Double 11848
* 70.34.461 GetTemplWidth(Handle as Integer) as Double 11848
* 70.34.462 GetTextDrawMode as Integer 11848
* 70.34.463 GetTextFieldValue(Field as Integer, byref Value as string, byref DefValue as string) as Boolean 11849
* 70.34.464 GetTextHeight(Align as Integer, aText as string) as Double 11849
* 70.34.465 GetTextHeightAnsi(Align as Integer, aText as string) as Double 11849
* 70.34.466 GetTextHeightEx(Width as Double, Align as Integer, aText as string) as Double 11850
* 70.34.467 GetTextHeightExAnsi(Width as Double, Align as Integer, aText as string) as Double 11850
* 70.34.468 GetTextRect(byref PosX as Double, byref PosY as Double, byref Width as Double, byref Height as Double) as Boolean 11850
* 70.34.469 GetTextRise as Double 11851
* 70.34.470 GetTextScaling as Double 11851
* 70.34.471 GetTextWidth(aText as string) as Double 11851
* 70.34.472 GetTextWidth(FontHandle as integer, Text as String, CharSpacing as Single, WordSpacing as Single, TextScale as Single) as double 11851
* 70.34.473 GetTextWidthAnsi(aText as string) as Double 11852
* 70.34.474 GetTIFFVersion as String 11852
* 70.34.475 GetTransparentColor as Integer 11852
* 70.34.476 GetTrapped as Boolean 11852
* 70.34.477 GetURIAction(index as Integer) as DynaPDFURIActionMBS 11852
* 70.34.478 GetUseExactPwd as Boolean 11853
* 70.34.479 GetUseGlobalImpFiles as Boolean 11853
* 70.34.480 GetUserRights as Integer 11853
* 70.34.481 GetUserUnit as single 11853
* 70.34.482 GetUseStdFonts as Boolean 11853
* 70.34.483 GetUsesTransparency(Page as Integer = -1) as Boolean 11854
* 70.34.484 GetUseSystemFonts as Boolean 11854
* 70.34.485 GetUseTransparency as Boolean 11854
* 70.34.486 GetUseVisibleCoords as Boolean 11855
* 70.34.487 GetViewerPreferences(byref Preference as Integer, byref AddVal as Integer) as Boolean 11855
* 70.34.488 GetViewport(Page as UInt32, index as Integer) as DynaPDFViewportMBS 11855
* 70.34.489 GetViewportCount(Page as UInt32) as Integer 11855
* 70.34.490 GetWMFDefExtent(byref width as Integer, byref height as Integer) as Boolean 11856
* 70.34.491 GetWMFPixelPerInch as Integer 11856
* 70.34.492 GetWordSpacing as Double 11856
* 70.34.493 GetXFAStream(Handle as UInt32) as DynaPDFXFAStreamMBS 11856
* 70.34.494 GetXFAStreamCount as Integer 11857
* 70.34.495 GetZlibVersion as String 11857
* 70.34.496 GofRGB(RGB as Integer) as Integer 11857
* 70.34.497 HaveOpenDoc as Boolean 11857
* 70.34.498 HaveOpenPage as Boolean 11858
* 70.34.499 HighlightAnnot(SubType as Integer, PosX as Double, PosY as Double, Width as Double, Height as Double, ColorValue as Integer, Author as string, Subject as string, Comment as string) as Integer 11858
* 70.34.500 HighlightAnnotAnsi(SubType as Integer, PosX as Double, PosY as Double, Width as Double, Height as Double, ColorValue as Integer, Author as string, Subject as string, Comment as string) as Integer 11858
* 70.34.501 HighlightOnAllPages(SearchText as string, ColorValue as Color, CaseInsensitive as boolean = false) as Integer 11858
* 70.34.502 HighlightOnCurrentPage(SearchText as string, ColorValue as Color, CaseInsensitive as boolean = false) as Integer 11858
* 70.34.503 ImportBookmarks as Integer 11859
* 70.34.504 ImportCatalogObjects as Boolean 11859
* 70.34.505 ImportDocInfo as Boolean 11859
* 70.34.506 ImportEncryptionSettings as Boolean 11859
* 70.34.507 ImportOCProperties as Boolean 11860
* 70.34.508 ImportPage(PageNum as Integer) as Integer 11860
* 70.34.509 ImportPageEx(PageNum as Integer, ScaleX as Double = 1.0, ScaleY as Double = 1.0) as Integer 11860
* 70.34.510 ImportPDFFile(DestPage as Integer, ScaleX as Double = 1.0, ScaleY as Double = 1.0) as Integer 11861
* 70.34.511 ImportPDFPage(PageNum as Integer, ScaleX as Double = 1.0, ScaleY as Double = 1.0) as Integer 11861
* 70.34.512 InitColorManagement(profiles as DynaPDFColorProfilesMBS, DestSpace as Integer, Flags as Integer) as boolean 11861
* 70.34.513 InitColorManagementEx(profiles as DynaPDFColorProfilesExMBS, DestSpace as Integer, Flags as Integer) as boolean 11862
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* 70.34.514 InitStack(byref stack as DynaPDFStackMBS) as boolean 11862
* 70.34.515 InkAnnot(points() as DynapdfPointMBS, LineWidth as Double, ColorValue as UInt32, ColorSpace as Integer, Author as string, Subject as string, Content as string) as Integer 11863
* 70.34.516 InkAnnotAnsi(points() as DynapdfPointMBS, LineWidth as Double, ColorValue as UInt32, ColorSpace as Integer, Author as string, Subject as string, Content as string) as Integer 11863
* 70.34.517 InsertBMPFromBuffer(PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double, Buffer as memoryblock) as Integer 11864
* 70.34.518 InsertBMPFromBuffer(PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double, Buffer as string) as Integer 11864
* 70.34.519 InsertBMPFromBuffer(PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double, BufferAddress as Integer) as Integer 11864
* 70.34.520 InsertBMPFromHandle(PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double, hBitmap as Integer) as Integer 11865
* 70.34.521 InsertBookmark(title as String, parent as Integer, DestPage as Integer, Open as boolean, AddChildren as boolean) as Integer 11865
* 70.34.522 InsertBookmarkAnsi(title as String, parent as Integer, DestPage as Integer, Open as boolean, AddChildren as boolean) as Integer 11865
* 70.34.523 InsertBookmarkEx(title as String, parent as Integer, NamedDest as Integer, Open as boolean, AddChildren as boolean) as Integer 11865
* 70.34.524 InsertBookmarkExAnsi(title as String, parent as Integer, NamedDest as Integer, Open as boolean, AddChildren as boolean) as Integer 11865
* 70.34.525 InsertImage(PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double, File as folderitem) as Integer 11866
* 70.34.526 InsertImageEx(PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double, File as folderitem, index as Integer = 1) as Integer 11866
* 70.34.527 InsertImageFromBuffer(PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double, Buffer as Memoryblock, index as Integer = 1) as Integer 11867
* 70.34.528 InsertImageFromBuffer(PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double, Buffer as string, index as Integer = 1) as Integer 11868
* 70.34.529 InsertMetafile(FileName as folderitem, PosX as Double, PosY as Double, Width as Double, Height as Double) as Boolean 11868
* 70.34.530 InsertMetafileEx(Buffer as memoryblock, PosX as Double, PosY as Double, Width as Double, Height as Double) as Boolean 11868
* 70.34.531 InsertMetafileEx(Buffer as string, PosX as Double, PosY as Double, Width as Double, Height as Double) as Boolean 11869
* 70.34.532 InsertMetafileExt(FileName as folderitem, View as DynapdfRectMBS, PosX as Double, PosY as Double, Width as Double, Height as Double) as Boolean 11869
* 70.34.533 InsertMetafileExtEx(Buffer as Memoryblock, View as DynaPDFRectMBS, PosX as Double, PosY as Double, Width as Double, Height as Double) as Boolean 11869
* 70.34.534 InsertMetafileExtEx(Buffer as String, View as DynaPDFRectMBS, PosX as Double, PosY as Double, Width as Double, Height as Double) as Boolean 11870
* 70.34.535 InsertMetafileFromHandle(hEnhMetafileHandle as Integer, PosX as Double, PosY as Double, Width as Double, Height as Double) as Boolean 11870
* 70.34.536 InsertMetafileFromHandleEx(hEnhMetafileHandle as Integer, View as DynapdfRectMBS, PosX as Double, PosY as Double, Width as Double, Height as Double) as Boolean 11870
* 70.34.537 InsertPicture(pic as picture, mask as picture, PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double) as Integer 11870
* 70.34.538 InsertPicture(pic as picture, PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double) as Integer 11871
* 70.34.539 InsertRawImage(Data as String, BitsPerPixel as Integer, ColorCount as Integer, ImgWidth as Integer, ImgHeight as Integer, PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double) as Integer 11872
* 70.34.540 InsertRawImage(Memory as MemoryBlock, BitsPerPixel as Integer, ColorCount as Integer, ImgWidth as Integer, ImgHeight as Integer, PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double) as Integer 11872
* 70.34.541 InsertRawImageEx(PoSX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double, Image as DynaPDFRawImageMBS) as Integer 11873
* 70.34.542 IsBidiText(Text as string) as Integer 11873
* 70.34.543 IsColorPage(GrayIsColor as Boolean) as Integer 11873
* 70.34.544 IsEmptyPage as Integer 11873
* 70.34.545 IsWrongPwd(errCode as Integer) as boolean 11873
* 70.34.546 KofCMYK(CMYK as UInt32) as Integer 11874
* 70.34.547 LAB(L as Integer, A as Integer, B as Integer) as Integer 11874
* 70.34.548 LineAnnot(x1 as Double, y1 as Double, x2 as Double, y2 as Double, LineWidth as Double, StartLineEndStyle as Integer, EndLineEndStyle as Integer, FillColor as UInt32, StrokeColor as UInt32, ColorSpace as Integer, Author as string, Subject as string, Content as string) as Integer 11874
* 70.34.549 LineAnnotAnsi(x1 as Double, y1 as Double, x2 as Double, y2 as Double, LineWidth as Double, StartLineEndStyle as Integer, EndLineEndStyle as Integer, FillColor as UInt32, StrokeColor as UInt32, ColorSpace as Integer, Author as string, Subject as string, Content as string) as Integer 11874
* 70.34.550 LineTo(PosX as Double, PosY as Double) as Boolean 11875
* 70.34.551 LoadCMap(CMapName as string, Embed as Boolean) as Integer 11876
* 70.34.552 LoadError as String 11876
* 70.34.553 LoadFDFData(FileName as folderitem, Password as string, Flags as Integer) as Boolean 11876
* 70.34.554 LoadFDFDataEx(Buffer as memoryblock, Password as string, Flags as Integer) as Boolean 11877
* 70.34.555 LoadFDFDataEx(Buffer as string, Password as string, Flags as Integer) as Boolean 11877
* 70.34.556 LoadFont(Buffer as memoryblock, Style as Integer, size as Double, Embed as Boolean = false, CodePage as Integer = 2, CollectionIndex as UInt32 = 0) as Integer 11877
* 70.34.557 LoadFont(Buffer as string, Style as Integer, size as Double, Embed as Boolean = false, CodePage as Integer = 2, CollectionIndex as UInt32 = 0) as Integer 11877
* 70.34.558 LoadFontEx(File as folderitem, Style as Integer, size as Double, Embed as Boolean = false, CodePage as Integer = 2, CollectionIndex as UInt32 = 0) as Integer 11878
* 70.34.559 LoadFontEx(Filepath as string, Style as Integer, size as Double, Embed as Boolean = false, CodePage as Integer = 2, CollectionIndex as UInt32 = 0) as Integer 11878
* 70.34.560 LoadLayerConfig(Index as Integer) as Boolean 11878
* 70.34.561 LoadLibrary(File as FolderItem) as boolean 11879
* 70.34.562 LoadLibrary(Path as string) as boolean 11879
* 70.34.563 LockLayer(layer as UInt32) as boolean 11880
* 70.34.564 LofLAB(LAB as Integer) as Integer 11880
* 70.34.565 MofCMYK(CMYK as UInt32) as Integer 11880
* 70.34.566 MovePage(source as Integer, dest as Integer) as Boolean 11880
* 70.34.567 MoveTo(PosX as Double, PosY as Double) as Boolean 11881
* 70.34.568 MultiplyMatrix(M1 as DynapdfMatrixMBS, M2 as DynapdfMatrixMBS, NewMatrix as DynapdfMatrixMBS) as boolean 11882
* 70.34.569 OpenImportBuffer(Buffer as Memoryblock, PwdType as Integer = 0, Password as string = ") as Integer 11882
* 70.34.570 OpenImportBuffer(Buffer as string, PwdType as Integer = 0, Password as string = ") as Integer 11882
* 70.34.571 OpenImportFile(File as folderitem, PwdType as Integer = 0, Password as string = ") as Integer 11882
* 70.34.572 OpenOutputFile(File as folderitem) as boolean 11883
* 70.34.573 OpenOutputFileEncrypted(File as folderitem, OpenPwd as string, OwnerPwd as string, KeyLen as Integer, Restrict as Integer) as boolean 11883
* 70.34.574 OpenTag(Tag as Integer, Lang as string, AltText as string, Expansion as string) as boolean 11883
* 70.34.575 OpenTagAnsi(Tag as Integer, Lang as string, AltText as string, Expansion as string) as boolean 11884
* 70.34.576 Optimize(Flags as Integer, Params as DynaPDFOptimizeParamsMBS = nil) as boolean 11884
* 70.34.577 PageLink(PosX as Double, PosY as Double, Width as Double, Height as Double, DestPage as Integer) as Integer 11884
* 70.34.578 PageLink2(PosX as Double, PosY as Double, Width as Double, Height as Double, NamedDest as Integer) as Integer 11884
* 70.34.579 PageLink3(PosX as Double, PosY as Double, Width as Double, Height as Double, NamedDest as string) as Integer 11884
* 70.34.580 PageLinkEx(PosX as Double, PosY as Double, Width as Double, Height as Double, DestType as Integer, DestPage as Integer, a as Double, b as Double, c as Double, d as Double) as Integer 11885
* 70.34.581 PageStatistic(page as Integer = -1) as DynaPDFPageStatisticMBS 11885
* 70.34.582 ParseContent(ParseInterface as DynaPDFParseInterfaceMBS, flags as Integer) as boolean 11885
* 70.34.583 PlaceImage(ImgHandle as Integer, PosX as Double, PosY as Double, Width as Double, Height as Double) as boolean 11886
* 70.34.584 PlaceSigFieldValidateIcon(SigField as Integer, PosX as Double, PosY as Double, Width as Double, Height as Double) as boolean 11886
* 70.34.585 PlaceTemplate(TmplHandle as Integer, PosX as Double, PosY as Double, Width as Double, Height as Double) as boolean 11886
* 70.34.586 PlaceTemplateEx(TmplHandle as Integer, PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double) as boolean 11886
- 70.34.587 PolygonAnnot(Vertices() as DynapdfPointMBS, LineWidth as Double, FillColor as UInt32, StrokeColor as UInt32, ColorSpace as Integer, Author as string, Subject as string, Content as string) as Integer

- 70.34.588 PolygonAnnotAnsi(Vertices() as DynapdfPointMBS, LineWidth as Double, FillColor as UInt32, StrokeColor as UInt32, ColorSpace as Integer, Author as string, Subject as string, Content as string) as Integer

- 70.34.589 PolyLineAnnot(Vertices() as DynapdfPointMBS, LineWidth as Double, StartLineEndStyle as Integer, EndLineEndStyle as Integer, FillColor as UInt32, StrokeColor as UInt32, ColorSpace as Integer, Author as string, Subject as string, Content as string) as Integer

- 70.34.590 PolyLineAnnotAnsi(Vertices() as DynapdfPointMBS, LineWidth as Double, StartLineEndStyle as Integer, EndLineEndStyle as Integer, FillColor as UInt32, StrokeColor as UInt32, ColorSpace as Integer, Author as string, Subject as string, Content as string) as Integer

- 70.34.591 PrintGetDevMode as String

- 70.34.592 PrintGetDevNames(byref Driver as String, byref Device as String, byref Output as String, byref DefaultFlag as Integer) as Boolean

- 70.34.593 PrintPDFFile(TmpDir as FolderItem, DocName as string, DCHandle as integer, Flags as Integer = 0, Margin as DynaPDFRectMBS = nil, PrintParams as DynaPDFPrintParamsMBS = nil) as Boolean

- 70.34.594 PrintPDFFile(TmpDir as FolderItem, DocName as string, PrinterName as String, Flags as Integer = 0, Margin as DynaPDFRectMBS = nil, PrintParams as DynaPDFPrintParamsMBS = nil) as Boolean

- 70.34.595 PrintPDFFileWithDialog(TmpDir as FolderItem, DocName as string, Flags as Integer = 0, Margin as DynaPDFRectMBS = nil, PrintParams as DynaPDFPrintParamsMBS = nil, parentWindow as Window = nil) as Boolean

- 70.34.596 PrintPDFPage(PageNum as Integer, DocName as string, DCHandle as integer, Flags as Integer = 0, Margin as DynaPDFRectMBS = nil, PrintParams as DynaPDFPrintParamsMBS = nil) as Boolean

- 70.34.597 PrintPDFPage(PageNum as Integer, DocName as string, PrinterName as String, Flags as Integer = 0, Margin as DynaPDFRectMBS = nil, PrintParams as DynaPDFPrintParamsMBS = nil) as Boolean

- 70.34.598 PrintPDFPageWithDialog(PageNum as Integer, DocName as string, Flags as Integer = 0, Margin as DynaPDFRectMBS = nil, PrintParams as DynaPDFPrintParamsMBS = nil, parentWindow as Window = nil) as Boolean

- 70.34.599 PrintSetDevMode(data as String) as Boolean

- 70.34.600 PrintSetDevNames(Driver as String, Device as String, Output as String, DefaultFlag as Integer) as Boolean

- 70.34.601 ReadImageFormat(FileName as folderitem, byref Width as Integer, byref Height as Integer, byref BitsPerPixel as Integer, byref UseZip as Boolean) as Boolean

- 70.34.602 ReadImageFormat2(FileName as folderitem, Index as Integer, byref Width as Integer, byref Height as Integer, byref BitsPerPixel as Integer, byref UseZip as Boolean) as Boolean

- 70.34.603 ReadImageFormatEx(hBitmap as Integer, byref Width as Integer, byref Height as Integer, byref BitsPerPixel as Integer, byref UseZip as Boolean) as Boolean
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* 70.34.604 ReadImageFormatFromBuffer(Buffer as memoryblock, Index as Integer, byref Width as Integer, byref Height as Integer, byref BitsPerPixel as Integer, byref UseZip as Boolean) as Boolean 11894
* 70.34.605 ReadImageFormatFromBuffer(Buffer as string, Index as Integer, byref Width as Integer, byref Height as Integer, byref BitsPerPixel as Integer, byref UseZip as Boolean) as Boolean 11894
* 70.34.606 ReadImageResolution(FileName as folderitem, Index as Integer, byref ResX as Integer, byref ResY as Integer) as Boolean 11894
* 70.34.607 ReadImageResolutionEx(Buffer as Memoryblock, Index as Integer, byref ResX as Integer, byref ResY as Integer) as Boolean 11895
* 70.34.608 ReadImageResolutionEx(Buffer as string, Index as Integer, byref ResX as Integer, byref ResY as Integer) as Boolean 11896
* 70.34.609 Rectangle(PosX as Double, PosY as Double, Width as Double, Height as Double, FillMode as Integer) as Boolean 11896
* 70.34.610 ReEncryptPDF(File as folderitem, PwdType as Integer, InPwd as string, OpenPwd as string, OwnerPwd as string, KeyLen as Integer, Restrict as Integer) as Integer 11896
* 70.34.611 ReEncryptPDFAnsi(Path as string, PwdType as Integer, InPwd as string, OpenPwd as string, OwnerPwd as string, KeyLen as Integer, Restrict as Integer) as Integer 11896
* 70.34.612 RenameSpotColor(Colorant as string, NewName as string) as Integer 11897
* 70.34.613 RenderAnnotOrField(Handle as UInt32, IsAnnot as boolean, State as Integer, Matrix as DynapdfMatrixMBS, Flags as Integer, PixFmt as Integer, Filter as Integer, byref Out as DynaPDFBitmapMBS) as Integer 11897
* 70.34.614 RenderPagePicture(PageNum as Integer) as picture 11897
* 70.34.615 RenderPagePicture(PageNum as Integer, Width as Integer, Height as Integer, DefScale as Integer = 2, matrix as DynapdfMatrixMBS = nil) as picture 11898
* 70.34.616 RenderPageToImage(PageNumber as UInt32, OutFile as folderitem, Resolution as UInt32, Width as UInt32, Height as UInt32, Flags as UInt32, PixFmt as UInt32, Filter as UInt32, Format as UInt32) as boolean 11900
* 70.34.617 RenderPageToImageMT(PageNumber as UInt32, OutFile as folderitem, Resolution as UInt32, Width as UInt32, Height as UInt32, Flags as UInt32, PixFmt as UInt32, Filter as UInt32, Format as UInt32) as boolean 11901
* 70.34.618 RenderPageToPicture(PageNum as Integer, pic as picture, DefScale as Integer = 2, matrix as DynapdfMatrixMBS = nil) as boolean 11902
* 70.34.619 RenderPDFFile(OutFile as folderitem, Resolution as UInt32, Flags as UInt32, PixFmt as UInt32, Filter as UInt32, Format as UInt32) as boolean 11903
* 70.34.620 RenderPDFFileEx(OutFile as folderitem, Resolution as UInt32, Flags as UInt32, Height as Integer, Flags as UInt32, PixFmt as UInt32, Filter as UInt32, Format as UInt32) as boolean 11904
* 70.34.621 RenderPDFFileExMT(OutFile as folderitem, Resolution as UInt32, Flags as UInt32, Height as Integer, Flags as UInt32, PixFmt as UInt32, Filter as UInt32, Format as UInt32) as boolean 11905
* 70.34.622 RenderPDFFileMT(OutFile as folderitem, Resolution as UInt32, Flags as UInt32, PixFmt as UInt32, Filter as UInt32, Format as UInt32) as boolean 11906
* 70.34.623 ReOpenImportFile(Handle as Integer) as boolean 11907
* 70.34.624 ReplaceFont(PDFFontRef as Integer, Name as string, Style as integer = 0, NameIsFamilyName as boolean = true) as integer 11907
* 70.34.625 ReplaceFontAnsi(PDFFontRef as Integer, Name as string, Style as integer = 0, NameIsFamilyName as boolean = true) as integer 11908
* 70.34.626 ReplaceFontEx(PDFFontRef as Integer, FontFile as FolderItem, Embed as boolean = true) as integer 11908
* 70.34.627 ReplaceFontEx(PDFFontRef as Integer, FontFilePath as string, Embed as boolean = true) as integer 11908
* 70.34.628 ReplaceFontExAnsi(PDFFontRef as Integer, FontFilePath as string, Embed as boolean = true) as integer 11908
* 70.34.629 ReplaceICCProfile(ColorSpace as Integer, ICCFile as folderitem) as Integer 11909
* 70.34.630 ReplaceICCProfileEx(ColorSpace as integer, ICCFileData as MemoryBlock) as integer 11909
* 70.34.631 ReplaceICCProfileEx(ColorSpace as integer, ICCFileData as String) as integer 11910
* 70.34.632 ReplaceImage(ImageToReplace as DynaPDFImageMBS, ImageFile as FolderItem, Index as Integer = 1, ColorSpace as Integer = 0, CSHandle as Integer = -1, Flags as Integer = 0) as Boolean 11910
* 70.34.633 ReplaceImageEx(ImageToReplace as DynaPDFImageMBS, ImageData as MemoryBlock, Index as Integer = 1, ColorSpace as Integer = 0, CSHandle as Integer = -1, Flags as Integer = 0) as Boolean 11911
* 70.34.634 ReplaceImageEx(ImageToReplace as DynaPDFImageMBS, ImageData as String, Index as Integer = 1, ColorSpace as Integer = 0, CSHandle as Integer = -1, Flags as Integer = 0) as Boolean 11911
* 70.34.635 ReplacePageText(text as string, stack as DynaPDFStackMBS) as boolean 11912
* 70.34.636 ReplacePageTextEx(text as string, stack as DynaPDFStackMBS) as boolean 11912
* 70.34.637 ReplacePageTextExAnsi(text as string, stack as DynaPDFStackMBS) as boolean 11912
* 70.34.638 ResetEncryptionSettings as Boolean 11913
* 70.34.639 ResetLineDashPattern as Boolean 11913
* 70.34.640 RestoreGraphicState as Boolean 11913
* 70.34.641 RGB(R as Integer, G as Integer, B as Integer) as Integer 11913
* 70.34.642 RofRGB(RGB as Integer) as Integer 11913
* 70.34.643 RotateCoords(alpha as Double, OriginX as Double, OriginY as Double) as Boolean 11914
* 70.34.644 RotateTemplate(OldTemplate as Integer, Rotation as Integer) as Integer 11914
* 70.34.645 RoundRect(PosX as Double, PosY as Double, Width as Double, Height as Double, Radius as Double, FillMode as Integer) as Boolean 11914
* 70.34.646 RoundRectEx(PosX as Double, PosY as Double, Width as Double, Height as Double, rWidth as Double, rHeight as Double, FillMode as Integer) as Boolean 11915
* 70.34.647 SaveGraphicState as Boolean 11916
* 70.34.648 ScaleCoords(sx as Double, sy as Double) as Boolean 11916
* 70.34.649 SelfTest as Boolean 11916
* 70.34.650 Set3DAnnotProps(Annot as Integer, ActType as Integer, DeActType as Integer, InstType as Integer, DeInstType as Integer, DisplayToolbar as boolean, DisplayModelTree as boolean) as boolean 11916
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* 70.34.651 Set3DAnnotScriptAnsi(Annot as Integer, Value as string) as boolean 11917
* 70.34.652 SetAllocBy(Value as Integer) as Integer 11917
* 70.34.653 SetAnnotBorderEffect(Handle as Integer, BorderEffect as Integer) as Boolean 11917
* 70.34.654 SetAnnotBorderStyle(Handle as Integer, BorderStyle as Integer) as boolean 11917
* 70.34.655 SetAnnotBorderWidth(Handle as Integer, LineWidth as Double) as boolean 11917
* 70.34.656 SetAnnotColor(Handle as Integer, ColorType as Integer, PDFColorSpace as Integer, ColorValue as Integer) as boolean 11918
* 70.34.657 SetAnnotFlags(Flags as Integer) as Boolean 11918
* 70.34.658 SetAnnotFlagsEx(Handle as Integer, Flags as Integer) as boolean 11918
* 70.34.659 SetAnnotHighlightMode(Handle as Integer, HighlightMode as Integer) as boolean 11918
* 70.34.660 SetAnnotIcon(Handle as Integer, AnnotIcon as Integer) as boolean 11918
* 70.34.661 SetAnnotLineDashPattern(Handle as UInt32, dash as memoryblock, NumValues as integer) as Boolean 11918
* 70.34.662 SetAnnotLineDashPattern(Handle as UInt32, dash() as single) as Boolean 11919
* 70.34.663 SetAnnotLineEndStyle(Handle as UInt32, StartLineStyle as Integer, EndLineStyle as Integer) as boolean 11920
* 70.34.664 SetAnnotMigrationState(Handle as Integer, State as Integer, Name as string) as Integer 11920
* 70.34.665 SetAnnotMigrationStateAnsi(Handle as Integer, State as Integer, Name as string) as Integer 11921
* 70.34.666 SetAnnotOpacity(Handle as Integer, opacity as Double) as Boolean 11921
* 70.34.667 SetAnnotOpenState(Handle as Integer, Open as Boolean) as boolean 11921
* 70.34.668 SetAnnotOrFieldDate(CSHandle as UInt32, IsField as Boolean, Type as Integer, DateTime as UInt32) as boolean 11922
* 70.34.669 SetAnnotQuadPoints(Handle as UInt32, points() as DynapdfPointMBS) as boolean 11923
* 70.34.670 SetAnnotString(Handle as Integer, StringType as Integer, Value as string) as boolean 11923
* 70.34.671 SetAnnotStringAnsi(Handle as Integer, StringType as Integer, Value as string) as boolean 11923
* 70.34.672 SetAnnotSubject(Handle as Integer, Value as string) as Boolean 11923
* 70.34.673 SetAnnotSubjectAnsi(Handle as Integer, Value as string) as Boolean 11924
* 70.34.674 SetBBox(Boundary as Integer, LeftX as Double, LeftY as Double, RightX as Double, RightY as Double) as Boolean 11924
* 70.34.675 SetBidiMode(BidiMode as Integer) as Boolean 11924
* 70.34.676 SetBookmarkDest(ABmk as Integer, DestType as Integer, a as Double, b as Double, c as Double, d as Double) as Boolean 11924
* 70.34.677 SetBookmarkStyle(ABmk as Integer, Style as Integer, RGBColor as Integer) as Boolean 11924
* 70.34.678 SetBorderStyle(ABmk as Integer) as Boolean 11924
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* 70.34.707 SetExtFillColorSpace(Handle as UInt32) \text{ as boolean} \ 11932
* 70.34.708 SetExtGState(Handle as Integer) \text{ as Boolean} \ 11933
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• 70.34.720 SetFieldFont(Field as Integer, Name as string, Style as Integer, Size as Double, Embed as Boolean, CodePage as Integer) as Integer 11935
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• 70.34.743 SetFont(Name as string, Style as Integer = 0, Size as Double = 12, Embed as boolean = true, CP as Integer = & h27) as Integer 11943
• 70.34.744 SetFontAnsi(Name as string, Style as Integer = 0, Size as Double = 12, Embed as boolean = true, CP as Integer = & h27) as Integer 11944
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* 70.34.763 SetLineCapStyle(Style as Integer) as Boolean 11949
* 70.34.764 SetLineDashPattern(Dash as string, Phase as Integer) as Boolean 11950
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* 70.34.766 SetLineDashPatternEx(dash() as double, Phase as integer) as Boolean 11950
* 70.34.767 SetLineStyle(Style as Integer) as Boolean 11950
* 70.34.768 SetLineWidth(value as Double) as Boolean 11951
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* 70.34.771 SetMatrix(Matrix as DynapdfMatrixMBS) as Boolean 11951
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* 70.34.774 SetMetaConvFlags(Flags as Integer) as Boolean 11952
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* 70.34.779 SetNumberFormat(TxtField as Integer, Sep as Integer, DecPlaces as Integer, NegStyle as Integer, CurrStr as string, Prepend as boolean) as Boolean 11954
* 70.34.780 SetOCGContUsage(Handle as UInt32, Value as DynaPDFOCGContUsageMBS) as Boolean 11954
* 70.34.781 SetOCGState(Handle as UInt32, On as Boolean, SaveState as Boolean) as Boolean 11954
* 70.34.782 SetOpacity(value as Double) as Boolean 11954
* 70.34.783 SetOrientation(Value as Integer) as Boolean 11955
* 70.34.784 SetOrientaionEx(Value as Integer) as Boolean 11955
* 70.34.785 SetPageCoords(PageCoords as Integer) as Boolean 11955
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* 70.34.786 SetPageFormat(Value as Integer) as Boolean
* 70.34.787 SetPageHeight(value as Double) as Boolean
* 70.34.788 SetPageLayout(Layout as Integer) as Boolean
* 70.34.789 SetPageMode(Mode as Integer) as Boolean
* 70.34.790 SetPageWidth(value as Double) as Boolean
* 70.34.791 SetPDFVersion(Version as Integer) as Boolean
* 70.34.792 SetPrintSettings(Mode as Integer, PickTrayByPDFSize as Integer, NumCopies as Integer, PrintRanges() as Integer) as boolean
* 70.34.793 SetResolution(Value as Integer) as Boolean
* 70.34.794 SetSaveNewImageFormat(value as Boolean) as Boolean
* 70.34.795 SetSeparationInfo(Handle as Integer) as boolean
* 70.34.796 SetStrokeColor(ColorValue as color) as Boolean
* 70.34.797 SetStrokeColor(ColorValue as Integer) as Boolean
* 70.34.798 SetStrokeColor(values() as Double) as boolean
* 70.34.799 SetStrokeColor(values() as single) as boolean
* 70.34.800 SetStrokeColorEx(colorvalues as memoryblock, count as Integer) as Boolean
* 70.34.801 SetStrokeColorEx(ParamArray colorvalue as Integer) as Boolean
* 70.34.802 SetStrokeColorSpace(Colorspace as Integer) as Boolean
* 70.34.803 SetTabLen(TabLen as Integer) as Boolean
* 70.34.804 SetTextDrawMode(Mode as Integer) as Boolean
* 70.34.805 SetTextFieldValue(Field as Integer, Value as string, DefValue as string, Align as Integer) as Boolean
* 70.34.806 SetTextFieldValueAnsi(Field as Integer, Value as string, DefValue as string, Align as Integer) as Boolean
* 70.34.807 SetTextFieldValueAnsiEx(Field as Integer, Value as string) as Boolean
* 70.34.808 SetTextFieldValueEx(Field as Integer, Value as string) as Boolean
* 70.34.809 SetTextRect(PosX as Double, PosY as Double, Width as Double, Height as Double) as Boolean
* 70.34.810 SetTextRise(value as Double) as Boolean
* 70.34.811 SetTextScaling(value as Double) as Boolean
* 70.34.812 SetTransparentColor(ColorValue as Integer) as Boolean
* 70.34.813 SetTrapped(value as boolean)
* 70.34.814 SetUseExactPwd(value as Boolean) as Boolean
* 70.34.815 SetUseGlobalImpFiles(value as Boolean) as Boolean
* 70.34.816 SetUseImageInterpolation(Index as Integer, Value as Boolean) as Boolean
* 70.34.817 SetUserUnit(value as single) as boolean
* 70.34.818 SetUseStdFonts(value as Boolean) as Boolean
* 70.34.819 SetUseSwapFile(SwapContents as Boolean, SwapLimit as Integer) as Boolean
* 70.34.820 SetUseSwapFileEx(SwapContents as Boolean, SwapLimit as Integer, SwapDir as Folderitem) as Boolean
* 70.34.821 SetUseSystemFonts(value as Boolean) as Boolean
* 70.34.822 SetUseTransparency(value as Boolean) as Boolean
* 70.34.823 `SetUseVisibleCoords(value as Boolean)` as Boolean 11968
* 70.34.824 `SetViewerPreferences(Value as Integer, AddVal as Integer)` as Boolean 11968
* 70.34.825 `SetWMFDefExtent(Width as Integer, Height as Integer)` as Boolean 11968
* 70.34.826 `SetWMFPixelPerInch(Value as Integer)` as Boolean 11969
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* 70.34.829 `SkewCoords(alpha as Double, beta as Double, OriginX as Double, OriginY as Double)` as Boolean 11969
* 70.34.830 `SortFieldsByIndex` as Boolean 11970
* 70.34.831 `SortFieldsByName` as Boolean 11970
* 70.34.832 `SquareAnnot(PosX as Double, PosY as Double, Width as Double, Height as Double, LineWidth as Double, FillColor as UInt32, StrokeColor as UInt32, ColorSpace as Integer, Author as string, Subject as string, Comment as string)` as Integer 11970
* 70.34.833 `SquareAnnotAnsi(PosX as Double, PosY as Double, Width as Double, Height as Double, LineWidth as Double, FillColor as UInt32, StrokeColor as UInt32, ColorSpace as Integer, Author as string, Subject as string, Comment as string)` as Integer 11970
* 70.34.834 `StampAnnot(SubType as Integer, PosX as Double, PosY as Double, Width as Double, Height as Double, Author as string, Subject as string, Comment as string)` as Integer 11970
* 70.34.835 `StampAnnotAnsi(SubType as Integer, PosX as Double, PosY as Double, Width as Double, Height as Double, Author as string, Subject as string, Comment as string)` as Integer 11970
* 70.34.836 `StrokePath` as Boolean 11971
* 70.34.837 `TestGlyphs(FontHandle as Integer, Text as string)` as Integer 11971
* 70.34.838 `TestGlyphsAnsi(FontHandle as Integer, Text as string)` as Integer 11971
* 70.34.839 `TextAnnot(PosX as Double, PosY as Double, Width as Double, Height as Double, Author as string, Text as string, Icon as Integer, Open as boolean)` as Integer 11971
* 70.34.840 `TextAnnotAnsi(PosX as Double, PosY as Double, Width as Double, Height as Double, Author as string, Text as string, Icon as Integer, Open as boolean)` as Integer 11971
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* 70.34.842 `TranslateRawCode(IFont as Integer, text as string, byref Width as Double, byref Decoded as boolean, CharSpacing as Double, WordSpacing as Double, TextScale as Double)` as string 11972
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* 70.34.845 `TranslateString(stack as DynaPDFStackMBS, flags as Integer)` as string 11972
* 70.34.846 `Triangle(x1 as Double, y1 as Double, x2 as Double, y2 as Double, x3 as Double, y3 as Double, FillMode as Integer)` as Boolean 11972
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* 70.34.848 `WatermarkAnnot(PosX as Double, PosY as Double, Width as Double, Height as Double)` as Integer 11976
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* 70.34.849 WebLink(PosX as Double, PosY as Double, Width as Double, Height as Double, aText as string) as Integer 11976

* 70.34.850 WebLinkAnsi(PosX as Double, PosY as Double, Width as Double, Height as Double, aText as string) as Integer 11976

* 70.34.851 WeightFromStyle(s as Integer) as Integer 11977

* 70.34.852 WeightToStyle(s as Integer) as Integer 11977

* 70.34.853 WidthFromStyle(s as Integer) as Integer 11977

* 70.34.854 WidthToStyle(s as Integer) as Integer 11977

* 70.34.855 WriteAngleText(aText as string, Angle as Double, PosX as Double, PosY as Double, Radius as Double, YOrigin as Double) as Boolean 11977

* 70.34.856 WriteAngleText(glyphs() as Integer, Angle as Double, PosX as Double, PosY as Double, Radius as Double, YOrigin as Double) as Boolean 11978

* 70.34.857 WriteAngleTextAnsi(aText as string, Angle as Double, PosX as Double, PosY as Double, Radius as Double, YOrigin as Double) as Boolean 11978

* 70.34.858 WriteAngleTextDirect(aText as string, Angle as Double, PosX as Double, PosY as Double, Radius as Double, YOrigin as Double) as Boolean 11978

* 70.34.859 WriteAngleTextDirect(glyphs() as Integer, Angle as Double, PosX as Double, PosY as Double, Radius as Double, YOrigin as Double) as Boolean 11979

* 70.34.860 WriteFText(Align as Integer, aText as string) as Boolean 11979

* 70.34.861 WriteFText(Align as Integer, glyphs() as Integer) as Boolean 11979

* 70.34.862 WriteFTextAnsi(Align as Integer, aText as string) as Boolean 11980

* 70.34.863 WriteFTextDirect(Align as Integer, aText as string) as Boolean 11980

* 70.34.864 WriteFTextDirect(Align as Integer, glyphs() as Integer) as Boolean 11980

* 70.34.865 WriteFTextEx(PosX as Double, PosY as Double, Width as Double, Height as Double, Align as Integer, aText as string) as Boolean 11981

* 70.34.866 WriteFTextEx(PosX as Double, PosY as Double, Width as Double, Height as Double, Align as Integer, glyphs() as Integer) as Boolean 11981

* 70.34.867 WriteFTextExAnsi(PosX as Double, PosY as Double, Width as Double, Height as Double, Align as Integer, aText as string) as Boolean 11981

* 70.34.868 WriteFTextExDirect(PosX as Double, PosY as Double, Width as Double, Height as Double, Align as Integer, glyphs() as Integer) as Boolean 11982

* 70.34.869 WriteFTextExDirect(PosX as Double, PosY as Double, Width as Double, Height as Double, Align as Integer, aText as string) as Boolean 11982

* 70.34.870 WriteStyledText(Align as Integer, StyledText as StyledText) as Boolean 11982

* 70.34.871 WriteStyledText(Align as Integer, TextArea as TextArea) as Boolean 11983

* 70.34.872 WriteStyledTextEx(PosX as Double, PosY as Double, Width as Double, Height as Double, Align as Integer, StyledText as StyledText) as Boolean 11983

* 70.34.873 WriteStyledTextEx(PosX as Double, PosY as Double, Width as Double, Height as Double, Align as Integer, TextArea as TextArea) as Boolean 11983

* 70.34.874 WriteText(PosX as Double, PosY as Double, aText as string) as Boolean 11983

* 70.34.875 WriteText(PosX as Double, PosY as Double, glyphs() as Integer) as Boolean 11984

* 70.34.876 WriteTextAnsi(PosX as Double, PosY as Double, aText as string) as Boolean 11984

* 70.34.877 WriteTextDirect(PosX as Double, PosY as Double, aText as string) as Boolean 11984
- 70.34.878 WriteTextDirect(PosX as Double, PosY as Double, glyphs() as Integer) as Boolean 11984
- 70.34.879 WriteTextMatrix(Matrix as DynapdfMatrixMBS, glyphs() as Integer) as Boolean 11985
- 70.34.880 WriteTextMatrix(Matrix as DynapdfMatrixMBS, Text as string) as Boolean 11985
- 70.34.881 WriteTextMatrixAnsi(Matrix as DynapdfMatrixMBS, Text as string) as Boolean 11985
- 70.34.882 WriteTextMatrixDirect(Matrix as DynapdfMatrixMBS, glyphs() as Integer) as Boolean 11986
- 70.34.883 WriteTextMatrixDirect(Matrix as DynapdfMatrixMBS, Text as string) as Boolean 11986
- 70.34.884 YofCMYK(CMYK as UInt32) as Integer 11986
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- 70.34.895 EnumDocFont(Font as DynaPDFFontMBS, FontInfo as DynaPDFFontInfoMBS, Type as Integer, BaseFont as string, Fontname as string, Embedded as boolean, IsFormFont as boolean, Flags as Integer, FontRef as Integer) as Integer 11989
- 70.34.896 EnumHostFont(FamilyName as string, PostScriptName as string, Style as Integer) as Integer 11989
- 70.34.897 EnumHostFontEx(FamilyName as string, PostScriptName as string, Style as Integer, BaseType as Integer, Embeddable as boolean, Flags as Integer, FilePath as string) as Integer 11989
- 70.34.898 Error(ErrorCode as Integer, ErrorMessage as string, ErrorType as Integer) as Integer 11990
- 70.34.899 InitProgress(ProgType as Integer, MaxCount as Integer) 11990
- 70.34.900 OnFontNotFound(PDFFontRef as Integer, FontName as string, Style as Integer, StdFontIndex as Integer, IsSymbolFont as boolean) as Integer 11990
- 70.34.901 OnReplaceICCProfile(Type as Integer, ColorSpace as Integer) as Integer 11991
- 70.34.902 PageBreak(LastPosX as Double, LastPosY as Double, PageBreak as boolean) as Integer 11991
- 70.34.903 Progress(ActivePage as Integer) as Integer 11991
- 70.34.904 RasterShowText(MatrixBefore as DynapdfMatrixMBS, MatrixAfter as DynapdfMatrixMBS, TextBuffers() as DynaPDFTextRecordAMBS, Texts() as String, Width as Double, Vertical as boolean, FontRef as Integer, textScaling as Double) 11992
- 70.34.906 kadAnnotation = 0 11992
- 70.34.907 kadCatalog = 1 11992
- 70.34.908 kadField = 2 11992
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* 70.34.910 kadPage = 4
* 70.34.911 kadTemplate = 5
* 70.34.912 kaeExport = 1
* 70.34.913 kaePrint = 2
* 70.34.914 kaeView = 4
* 70.34.915 kaffMarkupAnnots = 2
* 70.34.916 kaffNone = 0
* 70.34.917 kaffViewState = 1
* 70.34.918 kaffHidden = 2
* 70.34.919 kaffInvisible = 1
* 70.34.920 kaffLocked = & h00000080
* 70.34.921 kaffLockedContents = & h00000200
* 70.34.922 kaffNone = 0
* 70.34.923 kaffNoRotate = & h00000010
* 70.34.924 kaffNoView = & h00000200
* 70.34.925 kaffNoZoom = 8
* 70.34.926 kaffPrint = 4
* 70.34.927 kaffReadOnly = & h00000040
* 70.34.928 kaffToggleNoView = & h00000010
* 70.34.929 kaiComment = 0
* 70.34.930 kaiHelp = 1
* 70.34.931 kaiInsert = 2
* 70.34.932 kaiKey = 3
* 70.34.933 kaiNewParagraph = 4
* 70.34.934 kaiNote = 5
* 70.34.935 kaiParagraph = 6
* 70.34.936 karAlternative = 4
* 70.34.937 karAssociated = 0
* 70.34.938 karData = 1
* 70.34.939 karSource = 2
* 70.34.940 karSupplement = 3
* 70.34.941 kasAccepted = 1
* 70.34.942 kasAuthor = 0
* 70.34.943 kasCancelled = 3
* 70.34.944 kasCompleted = 4
* 70.34.945 kasContent = 1
* 70.34.946 kasCreateReply = 5
* 70.34.947 kasName = 2
* 70.34.948 kasNone = 0
* 70.34.949 kasRejected = 2
* 70.34.950 kasRichStyle = 4
* 70.34.951 kasRichText = 5
* 70.34.952 kasSubject = 3
* 70.34.953 kat3D = & h00000013
* 70.34.954 kat3D_AppDefault = 0
* 70.34.955 kat3D_Explicit = 3
* 70.34.956 kat3D_PageOpen = 1
* 70.34.957 kat3D_PageVisible = 2
* 70.34.958 katCaret = 0
* 70.34.959 katCircle = 1
* 70.34.960 katFileAttach = & h00000015
* 70.34.961 katFileLink = 2
* 70.34.962 katFreeText = 3
* 70.34.963 katGoTo = 0
* 70.34.964 katGoTo3DView = & h00000010
* 70.34.965 katGoToE = & h00000011
* 70.34.966 katGoToR = 1
* 70.34.967 katHide = 2
* 70.34.968 katHighlight = 4
* 70.34.969 katImportData = 3
* 70.34.970 katInk = 5
* 70.34.971 katJavaScript = 4
* 70.34.972 katLaunch = 5
* 70.34.973 katLine = 6
* 70.34.974 katMovie = 6
* 70.34.975 katMovieAnnot = & h00000019
* 70.34.976 katNamed = 7
* 70.34.977 katPageLink = 7
* 70.34.978 katPolygon = 8
* 70.34.979 katPolyLine = 9
* 70.34.980 katPopUp = & h0000000A
* 70.34.981 katPrinterMark = & h0000001A
* 70.34.982 katProjection = & h0000001B
* 70.34.983 katRedact = & h00000016
* 70.34.984 katRendition = 8
* 70.34.985 katReset = 9
* 70.34.986 katRichMedia = & h0000001C
* 70.34.987 katRichMediaExec = & h00000012
* 70.34.988 katScreen = & h0000001D
* 70.34.989 katSetOCGState = & h0000000A
* 70.34.990 katSound = & h0000000B
* 70.34.991 katSoundAnnot = & h00000014
* 70.34.992 katSquare = & h0000000B
* 70.34.993 katSquiggly = & h0000000C
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* 70.34.1911 kriByteAligned = & h00000100
* 70.34.1912 kriCMYKData = & h00000000
* 70.34.1913 kriRGBData = & h00002000
* 70.34.1914 kriPerceptual = 1
* 70.34.1915 kriRelativeColorimetric = 2
* 70.34.1916 kriSaturation = 3
* 70.34.1917 krmBoundingBox = 0
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* 70.34.1918 krmHiddenWireframe = 1
* 70.34.1919 krmIllustration = 2
* 70.34.1920 krmNotSet = & h0000000F
* 70.34.1921 krmShadedIllustration = 3
* 70.34.1922 krmShadedVertices = 4
* 70.34.1923 krmShadedWireframe = 5
* 70.34.1924 krmSolid = 6
* 70.34.1925 krmSolidOutline = 7
* 70.34.1926 krmSolidWireframe = 8
* 70.34.1927 krmTransparent = 9
* 70.34.1928 krmTranspBBox = & h0000000A
* 70.34.1929 krmTranspBBoxOutline = & h0000000B
* 70.34.1930 krmTranspWireframe = & h0000000C
* 70.34.1931 krmVertices = & h0000000D
* 70.34.1932 krmWireframe = & h0000000E
* 70.34.1933 krsAddObj = & h00000020
* 70.34.1934 krsApproved = 0
* 70.34.1935 krsAsIs = 1
* 70.34.1936 krsAssemble = & h00000040
* 70.34.1937 krsConfidential = 2
* 70.34.1938 krsCopyObj = & h00000010
* 70.34.1939 krsDenyAll = & h00000F3C
* 70.34.1940 krsDenyNothing = 0
* 70.34.1941 krsDepartmental = 3
* 70.34.1942 krsDraft = 4
* 70.34.1943 krsEmbFilesOnly = & h00002000
* 70.34.1944 krsExlMetadata = & h00001000
* 70.34.1945 krsExperimental = 5
* 70.34.1946 krsExpired = 6
* 70.34.1947 krsExtractObj = & h00000200
* 70.34.1948 krsFillInFormFields = & h00000100
* 70.34.1949 krsFinal = 7
* 70.34.1950 krsForComment = 8
* 70.34.1951 krsForPublicRelease = 9
* 70.34.1952 krsModify = 8
* 70.34.1953 krsNotApproved = & h0000000A
* 70.34.1954 krsNotForPublicRelease = & h0000000B
* 70.34.1955 krsPrint = 4
* 70.34.1956 krsPrintHighRes = & h00000800
* 70.34.1957 krsSold = & h0000000C
* 70.34.1958 krsTopSecret = & h0000000D
* 70.34.1959 krsUserDefined = & h0000000E
70.34.1960 ksfCanonicalFormat = & h00000200
70.34.1961 ksfEmbedForm = & h00002000
70.34.1962 ksfExlFKey = & h00000800
70.34.1963 ksfExlNonUserAnnots = & h00000400
70.34.1964 ksfExclude = 1
70.34.1965 ksfGetMethod = 8
70.34.1966 ksfHTML = 4
70.34.1967 ksfInclAnnots = & h00000800
70.34.1968 ksfInclAppSaves = & h00000040
70.34.1969 ksfInclNoValFields = 2
70.34.1970 ksfNone = 0
70.34.1971 ksfPDF = & h00000100
70.34.1972 ksfSubmitCoords = & h00000010
70.34.1973 ksfXML = & h00000024
70.34.1974 ksmFamilyName = 0
70.34.1975 ksmFullName = 2
70.34.1976 ksmPostScriptName = 1
70.34.1977 ksmtAlpha = 0
70.34.1978 ksmtLuminosity = 1
70.34.1979 kspcDefault = 0
70.34.1980 kspcDontAddMargins = 2
70.34.1981 kspcFlushPages = 8
70.34.1982 kspcIgnorePaperFormat = 1
70.34.1983 kspcLoadSpoolFontsOnly = 4
70.34.1984 kspCross = 4
70.34.1985 kspDiaCross = 5
70.34.1986 kspHorizontal = 0
70.34.1987 kspLDiagonal = 3
70.34.1988 kspRDiagonal = 2
70.34.1989 kspVertical = 1
70.34.1990 kst3DHeight = 2
70.34.1991 kst3DMax = 4
70.34.1992 kst3DMin = 3
70.34.1993 kst3DValue = 0
70.34.1994 kst3DWidth = 1
70.34.1995 kstAxial = 2
70.34.1996 kstCoonsPatch = 6
70.34.1997 kstFreeFormGouraud = 4
70.34.1998 kstFunctionBased = 1
70.34.1999 kstLatticeFormGouraud = 5
70.34.2000 kstRadial = 3
70.34.2001 kstTensorProduct = 7
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* 70.34.2002 ktaCenter = 1
* 70.34.2003 ktaJustify = 3
* 70.34.2004 ktaLeft = 0
* 70.34.2005 ktaRight = 2
* 70.34.2006 ktefDefault = 0
* 70.34.2007 ktefDeleteOverlappingText = 4
* 70.34.2008 ktefSortTextX = 1
* 70.34.2009 ktefSortTextXY = 3
* 70.34.2010 ktefSortTextY = 2
* 70.34.2011 ktoAnnots = 4
* 70.34.2012 ktoColumn = 1
* 70.34.2013 ktoFields = 5
* 70.34.2014 ktoNone = 3
* 70.34.2015 ktoRow = 0
* 70.34.2016 ktoStructure = 2
* 70.34.2017 kTRANSP_3D_ANNOT = & h40000000
* 70.34.2018 kttConstSpacing = 0
* 70.34.2019 kttFastConstSpacing = 2
* 70.34.2020 kttNoDistortion = 1
* 70.34.2021 kusbCursorHandClosed = & h00000020
* 70.34.2022 kusbCursorHandNormal = & h00000010
* 70.34.2023 kusbCursorHandPoint = & h00000040
* 70.34.2024 kusbCursorIBeam = & h00000080
* 70.34.2025 kusbCursorMask = & h000000F0
* 70.34.2026 kusbHorzRange = 4
* 70.34.2027 kusbHorzScrollPos = 8
* 70.34.2028 kusbNoUpdate = 0
* 70.34.2029 kusbUpdateAll = & h000000F
* 70.34.2030 kusbVertRange = 1
* 70.34.2031 kusbVertScrollPos = 2
* 70.34.2032 kvpCenterWindow = & h00000010
* 70.34.2033 kvpDirection = & h00000080
* 70.34.2034 kvpDisplayDocTitle = & h00000020
* 70.34.2035 kvpFitWindow = 8
* 70.34.2036 kvpHideMenuBar = 2
* 70.34.2037 kvpHideToolBar = 1
* 70.34.2038 kvpHideWindowUI = 4
* 70.34.2039 kvpNonFullScrPageMode = & h00000040
* 70.34.2040 kvpPrintArea = & h00000040
* 70.34.2041 kvpPrintClip = & h00000080
* 70.34.2042 kvpUseNone = 0
* 70.34.2043 kvpViewArea = & h00000010
* 70.34.2044 kvpViewClip = & h00000200

– 70.35.1 class DynaPDFMeasureMBS
  * 70.35.3 Angles as DynaPDFNumberFormatMBS()
  * 70.35.4 Area as DynaPDFNumberFormatMBS()
  * 70.35.5 Bounds as Single()
  * 70.35.6 Constructor
  * 70.35.7 Distance as DynaPDFNumberFormatMBS()
  * 70.35.8 GPTS as Single()
  * 70.35.9 LPTS as Single()
  * 70.35.10 Slope as DynaPDFNumberFormatMBS()
  * 70.35.11 X as DynaPDFNumberFormatMBS()
  * 70.35.12 Y as DynaPDFNumberFormatMBS()
  * 70.35.14 AnglesCount as Integer
  * 70.35.15 AreaCount as Integer
  * 70.35.16 BoundCount as Integer
  * 70.35.17 CXY as Single
  * 70.35.18 DCS_EPSG as Integer
  * 70.35.19 DCS_IsSet as Boolean
  * 70.35.20 DCS_Projected as Boolean
  * 70.35.21 DCS_WKT as String
  * 70.35.22 DistanceCount as Integer
  * 70.35.23 GCS_EPSG as Integer
  * 70.35.24 GCS_Projected as Boolean
  * 70.35.25 GCS_WKT as String
  * 70.35.26 GPTSCount as Integer
  * 70.35.27 IsRectilinear as Boolean
  * 70.35.28 LPTSCount as Integer
  * 70.35.29 OriginX as Single
  * 70.35.30 OriginY as Single
  * 70.35.31 PDU1 as String
  * 70.35.32 PDU2 as String
  * 70.35.33 PDU3 as String
  * 70.35.34 R as String
  * 70.35.35 SlopeCount as Integer
  * 70.35.36 XCount as Integer
  * 70.35.37 YCount as Integer

– 70.36.1 class DynaPDFMovieActionMBS
  * 70.36.3 Constructor
  * 70.36.4 FWPosition(index as Integer) as Single
  * 70.36.5 FWScale(index as Integer) as Single
  * 70.36.7 Annot as Integer
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- 70.36.8 Mode as String 12174
- 70.36.9 NextAction as Integer 12174
- 70.36.10 NextActionType as Integer 12174
- 70.36.11 Operation as String 12174
- 70.36.12 Rate as Single 12174
- 70.36.13 ShowControls as Boolean 12175
- 70.36.14 Synchronous as Boolean 12175
- 70.36.15 Title as String 12175
- 70.36.16 Volume as Single 12175

- 70.37.1 class DynaPDFNamedActionMBS 12176
  - 70.37.3 Constructor 12176
  - 70.37.5 Name as String 12176
  - 70.37.6 NewWindow as Integer 12176
  - 70.37.7 NextAction as Integer 12177
  - 70.37.8 NextActionType as Integer 12177
  - 70.37.9 Type as Integer 12177

- 70.38.1 class DynaPDFNamedDestMBS 12178
  - 70.38.3 DestFile as String 12178
  - 70.38.4 DestPage as Integer 12178
  - 70.38.5 DestPos as DynaPDFRectMBS 12178
  - 70.38.6 DestType as Integer 12178
  - 70.38.7 Name as String 12179

- 70.40.1 class DynaPDFNumberFormatMBS 12181
  - 70.40.3 Constructor 12181
  - 70.40.5 C as Single 12181
  - 70.40.6 D as Integer 12181
  - 70.40.7 F as Integer 12181
  - 70.40.8 FD as Boolean 12181
  - 70.40.9 O as Integer 12182
  - 70.40.10 PS as String 12182
  - 70.40.11 RD as String 12182
  - 70.40.12 RT as String 12182
  - 70.40.13 SS as String 12182
  - 70.40.14 U as String 12183
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  - 70.40.17 kmlpSuffix = 0 12183
  - 70.40.18 kmnfDecimal = 0 12183
  - 70.40.19 kmnfFractional = 1 12183
  - 70.40.20 kmnfRound = 2 12183
  - 70.40.21 kmnfTruncate = 3 12184

- 70.41.1 class DynaPDFObjActionsMBS 12185
* 70.41.3 Constructor 12185
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* 70.41.6 ActionType as Integer 12185
* 70.41.7 Events as DynaPDFObjEventMBS 12186

70.42.1 class DynaPDFObjEventMBS 12187
* 70.42.3 Constructor 12187
* 70.42.5 Action as Integer 12187
* 70.42.6 ActionType as Integer 12187
* 70.42.7 NextObject as DynaPDFObjEventMBS 12187
* 70.42.8 ObjEvent as Integer 12188

70.43.1 class DynaPDFOCGContUsageMBS 12189
* 70.43.3 Constructor 12189
* 70.43.5 ExportState as Integer 12189
* 70.43.6 InfoCreator as String 12189
* 70.43.7 InfoSubtype as String 12189
* 70.43.8 LangPreferred as Integer 12190
* 70.43.9 Language as String 12190
* 70.43.10 PageElement as Integer 12190
* 70.43.11 PrintState as Integer 12190
* 70.43.12 PrintSubtype as String 12190
* 70.43.13 UserNamesCount as Integer 12191
* 70.43.14 UserType as Integer 12191
* 70.43.15 ViewState as Integer 12191
* 70.43.16 ZoomMax as Single 12191
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* 70.44.3 Constructor 12193
* 70.44.5 AppEvents as Integer 12193
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* 70.44.8 HaveContUsage as Boolean 12194
* 70.44.9 Intent as Integer 12194
* 70.44.10 IsAll as Boolean 12194
* 70.44.11 IsDesign as Boolean 12194
* 70.44.12 IsEmpty as Boolean 12195
* 70.44.13 IsView as Boolean 12195
* 70.44.14 IsVisible as Boolean 12195
* 70.44.15 Name as String 12195

70.45.1 class DynaPDFOCLayerConfigMBS 12196
* 70.45.3 Constructor 12196
* 70.45.5 Intent as Integer 12196
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* 70.45.8 NameLen as Integer 12197

– 70.46.1 class DynaPDFOCUINodeMBS
  * 70.46.3 Constructor 12198
  * 70.46.5 Label as String 12198
  * 70.46.6 LabelLength as Integer 12198
  * 70.46.7 NewNode as Boolean 12198
  * 70.46.8 NextChild as Integer 12199
  * 70.46.9 NextItem as Integer 12199
  * 70.46.10 OCG as Integer 12199

– 70.47.1 class DynaPDFOptimizeParamsMBS
  * 70.47.3 Constructor 12200
  * 70.47.5 Filter1Bit as Integer 12200
  * 70.47.6 FilterColor as Integer 12200
  * 70.47.7 FilterGray as Integer 12200
  * 70.47.8 JP2KQuality as Integer 12201
  * 70.47.9 JPEGQuality as Integer 12201
  * 70.47.10 Min1BitRes as Integer 12201
  * 70.47.11 MinColorRes as Integer 12201
  * 70.47.12 MinGrayRes as Integer 12202
  * 70.47.13 MinLineWidth as Single 12202
  * 70.47.14 Res1BitImages as Integer 12202
  * 70.47.15 ResColorImages as Integer 12202
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– 70.48.1 class DynaPDFOutputIntentMBS
  * 70.48.3 Constructor 12204
  * 70.48.5 Buffer as String 12204
  * 70.48.6 BufferSize as Integer 12204
  * 70.48.7 Info as String 12204
  * 70.48.8 NumComponents as Integer 12205
  * 70.48.9 OutputCondition as String 12205
  * 70.48.10 OutputConditionID as String 12205
  * 70.48.11 RegistryName as String 12205
  * 70.48.12 SubType as String 12205

– 70.49.1 class DynapdfPageLabelMBS
  * 70.49.3 Constructor 12206
  * 70.49.5 FirstPageNum as Integer 12206
  * 70.49.6 Format as Integer 12206
  * 70.49.7 Prefix as String 12206
  * 70.49.8 PrefixLen as Integer 12207
70.49.9 PrefixUni as Boolean  
70.49.10 StartRange as Integer  

70.50.1 class DynaPDFPageMBS  
  * 70.50.3 BBox(type as Integer) as DynaPDFRectMBS  
  * 70.50.4 CalcPagePixelSize(DefScale as UInt32, Scale as single, FrameWidth as UInt32, FrameHeight as UInt32, Flags as UInt32, byref Width as UInt32, byref Height as UInt32)  
  * 70.50.5 Constructor  
  * 70.50.6 GetWidthHeight(Flags as UInt32, byref Width as Single, byref Height as Single, Rotate as Integer = 0) as DynaPDFRectMBS  
  * 70.50.7 Orientation as Integer  
  * 70.50.8 SetBBox(type as integer, BBox as DynaPDFRectMBS) as Boolean  
  * 70.50.10 Handle as Integer  
  * 70.50.11 Page as Integer  
  * 70.50.12 PDF as DynaPDFMBS  
  * 70.50.14 kpbArtBox = 0  
  * 70.50.15 kpbBleedBox = 1  
  * 70.50.16 kpbCropBox = 2  
  * 70.50.17 kpbMediaBox = 4  
  * 70.50.18 kpbTrimBox = 3  

70.51.1 class DynaPDFPageStatisticMBS  
  * 70.51.3 Constructor  
  * 70.51.5 BezierCount as Integer  
  * 70.51.6 ClipPathCount as Integer  
  * 70.51.7 ClosePathCount as Integer  
  * 70.51.8 DrawShadingCount as Integer  
  * 70.51.9 FontCount as Integer  
  * 70.51.10 ImageCount as Integer  
  * 70.51.11 LayerCount as Integer  
  * 70.51.12 LineCount as Integer  
  * 70.51.13 PatternCount as Integer  
  * 70.51.14 RectangleCount as Integer  
  * 70.51.15 TemplateCount as Integer  
  * 70.51.16 TextCount as Integer  
  * 70.51.17 TextLength as Integer  

70.52.1 class DynaPDFParseInterfaceMBS  
  * 70.52.3 ApplyPattern(ObjectPtr as Integer, Type as Integer, PatternPtr as Integer) as Integer  
  * 70.52.4 BeginLayer(OCHandle as Integer, InVisible as boolean) as Integer  
  * 70.52.5 BeginPattern(ObjectPtr as Integer, Fill as Boolean, PatternType as Integer, BBox as DynaPDFRectMBS, Matrix as DynapdfMatrixMBS, XStep as Double, YStep as Double) as Integer
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* 70.52.6 BeginTemplate(ObjectPtr as Integer, Handle as Integer, BBox as DynaPDFRectMBS, Matrix as DynapdfMatrixMBS) as Integer 12216
* 70.52.7 BezierTo1(ObjectPtr as Integer, x1 as Double, y1 as Double, x3 as Double, y3 as Double) as Integer 12216
* 70.52.8 BezierTo2(ObjectPtr as Integer, x2 as Double, y2 as Double, x3 as Double, y3 as Double) as Integer 12216
* 70.52.9 BezierTo3(ObjectPtr as Integer, x1 as Double, y1 as Double, x2 as Double, y2 as Double, x3 as Double, y3 as Double) as Integer 12216
* 70.52.10 ClipPath(ObjectPtr as Integer, EvenOdd as boolean, Mode as Integer) as Integer 12217
* 70.52.11 ClosePath(ObjectPtr as Integer, Mode as Integer) as Integer 12217
* 70.52.12 DrawShading(ObjectPtr as Integer, Type as Integer, Shading as Integer) as Integer 12217
* 70.52.13 EndLayer(OCHandle as Integer, InVisible as boolean) 12217
* 70.52.14 EndPattern 12217
* 70.52.15 EndTemplate 12217
* 70.52.16 InsertImage(image as DynaPDFImageMBS) as Integer 12218
* 70.52.17 LineTo(ObjectPtr as Integer, x as Double, y as Double) as Integer 12218
* 70.52.18 MoveTo(ObjectPtr as Integer, x as Double, y as Double) as Integer 12218
* 70.52.19 MulMatrix(ObjectPtr as Integer, matrix as DynapdfMatrixMBS) 12218
* 70.52.20 Rectangle(ObjectPtr as Integer, x as Double, y as Double, w as Double, h as Double) as Integer 12218
* 70.52.21 RestoreGraphicState as Integer 12218
* 70.52.22 SaveGraphicState as Integer 12218
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* 70.52.24 SetExtGState(ObjectPtr as Integer, GS as DynapdfExtGState2MBS) 12219
* 70.52.25 SetFillColor(ObjectPtr as Integer, NumComps as Integer, Color1 as Double, Color2 as Double, Color3 as Double, Color4 as Double, Colors() as Double, ColorspaceType as Integer, ColorSpace as DynaPDFColorSpaceMBS) 12219
* 70.52.26 SetFont(ObjectPtr as Integer, fontType as Integer, Embedded as boolean, FontName as string, Style as Integer, FontSize as Double, FontHandle as Integer, FontInfo as DynaPDFFontInfoMBS) 12219
* 70.52.27 SetLeading(ObjectPtr as Integer, Value as Double) 12219
* 70.52.28 SetLineCapStyle(ObjectPtr as Integer, Style as Integer) 12220
* 70.52.29 SetLineDashPattern(ObjectPtr as Integer, dash as memoryblock, NumValues as Integer, Phase as Integer) 12220
* 70.52.30 SetLineJoinStyle(ObjectPtr as Integer, Style as Integer) 12220
* 70.52.31 SetLineWidth(ObjectPtr as Integer, Value as Double) 12220
* 70.52.32 SetMiterLimit(ObjectPtr as Integer, Value as Double) 12220
* 70.52.33 SetStrokeColor(ObjectPtr as Integer, NumComps as Integer, Color1 as Double, Color2 as Double, Color3 as Double, Color4 as Double, Colors() as Double, ColorspaceType as Integer, ColorSpace as DynaPDFColorSpaceMBS) 12220
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* 70.52.35 SetTextScale(ObjectPtr as Integer, Value as Double) 12221
– 70.53.1 class DynaPDFPointDataDictionaryMBS 12222
  * 70.53.3 Arrays as DynaPDFPointDataMBS() 12222
  * 70.53.4 Constructor 12222
  * 70.53.6 Count as Integer 12222
  * 70.53.7 Subtype as String 12222
– 70.54.1 class DynaPDFPointDataMBS 12223
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  * 70.54.4 values as Single() 12223
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  * 70.54.7 Index as Integer 12224
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– 70.55.1 class DynapdfPointMBS 12225
  * 70.55.3 Constructor(x as Double = 0.0, y as Double = 0.0) 12225
  * 70.55.5 X as Double 12225
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– 70.56.1 class DynaPDFPrintParamsMBS 12226
  * 70.56.3 Compress as Boolean 12226
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  * 70.57.3 PrintRanges(index as Integer) as Integer 12228
  * 70.57.5 DuplexMode as Integer 12228
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– 70.58.1 class DynaPDFRasterImageMBS 12230
  * 70.58.3 ClipRect as DynaPDFRectMBS 12231
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* 70.58.6 Flags as Integer 12231
* 70.58.7 FrameColor as Integer 12232
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* 70.58.11 NumBezierCurves as Integer 12233
* 70.58.12 NumClipPaths as Integer 12233
* 70.58.13 NumFormFields as Integer 12233
* 70.58.14 NumGlyphs as Integer 12233
* 70.58.15 NumImages as Integer 12233
* 70.58.16 NumLineTo as Integer 12234
* 70.58.17 NumPaths as Integer 12234
* 70.58.18 NumPatterns as Integer 12234
* 70.58.19 NumRectangles as Integer 12234
* 70.58.20 NumRestoreGState as Integer 12234
* 70.58.21 NumSaveGState as Integer 12234
* 70.58.22 NumShadings as Integer 12235
* 70.58.23 NumSoftMasks as Integer 12235
* 70.58.24 NumTextRecords as Integer 12235
* 70.58.25 PageSpace as DynaPDFMatrixMBS 12235
* 70.58.26 UpdateOnImageCoverage as Single 12235
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* 70.58.28 Yield as Boolean 12236
* 70.58.30 UpdateWindow(r as DynaPDFRectMBS, pic as Variant) as Integer 12236
* 70.58.32 kpsFitBest = 2 12236
* 70.58.33 kpsFitHeight = 1 12237
* 70.58.34 kpsFitWidth = 0 12237
* 70.58.35 krfClipToArtBox = 4 12237
* 70.58.36 krfClipToBleedBox = 8 12237
* 70.58.37 krfClipToTrimBox = & h00000010 12237
* 70.58.38 krfCompositeWhite = & h00001000 12238
* 70.58.39 krfDefault = 0 12238
* 70.58.40 krfDisableAAClipping = & h00200000 12238
* 70.58.41 krfDisableAAText = & h00400000 12238
* 70.58.42 krfDisableAAVector = & h00800000 12238
* 70.58.43 krfDisableAntiAliasing = & h00E00000 12239
* 70.58.44 krfDisableBiLinearFilter = & h01000000 12239
* 70.58.45 krfExclAnnotations = & h00000020 12239
* 70.58.46 krfExclButtons = & h00000040 12239
* 70.58.47 krfExclCheckboxes = & h00000080 12239
* 70.58.48 krfExclComboBoxes = & h00001000 12239
* 70.58.49 krfExclFormFields = & h00000040 12240
* 70.58.50 krfExclListBoxes = & h00020000
* 70.58.51 krfExclPageContent = & h00002000
* 70.58.52 krfExclSigFields = & h00080000
* 70.58.53 krfExclTextFields = & h00040000
* 70.58.54 krfIgnoreCropBox = 2
* 70.58.55 krfInitBlack = & h00000800
* 70.58.56 krfRenderInvisibleText = & h02000000
* 70.58.57 krfRotate180 = & h00000200
* 70.58.58 krfRotate270 = & h00000400
* 70.58.59 krfRotate90 = & h00000100
* 70.58.60 krfScaleToBBBox = & h00100000
* 70.58.61 krfScaleToMediaBox = 1
* 70.58.62 krfSkipUpdateBG = & h00000080

- 70.59.1 class DynaPDFRasterizerMBS
  * 70.59.3 Abort
  * 70.59.4 AddRasImage(Filter as Integer) as boolean
  * 70.59.5 AttachImageBuffer(Pic as Picture) as boolean
  * 70.59.6 AttachImageBuffer(Rows as Memoryblock, Buffer as Memoryblock, Width as UInt32, Height as UInt32, ScanlineLen as Int32, PixelFormat as UInt32) as boolean
  * 70.59.7 Constructor(PDF as DynaPDFMBS, DeviceContextHandle as Integer, Width as UInt32, Height as UInt32, PixFmt as UInt32)
  * 70.59.8 Constructor(PDF as DynaPDFMBS, Pic as Picture)
  * 70.59.9 Constructor(PDF as DynaPDFMBS, Rows as Memoryblock, Buffer as Memoryblock, Width as UInt32, ScanlineLen as Int32, PixelFormat as UInt32)
  * 70.59.10 Constructor(PDF as DynaPDFMBS, Width as Integer, Height as Integer)
  * 70.59.11 Redraw(DeviceContextHandle as Integer, DestX as Integer, DestY as Integer)
  * 70.59.12 RenderPage(page as DynaPDFPageMBS, options as DynaPDFRasterImageMBS) as boolean
  * 70.59.13 RenderPageEx(DeviceContextHandle as Integer, byref DestX as Integer, byref DestY as Integer, page as DynaPDFPageMBS, options as DynaPDFRasterImageMBS) as boolean
  * 70.59.14 RenderPageMT(page as DynaPDFPageMBS, options as DynaPDFRasterImageMBS)
  * 70.59.15 ResizeBitmap(DeviceContextHandle as Integer, Width as Integer, Height as Integer)
  * 70.59.17 Handle as Integer
  * 70.59.18 PDF as DynaPDFMBS
  * 70.59.19 Pic as Picture
  * 70.59.21 kpxf1Bit = 0
  * 70.59.22 kpxfABGR = 7
  * 70.59.23 kpxfARGB = 6
  * 70.59.24 kpxfBGR = 3
  * 70.59.25 kpxfRGBA = 5
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- 70.59.26 kpxfCMYK = 9
- 70.59.27 kpxfCMYKA = & h0000000A
- 70.59.28 kpxfGray = 1
- 70.59.29 kpxfGrayA = 8
- 70.59.30 kpxfRGB = 2
- 70.59.31 kpxfRGBA = 4

- 70.60.1 class DynaPDFRawImageMBS
  - 70.60.3 setBuffer(data as MemoryBlock)
  - 70.60.4 setBuffer(data as MemoryBlock, size as Int64)
  - 70.60.5 setBuffer(data as Ptr)
  - 70.60.6 setBuffer(data as Ptr, size as Int64)
  - 70.60.7 setBuffer(data as string)
  - 70.60.8 setBuffer(data as string, size as Int64)
  - 70.60.10 BitsPerComponent as Integer
  - 70.60.11 Buffer as Ptr
  - 70.60.12 BufSize as Int64
  - 70.60.13 CS as Integer
  - 70.60.14 CSHandle as Integer
  - 70.60.15 HasAlpha as Boolean
  - 70.60.16 Height as Integer
  - 70.60.17 IsBGR as Boolean
  - 70.60.18 Memory as MemoryBlock
  - 70.60.19 MinIsWhite as Boolean
  - 70.60.20 NumComponents as Integer
  - 70.60.21 Stride as Integer
  - 70.60.22 String as String
  - 70.60.23 Width as Integer

- 70.61.1 class DynaPDFRectMBS
  - 70.61.3 Constructor(left as Double = 0.0, top as Double = 0.0, right as Double = 0.0, bottom as Double = 0.0)
  - 70.61.5 Bottom as Double
  - 70.61.6 Left as Double
  - 70.61.7 Right as Double
  - 70.61.8 Top as Double
  - 70.61.9 Width as Double

- 70.62.1 class DynaPDFRelFileNodeMBS
  - 70.62.3 Constructor
  - 70.62.5 EF as DynaPDFFileSpecMBS
  - 70.62.6 Name as String
  - 70.62.7 NextNode as DynaPDFRelFileNodeMBS

- 70.63.1 class DynaPDFResetFormActionMBS
* 70.63.3 Constructor
* 70.63.4 Fields(index as Integer) as DynaPDFFieldExMBS
* 70.63.6 FieldsCount as Integer
* 70.63.7 Include as Boolean
* 70.63.8 NextAction as Integer
* 70.63.9 NextActionType as Integer

– 70.64.1 class DynaPDFSigDictMBS
* 70.64.3 Cert as String
* 70.64.4 ContactInfo as String
* 70.64.5 Contents as String
* 70.64.6 Filter as String
* 70.64.7 Location as String
* 70.64.8 Name as String
* 70.64.9 PropAuthTime as Integer
* 70.64.10 PropAuthType as String
* 70.64.11 Reason as String
* 70.64.12 Revision as Integer
* 70.64.13 SignTime as String
* 70.64.14 SubFilter as String
* 70.64.15 Version as Integer

– 70.65.1 class DynaPDFSigParmsMBS
* 70.65.3 ContactInfo as String
* 70.65.4 Encrypt as Boolean
* 70.65.5 HashType as Integer
* 70.65.6 KeyLen as Integer
* 70.65.7 Location as String
* 70.65.8 OpenPwd as String
* 70.65.9 OwnerPwd as String
* 70.65.10 PKCS7ObjLen as Integer
* 70.65.11 Range1 as String
* 70.65.12 Range1Length as Integer
* 70.65.13 Range2 as String
* 70.65.14 Range2Length as Integer
* 70.65.15 Reason as String
* 70.65.16 Restrict as Integer
* 70.65.17 Signer as String

– 70.66.1 class DynaPDFStackMBS
* 70.66.3 KerningAdvance(index as UInt32) as Double
* 70.66.4 KerningLength(index as UInt32) as Integer
* 70.66.5 KerningText(index as UInt32) as string
* 70.66.6 KerningWidth(index as UInt32) as Double
| 70.66.7 | RawKernAdvance(index as UInt32) as Double |
| 70.66.8 | RawKernLength(index as UInt32) as Integer |
| 70.66.9 | RawKernText(index as UInt32) as string |
| 70.66.11 | CharSP as Double |
| 70.66.12 | CIDFont as Boolean |
| 70.66.13 | ConvColors as Boolean |
| 70.66.14 | ctm as DynapdfMatrixMBS |
| 70.66.15 | DeleteKerningAt as Integer |
| 70.66.16 | DestSpace as Integer |
| 70.66.17 | DrawMode as Integer |
| 70.66.18 | Embedded as Boolean |
| 70.66.19 | FillColor as Integer |
| 70.66.20 | FillCS as Integer |
| 70.66.21 | Font as DynaPDFFontMBS |
| 70.66.22 | FontFlags as Integer |
| 70.66.23 | FontHandle as Integer |
| 70.66.24 | FontInfo as DynaPDFFontInfoMBS |
| 70.66.25 | FontSize as Double |
| 70.66.26 | HScale as Double |
| 70.66.27 | KerningCount as Integer |
| 70.66.28 | Leading as Double |
| 70.66.29 | LineWidth as Double |
| 70.66.30 | SpaceWidth as Double |
| 70.66.31 | StrokeColor as Integer |
| 70.66.32 | StrokeCS as Integer |
| 70.66.33 | Text as String |
| 70.66.34 | TextLen as Integer |
| 70.66.35 | TextRise as Double |
| 70.66.36 | TextWidth as Double |
| 70.66.37 | tm as DynapdfMatrixMBS |
| 70.66.38 | WordSP as Double |
| 70.66.39 | x as Double |
| 70.66.40 | y as Double |

| 70.67.1 | class DynaPDFSubmitFormActionMBS |
| 70.67.3 | Constructor |
| 70.67.4 | Fields(index as Integer) as DynaPDFFieldExMBS |
| 70.67.6 | CharSet as String |
| 70.67.7 | FieldsCount as Integer |
| 70.67.8 | Fields as Integer |
| 70.67.9 | NextAction as Integer |
| 70.67.10 | NextActionType as Integer |
* 70.67.11 URL as String

- 70.68.1 class DynaPDFSysFontMBS
  * 70.68.3 Constructor
  * 70.68.4 NextFont as DynaPDFSysFontMBS
  * 70.68.6 BaseType as Integer
  * 70.68.7 CIDOrdering as String
  * 70.68.8 CIDRegistry as String
  * 70.68.9 CIDSupplement as UInt32
  * 70.68.10 DataOffset as UInt32
  * 70.68.11 FamilyName as String
  * 70.68.12 FilePath as String
  * 70.68.13 FileSize as UInt32
  * 70.68.14 Flags as Integer
  * 70.68.15 FullName as String
  * 70.68.16 Index as Integer
  * 70.68.17 IsFixedPitch as Boolean
  * 70.68.18 Length1 as UInt32
  * 70.68.19 Length2 as UInt32
  * 70.68.20 PostScriptName as String
  * 70.68.21 Style as Integer
  * 70.68.22 UnicodeRange1 as UInt32
  * 70.68.23 UnicodeRange2 as UInt32
  * 70.68.24 UnicodeRange3 as UInt32
  * 70.68.25 UnicodeRange4 as UInt32
  * 70.68.27 kurAlphabeticPresentationForms = & h40000000
  * 70.68.28 kurAncientGreekNumbers = & h00000040
  * 70.68.29 kurAncientSymbols = & h00800000
  * 70.68.30 kurArabic = & h00002000
  * 70.68.31 kurArabicPresentationFormsA = & h80000000
  * 70.68.32 kurArabicPresentationFormsB = 8
  * 70.68.33 kurArmenian = & h00000400
  * 70.68.34 kurArrows = & h00000020
  * 70.68.35 kurBalinese = & h08000000
  * 70.68.36 kurBasicLatin = 1
  * 70.68.37 kurBengali = & h00010000
  * 70.68.38 kurBlockElements = & h00010000
  * 70.68.39 kurBopomofo = & h00080000
  * 70.68.40 kurBoxDrawing = & h00000800
  * 70.68.41 kurBraillePatterns = & h00040000
  * 70.68.42 kurBuginese = 1
  * 70.68.43 kurCarian = & h02000000
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* 70.68.44 kurCham = & h00400000
* 70.68.45 kurCherokee = & h00001000
* 70.68.46 kurCJKCompatibility = & h00800000
* 70.68.47 kurCJKStrokes = & h20000000
* 70.68.48 kurCJKSymbolsAndPunctuation = & h00010000
* 70.68.49 kurCombDiacritMarksForSymbols = 4
* 70.68.50 kurCombiningDiacriticalMarks = & h00000040
* 70.68.51 kurCombiningHalfMarks = 1
* 70.68.52 kurCombiningRodNumerals = & h00008000
* 70.68.53 kurControlPictures = & h00000100
* 70.68.54 kurCoptic = & h00000100
* 70.68.55 kurCountingRodNumerals = & h00008000
* 70.68.56 kurCuneiform = & h00004000
* 70.68.57 kurCurrencySymbols = 2
* 70.68.58 kurCypriotSyllabary = & h00000800
* 70.68.59 kurCyrillic = & h00000200
* 70.68.60 kurDeseret = & h00800000
* 70.68.61 kurDevanagari = & h00008000
* 70.68.62 kurDingbats = & h00008000
* 70.68.63 kurDominoTiles = & h04000000
* 70.68.64 kurEnclosedAlphanumerics = & h00000400
* 70.68.65 kurEnclosedCJKLettersAndMonths = & h00400000
* 70.68.66 kurEthiopic = & h00000800
* 70.68.67 kurGeneralPunctuation = & h00000000
* 70.68.68 kurGeometricShapes = & h00002000
* 70.68.69 kurGeorgian = & h04000000
* 70.68.70 kurGlagolitic = 2
* 70.68.71 kurGothic = & h00400000
* 70.68.72 kurGreekandCoptic = & h00000080
* 70.68.73 kurGreekExtended = & h00000000
* 70.68.74 kurGujarati = & h00040000
* 70.68.75 kurGurmukhi = & h00020000
* 70.68.76 kurHalfwidthAndFullwidthForms = & h00000010
* 70.68.77 kurHangulCompatibilityJamo = & h00100000
* 70.68.78 kurHangulJamo = & h01000000
* 70.68.79 kurHangulSyllables = & h01000000
* 70.68.80 kurHebrew = & h00000800
* 70.68.81 kurHiragana = & h00020000
* 70.68.82 kurIPAExtensions = & h00000010
* 70.68.83 kurKannada = & h00400000
* 70.68.84 kurKatakana = & h00040000
* 70.68.85 kurKayahLi = & h00100000
* 70.68.86 kurKharoshthi = & h00001000
* 70.68.87 kurKhmer = & h00010000
* 70.68.88 kurLao = & h02000000
* 70.68.89 kurLatin1Supplement = 2
* 70.68.90 kurLatinExtendedA = 4
* 70.68.91 kurLatinExtendedAdditional = & h20000000
* 70.68.92 kurLatinExtendedB = 8
* 70.68.93 kurLepcha = & h00020000
* 70.68.94 kurLetterlikeSymbols = 8
* 70.68.95 kurLimbu = & h20000000
* 70.68.96 kurLinearBSyllabary = & h00000200
* 70.68.97 kurMalayalam = & h00800000
* 70.68.98 kurMathematicalAlphanumeric = & h02000000
* 70.68.99 kurMathematicalOperators = & h00000040
* 70.68.100 kurMiscellaneousSymbols = & h00004000
* 70.68.101 kurMiscellaneousTechnical = & h00000080
* 70.68.102 kurMongolian = & h00020000
* 70.68.103 kurMusicalSymbols = & h01000000
* 70.68.104 kurMyanmar = & h00000040
* 70.68.105 kurNewTaiLue = & h80000000
* 70.68.106 kurNKo = & h00004000
* 70.68.107 kurNonPlane0 = & h02000000
* 70.68.108 kurNumberForms = & h00000010
* 70.68.109 kurOgham = & h00004000
* 70.68.110 kurOlChiki = & h00040000
* 70.68.111 kurOldItalic = & h00200000
* 70.68.112 kurOldPersian = & h00000100
* 70.68.113 kurOpticalCharacterRecognition = & h00000200
* 70.68.114 kurOriya = & h00080000
* 70.68.115 kurOsmany = & h00000400
* 70.68.116 kurPhagsPa = & h00200000
* 70.68.117 kurPhaistosDisc = & h01000000
* 70.68.118 kurPhoenician = & h04000000
* 70.68.119 kurPrivateUseAreaPlane0 = & h10000000
* 70.68.120 kurPrivateUsePlane15 = & h04000000
* 70.68.121 kurRejang = & h00200000
* 70.68.122 kurRunic = & h00008000
* 70.68.123 kurSaurashtra = & h00080000
* 70.68.124 kurShavian = & h00000200
* 70.68.125 kurSinhala = & h00000200
* 70.68.126 kurSmallFormVariants = 4
* 70.68.127 kurSpacingModifierLetters = & h00000200
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* 70.68.128 kurSpecials = & h00000020
* 70.68.129 kurSundanese = & h00010000
* 70.68.130 kurSuperscriptsAndSubscripts = 1
* 70.68.131 kurSylotiNagri = & h00000010
* 70.68.132 kurSyriac = & h00000080
* 70.68.133 kurTagalog = & h00100000
* 70.68.134 kurTags = & h10000000
* 70.68.135 kurTaiLe = & h40000000
* 70.68.136 kurTaiXuanJingSymbols = & h00020000
* 70.68.137 kurTamil = & h00100000
* 70.68.138 kurTelugu = & h00200000
* 70.68.139 kurThaana = & h00001000
* 70.68.140 kurThai = & h01000000
* 70.68.141 kurTibetan = & h00000040
* 70.68.142 kurTifinagh = 4
* 70.68.143 kurUgaritic = & h00000080
* 70.68.144 kurUnifiedCanadianAboriginal = & h00002000
* 70.68.145 kurVai = & h00001000
* 70.68.146 kurVariationSelectors = & h08000000
* 70.68.147 kurVerticalForms = 2
* 70.68.148 kurYijingHexagramSymbols = 8
* 70.68.149 kurYiSyllables = & h00080000

– 70.69.1 class DynaPDFTableMBS

* 70.69.3 AddColumn(left as boolean, width as Double) as Integer
* 70.69.4 AddRow(height as Double = 0.0) as Integer
* 70.69.5 AddRows(count as UInt32, height as Double) as Integer
* 70.69.6 ClearColumn(Col as Integer, Types as Integer)
* 70.69.7 ClearContent(Types as Integer)
* 70.69.8 ClearRow(Row as Integer, Types as Integer)
* 70.69.9 Constructor
* 70.69.10 DeleteColumn(column as UInt32)
* 70.69.11 DeleteRow(row as UInt32)
* 70.69.12 DeleteRows
* 70.69.13 DrawTable(x as Double, y as Double, MaxHeight as Double = 0.0) as Double
* 70.69.14 GetFirstRow as Integer
* 70.69.15 GetFlags(Row as Integer, Column as Integer) as Integer
* 70.69.16 GetNextHeight(MaxHeight as Double, byref NextRow as Integer) as Double
* 70.69.17 GetNextRow as Integer
* 70.69.18 GetNumCols as Integer
* 70.69.19 GetNumRows as Integer
* 70.69.20 GetTableHeight as Double
- 70.69.21 GetTableWidth as Double
- 70.69.22 HaveMore as boolean
- 70.69.23 SetBackColor(Row as Integer, Column as Integer, channels() as Integer, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean
- 70.69.24 SetBackColor(Row as Integer, Column as Integer, paramarray channels as Integer) as boolean
- 70.69.25 SetBackColorFloat(Row as Integer, Column as Integer, channels() as Double, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean
- 70.69.26 SetBackColorFloat(Row as Integer, Column as Integer, paramarray channels as Double) as boolean
- 70.69.27 SetBackColorValue(Row as Integer, Column as Integer, TPDFColorSpace as Integer, ColorValue as UInt32) as boolean
- 70.69.28 SetBorderColor(Row as Integer, Column as Integer, channels() as Integer, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean
- 70.69.29 SetBorderColor(Row as Integer, Column as Integer, paramarray channels as Integer) as boolean
- 70.69.30 SetBorderColorFloat(Row as Integer, Column as Integer, channels() as Double, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean
- 70.69.31 SetBorderColorFloat(Row as Integer, Column as Integer, paramarray channels as Double) as boolean
- 70.69.32 SetBorderColorValue(Row as Integer, Column as Integer, TPDFColorSpace as Integer, ColorValue as UInt32) as boolean
- 70.69.33 SetCellImage(Row as Integer, Column as Integer, ForeGround as boolean, HAlign as Integer, VAlign as Integer, Width as Double, Height as Double, path as FolderItem, index as Integer = 0) as boolean
- 70.69.34 SetCellImage(Row as Integer, Column as Integer, ForeGround as boolean, HAlign as Integer, VAlign as Integer, Width as Double, Height as Double, path as string, index as Integer = 0) as boolean
- 70.69.35 SetCellImageAnsi(Row as Integer, Column as Integer, ForeGround as boolean, HAlign as Integer, VAlign as Integer, Width as Double, Height as Double, path as string, index as Integer = 0) as boolean
- 70.69.36 SetCellImageData(Row as Integer, Column as Integer, ForeGround as boolean, HAlign as Integer, VAlign as Integer, Width as Double, Height as Double, ImageData as MemoryBlock, index as Integer = 0) as boolean
- 70.69.37 SetCellImageData(Row as Integer, Column as Integer, ForeGround as boolean, HAlign as Integer, VAlign as Integer, Width as Double, Height as Double, ImageData as string, index as Integer = 0) as boolean
- 70.69.38 SetCellOrientation(Row as Integer, Column as Integer, Orientation as Integer) as boolean
- 70.69.39 SetCellPadding(Row as Integer, Column as Integer, left as Double, top as Double, right as Double, bottom as Double) as boolean
- 70.69.40 SetCellSpacing(Row as Integer, Column as Integer, left as Double, top as Double, right as Double, bottom as Double) as boolean
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* 70.69.42 SetCellTable(Row as Integer, Column as Integer, HAlign as Integer, VAlign as Integer, SubTable as DynaPDFTableMBS) as boolean
* 70.69.43 SetCellTemplate(Row as Integer, Column as Integer, ForeGround as boolean, HAlign as Integer, VAlign as Integer, TmplHandle as Integer, Width as Double = 0, Height as Double = 0) as boolean
* 70.69.44 SetCellText(Row as Integer, Column as Integer, HAlign as Integer, VAlign as Integer, text as string) as boolean
* 70.69.45 SetCellTextAnsi(Row as Integer, Column as Integer, HAlign as Integer, VAlign as Integer, text as string) as boolean
* 70.69.46 SetColWidth(column as UInt32, Width as Double, ExtTable as Boolean) as boolean
* 70.69.47 SetFlags(Row as Integer, Column as Integer, Flags as Integer) as boolean
* 70.69.48 SetFont(Row as Integer, Column as Integer, name as string, Style as Integer, Embed as Boolean, CodePage as Integer) as boolean
* 70.69.49 SetFontAnsi(Row as Integer, Column as Integer, name as string, Style as Integer, Embed as Boolean, CodePage as Integer) as boolean
* 70.69.50 SetFontSelMode(Row as Integer, Column as Integer, value as Int32) as boolean
* 70.69.51 SetFontSize(Row as Integer, Column as Integer, size as Double) as boolean
* 70.69.52 SetGridHorizontalColor(channels() as Integer, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean
* 70.69.53 SetGridHorizontalColor(paramarray channels as Integer) as boolean
* 70.69.54 SetGridHorizontalColorFloat(channels() as Double, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean
* 70.69.55 SetGridHorizontalColorFloat(paramarray channels as Double) as boolean
* 70.69.56 SetGridHorizontalColorValue(TPDFColorSpace as Integer, ColorValue as UInt32) as boolean
* 70.69.57 SetGridVerticalColor(channels() as Integer, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean
* 70.69.58 SetGridVerticalColor(paramarray channels as Integer) as boolean
* 70.69.59 SetGridVerticalColorFloat(channels() as Double, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean
* 70.69.60 SetGridVerticalColorFloat(paramarray channels as Double) as boolean
* 70.69.61 SetGridVerticalColorValue(TPDFColorSpace as Integer, ColorValue as UInt32) as boolean
* 70.69.62 SetGridWidth(h as Double, v as Double) as boolean
* 70.69.63 SetImageColor(Row as Integer, Column as Integer, channels() as Integer, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean
* 70.69.64 SetImageColor(Row as Integer, Column as Integer, paramarray channels as Integer) as boolean
* 70.69.65 SetImageColorFloat(Row as Integer, Column as Integer, channels() as Double, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean
* 70.69.66 SetImageColorFloat(Row as Integer, Column as Integer, paramarray channels as Double) as boolean
* 70.69.67 SetImageColorValue(Row as Integer, Column as Integer, TPDFColorSpace as Integer, ColorValue as UInt32) as boolean
* 70.69.68 SetPDF(pdf as DynaPDFMBS) 12321
* 70.69.69 SetRowHeight(Row as Integer, value as Double) as boolean 12321
* 70.69.70 SetTableWidth(Value as single, AdjustType as Integer, MinColWidth as single) 12321
* 70.69.71 SetTextColor(Row as Integer, Column as Integer, channels() as Integer, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean 12322
* 70.69.72 SetTextColor(Row as Integer, Column as Integer, paramarray channels as Integer) as boolean 12322
* 70.69.73 SetTextColorFloat(Row as Integer, Column as Integer, channels() as Double, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean 12322
* 70.69.74 SetTextColorFloat(Row as Integer, Column as Integer, paramarray channels as Double) as boolean 12323
* 70.69.75 SetTextColorValue(Row as Integer, Column as Integer, TPDFColorSpace as Integer, ColorValue as UInt32) as boolean 12323
* 70.69.77 Parent as Variant 12324
* 70.69.78 PDF as DynaPDFMBS 12324
* 70.69.80 kcctImage = 1 12324
* 70.69.81 kcctTable = 2 12324
* 70.69.82 kcctTemplate = 3 12324
* 70.69.83 kcctText = 0 12324
* 70.69.84 kcoaAdjLeft = 1 12325
* 70.69.85 kcoaAdjRight = 2 12325
* 70.69.86 kcoaUniqueWidth = 0 12325
* 70.69.87 kcoBottom = 1 12325
* 70.69.88 kcoCenter = 2 12325
* 70.69.89 kcoLeft = 0 12325
* 70.69.90 kcoRight = 1 12325
* 70.69.91 kcoTop = 0 12326
* 70.69.92 kdcAllCont = & h0000001F 12326
* 70.69.93 kdcBackGround = & h20000000 12326
* 70.69.94 kdcBoth = & h30000000 12326
* 70.69.95 kdcForeGround = & h10000000 12326
* 70.69.96 kdcImage = 2 12326
* 70.69.97 kdcTable = 8 12327
* 70.69.98 kdcTemplate = 4 12327
* 70.69.99 kdcText = 1 12327
* 70.69.100 ktfAddFlags = & h00000020 12327
* 70.69.101 ktfDefault = 0 12327
* 70.69.102 ktfHeaderRow = 2 12327
* 70.69.103 ktfNoLineBreak = 4 12328
* 70.69.104 ktfScaleToRect = 8 12328
* 70.69.105 ktfStatic = 1 12329
* 70.69.106 ktfUseImageCS = & h00000010 12329
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- 70.70.1 class DynapdfTextRecordAMBS
  * 70.70.3 Advance as Single
  * 70.70.4 Length as Integer
  * 70.70.5 Text as String

- 70.71.1 class DynapdfTextRecordWMBS
  * 70.71.3 Advance as Single
  * 70.71.4 Length as Integer
  * 70.71.5 Text as String
  * 70.71.6 Width as Single

- 70.72.1 class DynaPDFURIActionMBS
  * 70.72.3 Constructor
  * 70.72.5 BaseURL as String
  * 70.72.6 IsMap as Boolean
  * 70.72.7 NextAction as Integer
  * 70.72.8 NextActionType as Integer
  * 70.72.9 URI as String

- 70.73.1 class DynaPDFViewportMBS
  * 70.73.3 Constructor
  * 70.73.5 BBox as DynaPDFRectMBS
  * 70.73.6 Measure as DynaPDFMeasureMBS
  * 70.73.7 Name as String
  * 70.73.8 PtData as DynaPDFPointDataDictionaryMBS

- 70.74.1 class DynaPDFXFAStreamMBS
  * 70.74.3 Constructor
  * 70.74.5 Buffer as String
  * 70.74.6 Index as Integer
  * 70.74.7 Name as String
  * 70.74.8 Size as Integer
• 72 Encryption and Hash
  
  – ?? Globals
    
    * 72.4.3 Adler32MemoryMBS(adler as UInt32, buf as memoryblock, offset as Integer, length as Integer) as UInt32
    * 72.4.4 Adler32StringMBS(adler as UInt32, buf as string) as UInt32
    * 72.4.1 CalculateCRC16MemoryMBS(data as MemoryBlock, Start as UInt16 = 65535, Polynomial as UInt16 = &h1021, FinalXOR as UInt16 = 0, ReflectInput as boolean = false, ReflectOutput as boolean = false) as UInt16
    * 72.4.2 CalculateCRC16StringMBS(data as string, Start as UInt16 = 65535, Polynomial as UInt16 = &h1021, FinalXOR as UInt16 = 0, ReflectInput as boolean = false, ReflectOutput as boolean = false) as UInt16
    * 72.4.7 CRC16MBS(data as string) as UInt16
    * 72.4.5 CRC32MemoryMBS(crc as UInt32, buf as memoryblock, offset as Integer, length as Integer) as UInt32
    * 72.4.6 CRC32StringMBS(crc as UInt32, buf as string) as UInt32
    * 72.4.8 CRC_32InMemContMBS(address as Ptr, length as Integer, prevCRC as UInt32) as UInt32
    * 72.4.9 CRC_32InMemMBS(address as Ptr, length as Integer) as UInt32
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    * 72.4.17 CRC_DillonOfStrMBS(bitWidth as Integer, s as String) as String
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* 72.17.61 NID_X9_62_c2pnb272w1 = 699
* 72.17.62 NID_X9_62_c2pnb304w1 = 700
* 72.17.63 NID_X9_62_c2pnb308w1 = 702
* 72.17.64 NID_X9_62_c2tnb191v1 = 688
* 72.17.65 NID_X9_62_c2tnb191v2 = 689
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* 72.17.67 NID_X9_62_c2tnb239v1 = 694
* 72.17.68 NID_X9_62_c2tnb239v2 = 695
* 72.17.69 NID_X9_62_c2tnb239v3 = 696
* 72.17.70 NID_X9_62_c2tnb359v1 = 701
* 72.17.71 NID_X9_62_c2tnb431r1 = 703
* 72.17.72 NID_X9_62_prime256v1 = 415

- 72.18.1 class ECKeyMBS
  * 72.18.3 BuiltInCurves as Dictionary
  * 72.18.4 Constructor
  * 72.18.5 Copy as ECKeyMBS
  * 72.18.6 KeyByCurveName(CurveID as Integer) as ECKeyMBS
  * 72.18.7 OpenPrivateKey(Data as String) as ECKeyMBS
  * 72.18.8 OpenPublicKey(Data as String, CurveID as Integer) as ECKeyMBS
  * 72.18.9 PrivateKey as String
  * 72.18.10 PublicKey as String
  * 72.18.11 Sign(Data as String) as String
  * 72.18.12 Verify(SignatureData as String, Data as String) as Boolean
  * 72.18.14 Description as String
  * 72.18.15 Flags as Integer
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  – 25.1.1 class EdsBaseMBS
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    * 25.1.4 GetPropertyData(PropertyID as UInt32, Param as Int32 = 0) as MemoryBlock
    * 25.1.5 GetPropertyDataBool(PropertyID as UInt32, Param as Int32 = 0) as Boolean
    * 25.1.6 GetPropertyDataInt32(PropertyID as UInt32, Param as Int32 = 0) as Int32
    * 25.1.7 GetPropertyDataInt32Array(PropertyID as UInt32, Param as Int32 = 0) as Integer()
    * 25.1.8 GetPropertyDataPoint(PropertyID as UInt32, Param as Int32 = 0) as EdsPointMBS
    * 25.1.9 GetPropertyDataRational(PropertyID as UInt32, Param as Int32 = 0) as EdsRationalMBS
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    * 25.1.13 GetPropertyDataString(PropertyID as UInt32, Param as Int32 = 0) as String
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    * 25.1.16 GetPropertyDataUInt32Array(PropertyID as UInt32, Param as Int32 = 0) as UInt32()
    * 25.1.17 GetPropertyDataUInt8(PropertyID as UInt32, Param as Int32 = 0) as UInt8
    * 25.1.18 GetPropertyDesc(PropertyID as UInt32) as MemoryBlock
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    * 25.1.20 GetPropertySize(PropertyID as UInt32, Param as Int32 = 0) as UInt32
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    * 25.1.26 SetPropertyDataPoint(PropertyID as UInt32, Param as Int32, data as EdsPointMBS)
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    * 25.1.28 SetPropertyDataRationalArray(PropertyID as UInt32, Param as Int32, data() as EdsRationalMBS)
    * 25.1.29 SetPropertyDataRect(PropertyID as UInt32, Param as Int32, data as EdsRectMBS)
    * 25.1.30 SetPropertyDataSize(PropertyID as UInt32, Param as Int32, data as EdsSizeMBS)
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25.1.80 kEdsPropID_AvailableShots = & h0000040a
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25.1.86 kEdsPropID_ClickWBPoint = & h00000301
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25.1.88 kEdsPropID_ColorSaturation = & h0000010a
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* 25.1.119 kEdsPropID_Evf_ZoomRect = & h00000541
* 25.1.120 kEdsPropID_Exposure Compensation = & h00000407
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* 25.1.135 kEdsPropID_GPSLongitudeRef = & h00000803
* 25.1.136 kEdsPropID_GPSMapDatum = & h00000812
* 25.1.137 kEdsPropID_GPSSatellites = & h00000808
* 25.1.138 kEdsPropID_GPSStatus = & h00000809
* 25.1.139 kEdsPropID_GPSTimeStamp = & h00000807
* 25.1.140 kEdsPropID_GPSVersionID = & h00000800
* 25.1.141 kEdsPropID_HDDirectoryStructure = & h00000020
* 25.1.142 kEdsPropID_ICCProfile = & h00000103
* 25.1.143 kEdsPropID_ImageQuality = & h00000100
* 25.1.144 kEdsPropID_ISOBracket = & h000000410
* 25.1.145 kEdsPropID_ISOSpeed = & h00000402
* 25.1.146 kEdsPropID_JpegQuality = & h00000101
* 25.1.147 kEdsPropID_LensName = & h0000040d
* 25.1.148 kEdsPropID_LensStatus = & h00000416
* 25.1.149 kEdsPropID_Linear = & h00000300
* 25.1.150 kEdsPropID_MakerName = & h00000005
* 25.1.151 kEdsPropID_MeteringMode = & h00000403
* 25.1.152 kEdsPropID_MyMenu = & h0000000e
* 25.1.153 kEdsPropID_NoiseReduction = & h00000411
* 25.1.154 kEdsPropID_Orientation = & h00000102
* 25.1.155 kEdsPropID_OwnerName = & h00000004
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* 25.1.157 kEdsPropID_PhotoEffect = & h0000010f
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- 25.1.159 kEdsPropID_PictureStyleCaption = &h00000200  
- 25.1.160 kEdsPropID_PictureStyleDesc = &h00000115  
- 25.1.161 kEdsPropID_ProductName = &h00000002  
- 25.1.162 kEdsPropID_Record = &h00000510  
- 25.1.163 kEdsPropID_RedEye = &h00000413  
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- 25.1.169 kEdsPropID_Unknown = &h0000ffff  
- 25.1.170 kEdsPropID_WBCoeffs = &h00000302  
- 25.1.171 kEdsPropID_WhiteBalance = &h0000106  
- 25.1.172 kEdsPropID_WhiteBalanceBracket = &h0000040c  
- 25.1.173 kEdsPropID_WhiteBalanceShift = &h00000108  

- 25.2.1 class EdsCameraAddedHandlerMBS  
  - 25.2.3 CameraAdded as Integer  

- 25.3.1 class EdsCameraListMBS  
  - 25.3.3 Child(index as UInt32) as EdsCameraMBS  

- 25.4.1 class EdsCameraMBS  
  - 25.4.3 Child(index as UInt32) as EdsVolumeMBS  
  - 25.4.4 CloseSession  
  - 25.4.5 DateTime as EdsTimeMBS  
  - 25.4.6 DeviceInfo as EdsDeviceInfoMBS  
  - 25.4.7 DownloadEvfImage(image as EdsEvfImageMBS, OldSDK as boolean)  
  - 25.4.8 FocusInfo as EdsFocusInfoMBS  
  - 25.4.9 OpenSession  
  - 25.4.10 Parent as EdsCameraListMBS  
  - 25.4.11 PictureStyleDesc as EdsPictureStyleDescMBS  
  - 25.4.12 SendCommand(command as Integer, param as Integer = 0)  
  - 25.4.13 SendStatusCommand(command as Integer, param as Integer = 0)  
  - 25.4.14 SetCapacity(numberOfFreeClusters as Integer, bytesPerSector as Integer, reset as boolean)  
  - 25.4.15 kEdsCameraCommand_BulbEnd = 3  
  - 25.4.16 kEdsCameraCommand_BulbStart = 2  
  - 25.4.17 kEdsCameraCommand_DoClickWBEvf = &h00000104  
  - 25.4.18 kEdsCameraCommand_DoEvfAf = &h00000102  
  - 25.4.19 kEdsCameraCommand_DoEvfAf_ON = 1
25.4.23 kEdsCameraCommand_ExtendShutDownTimer = 1
25.4.24 kEdsCameraCommand_PressShutterButton = 4
25.4.25 kEdsCameraCommand_SharlterButton_Completely = 3
25.4.26 kEdsCameraCommand_SharlterButton_Completely__NonAF = & h00010003
25.4.27 kEdsCameraCommand_SharlterButton_Halfway = 1
25.4.28 kEdsCameraCommand_SharlterButton_Halfway__NonAF = & h00010001
25.4.29 kEdsCameraCommand_SharlterButton_OFF = 0
25.4.30 kEdsCameraCommand_TakePicture = 0
25.4.31 kEdsCameraStatusCommand_EnterDirectTransfer = 2
25.4.32 kEdsCameraStatusCommand_ExitDirectTransfer = 3
25.4.33 kEdsCameraStatusCommand_UILock = 0
25.4.34 kEdsCameraStatusCommand_UIUnLock = 1
25.4.35 kEdsProgressOption.Done = 1
25.4.36 kEdsProgressOption_NoReport = 0
25.4.37 kEdsProgressOption_Periodically = 2

25.5.1 class EdsCameraStateEventHandlerMBS
25.5.3 Add(camera as EdsCameraMBS, CameraStateEvent as UInt32)
25.5.4 Constructor
25.5.5 Constructor(camera as EdsCameraMBS, CameraStateEvent as UInt32)
25.5.7 StateChanged(StateEvent as UInt32, EventData as UInt32) as Integer

25.6.1 class EdsDeviceInfoMBS
25.6.3 DeviceDescription as String
25.6.4 deviceSubType as UInt32
25.6.5 PortName as String
25.6.6 reserved as UInt32

25.7.1 class EdsDirectoryItemInfoMBS
25.7.3 DateTime as UInt32
25.7.4 FileName as String
25.7.5 Format as UInt32
25.7.6 GroupID as UInt32
25.7.7 IsFolder as Boolean
25.7.8 Option as UInt32
25.7.9 Size as UInt64
25.7.11 kEdsImageType_CR2 = 6
25.7.12 kEdsImageType_CRW = 2
25.7.13 kEdsImageType_Jpeg = 1
25.7.14 kEdsImageType_RAW = 4
25.7.15 kEdsImageType_Unknown = 0

25.8.1 class EdsDirectoryItemMBS
25.8.3 Child(index as UInt32) as EdsDirectoryItemMBS
25.8.4 DeleteDirectoryItem
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* 25.8.5 DirectoryItemInfo as EdsDirectoryItemInfoMBS 4153
* 25.8.6 Download(ReadSize as UInt64, stream as EdsStreamMBS) 4154
* 25.8.7 DownloadCancel 4154
* 25.8.8 DownloadComplete 4154
* 25.8.9 DownloadThumbnail(stream as EdsStreamMBS) 4155
* 25.8.10 Parent as EdsDirectoryItemMBS 4155
* 25.8.12 FileAttributes as Integer 4155
* 25.8.14 kEdsFileAttributeArchive = & h20 4156
* 25.8.15 kEdsFileAttributeHidden = 2 4156
* 25.8.16 kEdsFileAttributeNormal = 0 4156
* 25.8.17 kEdsFileAttributeReadOnly = 1 4156
* 25.8.18 kEdsFileAttributeSystem = 4 4156

– 25.9.1 class EdsEvfImageMBS 4157
  * 25.9.3 Constructor(stream as EdsStreamMBS, OldSDK as boolean = false) 4157

– 25.10.1 class EdsFocusInfoMBS 4158
  * 25.10.3 FocusPoint(index as Integer) as EdsFocusPointMBS 4158
  * 25.10.5 ExecuteMode as Integer 4158
  * 25.10.6 ImageRect as EdsRectMBS 4158
  * 25.10.7 PointNumber as Integer 4158

– 25.11.1 class EdsFocusPointMBS 4159
  * 25.11.3 JustFocus as Boolean 4159
  * 25.11.4 Rect as EdsRectMBS 4159
  * 25.11.5 Reserved as UInt32 4159
  * 25.11.6 Selected as Boolean 4159
  * 25.11.7 Valid as Boolean 4160

– 25.12.1 class EdsImageInfoMBS 4161
  * 25.12.3 componentDepth as UInt32 4161
  * 25.12.4 effectiveRect as EdsRectMBS 4161
  * 25.12.5 height as UInt32 4161
  * 25.12.6 numOfComponents as UInt32 4161
  * 25.12.7 reserved1 as UInt32 4162
  * 25.12.8 reserved2 as UInt32 4162
  * 25.12.9 width as UInt32 4162

– 25.13.1 class EdsImageMBS 4163
  * 25.13.3 CacheImage(UseCache as boolean) 4163
  * 25.13.4 Constructor(stream as EdsImageMBS) 4163
  * 25.13.5 DateTime as EdsTimeMBS 4163
  * 25.13.6 FocusInfo as EdsFocusInfoMBS 4164
  * 25.13.7 Image(ImageSource as Integer, TargetImageType as Integer, Source as EdsRectMBS, Dest as EdsSizeMBS, DestStream as EdsStreamMBS) 4164
25.13.8 ImageInfo(ImageSource as Integer) as EdsImageInfoMBS
25.13.9 PictureStyleDesc as EdsPictureStyleDescMBS
25.13.10 ReflectImageProperty
25.13.11 SaveImage(TargetImageType as Integer, DestStream as EdsStreamMBS, JPEGQuality as Integer = 0, iccProfileStream as EdsStreamMBS)
25.13.13 kEdsImageSrc_FullView = 0
25.13.14 kEdsImageSrc_Preview = 2
25.13.15 kEdsImageSrc_RAWFullView = 4
25.13.16 kEdsImageSrc_RAWThumbnail = 3
25.13.17 kEdsImageSrc_Thumbnail = 1
25.13.18 kEdsTargetImageType_DIB = 11
25.13.19 kEdsTargetImageType_JPEG = 1
25.13.20 kEdsTargetImageType_RGB = 9
25.13.21 kEdsTargetImageType_RGB16 = 10
25.13.22 kEdsTargetImageType_TIFF = 7
25.13.23 kEdsTargetImageType_TIFF16 = 8
25.13.24 kEdsTargetImageType_Unknown = 0

25.14.1 module EDSModuleMBS
25.14.3 GetCameraList as EdsCameraListMBS
25.14.4 GetEvent
25.14.5 Initialize
25.14.6 Lasterror as Integer
25.14.7 LoadLibrary(file as folderitem, IsVersion2 as Boolean) as boolean
25.14.8 LoadLibrary(path as string, IsVersion2 as Boolean) as boolean
25.14.9 Terminate
25.14.11 EdsImageQuality_LJ = &h0010ff0f
25.14.12 EdsImageQuality_LJF = &h0013ff0f
25.14.13 EdsImageQuality_LJN = &h0012ff0f
25.14.14 EdsImageQuality_LR = &h0064ff0f
25.14.15 EdsImageQuality_LRLJ = &h00640010
25.14.16 EdsImageQuality_LRLJF = &h00640013
25.14.17 EdsImageQuality_LRLJN = &h00640012
25.14.18 EdsImageQuality_LRM1J = &h00640510
25.14.19 EdsImageQuality_LRM2J = &h00640610
25.14.20 EdsImageQuality_LRMJF = &h00640711
25.14.21 EdsImageQuality_LRMJN = &h00640712
25.14.22 EdsImageQuality_LRS1JF = &h00640113
25.14.23 EdsImageQuality_LRS1JN = &h00640112
25.14.24 EdsImageQuality_LRS2JF = &h006402113
25.14.25 EdsImageQuality_LRS3JF = &h006403113
25.14.26 EdsImageQuality_LRSJ = &h00640210
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* 25.14.27 EdsImageQuality_LRSJF = & h00640213
* 25.14.28 EdsImageQuality_LRSJN = & h00640212
* 25.14.29 EdsImageQuality_M1J = & h0510ff0f
* 25.14.30 EdsImageQuality_M2J = & h0610ff0f
* 25.14.31 EdsImageQuality_M1JF = & h0113ff0f
* 25.14.32 EdsImageQuality_M1JN = & h0112ff0f
* 25.14.33 EdsImageQuality_MR = & h0164ff0f
* 25.14.34 EdsImageQuality_MRLJ = & h01640010
* 25.14.35 EdsImageQuality_MRLJF = & h01640013
* 25.14.36 EdsImageQuality_MRLJN = & h01640012
* 25.14.37 EdsImageQuality_MRM1J = & h01640510
* 25.14.38 EdsImageQuality_MRM2J = & h01640610
* 25.14.39 EdsImageQuality_MRMJF = & h01640113
* 25.14.40 EdsImageQuality_MRMJN = & h01640112
* 25.14.41 EdsImageQuality_MRS1JF = & h01640E13
* 25.14.42 EdsImageQuality_MRS1JN = & h01640E12
* 25.14.43 EdsImageQuality_MRS2JF = & h01640F13
* 25.14.44 EdsImageQuality_MRS2JF = & h01641013
* 25.14.45 EdsImageQuality_MRSJ = & h01640210
* 25.14.46 EdsImageQuality_MRSJF = & h01640213
* 25.14.47 EdsImageQuality_MRSJN = & h01640212
* 25.14.48 EdsImageQuality_S1JF = & h0E13ff0f
* 25.14.49 EdsImageQuality_S1JN = & h0E12ff0f
* 25.14.50 EdsImageQuality_S2JF = & h0F13ff0f
* 25.14.51 EdsImageQuality_S2JF = & h01013ff0f
* 25.14.52 EdsImageQuality_SJ = & h0210ff0f
* 25.14.53 EdsImageQuality_SJF = & h0213ff0f
* 25.14.54 EdsImageQuality_SJN = & h0212ff0f
* 25.14.55 EdsImageQuality_SR = & h0264ff0f
* 25.14.56 EdsImageQuality_SRLJ = & h02640010
* 25.14.57 EdsImageQuality_SRLJF = & h02640013
* 25.14.58 EdsImageQuality_SRLJN = & h02640012
* 25.14.59 EdsImageQuality_SRM1J = & h02640510
* 25.14.60 EdsImageQuality_SRM2J = & h02640610
* 25.14.61 EdsImageQuality_SRMJF = & h02640113
* 25.14.62 EdsImageQuality_SRMJN = & h02640112
* 25.14.63 EdsImageQuality_SRS1JF = & h02640E13
* 25.14.64 EdsImageQuality_SRS1JN = & h02640E12
* 25.14.65 EdsImageQuality_SRS2JF = & h02640F13
* 25.14.66 EdsImageQuality_SRS3JF = & h02641013
* 25.14.67 EdsImageQuality_SRSJ = & h02640210
* 25.14.68 EdsImageQuality_SRSJF = & h02640213
* 25.14.69 EdsImageQuality_SRSJN = & h02640212
* 25.14.70 EdsImageQuality_UNKNOWN = & hfffffff
* 25.14.71 Eds_CMP_ID_CLIENT_COMPONENTID = & h01000000
* 25.14.72 Eds_CMP_ID_HLSDK_COMPONENTID = & h03000000
* 25.14.73 Eds_CMP_ID_LLSDK_COMPONENTID = & h02000000
* 25.14.74 Eds_COMPONENTID_MASK = & h7F000000
* 25.14.75 Eds_ERRORID_MASK = & h0000FFFF
* 25.14.76 Eds_ERR_CANNOT_MAKE_OBJECT = & h0000A104
* 25.14.77 Eds_ERR_CAPTURE_ALREADY_TERMINATED = & h00002018
* 25.14.78 Eds_ERR_COMM_BUFFER_FULL = & h000000C3
* 25.14.79 Eds_ERR_COMM_DEVICE_INCOMPATIBLE = & h000000C2
* 25.14.80 Eds_ERR_COMM_DISCONNECTED = & h000000C1
* 25.14.81 Eds_ERR_COMM_PORT_IS_IN_USE = & h000000C0
* 25.14.82 Eds_ERR_COMM_USB_BUS_ERR = & h000000C4
* 25.14.83 Eds_ERR_DEVICEPROP_NOT_SUPPORTED = & h0000200A
* 25.14.84 Eds_ERR_DEVICE_BUSY = & h00000081
* 25.14.85 Eds_ERR_DEVICE_CF_GATE_CHANGED = & h00000089
* 25.14.86 Eds_ERR_DEVICE_DIAL_CHANGED = & h0000008A
* 25.14.87 Eds_ERR_DEVICE_DISK_ERROR = & h00000088
* 25.14.88 Eds_ERR DEVICE_EMERGENCY = & h00000083
* 25.14.89 Eds_ERR_DEVICE_INTERNAL_ERROR = & h00000085
* 25.14.90 Eds_ERR_DEVICE_INVALID = & h00000082
* 25.14.91 Eds_ERR_DEVICE_INVALID_PARAMETER = & h00000086
* 25.14.92 Eds_ERR_DEVICE_MEMORY_FULL = & h00000084
* 25.14.93 Eds_ERR_DEVICE_NOT_FOUND = & h00000080
* 25.14.94 Eds_ERR_DEVICE_NOT_INSTALLED = & h0000008B
* 25.14.95 Eds_ERR_DEVICE_NOT_LAUNCHED = & h000000E4
* 25.14.96 Eds_ERR_DEVICE_NOT_RELEASED = & h0000008D
* 25.14.97 Eds_ERR_DEVICE_NO_DISK = & h00000087
* 25.14.98 Eds_ERR_DEVICE_STAY_AWAKE = & h0000008C
* 25.14.99 Eds_ERR_DIR_ENTRY_EXISTS = & h00000043
* 25.14.100 Eds_ERR_DIR_ENTRY_NOT_FOUND = & h00000042
* 25.14.101 Eds_ERR_DIR_IO_ERROR = & h00000041
* 25.14.102 Eds_ERR_DIR_NOT_EMPTY = & h00000044
* 25.14.103 Eds_ERR_DIR_NOT_FOUND = & h00000040
* 25.14.104 Eds_ERR_ENUM_NA = & h000000F0
* 25.14.105 Eds_ERR_FILE_ALREADY_EXISTS = & h0000002B
* 25.14.106 Eds_ERR_FILE_CLOSE_ERROR = & h00000024
* 25.14.107 Eds_ERR_FILE_DATA_CORRUPT = & h0000002D
* 25.14.108 Eds_ERR_FILE_DISK_FULL_ERROR = & h0000002A
* 25.14.109 Eds_ERR_FILE_FORMAT_UNRECOGNIZED = & h0000002C
* 25.14.110 Eds_ERR_FILE_IO_ERROR = & h00000020
* 25.14.111 EDS_ERR_FILE_NAMING NA = & h0000002E
* 25.14.112 EDS_ERR_FILE_NOT_FOUND = & h00000022
* 25.14.113 EDS_ERR_FILE_OPEN_ERROR = & h00000023
* 25.14.114 EDS_ERR_FILE_PERMISSION_ERROR = & h00000029
* 25.14.115 EDS_ERR_FILE_READ_ERROR = & h00000027
* 25.14.116 EDS_ERR_FILESEEK_ERROR = & h00000025
* 25.14.117 EDS_ERR_FILE_TELL_ERROR = & h00000026
* 25.14.118 EDS_ERR_FILE_TOO_MANY_OPEN = & h00000021
* 25.14.119 EDS_ERR_FILE_WRITE_ERROR = & h00000028
* 25.14.120 EDS_ERR_HANDLE_NOT_FOUND = & h000000F2
* 25.14.121 EDS_ERR_INCOMPATIBLE_VERSION = 6
* 25.14.122 EDS_ERR_INCOMPLETE_TRANSFER = & h00002007
* 25.14.123 EDS_ERR_INTERNAL_ERROR = 2
* 25.14.124 EDS_ERR_INVALID_CODE_FORMAT = & h00002016
* 25.14.125 EDS_ERR_INVALIDDEVICEPROP_FORMAT = & h0000201B
* 25.14.126 EDS_ERR_INVALIDDEVICEPROP_VALUE = & h0000201C
* 25.14.127 EDS_ERR_INVALID_FN_CALL = & h000000F1
* 25.14.128 EDS_ERR_INVALID_FN_POINTER = & h00000065
* 25.14.129 EDS_ERR_INVALID_HANDLE = & h00000061
* 25.14.130 EDS_ERR_INVALID_ID = & h000000F3
* 25.14.131 EDS_ERR_INVALID_INDEX = & h00000063
* 25.14.132 EDS_ERR_INVALID_LENGTH = & h00000064
* 25.14.133 EDS_ERR_INVALID_OBJECTFORMATCODE = & h0000200B
* 25.14.134 EDS_ERR_INVALID_PARAMETER = & h00000060
* 25.14.135 EDS_ERR_INVALID_PARENTOBJECT = & h0000201A
* 25.14.136 EDS_ERR_INVALID_POINTER = & h00000062
* 25.14.137 EDS_ERR_INVALID_SORT_FN = & h00000066
* 25.14.138 EDS_ERR_INVALIDSTRAGEID = & h00002008
* 25.14.139 EDS_ERR_INVALID_TRANSACTIONID = & h00002004
* 25.14.140 EDS_ERR_LAST_GENERIC_ERRORPLUS_ONE = & h000000F5
* 25.14.141 EDS_ERR_LENSCOVER_CLOSE = & h0000A006
* 25.14.142 EDS_ERR_LOW_BATTERY = & h0000A101
* 25.14.143 EDS_ERR_MEMALLOC_FAILED = 3
* 25.14.144 EDS_ERR_MEMFREE_FAILED = 4
* 25.14.145 EDS_ERR_MISSING_SUBCOMPONENT = & h000000A
* 25.14.146 EDS_ERR_NOT_CAMERA_SUPPORT_SDK_VERSION = & h00002021
* 25.14.147 EDS_ERR_NOT_SUPPORTED = 7
* 25.14.148 EDS_ERR_NOT_VALIDOBJECTINFO = & h00002015
* 25.14.149 EDS_ERR_OBJECT_NOTREADY = & h0000A102
* 25.14.150 EDS_ERR_OK = 0
* 25.14.151 EDS_ERR_OPERATION_CANCELLED = 5
* 25.14.152 EDS_ERR_OPERATION_REFUSED = & h0000A005
* 25.14.153 EDS_ERR_PARTIAL_DELETION = & h00002012 4190
* 25.14.154 EDS_ERR_PROPERTIES_MISMATCH = & h00000051 4190
* 25.14.155 EDS_ERR_PROPERTIES_NOT_LOADED = & h00000053 4190
* 25.14.156 EDS_ERR_PROPERTIES_UNAVAILABLE = & h00000050 4190
* 25.14.157 EDS_ERR_PROTECTION_VIOLATION = 9 4190
* 25.14.158 EDS_ERR_SELECTION_UNAVAILABLE = & h0000000B 4190
* 25.14.159 EDS_ERR_SELF_TEST_FAILED = & h00002011 4190
* 25.14.160 EDS_ERR_SESSION_ALREADY_OPEN = & h0000201E 4191
* 25.14.161 EDS_ERR_SESSION_NOT_OPEN = & h00002003 4191
* 25.14.162 EDS_ERR_SPECIFICATION_BY_FORMAT_UNSUPPORTED = & h00002014 4191
* 25.14.163 EDS_ERR_SPECIFICATION_OF_DESTINATION_UNSUPPORTED = & h00002020 4191
* 25.14.164 EDS_ERR_STI_DEVICE_CREATE_ERROR = & h000000E2 4191
* 25.14.165 EDS_ERR_STI_DEVICE_RELEASE_ERROR = & h000000E3 4191
* 25.14.166 EDS_ERR_STI_INTERNAL_ERROR = & h000000E1 4191
* 25.14.167 EDS_ERR_STI_UNKNOWN_ERROR = & h000000E0 4192
* 25.14.168 EDS_ERR_STREAM_ALREADY_OPEN = & h000000A2 4192
* 25.14.169 EDS_ERR_STREAM_BAD_OPTIONS = & h000000AB 4192
* 25.14.170 EDS_ERR_STREAM_CLOSE_ERROR = & h000000A4 4192
* 25.14.171 EDS_ERR_STREAM_COULDN'T_BEGIN_THREAD = & h000000AA 4192
* 25.14.172 EDS_ERR_STREAM_END_OF_STREAM = & h000000AC 4192
* 25.14.173 EDS_ERR_STREAM_IO_ERROR = & h000000A0 4192
* 25.14.174 EDS_ERR_STREAM_NOT_OPEN = & h000000A1 4192
* 25.14.175 EDS_ERR_STREAM_OPEN_ERROR = & h000000A3 4193
* 25.14.176 EDS_ERR_STREAM_PERMISSION_ERROR = & h000000A9 4193
* 25.14.177 EDS_ERR_STREAM_READ_ERROR = & h000000A7 4193
* 25.14.178 EDS_ERR_STREAM SEEK_ERROR = & h000000A5 4193
* 25.14.179 EDS_ERR_STREAM_TELL_ERROR = & h000000A6 4193
* 25.14.180 EDS_ERR_STREAM_WRITE_ERROR = & h000000A8 4193
* 25.14.181 EDS_ERR_TAKE_PICTURE_AF_NG = & h00008D01 4193
* 25.14.182 EDS_ERR_TAKE_PICTURE_CARD_NG = & h00008D07 4193
* 25.14.183 EDS_ERR_TAKE_PICTURE_CARD_PROTECT_NG = & h00008D08 4194
* 25.14.184 EDS_ERR_TAKE_PICTURE_MIRROR_UP_NG = & h00008D03 4194
* 25.14.185 EDS_ERR_TAKE_PICTURE.Movie_CROP_NG = & h00008D09 4194
* 25.14.186 EDS_ERR_TAKE_PICTURE_NO_CARD_NG = & h00008D06 4194
* 25.14.187 EDS_ERR_TAKE_PICTURE_RESERVED = & h00008D02 4194
* 25.14.188 EDS_ERR_TAKE_PICTURE_SENSOR_CLEANING_NG = & h00008D04 4194
* 25.14.189 EDS_ERR_TAKE_PICTURE_SILENCE_NG = & h00008D05 4194
* 25.14.190 EDS_ERR_TAKE_PICTURE_STROBO_CHARGE_NG = & h00008D0A 4194
* 25.14.191 EDS_ERR_TRANSACTION_CANCELED = & h0000201F 4195
* 25.14.192 EDS_ERR_UNEXPECTED_EXCEPTION = 8 4195
* 25.14.193 EDS_ERR_UNIMPLEMENTED = 1 4195
25.14.194 EDS_ERR_UNKNOWN_COMMAND = & h0000A001 4195
25.14.195 EDS_ERR_UNKNOWN_VENDOR_CODE = & h00002017 4195
25.14.196 EDS(ERR)_USB_DEVICE_LOCK_ERROR = & h000000D0 4195
25.14.197 EDS(ERR)_USBDEVICE_UNLOCK_ERROR = & h000000D1 4195
25.14.198 EDS(ERR)_WAIT_TIMEOUT_ERROR = & h000000F4 4195
25.14.199 EDS(ERR)_ISSPECIFIC_MASK = & h80000000 4196
25.14.200 EDS_MAX_NAME = 256 4196
25.14.201 EDS_RESERVED_MASK = & h00FF0000 4196
25.14.202 EDS_TRANSFER_BLOCK_SIZE = 512 4196
25.14.203 Evf_AFMode_Live = 1 4196
25.14.204 Evf_AFMode_LiveFace = 2 4196
25.14.205 Evf_AFMode_Quick = 0 4196
25.14.206 kEdsAEMode_Av = 2 4197
25.14.207 kEdsAEMode_A_DEP = 5 4197
25.14.208 kEdsAEMode_Bulb = 4 4197
25.14.209 kEdsAEMode_Closeup = 14 4197
25.14.210 kEdsAEMode_CreativeAuto = 19 4197
25.14.211 kEdsAEMode_Custom = 7 4197
25.14.212 kEdsAEMode_DEP = 6 4197
25.14.213 kEdsAEMode_FlashOff = 15 4198
25.14.214 kEdsAEMode_Green = 9 4198
25.14.215 kEdsAEMode_Landscape = 13 4198
25.14.216 kEdsAEMode_Lock = 8 4198
25.14.218 kEdsAEMode_Movie = 20 4198
25.14.219 kEdsAEMode_NightPortrait = 10 4198
25.14.220 kEdsAEMode_PhotoInMovie = 21 4199
25.14.221 kEdsAEMode_Photograph = 12 4199
25.14.222 kEdsAEMode_Program = 0 4199
25.14.223 kEdsAEMode_SceneIntelligentAuto = 22 4199
25.14.224 kEdsAEMode_Sports = 11 4199
25.14.225 kEdsAEMode_Tv = 1 4199
25.14.226 kEdsAEMode_Unknown = & hfffffff 4200
25.14.227 kEdsBatteryLevel2_AC = & hFFFFFFF 4200
25.14.228 kEdsBatteryLevel2_BCLevel = 0 4200
25.14.229 kEdsBatteryLevel2_Empty = 0 4200
25.14.230 kEdsBatteryLevel2_Error = 0 4200
25.14.231 kEdsBatteryLevel2_Half = 49 4200
25.14.232 kEdsBatteryLevel2_Hi = 69 4200
25.14.233 kEdsBatteryLevel2_Low = 9 4200
25.14.234 kEdsBatteryLevel2_Normal = 80 4201
25.14.235 kEdsBatteryLevel2_Quarter = 19 4201
* 25.14.236 kEdsBracket_AEB = & h01
* 25.14.237 kEdsBracket_FEB = & h08
* 25.14.238 kEdsBracket_ISO8 = & h02
* 25.14.239 kEdsBracket_Unknown = & hffffffff
* 25.14.240 kEdsBracket_WBB = & h04
* 25.14.241 kEdsColorMatrix_1 = 1
* 25.14.242 kEdsColorMatrix_2 = 2
* 25.14.243 kEdsColorMatrix_3 = 3
* 25.14.244 kEdsColorMatrix_4 = 4
* 25.14.245 kEdsColorMatrix_5 = 5
* 25.14.246 kEdsColorMatrix_6 = 6
* 25.14.247 kEdsColorMatrix_7 = 7
* 25.14.248 kEdsColorMatrix_Custom = 0
* 25.14.249 kEdsColorSpace_AdobeRGB = 2
* 25.14.250 kEdsColorSpace_sRGB = 1
* 25.14.251 kEdsColorSpace_Unknown = & hffffffff
* 25.14.252 kEdsCompressQuality_Fine = 3
* 25.14.253 kEdsCompressQuality_Lossless = 4
* 25.14.254 kEdsCompressQuality_Normal = 2
* 25.14.255 kEdsCompressQuality_SuperFine = 5
* 25.14.256 kEdsCompressQuality_Unknown = & hffffffff
* 25.14.257 kEdsETTL2ModeAverage = 1
* 25.14.258 kEdsETTL2ModeEvaluative = 0
* 25.14.259 kEdsEvfDepthOfFieldPreview_OFF = & h00000000
* 25.14.260 kEdsEvfDepthOfFieldPreview_ON = & h00000001
* 25.14.261 kEdsEvfDriveLens_Far1 = & h00008001
* 25.14.262 kEdsEvfDriveLens_Far2 = & h00008002
* 25.14.263 kEdsEvfDriveLens_Far3 = & h00008003
* 25.14.264 kEdsEvfDriveLens_Near1 = & h00000001
* 25.14.265 kEdsEvfDriveLens_Near2 = & h00000002
* 25.14.266 kEdsEvfDriveLens_Near3 = & h00000003
* 25.14.267 kEdsEvfOutputDevice_PC = 2
* 25.14.268 kEdsEvfOutputDevice_TFT = 1
* 25.14.269 kEdsEvfZoom_Fit = 1
* 25.14.270 kEdsEvfZoom_x10 = 10
* 25.14.271 kEdsEvfZoom_x5 = 5
* 25.14.272 kEdsFilterEffect_Green = 4
* 25.14.273 kEdsFilterEffect_None = 0
* 25.14.274 kEdsFilterEffect_Orange = 2
* 25.14.275 kEdsFilterEffect_Red = 3
* 25.14.276 kEdsFilterEffect_Yellow = 1
* 25.14.277 kEdsImageQualityForLegacy_LJ = & h001f000f
* 25.14.278 kEdsImageQualityForLegacy_LJF = & h00130000
* 25.14.279 kEdsImageQualityForLegacy_LJN = & h00120000
* 25.14.280 kEdsImageQualityForLegacy_LR = & h00240000
* 25.14.281 kEdsImageQualityForLegacy_LR2 = & h002f000f
* 25.14.282 kEdsImageQualityForLegacy_LR2LJ = & h002f001f
* 25.14.283 kEdsImageQualityForLegacy_LR2M1J = & h002f051f
* 25.14.284 kEdsImageQualityForLegacy_LR2M2J = & h002f061f
* 25.14.285 kEdsImageQualityForLegacy_LR2SJ = & h002f021f
* 25.14.286 kEdsImageQualityForLegacy_LRLJF = & h00240013
* 25.14.287 kEdsImageQualityForLegacy_LRLJN = & h00240012
* 25.14.288 kEdsImageQualityForLegacy_LRMJF = & h00240113
* 25.14.289 kEdsImageQualityForLegacy_LRMJN = & h00240112
* 25.14.290 kEdsImageQualityForLegacy_LRSJF = & h00240213
* 25.14.291 kEdsImageQualityForLegacy_LRSJN = & h00240212
* 25.14.292 kEdsImageQualityForLegacy_M1J = & h051f000f
* 25.14.293 kEdsImageQualityForLegacy_M2J = & h061f000f
* 25.14.294 kEdsImageQualityForLegacy_MJF = & h01130000
* 25.14.295 kEdsImageQualityForLegacy_MJN = & h01120000
* 25.14.296 kEdsImageQualityForLegacy_SJ = & h021f000f
* 25.14.297 kEdsImageQualityForLegacy_SJF = & h02130000
* 25.14.298 kEdsImageQualityForLegacy_SJN = & h02120000
* 25.14.299 kEdsImageQualityForLegacy_unknown = & hffffffff
* 25.14.300 kEdsImageSize_Large = 0
* 25.14.301 kEdsImageSize_Middle = 1
* 25.14.302 kEdsImageSize_Middle1 = 5
* 25.14.303 kEdsImageSize_Middle2 = 6
* 25.14.304 kEdsImageSize_Small = 2
* 25.14.305 kEdsImageSize_Small1 = 14
* 25.14.306 kEdsImageSize_Small2 = 15
* 25.14.307 kEdsImageSize_Small3 = 16
* 25.14.308 kEdsImageSize_Unknown = & hffffffff
* 25.14.309 kEdsObjectEvent_All = & h00000200
* 25.14.310 kEdsObjectEvent_DirItemCancelTransferDT = & h0000020a
* 25.14.311 kEdsObjectEvent_DirItemContentChanged = & h00000207
* 25.14.312 kEdsObjectEvent_DirItemCreated = & h00000204
* 25.14.313 kEdsObjectEvent_DirItemInfoChanged = & h00000206
* 25.14.314 kEdsObjectEvent_DirItemRemoved = & h00000205
* 25.14.315 kEdsObjectEvent_DirItemRequestTransfer = & h00000208
* 25.14.316 kEdsObjectEvent_DirItemRequestTransferDT = & h00000209
* 25.14.317 kEdsObjectEvent_FolderUpdateItems = & h00000203
* 25.14.318 kEdsObjectEvent_VolumeAdded = & h0000020c
* 25.14.319 kEdsObjectEvent_VolumeInfoChanged = & h00000201
* 25.14.320 kEdsObjectEvent_VolumeRemoved = & h0000020d
* 25.14.321 kEdsObjectEvent_VolumeUpdateItems = & h00000202
* 25.14.322 kEdsPhotoEffect_Monochrome = 5
* 25.14.323 kEdsPhotoEffect_Off = 0
* 25.14.324 kEdsPictureStyle_Auto = & h0087
* 25.14.325 kEdsPictureStyle_Faithful = & h0085
* 25.14.326 kEdsPictureStyle_Landscape = & h0083
* 25.14.327 kEdsPictureStyle_Monochrome = & h0086
* 25.14.328 kEdsPictureStyle_Neutral = & h0084
* 25.14.329 kEdsPictureStyle_PC1 = & h0041
* 25.14.330 kEdsPictureStyle_PC2 = & h0042
* 25.14.331 kEdsPictureStyle_PC3 = & h0043
* 25.14.332 kEdsPictureStyle_Portrait = & h0082
* 25.14.333 kEdsPictureStyle_Standard = & h0081
* 25.14.334 kEdsPictureStyle_User1 = & h0021
* 25.14.335 kEdsPictureStyle_User2 = & h0022
* 25.14.336 kEdsPictureStyle_User3 = & h0023
* 25.14.337 kEdsPropertyEvent_All = & h00000100
* 25.14.338 kEdsPropertyEvent_PropertyChanged = & h00000101
* 25.14.339 kEdsPropertyEvent_PropertyDescChanged = & h00000102
* 25.14.340 kEdsSaveTo_Both = 3
* 25.14.341 kEdsSaveTo_Camera = 1
* 25.14.342 kEdsSaveTo_Host = 2
* 25.14.343 kEdsStateEvent_AfResult = & h00000309
* 25.14.344 kEdsStateEvent_All = & h00000300
* 25.14.345 kEdsStateEvent_BulbExposureTime = & h00000310
* 25.14.346 kEdsStateEvent_CaptureError = & h00000305
* 25.14.347 kEdsStateEvent_InternalError = & h00000306
* 25.14.348 kEdsStateEvent_JobStatusChanged = & h00000302
* 25.14.349 kEdsStateEvent_Shutdown = & h00000301
* 25.14.350 kEdsStateEvent_ShutDownTimerUpdate = & h00000304
* 25.14.351 kEdsStateEvent_WillSoonShutDown = & h00000303
* 25.14.352 kEdsStroboModeExternalATTTL = 2
* 25.14.353 kEdsStroboModeExternalAuto = 4
* 25.14.354 kEdsStroboModeExternalETTL = 1
* 25.14.356 kEdsStroboModeExternalTTL = 3
* 25.14.357 kEdsStroboModeInternal = 0
* 25.14.358 kEdsStroboModeManual = 6
* 25.14.359 kEdsTonigEffect_Blue = 2
* 25.14.360 kEdsTonigEffect_Green = 4
* 25.14.361 kEdsTonigEffect_None = 0
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* 25.14.362 kEdsTonicEffect_Purple = 3
* 25.14.363 kEdsTonicEffect_Sepia = 1
* 25.14.364 kEdsTransferOption_ByDirectTransfer = 1
* 25.14.365 kEdsTransferOption_ByRelease = 2
* 25.14.366 kEdsTransferOption_ToDesktop = & h00000100
* 25.14.367 kEdsWhiteBalance_Auto = 0
* 25.14.368 kEdsWhiteBalance_Click = -1
* 25.14.369 kEdsWhiteBalance_Cloudy = 2
* 25.14.370 kEdsWhiteBalance_ColorTemp = 9
* 25.14.371 kEdsWhiteBalance_Daylight = 1
* 25.14.372 kEdsWhiteBalance_Fluorescent = 4
* 25.14.373 kEdsWhiteBalance_Pasted = -2
* 25.14.374 kEdsWhiteBalance_PCSet1 = 10
* 25.14.375 kEdsWhiteBalance_PCSet2 = 11
* 25.14.376 kEdsWhiteBalance_PCSet3 = 12
* 25.14.377 kEdsWhiteBalance_PCSet4 = 20
* 25.14.378 kEdsWhiteBalance_PCSet5 = 21
* 25.14.379 kEdsWhiteBalance_Shade = 8
* 25.14.380 kEdsWhiteBalance_Strobe = 5
* 25.14.381 kEdsWhiteBalance_Tangsten = 3

– 25.15.1 class EdsObjectEventHandlerMBS
  * 25.15.3 Add(camera as EdsBaseMBS, ObjectEvent as UInt32)
  * 25.15.4 Constructor
  * 25.15.5 Constructor(camera as EdsBaseMBS, ObjectEvent as UInt32)
  * 25.15.7 ObjectChanged(EventCode as Integer, obj as EdsBaseMBS) as Integer

– 25.16.1 class EdsPictureStyleDescMBS
  * 25.16.3 ColorTone as Int32
  * 25.16.4 Contrast as Int32
  * 25.16.5 FilterEffect as UInt32
  * 25.16.6 Saturation as Int32
  * 25.16.7 sharpFineness as UInt32
  * 25.16.8 Sharpness as UInt32
  * 25.16.9 sharpThreshold as UInt32
  * 25.16.10 ToningEffect as UInt32

– 25.17.1 class EdsPointMBS
  * 25.17.3 X as Integer
* 25.17.4 Y as Integer

- 25.18.1 class EdsProgressMBS
  * 25.18.3 Progress(Percent as UInt32, byref Cancel as boolean) as Integer
  * 25.18.5 kEdsProgressOption_Done = 1
  * 25.18.6 kEdsProgressOption_NoReport = 0
  * 25.18.7 kEdsProgressOption_Periodically = 2

- 25.19.1 class EdsPropertyEventHandlerMBS
  * 25.19.3 Add(camera as EdsCameraMBS, PropertyEvent as UInt32)
  * 25.19.4 Constructor
  * 25.19.5 Constructor(camera as EdsCameraMBS, PropertyEvent as UInt32)
  * 25.19.7 PropertyChanged(PropertyEvent as UInt32, PropertyID as UInt32, Param as UInt32) as Integer

- 25.20.1 class EdsRationalMBS
  * 25.20.3 denominator as UInt32
  * 25.20.4 numerator as Int32

- 25.21.1 class EdsRectMBS
  * 25.21.3 Height as Integer
  * 25.21.4 Point as EdsPointMBS
  * 25.21.5 Size as EdsSizeMBS
  * 25.21.6 Width as Integer
  * 25.21.7 X as Integer
  * 25.21.8 Y as Integer

- 25.22.1 class EdsSizeMBS
  * 25.22.3 Height as Integer
  * 25.22.4 Width as Integer

- 25.23.1 class EdsStreamMBS
  * 25.23.3 Constructor(data as string)
  * 25.23.4 Constructor(Memory as Memoryblock, size as Int64 = -1, offset as Integer = 0)
  * 25.23.5 Constructor(path as folderitem, CreateDisposition as Integer, DesiredAccess as Integer)
  * 25.23.6 Constructor(path as string, CreateDisposition as Integer, DesiredAccess as Integer)
  * 25.23.7 Constructor(size as UInt64)
  * 25.23.8 CopyData(WriteSize as UInt64, outStream as EdsStreamMBS)
  * 25.23.9 CreateEvfImageRef as EdsEvfImageMBS
  * 25.23.10 CreateFileStream(path as folderitem, CreateDisposition as Integer, DesiredAccess as Integer) as EdsStreamMBS
  * 25.23.11 CreateFileStream(path as string, CreateDisposition as Integer, DesiredAccess as Integer) as EdsStreamMBS
  * 25.23.12 CreateImage as EdsImageMBS
  * 25.23.13 CreateMemoryStream(size as UInt32) as EdsStreamMBS
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- 25.23.14 CreateMemoryStreamFromMemoryblock(Memory as Memoryblock, size as Integer = -1, offset as Integer = 0) as EdsStreamMBS 4241
- 25.23.15 CreateMemoryStreamFromString(data as string) as EdsStreamMBS 4241
- 25.23.16 Length as UInt64 4242
- 25.23.17 Pointer as Ptr 4242
- 25.23.18 Position as UInt64 4242
- 25.23.19 Read(size as UInt64) as string 4242
- 25.23.20 Seek(Offset as Int64, origin as Integer) 4243
- 25.23.21 Write(Data as string) as UInt64 4243
- 25.23.22 kEdsAccess_Error = -1 4243
- 25.23.23 kEdsAccess_Read = 0 4243
- 25.23.24 kEdsAccess_ReadWrite = 2 4244
- 25.23.25 kEdsAccess_Write = 1 4244
- 25.23.26 kEdsFileCreateDisposition_CreateAlways = 1 4244
- 25.23.27 kEdsFileCreateDisposition_CreateNew = 0 4244
- 25.23.28 kEdsFileCreateDisposition_OpenAlways = 3 4244
- 25.23.29 kEdsFileCreateDisposition_OpenExisting = 2 4244
- 25.23.30 kEdsFileCreateDisposition_TruncateExisting = 4 4244
- 25.23.31 kEdsSeek_Begin = 1 4245
- 25.23.32 kEdsSeek_Cur = 0 4245
- 25.23.33 kEdsSeek_End = 2 4245

- 25.24.1 class EdsTimeMBS 4246
  - 25.24.3 Date as Date 4246
  - 25.24.5 Day as UInt32 4246
  - 25.24.6 Hour as UInt32 4246
  - 25.24.7 Milliseconds as UInt32 4246
  - 25.24.8 Minute as UInt32 4247
  - 25.24.9 Month as UInt32 4247
  - 25.24.10 Second as UInt32 4247
  - 25.24.11 Year as UInt32 4247

- 25.25.1 class EdsVolumeInfoMBS 4248
  - 25.25.3 Access as Integer 4248
  - 25.25.4 FreeSpaceInBytes as UInt64 4248
  - 25.25.5 MaxCapacity as UInt64 4248
  - 25.25.6 StorageType as Integer 4248
  - 25.25.7 VolumeLabel as String 4249
  - 25.25.9 kEdsAccess_Error = -1 4249
  - 25.25.10 kEdsAccess_Read = 0 4249
  - 25.25.11 kEdsAccess_ReadWrite = 2 4249
  - 25.25.12 kEdsAccess_Write = 1 4249
  - 25.25.13 kEdsStorageType_CF = 1 4249

- kEdsAccess_Error = -1 4243
- kEdsAccess_Read = 0 4243
- kEdsAccess_ReadWrite = 2 4244
- kEdsAccess_Write = 1 4244
- kEdsFileCreateDisposition_CreateAlways = 1 4244
- kEdsFileCreateDisposition_CreateNew = 0 4244
- kEdsFileCreateDisposition_OpenAlways = 3 4244
- kEdsFileCreateDisposition_OpenExisting = 2 4244
- kEdsFileCreateDisposition_TruncateExisting = 4 4244
- kEdsSeek_Begin = 1 4245
- kEdsSeek_Cur = 0 4245
- kEdsSeek_End = 2 4245
* 25.25.14 kEdsStorageType_HD = 4
* 25.25.15 kEdsStorageType_Non = 0
* 25.25.16 kEdsStorageType_SD = 2

– 25.26.1 class EdsVolumeMBS
  * 25.26.3 Child(index as UInt32) as EdsDirectoryItemMBS
  * 25.26.4 FormatVolume
  * 25.26.5 Parent as EdsCameraMBS
  * 25.26.6 VolumeInfo as EdsVolumeInfoMBS
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    * 75.5.13 AdminToolsMBS(domain as Integer) as folderitem 12632
    * 75.5.1 ConsoleExecuteMBS(path as folderitem, arguments() as string, environment() as string) as Integer 12627
    * 75.5.2 ConsoleExecuteMBS(path as string, arguments() as string, environment() as string) as Integer 12627
    * 75.5.14 CookiesMBS as folderitem 12633
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    * 75.5.19 GetDriveTypeMBS(path as string) as Integer 12634
    * 75.5.15 HistoryMBS as folderitem 12633
    * 75.5.16 InternetCacheMBS as folderitem 12633
    * 75.5.6 NewFolderItemFSRefMBS(fsref as memoryblock) as FolderItem 12630
    * 75.5.7 NewFolderItemFSRefNameMBS(fsref as memoryblock,name as string) as FolderItem 12630
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    * 75.5.10 PathToFolderItemMBS(path as string) as folderitem 12631
    * 75.5.18 SetCurrentWorkingDirectoryMBS(path as folderitem) as boolean 12633
    * 75.5.11 VolResolveIDMBS(volume as FolderItem, id as Integer) as FolderItem 12631
    * 75.5.12 VolResolveIDMBS(vRefNum as Integer, id as Integer) as FolderItem 12632
    * 75.5.3 WindowsEjectVolumeMBS(driveLetter as string, byref status as Integer) as boolean 12628
    * 75.5.17 WindowsStartMenuMBS(domain as Integer) as folderitem 12633
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  24.11.1 class EKAlarmMBS
  * 24.11.3 alarmWithAbsoluteDate(d as date) as EKAlarmMBS
  * 24.11.4 alarmWithRelativeOffset(offset as Double) as EKAlarmMBS
  * 24.11.5 Constructor(date as date)
  * 24.11.6 Constructor(offset as Double)
  * 24.11.7 copy as EKAlarmMBS
  * 24.11.9 absoluteDate as date
  * 24.11.10 emailAddress as String
  * 24.11.11 proximity as Integer
  * 24.11.12 relativeOffset as Double
  * 24.11.13 soundName as String
  * 24.11.14 structuredLocation as EKStructuredLocationMBS
  * 24.11.15 type as Integer
  * 24.11.16 url as String
  * 24.11.18 kProximityEnter = 1
  * 24.11.19 kProximityLeave = 2
  * 24.11.20 kProximityNone = 0
  * 24.11.21 kTypeAudio = 1
  * 24.11.22 kTypeDisplay = 0
  * 24.11.23 kTypeEmail = 3
  * 24.11.24 kTypeProcedure = 2

  24.12.1 class EKCalendarItemMBS
  * 24.12.3 addAlarm(alarm as EKAlarmMBS)
  * 24.12.4 addRecurrenceRule(rule as EKRecurrenceRuleMBS)
  * 24.12.5 alarms as EKAlarmMBS()
  * 24.12.6 attendees as EKParticipantMBS()
  * 24.12.7 recurrenceRules as EKRecurrenceRuleMBS()
  * 24.12.8 removeAlarm(alarm as EKAlarmMBS)
  * 24.12.9 removeRecurrenceRule(rule as EKRecurrenceRuleMBS)
  * 24.12.10 setAlarms(alarms() as EKAlarmMBS)
  * 24.12.11 setRecurrenceRules(rules() as EKRecurrenceRuleMBS)
  * 24.12.13 calendar as EKCalendarMBS
  * 24.12.14 calendarItemExternalIdentifier as String
  * 24.12.15 calendarItemIdentifier as String
  * 24.12.16 creationDate as Date
  * 24.12.17 hasAlarms as Boolean
  * 24.12.18 hasAttendees as Boolean
  * 24.12.19 hasNotes as Boolean
  * 24.12.20 hasRecurrenceRules as Boolean
  * 24.12.21 lastModifiedDate as Date
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- 24.13.1 class EKCalendarMBS
  - 24.13.3 calendarForEntityType(entityType as Integer, eventStore as EKEventStoreMBS) as EKCalendarMBS
  - 24.13.4 Constructor(entityType as Integer, eventStore as EKEventStoreMBS)
  - 24.13.6 allowedEntityTypes as Integer
  - 24.13.7 allowsContentModifications as Boolean
  - 24.13.8 calendarIdentifier as String
  - 24.13.9 color as NSColorMBS
  - 24.13.10 Immutable as Boolean
  - 24.13.11 source as EKSourceMBS
  - 24.13.12 Subscribed as Boolean
  - 24.13.13 supportedEventAvailabilities as Integer
  - 24.13.14 title as String
  - 24.13.15 type as Integer
  - 24.13.17 kEntityMaskEvent = 1
  - 24.13.18 kEntityMaskReminder = 2
  - 24.13.19 kEntityTypeEvent = 0
  - 24.13.20 kEntityTypeReminder = 1
  - 24.13.21 kEventAvailabilityBusy = 1
  - 24.13.22 kEventAvailabilityFree = 2
  - 24.13.23 kEventAvailabilityNone = 0
  - 24.13.24 kEventAvailabilityTentative = 4
  - 24.13.25 kEventAvailabilityUnavailable = 8
  - 24.13.26 kTypeBirthday = 4
  - 24.13.27 kTypeCalDAV = 1
  - 24.13.28 kTypeExchange = 2
  - 24.13.29 kTypeLocal = 0
  - 24.13.30 kTypeSubscription = 3

- 24.14.1 class EKEventMBS
  - 24.14.3 compareStartDateWithEvent(other as EKEventMBS) as Integer
  - 24.14.4 Constructor(eventStore as EKEventStoreMBS)
  - 24.14.5 eventWithEventStore(eventStore as EKEventStoreMBS) as EKEventMBS
  - 24.14.6 refresh as boolean
  - 24.14.8 AllDay as Boolean
  - 24.14.9 availability as Integer
  - 24.14.10 birthdayPersonUniqueID as String
* 24.14.11 endDate as Date 4046
* 24.14.12 eventIdentifier as String 4046
* 24.14.13 isDetached as Boolean 4046
* 24.14.14 occurrenceDate as Date 4046
* 24.14.15 organizer asEKParticipantMBS 4047
* 24.14.16 startDate as Date 4047
* 24.14.17 status as Integer 4047
* 24.14.19 kAvailabilityBusy = 0 4047
* 24.14.20 kAvailabilityFree = 1 4047
* 24.14.21 kAvailabilityNotSupported = -1 4048
* 24.14.22 kAvailabilityTentative = 2 4048
* 24.14.23 kAvailabilityUnavailable = 3 4048
* 24.14.24 kStatusCANCELED = 3 4048
* 24.14.25 kStatusConfirmed = 1 4048
* 24.14.26 kStatusNone = 0 4048
* 24.14.27 kStatusTentative = 2 4048

– 24.15.1 class EKEventStoreMBS 4049
* 24.15.3 authorizationStatusForEntityType(entityType as Integer) as Integer 4049
* 24.15.4 Available as boolean 4049
* 24.15.5 calendarItemsWithExternalIdentifier(identifier as string) as EKCalendarItemMBS() 4049
* 24.15.6 calendarItemWithIdentifier(identifier as string) as EKCalendarItemMBS 4050
* 24.15.7 calendarsForEntityType(types as Integer) as EKCalendarMBS() 4050
* 24.15.8 calendarWithIdentifier(identifier as string) as EKCalendarMBS 4050
* 24.15.9 cancelFetchRequest(request as EKFetchRequestMBS) 4050
* 24.15.10 commit(byref error as NSErrorMBS) 4050
* 24.15.11 Constructor 4051
* 24.15.12 Constructor(types as Integer) 4051
* 24.15.13 Destructor 4051
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* 24.15.15 EKEventStoreChangedNotification as string 4052
* 24.15.16 enumerateEventsMatchingPredicate(predicate as NSPredicateMBS, tag as Variant = nil) as EKEventMBS() 4052
* 24.15.17 eventsMatchingPredicate(predicate as NSPredicateMBS) as EKEventMBS() 4052
* 24.15.18 eventsMatchingPredicateAsync(predicate as NSPredicateMBS, tag as Variant = nil) as EKEventMBS() 4053
* 24.15.19 eventsWithExternalIdentifier(identifier as string) as EKCalendarItemMBS() 4053
* 24.15.20 eventWithIdentifier(identifier as string) as EKEventMBS 4053
* 24.15.21 fetchRemindersMatchingPredicate(predicate as NSPredicateMBS, tag as Variant = nil) as EKFetchRequestMBS 4053
* 24.15.22 fetchRemindersMatchingPredicateSync(predicate as NSPredicateMBS) as EKReminderMBS() 4054
* 24.15.23 predicateForCompletedRemindersWithCompletionDate(startDate as date, endDate as date) as NSPredicateMBS
* 24.15.24 predicateForCompletedRemindersWithCompletionDate(startDate as date, endDate as date, calendars() as EKCalendarMBS) as NSPredicateMBS
* 24.15.25 predicateForEvents(startDate as date, endDate as date) as NSPredicateMBS
* 24.15.26 predicateForEvents(startDate as date, endDate as date, calendars() as EKCalendarMBS) as NSPredicateMBS
* 24.15.27 predicateForIncompleteRemindersWithDueDate(startDate as date, endDate as date) as NSPredicateMBS
* 24.15.28 predicateForIncompleteRemindersWithDueDate(startDate as date, endDate as date, calendars() as EKCalendarMBS) as NSPredicateMBS
* 24.15.29 predicateForRemindersInCalendar(calendar as EKCalendarMBS) as NSPredicateMBS
* 24.15.30 predicateForRemindersInCalendars(calendars() as EKCalendarMBS) as NSPredicateMBS
* 24.15.31 refreshSourcesIfNecessary
* 24.15.32 remindersWithExternalIdentifier(identifier as string) as EKCalendarItemMBS()
* 24.15.33 reminderWithIdentifier(identifier as string) as EKCalendarItemMBS
* 24.15.34 removeCalendar(calendar as EKCalendarMBS, commit as boolean, byref error as NSErrorMBS) as boolean
* 24.15.35 removeEvent(event asEKEventMBS, span as Integer, commit as boolean, byref error as NSErrorMBS) as boolean
* 24.15.36 removeReminder(reminder as EKReminderMBS, commit as boolean, byref error as NSErrorMBS) as boolean
* 24.15.37 requestAccessToEntityType(entityType as Integer, tag as Variant = nil)
* 24.15.38 reset
* 24.15.39 saveCalendar(calendar as EKCalendarMBS, commit as boolean, byref error as NSErrorMBS) as boolean
* 24.15.40 saveEvent(event as EKEventMBS, span as Integer, commit as boolean, byref error as NSErrorMBS) as boolean
* 24.15.41 saveReminder(reminder as EKReminderMBS, commit as boolean, byref error as NSErrorMBS) as boolean
* 24.15.42 sources as EKSourceMBS()
* 24.15.43 sourceWithIdentifier(identifier as string) as EKSourceMBS
* 24.15.44 defaultCalendarForNewEvents as EKCalendarMBS
* 24.15.46 defaultCalendarForNewReminders as EKCalendarMBS
* 24.15.47 eventStoreIdentifier as String
* 24.15.49 Changed
* 24.15.50 enumerateEventsMatchingPredicateUpdate(e as EKEventMBS, byref stop as boolean, predicate as NSPredicateMBS, tag as Variant)
* 24.15.51 eventsMatchingPredicateAsyncCompleted(events() as EKEventMBS, predicate as NSPredicateMBS, tag as Variant)
* 24.15.52 fetchRemindersMatchingPredicateCompleted(reminders() as EKReminderMBS, predicate as NSPredicateMBS, tag as Variant)
* 24.15.53 requestAccessToEntityTypeCompleted(entityType as Integer, granted as Boolean, error as NSErrorMBS, tag as Variant)
* 24.15.55 kAuthorizationStatusAuthorized = 3
* 24.15.56 kAuthorizationStatusDenied = 2
* 24.15.57 kAuthorizationStatusNotDetermined = 0
* 24.15.58 kAuthorizationStatusRestricted = 1
* 24.15.59 kEntityMaskEvent = 1
* 24.15.60 kEntityMaskReminder = 2
* 24.15.61 kEntityTypeEvent = 0
* 24.15.62 kEntityTypeReminder = 1
* 24.15.63 kErrorAlarmGreaterThanRecurrence = 8
* 24.15.64 kErrorAlarmProximityNotSupported = 21
* 24.15.65 kErrorCalendarDoesNotAllowEvents = 22
* 24.15.66 kErrorCalendarDoesNotAllowReminders = 23
* 24.15.67 kErrorCalendarHasNoSource = 14
* 24.15.68 kErrorCalendarIsImmutable = 16
* 24.15.69 kErrorCalendarReadOnly = 6
* 24.15.70 kErrorDatesInverted = 4
* 24.15.71 kErrorDurationGreaterThanRecurrence = 7
* 24.15.72 kErrorEventNotMutable = 0
* 24.15.74 kErrorInternalFailure = 5
* 24.15.75 kErrorInvalidSpan = 13
* 24.15.76 kErrorInvitesCannotBeMoved = 12
* 24.15.77 kErrorNoCalendar = 1
* 24.15.78 kErrorNoEndDate = 3
* 24.15.79 kErrorNoStartDate = 2
* 24.15.80 kErrorObjectBelongsToDifferentStore = 11
* 24.15.81 kErrorRecurringReminderRequiresDueDate = 18
* 24.15.82 kErrorReminderLocationsNotSupported = 20
* 24.15.83 kErrorSourceDoesNotAllowCalendarAddDelete = 17
* 24.15.84 kErrorSourceDoesNotAllowEvents = 25
* 24.15.85 kErrorSourceDoesNotAllowReminders = 24
* 24.15.86 kErrorStartDateCollidesWithOtherOccurrence = 10
* 24.15.87 kErrorStartDateTooFarInTheFuture = 9
* 24.15.88 kErrorStructuredLocationsNotSupported = 19
* 24.15.89 kSpanFutureEvents = 1
* 24.15.90 kSpanThisEvent = 0
* 24.15.91 kWeekDayFriday = 6
* 24.15.92 kWeekDayMonday = 2
* 24.15.93 kWeekDaySaturday = 7
* 24.15.94 kWeekDaySunday = 1
* 24.15.95 kWeekDayThursday = 5 4069
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– 24.16.1 class EKFetchRequestMBS 4070
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  * 24.18.9 participantRole as Integer 4074
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  * 24.18.15 kRoleChair = 3 4075
  * 24.18.16 kRoleNonParticipant = 4 4075
  * 24.18.17 kRoleOptional = 2 4075
  * 24.18.18 kRoleRequired = 1 4075
  * 24.18.19 kRoleUnknown = 0 4076
  * 24.18.20 kStatusAccepted = 2 4076
  * 24.18.21 kStatusCompleted = 6 4076
  * 24.18.22 kStatusDeclined = 3 4076
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  * 24.18.28 kTypeGroup = 4 4077
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* 24.18.31 kTypeRoom = 2
* 24.18.32 kTypeUnknown = 0

- 24.19.1 class EKRecurrenceDayOfWeekMBS
  * 24.19.3 Constructor(dayOfTheWeek as Integer)
  * 24.19.4 Constructor(dayOfTheWeek as Integer, weekNumber as Integer)
  * 24.19.5 copy as EKRecurrenceDayOfWeekMBS
  * 24.19.6 dayOfWeek(dayOfTheWeek as Integer) as EKRecurrenceDayOfWeekMBS
  * 24.19.7 dayOfWeek(dayOfTheWeek as Integer, weekNumber as Integer) as EKRecurrenceDayOfWeekMBS
  * 24.19.9 dayOfTheWeek as Integer
  * 24.19.10 Handle as Integer
  * 24.19.11 weekNumber as Integer
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  * 24.19.14 kMonday = 2
  * 24.19.15 kSaturday = 7
  * 24.19.16 kSunday = 1
  * 24.19.17 kThursday = 5
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- 24.20.1 class EKRecurrenceEndMBS
  * 24.20.3 Constructor(endDate as date)
  * 24.20.4 Constructor(occurrenceCount as Integer)
  * 24.20.5 copy as EKRecurrenceEndMBS
  * 24.20.6 recurrenceEndWithEndDate(endDate as date) as EKRecurrenceEndMBS
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  * 24.20.9 endDate as Date
  * 24.20.10 Handle as Integer
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- 24.21.1 class EKRecurrenceRuleMBS
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  * 24.21.4 Constructor(type as Integer, interval as Integer, end as EKRecurrenceEndMBS = nil)
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  * 24.21.7 daysOfWeek as Integer()
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* 24.21.19 kRecurrenceFrequencyDaily = 0 4088
* 24.21.20 kRecurrenceFrequencyMonthly = 2 4088
* 24.21.21 kRecurrenceFrequencyWeekly = 1 4088
* 24.21.22 kRecurrenceFrequencyYearly = 3 4089

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  * 24.22.6 completed as Boolean 4090
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  * 24.23.11 kTypeCalDAV = 2 4095
  * 24.23.12 kTypeExchange = 1 4095
  * 24.23.13 kTypeLocal = 0 4095
  * 24.23.14 kTypeMobileMe = 3 4095
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    * 73.1.4 EndianS16_LtoNMBS(n as Int16) as Int16
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    * 73.1.9 EndianS32_LtoBMBS(n as Int32) as Int32
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    * 73.1.18 EndianU16_LtoNMBS(n as UInt16) as UInt16
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    * 73.1.23 EndianU32_LtoBMBS(n as UInt32) as UInt32
    * 73.1.24 EndianU32_LtoNMBS(n as UInt32) as UInt32
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    * 158.1.35 GetMaximumOpenFileCountMacOSXMBS as Integer
    * 158.1.24 GetObjectMemoryAddressMBS(o as object) as integer
    * 158.1.25 GetStringMemoryAddressMBS(s as string) as integer
    * 158.1.36 GetSystemUIOptionsMBS as Integer
    * 158.1.37 GetSystemUIOptionsMBS as Integer
    * 158.1.26 GetTextMemoryAddressMBS(s as text) as integer
    * 158.1.27 GetVariantArrayMBS(VariantContainingArray as Variant) as Variant()
    * 158.1.28 GetVariantArrayUboundMBS(v as Variant) as Integer
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    * 158.1.5 GetWindowsColorProfileMBS as folderitem
    * 158.1.6 GetWindowsDisplayColorProfileMBS(DisplayIndex as Integer) as folderitem
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    * 158.1.16 GlobalIdleTimeMBS as Double
    * 158.1.13 InstallSystemExceptionHandlerMBS(Message as string = "")
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    * 158.1.39 IsWindowsAdminUserMBS as boolean
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    * 158.1.17 MacGlobalIdleTimeMBS as UINT64
    * 158.1.18 MacMountServerVolumeMBS(URL as string, MountDir as String, User as String, Password as String, byref Disk as FolderItem, flags as Integer) as Integer
    * 158.1.19 MacUnmountVolumeMBS(volume as folderItem, Force as Boolean, byref dissenter as Integer) as Integer
    * 158.1.30 MillisecondsMBS as Double
    * 158.1.31 ObjectIsAMBS(o as object, ClassName as string) as boolean
    * 158.1.42 OpenMacOSXPreferencesPaneMBS(name as string) as Integer
* 158.1.43 RunningOnCarbonXMBS as boolean
* 158.1.3 SetHelpTagDelayMBS(value as Integer)
* 158.1.4 SetHelpTagDisplayedMBS(value as boolean)
* 158.1.44 SetMaximumOpenFileCountMacOSXMBS(Value as Integer)
* 158.1.45 SetSystemUIModeMBS(mode as Integer, Options as Integer)
* 158.1.32 SetVariantArrayValueMBS(v as Variant, index as Integer, value as Variant)
* 158.1.46 ShowCharacterPaletteMBS
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* 158.1.20 StartDictationMBS
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* 158.1.49 SystemControlMBS(name as memoryblock) as memoryblock
* 158.1.50 SystemControlMBS(name as memoryblock, input as memoryblock) as memoryblock
* 158.1.51 SystemControlNameToMIBMBS(name as string) as memoryblock
* 158.1.53 WindowsGetProcessIntegrityLevelMBS as Integer
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* 158.1.55 WindowsIsProcessElevatedMBS as boolean
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    - 75.5.1 ConsoleExecuteMBS(path as folderitem, arguments() as string, environment() as string) as Integer
    - 75.5.2 ConsoleExecuteMBS(path as string, arguments() as string, environment() as string) as Integer
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    - 75.5.5 FolderItemToPathMBS(file as folderitem) as string
    - 75.5.19 GetDriveTypeMBS(path as string) as Integer
    - 75.5.15 HistoryMBS as folderitem
    - 75.5.16 InternetCacheMBS as folderitem
    - 75.5.6 NewFolderItemFSRefMBS(fsref as memoryblock) as FolderItem
    - 75.5.7 NewFolderItemFSRefNameMBS(fsref as memoryblock, name as string) as FolderItem
    - 75.5.8 NewFolderItemMBS(vRefNum as Integer, parID as Integer, name as String) as FolderItem
    - 75.5.9 NewVolumeFolderItemMBS(vRefNum as Integer) as FolderItem
    - 75.5.10 PathToFolderItemMBS(path as string) as folderitem
    - 75.5.18 SetCurrentWorkingDirectoryMBS(path as folderitem) as boolean
    - 75.5.11 VolResolveIDMBS(volume as FolderItem, id as Integer) as FolderItem
    - 75.5.12 VolResolveIDMBS(vRefNum as Integer, id as Integer) as FolderItem
    - 75.5.3 WindowsEjectVolumeMBS(driveLetter as string, byref status as Integer) as boolean
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    * 158.1.9 CrashUglyMBS
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    * 158.1.34 GetDoubleClickIntervalMBS as Integer
    * 158.1.1 GetHelpTagDelayMBS as Integer
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    * 158.1.35 GetMaxOpenFileCountMacOSXMBS as Integer
    * 158.1.24 GetObjectMemoryAddressMBS(o as object) as integer
    * 158.1.25 GetStringMemoryAddressMBS(s as string) as integer
    * 158.1.36 GetSystemUIModeMBS as Integer
    * 158.1.37 GetSystemUIModeOptionsMBS as Integer
    * 158.1.26 GetTextMemoryAddressMBS(s as text) as integer
    * 158.1.27 GetVariantArrayMBS(VariantContainingArray as Variant) as Variant()
    * 158.1.28 GetVariantArrayUboundMBS(v as Variant) as Integer
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    * 75.13.6 GetRawAttribute(path as folderitem, name as string, options as Integer = 0) as memoryblock
    * 75.13.7 GetRawAttribute(path as string, name as string, options as Integer = 0) as memoryblock
    * 75.13.8 LastError as Integer
    * 75.13.9 LastErrorMessage as string
    * 75.13.10 ListAttributes(path as folderitem, Options as Integer = 0) as string()
    * 75.13.11 ListAttributes(path as string, Options as Integer = 0) as string()
    * 75.13.12 RemoveAttribute(path as folderitem, name as string, options as Integer = 0) as boolean
    * 75.13.13 RemoveAttribute(path as string, name as string, options as Integer = 0) as boolean
    * 75.13.14 SetAttribute(path as folderitem, name as string, data as Variant, options as Integer = 0) as boolean
    * 75.13.15 SetAttribute(path as string, name as string, data as Variant, options as Integer = 0) as boolean
    * 75.13.16 SetRawAttribute(path as folderitem, name as string, data as memoryblock, options as Integer = 0) as boolean
    * 75.13.17 SetRawAttribute(path as string, name as string, data as memoryblock, options as Integer = 0) as boolean
    * 75.13.19 kAttributeNameFinderComment = "com.apple.metadata:kMDItemFinderComment"
    * 75.13.20 kAttributeNameFinderInfo = "com.apple.FinderInfo"
    * 75.13.21 kAttributeNameResourceFork = "com.apple.ResourceFork"
    * 75.13.22 kCreate = 2
    * 75.13.23 kNoDefault = 16
    * 75.13.24 kNoFollow = 1
    * 75.13.25 kNoSecurity = 8
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  - 75.14.3 AttributeModificationDate(index as Integer) as Double
  - 75.14.4 AttributeModificationDate(index as Integer, UTC as boolean) as Date
  - 75.14.5 BackupDate(index as Integer) as Double
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  - 75.14.11 Constructor(Path as String, WinFilter as string = "")
  - 75.14.12 CreationDate(index as Integer) as Double
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  - 75.14.14 Creator(index as Integer) as string
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  - 75.14.16 DisplayName(index as Integer) as string
  - 75.14.17 FinderFlags(index as Integer) as Integer
  - 75.14.18 FSRef(index as Integer) as memoryblock
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  - 75.14.20 IsBundle(index as Integer) as Boolean
  - 75.14.21 IsHardLinked(index as Integer) as boolean
  - 75.14.22 Item(index as Integer) as folderitem
  - 75.14.23 ItemPath(index as Integer) as string
  - 75.14.24 LastAccessDate(index as Integer) as Double
  - 75.14.25 LastAccessDate(index as Integer, UTC as boolean) as Date
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  - 75.14.27 LogicalResourceLength(index as Integer) as Int64
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  * 75.16.90 NewCGPDFDocumentMBS(MediaBox as CGRectMBS, title as string, author as string, creator as string, subject as string, keywords as string, OwnerPassword as string, UserPassword as string, AllowsPrinting as boolean, AllowsCopy as boolean, KeyLength as Integer) as CGPDFContextMBS

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  – 75.16.1 class Folderitem
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- 75.16.1 class Folderitem
  - 75.16.101 OpenAsPNGMBS(gamma as single = 0.0, AllowDamaged as Boolean = false) as PNGPictureMBS
  - 75.16.115 SaveAs8BitAlphaPNGMBS(pic as picture, colors() as color, alphas() as Integer, gamma as single = 0.0) as boolean
  - 75.16.116 SaveAs8BitAlphaPNGMBS(pic as picture, colors() as color, alphas() as Integer, gamma as single, Interlace as Boolean, FilterType as Integer) as boolean
  - 75.16.117 SaveAs8BitPNGMBS(pic as picture, colors() as color, gamma as single = 0.0) as boolean
  - 75.16.118 SaveAs8BitPNGMBS(pic as picture, colors() as color, gamma as single, Interlace as Boolean, FilterType as Integer) as boolean
  - 75.16.121 SaveAsPNGMBS(pic as picture, gamma as single = 0.0) as boolean
  - 75.16.122 SaveAsPNGMBS(pic as picture, gamma as single, Interlace as Boolean, FilterType as Integer) as boolean
  - 75.16.123 SaveAsPNGMBS(pic as picture, mask as picture, gamma as single = 0.0) as boolean
  - 75.16.124 SaveAsPNGMBS(pic as picture, mask as picture, gamma as single, Interlace as Boolean, FilterType as Integer) as boolean
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  – 75.16.1 class Folderitem
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    * 75.16.119 SaveAsGIFMBS(data as GIFMBS) as boolean
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  - 75.16.1 class Folderitem
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    - 75.16.99 OpenAsJPEGMBS(allowdamaged as Boolean, fileposition as Integer) as picture
    - 75.16.120 SaveAsJPEGMBS(pic as picture, quality as Integer = 80) as boolean
• 129 PNG
  
  – 75.16.1 class Folderitem
    
    – 75.16.101 OpenAsPNGMBS(gamma as single = 0.0, AllowDamaged as Boolean = false) as PNGPictureMBS
    – 75.16.115 SaveAs8BitAlphaPNGMBS(pic as picture, colors() as color, alphas() as Integer, gamma as single = 0.0) as boolean
    – 75.16.116 SaveAs8BitAlphaPNGMBS(pic as picture, colors() as color, alphas() as Integer, gamma as single, Interlace as Boolean, FilterType as Integer) as boolean
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    – 75.16.118 SaveAs8BitPNGMBS(pic as picture, colors() as color, gamma as single, Interlace as Boolean, FilterType as Integer) as boolean
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    – 75.16.123 SaveAsPNGMBS(pic as picture, mask as picture, gamma as single = 0.0) as boolean
    – 75.16.124 SaveAsPNGMBS(pic as picture, mask as picture, gamma as single, Interlace as Boolean, FilterType as Integer) as boolean
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* 81.40.423 UndefinedFilter = 0
* 81.40.424 UndefinedIntent = 0
* 81.40.425 UndefinedInterlace = 0
* 81.40.426 UndefinedMode = 0
* 81.40.427 UndefinedOrientation = 0
* 81.40.428 UndefinedResolution = 0
* 81.40.429 UndefinedType = 0
* 81.40.430 UnframeMode = 2
* 81.40.431 UniformNoise = 0
* 81.40.432 UnspecifiedAlpha = 0
* 81.40.433 WestGravity = 4
* 81.40.434 X11Compliance = 2
* 81.40.435 XorCompositeOp = 5
* 81.40.436 XPMCompliance = 4
* 81.40.437 YellowChannel = 6
* 81.40.438 ZipCompression = 9

– 81.41.1 class GMImageStatisticsMBS
  * 81.41.3 Constructor
  * 81.41.5 blue as GMImageChannelStatisticsMBS
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– 81.42.1 class GMLockMBS
  * 81.42.3 Constructor(mutexlock as GMMutexLockMBS)
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  * 81.42.6 target as GMMutexLockMBS

– 81.43.1 class GMMontageFramedMBS
  * 81.43.3 Constructor
  * 81.43.5 borderColor as GMColorMBS
  * 81.43.6 borderWidth as Uint32
  * 81.43.7 frameGeometry as GMGeometryMBS
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– 81.44.1 class GMMontageMBS
- 81.44.3 Constructor
- 81.44.5 handle as Integer
- 81.44.6 backgroundColor as GMColorMBS
- 81.44.7 compose as Integer
- 81.44.8 fileName as string
- 81.44.9 fillColor as GMColorMBS
- 81.44.10 font as string
- 81.44.11 geometry as GMGeometryMBS
- 81.44.12 gravity as Integer
- 81.44.13 label as string
- 81.44.14 penColor as GMColorMBS
- 81.44.15 pointSize as UInt32
- 81.44.16 shadow as boolean
- 81.44.17 strokeColor as GMColorMBS
- 81.44.18 texture as string
- 81.44.19 tile as GMGeometryMBS
- 81.44.20 title as string
- 81.44.21 transparentColor as GMColorMBS

- 81.45.1 class GMMutexLockMBS
  - 81.45.3 lock
  - 81.45.4 unlock
  - 81.45.6 handle as Integer

- 81.47.1 class GMPathArgsMBS
  - 81.47.3 Constructor
    - 81.47.4 Constructor(radiusX as Double, radiusY as Double, xAxisRotation as Double, largeArcFlag as boolean, sweepFlag as Boolean, x as Double, y as Double)
    - 81.47.5 Constructor(x1 as Double, y1 as Double, x as Double, y as Double)
    - 81.47.6 Constructor(x1 as Double, y1 as Double, x2 as Double, y2 as Double, x as Double, y as Double)
    - 81.47.8 largeArcFlag as Boolean
    - 81.47.9 radiusX as Double
    - 81.47.10 radiusY as Double
    - 81.47.11 sweepFlag as Boolean
    - 81.47.12 x as Double
    - 81.47.13 x1 as Double
    - 81.47.14 x2 as Double
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    * 80.1.8 DrawRotatedTextMBS(Rotation as Double, text as string, x as Integer, y as Integer, Center as Boolean = false, alpha as Double = 1.0, NoSwapY as boolean = false, FontWidth as Integer = 0)

    * 80.1.9 DrawWindowsIconMBS(file as folderitem, IconID as Integer, x as Integer, y as Integer, w as Integer, h as Integer) as boolean

    * 80.1.10 MeasureRotatedTextMBS(text as string, byref Width as Double, byref Height as Double, FontWidth as Integer = 0) as Boolean

    * 80.1.11 PaintdesktopMBS

    * 80.1.12 StretchBltMBS(nXOriginDest as Integer, nYOriginDest as Integer, nWidthDest as Integer, nHeightDest as Integer, source as graphics, nXOriginSrc as Integer, nYOriginSrc as Integer, nWidthSrc as Integer, nHeightSrc as Integer, dwRop as Integer) as boolean

    * 80.1.13 StretchDIBitsMBS(XDest as Integer, YDest as Integer, DestWidth as Integer, DestHeight as Integer, XSource as Integer, YSource as Integer, SourceWidth as Integer, SourceHeight as Integer, Bits as memoryblock, ImageWidth as Integer, ImageHeight as Integer, ImageBitCount as Integer) as boolean
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    * 80.1.8 DrawRotatedTextMBS(Rotation as Double, text as string, x as Integer, y as Integer, Center as Boolean = false, alpha as Double = 1.0, NoSwapY as boolean = false, FontWidth as Integer = 0)
    * 80.1.9 DrawWindowsIconMBS(file as folderitem, IconID as Integer, x as Integer, y as Integer, w as Integer, h as Integer) as boolean
    * 80.1.10 MeasureRotatedTextMBS(text as string, byref Width as Double, byref Height as Double, FontWidth as Integer = 0) as Boolean
    * 80.1.11 PaintdesktopMBS
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    * 80.1.13 StretchDIBitsMBS(XDest as Integer, YDest as Integer, DestWidth as Integer, DestHeight as Integer, XSource as Integer, YSource as Integer, SourceWidth as Integer, SourceHeight as Integer, Bits as memoryblock, ImageWidth as Integer, ImageHeight as Integer, ImageBitCount as Integer) as boolean
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  – 80.1.1 class Graphics
    * 80.1.14 WinApplyDevModeMBS(devmode as WindowsDeviceModeMBS) as boolean
    * 80.1.15 WindowsGraphicsInfoMBS as WindowsGraphicsInfoMBS
    * 80.1.16 WinEndPageMBS as boolean
    * 80.1.17 WinStartPageMBS as boolean
• 33 Cocoa Controls
  – 33.12.1 class Groupbox
    * 33.12.3 NSBoxMBS as NSBoxMBS
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  – 170.1.1 class GrowIconMBS
    
    * 170.1.3 Constructor(target as window)
    * 170.1.5 ControlHandle as Integer
    * 170.1.6 TargetWindow as Window
    * 170.1.8 Draw(context as CGContextMBS, x as Double, y as Double, width as Double, height as Double)
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  – 82.1.1 class GrowlApplicationBridgeMBS

    • 82.1.3 bestRegistrationDictionary as Dictionary
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    • 82.1.8 isGrowlRunning as boolean
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    • 82.1.10 LoadFramework(path as folderitem) as boolean
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    • 82.1.13 notifyWithTitle(title as string, description as string, notificationName as string, icon-Data as memoryblock = nil, Priority as Integer = 0, isSticky as boolean = false, clickContext as Variant as string)
    • 82.1.14 notifyWithTitle(title as string, description as string, notificationName as string, icon-Data as memoryblock, Priority as Integer, isSticky as boolean, clickContext as Variant, identifier as string)
    • 82.1.15 registerWithDictionary(regDict as dictionary = nil) as boolean
    • 82.1.16 registrationDictionaryByFillingInDictionary(regDict as dictionary) as Dictionary
    • 82.1.17 registrationDictionaryByFillingInDictionary(regDict as dictionary, restrictToKeys() as string) as Dictionary
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    • 82.1.27 applicationIsReady as boolean
    • 82.1.28 growlNotificationTimedOut(clickContext as Variant)
    • 82.1.29 growlNotificationWasClicked(clickContext as Variant)
    • 82.1.30 hasNetworkClientEntitlement as boolean
    • 82.1.31 kApplicationIcon = "ApplicationIcon"
    • 82.1.32 kApplicationId = "ApplicationId"
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- 82.1.40 kNotificationAppIcon = "NotificationAppIcon"
- 82.1.41 kNotificationClickContext = "NotificationClickContext"
- 82.1.42 kNotificationDescription = "NotificationDescription"
- 82.1.43 kNotificationIcon = "NotificationIcon"
- 82.1.44 kNotificationName = "NotificationName"
- 82.1.45 kNotificationPriority = "NotificationPriority"
- 82.1.46 kNotificationProgress = "NotificationProgress"
- 82.1.47 kNotificationsAll = "AllNotifications"
- 82.1.48 kNotificationsDefault = "DefaultNotifications"
- 82.1.49 kNotificationsDescriptions = "NotificationDescriptions"
- 82.1.50 kNotificationsHumanReadableNames = "HumanReadableNames"
- 82.1.51 kNotificationSticky = "NotificationSticky"
- 82.1.52 kNotificationTitle = "NotificationTitle"
- 82.1.53 kTicketVersion = "TicketVersion"

- 82.2.1 class GrowlMBS
  - 82.2.3 IsInstalled as boolean
  - 82.2.4 IsRunning as boolean
  - 82.2.5 LaunchIfInstalled as boolean
  - 82.2.6 LoadFramework(file as folderitem) as boolean
  - 82.2.7 Register
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  * 67.1.1 CallHASPMBS(service as Integer, seed as Integer, lptnum as Integer, pass1 as Integer, pass2 as Integer, byref p1 as Integer, byref p2 as Integer, byref p3 as Integer, byref p4 as Integer) 11301
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* 67.2.147 HASP_UNKNOWN_ALG = 29
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* 67.3.5 DateTimeToHaspTime(day as Integer, month as Integer, year as Integer, hour as Integer, minute as Integer, second as Integer) as memoryblock 11340
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- 167.1.1 class HIDAPIDeviceInfoMBS
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  * 167.1.4 ManufacturerString as String
  * 167.1.5 NextDevice as HIDAPIDeviceInfoMBS
  * 167.1.6 Path as String
  * 167.1.7 ProductID as Integer
  * 167.1.8 ProductString as String
  * 167.1.9 ReleaseNumber as Integer
  * 167.1.10 SerialNumber as String
  * 167.1.11 Usage as Integer
  * 167.1.12 UsagePage as Integer
  * 167.1.13 VendorID as Integer

- 167.2.1 class HIDAPIDeviceMBS
  * 167.2.3 Close
  * 167.2.4 Constructor
  * 167.2.5 Enumerate(VendorID as Integer = 0, ProduceID as Integer = 0) as HIDAPIDeviceInfoMBS
  * 167.2.6 GetFeatureReport(ReportID as Integer, MaxLength as Integer) as MemoryBlock
  * 167.2.7 IndexedString(Index as Integer, MaxLen as Integer = 1024) as String
  * 167.2.8 Init as Integer
  * 167.2.9 LoadError as String
  * 167.2.10 LoadLibrary(File as FolderItem) as boolean
  * 167.2.11 LoadLibrary(Path as string) as boolean
  * 167.2.12 Open(VendorID as Integer, ProduceID as Integer, SerialNumber as String = "") as HIDAPIDeviceMBS
  * 167.2.13 OpenPath(path as string) as HIDAPIDeviceMBS
  * 167.2.14 Read(MaxLength as Integer) as MemoryBlock
  * 167.2.15 ReadTimeOut(MaxLength as Integer, TimeoutMS as Integer) as MemoryBlock
  * 167.2.16 SendFeatureReport(data as MemoryBlock) as Integer
  * 167.2.17 SendFeatureReport(data as String) as Integer
  * 167.2.18 Shutdown as Integer
  * 167.2.19 Write(data as MemoryBlock) as Integer
  * 167.2.20 Write(data as String) as Integer
  * 167.2.22 DeviceHandle as Integer
  * 167.2.23 Error as String
  * 167.2.24 FeatureReportLength as Integer
  * 167.2.25 Handle as Integer
  * 167.2.26 InputReportLength as Integer
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* 167.2.28 NonBlocking as Boolean 19677
* 167.2.29 OutputReportLength as Integer 19677
* 167.2.30 ProductString as String 19678
* 167.2.31 SerialNumber as String 19678
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  - 45.5.1 class HIViewMBS
    * 45.5.3 AccessibilityActionDescription(action as string) as string
    * 45.5.4 available as boolean
    * 45.5.5 BoundsHeight as Double
    * 45.5.6 BoundsLeft as Double
    * 45.5.7 BoundsTop as Double
    * 45.5.8 BoundsWidth as Double
    * 45.5.9 CountSubviews as Integer
    * 45.5.10 CreateImage as picture
    * 45.5.11 CreateImage(byref x as Double, byref y as Double, byref width as Double, byref height as Double) as picture
    * 45.5.12 FirstSubview as HIViewMBS
    * 45.5.13 FrameHeight as Double
    * 45.5.14 FrameLeft as Double
    * 45.5.15 FrameTop as Double
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    * 45.5.17 IndexedSubview(index as Integer) as HIViewMBS
    * 45.5.18 IsAccessibilityIgnored as Boolean
    * 45.5.19 Kind as string
    * 45.5.20 LastSubview as HIViewMBS
    * 45.5.21 LatentlyVisible as Boolean
    * 45.5.22 MoveBy(dx as Double, dy as Double)
    * 45.5.23 NextView as HIViewMBS
    * 45.5.24 PreviousView as HIViewMBS
    * 45.5.25 SetAccessibilityIgnored(value as Boolean)
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    * 45.5.28 Superview as HIViewMBS
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    * 45.5.34 NeedsDisplay as Boolean
    * 45.5.35 Text as String
    * 45.5.36 Value as Integer
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- **83 Hotkey**
  - 83.1.1 class HotKeyMBS
    - 83.1.3 Close
    - 83.1.4 Constructor(KeyCode as Integer, Modifiers as Integer, Exclusive as Boolean = false)
    - 83.1.5 KeyCodeForText(name as string) as Integer
    - 83.1.7 Exclusive as Boolean
    - 83.1.8 Handle as Integer
    - 83.1.9 ID as Integer
    - 83.1.10 KeyCode as Integer
    - 83.1.11 Modifiers as Integer
    - 83.1.13 KeyDown
    - 83.1.14 KeyUp
    - 83.1.16 AlphaKey = & h400
    - 83.1.17 CommandKey = & h100
    - 83.1.18 ControlKey = & h1000
    - 83.1.19 OptionKey = & h800
    - 83.1.20 ShiftKey = & h200
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  – 85.98.1 class HTMLViewer
    * 85.98.3 backForwardListMBS as WebBackForwardListMBS
    * 85.98.4 canGoBackMBS as boolean
    * 85.98.5 canGoForwardMBS as boolean
    * 85.98.6 canMakeTextLargerMBS as boolean
    * 85.98.7 canMakeTextSmallerMBS as boolean
    * 85.98.8 canResetPageZoomMBS as boolean
    * 85.98.9 CanShowMIMETypeAsHTMLMBS(mime as string) as boolean
    * 85.98.10 CanShowMIMETypeMBS(mime as string) as boolean
    * 85.98.11 canZoomPageInMBS as boolean
    * 85.98.12 canZoomPageOutMBS as boolean
    * 85.98.14 ClearFocusMBS
    * 85.98.15 EstimatedProgressMBS as Double
    * 85.98.16 EvaluateJavaScriptMBS(code as string) as string
    * 85.98.17 GetPageFormatMBS as string
    * 85.98.18 GoBackMBS
    * 85.98.19 GoForwardMBS
    * 85.98.20 goToBackForwardItemMBS(item as WebHistoryItemMBS) as boolean
    * 85.98.21 HandleMBS as Integer
    * 85.98.22 HTMLTextMBS as string
    * 85.98.66 InstallWebDownloadDelegateMBS(DownloadDelegate as WebDownloadDelegateMBS)
    * 85.98.67 InstallWebFrameLoadDelegateMBS(WebFrameLoadDelegate as WebFrameLoadDelegateMBS)
    * 85.98.68 InstallWebPolicyDelegateMBS(WebPolicyDelegate as WebPolicyDelegateMBS)
    * 85.98.69 InstallWebResourceLoadDelegateMBS(WebResourceLoadDelegate as WebResourceLoadDelegateMBS)
    * 85.98.70 InstallWebUIDelegateMBS(WebUIDelegate as WebUIDelegateMBS)
    * 85.98.71 LoadHTMLStringMBS(data as memoryblock, mime as string, encoding as string, url as string)
    * 85.98.73 LoadHTMLStringMBS(text as string, url as string)
    * 85.98.74 LoadRequest(request as NSURLRequestMBS)
    * 85.98.75 LoadURLMBS(url as string)
    * 85.98.76 LoadURLMBS(url as string, CachePolicy as Integer, TimeOut as Double)
    * 85.98.77 mainFrameMBS as WebFrameMBS
    * 85.98.78 makeTextLargerMBS
    * 85.98.79 makeTextSmallerMBS
    * 85.98.80 mediaVolumeMBS as Double
    * 85.98.81 NSScrollViewMBS as Variant
    * 85.98.82 PageSetupDialogMBS(sheetTarget as window=nil) as boolean
    * 85.98.83 pageSizeMultiplierMBS as Double
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* 85.98.84 PrintDialogMBS(sheetTarget as window=nil, PDFFile as folderitem=nil) as boolean 14091
* 85.98.85 PrintDialogVisibleMBS as boolean 14091
* 85.98.86 PrintingEndMBS 14091
* 85.98.87 PrintingPageMBS(index as UInt32) as Memoryblock 14092
* 85.98.88 PrintingStartMBS(width as Double, height as Double) as Integer 14092
* 85.98.89 PrintMBS(PDFFile as folderitem=nil) as boolean 14093
* 85.98.90 PrintToPDFFileMBS(PDFFile as folderitem, LeftMargin as Double = 50.0, TopMargin as Double = 50.0, RightMargin as Double = 50.0, BottomMargin as Double = 50.0) as boolean 14093
* 85.98.91 reloadFromOriginMBS 14094
* 85.98.92 ReloadMBS 14094
* 85.98.93 RenderDocumentToEPSMBS as Memoryblock 14094
* 85.98.94 RenderDocumentToPDFMBS as Memoryblock 14095
* 85.98.95 RenderEPSMBS as Memoryblock 14095
* 85.98.96 RenderPDFMBS as Memoryblock 14096
* 85.98.97 RenderWebsiteImageMBS(ResolutionScale as Double = 1.0) as NSImageMBS 14096
* 85.98.98 resetPageZoomMBS 14097
* 85.98.99 SearchForMBS(text as string, Forward as boolean, CaseSensitive as boolean, Wrap as Boolean) as boolean 14097
* 85.98.100 setMaintainsBackForwardListMBS(value as boolean) 14098
* 85.98.101 setMediaVolumeMBS(value as Double) 14098
* 85.98.102 SetPageFormatMBS(data as string) as boolean 14098
* 85.98.103 setPageSizeMultiplierMBS(value as Double) 14099
* 85.98.104 StopLoadingMBS 14099
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* 85.98.110 VisibleWidthMBS as Double 14101
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* 85.98.115 ApplicationNameForUserAgentMBS as String 14102
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* 85.98.117 BoundsLeftMBS as Double 14103
* 85.98.118 BoundsTopMBS as Double 14103
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* 85.98.120 ContinuousSpellCheckingEnabledMBS as boolean 14104
* 85.98.121 CustomTextEncodingNameMBS as String 14104
* 85.98.122 CustomUserAgentMBS as String 14105
* 85.98.123 dashboardBehaviorMBS(behavior as Integer) as boolean
* 85.98.124 DrawsBackgroundMBS as Boolean
* 85.98.125 EditableMBS as boolean
* 85.98.126 FrameHeightMBS as Double
* 85.98.127 FrameLeftMBS as Double
* 85.98.128 FrameTopMBS as Double
* 85.98.129 FrameWidthMBS as Double
* 85.98.130 GroupNameMBS as string
* 85.98.138 mediaStyleMBS as String
* 85.98.139 PreferencesIdentifierMBS as string
* 85.98.140 preferencesMBS as WebPreferencesMBS
* 85.98.141 ScrollHeightMBS as single
* 85.98.142 ScrollLeftMBS as single
* 85.98.143 ScrollTopMBS as single
* 85.98.144 ScrollWidthMBS as single
* 85.98.145 TextSizeMultiplierMBS as single
* 85.98.146 toolTipMBS as String
* 85.98.147 visibleMBS as boolean
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  – 85.98.1 class HTMLViewer

    * 85.98.13 ChromiumBrowserMBS as ChromiumBrowserMBS
    * 85.98.23 IECContinueFindTextMBS(text as string, count as Integer, flags as Integer, selectText as boolean) as boolean
    * 85.98.24 IEDrawToHDCMBS(HDC as Ptr, PrinterName as string = "") as boolean
    * 85.98.25 IEFFileCreationDateMBS as string
    * 85.98.26 IEFFileModifiedDateMBS as string
    * 85.98.27 IEFFileSizeMBS as string
    * 85.98.28 IEFFileUpdatedDateMBS as string
    * 85.98.29 IEFFindTextMBS(text as string, count as Integer, flags as Integer, selectText as boolean) as boolean
    * 85.98.30 IEGetTextAreaMBS(FormName as String, FieldName as String) as String
    * 85.98.31 IEHHandleMBS as Integer
    * 85.98.32 IEHHistoryBackMBS
    * 85.98.33 IEHHistoryForwardMBS
    * 85.98.34 IEHHistoryLengthMBS as Integer
    * 85.98.35 IETHMLTextMBS as string
    * 85.98.36 IEMageMBS as picture
    * 85.98.37 IELastModifiedMBS as string
    * 85.98.38 IELoadHTMLMBS(HTMLText as string) as boolean
    * 85.98.39 IEMimeTypeMBS as string
    * 85.98.40 IENNamePropMBS as string
    * 85.98.41 IENavigatorAppMinorVersionMBS as string
    * 85.98.42 IENavigatorAppNameMBS as string
    * 85.98.43 IENavigatorAppVersionMBS as string
    * 85.98.44 IENavigatorBrowserLanguageMBS as string
    * 85.98.45 IENavigatorCookieEnabledMBS as boolean
    * 85.98.46 IENavigatorJavaEnabledMBS as boolean
    * 85.98.47 IENavigatorOnLineMBS as boolean
    * 85.98.48 IENavigatorUserAgentMBS as string
    * 85.98.49 IENavigatorUserLanguageMBS as string
    * 85.98.50 IEPrintMBS as boolean
    * 85.98.51 IEPrintPreviewMBS as boolean
    * 85.98.52 IEProtocolMBS as string
    * 85.98.53 IEReadyStateMBS as string
    * 85.98.54 IERefCountMBS as Integer
    * 85.98.55 IEReferrerMBS as string
    * 85.98.56 IEReloadMBS(Force as boolean = false) as boolean
    * 85.98.57 IERunJavaScriptMBS(JavaScript as string) as boolean
    * 85.98.58 IEScrollHeightMBS as Integer
* 85.98.59 IEScrollWidthMBS as Integer
* 85.98.60 IESecurityMBS as string
* 85.98.61 ISetTextAreaMBS(FormName as String, FieldName as String, Value as String) as Boolean
* 85.98.62 IEStopMBS as boolean
* 85.98.63 IETextMBS as string
* 85.98.64 IToStringMBS as string
* 85.98.65 IEZoomMBS(factor as Integer) as boolean
* 85.98.131 IESetCharsetMBS as string
* 85.98.132 IESetCookieMBS as string
* 85.98.133 IESetDefaultCharsetMBS as string
* 85.98.134 IESetDomainMBS as string
* 85.98.135 IESetEditableMBS as boolean
* 85.98.136 IESetTitleMBS as string
* 85.98.137 IESetURLMBS as string
• **HTMLViewer Mac**
  
  - 85.98.1 class HTMLViewer
    
    * 85.98.3 backForwardListMBS as WebBackForwardListMBS
    * 85.98.4 canGoBackMBS as boolean
    * 85.98.5 canGoForwardMBS as boolean
    * 85.98.6 canMakeTextLargerMBS as boolean
    * 85.98.7 canMakeTextSmallerMBS as boolean
    * 85.98.8 canResetPageZoomMBS as boolean
    * 85.98.9 CanShowMIMETypeAsHTMLMBS(mime as string) as boolean
    * 85.98.10 CanShowMIMETypeMBS(mime as string) as boolean
    * 85.98.11 canZoomPageInMBS as boolean
    * 85.98.12 canZoomPageOutMBS as boolean
    * 85.98.14 ClearFocusMBS
    * 85.98.15 EstimatedProgressMBS as Double
    * 85.98.16 EvaluateJavaScriptMBS(code as string) as string
    * 85.98.17 GetPageFormatMBS as string
    * 85.98.18 GoBackMBS
    * 85.98.19 GoForwardMBS
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    * 85.98.21 HandleMBS as Integer
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    * 85.98.66 InstallWebDownloadDelegateMBS(WebDownloadDelegate as WebDownloadDelegateMBS)
    * 85.98.67 InstallWebHostLoadDelegateMBS(WebHostLoadDelegate as WebHostLoadDelegateMBS
    * 85.98.68 InstallWebPolicyDelegateMBS(WebPolicyDelegate as WebPolicyDelegateMBS)
    * 85.98.69 InstallWebResourceLoadDelegateMBS(WebResourceLoadDelegate as WebResourceLoadDelegateMBS)
    * 85.98.70 InstallWebUIDelegateMBS(WebUIDelegate as WebUIDelegateMBS)
    * 85.98.72 LoadHTMLStringMBS(data as memoryblock, mime as string, encoding as string, url as string)
    * 85.98.73 LoadHTMLStringMBS(text as string, url as string)
    * 85.98.74 LoadRequest(request as NSURLRequestMBS)
    * 85.98.75 LoadURLMBS(url as string)
    * 85.98.76 LoadURLMBS(url as string, CachePolicy as Integer, TimeOut as Double)
    * 85.98.77 mainFrameMBS as WebFrameMBS
    * 85.98.78 makeTextLargerMBS
    * 85.98.79 makeTextSmallerMBS
    * 85.98.80 mediaVolumeMBS as Double
    * 85.98.81 NSScrollViewMBS as Variant
    * 85.98.82 PageSetupDialogMBS(sheetTarget as window=nil) as boolean
    * 85.98.83 pageSizeMultiplierMBS as Double
* 85.98.84 PrintDialogMBS(sheetTarget as window=nil, PDFFile as folderitem=nil) as boolean
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* 85.98.85 PrintDialogVisibleMBS as boolean
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* 85.98.86 PrintingEndMBS
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* 85.98.87 PrintingPageMBS(index as UInt32) as Memoryblock
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* 85.98.88 PrintingStartMBS(width as Double, height as Double) as Integer
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* 85.98.89 PrintMBS(PDFFile as folderitem=nil) as boolean
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* 85.98.90 PrintToPDFFileMBS(PDFFile as folderitem, LeftMargin as Double = 50.0, TopMargin as Double = 50.0, RightMargin as Double = 50.0, BottomMargin as Double = 50.0) as boolean
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* 85.98.96 RenderPDFMBS as Memoryblock
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* 85.98.97 RenderWebsiteImageMBS(ResolutionScale as Double = 1.0) as NSImageMBS
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* 85.98.99 SearchForMBS(text as string, Forward as boolean, CaseSensitive as boolean, Wrap as Boolean) as boolean
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* 85.98.103 setPageSizeMultiplierMBS(value as Double)
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* 85.98.104 StopLoadingMBS
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* 85.98.106 userAgentForURLMBS(url as string) as String
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* 85.98.119 BoundsWidthMBS as Double
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* 85.98.120 ContinuousSpellCheckingEnabledMBS as boolean
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* 85.98.121 CustomTextEncodingNameMBS as String
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* 85.98.122 CustomUserAgentMBS as String
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* 85.98.123 dashboardBehaviorMBS (behavior as Integer) as boolean 14105
* 85.98.124 DrawsBackgroundMBS as Boolean 14105
* 85.98.125 EditableMBS as boolean 14106
* 85.98.126 FrameHeightMBS as Double 14106
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* 85.98.138 mediaStyleMBS as String 14109
* 85.98.139 PreferencesIdentifierMBS as string 14110
* 85.98.140 preferencesMBS as WebPreferencesMBS 14110
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* 85.98.142 ScrollLeftMBS as single 14111
* 85.98.143 ScrollTopMBS as single 14111
* 85.98.144 ScrollWidthMBS as single 14111
* 85.98.145 TextSizeMultiplierMBS as single 14112
* 85.98.146 toolTipMBS as String 14112
* 85.98.147 visibleMBS as boolean 14112
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- 85.98.1 class HTMLViewer
  - 85.98.13 ChromiumBrowserMBS as ChromiumBrowserMBS
  - 85.98.23 IEContinueFindTextMBS(text as string, count as Integer, flags as Integer, selectText as boolean) as boolean
  - 85.98.24 IEDrawToHDCMBS(HDC as Ptr, PrinterName as string = "") as boolean
  - 85.98.25 IFileCreationDateMBS as string
  - 85.98.26 IFileModifiedDateMBS as string
  - 85.98.27 IFileSizeMBS as string
  - 85.98.28 IFileUpdatedDateMBS as string
  - 85.98.29 IEFindTextMBS(text as string, count as Integer, flags as Integer, selectText as boolean) as boolean
  - 85.98.30 IGetTextAreaMBS(FormName as String, FieldName as String) as String
  - 85.98.31 IEHandleMBS as Integer
  - 85.98.32 IEHistoryBackMBS
  - 85.98.33 IEHistoryForwardMBS
  - 85.98.34 IEHistoryLengthMBS as Integer
  - 85.98.35 IEHTMLTextMBS as string
  - 85.98.36 IEImageMBS as picture
  - 85.98.37 IELastModifiedMBS as string
  - 85.98.38 IELoadHTMLMBS(HTMLText as string) as boolean
  - 85.98.39 IEMimeTypeMBS as string
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  - 85.98.43 IENavigatorAppVersionMBS as string
  - 85.98.44 IENavigatorBrowserLanguageMBS as string
  - 85.98.45 IENavigatorCookieEnabledMBS as boolean
  - 85.98.46 IENavigatorJavaEnabledMBS as boolean
  - 85.98.47 IENavigatorOnLineMBS as boolean
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  - 85.98.50 IEPrintMBS as boolean
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  - 85.98.52 IEProtocolMBS as string
  - 85.98.53 IEReadyStateMBS as string
  - 85.98.54 IERefCountMBS as Integer
  - 85.98.55 IEReferredMBS as string
  - 85.98.56 IEReloadMBS(Force as boolean = false) as boolean
  - 85.98.57 IERunJavaScriptMBS(JavaScript as string) as boolean
  - 85.98.58 IEScrollHeightMBS as Integer
* 85.98.59 IEScrollWidthMBS as Integer 14083
* 85.98.60 IESecurityMBS as string 14083
* 85.98.61 IESetTextAreaMBS(FormName as String, FieldName as String, Value as String) as Boolean 14083
* 85.98.62 IEStopMBS as boolean 14083
* 85.98.63 IETextMBS as string 14084
* 85.98.64 IEToStringMBS as string 14084
* 85.98.65 IEZoomMBS(factor as Integer) as boolean 14084
* 85.98.131 IECharSetMBS as string 14108
* 85.98.132 IECookieMBS as string 14108
* 85.98.133 IEDefaultCharsetMBS as string 14108
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– 90.19.1 class IMImageQ16MBS
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  * 90.19.4 AddNoise(NoiseType as Integer) as IMImageQ16MBS
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* 90.19.31 Combine(channel as Integer) as IMImageQ16MBS
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* 90.19.35 ContrastImage(sharpen as boolean) as Boolean
* 90.19.36 CopyPicture as picture
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* 90.19.40 CopyPixel(x as Integer, y as Integer) as IMColorQ16MBS
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* 90.19.44 CycleColormap(displace as Integer) as boolean
* 90.19.45 DecipherImage(passkey as string) as boolean
* 90.19.46 DeconstructImages as IMImageQ16MBS
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* 90.19.48 Despeckle() as IMImageQ16MBS
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* 90.19.208 kDisposeLayer = 5
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* 90.19.216 kOptimizeLayer = 6
* 90.19.217 kOptimizePlusLayer = 8
* 90.19.218 kOptimizeTransLayer = 9
* 90.19.219 kPerspectiveDistortion = 4
* 90.19.220 kPerspectiveDistortion = 4
* 90.19.221 kPerspectiveProjectionDistortion = 5
* 90.19.222 kPerspectiveProjectionDistortion = 5
* 90.19.223 kPlane2CylinderDistortion = & h0000000D
* 90.19.224 kPlane2CylinderDistortion = & h0000000D
* 90.19.225 kPolarDistortion = & h0000000A
* 90.19.226 kPolarDistortion = & h0000000A
* 90.19.227 kPolynomialColorInterpolate = 8
* 90.19.228 kPolynomialColorInterpolate = 8
* 90.19.229 kPolynomialDistortion = 8
* 90.19.230 kPolynomialDistortion = 8
* 90.19.231 kPreviousDispose = 3
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* 90.19.234 kResizeDistortion = & h00000011
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∗ 90.19.237 kScaleRotateTranslateDistortion = 3
∗ 90.19.238 kSentinelDistortion = & h00000012
∗ 90.19.239 kSentinelDistortion = & h00000012
∗ 90.19.240 kShepardsColorInterpolate = & h00000010
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∗ 90.19.242 kShepardsDistortion = & h00000010
∗ 90.19.243 kShepardsDistortion = & h00000010
∗ 90.19.244 kUndefinedColorInterpolate = 0
∗ 90.19.245 kUndefinedColorInterpolate = 0
∗ 90.19.246 kUndefinedDispose = 0
∗ 90.19.247 kUndefinedDistortion = 0
∗ 90.19.248 kUndefinedDistortion = 0
∗ 90.19.249 kUndefinedLayer = 0
∗ 90.19.250 kUnrecognizedDispose = 0
∗ 90.19.251 kVoronoiColorInterpolate = & h00000012
∗ 90.19.252 kVoronoiColorInterpolate = & h00000012

− 90.20.1 class IMImageQ32MBS
    ∗ 90.20.3 AdaptiveThreshold(width as Integer, height as Integer, offset as Integer) as IMImageQ32MBS
    ∗ 90.20.4 AddNoise(NoiseType as Integer) as IMImageQ32MBS
    ∗ 90.20.5 AffineTransformImage(matrix as IMImageAffineMatrixQ32MBS) as IMImageQ32MBS
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    ∗ 90.20.7 AutoGammaImage as Boolean
    ∗ 90.20.8 AutoGammaImageChannel(ChannelType as Integer) as Boolean
    ∗ 90.20.9 AutoLevelImage as Boolean
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    ∗ 90.20.11 Average as IMImageQ32MBS
    ∗ 90.20.12 BilevelChannel(channel as Integer, threshold as Double) as boolean
    ∗ 90.20.13 BlackThreshold(threshold as string) as boolean
    ∗ 90.20.14 BlobSize as Integer
    ∗ 90.20.15 Blur(radius as Double, sigma as Double) as IMImageQ32MBS
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    ∗ 90.20.18 BrightnessContrastImage(brightness as Double, contrast as Double) as Boolean
    ∗ 90.20.19 BrightnessContrastImageChannel(ChannelType as Integer, brightness as Double, contrast as Double) as Boolean
    ∗ 90.20.20 Charcoal(radius as Double, sigma as Double) as IMImageQ32MBS
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- 90.20.25 CloneImageProfiles(SourceImage as IMImageQ32MBS) as boolean
- 90.20.26 Close
- 90.20.27 ClutImage(clutImage as IMImageQ32MBS) as Boolean
- 90.20.28 ClutImageChannel(ChannelType as Integer, clutImage as IMImageQ32MBS) as Boolean
- 90.20.29 CoalesceImages as IMImageQ32MBS
- 90.20.30 Colorize(opacity as string, PenColorRed as Integer, PenColorGreen as Integer, PenColorBlue as Integer, PenColorOpacity as Integer) as IMImageQ32MBS
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* 90.20.182 kArcDistortion = 9 15051
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* 90.20.189 kBarycentricColorInterpolate = 1 15052
* 90.20.190 kBarycentricColorInterpolate = 1 15052
* 90.20.191 kBilinearColorInterpolate = 7 15052
* 90.20.192 kBilinearColorInterpolate = 7 15052
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90.20.213 kMosaicLayer = & h0000000F
90.20.214 kNoneDispose = 1
90.20.215 kOptimizeImageLayer = 7
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90.20.217 kOptimizePlusLayer = 8
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90.20.219 kPerspectiveDistortion = 4
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90.20.221 kPerspectiveProjectionDistortion = 5
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90.20.225 kPolarDistortion = & h0000000A
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90.20.227 kPolynomialColorInterpolate = 8
90.20.228 kPolynomialColorInterpolate = 8
90.20.229 kPolynomialDistortion = 8
90.20.230 kPolynomialDistortion = 8
90.20.231 kPreviousDispose = 3
90.20.232 kRemoveDupsLayer = & h0000000A
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90.20.234 kResizeDistortion = & h00000011
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90.20.236 kScaleRotateTranslateDistortion = 3
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90.20.238 kSentinelDistortion = & h00000012
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90.20.243 kShepardsDistortion = & h00000010
90.20.244 kUndefinedColorInterpolate = 0
90.20.245 kUndefinedColorInterpolate = 0
90.20.246 kUndefinedDispose = 0
90.20.247 kUndefinedDistortion = 0
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90.20.249 kUndefinedLayer = 0
90.20.250 kUnrecognizedDispose = 0
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* 90.21.117 Shade(gray as boolean, azimuth as Double, elevation as Double) as IMImageQ8MBS
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* 90.21.147 Directory as String
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* 90.21.149 Filename as String
* 90.21.150 Filter as Integer
* 90.21.151 Fuzz as Double
* 90.21.152 Gamma as Double
* 90.21.153 Geometry as String
* 90.21.154 Gravity as Integer
* 90.21.155 Handle as Integer
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* 90.21.158 LastError as Integer
* 90.21.159 LastException as IMExceptionQ8MBS
* 90.21.160 Magick as String
* 90.21.161 Matte as Boolean
* 90.21.162 MatteColor as IMColorQ8MBS
* 90.21.163 Montage as String
* 90.21.164 Offset as Integer
* 90.21.165 Orientation as Integer
* 90.21.166 Quality as Integer
* 90.21.167 Release as Boolean
* 90.21.168 RenderingIntent as Integer
* 90.21.169 ResolutionUnits as Integer
* 90.21.170 ResolutionX as Double
* 90.21.171 ResolutionY as Double
* 90.21.172 Scene as Integer
* 90.21.173 StorageClass as Integer
* 90.21.174 Taint as Boolean
* 90.21.175 Width as Integer
* 90.21.177 kAffineDistortion = 1
* 90.21.178 kAffineProjectionDistortion = 2
* 90.21.179 kArcDistortion = 9
* 90.21.180 kBackgroundDispose = 2
* 90.21.181 kBilinearDistortion = & h0000000E
* 90.21.182 kBilinearInverseDistortion = & h0000000F
* 90.21.183 kBarycentricColorInterpolate = 1
* 90.21.184 kBilinearColorInterpolate = 7
* 90.21.185 kBilinearDistortion = 6
* 90.21.186 kBilinearForwardDistortion = 6
* 90.21.187 kBilinearReverseDistortion = 7
* 90.21.188 kCoalesceLayer = 1
* 90.21.189 kCompareAnyLayer = 2
* 90.21.190 kCompareClearLayer = 3
* 90.21.191 kCompareOverlayLayer = 4
* 90.21.192 kCompositeLayer = & h0000000C
* 90.21.193 kCylinder2PlaneDistortion = & h0000000C
* 90.21.194 kDePolarDistortion = & h0000000B
* 90.21.195 kDisposeLayer = 5
* 90.21.196 kFlattenLayer = & h0000000E
* 90.21.197 kInverseColorInterpolate = & h00000013
* 90.21.198 kMergeLayer = & h0000000D
* 90.21.199 kMosaicLayer = & h0000000F
* 90.21.200 kNoneDispose = 1
* 90.21.201 kOptimizeImageLayer = 7
* 90.21.202 kOptimizeLayer = 6
* 90.21.203 kOptimizePlusLayer = 8
* 90.21.204 kOptimizeTransLayer = 9
* 90.21.205 kPerspectiveDistortion = 4
* 90.21.206 kPerspectiveProjectionDistortion = 5
* 90.21.207 kPlane2CylinderDistortion = & h0000000D
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* 90.21.209 kPolynomialColorInterpolate = 8
* 90.21.210 kPolynomialDistortion = 8
* 90.21.211 kPreviousDispose = 3
* 90.21.212 kRemoveDupsLayer = & h0000000A
* 90.21.213 kRemoveZeroLayer = & h0000000B
* 90.21.214 kResizeDistortion = & h00000011
* 90.21.215 kScaleRotateTranslateDistortion = 3
* 90.21.216 kSentinelDistortion = & h00000012
* 90.21.217 kShepardsColorInterpolate = & h00000010
* 90.21.218 kShepardsDistortion = & h00000010
* 90.21.219 kUndefinedColorInterpolate = 0
* 90.21.220 kUndefinedDispose = 0
* 90.21.221 kUndefinedDistortion = 0
* 90.21.222 kUndefinedLayer = 0
* 90.21.223 kUnrecognizedDispose = 0
* 90.21.224 kVoronoiColorInterpolate = & h00000012

– 90.22.1 class IMMagickInfoListQ16MBS
  * 90.22.3 Item(index as Integer) as IMMagickInfoQ16MBS
  * 90.22.5 Count as Integer
  * 90.22.6 Handle as Integer
90.23.1 class IMMagickInfoListQ32MBS
  * 90.23.3 Item(index as Integer) as IMMagickInfoQ32MBS
  * 90.23.5 Count as Integer
  * 90.23.6 Handle as Integer

90.23.1 class IMMagickInfoListQ8MBS
  * 90.24.3 Item(index as Integer) as IMMagickInfoQ8MBS
  * 90.24.5 Count as Integer
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90.23.1 class IMMagickInfoQ16MBS
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  * 90.25.5 Adjoin as Boolean
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  * 90.25.7 Description as String
  * 90.25.8 EndianSupport as Boolean
  * 90.25.9 Handle as Integer
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  * 90.25.11 Name as String
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  * 90.26.7 Description as String
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- 90.29.1 class IMMagickPixelPacketQ32MBS
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    * 92.1.5 imageUrlForStatus(status as Integer) as string
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    * 92.1.25 infoForScreenName(name as string) as dictionary
    * 92.1.26 LocalizedName as String
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    * 92.1.28 Name as String
    * 92.1.29 peopleWithScreenName(screenName as string) as ABPersonMBS()
    * 92.1.30 screenNamesForPerson(person as ABPersonMBS) as string()
    * 92.1.31 Status as Integer
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    * 92.1.36 IMPersonStatusAway = 3
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  * 60.5.5 Constructor(Keys() as Integer)
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  60.6.1 class IntegerOrderedSetIteratorMBS
  * 60.6.3 isEqual(other as IntegerOrderedSetIteratorMBS) as boolean
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  60.7.1 class IntegerOrderedSetMBS
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104.18.37 SetPropertyDouble(Prop as string, Value as Double) as boolean
104.18.38 SetPropertyHex(Prop as string, Value as UInt32) as boolean
104.18.39 SetPropertyMulti(Key as string, SubKey as string, Value as string) as boolean
104.18.40 SetPropertyString(Prop as string, Value as String) as boolean
104.18.41 SetPropertyUncooked(Prop as string, Value as Memoryblock) as boolean
104.18.42 SetSheetType(type as string) as boolean
104.18.43 SetTable(uTable as UInt32) as UInt32
104.18.44 SetTableByLabel(Set as string, Field as string, ExpectedType as string) as Integer
104.18.45 TableCount as UInt32
104.18.46 ValidKeywords as string()
104.18.47 ValidSampleIDs as string()
104.18.49 context as LCMS2ContextMBS
104.18.50 Handle as Integer
104.19.1 class LCMS2JChMBS
* 104.19.3 Clone as LCMS2JChMBS
* 104.19.4 Constructor(J as Double=0.0, C as Double=0.0, h as Double=0.0)
* 104.19.5 Constructor(other as LCMS2JChMBS)
* 104.19.7 C as Double
* 104.19.8 h as Double
* 104.19.9 J as Double

104.20.1 class LCMS2Mat3MBS
* 104.20.3 Clone as LCMS2Mat3MBS
* 104.20.4 Constructor
* 104.20.5 Constructor(other as LCMS2Mat3MBS)
* 104.20.6 Constructor(v0 as LCMS2Vec3MBS, v1 as LCMS2Vec3MBS, v2 as LCMS2Vec3MBS)
* 104.20.8 V0 as LCMS2Vec3MBS
* 104.20.9 V1 as LCMS2Vec3MBS
* 104.20.10 V2 as LCMS2Vec3MBS
* 104.20.11 value(index as UInt32) as LCMS2Vec3MBS

104.21.1 module LCMS2MBS
* 104.21.3 AdaptationMatrix(ConeMatrix as LCMS2Mat3MBS, FromIll as LCMS2CIEXYZMBS, ToIll as LCMS2CIEXYZMBS) as LCMS2Mat3MBS
* 104.21.4 AdaptToIlluminant(SourceWhitePt as LCMS2CIEXYZMBS, Illuminant as LCMS2CIEXYZMBS, Value as LCMS2CIEXYZMBS) as LCMS2CIEXYZMBS
* 104.21.5 BFDdeltaE(Lab1 as LCMS2CIELabMBS, Lab2 as LCMS2CIELabMBS) as Double
* 104.21.6 BuildRGB2XYZtransferMatrix(WhitePoint as LCMS2CIExyYMBS, Primaries as LCMS2CIExyYTripleMBS) as LCMS2Mat3MBS
* 104.21.7 BYTES_SH(n as UInt32) as UInt32
* 104.21.8 ChannelsOf(ColorSpaceSignature as Integer) as UInt32
* 104.21.9 CHANNELS_SH(n as UInt32) as UInt32
* 104.21.10 CIE2000DeltaE(Lab1 as LCMS2CIELabMBS, Lab2 as LCMS2CIELabMBS, Kl as Double = 1.0, Kc as Double = 1.0, Kh as Double = 1.0) as Double
* 104.21.11 CIE94DeltaE(Lab1 as LCMS2CIELabMBS, Lab2 as LCMS2CIELabMBS) as Double
* 104.21.12 CMCdeltaE(Lab1 as LCMS2CIELabMBS, Lab2 as LCMS2CIELabMBS, l as Double, c as Double) as Double
* 104.21.13 ColorSpaceCCtoLCMS(ICCColorSpace as Integer) as Integer
* 104.21.14 ColorSpaceLCMSstoICC(LCMSColorSpace as Integer) as Integer
* 104.21.15 COLORSSPACE_SH(n as UInt32) as UInt32
* 104.21.16 CreateBitmapFromPicture(p as picture, bits as Integer = 8) as LCMS2BitmapMBS
* 104.21.17 D50_xyY as LCMS2CIExyYMBS
* 104.21.18 D50_XYZ as LCMS2CIEXYZMBS
* 104.21.19 DeltaE(Lab1 as LCMS2CIELabMBS, Lab2 as LCMS2CIELabMBS) as Double
  15993
* 104.21.20 DOSWAP_SH(n as UInt32) as UInt32  
  15994
* 104.21.21 EncodedCMMversion as Integer
  15994
* 104.21.22 ENDIAN16_SH(n as UInt32) as UInt32  
  15994
* 104.21.23 EXTRA_SH(n as UInt32) as UInt32
  15994
* 104.21.24 FLAVOR_SH(n as UInt32) as UInt32
  15994
* 104.21.25 Float2LabEncoded(c as LCMS2CIELabMBS) as Integer
  15995
* 104.21.26 Float2LabEncodedV2(c as LCMS2CIELabMBS) as Integer
  15995
* 104.21.27 Float2XYZEncoded(c as LCMS2CIEXYZMBS) as Integer
  15995
* 104.21.28 FLOAT_SH(n as UInt32) as UInt32  
  15995
* 104.21.29 GetAlarmCodes as Integer
  15995
* 104.21.30 GetAlarmCodes(context as LCMS2ContextMBS) as Integer
  15996
* 104.21.31 GetSupportedIntentCodes as UInt32()
  15996
* 104.21.32 GetSupportedIntentCodes(context as LCMS2ContextMBS) as UInt32()
  15996
* 104.21.33 GetSupportedIntentDescriptions as string
  15997
* 104.21.34 GridPoints(n as Integer) as Integer
  15997
* 104.21.35 kcmsD50X as Double
  15997
* 104.21.36 kcmsD50Y as Double
  15997
* 104.21.37 kcmsD50Z as Double
  15997
* 104.21.38 kcmsPERCEPTUAL.BLACK_X as Double
  15998
* 104.21.39 kcmsPERCEPTUAL.BLACK_Y as Double
  15998
* 104.21.40 kcmsPERCEPTUAL.BLACK_Z as Double
  15998
* 104.21.41 Lab2LCh(p as LCMS2CIELabMBS) as LCMS2CIELChMBS
  15998
* 104.21.42 Lab2XYZ(p as LCMS2CIELabMBS, whitepoint as LCMS2CIEXYZMBS = nil) as
  LCMS2CIEXYZMBS
  15998
* 104.21.43 LabEncoded2Float(w0 as UInt16, w1 as UInt16, w2 as UInt16) as LCMS2CIELabMBS
  15999
* 104.21.44 LabEncoded2FloatV2(w0 as UInt16, w1 as UInt16, w2 as UInt16) as LCMS2CIELabMBS
  15999
* 104.21.45 LCh2Lab(p as LCMS2CIELChMBS) as LCMS2CIELabMBS
  15999
* 104.21.46 NewBitmap(width as Integer, height as Integer, colorspace as Integer) as LCMS2BitmapMBS
  15999
* 104.21.47 NewBitmap(width as Integer, height as Integer, colorspace as Integer, RowBytes as
  Integer) as LCMS2BitmapMBS
  15999
* 104.21.48 NewBitmap(width as Integer, height as Integer, colorspace as Integer, RowBytes as
  Integer, data as memoryblock) as LCMS2BitmapMBS
  16000
* 104.21.49 OPTIMIZED_SH(n as UInt32) as UInt32
  16000
* 104.21.50 PixelFormat(FloatingPoint as boolean, Optimized as boolean, ColorSpace as UInt32, MinIsWhite as boolean, Planar as boolean, EndianSwap as boolean, DoSwap as boolean, ExtraSamples as UInt32, Channels as UInt32, BytesPerSample as UInt32, SwapFirst as boolean) as UInt32
  16000
* 104.21.51 PLANAR_SH(n as UInt32) as UInt32
  16001
104.21.52 SetAdaptationState(context as LCMS2ContextMBS, d as Double) as Double
16001
104.21.53 SetAdaptationState(d as Double) as Double
16001
104.21.54 SetAlarmCodes(context as LCMS2ContextMBS, values() as Integer)
16002
104.21.55 SetAlarmCodes(values() as Integer)
16002
104.21.56 SetLogErrorHandler(Context as LCMS2ContextMBS, handler as LCMS2ErrorHandlerMBS)
16002
104.21.57 SetLogErrorHandler(handler as LCMS2ErrorHandlerMBS)
16003
104.21.58 SWAPFIRST_SH(n as UInt32) as UInt32
16003
104.21.59 TagInteger(tag as string) as UInt32
16003
104.21.60 TagString(tag as string)
16004
104.21.61 TempFromWhitePoint(TempK as LCMS2CIExyYMBS) as Double
16004
104.21.62 T_BYTES(n as UInt32) as UInt32
16004
104.21.63 T_CHANNELS(n as UInt32) as UInt32
16004
104.21.64 T_COLORSPACE(n as UInt32) as UInt32
16005
104.21.65 T_DOSWAP(n as UInt32) as UInt32
16005
104.21.66 T_ENDIAN16(n as UInt32) as UInt32
16005
104.21.67 T_EXTRA(n as UInt32) as UInt32
16005
104.21.68 T_FLAVOR(n as UInt32) as UInt32
16005
104.21.69 T_FLOAT(n as UInt32) as UInt32
16005
104.21.70 T_OPTIMIZED(n as UInt32) as UInt32
16006
104.21.71 T_PLANAR(n as UInt32) as UInt32
16006
104.21.72 T_SWAPFIRST(n as UInt32) as UInt32
16006
104.21.73 Version as string
16006
104.21.74 WhitePointFromTemp(TempK as Double) as LCMS2CIExyYMBS
16006
104.21.75 xyY2XYZ(p as LCMS2CIExyYMBS) as LCMS2CIEXYZMBS
16007
104.21.76 XYZ2Lab(p as LCMS2CIEXYZMBS, whitepoint as LCMS2CIEXYZMBS = nil) as LCMS2CIELabMBS
16007
104.21.77 XYZ2xyY(p as LCMS2CIEXYZMBS) as LCMS2CIExyYMBS
16007
104.21.78 XYZEncoded2Float(w0 as UInt16, w1 as UInt16, w2 as UInt16) as LCMS2CIEXYZMBS
16007
104.21.80 kAVG_SURROUND = 1
16007
104.21.81 kcmsEmbeddedProfileFalse = 0
16008
104.21.82 kcmsEmbeddedProfileTrue = 1
16008
104.21.83 kcmsERROR_ALREADY_DEFINED = &h0000000A
16008
104.21.84 kcmsERROR_BAD_SIGNATURE = &h0000000B
16008
104.21.85 kcmsERROR_COLORSPACE_CHECK = 9
16008
104.21.86 kcmsERROR_CORRUPTION_DETECTED = &h0000000C
16008
104.21.87 kcmsERROR_FILE = 1
16008
104.21.88 kcmsERROR_INTERNAL = 3
16008
104.21.89 kcmsERROR_NOT_SUITABLE = &h0000000D
16009
104.21.90 kcmsERROR_NULL = 4
16009
104.21.91 kcmsERROR_RANGE = 2
16009
* 104.21.92 kcmsERROR_READ = 5
* 104.21.93 kcmsERRORSEEK = 6
* 104.21.94 kcmsERROR_UNDEFINED = 0
* 104.21.95 kcmsERROR_UNKNOWN_EXTENSION = 8
* 104.21.96 kcmsERROR_WRITE = 7
* 104.21.97 kcmsFLAGS_SBITS_DEVICE_LINK = 8
* 104.21.98 kcmsFLAGS_BLACKPOINTCOMPENSATION = & h00002000
* 104.21.99 kcmsFLAGS_CLUT_POST_LINEARIZATION = 1
* 104.21.100 kcmsFLAGS_CLUT_PRE_LINEARIZATION = & h00000010
* 104.21.101 kcmsFLAGS_COPY_ALPHA = & h04000000
* 104.21.102 kcmsFLAGS_FORCE_CLUT = 2
* 104.21.103 kcmsFLAGS_GAMUTCHECK = & h00001000
* 104.21.104 kcmsFLAGS_GUESSDEVICECLASS = & h00000020
* 104.21.105 kcmsFLAGS_HIGHERESPRECALC = & h00000400
* 104.21.106 kcmsFLAGS_KEEP_SEQUENCE = & h00000080
* 104.21.107 kcmsFLAGS_LOWRES_PRECALC = & h00000800
* 104.21.108 kcmsFLAGS_NOCACHE = & h00000040
* 104.21.109 kcmsFLAGS_NODEFAULTRESOURCEDEF = & h01000000
* 104.21.110 kcmsFLAGS_NONEGATIVES = & h00000800
* 104.21.111 kcmsFLAGS_NOOPTIMIZE = & h00000100
* 104.21.112 kcmsFLAGS_NOWHITEONWHITEFIXUP = 4
* 104.21.113 kcmsFLAGS_NULLTRANSFORM = & h00000020
* 104.21.114 kcmsFLAGS_SOFTPROOFING = & h00004000
* 104.21.115 kcmsFREQUENCY_UNITS_LINES_CM = 0
* 104.21.116 kcmsFREQUENCY_UNITS_LINES_INCH = 2
* 104.21.117 kcmsGlossy = 0
* 104.21.118 kcmsILLUMINANT_TYPE_A = 6
* 104.21.119 kcmsILLUMINANT_TYPE_D50 = 1
* 104.21.120 kcmsILLUMINANT_TYPE_D55 = 5
* 104.21.121 kcmsILLUMINANT_TYPE_D65 = 2
* 104.21.122 kcmsILLUMINANT_TYPE_D93 = 3
* 104.21.123 kcmsILLUMINANT_TYPE_E = 7
* 104.21.124 kcmsILLUMINANT_TYPE_F2 = 4
* 104.21.125 kcmsILLUMINANT_TYPE_F8 = 8
* 104.21.126 kcmsILLUMINANT_TYPE_UNKNOWN = 0
* 104.21.127 kcmsMagicNumber = & h61637370
* 104.21.128 kcmsMatte = 2
* 104.21.129 kcmsMAXCHANNELS = & h00000010
* 104.21.130 kcmsPRINTER_DEFAULTSCREENS = 1
* 104.21.131 kcmsReflective = 0
* 104.21.132 kcmsSig10colorData = & h41434C52
* 104.21.133 kcmsSig11colorData = & h42434C52
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* 104.21.134 kmcSig12colorData = & h43434C52 16015
* 104.21.135 kmcSig13colorData = & h44434C52 16015
* 104.21.136 kmcSig14colorData = & h45434C52 16015
* 104.21.137 kmcSig15colorData = & h46434C52 16015
* 104.21.138 kmcSig1colorData = & h31434C52 16015
* 104.21.139 kmcSig2colorData = & h32434C52 16015
* 104.21.140 kmcSig3colorData = & h33434C52 16015
* 104.21.141 kmcSig4colorData = & h34434C52 16015
* 104.21.142 kmcSig5colorData = & h35434C52 16015
* 104.21.143 kmcSig6colorData = & h36434C52 16015
* 104.21.144 kmcSig7colorData = & h37434C52 16015
* 104.21.145 kmcSig8colorData = & h38434C52 16015
* 104.21.146 kmcSig9colorData = & h39434C52 16015
* 104.21.147 kmcSigAbstractClass = & h61627374 16015
* 104.21.148 kmcSigAMDisplay = & h414D4420 16015
* 104.21.149 kmcSigArgyllArtsTag = & h61727473 16016
* 104.21.150 kmcSigAToB0Tag = & h41324230 16016
* 104.21.151 kmcSigAToB1Tag = & h41324231 16016
* 104.21.152 kmcSigAToB2Tag = & h41324232 16016
* 104.21.153 kmcSigBAcsElemType = & h62414353 16016
* 104.21.154 kmcSigBlueColorantTag = & h6258595A 16016
* 104.21.155 kmcSigBlueMatrixColumnTag = & h6258595A 16016
* 104.21.156 kmcSigBlueTRCTag = & h62545243 16016
* 104.21.157 kmcSigBToA0Tag = & h42324130 16017
* 104.21.158 kmcSigBToA1Tag = & h42324131 16017
* 104.21.159 kmcSigBToA2Tag = & h42324132 16017
* 104.21.160 kmcSigBToD0Tag = & h42324430 16017
* 104.21.161 kmcSigBToD1Tag = & h42324431 16017
* 104.21.162 kmcSigBToD2Tag = & h42324432 16017
* 104.21.163 kmcSigBToD3Tag = & h42324433 16017
* 104.21.164 kmcSigCalibrationDateTime = & h63616C74 16017
* 104.21.165 kmcSigCharTargetTag = & h74617267 16017
* 104.21.166 kmcSigChromaticAdaptationTag = & h63686164 16017
* 104.21.167 kmcSigChromaticityTag = & h6368726D 16017
* 104.21.168 kmcSigChromaticityType = & h6368726D 16017
* 104.21.169 kmcSigClipNegativesElemType = & h636C7020 16017
* 104.21.170 kmcSigCLutElemType = & h636C7574 16017
* 104.21.171 kmcSigCmyData = & h434D5920 16017
* 104.21.172 kmcSigCmykData = & h434D5920 16017
* 104.21.173 kmcSigColorantOrderTag = & h636C726F 16017
* 104.21.174 kmcSigColorantOrderType = & h636C726F 16017
* 104.21.175 kmcSigColorantTableOutTag = & h636C6F74 16017
* 104.21.218 kcmsSigGamutTag = & h67616D74
* 104.21.219 kcmsSigGravure = & h67726176
* 104.21.220 kcmsSigGrayData = & h47524159
* 104.21.221 kcmsSigGrayTRCTag = & h6B545243
* 104.21.222 kcmsSigGreenColorantTag = & h6758595A
* 104.21.223 kcmsSigGreenMatrixColumnTag = & h6758595A
* 104.21.224 kcmsSigGreenTRCTag = & h67545243
* 104.21.225 kcmsSigHlsData = & h484C5320
* 104.21.226 kcmsSigHsvData = & h48535620
* 104.21.227 kcmsSigIdentityElemType = & h69646E20
* 104.21.228 kcmsSigInkJetPrinter = & h696A6574
* 104.21.229 kcmsSigInputClass = & h73636EE72
* 104.21.230 kcmsSigLab2FloatPCS = & h64326C20
* 104.21.231 kcmsSigLab2XYZElemType = & h78326C20
* 104.21.232 kcmsSigLabData = & h4C616220
* 104.21.233 kcmsSigLabV2toV4 = & h82203420
* 104.21.234 kcmsSigLabV4toV2 = & h42403220
* 104.21.235 kcmsSigLinkClass = & h6C696E6B
* 104.21.236 kcmsSigLuminanceTag = & h6C756D69
* 104.21.237 kcmsSigLut16Type = & h6D667432
* 104.21.238 kcmsSigLut8Type = & h6D667431
* 104.21.239 kcmsSigLutAtoBType = & h6D414220
* 104.21.240 kcmsSigLutBtoAType = & h6D424120
* 104.21.241 kcmsSigLuvData = & h4C756720
* 104.21.242 kcmsSigLuvKData = & h4C75674B
* 104.21.243 kcmsSigMacintosh = & h4150504C
* 104.21.244 kcmsSigMatrixElemType = & h6D617466
* 104.21.245 kcmsSigMCH1Data = & h4D434831
* 104.21.246 kcmsSigMCH2Data = & h4D434832
* 104.21.247 kcmsSigMCH3Data = & h4D434833
* 104.21.248 kcmsSigMCH4Data = & h4D434834
* 104.21.249 kcmsSigMCH5Data = & h4D434835
* 104.21.250 kcmsSigMCH6Data = & h4D434836
* 104.21.251 kcmsSigMCH7Data = & h4D434837
* 104.21.252 kcmsSigMCH8Data = & h4D434838
* 104.21.253 kcmsSigMCH9Data = & h4D434839
* 104.21.254 kcmsSigMCHAData = & h4D434841
* 104.21.255 kcmsSigMCHBData = & h4D434842
* 104.21.256 kcmsSigMCHCData = & h4D434843
* 104.21.257 kcmsSigMCHDData = & h4D434844
* 104.21.258 kcmsSigMCHEData = & h4D434845
* 104.21.259 kcmsSigMCHFData = & h4D434846
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- 104.21.302 kcmsSigPs2RenderingIntentTag = & h70733269
- 104.21.303 kcmsSigRedColorantTag = & h7258595A
- 104.21.304 kcmsSigRedMatrixColumnTag = & h7258595A
- 104.21.305 kcmsSigRedTRCTag = & h72545243
- 104.21.306 kcmsSigReflectionHardcopyOriginalColorimetry = & h72686F63
- 104.21.307 kcmsSigReflectionPrintOutputColorimetry = & h72706F63
- 104.21.308 kcmsSigReflectiveScanner = & h7273636E
- 104.21.309 kcmsSigResponseCurveSet16Type = & h72686F63
- 104.21.310 kcmsSigRgbData = & h52474220
- 104.21.311 kcmsSigS15Fixed16ArrayType = & h73663332
- 104.21.312 kcmsSigSampledCurveSeg = & h73616D66
- 104.21.313 kcmsSigSaturationRenderingIntentGamutTag = & h72696732
- 104.21.314 kcmsSigSceneAppearanceEstimates = & h73617065
- 104.21.315 kcmsSigSceneColorimetryEstimates = & h73636F65
- 104.21.316 kcmsSigScreeningDescTag = & h73637264
- 104.21.317 kcmsSigScreeningTag = & h7363726E
- 104.21.318 kcmsSigScreeningType = & h7363726E
- 104.21.319 kcmsSigSegmentedCurve = & h63757266
- 104.21.320 kcmsSigSGI = & h53474920
- 104.21.321 kcmsSigSignatureType = & h73696720
- 104.21.322 kcmsSigSilkscreen = & h73696C6B
- 104.21.323 kcmsSigSolaris = & h53554E57
- 104.21.324 kcmsSigStatusA = & h53746141
- 104.21.325 kcmsSigStatusE = & h53746145
- 104.21.326 kcmsSigStatusI = & h53746149
- 104.21.327 kcmsSigStatusM = & h5374614D
- 104.21.328 kcmsSigStatusT = & h53746154
- 104.21.329 kcmsSigTaligent = & h54474E54
- 104.21.330 kcmsSigTechnologyTag = & h74656368
- 104.21.331 kcmsSigTextDescriptionType = & h64657363
- 104.21.332 kcmsSigTextType = & h74657874
- 104.21.333 kcmsSigThermalWaxPrinter = & h74776178
- 104.21.334 kcmsSigU16Fixed16ArrayType = & h75663332
- 104.21.335 kcmsSigUcrBgTag = & h62666420
- 104.21.336 kcmsSigUcrBgType = & h62666420
- 104.21.337 kcmsSigUInt16ArrayType = & h75693136
- 104.21.338 kcmsSigUInt32ArrayType = & h75693332
- 104.21.339 kcmsSigUInt64ArrayType = & h75693634
- 104.21.340 kcmsSigUInt8ArrayType = & h75693038
- 104.21.341 kcmsSigUnices = & h2A6E6978
- 104.21.342 kcmsSigVcgtTag = & h76636774
- 104.21.343 kcmsSigVcgtType = & h76636774
* 104.21.344 kcmsSigVideoCamera = & h76696463  
* 104.21.345 kcmsSigVideoMonitor = & h7669646D  
* 104.21.346 kcmsSigViewingCondDescTag = & h76756564  
* 104.21.347 kcmsSigViewingConditionsTag = & h76696577  
* 104.21.348 kcmsSigViewingConditionsType = & h76756577  
* 104.21.349 kcmsSigXYZ2FloatPCS = & h64327820  
* 104.21.350 kcmsSigXYZ2LabElemType = & h6C327820  
* 104.21.351 kcmsSigXYZData = & h58595A20  
* 104.21.352 kcmsSigXYZType = & h58595A20  
* 104.21.353 kcmsSigYChCrData = & h59436272  
* 104.21.354 kcmsSigYxyData = & h59787920  
* 104.21.355 kcmsSPOT_CROSS = 7  
* 104.21.356 kcmsSPOT_DIAMOND = 3  
* 104.21.357 kcmsSPOT_ELLIPSE = 4  
* 104.21.358 kcmsSPOT_LINE = 5  
* 104.21.359 kcmsSPOT_PRINTER_DEFAULT = 1  
* 104.21.360 kcmsSPOT_ROUND = 2  
* 104.21.361 kcmsSPOT_SQUARE = 6  
* 104.21.362 kcmsSPOT_UNKNOWN = 0  
* 104.21.363 kcmsTransparency = 1  
* 104.21.364 kcmsUseAnywhere = 0  
* 104.21.365 kcmsUseWithEmbeddedDataOnly = 2  
* 104.21.366 kCUTSHEET_SURROUND = 4  
* 104.21.367 kDARK_SURROUND = 3  
* 104.21.368 kDIM_SURROUND = 2  
* 104.21.369 kD_CALCULATE = -1  
* 104.21.370 kINTENT_ABSOLUTE_COLORIMETRIC = 3  
* 104.21.371 kINTENT_PERCEPTUAL = 0  
* 104.21.372 kINTENT_PRESERVE_K_ONLY_PERCEPTUAL = & h0000000A  
* 104.21.373 kINTENT_PRESERVE_K_ONLY_RELATIVE_COLORIMETRIC = & h0000000B  
* 104.21.374 kINTENT_PRESERVE_K_ONLY_SATURATION = & h0000000C  
* 104.21.375 kINTENT_PRESERVE_K_PLANE_PERCEPTUAL = & h0000000D  
* 104.21.376 kINTENT_PRESERVE_K_PLANE_RELATIVE_COLORIMETRIC = & h0000000E  
* 104.21.377 kINTENT_PRESERVE_K_PLANE_SATURATION = & h0000000F  
* 104.21.378 kINTENT_RELATIVE_COLORIMETRIC = 1  
* 104.21.379 kINTENT_SATURATION = 2  
* 104.21.380 klcmsSignature = & h6C636D73  
* 104.21.381 klcms_USED_AS_INPUT = 0  
* 104.21.382 klcms_USED_AS_OUTPUT = 1  
* 104.21.383 klcms_USED_AS_PROOF = 2
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* 104.21.384 kPT_ANY = 0
* 104.21.385 kPT_CMY = 5
* 104.21.386 kPT_CMYK = 6
* 104.21.387 kPT_GRAY = 3
* 104.21.388 kPT_HLS = & h0000000D
* 104.21.389 kPT_HSV = & h0000000C
* 104.21.390 kPT_Lab = & h0000000A
* 104.21.391 kPT_LabV2 = & h0000001E
* 104.21.392 kPT_MCH1 = & h0000000F
* 104.21.393 kPT_MCH10 = & h00000018
* 104.21.394 kPT_MCH11 = & h00000019
* 104.21.395 kPT_MCH12 = & h0000001A
* 104.21.396 kPT_MCH13 = & h0000001B
* 104.21.397 kPT_MCH14 = & h0000001C
* 104.21.398 kPT_MCH15 = & h0000001D
* 104.21.399 kPT_MCH2 = & h00000010
* 104.21.400 kPT_MCH3 = & h00000011
* 104.21.401 kPT_MCH4 = & h00000012
* 104.21.402 kPT_MCH5 = & h00000013
* 104.21.403 kPT_MCH6 = & h00000014
* 104.21.404 kPT_MCH7 = & h00000015
* 104.21.405 kPT_MCH8 = & h00000016
* 104.21.406 kPT_MCH9 = & h00000017
* 104.21.407 kPT_RGB = 4
* 104.21.408 kPT_XYZ = 9
* 104.21.409 kPT_YCbCr = 7
* 104.21.410 kPT_YUV = 8
* 104.21.411 kPT_YUVK = & h0000000B
* 104.21.412 kPT_Yxy = & h0000000E
* 104.21.413 kTYPE_ABGR_16 = & h0004049A
* 104.21.414 kTYPE_ABGR_16_PLANAR = & h0004149A
* 104.21.415 kTYPE_ABGR_16_SE = & h00040C9A
* 104.21.416 kTYPE_ABGR_8 = & h00040499
* 104.21.417 kTYPE_ABGR_8_PLANAR = & h00041499
* 104.21.418 kTYPE_ABGRFLT = & h0044049C
* 104.21.419 kTYPE_ABGR_HALFFLT = & h0044041A
* 104.21.420 kTYPE_ALabV2_8 = & h001E4099
* 104.21.421 kTYPE_ALab_8 = & h000A4099
* 104.21.422 kTYPE_ARGB_16 = & h0004409A
* 104.21.423 kTYPE_ARGB_8 = & h00044099
* 104.21.424 kTYPE_ARGB_8_PLANAR = & h00045099
* 104.21.425 kTYPE_ARGBFLT = & h0044409C
* 104.21.426 kTYPE_ARGB_HALF_FLT = & h0044409A
* 104.21.427 kTYPE_BGRA_16 = & h0004449A
* 104.21.428 kTYPE_BGRA_16_SE = & h000444C9A
* 104.21.429 kTYPE_BGRA_8 = & h00044499
* 104.21.430 kTYPE_BGRA_8_PLANAR = & h00044599
* 104.21.431 kTYPE_BGRA_FLT = & h0004449C
* 104.21.432 kTYPE_BGRA_HALF_FLT = & h00044449
* 104.21.433 kTYPE_BGR_16 = & h0004441A
* 104.21.434 kTYPE_BGR_16_PLANAR = & h0004441A
* 104.21.435 kTYPE_BGR_16_SE = & h000440C1A
* 104.21.436 kTYPE_BGR_8 = & h00044019
* 104.21.437 kTYPE_BGR_8_PLANAR = & h00044019
* 104.21.438 kTYPE_BGR_DBL = & h00044018
* 104.21.439 kTYPE_BGR_FLT = & h0004401C
* 104.21.440 kTYPE_BGR_HALF_FLT = & h0004401A
* 104.21.441 kTYPE_CMYK10_16 = & h00180052
* 104.21.442 kTYPE_CMYK10_16_SE = & h00180052
* 104.21.443 kTYPE_CMYK10_8 = & h00180051
* 104.21.444 kTYPE_CMYK11_16 = & h0019005A
* 104.21.445 kTYPE_CMYK11_16_SE = & h0019005A
* 104.21.446 kTYPE_CMYK11_8 = & h00190059
* 104.21.447 kTYPE_CMYK12_16 = & h001A0062
* 104.21.448 kTYPE_CMYK12_16_SE = & h001A0062
* 104.21.449 kTYPE_CMYK12_8 = & h001A0061
* 104.21.450 kTYPE_CMYK5_16 = & h0013002A
* 104.21.451 kTYPE_CMYK5_16_SE = & h0013002A
* 104.21.452 kTYPE_CMYK5_8 = & h00130029
* 104.21.453 kTYPE_CMYK6_16 = & h00140032
* 104.21.454 kTYPE_CMYK6_16_PLANAR = & h00140032
* 104.21.455 kTYPE_CMYK6_16_SE = & h00140032
* 104.21.456 kTYPE_CMYK6_8 = & h00140031
* 104.21.457 kTYPE_CMYK6_8_PLANAR = & h00140031
* 104.21.458 kTYPE_CMYK7_16 = & h0015003A
* 104.21.459 kTYPE_CMYK7_16_SE = & h0015003A
* 104.21.460 kTYPE_CMYK7_8 = & h00150039
* 104.21.461 kTYPE_CMYK8_16 = & h00160042
* 104.21.462 kTYPE_CMYK8_16_SE = & h00160042
* 104.21.463 kTYPE_CMYK8_8 = & h00160041
* 104.21.464 kTYPE_CMYK9_16 = & h0017004A
* 104.21.465 kTYPE_CMYK9_16_SE = & h0017004A
* 104.21.466 kTYPE_CMYK9_8 = & h00170049
* 104.21.467 kTYPE_CMYKA_8 = & h000600A1
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* 104.21.468 \texttt{kTYPE\_CMYK\_16 = \& h00060022} 16058
* 104.21.469 \texttt{kTYPE\_CMYK\_16\_PLANAR = \& h00061022} 16058
* 104.21.470 \texttt{kTYPE\_CMYK\_16\_REV = \& h00062022} 16058
* 104.21.471 \texttt{kTYPE\_CMYK\_16\_SE = \& h00060822} 16058
* 104.21.472 \texttt{kTYPE\_CMYK\_8 = \& h00060021} 16058
* 104.21.473 \texttt{kTYPE\_CMYK\_8\_PLANAR = \& h0006021} 16058
* 104.21.474 \texttt{kTYPE\_CMYK\_8\_REV = \& h000631021} 16058
* 104.21.475 \texttt{kTYPE\_CMYK\_DBL = \& h00460020} 16059
* 104.21.476 \texttt{kTYPE\_CMYK\_FLT = \& h00460024} 16059
* 104.21.477 \texttt{kTYPE\_CMYK\_HALF\_FLT = \& h00460022} 16059
* 104.21.478 \texttt{kTYPE\_CMY\_16 = \& h00060022} 16058
* 104.21.479 \texttt{kTYPE\_CMY\_8\_PLANAR = \& h0006021} 16058
* 104.21.480 \texttt{kTYPE\_CMY\_8\_SE = \& h0005081A} 16059
* 104.21.481 \texttt{kTYPE\_CMY\_8 = \& h00050019} 16059
* 104.21.482 \texttt{kTYPE\_CMY\_8\_PLANAR = \& h00050101} 16059
* 104.21.483 \texttt{kTYPE\_GRAYA\_16 = \& h0003008A} 16060
* 104.21.484 \texttt{kTYPE\_GRAYA\_16\_PLANAR = \& h0003108A} 16060
* 104.21.485 \texttt{kTYPE\_GRAYA\_16\_SE = \& h0003088A} 16060
* 104.21.486 \texttt{kTYPE\_GRAYA\_8 = \& h0003008A} 16060
* 104.21.487 \texttt{kTYPE\_GRAYA\_8\_PLANAR = \& h0003108A} 16060
* 104.21.488 \texttt{kTYPE\_GRAY\_16 = \& h0003000A} 16060
* 104.21.489 \texttt{kTYPE\_GRAY\_16\_REV = \& h0003200A} 16060
* 104.21.490 \texttt{kTYPE\_GRAY\_16\_SE = \& h0003080A} 16060
* 104.21.491 \texttt{kTYPE\_GRAY\_8 = \& h00030009} 16061
* 104.21.492 \texttt{kTYPE\_GRAY\_8\_REV = \& h00032009} 16061
* 104.21.493 \texttt{kTYPE\_GRAY\_DBL = \& h00430008} 16061
* 104.21.494 \texttt{kTYPE\_GRAY\_FLT = \& h0043000C} 16061
* 104.21.495 \texttt{kTYPE\_GRAY\_HALF\_FLT = \& h0043000A} 16061
* 104.21.496 \texttt{kTYPE\_HLS\_16 = \& h000D001A} 16061
* 104.21.497 \texttt{kTYPE\_HLS\_16\_PLANAR = \& h000D101A} 16061
* 104.21.498 \texttt{kTYPE\_HLS\_16\_SE = \& h000D081A} 16061
* 104.21.499 \texttt{kTYPE\_HLS\_8 = \& h000D0001} 16062
* 104.21.500 \texttt{kTYPE\_HLS\_8\_PLANAR = \& h000D0101} 16062
* 104.21.501 \texttt{kTYPE\_HSV\_16 = \& h000C001A} 16062
* 104.21.502 \texttt{kTYPE\_HSV\_16\_PLANAR = \& h000C101A} 16062
* 104.21.503 \texttt{kTYPE\_HSV\_16\_SE = \& h000C081A} 16062
* 104.21.504 \texttt{kTYPE\_HSV\_8 = \& h000C0001} 16062
* 104.21.505 \texttt{kTYPE\_HSV\_8\_PLANAR = \& h000C101A} 16062
* 104.21.506 \texttt{kTYPE\_KCMY\_16 = \& h00060022} 16062
* 104.21.507 \texttt{kTYPE\_KCMY\_16\_REV = \& h00066022} 16063
* 104.21.508 \texttt{kTYPE\_KCMY\_16\_SE = \& h00064022} 16063
* 104.21.509 \texttt{kTYPE\_KCMY\_8 = \& h00064021} 16063
104.21.510 kTYPE_KCMY_8_REV = & h00066021
104.21.511 kTYPE_KYMC10_16 = & h00180452
104.21.512 kTYPE_KYMC10_16_SE = & h00180C52
104.21.513 kTYPE_KYMC10_8 = & h00180451
104.21.514 kTYPE_KYMC11_16 = & h0019045A
104.21.515 kTYPE_KYMC11_16_SE = & h0019045A
104.21.516 kTYPE_KYMC11_8 = & h00190459
104.21.517 kTYPE_KYMC12_16 = & h001A0462
104.21.518 kTYPE_KYMC12_16_SE = & h001A0462
104.21.519 kTYPE_KYMC12_8 = & h001A0461
104.21.520 kTYPE_KYMC5_16 = & h0013042A
104.21.521 kTYPE_KYMC5_16_SE = & h0013042A
104.21.522 kTYPE_KYMC5_8 = & h00130429
104.21.523 kTYPE_KYMC7_16 = & h0015043A
104.21.524 kTYPE_KYMC7_16_SE = & h0015043A
104.21.525 kTYPE_KYMC7_8 = & h00150439
104.21.526 kTYPE_KYMC8_16 = & h00160442
104.21.527 kTYPE_KYMC8_16_SE = & h00160442
104.21.528 kTYPE_KYMC8_8 = & h00160441
104.21.529 kTYPE_KYMC9_16 = & h0017044A
104.21.530 kTYPE_KYMC9_16_SE = & h0017044A
104.21.531 kTYPE_KYMC9_8 = & h00170449
104.21.532 kTYPE_KYMC_16 = & h00060422
104.21.533 kTYPE_KYMC_16_SE = & h00060422
104.21.534 kTYPE_KYMC_8 = & h00060421
104.21.535 kTYPE_LabA_FLT = & h004A001A
104.21.536 kTYPE_LabV2_16 = & h001E001A
104.21.537 kTYPE_LabV2_8 = & h001E0019
104.21.538 kTYPE_Lab_16 = & h000A001A
104.21.539 kTYPE_Lab_8 = & h000A0019
104.21.540 kTYPE_Lab_DBL = & h004A0018
104.21.541 kTYPE_Lab_FLT = & h004A001C
104.21.542 kTYPE_NAMED_COLOR_INDEX = & h0000000A
104.21.543 kTYPE_RGBA_16 = & h0004009A
104.21.544 kTYPE_RGBA_16_PLANAR = & h0004109A
104.21.545 kTYPE_RGBA_16_SE = & h0004009A
104.21.546 kTYPE_RGBA_8 = & h00040099
104.21.547 kTYPE_RGBA_8_PLANAR = & h00041099
104.21.548 kTYPE_RGBA_FLT = & h00440009
104.21.549 kTYPE_RGBA_HALF_FLT = & h00440009
104.21.550 kTYPE_RGB_16 = & h0004001A
104.21.551 kTYPE_RGB_16_PLANAR = & h0004101A
104.21.552 kTYPE_RGB_16_SE = & h0004081A
104.21.553 kTYPE_RGB_8 = & h00040019
104.21.554 kTYPE_RGB_8_PLANAR = & h00041019
104.21.555 kTYPE_RGB_DBL = & h00440018
104.21.556 kTYPE_RGBFLT = & h0044001C
104.21.557 kTYPE_RGB_HALFFLT = & h0044001A
104.21.558 kTYPE_XYZ_16 = & h0009001A
104.21.559 kTYPE_XYZ_DBL = & h00490018
104.21.560 kTYPE_XYZFLT = & h0049001C
104.21.561 kTYPE_YCbCr_16 = & h0007001A
104.21.562 kTYPE_YCbCr_16_PLANAR = & h00070101A
104.21.563 kTYPE_YCbCr_16_SE = & h0007081A
104.21.564 kTYPE_YCbCr_8 = & h00070019
104.21.565 kTYPE_YCbCr_8_PLANAR = & h00071019
104.21.566 kTYPE_YUVK_16 = & h00062022
104.21.567 kTYPE_YUVK_8 = & h00062021
104.21.568 kTYPE_YUV_16 = & h0008001A
104.21.569 kTYPE_YUV_16_PLANAR = & h0008101A
104.21.570 kTYPE_YUV_16_SE = & h0008081A
104.21.571 kTYPE_YUV_8 = & h00080019
104.21.572 kTYPE_YUV_8_PLANAR = & h00081019
104.21.573 kTYPE_Yxy_16 = & h000E001A
104.22.1 class LCMS2MLUMBS
104.22.3 Constructor(context as LCMS2ContextMBS, items as UInt32)
104.22.4 getASCII(LanguageCode as string, CountryCode as string) as string
104.22.5 getTranslation(LanguageCode as string, CountryCode as string, byref ObtainedLanguageCode as string, byref ObtainedCountryCode as string) as boolean
104.22.6 getUnicode(LanguageCode as string, CountryCode as string) as string
104.22.7 setASCII(LanguageCode as string, CountryCode as string, ASCIIString as string) as Boolean
104.22.8 setUnicode(LanguageCode as string, CountryCode as string, UnicodeString as string) as Boolean
104.22.9 translationsCodes(index as Integer, byref LanguageCode as string, byref CountryCode as string) as boolean
104.22.11 Handle as Integer
104.22.12 TranslationsCount as Integer
104.22.14 kNoCountry = ""
104.22.15 kNoLanguage = ""
104.23.1 class LCMS2NamedColorListMBS
104.23.3 Append(name as string) as Boolean
104.23.4 Append(name as string, PCS() as Integer) as Boolean
104.23.5 Append(name as string, PCS() as Integer, Colorant() as Integer) as Boolean
* 104.23.6 Colorant(nColor as UInt32) as Integer() 16079
* 104.23.7 ColorIndex(name as string) as Integer 16079
* 104.23.8 Constructor(context as LCMS2ContextMBS, n as UInt32, ColorantCount as UInt32, Prefix as string = ",", Suffix as string = ")") 16079
* 104.23.9 Name(nColor as UInt32) as string 16080
* 104.23.10 PCS(nColor as UInt32) as Integer() 16080
* 104.23.11 Prefix(nColor as UInt32) as string 16080
* 104.23.12 Suffix(nColor as UInt32) as string 16080
* 104.23.14 Count as Integer 16080
* 104.23.15 Handle as Integer 16081

– 104.24.1 class LCMS2PipelineMBS 16082
* 104.24.3 Append(p as LCMS2PipelineMBS) as Boolean 16082
* 104.24.4 Constructor(context as LCMS2ContextMBS, InputChannels as UInt32, OutputChannels as UInt32) 16082
* 104.24.5 Eval16(In as Ptr, Out as Ptr) 16082
* 104.24.6 EvalFloat(In as Ptr, Out as Ptr) 16083
* 104.24.7 EvalReverseFloat(Target as Ptr, Result as Ptr, Hint as Ptr) 16083
* 104.24.8 InsertStage(where as Integer, stage as LCMS2StageMBS) as boolean 16083
* 104.24.9 SetSaveAs8bitsFlag(save8bit as boolean) as Boolean 16084
* 104.24.10 Stages as LCMS2StageMBS() 16084
* 104.24.11 UnlinkStage(where as Integer) as LCMS2StageMBS 16084
* 104.24.13 context as LCMS2ContextMBS 16084
* 104.24.14 FirstStage as LCMS2StageMBS 16085
* 104.24.15 Handle as Integer 16085
* 104.24.16 InputChannels as UInt32 16085
* 104.24.17 LastStage as LCMS2StageMBS 16085
* 104.24.18 OutputChannels as UInt32 16085
* 104.24.19 StageCount as UInt32 16086
* 104.24.21 kAtBegin = 0 16086
* 104.24.22 kAtEnd = 1 16086

– 104.25.1 class LCMS2ProfileMBS 16087
* 104.25.3 Constructor(context as LCMS2ContextMBS = nil) 16087
* 104.25.4 Constructor(file as folderitem, write as boolean = false) 16087
* 104.25.5 CreateBCHSWabstrackProfile(context as LCMS2ContextMBS, nLUTPoints as UInt32, Bright as double, Contrast as double, Hue as double, Saturation as double, TempSrc as UInt32, TempDest as UInt32) as LCMS2ProfileMBS 16087
* 104.25.6 CreateGrayProfile(context as LCMS2ContextMBS, WhitePoint as LCMS2CIExyYMBS, TransferFunction as LCMS2ToneCurveMBS) as LCMS2ProfileMBS 16088
* 104.25.7 CreateInkLimitingDeviceLink(context as LCMS2ContextMBS, ColorSpaceSignature as UInt32, Limit as Double) as LCMS2ProfileMBS 16088
* 104.25.8 CreateLab2Profile(context as LCMS2ContextMBS = nil, point as LCMS2CIExyYMBS = nil) as LCMS2ProfileMBS 16089
* 104.25.9 CreateLab4Profile(context as LCMS2ContextMBS = nil, point as LCMS2CIExyYMBS = nil) as LCMS2ProfileMBS 16089
* 104.25.10 CreateLinearizationDeviceLink(context as LCMS2ContextMBS, ColorSpaceSignature as UInt32, TransferFunction() as LCMS2ToneCurveMBS) as LCMS2ProfileMBS 16089
* 104.25.11 CreateNULLProfile(context as LCMS2ContextMBS = nil) as LCMS2ProfileMBS 16090
* 104.25.12 CreateProfilePlaceholder(context as LCMS2ContextMBS = nil) as LCMS2ProfileMBS 16090
* 104.25.13 CreateRGBProfile(context as LCMS2ContextMBS, WhitePoint as LCMS2CIExyYMBS, Primaries as LCMS2CIExyYTripleMBS, TransferFunction() as LCMS2ToneCurveMBS) as LCMS2ProfileMBS 16090
* 104.25.14 CreateSRGBProfile(context as LCMS2ContextMBS = nil) as LCMS2ProfileMBS 16091
* 104.25.15 CreateXYZProfile(context as LCMS2ContextMBS = nil) as LCMS2ProfileMBS 16092
* 104.25.16 DetectBlackPoint(Intent as Integer, Flags as Integer) as LCMS2CIEXYZMBS 16092
* 104.25.17 DetectDestinationBlackPoint(Intent as Integer, Flags as Integer) as LCMS2CIEXYZMBS 16092
* 104.25.18 DetectTAC as Double 16093
* 104.25.19 FormatterForBitmap(BitCount as Integer = 8) as UInt32 16093
* 104.25.20 FormatterForColorspace(nBytes as UInt32, IsFloat as boolean = false) as UInt32 16093
* 104.25.21 FormatterForPCS(nBytes as UInt32, IsFloat as boolean = false) as UInt32 16093
* 104.25.22 GetProfileInfo(Info as Integer, LanguageCode as string, CountryCode as string) as string 16094
* 104.25.23 IsCLUT(Intent as UInt32, UsedDirection as UInt32) as boolean 16094
* 104.25.24 IsIntentSupported(Intent as UInt32, UsedDirection as UInt32) as boolean 16094
* 104.25.25 IsTag(TagSignature as Integer) as Boolean 16094
* 104.25.26 LinkTag(sig as Integer, dest as Integer) as boolean 16095
* 104.25.27 MD5computeID as boolean 16095
* 104.25.28 OpenProfileFromFile(context as LCMS2ContextMBS, file as folderitem, write as boolean = false) as LCMS2ProfileMBS 16095
* 104.25.29 OpenProfileFromFile(file as folderitem, write as boolean = false) as LCMS2ProfileMBS 16095
* 104.25.30 OpenProfileFromMemory(context as LCMS2ContextMBS, data as Memoryblock) as LCMS2ProfileMBS 16096
* 104.25.31 OpenProfileFromMemory(data as Memoryblock) as LCMS2ProfileMBS 16096
* 104.25.32 OpenProfileFromString(context as LCMS2ContextMBS, data as string) as LCMS2ProfileMBS 16097
* 104.25.33 OpenProfileFromString(data as string) as LCMS2ProfileMBS 16097
* 104.25.34 PostScriptCRD(context as LCMS2ContextMBS, intent as UInt32, flags as UInt32 = 0) as string 16098
* 104.25.35 PostScriptCSA(context as LCMS2ContextMBS, intent as UInt32, flags as UInt32 = 0) as string 16098
* 104.25.36 ReadChromaticAdaptation as LCMS2CIEXYZMBS()
* 104.25.37 ReadChromaticity as LCMS2CIExyYTripleMBS
* 104.25.38 ReadCIEXYZ(tag as Integer) as LCMS2CIEXYZMBS
* 104.25.39 ReadColorantOrder as Memoryblock
* 104.25.40 ReadDate(tag as Integer) as LCMS2DateMBS
* 104.25.41 ReadDict(tag as Integer) as LCMS2DictionaryMBS
* 104.25.42 ReadICCData(tag as Integer) as LCMS2ICCDataMBS
* 104.25.43 ReadICCMeasurementConditions as LCMS2ICCMeasurementConditionsMBS
* 104.25.44 ReadICCViewingConditions as LCMS2ICCViewingConditionsMBS
* 104.25.45 ReadMLU(tag as Integer) as LCMS2MLUMBS
* 104.25.46 ReadNamedColorList(tag as Integer) as LCMS2NamedColorListMBS
* 104.25.47 ReadPipeline(tag as Integer) as LCMS2PipelineMBS
* 104.25.48 ReadRawTag(sig as Integer) as Memoryblock
* 104.25.49 ReadScreening as LCMS2ScreeningMBS
* 104.25.50 ReadSequence(tag as Integer) as LCMS2SequenceMBS
* 104.25.51 ReadSignature(tag as Integer) as UInt32
* 104.25.52 ReadTag(tag as Integer) as Variant
* 104.25.53 ReadToneCurve(tag as Integer) as LCMS2ToneCurveMBS
* 104.25.54 ReadUcrBg as LCMS2UcrBgMBS
* 104.25.55 SaveProfileToFile(file as folderitem) as boolean
* 104.25.56 SaveProfileToMemory as Memoryblock
* 104.25.57 SaveProfileToString as string
* 104.25.58 TagLinkedTo(sig as Integer) as Integer
* 104.25.59 TagSignature(index as Integer) as Integer
* 104.25.60 WriteChromaticAdaptation(value as LCMS2Mat3MBS) as boolean
* 104.25.61 WriteChromaticAdaptation(values() as LCMS2CIEXYZMBS) as boolean
* 104.25.62 WriteChromaticity(o as LCMS2CIExyYTripleMBS) as boolean
* 104.25.63 WriteCIEXYZ(tag as Integer, o as LCMS2CIEXYZMBS) as boolean
* 104.25.64 WriteColorantOrder(data as Memoryblock) as boolean
* 104.25.65 WriteDate(tag as Integer, o as LCMS2DateMBS) as boolean
* 104.25.66 WriteDict(tag as Integer, o as LCMS2DictionaryMBS) as boolean
* 104.25.67 WriteICCData(tag as Integer, o as LCMS2ICCDataMBS) as boolean
* 104.25.68 WriteICCMeasurementConditions(value as LCMS2ICCMeasurementConditionsMBS) as boolean
* 104.25.69 WriteICCViewingConditions(o as LCMS2ICCViewingConditionsMBS) as boolean
* 104.25.70 WriteMLU(tag as Integer, o as LCMS2MLUMBS) as boolean
* 104.25.71 WriteNamedColorList(tag as Integer, o as LCMS2NamedColorListMBS) as boolean
* 104.25.72 WritePipeline(tag as Integer, o as LCMS2PipelineMBS) as boolean
* 104.25.73 WriteRawTag(sig as Integer, data as Memoryblock) as boolean
* 104.25.74 WriteScreening(o as LCMS2ScreeningMBS) as boolean
104.25.75 WriteSequence(tag as Integer, o as LCMS2SequenceMBS) as boolean
104.25.76 WriteSignature(tag as Integer, o as UInt32) as boolean
104.25.77 WriteToneCurve(tag as Integer, o as LCMS2ToneCurveMBS) as boolean
104.25.78 WriteUcrBg(o as LCMS2UcrBgMBS) as boolean
104.25.80 ChannelCount as UInt32
104.25.81 ColorSpaceType as Integer
104.25.82 context as LCMS2ContextMBS
104.25.83 DeviceClass as Integer
104.25.84 File as Folderitem
104.25.85 Handle as Integer
104.25.86 HeaderAttributes as UInt64
104.25.87 HeaderCreationDateTime as LCMS2DateTimeMBS
104.25.88 HeaderCreator as UInt32
104.25.89 HeaderFlags as UInt32
104.25.90 HeaderManufacturer as UInt32
104.25.91 HeaderModel as UInt32
104.25.92 HeaderProfileID as string
104.25.93 IsMatrixShaper as Boolean
104.25.94 Name as string
104.25.95 PCS as Integer
104.25.96 ProfileICCversion as Integer
104.25.97 ProfileVersion as Double
104.25.98 RenderingIntent as Integer
104.25.99 TagCount as Integer
104.25.101 kInfoCopyright = 3
104.25.102 kInfoDescription = 0
104.25.103 kInfoManufacturer = 1
104.25.104 kInfoModel = 2

104.26.1 class LCMS2ScreeningChannelMBS
104.26.3 Clone as LCMS2ScreeningChannelMBS
104.26.4 Constructor(Frequency as Double = 0.0, ScreenAngle as Double = 0.0, SpotShape as UInt32 = 0)
104.26.5 Constructor(other as LCMS2ScreeningChannelMBS)
104.26.7 Frequency as Double
104.26.8 ScreenAngle as Double
104.26.9 SpotShape as UInt32

104.27.1 class LCMS2ScreeningMBS
104.27.3 Channels as UInt32
104.27.4 Flag as UInt32
104.27.5 Channel(index as Integer) as LCMS2ScreeningChannelMBS

104.28.1 class LCMS2SequenceDescriptionMBS
104.28.3 AttributeFlags as UInt64
104.28.4 Description as LCMS2MLUMBS
104.28.5 DeviceMfg as UInt32
104.28.6 DeviceModel as UInt32
104.28.7 Manufacturer as LCMS2MLUMBS
104.28.8 Model as LCMS2MLUMBS
104.28.9 ProfileID as Memoryblock
104.28.10 Technology as UInt32

104.29.1 class LCMS2SequenceMBS
104.29.3 Constructor(context as LCMS2ContextMBS, Count as UInt32)
104.29.5 Count as UInt32
104.29.6 Handle as Integer
104.29.7 Description(index as Integer) as LCMS2SequenceDescriptionMBS

104.30.1 class LCMS2StageMBS
104.30.3 CLutFloatValues as Double()
104.30.4 CLutUInt16Values as UInt16()
104.30.5 CreateStageWithCLut16bit(Context as LCMS2ContextMBS, GridPoints as UInt32, inputChan as UInt32, outputChan as UInt32) as LCMS2StageMBS
104.30.6 CreateStageWithCLut16bit(context as LCMS2ContextMBS, GridPoints as UInt32, inputChan as UInt32, outputChan as UInt32, TableUInt16 as Memoryblock) as LCMS2StageMBS
104.30.7 CreateStageWithCLut16bitGranular(Context as LCMS2ContextMBS, clutPoints() as UInt32, inputChan as UInt32, outputChan as UInt32, TableUInt16 as Memoryblock) as LCMS2StageMBS
104.30.8 CreateStageWithCLut16bitGranular(context as LCMS2ContextMBS, clutPoints() as UInt32, inputChan as UInt32, outputChan as UInt32, TableUInt16() as UInt16) as LCMS2StageMBS
104.30.9 CreateStageWithCLutFloat(Context as LCMS2ContextMBS, GridPoints as UInt32, inputChan as UInt32, outputChan as UInt32) as LCMS2StageMBS
104.30.10 CreateStageWithCLutFloat(context as LCMS2ContextMBS, GridPoints as UInt32, inputChan as UInt32, outputChan as UInt32, TableSingle as Memoryblock) as LCMS2StageMBS
104.30.11 CreateStageWithCLutFloat(context as LCMS2ContextMBS, GridPoints as UInt32, inputChan as UInt32, outputChan as UInt32, values() as Double) as LCMS2StageMBS
104.30.12 CreateStageWithCLutFloatGranular(Context as LCMS2ContextMBS, clutPoints() as UInt32, inputChan as UInt32, outputChan as UInt32, TableSingle as Memoryblock) as LCMS2StageMBS
104.30.13 CreateStageWithCLutFloatGranular(Context as LCMS2ContextMBS, clutPoints() as UInt32, inputChan as UInt32, outputChan as UInt32, values() as Double) as LCMS2StageMBS
104.30.14 CreateStageWithCLutFloatGranular(context as LCMS2ContextMBS, clutPoints() as UInt32, inputChan as UInt32, outputChan as UInt32, values() as single) as LCMS2StageMBS
104.30.15 CreateStageWithCLutFloatGranular(context as LCMS2ContextMBS, clutPoints() as UInt32, inputChan as UInt32, outputChan as UInt32) as LCMS2StageMBS
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- 104.30.16 CreateStageWithCLutFloatGranular(context as LCMS2ContextMBS, clutPoints() as UInt32, inputChan as UInt32, outputChan as UInt32, TableSingle as Memoryblock) as LCMS2StageMBS
- 104.30.17 CreateStageWithCLutFloatGranular(Context as LCMS2ContextMBS, clutPoints() as UInt32, inputChan as UInt32, outputChan as UInt32, TableSingle() as Single) as LCMS2StageMBS
- 104.30.18 CreateStageWithIdentity(context as LCMS2ContextMBS, Channels as UInt32) as LCMS2StageMBS
- 104.30.19 CreateStageWithMatrix(context as LCMS2ContextMBS, Rows as UInt32, Cols as UInt32, Matrix as Memoryblock, Offset as Memoryblock = nil) as LCMS2StageMBS
- 104.30.20 CreateStageWithToneCurves(context as LCMS2ContextMBS, ChannelCount as Integer) as LCMS2StageMBS
- 104.30.21 CreateStageWithToneCurves(context as LCMS2ContextMBS, Channels() as LCMS2ToneCurveMBS) as LCMS2StageMBS
- 104.30.22 CubeSize(clutPoints() as UInt32, inputChan as UInt32, outputChan as UInt32 = 1) as UInt32
- 104.30.23 CubeSize(GridPoints as UInt32, inputChan as UInt32, outputChan as UInt32 = 1) as UInt32
- 104.30.24 MatrixOffsets as Double()
- 104.30.25 MatrixValues as Double()
- 104.30.26 SampleCLut16bit(sampler as LCMS2StageSamplerMBS, Flags as Integer = 0) as boolean
- 104.30.27 SampleCLutFloat(sampler as LCMS2StageSamplerMBS, Flags as Integer = 0) as boolean
- 104.30.28 ToneCurves as LCMS2ToneCurveMBS()
- 104.30.30 CLutEntries as Integer
- 104.30.31 CLutHasFloatValues as Boolean
- 104.30.32 Data as Ptr
- 104.30.33 Handle as Integer
- 104.30.34 InputChannels as UInt32
- 104.30.35 NextItem as LCMS2StageMBS
- 104.30.36 OutputChannels as UInt32
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- 104.30.39 kSamplerInspect = & h01000000

- 104.31.1 class LCMS2StageSamplerMBS
  - 104.31.3 SliceSpaceFloat(Inputs as UInt32, values() as UInt32) as boolean
  - 104.31.4 SliceSpaceInteger(Inputs as UInt32, values() as UInt32) as boolean
- 104.31.6 SamplerFloat(InValues as Ptr, OutValues as Ptr, InputChannels as Integer, OutputChannels as Integer) as boolean
- 104.31.7 SamplerInteger(InValues as Ptr, OutValues as Ptr, InputChannels as Integer, OutputChannels as Integer) as boolean

- 104.32.1 class LCMS2ToneCurveMBS
  - 104.32.3 BuildGamma(context as LCMS2ContextMBS, gamma as Double) as LCMS2ToneCurveMBS
104.32.4 BuildParametricToneCurve(context as LCMS2ContextMBS, Type as Integer, params() as Double) as LCMS2ToneCurveMBS
104.32.5 BuildSegmentedToneCurve(context as LCMS2ContextMBS, Segments() as LCMS2CurveSegmentMBS) as LCMS2ToneCurveMBS
104.32.6 BuildTabulatedToneCurve(context as LCMS2ContextMBS, values() as Single) as LCMS2ToneCurveMBS
104.32.7 BuildTabulatedToneCurve(context as LCMS2ContextMBS, values() as UInt16) as LCMS2ToneCurveMBS
104.32.8 EstimatedTable as UInt16()
104.32.9 EstimatedTableEntries as UInt32
104.32.10 EstimateGamma(Precision as Double = 0.01) as Double
104.32.11 EvalToneCurve16(value as UInt16) as UInt16
104.32.12 EvalToneCurveFloat(value as Single) as Single
104.32.13 IsDescending as Boolean
104.32.14 IsLinear as Boolean
104.32.15 IsMonotonic as Boolean
104.32.16 IsMultisegment as Boolean
104.32.17 JoinToneCurve(context as LCMS2ContextMBS, X as LCMS2ToneCurveMBS, Y as LCMS2ToneCurveMBS, nPoints as UInt32) as LCMS2ToneCurveMBS
104.32.18 ParametricType as Integer
104.32.19 Reverse as LCMS2ToneCurveMBS
104.32.20 Reverse(nResultSamples as Integer) as LCMS2ToneCurveMBS
104.32.21 Smooth(lambda as Double) as Boolean
104.32.23 Handle as Integer

104.33.1 class LCMS2TransformMBS
104.33.3 ChangeBuffersFormat(InputFormat as UInt32, OutputFormat as UInt32) as boolean
104.33.4 CreateExtendedTransform(context as LCMS2ContextMBS, Profiles() as LCMS2ProfileMBS, BPC() as boolean, Intents() as UInt32, AdaptationStates() as Double, GamutProfile as LCMS2ProfileMBS, GamutPCSposition as UInt32, InputFormat as UInt32, OutputFormat as UInt32, Flags as UInt32 = 0) as LCMS2TransformMBS
104.33.5 CreateMultiprofileTransform(context as LCMS2ContextMBS, Profiles() as LCMS2ProfileMBS, InputFormat as UInt32, OutputFormat as UInt32, Intent as UInt32, Flags as UInt32 = 0) as LCMS2TransformMBS
104.33.6 CreateMultiprofileTransform(Profiles() as LCMS2ProfileMBS, InputFormat as UInt32, Intent as UInt32, Flags as UInt32 = 0) as LCMS2TransformMBS
104.33.7 CreateProofingTransform(context as LCMS2ContextMBS, InputProfile as LCMS2ProfileMBS, OutputProfile as LCMS2ProfileMBS, OutputFormat as UInt32, Proofing as LCMS2ProfileMBS, Intent as UInt32, ProofingIntent as UInt32, Flags as UInt32 = 0) as LCMS2TransformMBS
104.33.8 CreateProofingTransform(InputProfile as LCMS2ProfileMBS, OutputProfile as LCMS2ProfileMBS, OutputFormat as UInt32, Proofing as LCMS2ProfileMBS, Intent as UInt32, ProofingIntent as UInt32, Flags as UInt32 = 0) as LCMS2TransformMBS
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* 104.33.9 CreateTransform(context as LCMS2ContextMBS, InputProfile as LCMS2ProfileMBS, InputFormat as UInt32, OutputProfile as LCMS2ProfileMBS, OutputFormat as UInt32, Intent as UInt32, Flags as UInt32 = 0) as LCMS2TransformMBS

* 104.33.10 CreateTransform(InputProfile as LCMS2ProfileMBS, InputFormat as UInt32, OutputProfile as LCMS2ProfileMBS, OutputFormat as UInt32, Intent as UInt32, Flags as UInt32 = 0) as LCMS2TransformMBS

* 104.33.11 ToDeviceLink(Version as Double, Flags as UInt32) as LCMS2ProfileMBS

* 104.33.12 Transform(bitmap as LCMS2BitmapMBS) as boolean

* 104.33.13 Transform(inBitmap as LCMS2BitmapMBS, outBitmap as LCMS2BitmapMBS) as boolean

* 104.33.14 Transform(InputBuffer as Ptr, OutputBuffer as Ptr, Size as UInt32) as boolean

* 104.33.15 TransformLineStride(inBitmap as Ptr, outBitmap as Ptr, PixelsPerLine as UInt32, LineCount as UInt32, BytesPerLineIn as UInt32, BytesPerLineOut as UInt32, BytesPerPlaneIn as UInt32, BytesPerPlaneOut as UInt32) as boolean

* 104.33.16 TransformRGB(c as color) as color

* 104.33.17 TransformStride(inBitmap as Ptr, outBitmap as Ptr, size as UInt32, Stride as UInt32) as boolean

* 104.33.19 AdaptationState as Double

* 104.33.20 context as LCMS2ContextMBS

* 104.33.21 EntryColorSpace as Integer

* 104.33.22 EntryWhitePoint as LCMS2CIEXYZMBS

* 104.33.23 ExitColorSpace as Integer

* 104.33.24 ExitWhitePoint as LCMS2CIEXYZMBS

* 104.33.25 GamutCheck as LCMS2PipelineMBS

* 104.33.26 Handle as Integer

* 104.33.27 InputColorant as LCMS2NamedColorListMBS

* 104.33.28 InputFormat as UInt32

* 104.33.29 Lut as LCMS2PipelineMBS

* 104.33.30 NamedColorList as LCMS2NamedColorListMBS

* 104.33.31 OriginalFlags as UInt32

* 104.33.32 OutputColorant as LCMS2NamedColorListMBS

* 104.33.33 OutputFormat as UInt32

* 104.33.34 RenderingIntent as UInt32

* 104.33.35 Sequence as LCMS2SequenceMBS

– 104.34.1 class LCMS2UcrBgMBS

* 104.34.3 Constructor(Ucr as LCMS2ToneCurveMBS = nil, Bg as LCMS2ToneCurveMBS = nil, Desc as LCMS2MLUMBS = nil)

* 104.34.5 Bg as LCMS2ToneCurveMBS

* 104.34.6 Desc as LCMS2MLUMBS

* 104.34.7 Ucr as LCMS2ToneCurveMBS

– 104.35.1 class LCMS2Vec3MBS

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* 104.35.5 Constructor(v1 as Double = 0.0, v2 as Double = 0.0, v3 as Double = 0.0) 16162
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* 104.35.10 value(index as UInt32) as Double 16162

– 104.36.1 class LCMS2ViewingConditionsMBS 16164
  * 104.36.3 Clone as LCMS2ViewingConditionsMBS 16164
  * 104.36.4 Constructor(other as LCMS2ViewingConditionsMBS) 16164
  * 104.36.5 Constructor(whitePoint as LCMS2CIEXYZMBS = nil, Yb as Double = 0.0, La as Double = 0.0, surround as Integer = 0, D_value as Double = 0.0) 16164
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- 105.1.1 class LDAPMBS
  - 105.1.3 Add(distinguishedName as string, attrs() as LDAPModMBS)
  - 105.1.4 Bind(Who as String, Cred as String, AuthMethod as Integer, Domain as String = "")
  - 105.1.5 Connect(TimeOutSeconds as Double = 1.0)
  - 105.1.6 Constructor
  - 105.1.7 Constructor(IP as string, Port as Integer, Open as Boolean = false, Secure as Boolean = false)
  - 105.1.8 Constructor(URL as string)
  - 105.1.9 Delete(distinguishedName as string)
  - 105.1.10 ErrorString(error as Integer) as string
  - 105.1.11 Modify(distinguishedName as string, attrs() as LDAPModMBS)
  - 105.1.12 Rename(distinguishedName as string, NewDistinguishedName as String, DeleteOldRdn as Boolean)
  - 105.1.13 Rename(distinguishedName as string, NewRDN as String, NewParent as String, DeleteOldRdn as Boolean)
  - 105.1.14 Search(distinguishedName as string, Scope as Integer, Filter as String, Attrs() as String = nil, AttributesOnly as boolean = false, timeout as Double = 1.0, SizeLimit as Integer = 0) as Dictionary()
  - 105.1.15 SimpleBind(Who as String, Cred as String)
  - 105.1.16 Handle as Integer
  - 105.1.17 LastError as Integer
  - 105.1.18 NetworkTimeOut as Integer
  - 105.1.19 ProtocolVersion as Integer
  - 105.1.20 Referrals as Integer
  - 105.1.21 TimeOut as Integer
  - 105.1.22 Error(ErrorCode as Integer, ErrorMessage as String, FunctionName as String)

- 105.1.26 kAuthDigest = & h4086
- 105.1.27 kAuthDPA = & h2086
- 105.1.28 kAuthExternal = & hA6
- 105.1.29 kAuthKRBV4 = & hFF
- 105.1.30 kAuthKRBV41 = & h81
- 105.1.31 kAuthKRBV42 = & h82
- 105.1.32 kAuthMSN = & h0886
- 105.1.33 kAuthNegotiate = & h4FF
- 105.1.34 kAuthNegotiateWin = & h0486
- 105.1.35 kAuthNone = 0
- 105.1.36 kAuthNTLM = & h1086
- 105.1.37 kAuthSASL = & hA3
- 105.1.38 kAuthSASLWin = & h83
- 105.1.39 kAuthSicily = & h0286
* 105.1.40 kAuthSimple = & h80
* 105.1.41 kAuthSSPI = & h4FF
* 105.1.42 kScopeBase = 0
* 105.1.43 kScopeDefault = -1
* 105.1.44 kScopeOneLevel = 1
* 105.1.45 kScopeSubordinate = 3
* 105.1.46 kScopeSubtree = 2
* 105.1.47 kVersion1 = 1
* 105.1.48 kVersion2 = 2
* 105.1.49 kVersion3 = 3

– 105.2.1 class LDAPModMBS
* 105.2.3 addValue(value as String)
* 105.2.4 clearValues
* 105.2.5 Constructor
* 105.2.6 setValues(values() as String)
* 105.2.7 Values as String()
* 105.2.9 Operation as Integer
* 105.2.10 Type as String
* 105.2.11 Value as String
* 105.2.13 kOperationAdd = 0
* 105.2.14 kOperationDelete = 1
* 105.2.15 kOperationReplace = 2
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- 167.3.1 class LibUSBConfigDescriptorMBS
  - 167.3.3 Constructor
  - 167.3.4 GetInterface(index as Integer) as LibUSBInterfaceMBS
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- 167.4.1 class LibUSBDeviceDescriptorMBS
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  - 167.4.21 kClassAudio = 1
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  - 167.4.25 kClassDiagnosticDevice = & hdc
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* 167.5.81 kLogLevelError = 1 19712
* 167.5.82 kLogLevelInfo = 3 19712
* 167.5.83 kLogLevelNone = 0 19712
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* 167.5.85 kSpeedFull = 2 19712
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  * 167.10.8 GetInputReport(path() as Integer, data as memoryblock, offset as Integer, size as Integer) as Integer
  * 167.10.9 InterruptRead(EndPoint as Integer, mem as memoryblock, size as Integer, timeout as Integer) as Integer
  * 167.10.10 InterruptWrite(EndPoint as Integer, mem as memoryblock, size as Integer, timeout as Integer) as Integer
  * 167.10.11 IsInitialised as boolean
  * 167.10.12 IsOpen as boolean
  * 167.10.13 Open(theInterface as Integer, Vendor as Integer, Product as Integer) as Integer
  * 167.10.14 Reset
  * 167.10.15 SetDebugLevel(level as Integer)
  * 167.10.16 SetDebugOutputToStderr
  * 167.10.17 SetDebugOutputToStdout
  * 167.10.18 SetOutputReport(path() as Integer, data as memoryblock, offset as Integer, size as Integer) as Integer
  * 167.10.19 SetOutputReport(path() as Integer, data as string) as Integer
  * 167.10.20 WriteIdentificationToStderr as Integer
  * 167.10.21 WriteIdentificationToStdout as Integer
  * 167.10.22 Handle as Integer
  * 167.10.23 MatchDevice(usbdev as LinuxUSBDeviceHandleMBS) as boolean
  * 167.10.24 kDebugAll = 31
  * 167.10.25 kDebugAsserts = 16
  * 167.10.26 kDebugErrors = 1
  * 167.10.27 kDebugNone = 0
  * 167.10.28 kDebugNotices = 4
  * 167.10.29 kDebugNoTraces = 23
  * 167.10.30 kDebugTraces = 8
  * 167.10.31 kDebugWarnings = 2
  * 167.10.32 kErrorAlreadyInitialised = 3
  * 167.10.33 kErrorDeviceAlreadyOpened = 9
  * 167.10.34 kErrorDeviceNotFound = 7
  * 167.10.35 kErrorDeviceNotOpened = 8
  * 167.10.36 kErrorFailAlloc = 17
* 167.10.40 kErrorFailClaimIFace = 11
* 167.10.41 kErrorFailCloseDevice = 10
* 167.10.42 kErrorFailDetachDriver = 12
* 167.10.43 kErrorFailFindBusses = 4
* 167.10.44 kErrorFailFindDevices = 5
* 167.10.45 kErrorFailGetReport = 20
* 167.10.46 kErrorFailIntRead = 21
* 167.10.47 kErrorFailOpenDevice = 6
* 167.10.48 kErrorFailSetReport = 19
* 167.10.49 kErrorHIDDescShort = 14
* 167.10.50 kErrorInvalidParameter = 1
* 167.10.51 kErrorNotFound = 22
* 167.10.52 kErrorNotHIDDevice = 13
* 167.10.53 kErrorNotInitialised = 2
* 167.10.54 kErrorOutOfSpace = 18
* 167.10.55 kErrorReportDescLong = 16
* 167.10.56 kErrorReportDescShort = 15
* 167.10.57 kErrorSuccess = 0
* 167.10.58 kMatchAny = 0
• 84 HTMLViewer Linux

  – 84.1.1 class LinuxJavaScriptContextMBS

    * 84.1.3 CheckScriptSyntax(script as string, sourceURL as string = "", StartLineNumber as Integer = 0) as boolean
    * 84.1.4 CheckScriptSyntax(script as string, sourceURL as string, StartLineNumber as Integer, byref JSEException as string) as boolean
    * 84.1.5 Constructor
    * 84.1.6 Destructor
    * 84.1.7 EvaluateScript(script as string, sourceURL as string = "", StartLineNumber as Integer = 0) as string
    * 84.1.8 EvaluateScript(script as string, sourceURL as string, StartLineNumber as Integer, byref JSEException as string) as string
    * 84.1.9 GarbageCollect
    * 84.1.11 Handle as Integer
    * 84.1.12 HTMLViewer as HTMLViewer
• 108 Linux

  - 108.1 class LinuxProcessMBS
  * 108.1.3 Constructor
  * 108.1.4 PID as Integer
  * 108.1.5 ProcessByPID(ProcessID as Integer) as LinuxProcessMBS
  * 108.1.6 Processes as LinuxProcessMBS()
  * 108.1.8 CommandLine as String
  * 108.1.9 CurrentWorkingDirectory as String
  * 108.1.10 Environment as Dictionary
  * 108.1.11 Name as String
  * 108.1.12 NumberOfThreads as Integer
  * 108.1.13 OpenFiles as Dictionary
  * 108.1.14 ParentProcessID as Integer
  * 108.1.15 Path as String
  * 108.1.16 ProcessID as Integer
  * 108.1.17 StartTime as Date
  * 108.1.18 State as String

  - 108.2.1 class LinuxSuMBS
  * 108.2.3 AskPassword(prompt as String) as String
  * 108.2.4 Available as boolean
  * 108.2.5 ExecuteRun as boolean
  * 108.2.6 ExecuteSu as boolean
  * 108.2.7 ExecuteSudo as boolean
  * 108.2.9 Alert as String
  * 108.2.10 AlwaysAskPassword as Boolean
  * 108.2.11 Command as String
  * 108.2.12 Debug as Boolean
  * 108.2.13 Description as String
  * 108.2.14 ExitCode as Integer
  * 108.2.15 Grab as Boolean
  * 108.2.16 Handle as Integer
  * 108.2.17 KeepEnvironment as Boolean
  * 108.2.18 LastError as Integer
  * 108.2.19 LastErrorMessage as String
  * 108.2.20 LoginShell as Boolean
  * 108.2.21 Message as String
  * 108.2.22 User as String
  * 108.2.24 AskPassword(prompt as String, byref ErrorCode as Integer, byref ErrorMessage as String) as string
  * 108.2.25 PasswordNoNeeded
  * 108.2.27 ErrorCanceled = 11
108.2.28 ErrorChildFailed = 9
108.2.29 ErrorExec = 5
108.2.30 ErrorFork = 4
108.2.31 ErrorHelper = 1
108.2.32 ErrorNoCommand = 2
108.2.33 ErrorNoPassword = 3
108.2.34 ErrorNotAllowed = 10
108.2.35 ErrorPipe = 6
108.2.36 ErrorPiperead = 7
108.2.37 ErrorWrongAutoPass = 12
108.2.38 ErrorWrongPass = 8
108.2.39 ErrorXauth = 0
• 158 System

  – 158.4.1 class LinuxSysInfoMBS
    * 158.4.3 Constructor
    * 158.4.4 loads(index as Integer) as Double
    * 158.4.6 availablePhysicalPages as Integer
    * 158.4.7 BufferRam as UInt64
    * 158.4.8 FreeHigh as UInt64
    * 158.4.9 FreeRam as UInt64
    * 158.4.10 FreeSwap as UInt64
    * 158.4.11 MemoryUnit as UInt64
    * 158.4.12 NumberOfProcesses as Integer
    * 158.4.13 NumberOfProcessors as Integer
    * 158.4.14 NumberOfProcessorsConfigured as Integer
    * 158.4.15 PhysicalPages as Integer
    * 158.4.16 SharedRam as UInt64
    * 158.4.17 TotalHigh as UInt64
    * 158.4.18 TotalRam as UInt64
    * 158.4.19 TotalSwap as UInt64
    * 158.4.20 upTime as Integer
    * 158.4.21 Valid as Boolean
• 167 USB
  
  – 167.11.1 class LinuxUSBBusMBS  
    * 167.11.3 Buses as LinuxUSBBusMBS  
    * 167.11.4 RescanBusses as Integer  
    * 167.11.5 RescanDevices as Integer  
    * 167.11.7 Devices as LinuxUSBDeviceMBS  
    * 167.11.8 DirName as String  
    * 167.11.9 Location as Integer  
    * 167.11.10 NextBus as LinuxUSBBusMBS  
    * 167.11.11 PrevBus as LinuxUSBBusMBS  
    * 167.11.12 RootDevice as LinuxUSBDeviceMBS
  
  – 167.12.1 class LinuxUSBDeviceDescriptionMBS  
    * 167.12.3 cdDevice as Integer  
    * 167.12.4 cdUSB as Integer  
    * 167.12.5 DescriptorType as Integer  
    * 167.12.6 DeviceClass as Integer  
    * 167.12.7 DeviceProtocol as Integer  
    * 167.12.8 DeviceSubClass as Integer  
    * 167.12.9 Manufacturer as String  
    * 167.12.10 MaxPacketSize0 as Integer  
    * 167.12.11 NumConfigurations as Integer  
    * 167.12.12 Product as Integer  
    * 167.12.13 ProductName as String  
    * 167.12.14 SerialNumber as String  
    * 167.12.15 Vendor as Integer  
    * 167.12.17 kDeviceClassAudio = 1  
    * 167.12.18 kDeviceClassCOMM = 2  
    * 167.12.19 kDeviceClassDATA = 10  
    * 167.12.20 kDeviceClassHID = 3  
    * 167.12.21 kDeviceClassHUB = 9  
    * 167.12.22 kDeviceClassMassStorage = 8  
    * 167.12.23 kDeviceClassPerInterface = 0  
    * 167.12.24 kDeviceClassPrinter = 7  
    * 167.12.25 kDeviceClassVendorSpecific = 255
  
  – 167.13.1 class LinuxUSBDeviceHandleMBS  
    * 167.13.3 AltSetting as Integer  
    * 167.13.4 Bus as LinuxUSBBusMBS  
    * 167.13.5 Config as Integer  
    * 167.13.6 Device as LinuxUSBDeviceMBS  
    * 167.13.7 InterfaceIndex as Integer
167.14.1 class LinuxUSBDeviceMBS

  * 167.14.3 Children(index as Integer) as LinuxUSBDeviceMBS
  * 167.14.5 Bus as LinuxUSBBusMBS
  * 167.14.6 ChildrenCount as Integer
  * 167.14.7 Descriptor as LinuxUSBDeviceDescriptionMBS
  * 167.14.8 Filename as String
  * 167.14.9 NextDevice as LinuxUSBDeviceMBS
  * 167.14.10 PrevDevice as LinuxUSBDeviceMBS
• 84 HTMLViewer Linux
  – 84.2.1 class LinuxWebBackForwardListMBS
    * 84.2.3 AddItem(item as LinuxWebHistoryItemMBS)
    * 84.2.4 BackItem as LinuxWebHistoryItemMBS
    * 84.2.5 BackLength as Integer
    * 84.2.6 Clear
    * 84.2.7 Constructor(webview as LinuxWebViewMBS)
    * 84.2.8 ContainsItem(item as LinuxWebHistoryItemMBS) as boolean
    * 84.2.9 CurrentItem as LinuxWebHistoryItemMBS
    * 84.2.10 Destructor
    * 84.2.11 ForwardItem as LinuxWebHistoryItemMBS
    * 84.2.12 ForwardLength as Integer
    * 84.2.13 GoBack
    * 84.2.14 GoForward
    * 84.2.15 GoToItem(item as LinuxWebHistoryItemMBS)
    * 84.2.16 Item(index as Integer) as LinuxWebHistoryItemMBS
    * 84.2.18 Handle as Integer
    * 84.2.19 HTMLViewer as HTMLViewer
    * 84.2.20 Limit as Integer
  – 84.3.1 class LinuxWebCookieMBS
    * 84.3.3 Constructor(name as string, value as string, domain as string, path as string, maxAge as Integer)
    * 84.3.4 Copy as LinuxWebCookieMBS
    * 84.3.5 Destructor
    * 84.3.6 Equal(other as LinuxWebCookieMBS) as boolean
    * 84.3.7 SetMaxAge(value as Integer)
    * 84.3.8 ToCookieHeader as string
    * 84.3.9 ToSetCookieHeader as string
    * 84.3.11 Handle as Integer
    * 84.3.12 Owner as Variant
    * 84.3.13 Domain as string
    * 84.3.14 Expires as date
    * 84.3.15 HTTPOnly as boolean
    * 84.3.16 Name as string
    * 84.3.17 Path as string
    * 84.3.18 Secure as boolean
    * 84.3.19 Value as string
    * 84.3.21 kMaxAgeDay = 86400
    * 84.3.22 kMaxAgeHour = 3600
    * 84.3.23 kMaxAgeWeek = 604800
    * 84.3.24 kMaxAgeYear = 31556926
84.4.1 class LinuxWebCookieStoreMBS

- 84.4.3 AddCookie(cookie as LinuxWebCookieMBS)
- 84.4.4 AllCookies as LinuxWebCookieMBS()
- 84.4.5 Available as Boolean
- 84.4.6 Constructor
- 84.4.7 CookieStore as LinuxWebCookieStoreMBS
- 84.4.8 DeleteAllCookies
- 84.4.9 DeleteCookie(cookie as LinuxWebCookieMBS)
- 84.4.10 Destructor
- 84.4.11 SetCookieStore(newStore as LinuxWebCookieStoreMBS)
- 84.4.13 Handle as Integer
- 84.4.14 Owner as Variant
- 84.4.15 AcceptPolicy as Integer
- 84.4.17 kAcceptAlways = 0
- 84.4.18 kAcceptNever = 1
- 84.4.19 kAcceptNoThirdParty = 2

84.5.1 class LinuxWebDataSourceMBS

- 84.5.3 Constructor
- 84.5.4 Constructor(request as LinuxWebNetworkRequestMBS)
- 84.5.5 Data as string
- 84.5.6 Destructor
- 84.5.7 Encoding as string
- 84.5.8 InitialRequest as LinuxWebNetworkRequestMBS
- 84.5.9 IsLoading as boolean
- 84.5.10 MainResource as LinuxWebResourceMBS
- 84.5.11 Request as LinuxWebNetworkRequestMBS
- 84.5.12 Subresources as LinuxWebResourceMBS()
- 84.5.13 UnrechableURI as string
- 84.5.14 WebFrame as LinuxWebFrameMBS
- 84.5.16 Handle as Integer
- 84.5.17 HTMLViewer as HTMLViewer

84.6.1 class LinuxWebFrameMBS

- 84.6.3 Constructor
- 84.6.4 DataSource as LinuxWebDataSourceMBS
- 84.6.5 Destructor
- 84.6.6 FindFrame(name as string) as LinuxWebFrameMBS
- 84.6.7 JSContext as LinuxJavaScriptContextMBS
- 84.6.8 LoadAlternateString(content as string, BaseURL as string, unreachableURL as string)
- 84.6.9 LoadRequest(request as LinuxWebNetworkRequestMBS)
- 84.6.10 LoadStatus as Integer
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* 84.6.25 WebView as LinuxWebViewMBS 13848
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* 84.6.31 kLoadProvisional = 0 13849

– 84.7.1 class LinuxWebHistoryItemMBS 13850
  * 84.7.3 Constructor 13850
  * 84.7.4 Constructor(URI as string, Title as string) 13850
  * 84.7.5 Copy as LinuxWebHistoryItemMBS 13850
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  * 84.7.9 Title as string 13851
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– 84.8.1 class LinuxWebInspectorMBS 13853
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84.9.1 class LinuxWebNetworkRequestMBS
* 84.9.3 Constructor(url as string)
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* 84.9.6 Handle as Integer
* 84.9.7 HTMLViewer as HTMLViewer
* 84.9.8 URL as string

84.10.1 class LinuxWebNetworkResponseMBS
* 84.10.3 Constructor(url as string)
* 84.10.4 Destructor
* 84.10.6 Handle as Integer
* 84.10.7 HTMLViewer as HTMLViewer
* 84.10.8 URL as string

84.11.1 class LinuxWebResourceMBS
* 84.11.3 Constructor(data as string, uri as string, mimeType as string, encoding as string = "", FrameName as string = "")
* 84.11.4 Data as string
* 84.11.5 Destructor
* 84.11.6 Encoding as string
* 84.11.7 FrameName as string
* 84.11.8 MimeType as string
* 84.11.9 URL as string
* 84.11.11 Handle as Integer
* 84.11.12 HTMLViewer as HTMLViewer

84.12.1 class LinuxWebSettingsMBS
* 84.12.3 Constructor
* 84.12.4 Copy as LinuxWebSettingsMBS
* 84.12.5 Destructor
* 84.12.6 UserAgent as string
* 84.12.8 Handle as Integer
* 84.12.9 HTMLViewer as HTMLViewer

84.13.1 class LinuxWebViewMBS
* 84.13.3 Available as Boolean
* 84.13.4 BackForwardList as LinuxWebBackForwardListMBS
* 84.13.5 CacheModel as Integer
* 84.13.6 CanCopyClipboard as boolean
* 84.13.7 CanCutClipboard as boolean
* 84.13.8 CanGoBack as boolean
* 84.13.9 CanGoBackOrForward(steps as Integer) as boolean
* 84.13.10 CanGoForward as boolean
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* 84.13.11 CanPasteClipboard as boolean 13864
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* 84.13.30 IconURL as string 13867
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* 84.13.35 LoadStatus as Integer 13868
* 84.13.36 LoadString(content as string, MimeType as String, Encoding as String, BaseURL as string) 13868
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* 84.13.39 MajorVersion as Integer 13869
* 84.13.40 MarkTextMatches(text as string, caseSensitive as boolean = false, limit as Integer = 99) as Integer 13869
* 84.13.41 MicroVersion as Integer 13870
* 84.13.42 MinorVersion as Integer 13870
* 84.13.43 PasteClipboard 13870
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* 84.13.45 ProxyURL as String 13870
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* 84.13.47 Reload 13870
* 84.13.48 ReloadIgnoreCache 13871
* 84.13.49 SearchText(text as string, caseSensitive as boolean = false, forward as boolean = true, wrap as boolean = true) as boolean 13871
* 84.13.50 SelectAll
* 84.13.51 SetCookieStore(newStore as LinuxWebCookieStoreMBS)
* 84.13.52 SetHighlightTextMatches(highlight as boolean)
* 84.13.53 SetMaintainsBackForwardList(flag as boolean)
* 84.13.54 StopLoading
* 84.13.55 Title as string
* 84.13.56 Undo
* 84.13.57 UnmarkTextMatches
* 84.13.58 URL as string
* 84.13.59 ZoomIn
* 84.13.60 ZoomOut
* 84.13.62 Handle as Integer
* 84.13.63 HTMLViewer as HTMLViewer
* 84.13.64 CustomEncoding as string
* 84.13.65 Editable as boolean
* 84.13.66 FullContentZoom as boolean
* 84.13.67 Settings as LinuxWebSettingsMBS
* 84.13.68 Transparent as boolean
* 84.13.69 ViewSourceMode as boolean
* 84.13.70 ZoomLevel as Double
* 84.13.72 kCacheModelDocumentViewer = 1
* 84.13.73 kCacheModelWebBrowser = 2
* 84.13.74 kLoadCommitted = 1
* 84.13.75 kLoadFailed = 4
* 84.13.76 kLoadFinished = 2
* 84.13.77 kLoadFirstVisuallyNonEmptyLayout = 3
* 84.13.78 kLoadProvisional = 0
• 45 Controls
  – 45.9.1 class Listbox
    * 45.9.3 HorizontalNSScrollerMBS as NSScrollerMBS
    * 45.9.4 InvalidateCellThreadSafeMBS(Row as Integer, Column as Integer)
    * 45.9.5 VerticalNSScrollerMBS as NSScrollerMBS
• 59 Currency, Date and Time Format

  – ?? Globals ??
    * 59.1.1 CDblMBS(text as string, byref value as Double, locale as string = "") as boolean
    * 59.1.2 FormatDateMBS(format as string, value as date, locale as string = "") as string
    * 59.1.3 FormatMBS(format as string, value as Double, locale as string = "") as string
    * 59.1.4 ParseDateMBS(format as string, text as string, byref value as date, locale as string = "") as boolean

  – 59.2.1 class LocaleMBS
    * 59.2.3 Constructor
    * 59.2.4 Locale(Locale as string = "") as LocaleMBS
    * 59.2.6 CurrencySymbol as String
    * 59.2.7 DecimalPoint as String
    * 59.2.8 FracDigits as Integer
    * 59.2.9 Grouping as String
    * 59.2.10 IntCurrSymbol as String
    * 59.2.11 IntFracDigits as Integer
    * 59.2.12 IntNegCSPrecedes as Integer
    * 59.2.13 IntNegSepBySpace as Integer
    * 59.2.14 IntNegSignPosition as Integer
    * 59.2.15 IntPosCSPrecedes as Integer
    * 59.2.16 IntPosSepBySpace as Integer
    * 59.2.17 IntPosSignPosition as Integer
    * 59.2.18 monDecimalPoint as String
    * 59.2.19 monGrouping as String
    * 59.2.20 monThousandsSep as String
    * 59.2.21 Name as String
    * 59.2.22 NegativeSign as String
    * 59.2.23 NegCSPrecedes as Boolean
    * 59.2.24 NegSepBySpace as Boolean
    * 59.2.25 NegSignPosition as Integer
    * 59.2.26 PosCSPrecedes as Boolean
    * 59.2.27 PositiveSign as String
    * 59.2.28 PosSepBySpace as Boolean
    * 59.2.29 PosSignPosition as Integer
    * 59.2.30 ThousandsSep as String
• **109 Login Items**
  
  – 109.1.1 class LoginItemsMBS
    
    * 109.1.3 AddFile(file as FolderItem, hidden as boolean=false) as boolean
    * 109.1.4 AddURL(url as string, hidden as boolean=false) as boolean
    * 109.1.5 DisplayName(index as Integer) as String
    * 109.1.6 File(index as Integer) as FolderItem
    * 109.1.7 IsHidden(index as Integer) as boolean
    * 109.1.8 Name(index as Integer) as String
    * 109.1.9 OldAddLoginItem(file as folderitem,hide as boolean,allusers as boolean) as boolean
    * 109.1.10 OldCountOfLoginItems(allusers as boolean) as Integer
    * 109.1.11 OldLoginItemPropertyAtIndex(what as Integer, index as Integer, allusers as boolean) as string
    * 109.1.12 OldRemoveLoginItem(file as folderitem,allusers as boolean) as boolean
    * 109.1.13 OldRemoveLoginItemAtIndex(index as Integer, allusers as boolean) as boolean
    * 109.1.14 Remove(index as Integer) as boolean
    * 109.1.15 RemoveFile(file as FolderItem) as boolean
    * 109.1.16 RemoveURL(url as string) as boolean
    * 109.1.17 Update
    * 109.1.18 URL(index as Integer) as String
    * 109.1.20 Count as Integer
    * 109.1.21 Handle as Integer
    * 109.1.22 Lasterror as Integer
  
  – 109.2.1 class LSSharedFileListItemMBS
    
    * 109.2.3 DisplayName as string
    * 109.2.4 Icon as Variant
    * 109.2.5 ID as UInt32
    * 109.2.6 Resolve(flags as UInt32) as folderitem
    * 109.2.7 ResolveURL(flags as UInt32) as string
    * 109.2.9 Handle as Integer
    * 109.2.10 Lasterror as Integer
    * 109.2.11 ItemHidden as boolean
    * 109.2.12 LoginItemHidden as boolean
    * 109.2.14 kDoNotMountVolumes = 2
    * 109.2.15 kNoUserInteraction = 1
  
  – 109.3.1 class LSSharedFileListMBS
    
    * 109.3.3 Constructor(type as Integer)
    * 109.3.4 GetSeedValue as UInt32
    * 109.3.5 InsertFile(AfterItem as LSSharedFileListItemMBS, DisplayName as string, Icon as object, file as folderitem) as LSSharedFileListItemMBS
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* 109.3.7 kLSSharedFileListItemBeforeFirst as LSSharedFileListItemMBS 16324
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* 109.3.16 Handle as Integer 16326
* 109.3.17 Lasterror as Integer 16326
* 109.3.18 RecentItemsMaxAmount as Integer 16326
* 109.3.19 VolumesComputerVisible as boolean 16326
* 109.3.20 VolumesIDiskVisible as boolean 16327
* 109.3.21 VolumesNetworkVisible as boolean 16327
* 109.3.23 Changed 16327
* 109.3.25 kFavoriteItems = 2 16327
* 109.3.26 kFavoriteVolumes = 1 16328
* 109.3.27 kGlobalLoginItems = 7 16328
* 109.3.28 kRecentApplicationItems = 3 16329
* 109.3.29 kRecentDocumentItems = 4 16329
* 109.3.30 kRecentServerItems = 5 16330
* 109.3.31 kSessionLoginItems = 6 16330
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  – **170.3.1 class MAAttachedWindowMBS** 19958
    
    * **170.3.3 attachedWindow**(view as NSViewMBS, point as NSPointMBS = nil, window as NSWindowMBS = nil, onSide as Integer = 12, distance as Double = 0.0) as MAAttachedWindowMBS 19959
    
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  – 10.3.1 class MacAliasMBS
    * 10.3.3 AliasInfo as AliasInfoMBS
    * 10.3.4 close
    * 10.3.5 Create(relPath as FolderItem, target as FolderItem, isDirectory as boolean = false) as Integer
    * 10.3.6 CreateAliasFromPath(targetPath as string, fromFilePath as String = "", isDirectory as boolean = false) as Integer
    * 10.3.7 CreateFSRef(relPath as memoryblock, target as memoryblock) as Integer
    * 10.3.8 CreateMinimal(target as FolderItem, isDirectory as boolean = false) as Integer
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    * 10.3.10 GetRecord as String
    * 10.3.11 PathString as String
    * 10.3.12 Resolve(relPath as FolderItem, mode as Integer) as FolderItem
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    * 10.3.22 exhaustive=& h200
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    * 10.3.25 kARMNoUI=2
    * 10.3.26 kARMSearch=& h100
    * 10.3.27 kARMSearchMore=& h200
    * 10.3.28 kARMSearchRelFirst=& h400
    * 10.3.29 kARMTryFileIDFirst=& h800
    * 10.3.30 noDialogs=2
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  – 75.18.1 class MacFileOperationMBS
     * 75.18.3 Cancel
     * 75.18.4 CopyObject(Item as folderitem, DestinationFolder as folderitem, DestinationName as string, Options as Integer, statusChangeInterval as Double)
     * 75.18.5 CopyObjectSync(SourceItem as folderitem, DestinationFolder as folderitem, DestinationName as string, byref Result as folderitem, Options as Integer) as Integer
     * 75.18.6 MoveObject(Item as folderitem, DestinationFolder as folderitem, DestinationName as string, Options as Integer, statusChangeInterval as Double)
     * 75.18.7 MoveObjectSync(SourceItem as folderitem, DestinationFolder as folderitem, DestinationName as string, byref Result as folderitem, Options as Integer) as Integer
     * 75.18.8 MoveObjectToTrash(Item as folderitem, Options as Integer, statusChangeInterval as Double)
     * 75.18.9 MoveObjectToTrashSync(SourceItem as folderitem, byref Result as folderitem, Options as Integer) as Integer
     * 75.18.10 Status as MacFileOperationStatusMBS
     * 75.18.12 Handle as Integer
     * 75.18.13 LastError as Integer
     * 75.18.15 StatusChanged(status as MacFileOperationStatusMBS)
     * 75.18.17 kFSFileOperationDefaultOptions=0
     * 75.18.18 kFSFileOperationDoNotMoveAcrossVolumes=4
     * 75.18.19 kFSFileOperationOverwrite=1
     * 75.18.20 kFSFileOperationSkipPreflight=8
     * 75.18.21 kFSFileOperationSkipSourcePermissionErrors=2
     * 75.18.22 kFSOperationStageComplete=3
     * 75.18.23 kFSOperationStagePreflighting=1
     * 75.18.24 kFSOperationStageRunning=2
     * 75.18.25 kFSOperationStageUndefined=0

  – 75.19.1 class MacFileOperationStatusMBS
     * 75.19.3 BytesComplete as Int64
     * 75.19.4 BytesRemaining as Int64
     * 75.19.5 CurrentItem as FolderItem
     * 75.19.6 Error as Integer
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     * 75.19.8 ObjectsComplete as Int64
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     * 75.19.10 Stage as Integer
     * 75.19.11 Throughput as Int64
     * 75.19.12 TotalBytes as Int64
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     * 75.19.14 TotalUserVisibleObjects as Int64
     * 75.19.15 UserVisibleObjectsComplete as Int64
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  - 167.15.1 class MacHIDMBS
    - 167.15.3 Close
    - 167.15.4 Connect
    - 167.15.5 Disconnect
    - 167.15.6 FindFirstDevice as boolean
    - 167.15.7 FindNextDevice as boolean
    - 167.15.8 HIDProperties as Variant
    - 167.15.9 InstallCallback
    - 167.15.10 Manufacturer as string
    - 167.15.11 Product as string
    - 167.15.12 ProductID as Integer
    - 167.15.13 ReadMessage(ReportID as Integer, reportType as Integer, length as Integer) as string
    - 167.15.14 ReadMessageMemory(ReportID as Integer, reportType as Integer, length as Integer) as memoryblock
    - 167.15.15 SendMessage(data as string)
    - 167.15.16 SendMessage(ReportID as Integer, reportType as Integer, data as string)
    - 167.15.17 SendMessageMemory(data as memoryblock, offset as Integer, length as Integer)
    - 167.15.18 SendMessageMemory(ReportID as Integer, reportType as Integer, data as memoryblock, offset as Integer, length as Integer)
    - 167.15.19 SerialNumber as string
    - 167.15.20 VendorID as Integer
    - 167.15.21 VersionNumber as Integer
    - 167.15.23 IOHIDDeviceInterface122Handle as Integer
    - 167.15.24 IOHIDOObjectIteratorHandle as Integer
    - 167.15.25 IOObjectHandle as Integer
    - 167.15.26 Lasterror as Integer
    - 167.15.27 OnlyOneEventPerTick as Boolean
    - 167.15.28 TimeOut as Integer
    - 167.15.30 DeviceRemoved(result as Integer)
    - 167.15.31 ReceivedData(data as string, size as Integer)
    - 167.15.33 kIOHIDReportTypeFeature = 2
    - 167.15.34 kIOHIDReportTypeInput = 0
    - 167.15.35 kIOHIDReportTypeOutput = 1
• 122 Notifications
  
  – 122.1.1 class MacNotificationMBS
    * 122.1.3 Show
    * 122.1.5 FlashIcon as boolean
    * 122.1.6 IconID as Integer
    * 122.1.7 mark as boolean
    * 122.1.8 Message as string
    * 122.1.9 PlaySystemSound as boolean
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    * 170.4.3 AreFloatingWindowsVisibleMBS as boolean
    * 170.4.4 CollapseAllWindowsMBS(collapse as boolean)
    * 170.4.1 DisableScreenUpdatesMBS
    * 170.4.2 EnableScreenUpdatesMBS
    * 170.4.5 HideAllFloatingWindowsMBS
    * 170.4.6 ShowAllFloatingWindowsMBS
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    * 158.1.14 AbortMBS
    * 158.1.21 ArrayIsAMBS(v as Variant, ClassName as string) as boolean
    * 158.1.22 BacktraceMBS(MaxFrames as Integer = 0, skip as Integer = 2) as string()
    * 158.1.8 CrashNiceMBS
    * 158.1.9 CrashUglyMBS
    * 158.1.10 DelayMBS(time as Double)
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    * 158.1.15 ExitMBS(code as Integer)
    * 158.1.33 ExitWindowsMBS(mode as Integer) as boolean
    * 158.1.23 GetAutoMemoryAddressMBS(o as auto) as integer
    * 158.1.34 GetDoubleClickIntervalMBS as Integer
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    * 158.1.35 GetMaximumOpenFileCountMacOSXMBS as Integer
    * 158.1.24 GetObjectMemoryAddressMBS(o as object) as integer
    * 158.1.25 GetStringMemoryAddressMBS(s as string) as integer
    * 158.1.36 GetSystemUIModeMBS as Integer
    * 158.1.37 GetSystemUIModeOptionsMBS as Integer
    * 158.1.26 GetTextMemoryAddressMBS(s as text) as integer
    * 158.1.27 GetVariantArrayMBS(VariantContainingArray as Variant) as Variant()
    * 158.1.28 GetVariantArrayUboundMBS(v as Variant) as Integer
    * 158.1.29 GetVariantArrayValueMBS(v as Variant, index as Integer) as Variant
    * 158.1.5 GetWindowsColorProfileMBS as folderitem
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    * 158.1.16 GlobalIdleTimeMBS as Double
    * 158.1.13 InstallSystemExceptionHandlerMBS(Message as string = "")
    * 158.1.38 IsWindows95MBS as boolean
    * 158.1.39 IsWindowsAdminUserMBS as boolean
    * 158.1.40 IsWindowsNTMBS as boolean
    * 158.1.41 MacCountryCodeMBS as string
    * 158.1.17 MacGlobalIdleTimeMBS as UInt64
    * 158.1.18 MacMountServerVolumeMBS(URL as string, MountDir as String, User as String, Password as String, byref Disk as FolderItem, flags as Integer) as Integer
    * 158.1.19 MacUnmountVolumeMBS(volume as folderItem, Force as Boolean, byref dissenter as Integer) as Integer
    * 158.1.30 MillisecondsMBS as Double
    * 158.1.31 ObjectIsAMBS(o as object, ClassName as string) as boolean
    * 158.1.42 OpenMacOSXPreferencesPaneMBS(name as string) as Integer
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* 158.1.44 SetMaximumOpenFileCountMacOSXMBS(Value as Integer) 19166
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  - 75.20.1 class MacQuarantinePropertiesMBS
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    * 75.20.4 AgentName as String
    * 75.20.5 DataURL as String
    * 75.20.6 Dic as Variant
    * 75.20.7 OriginURL as String
    * 75.20.8 TimeStamp as Date
    * 75.20.9 Type as String
    * 75.20.11 kTypeCalendarEventAttachment = "LSQuarantineTypeCalendarEventAttachment"
    * 75.20.12 kTypeEmailAttachment = "LSQuarantineTypeEmailAttachment"
    * 75.20.13 kTypeInstantMessageAttachment = "LSQuarantineTypeInstantMessageAttachment"
    * 75.20.14 kTypeOtherAttachment = "LSQuarantineTypeOtherAttachment"
    * 75.20.15 kTypeOtherDownload = "LSQuarantineTypeOtherDownload"
    * 75.20.16 kTypeWebDownload = "LSQuarantineTypeWebDownload"
• 167 USB

  - 167.16.1 class MacUSBDeviceMBS
    * 167.16.3 children as MacUSBDeviceMBS()
    * 167.16.4 Constructor
    * 167.16.5 root as MacUSBDeviceMBS
    * 167.16.7 Address as Integer
    * 167.16.8 BusPowerAvailable as Integer
    * 167.16.9 ClassName as String
    * 167.16.10 DeviceClass as Integer
    * 167.16.11 DeviceMaxPacketSize as Integer
    * 167.16.12 DeviceNumConfigs as Integer
    * 167.16.13 DeviceProtocol as Integer
    * 167.16.14 DeviceReleaseNumber as Integer
    * 167.16.15 DeviceSpeed as Integer
    * 167.16.16 DeviceSubClass as Integer
    * 167.16.17 ExtraPowerForPorts as Integer
    * 167.16.18 Name as String
    * 167.16.19 NumEndpoints as Integer
    * 167.16.20 Path as String
    * 167.16.21 Ports as Integer
    * 167.16.22 ProductID as Integer
    * 167.16.23 ProductName as String
    * 167.16.24 Properties as Dictionary
    * 167.16.25 RequestedPower as Integer
    * 167.16.26 SerialNumber as String
    * 167.16.27 VendorID as Integer
    * 167.16.28 VendorName as String
    * 167.16.30 kUSBApplicationSpecificClass = 254
    * 167.16.31 kUSBATMNetworkingSubClass = 7
    * 167.16.32 kUSBAudioControlSubClass = 1
    * 167.16.33 kUSBAudioStreamingSubClass = 2
    * 167.16.34 kUSBCommAbstractSubClass = 2
    * 167.16.35 kUSBCommCAPISubClass = 5
    * 167.16.36 kUSBCommDirectLineSubClass = 1
    * 167.16.37 kUSBCommEthernetNetworkingSubClass = 6
    * 167.16.38 kUSBCommMultiChannelSubClass = 4
    * 167.16.39 kUSBCommonClassSubClass = 2
    * 167.16.40 kUSBCommTelephoneSubClass = 3
    * 167.16.41 kUSBCommunicationClass = 2
    * 167.16.42 kUSBCompositeClass = 0
    * 167.16.43 kUSBCompositeSubClass = 0
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* 167.16.44 kUSBDataClass = 10
* 167.16.45 kUSBDFUSubClass = 1
* 167.16.46 kUSBDiagnosticClass = 220
* 167.16.47 kUSBHIDBootInterfaceSubClass = 1
* 167.16.48 kUSBHubClass = 9
* 167.16.49 kUSBHubSubClass = 0
* 167.16.50 kUSBIrDABridgeSubClass = 2
* 167.16.51 kUSBMassStorageATAPISubClass = 2
* 167.16.52 kUSBMassStorageQIC157SubClass = 3
* 167.16.53 kUSBMassStorageRBCSubClass = 1
* 167.16.54 kUSBMassStorageSCISubClass = 6
* 167.16.55 kUSBMassStorageSFF8070ISubClass = 5
* 167.16.56 kUSBMassStorageUIFISubClass = 4
* 167.16.57 kUSBMIDISubclass = 3
* 167.16.58 kUSBMiscellaneousClass = 239
* 167.16.59 kUSBPersonalHealthcareClass = 15
* 167.16.60 kUSBReprogrammableDiagnosticSubClass = 1
* 167.16.61 kUSBRFCollisionSubClass = 1
* 167.16.62 kUSBTestMeasurementSubClass = 3
* 167.16.63 kUSBVendorSpecificClass = 255
* 167.16.64 kUSBVideoControlSubClass = 1
* 167.16.65 kUSBVideoInterfaceCollectionSubClass = 3
* 167.16.66 kUSBVideoStreamingSubClass = 2
* 167.16.67 kUSBWirelessControllerClass = 224

— 167.17.1 class MacUSBMBS
  * 167.17.3 AbortPipe(PipeRef as Integer) as boolean
  * 167.17.4 ClearPipeStall(PipeRef as Integer) as boolean
  * 167.17.5 Close
  * 167.17.6 ConfigurationValue as Integer
  * 167.17.7 Connect as boolean
  * 167.17.8 DeviceProduct as Integer
  * 167.17.9 DeviceReleaseNumber as Integer
  * 167.17.10 DeviceVendor as Integer
  * 167.17.11 InterfaceClass as Integer
  * 167.17.12 InterfaceNumber as Integer
  * 167.17.13 InterfaceProtocol as Integer
  * 167.17.14 InterfaceSubClass as Integer
  * 167.17.15 LocationID as Integer
  * 167.17.16 NumEndpoints as Integer
  * 167.17.17 ReadPacket(PipeRef as Integer, MaxSize as Integer = 1024) as Memoryblock
  * 167.17.18 ReadRaw(PipeRef as Integer, MaxSize as Integer = 1024) as Memoryblock
* 167.17.19 ResetPipe(PipeRef as Integer) as boolean
* 167.17.20 WritePacket(PipeRef as Integer, Data as Memoryblock) as boolean
* 167.17.21 WritePacket(PipeRef as Integer, Data as string) as boolean
* 167.17.22 WriteRaw(PipeRef as Integer, Data as Memoryblock) as boolean
* 167.17.23 WriteRaw(PipeRef as Integer, Data as string) as boolean
* 167.17.25 completionTimeout as Integer
* 167.17.26 LastError as Integer
* 167.17.27 noDataTimeout as Integer
* 167.17.28 ProductID as Integer
* 167.17.31 kIOReturnSuccess = 0
* 167.17.32 kIOUSBConfigNotFound = & he0004056
* 167.17.33 kIOUSBDeviceNotHighSpeed = & he0004049
* 167.17.34 kIOUSBDevicePortWasNotSuspended = & he0004050
* 167.17.35 kIOUSBEndpointNotFound = & he0004057
* 167.17.36 kIOUSBHighSpeedSplitError = & he000404b
* 167.17.37 kIOUSBInterfaceNotFound = & he000404e
* 167.17.38 kIOUSBLowLatencyBufferNotPreviouslyAllocated = & he000404d
* 167.17.39 kIOUSBLowLatencyFrameListNotPreviouslyAllocated = & he000404c
* 167.17.40 kIOUSBNoAsyncPortErr = & he000405f
* 167.17.41 kIOUSBNotEnoughPipesErr = & he000405e
* 167.17.42 kIOUSBNotEnoughPowerErr = & he000405d
* 167.17.43 kIOUSBPipeStalled = & he000404f
* 167.17.44 kIOUSBSyncRequestOnWLThread = & he000404a
* 167.17.45 kIOUSBTooManyPipesErr = & he0004060
* 167.17.46 kIOUSBTransactionReturned = & he0004050
* 167.17.47 kIOUSBTransactionTimeout = & he0004051
* 167.17.48 kIOUSBUnknownPipeErr = & he0004061

– 167.18.1 class MacUSBNotificationMBS
* 167.18.3 Constructor(vendor as Integer = 0, product as Integer = 0)
* 167.18.4 GetUSBDeviceInfo(DeviceHandle as Integer, byref Vendor as string, byref Product as string, byref SerialNumber as string, byref Revision as Integer) as boolean
* 167.18.5 QueryBSDName(DeviceHandle as Integer) as string
* 167.18.6 Release(DeviceHandle as Integer)
* 167.18.7 Retain(DeviceHandle as Integer)
* 167.18.9 LastError as Integer
* 167.18.11 DeviceAdded(properties as dictionary, NewDevice as boolean, ClassName as string, DeviceName as string, DeviceHandle as Integer)
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    * 158.1.41 MacCountryCodeMBS as string
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    * 112.1.32 kNoHTML = 8
    * 112.1.33 kNoImage = 2
    * 112.1.34 kNoLinks = 1
    * 112.1.35 kNoPants = 4
    * 112.1.36 kNoRelaxed = & h200
    * 112.1.37 kNoStrikethrough = & h8000
    * 112.1.38 kNoSuperscript = & h100
    * 112.1.39 kNoTables = & h100
    * 112.1.40 kSafeLink = & h8000
    * 112.1.41 kStrict = & h10
    * 112.1.42 kTabStop = & h10000
    * 112.1.43 kTagText = & h20
* 112.1.44 \texttt{kTOC} = \&h1000
* 112.1.45 \texttt{kUserFlags} = \&h0FFFFFFF

-- 112.2.1 class MarkdownFootnoteMBS
* 112.2.3 Constructor
* 112.2.5 Document as MarkdownDocumentMBS
* 112.2.6 Flags as Integer
* 112.2.7 Height as Integer
* 112.2.8 Link as String
* 112.2.9 RefNumber as Integer
* 112.2.10 Tag as String
* 112.2.11 Title as String
* 112.2.12 Width as Integer
* 112.2.14 \texttt{kFlagExtraBookmark} = 1
* 112.2.15 \texttt{kFlagReferenced} = 2

-- 112.3.1 class MarkdownLineMBS
* 112.3.3 Constructor
* 112.3.5 Count as Integer
* 112.3.6 DLE as Integer
* 112.3.7 Document as MarkdownDocumentMBS
* 112.3.8 Flags as Integer
* 112.3.9 Kind as Integer
* 112.3.10 NextLine as MarkdownLineMBS
* 112.3.11 Text as String
* 112.3.13 \texttt{kFlagChecked} = 2
* 112.3.14 \texttt{kFlagPipeChar} = 1
* 112.3.15 \texttt{kKindCode} = 1
* 112.3.16 \texttt{kKindDash} = 3
* 112.3.17 \texttt{kKindEqual} = 5
* 112.3.18 \texttt{kKindHR} = 2
* 112.3.19 \texttt{kKindText} = 0
* 112.3.20 \texttt{kKindTilde} = 4

-- 112.4.1 class MarkdownParagraphMBS
* 112.4.3 Constructor
* 112.4.5 Align as Integer
* 112.4.6 Document as MarkdownDocumentMBS
* 112.4.7 Down as MarkdownParagraphMBS
* 112.4.8 hNumber as Integer
* 112.4.9 Ident as String
* 112.4.10 Lang as String
* 112.4.11 NextParagraph as MarkdownParagraphMBS
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* 112.4.13 Typ as Integer
* 112.4.15 kAlignCenter = 2
* 112.4.16 kAlignImplicit = 0
* 112.4.17 kAlignPara = 1
* 112.4.18 kTypeAL = 9
* 112.4.19 kTypeCode = 1
* 112.4.20 kTypeDL = 6
* 112.4.21 kTypeHDR = 11
* 112.4.22 kTypeHR = 12
* 112.4.23 kTypeHTML = 4
* 112.4.24 kTypeListItem = 10
* 112.4.25 kTypeMarkup = 3
* 112.4.26 kTypeOL = 8
* 112.4.27 kTypeQuote = 2
* 112.4.28 kTypeSource = 14
* 112.4.29 kTypeStyle = 5
* 112.4.30 kTypeTable = 13
* 112.4.31 kTypeUL = 7
* 112.4.32 kTypeWhitespace = 0
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    * 113.3.4 ArithmeticShiftMBS(value as UInt64, count as Integer) as UInt64 16499
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    * 113.3.6 ASinMBS(x as Double) as Double 16499
    * 113.3.7 ATan2MBS(x as Double, y as Double) as Double 16500
    * 113.3.8 ATanHMBS(x as Double) as Double 16500
    * 113.3.9 ATanMBS(x as Double) as Double 16501
    * 113.3.10 BitClearMBS(value as UInt64, mask as UInt64) as UInt64 16501
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    * 113.3.13 BitInclMBS(value as UInt64, bitNumber as Integer) as UInt64 16502
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  * 67.4.4 DongleDecryptData(UserCode as Integer, Data as memoryblock, DongleNr as Integer, PortNr as Integer) as Integer
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  * 67.4.6 DongleExit as Integer
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  * 67.4.8 DongleFindEx(byref LPTNr1 as Integer, byref LPTAdr1 as Integer, byref DNGCnt1 as Integer, byref LPTNr2 as Integer, byref LPTAdr2 as Integer, byref DNGCnt2 as Integer, byref LPTNr3 as Integer, byref LPTAdr3 as Integer, byref DNGCnt3 as Integer) as Integer
  * 67.4.9 DongleGetKeyFlag(UserCode as Integer, DongleNr as Integer, PortNr as Integer) as Integer
  * 67.4.10 DongleMemSize(DongleNr as Integer, PortNr as Integer) as Integer
  * 67.4.11 DongleModel(DongleNr as Integer, PortNr as Integer) as Integer
  * 67.4.12 DongleReadData(UserCode as Integer, Data as memoryblock, count as Integer, DongleNr as Integer, PortNr as Integer) as Integer
  * 67.4.13 DongleReadDataEx(UserCode as Integer, Data as memoryblock, FPos as Integer, count as Integer, DongleNr as Integer, PortNr as Integer) as Integer
  * 67.4.14 DongleReadSerNr(UserCode as Integer, DongleNr as Integer, PortNr as Integer) as Integer
  * 67.4.15 DongleSetLedFlag(a as Integer, b as Integer, c as Integer, d as Integer) as Integer
  * 67.4.16 DongleVersion(DongleNr as Integer, PortNr as Integer) as Integer
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  * 67.4.20 GetConfigMatrixNet(Category as Integer) as Integer
  * 67.4.21 GetDriverFlag(UserCode as Integer, DongleNr as Integer, PortNr as Integer) as Integer
  * 67.4.22 GetPortAdr(LptNr as Integer) as Integer
  * 67.4.23 GetVersionAPI as Integer
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- 67.4.29 PausePrinterActivity as Integer 11356
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    * 49.3.4 CFHTTPMessageCreateRequestMBS(requestMethod as CFStringMBS, url as CFURLMBS, httpVersion as CFStringMBS) as CFHTTPMessageMBS

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    * 49.3.1 CFStreamCreatePairWithSocketMBS(TheSocket as CFSocketMBS, readstream as CFReadStreamMBS, writestream as CFWriteStreamMBS)

    * 49.3.2 CFStreamCreatePairWithSocketToHostMBS(host as CFStringMBS, port as Integer, readstream as CFReadStreamMBS, writestream as CFWriteStreamMBS)

    * 49.3.6 kCFHostMBSGetTypeID as Integer

    * 49.3.7 kCFHTTPMessageMBSGetTypeID as Integer

    * 49.3.8 kCFReadStreamMBSGetTypeID as Integer

    * 49.3.9 kCFSocketMBSGetTypeID as Integer

    * 49.3.10 kCFWriteStreamMBSGetTypeID as Integer
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    * 132.4.1 CallMethodLaterMBS(target as object, name as string, afterDelay as Double) as boolean
    * 132.4.2 CallMethodLaterMBS(target as object, name as string, afterDelay as Double, value1 as Variant) as boolean
    * 132.4.3 CallMethodLaterMBS(target as object, name as string, afterDelay as Double, value1 as Variant, value2 as Variant) as boolean
    * 132.4.4 CallMethodLaterMBS(target as object, name as string, afterDelay as Double, value1 as Variant, value2 as Variant, value3 as Variant) as boolean
    * 132.4.5 CallMethodMBS(target as object, name as string) as boolean
    * 132.4.6 CallMethodMBS(target as object, name as string, value1 as Variant) as boolean
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    * 132.4.9 CallMethodOnMainThreadMBS(target as object, name as string) as boolean
    * 132.4.10 CallMethodOnMainThreadMBS(target as object, name as string, value1 as Variant) as boolean
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    * 132.4.13 CallMethodOnThreadMBS(BackgroundThread as BackgroundThreadMBS, target as object, name as string) as boolean
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    * 132.4.20 CountProcessesMBS as Integer
    * 132.4.18 GetDarwinResourceUsageMBS as DarwinResourceUsageMBS
    * 132.4.17 GetDarwinVMStatisticsMBS as DarwinVMStatisticsMBS
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    * 132.4.19 SetThreadNameMBS(name as string)
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- 72.4 Adler32MemoryMBS(adler as UInt32, buf as memory block, offset as Integer, length as Integer) as UInt32
- 72.4.4 Adler32StringMBS(adler as UInt32, buf as string) as UInt32
- 72.4.1 CalculateCRC16MemoryMBS(data as MemoryBlock, Start as UInt16 = 65535, Polynomial as UInt16 = & h1021, FinalXOR as UInt16 = 0, ReflectInput as boolean = false, ReflectOutput as boolean = false) as UInt16
- 72.4.2 CalculateCRC16StringMBS(data as string, Start as UInt16 = 65535, Polynomial as UInt16 = & h1021, FinalXOR as UInt16 = 0, ReflectInput as boolean = false, ReflectOutput as boolean = false) as UInt16
- 72.4.7 CRC16MBS(data as string) as UInt16
- 72.4.5 CRC32MemoryMBS(crc as UInt32, buf as memory block, offset as Integer, length as Integer) as UInt32
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- 72.4.8 CRC_32InMemContMBS(address as Ptr, length as Integer, prevCRC as UInt32) as UInt32
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- 72.4.12 CRC_CCITTInMemContMBS(address as Ptr, length as Integer, prevCRC as UInt32) as UInt32
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- 72.4.23 MD5StringMBS(data as memory block) as string
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- 72.4.21 ModBusCalculateRTUMessageCRCMBS(data as string) as UInt16
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  * 80.2.5 BlendPicturesMBS(source as picture, sourcepercent as Double, dest as picture, destpercent as Double) as picture
  * 80.2.13 BlendPicturesWithMaskMBS(result as picture, source as picture, dest as picture, mask as picture, x as Integer, y as Integer, width as Integer, height as Integer) as boolean
  * 80.2.6 BlendPicturesWithMaskMBS(source as picture, dest as picture, mask as picture) as picture
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  * 80.2.17 ColorizePictureMBS(Pict As Picture, Mask As Picture, foreR as Double, foreG as Double, foreB as Double, foreA as Double, backR as Double, backG as Double, backB as Double, backA as Double) as boolean
  * 80.2.7 CombinePicturesMBS(red as picture, blue as picture, green as picture) as picture
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  * 80.2.64 MandelbrotSetMBS(Threaded as Integer, width as Integer, height as Integer, fx as Double = 4.0, fy as Double = 4.0, dx as Double = -2.0, dy as Double = -2.0, dest as picture = nil) as picture
  * 80.2.34 MemoryblockABGRtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture
  * 80.2.35 MemoryblockABGRtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture
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* 80.2.25 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean

* 80.2.26 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean

* 80.2.27 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

* 80.2.28 PictureCopyPixelFastMBS(DestImage As Picture, Source As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer) as boolean

* 80.2.66 PicturetoBinaryStringMBS(p as picture) as string

* 80.2.48 PtrABGRtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

* 80.2.49 PtrABGRtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

* 80.2.50 PtrARGBtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

* 80.2.51 PtrARGBtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

* 80.2.52 PtrARGBtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, LittleEndian as boolean) as picture

* 80.2.53 PtrBGRARoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

* 80.2.54 PtrBGRARoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

* 80.2.55 PtrBGRARoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

* 80.2.56 PtrBGRARoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer) as picture
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* 80.2.58 PtrGrayToPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer, Red as Integer, Blue as Integer, Green as Integer) as picture 13165

* 80.2.59 PtrGrayToPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer, Red() as Integer, Blue() as Integer, Green() as Integer) as picture 13165

* 80.2.60 PtrRGBAtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer, FlipVertically as boolean=false) as picture 13166

* 80.2.61 PtrRGBAtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, FlipVertically as boolean=false) as picture 13167

* 80.2.62 PtrRGBtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer) as picture 13167

* 80.2.63 PtrRGBtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer) as picture 13168

* 80.2.10 RenderSamplesMBS(Samples as memoryblock, SampleCount as Integer, Smooth as Integer, Width as Integer, Height as Integer, outlinewidth as Integer, BackColor as color=& c88B5C4, ForeColor as color=& c274C5A, OutLineColor as color=& c203F4E, Bits as Integer = 8, AutoScale as boolean = false) as Picture 13120

* 80.2.11 TintPictureMBS(source as picture, GreyBase as color, SepiaBase as color) as picture 13121

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    * 138.1.3 Target as string
    * 138.1.5 BuildNumber = 19645
    * 138.1.6 CompileDate = "May 20 2018"
    * 138.1.7 CompileTime = "16:56:54"
    * 138.1.8 ComputerName = "MyMac"
    * 138.1.9 Copyright = " 2017 by Monkeybread Software"
    * 138.1.10 HasAudioPlugin = true
    * 138.1.11 HasAVFoundationPlugin = true
    * 138.1.12 HasBarcodePlugin = true
    * 138.1.13 HasCanonEOSDigitalPlugin = true
    * 138.1.14 HasChartDirectorPlugin = true
    * 138.1.15 HasCocoaBasePlugin = true
    * 138.1.16 HasCocoaControlsPlugin = true
    * 138.1.17 HasCocoaExtrasPlugin = true
    * 138.1.18 HasCocoaPlugin = true
    * 138.1.19 HasCompressionPlugin = true
    * 138.1.20 HasComputerControlPlugin = true
    * 138.1.21 HasControlsPlugin = true
    * 138.1.22 HasCUPSPlugin = true
    * 138.1.23 HasCURLPlugin = true
    * 138.1.24 Has DataTypesPlugin = true
    * 138.1.25 HasDirectShowPlugin = true
    * 138.1.26 HasDonglePlugin = true
    * 138.1.27 HasDynaPDFPlugin = true
    * 138.1.28 HasEncryptionPlugin = true
    * 138.1.29 HasGIFPlugin = true
    * 138.1.30 HasGraphicsMagickPlugin = true
    * 138.1.31 HasImageMagickPlugin = true
    * 138.1.32 HasJavaPlugin = true
    * 138.1.33 HasJPEGPlugin = true
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    * 138.1.35 HasLCMS2Plugin = true
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    * 138.1.37 HasLeopardPlugin = true
    * 138.1.38 HasLinuxPlugin = true
    * 138.1.39 HasLionPlugin = true
    * 138.1.40 HasMac64bitPlugin = true
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* 138.1.75 HostName = "MyMac" 18215
* 138.1.76 UserName = "Christian Schmitz" 18215
* 138.1.77 Version = "MBS Xojo Plugin 18.2 (build 19645) Sun May 20 14:02:01 2018 (GMT)" 18215
* 138.1.78 VersionString = "18.2" 18216
* 138.1.79 Website = "http://www.monkeybreadsoftware.de" 18216
* 138.1.80 Year = 2018 18216
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    * 72.20.6 MD5(data as memoryblock) as string
    * 72.20.7 MD5(data as string) as string
    * 72.20.8 MD5String(data as memoryblock) as string
    * 72.20.9 MD5String(data as string) as string
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    * 72.20.13 Value as string
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    * 151.1.3 AllAttributes as string()
    * 151.1.4 AttributeBoolean(name as string) as boolean
    * 151.1.5 AttributeDouble(name as string) as Double
    * 151.1.6 AttributeMultiValued(name as string) as boolean
    * 151.1.7 AttributeNames as string()
    * 151.1.8 AttributeString(name as string) as string
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    * 151.1.10 AttributeType(name as string) as string
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    * 151.1.17 kMDItemAcquisitionMake as string
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* 151.3.38 kMDQueryReverseSortOrderFlag=1
* 151.3.39 kMDQueryScopeAllIndexed="kMDQueryScopeAllIndexed"
* 151.3.40 kMDQueryScopeComputer="kMDQueryScopeComputer"
* 151.3.41 kMDQueryScopeComputerIndexed="kMDQueryScopeComputerIndexed"
* 151.3.42 kMDQueryScopeHome="kMDQueryScopeHome"
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- 116.2.56 FindBytesMBS(srcOfs as Integer, maxBytes as Integer, target as memoryBlock, targOfs as Integer, targLen as Integer) as Integer
- 116.2.57 FindNotByteMBS(srcOfs as Integer, numBytes as Integer, byteValue as Integer) as Integer
- 116.2.58 FindStringMBS(srcOfs as Integer, maxBytes as Integer, target as String) as Integer
- 116.2.59 GetStringMBS(offset as Integer, numBytes as Integer) as String
- 116.2.60 InvertBytesMBS(offset as Integer, count as Integer)
- 116.2.61 LeftMBS(length as Integer) as memoryblock
- 116.2.62 MaxMBS(firstMem as Ptr, secondMem as Ptr, BitSize as Integer = 8, Signed as Boolean = false, offsetByte as Integer = 0, lengthBytes as Integer = 0) as boolean
- 116.2.63 MidMBS(offset as Integer) as memoryblock
- 116.2.64 MidMBS(offset as Integer, length as Integer) as memoryblock
- 116.2.65 MinMBS(firstMem as Ptr, secondMem as Ptr, BitSize as Integer = 8, Signed as Boolean = false, offsetByte as Integer = 0, lengthBytes as Integer = 0) as boolean
- 116.2.66 MirrorBitsInBytesMBS(offsetByte as Integer, lengthByte as Integer)
- 116.2.67 MirrorBitsMBS(offsetBit as Integer, lengthBit as Integer)
- 116.2.68 MirrorBytesMBS(offsetByte as Integer = 0, lengthByte as Integer = -1)
- 116.2.69 MultiplyUInt16MBS(Factor as Double, offsetByte as Integer = 0, lengthBytes as Integer = 0)
- 116.2.70 MultiplyUInt8MBS(Factor as Double, offsetByte as Integer = 0, lengthBytes as Integer = 0)
- 116.2.71 RightMBS(length as Integer) as memoryblock
- 116.2.72 SetStringMBS(str as String, offset as Integer)
- 116.2.73 SwapBytes16MBS(offset as Integer, numBytes as Integer)
- 116.2.74 SwapBytes32MBS(offset as Integer, numBytes as Integer)
- 116.2.75 SwapBytesMBS(offset as Integer, numBytes as Integer)
- 116.2.77 BytesMBS as Integer
- 116.2.78 OSTypeMBS(offset as Integer) as String
• 72 Encryption and Hash

- 116.2.1 class Memoryblock
  - 116.2.21 CRC_32ContMBS(offset as Integer, numBytes as Integer, prevCRC as UInt32) as UInt32
  - 116.2.22 CRC_32MBS(offset as Integer, numBytes as Integer) as UInt32
  - 116.2.23 CRC_CCITTContMBS(offset as Integer, numBytes as Integer, prevCRC as UInt32) as UInt32
  - 116.2.24 CRC_CCITTMBS(offset as Integer, numBytes as Integer) as UInt32
  - 116.2.25 CRC_DillonMBS(bitWidth as Integer, offset as Integer, numBytes as Integer) as String

- ?? Globals
  - ?? Adler32MemoryMBS(adler as UInt32, buf as memoryblock, offset as Integer, length as Integer) as UInt32
  - ?? Adler32StringMBS(adler as UInt32, buf as string) as UInt32
  - ?? CalculateCRC16MemoryMBS(data as MemoryBlock, Start as UInt16 = 65535, Polynomial as UInt16 = & h1021, FinalXOR as UInt16 = 0, ReflectInput as boolean = false, ReflectOutput as boolean = false) as UInt16
  - ?? CalculateCRC16StringMBS(data as string, Start as UInt16 = 65535, Polynomial as UInt16 = & h1021, FinalXOR as UInt16 = 0, ReflectInput as boolean = false, ReflectOutput as boolean = false) as UInt16
  - ?? CRC16MBS(data as string) as UInt16
  - ?? CRC32MemoryMBS(crc as UInt32, buf as memoryblock, offset as Integer, length as Integer) as UInt32
  - ?? CRC32StringMBS(crc as UInt32, buf as string) as UInt32
  - ?? CRC_32InMemContMBS(address as Ptr, length as Integer, prevCRC as UInt32) as UInt32
  - ?? CRC_32InMemMBS(address as Ptr, length as Integer) as UInt32
  - ?? CRC_32OfStrContMBS(s as String, prevCRC as UInt32) as UInt32
  - ?? CRC_32OfStrMBS(s as String) as UInt32
  - ?? CRC_CCITTInMemContMBS(address as Ptr, length as Integer, prevCRC as UInt32) as UInt32
  - ?? CRC_CCITTInMemMBS(address as Ptr, length as Integer) as UInt32
  - ?? CRC_CCITTOfStrContMBS(s as String, prevCRC as UInt32) as UInt32
  - ?? CRC_CCITTOfStrMBS(s as String) as UInt32
  - ?? CRC_DillonInMemMBS(bitWidth as Integer, address as Ptr, length as Integer) as String
  - ?? CRC_DillonOfStrMBS(bitWidth as Integer, s as String) as String
  - ?? CRC_DillonUInt64InMemMBS(bitWidth as Integer, address as Ptr, length as Integer) as UInt64
  - ?? CRC_DillonUInt64OfStrMBS(bitWidth as Integer, s as String) as UInt64
  - ?? GetHash32MBS(s as string) as UInt32
* 72.4.22 MD5MBS(data as memoryblock) as string 12419
* 72.4.25 MD5MBS(data as string) as string 12420
* 72.4.23 MD5StringMBS(data as memoryblock) as string 12419
* 72.4.26 MD5StringMBS(data as string) as string 12420
* 72.4.21 ModBusCalculateRTUMessageCRCMBS(data as string) as UInt16 12418
* 72.4.24 ValidateUUIDMBS(UUID as string, mode as Integer = 0, requiredVersion as Integer = 0) as string 12419
• 73 Endian

  – 116.2.1 class Memoryblock
    * 116.2.26 EndianS16_BtoLMBS(offset as Integer, count as Integer) 16582
    * 116.2.27 EndianS16_BtoNMBS(offset as Integer, count as Integer) 16590
    * 116.2.28 EndianS16_LtoBMBS(offset as Integer, count as Integer) 16590
    * 116.2.29 EndianS16_LtoNMBS(offset as Integer, count as Integer) 16591
    * 116.2.30 EndianS16_NtoBMBS(offset as Integer, count as Integer) 16591
    * 116.2.31 EndianS16_NtoLMBS(offset as Integer, count as Integer) 16592
    * 116.2.32 EndianS32_BtoLMBS(offset as Integer, count as Integer) 16593
    * 116.2.33 EndianS32_BtoNMBS(offset as Integer, count as Integer) 16594
    * 116.2.34 EndianS32_LtoBMBS(offset as Integer, count as Integer) 16594
    * 116.2.35 EndianS32_LtoNMBS(offset as Integer, count as Integer) 16595
    * 116.2.36 EndianS32_NtoBMBS(offset as Integer, count as Integer) 16595
    * 116.2.37 EndianS32_NtoLMBS(offset as Integer, count as Integer) 16596
    * 116.2.38 EndianSwap16MBS(offset as Integer, count as Integer) 16596
    * 116.2.39 EndianSwap32MBS(offset as Integer, count as Integer) 16597
    * 116.2.40 EndianU16_BtoLMBS(offset as Integer, count as Integer) 16597
    * 116.2.41 EndianU16_BtoNMBS(offset as Integer, count as Integer) 16597
    * 116.2.42 EndianU16_LtoBMBS(offset as Integer, count as Integer) 16598
    * 116.2.43 EndianU16_LtoNMBS(offset as Integer, count as Integer) 16599
    * 116.2.44 EndianU16_NtoBMBS(offset as Integer, count as Integer) 16599
    * 116.2.45 EndianU16_NtoLMBS(offset as Integer, count as Integer) 16600
    * 116.2.46 EndianU32_BtoLMBS(offset as Integer, count as Integer) 16600
    * 116.2.47 EndianU32_BtoNMBS(offset as Integer, count as Integer) 16601
    * 116.2.48 EndianU32_LtoBMBS(offset as Integer, count as Integer) 16601
    * 116.2.49 EndianU32_LtoNMBS(offset as Integer, count as Integer) 16602
    * 116.2.50 EndianU32_NtoBMBS(offset as Integer, count as Integer) 16602
    * 116.2.51 EndianU32_NtoLMBS(offset as Integer, count as Integer) 16603
116 MemoryBlock

- 116.2.1 class MemoryBlock
  - 116.2.3 AddressMBS(offset as Int64 = 0) as UInt64
  - 116.2.4 AddressPtrMBS(offset as Int64 = 0) as Ptr
  - 116.2.5 AndBitsMBS(Second as memoryblock, Dest as memoryblock=nil) as memoryblock
  - 116.2.6 AndBitsMBS(Second as memoryblock, Mask as Integer, Dest as memoryblock=nil) as memoryblock
  - 116.2.7 AppendMBS(other as memoryblock) as memoryblock
  - 116.2.8 BytesEqualMBS(srcOfs as Integer, numBytes as Integer, destBlk as memoryBlock, destOfs as Integer) as Boolean
  - 116.2.9 BytesZeroMBS(srcOfs as Integer, numBytes as Integer) as Boolean
  - 116.2.10 ConvertRGB12BitTo8BitMBS(Width as Integer)
  - 116.2.11 CopyBytesFromMacHandleMBS(srcHandle as Integer, numBytes as Integer, destOfs as Integer)
  - 116.2.12 CopyBytesFromMacPtrMBS(srcPtr as Ptr, numBytes as Integer, destOfs as Integer)
  - 116.2.13 CopyBytesMBS(srcOfs as Integer, numBytes as Integer, destBlk as memoryBlock, destOfs as Integer)
  - 116.2.14 CopyBytesMBS(srcOfs as Integer, numBytes as Integer, destOfs as Integer)
  - 116.2.15 CopyBytesToMacHandleMBS(srcOfs as Integer, numBytes as Integer, destHandle as Integer)
  - 116.2.16 CopyBytesToMacPtrMBS(srcOfs as Integer, numBytes as Integer, destPtr as Ptr)
  - 116.2.17 CopyByteToUShortMBS(dest as memoryblock, SourceOffset as Integer, DestinationOffset as Integer, ByteCount as Integer, divisor as Integer)
  - 116.2.18 CopyNthBitsMBS(source as memoryblock, SourceOffsetBits as Integer, DestinationOffsetBits as Integer, BitCount as Integer, StepCount as Integer, NumberOfSteps as Integer) as boolean
  - 116.2.19 CopyNthBytesMBS(source as memoryblock, SourceOffsetBytes as Integer, DestinationOffsetBytes as Integer, ByteCount as Integer, StepCount as Integer, NumberOfSteps as Integer) as boolean
  - 116.2.20 CopyUShortToByteMBS(dest as memoryblock, SourceOffset as Integer, DestinationOffset as Integer, ByteCount as Integer, divisor as Integer)
  - 116.2.21 ExpandBitsMBS(dest as memoryblock, SourceByteCount as Integer, LowValue as Integer = 0, HighValue as Integer = 255) as boolean
  - 116.2.22 ExtractBitsMBS(Mask as Integer, Dest as memoryblock=nil) as memoryblock
  - 116.2.23 FillBytesMBS(offset as Integer, count as Integer, value as Integer)
  - 116.2.24 FindByteMBS(srcOfs as Integer, numBytes as Integer, byteValue as Integer) as Integer
  - 116.2.25 FindBytesMBS(srcOfs as Integer, maxBytes as Integer, target as memoryBlock, targOfs as Integer, targLen as Integer) as Integer
  - 116.2.26 FindByteMBS(srcOfs as Integer, numBytes as Integer, byteValue as Integer) as Integer
  - 116.2.27 FindNotByteMBS(srcOfs as Integer, numBytes as Integer, byteValue as Integer) as Integer
* 116.2.58 FindStringMBS(srcOfs as Integer, maxBytes as Integer, target as String) as Integer
* 116.2.59 GetStringMBS(offset as Integer, numBytes as Integer) as String
* 116.2.60 InvertBytesMBS(offset as Integer, count as Integer)
* 116.2.61 LeftMBS(length as Integer) as memoryblock
* 116.2.62 MaxMBS(firstMem as Ptr, secondMem as Ptr, BitSize as Integer = 8, Signed as Boolean = false, offsetByte as Integer = 0, lengthBytes as Integer = 0) as boolean
* 116.2.63 MidMBS(offset as Integer) as memoryblock
* 116.2.64 MidMBS(offset as Integer, length as Integer) as memoryblock
* 116.2.65 MinMBS(firstMem as Ptr, secondMem as Ptr, BitSize as Integer = 8, Signed as Boolean = false, offsetByte as Integer = 0, lengthBytes as Integer = 0) as boolean
* 116.2.66 MirrorBitsInBytesMBS(offsetByte as Integer, lengthByte as Integer)
* 116.2.67 MirrorBitsMBS(offsetBit as Integer, lengthBit as Integer)
* 116.2.68 MirrorBytesMBS(offsetByte as Integer = 0, lengthByte as Integer = -1)
* 116.2.69 MultiplyUInt16MBS(Factor as Double, offsetByte as Integer = 0, lengthBytes as Integer = 0)
* 116.2.70 MultiplyUInt8MBS(Factor as Double, offsetByte as Integer = 0, lengthBytes as Integer = 0)
* 116.2.71 RightMBS(length as Integer) as memoryblock
* 116.2.72 SetStringMBS(str as String, offset as Integer)
* 116.2.73 SwapBytes16MBS(offset as Integer, numBytes as Integer)
* 116.2.74 SwapBytes32MBS(offset as Integer, numBytes as Integer)
* 116.2.75 SwapBytesMBS(offset as Integer, numBytes as Integer)
* 116.2.77 BytesMBS as Integer
* 116.2.78 OSTypeMBS(offset as Integer) as String
• Graphics & Pictures
  - ?? Globals
    * 80.2.65 BinaryStringtoPictureMBS(data as String) as Picture
    * 80.2.12 BlendPicturesMBS(result as picture, source as picture, sourcepercent as Double, dest as picture, destpercent as Double, x as Integer, y as Integer, width as Integer, height as Integer) as boolean
    * 80.2.5 BlendPicturesMBS(source as picture, sourcepercent as Double, dest as picture, destpercent as Double) as picture
    * 80.2.13 BlendPicturesWithMaskMBS(result as picture, source as picture, dest as picture, mask as picture, x as Integer, y as Integer, width as Integer, height as Integer) as boolean
    * 80.2.6 BlendPicturesWithMaskMBS(source as picture, dest as picture, mask as picture) as picture
    * 80.2.14 BlendPicturesWithMaskWithBackgroundMBS(SourceImage As Picture, DestImage As Picture, Mask As Picture, Result As Picture, X as Integer, Y as Integer, Width as Integer, Height as Integer) as boolean
    * 80.2.15 BlendPicturesWithMaskWithBackgroundMBS(SourceImage As Picture, DestImage As Picture, Mask As Picture, Result As Picture, X as Integer, Y as Integer, Width as Integer, Height as Integer, BackgroundColour As Color) as boolean
    * 80.2.17 ColorizePictureMBS(Pict As Picture, Mask As Picture, foreR as Double, foreG as Double, foreB as Double, foreA as Double, backR as Double, backG as Double, backB as Double, backA as Double) as boolean
    * 80.2.7 CombinePicturesMBS(red as picture, blue as picture, green as picture) as picture
    * 80.2.16 DiffPicturesMBS(source as picture, dest as picture, square as boolean) as picture
    * 80.2.32 GetMBfromPictureMBS(pic as picture, mask as picture, mode as string) as memoryblock
    * 80.2.33 GetMBfromPictureMBS(pic as picture, mode as string) as memoryblock
    * 80.2.64 MandelbrotSetMBS(Threaded as Integer, width as Integer, height as Integer, fx as Double = 4.0, fy as Double = 4.0, dx as Double = -2.0, dy as Double = -2.0, dest as picture = nil) as picture
    * 80.2.34 MemoryblockABGRtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture
    * 80.2.35 MemoryblockABGRtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture
    * 80.2.36 MemoryblockARGBtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture
    * 80.2.37 MemoryblockARGBtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture
    * 80.2.3 MemoryblockARGBtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer, LittleEndian as boolean) as picture
    * 80.2.38 MemoryblockBGRtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture
    * 80.2.39 MemoryblockBGRtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture
80.2.4 MemoryblockBGRtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

80.2.40 MemoryblockBGRtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

80.2.41 MemoryblockBGRtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

80.2.42 MemoryblockGrayToPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer) as picture

80.2.43 MemoryblockGrayToPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer, Red as Integer, Blue as Integer, Green as Integer) as picture

80.2.44 MemoryblockGrayToPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer, Red() as Integer, Blue() as Integer, Green() as Integer) as picture

80.2.45 MemoryblockRGBAtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer, FlipVertically as boolean=false) as picture

80.2.46 MemoryblockRGBAtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer, FlipVertically as boolean=false) as picture

80.2.47 MemoryblockRGBtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

80.2.48 MemoryblockRGBtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

80.2.49 MergePictureMBS(source1 as picture, source2 as picture) as picture

80.2.50 NewPictureEditorMBS(pic as picture) as PictureEditorMBS

80.2.51 NewPictureMBS(width as Integer, height as Integer, pixeltype as Integer, buffer as memoryblock, rowbytes as Integer) as picture

80.2.52 NewPictureReaderMBS(pic as picture) as PictureReaderMBS

80.2.53 NewPictureWithColorMBS(width as Integer, height as Integer, c as color) as picture

80.2.54 NewPictureWriterMBS(pic as picture, width as Integer, height as Integer) as PictureWriterMBS

80.2.55 NewPictureWriterMBS(width as Integer, height as Integer, AlphaChannel as boolean=false) as PictureWriterMBS

80.2.56 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean

80.2.57 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean

80.2.58 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean

80.2.59 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean
* 80.2.22 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 13132
* 80.2.23 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 13135
* 80.2.24 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 13136
* 80.2.25 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 13138
* 80.2.26 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 13140
* 80.2.27 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 13142
* 80.2.28 PictureCopyPixelFastMBS(DestImage As Picture, Source As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer) as boolean 13143
* 80.2.66 PicturetoBinaryStringMBS(p as picture) as string 13170
* 80.2.48 PtrABGRtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer) as picture 13159
* 80.2.49 PtrABGRtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer) as picture 13160
* 80.2.50 PtrARGBtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer) as picture 13160
* 80.2.51 PtrARGBtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer) as picture 13160
* 80.2.52 PtrBGRtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, LittleEndian as boolean) as picture 13161
* 80.2.53 PtrBGRAtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer) as picture 13161
* 80.2.54 PtrBGRAtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer) as picture 13162
* 80.2.55 PtrBGRtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer) as picture 13162
* 80.2.56 PtrBGRtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer) as picture 13164
* 80.2.57 PtrGrayToPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer) as picture

* 80.2.58 PtrGrayToPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer, Red as Integer, Blue as Integer, Green as Integer) as picture

* 80.2.59 PtrGrayToPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer, Red() as Integer, Blue() as Integer, Green() as Integer) as picture

* 80.2.60 PtrRGBAtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer, FlipVertically as boolean=false) as picture

* 80.2.61 PtrRGBAtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, FlipVertically as boolean=false) as picture

* 80.2.62 PtrRGBtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

* 80.2.63 PtrRGBtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

* 80.2.10 RenderSamplesMBS(Samples as memoryblock, SampleCount as Integer, Smooth as Integer, Width as Integer, Height as Integer, outlinewidth as Integer, BackColor as color=&c88B5C4, ForeColor as color=&c274C5A, OutLineColor as color=&c203F4E, Bits as Integer = 8, AutoScale as boolean = false) as Picture

* 80.2.11 TintPictureMBS(source as picture, GreyBase as color, SepiaBase as color) as picture

* 80.2.67 WindowsDrawPictureIntoDeviceContextMBS(pic as picture, HDC as Integer, x as Integer, y as Integer, w as Integer, h as Integer, Transparent as boolean)
• 116 MemoryBlock
  – 116.2.1 class Memoryblock
    * 116.2.3 AddressMBS(offset as Int64 = 0) as UInt64
    * 116.2.4 AddressPtrMBS(offset as Int64 = 0) as Ptr
    * 116.2.5 AndBitsMBS(Second as memoryblock, Dest as memoryblock=nil) as memoryblock
    * 116.2.6 AndBitsMBS(Second as memoryblock, Mask as Integer, Dest as memoryblock=nil)
    as memoryblock
    * 116.2.7 AppendMBS(other as memoryblock) as memoryblock
    * 116.2.8 BytesEqualMBS(srcOfs as Integer, numBytes as Integer, destBlk as memoryBlock,
      destOfs as Integer) as Boolean
    * 116.2.9 BytesZeroMBS(srcOfs as Integer, numBytes as Integer) as Boolean
    * 116.2.10 ConvertRGB12BitTo8BitMBS(Width as Integer)
    * 116.2.11 CopyBytesFromMacHandleMBS(srcHandle as Integer, numBytes as Integer, destOfs
      as Integer)
    * 116.2.12 CopyBytesFromMacPtrMBS(srcPtr as Ptr, numBytes as Integer, destOfs as Integer)
    * 116.2.13 CopyBytesMBS(srcOfs as Integer, numBytes as Integer, destBlk as memoryBlock,
      destOfs as Integer)
    * 116.2.14 CopyBytesMBS(srcOfs as Integer, numBytes as Integer, destOfs as Integer)
    * 116.2.15 CopyBytesToMacHandleMBS(srcOfs as Integer, numBytes as Integer, destHandle
      as Integer)
    * 116.2.16 CopyBytesToMacPtrMBS(srcOfs as Integer, numBytes as Integer, destPtr as Ptr)
    * 116.2.17 CopyByteToUShortMBS(dest as memoryblock, SourceOffset as Integer,
      DestinationOffset as Integer, ByteCount as Integer, divisor as Integer)
    * 116.2.18 CopyNthBitsMBS(source as memoryblock, SourceOffsetBits as Integer,
      DestinationOffsetBits as Integer, BitCount as Integer, StepCount as Integer,
      NumberOfSteps as Integer) as boolean
    * 116.2.19 CopyNthBytesMBS(source as memoryblock, SourceOffsetBytes as Integer,
      DestinationOffsetBytes as Integer, ByteCount as Integer, StepCount as Integer,
      NumberOfSteps as Integer) as boolean
    * 116.2.20 CopyUShortToByteMBS(dest as memoryblock, SourceOffset as Integer,
      DestinationOffset as Integer, ByteCount as Integer, divisor as Integer)
    * 116.2.21 ExpandBitsMBS(dest as memoryblock, SourceByteCount as Integer, LowValue as
      Integer = 0, HighValue as Integer = 255) as boolean
    * 116.2.22 ExtractBitsMBS(Mask as Integer, Dest as memoryblock=nil) as memoryblock
    * 116.2.23 FillBytesMBS(offset as Integer, count as Integer, value as Integer)
    * 116.2.24 FindByteMBS(srcOfs as Integer, numBytes as Integer, byteValue as Integer) as
      Integer
    * 116.2.25 FindBytesMBS(srcOfs as Integer, maxBytes as Integer, target as memoryBlock,
      targOfs as Integer, targLen as Integer) as Integer
    * 116.2.26 FindBytesMBS(srcOfs as Integer, maxBytes as Integer, byteValue as Integer)
      as Integer
    * 116.2.27 FindNotByteMBS(srcOfs as Integer, numBytes as Integer, byteValue as Integer)
      as Integer
* 116.2.58 FindStringMBS(srcOfs as Integer, maxBytes as Integer, target as String) as Integer
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* 116.2.59 GetStringMBS(offset as Integer, numBytes as Integer) as String 16607
* 116.2.60 InvertBytesMBS(offset as Integer, count as Integer) 16607
* 116.2.61 LeftMBS(length as Integer) as memoryblock 16607
* 116.2.62 MaxMBS(firstMem as Ptr, secondMem as Ptr, BitSize as Integer = 8, Signed as Boolean = false, offsetByte as Integer = 0, lengthBytes as Integer = 0) as boolean 16607
* 116.2.63 MidMBS(offset as Integer) as memoryblock 16608
* 116.2.64 MidMBS(offset as Integer, length as Integer) as memoryblock 16608
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  * 126.3.3 Constructor
  * 126.3.4 getEnabled(index as Integer) as boolean
  * 126.3.5 getOutputCount as Integer
  * 126.3.6 getVoltage(index as Integer) as Double
  * 126.3.7 getVoltageMax(index as Integer) as Double
  * 126.3.8 getVoltageMin(index as Integer) as Double
  * 126.3.9 setEnabled(index as Integer, value as boolean)
  * 126.3.10 setVoltage(index as Integer, value as Double)

– 126.4.1 class PhidgetBridgeMBS
  * 126.4.3 Constructor
  * 126.4.4 getBridgeMax(index as Integer) as Double
  * 126.4.5 getBridgeMin(index as Integer) as Double
  * 126.4.6 getBridgeValue(index as Integer) as Double
  * 126.4.7 getDataRate as Integer
  * 126.4.8 getDataRateMax as Integer
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  * 126.4.10 getEnabled(index as Integer) as Boolean
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* 126.4.19 PHIDGET_BRIDGE_GAIN_1 = 1 17545
* 126.4.20 PHIDGET_BRIDGE_GAIN_128 = 6 17545
* 126.4.21 PHIDGET_BRIDGE_GAIN_16 = 3 17546
* 126.4.22 PHIDGET_BRIDGE_GAIN_32 = 4 17546
* 126.4.23 PHIDGET_BRIDGE_GAIN_64 = 5 17546
* 126.4.24 PHIDGET_BRIDGE_GAIN_8 = 2 17546
* 126.4.25 PHIDGET_BRIDGE_GAIN_UNKNOWN = 7 17546

- 126.5.1 class PhidgetDictionaryMBS 17547
  * 126.5.3 addKey(key as string, value as string, persistent as Integer) 17547
  * 126.5.4 Close 17548
  * 126.5.5 Constructor 17548
  * 126.5.6 Constructor(pattern as string) 17548
  * 126.5.7 GetDeviceStatus as Integer 17548
  * 126.5.8 getServerAddress(byref port as Integer) as string 17549
  * 126.5.9 getServerID as string 17549
  * 126.5.10 GetServerStatus as Integer 17549
  * 126.5.11 openRemote(serverID as string, password as string) 17549
  * 126.5.12 openRemoteIP(addr as string, port as Integer, password as string) 17549
  * 126.5.13 removeKey(pattern as string) 17550
  * 126.5.15 Handle as Integer 17550
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- 126.6.1 class PhidgetEncoderMBS 17553
  * 126.6.3 Constructor 17553
  * 126.6.4 getEnabled(index as Integer) as boolean 17553
  * 126.6.5 getEncoderCount as Integer 17553
  * 126.6.6 getIndexPosition(index as Integer) as Integer 17554
  * 126.6.7 getInputCount as Integer 17554
  * 126.6.8 getInputState(index as Integer) as boolean 17554
  * 126.6.9 getPosition(index as Integer) as Integer 17554
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  * 126.6.14 PositionChanged(index as Integer, position as Integer, time as Integer) 17555

- 126.7.1 class PhidgetFrequencyCounterMBS 17556
* 126.7.3 Constructor
* 126.7.4 getEnabled(index as Integer) as Boolean
* 126.7.5 getFilter(index as Integer) as Integer
* 126.7.6 getFrequency(index as Integer) as Double
* 126.7.7 getFrequencyInputCount as Integer
* 126.7.8 getTimeout(index as Integer) as Integer
* 126.7.9 getTotalCount(index as Integer) as Int64
* 126.7.10 getTotalTime(index as Integer) as Int64
* 126.7.11 reset(index as Integer)
* 126.7.12 setEnabled(index as Integer, value as Boolean)
* 126.7.13 setFilter(index as Integer, filter as Integer)
* 126.7.14 setTimeout(index as Integer, filter as Integer)
* 126.7.16 Counted(index as Integer, time as Integer, counts as Integer)
* PHIDGET_FREQUENCYCOUNTER_FILTERTYPE_LOGIC_LEVEL = 2
* PHIDGET_FREQUENCYCOUNTER_FILTERTYPE_UNKNOWN = 3
* PHIDGET_FREQUENCYCOUNTER_FILTERTYPE_ZERO_CROSSING = 1

– 126.8.1 class PhidgetGPGAMBS
  * altitude as Double
  * fixQuality as Integer
  * heightOfGeoid as Double
  * horizontalDilution as Double
  * latitude as Double
  * longitude as Double
  * numSatellites as Integer
  * time as PhidgetGPSTimeMBS

– 126.9.1 class PhidgetGPGSAMBS
  * satUsed(index as Integer) as Integer
  * fixType as Integer
  * horizDilution as Double
  * mode as Integer
  * posnDilution as Double
  * vertDilution as Double
  * kFixType2D = 2
  * kFixType3D = 3
  * kFixTypeNo = 1
  * kModeAuto = 65
  * kModeForced = 77

– 126.10.1 class PhidgetGPSSVMBS
  * satInfo(index as Integer) as PhidgetGPSSatInfoMBS

– 126.11.1 class PhidgetGPRMCMBS
* 126.11.3 date as PhidgetGPSDateMBS
* 126.11.4 heading as Double
* 126.11.5 latitude as Double
* 126.11.6 longitude as Double
* 126.11.7 magneticVariation as Double
* 126.11.8 mode as Integer
* 126.11.9 speedKnots as Double
* 126.11.10 status as Integer
* 126.11.11 time as PhidgetGPSTimeMBS

– 126.12.1 class PhidgetGPSDateMBS
* 126.12.3 Day as Integer
* 126.12.4 Month as Integer
* 126.12.5 Year as Integer

– 126.13.1 class PhidgetGPSMBS
* 126.13.3 Constructor
* 126.13.4 getAltitude as Double
* 126.13.5 getDate as PhidgetGPSDateMBS
* 126.13.6 getHeading as Double
* 126.13.7 getLatitude as Double
* 126.13.8 getLongitude as Double
* 126.13.9 getNMEAData as PhidgetNMEADataMBS
* 126.13.10 getPositionFixStatus as Integer
* 126.13.11 getTime as PhidgetGPSTimeMBS
* 126.13.12 getVelocity as Double
* 126.13.14 PositionChanged(latitude as Double, longitude as Double, altitude as Double)
* 126.13.15 PositionFixStatusChanged(status as Integer)

– 126.14.1 class PhidgetGPSSatInfoMBS
* 126.14.3 Azimuth as Integer
* 126.14.4 Elevation as Integer
* 126.14.5 ID as Integer
* 126.14.6 SNR as Integer

– 126.15.1 class PhidgetGPSTimeMBS
* 126.15.3 Hour as Integer
* 126.15.4 Millisecond as Integer
* 126.15.5 Minute as Integer
* 126.15.6 Second as Integer

– 126.16.1 class PhidgetGPVTGMBS
* 126.16.3 magneticHeading as Double
* 126.16.4 mode as Integer
* 126.16.5 speed as Double
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* 126.16.6 speedKnots as Double 17574
* 126.16.7 trueHeading as Double 17574

- 126.17.1 class PhidgetInterfaceKitMBS 17576
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  * 126.17.5 getDataRateMax(index as Integer) as Integer 17577
  * 126.17.6 getDataRateMin(index as Integer) as Integer 17577
  * 126.17.7 getInputCount as Integer 17577
  * 126.17.8 getInputState(index as Integer) as boolean 17577
  * 126.17.9 getOutputCount as Integer 17577
  * 126.17.10 getOutputState(index as Integer) as boolean 17578
  * 126.17.11 getRatiometric as boolean 17578
  * 126.17.12 getSensorChangeTrigger(index as Integer) as Integer 17578
  * 126.17.13 getSensorCount as Integer 17578
  * 126.17.14 getSensorRawValue(index as Integer) as Integer 17578
  * 126.17.15 getSensorValue(index as Integer) as Integer 17579
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  * 126.17.23 SensorChanged(index as Integer, value as Integer) 17580

- 126.18.1 class PhidgetIRCodeInfoMBS 17581
  * 126.18.3 bitCount as Integer 17581
  * 126.18.4 carrierFrequency as Integer 17581
  * 126.18.5 dutyCycle as Integer 17581
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  * 126.18.10 trail as Integer 17582
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  * 126.18.12 one(index as Integer) as Integer 17583
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  * 126.18.17 PHIDGET\_IR\_ENCODING\_BIPHASE = 4 17584
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  * 126.18.19 PHIDGET\_IR\_ENCODING\_RC5 = 5 17584
  * 126.18.20 PHIDGET\_IR\_ENCODING\_RC6 = 6 17584
- 126.18.1 class PhidgetIRMBS
  * 126.18.21 PHIDGET_IR_ENCODING_SPACE = 2
  * 126.18.22 PHIDGET_IR_ENCODING_UNKNOWN = 1
  * 126.18.23 PHIDGET_IR_LENGTH_CONSTANT = 2
  * 126.18.24 PHIDGET_IR_LENGTHUNKNOWN = 1
  * 126.18.25 PHIDGET_IR_LENGTH_VARIABLE = 3

- 126.19.1 class PhidgetIRCodeInfoMBS
  * 126.19.3 Constructor
  * 126.19.4 getLastCode(byref bitCount as Integer) as MemoryBlock
  * 126.19.5 getLastLearnedCode(byref codeInfo as PhidgetIRCodeInfoMBS) as MemoryBlock
  * 126.19.6 getRawData as MemoryBlock
  * 126.19.7 Transmit(data as MemoryBlock, codeInfo as PhidgetIRCodeInfoMBS)
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  * 126.19.11 Code(data as memoryblock, bitcount as Integer, repeat as Integer)
  * 126.19.12 Learn(data as memoryblock, code as PhidgetIRCodeInfoMBS)
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- 126.20.1 class PhidgetLED
  * 126.20.3 Constructor
  * 126.20.4 getCurrentLimit as Integer
  * 126.20.5 getDiscreteLED(index as Integer) as Integer
  * 126.20.6 getLEDCount as Integer
  * 126.20.7 getVoltage as Integer
  * 126.20.8 setCurrentLimit(currentLimit as Integer)
  * 126.20.9 setDiscreteLED(index as Integer, Brightness as Integer)
  * 126.20.10 setVoltage(Voltage as Integer)
  * 126.20.12 PHIDGET_LED_CURRENT_LIMIT_20mA = 1
  * 126.20.13 PHIDGET_LED_CURRENT_LIMIT_40mA = 2
  * 126.20.14 PHIDGET_LED_CURRENT_LIMIT_60mA = 3
  * 126.20.15 PHIDGET_LED_CURRENT_LIMIT_80mA = 4
  * 126.20.16 PHIDGET_LED_VOLTAGE_1.7V = 1
  * 126.20.17 PHIDGET_LED_VOLTAGE_2.75V = 2
  * 126.20.18 PHIDGET_LED_VOLTAGE_3.9V = 3
  * 126.20.19 PHIDGET_LED_VOLTAGE_5.0V = 4

- 126.21.1 class PhidgetManagerMBS
  * 126.21.3 Close
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  * 126.21.5 Device(index as Integer) as PhidgetMBS
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* 126.22.82 PHIDDEF_ADVANCEDSERVO=& h15
* 126.22.83 PHIDDEF_ENCODER=& hE
* 126.22.84 PHIDDEF_GPS=& h16
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* 126.22.86 PHIDDEF_HUMIDITYSENSOR=5
* 126.22.87 PHIDDEF_INTERFACEKIT=3
* 126.22.88 PHIDDEF_LED=& hD
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* 126.22.90 PHIDDEF_PHSENSOR=& h13
* 126.22.91 PHIDDEF_RFID=7
* 126.22.92 PHIDDEF_SERVO=4
* 126.22.93 PHIDDEF_STEPPER=& hF
* 126.22.94 PHIDDEF_TEMPERATURESENSOR=& h10
* 126.22.95 PHIDDEF_TEXTLCD=& hA
* 126.22.96 PHIDDEF_TEXTLED=& h12
* 126.22.97 PHIDDEF_WEIGHTSENSOR=8
* 126.22.98 PHIDGET_ATTACHED=1
* 126.22.99 PHIDGET_LOG_CRITICAL=1
* 126.22.100 PHIDGET_LOG_DEBUG=4
* 126.22.101 PHIDGET_LOG_ERROR=2
* 126.22.102 PHIDGET_LOG_INFO=5
* 126.22.103 PHIDGET_LOG_VERBOSE=6
* 126.22.104 PHIDGET_LOG_WARNING=3
* 126.22.105 PHIDGET_NOTATTACHED=0
* 126.22.106 PHIDID_ACCELEROMETER_2AXIS = & h071
* 126.22.107 PHIDID_ACCELEROMETER_3AXIS = & h07E
* 126.22.108 PHIDID_ADVANCEDSERVO_1MOTOR = & h082
* 126.22.109 PHIDID_ADVANCEDSERVO_8MOTOR = & h03A
* 126.22.110 PHIDID_ANALOG_4OUTPUT = & h037
* 126.22.111 PHIDID_BIPOLAR_STEPPER_1MOTOR = & h07B
* 126.22.112 PHIDID_BRIDGE_4INPUT = & h03B
* 126.22.113 PHIDID_ENCODER_1ENCODER_1INPUT = & h04B
* 126.22.114 PHIDID_ENCODER_HS_1ENCODER = & h080
* 126.22.115 PHIDID_ENCODER_HS_4ENCODER_4INPUT = & h04F
* 126.22.116 PHIDID_FREQUENCYCOUNTER_2INPUT = & h035
* 126.22.117 PHIDID_GPS = & h079
* 126.22.118 PHIDID_INTERFACEKIT_0_0_4 = & h040
* 126.22.119 PHIDID_INTERFACEKIT_0_0_8 = & h081
* 126.22.120 PHIDID_INTERFACEKIT_0_16_16 = & h044
* 126.22.121 PHIDID_INTERFACEKIT_0_8_8_w_LCD = & h053
* 126.22.122 PHIDID_INTERFACEKIT_2_2_2 = & h036
* 126.22.123 PHIDID_INTERFACEKIT_4_8_8 = 4
* 126.22.124 PHIDID_INTERFACEKIT_8_8_8 = & h045
* 126.22.125 PHIDID_INTERFACEKIT_8_8_8_w_LCD = & h07D
* 126.22.126 PHIDID_IR = & h04D
* 126.22.127 PHIDID_LED_64 = & h04A
* 126.22.128 PHIDID_LED_64_ADV = & h04C
* 126.22.129 PHIDID_LINEAR_TOUCH = & h076
* 126.22.130 PHIDID_MOTORCONTROL_1MOTOR = & h03E
* 126.22.131 PHIDID_MOTORCONTROL_HC_2MOTOR = & h059
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* 126.22.134 PHIDID_RFID = & h030
* 126.22.135 PHIDID_RFID_2OUTPUT = & h031
* 126.22.136 PHIDID_ROTARY_TOUCH = & h077
* 126.22.137 PHIDID_SERVO_1MOTOR = & h039
* 126.22.138 PHIDID_SERVO_1MOTOR_OLD = 2
* 126.22.139 PHIDID_SERVO_4MOTOR = & h038
* 126.22.140 PHIDID_SERVO_4MOTOR_OLD = 3
* 126.22.141 PHIDID_SPATIAL_ACCEL_3AXIS = & h07F
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* 126.22.143 PHIDID_TEMPERATURESENSOR = & h070
* 126.22.144 PHIDID_TEMPERATURESENSOR_4 = & h032
* 126.22.145 PHIDID_TEMPERATURESENSOR_IR = & h03C
* 126.22.146 PHIDID_TEXTLCD_2x20 = & h052
* 126.22.147 PHIDID_TEXTLCD_2x20_w_0_8_8 = & h153
* 126.22.148 PHIDID_TEXTLCD_2x20_w_8_8_8 = & h17D
* 126.22.149 PHIDID_TEXTLCD_ADAPTER = & h03D
* 126.22.150 PHIDID_TEXTLED_1x8 = & h049
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- 126.22.189 PHIDSPEC_TEMPERATURESENSOR=& h0F 17628
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- 126.22.192 PHIDSPEC_TEXTLCD_2_20_CUSTOM=& h09 17628
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* 126.22.199 PUNK_INT = & H7FFFFFFF
* 126.22.200 PUNK_INT64 = & h7FFFFFFFFFFFFFF
* 126.22.201 PUNK_SHRT = & h7FF

126.24.1 class PhidgetMotorControlMBS

* 126.24.3 Constructor
* 126.24.4 getAcceleration(index as Integer) as Double
* 126.24.5 getAccelerationMax(index as Integer) as Double
* 126.24.6 getAccelerationMin(index as Integer) as Double
* 126.24.7 getBackEMF(index as Integer) as Double
* 126.24.8 getBackEMFSensingState(index as Integer) as Integer
* 126.24.9 getBraking(index as Integer) as Double
* 126.24.10 getCurrent(index as Integer) as Double
* 126.24.11 getEncoderCount as Integer
* 126.24.12 getEncoderPosition(index as Integer) as Integer
* 126.24.13 getInputCount as Integer
* 126.24.14 getInputState(index as Integer) as boolean
* 126.24.15 getMotorCount as Integer
* 126.24.16 getRatiometric as Integer
* 126.24.17 getSensorCount as Integer
* 126.24.18 getSensorRawValue(index as Integer) as Integer
* 126.24.19 getSensorValue(index as Integer) as Integer
* 126.24.20 getSupplyVoltage as Double
* 126.24.21 getVelocity(index as Integer) as Double
* 126.24.22 setAcceleration(index as Integer, value as Double)
* 126.24.23 setBackEMFSensingState(index as Integer, EMFState as Integer)
* 126.24.24 setBraking(index as Integer, value as Double)
* 126.24.25 setEncoderPosition(index as Integer, position as Integer)
* 126.24.26 setRatiometric(value as Integer)
* 126.24.27 setVelocity(index as Integer, value as Double)
* 126.24.29 BackEMFUpdated(index as Integer, voltage as Double)
* 126.24.30 CurrentChanged(index as Integer, value as Double)
* 126.24.31 CurrentUpdated(index as Integer, current as Double)
* 126.24.32 EncoderPositionChanged(index as Integer, time as Integer, positionChange as Integer)
* 126.24.33 EncoderPositionUpdated(index as Integer, positionChange as Integer)
* 126.24.34 InputChanged(index as Integer, value as Integer)
* 126.24.35 SensorUpdated(index as Integer, sensorValue as Integer)
* 126.24.36 VelocityChanged(index as Integer, value as Double)

126.25.1 class PhidgetNMEADataMBS

* 126.25.3 GGA as PhidgetGPGGAMBS
* 126.25.4 GSA as PhidgetGPGSAMBS
* 126.25.5 GSV as PhidgetGPGSVMBS 17639
* 126.25.6 RMC as PhidgetGPRMCMB 17639
* 126.25.7 VTG as PhidgetGPVTGMBS 17639

– 126.27.1 class PhidgetPHSensorMBS 17642
  * 126.27.3 Constructor 17642
  * 126.27.4 getPH as Double 17642
  * 126.27.5 getPHChangeTrigger as Double 17643
  * 126.27.6 getPHMax as Double 17643
  * 126.27.7 getPHMin as Double 17643
  * 126.27.8 getPotential as Double 17643
  * 126.27.9 getPotentialMax as Double 17643
  * 126.27.10 getPotentialMin as Double 17644
  * 126.27.11 setPHChangeTrigger(value as Double) 17644
  * 126.27.12 setTemperature(value as Double) 17644
  * 126.27.14 PHChanged(value as Double) 17644

– 126.28.1 class PhidgetRFIDMBS 17645
  * 126.28.3 Constructor 17645
  * 126.28.4 getAntennaOn as boolean 17645
  * 126.28.5 getLastTag(m as memoryblock) as memoryblock 17646
  * 126.28.6 getLEDOn as boolean 17646
  * 126.28.7 getOutputCount as Integer 17646
  * 126.28.8 getOutputState(index as Integer) as boolean 17646
  * 126.28.9 getTagStatus as boolean 17646
  * 126.28.10 setAntennaOn(value as boolean) 17647
  * 126.28.11 setLEDOn(value as boolean) 17647
  * 126.28.12 setOutputState(index as Integer, value as boolean) 17647
  * 126.28.14 OutputChanged(index as Integer, value as Integer) 17647
  * 126.28.15 Tag(tag as memoryblock) 17648
  * 126.28.16 TagLost(tag as memoryblock) 17648

– 126.29 Globals 17649
  * 126.29.1 LoadPhidgetFrameworkMBS(framework as folderitem) as boolean 17649
  * 126.29.2 LoadPhidgetLibraryMBS(file as folderitem) as boolean 17649
  * 126.29.3 LoadPhidgetLibraryMBS(path as string) as boolean 17649
  * 126.29.4 LoadPhidgetLinuxLibraryMBS(path as string) as boolean 17650
  * 126.29.5 LoadPhidgetWindowsDLLMBS(dllpath as string) as boolean 17650

– 126.30.1 class PhidgetServoMBS 17650
  * 126.30.3 Constructor 17651
  * 126.30.4 getEngaged(index as Integer) as boolean 17651
  * 126.30.5 getMotorCount as Integer 17651
  * 126.30.6 getPosition(index as Integer) as Double 17651
  * 126.30.7 getPositionMax(index as Integer) as Double 17652
* 126.30.8 getPositionMin(index as Integer) as Double 17652
* 126.30.9 getServoType(index as Integer) as Integer 17652
* 126.30.10 setEngaged(index as Integer, value as boolean) 17652
* 126.30.11 setPosition(index as Integer, value as Double) 17653
* 126.30.12 setServoParameters(index as Integer, min_us as Double, max_us as Double, degrees as Double) 17653
* 126.30.13 setServoType(index as Integer, value as Integer) 17653
* 126.30.15 MotorPositionChanged(index as Integer, value as Double) 17653

– 126.31.1 class PhidgetSpatialEventDataMBS 17655
  * 126.31.3 TimestampMicroseconds as Integer 17655
  * 126.31.4 TimestampSeconds as Integer 17655
  * 126.31.5 acceleration(index as Integer) as Double 17655
  * 126.31.6 angularRate(index as Integer) as Double 17655
  * 126.31.7 magneticField(index as Integer) as Double 17656

– 126.32.1 class PhidgetSpatialMBS 17657
  * 126.32.3 Constructor 17657
  * 126.32.4 getAcceleration(index as Integer) as Double 17657
  * 126.32.5 getAccelerationAxisCount as Integer 17657
  * 126.32.6 getAccelerationMax(index as Integer) as Double 17658
  * 126.32.7 getAccelerationMin(index as Integer) as Double 17658
  * 126.32.8 getAngularRate(index as Integer) as Double 17658
  * 126.32.9 getAngularRateMax(index as Integer) as Double 17658
  * 126.32.10 getAngularRateMin(index as Integer) as Double 17658
  * 126.32.11 getCompassAxisCount as Integer 17659
  * 126.32.12 setAcceleration as Integer 17659
  * 126.32.13 setAccelerationMax as Integer 17659
  * 126.32.14 setAccelerationMin as Integer 17659
  * 126.32.15 setGyroAxisCount as Integer 17659
  * 126.32.16 setMagneticField(index as Integer) as Double 17659
  * 126.32.17 setMagneticFieldMax(index as Integer) as Double 17660
  * 126.32.18 setMagneticFieldMin(index as Integer) as Double 17660
  * 126.32.19 resetCompassCorrectionParameters 17660
  * 126.32.20 setCompassCorrectionParameters(magField as Double, offset0 as Double, offset1 as Double, offset2 as Double, gain0 as Double, gain1 as Double, gain2 as Double, T0 as Double, T1 as Double, T2 as Double, T3 as Double, T4 as Double, T5 as Double) 17660
  * 126.32.21 setDataRate(milliseconds as Integer) 17661
  * 126.32.22 zeroGyro 17661
  * 126.32.24 SpatialData(data() as PhidgetSpatialEventDataMBS, dataCount as Integer) 17662

– 126.33.1 class PhidgetStepperMBS 17663
  * 126.33.3 Constructor 17663
  * 126.33.4 getAcceleration(index as Integer) as Double 17663
126.33.5 getAccelerationMax(index as Integer) as Double 17663
126.33.6 getAccelerationMin(index as Integer) as Double 17664
126.33.7 getCurrent(index as Integer) as Double 17664
126.33.8 getCurrentLimit(index as Integer) as Double 17664
126.33.9 getCurrentMax(index as Integer) as Double 17664
126.33.10 getCurrentMin(index as Integer) as Double 17665
126.33.11 getCurrentPosition(index as Integer) as int64 17665
126.33.12 getEngaged(index as Integer) as boolean 17665
126.33.13 getInputCount as Integer 17665
126.33.14 getInputState(index as Integer) as boolean 17665
126.33.15 getMotorCount as Integer 17666
126.33.16 getPositionMax(index as Integer) as int64 17666
126.33.17 getPositionMin(index as Integer) as int64 17666
126.33.18 getStopped(index as Integer) as boolean 17666
126.33.19 getTargetPosition(index as Integer) as int64 17666
126.33.20 getVelocity(index as Integer) as Double 17667
126.33.21 getVelocityLimit(index as Integer) as Double 17667
126.33.22 getVelocityMax(index as Integer) as Double 17667
126.33.23 getVelocityMin(index as Integer) as Double 17667
126.33.24 setAcceleration(index as Integer, value as Double) 17668
126.33.25 setCurrentLimit(index as Integer, value as Double) 17668
126.33.26 setCurrentPosition(index as Integer, value as int64) 17668
126.33.27 setEngaged(index as Integer, value as boolean) 17668
126.33.28 setTargetPosition(index as Integer, value as int64) 17669
126.33.29 setVelocityLimit(index as Integer, value as Double) 17669
126.33.31 CurrentChanged(index as Integer, value as Double) 17669
126.33.32 InputChanged(index as Integer, value as Integer) 17669
126.33.33 ServoChanged(index as Integer, value as int64) 17670
126.33.34 VelocityChanged(index as Integer, value as Double) 17670

126.34.1 class PhidgetTemperatureSensorMBS 17671
126.34.3 Constructor 17671
126.34.4 getAmbientTemperature as Double 17671
126.34.5 getAmbientTemperatureMax as Double 17671
126.34.6 getAmbientTemperatureMin as Double 17672
126.34.7 getPotential(index as Integer) as Double 17672
126.34.8 getPotentialMax(index as Integer) as Double 17672
126.34.9 getPotentialMin(index as Integer) as Double 17672
126.34.10 getTemperature(index as Integer) as Double 17672
126.34.11 getTemperatureChangeTrigger(index as Integer) as Double 17673
126.34.12 getTemperatureInputCount as Integer 17673
126.34.13 getTemperatureMax(index as Integer) as Double 17673
126.34.14 getTemperatureMin(index as Integer) as Double
126.34.15 getThermocoupleType(index as Integer) as Integer
126.34.16 setTemperatureChangeTrigger(index as Integer, value as Double)
126.34.17 setThermocoupleType(index as Integer, value as Integer)
126.34.19 TemperatureChanged(index as Integer, value as Double)
126.34.21 PHIDGET_TEMPERATURE_SENSOR_E_TYPE = 3
126.34.22 PHIDGET_TEMPERATURE_SENSOR_J_TYPE = 2
126.34.23 PHIDGET_TEMPERATURE_SENSOR_K_TYPE = 1
126.34.24 PHIDGET_TEMPERATURE_SENSOR_T_TYPE = 4

- 126.35.1 class PhidgetTextLCDMBS
  
  * 126.35.3 Constructor
  * 126.35.4 getBacklight as boolean
  * 126.35.5 getBrightness as Integer
  * 126.35.6 getColumnCount as Integer
  * 126.35.7 getContrast as Integer
  * 126.35.8 getCursorBlink as Integer
  * 126.35.9 getCursorOn as Integer
  * 126.35.10 getRowCount as Integer
  * 126.35.11 getScreen as Integer
  * 126.35.12 getScreenCount as Integer
  * 126.35.13 getScreenSize as Integer
  * 126.35.14 initialize
  * 126.35.15 setBacklight(backlightState as boolean)
  * 126.35.16 setBrightness(Brightness as Integer)
  * 126.35.17 setContrast(Contrast as Integer)
  * 126.35.18 setCursorBlink(CursorBlink as Integer)
  * 126.35.19 setCursorOn(CursorOn as Integer)
  * 126.35.20 setCustomCharacter(index as Integer, val1 as Integer, val2 as Integer)
  * 126.35.21 setDisplayCharacter(index as Integer, column as Integer, character as Integer)
  * 126.35.22 setDisplayString(row as Integer, displayString as string)
  * 126.35.23 setScreen(screenIndex as Integer)
  * 126.35.24 setScreenSize(screenSize as Integer)
  * 126.35.26 PHIDGET_TEXTLCD_SCREEN_1x16 = 4
  * 126.35.27 PHIDGET_TEXTLCD_SCREEN_1x40 = 10
  * 126.35.28 PHIDGET_TEXTLCD_SCREEN_1x8 = 2
  * 126.35.29 PHIDGET_TEXTLCD_SCREEN_2x16 = 5
  * 126.35.30 PHIDGET_TEXTLCD_SCREEN_2x20 = 7
  * 126.35.31 PHIDGET_TEXTLCD_SCREEN_2x24 = 9
  * 126.35.32 PHIDGET_TEXTLCD_SCREEN_2x40 = 11
  * 126.35.33 PHIDGET_TEXTLCD_SCREEN_2x8 = 3
126.35.34 PHIDGET_TEXTLCD_SCREEN_4x16 = 6
126.35.35 PHIDGET_TEXTLCD_SCREEN_4x20 = 8
126.35.36 PHIDGET_TEXTLCD_SCREEN_4x40 = 12
126.35.37 PHIDGET_TEXTLCD_SCREEN_NONE = 1
126.35.38 PHIDGET_TEXTLCD_SCREEN_UNKNOWN = 13

126.36.1 class PhidgetTextLEDMBS
   * 126.36.3 Constructor
   * 126.36.4 getBrightness as Integer
   * 126.36.5 getColumnCount as Integer
   * 126.36.6 getColumnCount as Integer
   * 126.36.7 setBrightness(Brightness as Integer)
   * 126.36.8 setDisplayString(row as Integer, displayString as string)

126.37.1 class PhidgetWeightSensorMBS
   * 126.37.3 Constructor
   * 126.37.4 getWeight as Double
   * 126.37.5 getWeightChangeTrigger as Double
   * 126.37.6 setWeightChangeTrigger(value as Double)
   * 126.37.8 WeightChanged(value as Double)
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  – 127.1 class PHPMBS
    * 127.1.3 CallbackArgumentCount as Integer
    * 127.1.4 CallbackArgumentDouble(index as Integer) as Double
    * 127.1.5 CallbackArgumentInteger(index as Integer) as Integer
    * 127.1.6 CallbackArgumentString(index as Integer) as string
    * 127.1.7 Constructor
    * 127.1.8 Execute(code as string) as string
    * 127.1.9 existsVariable(name as string) as boolean
    * 127.1.10 getVariable(name as string) as string
    * 127.1.11 INI as String
    * 127.1.12 LoadExtension(Path as string) as boolean
    * 127.1.13 LoadLibrary(file as folderitem) as boolean
    * 127.1.14 LoadLibrary(path as string) as boolean
    * 127.1.15 Run(code as string) as boolean
    * 127.1.16 setVariable(name as string, value as string)
    * 127.1.18 Inited as Boolean
    * 127.1.19 LastErrorFile as String
    * 127.1.20 LastErrorLine as Integer
    * 127.1.21 LastErrorMessage as String
    * 127.1.22 LastExitStatus as Integer
    * 127.1.23 Loaded as Boolean
    * 127.1.24 UseUTF8 as Boolean
    * 127.1.26 Callback(ArgumentCount as Integer) as Variant
    * 127.1.27 LogMessage(message as string)
    * 127.1.28 Write(data as string)
• 80 Graphics & Pictures
  – 80.4.1 class Picture
    * 80.4.3 AddSteganographyMBS(flags as Integer, data as Memoryblock) as Picture
    * 80.4.4 AddSteganographyPictureMBS(flags as Integer, data as Picture) as Picture
    * 80.4.5 AutoLevelCopyMBS as picture
    * 80.4.6 AutoLevelMBS as boolean
    * 80.4.7 BitmapMBS as picture
    * 80.4.8 BlueChannelMBS as picture
    * 80.4.9 BlurMBS(Radius as Double, yield as Integer = 0) as picture
    * 80.4.11 CalcSteganographyMBS(flags as Integer) as Integer
    * 80.4.13 ChangeBrightnessAbsoluteMBS(Brightness as Double) as picture
    * 80.4.14 ChangeBrightnessAbsoluteMBS(BrightnessRed as Double, BrightnessGreen as Double, BrightnessBlue as Double) as picture
    * 80.4.15 ChangeBrightnessLinearMBS(Brightness as Double) as picture
    * 80.4.16 ChangeBrightnessLinearMBS(BrightnessRed as Double, BrightnessGreen as Double, BrightnessBlue as Double) as picture
    * 80.4.17 ChangeContrastBrightnessAbsoluteMBS(Contrast as Double, Brightness as Double) as picture
    * 80.4.18 ChangeContrastBrightnessAbsoluteMBS(ContrastRed as Double, ContrastGreen as Double, ContrastBlue as Double, BrightnessRed as Double, BrightnessGreen as Double, BrightnessBlue as Double) as picture
    * 80.4.19 ChangeContrastBrightnessLinearMBS(Contrast as Double, Brightness as Double) as picture
    * 80.4.20 ChangeContrastBrightnessLinearMBS(ContrastRed as Double, ContrastGreen as Double, ContrastBlue as Double, BrightnessRed as Double, BrightnessGreen as Double, BrightnessBlue as Double) as picture
    * 80.4.21 ChangeContrastMBS(Contrast as Double) as picture
    * 80.4.22 ChangeContrastMBS(ContrastRed as Double, ContrastGreen as Double, ContrastBlue as Double) as picture
    * 80.4.23 ChangeCustomMBS(a as Double, b as Double) as picture
    * 80.4.24 ChangeCustomMBS(Ra as Double, Rb as Double, Ga as Double, Gb as Double, Ba as Double, Bb as Double) as picture
    * 80.4.25 ChangeSaturationMBS(Amount as Integer) as picture
    * 80.4.26 cloneMBS as picture
    * 80.4.27 CloneMBS(NewMask as Picture) as picture
    * 80.4.28 CloneMBS(NewMask as Picture, width as Integer, height as Integer) as picture
    * 80.4.29 CloneMBS(width as Integer, height as Integer) as picture
    * 80.4.30 ColorizeMBS(hue as Double, sat as Double, light as Double) as picture
    * 80.4.31 ColornessMBS(threshold as Integer = 10) as Double
    * 80.4.32 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean
80.4.33 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, 
SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As
Boolean, ForeColour As color) as boolean

80.4.34 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, 
SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As
Boolean, ForeColour As color, MaskColour As color) as boolean

80.4.35 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, 
SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As
Boolean, ForeColour as Integer) as boolean

80.4.36 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, 
SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As
Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

80.4.37 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, 
DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, 
Height as Integer, UseColours As Boolean) as boolean

80.4.38 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, 
DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, 
Height as Integer, UseColours As Boolean, ForeColour as color) as boolean

80.4.39 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, 
DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, 
Height as Integer, UseColours As Boolean, ForeColour as color, MaskColour As color) as 
boolean

80.4.40 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, 
DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, 
Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean

80.4.41 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, 
DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, 
Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as 
boolean

80.4.42 CombineMBS(Mode as Integer, SecondPicture As Picture, X as Integer = 0, Y as 
Integer = 0, Width as Integer = 0, Height as Integer = 0) as picture

80.4.43 CombinePixelMBS(Mode as Integer, SecondPicture As Picture) as picture

80.4.44 CompareBrightnessMBS(other as picture, mode as Integer, threshold as Integer) as 
Double

80.4.45 CompareMBS(other as picture, threshold as Integer) as Double

80.4.46 CopyABGRTomemoryblockMBS(destination as memoryblock, offset as Integer, Al-
phaValue as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, 
DestRowBytes as Integer = 0) as boolean

80.4.47 CopyABGRTomemoryblockMBS(destination as memoryblock, offset as Integer, Mask-
ForAlpha as picture, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, 
DestRowBytes as Integer = 0) as boolean

80.4.48 CopyARGBtomemoryblockMBS(destination as memoryblock, offset as Integer, Al-
phaValue as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, 
DestRowBytes as Integer = 0) as boolean

80.4.49 CopyARGBtomemoryblockMBS(destination as memoryblock, offset as Integer, Lit-
tleEndian as boolean, AlphaValue as Integer, StartLine as Integer = 0, EndLine as Integer = 
-1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean
* 80.4.50 CopyARGBtoMemoryblockMBS(destination as memoryblock, offset as Integer, MaskForAlpha as picture, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean 13216
* 80.4.51 CopyBGRAtoMemoryblockMBS(destination as memoryblock, offset as Integer, AlphaValue as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean 13218
* 80.4.52 CopyBGRAtoMemoryblockMBS(destination as memoryblock, offset as Integer, MaskForAlpha as picture, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean 13218
* 80.4.53 CopyBGRtoMemoryblockMBS(destination as memoryblock, offset as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean 13220
* 80.4.54 CopyBGRXtoMemoryblockMBS(destination as memoryblock, offset as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean 13220
* 80.4.55 CopyBtoMemoryblockMBS(destination as memoryblock, offset as Integer, PixelByteSize as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean 13221
* 80.4.56 CopyGtoMemoryblockMBS(destination as memoryblock, offset as Integer, PixelByteSize as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean 13222
* 80.4.57 CopyMaskMBS as picture 13223
* 80.4.58 CopyPictureMBS as picture 13224
* 80.4.59 CopyPictureWithMaskMBS as picture 13224
* 80.4.60 CopyPictureWithoutMaskMBS as picture 13224
* 80.4.61 CopyPixelFastMBS(Source As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer) as boolean 13225
* 80.4.62 CopyRGBAtoMemoryblockMBS(destination as memoryblock, offset as Integer, AlphaValue as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean 13226
* 80.4.63 CopyRGBAtoMemoryblockMBS(destination as memoryblock, offset as Integer, MaskForAlpha as picture, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean 13227
* 80.4.64 CopyRGBtoMemoryblockMBS(destination as memoryblock, offset as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean 13228
* 80.4.65 CopyRGBXtoMemoryblockMBS(destination as memoryblock, offset as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean 13229
* 80.4.66 CopyRtoMemoryblockMBS(destination as memoryblock, offset as Integer, PixelByteSize as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean 13230
* 80.4.67 CopyXBGRtoMemoryblockMBS(destination as memoryblock, offset as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean 13231
* 80.4.68 CopyXRGBtoMemoryblockMBS(destination as memoryblock, offset as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean
  13232
* 80.4.69 CountColorMBS(col as color) as Integer
  13233
* 80.4.70 CountColorsMBS(byref red as memoryblock, byref blue as memoryblock, byref green as memoryblock, byref count as Integer)
  13233
* 80.4.71 DrawPictureFMBS(pic as picture, x as Double, y as Double, alpha as Double = 1.0, yield as Integer = 0) as boolean
  13234
* 80.4.72 ExtractColorMBS(SearchColor as color, ReplaceWithColor as color, BackGroundColor as color) as picture
  13234
* 80.4.73 ExtractColorRectangleMaskMBS as picture
  13235
* 80.4.74 ExtractColorRectangleMaskMBS(left as Integer, top as Integer, width as Integer, height as Integer) as picture
  13235
* 80.4.75 FindPictureMBS(pic as picture, byref x as Integer, byref y as Integer, StartX as Integer = 0, StartY as Integer = 0, Tolerance as Integer = 3) as boolean
  13236
* 80.4.76 GetMaskMBS(create as boolean = true) as picture
  13237
* 80.4.77 GrayScale2MBS(mode as Integer) as boolean
  13237
* 80.4.78 GrayScaleMBS(mode as Integer) as picture
  13237
* 80.4.79 GreenChannelMBS as picture
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* 80.4.80 HashMBS as UInt32
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* 80.4.81 HasMaskMBS as boolean
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* 80.4.82 HMirrorMBS as picture
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* 80.4.83 HMirrorPictureMBS as boolean
  13240
* 80.4.84 InvertGrayMBS as picture
  13240
* 80.4.85 InvertGrayMBS(left as Integer, top as Integer, width as Integer, height as Integer) as picture
  13241
* 80.4.86 InvertMBS as picture
  13241
* 80.4.87 InvertMBS(left as Integer, top as Integer, width as Integer, height as Integer) as picture
  13242
* 80.4.88 isBlackMBS as boolean
  13242
* 80.4.89 isBlackMBS(left as Integer, top as Integer, width as Integer, height as Integer) as boolean
  13243
* 80.4.90 isGrayMBS(tolerance as Integer = 0) as boolean
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☆ 102.2.30 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY
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☆ 102.2.31 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY
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  - 128.2.11 NoBitDepthReduction as Boolean
  - 128.2.12 NoColorTypeReduction as Boolean
  - 128.2.13 NoIDATRecompression as Boolean
  - 128.2.14 NoPaletteReduction as Boolean
  - 128.2.15 OptimizationLevel as Integer
  - 128.2.16 OutputFile as Folderitem
  - 128.2.17 Preserve as Boolean
  - 128.2.18 simulate as Boolean
  - 128.2.19 YieldTicks as Integer
  - 128.2.21 Log(message as string)
  - 128.2.22 Panic(message as string)
  - 128.2.23 Progress(index as Integer, count as Integer)
  - 128.2.24 ProgressBegin
  - 128.2.25 ProgressEnd
129 PNG

- 129.2.1 class PNGpictureMBS
  * 129.2.3 CombinePictureWithMask as picture
  * 129.2.4 PNGLibVersion as string
  * 129.2.6 height as Integer
  * 129.2.7 mask as picture
  * 129.2.8 pict as picture
  * 129.2.9 width as Integer
  * 129.2.11 kDefaultGamma = 0

- 129.3.1 class PNGReaderMBS
  * 129.3.3 ApplyOptions(gamma as Double = 0.0, ScreenGamma as Double = -1.0) as boolean
  * 129.3.4 CombinePictureWithMask as picture
  * 129.3.5 Open(file as folderitem, data as string) as boolean
  * 129.3.6 OpenData(data as string) as boolean
  * 129.3.7 OpenFile(file as folderitem) as boolean
  * 129.3.8 OpenSpecialData(data as string) as boolean
  * 129.3.9 PNGLibVersion as string
  * 129.3.10 ReadICCProfile(byref name as string, byref compression as Integer, byref profile as string) as boolean
  * 129.3.11 ReadPicture as boolean
  * 129.3.12 ReadRow as memoryblock
  * 129.3.13 ReadRow(mem as memoryblock) as boolean
  * 129.3.14 ReadRowAlphaOnly(mem as memoryblock) as boolean
  * 129.3.15 ReadRowMaskOnly(mem as memoryblock) as boolean
  * 129.3.16 ReadsRGBTag(byref file_srgb_intent as Integer) as boolean
  * 129.3.17 RowBytes as Integer
  * 129.3.19 AllowDamaged as Boolean
  * 129.3.20 BitDepth as Integer
  * 129.3.21 ColorType as Integer
  * 129.3.22 Height as Integer
  * 129.3.23 InterlaceType as Integer
  * 129.3.24 Interlacing as Integer
  * 129.3.25 Mask as Picture
  * 129.3.26 Pict as Picture
  * 129.3.27 SourceData as String
  * 129.3.28 SourceFile as FolderItem
  * 129.3.29 SwapRB as Boolean
  * 129.3.30 Width as Integer
  * 129.3.32 Error(msg as string)
  * 129.3.33 Warning(msg as string)
– 129.4.1 class PNGWriterMBS

  * 129.4.3 CloseDestination
  * 129.4.4 Finish as string
  * 129.4.5 OpenWriteDestination(file as folderitem) as boolean
  * 129.4.6 PNGLibVersion as string
  * 129.4.7 SetAlphaData(alphas() as Integer, colors() as color) as boolean
  * 129.4.8 SetAlphas as boolean
  * 129.4.9 SetGamma(gamma as Double = 0.0) as boolean
  * 129.4.10 SetGrayPicture(pict as picture, mask as picture = nil) as boolean
  * 129.4.11 SetHeader(Interlace as boolean = false, Filter as Integer = -1, Compression as Integer = -1) as boolean
  * 129.4.12 SetICCProfile(name as string, CompressionType as Integer, Profile as string) as boolean
  * 129.4.13 SetPalette as boolean
  * 129.4.14 SetPaletteData(colors() as color) as boolean
  * 129.4.15 SetPalettePicture(pict as picture) as boolean
  * 129.4.16 SetResolution(ResolutionHorizontal as Integer, ResolutionVertical as Integer, Unit as Integer) as boolean
  * 129.4.17 SetRGBPicture(pict as picture, mask as picture = nil) as boolean
  * 129.4.18 SetRows(rows() as memoryblock) as boolean
  * 129.4.19 SetsRGB(intent as Integer) as boolean
  * 129.4.20 WriteEnd as boolean
  * 129.4.21 WriteInfo as boolean
  * 129.4.22 WriteRow(row as memoryblock)
  * 129.4.23 WriteRows as boolean
  * 129.4.25 bpc as Integer
  * 129.4.26 Height as Integer
  * 129.4.27 Rowbytes as Integer
  * 129.4.28 Type as Integer
  * 129.4.29 Width as Integer
  * 129.4.31 Error(msg as string)
  * 129.4.32 Warning(msg as string)
  * 129.4.34 ResolutionDPI = 2
  * 129.4.35 ResolutionMeter = 1
  * 129.4.36 ResolutionUnknown = 0
  * 129.4.37 TypeGray = 0
  * 129.4.38 TypeGrayA = 4
  * 129.4.39 TypePalette = 1
  * 129.4.40 TypeRGB = 2
  * 129.4.41 TypeRGBA = 6
• 117 Menu
  – 117.4.1 class Popupmenu
    • 117.4.3 MenuMBS as MenuMBS
• 33 Cocoa Controls
  – 117.4.1 class Popupmenu
    * 117.4.4 NSBUTTONMBS as NSBUTTONMBS
    * 117.4.5 NSPOPUPBUTTONMBS as NSPOPUPBUTTONMBS
• **15 Audio**

  - 15.6.1 class PortAudioDeviceInfoMBS
    * 15.6.3 Constructor
    * 15.6.5 DefaultHighInputLatency as Double
    * 15.6.6 DefaultHighOutputLatency as Double
    * 15.6.7 DefaultLowInputLatency as Double
    * 15.6.8 DefaultLowOutputLatency as Double
    * 15.6.9 DefaultSampleRate as Double
    * 15.6.10 HostApiIndex as Integer
    * 15.6.11 Index as Integer
    * 15.6.12 MaxInputChannels as Integer
    * 15.6.13 MaxOutputChannels as Integer
    * 15.6.14 Name as String
  - 15.7.1 class PortAudioHostApiInfoMBS
    * 15.7.3 Constructor
    * 15.7.5 defaultInputDevice as Integer
    * 15.7.6 defaultOutputDevice as Integer
    * 15.7.7 deviceCount as Integer
    * 15.7.8 Index as Integer
    * 15.7.9 Name as String
    * 15.7.10 Type as Integer
  - 15.8.1 class PortAudioHostErrorInfoMBS
    * 15.8.3 Constructor
    * 15.8.5 ErrorCode as Integer
    * 15.8.6 ErrorText as String
    * 15.8.7 HostApiType as Integer
  - 15.9.1 class PortAudioMBS
    * 15.9.3 CountDevices as Integer
    * 15.9.4 DefaultHostApiIndexd as Integer
    * 15.9.5 DefaultInputDeviceID as Integer
    * 15.9.6 DefaultOutputDeviceID as Integer
    * 15.9.7 DeviceInfo(DeviceIndex as Integer) as PortAudioDeviceInfoMBS
    * 15.9.8 DisableHostAPI(API as string) as boolean
    * 15.9.9 ErrorText(ErrorNumber as Integer) as string
    * 15.9.10 GetSampleSize(Format as Integer) as Integer
    * 15.9.11 HostApiCount as Integer
    * 15.9.12 HostApiDeviceIndexToDeviceIndex(hostApiIndex as Integer, hostApiDeviceIndex as Integer) as Integer
    * 15.9.13 HostApiInfo(hostApiIndex as Integer) as PortAudioHostApiInfoMBS
    * 15.9.14 HostApiTypeIdToHostApiIndex(type as Integer) as Integer
• 15.9.15 HostError as PortAudioHostErrorInfoMBS  
  2932
• 15.9.16 IsFormatSupported(input as PortAudioStreamParametersMBS, output as PortAudioStreamParametersMBS, sampleRate as Double) as Integer  
  2932
• 15.9.17 SampleSize(theFormat as Integer) as Integer  
  2932
• 15.9.18 SetDebugLogFile(File as FolderItem) as boolean  
  2933
• 15.9.19 Sleep(msec as Integer)  
  2933
• 15.9.20 Version as Integer  
  2934
• 15.9.21 VersionControlRevision as String  
  2934
• 15.9.22 VersionText as String  
  2934

– 15.10.1 class PortAudioStreamBaseMBS  
  2935
  • 15.10.3 Abort as Integer  
    2935
  • 15.10.4 Close as Integer  
    2935
  • 15.10.5 CPULoad as Double  
    2935
  • 15.10.6 HostError as PortAudioHostErrorInfoMBS  
    2936
  • 15.10.7 Info as PortAudioStreamInfoMBS  
    2936
  • 15.10.8 IsStreamActive as Integer  
    2936
  • 15.10.9 IsStreamStopped as Integer  
    2936
  • 15.10.10 Start as Integer  
    2937
  • 15.10.11 Stop as Integer  
    2937
  • 15.10.12 Time as Double  
    2937
  • 15.10.14 UseSafeThreading as boolean  
    2937

– 15.11.1 class PortAudioStreamBufferedMBS  
  2939
  • 15.11.3 AddAudio(Data as memoryblock, offsetBytes as Integer=0, countBytes as Integer=0, BitSize as Integer=16, ClearBuffers as boolean=false) as boolean  
    2939
  • 15.11.4 AddAudioStereo(Data1 as memoryblock, Data2 as memoryblock, offsetBytes as Integer=0, countBytes as Integer=0, BitSize as Integer=16, ClearBuffers as boolean=false) as boolean  
    2940
  • 15.11.5 AddFloatAudio(FloatData as memoryblock, offsetBytes as Integer=0, countBytes as Integer=0, ClearBuffers as boolean=false) as boolean  
    2941
  • 15.11.6 AddFloatAudioStereo(FloatData1 as memoryblock, FloatData2 as memoryblock, offsetBytes as Integer=0, countBytes as Integer=0, ClearBuffers as boolean=false) as boolean  
    2941
  • 15.11.7 FreeSpace as Integer  
    2942
  • 15.11.8 HasFreeSpace as boolean  
    2942
  • 15.11.9 OpenDefaultStream(numOutputChannels as Integer, sampleRate as Double) as Integer  
    2942
  • 15.11.10 OpenStream(outputParameters as PortAudioStreamParametersMBS, sampleRate as Double, framesPerBuffer as Integer, streamFlags as Integer) as Integer  
    2943
  • 15.11.11 PlayAudio(Data as memoryblock, offsetBytes as Integer=0, countBytes as Integer=0, BitSize as Integer=16, ClearBuffers as boolean=false) as boolean  
    2944
  • 15.11.12 PlayAudioStereo(Data1 as memoryblock, Data2 as memoryblock, offsetBytes as Integer=0, countBytes as Integer=0, BitSize as Integer=16, ClearBuffers as boolean=false) as boolean  
    2945
15.11.13 PlayFloatAudio(FloatData as memoryblock, offsetBytes as Integer=0, countBytes as Integer=0, ClearBuffers as boolean=false) as boolean

15.11.14 PlayFloatAudioStereo(FloatData1 as memoryblock, FloatData2 as memoryblock, offsetBytes as Integer=0, countBytes as Integer=0, ClearBuffers as boolean=false) as boolean

15.11.16 HadUnderflow as Boolean

15.11.17 NoUnderflow as Boolean

15.11.18 OutputPosition as Double

15.11.19 OutputPositionRelative as Double

15.11.21 Finished

15.12.1 class PortAudioStreamInfoMBS

15.12.3 Constructor

15.12.5 InputLatency as Double

15.12.6 OutputLatency as Double

15.12.7 SampleRate as Double

15.13.1 class PortAudioStreamMBS

15.13.3 OpenDefaultStream(numInputChannels as Integer, numOutputChannels as Integer, sampleFormat as Integer, sampleRate as Double, framesPerBuffer as Integer, Flags as Integer) as Integer

15.13.4 OpenStream(inputParameters as PortAudioStreamParametersMBS, outputParameters as PortAudioStreamParametersMBS, sampleRate as Double, framesPerBuffer as Integer, streamFlags as Integer) as Integer

15.13.5 Read(buffer as memoryblock, frameCount as Integer) as Integer

15.13.6 ReadAvailable as Integer

15.13.7 Write(buffer as memoryblock, frameCount as Integer) as Integer

15.13.8 WriteAvailable as Integer

15.13.10 Callback(InputBuffer as memoryblock, outputBuffer as memoryblock, FrameCount as Integer, inputBufferAdcTime as Double, currentTime as Double, outputBufferDacTime as Double, statusFlags as Integer) as Integer

15.13.11 Finished

15.14.1 class PortAudioStreamParametersMBS

15.14.3 ChannelCount as Integer

15.14.4 Device as Integer

15.14.5 SampleFormat as Integer

15.14.6 SuggestedLatency as Double

15.14.8 paCustomFormat = 65536

15.14.9 paFloat32 = 1

15.14.10 paInt16 = 8

15.14.11 paInt24 = 4

15.14.12 paInt32 = 2

15.14.13 paInt8 = 16

15.14.14 paNonInterleaved = \& h80000000
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15.14.15 paNonInterleavedFloat32 = & h80000001

15.14.16 paNonInterleavedInt16 = & h80000008

15.14.17 paNonInterleavedInt24 = & h80000004

15.14.18 paNonInterleavedInt32 = & h80000002

15.14.19 paNonInterleavedInt8 = & h80000010

15.14.20 paNonInterleavedUInt8 = & h80000020

15.14.21 paUInt8 = 32

15.15.1 class PortAudioStreamRecorderMBS

15.15.3 Constructor(BufferSize as Integer)

15.15.4 Flush

15.15.5 OpenDefaultStream(numInputChannels as Integer, sampleRate as Double) as Integer

15.15.6 OpenStream(inputParameters as PortAudioStreamParametersMBS, sampleRate as Double, framesPerBuffer as Integer, streamFlags as Integer) as Integer

15.15.7 ReadFrames(mem as memoryblock, SizeInBytes as Integer) as Integer

15.15.8 ResizeBuffer(BufferSize as Integer)

15.15.10 Buffer as Memoryblock

15.15.11 BufferReadIndex as Integer

15.15.12 BufferSize as Integer

15.15.13 BufferWriteIndex as Integer

15.15.14 FramesAvailable as Integer

15.15.15 NumInputChannels as Integer
• 118 MIDI

  – 118.18.1 class PortMidiDeviceInfoMBS
    * 118.18.3 HasInput as Boolean
    * 118.18.4 HasOutput as Boolean
    * 118.18.5 InterfaceName as String
    * 118.18.6 Name as String

  – 118.19.1 class PortMidiEventMBS
    * 118.19.3 Set(status as Integer, data1 as Integer, data2 as Integer)
    * 118.19.4 SetRaw(data0 as Integer, data1 as Integer, data2 as Integer, data3 as Integer)
    * 118.19.6 CurrentEvent as PortMidiEventMBS
    * 118.19.7 Data1 as Integer
    * 118.19.8 Data2 as Integer
    * 118.19.9 RawData0 as Integer
    * 118.19.10 RawData1 as Integer
    * 118.19.11 RawData2 as Integer
    * 118.19.12 RawData3 as Integer
    * 118.19.13 RawMessage as Integer
    * 118.19.14 Status as Integer
    * 118.19.15 When as Integer

  – 118.20.1 class PortMidiMBS
    * 118.20.3 CountDevices as Integer
    * 118.20.4 DefaultInputDeviceID as Integer
    * 118.20.5 DefaultOutputDeviceID as Integer
    * 118.20.6 DeviceInfo(DeviceID as Integer) as PortMidiDeviceInfoMBS
    * 118.20.7 ErrorText(ErrorNumber as Integer) as string
    * 118.20.8 Initialize as Integer
    * 118.20.9 ReInitialize as Integer
    * 118.20.11 pmBadData = -9994
    * 118.20.12 pmBadPtr = -9995
    * 118.20.13 pmBufferMaxSize = -9992
    * 118.20.14 pmBufferOverflow = -9996
    * 118.20.15 pmBufferTooSmall = -9997
    * 118.20.16 pmHostError = -10000
    * 118.20.17 pmInsufficientMemory = -9998
    * 118.20.18 pmInternalError = -9993
    * 118.20.19 pmInvalidDeviceId = -9999
    * 118.20.20 pmNoDevice = -1
    * 118.20.21 pmNoError = 0

  – 118.21.1 class PortMidiStreamMBS
    * 118.21.3 Abort as Integer
118.21.4 Close
118.21.5 currentTimeStamp as Integer
118.21.6 ErrorText(ErrorNumber as Integer) as string
118.21.7 HostError as string
118.21.8 OpenInput(DeviceID as Integer, Buffersize as Integer) as Integer
118.21.9 OpenOutput((DeviceID as Integer, Buffersize as Integer, Latency as Integer) as Integer
118.21.10 Poll as Integer
118.21.11 Read(byref data as PortMidiEventMBS) as Integer
118.21.12 SetChannelMask(mask as Integer) as Integer
118.21.13 SetFilter(filters as Integer) as Integer
118.21.14 Write(data as PortMidiEventMBS) as Integer
118.21.15 WriteShort(When as Integer, message as Integer) as Integer
118.21.16 WriteSysEx(When as Integer, message as memoryblock, offset as Integer) as Integer
118.21.17 WriteSysEx(When as Integer, message as string) as Integer
118.21.18 ChannelMask as Integer
118.21.19 DeviceID as Integer
118.21.20 DeviceName as String
118.21.21 Filters as Integer
118.21.22 Filters as Integer
118.21.23 FilterActive = & h4000
118.21.24 FilterAftertouch = & h6000000
118.21.25 FilterAftertouch = & h2000000
118.21.26 FilterChannelAftertouch = & h20000000
118.21.27 FilterClock = & h1D00
118.21.28 FilterControl = & h8000000
118.21.29 FilterFD = & h2000
118.21.30 FilterMTC = 2
118.21.31 FilterNote = & h3000000
118.21.32 FilterPitchBend = & h40000000
118.21.33 FilterPlay = & h400
118.21.34 FilterPolyAftertouch = & h4000000
118.21.35 FilterProgram = & h10000000
118.21.36 FilterRealTime = & hFF01
118.21.37 FilterReset = & h8000
118.21.38 FilterSongPosition = 4
118.21.39 FilterSongSelect = 8
118.21.40 FilterSysEx = 1
118.21.41 FilterSystemCommon = & h4E
118.21.42 FilterTick = & h200
118.21.43 FilterTune = & h40
118.21.44 FilterUndefined = & h2000
• 152 SQL

  – 152.6.1 class PostgreSQLAPIMBS
    * 152.6.3 DB(conn as SQLConnectionMBS) as string
    * 152.6.4 ErrorMessage(conn as SQLConnectionMBS) as string
    * 152.6.5 Field(cmd as SQLCommandMBS, RecordIndex as Integer, FieldIndex as Integer) as string
    * 152.6.6 Field(cmd as SQLCommandMBS, RecordIndex as Integer, FieldName as string) as string
    * 152.6.7 FieldCount(cmd as SQLCommandMBS) as Integer
    * 152.6.8 Host(conn as SQLConnectionMBS) as string
    * 152.6.9 Options(conn as SQLConnectionMBS) as string
    * 152.6.10 Password(conn as SQLConnectionMBS) as string
    * 152.6.11 Port(conn as SQLConnectionMBS) as string
    * 152.6.12 RecordCount(cmd as SQLCommandMBS) as Integer
    * 152.6.13 TTY(conn as SQLConnectionMBS) as string
    * 152.6.14 User(conn as SQLConnectionMBS) as string
    * 152.6.16 LibraryLoaded as Boolean
• 140 Remote Control
  – 140.4.1 class PresskeyMBS
    * 140.4.3 clear
    * 140.4.4 mouseclick(down as boolean)
    * 140.4.5 MouseClick(down as boolean, rightdown as boolean)
    * 140.4.6 MouseMove(globalx as Integer, globaly as Integer)
    * 140.4.7 MouseMoveClick(globalx as Integer, globaly as Integer, down as boolean)
    * 140.4.8 MouseMoveClick(globalx as Integer, globaly as Integer, down as boolean, rightdown as boolean)
    * 140.4.9 press
    * 140.4.10 pressraw(down as boolean)
    * 140.4.12 Charcode as Integer
    * 140.4.13 Command as boolean
    * 140.4.14 Control as boolean
    * 140.4.15 Keycode as Integer
    * 140.4.16 Lasterror as Integer
    * 140.4.17 Option as boolean
    * 140.4.18 Shift as boolean
    * 140.4.19 VirtualCode as Integer
• 132 Process

  - ?? Globals

    * 132.4.1 CallMethodLaterMBS(target as object, name as string, afterDelay as Double) as boolean
    * 132.4.2 CallMethodLaterMBS(target as object, name as string, afterDelay as Double, value1 as Variant) as boolean
    * 132.4.3 CallMethodLaterMBS(target as object, name as string, afterDelay as Double, value1 as Variant, value2 as Variant) as boolean
    * 132.4.4 CallMethodLaterMBS(target as object, name as string, afterDelay as Double, value1 as Variant, value2 as Variant, value3 as Variant) as boolean
    * 132.4.5 CallMethodMBS(target as object, name as string) as boolean
    * 132.4.6 CallMethodMBS(target as object, name as string, value1 as Variant) as boolean
    * 132.4.7 CallMethodMBS(target as object, name as string, value1 as Variant, value2 as Variant) as boolean
    * 132.4.8 CallMethodMBS(target as object, name as string, value1 as Variant, value2 as Variant, value3 as Variant) as boolean
    * 132.4.9 CallMethodOnMainThreadMBS(target as object, name as string) as boolean
    * 132.4.10 CallMethodOnMainThreadMBS(target as object, name as string, value1 as Variant) as boolean
    * 132.4.11 CallMethodOnMainThreadMBS(target as object, name as string, value1 as Variant, value2 as Variant) as boolean
    * 132.4.12 CallMethodOnMainThreadMBS(target as object, name as string, value1 as Variant, value2 as Variant, value3 as Variant) as boolean
    * 132.4.13 CallMethodOnThreadMBS(BackgroundThread as BackgroundThreadMBS, target as object, name as string) as boolean
    * 132.4.14 CallMethodOnThreadMBS(BackgroundThread as BackgroundThreadMBS, target as object, name as string, value1 as Variant) as boolean
    * 132.4.15 CallMethodOnThreadMBS(BackgroundThread as BackgroundThreadMBS, target as object, name as string, value1 as Variant, value2 as Variant) as boolean
    * 132.4.16 CallMethodOnThreadMBS(BackgroundThread as BackgroundThreadMBS, target as object, name as string, value1 as Variant, value2 as Variant, value3 as Variant) as boolean
    * 132.4.20 CountProcessesMBS as Integer
    * 132.4.18 GetDarwinResourceUsageMBS as DarwinResourceUsageMBS
    * 132.4.17 GetDarwinVMStatisticsMBS as DarwinVMStatisticsMBS
    * 132.4.21 GetWindowsVMStatisticsMBS as WindowsVMStatisticsMBS
    * 132.4.19 SetThreadNameMBS(name as string)

  – 132.20.1 class ProcessMBS

    * 132.20.3 Bundle as folderitem
    * 132.20.4 BundleID as string
    * 132.20.5 CurrentProcessID as Integer
    * 132.20.6 GetCurrentProcess
    * 132.20.7 GetfirstProcess
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* 132.20.8 GetFrontProcess 18040
* 132.20.9 GetNextProcess as boolean 18040
* 132.20.10 GetProcess(serial as memoryblock) 18040
* 132.20.11 KillProcess as Integer 18040
* 132.20.12 KillProcess(ProcessID as Integer, timeout as Integer) as Integer 18041
* 132.20.13 KillProcess(timeoutms as Integer) as Integer 18041
* 132.20.14 MacProcessSerial as memoryblock 18042
* 132.20.15 Priority(ProcessID as Integer) as Integer 18043
* 132.20.16 ProcessInformationCFDictionary as object 18043
* 132.20.17 QuitProcess as Integer 18044
* 132.20.18 SameAs(other as ProcessMBS) as boolean 18044
* 132.20.19 SetFrontProcessWithOptions(options as Integer) 18045
* 132.20.20 SetServiceMode(ismode as boolean) as boolean 18045
* 132.20.21 TransformProcessType(mode as Integer) as Integer 18045
* 132.20.22 TransformToForegroundApplication as Integer 18046
* 132.20.23 Update 18046
* 132.20.24 WinFullProcessImagePath as string 18046
* 132.20.25 WinGetPriorityClass(ProcessID as Integer) as Integer 18047
* 132.20.26 WinModulePath as string 18048
* 132.20.27 WinProcessImagePath as string 18048
* 132.20.28 WinSetPriorityClass(ProcessID as Integer, PriorityClass as Integer) as Integer 18048

* 132.20.30 CPUtime as Integer 18050
* 132.20.31 CurrentProcess as boolean 18050
* 132.20.32 flags as Integer 18050
* 132.20.33 FrontProcess as boolean 18052
* 132.20.34 lasterror as Integer 18052
* 132.20.35 LaunchProcess as ProcessMBS 18053
* 132.20.36 MacCreator as string 18053
* 132.20.37 MacType as string 18053
* 132.20.38 MemoryFree as Integer 18054
* 132.20.39 MemorySize as Integer 18054
* 132.20.40 Name as string 18054
* 132.20.41 Path as folderitem 18054
* 132.20.42 ProcessID as Integer 18055
* 132.20.43 Visible as boolean 18055
* 132.20.44 Priority as Integer 18056
* 132.20.46 kProcessTransformToBackgroundApplication = 2 18056
* 132.20.47 kProcessTransformToForegroundApplication = 1 18057
* 132.20.48 kProcessTransformToUIElementApplication = 4 18057
• 33 Cocoa Controls
  – 33.64.1 class ProgressBar
    * 33.64.3 NSProgressIndicatorMBS as NSProgressIndicatorMBS
• 45 Controls
  – 33.64.1 class ProgressBar
    * 33.64.4 SetMaximumThreadSafeMBS(maximum as Integer)
    * 33.64.5 SetMinimumThreadSafeMBS(minimum as Integer)
    * 33.64.6 SetValueThreadSafeMBS(value as Integer)
• 33 Cocoa Controls

  – 33.65.1 class ProgressWheel
    * 33.65.3 NSProgressIndicatorMBS as NSProgressIndicatorMBS
  – 33.66.1 class PushButton
    * 33.66.3 NSButtonMBS as NSButtonMBS
133 Quartz Composer

- 133.1.1 class QCCompositionMBS
  - 133.1.3 compositionWithData(data as MemoryBlock) as QCCompositionMBS
  - 133.1.4 compositionWithData(data as string) as QCCompositionMBS
  - 133.1.5 compositionWithFile(file as folderitem) as QCCompositionMBS
  - 133.1.6 compositionWithFile(path as string) as QCCompositionMBS
  - 133.1.7 Constructor
  - 133.1.8 copy as QCCompositionMBS
  - 133.1.9 getAttributes as dictionary
  - 133.1.10 inputKeys as string()
  - 133.1.11 outputKeys as string()
  - 133.1.12 protocols as string()
  - 133.1.13 QCCompositionAttributeBuiltInKey as string
  - 133.1.14 QCCompositionAttributeCategoryKey as string
  - 133.1.15 QCCompositionAttributeCopyrightKey as string
  - 133.1.16 QCCompositionAttributeDescriptionKey as string
  - 133.1.17 QCCompositionAttributeHasConsumersKey as string
  - 133.1.18 QCCompositionAttributeIsTimeDependentKey as string
  - 133.1.19 QCCompositionAttributeNameKey as string
  - 133.1.20 QCCompositionCategoryDistortion as string
  - 133.1.21 QCCompositionCategoryStylize as string
  - 133.1.22 QCCompositionCategoryUtility as string
  - 133.1.23 QCCompositionInputAudioPeakKey as string
  - 133.1.24 QCCompositionInputAudioSpectrumKey as string
  - 133.1.25 QCCompositionInputDestinationImageKey as string
  - 133.1.26 QCCompositionInputImageKey as string
  - 133.1.27 QCCompositionInputPaceKey as string
  - 133.1.28 QCCompositionInputPreviewModeKey as string
  - 133.1.29 QCCompositionInputPrimaryColorKey as string
  - 133.1.30 QCCompositionInputRSSArticleDurationKey as string
  - 133.1.31 QCCompositionInputRSSFeedURLKey as string
  - 133.1.32 QCCompositionInputScreenImageKey as string
  - 133.1.33 QCCompositionInputSecondaryColorKey as string
  - 133.1.34 QCCompositionInputSourceImageKey as string
  - 133.1.35 QCCompositionInputTrackInfoKey as string
  - 133.1.36 QCCompositionInputTrackPositionKey as string
  - 133.1.37 QCCompositionInputTrackSignalKey as string
  - 133.1.38 QCCompositionInputXKey as string
  - 133.1.39 QCCompositionInputYKey as string
  - 133.1.40 QCCompositionOutputImageKey as string
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    * 50.53.5 Constructor(url as string)  
    * 50.53.6 DrawToCGContext(context as CGContextMBS, r as CGRectMBS)  
    * 50.53.7 GetBounds as CGRectMBS  
    * 50.53.8 GetResolution(byref xRes as single, byref yRes as single)  
    * 50.53.9 Height as Double  
    * 50.53.10 HorizontalResolution as Double  
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• QuickLook

  - 134.1.1 class QLPreviewPanelMBS
    * 134.1.3 Available as boolean
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    * 134.1.7 exitFullScreenMode
    * 134.1.8 refreshCurrentPreviewItem
    * 134.1.9 reloadData
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    * 134.1.13 inFullScreenMode as boolean
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    * 134.1.17 handleEvent(e as NSEventMBS) as boolean
    * 134.1.18 numberOfPreviewItems as Integer
    * 134.1.19 previewItemAtIndex(index as Integer) as folderitem
    * 134.1.20 sourceFrameOnScreenForPreviewItem(file as folderitem) as NSRectMBS
    * 134.1.21 transitionImageForPreviewItem(file as folderitem, byref contentRect as NSRectMBS) as NSImageMBS
    * 134.1.22 willLoadPreviewItem(file as folderitem)

  - 134.2.1 control QLPreviewViewControlMBS
    * 134.2.3 View as QLPreviewViewMBS
    * 134.2.5 BoundsChanged
    * 134.2.6 EnableMenuItems
    * 134.2.7 FrameChanged
    * 134.2.8 GotFocus
    * 134.2.9 LostFocus
    * 134.2.10 MenuAction(HitItem as MenuItem) As Boolean
    * 134.2.11 MouseDown(x as Integer, y as Integer, Modifiers as Integer) As Boolean
    * 134.2.12 MouseDrag(x as Integer, y as Integer)
    * 134.2.13 MouseUp(x as Integer, y as Integer)
    * 134.2.14 ScaleFactorChanged(NewFactor as Double)

  - 134.3.1 class QLPreviewViewMBS
    * 134.3.3 Available as boolean
    * 134.3.4 close
    * 134.3.5 Constructor
    * 134.3.6 Constructor(Handle as Integer)
    * 134.3.7 Constructor(left as Double, top as Double, width as Double, height as Double)
    * 134.3.8 Constructor(left as Double, top as Double, width as Double, height as Double, style as Integer)
* 134.3.9 refreshPreviewItem
* 134.3.11 autostarts as boolean
* 134.3.12 previewItem as folderitem
* 134.3.13 shouldCloseWithWindow as boolean
* 134.3.15 StyleCompact = 1
* 134.3.16 StyleNormal = 0
• 135 QuickTime
  - 135.1.1 class QTAudioChannelDescriptionMBS
    * 135.1.3 ChannelFlags as UInt32
    * 135.1.4 ChannelLabel as UInt32
    * 135.1.5 Coordinates(index as Integer) as Double
    * 135.1.7 kAudioChannelCoordinates_Azimuth = 0
    * 135.1.8 kAudioChannelCoordinates_BackFront = 1
    * 135.1.9 kAudioChannelCoordinates_Distance = 2
    * 135.1.10 kAudioChannelCoordinates_DownUp = 2
    * 135.1.11 kAudioChannelCoordinates_Elevation = 1
    * 135.1.12 kAudioChannelCoordinates_LeftRight = 0
    * 135.1.13 kAudioChannelFlags_AllOff = 0
    * 135.1.14 kAudioChannelFlags_Meters = 4
    * 135.1.15 kAudioChannelFlags_RectangularCoordinates = 1
    * 135.1.16 kAudioChannelFlags_SphericalCoordinates = 2
    * 135.1.17 kAudioChannelLabel_Ambisonic_W = 200
    * 135.1.18 kAudioChannelLabel_Ambisonic_X = 201
    * 135.1.19 kAudioChannelLabel_Ambisonic_Y = 202
    * 135.1.20 kAudioChannelLabel_Ambisonic_Z = 203
    * 135.1.21 kAudioChannelLabel_Center = 3
    * 135.1.22 kAudioChannelLabel_CenterSurround = 9
    * 135.1.23 kAudioChannelLabel_CenterSurroundDirect = 44
    * 135.1.24 kAudioChannelLabel_ClickTrack = 304
    * 135.1.25 kAudioChannelLabel_DialogCentricMix = 43
    * 135.1.26 kAudioChannelLabel_Discrete = 400
    * 135.1.27 kAudioChannelLabel_Discrete_0 = & h10000
    * 135.1.28 kAudioChannelLabel_Discrete_1 = & h10001
    * 135.1.29 kAudioChannelLabel_Discrete_10 = & h1000A
    * 135.1.30 kAudioChannelLabel_Discrete_11 = & h1000B
    * 135.1.31 kAudioChannelLabel_Discrete_12 = & h1000C
    * 135.1.32 kAudioChannelLabel_Discrete_13 = & h1000D
    * 135.1.33 kAudioChannelLabel_Discrete_14 = & h1000E
    * 135.1.34 kAudioChannelLabel_Discrete_15 = & h1000F
    * 135.1.35 kAudioChannelLabel_Discrete_2 = & h10002
    * 135.1.36 kAudioChannelLabel_Discrete_3 = & h10003
    * 135.1.37 kAudioChannelLabel_Discrete_4 = & h10004
    * 135.1.38 kAudioChannelLabel_Discrete_5 = & h10005
    * 135.1.39 kAudioChannelLabel_Discrete_6 = & h10006
    * 135.1.40 kAudioChannelLabel_Discrete_65535 = & h1FFFF
    * 135.1.41 kAudioChannelLabel_Discrete_7 = & h10007
    * 135.1.42 kAudioChannelLabel_Discrete_8 = & h10008
* 135.1.43 kAudioChannelLabel_Discrete_9 = & h10009
* 135.1.44 kAudioChannelLabel_ForeignLanguage = 305
* 135.1.45 kAudioChannelLabel_Haptic = 45
* 135.1.46 kAudioChannelLabel_HeadphonesLeft = 301
* 135.1.47 kAudioChannelLabel_HeadphonesRight = 302
* 135.1.48 kAudioChannelLabel_HearingImpaired = 40
* 135.1.49 kAudioChannelLabel_Left = 1
* 135.1.50 kAudioChannelLabel_LeftCenter = 7
* 135.1.51 kAudioChannelLabel_LeftSurround = 5
* 135.1.52 kAudioChannelLabel_LeftSurroundDirect = 10
* 135.1.53 kAudioChannelLabel_LeftTotal = 38
* 135.1.54 kAudioChannelLabel_LeftWide = 35
* 135.1.55 kAudioChannelLabel_LFE2 = 37
* 135.1.56 kAudioChannelLabel_LFE_Screen = 4
* 135.1.57 kAudioChannelLabel_Mono = 42
* 135.1.58 kAudioChannelLabel_MS_Mid = 204
* 135.1.59 kAudioChannelLabel_MS_Side = 205
* 135.1.60 kAudioChannelLabel_Narration = 41
* 135.1.61 kAudioChannelLabel_RearSurroundLeft = 33
* 135.1.62 kAudioChannelLabel_RearSurroundRight = 34
* 135.1.63 kAudioChannelLabel_Right = 2
* 135.1.64 kAudioChannelLabel_RightCenter = 8
* 135.1.65 kAudioChannelLabel_RightSurround = 6
* 135.1.66 kAudioChannelLabel_RightSurroundDirect = 11
* 135.1.67 kAudioChannelLabel_RightTotal = 39
* 135.1.68 kAudioChannelLabel_RightWide = 36
* 135.1.69 kAudioChannelLabel_TopBackCenter = 17
* 135.1.70 kAudioChannelLabel_TopBackLeft = 16
* 135.1.71 kAudioChannelLabel_TopBackRight = 18
* 135.1.72 kAudioChannelLabel_TopCenterSurround = 12
* 135.1.73 kAudioChannelLabel_Unknown = & hFFFFFFFF
* 135.1.74 kAudioChannelLabel_Unused = 0
* 135.1.75 kAudioChannelLabel_UseCoordinates = 100
* 135.1.76 kAudioChannelLabel_VerticalHeightCenter = 14
* 135.1.77 kAudioChannelLabel_VerticalHeightLeft = 13
* 135.1.78 kAudioChannelLabel_VerticalHeightRight = 15
* 135.1.79 kAudioChannelLabel_XY_X = 206
* 135.1.80 kAudioChannelLabel_XY_Y = 207

- 135.2.1 class QTAudioChannelLayoutMBS
  * 135.2.3 GetNumberOfChannels(layoutTag as UInt32) as UInt32
  * 135.2.4 Memory as MemoryBlock
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* 135.2.6 ChannelBitmap as UInt32
* 135.2.7 ChannelLayoutTag as UInt32
* 135.2.8 NumberChannelDescriptions as UInt32
* 135.2.9 ChannelDescriptions(index as Integer) as QTAudioChannelDescriptionMBS
* 135.2.11 kAudioChannelBit_Center = 4
* 135.2.12 kAudioChannelBit_CenterSurround = 256
* 135.2.13 kAudioChannelBit_Left = 1
* 135.2.14 kAudioChannelBit_LeftCenter = 64
* 135.2.15 kAudioChannelBit_LeftSurround = 16
* 135.2.16 kAudioChannelBit_LeftSurroundDirect = 512
* 135.2.17 kAudioChannelBit_LFEScreen = 8
* 135.2.18 kAudioChannelBit_Right = 2
* 135.2.19 kAudioChannelBit_RightCenter = 128
* 135.2.20 kAudioChannelBit_RightSurround = 32
* 135.2.21 kAudioChannelBit_RightSurroundDirect = 1024
* 135.2.22 kAudioChannelBit_TopBackCenter = 65536
* 135.2.23 kAudioChannelBit_TopBackLeft = 32768
* 135.2.24 kAudioChannelBit_TopBackRight = 131072
* 135.2.25 kAudioChannelBit_TopCenterSurround = 2048
* 135.2.26 kAudioChannelBit_VerticalHeightCenter = 8192
* 135.2.27 kAudioChannelBit_VerticalHeightLeft = 4096
* 135.2.28 kAudioChannelBit_VerticalHeightRight = 16384
* 135.2.29 kAudioChannelLayoutTag_AAC_3_0 = h720003
* 135.2.30 kAudioChannelLayoutTag_AAC_4_0 = h740004
* 135.2.31 kAudioChannelLayoutTag_AAC_5_0 = h780005
* 135.2.32 kAudioChannelLayoutTag_AAC_5_1 = h7C0006
* 135.2.33 kAudioChannelLayoutTag_AAC_6_0 = h8D0006
* 135.2.34 kAudioChannelLayoutTag_AAC_6_1 = h8E0007
* 135.2.35 kAudioChannelLayoutTag_AAC_7_0 = h8F0007
* 135.2.36 kAudioChannelLayoutTag_AAC_7_1 = h7F0008
* 135.2.37 kAudioChannelLayoutTag_AAC_Octagonal = h900008
* 135.2.38 kAudioChannelLayoutTag_AAC_Quadraphonic = h6C0004
* 135.2.39 kAudioChannelLayoutTag_AC3_1_0_1 = h950002
* 135.2.40 kAudioChannelLayoutTag_AC3_2_1_1 = h990004
* 135.2.41 kAudioChannelLayoutTag_AC3_3_0 = h960003
* 135.2.42 kAudioChannelLayoutTag_AC3_3_0_1 = h980004
* 135.2.43 kAudioChannelLayoutTag_AC3_3_1 = h970004
* 135.2.44 kAudioChannelLayoutTag_AC3_3_1_1 = h9A0005
* 135.2.45 kAudioChannelLayoutTag_Ambisonic_B_Format = h6B0004
* 135.2.46 kAudioChannelLayoutTag_AudioUnit_4 = h6C0004
* 135.2.47 kAudioChannelLayoutTag_AudioUnit_5 = h6D0005
* 135.2.48 kAudioChannelLayoutTag_AudioUnit_5_0 = h760005
135.2.49 kAudioChannelLayoutTag_AudioUnit_5_1 = & h790006
135.2.50 kAudioChannelLayoutTag_AudioUnit_6 = & h6E0006
135.2.51 kAudioChannelLayoutTag_AudioUnit_6_0 = & h8B0006
135.2.52 kAudioChannelLayoutTag_AudioUnit_6_1 = & h7D0007
135.2.53 kAudioChannelLayoutTag_AudioUnit_7_0 = & h8C0007
135.2.54 kAudioChannelLayoutTag_AudioUnit_7_0_Front = & h940007
135.2.55 kAudioChannelLayoutTag_AudioUnit_7_1 = & h800008
135.2.56 kAudioChannelLayoutTag_AudioUnit_7_1_Front = & h7E0008
135.2.57 kAudioChannelLayoutTag_AudioUnit_8 = & h6F0008
135.2.58 kAudioChannelLayoutTag_Binaural = & h6A0002
135.2.59 kAudioChannelLayoutTag_Cube = & h700008
135.2.60 kAudioChannelLayoutTag_DiscreteInOrder = & h930000
135.2.61 kAudioChannelLayoutTag_DTS_3_1 = & hA80004
135.2.62 kAudioChannelLayoutTag_DTS_4_1 = & hA90005
135.2.63 kAudioChannelLayoutTag_DTS_6_0_A = & hAA0006
135.2.64 kAudioChannelLayoutTag_DTS_6_0_B = & hAB0006
135.2.65 kAudioChannelLayoutTag_DTS_6_0_C = & hAC0006
135.2.66 kAudioChannelLayoutTag_DTS_6_1_A = & hAD0007
135.2.67 kAudioChannelLayoutTag_DTS_6_1_B = & hAE0007
135.2.68 kAudioChannelLayoutTag_DTS_6_1_C = & hAF0007
135.2.69 kAudioChannelLayoutTag_DTS_6_1_D = & hB60007
135.2.70 kAudioChannelLayoutTag_DTS_7_0 = & hB00007
135.2.71 kAudioChannelLayoutTag_DTS_7_1 = & hB10008
135.2.72 kAudioChannelLayoutTag_DTS_8_0_A = & hB20008
135.2.73 kAudioChannelLayoutTag_DTS_8_0_B = & hB30008
135.2.74 kAudioChannelLayoutTag_DTS_8_1_A = & hB40009
135.2.75 kAudioChannelLayoutTag_DTS_8_1_B = & hB50009
135.2.76 kAudioChannelLayoutTag_DVD_0 = & h640001
135.2.77 kAudioChannelLayoutTag_DVD_1 = & h650002
135.2.78 kAudioChannelLayoutTag_DVD_10 = & h880004
135.2.79 kAudioChannelLayoutTag_DVD_11 = & h890005
135.2.80 kAudioChannelLayoutTag_DVD_12 = & h790006
135.2.81 kAudioChannelLayoutTag_DVD_13 = & h730004
135.2.82 kAudioChannelLayoutTag_DVD_14 = & h750005
135.2.83 kAudioChannelLayoutTag_DVD_15 = & h880004
135.2.84 kAudioChannelLayoutTag_DVD_16 = & h890005
135.2.85 kAudioChannelLayoutTag_DVD_17 = & h790006
135.2.86 kAudioChannelLayoutTag_DVD_18 = & h8A0005
135.2.87 kAudioChannelLayoutTag_DVD_19 = & h760005
135.2.88 kAudioChannelLayoutTag_DVD_2 = & h830003
135.2.89 kAudioChannelLayoutTag_DVD_20 = & h7A0006
135.2.90 kAudioChannelLayoutTag_DVD_3 = & h840004
* 135.2.91 kAudioChannelLayoutTag_DVD_4 = & h850003
* 135.2.92 kAudioChannelLayoutTag_DVD_5 = & h860004
* 135.2.93 kAudioChannelLayoutTag_DVD_6 = & h870005
* 135.2.94 kAudioChannelLayoutTag_DVD_7 = & h710003
* 135.2.95 kAudioChannelLayoutTag_DVD_8 = & h730004
* 135.2.96 kAudioChannelLayoutTag_DVD_9 = & h750005
* 135.2.97 kAudioChannelLayoutTag_EAC3_6_1_A = & h9D0007
* 135.2.98 kAudioChannelLayoutTag_EAC3_6_1_B = & h9E0007
* 135.2.99 kAudioChannelLayoutTag_EAC3_6_1_C = & h9F0007
* 135.2.100 kAudioChannelLayoutTag_EAC3_7_1_A = & hA00008
* 135.2.101 kAudioChannelLayoutTag_EAC3_7_1_B = & hA10008
* 135.2.102 kAudioChannelLayoutTag_EAC3_7_1_C = & hA20008
* 135.2.103 kAudioChannelLayoutTag_EAC3_7_1_D = & hA30008
* 135.2.104 kAudioChannelLayoutTag_EAC3_7_1_E = & hA40008
* 135.2.105 kAudioChannelLayoutTag_EAC3_7_1_F = & hA50008
* 135.2.106 kAudioChannelLayoutTag_EAC3_7_1_G = & hA60008
* 135.2.107 kAudioChannelLayoutTag_EAC3_7_1_H = & hA70008
* 135.2.108 kAudioChannelLayoutTag_EAC_6_0_A = & h9B0006
* 135.2.109 kAudioChannelLayoutTag_EAC_7_0_A = & h9C0007
* 135.2.110 kAudioChannelLayoutTag_Emagic_Default_7_1 = & h810008
* 135.2.111 kAudioChannelLayoutTag_Hexagonal = & h6E0006
* 135.2.112 kAudioChannelLayoutTag_ITU_1_0 = & h640001
* 135.2.113 kAudioChannelLayoutTag_ITU_2_0 = & h650002
* 135.2.114 kAudioChannelLayoutTag_ITU_2_1 = & h830003
* 135.2.115 kAudioChannelLayoutTag_ITU_2_2 = & h840004
* 135.2.116 kAudioChannelLayoutTag_ITU_3_0 = & h710003
* 135.2.117 kAudioChannelLayoutTag_ITU_3_1 = & h730004
* 135.2.118 kAudioChannelLayoutTag_ITU_3_2 = & h750005
* 135.2.119 kAudioChannelLayoutTag_ITU_3_2_1 = & h790006
* 135.2.120 kAudioChannelLayoutTag_ITU_3_4_1 = & h800008
* 135.2.121 kAudioChannelLayoutTag_MatrixStereo = & h670002
* 135.2.122 kAudioChannelLayoutTag_MidSide = & h680002
* 135.2.123 kAudioChannelLayoutTag_Mono = & h640001
* 135.2.124 kAudioChannelLayoutTag_MPEG_1_0 = & h640001
* 135.2.125 kAudioChannelLayoutTag_MPEG_2_0 = & h650002
* 135.2.126 kAudioChannelLayoutTag_MPEG_3_0_A = & h710003
* 135.2.127 kAudioChannelLayoutTag_MPEG_3_0_B = & h720003
* 135.2.128 kAudioChannelLayoutTag_MPEG_4_0_A = & h730004
* 135.2.129 kAudioChannelLayoutTag_MPEG_4_0_B = & h740004
* 135.2.130 kAudioChannelLayoutTag_MPEG_5_0_A = & h750005
* 135.2.131 kAudioChannelLayoutTag_MPEG_5_0_B = & h760005
* 135.2.132 kAudioChannelLayoutTag_MPEG_5_0_C = & h770005
* 135.2.133 kAudioChannelLayoutTag_MPEG_5.0_D = & h780005
* 135.2.134 kAudioChannelLayoutTag_MPEG_5.1_A = & h790006
* 135.2.135 kAudioChannelLayoutTag_MPEG_5.1_B = & h7A0006
* 135.2.136 kAudioChannelLayoutTag_MPEG_5.1_C = & h7B0006
* 135.2.137 kAudioChannelLayoutTag_MPEG_5.1_D = & h7C0006
* 135.2.138 kAudioChannelLayoutTag_MPEG_6.1_A = & h7D0007
* 135.2.139 kAudioChannelLayoutTag_MPEG_7.1_A = & h7E0008
* 135.2.140 kAudioChannelLayoutTag_MPEG_7.1_B = & h7F0008
* 135.2.141 kAudioChannelLayoutTag_MPEG_7.1_C = & h800008
* 135.2.142 kAudioChannelLayoutTag_Octagonal = & h6F0008
* 135.2.143 kAudioChannelLayoutTag_Pentagonal = & h6D0005
* 135.2.144 kAudioChannelLayoutTag_Quadraphonic = & h6C0004
* 135.2.145 kAudioChannelLayoutTag_SMPTEDTV = & h820008
* 135.2.146 kAudioChannelLayoutTag_Stereo = & h650002
* 135.2.147 kAudioChannelLayoutTag_StereoHeadphones = & h660002
* 135.2.148 kAudioChannelLayoutTag_TMH_10_2_full = & h920015
* 135.2.149 kAudioChannelLayoutTag_TMH_10_2_std = & h910010
* 135.2.150 kAudioChannelLayoutTag_Unknown = & hFFFF0000
* 135.2.151 kAudioChannelLayoutTag_UseChannelBitmap = & h10000
* 135.2.152 kAudioChannelLayoutTag_UseChannelDescriptions = 0
* 135.2.153 kAudioChannelLayoutTag_XY = & h690002

– 135.3.1 class QTSoundStreamMBS

* 135.3.3 AttachToAudioUnitComponent(componenthandle as Integer) as Integer
* 135.3.4 AttachToAudioUnitComponent(componenthandle as Integer, element as Integer) as Integer
* 135.3.5 AudioOutputUnitStart(componenthandle as Integer) as Integer
* 135.3.6 AudioUnitInitialize(componenthandle as Integer) as Integer
* 135.3.7 closeComponent
* 135.3.8 InitComponent
* 135.3.9 OpenComponent
* 135.3.10 OpenDefaultAudioUnitOutputComponent as Integer
* 135.3.12 Handle as Integer
* 135.3.13 IsOpen as Boolean
* 135.3.14 IsStreamActive as Boolean
* 135.3.15 PostsStatusNotifications as Boolean
* 135.3.16 Release as Boolean
* 135.3.17 SoundOutputComponentHandle as Integer
• 52 CoreImage

– ?? Globals

  • 52.220.1 NewCIColorMBS(red as single, green as single, blue as single, alpha as single=1.0) as CIColorMBS
  • 52.220.2 NewCIColorWithCGColorMBS(cgcolor as Variant) as CIColorMBS
  • 52.220.3 NewCIColorWithStringMBS(s as String) as CIColorMBS
  • 52.220.4 NewCIContextMBS(cgcontext as CGContextMBS) as CIContextMBS
  • 52.220.5 NewCIContextMBS(cgcontext as CGContextMBS, OutputColorSpace as CGColorSpaceMBS, UseSoftwareRenderer as Boolean) as CIContextMBS
  • 52.220.6 NewCIImagewithBitmapDataMBS(data as memoryblock, BytesPerRow as Integer, Width as Integer, Height as Integer, colorspace as CGColorSpaceMBS) as CImageMBS
  • 52.220.7 NewCIImagewithBitmapMemoryMBS(data as memoryblock, DataLength as Integer, BytesPerRow as Integer, Width as Integer, Height as Integer, colorspace as CGColorSpaceMBS) as CImageMBS
  • 52.220.8 NewCIImagewithCGImageMBS(cgimage as CGImageMBS, cgcolorspace as CGColorSpaceMBS) as CImageMBS
  • 52.220.9 NewCIImagewithCGImageMBS(cgimage as CGImageMBS, options as dictionary = nil) as CImageMBS
  • 52.220.10 NewCIImagewithDataMBS(Data as memoryblock, cgcolorspace as CGColorSpaceMBS) as CImageMBS
  • 52.220.11 NewCIImagewithDataMBS(Data as Memoryblock, Options as Dictionary = nil) as CImageMBS
  • 52.220.12 NewCIImagewithFileMBS(file as folderitem) as CImageMBS
  • 52.220.13 NewCIImagewithFileMBS(file as folderitem, cgcolorspace as CGColorSpaceMBS) as CImageMBS
  • 52.220.14 NewCIImagewithURLMBS(url as String) as CImageMBS
  • 52.220.15 NewCIImagewithURLMBS(url as String, cgcolorspace as CGColorSpaceMBS) as CImageMBS
  • 52.220.16 NewCISamplerMBS(ciImage as CImageMBS) as CISamplerMBS
  • 52.220.17 NewCISamplerMBS(ciImage as CImageMBS, matrix as NSAffineTransformMBS, WrapMode as String, FilterMode as string) as CISamplerMBS
  • 52.220.18 NewCIVectorWithStringMBS(s as string) as CIVectorMBS
  • 52.220.19 NewCIVectorWithXMB(x as Double) as CIVectorMBS
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137.3.70 kAutoFocusRangeMacro = 2
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137.3.73 kAutoFocusStatusFailed = 4
137.3.74 kAutoFocusStatusIdle = 0
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137.3.106 kWhiteBalanceFlash = 7
137.3.107 kWhiteBalanceFluorescent = 3
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<th>Value</th>
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<td>137.3.112</td>
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    • 67.8.14 HID_MODE = -1
    • 67.8.15 SDXERR_FAILED_DECRYPTION = & hA010000E
    • 67.8.16 SDXERR_FAILED_ENCRYPTION = & hA010000C
    • 67.8.17 SDXERR_FAILED_WRITE_KEY = & hA010000D
    • 67.8.18 SDXERR_FLUSH_QUEUE = & hA0100017
    • 67.8.19 SDXERR_FREE_PREPARSED_DATA = & hA0100016
    • 67.8.20 SDXERR_GENERATE_KEY = & hA010000A
    • 67.8.21 SDXERR_GETCAPS = & hA0100015
    • 67.8.22 SDXERR_GET_ATTRIBUTES = & hA0100013
    • 67.8.23 SDXERR_GET_PREPARSED_DATA = & hA0100014
    • 67.8.24 SDXERR_GET_SERIAL = & hA0100019
    • 67.8.25 SDXERR_INVALID_KEY = & hA010000B
    • 67.8.26 SDXERR_INVALID_LEN = & hA0100008
    • 67.8.27 SDXERR_NOT_OPENED_DEVICE = & hA0100002
    • 67.8.28 SDXERR_NO_SUCH_DEVICE = & hA0100001
    • 67.8.29 SDXERR_OPEN_DEVICE = & hA010000F
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    * 109.4.3 AllJobDictionaries(domain as string) as Dictionary()
    * 109.4.4 CreateAuthorization as AuthorizationMBS
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    * 109.4.6 JobDictionary(domain as string, jobLabel as string) as Dictionary
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* 144.2.74 kProtocolT0 = 1
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* 144.2.77 kProtocolUndefined = 0
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* 144.2.79 kResetCard = 1
* 144.2.80 kShareDirect = 3
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- ?? Globals

  * 162.1.5 CombineBitCMYKtoCMYKMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, Files() as FolderItem, scale as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, CacheSizeRead as Integer) as Integer

  * 162.1.1 CombineBitCMYKtoRGBMBS(CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, Files() as FolderItem, scale as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, byref output as picture, CacheSizeRead as Integer) as Integer

  * 162.1.4 CombineTiff1BitCMYKtoTiffMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, TiffData() as TiffPictureMBS, scale as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, ditherMode as Integer = 0) as Integer

  * 162.1.8 CombineTiff1BitCMYKtoTiffMBS(dest as TiffPictureMBS, TiffData as TiffPictureMBS, scalex as Double, scaley as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, ditherMode as Integer = 0) as Integer

  * 162.1.9 CombineTiff8BitCMYKtoTiffMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, TiffData() as TiffPictureMBS, scale as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, ditherMode as Integer = 0) as Integer

  * 162.1.6 CombineTiffCMYKtoCMYKMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, TiffData() as TiffPictureMBS) as Integer

  * 162.1.7 CombineTiffCMYKtoRGBMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, TiffData() as TiffPictureMBS) as Integer

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  * 162.1.3 TIFFStringToTiffPictureMBS(data as string) as TiffPictureMBS
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    * 128.1.2 Split1BitFileMBS(f as folderitem, fc as folderitem, fm as folderitem, fy as folderitem, fk as folderitem, width as Integer, height as Integer, CallbackTarget as object, CacheSizeRead as Integer, CacheSizeWrite as Integer) as Integer
    * 128.1.3 Split1BitFileMBS(f as folderitem, fc as folderitem, fm as folderitem, fy as folderitem, fk as folderitem, width as Integer, height as Integer, CallbackTarget as object, CacheSizeRead as Integer, CacheSizeWrite as Integer, ReadLines as Integer, WriteLines as Integer) as Integer
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- 162.1.5 CombineBitCMYKtoCMYKMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, Files() as FolderItem, scale as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, CacheSizeRead as Integer) as Integer

- 162.1.1 CombineBitCMYKtoRGBMBS(CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, Files() as FolderItem, scale as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, byref output as picture, CacheSizeRead as Integer) as Integer

- 162.1.4 CombineTiff1BitCMYKtoTiffMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, TiffData() as TiffPictureMBS, scale as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, ditherMode as Integer = 0) as Integer

- 162.1.8 CombineTiff1BitCMYKtoTiffMBS(dest as TiffPictureMBS, TiffData as TiffPictureMBS, scalex as Double, scaley as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, ditherMode as Integer = 0) as Integer

- 162.1.9 CombineTiff8BitCMYKtoTiffMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, TiffData() as TiffPictureMBS, scale as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, ditherMode as Integer = 0) as Integer

- 162.1.6 CombineTiffCMYKtoCMYKMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, TiffData() as TiffPictureMBS) as Integer

- 162.1.7 CombineTiffCMYKtoRGBMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, TiffData() as TiffPictureMBS) as Integer

- 162.1.2 TIFFStringToPictureMBS(data as string) as picture

- 162.1.3 TIFFStringToTiffPictureMBS(data as string) as TiffPictureMBS

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- 162.2.4 AddImage as boolean

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* 67.9.159 RSA_KEY_LEN = 1408
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  * 157.1.7 ReadSMSrawBytes(type as Integer) as memoryblock
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  – 22.3.1 class UniversalCharacterDetectionMBS
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    * 22.3.4 Constructor(filter as Integer)
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    • 166.1.15 kUnsanitySCR_GlobalInstall=2
    • 166.1.16 kUnsanitySCR_InfoPlist_CommentsTemplate="SmartCrashReports_CommentsTemplate"
    • 166.1.17 kUnsanitySCR_InfoPlist_CompanyName="SmartCrashReports_CompanyName"
    • 166.1.18 kUnsanitySCR_InfoPlist_SubmissionEmailTicket="SmartCrashReports_EmailTicket"
    • 166.1.19 kUnsanitySCR_InfoPlist_SubmissionURL="SmartCrashReports_URL"
    • 166.1.20 kUnsanitySCR_Install_AuthFailure=-111
    • 166.1.21 kUnsanitySCR_Install_InstalledGlobally=-13
    • 166.1.22 kUnsanitySCR_Install_NoError=0
    • 166.1.23 kUnsanitySCR_Install_NoPermissions=-54
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  - 43.8.1 class UnZipFilePositionMBS
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  - 43.9.1 class UnZipMBS
    * 43.9.3 Close
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  – 103.6.1 module UTTypeMBS
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    • 172.10.19 Description as String 20114
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    • 172.10.24 EnumeratorName as String 20115
    • 172.10.25 Exclusive as Boolean 20116
    • 172.10.26 FriendlyName as String 20116
    • 172.10.27 HID as Boolean 20116
    • 172.10.28 HIDAccessible as Boolean 20116
    • 172.10.29 HIDFeatureReportByteLength as Integer 20116
    • 172.10.30 HIDInputReportByteLength as Integer 20117
    • 172.10.31 HIDManufacturerName as String 20117
    • 172.10.32 HIDOutputReportByteLength as Integer 20117
    • 172.10.33 HIDProductID as Integer 20117
    • 172.10.34 HIDProductName as String 20117
    • 172.10.35 HIDSerialNumber as String 20118
    • 172.10.36 HIDVendorID as Integer 20118
    • 172.10.37 HIDVersionNumber as Integer 20118
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    • 172.10.39 LegacyBusType as Integer 20119
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* 172.10.46 SecurityDescriptor as String 20120
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* 172.10.48 UINumber as Integer 20120
* 172.10.50 kDeviceCapabilityDockDevice = 8 20121
* 172.10.51 kDeviceCapabilityEjectSupported = 2 20121
* 172.10.52 kDeviceCapabilityHardwareDisabled = 256 20121
* 172.10.53 kDeviceCapabilityLockSupported = 1 20121
* 172.10.54 kDeviceCapabilityNonDynamic = 512 20121
* 172.10.55 kDeviceCapabilityRAWDeviceOK = 64 20121
* 172.10.56 kDeviceCapabilityRemovable = 4 20122
* 172.10.57 kDeviceCapabilitySilentInstall = 32 20122
* 172.10.58 kDeviceCapabilitySurpriseRemovalOK = 128 20122
* 172.10.59 kDeviceCapabilityUniqueID = 16 20122
* 172.10.60 kDeviceType8042Port = & h27 20122
* 172.10.61 kDeviceTypeACPI = & h32 20122
* 172.10.62 kDeviceTypeBattery = & h29 20122
* 172.10.63 kDeviceTypeBeep = & h01 20123
* 172.10.64 kDeviceTypeBusExtender = & h2a 20123
* 172.10.65 kDeviceTypeCDROM = & h02 20123
* 172.10.66 kDeviceTypeCDROWFileSystem = & h03 20123
* 172.10.67 kDeviceTypeChanger = & h30 20123
* 172.10.68 kDeviceTypeController = & h04 20123
* 172.10.69 kDeviceTypeDataLink = & h05 20123
* 172.10.70 kDeviceTypeDFS = & h06 20123
* 172.10.71 kDeviceTypeDFSFSystem = & h35 20124
* 172.10.72 kDeviceTypeDFSVolume = & h36 20124
* 172.10.73 kDeviceTypeDisk = & h07 20124
* 172.10.74 kDeviceTypeDiskFileSystem = & h08 20124
* 172.10.75 kDeviceTypeDVD = & h33 20124
* 172.10.76 kDeviceTypeFileSystem = & h09 20124
* 172.10.77 kDeviceTypeFips = & h3a 20124
* 172.10.78 kDeviceTypeFullscreenVideo = & h34 20124
* 172.10.79 kDeviceTypeImportPort = & h0a 20125
* 172.10.80 kDeviceTypeKeyboard = & h0b 20125
* 172.10.81 kDeviceTypeKS = & h2f 20125
* 172.10.82 kDeviceTypeKSec = & h39 20125
* 172.10.83 kDeviceTypeMailslot = & h0c 20125
* 172.10.84 kDeviceTypeMassStorage = & h2d 20125
* 172.10.85 kDeviceTypeMidiIn = & h0d 20125
* 172.10.86 kDeviceTypeMidiOut = & h0e 20125
* 172.10.87 kDeviceTypeModem = & h2b 20126
* 172.10.88 kDeviceTypeMouse = & h0f 20126
* 172.10.89 kDeviceTypeMultiUncProvider = & h10 20126
* 172.10.90 kDeviceTypeNamedPipe = & h11 20126
* 172.10.91 kDeviceTypeNetwork = & h12 20126
* 172.10.92 kDeviceTypeNetworkBrowser = & h13 20126
* 172.10.93 kDeviceTypeNetworkFileSystem = & h14 20126
* 172.10.94 kDeviceTypeNetworkRedirector = & h28 20126
* 172.10.95 kDeviceTypeNull = & h15 20126
* 172.10.96 kDeviceTypeParallelPort = & h16 20126
* 172.10.97 kDeviceTypePhysicalNetcard = & h17 20127
* 172.10.98 kDeviceTypePrinter = & h18 20127
* 172.10.99 kDeviceTypeScanner = & h19 20127
* 172.10.100 kDeviceTypeScreen = & h1c 20127
* 172.10.101 kDeviceTypeSerenum = & h37 20127
* 172.10.102 kDeviceTypeSerialMousePort = & h1a 20127
* 172.10.103 kDeviceTypeSerialPort = & h1b 20128
* 172.10.104 kDeviceTypeSmartCard = & h31 20128
* 172.10.105 kDeviceTypeSMB = & h2e 20128
* 172.10.106 kDeviceTypeSound = & h1d 20129
* 172.10.107 kDeviceTypeStreams = & h1e 20129
* 172.10.108 kDeviceTypeTape = & h1f 20129
* 172.10.109 kDeviceTypeTapeFileSystem = & h20 20129
* 172.10.110 kDeviceTypeTermsrv = & h38 20129
* 172.10.111 kDeviceTypeTransport = & h21 20129
* 172.10.112 kDeviceTypeUnknown = & h22 20129
* 172.10.113 kDeviceTypeVDM = & h2c 20130
* 172.10.114 kDeviceTypeVideo = & h23 20130
* 172.10.115 kDeviceTypeVirtualDisk = & h24 20130
* 172.10.116 kDeviceTypeWaveIn = & h25 20130
* 172.10.117 kDeviceTypeWaveOut = & h26 20130
* 172.10.118 kInstallStateFailedInstall = 2 20130
* 172.10.119 kInstallStateFinishInstall = 3 20130
* 172.10.120 kInstallStateInstalled = 0 20130
* 172.10.121 kInstallStateNeedsReinstall = 1 20131
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  – 131.11.1 class WindowsDeviceModeMBS

    * 131.11.3 ApplyToSetupString(SetupString as String) as string
    * 131.11.4 Constructor
    * 131.11.5 FromRawData(data as memoryblock, Unicode as boolean = true) as WindowsDeviceModeMBS
    * 131.11.6 FromRawData(data as string, Unicode as boolean = true) as WindowsDeviceModeMBS
    * 131.11.7 FromSetupString(SetupString as String) as WindowsDeviceModeMBS
    * 131.11.8 RawData(Unicode as boolean = true) as memoryblock
    * 131.11.9 SetupString(ActualHorizontalResolution as integer, ActualVerticalResolution as integer, MaxHorizontalResolution as integer, MaxVerticalResolution as integer, MarginLeft as integer = 2500, MarginRight as integer = 2500, MarginTop as integer = 2500, MarginBottom as integer = 2500, MinMarginLeft as integer = 0, MinMarginRight as integer = 0, MinMarginTop as integer = 0, MinMarginBottom as integer = 0, PageSetupFlags as integer = 8) as string
    * 131.11.10 SetupString(Margin as Integer = 2500) as string
    * 131.11.12 Collate as Integer
    * 131.11.13 Color as Integer
    * 131.11.14 Copies as Integer
    * 131.11.15 Data as Integer
    * 131.11.16 DefaultSource as Integer
    * 131.11.17 DeviceName as String
    * 131.11.18 DitherType as Integer
    * 131.11.19 DriverExtra as Integer
    * 131.11.20 DriverVersion as Integer
    * 131.11.21 Duplex as Integer
    * 131.11.22 Fields as Integer
    * 131.11.23 FormName as String
    * 131.11.24 ICMIntent as Integer
    * 131.11.25 ICMMethod as Integer
    * 131.11.26 LogPixels as Integer
    * 131.11.27 MediaType as Integer
    * 131.11.28 Nup as Integer
    * 131.11.29 Orientation as Integer
    * 131.11.30 PaperLength as Integer
    * 131.11.31 PageSize as Integer
    * 131.11.32 PaperWidth as Integer
    * 131.11.33 PrintQuality as Integer
    * 131.11.34 Scale as Integer
    * 131.11.35 Size as Integer
    * 131.11.36 SpecVersion as Integer
* 131.11.37 TTOption as Integer
* 131.11.38 YResolution as Integer
* 131.11.40 DMBIN_AUTO = 7
* 131.11.41 DMBIN_CASSETTE = 14
* 131.11.42 DMBIN_ENVELOPE = 5
* 131.11.43 DMBIN_ENVMANUAL = 6
* 131.11.44 DMBIN_FORMSOURCE = 15
* 131.11.45 DMBIN_LARGECAPACITY = 11
* 131.11.46 DMBIN_LARGEFMT = 10
* 131.11.47 DMBIN_LOWER = 2
* 131.11.48 DMBIN_MANUAL = 4
* 131.11.49 DMBIN_MIDDLE = 3
* 131.11.50 DMBIN_ONLYONE = 1
* 131.11.51 DMBIN_SMALLFMT = 9
* 131.11.52 DMBINTRACTOR = 8
* 131.11.53 DMBIN_UPPER = 1
* 131.11.54 DMBIN_USER = 256
* 131.11.55 DMCOLLATE_FALSE = 0
* 131.11.56 DMCOLLATE_TRUE = 1
* 131.11.57 DMCOLOR_COLOR = 2
* 131.11.58 DMCOLOR_MONOCHROME = 1
* 131.11.59 DMDITHER_COARSE = 2
* 131.11.60 DMDITHER_ERRORDIFFUSION = 5
* 131.11.61 DMDITHER_FINE = 3
* 131.11.62 DMDITHER_GRAYSCALE = 10
* 131.11.63 DMDITHER_LINEART = 4
* 131.11.64 DMDITHER_NONE = 1
* 131.11.65 DMDITHER_RESERVED6 = 6
* 131.11.66 DMDITHER_RESERVED7 = 7
* 131.11.67 DMDITHER_RESERVED8 = 8
* 131.11.68 DMDITHER_RESERVED9 = 9
* 131.11.69 DMDITHER_USER = 256
* 131.11.70 DMDUP_HORIZONTAL = 3
* 131.11.71 DMDUP_SIMPLEX = 1
* 131.11.72 DMDUP_VERTICAL = 2
* 131.11.73 DMICMMETHOD_DEVICE = 4
* 131.11.74 DMICMMETHOD_DRIVER = 3
* 131.11.75 DMICMMETHOD_NONE = 1
* 131.11.76 DMICMMETHOD_SYSTEM = 2
* 131.11.77 DMICMMETHOD_USER = 256
* 131.11.78 DMICM_ABS_COLORIMETRIC = 4
* 131.11.79 DMICM_COLORIMETRIC = 3
* 131.11.80 DMICM\_CONTRAST = 2
* 131.11.81 DMICM\_SATURATE = 1
* 131.11.82 DMICM\_USER = 256
* 131.11.83 DM\_MEDIA\_GLOSSY = 3
* 131.11.84 DM\_MEDIA\_STANDARD = 1
* 131.11.85 DM\_MEDIA\_TRANSPARENCY = 2
* 131.11.86 DM\_MEDIA\_USER = 256
* 131.11.87 DM\_NUP\_ONEUP = 2
* 131.11.88 DM\_NUP\_SYSTEM = 1
* 131.11.89 DM\_ORIENT\_LANDSCAPE = 2
* 131.11.90 DM\_ORIENT\_PORTRAIT = 1
* 131.11.91 DM\_PAPER\_10x11 = 45
* 131.11.92 DM\_PAPER\_10x14 = 16
* 131.11.93 DM\_PAPER\_11x17 = 17
* 131.11.94 DM\_PAPER\_12x11 = 90
* 131.11.95 DM\_PAPER\_15x11 = 46
* 131.11.96 DM\_PAPER\_9x11 = 44
* 131.11.97 DM\_PAPER\_A2 = 66
* 131.11.98 DM\_PAPER\_A3 = 8
* 131.11.99 DM\_PAPER\_A3\_EXTRA = 63
* 131.11.100 DM\_PAPER\_A3\_EXTRA\_TRANSVERSE = 68
* 131.11.101 DM\_PAPER\_A3\_ROTATED = 76
* 131.11.102 DM\_PAPER\_A3\_TRANSVERSE = 67
* 131.11.103 DM\_PAPER\_A4 = 9
* 131.11.104 DM\_PAPER\_A4\_EXTRA = 53
* 131.11.105 DM\_PAPER\_A4\_PLUS = 60
* 131.11.106 DM\_PAPER\_A4\_ROTATED = 77
* 131.11.107 DM\_PAPER\_A4\_SMALL = 10
* 131.11.108 DM\_PAPER\_A4\_TRANSVERSE = 55
* 131.11.109 DM\_PAPER\_A5 = 11
* 131.11.110 DM\_PAPER\_A5\_EXTRA = 64
* 131.11.111 DM\_PAPER\_A5\_ROTATED = 78
* 131.11.112 DM\_PAPER\_A5\_TRANSVERSE = 61
* 131.11.113 DM\_PAPER\_A6 = 70
* 131.11.114 DM\_PAPER\_A6\_ROTATED = 83
* 131.11.115 DM\_PAPER\_A\_PLUS = 57
* 131.11.116 DM\_PAPER\_B4 = 12
* 131.11.117 DM\_PAPER\_B4\_JIS\_ROTATED = 79
* 131.11.118 DM\_PAPER\_B5 = 13
* 131.11.119 DM\_PAPER\_B5\_EXTRA = 65
* 131.11.120 DM\_PAPER\_B5\_JIS\_ROTATED = 80
* 131.11.121 DM\_PAPER\_B5\_TRANSVERSE = 62
* 131.11.164 DMPAPER_JENV_YOU4 = 91 17848
* 131.11.165 DMPAPER_JENV_YOU4_ROTATED = 92 17848
* 131.11.166 DMPAPER_LEDGER = 4 17848
* 131.11.167 DMPAPER_LEGAL = 5 17848
* 131.11.168 DMPAPER_LEGAL_EXTRA = 51 17849
* 131.11.169 DMPAPER_LETTER = 1 17849
* 131.11.170 DMPAPER_LETTER_SMALL = 2 17849
* 131.11.171 DMPAPER_LETTER_EXTRA = 50 17849
* 131.11.172 DMPAPER_LETTER_EXTRA_TRANSVERSE = 56 17849
* 131.11.173 DMPAPER_LETTER_PLUS = 59 17849
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* 131.11.179 DMPAPER_P32K = 94 17850
* 131.11.180 DMPAPER_P32KBIG = 95 17850
* 131.11.181 DMPAPER_P32KBIG_ROTATED = 108 17850
* 131.11.182 DMPAPER_P32K_ROTATED = 107 17851
* 131.11.183 DMPAPER_PENV_1 = 96 17851
* 131.11.184 DMPAPER_PENV_10 = 105 17851
* 131.11.185 DMPAPER_PENV_10_ROTATED = 118 17851
* 131.11.186 DMPAPER_PENV_1_ROTATED = 109 17851
* 131.11.187 DMPAPER_PENV_2 = 97 17851
* 131.11.188 DMPAPER_PENV_2_ROTATED = 110 17851
* 131.11.189 DMPAPER_PENV_3 = 98 17852
* 131.11.190 DMPAPER_PENV_3_ROTATED = 111 17852
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* 131.11.192 DMPAPER_PENV_4_ROTATED = 112 17852
* 131.11.193 DMPAPER_PENV_5 = 100 17852
* 131.11.194 DMPAPER_PENV_5_ROTATED = 113 17852
* 131.11.195 DMPAPER_PENV_6 = 101 17852
* 131.11.196 DMPAPER_PENV_6_ROTATED = 114 17853
* 131.11.197 DMPAPER_PENV_7 = 102 17853
* 131.11.198 DMPAPER_PENV_7_ROTATED = 115 17853
* 131.11.199 DMPAPER_PENV_8 = 103 17853
* 131.11.200 DMPAPER_PENV_8_ROTATED = 116 17853
* 131.11.201 DMPAPER_PENV_9 = 104 17853
* 131.11.202 DMPAPER_PENV_9_ROTATED = 117 17853
* 131.11.203 DMPAPER_QUARTO = 15 17854
* 131.11.204 DMPAPER_RESERVED_48 = 48 17854
* 131.11.205 DMPAPER_RESERVED_49 = 49 17854
* 131.11.206 DMPAPER_STATEMENT = 6 17854
* 131.11.207 DMPAPER_TABLOID = 3 17854
* 131.11.208 DMPAPER_TABLOID_EXTRA = 52 17854
* 131.11.209 DMPAPER_USER = 256 17854
* 131.11.210 DMRES_DRAFT = -1 17855
* 131.11.211 DMRES_HIGH = -4 17855
* 131.11.212 DMRES_LOW = -2 17855
* 131.11.213 DMRES_MEDIUM = -3 17855
* 131.11.214 DMTT_BITMAP = 1 17855
* 131.11.215 DMTT_DOWNLOAD = 2 17855
* 131.11.216 DMTT_DOWNLOAD_OUTLINE = 4 17856
* 131.11.217 DMTT_SUBDEV = 3 17856
* 131.11.218 DM_BITSPERPEL = & h00040000 17856
* 131.11.219 DM_COLLATE = & h00008000 17856
* 131.11.220 DM_COLOR = & h00008000 17856
* 131.11.221 DM_COPIES = & h00000100 17856
* 131.11.222 DM_DEFAULTSOURCE = & h00000200 17856
* 131.11.223 DM_DISPLAYFLAGS = & h00200000 17856
* 131.11.224 DM_DISPLAYFREQUENCY = & h00400000 17856
* 131.11.225 DM_DITHERTYPE = & h04000000 17856
* 131.11.226 DM_DUPLEX = & h00001000 17856
* 131.11.227 DM_FORMNAME = & h00010000 17856
* 131.11.228 DM_ICMINTENT = & h01000000 17856
* 131.11.229 DM_ICMMETHOD = & h00800000 17856
* 131.11.230 DM_LOGPIXELS = & h00020000 17856
* 131.11.231 DM_MEDIATYPE = & h00020000 17856
* 131.11.232 DM_NUP = & h00000400 17856
* 131.11.233 DM_ORIENTATION = & h00000001 17856
* 131.11.234 DM_PANNINGHEIGHT = & h10000000 17856
* 131.11.235 DM_PANNINGWIDTH = & h08000000 17856
* 131.11.236 DM_PAPERLENGTH = & h00000004 17856
* 131.11.237 DM_PAPERSIZE = & h00000002 17856
* 131.11.238 DM_PAPERWIDTH = & h00000008 17856
* 131.11.239 DM_PELSHIGH = & h00100000 17856
* 131.11.240 DM_PELSWIDTH = & h00080000 17856
* 131.11.241 DM_POSITION = & h00000200 17856
* 131.11.242 DM_PRINTQUALITY = & h00000400 17856
* 131.11.243 DM_SCALE = & h00000010 17856
* 131.11.244 DM_TTOPTION = & h00000400 17856
* 131.11.245 DM_YRESOLUTION = & h00002000 17856
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  - 76.3.1 class WindowsDirectoryChangeMBS
    * 76.3.3 Action as Integer
    * 76.3.4 Filename as String
    * 76.3.6 kActionAdded = 1
    * 76.3.7 kActionModified = 3
    * 76.3.8 kActionRemoved = 2
    * 76.3.9 kActionRenamedNewName = 5
    * 76.3.10 kActionRenamedOldName = 4
  
  - 76.4.1 class WindowsDirectoryWatcherMBS
    * 76.4.3 AddDirectory(path as folderitem, Recursive as boolean, Flags as Integer) as Boolean
    * 76.4.4 AddDirectory(path as string, Recursive as boolean, Flags as Integer) as Boolean
    * 76.4.5 Constructor
    * 76.4.6 NextChange as WindowsDirectoryChangeMBS
    * 76.4.8 kNotifyChangeAttributes = 4
    * 76.4.9 kNotifyChangeCreation = 64
    * 76.4.10 kNotifyChangeDirName = 2
    * 76.4.11 kNotifyChangeFilename = 1
    * 76.4.12 kNotifyChangeLastAccess = 32
    * 76.4.13 kNotifyChangeLastWrite = 16
    * 76.4.14 kNotifyChangeSecurity = 256
    * 76.4.15 kNotifyChangeSize = 8
• 172 Windows

  - 172.11.1 class WindowsDiscInfoMBS
    * 172.11.3 Device(file as folderitem) as WindowsDiscInfoMBS
    * 172.11.4 Device(path as string) as WindowsDiscInfoMBS
    * 172.11.5 Devices() as WindowsDiscInfoMBS()
    * 172.11.7 BufferSize as Int64
    * 172.11.8 BytesPerSector as Integer
    * 172.11.9 Drive as Integer
    * 172.11.10 Fixed as Boolean
    * 172.11.11 Mode as Integer
    * 172.11.12 ModelNumber as String
    * 172.11.13 ProductRevision as String
    * 172.11.14 Removable as Boolean
    * 172.11.15 RevisionNumber as String
    * 172.11.16 SectorsPerTrack as Integer
    * 172.11.17 SerialNumber as String
    * 172.11.18 Size as Int64
    * 172.11.19 TracksPerCylinder as Integer
    * 172.11.20 VendorId as String
• 75 Files

  – 75.27.1 class WindowsDiskChangeMBS
    * 75.27.3 Constructor
    * 75.27.5 Valid as Boolean
    * 75.27.7 DriveAdded(Path as string)
    * 75.27.8 DriveRemoved(Path as string)
    * 75.27.9 MediaInserted(Path as string)
    * 75.27.10 MediaRemoved(Path as string)
• 172 Windows
  
  – 172.12.1 class WindowsDisplayMBS
    * 172.12.3 Displays as WindowsDisplayMBS()
    * 172.12.5 DeviceInstanceID as String
    * 172.12.6 DeviceName as String
    * 172.12.7 DisplayAdapterActive as Boolean
    * 172.12.8 DisplayAdapterDeviceID as String
    * 172.12.9 DisplayAdapterDeviceKey as String
    * 172.12.10 DisplayAdapterDeviceName as String
    * 172.12.11 DisplayAdapterDeviceString as String
    * 172.12.12 DisplayAdapterRemovable as Boolean
    * 172.12.13 DisplayAdapterStateFlags as Integer
    * 172.12.14 DisplayMonitorActive as Boolean
    * 172.12.15 DisplayMonitorDeviceID as String
    * 172.12.16 DisplayMonitorDeviceKey as String
    * 172.12.17 DisplayMonitorDeviceName as String
    * 172.12.18 DisplayMonitorDeviceString as String
    * 172.12.19 DisplayMonitorRemovable as Boolean
    * 172.12.20 DisplayMonitorStateFlags as Integer
    * 172.12.21 Height as Integer
    * 172.12.22 HeightDPI as Integer
    * 172.12.23 HeightInch as Double
    * 172.12.24 HeightMM as Integer
    * 172.12.25 LogPixelsX as Integer
    * 172.12.26 LogPixelsY as Integer
    * 172.12.27 MonitorHandle as Integer
    * 172.12.28 MonitorHeight as Integer
    * 172.12.29 MonitorWidth as Integer
    * 172.12.30 MonitorX as Integer
    * 172.12.31 MonitorY as Integer
    * 172.12.32 Primary as Boolean
    * 172.12.33 Width as Integer
    * 172.12.34 WidthDPI as Integer
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    * 172.12.36 WidthMM as Integer
    * 172.12.37 WorkHeight as Integer
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  - 120.46.1 class WindowsDNSRecordAAAAMBS
    * 120.46.3 Constructor
    * 120.46.5 Address as String
    * 120.46.6 RawAddress as String
  - 120.47.1 class WindowsDNSRecordAMBS
    * 120.47.3 Constructor
    * 120.47.5 Address as String
    * 120.47.6 IPAddress as Integer
  - 120.48.1 class WindowsDNSRecordMBS
    * 120.48.3 Constructor
    * 120.48.4 Query(name as string, type as Integer, options as Integer = 0) as WindowsDNSRecordMBS
    * 120.48.6 A as WindowsDNSRecordAMBS
    * 120.48.7 AAAA as WindowsDNSRecordAAAAAMBS
    * 120.48.8 AFSDB as WindowsDNSRecordMXMBS
    * 120.48.9 CharSet as Integer
    * 120.48.10 CNAME as WindowsDNSRecordPTRMBS
    * 120.48.11 DataLength as Integer
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    * 120.48.19 MR as WindowsDNSRecordPTRMBS
    * 120.48.20 MX as WindowsDNSRecordMXMBS
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    * 120.48.27 RT as WindowsDNSRecordMXMBS
    * 120.48.28 Section as Integer
    * 120.48.29 SOA as WindowsDNSRecordSOAMBS
    * 120.48.30 TTL as Integer
    * 120.48.31 TXT as WindowsDNSRecordTXTMBS
    * 120.48.32 Type as Integer
    * 120.48.33 X25 as WindowsDNSRecordTXTMBS
* 120.48.35 CharSetAnsi = 3
* 120.48.36 CharSetUnicode = 1
* 120.48.37 CharSetUnknown = 0
* 120.48.38 CharSetUtf8 = 2
* 120.48.39 kDNSClassAll = h00ff
* 120.48.40 kDNSClassAny = h00ff
* 120.48.41 kDNSClassCHAOS = h0003
* 120.48.42 kDNSClassCSNET = h0002
* 120.48.43 kDNSClassHESIOD = h0004
* 120.48.44 kDNSClassInternet = h0001
* 120.48.45 kDNSClassNone = h00fe
* 120.48.46 kDNSQueryAcceptTruncatedResponse = h00000001
* 120.48.47 kDNSQueryBypassCache = h00000008
* 120.48.48 kDNSQueryDontResetTTLValues = h00100000
* 120.48.49 kDNSQueryMulticastOnly = h00000400
* 120.48.50 kDNSQueryNoHostsFile = h00000040
* 120.48.51 kDNSQueryNoLocalName = h00000020
* 120.48.52 kDNSQueryNoMulticast = h00000800
* 120.48.53 kDNSQueryNoNetBT = h00000080
* 120.48.54 kDNSQueryNoRecursion = h00000004
* 120.48.55 kDNSQueryNoWireQuery = h00000010
* 120.48.56 kDNSQueryReserved = hff000000
* 120.48.57 kDNSQueryReturnMessage = h00000200
* 120.48.58 kDNSQueryStandard = h00000000
* 120.48.59 kDNSQueryTreatAsFQDN = h00001000
* 120.48.60 kDNSQueryUseTCPOnly = h00000002
* 120.48.61 kDNSQueryWireOnly = h00000100
* 120.48.62 kDNSRClassAll = hff00
* 120.48.63 kDNSRClassAny = hff00
* 120.48.64 kDNSRClassCHAOS = h0300
* 120.48.65 kDNSRClassCSNET = h0200
* 120.48.66 kDNSRClassHESIOD = h0400
* 120.48.67 kDNSRClassInternet = h0100
* 120.48.68 kDNSRClassNone = hfe00
* 120.48.69 kDNSRTypeA = h0100
* 120.48.70 kDNSRTypeAAAA = h1c00
* 120.48.71 kDNSRTypeAFSDB = h1200
* 120.48.72 kDNSRTypeALL = hff00
* 120.48.73 kDNSRTypeANY = hff00
* 120.48.74 kDNSRTypeATMA = h2200
* 120.48.75 kDNSRTypeAXFR = hfc00
* 120.48.76 kDNSRTypeCNAME = h0500
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- 120.48.77 kDNSRTypGPOS = & h1b00
- 120.48.78 kDNSRTypHINFO = & h0d00
- 120.48.79 kDNSRTypISDN = & h1400
- 120.48.80 kDNSRTypIXFR = & hfb00
- 120.48.81 kDNSRTypKEY = & h1900
- 120.48.82 kDNSRTypLOC = & h1d00
- 120.48.83 kDNSRTypMAILA = & hfe00
- 120.48.84 kDNSRTypMAILB = & hfd00
- 120.48.85 kDNSRTypMB = & h0700
- 120.48.86 kDNSRTypMD = & h0300
- 120.48.87 kDNSRTypMF = & h0400
- 120.48.88 kDNSRTypMG = & h0800
- 120.48.89 kDNSRTypMINO = & h0e00
- 120.48.90 kDNSRTypMR = & h0900
- 120.48.91 kDNSRTypMX = & h0f00
- 120.48.92 kDNSRTypNS = & h0200
- 120.48.93 kDNSRTypNSAP = & h1600
- 120.48.94 kDNSRTypNSAPPTR = & h1700
- 120.48.95 kDNSRTypNULL = & h0a00
- 120.48.96 kDNSRTypNXT = & h1e00
- 120.48.97 kDNSRTypPTR = & h0c00
- 120.48.98 kDNSRTypPX = & h1a00
- 120.48.99 kDNSRTypRP = & h1100
- 120.48.100 kDNSRTypRT = & h1500
- 120.48.101 kDNSRTypSIG = & h1800
- 120.48.102 kDNSRTypSOA = & h0600
- 120.48.103 kDNSRTypSRV = & h2100
- 120.48.104 kDNSRTypTEXT = & h1000
- 120.48.105 kDNSRTypTKEY = & h0900
- 120.48.106 kDNSRTypTSIG = & hfa00
- 120.48.107 kDNSRTypWINS = & h01ff
- 120.48.108 kDNSRTypWINSR = & h02ff
- 120.48.109 kDNSRTypWKS = & h0b00
- 120.48.110 kDNSRTypX25 = & h1300
- 120.48.111 kDNSTypA = & h0001
- 120.48.112 kDNSTypAAAA = & h001c
- 120.48.113 kDNSTypAFSDB = & h0012
- 120.48.114 kDNSTypALL = & h00ff
- 120.48.115 kDNSTypANY = & h00ff
- 120.48.116 kDNSTypATMA = & h0022
- 120.48.117 kDNSTypAXFR = & h00fc
- 120.48.118 kDNSTypCNAME = & h0005
* 120.48.119 kDNSTypeGPOS = & h001b
* 120.48.120 kDNSTypeHINFO = & h000d
* 120.48.121 kDNSTypeISDN = & h0014
* 120.48.122 kDNSTypeIXFR = & h00fb
* 120.48.123 kDNSTypeKEY = & h0019
* 120.48.124 kDNSTypeLOC = & h001d
* 120.48.125 kDNSTypeMAILA = & h00fe
* 120.48.126 kDNSTypeMAILB = & h00fd
* 120.48.127 kDNSTypeMB = & h0007
* 120.48.128 kDNSTypeMD = & h0003
* 120.48.129 kDNSTypeMF = & h0004
* 120.48.130 kDNSTypeMG = & h0008
* 120.48.131 kDNSTypeMINFO = & h000e
* 120.48.132 kDNSTypeMR = & h0009
* 120.48.133 kDNSTypeMX = & h000f
* 120.48.134 kDNSTypeNBSTAT = & hff02
* 120.48.135 kDNSTypeNS = & h0002
* 120.48.136 kDNSTypeNSAP = & h0016
* 120.48.137 kDNSTypeNSAPPTR = & h0017
* 120.48.138 kDNSTypeNULL = & h000a
* 120.48.139 kDNSTypeNXT = & h001e
* 120.48.140 kDNSTypePTR = & h000c
* 120.48.141 kDNSTypePX = & h001a
* 120.48.142 kDNSTypeRP = & h001b
* 120.48.143 kDNSTypeRT = & h0015
* 120.48.144 kDNSTypeSIG = & h0018
* 120.48.145 kDNSTypeSOA = & h0006
* 120.48.146 kDNSTypeSRV = & h0021
* 120.48.147 kDNSTypeTEXT = & h0010
* 120.48.148 kDNSTypeTKEY = & h00f9
* 120.48.149 kDNSTypeTSIG = & h00fa
* 120.48.150 kDNSTypeWINS = & hff01
* 120.48.151 kDNSTypeWINSR = & hff02
* 120.48.152 kDNSTypeWKS = & h000b
* 120.48.153 kDNSTypeX25 = & h0013
* 120.48.154 kDNSTypeZERO = & h0000
* 120.48.155 kSectionAddtional = 3
* 120.48.156 kSectionAnswer = 1
* 120.48.157 kSectionAuthority = 2
* 120.48.158 kSectionQuestion = 0

– 120.49.1 class WindowsDNSRecordMInfoMBS
120.49.3 Constructor 17115
120.49.5 NameErrorsMailbox as String 17115
120.49.6 NameMailbox as String 17115
120.50.1 class WindowsDNSRecordMXMBS 17116
   * 120.50.3 Constructor 17116
   * 120.50.5 NameExchange as String 17116
   * 120.50.6 Preference as Integer 17116
120.51.1 class WindowsDNSRecordNullMBS 17117
   * 120.51.3 Constructor 17117
   * 120.51.5 ByteCount as Integer 17117
   * 120.51.6 Data as String 17117
120.52.1 class WindowsDNSRecordPTRMBS 17118
   * 120.52.3 Constructor 17118
   * 120.52.5 NameHost as String 17118
120.53.1 class WindowsDNSRecordSOAMBS 17119
   * 120.53.3 Constructor 17119
   * 120.53.5 DefaultTTL as Integer 17119
   * 120.53.6 Expire as Integer 17119
   * 120.53.7 NameAdministrator as String 17120
   * 120.53.8 NamePrimaryServer as String 17120
   * 120.53.9 Refresh as Integer 17120
   * 120.53.10 Retry as Integer 17120
   * 120.53.11 SerialNo as Integer 17120
120.54.1 class WindowsDNSRecordTXTMBS 17121
   * 120.54.3 Constructor 17121
   * 120.54.4 Strings as String() 17121
   * 120.54.6 StringCount as Integer 17121
• 68 Drag & Drop

- 68.12.1 class WindowsDragSourceMBS

  * 68.12.3 DoDragDrop(dataObject as WinDataObjectMBS, OKEffect as Integer, byref Effect as Integer) as Integer
  * 68.12.5 Handle as Integer
  * 68.12.7 GiveFeedback(Effect as Integer) as Integer
  * 68.12.8 QueryContinueDrag(EscapePressed as boolean, KeyState as Integer) as Integer
  * 68.12.10 DRAGDROP_S_CANCEL = & H00040101
  * 68.12.11 DRAGDROP_S_DROP = & h00040100
  * 68.12.12 DRAGDROP_S_USEDEFAULTCURSORS = & h00040102
  * 68.12.13 DROPEFFECT_COPY = 1
  * 68.12.14 DROPEFFECT_LINK = 4
  * 68.12.15 DROPEFFECT_MOVE = 2
  * 68.12.16 DROPEFFECT_NONE = 0
  * 68.12.17 DROPEFFECT_SCROLL = & h80000000
  * 68.12.18 MK_CONTROL = 8
  * 68.12.19 MK_LBUTTON = 1
  * 68.12.20 MK_MBUTTON = & h10
  * 68.12.21 MK_RBUTTON = 2
  * 68.12.22 MK_SHIFT = 4
  * 68.12.23 MK_XBUTTON1 = & h20
  * 68.12.24 MK_XBUTTON2 = & h40
  * 68.12.25 S_FALSE = 1
  * 68.12.26 S_OK = 0
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- 75 Files
  - 75.28.1 class WindowsDriveNotificationMBS
    * 75.28.3 DeviceArrival(Path as string)
    * 75.28.4 DeviceRemoved(Path as string)
• 68 Drag & Drop

- 68.13.1 class WindowsDropTargetMBS

  * 68.13.3 AttachToControl(ctl as control, showDragImage as boolean = true) as Integer
  * 68.13.4 AttachToWindow(win as window, showDragImage as boolean = true) as Integer
  * 68.13.6 Handle as Integer
  * 68.13.7 Helper as Integer
  * 68.13.9 DragEnter(dataObject as WinDataObjectMBS, keystate as Integer, x as Integer, y as Integer, byref effect as Integer) as Integer
  * 68.13.10 DragLeave as Integer
  * 68.13.11 DragOver(keystate as Integer, x as Integer, y as Integer, byref effect as Integer) as Integer
  * 68.13.12 Drop(dataObject as WinDataObjectMBS, keystate as Integer, x as Integer, y as Integer, byref effect as Integer) as Integer
  * 68.13.14 DROPEFFECT_COPY = 1
  * 68.13.15 DROPEFFECT_LINK = 4
  * 68.13.16 DROPEFFECT_MOVE = 2
  * 68.13.17 DROPEFFECT_NONE = 0
  * 68.13.18 DROPEFFECT_SCROLL = & h80000000
  * 68.13.19 E_INVALIDARG = & h80070057
  * 68.13.20 E_OUTOFMEMORY = & h80000002
  * 68.13.21 E_UNEXPECTED = & h8000FFFF
  * 68.13.22 MK_CONTROL = 8
  * 68.13.23 MK_LBUTTON = 1
  * 68.13.24 MK_MBUTTON = & h10
  * 68.13.25 MK_RBUTTON = 2
  * 68.13.26 MK_SHIFT = 4
  * 68.13.27 MK_XBUTTON1 = & h20
  * 68.13.28 MK_XBUTTON2 = & h40
  * 68.13.29 S_FALSE = 1
  * 68.13.30 S_OK = 0
• 120 Network
  – 120.55.1 class WindowsEthernetAdapterMBS
    * 120.55.3 Gateway(index as Integer) as WindowsIPAddressMBS
    * 120.55.4 IP(index as Integer) as WindowsIPAddressMBS
    * 120.55.6 AdapterName as String
    * 120.55.7 Address as String
    * 120.55.8 CurrentIpAddress as WindowsIPAddressMBS
    * 120.55.9 Description as String
    * 120.55.10 DhcpEnabled as Boolean
    * 120.55.11 DhcpServer as WindowsIPAddressMBS
    * 120.55.12 Gatewaycount as Integer
    * 120.55.13 HaveWins as Boolean
    * 120.55.14 Index as Integer
    * 120.55.15 IPcount as Integer
    * 120.55.16 LeaseExpires as Integer
    * 120.55.17 LeaseObtained as Integer
    * 120.55.18 PrimaryWinsServer as WindowsIPAddressMBS
    * 120.55.19 SecondaryWinsServer as WindowsIPAddressMBS
    * 120.55.20 Type as Integer
  – 120.56.1 class WindowsEthernetMBS
    * 120.56.3 Item(index as Integer) as WindowsEthernetAdapterMBS
    * 120.56.4 Update
    * 120.56.6 Count as Integer
• 172 Windows

  – 172.13.1 class WindowsFileCopyMBS
    * 172.13.3 CopyFileEx(ExistingFileName as folderitem, NewFileName as folderitem, Flags as Integer) as boolean
    * 172.13.4 CopyFileEx(ExistingFileName as String, NewFileName as String, Flags as Integer) as boolean
    * 172.13.5 CopyFileSimple(ExistingFileName as folderitem, NewFileName as folderitem, FailIfExists as boolean=false) as boolean
    * 172.13.6 CopyFileSimple(ExistingFileName as String, NewFileName as String, FailIfExists as boolean=false) as boolean
    * 172.13.7 FileOperationCopy(source as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
    * 172.13.8 FileOperationCopy(source as string, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
    * 172.13.9 FileOperationCopy(source as string, dest as string, Flags as Integer, ProgressTitle as string="") as boolean
    * 172.13.10 FileOperationCopy(source() as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
    * 172.13.11 FileOperationCopy(source() as folderitem, dest() as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
    * 172.13.12 FileOperationCopy(source() as string, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
    * 172.13.13 FileOperationCopy(source() as string, dest as string, Flags as Integer, ProgressTitle as string="") as boolean
    * 172.13.14 FileOperationCopy(source() as string, dest() as string, Flags as Integer, ProgressTitle as string="") as boolean
    * 172.13.15 FileOperationDelete(file as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
    * 172.13.16 FileOperationDelete(filepaths as string, Flags as Integer, ProgressTitle as string="") as boolean
    * 172.13.17 FileOperationDelete(filepaths() as string, Flags as Integer, ProgressTitle as string="") as boolean
    * 172.13.18 FileOperationDelete(files() as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
    * 172.13.19 FileOperationMove(source as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
    * 172.13.20 FileOperationMove(source as string, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
    * 172.13.21 FileOperationMove(source as string, dest as string, Flags as Integer, ProgressTitle as string="") as boolean
    * 172.13.22 FileOperationMove(source() as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
    * 172.13.23 FileOperationMove(source() as string, dest() as string, Flags as Integer, ProgressTitle as string="") as boolean

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* 172.13.24 FileOperationMove(source() as string, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean 20164
* 172.13.25 FileOperationMove(source() as string, dest as string, Flags as Integer, ProgressTitle as string="") as boolean 20165
* 172.13.26 FileOperationMove(source() as string, dest() as string, Flags as Integer, ProgressTitle as string="") as boolean 20167
* 172.13.27 MoveFileSimple(ExistingFileName as folderitem, NewFileName as folderitem) as boolean 20168
* 172.13.28 MoveFileSimple(ExistingFileName as String, NewFileName as String) as boolean 20168
* 172.13.29 MoveFileWithProgress(ExistingFileName as folderitem, NewFileName as folderitem, Flags as Integer) as boolean 20169
* 172.13.30 MoveFileWithProgress(ExistingFileName as String, NewFileName as String, Flags as Integer) as boolean 20170
* 172.13.32 Lasterror as Integer 20171
* 172.13.33 MultiThreaded as Boolean 20171
* 172.13.34 OperationsAborted as Boolean 20172
* 172.13.35 Parent as Window 20172
* 172.13.37 Progress(TotalFileSize as int64, TotalBytesTransferred as int64, StreamSize as int64, StreamBytesTransferred as Int64, StreamNumber as Integer, Reason as Integer) as Integer 20173
* 172.13.39 CallbackChunkFinished=0 20173
* 172.13.40 CallbackStreamSwitched=1 20173
* 172.13.41 CopyFileAllowDecryptedDestination=8 20174
* 172.13.42 CopyFileCopySymLink=& h800 20174
* 172.13.43 CopyFileFailIfExists=1 20174
* 172.13.44 CopyFileOpenSourceForWrite=4 20174
* 172.13.45 CopyFileRestartable=2 20174
* 172.13.46 FileOperationAllowUndo=& h40 20174
* 172.13.47 FileOperationFilesOnly=& h80 20174
* 172.13.48 FileOperationMultiDestFiles=1 20175
* 172.13.49 FileOperationNoConfirmation=& h10 20175
* 172.13.50 FileOperationNoConfirmationMkDir=& h200 20175
* 172.13.51 FileOperationNoConnectedElements=& H2000 20175
* 172.13.52 FileOperationNoCopySecurityAttributes=& h800 20176
* 172.13.53 FileOperationNoErrorUI=& h400 20176
* 172.13.54 FileOperationNoRecursion=& H1000 20176
* 172.13.55 FileOperationRenameCollision=8 20176
* 172.13.56 FileOperationSilent=4 20176
* 172.13.57 FileOperationSimpleProgress=& h100 20176
* 172.13.58 FileOperationWantNukeWarning=& H4000 20177
* 172.13.59 MoveFileCopyAllowed=2 20177
* 172.13.60 MoveFileCreateHardLink=16 20177
* 172.13.61 MoveFileDelayUntilReboot=4
* 172.13.62 MoveFileReplaceExisting=1
* 172.13.63 MoveFileWriteThrough=8
* 172.13.64 ProgressCancel=1
* 172.13.65 ProgressContinue=0
* 172.13.66 ProgressQuiet=3
* 172.13.67 ProgressStop=2

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68 Drag & Drop

- 68.14.1 class WindowsFileDescriptorMBS
  - 68.14.3 ClassID as String
  - 68.14.4 CreationTime as Double
  - 68.14.5 FileAttributes as Integer
  - 68.14.6 FileName as String
  - 68.14.7 FileSize as Int64
  - 68.14.8 Flags as Integer
  - 68.14.9 IconHeight as Integer
  - 68.14.10 IconWidth as Integer
  - 68.14.11 Index as Integer
  - 68.14.12 LastAccessTime as Double
  - 68.14.13 LastWriteTime as Double
  - 68.14.14 PointX as Integer
  - 68.14.15 PointY as Integer
  - 68.14.17 FD_ACCESSTIME = & h0010
  - 68.14.18 FD_ATTRIBUTES = 4
  - 68.14.19 FD_CLSID = 1
  - 68.14.20 FD_CREATETIME = 8
  - 68.14.21 FD_FILESIZ = & h0040
  - 68.14.22 FD_LINKUI = & h8000
  - 68.14.23 FD_PROGRESSUI = & h4000
  - 68.14.24 FD_SIZEPOINT = 2
  - 68.14.25 FD_WRITESTIME = & h0020
  - 68.14.26 FILE_ATTRIBUTE_ARCHIVE = & h00000020
  - 68.14.27 FILE_ATTRIBUTE_ATOMIC_WRITE = & h00000200
  - 68.14.28 FILE_ATTRIBUTE_COMPRESSED = & h00000000
  - 68.14.29 FILE_ATTRIBUTE_DIRECTORY = & h00000100
  - 68.14.30 FILE_ATTRIBUTE_HIDDEN = & h0000002
  - 68.14.31 FILE_ATTRIBUTE_NORMAL = & h00000000
  - 68.14.32 FILE_ATTRIBUTE_OFFLINE = & h00001000
  - 68.14.33 FILE_ATTRIBUTE_READONLY = & h00000001
  - 68.14.34 FILE_ATTRIBUTE_SYSTEM = & h00000004
  - 68.14.35 FILE_ATTRIBUTE_TEMPORARY = & h00000100
  - 68.14.36 FILE_ATTRIBUTE_XACTION_WRITE = & h00000400
172 Windows

- 172.14.1 class WindowsFileInfoMBS
  - * 172.14.3 Constructor(file as folderitem)
  - * 172.14.4 Constructor(handle as Integer)
  - * 172.14.5 Constructor(path as string)
  - * 172.14.6 Constructor(stream as BinaryStream)
  - * 172.14.8 CreationTime as UInt64
  - * 172.14.9 FileAttributes as Integer
  - * 172.14.10 FileIndex as UInt64
  - * 172.14.11 FileSize as UInt64
  - * 172.14.12 LastAccessTime as UInt64
  - * 172.14.13 LastWriteTime as UInt64
  - * 172.14.14 NumberOfLinks as Integer
  - * 172.14.15 Valid as Boolean
  - * 172.14.16 VolumeSerialNumber as Integer
  - * 172.14.18 kFileAttributeArchive = 32
  - * 172.14.19 kFileAttributeCompressed = 2048
  - * 172.14.20 kFileAttributeDevice = 64
  - * 172.14.21 kFileAttributeDirectory = 16
  - * 172.14.22 kFileAttributeEncrypted = 16384
  - * 172.14.23 kFileAttributeHidden = 2
  - * 172.14.24 kFileAttributeNormal = 128
  - * 172.14.25 kFileAttributeNotContentIndexed = 8192
  - * 172.14.26 kFileAttributeOffline = 4096
  - * 172.14.27 kFileAttributeReadOnly = 1
  - * 172.14.28 kFileAttributeReparsePoint = 1024
  - * 172.14.29 kFileAttributeSparseFile = 512
  - * 172.14.30 kFileAttributeSystem = 4
  - * 172.14.31 kFileAttributeTemporary = 256
  - * 172.14.32 kFileAttributeVirtual = 65536

- 172.15.1 class WindowsFileStreamMBS
  - * 172.15.3 Constructor
  - * 172.15.4 List(file as folderitem) as WindowsFileStreamMBS()
  - * 172.15.5 List(Path as String) as WindowsFileStreamMBS()
  - * 172.15.7 Name as String
  - * 172.15.8 Size as UInt64

- 172.16.1 class WindowsFileVersionMBS
  - * 172.16.3 FileVersion as string
  - * 172.16.4 GetCompanyName as string
  - * 172.16.5 GetFileDescription as string
  - * 172.16.6 GetFileVersion as string
• 172.16.7 GetInternalName as string 20189
• 172.16.8 GetLegalCopyright as string 20190
• 172.16.9 GetOriginalFilename as string 20190
• 172.16.10 GetProductName as string 20190
• 172.16.11 GetProductVersion as string 20190
• 172.16.12 OpenFile(file as folderitem) as boolean 20191
• 172.16.13 ProductVersion as string 20191
• 172.16.14 QueryBinaryValue(key as string) as string 20192
• 172.16.15 QueryUnicodeValue(key as string) as string 20192
• 172.16.17 FileDateLS as Integer 20192
• 172.16.18 FileDateMS as Integer 20193
• 172.16.19 FileFlags as Integer 20193
• 172.16.20 FileOS as Integer 20194
• 172.16.21 FileSubtype as Integer 20195
• 172.16.22 FileType as Integer 20196
• 172.16.23 FileVersionLS as Integer 20197
• 172.16.24 FileVersionMS as Integer 20197
• 172.16.25 LangCharset as Integer 20198
• 172.16.26 Lasterror as Integer 20198
• 172.16.27 ProductVersionLS as Integer 20198
• 172.16.28 ProductVersionMS as Integer 20199
• 172.16.29 RawData as String 20199
• 172.16.30 Success as Boolean 20200
76 Folder Change Watching

- 76.5.1 class WindowsFolderChangeMBS
  * 76.5.3 Constructor(path as folderitem, subtree as boolean, FilterFlags as Integer)
  * 76.5.5 ChangeCount as Integer
  * 76.5.6 Handle as Integer
  * 76.5.8 Changed
  * 76.5.10 ChangeAttribute=4
  * 76.5.11 ChangeDir=2
  * 76.5.12 ChangeFile=1
  * 76.5.13 ChangeSecurity=256
  * 76.5.14 ChangeSize=8
  * 76.5.15 ChangeWrite=16
• 77 Fonts

  – 77.7.1 class WindowsFontDialogMBS

    * 77.7.3 ChooseFont as Boolean
    * 77.7.4 CloseDialog
    * 77.7.5 Query
    * 77.7.6 Update
    * 77.7.8 Bold as Boolean
    * 77.7.9 CurrentFont as WindowsFontFamilyMBS
    * 77.7.10 DialogHandle as Integer
    * 77.7.11 Effects as Boolean
    * 77.7.12 FontName as String
    * 77.7.13 FontType as Integer
    * 77.7.14 ForceFontExist as Boolean
    * 77.7.15 Height as Integer
    * 77.7.16 Italic as Boolean
    * 77.7.17 LastError as Integer
    * 77.7.18 LimitSize as Boolean
    * 77.7.19 MaxSize as Integer
    * 77.7.20 MinSize as Integer
    * 77.7.21 NoFontSimulations as Boolean
    * 77.7.22 NoInitialFaceSelection as Boolean
    * 77.7.23 NoInitialSizeSelection as Boolean
    * 77.7.24 NoInitialStyleSelection as Boolean
    * 77.7.25 NoVectorFonts as Boolean
    * 77.7.26 NoVerticalFonts as Boolean
    * 77.7.27 OnlyFixedPitchFonts as Boolean
    * 77.7.28 OnlyTrueTypeFonts as Boolean
    * 77.7.29 Parent as Window
    * 77.7.30 ScalableFontsOnly as Boolean
    * 77.7.31 ShowApply as Boolean
    * 77.7.32 ShowInactiveFonts as Boolean
    * 77.7.33 Size as Double
    * 77.7.34 Strikethrough as Boolean
    * 77.7.35 TextColor as Color
    * 77.7.36 Underline as Boolean
    * 77.7.37 Weight as Integer
    * 77.7.39 Apply
    * 77.7.40 BoundsChanged
    * 77.7.41 BoundsChanging
    * 77.7.42 GotFocus
    * 77.7.43 Hide
* 77.7.44 Init
* 77.7.45 LostFocus
* 77.7.46 Show
* 77.7.48 FontTypeBold = & h100
* 77.7.49 FontTypeItalic = & h200
* 77.7.50 FontTypePrinter = & h4000
* 77.7.51 FontTypeRegular = & h400
* 77.7.52 FontTypeScreen = & h2000
* 77.7.53 FontTypeSimulator = & h8000

– 77.8.1 class WindowsFontFamilyMBS
  * 77.8.3 AllFonts as WindowsFontFamilyMBS()
  * 77.8.4 AllFonts(fonts() as WindowsFontFamilyMBS) as Integer
  * 77.8.5 AxisMaxValue(index as Integer) as Integer
  * 77.8.6 AxisMinValue(index as Integer) as Integer
  * 77.8.7 AxisName(index as Integer) as string
  * 77.8.8 DesignVectorValues(index as Integer) as Integer
  * 77.8.9 FontsOfFamily(family as string) as WindowsFontFamilyMBS()
  * 77.8.10 FontsOfFamily(family as string, fonts() as WindowsFontFamilyMBS) as Integer
  * 77.8.12 CodepageBitfield as MemoryBlock
  * 77.8.13 FontType as Integer
  * 77.8.14 LogFontBold as Boolean
  * 77.8.15 LogFontCharSet as Integer
  * 77.8.16 LogFontClipPrecision as Integer
  * 77.8.17 LogFontEscapement as Integer
  * 77.8.18 LogFontFaceName as String
  * 77.8.19 LogFontFullName as String
  * 77.8.20 LogFontHeight as Integer
  * 77.8.21 LogFontItalic as Boolean
  * 77.8.22 LogFontOrientation as Integer
  * 77.8.23 LogFontOutPrecision as Integer
  * 77.8.24 LogFontPitchAndFamily as Integer
  * 77.8.25 LogFontQuality as Integer
  * 77.8.26 LogFontScript as String
  * 77.8.27 LogFontStrikeOut as Boolean
  * 77.8.28 LogFontStyle as String
  * 77.8.29 LogFontUnderline as Boolean
  * 77.8.30 LogFontWeight as Integer
  * 77.8.31 LogFontWidth as Integer
  * 77.8.32 NumberOfAxes as Integer
  * 77.8.33 NumberOfDesignVectors as Integer
  * 77.8.34 TextMetricAscent as Integer
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* 77.8.35 TextMetricAverageCharWidth as Integer 12938
* 77.8.36 TextMetricAverageWidth as Integer 12939
* 77.8.37 TextMetricBreakChar as Integer 12939
* 77.8.38 TextMetricCellHeight as Integer 12939
* 77.8.39 TextMetricCharSet as Integer 12939
* 77.8.40 TextMetricDefaultChar as Integer 12939
* 77.8.41 TextMetricDescent as Integer 12940
* 77.8.42 TextMetricDigitizedAspectX as Integer 12940
* 77.8.43 TextMetricDigitizedAspectY as Integer 12940
* 77.8.44 TextMetricExternalLeading as Integer 12940
* 77.8.45 TextMetricFirstChar as Integer 12940
* 77.8.46 TextMetricFlags as Integer 12941
* 77.8.47 TextMetricHeight as Integer 12941
* 77.8.48 TextMetricInternalLeading as Integer 12941
* 77.8.49 TextMetricItalic as Boolean 12942
* 77.8.50 TextMetricLastChar as Integer 12942
* 77.8.51 TextMetricMaxCharWidth as Integer 12942
* 77.8.52 TextMetricOverhang as Integer 12942
* 77.8.53 TextMetricPitchAndFamily as Integer 12943
* 77.8.54 TextMetricSizeEM as Integer 12943
* 77.8.55 TextMetricStruckOut as Boolean 12943
* 77.8.56 TextMetricUnderlined as Boolean 12943
* 77.8.57 TextMetricWeight as Integer 12944
* 77.8.58 UnicodeSubsetBitfield as MemoryBlock 12944
* 77.8.60 ANSI_CHARSET = 0 12944
* 77.8.61 ANTIALIASED_QUALITY = 4 12944
* 77.8.62 ARABIC_CHARSET = 178 12944
* 77.8.63 BALTIC_CHARSET = 186 12945
* 77.8.64 CHINESEBIG5_CHARSET = 136 12945
* 77.8.65 CLIP_CHARACTER_PRECIS = 1 12945
* 77.8.66 CLIP_DEFAULT_PRECIS = 0 12945
* 77.8.67 CLIP_EMBEDDED = 128 12945
* 77.8.68 CLIP_LHANGLES = 16 12945
* 77.8.69 CLIP_MASK = & h15 12945
* 77.8.70 CLIP_STROKE_PRECIS = 2 12946
* 77.8.71 CLIP_TT_ALWAYS = 32 12946
* 77.8.72 DEFAULT_CHARSET = 1 12946
* 77.8.73 DEFAULT_PITCH = 0 12946
* 77.8.74 DEFAULT_QUALITY = 0 12946
* 77.8.75 DEVICE_FONTTYPE = & h002 12946
* 77.8.76 DRAFT_QUALITY = 1 12946
* 77.8.77 EASTEUROPE_CHARSET = 238 12947
* 77.8.78 FF_DECORATIVE = 80
* 77.8.79 FF_DONTCARE = 0
* 77.8.80 FF_MODERN = 48
* 77.8.81 FF_ROMAN = 16
* 77.8.82 FF_SCRIPT = 64
* 77.8.83 FF_SWISS = 32
* 77.8.84 FIXED_PITCH = 1
* 77.8.85 FW_BLACK = 900
* 77.8.86 FW_BOLD = 700
* 77.8.87 FW_DEMIBOLD = 600
* 77.8.88 FW_DONTCARE = 0
* 77.8.89 FW_EXTRABOLD = 800
* 77.8.90 FW_EXTRALIGHT = 200
* 77.8.91 FW_HEAVY = 900
* 77.8.92 FW_LIGHT = 300
* 77.8.93 FW_MEDIUM = 500
* 77.8.94 FW_NORMAL = 400
* 77.8.95 FW_REGULAR = 400
* 77.8.96 FW_SEMIBOLD = 600
* 77.8.97 FW_THIN = 100
* 77.8.98 FW_ULTRABOLD = 800
* 77.8.99 FW_ULTRALIGHT = 200
* 77.8.100 GB2312_CHARSET = 134
* 77.8.101 GREEK_CHARSET = 161
* 77.8.102 HANGEUL_CHARSET = 129
* 77.8.103 HANGUL_CHARSET = 129
* 77.8.104 HEBREW_CHARSET = 177
* 77.8.105 JOHAB_CHARSET = 130
* 77.8.106 MAC_CHARSET = 77
* 77.8.107 MONO_FONT = 8
* 77.8.108 NONANTIALIASED_QUALITY = 3
* 77.8.109 NTM_BOLD = & h00000020
* 77.8.110 NTM_DSIG = & h00200000
* 77.8.111 NTM_ITALIC = & h00000001
* 77.8.112 NTM_MULTIPLEMASTER = & h00080000
* 77.8.113 NTM_NONNEGATIVE_AC = & h00010000
* 77.8.114 NTM_PS_OPENTYPE = & h00020000
* 77.8.115 NTM_REGULAR = & h00000040
* 77.8.116 NTM_TT_OPENTYPE = & h00040000
* 77.8.117 NTM_TYPE1 = & h00100000
* 77.8.118 OEM_CHARSET = 255
* 77.8.119 OUT_CHARACTER_PRECIS = 2
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* 77.8.120 OUT_DEFAULT_PRECIS = 0
* 77.8.121 OUT_DEVICE_PRECIS = 5
* 77.8.122 OUT_OUTLINE_PRECIS = 8
* 77.8.123 OUT_PS_ONLY_PRECIS = 10
* 77.8.124 OUT_RASTER_PRECIS = 6
* 77.8.125 OUT_SCREEN_OUTLINE_PRECIS = 9
* 77.8.126 OUT_STRING_PRECIS = 1
* 77.8.127 OUT_STROKE_PRECIS = 3
* 77.8.128 OUT_TT_ONLY_PRECIS = 7
* 77.8.129 OUT_TT_PRECIS = 4
* 77.8.130 PROOF_QUALITY = 2
* 77.8.131 RASTER_FONTTYPE = & h0001
* 77.8.132 RUSSIAN_CHARSET = 204
* 77.8.133 SHIFTJIS_CHARSET = 128
* 77.8.134 SYMBOL_CHARSET = 2
* 77.8.135 THAI_CHARSET = 222
* 77.8.136 TRUETYPE_FONTTYPE = & h004
* 77.8.137 TURKISH_CHARSET = 162
* 77.8.138 VARIABLE_PITCH = 2
* 77.8.139 VIETNAMESE_CHARSET = 163
• 131 Printing

  - 131.12.1 class WindowsGraphicsInfoMBS
    * 131.12.3 Constructor(g as graphics)
    * 131.12.5 AspectX as Integer
    * 131.12.6 AspectXY as Integer
    * 131.12.7 AspectY as Integer
    * 131.12.8 BitsPerPixel as Integer
    * 131.12.9 BrushesCount as Integer
    * 131.12.10 ColorCount as Integer
    * 131.12.11 DesktopResolutionX as Integer
    * 131.12.12 DesktopResolutionY as Integer
    * 131.12.13 DriverVersion as Integer
    * 131.12.14 FontCount as Integer
    * 131.12.15 LogPixelsX as Integer
    * 131.12.16 LogPixelsY as Integer
    * 131.12.17 MakersCount as Integer
    * 131.12.18 PenCount as Integer
    * 131.12.19 PhysicalHeight as Integer
    * 131.12.20 PhysicalOffsetX as Integer
    * 131.12.21 PhysicalOffsetY as Integer
    * 131.12.22 PhysicalWidth as Integer
    * 131.12.23 Planes as Integer
    * 131.12.24 ResolutionX as Integer
    * 131.12.25 ResolutionY as Integer
    * 131.12.26 ScalingFactorX as Integer
    * 131.12.27 ScalingFactorY as Integer
    * 131.12.28 SizeX as Integer
    * 131.12.29 SizeY as Integer
    * 131.12.30 Technology as Integer
    * 131.12.31 VRefresh as Integer
    * 131.12.33 kTechnologyCharStream = 4
    * 131.12.34 kTechnologyDisplayFile = 6
    * 131.12.35 kTechnologyMetaFile = 5
    * 131.12.36 kTechnologyPlotter = 0
    * 131.12.37 kTechnologyRasterCamera = 3
    * 131.12.38 kTechnologyRasterDisplay = 1
    * 131.12.39 kTechnologyRasterPrinter = 2
• 82 Growl
  – 82.4.1 class WindowsGrowlMBS
    * 82.4.3 Constructor(protocol as Integer, password as string, application as string, notifications() as string)
    * 82.4.4 Constructor(protocol as Integer, server as string, password as string, application as string, notifications() as string)
    * 82.4.5 Notify(notification as string, title as string, message as string)
    * 82.4.6 Notify(notification as string, title as string, message as string, url as string, icon as string)
    * 82.4.8 Application as string
    * 82.4.9 Password as string
    * 82.4.10 Protocol as Integer
    * 82.4.11 Server as string
    * 82.4.13 kGrowlTCP = 1
    * 82.4.14 kGrowlUDP = 0
• 172 Windows

  – 172.17.1 class WindowsGUIResourcesMBS
    * 172.17.3 Constructor
    * 172.17.4 Constructor(ProcessID as integer)
    * 172.17.6 GDIObj ectCount as Integer
    * 172.17.7 GDIObj ectPeak as Integer
    * 172.17.8 LastError as Integer
    * 172.17.9 UserObj ectCount as Integer
    * 172.17.10 UserObj ectPeak as Integer
• 174 Windows ICM
  – 174.1.1 class WindowsICMColorMBS
    * 174.1.3 a as Integer
    * 174.1.4 b as Integer
    * 174.1.5 black as Integer
    * 174.1.6 blue as Integer
    * 174.1.7 ch1 as Integer
    * 174.1.8 ch2 as Integer
    * 174.1.9 ch3 as Integer
    * 174.1.10 cyan as Integer
    * 174.1.11 gray as Integer
    * 174.1.12 green as Integer
    * 174.1.13 Index as Integer
    * 174.1.14 L as Integer
    * 174.1.15 magenta as Integer
    * 174.1.16 red as Integer
    * 174.1.17 XYZ_X as Integer
    * 174.1.18 XYZ_Y as Integer
    * 174.1.19 XYZ_Z as Integer
    * 174.1.20 yellow as Integer
    * 174.1.21 Yxy_x as Integer
    * 174.1.22 Yxy_y as Integer
    * 174.1.23 Yxy_YY as Integer
    * 174.1.24 Channel(index as Integer) as Integer
    * 174.1.26 COLOR_3_CHANNEL = 6
    * 174.1.27 COLOR_5_CHANNEL = 8
    * 174.1.28 COLOR_6_CHANNEL = 9
    * 174.1.29 COLOR_7_CHANNEL = 10
    * 174.1.30 COLOR_8_CHANNEL = 11
    * 174.1.31 COLOR_CMYK = 7
    * 174.1.32 COLOR_GRAY = 1
    * 174.1.33 COLOR_Lab = 5
    * 174.1.34 COLOR_NAMED = 12
    * 174.1.35 COLOR_RGB = 2
    * 174.1.36 COLOR_XYZ = 3
    * 174.1.37 COLOR_Yxy = 4
    * 174.1.38 MAX_COLOR_CHANNELS = 8
  – 174.2.1 class WindowsICMEnumMBS
    * 174.2.3 Attributes0 as Integer
    * 174.2.4 Attributes1 as Integer
    * 174.2.5 Classs as Integer
* 174.2.6 CMMType as Integer
* 174.2.7 ConnectionSpace as Integer
* 174.2.8 Creator as Integer
* 174.2.9 DataColorSpace as Integer
* 174.2.10 DeviceClass as Integer
* 174.2.11 DeviceName as String
* 174.2.12 DitheringMode as Integer
* 174.2.13 Fields as Integer
* 174.2.14 Manufacturer as Integer
* 174.2.15 MediaType as Integer
* 174.2.16 Model as Integer
* 174.2.17 Platform as Integer
* 174.2.18 ProfileFlags as Integer
* 174.2.19 RenderingIntent as Integer
* 174.2.20 ResolutionX as Integer
* 174.2.21 ResolutionY as Integer
* 174.2.22 Signature as Integer
* 174.2.24 ATTRIB_MATTE = 2
* 174.2.25 ATTRIB_TRANSPARENCY = 1
* 174.2.26 CLASS_ABSTRACT = &h61627374
* 174.2.27 CLASS_CAMP = &h6C616D70
* 174.2.28 CLASS_COLORSPACE = &h73706163
* 174.2.29 CLASS_GMMP = &h676D6D70
* 174.2.30 CLASS_LINK = &h6C696E6B
* 174.2.31 CLASS_MONITOR = &h6D6E7472
* 174.2.32 CLASS_NAMED = &h6E6D636C
* 174.2.33 CLASS_PRINTER = &h70727472
* 174.2.34 CLASS_SCANNER = &h73636E72
* 174.2.35 ET_ATTRIBUTES = &h02000
* 174.2.36 ET_CLASS = &h00020
* 174.2.37 ET_CMMTYPE = &h00010
* 174.2.38 ET_CONNECTIONSPACE = &h00080
* 174.2.39 ET_CREATOR = &h08000
* 174.2.40 ET_DATACOLORSPACE = &h00040
* 174.2.41 ET_DEVICECLASS = &h10000
* 174.2.42 ET_DEVICENAME = &h00001
* 174.2.43 ET_DITHERMODE = &h00004
* 174.2.44 ET_MANUFACTURER = &h00080
* 174.2.45 ET_MEDIATYPE = &h00002
* 174.2.46 ET_MODEL = &h01000
* 174.2.47 ET_PLATFORM = &h00200
* 174.2.48 ET_PROFILEFLAGS = &h00400
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* 174.2.49 ET_RENDERINGINTENT = & h040000 20411
* 174.2.50 ET_RESOLUTION = & h000008 20412
* 174.2.51 ET_SIGNATURE = & h001000 20412
* 174.2.52 FLAG_DEPENDENTONDATA = 2 20412
* 174.2.53 FLAG_EMBEDDEDPROFILE = 1 20412
* 174.2.54 FLAG_ENABLE_CHROMATIC_ADAPTATION = & h02000000 20412
* 174.2.55 SigMacintosh = & h4150504C 20412
* 174.2.56 SigMicrosoft = & h4D534654 20412
* 174.2.57 SigSGI = & h53474920 20413
* 174.2.58 SigSolaris = & h53554E57 20413
* 174.2.59 SigTaligent = & h54474E54 20413
* 174.2.60 SPACE_Lab = & h4C616220 20413
* 174.2.61 SPACE_XYZ = & h58595A20 20413

- 174.3.1 class WindowsICMLogColorSpaceMBS
  * 174.3.3 CSType as Integer 20414
  * 174.3.4 EndpointsBX as Integer 20415
  * 174.3.5 EndpointsBY as Integer 20415
  * 174.3.6 EndpointsBZ as Integer 20415
  * 174.3.7 EndpointsGX as Integer 20415
  * 174.3.8 EndpointsGY as Integer 20415
  * 174.3.9 EndpointsGZ as Integer 20415
  * 174.3.10 EndpointsRX as Integer 20416
  * 174.3.11 EndpointsRY as Integer 20416
  * 174.3.12 EndpointsRZ as Integer 20416
  * 174.3.13 Filename as String 20416
  * 174.3.14 GammaBlue as Double 20417
  * 174.3.15 GammaGreen as Double 20417
  * 174.3.16 GammaRed as Double 20417
  * 174.3.17 Intent as Integer 20417
  * 174.3.19 INTENT_ABSOLUTE_COLORIMETRIC = 3 20418
  * 174.3.20 INTENT_PERCEPTUAL = 0 20418
  * 174.3.21 INTENT_RELATIVE_COLORIMETRIC = 1 20418
  * 174.3.22 INTENT_SATURATION = 2 20418
  * 174.3.23 LCS_CALIBRATED_RGB = 0 20418
  * 174.3.24 LCS_sRGB = & h3524742 20418
  * 174.3.25 LCS_WINDOWS_COLOR_SPACE = & h57696E20 20419

- 174.4.1 module WindowsICMModuleMBS
  * 174.4.3 AssociateColorProfileWithDevice(ProfileName as string, DeviceName as string) as boolean 20420
  * 174.4.4 DisassociateColorProfileFromDevice(ProfileName as string, DeviceName as string) as boolean 20421
* 174.4.5 EnumColorProfiles(criteria as WindowsICMEnumMBS) as string() 20421
* 174.4.6 GetColorDirectory as folderitem 20423
* 174.4.7 GetStandardColorSpaceProfile(ProfileID as Integer) as string 20423
* 174.4.8 InstallColorProfile(file as folderitem) as boolean 20424
* 174.4.9 RegisterCMM(cmmID as Integer, file as folderitem) as boolean 20424
* 174.4.10 SelectCMM(cmmID as Integer) as boolean 20425
* 174.4.11 SetStandardColorSpaceProfile(ProfileID as Integer, ProfileName as folderitem) as boolean 20425
* 174.4.12 UninstallColorProfile(ProfileName as string, DeleteFile as boolean = true) as boolean 20426
* 174.4.13 UnregisterCMM(cmmID as Integer) as boolean 20426
* 174.4.15 CMM_DESCRIPTION = 5 20426
* 174.4.16 CMM_DLL_VERSION = 3 20427
* 174.4.17 CMM_DRIVER_VERSION = 2 20427
* 174.4.18 CMM_IDENT = 1 20427
* 174.4.19 CMM_LOGOICON = 6 20427
* 174.4.20 CMM_VERSION = 4 20427
* 174.4.21 CMM_WIN_VERSION = 0 20427
* 174.4.22 LCS_sRGB = & h73524742 20427
* 174.4.23 LCS_WINDOWS_COLOR_SPACE = & h57696E20 20428

– 174.5.1 class WindowsICMNamedProfileInfoMBS 20429
  * 174.5.3 Count as Integer 20429
  * 174.5.4 CountDevCoordinates as Integer 20429
  * 174.5.5 Flags as Integer 20429
  * 174.5.6 Prefix as String 20429
  * 174.5.7 Suffix as String 20430

– 174.6.1 class WindowsICMProfileHeaderMBS 20431
  * 174.6.3 Attributes0 as Integer 20431
  * 174.6.4 Attributes1 as Integer 20431
  * 174.6.5 Classs as Integer 20431
  * 174.6.6 CMMType as Integer 20432
  * 174.6.7 ConnectionSpace as Integer 20433
  * 174.6.8 Creator as Integer 20433
  * 174.6.9 DataColorSpace as Integer 20433
  * 174.6.10 DateTime0 as Integer 20435
  * 174.6.11 DateTime1 as Integer 20435
  * 174.6.12 DateTime2 as Integer 20435
  * 174.6.13 IlluminantX as Integer 20435
  * 174.6.14 IlluminantY as Integer 20435
  * 174.6.15 IlluminantZ as Integer 20435
  * 174.6.16 Manufacturer as Integer 20436
* 174.6.17 Model as Integer
* 174.6.18 Platform as Integer
* 174.6.19 ProfileFlags as Integer
* 174.6.20 RenderingIntent as Integer
* 174.6.21 Signature as Integer
* 174.6.22 Version as Integer
* 174.6.24 ATTRIB_MATTE = 2
* 174.6.25 ATTRIB_TRANSPARENCY = 1
* 174.6.26 CLASS_ABSTRACT = & h61627374
* 174.6.27 CLASS_CAMP = & h6C616D70
* 174.6.28 CLASS_COLORSPACE = & h73706163
* 174.6.29 CLASS_GMMP = & h676D6D70
* 174.6.30 CLASS_LINK = & h6C696E6B
* 174.6.31 CLASS_MONITOR = & h6D6E7472
* 174.6.32 CLASS_NAMED = & h6E6D636C
* 174.6.33 CLASS_PRINTER = & h70727472
* 174.6.34 CLASS_SCANNER = & h73636E72
* 174.6.35 FLAG_DEPENDENTONDATA = 2
* 174.6.36 FLAG_EMBEDDEDPROFILE = 1
* 174.6.37 FLAG_ENABLE_CHROMATIC_ADAPTATION = & h02000000
* 174.6.38 SPACE_2_CHANNEL = & h32434C52
* 174.6.39 SPACE_3_CHANNEL = & h33434C52
* 174.6.40 SPACE_4_CHANNEL = & h34434C52
* 174.6.41 SPACE_5_CHANNEL = & h35434C52
* 174.6.42 SPACE_6_CHANNEL = & h36434C52
* 174.6.43 SPACE_7_CHANNEL = & h37434C52
* 174.6.44 SPACE_8_CHANNEL = & h38434C52
* 174.6.45 SPACE_CMY = & h434D5920
* 174.6.46 SPACE_CMYK = & h434D594B
* 174.6.47 SPACE_GRAY = & h47524159
* 174.6.48 SPACE_HLS = & h484C5320
* 174.6.49 SPACE_HSV = & h48535620
* 174.6.50 SPACE_Lab = & h4C616220
* 174.6.51 SPACE_Luv = & h4C757620
* 174.6.52 SPACE_RGB = & h52474220
* 174.6.53 SPACE_XYZ = & h58595A20
* 174.6.54 SPACE_YCbCr = & h59436272
* 174.6.55 SPACE_Yxy = & h59787920
* 174.7.1 class WindowsICMProfileMBS
  * 174.7.3 ConvertColorNameToIndex(name as string) as Integer
  * 174.7.4 ConvertIndexToColorName(index as Integer) as string
* 174.7.5 CountColorProfileElements as Integer
* 174.7.6 CreateIccProfile(options as Integer = 0) as WindowsICMProfileMBS
* 174.7.7 GetColorProfileElement(tag as Integer) as string
* 174.7.8 GetColorProfileElementTag(index as Integer) as Integer
* 174.7.9 GetNamedProfileInfo as WindowsICMNamedProfileInfoMBS
* 174.7.10 GetProfileData as string
* 174.7.11 IsColorProfileTagPresent(tag as Integer) as boolean
* 174.7.12 IsValid as boolean
* 174.7.13 OpenProfileData(data as string, DesiredAccess as Integer) as WindowsICMProfileMBS
* 174.7.14 OpenProfileFile(file as folderitem, DesiredAccess as Integer, ShareMode as Integer, CreationMode as Integer) as WindowsICMProfileMBS
* 174.7.15 OpenProfilePath(path as string, DesiredAccess as Integer, ShareMode as Integer, CreationMode as Integer) as WindowsICMProfileMBS
* 174.7.16 SetColorProfileHeader(header as WindowsICMProfileHeaderMBS) as boolean
* 174.7.18 ColorProfileHeader as WindowsICMProfileHeaderMBS
* 174.7.19 Handle as Integer
* 174.7.21 CREATE_ALWAYS = 2
* 174.7.22 CREATE_NEW = 1
* 174.7.23 FILE_SHARE_READ = 1
* 174.7.24 FILE_SHARE_WRITE = 2
* 174.7.25 OPEN_ALWAYS = 4
* 174.7.26 OPEN_EXISTING = 3
* 174.7.27 PROFILE_READ = 1
* 174.7.28 PROFILE_READWRITE = 2
* 174.7.29 TRUNCATE_EXISTING = 5
* 174.7.30 WCS_DEFAULT = 0
* 174.7.31 WCS_ICCONLY = & h00010000

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174.8.1 class WindowsICMSetupMBS

* 174.8.3 Setup as boolean
* 174.8.5 DisplayName as String
* 174.8.6 Flags as Integer
* 174.8.7 MonitorProfile as String
* 174.8.8 Parent as Window
* 174.8.9 PrinterName as String
* 174.8.10 PrinterProfile as String
* 174.8.11 ProofingIntent as Integer
* 174.8.12 RenderIntent as Integer
* 174.8.13 SourceName as String
* 174.8.14 TargetProfile as String
* 174.8.16 Apply
* 174.8.17 Idle
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* 174.8.19 CMS_DISABLEICM = 1
* 174.8.20 CMS_DISABLEINTENT = 1024
* 174.8.21 CMS_DISABLE RENDERINTENT = 2048
* 174.8.22 CMS_ENABLEPROOFING = 2
* 174.8.23 CMS_SETMONITORPROFILE = 16
* 174.8.24 CMS_SETINTERPROFILE = 32
* 174.8.25 CMS_SET PROOFINTENT = 5
* 174.8.26 CMS_SETRENDERINTENT = 4
* 174.8.27 CMS_SETTARGETPROFILE = 64
* 174.8.28 CMS_USEAPPLY CALLBACK = 256
* 174.8.29 CMS_USEDESCRIPTION = 512
* 174.8.30 CMS_USEHOOK = 128
* 174.8.31 INTENT ABSOLUTE_COLORIMETRIC = 3
* 174.8.32 INTENT PERCEPTUAL = 0
* 174.8.33 INTENT RELATIVE_COLORIMETRIC = 1
* 174.8.34 INTENT SATURATION = 2

– 174.9.1 class WindowsICMTransformMBS
* 174.9.3 CheckColors(InputColors() as WindowsICMColorMBS, ctInput as Integer, Results() as Integer) as boolean
* 174.9.4 Constructor(LogColorSpace as WindowsICMLogColorSpaceMBS, DestProfile as WindowsICMProfileMBS, TargetProfile as WindowsICMProfileMBS, Flags as Integer)
* 174.9.5 Constructor(Profiles() as WindowsICMProfileMBS, Intents() as Integer, Flags as Integer, indexPreferredCMM as Integer)
* 174.9.6 GetCMMInfo(what as Integer) as Integer
* 174.9.7 TranslateBitmapBits(SrcBits as memoryblock, InputType as Integer, Width as Integer, Height as Integer, InputRowBytes as Integer, DestBits as memoryblock, DestType as Integer, DestRowBytes as Integer) as boolean
* 174.9.8 TranslateColors(InputColors() as WindowsICMColorMBS, ctInput as Integer, OutputColors() as WindowsICMColorMBS, ctOutput as Integer) as boolean
* 174.9.9 TranslatePictures(InputPicture as picture, OutputPicture as picture) as boolean
* 174.9.11 Handle as Integer
* 174.9.13 Progress(Maximum as Integer, Current as Integer) as boolean
* 174.9.15 BEST MODE = 3
* 174.9.16 BM_10b_G3CH = & h0404
* 174.9.17 BM_10b_Lab = & h0403
* 174.9.18 BM_10b_RGB = 9
* 174.9.19 BM_10b_XYZ = & h0401
* 174.9.20 BM_10b_Yxy = & h0402
* 174.9.21 BM_16b_G3CH = & h0504
* 174.9.22 BM_16b_GRAY = & h0505
* 174.9.23 BM_16b_Lab = & h0503
* 174.9.24 BM_16b_RGB = 10
* 174.9.67 FAST_TRANSLATE = & h40000 20479
* 174.9.68 INDEX_DONT_CARE = 0 20479
* 174.9.69 INTENT_ABSOLUTE_COLORIMETRIC = 3 20479
* 174.9.70 INTENT_PERCEPTUAL = 0 20480
* 174.9.71 INTENT_RELATIVE_COLORIMETRIC = 1 20480
* 174.9.72 INTENT_SATURATION = 2 20480
* 174.9.73 NORMAL_MODE = 2 20480
* 174.9.74 PRESERVEBLACK = & h100000 20480
* 174.9.75 PROOF_MODE = 1 20480
* 174.9.76 SEQUENTIAL_TRANSFORM = & h8080000 20480
* 174.9.77 USE_RELATIVE_COLORIMETRIC = & h20000 20481
* 174.9.78 WCS_ALWAYS = & h200000 20481
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    * 172.24.10 Write(Data as MemoryBlock) as Integer
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  - 132.21.1 class WindowsProcessMemoryInfoMBS
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    * 132.21.4 Constructor(ProcessID as Integer)
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    * 132.21.13 QuotaPeakNonPagedPoolUsage as Int64
    * 132.21.14 QuotaPeakPagedPoolUsage as Int64
    * 132.21.15 WorkingSetSize as Int64
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    * 132.22.3 Constructor(ProcessID as Integer = -1, Mode as Integer = 255)
    * 132.22.5 CreationTime as UInt64
    * 132.22.6 CycleTime as UInt64
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    * 132.22.9 KernelTime as UInt64
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  – 172.25.1 class WindowsPropertiesMBS
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    * 172.25.5 Constructor(Win as Window)
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  - 120.58.1 class WindowsProxyMBS
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  - 120.59.1 class WindowsQOSMBS
    * 120.59.3 AddSocketToFlow(Socket as Integer, DestAddr as string, DestPort as Integer, TrafficType as Integer, Flags as Integer, byref FlowId as UInt32) as boolean
    * 120.59.4 AddSocketToFlow(Socket as Integer, TrafficType as Integer, Flags as Integer, byref FlowId as UInt32) as boolean
    * 120.59.5 Constructor
    * 120.59.6 getFlowFundamentals(FlowID as Integer, byref BottleneckBandwidthSet as boolean, byref BottleneckBandwidth as UInt64, byref AvailableBandwidthSet as boolean, byref AvailableBandwidth as UInt64, byref RTTSet as boolean, byref RTT as UInt32, Flags as Integer = 0) as boolean
    * 120.59.7 getOutgoingRate(FlowID as Integer, byref Bandwidth as UInt64, Flags as Integer = 0) as boolean
    * 120.59.8 getPacketPriority(FlowID as Integer, byref ConformantDSCPValue as Integer, byref NonConformantDSCPValue as Integer, byref ConformantL2Value as Integer, byref NonConformantL2Value as Integer, Flags as Integer = 0) as boolean
    * 120.59.9 RemoveAllSocketsFromFlow(FlowID as Integer) as boolean
    * 120.59.10 RemoveSocketFromFlow(socketHandle as Integer, FlowID as Integer) as boolean
    * 120.59.11 setOutgoingDSCPValue(FlowID as Integer, OutgoingDSCPValue as Integer, Flags as Integer = 0) as boolean
    * 120.59.12 setOutgoingRate(FlowID as Integer, Bandwidth as UInt64, ShapingBehavior as Integer, Reason as Integer, Flags as Integer = 0) as boolean
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    * 120.59.22 QOSFlowRateContentChange = 1
    * 120.59.23 QOSFlowRateHigherContentEncoding = 3
    * 120.59.24 QOSFlowRateNotApplicable = 0
    * 120.59.25 QOSFlowRateUserCaused = 4
    * 120.59.26 QOSNonAdaptiveFlow = 2
    * 120.59.27 QOSQueryFlowFresh = 1
    * 120.59.28 QOSShapeAndMark = 1
    * 120.59.29 QOSShapeOnly = 0
* 120.59.30 QOSTrafficTypeAudioVideo = 3
* 120.59.31 QOSTrafficTypeBackground = 1
* 120.59.32 QOSTrafficTypeBestEffort = 0
* 120.59.33 QOSTrafficTypeControl = 5
* 120.59.34 QOSTrafficTypeExcellentEffort = 2
* 120.59.35 QOSTrafficTypeVoice = 4
* 120.59.36 QOSUseNonConformantMarkings = 2
• 172 Windows
  
  – 172.27.1 class WindowsScriptErrorMBS  
    * 172.27.3 Column as Integer  
    * 172.27.4 Description as String  
    * 172.27.5 Line as Integer  
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    * 172.27.7 Source as String  
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  – 172.28.1 class WindowsScriptMBS  
    * 172.28.3 AddCode(code as string)  
    * 172.28.4 ClearError  
    * 172.28.5 Eval(code as string) as string  
    * 172.28.6 ExecuteStatement(statement as string)  
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    * 172.28.8 Run(functionName as string, parameters() as string) as string  
    * 172.28.10 AllowUI as Boolean  
    * 172.28.11 Error as WindowsScriptErrorMBS  
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    * 172.28.13 Lasterror as Integer  
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    * 172.28.15 Timeout as Integer  
    * 172.28.16 UseSafeSubset as Boolean  
    * 172.28.17 kLanguageJScript = "JScript"  
    * 172.28.18 kLanguageVBScript = "VBScript"  
  
  – 172.29.1 class WindowsSerialPortsMBS  
    * 172.29.3 Constructor(OnlyPresent as boolean = true)  
    * 172.29.4 Description(index as Integer) as string  
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  - 177.2.1 class WindowsShortCutMBS

    * 177.2.3 CreateShortCut as boolean
    * 177.2.4 ResolveShortCut(DisableGUI as boolean=false, DisableSearch as boolean=false) as boolean
    * 177.2.6 Arguments as string
    * 177.2.7 Command as Integer
    * 177.2.8 Description as String
    * 177.2.9 Icon as String
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  - 178.2.1 class WindowsSystemTrayMBS
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    * 178.2.8 SetIconFile(IconFile as Folderitem, IconID as Integer) as boolean
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    * 132.4.2 CallMethodLaterMBS(target as object, name as string, afterDelay as Double, value1 as Variant) as boolean
    * 132.4.3 CallMethodLaterMBS(target as object, name as string, afterDelay as Double, value1 as Variant, value2 as Variant) as boolean
    * 132.4.4 CallMethodLaterMBS(target as object, name as string, afterDelay as Double, value1 as Variant, value2 as Variant, value3 as Variant) as boolean
    * 132.4.5 CallMethodMBS(target as object, name as string) as boolean
    * 132.4.6 CallMethodMBS(target as object, name as string, value1 as Variant) as boolean
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    * 75.30.13 Serial as Integer
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    * 75.30.16 SupportsUnicodeFilenames as boolean
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• 172 Windows

  172.32.1 class WindowsWMIMBS
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    * 172.32.4 ConnectServer(NetworkResource as string, Username as string="", Password as string="", Locale as string="", Authority as string="") as boolean
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    * 172.32.6 ExecNotificationQueryAsync(QueryLanguage as string, QueryText as string) as boolean
    * 172.32.7 InitAuthentication(User as string, Domain as string, Password as string) as boolean
    * 172.32.8 InitSecurity(AuthnLevel as Integer, ImpLevel as Integer) as boolean
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    * 172.32.21 kAuthenticationLevelPacket = 4
    * 172.32.22 kAuthenticationLevelPacketIntegrity = 5
    * 172.32.23 kAuthenticationLevelPacketPrivacy = 6
    * 172.32.24 kImpersonationLevelAnonymous = 1
    * 172.32.25 kImpersonationLevelDefault = 0
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    * 172.32.27 kImpersonationLevelIdentity = 2
    * 172.32.28 kImpersonationLevelImpersonate = 3

  172.33.1 class WinExceptionMBS
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    * 172.33.8 ExceptionIsNonContinuable as Boolean
    * 172.33.9 ExceptionName as String
    * 172.33.11 GotException() as Integer
    * 172.33.13 kContinueCode = 2
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    * 172.33.15 kExceptionArrayBoundsExceeded = & hC000008C
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* 172.33.31 kExceptionPrivilegedInstruction = & hC0000096 20340
* 172.33.32 kExceptionSingleStep = & h80000004 20340
* 172.33.33 kExceptionStackOverflow = & hC00000FD 20340
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– 172.34.1 class WinGestureConfigMBS

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* 172.34.19 kPanWithSingleFingerVertically = 2 20346
* 172.34.20 kPressAndTap = 1 20346
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* 172.34.22 kTwoFingerTap = 1 20346
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172.35.1 class WinGestureInfoMBS
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  * 172.35.5 Arguments as Int64
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  * 172.35.9 ID as Integer
  * 172.35.10 InstanceID as Integer
  * 172.35.11 LocationInWindowX as Integer
  * 172.35.12 LocationInWindowY as Integer
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  * 172.35.15 RotateAngle as Double
  * 172.35.16 SequenceID as Integer
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  * 172.35.19 kFlagBegin = 1
  * 172.35.20 kFlagEnd = 4
  * 172.35.21 kFlagInertia = 2
  * 172.35.22 kGestureIDBegin = 1
  * 172.35.23 kGestureIDEnd = 2
  * 172.35.24 kGestureIDPan = 4
  * 172.35.25 kGestureIDPressAndTap = 7
  * 172.35.26 kGestureIDRotate = 5
  * 172.35.27 kGestureIDTwoFingerTap = 6
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• 167 USB
  
  – 167.19.1 class WinHIDMBS
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    * 167.19.5 DevicePath as string
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    * 167.19.9 GetInputReport(data as MemoryBlock, Offset as Integer = 0, Length as Integer = 0) as boolean
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    * 167.19.16 ReadMessage(length as Integer, timeOut as Integer = 0) as string
    * 167.19.17 ReadMessageMemory(length as Integer, timeOut as Integer = 0) as memoryblock
    * 167.19.18 SendMessage(data as string) as Integer
    * 167.19.19 SendMessageMemory(data as memoryblock, Offset as Integer = 0, length as Integer = 0) as Integer
    * 167.19.20 SerialNumber as string
    * 167.19.21 SetOutputReport(data as MemoryBlock, Offset as Integer = 0, Length as Integer = 0) as boolean
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    * 167.19.23 VersionNumber as Integer
    * 167.19.25 FeatureReportByteLength as Integer
    * 167.19.26 HidHandle as Integer
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    * 167.19.31 PnPHandle as Integer
    * 167.19.32 ReadHandle as Integer
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  - **120.60.1** class *WinHTTPClientAutoProxyOptionsMBS*
    * 120.60.3 Constructor
    * 120.60.5 AutoConfigUrl as String
    * 120.60.6 AutoDetectFlags as Integer
    * 120.60.7 AutoLogonIfChallenged as Boolean
    * 120.60.8 Flags as Integer
    * 120.60.10 kAutoDetectTypeDHCP = 1
    * 120.60.11 kAutoDetectTypeDNSA = 2
    * 120.60.12 kAutoProxyAutoDetect = 1
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- **181 Wordfile**
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    - 181.1.3 Append(other as WordFileMBS) as Boolean
    - 181.1.4 AppendTableRow(tag as string) as Integer
    - 181.1.5 Constructor
    - 181.1.6 DuplicateTableRow(tag as string) as Integer
    - 181.1.7 FieldNames as String()
    - 181.1.8 GetFieldText(fieldName as string, byref text as String) as boolean
    - 181.1.9 HasTag(tag as string) as boolean
    - 181.1.10 MediaFiles as String()
    - 181.1.11 OpenData(Data as MemoryBlock) as WordFileMBS
    - 181.1.12 OpenData(Data as String) as WordFileMBS
    - 181.1.13 OpenXML(XML as String) as WordFileMBS
    - 181.1.14 Parts as String()
    - 181.1.15 RemoveTableRow(tag as string) as Integer
    - 181.1.16 ReplaceTag(tag as string, text as string = "", All as boolean = false) as boolean
    - 181.1.17 SetFieldText(fieldName as string, text as String) as boolean
    - 181.1.18 SetMarkers(openMarker as String, closeMarker as String) as boolean
    - 181.1.19 WriteFile(path as folderItem) as boolean
    - 181.1.21 Caseless as Boolean
    - 181.1.22 CloseMarker as String
    - 181.1.23 OpenMarker as String
    - 181.1.24 Text as String
    - 181.1.25 XML as String
    - 181.1.26 MediaFile(name as string) as String
    - 181.1.27 XML(part as String) as String
• 182 X-Face
  – 182.1 Globals
    * 182.1.1 PictureFromXFaceMemoryBlockMBS(xface as memoryblock) as picture
    * 182.1.2 PictureFromXFaceMemoryBlockMBS(xface as memoryblock, size as Integer) as picture
    * 182.1.3 PictureFromXFaceStringMBS(xface as string) as picture
    * 182.1.4 XFaceStringFromPictureMBS(pic as picture) as string
- 72 Encryption and Hash
  - 72.34.1 class X509MBS
    * 72.34.3 Constructor
    * 72.34.4 Copy as X509MBS
    * 72.34.5 Data as String
    * 72.34.6 Open(Data as MemoryBlock) as X509MBS
    * 72.34.7 Open(Data as String) as X509MBS
    * 72.34.8 ReadFromPkcs12(Data as String, Pass as String, byref PKey as PKeyMBS, byref Cert as X509MBS, byref certs() as X509MBS) as Boolean
    * 72.34.10 Description as String
    * 72.34.11 Handle as Integer
    * 72.34.12 IssuerName as Dictionary
    * 72.34.13 Name as String
    * 72.34.14 PublicKey as PKeyMBS
    * 72.34.15 SerialNumber as String
    * 72.34.16 SubjectName as Dictionary
    * 72.34.17 Version as Integer
• 183 XL

  – 183.1.1 class XLAutoFilterMBS
    * 183.1.3 Column(colId as Integer) as XLFilterColumnMBS
    * 183.1.4 ColumnByIndex(colId as Integer) as XLFilterColumnMBS
    * 183.1.5 ColumnSize as Integer
    * 183.1.6 Constructor
    * 183.1.7 GetRef(byref rowFirst as Integer, byref rowLast as Integer, byref colFirst as Integer, byref colLast as Integer) as Boolean
    * 183.1.8 GetSort(byref columnIndex as Integer, byref descending as Boolean) as Boolean
    * 183.1.9 GetSortRange(byref rowFirst as Integer, byref rowLast as Integer, byref colFirst as Integer, byref colLast as Integer) as Boolean
    * 183.1.10 SetRef(rowFirst as Integer, rowLast as Integer, colFirst as Integer, colLast as Integer)
    * 183.1.11 SetSort(columnIndex as Integer, descending as Boolean)
    * 183.1.13 Handle as Integer
    * 183.1.14 Owner as Variant

  – 183.2.1 class XLBookMBS
    * 183.2.3 AddCustomNumFormat(customNumFormat as string) as Integer
    * 183.2.4 AddFont(initFont as XLFontMBS = nil) as XLFontMBS
    * 183.2.5 AddFormat(initFormat as XLFormatMBS = nil) as XLFormatMBS
    * 183.2.6 AddPicture(path as folderitem) as Integer
    * 183.2.7 AddPicture(path as string) as Integer
    * 183.2.8 AddPictureData(data as string) as Integer
    * 183.2.9 AddSheet(name as string = "", initSheet as XLSheetMBS = nil) as XLSheetMBS
    * 183.2.10 available as boolean
    * 183.2.11 BiffVersion as Integer
    * 183.2.12 BookVersion as Integer
    * 183.2.13 Constructor(xml as boolean = false)
    * 183.2.14 CopyContent(dest as XLBookMBS)
    * 183.2.15 CustomNumFormat(fnt as Integer) as string
    * 183.2.16 DefaultFont(byref fontSize as Integer) as string
    * 183.2.17 DelSheet(index as Integer) as boolean
    * 183.2.18 Font(index as Integer) as XLFontMBS
    * 183.2.19 FontCount as Integer
    * 183.2.20 Fonts as XLFontMBS()
    * 183.2.21 Format(index as Integer) as XLFormatMBS
    * 183.2.22 FormatCount as Integer
    * 183.2.23 Formats as XLFormatMBS()
    * 183.2.24 InsertSheet(index as Integer, name as string = "", initSheet as XLSheetMBS = nil) as XLSheetMBS
* 183.2.25 LibVersion as string
* 183.2.26 LibVersionNumber as Integer
* 183.2.27 Load(path as folderitem) as boolean
* 183.2.28 Load(path as string) as boolean
* 183.2.29 Load2(path as folderitem) as XLBookMBS
* 183.2.30 Load2(path as folderitem, byref ErrorMessage as String) as XLBookMBS
* 183.2.31 Load2(path as string) as XLBookMBS
* 183.2.32 Load2(path as string, byref ErrorMessage as String) as XLBookMBS
* 183.2.33 LoadError as String
* 183.2.34 LoadLibrary(File as FolderItem) as boolean
* 183.2.35 LoadLibrary(Path as string) as boolean
* 183.2.36 LoadMT(path as folderitem) as boolean
* 183.2.37 LoadMT(path as string) as boolean
* 183.2.38 LoadPartially(path as folderitem, sheetIndex as Integer, firstRow as Integer, lastRow as Integer) as boolean
* 183.2.39 LoadPartially(path as string, sheetIndex as Integer, firstRow as Integer, lastRow as Integer) as boolean
* 183.2.40 LoadPartiallyUsingTempFile(path as folderitem, sheetIndex as Integer, firstRow as Integer, lastRow as Integer, TempFile as folderitem) as boolean
* 183.2.41 LoadPartiallyUsingTempFile(path as string, sheetIndex as Integer, firstRow as Integer, lastRow as Integer, TempFile as String) as boolean
* 183.2.42 LoadRaw(data as MemoryBlock) as boolean
* 183.2.43 LoadRaw(data as string) as boolean
* 183.2.44 LoadRaw2(data as MemoryBlock) as XLBookMBS
* 183.2.45 LoadRaw2(data as MemoryBlock, byref ErrorMessage as String) as XLBookMBS
* 183.2.46 LoadRaw2(data as string) as XLBookMBS
* 183.2.47 LoadRaw2(data as string, byref ErrorMessage as String) as XLBookMBS
* 183.2.48 LoadRawMT(data as MemoryBlock) as boolean
* 183.2.49 LoadRawMT(data as string) as boolean
* 183.2.50 LoadRawPartially(data as MemoryBlock, sheetIndex as Integer, firstRow as Integer, lastRow as Integer) as boolean
* 183.2.51 LoadRawPartially(data as string, sheetIndex as Integer, firstRow as Integer, lastRow as Integer) as boolean
* 183.2.52 LoadUsingTempFile(path as folderitem, TempFile as folderitem) as boolean
* 183.2.53 LoadUsingTempFile(path as string, TempFile as String) as boolean
* 183.2.54 MoveSheet(SourceIndex as integer, DestIndex as Integer) as boolean
* 183.2.55 PackColor(ColorValue as color) as Integer
* 183.2.56 PackColor(red as Integer, green as Integer, blue as Integer) as Integer
* 183.2.57 PackDate(d as date) as Double
* 183.2.58 PackDate(year as Integer, month as Integer, day as Integer, hour as Integer = 0, min as Integer = 0, sec as Integer = 0, msec as Integer = 0) as Double
* 183.2.59 Picture(index as Integer, byref data as string) as Integer
+ 183.2.60 PictureCount as Integer  
+ 183.2.61 Save(path as folderitem) as boolean  
+ 183.2.62 Save(path as folderitem, UseTempFile as Boolean) as boolean  
+ 183.2.63 Save(path as string) as boolean  
+ 183.2.64 Save(path as string, UseTempFile as Boolean) as boolean  
+ 183.2.65 SaveMT(path as folderitem) as boolean  
+ 183.2.66 SaveMT(path as string) as boolean  
+ 183.2.67 SaveRaw(byref data as MemoryBlock) as boolean  
+ 183.2.68 SaveRaw(byref data as string) as boolean  
+ 183.2.69 SaveRawMT(byref data as MemoryBlock) as boolean  
+ 183.2.70 SaveRawMT(byref data as string) as boolean  
+ 183.2.71 SetDefaultFont(fontName as string, fontSize as Integer)  
+ 183.2.72 SetKey(name as string, key as string)  
+ 183.2.73 SetKeyGlobal(name as string, key as string)  
+ 183.2.74 SetLocale(locale as string)  
+ 183.2.75 Sheet(index as Integer) as XLSheetMBS  
+ 183.2.76 SheetCount as Integer  
+ 183.2.77 Sheets as XLSheetMBS()  
+ 183.2.78 SheetType(index as Integer) as Integer  
+ 183.2.79 UnpackColor(ColorValue as Integer) as color  
+ 183.2.80 UnpackColor(ColorValue as Integer, byref red as Integer, byref green as Integer, byref blue as Integer)  
+ 183.2.81 UnpackDate(Value as Double) as date  
+ 183.2.82 UnpackDate(Value as Double, byref year as Integer, byref month as Integer, byref day as Integer) as boolean  
+ 183.2.83 UnpackDate(Value as Double, byref year as Integer, byref month as Integer, byref day as Integer, byref hour as Integer, byref min as Integer, byref sec as Integer) as boolean  
+ 183.2.84 UnpackDate(Value as Double, byref year as Integer, byref month as Integer, byref day as Integer, byref hour as Integer, byref min as Integer, byref sec as Integer, byref msec as Integer) as boolean  
+ 183.2.86 ErrorMessage as string  
+ 183.2.87 Handle as Integer  
+ 183.2.88 ActiveSheet as Integer  
+ 183.2.89 IsDate1904 as boolean  
+ 183.2.90 IsTemplate as boolean  
+ 183.2.91 RefR1C1 as Integer  
+ 183.2.92 RgbMode as boolean  
+ 183.2.94 PictureTypeDIB = 4  
+ 183.2.95 PictureTypeEMF = 5  
+ 183.2.96 PictureTypeError = & hFF  
+ 183.2.97 PictureTypeGIF = 2  
+ 183.2.98 PictureTypeJPEG = 1
### 183.2.99 PictureTypePICT = 6
* 183.2.100 PictureTypePNG = 0
* 183.2.101 PictureTypeTIFF = 7
* 183.2.102 PictureTypeWMF = 3
* 183.2.103 SheetTypeChart = 1
* 183.2.104 SheetTypeSheet = 0
* 183.2.105 SheetTypeUnknown = 2

### 183.3.1 class XLFilterColumnMBS
* 183.3.3 AddFilter(Filter as String)
* 183.3.4 Clear
* 183.3.5 Constructor
* 183.3.6 Filter(index as Integer) as String
* 183.3.7 FilterSize as Integer
* 183.3.8 FilterType as Integer
* 183.3.9 GetCustomFilterEx(byref Op1 as Integer, byref Value1 as String, byref Op2 as Integer, byref Value2 as String, byref andOp as Boolean) as boolean
* 183.3.10 GetTop10(byref value as Double, byref top as boolean, byref percent as boolean) as boolean
* 183.3.11 Index as Integer
* 183.3.12 SetCustomFilter(Op as Integer, Value as String)
* 183.3.13 SetCustomFilterEx(Op1 as Integer, Value1 as String, Op2 as Integer, Value2 as String, andOp as Boolean = false)
* 183.3.14 SetTop10(value as Double, top as boolean = true, percent as boolean = false)
* 183.3.16 Handle as Integer
* 183.3.17 Owner as Variant
* 183.3.19 FilterColor = 4
* 183.3.20 FilterCustom = 2
* 183.3.21 FilterDynamic = 3
* 183.3.22 FilterExt = 6
* 183.3.23 FilterIcon = 5
* 183.3.24 FilterNotSet = 7
* 183.3.25 FilterTop10 = 1
* 183.3.26 FilterValue = 0
* 183.3.27 OperatorEqual = 0
* 183.3.28 OperatorGreaterThan = 1
* 183.3.29 OperatorGreaterThanOrEqual = 2
* 183.3.30 OperatorLessThan = 3
* 183.3.31 OperatorLessThanOrEqual = 4
* 183.3.32 OperatorNotEqual = 5

### 183.4.1 class XLFontMBS
* 183.4.3 Constructor
* 183.4.5 Handle as Integer
* 183.4.6 Owner as Variant
* 183.4.7 Bold as Boolean
* 183.4.8 ColorValue as Integer
* 183.4.9 Italic as Boolean
* 183.4.10 Name as string
* 183.4.11 Script as Integer
* 183.4.12 Size as Integer
* 183.4.13 StrikeOut as Boolean
* 183.4.14 Underline as Integer
* 183.4.16 ColorAqua = 49
* 183.4.17 ColorAuto = & h7Fff
* 183.4.18 ColorBlack = 8
* 183.4.19 ColorBlue = 12
* 183.4.20 ColorBlueCl = 39
* 183.4.21 ColorBluegray = 54
* 183.4.22 ColorBrightgreen = 11
* 183.4.23 ColorBrown = 60
* 183.4.24 ColorCoralCf = 29
* 183.4.25 ColorDarkblue = 18
* 183.4.26 ColorDarkblueCl = 32
* 183.4.27 ColorDarkgreen = 58
* 183.4.28 ColorDarkpurpleCf = 28
* 183.4.29 ColorDarkred = 16
* 183.4.30 ColorDarkredCl = 37
* 183.4.31 ColorDarkteal = 56
* 183.4.32 ColorDarkyellow = 19
* 183.4.33 ColorDefaultBackground = 65
* 183.4.34 ColorDefaultForeground = 64
* 183.4.35 ColorGold = 51
* 183.4.36 ColorGray25 = 22
* 183.4.37 ColorGray40 = 55
* 183.4.38 ColorGray50 = 23
* 183.4.39 ColorGray80 = 63
* 183.4.40 ColorGreen = 17
* 183.4.41 ColorIceblueCf = 31
* 183.4.42 ColorIndigo = 62
* 183.4.43 ColorIvoryCf = 26
* 183.4.44 ColorLavender = 46
* 183.4.45 ColorLightblue = 48
* 183.4.46 ColorLightgreen = 42
* 183.4.47 ColorLightorange = 52
* 183.4.48 ColorLightturquoise = 41
* 183.4.49 ColorLightturquoiseCf = 27
* 183.4.50 ColorLightyellow = 43
* 183.4.51 ColorLime = 50
* 183.4.52 ColorNone = & H7F
* 183.4.53 ColorOceanblueCf = 30
* 183.4.54 ColorOlivegreen = 59
* 183.4.55 ColorOrange = 53
* 183.4.56 ColorPaleblue = 44
* 183.4.57 ColorPeriwinkleCf = 24
* 183.4.58 ColorPink = 14
* 183.4.59 ColorPinkCl = 33
* 183.4.60 ColorPlum = 61
* 183.4.61 ColorPlumCf = 25
* 183.4.62 ColorRed = 10
* 183.4.63 ColorRose = 45
* 183.4.64 ColorSeagreen = 57
* 183.4.65 ColorSkyblue = 40
* 183.4.66 ColorTan = 47
* 183.4.67 ColorTeal = 21
* 183.4.68 ColorTealCl = 38
* 183.4.69 ColorTooltip = 81
* 183.4.70 ColorTurquoise = 15
* 183.4.71 ColorTurquoiseCl = 35
* 183.4.72 ColorViolet = 20
* 183.4.73 ColorVioletCl = 36
* 183.4.74 ColorWhite = 9
* 183.4.75 ColorYellow = 13
* 183.4.76 ColorYellowCl = 34
* 183.4.77 ScriptNormal = 0
* 183.4.78 ScriptSub = 2
* 183.4.79 ScriptSuper = 1
* 183.4.80 UnderlineDouble = 2
* 183.4.81 UnderlineDoubleacc = & H22
* 183.4.82 UnderlineNone = 0
* 183.4.83 UnderlineSingle = 1
* 183.4.84 UnderlineSingleacc = & H21

– 183.5.1 class XLFormatMBS
* 183.5.6 SetBorderColor(ColorValue as Integer) 20608
* 183.5.7 SetFont(font as XLFontMBS) as boolean 20608
* 183.5.8 SetRotation(rotation as Integer) as boolean 20608
* 183.5.10 Handle as Integer 20609
* 183.5.11 Owner as Variant 20609
* 183.5.12 AlignH as Integer 20609
* 183.5.13 AlignV as Integer 20609
* 183.5.14 BorderBottom as Integer 20610
* 183.5.15 BorderBottomColor as Integer 20610
* 183.5.16 BorderDiagonal as Integer 20610
* 183.5.17 BorderDiagonalColor as Integer 20610
* 183.5.18 BorderDiagonalStyle as Integer 20611
* 183.5.19 BorderLeft as Integer 20611
* 183.5.20 BorderLeftColor as Integer 20611
* 183.5.21 BorderRight as Integer 20611
* 183.5.22 BorderRightColor as Integer 20612
* 183.5.23 BorderTop as Integer 20612
* 183.5.24 BorderTopColor as Integer 20612
* 183.5.25 FillPattern as Integer 20612
* 183.5.26 Font as XLFontMBS 20613
* 183.5.27 Hidden as boolean 20613
* 183.5.28 Indent as Integer 20613
* 183.5.29 Locked as boolean 20614
* 183.5.30 NumFormat as Integer 20614
* 183.5.31 PatternBackgroundColor as Integer 20614
* 183.5.32 PatternForegroundColor as Integer 20614
* 183.5.33 ShrinkToFit as boolean 20615
* 183.5.34 Wrap as boolean 20615
* 183.5.36 AlignHCenter = 2 20615
* 183.5.37 AlignH Distributed = 7 20615
* 183.5.38 AlignH Fill = 4 20615
* 183.5.39 AlignH General = 0 20616
* 183.5.40 AlignH Justify = 5 20616
* 183.5.41 AlignH Left = 1 20616
* 183.5.42 AlignH Merge = 6 20616
* 183.5.43 AlignH Right = 3 20616
* 183.5.44 AlignV Bottom = 2 20616
* 183.5.45 AlignV Center = 1 20616
* 183.5.46 AlignVDistributed = 4 20617
* 183.5.47 AlignV Justify = 3 20617
* 183.5.48 AlignV Top = 0 20617
* 183.5.49 BorderDiagonalBoth = 3 20617
* 183.5.50 BorderDiagonalDown = 1
* 183.5.51 BorderDiagonalNone = 0
* 183.5.52 BorderDiagonalUp = 2
* 183.5.53 BorderStyleDashdot = 9
* 183.5.54 BorderStyleDashdotdot = 11
* 183.5.55 BorderStyleDashed = 3
* 183.5.56 BorderStyleDotted = 4
* 183.5.57 BorderStyleDouble = 6
* 183.5.58 BorderStyleHair = 7
* 183.5.59 BorderStyleMedium = 2
* 183.5.60 BorderStyleMediumdashdot = 10
* 183.5.61 BorderStyleMediumdashdotdot = 12
* 183.5.62 BorderStyleMediumdashed = 8
* 183.5.63 BorderStyleNone = 0
* 183.5.64 BorderStyleSlantdashdot = 13
* 183.5.65 BorderStyleThick = 5
* 183.5.66 BorderStyleThin = 1
* 183.5.67 FillPatternDiagcrosshatch = 9
* 183.5.68 FillPatternDiagstripe = 8
* 183.5.69 FillPatternGray12P5 = 17
* 183.5.70 FillPatternGray25 = 4
* 183.5.71 FillPatternGray50 = 2
* 183.5.72 FillPatternGray6P25 = 18
* 183.5.73 FillPatternGray75 = 3
* 183.5.74 FillPatternHorstripe = 5
* 183.5.75 FillPatternNone = 0
* 183.5.76 FillPatternRevdiagstripe = 7
* 183.5.77 FillPatternSolid = 1
* 183.5.78 FillPatternThickdiagcrosshatch = 10
* 183.5.79 FillPatternThindiagcrosshatch = 16
* 183.5.80 FillPatternThindiagstripe = 14
* 183.5.81 FillPatternThinhorcrosshatch = 15
* 183.5.82 FillPatternThinhorstripe = 11
* 183.5.83 FillPatternThinrevdiagstripe = 13
* 183.5.84 FillPatternThinverstripe = 12
* 183.5.85 FillPatternVerstripe = 6
* 183.5.86 NumformatAccount = 41
* 183.5.87 NumformatAccountCur = 42
* 183.5.88 NumformatAccountD2 = 43
* 183.5.89 NumformatAccountD2Cur = 44
* 183.5.90 NumformatCurrencyD2Negbra = 7
* 183.5.91 NumformatCurrencyD2NegbraRed = 8
* 183.5.92 NumformatCurrencyNegbra = 5
* 183.5.93 NumformatCurrencyNegbraRed = 6
* 183.5.94 NumformatCustom000P0EPus0 = 48
* 183.5.95 NumformatCustomDMon = 16
* 183.5.96 NumformatCustomDMonYY = 15
* 183.5.97 NumformatCustomH0MMSS = 46
* 183.5.98 NumformatCustomHMM = 20
* 183.5.99 NumformatCustomHMMAM = 18
* 183.5.100 NumformatCustomHMMSS = 21
* 183.5.101 NumformatCustomHMMSSAM = 19
* 183.5.102 NumformatCustomMDYYYYHMM = 22
* 183.5.103 NumformatCustomMMSS = 45
* 183.5.104 NumformatCustomMMSS0 = 47
* 183.5.105 NumformatCustomMonYY = 17
* 183.5.106 NumformatDate = 14
* 183.5.107 NumformatFractionOneDig = 12
* 183.5.108 NumformatFractionTwoDig = 13
* 183.5.109 NumformatGeneral = 0
* 183.5.110 NumformatNumber = 1
* 183.5.111 NumformatNumberD2 = 2
* 183.5.112 NumformatNumberD2SepNegbra = 39
* 183.5.113 NumformatNumberD2SepNegbraRed = 40
* 183.5.114 NumformatNumberSep = 3
* 183.5.115 NumformatNumberSepD2 = 4
* 183.5.116 NumformatNumberSepNegbra = 37
* 183.5.117 NumformatNumberSepNegbraRed = 38
* 183.5.118 NumformatPercent = 9
* 183.5.119 NumformatPercentD2 = 10
* 183.5.120 NumformatScientificD2 = 11
* 183.5.121 NumformatText = 49

– 183.6.1 class XLSheetMBS

* 183.6.3 AddDataValidation(type as Integer, op as integer, rowFirst as integer, colFirst as integer, rowLast as integer, colLast as integer, value1 as String, value2 as String) 20629
* 183.6.4 AddDataValidation(type as Integer, op as integer, rowFirst as integer, colFirst as integer, rowLast as integer, colLast as integer, value1 as String, value2 as String, allowBlank as Boolean, hideDropDown as Boolean = false, showInputMessage as Boolean = true, showErrorMessage as Boolean = true, promptTitle as String = "", prompt as String = "", errorTitle as string = "", error as string = "", errorStyle as integer = 0) 20630
* 183.6.5 AddDataValidationDouble(type as Integer, op as integer, rowFirst as integer, colFirst as integer, rowLast as integer, colLast as integer, value1 as Double, value2 as Double) 20630
* 183.6.6 AddDataValidationDouble(type as Integer, op as integer, rowFirst as integer, colFirst as integer, rowLast as integer, colLast as integer, value1 as Double, value2 as Double, allowBlank as Boolean, hideDropDown as Boolean = false, showInputMessage as Boolean = true, allowBlank as Boolean, hideDropDown as Boolean = false, showInputMessage as Boolean = true,
showErrorMessage as Boolean = true, promptTitle as String = "", prompt as String = "",
errorTitle as string = "", error as string = "", errorStyle as integer = 0) 20631
* 183.6.7 AddHyperlink(hyperlink as string, rowFirst as Integer, rowLast as Integer, colFirst
as Integer, colLast as Integer) 20631
* 183.6.8 AddIgnoredError(rowFirst as Integer, colFirst as Integer, rowLast as Integer, colLast
as Integer, iError as Integer) 20631
* 183.6.9 AddrToRowCol(addr as string, byref row as Integer, byref col as Integer, byref rowRelative
as boolean, byref colRelative as boolean) 20632
* 183.6.10 ApplyFilter 20632
* 183.6.11 AutoFilter as XLAutoFilterMBS 20632
* 183.6.12 CellType(row as Integer, col as Integer) as Integer 20632
* 183.6.13 Clear(rowFirst as Integer = 0, rowLast as Integer = 1048575, colFirst as Integer =
0, colLast as Integer = 16383) 20633
* 183.6.14 ClearPrintArea 20633
* 183.6.15 ClearPrintRepeats 20633
* 183.6.16 ColWidth(col as Integer) as Double 20633
* 183.6.17 Constructor 20633
* 183.6.18 CopyCell(rowSrc as Integer, colSrc as Integer, rowDst as Integer, colDst as Integer)
as boolean 20633
* 183.6.19 CopyRow(dest as XLSheetMBS, SourceRow as Integer, DestRow as Integer) 20634
* 183.6.20 CopySheet(dest as XLBookMBS) 20634
* 183.6.21 CopySheet(dest as XLSheetMBS) 20634
* 183.6.22 DelHyperlink(index as Integer) as Boolean 20634
* 183.6.23 DelMerge(row as Integer, col as Integer) as boolean 20635
* 183.6.24 DelMergeByIndex(index as Integer) as Boolean 20635
* 183.6.25 DelNamedRange(name as string, scopeId as Integer = -2) as boolean 20635
* 183.6.26 FirstCol as Integer 20635
* 183.6.27 FirstRow as Integer 20635
* 183.6.28 Footer as string 20635
* 183.6.29 FooterMargin as Double 20636
* 183.6.30 GetHorPageBreak(index as Integer) as Integer 20636
* 183.6.31 GetHorPageBreakCount as Integer 20637
* 183.6.32 GetMerge(row as Integer, col as Integer, byref rowFirst as Integer, byref rowLast as
Integer, byref colFirst as Integer, byref colLast as Integer) as boolean 20637
* 183.6.33 GetNamedRange(name as string, byref rowFirst as Integer, byref rowLast as Integer,
byref colFirst as Integer, byref colLast as Integer, ScopeID as Integer, byref Hidden as Integer)
as boolean 20637
* 183.6.34 GetNamedRange(name as string, byref rowFirst as Integer, byref rowLast as Integer,
byref colFirst as Integer, byref colLast as Integer, ScopeID as Integer, byref Hidden as Integer)
as boolean 20638
* 183.6.35 GetPicture(index as Integer, byref rowTop as Integer, byref colLeft as Integer, byref
rowBottom as Integer, byref colRight as Integer, byref width as Integer, byref height as Integer,
byref offsetX as Integer, byref offsetY as Integer) as Integer 20638
* 183.6.36 GetPrintArea(byref rowFirst as Integer, byref colFirst as Integer, byref rowLast as
Integer, byref colLast as Integer) as boolean 20639
* 183.6.37 GetPrintFit(byref wPages as Integer, byref hPages as Integer) as boolean 20639
* 183.6.38 GetPrintRepeatCols(byref colFirst as Integer, byref colLast as Integer) as boolean 20639
* 183.6.39 GetPrintRepeatRows(byref rowFirst as Integer, byref rowLast as Integer) as boolean 20639
* 183.6.40 GetTopLeftView(byref row as Integer, byref col as Integer) 20639
* 183.6.41 GetVerPageBreak(index as Integer) as Integer 20640
* 183.6.42 GetVerPageBreakCount as Integer 20640
* 183.6.43 GroupCols(colFirst as Integer, colLast as Integer, collapsed as boolean = true) as boolean 20640
* 183.6.44 GroupRows(rowFirst as Integer, rowLast as Integer, collapsed as boolean = true) as boolean 20640
* 183.6.45 Header as string 20641
* 183.6.46 HeaderMargin as Double 20641
* 183.6.47 Hyperlink(index as Integer, byref rowFirst as Integer, byref rowLast as Integer, byref colFirst as Integer, byref colLast as Integer) as String 20642
* 183.6.48 HyperlinkSize as Integer 20642
* 183.6.49 InsertCol(colFirst as Integer, colLast as Integer) as boolean 20642
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* 183.6.74 ReadString(row as Integer, col as Integer, byref format as XLFormatMBS) as string

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* 183.6.80 RowColToAddr(row as Integer, col as Integer, rowRelative as boolean = true, colRelative as boolean = true) as string

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* 183.6.82 SetAutoFitArea(rowFirst as Integer = 0, colFirst as Integer = 0, rowLast as Integer = -1, colLast as Integer = -1) as boolean

* 183.6.83 SetCol(colFirst as Integer, colLast as Integer, width as Double, format as XLFormatMBS = nil, hidden as boolean = false) as boolean

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* 183.6.86 SetHorPageBreak(row as Integer, pageBreak as boolean = true) as boolean

* 183.6.87 SetMerge(rowFirst as Integer, rowLast as Integer, colFirst as Integer, colLast as Integer) as boolean

* 183.6.88 SetNamedRange(name as string, rowFirst as Integer, rowLast as Integer, colFirst as Integer, colLast as Integer, scopeId as Integer = -2) as boolean

* 183.6.89 SetPicture(row as Integer, col as Integer, PictureID as Integer, scale as Double = 1.0, OffsetX as Integer = 0, OffsetY as Integer = 0, pos as Integer = 0)

* 183.6.90 SetPicture(row as Integer, col as Integer, PictureID as Integer, width as Integer, height as Integer, OffsetX as Integer = 0, OffsetY as Integer = 0, pos as Integer = 0)

* 183.6.91 SetPrintArea(rowFirst as Integer, rowLast as Integer, colFirst as Integer, colLast as Integer)

* 183.6.92 SetPrintFit(wPages as Integer, hPages as Integer)

* 183.6.93 SetPrintRepeatCols(colFirst as Integer, colLast as Integer)

* 183.6.94 SetPrintRepeatRows(rowFirst as Integer, rowLast as Integer)

* 183.6.95 SetProtectEx(protect as boolean = true, password as string = "", enhancedProtection as Integer = -1)

* 183.6.96 SetRow(row as Integer, height as Double, format as XLFormatMBS = nil, hidden as boolean = false) as boolean

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* 183.6.287 ProtectFormatCells = 4
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* 183.6.301 SheetStateHidden = 1
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* 183.6.303 SheetStateVisible = 0
* 183.6.304 ValidationErrstyleInformation = 2
* 183.6.305 ValidationErrstyleStop = 0
* 183.6.306 ValidationErrstyleWarning = 1
* 183.6.307 ValidationOpBetween = 0
* 183.6.308 ValidationOpEqual = 2
* 183.6.309 ValidationOpGreaterthan = 6
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* 183.6.317 ValidationTypeDecimal = 2
* 183.6.318 ValidationTypeList = 3
* 183.6.319 ValidationTypeNone = 0
* 183.6.320 ValidationTypeTextLength = 6
* 183.6.321 ValidationTypeTime = 5
* 183.6.322 ValidationTypeWhole = 1
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  – 184.1.1 class XMPAssertNotifyMBS  
  * 184.1.3 Assert(text as string)  
  
  – 184.2.1 class XMPDateTimeMBS  
  * 184.2.3 ClearTimeZone  
  * 184.2.4 Clone as XMPDateTimeMBS  
  * 184.2.5 Compare(other as XMPDateTimeMBS) as Integer  
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  * 184.2.31 kXMP_TimeEastOfUTC = 1  
  * 184.2.32 kXMP_TimeIsUTC = 0  
  * 184.2.33 kXMP_TimeWestOfUTC = -1  
  
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  * 184.4.5 CheckFileFormat(path as string) as Integer  
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* 184.4.23 kAEProjectFile = & h41455020 20709
* 184.4.24 kAEProjTemplateFile = & h41455420 20709
* 184.4.25 kAIFFFile = & h41494646 20710
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* 184.4.29 kAVCHDFile = & h41564844 20710
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* 184.4.68 kOpenInBackground = & h10000000 20716
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* 184.4.71 kOpenRepairFile = & h00000100 20716
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* 184.4.84 kReturnsTNail = & h00000080 20718
* 184.4.85 kSESFile = & h53455320 20718
* 184.4.86 kSonyHDVFFile = & h53484456 20718
* 184.4.87 kSWFFile = & h53574620 20718
* 184.4.88 kTextFile = & h74657874 20718
* 184.4.89 kTIFFFile = & h54494646 20719
* 184.4.90 kUCFFile = & h55434620
* 184.4.91 kUnknownFile = & h20202020
* 184.4.92 kUnknownLength = -1
* 184.4.93 kUnknownOffset = -1
* 184.4.94 kUpdateSafely = 1
* 184.4.95 kUseNullTermination = 0
* 184.4.96 kUsesSidecarXMP = & h00000800
* 184.4.97 kWAVFile = & h57415620
* 184.4.98 kWMAVFile = & h574D4156
* 184.4.99 kXDCAM_EXFile = & h58444358
* 184.4.100 kXDCAM_FAMFile = & h58444346
* 184.4.101 kXDCAM_SAMFile = & h58444353
* 184.4.102 kXMLFile = & h584D4C20

– 184.5.1 class XMPIteratorMBS
  * 184.5.3 Constructor
  * 184.5.4 Constructor(meta as XMPMetaMBS, options as Integer=0)
  * 184.5.5 Constructor(meta as XMPMetaMBS, schemaNS as string, options as Integer=0)
  * 184.5.6 Constructor(meta as XMPMetaMBS, schemaNS as string, propName as string, options as Integer=0)
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  * 184.5.8 NextItem() as boolean
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  * 184.5.12 NextItem(byref schemaNS as string, byref propPath as string, byref propValue as string, byref options as Integer) as boolean
  * 184.5.13 Skip(options as Integer)

– 184.6.1 class XMPMetaMBS
  * 184.6.3 AppendArrayItem(schemaNS as string, arrayName as string, arrayOptions as Integer, itemValue as string, options as Integer=0)
  * 184.6.4 ApplyTemplate(WorkingXMP as XMPMetaMBS, template as XMPMetaMBS, actions as Integer)
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  * 184.6.7 ComposeArrayItemPath(schemaNS as string, arrayName as string, itemIndex as Integer) as string
  * 184.6.8 ComposeFieldSelector(schemaNS as string, arrayName as string, fieldNS as string, fieldName as string, fieldValue as string) as string
  * 184.6.9 ComposeLangSelector(schemaNS as string, arrayName as string, langName as string) as string
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* 184.6.89 kArrayLastItem = -1 20764
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* 184.6.97 kEncodeUTF8 = 0
* 184.6.98 kEncodingMask = & h7
* 184.6.99 kExactPacketLength = & h200
* 184.6.100 kImplReservedMask = & h70000000
* 184.6.101 kIncludeAliases = & h800
* 184.6.102 kIncludeThumbnailPad = & h100
* 184.6.103 kInsertAfterItem = & h8000
* 184.6.104 kInsertBeforeItem = & h4000
* 184.6.105 kIterAliases = 1
* 184.6.106 kIterClassMask = & hFF
* 184.6.107 kIterIncludeAliases = & h800
* 184.6.108 kIterJustChildren = & h100
* 184.6.109 kIterJustLeafName = & h400
* 184.6.110 kIterJustLeafNodes = & h200
* 184.6.111 kIterNamespaces = 2
* 184.6.112 kIterOmitQualifiers = & h1000
* 184.6.113 kIterProperties = 0
* 184.6.114 kIterSkipSiblings = 2
* 184.6.115 kIterSkipSubtree = 1
* 184.6.116 kLittleEndianBit = 1
* 184.6.117 kNoOptions = 0
* 184.6.118 kNS_AdobeStockPhoto = "http://ns.adobe.com/StockPhoto/1.0/"
* 184.6.119 kNS_ASF = "http://ns.adobe.com/asf/1.0/"
* 184.6.120 kNS_CameraRaw = "http://ns.adobe.com/camera-raw-settings/1.0/"
* 184.6.121 kNS_CreatorAtom = "http://ns.adobe.com/creatorAtom/1.0/"
* 184.6.122 kNS_DC = "http://purl.org/dc/elements/1.1/"
* 184.6.123 kNS_DICOM = "http://ns.adobe.com/DICOM/"
* 184.6.124 kNS_DM = "http://ns.adobe.com/xmp/1.0/DynamicMedia/"
* 184.6.125 kNS_EXIF = "http://ns.adobe.com/exif/1.0/"
* 184.6.126 kNS_EXIF_Aux = "http://ns.adobe.com/exif/1.0/aux/"
* 184.6.127 kNS_IPTC4xmpCore = "http://iptc.org/std/Iptc4xmpCore/1.0/xmlns/"
* 184.6.128 kNS_JP2K = "http://ns.adobe.com/jp2k/1.0/"
* 184.6.129 kNS_JPEG = "http://ns.adobe.com/jpeg/1.0/"
* 184.6.130 kNS_PDF = "http://ns.adobe.com/pdf/1.3/"
* 184.6.131 kNS_PDFA_Extension = "http://www.aiim.org/pdfa/ns/extension/"
* 184.6.132 kNS_PDFA_Field = "http://www.aiim.org/pdfa/ns/field# "
* 184.6.133 kNS_PDFA_ID = "http://www.aiim.org/pdfa/ns/id/"
* 184.6.134 kNS_PDFA_Property = "http://www.aiim.org/pdfa/ns/property# "
* 184.6.135 kNS_PDFA_Schema = "http://www.aiim.org/pdfa/ns/schema# "
* 184.6.136 kNS_PDFA_Type = "http://www.aiim.org/pdfa/ns/type# "
* 184.6.137 kNS_PDFX = "http://ns.adobe.com/pdfx/1.3/"
* 184.6.138 kNS_PDFX_ID = "http://www.npes.org/pdfx/ns/id/"
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* 184.6.139 kNS_Photoshop = "http://ns.adobe.com/photoshop/1.0/"
* 184.6.140 kNS_PNG = "http://ns.adobe.com/png/1.0/"
* 184.6.141 kNS_PSAlbum = "http://ns.adobe.com/album/1.0/"
* 184.6.142 kNS_RDF = "http://www.w3.org/1999/02/22-rdf-syntax-ns#" 
* 184.6.143 kNS_SWF = "http://ns.adobe.com/swf/1.0/"
* 184.6.144 kNS_TIFF = "http://ns.adobe.com/tiff/1.0/"
* 184.6.145 kNS_WAV = "http://ns.adobe.com/xmp/wav/1.0/"
* 184.6.146 kNS_XML = "http://www.w3.org/XML/1998/namespace"
* 184.6.147 kNS_XMP = "http://ns.adobe.com/xap/1.0/"
* 184.6.148 kNS_XMP BJ = "http://ns.adobe.com/xap/1.0/bj/"
* 184.6.149 kNS_XMP_Dimensions = "http://ns.adobe.com/xap/1.0/sType/Dimensions#"
* 184.6.150 kNS_XMP_Font = "http://ns.adobe.com/xap/1.0/sType/Font#"
* 184.6.151 kNS_XMP_Graphics = "http://ns.adobe.com/xap/1.0/g/"
* 184.6.152 kNS_XMP_IMG = "http://ns.adobe.com/xap/1.0/g/img/"
* 184.6.153 kNS_XMP_IdentifierQual = "http://ns.adobe.com/xmp/Identifier/qual/1.0/"
* 184.6.154 kNS_XMP_Image = "http://ns.adobe.com/xap/1.0/g/img/"
* 184.6.155 kNS_XMP_ManifestItem = "http://ns.adobe.com/xap/1.0/sType/ManifestItem#"
* 184.6.156 kNS_XMP_MM = "http://ns.adobe.com/xap/1.0/mm/"
* 184.6.157 kNS_XMP_Note = "http://ns.adobe.com/xmp/note/"
* 184.6.158 kNS_XMP_PagedFile = "http://ns.adobe.com/xap/1.0/t/pg/"
* 184.6.159 kNS_XMP_ResourceEvent = "http://ns.adobe.com/xap/1.0/sType/ResourceEvent#"
* 184.6.160 kNS_XMP_PrincipalRef = "http://ns.adobe.com/xap/1.0/sType/ResourceRef#"
* 184.6.161 kNS_XMP_Rights = "http://ns.adobe.com/xap/1.0/rights/"
* 184.6.162 kNS_XMP_ST_Job = "http://ns.adobe.com/xap/1.0/sType/Job#"
* 184.6.163 kNS_XMP_ST_Version = "http://ns.adobe.com/xap/1.0/sType/Version#"
* 184.6.164 kNS_XMP_T = "http://ns.adobe.com/xap/1.0/t/"
* 184.6.165 kNS_XMP_Text = "http://ns.adobe.com/xap/1.0/t/"
* 184.6.166 kNS_XMP_T_PG = "http://ns.adobe.com/xap/1.0/t/pg/"
* 184.6.167 kOmitAllFormatting = & h800
* 184.6.168 kOmitPacketWrapper = & h10
* 184.6.169 kOmitXMPMetaElement = & h1000
* 184.6.170 kParseMoreBuffers = 2
* 184.6.171 kPropArrayFormMask = & h1E00
* 184.6.172 kPropArrayIsAlternate = & h800
* 184.6.173 kPropArrayIsAltText = & h1000
* 184.6.174 kPropArrayIsOrdered = & h400
* 184.6.175 kPropArrayIsUnordered = & h200
* 184.6.176 kPropArrayLocationMask = & hC000
* 184.6.177 kPropCompositeMask = & h1F00
* 184.6.178 kPropHasAliases = & h20000
* 184.6.179 kPropHasLang = & h40
* 184.6.180 kPropHasQualifiers = & h10
* 184.6.181 kPropHasType = & h80
* 184.6.182 kPropIsAlias = & h10000
* 184.6.183 kPropIsDerived = & h200000
* 184.6.184 kPropIsInternal = & h40000
* 184.6.185 kPropIsQualifier = & h20
* 184.6.186 kPropIsStable = & h100000
* 184.6.187 kPropValueIsArray = & h200
* 184.6.188 kPropValueIsStruct = & h100
* 184.6.189 kPropValueIsURI = 2
* 184.6.190 kPropValueOptionsMask = 2
* 184.6.191 kReadOnlyPacket = & h20
* 184.6.192 kReplaceOldValues = 2
* 184.6.193 kRequireXMPMeta = 1
* 184.6.194 kStrictAliasing = 4
* 184.6.195 kUseCompactFormat = & h40
* 184.6.196 kUseNullTermination = 0
* 184.6.197 kUTF16Bit = 2
* 184.6.198 kUTF32Bit = 4
* 184.6.199 kWriteAliasComments = & h400
* 184.6.200 kXMPFiles_IgnoreLocalText = 2
* 184.6.201 kXMPFiles_ServerMode = 2
* 184.6.202 kXMPTemplate_AddNewProperties = 8
* 184.6.203 kXMPTemplate_ClearUnnamedProperties = & h10
* 184.6.204 kXMPTemplate_IncludeInternalProperties = 1
* 184.6.205 kXMPTemplate_ReplaceExistingProperties = 2
* 184.6.206 kXMPTemplate_ReplaceWithDeleteEmpty = 4
* 184.6.207 kXMP_NS_BWF = "http://ns.adobe.com/bwf/bext/1.0/"
* 184.6.208 kXMP_NS_Script = "http://ns.adobe.com/xmp/1.0/Script/"
* 184.6.209 kXMP_WriteAliasComments = & h400
* 184.6.210 Version = "5.5.0"

– 184.7.1 class XMPPacketInfoMBS
  * 184.7.3 CharForm as Integer
  * 184.7.4 HasWrapper as Boolean
  * 184.7.5 Length as Integer
  * 184.7.6 Offset as Int64
  * 184.7.7 PadSize as Integer
  * 184.7.8 Writeable as Boolean

– 184.8.1 class XMPSScannerMBS
* 184.8.3 Constructor
* 184.8.4 Constructor(StreamLength as Integer)
* 184.8.5 Report as Integer
* 184.8.6 Scan(Buffer as string, Offset as Int64)
* 184.8.7 Snip(index as UInt32) as XMPSnipMBS
* 184.8.8 SnipCount as UInt32
* 184.8.9 StreamAllScanned as boolean

– 184.9.1 class XMPSnipMBS
* 184.9.3 Access as Integer
* 184.9.4 BytesAttr as Int64
* 184.9.5 CharForm as Integer
* 184.9.6 EncodingAttr as String
* 184.9.7 Length as Int64
* 184.9.8 Offset as Int64
* 184.9.9 OutOfOrder as Integer
* 184.9.10 State as Integer

– 184.10.1 class XMPTextOutputMBS
* 184.10.3 Output(text as string) as Integer

– 184.11.1 class XMPVersionInfoMBS
* 184.11.3 Build as Integer
* 184.11.4 Flags as Integer
* 184.11.5 IsDebug as boolean
* 184.11.6 Major as Integer
* 184.11.7 Message as String
* 184.11.8 Micro as Integer
* 184.11.9 Minor as Integer
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  – 20.3.1 class ZintRenderHexagonMBS
    * 20.3.3 Constructor
    * 20.3.5 NextObject as ZintRenderHexagonMBS
    * 20.3.6 X as Single
    * 20.3.7 Y as Single
  – 20.3.3 Constructor
  – 20.3.5 NextObject as ZintRenderHexagonMBS
  – 20.3.6 X as Single
  – 20.3.7 Y as Single
  – 20.4.1 class ZintRenderLineMBS
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    * 20.4.5 Length as Single
    * 20.4.6 NextObject as ZintRenderLineMBS
    * 20.4.7 Width as Single
    * 20.4.8 X as Single
    * 20.4.9 Y as Single
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  – 20.4.7 Width as Single
  – 20.4.8 X as Single
  – 20.4.9 Y as Single
  – 20.5.1 class ZintRenderMBS
    * 20.5.3 Constructor
    * 20.5.4 hexagons as ZintRenderHexagonMBS()
    * 20.5.5 lines as ZintRenderLineMBS()
    * 20.5.6 rings as ZintRenderRingMBS()
    * 20.5.7 strings as ZintRenderStringMBS()
    * 20.5.9 FirstHexagon as ZintRenderHexagonMBS
    * 20.5.10 FirstLine as ZintRenderLineMBS
    * 20.5.11 FirstRing as ZintRenderRingMBS
    * 20.5.12 FirstString as ZintRenderStringMBS
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    * 20.5.14 Width as Single
  – 20.5.3 Constructor
  – 20.5.4 hexagons as ZintRenderHexagonMBS()
  – 20.5.5 lines as ZintRenderLineMBS()
  – 20.5.6 rings as ZintRenderRingMBS()
  – 20.5.7 strings as ZintRenderStringMBS()
  – 20.5.9 FirstHexagon as ZintRenderHexagonMBS
  – 20.5.10 FirstLine as ZintRenderLineMBS
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  – 20.5.13 Height as Single
  – 20.5.14 Width as Single
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    * 20.6.3 Constructor
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    * 20.6.6 NextObject as ZintRenderRingMBS
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    * 20.6.9 Y as Single
  – 20.6.3 Constructor
  – 20.6.5 LineWidth as Single
  – 20.6.6 NextObject as ZintRenderRingMBS
  – 20.6.7 Radius as Single
  – 20.6.8 X as Single
  – 20.6.9 Y as Single
  – 20.7.1 class ZintRenderStringMBS
    * 20.7.3 Constructor
    * 20.7.5 FontSize as Single
    * 20.7.6 Length as Integer
    * 20.7.7 NextObject as ZintRenderStringMBS
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  – 20.7.5 FontSize as Single
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  – 20.7.8 Text as String
  – 20.7.9 Width as Single
  – 20.7.10 X as Single
  – 20.7.11 Y as Single
• 43 Compression

  - 43.10.1 class ZipFileInfoMBS
    * 43.10.3 SetDate(d as date)
    * 43.10.5 Day as Integer
    * 43.10.6 DosDate as UInt32
    * 43.10.7 ExternalFileAttributes as UInt32
    * 43.10.8 Hour as Integer
    * 43.10.9 InternalFileAttributes as UInt32
    * 43.10.10 Minute as Integer
    * 43.10.11 Month as Integer
    * 43.10.12 Second as Integer
    * 43.10.13 Year as Integer

  - 43.11.1 class ZipMBS
    * 43.11.3 Close(GlobalComment as string="")
    * 43.11.4 CloseFile
    * 43.11.5 CloseFileRaw(UncompressedSize as Integer, CRC32 as Integer)
    * 43.11.6 CompressFiles(ZipFile as FolderItem, SourceFolder as FolderItem, files() as string, Overwrite as Integer = 0, Password as string = "", CompressionLevel as Integer = 9, byref ErrorMessage as string) as Integer
    * 43.11.7 Constructor(file as folderitem, append as Integer = 0)
    * 43.11.8 CreateFile(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string = "", ExtraGlobal as string = "", Comment as String = "", CompressionMethod as Integer = 8, Level as Integer = 9, Zip64 as boolean = false)
    * 43.11.9 CreateFile(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string, ExtraGlobal as string, Comment as String, CompressionMethod as Integer, Level as Integer, Zip64 as boolean, Raw as boolean)
    * 43.11.10 CreateFile(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string, ExtraGlobal as string, Comment as String, CompressionMethod as Integer, Level as Integer, Zip64 as boolean, Raw as boolean, WindowBits as Integer, MemLevel as Integer, Strategy as Integer, Password as string, crcForCtypting as UInt32)
    * 43.11.11 CreateFile(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string, ExtraGlobal as string, Comment as String, CompressionMethod as Integer, Level as Integer, Zip64 as boolean, Raw as boolean, WindowBits as Integer, MemLevel as Integer, Strategy as Integer, Password as string, crcForCtypting as UInt32, versionMadeBy as UInt32, flagBase as UInt32)
    * 43.11.12 Write(data as string)
    * 43.11.14 Handle as Integer
    * 43.11.15 Lasterror as Integer
    * 43.11.16 ZipFileVersion32 as Integer
    * 43.11.17 ZipFileVersion64 as Integer
    * 43.11.19 AppendStatusAddInZip=2
    * 43.11.20 AppendStatusCreate=0
    * 43.11.21 AppendStatusCreateAfter=1
- 43.11.22 CompressionBestCompression=9
- 43.11.23 CompressionBestSpeed=1
- 43.11.24 CompressionDefault=-1
- 43.11.25 CompressionNo=0
- 43.11.26 MethodDeflated=8
- 43.11.27 MethodNone=0
- 43.11.28 StrategyDefault=0
- 43.11.29 StrategyFiltered=1
- 43.11.30 StrategyFixed=4
- 43.11.31 StrategyHuffmanOnly=2
- 43.11.32 StrategyRLE=3
- 43.11.33 ZipBadZipFile=-103
- 43.11.34 ZipInternalError=-104
- 43.11.35 ZipOk=0
- 43.11.36 ZipParameterError=-102
• 43 Compression
  
  - 43.12.1 class ZLibCompressMBS
    * 43.12.3 Adler32(start as UInt32, data as string) as UInt32 7510
    * 43.12.4 close 7510
    * 43.12.5 Constructor(BufferSize as Integer=20000) 7510
    * 43.12.6 CRC32(start as UInt32, data as string) as UInt32 7511
    * 43.12.7 EndZip 7511
    * 43.12.8 GetOutput as string 7511
    * 43.12.9 InitZip(level as Integer) 7511
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• 50.1.4 CGBitmapContextCreateMBS(data as memoryblock, width as Integer, height as Integer, 
  bitsPerComponent as Integer, bytesPerRow as Integer, colorspace as CGColorSpaceMBS, alphaInfo as Integer) 
  as CGBitmapContextMBS

• 50.1.8 CGCreateImageFromJPEGDataProviderMBS(dataprovider as Variant, decode as memoryblock, 
  shouldInterpolate as boolean, intent as Integer) as CGImageMBS

• 50.1.9 CGCreateImageFromPNGDataProviderMBS(dataprovider as Variant, decode as memoryblock, 
  shouldInterpolate as boolean, intent as Integer) as CGImageMBS

• 50.1.10 CGCreateImageMBS(pic as picture) as CGImageMBS

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• 50.1.12 CGMakePointMBS(x as Double, y as Double) as CGPointMBS
• 50.1.13 CGMakeRectMBS(left as Double, top as Double, width as Double, height as Double) as CGRectMBS
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• 50.1.1 CGNewPDFDocumentMBS(file as folderitem, MediaBox as CGRectMBS, title as string, author as string, subject as string, keywords as string, OwnerPassword as string, UserPassword as string, AllowsPrinting as boolean, AllowsCopy as boolean) as CGPDFContextMBS
• 50.1.2 CGNewPDFDocumentMBS(file as folderitem, MediaBox as CGRectMBS, title as string, author as string, subject as string, keywords as string, OwnerPassword as string, UserPassword as string, AllowsPrinting as boolean, AllowsCopy as boolean, KeyLength as Integer) as CGPDFContextMBS
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• 50.1.17 CGOpenPDFDocumentMBS(file as folderitem) as CGPDFDocumentMBS
• 50.1.18 CGSessionMBS as CGSessionMBS
• 50.1.6 CGShadingCreateAxialMBS(colorspace as CGColorSpaceMBS, startPoint as CGPointMBS, endPoint as CGPointMBS, func as CGFunctionMBS, extendStart as boolean, extendEnd as boolean) as CGShadingMBS
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• 148.1.29 ClassicPreferencesFolderMBS(domain as Integer) as folderitem
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• 22.1.7 cloneMemoryBlockMBS(s as memoryblock) as memoryblock
• 22.1.8 cloneMemoryBlockWithLengthMBS(s as memoryblock, len as Integer) as memoryblock
• 152.7.2 CloneRecordSetMBS(rec as RecordSet) as RecordSet
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- 170.4.4 CollapseAllWindowsMBS(collapse as boolean)
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- 80.2.17 ColorizePictureMBS(Pict As Picture, Mask As Picture, foreR as Double, foreG as Double, foreB as Double, foreA as Double, backR as Double, backG as Double, backB as Double, backA as Double) as boolean
- 148.1.30 ColorPickersFolderMBS(domain as Integer) as folderitem
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- 148.1.31 ColorSyncCMMFolderMBS(domain as Integer) as folderitem
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- 162.1.1 CombineBitCMYKtoRGBMBS(CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, Files() as FolderItem, scale as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, byref output as picture, CacheSizeRead as Integer) as Integer
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• 116.1.3 Memoryblock2ptrMBS(mem as memoryblock) as Integer

• 80.2.34 MemoryblockABGRtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

• 80.2.35 MemoryblockABGRtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

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• 80.2.3 MemoryblockARGBtoPictureMBS(source as memoryblock, offset as Integer, LittleEndian as boolean) as picture

• 80.2.38 MemoryblockBGRAtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture
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- 80.2.42 MemoryblockGrayToPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer) as picture

- 80.2.43 MemoryblockGrayToPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer, Red as Integer, Blue as Integer, Green as Integer) as picture

- 80.2.44 MemoryblockGrayToPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer, Red() as Integer, Blue() as Integer, Green() as Integer) as picture

- 80.2.45 MemoryblockRGBAtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer, FlipVertically as boolean=false) as picture

- 80.2.46 MemoryblockRGBAtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer, FlipVertically as boolean=false) as picture

- 80.2.47 MemoryblockRGBtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

- 80.2.4 MemoryblockRGBtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

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- 148.1.255 MIDIDriversFolderMBS(domain as Integer) as folderitem

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• 80.2.19 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean

• 80.2.20 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean

• 80.2.21 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean

• 80.2.22 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

• 80.2.23 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean

• 80.2.24 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean

• 80.2.25 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean

• 80.2.26 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean

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• 80.2.28 PictureCopyPixelFastMBS(DestImage As Picture, Source As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer) as boolean

• 148.1.264 PictureDocumentsFolderMBS(domain as Integer) as folderitem

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• 80.2.54 PtrBGRAtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

• 80.2.55 PtrBGRtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

• 80.2.56 PtrBGRtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

• 80.2.57 PtrGrayToPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer) as picture

• 80.2.58 PtrGrayToPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer, Red as Integer, Blue as Integer, Green as Integer) as picture

• 80.2.59 PtrGrayToPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer, Red() as Integer, Blue() as Integer, Green() as Integer) as picture

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• 80.2.61 PtrRGBAtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, FlipVertically as boolean=false) as picture

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- 172.7.3 WindowsRunAsMBS(Username as string, Domain as string, Password as string, LoginFlags as Integer, ApplicationName as string, CommandLine as string, CurrentDirectory as string, byref PID as Integer, Flags as Integer = -1) as Integer
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- 158.1.52 WindowsSystemMetricsMBS(what as Integer) as Integer
- 172.7.4 WinGetSysColorMBS(Index as Integer) as Color
- 172.7.5 WinOpenFolderAndSelectItemsMBS(folder as folderitem, files() as folderItem, ShowOnDesktop as Boolean = false, EditName as Boolean = false) as Integer
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- IKPictureTakerMBS 15217
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- IKPictureTakerMBS 15219
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- QuickLook ??
- SparkleMBS ??
- SparkleMBS ??
- SparkleMBS ??
Chapter 8

Accessibility

8.1 module AccessibilityMBS

8.1.1 module AccessibilityMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class to handle all the global stuff of the Accessibility API.

**Notes:**

This class has a lot of CFStringMBS functions to return you constants. Please check Apple’s documentation about those constants.

If you miss a function or a constant, please email.

8.1.2 Methods

8.1.3 ApplicationAXUIElement(pid as Integer) as AXUIElementMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The AXUIElement for the current application.

8.1.4 Available as Boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** True if the Accessibility API is available.

**Notes:** Should always be true on Mac OS X 10.2.
8.1.5 AXAPIEnabled as boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
True if the user permits Accessibility services.

8.1.6 IsProcessTrusted(Prompt as Boolean = false) as boolean

MBS MacCF Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns whether the current process is a trusted accessibility client.
**Notes:** Added prompt flag for version 18.1.

8.1.7 kAXAllowedValuesAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.8 kAXAMPMFieldAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.9 kAXApplicationActivatedNotification as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the notification names used for the axobserver class.

8.1.10 kAXApplicationDeactivatedNotification as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the notification names used for the axobserver class.

8.1.11 kAXApplicationDockItemSubrole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.
8.1. MODULE ACCESSIBILITY MBS

8.1.12 kAXApplicationHiddenNotification as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification names used for the axobserver class.

8.1.13 kAXApplicationRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.14 kAXApplicationShownNotification as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification names used for the axobserver class.

8.1.15 kAXAscendingSortDirectionValue as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** A constant used for the AXUIElement class.

8.1.16 kAXAttributedStringForRangeParameterizedAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute constants.

8.1.17 kAXBoundsForRangeParameterizedAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute constants.

8.1.18 kAXBROWSERRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.
CHAPTER 8. ACCESSIBILITY

8.1.19 kAXBusyIndicatorRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.

8.1.20 kAXBottonRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.

8.1.21 kAXCancelButton as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the action names used for the AXUIElement class.

8.1.22 kAXCancelButtonAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.23 kAXCellForColumnAndRowParameterizedAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.24 kAXCellRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.

8.1.25 kAXCheckBoxRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.
8.1. MODULE ACCESSIBILITYMBS

8.1.26 kAXChildrenAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.27 kAXClearButtonAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.28 kAXCloseButtonAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.29 kAXCloseButtonSubrole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.

8.1.30 kAXColorWellRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.

8.1.31 kAXColumnCountAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.32 kAXColumnHeaderUIElementsAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.
8.1.33  kAXColumnIndexRangeAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.34  kAXColumnRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.

8.1.35  kAXColumnsAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.36  kAXColumnTitleAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.37  kAXColumnTitlesAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.38  kAXComboBoxRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.

8.1.39  kAXConfirmAction as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the action names used for the AXUIElement class.
8.1. MODULE ACCESSIBILITYMBS

8.1.40 kAXContentListSubrole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.

8.1.41 kAXContentsAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.42 kAXCreatedNotification as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the notification constants.

8.1.43 kAXCriticalValueAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.44 kAXDateFieldRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.

8.1.45 kAXDayFieldAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.46 kAXDecrementAction as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the action names used for the AXUIElement class.
8.1.47  \texttt{kAXDecrementArrowSubrole} as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. \textbf{Function:} One of the role names used for the AXUIElement class.

8.1.48  \texttt{kAXDecrementButtonAttribute} as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. \textbf{Function:} One of the attribute names used for the AXUIElement class.

8.1.49  \texttt{kAXDecrementPageSubrole} as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. \textbf{Function:} One of the role names used for the AXUIElement class.

8.1.50  \texttt{kAXDefaultButtonAttribute} as CFStringMBS


8.1.51  \texttt{kAXDefinitionListSubrole} as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. \textbf{Function:} One of the role names used for the AXUIElement class.

8.1.52  \texttt{kAXDescendingSortDirectionValue} as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. \textbf{Function:} A constant used for the AXUIElement class.

8.1.53  \texttt{kAXDescription} as CFStringMBS

8.1.54 **kAXDescriptionAttribute as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute constants.

8.1.55 **kAXDialogSubrole as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.56 **kAXDisclosedByRowAttribute as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names used for the AXUIElement class.

8.1.57 **kAXDisclosedRowsAttribute as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names used for the AXUIElement class.

8.1.58 **kAX disclose Attribute as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names used for the AXUIElement class.

8.1.59 **kAXDisclosureLevelAttribute as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute constants.

8.1.60 **kAX Disclosure Triangle Role as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.
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8.1.61 kAXDockExtraDockItemSubrole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.62 kAXDockItemRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.63 kAXDocumentAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names used for the AXUIElement class.

8.1.64 kAXDocumentDockItemSubrole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.65 kAXDrawerCreatedNotification as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification constants.

8.1.66 kAXDrawerRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.67 kAXEditedAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names used for the AXUIElement class.
8.1. MODULE ACCESSIBILITY MBS

8.1.68 kAXEnabledAttribute as CFStringMBS
MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names used for the AXUIElement class.

8.1.69 kAXExpandedAttribute as CFStringMBS
MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names used for the AXUIElement class.

8.1.70 kAXFilenameAttribute as CFStringMBS
MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names used for the AXUIElement class.

8.1.71 kAXFloatingWindowSubrole as CFStringMBS
MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.72 kAXFocusedApplicationAttribute as CFStringMBS
MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names used for the AXUIElement class.

8.1.73 kAXFocusedAttribute as CFStringMBS
MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names used for the AXUIElement class.

8.1.74 kAXFocusedUIElementAttribute as CFStringMBS
MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names used for the AXUIElement class.
8.1.75 kAXFocusedUIElementChangedNotification as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: One of the notification names used for the axobserver class.

8.1.76 kAXFocusedWindowAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: One of the attribute names used for the AXUIElement class.

8.1.77 kAXFocusedWindowChangedNotification as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: One of the notification names used for the axobserver class.

8.1.78 kAXFolderDockItemSubrole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: One of the role names used for the AXUIElement class.

8.1.79 kAXFrontmostAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: One of the attribute names used for the AXUIElement class.

8.1.80 kAXGridRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: One of the role names used for the AXUIElement class.

8.1.81 kAXGroupRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: One of the role names used for the AXUIElement class.
8.1. MODULE ACCESSIBILITYMBS

8.1.82 kAXGrowAreaAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.83 kAXGrowAreaRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.

8.1.84 kAXHandleRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.

8.1.85 kAXHandlesAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.86 kAXHeaderAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.87 kAXHelpAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.88 kAXHelpTagCreatedNotification as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the notification constants.
8.1.89 kAXHelpTagRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.90 kAXHiddenAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names used for the AXUIElement class.

8.1.91 kAXHorizontalOrientationValue as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** A constant used for the AXUIElement class.

8.1.92 kAXHorizontalScrollBarAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names used for the AXUIElement class.

8.1.93 kAXHorizontalUnitDescriptionAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute constants.

8.1.94 kAXHorizontalUnitsAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute constants.

8.1.95 kAXHourFieldAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute constants.
8.1.96  kAXImageRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.

8.1.97  kAXIncrementAction as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the action names used for the AXUIElement class.

8.1.98  kAXIncrementArrowSubrole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.

8.1.99  kAXIncrementButtonAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.100 kAXIncrementorAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.101  kAXIncrementorRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.

8.1.102  kAXIncrementPageSubrole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.
8.1.103  kAXIndexAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
One of the attribute constants.

8.1.104  kAXInsertionPointLineNumberAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
One of the attribute constants.

8.1.105  kAXIsApplicationRunningAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
One of the attribute constants.

8.1.106  kAXIsEditableAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
One of the attribute names used for the AXUIElement class.

8.1.107  kAXLabelUIElementsAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
One of the attribute constants.

8.1.108  kAXLabelValueAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
One of the attribute constants.

8.1.109  kAXLayoutAreaRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
One of the role names used for the AXUIElement class.
8.1.110 kAXLayoutItemRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.

8.1.111 kAXLayoutPointForScreenPointParameterizedAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.112 kAXLayoutSizeForScreenSizeParameterizedAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.113 kAXLevelIndicatorRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.

8.1.114 kAXLineForIndexParameterizedAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.115 kAXLinkedUIElementsAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.116 kAXListRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.
8.1.117  kAXMainAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.118  kAXMainWindowAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.119  kAXMainWindowChangedNotification as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the notification names used for the axobserver class.

8.1.120  kAXMarkerTypeAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.121  kAXMarkerTypeDescriptionAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.122  kAXMarkerUIElementsAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.123  kAXMatteContentUIElementAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.
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8.1.124 kAXMatteHoleAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.125 kAXMatteRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.

8.1.126 kAXMaxValueAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.127 kAXMenuBarAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.128 kAXMenuBarItemRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.

8.1.129 kAXMenuBarRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.

8.1.130 kAXMenuButtonRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.
8.1.131 kAXMenuClosedNotification as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the notification names used for the axobserver class.

8.1.132 kAXMenuItemCmdCharAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.133 kAXMenuItemCmdGlyphAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.134 kAXMenuItemCmdModifiersAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.135 kAXMenuItemCmdVirtualKeyAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.136 kAXMenuItemMarkCharAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.137 kAXMenuItemPrimaryUIElementAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.
8.1. MODULE ACCESSIBILITY MBS

8.1.138 kAXMenuItemRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.139 kAXMenuItemSelectedNotification as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification names used for the axobserver class.

8.1.140 kAXMenuOpenedNotification as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification names used for the axobserver class.

8.1.141 kAXMenuRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.142 kAXMinimizeButtonAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names used for the AXUIElement class.

8.1.143 kAXMinimizeButtonSubrole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.144 kAXMinimizedAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names used for the AXUIElement class.
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8.1.145  kAXMinimizedWindowDockItemSubrole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.

8.1.146  kAXMinuteFieldAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.147  kAXMinValueAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.148  kAXModalAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.149  kAXMonthFieldAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.150  kAXMovedNotification as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the notification constants.

8.1.151  kAXNextContentsAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.
8.1.152 kAXNumberOfCharactersAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute constants.

8.1.153 kAXOrderedByRowAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute constants.

8.1.154 kAXOrientationAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names used for the AXUIElement class.

8.1.155 kAXOutlineRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.156 kAXOutlineRowSubrole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.157 kAXOverflowButtonAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names used for the AXUIElement class.

8.1.158 kAXParentAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names used for the AXUIElement class.
8.1.159  kAXPickAction as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the action names used for the AXUIElement class.

8.1.160  kAXPlaceholderValueAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.161  kAXPopUpButtonRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.

8.1.162  kAXPositionAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.163  kAXPressAction as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the action names used for the AXUIElement class.

8.1.164  kAXPreviousContentsAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.165  kAXProcessSwitcherListSubrole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.
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8.1.166 kAXProgressIndicatorRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.

8.1.167 kAXProxyAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.168 kAXRadioButtonRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.

8.1.169 kAXRadioGroupRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.

8.1.170 kAXRaiseAction as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the action names used for the AXUIElement class.

8.1.171 kAXRangeForIndexParameterizedAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.172 kAXRangeForLineParameterizedAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.
8.1.173  kAXRangeForPositionParameterizedAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.174  kAXRatingIndicatorSubrole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.

8.1.175  kAXRelevanceIndicatorRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.

8.1.176  kAXResizedNotification as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the notification constants.

8.1.177  kAXRoleAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.178  kAXRoleDescriptionAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.179  kAXRowCollapsedNotification as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the outline notification constants.
8.1. MODULE ACCESSIBILITY MBS

8.1.180  kAXRowCountAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute constants.

8.1.181  kAXRowCountChangedNotification as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification constants.

8.1.182  kAXRowExpandedNotification as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the outline notification constants.

8.1.183  kAXRowHeaderUIElementsAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute constants.

8.1.184  kAXRowIndexRangeAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute constants.

8.1.185  kAXRowRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.186  kAXRowsAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names used for the AXUIElement class.
8.1.187 kAXRTFForRangeParameterizedAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute constants.

8.1.188 kAXRulerMarkerRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.189 kAXRulerRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.190 kAXScreenPointForLayoutPointParameterizedAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute constants.

8.1.191 kAXScreenSizeForLayoutSizeParameterizedAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute constants.

8.1.192 kAXScrollAreaRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.193 kAXScrollBarRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.
8.1.194 kAXSearchButtonAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.195 kAXSearchFieldSubrole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.

8.1.196 kAXSecondFieldAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.197 kAXSecureTextFieldSubrole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.

8.1.198 kAXSelectedAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.199 kAXSelectedCellsAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.200 kAXSelectedCellsChangedNotification as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the cell-based table notification constants.
8.1.201  kAXSelectedChildrenAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.202  kAXSelectedChildrenChangedNotification as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the notification constants.

8.1.203  kAXSelectedChildrenMovedNotification as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the layout area notification constants.

8.1.204  kAXSelectedColumnsAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.205  kAXSelectedColumnsChangedNotification as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the notification constants.

8.1.206  kAXSelectedRowsAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.207  kAXSelectedRowsChangedNotification as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the notification constants.
8.1. MODULE ACCESSIBILITYMBS

8.1.208  kAXSelectedTextAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.209  kAXSelectedTextChangedNotification as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the notification constants.

8.1.210  kAXSelectedTextRangeAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.211  kAXSelectedTextRangesAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.212  kAXServesAsTitleForUIElementsAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.213  kAXSharedCharacterRangeAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.214  kAXSharedTextUIElementsAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.
8.1.215  **kAXSheetCreatedNotification as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification constants.

8.1.216  **kAXSheetRole as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.217  **kAXShowMenuAction as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the action names used for the AXUIElement class.

8.1.218  **kAXShownMenuUIElementAttribute as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute constants.

8.1.219  **kAXSizeAttribute as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names used for the AXUIElement class.

8.1.220  **kAXSliderRole as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.221  **kAXSortButtonSubrole as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.
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8.1.222 kAXSortDirectionAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names used for the AXUIElement class.

8.1.223 kAXSplitGroupRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.224 kAXSplitterRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.225 kAXSplittersAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names used for the AXUIElement class.

8.1.226 kAXStandardWindowSubrole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.227 kAXStaticTextRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.228 kAXStringForRangeParameterizedAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute constants.
8.1.229 kAXStyleRangeForIndexParameterizedAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute constants.

8.1.230 kAXSubroleAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names used for the AXUIElement class.

8.1.231 kAXSystemDialogSubrole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.232 kAXSystemFloatingWindowSubrole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.233 kAXSystemWideRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.234 kAXTabGroupRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.235 kAXTableRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.
8.1.236  
**kAXTableRowSubrole as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.237  
**kAXTabsAttribute as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names used for the AXUIElement class.

8.1.238  
**kAXTextAreaRole as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.239  
**kAXTextAttribute as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names used for the AXUIElement class.

8.1.240  
**kAXTextFieldRole as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.241  
**kAXTimeFieldRole as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.242  
**kAXTimelineSubrole as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.
8.1.243  kAXTitleAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: One of the attribute names used for the AXUIElement class.

8.1.244  kAXTitleChangedNotification as CFStringMBS


8.1.245  kAXTitleUIElementAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: One of the attribute names used for the AXUIElement class.

8.1.246  kAXToolbarButtonAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: One of the attribute names used for the AXUIElement class.

8.1.247  kAXToolbarButtonSubrole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: One of the role names used for the AXUIElement class.

8.1.248  kAXToolbarRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: One of the role names used for the AXUIElement class.

8.1.249  kAXTopLevelUIElementAttribute as CFStringMBS

8.1.250  kAXTrashDockItemSubrole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
One of the role names used for the AXUIElement class.

8.1.251  kAXUIElementDestroyedNotification as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
One of the notification names used for the axobserver class.

8.1.252  kAXUIElementMBSTypeID as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns the TypeID of the AXUIElement class.

8.1.253  kAXUnitDescriptionAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
One of the attribute constants.

8.1.254  kAXUnitsAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
One of the attribute constants.

8.1.255  kAXUnitsChangedNotification as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
One of the layout area notification constants.

8.1.256  kAXUnknownOrientationValue as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
A constant used for the AXUIElement class.
8.1.257  kAXUnknownRole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.

8.1.258  kAXUnknownSortDirectionValue as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
A constant used for the AXUIElement class.

8.1.259  kAXUnknownSubrole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.

8.1.260  kAXURLAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.261  kAXURLDockItemSubrole as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the role names used for the AXUIElement class.

8.1.262  kAXValueAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.263  kAXValueChangedNotification as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the notification names used for the axobserver class.
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8.1.264  kAXValueDescriptionAttribute as CFString

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute constants.

8.1.265  kAXValueIncrementAttribute as CFString

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names used for the AXUIElement class.

8.1.266  kAXValueIndicatorRole as CFString

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.267  kAXValueWrapsAttribute as CFString

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names used for the AXUIElement class.

8.1.268  kAXVerticalOrientationValue as CFString

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** A constant used for the AXUIElement class.

8.1.269  kAXVerticalScrollBarAttribute as CFString

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names used for the AXUIElement class.

8.1.270  kAXVerticalUnitDescriptionAttribute as CFString

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute constants.
8.1.271  **kAXVerticalUnitsAttribute as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.272  **kAXVisibleCellsAttribute as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.273  **kAXVisibleCharacterRangeAttribute as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.274  **kAXVisibleChildrenAttribute as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.275  **kAXVisibleColumnsAttribute as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.276  **kAXVisibleRowsAttribute as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.277  **kAXVisibleTextAttribute as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.
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8.1.278  kAXWarningValueAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute constants.

8.1.279  kAXWindowAttribute as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute names used for the AXUIElement class.

8.1.280  kAXWindowCreatedNotification as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the notification names used for the axobserver class.

8.1.281  kAXWindowDeminiaturizedNotification as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the notification names used for the axobserver class.

8.1.282  kAXWindowMiniaturizedNotification as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the notification names used for the axobserver class.

8.1.283  kAXWindowMovedNotification as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the notification names used for the axobserver class.

8.1.284  kAXWindowResizedNotification as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the notification names used for the axobserver class.
8.1.285  **kAXWindowRole as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.286  **kAXWindowsAttribute as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names used for the AXUIElement class.

8.1.287  **kAXYearFieldAttribute as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute constants. **Notes:** Convenience attribute that yields the year field of a date field element.

8.1.288  **kAXZoomButtonAttribute as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names used for the AXUIElement class.

8.1.289  **kAXZoomButtonSubrole as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the role names used for the AXUIElement class.

8.1.290  **MakeAXValue(theCFOBJECT as CFOBJECTMBS) as AXValueMBS**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an AXValue object containing the CFOBJECT. **Notes:** Actually only the RB object around the cfobject handle is replaced. You can’t do this using a cast in RB, so this function was created.
8.1.291 MakeAXValueFromCFRange(location as Integer, length as Integer) as AXValueMBS

MBS MacCF Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an AXValue object for a CFRange structure with the given values.

**Example:**

```vba
// create with values and read them back
dim a as AXValueMBS = AccessibilityMBS.MakeAXValueFromCFRange(5, 9)

if a.AXIsCFRange then
    dim lo, le as Integer

    if a.AXGetCFRange(lo, le) then
        MsgBox str(lo) + " " + str(le)
    else
        break // error
    end if
else
    break // error
end if
```

8.1.292 MakeAXValueFromCGPoint(x as single, y as single) as AXValueMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an AXValue object for a CGPoint structure with the given values.

8.1.293 MakeAXValueFromCGRect(x as single, y as single, width as single, height as single) as AXValueMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an AXValue object for a CGRect structure with the given values.

8.1.294 MakeAXValueFromCGSize(width as single, height as single) as AXValueMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an AXValue object for a CGSize structure with the given values.
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8.1.295 MakeProcessTrusted(path as string) as Integer

MBS MacCF Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Attempts to make the process represented by the specified path a trusted accessibility client. **Notes:**

Use this function to make a process a trusted accessibility client.

Note: The caller must be running as root to successfully call this function. In addition, the caller should relaunch the process after this function returns successfully for the trusted status to take effect.

Path: The path to the executable of the process to make trusted.

Returns an error code that indicates success or failure.

8.1.296 SystemWideAXUIElement as AXUIElementMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a AXUIElement which covers the whole system. **Example:**

```vbnet
// displays the current window title if accessibility is enabled in Mac OS X 10.2 or newer

dim SystemWideElement, FocusedApplicationElement, FocusedWindowElement as AXUIElementMBS
dim FocusedApplication, FocusedWindow, Title as AXValueMBS
dim s as String
dim cs as CFStringMBS

// show a window so there is one which can be found
window1.show

SystemWideElement = AccessibilityMBS.SystemWideAXUIElement
if SystemWideElement <> nil then
    FocusedApplication = SystemWideElement.AttributeValue(AccessibilityMBS.kAXFocusedApplicationAttribute)
    if FocusedApplication.Type = AccessibilityMBS.kAXUIElementMBSTypeID then
        FocusedApplicationElement = new AXUIElementMBS
        FocusedApplicationElement.Handle = FocusedApplication.Handle
        FocusedApplicationElement.RetainObject

        FocusedWindow = FocusedApplicationElement.AttributeValue(AccessibilityMBS.kAXFocusedWindowAttribute)
        if FocusedWindow <> nil and AccessibilityMBS.kAXUIElementMBSTypeID = FocusedWindow.Type then
            FocusedWindowElement = new AXUIElementMBS
            FocusedWindowElement.Handle = FocusedWindow.Handle
            FocusedWindowElement.RetainObject
```

Title=FocusedWindowElement.AttributeValue(AccessibilityMBS.kAXTitleAttribute)
if Title<>nil and Title.Type=kCFStringMBSTypeID then
   cs=new CFStringMBS
   cs.handle=Title.Handle
   cs.RetainObject
   msgbox cs.str
end if
end if
end if
end if

Notes: In the current implementation you can use this to get the AXUIElement for the frontmost application.

8.1.297 Constants

8.1.298 kAXErrorActionUnsupported = -25206

MBS MacCF Plugin, Plugin Version: 3.3. Function: One of the error values used for the lasterror property.

8.1.299 kAXErrorAPIDisabled = -25211

MBS MacCF Plugin, Plugin Version: 3.3. Function: One of the error values used for the lasterror property.

8.1.300 kAXErrorAttributeUnsupported = -25205

MBS MacCF Plugin, Plugin Version: 3.3. Function: One of the error values used for the lasterror property.

8.1.301 kAXErrorCannotComplete = -25204

MBS MacCF Plugin, Plugin Version: 3.3. Function: One of the error values used for the lasterror property.
8.1.302  kAXErrorFailure = -25200

MBS MacCF Plugin, Plugin Version: 3.3. **Function:** One of the error values used for the lasterror property.

8.1.303  kAXErrorIllegalArgument = -25201

MBS MacCF Plugin, Plugin Version: 3.3. **Function:** One of the error values used for the lasterror property.

8.1.304  kAXErrorInvalidUIElement = -25202

MBS MacCF Plugin, Plugin Version: 3.3. **Function:** One of the error values used for the lasterror property.

8.1.305  kAXErrorInvalidUIElementObserver = -25203

MBS MacCF Plugin, Plugin Version: 3.3. **Function:** One of the error values used for the lasterror property.

8.1.306  kAXErrorNotEnoughPrecision = -25214

MBS MacCF Plugin, Plugin Version: 13.0. **Function:** One of the error values used for the lasterror property.

8.1.307  kAXErrorNotificationAlreadyRegistered = -25209

MBS MacCF Plugin, Plugin Version: 3.3. **Function:** One of the error values used for the lasterror property.

8.1.308  kAXErrorNotificationNotRegistered = -25210

MBS MacCF Plugin, Plugin Version: 3.3. **Function:** One of the error values used for the lasterror property.

8.1.309  kAXErrorNotificationUnsupported = -25207

MBS MacCF Plugin, Plugin Version: 3.3. **Function:** One of the error values used for the lasterror property.
8.1.310  kAXErrorNotImplemented = -25208

MBS MacCF Plugin, Plugin Version: 3.3. **Function:** One of the error values used for the lasterror property.

8.1.311  kAXErrorNoValue = -25212

MBS MacCF Plugin, Plugin Version: 3.3. **Function:** One of the error values used for the lasterror property.

8.1.312  kAXErrorParameterizedAttributeUnsupported = -25213

MBS MacCF Plugin, Plugin Version: 13.0. **Function:** One of the error values used for the lasterror property.

8.1.313  kAXErrorSuccess = 0

MBS MacCF Plugin, Plugin Version: 3.3. **Function:** One of the error values used for the lasterror property.
8.2 class AXObserverMBS

8.2.1 class AXObserverMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class to observes notifications sent by the Accessibility services.
**Notes:**
This class requires Mac OS X 10.2 to work.
Subclass of the CFObjectMBS class.

8.2.2 Methods

8.2.3 AddNotification(element as AXUIElementMBS, notification as CFStringMBS) as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Adds a notification to the observer.
**Notes:** Returns an error code. (0 for no error and -1 if the function is not available)

8.2.4 Create(pid as Integer) as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new observer for the given process.
**Notes:** You need a valid process ID to observe the target application. The ProcessMBS class can help you.

8.2.5 RemoveNotification(element as AXUIElementMBS, notification as CFStringMBS) as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Removes a notification from the observer.
**Notes:** Returns an error code. (0 for no error and -1 if the function is not available)

8.2.6 Events

8.2.7 Action(element as AXUIElementMBS, notification as CFStringMBS)

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Called whenever an action occurs.
8.3 class AXUIElementMBS

8.3.1 class AXUIElementMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This class represents an element of the User Interface of an application.

**Example:**

```plaintext
// displays the current window title if accessibility is enabled in Mac OS X 10.2 or newer

dim SystemWideElement, FocusedApplicationElement, FocusedWindowElement as AXUIElementMBS
dim FocusedApplication, FocusedWindow, Title as AXValueMBS
dim s as String
dim cs as CFStringMBS

SystemWideElement = AccessibilityMBS.SystemWideAXUIElement
if SystemWideElement <> nil then
    FocusedApplication = SystemWideElement.AttributeValue(AccessibilityMBS.kAXFocusedApplicationAttribute)
    if FocusedApplication.Type = AccessibilityMBS.kAXUIElementMBSTypeID then
        FocusedApplicationElement = new AXUIElementMBS
        FocusedApplicationElement.Handle = FocusedApplication.Handle
        FocusedApplicationElement.RetainObject
    end if

    FocusedWindow = FocusedApplicationElement.AttributeValue(AccessibilityMBS.kAXFocusedWindowAttribute)
    if FocusedWindow <> nil and AccessibilityMBS.kAXUIElementMBSTypeID = FocusedWindow.Type then
        FocusedWindowElement = new AXUIElementMBS
        FocusedWindowElement.Handle = FocusedWindow.Handle
        FocusedWindowElement.RetainObject

        Title = FocusedWindowElement.AttributeValue(AccessibilityMBS.kAXTitleAttribute)
        if Title <> nil and Title.Type = kCFStringMBSTypeID then
            cs = new CFStringMBS
            cs.handle = Title.Handle
            cs.RetainObject
            msgbox cs.str
        end if
    end if
end if
```

**Notes:**

e.g. a window, a menuitem or a button.
This class requires Mac OS X 10.2 to work.
8.3. CLASS AXUIELEMENTMBS
Subclass of the CFObjectMBS class.

8.3.2 Methods

8.3.3 ActionDescription(action as CFStringMBS) as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the description of the action with the given name. **Notes:** Returns nil on any error.

8.3.4 ActionNames as CFArrayMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An CF array with all the possible action names. **Notes:** Returns nil on any error.

8.3.5 AttributeNames as CFArrayMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a CF array with all the possible attribute names.

8.3.6 AttributeValue(attribute as CFStringMBS) as AXValueMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the value of an attribute.

8.3.7 AttributeValues(attribute as CFStringMBS, minindex as Integer, maxindex as Integer) as CFArrayMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the values of an attribute as a CF array.
8.3.8 ElementAtPosition(x as single, y as single) as AXUIElementMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the element which is on the given position.
**Notes:** e.g. on a window.

8.3.9 GetAttributeValueCount(attribute as CFStringMBS) as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Counts how much attributes of the given name exists.

8.3.10 IsAttributeSettable(attribute as CFStringMBS) as Boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns true if the attribute with the given name is setable.
**Notes:** Returns false on any error.

8.3.11 PerformAction(action as CFStringMBS)

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Performs a named action.

8.3.12 PostKeyboardEvent(keyChar as Integer, virtualKey as Integer, keydown as boolean)

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Posts a keyboard event.
**Example:**

```plaintext
// For example, to produce a 'Z',
// the SHIFT key must be down,
// the 'z' key must go down,
// and then the SHIFT and 'z' key must be released:

dim a as AXUIElementMBS
// get the element

a.PostKeyboardEvent( 0, 56, true ) // shift down
a.PostKeyboardEvent( asc("Z"), 6, true ) // 'z' down
a.PostKeyboardEvent( asc("Z"), 6, false ) // 'z' up
```
8.3. CLASS AXUIELEMENTMBS

a.PostKeyboardEvent( 0, 56, false ) // shift up

Notes:
You can only pass the root or application uielement. The KeyCodesMBS class may help you to find the correct codes.

Synthesize keyboard events. Based on the values entered, the appropriate key down, key up, and flags changed events are generated.
If keyChar is NUL (0), an appropriate value will be guessed at, based on the default keymapping.

All keystrokes needed to generate a character must be entered, including SHIFT, CONTROL, OPTION, and COMMAND keys.

To find the virtual keys, we'll check the RB documentation for the keyboard class.

8.3.13 ProcessID as Integer

Notes: The unix PID.

8.3.14 SetAttributeValue(attribute as CFStringMBS, value as CFObjectMBS)

Notes: Changed type of value to CFObject in plugin version 6.3. Before it was an AXValue.
CHAPTER 8. ACCESSIBILITY

8.4 class AXValueMBS

8.4.1 class AXValueMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

An AXValue is a CFObject but some extra data types are allowed.

**Notes:**

Every AXValue is a CFObject. In case the CFObject contains unknown data or just binary data it can be a AXValue object.

This class requires Mac OS X 10.2 to work.

Subclass of the CFObjectMBS class.

8.4.2 Methods

8.4.3 AXGetCFRange(byref location as Integer, byref length as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Returns the values of a CFRange in case the AXValue holds a CFRange.

**Notes:** Returns true if it's a CFRange.

8.4.4 AXGetCGPoint(byref x as single, byref y as single) as boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Returns the values of the CGPoint structure inside the AXValue.

**Notes:** Returns true if successfull.

8.4.5 AXGetCGRect(byref x as single, byref y as single, byref width as single, byref height as single) as boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Returns the values of the CGRect inside the AXValue in case there is one.

**Notes:** Returns true if successfull.

8.4.6 AXGetCGSize(byref width as single, byref height as single) as boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Returns the values of the CGSize structure inside the AXValue in case there is one.
8.4. CLASS AXVALUEMBS

Notes: Returns true if successful.

8.4.7 Properties

8.4.8 AXIsCFRange as Boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if the AXValue contains a CFRange structure. **Notes:** (Read only property)

8.4.9 AXIsCGPoint as Boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if the AXValue contains a CGPoint structure. **Notes:** (Read only property)

8.4.10 AXIsCGRect as Boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if the AXValue contains a CGRect structure. **Notes:** (Read only property)

8.4.11 AXIsCGSize as Boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if the AXValue contains a CGSize structure. **Notes:** (Read only property)

8.4.12 AXTypeID as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Type ID of the AXValue. **Notes:** Values:
Types from CoreGraphics:
kAXValueCGPointType = 1,
kAXValueCGSizeType = 2,
kAXValueCGRectType = 3,

Types from CFBase:
kAXValueCFRangeType = 4,

Other:
kAXValueIllegalType = 0

In case this function returns 0 the object may be a normal CFObject.
(Read only property)
Chapter 9

Addressbook

9.1 class ABAccountMBS

9.1.1 class ABAccountMBS

MBS MacCocoa Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

Function: The class for an addressbook account.

Example:

dim a as new ABAddressBookMBS
dim accounts() as ABAccountMBS = a.allAccounts

for each c as ABAccountMBS in accounts
MsgBox c.Name + EndOfLine + c.Identifier + EndOfLine + c.BaseURL
next

Notes:

The ABAccount functions are not documented by Apple, but work well on OS X version 10.8 to 10.10. They may work in newer versions if Apple does not change them. They may work in past OS X versions if Apple hat the same features there, too.
If the functions are not available in a OS X version, you will see NSExceptionMBS being raised.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.
9.1.2 Methods

9.1.3 Constructor


9.1.4 Properties

9.1.5 BaseURL as String

Notes: (Read only property)

9.1.6 Handle as Integer

Notes: (Read and Write property)

9.1.7 Identifier as String

Notes: (Read only property)

9.1.8 isMainAccount as Boolean

MBS MacCocoa Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether this account is the main account.
Notes: (Read only property)

9.1.9 Name as String

9.1. CLASS ABACCOUNTMBS

Example:

```vbnet
dim a as new ABAddressBookMBS
dim accounts() as ABAccountMBS = a.allAccounts

dim c as ABAccountMBS = accounts(0)
MsgBox c.Name
```

Notes: (Read only property)
9.2 class ABAddressBookMBS

9.2.1 class ABAddressBookMBS

Notes: All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

9.2.2 Methods

9.2.3 ABAddressBookErrorDomain as string


9.2.4 ABMultiValueIdentifiersErrorCode as string


9.2.5 accountWithIdentifier(Identifier as string) as ABAccountMBS


9.2.6 addRecord(record as ABRecordMBS) as boolean

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Adds a record (ABPersonMBS or ABGroup) to the AddressBook Database
Example:

```vbnet
dim a as new ABAddressBookMBS
dim p as new ABPersonMBS
if not p.setValue("Miller", a.kABLastNameProperty) then
    MsgBox "Failed to set field "+a.LocalizedPropertyOrLabel(a.kABLastNameProperty)
end if
```
if not p.setValue("Ben",a.kABFirstNameProperty) then
MsgBox "Failed to set field " + a.LocalizedPropertyOrLabel(a.kABFirstNameProperty)
end if

if a.addRecord(p) then
MsgBox "Record added"
else
MsgBox "Failed to add record"
end if

if a.save then
MsgBox "Changes saved"
else
MsgBox "Failed to save changes"
end if

**Notes:** Returns true if the addition was successful
See also:

- 9.2.7 addRecord(record as ABRecordMBS, Account as ABAccountMBS, byref error as NSErrorMBS) as boolean 2483
- 9.2.8 addRecord(record as ABRecordMBS, byref error as NSErrorMBS) as boolean 2483

### 9.2.7 addRecord(record as ABRecordMBS, Account as ABAccountMBS, byref error as NSErrorMBS) as boolean

MBS MacCocoa Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** Adds a record (ABPersonMBS or ABGroup) to the AddressBook Database with given account.

**Notes:**
Returns true if the addition was successful.
On Mac OS X 10.7 the error parameter is set to describe the error.
See also:

- 9.2.6 addRecord(record as ABRecordMBS) as boolean 2482
- 9.2.8 addRecord(record as ABRecordMBS, byref error as NSErrorMBS) as boolean 2483

### 9.2.8 addRecord(record as ABRecordMBS, byref error as NSErrorMBS) as boolean


**Function:** Adds a record (ABPersonMBS or ABGroup) to the AddressBook Database.
CHAPTER 9. ADDRESSBOOK

Notes:
Returns true if the addition was successful.
On Mac OS X 10.7 the error parameter is set to describe the error.
See also:

- 9.2.6 addRecord(record as ABRecordMBS) as boolean 2482
- 9.2.7 addRecord(record as ABRecordMBS, Account as ABAccountMBS, byref error as NSErrorMBS) as boolean 2483

9.2.9 addressBook as ABAAddressBookMBS

Notes:
If you’re just making one-off lookups and edits, the sharedAddressBook method is probably more appropriate.
If the user denies your application access to the Address Book database, this method returns nil.

Available in OS X v10.5 and later.
You need to use this method if you want to get an addressbook for ABPersonViewMBS.

9.2.10 allAccounts as ABAccountMBS()

MBS MacCocoa Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Queries list of all accounts.
Example:

dim a as new ABAAddressBookMBS
dim accounts() as ABAccountMBS = a.allAccounts
Break // look in debugger

9.2.11 Constructor

9.2. **CLASS ABADDRESSBOOKMBS**

9.2.12 **enabledAccounts as ABAccountMBS()**

MBS MacCocoa Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries list of enabled accounts.  

**Example:**

```plaintext
dim a as new ABAddressBookMBS
dim accounts() as ABAccountMBS = a.enabledAccounts
Break // look in debugger
```

9.2.13 **EnableEvent**

MBS MacCocoa Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Activates the events in this class.  

**Notes:** You only need to call this if you use AddHandler command in Real Studio to add event handlers. The plugin automatically does that in the constructor, but that is too early for AddHandler. And plugin on enables events if you use them.

9.2.14 **formattedAddressFromDictionary(address as Dictionary) as NSAttributedStringMBS**

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an attributed string containing the formatted address.  

**Notes:**

The string’s attributes match address dictionary keys (kABAddressStreetKey for example). Each attribute value contains the localized description of the key. (For example, the value of a Canadian kABAddressZIPKey field would be Postal Code)

9.2.15 **GotSharedAddressbook as boolean**

MBS MacCocoa Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether some other part of your app queried the shared addressbook already.  

**Notes:**

sharedAddressbook asks for permissions the first time you call it. So with this function you can check if some other application part already queried the sharedAddressbook function. If true, a call to sharedAddressbook should return quickly. Either with nil (no permissions) or the addressbook.
9.2.16 groupForName(name as string) as ABGroupMBS

**Function:** Searches the group with the given name.
**Example:**
```vba
dim a as new ABAddressBookMBS
dim name as string = "Some Group"
dim g as ABGroupMBS = a.groupForName(name)
MsgBox g.DisplayName + " : " + str(g.members.Ubound + 1)
```

9.2.17 groupForUniqueId(uniqueid as string) as ABGroupMBS

**Function:** Returns a ABGroupMBS matching a given unique ID.
**Example:**
```vba
dim a as new ABAddressBookMBS

// you have some uid
dim groups() as ABGroupMBS = a.groups
dim uid as string = groups(0).valueForProperty(a.kABUIDProperty)

// later you want to find the group
dim g as ABGroupMBS = a.groupForUniqueId(uid)

// shows the name
MsgBox g.valueForProperty(a.kABGroupNameProperty)
```

**Notes:**
Returns nil if the record could not be found or matches to a person.
Available in Mac OS X 10.3 or newer.
see also recordForUniqueId.
See also:
- 9.2.18 groupForUniqueId(uniqueid as string, account as ABAccountMBS) as ABGroupMBS

9.2.18 groupForUniqueId(uniqueid as string, account as ABAccountMBS) as ABGroupMBS

MBS MacCocoa Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** Finds a group for given unique ID for given account.
9.2. **CLASS ABADDRESSBOOKMBS**

See also:

- 9.2.17 `groupForUniqueId(uniqueid as string) as ABGroupMBS`  

9.2.19 **groups as ABGroupMBS()**


**Function:** Returns an array of all the groups in the AddressBook database

**Example:**

```vba
' list all email addresses in one group
Dim book as ABAddressBookMBS
dim groups() as ABGroupMBS
dim person as ABPersonMBS
dim data as ABMultiValueMBS
dim s as string

book=new ABAddressBookMBS
groups=book.groups

for each group as ABGroupMBS in groups
    If group.valueForProperty(book.kABGroupNameProperty)= "test" then // or any valid group
        dim members() as ABPersonMBS = group.members

        for each member as ABPersonMBS in members
            data=person.valueForProperty(book.kABEmailProperty)
            if data<>nil then
                for k as Integer=data.count-1 downto 0
                    s=s+data.valueAtIndex(k)+EndOfLine
                next
            end if
        next
    end if
next
```

**Notes:**

Returns an empty array in case the DB doesn’t contain any groups.

Returns nil on any error.
9.2.20  groupsForAccount (account as ABAccountMBS) as ABGroupMBS()

MBS MacCocoa Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Returns an array of all the groups for this account.
Example:

    dim a as new ABAddressBookMBS
    dim c as ABAccountMBS = a.defaultAccount
    dim groups() as ABGroupMBS = a.groupsForAccount(c)

Break // look in debugger

Notes: Returns an empty array in case the DB doesn’t contain any body.

9.2.21  kABAddressCityKey as string

Function: One of the dictionary keys for the address.

9.2.22  kABAddressCountryCodeKey as string

Notes:

kABAddressCountryCodeKey code must be one of the following:
iso country codes

    ae = United Arab Emirates
    ar = Argentina
    at = Austria
    au = Australia
    ba = Bosnia and Herzegovina
    be = Belgium
    bg = Bulgaria
    bh = Bahrain
    br = Brazil
    ca = Canada
    ch = Switzerland
    cn = China
    cs = Czech
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</tbody>
</table>
9.2.23 kABAddressCountryKey as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the dictionary keys for the address. **Notes:**

kABAddressCountryCodeKey code must be one of the following: iso country codes

9.2.24 kABAddressHomeLabel as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A label for the home address.

9.2.25 kABAddressProperty as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Street Addresses - kABMultiDictionaryProperty **Notes:** This property is used for persons only.

9.2.26 kABAddressStateKey as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the dictionary keys for the address.

9.2.27 kABAddressStreetKey as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the dictionary keys for the address.

9.2.28 kABAddressWorkLabel as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A label for the work address.
9.2. CLASS ABADDRESSBOOKMBS

9.2.29 kABAddressZIPKey as string


9.2.30 kABAIMHomeLabel as string


9.2.31 kABAIMInstantProperty as string

Notes:
This property is used for persons only.
Deprecated in Mac OS 10.7. You should use kABInstantMessageProperty.

9.2.32 kABAIMMobileMeLabel as string

Notes:
Available on Mac OS X 10.7 or later.
none

9.2.33 kABAIMWorkLabel as string


9.2.34 kABAAlternateBirthdayComponentsProperty as string

9.2.35 kABAnniversaryLabel as string


9.2.36 kABAssistantLabel as string


9.2.37 kABBirthdayComponentsProperty as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the property names for the addressbook records. Notes: Available on Mac OS X 10.7 or later. Birth date - kABDateComponentsProperty

9.2.38 kABBirthdayProperty as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Birth date - kABDateProperty Notes: This property is used for persons only.

9.2.39 kABBrotherLabel as string


9.2.40 kABCalendarURIsProperty as string

9.2. CLASS ABADDRESSBOOKMBS

9.2.41 kABChildLabel as string


9.2.42 kABCreationDateProperty as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creation Date (when first saved) - kABDateProperty
Notes: A property for all records.

9.2.43 kABDatabaseChangedExternallyNotification as string

Notes:
Posted when a process other than the current one has changed the Address Book database. Depending on the operation performed on the address book, one or more of the following keys may be included in the user-info dictionary: kABInsertedRecords, kABUpdatedRecords, and kABDeletedRecords. The values for each of the keys are the unique IDs of the records that were inserted, updated, or deleted, respectively. If the values for all the keys are nil, every record has changes. For example, this happens when the Address Book database is restored from a backup copy.

The plugin implements this notification for you and calls the DatabaseChanged event in ABAddressBookMBS class.

9.2.44 kABDatabaseChangedNotification as string

Notes:
Posted when this process has changed the Address Book database. Depending on the operation performed on the address book, one or more of the following keys may be included in the user-info dictionary: kABInsertedRecords, kABUpdatedRecords, and kABDeletedRecords. The values for each of the keys are the unique IDs of the records that were inserted, updated, or deleted, respectively. If the values for all the keys are nil, every record has changes. For example, this happens when the Address Book database is restored from a backup copy.

The plugin implements this notification for you and calls the DatabaseChanged event in ABAddressBookMBS class.
9.2.45  kABDeletedRecords as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys contained by the user-info dictionary of the notifications posted by the Address Book framework.  
**Notes:** Records that have been deleted.

9.2.46  kABDepartmentProperty as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Department name - (Person)  
**Notes:** This property is used for persons only.

9.2.47  kABEmailHomeLabel as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A label for the home email address.

9.2.48  kABEmailMobileMeLabel as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the labels for emails.  
**Notes:**  
Available on Mac OS X 10.7 or later.  
MobileMe email

9.2.49  kABEmailProperty as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Email(s) - kABMultiStringProperty  
**Notes:** This property is used for persons only.
9.2. **CLASS ABADDRESSBOOKMBS**

### 9.2.50 kABEmailWorkLabel as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A label for the work email address.

### 9.2.51 kABFatherLabel as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the labels for the related names.

### 9.2.52 kABFirstNamePhoneticProperty as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** First name Phonetic - kABStringProperty  
**Notes:** This property is used for persons only.

### 9.2.53 kABFirstNameProperty as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** First name - kABStringProperty  
**Example:**
```vba
dim a as new ABAddressBookMBS
dim p as new ABPersonMBS

if not p.setValue("Ben",a.kABFirstNameProperty) then MsgBox "Failed to set field " + a.LocalizedPropertyOrLabel(a.kABFirstNameProperty)
end if
```

**Notes:** This property is used for persons only.

### 9.2.54 kABFriendLabel as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the labels for the related names.
9.2.55  kABGroupNameProperty as string

**Function:** Name of the group - kABStringProperty  
**Example:**

```pascal
dim theAB as new ABAddressBookMBS
dim result as new ABGroupMBS
dim error as NSErrorMBS
dim b as Boolean=result.SetValue("test",TheAB.kABGroupNameProperty,error)
if not b then
    MsgBox("Failed to name group test." +error.description)
else
    MessageBox "OK"
end if
```

**Notes:** This property is used for groups only.

9.2.56  kABHomeLabel as string

**Function:** A generic label.  
**Notes:** All kABXXXXHomeLabel are equivalent to this label.

9.2.57  kABHomePageLabel as string

**Function:** Homepage URL label for the kABURLsProperty.

9.2.58  kABHomePageProperty as string

**Function:** Home Web page - kABStringProperty  
**Notes:**  
This property is used for persons only.  
Deprecated in Mac OS 10.4. You should use kABURLsProperty.
9.2. CLASS ABAADDRESSBOOKMBS

9.2.59  kABICQHomeLabel as string


9.2.60  kABICQInstantProperty as string

Notes: Deprecated in Mac OS 10.7. You should use kABInstantMessageProperty. This property is used for persons only.

9.2.61  kABICQWorkLabel as string


9.2.62  kABInsertedRecords as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the keys contained by the user-info dictionary of the notifications posted by the Address Book framework. Notes: Records that have been inserted.

9.2.63  kABInstantMessageProperty as string

9.2.64  kABInstantMessageServiceAIM as string

Function: One of the values for the kABInstantMessageUsernameKey key.
Notes: Available on Mac OS X 10.7 or later.
AIM

9.2.65  kABInstantMessageServiceFacebook as string

Function: One of the values for the kABInstantMessageUsernameKey key.
Notes: Available on Mac OS X 10.7 or later.
Facebook

9.2.66  kABInstantMessageServiceGaduGadu as string

Function: One of the values for the kABInstantMessageUsernameKey key.
Notes: Available on Mac OS X 10.7 or later.
Gadu-Gadu

9.2.67  kABInstantMessageServiceGoogleTalk as string

Function: One of the values for the kABInstantMessageUsernameKey key.
Notes: Available on Mac OS X 10.7 or later.
Google Talk

9.2.68  kABInstantMessageServiceICQ as string

Function: One of the values for the kABInstantMessageUsernameKey key.
Notes:
9.2. CLASS ABADDRESSBOOKMBS

Available on Mac OS X 10.7 or later.

ICQ

9.2.69  kABInstantMessageServiceJabber as string

**Function:** One of the values for the kABInstantMessageUsernameKey key.
**Notes:**
Available on Mac OS X 10.7 or later.
Jabber

9.2.70  kABInstantMessageServiceKey as string

**Function:** One of the keys for the dictionary for an instant message.
**Notes:**
Available on Mac OS X 10.7 or later.
Dictionary key for the service type, not guaranteed to be present; possible values follow.

9.2.71  kABInstantMessageServiceMSN as string

**Function:** One of the values for the kABInstantMessageUsernameKey key.
**Notes:**
Available on Mac OS X 10.7 or later.
MSN

9.2.72  kABInstantMessageServiceQQ as string

**Function:** One of the values for the kABInstantMessageUsernameKey key.
**Notes:**
Available on Mac OS X 10.7 or later.
QQ
9.2.73  kABInstantMessageServiceSkype as string

Function: One of the values for the kABInstantMessageUsernameKey key.
Notes:  
Available on Mac OS X 10.7 or later.
Skype

9.2.74  kABInstantMessageServiceYahoo as string

Function: One of the values for the kABInstantMessageUsernameKey key.
Notes:  
Available on Mac OS X 10.7 or later.
Yahoo!

9.2.75  kABInstantMessageUsernameKey as string

Function: One of the keys for the dictionary for an instant message.
Notes:  
Available on Mac OS X 10.7 or later.
Dictionary key for the instant messaging handle/username

9.2.76  kABJabberHomeLabel as string

Function: A label for the home jabber Instant Messaging account.

9.2.77  kABJabberInstantProperty as string

Function: Jabber Instant Messaging - kABMultiStringProperty  
Notes:  
Deprecated in Mac OS 10.7. You should use kABInstantMessageProperty. This property is used for persons only.
9.2. CLASS ABADDRESSBOOKMBS

9.2.78 kABJabberWorkLabel as string


9.2.79 kABJobTitleProperty as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Job Title - kABStringProperty
**Notes:** This property is used for persons only.

9.2.80 kABLastNamePhoneticProperty as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Last name Phonetic - kABStringProperty
**Notes:** This property is used for persons only.

9.2.81 kABLastNameProperty as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Last name - kABStringProperty
**Example:**
```vbscript
dim a as new ABAddressBookMBS
dim p as new ABPersonMBS
if not p.setValue("Miller",a.kABLastNameProperty) then
    MsgBox "Failed to set field " +a.LocalizedPropertyOrLabel(a.kABLastNameProperty)
end if
```
**Notes:** This property is used for persons only.

9.2.82 kABMaidenNameProperty as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The maiden name of the person - kABStringProperty
**Example:**
dim a as new ABAddressBookMBS
dim p as ABPersonMBS = a.owner // get my card
MsgBox p.valueForProperty(a.kABMaidenNameProperty) // show my maiden name

Notes: This property is used for persons only.

9.2.83  kABManagerLabel as string


9.2.84  kABMiddleNamePhoneticProperty as string

Notes: This property is used for persons only.

9.2.85  kABMiddleNameProperty as string

Notes: This property is used for persons only.

9.2.86  kABMobileMeLabel as string

Notes:
Available on Mac OS X 10.7 or later.
MobileMe - for AIM or email values

9.2.87  kABModificationDateProperty as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Last saved date - kABDateProperty
9.2.88  **kABMotherLabel as string**

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the labels for the related names.

9.2.89  **kABMSNHomeLabel as string**


9.2.90  **kABMSNInstantProperty as string**

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** MSN Instant Messaging - kABMultiStringProperty

**Notes:**
This property is used for persons only.
Deprecated in Mac OS 10.7. You should use kABInstantMessageProperty.

9.2.91  **kABMSNWorkLabel as string**

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A label for the work MSN Instant Messaging account.

9.2.92  **kABNicknameProperty as string**

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The nick name of the person - kABStringProperty

**Notes:** This property is used for persons only.

9.2.93  **kABNoteProperty as string**

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Note - kABStringProperty
Example:

```vba
   dim a as new ABAddressBookMBS
    dim p as ABPersonMBS = a.owner

    // read
    MsgBox p.valueForProperty(a.kABNoteProperty).StringValue

    // write
    if p.setValue("Hello World", a.kABNoteProperty) then
        if a.save then
            MsgBox "Changed."
        end if
    end if
```

**Notes:** This property is used for persons only.

### 9.2.94 kABOrganizationProperty as string


**Function:** Company name - kABStringProperty

**Example:**

```vba
    dim a as new ABAddressBookMBS
    dim p as new ABPersonMBS

    if not p.setValue("My Company", a.kABOrganizationProperty) then
        MsgBox "Failed to set field " + a.LocalizedPropertyOrLabel(a.kABOrganizationProperty)
    end if
```

**Notes:** This property is used for persons only.

### 9.2.95 kABOtherDateComponentsProperty as string


**Function:** One of the properties for a addressbook records.

**Notes:**

Available on Mac OS X 10.7 or later.
Dates associated with this person - kABMultiDateComponentsProperty - (Person)
9.2. CLASS ABADDRESSBOOKMBS

9.2.96  kABOtherDatesProperty as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Dates associated with this person - kABMultiDateProperty - (Person) Notes: This property is used for persons only.

9.2.97  kABOtherLabel as string


9.2.98  kABParentLabel as string


9.2.99  kABPartnerLabel as string


9.2.100  kABPersonFlags as string


```vbnet
dim a as new ABAddressBookMBS
dim p as new ABPersonMBS
if not p.setValue("Miller",a.kABLastNameProperty) then
    MsgBox "Failed to set field " + a.LocalizedPropertyOrLabel(a.kABLastNameProperty)
end if

if not p.setValue("Ben",a.kABFirstNameProperty) then
    MsgBox "Failed to set field " + a.LocalizedPropertyOrLabel(a.kABFirstNameProperty)
end if

if not p.setValue("My Company",a.kABOrganizationProperty) then
```

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MsgBox "Failed to set field " + a.LocalizedPropertyOrLabel(a.kABOrganizationProperty) end if

if not p.setValue(a.kABShowAsCompany, a.kABPersonFlags) then
  MsgBox "Failed to set field " + a.LocalizedPropertyOrLabel(a.kABPersonFlags)
end if

if a.addRecord(p) then
  MsgBox "Record added"
else
  MsgBox "Failed to add record"
end if

if a.save then
  MsgBox "Changes saved"
else
  MsgBox "Failed to save changes"
end if

Notes: This property is used for persons only.

9.2.101 kABPhoneHomeFAXLabel as string


9.2.102 kABPhoneHomeLabel as string

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<th>Two-letter code</th>
<th>Country Name</th>
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<td>Russian Federation</td>
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<td>sa</td>
<td>Saudi Arabia</td>
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</tbody>
</table>
9.2.103  kABPhoneiPhoneLabel as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The label for the mobile phone number (for iPhone).

9.2.104  kABPhoneMainLabel as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The label for the main phone number.

9.2.105  kABPhoneMobileLabel as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The label for the mobile phone number.

9.2.106  kABPhonePagerLabel as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The label for the pager number.

9.2.107  kABPhoneProperty as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Generic phone number - kABMultiStringProperty

**Notes:** This property is used for persons only.

9.2.108  kABPhoneWorkFAXLabel as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The label for the work fax number.

9.2.109  kABPhoneWorkLabel as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The label for the work phone number.
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9.2.110 kABRelatedNamesProperty as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** names related to this person - kABMultiStringProperty
**Notes:** This property is used for persons only.

9.2.111 kABSisterLabel as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the labels for the related names.

9.2.112 kABSocialProfileProperty as string

**Notes:** Available on Mac OS X 10.7 or later.
The multi dictionary contains dictionaries. Each has keys like kABSocialProfileURLKey, kABSocialProfileUsernameKey, kABSocialProfileUserIdentifierKey and kABSocialProfileServiceKey.

kABSocialProfileServiceKey has values like kABSocialProfileServiceTwitter, kABSocialProfileServiceFacebook, kABSocialProfileServiceLinkedIn, kABSocialProfileServiceFlickr and kABSocialProfileServiceMySpace.

9.2.113 kABSocialProfileServiceFacebook as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the values for the social profile dictionary’s kABSocialProfileServiceKey key.
**Notes:** Available on Mac OS X 10.7 or later.
Facebook

9.2.114 kABSocialProfileServiceFlickr as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the values for the social profile dictionary’s kABSocialProfileServiceKey key.
**Notes:** Available on Mac OS X 10.7 or later.
9.2.115 kABSocialProfileServiceKey as string

Function: One of the keys for addressbook record values.
Notes:
Available on Mac OS X 10.7 or later.
The service for this social profile. Can be kABSocialProfileServiceTwitter, kABSocialProfileServiceFacebook, kABSocialProfileServiceLinkedIn, kABSocialProfileServiceFlickr or kABSocialProfileServiceMySpace.

9.2.116 kABSocialProfileServiceLinkedIn as string

Function: One of the values for the social profile dictionary’s kABSocialProfileServiceKey key.
Notes:
Available on Mac OS X 10.7 or later.
LinkedIn

9.2.117 kABSocialProfileServiceMySpace as string

Function: One of the values for the social profile dictionary’s kABSocialProfileServiceKey key.
Notes:
MySpace
Available on Mac OS X 10.7 or later.

9.2.118 kABSocialProfileServiceSinaWeibo as string

Function: One of the values for the social profile dictionary’s kABSocialProfileServiceKey key.
Notes:
SinaWeibo
Available in Mac OS X 10.8 and newer.
9.2.119  kABSocialProfileServiceTencentWeibo as string

Function: One of the values for the social profile dictionary’s kABSocialProfileServiceKey key.
Notes:
Available on Mac OS X 10.9 or later.
Tencent Weibo

9.2.120  kABSocialProfileServiceTwitter as string

Function: One of the values for the social profile dictionary’s kABSocialProfileServiceKey key.
Notes:
Available on Mac OS X 10.7 or later.
Twitter

9.2.121  kABSocialProfileServiceYelp as string

Function: One of the values for the social profile dictionary’s kABSocialProfileServiceKey key.
Notes:
Available on Mac OS X 10.7 or later.
Yelp

9.2.122  kABSocialProfileURLKey as string

Function: One of the keys for addressbook record values.
Notes:
Available on Mac OS X 10.7 or later.
Service name. Possible values follow.

9.2.123  kABSocialProfileUserIdentifierKey as string

Function: One of the keys for addressbook record values.
Notes:
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Available on Mac OS X 10.7 or later.
Service-specific identifier.

9.2.124 kABSocialProfileUsernameKey as string

**Function:** One of the keys for addressbook record values. 
**Notes:**
Available on Mac OS X 10.7 or later.  
User-visible profile name.

9.2.125 kABSpouseLabel as string

**Function:** One of the labels for the related names.

9.2.126 kABSuffixProperty as string

**Function:** The name suffix - kABStringProperty
**Notes:**
e.g. "Sr." "Jr." "III"
This property is used for persons only.

9.2.127 kABTitleProperty as string

**Function:** the title of the person - kABStringProperty
**Notes:**
e.g. "Sir" "Duke" "General" "Lord"
This property is used for persons only.

9.2.128 kABUIDProperty as string

**Function:** The UID property - kABStringProperty
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Notes: A property for all records.

9.2.129 kABUpdatedRecords as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the keys contained by the user-info dictionary of the notifications posted by the Address Book framework. Notes: Records that have been updated.

9.2.130 kABURLsProperty as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: URLs - kABMultiStringProperty Example:

```vba
// shows all websites with labels
dim a as new ABAddressBookMBS
dim p as ABPersonMBS = a.owner
dim m as ABMultiValueMBS = p.valueForProperty(a.kABURLsProperty)

dim u as Integer = m.count-1
for i as Integer = 0 to u
    dim label as string = m.labelAtIndex(i)
    dim value as string = m.valueAtIndex(i)
    MsgBox label+” -“+value
next
```

Notes: This property is used for persons only.

9.2.131 kABWorkLabel as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A generic label. Notes: All kABXXXXWorkLabel are equivalent to this label
9.2.132  kABYahooHomeLabel as string


9.2.133  kABYahooInstantProperty as string

**Notes**: This property is used for persons only. Deprecated in Mac OS 10.7. You should use kABInstantMessageProperty.

9.2.134  kABYahooWorkLabel as string


9.2.135  LocalizedPropertyOrLabel(propertyOrLabel as string) as string

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Returns the localized version of built in properties, labels or keys
**Notes**: Returns propertyOrLabel if not found (e.g. if not built in).

9.2.136  NewPersonWithVCardRepresentation(data as memoryblock) as ABPersonMBS

**Notes**: Returns nil on failure. Convenience function which can be used instead of the ABPersonMBS constructor.
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9.2.137 people as ABPersonMBS()

**Function:** Returns an array of all the people in the AddressBook database

**Example:**

```vba
dim a as new ABAddressBookMBS

// get all people
dim p(-1) as ABPersonMBS = a.people

// walk over people list
for each m as ABPersonMBS in p
try
  // ask for image
  dim j as NSImageMBS = m.image

  // do something with image
  if j<>nil then
    Backdrop=j.CopyPictureWithMask
  end if

  catch x as NSExceptionMBS
    // raises exception if there is no image
  end try
end next
```

**Notes:**

Returns an empty array in case the DB doesn’t contain any body.

Returns nil on any error.

---

9.2.138 peopleForAccount(account as ABAccountMBS) as ABPersonMBS()

MBS MacCocoa Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** Returns an array of all the people for this account.

**Example:**

```vba
dim a as new ABAddressBookMBS
dim c as ABAccountMBS = a.defaultAccount
dim people() as ABPersonMBS = a.peopleForAccount(c)

Break // look in debugger
```
Notes: Returns an empty array in case the DB doesn’t contain any body.

9.2.139  peopleForEmail(email as string) as ABPersonMBS()

Function: Searches a contact for the given email.
Example:

dim a as new ABAddressBookMBS
dim persons() as ABPersonMBS = a.peopleForEmail("support@monkeybreadsoftware.de")

if UBound(persons) >= 0 then
  MsgBox persons(0).DisplayName
else
  MsgBox "nothing found."
end if

9.2.140  persistentAccounts as ABAccountMBS()

MBS MacCocoa Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Queries list of all persistent accounts.
Example:

dim a as new ABAddressBookMBS
dim accounts() as ABAccountMBS = a.persistentAccounts
Break // look in debugger

9.2.141  personForUniqueId(uniqueid as string) as ABPersonMBS

Function: Returns a ABPersonMBS matching a given unique ID.
Example:

dim a as new ABAddressBookMBS

// you have some uid
dim uid as string = a.owner.valueForProperty(a.kABUIDProperty)

// later you want to find the person
9.2. CLASS ABADDRESSBOOKMBS

```
dim p as ABPersonMBS = a.personForUniqueId(uid)

// shows the name
MsgBox p.valueForProperty(a.kABFirstNameProperty)
```

**Notes:**

Returns nil if the record could not be found or matches to a group.
Available in Mac OS X 10.3 or newer.
see also recordForUniqueId.
See also:

- 9.2.142 personForUniqueId(uniqueid as string, account as ABAccountMBS) as ABPersonMBS 2517

9.2.142 personForUniqueId(uniqueid as string, account as ABAccountMBS) as ABPersonMBS

MBS MacCocoa Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** Finds a person for given unique ID for given account.
See also:

- 9.2.141 personForUniqueId(uniqueid as string) as ABPersonMBS 2516

9.2.143 recordClassFromUniqueId(uniqueid as string) as string

**Function:** Given a record uniqueId returns the record class name.
**Notes:** Return "ABPersonMBS" or "ABGroup" or "" for a given uniqueid.

9.2.144 recordForUniqueId(uniqueid as string) as ABRecordMBS

**Function:** Returns a record (ABPersonMBS or ABGroup) matching a given unique ID.
**Example:**

```
dim a as new ABAddressBookMBS

// you have some uid
dim uid as string = a.owner.valueForProperty(a.kABUIDProperty)

// later you want to find the person
dim r as ABRecordMBS = a.recordForUniqueId(uid)
```
if r is ABPersonMBS then
    dim p as ABPersonMBS = ABPersonMBS(r)

    // shows the name
    MsgBox p.valueForProperty(a.kABFirstNameProperty)
end if

Notes:

Returns nil if the record could not be found.
Available in Mac OS X 10.3 or newer.
See also:

- 9.2.145 recordForUniqueId(uniqueid as string, account as ABAccountMBS) as ABRecordMBS

9.2.145 recordForUniqueId(uniqueid as string, account as ABAccountMBS) as ABRecordMBS

MBS MacCocoa Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Finds a record for given unique ID for given account.
See also:

- 9.2.144 recordForUniqueId(uniqueid as string) as ABRecordMBS

9.2.146 recordsMatchingSearchElement(search as ABSearchElementMBS) as ABRecordMBS()

Function: Returns an array of records matching the given search element
Example:

dim ab as new ABAAddressBookMBS

    // search for people with birthday, by searching for dates starting 1901.
    dim searchDate as new date( 1901, 1, 1 )
    dim search as ABSearchElementMBS = ab.SearchElementForPersonProperty( ab.kABBirthdayProperty, ",", ",", searchDate, ab.kABGreaterThan )

    // do the search
    dim people() as ABRecordMBS = ab.RecordsMatchingSearchElement( search )

    for each person as ABRecordMBS in people
        dim p as ABPersonMBS = ABPersonMBS( person )
9.2. CLASS ABADDRESSBOOKMBS 2519

// now work on them
next

Notes: Returns an empty array if no matches or an error.

9.2.147 removeRecord(record as ABRecordMBS) as boolean

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Removes a record (ABPersonMBS or ABGroup) from the AddressBook Database
Notes: Returns true if the removal was successful.
See also:
  • 9.2.148 removeRecord(record as ABRecordMBS, byref error as NSErrorMBS) as boolean 2519

9.2.148 removeRecord(record as ABRecordMBS, byref error as NSErrorMBS) as boolean

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Removes a record (ABPersonMBS or ABGroup) from the AddressBook Database.
Notes: Returns true if the removal was successful.
On Mac OS X 10.7 the error parameter is set to describe the error.
See also:
  • 9.2.147 removeRecord(record as ABRecordMBS) as boolean 2519

9.2.149 save as boolean

Notes: Return true if successful (or there was no change).
See also:
  • 9.2.150 save(byref error as NSErrorMBS) as boolean 2519

9.2.150 save(byref error as NSErrorMBS) as boolean

Notes:
Return true if successful (or there was no change).
On Mac OS X 10.5 the error object is returned. On Mac OS X 10.4 this error property is nil and you only
can use the result.
See also:

- 9.2.149 save as boolean

9.2.151 searchElementForConjunction(conjunction as Integer, children() as ABSearchElementMBS) as ABSearchElementMBS

Notes: Convenience function which can be used instead of ABSearchElementMBS.searchElementForConjunction.

9.2.152 searchElementForGroupProperty(PropertyName as string, Label as string, Key as string, value as Variant, comparison as Integer) as ABSearchElementMBS

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a search element that will search groups.
Notes: Convenience function to be used instead of the searchElementForProperty method in the ABGroupMBS class.

9.2.153 searchElementForPersonProperty(PropertyName as string, Label as string, Key as string, value as Variant, comparison as Integer) as ABSearchElementMBS

Example:

// search person by record’s unique ID
// this is same as calling recordForUniqueId function directly
dim a as new ABAAddressBookMBS
dim e as ABSearchElementMBS

dim PropertyName as string = a.kABUIDProperty
const Label = ""
const Key = ""
const value = "637FA922-7A2B-4F9A-BFA3-023253D4A3D5:ABPerson" // some person ID
const comparison = a.kABEqual
9.2. CLASS ABADDRESSBOOKMBS

\[
e = \text{ABPersonMBS.searchElementForProperty(PropertyName, label, key, value, comparison)}
\]

\[
\text{dim records() as ABRecordMBS = a.recordsMatchingSearchElement(e)}
\]

\[
\text{for each r as ABRecordMBS in records}
\]
\[
\text{dim p as ABPersonMBS = ABPersonMBS(r)}
\]

\[
\text{MsgBox p.DisplayName}
\]

\text{next}

\text{Notes:} Convenience function to be used instead of the searchElementForProperty method in the ABPersonMBS class.

9.2.154 \text{ setMe(moi as ABPersonMBS)}


\text{Notes:} Pass nil to clear “Me”.

9.2.155 \text{ sharedAddressbook as ABAddressBookMBS}


\text{Example:}

// quickly find the addressbook, locate me and display my name:
\text{MsgBox ABAddressBookMBS.sharedAddressbook.owner.DisplayName}

\text{Notes:}

If you call this method several times, the object is cached, so it’s only created the first time (singleton). Returns nil on Windows or Linux or low memory or missing permissions.

9.2.156 \text{ sharedAddressbookMT as ABAddressBookMBS}


\text{Notes:}
On Mac OS X 10.8, the user will be asked to allow access to the addressbook for your application. As the call to sharedAddressbook blocks in this case, this method can be called on a thread to avoid the blocking of your app.

If you call this method several times, the object is cached, so it’s only created the first time (singleton). Returns nil on Windows or Linux or low memory or missing permissions.

### 9.2.157 Properties

#### 9.2.158 defaultAccount as ABAccountMBS

MBS MacCocoa Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries default account. **Example:**

```vba
dim a as new ABAddressBookMBS
MsgBox a.defaultAccount.Name
```

**Notes:** (Read only property)

#### 9.2.159 defaultCountryCode as string

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the default country code for records without specified codes. **Notes:**

Available in Mac OS X 10.3 or newer. (Read only property)

#### 9.2.160 defaultNameOrdering as Integer

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the default name ordering defined by the user in the Address Book preferences. **Notes:**

Possible values: kABFirstNameFirst or kABLastNameFirst Available in Mac OS X 10.3 or newer. (Read only property)
9.2. CLASS ABADDRESSBOOKMBS

9.2.161 Handle as Integer

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The handle to the used ABAddressbook object. Notes: (Read and Write property)

9.2.162 hasUnsavedChanges as boolean

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns true if they are unsaved changes. Notes: The unsaved changes flag is automatically set when changes are made. (Read only property)

9.2.163 owner as ABPersonMBS

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the person that represents the user. Notes: Returns nil if "me" was never set. (function is not named me as me is a reserved word in RealBasic) (Read only property)

9.2.164 Events

9.2.165 DatabaseChanged(Externally as boolean, InsertedRecords() as string, UpdatedRecords() as string, DeletedRecords() as string)

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The database has changed. Notes: Externally: true if changes were made by another application.
InsertedRecords: Record UIDs of records changed. (can be empty)
UpdatedRecords: Record UIDs of records updated. (can be empty)
DeletedRecords: Record UIDs of records deleted. (can be empty)
9.2.166 Constants

9.2.167 ABAddRecordsError = 1001
MBS MacCocoa Plugin, Plugin Version: 11.2. Function: One of the error constants.

9.2.168 ABPropertyReadOnlyError = 1014
MBS MacCocoa Plugin, Plugin Version: 11.2. Function: One of the error constants.

9.2.169 ABPropertyUnsupportedBySourceError = 1013
MBS MacCocoa Plugin, Plugin Version: 11.2. Function: One of the error constants.

9.2.170 ABPropertyValueValidationError = 1012
MBS MacCocoa Plugin, Plugin Version: 11.2. Function: One of the error constants.

9.2.171 ABRemoveRecordsError = 1002
MBS MacCocoa Plugin, Plugin Version: 11.2. Function: One of the error constants.

9.2.172 kABArrayProperty = 5

9.2.173 kABBitsInBitFieldMatch = 11
MBS MacCocoa Plugin, Plugin Version: 7.1. Function: One of the search comparison modes. Notes: Supported in Mac OS X 10.3 and newer versions.
9.2.174  kABContainsSubString = 7
MBS MacCocoa Plugin, Plugin Version: 7.1. **Function:** One of the search comparison modes.

9.2.175  kABContainsSubStringCaseInsensitive = 8
MBS MacCocoa Plugin, Plugin Version: 7.1. **Function:** One of the search comparison modes.

9.2.176  kABDataProperty = 7
MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the property type constants.  
**Notes:** Data object.

9.2.177  kABDateComponentsProperty = 8
MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the property type constants.  
**Notes:**  
Available on Mac OS X 10.7 or later.  
Date component.

9.2.178  kABDateProperty = 4
MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the property type constants.  
**Notes:** Date.

9.2.179  kABDefaultNameOrdering = 0
MBS MacCocoa Plugin, Plugin Version: 7.1. **Function:** One of the flags constants for the integer value stored in the property kABPersonFlags.

9.2.180  kABDictionaryProperty = 6
MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the property type constants.  
**Notes:** Dictionary.
9.2.181 kABDoesNotContainSubString = 12

Notes: Supported in Mac OS X 10.4 and newer versions.

9.2.182 kABDoesNotContainSubStringCaseInsensitive = 13

Notes: Supported in Mac OS X 10.4 and newer versions.

9.2.183 kABEqual = 0


9.2.184 kABEqualCaseInsensitive = 6


9.2.185 kABErrorInProperty = 0

MBS MacCocoa Plugin, Plugin Version: 11.2. Function: One of the property type constants.
Notes: Invalid property.

9.2.186 kABFirstNameFirst = & h40

MBS MacCocoa Plugin, Plugin Version: 7.1. Function: One of the flags constants for the integer value stored in the property kABPersonFlags.

9.2.187 kABGreaterThan = 4

9.2.188 kABGreaterThanOrEqual = 5

MBS MacCocoa Plugin, Plugin Version: 7.1. **Function:** One of the search comparison modes.

9.2.189 kABIntegerProperty = 2

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the property type constants. **Notes:** Integer.

9.2.190 kABLastNameFirst = & h20

MBS MacCocoa Plugin, Plugin Version: 7.1. **Function:** One of the flags constants for the integer value stored in the property kABPersonFlags.

9.2.191 kABLessThan = 2

MBS MacCocoa Plugin, Plugin Version: 7.1. **Function:** One of the search comparison modes.

9.2.192 kABLessThanOrEqual = 3

MBS MacCocoa Plugin, Plugin Version: 7.1. **Function:** One of the search comparison modes.

9.2.193 kABMultiArrayProperty = 261

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the property type constants. **Notes:** Multiple arrays.

9.2.194 kABMultiDataProperty = 263

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the property type constants. **Notes:** Multiple data values.
9.2.195  kABMultiDateComponentsProperty = 264

MBS MacCocoa Plugin, Plugin Version: 11.2. Function: One of the property type constants. Notes: Available on Mac OS X 10.7 or later. Date components.

9.2.196  kABMultiDateProperty = 260

MBS MacCocoa Plugin, Plugin Version: 11.2. Function: One of the property type constants. Notes: Multiple date values.

9.2.197  kABMultiDictionaryProperty = 262

MBS MacCocoa Plugin, Plugin Version: 11.2. Function: One of the property type constants.

9.2.198  kABMultiIntegerProperty = 258

MBS MacCocoa Plugin, Plugin Version: 11.2. Function: One of the property type constants. Notes: Multiple integer values.

9.2.199  kABMultiRealProperty = 259

MBS MacCocoa Plugin, Plugin Version: 11.2. Function: One of the property type constants. Notes: Multiple floating point values.

9.2.200  kABMultiStringProperty = 257

MBS MacCocoa Plugin, Plugin Version: 11.2. Function: One of the property type constants. Notes: Multiple strings.

9.2.201  kABMultiValueMask = & h100

MBS MacCocoa Plugin, Plugin Version: 11.2. Function: One of the property type constants. Notes: This value is combined with other values to define multi value defined.
9.2.202  kABNameOrderingMask = & h70

MBS MacCocoa Plugin, Plugin Version: 7.1. Function: One of the flags constants for the integer value stored in the property kABPersonFlags.

9.2.203  kABNotEqual = 1


9.2.204  kABNotEqualCaseInsensitive = 14

MBS MacCocoa Plugin, Plugin Version: 7.1. Function: One of the search comparison modes. Notes: Supported in Mac OS X 10.4 and newer versions.

9.2.205  kABNotWithinIntervalAroundToday = 19

MBS MacCocoa Plugin, Plugin Version: 7.1. Function: One of the search comparison modes. Notes: Supported in Mac OS X 10.4 and newer versions.

9.2.206  kABNotWithinIntervalAroundTodayYearless = 20

MBS MacCocoa Plugin, Plugin Version: 7.1. Function: One of the search comparison modes. Notes: Supported in Mac OS X 10.4 and newer versions.

9.2.207  kABNotWithinIntervalFromToday = 23

MBS MacCocoa Plugin, Plugin Version: 7.1. Function: One of the search comparison modes. Notes: Supported in Mac OS X 10.4 and newer versions.

9.2.208  kABNotWithinIntervalFromTodayYearless = 24

MBS MacCocoa Plugin, Plugin Version: 7.1. Function: One of the search comparison modes. Notes: Supported in Mac OS X 10.4 and newer versions.
9.2.209  kABPrefixMatch = 9

MBS MacCocoa Plugin, Plugin Version: 7.1. **Function:** One of the search comparison modes.

9.2.210  kABPrefixMatchCaseInsensitive = 10

MBS MacCocoa Plugin, Plugin Version: 7.1. **Function:** One of the search comparison modes.

9.2.211  kABRealProperty = 3

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the property type constants.  
**Notes:** a floating point number

9.2.212  kABSearchAnd = 0

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** A search conjunction.

9.2.213  kABSearchOr = 1

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** A search conjunction.

9.2.214  kABShowAsCompany = 1

MBS MacCocoa Plugin, Plugin Version: 7.1. **Function:** One of the flags constants for the integer value stored in the property kABPersonFlags.

9.2.215  kABShowAsMask = 7

MBS MacCocoa Plugin, Plugin Version: 7.1. **Function:** One of the flags constants for the integer value stored in the property kABPersonFlags.
9.2. CLASS ABADDRESSBOOKMBS

9.2.216 kABShowAsPerson = 0

MBS MacCocoa Plugin, Plugin Version: 7.1. **Function:** One of the flags constants for the integer value stored in the property kABPersonFlags.

9.2.217 kABShowAsResource = 2

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the flags constants for the integer value stored in the property kABPersonFlags.  
**Notes:** for Mac OS X 10.6.

9.2.218 kABShowAsRoom = 3

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the flags constants for the integer value stored in the property kABPersonFlags.  
**Notes:** for Mac OS X 10.6.

9.2.219 kABStringProperty = 1

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the property type constants.  
**Notes:** String

9.2.220 kABSuffixMatch = 15

MBS MacCocoa Plugin, Plugin Version: 7.1. **Function:** One of the search comparison modes.  
**Notes:** Supported in Mac OS X 10.4 and newer versions.

9.2.221 kABSuffixMatchCaseInsensitive = 16

MBS MacCocoa Plugin, Plugin Version: 7.1. **Function:** One of the search comparison modes.  
**Notes:** Supported in Mac OS X 10.4 and newer versions.

9.2.222 kABWithinIntervalAroundToday = 17

MBS MacCocoa Plugin, Plugin Version: 7.1. **Function:** One of the search comparison modes.  
**Notes:** Supported in Mac OS X 10.4 and newer versions.
9.2.223  \texttt{kABWithinIntervalAroundTodayYearless} = 18

MBS MacCocoa Plugin, Plugin Version: 7.1. \textbf{Function}: One of the search comparison modes. \textbf{Notes}: Supported in Mac OS X 10.4 and newer versions.

9.2.224  \texttt{kABWithinIntervalFromToday} = 21

MBS MacCocoa Plugin, Plugin Version: 7.1. \textbf{Function}: One of the search comparison modes. \textbf{Notes}: Supported in Mac OS X 10.4 and newer versions.

9.2.225  \texttt{kABWithinIntervalFromTodayYearless} = 22

MBS MacCocoa Plugin, Plugin Version: 7.1. \textbf{Function}: One of the search comparison modes. \textbf{Notes}: Supported in Mac OS X 10.4 and newer versions.
9.3. CLASS ABGROUPMBS

9.3 class ABGroupMBS

9.3.1 class ABGroupMBS

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** ABGroup is a subclass of ABRecord. **Example:**

```vbs
    dim a as new ABAddressBookMBS
    dim g() as ABGroupMBS = a.groups
    dim names() as string
    for each gg as ABGroupMBS in g
        names.append gg.DisplayName
    next
    MsgBox Join(names,EndOfLine)
```

**Notes:**
It represents a group of people or other groups. No recursions allowed.

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

Subclass of the ABRecordMBS class.

9.3.2 Methods

9.3.3 addMember(group as ABPersonMBS) as boolean

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds person to this group. **Example:**

```vbs
    dim wbook As new ABAddressBookMBS
    dim Group as new ABGroupMBS
    if not Group.setValue("Test Group", wbook.kABGroupNameProperty) then
        MsgBox "Failed to set group name."
    Return
    end if
    if not wbook.addRecord(Group) then
        MsgBox "Failed to add group to database."
    return
```
end if

dim Person as new ABPersonMBS

if not person.setValue("John", wbook.kABFirstNameProperty) then
    MsgBox "Failed to set first name."
    Return
end if

if not person.setValue("Miller", wbook.kABLastNameProperty) then
    MsgBox "Failed to set last name."
    Return
end if

if not wbook.addRecord(person) then
    MsgBox "Failed to add person to database."
    return
end if

if not group.addMember(person) then
    MsgBox "Failed to add person to group."
    Return
end if

if not wbook.save then
    MsgBox "Failed to save addressbook."
    return
end if

MsgBox "Created test group with a person."

Notes:

Does nothing if person is already part of this group (returns false)
Returns true if successful.

9.3.4 addProperty(propertyName as string, type as Integer) as Integer

Example:
call ABGroupMBS.addProperty "GroupWeight",1
9.3. CLASS ABGROUPMBS

Notes:
Property name must be unique.
For types see typeOfProperty.
Returns the number of properties successfully added.

9.3.5 addSubgroup(group as ABGroupMBS) as boolean

Notes:
Does nothing if group is already part of this group (returns false)
Recursions are not allowed (returns false)
Returns true if successful

9.3.6 Constructor

Notes: Available in Mac OS X 10.5 or newer.
See also:
- 9.3.7 Constructor(addressBook as ABAAddressBookMBS)

9.3.7 Constructor(addressBook as ABAAddressBookMBS)

See also:
- 9.3.6 Constructor

9.3.8 members as ABPersonMBS()

Notes:
Returns an empty array if this group doesn’t contain any people.
Returns an empty array on any error.
9.3.9 parentGroups as ABGroupMBS()

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of ABGroup this group belongs to.
**Notes:**
Returns an empty array if this group doesn’t belong to any groups.
Returns an empty array on any error.

9.3.10 properties as string()

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of property names.
**Notes:** Returns nil on any error.

9.3.11 removeMember(group as ABPersonMBS) as boolean

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes group from this group.
**Notes:**
Does nothing if group is not part of this group (returns false)
Returns true if successful.

9.3.12 removeProperties(properties() as string) as Integer

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes properties from all groups.
**Notes:** Returns the number of properties successfully removed.

9.3.13 removeProperty(propertyName as string) as Integer

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes property from all groups
**Notes:** Returns the number of properties successfully removed.
9.3. CLASS ABGROUPMBS

9.3.14 removeSubgroup(group as ABGroupMBS) as boolean


Notes:

Does nothing if group is not part of this group (returns false).
Returns true if successful.

9.3.15 searchElementForProperty(PropertyName as string, Label as string, Key as string, value as Variant, comparison as Integer) as ABSearchElementMBS

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a search element object that searches for records of this type.

Notes:

property: The name of the property to search on. It cannot be "."
label: The label name for a multivalue list. If property does not have multiple values, pass ".". If property does have multiple values, pass "." to search all the values. By default, ABGroup records don’t contain any multivalue list properties.
key: The key name for a dictionary. Pass "" if property is not a dictionary. If property is a dictionary, pass "" to search all keys. By default, ABGroup records don’t contain any properties that are dictionaries.
value: What you’re searching for. If "", the only supported value for comparison is kABEqual or kABNotEqual.
comparison: The type of comparison to perform and is an ABSearchComparison, such as kABEqual or kABPrefixMatchCaseInsensitive.

9.3.16 subgroups as ABGroupMBS()


Notes:

Returns an empty array if this group doesn’t contain any other groups.
Returns an empty array on any error.

9.3.17 typeOfProperty(propertyName as string) as Integer


Notes:
Possible values:

const kABMultiValueMask = & h100
const kABErrorInProperty = & h0
const kABStringProperty = & h1
const kABIntegerProperty = & h2
const kABRealProperty = & h3
const kABDateProperty = & h4
const kABArrayProperty = & h5
const kABDictionaryProperty = & h6
const kABDataProperty = & h7
const kABMultiStringProperty = kABMultiValueMask + kABStringProperty
const kABMultiIntegerProperty = kABMultiValueMask + kABIntegerProperty
const kABMultiRealProperty = kABMultiValueMask + kABRealProperty
const kABMultiDateProperty = kABMultiValueMask + kABDateProperty
const kABMultiArrayProperty = kABMultiValueMask + kABArrayProperty
const kABMultiDictionaryProperty = kABMultiValueMask + kABDictionaryProperty
const kABMultiDataProperty = kABMultiValueMask + kABDataProperty

9.3.18 Properties

9.3.19 distributionIdentifierForProperty(propertyName as string, person as ABPersonMBS) as String

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the distribution identifier for a given property and person. Notes:

If not set then returns the property primary identifier.
Returns the distribution identifier or "" if not successful.
(Read and Write computed property)
9.4. CLASS ABMULTIVALUEMBS

9.4 class ABMultiValueMBS

9.4.1 class ABMultiValueMBS

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Represents values of type ABMultiXXXXXProperty.

**Example:**

```vbnet
// shows all websites with labels

dim a as new ABAaddressBookMBS

dim p as ABPersonMBS = a.owner

dim m as ABMultiValueMBS = p.valueForProperty(a.kABURLsProperty)

dim u as Integer = m.count-1
for i as Integer = 0 to u

dim label as string = m.labelAtIndex(i)

dim value as string = m.valueAtIndex(i)

MsgBox label+" ->"+value
next
```

**Notes:**

All values in an ABMultiValue must be of the same type (kABMultiStringProperty: all values must be strings,...)

In case your application needs to store away a reference to a specific value/label pair, use the identifier. Index won’t work in this case because any client can add/remove/reorder a multivalue making your index point to the wrong pair. Identifiers are unique Ids.

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

9.4.2 Methods

9.4.3 Constructor

9.4.4 copy as ABMultiValueMBS

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an immutable copy of the data. **Notes:** Returns nil on any error.

9.4.5 edit as ABMutableMultiValueMBS

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a mutable copy of the data. **Notes:** Returns nil on any error.

9.4.6 identifierAtIndex(index as UInt32) as string

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an identifier at a given index **Notes:** Returns "" on any error. Index is zero based.

9.4.7 identifiers as string()

MBS MacCocoa Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns list of identifiers.

9.4.8 indexForIdentifier(identifier as string) as UInt32

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the index of a given identifier **Notes:** Returns NotFound (& h7fffffff) on any error.

9.4.9 indexForLabel(label as string) as UInt32

MBS MacCocoa Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the index of a given label **Notes:** Returns NotFound (& h7fffffff) on any error.
9.4. CLASS ABMULTIVALUEMBS

9.4.10 labelAtIndex(index as UInt32) as string


Example:

// get an entry
dim a as new ABAddressBookMBS
dim p as ABPersonMBS = a.owner

// query all emails
dim e as ABMultiValueMBS = p.valueForProperty(a.kABEmailProperty)

// walk over all
dim u as Integer = e.count-1
for i as Integer = 0 to u
    dim label as string = e.labelAtIndex(i)
    dim value as string = e.valueAtIndex(i)

    // show label and value for this entry
    MsgBox str(i)+": " + label +", " + value

    // is it home?
    if label = a.kABEmailHomeLabel then
        MsgBox "Home: " + value
    end if
next

Notes:
Returns "" on any error.
Index is zero based.

9.4.11 labelForIdentifier(identifier as string) as string


Example:

// same as the following code, but with index bound checking:

dim s as string
dim identifier as string = "fill the identifier here"
dim a as ABMultiValueMBS
// get multivalue somehow
s=a.labelAtIndex(a.indexForIdentifier(identifier))

Notes:
Returns "" if identifier is not found.
A convenience method.

9.4.12 labels as string()


9.4.13 valueAtIndex(index as UInt32) as Variant

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a value at a given index
Example:
// shows all websites with labels

dim a as new ABAddressBookMBS
dim p as ABPersonMBS = a.owner
dim m as ABMultiValueMBS = p.valueForProperty(a.kABURLsProperty)

dim u as Integer = m.count-1
for i as Integer = 0 to u
    dim label as string = m.labelAtIndex(i)
    dim value as string = m.valueAtIndex(i)
    MsgBox label+" - >"+value
next

Notes:
Returns nil on any error.
Index is zero based.
9.4. CLASS ABMULTIVALUEMBS

9.4.14 valueForIdentifier(identifier as string) as Variant

MBS MacCocoa Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the value with the given identifier. **Notes:**

Returns nil if identifier is not found.
A convenience method.

9.4.15 valueForLabel(label as string) as Variant

MBS MacCocoa Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the value for the value with the given label. **Example:**

```vbnet
dim a as new ABAddressBookMBS
dim p as ABPersonMBS
dim m as ABMultiValueMBS

a=new ABAddressBookMBS
p=a.owner
m=p.valueForProperty(a.kABPhoneProperty)
MsgBox "Work phone: " + m.valueForLabel(a.kABPhoneWorkLabel)
MsgBox "Mobile phone: " + m.valueForLabel(a.kABPhoneMobileLabel)
```

**Notes:**

Returns nil if not value exists for the label.
A convenience method.

9.4.16 values as Variant()

MBS MacCocoa Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns list of all values. **Notes:**

Returns nil on any error.
Useful to get all email addresses as array.
9.4.17 Properties

9.4.18 Addressbook as ABAddressBookMBS

Function: Reference to parent addressbook.
Notes:
Plugin sets this for most objects to keep reference to addressbook and avoid this addressbook from being closed too early.
(Read and Write property)

9.4.19 Content as Dictionary

MBS MacCocoa Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Returns content of multi value as dictionary.
Notes:
This is more for inspection in debugger.
The plugin will add key and value for all values.
Values will be twice in the dictionary, once with label and once with identifier as key.
So if two items have same label, one will overwrite other in dictionary.
(Read only property)

9.4.20 count as Integer

Function: Returns the number of value/label pairs.
Notes:
Returns 0 on any error.
(Read only property)

9.4.21 Description as string

Function: The description for this multi value.
Example:
```vbnet
dim a as new ABAddressBookMBS
dim m as new ABMutableMultiValueMBS
call m.insertValue("Hello World", "Owner", 0)
MsgBox m.Description
```
9.4. CLASS ABMULTIVALUEMBS  

Notes: (Read only property)

9.4.22 Handle as Integer

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The handle of the used ABMultiValue object. Notes: (Read and Write property)

9.4.23 primaryIdentifier as string

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Identifier for the primary value. Notes: Returns "" on any error. (Read only property)

9.4.24 propertyType as Integer

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Type of this multivalue (kABMultixxxxProperty) Notes: Returns kABErrorInProperty if this multi-value is empty or not all values have the same type.

Possible values:

const kABMultiValueMask = & h100  
const kABErrorInProperty = & h0  
const kABStringProperty = & h1  
const kABIntegerProperty = & h2  
const kABRealProperty = & h3  
const kABDateProperty = & h4  
const kABArrayProperty = & h5  
const kABDictionaryProperty = & h6  
const kABDataProperty = & h7  
const kABMultiStringProperty = kABMultiValueMask + kABStringProperty  
const kABMultiIntegerProperty = kABMultiValueMask + kABIntegerProperty  
const kABMultiRealProperty = kABMultiValueMask + kABRealProperty
const kABMultiDateProperty = kABMultiValueMask + kABDateProperty
const kABMultiArrayProperty = kABMultiValueMask + kABArrayProperty
const kABMultiDictionaryProperty = kABMultiValueMask + kABDictionaryProperty
const kABMultiDataProperty = kABMultiValueMask + kABDataProperty
(Read only property)
9.5. CLASS ABMUTABLEMULTIVALUEMBS

9.5 class ABMutableMultiValueMBS

9.5.1 class ABMutableMultiValueMBS


Notes:

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

Subclass of the ABMultiValueMBS class.

9.5.2 Methods

9.5.3 addValue(value as Variant, label as string) as string


Notes:

Returns the identifier if successful, "" otherwise.

Note: No type checking is made when adding a value. But trying to set a multivalue property with a multivalue that doesn't have all its values of the same type will return an error.

Supported types: Date, Integer, String, Dictionary.

9.5.4 Constructor


9.5.5 insertValue(value as Variant, label as string, index as UInt32) as string


Notes:

Returns the identifier if successful, "" otherwise
Note: No type checking is made when adding a value. But trying to set a multivalue property with a multivalue that doesn’t have all its values of the same type will return an error.

Index is zero based.

9.5.6 `removeValueAndLabelAtIndex(index as UInt32) as boolean`


Notes:
Returns true if successful.

Index is zero based.

9.5.7 `replaceLabelAtIndex(index as UInt32, label as string) as boolean`


Notes:
Index is zero based.
Returns true on success.

9.5.8 `replaceValueAtIndex(index as UInt32, value as Variant) as boolean`


Notes:
Index is zero based.
Returns true on success.

9.5.9 `setPrimaryIdentifier(identifier as string) as boolean`


Notes: Returns true if successful.
9.6. CONTROL ABPEOPLEPICKERVIEWCONTROLMBS

9.6 control ABPeoplePickerViewControlMBS

9.6.1 control ABPeoplePickerViewControlMBS

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The control to host a people picker view.
Notes: Shows people and groups from Addressbook and allows picking them.

9.6.2 Properties

9.6.3 View as ABPeoplePickerViewMBS

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The view used.
Notes: Access properties of the view hosted in the control via this variable.
(Read only property)

9.6.4 Events

9.6.5 BoundsChanged

Function: The event called when the bounds, but not the frame, changed.

9.6.6 DisplayedPropertyChanged

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Called when the displayed property in the record list is changed.

9.6.7 EnableMenuItems

Function: The event where you can enable menu items.
9.6.8 FrameChanged

Function: The event called when the frame changed.

9.6.9 GotFocus

Function: The control itself got focus.
Notes: This only fires if the control itself got focus and not a sub control.

9.6.10 GroupDoubleClick

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The event to be invoked when a group is double-clicked.

9.6.11 GroupSelectionDidChange

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Called when the selection in the group list is changed.

9.6.12 LostFocus

Function: The control lost focus.
Notes: This only fires if the control itself lost focus and not a sub control.

9.6.13 MenuAction(HitItem as MenuItem) As Boolean

Function: Called when a menuitem is choosen.
Notes: This allows the control to react on its relevant menu items. Please return true if you handled it or false to give others a chance.
9.6.14 MouseDown(x as Integer, y as Integer, Modifiers as Integer) As Boolean


**Function:** The mouse button was pressed inside the controls region at the location passed in to x, y.

**Notes:**

The coordinates x and y are local to the control, i.e. they represent the position of the mouse click relative to the upper-left corner or the Control.

Return True if you are going to handle the MouseDown. In such a case:

- The Action event, if any, will not execute and the state of the object will not change.
- You will receive the MouseDrag and MouseUp events.

If you return False, the system handles the MouseDown so the above event handlers do not get called.

9.6.15 MouseDrag(x as Integer, y as Integer)


**Function:** This event fires continuously after the mouse button was pressed inside the Control.

**Notes:**

Mouse location is local to the control passed in to x, y.

As this event is fired continuously (hundreds of time per second), it is your responsibility to determine if the mouse has really moved.

9.6.16 MouseUp(x as Integer, y as Integer)


**Function:** The mouse button was released.

**Notes:** Use the x and y parameters to determine if the mouse button was released within the control’s boundaries.

9.6.17 NameDoubleClick

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.

**Function:** The event to be invoked when a name is double-clicked.
9.6.18 NameSelectionDidChange

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Called when the selection in the name list is changed.

9.6.19 ScaleFactorChanged(NewFactor as Double)

Function: The backing store scale factor has changed.
Notes: Please invalidate any cached bitmaps or other relevant state.

9.6.20 ValueSelectionDidChange

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Called when the selection in a multivalue property is changed.
9.7. CLASS ABPEOPLEPICKERVIEWMBS

9.7  class ABPeoplePickerViewMBS

9.7.1  class ABPeoplePickerViewMBS


**Function:** This is a view for Mac applications to select people from the addressbook.

**Notes:**

The ABPeoplePickerView class allows you to customize the behavior of people-picker views in an application’s user interface.

Use CocoaControlMBS control to put this view on a window.

You can embed this view in a CustomNSViewMBS to get more events for mouse and keyboard. Subclass of the NSViewMBS class.

9.7.2  Methods

9.7.3  ABPeoplePickerDisplayedPropertyDidChangeNotification as string


**Function:** One of the notification names.

**Notes:**

Use this string with NSNotificationObserverMBS class. Or use the DisplayedPropertyDidChange event. Posted when the displayed property in the record list is changed.

9.7.4  ABPeoplePickerGroupSelectionDidChangeNotification as string


**Function:** One of the notification names.

**Notes:**

Use this string with NSNotificationObserverMBS class. Or use the GroupSelectionDidChange event. Posted when the selection in the group list is changed.

9.7.5  ABPeoplePickerNameSelectionDidChangeNotification as string


**Function:** One of the notification names.

**Notes:**
Use this string with NSNotificationObserverMBS class. Or use the NameSelectionDidChange event.
Posted when the selection in the name list is changed.

9.7.6 ABPeoplePickerValueSelectionDidChangeNotification as string

Function: One of the notification names.
Notes: Use this string with NSNotificationObserverMBS class. Or use the ValueSelectionDidChange event.
Posted when the selection in a multivalue property is changed.

9.7.7 addProperty(PropertyName as string)

Function: Adds a property to the group of properties whose values are shown in the record list.

9.7.8 clearSearchField

Function: Clears the search field and resets the list of displayed records.

9.7.9 Constructor

Function: The constructor for a new people picker view object.
See also:

- 9.7.10 Constructor(Handle as Integer) 2554
- 9.7.11 Constructor(left as Double, top as Double, width as Double, height as Double) 2555

9.7.10 Constructor(Handle as Integer)

Function: The constructor for a new people picker view object.
Notes: Pass a handle to a Cocoa ABPeoplePickerView object.
See also:
9.7. CLASS ABPEOPLEPICKERVIEWMBS

- 9.7.9 Constructor
- 9.7.11 Constructor(left as Double, top as Double, width as Double, height as Double)

9.7.11 Constructor(left as Double, top as Double, width as Double, height as Double)


Function: The constructor for a new people picker view object.

Notes: Pass rectangle for new control.

See also:
- 9.7.9 Constructor
- 9.7.10 Constructor(Handle as Integer)

9.7.12 deselectAll


Function: Deselects all selected groups, records, and values in multivalue properties.

9.7.13 deselectGroup(group as ABGroupMBS)


Function: Deselects a group selected in the group list.

9.7.14 deselectIdentifier(identifier as string, person as ABPersonMBS)


Function: Deselects a value selected in a multivalue property.

Notes:
- identifier: The identifier of the value that will be deselected.
- person: The person whose value will be deselected.

9.7.15 deselectRecord(record as ABRecordMBS)


Function: Deselects a record selected in the record list.

Notes: record: The record to deselect.
9.7.16  editInAddressBook

**Function:** Launches Address Book to edit the item selected in the people picker.

9.7.17  properties as string()

**Function:** Returns an array of the properties whose values are shown in the record list.

9.7.18  removeProperty(PropertyName as string)

**Function:** Removes a property from the group of properties whose values are shown in the record list.

9.7.19  selectedGroups as ABGroupMBS()

**Function:** The groups selected in the group list.  
**Notes:**  
The selected groups are returned as an array of ABGroupMBS objects.  
Available in Mac OS X v10.6 and later.

9.7.20  selectedIdentifiersForPerson(person as ABPersonMBS) as string()

**Function:** Returns the identifiers of the selected values in a multivalue property.  
**Notes:**  
person: The person whose identifiers for selected values will be returned.  
Returns nil if the property displayed is a single-value property.

9.7.21  selectedRecords as ABRecordMBS()

**Function:** The selection in the records list.
Notes:
The selection is returned as an array of ABGroupMBS or ABPersonMBS objects. Available in Mac OS X v10.6 and later.

9.7.22 selectedValues as Variant()

**Function:** Returns an array of all the values selected in the displayed multivalue property.

9.7.23 selectGroup(group as ABGroupMBS, byExtendingSelection as boolean)

**Function:** Selects a group or a set of groups in the group list.
**Notes:**
- group: The group to be selected, or to be added to the current selection.
- byExtendingSelection: True to extend the current selection; otherwise, false.

9.7.24 selectIdentifier(identifier as string, person as ABPersonMBS, byExtendingSelection as boolean)

**Function:** Selects a value or a set of values in a multivalue property.
**Notes:**
- identifier: The identifier to be selected, or to be added to the current selection.
- person: The person that the value to be selected is associated with.
- byExtendingSelection: True to extend the current selection; otherwise, false.

9.7.25 selectInAddressBook

**Function:** Launches Address Book and selects the item selected in the people picker.

9.7.26 selectRecord(group as ABRecordMBS, byExtendingSelection as boolean)

**Function:** Selects a record or a set of records in the record list.
Notes:

record: The record to be selected, or to be added to the current selection.
byExtendingSelection: True to extend the current selection; otherwise, false.

9.7.27 Properties

9.7.28 accessoryView as NSViewMBS

Function: The view that is placed to the left of the search field.
Notes:
Available in Mac OS X v10.6 and later.
If accessory is nil, the accessory view is removed.
(Read and Write property)

9.7.29 allowsGroupSelection as boolean

Function: A Boolean value that specifies whether the user can select entire groups in the group column.
Notes:
If true, the user can to select entire groups. If false, the user is required to select at least one person in the group.
Available in Mac OS X v10.6 and later.
(Read and Write property)

9.7.30 allowsMultipleSelection as boolean

Function: A Boolean value that specifies whether multiple groups, records, or values of multivalue properties can be selected at a time.
Notes:
Available in Mac OS X v10.6 and later.
(Read and Write property)
9.7.31 autosaveName as string

Function: The name under which the column positions and the filter selection are saved.
Notes:
Available in Mac OS X v10.6 and later.
(Read and Write property)

9.7.32 displayedProperty as string

Function: The property currently displayed in the record list.
Notes:
Available in Mac OS X v10.6 and later.
(Read and Write property)

9.7.33 valueSelectionBehavior as Integer

Function: The current selection behavior.
Notes:
The default behavior is ABSingleValueSelection.
Available in Mac OS X v10.6 and later.
(Read and Write property)

9.7.34 columnTitleForProperty(propertyName as string) as string

Function: The title of a custom property.
Notes: (Read and Write computed property)

9.7.35 Events

9.7.36 DisplayedPropertyDidChange

Function: Called when the displayed property in the record list is changed.
9.7.37  GroupDoubleClick

**Function:** The event to be invoked when a group is double-clicked.

9.7.38  GroupSelectionDidChange

**Function:** Called when the selection in the group list is changed.

9.7.39  NameDoubleClick

**Function:** The event to be invoked when a name is double-clicked.

9.7.40  NameSelectionDidChange

**Function:** Called when the selection in the name list is changed.

9.7.41  ValueSelectionDidChange

**Function:** Called when the selection in a multivalue property is changed.

9.7.42  Constants

9.7.43  ABMultipleValueSelection = 2

MBS MacControls Plugin, Plugin Version: 11.2. **Function:** One of the constants for the Selection Behavior type.
**Notes:** The user can select multiple values.
9.7.44 ABNoValueSelection = 0

MBS MacControls Plugin, Plugin Version: 11.2. **Function:** One of the constants for the Selection Behavior type.
**Notes:** The user cannot select individual values.

9.7.45 ABSingleValueSelection = 1

MBS MacControls Plugin, Plugin Version: 11.2. **Function:** One of the constants for the Selection Behavior type.
**Notes:** The user can select a single value.
9.8 class ABPersonMBS

9.8.1 class ABPersonMBS


**Function:** ABPersonMBS is a subclass of ABRecord and represents a person.

**Example:**

```lisp
dim a as new ABAddressBookMBS // get addressbook
dim p as ABPersonMBS = a.owner // and find me

// read note
MsgBox p.valueForProperty(a.kABNoteProperty).StringValue

// write note
if p.setValue("Hello World", a.kABNoteProperty) then 
  if a.save then 
    MsgBox "Changed."
  end if
end if
```

**Notes:**

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

Subclass of the ABRecordMBS class.

9.8.2 Methods

9.8.3 addProperty(propertyName as string, type as Integer) as Integer


**Function:** Adds property to all people records.

**Example:**

```lisp
dim p as ABPersonMBS
// get a person

call p.addProperty "Distance",1
```

**Notes:**
9.8. CLASS ABPERSONMBS

Property name must be unique.
For types see typeOfProperty.
Returns the number of properties successfully added.

9.8.4 Constructor

See also:

- 9.8.5 Constructor(addressBook as ABAddressBookMBS)
- 9.8.6 Constructor(vCardData as Memoryblock)

9.8.5 Constructor(addressBook as ABAddressBookMBS)

**Notes**: Available in Mac OS X 10.5 or newer.
See also:

- 9.8.4 Constructor
- 9.8.6 Constructor(vCardData as Memoryblock)

9.8.6 Constructor(vCardData as Memoryblock)

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Create a person from a vCard
**Notes**:
Handle is 0 on failure after constructor finished.
(e.g. because of invalid vCard data)

This gives a temporary ABPersonMBS object which is only useful in the same method.
At least we observed problems and crashes when this person is stored in a property of a window and used later.
See also:

- 9.8.4 Constructor
- 9.8.5 Constructor(addressBook as ABAddressBookMBS)
CHAPTER 9. ADDRESSBOOK

9.8.7 EditInAddressbook as boolean

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Opens addressbook entry in the addressbook for editing. **Notes:** Returns true on success and false on failure.

9.8.8 linkedPeople as ABPersonMBS()

MBS MacCocoa Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of all linked people, including this person. **Notes:**

Returns an array of only this person if this person is not linked. Available in Mac OS X 10.8 and newer.

9.8.9 parentGroups as ABGroupMBS()

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of ABGroup this group belongs to. **Notes:**

Returns an empty array if this person doesn’t belong to any groups. Returns an empty array on any error.

9.8.10 properties as string()

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of property names. **Notes:** Returns an empty array on any error.

9.8.11 removeProperties(properties() as string) as Integer

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes properties from all people **Notes:** Returns the number of properties successfully removed.
9.8.12 removeProperty(propertyName as string) as Integer

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Removes property from all people
Notes: Returns the number of properties successfully removed.

9.8.13 searchElementForProperty(PropertyName as string, Label as string, Key as string, value as Variant, comparison as Integer) as ABSearchElementMBS

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a search element object that specifies a query for records of this type.
Notes:
property: The name of the property to search on, such as kABAddressProperty or kABLastNameProperty. This name cannot be "".
label: The label name for a multivalue list, such as kABAddressHomeLabel, kABPhoneWorkLabel, or a user-specified label, such as Summer Home. If the specified property does not have multiple values, pass "". If the specified property does have multiple values, pass "" to search all the values.
key: The key name for a dictionary, such as kABAddressCityKey or kABAddressStreetKey. If the specified property is not a dictionary, pass "". If the specified property is a dictionary, pass nil to search all keys.
value: What you're searching for. If nil, then the only supported value for comparison is kABEqual or kABNotEqual.
comparison: The type of comparison to perform, such as kABEqual or kABPrefixMatchCaseInsensitive.

9.8.14 setImageData(data as Memoryblock) as boolean

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Set the image of a person to data. data should be in an NSImage/QuickTime compatible format.
Notes: Pass "" to clear the image.

9.8.15 ShowInAddressbook as boolean

Example:

// open addressbook
dim a as new ABAddressBookMBS

// pick a person, in this case me
dim p as ABPersonMBS = a.owner
// show in AddressBook
call p.ShowInAddressbook

Notes: Returns true on success and false on failure.

9.8.16  

**typeOfProperty**(propertyName as string) as Integer

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the type of a given property.  
**Notes:**
Possible values:

```
cost kABMultiValueMask = & h100
const kABErrorInProperty = & h0
const kABStringProperty = & h1
const kABIntegerProperty = & h2
const kABRealProperty = & h3
const kABDateProperty = & h4
const kABArrayProperty = & h5
const kABDictionaryProperty = & h6
const kABDataProperty = & h7
const kABMultiStringProperty = kABMultiValueMask + kABStringProperty
const kABMultiIntegerProperty = kABMultiValueMask + kABIntegerProperty
const kABMultiRealProperty = kABMultiValueMask + kABRealProperty
const kABMultiDateProperty = kABMultiValueMask + kABDateProperty
const kABMultiArrayProperty = kABMultiValueMask + kABArrayProperty
const kABMultiDictionaryProperty = kABMultiValueMask + kABDictionaryProperty
const kABMultiDataProperty = kABMultiValueMask + kABDataProperty
```

9.8.17  

**vCardRepresentation** as Memoryblock

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the vCard representation of a person  
**Notes:** Returns nil on any error.
9.8.18 Properties

9.8.19 image as NSImageMBS

MBS MacCocoa Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Synchronously returns data containing an image for this person.  
**Example:**

```vbscript
dim a as new ABAddressBookMBS  
dim p as ABPersonMBS = a.owner

Backdrop=p.image.CopyPictureWithMask
```

**Notes:**

Only does local file system searches.
Raises an exception if no image exists.

Convenience function which calls imageData and converts data to and from NSImage.  
(Read and Write computed property)

9.8.20 imageData as Memoryblock

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Synchronously returns data containing an image for this person.  
**Example:**

```vbscript
dim a as new ABAddressBookMBS

dim owner as ABPersonMBS = a.owner

dim s as string = owner.imageData

dim p as Picture

p=JPEGStringToPictureMBS(s)  // try jpeg
if p<>Nil then
    Title="jpeg"
    Backdrop=p
    Return
end if

p=TIFFStringToPictureMBS(s)  // try tiff
if p<>Nil then
    Title="tiff"
    Backdrop=p
    Return
```
end if

Notes:

Only does local file system searches. Data will be in an NSImage/QuickTime compatible format.
Raises an exception if no image exists.
(Read and Write computed property)
9.9. CONTROL ABPERSONVIEWCONTROLMBS

9.9 control ABPersonViewControlMBS

9.9.1 control ABPersonViewControlMBS

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The control to host a Person view.
Notes: Shows people from Addressbook and allows editing.

9.9.2 Methods

9.9.3 retainObject

Function: Retains the viewer object.
Notes:
This method is to workaround a bug which your app may see in OS X 10.11.
So to avoid crashes with releasing an view, you can retain it an extra time.

9.9.4 Properties

9.9.5 View as ABPersonViewMBS

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The view used.
Notes:
Access properties of the view hosted in the control via this variable.
(Read only property)

9.9.6 Events

9.9.7 BoundsChanged

Function: The event called when the bounds, but not the frame, changed.
9.9.8  EnableMenuItems

**Function:** The event where you can enable menu items.

9.9.9  FrameChanged

**Function:** The event called when the frame changed.

9.9.10  GotFocus

**Function:** The control itself got focus.
**Notes:** This only fires if the control itself got focus and not a sub control.

9.9.11  LostFocus

**Function:** The control lost focus.
**Notes:** This only fires if the control itself lost focus and not a sub control.

9.9.12  MenuAction(HitItem as MenuItem) As Boolean

**Function:** Called when a menuitem is choosen.
**Notes:** This allows the control to react on its relevant menu items. Please return true if you handled it or false to give others a chance.

9.9.13  MouseDown(x as Integer, y as Integer, Modifiers as Integer) As Boolean

**Function:** The mouse button was pressed inside the controls region at the location passed in to x, y.
**Notes:**
The coordinates x and y are local to the control, i.e. they represent the position of the mouse click relative to the upper-left corner or the Control.
Return True if you are going to handle the MouseDown. In such a case:

- The Action event, if any, will not execute and the state of the object will not change.
- You will receive the MouseDrag and MouseUp events.

If you return False, the system handles the MouseDown so the above event handlers do not get called.

### 9.9.14 MouseDrag(x as Integer, y as Integer)


**Function:** This event fires continuously after the mouse button was pressed inside the Control.

**Notes:**
Mouse location is local to the control passed in to x, y.
As this event is fired continuously (hundreds of time per second), it is your responsibility to determine if the mouse has really moved.

### 9.9.15 MouseUp(x as Integer, y as Integer)


**Function:** The mouse button was released.

**Notes:** Use the x and y parameters to determine if the mouse button was released within the control's boundaries.

### 9.9.16 ScaleFactorChanged(NewFactor as Double)


**Function:** The backing store scale factor has changed.

**Notes:** Please invalidate any cached bitmaps or other relevant state.
9.10 class ABPersonViewMBS

9.10.1 class ABPersonViewMBS

**Function:** ABPersonViewMBS provides a view for displaying and editing ABPersonMBS objects in your user interface.
**Notes:**
Available on Mac OS X 10.7 or later.
Please also check the documentation from Apple for the ABPersonView class.

You can embed this view in a CustomNSViewMBS to get more events for mouse and keyboard. Subclass of the NSViewMBS class.

9.10.2 Methods

9.10.3 available as Boolean

**Function:** Whether this class is available.
**Example:**
```plaintext```
msgbox "ABPersonView available: " + str(ABPersonViewMBS.available)
```

**Notes:** Returns true on Mac OS X 10.7 or later.

9.10.4 Constructor

**Function:** The constructor for a new people picker view object.
See also:

- 9.10.5 Constructor(Handle as Integer) 2572
- 9.10.6 Constructor(left as Double, top as Double, width as Double, height as Double) 2573

9.10.5 Constructor(Handle as Integer)

**Function:** The constructor for a new people picker view object.
9.10. CLASS ABPERSONVIEWMBS

Notes: Pass a handle to a Cocoa ABPersonView object.
See also:

- 9.10.4 Constructor
- 9.10.6 Constructor(left as Double, top as Double, width as Double, height as Double)

9.10.6 Constructor(left as Double, top as Double, width as Double, height as Double)

Function: The constructor for a new people picker view object.
Notes: Pass rectangle for new control.
See also:

- 9.10.4 Constructor
- 9.10.5 Constructor(Handle as Integer)

9.10.7 Properties

9.10.8 editing as Boolean

Function: A Boolean value that determines whether the receiver is in editing mode.
Notes:
When true, ABPersonView includes additional controls to manipulate person properties.
(Read and Write property)

9.10.9 person as ABPersonMBS

Function: An ABPersonMBS record for display.
Notes:
Raises if person originates from ABAddressBook’s sharedAddressBook. Use ABAddressBookMBS constructor.
Person must be exist in an ABAddressBook created and manipulated on the main thread only.
When person is nil, displays an empty selection state.
(Read and Write property)
9.10.10 shouldShowLinkedPeople as Boolean


Function: Indicates whether the view should include information for linked contacts in addition to the set contact.

Notes:
If true, information is included from linked contacts. If false, only the information on this person is shown.
Available in Mac OS X 10.8 and newer.
(Read and Write property)
9.11  class ABPickerMBS

9.11.1  class ABPickerMBS

Example:

dim p as ABPickerMBS // a global property

p = new ABPickerMBS
p.Create
p.visible = True

Notes:
Requires Mac OS X 10.3 or newer.

This class is for Carbon as event handling does not work on Cocoa.
For Cocoa better use ABPeoplePickerViewMBS.

9.11.2 Methods

9.11.3 AddProperty(propertyname as String)

Notes: Requires Mac OS X 10.3 or newer.

9.11.4 ClearSearchField

Notes: Requires Mac OS X 10.3 or newer.

9.11.5 Create

Example:

```
dim p as ABPickerMBS // a global property

p = new ABPickerMBS
p.Create

p.visible = True
```

Notes:
The window is created invisible.
Requires Mac OS X 10.3 or newer.
The handle property is not 0 if this call was successful.

9.11.6 DeselectAll

**Function**: Remove selection.

9.11.7 DeselectGroup(group as ABGroupMBS)

**Function**: Removes selection.
**Notes**: Requires Mac OS X 10.3 or newer.

9.11.8 DeselectIdentifier(person as ABPersonMBS, Identifier as String)

**Function**: Removes selection.
**Notes**: Requires Mac OS X 10.3 or newer.

9.11.9 DeselectPerson(person as ABPersonMBS)

**Function**: Removes selection.
**Notes**: Requires Mac OS X 10.3 or newer.
9.11.10 EditInAddressBook

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Launch AddressBook and edit the current selection  
**Notes:** Requires Mac OS X 10.3 or newer.

9.11.11 InstallEvents(targetwindow as window)

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Installs the event handler.  
**Notes:** Requires Mac OS X 10.3 or newer.  
The target window is only used as an anchor to send and receive events. You can use any window for that.

9.11.12 Properties as string()

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** A list of all the properties shown in the value columns.  
**Notes:** Requires Mac OS X 10.3 or newer.

9.11.13 RemoveEvents

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Removes the event handler.  
**Notes:** Requires Mac OS X 10.3 or newer.

9.11.14 RemoveProperty(propertyname as String)

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Removes a property from the value column.  
**Notes:** Requires Mac OS X 10.3 or newer.

9.11.15 SelectedDictionaries as Dictionary()

MBS MacCocoa Plugin, Plugin Version: 9.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array containing dictionaries for each item selected in the values column.  
**Notes:**
Use this method if you select single addresses.
Requires Mac OS X 10.3 or newer.

9.11.16  SelectedGroups as ABGroupMBS()

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns group column selection as an array of ABGroup object handles. **Notes:** Requires Mac OS X 10.3 or newer.

9.11.17  SelectedIdentifiers(person as ABPersonMBS) as string()

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** This method returns an array of selected multi-value identifiers. **Notes:** Requires Mac OS X 10.3 or newer. Returns empty array if the displayed property is a single value type.

9.11.18  SelectedRecords as ABRecordMBS()

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns names column selection as an array of ABGroup or ABPersonMBS objects. **Notes:** Requires Mac OS X 10.3 or newer. You need to cast the objects from the array to ABGroupMBS or ABPersonMBS to use them better. And IsA can tell you whether an object is from the group or the person class.

9.11.19  SelectedStrings as String()

MBS MacCocoa Plugin, Plugin Version: 9.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array containing strings for each item selected in the values column. **Notes:** Use this method if you select single strings like a phone number. Requires Mac OS X 10.3 or newer.
9.11. CLASS ABPICKERMBS

9.11.20 SelectedValues as Variant()

**Function:** Returns an array containing variants for each item selected in the values column. 
**Notes:**  
Use this method if you select single strings like a phone number.  
Requires Mac OS X 10.3 or newer.  
Changed from string to variant in plugin version 13.2, so you don’t need to use SelectedDictionaries.

9.11.21 SelectGroup(group as ABGroupMBS, ExtendSelection as boolean)

**Function:** Select group programatically. 
**Notes:** Requires Mac OS X 10.3 or newer.

9.11.22 SelectIdentifier(person as ABPersonMBS, Identifier as String, ExtendSelection as boolean)

**Function:** Individual values contained within an multi-value property can be selected with this method. 
**Notes:** Requires Mac OS X 10.3 or newer.

9.11.23 SelectInAddressBook

**Function:** Launch AddressBook and select the current selection 
**Notes:** Requires Mac OS X 10.3 or newer.

9.11.24 SelectPerson(person as ABPersonMBS, ExtendSelection as boolean)

**Function:** Select person programatically. 
**Notes:** Requires Mac OS X 10.3 or newer.
9.11.25 Properties

9.11.26 AllowGroupSelection as Boolean

**Function:** Allow the user to select entire groups in the group column.
**Notes:**
Requires Mac OS X 10.3 or newer.
If false, at least one person in the group will be selected. Defaults to false.
(Read and Write property)

9.11.27 AllowMultipleSelection as Boolean

**Function:** Allow the user to select more than one group/record at a time.
**Notes:**
Default is true.
Requires Mac OS X 10.3 or newer.
(Read and Write property)

9.11.28 AllowMultipleValueSelection as Boolean

**Function:** Allow user to choose multiple values for a person.
**Notes:**
Requires Mac OS X 10.3 or newer.
Choose the selection behavior for the value column. If multiple behaviors are selected, the most restrictive behavior will be used. Defaults to SingleValueSelection set.
(Read and Write property)

9.11.29 AllowSingleValueSelection as Boolean

**Function:** Allow user to choose a single value for a person.
**Notes:**
Requires Mac OS X 10.3 or newer.
Choose the selection behavior for the value column. If multiple behaviors are selected, the most restrictive behavior will be used. Defaults to SingleValueSelection set.
9.11. CLASS ABPICKERMBS

(Read and Write property)

9.11.30 Available as Boolean

Notes:
Returns true on Mac OS X 10.3 or newer.
(Read only property)

9.11.31 DisplayedProperty as String

Notes:
Returns nil on any error.
(Read and Write property)

9.11.32 Handle as Integer

Notes: (Read and Write property)

9.11.33 Height as Single

Notes:
Requires Mac OS X 10.3 or newer.
(Read and Write property)

9.11.34 Left as Single

CHAPTER 9. ADDRESSBOOK

Notes:
Requires Mac OS X 10.3 or newer.
(Read and Write property)

9.11.35  Top as Single

Notes:
Requires Mac OS X 10.3 or newer.

top=0 is on the bottom of the screen as this is the Cocoa coordinate system.
(Read and Write property)

9.11.36  Visible as Boolean

Notes:
The window is created invisible, so you must make it visible to show it to the user.
Requires Mac OS X 10.3 or newer.
(Read and Write property)

9.11.37  Width as Single

Notes:
Requires Mac OS X 10.3 or newer.
(Read and Write property)

9.11.38  ColumnTitle(columntitle as String) as String

Notes:
9.11. CLASS ABPICKERMBS

Requires Mac OS X 10.3 or newer.
(Read and Write computed property)

9.11.39 Events

9.11.40 DisplayedPropertyChanged


9.11.41 GroupDoubleClicked


9.11.42 GroupSelectionChanged


9.11.43 NameDoubleClicked


9.11.44 NameSelectionChanged

9.11.45 ValueSelectionChanged

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the events of a People Picker. 
**Notes:** Requires Mac OS X 10.3 or newer.
9.12.  CLASS ABRECORDMBS

9.12  class ABRecordMBS

9.12.1  class ABRecordMBS

Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

9.12.2  Methods

9.12.3  Constructor


9.12.4  removeValueForProperty(propertyName as string) as boolean

Notes:
Subsequent calls to valueForProperty on the same property will return nil.
Returns true if the value was removed successfully and false on any error.

9.12.5  setValue(value as Variant, propertyName as string) as boolean

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  Function: Set the value of a given property. The type of the value must match the property type.
Example:

dim a as ABAddressBookMBS
dim p as ABPersonMBS
// get a somehow
// get p somehow

if not p.setValue("My Company", a.kABOrganizationProperty) then
MsgBox "Failed to set field " + a.LocalizedPropertyOrLabel(a.kABOrganizationProperty)
end if

Notes:
Value can be Date, Integer, Double, Dictionary, MultiValueMBS/MutableMultiValueMBS or String.
Returns true if the value was set successfully
See also:

- 9.12.6 setValue(value as Variant, propertyName as string, byref error as NSErrorMBS) as boolean

9.12.6  setValue(value as Variant, propertyName as string, byref error as NSErrorMBS) as boolean

Function: Set the value of a given property. The type of the value must match the property type.
Notes:
Value can be Date, Integer, Double, Dictionary, MultiValueMBS/MutableMultiValueMBS or String.
Returns true if the value was set successfully

On Mac OS X 10.7 or later, we set the error property on any error.
See also:

- 9.12.5 setValue(value as Variant, propertyName as string) as boolean

9.12.7  valueForProperty(PropertyName as string) as Variant

Function: Returns the value of a given property.
Example:

dim a as new ABAddressBookMBS // get addressbook
dim p as ABPersonMBS = a.owner // and find me

// read note
MsgBox p.valueForProperty(a.kABNoteProperty).StringValue

Notes:
The type of the value depends on the property type.
Returns nil on any error.
Tip: Put the result in a variant, so you can see the type in the debugger. Emails for example can be a ABMultiValueMBS object while name is normally a string.

### 9.12.8 Properties

#### 9.12.9 account as ABAccountMBS

MBS MacCocoa Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries account for this record. **Notes:** (Read only property)

#### 9.12.10 Addressbook as ABAddressBookMBS

MBS MacCocoa Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Reference to parent addressbook. **Notes:** Plugin sets this for most objects to keep reference to addressbook and avoid this addressbook from being closed too early. (Read and Write property)

#### 9.12.11 Description as string

MBS MacCocoa Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The description for this record. **Example:**

```vbnet
dim a as new ABAddressBookMBS
dim m as ABPersonMBS = a.owner
MsgBox m.Description
```

**Notes:** (Read only property)

#### 9.12.12 DisplayName as string

MBS MacCocoa Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The display name. **Example:**
// quickly find the addressbook, locate me and display my name:
MsgBox ABAddressBookMBS.sharedAddressbook.owner.DisplayName

Notes:
For a group, the group name, for an organization the organization name and for a normal person the first
name, last name, prefix/suffix and middle name. Name order depends on the settings for person or address-
book.
(Read only property)

9.12.13  Handle as Integer

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The handle of the ABGroup or ABPersonMBS object being used.
Notes: (Read and Write property)

9.12.14  isReadOnly as boolean

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns whether or not the record is read only.
Notes:
Available on Mac OS X 10.4.
Returns false on older systems or other errors.
(Read only property)

9.12.15  uniqueId as string

Example:

dim a as new ABAddressBookMBS
dim o as ABPersonMBS = a.owner

// the unique ID for this record including the type
dim u as string = o.uniqueId

// the raw ID as Apple stores it
dim i as string = o.valueForProperty("com.apple.uuid")
9.12. CLASS ABRECORDMBS

// show it
MsgBox u+EndOfLine+i

Notes:

Equivalent to valueForProperty(kABUIDProperty).
(Read only property)
9.13 class ABSearchElementMBS

9.13.1 class ABSearchElementMBS


Example:

// search and display all entries with a given name in a 2 column listbox with address

// Save reference to caller.
dim addr as new ABAAddressBookMBS // Initialise the Address Book plugin
dim searchName as string = "Schmitz" // search on.

// Do the search
dim srch as ABSearchElementMBS = addr.searchElementForPersonProperty(addr.kABLastNameProperty,
"", ",", searchName, addr.kABContainsSubStringCaseInsensitive)
dim srchRes() as ABRecordMBS = addr.recordsMatchingSearchElement(srch) // Get the results into an array

for each rc as ABRRecordMBS in srchRes
if rc isa ABPersonMBS then // Is it a person record?
dim pers as ABPersonMBS = ABPersonMBS(rc) // Get it into a personnel record

// Now get the names and addresses.
listbox1.AddRow(pers.valueForProperty(addr.kABFirstNameProperty) + " " + pers.valueForProperty(addr.kABLastNameProperty))
listbox1.RowTag(listbox1.LastIndex) = pers.valueForProperty(addr.kABUIDProperty)

// Need to find the home address.
dim mlv as ABMultiValueMBS = pers.valueForProperty(addr.kABAddressProperty)
if mlv <> nil Then
    // get home address
    dim d as Dictionary = mlv.valueForLabel(addr.kABHomeLabel)
    if d = nil then
        // get primary
        d = mlv.valueForIdentifier(mlv.primaryIdentifier)
    end if

    if d <> Nil then
        // show address with street and city
        listbox1.Cell(listbox1.LastIndex,1) = d.Lookup(addr.kABAddressStreetKey,"") + "+" + d.Lookup(addr.kABAddressCityKey,"")
    end if
end if
next
Notes:
Use.searchElementForProperty.in.ABPersonMBS.and.ABGroupMBS.classes.to.create.objects.

All.methods.in.this.class.will.catch.exceptions.from.Cocoa.and.raise.a.NSExceptionMBS.instead.Using.the
message,.name.and.reason.properties.you.can.see.what.was.the.reason.for.this.exception..Please.report.if
you.find.a.method.that.does.not.handle.exceptions.correct.
This.is.an.abstract.class. You.can’t.create.an.instance,.but.you.can.get.one.from.various.plugin.functions.

9.13.2 Methods

9.13.3 Constructor


9.13.4 matchesRecord(record as ABRecordMBS) as boolean

Notes: Returns false if handle=0 or record=nil or record does not match. Else yes.

9.13.5 searchElementForConjunction(conjunction as Integer, children() as ABSearchElementMBS) as ABSearchElementMBS

Notes:
conjunction can be kABSearchAnd or kABSearchOr.
Returns nil on any error.

Pass kABSearchOr or kABSearchAnd for conjunction.

This is a class method. No need to have a valid handle.
CHAPTER 9. ADDRESSBOOK

9.13.6 Properties

9.13.7 Addressbook as ABAddressBookMBS

Function: Reference to parent addressbook.
Notes: 
Plugin sets this for most objects to keep reference to addressbook and avoid this addressbook from being closed too early.
(Read and Write property)

9.13.8 Description as string

Function: The description for this search element.
Example:
```vbs
dim a as new ABAddressBookMBS
dim m as ABSearchElementMBS = a.searchElementForPersonProperty(a.kABFirstNameProperty, "", "", "John", a.kABContainsSubStringCaseInsensitive)
MsgBox m.Description
```

Notes: (Read only property)

9.13.9 Handle as Integer

Function: The handle to the Cocoa object being used.
Notes: (Read and Write property)

9.13.10 Constants

9.13.11 kABSearchAnd = 0

9.13.12 kABSearchOr = 1

Chapter 10

Alias

10.1  class AliasInfoMBS

10.1.1  class AliasInfoMBS

Function: A class for information about an alias.
Example:

// select an alias file. use TrueChild so it’s not resolved
dim f as FolderItem = SpecialFolder.Desktop.TrueChild("Development")

// get alias info
dim a as AliasInfoMBS = f.AliasInfoMBS

// show info
MsgBox "alias points to " + a.TargetName + " in path " + a.PathString + " of volume " + a.VolumeName

Notes:
Only for Mac OS X.
This is for resource fork based alias files.
Newer OS X version use the newer bookmark format, so please use CFBookmarkMBS module there.
10.1.2 Methods

10.1.3 Constructor

**Function:** A dummy constructor used only for automatic plugin testing.
See also:

- 10.1.4 Constructor(AliasHandle as Integer)

10.1.4 Constructor(AliasHandle as Integer)

**Function:** The constructor: Loads object properties with information about the alias inside the Alias Handle.
**Notes:** Check Lasterror code to see whether it was successful.
See also:

- 10.1.3 Constructor

10.1.5 InfoForAliasData(data as string) as AliasInfoMBS

**Function:** Query information for alias data.
**Example:**

```vba
dim folder as FolderItem = SpecialFolder.Desktop
dim m as new MacAliasMBS
dim error as Integer = m.Create(nil, folder)
if error = 0 then
dim data as string = m.GetRecord
dim info as AliasInfoMBS = AliasInfoMBS_INFO AliasData(data)
MsgBox info.PathString
else
MsgBox "Failed to create the alias. Error " + str(error)
end if
```

**Notes:** Returns nil on any error.
10.1.6  InfoForSaveInfo(data as string) as AliasInfoMBS

**Function**: Query information about alias in SaveInfo.
**Example**:

```vbscript
dim folder as FolderItem = SpecialFolder.Desktop
dim SaveInfo as string = folder.GetSaveInfo(nil, FolderItem.SaveInfoDefaultMode)
dim info as AliasInfoMBS = AliasInfoMBS.InfoForSaveInfo(SaveInfo)
MsgBox info.PathString
```

**Notes:**
This is for saveinfo data returns by GetSaveInfo function in folderitem class.
Returns nil on any error.

10.1.7  Properties

10.1.8  FileCreator as String

**Function**: The file creator code.
**Example**:

```vbscript
// select an alias file. use TrueChild so it’s not resolved
dim f as FolderItem = SpecialFolder.Desktop(TrueChild("IMG_0793.jpg"))

// get alias info
dim a as AliasInfoMBS = f.AliasInfoMBS

// show info
MsgBox "FileCreator: " + a.FileCreator // shows Mac OS creator code like GKON
```

**Notes**: (Read only property)

10.1.9  FilesystemID as Integer

**Function**: The file system ID of the target file system.
**Notes**: (Read only property)
10.1.10  **FileType as String**


**Function:** The file type code.

**Example:**

```vba
// select an alias file. use TrueChild so it’s not resolved
Dim f As FolderItem = SpecialFolder.Desktop.TrueChild("IMG_0793.jpg")
// get alias info
Dim a As AliasInfoMBS = f.AliasInfoMBS
// show info
MsgBox "FileType: " + a.FileType // shows Mac OS creator code like JPEG
```

**Notes:** (Read only property)

10.1.11  **Flags as Integer**


**Function:** Which properties do have valid content.

**Notes:**

Some constants:

- `AliasInfoNone = &h00000000` no valid info
- `AliasInfoVolumeCreateDate = &h00000001` volume creation date is valid
- `AliasInfoTargetCreateDate = &h00000002` target creation date is valid
- `AliasInfoFinderInfo = &h00000004` file type and creator are valid
- `AliasInfoIsDirectory = &h00000008` isDirectory boolean is valid
- `AliasInfoIDs = &h00000010` parentDirID and nodeID are valid
- `AliasInfoFSInfo = &h00000020` filesystemID and signature are valid
- `AliasInfoVolumeFlags = &h00000040` volumeIsBootVolume, volumeIsAutomounted, volumeIsEjectable and volumeHasPersistentFileIDs are valid

(Read only property)

10.1.12  **IsDirectory as Boolean**


**Function:** Whether the target item is a directory or not.

**Example:**
10.1. CLASS ALIASINFOMBS

// select an alias file. use TrueChild so it's not resolved
dim f as FolderItem = SpecialFolder.Desktop.TrueChild("IMG_0793.jpg")

// get alias info
dim a as AliasInfoMBS = f.AliasInfoMBS

// show info
MsgBox "IsDirectory: " + str(a.IsDirectory)

Notes: (Read only property)

10.1.13 LastError as Integer

Notes: (Read only property)

10.1.14 NodeID as Integer

Notes: (Read only property)

10.1.15 ParentDirID as Integer

Notes: (Read only property)

10.1.16 PathString as String

Example:

// select an alias file. use TrueChild so it's not resolved
dim f as FolderItem = SpecialFolder.Desktop.TrueChild("IMG_0793.jpg")
// get alias info
Dim a As AliasInfoMBS = f.AliasInfoMBS

// show info
MsgBox "TargetName: " + a.PathString // shows target file path

Notes: (Read only property)

10.1.17 Signature as Integer

MBS MacClassic Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The signature of the target file system.
**Notes:** (Read only property)

10.1.18 TargetCreateDate as Double

MBS MacClassic Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Target file creation date.
**Notes:** Value should be in absolute seconds.
(Read only property)

10.1.19 TargetName as String

MBS MacClassic Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of the target item.
**Example:**
// select an alias file. use TrueChild so it’s not resolved
Dim f As FolderItem = SpecialFolder.Desktop.TrueChild("IMG_0793.jpg")

// get alias info
Dim a As AliasInfoMBS = f.AliasInfoMBS

// show info
MsgBox "TargetName: " + a.TargetName // shows target file name

Notes: (Read only property)
10.1.20  **VolumeCreateDate as Double**

MBS MacClassic Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The creation date of the target volume.  
**Notes:** (Read only property)

10.1.21  **VolumeHasPersistentFileIDs as Boolean**

MBS MacClassic Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The target volume has persistent file IDs, so the NodeID and parentDirID are usable.  
**Example:**
```
// select an alias file. use TrueChild so it’s not resolved
dim f as FolderItem = SpecialFolder.Desktop.TrueChild("IMG_0793.jpg")

// get alias info
dim a as AliasInfoMBS = f.AliasInfoMBS

// show info
MsgBox "VolumeHasPersistentFileIDs: "+str(a.VolumeHasPersistentFileIDs)
```

**Notes:** (Read only property)

10.1.22  **VolumeIsAutomounted as Boolean**

MBS MacClassic Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the volume is automounted.  
**Notes:**
```
// select an alias file. use TrueChild so it’s not resolved
dim f as FolderItem = SpecialFolder.Desktop.TrueChild("IMG_0793.jpg")

// get alias info
dim a as AliasInfoMBS = f.AliasInfoMBS

// show info
MsgBox "VolumeIsAutomounted: "+str(a.VolumeIsAutomounted)
```

(Read only property)
10.1.23 VolumeIsBootVolume as Boolean

Function: Whether the target volume is bootable.
Example:

// select an alias file. use TrueChild so it’s not resolved
dim f as FolderItem = SpecialFolder.Desktop.TrueChild("IMG_0793.jpg")

// get alias info
dim a as AliasInfoMBS = f.AliasInfoMBS

// show info
MsgBox "VolumeIsBootVolume: " + str(a.VolumeIsBootVolume)

Notes: (Read only property)

10.1.24 VolumeIsEjectable as Boolean

Function: Whether the target file is on an ejectable volume.
Example:

// select an alias file. use TrueChild so it’s not resolved
dim f as FolderItem = SpecialFolder.Desktop.TrueChild("IMG_0793.jpg")

// get alias info
dim a as AliasInfoMBS = f.AliasInfoMBS

// show info
MsgBox "VolumeIsEjectable: " + str(a.VolumeIsEjectable)

Notes: (Read only property)

10.1.25 VolumeName as String

Function: The name of the volume the target resides on.
Example:

// select an alias file. use TrueChild so it’s not resolved
dim f as FolderItem = SpecialFolder.Desktop.TrueChild("IMG_0793.jpg")
// get alias info
Dim a As AliasInfoMBS = f.AliasInfoMBS

// show info
MsgBox "VolumeName: " + a.VolumeName // shows target volume name

Notes: (Read only property)

10.1.26 Constants

10.1.27 kAliasInfoFinderInfo = 4

MBS MacClassic Plugin, Plugin Version: 13.4. Function: One of the flag constants. Notes: File type and creator are valid.

10.1.28 kAliasInfoFSInfo = 32


10.1.29 kAliasInfoIDs = 16

MBS MacClassic Plugin, Plugin Version: 13.4. Function: One of the flag constants. Notes: ParentDirID and nodeID are valid.

10.1.30 kAliasInfoIsDirectory = 8


10.1.31 kAliasInfoNone = 0

10.1.32  kAliasInfoTargetCreateDate = 2

MBS MacClassic Plugin, Plugin Version: 13.4. **Function:** One of the flag constants.  
**Notes:** Target creation date is valid.

10.1.33  kAliasInfoVolumeCreateDate = 1

MBS MacClassic Plugin, Plugin Version: 13.4. **Function:** One of the flag constants.  
**Notes:** Volume creation date is valid.

10.1.34  kAliasInfoVolumeFlags = 64

MBS MacClassic Plugin, Plugin Version: 13.4. **Function:** One of the flag constants.  
**Notes:** VolumeIsBootVolume, volumeIsAutomounted, volumeIsEjectable and volumeHasPersistentFileIDs are valid.
10.2. MODULE CFBOOKMARKMBS

10.2.1 module CFBookmarkMBS

MBS MacCF Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The module for Mac OS X bookmark/alias functions.

**Notes:**
Bookmark data strings have no text encoding. If you use ConvertEncoding on them, you destroy them.
Available with Mac OS X 10.6 or newer.
For older systems, please use MacAliasMBS class.

10.2.2 Methods

10.2.3 Available as boolean

MBS MacCF Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether bookmark functions are available.

**Notes:** Returns true on Mac OS X 10.6 or newer.

10.2.4 CreateBookmarkData(file as folderitem, options as UInt32 = 1024, relativeToURL as folderitem = nil) as string

MBS MacCF Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create a string containing an externalizable representation from a folderitem, modified with the given options, including (at the minimum) any properties in the propertiesToInclude array which are retrievable from the given url.

**Example:**
```plaintext
dim file as FolderItem = SpecialFolder.Desktop.Child(“test.rtf”)
dim Bookmark as string = CFBookmarkMBS.CreateBookmarkData(file, CFBookmarkMBS.kCreationSuitableForBookmarkFile)
MsgBox str(lenb(Bookmark))+” bytes”
```

**Notes:**
file: the folderitem to create a bookmark data from.
options: a set of options which control creation of the bookmark data
resourcePropertiesToInclude: Optional, If non-empty, an array of additional properties copied from the url to include in the created bookmark data.
relativeToURL: If non-nil, the created bookmark will be relative to the given url
Lasterror is set.

Returns a string containing an data, which can be later be passed to ResolveBookmarkData.

See also:

- 10.2.5 CreateBookmarkData(file as folderitem, options as UInt32, resourcePropertiesToInclude() as string, relativeToURL as folderitem = nil) as string
- 10.2.6 CreateBookmarkData(URL as CFURLMBS, options as UInt32 = 1024, relativeToURL as CFURLMBS = nil) as string
- 10.2.7 CreateBookmarkData(URL as CFURLMBS, options as UInt32 = 1024, relativeToURL as folderitem = nil) as string
- 10.2.8 CreateBookmarkData(URL as CFURLMBS, options as UInt32, resourcePropertiesToInclude() as string, relativeToURL as CFURLMBS = nil) as string
- 10.2.9 CreateBookmarkData(URL as CFURLMBS, options as UInt32, resourcePropertiesToInclude() as string, relativeToURL as folderitem = nil) as string
- 10.2.10 CreateBookmarkData(URL as string, options as UInt32 = 1024, relativeToURL as string = "") as string
- 10.2.11 CreateBookmarkData(URL as string, options as UInt32, resourcePropertiesToInclude() as string, relativeToURL as string = "") as string

**10.2.5 CreateBookmarkData**

(file as folderitem, options as UInt32, resourcePropertiesToInclude() as string, relativeToURL as folderitem = nil) as string

MBS MacCF Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Create a string containing an externalizable representation from a folderitem, modified with the given options, including ( at the minimum ) any properties in the propertiesToInclude array which are retrievable from the given url.

**Notes:**

- file: the folderitem to create a bookmark data from.
- options: a set of options which control creation of the bookmark data
- resourcePropertiesToInclude: Optional, If non-empty, an array of additional properties copied from the url to include in the created bookmark data.
- relativeToURL: If non-nil, the created bookmark will be relative to the given url

Lasterror is set.

Returns a string containing an data, which can be later be passed to ResolveBookmarkData.

See also:

- 10.2.4 CreateBookmarkData(file as folderitem, options as UInt32 = 1024, relativeToURL as folderitem = nil) as string
10.2.6 CreateBookmarkData(URL as CFURLMBS, options as UInt32 = 1024, relativeToURL as CFURLMBS = nil) as string

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Create a string containing an externalizable representation from a URL, modified with the given options,
including (at the minimum) any properties in the propertiesToInclude array which are retrievable from the
given url.

Notes:
URL: the URL to create a bookmark data from.
options: a set of options which control creation of the bookmark data
resourcePropertiesToInclude: Optional, If non-empty, an array of additional properties copied from the url
to include in the created bookmark data.
relativeToURL: If non-nil, the created bookmark will be relative to the given url

LastError is set.
Returns a string containing an data, which can be later be passed to ResolveBookmarkData.
See also:

- 10.2.4 CreateBookmarkData(file as folderitem, options as UInt32 = 1024, relativeToURL as folderitem = nil) as string
- 10.2.5 CreateBookmarkData(file as folderitem, options as UInt32, resourcePropertiesToInclude() as string, relativeToURL as folderitem = nil) as string
- 10.2.7 CreateBookmarkData(URL as CFURLMBS, options as UInt32 = 1024, relativeToURL as folderitem = nil) as string
- 10.2.8 CreateBookmarkData(URL as CFURLMBS, options as UInt32, resourcePropertiesToInclude() as string, relativeToURL as CFURLMBS = nil) as string
10.2.7  CreateBookmarkData(URL as CFURLMBS, options as UInt32 = 1024, relativeToURL as folderitem = nil) as string

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create a string containing an externalizable representation from a URL, modified with the given options, including ( at the minimum ) any properties in the propertiesToInclude array which are retrievable from the given url.

**Notes:**

URL: the URL to create a bookmark data from.

options: a set of options which control creation of the bookmark data

resourcePropertiesToInclude: Optional, If non-empty, an array of additional properties copied from the url to include in the created bookmark data.

relativeToURL: If non-nil, the created bookmark will be relative to the given url

Lasterror is set.

Returns a string containing an data, which can be later be passed to ResolveBookmarkData.

See also:

- 10.2.4 CreateBookmarkData(file as folderitem, options as UInt32 = 1024, relativeToURL as folderitem = nil) as string 2605
- 10.2.5 CreateBookmarkData(file as folderitem, options as UInt32, resourcePropertiesToInclude() as string, relativeToURL as folderitem = nil) as string 2606
- 10.2.6 CreateBookmarkData(URL as CFURLMBS, options as UInt32 = 1024, relativeToURL as CFURLMBS = nil) as string 2607
- 10.2.8 CreateBookmarkData(URL as CFURLMBS, options as UInt32, resourcePropertiesToInclude() as string, relativeToURL as CFURLMBS = nil) as string 2609
- 10.2.9 CreateBookmarkData(URL as CFURLMBS, options as UInt32, resourcePropertiesToInclude() as string, relativeToURL as folderitem = nil) as string 2609
- 10.2.10 CreateBookmarkData(URL as string, options as UInt32 = 1024, relativeToURL as string = ””) as string 2610
- 10.2.11 CreateBookmarkData(URL as string, options as UInt32, resourcePropertiesToInclude() as string, relativeToURL as string = ””) as string 2611
CreateBookmarkData(URI as CFURLMBS, options as UInt32, resourcePropertiesToInclude() as string, relativeToURL as CFURLMBS = nil) as string

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create a string containing an externalizable representation from a URL, modified with the given options, including (at the minimum) any properties in the propertiesToInclude array which are retrievable from the given URL.

**Notes:**

- URL: the URL to create a bookmark data from.
- options: a set of options which control creation of the bookmark data
- resourcePropertiesToInclude: Optional, if non-empty, an array of additional properties copied from the URL to include in the created bookmark data.
- relativeToURL: If non-nil, the created bookmark will be relative to the given URL

LastError is set.

Returns a string containing an externalizable representation, which can be later be passed to ResolveBookmarkData.

See also:

- 10.2.4 CreateBookmarkData(file as folderitem, options as UInt32 = 1024, relativeToURL as folderitem = nil) as string
- 10.2.5 CreateBookmarkData(file as folderitem, options as UInt32, resourcePropertiesToInclude() as string, relativeToURL as folderitem = nil) as string
- 10.2.6 CreateBookmarkData(URI as CFURLMBS, options as UInt32 = 1024, relativeToURL as CFURLMBS = nil) as string
- 10.2.7 CreateBookmarkData(URI as CFURLMBS, options as UInt32 = 1024, relativeToURL as folderitem = nil) as string
- 10.2.8 CreateBookmarkData(URI as CFURLMBS, options as UInt32 = 1024, relativeToURL as folderitem = nil) as string
- 10.2.9 CreateBookmarkData(URI as string, options as UInt32 = 1024, relativeToURL as string = "") as string
- 10.2.10 CreateBookmarkData(URI as string, options as UInt32, resourcePropertiesToInclude() as string, relativeToURL as string = "") as string

CreateBookmarkData(URI as CFURLMBS, options as UInt32, resourcePropertiesToInclude() as string, relativeToURL as folderitem = nil) as string

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create a string containing an externalizable representation from a URL, modified with the given options, including (at the minimum) any properties in the propertiesToInclude array which are retrievable from the
given url.

**Notes:**

URL: the URL to create a bookmark data from.

options: a set of options which control creation of the bookmark data

resourcePropertiesToInclude: Optional, If non-empty, an array of additional properties copied from the url to include in the created bookmark data.

relativeToURL: If non-nil, the created bookmark will be relative to the given url

LastError is set.

Returns a string containing an data, which can be later be passed to ResolveBookmarkData.

See also:

- 10.2.4 CreateBookmarkData(file as folderitem, options as UInt32 = 1024, relativeToURL as folderitem = nil) as string 2605
- 10.2.5 CreateBookmarkData(file as folderitem, options as UInt32, resourcePropertiesToInclude() as string, relativeToURL as folderitem = nil) as string 2606
- 10.2.6 CreateBookmarkData(URL as CFURLMBS, options as UInt32 = 1024, relativeToURL as CFURLMBS = nil) as string 2607
- 10.2.7 CreateBookmarkData(URL as CFURLMBS, options as UInt32 = 1024, relativeToURL as folderitem = nil) as string 2608
- 10.2.8 CreateBookmarkData(URL as CFURLMBS, options as UInt32, resourcePropertiesToInclude() as string, relativeToURL as CFURLMBS = nil) as string 2609
- 10.2.10 CreateBookmarkData(URL as string, options as UInt32 = 1024, relativeToURL as string = "") as string 2610
- 10.2.11 CreateBookmarkData(URL as string, options as UInt32, resourcePropertiesToInclude() as string, relativeToURL as string = "") as string 2611

**10.2.10 CreateBookmarkData(URL as string, options as UInt32 = 1024, relativeToURL as string = "") as string**

MBS MacCF Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create a string containing an externalizable representation from a URL, modified with the given options, including ( at the minimum ) any properties in the propertiesToInclude array which are retrievable from the given url.

**Notes:**

URL: the URL to create a bookmark data from.

options: a set of options which control creation of the bookmark data

resourcePropertiesToInclude: Optional, If non-empty, an array of additional properties copied from the url to include in the created bookmark data.

relativeToURL: If non-nil, the created bookmark will be relative to the given url
10.2. MODULE CFBOOKMARKMBS

Lasterror is set.
Returns a string containing an data, which can be later be passed to ResolveBookmarkData.
See also:

- 10.2.4 CreateBookmarkData(file as folderitem, options as UInt32 = 1024, relativeToURL as folderitem = nil) as string 2605
- 10.2.5 CreateBookmarkData(file as folderitem, options as UInt32, resourcePropertiesToInclude() as string, relativeToURL as folderitem = nil) as string 2606
- 10.2.6 CreateBookmarkData(URL as CFURLMBS, options as UInt32 = 1024, relativeToURL as CFURLMBS = nil) as string 2607
- 10.2.7 CreateBookmarkData(URL as CFURLMBS, options as UInt32 = 1024, relativeToURL as folderitem = nil) as string 2608
- 10.2.8 CreateBookmarkData(URL as CFURLMBS, options as UInt32, resourcePropertiesToInclude() as string, relativeToURL as CFURLMBS = nil) as string 2609
- 10.2.9 CreateBookmarkData(URL as CFURLMBS, options as UInt32, resourcePropertiesToInclude() as string, relativeToURL as folderitem = nil) as string 2609
- 10.2.11 CreateBookmarkData(URL as string, options as UInt32, resourcePropertiesToInclude() as string, relativeToURL as string = ””) as string 2611

10.2.11 CreateBookmarkData(URL as string, options as UInt32, resourcePropertiesToInclude() as string, relativeToURL as string = ””) as string

MBS MacCF Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Create a string containing an externalizable representation from a URL, modified with the given options,
including (at the minimum) any properties in the propertiesToInclude array which are retrievable from the
given url.

**Notes:**

URL: the URL to create a bookmark data from.
options: a set of options which control creation of the bookmark data
resourcePropertiesToInclude: Optional, If non-empty, an array of additional properties copied from the url
to include in the created bookmark data.
relativeToURL: If non-nil, the created bookmark will be relative to the given url

Lasterror is set.
Returns a string containing an data, which can be later be passed to ResolveBookmarkData.
See also:

- 10.2.4 CreateBookmarkData(file as folderitem, options as UInt32 = 1024, relativeToURL as folderitem = nil) as string 2605
- 10.2.5 CreateBookmarkData(file as folderitem, options as UInt32, resourcePropertiesToInclude() as string, relativeToURL as folderitem = nil) as string 2606
10.2.12 \textbf{CreateBookmarkDataFromAliasRecord(AliasRecordData as string) as string}

MBS MacCF Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. \textbf{Function:} Create a string containing bookmarkdata by converting the alias data in aliasRecordData which should be the contents of an AliasRecord copied into a string. 
\textbf{Notes:}

The created bookmarkdata can be passed into ResolveBookmarkData to resolve the item into a folderitem or URL, or a small set of information can be returned from ResourcePropertiesForKeysFromBookmarkData / ResourcePropertyForKeyFromBookmarkData.

AliasRecordData: the contents of an AliasRecord to create bookmark data for.

Returns a string containing bookmark data.

10.2.13 \textbf{LastError as CFErrorMBS}

\textbf{Notes:} This ia CFErrorMBS object.

10.2.14 \textbf{ReadBookmarkDataFromFile(file as folderitem) as string}

MBS MacCF Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. \textbf{Function:} Given a file which is a Finder "alias" file, return a string with the bookmark data from the file. 
\textbf{Notes:}

If file points to an alias file created before SnowLeopard which contains Alias Manager information and no bookmark data, then a bookmark data string will be synthesized which contains a approximation of the alias
10.2. MODULE CFBOOKMARKMBS

information in a format which can be used to resolve the bookmark. If an error prevents reading the data or if it is corrupt, nil will be returned and lasterror will be filled in if error object.

File: a folderitem to to the alias file to create the bookmark data from.

Returns a string containing bookmark data, or nil if there was an error creating bookmark data from the file, such as if the file is not an alias file.

10.2.15 ResolveBookmarkData(bookmark as string, options as UInt32, relativeToURL as folderitem, byref isStale as boolean) as folderitem

MBS MacCF Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Given a bookmark data string, returns a folderitem of the item it was a bookmark to.

Example:

```vba
dim AliasFile as FolderItem = SpecialFolder.Desktop.trueChild("test.alias")
dim Bookmark as string = CFBookmarkMBS.ReadBookmarkDataFromFile(AliasFile)
dim isStale as Boolean

dim options as UInt32 = CFBookmarkMBS.kResolutionWithoutUMask + CFBookmarkMBS.kResolution-
WithoutMountingMask

dim file as FolderItem = CFBookmarkMBS.ResolveBookmarkData(Bookmark, options, nil, isStale)

if file<>Nil then
    MsgBox file.AbsolutePath
else
    dim e as CFEErrorMBS = CFBookmarkMBS.LastError
    if e = nil then
        MsgBox "Failed to resolve."
    else
        MsgBox e.Description
    end if
end if
```

Notes:

If in the process of resolving the bookmark into the folderitem it points to this determines that some properties in the bookmark are out of date or not correct for the item it resolves to, set isStale to true, which the client may want to use to decide to make a new bookmark from the returned item and replace the saved bookmark it has. If the bookmarked item cannot be found, return nil. If an error (other than "original item can not be found") occurs during the process, return nil and fill in lasterror property.

bookmark: a string containing a bookmark data, created with CreateBookmarkData
options: options which affect the resolution
relativeToURL: If non-nil, and if the bookmark was created relative to another file/folder, then resolve it relative to this file/folder.

resourcePropertiesToInclude: Optional, if non-empty, an array containing those properties which the caller would like to already be cached on the given url.

isStale: On exit will be set to true if during resolution any of the properties in the bookmark no longer seemed to match the corresponding properties on the returned file. Clients, upon seeing a stale representation, may want to replace whatever stored bookmark data they have saved and create a new one.

LastError is set.

Returns a folderitem of a file which is the closest match to the file the bookmark data.

See also:

- 10.2.16 ResolveBookmarkData(bookmark as string, options as UInt32, relativeToURL as folderitem, resourcePropertiesToInclude() as string, byref isStale as boolean) as folderitem
- 10.2.17 ResolveBookmarkData(bookmark as string, options as UInt32, relativeToURL as string, byref isStale as boolean) as string
- 10.2.18 ResolveBookmarkData(bookmark as string, options as UInt32, relativeToURL as string, resourcePropertiesToInclude() as string, byref isStale as boolean) as string

10.2.16 ResolveBookmarkData(bookmark as string, options as UInt32, relativeToURL as folderitem, resourcePropertiesToInclude() as string, byref isStale as boolean) as folderitem

MBS MacCF Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Given a bookmark data string, returns a folderitem of the item it was a bookmark to.

**Notes:**

If in the process of resolving the bookmark into the folderitem it points to this determines that some properties in the bookmark are out of date or not correct for the item it resolves to, set isStale to true, which the client may want to use to decide to make a new bookmark from the returned item and replace the saved bookmark it has. If the bookmarked item cannot be found, return nil. If an error (other than "original item can not be found") occurs during the process, return nil and fill in lasterror property.

bookmark: a string containing a bookmark data, created with CreateBookmarkData
options: options which affect the resolution
relativeToURL: If non-nil, and if the bookmark was created relative to another file/folder, then resolve it relative to this file/folder.

resourcePropertiesToInclude: Optional, if non-empty, an array containing those properties which the caller would like to already be cached on the given url.

isStale: On exit will be set to true if during resolution any of the properties in the bookmark no longer seemed to match the corresponding properties on the returned file. Clients, upon seeing a stale representation, may want to replace whatever stored bookmark data they have saved and create a new one.
Lasterror is set.

Returns a folderitem of a file which is the closest match to the file the bookmark data.
See also:

- 10.2.15 ResolveBookmarkData(bookmark as string, options as UInt32, relativeToURL as folderitem, byref isStale as boolean) as folderitem
- 10.2.17 ResolveBookmarkData(bookmark as string, options as UInt32, relativeToURL as string, byref isStale as boolean) as string
- 10.2.18 ResolveBookmarkData(bookmark as string, options as UInt32, relativeToURL as string, resourcePropertiesToInclude() as string, byref isStale as boolean) as string

10.2.17 ResolveBookmarkData(bookmark as string, options as UInt32, relativeToURL as string, byref isStale as boolean) as string

MBS MacCF Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Given a bookmark data string, returns a folderitem of the item it was a bookmark to.

Notes:
If in the process of resolving the bookmark into the folderitem it points to this determines that some properties in the bookmark are out of date or not correct for the item it resolves to, set isStale to true, which the client may want to use to decide to make a new bookmark from the returned item and replace the saved bookmark it has. If the bookmarked item cannot be found, return nil. If an error (other than "original item can not be found") occurs during the process, return nil and fill in lasterror property.

bookmark: a string containing a bookmark data, created with CreateBookmarkData
options: options which affect the resolution
relativeToURL: If non-nil, and if the bookmark was created relative to another file/folder, then resolve it relative to this file/folder.
resourcePropertiesToInclude: Optional, if non-empty, an array containing those properties which the caller would like to already be cached on the given url.
isStale: On exit will be set to true if during resolution any of the properties in the bookmark no longer seemed to match the corresponding properties on the returned file. Clients, upon seeing a stale representation, may want to replace whatever stored bookmark data they have saved and create a new one.

Lasterror is set.

Returns a folderitem of a file which is the closest match to the file the bookmark data.
See also:

- 10.2.15 ResolveBookmarkData(bookmark as string, options as UInt32, relativeToURL as folderitem, byref isStale as boolean) as folderitem
10.2.18  ResolveBookmarkData(bookmark as string, options as UInt32, relativeToURL as string, resourcePropertiesToInclude() as string, byref isStale as boolean) as string

MBS MacCF Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Given a bookmark data string, returns a folderitem of the item it was a bookmark to.

**Notes:**
- If in the process of resolving the bookmark into the folderitem it points to this determines that some properties in the bookmark are out of date or not correct for the item it resolves to, set isStale to true, which the client may want to use to decide to make a new bookmark from the returned item and replace the saved bookmark it has. If the bookmarked item cannot be found, return nil. If an error (other than "original item can not be found") occurs during the process, return nil and fill in lasterror property.

bookmark: a string containing a bookmark data, created with CreateBookmarkData
options: options which affect the resolution
relativeToURL: If non-nil, and if the bookmark was created relative to another file/folder, then resolve it relative to this file/folder.
resourcePropertiesToInclude: Optional, if non-empty, an array containing those properties which the caller would like to already be cached on the given url.
isStale: On exit will be set to true if during resolution any of the properties in the bookmark no longer seemed to match the corresponding properties on the returned file. Clients, upon seeing a stale representation, may want to replace whatever stored bookmark data they have saved and create a new one.

Lasterror is set.

Returns a folderitem of a file which is the closest match to the file the bookmark data.

See also:
- 10.2.15 ResolveBookmarkData(bookmark as string, options as UInt32, relativeToURL as folderitem, byref isStale as boolean) as folderitem
- 10.2.16 ResolveBookmarkData(bookmark as string, options as UInt32, relativeToURL as folderitem, resourcePropertiesToInclude() as string, byref isStale as boolean) as folderitem
- 10.2.17 ResolveBookmarkData(bookmark as string, options as UInt32, relativeToURL as string, byref isStale as boolean) as string
10.2.19 ResolveBookmarkDataToCFURLMBS(bookmark as string, options as UInt32, relativeToURL as CFURLMBS, byref isStale as boolean) as CFURLMBS

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Given a bookmark data string, returns a CFURL of the item it was a bookmark to.
Notes:

If in the process of resolving the bookmark into the folderitem it points to this determines that some properties in the bookmark are out of date or not correct for the item it resolves to, set isStale to true, which the client may want to use to decide to make a new bookmark from the returned item and replace the saved bookmark it has. If the bookmarked item cannot be found, return nil. If an error (other than "original item can not be found") occurs during the process, return nil and fill in lasterror property.

Returns a CFURLMBS of a file which is the closest match to the file the bookmark data.

See also:

- 10.2.20 ResolveBookmarkDataToCFURLMBS(bookmark as string, options as UInt32, relativeToURL as CFURLMBS, resourcePropertiesToInclude() as string, byref isStale as boolean) as CFURLMBS
- 10.2.21 ResolveBookmarkDataToCFURLMBS(bookmark as string, options as UInt32, relativeToURL as folderitem, byref isStale as boolean) as CFURLMBS
- 10.2.22 ResolveBookmarkDataToCFURLMBS(bookmark as string, options as UInt32, relativeToURL as folderitem, resourcePropertiesToInclude() as string, byref isStale as boolean) as CFURLMBS

10.2.20 ResolveBookmarkDataToCFURLMBS(bookmark as string, options as UInt32, relativeToURL as CFURLMBS, resourcePropertiesToInclude() as string, byref isStale as boolean) as CFURLMBS

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Given a bookmark data string, returns a CFURL of the item it was a bookmark to.
Notes:
If in the process of resolving the bookmark into the folder item it points to, this determines that some properties in the bookmark are out of date or not correct for the item it resolves to, set isStale to true, which the client may want to use to decide to make a new bookmark from the returned item and replace the saved bookmark it has. If the bookmarked item cannot be found, return nil. If an error (other than "original item can not be found") occurs during the process, return nil and fill in lasterror property.

bookmark: a string containing a bookmark data, created with CreateBookmarkData
options: options which affect the resolution
relativeToURL: If non-nil, and if the bookmark was created relative to another file/folder, then resolve it relative to this file/folder.
resourcePropertiesToInclude: Optional, if non-empty, an array containing those properties which the caller would like to already be cached on the given url.
isStale: On exit will be set to true if during resolution any of the properties in the bookmark no longer seemed to match the corresponding properties on the returned file. Clients, upon seeing a stale representation, may want to replace whatever stored bookmark data they have saved and create a new one.

Lasterror is set.

Returns a CFURLMBS of a file which is the closest match to the file the bookmark data.
See also:

- 10.2.19 ResolveBookmarkDataToCFURLMBS(bookmark as string, options as UInt32, relativeToURL as CFURLMBS, byref isStale as boolean) as CFURLMBS
- 10.2.21 ResolveBookmarkDataToCFURLMBS(bookmark as string, options as UInt32, relativeToURL as folderitem, byref isStale as boolean) as CFURLMBS
- 10.2.22 ResolveBookmarkDataToCFURLMBS(bookmark as string, options as UInt32, relativeToURL as folderitem, resourcePropertiesToInclude() as string, byref isStale as boolean) as CFURLMBS

10.2.21 ResolveBookmarkDataToCFURLMBS(bookmark as string, options as UInt32, relativeToURL as folderitem, byref isStale as boolean) as CFURLMBS

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Given a bookmark data string, returns a CFURL of the item it was a bookmark to.
Notes:
If in the process of resolving the bookmark into the folder item it points to, this determines that some properties in the bookmark are out of date or not correct for the item it resolves to, set isStale to true, which the client may want to use to decide to make a new bookmark from the returned item and replace the saved bookmark it has. If the bookmarked item cannot be found, return nil. If an error (other than "original item can not be found") occurs during the process, return nil and fill in lasterror property.

bookmark: a string containing a bookmark data, created with CreateBookmarkData
options: options which affect the resolution
relativeToURL: If non-nil, and if the bookmark was created relative to another file/folder, then resolve it relative to this file/folder.
resourcePropertiesToInclude: Optional, if non-empty, an array containing those properties which the caller would like to already be cached on the given url.
isStale: On exit will be set to true if during resolution any of the properties in the bookmark no longer seemed to match the corresponding properties on the returned file. Clients, upon seeing a stale representation, may want to replace whatever stored bookmark data they have saved and create a new one.

Returns a CFURLMBS of a file which is the closest match to the file the bookmark data.

See also:

- 10.2.19 ResolveBookmarkDataToCFURLMBS(bookmark as string, options as UInt32, relativeToURL as CFURLMBS, byref isStale as boolean) as CFURLMBS 2617
- 10.2.20 ResolveBookmarkDataToCFURLMBS(bookmark as string, options as UInt32, relativeToURL as CFURLMBS, resourcePropertiesToInclude() as string, byref isStale as boolean) as CFURLMBS 2617
- 10.2.22 ResolveBookmarkDataToCFURLMBS(bookmark as string, options as UInt32, relativeToURL as folderitem, resourcePropertiesToInclude() as string, byref isStale as boolean) as CFURLMBS 2619

10.2.22 ResolveBookmarkDataToCFURLMBS(bookmark as string, options as UInt32, relativeToURL as folderitem, resourcePropertiesToInclude() as string, byref isStale as boolean) as CFURLMBS

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Given a bookmark data string, returns a CFURL of the item it was a bookmark to.
Notes:

If in the process of resolving the bookmark into the folderitem it points to this determines that some properties in the bookmark are out of date or not correct for the item it resolves to, set isStale to true, which the client may want to use to decide to make a new bookmark from the returned item and replace the saved bookmark it has. If the bookmarked item cannot be found, return nil. If an error (other than "original item can not be found") occurs during the process, return nil and fill in lasterror property.

bookmark: a string containing a bookmark data, created with CreateBookmarkData
options: options which affect the resolution
relativeToURL: If non-nil, and if the bookmark was created relative to another file/folder, then resolve it relative to this file/folder.
resourcePropertiesToInclude: Optional, if non-empty, an array containing those properties which the caller would like to already be cached on the given url.
isStale: On exit will be set to true if during resolution any of the properties in the bookmark no longer seemed to match the corresponding properties on the returned file. Clients, upon seeing a stale representation, may
want to replace whatever stored bookmark data they have saved and create a new one.

LastError is set.

Returns a CFURLMBS of a file which is the closest match to the file the bookmark data.
See also:

- 10.2.19 ResolveBookmarkDataToCFURLMBS(bookmark as string, options as UInt32, relativeToURL as CFURLMBS, byref isStale as boolean) as CFURLMBS
- 10.2.20 ResolveBookmarkDataToCFURLMBS(bookmark as string, options as UInt32, relativeToURL as CFURLMBS, resourcePropertiesToInclude() as string, byref isStale as boolean) as CFURLMBS
- 10.2.21 ResolveBookmarkDataToCFURLMBS(bookmark as string, options as UInt32, relativeToURL as folderitem, byref isStale as boolean) as CFURLMBS

10.2.23 ResourcePropertiesForKeysFromBookmarkData(BookmarkData as string) as dictionary

MBS MacCF Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Given a bookmark, return a dictionary of all properties.
Example:

```
dim f as FolderItem = SpecialFolder.Desktop.TrueChild("Webseiten")

dim data as string = CFBookmarkMBS.ReadBookmarkDataFromFile(f)

if data.lenb > 0 then
    dim dic as Dictionary = CFBookmarkMBS.ResourcePropertiesForKeysFromBookmarkData(data)

    Break ' // see in debugger
end if
```

Notes:
This returns only the properties stored within the bookmark and will not attempt to resolve the bookmark or do i/o.

BookmarkData: a string containing a bookmark data, created with CreateBookmarkData

Returns a dictionary containing the values for all properties passed in obtained from the bookmark data (not by attempting to resolve it or do i/o in any way)
Version 17.1 of our plugin knows a list of keys, so it tries all keys and returns the dictionary with matching ones.

See also:

- 10.2.24 ResourcePropertiesForKeysFromBookmarkData(BookmarkData as string, resourcePropertiesToReturn() as string) as dictionary

10.2.24 ResourcePropertiesForKeysFromBookmarkData(BookmarkData as string, resourcePropertiesToReturn() as string) as dictionary

MBS MacCF Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Given a bookmark, return a dictionary of properties.

**Notes:**
This returns only the properties stored within the bookmark and will not attempt to resolve the bookmark or do i/o.

BookmarkData: a string containing a bookmark data, created with CreateBookmarkData
resourcePropertiesToReturn: Optional an array of string of the properties of the bookmark data which the client would like returned.

Returns a dictionary containing the values for the properties passed in obtained from the bookmark data (not by attempting to resolve it or do i/o in any way)

See also:

- 10.2.23 ResourcePropertiesForKeysFromBookmarkData(BookmarkData as string) as dictionary

10.2.25 ResourcePropertyForKeyFromBookmarkData(BookmarkData as string, resourcePropertyKey as string) as Variant

MBS MacCF Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Given a bookmark, return the value for a given property from the bookmark data.

**Notes:**
This returns only the properties stored within the bookmark and will not attempt to resolve the bookmark or do i/o.

BookmarkData: a string containing a bookmark data, created with CreateBookmarkData
resourcePropertyKey: the property key to return.

Returns a variant value for the property passed in obtained from the bookmark data (not by attempting to resolve it or do i/o in any way)
10.2.26 StartAccessingSecurityScopedResource(URL as CFURLMBS) as boolean

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Given a file URL created by resolving a bookmark data created with security scope, make the resource referenced by the url accessible to the process. **Notes:** When access to this resource is no longer needed the client should call StopAccessingSecurityScopedResource(). Each call to StartAccessingSecurityScopedResource() must be balanced with a call to StopAccessingSecurityScopedResource(). URL: the file URL for the resource returned by CreateByResolvingBookmarkData() using kResolutionWithSecurityScope. Returns true if access was granted and false if the url does not reference a security scoped resource, or if some error occurred which didn’t allow access to be granted. Available on Mac OS X 10.7 or newer.

10.2.27 StopAccessingSecurityScopedResource(URL as CFURLMBS)

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Revokes the access granted to the url by a prior successful call to StartAccessingSecurityScopedResource(). **Notes:** Available on Mac OS X 10.7 or newer.

10.2.28 WriteBookmarkDataToFile(BookmarkData as string, file as folderitem, options as UInt32) as boolean

MBS MacCF Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Given a created bookmarkData object, create a new Finder "alias" file at file which contains the bookmark data. **Example:**

```plaintext
dim file as FolderItem = SpecialFolder.Desktop.TrueChild(“test.rtf”)  
dim Bookmark as string = CFBookmarkMBS.CreateBookmarkData(file, CFBookmarkMBS.kCreationSuitableForBookmarkFile)  

dim AliasFile as FolderItem = SpecialFolder.Desktop.TrueChild(“test.alias”)  
if CFBookmarkMBS.WriteBookmarkDataToFile(Bookmark, AliasFile, 0) then  
    MsgBox “OK”  
else  
    dim e as CFErrorMBS = CFBookmarkMBS.lasterror  
    MsgBox “Failed: ” + e.Description  
end if
```
Notes:
If file points to a directory, an alias file will be created with the same name as the bookmarked item and a ".alias" extension. If file points to a file and it exists it will be overwritten. If a .alias extension is not present it will be added. In addition to the bookmark data, sufficient pre-SnowLeopard alias data will added to the file to allow systems running something before SnowLeopard to resolve this file using Alias Manager routines and get back the same file as the bookmark routines.

The bookmark data must have been created with the kCFURLBookmarkCreationSuitableForBookmarkFile option and an error will be returned if not.

bookmark: A string containing a bookmark data, created with CreateBookmarkData
file: The file/folder to write the alias to.
options: options flags

LastError is set.

10.2.29 Constants

10.2.30 kCreationMinimalBookmarkMask = 512

MBS MacCF Plugin, Plugin Version: 11.3. Function: One of the creation option constants.
Notes: Creates a bookmark with "less" information, which may be smaller but still be able to resolve in certain ways.

10.2.31 kCreationPreferFileIDResolutionMask = 256

MBS MacCF Plugin, Plugin Version: 11.3. Function: One of the creation option constants.
Notes: At resolution time, this alias will prefer resolving by the embedded fileID to the path.

10.2.32 kCreationSecurityScopeAllowOnlyReadAccess = 4096

MBS MacCF Plugin, Plugin Version: 12.4. Function: One of the creation option constants.
Notes: Mac OS X 10.7.3 and later, if used with kCFURLBookmarkCreationWithSecurityScope, at resolution time only read access to the resource will be granted.
10.2.33  \texttt{kCreationSuitableForBookmarkFile} = 1024

MBS MacCF Plugin, Plugin Version: 11.3. \textbf{Function:} One of the creation option constants. 
\textbf{Notes:} Includes in the created bookmark those properties which are needed for a bookmark/alias file.

10.2.34  \texttt{kCreationWithSecurityScope} = 2048

MBS MacCF Plugin, Plugin Version: 12.4. \textbf{Function:} One of the creation option constants. 
\textbf{Notes:} Mac OS X 10.7.3 and later, include information in the bookmark data which allows the same sandboxed process to access the resource after being relaunched.

10.2.35  \texttt{kResolutionWithoutMountingMask} = 512

MBS MacCF Plugin, Plugin Version: 11.3. \textbf{Function:} One of the resolving option constants. 
\textbf{Notes:} Don’t mount a volume during bookmark resolution.

10.2.36  \texttt{kResolutionWithoutUIMask} = 256

MBS MacCF Plugin, Plugin Version: 11.3. \textbf{Function:} One of the resolving option constants. 
\textbf{Notes:} Don’t perform any UI during bookmark resolution.

10.2.37  \texttt{kResolutionWithSecurityScope} = 1024

MBS MacCF Plugin, Plugin Version: 12.4. \textbf{Function:} One of the resolving option constants. 
\textbf{Notes:} Mac OS X 10.7.3 and later, extract the security scope included at creation time to provide the ability to access the resource.
10.3. CLASS MACALIASMBS

10.3 class MacAliasMBS

10.3.1 class MacAliasMBS

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Gives access to Aliases on Mac.

**Example:**

// Store the reference to a FolderItem in a Binary File

Dim alias as MacAliasMBS
Dim t,f as FolderItem
Dim bf as BinaryStream, s as String
Dim t as SpecialFolder.Desktop.Child("test")
bf = t.CreateBinaryFile("") // open your binary file here
f = SpecialFolder.Desktop // the FolderItem you want to save
alias = new MacAliasMBS
if alias.Create(nil, f) = 0 then
    s = alias.GetRecord
    bf.WriteLong LenB(s) // this saves the length of the record
    bf.Write s // this saves the record itself
end
bf.Close

// Retrieve the reference to a FolderItem from a Binary File

dim l as Integer

Dim t as SpecialFolder.Desktop.Child("test")
bf = t.OpenAsBinaryFile(false) // open your binary file here
alias = new MacAliasMBS
l = bf.ReadLong
alias.SetRecord bf.Read(l)
f = alias.Resolve(nil, alias.attemptMount)
if alias.needsUpdate then
    if alias.Update(nil, f) = 1 then
        // ... you might want to save the updated alias in your file here
    end
end

// f now describes the FolderItem again.
// It may not be existing any more, however, so here’s a check for that:
if not f.exists then
    MsgBox "oops! the file is not available any more. Select a new one, please"
//... let the user locate the file
end
Notes:
This Plugin implements a new Class for handling Mac OS Alias Records.

AliasRecords are like FolderItems, but can be made persistent: You can convert a FolderItem into a AliasRecord and store that AliasRecord in a file (like your Preferences file). Later you can retrieve that information again and convert it back into a FolderItem.

AliasRecords also appear inside Alias Files, that are usually created by the Finder. The enclosed sample application (Alias Mgr Plugin Demo.) shows how to create and resolve such Alias Files.

Additional Background Information
The purpose of the class is to store paths to files and/or folders between runs of a RB application. To store a path to a file/folder in an RB app, currently your only option is to get the absolute path as a string, and store that string in a file, usually your preferences file. However, there is problem with using this technique: If, between runs of your app, the user changes the path of the file by moving it, or by renaming the file or any of its parent folders (including the volume name), your app will fail to locate the file next time it is looking for it.
Fortunately, at least in Mac OS, there is a solution to this, which helps you to track your files in such a case. This is done by using Alias Records: they are the basic data structure that is also used in Alias Files as created and used in the Finder.
This class attempts to give the flexibility of Alias Records to your RB apps.

The meaning of the Relative path
When no relative path is specified, then the file is only located by its folder hierarchy down to the root of the volume. However, if a relative path is given, then the file is optionally located relative to that point. So, if you locate files relatively to some folder, like the folder your application is in, you should specify your app’s folder as the relative path so that the target is even found easily when the user moved the whole folder including your app and its related files. This is even more important when using this Alias class under Windows than under Mac OS (if files are moved in Mac OS, they often still can be found even without the help of the original folder hierarchy, while this is not possible under Windows 9x).

For Mac OS X 10.6 or newer, please also check CFBookmarkMBS module.

10.3.2 Methods

10.3.3 AliasInfo as AliasInfoMBS

Example:
10.3. **CLASS MACALIASMBS**

```
dim m as new MacAliasMBS
dim f as FolderItem = SpecialFolder.Desktop

if m.Create(nil, f) = 0 then
    dim info as AliasInfoMBS = m.AliasInfo
    MsgBox info.TargetName + EndOfLine + info.VolumeName + EndOfLine + info.PathString
end if
```

10.3.4 close

**Function:** The destructor. 
**Notes:**

There is no need to call this method except you want to free all resources of this object now without waiting 
for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

10.3.5 Create(relPath as FolderItem, target as FolderItem, isDirectory as boolean = false) as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an 
AliasRecord for a given file or folder.
**Example:**
```
dim m as new MacAliasMBS

dim e as Integer = m.Create(nil, SpecialFolder.Desktop.Child("test.txt"), true)

// shows -43 as we created alias for non existing file
MsgBox str(e)
MsgBox m.AliasInfo.TargetName
```

**Notes:**

Returns zero if successful, otherwise a negative Mac OS error code.

Version 16.0 can create alias for non existing files. In that case you can tell with function isDirectory whether 
the target should be a directory. Still returns fnfErr (-43) if file doesn’t exist but the alias will still be created.
10.3.6 CreateAliasFromPath(targetPath as string, fromFilePath as String = ", isDirectory as boolean = false) as Integer

Function: Creates an alias given a POSIX style utf-8 path to the target.  
Example:  

dim m as new MacAliasMBS  
dim e as Integer = m.CreateAliasFromPath("/Users/test", "", true)  
// shows -43 as we created alias for non existing file
MsgBox str(e)  
MsgBox m.AliasInfo.TargetName

Notes:  
Returns OS error code.  
If the target file does not exist but the path up to the leaf does then fnfErr (-43) will be returned but the alias will still be created.  

fromFilePath: The starting point for a relative search.  
targetPath: POSIX style UTF-8 path to target.  
IsDirectory: On input, if target does not exist, a flag to indicate whether or not the target is a directory.

10.3.7 CreateFSRef(relPath as memoryblock, target as memoryblock) as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  
Function: Creates an AliasRecord for a given file or folder.  
Notes:  
The two memoryblocks are FSRefs which you can get by FolderItem.FSRef.  
Returns zero if successful, otherwise a negative Mac OS error code.

10.3.8 CreateMinimal(target as FolderItem, isDirectory as boolean = false) as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  
Function: Creates an AliasRecord for a given file or folder.  
Returns zero if successful, otherwise a negative Mac OS error code.  
Notes:
Minimal creates an alias without path, so it is smaller.

Version 16.0 can create alias for non-existing files. In that case you can tell with function isDirectory whether the target should be a directory. Still returns fnfErr (-43) if file doesn’t exist but the alias will still be created.

10.3.9 CreateMinimalFSRef(target as memoryblock) as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a minimal AliasRecord for a given file or folder.

**Notes:**
The memoryblock is a FSRefs which you can get by Folderitem.FSRef.
Returns zero if successful, otherwise a negative Mac OS error code.

10.3.10 GetRecord as String

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the AliasRecord in a String so that you can store it in a file, and pass it SetRecord for re-creating the AliasRecord (this string might contain any byte values, including zeros, so you can not display it or store it in a text file - you have to store it in a binary file or in a resource, instead!).

**Notes:** Attention: The length of the String is not fixed! When the Alias changes, its length usually changes, too. If you want to save this string into a binary file, you must also save its current length so that you know how much bytes to retrieve if you read it back from the file later. An easier way to store Aliases in a file is by using the Resource Manager. The sample code "FolderItems in Preferences.rbp" shows how to accomplish this.

10.3.11 PathString as String


**Example:**
```vbnet
dim m as new MacAliasMBS
dim f as FolderItem = SpecialFolder.Desktop

if m.Create(nil, f) = 0 then
    MsgBox m.PathString
end if
```
10.3.12 Resolve(relPath as FolderItem, mode as Integer) as FolderItem

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Converts an AliasRecord back into a FolderItem. For values to the mode parameter see the class constants or pass in 0 for default searching (will not attempt to mount unavailable volumes). **Notes:** After calling this method, the property needsUpdate tells you whether the target has been renamed or moved, which suggests that you call Update in order to reflect the change in the AliasRecord. See the demo "FolderItems in Preferences.rbp" for an example.

10.3.13 SetRecord(record as String)

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Use this method to revive an AliasRecord with the string you inquired from GetRecord earlier.

10.3.14 TargetName as String

MBS MacClassic Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries target name of the alias. **Example:**

```vbnet
dim m as new MacAliasMBS
dim f as FolderItem = SpecialFolder.Desktop
if m.Create(nil, f) = 0 then
    MsgBox m.TargetName
end if
```

10.3.15 Update(relPath as FolderItem, target as FolderItem) as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Updates an already created AliasRecord. Returns either a negative Mac OS error code, zero if the update didn’t actually change the AliasRecord, or one if the record was changed (in this case you might want to update your record of the alias if you had stored it in a file).

10.3.16 VolumeName as String

MBS MacClassic Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries volume name of the alias. **Example:**
10.3. CLASS MACALIASMBS

```vbscript
dim m as new MacAliasMBS
dim f as FolderItem = SpecialFolder.Desktop
if m.Create(nil, f) = 0 then
    MsgBox m.VolumeName
end if
```

10.3.17 Properties

10.3.18 needsUpdate as boolean

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Does the Alias Record need no Update?

**Notes:**
after having called Resolve successfully, this property indicates whether the AliasRecord is still up to date:
true: the target of the Alias is still at the same location where it was last seen.
false: the target has been moved or renamed. The Update method should be invoked.
(Read only property)

10.3.19 Constants

10.3.20 allVols=8

MBS MacClassic Plugin, Plugin Version: 7.7. **Function:** One of the constants to use in Resolve.

**Notes:**
search on multiple volumes
This is the old constant name used for compatibility to older Realbasic code.
Use BitwiseOr or Bitwise.Or to combine this constants values.

10.3.21 attemptMount=1

MBS MacClassic Plugin, Plugin Version: 7.7. **Function:** One of the constants to use in Resolve.

**Notes:**
mount the volume automatically
This is the old constant name used for compatibility to older Realbasic code.
Use BitwiseOr or Bitwise.Or to combine this constants values.
10.3.22 exhaustive=& h200

MBS MacClassic Plugin, Plugin Version: 7.7. **Function:** One of the constants to use in Resolve.  
**Notes:**
- search further
- This is the old constant name used for compatibility to older Realbasic code.
- Use BitwiseOr or Bitwise.Or to combine this constants values.

10.3.23 kARMMountVol=1

MBS MacClassic Plugin, Plugin Version: 7.7. **Function:** One of the constants to use in Resolve.  
**Notes:**
- mount the volume automatically
- Use BitwiseOr or Bitwise.Or to combine this constants values.

10.3.24 kARMMultVols=8

MBS MacClassic Plugin, Plugin Version: 7.7. **Function:** One of the constants to use in Resolve.  
**Notes:**
- search on multiple volumes
- Use BitwiseOr or Bitwise.Or to combine this constants values.

10.3.25 kARMNoUI=2

MBS MacClassic Plugin, Plugin Version: 7.7. **Function:** One of the constants to use in Resolve.  
**Notes:**
- no user interface allowed during resolution
- Use BitwiseOr or Bitwise.Or to combine this constants values.

10.3.26 kARMSearch=& h100

MBS MacClassic Plugin, Plugin Version: 7.7. **Function:** One of the constants to use in Resolve.  
**Notes:**
- search quickly
- Use BitwiseOr or Bitwise.Or to combine this constants values.
10.3. CLASS MACALIASMBS

10.3.27  kARMSearchMore=& h200

Notes:
search further
Use BitwiseOr or Bitwise.Or to combine this constants values.

10.3.28  kARMSearchRelFirst=& h400

Notes:
search target on a relative path first
Use BitwiseOr or Bitwise.Or to combine this constants values.

10.3.29  kARMTryFileIDFirst=& h800

Notes:
search by file id before path
Use BitwiseOr or Bitwise.Or to combine this constants values.

10.3.30  noDialogs=2

Notes:
no user interface allowed during resolution
This is the old constant name used for compatibility to older Realbasic code.
Use BitwiseOr or Bitwise.Or to combine this constants values.

10.3.31  relFirst=& h400

Notes:
search target on a relative path first
This is the old constant name used for compatibility to older Realbasic code.
Use BitwiseOr or Bitwise.Or to combine this constants values.
Chapter 11

Apple Remote

11.1 class AppleRemoteMBS

11.1.1 class AppleRemoteMBS

Function: A class to handle an Apple Remote device from Realbasic.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

With Mac OS X 10.6 Apple made changes to the behavior of the driver so the exclusive mode does no longer work.

11.1.2 Methods

11.1.3 startListening


11.1.4 stopListening

11.1.5 Properties

11.1.6 ClickCountEnabledButtons as Integer

MBS MacExtras Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Which buttons to enable for click counting.  
**Notes:** (Read and Write property)

11.1.7 ClickCountingEnabled as Boolean

MBS MacExtras Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether to do click counting.  
**Notes:**  
Click counting makes it possible to recognize if the user has pressed a button repeatedly. Click counting does delay each event as it has to wait if there is another event (second click) therefore there is a slight time difference (maximumClickCountTimeDifference) between a single click of the user and the call of your delegate method. Click counting can be enabled individually for specific buttons. Use the property clickCountEnabledButtons to set the buttons for which click counting shall be enabled.  
(Read and Write property)

11.1.8 Handle as Integer

MBS MacExtras Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle to the used AppleRemote Cocoa object.  
**Notes:** (Read and Write property)

11.1.9 ListeningOnAppActivate as Boolean

MBS MacExtras Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets an NSApplication delegate which starts listening when application is becoming active and stops listening when application resigns being active.  
**Notes:**  
If an NSApplication delegate has been already set all method calls will be forwarded to this delegate, too.  
(Read and Write property)
11.1. CLASS APPLEREMOTEMBS

11.1.10 ListeningToRemote as boolean

MBS MacExtras Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether object is currently listening to the devices. **Notes:**

True if yes and false if no. (Read and Write property)

11.1.11 MaximumClickCountTimeDifference as Double

MBS MacExtras Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The maximum time difference till which clicks are recognized as multi clicks. **Notes:** (Read and Write property)

11.1.12 OpenInExclusiveMode as boolean

MBS MacExtras Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether device should be opened in exclusive mode. **Notes:**

True if yes and False if no. (Read and Write property)

11.1.13 ProcessesBacklog as Boolean

MBS Mac Extras Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** When your application needs too much time on the main thread when processing an event other events may already be received which are put on a backlog. **Notes:**

As soon as your main thread has some spare time this backlog is processed and may flood your delegate with calls. Backlog processing is turned off by default. (Read and Write property)

11.1.14 RemoteAvailable as boolean

MBS MacExtras Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the needed drivers are installed to handle the device. **Notes:**
11.1.15  remoteId as Integer

MBS MacExtras Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The device ID.  
**Notes:** (Read only property)

11.1.16  SimulatesPlusMinusHold as Boolean

MBS MacExtras Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Simulating plus/minus hold does deactivate sending of individual requests for plus/minus pressed down/released.  
**Notes:** Instead special hold events are being triggered when the user is pressing and holding plus/minus for a small period. With simulating enabled the plus/minus buttons do behave as the left/right buttons.  
(Read and Write property)

11.1.17  Events

11.1.18  ButtonPressed(ButtonID as Integer, PressedDown as boolean, click-Count as Integer)

MBS MacExtras Plugin, Plugin Version: 7.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event being called whenever a button is pressed or released.  
**Notes:** ButtonID is one of the kRemote* constants in this class. PressedDown is true if the button was pressed down. If false the button is now no longer pressed after holding it.

11.1.19  Constants

11.1.20  kRemoteButtonFullscreen2009 = 32768

MBS MacExtras Plugin, Plugin Version: 15.0. **Function:** The constant for the fullscreen button (older modell).
11.1. CLASS APPLEREMOTEMBS

11.1.21 kRemoteButtonLeft = 64

MBS MacExtras Plugin, Plugin Version: 7.1. **Function:** The constant for the left button.

11.1.22 kRemoteButtonLeftHold = 256

MBS MacExtras Plugin, Plugin Version: 7.1. **Function:** The constant for the left button being hold.

11.1.23 kRemoteButtonMenu = 8

MBS MacExtras Plugin, Plugin Version: 7.1. **Function:** The constant for the menu button.

11.1.24 kRemoteButtonMenuHold = 512

MBS MacExtras Plugin, Plugin Version: 7.1. **Function:** The constant for the menu button being hold.

11.1.25 kRemoteButtonPlay = 16

MBS MacExtras Plugin, Plugin Version: 7.1. **Function:** The constant for the play button.

11.1.26 kRemoteButtonPlay2009 = 16384

MBS MacExtras Plugin, Plugin Version: 15.0. **Function:** The constant for the play button (older model).

11.1.27 kRemoteButtonPlaySleep = 1024

MBS MacExtras Plugin, Plugin Version: 7.1. **Function:** The constant for the play button being hold.

11.1.28 kRemoteButtonRight = 32

MBS MacExtras Plugin, Plugin Version: 7.1. **Function:** The constant for the right button.
11.1.29  \( k_{\text{RemoteButtonRightHold}} = 128 \)

MBS MacExtras Plugin, Plugin Version: 7.1. **Function:** The constant for the right button being hold.

11.1.30  \( k_{\text{RemoteButtonVolumeMinus}} = 4 \)

MBS MacExtras Plugin, Plugin Version: 7.1. **Function:** The constant for the volume minus button.

11.1.31  \( k_{\text{RemoteButtonVolumeMinus_Hold}} = 8192 \)

MBS MacExtras Plugin, Plugin Version: 15.0. **Function:** The constant for the volume minus button (hold).

11.1.32  \( k_{\text{RemoteButtonVolumePlus}} = 2 \)

MBS MacExtras Plugin, Plugin Version: 7.1. **Function:** The constant for the volume plus button.

11.1.33  \( k_{\text{RemoteButtonVolumePlus_Hold}} = 4096 \)

MBS MacExtras Plugin, Plugin Version: 15.0. **Function:** The constant for the volume plus button (hold).

11.1.34  \( k_{\text{RemoteControlSwitched}} = 2048 \)

MBS MacExtras Plugin, Plugin Version: 7.1. **Function:** The constant for the device switch event.
Chapter 12

Apple Script

12.1 class AppleScriptErrorMBS

12.1.1 class AppleScriptErrorMBS

Function: A class for detailed error information.
Example:

/* a simply example using the AppleScriptErrorMBS class: */

dim s As new AppleScriptMBS
dim ASErr As AppleScriptErrorMBS

dim text As string = "set x to 1" /* intentional error */
s.Compile text

if s.LastError<>0 Then
    dim errorMsg As String = "Compile error: " + str(s.Lasterror) + EndOfLine
    ASErr = s.Error
    MsgBox errorMessage + "Details: " + ASErr.BriefMessage
end if
12.1.2 Properties

12.1.3 AppName as String

Function: The name of the application.
Notes:
Value is "" if no application is used (e.g. on compiling).
(Read and Write property)

12.1.4 AppSerial as MemoryBlock

Function: The application serial number.
Notes:
Nil if no application is used.
You can create a ProcessMBS class using this serial.s
(Read and Write property)

12.1.5 BriefMessage as String

Function: The brief error message.
Example:
```
dim ASErr as AppleScriptErrorMBS
MsgBox "Details: " + ASErr.BriefMessage
```
Notes: (Read and Write property)

12.1.6 Errorcode as Integer

Function: The error code.
Example:
```
dim a as new AppleScriptMBS
a.Compile "hello"
```
12.1. CLASS APPLES CriPTERRORMBS

Do not hallucinate.
2644

12.1.9

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RangeAvailable as Boolean

Function: whether the rangestart and rangeend properties have valid values.
Example:
dim a as new AppleScriptMBS
a.Compile ”hello”
a.Execute
MsgBox str(a.error.RangeAvailable)+”: ”+str(a.error.RangeStart)+”-”+str(a.error.RangeEnd)

Notes: (Read and Write property)

12.1.10

RangeEnd as Integer

Function: The end of the source text range.
Example:
dim a as new AppleScriptMBS
a.Compile ”hello”
a.Execute
MsgBox str(a.error.RangeAvailable)+”: ”+str(a.error.RangeStart)+”-”+str(a.error.RangeEnd)

Notes: (Read and Write property)

12.1.11

RangeStart as Integer

Function: The start of the source text range.
Example:
dim a as new AppleScriptMBS
a.Compile ”hello”
a.Execute
MsgBox str(a.error.RangeAvailable)+”: ”+str(a.error.RangeStart)+”-”+str(a.error.RangeEnd)


Notes: (Read and Write property)
12.2 class AppleScriptMBS

12.2.1 class AppleScriptMBS


**Function:** A class for compiling and executing Apple Scripts in RB.

**Example:**

```ruby
dim a as new AppleScriptMBS
dim lines(-1) as string

lines.Append "tell application " "Finder"
lines.Append " activate"
lines.Append " display dialog " "Now is " " & (current date)"
lines.Append "end tell"

a.Compile Join(lines, EndOfLine.Macintosh)
a.Execute
```

12.2.2 Methods

12.2.3 close


**Function:** The destructor.

**Example:**

```ruby
dim a as new AppleScriptMBS

// later
a.close
```

**Notes:**

There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.

(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

12.2.4 Compile(text as string)


**Function:** Compiles the given source code.
12.2. CLASS APPLESRIPTMBS

Example:

// the code below workarounds a limitation in AppleScript on processing unicode strings

dim theScript as new AppleScriptMBS
dim scripttext as string
dim chars(-1) as string
dim n as string
dim i,c as Integer

const text="Hello World" // add unicode characters here!

c=len(text)
for i=1 to c
  n=hex(asc(mid(text,i,1)))
  while len(n)<4
    n="0"+n
  wend
  chars.Append n
next

scripttext="display dialog (sdata utxt" +join(chars,"")+"t as Unicode text)"

MsgBox scripttext

// must use unicode to avoid error -1753
scripttext=ConvertEncoding(scripttext,encodings.UTF16)
theScript.UnicodeText=true
theScript.compile ScriptText
theScript.execute

Notes:

LastError is set.
Text should be in MacRoman or UTF16 text encoding for best results.

12.2.5 CountScriptProperties as Integer

Function: Returns the number of properties in the script.
Example:

dim s as String
dim a as AppleScriptMBS
dim i,c,cc as Integer
CHAPTER 12. APPLE SCRIPT

```javascript
dim z,t as String

s=s+"property hello : " "Hallo Leute""""+chr(13)
s=s+"property just : " "Just a test""""+chr(13)
s=s+"display dialog hello"+chr(13)
s=s+"return just"+chr(13)

MsgBox "The script:" +chr(13)+s
a=new AppleScriptMBS

a.Compile s

MsgBox str(a.CountScriptProperties)+" properties"

Notes: Lasterror is set.

12.2.6 Error as AppleScriptErrorMBS


Function: Returns an AppleScriptError object for details error information.

Example:

dim a as AppleScriptMBS
dim e as AppleScriptErrorMBS
a=new AppleScriptMBS

a.Compile "tell application ""Finder"" open file "test" end tell"+chr(13)

// You may check for errors here.

a.Execute

e=a.Error

// in a breakpoint you can see an error message here.

Notes:

Returns nil on any error.
The returned object may be empty.
The error information is changed whenever you compile or execute.
12.2.7 Execute

**Function:** Runs the current script.  
**Example:**

```applescript
dim a as new AppleScriptMBS

a.Compile "beep"

a.Execute
```

**Notes:**

Lasterror is set.  
If you use this method, please make sure your own Application’s HandleAppleEvent method doesn’t block executing by returning true for unknown events.

12.2.8 ExecuteEvent(eventname as string, parameters() as string)

**Function:** Executes an event inside the current script with the given parameters.  
**Example:**

```applescript
dim a as new AppleScriptMBS

dim lines(-1) as string

lines.append "on test(a,b,c)"
lines.append "display dialog a"
lines.append "display dialog b"
lines.append "display dialog c"
lines.append "end test"

a.Compile join(lines,EndOfLine.Macintosh)

a.Execute

dim s(2) as string

s(0)="Hello"
s(1)="World"
s(2)="!"

a.ExecuteEvent("test",s)
```

**Notes:**
The eventname must be the name of the event in pure ASCII or MacRoman encoding (and lowercase!).
The parameters can be unicode. The array is based on 0, so string in parameters(0) is the first parameter.

```
LastError is set.
```

### 12.2.9 Result as string


**Function:** The result of the executed script as a string.

**Example:**

```plaintext
dim a as new AppleScriptMBS

a.Compile "return " "hello"

a.Execute

MsgBox a.Result
```

**Notes:**

Returns "" on any error.

If unicode is enabled, this string is unicode (UTF16).

### 12.2.10 ResultAsStringArray as string()


**Function:** The result of the executed script as a string array.

**Example:**

```plaintext
dim a as new AppleScriptMBS

a.Compile "return { ""Hello"", ""World"" }"

a.Execute

MsgBox join(a.ResultAsStringArray, EndOfLine) // Shows Hello World in two lines

a.Compile "tell application "Mail" return name of every mailbox" + EndOfLine.Macintosh + "end tell"

a.Execute

MsgBox join(a.ResultAsStringArray, EndOfLine) // shows your Mailboxes
```
Notes:
On any error the array is empty.
If unicode is enabled, this strings are unicode (UTF16).

12.2.11 ResultDisplayString as string

Function: The result of the executed script as a string.
Example:

    dim a as new AppleScriptMBS

    a.Compile "return " "hello"
    a.Execute

    MsgBox a.ResultDisplayString

Notes:
This is the same as Result, but a flag is set to tell AppleScript that the string is for display to a human. So
it may not be good for input to the AppleScript compiler.

Returns "" on any error.
If unicode is enabled, this string is unicode (UTF16).

12.2.12 ScriptProperty(index as Integer) as string

Function: The name of the property with the given index.
Example:

    dim s as String
    dim a as AppleScriptMBS
    dim i,c,cc as Integer
    dim z,t as String

    s=s+"property hello : " "Hallo Leute"
    s=s+"property just : " "Just a test"
    s=s+"display dialog hello"
    s=s+"return just"
MsgBox "The script:" +chr(13)+s
a=new AppleScriptMBS

a.Compile s

c=a.CountScriptProperties

cc=c-1
for i=0 to cc
z=a.ScriptProperty(i)
if z<>"" then
if i=0 then
t=z
elseif i=cc then
t=t+" and "+z
else
t=t+, "+z
end if
end if
next

MsgBox str(c)+" properties in the script: "+t

t=a.ScriptProperty(0)
z=a.ScriptPropertyValue(t)
MsgBox "Value of the property named "+t+" is: "+z

a.ScriptPropertyValue(t)="Hello World!"

z=a.ScriptPropertyValue(t)
MsgBox "The new value of the property named "+t+" is: "+z

a.Execute

MsgBox "The result is: "+a.Result

Notes:

Index is from 0 to CountScriptProperties-1.
Lasterror is set.
12.2. CLASS APPLESCEPRTMBS

12.2.13 Source as string

Function: Decompiles the current script and returns the source code.
Example:

```applescript
dim a as new AppleScriptMBS
a.compile "beep"
MsgBox a.Source
```

12.2.14 SourceTextStyle as string

Function: Decompiles the current script and returns the source code text style.
Example:

```applescript
dim a as new AppleScriptMBS
a.compile "beep"
EditField1.SetTextAndStyle a.Source, a.SourceTextStyle
```

Notes: Doesn’t work for unicode text.

12.2.15 Properties

12.2.16 AllowInteraction as Boolean

Function: Whether to allow user interaction.
Notes:
Default is false to disallow.
You can set to true to allow GUI.
(Read and Write property)
12.2.17 CanUnicodeText as Boolean

**Function:** True if AppleScript can handle Unicode text.
**Example:**
```powershell
dim a as new AppleScriptMBS
MsgBox str(a.CanUnicodeText)
```

**Notes:**
This property is set to true if AppleScript 1.3 or newer is installed. (AppleScript 1.3 was introduced around the time of Mac OS 8.6) (Read only property)

12.2.18 Handle as Integer

**Function:** The handle of the used AppleScript component.
**Example:**
```powershell
dim a as new AppleScriptMBS
MsgBox str(a.Handle)
```

**Notes:** (Read and Write property)

12.2.19 Lasterror as Integer

**Function:** The last error code.
**Example:**
```powershell
dim a as new AppleScriptMBS
MsgBox str(a.Lasterror)
```

**Notes:**
Value is 0 for successful and -1 if function is not available. All other values are normal Mac OS error codes.
12.2. CLASS APPLEScriPtmbs

Some common error codes for this class:

- OSASystemError -1750
- OSAInvalidID -1751
- OSABadStorageType -1752
- OSAScriptError -1753
- OSABadSelector -1754
- OSASourceNotAvailable -1756
- OSAOutOfRangeDialect -1757
- OSADataFormatObsolete -1758
- OSADataFormatTooNew -1759
- OSACorruptData -1702
- OSARecordingIsAlreadyOn -1732
- OSAComponentMismatch -1761 Parameters are from 2 different components
- OSAComponentMismatch -1762 Can’t connect to scripting system with that ID
- OSAComponentMismatch -1763 Signaled when a value can’t be coerced to the desired type.
- OSAComponentMismatch -1764 Signaled when an object is not found in a container
- OSAComponentMismatch -1765 Signaled when an object cannot be set in a container.
- OSAComponentMismatch -1766 Signaled by user scripts or applications when no actual error code is to be returned.
- OSAComponentMismatch -1767 Signaled when there is an attempt to divide by zero
- OSAComponentMismatch -1768 Signaled when integer or real value is too large to be represented
- OSAComponentMismatch -1769 Signaled when application can’t be launched or when it is remote and program linking is not enabled
- OSAComponentMismatch -1770 Signaled when an application can’t respond to AppleEvents
- OSAComponentMismatch -1771 Signaled when an application’s terminology resource is not readable
- OSAComponentMismatch -1772 Signaled when the runtime stack overflows
- OSAComponentMismatch -1773 Signaled when a runtime internal data structure overflows
- OSAComponentMismatch -1774 Signaled when an intrinsic limitation is exceeded for the size of a value or data structure.

(Read and Write property)

12.2.20 ResultID as Integer


Function: The internal result ID for the current script.

Example:

```javascript
dim a as new AppleScriptMBS
a.Compile "return ""hello"
```

a.Execute

MsgBox str(a.ResultID)
CHAPTER 12. APPLE SCRIPT

Notes:
May be useful for Toolbox calls.
(Read and Write property)

12.2.21 ScriptID as Integer

Function: The internal script ID for the current script.
Example:

```plaintext
dim a as new AppleScriptMBS

a.compile "beep"

MsgBox str(a.ScriptID)
```

Notes:
May be useful for Toolbox calls.
(Read and Write property)

12.2.22 UnicodeText as Boolean

Function: True if you want to use unicode.
Example:

```plaintext
dim a as AppleScriptMBS

a=new AppleScriptMBS
a.UnicodeText=true

dim s as string="tell application ""iTunes""""+chr(13)+"set rating of (track ""Flintstones"" ) to 40""+chr(13)+"end tell"
a.compile ConvertEncoding(s,Encodings.UTF16)
MsgBox str(a.Lasterror)
a.Execute
MsgBox str(a.Lasterror)
MsgBox a.Result
```
Notes:
If this property is true, all functions try to get strings as 16 bit Unicode strings.
Strings you pass which are in 16 bit Unicode are passed in Unicode to AppleScript.
You may get trouble if the strings you give this class are not in the system encoding (MacRoman?) or 16
bit Unicode. UTF8 will not work!
(Read and Write property)

12.2.23 Binary as string

Function: The binary representation of the current compiled script.
Example:

// create our own compiled AppleScript file

    dim a as AppleScriptMBS
    dim b as BinaryStream
    dim f as FolderItem
    dim r as ResourceFork

    a=new AppleScriptMBS

    // compile a simply applescript:
    a.Compile "beep"

    // Mac OS X format
    f=GetFolderItem("My Apple Script X")

    b=f.CreateBinaryFile("applescript")
    b.Write a.Binary
    b.Close

    // Mac OS 9 format
    f=GetFolderItem("My Apple Script 9")

    r=f.CreateResourceFork("applescript")
    r.Close

Notes:
You can save and load this value to store scripts.
Lasterror is set.
12.2.24 ScriptPropertyValue(name as string) as string


**Function:** The value of a script property.

**Example:**

Sub NewEmailInMail(subject as string, body as string, sender as string, receiver as string)
// make a new email in Apple Mail using AppleScript

dim lines(-1) as string

lines.append ""
lines.append "property MySubject : " "My Subject"
lines.append "property MyBody : " "My Body"
lines.append "property MyReceiver : " "test@test.test"
lines.append "property MySender : " "test@test.test"
lines.append ""
lines.append "tell application " "Mail"
lines.append " activate"
lines.append " set NewMail to make new outgoing message with properties { visible:true, subject:MySubject, content:MyBody } "
lines.append ""
lines.append " tell NewMail"
lines.append " make new to recipient at beginning of to recipients with properties { address:MyReceiver } "
lines.append " end tell"
lines.append ""
lines.append " set the sender of NewMail to MySender"
lines.append " end tell"

dim a as new AppleScriptMBS

a.Compile Join(lines, EndOfLine.Macintosh)

// Change encoding
subject = ConvertEncoding(subject, encodings.MacRoman)
body = ConvertEncoding(body, encodings.MacRoman)
sender = ConvertEncoding(sender, encodings.MacRoman)
receiver = ConvertEncoding(receiver, encodings.MacRoman)

// replace line endings
subject = ReplaceLineEndings(subject, EndOfLine.Macintosh)
body = ReplaceLineEndings(body, EndOfLine.Macintosh)
sender = ReplaceLineEndings(sender, EndOfLine.Macintosh)
12.2. CLASS APPLESKRIPTMBS

receiver = ReplaceLineEndings(receiver, EndOfLine.Macintosh)

// set properties in Script
a.ScriptPropertyValue("MySubject")=subject
a.ScriptPropertyValue("MyBody")=body
a.ScriptPropertyValue("MySender")=sender
a.ScriptPropertyValue("MyReceiver")=receiver

a.Execute
End Sub

Notes:
If name or value are UTF16 encoding, than the plugin passes UTF16. Else it passes the bytes and AppleScript may assume MacRoman encoding.
(Read and Write computed property)

12.2.25 Events

12.2.26 Periodic as Integer

MBS MacClassic Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: This event is called periodical on long operations like Compile or Execute. Notes: Return 0 to continue or some other value to report an error.
12.3  class NSAppleEventDescriptorMBS

12.3.1  class NSAppleEventDescriptorMBS


Function: An instance of NSAppleEventDescriptor represents a descriptor—the basic building block for
Apple events.

Notes: This class is a wrapper for the underlying Apple event descriptor data type, AEDesc. Scriptable Cocoa
applications frequently work with instances of NSAppleEventDescriptor, but should rarely need to work
directly with the AEDesc data structure.

A descriptor is a data structure that stores data and an accompanying four-character code. A descriptor
can store a value, or it can store a list of other descriptors (which may also be lists). All the information in
an Apple event is stored in descriptors and lists of descriptors, and every Apple event is itself a descriptor
list that matches certain criteria.

Important: An instance of NSAppleEventDescriptor can represent any kind of descriptor, from a simple
value descriptor, to a descriptor list, to a full-fledged Apple event.

Descriptors can be used to build arbitrarily complex containers, so that one Apple event can represent a
script statement such as tell application "TextEdit" to get word 3 of paragraph 6 of document 3.

In working with Apple event descriptors, it can be useful to understand some of the underlying data types.
You'll find terms such as descriptor, descriptor list, Apple event record, and Apple event defined in Building
an Apple Event in Apple Events Programming Guide. You'll also find information on the four-character
codes used to identify information within a descriptor. Apple event data types are defined in Apple Event
Manager Reference. The values of many four-character codes used by Apple (and in some cases reused by
developers) can be found in AppleScript Terminology and Apple Event Codes.

The most common reason to construct an Apple event with an instance of NSAppleEventDescriptor is to
supply information in a return Apple event. The most common situation where you might need to ex-
tract information from an Apple event (as an instance of NSAppleEventDescriptor) is when an Apple event
handler installed by your application is invoked, as described in "Installing an Apple Event Handler" in
How Cocoa Applications Handle Apple Events. In addition, if you execute an AppleScript script using the
NSAppleScript class, you get an instance of NSAppleEventDescriptor as the return value, from which you
can extract any required information.

When you work with an instance of NSAppleEventDescriptor, you can access the underlying descriptor
directly, if necessary, with the aeDesc method. Other methods, including descriptorWithDescriptorType
make it possible to create and initialize instances of NSAppleEventDescriptor without creating temporary
instances of memoryblock.

Cocoa doesn’t currently provide a mechanism for applications to directly send raw Apple events (though
compiling and executing an AppleScript script with NSAppleScript may result in Apple events being sent). However, Cocoa applications have full access to the Apple Event Manager C APIs for working with Apple events. So, for example, you might use an instance of NSAppleEventDescriptor to assemble an Apple event and call the Apple Event Manager function AESend to send it.

If you need to send Apple events, or if you need more information on some of the Apple event concepts described here, see Apple Events Programming Guide and Apple Event Manager Reference.

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

### 12.3.2 Methods

**12.3.3 appleEventWithEventClass(eventClass as string, eventID as string, targetDescriptor as NSAppleEventDescriptorMBS, returnID as Int16, transactionID as UInt32) as NSAppleEventDescriptorMBS**


**Function:** Creates a descriptor that represents an Apple event, initialized according to the specified information.

**Notes:**

- `eventClass`: The event class to be set in the returned descriptor.
- `eventID`: The event ID to be set in the returned descriptor.
- `targetDescriptor`: A pointer to a descriptor that identifies the target application for the Apple event. Passing nil results in an Apple event descriptor that has no keyAddressAttr attribute (it is valid for an Apple event to have no target address attribute).
- `returnID`: The return ID to be set in the returned descriptor. If you pass a value of kAutoGenerateReturnID, the Apple Event Manager assigns the created Apple event a return ID that is unique to the current session. If you pass any other value, the Apple Event Manager assigns that value for the ID.
- `transactionID`: The transaction ID to be set in the returned descriptor. A transaction is a sequence of Apple events that are sent back and forth between client and server applications, beginning with the client’s initial request for a service. All Apple events that are part of a transaction must have the same transaction ID. You can specify kAnyTransactionID if the Apple event is not one of a series of interdependent Apple events.

Returns a descriptor for an Apple event, initialized according to the specified parameter values, or nil if an error occurs.

Constants such as kAutoGenerateReturnID and kAnyTransactionID are defined in AE.framework, a subframework of ApplicationServices.framework.
12.3.4 attributeDescriptorForKeyword(keyword as string) as NSAppleEventDescriptorMBS

Function: Returns a descriptor for the receiver’s Apple event attribute identified by the specified keyword.
Notes:
keyword: A keyword (a four-character code) that identifies the descriptor to obtain.

Returns the attribute descriptor for the specified keyword, or nil if an error occurs.

12.3.5 coerceToDescriptorType(descriptorType as string) as NSAppleEventDescriptorMBS

Function: Returns a descriptor obtained by coercing the receiver to the specified type.
Notes:
descriptorType: The descriptor type to coerce the receiver to.

Returns a descriptor of the specified type, or nil if an error occurs.

12.3.6 Constructor


12.3.7 copy as NSAppleEventDescriptorMBS


12.3.8 currentProcessDescriptor as NSAppleEventDescriptorMBS

Example:
12.3. CLASS NSAPPLEEVENTDESCRIPTORMBS

```ruby
dim d as NSAppleEventDescriptorMBS = NSAppleEventDescriptorMBS.currentProcessDescriptor
MsgBox "Process ID: "+str(d.processIDValue)
```

Notes: The result is suitable for use as the ”targetDescriptor” parameter of appleEventWithEventClass.

12.3.9  descriptorAtIndex(index as Integer) as NSAppleEventDescriptorMBS

Function: Returns the descriptor at the specified (one-based) position in the receiving descriptor list.
Example:
```ruby
dim n as NSAppleEventDescriptorMBS = NSAppleEventDescriptorMBS.listDescriptor
dim d as NSAppleEventDescriptorMBS = NSAppleEventDescriptorMBS.descriptorWithString("Hello")
dim e as NSAppleEventDescriptorMBS = NSAppleEventDescriptorMBS.descriptorWithString("World")
n.insertDescriptor(d,1)
n.insertDescriptor(e,2)
MsgBox str(n.numberOfItems)
dim x1 as NSAppleEventDescriptorMBS = n.descriptorAtIndex(1)
dim x2 as NSAppleEventDescriptorMBS = n.descriptorAtIndex(2)
MsgBox x1.stringValue+" "+x2.stringValue
```

Notes:
Index: The one-based descriptor list position of the descriptor to return.

Returns the descriptor from the specified position (one-based) in the descriptor list, or nil if the specified descriptor cannot be obtained.

12.3.10  descriptorForKeyword(keyword as string) as NSAppleEventDescriptorMBS

Function: Returns the receiver’s descriptor for the specified keyword.
Example:
```ruby
dim n as new NSAppleScriptMBS("return system info")
dim r as NSAppleEventDescriptorMBS = n.execute
```
dim lines(-1) as string

dim u as Integer = r.numberOfItems
for i as Integer = 1 to u
  dim keyword as string = r.keywordForDescriptorAtIndex(i)
  dim value as string
  dim p as NSAppleEventDescriptorMBS = r.descriptorForKeyword(keyword)
  if p<>Nil then value = p.stringValue
  lines.Append keyword+": "+value
next

MsgBox Join(lines,EndOfLine)

Notes:

keyword: A keyword (a four-character code) that identifies the descriptor to obtain.

Returns a descriptor for the specified keyword, or nil if an error occurs.

12.3.11  descriptorWithAlias(item as folderitem) as NSAppleEventDescriptorMBS

Function: Creates a descriptor initialized with type typeAlias that stores the specified folderitem reference.
Example:

  // pick a folderitem
dim folder as FolderItem = SpecialFolder.Desktop

  // create value with file reference
  dim d as NSAppleEventDescriptorMBS = NSAppleEventDescriptorMBS.descriptorWithAlias(folder)

  // convert back to FolderItem
  dim file as FolderItem = d.FSRefValue

  // show path
  MsgBox file.AbsolutePath

Notes: This type can be converted internally to FSRef descriptor.
12.3.12  

`descriptorWithApplicationURL(fileURL as string) as NSAppleEventDescriptorMBS`


**Function:** Create and return an application address descriptor using the file URL for an application.

**Example:**

```vba
dim f as FolderItem = SpecialFolder.Applications.Child("Stickies.app")
dim u as string = f.URLPath
dim d as NSAppleEventDescriptorMBS = NSAppleEventDescriptorMBS.descriptorWithApplicationURL(u)
MsgBox d.applicationURLValue
```

**Notes:** The result is suitable for use as the "targetDescriptor" parameter of `appleEventWithEventClass`. See also:

- 12.3.13 `descriptorWithApplicationURL(item as folderitem) as NSAppleEventDescriptorMBS` 2665

12.3.13  

`descriptorWithApplicationURL(item as folderitem) as NSAppleEventDescriptorMBS`


**Function:** Create and return an application address descriptor using the folderitem for an application.

**Example:**

```vba
dim f as FolderItem = SpecialFolder.Applications.Child("Stickies.app")
dim d as NSAppleEventDescriptorMBS = NSAppleEventDescriptorMBS.descriptorWithApplicationURL(f)
MsgBox d.applicationURLValue
```

**Notes:** The result is suitable for use as the "targetDescriptor" parameter of `appleEventWithEventClass`. See also:

- 12.3.12 `descriptorWithApplicationURL(fileURL as string) as NSAppleEventDescriptorMBS` 2665

12.3.14  

`descriptorWithBoolean(value as Boolean) as NSAppleEventDescriptorMBS`


**Function:** Creates a descriptor initialized with type `typeBoolean` that stores the specified Boolean value.

**Example:**

```vba
dim a as NSAppleEventDescriptorMBS
a = NSAppleEventDescriptorMBS.descriptorWithBoolean(true)
MsgBox a.stringValue // shows true
```
Notes: Returns a descriptor with the specified Boolean value, or nil if an error occurs.

12.3.15 descriptorWithBundleIdentifier(BundleID as String) as NSAppleEventDescriptorMBS

Function: Create and return an application address descriptor using the bundle identifier.
Example:

```vba
dim d as NSAppleEventDescriptorMBS = NSAppleEventDescriptorMBS.descriptorWithBundleIdentifier("com.apple.iCal")
MsgBox d.bundleIDValue
```

Notes: The result is suitable for use as the "targetDescriptor" parameter of appleEventWithEventClass.

12.3.16 descriptorWithCurrentProcessSerialNumber as NSAppleEventDescriptorMBS

Function: Creates descriptor with current process serial number.
Example:

```vba
dim n as NSAppleEventDescriptorMBS = NSAppleEventDescriptorMBS.descriptorWithCurrentProcessSerialNumber
MsgBox n.stringValue // shows app name
```

12.3.17 descriptorWithDate(value as date) as NSAppleEventDescriptorMBS

Function: Creates a descriptor with a date value.
Example:

```vba
dim d as new date
dim n as NSAppleEventDescriptorMBS = NSAppleEventDescriptorMBS.descriptorWithDate(d)
dim x as date = n.dateValue
MsgBox x.LongDate" "+x.LongTime // shows today
```
12.3.18  descriptorWithDescriptorType(descriptorType as string, data as memoryblock) as NSAppleEventDescriptorMBS

**Function:** Creates a descriptor initialized with the specified event type that stores the specified data.
**Notes:**

descriptorType: The descriptor type to be set in the returned descriptor.
data: The data, as a memoryblock, to be set in the returned descriptor.

Returns a descriptor with the specified type and data, or nil if an error occurs.

You can use this method to create a descriptor that you can build into a complete Apple event by calling methods such as setAttributeDescriptor, setDescriptor, and setParamDescriptor.

See also:

- 12.3.19 descriptorWithDescriptorType(descriptorType as string, data as memoryblock, offset as UInt32, length as UInt32) as NSAppleEventDescriptorMBS

12.3.19  descriptorWithDescriptorType(descriptorType as string, data as memoryblock, offset as UInt32, length as UInt32) as NSAppleEventDescriptorMBS

**Function:** Creates a descriptor initialized with the specified event type that stores the specified data (from a series of bytes).
**Notes:**
descriptorType: The descriptor type to be set in the returned descriptor.
bytes: The data, as a sequence of bytes, to be set in the returned descriptor.
offset: offset in memoryblock.
length: The length, in bytes, of the data to be set in the returned descriptor.

Returns a descriptor with the specified type and data, or nil if an error occurs.
See also:

- 12.3.18 descriptorWithDescriptorType(descriptorType as string, data as memoryblock) as NSAppleEventDescriptorMBS
12.3.20 descriptorWithDouble(value as Double) as NSAppleEventDescriptorMBS

**Function:** Creates a descriptor with a double value.
**Example:**
```
dim a as NSAppleEventDescriptorMBS
a = NSAppleEventDescriptorMBS.descriptorWithDouble(5)
MsgBox a.stringValue // shows 5
```

12.3.21 descriptorWithEnumCode(enumerator as string) as NSAppleEventDescriptorMBS

**Function:** Creates a descriptor initialized with type typeEnumerated that stores the specified enumerator data type value.
**Notes:**
- **enumerator:** A type code that identifies the type of enumerated data to be stored in the returned descriptor.
Returns a descriptor with the specified enumerator data type value, or nil if an error occurs.

12.3.22 descriptorWithURL(fileURL as string) as NSAppleEventDescriptorMBS

**Function:** Creates a descriptor for a file URL.
**Example:**
```
Dim f as FolderItem = SpecialFolder.Applications.Child("Stickies.app")
Dim u as string = f.URLPath
Dim d as NSAppleEventDescriptorMBS = NSAppleEventDescriptorMBS.descriptorWithURL(u)
MsgBox d.fileURLValue
```

See also:
- 12.3.23 descriptorWithURL(item as folderitem) as NSAppleEventDescriptorMBS
12.3. CLASS NSAPPLEEVENTDESCRIPTORMBS

12.3.23 descriptorWithURL(item as folderitem) as NSAppleEventDescriptorMBS

Function: Creates a descriptor for a file URL based on the folderitem.
Example:

dim f as FolderItem = SpecialFolder.Applications.Child("Stickies.app")
dim d as NSAppleEventDescriptorMBS = NSAppleEventDescriptorMBS.descriptorWithURL(f)
MsgBox d.fileURLValue

See also:
- 12.3.22 descriptorWithURL(fileURL as string) as NSAppleEventDescriptorMBS

12.3.24 descriptorWithFSRef(item as folderitem) as NSAppleEventDescriptorMBS

Function: Creates a descriptor initialized with type typeFSRef that stores the specified folderitem reference.
Example:

// pick a folderitem
dim folder as FolderItem = SpecialFolder.Desktop

// create value with file reference
dim d as NSAppleEventDescriptorMBS = NSAppleEventDescriptorMBS.descriptorWithFSRef(folder)

// show path
MsgBox d.stringValue

// convert back to FolderItem
dim file as FolderItem = d.FSRefValue

// show path
MsgBox file.AbsolutePath

Notes: This type can be converted internally to Alias or String descriptor.

12.3.25 descriptorWithInt16(value as Int16) as NSAppleEventDescriptorMBS

Function: Creates a descriptor initialized with Apple event type typeSInt16 that stores the specified integer
value.

Example:

```vbnet
dim a as NSAppleEventDescriptorMBS

a = NSAppleEventDescriptorMBS.descriptorWithInt16(5)

MsgBox a.stringValue // shows 5
```

### 12.3.26 descriptorWithInt32(value as Int32) as NSAppleEventDescriptorMBS


**Function:** Creates a descriptor initialized with Apple event type typeSInt32 that stores the specified integer value.

**Example:**

```vbnet
dim a as NSAppleEventDescriptorMBS

a = NSAppleEventDescriptorMBS.descriptorWithInt32(5)

MsgBox a.stringValue // shows 5
```

**Notes:** Returns a descriptor containing the specified integer value, or nil if an error occurs.

### 12.3.27 descriptorWithProcessIdentifier(PID as Integer) as NSAppleEventDescriptorMBS


**Function:** Create and return an application address descriptor using the process identifier.

**Example:**

```vbnet
// get my PID
dim p as new ProcessMBS
p.GetCurrentProcess

dim pid as Integer = p.ProcessID

// make process ID descriptor
dim n as NSAppleEventDescriptorMBS = NSAppleEventDescriptorMBS.descriptorWithProcessIdentifier(pid)

// show it
MsgBox "ProcessID: "+str(n.processIDValue) + EndOfLine + n.stringValue
```
12.3. CLASS NSAPPLEEVENTDESCRIPTORMBS

Notes: The result is suitable for use as the "targetDescriptor" parameter of appleEventWithEventClass.

12.3.28 descriptorWithSingle(value as single) as NSAppleEventDescriptorMBS

Function: Creates a descriptor with a single value.
Example:

```vba
dim a as NSAppleEventDescriptorMBS
a = NSAppleEventDescriptorMBS.descriptorWithSingle(5)
MsgBox a.stringValue // shows 5
```

12.3.29 descriptorWithString(text as string) as NSAppleEventDescriptorMBS

Function: Creates a descriptor initialized with type typeUnicodeText that stores the text from the specified string.
Example:

```vba
dim a as NSAppleEventDescriptorMBS
a = NSAppleEventDescriptorMBS.descriptorWithString(“Hello World”)
MsgBox a.stringValue
```

Notes: Returns a descriptor that contains the text from the specified string, or nil if an error occurs.

12.3.30 descriptorWithTypeCode(typeCode as string) as NSAppleEventDescriptorMBS

Function: Creates a descriptor initialized with type typeType that stores the specified type value.
Notes:

typeCode: The type value to be set in the returned descriptor.

Returns a descriptor with the specified type, or nil if an error occurs.
### 12.3.31 descriptorWithUInt32(value as UInt32) as NSAppleEventDescriptorMBS


**Function:** Creates a descriptor with an unsigned integer value.

**Example:**

```vbnet
dim a as NSAppleEventDescriptorMBS
da = NSAppleEventDescriptorMBS.descriptorWithUInt32(5)
MsgBox a.stringValue // shows 5
```

### 12.3.32 insertDescriptor(descriptor as NSAppleEventDescriptorMBS, index as Integer)


**Function:** Inserts a descriptor at the specified (one-based) position in the receiving descriptor list, replacing the existing descriptor, if any, at that position.

**Notes:**

- descriptor: The descriptor to insert in the receiver. Specifying an index of 0 or count + 1 causes appending to the end of the list.
- Index: The one-based descriptor list position at which to insert the descriptor.

Because it actually replaces the descriptor, if any, at the specified position, this method might better be called replaceDescriptor. The receiver must be a list descriptor. The indices are one-based. Currently provides no indication if an error occurs.

### 12.3.33 keywordForDescriptorAtIndex(index as Integer) as string


**Function:** Returns the keyword for the descriptor at the specified (one-based) position in the receiver.

**Example:**

```vbnet
dim n as new NSAppleScriptMBS("return system info")
dim r as NSAppleEventDescriptorMBS = n.execute

dim lines(-1) as string

dim u as Integer = r.numberOfItems
for i as Integer = 1 to u
    dim keyword as string = r.keywordForDescriptorAtIndex(i)
    dim value as string
    dim p as NSAppleEventDescriptorMBS = r.descriptorForKeyword(keyword)
    if p<>Nil then value = p.stringValue
```

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12.3.31 descriptorWithUInt32(value as UInt32) as NSAppleEventDescriptorMBS


**Function:** Creates a descriptor with an unsigned integer value.

**Example:**

```vbnet
dim a as NSAppleEventDescriptorMBS
da = NSAppleEventDescriptorMBS.descriptorWithUInt32(5)
MsgBox a.stringValue // shows 5
```

12.3.32 insertDescriptor(descriptor as NSAppleEventDescriptorMBS, index as Integer)


**Function:** Inserts a descriptor at the specified (one-based) position in the receiving descriptor list, replacing the existing descriptor, if any, at that position.

**Notes:**

- descriptor: The descriptor to insert in the receiver. Specifying an index of 0 or count + 1 causes appending to the end of the list.
- Index: The one-based descriptor list position at which to insert the descriptor.

Because it actually replaces the descriptor, if any, at the specified position, this method might better be called replaceDescriptor. The receiver must be a list descriptor. The indices are one-based. Currently provides no indication if an error occurs.

12.3.33 keywordForDescriptorAtIndex(index as Integer) as string


**Function:** Returns the keyword for the descriptor at the specified (one-based) position in the receiver.

**Example:**

```vbnet
dim n as new NSAppleScriptMBS("return system info")
dim r as NSAppleEventDescriptorMBS = n.execute

dim lines(-1) as string

dim u as Integer = r.numberOfItems
for i as Integer = 1 to u
    dim keyword as string = r.keywordForDescriptorAtIndex(i)
    dim value as string
    dim p as NSAppleEventDescriptorMBS = r.descriptorForKeyword(keyword)
    if p<>Nil then value = p.stringValue
```
lines.Append keyword+"": "+value
next
MsgBox Join(lines,EndOfLine)

Notes:
Index: The one-based descriptor list position of the descriptor to get the keyword for.

Returns the keyword (a four-character code) for the descriptor at the one-based location specified by anIndex, or 0 if an error occurs.

12.3.34  listDescriptor as NSAppleEventDescriptorMBS

Function: Creates and initializes an empty list descriptor.
Notes:
Returns an empty list descriptor, or nil if an error occurs.

A list descriptor is a descriptor whose data consists of one or more descriptors. You can add items to the list by calling insertDescriptor or remove them with removeDescriptorAtIndex.

12.3.35  nullDescriptor as NSAppleEventDescriptorMBS

Function: Creates and initializes a descriptor with no parameter or attribute values set.
Notes:
Returns a descriptor with no parameter or attribute values set, or nil if an error occurs.

You don’t typically call this method, as most NSAppleEventDescriptor instance methods can’t be safely called on the returned empty descriptor.

12.3.36  paramDescriptorForKeyword(keyword as string) as NSAppleEventDescriptorMBS

Function: Returns a descriptor for the receiver’s Apple event parameter identified by the specified keyword.
keyword: A keyword (a four-character code) that identifies the parameter descriptor to obtain.

Returns a descriptor for the specified keyword, or nil if an error occurs.

12.3.37 print

MBS MacCocoa Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Writes description for this event descriptor to the console. Notes: You can see result in Console.app.

12.3.38 recordDescriptor as NSAppleEventDescriptorMBS

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creates and initializes a descriptor for an Apple event record whose data has yet to be set. Notes: Returns an Apple event descriptor whose data has yet to be set, or nil if an error occurs.

An Apple event record is a descriptor whose data is a set of descriptors keyed by four-character codes. You can add information to the descriptor with methods such as setAttributeDescriptor, setDescriptor, and set-ParamDescriptor.

12.3.39 removeDescriptorAtIndex(index as Integer)


The receiver must be a list descriptor. The indices are one-based. Currently provides no indication if an error occurs.

12.3.40 removeDescriptorWithKeyword(keyword as string)

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Removes the receiver’s descriptor identified by the specified keyword.
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**Notes:**

keyword: A keyword (a four-character code) that identifies the descriptor to remove.

The receiver must be an Apple event or Apple event record. Currently provides no indication if an error occurs.

**12.3.41 removeParamDescriptorWithKeyword(keyword as string)**


**Function:** Removes the receiver’s parameter descriptor identified by the specified keyword.

**Notes:**

keyword: A keyword (a four-character code) that identifies the parameter descriptor to remove. Currently provides no indication if an error occurs.

The receiver must be an Apple event or Apple event record, both of which can contain parameters.

**12.3.42 send(options as Integer, timeoutInSeconds as Double, byref error as NSErrorMBS) as NSAppleEventDescriptorMBS**


**Function:** Sends an Apple event.

**Example:**

```cpp
// pick a file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.rtf")
// make a descriptor for file
dim fd as NSAppleEventDescriptorMBS = NSAppleEventDescriptorMBS.descriptorWithFSRef(f)
// make a descriptor for target app. here by bundle id
dim bd as NSAppleEventDescriptorMBS = NSAppleEventDescriptorMBS.descriptorWithBundleIdentifier("com.apple.finder")
// make a descriptor for apple event, here OpenDocument event
dim ad as NSAppleEventDescriptorMBS = NSAppleEventDescriptorMBS.appleEventWithEventClass("aevt", ",odoc", bd, fd.kAutoGenerateReturnID, fd.kAnyTransactionID)

// assign parameter
ad.setParamDescriptor(fd, "—-")

// now run
dim e as NSErrorMBS
dim rd as NSAppleEventDescriptorMBS = ad.send(ad.NSAppleEventSendDefaultOptions, 0.1, e)

// error sending?
```
if e <> nil then
    MsgBox e.LocalizedDescription
end if

Break // inspect rd for success or failure of event?

12.3.43  setAttributeDescriptor(descriptor as NSAppleEventDescriptorMBS, keyword as string)

Function: Adds a descriptor to the receiver as an attribute identified by the specified keyword.
Notes:
descriptor: The attribute descriptor to add to the receiver.
keyword: A keyword (a four-character code) that identifies the attribute descriptor to add. If a descriptor
with that keyword already exists in the receiver, it is replaced.

The receiver must be an Apple event. Currently provides no indication if an error occurs.

12.3.44  setDescriptor(descriptor as NSAppleEventDescriptorMBS, keyword as string)

Function: Adds a descriptor, identified by a keyword, to the receiver.
Notes:
descriptor: The descriptor to add to the receiver.
keyword: A keyword (a four-character code) that identifies the descriptor to add. If a descriptor with that
keyword already exists in the receiver, it is replaced.

The receiver must be an Apple event or Apple event record. Currently provides no indication if an error
occurs.

12.3.45  setParamDescriptor(descriptor as NSAppleEventDescriptorMBS, keyword as string)

Function: Adds a descriptor to the receiver as an Apple event parameter identified by the specified keyword.
Notes:
12.3. **CLASS NSAPPLEEVENTDESCRIPTORMBS**

descriptor: The parameter descriptor to add to the receiver.

keyword: A keyword (a four-character code) that identifies the parameter descriptor to add. If a descriptor with that keyword already exists in the receiver, it is replaced.

The receiver must be an Apple event or Apple event record, both of which can contain parameters.

### 12.3.46 Properties

#### 12.3.47 aeDesc as Ptr


**Function:** Returns a pointer to the AEDesc structure that is encapsulated by the receiver, if it has one.

**Notes:**
If the receiver has a valid AEDesc structure, returns a pointer to it; otherwise returns nil.
(Read only property)

#### 12.3.48 applicationURLValue as String


**Function:** The application URL.

**Example:**
```
dim f as FolderItem = SpecialFolder.Applications.Child("Stickies.app")
dim u as string = f.URLPath
dim d as NSAppleEventDescriptorMBS = NSAppleEventDescriptorMBS.descriptorWithApplicationURL(u)
MsgBox d.applicationURLValue
```

**Notes:** (Read only property)

#### 12.3.49 booleanValue as boolean


**Function:** Returns the contents of the receiver as a Boolean value, coercing (to typeBoolean) if necessary.

**Example:**
```
dim lines(-1) as string
lines.Append "set a to 1"
lines.Append "set b to 1"
```
lines.Append "return a = b" // return a boolean result

// compile, run and show value
dim source as string = Join(lines,EndOfLine)
dim n as new NSAppleScriptMBS(source)

dim error as Dictionary
dim d as NSAppleEventDescriptorMBS = n.execute(Error)

MsgBox str(d.booleanValue)

Notes:
Returns the contents of the descriptor, as a Boolean value, or false if an error occurs.
(Read only property)

12.3.50 bundleIDValue as String

Function: Queries the bundle identifier.
Example:
dim d as NSAppleEventDescriptorMBS = NSAppleEventDescriptorMBS.descriptorWithBundleIdentifier("com.apple.iCal")
MsgBox d.bundleIDValue

Notes: (Read only property)

12.3.51 data as Memoryblock

Function: Returns the receiver’s data as a memoryblock.
Notes:
Returns an instance of memoryblock containing the receiver’s data, or nil if an error occurs.
(Read only property)
12.3.52    dateValue as date

Function: Returns the contents of the receiver as a date value.  
Example: 

    dim d as new date 
    dim n as NSAppleEventDescriptorMBS = NSAppleEventDescriptorMBS.descriptorWithDate(d) 
    
    dim x as date = n.dateValue 
    MsgBox x.LongDate+” ”+x.LongTime  // shows today 

Notes: (Read only property)

12.3.53    description as string

Function: The descriptor for this event. 
Example: 

    dim n as NSAppleEventDescriptorMBS = NSAppleEventDescriptorMBS.descriptorWithString(“Hello”) 
    MsgBox n.description 

Notes: 
This is a text representation for debugging.  
(Read only property)

12.3.54    descriptorType as string

Function: Returns the descriptor type of the receiver. 
Notes: (Read only property)

12.3.55    doubleValue as Double

Function: Returns the contents of the receiver as a double. 
Example:
dim a as NSAppleEventDescriptorMBS
a = NSAppleEventDescriptorMBS.descriptorWithString("5")
MsgBox str(a.doubleValue) // shows 5

Notes: (Read only property)

12.3.56 enumCodeValue as string

Function: Returns the contents of the receiver as an enumeration type, coercing (to typeEnumerated) if necessary.
Notes: Returns the contents of the descriptor, as an enumeration type, or 0 if an error occurs.
(Read only property)

12.3.57 eventClass as string

Function: Returns the event class for the receiver.
Notes: Returns the event class (a four-character code) for the receiver, or 0 if an error occurs.
The receiver must be an Apple event. An Apple event is identified by its event class and event ID, a pair of four-character codes stored as 32-bit integers. For example, most events in the Standard suite have the four-character code 'core' (defined as the constant kAECoreSuite in AE.framework, a subframework of ApplicationServices.framework). For more information on event classes and event IDs, see Building an Apple Event in Apple Events in Apple Events Programming Guide.
(Read only property)

12.3.58 eventID as string

Function: Returns the event ID for the receiver.
Notes: The event ID (a four-character code) for the receiver, or 0 if an error occurs.
The receiver must be an Apple event. An Apple event is identified by its event class and event ID, a pair of
12.3. CLASS NSAPPLEEVENTDESCRIPTORMBS

four-character codes stored as 32-bit integers. For example, the open Apple event from the Standard suite has the four-character code 'odoc' (defined as the constant kAEOpen in AE.framework, a subframework of ApplicationServices.framework).

(Read only property)

12.3.59 fileURLValue as String

Function: The file URL.
Example:

```vbs
dim f as FolderItem = SpecialFolder.Applications.Child("Stickies.app")
dim d as NSAppleEventDescriptorMBS = NSAppleEventDescriptorMBS.descriptorWithURL(f)
MsgBox d.fileURLValue
```

Notes: (Read only property)

12.3.60 FSRefValue as folderitem

Function: Resolves a folderitem reference.
Example:

```
// pick a folderitem
dim folder as FolderItem = SpecialFolder.Desktop

// create value with file reference
dim d as NSAppleEventDescriptorMBS = NSAppleEventDescriptorMBS.descriptorWithURL(folder)

// show path
MsgBox d.stringValue

// convert back to FolderItem
dim file as FolderItem = d.FSRefValue

// show path
MsgBox file.AbsolutePath
```

Notes:

NSAppleEventDescriptorMBS objects with strings, FSRef or Alias data are converted automatically.
(Read only property)
12.3.61 Handle as Integer

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the internal reference to the NSAppleEventDescriptor object. **Notes:** (Read and Write property)

12.3.62 int16Value as Int16

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the contents of the receiver as an int16. **Example:**

```plaintext
dim a as NSAppleEventDescriptorMBS
a = NSAppleEventDescriptorMBS.descriptorWithString("5")
MsgBox str(a.int16Value) // shows 5
```

**Notes:** (Read only property)

12.3.63 int32Value as Int32

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the contents of the receiver as an integer, coercing (to typeSInt32) if necessary. **Example:**

```plaintext
dim a as NSAppleEventDescriptorMBS
a = NSAppleEventDescriptorMBS.descriptorWithString("5")
MsgBox str(a.int32Value) // shows 5
```

**Notes:**

Returns the contents of the descriptor, as an integer value, or 0 if an error occurs. (Read only property)

12.3.64 isRecordDescriptor as Boolean

MBS MacCocoa Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return whether or not a descriptor is a record-like descriptor.
Notes:
Record-like descriptors function as records, but may have a descriptorType other than AERecord, such as ObjectSpecifier.
(Read only property)

12.3.65 numberOfItems as Integer

Function: Returns the number of descriptors in the receiver’s descriptor list.
Example:

```
dim n as NSAppleEventDescriptorMBS = NSAppleEventDescriptorMBS.listDescriptor
dim d as NSAppleEventDescriptorMBS = NSAppleEventDescriptorMBS.descriptorWithString(“Hello”)
dim e as NSAppleEventDescriptorMBS = NSAppleEventDescriptorMBS.descriptorWithString(“World”)

n.insertDescriptor(d,1)
n.insertDescriptor(e,2)

MsgBox str(n.numberOfItems)
```

Notes:
Returns the number of descriptors in the receiver’s descriptor list (possibly 0); returns 0 if an error occurs.
(Read only property)

12.3.66 processIDValue as Integer

Function: Queries the process ID.
Example:

```
// get my PID
dim p as new ProcessMBS
p.GetCurrentProcess
dim pid as Integer = p.ProcessID

// make process ID descriptor
dim n as NSAppleEventDescriptorMBS = NSAppleEventDescriptorMBS.descriptorWithProcessIdentifier(pid)
```

Notes:
Returns the number of descriptors in the receiver’s descriptor list (possibly 0); returns 0 if an error occurs.
(Read only property)
CHAPTER 12. APPLE SCRIPT

// show it
MsgBox "ProcessID: " +str(n.processIDValue) + EndOfLine + n.stringValue

Notes: (Read only property)

12.3.67  returnID as Int16

Function: Returns the receiver’s return ID (the ID for a reply Apple event).
Notes:  
Returns the receiver’s return ID (an integer value), or 0 if an error occurs.  
(Read only property)

12.3.68  singleValue as single

Function: Returns the contents of the receiver as a single value.
Example:  
dim a as NSAppleEventDescriptorMBS
a = NSAppleEventDescriptorMBS.descriptorWithString("5")
MsgBox str(a.singleValue) // shows 5

Notes: (Read only property)

12.3.69  stringValue as string

Function: Returns the contents of the receiver as a Unicode text string, coercing (to typeUnicodeText) if necessary. 
Example: 

dim a as NSAppleEventDescriptorMBS
a = NSAppleEventDescriptorMBS.descriptorWithString("Hello World")
MsgBox a.stringValue
12.3. CLASS NSAPPLEEVENTDESCRIPTORMBS

Notes:

Returns the contents of the descriptor, as a string, or "" if an error occurs. (Read only property)

12.3.70 transactionID as Int32

**Function:** Returns the receiver’s transaction ID, if any.
**Notes:**

Returns the receiver’s transaction ID (an integer value), or 0 if an error occurs.

The receiver must be an Apple event. Currently provides no indication if an error occurs. For more information on transactions, see the description for appleEventWithEventClass. (Read only property)

12.3.71 typeCodeValue as string

**Function:** Returns the contents of the receiver as a type, coercing (to typeType) if necessary. 
**Notes:** (Read only property)

12.3.72 UInt32Value as UInt32

**Function:** Returns the contents of the receiver as an UInt32. 
**Example:**

dim a as NSAppleEventDescriptorMBS
a = NSAppleEventDescriptorMBS.descriptorWithString("5")
MsgBox str(a.UInt32Value) // shows 5

**Notes:** (Read only property)
12.3.73 Constants

12.3.74 \texttt{kAnyTransactionID} = 0

MBS MacCocoa Plugin, Plugin Version: 11.2. \textbf{Function}: Special constant for transaction ID. 
\textbf{Notes}: no transaction is in use

12.3.75 \texttt{kAutoGenerateReturnID} = -1

MBS MacCocoa Plugin, Plugin Version: 11.2. \textbf{Function}: Special constant for return ID. 
\textbf{Notes}: AECreatAppleEvent will generate a session-unique ID internally.

12.3.76 \texttt{NSAppleEventSendAlwaysInteract} = \& h30

MBS MacCocoa Plugin, Plugin Version: 16.2. \textbf{Function}: One of the send options. 
\textbf{Notes}: Server should always interact with user where appropriate.

12.3.77 \texttt{NSAppleEventSendCanInteract} = \& h20

MBS MacCocoa Plugin, Plugin Version: 16.2. \textbf{Function}: One of the send options. 
\textbf{Notes}: Server may try to interact with user.

12.3.78 \texttt{NSAppleEventSendCanSwitchLayer} = \& h40

MBS MacCocoa Plugin, Plugin Version: 16.2. \textbf{Function}: One of the send options. 
\textbf{Notes}: Interaction may switch layer.

12.3.79 \texttt{NSAppleEventSendDefaultOptions} = \& h23

MBS MacCocoa Plugin, Plugin Version: 16.2. \textbf{Function}: One of the send options. 
\textbf{Notes}: Default options: WaitForReply with CanInteract.
12.3. **CLASS NSAPPLEEVENTDESCRIPTORMBS**

### 12.3.80 NSAppleEventSendDontAnnotate = & h10000

MBS MacCocoa Plugin, Plugin Version: 16.2. **Function:** One of the send options. **Notes:** Don’t automatically add any sandbox or other annotations to the event.

### 12.3.81 NSAppleEventSendDontExecute = & h2000

MBS MacCocoa Plugin, Plugin Version: 16.2. **Function:** One of the send options. **Notes:** Don’t execute this event; used for recording.

### 12.3.82 NSAppleEventSendDontRecord = & H1000

MBS MacCocoa Plugin, Plugin Version: 16.2. **Function:** One of the send options. **Notes:** Don’t record this event.

### 12.3.83 NSAppleEventSendNeverInteract = & h10

MBS MacCocoa Plugin, Plugin Version: 16.2. **Function:** One of the send options. **Notes:** Server should not interact with user.

### 12.3.84 NSAppleEventSendNoReply = 1

MBS MacCocoa Plugin, Plugin Version: 16.2. **Function:** One of the send options. **Notes:** Sender doesn’t want a reply to event.

### 12.3.85 NSAppleEventSendQueueReply = 2

MBS MacCocoa Plugin, Plugin Version: 16.2. **Function:** One of the send options. **Notes:** Sender wants a reply but won’t wait.

### 12.3.86 NSAppleEventSendWaitForReply = 3

MBS MacCocoa Plugin, Plugin Version: 16.2. **Function:** One of the send options. **Notes:** Sender wants a reply and will wait.
12.4 class NSAppleEventHandlerMBS

12.4.1 class NSAppleEventHandlerMBS

MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for an apple event handler.

12.4.2 Methods

12.4.3 Constructor

MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

12.4.4 Destructor


12.4.5 Properties

12.4.6 Handle as Integer

MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Internal object reference. **Notes:** (Read and Write property)

12.4.7 Events

12.4.8 handleAppleEvent(theEvent as NSAppleEventDescriptorMBS, replyEvent as NSAppleEventDescriptorMBS)

MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event called when an event needs to be handled.
12.5. CLASS NSAPPLEEVENTMANAGERMBS

12.5 class NSAppleEventManagerMBS

12.5.1 class NSAppleEventManagerMBS


Function: The class for the Apple Event Manager.

Notes:
Provides a mechanism for registering handler routines for specific types of Apple events and dispatching events to those handlers.

Cocoa provides built-in scriptability support that uses scriptability information supplied by an application to automatically convert Apple events into script command objects that perform the desired operation. However, some applications may want to perform more basic Apple event handling, in which an application registers handlers for the Apple events it can process, then calls on the Apple Event Manager to dispatch received Apple events to the appropriate handler. NSAppleEventManager supports these mechanisms by providing methods to register and remove handlers and to dispatch Apple events to the appropriate handler, if one exists. For related information, see How Cocoa Applications Handle Apple Events (on Apple Developer Website).

For information about the Apple Event Manager, see Apple Event Manager Reference and Apple Events Programming Guide (on Apple Developer Website).

12.5.2 Methods

12.5.3 appleEventForSuspensionID(id as NSAppleEventManagerSuspensionIDMBS) as NSAppleEventDescriptorMBS

MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Given a suspensionID returned by an invocation of suspendCurrentAppleEvent, returns the descriptor for the event whose handling was suspended.

12.5.4 Constructor

12.5.5 currentAppleEvent as NSAppleEventDescriptorMBS

MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the descriptor for currentAppleEvent if an Apple event is being handled on the current thread. **Notes:** An Apple event is being handled on the current thread if a handler that was registered with setEventHandler is being messaged at this instant or setCurrentAppleEventAndReplyEventWithSuspensionID has just been invoked. Returns nil otherwise. The effects of mutating or retaining the returned descriptor are undefined, although it may be copied.

12.5.6 currentReplyAppleEvent as NSAppleEventDescriptorMBS

MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the corresponding reply event descriptor if an Apple event is being handled on the current thread. **Notes:** An Apple event is being handled on the current thread if currentAppleEvent does not return nil. Returns nil otherwise. This descriptor, including any mutations, will be returned to the sender of the current event when all handling of the event has been completed, if the sender has requested a reply. The effects of retaining the descriptor are undefined; it may be copied, but mutations of the copy are not returned to the sender of the current event.

12.5.7 NSAppleEventManagerWillProcessFirstEventNotification as string

MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification names you can use with NSNotificationObserverMBS. **Notes:** Posted by NSAppleEventManager before it first dispatches an Apple event. Your application can use this notification to avoid registering any Apple event handlers until the first time at which they may be needed. The notification object is the NSAppleEventManager. This notification does not contain a userInfo dictionary.

12.5.8 removeEventHandlerForEventClass(eventClass as string, eventID as string)

MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** If an Apple event handler has been registered for the event specified by eventClass and eventID, removes it.

12.5.9 replyAppleEventForSuspensionID(id as NSAppleEventManagerSuspensionIDMBS) as NSAppleEventDescriptorMBS

MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Given a nonzero suspensionID returned by an invocation of suspendCurrentAppleEvent, returns the
corresponding reply event descriptor.

**Notes:** This descriptor, including any mutations, will be returned to the sender of the suspended event when handling of the event is resumed, if the sender has requested a reply. The effects of retaining the descriptor are undefined; it may be copied, but mutations of the copy are returned to the sender of the suspended event. replyAppleEventForSuspensionID may be invoked in any thread, not just the one in which the corresponding invocation of suspendCurrentAppleEvent occurred.

### 12.5.10 resumeWithSuspensionID(id as NSAppleEventManagerSuspensionIDMBS)

MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Given a suspensionID returned by an invocation of suspendCurrentAppleEvent, signal that handling of the suspended event may now continue.

**Notes:** This may result in the immediate sending of the reply event to the sender of the suspended event, if the sender has requested a reply. If suspensionID has been used in a previous invocation of setCurrentAppleEventAndReplyEventWithSuspensionID the effects of that invocation are completely undone. Redundant invocations of resumeWithSuspensionID are ignored. Subsequent invocations of other NSAppleEventManager methods using the same suspension ID are invalid. resumeWithSuspensionID may be invoked in any thread, not just the one in which the corresponding invocation of suspendCurrentAppleEvent occurred.

### 12.5.11 setCurrentAppleEventAndReplyEventWithSuspensionID(id as NSAppleEventManagerSuspensionIDMBS)

MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Given a nonzero suspensionID returned by an invocation of suspendCurrentAppleEvent, sets the values that will be returned by subsequent invocations of currentAppleEvent and currentReplyAppleEvent to be the event whose handling was suspended and its corresponding reply event, respectively.

**Notes:** Redundant invocations of setCurrentAppleEventAndReplyEventWithSuspensionID are ignored.

### 12.5.12 setEventHandler(handler as NSAppleEventHandlerMBS, eventClass as string, eventID as string)

MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Registers the Apple event handler specified by handler for the event specified by eventClass and eventID.

### 12.5.13 suspendCurrentAppleEvent as NSAppleEventManagerSuspensionIDMBS

MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Suspends the handling of the current event and returns an ID that must be used to resume the
handling of the event if an Apple event is being handled on the current thread.

Notes: An Apple event is being handled on the current thread if currentAppleEvent does not return nil. Returns zero otherwise. The suspended event is no longer the current event after this method returns.

12.5.14 Properties

12.5.15 Handle as Integer


Notes: (Read and Write property)
12.6. class NSAppleEventManagerSuspensionIDMBS

12.6.1 class NSAppleEventManagerSuspensionIDMBS

MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Identifies an Apple event whose handling has been suspended. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

12.6.2 Methods

12.6.3 Constructor

MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.

12.6.4 Properties

12.6.5 Handle as Integer

MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Internal object reference. **Notes:** (Read and Write property)
12.7 class NSAppleScriptMBS

12.7.1 class NSAppleScriptMBS


Function: The NSAppleScriptMBS class provides the ability to load, compile, and execute scripts.

Example:

dim source as string = "tell Application ""iTunes"" to pause"
dim n as new NSAppleScriptMBS(source)
call n.execute

Notes:

Important: You should access NSAppleScriptMBS only from the main thread.

This class provides applications with the ability to

- load a script from a URL or from a text string
- compile or execute a script or an individual Apple event
- obtain an NSAppleEventDescriptorMBS containing the reply from an executed script or event
- obtain an attributed string for a compiled script, suitable for display in a script editor
- obtain various kinds of information about any errors that may occur

Important: NSAppleScriptMBS provides the execute method so that you can send an Apple event to invoke a handler in a script. (In an AppleScript script, a handler is the equivalent of a function.) However, you cannot use this method to send Apple events to other applications.

When you create an instance of NSAppleScriptMBS object, you can use a URL or a folderitem to specify a script that can be in either text or compiled form, or you can supply the script as a string. Should an error occur when compiling or executing the script, several of the methods return a dictionary containing error information. The keys for obtaining error information, such as NSAppleScriptErrorMessage, are described in the Constants section.

12.7.2 Methods

12.7.3 compile as boolean


Function: Compiles the receiver, if it is not already compiled.
12.7. CLASS NSAPPLESCRIPTMBS

Example:

```plaintext
dim source as string = "tell application ""iTunes"""" + EndOfLine + "pause" + EndOfLine + "end tell"
dim n as new NSAppleScriptMBS(source)

dim error as Dictionary
if n.compile then
    MsgBox "OK"
else
    MsgBox error.Value(n.NSAppleScriptErrorMessage)
end if
```

Notes:

error: Optional, on return, if an error occurs, an error information dictionary.
Return Value
Returns true for success or if the script was already compiled, false otherwise.
See also:

- 12.7.4 compile(byref error as dictionary) as boolean

12.7.4 compile(byref error as dictionary) as boolean

Function: Compiles the receiver, if it is not already compiled.
Example:

```plaintext
dim source as string = "tell application ""iTunes"""" + EndOfLine + "pause" + EndOfLine + "end tell"
dim n as new NSAppleScriptMBS(source)

dim error as Dictionary
if n.compile(error) then
    MsgBox "OK"
else
    MsgBox error.Value(n.NSAppleScriptErrorMessage)
end if
```

Notes:

error: Optional, on return, if an error occurs, an error information dictionary.
Return Value
Returns true for success or if the script was already compiled, false otherwise.
See also:

- 12.7.3 compile as boolean
12.7.5 Constructor(file as folderitem, byref error as Dictionary)

**Function:** Initializes a newly allocated script instance from the source identified by the passed folderitem.
**Example:**

```plaintext
dim file as FolderItem = SpecialFolder.Desktop.Child("test.scpt")
dim error as Dictionary
dim n as new NSAppleScriptMBS(file, error)
if n.handle = 0 then
    dim err as Integer = error.lookup(n.NSAppleScriptErrorNumber,0)
    if err = -43 then
        MsgBox "File not found."
    else
        MsgBox "Some other error. " + str(n)
    end if
else
    MsgBox n.source
end if
```

**Notes:**

file: A folderitem that locates a script, in either text or compiled form.
error: On return, if an error occurs, the error information dictionary.

Handle is zero in case of error.

See also:

- 12.7.6 Constructor(source as string) 2696
- 12.7.7 Constructor(sourceLines() as string) 2697
- 12.7.8 Constructor(URL as string, byref error as Dictionary) 2698

12.7.6 Constructor(source as string)

**Function:** Initializes a newly allocated script instance from the passed source.
**Example:**

```plaintext
dim source as string = "beep"
dim n as new NSAppleScriptMBS(source)
```
12.7. CLASS NSAPPLESCRIPTMBS

Notes: Handle is zero in case of error.
See also:

- 12.7.5 Constructor(file as folderitem, byref error as Dictionary) 2696
- 12.7.7 Constructor(sourceLines() as string) 2697
- 12.7.8 Constructor(URL as string, byref error as Dictionary) 2698

12.7.7 Constructor(sourceLines() as string)

Function: Initializes a newly allocated script instance from the passed source.
Example:

dim lines() as string

lines.Append "property hello : " "Hallo Leute"
lines.Append "property just : " "Just a test"
lines.Append "display dialog hello"
lines.Append "return just"

dim a as new NSAppleScriptMBS(lines)

// compile
call a.Compile

// show names
dim names() as string = a.properties
MsgBox Join(names,EndOfLine)

// query value
MsgBox a.valueDescriptorForProperty("hello").stringValue

// change value
dim o as NSAppleEventDescriptorMBS = NSAppleEventDescriptorMBS.descriptorWithString("just a test")
call a.setValueDescriptorForProperty("hello", o)

// and query again
MsgBox a.valueDescriptorForProperty("hello").stringValue

Notes: Handle is zero in case of error.
See also:

- 12.7.5 Constructor(file as folderitem, byref error as Dictionary) 2696
- 12.7.6 Constructor(source as string) 2696
12.7.8 Constructor(URL as string, byref error as Dictionary)


**Function:** Initializes a newly allocated script instance from the source identified by the passed URL.

**Notes:**
- file: A folderitem that locates a script, in either text or compiled form.
- error: On return, if an error occurs, the error information dictionary.

Handle is zero in case of error.

See also:
- 12.7.5 Constructor(file as folderitem, byref error as Dictionary)
- 12.7.6 Constructor(source as string)
- 12.7.7 Constructor(sourceLines() as string)

12.7.9 copy as NSAppleScriptMBS


**Function:** Creates a copy of this object.

**Example:**

```vbs
dim source as string = "tell application ""iTunes"": pause" + EndOfLine + "end tell"
dim n as new NSAppleScriptMBS(source)

dim copy as NSAppleScriptMBS = n.copy
call copy.execute
```

12.7.10 execute as NSAppleEventDescriptorMBS


**Function:** Executes the receiver, compiling it first if it is not already compiled.

**Example:**

```vbs
dim source as string = "tell Application ""iTunes"" to pause"
dim n as new NSAppleScriptMBS(source)
call n.execute
```
12.7. CLASS NSAPPLESCRIPTMBS

Notes:
error: Optional, on return, if an error occurs, an error information dictionary.
Returns the result of executing the event, or nil if an error occurs.
Any changes to property values caused by executing the script do not persist.
See also:

- 12.7.11 execute(byref error as dictionary) as NSAppleEventDescriptorMBS

12.7.11 execute(byref error as dictionary) as NSAppleEventDescriptorMBS

Function: Executes the receiver, compiling it first if it is not already compiled.
Example:

dim source as string = "tello Application ""iTunes"" to play"
dim error as dictionary
dim n as new NSAppleScriptMBS(source)
dim p as NSAppleEventDescriptorMBS = n.execute(error)
if p <>nil then
    MsgBox "OK"
else
    MsgBox error.Lookup(n.NSAppleScriptErrorMessage,"unknown error")
end if

Notes:
error: Optional, on return, if an error occurs, an error information dictionary.
Returns the result of executing the event, or nil if an error occurs.
Any changes to property values caused by executing the script do not persist.
See also:

- 12.7.10 execute as NSAppleEventDescriptorMBS

12.7.12 executeAppleEvent(event as NSAppleEventDescriptorMBS, byref error as dictionary) as NSAppleEventDescriptorMBS

Function: Executes an Apple event in the context of the receiver, as a means of allowing the application
to invoke a handler in the script.
Notes:
event: The Apple event to execute.
error: On return, if an error occurs, an error information dictionary.
Returns the result of executing the event, or nil if an error occurs.

Compiles the receiver before executing it if it is not already compiled.

Important: You cannot use this method to send Apple events to other applications.

12.7.13 `executeSubroutine(Name as String, parameters() as NSAppleEventDescriptorMBS, byref error as dictionary) as NSAppleEventDescriptorMBS`


**Function:** Calls a subroutine in a script.

**Example:**

```vbnet
// our script

Dim CodeLines() as string

CodeLines.Append "on Add(Name1, Name2)"
CodeLines.Append "return Name1 & " " & Name2"
CodeLines.Append "end Add"

// now compile it
Dim a as new NSAppleScriptMBS(CodeLines)
Dim error as dictionary
Dim CompileOkay As Boolean = a.Compile(error)

if CompileOkay then

// script name and parameters
Dim ScriptFuncName As String = "Add"

Dim ScriptParams() As NSAppleEventDescriptorMBS
ScriptParams.Append NSAppleEventDescriptorMBS.descriptorWithString("Hello")
ScriptParams.Append NSAppleEventDescriptorMBS.descriptorWithString("World")

// now run it
Dim p as NSAppleEventDescriptorMBS

p = a.executeSubroutine(ScriptFuncName, ScriptParams, Error)
if error = nil then

// show result
Dim ScriptResult As String = p.stringValue

MsgBox "ScriptResult:" + EndOfLine + EndOfLine + ScriptResult
```
else
MsgBox "Error running script." + _
EndOfLine + EndOfLine + _
error.Lookup(a.NSAppleScriptErrorMessage, "Unknown error") + _
EndOfLine + EndOfLine + _
error.Lookup(a.NSAppleScriptErrorBriefMessage, "Unknown error") + _
EndOfLine + EndOfLine + _
error.Lookup(a.NSAppleScriptErrorNumber, "Unknown error")
end if
else
    // Compile Error
MsgBox "Error loading script." + _
EndOfLine + EndOfLine + _
error.Lookup(a.NSAppleScriptErrorMessage, "Unknown error") + _
EndOfLine + EndOfLine + _
error.Lookup(a.NSAppleScriptErrorBriefMessage, "Unknown error") + _
EndOfLine + EndOfLine + _
error.Lookup(a.NSAppleScriptErrorNumber, "Unknown error")
end if

Notes:
Similar to executeAppleEvent, but creates the apple event for you.

Name: The name of the subroutine to execute.
parameters: The parameters for the subroutine.
error: On return, if an error occurs, an error information dictionary.

Returns the result of executing the event, or nil if an error occurs.
Compiles the receiver before executing it if it is not already compiled.
Important: You cannot use this method to send Apple events to other applications.

12.7.14  NSAppleScriptErrorAppName as string

Notes: Value for this key is a string that specifies the name of the application that generated the error.
12.7.15 NSAppleScriptErrorBriefMessage as string

Function: One of the keys in the error dictionary.
Example:

```vbnet
dim source as string = "tell application ""iTunes"""" + EndOfLine + "pause" + EndOfLine + "end if"
dim n as new NSAppleScriptMBS(source)

dim error as Dictionary
if not n.compile(error) then
// shows error about missing tell where it found an if.
MsgBox error.Value(n.NSAppleScriptErrorBriefMessage)
end if
```

Notes: Value for this key is a string that provides a brief description of the error.

12.7.16 NSAppleScriptErrorMessage as string

Function: One of the keys in the error dictionary.
Example:

```vbnet
dim source as string = "tell application ""iTunes"""" + EndOfLine + "pause" + EndOfLine + "end if"
dim n as new NSAppleScriptMBS(source)

dim error as Dictionary
if n.compile(error) then
MsgBox "OK"
else
// shows error about missing tell where it found an if.
MsgBox error.Value(n.NSAppleScriptErrorMessage)
end if
```

Notes: Value for this key is a NSRangeMBS object.

12.7.17 NSAppleScriptErrorNumber as string

Function: One of the keys in the error dictionary.
Example:
12.7. CLASS "NSAPPLESCRIPTMBS"

```
dim source as string = "tell application ""iTunes"""" + EndOfString + "pause" + EndOfString + "end if"
dim n as new NSAppleScriptMBS(source)

   dim error as Dictionary
   if not n.compile(error) then
      // error about missing tell where it found an if.
      MsgBox error.Value(n.NSAppleScriptErrorNumber)  // shows -2741
   end if
```

Notes: Value for this key is a number that specifies the error number.

12.7.18 "NSAppleScriptErrorRange" as string

Function: One of the keys in the error dictionary.
Example:

```
dim source as string = "tell application ""iTunes"""" + EndOfString + "pause" + EndOfString + "end if"
dim n as new NSAppleScriptMBS(source)

   dim error as Dictionary
   if not n.compile(error) then
      // error about missing tell where it found an if.
      dim r as NSRangeMBS = error.Value(n.NSAppleScriptErrorRange)
      MsgBox r.String  // { 36,2 } , the position of the if
   end if
```

Notes: Value for this key is a string that supplies a detailed description of the error condition.

12.7.19 properties as string()

Function: Queries the names of all properties in the script.
Example:

```
dim s as String
   dim a as NSAppleScriptMBS
   dim i,c,cc as Integer
   dim z,t as String

   s=s+"property hello : ""Hallo Leute""""+chr(13)
```
CHAPTER 12. APPLE SCRIPT

s=s+"property just : " "Just a test"

s=s+"display dialog hello"

s=s+"return just"

MsgBox "The script:" +chr(13)
a=new NSAppleScriptMBS(s)

// compile
call a.Compile

// show names
dim names() as string = a.properties
MsgBox Join(names,EndOfLine)

// query value
MsgBox a.valueDescriptorForProperty("hello").stringValue

// change value
dim o as NSAppleEventDescriptorMBS = NSAppleEventDescriptorMBS.descriptorWithString("just a test")
call a.setValueDescriptorForProperty("hello", o)

// and query again
MsgBox a.valueDescriptorForProperty("hello").stringValue

12.7.20 setValueDescriptorForProperty(propertyName as string, value as NSAppleEventDescriptorMBS) as boolean


12.7.21 valueDescriptorForProperty(propertyName as string) as NSAppleEventDescriptorMBS

12.7.22 Properties

12.7.23 Handle as Integer


12.7.24 isCompiled as boolean

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a Boolean value that indicates whether the receiver’s script has been compiled. Example:

```vba
dim source as string = "tell Application ""iTunes"" to play"
dim n as new NSAppleScriptMBS(source)

MsgBox "isCompiled: "+str(n.isCompiled)
call n.compile

MsgBox "isCompiled: "+str(n.isCompiled)
```

Notes: (Read only property)

12.7.25 richTextSource as NSAttributedStringMBS

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the syntax-highlighted source code of the receiver if the receiver has been compiled and its source code is available. Example:

```vba
// init with some source
dim source as string = "tell Application ""iTunes"" to play"
dim n as new NSAppleScriptMBS(source)

// compile
call n.compile

// format text
dim richtext as NSAttributedStringMBS = n.richTextSource

if richtext = nil then
```
CHAPTER 12. APPLE SCRIPT

MsgBox "Failed to format source."
else
  // write to RTF file
  dim file as FolderItem = SpecialFolder.Desktop.Child("test.rtf")
  dim b as BinaryStream = file.CreateBinaryFile("")
  b.Write richtext.RTF
  b.close
  file.Launch
end if

Notes:
Returns nil otherwise. It is possible for an instance of NSAppleScript that has been instantiated with Constructor to be a script for which the source code is not available, but is nonetheless executable. (Read only property)

12.7.26 source as string

Notes:
Returns the script source code of the receiver if it is available, "" otherwise.

It is possible for an NSAppleScript that has been instantiated with Constructor to be a script for which the source code is not available but is nonetheless executable. (Read only property)
12.8. CLASS OSALANGUAGEINSTANCEMBS

12.8 class OSALanguageInstanceMBS

12.8.1 class OSALanguageInstanceMBS

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for a language instance.

12.8.2 Methods

12.8.3 Constructor(language as OSALanguageMBS)

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new language instance with given language.

12.8.4 languageInstanceWithLanguage(language as OSALanguageMBS) as OSALanguageInstanceMBS

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new language instance with given language.

12.8.5 richTextFromDescriptor(descriptor as NSAppleEventDescriptorMBS) as NSAttributedStringMBS

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Get source text for a descriptor using the language instance for context.

12.8.6 Properties

12.8.7 componentInstance as Integer

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The component instance handle. **Notes:** If this is the shared instance for the language, this is the same as the language’s component instance. (Read only property)
12.8.8  defaultTarget as NSAppleEventDescriptorMBS

Function: The default target application for Apple event sending. 
Notes: 
It also establishes the default target from which terminologies come. It is effectively like having an Apple- 
Script "tell" statement around the entire program. When nil, the default target is the current application. 
(Read and Write property)

12.8.9  Handle as Integer

Function: The internal object handle. 
Notes: (Read and Write property)

12.8.10  language as OSALanguageMBS

Function: The language for this instance. 
Notes: (Read only property)
12.9. class OSALanguageMBS

12.9.1 class OSALanguageMBS

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for a language.

12.9.2 Methods

12.9.3 availableLanguages as OSALanguageMBS()

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries available languages.
**Notes:** For 32-bit apps this is just AppleScript, but 64-bit apps see more entries.

12.9.4 Constructor(ComponentHandle as Integer)

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new object with given component handle.

12.9.5 defaultLanguage as OSALanguageMBS

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The default language.
**Example:**

```vbnet
dim l as OSALanguageMBS = OSALanguageMBS.defaultLanguage
MsgBox l.Name+EndOfLine+l.Manufacturer+EndOfLine+l.Info
```

12.9.6 languageForName(name as String) as OSALanguageMBS

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Finds language for given name.
**Example:**

```vbnet
dim l as OSALanguageMBS = OSALanguageMBS.languageForName("AppleScript")
MsgBox l.Name
```
12.9.7 **languageForScriptDataDescriptor(Descriptor as NSAppleEventDescriptorMBS) as OSALanguageMBS**

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries language for an Apple Event descriptor.

12.9.8 **setDefaultLanguage(Language as OSALanguageMBS)**

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** sets the default language.

12.9.9 **Properties**

12.9.10 **componentInstance as Integer**

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries component instance handle.  
**Notes:** (Read only property)

12.9.11 **Features as Integer**

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The language features.  
**Notes:** (Read only property)

12.9.12 **Handle as Integer**

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference.  
**Notes:** (Read and Write property)

12.9.13 **Info as String**

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries info string.  
**Example:**
12.9. CLASS OSALANGUAGEMBS

```vbscript
dim l as OSALanguageMBS = OSALanguageMBS.defaultLanguage
MsgBox l.Name + vbCrLf + l.Manufacturer + vbCrLf + l.Info
```

Notes: (Read only property)

12.9.14 isThreadSafe as Boolean

Function: Whether this language is thread safe.
Example:
```vbscript
dim l as OSALanguageMBS = OSALanguageMBS.defaultLanguage
MsgBox str(l.isThreadSafe)
```

Notes: (Read only property)

12.9.15 Manufacturer as String

Function: The manufacturer of the language.
Example:
```vbscript
dim l as OSALanguageMBS = OSALanguageMBS.defaultLanguage
MsgBox l.Name + vbCrLf + l.Manufacturer + vbCrLf + l.Info
```

Notes: (Read only property)

12.9.16 Name as String

Function: The name of the language.
Example:
```vbscript
dim l as OSALanguageMBS = OSALanguageMBS.defaultLanguage
MsgBox l.Name + vbCrLf + l.Manufacturer + vbCrLf + l.Info
```
12.9.17 sharedLanguageInstance as OSALanguageInstanceMBS

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The shared language instance if available.  
**Notes:** (Read only property)

12.9.18 SubType as String

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The subtype.  
**Example:**
```plaintext
dim l as OSALanguageMBS = OSALanguageMBS.defaultLanguage  
MsgBox l.type+EndOfLine+l.SubType
```

**Notes:** (Read only property)

12.9.19 Type as String

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The type code.  
**Example:**
```plaintext
dim l as OSALanguageMBS = OSALanguageMBS.defaultLanguage  
MsgBox l.type+EndOfLine+l.SubType
```

**Notes:** (Read only property)

12.9.20 version as String

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The version of this language.  
**Example:**
```plaintext
dim l as OSALanguageMBS = OSALanguageMBS.languageForName("AppleScript")  
MsgBox l.version
```
12.9. Constants

12.9.21 Constants

12.9.22 OSASupportsAECoercion = 8

MBS MacExtras Plugin, Plugin Version: 15.3. **Function:** One of the feature constants. **Notes:** Supports Apple Event coercion

12.9.23 OSASupportsAESending = 16

MBS MacExtras Plugin, Plugin Version: 15.3. **Function:** One of the feature constants. **Notes:** Supports Apple Event sending

12.9.24 OSASupportsCompiling = 2

MBS MacExtras Plugin, Plugin Version: 15.3. **Function:** One of the feature constants. **Notes:** Supports Compiling

12.9.25 OSASupportsConvenience = 64

MBS MacExtras Plugin, Plugin Version: 15.3. **Function:** One of the feature constants. **Notes:** Supports Convenience

12.9.26 OSASupportsDialects = 128

MBS MacExtras Plugin, Plugin Version: 15.3. **Function:** One of the feature constants. **Notes:** Supports Dialects

12.9.27 OSASupportsEventHandling = 256

MBS MacExtras Plugin, Plugin Version: 15.3. **Function:** One of the feature constants. **Notes:** Supports Event handling
12.9.28  OSASupportsGetSource = 4

MBS MacExtras Plugin, Plugin Version: 15.3. **Function:** One of the feature constants. **Notes:** Supports getting source

12.9.29  OSASupportsRecording = 32

MBS MacExtras Plugin, Plugin Version: 15.3. **Function:** One of the feature constants. **Notes:** Supports Recording
12.10 class OSAScriptControllerMBS

12.10.1 class OSAScriptControllerMBS

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The script controller.

12.10.2 Methods

12.10.3 compileScript

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Compiles the script.

12.10.4 Constructor

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

12.10.5 recordScript


12.10.6 runScript

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Runs current script.

12.10.7 stopScript

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Stops the current script.
12.10.8 Properties

12.10.9 Handle as Integer

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference. **Notes:** (Read and Write property)

12.10.10 isCompiling as Boolean

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the view is currently compiling a script. **Notes:** (Read only property)

12.10.11 language as OSALanguageMBS

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The language to use. **Notes:** (Read and Write property)

12.10.12 resultView as NSTextViewMBS

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The view to show result of script run. **Notes:** (Read and Write property)

12.10.13 script as OSAScriptMBS

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The current script. **Notes:** (Read and Write property)

12.10.14 scriptState as Integer

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The current script state. **Notes:**
12.10. CLASS OSASCRIPTCO... 2717

Can be OSAScriptStopped, OSAScriptRunning or OSAScriptRecording. (Read only property)

12.10.15  scriptView as OSAScriptViewMBS

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The script view for this controller. Notes: (Read and Write property)

12.10.16  Constants

12.10.17  OSAScriptRecording = 2

MBS MacExtras Plugin, Plugin Version: 15.3. Function: The script state. Notes: Script is recording.

12.10.18  OSAScriptRunning = 1

MBS MacExtras Plugin, Plugin Version: 15.3. Function: The script state. Notes: Script is running.

12.10.19  OSAScriptStopped = 0

MBS MacExtras Plugin, Plugin Version: 15.3. Function: The script state. Notes: Script is stopped.
12.11 control OSAScriptControlMBS

12.11.1 control OSAScriptControlMBS

Function: The Xojo control for a OSAScriptView.
Notes:
This control embeds a special OSAScriptView subclass.
Designed for Xojo 2013r1 and newer. May work on Real Studio 2012, but not perfectly.
Please use view property to access the underlying object and set properties.

12.11.2 Properties

12.11.3 AcceptTabs as Boolean

Function: Whether the control should accept tab keys.
Notes:
If true, the plugin will not forward the tab keydown/keyup events to Xojo, because Xojo would do switch
to next control.
(Read and Write property)

12.11.4 ScrollView as Variant

Notes: (Read only property)

12.11.5 View as OSAScriptViewMBS

Function: The view used in the control.
Notes:
Use this object to set more options on the control.
(Read only property)
12.11.6 Events

12.11.7 BoundsChanged

MBS MacExtras Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event called when the bounds, but not the frame, changed.

12.11.8 EnableMenuItems

MBS MacExtras Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event where you can enable menu items.

12.11.9 FrameChanged

MBS MacExtras Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event called when the frame changed.

12.11.10 GotFocus

MBS MacExtras Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The control itself got focus. **Notes:** This only fires if the control itself got focus and not a sub control.

12.11.11 LostFocus

MBS MacExtras Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The control lost focus. **Notes:** This only fires if the control itself lost focus and not a sub control.

12.11.12 MenuAction(HitItem as MenuItem) As Boolean

MBS MacExtras Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called when a menuitem is choosen. **Notes:** This allows the control to react on its relevant menu items. Please return true if you handled it or false to give others a chance.
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12.11.13 MouseDown(x as Integer, y as Integer, Modifiers as Integer) As Boolean


Function: The mouse button was pressed inside the controls region at the location passed in to x, y.

Notes:
The coordinates x and y are local to the control, i.e. they represent the position of the mouse click relative to the upper-left corner or the Control.
Return True if you are going to handle the MouseDown. In such a case:

- The Action event, if any, will not execute and the state of the object will not change.
- You will receive the MouseDrag and MouseUp events.

If you return False, the system handles the MouseDown so the above event handlers do not get called.

12.11.14 MouseDrag(x as Integer, y as Integer)


Function: This event fires continuously after the mouse button was pressed inside the Control.

Notes:
Mouse location is local to the control passed in to x, y.
As this event is fired continuously (hundreds of time per second), it is your responsibility to determine if the mouse has really moved.

12.11.15 MouseUp(x as Integer, y as Integer)


Function: The mouse button was released.

Notes: Use the x and y parameters to determine if the mouse button was released within the control’s boundaries.

12.11.16 ScaleFactorChanged(NewFactor as Double)


Function: The backing store scale factor has changed.

Notes: Please invalidate any cached bitmaps or other relevant state.
12.11.17  shouldChangeTextInRange(affectedCharRange as NSRangeMBS, replacementString as string) as boolean

**Function:** Sent when a text view needs to determine if text in a specified range should be changed.  
**Notes:**  
affectedCharRange: The range of characters to be replaced.  
replacementString: The characters that will replace the characters in affectedCharRange; nil if only text attributes are being changed.  

Return true to allow the replacement, or false to reject the change.

12.11.18  textDidBeginEditing

**Function:** Informs you that the text object has begun editing (that the user has begun changing it).

12.11.19  textDidChange

**Function:** Informs you that the text object has changed its characters or formatting attributes.

12.11.20  textDidEndEditing

**Function:** Informs you that the text object has finished editing (that it has resigned first responder status).

12.11.21  textShouldBeginEditing as boolean

**Function:** Invoked when a text object begins to change its text, this method requests permission to begin editing.  
**Notes:** If the delegate returns false, the text object proceeds to make changes. If the delegate returns true, the text object abandons the editing operation. This method is also invoked when the user drags and drops a file onto the text object.
12.11.22 `textShouldEndEditing` as boolean

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Invoked from a text object’s implementation of resignFirstResponder, this method requests permission to end editing. **Notes:** If the delegate returns false, the text object proceeds to finish editing and resign first responder status. If the delegate returns true, the text object selects all of its text and remains the first responder.

12.11.23 `textViewDidChangeSelection`

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sent when the selection changes in the text view.
12.12. CLASS OSAScriptMBS

12.12 class OSAScriptMBS

12.12.1 class OSAScriptMBS

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for Open Scripting Architecture.

12.12.2 Methods

12.12.3 compile(byref error as dictionary) as boolean

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Compiles the script.

12.12.4 compiledDataForType(type as string, options as Integer, byref error as dictionary) as MemoryBlock

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Compile data for a given type and options.

12.12.5 Constructor(Data as MemoryBlock, byref error as dictionary)

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates new script from compiled data.

See also:
- 12.12.6 Constructor(Data as MemoryBlock, url as string, storageOptions as Integer, byref error as NSErrorMBS) 2724
- 12.12.7 Constructor(Data as NSAppleEventDescriptorMBS, URL as String, LanguageInstance as OSALanguageInstanceMBS, storageOptions as Integer, byref error as NSErrorMBS) 2724
- 12.12.8 Constructor(File as FolderItem, byref error as dictionary) 2725
- 12.12.9 Constructor(File as FolderItem, language as OSALanguageMBS, byref error as dictionary) 2726
- 12.12.10 Constructor(File as FolderItem, languageInstance as OSALanguageInstanceMBS, storageOptions as Integer, byref error as NSErrorMBS) 2726
- 12.12.11 Constructor(Source as String) 2727
- 12.12.12 Constructor(Source as String, Language as OSALanguageMBS) 2728
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- 12.12.13 Constructor(Source as String, URL as String, LanguageInstance as OSALanguageInstanceMBS, storageOptions as Integer) 2728
- 12.12.14 Constructor(URL as String, byref error as dictionary) 2729
- 12.12.15 Constructor(URL as String, language as OSALanguageMBS, byref error as dictionary) 2730
- 12.12.16 Constructor(URL as String, languageInstance as OSALanguageInstanceMBS, storageOptions as Integer, byref error as NSErrorMBS) 2730

**12.12.6 Constructor(Data as MemoryBlock, url as string, storageOptions as Integer, byref error as NSErrorMBS)**


**Function:** Creates new script from compiled data.

See also:

- 12.12.5 Constructor(Data as MemoryBlock, byref error as dictionary) 2723
- 12.12.7 Constructor(Data as NSAppleEventDescriptorMBS, URL as String, LanguageInstance as OSALanguageInstanceMBS, storageOptions as Integer, byref error as NSErrorMBS) 2724
- 12.12.8 Constructor(File as FolderItem, byref error as dictionary) 2725
- 12.12.9 Constructor(File as FolderItem, language as OSALanguageMBS, byref error as dictionary) 2726
- 12.12.10 Constructor(File as FolderItem, languageInstance as OSALanguageInstanceMBS, storageOptions as Integer, byref error as NSErrorMBS) 2726
- 12.12.11 Constructor(Source as String) 2727
- 12.12.12 Constructor(Source as String, Language as OSALanguageMBS) 2728
- 12.12.13 Constructor(Source as String, URL as String, LanguageInstance as OSALanguageInstanceMBS, storageOptions as Integer) 2728
- 12.12.14 Constructor(URL as String, byref error as dictionary) 2729
- 12.12.15 Constructor(URL as String, language as OSALanguageMBS, byref error as dictionary) 2730
- 12.12.16 Constructor(URL as String, languageInstance as OSALanguageInstanceMBS, storageOptions as Integer, byref error as NSErrorMBS) 2730

**12.12.7 Constructor(Data as NSAppleEventDescriptorMBS, URL as String, LanguageInstance as OSALanguageInstanceMBS, storageOptions as Integer, byref error as NSErrorMBS)**


**Function:** Creates new script from data.

See also:
12.12. CLASS OSASCIPIRINTMBS

- 12.12.5 Constructor(Data as MemoryBlock, byref error as dictionary) 2723
- 12.12.6 Constructor(Data as MemoryBlock, url as string, storageOptions as Integer, byref error as NSErrorMBS) 2724
- 12.12.8 Constructor(File as FolderItem, byref error as dictionary) 2725
- 12.12.9 Constructor(File as FolderItem, language as OSALanguageMBS, byref error as dictionary) 2726
- 12.12.10 Constructor(File as FolderItem, languageInstance as OSALanguageInstanceMBS, storageOptions as Integer, byref error as NSErrorMBS) 2726
- 12.12.11 Constructor(Source as String) 2727
- 12.12.12 Constructor(Source as String, Language as OSALanguageMBS) 2728
- 12.12.13 Constructor(Source as String, URL as String, LanguageInstance as OSALanguageInstanceMBS, storageOptions as Integer) 2728
- 12.12.14 Constructor(URL as String, byref error as dictionary) 2729
- 12.12.15 Constructor(URL as String, language as OSALanguageMBS, byref error as dictionary) 2730
- 12.12.16 Constructor(URL as String, languageInstance as OSALanguageInstanceMBS, storageOptions as Integer, byref error as NSErrorMBS) 2730

12.12.8 Constructor(File as FolderItem, byref error as dictionary)


Function: Creates new script from file.

See also:

- 12.12.5 Constructor(Data as MemoryBlock, byref error as dictionary) 2723
- 12.12.6 Constructor(Data as MemoryBlock, url as string, storageOptions as Integer, byref error as NSErrorMBS) 2724
- 12.12.7 Constructor(Data as NSAppleEventDescriptorMBS, URL as String, LanguageInstance as OSALanguageInstanceMBS, storageOptions as Integer, byref error as NSErrorMBS) 2724
- 12.12.9 Constructor(File as FolderItem, language as OSALanguageMBS, byref error as dictionary) 2726
- 12.12.10 Constructor(File as FolderItem, languageInstance as OSALanguageInstanceMBS, storageOptions as Integer, byref error asNSErrorMBS) 2726
- 12.12.11 Constructor(Source as String) 2727
- 12.12.12 Constructor(Source as String, Language as OSALanguageMBS) 2728
- 12.12.13 Constructor(Source as String, URL as String, LanguageInstance as OSALanguageInstanceMBS, storageOptions as Integer) 2728
- 12.12.14 Constructor(URL as String, byref error as dictionary) 2729
12.12.9 Constructor(File as FolderItem, language as OSALanguageMBS, byref error as dictionary)

Function: Creates new script from file.
See also:

- 12.12.5 Constructor(Data as MemoryBlock, byref error as dictionary) 2723
- 12.12.6 Constructor(Data as MemoryBlock, url as string, storageOptions as Integer, byref error as NSErrorMBS) 2724
- 12.12.7 Constructor(Data as NSAppleEventDescriptorMBS, URL as String, LanguageInstance as OSALanguageInstanceMBS, storageOptions as Integer, byref error as NSErrorMBS) 2724
- 12.12.8 Constructor(File as FolderItem, byref error as dictionary) 2725
- 12.12.10 Constructor(File as FolderItem, languageInstance as OSALanguageInstanceMBS, storageOptions as Integer, byref error as NSErrorMBS) 2726
- 12.12.11 Constructor(Source as String) 2727
- 12.12.12 Constructor(Source as String, Language as OSALanguageMBS) 2728
- 12.12.13 Constructor(Source as String, URL as String, LanguageInstance as OSALanguageInstanceMBS, storageOptions as Integer) 2728
- 12.12.14 Constructor(URL as String, byref error as dictionary) 2729
- 12.12.15 Constructor(URL as String, language as OSALanguageMBS, byref error as dictionary) 2730
- 12.12.16 Constructor(URL as String, languageInstance as OSALanguageInstanceMBS, storageOptions as Integer, byref error as NSErrorMBS) 2730

12.12.10 Constructor(File as FolderItem, languageInstance as OSALanguage-InstanceMBS, storageOptions as Integer, byref error as NSErrorMBS)

Function: Creates new script from file.
See also:

- 12.12.5 Constructor(Data as MemoryBlock, byref error as dictionary) 2723
- 12.12.6 Constructor(Data as MemoryBlock, url as string, storageOptions as Integer, byref error as NSErrorMBS) 2724
12.12. CLASS OSASCRIPTMBS

- 12.12.7 Constructor(Data as NSAppleEventDescriptorMBS, URL as String, LanguageInstance as OSALanguageInstanceMBS, storageOptions as Integer, byref error as NSErrorMBS) 2724
- 12.12.8 Constructor(File as FolderItem, byref error as dictionary) 2725
- 12.12.9 Constructor(File as FolderItem, language as OSALanguageMBS, byref error as dictionary) 2726
- 12.12.11 Constructor(Source as String) 2727
- 12.12.12 Constructor(Source as String, Language as OSALanguageMBS) 2728
- 12.12.13 Constructor(Source as String, URL as String, LanguageInstance as OSALanguageInstanceMBS, storageOptions as Integer) 2728
- 12.12.14 Constructor(URL as String, byref error as dictionary) 2729
- 12.12.15 Constructor(URL as String, language as OSALanguageMBS, byref error as dictionary) 2730
- 12.12.16 Constructor(URL as String, languageInstance as OSALanguageInstanceMBS, storageOptions as Integer, byref error as NSErrorMBS) 2730

12.12.11 Constructor(Source as String)

Function: Creates new script from source code.
Example:

```pascal
Dim s as new OSAScriptMBS("display dialog ""Hello!"")
MsgBox s.source
```

See also:

- 12.12.5 Constructor(Data as MemoryBlock, byref error as dictionary) 2723
- 12.12.6 Constructor(Data as MemoryBlock, url as string, storageOptions as Integer, byref error as NSErrorMBS) 2724
- 12.12.7 Constructor(Data as NSAppleEventDescriptorMBS, URL as String, LanguageInstance as OSALanguageInstanceMBS, storageOptions as Integer, byref error as NSErrorMBS) 2724
- 12.12.8 Constructor(File as FolderItem, byref error as dictionary) 2725
- 12.12.9 Constructor(File as FolderItem, language as OSALanguageMBS, byref error as dictionary) 2726
- 12.12.10 Constructor(File as FolderItem, languageInstance as OSALanguageInstanceMBS, storageOptions as Integer, byref error as NSErrorMBS) 2726
- 12.12.12 Constructor(Source as String, Language as OSALanguageMBS) 2728
- 12.12.13 Constructor(Source as String, URL as String, LanguageInstance as OSALanguageInstanceMBS, storageOptions as Integer) 2728
12.12.12 Constructor(Source as String, Language as OSALanguageMBS)


**Function:** Creates new script from source code.

See also:

- 12.12.5 Constructor(Data as MemoryBlock, byref error as dictionary) 2723
- 12.12.6 Constructor(Data as MemoryBlock, url as string, storageOptions as Integer, byref error as NSErrorMBS) 2724
- 12.12.7 Constructor(Data as NSAppleEventDescriptorMBS, URL as String, LanguageInstance as OSALanguageInstanceMBS, storageOptions as Integer, byref error as NSErrorMBS) 2724
- 12.12.8 Constructor(File as FolderItem, byref error as dictionary) 2725
- 12.12.9 Constructor(File as FolderItem, language as OSALanguageMBS, byref error as dictionary) 2726
- 12.12.10 Constructor(File as FolderItem, languageInstance as OSALanguageInstanceMBS, storageOptions as Integer, byref error as NSErrorMBS) 2726
- 12.12.11 Constructor(Source as String) 2727
- 12.12.13 Constructor(Source as String, URL as String, LanguageInstance as OSALanguageInstanceMBS, storageOptions as Integer) 2728
- 12.12.14 Constructor(URL as String, byref error as dictionary) 2729
- 12.12.15 Constructor(URL as String, language as OSALanguageMBS, byref error as dictionary) 2730
- 12.12.16 Constructor(URL as String, languageInstance as OSALanguageInstanceMBS, storageOptions as Integer, byref error as NSErrorMBS) 2730

12.12.13 Constructor(Source as String, URL as String, LanguageInstance as OSALanguageInstanceMBS, storageOptions as Integer)


**Function:** Creates new script from source code.

See also:

- 12.12.5 Constructor(Data as MemoryBlock, byref error as dictionary) 2723
12.12. **CLASS OSASCRIPTMBS**

- 12.12.6 Constructor(Data as MemoryBlock, url as string, storageOptions as Integer, byref error as NSErrorMBS) 2724
- 12.12.7 Constructor(Data as NSAppleEventDescriptorMBS, URL as String, LanguageInstance as OSALanguageInstanceMBS, storageOptions as Integer, byref error as NSErrorMBS) 2724
- 12.12.8 Constructor(File as FolderItem, byref error as dictionary) 2725
- 12.12.9 Constructor(File as FolderItem, language as OSALanguageMBS, byref error as dictionary) 2726
- 12.12.10 Constructor(File as FolderItem, languageInstance as OSALanguageInstanceMBS, storageOptions as Integer, byref error as NSErrorMBS) 2726
- 12.12.11 Constructor(Source as String) 2727
- 12.12.12 Constructor(Source as String, Language as OSALanguageMBS) 2728
- 12.12.14 Constructor(URL as String, byref error as dictionary) 2729
- 12.12.15 Constructor(URL as String, language as OSALanguageMBS, byref error as dictionary) 2730
- 12.12.16 Constructor(URL as String, languageInstance as OSALanguageInstanceMBS, storageOptions as Integer, byref error as NSErrorMBS) 2730

12.12.14 **Constructor(URL as String, byref error as dictionary)**


**Function:** Creates new script from file.

See also:

- 12.12.5 Constructor(Data as MemoryBlock, byref error as dictionary) 2723
- 12.12.6 Constructor(Data as MemoryBlock, url as string, storageOptions as Integer, byref error as NSErrorMBS) 2724
- 12.12.7 Constructor(Data as NSAppleEventDescriptorMBS, URL as String, LanguageInstance as OSALanguageInstanceMBS, storageOptions as Integer, byref error as NSErrorMBS) 2724
- 12.12.8 Constructor(File as FolderItem, byref error as dictionary) 2725
- 12.12.9 Constructor(File as FolderItem, language as OSALanguageMBS, byref error as dictionary) 2726
- 12.12.10 Constructor(File as FolderItem, languageInstance as OSALanguageInstanceMBS, storageOptions as Integer, byref error as NSErrorMBS) 2726
- 12.12.11 Constructor(Source as String) 2727
- 12.12.12 Constructor(Source as String, Language as OSALanguageMBS) 2728
- 12.12.13 Constructor(Source as String, URL as String, LanguageInstance as OSALanguageInstanceMBS, storageOptions as Integer) 2728
- 12.12.15 Constructor(URL as String, language as OSALanguageMBS, byref error as dictionary) 2730
- 12.12.16 Constructor(URL as String, languageInstance as OSALanguageInstanceMBS, storageOptions as Integer, byref error as NSErrorMBS) 2730
12.12.15 Constructor(URL as String, language as OSALanguageMBS, byref error as dictionary)

Function: Creates new script from file.
See also:

- 12.12.5 Constructor(Data as MemoryBlock, byref error as dictionary) 2723
- 12.12.6 Constructor(Data as MemoryBlock, url as string, storageOptions as Integer, byref error as NSErrorMBS) 2724
- 12.12.7 Constructor(Data as NSAppleEventDescriptorMBS, URL as String, LanguageInstance as OSALanguageInstanceMBS, storageOptions as Integer, byref error as NSErrorMBS) 2724
- 12.12.8 Constructor(File as FolderItem, byref error as dictionary) 2725
- 12.12.9 Constructor(File as FolderItem, language as OSALanguageMBS, byref error as dictionary) 2726
- 12.12.10 Constructor(File as FolderItem, languageInstance as OSALanguageInstanceMBS, storageOptions as Integer, byref error as NSErrorMBS) 2726
- 12.12.11 Constructor(Source as String) 2727
- 12.12.12 Constructor(Source as String, Language as OSALanguageMBS) 2728
- 12.12.13 Constructor(Source as String, URL as String, LanguageInstance as OSALanguageInstanceMBS, storageOptions as Integer) 2728
- 12.12.14 Constructor(URL as String, byref error as dictionary) 2729
- 12.12.16 Constructor(URL as String, languageInstance as OSALanguageInstanceMBS, storageOptions as Integer, byref error as NSErrorMBS) 2730

12.12.16 Constructor(URL as String, languageInstance as OSALanguageInstanceMBS, storageOptions as Integer, byref error as NSErrorMBS)

Function: Creates new script from file.
See also:

- 12.12.5 Constructor(Data as MemoryBlock, byref error as dictionary) 2723
- 12.12.6 Constructor(Data as MemoryBlock, url as string, storageOptions as Integer, byref error as NSErrorMBS) 2724
- 12.12.7 Constructor(Data as NSAppleEventDescriptorMBS, URL as String, LanguageInstance as OSALanguageInstanceMBS, storageOptions as Integer, byref error as NSErrorMBS) 2724
- 12.12.8 Constructor(File as FolderItem, byref error as dictionary) 2725
12.12.  CLASS OSASCRIPTMBS

- 12.12.9 Constructor(File as FolderItem, language as OSALanguageMBS, byref error as dictionary) 2726
- 12.12.10 Constructor(File as FolderItem, languageInstance as OSALanguageInstanceMBS, storageOptions as Integer, byref error as NSErrorMBS) 2726
- 12.12.11 Constructor(Source as String) 2727
- 12.12.12 Constructor(Source as String, Language as OSALanguageMBS) 2728
- 12.12.13 Constructor(Source as String, URL as String, LanguageInstance as OSALanguageInstanceMBS, storageOptions as Integer) 2728
- 12.12.14 Constructor(URL as String, byref error as dictionary) 2729
- 12.12.15 Constructor(URL as String, language as OSALanguageMBS, byref error as dictionary) 2730

12.12.17  copy as OSAScriptMBS

Function: Creates a copy of the script.

12.12.18  execute(byref error as dictionary) as NSAppleEventDescriptorMBS

Function: Executes the script.  
Example:

    dim s as new OSAScriptMBS("display dialog ""Hello"")
    dim d as Dictionary
    call s.execute(d)

12.12.19  executeAndReturnDisplayValue(byref displayValue as NSAttributedStringMBS, byref error as dictionary) as NSAppleEventDescriptorMBS

Function: Executes the script and returns the display value of result.

12.12.20  executeAppleEvent(event as NSAppleEventDescriptorMBS, byref error as dictionary) as NSAppleEventDescriptorMBS

Function: Executes an apple event in the script.
**executeHandlerWithName( Name as String, arguments() as String, byref error as dictionary) as NSAppleEventDescriptorMBS**

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Executes an event handler in the script.

**OSAScriptErrorAppAddressKey as String**

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Error Dictionary key for error app address.

**OSAScriptErrorAppNameKey as String**

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the error dictionary. **Notes:** String containing the target application name.

**OSAScriptErrorBriefMessageKey as String**

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the error dictionary. **Example:**

```
dim s as new OSAScriptMBS("display dialXXX ""Hello"")
dim d as Dictionary
call s.compile(d)
MsgBox d.Value(OSAScriptMBS.OSAScriptErrorBriefMessageKey)
```

**Notes:** String containing just the failure; may or may not be the same value as NSLocalizedFailureReason-ErrorKey

**OSAScriptErrorExpectedTypeKey as String**

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the error dictionary. **Notes:** Should be NSAppleEventDescriptorMBS object in dictionary.
12.12.26 **OSAScriptErrorMessageKey as String**


**Function:** One of the keys for the error dictionary.

**Example:**

```vbscript
dim s as new OSAScriptMBS("display dialXXX ""Hello""")
dim d as Dictionary
call s.compile(d)
MsgBox d.Value(OSAScriptMBS.OSAScriptErrorMessageKey)
```

**Notes:** String containing entire error message; may or may not be the same value as NSLocalizedDescriptionKey.

12.12.27 **OSAScriptErrorNumberKey as String**


**Function:** One of the keys for the error dictionary.

**Example:**

```vbscript
dim s as new OSAScriptMBS("display dialXXX ""Hello""")
dim d as Dictionary
call s.compile(d)
// shows -2740
MsgBox d.Value(OSAScriptMBS.OSAScriptErrorNumberKey)
```

**Notes:** Number containing an OSAError; may or may not be the same value as the NSError code.

12.12.28 **OSAScriptErrorOffendingObjectKey as String**


**Function:** One of the keys for the error dictionary.

**Notes:** Should be NSAppleEventDescriptorMBS object in dictionary.
12.12.29 **OSAScriptErrorPartialResultKey as String**

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the error dictionary. **Notes:** Should be NSObjectAppleEventDescriptorMBS object in dictionary.

12.12.30 **OSAScriptErrorRangeKey as String**

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the error dictionary. **Example:**

```powershell
dim s as new OSAScriptMBS("display dialXXX ""Hello""")
dim d as Dictionary
call s.compile(d)

// shows { 0, 15 }
MsgBox d.Value(OSAScriptMBS.OSAScriptErrorRangeKey)
```

**Notes:** Value containing an range indicating the range of source characters where the error occurred.

12.12.31 **OSAStorageApplicationBundleType as String**

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the storage types. **Notes:** Application Bundle

12.12.32 **OSAStorageApplicationType as String**

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the storage types. **Notes:** Application file

12.12.33 **OSAStorageScriptBundleType as String**

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the storage types.
12.12. CLASS OSASCRIPTEMBS

Notes: Script bundle file

12.12.34 OSASTorageScriptType as String

MBS MacExtrax Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the storage types.
Notes: Script file

12.12.35 OSASTorageTextType as String

MBS MacExtrax Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the storage types.
Notes: Text file

12.12.36 richTextFromDescriptor(descriptor as NSAppleEventDescriptorMBS) as NSAttributedStringMBS

MBS MacExtrax Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries rich text for an Appleevent descriptor.

12.12.37 scriptDataDescriptorWithContentsOfFile(file as FolderItem) as NSAppleEventDescriptorMBS

MBS MacExtrax Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Reads script from file into AppleEventDescriptor.

12.12.38 scriptDataDescriptorWithContentsOfURL(URL as String) as NSAppleEventDescriptorMBS

MBS MacExtrax Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Reads script from file into AppleEventDescriptor.
12.12.39  writeToFile(File as FolderItem, type as String, byref error as dictionary) as boolean

Function: Writes script to a file.
See also:

- 12.12.40  writeToFile(File as FolderItem, type as String, storageOptions as Integer, byref error as dictionary) as boolean

12.12.40  writeToFile(File as FolderItem, type as String, storageOptions as Integer, byref error as dictionary) as boolean

Function: Writes script to a file.
See also:

- 12.12.39  writeToFile(File as FolderItem, type as String, byref error as dictionary) as boolean

12.12.41  writeToFile(URL as String, type as String, byref error as dictionary) as boolean

Function: Writes script to a file.
See also:

- 12.12.42  writeToFile(URL as String, type as String, storageOptions as Integer, byref error as dictionary) as boolean

12.12.42  writeToFile(URL as String, type as String, storageOptions as Integer, byref error as dictionary) as boolean

Function: Writes script to a file.
See also:

- 12.12.41  writeToFile(URL as String, type as String, byref error as dictionary) as boolean
12.12.43 Properties

12.12.44 Handle as Integer

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The internal object reference. Notes: (Read and Write property)

12.12.45 isCompiled as Boolean

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Queries if script is compiled. Notes: (Read only property)

12.12.46 language as OSALanguageMBS


dim s as new OSAScriptMBS("display dialog \\"Hello\\"")
MsgBox s.language.Name

Notes: (Read and Write property)

12.12.47 languageInstance as OSALanguageInstanceMBS

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The language instance of script. Notes: (Read and Write property)

12.12.48 richTextSource as NSAttributedStringMBS

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Queries rich text of script. Notes: (Read only property)
12.12.49  Source as String

**Function:** The source code of script.  
**Example:**

```ruby
dim s as new OSAScriptMBS("display dialog ""Hello"")
MsgBox s.Source
```

**Notes:** (Read only property)

12.12.50  URL as String

**Function:** The URL if script has a solution.  
**Notes:** (Read only property)

12.12.51  Constants

12.12.52  OSACompileIntoContext = 2

MBS MacExtras Plugin, Plugin Version: 15.3.  
**Function:** One of the storage options.  
**Notes:**  
Compile in context.  
May be used when getting compiled data.

12.12.53  OSADontSetScriptLocation = & h01000000

MBS MacExtras Plugin, Plugin Version: 15.3.  
**Function:** One of the storage options.  
**Notes:**  
Set script location.  
May be used when initing with a URL or fromURL.

12.12.54  OSANull = 0

MBS MacExtras Plugin, Plugin Version: 15.3.  
**Function:** One of the storage options.  
**Notes:** No option set.
12.12.55  **OSAPreventGetSource = 1**

MBS MacExtras Plugin, Plugin Version: 15.3. **Function:** One of the storage options.  
**Notes:**
Prevent user from getting source.  
May be used when initing with a compiled script, writing or getting compiled data.

12.12.56  **OSAShowStartupScreen = & h20000000**

MBS MacExtras Plugin, Plugin Version: 15.3. **Function:** One of the storage options.  
**Notes:**
Show startup screen.  
May be used when writing

12.12.57  **OSASstayOpenApplet = & h10000000**

MBS MacExtras Plugin, Plugin Version: 15.3. **Function:** One of the storage options.  
**Notes:**
Applet should stay open.  
May be used when writing
12.13 class OSAScriptViewMBS

12.13.1 class OSAScriptViewMBS


12.13.2 Methods

12.13.3 Constructor

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creates a new text field with size 100/100 and position 0/0 Example:

```vba
dim t as new OSAScriptViewMBS
```

Notes: On success the handle property is not zero. See also:

- 12.13.4 Constructor(Handle as Integer)
- 12.13.5 Constructor(left as Double, top as Double, width as Double, height as Double)

12.13.4 Constructor(Handle as Integer)

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creates an object based on the given OSAScriptView handle. Example:

```vba
dim t as new OSAScriptViewMBS(0, 0, 100, 100)
dim v as new OSAScriptViewMBS(t.handle)
```

MsgBox str(v.Bounds.Width)+” x ”+str(v.Bounds.Height)

Notes: The handle is casted to a OSAScriptView and the plugin retains this handle. See also:

- 12.13.3 Constructor
- 12.13.5 Constructor(left as Double, top as Double, width as Double, height as Double)
12.13. CLASS OSASCRIPTRVIEWMBS

12.13.5 Constructor(left as Double, top as Double, width as Double, height as Double)

**Function:** Creates a new script view with the given size and position. 
**Example:**

```vbnet
dim x as new OSAScriptViewMBS(0, 0, 100, 100)
```

**Notes:** On success the handle property is not zero.

See also:

- 12.13.3 Constructor
- 12.13.4 Constructor(Handle as Integer)

12.13.6 Properties

12.13.7 indentsWrappedLines as Boolean

**Function:** Whether to indent wrapped lines. 
**Notes:** (Read and Write property)

12.13.8 indentWidth as Integer

**Function:** The indentation width. 
**Notes:** (Read and Write property)

12.13.9 source as String

**Function:** The source text of current script. 
**Notes:** (Read and Write property)

12.13.10 tabWidth as Integer

**Function:** The tab width.
12.13.11 usesScriptAssistant as Boolean

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether to use script assistant.
**Notes:** (Read and Write property)

12.13.12 usesTabs as Boolean

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether to use tab character.
**Notes:** (Read and Write property)

12.13.13 wrapsLines as Boolean

MBS MacExtras Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether to wrap lines.
**Notes:** (Read and Write property)
Chapter 13

Apple Type Services for Fonts

13.1  Globals

13.1.1  ATSFontActivateFileMBS(File as FolderItem, OnlyLocal as boolean, Options as Integer, byref FontHandle as Integer) as Integer

MBS MacCF Plugin, Plugin Version: 5.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Activates one or more fonts from a file specification.

**Example:**

```plaintext
dim f as FolderItem = SpecialFolder.Desktop.Child("Firecat.ttf")
dim FontHandle as Integer
dim e as Integer = ATSFontActivateFileMBS(f, true, 0, FontHandle)
```

Break // on success e = 0 and FontHandle > 0

**Notes:**

You can use the function ATSFontActivateFileMBS to activate one font or more fonts. Activating a font makes that font available for use either locally (available only to your application) or globally (available to all applications on the system). A font’s availability local or global is referred to as its context.

**file:**
A folderitem that specifies the name and location of a file or directory that contains the font data you want to activate.

**OnlyLocal:**
A value that specifies the context of the activated font. If you want the activated font to be accessible only from your application use the kATSFontContextLocal constant (=true). If you want the activated font to
be accessible to all applications use the constant kATSFontContextGlobal (=false).

options:
An options flag. Pass kATSOptionFlagsDefault (=0) unless the font’s data fork contains resource-fork information, you need to activate a directory of font directories, or you plan to call this function a number of times. If the font’s data fork contains resource-fork information, pass the option kATSOptionFlagsUseDataForkAsResourceFork (=256). If you want to activate a font directory that contains font directories, you must pass the option kATSOptionFlagsProcessSubdirectories (=64). If you plan to call this function a number of times, you can set the iOptions parameter to kATSOptionFlagsDoNotNotify (=128) set. When you are done activating fonts you can call the function ATSFontNotifyMBS with the action parameter set to kATSFontNotifyActionFontsChanged (=1). Then ATS notifies all applications who subscribe to notifications of the changes you made.

FontHandle:
On output, a reference to the font container that is activated from the file specification. You need this reference when you deactivate the font by calling the function ATSFontDeactivateMBS.

Requires Mac OS X 10.0 or newer.
Returns a Mac OS error code (0 for success).

13.1.2 ATSFontActivateStringMBS(FontData as string, OnlyLocal as boolean, Options as Integer, byref FontHandle as Integer) as Integer

MBS MacCF Plugin, Plugin Version: 5.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Activates one or more fonts at the specified location in memory.

**Example:**
```pascal
    dim f as FolderItem = SpecialFolder.Desktop.Child("some font file.ttf")
    dim b as BinaryStream = BinaryStream.Open(f)
    dim s as string = b.Read(b.Length)
    dim FontHandle as Integer
    dim e as Integer = ATSFontActivateStringMBS(S, true, 0, FontHandle)
    Break // on success e = 0 and FontHandle >0
```

**Notes:**
FontData:
The binary data of the font you want to activate.

OnlyLocal:
A value that specifies the context of the activated font. If you want the activated font to be accessible only
from your application use the kATSFontContextLocal (=true) constant. If you want the activated font to be accessible to all applications use the constant kATSFontContextGlobal (=False).

options:
An ATSOptionFlags value. This parameter is currently reserved for future use, so you should pass kATSOptionFlagsDefault (=0).

FontHandle:
On output, a pointer to a font container reference that refers to the file that contains the activated font data.

You use this function to activate a streamed font, such as a font contained in a PDF file. Your application must first load the font data into a string and pass it to the ATSFontActivateStringMBS function.

Requires Mac OS X 10.0 or newer.
Returns a Mac OS error code (0 for success).

### 13.1.3 ATSFontCountMBS as Integer

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the number of installed fonts.

**Notes:**
Returns 0 on any error.
Value may change when the user installs or removes fonts while the application is working.

### 13.1.4 ATSFontDeactivateMBS(FontHandle as Integer, Options as Integer) as Integer

MBS MacCF Plugin, Plugin Version: 5.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Deactivates one or more fonts.

**Notes:**
FontHandle:
The handle value you got from ATSFontActivateFileMBS or ATSFontActivateStringMBS.

options:
You should pass kATSOptionFlagsDefault (=0) unless to plan to call this function a number of times to deactivate many fonts. If you plan to call this function a number of times, you can set the iOptions parameter to kATSOptionFlagsDoNotNotify (=128) set. When you are done deactivateing fonts you can call the function ATSFontNotifyMBS with the action parameter set to kATSFontNotifyActionFontsChanged (=1). ATS notifies all applications who subscribe to notifications of the changes you made.
When you deactivate a font, you must supply the font handle you obtained when you activated the font. You can’t deactivate a font that you did not activate by calling the functions ATSFontActivateFileMBS or ATSFontActivateStringMBS.

You should use caution if you deactivate a font that is available globally, as its deactivation impacts any application that uses that font.

Requires Mac OS X 10.0 or newer.

13.1.5 ATSFontFamilyFindFromNameMBS(name as String) as ATSFontFamilyMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the font family which matches the given name.  

**Example:**

```plaintext
// query postscript names for a font
const nameOfAFont = "Arial"

dim ATSFontName as string
dim ATSFontFamilyName as string
dim ATSFontPostscriptName as string
dim ATSFontPostscriptNameBold as string
dim ATSFontPostscriptNameItalic as string

dim f as ATSFontMBS
dim ATSFontFamily as ATSFontFamilyMBS = ATSFontFamilyFindFromNameMBS(nameOfAFont)
if ATSFontFamily <> nil then
    ATSFontFamilyName = ATSFontFamily.Name
    const normal = 0
    const bold = 1
    const italic = 2
    const underline = 4
    const outline = 8
    const shadow = & h10
    const condense = & h20
    const extend = & h40

    f = ATSFontFamily.Font(normal)
    if f <> nil then
        ATSFontName = f.Name
        ATSFontPostscriptName = f.PostscriptName
    end if
```
f = ATSFontFamily.Font(bold)
if f <> nil then
    ATSFontPostscriptNameBold = f.PostscriptName
end if

f = ATSFontFamily.Font(italic)
if f <> nil then
    ATSFontPostscriptNameItalic = f.PostscriptName
end if

end if

Break // read names in debugger

Notes: Returns nil on any error.

13.1.6 ATSFontFamilyFindFromQuickDrawNameMBS(qdname as string) as ATS-FontFamilyMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Returns the font family which matches the given quickdraw name.
Notes: Returns nil on any error.
The name must be encoded in MacRoman.

13.1.7 ATSFontFindFromContainerMBS(FontContainerHandle as Integer) as ATSFontMBS()

Example:
    // activate a font
dim f as FolderItem = GetFolderItem(“Gadget”)  
dim FontContainerHandle as Integer
    dim e as Integer = ATSFontActivateFileMBS(f, false, 0, FontContainerHandle)
if e = 0 then
    // find fonts
dim fonts() as atsFontMBS = ATSFontFindFromContainerMBS(FontContainerHandle)

dim names() as string

for each font as atsFontMBS in fonts
    names.Append font.PostscriptName + " - " + font.Name
next

// show names
MsgBox Join(names,EndOfLine)
end if

Notes: You activate a font and this function queries all the fonts in the font container.

13.1.8  ATSFontFindFromNameMBS(name as String) as ATSFontMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Returns the font matching the given name.
Notes: Returns nil on any error.

13.1.9  ATSFontFindFromPostScriptNameMBS(name as String) as ATSFontMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Returns the font matching the given name.
Notes: Returns nil on any error.

13.1.10 ATSFontGenerationMBS as Integer

Notes:
If somewhere on the system something changes, this counter is updated.
(You may need to update your font list if this counter changes)

13.1.11 ATSFontNotifyMBS(Action as Integer) as Integer

Notes:
The following is a list of actions you might wish the ATS server to perform and notify clients if appropriate.

kATSFontNotifyActionFontsChanged = 1
Used after a batch (de)activation of fonts occurs. Typically the caller has exercised multiple global (De)Activation calls with the kATSOptionFlagsDoNotNotify set. Once all calls are completed, one may use ATSFontNotify with this action to ask ATS to notify all clients.

kATSFontNotifyActionDirectoriesChanged = 2
The ATS system with the help of the Finder keeps track of changes to any of the font directories in the system domains (System, Local, Network, User, & Classic). However, one may wish to add/remove fonts to these locations programmatically. This action is used to let ATS server to rescan these directories and post notifications if necessary.

Requires Mac OS X 10.2 to work.
Returns -1 if function is not present on the Mac or else a Mac OS error code.
(0 for success)

13.1.12 ATSUFindFontFromNameMBS(name as string, code as Integer, platform as Integer, script as Integer, language as Integer) as Integer

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Find a font by name.
**Example:**
```plaintext
const kFontFullName=4
const kFontNoPlatform=-1
const kFontNoScript=-1
const kFontNoLanguage=-1

msgbox str(ATSUFindFontFromNameMBS("Times Roman",kFontFullName,kFontNoPlatform, kFontNoScript, kFontNoLanguage))
```

**Notes:**
Returns the font ID for the given font or 0 on any error.

Some more constants:
13.1.13 ATSUFindFontNameMBS(FontID as Integer, code as Integer, platform as Integer, script as Integer, language as Integer) as string

MBS MacCF Plugin, Plugin Version: 5.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Obtains a name string for the first font in a name table that matches the specified ATSUI font ID, name code, platform, script, and/or language.

**Example:**

```plaintext
const kFontUnicodePlatform=0
const kFontMacintoshPlatform=1

const kFontRomanScript=0

const kFontEnglishLanguage=0

const kFontFamilyName=1
const kFontUniqueName=3
const kFontFullName=4
const kFontPostscriptName=6
const kFontNoPlatformCode=-1
const kFontNoScriptCode=-1
const kFontNoLanguageCode=-1

dim a as ATSFontListMBS
dim fontid as Integer

a=new ATSFontListMBS
fontid=a.FontID(0)
```
msgbox ATSUFindFontNameMBS(fontid,kFontPostscriptName,kFontNoPlatformCode,kFontNoScriptCode,kFontNoLanguageCode)

Notes:
To obtain an ATSUI font ID for the first font in a name table that matches the specified name string, name code, platform, script, and/or language, call the function ATSUFindFontFromNameMBS.

To obtain the font name string, name code, platform, script, and language for the font that matches an ATSUI font ID and name table index, use the ATSFontListMBS class.

Returns a Mac OS error code.

Parameters:

FontID:
The font for which to obtain a name string. Note that because Apple Type Services assigns ATSUFontID values systemwide at runtime, font IDs can change across system restarts.

Code:
A constant specifying the FontNameCode value of the font for which to obtain a name string.

Platform:
A constant specifying the encoding of the font. If you pass the kFontNoPlatformCode constant, ATSUFindFontName produces the first font in the name table matching the other specified parameters.

Script:
A constant specifying the script of the font.
If you pass the kFontNoScriptCode constant, ATSUFindFontName produces the first font in the name table matching the other specified parameters.

Language:
A constant specifying the language of the font you are searching for.

Available on Mac OS 8.5 and newer.

The following are special "don’t care" values to be used in interfaces

Language codes are zero based everywhere but within a ‘cmap’ table
13.1.14  GetATSFontFamilyFromFontFamilyMBS(font as FontFamilyMBS) as ATSFontFamilyMBS

MBS MacCF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Function:**
Obtains the ATS font family reference associated with a font family object.
**Notes:**
Returns nil on any error.
Deprecated: Please move to NSFontMBS class.

13.1.15  GetATSFontFromFontMBS(font as FontMBS) as ATSFontMBS

MBS MacCF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Function:**
Obtains the ATS font reference associated with a font object.
**Notes:**
Returns nil on any error.
Deprecated: Please move to NSFontMBS class.

13.1.16  GetFontFamilyFromATSFontFamilyMBS(font as ATSFontFamilyMBS) as FontFamilyMBS

MBS MacCF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Function:**
Obtains the font family associated with an ATS font family reference.
**Notes:**
Returns nil on any error.
Deprecated: Please move to NSFontMBS class.

13.1.17  GetFontFromATSFontMBS(font as ATSFontMBS) as FontMBS

MBS MacCF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Function:**
Obtains the font object associated with an ATS font reference.
**Notes:**

kFontNoPlatformCode  -1
kFontNoScriptCode    -1
kFontNoLanguageCode -1
13.2  class ATSFontFamilyIteratorMBS

13.2.1  class ATSFontFamilyIteratorMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class to work through the list of installed font families. **Deprecated:** This item is deprecated and should no longer be used. You can use CTFontMBS instead.

13.2.2  Methods

13.2.3  NextFontFamily as ATSFontFamilyMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Finds the next font family in the list. **Notes:** Returns nil on any error. Lasterror is set.

13.2.4  Reset

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Resets the class to start again on the first font family if you call NextFontFamily. **Notes:** Lasterror is set.

13.2.5  Properties

13.2.6  Handle as Integer

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The handle to the used ATSFontFamilyIterator. **Notes:** Maybe useful for toolbox calls. (Read and Write property)
13.2.7 Lasterror as Integer

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The last error code returned by a function.

**Notes:**
- 0 for success, -1 for parameter error or out of memory.
- Else a Mac OS error code.
- (Read and Write property)

13.2.8 Release as Boolean

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether the destructor will release the handle.

**Notes:** (Read and Write property)
13.2. CLASS ATSFON TFAMILYITERATOR MBS

kFontEnglishLanguage = 0
kFontFrenchLanguage = 1
kFontGermanLanguage = 2
kFontItalianLanguage = 3
kFontDutchLanguage = 4
kFontSwedishLanguage = 5
kFontSpanishLanguage = 6
kFontDanishLanguage = 7
kFontPortugueseLanguage = 8
kFontNorwegianLanguage = 9
kFontHebrewLanguage = 10
kFontJapaneseLanguage = 11
kFontArabicLanguage = 12
kFontSpanishLanguage = 13
kFontGreekLanguage = 14
kFontIcelandicLanguage = 15
kFontPortugueseLanguage = 16
kFontTurkishLanguage = 17
kFontCroatianLanguage = 18
kFontFrenchLanguage = 19
kFontUrduLanguage = 20
kFontHindiLanguage = 21
kFontThaiLanguage = 22
kFontKoreanLanguage = 23
kFontLithuanianLanguage = 24
kFontPolishLanguage = 25
kFontHungarianLanguage = 26
kFontEstonianLanguage = 27
kFontLatvianLanguage = 28
kFontLettishLanguage = 29
kFontSaamiskLanguage = 30
kFontLappishLanguage = 31
kFontFaeroeseLanguage = 32
kFontFarsiLanguage = 33
kFontPersianLanguage = 34
kFontRussianLanguage = 35
kFontChineseLanguage = 36
kFontCzechLanguage = 37
kFontSlovakLanguage = 38
kFontSlovenianLanguage = 39
kFontYiddishLanguage = 40
kFontSerbianLanguage = 41
kFontMacedonianLanguage = 42
kFontBulgarianLanguage = 43
kFontUkrainianLanguage = 44
kFontByelorussianLanguage = 45
kFontUzbekLanguage = 46
kFontKazakhLanguage = 47
kFontAzerbaijaniLanguage = 48
kFontArmenianLanguage = 49
kFontGeorgianLanguage = 50
kFontMoldavianLanguage = 51
kFontKirghizLanguage = 52
kFontKurdishLanguage = 53
kFontRussianLanguage = 54
kFontTajikiLanguage = 55
kFontTurkmenLanguage = 56
kFontMongolianCyrLanguage = 57
kFontMongolianLanguage = 58
kFontPashtoLanguage = 59
kFontRomanScript = 0
kFontJapaneseScript = 1
kFontTraditionalChineseScript = 2
kFontChineseScript = kFontTraditionalChineseScript
kFontKoreanScript = 3
kFontArabicScript = 4
kFontHebrewScript = 5
kFontGreekScript = 6
kFontCyrillicScript = 7
kFontRussian = kFontCyrillicScript
kFontRSymbolScript = 8
kFontDevanagariScript = 9
kFontGurmukhiScript = 10
kFontGujaratiScript = 11
kFontOriyaScript = 12
kFontBengaliScript = 13
kFontTamilScript = 14
kFontTeluguScript = 15
kFontKannadaScript = 16
kFontMalayalamScript = 17
kFontSinhaleseScript = 18
kFontBurmeseScript = 19
kFontKhmerScript = 20
kFontThaiScript = 21
kFontLaotianScript = 22
kFontGeorgianScript = 23
kFontArmenianScript = 24
kFontSimpleChineseScript = 25
kFontTibetanScript = 26
kFontMongolianScript = 27
kFontGeezScript = 28
kFontEthiopicScript = kFontGeezScript
kFontAmharicScript = kFontGeezScript
kFontSlavicScript = 29
kFontEastEuropeanRomanScript = kFontSlavicScript
kFontVietnameseScript = 30
kFontExtendedArabicScript = 31
kFontSindhiScript = kFontExtendedArabicScript
kFontUninterpretedScript = 32

kFontUnicodePlatform = 0
kFontMacintoshPlatform = 1
kFontReservedPlatform = 2
kFontMicrosoftPlatform = 3
kFontCustomPlatform = 4
<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kFontCopyrightName</td>
<td>0</td>
</tr>
<tr>
<td>kFontFamilyName</td>
<td>1</td>
</tr>
<tr>
<td>kFontStyleName</td>
<td>2</td>
</tr>
<tr>
<td>kFontUniqueName</td>
<td>3</td>
</tr>
<tr>
<td>kFontFullName</td>
<td>4</td>
</tr>
<tr>
<td>kFontVersionName</td>
<td>5</td>
</tr>
<tr>
<td>kFontPostscriptName</td>
<td>6</td>
</tr>
<tr>
<td>kFontTrademarkName</td>
<td>7</td>
</tr>
<tr>
<td>kFontManufacturerName</td>
<td>8</td>
</tr>
<tr>
<td>kFontDesignerName</td>
<td>9</td>
</tr>
<tr>
<td>kFontDescriptionName</td>
<td>10</td>
</tr>
<tr>
<td>kFontVendorURLName</td>
<td>11</td>
</tr>
<tr>
<td>kFontDesignerURLName</td>
<td>12</td>
</tr>
<tr>
<td>kFontLicenseDescriptionName</td>
<td>13</td>
</tr>
<tr>
<td>kFontLicenseInfoURLName</td>
<td>14</td>
</tr>
<tr>
<td>kFontLastReservedName</td>
<td>255</td>
</tr>
</tbody>
</table>
13.3 class ATSFontFamilyMBS

13.3.1 class ATSFontFamilyMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class representing an ATS font family. **Deprecated:** This item is deprecated and should no longer be used. You can use CTFontMBS instead.

13.3.2 Methods

13.3.3 Font(QuickDrawStyle as Integer) as ATSFontMBS

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Tries to find a matching ATSFont within the family for the given style. **Example:**

```vbnet
dim FontName as string = "Times"

dim f as ATSFontMBS
dim ATSFontFamily as ATSFontFamilyMBS = ATSFontFamilyFindFromNameMBS(Fontname)

if ATSFontFamily<>nil then

    const normal = 0
    const bold = 1
    const italic = 2
    const underline = 4
    const outline = 8
    const shadow = & h10
    const condense = & h20
    const extend = & h40

    f=ATSFontFamily.Font(normal)
    if f<>nil then
        MsgBox "Normal: " + f.PostscriptName
    end if

    f=ATSFontFamily.Font(bold)
    if f<>nil then
        MsgBox "Bold: " + f.PostscriptName
    end if

    f=ATSFontFamily.Font(italic)
```
if f<>nil then
MsgBox "Italic: " + f.PostscriptName
end if
end if

Notes: Returns nil on any error.

13.3.4 Properties

13.3.5 Encoding as Integer

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The encoding of this font.
Notes:
Some example values for common encodings:

<table>
<thead>
<tr>
<th>Encoding</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MacRoman</td>
<td>0</td>
<td>Also sometimes for ASCII or binary data used.</td>
</tr>
<tr>
<td>WindowsLatin1</td>
<td>&amp; h0500</td>
<td>ANSI codepage 1252</td>
</tr>
<tr>
<td>7bit ASCII</td>
<td>&amp; h0600</td>
<td>ASCII</td>
</tr>
<tr>
<td>ISOLatin1</td>
<td>&amp; h0201</td>
<td>ISO 8859-1</td>
</tr>
<tr>
<td>NextStepLatin</td>
<td>&amp; h0B01</td>
<td>NextStep encoding</td>
</tr>
<tr>
<td>Unicode</td>
<td>&amp; h0100</td>
<td>16 bit Unicode</td>
</tr>
<tr>
<td>UTF8</td>
<td>&amp; h08000100</td>
<td>8 bit Unicode</td>
</tr>
</tbody>
</table>

(Read only property)

13.3.6 GenerationCount as Integer

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The current font family generation counter value for this font family.
Notes:
If somewhere on the system something changes on this font family, this counter is updated.
(You may need to update your font list if this counter changes)
(Read only property)
13.3.7 Handle as Integer

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The handle to the ATSFontFamilyRef. 
**Notes:**
Maybe useful for toolbox calls. 
(Read and Write property)

13.3.8 Lasterror as Integer

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The last error code returned by a function.
**Notes:**
0 for success, -1 for parameter error or out of memory. 
Else a Mac OS error code.
(Read and Write property)

13.3.9 Name as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The name of this font.
**Notes:**
Lasterror is set. 
(Read only property)

13.3.10 QuickDrawName as String

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The postscript name of this font. 
**Notes:**
Lasterror is set. 
(Read only property)

13.3.11 Release as Boolean

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether the destructor will release the handle.
13.3. *CLASS ATSFONTFAMILYMBS*  

**Notes:** (Read and Write property)
13.4 class ATSFontGlyphListMBS

13.4.1 class ATSFontGlyphListMBS

MBS MacCF Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a list of ATS font glyphs. **Deprecated:** This item is deprecated and should no longer be used. You can use CTGlyphInfoMBS instead.

13.4.2 Methods

13.4.3 close

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The destructor. **Notes:** There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you. (e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

13.4.4 Item(index as Integer) as ATSFontGlyphMBS

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the glyph with the given index. **Notes:** Index is from 0 to count-1.

13.4.5 Properties

13.4.6 Count as Integer

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The number of glyphs in this list. **Notes:** (Read only property)
13.5. CLASS ATSFontGlyphMBS

13.5. class ATSFontGlyphMBS

MBS MacCF Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for an ATS font glyph. **Deprecated:** This item is deprecated and should no longer be used. You can use CTGlyphInfoMBS instead.

13.5.2 Properties

13.5.3 CaretX as Integer

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The position in device coordinates where a trailing caret for this glyph intersects the baseline. **Notes:** (Read only property)

13.5.4 CharIndex as Integer

MBS MacCF Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The unicode char index. **Notes:** (Read only property)

13.5.5 DeltaY as single

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The cross-stream shift value for this glyph. **Notes:** (Read only property)

13.5.6 GlyphID as Integer

MBS MacCF Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The glyph ID for this character. **Notes:** (Read only property)

13.5.7 IdealAdvanceX as single

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The amount by which the pen is advanced after drawing the glyph.
13.5.8 IdealAdvanceY as single

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The amount by which the pen is advanced after drawing the glyph.
**Notes:** (Read only property)

13.5.9 IdealOtherSideBearingX as single

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The offset from the end of the glyph image to the end of the glyph advance.
**Notes:** (Read only property)

13.5.10 IdealOtherSideBearingY as single

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The offset from the end of the glyph image to the end of the glyph advance.
**Notes:** (Read only property)

13.5.11 IdealSideBearingX as single

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The offset from the glyph origin to the beginning of the glyph image.
**Notes:** (Read only property)

13.5.12 IdealSideBearingY as single

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The offset from the glyph origin to the beginning of the glyph image.
**Notes:** (Read only property)

13.5.13 IdealValues as boolean

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Whether the ideal metrics values are present.
13.5.14 **IdealX as single**

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The ideal with-stream offset from the origin of this layout.
**Notes:** (Read only property)

13.5.15 **LayoutFlags as Integer**

MBS MacCF Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The layout flags.
**Notes:** (Read only property)

13.5.16 **ScreenDeviceAdvanceX as single**

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The number of pixels of the advance for the glyph as actually drawn on the screen.
**Notes:** (Read only property)

13.5.17 **ScreenDeviceAdvanceY as single**

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The number of pixels of the advance for the glyph as actually drawn on the screen.
**Notes:** (Read only property)

13.5.18 **ScreenHeight as Integer**

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The height of this glyph on the screen.
**Notes:** (Read only property)

13.5.19 **ScreenOtherSideBearingX as single**

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The trailing-side bearing, in pixels.
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Notes: (Read only property)

13.5.20 ScreenOtherSideBearingY as single

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The trailing-side bearing, in pixels. **Notes:** (Read only property)

13.5.21 ScreenSideBearingX as single

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The origin-side bearing, in pixels. **Notes:** (Read only property)

13.5.22 ScreenSideBearingY as single

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The origin-side bearing, in pixels. **Notes:** (Read only property)

13.5.23 ScreenTopLeftX as single

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The top-left point of the glyph in device coordinates. **Notes:** (Read only property)

13.5.24 ScreenTopLeftY as single

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The top-left point of the glyph in device coordinates. **Notes:** (Read only property)

13.5.25 ScreenValues as boolean

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether the screen values have been filled in this object.
13.5. **CLASS ATSFONTGLYPHMBS**

**Notes:** (Read only property)

### 13.5.26 ScreenWidth as Integer

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The width of this glyph on the screen.
**Notes:** (Read only property)

### 13.5.27 ScreenX as Integer

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The position of this glyph on the screen.
**Notes:** (Read only property)
13.6 class ATSFontIteratorMBS

13.6.1 class ATSFontIteratorMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class to work through the list of installed fonts. **Deprecated:** This item is deprecated and should no longer be used. You can use CTFontMBS instead.

13.6.2 Methods

13.6.3 NextFont as ATSFontMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Finds the next font in the list. **Notes:** Returns nil on any error. Lasterror is set.

13.6.4 Reset

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Resets the class to start again on the first font if you call NextFont. **Notes:** Lasterror is set.

13.6.5 Properties

13.6.6 Handle as Integer

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The handle to the internal used ATSFontIterator. **Notes:** Maybe useful for toolbox calls. (Read and Write property)

13.6.7 Lasterror as Integer

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The last error code returned by a function.
Notes:
0 for success, -1 for parameter error or out of memory.
Else a Mac OS error code.
(Read and Write property)

13.6.8 Release as Boolean

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Whether the destructor will release the handle.
**Notes:** (Read and Write property)
13.7 class ATSFontListMBS

13.7.1 class ATSFontListMBS

MBS MacCF Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for the list of ATS fonts. **Deprecated:** This item is deprecated and should no longer be used. You can use CTFontMBS instead.

13.7.2 Methods

13.7.3 close

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The destructor. **Notes:** There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you. (e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

13.7.4 FontID(index as Integer) as Integer

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the font id of the font with the given index.

13.7.5 FontName(index as Integer, fontnameindex as Integer) as ATSFontNameMBS

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the font name with the given fontnameindex from the font with the given index. **Notes:** Lasterror is set.

13.7.6 FontNameCount(index as Integer) as Integer

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the name count for the font with the given index. **Notes:** Returns 0 on any error. Lasterror is set.
13.7.7 Update

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Updates the list of fonts.
**Notes:** Lasterror is set.

13.7.8 Properties

13.7.9 Count as Integer

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the count of fonts in the list.
**Notes:**
0 on any error.
(Read only property)

13.7.10 Lasterror as Integer

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The last error code reported.
**Notes:** (Read and Write property)
13.8  class ATSFontMBS

13.8.1  class ATSFontMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class representing an ATS font. **Deprecated:** This item is deprecated and should no longer be used. You can use CTFontMBS instead.

13.8.2  Methods

13.8.3  File as folderitem

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The file of this font. **Notes:** Lasterror is set.

13.8.4  FontFamilyResource as string

MBS MacCF Plugin, Plugin Version: 13.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Queries the resource for this font.

13.8.5  HorizontalMetrics(Optionflags as Integer = 0) as ATSFontMetricsMBS

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Obtains the horizontal metrics for a font. **Notes:** Lasterror is set. Returns nil on any error.

13.8.6  VerticalMetrics(Optionflags as Integer = 0) as ATSFontMetricsMBS

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Obtains the vertical metrics for a font. **Notes:** Lasterror is set. Returns nil on any error.
13.8. CLASS ATSFONTMBS

13.8.7 Properties

13.8.8 GenerationCount as Integer

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The current font family generation counter value for this font.

**Notes:**
If somewhere on the system something changes on this font, this counter is updated.
(You may need to update your font list if this counter changes)
(Read only property)

13.8.9 Handle as Integer

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The handle to the used ATSFontRef.

**Notes:**
Maybe useful for toolbox calls.
(Read and Write property)

13.8.10 Lasterror as Integer

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The last error code returned by a function.

**Notes:**
0 for success, -1 for parameter error or out of memory.
Else a Mac OS error code.
(Read and Write property)

13.8.11 Name as string

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The name of this font.

**Notes:**
Lasterror is set.
(Read only property)
13.8.12 PostscriptName as string

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The postscript name of this font.
**Notes:**
Laterror is set.
(Read only property)

13.8.13 Release as Boolean

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Whether the destructor will release the handle.
**Notes:** (Read and Write property)
13.9. CLASS ATSFontMetricsMBS  

13.9  class ATSFontMetricsMBS

13.9.1  class ATSFontMetricsMBS

**Function:**  
Contains metrics for a font.  
**Deprecated:**  
This item is deprecated and should no longer be used. You can use CTFontMBS instead.

13.9.2  Properties

13.9.3  Ascent as single

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.  
**Function:**  
The maximum height from the baseline to the ascent line of the glyphs in the font. For vertical text, the maximum distance from the center line to the ascent line of the glyphs in the font.  
**Notes:** (Read and Write property)

13.9.4  AvgAdvanceWidth as single

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.  
**Function:**  
The average advance width of the glyph in the font.  
**Notes:** (Read and Write property)

13.9.5  CapHeight as single

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.  
**Function:**  
The height of a capital letter in the font from the baseline to the top of the letter.  
**Notes:** (Read and Write property)

13.9.6  Descent as single

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.  
**Function:**  
The maximum distance from the baseline to the descent line of the glyphs in the font.  
**Notes:**  
For vertical text, the maximum distance from center line to the descent line of the glyphs in the font.  
(Read and Write property)
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13.9.7 ItalicAngle as single

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The angle (in degrees counterclockwise) at which glyphs in the font slant when italicized.
**Notes:** (Read and Write property)

13.9.8 Leading as single

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The spacing from the descent line to the ascent line below it.
**Notes:**
This defines the spacing between lines of text.
(Read and Write property)

13.9.9 maxAdvanceWidth as single

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The maximum advance width of the glyphs in the font.
**Notes:** (Read and Write property)

13.9.10 MinLeftSideBearing as single

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The minimum left-side bearing value of the glyphs in the font.
**Notes:**
For vertical text, the minimum top-side bearing value of the glyphs in the font.
(Read and Write property)

13.9.11 MinRightSideBearing as single

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The minimum right-side bearing value of the glyphs in the font.
**Notes:**
For vertical text, the minimum bottom side bearing of a glyph in the font.
(Read and Write property)
13.9. **CLASS ATSFONTMETRICSMBS**

13.9.12 **StemHeight as single**

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The vertical width of the dominant horizontal stems of glyphs in the font.
**Notes:** (Read and Write property)

13.9.13 **StemWidth as single**

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The width of the dominant vertical stems of the glyphs in the font.
**Notes:** (Read and Write property)

13.9.14 **UnderlinePosition as single**

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The position at which an underline stroke should be placed for the font.
**Notes:** (Read and Write property)

13.9.15 **UnderlineThickness as single**

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The thickness, in pixels, of the underscore character used to underline the glyphs in the font.
**Notes:** (Read and Write property)

13.9.16 **XHeight as single**

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The height of lowercase characters in the font, specifically the letter x, excluding ascenders and descenders.
**Notes:** (Read and Write property)
13.10 class ATSFontNameMBS

13.10.1 class ATSFontNameMBS

MBS MacCF Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for the names of a font.
**Deprecated:** This item is deprecated and should no longer be used. You can use CTFontMBS instead.

13.10.2 Methods

13.10.3 FindEncoding(platform as Integer, script as Integer, language as Integer) as Integer

MBS MacCF Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the encoding for the given parameters.
**Notes:**
The encoding is an integer which you can use for SetEncodingOfStringMBS.
The Name property of this class has already and encoding set by using this function.

13.10.4 Properties

13.10.5 LanguageCode as Integer

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The language code.
**Notes:**
some constants:

(Read and Write property)

13.10.6 Name as String

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The font name.
**Notes:** (Read and Write property)
13.10. **CLASS ATSFONTNAMEMEMBS**

13.10.7 **NameCode as Integer**

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The name code of this font name.
**Notes:**

constants:

(Read and Write property)

13.10.8 **PlatformCode as Integer**

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The platform code for this font.
**Notes:**

useful constants:

(Read and Write property)

13.10.9 **ScriptCode as Integer**

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The script code for this font.
**Notes:** (Read and Write property)
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kFontEnglishLanguage = 0
kFontFrenchLanguage = 1
kFontGermanLanguage = 2
kFontItalianLanguage = 3
kFontDutchLanguage = 4
kFontSwedishLanguage = 5
kFontSpanishLanguage = 6
kFontDanishLanguage = 7
kFontPortugueseLanguage = 8
kFontNorwegianLanguage = 9
kFontHebrewLanguage = 10
kFontJapaneseLanguage = 11
kFontArabicLanguage = 12
kFontFinnishLanguage = 13
kFontGreekLanguage = 14
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kFontTurkishLanguage = 17
kFontCroatianLanguage = 18
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kFontLatinLanguage = 131
kFontQuechuaLanguage = 132
kFontGuaraniLanguage = 133
kFontAymaraLanguage = 134
kFontTatarLanguage = 135
kFontUighurLanguage = 136
kFontDzongkhaLanguage = 137
kFontJavaneseRomLanguage = 138
kFontSundaneseRomLanguage = 139
### 13.10. CLASS ATSFONMEMMEMBS

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<tr>
<td>kFontCustomPlatform</td>
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</tr>
</tbody>
</table>
13.11 class ATSFontNotificationMBS

13.11.1 class ATSFontNotificationMBS

MBS MacCF Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class to listen for font changed notifications. **Deprecated:** This item is deprecated and should no longer be used. You can use CoreTextMBS instead. **Notes:** Requires Mac OS X 10.2 or newer.

13.11.2 Methods

13.11.3 Close

MBS MacCF Plugin, Plugin Version: 5.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The destructor. **Notes:** There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you. (e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

13.11.4 Create(flags as Integer)

MBS MacCF Plugin, Plugin Version: 5.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Listens for font notifications. **Notes:** Requires Mac OS X 10.2 or newer. Pass 1 for the flags when you want to get events while your application is in background. Else pass 0.

13.11.5 Properties

13.11.6 Handle as Integer

MBS MacCF Plugin, Plugin Version: 5.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The handle for the ATSFontNotification. **Notes:** Only useful for declares to the ATS framework. Value is a ATSFontNotificationRef. (Read and Write property)
13.11. Lasterror as Integer

MBS MacCF Plugin, Plugin Version: 5.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The last error code reported.
**Notes:** (Read and Write property)

13.11.8 Release as Boolean

MBS MacCF Plugin, Plugin Version: 5.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether the destructor releases the handle.
**Notes:** (Read and Write property)

13.11.9 Events

13.11.10 Changed()

MBS MacCF Plugin, Plugin Version: 5.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called whenever the fonts changed.
13.12 class ATSPPathEventsMBS

13.12.1 class ATSPPathEventsMBS

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class to get events for ats path operations.

**Deprecated:** This item is deprecated and should no longer be used. **Notes:** This class is used with GlyphGetCubicPaths and GlyphGetQuadraticPaths function in the ATSUStyleMBS class.

13.12.2 Events

13.12.3 CubicClosePath as Integer

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The cubic close-path event.

**Notes:** Return any other value than 0 to stop processing outlines.

13.12.4 CubicCurveTo(x1 as Double, y1 as Double, x2 as Double, y2 as Double, x3 as Double, y3 as Double) as Integer

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The cubic curve-to event.

**Notes:**

x1/y1: The x and y coordinates for the relative point that defines the start of the curve (an on-curve point) for this segment of the glyph.

x2/y2: The x and y coordinates for the relative point that defines the off-curve point for this segment of the glyph.

x3/y3: The x and y coordinates for the relative point that defines the end of the curve (an on-curve point) for this segment of the glyph.

Return any other value than 0 to stop processing outlines.

13.12.5 CubicLineTo(x as Double, y as Double) as Integer

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The cubic line-to event.
13.12. CLASS ATSPATHEVENTSMBS

Notes:

x/y: the x and y coordinates for the relative point to which the pen should draw a line.

Return any other value than 0 to stop processing outlines.

13.12.6 CubicMoveTo(x as Double, y as Double) as Integer


Notes:

x/y: the x and y coordinates for the relative point to which the pen should move before it begins drawing this segment of the glyph.

Return any other value than 0 to stop processing outlines.

13.12.7 QuadraticClosePath as Integer


Notes: Return any other value than 0 to stop processing outlines.

13.12.8 QuadraticCurve(x1 as Double, y1 as Double, CX as Double, CY as Double, x2 as Double, y2 as Double) as Integer


Notes:

x1/y1: the relative point that defines the start of the curve (an on-curve point) for this segment of the glyph.

x2/y2: the relative point that defines the end of the curve (an on-curve point) for this segment of the glyph.

CX/CY: the relative point that defines the control point (an off-curve point) for this segment of the glyph.

Return any other value than 0 to stop processing outlines.
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**13.12.9 QuadraticLine(x1 as Double, y1 as Double, x2 as Double, y2 as Double) as Integer**

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The quadratic line callback for drawing glyphs.

**Notes:**

x1/y1: the x and y coordinates for the relative point that defines the start of the line for this segment of the glyph.

x2/y2: the x and y coordinates for the relative point that defines the end of the line for this segment of the glyph.

Return any other value than 0 to stop processing outlines.

**13.12.10 QuadraticNewPath as Integer**

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The quadratic new-path event.

**Notes:** Return any other value than 0 to stop processing outlines.
13.13. CLASS ATSUSTYLEMBS

13.13.1 class ATSUSTYLEMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for an ATSUI style.

**Deprecated:** This item is deprecated and should no longer be used. You can use CTFontMBS instead.

13.13.2 Methods

13.13.3 clear

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Clears all style values.

**Notes:** Lasterror is set.

13.13.4 CompareStyles(other as ATSUSTYLEMBS) as Integer

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Compares two styles.

**Notes:**

ATSUSTYLEComparison is an enumeration with four values, and is used by CompareStyles function to indicate if the first style parameter contains as a proper subset, is equal to, or is contained by the second style parameter.

```
kATSUSTYLEUnequal 0
kATSUSTYLEContains 1
kATSUSTYLEEquals 2
kATSUSTYLEContainedBy 3
```

Lasterror is set.

13.13.5 Copy as ATSUSTYLEMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy of this style.

**Notes:** Lasterror is set.
13.13.6 CopyAttributes(destination as ATSUStyleMBS)

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Copies all style attributes to the target style object. **Notes:** Lasterror is set.

13.13.7 Create

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new style handle. **Notes:** Lasterror is set.

13.13.8 GlyphGetCubicPaths(pathEvents as ATSPathEventsMBS, glyphID as Integer) as Integer

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Obtains the cubic outline paths for a glyph. **Notes:**

- pathEvents: The events to call for the paths.
- GlyphID: A GlyphID value identifying the glyph for which to obtain an outline path.

The glyph outlines that are returned are the hinted outlines at the font size specified in the style object. If you want to use unhinted outlines, set the font size to a very large size, (for example, 1000 points) and then scale down the returned curves to the desired size.

As of Mac OS X version 10.1, the curves returned by this function are derived from quadratic curves, irrespective of the native curve type of the font.

Lasterror is set.

13.13.9 GlyphGetQuadraticPaths(pathEvents as ATSPathEventsMBS, glyphID as Integer) as Integer

MBS MacCF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Obtains the quadratic outline paths for a glyph. **Notes:**

- pathEvents: The events to call for the paths.
- GlyphID: A GlyphID value identifying the glyph for which to obtain an outline path.
The glyph outlines that are returned are the hinted outlines at the font size specified in the style object. If you want to use unhinted outlines, set the font size to a very large size, (for example, 1000 points) and then scale down the returned curves to the desired size.
Lasterror is set.

13.13.10  **IsEmpty as boolean**

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether the style is empty.  
**Notes:** Lasterror is set.

13.13.11  **OverwriteAttributes(destination as ATSUStyleMBS)**

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Copies to a destination style object the nondefault style attribute settings of the current style object.  
**Notes:** Lasterror is set.

13.13.12  **SetBooleanAttribute(value as boolean, AttributeTag as Integer)**

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sets a style attribute with a boolean value.  
**Notes:** Lasterror is set.

13.13.13  **SetFixedAttribute(value as Double, AttributeTag as Integer)**

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sets the layout control tag with a fixed float value.  
**Notes:** Lasterror is set.

13.13.14  **SetFractAttribute(value as Double, AttributeTag as Integer)**

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sets a style attribute with a fraction value.  
**Notes:** Lasterror is set.
13.13.15  **SetIntegerAttribute**(*value as Integer, AttributeTag as Integer*)

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sets a style attribute with an integer value. **Notes:** Lasterror is set.

13.13.16  **SetPtrAttribute**(*value as memoryblock, AttributeTag as Integer*)

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sets a style attribute with a pointer value. **Notes:** Lasterror is set.

13.13.17  **SetShortAttribute**(*value as Integer, AttributeTag as Integer*)

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sets a style attribute with a short value. **Notes:** Lasterror is set.

13.13.18  **UnderwriteAttributes**(*destination as ATSUStyleMBS*)

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Copies to a destination style object only those nondefault style attribute settings of the current style object that are at default settings in the destination object. **Notes:** Lasterror is set.

13.13.19  **Properties**

13.13.20  **Handle as Integer**

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The handle for this style. **Notes:** Useful for toolbox calls. (Read and Write property)
## 13.13.21 Lasterror as Integer

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The last error code reported.
**Notes:** (Read and Write property)

## 13.13.22 Release as Boolean

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Whether the destructor will release the handle.
**Notes:** (Read and Write property)

## 13.13.23 Bold as boolean

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
If true the text will be drawn with bold style.
**Example:**

```vbscript
Sub Paint(g As Graphics)
    // Window.paint event

    dim cg as CGContextMBS
    dim st as ATSUStyleMBS
    dim t as ATSUTextLayoutMBS
    dim s as string

    const kATSUFromTextBeginning = -1
    const kATSUToTextEnd = -1

    // Make UTF16 string
    s="Hello World"
    s=ConvertEncoding(s,Encodings.UTF16)

    // get context to draw into
    cg=window1.CGContextMBS

    st=new ATSUStyleMBS
    st.Create
    st.bold=true
    t=new ATSUTextLayoutMBS
    t.Create
    t.SetTextPointerLocation s,kATSUFromTextBeginning,kATSUToTextEnd,len(s)
    t.SetCGContext cg.Handle
    t.SetRunStyle st,kATSUFromTextBeginning,kATSUToTextEnd
```
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```vbnet
Dim style As New ATSUStyleMBS
Style.Create
Style.condensed = True
```

Notes:
Lasterror is set.
(Read and Write computed property)

### 13.13.24 Condensed as boolean

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
If true the text will be drawn with condensed style.

**Example:**
```vbnet
Dim style As New ATSUStyleMBS
Style.Create
Style.condensed = True
```

Notes:
Lasterror is set.
(Read and Write computed property)

### 13.13.25 Extended as boolean

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
If true the text will be drawn with extended style.

**Example:**
```vbnet
Dim style As New ATSUStyleMBS
Style.Create
Style.extended = True
```

Notes:
Lasterror is set.
(Read and Write computed property)
13.13.26 FontID as Integer

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The font ID of this style.

**Notes:**
Lasterror is set.
(Read and Write computed property)

13.13.27 ForceHanging as boolean

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Whether to force the character to hang beyond line boundaries.

**Notes:**
default: false

You can treat glyphs in a style run as hanging punctuation, whether or not the font designer intended them to be.

Lasterror is set.
(Read and Write computed property)

13.13.28 ImposedWidth as Double

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Glyph widths, by default, are specified by font-defined advance widths.

**Notes:**
You can override the glyph’s default metrics by imposing a width for ATSUI to use.

Lasterror is set.
(Read and Write computed property)

13.13.29 Italic as boolean

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
If true the text will be drawn with italic style.

**Example:**
dim style as new ATSUStyleMBS

Style.Create
style.italic=true

Notes:
Lasterror is set.
(Read and Write computed property)

13.13.30 Language as Integer

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The language region attribute tag represents the regional language code for glyphs in a style run.
**Notes:**
ATSUI uses the value associated with this tag to determine how to render region-dependent characteristics.

Default: Region code for current region.

Lasterror is set.
(Read and Write computed property)

13.13.31 LineFlushFactor as Integer

MBS MacCF Plugin, Plugin Version: 9.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The line flush factor.
**Notes:**
Lasterror is set.
(Read and Write computed property)

13.13.32 NoCaretAngle as boolean

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The caret angle attribute tag specifies whether the text caret or edges of a highlighted area are always parallel to the slant of the style run’s text or always perpendicular to the baseline.
**Notes:**
Default value:false
The default setting is to use the character's angularity to determine caret angle and the edges of a highlighted area. For example, when the caret appears in italic text or text that has an intrinsic angle, you may want to display an angled (slanted) caret rather than a straight one. ATSUI supports this capability by using data present in a font that identifies the intrinsic font angle.

Lasterror is set.
(Read and Write computed property)

13.13.33 NoLigatureSplit as boolean

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Ligature splitting is the division of a ligature for hit-testing purposes into regions corresponding to each of its component glyphs.

**Notes:**
default: false

The default setting specifies that ligatures and compound characters in a style have divisible components. If the value set by the ligature splitting attribute tag is true and the caret position is adjacent to a ligature, ATSUI considers the next valid caret position to be at the other side of the entire ligature rather than at any point within it.

Lasterror is set.
(Read and Write computed property)

13.13.34 NoOpticalAlignment as boolean

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Optical alignment is the fine adjustment of glyph positions (as specified by the font) at the ends of lines to give a more even visual appearance to margins.

**Notes:**
default: false

The default setting specifies not to suppress automatic optical positioning alignment. In multiline text, glyphs may seem to line up incorrectly at the margins. This is accounted for by two factors. First, glyph advance widths contain a certain amount of extra white space (side bearing) to account for the normal interglyph spacing. This produces certain anomalies at line margins, because the side bearing varies with font size.

The second problem is that due to optical effects, curved lines do not appear to line up properly with straight
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lines. To make them appear to line up, some compensation must occur. On baselines, for example, curved letters such as "C" or "S" are generally designed to extend slightly below the baseline, so that they appear to line up with straight letters such as "H".

This same effect should happen at the edges of lines. On the left side of Figure 2-13, the "O" in "Oregon" and the "C" in "Connecticut" appear to be indented compared to the "H" and "D" glyphs. However, as shown by the vertical line on the right, the outlines of the four glyphs are exactly aligned. The apparent indentation is an optical effect.

LastError is set.
(Read and Write computed property)

13.13.35 NoSpecialJustification as boolean

Notes:
default: false

Postcompensation justification is a set of processes (such as glyph stretching and ligature decomposition) that occur at the end of the justification process and should take place after glyph positions have been calculated.

LastError is set.
(Read and Write computed property)

13.13.36 Reference as Integer

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: An user defined integer value which is stored inside the style handle.
Notes:

LastError is set.
(Read and Write computed property)

13.13.37 Size as Double

**Example:**

```vbs
Sub Paint(g As Graphics)
    // Window.paint event
    dim cg as CGContextMBS
    dim st as ATSUStyleMBS
    dim t as ATSUTextLayoutMBS
    dim s as string

    const kATSUFromTextBeginning = -1
    const kATSUToTextEnd = -1

    // Make UTF16 string
    s="Hello World"
    s=ConvertEncoding(s,Encodings.UTF16)

    // get context to draw into
    cg=window1.CGContextMBS

    st=new ATSUStyleMBS
    st.Create
    st.Size=24
    t=new ATSUTextLayoutMBS
    t.Create
    t.SetTextPointerLocation s,kATSUFromTextBeginning,kATSUToTextEnd,len(s)
    t.SetCGContext cg.Handle
    t.SetRunStyle st,kATSUFromTextBeginning,kATSUToTextEnd
    t.DrawText kATSUFromTextBeginning,kATSUToTextEnd,100,100

End Sub
```

**Notes:**

Lasterror is set.
(Read and Write computed property)

---

**13.13.38  SuppressCrossKerning as boolean**

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Cross-stream kerning is the movement of glyphs (as specified by the font) perpendicular to the line orientation of the text.

**Notes:**

(For horizontal text, the automatic movement is vertical.) Cross-stream kerning is required for such scripts
as Taliq (used in Urdu). It can also be used to assist in the creation of automatic fractions.

Default value: false

The default setting specifies not to suppress automatic cross-kerning (defined by the font).

LastError is set.
(Read and Write computed property)

13.13.39 TextColor as Color

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The text color to use.
**Notes:**
LastError is set.
(Read and Write computed property)

13.13.40 Tracking as Double

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
What tracking should be used for drawing text.
**Notes:**
Tracking represents the relative proportion of font-defined adjustments to apply to interglyph positions. You can expand or contract the spacings of all glyphs in a style run by applying a tracking value, called the tracking setting, to that style run. You can set and retrieve the tracking setting using the following style attribute tag:

```
Attribute tag:kATSUTrackingTagData
type: FixedDefault
value: 0
```

Comment: No change to the font-defined adjustments.

Tracking is different from with-stream shifting because the actual amount of space added or removed is controlled by the font, not by your application. The positional shifts are the result of two-dimensional interpolation based on the tracking setting, the text size in points, and the threshold values present in the font’s tracking table. These threshold values are used to permit nonlinear tracking amounts. For example, a single tracking setting can specify different sets of spacings for text below 8 points, from 8 to 12 points, from 12 to 15, from 15 to 36, and over 36 points if the font designer specifies it.
Specifying a tracking setting of 0 means "space normally" according to the specifications set by the font designer. That does not necessarily mean that no adjustment to spacing occurs. The font designer may decide that "normal spacing" includes some spacing adjustment in certain point size ranges.

The glyph orientation also affects the tracking settings. A font designer can specify different spacings for a tracking setting of 0 (normal spacing) depending on the orientation of the glyphs.

Lasterror is set.
(Read and Write computed property)

13.13.41 Underline as boolean

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** If true the text will be drawn with underline style.  
**Example:**
```plaintext
dim style as new ATSUSTyleMBS
Style.Create
style.underline=true
```

**Notes:**
Lasterror is set.
(Read and Write computed property)

13.13.42 VerticalCharacter as Integer

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The glyph orientation of a style run specifies which direction (vertical or horizontal) glyphs should be drawn.  
**Notes:**

default: kATSUStronglyHorizontal

const kATSUStronglyHorizontal=0
const kATSUStronglyVertical=1

Lasterror is set.
(Read and Write computed property)
13.14 class ATSUTabMBS

13.14.1 class ATSUTabMBS

MBS MacCF Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The class for an ATS tab stop.

**Example:**

```vbs
dim a as new ATSUTabMBS

a.Type = a.kLeftTab
a.Position = 65536 * 5
```

**Deprecated:** This item is deprecated and should no longer be used. You can use CTTextTabMBS instead.

**Notes:** This class specifies the position and type of tab stop to be applied to a ATSUTextLayoutMBS set through the ATSUI routine SetTabs and returned through GetTabs.

13.14.2 Properties

13.14.3 Position as Integer

MBS MacCF Plugin, Plugin Version: 10.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The position of this tab.

**Notes:**
Value is a Fixed floating value in an integer. Which means the value is multiplied by 65536. That means 1.0 = 65536, 0.5 = 32768 and 2.0 = 131072.
(Read and Write property)

13.14.4 Type as Integer

MBS MacCF Plugin, Plugin Version: 10.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The type of this tab.

**Example:**

```vbs
dim a as new ATSUTabMBS

a.Type = a.kLeftTab
a.Position = 16384
```

**Notes:**
13.14. CLASS ATSUTABMBS

The type defines the characteristic of ATSUI tabs. A Left tab type specifies that the left side of affected text is to be maintained flush against the tab stop. A Right tab type specifies that the right side of affected text is to be maintained flush against the tab stop. A Center tab type specifies that the affected text centered about the tab stop. (Read and Write property)

13.14.5 Constants

13.14.6 kCenterTab = 1

MBS MacCF Plugin, Plugin Version: 10.3. **Function:** One of the tab constants. **Example:**
```
dim a as new ATSUTabMBS

a.Type = a.kCenterTab
a.Position = 65536
```

**Notes:** Center alignment.

13.14.7 kLeftTab = 0

MBS MacCF Plugin, Plugin Version: 10.3. **Function:** One of the tab constants. **Example:**
```
dim a as new ATSUTabMBS

a.Type = a.kLeftTab
a.Position = 32768
```

**Notes:** Left alignment.

13.14.8 kRightTab = 2

MBS MacCF Plugin, Plugin Version: 10.3. **Function:** One of the tab constants. **Example:**
```
dim a as new ATSUTabMBS
```
a.Type = a.kRightTab
a.Position = 65536 * 4

Notes: Right alignment.
13.15. CLASS ATSUTEXTLAYOUTMBS

13.15  class ATSUTextLayoutMBS

13.15.1  class ATSUTextLayoutMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** A class for an ATSUI text layout.

**Deprecated:** This item is deprecated and should no longer be used. You can use CTFramesetterMBS instead. **Notes:**

For more information, you should also read the ATSUI help:


13.15.2  Methods

13.15.3  BreakLine(iLineStart as Integer, iLineWidth as Double, iUseAsSoftLineBreak as boolean) as Integer

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Calculates and, optionally, sets a soft line break in a range of text

**Example:**

```c
// See the example.
```

**Notes:**

Returns the new line end offset inside the source text.
iLineStart is the offset in the text.
iLineWidth is the width of the output area in pixels.
LastError is set.

**iUseAsSoftLineBreak:**

A Boolean value indicating whether BreakLine should automatically set the line break produced in the return value. If true, BreakLine sets the line break and clears any previously-set soft line breaks that precede the new break in the line but lie after the offset specified by iLineStart.

13.15.4  clearLayoutCache(iLineStart as Integer)

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Clears the layout cache of a line or an entire text layout object.

**Notes:** LastError is set.
13.15.5  clearSoftLineBreaks(iRangeStart as Integer, iRangeLength as Integer)

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Clears all soft line breaks in the given range of characters.
**Notes:** Lasterror is set.

13.15.6  Copy(dest as ATSUTextLayoutMBS)

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Duplicates the text layout handle into the destination text layout object.
**Notes:** Lasterror is set.

13.15.7  CopyLayoutControls(destination as ATSUTextLayoutMBS)

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Copies all layout controls to the target text layout object.
**Notes:** Lasterror is set.

13.15.8  Create

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new textlayout handle.
**Notes:** Lasterror is set.

13.15.9  CreateTextLayoutWithText(text as string, iTexOffset as Integer, iTexLength as Integer, iTexTotalLength as Integer, iNumberOfRuns as Integer, iRunLengths as memoryblock, iStyles as memoryblock)

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a text layout handle with given parameters.
**Notes:**
Text is UTF16 encoded string.
iTexOffset is the start offset inside the text.
iTexLength is the length of the text piece to use.
iTexTotalLength is len(text).
iNumberOfRuns is the number of style runs.
iRunLengths is a memoryblock with integers used to specify how long the style runs are.
iStyles is a memoryblock with integers filled with handles of style objects.
Lasterror is set.

### 13.15.10 DrawText(iLineOffset as Integer, iLineLength as Integer, iLocationX as Double, iLocationY as Double)

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Draws text.
**Example:**

```vba
// inside the paint event of a window:

dim s as ATSUStyleMBS
dim t as ATSUTextLayoutMBS
dim a as string
dim cg as CGContextMBS

const kATSUFromTextBeginning=-1
cast kATSUToTextEnd=-1

cg=window1.CGContextMBS

a=\"Hello World!\"
a=ConvertEncoding(a,Encodings.UTF16)

s=new ATSUStyleMBS
s.Create

t=new ATSUTextLayoutMBS
t.Create
t.SetTextPointerLocation a,kATSUFromTextBeginning,kATSUToTextEnd,len(a)
t.SetRunStyle s,kATSUFromTextBeginning,kATSUToTextEnd
t.SetCGContext cg.Handle
t.DrawText kATSUFromTextBeginning, kATSUToTextEnd,100,100
```

**Notes:**
iLocationX/iLocationY is the location inside the Graphics context used. Note that CoreGraphics has y=0 on the bottom of a window.
iLineOffset is the number of the first character inside the text to use. (-1 or 0 for the beginning).
iLineLength is the count of characters to draw. (-1 for everything till end)
Lasterror is set.
13.15.11 GetSoftLineBreaks(iRangeStart as Integer, iRangeLength as Integer) as memoryblock

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns a memoryblock with integers for the softlinebreaks offsets.

**Notes:**
The range is in characters inside the source text.
Returns nil on any error.
Lasterror is set.

13.15.12 GetTabs(iMaxTabCount as Integer = 100) as ATSUTabMBS()

MBS MacCF Plugin, Plugin Version: 10.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Queries the tabs.

**Example:**
```vba
    dim t as new ATSUTextLayoutMBS
    t.Create
    // setup textlayout... (see SetTabs)

    dim qtabs(-1) as ATSUTabMBS = t.GetTabs
    MsgBox "GetTabs: " + str(t.Lasterror)
    for each q as ATSUTabMBS in qtabs
        MsgBox str(q.Type) + " " + str(q.Position)
    next
```

**Notes:**
As we need to pass an array to the system to store the values, you need to think what may be the maximum count.
Lasterror is set.

13.15.13 GlyphInfo(iTextOffset as Integer, iTextLength as Integer, style as ATSUStyleMBS, iForcingAntiAlias as boolean, iAntiAliasSwitch as boolean) as ATSFonfesGlyphListMBS

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** This function returns the glyph information from an ATSUTextLayout.

**Notes:** Returns nil on any error.
13.15. CLASS ATSUTEXTLAYOUTMBS

13.15.14 HighlightText(iTextBasePointX as Double, iTextBasePointY as Double, iHighlightStart as Integer, iHighlightLength as Integer)

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Renders a highlighted range of text at a specified location in a QuickDraw graphics port or Quartz graphics context.

**Notes:**
Parameters like DrawText.
LastError is set.

When the user selects a series of glyphs, the characters in memory corresponding to the glyphs make up the selection range and should be highlighted to indicate where the next editing operation is to occur. The characters in a selection range are always contiguous in memory, but their corresponding glyphs are not necessarily so onscreen. If the selection range crosses a direction boundary, it is appropriate to display discontinuous highlighting. The HighlightText function renders a highlighted range of text at a specified location in a QuickDraw graphics port or Quartz graphics context, using the highlight information in the graphics port or context. ATSUHighlightText automatically produces discontinuous highlighting, if needed. You typically call the HighlightText function every time you need to draw or redraw highlighted text.

**Parameters:**

- **self:** A layout containing text to be highlighted.
- **TextBasePointX:** The x-coordinate of the origin (in either the current graphics port or in a Quartz graphics context) of the line containing the text range. Pass the constant kATSUUseGrafPortPenLoc (-1) to draw relative to the current pen location in the current graphics port.*
- **TextBasePointY:** The y-coordinate of the origin (in either the current graphics port or in a Quartz graphics context) of the line containing the text range. Pass the constant kATSUUseGrafPortPenLoc (-1) to draw relative to the current pen location in the current graphics port.*
- **HighlightStart:** The first character of the text range to be highlighted. If the text range spans multiple lines, you should call ATSUHighlightText for each line, passing the offset corresponding to the beginning of the new line to draw with each call. To indicate that the specified text range starts at the beginning of the text buffer, you can pass the constant kATSUFromTextBeginning. To specify the entire text buffer, pass kATSUFromTextBeginning (-1) in this parameter and kATSUToTextEnd (-1) in the HighlightLength parameter.
- **HighlightLength:** The length of the text range to be highlighted. To indicate that the text range extends to the end of the text buffer, pass the constant kATSUToTextEnd (-1).

*Internally the ATSUHighlightText function excepts the coordinates as Fixed datatype, so the plugin multiplies the values by 65536.0 and casts them to an integer. To pass -1 to the function, you need to divide -1 by 65536.0.
13.15.15 Idle

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Call this to give ATSUI some CPU time.
**Notes:** Seems not be required currently.

13.15.16 MeasureText(iTextOffset as Integer, iTextLength as Integer, byref oTextBefore as Double, byref oTextAfter as Double, byref oAscent as Double, byref oDescent as Double)

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Measures the space needed for the text to draw.
**Example:**

```plaintext
dim s as ATSUStyleMBS
dim t as ATSUTextLayoutMBS
dim a as string
dim cg as CGContextMBS
dim TextBefore as Double
dim TextAfter as Double
dim Ascent as Double
dim Descent as Double

const kATSUFromTextBeginning=-1
cost kATSUToTextEnd=-1

cg=window1.CGContextMBS

a="Hello World!"
a=UnicodeStringMBS(a)

s=new ATSUStyleMBS
s.Create
s.Size=64

t=new ATSUTextLayoutMBS
t.Create
t.SetTextPointerLocation a,kATSUFromTextBeginning,kATSUToTextEnd,len(a)
t.SetRunStyle s,kATSUFromTextBeginning, kATSUToTextEnd
t.SetCGContext cg.Handle
t.MeasureText kATSUFromTextBeginning, kATSUToTextEnd, TextBefore, TextAfter, Ascent, Descent
cg.SetRGBFillColor 0.5,0,0,0.1
```
13.15. CLASS ATSUTEXTLAYOUTMBS

cg.FillRect CGMakeRectMBS(100+TextBefore,100-Descent,TextAfter-TextBefore,ascent+descent)
cg.SetGrayFillColor 0,1

window1.Title=str(Descent)+" " +str(ascent)

t.DrawText kATSUFromTextBeginning, kATSUToTextEnd,100,100

Notes: Lasterror is set.

13.15.17 MeasureTextImage(iLineOffset as Integer, iLineLength as Integer, iLocationX as Double, iLocationY as Double, byref left as Integer, byref top as Integer, byref width as Integer, byref height as Integer) as boolean


Notes:

iLineOffset: An offset value specifying the offset from the beginning of the text buffer to the first character of the line to examine. To indicate that the specified line starts at the beginning of the text buffer, you can pass the constant kATSUFromTextBeginning. To specify the entire text buffer, pass kATSUFromTextBeginning in this parameter and kATSUToTextEnd in the iLineLength parameter.

iLineLength: A value specifying the length of the text range. If you want the range of text to extend to the end of the text buffer, you can pass the constant kATSUToTextEnd. However, the image bounds is restricted to the line in which iLineOffset resides.

iLocationX: An ATSUTextMeasurement value specifying the x-coordinate of the line’s origin in the current graphics port or Quartz graphics context. Pass the constant kATSUUseGrafPortPenLoc, described in “Convenience Constants”, for the dimensions of the bounds relative to the current pen location in the current graphics port or graphics context. You can pass 0 to obtain only the dimensions of the bounding rectangle relative to one another, not their actual onscreen position.

iLocationY: An ATSUTextMeasurement value specifying the y-coordinate of the line’s origin in the current graphics port or Quartz graphics context. Pass the constant kATSUUseGrafPortPenLoc, described in “Convenience Constants,” for the dimensions of the bounds relative to the current pen location in the current graphics port or graphics context. You can pass 0 to obtain only the dimensions of the bounding rectangle relative to one another, not their actual onscreen position.

left, top, width and height: A pointer to a Rect structure. On return, the structure contains the dimensions of the image bounding rectangle for the text, offset by the values specified in the iLocationX and iLocationY parameters. If the
line is rotated, the sides of the rectangle are parallel to the coordinate axis.

Returns true on success. And lasterror is set.

Discussion
The ATSUMeasureTextImage function obtains the image bounds of a laid-out line of text. These bounds are described by the smallest rectangle that completely encloses the filled or framed parts of a block of text that is, the text’s "inked" glyphs.

In measuring the line, the ATSUMeasureTextImage function takes into account line rotation, alignment, and justification, as well as other characteristics that affect layout, such as hanging punctuation. (If the line is rotated, the sides of the rectangle are parallel to the coordinate axes and encompass the rotated line.) If no attributes are set for the line, ATSUMeasureTextImage uses the global attributes set for the text layout object.

Because the height of the image bounding rectangle is determined by the actual device metrics, ATSUMeasureTextImage ignores any previously set line ascent and descent values for the line it is measuring.

Before calculating the image bounds for the text range, the ATSUMeasureTextImage function examines the text layout object to ensure that each of the characters in the range is assigned to a style run. If there are gaps between style runs, ATSUMeasureTextImage assigns the characters in the gap to the style run that precedes (in storage order) the gap. If there is no style run at the beginning of the text range, the ATSUMeasureTextImage function assigns these characters to the first style run it finds. If there is no style run at the end of the text range, ATSUMeasureTextImage assigns the remaining characters to the last style run it finds.

To obtain the final typographic bounds of a line, call the function ATSUGetGlyphBounds. To calculate the unjustified typographic bounds of a line, call the function ATSUGetUnjustifiedBounds.

### 13.15.18 SetBooleanLayoutControl(value as boolean, AttributeTag as Integer)

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sets the layout control tag with a boolean value. **Notes:** Lasterror is set.

### 13.15.19 SetCGContext(CGContextHandle as Integer)

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sets the destination CoreGraphics Context as the drawing target. **Example:**

```dim t as ATSUTextLayoutMBS
dim cg as CGContextMBS```
13.15. CLASS ATSUTEXTLAYOUTMBS

cg=window1.CGContextMBS

t.SetCGContext cg.Handle

Notes: Lasterror is set.

13.15.20  SetFixedLayoutControl(value as Double, AttributeTag as Integer)

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Sets the layout control tag with a fixed float value.
**Notes:** Lasterror is set.

13.15.21  SetFractLayoutControl(value as Double, AttributeTag as Integer)

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Sets the layout control tag with a fract value.
**Notes:** Lasterror is set.

13.15.22  SetHighlightingMethod(HighlightMethod as Integer, red as Double, green as Double, blue as Double, alpha as Double)

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Sets the method ATSUI uses to highlight and unhighlight text for a text layout object.
**Notes:**
HighlightMethod: An integer value specifying the type of highlighting for ATSUI to use (kInvertHighlighting or kRedrawHighlighting). The default highlighting method, if you do not call ATSUSetHighlightingMethod, is inversion.
red, green, blue and alpha: The color for the background.

Lasterror is set.

You can read more about the ATSUSetHighlightingMethod method on Apple’s documentation. The plugin only supports the background color option and not the callback option.
13.15.23 SetPtrLayoutControl(value as memoryblock, AttributeTag as Integer)

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sets the layout control tag with a pointer value. **Notes:** Lasterror is set.

13.15.24 SetRunStyle(style as ATSUStyleMBS, iRunStart as Integer, iRunLength as Integer)

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Defines a style run by associating style information with a run of text. **Notes:** Lasterror is set.

A text run consists of one or more characters that are contiguous in memory. If you associate these characters with a distinct style, you define a style run. You can use the SetRunStyle function to define a style run, by associating a style object with a run of text in a text layout object. There is a limit of 64K different styles for each ATSUI text layout object. Each text run must be assigned its own style object, which may or may not differ from other style objects assigned to other text runs in a given text layout object.

13.15.25 SetShortLayoutControl(value as Integer, AttributeTag as Integer)

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sets the layout control tag with a 16 bit integer value. **Notes:** Lasterror is set.

13.15.26 SetSoftLineBreak(iLineBreak as Integer)

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Adds a soft linebreak at the given text offset. **Notes:** Lasterror is set.

13.15.27 SetTabs(tabs() as ATSUTabMBS)

MBS MacCF Plugin, Plugin Version: 10.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sets the tabs. **Example:**
13.15. **CLASS ATSUTEXTLAYOUTMBS**

dim t as new ATSUTextLayoutMBS

t.Create

dim t1 as new ATSUTabMBS

t1.Type = t1.kLeftTab

t1.Position = 65536

dim t2 as new ATSUTabMBS

t2.Type = t1.kRightTab

t2.Position = 65536*4

dim tabs(-1) as ATSUTabMBS

tabs.Append t1

tabs.Append t2

t.SetTabs tabs

MsgBox "SetTabs: " + str(t.Lasterror)

**Notes:** Lasterror is set.

---

13.15.28 **SetTextPointerLocation(text as string, iTextOffset as Integer, iTextLength as Integer, iTextTotalLength as Integer)**

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Associates text with a text layout object or updates previously associated text.

**Notes:**

text:
A string containing UTF-16 encoded text. ATSUI associates this string with the text layout object and analyzes the complete text of the buffer when obtaining the layout context for the current text range. Thus, for paragraph-format text, if you specify a buffer containing less than a complete paragraph, some of ATSUI’s layout results are not guaranteed to be accurate. For example, with a buffer of less than a full paragraph, ATSUI can neither reliably obtain the context for bidirectional processing nor reliably generate accent attachments and ligature formations.

iTextOffset:
An integer value specifying the offset from the beginning of the text buffer to the first character of the range to include in the layout. To indicate that the specified text range starts at the beginning of the text buffer, you can pass the constant kATSUFromTextBeginning. To specify the entire text buffer, pass kATSUFromTextBeginning in this parameter and kATSUToTextEnd in the iTextLength parameter.

iTextLength:
An integer value specifying the length of the text range. Note that iTextOffset + iTextLength must be less
than or equal to the value of the iTexTTotalLength parameter. If you want the range of text to extend to
the end of the text buffer, you can pass the constant kATSUToTextEnd.

iTexTTotalLength:
An integer value specifying the length of the entire text buffer. This value should be greater than or equal
to the range of text defined by the iTexTLength parameter.

LastError is set.

13.15.29 TextLength as Integer

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The current text length.
**Notes:**
You can set this using theSetTextPointerLocation method.
LastError is set.

13.15.30 TextOffset as Integer

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The current text offset.
**Notes:**
You can set this using theSetTextPointerLocation method.
LastError is set.

13.15.31 TextTotalLength as Integer

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The current text total length.
**Notes:**
You can set this using theSetTextPointerLocation method.
LastError is set.
13.15.32 UnhighlightText(iTextBasePointX as Double, iTextBasePointY as Double, iHighlightStart as Integer, iHighlightLength as Integer)

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Renders an unhighlighted range of text at a specified location in a QuickDraw graphics port or Quartz graphics context.
**Notes:**
Parameters like DrawText.
LastError is set.

13.15.33 Properties

13.15.34 Handle as Integer

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The handle of the textlayout.
**Notes:**
Useful for toolbox calls.
(Read and Write property)

13.15.35 Lasterror as Integer

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The last error code reported.
**Notes:** (Read and Write property)

13.15.36 Release as Boolean

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether the destructor will release the handle.
**Notes:** (Read and Write property)

13.15.37 Text as String

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The text used.
**Notes:**
You can set this using the SetTextPointerLocation method.
(Read only property)

13.15.38  Ascent as Double

MBS MacCF Plugin, Plugin Version: 9.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The ascent of the text layout.
**Notes:** (Read and Write computed property)

13.15.39  Descent as Double

MBS MacCF Plugin, Plugin Version: 9.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The descent of the text layout.
**Notes:** (Read and Write computed property)

13.15.40  FlushFactor as Double

**Notes:** (Read and Write computed property)

13.15.41  JustFactor as Double

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The just factor.
**Notes:** (Read and Write computed property)

13.15.42  Language as Integer

**Notes:**
Lasterror is set.
(Read and Write computed property)
13.15. **CLASS ATSUTEXTLAYOUTMBS**

### 13.15.43 LineAscent(offset as Integer) as Double

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The line ascent attribute tag represents the ascent associated with a line of text.
**Notes:**
Lasterror is set.
(Read and Write computed property)

### 13.15.44 LineDescent(offset as Integer) as Double

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The line descent attribute tag represents the sum of the descent and leading associated with a line of text
or a text layout object.
**Notes:**
Lasterror is set.
(Read and Write computed property)

### 13.15.45 LineDirection as boolean

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The line direction attribute specifies a left-to-right or right-to-left direction for the glyphs associated with a

The dominant direction of a line is the overall, controlling direction within which the individual glyph di-

crctions are set. If a Hebrew word is embedded in a line of Roman text, the dominant direction for that
gle is left to right, but the Hebrew word is still laid out right to left, as expected. Conversely, Roman text
embedded in a line of Hebrew, in which the dominant direction is right to left, is still displayed left to right.
For this reason, dominant direction has significance only in mixed-direction text.

The ATSUI text layout model accounts for dominant direction as well as glyph direction, automatically
performing any reordering needed for correct display of simple mixed-direction lines of text.

Lasterror is set.
(Read and Write computed property)
13.15.46 LineFlushFactor(offset as Integer) as Double

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Alignment, or flushness, is the process of placing text in relation to one or both margins, which are the left and right sides (or top and bottom sides) of the text area.

**Notes:**
- default: kATSUStartAlignment

Text is drawn to the right of the left margin for horizontal text, or below the top margin for vertical text. Text can be aligned left (kATSUStartAlignment), right (kATSUEndAlignment), or center (kATSUCenterAlignment), as shown in Figure 1-16. You can also specify a fractional value to align text at any location between the margins. Note in Figure 1-16 how the words of the text are spaced normally. Unlike justification (see "Justification Attribute Tag"), alignment does not affect the spacing between words or individual glyphs.

The alignment attribute has an effect only with text whose width is shorter than the width specified by the width attribute (kATSULineWidthTag), as shown in Figure 2-23. You must specify a width if you want to have any alignment other than kATSUStartAlignment.

```plaintext
const kATSUStartAlignment = & h00000000
const kATSUEndAlignment = & h40000000
const kATSUCenterAlignment = & h20000000
```

Lasterror is set.
(Read and Write computed property)

13.15.47 LineJustFactor(offset as Integer) as Double

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The line just factor.

**Notes:**
Lasterror is set.
(Read and Write computed property)

13.15.48 LineRotation(offset as Integer) as Double

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The rotation attribute specifies the angle (in degrees) by which the entire line should be rotated.

**Notes:**
In ATSUI, rotation is counterclockwise. To produce vertical text, set the rotation value to -90.0 degrees and
the value accessed by the style attribute tag kATSUVerticalCharacterTag to the constant kATSUStronglyVertical.

LastError is set.
(Read and Write computed property)

13.15.49 LineWidth(offset as Integer) as Double

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The width attribute specifies the desired width of a line of text, in typographic points, of the line when drawn as justified or right-aligned text.

**Notes:**
ATSUI treats vertical text as if it were horizontal. You can set and retrieve the width value using the following line and layout control attribute tag:

Attribute tag:kATSULineWidthTagData type: ATSUTextMeasurementDefault value: 0Comment: If you don’t set the line width, you can’t justify and align the text.
If a line is not justified or right-aligned, the value set by the width attribute tag kATSULineWidthTag is still used to apply negative justification (unless the kATSLineDisableNegativeJustification tag is set). Negative justification is the process of condensing text that exceeds the specified width so that the text fits the specified width. See Justification Attribute Tag for additional information on how the width, alignment, and justification attributes interact.

If the line contains glyphs with large negative side bearings, hanging punctuation, or optically aligned edges, the final width of the displayed text may be different from the value specified by the width attribute. See Hanging Punctuation Attribute Tag and Optical Alignment Attribute Tag for more information.

If you use the width of the image bounding rectangle and the typographic bounding rectangle as a measure of the overall line length, the measurements may be slightly different from each other. See Text Measurements for more information.

LastError is set.
(Read and Write computed property)

13.15.50 Reference as Integer

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
An user defined integer value which is stored inside the style handle.

**Notes:**
LastError is set.
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(Read and Write computed property)

13.15.51 Rotation as Double

MBS MacCF Plugin, Plugin Version: 9.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The rotation of the text layout.
**Notes:** (Read and Write computed property)

13.15.52 TransientFontMatching as boolean

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether to use Transient Font Matching.
**Example:**

```vba
Dim atsLayout As ATSUTextLayoutMBS
Dim atsStyle As ATSUStyleMBS
Dim sFontName As String
Dim eFontEncoding As TextEncoding
Dim sDrawText As String
dim c as CGContextMBS=window1.CGContextMBS
const kATSUFromTextBeginning = -1
const kATSUToTextEnd = -1
const kFontFullName=4
const kFontNoPlatform =-1
const kFontNoScript=-1
const kFontNoLanguag=-1
sFontName = "Hiragino Mincho Pro W3"
sDrawText = " " // some umlauts, special characters and something asian
sDrawText = ConvertEncoding(sDrawText, Encodings.UTF16) //Converts to UTF-16 for ATS
window1.Title=sDrawText
atsStyle = New ATSUStyleMBS
atsStyle.Create
atsStyle.Size = 20
atsStyle.FontID = ATSUFindFontFromNameMBS(sFontName,kFontFullName,kFontNoPlatform, kFontNoScript, kFontNoLanguag) //Your method to find the FontID
atsLayout = New ATSUTextLayoutMBS
atsLayout.Create
atsLayout.SetCGContext(c.handle) //Handle to CGContext
atsLayout.SetTextPointerLocation sDrawText,kATSUFromTextBeginning,kATSUToTextEnd,Len(sDrawText)
```
13.15. CLASS ATSUTEXTLAYOUTMBS

atsLayout.SetRunStyle atsStyle, kATSUFromTextBeginning, kATSUToTextEnd
atsLayout.TransientFontMatching = True // must be defined after setting the style

//Now you can feel free to draw the text without worrying

atsLayout.DrawText kATSUFromTextBeginning, kATSUToTextEnd, 20, 20

Notes:
Lasterror is set.

If TransientFontMatching is on, ATSUI will search a replacement font for a character if it can’t be drawn using the current font.
(Read and Write computed property)

13.15.53 Constants

13.15.54 kInvertHighlighting = 0

MBS MacCF Plugin, Plugin Version: 10.5. Function: One of the text highlighting method constants. Notes: Specifies to use inversion for highlighting. You can use this when the background is a single color.

13.15.55 kRedrawHighlighting = 1

MBS MacCF Plugin, Plugin Version: 10.5. Function: One of the text highlighting method constants. Notes: Specifies to use your callback for highlighting. You should use this when the background is complex (containing, for example, multiple colors, patterns, or pictures).
Chapter 14

Archive

14.1 class ArchiveEntryMBS

14.1.1 class ArchiveEntryMBS

Function: The class for an archive entry.
Example:

dim data as string = "Hello World test file. Hello World again."

dim e as new ArchiveEntryMBS
e.PathName = "Hello World.txt"
e.Size = lenb(data)
e.Permissions = & o0644
e.FileType = e.kFileTypeRegular

14.1.2 Methods

14.1.3 Clone as ArchiveEntryMBS

Function: Creates a copy of the entry.
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14.1.4 Constructor

Function: Creates a new archive entry.
See also:

- 14.1.5 Constructor(Archive as ArchiverMBS)  

14.1.5 Constructor(Archive as ArchiverMBS)

Function: Creates a new archive entry for a given archive.
Notes: This will pick the character set from the archive.
See also:

- 14.1.4 Constructor  

14.1.6 Destructor

Function: The destructor.

14.1.7 GetFFlags(byref FlagsSet as UInt64, byref FlagsClear as UInt64)

Function: Queries file flags.

14.1.8 SetFFlags(FlagsSet as UInt64, FlagsClear as UInt64)

Function: Sets the file flags.

14.1.9 SetLink(link as string)

Function: Sets the link.
Notes: Update only. For a symlink, update the destination. Otherwise, make the entry a hardlink and alter the destination for that.
14.1. CLASS ARCHIVEENTRYMBS

14.1.10 UnsetATime

**Function:** Unsets the last access timestamp.

14.1.11 UnsetBTime

**Function:** Unsets the birth timestamp.

14.1.12 UnsetCTime

**Function:** Unsets the last modification timestamp.

14.1.13 UnsetGName

**Function:** Unsets the group name.

14.1.14 UnsetHardLink

**Function:** Unset the hard link field.

14.1.15 UnsetMTime

**Function:** Unsets the modification timestamp.

14.1.16 UnsetPathName

**Function:** Unsets the pathname field.
14.1.17  **UnsetSize**  
**Function:** Unsets the size.

14.1.18  **UnsetSymLink**  
**Function:** Unsets the symbolic link field.

14.1.19  **UnsetUName**  
**Function:** Unsets the user name field.

14.1.20  **Properties**  

14.1.21  **ATime as Date**  
**Function:** The last access timestamp.  
**Notes:** (Read and Write property)

14.1.22  **ATimeSet as Boolean**  
**Function:** Whether last access timestamp is set.  
**Notes:** (Read only property)

14.1.23  **BTime as Date**  
**Function:** The birth timestamp.  
**Notes:**  
This is the creation time.  
(Read and Write property)
14.1. CLASS ARCHIVEENTRYMBS

14.1.24 BTimeSet as Boolean

Function: Whether the birth timestamp field is set.
Notes: (Read only property)

14.1.25 CTime as Date

Function: The last modification timestamp.
Notes: Last time an inode property was changed.
(Read and Write property)

14.1.26 CTimeSet as Boolean

Function: Whether last modification timestamp is set.
Notes: (Read only property)

14.1.27 Dev as Integer

Function: The device number.
Notes: (Read and Write property)

14.1.28 DevMajor as Integer

Function: The minor part of the dev field.
Notes: (Read and Write property)

14.1.29 DevMinor as Integer

Function: The major part of the dev field.
14.1.30 DevSet as Boolean

**Function:** Whether dev is set.
**Notes:** (Read only property)

14.1.31 FFlags as String

**Function:** The file flags.
**Notes:** (Read and Write property)

14.1.32 FileType as Integer

**Function:** Queries file type.
**Example:**
```
dim e as new ArchiveEntryMBS
e.FileType = e.kFileTypeRegular
```

**Notes:**
Check the kFileType* constants.
(Read and Write property)

14.1.33 GID as Int64

**Function:** The group ID.
**Notes:** (Read and Write property)
14.1. CLASS ARCHIVEENTRYMBS

14.1.34 GName as String

Function: The group name.
Notes: (Read and Write property)

14.1.35 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

14.1.36 HardLink as String

Function: Destination of the hardlink.
Notes: (Read and Write property)

14.1.37 INo as Int64

Function: The inode number.
Notes: (Read and Write property)

14.1.38 INo64 as Int64

Function: The inode number.
Notes: (Read and Write property)

14.1.39 INoSet as Boolean

Function: Whether inode number is set.
Notes: (Read only property)
14.1.40 IsDataEncrypted as Boolean

Function: Whether data is encrypted.  
Notes: (Read and Write property)

14.1.41 IsMetaDataEncrypted as Boolean

Function: Whether metadata is encrypted.  
Notes: (Read and Write property)

14.1.42 MacMetadata as MemoryBlock

Function: The Mac Metadata.  
Notes: Storage for Mac OS-specific AppleDouble metadata information. Apple-format tar files store a separate binary blob containing encoded metadata with ACL, extended attributes, etc. This provides a place to store that blob.  
(Read and Write property)

14.1.43 Mode as Integer

Function: The permissions mode.  
Notes: (Read and Write property)

14.1.44 ModeString as String

Function: The permissions mode as string.  
Notes: (Read only property)
14.1. CLASS ARCHIVEENTRYMBS

14.1.45 MTime as Date

Function: The modification timestamp.
Notes: (Read and Write property)

14.1.46 MTimeSet as Boolean

Function: Whether the modification time stamp field is set.
Notes: (Read only property)

14.1.47 NLink as Integer

Function: The number of hardlinks.
Notes: (Read and Write property)

14.1.48 PathName as String

Function: Path in the archive.
Example:
```
dim e as new ArchiveEntryMBS
e.PathName = "Hello World.txt"
```
Notes:
Text encoding works partly.
Best to use only ASCII file paths.
(Read and Write property)

14.1.49 Permissions as Integer

Function: The permissions.
Example:
dim e as new ArchiveEntryMBS
e.Permissions = & o0644

Notes: (Read and Write property)

### 14.1.50 RDev as Integer

**Function:** The device ID (if special file).
**Notes:** (Read and Write property)

### 14.1.51 RDevMajor as Integer

**Function:** The major part of RDev field.
**Notes:** (Read and Write property)

### 14.1.52 RDevMinor as Integer

**Function:** The minor part of RDev field.
**Notes:** (Read and Write property)

### 14.1.53 Size as UInt64

**Function:** The size of the file.
**Notes:** (Read and Write property)

### 14.1.54 SizeSet as Boolean

**Function:** Whether size field is set.
**Notes:** (Read only property)
14.1. **CLASS ARCHIVEENTRYMBS**

14.1.55 **SourcePath as String**

**Function:** Path on the disk for use.  
**Notes:** (Read and Write property)

14.1.56 **SymLink as String**

**Function:** Destination of the symbolic link.  
**Notes:** (Read and Write property)

14.1.57 **UID as UInt64**

**Function:** The user ID.  
**Notes:** (Read and Write property)

14.1.58 **UName as String**

**Function:** The user name.  
**Notes:** (Read and Write property)

14.1.59 **Constants**

14.1.60 **kFileTypeBlock = & o0060000**

MBS Compression Plugin, Plugin Version: 16.2.  
**Function:** One of the file type constants.  
**Notes:** Block device.

14.1.61 **kFileTypeCharacter = & o0020000**

MBS Compression Plugin, Plugin Version: 16.2.  
**Function:** One of the file type constants.  
**Notes:** Character device.
14.1.62  kFileTypeDirectory = & o0040000

MBS Compression Plugin, Plugin Version: 16.2. **Function:** One of the file type constants.  
**Notes:** Directory

14.1.63  kFileTypeIFO = & o0010000

MBS Compression Plugin, Plugin Version: 16.2. **Function:** One of the file type constants.  
**Notes:** Named pipe (fifo)

14.1.64  kFileTypeLink = & o0120000

MBS Compression Plugin, Plugin Version: 16.2. **Function:** One of the file type constants.  
**Notes:** Symbolic link

14.1.65  kFileTypeMT = & o0170000

MBS Compression Plugin, Plugin Version: 16.2. **Function:** One of the file type constants.  
**Notes:** MT?

14.1.66  kFileTypeRegular = & o0100000

MBS Compression Plugin, Plugin Version: 16.2. **Function:** One of the file type constants.  
**Notes:** Regular file.

14.1.67  kFileTypeSOCK = & o0140000

MBS Compression Plugin, Plugin Version: 16.2. **Function:** One of the file type constants.  
**Notes:** Socket
14.2. CLASS ARCHIVEREADERMBS

14.2 class ArchiveReaderMBS

14.2.1 class ArchiveReaderMBS


Function: The class to read archive content.

Example:

```vbnet
dim a as new ArchiveReaderMBS
a.SupportFilterAll
a.SupportFormatAll

// open file

dim f as FolderItem = SpecialFolder.Desktop.Child("test.zip")

if not a.OpenFile(f) then
    Break // path invalid?
end if

dim e as ArchiveEntryMBS = a.NextHeader
while e <> nil

    print e.PathName

    e = a.NextHeader
wend
```

Notes:

Can be used to read zip, tar and other image formats.
Subclass of the ArchiverMBS class.

14.2.2 Methods

14.2.3 Constructor


Function: The constructor.
14.2.4 Destructor

Function: The destructor.

14.2.5 NextHeader(entry as ArchiveEntryMBS = nil) as ArchiveEntryMBS

Function: Reads next header.
Notes:
If you pass in an existing entry, we can recycle the object.
Returns nil in case of error.

14.2.6 OpenData(Data as String) as Boolean

Function: Opens an archive from memory.
Notes: Returns true on success and false on failure.

14.2.7 OpenFile(File as FolderItem, BlockSize as Integer = 10240) as Boolean

Function: Opens an archive from a folderitem.
Notes: Returns true on success and false on failure.

14.2.8 ReadDataMemory(ByteCount as Integer) as MemoryBlock

Function: Reads data from current file into memoryblock.

14.2.9 ReadDataString(ByteCount as Integer) as String

Function: Reads data from current file into string.
14.2.10  **Skip**

**Function:** Skips a file in the archive.

14.2.11  **SupportFilterAll**

**Function:** Enables all filters.

14.2.12  **SupportFilterBZip2**

**Function:** Enables bzip2 filter.

14.2.13  **SupportFilterCompress**

**Function:** Enables compress filter.

14.2.14  **SupportFilterGRZip**

**Function:** Enables GRZip filter.

14.2.15  **SupportFilterGZip**

**Function:** Enable gzip filter.

14.2.16  **SupportFilterLRZip**

**Function:** Enable LRZip filter.
14.2.17 SupportFilterLZip

Function: Enable LZip filter.

14.2.18 SupportFilterLzma

Function: Enable LZMA filter.

14.2.19 SupportFilterLzop

Function: Enable Lzop filter.

14.2.20 SupportFilterNone

Function: Enable none filter.

14.2.21 SupportFilterRpm

Function: Enable RPM filter.

14.2.22 SupportFilterUU

Function: Enable UU filter.

14.2.23 SupportFilterXz

Function: Enable XZ filter. 
Notes: xz is a lossless data compression program and file format which incorporates the LZMA/LZMA2
14.2. CLASS ARCHIVEREADERMBS

compression algorithms.

14.2.24 SupportFormat7zip


14.2.25 SupportFormatAll


14.2.26 SupportFormatAr


14.2.27 SupportFormatByCode(FilterCode as Integer)


14.2.28 SupportFormatCab


14.2.29 SupportFormatCpio

14.2.30 SupportFormatEmpty

**Function:** Enables empty format.

14.2.31 SupportFormatGnutar

**Function:** Enables gnutar format.

14.2.32 SupportFormatIso9660

**Function:** Enables iso 9660 format.

14.2.33 SupportFormatLha

**Function:** Enables lha format.

14.2.34 SupportFormatLZ4

**Function:** Enables support for LZ4 format.

14.2.35 SupportFormatMTree

**Function:** Enables mtree format.

14.2.36 SupportFormatRar

**Function:** Enables rar format.
14.2. CLASS ARCHIVEREADERMBS

14.2.37 SupportFormatRaw

Function: Enables raw format.

14.2.38 SupportFormatTar

Function: Enables tape archive files format.

14.2.39 SupportFormatWArc

Function: Enables support for WArc format.

14.2.40 SupportFormatXar

Function: Enables xar format.

14.2.41 SupportFormatZip

Function: Enables zip format.
Notes: Enables both streamable and seekable zip readers.

14.2.42 SupportFormatZipSeekable

Function: Allows only support for seekable zip archives.
Notes: Reads starting from central directory; requires seekable input.

14.2.43 SupportFormatZipStreamable

Function: Enables support only for streamable zip archives.
Notes: Reads Zip archives as stream from beginning to end. Doesn’t correctly handle SFX ZIP files or ZIP archives that have been modified in-place.

14.2.44 Properties

14.2.45 FormatCapabilities as Integer

Function: Returns a bitmask of capabilities that are supported by the archive format reader.
Notes:
If the reader has no special capabilities, kFormatCapabilitiesNone is returned.
See also kFormatCapabilitiesEncryptMetaData and kFormatCapabilitiesEncryptData.
(Read only property)

14.2.46 HasEncryptedEntries as Integer

Function: Returns 1 if the archive contains at least one encrypted entry.
Notes:
If the archive format not support encryption at all kEncryptionUnsupported is returned. If for any other reason (e.g. not enough data read so far) we cannot say whether there are encrypted entries, then kEncryptionDontKnow is returned. In general, this function will return values below zero when the reader is uncertain or totally incapable of encryption support. When this function returns 0 you can be sure that the reader supports encryption detection but no encrypted entries have been found yet.

If the metadata/header of an archive is also encrypted, you cannot rely on the number of encrypted entries. That is why this function does not return the number of encrypted entries but just shows that there are some.
(Read only property)

14.2.47 HeaderPosition as Int64

Function: The current header position.
Notes:
Retrieve the byte offset in uncompressed data where last-read header started.
(Read only property)
14.2. Class ArchiveReaderMBS

14.2.48 Constants

14.2.49 kEncryptionDontKnow = -1

MBS Compression Plugin, Plugin Version: 16.3. **Function:** One of the Encryption Status constants. **Notes:** If the reader for some other reason (e.g. not enough bytes read) cannot say if there are encrypted entries, kEncryptionDontKnow is returned.

14.2.50 kEncryptionUnsupported = -2

MBS Compression Plugin, Plugin Version: 16.3. **Function:** One of the Encryption Status constants. **Notes:** In case the archive does not support encryption detection at all kEncryptionUnsupported is returned.

14.2.51 kFormatCapabilitiesEncryptData = 1

MBS Compression Plugin, Plugin Version: 16.3. **Function:** One of the encryption capabilities constants. **Notes:** Reader can detect encrypted data.

14.2.52 kFormatCapabilitiesEncryptMetaData = 2

MBS Compression Plugin, Plugin Version: 16.3. **Function:** One of the encryption capabilities constants. **Notes:** Reader can detect encryptable metadata (pathname, mtime, etc.).

14.2.53 kFormatCapabilitiesNone = 0

MBS Compression Plugin, Plugin Version: 16.3. **Function:** One of the encryption capabilities constants. **Notes:** Current format supports no encryption.
14.3 class ArchiverMBS

14.3.1 class ArchiverMBS

Function: The abstract super class for common archiver methods.
Notes:
Currently we build this library without lzma and lz4 support. That could be changed if needed.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

14.3.2 Methods

14.3.3 Constructor

Function: The private constructor.

14.3.4 Destructor

Function: The destructor.

14.3.5 NewReader as ArchiveReaderMBS

Function: Creates a new archive reader.

14.3.6 NewWriter as ArchiveWriterMBS

Function: Creates a new archive writer.
14.3. CLASS ARCHIVERMBS

14.3.7 Properties

14.3.8 BZLibVersion as String

Function: The bzlib version used in this plugin.
Notes: This is empty if we compiled plugin without this library.
(Read only property)

14.3.9 Handle as Integer

Function: The internal object reference.
Notes: (Read only property)

14.3.10 Lasterror as Integer

Function: The last error code.
Notes: See kArchive constants.
(Read only property)

14.3.11 LibVersion as Integer

Function: The version of the archive C++ library.
Notes: e.g. 3001002 for version 3.1.2.
(Read only property)

14.3.12 LibVersionDetails as String

Function: The detailed version string for libArchive.
Notes:
Detailed textual name/version of the library and its dependencies.

This has the form:
"libarchive x.y.z zlib/a.b.c liblzma/d.e.f ... etc ...

the list of libraries described here will vary depending on how libarchive was compiled.
(Read only property)

### 14.3.13 LibVersionString as String

**Function:** The version of the archive C++ library as text.
**Notes:**
e.g. "libarchive 3.1.2"
(Read only property)

### 14.3.14 LZ4Version as String

**Function:** The lz4 version used in this plugin.
**Notes:**
This is empty if we compiled plugin without this library.
(Read only property)

### 14.3.15 LzmaVersion as String

**Function:** The lzma version used in this plugin.
**Notes:**
This is empty if we compiled plugin without this library.
(Read only property)

### 14.3.16 Open as Boolean

**Function:** Whether an archive is currently open.
14.3. CLASS ARCHIVERMBS

Notes: (Read only property)

14.3.17 ZLibVersion as String

Function: The zlib version used in this plugin.
Notes: This is empty if we compiled plugin without this library.
(Read only property)

14.3.18 Events

14.3.19 Passphrase(byref password as String) as Boolean

Function: The event to query for passphrase.
Notes: Please set password property and return true if you have one.

14.3.20 Constants

14.3.21 kArchiveEOF = 1

MBS Compression Plugin, Plugin Version: 16.2. Function: One of the error constants.
Notes: Found end of archive.

14.3.22 kArchiveFailed = -25

MBS Compression Plugin, Plugin Version: 16.2. Function: One of the error constants.
Notes: Current operation cannot complete.
But if writeHeader is ”fatal,” then this archive is dead and useless.

14.3.23 kArchiveFatal = -30

MBS Compression Plugin, Plugin Version: 16.2. Function: One of the error constants.
Notes: No more operations are possible.
14.3.24  \( k_{\text{ArchiveOK}} = 0 \)

MBS Compression Plugin, Plugin Version: 16.2. **Function:** One of the error constants. **Notes:** Operation was successful.

14.3.25  \( k_{\text{ArchiveRetry}} = -10 \)

MBS Compression Plugin, Plugin Version: 16.2. **Function:** One of the error constants. **Notes:** Retry might succeed.

14.3.26  \( k_{\text{ArchiveWarn}} = -20 \)

MBS Compression Plugin, Plugin Version: 16.2. **Function:** One of the error constants. **Notes:**

Partial success.

For example, if writeHeader "fails", then you can’t push data.

14.3.27  \( k_{\text{FilterBZip2}} = 2 \)

MBS Compression Plugin, Plugin Version: 16.3. **Function:** One of the filter values. **Notes:** bzip2 filter

14.3.28  \( k_{\text{FilterCompress}} = 3 \)

MBS Compression Plugin, Plugin Version: 16.3. **Function:** One of the filter values. **Notes:** compress filter.

14.3.29  \( k_{\text{FilterGRZip}} = 12 \)

MBS Compression Plugin, Plugin Version: 16.3. **Function:** One of the filter values. **Notes:** GRZip filter.
14.3.30 kFilterGZip = 1

MBS Compression Plugin, Plugin Version: 16.3. **Function:** One of the filter values.
**Notes:** gzip filter.

14.3.31 kFilterLRZip = 10

MBS Compression Plugin, Plugin Version: 16.3. **Function:** One of the filter values.
**Notes:** LRZip filter.

14.3.32 kFilterLZ4 = 13

MBS Compression Plugin, Plugin Version: 16.3. **Function:** One of the filter values.
**Notes:** LZ4 Filter.

14.3.33 kFilterLZip = 9

MBS Compression Plugin, Plugin Version: 16.3. **Function:** One of the filter values.
**Notes:** LZip filter.

14.3.34 kFilterLZMA = 5

MBS Compression Plugin, Plugin Version: 16.3. **Function:** One of the filter values.
**Notes:** LZMA filter.

14.3.35 kFilterLZOP = 11

MBS Compression Plugin, Plugin Version: 16.3. **Function:** One of the filter values.
**Notes:** Lzop filter.

14.3.36 kFilterNone = 0

MBS Compression Plugin, Plugin Version: 16.3. **Function:** One of the filter values.
**Notes:** No filter.
14.3.37 kFilterProgram = 4

MBS Compression Plugin, Plugin Version: 16.3. Function: One of the filter values.
Notes: Program filter.

14.3.38 kFilterRPM = 8

MBS Compression Plugin, Plugin Version: 16.3. Function: One of the filter values.
Notes: RPM filter.

14.3.39 kFilterUU = 7

MBS Compression Plugin, Plugin Version: 16.3. Function: One of the filter values.
Notes: UU filter.

14.3.40 kFilterXZ = 6

MBS Compression Plugin, Plugin Version: 16.3. Function: One of the filter values.
Notes: XZ filter.

14.3.41 kFormat7Zip = & he0000

MBS Compression Plugin, Plugin Version: 16.3. Function: One of the format constants.
Notes: 7Zip

14.3.42 kFormatAr = & h70000

MBS Compression Plugin, Plugin Version: 16.3. Function: One of the format constants.
Notes: Unix Archive format, base type.

14.3.43 kFormatArBsd = & h70002

MBS Compression Plugin, Plugin Version: 16.3. Function: One of the format constants.
Notes: Archive, BSD format.
14.3. CLASS ARCHIVERMBS

14.3.44 kFormatArGnu = & h70001

MBS Compression Plugin, Plugin Version: 16.3. **Function:** One of the format constants. **Notes:** Archive, GNU format.

14.3.45 kFormatBaseMask = & hff0000

MBS Compression Plugin, Plugin Version: 16.3. **Function:** One of the format constants. **Notes:** Mask for Base Type.

14.3.46 kFormatCab = & hc0000

MBS Compression Plugin, Plugin Version: 16.3. **Function:** One of the format constants. **Notes:** Windows CAB format.

14.3.47 kFormatCpio = & h0000

MBS Compression Plugin, Plugin Version: 16.3. **Function:** One of the format constants. **Notes:** CPIO base format.

14.3.48 kFormatCpioAfioLarge = & h0006

MBS Compression Plugin, Plugin Version: 16.3. **Function:** One of the format constants. **Notes:** CPIO format, AFIO large variant.

14.3.49 kFormatCpioBinBe = & h0003

MBS Compression Plugin, Plugin Version: 16.3. **Function:** One of the format constants. **Notes:** CPIO format, BIN BE variant.

14.3.50 kFormatCpioBinLe = & h0002

MBS Compression Plugin, Plugin Version: 16.3. **Function:** One of the format constants. **Notes:** CPIO format, BIN LE variant.
14.3.51   kFormatCpioPosix = & h10001

MBS Compression Plugin, Plugin Version: 16.3. **Function:** One of the format constants.  
**Notes:** CPIO format, Posix variant.

14.3.52   kFormatCpioSvr4Crc = & h10005

MBS Compression Plugin, Plugin Version: 16.3. **Function:** One of the format constants.  
**Notes:** CPIO format, SVR4 CRC variant.

14.3.53   kFormatCpioSvr4Nocrc = & h10004

MBS Compression Plugin, Plugin Version: 16.3. **Function:** One of the format constants.  
**Notes:** CPIO format, SVR4 no CRC variant.

14.3.54   kFormatEmpty = & h60000

MBS Compression Plugin, Plugin Version: 16.3. **Function:** One of the format constants.  
**Notes:** Empty format.

14.3.55   kFormatIso9660 = & h40000

MBS Compression Plugin, Plugin Version: 16.3. **Function:** One of the format constants.  
**Notes:** IOS 9660 base type.

14.3.56   kFormatIso9660Rockridge = & h40001

MBS Compression Plugin, Plugin Version: 16.3. **Function:** One of the format constants.  
**Notes:** IOS 9660, Rockridge variant.

14.3.57   kFormatLha = & hb0000

MBS Compression Plugin, Plugin Version: 16.3. **Function:** One of the format constants.  
**Notes:** LHA format.
14.3.58  \texttt{kFormatMtree} = & h80000

MBS Compression Plugin, Plugin Version: 16.3. \textbf{Function:} One of the format constants.
\textbf{Notes:} MTree format.

14.3.59  \texttt{kFormatRar} = & h0000

MBS Compression Plugin, Plugin Version: 16.3. \textbf{Function:} One of the format constants.
\textbf{Notes:} RAR format.

14.3.60  \texttt{kFormatRaw} = & h0000

MBS Compression Plugin, Plugin Version: 16.3. \textbf{Function:} One of the format constants.
\textbf{Notes:} Raw format.

14.3.61  \texttt{kFormatShar} = & h0000

MBS Compression Plugin, Plugin Version: 16.3. \textbf{Function:} One of the format constants.
\textbf{Notes:} SHAR base format.

14.3.62  \texttt{kFormatSharBase} = & h0001

MBS Compression Plugin, Plugin Version: 16.3. \textbf{Function:} One of the format constants.
\textbf{Notes:} SHAR base format, base variant.

14.3.63  \texttt{kFormatSharDump} = & h0002

MBS Compression Plugin, Plugin Version: 16.3. \textbf{Function:} One of the format constants.
\textbf{Notes:} SHAR base format, dump variant.

14.3.64  \texttt{kFormatTar} = & h0000

MBS Compression Plugin, Plugin Version: 16.3. \textbf{Function:} One of the format constants.
\textbf{Notes:} Tar base format.
14.3.65 \texttt{kFormatTarGnutar} $= \texttt{& h30004}$

MBS Compression Plugin, Plugin Version: 16.3. \textbf{Function:} One of the format constants. 
\textbf{Notes:} Tar format, GNU variant.

14.3.66 \texttt{kFormatTarPaxInterchange} $= \texttt{& h30002}$

MBS Compression Plugin, Plugin Version: 16.3. \textbf{Function:} One of the format constants. 
\textbf{Notes:} Tar format, Pax Interchange variant.

14.3.67 \texttt{kFormatTarPaxRestricted} $= \texttt{& h30003}$

MBS Compression Plugin, Plugin Version: 16.3. \textbf{Function:} One of the format constants. 
\textbf{Notes:} Tar format, Pax Restricted variant.

14.3.68 \texttt{kFormatTarUstar} $= \texttt{& h30001}$

MBS Compression Plugin, Plugin Version: 16.3. \textbf{Function:} One of the format constants. 
\textbf{Notes:} Tar format, US variant.

14.3.69 \texttt{kFormatWarc} $= \texttt{& hf0000}$

MBS Compression Plugin, Plugin Version: 16.3. \textbf{Function:} One of the format constants. 
\textbf{Notes:} WArc format.

14.3.70 \texttt{kFormatXar} $= \texttt{& ha0000}$

MBS Compression Plugin, Plugin Version: 16.3. \textbf{Function:} One of the format constants. 
\textbf{Notes:} Xar format.

14.3.71 \texttt{kFormatZip} $= \texttt{& h50000}$

MBS Compression Plugin, Plugin Version: 16.3. \textbf{Function:} One of the format constants. 
\textbf{Notes:} Zip format.
14.4. class ArchiveWriterMBS


**Function:** The class to write archive content.

**Example:**

```vbs
Dim a As New ArchiveWriterMBS

a.SetFormatZip
a.ZipSetCompressionDeflate

Dim f As FolderItem = SpecialFolder.Desktop.Child("test.zip")
If Not a.CreateFile(f) Then
    Break ' // failed
Else

    Dim data As String = "Hello World test file. Hello World again."

    Dim e As New ArchiveEntryMBS
    e.PathName = "Hello World.txt"
    e.Size = Lenb(data)
    e.Permissions = &O0644
    e.FileType = e.kFileTypeRegular

    a.WriteHeader e
    Call a.WriteData data

    a.FinishEntry

    a.Close

End If
```

**Notes:**

Can be used to write zip, tar and other image formats.
Subclass of the ArchiverMBS class.
14.4.2 Methods

14.4.3 AddFilter(FilterCode as Integer)

**Function:** Adds filter by code number.

14.4.4 AddFilterB64encode

**Function:** Adds base 64 filter.

14.4.5 AddFilterByName(Name as String)

**Function:** Adds filter by name.

14.4.6 AddFilterBZip2

**Function:** Add bzip2 filter.

14.4.7 AddFilterCompress

**Function:** Add compress filter.

14.4.8 AddFilterGZip

**Function:** Add gzip filter.
14.4. CLASS ARCHIVEWRITERMBS

14.4.9 AddFilterGZip

**Function:** Add gzip filter.

14.4.10 AddFilterLRZip

**Function:** Add lrzip filter.

14.4.11 AddFilterLZ4

**Function:** Add support for LZ4 compression.  
**Notes:** Lasterror is set.

14.4.12 AddFilterLZip

**Function:** Add lzip filter.

14.4.13 AddFilterLZMA

**Function:** Add lzma filter.

14.4.14 AddFilterLZOOp

**Function:** Add lzop filter.

14.4.15 AddFilterNone

**Function:** Add none filter.
14.4.16  AddFilterProgram(Command as String)

**Function:** Adds a filter calling external application.

14.4.17  AddFilterUUEncode

**Function:** Add uu filter.

14.4.18  AddFilterXZ

**Function:** Add xy filter.

14.4.19  Close

**Function:** Closes the archive.

14.4.20  Constructor

**Function:** The constructor.

14.4.21  CreateFile(File as FolderItem) as boolean

**Function:** Creates a new archive file.  
**Notes:** Returns true on success.

14.4.22  Destructor

**Function:** The destructor.
14.4.23  Fail

Function: Marks archive as failed.
Notes: We will not close the archive properly and you can delete file.

14.4.24  FinishEntry

Function: Finishes an entry.

14.4.25  SetFormat(FormatCode as Integer)

Function: Sets format by code.

14.4.26  SetFormat7Zip

Function: Sets format to 7zip.

14.4.27  SetFormatArBsd

Function: Sets format to ar bsd.

14.4.28  SetFormatArSvr4

Function: Sets format to ar svr4.

14.4.29  SetFormatByExtension(FileName as String, defaultExtension as String = "")

Function: Set file format by extension of filename.
Notes:
e.g. pass "test.zip" for file name and ".zip" for default extension (if filename has none). Lasterror is set.

14.4.30 SetFormatByName(Name as String)
Function: Sets format by name.

14.4.31 SetFormatCpio
Function: Sets format to cpio.

14.4.32 SetFormatCpioNewc
Function: Sets format to cpio newc.

14.4.33 SetFormatGnutar
Function: Sets format to gnu tape archive files.

14.4.34 SetFormatIso9660
Function: Sets format to iso 9660.

14.4.35 SetFormatMTree
Function: Sets format to mtree.
14.4. CLASS ARCHIVEWRITERMBS

14.4.36 SetFormatMTreeClassic

Function: Sets format to mtree classic.

14.4.37 SetFormatPax

Function: Sets format to pax.

14.4.38 SetFormatPaxRestricted

Function: Sets format to pax restricted.

14.4.39 SetFormatRaw

Function: Sets raw format.

14.4.40 SetFormatShar

Function: Sets format to shar.

14.4.41 SetFormatSharDump

Function: Sets format to shar dump.

14.4.42 SetFormatUstar

Function: Sets format to Unix Standard TAR.
14.4.43 SetFormatV7tar

**Function:** Sets format to v7 tape archive files.

14.4.44 SetFormatWArc

**Function:** Sets format to web archive.

14.4.45 SetFormatXar

**Function:** Sets format to xar.

14.4.46 SetFormatZip

**Function:** Sets format to zip.
**Example:**

```vbnet
dim a as new ArchiveWriterMBS
a.SetFormatZip
a.ZipSetCompressionDeflate

dim f as FolderItem = SpecialFolder.Desktop.Child("test.zip")
if not a.CreateFile(f) then
    break // failed
else

dim data as string = "Hello World test file. Hello World again."

dim e as new ArchiveEntryMBS
e.PathName = "Hello World.txt"
e.Size = lenb(data)
e.Permissions = & o0644
e.FileType = e.kFileTypeRegular
a.WriteHeader e
call a.WriteData data
```
14.4. CLASS ARCHIVEWRITERMBS

a. FinishEntry

a. Close

end if

14.4.47 SetPassphrase(Password as String)


Function: Sets the passphrase to use.

Notes: Alternatively you can use the Passphrase event.

14.4.48 WriteData(data as MemoryBlock) as Int64


Function: Writes data to current file.

Notes: Returns number of bytes written.

See also:

- 14.4.49 WriteData(data as Ptr, Size as Int64) as Int64
- 14.4.50 WriteData(data as string) as Int64

14.4.49 WriteData(data as Ptr, Size as Int64) as Int64


Function: Writes data to current file.

Notes: Returns number of bytes written.

See also:

- 14.4.48 WriteData(data as MemoryBlock) as Int64
- 14.4.50 WriteData(data as string) as Int64

14.4.50 WriteData(data as string) as Int64


Function: Writes data to current file.

Notes: Returns number of bytes written.

See also:
14.4.48 WriteData(data as MemoryBlock) as Int64

14.4.49 WriteData(data as Ptr, Size as Int64) as Int64

14.4.51 WriteHeader(Entry as ArchiveEntryMBS)

Function: Writes an archive item.

14.4.52 ZipSetCompressionDeflate

Function: Sets compression for zip to deflate.

14.4.53 ZipSet CompressionStore

Function: Sets compression for zip to store.
Notes: Store is no compression.
Chapter 15

Audio

15.1 class AUPlayerMBS

15.1.1 class AUPlayerMBS


Notes:
This is a better Core Audio based player which has a lot of features like pitch, rate, volume, equalizer and other features.
Beside playing audio you can also use this class to get sample data from audio files.

Currently only stereo is supported (2 channels maximum).

15.1.2 Methods

15.1.3 ChannelMap as Integer()


Notes: The map should have an entry for each input channel and inside the number of the output channel or -1 to keep it silent.
15.1.4 Data as Memoryblock

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Copies the data to play.

**Notes:**
The other data properties define what format this data has.
Typically 4 byte floats per sample interleaved for all channels.

15.1.5 LoadFile(file as folderitem, InputChannels as Integer = 2, OutputChannels as Integer = 2) as boolean


**Notes:**
InputChannels is the number of channels we want to get back from file reader.
OutputChannels is the number of channels we want to have for output.
Returns true on success or false on failure.

15.1.6 LoadFileMT(file as folderitem, InputChannels as Integer = 2, OutputChannels as Integer = 2) as boolean


**Notes:**
Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.

InputChannels is the number of channels we want to get back from file reader.
OutputChannels is the number of channels we want to have for output.
Returns true on success or false on failure.

15.1.7 Pause


**Notes:** Lasterror is set.
15.1.8 Play

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Starts playback. **Notes:** Lasterror is set.

15.1.9 Reset

MBS MacOSX Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Resets audio units. **Notes:** Useful after changing options.

15.1.10 setChannelMap(values() as Integer)

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets a new channel map. **Notes:** The map should have an entry for each input channel and inside the number of the output channel or -1 to keep it silent.

15.1.11 updateEQ(eqBands() as Double)

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Updates equalizer. **Notes:** Please pass array of 32 values from -12 to 12. Lasterror is set. See also:

- 15.1.12 updateEQ(eqBands() as single) 2867

15.1.12 updateEQ(eqBands() as single)

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Updates equalizer. **Notes:** Please pass array of 32 values from -12 to 12. Lasterror is set. See also:

- 15.1.11 updateEQ(eqBands() as Double) 2867
15.1.13 Properties

15.1.14 ClientFormatString as String

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The input format description string. **Notes:** (Read only property)

15.1.15 ConverterHandle as Integer

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle to the converter audio unit. **Notes:** (Read and Write property)

15.1.16 CurrentDeviceID as UInt32

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Get or set the current device. **Notes:** Please check OutputDevices dictionary for which devices are available. (Read and Write property)

15.1.17 CurrentTime as Double

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The current time in seconds. **Notes:** Lasterror is set. (Read and Write property)

15.1.18 DataIsFloat as Boolean

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether data is floating point. **Notes:** (Read only property)
15.1.19  DataIsInterleaved as Boolean

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether data is interleaved.  
**Notes:** (Read only property)

15.1.20  DataIsNativeEndian as Boolean

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether data is native endian.  
**Notes:** (Read only property)

15.1.21  DataIsPCM as Boolean

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether data is PCM format.  
**Notes:**  
Linear PCM.  
(Read only property)

15.1.22  DataIsSignedInteger as Boolean

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether data is signed integers.  
**Notes:** (Read only property)

15.1.23  DataNumberChannels as Integer

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Number of channels.  
**Notes:** (Read only property)

15.1.24  DataNumberChannelStreams as Integer

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Number of channels.
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Notes: (Read only property)

15.1.25 DataNumberInterleavedChannels as Integer

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Number of interleaved channels. Notes: (Read only property)

15.1.26 DataSampleWordSize as Integer

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The size of a sample word. Notes: (Read only property)

15.1.27 DefaultDeviceID as UInt32

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Queries the Core Audio ID of the default device. Notes: (Read only property)

15.1.28 EnablePeakLocking as Boolean

MBS MacOSX Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether peak locking is enabled. Notes:

Default value is true.
Only if UseNewTimePitchUnit is set to true.
(Read and Write property)

15.1.29 EqualizerHandle as Integer

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The handle to the equalizer audio unit. Notes: (Read and Write property)
15.1.30  File as FolderItem

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The reference to the folderitem used to load audio file.  
**Notes:** (Read only property)

15.1.31  GraphHandle as Integer

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle to the audio graph.  
**Notes:** (Read and Write property)

15.1.32  Lasterror as Integer

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last error code.  
**Notes:**  
Zero is no error.  
(Read and Write property)

15.1.33  LoopIn as Double

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The position where loop starts.  
**Notes:** (Read and Write property)

15.1.34  Looping as Boolean

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether to loop.  
**Notes:** (Read and Write property)

15.1.35  LoopOut as Double

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The position where loop ends.
15.1.36  **MaximumFramesPerSlice as Integer**

MBS MacOSX Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The maximum number of frames per slice.  
**Notes:**  
Default seems to be 1156 by Core Audio.  
(Read and Write property)

15.1.37  **MeterLevel as Double**

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries meter level.  
**Notes:**  
Lasterror is set.  
Value is smaller than -120 if unknown.  
(Read only property)

15.1.38  **MixerHandle as Integer**

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle to the mixer audio unit.  
**Notes:**  
(Read and Write property)

15.1.39  **OutputDevices as Dictionary**

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries a dictionary with output devices.  
**Notes:**  
Key is the ID and value is the name of the device.  
(Read only property)
15.1.40 OutputFormatString as String

Notes: (Read only property)

15.1.41 OutputHandle as Integer

Notes: (Read and Write property)

15.1.42 OutputUnit as Integer

Notes: Apple offer various output units and here you can decide which one to use.
Setting takes effect the next time you call LoadFile.
(Read and Write property)

15.1.43 OutputVolume as Double

Notes: Lasterror is set.
From 0.0 to 1.0.
(Read and Write property)

15.1.44 Overlap as Double

Notes: Range is 3.0 to 32.0 and default is 8.0.
Only if UseNewTimePitchUnit is set to true.
15.1.45 Pan as Double

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The output pan. 
**Notes:** 
From -1.0 to 1.0.  
Lasterror is set. 
(Read and Write property)

15.1.46 PitchRate as Double

**Notes:** 
Lasterror is set. 
(Read and Write property)

15.1.47 Playing as Boolean

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the player is playing. 
**Notes:** (Read and Write property)

15.1.48 SampleRate as Double

**Notes:** (Read only property)

15.1.49 Tag as Variant

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The tag value. 
**Notes:**
You can use this property to store whatever you like.
(Read and Write property)

15.1.50 **TimePitchHandle as Integer**

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle to the time audio unit.
**Notes:** (Read and Write property)

15.1.51 **TimePitchUnit as Integer**

MBS MacOSX Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Which time pitch unit to use.
**Notes:**
Apple offer various time pitch units and here you can decide which one to use.
Setting takes effect the next time you call LoadFile.
(Read and Write property)

15.1.52 **TimeRate as Double**

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The time rate.
**Notes:**
Lasterror is set.
(Read and Write property)

15.1.53 **TrackLength as Double**

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Length of the audio track in seconds.
**Notes:**
Lasterror is set.
(Read only property)
15.1.54 VariSpeedHandle as Integer

MBS MacOSX Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle to the vari speed audio unit.  
**Notes:** (Read and Write property)

15.1.55 InputEnabled(inputNum as UInt32) as boolean

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Enable or disable input.  
**Notes:**
Lasterror is set.  
(Read and Write computed property)

15.1.56 InputVolume(inputNum as UInt32) as Double

**Notes:**
Lasterror is set.  
(Read and Write computed property)

15.1.57 Constants

15.1.58 OutputUnitDefault = 0

MBS MacOSX Plugin, Plugin Version: 15.0. **Function:** One of the output units.  
**Notes:** Plugin default, currently HALOutput.

15.1.59 OutputUnitDefaultOutput = 3

MBS MacOSX Plugin, Plugin Version: 15.0. **Function:** One of the output units.  
**Notes:** A specialisation of AUHAL that is used to track the user’s selection of the default device as set in the Sound Prefs
15.1. CLASS AUPLAYERMBS

15.1.60 OutputUnitGenericOutput = 1

MBS MacOSX Plugin, Plugin Version: 15.0. **Function:** One of the output units.
**Notes:** A generic output unit provides the start/stop API, and provides the basic services to convert Linear PCM formats.

15.1.61 OutputUnitHALOutput = 2

MBS MacOSX Plugin, Plugin Version: 15.0. **Function:** One of the output units.
**Notes:** The audio unit that interfaces to any audio device. The user specifies which audio device to track. The audio unit can do input from the device as well as output to the device. Bus 0 is used for the output side, bus 1 is used to get audio input from the device.

15.1.62 OutputUnitSystemOutput = 4

MBS MacOSX Plugin, Plugin Version: 15.0. **Function:** One of the output units.
**Notes:** A specialisation of AUHAL that is used to track the user’s selection of the device to use for sound effects, alerts and other UI sounds.

15.1.63 TimePitchUnitDefault = 0

MBS MacOSX Plugin, Plugin Version: 15.0. **Function:** One of the time pitch units.
**Notes:** Default, plugin chooses one. (normal TimePitch)

15.1.64 TimePitchUnitTimePitch = 1

MBS MacOSX Plugin, Plugin Version: 15.0. **Function:** One of the time pitch units.
**Notes:** An audio unit that can be used to have independent control of both playback rate and pitch.

15.1.65 TimePitchUnitVarispeed = 2

MBS MacOSX Plugin, Plugin Version: 15.0. **Function:** One of the time pitch units.
**Notes:** An audio unit that can be used to control playback rate (as the rate is faster, the pitch is higher).
15.2 class CAPlayThroughMBS

15.2.1 class CAPlayThroughMBS

MBS MacOSX Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class to do active play through on Mac OS X using CoreAudio. **Notes:** This class uses newer code than the AudioPlayThruMBS class and may work better for some people.

15.2.2 Methods

15.2.3 Constructor(InputDeviceID as Integer, OutputDeviceID as Integer)

MBS MacOSX Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor. **Notes:** Lasterror is set. Device IDs are the IDs you get in the CoreAudio classes.

15.2.4 IsRunning as boolean

MBS MacOSX Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether playthrough is running.

15.2.5 Start

MBS MacOSX Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Starts play through. **Notes:** Lasterror is set.

15.2.6 Stop

MBS MacOSX Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Stops play through. **Notes:** Lasterror is set.
15.2. **CLASS CAPLAYTHROUGHMBS**

15.2.7 **Properties**

15.2.8 **ExtraLatency as Integer**

MBS MacOSX Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Extra latency. **Notes:**

When the latency is calculated, we add this value.
Unit is bytes.

Calculation of the buffer size is like this:

```
if (UseMinimumLatency)
  InToOutSampleOffset = ExtraLatency + InputDevice.SafetyOffset + OutputDevice.SafetyOffset
else
```

(Read and Write property)

15.2.9 **Lasterror as Integer**

MBS MacOSX Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last error code reported. **Notes:** (Read and Write property)

15.2.10 **UseMinimumLatency as Boolean**

MBS MacOSX Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether to reduce latency to the absolute minimum. **Notes:**

By default a large latency is used to ensure a smoother playthrough.
But you can have it set to the absolute minimum.

Calculation of the buffer size is like this:

```
if (UseMinimumLatency)
  InToOutSampleOffset = ExtraLatency + InputDevice.SafetyOffset + OutputDevice.SafetyOffset
else
```
15.2.11 Volume as Double

MBS MacOSX Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Get or set the volume of the output audio unit.

**Notes:**

- Lasterror is set.
- Range is from 0.0 to 1.0.

(Read and Write computed property)
15.3 CLASS CoreAudioListenerMBS

15.3.1 class CoreAudioListenerMBS

MBS MacOSX Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The class to watch for changes to CoreAudio property.

15.3.2 Methods

15.3.3 Constructor(ObjectID as UInt32, PropertySelector as UInt32, PropertyScope as UInt32, PropertyElement as UInt32)

Notes:
Please pass object ID and property selector values (see example project).
Lasterror is zero on success.

15.3.4 Destructor


15.3.5 Properties

15.3.6 LastError as Integer

Notes: (Read only property)

15.3.7 ObjectID as UInt32

MBS MacOSX Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The object ID used in constructor.
Notes: (Read only property)
15.3.8 PropertyElement as UInt32

Notes: (Read only property)

15.3.9 PropertyScope as UInt32

Notes: (Read only property)

15.3.10 PropertySelector as UInt32

MBS MacOSX Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The selector value used in constructor.
Notes: (Read only property)

15.3.11 Events

15.3.12 Changed

15.4. **CLASS COREAUDIOMBS**

15.4  class CoreAudioMBS

15.4.1  class CoreAudioMBS

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for low level CoreAudio calls. **Notes:** Currently not finished for the 4.0 release.

15.4.2  Methods

15.4.3  **AudioDeviceGetPropertyCFString(AudioDeviceID as Integer, channel as Integer, isinput as boolean, propertyID as string) as string**

MBS MacOSX Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Gets a property value from the Audio Device. **Notes:** Lasterror is set. The property you query must be one of the CFString properties.

15.4.4  **AudioDeviceGetPropertyInfo(AudioDeviceID as Integer, channel as Integer, isinput as boolean, propertyID as string, byref size as Integer, byref writeable as boolean)**

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Gets property information from an Audio Unit. **Notes:** Lasterror is set.

15.4.5  **AudioDeviceGetPropertyMemory(AudioDeviceID as Integer, channel as Integer, isinput as boolean, propertyID as string) as memoryblock**

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Gets a property value from the Audio Device. **Notes:** Lasterror is set.
15.4.6 AudioDeviceGetPropertyString(AudioDeviceID as Integer, channel as Integer, isinput as boolean, propertyID as string) as string

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Gets a property value from the Audio Device.  
**Notes:** Lasterror is set.

15.4.7 AudioDeviceSetPropertyMemory(AudioDeviceID as Integer, when as memoryblock, channel as Integer, isinput as boolean, propertyID as string, data as memoryblock, offset as Integer, length as Integer)

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets a property value for the Audio Device.  
**Notes:** Lasterror is set.

15.4.8 AudioDeviceSetPropertyString(AudioDeviceID as Integer, when as memoryblock, channel as Integer, isinput as boolean, propertyID as string, data as string)

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets a property value for the Audio Device.  
**Notes:** Lasterror is set.

15.4.9 AudioHardwareGetPropertyCFString(propertyID as string) as string

MBS MacOSX Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Gets a property value from the Audio Hardware.  
**Notes:** Lasterror is set.  
The property you query must be one of the CFString properties.

15.4.10 AudioHardwareGetPropertyInfo(propertyID as string, byref size as Integer, byref writeable as boolean)

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Gets property information from the Audio Hardware.  
**Notes:** Lasterror is set.
15.4.11 AudioHardwareGetPropertyMemory(propertyID as string) as memoryblock

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Gets a property value from the Audio Hardware.
Notes: Lasterror is set.

15.4.12 AudioHardwareGetPropertyString(propertyID as string) as string

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Gets a property value from the Audio Hardware.
Notes: Lasterror is set.

15.4.13 AudioHardwareSetPropertyMemory(propertyID as string, data as memoryblock, offset as Integer, length as Integer)

Notes: Lasterror is set.

15.4.14 AudioHardwareSetPropertyString(propertyID as string, data as string)

Notes: Lasterror is set.

15.4.15 AudioObjectGetPropertyData(inObjectID as Integer, AddressSelector as UInt32, AddressScope as UInt32, AddressElement as UInt32, QualifierData as memoryblock = nil, InputData as Memoryblock = nil) as memoryblock

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Queries an AudioObject to get the data of the given property and places it in the provided buffer.
Notes:
The plugin queries size and creates a buffer for the result.
inObjectID: The AudioObject to query.
AddressSelector, AddressScope or AddressElement: An audio object property address indicating which prop-
AudioObjectGetPropertyDataSize

15.4.16 AudioObjectGetPropertyDataSize(inObjectID as Integer, AddressSelector as UInt32, AddressScope as UInt32, AddressElement as UInt32, QualifierData as memoryblock = nil) as UInt32

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Queries an AudioObject to find the size of the data for the given property. **Notes:**

inObjectID: The AudioObject to query.
AddressSelector, AddressScope or AddressElement: An audio object property address indicating which property is being queried.
QualifierData: A buffer of data to be used in determining the data of the property being queried. Note that not all properties require qualification, in which case this value will be nil.

Returns an UInt32 indicating how many bytes the data for the given property occupies. Lasterror is set.

AudioObjectSetPropertyData

15.4.17 AudioObjectSetPropertyData(inObjectID as Integer, AddressSelector as UInt32, AddressScope as UInt32, AddressElement as UInt32, Data as Memoryblock, QualifierData as memoryblock = nil)

MBS MacOSX Plugin, Plugin Version: 14.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Tells an AudioObject to change the value of the given property using the provided data. **Notes:**

inObjectID: The AudioObject to query.
AddressSelector, AddressScope or AddressElement: An audio object property address indicating which property is being queried.
QualifierData: A buffer of data to be used in determining the data of the property being queried. Note that not all properties require qualification, in which case this value will be nil.

Lasterror is set.
15.4.18  **AudioOutputUnitStart(componenthandle as Integer) as Integer**

MBS MacOSX Plugin, Plugin Version: 4.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Starts the Audio Unit.
**Notes:** Errorcode is returned.

15.4.19  **AudioOutputUnitStop(componenthandle as Integer) as Integer**

MBS MacOSX Plugin, Plugin Version: 4.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Stops the AudioUnit.
**Notes:** Errorcode is returned.

15.4.20  **AudioStreamGetPropertyCFString(AudioStreamID as Integer, channel as Integer, propertyID as string) as string**

MBS MacOSX Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Gets a property value from the Audio Stream.
**Notes:**
Lasterror is set.
The property you query must be one of the CFString properties.

15.4.21  **AudioStreamGetPropertyInfo(AudioStreamID as Integer, channel as Integer, propertyID as string, byref size as Integer, byref writeable as boolean)**

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Gets property information from an Audio Stream.
**Notes:** Lasterror is set.

15.4.22  **AudioStreamGetPropertyMemory(AudioStreamID as Integer, channel as Integer, propertyID as string) as memoryblock**

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Gets a property value from the Audio Stream.
**Notes:** Lasterror is set.
15.4.23 AudioStreamGetPropertyString(AudioStreamID as Integer, channel as Integer, propertyID as string) as string

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Gets a property value from the Audio Stream.  
**Notes:** Lasterror is set.

15.4.24 AudioStreamSetPropertyMemory(AudioStreamID as Integer, when as memoryblock, channel as Integer, propertyID as string, data as memoryblock, offset as Integer, length as Integer)

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets a property value for the Audio Stream.  
**Notes:** Lasterror is set.

15.4.25 AudioStreamSetPropertyString(AudioStreamID as Integer, when as memoryblock, channel as Integer, propertyID as string, data as string)

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets a property value for the Audio Stream.  
**Notes:** Lasterror is set.

15.4.26 AudioUnitGetParameter(AudioUnit as Integer, ParameterID as Integer, AudioUnitScope as Integer, AudioUnitElement as Integer) as single

MBS MacOSX Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Gets an audio unit parameter.

15.4.27 AudioUnitGetPropertyCFString(AudioUnit as Integer, propertyID as Integer, AudioUnitScope as Integer, AudioUnitElement as Integer) as string

MBS MacOSX Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Gets a property of an Audio Unit.  
**Notes:**  
Lasterror is set.  
Constants for AudioUnitScope:
The property you query must be one of the CFString properties.

15.4.28  AudioUnitGetPropertyInfo(AudioUnit as Integer, propertyID as Integer, AudioUnitScope as Integer, AudioUnitElement as Integer, byref size as Integer, byref writeable as boolean)

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Gets property information from the Audio Unit.

**Notes:**
Lasterror is set.

Constants for AudioUnitScope:

```
kAudioUnitScope_Global  = 0
kAudioUnitScope_Input   = 1
kAudioUnitScope_Output  = 2
kAudioUnitScope_Group   = 3
kAudioUnitScope_Part    = 4
```

15.4.29  AudioUnitGetPropertyMemory(AudioUnit as Integer, propertyID as Integer, AudioUnitScope as Integer, AudioUnitElement as Integer) as memoryblock

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Gets a property of an Audio Unit.

**Notes:**
Lasterror is set.

Constants for AudioUnitScope:

```
kAudioUnitScope_Global  = 0
kAudioUnitScope_Input   = 1
kAudioUnitScope_Output  = 2
kAudioUnitScope_Group   = 3
kAudioUnitScope_Part    = 4
```
15.4.30 AudioUnitGetPropertyString(AudioUnit as Integer, propertyID as Integer, AudioUnitScope as Integer, AudioUnitElement as Integer) as string

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Gets a property of an Audio Unit.

**Notes:**

- Lasterror is set.
- Constants for AudioUnitScope:

  kAudioUnitScope_Global = 0
  kAudioUnitScope_Input = 1
  kAudioUnitScope_Output = 2
  kAudioUnitScope_Group = 3
  kAudioUnitScope_Part = 4

15.4.31 AudioUnitInitialize(componenthandle as Integer) as Integer

MBS MacOSX Plugin, Plugin Version: 4.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**

Initializes the Audio Unit.

**Notes:** Errorcode is returned.

15.4.32 AudioUnitReset(componenthandle as Integer, scope as Integer, element as Integer) as Integer

MBS MacOSX Plugin, Plugin Version: 4.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**

Resets the Audio Unit.

**Notes:**

- Errorcode is returned.

Useful constants:
15.4.33 AudioUnitSetParameter(AudioUnit as Integer, ParameterID as Integer, AudioUnitScope as Integer, AudioUnitElement as Integer, value as single, BufferOffsetInFrames as Integer)

MBS MacOSX Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets an audio unit parameter.

15.4.34 AudioUnitSetPropertyMemory(AudioUnit as Integer, propertyID as Integer, AudioUnitScope as Integer, AudioUnitElement as Integer, data as memoryblock, offset as Integer, length as Integer)

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets a property of an Audio Unit.

**Notes:**
Lasterror is set.

Constants for AudioUnitScope:

kAudioUnitScope_Global  = 0
kAudioUnitScope_Input   = 1
kAudioUnitScope_Output  = 2
kAudioUnitScope_Group   = 3
kAudioUnitScope_Part    = 4

15.4.35 AudioUnitSetPropertyString(AudioUnit as Integer, propertyID as Integer, AudioUnitScope as Integer, AudioUnitElement as Integer, data as string)

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets a property value for the Audio Unit.

**Notes:**
Lasterror is set.

Constants for AudioUnitScope:
15.4.36  AudioUnitUninitialize(componenthandle as Integer) as Integer


15.4.37  CloseComponent(componenthandle as Integer)

MBS MacOSX Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Closes a component. Notes: Do not use the componenthandle any more after this call!

15.4.38  CoreAudioConvertHostTimeToNanosMBS(inHostTime as UInt64) as UInt64

MBS MacOSX Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Convert the given host time to a time in Nanoseconds. Notes: Returns 0 on any error.

15.4.39  CoreAudioConvertNanosToHostTimeMBS(inNanos as UInt64) as UInt64

MBS MacOSX Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Convert the given Nanoseconds time to a time in the host clock’s time base. Notes: Returns 0 on any error.

15.4.40  CoreAudioGetCurrentHostTimeMBS as UInt64

MBS MacOSX Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Retrieve the current host time value. Notes: Returns 0 on any error.
15.4.41 CoreAudioGetHostClockFrequencyMBS as Double

MBS MacOSX Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Retrieve the number of ticks per second of the host clock.

15.4.42 GetHostClockMinimumTimeDeltaMBS as Integer

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Retrieve the smallest number of ticks difference between two succeeding values of the host clock. **Notes:**

For instance, if this value is 5 and the first value of the host clock is X then the next time after X will be at greater than or equal X+5.

Returns an unsigned integer value.

15.4.43 OpenDefaultComponent(type as string, subtype as string) as Integer

MBS MacOSX Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Opens the default component for the given type and subtype string. **Notes:**

You can check the "QT Components list" example project for which components are installed.

Returns 0 on any error.

type and subtype must be 4 letter codes.

useful constans:

15.4.44 Properties

15.4.45 kAudioDeviceProcessorOverload as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for CoreAudio. **Notes:** (Read only property)

15.4.46 kAudioDevicePropertyActualSampleRate as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for CoreAudio.


Notes: (Read only property)

15.4.47  kAudioDevicePropertyAvailableNominalSampleRates as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for CoreAudio.

Notes: (Read only property)

15.4.48  kAudioDevicePropertyBufferFrameSize as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for CoreAudio.

Notes: (Read only property)

15.4.49  kAudioDevicePropertyBufferFrameSizeRange as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for CoreAudio.
15.4.50  kAudioDevicePropertyBufferSize as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.51  kAudioDevicePropertyBufferSizeRange as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.52  kAudioDevicePropertyClockSource as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.53  kAudioDevicePropertyClockSourceNameForID as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.54  kAudioDevicePropertyClockSourceNameForIDCFString as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.55  kAudioDevicePropertyClockSources as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.56  kAudioDevicePropertyDataSource as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.57  kAudioDevicePropertyDataSourceNameForID as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.58  kAudioDevicePropertyDataSourceNameForIDCFString as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.59  kAudioDevicePropertyDataSources as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.60  kAudioDevicePropertyDeviceCanBeDefaultDevice as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.61  kAudioDevicePropertyDeviceCanBeDefaultSystemDevice as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  Function: One of the constants for CoreAudio.
15.4.62 kAudioDevicePropertyDeviceIsAlive as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for CoreAudio. **Notes:** (Read only property)

15.4.63 kAudioDevicePropertyDeviceIsRunning as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for CoreAudio. **Notes:** (Read only property)

15.4.64 kAudioDevicePropertyDeviceIsRunningSomewhere as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for CoreAudio. **Notes:** (Read only property)

15.4.65 kAudioDevicePropertyDeviceManufacturer as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for CoreAudio. **Notes:** (Read only property)

15.4.66 kAudioDevicePropertyDeviceManufacturerCFString as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for CoreAudio. **Notes:** (Read only property)

15.4.67 kAudioDevicePropertyDeviceName as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for CoreAudio.
Notes: (Read only property)

15.4.68 kAudioDevicePropertyDeviceNameCFString as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.69 kAudioDevicePropertyDeviceUID as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.70 kAudioDevicePropertyDriverShouldOwniSub as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.71 kAudioDevicePropertyHogMode as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.72 kAudioDevicePropertyIOProcStreamUsage as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.73 kAudioDevicePropertyJackIsConnected as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
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Notes: (Read only property)

15.4.74 kAudioDevicePropertyLatency as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.75 kAudioDevicePropertyMute as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.76 kAudioDevicePropertyNominalSampleRate as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.77 kAudioDevicePropertyPlayThru as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.78 kAudioDevicePropertyPlugIn as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.79 kAudioDevicePropertyPreferredChannelsForStereo as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
15.4.80 kAudioDevicePropertyRegisterBufferList as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.81 kAudioDevicePropertySafetyOffset as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.82 kAudioDevicePropertyStreamConfiguration as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.83 kAudioDevicePropertyStreamFormat as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.84 kAudioDevicePropertyStreamFormatMatch as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.85 kAudioDevicePropertyStreamFormats as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
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Notes: (Read only property)

15.4.86  kAudioDevicePropertyStreamFormatSupported as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.87  kAudioDevicePropertyStreams as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.88  kAudioDevicePropertySubMute as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.89  kAudioDevicePropertySubVolumeDecibels as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.90  kAudioDevicePropertySubVolumeDecibelsToScalar as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.91  kAudioDevicePropertySubVolumeRangeDecibels as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
15.4.92 \texttt{kAudioDevicePropertySubVolumeScalar} as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. \textbf{Function}: One of the constants for CoreAudio.
\textbf{Notes}: (Read only property)

15.4.93 \texttt{kAudioDevicePropertySubVolumeScalarToDecibels} as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. \textbf{Function}: One of the constants for CoreAudio.
\textbf{Notes}: (Read only property)

15.4.94 \texttt{kAudioDevicePropertySupportsMixing} as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. \textbf{Function}: One of the constants for CoreAudio.
\textbf{Notes}: (Read only property)

15.4.95 \texttt{kAudioDevicePropertyTransportType} as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. \textbf{Function}: One of the constants for CoreAudio.
\textbf{Notes}: (Read only property)

15.4.96 \texttt{kAudioDevicePropertyUsesVariableBufferFrameSizes} as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. \textbf{Function}: One of the constants for CoreAudio.
\textbf{Notes}: (Read only property)

15.4.97 \texttt{kAudioDevicePropertyVolumeDecibels} as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. \textbf{Function}: One of the constants for CoreAudio.
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Notes: (Read only property)

15.4.98  kAudioDevicePropertyVolumeDecibelsToScalar as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.99  kAudioDevicePropertyVolumeRangeDecibels as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.100  kAudioDevicePropertyVolumeScalar as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.101  kAudioDevicePropertyVolumeScalarToDecibels as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.102  kAudioHardwarePropertyBootChimeVolumeDecibels as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes:
A Float32 that represents the value of the boot chime volume control in dB. This property is implemented by an AudioControl object that is a subclass of AudioBootChimeVolumeControl.
(Read only property)
15.4.103  kAudioHardwarePropertyBootChimeVolumeDecibelsToScalar as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for CoreAudio. **Notes:** (Read only property)
15.4. CLASS COREAUDIOMBS

15.4.104 kAudioHardwarePropertyBootChimeVolumeRangeDecibels as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.105 kAudioHardwarePropertyBootChimeVolumeScalar as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.106 kAudioHardwarePropertyBootChimeVolumeScalarToDecibels as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.107 kAudioHardwarePropertyDefaultInputDevice as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.108 kAudioHardwarePropertyDefaultOutputDevice as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)

15.4.109 kAudioHardwarePropertyDefaultSystemOutputDevice as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio.
Notes: (Read only property)
15.4.110  **kAudioHardwarePropertyDeviceForUID as String**

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for CoreAudio. **Notes:** (Read only property)

15.4.111  **kAudioHardwarePropertyDevices as String**

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for CoreAudio. **Notes:** (Read only property)

15.4.112  **kAudioHardwarePropertyRunLoop as String**

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for CoreAudio. **Notes:** (Read only property)

15.4.113  **kAudioHardwarePropertySleepingIsAllowed as String**

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for CoreAudio. **Notes:** (Read only property)

15.4.114  **kAudioHardwarePropertyUnloadingIsAllowed as String**

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for CoreAudio. **Notes:** (Read only property)

15.4.115  **kAudioPropertyWildcardChannel as Integer**

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for CoreAudio. **Notes:** (Read only property)
15.4. CLASS COREAUDIOMBS

15.4.116  kAudioPropertyWildcardPropertyID as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for CoreAudio. **Notes:** (Read only property)

15.4.117  kAudioPropertyWildcardSection as Integer

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for CoreAudio. **Notes:** (Read only property)

15.4.118  kAudioStreamPropertyDirection as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for CoreAudio. **Notes:** (Read only property)

15.4.119  kAudioStreamPropertyOwningDevice as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for CoreAudio. **Notes:** (Read only property)

15.4.120  kAudioStreamPropertyPhysicalFormat as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for CoreAudio. **Notes:** (Read only property)

15.4.121  kAudioStreamPropertyPhysicalFormatMatch as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for CoreAudio. **Notes:** (Read only property)
15.4.122 kAudioStreamPropertyPhysicalFormats as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio. Notes: (Read only property)

15.4.123 kAudioStreamPropertyPhysicalFormatSupported as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio. Notes: (Read only property)

15.4.124 kAudioStreamPropertyStartingChannel as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio. Notes: (Read only property)

15.4.125 kAudioStreamPropertyTerminalType as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants for CoreAudio. Notes: (Read only property)

15.4.126 Lasterror as Integer

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The last error code returned. Notes: 0 for success. (Read and Write property)
15.5. class CoreAudioPlayerMBS

15.5.1 class CoreAudioPlayerMBS

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class to play sounds from a memoryblock using CoreAudio.

**Notes:**

This class uses an internal buffer of around 100000 samples which when played with a samplerate of 8000 will play for 10 seconds.
The music stops playing after this object is destroyed.
Mac OS X is required.

15.5.2 Methods

15.5.3 AddAudio(Data as memoryblock, offsetBytes as Integer=0, countBytes as Integer=0, BitSize as Integer=16, ClearBuffers as boolean=false) as boolean

MBS MacOSX Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds integer audio.

**Notes:**

Data: a memoryblock with the sound data
offsetBytes: the number of the bytes to start playing (0=first)
countBytes: the number of bytes to play from offset.

You need to set NumberOfChannels before calling this method.
NumberOfChannels can be 1 or 2. For 2 channels, sound data must be interleaved.

Values for bitsize:

- 7 signed byte
- 8 unsigned byte
- 15 signed short
- 16 unsigned short
- 24 unsigned medium
- 31 signed integer
- 32 unsigned integer
This method only copies the data to the internal queue. It returns directly.
If ClearBuffers is true the buffer list is cleared before this new data is added.

15.5.4 AddAudioStereo(Data1 as memoryblock, Data2 as memoryblock, offsetBytes as Integer=0, countBytes as Integer=0, BitSize as Integer=16, ClearBuffers as boolean=false) as boolean

Notes:
This is a special version of PlayAudio which takes samples from both memoryblocks and interleaves them.

Data1: a memoryblock with the sound data
Data2: a memoryblock with the sound data
offsetBytes: the number of the bytes to start playing (0=first)
countBytes: the number of bytes to play from offset.

You need to set NumberOfChannels before calling this method.
NumberOfChannels must be 2 for this method.

Values for bitsize:

7 signed byte
8 unsigned byte
15 signed short
16 unsigned short
24 unsigned medium
31 signed integer
32 unsigned integer

This method only copies the data to the internal queue. It returns directly.
If ClearBuffers is true the buffer list is cleared before this new data is added.
15.5.5 AddFloatAudio(FloatData as memoryblock, offsetBytes as Integer=0, countBytes as Integer=0, ClearBuffers as boolean=false) as boolean

MBS MacOSX Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds float audio.

**Notes:**

FloatData: a memoryblock with the sound data filled with single values.
offsetBytes: the number of the bytes to start playing (0=first)
countBytes: the number of bytes to play from offset.

The samples are stored in 32bit float values (memoryblock.SingleValue)

You need to set NumberOfChannels before calling this method.
NumberOfChannels can be 1 or 2. For 2 channels, sound data must be interleaved.

This method only copies the data to the internal queue. It returns directly.
If ClearBuffers is true the buffer list is cleared before this new data is added.

15.5.6 AddFloatAudioStereo(FloatData1 as memoryblock, FloatData2 as memoryblock, offsetBytes as Integer=0, countBytes as Integer=0, ClearBuffers as boolean=false) as boolean

MBS MacOSX Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds float audio.

**Notes:**

This is a special version of PlayFloatAudio which takes samples from both memoryblocks and interleaves them.

FloatData1: a memoryblock with the sound data filled with single values.
FloatData2: a memoryblock with the sound data filled with single values.
offsetBytes: the number of the bytes to start playing (0=first)
countBytes: the number of bytes to play from offset.

The samples are stored in 32bit float values (memoryblock.SingleValue)

You need to set NumberOfChannels before calling this method.
NumberOfChannels must be 2 for this method.

This method only copies the data to the internal queue. It returns directly.
If ClearBuffers is true the buffer list is cleared before this new data is added.
15.5.7 Close

MBS MacOSX Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The destructor.

**Notes:**

There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

15.5.8 FreeSpace as Integer

MBS MacOSX Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the number of buffer entries available in the queue.

**Notes:** The size of the buffers is not limited except your available memory.

15.5.9 HardwareNumberOfChannels as Integer

MBS MacOSX Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the actual number of channels in the default device; to set the number of channels being output, use numberOfChannels.

**Notes:**

This class can only play stereo to 2 channel devices or mono to all channels.
Returns 0 on any error.

15.5.10 HardwareSampleRate as single

MBS MacOSX Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The hardware sample rate.

**Notes:** Today this is normally 44100 Hz. Or 0 on any error.

15.5.11 HasFreeSpace as boolean

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Returns true if the internal sound buffer is not full.

**Notes:**
Returns true if freespace returns a value greater than zero.

This function was named IsQueueEmpty in plugin version 7.4.

15.5.12 PlayAudio(Data as memoryblock, offsetBytes as Integer=0, countBytes as Integer=0, BitSize as Integer=16, ClearBuffers as boolean=false) as boolean

MBS MacOSX Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds integer audio and starts playback.  
**Notes:**  
Data: a memoryblock with the sound data  
offsetBytes: the number of the bytes to start playing (0=first)  
countBytes: the number of bytes to play from offset.

You need to set NumberOfChannels before calling this method.  
NumberOfChannels can be 1 or 2. For 2 channels, sound data must be interleaved.

Values for bitsize:

<table>
<thead>
<tr>
<th>Value</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>signed byte</td>
</tr>
<tr>
<td>8</td>
<td>unsigned byte</td>
</tr>
<tr>
<td>15</td>
<td>signed short</td>
</tr>
<tr>
<td>16</td>
<td>unsigned short</td>
</tr>
<tr>
<td>24</td>
<td>unsigned medium</td>
</tr>
<tr>
<td>31</td>
<td>signed integer</td>
</tr>
<tr>
<td>32</td>
<td>unsigned integer</td>
</tr>
</tbody>
</table>

This method only copies the data to the internal queue. It returns directly.  
If ClearBuffers is true the buffer list is cleared before this new data is added.

15.5.13 PlayAudioStereo(Data1 as memoryblock, Data2 as memoryblock, offsetBytes as Integer=0, countBytes as Integer=0, BitSize as Integer=16, ClearBuffers as boolean=false) as boolean

MBS MacOSX Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds integer audio and starts playback.
Notes:

This is a special version of PlayAudio which takes samples from both memoryblocks and interleaves them.

Data1: a memoryblock with the sound data
Data2: a memoryblock with the sound data
offsetBytes: the number of the bytes to start playing (0=first)
countBytes: the number of bytes to play from offset.

You need to set NumberOfChannels before calling this method.
NumberOfChannels must be 2 for this method.

Values for bitsize:

7 signed byte
8 unsigned byte
15 signed short
16 unsigned short
24 unsigned medium
31 signed integer
32 unsigned integer

This method only copies the data to the internal queue. It returns directly.
If ClearBuffers is true the buffer list is cleared before this new data is added.

15.5.14 PlayFloatAudio(FloatData as memoryblock, offsetBytes as Integer=0, countBytes as Integer=0, ClearBuffers as boolean=false) as boolean

MBS MacOSX Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Adds float audio and starts playback.

Notes:

FloatData: a memoryblock with the sound data filled with single values.
offsetBytes: the number of the bytes to start playing (0=first)
countBytes: the number of bytes to play from offset.

The samples are stored in 32bit float values (memoryblock.SingleValue)

You need to set NumberOfChannels before calling this method.
NumberOfChannels can be 1 or 2. For 2 channels, sound data must be interleaved.
This method only copies the data to the internal queue. It returns directly. If ClearBuffers is true the buffer list is cleared before this new data is added.

### 15.5.15 PlayFloatAudioStereo

**Function:**

Adds float audio and starts playback.

**Notes:**

This is a special version of PlayFloatAudio which takes samples from both memoryblocks and interleaves them.

- **FloatData1:** a memoryblock with the sound data filled with single values.
- **FloatData2:** a memoryblock with the sound data filled with single values.
- **offsetBytes:** the number of the bytes to start playing (0=first)
- **countBytes:** the number of bytes to play from offset.

The samples are stored in 32bit float values (memoryblock.SingleValue)

You need to set NumberOfChannels before calling this method.

**NumberOfChannels** must be 2 for this method.

This method only copies the data to the internal queue. It returns directly. If ClearBuffers is true the buffer list is cleared before this new data is added.

### 15.5.16 Start

**Function:**

Starts playback.

**Notes:**

use AddAudio, AddAudioStereo, AddFloatAudio and AddFloatAudioStereo first to fill buffers.

### 15.5.17 Stop

**Function:**

Stops playback.
15.5.18 Properties

15.5.19 HadUnderflow as Boolean

MBS MacOSX Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A flag set if a data underflow was found while NoUnderflow is true.
**Notes:**
You may want to set this to false after your application recovered from a data underflow.
(Read and Write property)

15.5.20 IsRunning as Boolean

MBS MacOSX Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the class is playing something.
**Notes:**
Returns true while playing.
(Read only property)

15.5.21 NoUnderflow as Boolean

MBS MacOSX Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether underflows should be prevented.
**Notes:**
If no audio data is there and NoUnderflow=true, the flag HadUnderflow is set to true and 0 values (Silence) is played.
Switching from sound to no sound and back may add some noise.
(Read and Write property)

15.5.22 NumberOfChannels as Integer

MBS MacOSX Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of output channels.
**Notes:**
Currently only 1 (default) and 2 are supported.
(Read and Write property)
15.5.23 OutputDeviceID as Integer

MBS MacOSX Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The output device to use. **Notes:**

0 for the default output device. If you set this property to a bad value you risk a crash. (Read and Write property)

15.5.24 OutputPosition as Double

MBS MacOSX Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The current position in the playing stream. **Notes:**

May point between samples. (Read only property)

15.5.25 OutputPositionRelative as Double

MBS MacOSX Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The current position in the playing buffer. **Notes:**

May point between samples. Will reset to 0 when a new buffer is used. (Read only property)

15.5.26 SampleRate as Single

MBS MacOSX Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The sample rate to use. **Notes:**

You can use any value between 4000 and 100000. Default is 44100 Hz. (Read and Write property)
15.6  class PortAudioDeviceInfoMBS

15.6.1  class PortAudioDeviceInfoMBS

MBS Audio Plugin, Plugin Version: 6.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A class providing information and capabilities of PortAudio devices.
**Notes:**
Devices may support input, output or both input and output.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

15.6.2  Methods

15.6.3  Constructor

MBS Audio Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

15.6.4  Properties

15.6.5  DefaultHighInputLatency as Double

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Default latency values for robust non-interactive applications (eg. playing sound files).
**Notes:** (Read only property)

15.6.6  DefaultHighOutputLatency as Double

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Default latency values for robust non-interactive applications (eg. playing sound files).
**Notes:** (Read only property)

15.6.7  DefaultLowInputLatency as Double

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Default latency values for interactive performance.
**Notes:** (Read only property)
15.6. CLASS PORTAUDIODEVICEINFOMBS

15.6.8 DefaultLowOutputLatency as Double

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Default latency values for interactive performance.
**Notes:** (Read only property)

15.6.9 DefaultSampleRate as Double

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The default sample rate.
**Notes:** (Read only property)

15.6.10 HostApiIndex as Integer

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The host API index for this device.
**Notes:** (Read only property)

15.6.11 Index as Integer

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The index of this device.
**Notes:** (Read only property)

15.6.12 MaxInputChannels as Integer

MBS Audio Plugin, Plugin Version: 6.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of input channels.
**Notes:**
Returns 0 on any error.
(Read only property)

15.6.13 MaxOutputChannels as Integer

MBS Audio Plugin, Plugin Version: 6.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of output channels for this device.
**Notes:**
0 on any error.

Seems like an iMac returns two here, but the internal microphone has only one channel. So be aware that the memory blocks in the events do have the actual size of the data that is coming in. So stereo has there a larger buffer.
(Read only property)

15.6.14 Name as String

MBS Audio Plugin, Plugin Version: 6.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The name of this device.
**Notes:**
Returns "" on any error.
(Read only property)
15.7. CLASS PORTAUDIOHOSTAPIINFOMBS

15.7  class PortAudioHostApiInfoMBS

15.7.1  class PortAudioHostApiInfoMBS

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class containing information about a particular host API. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

15.7.2  Methods

15.7.3  Constructor

MBS Audio Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The private constructor.

15.7.4  Properties

15.7.5  defaultInputDevice as Integer

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The default input device for this host API. **Notes:** The value will be a device index ranging from 0 to (PortAudioHostApiInfoMBS.deviceCount-1), or paNoDevice (-1) if no default input device is available. (Read only property)

15.7.6  defaultOutputDevice as Integer

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The default output device for this host API. **Notes:** The value will be a device index ranging from 0 to (PortAudioHostApiInfoMBS.deviceCount-1), or paNoDevice (-1) if no default output device is available. (Read only property)
15.7.7 deviceCount as Integer

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The number of devices belonging to this host API.
**Notes:**
This field may be used in conjunction with HostApiDeviceIndexToDeviceIndex() to enumerate all devices for this host API.
(Read only property)

15.7.8 Index as Integer

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The index of this host API.
**Notes:** (Read only property)

15.7.9 Name as String

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A textual description of the host API for display on user interfaces.
**Notes:** (Read only property)

15.7.10 Type as Integer

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The well known unique identifier of this host API.
**Notes:**
Useful constants for the different types:

(Read only property)
paInDevelopment = 0
paDirectSound = 1
paMME = 2
paASIO = 3
paSoundManager = 4
paCoreAudio = 5
paOSS = 7
paALSA = 8
paAL = 9
paBeOS = 10
paWDMKS = 11
paJACK = 12
paWASAPI = 13
paAudioScienceHPI = 14
15.8 class PortAudioHostErrorInfoMBS

15.8.1 class PortAudioHostErrorInfoMBS

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A class used to return information about a host error condition.
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

15.8.2 Methods

15.8.3 Constructor

MBS Audio Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

15.8.4 Properties

15.8.5 ErrorCode as Integer

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
the error code returned.
**Notes:** (Read only property)

15.8.6 ErrorText as String

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A textual description of the error if available, otherwise a zero-length string.
**Notes:** (Read only property)

15.8.7 HostApiType as Integer

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The host API which returned the error code.
**Notes:** (Read only property)
15.9. CLASS PORTAUDIOMBS

15.9 class PortAudioMBS

15.9.1 class PortAudioMBS

MBS Audio Plugin, Plugin Version: 6.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class to run the opensource PortAudio library in Realbasic.

**Notes:**

Constants for error codes:

- `paNoError` = 0
- `Plugin parameter error` = -1
- `paNotInitialized` = -10000
- `paUnanticipatedHostError` = -9999
- `paInvalidChannelCount` = -9998
- `paInvalidSampleRate` = -9997
- `paInvalidDevice` = -9996
- `paInvalidFlag` = -9995
- `paSampleFormatNotSupported` = -9994
- `paBadIODeviceCombination` = -9993
- `paInsufficientMemory` = -9992
- `paBufferTooBig` = -9991
- `paBufferTooSmall` = -9990
- `paNullCallback` = -9889
- `paBadStreamPtr` = -9988
- `paTimedOut` = -9987
- `paInternalError` = -9986
- `paDeviceUnavailable` = -9985
- `paIncompatibleHostApiSpecificStreamInfo` = -9984
- `paStreamIsStopped` = -9983
- `paStreamIsNotStopped` = -9982
- `paInputOverfilled` = -9981
- `paOutputUnderflowed` = -9980
- `paHostApiNotFound` = -9979
- `paInvalidHostApi` = -9978
- `paCanNotReadFromACallbackStream` = -9977
- `paCanNotWriteToACallbackStream` = -9976
- `paCanNotReadFromAnOutputOnlyStream` = -9975
- `paCanNotWriteToAnInputOnlyStream` = -9974
- `paIncompatibleStreamHostApi` = -9973
- `paBadBufferPtr` = -9972

Initialization and Termination of the PortAudio library are done in background automatically.

Requires libasound.so.2 on Linux to be installed.
15.9.2 Methods

15.9.3 CountDevices as Integer

MBS Audio Plugin, Plugin Version: 6.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieve the number of available devices.

**Example:**

```vba
Dim c as Integer = pa.CountDevices
msgbox str(c)+" devices found"
for i as Integer = 0 to c-1
    MsgBox pa.DeviceInfo(i).Name
next
```

**Notes:**

The number of available devices may be zero.

Returns a non-negative value indicating the number of available devices or, a PaErrorCode (which are always negative) if PortAudio is not initialized or an error is encountered.

15.9.4 DefaultHostApiIndexd as Integer

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieve the index of the default host API.

**Example:**

```vba
Dim d as PortAudioHostApiInfoMBS = pa.HostApiInfo(DefaultHostApiIndexd)
MsgBox "Default host API is: "+d.Name
```

**Notes:**

Returns a non-negative value indicating the number of available devices or, a PaErrorCode (which are always negative) if PortAudio is not initialized or an error is encountered.
The default host API will be the lowest common denominator host API on the current platform and is unlikely to provide the best performance.

Returns a non-negative value ranging from 0 to (HostApiCount-1) indicating the default host API index or, a PaErrorCode (which are always negative) if PortAudio is not initialized or an error is encountered.

### 15.9.5 DefaultInputDeviceID as Integer

MBS Audio Plugin, Plugin Version: 6.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieve the index of the default input device. **Example:**

```vbscript
dim pa as new PortAudioMBS

dim DefaultInputDeviceID as Integer = pa.DefaultInputDeviceID

if DefaultInputDeviceID>=0 then
    dim d as PortAudioDeviceInfoMBS = paDeviceInfo(DefaultInputDeviceID)
    MsgBox "Default input device is: " + d.Name
else
    MsgBox "No default input device."
end if
```

**Notes:**
The result can be used in the inputDevice parameter to OpenStream().

Returns the default input device index for the default host API, or paNoDevice (-1) if no default input device is available or an error was encountered.

### 15.9.6 DefaultOutputDeviceID as Integer

MBS Audio Plugin, Plugin Version: 6.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieve the index of the default output device. **Example:**

```vbscript
dim pa as new PortAudioMBS

dim DefaultOutputDeviceID as Integer = pa.DefaultOutputDeviceID

if DefaultOutputDeviceID>=0 then
    dim d as PortAudioDeviceInfoMBS = paDeviceInfo(DefaultOutputDeviceID)
    MsgBox "Default output device is: " + d.Name
else
    MsgBox "No default output device."
end if
```
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```vba
MsgBox "Default output device is: " + d.Name
else
MsgBox "No default output device."
end if
```

**Notes:**

The result can be used in the outputDevice parameter to OpenStream().

Returns the default output device index for the default host API, or paNoDevice (-1) if no default output device is available or an error was encountered.

On the PC, the user can specify a default device by setting an environment variable. For example, to use device # 1.

```vba
set PA.RECOMMENDED_OUTPUT_DEVICE=1
```

The user should first determine the available device ids by using the supplied application "pa_devs".

### 15.9.7 DeviceInfo(DeviceIndex as Integer) as PortAudioDeviceInfoMBS

**MBS Audio Plugin, Plugin Version: 6.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:**

Retrieve an object containing information about the specified device.

**Example:**

```vba
dim pa as new PortAudioMBS

Dim u as Integer = pa.CountDevices - 1
for i as Integer = 0 to u
    dim d as PortAudioDeviceInfoMBS = pa.DeviceInfo(i)
    MsgBox d.Name + " with default " + str(D.DefaultSampleRate) + " Hz"
next
```

**Notes:**

Returns an object of class PortAudioDeviceInfoMBS with the requested information. If the device parameter is out of range the function returns nil.

DeviceIndex: A valid device index in the range 0 to (PortAudioMBS.CountDevices - 1)
15.9. **CLASS PORTAUDIOMBS**

### 15.9.8 DisableHostAPI(API as string) as boolean

MBS Audio Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Enables a PortAudio Host API. **Example:**

```
if PortAudioMBS.DisableHostAPI("Core Audio") then // for Mac
    MsgBox "OK"
else
    MsgBox "Failed"
end if
```

**Notes:**

This must be called before using any PortAudio function. It removes the API from the list of APIs to be used when PortAudio initializes. This way you can avoid loading interfaces you don’t need. API name can be "MME", "Windows DirectSound", "Windows WASAPI", "ASIO", "Core Audio", "ALSA", "OSS". Returns true on success.

### 15.9.9 ErrorText(ErrorNumber as Integer) as string

MBS Audio Plugin, Plugin Version: 6.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Translate the error number into a human readable message.

### 15.9.10 GetSampleSize(Format as Integer) as Integer

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the sample size in bytes of the given format. **Example:**

```
dim pa as new PortAudioMBS
const paFloat32 = 1

MsgBox str(pa.GetSampleSize(paFloat32)) + “ bytes per sample”
```
15.9.11 HostApiCount as Integer

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieve the number of available host APIs.  
**Example:**

```vba
dim pa as new PortAudioMBS
Dim c as Integer = pa.HostApiCount
msgbox str(c)+“ host APIs found”
```

**Notes:**

Even if a host API is available it may have no devices available.

Returns a non-negative value indicating the number of available host APIs or, a PaErrorCode (which are always negative) if PortAudio is not initialized or an error is encountered.

15.9.12 HostApiDeviceIndexToDeviceIndex(hostApiIndex as Integer, hostApiDeviceIndex as Integer) as Integer

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Convert a host-API-specific device index to standard PortAudio device index.  
**Notes:**

This function may be used in conjunction with the deviceCount field of PaHostApiInfo to enumerate all devices for the specified host API.

```vba
hostApiIndex: A valid host API index ranging from 0 to (HostApiCount-1)
hostApiDeviceIndex: A valid per-host device index in the range 0 to (HostApiInfo(hostApi).deviceCount-1)
```

Returns a non-negative device index ranging from 0 to (DeviceCount-1) or, an error code (which are always negative) if PortAudio is not initialized or an error is encountered.

A paInvalidHostApi (-9978) error code indicates that the host API index specified by the hostApi parameter is out of range.

A paInvalidDevice (-9996) error code indicates that the hostApiDeviceIndex parameter is out of range.
15.9.13 HostApiInfo(hostApiIndex as Integer) as PortAudioHostApiInfoMBS

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieve an PortAudioHostApiInfoMBS object containing information about a specific host Api. **Example:**

```vbscript
dim pa as new PortAudioMBS
Dim u as Integer = pa.HostApiCount - 1

for i as Integer = 0 to u
    dim d as PortAudioHostApiInfoMBS = pa.HostApiInfo(i)
    MsgBox d.name
next
```

**Notes:**

- hostApiIndex: A valid host API index ranging from 0 to (HostApiCount-1)

Returns the information object. If the hostApi parameter is out of range or an error is encountered, the function returns nil.

15.9.14 HostApiTypeIdToHostApiIndex(type as Integer) as Integer

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Convert a static host API unique identifier, into a runtime host API index. **Example:**

```vbscript
dim IndexDirectSound as Integer
dim p as new PortAudioMBS
const paDirectSound=1
IndexDirectSound=p.HostApiTypeIdToHostApiIndex(paDirectSound)
```

**Notes:**

- type: A unique host API identifier. See PortAudioHostApiInfoMBS.Type for the list of constants.

Returns a valid PaHostApiIndex ranging from 0 to (HostApiCount-1) or, a PaErrorCode (which are always negative) if PortAudio is not initialized or an error is encountered.

The paHostApiNotFound (-9979) error code indicates that the host API specified by the type parameter is not available.
15.9.15 HostError as PortAudioHostErrorInfoMBS

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Return information about the last host error encountered.

**Notes:**
This function is provided as a last resort, primarily to enhance debugging by providing clients with access to all available error information.

Returns an object containing information about the host error. The values in this structure will only be valid if a PortAudio function has previously returned the paUnanticipatedHostError.

15.9.16 IsFormatSupported(input as PortAudioStreamParametersMBS, output as PortAudioStreamParametersMBS, sampleRate as Double) as Integer

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Determine whether it would be possible to open a stream with the specified parameters.

**Notes:**
- input: An object that describes the input parameters used to open a stream. The suggestedLatency field is ignored. inputParameters must be nil for output-only streams.
- output: An object that describes the output parameters used to open a stream. The suggestedLatency field is ignored. outputParameters must be nil for input-only streams.
- sampleRate: The required sampleRate. For full-duplex streams it is the sample rate for both input and output

Returns 0 if the format is supported, and an error code indicating why the format is not supported otherwise. The constant paFormatIsSupported (0) is provided to compare with the return value for success.

15.9.17 SampleSize(theFormat as Integer) as Integer

MBS Audio Plugin, Plugin Version: 6.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Return size in bytes of a single sample in a given sample format or paSampleFormatNotSupported (-9994).

**Notes:**
Returns 0 on any error.

Constants for sample format:
15.9. CLASS PORTAUDIOMBS

const paFloat32 = 1
const paInt32 = 2
const paInt24 = 4
const paInt16 = 8
const paInt8 = 16
const paUInt8 = 32
const paCustomFormat = 65536
const paNonInterleaved = negative sign

The standard formats paFloat32, paInt16, paInt32, paInt24, paInt8 and aUInt8 are usually implemented by all implementations.

The floating point representation (paFloat32) uses +1.0 and -1.0 as the maximum and minimum respectively.

paUInt8 is an unsigned 8 bit format where 128 is considered "ground"

The paNonInterleaved flag indicates that a multichannel buffer is passed as a set of non-interleaved pointers.

15.9.18 SetDebugLogFile(File as FolderItem) as boolean

Notes:
Pass nil to stop logging.
Returns true on success or false on failure.

15.9.19 Sleep(msec as Integer)

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Put the caller to sleep for at least 'msec' milliseconds.
Notes:
This function is provided only as a convenience for authors of portable code (such as the tests and examples in the PortAudio distribution.)
The function may sleep longer than requested so don’t rely on this for accurate musical timing.
15.9.20 Version as Integer

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieve the release number of the currently running PortAudio build.
**Notes:** e.g. 1900

15.9.21 VersionControlRevision as String

MBS Audio Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieve a version control revision text.

15.9.22 VersionText as String

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieve a textual description of the current PortAudio build.
**Notes:** e.g. "PortAudio V19-devel 13 October 2002"
15.10. **CLASS PORTAUDIOSTREAMBASEMBS**

15.10 class PortAudioStreamBaseMBS

15.10.1 class PortAudioStreamBaseMBS

MBS Audio Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The base class for the portaudio streams.

15.10.2 Methods

15.10.3 Abort as Integer

MBS Audio Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Terminates audio processing immediately without waiting for pending buffers to complete.

15.10.4 Close as Integer

MBS Audio Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Closes an audio stream.
**Notes:** If the audio stream is active it discards any pending buffers as if Abort() had been called.

15.10.5 CPULoad as Double

MBS Audio Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieve CPU usage information for the specified stream.
**Notes:**
The "CPU Load" is a fraction of total CPU time consumed by a callback stream’s audio processing routines including, but not limited to the client supplied stream callback. This function does not work with blocking read/write streams.

This function may be called from the stream callback function or the application.

Returns a floating point value, typically between 0.0 and 1.0, where 1.0 indicates that the stream event is consuming the maximum number of CPU cycles possible to maintain real-time operation. A value of 0.5 would imply that PortAudio and the stream event was consuming roughly 50% of the available CPU time. The return value may exceed 1.0. A value of 0.0 will always be returned for a blocking read/write stream, or if an error occurs.
15.10.6 HostError as PortAudioHostErrorInfoMBS

MBS Audio Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Return information about the last host error encountered.

**Notes:**
This function is provided as a last resort, primarily to enhance debugging by providing clients with access to all available error information.

Returns an object containing information about the host error. The values in this structure will only be valid if a PortAudio function has previously returned the paUnanticipatedHostError.

15.10.7 Info as PortAudioStreamInfoMBS

MBS Audio Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieve a PortAudioStreamInfoMBS object containing information about the specified stream.

**Notes:** If the stream parameter invalid, or an error is encountered, the function returns nil.

15.10.8 IsStreamActive as Integer

MBS Audio Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Determine whether the stream is active.

**Notes:**
A stream is active after a successful call to Start(), until it becomes inactive either as a result of a call to Stop() or Abort(), or as a result of a return value other than paContinue from the stream callback. In the latter case, the stream is considered inactive after the last buffer has finished playing.

Returns one (1) when the stream is active (ie playing or recording audio), zero (0) when not playing or, a PaErrorCode (which are always negative) if PortAudio is not initialized or an error is encountered.

15.10.9 IsStreamStopped as Integer

MBS Audio Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Determine whether the stream is stopped.

**Notes:**
A stream is considered to be stopped prior to a successful call to Start and after a successful call to Stop or Abort.
If a stream value returns a value other than paContinue (0) the stream is NOT considered to be stopped.
15.10. CLASS PORTAUDIOSTREAMBASEMBS

Returns one (1) when the stream is stopped, zero (0) when the stream is running or, a PaErrorCode (which are always negative) if PortAudio is not initialized or an error is encountered.

15.10.10 Start as Integer

MBS Audio Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Commences audio processing.
**Notes:**
Returns an error code.
(0 for success, -1 for no stream)

15.10.11 Stop as Integer

MBS Audio Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Terminates audio processing.
**Notes:** It waits until all pending audio buffers have been played before it returns.

15.10.12 Time as Double

MBS Audio Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Determine the current time for the stream according to the same clock used to generate buffer timestamps.
**Notes:**
This time may be used for synchronizing other events to the audio stream, for example synchronizing audio to MIDI.

Returns the stream’s current time in seconds, or 0 if an error occurred.

15.10.13 Properties

15.10.14 UseSafeThreading as boolean

MBS Audio Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Enables or disables thread safe event handling.
**Notes:**
Realbasic works normally only on one preemptive thread as the framework is not reentrant and not in general preemptive thread safe.
Still newer Realbasic versions get better so you can switch it off and get a better performance.
For most usages you need to turn it off. See the examples. A lot of pragma lines are needed to disable
everything which can slow down processing. Also you are limited in a preemptive thread to do only math
and no object creating/deleting.
(Read and Write computed property)
15.11. CLASS PORTAUDIOSTREAMBUFFEREDMBS

15.11 class PortAudioStreamBufferedMBS

15.11.1 class PortAudioStreamBufferedMBS

MBS Audio Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A portaudio stream class to use an internal buffer to feed its callback. 
**Notes:**
Currently this class allows you to add 200 buffers to the internal playlist. The buffer size is not limited. FreeSpace returns you the number of buffers you have currently. Buffers are freed after they are played. Subclass of the PortAudioStreamBaseMBS class.

15.11.2 Methods

15.11.3 **AddAudio(Data as memoryblock, offsetBytes as Integer=0, countBytes as Integer=0, BitSize as Integer=16, ClearBuffers as boolean=false) as boolean**

MBS Audio Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds audio to the queue. 
**Notes:**
Data: a memoryblock with the sound data
offsetBytes: the number of the bytes to start playing (0=first)
countBytes: the number of bytes to play from offset. If countBytes is zero, the memoryblock’s size property is used.

You need to set numOutputChannels to 1 or 2 when opening the stream. For 2 channels, sound data must be interleaved.

Values for bitsize:

7 signed byte
8 unsigned byte
15 signed short
16 unsigned short
24 unsigned medium
31 signed integer
32 unsigned integer
This method copies the data to the internal queue. It returns directly.

If ClearBuffers is true, the buffer list will be cleared before this new data is added. This allows to have the next minute in the buffers and still do a change in the stream quick.

Returns true on success and false on failure (e.g. out of memory).

15.11.4 AddAudioStereo(Data1 as memoryblock, Data2 as memoryblock, offsetBytes as Integer=0, countBytes as Integer=0, BitSize as Integer=16, ClearBuffers as boolean=false) as boolean


Notes:

This is a special version of AddAudio which takes samples from both memoryblocks and interleaves them.

Data1: a memoryblock with the sound data  
Data2: a memoryblock with the sound data  
offsetBytes: the number of the bytes to start playing (0=first)  
countBytes: the number of bytes to play from offset. If countBytes is zero, the memoryblock’s size property is used.

The stream must use 2 channels for this method to work correctly.

Values for bitsize:

7 signed byte  
8 unsigned byte  
15 signed short  
16 unsigned short  
24 unsigned medium  
31 signed integer  
32 unsigned integer  

This method copies the data to the internal queue. It returns directly.

If ClearBuffers is true, the buffer list will be cleared before this new data is added. This allows to have the next minute in the buffers and still do a change in the stream quick.
15.11. CLASS PORTAUDIOSTREAMBUFFEREDMBS

Returns true on success and false on failure (e.g. out of memory).

15.11.5 AddFloatAudio(FloatData as memoryblock, offsetBytes as Integer=0, countBytes as Integer=0, ClearBuffers as boolean=false) as boolean

MBS Audio Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds audio to the queue.

**Notes:**
FloatData: a memoryblock with the sound data filled with single values.
offsetBytes: the number of the bytes to start playing (0=first)
countBytes: the number of bytes to play from offset. If countBytes is zero, the memoryblock’s size property is used.

You need to set numOutputChannels to 1 or 2 when opening the stream. For 2 channels, sound data must be interleaved.

The samples are stored in 32bit float values (memoryblock.SingleValue)

This method copies the data to the internal queue. It returns directly.

If ClearBuffers is true, the buffer list will be cleared before this new data is added. This allows to have the next minute in the buffers and still do a change in the stream quick.

Returns true on success and false on failure (e.g. out of memory).

15.11.6 AddFloatAudioStereo(FloatData1 as memoryblock, FloatData2 as memoryblock, offsetBytes as Integer=0, countBytes as Integer=0, ClearBuffers as boolean=false) as boolean

MBS Audio Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds audio to the queue.

**Notes:**
This is a special version of AddFloatAudio which takes samples from both memoryblocks and interleaves them.

FloatData1: a memoryblock with the sound data filled with single values.
FloatData2: a memoryblock with the sound data filled with single values.
offsetBytes: the number of the bytes to start playing (0=first)
countBytes: the number of bytes to play from offset. If countBytes is zero, the memoryblock’s size property is used.

The samples are stored in 32bit float values (memoryblock.SingleValue)

This method copies the data to the internal queue. It returns directly.

The stream must use 2 channels for this method to work correctly.

If ClearBuffers is true, the buffer list will be cleared before this new data is added. This allows to have the next minute in the buffers and still do a change in the stream quick.

Returns true on success and false on failure (e.g. out of memory).

### 15.11.7 FreeSpace as Integer

MBS Audio Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of buffer entries available in the queue. **Notes:** The size of the buffers is not limited except your available memory.

### 15.11.8 HasFreeSpace as boolean

MBS Audio Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if the internal sound buffer has free space. **Notes:**

Returns true if freespace returns a value greater than zero.

This function was named IsQueueEmpty in plugin version 7.4.

### 15.11.9 OpenDefaultStream(numOutputChannels as Integer, sampleRate as Double) as Integer

MBS Audio Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A simplified version of OpenStream() that opens the default input and/or output devices. **Notes:**
Sample format is always 32bit float in this class. All data you add the queue is converted to float internally.

numOutputChannels: The number of channels of sound to be delivered to the stream callback or passed to Write. It can range from 1 to the value of maxOutputChannels in the PortAudioDeviceInfoMBS object for the default output device. If 0 the stream is opened as an output-only stream.

sampleRate: Same as OpenStream parameter of the same name.

Returns an error code.

**15.11.10 OpenStream(outputParameters as PortAudioStreamParametersMBS, sampleRate as Double, framesPerBuffer as Integer, streamFlags as Integer) as Integer**

MBS Audio Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Opens a stream for either input, output or both.

**Notes:**
Sample format is always 32bit float in this class. All data you add the queue is converted to float internally.

outputParameters: A object that describes the output parameters used by the opened stream. See PortAudioStreamParametersMBS for a description of these parameters.

sampleRate: The desired sample rate. For full-duplex streams it is the sample rate for both input and output

framesPerBuffer: The number of frames passed to the stream callback function, or the preferred block granularity for a blocking read/write stream. The special value paFramesPerBufferUnspecified (0) may be used to request that the stream callback will receive an optimal (and possibly varying) number of frames based on host requirements and the requested latency settings.

Note: With some host APIs, the use of non-zero framesPerBuffer for a callback stream may introduce an additional layer of buffering which could introduce additional latency. PortAudio guarantees that the additional latency will be kept to the theoretical minimum however, it is strongly recommended that a non-zero framesPerBuffer value only be used when your algorithm requires a fixed number of frames per stream callback.

const paFramesPerBufferUnspecified=0

streamFlags: Flags which modify the behaviour of the streaming process. This parameter may contain a combination of flags ORed together. Some flags may only be relevant to certain buffer formats.
const paNoFlag = 0 no flags
const paClipOff = 1 Disable default clipping of out of range samples.
const paDitherOff = 2 Flag requests that where possible a full duplex stream will not discard over-
flowed input samples without calling the stream callback. This flag is only valid
for full duplex callback streams and only when used in combination with the
paFramesPerBufferUnspecified (0) framesPerBuffer parameter. Using this flag
incorrectly results in a paInvalidFlag error being returned from OpenStream
and OpenDefaultStream.

const paNeverDropInput = 4 Flag requests that where possible a full duplex stream will not discard over-
flowed input samples without calling the stream callback. This flag is only valid
for full duplex callback streams and only when used in combination with the
paFramesPerBufferUnspecified (0) framesPerBuffer parameter. Using this flag
incorrectly results in a paInvalidFlag error being returned from OpenStream
and OpenDefaultStream.

const paPrimeOutputBuffersUsingStreamCallback = 8 Call the stream callback to fill initial output buffers, rather than the default
behavior of priming the buffers with zeros (silence). This flag has no effect for
input-only and blocking read/write streams.

Upon success OpenStream() returns paNoError and places a pointer to a valid PaStream in the stream
argument. The stream is inactive (stopped).
If a call to OpenStream() fails, a non-zero error code is returned (see PaError for possible error codes) and
the value of stream is invalid.

15.11.11 PlayAudio(Data as memoryblock, offsetBytes as Integer=0, count-
Bytes as Integer=0, BitSize as Integer=16, ClearBuffers as boolean=false) as boolean

MBS Audio Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Adds audio to the queue and starts playback.
Notes:
Data: a memoryblock with the sound data
offsetBytes: the number of the bytes to start playing (0=first)
countBytes: the number of bytes to play from offset. If countBytes is zero, the memoryblock’s size property
is used.

You need to set numOutputChannels to 1 or 2 when opening the stream. For 2 channels, sound data must
be interleaved.

Values for bitsize:

This method copies the data to the internal queue. It returns directly.

If ClearBuffers is true, the buffer list will be cleared before this new data is added. This allows to have the
next minute in the buffers and still do a change in the stream quick.
15.11.12 PlayAudioStereo(Data1 as memoryblock, Data2 as memoryblock, offsetBytes as Integer=0, countBytes as Integer=0, BitSize as Integer=16, ClearBuffers as boolean=false) as boolean

MBS Audio Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds audio to the queue and starts playback. **Notes:** This is a special version of AddAudio which takes samples from both memoryblocks and interleaves them.

Data1: a memoryblock with the sound data
Data2: a memoryblock with the sound data
offsetBytes: the number of the bytes to start playing (0=first)
countBytes: the number of bytes to play from offset. If countBytes is zero, the memoryblock’s size property is used.

The stream must use 2 channels for this method to work correctly.

Values for bitsize:

7  signed byte
8  unsigned byte
15 signed short
16 unsigned short
24 unsigned medium
31 signed integer
32 unsigned integer

This method copies the data to the internal queue. It returns directly.
If ClearBuffers is true, the buffer list will be cleared before this new data is added. This allows to have the next minute in the buffers and still do a change in the stream quick.

### 15.11.13 PlayFloatAudio(FloatData as memoryblock, offsetBytes as Integer=0, countBytes as Integer=0, ClearBuffers as boolean=false) as boolean

MBS Audio Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds audio to the queue and starts playback.  
**Notes:**

- FloatData: a memoryblock with the sound data filled with single values.  
- offsetBytes: the number of the bytes to start playing (0=first)  
- countBytes: the number of bytes to play from offset. If countBytes is zero, the memoryblock’s size property is used.

You need to set numOutputChannels to 1 or 2 when opening the stream. For 2 channels, sound data must be interleaved.

The samples are stored in 32bit float values (memoryblock.SingleValue)

This method copies the data to the internal queue. It returns directly.

If ClearBuffers is true, the buffer list will be cleared before this new data is added. This allows to have the next minute in the buffers and still do a change in the stream quick.

### 15.11.14 PlayFloatAudioStereo(FloatData1 as memoryblock, FloatData2 as memoryblock, offsetBytes as Integer=0, countBytes as Integer=0, ClearBuffers as boolean=false) as boolean

MBS Audio Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds audio to the queue and starts playback.  
**Notes:**

- FloatData1: a memoryblock with the sound data filled with single values.  
- FloatData2: a memoryblock with the sound data filled with single values.  
- offsetBytes: the number of the bytes to start playing (0=first)  
- countBytes: the number of bytes to play from offset. If countBytes is zero, the memoryblock’s size property is used.

This is a special version of AddFloatAudio which takes samples from both memoryblocks and interleaves them.
The samples are stored in 32bit float values (memoryblock.SingleValue)

This method copies the data to the internal queue. It returns directly.

The stream must use 2 channels for this method to work correctly.

If ClearBuffers is true, the buffer list will be cleared before this new data is added. This allows to have the next minute in the buffers and still do a change in the stream quick.

15.11.15 Properties

15.11.16 HadUnderflow as Boolean

MBS Audio Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: A flag set if a data underflow was found while NoUnderflow is true. Notes: You may want to set this to false after your application recovered from a data underflow. (Read and Write property)

15.11.17 NoUnderflow as Boolean

MBS Audio Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Whether underflows should be prevented. Notes: If no audio data is there and NoUnderflow=true, the flag HadUnderflow is set to true and 0 values (Silence) is played. Switching from sound to no sound and back may add some noise. (Read and Write property)

15.11.18 OutputPosition as Double

15.11.19 OutputPositionRelative as Double

MBS Audio Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The current position in the playing buffer.

**Notes:**
May point between samples.
Will reset to 0 when a new buffer is used.
(Read only property)

15.11.20 Events

15.11.21 Finished

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This event is implemented by PortAudio clients.

**Notes:**
Once registered they are called when the stream becomes inactive (ie once a call to Stop() will not block).
A stream will become inactive after the stream callback returns non-zero, or when Stop or Abort is called.
For a stream providing audio output, if the stream callback returns paComplete, or Stop is called, the stream finished callback will not be called until all generated sample data has been played.
15.12.1 class PortAudioStreamInfoMBS

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class to hold time information of the current stream. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

15.12.2 Methods

15.12.3 Constructor

MBS Audio Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The private constructor.

15.12.4 Properties

15.12.5 InputLatency as Double

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The input latency of the stream in seconds. **Notes:** This value provides the most accurate estimate of input latency available to the implementation. It may differ significantly from the suggestedLatency value passed to OpenStream(). The value of this field will be zero (0.) for output-only streams. (Read only property)

15.12.6 OutputLatency as Double

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The output latency of the stream in seconds. **Notes:** This value provides the most accurate estimate of output latency available to the implementation. It may differ significantly from the suggestedLatency value passed to OpenStream(). The value of this field will be zero (0.) for input-only streams. (Read only property)
15.12.7 SampleRate as Double

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The sample rate of the stream in Hertz (samples per second).

**Notes:**
In cases where the hardware sample rate is inaccurate and PortAudio is aware of it, the value of this field
may be different from the sampleRate parameter passed to OpenStream(). If information about the actual
hardware sample rate is not available, this field will have the same value as the sampleRate parameter passed
to OpenStream().

(Read only property)
15.13. CLASS PORTAUDIOSTREAMMBS

15.13 class PortAudioStreamMBS

15.13.1 class PortAudioStreamMBS

MBS Audio Plugin, Plugin Version: 6.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A single PortAudioStreamMBS can provide multiple channels of real-time streaming audio input and output to a client application.

**Notes:**

A stream provides access to audio hardware represented by one or more devices. Depending on the underlying Host API, it may be possible to open multiple streams using the same device, however this behavior is implementation defined. Portable applications should assume that a device may be simultaneously used by at most one PortAudioStreamMBS.

Subclass of the PortAudioStreamBaseMBS class.

15.13.2 Methods

15.13.3 OpenDefaultStream(numInputChannels as Integer, numOutputChannels as Integer, sampleFormat as Integer, sampleRate as Double, framesPerBuffer as Integer, Flags as Integer) as Integer

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A simplified version of OpenStream() that opens the default input and/or output devices.

**Notes:**

numInputChannels: The number of channels of sound that will be supplied to the stream callback or returned by ReadStream. It can range from 1 to the value of maxInputChannels in the PaDeviceInfo record for the default input device. If 0 the stream is opened as an output-only stream.

numOutputChannels: The number of channels of sound to be delivered to the stream callback or passed to Write. It can range from 1 to the value of maxOutputChannels in the PaDeviceInfo record for the default output device. If 0 the stream is opened as an output-only stream.

sampleFormat: The sample format of both the input and output buffers provided to the callback or passed to and from Read and Write.

sampleFormat may be any of the formats described by the PaSampleFormat enumeration.

sampleRate: Same as OpenStream parameter of the same name.
framesPerBuffer: Same as OpenStream parameter of the same name.

constants for the flags value:
const paNoFlag = 0 no flags
const paClipOff = 1 Disable default clipping of out of range samples.
const paDitherOff = 2 Flag requests that where possible a full duplex stream will not discard overflowed input samples without calling the stream callback. This flag is only valid for full duplex callback streams and only when used in combination with the paFramesPerBufferUnspecified (0) framesPerBuffer parameter. Using this flag incorrectly results in a paInvalidFlag error being returned from OpenStream and OpenDefaultStream.
const paNeverDropInput = 4 Flag requests that where possible a full duplex stream will not discard overflowed input samples without calling the stream callback. This flag is only valid for full duplex callback streams and only when used in combination with the paFramesPerBufferUnspecified (0) framesPerBuffer parameter. Using this flag incorrectly results in a paInvalidFlag error being returned from OpenStream and OpenDefaultStream.
const paPrimeOutputBuffersUsingStreamCallback = 8 Call the stream callback to fill initial output buffers, rather than the default behavior of priming the buffers with zeros (silence). This flag has no effect for input-only and blocking read/write streams.

Returns an error code.

15.13.4 OpenStream(inputParameters as PortAudioStreamParametersMBS, outputParameters as PortAudioStreamParametersMBS, sampleRate as Double, framesPerBuffer as Integer, streamFlags as Integer) as Integer

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Opens a stream for either input, output or both.

**Notes:**

inputParameters: A object that describes the input parameters used by the opened stream. See PortAudioStreamParametersMBS for a description of these parameters. inputParameters must be nil for output-only streams.

outputParameters: A object that describes the output parameters used by the opened stream. See PortAudioStreamParametersMBS for a description of these parameters. outputParameters must be nil for input-only streams.

sampleRate: The desired sampleRate. For full-duplex streams it is the sample rate for both input and output.

framesPerBuffer: The number of frames passed to the stream callback function, or the preferred block granularity for a blocking read/write stream. The special value paFramesPerBufferUnspecified (0) may be used to request that the stream callback will recieve an optimal (and possibly varying) number of frames based on host requirements and the requested latency settings.

Note: With some host APIs, the use of non-zero framesPerBuffer for a callback stream may introduce an additional layer of buffering which could introduce additional latency. PortAudio guarantees that the additional latency will be kept to the theoretical minimum however, it is strongly recommended that a non-zero framesPerBuffer value only be used when your algorithm requires a fixed number of frames per stream callback.
const paFramesPerBufferUnspecified = 0

streamFlags: Flags which modify the behaviour of the streaming process. This parameter may contain a combination of flags ORed together. Some flags may only be relevant to certain buffer formats.

const paNoFlag = 0 no flags
const paClipOff = 1 Disable default clipping of out of range samples.
const paDitherOff = 2 Flag requests that where possible a full duplex stream will not discard overflowed input samples without calling the stream callback. This flag is only valid for full duplex callback streams and only when used in combination with the paFramesPerBufferUnspecified (0) framesPerBuffer parameter. Using this flag incorrectly results in a paInvalidFlag error being returned from OpenStream and OpenDefaultStream.
const paNeverDropInput = 4 Flag requests that where possible a full duplex stream will not discard overflowed input samples without calling the stream callback. This flag is only valid for full duplex callback streams and only when used in combination with the paFramesPerBufferUnspecified (0) framesPerBuffer parameter. Using this flag incorrectly results in a paInvalidFlag error being returned from OpenStream and OpenDefaultStream.
const paPrimeOutputBuffersUsingStreamCallback = 8 Call the stream callback to fill initial output buffers, rather than the default behavior of priming the buffers with zeros (silence). This flag has no effect for input-only and blocking read/write streams.

If this the callback event is left empty the stream will be opened in ‘blocking read/write’ mode. In blocking mode, the client can receive sample data using Read and write sample data using Write, the number of samples that may be read or written without blocking is returned by ReadAvailable and WriteAvailable respectively.

Upon success OpenStream() returns paNoError and places a pointer to a valid PaStream in the stream argument. The stream is inactive (stopped).
If a call to OpenStream() fails, a non-zero error code is returned (see PaError for possible error codes) and the value of stream is invalid.

15.13.5 Read(buffer as memoryblock, frameCount as Integer) as Integer


Notes: The function doesn’t return until the entire buffer has been filled - this may involve waiting for the operating system to supply the data.

buffer: A buffer of sample frames. The buffer contains samples in the format specified by the input.sampleFormat field used to open the stream, and the number of channels specified by input.numChannels. If
non-interleaved samples were requested, buffer is a pointer to the first element of an array of non-interleaved buffer pointers, one for each channel.

frameCount: The number of frames to be read into buffer. This parameter is not constrained to a specific range, however high performance applications will want to match this parameter to the framesPerBuffer parameter used when opening the stream.

Returns on success PaNoError will be returned, or PaInputOverflowed (-9981) if input data was discarded by PortAudio after the previous call and before this call.

15.13.6 ReadAvailable as Integer

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieve the number of frames that can be read from the stream without waiting.

**Notes:** Returns a non-negative value representing the maximum number of frames that can be read from the stream without blocking or busy waiting or, a PaErrorCode (which are always negative) if PortAudio is not initialized or an error is encountered.

15.13.7 Write(buffer as memoryblock, frameCount as Integer) as Integer

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Write samples to an output stream.

**Notes:**

This function doesn’t return until the entire buffer has been consumed - this may involve waiting for the operating system to consume the data.

buffer: A buffer of sample frames. The buffer contains samples in the format specified by the outputParameters.sampleFormat field used to open the stream, and the number of channels specified by outputParameters.numChannels. If non-interleaved samples were requested, buffer is a pointer to the first element of an array of non-interleaved buffer pointers, one for each channel.

frameCount: The number of frames to be written from buffer. This parameter is not constrained to a specific range, however high performance applications will want to match this parameter to the framesPerBuffer parameter used when opening the stream.

On success PaNoError (0) will be returned, or paOutputUnderflowed (-9980) if additional output data was inserted after the previous call and before this call.
15.13. CLASS PORTAUDIOSTREAMMBS

15.13.8 WriteAvailable as Integer

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieve the number of frames that can be written to the stream without waiting. **Notes:** Returns a non-negative value representing the maximum number of frames that can be written to the stream without blocking or busy waiting or, a PaErrorCode (which are always negative) if PortAudio is not initialized or an error is encountered.

15.13.9 Events

15.13.10 Callback(InputBuffer as memoryblock, outputBuffer as memoryblock, FrameCount as Integer, inputBufferAdcTime as Double, currentTime as Double, outputBufferDacTime as Double, statusFlags as Integer) as Integer

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event called when new data is needed or received. **Notes:** This event is implemented by PortAudio clients. They consume, process or generate audio in response to requests from an active PortAudio stream.

InputBuffer and outputBuffer are arrays of interleaved samples, the format, packing and number of channels used by the buffers are determined by parameters to OpenStream().

frameCount: The number of sample frames to be processed by the stream callback.

inputBufferAdcTime, currentTimeTiming and outputBufferDacTime: The time in seconds when the first sample of the input buffer was received at the audio input, the time in seconds when the first sample of the output buffer will begin being played at the audio output, and the time in seconds when the stream callback was called.

statusFlags: Flags indicating whether input and/or output buffers have been inserted or will be dropped to overcome underflow or overflow conditions.

Returns the stream callback should return one of the values in the PaStreamCallbackResult enumeration. To ensure that the callback continues to be called, it should return paContinue (0). Either paComplete or paAbort can be returned to finish stream processing, after either of these values is returned the callback will not be called again. If paAbort is returned the stream will finish as soon as possible. If paComplete is returned, the stream will continue until all buffers generated by the callback have been played. This may be useful in applications such as soundfile players where a specific duration of output is required. However, it is not necessary to utilise this mechanism as Stop(), Abort() or Close() can also be used to stop the stream. The callback must always fill the entire output buffer irrespective of its return value.
With the exception of CpuLoad() it is not permissable to call PortAudio API functions from within the stream callback.

Flag bit constants for the statusFlags to Callback:

paInputUnderflow = 1
In a stream opened with paFramesPerBufferUnspecified, indicates that input data is all silence (zeros) because no real data is available. In a stream opened without paFramesPerBufferUnspecified, it indicates that one or more zero samples have been inserted into the input buffer to compensate for an input underflow.

paInputOverflow = 2
In a stream opened with paFramesPerBufferUnspecified, indicates that data prior to the first sample of the input buffer was discarded due to an overflow, possibly because the stream callback is using too much CPU time. Otherwise indicates that data prior to one or more samples in the input buffer was discarded.

paOutputUnderflow = 4
Indicates that output data (or a gap) was inserted, possibly because the stream callback is using too much CPU time.

paOutputOverflow = 8
Indicates that output data will be discarded because no room is available.

paPrimingOutput = 16
Some of all of the output data will be used to prime the stream, input data may be zero.

Allowable return values for the callback: (PaStreamCallbackResult)

const paContinue = 0
const paComplete = 1
const paAbort = 2

15.13.11 Finished

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: This event is implemented by PortAudio clients.
Notes:
Once registered they are called when the stream becomes inactive (ie once a call to Stop() will not block). A stream will become inactive after the stream callback returns non-zero, or when Stop or Abort is called.
For a stream providing audio output, if the stream callback returns paComplete, or Stop is called, the stream finished callback will not be called until all generated sample data has been played.
15.14 class PortAudioStreamParametersMBS

15.14.1 class PortAudioStreamParametersMBS

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Parameters for one direction (input or output) of a stream.

15.14.2 Properties

15.14.3 ChannelCount as Integer

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The requested channel count. 
**Notes:** 
The number of channels of sound to be delivered to the stream callback or accessed by Read() or Write(). It can range from 1 to the value of maxInputChannels in the DeviceInfo object for the device specified by the device parameter. 
(Read and Write property)

15.14.4 Device as Integer

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The device ID to be used. 
**Notes:** 
A valid device index in the range 0 to (PortAudioMBS.CountDevices-1) specifying the device to be used or the special constant paUseHostApiSpecificDeviceSpecification which indicates that the actual device(s) to use are specified in hostApiSpecificStreamInfo. This field must not be set to paNoDevice (-1). 
(Read and Write property)

15.14.5 SampleFormat as Integer

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The sample format of the buffer provided to the stream callback, Read() or Write(). 
**Notes:** 
Constants for sample format:
The standard formats paFloat32, paInt16, paInt32, paInt24, paInt8 and aUInt8 are usually implemented by
15.14. CLASS PORTAUDIOSTREAMPARAMETERSMBS

const paFloat32 = 1
const paInt32 = 2
const paInt24 = 4
const paInt16 = 8
const paInt8 = 16
const paUInt8 = 32
const paCustomFormat = 65536
const paNonInterleaved = negative sign

custom format. Not supported by plugin.

The floating point representation (paFloat32) uses +1.0 and -1.0 as the maximum and minimum respectively.

paUInt8 is an unsigned 8 bit format where 128 is considered "ground"

The paNonInterleaved flag indicates that a multichannel buffer is passed as a set of non-interleaved pointers. (Read and Write property)

15.14.6 SuggestedLatency as Double

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
The desired latency in seconds.
Notes:
Where practical, implementations should configure their latency based on these parameters, otherwise they may choose the closest viable latency instead. Unless the suggested latency is greater than the absolute upper limit for the device implementations should round the suggestedLatency up to the next practical value - ie to provide an equal or higher latency than suggestedLatency wherever possible.
Actual latency values for an open stream may be retrieved using the inputLatency and outputLatency fields of the PortAudioStreamInfoMBS object returned by PortAudioStreamMBS.Info(). (Read and Write property)

15.14.7 Constants

15.14.8 paCustomFormat = 65536

MBS Audio Plugin, Plugin Version: 15.1. Function: One of the sample format constants.
Notes: Custom format. Not supported by plugin.
15.14.9  paFloat32 = 1

MBS Audio Plugin, Plugin Version: 15.1. **Function:** One of the sample format constants. **Notes:** Uses +1.0 and -1.0 as the maximum and minimum respectively.

15.14.10  paInt16 = 8

MBS Audio Plugin, Plugin Version: 15.1. **Function:** One of the sample format constants. **Notes:** Signed 16 bit.

15.14.11  paInt24 = 4

MBS Audio Plugin, Plugin Version: 15.1. **Function:** One of the sample format constants. **Notes:** Packed 24 bit format

15.14.12  paInt32 = 2

MBS Audio Plugin, Plugin Version: 15.1. **Function:** One of the sample format constants. **Notes:** Signed 32 bit.

15.14.13  paInt8 = 16

MBS Audio Plugin, Plugin Version: 15.1. **Function:** One of the sample format constants. **Notes:** 8 bit integer.

15.14.14  paNonInterleaved = & h80000000

MBS Audio Plugin, Plugin Version: 15.1. **Function:** One of the sample format constants. **Notes:** Non interleaved. The paNonInterleaved flag indicates that audio data is passed as an array of pointers to separate buffers, one buffer for each channel. Usually, when this flag is not used, audio data is passed as a single buffer with all channels interleaved.
15.14.15  \text{paNonInterleavedFloat32} = \& \text{h80000001} \\

MBS Audio Plugin, Plugin Version: 15.1. \textbf{Function}: One of the sample format constants. 
\textbf{Notes}: Non interleaved, Uses +1.0 and -1.0 as the maximum and minimum respectively.

15.14.16  \text{paNonInterleavedInt16} = \& \text{h80000008} \\

MBS Audio Plugin, Plugin Version: 15.1. \textbf{Function}: One of the sample format constants. 
\textbf{Notes}: Non interleaved, signed 16 bit.

15.14.17  \text{paNonInterleavedInt24} = \& \text{h80000004} \\

MBS Audio Plugin, Plugin Version: 15.1. \textbf{Function}: One of the sample format constants. 
\textbf{Notes}: Non interleaved, Packed 24 bit format

15.14.18  \text{paNonInterleavedInt32} = \& \text{h80000002} \\

MBS Audio Plugin, Plugin Version: 15.1. \textbf{Function}: One of the sample format constants. 
\textbf{Notes}: Non interleaved, signed 32 bit.

15.14.19  \text{paNonInterleavedInt8} = \& \text{h80000010} \\

MBS Audio Plugin, Plugin Version: 15.1. \textbf{Function}: One of the sample format constants. 
\textbf{Notes}: Non interleaved, 8 bit integer.

15.14.20  \text{paNonInterleavedUInt8} = \& \text{h80000020} \\

MBS Audio Plugin, Plugin Version: 15.1. \textbf{Function}: One of the sample format constants. 
\textbf{Notes}: Non interleaved, unsigned 8 bit format where 128 is considered "ground".

15.14.21  \text{paUInt8} = 32 \\

MBS Audio Plugin, Plugin Version: 15.1. \textbf{Function}: One of the sample format constants. 
\textbf{Notes}: unsigned 8 bit format where 128 is considered "ground"
15.15  class PortAudioStreamRecorderMBS

15.15.1  class PortAudioStreamRecorderMBS

MBS Audio Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A portaudio stream class to use an internal buffer to record audio.

**Notes:**
This class has a ring buffer to store the audio samples which they are being recorded. Your application can
in a timer or thread process this samples.
Subclass of the PortAudioStreamBaseMBS class.

15.15.2  Methods

15.15.3  Constructor(BufferSize as Integer)

MBS Audio Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new object using a buffer of the given size.

**Notes:**
The buffer must be a power of 2. For example one Megabyte (2\(^20\)). This defines the ring buffer used to
buffer samples between data coming from sound device and you call ReadFrames method.

Automatically we take paFloat32 as format for sample buffer.

At 44100 Hz, and 4 bytes per value and 2 channels, you will need 352800 bytes per second on storage.

15.15.4  Flush

MBS Audio Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Clears the buffer and discards all current samples.

15.15.5  OpenDefaultStream(numInputChannels as Integer, sampleRate as Double) as Integer

MBS Audio Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A simplified version of OpenStream() that opens the default input devices.

**Notes:**
Sampleformat is always 32bit float in this class. (use memoryblock.singlevalue)
numInputChannels: The number of channels of sound to be delivered. It can range from 1 to the value of maxInputChannels in the PortAudioDeviceInfoMBS object for the default output device. If 0 the stream is opened as an output-only stream.

sampleRate: Same as OpenStream parameter of the same name.

Returns an error code.
Error -2 is from the plugin and reports that the buffer was not created before.

15.15.6 OpenStream(inputParameters as PortAudioStreamParametersMBS, sampleRate as Double, framesPerBuffer as Integer, streamFlags as Integer) as Integer

Notes:
Sampleformat is always 32bit float in this class. (use memoryblock.singlevalue)

outputParameters: A object that describes the input parameters used by the opened stream. See PortAudioStreamParametersMBS for a description of these parameters.

sampleRate: The desired sampleRate.

framesPerBuffer: The number of frames passed to the stream callback function, or the preferred block granularity for a blocking read/write stream. The special value paFramesPerBufferUnspecified (0) may be used to request that the stream callback will receive an optimal (and possibly varying) number of frames based on host requirements and the requested latency settings.
Note: With some host APIs, the use of non-zero framesPerBuffer for a callback stream may introduce an additional layer of buffering which could introduce additional latency. PortAudio guarantees that the additional latency will be kept to the theoretical minimum however, it is strongly recommended that a non-zero framesPerBuffer value only be used when your algorithm requires a fixed number of frames per stream callback.

const paFramesPerBufferUnspecified=0

streamFlags: Flags which modify the behaviour of the streaming process. This parameter may contain a combination of flags ORed together. Some flags may only be relevant to certain buffer formats.

Upon success OpenStream() returns paNoError and places a pointer to a valid PaStream in the stream argument. The stream is inactive (stopped).
const `paNoFlag` = 0 no flags
const `paClipOff` = 1 Disable default clipping of out of range samples.
const `paDitherOff` = 2 Flag requests that where possible a full duplex stream will not discard over-flowed input samples without calling the stream callback. This flag is only valid for full duplex callback streams and only when used in combination with the `paFramesPerBufferUnspecified` (0) `framesPerBuffer` parameter. Using this flag incorrectly results in a `paInvalidFlag` error being returned from `OpenStream` and `OpenDefaultStream`.

const `paNeverDropInput` = 4 Call the stream callback to fill initial output buffers, rather than the default behavior of priming the buffers with zeros (silence). This flag has no effect for input-only and blocking read/write streams.

const `paPrimeOutputBuffersUsingStreamCallback` = 8 Call the stream callback to fill initial output buffers, rather than the default behavior of priming the buffers with zeros (silence). This flag has no effect for input-only and blocking read/write streams.

If a call to `OpenStream()` fails, a non-zero error code is returned (see `PaError` for possible error codes) and the value of `stream` is invalid.

Error -2 is from the plugin and reports that the buffer was not created before.

### 15.15.7 ReadFrames(mem as memoryblock, SizeInBytes as Integer) as Integer

MBS Audio Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads frames into the memoryblock.

**Example:**

```pascal
dim s as PortAudioStreamRecorderMBS
dim m as memoryblock

m=newmemoryblock(1024*1024)  // initialize
dim frames as Integer

frames=s.ReadFrames(m,m.size)
msgbox "we got "+str(frames)+" frames."
```

**Notes:**

You pass a memoryblock and the size of this memoryblock in bytes. Values are stored in floats (memoryblock.singlevalue) so you get at maximum SizeInBytes/4 values. And if you use more than one channel, you will receive them interlaced.

ReadFrames uses a mutex to access share data, so this call is expensive. Use a big buffer.
15.15.8 ResizeBuffer(BufferSize as Integer)

MBS Audio Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Resizes the buffer.
**Notes:**
Do not resize while you are recording (this can crash).

The buffer must be a power of 2. For example one Megabyte \(2^{20}\).

At 44100 Hz, and 4 bytes per value and 2 channels, you will need 352800 bytes per second on storage.

15.15.9 Properties

15.15.10 Buffer as Memoryblock

MBS Audio Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a memoryblock which points to the ring buffer used in the recorder object.
**Notes:**
This memoryblock has no size.
It is only for debugging and only valid as long as the PortAudioStreamRecorderMBS object is living.
(Read only property)

15.15.11 BufferReadIndex as Integer

MBS Audio Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The read index inside the ring buffer.
**Notes:**
Only for debugging.
(Read only property)

15.15.12 BufferSize as Integer

MBS Audio Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The size of the ring buffer in bytes.
**Notes:** (Read only property)
15.15.13 **BufferWriteIndex as Integer**

MBS Audio Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The write index inside the ring buffer.  
**Notes:** Only for debugging. (Read only property)

15.15.14 **FramesAvailable as Integer**

MBS Audio Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of frames available in the buffer.  
**Notes:** FramesAvailable uses a mutex to access share data, so this call is expensive. Do not call it to decide whether to call ReadFrames. ReadFrames calls FramesAvailable itself. (Read only property)

15.15.15 **NumInputChannels as Integer**

MBS Audio Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of input channels used with the OpenStream function.  
**Notes:** (Read only property)
15.16.1 GetSoundMuteMBS as boolean

MBS Util Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Checks the mute state of the sound output.

**Example:**

```plaintext
if GetSoundMuteMBS then
    Title="on"
else
    Title="off"
end if
```

**Notes:** Returns false on any error.

15.16.2 GetSoundVolumeLeftMBS as Double

MBS Util Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Gets the current volume for the left channel.

**Notes:** Same as GetSoundVolumeMBS, but only for the left channel.

15.16.3 GetSoundVolumeMBS as Double

MBS Util Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Gets the current volume.

**Example:**

```plaintext
dim d as Double

d=GetSoundVolumeMBS
```

**Notes:**

Volume is from 0 to 1.0
Uses QuickTime on Mac OS Classic, CoreAudio on Mac OS X and the Mixer on Windows.
15.16.4 GetSoundVolumeRightMBS as Double

MBS Util Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Gets the current volume for the right channel. **Notes:** Same as GetSoundVolumeMBS, but only for the right channel.

15.16.5 SetSoundMuteMBS(mute as boolean)

MBS Util Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Sets sound mute to the give state. **Example:**

SetSoundMuteMBS true // set mute on

15.16.6 SetSoundVolumeLeftMBS(percent as Double)

MBS Util Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Sets the volume on the left channel. **Notes:**

Volume is from 0 to 1.0
Uses QuickTime on Mac OS Classic, CoreAudio on Mac OS X and the Mixer on Windows.

15.16.7 SetSoundVolumeMBS(percent as Double)

MBS Util Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Sets the volume. **Example:**

SetSoundVolumeMBS 1.0

**Notes:**

Volume is from 0 to 1.0
Uses QuickTime on Mac OS Classic, CoreAudio on Mac OS X and the Mixer on Windows.
15.16.8  SetSoundVolumeRightMBS(percent as Double)

MBS Util Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:**
Sets the volume on the right channel.

**Notes:**
Volume is from 0 to 1.0
Uses QuickTime on Mac OS Classic, CoreAudio on Mac OS X and the Mixer on Windows.

15.17  class SoundFileInfoMBS

15.17.1  class SoundFileInfoMBS

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for the file info of a sound file.

**Notes:**
When you open a sound file, the library will fill this and provide you the file format details.
When writing a sound file, you need to build valid format.

15.17.2  Properties

15.17.3  Channels as Integer

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The number of channels.

**Notes:**  (Read and Write property)

15.17.4  Format as Integer

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The format ID.

**Notes:**
See kFormat constants.
(Read and Write property)
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15.17.5 FormatEndianName as String

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The endian description for the format.
**Notes:** (Read only property)

15.17.6 FormatName as String

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The format description for the format.
**Notes:** (Read only property)

15.17.7 FormatSubName as String

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The sub format description for the format.
**Notes:** (Read only property)

15.17.8 Frames as Int64

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The number of frames.
**Notes:** (Read and Write property)

15.17.9 IsValid as Boolean

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether format is valid.
**Notes:**
Returns true if valid.
(Read only property)

15.17.10 SampleRate as Integer

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The sample rate in Hz.
15.17. **CLASS SOUNDFILEINFOMBS**

Notes: (Read and Write property)

15.17.11 **Sections as Integer**

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of sections.
Notes: (Read and Write property)

15.17.12 **Seekable as Boolean**

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether format is seekable.
Notes: (Read and Write property)

15.17.13 **Constants**

15.17.14 **kFormatAIFF = & h020000**

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the format constants.
Notes: Apple/SGI AIFF format (big endian).

15.17.15 **kFormatALAC16 = & h0070**

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the sub format constants.
Notes: Apple Lossless Audio Codec (16 bit).

15.17.16 **kFormatALAC20 = & h0071**

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the sub format constants.
Notes: Apple Lossless Audio Codec (20 bit).

15.17.17 **kFormatALAC24 = & h0072**

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the sub format constants.
Notes: Apple Lossless Audio Codec (24 bit).
15.17.18  \texttt{kFormatALAC32 = & h0073}

MBS Tools Plugin, Plugin Version: 17.4. \textbf{Function}: One of the sub format constants. 
\textbf{Notes}: Apple Lossless Audio Codec (32 bit). 

15.17.19  \texttt{kFormatALAW = & h0011}

MBS Tools Plugin, Plugin Version: 17.4. \textbf{Function}: One of the sub format constants. 
\textbf{Notes}: A-Law encoded. 

15.17.20  \texttt{kFormatAU = & h030000}

MBS Tools Plugin, Plugin Version: 17.4. \textbf{Function}: One of the format constants. 
\textbf{Notes}: Sun/NeXT AU format (big endian). 

15.17.21  \texttt{kFormatAVR = & h120000}

MBS Tools Plugin, Plugin Version: 17.4. \textbf{Function}: One of the format constants. 
\textbf{Notes}: Audio Visual Research 

15.17.22  \texttt{kFormatCAF = & h180000}

MBS Tools Plugin, Plugin Version: 17.4. \textbf{Function}: One of the format constants. 
\textbf{Notes}: Core Audio File format 

15.17.23  \texttt{kFormatDouble = & h0007}

MBS Tools Plugin, Plugin Version: 17.4. \textbf{Function}: One of the sub format constants. 
\textbf{Notes}: 64 bit float data 

15.17.24  \texttt{kFormatDPCM_16 = & h0051}

MBS Tools Plugin, Plugin Version: 17.4. \textbf{Function}: One of the sub format constants. 
\textbf{Notes}: 16 bit differential PCM (XI only)
15.17. CLASS SOUNDFILEINFOMBS

15.17.25 kFormatDPCM_8 = & h0050

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the sub format constants.  
**Notes:** 8 bit differential PCM (XI only)

15.17.26 kFormatDWVW_12 = & h0040

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the sub format constants.  
**Notes:** 12 bit Delta Width Variable Word encoding.

15.17.27 kFormatDWVW_16 = & h0041

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the sub format constants.  
**Notes:** 16 bit Delta Width Variable Word encoding.

15.17.28 kFormatDWVW_24 = & h0042

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the sub format constants.  
**Notes:** 24 bit Delta Width Variable Word encoding.

15.17.29 kFormatDWVW_N = & h0043

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the sub format constants.  
**Notes:** N bit Delta Width Variable Word encoding.

15.17.30 kFormatEndianBig = & h20000000

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the endian format constants.  
**Notes:** Force big endian-ness.

15.17.31 kFormatEndianCPU = & h30000000

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the endian format constants.  
**Notes:** Force CPU endian-ness.
15.17.32  kFormatEndianFile = \& h00000000

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the endian format constants.  
**Notes:** Default file endian-ness.

15.17.33  kFormatEndianLittle = \& h10000000

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the endian format constants.  
**Notes:** Force little endian-ness.

15.17.34  kFormatEndianMask = \& h30000000

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the format constants.  
**Notes:** Bitmask for the endian format.

15.17.35  kFormatFLAC = \& h170000

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the format constants.  
**Notes:** FLAC lossless file format

15.17.36  kFormatFloat = \& h0006

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the sub format constants.  
**Notes:** 32 bit float data

15.17.37  kFormatG721_32 = \& h0030

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the sub format constants.  
**Notes:** 32kbs G721 ADPCM encoding.

15.17.38  kFormatG723_24 = \& h0031

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the sub format constants.  
**Notes:** 24kbs G723 ADPCM encoding.
15.17. CLASS SOUNDFILEINFOMBS

15.17.39  kFormatG723_40 = & h0032

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the sub format constants.  
**Notes:** 40kbs G723 ADPCM encoding.

15.17.40  kFormatGSM610 = & h0020

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the sub format constants.  
**Notes:** GSM 6.10 encoding.

15.17.41  kFormatHTK = & h100000

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the format constants.  
**Notes:** HMM Tool Kit format

15.17.42  kFormatIMA_ADPCM = & h0012

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the sub format constants.  
**Notes:** IMA ADPCM.

15.17.43  kFormatIRCAM = & h0A0000

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the format constants.  
**Notes:** Berkeley/IRCAM/CARL

15.17.44  kFormatMAT4 = & h0C0000

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the format constants.  
**Notes:** Matlab (tm) V4.2 / GNU Octave 2.0

15.17.45  kFormatMAT5 = & h0D0000

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the format constants.  
**Notes:** Matlab (tm) V5.0 / GNU Octave 2.1
15.17.46 kFormatMPC2K = & h210000

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the format constants. 
*Notes:* Akai MPC 2000 sampler

15.17.47 kFormatMS_ADPCM = & h0013

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the sub format constants. 
*Notes:* Microsoft ADPCM.

15.17.48 kFormatNIST = & h070000

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the format constants. 
*Notes:* Sphere NIST format.

15.17.49 kFormatOGG = & h200000

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the format constants. 
*Notes:* Xiph OGG container

15.17.50 kFormatPAF = & h050000

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the format constants. 
*Notes:* Ensoniq PARIS file format.

15.17.51 kFormatPCM16 = & h0002

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the sub format constants. 
*Notes:* Signed 16 bit data

15.17.52 kFormatPCM24 = & h0003

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the sub format constants. 
*Notes:* Signed 24 bit data
15.17. **CLASS SOUNDFILEINFOMBSS**

15.17.53  kFormatPCM32 = & h0004

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the sub format constants. 
**Notes:** Signed 32 bit data

15.17.54  kFormatPCMS8 = & h0001

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the sub format constants. 
**Notes:** Signed 8 bit data

15.17.55  kFormatPCMU8 = & h0005

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the sub format constants. 
**Notes:** Unsigned 8 bit data (WAV and RAW only)

15.17.56  kFormatPVF = & h0E0000

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the format constants. 
**Notes:** Portable Voice Format

15.17.57  kFormatRAW = & h040000

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the format constants. 
**Notes:** RAW PCM data.

15.17.58  kFormatRF64 = & h220000

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the format constants. 
**Notes:** RF64 WAV file

15.17.59  kFormatSD2 = & h160000

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the format constants. 
**Notes:** Sound Designer 2
15.17.60  \texttt{kFormatSDS = \& h110000}

MBS Tools Plugin, Plugin Version: 17.4. \textbf{Function:} One of the format constants.
\textbf{Notes:} Midi Sample Dump Standard

15.17.61  \texttt{kFormatSubMask = \& h0000FFFF}

MBS Tools Plugin, Plugin Version: 17.4. \textbf{Function:} One of the format constants.
\textbf{Notes:} Bitmask for the sub format.

15.17.62  \texttt{kFormatSVX = \& h060000}

MBS Tools Plugin, Plugin Version: 17.4. \textbf{Function:} One of the format constants.
\textbf{Notes:} Amiga IFF / SVX8 / SV16 format.

15.17.63  \texttt{kFormatTypeMask = \& h0FFF0000}

MBS Tools Plugin, Plugin Version: 17.4. \textbf{Function:} One of the format constants.
\textbf{Notes:} Bitmask for the type format.

15.17.64  \texttt{kFormatULAW = \& h0010}

MBS Tools Plugin, Plugin Version: 17.4. \textbf{Function:} One of the sub format constants.
\textbf{Notes:} U-Law encoded.

15.17.65  \texttt{kFormatVOC = \& h080000}

MBS Tools Plugin, Plugin Version: 17.4. \textbf{Function:} One of the format constants.
\textbf{Notes:} VOC files.

15.17.66  \texttt{kFormatVORBIS = \& h0060}

MBS Tools Plugin, Plugin Version: 17.4. \textbf{Function:} One of the sub format constants.
\textbf{Notes:} Xiph Vorbis encoding.
15.17. CLASS SOUNDFILEINFOMBS

15.17.67 kFormatVOX_ADPCM = & h0021

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the sub format constants.  
**Notes:** OKI / Dialogix ADPCM

15.17.68 kFormatW64 = & h0B0000

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the format constants.  
**Notes:** Sonic Foundry’s 64 bit RIFF/WAV

15.17.69 kFormatWAV = & h010000

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the format constants.  
**Notes:** Microsoft WAV format (little endian default).

15.17.70 kFormatWAVEX = & h130000

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the format constants.  
**Notes:** MS WAVE with WAVEFORMATEX

15.17.71 kFormatWVE = & h190000

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the format constants.  
**Notes:** Psion WVE format

15.17.72 kFormatXI = & h0F0000

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the format constants.  
**Notes:** Fasttracker 2 Extended Instrument
15.18 class SoundFileMBS

15.18.1 class SoundFileMBS

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A cross platform class to use sndfile library to read/write audio samples.  
**Notes:**  
As sndfile library is LGPL, you need to include library within your app folder and load it at runtime.  
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

15.18.2 Methods

15.18.3 Close

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Closes file now.  
**Notes:** Same as destructor, but you can call it early.

15.18.4 Constructor

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Private constructor.

15.18.5 Create(file as folderitem, Info as SoundFileInfoMBS) as SoundFileMBS

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new audio file with given format.  
**Notes:** On success returns new sound file object.

15.18.6 ErrorMessage(errorNumber as integer) as string

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries error message for error number.  
See also:

- 15.18.38 ErrorMessage as String
15.18.7  GetString(type as Integer) as string

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries one of the strings.  
**Notes:**  
See kString* constants.  
Returns "" in case of error.

15.18.8  Loaded as Boolean

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether library is loaded.

15.18.9  LoadErrorMessage as String

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The error message from loading library.

15.18.10  LoadLibrary(file as folderitem) as boolean

**Notes:** Returns true on error.

15.18.11  Open(data as MemoryBlock) as SoundFileMBS

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Opens an audio file from in memory data.  
**Notes:** On success returns the sound file object.  
See also:  
- 15.18.12 Open(data as String) as SoundFileMBS  
- 15.18.13 Open(file as folderitem, readwrite As Boolean = False) as SoundFileMBS

15.18.12  Open(data as String) as SoundFileMBS

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Opens an audio file from in memory data.
Notes: On success returns the sound file object.
See also:

- 15.18.11 Open(data as MemoryBlock) as SoundFileMBS
- 15.18.13 Open(file as folderitem, readwrite As Boolean = False) as SoundFileMBS

15.18.13 Open(file as folderitem, readwrite As Boolean = False) as SoundFileMBS

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Opens an audio file.
**Notes:**
On success returns the sound file object.
Pass readwrite = true to write to the file.
See also:

- 15.18.11 Open(data as MemoryBlock) as SoundFileMBS
- 15.18.12 Open(data as String) as SoundFileMBS

15.18.14 ReadDouble(p as ptr, items as Int64) as Int64

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Reads data as double values, converts if necessary.
**Notes:**
Pointer should point to memmoryblock with 8 * Items in size.
Returns number of items read.

15.18.15 ReadDoubleFrames(p as ptr, items as Int64) as Int64

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Reads frames as double values, converts if necessary.
**Notes:**
Pointer should point to memmoryblock with 8 * Items * Channels in size.
Returns number of items read.

15.18.16 ReadInt(p as ptr, items as Int64) as Int64

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Reads data as Int32 values, converts if necessary.
Notes:
Pointer should point to memory block with 4 * Items in size.
Returns number of items read.

15.18.17 ReadIntFrames(p as ptr, items as Int64) as Int64

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Reads frames as Int32 values, converts if necessary.
Notes:
Pointer should point to memory block with 4 * Items * Channels in size.
Returns number of items read.

15.18.18 ReadRaw(p as ptr, bytes as Int64) as Int64

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Read raw data.
Notes:
Pointer should point to memory block with Bytes in size.
Returns number of bytes read.

15.18.19 ReadShort(p as ptr, items as Int64) as Int64

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Reads data as Int16 values, converts if necessary.
Notes:
Pointer should point to memory block with 2 * Items in size.
Returns number of items read.

15.18.20 ReadShortFrames(p as ptr, items as Int64) as Int64

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Reads frames as Int16 values, converts if necessary.
Notes:
Pointer should point to memory block with 2 * Items * Channels in size.
Returns number of items read.
15.18.21 ReadSingle(p as ptr, items as Int64) as Int64

Notes:
Pointer should point to memory block with 4 * Items in size.
Returns number of items read.

15.18.22 ReadSingleFrames(p as ptr, items as Int64) as Int64

Notes:
Pointer should point to memory block with 4 * Items * Channels in size.
Returns number of items read.

15.18.23 Seek(frames as Int64, whence as Integer) as Int64

Notes: See kSeek* constants for whence parameter.

15.18.24 SetString(type as Integer, data as Memoryblock) as Integer

Notes:
See kString* constants.
Returns zero on success.
See also:
- 15.18.25 SetString(type as Integer, text as string) as Integer

15.18.25 SetString(type as Integer, text as string) as Integer

Notes:
15.18. CLASS SOUNDFILEMBS

See kString* constants.
Returns zero on success.
See also:

- 15.18.24 SetString(type as Integer, data as Memoryblock) as Integer

15.18.26 Version as string

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries version of the library.

15.18.27 WriteDouble(p as ptr, items as Int64) as Int64

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes data to file in double format.
**Notes:**
Pointer should point to memory block with 8 * Items in size.
Returns number of items written.

15.18.28 WriteDoubleFrames(p as ptr, items as Int64) as Int64

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes frames to file in double format.
**Notes:**
Pointer should point to memory block with 8 * Items * Channels in size.
Returns number of items written.

15.18.29 WriteInt(p as ptr, items as Int64) as Int64

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes data to file in Int32 format.
**Notes:**
Pointer should point to memory block with 4 * Items in size.
Returns number of items written.
15.18.30 WriteIntFrames(p as ptr, items as Int64) as Int64

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes frames to file in Int32 format.  
**Notes:**  
Pointer should point to memory block with 4 * Items * Channels in size.  
Returns number of items written.

15.18.31 WriteRaw(p as ptr, bytes as Int64) as Int64

**Notes:**  
Pointer should point to memory block with Bytes in size.  
Returns number of bytes written.

15.18.32 WriteShort(p as ptr, items as Int64) as Int64

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes data to file in Int16 format.  
**Notes:**  
Pointer should point to memory block with 2 * Items in size.  
Returns number of items written.

15.18.33 WriteShortFrames(p as ptr, items as Int64) as Int64

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes frames to file in Int16 format.  
**Notes:**  
Pointer should point to memory block with 2 * Items * Channels in size.  
Returns number of items written.

15.18.34 WriteSingle(p as ptr, items as Int64) as Int64

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes data to file in single format.  
**Notes:**
15.18. **CLASS SOUNDFILEMBS**

Pointer should point to memory block with 4 * Items in size.
Returns number of items written.

15.18.35 **WriteSingleFrames**(p as ptr, items as Int64) as Int64

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Writes frames to file in single format.
**Notes:**
Pointer should point to memory block with 4 * Items * Channels in size.
Returns number of items written.

15.18.36 **WriteSync**

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Writes recent changes in file to disk.

15.18.37 **Properties**

15.18.38 **ErrorMessage** as String

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The last error message.
**Notes:** (Read only property)
See also:

- 15.18.6 ErrorMessage(errorNumber as integer) as string

15.18.39 **ErrorNumber** as Integer

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The last error number.
**Notes:** (Read only property)

15.18.40 **Handle** as Integer

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The internal object reference.
15.18.41 Info as SoundFileInfoMBS

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries current format.  
**Notes:** (Read and Write property)

15.18.42 Constants

15.18.43 $k\text{SeekCurrent} = 1$

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the seek mode constants.  
**Notes:** Seek relative to current position.

15.18.44 $k\text{SeekEnd} = 2$

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the seek mode constants.  
**Notes:** Seek relative to end.

15.18.45 $k\text{SeekSet} = 0$

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the seek mode constants.  
**Notes:** Seek relative to begin.

15.18.46 $k\text{StringAlbum} = 7$

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the string constants.  
**Notes:** Album

15.18.47 $k\text{StringArtist} = 4$

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the string constants.  
**Notes:** Artist
15.18.48  kStringComment = 5

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the string constants.  
**Notes:** Comment

15.18.49  kStringCopyright = 2

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the string constants.  
**Notes:** Copyright

15.18.50  kStringDate = 6

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the string constants.  
**Notes:** Date

15.18.51  kStringGenre = 10

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the string constants.  
**Notes:** Genre

15.18.52  kStringLicense = 8

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the string constants.  
**Notes:** License

15.18.53  kStringSoftware = 3

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the string constants.  
**Notes:** Software

15.18.54  kStringTitle = 1

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the string constants.  
**Notes:** Title
15.18.55  kStringTrackNumber = 9

MBS Tools Plugin, Plugin Version: 17.4. **Function:** One of the string constants.
**Notes:** Track Number.
15.19. class TagLibAudioPropertiesMBS

15.19.1 class TagLibAudioPropertiesMBS

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for audio properties.

15.19.2 Properties

15.19.3 Bitrate as Integer

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The bit rate for the sound.
**Notes:**
Returns the most appropriate bit rate for the file in kb/s. For constant bitrate formats this is simply the bitrate of the file. For variable bitrate formats this is either the average or nominal bitrate.
(Read and Write property)

15.19.4 Channels as Integer

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of channels.
**Notes:** (Read and Write property)

15.19.5 Length as Integer

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The length of the file in second.
**Notes:** (Read and Write property)

15.19.6 SampleRate as Integer

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The sample rate in Hz.
**Notes:** (Read and Write property)
15.20 class TagLibFileRefMBS

15.20.1 class TagLibFileRefMBS

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for file loading in TagLib.

15.20.2 Methods

15.20.3 Constructor(file as folderitem)

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constructor.
**Notes:** May raise error exception.

15.20.4 Save as Boolean

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Saves changes to the file.

15.20.5 Properties

15.20.6 audioProperties as TagLibAudioPropertiesMBS

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Queries audio properties of the audio file.
**Notes:** (Read only property)

15.20.7 Handle as Integer

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The internal object reference.
**Notes:** (Read and Write property)
15.20.8 tags as TagLibTagMBS

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tags in that file. **Notes:** (Read only property)
### 15.21 class TagLibTagMBS

#### 15.21.1 class TagLibTagMBS

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for tags.

**Notes:**
We do have common values in properties like title, comment and track.
Other properties can be found in tags dictionary.

Please use TagLibFileRefMBS to load file and query it for the tags.

This is an attempt to abstract away the difference in the meta data formats of various audio codecs and tagging schemes. As such it is generally a subset of what is available in the specific formats but should be suitable for most applications. This is meant to compliment the generic APIs found in TagLibAudioPropertiesMBS and TagLibFileRefMBS.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

#### 15.21.2 Methods

#### 15.21.3 Constructor

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

#### 15.21.4 setTags(Values as Dictionary) as Dictionary

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the tags.
**Notes:** Returns a new dictionary with values which are not supported.

#### 15.21.5 Properties

#### 15.21.6 Album as String

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The name of the album.
**Notes:** (Read and Write property)
15.21. **CLASS TAGLIBTAGMBS**

15.21.7 **Artist as String**

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The name of the artist.  
**Notes:** (Read and Write property)

15.21.8 **Comment as String**

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The comment field.  
**Notes:** (Read and Write property)

15.21.9 **Genre as String**

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The genre.  
**Notes:** (Read and Write property)

15.21.10 **Handle as Integer**

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal object reference.  
**Notes:** (Read and Write property)

15.21.11 **isEmpty as Boolean**

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Wether this tag set is empty.  
**Notes:** (Read only property)

15.21.12 **Tags as Dictionary**

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries list of properties.  
**Notes:**  
You get a copy as a dictionary with all keys and values.  
Values could be strings or array of strings.
15.21.13 Title as String


15.21.14 Track as Integer

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The track number. Notes: (Read and Write property)

15.21.15 Year as Integer

MBS Tools Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The year. Notes: (Read and Write property)
15.22. **class WindowsAudioMixerMBS**

15.22.1 **class WindowsAudioMixerMBS**

MBS Audio Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The Windows Audio Mixer is a device to control the volume and mute state of all attached audio devices.
**Notes:**
Not all devices are present on all Windows machines.
What device is source and destination is a bit unlogic from Microsoft.

15.22.2 **Methods**

15.22.3 **DeviceCount as Integer**

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Number of Mixer devices found in the system.

15.22.4 **DeviceName(index as Integer) as string**

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Name of the device with the given index.
**Notes:**
Index goes from 0 to DeviceCount-1.
Returns "" on invalid index.

15.22.5 **Properties**

15.22.6 **DeviceIndex as Integer**

MBS Audio Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The index of the current used device.
**Notes:**
Default is 0.
(Read and Write property)
15.22.7 Lasterror as Integer

MBS Audio Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The last error code reported.
**Notes:** (Read and Write property)

15.22.8 DestinationDigitalMute as boolean

MBS Audio Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Whether digital device is muted.
**Notes:**
Audio line is a digital destination (for example, digital input to a DAT or CD audio device).
Lasterror is set.
Value is true if device is muted, else false.
On any error or non Windows platforms value is always false.
(Read and Write computed property)

15.22.9 DestinationDigitalVolume as Double

MBS Audio Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Volume of digital device.
**Notes:**
Audio line is a digital destination (for example, digital input to a DAT or CD audio device).
Lasterror is set.
Range is from 0 for no volume to 1.0 for maximum volume.
On any error or non Windows platforms the value is always 0.
(Read and Write computed property)

15.22.10 DestinationHeadPhonesMute as boolean

MBS Audio Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Whether head phones are muted.
**Notes:**
Audio line is an adjustable (gain and/or attenuation) destination intended to drive headphones. Most audio
cards use the same audio destination line for speakers and headphones, in which case the mixer device simply
uses the DestinationSpeakers.
Lasterror is set.
Value is true if device is muted, else false.
On any error or non Windows platforms value is always false.
(Read and Write computed property)

15.22.11 **DestinationHeadPhonesVolume as Double**

**Notes:**
Audio line is an adjustable (gain and/or attenuation) destination intended to drive headphones. Most audio cards use the same audio destination line for speakers and headphones, in which case the mixer device simply uses the DestinationSpeakers.

Lasterror is set.
Range is from 0 for no volume to 1.0 for maximum volume.
On any error or non Windows platforms the value is always 0.
(Read and Write computed property)

15.22.12 **DestinationLineMute as boolean**

MBS Audio Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether line is muted.  
**Notes:**
Audio line is a line level destination (for example, line level input from a CD audio device) that will be the final recording source for the analog-to-digital converter (ADC). Because most audio cards for personal computers provide some sort of gain for the recording audio source line, the mixer device will use the DestinationWaveIn.

Lasterror is set.
Value is true if device is muted, else false.
On any error or non Windows platforms value is always false.
(Read and Write computed property)

15.22.13 **DestinationLineVolume as Double**

**Notes:**
Audio line is a line level destination (for example, line level input from a CD audio device) that will be the final recording source for the analog-to-digital converter (ADC). Because most audio cards for personal computers provide some sort of gain for the recording audio source line, the mixer device will use the DestinationWaveIn.

LastError is set.
Range is from 0 for no volume to 1.0 for maximum volume.
On any error or non Windows platforms the value is always 0.
(Read and Write computed property)

15.22.14 DestinationMonitorMute as boolean

MBS Audio Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether audio monitor is muted.
**Notes:**
Audio line is a destination used for a monitor.

LastError is set.
Value is true if device is muted, else false.
On any error or non Windows platforms value is always false.
(Read and Write computed property)

15.22.15 DestinationMonitorVolume as Double

**Notes:**
Audio line is a destination used for a monitor.

LastError is set.
Range is from 0 for no volume to 1.0 for maximum volume.
On any error or non Windows platforms the value is always 0.
(Read and Write computed property)

15.22.16 DestinationSpeakersMute as boolean

MBS Audio Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether speakers are muted.
**Notes:**
Audio line is an adjustable (gain and/or attenuation) destination intended to drive speakers. This is the typical component type for the audio output of audio cards for personal computers.

Lasterror is set.
Value is true if device is muted, else false.
On any error or non Windows platforms value is always false.
(Read and Write computed property)

15.22.17 DestinationSpeakersVolume as Double

**Notes:**
Audio line is an adjustable (gain and/or attenuation) destination intended to drive speakers. This is the typical component type for the audio output of audio cards for personal computers.

Lasterror is set.
Range is from 0 for no volume to 1.0 for maximum volume.
On any error or non Windows platforms the value is always 0.
(Read and Write computed property)

15.22.18 DestinationTelephoneMute as boolean

MBS Audio Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether telephone is muted.  
**Notes:**
Audio line is a destination that will be routed to a telephone line.

Lasterror is set.
Value is true if device is muted, else false.
On any error or non Windows platforms value is always false.
(Read and Write computed property)

15.22.19 DestinationTelephoneVolume as Double

**Notes:**
Audio line is a destination that will be routed to a telephone line.

Lasterror is set.
Range is from 0 for no volume to 1.0 for maximum volume.
On any error or non Windows platforms the value is always 0.
(Read and Write computed property)

15.22.20  **DestinationVoiceInMute as boolean**

MBS Audio Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether voice input is muted.
**Notes:**
Audio line is a destination that will be the final recording source for voice input. This component type is exactly like DestinationWaveIn but is intended specifically for settings used during voice recording/recognition. Support for this line is optional for a mixer device. Many mixer devices provide only DestinationWaveIn.

Lasterror is set.
Value is true if device is muted, else false.
On any error or non Windows platforms value is always false.
(Read and Write computed property)

15.22.21  **DestinationVoiceInVolume as Double**

**Notes:**
Audio line is a destination that will be the final recording source for voice input. This component type is exactly like DestinationWaveIn but is intended specifically for settings used during voice recording/recognition. Support for this line is optional for a mixer device. Many mixer devices provide only DestinationWaveIn.

Lasterror is set.
Range is from 0 for no volume to 1.0 for maximum volume.
On any error or non Windows platforms the value is always 0.
(Read and Write computed property)

15.22.22  **DestinationWaveInMute as boolean**

MBS Audio Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether wave in is muted.
Notes:
Audio line is a destination that will be the final recording source for the waveform-audio input (ADC). This line typically provides some sort of gain or attenuation. This is the typical component type for the recording line of most audio cards for personal computers.

Lasterror is set.
Value is true if device is muted, else false.
On any error or non Windows platforms value is always false.
(Read and Write computed property)

15.22.23 DestinationWaveInVolume as Double

Notes:
Audio line is a destination that will be the final recording source for the waveform-audio input (ADC). This line typically provides some sort of gain or attenuation. This is the typical component type for the recording line of most audio cards for personal computers.

Lasterror is set.
Range is from 0 for no volume to 1.0 for maximum volume.
On any error or non Windows platforms the value is always 0.
(Read and Write computed property)

15.22.24 SourceAnalogMute as boolean

Notes:
Audio line is an analog source (for example, analog output from a video-cassette tape).

Lasterror is set.
Value is true if device is muted, else false.
On any error or non Windows platforms value is always false.
(Read and Write computed property)
15.22.25 SourceAnalogVolume as Double


**Notes:**
Audio line is an analog source (for example, analog output from a video-cassette tape).

Lasterror is set.
Range is from 0 for no volume to 1.0 for maximum volume.
On any error or non Windows platforms the value is always 0.
(Read and Write computed property)

15.22.26 SourceAuxiliaryMute as boolean

MBS Audio Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether auxiliary is muted.

**Notes:**
Audio line is a source originating from the auxiliary audio line. This line type is intended as a source with gain or attenuation that can be routed to the DestinationSpeakers destination and/or recorded from the DestinationWaveIn destination.

Lasterror is set.
Value is true if device is muted, else false.
On any error or non Windows platforms value is always false.
(Read and Write computed property)

15.22.27 SourceAuxiliaryVolume as Double


**Notes:**
Audio line is a source originating from the auxiliary audio line. This line type is intended as a source with gain or attenuation that can be routed to the DestinationSpeakers destination and/or recorded from the DestinationWaveIn destination.

Lasterror is set.
Range is from 0 for no volume to 1.0 for maximum volume.
On any error or non Windows platforms the value is always 0.
(Read and Write computed property)
15.22. **SourceCompactDiscMute as boolean**

MBS Audio Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether the CD device is muted.  
**Notes:**  
Audio line is a source originating from the output of an internal audio CD. This component type is provided for audio cards that provide an audio source line intended to be connected to an audio CD (or CD-ROM playing an audio CD).

Lasterror is set.  
Value is true if device is muted, else false.  
On any error or non Windows platforms value is always false.  
(Read and Write computed property)

15.22. **SourceCompactDiscVolume as Double**

**Notes:**  
Audio line is a source originating from the output of an internal audio CD. This component type is provided for audio cards that provide an audio source line intended to be connected to an audio CD (or CD-ROM playing an audio CD).

Lasterror is set.  
Range is from 0 for no volume to 1.0 for maximum volume.  
On any error or non Windows platforms the value is always 0.  
(Read and Write computed property)

15.22. **SourceDigitalMute as boolean**

**Notes:**  
Audio line is a digital source (for example, digital output from a DAT or audio CD).

Lasterror is set.  
Value is true if device is muted, else false.  
On any error or non Windows platforms value is always false.  
(Read and Write computed property)
15.22.31 SourceDigitalVolume as Double


**Notes:**
Audio line is a digital source (for example, digital output from a DAT or audio CD).

LastError is set.
Range is from 0 for no volume to 1.0 for maximum volume.
On any error or non Windows platforms the value is always 0.
(Read and Write computed property)

15.22.32 SourceLineMute as boolean

MBS Audio Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether line is muted.

**Notes:**
Audio line is a line-level source (for example, line-level input from an external stereo) that can be used as an optional recording source. Because most audio cards for personal computers provide some sort of gain for the recording source line, the mixer device will use the SourceAuxiliary type.

LastError is set.
Value is true if device is muted, else false.
On any error or non Windows platforms value is always false.
(Read and Write computed property)

15.22.33 SourceLineVolume as Double


**Notes:**
Audio line is a line-level source (for example, line-level input from an external stereo) that can be used as an optional recording source. Because most audio cards for personal computers provide some sort of gain for the recording source line, the mixer device will use the SourceAuxiliary type.

LastError is set.
Range is from 0 for no volume to 1.0 for maximum volume.
On any error or non Windows platforms the value is always 0.
(Read and Write computed property)
15.22. CLASS WINDOWSAUDIO\_MIXER MGMBS

15.22.34 SourceMicrophoneMute as boolean

MBS Audio Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether microphone is muted.

**Notes:**

Audio line is a microphone recording source. Most audio cards for personal computers provide at least two types of recording sources: an auxiliary audio line and microphone input. A microphone audio line typically provides some sort of gain. Audio cards that use a single input for use with a microphone or auxiliary audio line should use the SourceMicrophone component type.

Lasterror is set.
Value is true if device is muted, else false.
On any error or non Windows platforms value is always false.
(Read and Write computed property)

15.22.35 SourceMicrophoneVolume as Double


**Notes:**

Audio line is a microphone recording source. Most audio cards for personal computers provide at least two types of recording sources: an auxiliary audio line and microphone input. A microphone audio line typically provides some sort of gain. Audio cards that use a single input for use with a microphone or auxiliary audio line should use the SourceMicrophone component type.

Lasterror is set.
Range is from 0 for no volume to 1.0 for maximum volume.
On any error or non Windows platforms the value is always 0.
(Read and Write computed property)

15.22.36 SourcePCSpeakerMute as boolean

MBS Audio Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether PC Speaker is muted.

**Notes:**

Audio line is a source originating from personal computer speaker. Several audio cards for personal computers provide the ability to mix what would typically be played on the internal speaker with the output of an audio card. Some audio cards support the ability to use this output as a recording source.

Lasterror is set.
Value is true if device is muted, else false.
On any error or non Windows platforms value is always false.
(Read and Write computed property)

15.22.37 **SourcePCSpeakerVolume as Double**

MBS Audio Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Volume of PC Speakers.

**Notes:**
Audio line is a source originating from personal computer speaker. Several audio cards for personal comput-
ers provide the ability to mix what would typically be played on the internal speaker with the output of an audio card. Some audio cards support the ability to use this output as a recording source.

LastError is set.
Range is from 0 for no volume to 1.0 for maximum volume.
On any error or non Windows platforms the value is always 0.
(Read and Write computed property)

15.22.38 **SourceSynthesizerMute as boolean**

MBS Audio Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Whether synthesizer is muted.

**Notes:**
Audio line is a source originating from the output of an internal synthesizer. Most audio cards for personal computers provide some sort of MIDI synthesizer (for example, an Adlib-compatible or OPL/3 FM synthe-
sizer).

LastError is set.
Value is true if device is muted, else false.
On any error or non Windows platforms value is always false.
(Read and Write computed property)

15.22.39 **SourceSynthesizerVolume as Double**

MBS Audio Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Volume of synthesizer.

**Notes:**
Audio line is a source originating from the output of an internal synthesizer. Most audio cards for personal computers provide some sort of MIDI synthesizer (for example, an Adlib-compatible or OPL/3 FM synthe-
Lasterror is set.
Range is from 0 for no volume to 1.0 for maximum volume.
On any error or non Windows platforms the value is always 0.
(Read and Write computed property)

15.22.40  **SourceTelephoneMute as boolean**

MBS Audio Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether telephone is muted.
**Notes:**
Audio line is a source originating from an incoming telephone line.

Lasterror is set.
Value is true if device is muted, else false.
On any error or non Windows platforms value is always false.
(Read and Write computed property)

15.22.41  **SourceTelephoneVolume as Double**

**Notes:**
Audio line is a source originating from an incoming telephone line.

Lasterror is set.
Range is from 0 for no volume to 1.0 for maximum volume.
On any error or non Windows platforms the value is always 0.
(Read and Write computed property)

15.22.42  **SourceWaveOutMute as boolean**

**Notes:**
Audio line is a source originating from the waveform-audio output digital-to-analog converter (DAC). Most audio cards for personal computers provide this component type as a source to the DestinationSpeakers
destination. Some cards also allow this source to be routed to the DestinationWaveIn destination.

Lasterror is set.
Value is true if device is muted, else false.
On any error or non Windows platforms value is always false.
(Read and Write computed property)

15.22.43 SourceWaveOutVolume as Double

MBS Audio Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Volume of wave out device.
**Notes:**
Audio line is a source originating from the waveform-audio output digital-to-analog converter (DAC). Most audio cards for personal computers provide this component type as a source to the DestinationSpeakers destination. Some cards also allow this source to be routed to the DestinationWaveIn destination.

Lasterror is set.
Range is from 0 for no volume to 1.0 for maximum volume.
On any error or non Windows platforms the value is always 0.
(Read and Write computed property)
15.23 class WindowsMCIMBS

15.23.1 class WindowsMCIMBS

MBS Audio Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Access to the Video for Windows API.

**Example:**

```// open the CD Device and set time format to Track:Minute:Second:Frame```

```dim v as new WindowsMCIMBS
v.Command="open cdaudio"
v.run```

```v.Command="set cdaudio time format TMSF"
v.run```

**Notes:**

Without QuickTime you can’t play a movie in Windows with the Movieplayer control. This class allows you to play movies.

Possible devices:

- vcr (ME, 98)
- videodisc (ME, 98)
- overlay
cd audio (2000, ME, 98)
dat
scanner
animation
digitalvideo
wave audio (2000, ME, 98)
sequencer (2000, ME, 98)
avivideo (2000, ME, 98)
mpeg video (2000, ME, 98)

(I added on which OS I find the devices on my installation.)

On Windows 2000 we have this connection between devices and file extensions:

You can find this list in the Registry on Windows 2000 at "HKEY_LOCAL_MACHINE\Software\Microsoft\Windows NT\Currentversion\MCI Extensions".
vcr:
videodisc:
overlay:
cdaudio: cda.
dat:
scanner:
animation:
digitalvideo:
waveaudio: wav.
sequencer: mdi, midi, rmi.
avi
mpegvideo: aif*, asx, asf, au, dat, ivf, m1v, m3z, mov, mp*, qt, snd, wax, wm, wma, wmv, wvx.

Possible states of a device:

not ready
stopped
playing
recording
seeking
paused
open

Possible time units:

milliseconds - Default
hms - Hour:Minute:Second
msf - Minute:Second:Frame
frames
smpte 24
smpte 25
smpte 30
smpte 30 drop
bytes
samples
tmsf - Track:Minute:Second:Frame -> use for CD

A list of all commands can be found on the Microsoft Website at:
15.23.2 Methods

15.23.3 Run

MBS Audio Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Executes a command.

**Example:**

```vbs
Dim v As New WindowsMCIMBS

v.command = "pause cdaudio" ' pauses the CD
v.run
```

15.23.4 Properties

15.23.5 Command as string

MBS Audio Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Here you can store the next Command for the MCI.

**Example:**

```vbs
Dim v As New WindowsMCIMBS

v.command = "pause cdaudio" ' pauses the CD
v.run
```

**Notes:** (Read and Write property)

15.23.6 Errorcode as Integer

MBS Audio Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The error code for the last error.

**Example:**

```vbs
Dim v As New WindowsMCIMBS

MsgBox Str(v.errorcode) + " " + v.errorstring
```
Notes:
This property can be set to make a list of possible error messages like in the example "List MCI Errormes-
sages".
(Read and Write property)

15.23.7 Errorstring as string

MBS Audio Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The error description
for the last error.
**Example:**
```v
dim v as new WindowsMCIMBS

msgbox str(v.errorcode)+" " +v.errorstring
```

Notes:
Here is a list of some error messages:

(Read and Write property)

15.23.8 Result as string

MBS Audio Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The result of the last
operation.
**Example:**
```v
dim v as WindowsMCIMBS

// get the current position, track and track count to display for the CD Audio.

v.Command="Status cdaudio Current Track"
v.run
MsgBox v.result

v.command="Status cdaudio Number of Tracks"
v.run
MsgBox v.result

v.command="Status cdaudio position"
v.run
MsgBox v.result
```
Notes: (Read and Write property)
The specified command was carried out.

Undefined external error.

A device ID has been used that is out of range for your system.

The driver was not enabled.

The specified device is already in use. Wait until it is free, and then try again.

The specified device handle is invalid.

There is no driver installed on your system.

There is not enough memory available for this task. Quit one or more applications to increase available memory, and then try again.

This function is not supported. Use the Capabilities function to determine which functions and messages the driver supports.

An error number was specified that is not defined in the system.

An invalid flag was passed to a system function.

An invalid parameter was passed to a system function.

Handle being used simultaneously on another thread (eg callback).

Specified alias not found in WIN.INI.

The registry database is corrupt.

The specified registry key was not found.

The registry could not be opened or could not be read.

The registry could not be written to.

The specified registry key could not be deleted.

The specified registry key value could not be found.

The driver did not generate a valid OPEN callback.

The specified format is not supported or cannot be translated. Use the Capabilities function to determine the supported formats.

Cannot perform this operation while media data is still playing. Reset the device, or wait until the data is finished playing.

The wave header was not prepared. Use the Prepare function to prepare the header, and then try again.

Cannot open the device without using the WAVE_ALLOWSYNC flag. Use the flag, and then try again.

The MIDI header was not prepared. Use the Prepare function to prepare the header, and then try again.

The specified device is already in use. Wait until it is free, and then try again.

Cannot perform this operation while media data is still playing. Reset the device, or wait until the data is finished playing.

A MIDI map was not found. There may be a problem with the driver, or the MIDIMAP.CFG file may be corrupt or missing.

The port is transmitting data to the device. Wait until the data has been transmitted, and then try again.

The current MIDI Mapper setup refers to a MIDI device that is not installed on the system. Use MIDI Mapper to edit the setup.

The current MIDI setup is damaged. Copy the original MIDIMAP.CFG file to the Windows SYSTEM directory, and then try again.

A MIDI call was made which is invalid with the current open mode. Reopen the device with the correct mode.

Driver condition - do not callback this input event

Invalid MCI device ID. Use the ID returned when opening the MCI device.

The driver cannot recognize the specified command parameter.

The device cannot recognize the specified command parameter.
15.24. **CLASS WINDOWSPLAYERMBS**

15.24  **class WindowsPlayerMBS**

15.24.1  **class WindowsPlayerMBS**

MBS Audio Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The Windows MP3 Player class.

**Notes:**
This is a little class to play a MP3 file (or data in memory).
Written for 44100 Hz, 2 channel MP3 files.

With plugin version 16.1 this class should work fine with any sample rate, any channel count and other formats as long as Microsoft drivers support them.

15.24.2  **Methods**

15.24.3  **Constructor(data as MemoryBlock)**

MBS Audio Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Initializes the class with given data.
See also:

- 15.24.4 Constructor(data as String)
- 15.24.5 Constructor(file as folderitem)

15.24.4  **Constructor(data as String)**

MBS Audio Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Initializes the class with given data.
See also:

- 15.24.3 Constructor(data as MemoryBlock)
- 15.24.5 Constructor(file as folderitem)

15.24.5  **Constructor(file as folderitem)**

MBS Audio Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Initializes the class with a given file.
See also:

- 15.24.3 Constructor(data as MemoryBlock)
15.24.6  GetVolume(byref VolumeLeft as Double, byref VolumeRight as Double)

MBS Audio Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries left and right volume.

15.24.7  Pause

MBS Audio Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Pauses current playback.

15.24.8  Play(offset as Double = 0.0)

MBS Audio Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Starts playing the sound. **Notes:** With offset you can define the start point in seconds from beginning of sound. Range from 0 seconds to duration-1.

15.24.9  Resume

MBS Audio Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Resumes current playback.

15.24.10  SetVolume(VolumeLeft as Double, VolumeRight as Double)

MBS Audio Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Sets the left and right volume independent.

15.24.11  Stop

MBS Audio Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Stops current playback.
### 15.24.12 Properties

#### 15.24.13 Buffer as MemoryBlock

MBS Audio Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The buffer with audio samples.
**Notes:**
You get a copy of the buffer as memoryblock.
Please use BufferLength, SampleRate and ChannelCount to read it.
Data is always 16 bit with 2 * ChannelCount * SampleRate bytes per second.
(Read only property)

#### 15.24.14 BufferLength as Integer

MBS Audio Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The buffer length for audio samples.
**Notes:** (Read only property)

#### 15.24.15 ChannelCount as Integer

MBS Audio Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The channel count of the audio file.
**Notes:** (Read only property)

#### 15.24.16 Duration as Double

MBS Audio Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Returns duration of sound in seconds.
**Notes:** (Read only property)

#### 15.24.17 Lasterror as Integer

MBS Audio Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The last error code.
**Notes:** (Read and Write property)
15.24.18 Pitch as Double

Notes:
Default 1.0.
pass e.g. 0.5 for half pitch or 2.0 to double pitch.
(Read and Write property)

15.24.19 Position as Double

Notes: (Read only property)

15.24.20 Rate as Double

Notes:
Default 1.0.
pass e.g. 0.5 for half speed or 2.0 to double speed.
(Read and Write property)

15.24.21 SampleRate as Integer

Notes: (Read only property)

15.24.22 Volume as Double

Notes: (Read and Write property)
Chapter 16

Authorization

16.1  class AuthorizationItemMBS

16.1.1  class AuthorizationItemMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
A class for an authorization right.

16.1.2  Properties

16.1.3  Flags as Integer

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Flags for this item.
Notes:
Flags returned in the flags field of ItemSet Items when calling Authorize:

kAuthorizationFlagCanNotPreAuthorize  1

(Read and Write property)

16.1.4  Name as String

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The name of the item.
Notes: (Read and Write property)

16.1.5 Value as String

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The value of the item.
**Notes:** (Read and Write property)
16.2. CLASS AUTHORIZATIONITEMSETMBS

16.2  class AuthorizationItemSetMBS

16.2.1  class AuthorizationItemSetMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class for a set of authorization rights.

16.2.2  Methods

16.2.3  Append(item as AuthorizationItemMBS)

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Adds a new item to the list.

16.2.4  Remove(index as Integer)

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Removes the item with the given index.

16.2.5  Properties

16.2.6  Count as Integer

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the number of items in the list.
**Notes:** (Read and Write property)

16.2.7  Item(index as Integer) as AuthorizationItemMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns an item from the list.
**Notes:** (Read and Write computed property)
16.3 class AuthorizationMBS

16.3.1 class AuthorizationMBS

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class to run a root shell on Mac OS X.

**Notes:**

Some notes from Ilija Injac on this usage of this class:

The main problem for the execution of the perl script was, that perl is not able to find the required perl-modules at execution with the option "-U" (this switch is set for security reasons). It was also neccessary to include the perl-modules from inside the perl script wich has to be executed. Inside the Realbasic code i created a AuthorizationItemMBS with the value "/usr/bin/perl":

```plaintext
i = new AuthorizationItemMBS

i.name = a.kAuthorizationItemRightExecute
i.value = "/usr/bin/perl"
```

... Actually it is the same source as in Christians "Authorization 1" example within the "test1" function. And it works!

16.3.2 Methods

16.3.3 Authorize(rights as AuthorizationItemSetMBS, flags as Integer)

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Short for Authorize without the resulting rights set.

**Example:**

```plaintext
dim a as AuthorizationMBS
dim s as AuthorizationItemSetMBS
dim i as AuthorizationItemMBS
dim Flags as Integer

// check whether use is admin

a=new AuthorizationMBS
s=new AuthorizationItemSetMBS
i=new AuthorizationItemMBS
```
if a.NewAuthorization(nil,a.kAuthorizationFlagDefaults) then  // create
Flags=BitwiseOr(a.kAuthorizationFlagExtendRights,a.kAuthorizationFlagInteractionAllowed)
a.Authorize(s,flags)
MsgBox str(a.LastError)
// -60006 for cancel = no admin
// 0 on success
end if

See also:

- 16.3.4 Authorize(rights as AuthorizationItemSetMBS, flags as Integer, byref outrights as AuthorizationItemSetMBS)

16.3.4 Authorize(rights as AuthorizationItemSetMBS, flags as Integer, byref outrights as AuthorizationItemSetMBS)

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Tries to extend authorization to have root rights.

**Notes:**
The Authorized property is set if this function was successful.
LastError is set.
outrights is on return a list of the rights which are authorized.

Extends the rights of the class.

When the kAuthorizationFlagInteractionAllowed flag is set, user interaction will happen when required. Failing to set this flag will result in this call failing with a errAuthorizationInteractionNotAllowed status when interaction is required.

Setting the kAuthorizationFlagExtendRights flag will extend the currently available rights.

Setting the kAuthorizationFlagPartialRights flag will cause this call to succeed if only some of the requested rights are being granted by the system. Unless this flag is set this API will fail if not all the requested rights could be obtained.

Setting the kAuthorizationFlagDestroyRights flag will prevent any additional rights obtained during this call from being preserved after returning from this API.
Setting the kAuthorizationFlagPreAuthorize flag will pre authorize the requested rights so that at a later time – by calling GetExternalForm() follow by NewAuthorizationFromExternalForm() – the obtained rights can be used in a different process. Rights that can’t be preauthorized will be treated as if they were authorized for the sake of returning an error (in other words if all rights are either authorized or could not be preauthorized this call will still succeed).

The rights which could not be preauthorized are not currently authorized and may fail to authorize when a later call to Authorize() is made, unless the kAuthorizationFlagExtendRights and kAuthorizationFlagInteractionAllowed flags are set. Even then they might still fail if the user does not supply the correct credentials.

The reason for passing in this flag is to provide correct audit trail information and to avoid unnecessary user interaction.

Error codes:

- **errAuthorizationSuccess** 0 No error.
- **errAuthorizationInvalidRef** -60002 The authorization parameter is invalid.
- **errAuthorizationInvalidSet** -60001 The rights parameter is invalid.
- **errAuthorizationInvalidPointer** -60004 The authorizedRights parameter is invalid.

See also:

- 16.3.3 Authorize(rights as AuthorizationItemSetMBS, flags as Integer)

### 16.3.5 Available as boolean

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns true if the Authorization Framework was loaded correctly.
**Notes:** Returns false on any error.

### 16.3.6 close

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The destructor.
**Notes:**
Strings made with the ExternalForm function will become invalid!

There is no need to call this method except you want to free all resources used by this object now without waiting for Realbasic to do it for you.
16.3. CLASS AUTHORIZATIONMBS

(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

16.3.7 closeStream

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Closes the stream.

16.3.8 EOFStream as boolean

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if the Stream is at the end.

16.3.9 Execute(toolpath as string, parameters() as string)

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Executes a command line application in the background. **Notes:** You may make some small shell script which you launch in background. This script can change some other utility to run as root (Setuid), so you can do admin stuff using the normal shell class. Lasterror is set. Currently this function is not available to RB versions before 3.5. Note that the parameters parameter is an array of strings and not just one. toolpath should use an absolute path in unix style. Lasterror is set to -1 if the path is empty or you are not using Mac OS X. See also:

- 16.3.10 Execute(toolpath as string, parameters() as string, openstream as boolean)

16.3.10 Execute(toolpath as string, parameters() as string, openstream as boolean)

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Same as Execute, but you can specify if the stream to the command line application should be opened. **Notes:** Currently this function is not available to RB versions before 3.5. Note that the parameters parameter is an array of strings and not just one. toolpath should use an absolute path in unix style.
Lasterror is set to -1 if the path is empty or you are not using Mac OS X.
See also:

- 16.3.9 Execute(toolpath as string, parameters() as string)

16.3.11 ExternalForm as string

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a string with binary data about this Authorization object.  
**Notes:**  
This external representation depends on your process. You can’t save it to disk or keep it longer than the Authorization object exists.  
If the Authorization object is destroyed, your application quits or the authorization times out, this external form becomes invalid.

16.3.12 FlushStream

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Flushs the stream to the background application.

16.3.13 Info as AuthorizationItemSetMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the list of currently authorized rights.  
**Notes:** Returns nil on any error.

16.3.14 MakeStreamAsyncron


16.3.15 NewAuthorization(rights as AuthorizationItemSetMBS, flags as Integer) as Boolean

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new Authorization object.  
**Notes:**
16.3. CLASS AUTHORIZATIONMBS

Laerror is set. Returns true if successfull.

Create a new authorization object which can be used in other authorization calls.

When the kAuthorizationFlagInteractionAllowed flag is set, user interaction will happen when required. Failing to set this flag will result in this call failing with a errAuthorizationInteractionNotAllowed status in the laerror property when interaction is required.

Setting the kAuthorizationFlagExtendRights flag will extend the currently available rights. If this flag is set the class will grant all the rights requested when errAuthorizationSuccess is returned in the laerror property. If this flag is not set the operation will almost certainly succeed, but no attempt will be made to make the requested rights available.

Call the Info function to figure out which of the requested rights are granted by the system.

Setting the kAuthorizationFlagPartialRights flag will cause this call to succeed if only some of the requested rights are being granted by the system. Unless this flag is set this API will fail if not all the requested rights could be obtained.

Setting the kAuthorizationFlagPreAuthorize flag will pre authorize the requested rights so that at a later time – by calling GetExternalForm() follow by NewAuthorizationFromExternalForm() in a different object – the obtained rights can be used in a different process. Rights that can’t be preauthorized will be treated as if they were authorized for the sake of returning an error (in other words if all rights are either authorized or could not be preauthorized this call will still succeed).

The rights which could not be preauthorized are not currently authorized and may fail to authorize when a later call to Authorize() is made, unless the kAuthorizationFlagExtendRights and kAuthorizationFlagInteractionAllowed flags are set. Even then they might still fail if the user does not supply the correct credentials.

The reason for passing in this flag is to provide correct audit trail information and to avoid unnecessary user interaction.

rights (input/optional):
An AuthorizationItemSet containing rights for which authorization is being requested. If nil are specified the class will authorize nothing at all.

flags (input) options specified using the different constants from this class.

Error codes:
errAuthorizationSuccess 0 Authorization or all requested rights succeeded.
errAuthorizationDenied -60005 The authorization for one or more of the requested rights was denied.
errAuthorizationCanceled -60006 The authorization was canceled by the user.
errAuthorizationInteractionNotAllowed -60007 The authorization was denied since no interaction with the user was allowed.

16.3.16 NewAuthorizationFromExternalForm(s as string) as Boolean

Notes:
You can store an authorization in a string for use in a subprocess. For example your application can ask the user for Root rights and you pass this string to a launched terminal application which will use it without having it’s own interface.
LastError is set. Returns true if successfull.

16.3.17 ReadStream(count as Integer) as string

Example:

dim s(0) as String
dim a as AuthorizationMBS
dim e as Integer

s(0)="-show"

a=new AuthorizationMBS

if a.SimpleNewAuthorization then // create

a.Execute("/usr/sbin/dsconfigad",s,true) // and run it

if a.LastError<>0 then MsgBox "LastError on Execute: "+str(a.LastError) else
e=a.Wait // wait for process to terminate. Returns PID
if a.LastError<>0 then MsgBox "LastError on Wait: "+str(a.LastError) end if
end if

msgbox aReadStream(1024)
end if
16.3. CLASS AUTHORIZATIONMBS

Notes:
Tries to read count bytes.

LastError is set.
The returned string will be as long as the number of strings read.

LastError is set to -1 by the plugin if the stream is not open, or you are not using Mac OS X or the memory allocation failed.

16.3.18 SimpleAuthorize

Notes: This is the function from MBS Plugin 3.0.

16.3.19 SimpleNewAuthorization as Boolean

Example:

```vbnet
// uses chmod on test.pdf on the desktop to make
// it read-, write- and executable by everyone.

dim s(1) as String
dim a as AuthorizationMBS

a=new AuthorizationMBS

if a.SimpleNewAuthorization then
    s(0)=“777”
    s(1)=SpecialFolder.Desktop.Child(“test.pdf”).UnixpathMBS

    MsgBox s(1)
a.execute(“/bin/chmod”,s)
    msgbox “Executed:”+str(aLastError)
end if
```

Notes: This is the function from MBS Plugin 3.0.
16.3.20  Wait as Integer

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Waits till the background application is done.
**Notes:**
Returns the Process ID or -1 on an error. Lasterror is set.

16.3.21  WriteStream(s as string) as Integer

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Writes the given bytes in the string to the stream.

16.3.22  Properties

16.3.23  Authorized as Boolean

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Set to true if the last call to Authorizate was successfull.
**Notes:** (Read and Write property)

16.3.24  Handle as Integer

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The handle to the Mac OS authorization object.
**Notes:**
The C type is AuthorizationRef.
(Read and Write property)

16.3.25  KeepRights as Boolean

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
whether the destructor will keep the rights allive for the next use.
**Notes:**
Normally the rights will be destroyed in the destructor so on the next use of the class the user has to reenter
the password. If KeepRights=true the rights will not be destroyed.
(Read and Write property)
16.3. LastError as Integer

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last error code reported.

**Notes:**

Lasterror is -1 if the function is not supported (e.g. on Windows).

Authorization error codes:

- errAuthorizationSuccess 0, The operation completed successfully.
- errAuthorizationInvalidSet -60001, The set parameter is invalid.
- errAuthorizationInvalidRef -60002, The authorization parameter is invalid.
- errAuthorizationInvalidTag -60003, The tag parameter is invalid.
- errAuthorizationInvalidPointer -60004, The authorizedRights parameter is invalid.
- errAuthorizationDenied -60005, The authorization was denied.
- errAuthorizationCanceled -60006, The authorization was canceled by the user.
- errAuthorizationInteractionNotAllowed -60007, The authorization was denied since no user interaction was possible.
- errAuthorizationInternal -60008, Something else went wrong.
- errAuthorizationInvalidFlags -60011, Invalid option flag(s).
- errAuthorizationToolExecuteFailure -60031, Cannot execute privileged tool.

Other Mac OS error codes like -50 for wrong parameters are also possible.

(Read and Write property)

16.3.27 StreamHandle as Integer

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle to the stream for the terminal running in the background with your command line application.

**Notes:** (Read and Write property)

16.3.28 Constants

16.3.29 errAuthorizationCanceled = -60006

MBS MacCF Plugin, Plugin Version: 14.2. **Function:** One of the error codes.

**Notes:** The authorization was cancelled by the user.
16.3.30  errAuthorizationDenied = -60005

MBS MacCF Plugin, Plugin Version: 14.2. **Function:** One of the error codes. **Notes:** The authorization was denied.

16.3.31  errAuthorizationExternalizeNotAllowed = -60009

MBS MacCF Plugin, Plugin Version: 14.2. **Function:** One of the error codes. **Notes:** The authorization is not allowed to be converted to an external format.

16.3.32  errAuthorizationInteractionNotAllowed = -60007

MBS MacCF Plugin, Plugin Version: 14.2. **Function:** One of the error codes. **Notes:** The authorization was denied since no user interaction was possible.

16.3.33  errAuthorizationInternal = -60008

MBS MacCF Plugin, Plugin Version: 14.2. **Function:** One of the error codes. **Notes:** Unable to obtain authorization for this operation.

16.3.34  errAuthorizationInternalizeNotAllowed = -60010

MBS MacCF Plugin, Plugin Version: 14.2. **Function:** One of the error codes. **Notes:** The authorization is not allowed to be created from an external format.

16.3.35  errAuthorizationInvalidFlags = -60011

MBS MacCF Plugin, Plugin Version: 14.2. **Function:** One of the error codes. **Notes:** The provided option flag(s) are invalid for this authorization operation.

16.3.36  errAuthorizationInvalidPointer = -60004

MBS MacCF Plugin, Plugin Version: 14.2. **Function:** One of the error codes. **Notes:** The returned authorization is invalid.
16.3.37  **errAuthorizationInvalidRef = -60002**

MBS MacCF Plugin, Plugin Version: 14.2. **Function:** One of the error codes.  
**Notes:** The authorization reference is invalid.

16.3.38  **errAuthorizationInvalidSet = -60001**

MBS MacCF Plugin, Plugin Version: 14.2. **Function:** One of the error codes.  
**Notes:** The authorization rights are invalid.

16.3.39  **errAuthorizationInvalidTag = -60003**

MBS MacCF Plugin, Plugin Version: 14.2. **Function:** One of the error codes.  
**Notes:** The authorization tag is invalid.

16.3.40  **errAuthorizationSuccess = 0**

MBS MacCF Plugin, Plugin Version: 14.2. **Function:** One of the error codes.  
**Notes:** No error.

16.3.41  **errAuthorizationToolEnvironmentError = -60032**

MBS MacCF Plugin, Plugin Version: 14.2. **Function:** One of the error codes.  
**Notes:** An invalid status was returned during execution of a privileged tool.

16.3.42  **errAuthorizationToolExecuteFailure = -60031**

MBS MacCF Plugin, Plugin Version: 14.2. **Function:** One of the error codes.  
**Notes:** The specified program could not be executed.

16.3.43  **kAuthorizationEmptyEnvironment = nil**

MBS MacCF Plugin, Plugin Version: 14.2. **Function:** Indicates an empty environment. You should pass this constant in functions with an environment parameter if you have no environment data to provide.
16.3.44  \texttt{kAuthorizationExternalFormLength} = 32

MBS MacCF Plugin, Plugin Version: 14.2.  \textbf{Function:} Indicates, in number of bytes, the length of the array in the AuthorizationExternalForm structure.

16.3.45  \texttt{kAuthorizationFlagCanNotPreAuthorize} = 1

MBS MacCF Plugin, Plugin Version: 14.2.  \textbf{Function:} One of the flag values.  \textbf{Notes:} Indicates the Security Server could not preauthorize the right.

16.3.46  \texttt{kAuthorizationFlagDefaults} = 0

MBS MacCF Plugin, Plugin Version: 14.2.  \textbf{Function:} One of the flag values.  \textbf{Notes:} If no bits are set, none of the following features are available.

16.3.47  \texttt{kAuthorizationFlagDestroyRights} = 8

MBS MacCF Plugin, Plugin Version: 14.2.  \textbf{Function:} One of the flag values.  \textbf{Notes:} If the bit specified by this mask is set, the Security Server revokes authorization from the process as well as from any other process that is sharing the authorization. If the bit specified by this mask is not set, the Security Server revokes authorization from the process but not from other processes that share the authorization.

16.3.48  \texttt{kAuthorizationFlagExtendRights} = 2

MBS MacCF Plugin, Plugin Version: 14.2.  \textbf{Function:} One of the flag values.  \textbf{Notes:} If the bit specified by this mask is set, the Security Server attempts to grant the rights requested. Once the Security Server denies one right, it ignores the remaining requested rights.

16.3.49  \texttt{kAuthorizationFlagInteractionAllowed} = 1

MBS MacCF Plugin, Plugin Version: 14.2.  \textbf{Function:} One of the flag values.  \textbf{Notes:} If the bit specified by this mask is set, you permit the Security Server to interact with the user when necessary.
16.3.50  kAuthorizationFlagPartialRights = 4

MBS MacCF Plugin, Plugin Version: 14.2. **Function:** One of the flag values.
**Notes:** If the bit specified by this mask and the kAuthorizationFlagExtendRights mask are set, the Security Server grants or denies rights on an individual basis and all rights are checked.

16.3.51  kAuthorizationFlagPreAuthorize = 16

MBS MacCF Plugin, Plugin Version: 14.2. **Function:** One of the flag values.
**Notes:** If the bit specified by this mask is set, the Security Server preauthorizes the rights requested.
Chapter 17

AVFoundation

17.1 class AVAssetExportSessionMBS

17.1.1 class AVAssetExportSessionMBS


Function: The AVFoundation class for media export.

Example:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.m4v")
dim a as AVAssetMBS = AVAssetMBS.assetWithFile(f)
dim p as string = AVAssetExportSessionMBS.AVAssetExportPresetAppleM4VCellular
dim e as new AVAssetExportSessionMBS(a, p)

dim FileTypes() as string = e.supportedFileTypes
e.outputFileType = FileTypes(0)
e.OutputFile = SpecialFolder.Desktop.Child("small.m4v")
e.exportAsynchronously

// instead of waiting for event, we simply wait for it to finish
do
app.YieldToNextThread
loop until e.status <> e.AVAssetExportSessionStatusExporting

Notes:

An AVAssetExportSession object transcodes the contents of an AVAsset source object to create an output of the form described by a specified export preset.

Prior to initializing an instance of AVAssetExportSession, you can use allExportPresets to get the complete
list of presets available. Use exportPresetsCompatibleWithAsset to get a list of presets that are compatible with a specific asset.

After you have initialized an export session with the asset that contains the source media, the export preset name (presetName), and the output file type (outputFileType), you can start the export running by invoking exportAsynchronously. Because the export is performed asynchronously, this method returns immediately you can use progress to check on the progress. Depending on the capabilities of the device, some exports may be queued when multiple exports are attempted. When this happens, the status of a queued export will indicate that it’s waiting (AVAssetExportSessionStatusWaiting).

The exportAsynchronouslyCompleted event on AVFoundationMBS is called whether the export fails, completes, or is cancelled. Upon completion, the status property indicates whether the export has completed successfully. If it has failed, the value of the error property supplies additional information about the reason for the failure.

Available in OS X v10.7 and later.

17.1.2 Methods

17.1.3 allExportPresets as string()

Function: Returns all available export preset names.
Notes: Returns an array containing a string constant for each of the available preset names.

17.1.4 available as boolean

Function: Whether this class is available.
Notes: Returns true on Mac OS X 10.7 and newer.

17.1.5 AVAssetExportPreset1280x720 as string

Function: You use these export options to produce QuickTime .mov files with a specified video size.
Notes: Specifies output at 1280x720 pixels.
17.1.6 AVAssetExportPreset1920x1080 as string

Function: You use these export options to produce QuickTime .mov files with a specified video size.
Notes: Specifies output at 1920x1080 pixels.

17.1.7 AVAssetExportPreset3840x2160 as string

Function: You use these export options to produce QuickTime .mov files with a specified video size.
Notes: Specifies output at 3840x2160 pixels (4K video).

17.1.8 AVAssetExportPreset640x480 as string

Function: You use these export options to produce QuickTime .mov files with a specified video size.
Notes: Specifies output at 640x480 pixels.

17.1.9 AVAssetExportPreset960x540 as string

Function: You use these export options to produce QuickTime .mov files with a specified video size.
Notes: Specifies output at 960x540 pixels.

17.1.10 AVAssetExportPresetAppleM4A as string

Function: You use this export option to produce an audio-only .m4a file with appropriate iTunes gapless playback data.
Notes: Specifies an audio-only .m4a file with appropriate iTunes gapless playback data.

17.1.11 AVAssetExportPresetAppleM4V1080pHD as string

Function: One of the export option presets to produce files that can be played on the specific Apple devices.
Notes: Specifies a 1080p High Definition format suitable for playing on Apple devices.
17.1.12 **AVAssetExportPresetAppleM4V480pSD** as string

**Function:** One of the export option presets to produce files that can be played on the specific Apple devices.
**Notes:** Specifies a 480p Standard Definition format suitable for playing on Apple devices.

17.1.13 **AVAssetExportPresetAppleM4V720pHD** as string

**Function:** One of the export option presets to produce files that can be played on the specific Apple devices.
**Notes:** Specifies a 720p High Definition format suitable for playing on Apple devices.

17.1.14 **AVAssetExportPresetAppleM4VAppleTV** as string

**Function:** One of the export option presets to produce files that can be played on the specific Apple devices.
**Notes:** Specifies a format suitable for playing on AppleTV.

17.1.15 **AVAssetExportPresetAppleM4VCellular** as string

**Function:** One of the export option presets to produce files that can be played on the specific Apple devices.
**Notes:** Specifies a format suitable for playing on Apple devices when streamed over a cellular network.

17.1.16 **AVAssetExportPresetAppleM4ViPod** as string

**Function:** One of the export option presets to produce files that can be played on the specific Apple devices.
**Notes:** Specifies a format suitable for playing on an iPod.

17.1.17 **AVAssetExportPresetAppleM4VWiFi** as string

**Function:** One of the export option presets to produce files that can be played on the specific Apple devices.
**Notes:** Specifies a format suitable for playing on Apple devices when streamed over a WiFi network.
17.1. CLASSES AVASSETEXPORTSESSIONMBS

17.1.18 AVAssetExportPresetAppleProRes422LPCM as string

**Function:** One of the export option presets to produce files that can be played on the specific Apple devices.
**Notes:** Specifies a QuickTime movie with Apple ProRes 422 video and LPCM audio.

17.1.19 AVAssetExportPresetPassthrough as string

**Function:** You use this export option to let all tracks pass through.
**Notes:** Specifies that all tracks pass through, unless it is not possible.

17.1.20 cancelExport

**Function:** Cancels the execution of an export session.

17.1.21 Constructor(asset as AVAssetMBS, presetName as string)

**Function:** Initializes an asset export session with a specified asset and preset.
**Notes:**

- **asset:** The asset you want to export.
- **presetName:** A string constant specifying the name of the preset template for the export.

17.1.22 determineCompatibilityOfExportPreset(presetName as string, asset as AVAssetMBS, outputFileType as string, tag as Variant = nil)

**Function:** Reports the compatibility of an export present, asset, and output file type to the event.
**Notes:**

- Calls later AVAssetExportSessionMBS.determineCompatibilityOfExportPresetCompleted event.

- **presetName:** The name of the preset template for the export operation. For possible values, see "Export Preset Names for Device-Appropriate QuickTime Files," "Export Preset Names for QuickTime Files of a Given Size," AVAssetExportSessionStatusCancelled, "Export Preset Name for iTunes Audio," and "Export Preset Name for Pass-Through."
- **asset:** The asset object that you are planning to export.
outputFileType: The UTI string corresponding to the file type. For example, to specify a QuickTime movie file format, you could specify the constant AVFileTypeQuickTimeMovie. For a list of constants specifying UTIs for standard file types, see AV Foundation Constants Reference.

Because not all export presets are compatible with all assets and file types, you can use this method to query the compatibility of specific combos before using them. To ensure that the export operation succeeds, you should not make any significant changes to the asset between the time of calling this method and performing the export operation.

This method performs its checks asynchronously on a secondary thread and returns immediately. The results are similarly reported to the event later.

Available in OS X v10.9 and later.

With tag you can pass any value you like to the event later. This can be for example an object reference or a number in an array. Be aware that the reference to this tag value is kept until the event is called and can cause memory reference cycles.

17.1.23 determineCompatibleFileTypes(tag as Variant = nil)


Function: Reports the compatible file types for the current export session to the event.

Notes:
calls later AVFoundationMBS.determineCompatibleFileTypesCompleted event.

This method operates on the asset object and preset information that was used to initialize the export session. It uses this information to determine the file types that the export session can write.

This method performs its checks asynchronously on a secondary thread and returns immediately. The results are similarly reported to the specified block on a secondary thread. Because this method actually inspects the asset’s tracks, the tracks are loaded if they have not been already.
Available in OS X v10.9 and later.

With tag you can pass any value you like to the event later. This can be for example an object reference or a number in an array. Be aware that the reference to this tag value is kept until the event is called and can cause memory reference cycles.
17.1.24 exportAsynchronously(tag as Variant = nil)


**Function:** Starts the asynchronous execution of an export session.

**Example:**

```vbscript
dim f as FolderItem = SpecialFolder.Desktop.Child("test.m4v")
dim a as AVAssetMBS = AVAssetMBS.assetWithFile(f)
dim p as string = AVAssetExportSessionMBS.AVAssetExportPresetAppleM4VCellular
dim e as new AVAssetExportSessionMBS(a, p)

dim FileTypes() as string = e.supportedFileTypes
e.outputFileType = FileTypes(0)
e.outputFile = SpecialFolder.Desktop.Child("small.m4v")
e.exportAsynchronously

// instead of waiting for event, we simply wait for it to finish
do
    app.YieldToNextThread
loop until e.status <> e.AVAssetExportSessionStatusExporting
```

**Notes:**

This method starts an asynchronous export operation and returns immediately. status signals the terminal state of the export session, and if a failure occurs, error describes the problem.

This method calls AVFoundationMBS.exportAsynchronouslyCompleted event later. Tag is passed so you can pass information needed to finish work.

If internal preparation for export fails, event is invoked synchronously. The event may also be called asynchronously, after the method returns, in the following cases:

- If a failure occurs during the export, including failures of loading, re-encoding, or writing media data to the output.
- If cancelExport is invoked.
- After the export session succeeds, having completely written its output to the outputURL.

With tag you can pass any value you like to the event later. This can be for example an object reference or a number in an array. Be aware that the reference to this tag value is kept until the event is called and can cause memory reference cycles.
17.1.25  exportMT

Function: Starts the synchronous execution of an export session.
Notes:
Same as exportAsynchronously, but run synchronous, so the plugin waits.
If called in a Xojo thread yields time to other threads.

17.1.26  exportPresetsCompatibleWithAsset(asset as AVAssetMBS) as string()

Function: Returns the identifiers compatible with a given asset.
Notes:
asset: An asset that is ready to be exported.
Returns an array of strings representing the identifiers compatible with asset.
The array is a complete list of the valid identifiers that can be used with exportSessionWithAsset with the specified asset.
Not all export presets are compatible with all assets. For example, a video-only asset is not compatible with an audio-only preset. This method returns only the identifiers for presets that are compatible with the given asset.
In order to ensure that the setup and running of an export operation will succeed using a given preset, you should not make significant changes to the asset (such as adding or deleting tracks) between retrieving compatible identifiers and performing the export operation.
If the asset’s tracks are not currently loaded, they may be loaded by this method before any checks are performed.

17.1.27  exportSessionWithAsset(asset as AVAssetMBS, presetName as string) as AVAssetExportSessionMBS

Function: Returns an asset export session configured with a specified asset and preset.
Notes:
asset: The asset you want to export.
presetName: A string constant specifying the name of the preset template for the export.
Returns an asset export session initialized to export asset using preset presetName.

### 17.1.28  metadata as AVMetadataItemMBS()

**Function:** Returns the metadata to be written to the output file by the export session.

### 17.1.29  outputFileExtension as string

**Function:** Convenience method to query the preferred file extension for current output file type.
**Example:**
```
    dim f as FolderItem = SpecialFolder.Desktop.Child("test.m4v")
    dim a as AVAssetMBS = AVAssetMBS.assetWithFile(f)
    dim p as string = AVAssetExportSessionMBS.AVAssetExportPresetAppleM4VCellular
    dim e as new AVAssetExportSessionMBS(a, p)
    dim filetypes() as string = e.supportedFileTypes
    e.outputFileExtension = FileTypes(0)

    // shows the output file extension
    MsgBox "outputFileExtension: " + e.outputFileExtension
```

### 17.1.30  setMetadata(items() as AVMetadataItemMBS)

**Function:** Sets the metadata to be written to the output file by the export session.
**Example:**
```
    dim e as AVAssetExportSessionMBS // your export session
    dim asset as AVAssetMBS // your asset

    // query metadata
    dim a() as AVMetadataItemMBS = asset.metadata

    // make new
    dim m as new AVMutableMetadataItemMBS

    // add common key with author
    m.keySpace = AVFoundationMBS.AVMetadataKeySpaceCommon
```
m.key = AVFoundationMBS.AVMetadataCommonKeyAuthor
m.Value = "Hello World"

// append to array and use as metadata:
a.Append m
e.setMetadata a

Notes: If the array is empty, any existing metadata in the exported asset will be translated as accurately as possible into the appropriate metadata key space for the output file and written to the output.

17.1.31 supportedFileTypes as string()

Function: The types of files the session can write. (read-only)
Example:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.m4v")
dim a as AVAssetMBS = AVAssetMBS.assetWithFile(f)
dim p as string = AVAssetExportSessionMBS.AVAssetExportPresetAppleM4VCellular
dim e as new AVAssetExportSessionMBS(a, p)
// shows supported file types
MsgBox join(e.supportedFileTypes, EndOfLine)

Notes: The types of files the session can write are determined by the asset and and export preset with which the session was initialized. If you need to determine the compatible file formats before initiating the export operation, use the determineCompatibleFileTypesWithCompletionHandler: method.

17.1.32 Properties

17.1.33 asset as AVAssetMBS

Function: The asset with which the export session was initialized. (read-only)
Notes: (Read only property)

17.1.34 audioMix as AVAudioMixMBS

Function: Indicates whether non-default audio mixing is enabled for export, and supplies the parameters
17.1. CLASS AVASSETEXPORTSESSIONMBS

for audio mixing.

Notes: (Read and Write property)

17.1.35 audioTimePitchAlgorithm as String


Function: Indicates the processing algorithm used to manage audio pitch for scaled audio edits.

Notes:

An exception (NSInvalidArgumentException) is raised if this property is set to a value other than the constants defined in TimePitchAlgorithmSettings.

The default value is AVAudioTimePitchAlgorithmSpectral.

Available in OS X v10.9 and later.

(Read and Write property)

17.1.36 canPerformMultiplePassesOverSourceMediaData as Boolean


Function: Determines whether the export session can perform multiple passes over the source media to achieve better results.

Notes:

When the value for this property is true, the export session can produce higher quality results at the expense of longer export times. Setting this property to true may also require the export session to write temporary data to disk during the export. To control the location of temporary data, use the property directoryForTemporaryFiles.

The default value is false. Not all export session configurations can benefit from performing multiple passes over the source media. In these cases, setting this property to true has no effect.

This property cannot be set after the export has started.

Available in Mac OS X 10.10 and newer.

(Read and Write property)

17.1.37 customVideoCompositor as AVVideoCompositingMBS


Function: Indicates the custom video compositor instance used, if any. (read-only)
Notes:

The custom video compositor instance that is used during image generation is accessible via this property after the value of videoComposition is set to an AVVideoComposition instance that specifies a custom video compositor class. Any additional communication between the application and that instance of the custom video compositor, if any is required for configuration or other purposes, can only occur once that has happened.

If the value of videoComposition is changed from an AVVideoComposition that specifies a custom video compositor class to another instance of AVVideoComposition that specifies the same custom video compositor class, the instance of the custom video compositor that was previously created will receive the renderContextChanged: message and remain in use for subsequent image generation.

This property is nil if there is no video compositor, or if the internal video compositor is in use. Available in OS X v10.9 and later. (Read only property)

17.1.38 directoryForTemporaryFiles as Folderitem

Function: Specifies a directory that is suitable for containing temporary files generated during the export process.

Notes: AVAssetExportSession may need to write temporary files when configured in certain ways, such as when canPerformMultiplePassesOverSourceMediaData is set to true. This property can be used to control where in the filesystem those temporary files are created. All temporary files will be deleted when the export is completed, is canceled, or fails.

When the value of this property is nil, the export session will choose a suitable location when writing temporary files. The default value is nil.

This property cannot be set after the export has started. The export will fail if the URL points to a location that is not a directory, does not exist, is not on the local file system, or if a file cannot be created in this directory (for example, due to insufficient permissions or sandboxing restrictions).

Available in Mac OS X 10.10 and newer. (Read and Write property)
17.1.39  directoryForTemporaryFilesURL as String

**Function:** Specifies a directory that is suitable for containing temporary files generated during the export process.
**Notes:**

AVAssetExportSession may need to write temporary files when configured in certain ways, such as when canPerformMultiplePassesOverSourceMediaData is set to true. This property can be used to control where in the filesystem those temporary files are created. All temporary files will be deleted when the export is completed, is canceled, or fails.

When the value of this property is empty, the export session will choose a suitable location when writing temporary files. The default value is nil.

This property cannot be set after the export has started. The export will fail if the URL points to a location that is not a directory, does not exist, is not on the local file system, or if a file cannot be created in this directory (for example, due to insufficient permissions or sandboxing restrictions).

Available in Mac OS X 10.10 and newer.
(Read and Write property)

17.1.40  error as NSErrorMBS

**Function:** Describes the error that occurred if the export status is AVAssetExportSessionStatusFailed or AVAssetExportSessionStatusCancelled. (read-only)
**Notes:**

If there is no error to report, the value of this property is nil.
(Read only property)

17.1.41  estimatedOutputFileLength as Int64

**Function:** Indicates the estimated size in bytes of the exported file. (read-only)
**Notes:**

Available in OS X v10.9 and later.
(Read only property)
17.1.42 Handle as Integer

**Function:** The internal object reference.
**Notes:** (Read and Write property)

17.1.43 metadataItemFilter as AVMetadataItemFilterMBS

**Function:** Specifies a filter object to be used during export to determine which metadata items should be transferred from the source asset.
**Notes:**
If the value of this key is nil, no filter will be applied. This is the default.

The filter will not be applied to metadata set with via the metadata property. To apply the filter to metadata before it is set on the metadata property, see AVMetadataItem.

Available in OS X v10.9 and later.
(Read and Write property)

17.1.44 OutputFile as folderitem

**Function:** The file of the export session’s output.
**Notes:** (Read and Write property)

17.1.45 outputFileType as string

**Function:** The type of file to be written by the session.
**Notes:**
The value is a UTI string corresponding to the file type to use when writing the asset. For a list of constants specifying UTIs for standard file types, see AV Foundation Constants Reference.
(Read and Write property)
17.1.46  outputURL as string

Function: The URL of the export session’s output.
Notes: (Read and Write property)

17.1.47  presetName as string

Function: The name of the preset with which the session was initialized. (read-only)
Notes: (Read only property)

17.1.48  progress as Double

Function: The progress of the export on a scale from 0 to 1. (read-only)
Notes: A value of 0 means the export has not yet begun, 1 means the export is complete.
(Read only property)

17.1.49  shouldOptimizeForNetworkUse as boolean

Function: Indicates whether the movie should be optimized for network use.
Notes: (Read and Write property)

17.1.50  status as Integer

Function: The status of the export session. (read-only)
Notes: (Read only property)

17.1.51  videoComposition as AVVideoCompositionMBS

Function: Indicates whether video composition is enabled for export, and supplies the instructions for video composition.
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Notes: (Read and Write property)

17.1.52 timeRange as CMTimeRangeMBS


Function: The time range to be exported from the source.

Example:

```vba
dim a as AVAssetMBS // your asset to export
dim preset as string = AVAssetExportSessionMBS.AVAssetExportPresetPassthrough // your settings
dim e as new AVAssetExportSessionMBS(a, preset)

dim t as CMTimeMBS = CMTimeMBS.MakeWithSeconds(5) // start at 5
dim d as CMTimeMBS = CMTimeMBS.MakeWithSeconds(10) // duration 10
dim r as CMTimeRangeMBS = CMTimeRangeMBS.Make(t, d)

e.timeRange = r // or your time range!
e.shouldOptimizeForNetworkUse = true

dim filetypes() as string = e.supportedFileTypes
e.outputFileType = FileTypes(0)

e.exportAsynchronously(nil)

// keep e and check for events

// or instead of waiting for event, we simply wait for it to finish
do
app.YieldToNextThread
loop until e.status <> e.AVAssetExportSessionStatusExporting
```

Notes:
The default time range of an export session is kCMTimeZero to kCMTimePositiveInfinity, meaning that (modulo a possible limit on file length) the full duration of the asset will be exported.

(Read and Write computed property)
17.1.53 Constants

17.1.54 AVAssetExportSessionStatusCancelled = 5

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants to indicate the status of the session. 
**Notes:** Indicates that the export session was cancelled.

17.1.55 AVAssetExportSessionStatusCompleted = 3

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants to indicate the status of the session. 
**Notes:** Indicates that the export session completed successfully.

17.1.56 AVAssetExportSessionStatusExporting = 2

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants to indicate the status of the session. 
**Notes:** Indicates that the export session is in progress.

17.1.57 AVAssetExportSessionStatusFailed = 4

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants to indicate the status of the session. 
**Notes:** Indicates that the export session failed.

17.1.58 AVAssetExportSessionStatusUnknown = 0

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants to indicate the status of the session. 
**Notes:** Indicates that the status is unknown.

17.1.59 AVAssetExportSessionStatusWaiting = 1

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants to indicate the status of the session.
Notes: Indicates that the session is waiting to export more data.
17.2. **CLASS AVASSETIMAGEGENERATORMBS**

### 17.2 class AVAssetImageGeneratorMBS


**Function:** An AVAssetImageGenerator object provides thumbnail or preview images of assets independently of playback.

**Notes:**

AVAssetImageGenerator uses the default enabled video track(s) to generate images. Generating a single image in isolation can require the decoding of a large number of video frames with complex interdependencies. If you require a series of images, you can achieve far greater efficiency using the asynchronous method, CGImageAtTime, which employs decoding efficiencies similar to those used during playback.

You create an asset generator using initWithAsset: or assetImageGeneratorWithAsset. These methods may succeed even if the asset possesses no visual tracks at the time of initialization. You can test whether an asset has any tracks with the visual characteristic using tracksWithMediaCharacteristic (AVAsset).

The actual time of a generated image is within the range \([\text{requestedTime}-\text{requestedTimeToleranceBefore}, \text{requestedTime}+\text{requestedTimeToleranceAfter}]\) and may differ from the requested time for efficiency.

Assets that represent mutable compositions or mutable movies may gain visual tracks after initialization of an associated image generator.

### 17.2.2 Methods

#### 17.2.3 assetImageGeneratorWithAsset(asset as AVAssetMBS) as AVAssetImageGeneratorMBS


**Function:** Returns an image generator for use with a specified asset.

**Notes:**

asset: The asset from which images will be extracted.

Returns an image generator for use with asset.

This method may succeed even if the asset possesses no visual tracks at the time of initialization.
17.2.4 available as boolean

Function: Whether this class is available.
Notes: Returns true on Mac OS X 10.7 and newer.

17.2.5 AVAssetImageGeneratorApertureModeCleanAperture as string

Function: One of the constants to specify the aperture mode.
Notes: Both pixel aspect ratio and clean aperture will be applied.

17.2.6 AVAssetImageGeneratorApertureModeEncodedPixels as string

Function: One of the constants to specify the aperture mode.
Notes: Neither pixel aspect ratio nor clean aperture will be applied.

17.2.7 AVAssetImageGeneratorApertureModeProductionAperture as string

Function: One of the constants to specify the aperture mode.
Notes: Only pixel aspect ratio will be applied.

17.2.8 cancelAllCGImageGeneration

Function: Cancels all pending image generation requests.
Notes: This method calls the AVFoundationMBS.generateCGImagesAsynchronouslyForTimesCompleted event with AVAssetImageGeneratorCancelled for each image time in every previous invocation of generate-CGImagesAsynchronouslyForTimes for which images have not yet been supplied.

17.2.9 CGImageAtTime(time as CMTimeMBS, byref actualTime as CMTimeMBS, byref error as NSErrorMBS) as Variant

Function: Returns a CGImage for the asset at or near a specified time.
Example:
17.2. CLASS AVASSETIMAGEGENERATORMBS

// open asset
dim f as FolderItem = SpecialFolder.Desktop.Child("test.mov")
dim a as AVAssetMBS = AVAssetMBS.assetWithFile(f)

// prepare generator
dim g as new AVAssetImageGeneratorMBS(a)
dim timeRequested as CMTimeMBS = CMTimeMBS.MakeWithSeconds(5, 30)
dim actualTime as CMTimeMBS
dim error as NSErrorMBS
// ask for an image
dim c as CGImageMBS = g.CGImageAtTime(timeRequested, actualTime, error)
// and show it
dim p as Picture = c.Picture
window1.backdrop = p

Notes:

requestedTime: The time at which the image of the asset is to be created.
actualTime: Upon return, contains the time at which the image was actually generated.
Error: If an error occurs, upon return contains an NSError object that describes the problem.

Returns a CGImageMBS for the asset at or near a specified time, or nil if the image could not be created.
This method returns the image synchronously.

17.2.10 Constructor(asset as AVAssetMBS)

Function: Initializes an image generator for use with a specified asset.
Notes:

asset: The asset from which images will be extracted.
This method may succeed even if the asset possesses no visual tracks at the time of initialization.

17.2.11 generateCGImagesAsynchronouslyForTimes(times() as CMTimeMBS, tag as Variant = nil)

Function: Creates a series of CGImage objects for an asset at or near specified times.
Notes:

requestedTimes: An array of CMTimeMBS, specifying the asset times at which an image is requested.
This method uses an efficient “batch mode” to get images in time order.

The client receives exactly one event call to AVFoundationMBS.generateCGImagesAsynchronouslyForTimesCompleted for each requested time in requestedTimes. Changes to the generator’s properties (snap behavior, maximum size, and so on) do not affect pending asynchronous image generation requests.

With tag you can pass any value you like to the event later. This can be for example an object reference or a number in an array. Be aware that the reference to this tag value is kept until the event is called and can cause memory reference cycles.

17.2.12  Properties

17.2.13  apertureMode as string

Function: Specifies the aperture mode for the generated image.  
Notes: (Read and Write property)

17.2.14  appliesPreferredTrackTransform as boolean

Function: Specifies whether to apply the track matrix (or matrices) when extracting an image from the asset.  
Notes:  
The default is false. AVAssetImageGenerator only supports rotation by 90, 180, or 270 degrees. This property is ignored if you set a value for the videoComposition property.  
(Read and Write property)

17.2.15  asset as AVAssetMBS

Function: The asset with which the export session was initialized. (read-only)  
Notes:  
Available in OS X v10.8 and later.  
(Read only property)
17.2.16 customVideoCompositor as AVVideoCompositingMBS

Function: Indicates the custom video compositor instance used, if any. (read-only)
Notes:
The custom video compositor instance that is used during image generation is accessible via this property after the value of videoComposition is set to an AVVideoComposition instance that specifies a custom video compositor class. Any additional communication between the application and that instance of the custom video compositor, if any is required for configuration or other purposes, can only occur once that has happened.

If the value of videoComposition is changed from an AVVideoComposition that specifies a custom video compositor class to another instance of AVVideoComposition that specifies the same custom video compositor class, the instance of the custom video compositor that was previously created will receive the renderContextChanged message and remain in use for subsequent image generation.

This property is nil if there is no video compositor, or if the internal video compositor is in use. Available in OS X v10.9 and later.
(Read only property)

17.2.17 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

17.2.18 videoComposition as AVVideoCompositionMBS

Function: The video composition to use when extracting images from assets with multiple video tracks.
Notes:
If no video composition is specified, only the first enabled video track will be used. If a video composition is specified, the appliesPreferredTrackTransform property is ignored.
(Read and Write property)

17.2.19 maximumSize as CGSizeMBS

Function: Specifies the maximum dimensions for generated image.
Notes:
The default value is CGSizeZero, which specifies the asset’s unscaled dimensions.

AVAssetImageGenerator scales images such that they fit within the defined bounding box. Images are never scaled up. The aspect ratio of the scaled image is defined by the apertureMode property.
(Read and Write computed property)

17.2.20 **requestedTimeToleranceAfter as CMTimeMBS**

**Function:** The maximum length of time after a requested time for which an image may be generated.
**Notes:**
The default value is kCMTimePositiveInfinity.

Set the values of requestedTimeToleranceBefore and requestedTimeToleranceAfter to kCMTimeZero to request frame-accurate image generation; this may incur additional decoding delay.
(Read and Write computed property)

17.2.21 **requestedTimeToleranceBefore as CMTimeMBS**

**Function:** The maximum length of time before a requested time for which an image may be generated.
**Notes:**
The default value is kCMTimePositiveInfinity.

Set the values of requestedTimeToleranceBefore and requestedTimeToleranceAfter to kCMTimeZero to request frame-accurate image generation; this may incur additional decoding delay.
(Read and Write computed property)

17.2.22 **Constants**

17.2.23 **AVAssetImageGeneratorCancelled = 2**

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants to indicate the outcome of image generation.
**Notes:** Indicates that generation was cancelled.
17.2.24 AVAssetImageGeneratorFailed = 1

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants to indicate the outcome of image generation.  
**Notes:** Indicates that generation failed.

17.2.25 AVAssetImageGeneratorSucceeded = 0

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants to indicate the outcome of image generation.  
**Notes:** Indicates that generation succeeded.
17.3 class AVAssetMBS

17.3.1 class AVAssetMBS


Function: AVAsset is an abstract class to represent timed audiovisual media such as videos and sounds.

Notes:

Each asset contains a collection of tracks that are intended to be presented or processed together, each of a uniform media type, including but not limited to audio, video, text, closed captions, and subtitles.

An AVAsset object defines the collective properties of the tracks that comprise the asset. (You can access the instances of AVAssetTrack representing tracks of the collection, so you can examine each of these independently if you need to.) You often instantiate an asset using a concrete subclass of AVAsset; for example, you can initialize an instance of AVURLAsset using an URL that refers to an audiovisual media file, such as a QuickTime movie file or an MP3 files (amongst other types). You can also instantiate an asset using other concrete subclasses that extend the basic model for audiovisual media in useful ways, as AVComposition does for temporal editing. To assemble audiovisual constructs from one or more source assets, you can insert assets into instances of AVMutableComposition.

You often instantiate an asset using AVURLAsseta concrete subclass of AVAssetwith URLs that refer to audiovisual media resources, such as streams (including HTTP live streams), QuickTime movie files, MP3 files, and files of other types. You can also instantiate an asset using other concrete subclasses that extend the basic model for audiovisual media in useful ways, as AVComposition does for temporal editing.

Properties of assets as a whole are defined by AVAsset. Additionally, references to instances of AVAssetTrack representing tracks of the collection can be obtained, so that each of these can be examined independently.

Because of the nature of timed audiovisual media, upon successful initialization of an asset some or all of the values for its keys may not be immediately available. The value of any key can be requested at any time, and asset will always return its value synchronously, although it may have to block the calling thread in order to do so. In order to avoid blocking, you can register your interest in particular keys and to become notified when their values become available. For further details, see AVAsynchronousKeyValueLoading.

To play an instance of AVAsset, initialize an instance of AVPlayerItem with it, use the player item tem to set up its presentation state (such as whether only a limited timeRange of the asset should be played, etc.), and provide the player item to an AVPlayer object according to whether the items is to be played by itself or together with a collection of other items.

You can insert AVAsset objects can also be inserted into an AVMutableComposition object in order to assemble audiovisual constructs from one or more source assets.

Subclassing Notes
It is not currently possible to subclass AVAsset to handle streaming protocols or file formats that are not supported by the framework. This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

### 17.3.2 Methods

#### 17.3.3 assetWithData(Data as MemoryBlock, Options as Dictionary = nil) as AVAssetMBS

**Function:** Creates an AVMovie object from a movie header stored in an data parameter.  
**Notes:**
- data: An Memoryblock/String containing a movie header. We make a copy of that.  
- options: Dictionary object that contains keys for specifying options for the initialization of the AVMovie object. Currently no keys are defined.  
  
- Returns An AVMovie object or nil in case of error.  
You can use this method to operate on movie headers that are not stored in files; this might include movie headers on the pasteboard (which do not contain media data). In general you should avoid loading an entire movie file with its media data into an instance of Memoryblock/String! By default, the defaultMediaDataStorage property will be nil and each associated AVMovieTrack’s mediaDataStorage property will be nil.  
If you want to create an AVMutableMovie from an NSData object and then append sample buffers to any of its tracks, you must first set one of these properties to indicate where the sample data should be written.  
See also:

- 17.3.4 assetWithData(Data as String, Options as Dictionary = nil) as AVAssetMBS

#### 17.3.4 assetWithData(Data as String, Options as Dictionary = nil) as AVAssetMBS

**Function:** Creates an AVMovie object from a movie header stored in an data parameter.  
**Example:**

```// load movie in memory
dim f as FolderItem = SpecialFolder.Desktop.Child("test.m4v")
dim b as BinaryStream = BinaryStream.Open(f)

// now open it from memory
dim s as string = b.Read(b.Length)
dim m as AVAssetMBS = AVAssetMBS.movieWithData(s)

MsgBox str(m.duration.Seconds)+” seconds.”```
Notes:

data: An Memoryblock/String containing a movie header. We make a copy of that.
options: Dictionary object that contains keys for specifying options for the initialization of the AVMovie object. Currently no keys are defined.
Returns An AVMovie object or nil in case of error.
You can use this method to operate on movie headers that are not stored in files; this might include movie headers on the pasteboard (which do not contain media data). In general you should avoid loading an entire movie file with its media data into an instance of Memoryblock/String! By default, the defaultMediaDataStorage property will be nil and each associated AVMovieTrack’s mediaDataStorage property will be nil.
If you want to create an AVMutableMovie from an NSData object and then append sample buffers to any of its tracks, you must first set one of these properties to indicate where the sample data should be written.
See also:

- 17.3.3 assetWithData(Data as MemoryBlock, Options as Dictionary = nil) as AVAssetMBS

17.3.5 assetWithFile(file as folderitem) as AVAssetMBS

Function: Returns an asset for inspection of a media resource.
Example:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.mov")
dim a as AVAssetMBS = AVAssetMBS.assetWithFile(f)
MsgBox str(a.duration.Seconds)+" seconds"

17.3.6 assetWithURL(URL as string) as AVAssetMBS

Function: Returns an asset for inspection of a media resource.

17.3.7 available as boolean

Function: Whether this class is available.
Notes: Returns true on Mac OS X 10.7 and newer.
17.3. **CLASS AVASSETMBS**

17.3.8 **availableChapterLocales as NSLocaleMBS()**


**Function:** The locales available for chapters in the asset. (read-only)

17.3.9 **availableMediaCharacteristicsWithMediaSelectionOptions as string()**


**Function:** An array of media characteristics for which a media selection option is available. (read-only)

**Notes:** The value of this property is an array of strings, each string indicating a media characteristic for which a media selection option is available.

17.3.10 **availableMetadataFormats as string()**


**Function:** An array of strings, each representing a metadata format that’s available to the asset. (read-only)

**Notes:** Metadata formats may include ID3, iTunes metadata, and so on. For more details, see AVMetadataItem.

17.3.11 **cancelLoading**


**Function:** Cancels the loading of all values for all observers.

**Notes:** Deallocation of an instance of the asset will implicitly invoke this method if any loading requests are still outstanding.

17.3.12 **chapterMetadataGroupsBestMatchingPreferredLanguages as AVTimedMetadataGroupMBS()**


**Function:** Returns an array of chapters whose locale best matches the list of preferred languages.

**Notes:**

preferredLanguages: Optional, an array of strings, each of which contains a canonicalized IETF BCP 47 language identifier. The order of the identifiers in the array reflects the preferred language order, with the most preferred language being first in the array. Typically, you pass the user’s preferred languages by retrieving this array from the preferredLanguages class method of NSLocale. If you don’t pass an array, the plugin automatically passes NSLocaleMBS.preferredLanguages.
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Returns an array of AVTimedMetadataGroup objects.

Each object in the returned array contains an AVMetadataItem object representing the chapter title. The time range property of the AVTimedMetadataGroup object is equal to the time range of the chapter title item.

All of the available chapter metadata is included in the metadata groups, including items with the common key AVMetadataCommonKeyArtwork, if such items are present. Items not carrying chapter titles are added to an existing AVTimedMetadataGroup object if the time range (timestamp and duration) of the metadata item and that of the metadata group overlaps. The locale of such items need not match the locale of the chapter titles.

You can use the metadataItemsFromArray:filteredAndSortedAccordingToPreferredLanguages: method to further filter the metadata items in each group. You can also filter the returned items based on locale using the metadataItemsFromArray:withLocale: method.

Special Considerations
Becomes callable without blocking when the data in the availableChapterLocales property is already loaded.

See also:

- 17.3.13 chapterMetadataGroupsBestMatchingPreferredLanguages(preferredLanguages() as string) as AVTimedMetadataGroupMBS()

17.3.13  chapterMetadataGroupsBestMatchingPreferredLanguages(preferredLanguages() as string) as AVTimedMetadataGroupMBS()


Function: Returns an array of chapters whose locale best matches the the list of preferred languages.

Notes:

preferredLanguages: Optional, an array of strings, each of which contains a canonicalized IETF BCP 47 language identifier. The order of the identifiers in the array reflects the preferred language order, with the most preferred language being first in the array. Typically, you pass the user’s preferred languages by retrieving this array from the preferredLanguages class method of NSLocale. If you don’t pass an array, the plugin automatically passes NSLocaleMBS.preferredLanguages.

Returns an array of AVTimedMetadataGroup objects.

Each object in the returned array contains an AVMetadataItem object representing the chapter title. The time range property of the AVTimedMetadataGroup object is equal to the time range of the chapter title item.

All of the available chapter metadata is included in the metadata groups, including items with the common
17.3. CLASS AVASSETMBS

key AVMetadataCommonKeyArtwork, if such items are present. Items not carrying chapter titles are added to an existing AVTimedMetadataGroup object if the time range (timestamp and duration) of the metadata item and that of the metadata group overlaps. The locale of such items need not match the locale of the chapter titles.

You can use the metadataItemsFromArray:filteredAndSortedAccordingToPreferredLanguages: method to further filter the metadata items in each group. You can also filter the returned items based on locale using the metadataItemsFromArray:withLocale: method.

Special Considerations
Becomes callable without blocking when the data in the availableChapterLocales property is already loaded. See also:

- 17.3.12 chapterMetadataGroupsBestMatchingPreferredLanguages as AVTimedMetadataGroupMBS()

17.3.14 chapterMetadataGroupsWithTitleLocale(locale as NSLocaleMBS, commonKeys() as string) as AVTimedMetadataGroupMBS()


Function: Returns an array of chapters with a given title locale and containing specified keys.

Notes:
locale: The locale of the metadata items carrying chapter titles to be returned (the method supports the IETF BCP 47 specification of locales).
commonKeys: An array of common keys of AVMetadataItem to include in the returned array. AVMetadataCommonKeyArtwork is the only supported key.

Returns an array of AVTimedMetadataGroup objects.

Each object in the returned array contains an AVMetadataItem object representing the chapter title, and the time range property of the AVTimedMetadataGroup object is equal to the time range of the chapter title item.

An AVMetadataItem with the specified common key is added to an existing AVTimedMetadataGroup object if the time range (timestamp and duration) of the metadata item and the metadata group overlap.

The locale of items not carrying chapter titles need not match the specified locale parameter. You can filter the returned items based on locale using metadataItemsFromArray.
17.3.15 **commonMetadata as AVMetadataItemMBS()**

**Function:** An array of metadata items for each common metadata key for which a value is available. (read-only)
**Notes:** The value is an array of AVMetadataItem objects, one for each common metadata key for which a value is available. You can filter the array by locale using metadataItemsFromArray (AVMetadataItem) or by key using metadataItemsFromArray (AVMetadataItem).

17.3.16 **Constructor**

**Function:** The private constructor.

17.3.17 **copy as AVAssetMBS**

**Function:** Creates a copy of the object.

17.3.18 **duration as CMTimeMBS**

**Function:** The duration of the asset. (read-only)

**Example:**
```
    dim f as FolderItem = SpecialFolder.Desktop.Child("test.mov")
    dim a as AVAssetMBS = AVAssetMBS.assetWithFile(f)
    MsgBox str(a.duration.Seconds)+" seconds"
```

**Notes:** If providesPreciseDurationAndTiming is false, a best-available estimate of the duration is returned. You can set the degree of precision required for timing-related properties at initialization time for assets initialized with URLs (see AVURLAssetPreferPreciseDurationAndTimingKey in AVURLAsset).
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17.3.19 loadValuesAsynchronouslyForKeys(keys() as string, tag as Variant = nil)


Function: Tells the asset to load the values of any of the specified keys that are not already loaded.

Example:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.m4v")
dim a as AVAssetMBS = AVAssetMBS.assetWithFile(f)

if a = nil then
    MsgBox "failed to read file at all"
    Return
end if

// request duration property
a.loadValuesAsynchronouslyForKeys array("duration")

dim e as NSErrorMBS
dim Status as Integer = a.statusOfValueForKey("duration", e)
while status <> a.AVKeyValueStatusLoaded
    // wait for loading in background
    status = a.statusOfValueForKey("duration", e)
wend

// got it?
if status <> a.AVKeyValueStatusLoaded then
    MsgBox "Failed to load duration."
    if e <> nil then
        MsgBox e.LocalizedDescription
    end if
else
    MsgBox str(a.duration.Seconds)+" seconds long."
end if

Notes:

keys: An array containing the required keys.

Calls AVFoundationMBS.AssetLoadValuesAsynchronouslyForKeysFinished on completion. The completion event will be invoked exactly once per invocation of this method:

- Synchronously if an I/O error or other format-related error occurs immediately.
- Asynchronously at a subsequent time if a loading error occurs at a later stage of processing, or if
cancelLoading is invoked on an AVAsset instance.

The completion states of the keys you specify in keys are not necessarily the same; some may be loaded, and others may have failed. You must check the status of each key individually.

If you want to receive error reporting for loading that’s still pending, you can call this method at any time even after an asset has begun to load data for operations in progress or already completed. If a fatal error has already occurred, the completion event is invoked synchronously.

17.3.20 mediaSelectionGroupForMediaCharacteristic(mediaCharacteristic as string) as AVMediaSelectionGroupMBS

**Function:** Returns an AVMediaSelectionGroup object that contains one or more options with the specified media characteristic.

**Notes:**
- mediaCharacteristic: A media characteristic for which you wish to obtain the available media selection options.
- Only AVMediaCharacteristicAudible and AVMediaCharacteristicLegible are currently supported.
- Pass AVMediaCharacteristicAudible to obtain the group of available options for audio media in various languages and for various purposes, such as descriptive audio.
- Pass AVMediaCharacteristicLegible to obtain the group of available options for subtitles in various languages and for various purposes.

Returns an AVMediaSelectionGroup object that contains one or more options with the media characteristic specified by mediaCharacteristic, or nil if none could be found.

You can invoke this method without blocking when the key availableMediaCharacteristicsWithMediaSelectionOptions has been loaded.
You can filter the options in the returned media selection group according to playability, locale, and additional media characteristics can be accomplished using the filtering methods defined in the AVMediaSelectionGroup class.

17.3.21 metadata as AVMetadataItemMBS()
### 17.3.22 `metadataForFormat(Format as string) as AVMetadataItemMBS()`


**Function:** Returns an array of AVMetadataItem objects, one for each metadata item in the container of the specified format.

**Notes:**

- `format`: The metadata format for which you want items.

Returns an array of AVMetadataItem objects, one for each metadata item in the container of the specified format, or nil if there is no metadata of the specified format.

You can filter the array by locale using `metadataItemsFromArray (AVMetadataItem)` or by key using `metadataItemsFromArray (AVMetadataItem)`. Becomes callable without blocking when `availableMetadataFormats` has been loaded.

### 17.3.23 `naturalSize as CGSizeMBS`


**Function:** The encoded or authored size of the visual portion of the asset.

### 17.3.24 `preferredTransform as CGAffineTransformMBS`


**Function:** The preferred transform to apply to the visual content of the asset for presentation or processing. (read-only)

**Notes:** The value is often, but not always, the identity transform.

### 17.3.25 `readTimeCodeObjects as AVTimeCodeMBS()`


**Function:** Reads time codes from asset.

**Notes:**

- Raises exception if not possible.
- Returns empty array if nothing found.

Provides details on time codes.
17.3.26  readTimeCodes as String()

**Function:** Reads time codes from asset.
**Example:**
```vba
dim f as FolderItem = SpecialFolder.Desktop.Child(“test.m4v”)  
dim a as AVAssetMBS = AVAssetMBS.assetWithFile(f)  
dim timecodes() as string = a.readTimeCodes

break // see in debugger
```

**Notes:**
Raises exception if not possible.
Returns empty array if nothing found.
Format is 2 digit hours, double colon, 2 digit minutes, double colon, 2 digit seconds, double colon, 2 digit frames.
e.g. ”01:02:03:04”
Please use readTimeCodeObjects for more options.

17.3.27  statusOfValueForKey(key as string, byref error as NSErrorMBS) as Integer

**Function:** Reports whether the value for a given key is immediately available without blocking. (required)
**Example:**
```vba
dim f as FolderItem = SpecialFolder.Desktop.Child(“test.m4v”)  
dim a as AVAssetMBS = AVAssetmbs.assetWithFile(f)
if a = nil then  
    MsgBox ”failed to read file at all”  
    Return
end if

// request duration property
a.loadValuesAsynchronouslyForKeys array(”duration”)  

dim e as NSErrorMBS  
dim Status as Integer = a.statusOfValueForKey(”duration”, e)  
while status <a.AVKeyValueStatusLoaded
```
17.3. CLASS AVASSETMBS

// wait for loading in background
status = a.statusOfValueForKey("duration", e)
wend

// got it?
if status <> a.AVKeyValueStatusLoaded then
MsgBox "Failed to load duration."
if e <> nil then
MsgBox e.LocalizedDescription
end if
else
MsgBox str(a.duration.Seconds)+" seconds long."
end if

Notes:
key: The key whose status you want.
error: If the status of the value for the key is AVKeyValueStatusFailed, upon return contains an NSError object that describes the failure that occurred.

Returns the current loading status of the value for key. For possible values, see "Protocol Methods."

You use this method to determine the availability of the value for a key. This method does not cause an asset to load the value of a key that’s not yet available. To request values for keys that may not already be loaded without blocking, use loadValuesAsynchronouslyForKeys and wait for invocation of the completion handler to be informed of availability.

17.3.28 trackGroups as AVAssetTrackGroupMBS()

Function: An array containing all of the track groups in the asset. (read-only)
Notes:
This is an array of AVAssetTrackGroup instances, each representing a different grouping of tracks in the asset.
Available in OS X v10.9 and later.

17.3.29 tracks as AVAssetTrackMBS()

Function: The tracks contained by the asset. (read-only)
Notes: Tracks are instances of AVAssetTrack.

17.3.30  tracksWithMediaCharacteristic(mediaCharacteristic as string) as AVAssetTrackMBS()

Function: Returns an array of AVAssetTrack objects of the asset that present media with a specified characteristic.
Notes:
mediaCharacteristic: The media characteristic according to which receiver filters its asset tracks.
Return an array of AVAssetTrack objects that present media with mediaCharacteristic, or nil if no tracks with the specified characteristic are available.
You can call this method without blocking when tracks has been loaded.

17.3.31  tracksWithMediaType(mediaType as string) as AVAssetTrackMBS()

Function: Returns an array of the asset tracks of the asset that present media of a specified type.
Notes:
mediaType: The media type according to which the asset filters its tracks.
Media types are defined in AVAssetTrack.
Returns an array of AVAssetTrack objects of the asset that present media of mediaType.
You can call this method without blocking when tracks has been loaded.

17.3.32  trackWithTrackID(PersistentTrackID as Integer) as AVAssetTrackMBS

Function: Returns the track with a specified track ID.
Notes:
trackID: The trackID of the requested asset track.
Returns the track with track ID trackID, or nil if no track with the specified ID is available.
You can call this method without blocking when tracks has been loaded.
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17.3.33 unusedTrackID as Integer

Function: Returns an ID that is currently unused by any of the tracks in the asset.

17.3.34 Properties

17.3.35 ClassName as String

Function: Returns the class name for the Objective-C class.
Notes:
Sometimes useful for debugging.
(Read only property)

17.3.36 creationDate as AVMetadataItemMBS

Function: Indicates the creation date of the asset. (read-only)
Example:
```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.mov")
dim a as AVAssetMBS = AVAssetMBS.assetWithFile(f)

dim creationDate as date = a.creationDate.dateValue
MsgBox creationDate.LongDate + " " + creationDate.LongTime
```

Notes:
The value of this property may be nil.

If a creation date has been stored by the asset in a form that can be converted to an Date object, the
dateValue property of the metadata item will provide an instance of NSDate. Otherwise the creation date
is available only as a string value, using the AVMetadataItem stringValue method.
(Read only property)
### 17.3.37 Handle as Integer

**Function:** The internal object reference.
**Notes:** (Read and Write property)

### 17.3.38 hasProtectedContent as boolean

**Function:** Indicates whether the asset has protected content. (read-only)
**Notes:** (Read only property)

### 17.3.39 isComposable as boolean

**Function:** Indicates whether the asset can be used within a segment of an AVCompositionTrack object. (read-only)
**Notes:** (Read only property)

### 17.3.40 isExportable as boolean

**Function:** Indicates whether the asset can be exported using AVAssetExportSession. (read-only)
**Notes:** (Read only property)

### 17.3.41 isPlayable as boolean

**Function:** Indicates whether the asset, or its URL, can be used to initialize an instance of AVPlayerItem. (read-only)
**Notes:** (Read only property)

### 17.3.42 isReadable as boolean

**Function:** Indicates whether the asset’s media data can be extracted using AVAssetReader. (read-only)
**Notes:** (Read only property)
17.3. **CLASS AVASSETMBS**

17.3.43 **lyrics as string**


**Function:** The lyrics of the asset suitable for the current locale. (read-only)

**Example:**

```vba
dim f as FolderItem = SpecialFolder.Desktop.Child("test.mov")
dim a as AVAssetMBS = AVAssetMBS.assetWithFile(f)
MsgBox "Lyrics: " + a.lyrics
```

**Notes:** (Read only property)

17.3.44 **preferredRate as Double**


**Function:** The natural rate at which the asset is to be played. (read-only)

**Notes:**

This value is often, but not always, 1.0.
(Read only property)

17.3.45 **preferredVolume as Double**


**Function:** The preferred volume at which the audible media of asset is to be played. (read-only)

**Notes:**

This value is often, but not always, 1.0.
(Read only property)

17.3.46 **providesPreciseDurationAndTiming as boolean**


**Function:** Indicates whether the asset provides precise timing. (read-only)

**Notes:**

You can set the degree of precision required for timing-related properties at initialization time for assets initialized with URLs (see AVURLAssetPreferPreciseDurationAndTimingKey in AVURLAsset).
(Read only property)
17.3.47 referenceRestrictions as Integer

**Function:** The reference restrictions being used by the receiver. (read-only)  
**Notes:**
For AVURLAsset, this property reflects the value passed in for AVURLAssetReferenceRestrictionsKey, if any.

The default value for this property is AVAssetReferenceRestrictionForbidNone. See AVURLAssetReferenceRestrictionsKey for a full discussion of reference restrictions.  
(Read only property)

17.3.48 Constants

17.3.49 AVAssetReferenceRestrictionForbidAll = & hFFFF

MBS AVFoundation Plugin, Plugin Version: 13.2.  
**Function:** One of the constants for use with AVURLAssetReferenceRestrictionsKey to control the resolution of references to external media data.  
**Notes:** Indicates that only references to media data stored within the asset’s container file should be allowed.

17.3.50 AVAssetReferenceRestrictionForbidCrossSiteReference = 4

MBS AVFoundation Plugin, Plugin Version: 13.2.  
**Function:** One of the constants for use with AVURLAssetReferenceRestrictionsKey to control the resolution of references to external media data.  
**Notes:** Indicates that references from a remote asset to remote media data stored at a different site should not be followed.

17.3.51 AVAssetReferenceRestrictionForbidLocalReferenceToLocal = 8

MBS AVFoundation Plugin, Plugin Version: 13.2.  
**Function:** One of the constants for use with AVURLAssetReferenceRestrictionsKey to control the resolution of references to external media data.  
**Notes:** Indicates that references from a local asset to local media data stored outside the asset’s container file should not be followed.

17.3.52 AVAssetReferenceRestrictionForbidLocalReferenceToRemote = 2

MBS AVFoundation Plugin, Plugin Version: 13.2.  
**Function:** One of the constants for use with AVURLAssetReferenceRestrictionsKey to control the resolution of references to external media data.
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Notes: Indicates that references from a local asset to remote media data should not be followed.

17.3.53 AVAssetReferenceRestrictionForbidNone = 0

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the constants for use with AVURLAssetReferenceRestrictionsKey to control the resolution of references to external media data. Notes: Indicates that all types of references should be followed.

17.3.54 AVAssetReferenceRestrictionForbidRemoteReferenceToLocal = 1

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the constants for use with AVURLAssetReferenceRestrictionsKey to control the resolution of references to external media data. Notes: Indicates that references from a remote asset (for example, referenced via http URL) to local media data (for example, stored in a local file) should not be followed.

17.3.55 AVKeyValueStatusCancelled = 4

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the constants to indicate the load status of a property. Notes: Indicates that the attempt to load the property was cancelled.

17.3.56 AVKeyValueStatusFailed = 3

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the constants to indicate the load status of a property. Notes: Indicates that the attempt to load the property failed.

17.3.57 AVKeyValueStatusLoaded = 2

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the constants to indicate the load status of a property. Example:

```dim f as FolderItem = SpecialFolder.Desktop.Child("test.m4v")
dim a as AVAssetMBS = AVAssetmbs.assetWithFile(f)
if a = nil then
    MsgBox "failed to read file at all"
```
Return
end if

// request duration property
a.loadValuesAsynchronouslyForKey(array("duration"))

dim e as NSErrorMBS
dim Status as Integer = a.statusOfValueForKey("duration", e)
while status < a.AVKeyValueStatusLoaded
    // wait for loading in background
    status = a.statusOfValueForKey("duration", e)
wend

// got it?
if status ^= a.AVKeyValueStatusLoaded then
    MsgBox "Failed to load duration."
if e ^= nil then
    MsgBox e.LocalizedDescription
wend
else
    MsgBox str(a.duration.Seconds) + " seconds long."
end if

Notes: Indicates that the property is ready for use.

17.3.58 AVKeyValueStatusLoading = 1

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the constants to indicate the load status of a property.
Notes: Indicates that the property is not fully loaded.

17.3.59 AVKeyValueStatusUnknown = 0

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the constants to indicate the load status of a property.
Notes: Indicates that the property status is unknown.
17.4. class AVAssetReaderAudioMixOutputMBS

17.4.1 class AVAssetReaderAudioMixOutputMBS


Function: AVAssetReaderAudioMixOutput is a concrete subclass of AVAssetReaderOutput that defines an interface for reading audio samples that result from mixing the audio from one or more tracks of an AVAssetReader object’s asset.

Notes:
You can read the audio data mixed from one or more asset tracks by adding an instance of AVAssetReaderAudioMixOutput to an asset reader using addOutput. The samples can be read in a default format or can be converted to a different format.
Subclass of the AVAssetReaderOutputMBS class.

17.4.2 Methods

17.4.3 assetReaderAudioMixOutputWithAudioTracks(audioTracks() as AVAssetTrackMBS, outputSettings as dictionary) as AVAssetReaderAudioMixOutputMBS


Function: Returns an instance of AVAssetReaderAudioMixOutput for reading mixed audio from the specified audio tracks, with optional audio settings.

Notes:
audioTracks: An array of AVAssetTrack objects from which the created object should read sample buffers to be mixed.
Each track must be one of the tracks owned by the target AVAssetReader object’s asset and must be of media type AVMediaTypeAudio.
audioSettings: The audio settings to be used for audio output; the dictionary must contain values for keys in AVAudioSettings.h (linear PCM only). Pass nil if you want to receive decoded samples in a convenient uncompressed format, with properties determined according to the properties of the specified audio tracks.

Returns an instance of AVAssetReaderAudioMixOutput for reading mixed audio from audioTracks, with audio settings specified by audioSettings.
Initialization will fail if audioSettings cannot be used with audioTracks.

17.4.4 audioSettings as dictionary


Function: The audio settings used for audio output. (read-only)

Notes:
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The dictionary must contain values for keys in AVAudioSettings.h (linear PCM only). nil indicates that the samples will be returned in the default format.

17.4.5 audioTracks as AVAssetTrackMBS()

MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The tracks from which the receiver reads mixed audio. (read-only) Notes: The value is an array of AVAssetTrack objects owned by the target AVAssetReader object’s asset.

17.4.6 Constructor(audioTracks() as AVAssetTrackMBS, outputSettings as dictionary)

MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Initializes an instance of AVAssetReaderAudioMixOutput for reading mixed audio from the specified audio tracks, with optional audio settings. Notes: audioTracks: An array of AVAssetTrack objects from which the created object should read sample buffers to be mixed. Each track must be one of the tracks owned by the target AVAssetReader object’s asset and must be of media type AVMediaTypeAudio. audioSettings: The audio settings to be used for audio output; the dictionary must contain values for keys in AVAudioSettings.h (linear PCM only). Pass nil if you want to receive decoded samples in a convenient uncompressed format, with properties determined according to the properties of the specified audio tracks.

Returns an instance of AVAssetReaderAudioMixOutput initialized for reading mixed audio from audioTracks, with audio settings specified by audioSettings.

Initialization will fail if audioSettings cannot be used with audioTracks. So please check handle property.

17.4.7 Properties

17.4.8 audioMix as AVAudioMixMBS

MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The output’s audio mix. Notes: You use the audio mix to specify how the volume of audio samples read from each source track will change over the timeline of the source asset.
17.4. CLASS AVASSETREADERAUDIOMIXOUTPUTMBS

(Read and Write property)

17.4.9 audioTimePitchAlgorithm as String


Function: The processing algorithm used to manage audio pitch for scaled audio edits.

Notes:
The supported constants are defined in Time Pitch Algorithm Settings.
An NSInvalidArgumentException will be raised if this property is set to a value other than the defined constants.
Available in OS X v10.9 and later.
(Read and Write property)
17.5 class AVAssetReaderMBS

17.5.1 class AVAssetReaderMBS

**Function:** You use an AVAssetReader object to obtain media data of an asset, whether the asset is file-based or represents an assemblage of media data from multiple sources (as with an AVComposition object).
**Notes:**

AVAssetReader lets you:

Read raw un-decoded media samples directly from storage, obtain samples decoded into renderable forms. Mix multiple audio tracks of the asset and compose multiple video tracks (by using AVAssetReaderAudioMixOutput and AVAssetReaderVideoCompositionOutput).

AVAssetReader’s pipelines are multithreaded internally. After you initiate reading with initWithAsset:error:, a reader loads and processes a reasonable amount of sample data ahead of use so that retrieval operations such as copyNextSampleBuffer (AVAssetReaderOutput) can have very low latency. Note, however, that AVAssetReader is not intended for use with real-time sources, and its performance is not guaranteed for real-time operations.

17.5.2 Methods

17.5.3 addOutput(output as AVAssetReaderOutputMBS)

**Function:** Adds a given output to the receiver.
**Notes:**

output: The reader output to add.

Outputs are created with a reference to one or more AVAssetTrack objects. Adding an output to an asset reader indicates to the reader that it should source from those tracks. The tracks must be owned by the asset returned by the reader’s asset property.

You cannot add an output after reading has started.

17.5.4 asset as AVAssetMBS

**Function:** The asset with which the receiver was initialized. (read-only)
**Notes:** Concrete instances of AVAssetReader with specific AVAssetTrack instances must obtain those tracks from the asset returned by this property.
17.5. \texttt{CLASS AVASSETREADERMBS}

17.5.5 \texttt{assetReaderWithAsset(item as AVAssetMBS, byref error as NSErrorMBS) as AVAssetReaderMBS}


\textbf{Function}: Returns an asset reader for reading media data from a specified asset.

\textbf{Notes}:

asset: The asset from which media data is to be read.
Error: If initialization of the reader fails, upon return contains an error that describes the problem.

Returns an asset reader, initialized for reading media data from asset.

17.5.6 \texttt{available as boolean}


\textbf{Function}: Whether this class is available.

\textbf{Notes}: Returns true on Mac OS X 10.7 and newer.

17.5.7 \texttt{canAddOutput(output as AVAssetReaderOutputMBS) as boolean}


\textbf{Function}: Returns a Boolean value that indicates whether a given output can be added to the receiver.

\textbf{Notes}:

output: The reader output to be tested.

Returns true if output can be added to the receiver, otherwise false.
You cannot add an output that reads from a track of an asset other than the asset used to initialize the receiver.

17.5.8 \texttt{cancelReading}


\textbf{Function}: Cancels any background work and prevents the receiver’s outputs from reading more samples.

\textbf{Notes}: If you want to stop reading samples from the receiver before reaching the end of its time range, you should call this method to stop any background read ahead operations that the may have been in progress.
17.5.9  Constructor(item as AVAssetMBS, byref error as NSErrorMBS)

Function: Initializes an asset reader for reading media data from a specified asset.
Notes:
asset: The asset from which media data is to be read.
Error: If initialization of the reader fails, upon return contains an error that describes the problem.

17.5.10  error as NSErrorMBS

Function: Describes the error that occurred if the status is AVAssetReaderStatusFailed. (read-only)
Notes:
This property is thread safe.
The value of this property describes what caused the reader to no longer be able to read its asset. If the reader’s status is not AVAssetReaderStatusFailed, the value of this property is nil.

17.5.11  outputs as AVAssetReaderOutputMBS()

Function: The outputs from which clients of reader can read media data. (read-only)
Notes: The array contains concrete instances of AVAssetReaderOutput associated with the reader.

17.5.12  startReading

Function: Prepares the receiver for obtaining sample buffers from the asset.
Notes:
Returns true if the reader is able to start reading, otherwise false.
This method validates the entire collection of settings for outputs for tracks, for audio mixdown, and for video composition and initiates reading of all outputs.
status signals the terminal state of the asset reader, and if a failure occurs, error describes the failure.
17.5.13 status as Integer

**Function:** The status of the reading of sample buffers from the asset. (read-only)
**Notes:**
This property is thread safe. For possible values, see "Reader Status Constants."

The value of this property indicates whether reading is in progress, has completed successfully, has been canceled, or has failed. You should check the value of this property copyNextSampleBuffer (AVAssetReader-Output) returns nil to determine why no more samples could be read.

17.5.14 Properties

17.5.15 Handle as Integer

**Function:** The internal object reference.
**Notes:** (Read and Write property)

17.5.16 timeRange as CMTimeRangeMBS

**Function:** The time range of the asset that should be read.
**Notes:**
The intersection of the value of this property and CMTimeRangeMake(kCMTimeZero, asset.duration) determines the time range of the asset from which media data will be read.

The default value is CMTimeRangeMake(kCMTimeZero, kCMTimePositiveInfinity). You cannot change the value of this property after reading has started.
(Read and Write computed property)

17.5.17 Constants

17.5.18 AVAssetReaderStatusCancelled = 4

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the reader’s status values.
**Notes:** Indicates that reading was cancelled using cancelReading.
17.5.19 AVAssetReaderStatusCompleted = 2

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the reader’s status values. Notes: Indicates that the reader has provided all available sample buffers to all of its outputs.

17.5.20 AVAssetReaderStatusFailed = 3

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the reader’s status values. Notes: Indicates that reading failed.

17.5.21 AVAssetReaderStatusReading = 1

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the reader’s status values. Notes: Indicates that the reader is ready to provide more sample buffers to its outputs.

17.5.22 AVAssetReaderStatusUnknown = 0

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the reader’s status values. Notes: Indicates that startReading has not yet been invoked.
17.6. CLASS AVASSETREADEROUTPUTMBS

17.6 class AVAssetReaderOutputMBS

17.6.1 class AVAssetReaderOutputMBS

Function: AVAssetReaderOutput is an abstract class that defines an interface for reading a single collection of samples of a common media type from an AVAssetReader object.
Notes:
There are several subclasses of AVAssetReaderOutput for specific tasks, such as AVAssetReaderTrackOutput or AVAssetReaderVideoCompositionOutput.
You can read the media data of an asset by adding one or more concrete instances of AVAssetReaderOutput to an AVAssetReader object using addOutput.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

17.6.2 Methods

17.6.3 available as boolean

Function: Whether this class is available.
Notes: Returns true on Mac OS X 10.7 and newer.

17.6.4 Constructor

Function: The private constructor.

17.6.5 NextSampleBuffer as CMSampleBufferMBS

Function: Synchronously copies the next sample buffer for the output.
Notes:
The output sample buffer, or nil if there are no more sample buffers available for the output within the time range specified by the asset reader’s timeRange property.

If this method returns nil, you should check the value of the associated AVAssetReader object’s status property to determine why no more samples could be read.
17.6.6 Properties

17.6.7 alwaysCopiesSampleData as boolean

Function: Indicates whether the data in buffers gets copied before being vended.
Notes: When the value of this property is true, the output always vends a buffer with copied data; you can freely modify data in such buffers.

When the value of this property is false, the buffers vended may not be copied; such buffers may still be referenced by other entities. The result of modifying a buffer whose data hasn’t been copied is undefined. Requesting buffers whose data hasn’t been copied when possible can lead to performance improvements. The default value of this property is true.
Available in OS X v10.8 and later.
(Read and Write property)

17.6.8 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

17.6.9 mediaType as string

Function: A string representing the media type of the track (or tracks) represented by the output. (read-only)
Notes: The value of this property is one of the media type strings defined in AVMediaFormat.h.
(Read only property)

17.6.10 supportsRandomAccess as Boolean

Function: Indicates whether the asset reader output supports reconfiguration of the time ranges to read.
Notes:
When the value of this property is true, the time ranges read by the asset reader output can be reconfigured during reading using the -resetForReadingTimeRanges method. This also prevents the attached AVAssetReader from progressing to AVAssetReaderStatusCompleted until markConfigurationAsFinal has been invoked.

The default value is false, which means that the asset reader output may not be reconfigured once reading has begin. When the value of this property is false, AVAssetReader may be able to read media data more efficiently, particularly when multiple asset reader outputs are attached.

This property may not be set after startReading has been called on the attached asset reader.

(Read and Write property)
17.7 class AVAssetReaderOutputMetadataAdaptorMBS

17.7.1 class AVAssetReaderOutputMetadataAdaptorMBS


Function: Creates a new timed metadata group adaptor for retrieving timed metadata group objects from
an asset reader output.

Notes:

assetReaderOutput: An instance of AVAssetReaderTrackOutput that vends sample buffers containing meta-
data, e.g. an AVAssetReaderTrackOutput object initialized with a track of media type AVMediaTypeMeta-
data and nil outputSettings.

Returns an instance of AVAssetReaderOutputMetadataAdaptor

It is an error to create a timed metadata group adaptor with an asset reader output that does not vend
metadata. It is also an error to create a timed metadata group adaptor with an asset reader output whose
asset reader has already started reading, or an asset reader output that already has been used to initialize
another timed metadata group adaptor.

Clients should not mix calls to AVAssetReaderTrackOutput.NextSampleBuffer and AVAssetReaderOutput-
MetadataAdaptor.nextTimedMetadataGroup. Once an AVAssetReaderTrackOutput instance has been used
to initialize an AVAssetReaderOutputMetadataAdaptor, calling NextSampleBuffer on that instance will re-
sult in an exception being thrown.

Available on Mac OS X 10.10 or newer.

17.7.2 Methods

17.7.3 assetReaderOutputMetadataAdaptorWithAssetReaderTrackOutput(track-
Output as AVAssetReaderTrackOutputMBS) as AVAssetReaderOutput-
MetadataAdaptorMBS


Function: Creates a new timed metadata group adaptor for retrieving timed metadata group objects from
an asset reader output.

Notes:

Parameter: an instance of AVAssetReaderTrackOutput that vends sample buffers containing metadata, e.g.
an AVAssetReaderTrackOutput object initialized with a track of media type AVMediaTypeMetadata and
nil outputSettings.
Returns an instance of AVAssetReaderOutputMetadataAdaptor

It is an error to create a timed metadata group adaptor with an asset reader output that does not vend metadata. It is also an error to create a timed metadata group adaptor with an asset reader output whose asset reader has already started reading, or an asset reader output that already has been used to initialize another timed metadata group adaptor.

Clients should not mix calls to AVAssetReaderTrackOutput.NextSampleBuffer and AVAssetReaderOutputMetadataAdaptor.nextTimedMetadataGroup. Once an AVAssetReaderTrackOutput instance has been used to initialize an AVAssetReaderOutputMetadataAdaptor, calling NextSampleBuffer on that instance will result in an exception being thrown.

### 17.7.4 available as boolean


**Function:** Whether this class is available.

**Notes:** Should be true on Mac OS X 10.10 and newer.

### 17.7.5 Constructor(trackOutput as AVAssetReaderTrackOutputMBS)


**Function:** Creates a new timed metadata group adaptor for retrieving timed metadata group objects from an asset reader output.

**Notes:**

assetReaderOutput: An instance of AVAssetReaderTrackOutput that vends sample buffers containing metadata, e.g. an AVAssetReaderTrackOutput object initialized with a track of media type AVMediaTypeMetadata and nil outputSettings.

Returns an instance of AVAssetReaderTrackOutputTimedMetadataGroupAdaptor

It is an error to create a timed metadata group adaptor with an asset reader output that does not vend metadata. It is also an error to create a timed metadata group adaptor with an asset reader output whose asset reader has already started reading, or an asset reader output that already has been used to initialize another timed metadata group adaptor.

Clients should not mix calls to AVAssetReaderTrackOutput.NextSampleBuffer and AVAssetReaderOutputMetadataAdaptor.nextTimedMetadataGroup. Once an AVAssetReaderTrackOutput instance has been used to initialize an AVAssetReaderOutputMetadataAdaptor, calling NextSampleBuffer on that instance will result in an exception being thrown.
17.7.6 nextTimedMetadataGroup as AVTimedMetadataGroupMBS


Function: Returns the next timed metadata group for the asset reader output, synchronously.

Notes: Returns an instance of AVTimedMetadataGroup, representing the next logical segment of metadata coming from the source asset reader output.

This method will return nil when all timed metadata groups have been read from the asset reader output, or if there is an error that prevents the timed metadata group adaptor from reading more timed metadata groups. When this method returns nil, clients should check the value of the associated AVAssetReader's status property to determine why no more samples could be read.

Before calling this method, you must ensure that the output which underlies the receiver is attached to an AVAssetReader via a prior call to addOutput and that startReading has been called on the asset reader.

17.7.7 Properties

17.7.8 assetReaderTrackOutput as AVAssetReaderTrackOutputMBS


Function: The asset reader track output from which the receiver pulls timed metadata groups.

Notes: (Read only property)

17.7.9 Handle as Integer


Function: The internal object reference.

Notes: (Read and Write property)
17.8. CLASS AVASSETREADERSAMPLEREFERENCEOUTPUTMBS

17.8  class AVAssetReaderSampleReferenceOutputMBS

17.8.1  class AVAssetReaderSampleReferenceOutputMBS


**Function:** AVAssetReaderSampleReferenceOutput is a concrete subclass of AVAssetReaderOutput that defines an interface for reading sample references from a single AVAssetTrack of an AVAssetReader’s AVAsset.

**Notes:**
Clients can extract information about the location (file URL and offset) of samples in a track by adding an instance of AVAssetReaderSampleReferenceOutput to an AVAssetReader using the AVAssetReader.addOutput method. No actual sample data can be extracted using this class. The location of the sample data is described by the kCMSampleBufferAttachmentKey SampleReferenceURL and kCMSampleBufferAttachmentKey SampleReferenceByteOffset attachments on the extracted sample buffers. More information about sample buffers describing sample references can be found in the CMSampleBuffer documentation.

Sample buffers extracted using this class can also be appended to an AVAssetWriterInput to create movie tracks that are not self-contained and reference data in the original file instead. Currently, only instances of AVAssetWriter configured to write files of type AVFileTypeQuickTimeMovie can be used to write tracks that are not self-contained.

Since no sample data is ever returned by instances of AVAssetReaderSampleReferenceOutput, the value of the alwaysCopiesSampleData property is ignored.

Available on Mac OS X 10.10 or newer.
Subclass of the AVAssetReaderOutputMBS class.

17.8.2  Methods

17.8.3  assetReaderSampleReferenceOutputWithTrack(track as AVAssetTrackMBS) as AVAssetReaderSampleReferenceOutputMBS


**Function:** Returns an instance of AVAssetReaderSampleReferenceOutput for supplying sample references.

**Notes:**
Track: The AVAssetTrack for which the resulting AVAssetReaderSampleReferenceOutput should provide sample references.

Returns an instance of AVAssetReaderSampleReferenceOutput.
The track must be one of the tracks contained by the target AVAssetReader’s asset.
17.8.4 Constructor(Track as AVAssetTrackMBS)


Function: Returns an instance of AVAssetReaderSampleReferenceOutput for supplying sample references.

Notes:

Track: The AVAssetTrack for which the resulting AVAssetReaderSampleReferenceOutput should provide sample references.

The track must be one of the tracks contained by the target AVAssetReader’s asset.

17.8.5 Properties

17.8.6 track as AVAssetTrackMBS


Function: The track from which the receiver extracts sample references.

Notes:

The value of this property is an AVAssetTrack owned by the target AVAssetReader’s asset.
(Read only property)
17.9. class AVAssetReaderTrackOutputMBS

17.9.1 class AVAssetReaderTrackOutputMBS


**Function:** AVAssetReaderTrackOutput defines an interface for reading media data from a single AVAssetTrack object of an asset reader’s asset.

**Notes:**

You can read the media data of an asset track by adding an instance of AVAssetReaderTrackOutput to an asset reader using the AVAssetReader’s addOutput method. The samples in the track can be read in read in the format in which they are stored in the asset, or can be converted to a different format.

Subclass of the AVAssetReaderOutputMBS class.

17.9.2 Methods

17.9.3 assetReaderTrackOutputWithTrack(track as AVAssetTrackMBS, outputSettings as dictionary) as AVAssetReaderTrackOutputMBS


**Function:** Returns an asset reader wrapping a specified track, with optional output settings.

**Notes:**

- **track:** The track from which the reader should source sample buffers.
- **outputSettings:** A dictionary of output settings to be used for sample output. Pass nil to receive samples as stored in the track.

You use keys from one of AVAudioSettings.h, AVVideoSettings.h, or `<CoreVideo/CVPixelBuffer.h>`, depending on the media type and the output format you want.

Initialization fails if the output settings cannot be used with the specified track. Those keys are available in AVFoundationMBS class.

17.9.4 Constructor(track as AVAssetTrackMBS, outputSettings as dictionary)


**Function:** Initializes an asset reader to wrap a specified track, with optional output settings.

**Notes:**

- **track:** The track from which the reader should source sample buffers.
- **outputSettings:** A dictionary of output settings to be used for sample output. Pass nil to receive samples as stored in the track.

You use keys from one of AVAudioSettings.h, AVVideoSettings.h, or `<CoreVideo/CVPixelBuffer.h>`, depending on the media type and the output format you want.

Initialization fails if the output settings cannot be used with the specified track.
Those keys are available in AVFoundationMBS class.

17.9.5 outputSettings as dictionary

Function: The output settings used by the output. (read-only)
Notes:
The value is a dictionary that contains values for keys from either AVAudioSettings.h (linear PCM only) for audio tracks or <CoreVideo/CVPixelBuffer.h> for video tracks. A value of nil indicates that the output will return samples in their original format as stored in the target track. Those keys are available in AVFoundationMBS class.

17.9.6 track as AVAssetTrackMBS

Function: The track from which the receiver reads sample buffers. (read-only)

17.9.7 Properties

17.9.8 audioTimePitchAlgorithm as string

Function: The processing algorithm used to manage audio pitch for scaled audio edits.
Notes:
The supported constants are defined in Time Pitch Algorithm Settings. An NSInvalidArgumentException will be raised if this property is set to a value other than the defined constants. Available in OS X v10.9 and later. (Read and Write computed property)
17.10. class AVAssetReaderVideoCompositionOutputMBS

17.10.1 class AVAssetReaderVideoCompositionOutputMBS

**Function:** AVAssetReaderVideoCompositionOutput is a subclass of AVAssetReaderOutput you use to read 
video frames that have been composited together from the frames in one or more tracks of an AVAssetReader 
object’s asset. 
**Notes:** 
You can read the video frames composited from one or more asset tracks by adding an instance of AVAsset-
ReaderVideoCompositionOutput to an AVAssetReader object using the addOutput method. 
Subclass of the AVAssetReaderOutputMBS class.

17.10.2 Methods

17.10.3 assetReaderVideoCompositionOutputWithVideoTracks(videoTracks() as AVAssetTrackMBS, videoSettings as dictionary) as AVAssetReaderVideoCompositionOutputMBS

**Function:** Returns an instance of AVAssetReaderVideoCompositionOutput for reading composited video 
from the specified video tracks, using optional video settings. 
**Notes:**
videoTracks: An array of AVAssetTrack objects from which the created object should read video frames for 
compositing. 
videoSettings: A dictionary of video settings to be used for sample output, or nil if you want to receive de-
coded samples in a convenient uncompressed format, with properties determined according to the properties 
of the specified video tracks. 
You use keys from `<CoreVideo/CVPixelBuffer.h>`, depending on the output format you want. 
Initialization will fail if the video settings cannot be used with the specified video tracks. 

Return an instance of AVAssetReaderVideoCompositionOutput wrapping videoTracks, using the settings 
specified by videoSettings, or nil if initialization failed.

17.10.4 Constructor(videoTracks() as AVAssetTrackMBS, videoSettings as dictionary)

**Function:** Returns an instance of AVAssetReaderVideoCompositionOutput for reading composited video
from the specified video tracks, using optional video settings.

**Notes:**

- **videoTracks**: An array of AVAssetTrack objects from which the created object should read video frames for compositing.
- It is an error to include tracks of media types other than AVMediaTypeVideo.
- **videoSettings**: A dictionary of video settings to be used for sample output, or nil if you want to receive decoded samples in a convenient uncompressed format, with properties determined according to the properties of the specified video tracks.
- You use keys from `<CoreVideo/CVPixelBuffer.h>`, depending on the output format you want.
- Initialization will fail if the video settings cannot be used with the specified video tracks.
- In that case handle property will be 0.

### 17.10.5 customVideoCompositor as AVVideoCompositingMBS

**MBS AVFoundation Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Returns the custom video compositor instance used by the receiver, if any. (read-only)

**Notes:**

The custom video compositor instance that is used during image generation is accessible via this property after the value of videoComposition is set to an AVVideoComposition instance that specifies a custom video compositor class. Any additional communication between the application and that instance of the custom video compositor, if any is required for configuration or other purposes, can only occur once that has happened.

If the value of videoComposition is changed from an AVVideoComposition that specifies a custom video compositor class to another instance of AVVideoComposition that specifies the same custom video compositor class, the instance of the custom video compositor that was previously created will receive the renderContextChanged message and remain in use for subsequent image generation.

This property is nil if there is no video compositor, or if the internal video compositor is in use.

**Available in OS X v10.9 and later.**

### 17.10.6 videoSettings as dictionary

**MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** The video settings used by the output. (read-only)

**Notes:**

A value of nil indicates that the receiver will return video frames in a convenient uncompressed format, with properties determined according to the properties of the receiver’s video tracks.

The dictionary’s keys are from `<CoreVideo/CVPixelBuffer.h>`. 
17.10.7 videoTracks as AVAssetTrackMBS()

Function: The tracks from which the output reads composited video. (read-only)
Notes: The array contains AVAssetTrack objects owned by the target asset reader’s asset.

17.10.8 Properties

17.10.9 videoComposition as AVVideoCompositionMBS

Function: The video composition to use for the output.
Notes: The value is an AVVideoComposition object that can be used to specify the visual arrangement of video frames read from each source track over the timeline of the source asset.

See AVVideoComposition for options for configuring a video composition.
(Read and Write computed property)
17.11 class AVAssetResourceLoaderMBS


Function: The asset resource loader class.

Notes:

An AVAssetResourceLoader object mediates resource requests from an AVURLAsset object with a delegate object that you provide. When a request arrives, the resource loader asks your delegate if it is able to handle the request and reports the results back to the asset.

You do not create resource loader objects yourself. Instead, you retrieve a resource loader from the resourceLoader property of an AVURLAsset object and use it to assign your custom delegate object.

The delegate you associate with this object must adopt the AVAssetResourceLoaderDelegate protocol. For more information, see AVAssetResourceLoaderDelegate Protocol Reference.

17.11.2 Methods

17.11.3 available as boolean


Function: Whether this class is available.

Notes: Returns true on Mac OS X 10.9 and newer.

17.11.4 Constructor


Function: The constructor.

17.11.5 Properties

17.11.6 Handle as Integer


Function: The internal object reference.

Notes: (Read and Write property)
17.12. CLASS AVAssetResourceLoadingContentInformationRequestMBS

17.12 class AVAssetResourceLoadingContentInformationRequestMBS


**Function:** The AVAssetResourceLoadingContentInformationRequest class represents a query for essential information about a resource referenced by an asset resource loading request.

**Notes:**

The event AVFoundationMBS.resourceLoaderShouldWaitForLoadingOfRequestedResource is invoked and accepts responsibility for loading the resource it must check whether the contentInformationRequest property of the AVAssetResourceLoadingRequest is not nil. Whenever the value is not nil, the request includes a query for the information that AVAssetResourceLoadingContentInformationRequest encapsulates. In response to such queries, the resource loading delegate should set the values of the content information request’s properties appropriately before invoking the AVAssetResourceLoadingRequest method finishLoading.

When finishLoading is invoked, the values of the properties of its contentInformationRequest property will, in part, determine how the requested resource is processed. For example, if the requested resource’s URL is the URL of an AVURLAsset and contentType is set by the resource loading delegate to a value that the underlying media system doesn’t recognize as a supported media file type, operations on the AVURLAsset, such as playback, are likely to fail.

17.12.2 Methods

17.12.3 available as boolean


**Function:** Whether this class is available.

**Notes:** Returns true on Mac OS X 10.9 and newer.

17.12.4 Constructor


**Function:** The constructor.
17.12.5 Properties

17.12.6 ByteRangeAccessSupported as Boolean


Function: A Boolean value that indicates whether random access to arbitrary ranges of bytes of the resource is supported.

Notes:

Before finishing loading an AVAssetResourceLoadingRequest instance, if its contentInformationRequest property is not nil, set the value of this property to true if it supports random access to arbitrary ranges of bytes of the resource.

If this property is not true for resources that must be loaded incrementally, loading of the resource may fail. Such resources include anything that contains media data.

If byte range access is supported portions of the resource can be requested more than once.
Available in OS X v10.9 and later.
(Read and Write property)

17.12.7 contentLength as Int64


Function: The length, in bytes, of the requested resource.

Notes:

Before finishing loading an AVAssetResourceLoadingRequest instance, if its contentInformationRequest property is not nil, set the value of the contentLength property to the number of bytes contained by the requested resource.
Available in OS X v10.9 and later.
(Read and Write property)

17.12.8 contentType as String


Function: The UTI that specifies the type of data contained by the requested resource.

Notes:

Before finishing loading an AVAssetResourceLoadingRequest instance, if its contentInformationRequest property is not nil, set the value of this property to a UTI indicating the type of data contained by the requested resource.
Available in OS X v10.9 and later.
(Read and Write property)
17.12.9 Handle as Integer


**Function:** The internal object reference.

**Notes:** (Read and Write property)
17.13 class AVAssetResourceLoadingDataRequestMBS

17.13.1 class AVAssetResourceLoadingDataRequestMBS


Function: Use the AVAssetResourceLoadingDataRequest class to request data from a resource referenced by an AVAssetResourceLoadingRequest instance.

Notes:

The AVAssetResourceLoaderDelegate uses the AVAssetResourceLoadingDataRequest class to do the actual data reading, and its methods will be invoked, as necessary, to acquire data for the AVAssetResourceLoadingRequest instance.

When the resource loading delegate, which implements the AVAssetResourceLoaderDelegate protocol, receives an instance of AVAssetResourceLoadingRequest as the second parameter of the delegate’s resourceLoader:should-WaitForLoadingOfRequestedResource: method, it has the option of accepting responsibility for loading the referenced resource. If it accepts that responsibility, by returning YES, it must check whether the dataRequest property of the AVAssetResourceLoadingRequest instance is not nil. If it is not nil, the resource loading delegate is informed of the range of bytes within the resource that are required by the underlying media system. In response, the data is provided by one or more invocations of respondWithData: as required to provide the requested data. The data can be provided in increments determined by the resource loading delegate according to convenience or efficiency.

When the AVAssetResourceLoadingRequest method finishLoading is invoked, the data request is considered fully satisfied. If the entire range of bytes requested has not yet been provided, the underlying media system assumes that the resource’s length is limited to the provided content.

Available in OS X v10.9 and later.

17.13.2 Methods

17.13.3 available as boolean


Function: Whether this class is available.

17.13.4 Constructor


Function: The constructor.
17.13.5 **respondWithData(data as MemoryBlock)**

**Function:** Provides data to the loading request.
**Notes:**

- data: An instance of NSData containing some or all of the requested bytes.

This method may be invoked multiple times on the same instance of AVAssetResourceLoadingDataRequest to provide the full range of requested data incrementally. Upon each invocation, the value of the currentOffset property is updated to match the amount of data provided.

Available in OS X v10.9 and later.

---

17.13.6 **Properties**

17.13.7 **currentOffset as Integer**

**Function:** The position within the resource of the next byte. (read-only)
**Notes:**

- When incrementally loading data you should begin loading at this offset, returning the data by invoking the respondWithData: method. Bytes previous to this value have already been provided.

Available in OS X v10.9 and later.
(Read only property)

---

17.13.8 **Handle as Integer**

**Function:** The internal object reference.
**Notes:** (Read and Write property)

---

17.13.9 **requestedLength as Int64**

**Function:** The length, in bytes, of the data requested. (read-only)
**Notes:**
If the content length of the resource is unknown, the sum of the requestedLength and requestedOffset properties may be greater than the actual content length. When this situation occurs, an application must attempt to provide as much of the requested data beginning at the requestedOffset property as the resource contains. The application must then invoke either the AVAssetResourceLoadingRequest instance’s finishLoading method upon success, or the finishLoadingWithError: method if an error is encountered during the loading. Available in OS X v10.9 and later.

(Read only property)

17.13.10 requestedOffset as Int64


**Function:** The position within the resource of the first byte requested. (read-only)

**Notes:**

When all of the requested bytes that can be provided have been loaded, including the possible contentInformationRequest data in the AVAssetResourceLoadingRequest instance that contains the receiver, the delegate should respond by invoking finishLoading.

If the requestedOffset value is beyond the content length of the resource, the AVAssetResourceLoadingRequest instance is sent a finishLoading message without any prior invocations of respondWithData. Available in OS X v10.9 and later.

(Read only property)
17.14. class AVAssetResourceLoadingRequestMBS

17.14.1 class AVAssetResourceLoadingRequestMBS


**Function:** An AVAssetResourceLoadingRequest object encapsulates information about a resource request issued from a resource loader object.

**Notes:**
When an AVURLAsset object needs help loading a resource, it asks its AVAssetResourceLoader object to assist. The resource loader encapsulates the request information by creating an instance of this object, which it then hands to its delegate object for processing. The delegate uses the information in this object to perform the request and report on the success or failure of the operation.
Available on Mac OS X 10.9 and later.

17.14.2 Methods

17.14.3 available as boolean


**Function:** Whether this class is available.

17.14.4 Constructor


**Function:** The constructor.

17.14.5 finishLoading


**Function:** Causes the receiver to treat the processing of the request as complete.

**Notes:**
If a dataRequest is present and the resource does not contain the full extent of the data that has been requested according to the values of the requestedOffset and requestedLength properties of the request, invoke finishLoading after providing as much of the requested data as the resource contains.

Available in OS X v10.9 and later.

See also:

- 17.14.6 finishLoading(error as NSErrorMBS)
17.14.6 finishLoading(error as NSErrorMBS)

**Function:** Causes the receiver to handle the failure to load a resource for which a resource loader’s delegate took responsibility.
**Notes:**
- error: An error object indicating the reason for the failure.
- When a resource loader’s delegate takes responsibility for loading a resource, it calls this method when a failure occurred when loading the resource. This method marks the loading request as finished and notifies the resource loader object that the resource could not be loaded.
- Available in OS X v10.9 and later.
- See also:
  - 17.14.5 finishLoading

17.14.7 streamingContentKeyRequestDataForApp(appIdentifier as Memoryblock, contentIdentifier as Memoryblock, options as Dictionary, byref error as NSErrorMBS) as Memoryblock

**Function:** Obtains key request data for a specific combination of application and content.
**Notes:**
- appIdentifier: An opaque content identifier for the application. The value of this identifier depends on the particular system used to provide the decryption key.
- contentIdentifier: An opaque identifier for the content. The value of this identifier depends on the particular system used to provide the decryption key.
- options: Additional information necessary to obtain the key, or nil if no additional information is required.
- Error: If an error occurs while obtaining the streaming content key, the pointer is set to an appropriate error object on output.
- Returns the key request data that must be transmitted to the key vendor to obtain the content key.
- Available in OS X v10.9 and later.

17.14.8 Properties

17.14.9 contentInformationRequest as AVAssetResourceLoadingContentInformationRequestMBS

**Function:** Information about the requested resource. (read-only)
**Notes:**
An instance of AVAssetResourceLoadingContentInformationRequest that you populate with information about the resource. The value of this property is nil if no such information is being requested.
Available in OS X v10.9 and later.
(Read only property)

**17.14.10 dataRequest as AVAssetResourceLoadingDataRequestMBS**

Function: The range of requested resource data. (read-only)
Notes:
An instance of AVAssetResourceLoadingDataRequest that indicates the range of resource data that’s being requested. The value of this property is nil if no data is being requested.
Available in OS X v10.9 and later.
(Read only property)

**17.14.11 Handle as Integer**

Function: The internal object reference.
Notes: (Read and Write property)

**17.14.12 isCancelled as Boolean**

Function: A Boolean value that indicates whether the request has been cancelled. (read-only)
Notes:
True when the resource loader cancels the loading of a request, just prior to sending the message resourceLoaderDidCancelLoadingRequest to the delegate.
(Read only property)

**17.14.13 isFinished as Boolean**

Function: A Boolean value that indicates whether loading of the resource has finished. (read-only)
Notes:
The value of this property is NO initially. The value changes to YES when the delegate object handling the request calls the finishLoadingWithResponse or finishLoadingWithError method.
Available in OS X v10.9 and later.
17.14.14 redirect as Variant


Function: An URL request instance if the loading request was redirected.

Notes:

Value is NSURLRequestMBS.
Set this property to an instance of NSURLRequest indicating a redirection of the loading request to another URL.
If no redirection is needed, the value of this property must be nil, which is the default.
Available in OS X v10.9 and later.
(Read only property)

17.14.15 request as Variant


Function: The URL request object for the resource. (read-only)

Notes:

Value is NSURLRequestMBS.
Use the value in this property to identify the requested resource and to formulate an appropriate response object.
Available in OS X v10.9 and later.
(Read only property)

17.14.16 response as Variant


Function: The URL response for the loading request.

Notes:

Value is NSURLResponseMBS.
The value of this property to an instance of NSURLResponse, indicating a response to the loading request.
If no response is needed, the value of this property is nil.
Available in OS X v10.9 and later
(Read only property)
17.15. **CLASS AVASSETTRACKGROUPMBS**

17.15 **class AVAssetTrackGroupMBS**

**17.15.1 class AVAssetTrackGroupMBS**


**Function:** The AVAssetTrackGroup class encapsulates a single group of related tracks in an asset.

**Notes:**

Instances of AVAssetTrackGroup describe a single group of related alternate tracks, only one of which should be played at a time. Groups of alternate tracks typically contain variations of the same content, such as subtitles in multiple translations.

Clients can inspect the track groups contained in an asset (AVAsset) instance by loading and obtaining the value of the asset’s trackGroups property.

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

17.15.2 **Methods**

17.15.3 **available as boolean**


**Function:** Whether this class is available.

**Notes:** Returns true on Mac OS X 10.9 and newer.

17.15.4 **Constructor**


**Function:** The private constructor.

17.15.5 **copy as AVAssetTrackGroupMBS**


**Function:** Creates a copy of the track group.

17.15.6 **trackIDs as Integer()**


**Function:** The IDs of the tracks in the group. (read-only)

**Notes:**
The value of this property is an array of NSNumber instances that are interpreted as CMPersistentTrackID values, one for each track in the group.
Available in OS X v10.9 and later.

17.15.7 Properties

17.15.8 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)
17.16  class AVAssetTrackMBS

17.16.1  class AVAssetTrackMBS

Function: An AVAssetTrack object provides provides the track-level inspection interface for all assets.
Notes:

AVAssetTrack adopts the AVAsynchronousKeyValueLoading protocol. You should use methods in the protocol
to access a track’s properties without blocking the current thread. To cancel load requests for all keys
of AVAssetTrack you must message the parent AVAsset object (for example, | track.asset cancelLoading | ).
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

17.16.2  Methods

17.16.3  associatedTracksOfType(trackAssociationType as string) as AVAssetTrackMBS()

Function: An array containing other tracks associated with the track using the specified association type.
Notes:

trackAssociationType: The association type for which associated tracks are requested.

Returns an array of AVAssetTrack objects associated with the track by trackAssociationType. May be empty
if no tracks are associated through the specified association type.

You can call this method without blocking after availableTrackAssociationTypes has been loaded.
Available in OS X v10.9 and later.

17.16.4  available as boolean

Function: Whether this class is available.
Notes: Returns true on Mac OS X 10.7 and newer.

17.16.5  availableMetadataFormats as string()

Function: An array containing the metadata formats available for the track. (read-only)
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Notes: The array contains String objects, one for each metadata format that’s available for the track (such as QuickTime user data). For possible values, see AVMetadataItem.

17.16.6 availableTrackAssociationTypes as string()

Function: An array of association types used to associate other tracks with the track. (read-only)
Notes:
The array contains strings, one for each type of association for which the track has associated tracks. For possible values, see "Track Association Types" in Apple’s documentation.
Available in OS X v10.9 and later.

17.16.7 commonMetadata as AVMetadataItemMBS()

Function: An array of AVMetadataItem objects for each common metadata key for which a value is available. (read-only)

17.16.8 Constructor

Function: The private constructor.

17.16.9 copy as AVAssetTrackMBS

Function: Creates a copy of the object.

17.16.10 formatDescriptions as CMFormatDescriptionMBS()

Function: The formats of media samples referenced by the track. (read-only)
Notes: The array contains CMFormatDescriptions, each of which indicates the format of media samples referenced by the track. A track that presents uniform media (for example, encoded according to the same encoding settings) will provide an array with a count of 1.
17.16.11 hasMediaCharacteristic(mediaCharacteristic as string) as boolean

**Function:** Returns a Boolean value that indicates whether the track references media with the specified media characteristic.

**Notes:**
mediaCharacteristic: The media characteristic of interest.
For possible values, see "Media Characteristics" in AV Foundation Constants Reference, for example AVMediaCharacteristicVisual, AVMediaCharacteristicAudible, or AVMediaCharacteristicLegible.

Returns true if the track references media with the specified characteristic, otherwise false.

17.16.12 loadValuesAsynchronouslyForKeys(keys() as string, tag as Variant = nil)

**Function:** Tells the asset to load the values of any of the specified keys that are not already loaded.

**Notes:**
keys: An array containing the required keys.

Calls AVFoundationMBS.AssetTrackLoadValuesAsynchronouslyForKeysFinished on completion. 
The completion event will be invoked exactly once per invocation of this method:

- Synchronously if an I/O error or other format-related error occurs immediately.
- Asynchronously at a subsequent time if a loading error occurs at a later stage of processing, or if cancelLoading is invoked on an AVAsset instance.

The completion states of the keys you specify in keys are not necessarily the same—some may be loaded, and others may have failed. You must check the status of each key individually.

If you want to receive error reporting for loading that’s still pending, you can call this method at any time, even after an asset has begun to load data for operations in progress or already completed. If a fatal error has already occurred, the completion event is invoked synchronously.

17.16.13 metadataForFormat(Format as string) as AVMetadataItemMBS()

**Function:** An array of metadata items, one for each metadata item in the container of the specified format.

**Notes:**
format: The metadata format for which items are requested.

Returns an array of AVMetadataItem objects, one for each metadata item in the container of the format specified by format, or empty array if there is no metadata of the specified format.

You can call this method without blocking after availableMetadataFormats has been loaded.

17.16.14 preferredTransform as CGAffineTransformMBS


Function: The transform specified in the track’s storage container as the preferred transformation of the visual media data for display purposes. (read-only)

Notes: The value of this property is often, but not always, CGAffineTransformIdentity.

17.16.15 samplePresentationTimeForTrackTime(trackTime as CMTimeMBS) as CMTimeMBS


Function: Maps the specified track time through the appropriate time mapping and returns the resulting sample presentation time.

Notes:

trackTime: The track time for which a sample presentation time is requested.
Returns the sample presentation time corresponding to trackTime; the value will be invalid if trackTime is out of range.

17.16.16 segmentForTrackTime(trackTime as CMTimeMBS) as AVAssetTrackSegmentMBS


Function: The track segment that corresponds to the specified track time.

Notes:

trackTime: The track time for which you want the segment.
Returns the track segment from the segments array that corresponds to trackTime, or nil if trackTime is out of range.
17.16. **CLASS AVASSETTRACKMBS**

17.16.17 **segments as AVAssetTrackSegmentMBS()**

**Function:** The time mappings from the track’s media samples to the timeline of the track. (read-only)
**Notes:**

The array contains instances of AVAssetTrackSegment.

Empty edits (that is, time ranges for which no media data is available to be presented) have source.start and source.duration equal to kCMTimeInvalid.

17.16.18 **statusOfValueForKey(key as string, byref error as NSErrorMBS) as Integer**

**Function:** Reports whether the value for a given key is immediately available without blocking. (required)
**Notes:**

key: The key whose status you want.
error: If the status of the value for the key is AVKeyValueStatusFailed, upon return contains an NSError object that describes the failure that occurred.

Returns the current loading status of the value for key. For possible values, see "Protocol Methods."

You use this method to determine the availability of the value for a key. This method does not cause an asset to load the value of a key that’s not yet available. To request values for keys that may not already be loaded without blocking, use loadValuesAsynchronouslyForKeys and wait for invocation of the completion handler to be informed of availability.

17.16.19 **timeRange as CMTimeRangeMBS**

**Function:** The time range of the track within the overall timeline of the asset. (read-only)
**Notes:** A track with CMT imeCompare(timeRange.start, kCMTimeZero) == 1 will initially present an empty time range.

17.16.20 **trackSamples(formatOptions as Dictionary) as MemoryBlock**

MBS AVFoundation Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** Queries the track Samples
**Example:**
dim f as FolderItem = SpecialFolder.Desktop.Child("test.m4v")
dim a as AVAssetMBS = AVAssetMBS.assetWithFile(f)
dim tracks() as AVAssetTrackMBS = a.tracksWithMediaType(AVFoundationMBS.AVMediaTypeAudio)
dim track as AVAssetTrackMBS = tracks(0)

dim d as new Dictionary
dim n as Integer = OSTypeFromStringMBS(AVFoundationMBS.kAudioFormatLinearPCM)
d.Value(AVFoundationMBS.AVFormatIDKey) = n
d.Value(AVFoundationMBS.AVLinearPCMBitDepthKey) = 16
d.Value(AVFoundationMBS.AVLinearPCMIsmBigEndianKey) = false
d.Value(AVFoundationMBS.AVLinearPCMIsmFloatKey) = false
d.Value(AVFoundationMBS.AVLinearPCMIsmNonInterleaved) = false

dim SampleData as MemoryBlock = track.trackSamples(d)

window1.Backdrop = RenderSamplesMBS(SampleData, SampleData.Size / 2, 1, window1.Width, window1.Height, 1, & c88B5C4, & c274C5A, & c203F4E, 15)

Notes:
Returns nil in case of errors.
Track should be an audio or muxed track.

17.16.21 Properties

17.16.22 asset as AVAssetMBS

Function: The asset of which the track is a part. (read-only)
Notes: (Read only property)

17.16.23 estimatedDataRate as Double

Function: The estimated data rate of the media data referenced by the track, in bits per second. (read-only)
Notes: (Read only property)
17.16. CLASS AVASSETTRACKMBS

17.16.24 extendedLanguageTag as string

Function: The language tag associated with the track, as an RFC 4646 language tag. (read-only)
Notes:
The value may be nil if no language tag is indicated. (Read only property)

17.16.25 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

17.16.26 isEnabled as boolean

Function: Indicates whether the track is enabled according to state stored in its container or construct. (read-only)
Notes: (Read only property)

17.16.27 isPlayable as boolean

Function: Indicates whether the track is playable in the current environment. (read-only)
Notes:
If the value of this property is true, an AVPlayerItemTrack of an AVPlayerItem initialized with the the track's asset can be enabled for playback. Available in OS X v10.8 and later. (Read only property)

17.16.28 isSelfContained as boolean

Function: Indicates whether the track references sample data only within its storage container. (read-only)
Notes:
The value is true if the track references sample data only within its storage container, otherwise it is false. (Read only property)
17.16.29  languageCode as string

**Function:** The language associated with the track, as an ISO 639-2/T language code. (read-only) 
**Notes:**  
The value may be "" if no language is indicated. 
(Read only property)

17.16.30  mediaType as string

**Function:** The media type for the track. (read-only) 
**Notes:**  
For possible values, see "Media Types" in AV Foundation Constants Reference. 
(Read only property)

17.16.31  naturalSize as CGSizeMBS

**Function:** The natural dimensions of the media data referenced by the track. (read-only) 
**Example:**
```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.m4v")  
dim m as new AVMovieMBS(f, nil)  

dim videotracks() as AVMovieTrackMBS = m.movieTracksWithMediaCharacteristic(AVFoundationMBS.AV-  
MediaCharacteristicFrameBased)  

for each videotrack as AVMovieTrackMBS in videotracks  
dim s as CGSizeMBS = videotrack.naturalSize  
MsgBox str(s.Width)+" x "+ str(s.Height)  
next
```

**Notes:** (Read only property)
17.16.32 naturalTimeScale as Integer

Function: A timescale in which time values for the track can be operated upon without extraneous numerical conversion. (read-only)
Notes: (Read only property)

17.16.33 nominalFrameRate as Double

Function: The frame rate of the track, in frames per second. (read-only)
Example:
```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.mp4")
dim a as AVAssetMBS = AVAssetMBS.assetWithFile(f)
dim tracks() as AVAssetTrackMBS = a.tracksWithMediaCharacteristic(AVFoundationMBS.AVMediaCharacteristicFrameBased)
for each t as AVAssetTrackMBS in tracks
    MsgBox str(t.nominalFrameRate)
next
```
Notes: (Read only property)

17.16.34 preferredVolume as Double

Function: The volume specified in the track’s storage container as the preferred volume of the audible media data. (read-only)
Notes: (Read only property)

17.16.35 totalSampleDataLength as Int64

Function: The total number of bytes of sample data required by the track. (read-only)
Notes: (Read only property)
17.16.36  trackID as Integer

Function: The persistent unique identifier for this track of the asset. (read-only)
Notes: (Read only property)

17.16.37  Constants

17.16.38  AVKeyValueStatusCancelled = 4

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the constants to indicate the load
status of a property.
Notes: Indicates that the attempt to load the property was cancelled.

17.16.39  AVKeyValueStatusFailed = 3

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the constants to indicate the load
status of a property.
Notes: Indicates that the attempt to load the property failed.

17.16.40  AVKeyValueStatusLoaded = 2

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the constants to indicate the load
status of a property.
Notes: Indicates that the property is ready for use.

17.16.41  AVKeyValueStatusLoading = 1

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the constants to indicate the load
status of a property.
Notes: Indicates that the property is not fully loaded.

17.16.42  AVKeyValueStatusUnknown = 0

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the constants to indicate the load
status of a property.
Notes: Indicates that the property status is unknown.
17.17 class AVAssetTrackSegmentMBS

17.17.1 class AVAssetTrackSegmentMBS

Function: An AVAssetTrackSegment object represents a segment of an AVAssetTrack object, comprising of a time mapping from the source to the asset track timeline.

17.17.2 Methods

17.17.3 available as boolean

Function: Whether this class is available.
Notes: Returns true on Mac OS X 10.7 and newer.

17.17.4 Constructor

Function: The constructor.

17.17.5 isEmpty as boolean

Function: Indicates whether the segment is an empty segment (read-only)
Notes: True if the segment is empty, otherwise false.

17.17.6 timeMapping as CMTimeMappingMBS

Function: The time range of the track of the container file of the media presented by the segment. (read-only)
17.17.7 Properties

17.17.8 Handle as Integer


Function: The internal object reference.
Notes: (Read and Write property)
17.18 class AVAssetWriterInputGroupMBS

17.18.1 class AVAssetWriterInputGroupMBS


**Function:** The AVAssetWriterInputGroup class associates tracks corresponding to inputs with each other in a mutually exclusive relationship.

**Notes:**

This class is used to associate tracks corresponding to multiple AVAssetWriterInput instances as mutually exclusive to each other for playback or other processing.

For example, if you are creating an asset with multiple audio tracks using different spoken languages and only one track should be played at a time, group the inputs corresponding to those tracks into a single instance of AVAssetWriterInputGroup and add the group to the AVAssetWriter instance using the AVAssetWriter method addInputGroup:. If the output format supports mutually exclusive relationships among tracks, the AVAssetWriter marks the tracks as mutually exclusive to each other.

Because the AVAssetWriterInputGroup class is a subclass of the AVMediaSelectionGroup class, clients can examine the media selection options that are available on the output asset before the asset is written. The best results for examining the options of the AVAssetWriterInputGroup are obtained after associating the AVAssetWriterInput instances of the AVAssetTrack objects as appropriate using the AVAssetWriterInput method addTrackAssociationWithTrackOfInput and by initializing each AVAssetWriterInput with a source format hint, where appropriate.

Subclass of the AVMediaSelectionGroupMBS class.

17.18.2 Methods

17.18.3 assetWriterInputGroupWithInputs(inputs() as AVAssetWriterInputMBS, defaultInput as AVAssetWriterInputMBS) as AVAssetWriterInputGroupMBS


**Function:** Creates and initializes an instance of an asset writer input group.

**Notes:**

inputs: An array of AVAssetWriterInput instances to be grouped together.

defaultInput: The instance of AVAssetWriterInput to designate as the default input for the group.

Returns an initialized instance of AVAssetWriterInputGroup.

When the input group is added to an AVAssetWriter instance using the addInputGroup: method, the AVAssetWriterInput property marksOutputTrackAsEnabled is automatically set to true for defaultInput and false for all of the other inputs in the group.

Available in OS X v10.9 and later.
17.18.4 Constructor(inputs() as AVAssetWriterInputMBS, defaultInput as AVAssetWriterInputMBS)

Function: Initializes an instance of an asset writer input group.
Notes:
inputs: An array of AVAssetWriterInput instances to be grouped together.
defaultInput: The instance of AVAssetWriterInput to designate as the default input for the group.

When the input group is added to an AVAssetWriter instance using the addInputGroup method, the AVAssetWriterInput property marksOutputTrackAsEnabled is automatically set to true for defaultInput and false for all of the other inputs in the group.
Available in OS X v10.9 and later.

17.18.5 inputs as AVAssetWriterInputMBS()

Function: The the inputs array. (read-only)
Notes: Available in OS X v10.9 and later.

17.18.6 Properties

17.18.7 defaultInput as AVAssetWriterInputMBS

Function: The the default input object. (read-only)
Notes:
Available in OS X v10.9 and later.
(Read only property)
17.19 class AVAssetWriterInputMBS

17.19.1 class AVAssetWriterInputMBS


**Function:** You use an AVAssetWriterInput to append media samples packaged as CMSampleBuffer objects, or collections of metadata, to a single track of the output file of an AVAssetWriter object.

**Notes:**

When there are multiple inputs, AVAssetWriter tries to write media data in an ideal interleaving pattern for efficiency in storage and playback. Each of its inputs signals its readiness to receive media data for writing according to that pattern via the value of readyForMoreMediaData. If readyForMoreMediaData is true, an input can accept additional media data while maintaining appropriate interleaving. If media data is appended to an input after readyForMoreMediaData becomes false, AVAssetWriter may need to write media data to its output without regard for ideal interleaving.

You can only append media data to an input while its readyForMoreMediaData property is true.

- If you’re writing media data from a non-real-time source, such as an instance of AVAssetReader, you should hold off on generating or obtaining more media data to append to an input when the value of readyForMoreMediaData is false. To help with control of the supply of non-real-time media data, you can use requestMediaDataWhenReadyOnQueue:usingBlock: to specify a block that the input should invoke whenever it’s ready for input to be appended.

- If you’re writing media data from a real-time source, you should set the input’s expectsMediaDataInRealTime property to true to ensure that the value of readyForMoreMediaData is calculated appropriately. When expectsMediaDataInRealTime is true, readyForMoreMediaData will become false only when the input cannot process media samples as quickly as they are being provided by the client. If readyForMoreMediaData becomes false for a real-time source, the client may need to drop samples or consider reducing the data rate of appended samples.

The value of readyForMoreMediaData will often change from false to true asynchronously, as previously-supplied media data is processed and written to the output. It is possible for all of an asset writer’s inputs temporarily to return false for readyForMoreMediaData.

17.19.2 Methods

17.19.3 addTrackAssociationWithTrackOfInput(input as AVAssetWriterInputMBS, trackAssociationType as string)


**Function:** Associates the track corresponding to the specified input with the track corresponding with the receiver.

**Notes:**
input: The instance of AVAssetWriterInput with a corresponding track to associate with track corresponding with the receiver.

trackAssociationType: The type of track association to add. Common track association types, such as AVTrackAssociationTypeTimecode are defined in Track Association Types.

If the type of association requires tracks of specific media types that don’t match the media types of the inputs, or if the output file type does not support track associations, an NSInvalidArgumentException is raised.

Note: Track associations cannot be added after writing on the receiver’s AVAssetWriter instance has started. Available in OS X v10.9 and later.

17.19.4  appendSampleBuffer(sampleBuffer as CMSampleBufferMBS) as boolean

Function: Appends samples to the receiver.
Notes:
sampleBuffer: The CMSampleBuffer to be appended.

Returns true if sampleBuffer as appended successfully, otherwise false.

The timing information in the sample buffer, considered relative to the time passed to the asset writer’s startSessionAtSourceTime: will be used to determine the timing of those samples in the output file.

Do not modify sampleBuffer or its contents after you have passed it to this method.

17.19.5  assetWriterInputWithMediaType(MediaType as string, outputSettings as dictionary = nil) as AVAssetWriterInputMBS

Function: Returns a new input of the specified media type to receive sample buffers for writing to the output file.
Notes:

mediaType: The media type of samples that will be accepted by the input.
Media types are defined in AVMediaFormat.h.
outputSettings: The settings used for encoding the media appended to the output. Pass nil to specify that appended samples should not be re-encoded.
Audio output settings keys are defined in AVAudioSettings.h. Video output settings keys are defined in AVVideoSettings.h. Video output settings with keys from <CoreVideo/CVPixelBuffer.h>are not currently supported.
Returns a new input of the specified media type to receive sample buffers for writing to the output file.

Each new input accepts data for a new track of the asset writer’s output file. You add an input to an asset writer using the AVAssetWriter method addInput:

Passing nil for outputSettings instructs the input to pass through appended samples, doing no processing before they are written to the output file. This is useful if, for example, you are appending buffers that are already in a desirable compressed format. However, passthrough is currently supported only when writing to QuickTime Movie files (i.e. the AVAssetWriter was initialized with AVFileTypeQuickTimeMovie). For other file types, you must specify non-nil output settings.

See also:

- 17.19.6 assetWriterInputWithMediaType(MediaType as string, outputSettings as dictionary, sourceFormatHint as CMFormatDescriptionMBS) as AVAssetWriterInputMBS

17.19.6 assetWriterInputWithMediaType(MediaType as string, outputSettings as dictionary, sourceFormatHint as CMFormatDescriptionMBS) as AVAssetWriterInputMBS


**Function:** Returns a new input of the specified media type to receive sample buffers for writing to the output file.

See also:

- 17.19.5 assetWriterInputWithMediaType(MediaType as string, outputSettings as dictionary = nil) as AVAssetWriterInputMBS

17.19.7 available as boolean


**Function:** Whether this class is available.

**Notes:** Returns true on Mac OS X 10.7 and newer.

17.19.8 canAddTrackAssociationWithTrackOfInput(input as AVAssetWriterInputMBS, trackAssociationType as string) as Boolean


**Function:** Whether an association between the tracks corresponding to a pair of inputs is valid.

**Notes:**
input: The instance of AVAssetWriterInput with a corresponding track to associate with track corresponding with the receiver.

trackAssociationType: The type of track association to test. Common track association types, such as AVTrackAssociationTypeTimecode are defined in Track Association Types.

Returns true if the track association can be added; otherwise false.

If the type of association requires tracks of specific media types that don’t match the media types of the inputs, or if the output file type does not support track associations, returns NO.

Available in OS X v10.9 and later.

17.19.9 Constructor(MediaType as string, outputSettings as dictionary = nil)


Function: Initialized a new input of the specified media type to receive sample buffers for writing to the output file.

Notes:

mediaType: The media type of samples that will be accepted by the input.

Media types are defined in AVMediaFormat.h.

outputSettings: The settings used for encoding the media appended to the output. Pass nil to specify that appended samples should not be re-encoded.

Audio output settings keys are defined in AVAudioSettings.h. Video output settings keys are defined in AVVideoSettings.h. Video output settings with keys from <CoreVideo/CVPixelBuffer.h> are not currently supported.

Returns an input of the specified media type initialized to receive sample buffers for writing to the output file.

Each new input accepts data for a new track of the asset writer’s output file. You add an input to an asset writer using the AVAssetWriter method addInput:.

Passing nil for outputSettings instructs the input to pass through appended samples, doing no processing before they are written to the output file. This is useful if, for example, you are appending buffers that are already in a desirable compressed format. However, passthrough is currently supported only when writing to QuickTime Movie files (i.e. the AVAssetWriter was initialized with AVFileTypeQuickTimeMovie). For other file types, you must specify non-nil output settings.

See also:

• 17.19.10 Constructor(MediaType as string, outputSettings as dictionary, sourceFormatHint as CMFormatDescriptionMBS)
17.19.10 Constructor(MediaType as string, outputSettings as dictionary, source-FormatHint as CMFormatDescriptionMBS)

Function: Initialized a new input of the specified media type to receive sample buffers for writing to the output file.
See also:

- 17.19.9 Constructor(MediaType as string, outputSettings as dictionary = nil)

17.19.11 markAsFinished

Function: Tells the writer that no more buffers will be appended to this input.
Notes: If you are monitoring each input’s expectsMediaDataInRealTime value to keep the output file well interleaved, it is important to call this method when you have finished adding buffers to a track. This is necessary to prevent other inputs from stalling, as they may otherwise wait forever for that input’s media data, attempting to complete the ideal interleaving pattern.

17.19.12 metadata as AVMetadataItemMBS()

Function: The collection of track-level metadata for association with the asset and for carriage in the output file.
Notes: The array contains AVMetadataItem objects representing the collection of track-level metadata to be written in the output file.
See also setMetadata method.

17.19.13 outputSettings as dictionary

Function: The settings used for encoding the media appended to the output. (read-only)
Notes: A value of nil specifies that appended samples should not be re-encoded.
17.19.14  requestMediaDataWhenReadyOnQueue(assetWriterInput as AVAssetWriterInputMBS, AssetReaderOutput as AVAssetReaderOutputMBS, tag as Variant = nil)


Function: Instructs the receiver to invoke an event repeatedly, at its convenience, in order to gather media data for writing to the output.

Notes:

This is a special version of that method where the plugin does the required work.
The plugin provides the block to do the work to copy samples from input to output.
You receive AVFoundationMBS.requestMediaDataWhenReadyOnQueueProgress events and on the end an AVFoundationMBS.requestMediaDataWhenReadyOnQueueFinished event, when assetReaderOutput.NextSampleBuffer does not provide the next buffer.

With tag you can pass any value you like to the event later. This can be for example an object reference or a number in an array. Be aware that the reference to this tag value is kept until the event is called and can cause memory reference cycles.

See also:

- 17.19.15 requestMediaDataWhenReadyOnQueue(tag as Variant = nil)

17.19.15  requestMediaDataWhenReadyOnQueue(tag as Variant = nil)


Function: Instructs the receiver to invoke an event repeatedly, at its convenience, in order to gather media data for writing to the output.

Notes:

Calls later AVFoundationMBS.requestMediaDataWhenReadyOnQueueCompleted event.

With tag you can pass any value you like to the event later. This can be for example an object reference or a number in an array. Be aware that the reference to this tag value is kept until the event is called and can cause memory reference cycles.

See also:

- 17.19.14 requestMediaDataWhenReadyOnQueue(assetWriterInput as AVAssetWriterInputMBS, AssetReaderOutput as AVAssetReaderOutputMBS, tag as Variant = nil)

17.19.16  setMetadata(items() as AVMetadataItemMBS)


Function: Sets the collection of track-level metadata for association with the asset and for carriage in the output file.

Notes:
The array contains AVMetadataItem objects representing the collection of track-level metadata to be written in the output file.
You cannot set this property after writing on the receiver’s asset writer has started.

### 17.19.17 sourceFormatHint as CMFormatDescriptionMBS

**Function:** A hint about the format of buffers that will be appended.
**Notes:** An AVAssetWriterInput object may be able to use this hint to fill in missing output settings or perform more upfront validation. To guarantee successful file writing, if you set this property you should ensure that subsequently-appended buffers are of the specified format. An NSInvalidArgumentException will be thrown if the media type of the format description does not match the media type of the writer input.

### 17.19.18 Properties

#### 17.19.19 expectsMediaDataInRealTime as boolean

**Function:** Indicates whether the input should tailor its processing of media data for real-time sources.
**Notes:**
If you are appending media data to an input from a real-time source, such as an AVCaptureOutput, you should set expectsMediaDataInRealTime to true. This will ensure that readyForMoreMediaData is calculated appropriately for real-time usage.
(Read and Write property)

#### 17.19.20 extendedLanguageTag as String

**Function:** Language tag to associate with the track corresponding to the receiver.
**Notes:**
The value is specified as an RFC 4646 language tag; can be nil in which case no tag is written to the track.

Extended language tags are normally set only when an ISO 639-2/T language code by itself is ambiguous, as in cases in which media data should be distinguished not only by language but also by the regional dialect in use or the writing system employed.
Available in OS X v10.9 and later.
(Read and Write property)
17.19. CLASS AVASSETWRITERINPUTMBS

17.19.21 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

17.19.22 isReadyForMoreMediaData as boolean

Function: Indicates the readiness of the input to accept more media data. (read-only)
Notes: This property is observable using key-value observing (see Key-Value Observing Programming Guide). Observers should not assume that they will be notified of changes on a specific thread.
(Read only property)

17.19.23 languageCode as String

Function: Language to associate with the track corresponding to the receiver.
Notes: The value is specified as an ISO 639-2/T language code; can be nil in which case no language code is written to the track.
Available in OS X v10.9 and later.
(Read and Write property)

17.19.24 marksOutputTrackAsEnabled as Boolean

Function: Returns whether the receiver’s track is enabled.
Notes: For file types that support enabled and disabled tracks, such as QuickTime Movie files, specifies whether the track corresponding to the receiver should be enabled by default for playback and processing.
The default value is true.
Available in OS X v10.9 and later.
(Read and Write property)
17.19.25 mediaTimeScale as Integer


Function: Specifies the media time scale to be used.

Notes:
For file types that support media time scales, such as QuickTime Movie files, specifies the media time scale to be used.
The default value is 0, which indicates that you should choose a convenient value, if applicable.
You cannot set this property after writing has started.
(Read and Write property)

17.19.26 mediaType as string


Function: The media type of the samples that can be appended to the input. (read-only)

Notes:
The value of this property is one of the media type strings defined in AVMediaFormat.
(Read only property)

17.19.27 naturalSize as CGSizeMBS


Function: Size specified in the output file as the natural dimensions of the visual media data for display.

Notes:
If the default value, (0,0), is specified, the naturalSize of the track corresponding to the receiver is set according to dimensions indicated by the format descriptions that are ultimately written to the output track.

Note: This property cannot be set after writing on the receiver’s AVAssetWriter has started.
Available in OS X v10.9 and later.
(Read only property)

17.19.28 preferredVolume as Double


Function: Preferred volume level to be stored in the output file.

Notes:
The value for this property should typically be in the range of 0.0 to 1.0.
The default value is 1.0, which is equivalent to a "normal" volume level.
17.19. CLASS AVASSETWRITERINPUTMBS

Note: This property cannot be set after writing on the receiver’s AVAssetWriter has started.
Available in OS X v10.9 and later.
(Read and Write property)

17.19.29 transform as CGAffineTransformMBS

Function: The transform specified in the output file as the preferred transformation of the visual media data for display purposes.
Notes:
If no value is specified, the identity transform is used.
(Read and Write computed property)
17.20 class AVAssetWriterInputPixelBufferAdaptorMBS

17.20.1 class AVAssetWriterInputPixelBufferAdaptorMBS


Function: You use an AVAssetWriterInputPixelBufferAdaptor to append video samples packaged as CVPixelBuffer objects to a single AVAssetWriterInput object.

Notes: Instances of AVAssetWriterInputPixelBufferAdaptor provide a CVPixelBufferPool that you can use to allocate pixel buffers for writing to the output file. Using the provided pixel buffer pool for buffer allocation is typically more efficient than appending pixel buffers allocated using a separate pool.

17.20.2 Methods

17.20.3 appendPicture(pic as picture, presentationTime as CMTimeMBS) as boolean


Function: Appends a picture to the receiver.

Notes: Internally creates a copy of the picture to create a PixelBuffer and calls appendPixelBuffer. Works in Cocoa and Carbon. Using appendPixelBuffer directly with PixelBuffer objects may be more efficient depending on what your app does.

17.20.4 appendPixelBuffer(pixelBuffer as CVPixelBufferMBS, presentationTime as CMTimeMBS) as boolean


Function: Appends a pixel buffer to the receiver.

Notes: pixelBuffer: The CVPixelBuffer to be appended.
presentationTime: The presentation time for the pixel buffer to be appended. This time will be considered relative to the time passed to AVAssetWriter.startSessionAtSourceTime to determine the timing of the frame in the output file.

Returns true if the pixel buffer was successfully appended, otherwise false.

If the operation was unsuccessful, you might invoke the AVAssetWriter object’s finishWriting method in order to save a partially completed asset. Do not modify a CVPixelBuffer or its contents after you have passed it to this method.
17.20. CLASS AVASSETWRITERINPUTPIXELBUFFERADAPTORMBS

17.20.5 assetWriterInput as AVAssetWriterInputMBS

Function: The asset writer input to which the adaptor should append pixel buffers. (read-only)

17.20.6 assetWriterInputPixelBufferAdaptorWithAssetWriterInput(input as AVAssetWriterInputMBS, sourcePixelBufferAttributes as dictionary) as AVAssetWriterInputPixelBufferAdaptorMBS

Function: Returns a new pixel buffer adaptor to receive pixel buffers for writing to the output file.
Notes:
input: The asset writer input to which the receiver should append pixel buffers. Currently, only asset writer inputs that accept media data of type AVMediaTypeVideo can be used to initialize a pixel buffer adaptor. It is an error to pass a sample buffer input that is already attached to another instance of AVAssetWriterInputPixelBufferAdaptor.
sourcePixelBufferAttributes: The attributes of pixel buffers that will be vended by the input’s CVPixelBufferPool. Pixel buffer attributes keys for the pixel buffer pool are defined in `<CoreVideo/CVPixelBuffer.h>`. To take advantage of the improved efficiency of appending buffers created from the adaptor’s pixel buffer pool, you should specify pixel buffer attributes that most closely accommodate the source format of the video frames being appended. Pass nil if you do not need a pixel buffer pool for allocating buffers.

Returns a new pixel buffer adaptor to receive pixel buffers for writing to the output file.

To specify the pixel format type, the pixelBufferAttributes dictionary should contain a value for kCVPixelBufferPixelFormatTypeKey. For example, use kCVPixelFormatType_32BGRA as Integer for 8-bit-per-channel BGRA, or use kCVPixelFormatType_420YpCbCr8BiPlanarVideoRange as Integer for 2-plane YCbCr.

17.20.7 available as boolean

Function: Whether this class is available.
Notes: Returns true on Mac OS X 10.7 and newer.
17.20.8 Constructor(input as AVAssetWriterInputMBS, sourcePixelBufferAttributes as dictionary)

Function: Creates a new pixel buffer adaptor to receive pixel buffers for writing to the output file.
Notes:
input: The asset writer input to which the receiver should append pixel buffers.
Currently, only asset writer inputs that accept media data of type AVMediaTypeVideo can be used to initialize a pixel buffer adaptor.
It is an error to pass a sample buffer input that is already attached to another instance of AVAssetWriterInputPixelBufferAdaptor.

sourcePixelBufferAttributes: The attributes of pixel buffers that will be vended by the input’s CVPixelBufferPool.
Pixel buffer attributes keys for the pixel buffer pool are defined in `<CoreVideo/CVPixelBuffer.h>`. To take advantage of the improved efficiency of appending buffers created from the adaptor’s pixel buffer pool, you should specify pixel buffer attributes that most closely accommodate the source format of the video frames being appended.
Pass nil if you do not need a pixel buffer pool for allocating buffers.

Returns a new pixel buffer adaptor to receive pixel buffers for writing to the output file.

To specify the pixel format type, the pixelBufferAttributes dictionary should contain a value for kCVPixelBufferPixelFormatTypeKey. For example, use kCVPixelFormatType_32BGRA as Integer for 8-bit-per-channel BGRA, or use kCVPixelFormatType_420YpCbCr8BiPlanarVideoRange as Integer for 2-plane YCbCr.

17.20.9 sourcePixelBufferAttributes as Dictionary

Function: The pixel buffer attributes of pixel buffers that will be vended by the adaptor’s CVPixelBufferPool. (read-only)
Notes: The value of this property is a dictionary containing pixel buffer attributes keys defined in `<CoreVideo/CVPixelBuffer.h>`.

17.20.10 Properties

17.20.11 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)
17.21 class AVAssetWriterMBS

17.21.1 class AVAssetWriterMBS


**Function:** You use an AVAssetWriter object to write media data to a new file of a specified audiovisual container type, such as a QuickTime movie file or an MPEG-4 file, with support for automatic interleaving of media data for multiple concurrent tracks.

**Notes:**

You can get the media data for one or more assets from instances of AVAssetReader or even from outside the AV Foundation API set. Media data is presented to AVAssetWriter for writing in the form of CMSampleBuffers. Sequences of sample data appended to the asset writer inputs are considered to fall within "sample-writing sessions." You must call startSessionAtSourceTime to begin one of these sessions.

Using AVAssetWriter, you can optionally re-encode media samples as they are written. You can also optionally write metadata collections to the output file.

You can only use a given instance of AVAssetWriter once to write to a single file. If you want to write to files multiple times, you must use a new instance of AVAssetWriter each time.

17.21.2 Methods

17.21.3 addInput(input as AVAssetWriterInputMBS)


**Function:** Adds an input to the receiver.

**Notes:**

input: The asset writer input to be added.

Inputs are created with a media type and output settings. These both must be compatible with the receiver. You cannot add inputs after writing has started.

17.21.4 addInputGroup(inputGroup as AVAssetWriterInputGroupMBS)


**Function:** Adds an asset writer input group instance to the asset writer.

**Notes:**

inputGroup: The asset writer input group to be added.
The asset writer will mark the tracks associated with grouped inputs as mutually exclusive to each other for playback or other processing, if the output container format supports mutually exclusive relationships among tracks.

When an input group is added to an asset writer, the value of marksOutputTrackAsEnabled for the AVAssetWriterInput instance set as the default input will automatically be set to true and all other inputs in the group will be set to false.

Input groups cannot be added after writing has started.

Available in OS X v10.9 and later.

17.21.5 assetWriterWithFile(outputFile as folderitem, outputFileType as string, byref error as NSErrorMBS) as AVAssetWriterMBS


Function: Returns an asset writer for writing to the file identified by a given folderitem in a format specified by a given UTI.

Notes:

outputFile: The location of the file to be written.
outputFileType: The UTI-identified format of the file to be written.
For example, AVFileTypeQuickTimeMovie for a QuickTime movie file, AVFileTypeMPEG4 for an MPEG-4 file, and AVFileTypeAMR for an adaptive multi-rate audio format file.
Error: If initialization of the asset writer fails, upon return contains an error object that describes the problem.

Returns an asset writer for writing to the file identified by URL in the format specified by outputFileType, or nil if the writer could not be initialized.
Writing will fail if a file already exists at URL. UTIs for container formats that can be written are declared in AVMediaFormat.h.

17.21.6 assetWriterWithURL(outputURL as string, outputFileType as string, byref error as NSErrorMBS) as AVAssetWriterMBS


Function: Returns an asset writer for writing to the file identified by a given URL in a format specified by a given UTI.

Notes:

outputURL: The location of the file to be written. The URL must be a file URL.
outputFileType: The UTI-identified format of the file to be written.
For example, AVFileTypeQuickTimeMovie for a QuickTime movie file, AVFileTypeMPEG4 for an MPEG-4 file, and AVFileTypeAMR for an adaptive multi-rate audio format file.
Error: If initialization of the asset writer fails, upon return contains an error object that describes the problem.
Returns an asset writer for writing to the file identified by URL in the format specified by outputFileType, or nil if the writer could not be initialized. Writing will fail if a file already exists at URL. UTIs for container formats that can be written are declared in AVMediaFormat.h.

### 17.21.7 available as boolean


**Function:** Whether this class is available.

**Notes:** Returns true on Mac OS X 10.7 and newer.

### 17.21.8 availableMediaTypes as string()


**Function:** The media types for which inputs can be added (read-only)

**Notes:** Some media types may not be accepted within the type of file with which the writer was initialized.

### 17.21.9 canAddInput(input as AVAssetWriterInputMBS) as boolean


**Function:** Returns a Boolean value that indicates whether a given input can be added to the receiver.

**Notes:**

input: The asset writer input to be tested.

Returns true if input can be added, otherwise false.

You cannot add an input that accepts media data of a type that is not compatible with the receiver, or with output settings that are not compatible with the receiver.

### 17.21.10 canAddInputGroup(input as AVAssetWriterInputGroupMBS) as boolean


**Function:** Returns whether an input group can be added to the receiver.

**Notes:**

inputGroup: The asset writer input group to be added.

Returns true if inputGroup can be added to the inputGroups, otherwise false.

If outputFileType specifies a container format that does not support mutually exclusive relationships among
tracks, or if the specified instance of AVAssetWriterInputGroup contains inputs with media types that cannot be related, the group cannot be added.
Available in OS X v10.9 and later.

17.21.11 **canApplyOutputSettings**(outputSettings as dictionary, mediaType as string) as boolean

**Function:** Returns a Boolean value that indicates whether give output settings are supported for a specified media type.
**Notes:**

outputSettings: The output settings to validate.
mediaType: The media type for which the output settings are validated.

Returns true if the output settings in outputSettings are supported for mediaType, otherwise false.
You can use this method to test, for example, whether video output settings that specify H.264 compression will fail (as would be the case if the container format for which the writer was initialized does not support the carriage of H.264-compressed video).

17.21.12 **cancelWriting**

**Function:** Instructs the writer to cancel writing.
**Notes:** This method blocks until writing is canceled.

17.21.13 **Constructor**(outputFile as folderitem, outputFileType as string, byref error as NSErrorMBS)

**Function:** Initializes an asset writer for writing to the file identified by a given URL in a format specified by a given UTI.
**Notes:**

outputFile: The location of the file to be written.
outputFileType: The UTI-identified format of the file to be written.
For example, AVFileTypeQuickTimeMovie for a QuickTime movie file, AVFileTypeMPEG4 for an MPEG-4 file, and AVFileTypeAMR for an adaptive multi-rate audio format file.
Error: If initialization of the asset writer fails, upon return contains an error object that describes the problem.
Returns an asset writer for writing to the file identified by URL in the format specified by outputFileType, or nil if the writer could not be initialized.

Writing will fail if a file already exists at URL. UTIs for container formats that can be written are declared in AVMediaFormat.h.

See also:

- 17.21.14 Constructor(outputURL as string, outputFileType as string, byref error as NSErrorMBS)

### 17.21.14 Constructor(outputURL as string, outputFileType as string, byref error as NSErrorMBS)

**Function:** Initializes an asset writer for writing to the file identified by a given URL in a format specified by a given UTI.
**Notes:**
outputURL: The location of the file to be written. The URL must be a file URL.
outputFileType: The UTI-identified format of the file to be written.
For example, AVFileTypeQuickTimeMovie for a QuickTime movie file, AVFileTypeMPEG4 for an MPEG-4 file, and AVFileTypeAMR for an adaptive multi-rate audio format file.
Error: If initialization of the asset writer fails, upon return contains an error object that describes the problem.

Returns an asset writer for writing to the file identified by URL in the format specified by outputFileType, or nil if the writer could not be initialized.

Writing will fail if a file already exists at URL. UTIs for container formats that can be written are declared in AVMediaFormat.h.

See also:

- 17.21.13 Constructor(outputFile as folderitem, outputFileType as string, byref error as NSErrorMBS)

### 17.21.15 endSessionAtSourceTime(endTime as CMTimeMBS)

**Function:** Concludes an explicit sample-writing session.
**Notes:**
endTime: The ending asset time for the sample-writing session, in the timeline of the source samples.
You may invoke this method to complete a session you began by invoking `startSessionAtSourceTime`.

You do not need to call this method; if you call `finishWriting` without calling this method, the session’s effective end time will be the latest end timestamp of the session’s samples (that is, no samples will be edited out at the end).

The `endTime` defines the moment on the timeline of source samples at which the session ends. In the case of the QuickTime movie file format, each sample-writing session’s `startTime`-`endTime` pair corresponds to a period of movie time into which the session’s samples are inserted. Samples with later timestamps will be still be added to the media but will be edited out of the movie. So if the first session has duration $D_1 = endTime - startTime$, it will be inserted into the movie at movie time $0$ through $D_1$; the second session would be inserted into the movie at movie time $D_1$ through $D_1+D_2$, and so on.

It is legal to have a session with no samples; this will cause creation of an empty edit of the prescribed duration.

### 17.21.16 error as NSErrorMBS


**Function:** If the receiver’s status is `AVAssetWriterStatusFailed`, describes the error that caused the failure. (read-only)

**Notes:** The value of this property is an error object that describes what caused the receiver to no longer be able to write to its output file. If the receiver’s status is not `AVAssetWriterStatusFailed`, the value of this property is nil.

### 17.21.17 finishWriting as boolean


**Function:** Completes the writing of the output file.

**Notes:**

Returns true if writing can be finished, otherwise false.

This method blocks until writing is finished. When this method returns successfully, the file being written by the receiver is complete and ready to use. You can check the values of the status and error properties for more information on why writing could not be finished.
17.21.18  \texttt{finishWritingWithCompletionHandler(tag as Variant = nil)}

\textbf{Function:} Marks all unfinished inputs as finished and completes the writing of the output file.
\textbf{Notes:} 
Calls later AVFoundationMBS.finishWritingCompleted event.

This method returns immediately and causes its work to be performed asynchronously. To determine whether
the operation succeeded, you can check the value of the status property within the handler parameter. If
the status is AVAssetWriterStatusFailed, then the error property will contain an instance of NSError that
describes the failure.

To guarantee that all sample buffers are successfully written, you must ensure that all calls to appendSampleBuffer
and appendPixelBuffer have returned before invoking this method.

Available in OS X v10.9 and later.

With tag you can pass any value you like to the event later. This can be for example an object reference or
a number in an array. Be aware that the reference to this tag value is kept until the event is called and can
cause memory reference cycles.

17.21.19  \texttt{inputGroups as AVAssetWriterInputGroupMBS()}

\textbf{Function:} An array of asset writer input groups that have been added to the asset writer. (read-only)
\textbf{Notes:} 
The value of this property is an array containing concrete instances of AVAssetWriterInputGroup.
Input groups are added to the receiver using the addInputGroup method.
Available in OS X v10.9 and later.

17.21.20  \texttt{inputs as AVAssetWriterInputMBS()}

\textbf{Function:} The asset writer inputs associated with the asset writer. (read-only)
\textbf{Notes:} The array contains AVAssetWriterInput objects.
17.21. CLASS AVASSETWRITERMBS

17.21.21 metadata as AVMetadataItemMBS()

Function: The collection of metadata for association with the asset and for carriage in the output file.
Notes:
The array contains AVMetadataItem objects.
See also SetMetaData.

17.21.22 movieFragmentInterval as CMTimeMBS

Function: The time to elapse between writing movie fragments.
Notes:
This property only applies to the QuickTime movie file type.

Sometimes a write operation may be unexpectedly interrupted (because a process crashes, for example). By using movie fragments, such a partially-written QuickTime movie file can be successfully opened and played up to the largest multiple of movieFragmentInterval smaller than the point at which the write operation was interrupted.

The default value is kCMTimeInvalid, which means that movie fragments should not be used, that only a movie atom describing all of the media in the file should be written.

You cannot set the value after writing has started.

17.21.23 movieTimeScale as Double

Function: Specifies the asset-level time scale to be used.
Notes:
For file types that contain a moov atom, such as QuickTime Movie files, specifies the asset-level time scale to be used.
The default value is 0, which indicates that you should choose a convenient value, if applicable.
You cannot set the value after writing has started.
17.21.24  outputFileType as string

Function: The file format of the writer’s output. (read-only)
Notes: The format is identified by the UTI, specified when the writer is initialized.

17.21.25  outputURL as string

Function: The URL to which output is directed. (read-only)
Notes: The URL is the same as that specified when the writer is initialized.

17.21.26  setMetadata(items() as AVMetadataItemMBS)

Function: Set the collection of metadata for association with the asset and for carriage in the output file.
Notes:
The array contains AVMetadataItem objects.
You cannot set the value after writing has started.

17.21.27  shouldOptimizeForNetworkUse as boolean

Function: Indicates whether the output file should be written in way that makes it more suitable for playback over a network.
Notes:
When the value of this property is true, the output file will be written in such a way that playback can start after only a small amount of the file is downloaded.
The default value is false.
You cannot set the value after writing has started.

17.21.28  startSessionAtSourceTime(startTime as CMTimeMBS)

Function: Initiates a sample-writing session for the output asset.
Notes:
startTime: The starting asset time for the sample-writing session, in the timeline of the source samples.

Sequences of sample data appended to the asset writer inputs are considered to fall within "sample-writing sessions." You must call this method to begin one of these sessions.

Each writing session has a start time which, where allowed by the file format being written, defines the mapping from the timeline of source samples onto the file's timeline. In the case of the QuickTime movie file format, the first session begins at movie time 0, so a sample appended with timestamp T will be played at movie time (T - startTime). Samples with timestamps before startTime will still be added to the output media but will be edited out of the movie. If the earliest buffer for an input is later than startTime, an empty edit will be inserted to preserve synchronization between tracks of the output asset.

It is an error to invoke this method twice in a row without invoking endSessionAtSourceTime in between.

17.21.29 startWriting as boolean

Function: Tells the writer to start writing its output.
Notes:
Returns true if writing can be started, otherwise false.

You must call this method after all inputs have added and other configuration properties have been set to tell the receiver to prepare for writing. After invoking this method, you can start writing sessions using startSessionAtSourceTime and can write media samples using the methods provided by each of the writer’s inputs.

status signals the terminal state of the asset reader, and if a failure occurs, error describes the failure.

17.21.30 status as Integer

Function: The status of writing samples to the receiver’s output file. (read-only)
Notes: The value of this property is an AVAssetWriterStatus constant that indicates whether writing is in progress, has completed successfully, has been canceled, or has failed. If an attempt to append samples fails, you can check the value of this property to determine why no more samples could be written.
17.21.31 Properties

17.21.32 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

17.21.33 Constants

17.21.34 AVAssetWriterStatusCancelled = 4

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the status constants.
Notes: Cancelled

17.21.35 AVAssetWriterStatusCompleted = 2

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the status constants.
Notes: Completed

17.21.36 AVAssetWriterStatusFailed = 3

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the status constants.
Notes: Failed

17.21.37 AVAssetWriterStatusUnknown = 0

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the status constants.
Notes: Unknown

17.21.38 AVAssetWriterStatusWriting = 1

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the status constants.
Notes: Writing
17.22 class AVAsynchronousVideoCompositionRequestMBS

17.22.1 class AVAsynchronousVideoCompositionRequestMBS

Function: An AVAsynchronousVideoCompositionRequest instance contains the information necessary for a video compositor to render an output pixel buffer.
Notes:
The video compositor must implement the AVVideoCompositing protocol.
Available in OS X v10.9 and later.

17.22.2 Methods

17.22.3 available as boolean

Function: Whether this class is available.
Notes: Returns true on Mac OS X 10.9.

17.22.4 Constructor

Function: The constructor.

17.22.5 copy as AVAsynchronousVideoCompositionRequestMBS

Function: Creates a copy of the object.

17.22.6 finishCancelledRequest

Function: Invoked by the custom compositor when the composition request was canceled.
Notes: Available in OS X v10.9 and later.
17.22.7  finishWithComposedVideoFrame(composedVideoFrame as CVPixelBufferMBS)

Function: Invoked by the custom compositor when the composition request succeeded.
Notes:
composedVideoFrame: The successfully composed pixel buffer.
Available in OS X v10.9 and later.

17.22.8  finishWithError(error as NSErrorMBS)

Function: Invoked by the custom compositor when the composition request failed.
Notes:
error: Returns the error encountered during the compositing.
Available in OS X v10.9 and later.

17.22.9  sourceFrameByTrackID(trackID as Integer) as CVPixelBufferMBS

Function: Returns the source pixel buffer for the specified track ID.
Notes:
trackID: The track ID for the requested source frame.
Returns the source CVPixelBufferRef for trackID.
Available in OS X v10.9 and later.

17.22.10  sourceTrackIDs as Integer()

Function: The track IDs of all the source buffers that are available to compose the frame. (read-only)
Notes: Available in OS X v10.9 and later.

17.22.11  Properties

17.22.12  compositionTime as CMTimeMBS

Function: The time for which the frame should be composed. (read-only)
Notes:
17.22. CLASS AVASYNCHRONOUSVIDEOCOMPOSITIONREQUESTMBS

Available in OS X v10.9 and later.
(Read only property)

17.22.13 Handle as Integer

**Function:** The internal object reference.
**Notes:** (Read and Write property)

17.22.14 renderContext as AVVideoCompositionRenderContextMBS

**Function:** The video composition render context making the request. (read-only)
**Notes:**
Available in OS X v10.9 and later.
(Read only property)

17.22.15 videoCompositionInstruction as AVVideoCompositionInstructionMBS

**Function:** The video composition instruction to use to compose the frame. (read-only)
**Notes:**
Available in OS X v10.9 and later.
(Read only property)
17.23 class AVAudioMixInputParametersMBS

17.23.1 class AVAudioMixInputParametersMBS


Function: An AVAudioMixInputParameters object represents the parameters that should be applied to an audio track when it is added to a mix.

Notes:

Audio volume is currently supported as a time-varying parameter. AVAudioMixInputParameters has a mutable subclass, AVMutableAudioMixInputParameters.

You use an instance AVAudioMixInputParameters to apply audio volume ramps for an input to an audio mix. Mix parameters are associated with audio tracks via the trackID property.

Before the first time at which a volume is set, a volume of 1.0 used; after the last time for which a volume has been set, the last volume is used. Within the time range of a volume ramp, the volume is interpolated between the start volume and end volume of the ramp. For example, setting the volume to 1.0 at time 0 and also setting a volume ramp from a volume of 0.5 to 0.2 with a timeRange of [4.0, 5.0] results in an audio volume parameters that hold the volume constant at 1.0 from 0.0 sec to 4.0 sec, then cause it to jump to 0.5 and descend to 0.2 from 4.0 sec to 9.0 sec, holding constant at 0.2 thereafter.

17.23.2 Methods

17.23.3 available as boolean


Function: Whether this class is available.

Notes: Returns true on Mac OS X 10.7 and newer.

17.23.4 Constructor


Function: The default constructor.

17.23.5 copy as AVAudioMixInputParametersMBS


Function: Creates a copy of the object.
17.23.6 getVolumeRampForTime(time as CMTimeMBS, byref startVolume as Double, byref endVolume as Double, byref timeRange as CMTimeRangeMBS) as boolean


**Function:** Obtains the volume ramp that includes the specified time.

**Notes:**
- time: If a ramp with a time range that contains the specified time has been set, information about the effective ramp for that time is supplied. Otherwise, information about the first ramp that starts after the specified time is supplied.
- startVolume: A variable to receive the starting volume value for the volume ramp.
- endVolume: A variable to receive the ending volume value for the volume ramp.
- timeRange: A variable to a CMTimeRange to receive the time range of the volume ramp.

Returns true if the values were retrieved successfully, otherwise false. Returns false if time is beyond the duration of the last volume ramp that has been set.

17.23.7 mutableCopy as AVMutableAudioMixInputParametersMBS


**Function:** Creates an editable copy of the object.

17.23.8 trackID as Integer


**Function:** The ID of the audio track to which the parameters should be applied. (read-only)

17.23.9 Properties

17.23.10 Handle as Integer


**Function:** The internal object reference.

**Notes:** (Read and Write property)
17.24 class AVAudioMixMBS

17.24.1 class AVAudioMixMBS

Function: An AVAudioMix object manages the input parameters for mixing audio tracks.
Notes: It allows custom audio processing to be performed on audio tracks during playback or other operations. This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

17.24.2 Methods

17.24.3 available as boolean

Function: Whether this class is available.
Notes: Returns true on Mac OS X 10.7 and newer.

17.24.4 Constructor

Function: The private constructor.

17.24.5 copy as AVAudioMixMBS

Function: Creates a copy of the object.

17.24.6 inputParameters as AVAudioMixInputParametersMBS()

Function: The parameters for inputs to the mix (read-only)
Notes: The array contains instances of AVAudioMixInputParameters. Note that an instance of AVAudioMixInputParameters is not required for each audio track that contributes to the mix; audio for those without associated AVAudioMixInputParameters objects will be included in the mix, processed according to default behavior.
17.24.7  mutableCopy as AVMutableAudioMixMBS

MBS AVFoundation Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Creates a mutable copy.

17.24.8  Properties

17.24.9  Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)
17.25   class AVAudioPlayerMBS

17.25.1   class AVAudioPlayerMBS


Function: An instance of the AVAudioPlayer class, called an audio player, provides playback of audio data from a file or memory.

Example:

```vbs
    dim f as FolderItem = SpecialFolder.Desktop.Child("test.mp3")
    dim e as NSErrorMBS
    dim u as new AVAudioPlayerMBS(f,e)
    if e<>nil then
        MsgBox e.localizedDescription
    else
        MsgBox str(u.duration)+" seconds"
    end if
```

Notes:

Apple recommends that you use this class for audio playback unless you are playing audio captured from a network stream or require very low I/O latency. For an overview of audio technologies, see Audio & Video Starting Point and "Using Audio" in Multimedia Programming Guide.

Using an audio player you can:

- Play sounds of any duration
- Play sounds from files or memory buffers
- Loop sounds
- Play multiple sounds simultaneously, one sound per audio player, with precise synchronization
- Control relative playback level, stereo positioning, and playback rate for each sound you are playing
- Seek to a particular point in a sound file, which supports such application features as fast forward and rewind
- Obtain data you can use for playback-level metering

The AVAudioPlayer class lets you play sound in any audio format available in OS X. The plugin provides the events for this audio player in AVFoundationMBS class.

To play, pause, or stop an audio player, call one of its playback control methods, described in "Configuring and Controlling Playback."
To configure an appropriate audio session for playback, refer to AVAudioSession Class Reference and AVAudioSessionDelegate Protocol Reference. To learn how your choice of file formats impacts the simultaneous playback of multiple sounds, refer to "iPhone Hardware and Software Audio Codecs" in Multimedia Programming Guide.

17.25.2 Methods

17.25.3 audioPlayerWithData(Data as MemoryBlock, byref error as NSErrorMBS) as AVAudioPlayerMBS

Function: Initializes and returns an audio player for playing a designated memory buffer.
Notes:

data: A block of data containing a sound to play. The audio data must be in a format supported by Core Audio. For a list of supported formats, see "Using Audio" in Multimedia Programming Guide.
Error: Pass in the address of a nil-initialized NSError object. If an error occurs, upon return the NSError object describes the error. If you do not want error information, pass in NULL.

On success, you get an initialized AVAudioPlayer object. Else the handle property is 0 and the Error parameter contains a code that describes the problem.
See also:

- 17.25.4 audioPlayerWithData(Data as MemoryBlock, fileTypeHintUtiString as string, byref error as NSErrorMBS) as AVAudioPlayerMBS
- 17.25.5 audioPlayerWithData(Data as String, byref error as NSErrorMBS) as AVAudioPlayerMBS
- 17.25.6 audioPlayerWithData(Data as String, fileTypeHintUtiString as string, byref error as NSErrorMBS) as AVAudioPlayerMBS

17.25.4 audioPlayerWithData(Data as MemoryBlock, fileTypeHintUtiString as string, byref error as NSErrorMBS) as AVAudioPlayerMBS

Function: Initializes and returns an audio player using the specified data and file type hint.
Notes:

data: The data object containing the audio.
fileTypeHintUtiString: A UTI that is used as a file type hint. The supported UTIs are defined in File Format UTIs.
error: If an error occurs, upon return the NSError object describes the error.
The utiString file type hint tells the parser what kind of sound data to expect so that data that may possibly be corrupt, can be successfully parsed.

Available in OS X v10.9 and later, but plugin calls variant without filetypehint on older versions.

See also:

- 17.25.3 `audioPlayerWithData(Data as MemoryBlock, byref error as NSErrorMBS) as AVAudioPlayerMBS`
- 17.25.5 `audioPlayerWithData(Data as String, byref error as NSErrorMBS) as AVAudioPlayerMBS`
- 17.25.6 `audioPlayerWithData(Data as String, fileTypeHintUtiString as string, byref error as NSErrorMBS) as AVAudioPlayerMBS`

### 17.25.5 `audioPlayerWithData(Data as String, byref error as NSErrorMBS) as AVAudioPlayerMBS`

MBS AVFoundation Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** Initializes and returns an audio player for playing a designated memory buffer.

**Notes:**

- **data:** A block of data containing a sound to play. The audio data must be in a format supported by Core Audio. For a list of supported formats, see "Using Audio" in Multimedia Programming Guide.
- **Error:** Pass in the address of a nil-initialized NSError object. If an error occurs, upon return the NSError object describes the error. If you do not want error information, pass in NULL.

On success, you get an initialized AVAudioPlayer object. Else the handle property is 0 and the Error parameter contains a code that describes the problem.

See also:

- 17.25.3 `audioPlayerWithData(Data as MemoryBlock, byref error as NSErrorMBS) as AVAudioPlayerMBS`
- 17.25.4 `audioPlayerWithData(Data as MemoryBlock, fileTypeHintUtiString as string, byref error as NSErrorMBS) as AVAudioPlayerMBS`
- 17.25.6 `audioPlayerWithData(Data as String, fileTypeHintUtiString as string, byref error as NSErrorMBS) as AVAudioPlayerMBS`

### 17.25.6 `audioPlayerWithData(Data as String, fileTypeHintUtiString as string, byref error as NSErrorMBS) as AVAudioPlayerMBS`

MBS AVFoundation Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** Initializes and returns an audio player using the specified data and file type hint.

**Notes:**

- **data:** A block of data containing a sound to play. The audio data must be in a format supported by Core Audio. For a list of supported formats, see "Using Audio" in Multimedia Programming Guide.
- **Error:** Pass in the address of a nil-initialized NSError object. If an error occurs, upon return the NSError object describes the error. If you do not want error information, pass in NULL.

On success, you get an initialized AVAudioPlayer object. Else the handle property is 0 and the Error parameter contains a code that describes the problem.
data: The data object containing the audio.

fileTypeHintUtiString: A UTI that is used as a file type hint. The supported UTIs are defined in File Format UTIs.

error: If an error occurs, upon return the NSError object describes the error.

The utiString file type hint tells the parser what kind of sound data to expect so that data that may possibly be corrupt, can be successfully parsed.

Available in OS X v10.9 and later, but plugin calls variant without filetypehint on older versins.

See also:

- 17.25.3 audioPlayerWithData(Data as MemoryBlock, byref error as NSErrorMBS) as AVAudioPlayerMBS
- 17.25.4 audioPlayerWithData(Data as MemoryBlock, fileTypeHintUtiString as string, byref error as NSErrorMBS) as AVAudioPlayerMBS
- 17.25.5 audioPlayerWithData(Data as String, byref error as NSErrorMBS) as AVAudioPlayerMBS

17.25.7 audioPlayerWithFile(File as folderitem, byref error as NSErrorMBS) as AVAudioPlayerMBS


Function: Initializes and returns an audio player for playing a designated sound file.

Example:

```vbs
Dim f As FolderItem = SpecialFolder.Desktop.Child("test.mp3")
Dim e As NSErrorMBS
Dim u As AVAudioPlayerMBS.audioPlayerWithFile(f, e)
If e <> nil Then
    MsgBox e.localizedDescription
Else
    MsgBox str(u.duration) & " seconds"
End If
```

Notes:

File: A folderitem identifying the sound file to play. The audio data must be in a format supported by Core Audio. For a list of supported formats, see "Using Audio" in Multimedia Programming Guide.

Error: If an error occurs, upon return the NSError object describes the error.

On success, you have an initialized AVAudioPlayer object. On failure, the Error parameter contains a code that describes the problem.

See also:
17.25.8  **audioPlayerWithFile(File as folderitem, fileTypeHintUtiString as string, byref error as NSErrorMBS) as AVAudioPlayerMBS**


**Function:** Initializes and returns an audio player using the specified URL and file type hint.

**Notes:**

- **url:** A URL identifying the sound file to play. The audio data must be in a format supported by Core Audio.
- **utiString:** A UTI that is used as a file type hint. The supported UTIs are defined in File Format UTIs. See AVFileType* strings.
- **Error:** If an error occurs, upon return the NSError object describes the error.

The utiString file type hint tells the parser what kind of sound data to expect so that files which are not self identifying, or possibly even corrupt, can be successfully parsed.

Available in OS X v10.9 and later, but plugin calls variant without hint for older versions.

See also:

- 17.25.7 audioPlayerWithFile(File as folderitem, byref error as NSErrorMBS) as AVAudioPlayerMBS 3167

17.25.9  **audioPlayerWithURL(URL as string, byref error as NSErrorMBS) as AVAudioPlayerMBS**


**Function:** Initializes and returns an audio player for playing a designated sound file.

**Notes:**

- **url:** A URL identifying the sound file to play. The audio data must be in a format supported by Core Audio.
- For a list of supported formats, see "Using Audio" in Multimedia Programming Guide.
- **Error:** If an error occurs, upon return the NSError object describes the error.

On success, you have an initialized AVAudioPlayer object. On failure, the Error parameter contains a code that describes the problem.

See also:

- 17.25.10 audioPlayerWithURL(URL as string, fileTypeHintUtiString as string, byref error as NSErrorMBS) as AVAudioPlayerMBS 3169
17.25.10 audioPlayerWithURL(URL as string, fileTypeHintUtiString as string, byref error as NSErrorMBS) as AVAudioPlayerMBS


Function: Initializes and returns an audio player using the specified URL and file type hint.

Notes:

url: A URL identifying the sound file to play. The audio data must be in a format supported by Core Audio.
utiString: A UTI that is used as a file type hint. The supported UTIs are defined in File Format UTIs. See AVFileType* strings.
Error: If an error occurs, upon return the NSError object describes the error.

The utiString file type hint tells the parser what kind of sound data to expect so that files which are not self identifying, or possibly even corrupt, can be successfully parsed.

Available in OS X v10.9 and later, but plugin calls variant without hint for older versions.

See also:

- 17.25.9 audioPlayerWithURL(URL as string, byref error as NSErrorMBS) as AVAudioPlayerMBS 3168

17.25.11 available as boolean


Function: Whether this class is available.

Notes: Returns true on Mac OS X 10.7 and newer.

17.25.12 averagePowerForChannel(channel as Integer) as Double


Function: Returns the average power for a given channel, in decibels, for the sound being played.

Notes:

channelNumber: The audio channel whose average power value you want to obtain. Channel numbers are zero-indexed. A monaural signal, or the left channel of a stereo signal, has channel number 0.

Returns a floating-point representation, in decibels, of a given audio channel’s current average power. A return value of 0 dB indicates full scale, or maximum power; a return value of -160 dB indicates minimum power (that is, near silence).

If the signal provided to the audio player exceeds full scale, then the return value may exceed 0 (that is, it may enter the positive range).
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To obtain a current average power value, you must call the updateMeters method before calling this method.

17.25.13 Constructor(Data as MemoryBlock, byref error as NSErrorMBS)


Function: Initializes and returns an audio player for playing a designated memory buffer.

Notes:

data: A block of data containing a sound to play. The audio data must be in a format supported by Core Audio. For a list of supported formats, see "Using Audio" in Multimedia Programming Guide.

Error: Pass in the address of a nil-initialized NSError object. If an error occurs, upon return the NSError object describes the error. If you do not want error information, pass in NULL.

On success, you get an initialized AVAudioPlayer object. Else the handle property is 0 and the Error parameter contains a code that describes the problem.

See also:

- 17.25.14 Constructor(Data as MemoryBlock, fileTypeHintUtiString as string, byref error as NSErrorMBS) 3170
- 17.25.15 Constructor(File as folderitem, byref error as NSErrorMBS) 3171
- 17.25.16 Constructor(File as folderitem, fileTypeHintUtiString as string, byref error as NSErrorMBS) 3172
- 17.25.17 Constructor(URL as string, byref error as NSErrorMBS) 3172
- 17.25.18 Constructor(URL as string, fileTypeHintUtiString as string, byref error as NSErrorMBS) 3173

17.25.14 Constructor(Data as MemoryBlock, fileTypeHintUtiString as string, byref error as NSErrorMBS)


Function: Initializes and returns an audio player using the specified data and file type hint.

Notes:

data: The data object containing the audio.

fileTypeHintUtiString: A UTI that is used as a file type hint. The supported UTIs are defined in File Format UTIs.

error: If an error occurs, upon return the NSError object describes the error.

The utiString file type hint tells the parser what kind of sound data to expect so that data that may possibly be corrupt, can be successfully parsed.

Available in OS X v10.9 and later, but plugin calls variant without filetypehint on older versins.

See also:
17.25. **CLASS AVAUDIOPLAYERMBS**

- 17.25.13 Constructor(Data as MemoryBlock, byref error as NSErrorMBS) 3170
- 17.25.15 Constructor(File as folderitem, byref error as NSErrorMBS) 3171
- 17.25.16 Constructor(File as folderitem, fileTypeHintUtiString as string, byref error as NSErrorMBS) 3172
- 17.25.17 Constructor(URL as string, byref error as NSErrorMBS) 3172
- 17.25.18 Constructor(URL as string, fileTypeHintUtiString as string, byref error as NSErrorMBS) 3173

### 17.25.15 Constructor(File as folderitem, byref error as NSErrorMBS)

**Function:** Initializes and returns an audio player for playing a designated sound file.  
**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child(“test.mp3”)  
dim e as NSErrorMBS  
dim u as new AVAudioPlayerMBS(f,e)  
if e<>nil then  
MsgBox e.localizedDescription  
else  
MsgBox str(u.duration)+” seconds”  
end if
```

**Notes:**

File: A folderitem identifying the sound file to play. The audio data must be in a format supported by Core Audio. For a list of supported formats, see "Using Audio" in Multimedia Programming Guide.  
Error: If an error occurs, upon return the NSError object describes the error.

On success, you have an initialized AVAudioPlayer object. On failure, the Error parameter contains a code that describes the problem.  
**See also:**

- 17.25.13 Constructor(Data as MemoryBlock, byref error as NSErrorMBS) 3170
- 17.25.14 Constructor(Data as MemoryBlock, fileTypeHintUtiString as string, byref error as NSErrorMBS) 3170
- 17.25.16 Constructor(File as folderitem, fileTypeHintUtiString as string, byref error as NSErrorMBS) 3172
- 17.25.17 Constructor(URL as string, byref error as NSErrorMBS) 3172
- 17.25.18 Constructor(URL as string, fileTypeHintUtiString as string, byref error as NSErrorMBS) 3173
17.25.16 Constructor(File as folderitem, fileTypeHintUtiString as string, byref error as NSErrorMBS)


Function: Initializes and returns an audio player using the specified URL and file type hint.

Notes:

url: A URL identifying the sound file to play. The audio data must be in a format supported by Core Audio.
utiString: A UTI that is used as a file type hint. The supported UTIs are defined in File Format UTIs. See AVFileType* strings.
Error: If an error occurs, upon return the NSError object describes the error.

The utiString file type hint tells the parser what kind of sound data to expect so that files which are not self identifying, or possibly even corrupt, can be successfully parsed.

Available in OS X v10.9 and later, but plugin calls variant without hint for older versions.

See also:

- 17.25.13 Constructor(Data as MemoryBlock, byref error as NSErrorMBS) 3170
- 17.25.14 Constructor(Data as MemoryBlock, fileTypeHintUtiString as string, byref error as NSErrorMBS) 3170
- 17.25.15 Constructor(File as folderitem, byref error as NSErrorMBS) 3171
- 17.25.17 Constructor(URL as string, byref error as NSErrorMBS) 3172
- 17.25.18 Constructor(URL as string, fileTypeHintUtiString as string, byref error as NSErrorMBS) 3173

17.25.17 Constructor(URL as string, byref error asNSErrorMBS)


Function: Initializes and returns an audio player for playing a designated sound file.

Notes:

url: A URL identifying the sound file to play. The audio data must be in a format supported by Core Audio.
For a list of supported formats, see ”Using Audio” in Multimedia Programming Guide.
Error: If an error occurs, upon return the NSError object describes the error.

On success, you have an initialized AVAudioPlayer object. On failure, the Error parameter contains a code that describes the problem.

See also:

- 17.25.13 Constructor(Data as MemoryBlock, byref error as NSErrorMBS) 3170
- 17.25.14 Constructor(Data as MemoryBlock, fileTypeHintUtiString as string, byref error as NSErrorMBS) 3170
17.25. **CLASS AVAUDIOPLAYERMBS**

- 17.25.15 Constructor(File as folderitem, byref error as NSErrorMBS)
- 17.25.16 Constructor(File as folderitem, fileTypeHintUtiString as string, byref error as NSErrorMBS)
- 17.25.18 Constructor(URL as string, fileTypeHintUtiString as string, byref error as NSErrorMBS)

### 17.25.18 Constructor(URL as string, fileTypeHintUtiString as string, byref error as NSErrorMBS)


**Function:** Initializes and returns an audio player using the specified URL and file type hint.

**Notes:**
- **url:** A URL identifying the sound file to play. The audio data must be in a format supported by Core Audio.
- **utiString:** A UTI that is used as a file type hint. The supported UTIs are defined in File Format UTIs. See AVFileType* strings.
- **Error:** If an error occurs, upon return the NSError object describes the error.

The utiString file type hint tells the parser what kind of sound data to expect so that files which are not self-identifying, or possibly even corrupt, can be successfully parsed.

Available in OS X v10.9 and later, but plugin calls variant without hint for older versions.

See also:
- 17.25.13 Constructor(Data as MemoryBlock, byref error as NSErrorMBS)
- 17.25.14 Constructor(Data as MemoryBlock, fileTypeHintUtiString as string, byref error as NSErrorMBS)
- 17.25.15 Constructor(File as folderitem, byref error as NSErrorMBS)
- 17.25.16 Constructor(File as folderitem, fileTypeHintUtiString as string, byref error as NSErrorMBS)
- 17.25.17 Constructor(URL as string, byref error as NSErrorMBS)

### 17.25.19 pause


**Function:** Pauses playback; sound remains ready to resume playback from where it left off.

**Notes:** Calling pause leaves the audio player prepared to play; it does not release the audio hardware that was acquired upon calling play or prepareToPlay.
17.25.20  peakPowerForChannel(channel as Integer) as Double


**Function:** Returns the peak power for a given channel, in decibels, for the sound being played.

**Notes:**

channelNumber: The audio channel whose peak power value you want to obtain. Channel numbers are zero-indexed. A monaural signal, or the left channel of a stereo signal, has channel number 0.

Returns a floating-point representation, in decibels, of a given audio channel's current peak power. A return value of 0 dB indicates full scale, or maximum power; a return value of -160 dB indicates minimum power (that is, near silence).

If the signal provided to the audio player exceeds full scale, then the return value may exceed 0 (that is, it may enter the positive range).

To obtain a current peak power value, you must call the updateMeters method before calling this method.

17.25.21  play as boolean


**Function:** Plays a sound asynchronously.

**Notes:**

Returns true on success, or false on failure.

Calling this method implicitly calls the prepareToPlay method if the audio player is not already prepared to play.

17.25.22  playAtTime(time as Double = 0.0) as boolean


**Function:** Plays a sound asynchronously, starting at a specified point in the audio output device's timeline.

**Notes:**

time: The number of seconds to delay playback, relative to the audio output device's current time.

Returns true on success, or false on failure.

To learn about the virtual audio output device's timeline, read the description for the deviceCurrentTime property.

Calling this method implicitly calls the prepareToPlay method if the audio player is not already prepared to play.
17.25.23 prepareToPlay as boolean

Function: Prepares the audio player for playback by preloading its buffers.
Notes:
Returns true on success, or false on failure.

Calling this method preloads buffers and acquires the audio hardware needed for playback, which minimizes the lag between calling the play method and the start of sound output.
Calling the stop method, or allowing a sound to finish playing, undoes this setup.

17.25.24 stop

Function: Stops playback and undoes the setup needed for playback.
Notes:
Calling this method, or allowing a sound to finish playing, undoes the setup performed upon calling the play or prepareToPlay methods.

The stop method does not reset the value of the currentTime property to 0. In other words, if you call stop during playback and then call play, playback resumes at the point where it left off.

17.25.25 updateMeters

Function: Refreshes the average and peak power values for all channels of an audio player.
Notes: To obtain current audio power values, you must call this method before calling averagePowerForChannel or peakPowerForChannel.

17.25.26 Properties

17.25.27 currentTime as Double

Function: The playback point, in seconds, within the timeline of the sound associated with the audio player.
Notes:
If the sound is playing, `currentTime` is the offset of the current playback position, measured in seconds from the start of the sound. If the sound is not playing, `currentTime` is the offset of where playing starts upon calling the play method, measured in seconds from the start of the sound.

By setting this property you can seek to a specific point in a sound file or implement audio fast-forward and rewind functions.

(Read and Write property)

**17.25.28 data as MemoryBlock**


**Function:** The data object containing the sound associated with the audio player. (read-only)

**Notes:**
Returns nil if the audio player has no data (that is, if it was not initialized with an `MemoryBlock`).
(Read only property)

**17.25.29 deviceCurrentTime as Double**


**Function:** The time value, in seconds, of the audio output device. (read-only)

**Notes:**
The value of this property increases monotonically while an audio player is playing or paused.

If more than one audio player is connected to the audio output device, device time continues incrementing as long as at least one of the players is playing or paused.

If the audio output device has no connected audio players that are either playing or paused, device time reverts to 0.

Use this property to indicate "now" when calling the `playAtTime` instance method. By configuring multiple audio players to play at a specified offset from `deviceCurrentTime`, you can perform precise synchronization as described in the discussion for that method.
(Read only property)

**17.25.30 duration as Double**


**Function:** Returns the total duration, in seconds, of the sound associated with the audio player. (read-only)
Example:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.mp3")
dim e as NSErrorMBS
dim u as new AVAudioPlayerMBS(f,e)
if e<>nil then
  MsgBox e.localizedDescription
else
  MsgBox str(u.duration)+" seconds"
end if

Notes: (Read only property)

17.25.31 enableRate as boolean

Function: A Boolean value that specifies whether playback rate adjustment is enabled for an audio player.
Notes:
To enable adjustable playback rate for an audio player, set this property to YES after you initialize the
player and before you call the prepareToPlay instance method for the player.
Available in OS X v10.8 and later.
(Read and Write property)

17.25.32 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

17.25.33 isPlaying as boolean

Function: A Boolean value that indicates whether the audio player is playing (true) or not (false). (read-only)
Notes:
To find out when playback has stopped, use the AVFoundationMBS.audioPlayerDidFinishPlaying event.
Important: Do not poll this property (that is, do not use it inside of a loop) in an attempt to discover when
playback has stopped.
17.25.34  meteringEnabled as boolean

Function: A Boolean value that specifies the audio-level metering on/off state for the audio player.
Notes: The default value for the meteringEnabled property is off (Boolean false). Before using metering for an audio player, you need to enable it by setting this property to true.
(Read and Write property)

17.25.35  numberOfChannels as Integer

Function: The number of audio channels in the sound associated with the audio player. (read-only)
Notes: (Read only property)

17.25.36  numberOfLoops as Integer

Function: The number of times a sound will return to the beginning, upon reaching the end, to repeat playback.
Notes: A value of 0, which is the default, means to play the sound once. Set a positive integer value to specify the number of times to return to the start and play again. For example, specifying a value of 1 results in a total of two plays of the sound. Set any negative integer value to loop the sound indefinitely until you call the stop method.
(Read only property)

17.25.37  pan as Double

Function: The audio player’s stereo pan position.
Notes: By setting this property you can position a sound in the stereo field. A value of 1.0 is full left, 0.0 is center, and 1.0 is full right.
(Read and Write property)
17.25.38 rate as Double

Function: The audio player’s playback rate.
Example:

```javascript
dim s as sound // your sound
dim a as AVAudioPlayerMBS = s.AVAudioPlayerMBS
a.rate = 0.5
```

Notes:
This property’s default value of 1.0 provides normal playback rate. The available range is from 0.5 for
deleaf-speed playback through 2.0 for double-speed playback.

To set an audio player’s playback rate, you must first enable rate adjustment as described in the enableRate
property description.
Available in OS X v10.8 and later.
(Read and Write property)

17.25.39 settings as Dictionary

Function: The audio player’s settings dictionary, containing information about the sound associated with
the player. (read-only)
Notes:
An audio player’s settings dictionary contains keys for the following information about the player’s associated
sound:

- Channel layout (AVChannelLayoutKey)
- Encoder bit rate (AVEncoderBitRateKey)
- Audio data format (AVFormatIDKey)
- Channel count (AVNumberOfChannelsKey)
- Sample rate (AVSampleRateKey)

The settings keys are described in AV Foundation Audio Settings Constants.
(Read only property)
### 17.25.40 URL as string

**Function:** The URL for the sound associated with the audio player. (read-only)  
**Example:**

```vba
dim f as FolderItem = SpecialFolder.Desktop.Child("test.mp3")
dim e as NSErrorMBS
dim u as new AVAudioPlayerMBS(f,e)
if e<>nil then
    MsgBox e.localizedDescription
else
    MsgBox u.URL
end if
```

**Notes:**

Returns "" if the audio player was not initialized with a URL.  
(Read only property)

---

### 17.25.41 volume as Double

**Function:** The playback gain for the audio player, ranging from 0.0 through 1.0.  
**Notes:** (Read and Write property)
17.26. CLASS AVAudioRecorderMBS

17.26 class AVAudioRecorderMBS


**Function:** An instance of the AVAudioRecorder class, called an audio recorder, provides audio recording capability in your application.

**Example:**

```vbs
dim f as FolderItem = SpecialFolder.Desktop.Child("test.caf")
dim recordSetting as new Dictionary

dim n as Integer = OSTypeFromStringMBS(AVFoundationMBS.kAudioFormatLinearPCM)
recordSetting.Value(AVFoundationMBS.AVFormatIDKey) = n
recordSetting.Value(AVFoundationMBS.AVSampleRateKey) = 44100.0
recordSetting.Value(AVFoundationMBS.AVNumberOfChannelsKey) = 2
recordSetting.Value(AVFoundationMBS.AVLinearPCMBitDepthKey) = 16
recordSetting.Value(AVFoundationMBS.AVLinearPCMIsBigEndianKey) = false
recordSetting.Value(AVFoundationMBS.AVLinearPCMIsFloatKey) = false

dim error as NSErrorMBS
dim recorder as new AVAudioRecorderMBS(f, recordSetting, error)

if error<>Nil then
    MsgBox error.localizedDescription
    Return
end if

if recorder.recordForDuration(10) then
    // ok
else
    MsgBox "Failed to start recording."
end if
```

**Notes:**

Using an audio recorder you can:

- Record until the user stops the recording
- Record for a specified duration
- Pause and resume a recording
- Obtain input audio-level data that you can use to provide level metering
In OS X, the audio comes from the system’s default audio input device as set by a user in System Preferences.

You can implement a subclass of AVFoundationMBS to respond to audio interruptions and audio decoding errors, and to the completion of a recording.

To configure a recording, including options such as bit depth, bit rate, and sample rate conversion quality, configure the audio recorder’s settings dictionary. Use the settings keys described in AV Foundation Audio Settings Constants.

To configure an appropriate audio session for recording, refer to AVAudioSession Class Reference and AVAudioSessionDelegate Protocol Reference.

The AVAudioRecorder class is intended to allow you to make audio recordings with very little programming overhead. Other classes that can be used for recording audio in OS X include AVCaptureAudioDataOutput and the Audio Queue services described in the Audio Queue Services Programming Guide.

In OS X, you can also use the AVCaptureAudioFileOutput class to record audio. Available in OS X v10.7 and later.

Calls audioRecorderEncodeErrorDidOccur and audioRecorderDidFinishRecording events on AVFoundationMBS class.

17.26.2 Methods

17.26.3 available as boolean

MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether this class is available. Notes: Returns true on Mac OS X 10.7 and newer.

17.26.4 averagePowerForChannel(channelNumber as Integer) as Double

MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the average power for a given channel, in decibels, for the sound being recorded. Notes: channelNumber: The number of the channel that you want the average power value for. Returns the current average power, in decibels, for the sound being recorded. A return value of 0 dB indicates full scale, or maximum power; a return value of -160 dB indicates minimum power (that is, near silence).
If the signal provided to the audio recorder exceeds full scale, then the return value may exceed 0 (that is, it may enter the positive range).

To obtain a current average power value, you must call the updateMeters method before calling this method.

17.26.5 Constructor(file as folderitem, settings as Dictionary, byref error as NSErrorMBS)

Function: Initializes an audio recorder.
Notes:
url: The file system location to record to. The file type to record to is inferred from the file extension included in this parameter’s value.
settings: Settings for the recording session. For information on the settings available for an audio recorder, see AV Foundation Audio Settings Constants.
Error: Pass in the address of a nil-initialized NSError object. If an error occurs, upon return the NSError object describes the error. If you do not want error information, pass in NULL.
See also:
• 17.26.6 Constructor(URL as string, settings as Dictionary, byref error as NSErrorMBS) 3183

17.26.6 Constructor(URL as string, settings as Dictionary, byref error as NSErrorMBS)

Function: Initializes an audio recorder.
Notes:
url: The file system location to record to. The file type to record to is inferred from the file extension included in this parameter’s value.
settings: Settings for the recording session. For information on the settings available for an audio recorder, see AV Foundation Audio Settings Constants.
Error: Pass in the address of a nil-initialized NSError object. If an error occurs, upon return the NSError object describes the error. If you do not want error information, pass in NULL.
See also:
• 17.26.5 Constructor(file as folderitem, settings as Dictionary, byref error as NSErrorMBS) 3183

17.26.7 currentTime as Double

Function: The time, in seconds, since the beginning of the recording. (read-only)
Notes:
When the audio recorder is stopped, calling this method returns a value of 0. Available in OS X v10.7 and later.

### 17.26.8 deleteRecording

**MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Deletes a recorded audio file.

**Notes:**

Returns true on success, or false on failure.

The audio recorder must be stopped before you call this method.

### 17.26.9 pause

**MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Pauses a recording.

**Notes:** Call record to resume recording.

### 17.26.10 peakPowerForChannel(channelNumber as Integer) as Double

**MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Returns the peak power for a given channel, in decibels, for the sound being recorded.

**Notes:**

channelNumber: The number of the channel that you want the peak power value for.

Returns the current peak power, in decibels, for the sound being recorded. A return value of 0 dB indicates full scale, or maximum power; a return value of -160 dB indicates minimum power (that is, near silence).

If the signal provided to the audio recorder exceeds full scale, then the return value may exceed 0 (that is, it may enter the positive range).

To obtain a current peak power value, call the updateMeters method immediately before calling this method.

### 17.26.11 prepareToRecord

**MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Creates an audio file and prepares the system for recording.

**Notes:**
17.26. CLASS AVAUDIORECORDERMBS

Returns true on success, or false on failure.

Creates an audio file at the location specified by the url parameter in the Constructor method. If a file already exists at that location, this method overwrites it.
The preparation invoked by this method takes place automatically when you call record. Use prepareToRecord when you want recording to start as quickly as possible upon calling record.

17.26.12 record as boolean

Function: Starts or resumes recording.
Notes:
Returns true on success, or false on failure.
Calling this method implicitly calls prepareToRecord, which creates (or erases) an audio file and prepares the system for recording.

17.26.13 recordForDuration(duration as Double) as boolean

Function: Records for a specified duration of time.
Notes:
duration: The maximum duration, in seconds, for the recording.
Returns true on success, or false on failure.
The recorder stops when the duration of recorded audio reaches the value in the duration parameter.
Calling this method implicitly calls prepareToRecord, which creates (or erases) an audio file and prepares the system for recording.

17.26.14 Recording as boolean

Function: A Boolean value that indicates whether the audio recorder is recording (true), or not (false).
(read-only)
17.26.15 settings as Dictionary

**Function:** The audio settings for the audio recorder. (read-only)
**Notes:** Audio recorder settings are in effect only after you explicitly call the prepareToRecord method, or after you call it implicitly by starting recording. The audio settings keys are described in AV Foundation Audio Settings Constants.

17.26.16 stop

**Function:** Stops recording and closes the audio file.

17.26.17 updateMeters

**Function:** Refreshes the average and peak power values for all channels of an audio recorder.
**Notes:** To obtain current audio power values, you must call this method before you call averagePowerForChannel or peakPowerForChannel.

17.26.18 url as string

**Function:** The URL for the audio file associated with the audio recorder. (read-only)

17.26.19 Properties

17.26.20 Handle as Integer

**Function:** The internal object reference.
**Notes:** (Read and Write property)

17.26.21 MeteringEnabled as boolean

**Function:** A Boolean value that indicates whether audio-level metering is enabled (true), or not (false).
Notes:

By default, audio level metering is off for an audio recorder. Because metering uses computing resources, turn it on only if you intend to use it.
Available in OS X v10.7 and later.
(Read and Write computed property)
17.27  class AVCaptureAudioChannelMBS

17.27.1  class AVCaptureAudioChannelMBS

Function: You use an AVCaptureAudioChannel to monitor the average and peak power levels in an audio
channel in a capture connection (see AVCaptureConnection).
Notes:
An AVCaptureConnection object from an input producing audio to an output receiving audio exposes an
array of AVCaptureAudioChannel objects, one for each channel of audio available. You can poll for audio
levels by iterating through these audio channel objects.
You cannot create instances of AVCaptureAudioChannel directly.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

17.27.2  Methods

17.27.3  averagePowerLevel as Double

Function: The instantaneous average power level, in dB. (read-only)

17.27.4  Constructor

Function: The private constructor.

17.27.5  peakHoldLevel as Double

Function: The peak hold power level, in dB. (read-only)

17.27.6  Properties

17.27.7  Handle as Integer

Function: The internal object reference.
17.27. **CLASS AVCAPTUREAUDIOCHANNELMBS**

Notes: (Read and Write property)

17.27.8 **Enabled as boolean**

Function: Indicates whether the channel is currently enabled for data capture.
Notes: By default, all AVCaptureAudioChannel objects exposed by a connection are enabled. You may set enabled to false to stop the flow of data for a particular channel.
(Read and Write computed property)

17.27.9 **volume as Double**

Function: The current volume (gain) of the channel.
Notes: The volume property indicates the current volume or gain of the receiver as a floating point value between 0.0 and 1.0. If you want to boost the gain in software, you may specify a value greater than 1.0.
(Read and Write computed property)
17.28 class AVCaptureAudioDataOutputMBS

17.28.1 class AVCaptureAudioDataOutputMBS

Function: AVCaptureAudioDataOutput is a concrete sub-class of AVCaptureOutput that you use, via its
delegate, to process audio sample buffers from the audio being captured.
Notes: Subclass of the AVCaptureOutputMBS class.

17.28.2 Methods

17.28.3 Constructor

Function: The constructor.
Notes: Enables events on the new object.

17.28.4 EnableEvents

Function: Enables the event for an existing audio data output object.
Notes: For the audio data output, the plugin will with enabled events call captureOutputDidOutputSam-
pleBuffer event.

17.28.5 Properties

17.28.6 audioSettings as dictionary

Function: The settings used to decode or re-encode audio before it is output.
Notes:
The value of this property is a dictionary containing values for audio settings keys defined in AVAudioSet-
tings.h.
If the value of this property is nil, samples are output in their device native format.
(Read and Write computed property)
17.29. **CLASS AVCaptureAudioFileOutputMBS**

17.29 **class AVCaptureAudioFileOutputMBS**

MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** AVCaptureMovieFileOutput is a concrete sub-class of AVCaptureFileOutput that writes captured audio to any audio file type supported by CoreAudio. **Notes:** AVCaptureAudioFileOutput implements the complete file recording interface declared by AVCaptureFileOutput for writing media data to audio files. In addition, you can configure options specific to the audio file formats, including writing metadata collections to each file and specifying audio encoding options. AVCaptureAudioFileOutput does not, however, support startRecordingToOutputFileURL use startRecordingToOutputFileURL with outputFiletype parameter instead. Subclass of the AVCaptureFileOutputMBS class.

17.29.2 **Methods**

17.29.3 **availableOutputFileTypes as string()**

MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns array containing UTIs identifying the file types AVCaptureAudioFileOutput can write.

17.29.4 **Constructor**

MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

17.29.5 **EnableEvents**

MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Enables the events for this output. **Notes:** Those are normally handled automatically, but if you add event with AddHandler you need to call this method.

17.29.6 **metadata as AVMetadataItemMBS()**

MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A collection of metadata to be written to the receiver’s output files.
Notes: The value of this property is an array of AVMetadataItem objects representing the collection of top-level metadata to be written in each output file. Only ID3 v2.2, v2.3, or v2.4 style metadata items are supported.

17.29.7 setMetadata(items() as AVMetadataItemMBS)

Function: Sets the metadata array.

17.29.8 startRecordingToOutputFile(file as folderitem, outputFileType as string)

Function: Tells the receiver to start recording to a new file of the specified format, and specifies a delegate that will be notified when recording is finished.
Notes:
file: The output file. If a file already exists when capturing starts, recording to the new file will fail.
fileType: A UTI indicating the format of the file to be written. UTIs for common audio file types are declared in AVMediaFormat.h.
You do not need not to call stopRecording before calling this method while another recording is in progress. If this method is invoked while an existing output file was already being recorded, no media samples will be discarded between the old file and the new file.

When recording is stopped by calling stopRecording, by changing files using this method, or because of an error, the remaining data that needs to be included to the file will be written in the background. Therefore, you must specify a delegate that will be notified when all data has been written to the file using the captureOutputDidFinishRecordingToOutputFileAtURL method. The recording delegate can also optionally implement methods that inform it when data starts being written, when recording is paused and resumed, and when recording is about to be finished.

On OS X, if this method is called within the captureOutputDidOutputSampleBuffer event method, the first samples written to the new file are guaranteed to be those contained in the sample buffer passed to that method.

17.29.9 startRecordingToOutputFileURL(URL as string, outputFileType as string)

Function: Tells the receiver to start recording to a new file of the specified format, and specifies a delegate that will be notified when recording is finished.
Notes:

URL: The URL of the output file. This method throws an NSInvalidArgumentException if the URL is not a valid file URL. If a file at the given URL already exists when capturing starts, recording to the new file will fail.

fileType: A UTI indicating the format of the file to be written. UTIs for common audio file types are declared in AVMediaFormat.h.

You do not need not to call stopRecording before calling this method while another recording is in progress. If this method is invoked while an existing output file was already being recorded, no media samples will be discarded between the old file and the new file.

When recording is stopped by calling stopRecording, by changing files using this method, or because of an error the remaining data that needs to be included to the file will be written in the background. Therefore, you must specify a delegate that will be notified when all data has been written to the file using the captureOutputDidFinishRecordingToOutputFileAtURL method. The recording delegate can also optionally implement methods that inform it when data starts being written, when recording is paused and resumed, and when recording is about to be finished.

On OS X, if this method is called within the captureOutputDidOutputSampleBuffer event method, the first samples written to the new file are guaranteed to be those contained in the sample buffer passed to that method.

17.29.10 Properties

17.29.11 audioSettings as dictionary


Function: The settings used to decode or re-encode audio before it is output by the receiver.

Notes:

The value of this property is a dictionary containing values for audio settings keys defined in AVAudioSettings.h. If you set the value of this property to nil, the output vends samples in their device native format. (Read and Write computed property)
17.30 class AVCaptureAudioPreviewOutputMBS

17.30.1 class AVCaptureAudioPreviewOutputMBS

Function: AVCaptureAudioPreviewOutput is a concrete subclass of AVCaptureOutput that you use to preview audio being captured.
Notes:
Instances of AVCaptureAudioPreviewOutput are associated with a Core Audio output device that can be used to play audio being captured by the capture session. You can obtain the unique ID of a Core Audio device using its kAudioDevicePropertyDeviceUID property.
Subclass of the AVCaptureOutputMBS class.

17.30.2 Methods

17.30.3 Constructor

Function: The default constructor.

17.30.4 Properties

17.30.5 outputDeviceUniqueID as string

Function: Indicates the unique ID of the Core Audio output device being used to play preview audio.
Notes:
The value of this property is a string containing the unique ID of the Core Audio device to be used for output, or "" if the default system output should be used.
(Read and Write computed property)

17.30.6 volume as Double

Function: Indicates the preview volume of the output.
Notes:
The value of this property is the preview volume of the receiver, where 1.0 is the maximum volume and 0.0 is muted.
17.30. CLASS AVCAPTUREAUDIOPREVIEWOUTPUTMBS

(Read and Write computed property)
17.31 class AVCaptureConnectionMBS

17.31.1 class AVCaptureConnectionMBS

Function: An AVCaptureConnection object represents a connection between capture input and capture output objects associated with a capture session.
Notes:
Capture inputs (instances of AVCaptureInput) have one or more input ports (instances of AVCaptureInputPort). Capture outputs (instances of AVCaptureOutput) can accept data from one or more sources (for example, an AVCaptureMovieFileOutput object accepts both video and audio data).

You can only add an AVCaptureConnection instance to a session using addConnection: if canAddConnection: returns true. When using addInput or addOutput, connections are formed automatically between all compatible inputs and outputs. You only need to add connections manually when adding an input or output with no connections. You can also use connections to enable or disable the flow of data from a given input or to a given output.

17.31.2 Methods

17.31.3 audioChannels as AVCaptureAudioChannelMBS()

Function: An array of AVCaptureAudioChannel objects. (read-only)
Notes: This property is only applicable to connections involving audio.

17.31.4 available as boolean

Function: Whether this class is available.
Notes: Returns true on Mac OS X 10.7 and newer.

17.31.5 connectionWithInputPort(port as AVCaptureInputPortMBS, layer as AVCaptureVideoPreviewLayerMBS) as AVCaptureConnectionMBS

Function: Returns a capture connection describing a connection between the specified input port and the specified video preview layer.
Notes:
port: An AVCaptureInputPort object associated with an AVCaptureInput object.
layer: An AVCaptureVideoPreviewLayer object.

Returns a capture connection describing a connection between the port and layer.

You can add the connection returned by this method to an AVCaptureSession instance using addConnection:

When using addInput or addOutput, connections are automatically formed between all compatible inputs and outputs. You do not need to manually create and add connections to the session unless you use the primitive addInputWithNoConnections or addOutputWithNoConnections methods.

17.31.6  connectionWithInputPorts(ports() as AVCaptureInputPortMBS, output as AVCaptureOutputMBS) as AVCaptureConnectionMBS

Function: Returns a capture connection describing a connection between the specified input ports and the specified output.
Notes:
ports: An array of AVCaptureInputPort objects associated with AVCaptureInput objects.
output: An AVCaptureOutput object.

Returns a capture connection describing a connection between inputPorts and the output.

You can add the connection returned by this method to an AVCaptureSession instance using addConnection.

When using addInput or addOutput, connections are automatically formed between all compatible inputs and outputs. You do not need to manually create and add connections to the session unless you use the primitive addInputWithNoConnections or addOutputWithNoConnections methods.

17.31.7  Constructor(port as AVCaptureInputPortMBS, layer as AVCaptureVideoPreviewLayerMBS)

Function: Initializes a capture connection to describe a connection between the specified input port and the specified video preview layer.
Notes:
port: An AVCaptureInputPort object associated with an AVCaptureInput object.
layer: An AVCaptureVideoPreviewLayer object.
Returns a capture connection describing a connection between the port and layer.

You can add the connection returned by this method to an AVCaptureSession instance using addConnection.

When using addInput or addOutput, connections are automatically formed between all compatible inputs and outputs. You do not need to manually create and add connections to the session unless you use the primitive addInputWithNoConnections or addOutputWithNoConnections methods.

See also:

- 17.31.7 Constructor(port as AVCaptureInputPortMBS, layer as AVCaptureVideoPreviewLayerMBS) 3197

### 17.31.8 Constructor(ports() as AVCaptureInputPortMBS, output as AVCaptureOutputMBS)


**Function:** Initializes a capture connection to describe a connection between the specified input ports and the specified output.

**Notes:**

- ports: An array of AVCaptureInputPort objects associated with AVCaptureInput objects.
- output: An AVCaptureOutput object.

Returns a capture connection initialized to describe a connection between inputPorts and the output.

You can add the connection returned by this method to an AVCaptureSession instance using addConnection.

When using addInput or addOutput, connections are automatically formed between all compatible inputs and outputs. You do not need to manually create and add connections to the session unless you use the primitive addInputWithNoConnections or addOutputWithNoConnections methods.

See also:

- 17.31.7 Constructor(port as AVCaptureInputPortMBS, layer as AVCaptureVideoPreviewLayerMBS) 3197

### 17.31.9 inputPorts as AVCaptureInputPortMBS()


**Function:** The connection’s input ports. (read-only)

**Notes:** Input ports are instances of AVCaptureInputPort.
17.31.10 Properties

17.31.11 Active as boolean

Function: Indicates whether the connection is active. (read-only)
Notes: (Read only property)

17.31.12 automaticallyAdjustsVideoMirroring as boolean

Function: A Boolean value that indicates whether the value of videoMirrored can change based on configuration of the session.
Notes:
For some session configurations, video data flowing through the connection will be mirrored by default. When the value of this property is true, the value of videoMirrored may change depending on the configuration of the session, for example after switching to a different capture device input.

The default value is true.
(Read and Write property)

17.31.13 Enabled as boolean

Function: Indicates whether the connection is enabled.
Notes: (Read and Write property)

17.31.14 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

17.31.15 output as AVCaptureOutputMBS

Function: The connection’s output port. (read-only)
17.31.16  videoFieldMode as Integer

Function: An indicator of how interlaced video flowing through the connection should be treated.
Notes:
This property is only applicable to connections involving video.
You can only set this value if supportsVideoFieldMode is true.
(Read and Write property)

17.31.17  VideoFieldModeSupported as boolean

Function: A Boolean value that indicates whether the connection supports setting the videoFieldMode
property. (read-only)
Notes:
This property is only applicable to connections involving video.
(Read only property)

17.31.18  videoMaxFrameDuration as CMTimeMBS

Function: The maximum time interval between which the receiver should output consecutive video frames.
Notes:
The value of this property specifies the maximum duration of each video frame output by the connection,
placing an upper bound on the amount of time that should separate consecutive frames. The value is equiv-
alent to the reciprocal of the minimum frame rate.
A value of kCMTimeZero or kCMTimeInvalid indicates an unlimited minimum frame rate.
The default value is kCMTimeInvalid.
You can only set this value if supportsVideoMaxFrameDuration is true.
Available in OS X v10.9 and later.
(Read and Write property)

17.31.19  VideoMaxFrameDurationSupported as Boolean

Function: A Boolean value that indicates whether the connection supports setting the videoMaxFrameDu-
17.31. CLASS AVCAPTURECONNECTIONMBS

```
ration property. (read-only)

Notes:
This property is only applicable to connections involving video.
Available in OS X v10.9 and later.
(Read only property)
```

17.31.20 videoMinFrameDuration as CMTimeMBS

```
Function: The minimum time interval between which the receiver should output consecutive video frames.
Notes:
The value of this property specifies the minimum duration of each video frame output by the connection,
placing a lower bound on the amount of time that should separate consecutive frames. The value is equiva-
ient to the reciprocal of the maximum frame rate.

A value of kCMTimeZero or kCMTimeInvalid indicates an unlimited maximum frame rate.

The default value is kCMTimeInvalid.

You can only set this value if supportsVideoMinFrameDuration is true.
(Read and Write property)
```

17.31.21 VideoMinFrameDurationSupported as boolean

```
Function: A Boolean value that indicates whether the connection supports setting the videoMinFrameDu-
ration property. (read-only)
Notes:
This property is only applicable to connections involving video.
(Read only property)
```

17.31.22 VideoMirrored as boolean

```
Function: A Boolean value that indicates whether the video flowing through the connection should be
mirrored about its vertical axis.
Notes:
```
This property is only applicable to connections involving video.

If the value of supportsVideoMirroring is true, you can set videoMirrored to true to flip the video about its vertical axis and produce a mirror-image effect. (Read and Write property)

### 17.31.23 VideoMirroringSupported as boolean


**Function:** A Boolean value that indicates whether the connection supports video mirroring. (read-only)

**Notes:** (Read only property)

### 17.31.24 videoOrientation as Integer


**Function:** The orientation of the video.

**Notes:**

This property is only applicable to connections involving video.

If the value of supportsVideoOrientation is true, you can set videoOrientation to rotate the video buffers being consumed by the connection’s output. Setting videoOrientation does not necessarily result in a physical rotation of video buffers. For example, a video connection to an AVCaptureMovieFileOutput object handles orientation using a Quicktime track matrix; using an AVCaptureStillImageOutput object, orientation is handled using Exif tags. (Read and Write property)

### 17.31.25 VideoOrientationSupported as boolean


**Function:** A Boolean value that indicates whether the connection supports changing the orientation of the video. (read-only)

**Notes:** (Read only property)

### 17.31.26 videoPreviewLayer as AVCaptureVideoPreviewLayerMBS


**Function:** The video preview layer associated with the connection. (read-only)

**Notes:**
This property is the set if you initialized the connection using Constructor or connectionWithInputPort. (Read only property)

### 17.31.27 Constants

#### 17.31.28 AVCaptureVideoOrientationLandscapeLeft = 4

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants indicating video orientation.  
**Notes:** Indicates that video should be oriented horizontally, top on the right.

#### 17.31.29 AVCaptureVideoOrientationLandscapeRight = 3

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants indicating video orientation.  
**Notes:** Indicates that video should be oriented horizontally, top on the left.

#### 17.31.30 AVCaptureVideoOrientationPortrait = 1

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants indicating video orientation.  
**Notes:** Indicates that video should be oriented vertically, top at the top.

#### 17.31.31 AVCaptureVideoOrientationPortraitUpsideDown = 2

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants indicating video orientation.  
**Notes:** Indicates that video should be oriented vertically, top at the bottom.

#### 17.31.32 AVVideoFieldModeBoth = 0

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants indicating video field mode, for use with the videoFieldMode property.  
**Notes:** Indicates that both top and bottom video fields in interlaced content should be passed through.
17.31.33 AVVideoFieldModeBottomOnly = 2

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants indicating video field mode, for use with the videoFieldMode property. 
**Notes:** Indicates that the bottom video field only in interlaced content should be passed through.

17.31.34 AVVideoFieldModeDeinterlace = 3

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants indicating video field mode, for use with the videoFieldMode property. 
**Notes:** Indicates that top and bottom video fields in interlaced content should be deinterlaced.

17.31.35 AVVideoFieldModeTopOnly = 1

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants indicating video field mode, for use with the videoFieldMode property. 
**Notes:** Indicates that only the top video field in interlaced content should be passed through.
17.32 class AVCaptureDeviceFormatMBS

17.32.1 class AVCaptureDeviceFormatMBS

**Function:** The class for device format information.
**Notes:**
An AVCaptureDeviceFormat object wraps a CMFormatDescription (see CMFormatDescriptionRef) and other format-related information, such as minimum and maximum frame rate.

An AVCaptureDeviceFormat object is immutable. AVCaptureDevice uses AVCaptureDeviceFormat objects to describe supported formats and the active format of an instance.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

17.32.2 Methods

17.32.3 Constructor

**Function:** The private constructor.

17.32.4 DisplayName as string

**Function:** The display text for this object.
**Notes:** The plugin formats a string with the device format for displaying.

17.32.5 formatDescription as CMFormatDescriptionMBS

**Function:** A CMFormatDescription describing an AVCaptureDevice active or supported format. (read-only).

17.32.6 mediaType as string

**Function:** An string describing the media type of an AVCaptureDevice active or supported format. (read-only)
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Notes: Supported media types are listed in AVMediaFormat.h.

17.32.7  videoSupportedFrameRateRanges as AVFrameRateRangeMBS()

Function: Indicates the format’s supported frame rate ranges/ (read-only)  
Notes: The value is an array of AVFrameRateRange objects, one for each of the format’s supported video frame rate ranges.

17.32.8  Properties

17.32.9  Handle as Integer

Function: The internal object reference.  
Notes: (Read and Write property)
17.33. **CLASS AVCaptureDeviceInputMBS**

### 17.33.1 class AVCaptureDeviceInputMBS

**Function:** AVCaptureDeviceInput is a concrete sub-class of AVCaptureInput you use to capture data from an AVCaptureDevice object.  
**Notes:** Subclass of the AVCaptureInputMBS class.

### 17.33.2 Methods

#### 17.33.3 Constructor(Device as AVCaptureDeviceMBS, byref error as NSErrorMBS)

**Function:** Initializes an input to use a specified device.  
**Notes:**  
- **device:** The device from which to capture input.  
- **Error:** If an error occurs during initialization, upon return contains an NSErrorMBS object describing the problem.

#### 17.33.4 device as AVCaptureDeviceMBS

**Function:** The device with which the input is associated. (read-only)

#### 17.33.5 deviceInputWithDevice(device as AVCaptureDeviceMBS, byref error as NSErrorMBS) as AVCaptureDeviceInputMBS

**Function:** Returns an input initialized to use a specified device.  
**Notes:**  
- **device:** The device from which to capture input.  
- **Error:** If an error occurs during initialization, upon return contains an NSError object describing the problem.  

Returns an input initialized to use device.
17.34 class AVCaptureDeviceInputSourceMBS

17.34.1 class AVCaptureDeviceInputSourceMBS


**Function:** An AVCaptureDeviceInputSource object represents a distinct input source on an AVCaptureDevice object.

**Notes:**

An AVCaptureDevice object may optionally present an array of input sources, representing distinct mutually exclusive inputs to the device. For example, an audio capture device might have ADAT optical and analog input sources; a video capture device might have an HDMI input source, or a component input source. This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

17.34.2 Methods

17.34.3 Constructor


**Function:** The private constructor.

17.34.4 inputSourceID as string


**Function:** The input source ID. (read-only)

**Notes:** The ID is unique among the input sources exposed by a given AVCaptureDevice object.

17.34.5 localizedName as string


**Function:** A localized, human-readable, name for the input source. (read-only)

**Notes:** You can use this property to display the name of the capture device input source in a user interface.

17.34.6 Properties

17.34.7 Handle as Integer


**Function:** The internal object reference.
17.34. CLASS AVCAPTUREDEVICEINPUTSOURCEMBS

Notes: (Read and Write property)
17.35 class AVCaptureDeviceMBS

17.35.1 class AVCaptureDeviceMBS


**Function:** An AVCaptureDevice object represents a physical capture device and the properties associated with that device.

**Example:**

```javascript
dim device as AVCaptureDeviceMBS = AVCaptureDeviceMBS.defaultDeviceWithMediaType(AVFoundationMBS.AVMediaTypeVideo)
MsgBox device.localizedName
```

**Notes:**

You use a capture device to configure the properties of the underlying hardware. A capture device also provides input data (such as audio or video) to an AVCaptureSession object.

You use the methods of the AVCaptureDevice class to enumerate the available devices, query their capabilities, and be informed about when devices come and go. Before you attempt to set properties of a capture device (its focus mode, exposure mode, and so on), you must first acquire a lock on the device using the lockForConfiguration method. You can then set the properties and release the lock using the unlockForConfiguration method. You may hold the lock if you want all settable device properties to remain unchanged. However, holding the device lock unnecessarily may degrade capture quality in other applications sharing the device and is not recommended.

May work for all built-in cameras and microphones as well as external USB webcams, as far as Apple supports them.

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

17.35.2 Methods

17.35.3 available as boolean


**Function:** Whether this class is available.

**Notes:** Returns true on Mac OS X 10.7 and newer.
17.35. **CLASS AVCAPTUREDEVICEMBS**

### 17.35.4 AVCaptureMaxAvailableTorchLevel as Double


**Function:** The maximum torch level.

**Notes:**

This constant always represents the maximum available torch level, independent of the actual maximum value currently supported by the device. Thus, pass this constant to the setTorchModeOnWithLevel:error: in situations where you want to specify the maximum torch level without having to worry about whether the device is overheating and might not accept a value of 1.0 as the maximum.

Available in OS X v10.9 and later.

### 17.35.5 Constructor


**Function:** The private constructor.

### 17.35.6 defaultDeviceWithMediaType(mediaType as string) as AVCaptureDeviceMBS


**Function:** Returns the default device used to capture data of a given media type.

**Example:**

```vbnet
dim device as AVCaptureDeviceMBS = AVCaptureDeviceMBS.defaultDeviceWithMediaType(AVFoundationMBS.AVMediaTypeAudio)
MsgBox device.localizedName
```

**Notes:**

- **mediaType:** A media type identifier.
- For possible values, see AV Foundation Constants Reference.

### 17.35.7 devices as AVCaptureDeviceMBS()


**Function:** Returns an array of the available capture devices on the system.

**Example:**

```vbnet
dim devices() as AVCaptureDeviceMBS = AVCaptureDeviceMBS.devices
dim names() as string
```
for each d as AVCaptureDeviceMBS in devices
    names.Append d.localizedDescription
next

    // show all names in a message dialog
    MsgBox Join(names, EndOfLine)

17.35.8 devicesWithMediaType(mediaType as string) as AVCaptureDeviceMBS()

Function: Returns an array of the devices able to capture data of a given media type.
Example:

    dim devices() as AVCaptureDeviceMBS = AVCaptureDeviceMBS.devicesWithMediaType(AVFoundation-
        MBS.AVMediaTypeAudio)
    dim names() as string

    for each d as AVCaptureDeviceMBS in devices
        names.Append d.localizedDescription
    next

    // show all names of audio devices in a message dialog
    MsgBox Join(names, EndOfLine)

Notes:
mediaType: A media type identifier.
For possible values, see AV Foundation Constants Reference.

17.35.9 deviceWithUniqueID(deviceUniqueID as string) as AVCaptureDeviceMBS

Function: Returns the device with a given ID.
Notes: deviceUniqueID: The ID of a capture device.

17.35.10 formats as AVCaptureDeviceFormatMBS()

Function: An array of AVCaptureDeviceFormat objects representing the formats supported by the device
17.35. **CLASS AVCAPTUREDEVICEMBS**

(read-only)

**Notes:**

You can use this property to enumerate the formats natively supported by the receiver. You can set modelID to any of the formats in this array. You can observe changes to the value of this property using key-value observing.

17.35.11 **hasMediaType(mediaType as string) as boolean**


**Function:** Returns a Boolean value that indicates whether the device provides media with a given type.

**Example:**

```vbs
dim device as AVCaptureDeviceMBS
device = AVCaptureDeviceMBS.defaultDeviceWithMediaType(AVFoundationMBS.AVMediaTypeVideo)
MsgBox str(device.hasMediaType(AVFoundationMBS.AVMediaTypeVideo)) ' true
MsgBox str(device.hasMediaType(AVFoundationMBS.AVMediaTypeAudio)) ' false
```

**Notes:**

mediaType: A media type, such as AVMediaTypeVideo, AVMediaTypeAudio, or AVMediaTypeMuxed. For a complete list of supported media type constants, see AV Foundation Constants Reference.

Returns true if the device provides media of type mediaType, otherwise false.

17.35.12 **inputSources as AVCaptureDeviceInputSourceMBS()**


**Function:** An array of AVCaptureDeviceInputSource objects representing the input sources supported by the device. (read-only)

**Notes:**

Some devices can capture data from one of multiple data sources (different input jacks on the same audio device, for example). For devices with multiple possible data sources, you can use this property to enumerate the possible choices.

You can observe changes to the value of this property using key-value observing.
17.35.13 isExposureModeSupported(exposureMode as Integer) as boolean

Function: Returns a Boolean value that indicates whether the given exposure mode is supported.
Example:

```vba
Dim device As AVCaptureDeviceMBS
Device = AVCaptureDeviceMBS.defaultDeviceWithMediaType(AVFoundationMBS.AVMediaTypeVideo)
MsgBox Str(device.isExposureModeSupported(device.AVCaptureExposureModeAutoExposure))
```

Notes:

exposureMode: An exposure mode. See "AVCaptureExposureMode" for possible values.
Returns true if exposureMode is supported, otherwise false.

17.35.14 isFlashModeSupported(FlashMode as Integer) as boolean

Function: Returns a Boolean value that indicates whether the given flash mode is supported.
Example:

```vba
Dim device As AVCaptureDeviceMBS
Device = AVCaptureDeviceMBS.defaultDeviceWithMediaType(AVFoundationMBS.AVMediaTypeVideo)
MsgBox Str(device.isFlashModeSupported(device.AVCaptureFlashModeAuto))
```

Notes:

flashMode: A flash mode. See "AVCaptureFlashMode" for possible values.
Returns true if flashMode is supported, otherwise false.

17.35.15 isFocusModeSupported(focusMode as Integer) as boolean

Function: Returns a Boolean value that indicates whether the given focus mode is supported.
Example:

```vba
Dim device As AVCaptureDeviceMBS
Device = AVCaptureDeviceMBS.defaultDeviceWithMediaType(AVFoundationMBS.AVMediaTypeVideo)
MsgBox Str(device.isFocusModeSupported(device.AVCaptureFocusModeContinuousAutoFocus))
```

Notes:
focusMode: A focus mode. See "AVCaptureFocusMode" for possible values.

Returns true if focusMode is supported, otherwise false.

17.35.16 isTorchModeSupported(torchMode as Integer) as boolean

Function: Returns a Boolean value that indicates whether the device supports the specified torch mode.
Example:

dim device as AVCaptureDeviceMBS
device = AVCaptureDeviceMBS.defaultDeviceWithMediaType(AVFoundationMBS.AVMediaTypeVideo)
MsgBox str(device.isTorchModeSupported(device.AVCaptureTorchModeAuto))

Notes:
torchMode: The desired torch mode. For a list of possible values, see "AVCaptureTorchMode."
Returns true if torchMode is supported, otherwise false.

17.35.17 isWhiteBalanceModeSupported(mode as Integer) as boolean

Function: Returns a Boolean value that indicates whether the given white balance mode is supported.
Example:

dim device as AVCaptureDeviceMBS
device = AVCaptureDeviceMBS.defaultDeviceWithMediaType(AVFoundationMBS.AVMediaTypeVideo)
MsgBox str(device.isWhiteBalanceModeSupported(device.AVCaptureWhiteBalanceModeAutoWhiteBalance))

Notes:
whiteBalanceMode: A focus mode. See "AVCaptureWhiteBalanceMode" for possible values.
Returns true if whiteBalanceMode is supported, otherwise false.

17.35.18 linkedDevices as AVCaptureDeviceMBS()

Function: An array of AVCaptureDevice objects representing the devices physically linked to the receiver.
(read-only)
Example:
dim device as AVCaptureDeviceMBS
device = AVCaptureDeviceMBS.defaultDeviceWithMediaType(AVFoundationMBS.AVMediaTypeAudio)

dim linkedDevices() as AVCaptureDeviceMBS
linkedDevices = device.linkedDevices

for each d as AVCaptureDeviceMBS in linkedDevices
MsgBox device.localizedName+” “+d.localizedName
next

Notes: The value of this property is an array of AVCaptureDevice objects that are a part of the same physical device as the receiver. For example, for an external iSight camera, the array contains an AVCaptureDevice instance representing the external iSight microphone.

17.35.19 lockForConfiguration(byref error as NSErrorMBS) as boolean

Function: Requests exclusive access to the device’s hardware properties.
Notes:
Error: If a lock cannot be acquired, this pointer contains an NSError object that describes the problem.
Returns true if a lock was acquired or false if it was not.

You must call this method before attempting to configure the hardware related properties of the device. This method returns true when it successfully locks the device for configuration by your code. After configuring the device properties, call unlockForConfiguration to release the configuration lock and allow other apps to make changes.

You may hold onto a lock (instead of releasing it) if you require the device properties to remain unchanged. However, holding the device lock unnecessarily may degrade capture quality in other apps sharing the device.

17.35.20 setTransportControlsPlaybackMode(mode as Integer, speed as Double)

Function: Sets the transport control’s playback mode and speed.
Notes:
mode: An AVCaptureDeviceTransportControlsPlaybackMode constant indicating whether the deck should be put into play mode.
speed: A float value indicating the speed at which to wind or play the tape.

Before changing the value of this property, you must call lockForConfiguration to acquire exclusive access to the device’s configuration properties. If you do not, this method raises an exception. When you are done configuring the device, call unlockForConfiguration to release the lock and allow other devices to configure the settings.

**17.35.21 supportsAVCaptureSessionPreset(preset as string) as boolean**


**Function:** Returns a Boolean value that indicates whether the receiver can be used in an capture session configured with the given preset.

**Example:**

```vbnet
dim device as AVCaptureDeviceMBS
device = AVCaptureDeviceMBS.defaultDeviceWithMediaType(AVFoundationMBS.AVMediaTypeVideo)
MsgBox str(device.supportsAVCaptureSessionPreset(AVFoundationMBS.AVCaptureSessionPreset1280x720))
```

**Notes:**

preset: A capture session preset.

Returns true if the receiver can be used with preset, otherwise false.

An AVCaptureSession instance can be associated with a preset that configures its inputs and outputs to fulfill common use cases. You can use this method to determine if the receiver can be used in a capture session with the given preset. For a list of preset constants, see AVCaptureSession Class Reference.

**17.35.22 unlockForConfiguration**


**Function:** Relinquishes exclusive control over the device’s configuration.

**Notes:** Call this method to release the lock acquired using the lockForConfiguration method when you are done configuring the device.

**17.35.23 Properties**

**17.35.24 activeFormat as AVCaptureDeviceFormatMBS**


**Function:** The currently active format of the receiver.
Notes:
You use this property to get or set the currently active device format.

To set the format, you must first obtain exclusive access to the receiver using focusMode. If you do not obtain exclusive access, setActiveFormat throws an NSGenericException.

The set method, setActiveFormat, throws an NSInvalidArgumentException if you pass a format not present in the supportsAVCaptureSessionPreset array.

You can observe changes to the value of this property using key-value observing.
(Read and Write property)

17.35.25 activeInputSource as AVCaptureDeviceInputSourceMBS

Function: The currently active input source.
Notes:
You use this property to get or set the currently active input source.

To set the format, you must first obtain exclusive access to the receiver using focusMode. If you do not obtain exclusive access, setActiveInputSource throws an NSGenericException.

The set method, setActiveInputSource, throws an NSInvalidArgumentException if you pass a format not present in the activeInputSource array.

You can observe changes to the value of this property using key-value observing.
(Read only property)

17.35.26 activeVideoMaxFrameDuration as CMTimeMBS

Function: The currently active maximum frame duration.
Notes:
A device’s maximum frame duration is the reciprocal of its minimum frame rate. You can set the value of this property to limit the minimum frame rate during a capture session. The capture device automatically chooses a default maximum frame duration based on its active format. After changing the value of this property, you can return to the default maximum frame duration by setting this property’s value to kCMTimeInvalid. Choosing a new preset for the capture session also resets this property to its default value.
Attempting to set this property to a value not found in the active format’s `videoSupportedFrameRateRanges` array raises an exception (`NSInvalidArgumentException`).

Before changing the value of this property, you must call `lockForConfiguration` to acquire exclusive access to the device’s configuration properties. Otherwise, setting the value of this property raises an exception. When you are done configuring the device, call `unlockForConfiguration` to release the lock and allow other devices to configure the settings.

You can observe changes to the value of this property using Key-value observing. Available in OS X v10.9 and later.
(Read and Write property)

### 17.35.27 `activeVideoMinFrameDuration` as `CMTimeMBS`


**Function:** The currently active minimum frame duration.

**Notes:**
You use this property to get or set the currently active minimum frame duration.

The value of this property is the reciprocal of its maximum frame rate. To limit the maximum frame rate, you can set the value of this property to a value supported by the receiver’s `modelID` (see `videoSupportedFrameRateRanges`).

Before changing the value of this property, you must call `lockForConfiguration` to acquire exclusive access to the device’s configuration properties. If you do not, setting the value of this property raises an exception. When you are done configuring the device, call `unlockForConfiguration` to release the lock and allow other devices to configure the settings.

The device object throws `NSInvalidArgumentException` if you try to assign an unsupported value to this property.

You can observe changes to the value of this property using key-value observing.
(Read and Write property)

### 17.35.28 `exposureMode` as `Integer`


**Function:** The exposure mode for the device.
Notes:

Before changing the value of this property, you must call lockForConfiguration: to acquire exclusive access to the device's configuration properties. If you do not, setting the value of this property raises an exception. When you are done configuring the device, call unlockForConfiguration to release the lock and allow other devices to configure the settings.

You can observe changes to the value of this property using key-value observing.
See "AVCaptureExposureMode" for possible values.
(Read and Write property)

17.35.29 exposurePointOfInterest as CGPointMBS

Function: The point of interest for exposure.
Notes:

Before changing the value of this property, you must call lockForConfiguration to acquire exclusive access to the device's configuration properties. If you do not, setting the value of this property raises an exception. When you are done configuring the device, call unlockForConfiguration to release the lock and allow other devices to configure the settings.
(Read and Write property)

17.35.30 flashMode as Integer

Function: The current flash mode.
Notes:

Before changing the value of this property, you must call lockForConfiguration: to acquire exclusive access to the device's configuration properties. If you do not, setting the value of this property raises an exception. When you are done configuring the device, call unlockForConfiguration to release the lock and allow other devices to configure the settings.

You can observe changes to the value of this property using key-value observing.

See "AVCaptureFlashMode" for possible values.
(Read and Write property)
17.35. **CLASS AVCAPTUREDEVICEMBS**

### 17.35.31 focusMode as Integer

**Function:** The device’s focus mode.
**Notes:**

Before changing the value of this property, you must call lockForConfiguration to acquire exclusive access to the device’s configuration properties. If you do not, setting the value of this property raises an exception. When you are done configuring the device, call unlockForConfiguration to release the lock and allow other devices to configure the settings.

You can observe changes to the value of this property using key-value observing.

See "AVCaptureFocusMode" for possible values.
(Read and Write property)

### 17.35.32 focusPointOfInterest as CGPointMBS

**Function:** The point of interest for focusing.
**Notes:**

This property represents a CGPoint where { 0,0 } corresponds to the top left of the picture area, and { 1,1 } corresponds to the bottom right in landscape mode with the home button on the right this applies even if the device is in portrait mode.

Before changing the value of this property, you must call lockForConfiguration to acquire exclusive access to the device’s configuration properties. If you do not, setting the value of this property raises an exception. When you are done configuring the device, call unlockForConfiguration to release the lock and allow other devices to configure the settings.
(Read and Write property)

### 17.35.33 Handle as Integer

**Function:** The internal object reference.
**Notes:** (Read and Write property)
### 17.35.34 hasFlash as boolean

**Function:** Indicates whether the capture device has a flash. (read-only)

**Example:**
```vbnet
Dim device as AVCaptureDeviceMBS
device = AVCaptureDeviceMBS.defaultDeviceWithMediaType(AVFoundationMBS.AVMediaTypeVideo)
MsgBox str(device.hasFlash)
```

**Notes:**
You can observe changes to the value of this property using key-value observing.
(Read only property)

### 17.35.35 hasTorch as boolean

**Function:** A Boolean value that specifies whether the capture device has a torch. (read-only)

**Example:**
```vbnet
Dim device as AVCaptureDeviceMBS
device = AVCaptureDeviceMBS.defaultDeviceWithMediaType(AVFoundationMBS.AVMediaTypeVideo)
MsgBox str(device.hasTorch)
```

**Notes:**
A torch is a light source, such as an LED flash, that is available on the device and used for illuminating captured content or providing general illumination. This property reflects whether the current device has such illumination hardware built-in.

Even if the device has a torch, that torch might not be available for use. Thus, you should also check the value of the torchAvailable property before using it.

You can observe changes to the value of this property using key-value observing.
(Read only property)

### 17.35.36 isAdjustingExposure as boolean

**Function:** The transport type of the receiver. (read-only)
Example:

```dim device as AVCaptureDeviceMBS
device = AVCaptureDeviceMBS.defaultDeviceWithMediaType(AVFoundationMBS.AVMediaTypeVideo)
MsgBox str(device.isAdjustingExposure)
```

Notes:
The value of this property represents the transport type of the device (USB, PCI, etc). Transport types are defined in `<IOKit/audio/IOAudioTypes.h>` as `kIOAudioDeviceTransportType*`. (Read only property)

### 17.35.37 `isAdjustingFocus` as boolean

**Function:** Indicates whether the device is currently adjusting its focus setting. (read-only)  
**Example:**

```dim device as AVCaptureDeviceMBS
device = AVCaptureDeviceMBS.defaultDeviceWithMediaType(AVFoundationMBS.AVMediaTypeVideo)
MsgBox str(device.isAdjustingFocus)
```

Notes:
You can observe changes to the value of this property using key-value observing.  
(Read only property)

### 17.35.38 `isAdjustingWhiteBalance` as boolean

**Function:** Indicates whether the device is currently adjusting the white balance. (read-only)  
**Example:**

```dim device as AVCaptureDeviceMBS
device = AVCaptureDeviceMBS.defaultDeviceWithMediaType(AVFoundationMBS.AVMediaTypeVideo)
MsgBox str(device.isAdjustingWhiteBalance)
```

Notes:
You can observe changes to the value of this property using key-value observing.  
(Read only property)
17.35.39 isConnected as boolean

Function: Indicates whether the device is currently connected. (read-only)
Example:

```
    dim device as AVCaptureDeviceMBS
    device = AVCaptureDeviceMBS.defaultDeviceWithMediaType(AVFoundationMBS.AVMediaTypeVideo)
    MsgBox str(device.isConnected)
```

Notes:
The value of this property indicates whether the device represented by the receiver is connected and available for use as a capture device. When the value of this property becomes false for a given instance, however, it will not become true again. If the same physical device again becomes available to the system, it will be represented using a new instance of AVCaptureDevice.

You can observe the value of this property using key-value observing to be notified when a device is no longer available.
(Read only property)

17.35.40 isExposurePointOfInterestSupported as boolean

Function: Indicates whether the device supports a point of interest for exposure. (read-only)
Example:

```
    dim device as AVCaptureDeviceMBS
    device = AVCaptureDeviceMBS.defaultDeviceWithMediaType(AVFoundationMBS.AVMediaTypeVideo)
    MsgBox str(device.isExposurePointOfInterestSupported)
```

Notes:
You can observe changes to the value of this property using key-value observing.
(Read only property)
17.35. **CLASS AVCAPTUREDEVICEMBS**

### 17.35.41 `isFocusPointOfInterestSupported` as boolean

**Function:** Indicates whether the device supports a point of interest for focus. (read-only)  
**Example:**

```vbnet
dim device as AVCaptureDeviceMBS  
device = AVCaptureDeviceMBS.defaultDeviceWithMediaType(AVFoundationMBS.AVMediaTypeVideo)  
MsgBox str(device.isFocusPointOfInterestSupported)
```

**Notes:**  
You can observe changes to the value of this property using key-value observing.  
(Read only property)

### 17.35.42 `isInUseByAnotherApplication` as boolean

**Function:** Indicates whether the device is in use by another application. (read-only)  
**Example:**

```vbnet
dim device as AVCaptureDeviceMBS  
device = AVCaptureDeviceMBS.defaultDeviceWithMediaType(AVFoundationMBS.AVMediaTypeVideo)  
MsgBox str(device.isInUseByAnotherApplication)
```

**Notes:**  
You can observe changes to the value of this property using key-value observing.  
(Read only property)

### 17.35.43 `isSuspended` as boolean

**Function:** Indicates whether the device is suspended. (read-only)  
**Example:**

```vbnet
dim device as AVCaptureDeviceMBS  
device = AVCaptureDeviceMBS.defaultDeviceWithMediaType(AVFoundationMBS.AVMediaTypeVideo)  
MsgBox str(device.isSuspended)
```

**Notes:**
Some devices disallow data capture due to a feature on the device.

For example, isSuspended returns true for an external iSight camera when its privacy iris is closed, or for the internal iSight camera on a notebook when the notebook’s display is closed.

You can observe changes to the value of this property using key-value observing.
(Read only property)

17.35.44 localizedName as string

Function: A localized human-readable name for the receiver. (read-only)
Example:

dim device as AVCaptureDeviceMBS = AVCaptureDeviceMBS.defaultDeviceWithMediaType(AVFoundationMBS.AVMediaTypeAudio)
MsgBox device.localizedName

Notes:
You can use this property to display the name of a capture device in a user interface.
(Read only property)

17.35.45 manufacturer as String

Function: The human-readable manufacturer name for the receiver.
Notes:
This property can be used to identify capture devices from a particular manufacturer. All Apple devices return "Apple Inc.". Devices from third party manufacturers may return an empty string.
Available on Mac OS X 10.9 or later.
(Read only property)

17.35.46 modelID as string

Function: The model ID of the device. (read-only)
Example:
17.35. CLASS AVCaptureDeviceMBS

```plaintext
dim device as AVCaptureDeviceMBS
device = AVCaptureDeviceMBS.defaultDeviceWithMediaType(AVFoundationMBS.AVMediaTypeVideo)

MsgBox "modelID: " + device.modelID
```

Notes:
The value of this property is an identifier unique to all devices of the same model. The value is persistent across device connections and disconnections, and across different systems. For example, the model ID of the camera built in to two identical iPhone models will be the same even though they are different physical devices.
(Read only property)

17.35.47 position as Integer

Function: Indicates the physical position of the device hardware on the system. (read-only)
Notes:
You can observe changes to the value of this property using key-value observing.
See "AVCaptureDevicePosition" for possible values.
(Read only property)

17.35.48 torchMode as Integer

Function: The current torch mode.
Notes:
Setting the value of this property also sets the torch level to its maximum current value.

Before setting the value of this property, call the isTorchModeSupported method to make sure the device supports the desired mode. Setting the device to an unsupported torch mode results in the raising of an exception. For a list of possible values for this property, see "AVCaptureTorchMode."

Before changing the value of this property, you must call lockForConfiguration to acquire exclusive access to the device’s configuration properties. If you do not, setting the value of this property raises an exception. When you are done configuring the device, call unlockForConfiguration to release the lock and allow other devices to configure the settings.

You can observe changes to the value of this property using key-value observing.
(Read and Write property)
17.35.49 transportControlsPlaybackMode as Integer


**Function:** The current playback mode. (read-only)

**Notes:**
This property is only valid for devices that support transport control.
You can observe changes to the value of this property using key-value observing.
(Read-only property)

17.35.50 transportControlsSpeed as Double


**Function:** The current playback speed. (read-only)

**Notes:**
For devices that support transport control, the value of this property indicates the current playback speed of the deck. The following table gives examples of the meaning of values:

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>Stopped</td>
</tr>
<tr>
<td>1.0</td>
<td>Forward at normal speed.</td>
</tr>
<tr>
<td>-1.0</td>
<td>Reverse at normal speed.</td>
</tr>
<tr>
<td>2.0</td>
<td>Forward at 2x normal speed.</td>
</tr>
</tbody>
</table>

You can observe changes to the value of this property using key-value observing.
(Read-only property)

17.35.51 transportControlsSupported as boolean


**Function:** Indicates whether the device supports transport control commands. (read-only)

**Example:**
```
dim device as AVCaptureDeviceMBS = AVCaptureDeviceMBS.defaultDeviceWithMediaType(AVFoundationMBS.AVMediaTypeVideo)
MsgBox str(device.transportControlsSupported)
```
Notes:
For devices with transport controls, such as AVC tape-based camcorders or pro capture devices with RS422 deck control, the value of this property is true. If transport controls are not supported, none of the associated transport control methods and properties are available on the receiver.

You can observe changes to the value of this property using key-value observing. (Read only property)

17.35.52 transportType as Integer

**Function:** The transport type of the receiver. (read-only)
**Notes:**
The value of this property represents the transport type of the device (USB, PCI, etc). Transport types are defined in `<IOKit/audio/IOAudioTypes.h>` as `kIOAudioDeviceTransportType*`. (Read only property)

17.35.53 uniqueID as string

**Function:** An ID unique to the model of device corresponding to the receiver. (read-only)
**Example:**
```vba
dim device as AVCaptureDeviceMBS
device = AVCaptureDeviceMBS.defaultDeviceWithMediaType(AVFoundationMBS.AVMediaTypeVideo)
dim u as string = device.uniqueID
MsgBox "uniqueID: " + u
```

**Notes:**
Every available capture device has a unique ID that persists on one system across device connections and disconnections, application restarts, and reboots of the system itself. You can store the value returned by this property to recall or track the status of a specific device in the future. (Read only property)

17.35.54 whiteBalanceMode as Integer

**Function:** The current white balance mode.
Before changing the value of this property, you must call lockForConfiguration to acquire exclusive access to the device’s configuration properties. If you do not, setting the value of this property raises an exception. When you are done configuring the device, call unlockForConfiguration to release the lock and allow other devices to configure the settings.

You can observe changes to the value of this property using key-value observing. See "AVCaptureWhiteBalanceMode" for possible values.

(Read and Write property)

17.35.55 Constants

17.35.56 AVCaptureDevicePositionBack = 1

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants to specify the position of a capture device.
**Notes:** The capture device is on the back of the unit.

17.35.57 AVCaptureDevicePositionFront = 2

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants to specify the position of a capture device.
**Notes:** The capture device is on the front of the unit.

17.35.58 AVCaptureDevicePositionUnspecified = 0

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants to specify the position of a capture device.
**Notes:** The capture device’s position relative to the system hardware is unspecified.

17.35.59 AVCaptureDeviceTransportControlsNotPlayingMode = 0

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants that indicate the transport controls’ current mode of playback, if it has one.
**Notes:** Indicates that the tape transport is not threaded through the play head.
17.35. **CLASS AVCaptureDeviceMBS**

**17.35.60 AVCaptureDeviceTransportControlsPlayingMode = 1**

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants that indicate the transport controls' current mode of playback, if it has one.  
**Notes:** Indicates that the tape transport is threaded through the play head.

**17.35.61 AVCaptureExposureModeAutoExpose = 1**

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants to specify the exposure mode of a capture device.  
**Notes:** The device continuously monitors exposure levels and auto exposes when necessary.

**17.35.62 AVCaptureExposureModeContinuousAutoExposure = 2**

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants to specify the exposure mode of a capture device.  
**Example:**

```vbnet
dim device as AVCaptureDeviceMBS
device = AVCaptureDeviceMBS.defaultDeviceWithMediaType(AVFoundationMBS.AVMediaTypeVideo)
MsgBox str(device.isExposureModeSupported(device.AVCaptureExposureModeContinuousAutoExposure))
```

**Notes:** The device performs an auto-expose operation now.

**17.35.63 AVCaptureExposureModeLocked = 0**

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants to specify the exposure mode of a capture device.  
**Notes:** The exposure setting is locked.

**17.35.64 AVCaptureFlashModeAuto = 2**

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants to specify the flash mode of a capture device.  
**Notes:** The capture device continuously monitors light levels and uses the flash when necessary.
17.35.65  AVCaptureFlashModeOff = 0

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants to specify the flash mode of a capture device.
**Notes:** The capture device flash is always off.

17.35.66  AVCaptureFlashModeOn = 1

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants to specify the flash mode of a capture device.
**Notes:** The capture device flash is always on.

17.35.67  AVCaptureFocusModeAutoFocus = 1

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants to specify the focus mode of a capture device.
**Notes:** The capture device performs an autofocus operation now.

17.35.68  AVCaptureFocusModeContinuousAutoFocus = 2

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants to specify the focus mode of a capture device.
**Notes:** The capture device continuously monitors focus and auto focuses when necessary.

17.35.69  AVCaptureFocusModeLocked = 0

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants to specify the focus mode of a capture device.
**Notes:** The focus is locked.

17.35.70  AVCaptureTorchModeAuto = 2

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants to specify the direction in which a capture device faces.
**Notes:** The capture device continuously monitors light levels and uses the torch when necessary.
17.35. **CLASS AVCAPTUREDEVICEMBS**

17.35.71 **AVCaptureTorchModeOff = 0**

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants to specify the direction in which a capture device faces. **Notes:** The capture device torch is always off.

17.35.72 **AVCaptureTorchModeOn = 1**

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants to specify the direction in which a capture device faces. **Notes:** The capture device torch is always on.

17.35.73 **AVCaptureWhiteBalanceModeAutoWhiteBalance = 1**

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants to specify the white balance mode of a capture device. **Notes:** The device performs an auto white balance operation now.

17.35.74 **AVCaptureWhiteBalanceModeContinuousAutoWhiteBalance = 2**

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants to specify the white balance mode of a capture device. **Notes:** The device continuously monitors white balance and adjusts when necessary.

17.35.75 **AVCaptureWhiteBalanceModeLocked = 0**

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants to specify the white balance mode of a capture device. **Notes:** The white balance setting is locked.
17.36 class AVCaptureFileOutputMBS

17.36.1 class AVCaptureFileOutputMBS


Function: AVCaptureFileOutput is an abstract sub-class of AVCaptureOutput that describes a file output destination to an AVCaptureSession.

Notes:

For example, you use an instance of its concrete subclass, AVCaptureMovieFileOutput, to save capture output to a QuickTime movie file. The concrete subclasses of AVCaptureFileOutput are AVCaptureMovieFileOutput, which records media to a QuickTime movie file, and AVCaptureAudioFileOutput, which writes audio media to a variety of audio file formats.

This abstract superclass defines the interface for outputs that record media samples to files. File outputs can start recording to a new file using startRecordingToOutputFileURL method.

In OS X, on successive invocations of this method the output file can be changed dynamically without losing media samples. A file output can stop recording using the stopRecording method. Because files are recorded in the background, you need to specify a delegate for each new file to be notified when recorded files are finished.

In OS X, you can also set a delegate on the file output itself that can be used to control recording along exact media sample boundaries using the captureOutputDidOutputSampleBuffer event in AVFoundationMBS. Subclass of the AVCaptureOutputMBS class.

17.36.2 Methods

17.36.3 Constructor


Function: The constructor.

17.36.4 EnableEvents


Function: Enables the events for this output.

Notes: Those are normally handled automatically, but if you add event with AddHandler you need to call this method.
17.36. CLASS AVCAPTUREFILEOUTPUTMBS

17.36.5  isRecording as boolean

**Function:** Indicates whether recording is in progress.
**Notes:** The value of this property is true when the file output currently has a file to which it is writing new samples, false otherwise.

17.36.6  isRecordingPaused as boolean

**Function:** Indicates whether recording to the current output file is paused.
**Notes:** This property indicates recording to the file returned by outputFileURL has been previously paused using the pauseRecording method. When a recording is paused, captured samples are not written to the output file, but new samples can be written to the same file in the future by calling resumeRecording.

17.36.7  outputFileURL as string

**Function:** The URL to which output is directed. (read-only)

17.36.8  pauseRecording

**Function:** Pauses recording to the current output file.
**Notes:**
This method causes the receiver to stop writing captured samples to the current output file returned by outputFileURL, but leaves the file open so that samples can be written to it in the future, if resumeRecording is called. This allows you to record multiple media segments that are not contiguous in time to a single file.

In OS X, if this method is called within the AVFoundationMBS captureOutputDidFinishRecordingToOutputFileAtURL event, the last samples written to the current file are guaranteed to be those that were output immediately before those in the sample buffer passed to that method.

17.36.9  recordedDuration as CMTimeMBS

**Function:** Indicates the duration of the media recorded to the current output file. (read-only)
Notes: If recording is in progress, this property returns the total time recorded so far.

17.36.10  recordedFileSize as Int64

Function: Indicates the size, in bytes, of the data recorded to the current output file. (read-only)
Notes: If a recording is in progress, this property returns the size in bytes of the data recorded so far.

17.36.11  resumeRecording

Function: Resumes recording to the current output file after it was previously paused using pauseRecording.
Notes:
This method causes the receiver to resume writing captured samples to the current output file returned
by outputFileURL, after recording was previously paused using pauseRecording. This allows you to record
multiple media segments that are not contiguous in time to a single file.

In OS X, if this method is called within the AVFoundationMBS captureOutputDidFinishRecordingToOut-
putFileAtURL event, the first samples written to the current file are guaranteed to be those contained in
the sample buffer passed to that method.

17.36.12  startRecordingToOutputFile(file as folderitem)

Function: Starts recording to a given file.
Notes: Same as startRecordingToOutputFileURL, but with folderitem.

17.36.13  startRecordingToOutputFileURL(URL as string)

Function: Starts recording to a given URL.
Notes:
URL: The URL of the output file. This method throws an NSInvalidArgumentException if the URL is not
a valid file URL.

The method sets the file URL to which the receiver is currently writing output media. If a file at the given
URL already exists when capturing starts, recording to the new file will fail.
In OS X, you do not need to call stopRecording before calling this method while another recording is in progress. If this method is invoked while an existing output file was already being recorded, no media samples will be discarded between the old file and the new file.

In iOS, this frame accurate file switching is not supported. You must call stopRecording before calling this method again to avoid any errors.

When recording is stopped either by calling stopRecording, by changing files using this method, or because of an error, the remaining data that needs to be included to the file will be written in the background. Therefore, you must specify a delegate that will be notified when all data has been written to the file using the AVFoundationMBS.captureOutputDidFinishRecordingToOutputFileAtURL event. The recording delegate can also optionally implement methods that inform it when data starts being written, when recording is paused and resumed, and when recording is about to be finished.

In OS X, if this method is called within the AVFoundationMBS.captureOutputDidOutputSampleBuffer event, the first samples written to the new file are guaranteed to be those contained in the sample buffer passed to that method.

Note: AVCaptureAudioFileOutput does not support startRecordingToOutputFileURL without filetype.

17.36.14 stopRecording


Function: Tells the receiver to stop recording to the current file.

Notes:

You can call this method when they want to stop recording new samples to the current file, and do not want to continue recording to another file. If you want to switch from one file to another, you should not call this method. Instead you should simply call startRecordingToOutputFileURL with the new file URL.

When recording is stopped either by calling this method, by changing files using startRecordingToOutputFileURL, or because of an error, the remaining data that needs to be included to the file will be written in the background. Therefore, before using the file, you must wait until the delegate that was specified in startRecordingToOutputFileURL is notified when all data has been written to the file using the AVFoundationMBS.captureOutputDidFinishRecordingToOutputFileAtURL method.

In OS X, if this method is called within the AVFoundationMBS.captureOutputDidOutputSampleBuffer event, the last samples written to the current file are guaranteed to be those that were output immediately before those in the sample buffer passed to that method.
17.36.15 Properties

17.36.16 maxRecordedDuration as CMTimeMBS

Function: The longest duration allowed for the recording.
Notes:
This property specifies a hard limit on the duration of recorded files. Recording is stopped when the limit
is reached and the AVFoundationMBS.captureOutputDidFinishRecordingToOutputFileAtURL event is in-
voked with an appropriate error. The default value of this property is kCMTimeInvalid, which indicates no
limit.
(Read and Write computed property)

17.36.17 maxRecordedFileSize as Int64

Function: The maximum size, in bytes, of the data that should be recorded by the receiver.
Notes:
This property specifies a hard limit on the data size of recorded files. Recording is stopped when the limit
is reached and the AVFoundationMBS captureOutputDidFinishRecordingToOutputFileAtURL event is in-
voked with an appropriate error. The default value of this property is 0, which indicates no limit.
(Read and Write computed property)

17.36.18 minFreeDiskSpaceLimit as Int64

Function: The minimum amount of free space, in bytes, required for recording to continue on a given
volume.
Notes:
This property specifies a hard lower limit on the amount of free space that must remain on a target volume
for recording to continue. Recording is stopped when the limit is reached and the AVFoundationMBS cap-
tureOutputDidFinishRecordingToOutputFileAtURL event is invoked with an appropriate error.
(Read and Write computed property)
17.37 class AVCaptureInputMBS

17.37.1 class AVCaptureInputMBS


Function: AVCaptureInput is an abstract base-class describing an input data source to an AVCaptureSession object.

Notes:
To associate an AVCaptureInput object with a session, call addInput on the session.

AVCaptureInput objects have one or more ports (instances of AVCaptureInputPort), one for each data stream they can produce. For example, an AVCaptureDevice object presenting one video data stream has one port.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

17.37.2 Methods

17.37.3 available as boolean


Function: Whether this class is available.

Notes: Returns true on Mac OS X 10.7 and newer.

17.37.4 Constructor


Function: The private constructor.

17.37.5 ports as AVCaptureInputPortMBS()


Function: The capture input’s ports. (read-only)

Notes:
The array contains one or more instances of AVCaptureInputPort.

Each individual AVCaptureInputPort instance posts an AVCaptureInputPortFormatDescriptionDidChangeNotification when the formatDescription of that port changes.
17.37.6  `portWithMediaType(mediaType as string) as AVCaptureInputPortMBS`

**Function:** Finds the port in the ports array with given mediatype.
**Notes:** Returns nil if not found.

17.37.7  Properties

17.37.8  Handle as Integer

**Function:** The internal object reference.
**Notes:** (Read and Write property)
17.38. class AVCaptureInputPortMBS

17.38.1 class AVCaptureInputPortMBS


Function: An AVCaptureInputPort represents a stream of data from a capture input.

Notes:
Instances of AVCaptureInput have one or more input ports, one for each data stream they can produce. For example, an AVCaptureDeviceInput presenting one video data stream has one port. This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

17.38.2 Methods

17.38.3 available as boolean


Function: Whether this class is available.

Notes: Returns true on Mac OS X 10.7 and newer.

17.38.4 Constructor


Function: The private constructor.

17.38.5 formatDescription as CMFormatDescriptionMBS


Function: A description of the port format. (read-only)

17.38.6 input as AVCaptureInputMBS


Function: The port’s input. (read-only)
17.38.7  mediaType as string

Function: The port’s media type. (read-only)

17.38.8  Properties

17.38.9  Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

17.38.10  Enabled as boolean

Function: Indicates whether the port is enabled.
Notes: (Read and Write computed property)
17.39  class AVCaptureMovieFileOutputMBS

17.39.1  class AVCaptureMovieFileOutputMBS

Function: AVCaptureMovieFileOutput is a concrete sub-class of AVCaptureFileOutput you use to capture
data to a QuickTime movie.
Notes:
The timeMapping.target.start of the first track segment must be kCMT imeZero, and the timeMapping.tar-
get.start of each subsequent track segment must equal CMT imeRangeGetEnd(# the previous AVCompo-
sitionTrackSegment’s timeMapping.target # ). You can use validateTrackSegments to ensure that an array
of track segments conforms to this rule.
Subclass of the AVCaptureFileOutputMBS class.

17.39.2  Methods

17.39.3  Constructor

Function: The constructor.

17.39.4  EnableEvents

Function: Enables the events for this output.
Notes: Those are normally handled automatically, but if you add event with AddHandler you need to call
this method.

17.39.5  metadata as AVMetadataItemMBS()

Function: The metadata for the output file.
Notes: The array contains AVMetadataItem objects. You use this array to add metadata such as copyright,
creation date, and so on, to the recorded movie file.
17.39.6  setMetadata(items() as AVMetadataItemMBS)

**Function:** Sets the metadata for the output file.
**Notes:** The array contains AVMetadataItem objects. You use this array to add metadata such as copyright, creation date, and so on, to the recorded movie file.

17.39.7  Properties

17.39.8  movieFragmentInterval as CMTimeMBS

**Function:** Indicates the number of seconds of output that are written per fragment.
**Notes:**
The default is 10 seconds. Set to kCMTimeInvalid to disable movie fragment writing (not typically recommended).

A QuickTime movie is comprised of media samples and a sample table identifying their location in the file. A movie file without a sample table is unreadable.

In a processed file, the sample table typically appears at the beginning of the file. It may also appear at the end of the file, in which case the header contains a pointer to the sample table at the end. When a new movie file is being recorded, it is not possible to write the sample table since the size of the file is not yet known. Instead, the table is must be written when recording is complete. If no other action is taken, this means that if the recording does not complete successfully (for example, in the event of a crash), the file data is unusable (because there is no sample table). By periodically inserting "movie fragments" into the movie file, the sample table can be built up incrementally. This means that if the file is not written completely, the movie file is still usable (up to the point where the last fragment was written).
(Read and Write computed property)

17.39.9  outputSettingsForConnection(connection as AVCaptureConnectionMBS) as Dictionary

**Function:** Returns the options the receiver uses to re-encode media from the given connection as it is being recorded.
**Notes:**
connection: The connection delivering the media to be re-encoded.
Returns an Dictionary of output settings.
See AVAudioSettings.h for audio connections or AVVideoSettings.h for video connections for more information on how to construct an output settings dictionary. If the returned value is an empty dictionary (i.e. new dictionary, the format of the media from the connection will not be changed before being written to the file. If setOutputSettings was called with a nil dictionary, this method returns a non-nil dictionary reflecting the settings used by the AVCaptureSession’s current sessionPreset.
(Read and Write computed property)
17.40 class AVCaptureOutputMBS

17.40.1 class AVCaptureOutputMBS

Function: AVCaptureOutput is an abstract base-class describing an output destination of an AVCaptureSession object.
Notes:
AVCaptureOutput provides an abstract interface for connecting capture output destinations, such as files and video previews, to an capture session (an instance of AVCaptureSession). A capture output can have multiple connections represented by AVCaptureConnection objects, one for each stream of media that it receives from a capture input (an instance of AVCaptureInput). A capture output does not have any connections when it is first created. When you add an output to a capture session, connections are created that map media data from that session’s inputs to its outputs.
You can add concrete AVCaptureOutput instances to an capture session using addOutput.

17.40.2 Methods

17.40.3 available as boolean

Function: Whether this class is available.
Notes: Returns true on Mac OS X 10.7 and newer.

17.40.4 connections as AVCaptureConnectionMBS()

Function: The capture output object’s connections. (read-only)
Notes: The value of this property is an array of AVCaptureConnection objects, each describing the mapping between the receiver and the capture input ports (see AVCaptureInputPort) of one or more capture inputs (see AVCaptureInput).

17.40.5 connectionWithMediaType(mediaType as string) as AVCaptureConnectionMBS

Function: Returns the first connection in the connections array with an input port of a specified media
Returns the first capture connection in the connections array that has an AVCaptureInputPort with media type mediaType, or nil if no connection with the specified media type is found.

17.40.6 Constructor


17.40.7 Properties

17.40.8 Handle as Integer

17.41 class AVCaptureScreenInputMBS

17.41.1 class AVCaptureScreenInputMBS


Function: AVCaptureScreenInput is a concrete subclass of AVCaptureInput that provides an interface for capturing media from a screen or a portion of a screen.

Notes:
Instances of AVCaptureScreenInput are input sources for AVCaptureSession objects that provide media data from one of the screens connected to the system, represented by CGDirectDisplayIDs.
Subclass of the AVCaptureInputMBS class.

17.41.2 Methods

17.41.3 Constructor(CGDisplay as Variant)


Function: Initializes a capture screen input that provides media data from a given display.

Notes:
CGDisplay: The display from which to capture video. Must be CGDisplayMBS object.
Handle is non zero on success.

17.41.4 minFrameDuration as CMTimeMBS


Function: The screen input’s minimum frame duration.

Notes:
The minFrameDuration is the reciprocal of its maximum frame rate.

You use this property to request a maximum frame rate at which the input produces video frames. The requested rate may not be achievable due to overall bandwidth, so actual frame rates may be lower.

17.41.5 scaleFactor as Double


Function: Indicates the factor by which video buffers captured from the screen are to be scaled.

Notes: By default, AVCaptureScreenInput captures the video buffers from the display at a scale factor of 1.0 (no scaling). Set this property to scale the buffers by a given factor; for example a 320x240 capture area
with a scaleFactor of 2.0 produces video buffers at 640x480.

### 17.41.6 Properties

#### 17.41.7 capturesCursor as boolean

**Function:** A property indicating whether the cursor should be rendered to the captured output.  
**Notes:**  
By default, AVCaptureScreenInput draws the cursor in its captured output. If this property is set to false, the captured output contains only the windows on the screen. Cursor is omitted. Note that cursor position and mouse button state at the time of capture is preserved in CMSampleBuffers emitted from AVCaptureScreenInput. See the inline documentation for kCMIOSampleBufferAttachmentKey_MouseAndKeyboardModifiers in `<CoreMediaIO/CMIOSampleBuffer.h>`

Available in Mac OS X 10.8 and newer.  
(Read and Write computed property)

#### 17.41.8 capturesMouseClicks as boolean

**Function:** Indicates whether mouse clicks should be highlighted in the captured output.  
**Notes:**  
By default, AVCaptureScreenInput does not highlight mouse clicks in its captured output.  
If you set this property is set to true, mouse clicks are highlighted (a circle is drawn around the mouse for the duration of the click) in the captured output.  
(Read and Write computed property)

#### 17.41.9 cropRect as CGRectMBS

**Function:** Indicates the bounding rectangle of the screen area to be captured, in pixels.  
**Notes:**  
By default, AVCaptureScreenInput captures the entire area of the displayID with which it is associated.  
Set the value of this property to limit the capture rectangle to a subsection of the screen.
The rectangle should define a smaller section of the screen in the screen’s coordinate system. The origin (0,0) is the bottom-left corner of the screen.

(Read and Write computed property)

17.41.10 **removesDuplicateFrames as boolean**


*Function:* A property indicating whether duplicate frames should be removed by the input.

*Notes:*

By default, AVCaptureScreenInput performs frame differencing and when it detects duplicate frames, it drops them. If this property is set to false, the captured output receives all frames from the input.

Available in Mac OS X 10.8 and newer.

(Read and Write computed property)
17.42. **CLASS AVCaptureSessionMBS**

### 17.42 class AVCaptureSessionMBS

**MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** An AVCaptureConnection object represents a connection between capture input and capture output objects associated with a capture session.

**Notes:**

Capture inputs (instances of AVCaptureInput) have one or more input ports (instances of AVCaptureInputPort). Capture outputs (instances of AVCaptureOutput) can accept data from one or more sources (for example, an AVCaptureMovieFileOutput object accepts both video and audio data).

You can only add an AVCaptureConnection instance to a session using addConnection if canAddConnection returns true. When using addInput or addOutput, connections are formed automatically between all compatible inputs and outputs. You only need to add connections manually when adding an input or output with no connections. You can also use connections to enable or disable the flow of data from a given input or to a given output.

### 17.42.2 Methods

#### 17.42.3 addConnection(connection as AVCaptureConnectionMBS)

**MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Adds a given capture connection to the session.

**Notes:**

connection: The capture connection to add to the session.

You can only add an AVCaptureConnection instance to a session using this method if canAddConnection returns true. When using addInput or addOutput, connections are formed automatically between all compatible inputs and outputs. Manually adding connections is only necessary when adding an input or output with no connections.

#### 17.42.4 addInput(connection as AVCaptureInputMBS)

**MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Adds a given input to the session.

**Notes:**

input: An input to add to the session.
You can only add an input to a session using this method if `canAddInput` returns true. You can invoke this method while the session is running.

### 17.42.5 addInputWithNoConnections(input as AVCaptureInputMBS)


**Function:** Adds an capture input to the session without forming any connections.

**Notes:**
- `input`: The capture input to add to the session.
- You can invoke this method while the session is running.
- Typically you should use `addInput` to add an input to a session. You use this method if you need fine-grained control over which inputs are connected to which outputs.

### 17.42.6 addOutput(connection as AVCaptureOutputMBS)


**Function:** Adds a given output to the session.

**Notes:**
- `output`: An output to add to the session.
- You can only add an output to a session using this method if `canAddOutput` returns true.
- You can invoke this method while the session is running.

### 17.42.7 addOutputWithNoConnections(output as AVCaptureOutputMBS)


**Function:** Adds an capture output to the session without forming any connections.

**Notes:**
- `output`: The capture output to add to the session.
- You can invoke this method while the session is running.
- Typically you should use `addOutput` to add an output to a session. You use this method if you need fine-grained control over which inputs are connected to which outputs.

### 17.42.8 available as boolean


**Function:** Whether this class is available.
17.42.9 beginConfiguration

Function: Indicates the start of a set of configuration changes to be made atomically.
Notes:
You use beginConfiguration and commitConfiguration to batch multiple configuration operations on a running session into an atomic update.

After calling beginConfiguration, you can for example add or remove outputs, alter the sessionPreset, or configure individual capture input or output properties. No changes are actually made until you invoke commitConfiguration, at which time they are applied together.

17.42.10 canAddConnection(connection as AVCaptureConnectionMBS) as boolean

Function: Returns a Boolean value that indicates whether a given connection can be added to the receiver.
Notes:
connection: An AVCaptureConnection instance.
Returns true if connection can be added to the receiver, otherwise false.

17.42.11 canAddInput(input as AVCaptureInputMBS) as boolean

Function: Returns a Boolean value that indicates whether a given input can be added to the session.
Notes:
input: An input that you want to add to the session.
Returns true if input can be added to the session, otherwise false.

17.42.12 canAddOutput(output as AVCaptureOutputMBS) as boolean

Function: Returns a Boolean value that indicates whether a given output can be added to the session.
Notes:
output: An output that you want to add to the session.
Returns true if output can be added to the session, otherwise false.
17.42.13 canSetSessionPreset(preset as string) as boolean

**Function:** Returns a Boolean value that indicates whether the receiver can use the given preset.
**Notes:**

preset: A preset you would like to set for the receiver. For possible values, see AVFoundationMBS.
Returns true if the receiver can use preset, otherwise false.

17.42.14 commitConfiguration

**Function:** Commits a set of configuration changes.
**Notes:** For discussion, see beginConfiguration.

17.42.15 Constructor

**Function:** The constructor.

17.42.16 inputs as AVCaptureInputMBS()

**Function:** The capture session’s inputs. (read-only)
**Notes:** The array contains instances of subclasses of AVCaptureInput.

17.42.17 isRunning as boolean

**Function:** Indicates whether the receiver is running. (read-only)
**Notes:** You can observe the value of this property using key-value observing.
17.42. CLASS AVCaptureSessionMBS

17.42.18 outputs as AVCaptureOutputMBS()

Function: The capture session’s outputs. (read-only)
Notes: The array contains instances of subclasses of AVCaptureOutput.

17.42.19 removeConnection(connection as AVCaptureConnectionMBS)

Function: Removes a capture connection from the session.
Notes: connection: The capture connection to remove from the session.
You can invoke this method while the session is running.

17.42.20 removeInput(connection as AVCaptureInputMBS)

Function: Removes a given input.
Notes: input: An input to remove from the receiver.
You can invoke this method while the session is running.

17.42.21 removeOutput(connection as AVCaptureOutputMBS)

Function: Removes a given output.
Notes: output: An output to remove from the receiver.
You can invoke this method while the session is running.

17.42.22 startRunning

Function: Tells the receiver to start running.
Notes: startRunning and stopRunning are asynchronous operations. If an error occurs during a
capture session, you receive an AVCaptureSessionRuntimeErrorNotification.
17.42.23 stopRunning

Function: Tells the receiver to stop running.
Notes: startRunning and stopRunning are asynchronous operations. If an error occurs during a capture session, you receive an AVCaptureSessionRuntimeErrorNotification.

17.42.24 Properties

17.42.25 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

17.42.26 sessionPreset as string

Function: A constant value indicating the quality level or bitrate of the output.
Notes:
You use this property to customize the quality level or bitrate of the output. For possible values of sessionPreset, see AVFoundationMBS. The default value is AVCaptureSessionPresetHigh.
You can set this value while the session is running.
You can only set a preset if canSetSessionPreset: returns true for that preset.
(Read and Write computed property)
17.43. **CLASS AVCAPTURESTILLIMAGEOUTPUTMBS**

17.43 **class AVCaptureStillImageOutputMBS**

17.43.1 **class AVCaptureStillImageOutputMBS**

**Function:** AVCaptureStillImageOutput is a concrete sub-class of AVCaptureOutput that you use to capture a high-quality still image with accompanying metadata.  
**Notes:** Subclass of the AVCaptureOutputMBS class.

17.43.2 **Methods**

17.43.3 **availableImageDataCodecTypes as string()**

**Function:** The supported image codec formats that can be specified in outputSettings. (read-only)  
**Example:**

```vbs
dim a as new AVCaptureStillImageOutputMBS
MsgBox join(a.availableImageDataCodecTypes)
```

**Notes:** The value of this property is an array of Strings that you can use as values for the AVVideoCodecKey in the outputSettings property.

17.43.4 **availableImageDataCVPixelFormatTypes as Integer()**

**Function:** The supported image pixel formats that can be specified in outputSettings. (read-only)  
**Example:**

```vbs
dim a as new AVCaptureStillImageOutputMBS
dim availableImageDataCVPixelFormatTypes() as Integer = a.availableImageDataCVPixelFormatTypes()
break // check array in debugger
```

**Notes:**

The value of this property is an array of numbers that you can use as values for the kCVPixelBufferPixelFormatTypeKey in the outputSettings property.  
Currently only "jpeg".  
Available in OS X v10.7 and later.
17.43.5 captureStillImageAsynchronously(connection as AVCaptureConnectionMBS, prepareJpegStillImage as boolean, tag as Variant = nil)


Function: Initiates a still image capture and returns immediately.

Notes:
connection: The connection from which to capture the image.

Pass true for prepareJpegStillImage to have the plugin prepare jpeg data for you.

The buffer attachments may contain metadata appropriate to the image data format. For example, a buffer containing JPEG data may carry a kCGImagePropertyExifDictionary as an attachment. See ImageIO/CGImageProperties.h for a list of keys and value types.

error
If the request could not be completed, an NSError object that describes the problem; otherwise nil.

This method returns immediately after it is invoked, later calling the AVFoundationMBS.captureStillImageAsynchronouslyCompleted event when image data is ready. If the request could not be completed, the error parameter will contain an NSError object describing the failure.

Available in OS X v10.7 and later.

With tag you can pass any value you like to the event later. This can be for example an object reference or a number in an array. Be aware that the reference to this tag value is kept until the event is called and can cause memory reference cycles.

17.43.6 Constructor


Function: The constructor.

17.43.7 jpegStillImageNSDataRepresentation(jpegSampleBuffer as CMSampleBufferMBS) as memoryblock


Function: Returns an memoryblock representation of a still image data and metadata attachments in a JPEG sample buffer.

Notes:
jpegSampleBuffer: The sample buffer carrying JPEG image data, optionally with Exif metadata sample
buffer attachments.
This method throws an NSInvalidArgumentException if jpegSampleBuffer is nil or not in the JPEG format.

Returns memory block representation of jpegSampleBuffer.

This method merges the image data and Exif metadata sample buffer attachments without re-compressing the image.
The returned memory block object is suitable for writing to disk.

Available in OS X v10.7 and later.

17.43.8 Properties

17.43.9 isCapturingStillImage as boolean

Function: A boolean value that becomes true when a still image is being captured.
Notes: The value of this property is a BOOL that becomes true when a still image is being captured, and false when no still image capture is underway. This property is key-value observable.
(Read only property)

17.43.10 outputSettings as dictionary

Function: The compression settings for the output.
Notes: You specify the compression settings using keys from AVVideoSettings.h, or a dictionary of pixel buffer attributes using keys from CVPixelBuffer.h.

Currently the only supported keys are AVVideoCodecKey and kCVPixelBufferPixelFormatTypeKey. The recommended values are kCMVideoCodecType_JPEG, kCVPixelFormatType_420YpCrCb8BiPlanarFullRange and kCVPixelFormatType_32BGRA.

Available in OS X v10.7 and later.
(Read and Write computed property)
17.44 class AVCaptureVideoDataOutputMBS

17.44.1 class AVCaptureVideoDataOutputMBS

Function: AVCaptureVideoDataOutput is a concrete sub-class of AVCaptureOutput you use to process uncompressed frames from the video being captured, or to access compressed frames.
Notes:
An instance of AVCaptureVideoDataOutput produces video frames you can process using other media APIs. You can access the frames with the AVFoundationMBS.captureOutputDidOutputSampleBuffer event. Subclass of the AVCaptureOutputMBS class.

17.44.2 Methods

17.44.3 availableVideoCodecTypes as string()

Function: Indicates the supported video codec formats that can be specified in videoSettings. (read-only)
Notes: The value of this property is an array of String objects you can use as values for the AVVideoCodecKey in the videoSettings property. The first format in the returned list is the most efficient output format.

17.44.4 Constructor

Function: The constructor.

17.44.5 EnableEvents

Function: Enables the events for this output.
Notes: Those are normally handled automatically, but if you add event with AddHandler you need to call this method.
17.44.6 Properties

17.44.7 alwaysDiscardsLateVideoFrames as boolean


Function: Indicates whether video frames are dropped if they arrive late.

Notes:

When the value of this property is true, the object immediately discards frames that are captured while the dispatch queue handling existing frames is blocked in the AVFoundationMBS.capturcOutputDidOutputSampleBuffer event.

When the value of this property is false, delegates are allowed more time to process old frames before new frames are discarded, but application memory usage may increase significantly as a result.

The default is true.
(Read and Write computed property)

17.44.8 videoSettings as dictionary


Function: The compression settings for the output.

Notes:

The dictionary contains values for compression settings keys defined in AVVideoSettings.h, or pixel buffer attributes keys defined in `<CoreVideo/CVPixelBuffer.h>`(see CVPixelBufferRef). The only key currently supported is the kCVPixelBufferPixelFormatTypeKey key.
(The plugin defines such keys in AVFoundationMBS)

To get possible values for the supported video pixel formats (kCVPixelBufferPixelFormatTypeKey) and video codec formats (AVVideoCodecKey), see availableVideoCVPixelFormatTypes and availableVideoCodecTypes respectively.

To receive samples in their device native format, set this property to nil:

If you set this property to nil and then subsequently query it, you will get a dictionary reflecting the settings used by the capture session's current sessionPreset.
(Read and Write computed property)
17.45 class AVCaptureVideoPreviewLayerMBS

17.45.1 class AVCaptureVideoPreviewLayerMBS

**Function:** AVCaptureVideoPreviewLayer is a subclass of CALayer that you use to display video as it is being captured by an input device.
**Notes:**
You use the videoGravity property to influence how content is viewed relative to the layer bounds. On some hardware configurations, you can manipulate the orientation of the layer using orientation and mirrored. Subclass of the CALayerMBS class.

17.45.2 Methods

17.45.3 connection as AVCaptureConnectionMBS

**Function:** The capture connection describing the AVCaptureInputPort to which the preview layer is connected. (read-only)
**Notes:** If you invoke Constructor, layerWithSession, or set session with a valid AVCaptureSession instance, a connection is formed to the first eligible video AVCaptureInput object. If the preview layer is detached from a session, the connection property becomes nil.

17.45.4 Constructor(session as AVCaptureSessionMBS, WithConnection as boolean = true)

**Function:** Initializes a preview layer with a given capture session.
**Notes:** Only pass WithConnection=false here if you intend to manually form a connection between a desired AVCaptureInputPort object and the receiver using addConnection.

17.45.5 layerWithSession(session as AVCaptureSessionMBS) as AVCaptureVideoPreviewLayerMBS

**Function:** Returns a preview layer initialized with a given capture session.
**Notes:**
session: The capture session from which to derive the preview.
Returns a preview layer initialized to use session.

### 17.45.6 `layerWithSessionWithNoConnection(session as AVCaptureSessionMBS)` as AVCaptureVideoPreviewLayerMBS


**Function:** Returns a preview layer using a given capture session but without making any connections.

**Notes:**
- `session`: The capture session to be previewed.
- Return a preview layer initialized with session but with no connections to any of the session’s eligible video inputs.

Only use this method if you intend to manually form a connection between a desired AVCaptureInputPort object and the receiver using addConnection.

### 17.45.7 `setSessionWithNoConnection(session as AVCaptureSessionMBS)`


**Function:** Attaches the receiver to a given session without implicitly forming a connection.

**Notes:**
- This method attaches the receiver to a given session without implicitly forming a connection to the first eligible video AVCaptureInputPort object. You should only use this method if you intend to manually form a connection between a desired AVCaptureInputPort object and the receiver using addConnection.

### 17.45.8 Properties

### 17.45.9 `session as AVCaptureSessionMBS`


**Function:** The capture session instance being previewed.

**Notes:** (Read and Write computed property)

### 17.45.10 `videoGravity as string`


**Function:** Indicates how the video is displayed within a player layer’s bounds rect.

**Notes:**
- Options are AVLayerVideoGravityResizeAspect, AVLayerVideoGravityResizeAspectFill and AVLayerVideoGravityResize. The default is AVLayerVideoGravityResizeAspect.
This property is animatable.
(Read and Write computed property)
17.46. **CLASS AVCOMPOSITIONMBS**

17.46 **class AVCompositionMBS**

**17.46.1 class AVCompositionMBS**

**Function:** An AVComposition object combines media data from multiple file-based sources in a custom temporal arrangement, in order to present or process media data from multiple sources together.  
**Notes:**  
All file-based audiovisual assets are eligible to be combined, regardless of container type. The tracks in an AVComposition object are fixed; to change the tracks, you use an instance of its subclass, AVMutableComposition.  

At its top-level, AVComposition is a collection of tracks, each presenting media of a specific media type, e.g. audio or video, according to a timeline. Each track is represented by an instance of AVCompositionTrack. Each track is comprised of an array of track segments, represented by instances of AVCompositionTrackSegment. Each segment presents a portion of the media data stored in a source container, specified by URL, a track identifier, and a time mapping. The URL specifies the source container, and the track identifier indicates the track of the source container to be presented.

The time mapping specifies the temporal range of the source track that’s to be presented and also specifies the temporal range of its presentation in the composition track. If the durations of the source and destination ranges of the time mapping are the same, the media data for the segment will be presented at its natural rate. Otherwise, the segment will be presented at a rate equal to the ratio source.duration / target.duration.

You can access the track segments of a track using the segments property (an array of AVCompositionTrackSegment objects) of AVCompositionTrack. The collection of tracks with media type information for each, and each with its array of track segments (URL, track identifier, and time mapping), form a complete low-level representation of a composition. This representation can be written out by clients in any convenient form, and subsequently the composition can be reconstituted by instantiating a new AVMutableComposition with AVMutableCompositionTrack objects of the appropriate media type, each with its segments property set according to the stored array of URL, track identifier, and time mapping.

A higher-level interface for constructing compositions is also presented by AVMutableComposition and AVMutableCompositionTrack, offering insertion, removal, and scaling operations without direct manipulation of the trackSegment arrays of composition tracks. This interface makes use of higher-level constructs such as AVAsset and AVAssetTrack, allowing the client to make use of the same references to candidate sources that it would have created in order to inspect or preview them prior to inclusion in a composition.  
**Subclass of the AVAssetMBS class.**  
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.
17.46.2 Methods

17.46.3 CompositionTracks as AVCompositionTrackMBS()

Function: An array of AVCompositionTrack objects contained by the composition. (read-only)

17.46.4 Constructor

Function: The private constructor.

17.46.5 mutableCopy as AVMutableCompositionMBS

Function: Creates an editable copy of the object.

17.46.6 naturalSize as CGSizeMBS

Function: Indicates the authored size of the visual portion of the composition. (read-only)
17.47 class AVCompositionTrackMBS

17.47.1 class AVCompositionTrackMBS


**Function:** The class for a composition track.

**Notes:**

An AVCompositionTrack object provides the low-level representation of tracks in an AVComposition object, comprising a media type, a track identifier, and an array of AVCompositionTrackSegment objects, each comprising a URL, and track identifier, and a time mapping.

The timeMapping.target.start of the first track segment in a composition track is kCMTimeZero, and the timeMapping.target.start of each subsequent track segment equals CMTimestampGetEnd(<# previous-TrackSegment#>).timeMapping.target).

The AVFoundation framework also provides a mutable subclass, AVMutableCompositionTrack.

Subclass of the AVAssetTrackMBS class.

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

17.47.2 Methods

17.47.3 CompositionTrackSegments as AVCompositionTrackSegmentMBS()


**Function:** The composition track’s track segments. (read-only)

17.47.4 Constructor


**Function:** The private constructor.
17.48  **class AVCompositionTrackSegmentMBS**

17.48.1  **class AVCompositionTrackSegmentMBS**


**Function:** An AVCompositionTrackSegment object represents a segment of an AVCompositionTrack object, comprising a URL, and track identifier, and a time mapping from the source track to the composition track.

**Notes:**
You typically use this class to save the low-level representation of a composition to storage formats of your choosing and to reconstitute them from storage.
Subclass of the AVAssetTrackSegmentMBS class.

17.48.2  **Methods**

17.48.3  **compositionTrackSegmentWithTimeRange(timeRange as CMTimeRangeMBS)** as AVCompositionTrackSegmentMBS


**Function:** Returns a composition track segment that presents an empty track segment.

**Notes:**
- timeRange: The time range of the empty composition track segment.

Returns a composition track segment that presents an empty track segment.

This method invokes Constructor with an empty URL, a trackID of kCMPersistentTrackID_Invalid, a time mapping with source.start and source.duration equal to kCMTimeInvalid, and with a target equal to timeRange.

This is the standard low-level representation of an empty track segment.

17.48.4  **Constructor(timeRange as CMTimeRangeMBS)**


**Function:** Initializes a track segment that presents an empty track segment.

**Notes:**
- timeRange: The time range of the empty track segment.

This method invokes Constructor with an empty URL, a trackID of kCMPersistentTrackID_Invalid, a
time mapping with source.start and source.duration equal to kCMTimeInvalid, and with a target equal to timeRange.

This is the standard low-level representation of an empty track segment.

### 17.48.5 isEmpty as boolean

MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates whether the segment is empty. (read-only) **Notes:** An empty segment has a valid target time range but sourceURL is nil and the source start time is kCMTimeInvalid; all other fields are undefined.

### 17.48.6 sourceTrackID as Integer

MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The track ID of the container file of the media presented by the track segment. (read-only)

### 17.48.7 sourceURL as string

MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The container file of the media presented by the track segment. (read-only)
17.49 class AVEdgeWidthsMBS

17.49.1 class AVEdgeWidthsMBS

Function: Defines the thickness of the edge processing region, in pixels.

17.49.2 Properties

17.49.3 Bottom as Double

Function: The thickness, in pixels, of the bottom-edge processing region of the edgeWidths property.
Notes: (Read only property)

17.49.4 Left as Double

Function: The thickness, in pixels, of the left-edge processing region of the edgeWidths property.
Notes: (Read only property)

17.49.5 Right as Double

Function: The thickness, in pixels, of the right-edge processing region of the edgeWidths property.
Notes: (Read only property)

17.49.6 Top as Double

Function: The thickness, in pixels, of the top-edge processing region of the edgeWidths property.
Notes: (Read only property)
17.50. CLASS AVFOUNDATIONMBS

17.50 class AVFoundationMBS

17.50.1 class AVFoundationMBS

Function: The central AVFoundation class for receiving events and getting constants.
Notes:
All events from AVFoundation classes (delegates, notifications) are routed to your subclass of AVFounda-
tionMBS.
Events received on a helper thread a routed to main thread in order to allow you to use Real Studio code
which is not thread safe.
Please use available property on classes to check if they are available. Some classes are only for Mac OS X
10.8 or future versions.

If you need some new methods/classes in AVFoundation from Mac OS X 10.10 or newer, please email us.

17.50.2 Methods

17.50.3 available as boolean

Function: Whether AVFoundation is available.
Notes: Returns true on Mac OS X 10.7 and newer.

17.50.4 AVAudioBitRateStrategy_Constant as string

Function: One of the values for the AVEncoderBitRateStrategyKey encoder setting.
Notes: Available in OS X v10.9 and later.

17.50.5 AVAudioBitRateStrategy_LongTermAverage as string

Function: One of the values for the AVEncoderBitRateStrategyKey encoder setting.
Notes: Available in OS X v10.9 and later.
17.50.6 AVAudioBitRateStrategy_Variable as string

Function: One of the values for the AVEncoderBitRateStrategyKey encoder setting.
Notes: Available in OS X v10.9 and later.

17.50.7 AVAudioBitRateStrategy_VariableConstrained as string

Function: One of the values for the AVEncoderBitRateStrategyKey encoder setting.
Notes: Available in OS X v10.9 and later.

17.50.8 AVAudioTimePitchAlgorithmSpectral as string

Function: One of the values for the time pitch algorithms.
Notes:
Highest quality, most computationally expensive. Suitable for music. Variable rate from 1/32 to 32.
Available in OS X v10.9 and later.
Default for Mac OS X.

17.50.9 AVAudioTimePitchAlgorithmTimeDomain as string

Function: One of the values for the time pitch algorithms.
Notes:
Modest quality pitch algorithm that is less computationally intensive. Suitable for voice. Variable rate from 1/32 to 32.
Available in OS X v10.9 and later.

17.50.10 AVAudioTimePitchAlgorithmVarispeed as string

Function: One of the values for the time pitch algorithms.
Notes:
High quality, no pitch correction. Pitch varies with rate. Variable rate from 1/32 to 32.
Available in OS X v10.9 and later.
17.50.11 **AVCaptureDeviceWasConnectedNotification** as string


**Function:** Notification that is posted when a new device becomes available.

17.50.12 **AVCaptureDeviceWasDisconnectedNotification** as string


**Function:** Notification that is posted when an existing device becomes unavailable.

17.50.13 **AVCaptureInputPortFormatDescriptionDidChangeNotification** as string


**Function:** Posted if the formatDescription of the capture input port changes.

17.50.14 **AVCaptureSessionDidStartRunningNotification** as string


**Function:** Posted when a capture session starts.

17.50.15 **AVCaptureSessionDidStopRunningNotification** as string


**Function:** Posted when a capture session stops.

17.50.16 **AVCaptureSessionErrorKey** as string


**Function:** Key to retrieve information from a notification from a capture session.

**Notes:** Key to retrieve the error object from the user info dictionary of an AVCaptureSessionRuntimeErrorNotification.

17.50.17 **AVCaptureSessionPreset1280x720** as string


**Function:** One of the constants to define capture setting presets using the sessionPreset property.
CHAPTER 17. AVFOUNDATION

Notes: Specifies capture settings suitable for 720p quality (1280x720 pixel) video output.

17.50.18 AVCaptureSessionPreset320x240 as string

Function: One of the constants to define capture setting presets using the sessionPreset property.
Notes: Specifies capture settings suitable for 320x240 pixel video output.

17.50.19 AVCaptureSessionPreset352x288 as string

Function: One of the constants to define capture setting presets using the sessionPreset property.
Notes: Specifies capture settings suitable for CIF quality (352x288 pixel) video output.

17.50.20 AVCaptureSessionPreset640x480 as string

Function: One of the constants to define capture setting presets using the sessionPreset property.
Notes: Specifies capture settings suitable for VGA quality (640x480 pixel) video output.

17.50.21 AVCaptureSessionPreset960x540 as string

Function: One of the constants to define capture setting presets using the sessionPreset property.
Notes: Specifies capture settings suitable for quarter HD quality (960x540 pixel) video output.

17.50.22 AVCaptureSessionPresetHigh as string

Function: One of the constants to define capture setting presets using the sessionPreset property.
Notes: Specifies capture settings suitable for high quality video and audio output.

17.50.23 AVCaptureSessionPresetiFrame1280x720 as string

Function: One of the constants to define capture setting presets using the sessionPreset property.
Notes:
Specifies capture settings to achieve 1280x720 quality iFrame H.264 video at about 40 Mbits/sec with AAC audio.
QuickTime movies captured in iFrame format are optimal for editing applications.
Available in OS X v10.9 and later.

17.50.24 AVCaptureSessionPresetiFrame960x540 as string

Function: One of the constants to define capture setting presets using the sessionPreset property.
Notes:
Specifies capture settings to achieve 960x540 quality iFrame H.264 video at about 30 Mbits/sec with AAC audio.
QuickTime movies captured in iFrame format are optimal for editing applications.
Available in OS X v10.9 and later.

17.50.25 AVCaptureSessionPresetLow as string

Function: One of the constants to define capture setting presets using the sessionPreset property.
Notes: Specifies capture settings suitable for output video and audio bitrates suitable for sharing over 3G.

17.50.26 AVCaptureSessionPresetMedium as string

Function: One of the constants to define capture setting presets using the sessionPreset property.
Notes: Specifies capture settings suitable for output video and audio bitrates suitable for sharing over WiFi.

17.50.27 AVCaptureSessionPresetPhoto as string

Function: One of the constants to define capture setting presets using the sessionPreset property.
Notes: Specifies capture settings suitable for high resolution photo quality output.
17.50.28 AVCaptureSessionRuntimeErrorNotification as string

**Function:** Posted if an error occurred during a capture session.
**Notes:** You retrieve the underlying error from the notification’s user info dictionary using the key AVCaptureSessionErrorKey.

17.50.29 AVChannelLayoutKey as string

**Function:** Key to retrieve channel layout information for playback.
**Notes:** The corresponding value is an Memoryblock containing an AudioChannelLayout structure.

17.50.30 AVCaptureSessionBeginTimeAtZero as Double

**Function:** Support for integration with Core Animation.
**Notes:** Use this constant to set the CoreAnimation’s animation beginTime property to be time 0. The constant is a small, non-zero, positive value which prevents CoreAnimation from replacing 0.0 with CACurrentMediaTime.

17.50.31 AVEncoderAudioQualityForVBRKey as string

**Function:** One of the Sample rate converter audio quality settings.

17.50.32 AVEncoderAudioQualityKey as string

**Function:** One of the audio encoder setting keys for the AVAudioRecorder class.
**Notes:** Value is a AVAudioQuality* constant.

17.50.33 AVEncoderBitDepthHintKey as string

**Function:** One of the audio encoder setting keys for the AVAudioRecorder class.
17.50. CLASS AVFOUNDATIONMBS

Notes: An integer ranging from 8 through 32.

17.50.34 AVEncoderBitRateKey as string

Function: One of the audio encoder setting keys for the AVAudioRecorder class.
Notes: An integer that identifies the audio bit rate.

17.50.35 AVEncoderBitRatePerChannelKey as string

Function: One of the audio encoder setting keys for the AVAudioRecorder class.
Notes: An integer that identifies the audio bit rate per channel.

17.50.36 AVEncoderBitRateStrategyKey as string

Function: One of the Sample rate converter audio quality settings.

17.50.37 AVErrorDeviceKey as string

Function: One of the keys in the user info dictionary in errors AVFoundation creates.
Notes: The corresponding value is a string with the name of the device.

17.50.38 AVErrorDiscontinuityFlagsKey as string

Function: One of the keys in the user info dictionary in errors AVFoundation creates.

17.50.39 AVErrorFileSizeKey as string

Function: One of the keys in the user info dictionary in errors AVFoundation creates.
Notes: The corresponding value is a number containing the size of the file in bytes.
17.50.40 AVErrorMediaSubTypeKey as string

Function: One of the keys in the user info dictionary in errors AVFoundation creates.
Notes: The corresponding value is an array of integers that specify media subtypes.
The types are represented by four character codes (4ccs), as defined in CoreAudioTypes.h for audio media
and in CMFormatDescription.h for video media.

17.50.41 AVErrorMediaTypeKey as string

Function: One of the keys in the user info dictionary in errors AVFoundation creates.
Notes: The corresponding value is a string that specified a media format.

17.50.42 AVErrorPIDKey as string

Function: One of the keys in the user info dictionary in errors AVFoundation creates.
Notes: The corresponding value is a number containing a process ID number.

17.50.43 AVErrorRecordingSuccessfullyFinishedKey as string

Function: One of the keys in the user info dictionary in errors AVFoundation creates.
Notes: The corresponding value is a Boolean value indicating whether recording finished successfully.

17.50.44 AVErrorTimeKey as string

Function: One of the keys in the user info dictionary in errors AVFoundation creates.
Notes: The corresponding value is an NSValue object containing a CMTime.

17.50.45 AVFileType3GPP as string

Function: One of the file format uniform type identifiers (UTIs).
Notes:
The value of this UTI is "public.3gpp".
Files are identified with the .3gp, .3gpp, and .sdv extensions.
Available in macOS 10.11 or newer.

17.50.46 AVFileType3GPP2 as string

Function: One of the file format uniform type identifiers (UTIs).
Notes:
The value of this UTI is "public.3gpp2".
Files are identified with the .3g2, .3gp2 extensions.
Available in macOS 10.11 or newer.

17.50.47 AVFileTypeAC3 as string

Function: One of the file format uniform type identifiers (UTIs).
Notes:
UTI for the AC-3 audio file format.
The value of this UTI is public.ac3-audio. Files are identified with the .ac3 extension.
Available in OS X v10.9 and later.

17.50.48 AVFileTypeAIFC as string

Function: One of the file format uniform type identifiers (UTIs).
Notes:
UTI for the AIFC audio file format.
The value of this UTI is public.aifc-audio. Files are identified with the .aifc and .cdda extensions.

17.50.49 AVFileTypeAIFF as string

Function: One of the file format uniform type identifiers (UTIs).
Notes:
UTI for the AIFF audio file format. The value of this UTI is public.aiff-audio. Files are identified with the .aif and .aiff extensions.

17.50.50 AVFileTypeAMR as string

Function: One of the file format uniform type identifiers (UTIs).
Notes:
UTI for the adaptive multi-rate audio file format. The value of this UTI is org.3gpp.adaptive-multi-rate-audio. Files are identified with the .amr extension.

17.50.51 AVFileTypeAppleM4A as string

Function: One of the file format uniform type identifiers (UTIs).
Notes:
UTI for the Apple m4a audio file format. The value of this UTI is com.apple.m4a-audio. Files are identified with the .m4a extension.

17.50.52 AVFileTypeAppleM4V as string

Function: One of the file format uniform type identifiers (UTIs).
Notes:
UTI for the iTunes video file format. The value of this UTI is com.apple.mpeg-4-video. Files are identified with the .m4v extension.

17.50.53 AVFileTypeAVCI as string

Function: One of the file format uniform type identifiers (UTIs).
Notes:
The value of this UTI is "public.avci". Files are identified with the .avci extension. Available in macOS 10.13 or newer.
17.50.54  AVFileTypeCoreAudioFormat as string

Function: One of the file format uniform type identifiers (UTIs).
Notes:
UTI for the CoreAudio file format.
The value of this UTI is com.apple.coreaudio-format. Files are identified with the .caf extension.

17.50.55  AVFileTypeDNG as string

Function: One of the file format uniform type identifiers (UTIs).
Notes:
The value of this UTI is "com.adobe.raw-image".
Files are identified with the .dng extension.
Available in macOS 10.13 or newer.

17.50.56  AVFileTypeEnhancedAC3 as string

Function: One of the file format uniform type identifiers (UTIs).
Notes:
The value of this UTI is "public.ac3-audio".
Files are identified with the .ac3 extension.
Available in macOS 10.9 or newer.

17.50.57  AVFileTypeHEIC as string

Function: One of the file format uniform type identifiers (UTIs).
Notes:
The value of this UTI is "public.heic".
Files are identified with the .heic extension.
Available in macOS 10.13 or newer.
17.50.58 AVFileTypeHEIF as string

Function: One of the file format uniform type identifiers (UTIs).
Notes: The value of this UTI is "public.heif".
Files are identified with the .heif extension.
Available in macOS 10.13 or newer.

17.50.59 AVFileTypeJPEG as string

Function: One of the file format uniform type identifiers (UTIs).
Notes: The value of this UTI is "public.jpeg".
Files are identified with the .jpg or .jpeg extension.
Available in macOS 10.13 or newer.

17.50.60 AVFileTypeMPEG4 as string

Function: One of the file format uniform type identifiers (UTIs).
Notes: UTI for the MPEG-4 file format.
The value of this UTI is public.mpeg-4. Files are identified with the .mp4 extension.

17.50.61 AVFileTypeMPEGLayer3 as string

Function: One of the file format uniform type identifiers (UTIs).
Notes: UTI for the MPEG layer 3 audio file format.
The value of this UTI is public.mp3. Files are identified with the .mp3 extension.
Available in OS X v10.9 and later.
17.50.62  AVFileTypeQuickTimeMovie as string

Function: One of the file format uniform type identifiers (UTIs).
Notes:
UTI for the QuickTime movie file format.
The value of this UTI is com.apple.quicktime-movie. Files are identified with the .mov and .qt extensions.

17.50.63  AVFileTypeSunAU as string

Function: One of the file format uniform type identifiers (UTIs).
Notes:
UTI for the Sun/NeXT audio file format.
The value of this UTI is public.au-audio. Files are identified with the .au and .snd extensions.
Available in OS X v10.9 and later.

17.50.64  AVFileTypeTIFF as string

Function: One of the file format uniform type identifiers (UTIs).
Notes:
The value of this UTI is "public.tiff".
Files are identified with the .tiff or .tif extension.
Available in macOS 10.13 or newer.

17.50.65  AVFileTypeWAVE as string

Function: One of the file format uniform type identifiers (UTIs).
Notes:
A UTI for the WAVE audio file format.
The value of this UTI is com.microsoft.wavform-audio. Files are identified with the .wav, .wave, and .bwf extensions.
17.50.66 AVFormatIDKey as string

**Function:** One of the audio setting keys that apply to all audio formats handled by the AVAudioPlayer and AVAudioRecorder classes.
**Notes:** A format identifier. See the "Audio Data Format Identifiers" enumeration in Core Audio Data Types Reference.

17.50.67 AVFoundationErrorDomain as string

**Function:** Domain for AVFoundation errors.

17.50.68 AVLayerVideoGravityResize as string

**Function:** The constants define how the video is displayed within a layer’s bounds rectangle.
**Notes:** Specifies that the video should be stretched to fill the layer’s bounds.

17.50.69 AVLayerVideoGravityResizeAspect as string

**Function:** The constants define how the video is displayed within a layer’s bounds rectangle.
**Notes:** Specifies that the player should preserve the video’s aspect ratio and fit the video within the layer’s bounds.

17.50.70 AVLayerVideoGravityResizeAspectFill as string

**Function:** The constants define how the video is displayed within a layer’s bounds rectangle.
**Notes:** Specifies that the player should preserve the video’s aspect ratio and fill the layer’s bounds.

17.50.71 AVLinearPCMBitDepthKey as string

**Function:** One of the audio setting keys that apply to linear PCM audio formats.
**Notes:** An integer that indicates the bit depth for a linear PCM audio formatone of 8, 16, 24, or 32.
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17.50.72 AVLinearPCMIsBigEndianKey as string

**Function:** One of the Audio setting keys that apply to linear PCM audio formats.
**Notes:** A Boolean value that indicates whether the audio format is big endian (true) or little endian (false).

17.50.73 AVLinearPCMIsFloatKey as string

**Function:** One of the Audio setting keys that apply to linear PCM audio formats.
**Notes:** A Boolean value that indicates that the audio format is floating point (true) or fixed point (false).

17.50.74 AVLinearPCMIsNonInterleaved as string

**Function:** One of the Audio setting keys that apply to linear PCM audio formats.
**Notes:** A Boolean value that indicates that the audio format is non-interleaved (true) or interleaved (false).

17.50.75 AVMakeRectWithAspectRatioInsideRect(aspectRatio as CGSizeMBS, boundingRect as CGRectMBS) as CGRectMBS

**Function:** Returns a scaled CGRect that maintains the aspect ratio specified by a CGSize within a bounding CGRect.
**Notes:**
- aspectRatio: The width and height ratio (aspect ratio) you want to maintain.
- boundingRect: The bounding rectangle you want to fit into.

Returns a scaled CGRect that maintains the aspect ratio specified by aspectRatio that fits within boundingRect.

This is useful when attempting to fit the naturalSize property of an AVPlayerItem object within the bounds of another CALayer. You would typically use the return value of this function as an AVPlayerLayer frame property value. For example:

```swift
myPlayerLayer.frame = AVMakeRectWithAspectRatioInsideRect(myPlayerItem.naturalSize, mySuperLayer.bounds)
```
CHAPTER 17. AVFOUNDATION

17.50.76 AVMediaCharacteristicAudible as string

Function: One of the characteristics of media types.
Notes: Indicates that the media is audible.

17.50.77 AVMediaCharacteristicContainsOnlyForcedSubtitles as string

Function: One of the media characteristic that may be present in an AVMediaSelectionOption object.
Notes: Indicates that the options presents only forced subtitles.
Media options with forced-only subtitles are typically selected when 1) the user has not selected a legible option with an accessibility characteristic or an auxiliary purpose and 2) its locale matches the locale of the selected audible media selection option.
The value of this characteristic is "public.subtitles.forced-only".
The presence of this characteristic for a legible media option is inferred from the format description of the associated track that presents the subtitle media.
Available in OS X v10.8 and later.

17.50.78 AVMediaCharacteristicDescribesMusicAndSoundForAccessibility as string

Function: One of the media characteristic that may be present in an AVMediaSelectionOption object.
Notes: Indicates that the option includes legible content in the language of its specified locale that describes music and sound effects occurring in program audio.
It is possible for a legible media option to include both transcriptions of spoken dialog and descriptions of music and sound effects.
The value of this characteristic is "public.accessibility.describes-music-and-sound".
For QuickTime movie and .m4v files, a media option is considered to have the characteristic AVMediaCharacteristicDescribesMusicAndSoundForAccessibility only if it’s explicitly tagged with that characteristic.
Available in OS X v10.8 and later.

17.50.79 AVMediaCharacteristicDescribesVideoForAccessibility as string

Function: One of the media characteristic that may be present in an AVMediaSelectionOption object.
Notes: Indicates that the option includes audible content that describes the visual portion of the presentation.
It is possible for a legible media option to include both transcriptions of spoken dialog and descriptions of music and sound effects.

The value of this characteristic is "public.accessibility.describes-video".
For QuickTime movie and .m4v files a media option is considered to have the characteristic AVMediaCharacteristicDescribesVideoForAccessibility only if it’s explicitly tagged with that characteristic.
Available in OS X v10.8 and later.

**17.50.80 AVMediaCharacteristicEasyToRead as string**

**Function:** One of the media characteristic that may be present in an AVMediaSelectionOption object.
**Notes:**
Indicates that the option provides legible content in the language of its specified locale and that the content has been edited for ease of reading.
Closed caption tracks that carry "easy reader" captions (per the CEA-608 specification) should be tagged with this characteristic. Subtitle tracks can also be tagged with this characteristic, where appropriate.
The value of this characteristic is "public.easy-to-read".
For QuickTime movie and .m4v files a media option is considered to have the characteristic AVMediaCharacteristicEasyToRead only if it’s explicitly tagged with that characteristic.

**17.50.81 AVMediaCharacteristicFrameBased as string**

**Function:** One of the characteristics of media types.
**Notes:** Indicates that the media is frame-based.

**17.50.82 AVMediaCharacteristicIsAuxiliaryContent as string**

**Function:** One of the media characteristic that may be present in an AVMediaSelectionOption object.
**Notes:**
Indicates that the option includes content that’s marked by the content author as auxiliary to the presentation of the asset.
Example: an option that presents audio media containing commentary on the presentation would typically have this characteristic.
The value of this characteristic is "public.auxiliary-content".
For QuickTime movie and .m4v files, a media option is considered to have the characteristic AVMediaCharacteristicIsAuxiliaryContent if it’s explicitly tagged with that characteristic or if, as a member of an alternate track group, its associated track is excluded from autoselection.
Available in OS X v10.8 and later.
17.50.83 AVMediaCharacteristicIsMainProgramContent as string

Function: One of the media characteristic that may be present in an AVMediaSelectionOption object.
Notes:
Indicates that the option includes content that’s marked by the content author as intrinsic to the presentation of the asset.
Example: an option that presents the main program audio for the presentation, regardless of locale, would typically have this characteristic.
The value of this characteristic is "public.main-program-content".
The presence of this characteristic for a media option is inferred; any option that does not have the characteristic AVMediaCharacteristicIsAuxiliaryContent is considered to have the characteristic.
Available in OS X v10.8 and later.

17.50.84 AVMediaCharacteristicLegible as string

Function: One of the characteristics of media types.
Notes: Indicates that the media is legible.

17.50.85 AVMediaCharacteristicTranscribesSpokenDialogForAccessibility as string

Function: One of the media characteristic that may be present in an AVMediaSelectionOption object.
Notes:
Indicates that the option includes legible content in the language of its specified locale that transcribes spoken dialog.
It is possible for a legible media option to include both transcriptions of spoken dialog and descriptions of music and sound effects.
The value of this characteristic is "public.accessibility.transcribes-spoken-dialog".
For QuickTime movie and .m4v files, a media option is considered to have the characteristic AVMediaCharacteristicTranscribesSpokenDialogForAccessibility only if it’s explicitly tagged with that characteristic.
Available in OS X v10.8 and later.

17.50.86 AVMediaCharacteristicVisual as string

Function: One of the characteristics of media types.
Notes: Indicates that the media is visual.
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17.50.87 **AVMediaTypeAudio as string**

**Function:** One of the media types.
**Notes:** Specifies audio.

17.50.88 **AVMediaTypeClosedCaption as string**

**Function:** One of the media types.
**Notes:** Specifies closed-caption content.

17.50.89 **AVMediaTypeMetadata as string**

**Function:** One of the media types.
**Notes:** Specifies metadata.

17.50.90 **AVMediaTypeMuxed as string**

**Function:** One of the media types.
**Notes:** Specifies muxed media.

17.50.91 **AVMediaTypeSubtitle as string**

**Function:** One of the media types.
**Notes:** Specifies subtitles.

17.50.92 **AVMediaTypeText as string**

**Function:** One of the media types.
**Notes:** Specifies text.
17.50.93 AVMediaTypeTimecode as string

Function: One of the media types.
Notes: Specifies a time code.

17.50.94 AVMediaTypeVideo as string

Function: One of the media types.
Notes: Specifies video.

17.50.95 AVMetadata3GPUserDataKeyAlbumAndTrack as string

Function: One of the possible metadata keys for QuickTime UserData.

17.50.96 AVMetadata3GPUserDataKeyAuthor as string

Function: One of the possible metadata keys for QuickTime UserData.

17.50.97 AVMetadata3GPUserDataKeyCollection as string

Function: One of the possible metadata keys for QuickTime UserData.

17.50.98 AVMetadata3GPUserDataKeyCopyright as string

Function: One of the possible metadata keys for QuickTime UserData.

17.50.99 AVMetadata3GPUserDataKeyDescription as string

Function: One of the possible metadata keys for QuickTime UserData.
17.50.100  AVMetadata3GPUserDataKeyGenre as string

Function: One of the possible metadata keys for QuickTime UserData.

17.50.101  AVMetadata3GPUserDataKeyKeywordList as string

Function: One of the possible metadata keys for QuickTime UserData.

17.50.102  AVMetadata3GPUserDataKeyLocation as string

Function: One of the possible metadata keys for QuickTime UserData.
17.50.103 AVMetadata3GPUserDataKeyMediaClassification as string

Function: One of the possible metadata keys for QuickTime UserData.

17.50.104 AVMetadata3GPUserDataKeyMediaRating as string

Function: One of the possible metadata keys for QuickTime UserData.

17.50.105 AVMetadata3GPUserDataKeyPerformer as string

Function: One of the possible metadata keys for QuickTime UserData.

17.50.106 AVMetadata3GPUserDataKeyRecordingYear as string

Function: One of the possible metadata keys for QuickTime UserData.

17.50.107 AVMetadata3GPUserDataKeyThumbnail as string

Function: One of the possible metadata keys for QuickTime UserData.

17.50.108 AVMetadata3GPUserDataKeyTitle as string

Function: One of the possible metadata keys for QuickTime UserData.

17.50.109 AVMetadata3GPUserDataKeyUserRating as string

Function: One of the possible metadata keys for QuickTime UserData.
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17.50.110 AVMetadataCommonKeyAlbumName as string

Function: One of the common metadata keys.

17.50.111 AVMetadataCommonKeyArtist as string

Function: One of the common metadata keys.

17.50.112 AVMetadataCommonKeyArtwork as string

Function: One of the common metadata keys.

17.50.113 AVMetadataCommonKeyAuthor as string

Function: One of the common metadata keys.

17.50.114 AVMetadataCommonKeyContributor as string

Function: One of the common metadata keys.

17.50.115 AVMetadataCommonKeyCopyrights as string

Function: One of the common metadata keys.

17.50.116 AVMetadataCommonKeyCreationDate as string

Function: One of the common metadata keys.
17.50.117  AVMetadataCommonKeyCreator as string

Function: One of the common metadata keys.

17.50.118  AVMetadataCommonKeyDescription as string

Function: One of the common metadata keys.

17.50.119  AVMetadataCommonKeyFormat as string

Function: One of the common metadata keys.

17.50.120  AVMetadataCommonKeyIdentifier as string

Function: One of the common metadata keys.

17.50.121  AVMetadataCommonKeyLanguage as string

Function: One of the common metadata keys.

17.50.122  AVMetadataCommonKeyLastModifiedDate as string

Function: One of the common metadata keys.

17.50.123  AVMetadataCommonKeyLocation as string

Function: One of the common metadata keys.
17.50.124 AVMetadataCommonKeyMake as string

Function: One of the common metadata keys.

17.50.125 AVMetadataCommonKeyModel as string

Function: One of the common metadata keys.

17.50.126 AVMetadataCommonKeyPublisher as string

Function: One of the common metadata keys.

17.50.127 AVMetadataCommonKeyRelation as string

Function: One of the common metadata keys.

17.50.128 AVMetadataCommonKeySoftware as string

Function: One of the common metadata keys.

17.50.129 AVMetadataCommonKeySource as string

Function: One of the common metadata keys.

17.50.130 AVMetadataCommonKeySubject as string

Function: One of the common metadata keys.
17.50.131  AVMetadataCommonKeyTitle as string

Function: One of the common metadata keys.

17.50.132  AVMetadataCommonKeyType as string

Function: One of the common metadata keys.

17.50.133  AVMetadataFormatID3Metadata as string

Function: One of the metadata formats.
Notes: The asset has metadata in the ID3 format.

17.50.134  AVMetadataFormatISOUserData as string

Function: One of the metadata formats.

17.50.135  AVMetadataFormatiTunesMetadata as string

Function: One of the metadata formats.
Notes: The asset has metadata in the iTunes format.

17.50.136  AVMetadataFormatQuickTimeMetadata as string

Function: One of the metadata formats.
Notes: The asset has metadata in the QuickTime metadata format.
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17.50.137 AVMetadataFormatQuickTimeUserData as string

Function: One of the metadata formats.
Notes: The asset has metadata in the QuickTime user data format.

17.50.138 AVMetadataID3MetadataKeyAlbumSortOrder as string

Function: One of the possible keys for ID3 Metadata.
Notes: TSOA album sort order.

17.50.139 AVMetadataID3MetadataKeyAlbumTitle as string

Function: One of the possible keys for ID3 Metadata.
Notes: TALB album/Movie/Show title.

17.50.140 AVMetadataID3MetadataKeyAttachedPicture as string

Function: One of the possible keys for ID3 Metadata.
Notes: APIC attached picture.

17.50.141 AVMetadataID3MetadataKeyAudioEncryption as string

Function: One of the possible keys for ID3 Metadata.
Notes: AENC audio encryption.

17.50.142 AVMetadataID3MetadataKeyAudioSeekPointIndex as string

Function: One of the possible keys for ID3 Metadata.
Notes: ASPI audio seek point index.
17.50.143  AVMetadataID3MetadataKeyBand as string

**Function:** One of the possible keys for ID3 Metadata.
**Notes:** TPE2 band/orchestra/accompaniment.

17.50.144  AVMetadataID3MetadataKeyBeatsPerMinute as string

**Function:** One of the possible keys for ID3 Metadata.
**Notes:** TBPM BPM (beats per minute).

17.50.145  AVMetadataID3MetadataKeyComments as string

**Function:** One of the possible keys for ID3 Metadata.
**Notes:** COMM comments.

17.50.146  AVMetadataID3MetadataKeyCommercial as string

**Function:** One of the possible keys for ID3 Metadata.
**Notes:** COMR commercial frame.

17.50.147  AVMetadataID3MetadataKeyCommercialInformation as string

**Function:** One of the possible keys for ID3 Metadata.
**Notes:** WCOM commercial information.

17.50.148  AVMetadataID3MetadataKeyComposer as string

**Function:** One of the possible keys for ID3 Metadata.
**Notes:** TCOM composer.
17.50.149  AVMetadataID3MetadataKeyConductor as string

**Function:** One of the possible keys for ID3 Metadata.
**Notes:** TPE3 conductor/performer refinement.

17.50.150  AVMetadataID3MetadataKeyContentGroupDescription as string

**Function:** One of the possible keys for ID3 Metadata.
**Notes:** TIT1 content group description.

17.50.151  AVMetadataID3MetadataKeyContentType as string

**Function:** One of the possible keys for ID3 Metadata.
**Notes:** TCON content type.

17.50.152  AVMetadataID3MetadataKeyCopyright as string

**Function:** One of the possible keys for ID3 Metadata.
**Notes:** TCOP copyright message.

17.50.153  AVMetadataID3MetadataKeyCopyrightInformation as string

**Function:** One of the possible keys for ID3 Metadata.
**Notes:** WCOP copyright/legal information.

17.50.154  AVMetadataID3MetadataKeyDate as string

**Function:** One of the possible keys for ID3 Metadata.
**Notes:** TDAT date.
17.50.155  AVMetadataID3MetadataKeyEncodedBy as string

Function: One of the possible keys for ID3 Metadata.
Notes: TENC encoded by.

17.50.156  AVMetadataID3MetadataKeyEncodedWith as string

Function: One of the possible keys for ID3 Metadata.
Notes: TSSE software/hardware and settings used for encoding.

17.50.157  AVMetadataID3MetadataKeyEncodingTime as string

Function: One of the possible keys for ID3 Metadata.
Notes: TDEN encoding time.

17.50.158  AVMetadataID3MetadataKeyEncryption as string

Function: One of the possible keys for ID3 Metadata.
Notes: ENCR encryption method registration.

17.50.159  AVMetadataID3MetadataKeyEqualization as string

Function: One of the possible keys for ID3 Metadata.
Notes: EQUA equalization.

17.50.160  AVMetadataID3MetadataKeyEqualization2 as string

Function: One of the possible keys for ID3 Metadata.
Notes: EQU2 equalization (2).
17.50.161 AVMetadataID3MetadataKeyEventTimingCodes as string

*Function:* One of the possible keys for ID3 Metadata.
*Notes:* ETCO event timing codes.

17.50.162 AVMetadataID3MetadataKeyFileOwner as string

*Function:* One of the possible keys for ID3 Metadata.
*Notes:* TOWN file owner/licensee.

17.50.163 AVMetadataID3MetadataKeyFileType as string

*Function:* One of the possible keys for ID3 Metadata.
*Notes:* TFLT file type.

17.50.164 AVMetadataID3MetadataKeyGeneralEncapsulatedObject as string

*Function:* One of the possible keys for ID3 Metadata.
*Notes:* GEOB general encapsulated object.

17.50.165 AVMetadataID3MetadataKeyGroupIdentifier as string

*Function:* One of the possible keys for ID3 Metadata.
*Notes:* GRID group identification registration.

17.50.166 AVMetadataID3MetadataKeyInitialKey as string

*Function:* One of the possible keys for ID3 Metadata.
*Notes:* TKEY initial key.
17.50.167 AVMetadataID3MetadataKeyInternationalStandardRecordingCode as string

Function: One of the possible keys for ID3 Metadata.
Notes: TSRC ISRC (international standard recording code).

17.50.168 AVMetadataID3MetadataKeyInternetRadioStationName as string

Function: One of the possible keys for ID3 Metadata.
Notes: TRSN internet radio station name.

17.50.169 AVMetadataID3MetadataKeyInternetRadioStationOwner as string

Function: One of the possible keys for ID3 Metadata.
Notes: TRSO internet radio station owner.

17.50.170 AVMetadataID3MetadataKeyInvolvedPeopleList_v23 as string

Function: One of the possible keys for ID3 Metadata.
Notes: IPLS involved people list.

17.50.171 AVMetadataID3MetadataKeyInvolvedPeopleList_v24 as string

Function: One of the possible keys for ID3 Metadata.
Notes: TIPL involved people list.

17.50.172 AVMetadataID3MetadataKeyLanguage as string

Function: One of the possible keys for ID3 Metadata.
Notes: TLAN language(s).
17.50. **CLASS AVFOUNDATIONMBS**

### 17.50.173 AVMetadataID3MetadataKeyLeadPerformer as string

**Function:** One of the possible keys for ID3 Metadata.
**Notes:** TPE1 lead performer(s)/Soloist(s).

### 17.50.174 AVMetadataID3MetadataKeyLength as string

**Function:** One of the possible keys for ID3 Metadata.
**Notes:** TLEN length.

### 17.50.175 AVMetadataID3MetadataKeyLink as string

**Function:** One of the possible keys for ID3 Metadata.
**Notes:** LINK linked information.

### 17.50.176 AVMetadataID3MetadataKeyLyricist as string

**Function:** One of the possible keys for ID3 Metadata.
**Notes:** TEXT lyricist/text writer.

### 17.50.177 AVMetadataID3MetadataKeyMediaType as string

**Function:** One of the possible keys for ID3 Metadata.
**Notes:** TMED media type.

### 17.50.178 AVMetadataID3MetadataKeyModifiedBy as string

**Function:** One of the possible keys for ID3 Metadata.
**Notes:** TPE4 interpreted, remixed, or otherwise modified by.
17.50.179  AVMetadataID3MetadataKeyMood as string

Function: One of the possible keys for ID3 Metadata.
Notes: TMOO mood.

17.50.180  AVMetadataID3MetadataKeyMPEGLocationLookupTable as string

Function: One of the possible keys for ID3 Metadata.
Notes: MLLT MPEG location lookup table.

17.50.181  AVMetadataID3MetadataKeyMusicCDIdentifier as string

Function: One of the possible keys for ID3 Metadata.
Notes: MCDI music CD identifier.

17.50.182  AVMetadataID3MetadataKeyMusicianCreditsList as string

Function: One of the possible keys for ID3 Metadata.
Notes: TMCL musician credits list.

17.50.183  AVMetadataID3MetadataKeyOfficialArtistWebpage as string

Function: One of the possible keys for ID3 Metadata.
Notes: WOAR official artist/performer webpage.

17.50.184  AVMetadataID3MetadataKeyOfficialAudioFileWebpage as string

Function: One of the possible keys for ID3 Metadata.
Notes: WOAF official audio file webpage.
17.50. CLASS AVFOUNDATIONMBS

17.50.185 AVMetadataID3MetadataKeyOfficialAudioSourceWebpage as string

Function: One of the possible keys for ID3 Metadata.
Notes: WOAS official audio source webpage.

17.50.186 AVMetadataID3MetadataKeyOfficialInternetRadioStationHomepage as string

Function: One of the possible keys for ID3 Metadata.
Notes: WORS official Internet radio station homepage.

17.50.187 AVMetadataID3MetadataKeyOfficialPublisherWebpage as string

Function: One of the possible keys for ID3 Metadata.
Notes: WPUB publishers official webpage.

17.50.188 AVMetadataID3MetadataKeyOriginalAlbumTitle as string

Function: One of the possible keys for ID3 Metadata.
Notes: TOAL original album/movie/show title.

17.50.189 AVMetadataID3MetadataKeyOriginalArtist as string

Function: One of the possible keys for ID3 Metadata.
Notes: TOPE original artist(s)/performer(s).

17.50.190 AVMetadataID3MetadataKeyOriginalFilename as string

Function: One of the possible keys for ID3 Metadata.
Notes: TOFN original filename.
17.50.191  AVMetadataID3MetadataKeyOriginalLyricist as string

Function: One of the possible keys for ID3 Metadata.
Notes: TOLY original lyricist(s)/text writer(s).

17.50.192  AVMetadataID3MetadataKeyOriginalReleaseTime as string

Function: One of the possible keys for ID3 Metadata.
Notes: TDOR original release time.

17.50.193  AVMetadataID3MetadataKeyOriginalReleaseYear as string

Function: One of the possible keys for ID3 Metadata.
Notes: TORY original release year.

17.50.194  AVMetadataID3MetadataKeyOwnership as string

Function: One of the possible keys for ID3 Metadata.
Notes: OWNE ownership frame.

17.50.195  AVMetadataID3MetadataKeyPartOfASet as string

Function: One of the possible keys for ID3 Metadata.
Notes: TPOS part of a set.

17.50.196  AVMetadataID3MetadataKeyPayment as string

Function: One of the possible keys for ID3 Metadata.
Notes: WPAY payment.
17.50.197  **AVMetadataID3MetadataKeyPerformerSortOrder** as string

**Function:** One of the possible keys for ID3 Metadata.
**Notes:** TSOP performer sort order.

17.50.198  **AVMetadataID3MetadataKeyPlayCounter** as string

**Function:** One of the possible keys for ID3 Metadata.
**Notes:** PCNT play counter.

17.50.199  **AVMetadataID3MetadataKeyPlaylistDelay** as string

**Function:** One of the possible keys for ID3 Metadata.
**Notes:** TDLY playlist delay.

17.50.200  **AVMetadataID3MetadataKeyPopularimeter** as string

**Function:** One of the possible keys for ID3 Metadata.
**Notes:** POPM popularimeter.

17.50.201  **AVMetadataID3MetadataKeyPositionSynchronization** as string

**Function:** One of the possible keys for ID3 Metadata.
**Notes:** POSS position synchronisation frame.

17.50.202  **AVMetadataID3MetadataKeyPrivate** as string

**Function:** One of the possible keys for ID3 Metadata.
**Notes:** PRIV private frame.
17.50.203 AVMetadataID3MetadataKeyProducedNotice as string

Function: One of the possible keys for ID3 Metadata.
Notes: TPRO produced notice.

17.50.204 AVMetadataID3MetadataKeyPublisher as string

Function: One of the possible keys for ID3 Metadata.
Notes: TPUB publisher.

17.50.205 AVMetadataID3MetadataKeyRecommendedBufferSize as string

Function: One of the possible keys for ID3 Metadata.
Notes: RBUF recommended buffer size.

17.50.206 AVMetadataID3MetadataKeyRecordingDates as string

Function: One of the possible keys for ID3 Metadata.
Notes: TRDA recording dates.

17.50.207 AVMetadataID3MetadataKeyRecordingTime as string

Function: One of the possible keys for ID3 Metadata.
Notes: TDRC recording time.

17.50.208 AVMetadataID3MetadataKeyRelativeVolumeAdjustment as string

Function: One of the possible keys for ID3 Metadata.
Notes: RVAD relative volume adjustment.
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17.50.209  AVMetadataID3MetadataKeyRelativeVolumeAdjustment2 as string

**Function:** One of the possible keys for ID3 Metadata.  
**Notes:** RVA2 relative volume adjustment (2).

17.50.210  AVMetadataID3MetadataKeyReleaseTime as string

**Function:** One of the possible keys for ID3 Metadata.  
**Notes:** TDRL release time.

17.50.211  AVMetadataID3MetadataKeyReverb as string

**Function:** One of the possible keys for ID3 Metadata.  
**Notes:** RVRB reverb.

17.50.212  AVMetadataID3MetadataKeySeek as string

**Function:** One of the possible keys for ID3 Metadata.  
**Notes:** SEEK seek frame.

17.50.213  AVMetadataID3MetadataKeySetSubtitle as string

**Function:** One of the possible keys for ID3 Metadata.  
**Notes:** TSST set subtitle.

17.50.214  AVMetadataID3MetadataKeySignature as string

**Function:** One of the possible keys for ID3 Metadata.  
**Notes:** SIGN signature frame.
17.50.215 AVMetadataID3MetadataKeySize as string

Function: One of the possible keys for ID3 Metadata.
Notes: TSIZ size.

17.50.216 AVMetadataID3MetadataKeySubTitle as string

Function: One of the possible keys for ID3 Metadata.
Notes: TIT3 subtitle/description refinement.

17.50.217 AVMetadataID3MetadataKeySynchronizedLyric as string

Function: One of the possible keys for ID3 Metadata.
Notes: SYLT synchronized lyric/text.

17.50.218 AVMetadataID3MetadataKeySynchronizedTempoCodes as string

Function: One of the possible keys for ID3 Metadata.
Notes: SYTC synchronized tempo codes.

17.50.219 AVMetadataID3MetadataKeyTaggingTime as string

Function: One of the possible keys for ID3 Metadata.
Notes: TDTG tagging time.

17.50.220 AVMetadataID3MetadataKeyTermsOfUse as string

Function: One of the possible keys for ID3 Metadata.
Notes: USER terms of use.
17.50.221  AVMetadataID3MetadataKeyTime as string

**Function:** One of the possible keys for ID3 Metadata.
**Notes:** TIME time.

17.50.222  AVMetadataID3MetadataKeyTitleDescription as string

**Function:** One of the possible keys for ID3 Metadata.
**Notes:** TIT2 title/songname/content description.

17.50.223  AVMetadataID3MetadataKeyTitleSortOrder as string

**Function:** One of the possible keys for ID3 Metadata.
**Notes:** TSOT title sort order.

17.50.224  AVMetadataID3MetadataKeyTrackNumber as string

**Function:** One of the possible keys for ID3 Metadata.
**Notes:** TRCK track number/position in set.

17.50.225  AVMetadataID3MetadataKeyUniqueFileIdentifier as string

**Function:** One of the possible keys for ID3 Metadata.
**Notes:** UFID unique file identifier.

17.50.226  AVMetadataID3MetadataKeyUnsynchronizedLyric as string

**Function:** One of the possible keys for ID3 Metadata.
**Notes:** USLT unsynchronized lyric/text transcription.
17.50.227  **AVMetadataID3MetadataKeyUserText** as string

**Function:** One of the possible keys for ID3 Metadata.
**Notes:** TXXX user defined text information frame.

17.50.228  **AVMetadataID3MetadataKeyUserURL** as string

**Function:** One of the possible keys for ID3 Metadata.
**Notes:** WXXX user defined URL link frame.

17.50.229  **AVMetadataID3MetadataKeyYear** as string

**Function:** One of the possible keys for ID3 Metadata.
**Notes:** TYER year.

17.50.230  **AVMetadataISOUserDataKeyCopyright** as string

**Function:** One of the possible metadata keys for QuickTime UserData.

17.50.231  **AVMetadataiTunesMetadataKeyAccountKind** as string

**Function:** One of the possible keys for iTunes Metadata.

17.50.232  **AVMetadataiTunesMetadataKeyAcknowledgement** as string

**Function:** One of the possible keys for iTunes Metadata.
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### 17.50.233 AVMetadataiTunesMetadataKeyAlbum as string

**Function:** One of the possible keys for iTunes Metadata.

### 17.50.234 AVMetadataiTunesMetadataKeyAlbumArtist as string

**Function:** One of the possible keys for iTunes Metadata.

### 17.50.235 AVMetadataiTunesMetadataKeyAppleID as string

**Function:** One of the possible keys for iTunes Metadata.

### 17.50.236 AVMetadataiTunesMetadataKeyArranger as string

**Function:** One of the possible keys for iTunes Metadata.

### 17.50.237 AVMetadataiTunesMetadataKeyArtDirector as string

**Function:** One of the possible keys for iTunes Metadata.

### 17.50.238 AVMetadataiTunesMetadataKeyArtist as string

**Function:** One of the possible keys for iTunes Metadata.

### 17.50.239 AVMetadataiTunesMetadataKeyArtistID as string

**Function:** One of the possible keys for iTunes Metadata.
17.50.240 AVMetadataiTunesMetadataKeyAuthor as string

**Function:** One of the possible keys for iTunes Metadata.

17.50.241 AVMetadataiTunesMetadataKeyBeatsPerMin as string

**Function:** One of the possible keys for iTunes Metadata.

17.50.242 AVMetadataiTunesMetadataKeyComposer as string

**Function:** One of the possible keys for iTunes Metadata.

17.50.243 AVMetadataiTunesMetadataKeyConductor as string

**Function:** One of the possible keys for iTunes Metadata.

17.50.244 AVMetadataiTunesMetadataKeyContentRating as string

**Function:** One of the possible keys for iTunes Metadata.

17.50.245 AVMetadataiTunesMetadataKeyCopyright as string

**Function:** One of the possible keys for iTunes Metadata.

17.50.246 AVMetadataiTunesMetadataKeyCoverArt as string

**Function:** One of the possible keys for iTunes Metadata.
17.50. CLASS AVFOUNDATIONMBS

17.50.247 AVMetadataiTunesMetadataKeyCredits as string

Function: One of the possible keys for iTunes Metadata.

17.50.248 AVMetadataiTunesMetadataKeyDescription as string

Function: One of the possible keys for iTunes Metadata.

17.50.249 AVMetadataiTunesMetadataKeyDirector as string

Function: One of the possible keys for iTunes Metadata.

17.50.250 AVMetadataiTunesMetadataKeyDiscCompilation as string

Function: One of the possible keys for iTunes Metadata.

17.50.251 AVMetadataiTunesMetadataKeyDiscNumber as string

Function: One of the possible keys for iTunes Metadata.

17.50.252 AVMetadataiTunesMetadataKeyEncodedBy as string

Function: One of the possible keys for iTunes Metadata.

17.50.253 AVMetadataiTunesMetadataKeyEncodingTool as string

Function: One of the possible keys for iTunes Metadata.
17.50.254 AVMetadataiTunesMetadataKeyEQ as string


17.50.255 AVMetadataiTunesMetadataKeyExecProducer as string


17.50.256 AVMetadataiTunesMetadataKeyGenreID as string


17.50.257 AVMetadataiTunesMetadataKeyGrouping as string


17.50.258 AVMetadataiTunesMetadataKeyLinerNotes as string


17.50.259 AVMetadataiTunesMetadataKeyLyrics as string


17.50.260 AVMetadataiTunesMetadataKeyOnlineExtras as string

17.50.261 AVMetadataiTunesMetadataKeyOriginalArtist as string

Function: One of the possible keys for iTunes Metadata.

17.50.262 AVMetadataiTunesMetadataKeyPerformer as string

Function: One of the possible keys for iTunes Metadata.

17.50.263 AVMetadataiTunesMetadataKeyPhonogramRights as string

Function: One of the possible keys for iTunes Metadata.

17.50.264 AVMetadataiTunesMetadataKeyPlaylistID as string

Function: One of the possible keys for iTunes Metadata.

17.50.265 AVMetadataiTunesMetadataKeyPredefinedGenre as string

Function: One of the possible keys for iTunes Metadata.

17.50.266 AVMetadataiTunesMetadataKeyProducer as string

Function: One of the possible keys for iTunes Metadata.

17.50.267 AVMetadataiTunesMetadataKeyPublisher as string

Function: One of the possible keys for iTunes Metadata.
17.50.268 AVMetadataiTunesMetadataKeyRecordCompany as string

**Function:** One of the possible keys for iTunes Metadata.

17.50.269 AVMetadataiTunesMetadataKeyReleaseDate as string

**Function:** One of the possible keys for iTunes Metadata.

17.50.270 AVMetadataiTunesMetadataKeySoloist as string

**Function:** One of the possible keys for iTunes Metadata.

17.50.271 AVMetadataiTunesMetadataKeySongID as string

**Function:** One of the possible keys for iTunes Metadata.

17.50.272 AVMetadataiTunesMetadataKeySongName as string

**Function:** One of the possible keys for iTunes Metadata.

17.50.273 AVMetadataiTunesMetadataKeySoundEngineer as string

**Function:** One of the possible keys for iTunes Metadata.

17.50.274 AVMetadataiTunesMetadataKeyThanks as string

**Function:** One of the possible keys for iTunes Metadata.
17.50. CLASS AVFOUNDATIONMBS

17.50.275 AVMetadataiTunesMetadataKeyTrackNumber as string

Function: One of the possible keys for iTunes Metadata.

17.50.276 AVMetadataiTunesMetadataKeyTrackSubTitle as string

Function: One of the possible keys for iTunes Metadata.

17.50.277 AVMetadataiTunesMetadataKeyUserComment as string

Function: One of the possible keys for iTunes Metadata.

17.50.278 AVMetadataiTunesMetadataKeyUserGenre as string

Function: One of the possible keys for iTunes Metadata.

17.50.279 AVMetadataKeySpaceCommon as string

Function: One of the key spaces.
Notes: The common key space. Keys in this space represent standard versions of keys that are found in most or all other key spaces.

17.50.280 AVMetadataKeySpaceID3 as string

Function: One of the key spaces.
Notes: The ID3 key space.
17.50.281 **AVMetadataKeySpaceISOUserData** as string

**Function:** One of the metadata formats.

17.50.282 **AVMetadataKeySpaceiTunes** as string

**Function:** One of the key spaces.  
**Notes:** The iTunes key space.

17.50.283 **AVMetadataKeySpaceQuickTimeMetadata** as string

**Function:** One of the key spaces.  
**Notes:** The QuickTime metadata key space.

17.50.284 **AVMetadataKeySpaceQuickTimeUserData** as string

**Function:** One of the key spaces.  
**Notes:** The QuickTime user data key space.

17.50.285 **AVMetadataQuickTimeMetadataKeyAlbum** as string

**Function:** One of the possible keys for QuickTime Metadata.

17.50.286 **AVMetadataQuickTimeMetadataKeyArranger** as string

**Function:** One of the possible keys for QuickTime Metadata.
17.50.287  
AVMetadataQuickTimeMetadataKeyArtist as string

Function: One of the possible keys for QuickTime Metadata.

17.50.288  
AVMetadataQuickTimeMetadataKeyArtwork as string

Function: One of the possible keys for QuickTime Metadata.

17.50.289  
AVMetadataQuickTimeMetadataKeyAuthor as string

Function: One of the possible keys for QuickTime Metadata.

17.50.290  
AVMetadataQuickTimeMetadataKeyCameraFrameReadoutTime as string

Function: One of the possible keys for QuickTime Metadata.

17.50.291  
AVMetadataQuickTimeMetadataKeyCameraIdentifier as string

Function: One of the possible keys for QuickTime Metadata.

17.50.292  
AVMetadataQuickTimeMetadataKeyCollectionUser as string

Function: One of the possible keys for QuickTime Metadata.

17.50.293  
AVMetadataQuickTimeMetadataKeyComment as string

Function: One of the possible keys for QuickTime Metadata.
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17.50.294 AVMetadataQuickTimeMetadatAKeyComposer as string

Function: One of the possible keys for QuickTime Metadata.

17.50.295 AVMetadataQuickTimeMetadatAKeyCopyright as string

Function: One of the possible keys for QuickTime Metadata.

17.50.296 AVMetadataQuickTimeMetadatAKeyCreationDate as string

Function: One of the possible keys for QuickTime Metadata.

17.50.297 AVMetadataQuickTimeMetadatAKeyCredits as string

Function: One of the possible keys for QuickTime Metadata.

17.50.298 AVMetadataQuickTimeMetadatAKeyDescription as string

Function: One of the possible keys for QuickTime Metadata.

17.50.299 AVMetadataQuickTimeMetadatAKeyDirectionFacing as string

Function: One of the possible keys for QuickTime Metadata.

17.50.300 AVMetadataQuickTimeMetadatAKeyDirectionMotion as string

Function: One of the possible keys for QuickTime Metadata.
17.50.301 AVMetadataQuickTimeMetadataKeyDirector as string

Function: One of the possible keys for QuickTime Metadata.

17.50.302 AVMetadataQuickTimeMetadataKeyDisplayName as string

Function: One of the possible keys for QuickTime Metadata.

17.50.303 AVMetadataQuickTimeMetadataKeyEncodedBy as string

Function: One of the possible keys for QuickTime Metadata.

17.50.304 AVMetadataQuickTimeMetadataKeyGenre as string

Function: One of the possible keys for QuickTime Metadata.

17.50.305 AVMetadataQuickTimeMetadataKeyInformation as string

Function: One of the possible keys for QuickTime Metadata.

17.50.306 AVMetadataQuickTimeMetadataKeyiXML as string

Function: One of the possible keys for QuickTime Metadata.

17.50.307 AVMetadataQuickTimeMetadataKeyKeywords as string

Function: One of the possible keys for QuickTime Metadata.
17.50.308  **AVMetadataQuickTimeMetadataKeyLocationBody** as string


**Function:** One of the possible keys for QuickTime Metadata.

17.50.309  **AVMetadataQuickTimeMetadataKeyLocationDate** as string


**Function:** One of the possible keys for QuickTime Metadata.

17.50.310  **AVMetadataQuickTimeMetadataKeyLocationISO6709** as string


**Function:** One of the possible keys for QuickTime Metadata.

17.50.311  **AVMetadataQuickTimeMetadataKeyLocationName** as string


**Function:** One of the possible keys for QuickTime Metadata.

17.50.312  **AVMetadataQuickTimeMetadataKeyLocationNote** as string


**Function:** One of the possible keys for QuickTime Metadata.

17.50.313  **AVMetadataQuickTimeMetadataKeyLocationRole** as string


**Function:** One of the possible keys for QuickTime Metadata.

17.50.314  **AVMetadataQuickTimeMetadataKeyMake** as string


**Function:** One of the possible keys for QuickTime Metadata.
17.50.315 AVMetadataQuickTimeMetadataKeyModel as string

Function: One of the possible keys for QuickTime Metadata.

17.50.316 AVMetadataQuickTimeMetadataKeyOriginalArtist as string

Function: One of the possible keys for QuickTime Metadata.

17.50.317 AVMetadataQuickTimeMetadataKeyPerformer as string

Function: One of the possible keys for QuickTime Metadata.

17.50.318 AVMetadataQuickTimeMetadataKeyPhonogramRights as string

Function: One of the possible keys for QuickTime Metadata.

17.50.319 AVMetadataQuickTimeMetadataKeyProducer as string

Function: One of the possible keys for QuickTime Metadata.

17.50.320 AVMetadataQuickTimeMetadataKeyPublisher as string

Function: One of the possible keys for QuickTime Metadata.

17.50.321 AVMetadataQuickTimeMetadataKeyRatingUser as string

Function: One of the possible keys for QuickTime Metadata.
17.50.322  AVMetadataQuickTimeMetadataKeySoftware as string

Function: One of the possible keys for QuickTime Metadata.

17.50.323  AVMetadataQuickTimeMetadataKeyTitle as string

Function: One of the possible keys for QuickTime Metadata.

17.50.324  AVMetadataQuickTimeMetadataKeyYear as string

Function: One of the possible keys for QuickTime Metadata.

17.50.325  AVMetadataQuickTimeUserDataKeyAlbum as string

Function: One of the possible metadata keys for QuickTime UserData.

17.50.326  AVMetadataQuickTimeUserDataKeyArranger as string

Function: One of the possible metadata keys for QuickTime UserData.

17.50.327  AVMetadataQuickTimeUserDataKeyArtist as string

Function: One of the possible metadata keys for QuickTime UserData.

17.50.328  AVMetadataQuickTimeUserDataKeyAuthor as string

Function: One of the possible metadata keys for QuickTime UserData.
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17.50.329  **AVMetadataQuickTimeUserDataKeyChapter as string**

**Function:** One of the possible metadata keys for QuickTime UserData.

17.50.330  **AVMetadataQuickTimeUserDataKeyComment as string**

**Function:** One of the possible metadata keys for QuickTime UserData.

17.50.331  **AVMetadataQuickTimeUserDataKeyComposer as string**

**Function:** One of the possible metadata keys for QuickTime UserData.

17.50.332  **AVMetadataQuickTimeUserDataKeyCopyright as string**

**Function:** One of the possible metadata keys for QuickTime UserData.

17.50.333  **AVMetadataQuickTimeUserDataKeyCreationDate as string**

**Function:** One of the possible metadata keys for QuickTime UserData.

17.50.334  **AVMetadataQuickTimeUserDataKeyCredits as string**

**Function:** One of the possible metadata keys for QuickTime UserData.

17.50.335  **AVMetadataQuickTimeUserDataKeyDescription as string**

**Function:** One of the possible metadata keys for QuickTime UserData.
17.50.336 AVMetadataQuickTimeUserDataKeyDirector as string

Function: One of the possible metadata keys for QuickTime UserData.

17.50.337 AVMetadataQuickTimeUserDataKeyDisclaimer as string

Function: One of the possible metadata keys for QuickTime UserData.

17.50.338 AVMetadataQuickTimeUserDataKeyEncodedBy as string

Function: One of the possible metadata keys for QuickTime UserData.

17.50.339 AVMetadataQuickTimeUserDataKeyFullName as string

Function: One of the possible metadata keys for QuickTime UserData.

17.50.340 AVMetadataQuickTimeUserDataKeyGenre as string

Function: One of the possible metadata keys for QuickTime UserData.

17.50.341 AVMetadataQuickTimeUserDataKeyHostComputer as string

Function: One of the possible metadata keys for QuickTime UserData.

17.50.342 AVMetadataQuickTimeUserDataKeyInformation as string

Function: One of the possible metadata keys for QuickTime UserData.
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17.50.343 AVMetadataQuickTimeUserDataKeyKeywords as string

Function: One of the possible metadata keys for QuickTime UserData.

17.50.344 AVMetadataQuickTimeUserDataKeyLocationISO6709 as string

Function: One of the possible metadata keys for QuickTime UserData.

17.50.345 AVMetadataQuickTimeUserDataKeyMake as string

Function: One of the possible metadata keys for QuickTime UserData.

17.50.346 AVMetadataQuickTimeUserDataKeyModel as string

Function: One of the possible metadata keys for QuickTime UserData.

17.50.347 AVMetadataQuickTimeUserDataKeyOriginalArtist as string

Function: One of the possible metadata keys for QuickTime UserData.

17.50.348 AVMetadataQuickTimeUserDataKeyOriginalFormat as string

Function: One of the possible metadata keys for QuickTime UserData.

17.50.349 AVMetadataQuickTimeUserDataKeyOriginalSource as string

Function: One of the possible metadata keys for QuickTime UserData.
17.50.350  AVMetadataQuickTimeUserDataKeyPerformers as string

Function: One of the possible metadata keys for QuickTime UserData.

17.50.351  AVMetadataQuickTimeUserDataKeyPhonogramRights as string

Function: One of the possible metadata keys for QuickTime UserData.

17.50.352  AVMetadataQuickTimeUserDataKeyProducer as string

Function: One of the possible metadata keys for QuickTime UserData.

17.50.353  AVMetadataQuickTimeUserDataKeyProduct as string

Function: One of the possible metadata keys for QuickTime UserData.

17.50.354  AVMetadataQuickTimeUserDataKeyPublisher as string

Function: One of the possible metadata keys for QuickTime UserData.

17.50.355  AVMetadataQuickTimeUserDataKeySoftware as string

Function: One of the possible metadata keys for QuickTime UserData.

17.50.356  AVMetadataQuickTimeUserDataKeySpecialPlaybackRequirements as string

Function: One of the possible metadata keys for QuickTime UserData.
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17.50.357 **AVMetadataQuickTimeUserDataKeyTaggedCharacteristic as string**

MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the possible metadata keys for QuickTime UserData.

17.50.358 **AVMetadataQuickTimeUserDataKeyTrack as string**

MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the possible metadata keys for QuickTime UserData.

17.50.359 **AVMetadataQuickTimeUserDataKeyTrackName as string**

MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the possible metadata keys for QuickTime UserData.

17.50.360 **AVMetadataQuickTimeUserDataKeyURLLink as string**

MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the possible metadata keys for QuickTime UserData.

17.50.361 **AVMetadataQuickTimeUserDataKeyWarning as string**

MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the possible metadata keys for QuickTime UserData.

17.50.362 **AVMetadataQuickTimeUserDataKeyWriter as string**

MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the possible metadata keys for QuickTime UserData.

17.50.363 **AVNumberOfChannelsKey as string**

MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the Audio setting keys that apply to all audio formats handled by the AVAudioPlayer and AVAudioRecorder classes.
Notes: The number of channels expressed as an integer value.

17.50.364  AVPlayerItemDidPlayToEndTimeNotification as string

Function: Posted when the item has played to its end time.
Notes: The notification’s object is the item that finished playing.

17.50.365  AVPlayerItemFailedToPlayToEndTimeErrorKey as string

Function: Key to retrieve information from a notification’s user info dictionary.
Notes: The key to retrieve an error object (NSError) from the user info dictionary of an AVPlayerItem-
TimeJumpedNotification notification.

17.50.366  AVPlayerItemFailedToPlayToEndTimeNotification as string

Function: Posted when the item failed to play to its end time.
Notes: The notification’s object is the item that finished playing.
The user info dictionary contains an error object that describes the problemseeAVPlayerItemFailedToPlay-
ToEndTimeErrorKey.

17.50.367  AVPlayerItemNewAccessLogEntryNotification as string

Function: The notification name to use with NSNotificationObserverMBS class.
Notes: Posted when a new access log entry has been added.
The notification’s object is the player item. The new log entry is accessible via accessLog.
Available on Mac OS X 10.9 or later.

17.50.368  AVPlayerItemNewErrorLogEntryNotification as string

Function: The notification name to use with NSNotificationObserverMBS class.
Notes:
Posted when a new error log entry has been added.
The notification's object is the player item. The new log entry is accessible via errorLog, respectively.
Available on Mac OS X 10.9 or later.

17.50.369 AVPlayerItemPlaybackStalledNotification as string

Function: The notification name to use with NSNotificationCenterMBS class.
Notes:
Posted when some media did not arrive in time to continue playback.
The notification's object is the AVPlayerItem instance whose playback was unable to continue because the necessary media isn't available yet, usually because it didn't arrive in a timely fashion from its source over a network. Playback will continue once a sufficient amount of media has subsequently been delivered.
Available on Mac OS X 10.9 or later.

17.50.370 AVPlayerItemTimeJumpedNotification as string

Function: Posted when the item’s current time has changed discontinuously.
Notes: The notification’s object is the item.

17.50.371 AVSampleRateConverterAlgorithmKey as string

Function: The algorithm for the rate conversion.
Notes:
Can be AVSampleRateConverterAlgorithm_Mastering or AVSampleRateConverterAlgorithm_Normal.
Available in OS X v10.9 and later.

17.50.372 AVSampleRateConverterAlgorithm_Mastering as string

Function: One of the supported values for the AVEncoderBitRateStrategyKey encoder setting.
Notes: Available in OS X v10.9 and later.
17.50.373 AVSampleRateConverterAlgorithm_Normal as string

Function: One of the supported values for the AVEncoderBitRateStrategyKey encoder setting.
Notes: Available in OS X v10.9 and later.

17.50.374 AVSampleRateConverterAudioQualityKey as string

Function: Sample rate converter audio quality settings.
Notes: Value is an integer value. See AVAudioQuality* constants.

17.50.375 AVSampleRateKey as string

Function: One of the Audio setting keys that apply to all audio formats handled by the AVAudioPlayer and AVAudioRecorder classes.
Notes: A sample rate, in hertz, expressed as a floating point value.

17.50.376 AVTrackAssociationTypeAudioFallback as string

Function: Constants for identifying how other tracks are associated with a track.
Notes:
An association from one audio track to another audio track. This constant indicates when one track contains the same content as another but in a more widely supported format. A player that does not support the format of the original track can use the "fallback" track instead.
For example, an asset may contain both stereo and a 5.1-channel audio tracks. In this case, marking the stereo track as the fallback for the 5.1-channel track would ensure that devices not capable of playing 5.1-channel audio can still play an equivalent track.
Available in OS X v10.9 and later.

17.50.377 AVTrackAssociationTypeChapterList as string

Function: Constants for identifying how other tracks are associated with a track.
Notes:
An association from a track to another track containing chapter information, which may be a text track, a
video track, or a timed metadata track. Available in OS X v10.9 and later.

17.50.378 AVTrackAssociationTypeForcedSubtitlesOnly as string

Function: Constants for identifying how other tracks are associated with a track.
Notes:
An association from one subtitle track, containing both forced and nonforced subtitles, to another subtitle track containing only forced subtitles for the same content.
Nonforced subtitles usually transcribe all "normal" dialogue in a media asset and are typically not presented by default. Forced subtitles are those that are essential for presentation even when normal subtitles are disabled (for example, when a character speaks in a language foreign to that of the audio track). Available in OS X v10.9 and later.

17.50.379 AVTrackAssociationTypeSelectionFollower as string

Function: Constants for identifying how other tracks are associated with a track.
Notes:
An association from one track to another specifying that when the user selects the first track, the second should be considered an appropriate default selection.
For example, a follower for an audio track could be a subtitle track in the same language. When the user chooses a language for audio, the subtitle language "follows" the audio language selection. Available in OS X v10.9 and later.

17.50.380 AVTrackAssociationTypeTimecode as string

Function: Constants for identifying how other tracks are associated with a track.
Notes:
An association from one track (of any type) to a timecode track containing timing information for the original track. Available in OS X v10.9 and later.
17.50.381 AVURLAssetHTTPCookiesKey as string

Function: HTTP cookies that the AVURLAsset may send with HTTP requests.
Notes:
Standard cross-site policy still applies: cookies will only be sent to domains to which they apply.

HTTP cookies do not apply to non-HTTP(S) URLs.
In HLS, many HTTP requests (e.g., media, crypt key, variant index) might be issued to different paths or hosts.
In both of these cases, HTTP requests will be missing any cookies that do not apply to the AVURLAsset’s URL.
This init option allows the AVURLAsset to use additional HTTP cookies for those HTTP(S) requests.

17.50.382 AVURLAssetPreferPreciseDurationAndTimingKey as string

Function: One of the keys for AVAsset creations.
Notes:
The corresponding value is a boolean, contained in an NSValue object, that indicates whether the asset should be prepared to indicate a precise duration and provide precise random access by time.
True indicates that longer loading times are acceptable in cases in which precise timing is required. Such precision, however, may require additional parsing of the resource in advance of operations that make use of any portion of it, depending on the specifics of its container format.
Many container formats provide sufficient summary information for precise timing and do not require additional parsing to prepare for it; QuickTime movie files and MPEG-4 files are examples of such formats. Other formats do not provide sufficient summary information, and precise random access for them is possible only after a preliminary examination of a file’s contents.
If you only intend that the asset be played, the default value of false will suffice (because AVPlayer supports approximate random access by time when full precision isn’t available). If you intend to insert the asset into an AVMutableComposition object, precise random access is typically desirable, and the value of true is recommended.

17.50.383 AVURLAssetReferenceRestrictionsKey as string

Function: One of the keys for AVAsset creations.
Notes:
The corresponding value is a number wrapping an “AVAssetReferenceRestrictions” enum value or the logical
combination of multiple such values that indicates the restrictions used by the asset when resolving references to external media data. Some assets can contain references to media data stored outside the asset’s container file, for example in another file. This key can be used to specify a policy to use when these references are encountered. If an asset contains one or more references of a type that is forbidden by the reference restrictions, loading of asset properties will fail. In addition, such an asset cannot be used with other AVFoundation modules, such as AVPlayerItem or AVAssetExportSession.

17.50.384 AVVideoAverageBitRateKey as string

Function: One of the constants for the dictionary with video settings.
Notes:
Specifies a key to access the average bit rate (as bits per second) used in encoding. The corresponding value is a number.

17.50.385 AVVideoCleanApertureHeightKey as string

Function: One of the constants for the dictionary with video settings.
Notes:
Specifies a key to access the clean aperture height. The corresponding value is a number.

17.50.386 AVVideoCleanApertureHorizontalOffsetKey as string

Function: One of the constants for the dictionary with video settings.
Notes:
Specifies a key to access the clean aperture horizontal offset. The corresponding value is a number.

17.50.387 AVVideoCleanApertureKey as string

Function: One of the constants for the dictionary with video settings.
Notes:
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Specifies a key to access the clean aperture.
The corresponding value is a dictionary.

17.50.388 AVVideoCleanApertureVerticalOffsetKey as string

Function: One of the constants for the dictionary with video settings.
Notes: Specifies a key to access the clean aperture vertical offset.
The corresponding value is a number.

17.50.389 AVVideoCleanApertureWidthKey as string

Function: One of the constants for the dictionary with video settings.
Notes: Specifies a key to access the clean aperture width.
The corresponding value is a number.

17.50.390 AVVideoCodecAppleProRes422 as string

Function: One of the constants for the dictionary with video settings.
Notes: Specifies that the video was encoded using the ProRes 422 Standard Definition encoder.
Files are identified with the .apcn extension.

17.50.391 AVVideoCodecAppleProRes4444 as string

Function: One of the constants for the dictionary with video settings.
Notes: Specifies that the video was encoded using the Apple ProRes 4444 encoder.
Files are identified with the .ap4h extension.
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17.50.392 **AVVideoCodecH264** as string

**Function:** One of the constants for the dictionary with video settings.  
**Notes:** Specifies that the video was encoded using H264.

17.50.393 **AVVideoCodecJPEG** as string

**Function:** One of the constants for the dictionary with video settings.  
**Notes:** Specifies that the video was encoded using the JPEG encoder.

17.50.394 **AVVideoCodecKey** as string

**Function:** One of the constants for the dictionary with video settings.  
**Notes:** Specifies a key to access the name of the codec used to encode the video.  
The corresponding value is a string; equivalent to CMVideoCodecType.

17.50.395 **AVVideoColorPrimariesKey** as string

**Function:** The key to identify color primaries in a color properties dictionary.

17.50.396 **AVVideoColorPrimaries_EBU_3213** as string

**Function:** One of the values to use with AVVideoColorPrimariesKey.

17.50.397 **AVVideoColorPrimaries_ITU_R_709_2** as string

**Function:** One of the values to use with AVVideoColorPrimariesKey.
17.50.398  **AVVideoColorPrimaries_SMPTE_C** as string

**Function:** One of the values to use with AVVideoColorPrimariesKey.

17.50.399  **AVVideoColorPropertiesKey** as string

**Function:** The key for a dictionary that contains properties specifying video color.
**Notes:** The dictionary must contain the keys AVVideoColorPrimariesKey, AVVideoTransferFunctionKey, and AVVideoYCbCrMatrixKey.

17.50.400  **AVVideoCompressionPropertiesKey** as string

**Function:** One of the constants for the dictionary with video settings.
**Notes:**
Specifies a key to access the compression properties.
The corresponding value is a Dictionary.

17.50.401  **AVVideoHeightKey** as string

**Function:** One of the constants for the dictionary with video settings.
**Notes:**
Specifies a key to access the height of the video in pixels.
The corresponding value is a number.

17.50.402  **AVVideoMaxKeyFrameIntervalDurationKey** as string

**Function:** One of the constants for the dictionary with video settings.
**Notes:** Number (1 means key frames only, H.264 only)
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17.50.403 AVVideoMaxKeyFrameIntervalKey as string

Function: One of the constants for the dictionary with video settings.
Notes:
Specifies a key to access the maximum interval between key frames.
The corresponding value is a number. 1 means key frames only.

17.50.404 AVVideoPixelAspectRatioHorizontalSpacingKey as string

Function: One of the constants for the dictionary with video settings.
Notes:
Specifies a key to access the pixel aspect ratio horizontal spacing.
The corresponding value is a number.

17.50.405 AVVideoPixelAspectRatioKey as string

Function: One of the constants for the dictionary with video settings.
Notes:
Specifies a key to access the pixel aspect ratio.
The corresponding value is a dictionary.

17.50.406 AVVideoPixelAspectRatioVerticalSpacingKey as string

Function: One of the constants for the dictionary with video settings.
Notes:
Specifies a key to access the pixel aspect ratio vertical spacing.
The corresponding value is a number.

17.50.407 AVVideoProfileLevelH264Baseline30 as string

Function: One of the constants for the dictionary with video settings.
Notes:
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Specifies a baseline level 3.0 profile.
Available in OS X v10.8 and later.

17.50.408 AVVideoProfileLevelH264Baseline31 as string

Function: One of the constants for the dictionary with video settings.
Notes:
Specifies a baseline level 3.1 profile.
Available in OS X v10.8 and later.

17.50.409 AVVideoProfileLevelH264Baseline41 as string

Function: One of the constants for the dictionary with video settings.
Notes:
Specifies a baseline level 4.1 profile.
Available in OS X v10.8 and later.

17.50.410 AVVideoProfileLevelH264BaselineAutoLevel as string

Function: One of the constants for the dictionary with video settings.
Notes:
Baseline Profile Auto Level.
Available on Mac OS X 10.9.

17.50.411 AVVideoProfileLevelH264High40 as string

Function: One of the constants for the dictionary with video settings.
Notes:
High Profile Level 4.0
Available on Mac OS X 10.9.
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17.50.412 AVVideoProfileLevelH264High41 as string

Function: One of the constants for the dictionary with video settings.
Notes:
High Profile Level 4.1
Available on Mac OS X 10.9.

17.50.413 AVVideoProfileLevelH264HighAutoLevel as string

Function: One of the constants for the dictionary with video settings.
Notes:
High Profile Auto Level
Available on Mac OS X 10.9.

17.50.414 AVVideoProfileLevelH264Main30 as string

Function: One of the constants for the dictionary with video settings.
Notes:
Specifies a main level 3.0 profile.
Available in OS X v10.8 and later.

17.50.415 AVVideoProfileLevelH264Main31 as string

Function: One of the constants for the dictionary with video settings.
Notes:
Specifies a main level 3.1 profile.
Available in OS X v10.8 and later.

17.50.416 AVVideoProfileLevelH264Main32 as string

Function: One of the constants for the dictionary with video settings.
Notes:
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Specifies a main level 3.2 profile.
Available in OS X v10.8 and later.

17.50.417 AVVideoProfileLevelH264Main41 as string

**Function:** One of the constants for the dictionary with video settings.
**Notes:**
Specifies a main level 4.2 profile.
Available in OS X v10.8 and later.

17.50.418 AVVideoProfileLevelH264MainAutoLevel as string

**Function:** One of the constants for the dictionary with video settings.
**Notes:**
Main Profile Auto Level
Available on Mac OS X 10.9.

17.50.419 AVVideoProfileLevelKey as string

**Function:** One of the constants for the dictionary with video settings.
**Notes:**
Specifies a key to access the video profile.
Available in OS X v10.8 and later.

17.50.420 AVVideoQualityKey as string

**Function:** One of the constants for the dictionary with video settings.
**Notes:**
Specifies a key to access the JPEG coded quality.
The corresponding value is a number 0.0-1.0.
17.50.421 AVVideoScalingModeFit as string

Function: One of the constants to specify how video should be scaled to fit a given area.
Notes: Crop to remove edge processing region; preserve aspect ratio of cropped source by reducing specified width or height if necessary.
This mode does not scale a small source up to larger dimensions.

17.50.422 AVVideoScalingModeKey as string

Function: One of the constants to specify how video should be scaled to fit a given area.
Notes: A key to retrieve the video scaling mode from a dictionary.

17.50.423 AVVideoScalingModeResize as string

Function: One of the constants to specify how video should be scaled to fit a given area.
Notes: Crop to remove edge processing region; scale remainder to destination area.
This mode does not preserve the aspect ratio.

17.50.424 AVVideoScalingModeResizeAspect as string

Function: One of the constants to specify how video should be scaled to fit a given area.
Notes: Preserve aspect ratio of the source, and fill remaining areas with black to fit destination dimensions.

17.50.425 AVVideoScalingModeResizeAspectFill as string

Function: One of the constants to specify how video should be scaled to fit a given area.
Notes: Preserve aspect ratio of the source, and crop picture to fit destination dimensions.
17.50.426  AVVideoTransferFunctionKey as string

Function: The key to identify the transfer function in a color properties dictionary.

17.50.427  AVVideoTransferFunction_ITU_R_709_2 as string

Function: One of the values to use with AVVideoTransferFunctionKey.

17.50.428  AVVideoTransferFunction_SMPTE_240M_1995 as string

Function: One of the values to use with AVVideoTransferFunctionKey.

17.50.429  AVVideoWidthKey as string

Function: One of the constants for the dictionary with video settings.  
Notes:  
Specifies a key to access the width of the video in pixels.  
The corresponding value is a number.

17.50.430  AVVideoYCbCrMatrixKey as string

Function: The key to identify the Y’CbCr matrix in a color properties dictionary.

17.50.431  AVVideoYCbCrMatrix_ITU_R_601_4 as string

Function: One of the values to use with AVVideoYCbCrMatrixKey.
17.50.432  AVVideoYCbCrMatrix_ITU_R_709_2 as string

Function: One of the values to use with AVVideoYCbCrMatrixKey.

17.50.433  AVVideoYCbCrMatrix_SMPTE_240M_1995 as string

Function: One of the values to use with AVVideoYCbCrMatrixKey.

17.50.434  WriteCGImageToFile(File as Folderitem, Type as String, Image as Variant, options as Dictionary = nil, tag as Variant = nil) as boolean

Function: Writes a CGImage to a file on disk on another thread.
Notes:
Image must be a CGImageMBS.

If this method returns true (parameters are correct), it starts the compression and writing of the image on a helper thread and later calls WriteCGImageToFileCompleted event to inform you about success or failure. Returns false in case of bad parameters.

Tag is the value you passed when calling the original method.

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17.50.436  AssetLoadValuesAsynchronouslyForKeysFinished(MetadataItem as AVMeta-
dataItemMBS, keys() as string, tag as Variant)

Function: Called by AVAssetMBS.loadValuesAsynchronouslyForKeys method on completion.
Notes: Tag is the value you passed when calling the original method.
17.50.437 AssetTrackLoadValuesAsynchronouslyForKeysFinished(MetadataItem as AVMetadataItemMBS, keys() as string, tag as Variant)

Function: Called by AVAssetTrackMBS.loadValuesAsynchronouslyForKeys method on completion.
Notes: Tag is the value you passed when calling the original method.

17.50.438 audioPlayerDecodeErrorDidOccur(player as AVAudioPlayerMBS, error as NSErrorMBS)

Function: Called when an audio player encounters a decoding error during playback.
Notes:
player: The audio player that encountered the decoding error.
error: The decoding error.

17.50.439 audioPlayerDidFinishPlaying(player as AVAudioPlayerMBS, successful as boolean)

Function: Called when a sound has finished playing.
Notes:
player: The audio player that finished playing.
flag: True on successful completion of playback; false if playback stopped because the system could not decode the audio data.

This method is not called upon an audio interruption. Rather, an audio player is paused upon interruption the sound has not finished playing.

17.50.440 audioRecorderDidFinishRecording(recorder as AVAudioRecorderMBS, successful as boolean)

Function: Called by the system when a recording is stopped or has finished due to reaching its time limit.
Notes:
recorder: The audio recorder that has finished recording.
flag: True on successful completion of recording; False if recording stopped because of an audio encoding error.
This method is not called by the system if the audio recorder stopped due to an interruption.

17.50.441 audioRecorderEncodeErrorDidOccur(recorder as AVAudioRecorderMBS, error as NSErrorMBS)

**Function:** Called when an audio recorder encounters an encoding error during recording.
**Notes:**
recorder: The audio recorder that encountered the encoding error.
error: The encoding error.

17.50.442 BoundaryTimeObserver(Player as AVPlayerMBS, tag as Variant)

**Function:** Called by addBoundaryTimeObserverForTimes.
**Notes:** Tag is the value you passed when calling the original method.

17.50.443 CaptureDeviceSubjectAreaDidChange(device as AVCaptureDeviceMBS, notification as Variant)

**Function:** Notification that is posted when the instance of AVCaptureDevice has detected a substantial change to the video subject area.
**Notes:**
notification is a NSNotificationMBS object.
This notification is only sent if you first set subjectAreaChangeMonitoringEnabled to True.

17.50.444 CaptureDeviceWasConnected(device as AVCaptureDeviceMBS, notification as Variant)

**Function:** Notification that is posted when a new device becomes available.
**Notes:** notification is a NSNotificationMBS object.
CaptureDeviceWasDisconnected(device as AVCaptureDeviceMBS, notification as Variant)

Function: Notification that is posted when an existing device becomes unavailable.
Notes: notification is a NSNotificationMBS object.

CaptureInputPortFormatDescriptionDidChange(InputPort as AVCaptureInputPortMBS, notification as Variant)

Function: Posted if the formatDescription of the capture input port changes.
Notes: notification is a NSNotificationMBS object.

captureOutputDidDropSampleBuffer(captureOutput as AVCaptureOutputMBS, OutputSampleBuffer as CMSampleBufferMBS, connection as AVCaptureConnectionMBS)

Function: Notifies the delegate that a video frame was discarded.
Notes:
captureOutput: The capture output object.
sampleBuffer: A CMSampleBuffer object containing information about the dropped frame, such as its format and presentation time. This sample buffer contains none of the original video data.
connection: The connection from which the video was received.

Delegates receive this message whenever a late video frame is dropped. This method is called once for each dropped frame. It is called on the main thread, so please make your event code run very fast.

captureOutputDidFinishRecordingToOutputFileAtURL(captureOutput as AVCaptureFileOutputMBS, outputFileURL as string, connections() as AVCaptureConnectionMBS, error as NSErrorMBS)

Function: Informs the delegate when all pending data has been written to an output file.
Notes:
captureOutput: The capture file output that has finished writing the file.
outputFileURL: The file URL of the file that is being written.
connections: An array of AVCaptureConnection objects attached to the file output that provided the data.
that is being written to the file.

error: If the file was not written successfully, an error object that describes the problem; otherwise nil.

This method is called whenever a file is finished. If the file was forced to be finished due to an error, the error is described in the error parameter otherwise, the error parameter is nil.

This method is called when the file output has finished writing all data to a file whose recording was stopped, either because startRecordingToOutputFileURL or stopRecording were called, or because an error (described by the error parameter), occurred (if no error occurred, the error parameter is nil).

This method is always called for each recording request, even if no data is successfully written to the file.

17.50.449 captureOutputDidOutputMetadataObjects(captureOutput as AVCaptureOutputMBS, metadataObjects() as AVMetadataObjectMBS, connection as AVCaptureConnectionMBS)

Function: Called by AVCaptureMetadataOutputMBS class if new metadata is available.

17.50.450 captureOutputDidOutputSampleBuffer(captureOutput as AVCaptureOutputMBS, OutputSampleBuffer as CMSampleBufferMBS, connection as AVCaptureConnectionMBS)

Function: Called for frames being outputted.
Notes: Called by AVCaptureFileOutputMBS, AVCaptureVideoDataOutputMBS and AVCaptureAudioDataOutputMBS.

17.50.451 captureOutputDidPauseRecordingToOutputFileAtURL(captureOutput as AVCaptureFileOutputMBS, fileURL as string, connections() as AVCaptureConnectionMBS)

Function: Called whenever the output is recording to a file and successfully pauses the recording at the request of a client.
Notes:
captureOutput: The capture file output that has paused its file recording.
fileURL: The file URL of the file that is being written.
connections: An array of AVCaptureConnection objects attached to the file output that provided the data that is being written to the file.

This method is called whenever a request to pause recording is actually respected.

It is safe for delegates to change what the file output is currently doing (starting a new file, for example) from within this method. If recording to a file is stopped, either manually or due to an error, this method is not guaranteed to be called, even if a previous call to pauseRecording was made.

17.50.452 captureOutputDidResumeRecordingToOutputFileAtURL(captureOutput as AVCaptureFileOutputMBS, fileURL as string, connections() as AVCaptureConnectionMBS)

Function: Called whenever the output, at the request of the client, successfully resumes a file recording that was paused.
Notes:
captureOutput: The capture file output that has resumed its paused file recording.
fileURL: The file URL of the file that is being written.
connections: An array of AVCaptureConnection objects attached to the file output that provided the data that is being written to the file.

Delegates can use this method to be informed when a request to resume recording is actually respected.

It is safe for delegates to change what the file output is currently doing (starting a new file, for example) from within this method. If recording to a file is stopped, either manually or due to an error, this method is not guaranteed to be called, even if a previous call to resumeRecording was made.

17.50.453 captureOutputDidStartRecordingToOutputFileAtURL(captureOutput as AVCaptureFileOutputMBS, fileURL as string, connections() as AVCaptureConnectionMBS)

Function: Informs the delegate when the output has started writing to a file.
Notes:
captureOutput: The capture file output that started writing the file.
fileURL: The file URL of the file that is being written.
connections: An array of AVCaptureConnection objects attached to the file output that provided the data that is being written to the file.
If an error condition prevents any data from being written, this method may not be called. captureOutputWillFinishRecordingToOutputFileAtURL and captureOutputdidFinishRecordingToOutputFileAtURL are always called, even if no data is written.

17.50.454 captureOutputWillFinishRecordingToOutputFileAtURL(captureOutput as AVCaptureFileOutputMBS, fileURL as string, connections() as AVCaptureConnectionMBS, error as NSErrorMBS)

Function: Informs the delegate when the output will stop writing new samples to a file.
Notes:
captureOutput: The capture file output that will finish writing the file.
fileURL: The file URL of the file that is being written.
connections: An array of AVCaptureConnection objects attached to the file output that provided the data that is being written to the file.
error: An error describing what caused the file to stop recording, or nil if there was no error.

This method is called when the file output will stop recording new samples to the file at outputFileURL, either because startRecordingToOutputFileURL or stopRecording were called, or because an error (described by the error parameter), occurred (if no error occurred, the error parameter is nil).

This method is always called for each recording request, even if no data is successfully written to the file.

17.50.455 CaptureSessionDidStartRunning(session as AVCaptureSessionMBS, notification as Variant)

Function: Posted when a capture session starts.
Notes: notification is a NSNotificationMBS object.

17.50.456 CaptureSessionDidStopRunning(session as AVCaptureSessionMBS, notification as Variant)

Function: Posted when a capture session stops.
Notes: notification is a NSNotificationMBS object.
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17.50.457 CaptureSessionRuntimeError(session as AVCaptureSessionMBS, error as NSErrorMBS, notification as Variant)

Function: Posted if an error occurred during a capture session.
Notes:
notification is a NSNotificationMBS object.
You retrieve the underlying error from the notification’s user info dictionary using the key AVCaptureSessionErrorKey.

17.50.458 captureStillImageAsynchronouslyCompleted(output as AVCaptureStillImageOutputMBS, prepareJpegStillImage as boolean, tag as Variant, error as NSErrorMBS, imageDataSampleBuffer as CMSampleBufferMBS, JpegStillImage as memoryblock)

Function: The event called when still image was captured.
Notes:
If prepareJpegStillImage is true, the plugin will prepare the jpeg data and pass it as JpegStillImage, so the preparation is done on the capture thread.
imageDataSampleBuffer: The data that was captured.
The buffer attachments may contain metadata appropriate to the image data format. For example, a buffer containing JPEG data may carry a kCGImagePropertyExifDictionary as an attachment. See ImageIO/CGImageProperties.h for a list of keys and value types.
error
If the request could not be completed, an NSError object that describes the problem; otherwise nil.
Tag is the value you passed when calling the original method.

17.50.459 determineCompatibilityOfExportPresetCompleted(presetName as string, asset as AVAssetMBS, outputFileType as string, compatible as boolean, tag as Variant)

Function: The event called by AVAssetExportSessionMBS.determineCompatibilityOfExportPreset.
Notes:
The event to execute with the results of your call to determineCompatibilityOfExportPreset.
The compatible parameter contains the value true if the combination of options is compatible or false if they
Tag is the value you passed when calling the original method.

### 17.50.460 determineCompatibleFileTypesCompleted

**Function:** The event called when you call `AVAssetExportSessionMBS.determineCompatibleFileTypesCompleted` method.

**Notes:**

The event to execute with the results.

You receive an array parameter and return no result. The array contains zero or more strings with the UTIs of the compatible file types. The file types are in no particular order. For a list of constants specifying UTIs for standard file types, see AV Foundation Constants Reference.

Tag is the value you passed when calling the original method.

### 17.50.461 exportAsynchronouslyCompleted

**Function:** Export finished.

**Notes:**

Called by `AVAssetExportSessionMBS.exportAsynchronouslyCompleted` when the export is done or failed.

Tag is the value you passed when calling the original method.

### 17.50.462 finishWritingCompleted

**Function:** Event called from `AVAssetWriterMBS.finishWritingWithCompletionHandler`.

**Notes:**

The event is invoked once the writing of the output file is finished or if a failure or cancellation occurs in the meantime.
Tag is the value you passed when calling the original method.

17.50.463  generateCGImagesAsynchronouslyForTimesCompleted(generator as AVAssetImageGeneratorMBS, requestedTime as CMTimeMBS, image as Variant, actualTime as CMTimeMBS, result as Integer, error as NSErrorMBS, tag as Variant)

Function: Called when image generation is completed or cancelled.
Notes: Image is a CGImageMBS object.
Called by AVAssetImageGeneratorMBS.generateCGImagesAsynchronouslyForTimes method.

Tag is the value you passed when calling the original method.

17.50.464  legibleOutputDidOutputAttributedStrings(output as AVPlayerItemLegibleOutputMBS, strings() as Variant, nativeSamples() as CMSampleBufferMBS, itemTime as CMTimeMBS)

Function: The legible output did output an attributed string.
Notes: Strings array contains NSAttributedStringMBS objects.

17.50.465  MetadataItemLoadValuesAsynchronouslyForKeysFinished(MetadataItem as AVMetadataItemMBS, keys() as string, tag as Variant)

Function: Called by AVMetadataItemMBS.loadValuesAsynchronouslyForKeys method on completion.
Notes: Tag is the value you passed when calling the original method.

17.50.466  outputMediaDataWillChange(output as AVPlayerItemOutputMBS)

Function: Tells you that new samples are about to arrive.
Notes: You can use this method to prepare for any new sample data. This method is called at some point after a call to your video output object’s requestNotificationOfMediaDataChangeWithAdvanceInterval method.
17.50.467  outputSequenceWasFlushed(output as AVPlayerItemOutputMBS)

Function: Tells the delegate that a new sample sequence is commencing.
Notes:
output: The output object that sent the message.

This method is called after any attempt to seek or change the playback direction of the item’s content. If you are maintaining any queued future samples, you can use your implementation of this method to discard those samples.

17.50.468  PeriodicTimeObserver(Player as AVPlayerMBS, time as CMTimeMBS, tag as Variant)

Function: Called by addPeriodicTimeObserverForInterval.
Notes:
time: The time at which the block is invoked.

Tag is the value you passed when calling the original method.

17.50.469  PlayerItemDidPlayToEndTime(PlayerItem as AVPlayerItemMBS, notification as Variant)

Function: Posted when the item has played to its end time.
Notes:
notification is a NSNotificationMBS object.
The notification’s object is the item that finished playing.

17.50.470  PlayerItemFailedToPlayToEndTime(PlayerItem as AVPlayerItemMBS, error as NSErrorMBS, notification as Variant)

Function: Posted when the item failed to play to its end time.
Notes:
notification is a NSNotificationMBS object.
The notification’s object is the item that finished playing.
The user info dictionary contains an error object that describes the problem see AVPlayerItemFailedToPlayToEndTimeErrorKey.

17.50.471 PlayerItemNewAccessLogEntry(PlayerItem as AVPlayerItemMBS, notification as Variant)
Function: A new access log entry is available to a player item.
Notes:
notification is a NSNotificationMBS object.
Posted when a new access log entry has been added.
The notification's object is the player item. The new log entry is accessible via accessLog.

17.50.472 PlayerItemNewErrorLogEntry(PlayerItem as AVPlayerItemMBS, notification as Variant)
Function: A new error log entry is available to a player item.
Notes:
notification is a NSNotificationMBS object.
Posted when a new error log entry has been added.
The notification's object is the player item. The new log entry is accessible via errorLog, respectively.

17.50.473 PlayerItemPlaybackStalled(PlayerItem as AVPlayerItemMBS, notification as Variant)
Function: The player item playback is stalled.
Notes:
notification is a NSNotificationMBS object.
Posted when some media did not arrive in time to continue playback.
The notification's object is the AVPlayerItem instance whose playback was unable to continue because the necessary media isn’t available yet, usually because it didn’t arrive in a timely fashion from its source over a network. Playback will continue once a sufficient amount of media has subsequently been delivered.
17.50.474 `playerItemSeekToDateFinished(player as AVPlayerItemMBS, date as date, finished as boolean, tag as Variant)`

**Function:** The seek operation to date finished.
**Notes:** Tag is the value you passed when calling the original method.

17.50.475 `playerItemSeekToTimeFinished(player as AVPlayerItemMBS, time as CMTimeMBS, toleranceBefore as CMTimeMBS, toleranceAfter as CMTimeMBS, finished as boolean, tag as Variant)`

**Function:** A seek operation has finished.
**Notes:**

finished: Indicates whether the seek operation completed.

Tag is the value you passed when calling the original method.

17.50.476 `PlayerItemTimeJumped(PlayerItem as AVPlayerItemMBS, notification as Variant)`

**Function:** Posted when the item’s current time has changed discontinuously.
**Notes:**

notification is a NSNotificationMBS object.
The notification’s object is the item.

17.50.477 `playerSeekToDateFinished(player as AVPlayerMBS, date as date, finished as boolean, tag as Variant)`

**Function:** Event called by AVPlayerMBS.seekToDate method when seeking is done.
**Notes:** Tag is the value you passed when calling the original method.
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17.50.478  playerSeekToTimeFinished(player as AVPlayerMBS, time as CMTimeMBS, toleranceBefore as CMTimeMBS, toleranceAfter as CMTimeMBS, finished as boolean, tag as Variant)

Function: Called by AVPlayerMBS.seekToTime when seeking is done.
Notes:
finished: Indicates whether the seek operation completed.
Tag is the value you passed when calling the original method.

17.50.479  prerollAtRateFinished(player as AVAudioPlayerMBS, rate as Double, finished as boolean, tag as Variant)

Function: The event called when preroll is done.
Notes:
Finished: True if the data was loaded or false if there was a problem.
The value might be false if the preroll was interrupted by a time change or incompatible rate change.
Tag is the value you passed when calling the original method.

17.50.480  requestContentAuthorizationCompleted(PlayerItem as AVPlayerItemMBS, timeoutInterval as Double, tag as Variant)

Function: The event called when a request started with AVPlayerItemMBS.requestContentAuthorizationAsynchronously completed.
Notes: Tag is the value you passed when calling the original method.

17.50.481  requestMediaDataWhenReadyOnQueueCompleted(assetWriterInput as AVAssetWriterInputMBS, tag as Variant)

Function: Called when media is ready.
Notes:
You called requestMediaDataWhenReadyOnQueue on an AVAssetWriterInputMBS before.
Tag is the value you passed when calling the original method.

17.50.482  requestMediaDataWhenReadyOnQueueFinished(assetWriterInput as AVAssetWriterInputMBS, assetReaderOutput as AVAssetReaderOutputMBS, tag as Variant)

Function: Called when copying data from input to output by plugin is done.
Notes: Tag is the value you passed when calling the original method.

17.50.483  requestMediaDataWhenReadyOnQueueProgress(assetWriterInput as AVAssetWriterInputMBS, assetReaderOutput as AVAssetReaderOutputMBS, convertedByteCount as Int64, LastBuffer as CMSampleBufferMBS, tag as Variant)

Function: Called when media is processed from input to output from plugin.
Notes: LastBuffer: The last buffer processed.
Tag is the value you passed when calling the original method.

17.50.484  resourceLoaderDidCancelLoadingRequest(resourceLoader as AVAssetResourceLoaderMBS, loadingRequest as AVAssetResourceLoadingRequestMBS)

Function: Invoked to inform the delegate that a prior loading request has been cancelled.
Notes: resourceLoader: The resource loader.
loadingRequest: The loading request that has been cancelled.
Previously issued loading requests can be cancelled when data from the resource is no longer required or when a loading request is superseded by new requests for data from the same resource.
For example, if to complete a seek operation it becomes necessary to load a range of bytes that’s different from a range previously requested, the prior request may be cancelled while the delegate is still handling it.
17.50.485 resourceLoaderShouldWaitForLoadingOfRequestedResource(resourceLoader as AVAssetResourceLoaderMBS, loadingRequest as AVAssetResourceLoadingRequestMBS) as boolean


Function: Asks the delegate if it wants to load the requested resource.

Notes:
resourceLoader: The resource loader object that is making the request.
loadingRequest: The loading request object that contains information about the requested resource.

Returns true if your delegate can load the resource specified by the loadingRequest parameter or false if it cannot.

The resource loader object calls this method when assistance is required of your code to load the specified resource. For example, the resource loader might call this method to load decryption keys that have been specified using a custom URL scheme.

Returning true from this method, implies only that the receiver will load, or at least attempt to load, the resource. In some implementations, the actual work of loading the resource might be initiated on another thread, running asynchronously to the resource loading delegate; whether the work begins immediately or merely soon is an implementation detail of the client application.

You can load the resource synchronously or asynchronously. In both cases, you must indicate success or failure of the operation by calling the finishLoadingWithResponse or finishLoadingWithError: method of the request object when you finish. If you load the resource asynchronously, you must also store a strong reference to the object in the loadingRequest parameter before returning from this method.

If you return false from this method, the resource loader treats the loading of the resource as having failed.

Available in OS X v10.9 and later.

17.50.486 SampleBufferDisplayLayerMediaDataWhenReady(tag as Variant)


Function: Event called by AVSampleBufferDisplayLayerMBS.requestMediaDataWhenReady when media data is ready.

Notes: Tag is the value you passed when calling the original method.
17.50.487  videoCompositionShouldContinueValidatingAfterFindingEmptyTimeRange(videoComposition as AVVideoCompositionMBS, timeRange as CMTimeRangeMBS) as boolean

**Function:** Reports a time range that has no corresponding video composition instruction.
**Notes:**
- videoComposition: The video composition being validated.
- timeRange: The time range that has no corresponding video composition instruction.

Return true if the video composition should continue validation in order to report additional problems that may exist, otherwise false.

17.50.488  videoCompositionShouldContinueValidatingAfterFindingInvalidTimeRangeInInstruction(videoComposition as AVVideoCompositionMBS, Instruction as AVVideoCompositionInstructionMBS) as boolean

**Function:** Reports a video composition instruction with a time range that is invalid, that overlaps with the time range of a prior instruction, or that contains times earlier than the time range of a prior instruction.
**Notes:**
- videoComposition: The video composition being validated.
- videoCompositionInstruction: The video composition instruction.

Return true if the video composition should continue validation in order to report additional problems that may exist, otherwise false.

17.50.489  videoCompositionShouldContinueValidatingAfterFindingInvalidTrackIDInInstruction(videoComposition as AVVideoCompositionMBS, videoCompositionInstruction as AVVideoCompositionInstructionMBS, layerInstruction as AVVideoCompositionLayerInstructionMBS, asset as AVAssetMBS) as boolean

**Function:** Reports a video composition layer instruction with a track ID that does not correspond either to the track ID used for the composition’s animation tool or to a track of the asset specified in isValidForAsset.
**Notes:**
- videoComposition: The video composition being validated.
- videoCompositionInstruction: The video composition instruction.
- layerInstruction: The layer instruction.
- asset: The underlying asset.
Return true if the video composition should continue validation in order to report additional problems that may exist, otherwise false.

17.50.490 videoCompositionShouldContinueValidatingAfterFindingInvalidValueForKey(videoComposition as AVVideoCompositionMBS, key as string) as boolean

Function: Reports that a key that has an invalid value.
Notes:
videoComposition: The video composition being validated.
key: The key being validated.

Return true if the video composition should continue validation in order to report additional problems that may exist, otherwise false.

17.50.491 WriteCGImageToFileCompleted(file as folderitem, type as string, image as Variant, options as dictionary, success as boolean, tag as Variant)

Function: The call to WriteCGImageToFile method finished.
Notes:
Image is a CGImageMBS.
Success property tells you whether or not the write was successful.

Tag is the value you passed when calling the original method.

17.50.492 Constants

17.50.493 AVAudioQualityHigh = & h60

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the values that specify sample rate conversion quality, used for the AVSampleRateConverterAudioQualityKey property.
Notes: High quality sample rate conversion.
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17.50.494  AVAudioQualityLow = &h20

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the values that specify sample rate conversion quality, used for the AVSampleRateConverterAudioQualityKey property. **Notes:** Low quality rate conversion.

17.50.495  AVAudioQualityMax = &h7F

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the values that specify sample rate conversion quality, used for the AVSampleRateConverterAudioQualityKey property. **Notes:** Maximum quality sample rate conversion.

17.50.496  AVAudioQualityMedium = &h40

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the values that specify sample rate conversion quality, used for the AVSampleRateConverterAudioQualityKey property. **Notes:** Medium quality sample rate conversion.

17.50.497  AVAudioQualityMin = 0

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the values that specify sample rate conversion quality, used for the AVSampleRateConverterAudioQualityKey property. **Notes:** The minimum quality for sample rate conversion.

17.50.498  AVErrorApplicationIsNotAuthorized = -11836

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the error constants. **Notes:** The application is not authorized to play media.

17.50.499  AVErrorApplicationIsNotAuthorizedToUseDevice = -11852

MBS AVFoundation Plugin, Plugin Version: 14.0. **Function:** One of the error constants. **Notes:** The user has denied this application permission for media capture. Available in OS X v10.9 and later.
17.50.500  **AVErrorCompositionTrackSegmentsNotContiguous = -11824**

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the error constants.  
**Notes:** The source media can’t be added because it contains gaps.

17.50.501  **AVErrorContentIsNotAuthorized = -11835**

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the error constants.  
**Notes:** The user is not authorized to play the media.

17.50.502  **AVErrorContentIsProtected = -11831**

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the error constants.  
**Notes:** The application is not authorized to open the media.

17.50.503  **AVErrorDecodeFailed = -11821**

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the error constants.  
**Notes:** The operation could not be completed because some source media could not be decoded.

17.50.504  **AVErrorDecoderNotFound = -11833**

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the error constants.  
**Notes:** The decoder for the given media was not found.  
The error’s userInfo may contain values for the keys AVErrorMediaTypeKey and AVErrorMediaSubTypeKey, if they are available.

17.50.505  **AVErrorDecoderTemporarilyUnavailable = -11839**

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the error constants.  
**Notes:** The appropriate decoder is currently not available.  
The error’s userInfo may contain AVErrorMediaTypeKey and AVErrorMediaSubTypeKey, if they are available.
17.50. CLASS AVFOUNDATIONMBS

17.50.506  AVErrorDeviceAlreadyUsedByAnotherSession = -11804

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the error constants.
**Notes:** Media could not be captured from the device because it is already in use elsewhere in this application.

17.50.507  AVErrorDeviceInUseByAnotherApplication = -11815

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the error constants.
**Notes:** The device could not be opened because it is in use by another application.

17.50.508  AVErrorDeviceLockedForConfigurationByAnotherProcess = -11817

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the error constants.
**Notes:** Settings for the device could not be changed because the device is being controlled by another application.

17.50.509  AVErrorDeviceNotConnected = -11814

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the error constants.
**Notes:** The device could not be opened because it is not connected or turned on.

17.50.510  AVErrorDeviceWasDisconnected = -11808

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the error constants.
**Notes:** Recording stopped because the device was turned off or disconnected.

17.50.511  AVErrorDiskFull = -11807

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the error constants.
**Notes:** Recording stopped because the disk is getting full.

17.50.512  AVErrorDisplayWasDisabled = -11845

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the error constants.
**Notes:** Screen capture failed because the display was inactive.
17.50.513  AVErrorEncoderNotFound = -11834

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the error constants.
**Notes:**
The requested encoder was not found.
The error’s `userInfo` may contain values for the keys `AVErrorMediaTypeKey` and `AVErrorMediaSubType-Key`, if they are available.

17.50.514  AVErrorEncoderTemporarilyUnavailable = -11840

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the error constants.
**Notes:**
The appropriate encoder is currently not available.
The error’s `userInfo` may contain `AVErrorMediaTypeKey` and `AVErrorMediaSubTypeKey`, if they are available.

17.50.515  AVErrorExportFailed = -11820

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the error constants.
**Notes:** The export could not be completed.

17.50.516  AVErrorFailedToLoadMediaData = -11849

MBS AVFoundation Plugin, Plugin Version: 14.0. **Function:** One of the error constants.
**Notes:**
The media resource does not contain all of the data required and cannot be loaded.
Available in OS X v10.9 and later.

17.50.517  AVErrorFileAlreadyExists = -11823

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the error constants.
**Notes:** The file could not be created because a file with the same name already exists in the same location.
17.50.518 AVErrorFileFailedToParse = -11829

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the error constants.  
Notes: The media could not be opened because the file is damaged or not in a recognized format.

17.50.519 AVErrorFileFormatNotRecognized = -11828

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the error constants.  
Notes: The media could not be opened because it is not in a recognized format.

17.50.520 AVErrorIncompatibleAsset = -11848

MBS AVFoundation Plugin, Plugin Version: 14.0. Function: One of the error constants.  
Notes: The media could not be displayed because the iOS device is not capable of playing the content. This might occur if the device does not support playing a particular video profile level.  
Available in OS X v10.9 and later.

17.50.521 AVErrorInvalidCompositionTrackSegmentDuration = -11825

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the error constants.  
Notes: The source media can’t be added because its duration in the destination is invalid.

17.50.522 AVErrorInvalidCompositionTrackSegmentSourceDuration = -11827

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the error constants.  
Notes: The source media can’t be added because it has no duration.

17.50.523 AVErrorInvalidCompositionTrackSegmentSourceStartTime= -11826

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the error constants.  
Notes: The source media can’t be added because its start time in the destination is invalid.
17.50.524  AVErrorInvalidOutputURLPathExtension = -11843

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the error constants. **Notes:** The path extension of the URL was invalid.

17.50.525  AVErrorInvalidSourceMedia = -11822

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the error constants. **Notes:** The operation could not be completed because some source media could not be read.

17.50.526  AVErrorInvalidVideoComposition = -11841

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the error constants. **Notes:** You attempted to perform an operation with the asset that is not supported.

17.50.527  AVErrorMaximumDurationReached = -11810

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the error constants. **Notes:** Recording stopped because the maximum duration for the file was reached.

17.50.528  AVErrorMaximumFileSizeReached = -11811

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the error constants. **Notes:** Recording stopped because the maximum size for the file was reached.

17.50.529  AVErrorMaximumNumberOfSamplesForFileFormatReached = -11813

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the error constants. **Notes:** Recording stopped because the maximum number of samples for the file was reached.

17.50.530  AVErrorMaximumStillImageCaptureRequestsExceeded = -11830

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the error constants. **Notes:** The photo could not be taken because there are too many photo requests that haven’t completed yet.
17.50.531 AVErrorMediaChanged = -11809

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the error constants. **Notes:** Recording stopped because the format of the source media changed.

17.50.532 AVErrorMediaDiscontinuity = -11812

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the error constants. **Notes:** Recording stopped because there was an interruption in the input media.

17.50.533 AVErrorNoDataCaptured = -11805

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the error constants. **Notes:** Recording failed because no data was received.

17.50.534 AVErrorNoImageAtTime = -11832

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the error constants. **Notes:** There is no image at that time in the media.

17.50.535 AVErrorOperationInterrupted = -11847

MBS AVFoundation Plugin, Plugin Version: 14.0. **Function:** One of the error constants. **Notes:** Operation was interrupted.

17.50.536 AVErrorOperationNotSupportedForAsset = -11838

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the error constants. **Notes:** You attempted to perform an operation with the asset that is not supported.

17.50.537 AVErrorOutOfMemory = -11801

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the error constants. **Notes:** The operation could not be completed because there is not enough memory to process all of the media.
17.50.538 AVErrorReferenceForbiddenByReferencePolicy = -11842

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the error constants. Notes: You attempted to perform an operation with the asset that attempted to follow a reference that was not allowed.

17.50.539 AVErrorScreenCaptureFailed = -11844


17.50.540 AVErrorServerIncorrectlyConfigured = -11850

MBS AVFoundation Plugin, Plugin Version: 14.0. Function: One of the error constants. Notes: The HTTP server sending the media resource is not configured as expected. This might mean that the server does not support byte range requests. Available in OS X v10.9 and later.

17.50.541 AVErrorSessionConfigurationChanged = -11806

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the error constants. Notes: Recording stopped because the configuration of media sources and destinations changed.

17.50.542 AVErrorSessionNotRunning = -11803

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the error constants. Notes: Recording could not be started because no data is being captured.

17.50.543 AVErrorTorchLevelUnavailable = -11846

MBS AVFoundation Plugin, Plugin Version: 14.0. Function: One of the error constants. Notes: The specified torch level is valid but currently unavailable. This might be due to the device being overheated currently.
Available in OS X v10.9 and later.

17.50.544 **AVErrorUnknown = -11800**

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the error constants.  
**Notes:** Reason for the error is unknown.

17.50.545 **kAudioFormat60958AC3 = ”cac3”**

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats.  
**Notes:** A key that specifies an AC-3 codec that provides data packaged for transport over an IEC 60958 compliant digital audio interface. Uses the standard format flags in "AudioStreamBasicDescription Flags".

17.50.546 **kAudioFormatAC3 = ”ac-3”**

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats.  
**Notes:** A key that specifies an AC-3 codec. Uses no flags.

17.50.547 **kAudioFormatAES3 = ”aes3”**

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats.  
**Notes:** The format defined by the AES3-2003 standard. Adopted into MXF and MPEG-2 containers and SDTI transport streams with SMPTE specs 302M-2002 and 331M-2000. Uses no flags.

17.50.548 **kAudioFormatALaw = ”alaw”**

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats.  
**Notes:** aLaw 2:1. Uses no flags.

17.50.549 **kAudioFormatAMR = ”samr”**

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats.  
**Notes:** The AMR (Adaptive Multi-Rate) narrow band speech codec.
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17.50.550  kAudioFormatAppleIMA4 = "ima4"

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats. **Notes:** A key that specifies Apple’s implementation of the IMA 4:1 ADPCM codec. Uses no flags.

17.50.551  kAudioFormatAppleLossless = "alac"

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats. **Notes:** Apple Lossless. Uses no flags.

17.50.552  kAudioFormatAudible = "AUDB"

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats. **Notes:** The codec used for Audible, Inc. audio books. Uses no flags.

17.50.553  kAudioFormatDVIIntelIMA = &h6D730011

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats. **Notes:** DVI/Intel IMA ADPCM - ACM code 17.

17.50.554  kAudioFormatiLBC = "ilbc"

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats. **Notes:** The iLBC (internet Low Bitrate Codec) narrow band speech codec. Uses no flags.

17.50.555  kAudioFormatLinearPCM = "lpcm"

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats. **Notes:** A key that specifies linear PCM, a noncompressed audio data format with one frame per packet. Uses the linear PCM format flags in "AudioStreamBasicDescription Flags".

17.50.556  kAudioFormatMACE3 = "MAC3"

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats. **Notes:** MACE 3:1. Uses no flags.
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17.50.557 \( \text{kAudioFormatMACE6} = "\text{MAC6}" \)

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats.  
**Notes:** MACE 6.1. Uses no flags.

17.50.558 \( \text{kAudioFormatMicrosoftGSM} = \& \text{h6D730031} \)

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats.  
**Notes:** Microsoft GSM 6.10 - ACM code 49.

17.50.559 \( \text{kAudioFormatMIDISTream} = "\text{midi}" \)

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats.  
**Notes:** A stream of MIDIPacketList structures where the time stamps in the MIDIPacket structures are sample offsets in the stream. The mSampleRate field in the AudioStreamBasicDescription structure is used to describe how time is passed in this kind of stream and an audio unit that receives or generates this stream can use this sample rate together with the number of frames it is rendering and the sample offsets within the MIDIPacketList to define the time for any MIDI event within this list. Uses no flags.

17.50.560 \( \text{kAudioFormatMPEG4AAC} = "\text{aac }" \)

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats.  
**Notes:** A key that specifies an MPEG-4 AAC codec. The flags field contains the MPEG-4 audio object type constant listed in "MPEG-4 Audio Object Type Constants" indicating the specific kind of data.

17.50.561 \( \text{kAudioFormatMPEG4AAC_ELD} = "\text{aace}" \)

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats.  
**Notes:** MPEG-4 AAC Enhanced Low Delay audio object. Uses no flags.

17.50.562 \( \text{kAudioFormatMPEG4AAC_ELD_SBR} = "\text{aacf}" \)

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats.  
**Notes:** MPEG-4 AAC Enhanced Low Delay audio object with SBR (spectral band replication) extension layer. Uses no flags.
17.50.563  kAudioFormatMPEG4AAC_ELD_V2 = "aacg"
MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats.

17.50.564  kAudioFormatMPEG4AAC_HE = "aach"
MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats.  
**Notes:** MPEG-4 High Efficiency AAC audio object. Uses no flags.

17.50.565  kAudioFormatMPEG4AAC_HE_V2 = "aacp"
MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats.  
**Notes:** MPEG-4 High Efficiency AAC Version 2 audio object. Uses no flags.

17.50.566  kAudioFormatMPEG4AAC_LD = "aacl"
MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats.  
**Notes:** MPEG-4 AAC Low Delay audio object. Uses no flags.

17.50.567  kAudioFormatMPEG4AAC_Spatial = "aacs"
MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats.  
**Notes:** MPEG-4 Spatial Audio audio object. Uses no flags.

17.50.568  kAudioFormatMPEG4CELP = "celp"
MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats.  
**Notes:** A key that specifies an MPEG-4 CELP codec. The flags field contains the MPEG-4 audio object type constant listed in "MPEG-4 Audio Object Type Constants" indicating the specific kind of data.

17.50.569  kAudioFormatMPEG4HVXC = "hvxc"
MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats.  
**Notes:** A key that specifies an MPEG-4 HVXC codec. The flags field contains the MPEG-4 audio object type constant listed in "MPEG-4 Audio Object Type Constants" indicating the specific kind of data.
17.50. CLASS AVFOUNDATIONMBS

17.50.570 kAudioFormatMPEG4TwinVQ = "twvq"

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats. **Notes:** A key that specifies an MPEG-4 TwinVQ codec. The flags field contains the MPEG-4 audio object type constant listed in "MPEG-4 Audio Object Type Constants" indicating the specific kind of data.

17.50.571 kAudioFormatMPEGLayer1 = ".mp1"

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats. **Notes:** MPEG-1/2, Layer 1 audio. Uses no flags

17.50.572 kAudioFormatMPEGLayer2 = ".mp2"

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats. **Notes:** MPEG-1/2, Layer 2 audio. Uses no flags

17.50.573 kAudioFormatMPEGLayer3 = ".mp3"

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats. **Notes:** MPEG-1/2, Layer 3 audio. Uses no flags

17.50.574 kAudioFormatParameterValueStream = "apvs"

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats. **Notes:** A "side-chain" of Float32 data that can be fed or generated by an audio unit and that is used to send a high density of parameter value control information. An audio unit typically runs a parameter value stream at either the sample rate of the audio unit’s audio data, or some integer quotient of this (say a half or a third of the sample rate of the audio). The mSampleRate field in the AudioStreamBasicDescription structure describes this relationship. Uses no flags.

17.50.575 kAudioFormatQDesign = "QDMC"

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats. **Notes:** QDesign music. Uses no flags
17.50.576  kAudioFormatQDesign2 = "QDM2"

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats.  
**Notes:** QDesign2 music. Uses no flags.

17.50.577  kAudioFormatQUALCOMM = "Qclp"

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats.  
**Notes:** QUALCOMM PureVoice. Uses no flags.

17.50.578  kAudioFormatTimeCode = "time"

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats.  
**Notes:** A stream of IOAudioTimeStamp structures. Uses the IOAudioTimeStamp flags (see "Audio Time Stamp Flags" and "Audio Time Stamp Flag Combination Constant").

17.50.579  kAudioFormatULaw = "ulaw"

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the audio formats.  
**Notes:** Law 2:1. Uses no flags.
17.51 class AVFrameRateRangeMBS

17.51.1 class AVFrameRateRangeMBS

**Function:** An AVFrameRateRange object expresses a range of valid frame rates as minimum and maximum rate and minimum and maximum duration.  
**Notes:**  
An AVFrameRateRange object is immutable.  
An AVCaptureDeviceFormat object wraps a CMFormatDescription and expresses a range of valid video frame rates as an array of AVFrameRateRange objects.  
An AVCaptureDevice object uses AVCaptureDeviceFormat to describe the formats it supports and the currently-active format.  
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

17.51.2 Methods

17.51.3 Constructor

**Function:** The private constructor.

17.51.4 DisplayName as string

**Function:** The display text for this object.  
**Notes:** The plugin formats a string with the frame rate range for displaying.

17.51.5 maxFrameDuration as CMTimeMBS

**Function:** The maximum frame duration supported by the range. (read-only)  
**Notes:** This value is the reciprocal of minFrameRate, and expresses the minimum frame rate as a duration.

17.51.6 maxFrameRate as Double

**Function:** The maximum frame rate supported by the range. (read-only)
Notes: The frame is given in frames per second.

17.51.7 minFrameDuration as CMTimeMBS

Function: The minimum frame duration supported by the range. (read-only)
Notes: This value is the reciprocal of maxFrameRate, and expresses the maximum frame rate as a duration.

17.51.8 minFrameRate as Double

Function: The minimum frame rate supported by the range. (read-only)
Notes: The frame is given in frames per second.

17.51.9 Properties

17.51.10 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)
17.52. **CLASS AVMEDIASELECTIONGROUPMBS**

17.52 class AVMediaSelectionGroupMBS

17.52.1 class AVMediaSelectionGroupMBS

**Function:** AVMediaSelectionGroup provides a collection of mutually exclusive options for the presentation of media within an asset.

17.52.2 Methods

17.52.3 available as boolean

**Function:** Whether this class is available.
**Notes:** Returns true on Mac OS X 10.7 and newer.

17.52.4 Constructor

**Function:** The constructor.

17.52.5 copy as AVMediaSelectionGroupMBS

**Function:** Creates a copy of the object.

17.52.6 mediaSelectionOptionsFromArrayFilteredAndSortedAccordingToPreferred-Languages(mediaSelectionOptions() as AVMediaSelectionOptionMBS) as AVMediaSelectionOptionMBS()

**Function:** Filters an array of AVMediaSelectionOptions according to whether their locales match any language identifier in the specified array of preferred languages. The returned array is sorted according to the order of preference of the language each matches.
**Notes:**
mediaSelectionOptions: An array of AVMediaSelectionOptions to be filtered and sorted.
preferredLanguages: An array of language identifiers in order of preference, each of which is an IETF BCP 47 (RFC 4646) language identifier. Use NSLocaleMBS.preferredLanguages to obtain the user’s list of preferred
languages. Plugins passes NSLocaleMBS.preferredLanguages if you don't provide an array of languages.

Returns an instance of NSArray containing media selection options of the specified NSArray that match a preferred language, sorted according to the order of preference of the language each matches.

See also:

- 17.52.7 mediaSelectionOptionsFromArrayFilteredAndSortedAccordingToPreferredLanguages(mediaSelectionOptions() as AVMediaSelectionOptionMBS, preferredLanguages() as string) as AVMediaSelectionOptionMBS()

17.52.7 mediaSelectionOptionsFromArrayFilteredAndSortedAccordingToPreferredLanguages(mediaSelectionOptions() as AVMediaSelectionOptionMBS, preferredLanguages() as string) as AVMediaSelectionOptionMBS()


Function: Filters an array of AVMediaSelectionOptions according to whether their locales match any language identifier in the specified array of preferred languages. The returned array is sorted according to the order of preference of the language each matches.

Notes:

mediaSelectionOptions: An array of AVMediaSelectionOptions to be filtered and sorted.
preferredLanguages: An array of language identifiers in order of preference, each of which is an IETF BCP 47 (RFC 4646) language identifier. Use NSLocaleMBS.preferredLanguages to obtain the user’s list of preferred languages. Plugins passes NSLocaleMBS.preferredLanguages if you don’t provide an array of languages.

Returns an instance of NSArray containing media selection options of the specified NSArray that match a preferred language, sorted according to the order of preference of the language each matches.

See also:

- 17.52.6 mediaSelectionOptionsFromArrayFilteredAndSortedAccordingToPreferredLanguages(mediaSelectionOptions() as AVMediaSelectionOptionMBS) as AVMediaSelectionOptionMBS()

17.52.8 mediaSelectionOptionsFromArrayWithLocale(mediaSelectionOptions() as AVMediaSelectionOptionMBS, locale as NSLocaleMBS) as AVMediaSelectionOptionMBS()


Function: Filters an array of AVMediaSelectionOptions according to locale.

Notes:

mediaSelectionOptions: An array of AVMediaSelectionOption to be filtered by locale.
locale: The NSLocale that must be matched for a media selection option to be copied to the output array.

Returns an instance of Array containing the media selection options of the specified Array that match the specified locale.
17.52.9 mediaSelectionOptionsFromArrayWithMediaCharacteristics(mediaSelectionOptions() as AVMediaSelectionOptionMBS, mediaCharacteristics() as string) as AVMediaSelectionOptionMBS()

**Function:** Filters an array of AVMediaSelectionOptions according to one or more media characteristics.
**Notes:**
mediaSelectionOptions: An array of AVMediaSelectionOptions to be filtered by media characteristic.
mediaCharacteristics: The media characteristics that must be matched for a media selection option to be copied to the output array.

Returns an instance of NSArray containing the media selection options of the specified NSArray that match the specified media characteristics.

17.52.10 mediaSelectionOptionsFromArrayWithoutMediaCharacteristics(mediaSelectionOptions() as AVMediaSelectionOptionMBS, mediaCharacteristics() as string) as AVMediaSelectionOptionMBS()

**Function:** Filters an array of AVMediaSelectionOptions according to whether they lack one or more media characteristics.
**Notes:**
mediaSelectionOptions: An array of AVMediaSelectionOptions to be filtered by media characteristic.
mediaCharacteristics: The media characteristics that must not be present for a media selection option to be copied to the output array.
Returns an instance ofNSArray containing the media selection options of the specified NSArray that lack the specified media characteristics.

17.52.11 mediaSelectionOptionWithPropertyList(plist as Variant) as AVMediaSelectionOptionMBS

**Function:** Returns the instance of AVMediaSelectionOption with properties that match the specified property list.
**Notes:**
plist: A property list previously obtained from an option in the group via AVMediaSelectionOption.propertyList.
If the specified properties match those of an option in the group, an instance of AVMediaSelectionOption. Otherwise nil.
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17.52.12 **options as AVMediaSelectionOptionMBS()**

**Function:** A collection of mutually exclusive media selection options.

17.52.13 **playableMediaSelectionOptionsFromArray(mediaSelectionOptions() as AVMediaSelectionOptionMBS) as AVMediaSelectionOptionMBS()**

**Function:** Filters an array of AVMediaSelectionOptions according to whether they are playable.
**Notes:**
mediaSelectionOptions: An array of AVMediaSelectionOption to be filtered according to whether they are playable.

Returns an instance of NSArray containing the media selection options of the specified NSArray that are playable.

17.52.14 **Properties**

17.52.15 **allowsEmptySelection as boolean**

**Function:** Indicates whether it’s possible to present none of the options in the group when an associated AVPlayerItem is played.
**Notes:**
If allowsEmptySelection is true, all of the available media options in the group can be deselected by passing nil as the specified AVMediaSelectionOption to AVPlayerItem.selectMediaOption.
(Read only property)

17.52.16 **Handle as Integer**

**Function:** The internal object reference.
**Notes:** (Read and Write property)
17.53. **CLASS AVMEDIAELECTIONOPTIONMBS**

17.53  class AVMediaSelectionOptionMBS

17.53.1  class AVMediaSelectionOptionMBS


**Function:** AVMediaSelectionOption represents a specific option for the presentation of media within a group of options.

**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

17.53.2  Methods

17.53.3  associatedMediaSelectionOptionInMediaSelectionGroup(mediaSelectionGroup as AVMediaSelectionGroupMBS) as AVMediaSelectionOptionMBS


**Function:** If a media selection option in another group is associated with the specified option, returns a reference to the associated option.

**Notes:**

mediaSelectionGroup: A media selection group in which an associated option is to be sought.

Returns an instance of AVMediaSelectionOption.

Audible media selection options often have associated legible media selection options; in particular, audible options are typically associated with forced-only subtitle options with the same locale. See AVMediaCharacteristicContainsOnlyForcedSubtitles in AVMediaFormat.h for a discussion of forced-only subtitles.

17.53.4  available as boolean


**Function:** Whether this class is available.

**Notes:** Returns true on Mac OS X 10.7 and newer.

17.53.5  availableMetadataFormats as string()


**Function:** Provides an NSArray of NSStrings, each representing a metadata format that contains metadata
associated with the option (e.g. ID3, iTunes metadata, etc.).

17.53.6  **commonMetadata as AVMetadataItemMBS()**

**Function:** Provides an array of AVMetadataItems for each common metadata key for which a value is available.

17.53.7  **Constructor**

**Function:** The private constructor.

17.53.8  **copy as AVMediaSelectionOptionMBS**

**Function:** Creates a copy of the object.

17.53.9  **displayNameWithLocale(locale as NSLocaleMBS) as String**

**Function:** Provides an string suitable for display.
**Notes:**
Available on Mac OS X 10.9 or newer.
Localize manufactured portions of the string using the specified locale.
May use this option’s common metadata, media characteristics and locale properties in addition to the provided locale to formulate an NSString intended for display.

17.53.10  **hasMediaCharacteristic(mediaCharacteristic as string) as boolean**

**Function:** Reports whether the media selection option includes media with the specified media characteristic.
**Notes:**
The media characteristic of interest, e.g. AVMediaCharacteristicVisual, AVMediaCharacteristicAudible, AVMediaCharacteristicLegible, etc.
Returns true if the media selection option includes media with the specified characteristic, otherwise false.

17.53.11 mediaSubTypes as Integer()

Function: The mediaSubTypes of the media data associated with the option.
Notes:
An Array of numbers carrying four character codes as defined in CoreAudioTypes.h for audio media and in CMFormatDescription.h for video media. Also see CMFormatDescriptionGetMediaSubType in CMFormatDescription.h for more information about media subtypes.

Note that if no information is available about the encoding of the media presented when a media option is selected, the value of mediaSubTypes will be an empty array. This can occur, for example, with streaming media. In these cases the value of mediaSubTypes should simply not be used as a criteria for selection.

17.53.12 metadataForFormat(Format as string) as AVMetadataItemMBS()

Function: Provides an Array of AVMetadataItems, one for each metadata item in the container of the specified format.
Notes:
format: The metadata format for which items are requested.
An Array containing AVMetadataItems; may be nil if there is no metadata of the specified format.

17.53.13 propertyList as Variant

Function: Returns a serializable property list that can be used to obtain an instance of AVMediaSelectionOption representing the same option as the receiver via AVMediaSelectionGroup.mediaSelectionOptionWithPropertyList.
Notes: Returns a serializable property list that’s sufficient to identify the option within its group. For serialization utilities, see NSPropertyList.h.
17.53.14 Properties

17.53.15 displayName as String

**Function:** Provides an String suitable for display using the current system locale.  
**Notes:**  
Available on Mac OS X 10.9 or newer.  
May use this option’s common metadata, media characteristics and locale properties in addition to the current system locale to formulate a string intended for display. Equivalent to displayNameWithLocale(NSLocaleMBS.currentLocale).  
(Read only property)

17.53.16 extendedLanguageTag as String

**Function:** Indicates the RFC 4646 language tag associated with the option. May be nil.  
**Notes:**  
Available on Mac OS X 10.9 or newer.  
(Read only property)

17.53.17 Handle as Integer

**Function:** The internal object reference.  
**Notes:** (Read and Write property)

17.53.18 isPlayable as boolean

**Function:** Indicates whether a media selection option is playable.  
**Notes:**  
If the media data associated with the option cannot be decoded or otherwise rendered, playable is false.  
(Read only property)
17.53. **CLASS AVMEDIASELECTIONOPTIONMBS**

17.53.19 **locale as NSLocaleMBS**

**Function:** Indicates the locale for which the media option was authored.
**Notes:** (Read only property)

17.53.20 **mediaType as string**

**Function:** The media type of the media data, e.g. AVMediaTypeAudio, AVMediaTypeSubtitle, etc.
**Notes:** (Read only property)
17.54 class AVMetadataItemFilterMBS

17.54.1 class AVMetadataItemFilterMBS

Function: AVMetadataItemFilter is a tool used to filter AVMetadataItems.
Notes: Instances of AVMetadataItemFilter are used to filter AVMetadataItems. They are opaque, unmodifiable objects, created via AVMetadataItemFilter class methods.

17.54.2 Methods

17.54.3 Add(keySpace as String, Key as String)

MBS AVFoundation Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Adds a new key to the whitelist.
Example:

dim e as AVAssetExportSessionMBS // your export session

// make new filter
dim n as new AVMetadataItemFilterMBS

// add new keys
n.Add(AVFoundationMBS.AVMetadataKeySpaceCommon, AVFoundationMBS.AVMetadataCommonKeyAuthor)
n.Add(AVFoundationMBS.AVMetadataKeySpaceCommon, AVFoundationMBS.AVMetadataCommonKeyTitle)
n.Add(AVFoundationMBS.AVMetadataKeySpaceCommon, AVFoundationMBS.AVMetadataCommonKeySubject)

// now use the filter
e.metadataItemFilter = n

17.54.4 available as boolean

Function: Whether this class is available.
Notes: Returns true on Mac OS X 10.9 and newer.
17.54. CLASS AVMETADATAIMEFILTERMBS

17.54.5 Constructor

Function: The constructor for a new empty filter.

17.54.6 metadataItemFilterForSharing as AVMetadataItemFilterMBS

Function: Provides an instance of an AVMetadataItemFilter useful for sharing assets.
Notes: Removes many user-identifying metadata items, such as location information, leaving only playback-, copyright- and commercial-related metadata (such as the purchaser’s Apple ID), along with metadata either derivable from the media itself or necessary for its proper behavior.

17.54.7 Properties

17.54.8 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

17.54.9 whitelist as Dictionary

MBS AVFoundation Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Queries white list for this filter.
Notes: This is dictionary. Keys are key spaces and values are arrays of keys.
(Read only property)
17.55 class AVMetadataItemMBS

17.55.1 class AVMetadataItemMBS

**Function:** An AVMetadataItem object represents an item of metadata associated with an audiovisual asset  
or with one of its tracks.  
**Notes:** To create metadata items for your own assets, you use the mutable subclass, AVMutableMetadataItem.  
Metadata items have keys that accord with the specification of the container format from which they’re  
drawn. Full details of the metadata formats, metadata keys, and metadata key spaces supported by AV  
Foundation are available among the defines in AVMetadataFormat.h.

You can load values of a metadata item "lazily" using the methods from the AVAsynchronousKeyVal-  
ueLoading protocol (see “Asynchronous Loading”). The AVAsset class and other classes in turn provide  
their metadata lazily so that you can obtain objects from those arrays without incurring overhead for items  
you don’t ultimately inspect.

You can filter arrays of metadata items using the methods of this class. For example, you can filter by key  
and key space, by locale, and by preferred language.

17.55.2 Methods

17.55.3 available as boolean

**Function:** Whether this class is available.  
**Notes:** Returns true on Mac OS X 10.7 and newer.

17.55.4 Constructor

**Function:** The constructor.
17.55. CLASS AVMETADATAITEMMBS

17.55.5 copy as AVMetadataItemMBS

Function: Creates a copy of the object.

17.55.6 loadValuesAsynchronouslyForKeys(keys() as string, tag as Variant = nil)

Function: Tells the asset to load the values of any of the specified keys that are not already loaded.
Notes:
keys: An array containing the required keys.

Calls AVFoundationMBS.MetadataItemLoadValuesAsynchronouslyForKeysFinished on completion. The completion event will be invoked exactly once per invocation of this method:

- Synchronously if an I/O error or other format-related error occurs immediately.
- Asynchronously at a subsequent time if a loading error occurs at a later stage of processing, or if cancelLoading is invoked on an AVAsset instance.

The completion states of the keys you specify in keys are not necessarily the same; some may be loaded, and others may have failed. You must check the status of each key individually.

If you want to receive error reporting for loading that’s still pending, you can call this method at any time; even after an asset has begun to load data for operations in progress or already completed. If a fatal error has already occurred, the completion event is invoked synchronously.

17.55.7 metadataItemsFromArray(metadataItems() as AVMetadataItemMBS, key as Variant, keySpace as string) as AVMetadataItemMBS()

Function: Returns from a given array an array of metadata items that match a specified key or key space.
Notes:
array: The array of AVMetadataItem objects to be filtered.
key: The key that must be matched for a metadata item to be included in the output array. The key is compared to the keys in the metadata in the array using isEqual. If you do not want to filter by key, pass nil.
keySpace: The key space that must be matched for a metadata item to be included in the output array. The key space is compared to the key spaces in the metadata in the array using isEqualToString:. If you do not
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want to filter by key space, pass nil.

Returns an array of the metadata items from array that match key or keySpace.

If the value in the keySpace parameter is AVMetadataKeySpaceCommon, the value of the metadata item’s commonKey property must match the value in the key parameter for the item to be returned. If the key parameter is nil, then all metadata items in the common key space are returned.

If the value in the keySpace parameter is nil or is not the constant for the common key space, the value of the metadata item’s key property must match the value in the key parameter for the item to be returned. If the key parameter itself is nil, then all metadata items in the specified key space are returned.

See also:

• 17.55.8 metadataItemsFromArray(metadataItems() as AVMetadataItemMBS, locale as NSLocaleMBS) as AVMetadataItemMBS() 3394

• 17.55.9 metadataItemsFromArray(metadataItems() as AVMetadataItemMBS, metadataItemFilter as AVMetadataItemFilterMBS) as AVMetadataItemMBS() 3395

• 17.55.10 metadataItemsFromArray(metadataItems() as AVMetadataItemMBS, preferredLanguages() as string) as AVMetadataItemMBS() 3395

17.55.8 metadataItemsFromArray(metadataItems() as AVMetadataItemMBS, locale as NSLocaleMBS) as AVMetadataItemMBS()

Function: Returns from a given array an array of metadata items that match a specified locale.  
Notes:  
array: The array of AVMetadataItem objects to be filtered.  
locale: The locale that must be matched for a metadata item to be included in the output array.

Returns an array containing the AVMetadataItem objects from the array parameter that match the specified locale.

See also:

• 17.55.7 metadataItemsFromArray(metadataItems() as AVMetadataItemMBS, key as Variant, keySpace as string) as AVMetadataItemMBS() 3393

• 17.55.9 metadataItemsFromArray(metadataItems() as AVMetadataItemMBS, metadataItemFilter as AVMetadataItemFilterMBS) as AVMetadataItemMBS() 3395

• 17.55.10 metadataItemsFromArray(metadataItems() as AVMetadataItemMBS, preferredLanguages() as string) as AVMetadataItemMBS() 3395
17.55.9  metadataItemsFromArray(metadataItems() as AVMetadataItemMBS, metadataItemFilter as AVMetadataItemFilterMBS) as AVMetadataItemMBS()

**Function:** Filters an array of metadata items using the metadata item filter.  
**Notes:**  
metadataItems: An array of AVMetadataItems to be filtered.  
metadataItemFilter: The AVMetadataItemFilter object for filtering the metadataItems.  

Returns an instance of NSArray containing the metadata items in metadataItems that have not been removed by metadataItemFilter.  
Available in OS X v10.9 and later.  
See also:  
- 17.55.7 metadataItemsFromArray(metadataItems() as AVMetadataItemMBS, key as Variant, keySpace as string) as AVMetadataItemMBS()  
- 17.55.8 metadataItemsFromArray(metadataItems() as AVMetadataItemMBS, locale as NSLocaleMBS) as AVMetadataItemMBS()  
- 17.55.10 metadataItemsFromArray(metadataItems() as AVMetadataItemMBS, preferredLanguages() as string) as AVMetadataItemMBS()  

17.55.10  metadataItemsFromArray(metadataItems() as AVMetadataItemMBS, preferredLanguages() as string) as AVMetadataItemMBS()

**Function:** Returns the subset of metadata items whose locales match one of the specified language identifiers.  
**Notes:**  
metadataItems: An array of AVMetadataItem objects to be filtered and sorted.  
preferredLanguages: An array of strings, each of which contains a canonicalized IETF BCP 47 language identifier.  
The order of the identifiers in the array reflects the preferred language order, with the most preferred language being first in the array.  
Typically, you pass the user’s preferred languages by retrieving this array from the preferredLanguages class method of NSLocale.  

Returns an array containing the AVMetadataItem objects from the metadataItems parameter that match one of the specified languages.  
See also:  
- 17.55.7 metadataItemsFromArray(metadataItems() as AVMetadataItemMBS, key as Variant, keySpace as string) as AVMetadataItemMBS()  
- 17.55.8 metadataItemsFromArray(metadataItems() as AVMetadataItemMBS, locale as NSLocaleMBS) as AVMetadataItemMBS()  
- 17.55.10 metadataItemsFromArray(metadataItems() as AVMetadataItemMBS, preferredLanguages() as string) as AVMetadataItemMBS()
• 17.55.9 metadataItemsFromArray(metadataItems() as AVMetadataItemMBS, metadataItemFilter as AVMetadataItemFilterMBS) as AVMetadataItemMBS()

17.55.11 mutableCopy as AVMutableMetadataItemMBS

MBS AVFoundation Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** Creates a mutable copy.

17.55.12 statusOfValueForKey(key as string, byref error as NSErrorMBS) as Integer

**Function:** Reports whether the value for a given key is immediately available without blocking. (required)
**Notes:**
key: The key whose status you want.
error: If the status of the value for the key is AVKeyValueStatusFailed, upon return contains an NSError object that describes the failure that occurred.

Returns the current loading status of the value for key. For possible values, see "Protocol Methods."

You use this method to determine the availability of the value for a key. This method does not cause an asset to load the value of a key that’s not yet available. To request values for keys that may not already be loaded without blocking, use loadValuesAsynchronouslyForKeys and wait for invocation of the completion handler to be informed of availability.

17.55.13 Properties

17.55.14 commonKey as string

**Function:** The common key of the metadata item. (read-only)
**Notes:**
This property contains the key that most closely corresponds to the key in the key property but that belongs to the common key space (AVMetadataKeySpaceCommon) as opposed to a format-specific key space. You can use this key to locate metadata items irrespective of the underlying media format.

If the value of the keySpace property is AVMetadataKeySpaceCommon, this property contains the same key as the key property.
(Read only property)
17.55.15  dataValue as Memoryblock

Function: Provides the raw bytes of the value of the metadata item. (read-only)
Notes: (Read only property)

17.55.16  dateValue as date

Function: The value of the metadata item formatted as a date. (read-only)
Notes:
The value of this property is nil if the metadata value cannot be represented as a date.
(Read only property)

17.55.17  duration as CMTimeMBS

Function: The duration of the metadata item. (read-only)
Notes: (Read only property)

17.55.18  extraAttributes as Dictionary

Function: The additional attributes supplied by the metadata item. (read-only)
Notes: (Read only property)

17.55.19  Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)
**17.55.20  key as Variant**

**Function:** The key of the metadata item. (read-only)  
**Notes:**  
The key property contains the true key used to identify the contents of the metadata item. This value is specific to the key space of the metadata item.  
(Read only property)

**17.55.21  keySpace as string**

**Function:** The key space of metadata item’s key. (read-only)  
**Notes:**  
The key space specified by this property is typically the default key space for the metadata container in which the metadata item is stored.  
AV Foundation uses key spaces to group related sets of keys. For example, the framework defines different key spaces for common keys, iTunes keys, ID3 keys, and QuickTime keys. Key spaces aid in filtering arrays of metadata items.  
(Read only property)

**17.55.22  locale as NSLocaleMBS**

**Function:** The locale of the metadata item. (read-only)  
**Notes:**  
The locale may be nil if no locale information is available for the metadata item.  
(Read only property)

**17.55.23  numberValue as Double**

**Function:** The value of the metadata item formatted as a number. (read-only)  
**Notes:**  
The value of this property is nil if the metadata value cannot be represented as a number.  
(Read only property)
17.55. **CLASS AVMETADATAITEMMBS**

17.55.24 **stringValue as string**

**Function:** The value of the metadata item formatted as a string. (read-only)
**Notes:**
The value of this property is nil if the metadata value cannot be represented as a string.
(Read only property)

17.55.25 **time as CMTimeMBS**

**Function:** The timestamp of the metadata item. (read-only)
**Notes:** (Read only property)

17.55.26 **value as Variant**

**Function:** The value of the metadata item. (read-only)
**Notes:** (Read only property)

17.55.27 **Constants**

17.55.28 **AVKeyValueStatusCancelled = 4**

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants to indicate the load status of a property.
**Notes:** Indicates that the attempt to load the property was cancelled.

17.55.29 **AVKeyValueStatusFailed = 3**

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants to indicate the load status of a property.
**Notes:** Indicates that the attempt to load the property failed.
17.55.30  **AVKeyValueStatusLoaded = 2**

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants to indicate the load status of a property.
**Notes:** Indicates that the property is ready for use.

17.55.31  **AVKeyValueStatusLoading = 1**

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants to indicate the load status of a property.
**Notes:** Indicates that the property is not fully loaded.

17.55.32  **AVKeyValueStatusUnknown = 0**

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the constants to indicate the load status of a property.
**Notes:** Indicates that the property status is unknown.
17.56   class AVMetadataObjectMBS

17.56.1  class AVMetadataObjectMBS

Function: The class for a metadata object.

17.56.2  Methods

17.56.3  available as boolean

Function: Whether this class is available.

17.56.4  Constructor

Function: The constructor.

17.56.5  Properties

17.56.6  Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)
17.57 class AVMutableAudioMixInputParametersMBS

17.57.1 class AVMutableAudioMixInputParametersMBS


Function: An AVMutableAudioMixInputParameters object represents the parameters that should be applied to an audio track when it is added to a mix.

Notes: Subclass of the AVAudioMixInputParametersMBS class.

17.57.2 Methods

17.57.3 audioMixInputParameters as AVMutableAudioMixInputParametersMBS


Function: Creates and returns a mutable input parameters object with no volume ramps and trackID initialized to kCMPersistentTrackIDInvalid.

17.57.4 audioMixInputParametersWithTrack(track as AVAssetTrackMBS) as AVMutableAudioMixInputParametersMBS


Function: Creates and returns a mutable input parameters object for a given track.

Notes: track: The track to associate with the input parameters object.

Returns a mutable input parameters object with no volume ramps and trackID set to track’s ID.

17.57.5 Constructor


Function: Creates and returns a mutable input parameters object with no volume ramps and trackID initialized to kCMPersistentTrackIDInvalid.

See also:

- 17.57.6 Constructor(other as AVAudioMixInputParametersMBS) 3403

- 17.57.7 Constructor(track as AVAssetTrackMBS) 3403
17.57. **CLASS AVMUTABLEAUDIOMIXINPUTPARAMETERSMBS**

17.57.6 **Constructor(other as AVAudioMixInputParametersMBS)**

MBS AVFoundation Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** The copy constructor to initialize with a mutable copy of the given object.

See also:

- 17.57.5 Constructor
- 17.57.7 Constructor(track as AVAssetTrackMBS)

17.57.7 **Constructor(track as AVAssetTrackMBS)**


**Function:** Creates and returns a mutable input parameters object for a given track.

**Notes:**

track: The track to associate with the input parameters object.

Initializes input parameters object with no volume ramps and trackID set to track’s ID.

See also:

- 17.57.5 Constructor
- 17.57.6 Constructor(other as AVAudioMixInputParametersMBS)

17.57.8 **setVolume(volume as Double, atTime as CMTimeMBS)**


**Function:** Sets the value of the audio volume starting at the specified time.

**Notes:**

volume: The volume.

time: The start time at which to set the volume.

This method adds a volume ramp starting at time. This volume setting remains in effect until the end of the track unless you set a different volume level to start at a later time.

17.57.9 **setVolumeRamp(startVolume as Double, endVolume as Double, timeRange as CMTimeRangeMBS)**


**Function:** Sets a volume ramp to apply during a specified time range.

**Notes:**

startVolume: The starting volume.

dendVolume: The end volume.
timeRange: The time range over which to apply the ramp.

### 17.57.10 Properties

#### 17.57.11 trackID as Integer


**Function:** The ID of the audio track to which the parameters should be applied.

**Notes:** (Read and Write computed property)
17.58. **CLASS AVMUTABLEAUDIOMIXMBS**

### 17.58 class AVMutableAudioMixMBS

**MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** An AVMutableAudioMix object manages the input parameters for mixing audio tracks.

**Notes:**

It allows custom audio processing to be performed on audio tracks during playback or other operations. Subclass of the AVAudioMixMBS class.

### 17.58.2 Methods

#### 17.58.3 audioMix as AVMutableAudioMixMBS

**MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Returns a new mutable audio mix.

### 17.58.4 Constructor

**MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** The constructor.

See also:

- 17.58.5 Constructor(other as AVAudioMixMBS)

### 17.58.5 Constructor(other as AVAudioMixMBS)

**MBS AVFoundation Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** The copy constructor to initialize with a mutable copy of the given object.

See also:

- 17.58.4 Constructor

### 17.58.6 setInputParameters(items() as AVAudioMixInputParametersMBS)

**MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Sets the parameters for inputs to the mix.

**Notes:**

The array contains instances of AVAudioMixInputParameters. Note that an instance of AVAudioMixInputParameters is not required for each audio track that contributes to the mix; audio for those without associated AVAudioMixInputParameters will be included in the mix, processed according to default
behavior.
17.59. **CLASS AVMutableCompositionMBS**

17.59 **class AVMutableCompositionMBS**

Function: AVMutableComposition is a mutable subclass of AVComposition you use when you want to create a new composition from existing assets.  
Notes:  
You can add and remove tracks, and you can add, remove, and scale time ranges.  
You can make an immutable snapshot of a mutable composition for playback or inspection with the copy method.  
Subclass of the AVCompositionMBS class.

17.59.2 **Methods**

17.59.3 **addMutableTrackWithMediaType**(mediaType as string, preferredTrackID as Integer) as AVMutableCompositionTrackMBS

Function: Adds an empty track to the receiver.  
Notes:  
mediaType: The media type of the new track.  
preferredTrackID: The preferred track ID for the new track. If you do not need to specify a preferred track ID, pass kCMPersistentTrackID_Invalid. The preferred track ID will be used for the new track provided that it is not currently in use and has not previously been used. If the preferred track ID you specify is not available, or if you pass in kCMPersistentTrackID_Invalid, a unique track ID is generated.

Returns an instance of AVMutableCompositionTrack representing the new track.  
You can get the actual trackID of the new track through its "trackID" key.

17.59.4 **append**(asset as AVAssetMBS, byref error as NSErrorMBS) as boolean

Function: Appends all the tracks to the receiver.  
Notes:  
asset: An asset that contains the tracks to be inserted.  
Error: If the insertion was not successful, on return contains an NSError object that describes the problem.

Return true if the insertion was successful, otherwise false.
This method may add new tracks to ensure that all tracks of the asset are represented in the inserted time range.
Existing content at the specified start time is pushed out by the duration of the time range.
Media data for the inserted time range is presented at its natural duration; you can scale it to a different duration using `scaleTimeRange`.

### 17.59.5 appendTimeRange(timeRange as CMTimeRangeMBS, asset as AVAssetMBS, byref error as NSErrorMBS) as boolean

**Function:** Appends all the tracks within a given time range of a specified asset into the receiver.
**Notes:**
timeRange: The time range of the asset to be inserted.
asset: An asset that contains the tracks to be inserted.
Error: If the insertion was not successful, on return contains an NSError object that describes the problem.
Return true if the insertion was successful, otherwise false.

This method may add new tracks to ensure that all tracks of the asset are represented in the inserted time range.
Existing content at the specified start time is pushed out by the duration of the time range.
Media data for the inserted time range is presented at its natural duration; you can scale it to a different duration using `scaleTimeRange`.

### 17.59.6 composition as AVMutableCompositionMBS

**Function:** Returns a new, empty, mutable composition.

### 17.59.7 Constructor

**Function:** The constructor.
See also:
- 17.59.8 Constructor(other as AVCompositionMBS)
17.59. **CLASS AVMUTABLECOMPOSITIONMBS**

### 17.59.8 Constructor(other as AVCompositionMBS)

MBS AVFoundation Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** The copy constructor to initialize with a mutable copy of the given object.

See also:

- 17.59.7 Constructor

### 17.59.9 insert(asset as AVAssetMBS, startTime as CMTimeMBS, byref error as NSErrorMBS) as boolean


**Function:** Inserts all the tracks of a specified asset into the receiver.

**Notes:**

- asset: An asset that contains the tracks to be inserted.
- startTime: The time at which the inserted tracks should be presented by the receiver.
- Error: If the insertion was not successful, on return contains an NSError object that describes the problem.

Return true if the insertion was successful, otherwise false.

This method may add new tracks to ensure that all tracks of the asset are represented in the inserted time range.

Existing content at the specified start time is pushed out by the duration of the time range.

Media data for the inserted time range is presented at its natural duration; you can scale it to a different duration using scaleTimeRange.

### 17.59.10 insertEmptyTimeRange(timeRange as CMTimeRangeMBS)


**Function:** Adds or extends an empty timeRange within all tracks of the composition.

**Notes:**

- timeRange: The empty time range to insert.

If you insert an empty time range into the composition, any media that was presented during that interval prior to the insertion will be presented instead immediately afterward. You can use this method to reserve an interval in which you want a subsequently created track to present its media.
17.59.11 insertTimeRange(timeRange as CMTimeRangeMBS, asset as AVAssetMBS, startTime as CMTimeMBS, byref error as NSErrorMBS) as boolean

Function: Inserts all the tracks within a given time range of a specified asset into the receiver.
Notes:

timeRange: The time range of the asset to be inserted.
asset: An asset that contains the tracks to be inserted.
startTime: The time at which the inserted tracks should be presented by the receiver.
Error: If the insertion was not successful, on return contains an NSError object that describes the problem.

Return true if the insertion was successful, otherwise false.

This method may add new tracks to ensure that all tracks of the asset are represented in the inserted time range. Existing content at the specified start time is pushed out by the duration of the time range. Media data for the inserted time range is presented at its natural duration; you can scale it to a different duration using scaleTimeRange.

17.59.12 MutableCompositionTracks as AVMutableCompositionTrackMBS()

Function: An array of AVMutableCompositionTrack objects contained by the composition. (read-only)

17.59.13 mutableTrackCompatibleWithTrack(track as AVAssetTrackMBS) as AVMutableCompositionTrackMBS

Function: Returns a track in the receiver into which any time range of a given asset track can be inserted.
Notes:

track: An AVAssetTrack from which a time range may be inserted.

Returns a mutable track in the receiver into which any time range of track can be inserted. If no such track is available, the returns nil.

For best performance, you should keep the number of tracks of a composition should be kept to a minimum, corresponding to the number for which media data must be presented in parallel. If you want to present media data of the same type serially, even from multiple assets, you should use a single track of that media.
type. You use this method to identify a suitable existing target track for an insertion.

If there is no compatible track available, you can create a new track of the same media type as track using addMutableTrackWithMediaType.

This method is similar to compatibleTrackForCompositionTrack (AVAsset).

### 17.59.14 removeTimeRange(timeRange as CMTimeRangeMBS)


**Function:** Removes a specified timeRange from all tracks of the composition.

**Notes:**

- timeRange: The time range to be removed.

After removing, existing content after the time range will be pulled in. Removal of a time range does not cause any existing tracks to be removed from the composition, even if removing timeRange results in an empty track. Instead, it removes or truncates track segments that intersect with the time range.

### 17.59.15 removeTrack(track as AVCompositionTrackMBS)


**Function:** Removes a specified track from the receiver.

**Notes:**

- track: The track to remove.

When it is removed track’s @"composition" key is set to nil. The values of its other keys remain intact, for arbitrary use.

### 17.59.16 scaleTimeRange(timeRange as CMTimeRangeMBS, duration as CMTimeMBS)


**Function:** Changes the duration of all tracks in a given time range.

**Notes:**

- timeRange: The time range of the composition to be scaled.
- duration: The new duration of timeRange.
Each track segment affected by the scaling operation will be presented at a rate equal to source.duration / target.duration of its resulting time mapping.

17.59.17 Properties

17.59.18 naturalSize as CGSizeMBS


**Function:** The encoded or authored size of the visual portion of the asset.

**Notes:**

If this value is not set, the default behavior is as defined by AVAsset; set the value to CGSizeZero to revert to the default behavior.
Available in OS X v10.7 and later.
Deprecated in OS X v10.8.
(Read and Write computed property)
17.60. **CLASS AVMUTABLECOMPOSITIONTRACKMBS**

17.60  **class AVMutableCompositionTrackMBS**

17.60.1  **class AVMutableCompositionTrackMBS**

**Function:** AVMutableCompositionTrack is a mutable subclass of AVCompositionTrack that lets you for insert, remove, and scale track segments without affecting their low-level representation (that is, the operations you perform are non-destructive on the original).  
**Notes:** AVCompositionTrack defines constraints for the temporal alignment of the track segments. If you set the array of track segments in a mutable composition (see trackSegments), you can test whether the segments meet the constraints using validateTrackSegments.  
Subclass of the AVCompositionTrackMBS class.

17.60.2  **Methods**

17.60.3  **Constructor**

**Function:** The constructor.  
See also:  
- 17.60.4 Constructor(other as AVCompositionTrackMBS)

17.60.4  **Constructor(other as AVCompositionTrackMBS)**

MBS AVFoundation Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  
**Function:** The copy constructor to initialize with a mutable copy of the given object.  
See also:  
- 17.60.3 Constructor

17.60.5  **insertEmptyTimeRange(timeRange as CMTimeRangeMBS)**

**Function:** Adds or extends an empty time range within the receiver.  
**Notes:**  
timeRange: The empty time range to be inserted.

If you insert an empty time range into the track, any media that was presented during that interval prior to the insertion will be presented instead immediately afterward.
The nature of the data inserted depends upon the media type of the track. For example, an empty time range in a sound track presents silence.

17.60.6  insertTimeRange(timeRange as CMTimeRangeMBS, AssetTrack as AVAssetTrackMBS, startTime as CMTimeMBS, byref error as NSErrorMBS) as boolean

Function: Inserts a time range of a source track.
Notes:
timeRange: The time range of the track to be inserted.
track: The source track to be inserted.
startTime: The time at which track is to be presented by the composition track.
error: If track is not inserted successfully, contains an NSError object that describes the problem.

Returns true if track was inserted successfully, otherwise false.

By default, the inserted track’s time range is presented at its natural duration and rate. You can scale it to a different duration (so that it is presented at a different rate) using scaleTimeRange:toDuration:.

Insertion might fail if, for example, the asset that you try to insert is restricted by copy-protection.

17.60.7  insertTimeRanges(timeRanges() as CMTimeRangeMBS, tracks() as AVAssetTrackMBS, startTime as CMTimeMBS, byref error as NSErrorMBS) as boolean

Function: Inserts time ranges of source tracks.
Notes:
Requires Mac OS X 10.8.

Inserts the timeRanges of multiple source tracks into a track of a composition.
timeRanges: Specifies the timeRanges to be inserted.
tracks: Specifies the source tracks to be inserted. Only AVAssetTracks of AVURLAssets are supported.
startTime: Specifies the time at which the inserted tracks are to be presented by the composition track. You may pass kCMTimeInvalid for startTime to indicate that the timeRanges should be appended to the end of the track.
error: Describes failures that may be reported to the user, e.g. the asset that was selected for insertion in
the composition is restricted by copy-protection.
Returns a boolean value indicating the success of the insertion.

This method is equivalent to (but more efficient than) calling insertTimeRange for each timeRange/track pair.
If this method returns an error, none of the time ranges will be inserted into the composition track.
To specify an empty time range, pass NSNull for the track and a time range of starting at kCMTIMEInvalid
with a duration of the desired empty edit.

17.60.8 removeTimeRange(timeRange as CMTimeRangeMBS)

Function: Removes a specified time range from the receiver.
Notes:
timeRange: The time range to be removed.

Removing a time range does not cause the track to be removed from the composition. Instead it removes or
truncates track segments that intersect with the time range.

17.60.9 scaleTimeRange(timeRange as CMTimeRangeMBS, duration as CM-
TimeMBS)

Function: Changes the duration of a time range in the receiver.
Notes:
timeRange: The time range of the track to be scaled.
duration: The new duration of timeRange.

Each track segment affected by the scaling operation will be presented at a rate equal to source.duration /
target.duration of its resulting timeMapping.

17.60.10 setCompositionTrackSegments(segments() as AVCompositionTrackSe-
gmentMBS)

Function: Sets the composition track’s array of track segments.
Notes: The timeMapping.target.start of the first track segment must be kCMTIMEZero, and the timeMap-
ing.target.start of each subsequent track segment must equal CMTimeRangeGetEnd(<# previousTrack-
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Segment# > .timeMapping.target). You can use validateTrackSegments to ensure that an array of track segments conforms to this rule.

17.60.11 validateTrackSegments(trackSegments() as AVCompositionTrackSegmentMBS, byref error as NSErrorMBS) as boolean

Function: Returns a Boolean value that indicates whether a given array of track segments conform to the timing rules for a composition track.
Notes:

trackSegments: An array of AVCompositionTrackSegment objects.
error: If validation fails, on return contains an NSError object that describes the problem.

Returns true if the track segments in trackSegments conform to the timing rules for a composition track, otherwise false.

You can use this method to ensure that an array of track segments is suitable for setting as the value of the trackSegments property. The timeMapping.target.start of the first track segment must be kCMTimeZero, and the timeMapping.target.start of each subsequent track segment must equal CMTimingRangeGetEnd(<# previousTrackSegment# > .timeMapping.target).

If you want to modify the existing trackSegments array, you can create a mutable copy of it, modify the mutable array, and then validate the mutable array using this method.

17.60.12 Properties

17.60.13 extendedLanguageTag as string

Function: The language tag associated with the track, as an RFC 4646 language tag.
Notes:

If not set, the value is nil.
(Read and Write computed property)

17.60.14 languageCode as string

Function: The language associated with the track, as an ISO 639-2/T language code.
Notes:
If not set, the value is nil.
(Read and Write computed property)

17.60.15 naturalTimeScale as Integer

Function: The timescale in which time values for the track can be operated upon without extraneous numerical conversion.
Notes:
If not set, the value is the natural time scale of the first non-empty edit, or 600 if there are no non-empty edits.

Set the value to 0 to revert to the default behavior.
(Read and Write computed property)

17.60.16 preferredTransform as CGAffineTransformMBS

Function: The preferred transformation of the visual media data for display purposes.
Notes:
If not set, the value is CGAffineTransformIdentity.
(Read and Write computed property)

17.60.17 preferredVolume as Double

Function: The preferred volume of the audible media data.
Notes:
If not set, the value is 1.0.
(Read and Write computed property)
17.61 class AVMutableMetadataItemMBS

17.61.1 class AVMutableMetadataItemMBS

**Function:** AVMutableMetadataItem is a mutable subclass of AVMetadataItem that lets you build collections of metadata to be written to asset files using AVAssetExportSession.  
**Notes:** 
You can initialize a mutable metadata item from an existing AVMetadataItem object or with a one or more of the basic properties of a metadata item: a key, a key space, a locale, and a value.  
Subclass of the AVMetadataItemMBS class.

17.61.2 Methods

17.61.3 Constructor

**Function:** The constructor.  
**Example:**

```plaintext
dim e as AVAssetExportSessionMBS // your export session
dim asset as AVAssetMBS // your asset

// query metadata
dim a() as AVMetadataItemMBS = asset.metadata

// make new
dim m as new AVMutableMetadataItemMBS

// add common key with author
m.keySpace = AVFoundationMBS.AVMetadataKeySpaceCommon
m.key = AVFoundationMBS.AVMetadataCommonKeyAuthor
m.Value = "Hello World"

// append to array and use as metadata:
a.Append m
e.setMetadata a
```

See also:

- 17.61.4 Constructor(other as AVMetadataItemMBS)
17.61. **CLASS AVMUTABLEMETADATAITEMMBS**

### 17.61.4 Constructor(other as AVMetadataItemMBS)

MBS AVFoundation Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** The copy constructor to initialize with a mutable copy of the given object.
See also:
- 17.61.3 Constructor

### 17.61.5 metadataItem as AVMutableMetadataItemMBS

**Function:** Returns a new mutable metadata item.

### 17.61.6 Properties

#### 17.61.7 duration as CMTimeMBS

**Function:** Indicates the metadata item’s duration.
**Notes:** (Read and Write computed property)

#### 17.61.8 extraAttributes as Dictionary

**Function:** Provides a dictionary of the metadata item’s additional attributes.
**Notes:** (Read and Write computed property)

#### 17.61.9 key as Variant

**Function:** Indicates the metadata item’s key.
**Notes:** (Read and Write computed property)

#### 17.61.10 keySpace as string

**Function:** Indicates the key space of the metadata item’s key.
**Notes:**
This is typically the default key space for the metadata container in which the metadata item is stored.
(Read and Write computed property)

17.61.11 locale as NSLocaleMBS

Function: Indicates the metadata item’s locale.
Notes:
The locale may be nil if no locale information is available for the item.
(Read and Write computed property)

17.61.12 time as CMTimeMBS

Function: Indicates the metadata item’s timestamp.
Notes: (Read and Write computed property)

17.61.13 value as Variant

Function: Indicates the metadata item’s value.
Notes: (Read and Write computed property)
17.62. **CLASS AVMUTABLETIMEDMETADATAGROUPMBS**

17.62  **class AVMutableTimedMetadataGroupMBS**

17.62.1  **class AVMutableTimedMetadataGroupMBS**

**Function:** You use an AVMutableTimedMetadataGroup object to represent a mutable collection of metadata items.  
**Notes:** Subclass of the AVTimedMetadataGroupMBS class.

17.62.2  **Methods**

17.62.3  **Constructor(items() as AVMetadataItemMBS, timeRange as CMTimeRangeMBS)**

**Function:** The constructor.  
See also:

- 17.62.4 **Constructor(other as AVTimedMetadataGroupMBS)**

17.62.4  **Constructor(other as AVTimedMetadataGroupMBS)**

MBS AVFoundation Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  
**Function:** The copy constructor to initialize with a mutable copy of the given object.  
See also:

- 17.62.3 **Constructor(items() as AVMetadataItemMBS, timeRange as CMTimeRangeMBS)**

17.62.5  **items as AVMetadataItemMBS()**

**Function:** The metadata items in the group.

17.62.6  **setItems(items() as AVMetadataItemMBS)**

**Function:** Sets the metadata items in the group.
17.62.7 Properties

17.62.8 timeRange as CMT impeRangeMBS

Function: The time range of the metadata.
Notes: (Read and Write computed property)
17.63  class AVMutableVideoCompositionInstructionMBS

17.63.1  class AVMutableVideoCompositionInstructionMBS


**Function:**  An AVMutableVideoCompositionInstruction object represents an operation to be performed by a compositor.

**Notes:**

An AVVideoComposition object maintains an array of instructions to perform its composition. Subclass of the AVVideoCompositionInstructionMBS class.

17.63.2  Methods

17.63.3  Constructor


**Function:**  The constructor.

See also:

- 17.63.4 Constructor(other as AVVideoCompositionInstructionMBS)

17.63.4  Constructor(other as AVVideoCompositionInstructionMBS)

MBS AVFoundation Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:**  The copy constructor to initialize with a mutable copy of the given object.

See also:

- 17.63.3 Constructor

17.63.5  layerInstructions as AVVideoCompositionLayerInstructionMBS()


**Function:**  An array of instances of AVVideoCompositionLayerInstruction that specify how video frames from source tracks should be layered and composed.

**Notes:**

Tracks are layered in the composition according to the top-to-bottom order of the layerInstructions array; the track with trackID of the first instruction in the array will be layered on top, with the track with the trackID of the second instruction immediately underneath, and so on.

If the property value is nil, the output is a fill of the background color.
17.63.6 setLayerInstructions(items() as AVVideoCompositionLayerInstruction-MBS)


**Function:** Sets an array of instances of AVVideoCompositionLayerInstruction that specify how video frames from source tracks should be layered and composed.

**Notes:**
Tracks are layered in the composition according to the top-to-bottom order of the layerInstructions array; the track with trackID of the first instruction in the array will be layered on top, with the track with the trackID of the second instruction immediately underneath, and so on.

If the property value is nil, the output is a fill of the background color.

17.63.7 videoCompositionInstruction as AVMutableVideoCompositionInstructionMBS


**Function:** Returns a new mutable video composition instruction.

17.63.8 Properties

17.63.9 backgroundColor as Variant


**Function:** The background color of the composition.

**Notes:**
Value must be CGColorMBS.
Only solid BGRA colors are supported; patterns and other supported colors are ignored. If the rendered pixel buffer does not have alpha, the alpha value of the background color is ignored.

If the background color is nil, the video compositor uses a default background color of opaque black.
(Read and Write computed property)

17.63.10 enablePostProcessing as boolean


**Function:** Indicates whether post processing is required for the video composition instruction.

**Notes:**
If no post processing is required for the whole duration of the video composition instruction, set this property to false to make the composition process more efficient.

The value is true by default.
(Read and Write computed property)

**17.63.11 timeRange as CMTimeRangeMBS**

**Function:** The time range during which the instruction is effective.
**Notes:**
If the time range is invalid, the video compositor will ignore it.
(Read and Write computed property)
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17.64 class AVMutableVideoCompositionLayerInstructionMBS

17.64.1 class AVMutableVideoCompositionLayerInstructionMBS


Function: AVMutableVideoCompositionLayerInstruction is a mutable subclass of AVVideoComposition-
LayerInstruction that you use to modify the transform and opacity ramps to apply to a given track in an
AV composition.

Notes: Subclass of the AVVideoCompositionLayerInstructionMBS class.

17.64.2 Methods

17.64.3 Constructor


Function: The constructor.

See also:

- 17.64.4 Constructor(other as AVMutableVideoCompositionLayerInstructionMBS)

17.64.4 Constructor(other as AVMutableVideoCompositionLayerInstructionMBS)

MBS AVFoundation Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

Function: The copy constructor to initialize with a mutable copy of the given object.

See also:

- 17.64.3 Constructor

17.64.5 setCropRectangle(cropRectangle as CGRectMBS, time as CMTimeMBS)


Function: Sets a value of the crop rectangle at a time within the time range of the instruction.

Notes:

cropRectangle: The crop rectangle to be applied at the specified time.
time: A time value within the timeRange of the composition instruction.

The origin of the crop rectangle is the top-left corner of the buffer clean aperture rectangle. The crop
rectangle is defined in square pixel space, that is, without taking the pixel aspect ratio into account. Crop
rectangles extending outside of the clean aperture, are cropped to the clean aperture.
17.64. CLASS AVMUTABLEVIDEOCOMPOSITIONLAYERINSTRUCTIONMBS

Sets a fixed crop rectangle to apply from time until the next time at which a crop rectangle is set; this is the same as setting a flat ramp for that time range.

Before the first specified time for which a crop rectangle is set, the crop rectangle is held constant to CGRect-Infinite and after the last time for which a crop rectangle is set, the crop rectangle is held constant at that last value.
Available in OS X v10.9 and later.

17.64.6 setCropRectangleRampFromStartCropRectangle(startCropRectangle as CGRectMBS, endCropRectangle as CGRectMBS, timeRange as CM-TimeRangeMBS)

Function: Sets a crop rectangle ramp to apply during the specified time range.
Notes:
startCropRectangle: The crop rectangle to be applied at the starting time of the timeRange.
endCropRectangle: The crop rectangle to be applied at the end time of the timeRange.
timeRange: The time range over which the value of the opacity is interpolated between startCropRectangle and endCropRectangle.

The origin of the crop rectangle is the top-left corner of the buffer clean aperture rectangle. The crop rectangle is defined in square pixel space, that is, without taking the pixel aspect ratio into account. Crop rectangles extending outside of the clean aperture, are cropped to the clean aperture.

During a crop rectangle ramp, the rectangle is interpolated between the values set at the ramp’s start time and end time. When the starting or ending rectangle is empty, interpolations take into account the origin and size of the empty rectangle.

Before the first specified time for which a crop rectangle is set, the crop rectangle is held constant to CGRect-Infinite and after the last time for which a crop rectangle is set, the crop rectangle is held constant at that last value.
Available in OS X v10.9 and later.

17.64.7 setOpacity(opacity as Double, time as CMTimeMBS)

Function: Sets a value of the opacity at a time within the time range of the instruction.
Notes:
opacity: The opacity to be applied at time. The value must be between 0.0 and 1.0.
time: A time value within the time range of the composition instruction.
Sets a fixed opacity to apply from the specified time until the next time at which an opacity is set; this is the same as setting a flat ramp for that time range. Before the first time for which an opacity is set, the opacity is held constant at 1.0; after the last specified time, the opacity is held constant at the last value.

See also:

- 17.64.8 setOpacity(startOpacity as Double, endOpacity as Double, timeRange as CMTimeRangeMBS)

17.64.8 setOpacity(startOpacity as Double, endOpacity as Double, timeRange as CMTimeRangeMBS)


**Function:** Sets an opacity ramp to apply during a specified time range.

**Notes:**

- startOpacity: The opacity to be applied at the start time of timeRange. The value must be between 0.0 and 1.0.
- endOpacity: The opacity to be applied at the end time of timeRange. The value must be between 0.0 and 1.0.
- timeRange: The time range over which the value of the opacity will be interpolated between startOpacity and endOpacity.

During an opacity ramp, opacity is computed using a linear interpolation. Before the first time for which an opacity is set, the opacity is held constant at 1.0; after the last specified time, the opacity is held constant at the last value.

See also:

- 17.64.7 setOpacity(opacity as Double, time as CMTimeMBS)

17.64.9 setTransform(transform as CGAffineTransformMBS, time as CMTimeMBS)


**Function:** Sets a value of the transform at a time within the time range of the instruction.

**Notes:**

- transform: The transform to be applied at time.
- time: A time value within the time range of the composition instruction.

Sets a fixed transform to apply from the specified time until the next time at which a transform is set. This is the same as setting a flat ramp for that time range. Before the first specified time for which a transform is set, the affine transform is held constant at the value of CGAffineTransformIdentity; after the last time for which a transform is set, the affine transform is held constant at that last value.
17.64. CLASS AVMUTABLEVIDEOCOMPOSITIONLAYERINSTRUCTIONMBS

17.64.10 setTransformRamp(startTransform as CGAffineTransformMBS, endTransform as CGAffineTransformMBS, timeRange as CMTimeRangeMBS)

Function: Sets a transform ramp to apply during a given time range.
Notes:
startTransform: The transform to be applied at the starting time of timeRange.
endTransform: The transform to be applied at the end time of timeRange.
timeRange: The time range over which the value of the transform is interpolated between startTransform and endTransform.

During a transform ramp, the affine transform is interpolated between the values set at the ramp’s start time and end time. Before the first specified time for which a transform is set, the affine transform is held constant at the value of CGAffineTransformIdentity; after the last time for which a transform is set, the affine transform is held constant at that last value.

Available in OS X v10.7 and later.

17.64.11 videoCompositionLayerInstruction as AVMutableVideoCompositionLayerInstructionMBS

Function: Returns a new mutable video composition layer instruction.
Notes: Returns a new mutable video composition layer instruction with no transform or opacity ramps and trackID initialized to kCMPersistentTrackID_Invalid.

17.64.12 videoCompositionLayerInstructionWithAssetTrack(track as AVAssetTrackMBS) as AVMutableVideoCompositionLayerInstructionMBS

Function: Returns a new mutable video composition layer instruction for the given track.
Notes:
track: The asset track to which to apply the instruction.

Returns a new mutable video composition layer instruction with no transform or opacity ramps and trackID initialized to the track ID of track.
17.64.13 Properties

17.64.14 trackID as Integer


**Function:** The trackID of the source track to which the compositor will apply the instruction.

**Notes:** (Read and Write computed property)
17.65. CLASS AVMUTABLEVIDEOCOMPOSITIONMBS

17.65 class AVMutableVideoCompositionMBS

17.65.1 class AVMutableVideoCompositionMBS

Function: An AVMutableVideoComposition object represents a mutable video composition.
Notes: Subclass of the AVVideoCompositionMBS class.

17.65.2 Methods

17.65.3 Constructor

Function: Creates a new mutable video composition.
See also:

- 17.65.4 Constructor(other as AVVideoCompositionMBS)

17.65.4 Constructor(other as AVVideoCompositionMBS)

MBS AVFoundation Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The copy constructor to initialize with a mutable copy of the given object.
See also:

- 17.65.3 Constructor

17.65.5 setInstructions(items() as AVVideoCompositionInstructionMBS)

Function: Sets the video composition instructions.

17.65.6 videoComposition as AVMutableVideoCompositionMBS

Function: Returns a new mutable video composition.
17.65.7 videoCompositionWithPropertiesOfAsset(asset as AVAssetMBS) as AVVideoCompositionMBS

Function: Returns a new mutable video composition with the specified asset properties.
Notes:
asset: An instance of AVAsset. Ensure that the duration and tracks properties of the asset are already loaded before invoking this method.
Returns a newly created and initialized instance of AVMutableVideoComposition.

The returned AVMutableVideoComposition has instructions that respect the spatial properties and time ranges of the specified asset’s video tracks.

It also has the following values for its properties:

- A value for frameDuration short enough to accommodate the greatest nominalFrameRate among the asset’s video tracks. If the nominalFrameRate of all of the asset’s video tracks is 0, a default framerate of 30fps is used.

- If the specified asset is an instance of AVComposition, the renderSize is set to the naturalSize of the AVComposition; otherwise the renderSize will be set to a value that encompasses all of the asset’s video tracks.

- A renderScale of 1.0.

- The animationTool property set to nil.

Available in OS X v10.9 and later.

17.65.8 Properties

17.65.9 animationTool as AVVideoCompositionCoreAnimationToolMBS

Function: A special video composition tool for use with Core Animation.
Notes:
This attribute may be nil.
(Read and Write computed property)
17.65.10 frameDuration as CMTimeMBS

Function: The interval for which the video composition should render composed video frames.
Notes: (Read and Write computed property)

17.65.11 renderSize as CGSizeMBS

MBS AVFoundation Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The render size.
Notes: (Read and Write computed property)
17.66  class AVOutputSettingsAssistantMBS

17.66.1  class AVOutputSettingsAssistantMBS

Function: The helper class to configure output settings.
Notes:
A class, each instance of which specifies a set of parameters for configuring objects that use output settings
dictionaries, for example AVAssetWriter & AVAssetWriterInput, so that the resulting media file conforms to
some specific criteria.

Instances of AVOutputSettingsAssistant are typically created using a string constant representing a specific
preset configuration, such as AVOutputSettingsPreset1280x720. Once you have an instance, its properties
can be used as a guide for creating and configuring an AVAssetWriter object and one or more AVAssetWri-
terInput objects. If all the suggested properties are respected, the resulting media file will conform to the
criteria implied by the preset. Alternatively, the properties of an instance can be used as a "base" configu-
ration which can be customized to suit your individual needs.

The recommendations made by an instance get better as you tell it more about the format of your source
data. For example, if you set the sourceVideoFormat property, the recommendation made by the videoSet-
tings property will ensure that your video frames are not scaled up from a smaller size.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

17.66.2  Methods

17.66.3  available as boolean

Function: Whether this class is available.
Notes: Returns true on Mac OS X 10.9 or later.

17.66.4  AVOutputSettingsPreset1280x720 as string

Function: One of the predefined presets.
17.66.  CLASS AVOUTPUTSETTINGSASSISTANTMBS

17.66.5  AVOutputSettingsPreset1920x1080 as string

Function: One of the predefined presets.

17.66.6  AVOutputSettingsPreset640x480 as string

Function: One of the predefined presets.

17.66.7  AVOutputSettingsPreset960x540 as string

Function: One of the predefined presets.

17.66.8  Constructor

Function: The private constructor.

17.66.9  outputSettingsAssistantWithPreset(presetIdentifier as string) as AVOutputSettingsAssistantMBS

Function: Returns an instance of AVOutputSettingsAssistant corresponding to the given preset.
Notes:
presetIdentifier: The string identifier, for example AVOutputSettingsPreset1280x720, for the desired preset.

Returns an instance of AVOutputSettingsAssistant with properties corresponding to the given preset, or nil
if there is no such preset.

The properties of the returned object can be used as a guide for creating and configuring an AVAssetWriter
object and one or more AVAssetWriterInput objects. If all the suggested properties are respected in creating
the AVAssetWriter, the resulting media file will conform to the criteria implied by the preset.
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17.66.10 Properties

17.66.11 audioSettings as Dictionary

Function: A dictionary of key/value pairs, as specified in AVAudioSettings.h, to be used when e.g. creating
an instance of AVAssetWriterInput.
Notes:
The value of this property may change as a result of setting a new value for the sourceAudioFormat property.
(Read only property)

17.66.12 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

17.66.13 outputFileType as String

Function: A UTI indicating the type of file to be written, to be used when e.g. creating an instance of
AVAssetWriter.
Notes:
Use UTTypeCopyPreferredTagWithClass / kUTTagClassFilenameExtension to get a suitable file extension
for a given file type.
(Read only property)

17.66.14 videoSettings as Dictionary

Function: A dictionary of key/value pairs, as specified in AVVideoSettings.h, to be used when e.g. creating
an instance of AVAssetWriterInput.
Notes:
The value of this property may change as a result of setting a new value for the sourceVideoFormat property.
(Read only property)
17.67. CLASS AVPIXELASPECTRATIO MBS

17.67  class AVPixelAspectRatioMBS

17.67.1  class AVPixelAspectRatioMBS

Function: The class for pixel aspect ratio.

17.67.2  Properties

17.67.3  horizontalSpacing as Integer

Function: The horizontal spacing of the pixelAspectRatio property.
Notes: (Read and Write property)

17.67.4  verticalSpacing as Integer

Function: The vertical spacing of the pixelAspectRatio property.
Notes: (Read and Write property)
17.68 class AVPlayerItemAccessLogEventMBS

17.68.1 class AVPlayerItemAccessLogEventMBS

**Function:** An AVPlayerItemAccessLogEvent object represents a single item in an AVPlayerItem object’s
access log.
**Notes:**
An AVPlayerItemAccessLog object provides named properties for accessing the data fields of each log event.
None of the properties of this class are observable using key-value observing.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

17.68.2 Methods

17.68.3 Constructor

**Function:** The private constructor.

17.68.4 Properties

17.68.5 downloadOverdue as Integer

**Function:** The total number of times the download of the segments took too long. (read-only)
**Notes:**
The value of the property is negative if unknown.
This property corresponds to "c-overdue".
This property is not compatible with key-value observing.
Available in OS X v10.9 and later.
(Read only property)

17.68.6 durationWatched as Double

**Function:** The accumulated duration of the media played, in seconds. (read-only)
**Notes:**
The value of this property is negative if unknown.
(Read only property)
17.68.7 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

17.68.8 indicatedBitrate as Double

Function: The throughput required to play the stream, as advertised by the server, in bits per second.
(Read-only)
Notes:
The value of this property is negative if unknown.
(Read only property)

17.68.9 mediaRequestsWWAN as Integer

Function: Number of network read requests over WWAN. (read-only)
Notes:
The value of the property is negative if unknown.
Corresponds to "sc-wwan-count".
This property is not compatible with key-value observing.
Available in OS X v10.9 and later.
(Read only property)

17.68.10 numberOfBytesTransferred as Int64

Function: The accumulated number of bytes transferred by the item. (read-only)
Notes:
The value of this property is negative if unknown.
(Read only property)
17.68.11  **numberOfDroppedVideoFrames as Integer**

**Function:** The total number of dropped video frames (read-only)
**Notes:**
The value of this property is negative if unknown.
(Read only property)

17.68.12  **numberOfMediaRequests as Integer**

**Function:** A count of media read requests from the server to this client. (read-only)
**Notes:**
For HTTP live streaming, this property contains the count of media requests downloaded from the server. For progressive-style HTTP media downloads, it contains a count of HTTP GET (byte-range) requests for the resource.
The value of this property is negative if unknown.
Available in OS X v10.9 and later.#
(Read only property)

17.68.13  **numberOfSegmentsDownloaded as Integer**

**Function:** A count of the media segments downloaded from the server to this client. (read-only)
**Notes:**
The value of this property is negative if unknown.
(Read only property)

17.68.14  **numberOfServerAddressChanges as Integer**

**Function:** A count of changes to the server address over the last uninterrupted period of playback. (read-only)
**Notes:**
The value of this property is negative if unknown.
(Read only property)
17.68.15  **numberOfStalls as Integer**


**Function:** The total number of playback stalls encountered. (read-only)

**Notes:**
The value of this property is negative if unknown.
(Read only property)

17.68.16  **observedBitrate as Double**


**Function:** The empirical throughput across all media downloaded, in bits per second. (read-only)

**Notes:**
The value of this property is negative if unknown.
(Read only property)

17.68.17  **observedBitrateStandardDeviation as Double**


**Function:** Standard deviation of observed segment download bit rates. (read-only)

**Notes:**
The value of the property is negative if unknown.
Available in OS X v10.9 and later.
(Read only property)

17.68.18  **observedMaxBitrate as Double**


**Function:** Maximum observed segment download bit rate. (read-only)

**Notes:**
The value of the property is negative if unknown.
Available in OS X v10.9 and later.
(Read only property)
17.68.19  observedMinBitrate as Double

Function: Minimum observed segment download bit rate. (read-only)
Notes:
The value of the property is negative if unknown.
Available in OS X v10.9 and later.
(Read only property)

17.68.20  playbackSessionID as string

Function: A GUID that identifies the playback session. (read-only)
Notes:
This value is used in HTTP requests.
The value of this property is nil if unknown.
(Read only property)

17.68.21  playbackStartDate as date

Function: The date and time at which playback began for this event. (read-only)
Notes:
The value of this property is nil if unknown.
(Read only property)

17.68.22  playbackStartOffset as Double

Function: An offset into the playlist where the last uninterrupted period of playback began, in seconds
(readonly)
Notes:
The value of this property is negative if unknown.
(Read only property)
### 17.68.23 playbackType as String

**Function:** The playback type: live, VOD, or from a file. (read-only)
**Notes:**
- If nil is returned the playback type is unknown.
- Available in OS X v10.9 and later.
- (Read only property)

### 17.68.24 segmentsDownloadedDuration as Double

**Function:** The accumulated duration of the media downloaded, in seconds. (read-only)
**Notes:**
- The value of this property is negative if unknown.
- (Read only property)

### 17.68.25 serverAddress as string

**Function:** The IP address of the server that was the source of the last delivered media segment. (read-only)
**Notes:**
- The value of this property is nil if unknown.
- (Read only property)

### 17.68.26 startupTime as Double

**Function:** The accumulated duration, in seconds, until player item is ready to play. (read-only)
**Notes:**
- The value of the property is negative if unknown.
- Available in OS X v10.9 and later.
- (Read only property)
17.68.27  switchBitrate as Double

Function: Bandwidth that caused a switch (up or down). (read-only)
Notes:
The value of the property is negative if unknown.
Available in OS X v10.9 and later.
(Read only property)

17.68.28  transferDuration as Double

Function: The accumulated duration, in seconds, of active network transfer of bytes. (read-only)
Notes:
The value of the property is negative if unknown.
Corresponds to "c-transfer-duration".
This property is not compatible with key-value observing.
Available in OS X v10.9 and later.
(Read only property)

17.68.29  URI as string

Function: The URI of the playback item (read-only)
Notes:
The value of this property may be nil if the URI is unknown.
(Read only property)
class AVPlayerItemAccessLogMBS


**Function:** You use an AVPlayerItemAccessLog object to retrieve the access log associated with an AVPlayerItem object.

**Notes:**
An AVPlayerItemAccessLog object accumulates key metrics about network playback and presents them as a collection of AVPlayerItemAccessLogEvent instances. Each event instance collates the data that relates to each uninterrupted period of playback.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

Methods

**Constructor**


**Function:** The private constructor.

**events as AVPlayerItemAccessLogEventMBS()**


**Function:** A chronologically ordered array of AVPlayerItemAccessLogEvent objects. (read-only)

**Notes:**
The array contains AVPlayerItemAccessLogEvent objects that represent the chronological sequence of events contained in the access log.
This property is not observable using key-value observing.

**extendedLogData as MemoryBlock**


**Function:** Returns a serialized representation of the access log in the Extended Log File Format.

**Notes:**
A serialized representation of the access log in the Extended Log File Format.
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This method converts the web server access log into a textual format that conforms to the W3C Extended Log File Format for web server log files. For more information, see http://www.w3.org/pub/WWW/TR/WD-logfile.html.

17.69.6 extendedLogDataStringEncoding as Integer

Function: Returns the string encoding of the extended log data.
Notes: The string encoding of the data returned by extendedLogData.

17.69.7 Properties

17.69.8 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)
17.70. **CLASS AVPLAYERITEMERRORLOGEVENTMBS**

17.70 class AVPlayerItemErrorLogEventMBS

17.70.1 class AVPlayerItemErrorLogEventMBS

**Function:** An AVPlayerItemErrorLogEvent object represents a single item in an AVPlayerItem object’s error log.
**Notes:**
An AVPlayerItemErrorLogEvent object provides named properties for accessing the data fields of each log event. None of the properties of this class are observable using key-value observing.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

17.70.2 Methods

17.70.3 Constructor

**Function:** The private constructor.

17.70.4 date as date

**Function:** The date and time when the error occurred. (read-only)
**Notes:**
The property corresponds to "date".
The value of this property may be nil if the date is unknown.

17.70.5 errorComment as string

**Function:** A description of the error encountered (read-only)
**Notes:** The value of this property may be nil if further information is not available.

17.70.6 errorDomain as string

**Function:** The domain of the error. (read-only)
17.70.7  errorStatusCode as Integer

Function: A unique error code identifier. (read-only)

17.70.8  playbackSessionID as string

Function: A GUID that identifies the playback session. (read-only)
Notes: The value of this property is used in HTTP requests, and may be nil if the GUID is unknown.

17.70.9  serverAddress as string

Function: The IP address of the server that was the source of the error. (read-only)
Notes: The value of this property can be either an IPv4 or IPv6 address, and may be nil if the address is unknown.

17.70.10  URI as string

Function: The URI of the playback item (read-only)
Notes: The value of this property may be nil if the URI is unknown.

17.70.11  Properties

17.70.12  Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)
17.71 class AVPlayerItemErrorLogMBS

17.71.1 class AVPlayerItemErrorLogMBS

**Function:** You use an AVPlayerItemErrorLog object to retrieve the error log associated with an AV-PlayerItem object.  
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

17.71.2 Methods

17.71.3 Constructor

**Function:** The private constructor.

17.71.4 events as AVPlayerItemErrorLogEventMBS()

**Function:** A chronologically ordered array of AVPlayerItemErrorLogEvent objects. (read-only)  
**Notes:**  
The array contains AVPlayerItemErrorLogEvent objects that represent the chronological sequence of events contained in the error log.

This property is not observable using key-value observing.

17.71.5 extendedLogData as MemoryBlock

**Function:** Returns a serialized representation of the error log in the Extended Log File Format.  
**Notes:**  
A serialized representation of the error log in the Extended Log File Format.

**Discussion**  
This method converts the web server error log into a textual format that conforms to the W3C Extended Log File Format for web server log files. For more information, see http://www.w3.org/pub/WWW/TR/WD-logfile.html.
17.71.6 extendedLogDataStringEncoding as Integer


**Function:** Returns the string encoding of the extended log data.

**Notes:** The string encoding of the data returned by extendedLogData.

17.71.7 Properties

17.71.8 Handle as Integer


**Function:** The internal object reference.

**Notes:** (Read and Write property)
17.72. CLASS AVPLAYERITEMLEGIBLEOUTPUTMBS

17.72 class AVPlayerItemLegibleOutputMBS

17.72.1 class AVPlayerItemLegibleOutputMBS

Function: A subclass of AVPlayerItemOutput that can vend media with a legible characteristic as NSAttributedString.
Notes: Subclass of the AVPlayerItemOutputMBS class.

17.72.2 Methods

17.72.3 available as boolean

Function: Whether this class is available.
Notes: Returns true on Mac OS X 10.9 or later.

17.72.4 AVPlayerItemLegibleOutputTextStylingResolutionDefault as string

Function: One of the text styling mode.
Notes: Specify this level of text styling resolution to receive attributed strings from an AVPlayerItemLegibleOutput that include the same level of styling information that AVFoundation would use itself to render text within an AVPlayerLayer. The text styling will accommodate user-level Media Accessibility settings.

17.72.5 AVPlayerItemLegibleOutputTextStylingResolutionSourceAndRulesOnly as string

Function: One of the text styling mode.
Notes: Specify this level of text styling resolution to receive only the styling present in the source media and the styling provided via AVPlayerItem.textStyleRules.
This level of resolution excludes styling provided by the user-level Media Accessibility settings. You would typically use it if you wish to override the styling specified in source media. If you do this, you are strongly encouraged to allow your custom styling in turn to be overridden by user preferences for text styling that are available as Media Accessibility settings.
17.72.6 Constructor

**Function:** The standard constructor.  
See also:  
- 17.72.7 Constructor(subTypes() as string)

17.72.7 Constructor(subTypes() as string)

**Function:** The constructor.  
**Notes:**  
Returns an instance of AVPlayerItemLegibleOutput with filtering enabled for AVPlayerItemLegibleOutput-PushDelegate’s legibleOutput:didOutputAttributedStrings:nativeSampleBuffers:forItemTime:.  

subtypes: Array of strings with 4 letter codes.

Add media subtype FourCC number objects to the subtypes array to elect to receive that type as a CM-  
SampleBuffer instead of an NSAttributedString. Initializing an AVPlayerItemLegibleOutput using the Constructor method is equivalent to calling Constructor with an empty array, which means that all legible data,  
regardless of media subtype, will be delivered using NSAttributedString in a common format.

If a media subtype for which there is no legible data in the current player item is included in the media  
subtypes array, no error will occur. AVPlayerItemLegibleOutput will not vend closed caption data as CM-  
SampleBuffers, so it is an error to include ‘c608’ in the media subtypes array.  
See also:  
- 17.72.6 Constructor

17.72.8 Properties

17.72.9 advanceIntervalForDelegateInvocation as Double

**Function:** Permits advance invocation of the associated delegate, if any.  
**Notes:**  
If it is possible, an AVPlayerItemLegibleOutput will message its delegate advanceIntervalForDelegateInvocation seconds earlier than otherwise. If the value you provide is large, effectively requesting provision of  
samples earlier than the AVPlayerItemLegibleOutput is prepared to act on them, the delegate will be invoked  
as soon as possible.  
(Read and Write property)
17.72.10 textStylingResolution as String


**Function:** A string identifier indicating the degree of text styling to be applied to attributed strings vended by the receiver.

**Notes:**
Valid values are AVPlayerItemLegibleOutputTextStylingResolutionDefault and AVPlayerItemLegibleOutputTextStylingResolutionSourceAndRulesOnly. An NSInvalidArgumentException is raised if this property is set to any other value. The default value is AVPlayerItemLegibleOutputTextStylingResolutionDefault, which indicates that attributed strings vended by the receiver will include the same level of styling information that would be used if AVFoundation were rendering the text via AVPlayerLayer.

(Read and Write property)
17.73 class AVPlayerItemMBS

17.73.1 class AVPlayerItemMBS


**Function:** An AVPlayerItem represents the presentation state of an asset that’s played by an AVPlayer object, and lets you observe that state.

**Notes:**

A object carries a reference to an AVAsset object and presentation settings for that asset, including track enabled state. If you need to inspect the media assets themselves, you should message the AVAsset object itself.

You can initialize a player item using an URL (playerItemWithURL and Constructor); the resource types referenced by the URL may include, but aren’t necessarily limited to, those with the following corresponding UTIs:

- kUTTypeQuickTimeMovie, (.mov, .qt)
- kUTTypeMPEG4 (.mp4)
- "public.3gpp" (.3gp, .3gpp)
- kUTTypeMPEG4Audio (.m4a)
- "com.apple.coreaudio-format" (.caf)
- "com.microsoft.waveform-audio" (.wav)
- "public.aiff-audio" (.aif)
- "public.aifc-audio” (also .aif)
- "org.3gpp.adaptive-multi-rate-audio” (.amr)

If you want to play an asset more than once within a sequence of items, you must create independent instances of AVPlayerItem for each placement in the player’s queue.

17.73.2 Methods

17.73.3 accessLog as AVPlayerItemAccessLogMBS


**Function:** Returns an object that represents a snapshot of the network access log.

**Notes:**

An object that represents a snapshot of the network access log. The returned value can be nil. If the method returns nil, there is no logging information currently available for the player item.
17.73. **CLASS AVPLAYERITEMMBS**

17.73.4 **addOutput(output as AVPlayerItemOutputMBS)**

Function: Adds the specified player item output object to the receiver.
Notes:

output: The player item output object to associate with the item.

When you add an AVPlayerItemOutput object to an item, the samples associated with that output object are processed according to the rules for mixing, composing, or excluding content that the AVPlayer object honors for the specific media type. For example, video media is composed according to the instructions provided by the player item’s video composition object and audio media is mixed according to the parameters of its audio mix object.
Available in OS X v10.8 and later.

17.73.5 **automaticallyLoadedAssetKeys as String()**

Function: An array of property keys defined by the asset property. (read-only)
Notes:
The value of each key in automaticallyLoadedAssetKeys will be automatically be loaded by the asset before the receiver achieves the status AVPlayerItemStatusReadyToPlay; i.e. when the item is ready to play, the value of invoking statusOfValueForKey on the asset property value will be AVKeyValueStatusLoaded. If loading of any of the values fails, the status property of the receiver will change to AVPlayerItemStatusFailed.
Available in OS X v10.9 and later.

17.73.6 **available as boolean**

Function: Whether this class is available.
Notes: Returns true on Mac OS X 10.7 and newer.

17.73.7 **cancelContentAuthorizationRequest**

Function: Causes the currently outstanding content authorization request to be cancelled.
Notes:

Calling this method while a content authorization request is pending will cause that request to be cancelled and its completion handler to be invoked with a status of AVContentAuthorizationCancelled.
This method does not block.

17.73.8 cancelPendingSeeks

Function: Cancel any pending seek requests and invoke the corresponding completion handlers if present.
Notes: Use this method to cancel and release the completion handlers of pending seeks.
The finished parameter of the completion handlers will be set to false.

17.73.9 Constructor(asset as AVAssetMBS)

Function: Initializes a new player item for a given asset.
See also:
• 17.73.10 Constructor(asset as AVAssetMBS, automaticallyLoadedAssetKeys() as string) 3456
• 17.73.11 Constructor(file as folderitem) 3457
• 17.73.12 Constructor(URL as string) 3457

17.73.10 Constructor(asset as AVAssetMBS, automaticallyLoadedAssetKeys() as string)

Function: Initializes a player item with an array of AVAsset keys.
Notes:
asset: An instance of AVAsset.
éautomaticallyLoadedAssetKeys: An array of strings, each representing a property defined by AVAsset.
Returns an initialized instance of AVPlayerItem.

The value of each key in automaticallyLoadedAssetKeys will be automatically be loaded by the underlying
AVAsset before the receiver achieves the status AVPlayerItemStatusReadyToPlay; i.e. when the item is
ready to play, the value returned by invoking the asset property’s statusOfValueForKey method will be one
of the terminal status values, either AVKeyValueStatusLoaded, AVKeyValueStatusFailed, or AVKeyValueS-
tatusCancelled.
17.73. CLASS AVPLAYERITEMMBS

Important: The asset property keys "playable" and "compatibleWithSavedPhotosAlbum" are not eligible for automatic loading by AVPlayerItem. You must use the AVAsset method loadValuesAsynchronously-ForKeys:completionHandler: to load the values of those properties asynchronously.

Available in OS X v10.9 and later.
See also:

- 17.73.9 Constructor(asset as AVAssetMBS) 3456
- 17.73.11 Constructor(file as folderitem) 3457
- 17.73.12 Constructor(URL as string) 3457

17.73.11 Constructor(file as folderitem)

Function: Prepares a player item with a given file.

Notes:

file: A folderitem.

This method immediately returns the item, but with the status AVPlayerItemStatusUnknown.
If the URL contains valid data that can be used by the player item, the status later changes to AVPlayerItem-StatusReadyToPlay.
If the URL contains no valid data or otherwise can’t be used by the player item, the status later changes to AVPlayerItemStatusFailed.
See also:

- 17.73.9 Constructor(asset as AVAssetMBS) 3456
- 17.73.10 Constructor(asset as AVAssetMBS, automaticallyLoadedAssetKeys() as string) 3456
- 17.73.12 Constructor(URL as string) 3457

17.73.12 Constructor(URL as string)

Function: Prepares a player item with a given URL.

Notes:

URL: An URL.

This method immediately returns the item, but with the status AVPlayerItemStatusUnknown.
If the URL contains valid data that can be used by the player item, the status later changes to AVPlayerItem-StatusReadyToPlay.
If the URL contains no valid data or otherwise can’t be used by the player item, the status later changes to
AVPlayerItemStatusFailed.
See also:

- 17.73.9 Constructor(asset as AVAssetMBS)
  - 17.73.10 Constructor(asset as AVAssetMBS, automaticallyLoadedAssetKeys() as string)
  - 17.73.11 Constructor(file as folderitem)

17.73.13 copy as AVPlayerItemMBS

**Function:** Creates a copy of the object.

17.73.14 errorLog as AVPlayerItemErrorLogMBS

**Function:** Returns an object that represents a snapshot of the error log.
**Notes:**
An object that represents a snapshot of the error log. The returned value can be nil.
If the method returns nil, there is no logging information currently available for the player item.

17.73.15 loadedTimeRanges as CMTimeRangeMBS()

**Function:** The time ranges of the item that have been loaded. (read-only)

17.73.16 outputs as AVPlayerItemOutputMBS()

**Function:** The outputs associated with the item. (read-only)
**Notes:**
This property contains the collection of AVPlayerItemOutput objects used to transfer media data to the
player object.
Available in OS X v10.8 and later.
17.73. **CLASS AVPLAYERITEMMBS**

17.73.17 **playerItemWithAsset(asset as AVAssetMBS) as AVPlayerItemMBS**


**Function:** Returns a new player item for a given asset.

See also:

- 17.73.18 playerItemWithAsset(asset as AVAssetMBS, automaticallyLoadedAssetKeys() as string) as AVPlayerItemMBS

17.73.18 **playerItemWithAsset(asset as AVAssetMBS, automaticallyLoadedAssetKeys() as string) as AVPlayerItemMBS**


**Function:** Creates and initializes a player item with an array of AVAsset keys.

**Notes:**

- asset: An instance of AVAsset.
- automaticallyLoadedAssetKeys: An array of strings, each representing a property key defined by AVAsset.

Returns an initialized instance of AVPlayerItem.

The value of each key in automaticallyLoadedAssetKeys will be automatically be loaded by the underlying AVAsset before the receiver achieves the status AVPlayerItemStatusReadyToPlay; i.e. when the item is ready to play, the value returned by invoking the asset property’s statusOfValueForKey:error: method will be one of the terminal status values, either AVKeyValueStatusLoaded, AVKeyValueStatusFailed, or AVKeyValueStatusCancelled.

Important: The asset property keys "playable" and "compatibleWithSavedPhotosAlbum" are not eligible for automatic loading by AVPlayerItem. You must use the AVAsset method loadValuesAsynchronouslyForKeys:completionHandler: to load the values of those properties asynchronously.

Available in OS X v10.9 and later.

See also:

- 17.73.17 playerItemWithAsset(asset as AVAssetMBS) as AVPlayerItemMBS

17.73.19 **playerItemWithFile(file as folderitem) as AVPlayerItemMBS**


**Function:** Returns a new player item, prepared to use a given folderitem.

**Notes:**

- File: A folderitem.

Returns a new player item, prepared to use folderitem.
This method immediately returns the item, but with the status AVPlayerItemStatusUnknown.
If the URL contains valid data that can be used by the player item, the status later changes to AVPlayerItemStatusReadyToPlay.
If the URL contains no valid data or otherwise can’t be used by the player item, the status later changes to AVPlayerItemStatusFailed.

### 17.73.20 playerItemWithURL(URL as string) as AVPlayerItemMBS

**Function:** Returns a new player item, prepared to use a given URL.
**Notes:**
- **URL:** An URL.
- Returns a new player item, prepared to use URL.

This method immediately returns the item, but with the status AVPlayerItemStatusUnknown.
If the URL contains valid data that can be used by the player item, the status later changes to AVPlayerItemStatusReadyToPlay.
If the URL contains no valid data or otherwise can’t be used by the player item, the status later changes to AVPlayerItemStatusFailed.

### 17.73.21 removeOutput(output as AVPlayerItemOutputMBS)

**Function:** Removes the specified player item output object from the receiver.
**Notes:**
- **output:** The player item output object to remove.
- Available in OS X v10.8 and later.

### 17.73.22 requestContentAuthorizationAsynchronously(timeoutInterval as Double, tag as Variant = nil)

**Function:** Causes appropriate action to be taken to allow the user to authorize the content for playback.
**Notes:**
- **timeoutInterval:** The maximum amount of time in seconds to wait for the user to authorize the content before calling the handler block with a timeout result.

Calling this method will present the user with the opportunity to authorize the content (for example, by launching iTunes and prompting the user to enter their Apple ID and password).
When the user has taken action (or the timeout has elapsed), the AVFoundationMBS.requestContentAuthorizationCompleted event is invoked. You determine the status of the authorization attempt by checking the value of the contentAuthorizationRequestStatus property.

Even if the status indicates a completed authorization, the content may still not be authorized (for example, if the user authorizes an Apple ID other than that associated with the content). You should re-check the value of contentAuthorizationRequestStatus to verify whether the content has actually been authorized before continuing. It is not necessary to call this method if the value of contentAuthorizationRequestStatus is already true.

With tag you can pass any value you like to the event later. This can be for example an object reference or a number in an array. Be aware that the reference to this tag value is kept until the event is called and can cause memory reference cycles.

17.73.23 seekableTimeRanges as CMTimeRangeMBS()

Function: An array of time ranges within which it is possible to seek. (read-only)

17.73.24 seekToDate(date as date, fireEvent as boolean = false, tag as Variant = nil) as boolean

Function: Moves the playback cursor to the time given by the specified date object.
Notes:
date: The time to which to seek.

If fireEvent is true, the AVFoundationMBS.playerItemSeekToDateFinished event is called.

Use this method to seek to a specified time in the item item and be notified when the operation completes. If the seek request completes without being interrupted (either by another seek request or by any other operation), the completion handler you provide is executed with the finished parameter set to true.

If another seek request is already in progress when you call this method, the completion handler for the in-progress seek request is executed immediately with the finished parameter set to NO.
Available in OS X v10.9 and later.
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17.73.25 seekToTime(time as CMTimeMBS, fireEvent as boolean = false, tag as Variant = nil)


Function: Moves the playback cursor to a given time.

Notes:

time: The time to which to move the playback cursor.
If fireEvent is true, the AVFoundationMBS.playerItemSeekToTimeFinished event will be called later.

Use this method to seek to a specified time in the item item and be notified when the operation completes.
If the seek request completes without being interrupted (either by another seek request or by any other
operation), the event is executed with the finished parameter set to true.

If another seek request is already in progress when you call this method, the completion handler for the
in-progress seek request is executed immediately with the finished parameter set to false.

With tag you can pass any value you like to the event later. This can be for example an object reference or
a number in an array. Be aware that the reference to this tag value is kept until the event is called and can
cause memory reference cycles.
See also:

- 17.73.26 seekToTime(time as CMTimeMBS, toleranceBefore as CMTimeMBS, toleranceAfter as CM-TimeMBS, fireEvent as boolean = false, tag as Variant = nil)

17.73.26 seekToTime(time as CMTimeMBS, toleranceBefore as CMTimeMBS, toleranceAfter as CMTimeMBS, fireEvent as boolean = false, tag as Variant = nil)


Function: Moves the playback cursor within a specified time bound.

Notes:

time: The time to which you would like to move the playback cursor.
toleranceBefore: The tolerance allowed before time.
toleranceAfter: The tolerance allowed after time.

The time sought to will be within the range [ time-beforeTolerance, time+afterTolerance ] , and may differ
from the specified time for efficiency. If you pass kCMTimeZero for both toleranceBefore and toleranceAfter
(to request sample accurate seeking), you may incur additional decoding delay.

Passing kCMTimePositiveInfinity for both toleranceBefore and toleranceAfter is the same as messaging seek-
ToTime directly.
With tag you can pass any value you like to the event later. This can be for example an object reference or a number in an array. Be aware that the reference to this tag value is kept until the event is called and can cause memory reference cycles.

See also:

- 17.73.25 seekToTime(time as CMTimeMBS, fireEvent as boolean = false, tag as Variant = nil)

### 17.73.27 selectedMediaOptionInMediaSelectionGroup(mediaSelectionGroup as AVMediaSelectionGroupMBS) as AVMediaSelectionOptionMBS


**Function:** Indicates the media selection option that’s currently selected from the specified group.

**Notes:**

mediaSelectionGroup: A media selection group obtained from the player item’s asset.

Returns an instance of AVMediaSelectionOption that describes the currently selection option in the group.

If the value of the allowsEmptySelection property of mediaSelectionGroup is true, the currently selected option in the group may be nil.

Available in OS X v10.8 and later.

### 17.73.28 selectMediaOption(mediaSelectionOption as AVMediaSelectionOptionMBS, mediaSelectionGroup as AVMediaSelectionGroupMBS)


**Function:** Selects the media option described by a specified instance of AVMediaSelectionOption in a given media selection group and deselects all other options in that group.

**Notes:**

mediaSelectionOption: The option to select.

If the value of the allowsEmptySelection property of mediaSelectionGroup is true, you can pass nil to deselect all media selection options in the group.

mediaSelectionGroup: The media selection group, obtained from the receiver’s asset, that contains mediaSelectionOption.

If mediaSelectionOption isn’t a member of the mediaSelectionGroup, no change in presentation state will result.

If multiple options within a group meet your criteria for selection according to locale or other considerations, and if these options are otherwise indistinguishable to you according to media characteristics that are meaningful for your application, content is typically authored so that the first available option that meets your criteria is appropriate for selection.
17.73.29 selectMediaOptionAutomaticallyInMediaSelectionGroup(mediaSelectionGroup as AVMediaSelectionGroupMBS)

**Function:** Selects the media option in the specified media selection group that best matches the receiver’s automatic selection criteria.
**Notes:**
mediaSelectionGroup: The media selection group, obtained from the receiver’s asset, that contains the specified option.

This method has no effect unless the appliesMediaSelectionCriteriaAutomatically property of the associated AVPlayer is true and unless automatic media selection has previously been overridden by invoking sselectMediaOption:inMediaSelectionGroup.
Available in OS X v10.9 and later.

17.73.30 setTextStyleRules(rules() as AVTextStyleRuleMBS)

**Function:** Sets the textStyleRules array.

17.73.31 stepByCount(stepCount as Integer)

**Function:** Moves the player’s current item’s current time forward or backward by a specified number of steps.
**Notes:**
stepCount: The number of steps by which to move.
A positive number steps forward, a negative number steps backward.

The size of each step depends on the receiver’s enabled AVPlayerItemTrack objects (see tracks).

17.73.32 textStyleRules as AVTextStyleRuleMBS()

**Function:** An array of text style rules to apply to subtitles and other legible text.
Notes:
You can use this property to assign an array of AVTextStyleRule objects to the item. Each rule specifies both the style information and the range of text to which that styling should apply. Available in OS X v10.9 and later.

17.73.33 timedMetadata as AVMetadataItemMBS()

Function: The timed metadata played most recently by the media stream. (read-only)
Notes: The array contains instances of AVMetadataItem.

17.73.34 tracks as AVPlayerItemTrackMBS()

Function: An array of AVPlayerItemTrack objects. (read-only)
Notes: This property can change dynamically during playback.
You can observe this property using key-value observing.

17.73.35 Properties

17.73.36 asset as AVAssetMBS

Function: The underlying asset provided during initialization. (read-only)
Notes: (Read only property)

17.73.37 audioMix as AVAudioMixMBS

Function: The audio mix parameters to be applied during playback.
Notes: (Read and Write property)
17.73.38 audioTimePitchAlgorithm as String

Function: The processing algorithm used to manage audio pitch for scaled audio edits.
Notes:
The supported constants are defined in Time Pitch Algorithm Settings.
An NSInvalidArgumentException will be raised if this property is set to a value other than the defined constants.
Available in OS X v10.9 and later.
(Read and Write property)

17.73.39 canPlayFastForward as boolean

Function: A Boolean value indicating whether the item can be played at rates greater than 1.0. (read-only)
Notes:
Available in OS X v10.8 and later.
(Read only property)

17.73.40 canPlayFastReverse as boolean

Function: A Boolean value indicating whether the item can be played at rates less than 1.0. (read-only)
Notes:
Available in OS X v10.8 and later.
(Read only property)

17.73.41 canPlayReverse as boolean

Function: A Boolean value indicating whether the item can be played with a rate of -1.0. (read-only)
Notes:
Available in OS X v10.8 and later.
(Read only property)
17.73.42 canPlaySlowForward as boolean

Function: A Boolean value indicating whether the item can be played at a rate between 0.0 and 1.0. (read-only)
Notes: Available in OS X v10.8 and later.
(Read only property)

17.73.43 canPlaySlowReverse as boolean

Function: A Boolean value indicating whether the item can be played at a rate between -1.0 and 0.0. (read-only)
Notes: Available in OS X v10.8 and later.
(Read only property)

17.73.44 canStepBackward as boolean

Function: A Boolean value indicating whether the item supports stepping backward. (read-only)
Notes: Once the item becomes ready to play, the value of this property does not change. This behavior applies even when boundary conditions, such as when the item’s current time is kCMTTimeZero, have been reached.
Available in OS X v10.8 and later.
(Read only property)

17.73.45 canStepForward as boolean

Function: A Boolean value indicating whether the item supports stepping forward. (read-only)
Notes: Once the item becomes ready to play, the value of this property does not change. This behavior applies even when boundary conditions, such as when the item’s current time is equal to its end time, have been reached.
Available in OS X v10.8 and later.
(Read only property)
17.73.46  contentAuthorizationRequestStatus as Integer

Function: Indicates the status of the most recent call to requestContentAuthorizationAsynchronouslyWith-TimeoutInterval. (read-only)
Notes:
This property reports the authorization status as determined by the most recent call to requestContentAuthorizationAsynchronouslyWithTimeoutInterval.

The value will be AVContentAuthorizationUnknown before the first call and between the time a request call is made and just prior to the completion handler being executed (thus it is safe to query this property from the event).

This value is not key-value observable.
(Read only property)

17.73.47  currentDate as date

Function: Returns the current time of the item as a date object.
Notes:
The current time of the item as a date object, or nil if playback is not mapped to any date.
(Read only property)

17.73.48  currentTime as CMTimeMBS

Function: Returns the current time of the item.
Notes: (Read only property)

17.73.49  customVideoCompositor as AVVideoCompositingMBS

Function: The custom video compositor, if any. (read-only)
Notes:
The custom video compositor instance that is used during image generation is accessible via this property after the value of AVPlayerItemStatusFailed is set to an AVVideoComposition instance that specifies a custom video compositor class. Any additional communication between the application and that instance of the custom video compositor, if any is required for configuration or other purposes, can only occur once that
If the value of AVPlayerItemStatusFailed is changed from an AVVideoComposition that specifies a custom video compositor class to another instance of AVVideoComposition that specifies the same custom video compositor class, the instance of the custom video compositor that was previously created will receive the renderContextChanged: message and remain in use for subsequent image generation.

This property is nil if there is no video compositor, or if the internal video compositor is in use. Available in OS X v10.9 and later. (Read only property)

17.73.50 duration as CMTimeMBS

MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Indicates the duration of the item. (read-only)
Notes: Indicates the duration of the item, not considering either its forwardPlaybackEndTime or reversePlaybackEndTime. (Read only property)

17.73.51 error as NSErrorMBS

MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: If the receiver’s status is AVPlayerItemStatusFailed, this describes the error that caused the failure. (read-only)
Notes: The value of this property is an error that describes what caused the receiver to no longer be able to be played. If the receiver’s status is not AVPlayerItemStatusFailed, the value of this property is nil. (Read only property)

17.73.52 forwardPlaybackEndTime as CMTimeMBS

Notes: The value indicated the time at which playback should end when the playback rate is positive (see AVPlayer’s rate property).
The default value is kCMTimeInvalid, which indicates that no end time for forward playback is specified. In this case, the effective end time for forward playback is the item’s duration.

The value of this property has no effect on playback when the rate is negative.
(Read and Write property)

17.73.53  **Handle as Integer**

**Function:** The internal object reference.
**Notes:** (Read and Write property)

17.73.54  **isApplicationAuthorizedForPlayback as boolean**

**Function:** Indicates whether the application can be used to play the content. (read-only)
**Notes:**
This property reports whether or not the calling application is authorized to play the content associated with the item.

Application authorization is independent of content authorization (see contentAuthorizedForPlayback) and that both must be granted in order for an application to be allowed to play protected content. Also, unlike content authorization, application authorization is not dependent on user credentials (that is, if applicationAuthorizedForPlayback is false, there are no means to obtain authorization).

This property is not key-value observable.
(Read only property)

17.73.55  **isAuthorizationRequiredForPlayback as boolean**

**Function:** Indicates whether or not authorization is required to play the content. (read-only)
**Notes:**
This property reports whether authorization is required for the item's content to be played. If it does not require authorization, then none of the other authorization-related methods or properties apply (though they will return sensible values where possible).

This property is not key-value observable.
17.73. **CLASS AVPLAYERITEMMBS**

(Read only property)

17.73.56  **isContentAuthorizedForPlayback as boolean**


**Function:** Indicates whether the content has been authorized by the user (for example, by authorizing the content’s associated account in iTunes). (read-only)

**Notes:**

This property reports whether the user has provided the necessary credentials to the system in order for the content to be decrypted for playback.

Content authorization is independent of application authorization (see applicationAuthorizedForPlayback) and that both must be granted in order for an application to be allowed to play protected content.

This property is not key-value observable.

(Read only property)

17.73.57  **isPlaybackBufferEmpty as boolean**


**Function:** Indicates whether playback has consumed all buffered media and that playback will stall or end. (read-only)

**Notes:** (Read only property)

17.73.58  **isPlaybackBufferFull as boolean**


**Function:** Indicates whether the internal media buffer is full and that further I/O is suspended. (read-only)

**Notes:**

Despite the playback buffer reaching capacity there might not exist sufficient statistical data to support a playbackLikelyToKeepUp prediction of true.

(Read only property)

17.73.59  **isPlaybackLikelyToKeepUp as boolean**


**Function:** Indicates whether the item will likely play through without stalling (read-only)
Notes:
This property communicates a prediction of playability. Factors considered in this prediction include I/O throughput and media decode performance. It is possible for playbackLikelyToKeepUp to indicate false while the property playbackBufferFull indicates true. In this event the playback buffer has reached capacity but there isn’t the statistical data to support a prediction that playback is likely to keep up in the future. It is up to you to decide whether to continue media playback.
(Read only property)

17.73.60 presentationSize as CGSizeMBS

Function: The size at which the visual portion of the item is presented by the player. (read-only)
Notes:
You can scale the presentation size to fit within the bounds of a player layer using its videoGravity property. You can also scale the presentation size arbitrarily using the frame property of an AVPlayerLayer object.
(Read only property)

17.73.61 reversePlaybackEndTime as CMTimeMBS

Function: The time at which reverse playback ends.
Notes:
The value indicated the time at which playback should end when the playback rate is negative (see AV-Player’s rate property).

The default value is kCMTimeInvalid, which indicates that no end time for reverse playback is specified. In this case, the effective end time for reverse playback is kCMTimeZero.

The value of this property has no effect on playback when the rate is positive.
(Read and Write property)

17.73.62 seekingWaitsForVideoCompositionRendering as Boolean

Function: A Boolean value indicating whether the item’s timing follows the displayed video frame when seeking with a video composition.
Notes:
By default, item timing is updated as quickly as possible during seeking. Specifically, the item does not wait
for new frames to be rendered when seeking during normal playback. In most situations, the latency between
the completion of a seek operation and the display of a video frame at the new time is negligible. However,
when video compositions are in use, the processing of video may introduce noticeable latency. Setting the
value of this property to true causes the item’s timing to be updated only after the corresponding video
frame has been displayed. For example, this allows an AVSynchronizedLayer object associated with the item
to remain in sync with the displayed video.

This property has no effect on items whose videoComposition property is nil.
Available in OS X v10.9 and later.
(Read and Write property)

17.73.63 status as Integer

Function: The status of the player item. (read-only)
Notes:
For example, whether the item is playable. For values: AVPlayerItemStatusUnknown, AVPlayerItemStatus-
ReadyToPlay and AVPlayerItemStatusFailed.
(Read only property)

17.73.64 videoComposition as AVVideoCompositionMBS

Function: The video composition settings to be applied during playback.
Notes: (Read and Write property)

17.73.65 Constants

17.73.66 AVContentAuthorizationBusy = 4

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the authorization status constants.
Notes: The last call to request content authorization could not be completed because another asset is cur-
rently attempting authorization.

17.73.67 AVContentAuthorizationCancelled = 2

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the authorization status constants.
Notes: The last call to request content authorization was cancelled by the user.
17.73.68  AVContentAuthorizationCompleted = 1

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the authorization status constants. **Notes:** The last completed call to request content authorization completed.

17.73.69  AVContentAuthorizationNotAvailable = 5

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the authorization status constants. **Notes:** The last call to request content authorization could not be completed because there was no known mechanism by which to attempt authorization.

17.73.70  AVContentAuthorizationNotPossible = 6

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the authorization status constants. **Notes:** The last call to request content authorization could not be completed in a non-recoverable way (for example, a newer version of iTunes is required).

17.73.71  AVContentAuthorizationTimedOut = 3

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the authorization status constants. **Notes:** The last call to request content authorization was cancelled because the timeout interval was reached.

17.73.72  AVContentAuthorizationUnknown = 0

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the authorization status constants. **Notes:** No call to request content authorization has completed yet.

17.73.73  AVPlayerItemStatusFailed = 2

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the status values. **Notes:** The item cannot be played.
17.73. CLASS AVPLAYERITEMMBS

17.73.74 AVPlayerItemStatusReadyToPlay = 1

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function**: One of the status values. **Notes**: The item is ready to play.

17.73.75 AVPlayerItemStatusUnknown = 0

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function**: One of the status values. **Notes**: The item’s status is unknown.
17.74 class AVPlayerItemOutputMBS

17.74.1 class AVPlayerItemOutputMBS


Function: The AVPlayerItemOutput class is an abstract class that defines the common interface for moving
samples from an asset to an AVPlayer object.

Notes:
You do not create instances of this class directly but instead use one of the concrete subclasses that manage
specific types of assets.

This class provides basic methods for converting time values to the timebase of the item. It also provides an
option to suppress rendering of the output associated with the specific instance of this class.

Available in OS X v10.8 and later.

17.74.2 Methods

17.74.3 available as boolean


Function: Whether this class is available.

Notes: Returns true on Mac OS X 10.7 and newer.

17.74.4 Constructor


Function: The default constructor.

17.74.5 itemTimeForHostTime(hostTimeInSeconds as Double) as CMTimeMBS


Function: Converts a host time (specified in seconds) to the item’s timebase.

Notes:
hostTimeInSeconds: A host time value, specified in seconds. For example, you might specify the time value
returned by the CACurrentMediaTime function or the timestamp from a CADisplayLink object for this
parameter.
17.74. **CLASS AVPLAYERITEMOUTPUTMBS**

Returns the equivalent time in the item’s timebase.

The timestamp associated with a CADisplayLink object represents the time of the most recent screen refresh, which is usually a time in the past. If you want to find the time associated with the next screen refresh, you need to increment the timestamp by the value in the display link’s duration property.

### 17.74.6 `itemTimeForMachAbsoluteTime(machAbsoluteTime as Int64) as CMTimeMBS`


**Function:** Converts a Mach host time to the item’s timebase.

**Notes:**
- `machAbsoluteTime`: The Mach host time to convert. You typically retrieve this value using the mach_absolute_time function.

Returns the equivalent time in the item’s timebase.

Available in OS X v10.8 and later.

### 17.74.7 Properties

#### 17.74.8 Handle as Integer


**Function:** The internal object reference.

**Notes:** (Read and Write property)

#### 17.74.9 `suppressesPlayerRendering as boolean`


**Function:** A Boolean indicating whether the player object renders the receiver’s output.

**Notes:**
- When the value of this property is false (the default), the player object handles the rendering of the receiver's associated output. You can change the value of this property to true if you want to suppress the rendering of the media data associated with this object.

Available in OS X v10.8 and later.

(Read and Write property)
17.75 class AVPlayerItemTrackMBS

17.75.1 class AVPlayerItemTrackMBS

Function: The track of a player item.
Notes:
You use an AVPlayerItemTrack object to modify the presentation state of an asset track (AVAssetTrack) being presented by an AVPlayer object.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

17.75.2 Methods

17.75.3 available as boolean

Function: Whether this class is available.
Notes: Returns true on Mac OS X 10.7 and newer.

17.75.4 Constructor

Function: The private constructor.

17.75.5 Properties

17.75.6 assetTrack as AVAssetTrackMBS

Function: The asset track for which the player item represents presentation state. (read-only)
Notes: (Read only property)

17.75.7 currentVideoFrameRate as Double

Function: For video media types, indicates the current frame rate of the track as it plays. (read-only)
Notes:
If the media type of the assetTrack is AVMediaTypeVideo, the property indicates the current frame rate of the track as it plays, in units of frames per second.

If the item is not playing, or if the media type of the track is not video, the value of this property is 0.0.

This property is not key-value observable.
Available in OS X v10.9 and later.
(Read only property)

17.75.8  Enabled as Boolean

**Function:** Indicates whether the track is enabled for presentation during playback.
**Notes:** (Read and Write property)

17.75.9  Handle as Integer

**Function:** The internal object reference.
**Notes:** (Read and Write property)
17.76 class AVPlayerItemVideoOutputMBS

17.76.1 class AVPlayerItemVideoOutputMBS

**Function:** The AVPlayerItemVideoOutput lets you coordinate the output of content associated with a Core Video pixel buffer.  
**Notes:**  
Available in OS X v10.8 and later.  
This class can call the outputSequenceWasFlushed and outputMediaDataWillChange events in the AVFoundationMBS class.  
Subclass of the AVPlayerItemOutputMBS class.

17.76.2 Methods

17.76.3 Constructor(pixelBufferAttributes as dictionary)

**Function:** Initializes and returns a video output object using the specified pixel buffer attributes.  
**Notes:** pixelBufferAttributes; The pixel buffer attributes required for video output. For a list of pixel buffer attributes you can include in this dictionary, see the CVPixelBuffer.h header file in the Core Video framework.

17.76.4 copyCIImageForItemTime(time as CMTimeMBS) as Variant

**Function:** Acquires and returns an image that is appropriate to display at the specified time.  
**Notes:**  
itemTime: The time at which you want to retrieve the image from the item.  
outItemTimeForDisplay: Optional, the time by which you intend to use the returned pixel buffer.  

Returns a pixel buffer containing the image data to display or nil if nothing should be displayed at the specified time. The caller is responsible for calling CVBufferRelease on the returned data when it is no longer needed.  

Typically, you call this method in response to a CVDisplayLink callback or a CADisplayLink delegate method call when the hasNewPixelBufferForItemTime method also returns true.

After calling this method, the video output object marks the pixel buffer data as having been acquired. This causes the hasNewPixelBufferForItemTime method to return false unless newer data becomes available.
17.76. **CLASS AVPLAYERITEMVIDEOOUTPUTMBS**

Returns CIImageMBS object.
Available in OS X v10.8 and later.
See also:

- 17.76.5 `copyCIImageForItemTime(time as CMTimeMBS, byref outItemTimeForDisplay as CMTimeMBS) as Variant` 3481

### 17.76.5 `copyCIImageForItemTime(time as CMTimeMBS, byref outItemTimeForDisplay as CMTimeMBS) as Variant`

**Function:** Acquires and returns an image that is appropriate to display at the specified time.
**Notes:**

itemTime: The time at which you want to retrieve the image from the item.
outItemTimeForDisplay: Optional, the time by which you intend to use the returned pixel buffer.

Returns a pixel buffer containing the image data to display or nil if nothing should be displayed at the specified time. The caller is responsible for calling CVBufferRelease on the returned data when it is no longer needed.

Typically, you call this method in response to a CVDisplayLink callback or a CADisplayLink delegate method call when the hasNewPixelBufferForItemTime method also returns true.

After calling this method, the video output object marks the pixel buffer data as having been acquired. This causes the hasNewPixelBufferForItemTime method to return false unless newer data becomes available.

Returns CIImageMBS object.
Available in OS X v10.8 and later.
See also:

- 17.76.4 `copyCIImageForItemTime(time as CMTimeMBS) as Variant` 3480

### 17.76.6 `copyPixelBufferForItemTime(time as CMTimeMBS) as CVPixelBufferMBS`

**Function:** Acquires and returns an image that is appropriate to display at the specified time.
**Notes:**

itemTime: The time at which you want to retrieve the image from the item.
outItemTimeForDisplay: Optional, the time by which you intend to use the returned pixel buffer.

Returns a pixel buffer containing the image data to display or nil if nothing should be displayed at the specified time. The caller is responsible for calling CVBufferRelease on the returned data when it is no
Typically, you call this method in response to a CVDisplayLink callback or a CADisplayLink delegate method call when the hasNewPixelBufferForItemTime method also returns true.

After calling this method, the video output object marks the pixel buffer data as having been acquired. This causes the hasNewPixelBufferForItemTime method to return false unless newer data becomes available.

Returns CVPixelBufferMBS object.
Available in OS X v10.8 and later.

See also:

- 17.76.6 copyPixelBufferForItemTime(time as CMTimeMBS) as CVPixelBufferMBS

17.76.7 copyPixelBufferForItemTime(time as CMTimeMBS, byref outItemTimeForDisplay as CMTimeMBS) as CVPixelBufferMBS


Function: Acquires and returns an image that is appropriate to display at the specified time.

Notes:

- itemTime: The time at which you want to retrieve the image from the item.
- outItemTimeForDisplay: Optional, the time by which you intend to use the returned pixel buffer.

Returns a pixel buffer containing the image data to display or nil if nothing should be displayed at the specified time. The caller is responsible for calling CVBufferRelease on the returned data when it is no longer needed.

Typically, you call this method in response to a CVDisplayLink callback or a CADisplayLink delegate method call when the hasNewPixelBufferForItemTime method also returns true.

After calling this method, the video output object marks the pixel buffer data as having been acquired. This causes the hasNewPixelBufferForItemTime method to return false unless newer data becomes available.

Available in OS X v10.8 and later.
See also:

- 17.76.6 copyPixelBufferForItemTime(time as CMTimeMBS) as CVPixelBufferMBS
17.76.8 hasNewPixelBufferForItemTime(time as CMTimeMBS) as boolean


**Function:** Returns a Boolean value indicating whether video output is available for the specified item time.

**Notes:**

itemTime: The item time to query. The time value is relative to the AVPlayerItem object with which the receiver is associated.

Returns true if there is available video output that has not been previously acquired or false if there is not.

This method returns true if the video data at the specified time has not yet been acquired or is different from the video that was acquired previously. If you require multiple objects to acquire video output from the same AVPlayerItem object, you should create separate AVPlayerItemVideoOutput objects for each. Available in OS X v10.8 and later.

17.76.9 requestNotificationOfMediaDataChangeWithAdvanceInterval(time as Double)


**Function:** Informs the receiver that the video output client is entering a quiescent state.

**Notes:**

interval: The amount of time to wait before notifying the delegate of the media change.

Call this method before you suspend your use of a CVDisplayLinkRef type or a CADisplayLink object. After the interval expires, the video output object notifies its delegate that it should resume the display link. If the interval value you specify is large, the delegate is notified as soon as possible rather than waiting.

Do not call this method repeatedly to force the delegate to be notified for each sample.

17.76.10 setDelegate


**Function:** Sets the delegate so the events are called for this instance.

**Notes:** The constructor (if used) sets this for you automatically.
17.77 class AVPlayerLayerMBS

17.77.1 class AVPlayerLayerMBS

Function: AVPlayerLayer is a subclass of CALayer to which an AVPlayer object can direct its visual output.
Notes:
The videoGravity property defines how the video content is displayed within the player layer’s bounds rect.

The value for the contents key of a player layer is opaque and effectively read-only.

During playback, AVPlayer may compensate for temporal drift between its visual output and its audible
output to one or more independently-clocked audio output devices by adjusting the timing of its associated
player layers. The effects of these adjustments are usually very small; however, clients that wish to remain
entirely unaffected by such adjustments may wish to place other layers for which timing is important into
independently timed subtrees of their layer trees.

You can create arbitrary numbers of player layers with the same AVPlayer object. Only the most-recently-
created player layer will actually display the video content on-screen.
Subclass of the CALayerMBS class.

17.77.2 Methods

17.77.3 Constructor(player as AVPlayerMBS)

Function: Creates a player layer to display the visual output of a specified player.
Notes: player: The player for which the player layer displays visual output.

17.77.4 isReadyForDisplay as boolean

Function: Indicates whether the first video frame has been made ready for display for the current item of
the associated player. (read-only)
Notes:
Use this property as an indicator of when best to show or animate-in a player layer into view. An player
layer may be displayed, or made visible, while this property is false, however the layer will not have any
user-visible content until the value becomes true.
This property remains false for a player’s currentItem whose asset contains no enabled video tracks.

17.77.5 \textbf{playerLayerWithPlayer(player as AVPlayerMBS) as AVPlayerLayerMBS}

\textit{MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.}
\textit{Function:} Returns a player layer to display the visual output of a specified player.
\textit{Notes:}
player: The player for which the player layer displays visual output.

Returns a player layer configured to display the visual output of player.

17.77.6 \textbf{videoRect as CGRectMBS}

\textit{MBS AVFoundation Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.}
\textit{Function:} The current size and position of the video image as displayed within the receiver’s bounds.
\textit{(read-only)}
\textit{Notes:} Available in OS X v10.9 and later.

17.77.7 \textbf{Properties}

17.77.8 \textbf{player as AVPlayerMBS}

\textit{MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.}
\textit{Function:} The player for which the player layer displays visual output.
\textit{Notes:} (Read and Write computed property)

17.77.9 \textbf{videoGravity as string}

\textit{MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.}
\textit{Function:} Specifies how the video is displayed within a player layer’s bounds.
\textit{Notes:}
Options are AVLayerVideoGravityResizeAspect, AVLayerVideoGravityResizeAspectFill, and AVLayerVideoGravityResize.
This property is animatable.
(Read and Write computed property)
17.78 class AVPlayerMBS

17.78.1 class AVPlayerMBS


Function: You use an AVPlayer object to implement controllers and user interfaces for single- or multiple-item playback.

Notes:
The multiple-item case supports advanced behaviors.

AVPlayer works equally well with local and remote media files, providing you with appropriate information about readiness to play or about the need to await additional data before continuing.

You can display the visual content of items played by an instance of AVPlayer in a CoreAnimation layer of class AVPlayerLayer; to synchronize real-time playback with other CoreAnimation layers, you can use AVSynchronizedLayer. You cannot use an instance of AVVideoCompositionCoreAnimationTool with an AVPlayer object; for offline rendering you should instead use AVAssetExportSession.

You can observe the status of a player using key-value observing. So that you can add and remove observers safely, AVPlayer serializes notifications of changes that occur dynamically during playback on a dispatch queue. By default, this queue is the main queue. To ensure safe access to a player’s nonatomic properties while dynamic changes in playback state may be reported, you must serialize access with the receiver’s notification queue. In the common case, such serialization is naturally achieved by invoking AVPlayer’s various methods on the main thread or queue.

17.78.2 Methods

17.78.3 addBoundaryTimeObserverForTimes(times() as CMTimeMBS, tag as Variant = nil) as AVPlayerTimeObserverMBS


Function: Requests invocation of a block when specified times are traversed during normal playback.

Notes:
times: An array of NSValue objects containing CMTime values representing the times at which to invoke block.
Returns an opaque object that you pass as the argument to removeTimeObserver to stop observation.

You must retain the returned value as long as you want the time observer to be invoked by the player. Each invocation of this method should be paired with a corresponding call to removeTimeObserver.
 Calls AVFoundationMBS.BoundaryTimeObserver event passing tag value.

With tag you can pass any value you like to the event later. This can be for example an object reference or a number in an array. Be aware that the reference to this tag value is kept until the event is called and can cause memory reference cycles.

17.78.4 addPeriodicTimeObserverForInterval(interval as CMTimeMBS, tag as Variant = nil) as AVPlayerTimeObserverMBS


Function: Requests invocation of a given block during playback to report changing time.

Notes:

interval: The interval of invocation of the block during normal playback, according to progress of the current time of the player.
The block takes a single parameter:

Returns an opaque object that you pass as the argument to removeTimeObserver: to cancel observation.

You must retain the returned value as long as you want the time observer to be invoked by the player. Each invocation of this method should be paired with a corresponding call to removeTimeObserver.

The AVFoundationMBS.PeriodicTimeObserver event is invoked periodically at the interval specified, interpreted according to the timeline of the current item. The block is also invoked whenever time jumps and whenever playback starts or stops. If the interval corresponds to a very short interval in real time, the player may invoke the block less frequently than requested. Even so, the player will invoke the event sufficiently often for the client to update indications of the current time appropriately in its end-user interface.

Special Considerations
Releasing the observer object without invoking removeTimeObserver: will result in undefined behavior.

With tag you can pass any value you like to the event later. This can be for example an object reference or a number in an array. Be aware that the reference to this tag value is kept until the event is called and can cause memory reference cycles.

17.78.5 available as boolean


Function: Whether this class is available.

Notes: Returns true on Mac OS X 10.7 and newer.
17.78.6  cancelPendingPrerolls

Function: Cancels the preloading of media data.
Notes: This method cancels any pending operations to prepare the render pipeline for the current item.
Available in OS X v10.8 and later.

17.78.7  Constructor

Function: The default constructor.
See also:
- 17.78.8 Constructor(File as folderitem)
- 17.78.9 Constructor(item as AVPlayerItemMBS)
- 17.78.10 Constructor(URL as string)

17.78.8  Constructor(File as folderitem)

Function: Initializes a new player to play a single audiovisual resource referenced by a given file.
Notes: File: A folderitem that identifies an audiovisual resource.
This method implicitly creates an AVPlayerItem object. You can get the player item using currentItem.
See also:
- 17.78.7 Constructor
- 17.78.9 Constructor(item as AVPlayerItemMBS)
- 17.78.10 Constructor(URL as string)

17.78.9  Constructor(item as AVPlayerItemMBS)

Function: Initializes a new player to play a given single audiovisual item.
Notes: You can use this method to play items for which you have an existing AVAsset object (see Constructor
17.78. CLASS AVPLAYERMBS

in AVPlayerItem).

See also:

- 17.78.7 Constructor
- 17.78.8 Constructor(File as folderitem)
- 17.78.10 Constructor(URL as string)

17.78.10 Constructor(URL as string)


Function: Initializes a new player to play a single audiovisual resource referenced by a given URL.

Notes:

URL: An URL that identifies an audiovisual resource.
This method implicitly creates an AVPlayerItem object. You can get the player item using currentItem.

See also:

- 17.78.7 Constructor
- 17.78.8 Constructor(File as folderitem)
- 17.78.9 Constructor(item as AVPlayerItemMBS)

17.78.11 mediaSelectionCriteriaForMediaCharacteristic(mediaCharacteristic as string) as AVPlayerMediaSelectionCriteriaMBS


Function: Returns the automatic selection criteria for media that has the specified media characteristic.

Notes:

mediaCharacteristic: The media characteristic for which the selection criteria is to be returned. Supported values include AVMediaCharacteristicAudible, AVMediaCharacteristicLegible, and AVMediaCharacteristicVisual.

Returns the automatic media selection criteria for mediaCharacteristic.

Available in OS X v10.9 and later.

17.78.12 pause


Function: Pauses playback.
Notes: This is the same as setting rate to 0.0.

17.78.13 play

**Function:** Begins playback of the current item.
**Notes:** This is the same as setting rate to 1.0.

17.78.14 playerWithFile(File as folderitem) as AVPlayerMBS

**Function:** Returns a new player to play a single audiovisual resource referenced by a given file.
**Notes:**
- File: A folderitem that identifies an audiovisual resource.
- Returns a new player initialized to play the audiovisual resource specified by folderitem.
- This method implicitly creates an AVPlayerItem object. You can get the player item using currentItem.

17.78.15 playerWithPlayerItem(item as AVPlayerItemMBS) as AVPlayerMBS

**Function:** Returns a new player initialized to play a given single audiovisual item
**Notes:**
- item: A player item.
- Returns a new player, initialized to play item.

You can use this method to play items for which an AVAsset object has previously been created (see Constructor in AVPlayerItem).

17.78.16 playerWithURL(URL as string) as AVPlayerMBS

**Function:** Returns a new player to play a single audiovisual resource referenced by a given URL.
**Notes:**
- URL: An URL that identifies an audiovisual resource.
- Returns a new player initialized to play the audiovisual resource specified by URL.
- This method implicitly creates an AVPlayerItem object. You can get the player item using currentItem.
17.78. **CLASS AVPLAYERMBS**

**17.78.17 prerollAtRate(rate as Double, tag as Variant)**


**Function:** Begins loading media data to prime the media pipelines for playback.

**Notes:**

rate: The playback rate to use when determining how much data to load.

Calls AVFoundationMBS.prerollAtRateFinished event when the player finishes the load attempt.

This method loads data starting at the item’s current playback time. The current rate for the playback item should always be 0 prior to calling this method. After the method calls the completion handler, you can change the item’s playback rate to begin playback.

If the player object is not ready to play (its status property is not AVPlayerStatusReadyToPlay), this method throws an exception.

Available in OS X v10.8 and later.

**17.78.18 removeTimeObserver(observer as AVPlayerTimeObserverMBS)**


**Function:** Cancels a previously registered time observer.

**Notes:**

observer: An object returned by a previous call to addPeriodicTimeObserverForInterval or addBoundaryTimeObserverForTimes.

Upon return, the caller is guaranteed that no new time observer event will begin executing. Depending on the calling thread and the queue used to add the time observer, an in-flight block may continue to execute after this method returns. You can guarantee synchronous time observer removal by enqueueing the call to removeTimeObserver on the main queue (do it in main event).

You should use this method to explicitly cancel each time observer added using addPeriodicTimeObserverForInterval and addBoundaryTimeObserverForTimes.

**17.78.19 replaceCurrentItemWithPlayerItem(item as AVPlayerItemMBS)**


**Function:** Replaces the player item with a new player item.

**Notes:**

item: A player item.
You can only use this method with players created without queues. If the player was not initialized with a single item and no queue, the method throws an exception.

The item replacement occurs asynchronously; observe the currentItem property to find out when the replacement will/did occur.

Special Considerations
The new item must have the same compositor as the item it replaces, or have no compositor.

17.78.20 seekToDate(date as date, fireEvent as boolean = false, tag as Variant = nil)

Function: Moves the playback cursor to the specified time.
Notes:
If FireEvent is true, the AVFoundationMBS.playerSeekToDateFinished event is called.

With tag you can pass any value you like to the event later. This can be for example an object reference or a number in an array. Be aware that the reference to this tag value is kept until the event is called and can cause memory reference cycles.

17.78.21 seekToTime(time as CMTimeMBS, fireEvent as boolean = false, tag as Variant = nil)

Function: Moves the playback cursor to a given time.
Notes:
time: The time to which to move the playback cursor.

Use this method to seek to a specified time for the current player item and be notified when the operation completes. If the seek request completes without being interrupted (either by another seek request or by any other operation), the AVFoundationMBS.playerSeekToTimeFinished is executed with the finished parameter set to true.

If another seek request is already in progress when you call this method, the event for the in-progress seek request is executed immediately with the finished parameter set to false.
If fireevent is true, the AVFoundationMBS.playerSeekToTimeFinished event is run later.

With tag you can pass any value you like to the event later. This can be for example an object reference or a number in an array. Be aware that the reference to this tag value is kept until the event is called and can cause memory reference cycles.

See also:

- 17.78.22 seekToTime(time as CMTimeMBS, toleranceBefore as CMTimeMBS, toleranceAfter as CMTimeMBS, fireEvent as boolean = false, tag as Variant = nil)

17.78.22 seekToTime(time as CMTimeMBS, toleranceBefore as CMTimeMBS, toleranceAfter as CMTimeMBS, fireEvent as boolean = false, tag as Variant = nil)


Function: Moves the playback cursor within a specified time bound and invokes the event when the seek operation has either been completed or been interrupted.

Notes:

If fireevent is true, the AVFoundationMBS.playerSeekToTimeFinished event is run later.

time: The time to which you would like to move the playback cursor.
toleranceBefore: The tolerance allowed before time.
toleranceAfter: The tolerance allowed after time.

Use this method to seek to a specified time for the current player item and to be notified when the seek operation is complete.

The time seeked to will be within the range \[ time-\text{beforeTolerance}, time+\text{afterTolerance} \], and may differ from the specified time for efficiency. If you pass kCMTimeZero for both toleranceBefore and toleranceAfter (to request sample accurate seeking), you may incur additional decoding delay.

Invoking this method with toleranceBefore set to kCMTimePositiveInfinity and toleranceAfter set to kCMTimePositiveInfinity is the same as invoking seekToTime:.

The completion handler for any prior seek request that is still in process will be invoked immediately with the finished parameter set to false. If the new request completes without being interrupted by another seek request or by any other operation the event will be invoked with the finished parameter set to true.

With tag you can pass any value you like to the event later. This can be for example an object reference or a number in an array. Be aware that the reference to this tag value is kept until the event is called and can cause memory reference cycles.

See also:
• 17.78.21 seekToTime(time as CMTimeMBS, fireEvent as boolean = false, tag as Variant = nil)  

17.78.23 setMediaSelectionCriteria(criteria as AVPlayerMediaSelectionCriteriaMBS, mediaCharacteristic as string)

Function: Applies automatic selection criteria for media that has the specified media characteristic.
Notes:
criteria: An instance of AVPlayerMediaSelectionCriteria that specifies the selection criteria.
mediaCharacteristic: The media characteristic for which the selection criteria are to be applied. Supported values include AVMediaCharacteristicAudible, AVMediaCharacteristicLegible, and AVMediaCharacteristicVisual.
Criteria will be applied to an AVPlayerItem instance when:

• It is made ready to play.
• Specific media selections are made by the AVPlayerItem instance using the method selectMediaOption in a different group. The automatic choice in one group may be influenced by a specific selection in another group.
• Underlying system preferences change, e.g. system language, accessibility captions.

Specific selections made by the AVPlayerItem instance using the method selectMediaOption method within any group will override automatic selection in that group until the player item receives a selectMediaOptionAutomaticallyInMediaSelectionGroup message.

Available in OS X v10.9 and later.

17.78.24 setRate(rate as Double, time as CMTimeMBS, HostTime as CMTimeMBS)

Function: Synchronizes the playback rate and time of the current item with an external source.
Notes:
rate: The playback rate for the item.
itemTime: The precise time at which to match playback of the item. To use the current item’s current time, specify kCMTimeInvalid.
hostClockTime: The host time at which to synchronize playback. If you specify kCMTimeInvalid, the rate and time are set together without any external synchronization.
This method adjusts the current item’s timebase so that the time in itemTime is in sync with the time in hostClockTime. Thus, if hostClockTime specifies a time in the past, the item’s timebase is adjusted to make it appear as if the item has been running at the specified rate since itemTime. And if hostClockTime specifies a time in the future, playback is adjusted backward (if possible) so that the value in itemTime occurs at the precise moment the host’s clock reaches the value in hostClockTime. If there is no content to play before the time specified by itemTime, playback holds until the two times come into sync.

This method does not ensure that media data is loaded before the timebase starts moving. However, if you specify a host time in the near future, that would give you some time to load the media data and prepare for playback.

17.78.25 Properties

17.78.26 ActionAtItemEnd as Integer

Function: The action to perform when an item has finished playing.
Notes: (Read and Write property)

17.78.27 appliesMediaSelectionCriteriaAutomatically as Boolean

Function: Indicates whether the receiver should apply the current selection criteria automatically to AVPlayerItems.
Notes:
By default, AVPlayer applies selection criteria based on system preferences. To override the default criteria for any media selection group, use setMediaSelectionCriteria method.
(Read and Write property)

17.78.28 audioOutputDeviceUniqueID as String

Function: Specifies the unique ID of the Core Audio output device used to play audio.
Notes:
By default, the value of this property is nil, indicating that the default audio output device is used. Otherwise the value of this property is an NSString containing the unique ID of the Core Audio output device to be used for audio output.
Core Audio’s kAudioDevicePropertyDeviceUID is a suitable source of audio output device unique IDs.
(Read and Write property)
17.78.29 **ClosedCaptionDisplayEnabled as boolean**


**Function:** Indicates whether the player uses closed captioning.

**Notes:** (Read and Write property)

17.78.30 **currentItem as AVPlayerItemMBS**


**Function:** The player’s current item. (read-only)

**Notes:** (Read only property)

17.78.31 **currentTime as CMTimeMBS**


**Function:** Returns the current time of the current item.

**Notes:** (Read only property)

17.78.32 **error as NSErrorMBS**


**Function:** If the receiver’s status is AVPlayerStatusFailed, this describes the error that caused the failure. (read-only)

**Notes:**

The value of this property is an error object that describes what caused the receiver to no longer be able to play items. If the receiver’s status is not AVPlayerStatusFailed, the value of this property is nil. (Read only property)

17.78.33 **Handle as Integer**


**Function:** The internal object reference.

**Notes:** (Read and Write property)
17.78. **CLASS AVPLAYERMBS**

### 17.78.34 Muted as boolean

**Function:** Indicates whether the audio output of the player is muted.
**Notes:** (Read and Write property)

### 17.78.35 rate as Double

**Function:** The current rate of playback.
**Notes:**
0.0 means "stopped", 1.0 means "play at the natural rate of the current item".
(Read and Write property)

### 17.78.36 status as Integer

**Function:** Indicates whether the player can be used for playback. (read-only)
**Notes:**
When the value of this property is AVPlayerStatusFailed, you can no longer use the player for playback and you need to create a new instance to replace it. If this happens, you can check the value of the error property to determine the nature of the failure.
This property is key value observable using key-value observing.
(Read only property)

### 17.78.37 volume as Double

**Function:** Indicates the current audio volume of the player.
**Notes:**
0.0 means "silence all audio," 1.0 means "play at the full volume of the current item."
(Read and Write property)
17.78.38 Constants

17.78.39 AVPlayerActionAtItemEndAdvance = 0

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the constants with actionAtItemEnd to indicate the action a player should take when it finishes playing.
Notes: Indicates that the player should advance to the next item, if there is one.

17.78.40 AVPlayerActionAtItemEndNone = 2

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the constants with actionAtItemEnd to indicate the action a player should take when it finishes playing.
Notes: Indicates that the player should do nothing.

17.78.41 AVPlayerActionAtItemEndPause = 1

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the constants with actionAtItemEnd to indicate the action a player should take when it finishes playing.
Notes: Indicates that the player should pause playing.

17.78.42 AVPlayerStatusFailed = 2

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the possible values of the status property, to indicate whether it can successfully play items.
Notes:
Indicates that the player can no longer play AVPlayerItem instances because of an error.
The error is described by the value of the player’s error property.

17.78.43 AVPlayerStatusReadyToPlay = 1

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the possible values of the status property, to indicate whether it can successfully play items.
Notes: Indicates that the player is ready to play AVPlayerItem instances.
17.78.44 AVPlayerStatusUnknown = 0

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the possible values of the status property, to indicate whether it can successfully play items. **Notes:** Indicates that the status of the player is not yet known because it has not tried to load new media resources for playback.


17.79 class AVPlayerMediaSelectionCriteriaMBS

17.79.1 class AVPlayerMediaSelectionCriteriaMBS

**Function:** The AVPlayerMediaSelectionCriteria class specifies the preferred languages and media characteristics for an AVPlayer instance.  
**Notes:** The languages and media characteristics of assets containing media selection options that an AVPlayer instance should attempt to select automatically when preparing and playing items. The languages and media characteristics are specified in the preferred order.

17.79.2 Methods

17.79.3 available as boolean

**Function:** Whether this class is available.

17.79.4 Constructor(preferredLanguages() as string, preferredMediaCharacteristics() as string)

**Function:** Returns an initialized media selection criteria instance with the specified settings.  
**Notes:**  
preferredLanguages: An array of strings containing language identifiers, in the preferred order. Can be nil.  
preferredMediaCharacteristics: An array of strings indicating additional media characteristics, the preferred order. Can be nil.  
Supported media characteristics are defined in AVMediaSelectionOption Constants and Media Characteristics.

Returns an initialized AVPlayerMediaSelectionCriteria instance.

When making selections, AVPlayer treats the preferredLanguages as the paramount criterion and the preference for preferredMediaCharacteristics as secondary.

The objects in the preferredLanguages array are indicated using BCP 47 language identifiers or ISO 639-2/T language codes.

If no option with any of the preferredLanguages is available, a selection is made according to the default enabling and disabling of media options as stored in the asset.
The preferredMediaCharacteristics are used when selecting media for the AVPlayer.

For example, desirable characteristics of legible media may include AVMediaCharacteristicTranscribesSpokenDialogForAccessibility and AVMediaCharacteristicDescribesMusicAndSoundForAccessibility.

Similarly, desirable characteristics of audible media may include AVMediaCharacteristicDescribesVideoForAccessibility.

If no option is found that possesses all of the desired characteristics, the option that best matches the desired characteristics will be selected.
Available in OS X v10.9 and later.

17.79.5 preferredLanguages as String()

**Function:** The array of preferred languages in the order of desirability. (read-only)
**Notes:** Available in OS X v10.9 and later.

17.79.6 preferredMediaCharacteristics as String()

**Function:** The array of preferred media characteristics in the order of desirability. (read-only)
**Notes:** Available in OS X v10.9 and later.

17.79.7 Properties

17.79.8 Handle as Integer

**Function:** The internal object reference.
**Notes:** (Read and Write property)
17.80 class AVPlayerTimeObserverMBS

17.80.1 class AVPlayerTimeObserverMBS

Function: The class for an observer.
Notes: You keep reference to this class, so you can cancel time observer later.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

17.80.2 Methods

17.80.3 Constructor

Function: The private constructor.

17.80.4 Destructor

Function: The destructor.
Notes: Automatically cancels this observer if it was not cancelled.
17.81. CLASS AVQUEUEPLAYERMBS

17.81. class AVQueuePlayerMBS

17.81.1 class AVQueuePlayerMBS

Function: AVQueuePlayer is a subclass of AVPlayer you use to play a number of items in sequence.
Notes: Subclass of the AVPlayerMBS class.

17.81.2 Methods

17.81.3 advanceToNextItem

Function: Ends playback of the current item and initiates playback of the next item in the player’s queue.
Notes: This method also removes the current item from the play queue.

17.81.4 appendItem(item as AVPlayerItemMBS)

Function: Places given player item in the queue.
Notes: item: The item to be inserted.

17.81.5 canAppendItem(item as AVPlayerItemMBS) as boolean

Function: Returns a Boolean value that indicates whether a given player item can be appended into the player’s queue.
Notes:
item: The AVPlayerItem object to test.

Returns true if item can be appended to the queue, otherwise false.
Adding the same item to a player at more than one position in the queue is not supported.
17.81.6 canInsertItem(item as AVPlayerItemMBS, afterItem as AVPlayerItemMBS = nil) as boolean

Function: Returns a Boolean value that indicates whether a given player item can be inserted into the player's queue.
Notes:
item: The AVPlayerItem object to test.
afterItem: The item that item is to follow in the queue. Pass nil to test whether item can be appended to the queue.

Returns true if item can be appended to the queue, otherwise false.
Adding the same item to a player at more than one position in the queue is not supported.

17.81.7 Constructor(items() as AVPlayerItemMBS)

Function: Initializes an instance of AVQueuePlayer by enqueuing the player items from a given array.
Notes:
items: An array of AVPlayerItem objects with which initially to populate the player’s queue.
Creates an instance of AVQueuePlayer initialized to play the player items in items.

17.81.8 insertItem(item as AVPlayerItemMBS, afterItem as AVPlayerItemMBS = nil)

Function: Places given player item after a specified item in the queue.
Notes:
item: The item to be inserted.
afterItem: The item that the newly inserted item should follow in the queue. Pass nil to append the item to the queue.

17.81.9 items as AVPlayerItemMBS()

Function: Returns an array of the currently enqueued items.
Notes: The array contains AVPlayerItem objects.
17.81. **CLASS AVQUEUEPLAYERMBS**

17.81.10 **queuePlayerWithItems(items() as AVPlayerItemMBS) as AVQueuePlayerMBS**

**Function:** Returns an instance of AVQueuePlayer initialized to play items from a given array.

**Notes:**

items: An array of AVPlayerItem objects with which initially to populate the player’s queue.

Returns an instance of AVQueuePlayer initialized to play the player items in items.

17.81.11 **removeAllItems**

**Function:** Removes all the items from the queue.
**Notes:** This has the side-effect of stopping playback by the player.

17.81.12 **removeItem(item as AVPlayerItemMBS)**

**Function:** Removes a given player item from the queue.
**Notes:**

item: The item to be removed.

If item is currently playing, this has the same effect as advanceToNextItem.
17.82 class AVSampleBufferDisplayLayerMBS

17.82.1 class AVSampleBufferDisplayLayerMBS

Function: AVSampleBufferDisplayLayer is a subclass of CALayer that can decompress and display compressed or uncompressed video frames.
Notes: Subclass of the CALayerMBS class.

17.82.2 Methods

17.82.3 Constructor

Function: The default constructor.

17.82.4 enqueueSampleBuffer(sampleBuffer as CMSampleBufferMBS)

Function: Sends a sample buffer for display.
Notes: If sampleBuffer has the kCMSampleAttachmentKey_DoNotDisplay attachment set to True, the frame will be decoded but not displayed. Otherwise, if sampleBuffer has the kCMSampleAttachmentKey_DisplayImmediately attachment set to True, the decoded image will be displayed as soon as possible, replacing all previously enqueued images regardless of their timestamps. Otherwise, the decoded image will be displayed at sampleBuffer’s output presentation timestamp, as interpreted by the control timebase (or the mach_absolute_time timeline if there is no control timebase). To schedule the removal of previous images at a specific timestamp, enqueue a marker sample buffer containing no samples, with the kCMSampleBufferAttachmentKey_EmptyMedia attachment set to kCFBooleanTrue. IMPORTANT NOTE: attachments with the kCMSampleAttachmentKey_prefix must be set via CMSampleBufferGetSampleAttachmentsArray and CFDictionarySetValue. Attachments with the kCMSampleBufferAttachmentKey_prefix must be set via CMSetAttachment.

17.82.5 flush

Function: Instructs the layer to discard pending enqueued sample buffers.
Notes: It is not possible to determine which sample buffers have been decoded, so the next frame passed to enqueueSampleBuffer should be an IDR frame (also known as a key frame or sync sample).
### 17.82.6 flushAndRemoveImage

**Function:** Instructs the layer to discard pending enqueued sample buffers and remove any currently displayed image.  
**Notes:** It is not possible to determine which sample buffers have been decoded, so the next frame passed to enqueueSampleBuffer should be an IDR frame (also known as a key frame or sync sample).

### 17.82.7 requestMediaDataWhenReady(tag as Variant = nil)

**Function:** Instructs the target to invoke a client-supplied block repeatedly, at its convenience, in order to gather sample buffers for display.  
**Notes:**  
The block should enqueue sample buffers to the layer either until the layer’s readyForMoreMediaData property becomes false or until there is no more data to supply. When the layer has decoded enough of the media data it has received that it becomes ready for more media data again, it will invoke the block again in order to obtain more. If this function is called multiple times, only the last call is effective.  
Call stopRequestingMediaData to cancel this request.  
Each call to requestMediaDataWhenReady should be paired with a corresponding call to stopRequestingMediaData. Releasing the AVSampleBufferDisplayLayer without a call to stopRequestingMediaData will result in undefined behavior. 
Calls SampleBufferDisplayLayerMediaDataWhenReady event on AVFoundationMBS class.  

With tag you can pass any value you like to the event later. This can be for example an object reference or a number in an array. Be aware that the reference to this tag value is kept until the event is called and can cause memory reference cycles.

### 17.82.8 stopRequestingMediaData

**Function:** Cancels any current requestMediaDataWhenReady call.  
**Notes:** This method may be called from outside the block or from within the block.

### 17.82.9 Properties

#### 17.82.10 isReadyForMoreMediaData as boolean

**Function:** Indicates the readiness of the layer to accept more sample buffers.
Notes:

AVSampleBufferDisplayLayer keeps track of the occupancy levels of its internal queues for the benefit of clients that enqueue sample buffers from non-real-time sources—i.e., clients that can supply sample buffers faster than they are consumed, and so need to decide when to hold back. Clients enqueuing sample buffers from non-real-time sources may hold off from generating or obtaining more sample buffers to enqueue when the value of readyForMoreMediaData is false. It is safe to call enqueueSampleBuffer when readyForMoreMediaData is false, but it is a bad idea to enqueue sample buffers without bound. To help with control of the non-real-time supply of sample buffers, such clients can use requestMediaDataWhenReady in order to specify a block that the layer should invoke whenever it’s ready for sample buffers to be appended. The value of readyForMoreMediaData will often change from false to true asynchronously, as previously supplied sample buffers are decoded and displayed.

This property is not key value observable.
(Read only property)

17.82.11 videoGravity as string


Notes:

Options are AVLayerVideoGravityResizeAspect, AVLayerVideoGravityResizeAspectFill and AVLayerVideoGravityResize. AVLayerVideoGravityResizeAspectFill is default.

See AVFoundationMBS class for a description of these options.
(Read and Write property)
17.83. **CLASS AVSYNCHRONIZEDLAYERMBS**

### 17.83 class AVSynchronizedLayerMBS

**MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** AVSynchronizedLayer a subclass of CALayer with layer timing that synchronizes with a specific AVPlayerItem.

**Notes:**

You can create an arbitrary number of synchronized layers from the same AVPlayerItem object.

A synchronized layer is similar to a CATransformLayer object in that it doesn’t display anything itself, it just confers state upon its layer subtree. AVSynchronizedLayer confers is timing state, synchronizing the timing of layers in its subtree with that of a player item.

Subclass of the CALayerMBS class.

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

### 17.83.2 Methods

#### 17.83.3 Constructor

**MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** The private constructor.

### 17.83.4 synchronizedLayerWithPlayerItem(playerItem as AVPlayerItemMBS) as AVSynchronizedLayerMBS

**MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Returns a new synchronized layer with timing synchronized with a given player item.

**Notes:**

playerItem: A player item.

Returns a new synchronized layer with timing synchronized with playerItem.
17.83.5 Properties

17.83.6 `playerItem` as `AVPlayerItemMBS`

**Function:** The player item to which the timing of the layer is synchronized.  
**Notes:** (Read and Write computed property)
17.84. class AVTextStyleRuleMBS

17.84.1 class AVTextStyleRuleMBS

Function: AVTextStyleRule represents a set of text styling attributes that can be applied to some or all of
the text of legible media, such as subtitles and closed captions.

17.84.2 Methods

17.84.3 available as boolean

Function: Whether this class is available.
Notes: Returns true on Mac OS X 10.9.

17.84.4 Constructor(textMarkupAttributes as dictionary)

Function: Creates an instance of AVTextStyleRule with the specified text markup attributes.
Notes: textMarkupAttributes: A dictionary with keys representing text style attributes that are specifiable
in text markup. Eligible keys are defined in <CoreMedia/CMTextMarkup.h>.
See also:
• 17.84.5 Constructor(textMarkupAttributes as dictionary, textSelector as string)

17.84.5 Constructor(textMarkupAttributes as dictionary, textSelector as string)

Function: Creates an instance of AVTextStyleRule with the specified text markup attributes and an iden-
tifier for the range or ranges of text to which the attributes should be applied.
Notes:
textMarkupAttributes: A dictionary with keys representing text style attributes that are specifiable in text
markup. Eligible keys are defined in <CoreMedia/CMTextMarkup.h>.
textSelector: An identifier for the range or ranges of text to which the attributes should be applied. Eligible
identifiers are determined by the format and content of the legible media. A value of nil indicates that the
textMarkupAttributes should be applied as default styles for all text unless overridden by content markup
or other applicable text selectors.
Returns an instance of AVTextStyleRule
See also:
17.84.4 Constructor (textMarkupAttributes as dictionary)

17.84.6 copy as AVTextStyleRuleMBS

Function: Creates a copy of the style rule.

17.84.7 textStyleRuleWithTextMarkupAttributes (textMarkupAttributes as Dictionary) as AVTextStyleRuleMBS

Function: Creates an instance of AVTextStyleRule with the specified text markup attributes.
Notes:
textMarkupAttributes: A dictionary with keys representing text style attributes that are specifiable in text
markup. Eligible keys are defined in `<CoreMedia/CMTextMarkup.h>`.
Returns an instance of AVTextStyleRule
Equivalent to invoking textStyleRuleWithTextMarkupAttributes with a value of nil for textSelector.
See also:

- 17.84.8 textStyleRuleWithTextMarkupAttributes (textMarkupAttributes as Dictionary, textSelector as string) as AVTextStyleRuleMBS

17.84.8 textStyleRuleWithTextMarkupAttributes (textMarkupAttributes as Dictionary, textSelector as string) as AVTextStyleRuleMBS

Function: Creates an instance of AVTextStyleRule with the specified text markup attributes and an identifier for the range
or ranges of text to which the attributes should be applied.
Notes:
textMarkupAttributes: A dictionary with keys representing text style attributes that are specifiable in text
markup. Eligible keys are defined in `<CoreMedia/CMTextMarkup.h>`.
textSelector: An identifier for the range or ranges of text to which the attributes should be applied. Eligible
identifiers are determined by the format and content of the legible media. A value of nil indicates that the
textMarkupAttributes should be applied as default styles for all text unless overridden by content markup
or other applicable text selectors.
Returns an instance of AVTextStyleRule
See also:

- 17.84.7 textStyleRuleWithTextMarkupAttributes (textMarkupAttributes as Dictionary) as AVTextStyleRuleMBS
17.84.9 Properties

17.84.10 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

17.84.11 textMarkupAttributes as Dictionary

Function: A dictionary with keys representing text style attributes that are specifiable in text markup.
Notes: Eligible keys and the expected types of their corresponding values are defined in <CoreMedia/CMTextMarkup.h>.
(Read only property)

17.84.12 textSelector as String

Function: A string that identifies the range or ranges of text to which the attributes should be applied.
Notes: A value of nil indicates that the textMarkupAttributes should be applied as default styles for all text unless overridden by content markup or other applicable text selectors. The syntax of text selectors is determined by the format of the legible media. Eligible selectors may be determined by the content of the legible media (e.g. CSS selectors that are valid for a specific WebVTT document).
(Read only property)
17.85  class AVTimeCodeMBS

17.85.1  class AVTimeCodeMBS

Function: The class for a time code.
Notes:
The data class used by AVAssetMBS.readTimeCodeObjects to store details on time codes.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

17.85.2  Methods

17.85.3  Constructor

Function: Private constructor.

17.85.4  Properties

17.85.5  duration as CMTimeMBS

Function: The duration.
Notes: (Read only property)

17.85.6  frameNumber as Int64

Function: The frame number.
Notes: (Read only property)

17.85.7  frameQuanta as UInt32

Function: Returns the frames/sec for timecode (eg. 30) OR frames/tick for counter mode
Notes: (Read only property)
17.85. CLASS AVTIMECODEMBS

17.85.8 presentationTimeStamp as CMTimeMBS

Function: The earliest presentation timestamp.
Notes: (Read only property)

17.85.9 tcFlag as UInt32

Function: The time zone flags.
Notes: Can be combination of

- kDropFrame 1
- k24HourMax 2
- kNegTimesOK 4

(Read only property)

17.85.10 timecode as String

Function: The timecode as formatted number.
Notes: Format is 2 digit hours, double colon, 2 digit minutes, double colon, 2 digit seconds, double colon, 2 digit frames.
e.g. "01:02:03:04"
(Read only property)

17.85.11 type as String

Function: The type of timecode.
Notes: Can be tmcd for 32-bit time code or tc64 for 64-bit timecode.
(Read only property)
17.86 class AVTimedMetadataGroupMBS

17.86.1 class AVTimedMetadataGroupMBS

**Function:** You use an AVTimedMetadataGroup object to represent a collection of metadata items.
**Notes:** AV Foundation also provides a mutable subclass, AVMutableTimedMetadataGroup.

17.86.2 Methods

17.86.3 Constructor(items() as AVMetadataItemMBS, timeRange as CMTimeRangeMBS)

**Function:** Returns a metadata group initialized with given metadata items.
**Notes:**
- items: An array of AVMetadataItem objects.
- timeRange: The time range of the metadata contained in items.

17.86.4 copy as AVTimedMetadataGroupMBS

**Function:** Creates a copy of the object.

17.86.5 items as AVMetadataItemMBS()

**Function:** The metadata items in the group. (read-only)
**Notes:** The array contains instances of AVMetadataItem.

17.86.6 timeRange as CMTimeRangeMBS

**Function:** The time range of the metadata. (read-only)
17.86.7 Properties

17.86.8 Handle as Integer


Function: The internal object reference.

Notes: (Read and Write property)
17.87  class AVURLAssetMBS

17.87.1  class AVURLAssetMBS

**Function:** AVURLAsset is a concrete subclass of AVAsset that you use to initialize an asset from an URL.  
**Example:**

```vba
dim f as FolderItem = SpecialFolder.Desktop.Child(”test.mov”)  
dim u as AVURLAssetMBS = AVURLAssetMBS.URLAssetWithFile(f)  
dim a() as AVAssetTrackMBS = u.tracks

MsgBox str(UBound(a)+1)+” tracks.”
```

**Notes:** Subclass of the AVAssetMBS class.

17.87.2  Methods

17.87.3  audiovisualMIMETypes as string()

**Function:** Returns an array of the MIME types the AVURLAsset class understands.  
**Example:**

```vba
MsgBox Join(AVURLAssetMBS.audiovisualMIMETypes, EndOfLine)
```

**Notes:** See also MimeTypeToFileExtensionMBS function.

17.87.4  audiovisualTypes as string()

**Function:** Returns an array of the file types the AVURLAsset class understands.  
**Example:**

```vba
MsgBox Join(AVURLAssetMBS.audiovisualTypes, EndOfLine)
```
17.87. **CLASS AVURLASSETMBS**

17.87.5 **compatibleTrackForCompositionTrack(compositionTrack as AVCompositionTrackMBS) as AVAssetTrackMBS**

**Function:** Returns an asset track from which any time range can be inserted into a given composition track.  
**Notes:**  
- compositionTrack: The composition track for which a compatible AVAssetTrack object is requested.  

Returns an asset track managed by the receiver from which any time range can be inserted into a given composition track.

You insert the track into using `insertTimeRange` (AVMutableCompositionTrack). This method is the logical complement of `mutableTrackCompatibleWithTrack`.

17.87.6 **Constructor(File as folderitem, options as dictionary = nil)**

**Function:** Initializes an asset for inspection of a resource referenced by a given file.  
**Example:**
```plaintext
dim f as FolderItem = SpecialFolder.Desktop.Child("test.mov")
dim u as AVURLAssetMBS = new AVURLAssetMBS(f)
MsgBox str(U.duration.Seconds) + " seconds long"
```

**Notes:**  
- file: A folderitem that references the container file to be represented by the asset.  
- options: A dictionary that contains options for the initialization of the asset.  
See also:

  - 17.87.7 Constructor(URL as string, options as dictionary = nil)

17.87.7 **Constructor(URL as string, options as dictionary = nil)**

**Function:** Initializes an asset for inspection of a resource referenced by a given URL.  
**Notes:**  
- URL: An URL that references the container file to be represented by the asset.  
- options: A dictionary that contains options for the initialization of the asset.  
See also:
17.87.8 isPlayableExtendedMIMEType(extendedMIMEType as string) as boolean

Function: Returns a Boolean value indicating whether an asset is playable with the codec(s) and container type specified in a given extended MIME type.
Notes: Returns true if an asset is playable with the codec(s) and container type specified in extendedMIMEType, otherwise false.
See also FileExtensionToMimeTypeMBS function.

17.87.9 URLAssetWithFile(File as folderitem, options as dictionary = nil) as AVURLAssetMBS

Function: Returns an asset for inspection of a resource referenced by a given file.
Example:
```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.mov")
dim u as AVURLAssetMBS = AVURLAssetMBS.URLAssetWithFile(f)
MsgBox str(u.duration.Seconds)+" seconds video."
```
Notes:
File: A folderitem that references the container file to be represented by the asset.
options: A dictionary that contains options for the initialization of the asset.

Returns an asset initialized for inspection of a resource referenced by folderitem.

17.87.10 URLAssetWithURL(URL as string, options as dictionary = nil) as AVURLAssetMBS

Function: Returns an asset for inspection of a resource referenced by a given URL.
Notes:
URL: An URL that references the container file to be represented by the asset.
options: A dictionary that contains options for the initialization of the asset.
17.87. **CLASS AVURLASSETMBS**

Returns an asset initialized for inspection of a resource referenced by URL.

### 17.87.11 Properties

#### 17.87.12 resourceLoader as AVAssetResourceLoaderMBS

**Function:** The resource loader associated with the asset. (read-only)  
**Notes:**  
During loading, the resource loader object may be asked to assist in the loading of a resource. For example, a resource that requires decryption might result in the resource loader being asked to provide the appropriate decryption keys. You can assign a delegate object to the resource loader object and use your delegate to intercept these requests and provide an appropriate response.  
Available on Mac OS X 10.9 or later.  
(Read only property)

#### 17.87.13 URL as string

**Function:** The URL with which the asset was initialized. (read-only)  
**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.mov")
dim u as AVURLAssetMBS = new AVURLAssetMBS(f)
MsgBox u.URL
```

**Notes:** (Read only property)
17.88 **class AVVideoCompositingMBS**

17.88.1 **class AVVideoCompositingMBS**

**Function:** The AVVideoCompositing protocol defines properties and methods that custom video compositors must implement.  
**Notes:**

For each AV Foundation object of class AVPlayerItem, AVAssetExportSession, AVAssetImageGenerator, or AVAssetReaderVideoCompositionOutput that has a non-nil value for its videoComposition property, and the value of the customVideoCompositorClass property of the AVVideoComposition is not nil, AV Foundation creates and uses an instance of that custom video compositor class to process the instructions contained in the AVVideoComposition.

The custom video compositor instance will be created when you assign videoComposition an instance of AVVideoComposition that’s associated with a different custom video compositor class than the object was previously using.

When creating instances of custom video compositors, AV Foundation initializes them by calling init and then makes them available as the value of the customVideoCompositor property of the object to which it was assigned. You then can do any additional setup or configuration to the custom compositor.

Custom video compositor instances will then be retained by the AV Foundation object for as long as the value of its videoComposition property indicates that an instance of the same custom video compositor class should be used, even if the value is changed from one instance of AVVideoComposition to another instance that’s associated with the same custom video compositor class.

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

17.88.2 **Methods**

17.88.3 **cancelAllPendingVideoCompositionRequests**

**Function:** Directs a custom video compositor object to cancel or finish all pending video composition requests.  
**Notes:**

Upon receiving this message, a custom video compositor must block until it has either cancelled all pending frame requests, and called the finishCancelledRequest method for each of them. If cancellation is not possible, the method must block until it has finished processing of all the frames and called the finishWithComposedVideoFrame method for each of them.

Available in OS X v10.9 and later.
17.88. CLASS AVVIDEOCOMPOSITINGMBS

17.88.4 Constructor

Function: The private constructor.
Notes:
Initializes an instance of the class that implements the video compositing protocol. (required)
This constructor is private to make sure you don’t create an object from this class by error. Please use
designated functions to create objects.

17.88.5 renderContextChanged(newRenderContext as AVVideoComposition-
RenderContextMBS)

Function: Invoked to notify the custom compositor that a composition will switch to a different render
context. (required)
Notes:
newRenderContext: The new render context that will be handling video composition.

Instances of classes implementing the AVVideoComposting protocol must implement this method to be noti-
fied when the AVVideoCompositionRenderContext instance handing a video composition changes. AVVideo-
CompositionRenderContext instances being immutable, such a change will occur every time there is a change
in the video composition parameters.
Available in OS X v10.9 and later.

17.88.6 startVideoCompositionRequest(asyncVideoCompositionRequest as AVAsyn-
chronousVideoCompositionRequestMBS)

Function: Directs a custom video compositor object to create a new pixel buffer composed asynchronously
from a collection of sources. (required)
Notes:
asyncVideoCompositionRequest: An instance of AVAsynchronousVideoCompositionRequest that provides
context for the requested composition.

The custom compositor is expected to invoke, either subsequently or immediately, the asyncVideoComposi-
tionRequest object’s finishWithComposedVideoFrame or finishWithError methods.

If you intend to finish rendering the frame after handling of this message returns, you must retain asyncVideo-
CompositionRequest until after composition is finished.
Note that if the custom compositor’s implementation of this method returns without finishing the composition immediately, it may be invoked again with another composition request before the prior request is finished; in such cases the custom compositor should be prepared to manage multiple composition requests.

If the rendered frame is exactly the same as one of the source frames, with no letterboxing, pillboxing or cropping needed, then the appropriate source pixel buffer may be returned, after CFRelease has been called on it.

Available in OS X v10.9 and later.

### 17.88.7 Properties

#### 17.88.8 Handle as Integer


**Function:** The internal object reference.

**Notes:** (Read and Write property)

#### 17.88.9 requiredPixelBufferAttributesForRenderContext as Dictionary


**Function:** Returns the pixel buffer attributes required by the video compositor for new buffers created for processing. (required) (read-only)

**Notes:**

The property is required to provide a `kCVPixelBufferPixelFormatTypeKey` key in the dictionary, along with attributes for which the compositor needs specific values to work properly. Omitted attributes will be supplied by the composition engine to allow for the best performance. If the attribute `kCVPixelBufferPixelFormatTypeKey` key is not in the dictionary an exception will be raised. The value of the `kCVPixelBufferPixelFormatTypeKey` is an array of `kCVPixelFormatType_*` constants as defined in `PixelFormat_Types`.

The value of `requiredPixelBufferAttributesForRenderContext` is retrieved prior to the creation of a new render context; the combination of the attributes in the returned value and the additional attributes supplied by the composition engine will be used in the creation of subsequent render context’s pixelBuffers.

This property is queried once before any composition request is sent to the compositor. Changing required buffer attributes afterwards is not supported.

Available in OS X v10.9 and later.

(Read only property)
17.88. CLASS AVVIDEOCOMPOSITINGMBS

17.88.10 sourcePixelBufferAttributes as Dictionary


**Function:** Returns the kinds of source frame pixel buffer attributes a video compositor can accept as input.

(required) (read-only)

**Notes:**

The property is required to provide a kCVPixelBufferPixelFormatTypeKey key in the dictionary, along with attributes for which the compositor needs specific values to work properly. Omitted attributes will be supplied by the composition engine to allow for the best performance. If the attribute kCVPixelBufferPixelFormatTypeKey key is not in the dictionary an exception will be raised. The value of the kCVPixelBufferPixelFormatTypeKey is an array of kCVPixelFormatType_* constants as defined in Pixel_Format_Types.

If the custom compositor is meant to be used with an AVVideoCompositionCoreAnimationTool created using the videoCompositionCoreAnimationToolWithAdditionalLayer:asTrackID: method, kCVPixelFormatType_32BGRA should be included as one of the supported pixel format types.

Missing attributes will be set by the composition engine to values allowing the best performance.

This property is queried once before any composition request is sent to the compositor. Changing source buffer attributes afterwards is not supported.

Available in OS X v10.9 and later.

(Read only property)
17.89 **class AVVideoCompositionCoreAnimationToolMBS**

17.89.1 **class AVVideoCompositionCoreAnimationToolMBS**

**Function:** You use an AVVideoCompositionCoreAnimationTool object to incorporate Core Animation in a video composition.  
**Notes:**  
Any animations will be interpreted on the video’s timeline, not real-time, so you should:

1. Set animations’ `beginTime` property to `1e-100` rather than `0` (which CoreAnimation replaces with `CACurrentMediaTime`);  
2. Set animations’ `removedOnCompletion` property to `false` so they are not automatically removed.

17.89.2 **Methods**

17.89.3 **available as boolean**

**Function:** Whether this class is available.  
**Notes:** Returns true on Mac OS X 10.7 and newer.

17.89.4 **Constructor**

**Function:** The default constructor.

17.89.5 **videoCompositionCoreAnimationToolWithAdditionalLayer(layer as CALayerMBS, trackID as Integer) as AVVideoCompositionCoreAnimationToolMBS**

**Function:** Add a Core Animation layer to the video composition.  
**Notes:**  
layer: The Core Animation layer to add.  
trackID: A track ID to identify the track.
trackID should not match any real trackID in the source.

Return a new animation tool for the layer.

You use this method to include a Core Animation layer as an individual track input in video composition. Video composition instructions should reference trackID where the rendered animation should be included.

17.89.6  videoCompositionCoreAnimationToolWithPostProcessingAsVideoLayer(videoLayer as CALayerMBS, animationLayer as CALayerMBS) as AVVideoCompositionCoreAnimationToolMBS

Function: Composes the composited video frames with a Core Animation layer.
Notes:
videoLayer: A video layer.
animationLayer: An animation layer.

Returns a new animation tool for the composition. Place composited video frames in videoLayer and render animationLayer to produce the final frame.

17.89.7  videoCompositionCoreAnimationToolWithPostProcessingAsVideoLayers(videoLayers() as CALayerMBS, animationLayer as CALayerMBS) as AVVideoCompositionCoreAnimationToolMBS

Function: Composes the composited video frames with the Core Animation layer.
Notes:
videoLayers: An array containing the video layers
animationLayer: The animation layer.

Returns a new AVVideoCompositionCoreAnimationTool instance with the composited video frames and the rendered animation layer.

Duplicates the composited video frames in each videoLayer and renders animationLayer to produce the final frame. The videoLayers should be in animationLayer’s sublayer tree.

The animationLayer should not come from, or be added to, another layer tree. Available in OS X v10.9 and later.
17.89.8 Properties

17.89.9 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)
17.90. **CLASS AVVIDEOCOMPOSITIONINSTRUCTIONMBS**

17.90 **class AVVideoCompositionInstructionMBS**

17.90.1 **class AVVideoCompositionInstructionMBS**


**Function:** An AVVideoCompositionInstruction object represents an operation to be performed by a compositor.

**Notes:**

An AVVideoComposition object maintains an array of instructions to perform its composition.

The is a specialty with the AVFoundation framework: There is a class and an interface with same name. The plugin only has one class for both. This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

17.90.2 **Methods**

17.90.3 **available as boolean**


**Function:** Whether this class is available.

**Notes:** Returns true on Mac OS X 10.7 and newer.

17.90.4 **Constructor**


**Function:** The private constructor.

17.90.5 **copy as AVVideoCompositionInstructionMBS**


**Function:** Creates a copy of the object.

17.90.6 **mutableCopy as AVMutableVideoCompositionInstructionMBS**


**Function:** Creates an editable copy of the object.
17.90.7 requiredSourceTrackIDs as Integer()

**Function:** An array of video track IDs required to compose frames for this instruction. (required) (read-only)
**Notes:** Available in OS X v10.9 and later.

17.90.8 Properties

17.90.9 containsTweening as Boolean

**Function:** A Boolean value that returns whether the composition contains tweening. (required) (read-only)
**Notes:**
If YES, rendering a frame from the same source buffers and the same composition instruction at two different compositionTime may yield different output frames. If NO, two such compositions will yield the same frame.

The media pipeline may be able to avoid some duplicate processing when this property is set to false. Available in OS X v10.9 and later.
(Read only property)

17.90.10 enablePostProcessing as boolean

**Function:** Indicates whether post processing is required for the video composition instruction. (read-only)
**Notes:**
A value of false indicates that no post processing is required for the whole duration of the video composition instruction. The composition process is more efficient if the value is false.

The value is true by default.
(Read only property)

17.90.11 Handle as Integer

**Function:** The internal object reference.
**Notes:** (Read and Write property)
17.90. CLASS AVVIDEOCOMPOSITIONINSTRUCTIONMBS

17.90.12 passthroughTrackID as Integer

**Function:** Returns the track ID if a single source frame should be displayed for the duration of the instruction. (required) (read-only)

**Notes:**
If for the duration of the instruction, the video composition result is one of the source frames, this property returns the corresponding track ID. The compositor won’t be run for the duration of the instruction and the proper source frame is used instead.

The dimensions, clean aperture and pixel aspect ratio of the source buffer are matched to the required values automatically.
Available in OS X v10.9 and later.
(Read only property)

17.90.13 timeRange as CMTimeRangeMBS

**Function:** The time range during which the instruction is effective. (read-only)

**Notes:**
If the time range is invalid, the video compositor will ignore it.
(Read only property)
17.91 class AVVideoCompositionLayerInstructionMBS

17.91.1 class AVVideoCompositionLayerInstructionMBS

**Function:** An AVVideoCompositionLayerInstruction object represents the transform and opacity ramps to apply to a given track.

17.91.2 Methods

17.91.3 available as boolean

**Function:** Whether this class is available.
**Notes:** Returns true on Mac OS X 10.7 and newer.

17.91.4 Constructor

**Function:** The default constructor.

17.91.5 copy as AVVideoCompositionLayerInstructionMBS

**Function:** Creates a copy of the object.

17.91.6 getCropRectangleRampForTime(time as CMTimeMBS, byref startCropRectangle as CGRectMBS, byref endCropRectangle as CGRectMBS, byref timeRange as CMTimeRangeMBS) as Boolean

**Function:** Obtains the crop rectangle ramp that includes the specified time.
**Notes:**
- time: If a ramp with a time range that contains the specified time has been set, information about the effective ramp for that time is supplied. Otherwise, information about the first ramp that starts after the specified time is supplied.
- startCropRectangle: A CGRect to receive the starting crop rectangle value for the crop rectangle ramp.
- endCropRectangle: A CGRect to receive the ending crop rectangle value for the crop rectangle ramp.
timeRange: A CMTimeRange to receive the time range of the crop rectangle ramp.

Returns false will be returned if the specified time is beyond the duration of the last crop rectangle ramp that has been set.
Available in OS X v10.9 and later.

17.91.7 getOpacityRampForTime(time as CMTimeMBS, byref startOpacity as Double, byref endOpacity as Double, byref timeRange as CMTimeRangeMBS) as boolean

Function: Obtains the opacity ramp that includes a specified time.
Notes:
time: If a ramp with a time range that contains the specified time has been set, information about the effective ramp for that time is supplied. Otherwise, information about the first ramp that starts after the specified time is supplied.
startOpacity: a float to receive the starting opacity value for the opacity ramp.
endOpacity: a float to receive the ending opacity value for the opacity ramp.
timeRange: a CMTimeRange to receive the time range of the opacity ramp.

Returns true if values are returned successfully, otherwise false. False is returned if time is beyond the duration of the last opacity ramp that has been set.

17.91.8 getTransformRampForTime(time as CMTimeMBS, byref startTransform as CGAffineTransformMBS, byref endTransform as CGAffineTransformMBS, byref timeRange as CMTimeRangeMBS) as boolean

Function: Obtains the transform ramp that includes a specified time.
Notes:
time
If a ramp with a time range that contains the specified time has been set, information about the effective ramp for that time is supplied. Otherwise, information about the first ramp that starts after the specified time is supplied.
startTransform: A float to receive the starting transform value for the transform ramp.
endTransform: A float to receive the ending transform value for the transform ramp.
timeRange: A CMTimeRange to receive the time range of the transform ramp.
Returns true if values are returned successfully, otherwise false. False is returned if time is beyond the duration of the last transform ramp that has been set.
17.91.9  mutableCopy as AVMutableVideoCompositionLayerInstructionMBS

Function: Creates an editable copy of the object.

17.91.10  trackID as Integer

Function: The trackID of the source track to which the compositor will apply the instruction. (read-only)

17.91.11  Properties

17.91.12  Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)
17.92. Class AVVideoCompositionMBS

17.92.1. Class AVVideoCompositionMBS

**Function:** An AVVideoComposition object represents an immutable video composition.
**Notes:** The AVFoundation framework also provides a mutable subclass, AVMutableVideoComposition, that you can use to create new videos.

17.92.2. Methods

17.92.3. animationTool as AVVideoCompositionCoreAnimationToolMBS

**Function:** A video composition tool to use with Core Animation in offline rendering. (read-only)
**Notes:**
This attribute may be nil.

You set an animation tool if you are using the composition in conjunction with AVAssetExportSession for offline rendering, rather than with AVPlayer.

17.92.4. available as boolean

**Function:** Whether this class is available.
**Notes:** Returns true on Mac OS X 10.7 and newer.

17.92.5. Constructor

**Function:** The constructor.

17.92.6. copy as AVVideoCompositionMBS

**Function:** Creates a copy of the object.
17.92.7 frameDuration as CMTimeMBS

**Function:** The interval for which the video composition should render composed video frames. (read-only)
**Notes:** This property only applies when the composition is enabled.

17.92.8 instructions as AVVideoCompositionInstructionMBS()

**Function:** The video composition instructions. (read-only)
**Notes:**
The array contains of instances of AVVideoCompositionInstruction.

For the first instruction in the array, timeRange.start must be less than or equal to the earliest time for
which playback or other processing will be attempted (typically kCMTimeZero). For subsequent instruc-
tions, timeRange.start must be equal to the prior instruction’s end time. The end time of the last instruction
must be greater than or equal to the latest time for which playback or other processing will be attempted
(typically be the duration of the asset with which the instance of AVVideoComposition is associated).

17.92.9 isValidForAsset(asset as AVAssetMBS, timerange as CMTimeRangeMBS) as boolean

**Function:** Indicates whether the time ranges of the composition’s instructions conform to validation re-
quirements.
**Notes:**
asset: An AVAsset object, if you wish to validate the time ranges of the instructions against the duration
of the asset and the track IDs of the layer instructions against the asset’s tracks. Pass nil to skip that
validation.
timeRange: A time range.
Only those instructions with time ranges that overlap with this time range will be validated. To validate all
instructions that may be used for playback or other processing, regardless of time range, pass CMTimeRange-
Make(kCMTimeZero, kCMTimePositiveInfinity).

Returns true if the time ranges of the composition’s instructions conform to validation requirements, other-
wise false.

This method may call events videoCompositionShouldContinueValidatingAfterFindingInvalidValueForKey,
videoCompositionShouldContinueValidatingAfterFindingInvalidTrackIDInInstruction, videoCompositionShould-
ContinueValidatingAfterFindingInvalidTimeRangeInInstruction or videoCompositionShouldContinueValidatin-
In the course of validation, the receiver will invoke its events (if there is one) with reference to any trouble spots in the video composition.

This method raises an exception if the event modifies the receiver’s array of instructions or the array of layer instructions of any AVVideoCompositionInstruction object contained therein during validation.

17.92.10 mutableCopy as AVMutableVideoCompositionMBS

**Function:** Creates an editable copy of the object.

17.92.11 renderSize as CGSizeMBS

**Function:** The size at which the video composition should render. (read-only)
**Notes:** This property only applies when the composition is enabled.

17.92.12 videoCompositionWithPropertiesOfAsset(asset as AVAssetMBS) as AVVideoCompositionMBS

**Function:** Creates and returns a video composition object configured to present the video tracks of the specified asset.
**Notes:**

- asset: The asset whose configuration matches the intended use of the video composition.

Returns a new video composition object.

This method creates the video composition object and configures it with the values and instructions suitable for presenting the video tracks of the specified asset. The returned object contains instructions that respect the spatial properties and time ranges of the specified asset’s video tracks. It also configures the object properties in the following way:

- The value of the frameDuration property is set to a value short enough to accommodate the greatest nominal frame rate value among the asset’s video tracks, as indicated by the nominalFrameRate prop-
The property of each track. If all of the asset tracks have a nominal frame rate of 0, a frame rate of 30 frames per second is used, with the frame duration set accordingly.

- The value assigned to the renderSize property depends on whether the asset is an AVComposition object. If it is, the value is set to the value of the naturalSize property of the composition. If it is not, the value is set to a value that encompasses all of the asset’s video tracks.

- The value of the renderScale property is set to 1.0.

- The value of the animationTool property is set to nil.

Available in OS X v10.9 and later.

**17.92.13 Properties**

**17.92.14 Handle as Integer**


*Function:* The internal object reference.

*Notes:* (Read and Write property)
17.93. CLASS AVVIDEOCOMPOSITIONRENDERCONTEXTMBS

17.93 class AVVideoCompositionRenderContextMBS

17.93.1 class AVVideoCompositionRenderContextMBS

**Function:** The AVVideoCompositionRenderContext class defines the context within which custom com- positors render new output pixels buffers.
**Notes:**
An instance of AVVideoCompositionRenderContext provides size and scaling information and offers a service for efficiently providing pixel buffers from a managed pool of buffers.
Available in OS X v10.9 and later.

17.93.2 Methods

17.93.3 available as boolean

**Function:** Whether this class is available.
**Notes:** Returns true on Mac OS X 10.9 or later.

17.93.4 Constructor

**Function:** The constructor.

17.93.5 newPixelBuffer as CVPixelBufferMBS

**Function:** Returns a pixel buffer to use for rendering.
**Notes:**
The buffer’s kCVImageBufferCleanApertureKey and kCVImageBufferPixelAspectRatioKey attachments are set to match the current composition processor properties.
You are responsible for calling CVBufferRelease on the pixel buffer.
Available in OS X v10.9 and later.
17.93.6 Properties

17.93.7 edgeWidths as AVEdgeWidthsMBS

Function: The thickness of the edge processing region on the left, top, right and bottom edges, in pixels.
(readonly)
Notes:
Available in OS X v10.9 and later.
(Read only property)

17.93.8 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

17.93.9 highQualityRendering as Boolean

Function: The rendering quality to use. (readonly)
Notes:
Specifies that the custom compositor should use higher quality, potentially slower algorithms.
Generally this property is true for non-real-time use cases.
Available in OS X v10.9 and later.
(Read only property)

17.93.10 pixelAspectRatio as AVPixelAspectRatioMBS

Function: The pixel aspect ratio for rendered frames. (readonly)
Notes:
Available in OS X v10.9 and later.
(Read only property)
17.93.11  renderScale as Double

**Function:** A scaling ratio that is applied when rendering frames. (read-only)
**Notes:**
Available in OS X v10.9 and later.
(Read only property)

17.93.12  renderTransform as CGAffineTransformMBS

**Function:** Transform to apply to the source image (read-only)
**Notes:**
The transform to apply to the source image incorporating the renderScale, pixelAspectRatio, and edgeWidths.
The coordinate system origin is the top left corner of the buffer.
Available in OS X v10.9 and later.
(Read only property)

17.93.13  size as CGSizeMBS

**Function:** The width and height for rendering frames. (read-only)
**Notes:**
Available in OS X v10.9 and later.
(Read only property)

17.93.14  videoComposition as AVVideoCompositionMBS

**Function:** The video composition being rendered.
**Notes:**
Available in OS X v10.9 and later.
(Read only property)
17.94 class CMFormatDescriptionMBS

17.94.1 class CMFormatDescriptionMBS

**Function:** The class for a format description.
**Notes:**
CMFormatDescriptions are immutable Core Foundation objects that describe media data of various types, including audio, video, andmuxed media data. There are two types of API: media-type-agnostic APIs (supported by all CMFormatDescriptions) and media-type-specific APIs. The media-type-agnostic APIs are prefixed with CMFormatDescription, and the media-type-specific APIs are prefixed with CMAudioFormatDescription CMVideoFormatDescription, and so on.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

17.94.2 Methods

17.94.3 Constructor

**Function:** The private constructor.

17.94.4 Equal(other as CMFormatDescriptionMBS) as boolean

**Function:** Checks if two descriptions are equal.

17.94.5 Extensions as Dictionary

**Function:** Queries extensions to the description.

17.94.6 MediaSubType as string

**Function:** Queries media sub type.
17.94. **CLASS CMFORMATDESCRIPTIONMBS**

17.94.7 **MediaType as string**

**Function:** Queries media type.

17.94.8 **Name as string**

**Function:** Queries the name of this format description.

17.94.9 **Properties**

17.94.10 **Handle as Integer**

**Function:** The internal object reference.  
**Notes:** (Read and Write property)
17.95 class CMSampleBufferMBS

17.95.1 class CMSampleBufferMBS


**Function:** CMSampleBuffers are CF objects containing zero or more compressed (or uncompressed) samples of a particular media type (audio, video, muxed, etc), that are used to move media sample data through the media system.

**Notes:**

A CMSampleBuffer can contain a CMBlockBuffer of one or more media samples or a CVImageBuffer, a reference to the format description for the stream of CMSampleBuffers, size and timing information for each of the contained media samples, and both buffer-level and sample-level attachments. The buffer-level attachments of a CMSampleBuffer are distinct from the attachments of its contained CMBlockBuffer. An example of a sample-level attachment is an annotation about video frame dependencies (eg. "droppable", "other frames depend on me", "I depend on other frames", etc). Each sample (video frame) in the CMSampleBuffer would need its own attachment in this case. Another sample-level attachment example is SMPTE timecode acquired during capture. To get and set a CMSampleBuffer's buffer-level attachments, use the APIs in in CMAttachmentBearer.h (CMGetAttachment et al).

It is possible for a CMSampleBuffer to describe samples it does not yet contain. For example, some media services may have access to sample size, timing and format information before the data is read. Such services may create CMSampleBuffers with that information and insert them into queues early, and attach (or fill) the CMBlockBuffers of media data later, when the data becomes ready. To this end, CMSampleBuffers have the concept of data-readiness, which can be tested, set, forced to become ready "now", etc. It is also possible for a CMSampleBuffer to contain nothing but a special buffer-level attachment that describes a media stream event (eg. "discontinuity: drain and reset decoder before processing the next CMSampleBuffer"). Such a special attachment can also be attached to regular CMSampleBuffers (ie. that contain media sample data), and if so, the event it describes is defined to occur after the samples in that CMSampleBuffer.

The MBS Plugin implements a subset of what's available. If you need more, please do not hesitate to contact us.

This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

17.95.2 Methods

17.95.3 Constructor


**Function:** The private constructor.
17.95.4  Copy as CMSampleBufferMBS

Function: Creates a copy of the object.

17.95.5  CopySampleBufferForRange(pos as Integer, len as Integer) as CMSampleBufferMBS

Function: Creates a CMSampleBuffer containing a range of samples from an existing CMSampleBuffer.
Notes: Samples containing non-interleaved audio are currently not supported.

17.95.6  Invalidate

Function: Makes the sample buffer invalid, calling any installed invalidation callback.
Notes: An invalid sample buffer cannot be used – all accessors will return kCMSampleBufferError_Invalidated.
It is not a good idea to do this to a sample buffer that another module may be accessing concurrently.
Example of use: the invalidation callback could cancel pending I/O.

17.95.7  MakeDataReady

Function: Makes a CMSampleBuffer's data ready, by calling the client’s MakeDataReadyCallback.
Notes: The CMSampleBufferMakeDataReadyCallback is passed in by the client during creation. It must return 0 if successful, and in that case, CMSampleBufferMakeDataReady will set the data readiness of the CMSampleBuffer to true. Example of usage: when it is time to actually use the data. Example of callback routine: a routine to force a scheduled read to complete. If the CMSampleBuffer is not ready, and there is no CMSampleBufferMakeDataReadyCallback to call, kCMSampleBufferError_BufferNotReady will be returned. Similarly, if the CMSampleBuffer is not ready, and the CMSampleBufferMakeDataReadyCallback fails and returns an error, kCMSampleBufferError_BufferNotReady will be returned.

17.95.8  SampleSize(index as Integer) as UInt64

MBS AVFoundation Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Returns the size in bytes of a specified sample in a CMSampleBuffer.
Notes:
Size in bytes of the specified sample in the CMSampleBuffer. If the sample index is not in the range 0 .. numSamples-1, a size of 0 will be returned. If there are no sample sizes in this CMSampleBuffer, a size of 0 will be returned. This will be true, for example, if the samples in the buffer are non-contiguous (eg. non-interleaved audio, where the channel values for a single sample are scattered through the buffer), or if this CMSampleBuffer contains a CVImageBuffer.

17.95.9 SetDataReady

**Function:** Marks a CMSampleBuffer’s data as “ready”. 
**Notes:** There is no way to undo this operation. The only way to get an ”unready” CMSampleBuffer is to call CMSampleBufferCreate with the dataReady parameter set to false. Example of usage: in a read completion routine.

17.95.10 Properties

17.95.11 DataIsReady as boolean

**Function:** Returns whether or not a CMSampleBuffer’s data is ready. 
**Notes:** 
Whether or not the CMSampleBuffer’s data is ready. True is returned for special marker buffers, even though they have no data. False is returned if there is an error.  
(Read only property)

17.95.12 DecodeTimeStamp as CMTimeMBS

**Function:** Returns the numerically earliest decode timestamp of all the samples in a CMSampleBuffer. 
**Notes:** 
The returned decode timestamp is always the decode timestamp of the first sample in the buffer, since even out-of-presentation-order samples are expected to be in decode order in the buffer. Numerically earliest sample decode timestamp in the CMSampleBuffer. kCMTimeInvalid is returned if there is an error.  
(Read only property)
17.95.13  Duration as CMTimeMBS

Function: Returns the total duration of a CMSampleBuffer.
Notes:
If the buffer contains out-of-presentation-order samples, any gaps in the presentation timeline are not rep-
resented in the returned duration.
The returned duration is simply the sum of all the individual sample durations.
Returns the duration of the CMSampleBuffer. kCMTimeInvalid is returned if there is an error.
(Read only property)

17.95.14  FormatDescription as CMFormatDescriptionMBS

Function: Returns the format description of the samples in a CMSampleBuffer.
Notes:
Nil is returned if there is an error.
(Read only property)

17.95.15  Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

17.95.16  ImageBuffer as CVImageBufferMBS

Function: Returns a CMSampleBuffer’s CVImageBuffer of media data.
Notes:
The result will be nil if the CMSampleBuffer does not contain a CVImageBuffer, if the CMSampleBuffer
contains a CMBlockBuffer, or if there is some other error.
(Read only property)

17.95.17  IsValid as boolean

Function: Queries whether a sample buffer is still valid.
Notes:
Returns false if buffer is nil or Invalidate was called, true otherwise.
Does not perform any kind of exhaustive validation of the sample buffer.
(Read only property)

17.95.18 Lasterror as Integer

MBS AVFoundation Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The last error code.
Notes:
See error code constants.
Looking with debugger on properties of this class will change the lasterror code!
(Read and Write property)

17.95.19 NumberOfSamples as Integer

Function: Returns the number of media samples in a CMSampleBuffer.
Notes:
The number of media samples in the CMSampleBuffer. 0 is returned if there is an error.
(Read only property)

17.95.20 OutputDecodeTimeStamp as CMTimeMBS

Function: Returns the output decode timestamp of the CMSampleBuffer.
Notes:
For consistency with OutputPresentationTimeStamp, this is calculated as: OutputPresentationTimeStamp + ((DecodeTimeStamp - PresentationTimeStamp) / SpeedMultiplier).
CMInvalidTime is returned if there is an error.
(Read only property)

17.95.21 OutputDuration as CMTimeMBS

Function: Returns the output duration of a CMSampleBuffer.
Notes:
The OutputDuration is the duration minus any trimmed duration, all divided by the SpeedMultiplier: \((\text{Duration} - \text{TrimDurationAtStart} - \text{TrimDurationAtEnd}) / \text{SpeedMultiplier}\)

Returns the output duration of the CMSampleBuffer. kCMTimeInvalid is returned if there is an error.
(Read only property)

### 17.95.22 OutputPresentationTimeStamp as CMTimeMBS


**Function:** Returns the output presentation timestamp of the CMSampleBuffer.

**Notes:**

The output presentation timestamp is the time at which the decoded, trimmed, stretched and possibly reversed samples should commence being presented.

If CMSampleBufferSetOutputPresentationTimeStamp has been called to explicitly set the output PTS, CMSampleBufferGetOutputPresentationTimeStamps returns it.

If not, CMSampleBufferGetOutputPresentationTimeStamps calculates its result as \((\text{PresentationTimeStamp} + \text{TrimDurationAtStart})\) unless kCMSampleBufferAttachmentKey.Reverse is kCFBooleanTrue, in which case it calculates the result as \((\text{PresentationTimeStamp} + \text{Duration} - \text{TrimDurationAtEnd})\).

These are generally correct for un-stretched, un-shifted playback.

For general forward playback in a scaled edit, the OutputPresentationTimeStamp should be set to:
\(\left(\frac{\text{PresentationTimeStamp} + \text{TrimDurationAtStart} - \text{EditStartMediaTime}}{\text{EditSpeedMultiplier}}\right) + \text{EditStartTrackTime}\).

For general reversed playback:
\(\left(\frac{\text{PresentationTimeStamp} + \text{Duration} - \text{TrimDurationAtEnd} - \text{EditStartMediaTime}}{\text{EditSpeedMultiplier}}\right) + \text{EditStartTrackTime}\).

Returns kCMTimeInvalid is returned if there is an error.
(Read and Write property)

### 17.95.23 PresentationTimeStamp as CMTimeMBS


**Function:** Returns the numerically earliest presentation timestamp of all the samples in a CMSampleBuffer.

**Notes:**

For in-presentation-order samples, this is the presentation timestamp of the first sample.

For out-of-presentation-order samples, this is the presentation timestamp of the sample that will be presented first, which is not necessarily the first sample in the buffer.

Returns numerically earliest sample presentation timestamp in the CMSampleBuffer. kCMTimeInvalid is returned if there is an error.
(Read only property)
17.95.24  **Text as String**

MBS AVFoundation Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  
**Function:** For text samples, provides the text.  
**Notes:** (Read only property)

17.95.25  **TotalSampleSize as UInt64**

**Function:** Returns the total size in bytes of sample data in a CMSampleBuffer.  
**Notes:**  
If there are no sample sizes in this CMSampleBuffer, a size of 0 will be returned.  
(Read only property)

17.95.26  **Constants**

17.95.27  **kAllocationFailed = -12730**

MBS AVFoundation Plugin, Plugin Version: 15.0.  
**Function:** One of the error code constants.  
**Notes:** An allocation failed.

17.95.28  **kAlreadyHasDataBuffer = -12732**

MBS AVFoundation Plugin, Plugin Version: 15.0.  
**Function:** One of the error code constants.  
**Notes:** Attempt was made to set a dataBuffer on a CMSampleBuffer that already has one.

17.95.29  **kArrayTooSmall = -12737**

MBS AVFoundation Plugin, Plugin Version: 15.0.  
**Function:** One of the error code constants.  
**Notes:** Output array was not large enough for the array being requested.

17.95.30  **kBufferHasNoSampleSizes = -12735**

MBS AVFoundation Plugin, Plugin Version: 15.0.  
**Function:** One of the error code constants.  
**Notes:** Attempt to get sample size information when there was none.
17.95.31  \text{kBufferHasNoSampleTimingInfo} = -12736

MBS AVFoundation Plugin, Plugin Version: 15.0. \textbf{Function}: One of the error code constants.  
\textbf{Notes}: Attempt to get sample timing information when there was none.

17.95.32  \text{kBufferNotReady} = -12733

MBS AVFoundation Plugin, Plugin Version: 15.0. \textbf{Function}: One of the error code constants.  
\textbf{Notes}: Buffer could not be made ready.

17.95.33  \text{kCannotSubdivide} = -12739

MBS AVFoundation Plugin, Plugin Version: 15.0. \textbf{Function}: One of the error code constants.  
\textbf{Notes}: Sample buffer does not contain sample sizes. This can happen when the samples in the buffer are non-contiguous (e.g. non-interleaved audio, where the channel values for a single sample are scattered through the buffer).

17.95.34  \text{kInvalidated} = -12744

MBS AVFoundation Plugin, Plugin Version: 15.0. \textbf{Function}: One of the error code constants.  
\textbf{Notes}: the sample buffer was invalidated.

17.95.35  \text{kInvalidEntryCount} = -12738

MBS AVFoundation Plugin, Plugin Version: 15.0. \textbf{Function}: One of the error code constants.  
\textbf{Notes}: Timing info or size array entry count was not 0, 1, or numSamples.

17.95.36  \text{kInvalidMediaFormat} = -12743

MBS AVFoundation Plugin, Plugin Version: 15.0. \textbf{Function}: One of the error code constants.  
\textbf{Notes}: The format of the given media does not match the given format description (e.g. a format description paired with a CVImageBuffer that fails CMVideoFormatDescriptionMatchesImageBuffer).
17.95.37 kInvalidMediaTypeForOperation = -12741

MBS AVFoundation Plugin, Plugin Version: 15.0. **Function:** One of the error code constants.  
**Notes:** The media type specified by a format description is not valid for the given operation (eg. a CMSampleBuffer with a non-audio format description passed to GetAudioStreamPacketDescriptions).

17.95.38 kInvalidSampleData = -12742

MBS AVFoundation Plugin, Plugin Version: 15.0. **Function:** One of the error code constants.  
**Notes:** Buffer contains bad data. Only returned by CMSampleBuffer functions that inspect its sample data.

17.95.39 kRequiredParameterMissing = -12731

MBS AVFoundation Plugin, Plugin Version: 15.0. **Function:** One of the error code constants.  
**Notes:** Nil or 0 was passed for a required parameter.

17.95.40 kSampleIndexOutOfRange = -12734

MBS AVFoundation Plugin, Plugin Version: 15.0. **Function:** One of the error code constants.  
**Notes:** Sample index was not between 0 and numSamples-1, inclusive.

17.95.41 kSampleTimingInfoInvalid = -12740

MBS AVFoundation Plugin, Plugin Version: 15.0. **Function:** One of the error code constants.  
**Notes:** Buffer unexpectedly contains a non-numeric sample timing info.
17.96. CLASS CMTimeMappingMBS

17.96. class CMTimeMappingMBS

Function: A class to specify the mapping of a segment of one time line into another.
Notes: A CMTimeMapping specifies the mapping of a segment of one time line (called the source) into another time line (called the target). When used for movie edit lists, the source time line is the media and the target time line is the track or movie.

17.96.2 Methods

17.96.3 Constructor(source as CMTimeRangeMBS, target as CMTimeRangeMBS)

Function: Initializes the time mapping object.

17.96.4 Properties

17.96.5 Source as CMTimeRangeMBS

Function: The time range on the source time line.
Notes:
For an empty edit, source.start is an invalid CMTime, in which case source.duration is ignored. Otherwise, source.start is the starting time within the source, and source.duration is the duration of the source timeline to be mapped to the target time range.
(Read and Write property)

17.96.6 Target as CMTimeRangeMBS

Function: The time range on the target time line.
Notes:
If target.duration and source.duration are different, then the source segment should be played at the rate source.duration /target.duration to fit.
(Read and Write property)
17.97  class CMTimeMBS

17.97.1  class CMTimeMBS


Function:  CMTime is a class representing times (either timestamps or durations).

Example:

dim t as new CMTimeMBS(1200, 600)
MsgBox t.Description

Notes:

A CMTime is represented as a rational number, with a numerator (an int64 value), and a denominator (an
int32 timescale). Conceptually, the timescale specifies the fraction of a second each unit in the numerator
occupies. Thus if the timescale is 4, each unit represents a quarter of a second; if the timescale is 10, each
unit represents a tenth of a second, and so on. In addition to a simple time value, a CMTime can represent
non-numeric values: +infinity, -infinity, and indefinite. Using a flag CMTime indicates whether the time
been rounded at some point.

CMTimes contain an epoch number, which is usually set to 0, but can be used to distinguish unrelated time-
lines: for example, it could be incremented each time through a presentation loop, to differentiate between
time N in loop 0 from time N in loop 1.

Additional functions for managing dates and times are described in Time Utilities Reference. Note that CM-
Time is designed for media timelines whereas functions in Time Utilities Reference are designed for working
with wall-clock time in Core Foundation framework; see also AV Foundation Constants Reference.

17.97.2  Methods

17.97.3  AbsoluteValue as CMTimeMBS


Function:  Returns the absolute value of a CMTime.

Notes:  Same as the argument time, with sign inverted if negative.

17.97.4  Add(other as CMTimeMBS) as CMTimeMBS


Function:  Returns the sum of two CMTimes.

Notes:
17.97. CLASS CMTIMEMBS

self: CMTime to be added.
other: Another CMTime to be added.
Returns the sum of the two CMTimes \((addend1 + addend2)\).

If the operands both have the same timescale, the timescale of the result will be the same as the operands' timescale. If the operands have different timescales, the timescale of the result will be the least common multiple of the operands' timescales. If that LCM timescale is greater than \(k\text{CMTimeMaxTimescale}\), the result timescale will be \(k\text{CMTimeMaxTimescale}\), and default rounding will be applied when converting the result to this timescale. If the result value overflows, the result timescale will be repeatedly halved until the result value no longer overflows. Again, default rounding will be applied when converting the result to this timescale. If the result value still overflows when timescale == 1, then the result will be either positive or negative infinity, depending on the direction of the overflow.

If any rounding occurs for any reason, the result’s kCMTimeFlagsHasBeenRounded flag will be set. This flag will also be set if either of the operands has kCMTimeFlagsHasBeenRounded set. If either of the operands is invalid, the result will be invalid. If the operands are valid, but just one operand is infinite, the result will be similarly infinite. If the operands are valid, and both are infinite, the results will be as follows:

\[
\begin{align*}
+\infty + +\infty &= +\infty \\
-\infty + -\infty &= -\infty \\
+\infty + -\infty &= \text{invalid} \\
-\infty + +\infty &= \text{invalid}
\end{align*}
\]

If the operands are valid, not infinite, and either or both is indefinite, the result will be indefinite. If the two operands are numeric (i.e., valid, not infinite, not indefinite), but have different nonzero epochs, the result will be invalid. If they have the same nonzero epoch, the result will have epoch zero (a duration). Times in different epochs cannot be added or subtracted, because epoch length is unknown. Times in epoch zero are considered to be durations and can be added to times in other epochs. Times in different epochs can be compared, however, because numerically greater epochs always occur after numerically lesser epochs.

17.97.5 Compare(other as CMTimeMBS) as Integer

Function: Returns the numerical relationship of two CMTimes.
Notes:
self: First CMTime in comparison.
other: Second CMTime in comparison.

Returns the numerical relationship of the two CMTimes.
-1 is returned if time1 is less than time2.
1 is returned if time1 is greater than time2.
0 is returned if time1 and time2 are equal.

If the two CMTimes are numeric (i.e., not invalid, infinite, or indefinite), and have different epochs, it is
considered that times in numerically larger epochs are always greater than times in numerically smaller
epochs. Since this routine will be used to sort lists by time, it needs to give all values (even invalid and
indefinite ones) a strict ordering to guarantee that sort algorithms terminate safely. The order chosen is
somewhat arbitrary: -infinity < all finite values < indefinite < +infinity < invalid

Invalid CMTimes are considered to be equal to other invalid CMTimes, and greater than any other CM-
Time. Positive infinity is considered to be less than any invalid CMTime, equal to itself, and greater than
any other CMTime. An indefinite CMTime is considered to be less than any invalid CMTime, less than
positive infinity, equal to itself, and greater than any other CMTime. Negative infinity is considered to be
equal to itself, and less than any other CMTime.

17.97.6 Constructor(Value as Int64, Timescale as Integer, Flags as Integer = 1, Epoch as Int64 = 0)

Function: Creates a new time object with the given field values.
Example:

    dim t as new CMTimeMBS(1200, 600)
    MsgBox t.Description

17.97.7 ConvertScale(newTimescale as Integer, RoundingMethod as Integer = 1) as CMTimeMBS

Function: Returns a new CMTime containing the source CMTime converted to a new timescale (rounding
as requested).
Example:

    dim t as CMTimeMBS = CMTimeMBS.MakeWithSeconds(123.4, 600)
    dim u as CMTimeMBS = t.ConvertScale(300, t.kCMTimeRoundingMethod_Default)
    MsgBox t.Description+EndOfLine+u.Description

Notes:
17.97. CLASS CMTIMEMBS

self: Source CMTime.
newTimescale: The timescale to which the source CMTime is converted.
RoundingMethod: The requested rounding method.

Returns the converted CMTime.
If the value needs to be rounded, the kCMTimeFlagsHasBeenRounded flag will be set. See constants for a discussion of the various rounding methods available. If the source time is non-numeric (i.e., infinite, indefinite, invalid), the result will be similarly non-numeric.

17.97.8 Description as string

Function: Creates a description of the time.
Example:

dim t as new CMTimeMBS(1200, 600)
MsgBox t.Description

17.97.9 kCMTimeIndefinite as CMTimeMBS

Function: Predefined time.
Notes:
Use this constant to initialize an indefinite CMTime (for example, the duration of a live broadcast).
Do not test against this using (time = kCMTimeIndefinite), there are many CMTimes other than this that are also indefinite. Use time.IsIndefinite instead.

17.97.10 kCMTimeInvalid as CMTimeMBS

Function: Predefined time.
Example:

dim t as CMTimeMBS = CMTimeMBS.kCMTimeInvalid
MsgBox "Invalid: " + str(t.IsInvalid)

Notes:
Use this constant to initialize an invalid CMTime.
All fields are 0. Do not test against this using \((\text{time} = \text{kCMTimeInvalid})\), there are many CMTimes other than this that are also invalid. Use \text{time.IsInvalid} instead.

17.97.11 \textbf{kCMTimeNegativeInfinity as CMTimeMBS}

\textbf{Function:} Predefined time.
\textbf{Notes:}
Use this constant to initialize a CMTime to -infinity.
Do not test against this using \((\text{time} = \text{kCMTimeNegativeInfinity})\), there are many CMTimes other than this that are also -infinity. Use \text{time.IsNegativeInfinity} instead.

17.97.12 \textbf{kCMTimePositiveInfinity as CMTimeMBS}

\textbf{Function:} Predefined time.
\textbf{Notes:}
Use this constant to initialize a CMTime to +infinity.
Do not test against this using \((\text{time} = \text{kCMTimePositiveInfinity})\), there are many CMTimes other than this that are also +infinity. Use \text{time.IsPositiveInfinity} instead.

17.97.13 \textbf{kCMTimeZero as CMTimeMBS}

\textbf{Function:} Predefined time.
\textbf{Notes:}
Use this constant to initialize a CMTime to 0.
Do not test against this using \((\text{time} = \text{kCMTimeZero})\), there are many CMTimes other than this that are also 0. Use \text{time.Compare(kCMTimeZero)} instead.

17.97.14 \textbf{Make(value as Int64, timescale as Integer) as CMTimeMBS}

\textbf{Function:} Makes a valid CMTime with value and timescale.
\textbf{Example:}
\begin{verbatim}
dim t as CMTimeMBS = CMTimeMBS.Make(1234, 600)
MsgBox t.Description
\end{verbatim}
Notes:
Epoch is implied to be 0.

value: Initializes the value field of the resulting CMTime.
timescale: Initializes the timescale field of the resulting CMTime.

Returns the resulting CMTime

17.97.15 MakeWithEpoch(value as Int64, timescale as Integer, Epoch as Int64)
as CMTimeMBS

Function: Makes a valid CMTime with value, scale and epoch.
Notes:
value: Initializes the value field of the resulting CMTime.
timescale: Initializes the scale field of the resulting CMTime.
epoch: Initializes the epoch field of the resulting CMTime.

Returns the resulting CMTime.

17.97.16 MakeWithSeconds(seconds as Double, preferredTimeScale as Int32 = 600)
as CMTimeMBS

Function: Makes a CMTime from a Float number of seconds, and a preferred timescale.
Example:
    dim t as CMTimeMBS = CMTimeMBS.MakeWithSeconds(123.4, 600)
    MsgBox t.Description

Notes:
seconds: Initializes the seconds field of the resulting CMTime.
preferredTimeScale: Initializes the preferredTimeScale field of the resulting CMTime.

Returns the resulting CMTime.
The epoch of the result will be zero. If preferredTimeScale is $\leq 0$, the result will be an invalid CMTime. If the preferred timescale will cause an overflow, the timescale will be halved repeatedly until the overflow goes away, or the timescale is 1. If it still overflows at that point, the result will be +/- infinity. The kCM-TimeFlagsHasBeenRounded flag will be set if the result, when converted back to seconds, is not exactly equal to the original seconds value.

### 17.97.17 Maximum(t1 as CMTimeMBS, t2 as CMTimeMBS) as CMTimeMBS


**Function**: Returns the greater of two CMTimes.

**Example**:

```vba
dim t1 as new CMTimeMBS(1200, 600)
dim t2 as new CMTimeMBS(70, 30)

dim mi as CMTimeMBS = CMTimeMBS.Minimum(t1,t2)
dim ma as CMTimeMBS = CMTimeMBS.Maximum(t1,t2)

MsgBox "with " +t1.Description+ 
" and " +t2.Description+ 
" the minimum is " +mi.Description+ 
" and maximum is " +ma.Description
```

### 17.97.18 Minimum(t1 as CMTimeMBS, t2 as CMTimeMBS) as CMTimeMBS


**Function**: Returns the lesser of two CMTimes.

**Example**:

```vba
dim t1 as new CMTimeMBS(1200, 600)
dim t2 as new CMTimeMBS(70, 30)

dim mi as CMTimeMBS = CMTimeMBS.Minimum(t1,t2)
dim ma as CMTimeMBS = CMTimeMBS.Maximum(t1,t2)

MsgBox "with " +t1.Description+ 
" and " +t2.Description+ 
" the minimum is " +mi.Description+ 
" and maximum is " +ma.Description
```
17.97. CLASS CMTIMEMBS

17.97.19 Multiply(multiplier as Integer) as CMTimeMBS

Function: Returns the product of a CMTime and a 32-bit integer.
Example:

```vbnet
dim t as new CMTimeMBS(1200, 600)
MsgBox str(T.Seconds)+" seconds"
t = t.Multiply(2)
MsgBox str(T.Seconds)+" seconds"
```

Notes:

- **self**: The CMTime that will be multiplied.
- **multiplier**: A 32-bit integer. CMTime time and multiplier will be multiplied.

Returns the product of the CMTime and the 32-bit integer.

The result will have the same timescale as the CMTime operand. If the result value overflows, the result timescale will be repeatedly halved until the result value no longer overflows. Again, default rounding will be applied when converting the result to this timescale. If the result value still overflows when timescale == 1, then the result will be either positive or negative infinity, depending on the direction of the overflow. If any rounding occurs for any reason, the result’s kCMTimeFlags_HasBeenRounded flag will be set. This flag will also be set if the CMTime operand has kCMTimeFlags_HasBeenRounded set. If the CMTime operand is invalid, the result will be invalid. If the CMTime operand is valid, but infinite, the result will be infinite, and of an appropriate sign, give the signs of both operands. If the CMTime operand is valid, but indefinite, the result will be indefinite.

17.97.20 MultiplyByFloat(multiplier as Double) as CMTimeMBS

Function: Returns the product of a CMTime and a 64-bit float.
Example:

```vbnet
dim t as new CMTimeMBS(1200, 600)
MsgBox str(T.Seconds)+" seconds"
t = t.MultiplyByFloat(2.0)
MsgBox str(T.Seconds)+" seconds"
```

Notes:

- **time**: The CMTime that will be multiplied.
- **multiplier**: A 64-bit float. CMTime time and multiplier will be multiplied.
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Returns the product of the CMTime and the 64-bit float.

The result will initially have the same timescale as the CMTime operand. If the result timescale is less than 65536, it will be repeatedly doubled until it is at least 65536. If the result value overflows, the result timescale will be repeatedly halved until the result value no longer overflows. Again, default rounding will be applied when converting the result to this timescale. If the result value still overflows when timescale == 1, then the result will be either positive or negative infinity, depending on the direction of the overflow. If any rounding occurs for any reason, the result’s kCMTimeFlagsHasBeenRounded flag will be set. This flag will also be set if the CMTime operand has kCMTimeFlagsHasBeenRounded set. If the CMTime operand is invalid, the result will be invalid. If the CMTime operand is valid, but infinite, the result will be infinite, and of an appropriate sign, given the signs of both operands. If the CMTime operand is valid, but indefinite, the result will be indefinite.

17.97.21 Show


Function: Prints a description of the CMTime.

Example:

dim t as new CMTimeMBS(1200, 600)
t.show

17.97.22 Subtract(other as CMTimeMBS) as CMTimeMBS


Function: Returns the difference of two CMTimes.

Notes:

self: The CMTime from which the subtrahend will be subtracted.
other: The CMTime that will be subtracted from the minuend.

Returns the difference of the two CMTimes (minuend - subtrahend).

If the operands both have the same timescale, the timescale of the result will be the same as the operands' timescale. If the operands have different timescales, the timescale of the result will be the least common multiple of the operands' timescales. If that LCM timescale is greater than kCMTimeMaxTimescale, the result timescale will be kCMTimeMaxTimescale, and default rounding will be applied when converting the result to this timescale.

If the result value overflows, the result timescale will be repeatedly halved until the result value no longer
overflows. Again, default rounding will be applied when converting the result to this timescale. If the result value still overflows when timescale = 1, then the result will be either positive or negative infinity, depending on the direction of the overflow.

If any rounding occurs for any reason, the result’s kCMTimeFlags_HasBeenRounded flag will be set. This flag will also be set if either of the operands has kCMTimeFlags_HasBeenRounded set. If either of the operands is invalid, the result will be invalid. If the operands are valid, but just one operand is infinite, the result will be similarly infinite. If the operands are valid, and both are infinite, the results will be as follows:

\[ +\infty - +\infty = \text{invalid} \]
\[ -\infty - -\infty = \text{invalid} \]
\[ +\infty - -\infty = +\infty \]
\[ -\infty - +\infty = -\infty \]

If the operands are valid, not infinite, and either or both is indefinite, the result will be indefinite. If the two operands are numeric (i.e., valid, not infinite, not indefinite), but have different nonzero epochs, the result will be invalid. If they have the same nonzero epoch, the result will have epoch zero (a duration). Times in different epochs cannot be added or subtracted, because epoch length is unknown. Times in epoch zero are considered to be durations and can be subtracted from times in other epochs. Times in different epochs can be compared, however, because numerically greater epochs always occur after numerically lesser epochs.

17.97.23 Properties

17.97.24 Epoch as Int64


Function: The epoch of the CMTime.

Notes:

You use the epoch to differentiate between equal timestamps that are actually different because of looping, multi-item sequencing, and so on.

The epoch is used during comparison: greater epochs happen after lesser ones. Addition or subtraction is only possible within a single epoch, however, since the epoch length may be unknown or variable.

The epoch is typically 0, but you might use a different value, for example, in a loop.
(Read and Write property)

17.97.25 Flags as Integer


Function: A bitfield representing the flags set for the CMTime.

Notes:
For example, kCMTimeFlags_Valid. See constants for possible values. (Read and Write property)

17.97.26  **HasBeenRounded as Boolean**

**Function:** Returns a Boolean value that indicates whether a given time has been rounded.
**Notes:**
Returns true if the CMTime has been rounded, otherwise false (the time is completely accurate).
(Read only property)

17.97.27  **IsIndefinite as Boolean**

**Function:** Returns whether a CMTime is indefinite.
**Notes:**
Returns true if the CMTime is indefinite, false if it is not.
(Read only property)

17.97.28  **IsInvalid as Boolean**

**Function:** Returns a Boolean value that indicates whether a given time is invalid.
**Example:**
```
    dim t as new CMTimeMBS(1200, 600)
    MsgBox "Invalid: " + str(t.IsInvalid)

    t = CMTimeMBS.kCMTimeInvalid
    MsgBox "Invalid: " + str(t.IsInvalid)
```
**Notes:**
Returns true if the CMTime is invalid, otherwise false.
(Read only property)
17.97. CLASS CMTIMEMBS

17.97.29  IsNegativeInfinity as Boolean

Function: Returns a Boolean value that indicates whether a given time is negative infinity.
Notes:
Returns true if the CMTime is negative infinity, otherwise false.
Use this instead of (myTime = kCMTimeNegativeInfinity), since there are many CMTime structs that represent positive infinity. This is because the non-flags fields are ignored, so they can contain anything.
(Read only property)

17.97.30  IsNumeric as Boolean

Function: Returns a Boolean value that indicates whether a given time is numeric.
Notes:
Returns true if the CMTime is numeric, otherwise false. Returns false if the CMTime is invalid, indefinite, or +/- infinity.
A numeric time contains a usable value/timescale/epoch.
(Read only property)

17.97.31  IsPositiveInfinity as Boolean

Function: Returns a Boolean value that indicates whether a given time is positive infinity.
Notes:
Returns true if the CMTime is positive infinity, otherwise false.
Use this instead of (myTime = kCMTimePositiveInfinity), since there are many CMTime structs that represent positive infinity. This is because the non-flags fields are ignored, so they can contain anything.
(Read only property)

17.97.32  IsValid as Boolean

Function: Returns a Boolean value that indicates whether a given time is valid.
Example:
```vba
dim t as new CMTimeMBS(1200, 600)
MsgBox "valid: " + str(t.IsValid)
```

**Notes:**
Return true if the CMTime is valid, otherwise false.
(Read only property)

### 17.97.33 Seconds as Double

**Function:** The number of seconds.
**Example:**
```vba
dim t as new CMTimeMBS(1200, 600)
t.show
```

**Notes:**
If the CMTime is invalid or indefinite, NaN is returned. If the CMTime is infinite, +/- infinity is returned. If the CMTime is numeric, epoch is ignored, and time.value / time.timescale is returned. The division is done in Float64, so the fraction is not lost in the returned result.
(Read only property)

### 17.97.34 Timescale as Integer

**Function:** The timescale of the CMTime.
**Notes:**
value/timescale = seconds.
(Read and Write property)

### 17.97.35 Value as Int64

**Function:** The value of the CMTime.
**Notes:**
value/timescale = seconds.
(Read and Write property)
17.97.36 Constants

17.97.37 kCMTimeFlags_HasBeenRounded = 2

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function**: One of the flags for CMTime. **Notes**: Indicates that the time has been rounded.

17.97.38 kCMTimeFlags_ImpliedValueFlagsMask = 28

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function**: One of the flags for CMTime. **Notes**: Indicates that the time is +infinity, -infinity, or indefinite. Use this value with bitwiseAnd on the flags.

17.97.39 kCMTimeFlags_Indefinite = 16

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function**: One of the flags for CMTime. **Notes**: Indicates that the time is indefinite.

17.97.40 kCMTimeFlags_NegativeInfinity = 8

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function**: One of the flags for CMTime. **Notes**: Indicates that the time is -infinity.

17.97.41 kCMTimeFlags_PositiveInfinity = 4

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function**: One of the flags for CMTime. **Notes**: Indicates that the time is +infinity.

17.97.42 kCMTimeFlags_Valid = 1

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function**: One of the flags for CMTime. **Notes**: Indicates that the time is valid.
17.97.43  kCMTimeMaxTimescale = & h7fffffff

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** A constant to define the maximum timescale.

17.97.44  kCMTimeRoundingMethod_Default = 1

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of constants used to specify the rounding method to use when computing time.value during timescale conversions.  
**Notes:** Synonym for kCMTimeRoundingMethod_RoundHalfAwayFromZero.

17.97.45  kCMTimeRoundingMethod_QuickTime = 4

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of constants used to specify the rounding method to use when computing time.value during timescale conversions.  
**Notes:**  
Use kCMTimeRoundingMethod_RoundTowardZero if converting from larger to smaller scale (that is, from more precision to less precision), but use kCMTimeRoundingMethod_RoundAwayFromZero if converting from smaller to larger scale (i.e. from less precision to more precision).  
Also, never round a negative number down to 0; always return the smallest magnitude negative CMTime in this case (-1/newTimescale).

17.97.46  kCMTimeRoundingMethod_RoundAwayFromZero = 3

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of constants used to specify the rounding method to use when computing time.value during timescale conversions.  
**Notes:** Round away from zero if abs(fraction) is >0.

17.97.47  kCMTimeRoundingMethod_RoundHalfAwayFromZero = 1

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of constants used to specify the rounding method to use when computing time.value during timescale conversions.  
**Notes:** Round towards zero if abs(fraction) is <0.5, away from 0 if abs(fraction) is >= 0.5.

17.97.48  kCMTimeRoundingMethod_RoundTowardNegativeInfinity = 6

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of constants used to specify the rounding method to use when computing time.value during timescale conversions.
Notes: Round towards -infinity if fraction is not 0.

17.97.49  kCMTimeRoundingMethod_RoundTowardPositiveInfinity = 5

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of constants used to specify the rounding method to use when computing time.value during timescale conversions. Notes: Round towards +infinity if fraction is not 0.

17.97.50  kCMTimeRoundingMethod_RoundTowardZero = 2

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of constants used to specify the rounding method to use when computing time.value during timescale conversions. Notes: Round towards zero if fraction is not 0.
17.98 class CMTimeRangeMBS

17.98.1 class CMTimeRangeMBS


**Function:** The class that represent time ranges.

**Example:**

```dim t as CMTimeMBS = CMTimeMBS.MakeWithSeconds(5) // start at 5
dim d as CMTimeMBS = CMTimeMBS.MakeWithSeconds(10) // duration 10
dim r as CMTimeRangeMBS = CMTimeRangeMBS.Make(t,d)```

**Notes:** A CMTimeRange is represented as two CMTime structs, one that specifies the start time of the range and another that specifies the duration of the range. A time range does not include the end time that would be calculated by adding the duration to the start time.

17.98.2 Methods

17.98.3 AllTimeRange as CMTimeRangeMBS


**Function:** Creates a special timerange to cover all times.

**Notes:** From zero to infinity.

17.98.4 Constructor(start as CMTimeMBS, duration as CMTimeMBS)


**Function:** Creates a new range with given values.

**Example:**

```dim t as CMTimeMBS = new CMTimeMBS(5*600, 600, kCMTimeFlags_Valid) // start at 5
dim d as CMTimeMBS = new CMTimeMBS(10*600, 600, kCMTimeFlags_Valid) // duration 10
dim r as CMTimeRangeMBS = new CMTimeRangeMBS(t,d)```

17.98.5 ContainsTime(time as CMTimeMBS) as boolean


**Function:** Indicates whether a time is contained within a time range.

**Notes:**
time: CMTime to be tested for inclusion.
Returns true if the specified time is contained within the specified time range, false if it is not.

This function returns a Boolean value that indicates whether the time specified by the time parameter is
contained within the range specified by the range parameter.

17.98.6 ContainsTimeRange(timeRange as CMTimeRangeMBS) as boolean

Function: Returns a Boolean that indicates whether a given time range is contained within another time
range.
Notes:
range1: The CMTimeRange being interrogated.
range2: CMTimeRange to be tested for inclusion.

Returns true if the second time range is contained within the first time range, false if it is not.
This function returns a Boolean value that indicates whether the time range specified by the range1 param-
eter contains the range specified by the range2 parameter.

17.98.7 Description as string

Function: Creates a String with a description of a CMTimeRange.

17.98.8 Equal(range1 as CMTimeRangeMBS, range2 as CMTimeRangeMBS) as boolean

Function: Returns a Boolean value that indicates whether two CMTimeRanges are identical.
Notes:
range1: CMTimeRange to be compared for equality.
range2: Another CMTimeRange to be compared for equality.

Returns true if the two time ranges are identical, false if they differ.
This function returns a Boolean value that indicates whether the time ranges specified by the range1 and
range2 parameters are identical.
17.98.9 Intersection(range1 as CMTimeRangeMBS, range2 as CMTimeRangeMBS) as CMTimeRangeMBS

Function: Returns the intersection of two CMTimeRanges.
Notes:
range1: CMTimeRange to be intersected.
range2: Another CMTimeRange to be intersected.

Returns the intersection of the two CMTimeRanges.
This function returns a CMTimeRange structure that represents the intersection of the time ranges specified by the range1 and range2 parameters. This is the largest range that both ranges include.

17.98.10 kCMTimeRangeInvalid as CMTimeRangeMBS

Function: Use this constant to generate an invalid CMTimeRange.

17.98.11 kCMTimeRangeZero as CMTimeRangeMBS

Function: Use this constant to generate an empty CMTimeRange at 0.

17.98.12 Make(start as CMTimeMBS, duration as CMTimeMBS) as CMTimeRangeMBS

Function: Creates a valid CMTimeRange with the given start time and duration.
Example:
    dim t as CMTimeMBS = CMTimeMBS.MakeWithSeconds(5) // start at 5
    dim d as CMTimeMBS = CMTimeMBS.MakeWithSeconds(10) // duration 10
    dim r as CMTimeRangeMBS = CMTimeRangeMBS.Make(t,d)

Notes:
start: CMMTime for initializing the start field of the resulting CMTimeRange.
duration: CMMTime for initializing the duration field of the resulting CMTimeRange.

Returns the resulting CMTimeRange.
The duration parameter must have an epoch of 0; otherwise an invalid time range will be returned.

17.98.13  Show

Function: Prints a description of the CMTimeRange to stderr (similar to CFShow).

17.98.14  TimeRangeFromTimeToTime(start as CMTimeMBS, EndTime as CMTimeMBS) as CMTimeRangeMBS

Function: Creates a valid CMTimeRange from the given start and end time.
Notes:
start: CMTime structure representing start time for creating the range.
EndTime: CMTime structure representing end time for creating the range.
Returns the resulting CMTimeRange.

17.98.15  Union(range1 as CMTimeRangeMBS, range2 as CMTimeRangeMBS) as CMTimeRangeMBS

Function: Returns the union of two CMTimeRanges.
Notes:
range1: CMTimeRange to be unified.
range2: Another CMTimeRange to be unified.
Returns the union of the two CMTimeRanges.
This function returns a CMTimeRange that represents the union of the time ranges specified by the range1 and range2 parameters. This is the smallest range that includes all times that are in either range.

17.98.16  Properties

17.98.17  Duration as CMTimeMBS

Function: The duration.
17.98.18 EndTime as CMTimeMBS

Function: Returns a CMTime structure representing the end of a time range.
Notes:
range: The CMTimeRange from which to find the end of time range.
Returns a CMTime representing the end of the specified time range.

This function returns a CMTime structure that indicates the end of the time range specified by the range parameter. ContainsTime(range, range.EndTime) is always false.
(Read only property)

17.98.19 IsEmpty as Boolean

Function: Returns a Boolean value that indicates whether a given CMTimeRange has a duration of 0.
Notes:
Returns true if range has a duration of 0; otherwise, false.
(Read only property)

17.98.20 IsIndefinite as Boolean

Function: Returns a Boolean value that indicates whether a given CMTimeRange is indefinite.
Notes:
Returns true if range is indefinite; otherwise, false.
An indefinite time range has either an indefinite start or an indefinite duration, or both.
(Read only property)

17.98.21 IsInvalid as Boolean

Function: Returns a Boolean value that indicates whether a given CMTimeRange is invalid.
Notes:
Returns true if range is invalid; otherwise, false.
(Read only property)

17.98.22 IsValid as Boolean

Function: Returns a Boolean value that indicates whether a given CMTimeRange is valid.
Notes:
Returns true if range is valid; otherwise, false.
(Read only property)

17.98.23 Start as CMT imeMBS

Function: The start time.
Notes: (Read and Write property)
17.99 class CVImageBufferMBS

17.99.1 class CVImageBufferMBS

**Function:** Core Video image buffers provides a convenient interface for managing different types of image data.

**Example:**

```vbnet
Dim p As New Picture(300, 200)
Dim b As CVPixelBufferMBS = CVPixelBufferMBS.PixelBufferWithPicture(p)
MsgBox Str(b.Width) & " x " & Str(b.Height)
```

**Notes:**

Pixel buffers and Core Video OpenGL buffers derive from the Core Video image buffer.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

17.99.2 Methods

17.99.3 CIImage as Variant

**Function:** The CIImage object for drawing into picture.

**Notes:** Each time you call this function a new CIImage object is created, so cache it if possible.

17.99.4 Constructor

**Function:** The private constructor.

17.99.5 JPEG(CompressionFactor as Double = 0.8) as Memoryblock

MBS AVFoundation Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** Returns JPEG compressed image data.

**Notes:**

Compression Factor is in range from 0 to 1.0.
Returns memoryblock with jpeg data or nil in case of error.
17.99. **CLASS CVIMAGEBUFFERMBS**

### 17.99.6 NSImage as Variant

MBS AVFoundation Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  
**Function:** Queries image buffer as NSImageMBS object.  
**Notes:** Result is NSImageMBS object or nil in case of error.

### 17.99.7 Properties

#### 17.99.8 Context as CGContextMBS

**Function:** The CGContext for this picture.  
**Notes:** (Read only property)

#### 17.99.9 Handle as Integer

**Function:** The internal object reference.  
**Notes:** (Read only property)

#### 17.99.10 IsFlipped as Boolean

**Function:** Returns whether the image is flipped vertically or not.  
**Notes:**  
True if 0,0 in the texture is upper left, false if 0,0 is lower left.  
(Read only property)

#### 17.99.11 Lasterror as Integer

**Function:** The last error.  
**Notes:** (Read and Write property)
17.99.12 Picture as Picture

Function: The picture this image buffer references to.
Notes: (Read only property)
17.100. CLASS CVPIXELBUFFERMBS

17.100 class CVPixelBufferMBS

17.100.1 class CVPixelBufferMBS

**Function:** A Core Video pixel buffer is an image buffer that holds pixels in main memory.
**Example:**

```vba
dim p as new Picture(300, 200)
dim b as CVPixelBufferMBS = CVPixelBufferMBS.PixelBufferWithPicture(p)
MsgBox str(b.Width) + " x " + str(b.Height)
```

**Notes:**
Applications generating frames, compressing or decompressing video, or using Core Image can all make use of Core Video pixel buffers.
Subclass of the CVImageBufferMBS class.

17.100.2 Methods

17.100.3 BaseAddress as Ptr

**Function:** Returns the base address of the pixel buffer.
**Notes:**
For chunky buffers, returns a pointer to the pixel at (0,0) in the buffer.
For planar buffers, returns a pointer to a PlanarComponentInfo structure (as defined by QuickTime in ImageCodec.h).

Retrieving the base address for a pixel buffer requires that the buffer base address be locked via a successful call to CVPixelBufferLockBaseAddress.

17.100.4 BaseAddressOfPlane(planeIndex as Integer) as Ptr

**Function:** Returns the base address of the plane at the specified plane index.
**Notes:**
planeIndex: The index of the plane.

Returns the base address of the plane, or NULL for nonplanar pixel buffers.
Retrieving the base address for a pixel buffer requires that the buffer base address be locked by a successful call to LockBaseAddress.

### 17.100.5 BytesPerRowOfPlane(planeIndex as Integer) as Integer

**Function:** Returns the number of bytes per row for a plane at the specified index in the pixel buffer.  
**Notes:**  
- `planeIndex`: The index of the plane whose bytes-per-row value you want to obtain.
  
Returns the number of row bytes of the plane, or nil for nonplanar pixel buffers.

### 17.100.6 Constructor(pic as picture)

**Function:** Creates a pixel buffer for a picture.  
**Example:**

```vba
dim p as new Picture(300, 200)
dim b as new CVPixelBufferMBS(p)
MsgBox str(b.Width)+” x ”+str(b.Height)
```

**Notes:**  
- Only for Cocoa target.  
- This function takes the existing picture and creates a pixelbuffer referencing it. Also we setup the CGContext object and stores it in Context property. Also picture property is set to the current picture.

### 17.100.7 FillExtendedPixels

**Function:** Fills the extended pixels of the pixel buffer.  
**Notes:** This function replicates edge pixels to fill the entire extended region of the image.

### 17.100.8 Flush

**Function:** Flushes output to the image buffer.
### 17.100.9 GetExtendedPixels(byref extraColumnsOnLeft as Integer, byref extraColumnsOnRight as Integer, byref extraRowsOnTop as Integer, byref extraRowsOnBottom as Integer)

**Function:** Returns the amount of extended pixel padding in the pixel buffer.
**Notes:**
- extraColumnsOnLeft: On output, the pixel row padding to the left.
- extraColumnsOnRight: On output, the pixel row padding to the right.
- extraRowsOnTop: On output, the pixel row padding to the top.
- extraRowsOnBottom: On output, the pixel row padding to the bottom.

### 17.100.10 HeightOfPlane(planeIndex as Integer) as Integer

**Function:** Returns the height of the plane at planeIndex in the pixel buffer.
**Notes:**
- planeIndex: The index of the plane.
  Returns the height of the buffer, in pixels, or 0 for nonplanar pixel buffers.

### 17.100.11 kCVPixelBufferBytesPerRowAlignmentKey as string

**Function:** One of the attribute keys.
**Notes:** Indicates the number of bytes per row in the pixel buffer (type Number).

### 17.100.12 kCVPixelBufferCGBitmapContextCompatibilityKey as string

**Function:** One of the attribute keys.
**Notes:** Indicates whether the pixel buffer is compatible with Core Graphics bitmap contexts (type Boolean).
17.100.13  kCVPixelBufferCGImageCompatibilityKey as string

Function: One of the attribute keys.
Notes: Indicates whether the pixel buffer is compatible with CGImage types (type Boolean).

17.100.14  kCVPixelBufferExtendedPixelsBottomKey as string

Function: One of the attribute keys.
Notes: The number of pixels padding the bottom of the image (type Number).

17.100.15  kCVPixelBufferExtendedPixelsLeftKey as string

Function: One of the attribute keys.
Notes: The number of pixels padding the left of the image (type Number).

17.100.16  kCVPixelBufferExtendedPixelsRightKey as string

Function: One of the attribute keys.
Notes: The number of pixels padding the right of the image (type Number).

17.100.17  kCVPixelBufferExtendedPixelsTopKey as string

Function: One of the attribute keys.
Notes: The number of pixels padding the top of the image (type Number).

17.100.18  kCVPixelBufferHeightKey as string

Function: One of the attribute keys.
Notes: The height of the pixel buffer (type Number).
17.100. **CLASS CVPIXELBUFFERMBS**

### 17.100.19  kCVPixelBufferIOSurfaceCoreAnimationCompatibilityKey as string

**Function:** One of the attribute keys.
**Notes:** A boolean value

### 17.100.20  kCVPixelBufferIOSurfaceOpenGLFBOCompatibilityKey as string

**Function:** One of the attribute keys.
**Notes:** Ensures that the CVPixelBuffer’s IOSurfaceRef can be displayed in an CoreAnimation CALayer.

### 17.100.21  kCVPixelBufferIOSurfaceOpenGLTextureCompatibilityKey as string

**Function:** One of the attribute keys.
**Notes:** Ensures that CGLTexImageIOSurface2D() will succeed in creating a valid texture object from the CVPixelBuffer’s IOSurface AND that the resulting texture may be used as a color buffer attachment to a OpenGL frame buffer object.

### 17.100.22  kCVPixelBufferIOSurfacePropertiesKey as string

**Function:** One of the attribute keys.
**Notes:**
- Indicates optional properties in the IOSurface framework (type Dictionary). An empty dictionary indicates default values.
- Presence of this key requests allocation via the IOSurface framework.

### 17.100.23  kCVPixelBufferMemoryAllocatorKey as string

**Function:** One of the attribute keys.
**Notes:** The allocator used with this buffer (type CFAllocatorRef).
17.100.24  kCVPixelBufferOpenGLCompatibilityKey as string

**Function:** One of the attribute keys.
**Notes:** Indicates whether the pixel buffer is compatible with Core Graphics bitmap contexts (type Boolean).

17.100.25  kCVPixelBufferPixelFormatTypeKey as string

**Function:** One of the attribute keys.
**Notes:** The pixel format for this buffer (type Number, or type Array containing an array of Number types (actually type OSType)). For a listing of common pixel formats, see the QuickTime Ice Floe Dispatch 20.

17.100.26  kCVPixelBufferPlaneAlignmentKey as string

**Function:** One of the attribute keys.
**Notes:** Specifies the alignment of the planes within the buffer. Planes will start on a byte number which is a multiple of this value. (type Number).

17.100.27  kCVPixelBufferWidthKey as string

**Function:** One of the attribute keys.
**Notes:** The width of the pixel buffer (type Number).

17.100.28  LockBaseAddress(flags as Integer)

**Function:** Locks the base address of the pixel buffer.
**Notes:** lockFlags: You can pass zero or kLockReadonly.

17.100.29  PixelBufferWithCGImage(CGImage as Variant) as CVPixelBufferMBS

**Function:** Creates a pixel buffer for a CGImage by making a copy of the picture.
**Notes:**
**17.100. CLASS CVPIXELBUFFERMBS**

Image parameter must be a CGImageMBS object.
For Carbon and Cocoa.
Returns nil on any error.

---

### 17.100.30 PixelBufferWithPicture(pic as picture) as CVPixelBufferMBS

**MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Creates a pixel buffer for a picture by making a copy of the picture.

**Example:**

```vbscript
dim p as new Picture(300, 200)
dim b as CVPixelBufferMBS = CVPixelBufferMBS.PixelBufferWithPicture(p)
MsgBox str(b.Width) + " x " + str(b.Height)
```

**Notes:**
For Carbon and Cocoa.
Returns nil on any error.

---

### 17.100.31 UnlockBaseAddress(flags as Integer)

**MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Unlocks the base address of the pixel buffer.

---

### 17.100.32 WidthOfPlane(planeIndex as Integer) as Integer

**MBS AVFoundation Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Returns the width of the plane at a given index in the pixel buffer.

**Notes:**
- `pixelBuffer`: The pixel buffer whose plane width you want to obtain.
- `planeIndex`: The plane index that contains the plane’s width value.

Returns the width of the plane, in pixels, or 0 for nonplanar pixel buffers.
17.100.33 Properties

17.100.34 BytesPerRow as Integer

Function: Returns the number of bytes per row of the pixel buffer.
Example:

```vba
dim p as new Picture(300, 200)
dim b as new CVPixelBufferMBS(p)
MsgBox str(b.BytesPerRow)
```

Notes:
The number of bytes per row of the image data. For planar buffers, this function returns a rowBytes value such that bytesPerRow * height covers the entire image, including all planes.
(Read only property)

17.100.35 DataSize as Integer

Function: Returns the data size for contiguous planes of the pixel buffer.
Example:

```vba
dim p as new Picture(300, 200)
dim b as new CVPixelBufferMBS(p)
MsgBox str(b.DataSize)
```

Notes: (Read only property)

17.100.36 Height as Integer

Function: Returns the height of the pixel buffer.
Example:

```vba
dim p as new Picture(300, 200)
dim b as CVPixelBufferMBS = CVPixelBufferMBS.PixelBufferWithPicture(p)
MsgBox str(b.Width)+" x "+str(b.Height)
```
17.100.37  IsPlanar as Boolean

Function: Determines whether the pixel buffer is planar.
Notes:

Returns true if the pixel buffer was created using CVPixelBufferCreateWithPlanarBytes; otherwise, false.
(Read only property)

17.100.38  PixelFormatType as String

Function: Returns the pixel format type of the pixel buffer.
Notes:

Returns a four-character code OSType identifier for the pixel format.
(Read only property)

17.100.39  PlaneCount as Integer

Function: Returns number of planes of the pixel buffer.
Notes:

Returns the number of planes. Returns 0 for nonplanar pixel buffers.
(Read only property)

17.100.40  Width as Integer

Function: Returns the width of the pixel buffer.
Example:

```
dim p as new Picture(300, 200)
dim b as CVPixelBufferMBS = CVPixelBufferMBS.PixelBufferWithPicture(p)
MsgBox str(b.Width)+" x "+str(b.Height)
```
17.100.41 Constants

17.100.42 kCVPixelFormatType_16BE555 = & h00000010

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the pixel formats for CVPixelBuffer. Notes:
16 bit BE RGB 555.
Available in OS X v10.5 and later.

17.100.43 kCVPixelFormatType_16BE565 = "B565"

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the pixel formats for CVPixelBuffer. Notes:
16 bit BE RGB 565.
Available in OS X v10.5 and later.

17.100.44 kCVPixelFormatType_16Gray = "b16g"

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the pixel formats for CVPixelBuffer. Notes:
16 bit Grayscale, 16-bit big-endian samples, black is zero.
Available in OS X v10.5 and later.

17.100.45 kCVPixelFormatType_16LE555 = "L555"

MBS AVFoundation Plugin, Plugin Version: 13.2. Function: One of the pixel formats for CVPixelBuffer. Notes:
16 bit LE RGB 555.
Available in OS X v10.5 and later.
17.100  CLASS CVPIXELBUFFERMBS

17.100.46  kCVPixelFormatType_16LE5551 = "5551"

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the pixel formats for CVPixelBuffer. **Notes:**

16 bit LE RGB 5551. Available in OS X v10.5 and later.

17.100.47  kCVPixelFormatType_16LE565 = "L565"

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the pixel formats for CVPixelBuffer. **Notes:**

16 bit LE RGB 565. Available in OS X v10.5 and later.

17.100.48  kCVPixelFormatType_1IndexedGray_WhiteIsZero = & h00000021

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the pixel formats for CVPixelBuffer. **Notes:**

1 bit indexed gray, white is zero. Available in OS X v10.5 and later.

17.100.49  kCVPixelFormatType_1Monochrome = & h00000001

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the pixel formats for CVPixelBuffer. **Notes:**

1 bit indexed. Available in OS X v10.5 and later.

17.100.50  kCVPixelFormatType_24BGR = "24BG"

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the pixel formats for CVPixelBuffer. **Notes:**

24 bit BGR. Available in OS X v10.5 and later.
17.100.51 kCVPixelFormatType_24RGB = & h00000018

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the pixel formats for CVPixelBuffer. **Notes:**

24 bit RGB.
Available in OS X v10.5 and later.

17.100.52 kCVPixelFormatType_2Indexed = & h00000002

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the pixel formats for CVPixelBuffer. **Notes:**

2 bit indexed.
Available in OS X v10.5 and later.

17.100.53 kCVPixelFormatType_2IndexedGray_WhiteIsZero = & h00000022

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the pixel formats for CVPixelBuffer. **Notes:**

2 bit indexed gray, white is zero.
Available in OS X v10.5 and later.

17.100.54 kCVPixelFormatType_32ABGR = ”ABGR”

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the pixel formats for CVPixelBuffer. **Notes:**

32 bit ABGR.
Available in OS X v10.5 and later.

17.100.55 kCVPixelFormatType_32AlphaGray = ”b32a”

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the pixel formats for CVPixelBuffer. **Notes:**

32 bit AlphaGray, 16-bit big-endian samples, black is zero.
Available in OS X v10.5 and later.
17.100.56  kCVPixelFormatType_32ARGB = & h00000020

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the pixel formats for CVPixelBuffer.  
**Notes:**  
32 bit ARGB.  
Available in OS X v10.5 and later.

17.100.57  kCVPixelFormatType_32BGRA = ”BGRA”

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the pixel formats for CVPixelBuffer.  
**Notes:**  
32 bit BGRA.  
Available in OS X v10.5 and later.

17.100.58  kCVPixelFormatType_32RGBA = ”RGBA”

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the pixel formats for CVPixelBuffer.  
**Notes:**  
32 bit RGBA.  
Available in OS X v10.5 and later.

17.100.59  kCVPixelFormatType_420YpCbCr8Planar = ”y420”

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the pixel formats for CVPixelBuffer.  
**Notes:**  
Planar Component Y’CbCr 8-bit 4:2:0.  baseAddr points to a big-endian CVPlanarPixelBufferInfo_YCbCrPlanar struct.  
Available in OS X v10.5 and later.

17.100.60  kCVPixelFormatType_422YpCbCr10 = ”v210”

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the pixel formats for CVPixelBuffer.  
**Notes:**  
Component Y’CbCr 10-bit 4:2:2.  
Available in OS X v10.5 and later.
17.100.61  kCVPixelFormatType_422YpCbCr16 = ”v216”

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the pixel formats for CVPixelBuffer. 
**Notes:**
Component Y’CbCr 10,12,14,16-bit 4:2:2. 
Available in OS X v10.5 and later.

17.100.62  kCVPixelFormatType_422YpCbCr8 = ”2vuy”

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the pixel formats for CVPixelBuffer. 
**Notes:**
Component Y’CbCr 8-bit 4:2:2, ordered Cb Y’0 Cr Y’1. 
Available in OS X v10.5 and later.

17.100.63  kCVPixelFormatType_422YpCbCr_4A_8BiPlanar = ”a2vy”

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the pixel formats for CVPixelBuffer. 
**Notes:**
First plane: Video-range Component Y’CbCr 8-bit 4:2:2, ordered Cb Y’0 Cr Y’1; second plane: alpha 8-bit 0-255. 
Available in OS X v10.5 and later.

17.100.64  kCVPixelFormatType_4444YpCbCrA8 = ”v408”

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the pixel formats for CVPixelBuffer. 
**Notes:**
Component Y’CbCrA 8-bit 4:4:4:4, ordered Cb Y’ Cr A. 
Available in OS X v10.5 and later.

17.100.65  kCVPixelFormatType_4444YpCbCrA8R = ”r408”

MBS AVFoundation Plugin, Plugin Version: 13.2. **Function:** One of the pixel formats for CVPixelBuffer. 
**Notes:**
Component Y’CbCrA 8-bit 4:4:4:4, rendering format. Full range alpha, zero biased YUV, ordered A Y’ Cr Cb. 
Available in OS X v10.5 and later.
17.100.66  \texttt{kCVPixelFormatType\_444YpCbCr10 = ”v410”}

MBS AVFoundation Plugin, Plugin Version: 13.2. \textbf{Function:} One of the pixel formats for CVPixelBuffer. \textbf{Notes:}
Available in OS X v10.5 and later.

17.100.67  \texttt{kCVPixelFormatType\_444YpCbCr8 = ”v308”}

MBS AVFoundation Plugin, Plugin Version: 13.2. \textbf{Function:} One of the pixel formats for CVPixelBuffer. \textbf{Notes:}
Component Y’CbCr 8-bit 4:4:4.
Available in OS X v10.5 and later.

17.100.68  \texttt{kCVPixelFormatType\_48RGB = ”b48r”}

MBS AVFoundation Plugin, Plugin Version: 13.2. \textbf{Function:} One of the pixel formats for CVPixelBuffer. \textbf{Notes:}
48 bit RGB, 16-bit big-endian samples.
Available in OS X v10.5 and later.

17.100.69  \texttt{kCVPixelFormatType\_4Indexed = & h00000004}

MBS AVFoundation Plugin, Plugin Version: 13.2. \textbf{Function:} One of the pixel formats for CVPixelBuffer. \textbf{Notes:}
4 bit indexed.
Available in OS X v10.5 and later.

17.100.70  \texttt{kCVPixelFormatType\_4IndexedGray\_WhiteIsZero = & h00000024}

MBS AVFoundation Plugin, Plugin Version: 13.2. \textbf{Function:} One of the pixel formats for CVPixelBuffer. \textbf{Notes:}
4 bit indexed gray, white is zero.
Available in OS X v10.5 and later.
17.100.71  kCVPixelFormatType_64ARGB = "b64a"

MBS AVFoundation Plugin, Plugin Version: 13.2.  **Function:** One of the pixel formats for CVPixelBuffer.  
**Notes:**
64 bit ARGB, 16-bit big-endian samples.  
Available in OS X v10.5 and later.

17.100.72  kCVPixelFormatType_8Indexed = & h00000008

MBS AVFoundation Plugin, Plugin Version: 13.2.  **Function:** One of the pixel formats for CVPixelBuffer.  
**Notes:**
8 bit indexed.  
Available in OS X v10.5 and later.

17.100.73  kCVPixelFormatType_8IndexedGray_WhiteIsZero = & h00000028

MBS AVFoundation Plugin, Plugin Version: 13.2.  **Function:** One of the pixel formats for CVPixelBuffer.  
**Notes:**
8 bit indexed gray, white is zero.  
Available in OS X v10.5 and later.

17.100.74  kLockReadonly = 1

MBS AVFoundation Plugin, Plugin Version: 13.2.  **Function:** The flag for LockBaseAddress function.  
**Notes:**
If you are not going to modify the data while you hold the lock, you should set this flag to avoid potentially modifying any existing caches of the buffer contents.  This flag should be passed both to the lock and unlock functions.  Non-symmetrical usage of this flag will result in undefined behavior.
17.101. CLASS MOVIE

17.101  class Movie

17.101.1  class Movie

Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Extends the Movie class inside Xojo.

17.101.2  Methods

17.101.3  AVAssetMBS as AVAssetMBS

MBS AVFoundation Plugin, Plugin Version: 14.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the AVAsset for this movie.

**Example:**

```plaintext
dim f as FolderItem = SpecialFolder.Desktop.Child("test.m4v")
dim m as movie = f.OpenAsMovie
dim asset as AVAssetMBS = m.AVAssetMBS
MsgBox str(asset.duration.Seconds) + " seconds"
```

**Notes:**

Useful in order to use plugin functions on a movie object, e.g. query meta data.
Only for Cocoa target in Xojo 2014.
17.102 class Movieplayer

17.102.1 class Movieplayer

Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Extends the Movieplayer class inside Xojo.

17.102.2 Methods

17.102.3 AVAssetMBS as AVAssetMBS

**Function:** Returns the AVAsset for this movieplayer.
**Example:**

```lisp
dim f as FolderItem = SpecialFolder.Desktop.Child("Der Hausbau.m4v")
dim m as movie = f.OpenAsMovie
MoviePlayer1.movie = m
MoviePlayer1.play

dim asset as AVAssetMBS = MoviePlayer1.AVAssetMBS
MsgBox str(asset.duration.Seconds)+" seconds"
```

**Notes:**
Useful in order to use plugin functions on a movieplayer, e.g. query meta data.
Only for Cocoa target in Xojo 2014.

17.102.4 AVPlayerLayerMBS as AVPlayerLayerMBS

**Function:** Returns the AVPlayerLayer for this movieplayer.
**Notes:** Only for Cocoa target in Xojo 2014.

17.102.5 AVPlayerMBS as AVPlayerMBS

**Function:** Returns the AVPlayer for this movieplayer.
**Notes:** Only for Cocoa target in Xojo 2014.
17.103. class Sound

17.103.1 class Sound

Example:

```vbs
dim f as FolderItem = SpecialFolder.Desktop.Child("test.mp4")
dim s as sound = f.OpenAsSound
dim a as AVAudioPlayerMBS = s.AVAudioPlayerMBS
MsgBox str(a.duration)+" seconds long"
call a.play
```

17.103.2 Methods

17.103.3 AVAudioPlayerMBS as AVAudioPlayerMBS

Example:

```vbs
dim f as FolderItem = SpecialFolder.Desktop.Child("test.mp4")
dim s as sound = f.OpenAsSound
dim a as AVAudioPlayerMBS = s.AVAudioPlayerMBS
MsgBox str(a.duration)+" seconds long"
call a.play
```

Notes:

Xojo uses AVAudioPlayer for playing sounds in version 2013r4 and newer. This function returns the player object, so you change more settings.
Chapter 18

AVFoundationNode

18.1 class AVAudio3DPointMBS

18.1.1 class AVAudio3DPointMBS


Function: Class representing a point in 3D space.

Notes: This class is used by classes dealing with 3D audio such as those that adopt the AVAudioMixing protocol and the AVAudioEnvironmentNode class and represents a point in 3D space, in meters.

18.1.2 Methods

18.1.3 Constructor(x as Double = 0.0, y as Double = 0.0, z as Double = 0.0)


Function: The constructor.

18.1.4 Properties

18.1.5 x as Double


Function: The location on the x-axis, in meters.

Notes: (Read and Write property)
18.1.6 y as Double

**Function:** The location on the y-axis, in meters.
**Notes:** (Read and Write property)

18.1.7 z as Double

**Function:** The location on the z-axis, in meters.
**Notes:** (Read and Write property)
18.2. CLASS AVAUDIOBUFFERMBS

18.2  class AVAudioBufferMBS

18.2.1  class AVAudioBufferMBS

Function: The AVAudioBuffer class represents a buffer of audio data and its format.
Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

18.2.2  Methods

18.2.3  available as boolean

Function: Whether this class is available for use.
Notes: Should return true on OS X 10.10 and newer.

18.2.4  Constructor

Function: The private constructor.

18.2.5  copy as AVAudioBufferMBS

Function: Creates a read only copy of the buffer.

18.2.6  mutableCopy as AVAudioBufferMBS

Function: Creates a mutable copy of the buffer.
18.2.7 Properties

18.2.8 format as AVAudioFormatMBS

Function: The format of the audio in the buffer.
Notes: (Read only property)

18.2.9 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)
18.3.3 Methods

18.3.3 available as boolean


Function: Whether this class is available for use.

Notes: Should return true on OS X 10.10 and newer.
18.3.4 Constructor(Layout as QTAudioChannelLayoutMBS)

Function: Initialize an audio channel layout object using an existing one.
Example:

```vbscript
Function StereoFormat() As AVAudioFormatMBS
    // stereo format with standard layout tag
    dim qlayout as new QTAudioChannelLayoutMBS
    qlayout.ChannelLayoutTag = QTAudioChannelLayoutMBS.kAudioChannelLayoutTag_Stereo
    dim layout as new AVAudioChannelLayoutMBS(qlayout)
    dim pf as new AVAudioFormatMBS(44100, layout)
    Return pf
End Function
```

Notes: If the provided audio channel layout objects tag is kAudioChannelLayoutTag_UseChannelDescriptions, this initializer attempts to convert it to a more specific tag. See also:
- 18.3.5 Constructor(LayoutTag as Integer)

18.3.5 Constructor(LayoutTag as Integer)

Function: Initialize an audio channel layout object using a layout tag.
Example:

```vbscript
Function StereoFormat() As AVAudioFormatMBS
    // stereo format with standard layout tag
    dim layout as new AVAudioChannelLayoutMBS(QTAudioChannelLayoutMBS.kAudioChannelLayoutTag_Stereo)
    dim pf as new AVAudioFormatMBS(44100, layout)
    Return pf
End Function
```

Notes: See QTAudioChannelLayoutMBS class for constants. See also:
- 18.3.4 Constructor(Layout as QTAudioChannelLayoutMBS)
18.3. CLASS AVAUDIOCHANNELLAYOUTMBS

18.3.6 isEqual(other as AVAudioChannelLayoutMBS) as boolean

Function: Determines whether another audio channel layout is exactly equal to this layout.
Notes:
other: The AVAudioChannelLayout object to compare against.

Returns true if they are equal; otherwise false.

18.3.7 layoutWithLayout(Layout as QTAudioChannelLayoutMBS) as AVAudioChannelLayoutMBS

Function: Creates a new audio channel layout object from an existing one.

18.3.8 layoutWithLayoutTag(LayoutTag as Integer) as AVAudioChannelLayoutMBS

Function: Creates a new audio channel layout object using an audio channel layout tag.
Notes: If the provided audio channel layout objects tag is kAudioChannelLayoutTag.UseChannelDescriptions, this initializer attempts to convert it to a more specific tag.

18.3.9 Properties

18.3.10 channelCount as Integer

Function: The number of channels of audio data.
Notes: (Read only property)

18.3.11 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)
18.3.12 layout as QTAudioChannelLayoutMBS

Function: The underlying audio channel layout.
Notes:
See QTAudioChannelLayoutMBS class for details.
(Read only property)

18.3.13 layoutTag as Integer

Function: The audio channels underlying layout tag.
Notes:
See QTAudioChannelLayoutMBS class for constants.
(Read only property)
18.4. class AVAudioComponentDescriptionMBS

18.4.1 class AVAudioComponentDescriptionMBS

**Function:** Identifying information for an audio component.

18.4.2 Methods

18.4.3 Constructor(componentType as string = "", componentSubType as string = "", componentManufacturer as string = "", componentFlags as UInt32 = 0, componentFlagsMask as UInt32 = 0)

**Function:** The constructor.

18.4.4 Properties

18.4.5 componentFlags as UInt32

**Function:** The flags.
**Notes:**
Set this value to zero.
(Read and Write property)

18.4.6 componentFlagsMask as UInt32

**Function:** The mask of flags set.
**Notes:**
Set this value to zero.
(Read and Write property)
18.4.7 componentManufacturer as String

Function: The unique vendor identifier, registered with Apple, for the audio component.
Notes: (Read and Write property)

18.4.8 componentSubType as String

Function: A 4-byte code that you can use to indicate the purpose of a component.
Notes: For example, you could use lpas or lowp as a mnemonic indication that an audio unit is a low-pass filter.
(Read and Write property)

18.4.9 componentType as String

Function: A unique 4-byte code identifying the interface for the component.
Notes: (Read and Write property)
18.5.  CLASS AVAUDIOENGINEMBS

18.5  class AVAudioEngineMBS

18.5.1  class AVAudioEngineMBS

Function: The AVAudioEngine class defines a group of connected AVAudioNode objects, known as audio
nodes.
Notes:
You use audio nodes to generate audio signals, process them, and perform audio input and output.
You create each audio node separately and attach it to the audio engine. You can perform all audio node op-
erations during runtime connecting them, disconnecting them, and removing them with only minor limitations:

- Reconnect audio nodes only when they are upstream of a mixer.
- If you remove an audio node that has differing input and output channel counts, or which is a mixer, the
  result will likely be a broken graph.

18.5.2  Methods

18.5.3  attachNode(node as AVAudioNodeMBS)

Function: Attaches a new audio node to the audio engine.
Notes:
node: The audio node to be attached to the audio engine.
To support the instantiation of arbitrary AVAudioNode subclasses, instances are created externally to the
audio engine but are unusable until attached to the audio engine using this method.

18.5.4  available as boolean

Function: Whether this class is available for use.
Notes: Should return true on OS X 10.10 and newer.
18.5.5 AVAudioEngineConfigurationChangeNotification as String

Function: Posted when the audio engine configuration changes.
Notes: When the audio engine's I/O unit observes a change to the audio input or output hardware's channel count or sample rate, the audio engine stops, uninitializes itself, and issues this notification.

18.5.6 connect(node1 as AVAudioNodeMBS, node2 as AVAudioNodeMBS, bus1 as Integer, bus2 as Integer, format as AVAudioFormatMBS)

Function: Establish a connection between two audio nodes, specifying the input and output busses.
Notes:
node1: The source audio node.
node2: The destination audio node.
bush: The output bus of the source audio node.
bush2: The input bus of the destination audio node.
format: If not nil, the format of the source audio node's output bus is set to this AVAudioFormat object. In all cases, the format of the destination audio node's input bus is set to match that of the source audio node's output bus.

Audio nodes have input and output busses (AVAudioNodeBus). Use this method to establish connections between audio nodes. Connections are always one-to-one, never one-to-many or many-to-one.
See also:

- 18.5.7 connect(node1 as AVAudioNodeMBS, node2 as AVAudioNodeMBS, format as AVAudioFormatMBS)

18.5.7 connect(node1 as AVAudioNodeMBS, node2 as AVAudioNodeMBS, format as AVAudioFormatMBS)

Function: Establishes a connection between two audio nodes.
Notes:
node1: The source audio node.
node2: The destination audio node.

This method calls the connect method using bus 0 for the source audio node, and bus 0 for the destination audio node, except in the case of a destination which is a mixer, in which case the destination is the mixer's nextAvailableInputBus.
See also:
format: If not nil, the format of the source audio nodes output bus is set to this AVAudioFormat object. In all cases, the format of the destination audio nodes input bus is set to match that of the source audio nodes output bus.

- 18.5.6 connect(node1 as AVAudioNodeMBS, node2 as AVAudioNodeMBS, bus1 as Integer, bus2 as Integer, format as AVAudioFormatMBS)

18.5.8 Constructor

Function: The constructor.

18.5.9 Destructor

Function: The destructor.

18.5.10 detachNode(node as AVAudioNodeMBS)

Function: Detaches a audio node previously attached to the audio engine. 
Notes: 
node: The audio node to be detached from the audio engine. 

If necessary, the audio engine will safely disconnect the audio node before detaching it.

18.5.11 disconnectNodeInput(node as AVAudioNodeMBS)

Function: Removes all input connections of the audio node. 
Notes: 
node: The audio node whose inputs you want to disconnect. 

Connections are broken on each of the audio nodes input buses. 
See also:
18.5.12  **disconnectNodeInput(node as AVAudioNodeMBS, bus as Integer)**

**Function:** Removes the input connection of an audio node on the specified bus.
**Notes:**
node: The audio node whose input is to be disconnected.
bus: The destinations input bus to be disconnected.
See also:
- 18.5.11 disconnectNodeInput(node as AVAudioNodeMBS)

18.5.13  **disconnectNodeOutput(node as AVAudioNodeMBS)**

**Function:** Remove all output connections of an audio node.
**Notes:** node: The audio node whose outputs are to be disconnected.
See also:
- 18.5.14 disconnectNodeOutput(node as AVAudioNodeMBS, bus as Integer)

18.5.14  **disconnectNodeOutput(node as AVAudioNodeMBS, bus as Integer)**

**Function:** Remove the output connection of an audio node on the specified bus.
**Notes:**
node: The audio node whose output is to be disconnected.
bus: The destinations output bus to disconnect.
See also:
- 18.5.13 disconnectNodeOutput(node as AVAudioNodeMBS)

18.5.15  **pause**

**Function:** Pauses the audio engine.
**Notes:**
Stops the flow of audio through the audio engine but does not deallocate the resources allocated by prepare.
You resume the audio engine by invoking startAndReturnError again.
### 18.5.16 prepare

**Function:** Prepares the audio engine for starting.  
**Notes:** This method preallocates many of the resources that the audio engine requires in order to start. Use it in order to start audio input or output more responsively.

### 18.5.17 reset

**Function:** Resets all of the audio nodes in the audio engine.  
**Notes:** This method resets all of the audio nodes in the audio engine. Use it, for example, to silence reverb and delay tails.

### 18.5.18 startAndReturnError(byref error as NSErrorMBS) as Boolean

**Function:** Starts the audio engine.  
**Notes:**  
Error: Returns, by-reference, a description of the error.

Returns true if the audio engine started successfully; otherwise, false.  
This method invokes the prepare method if it has not already been called since stop was invoked.  
It then starts the audio hardware via the AVAudioInputNode and/or AVAudioOutputNode instances in the audio engine.  

Errors can occur when:

- There is problem in the structure of the graph. Input can’t be routed to output or to a recording tap through converter type nodes.  
- An AVAudioSession error occurred  
- The driver failed to start the hardware

### 18.5.19 stop

**Function:** Stop the audio engine.  
**Notes:** Releases the resources allocated by the prepare method.
18.5.20  Properties

18.5.21  Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

18.5.22  inputNode as AVAudioInputNodeMBS

Function: The audio engines singleton input audio node.
Notes: The audio engine creates a singleton on demand when inputNode is first accessed. To receive input, connect
another audio node from the output of the input audio node, or create a recording tap on it.

The AVAudioSession instance and/or the availability of hardware features determine whether an app can
perform input. Check the input format of input node (specifically, the hardware format) for a non-zero
sample rate and channel count to see if input is enabled.
(Read only property)

18.5.23  mainMixerNode as AVAudioMixerNodeMBS

Function: The audio engines optional singleton main mixer node.
Notes: When the property is first accessed the audio engine constructs a singleton main mixer and connects it to
the outputNode on demand. You can then connect additional audio nodes to the mixer.

By default, the mixer’s output format (sample rate and channel count) will track the format of the output
node. It is possible to make the connection explicitly with a different format.
(Read only property)

18.5.24  outputNode as AVAudioOutputNodeMBS

Function: The audio engines singleton output audio node.
Notes:
When this property is first accessed the audio engine creates a singleton on demand. Connect another audio node to the input of the output audio node, or obtain a mixer that is connected by default, using the mainMixerNode property.

The AVAudioSession instance and/or the availability of hardware features determine whether an app can perform output. Check the output format of output node (specifically, the hardware format) for a non-zero sample rate and channel count to see if output is enabled.
(Read only property)

### 18.5.25 running as Boolean

**Function:** Returns the audio engines running state.
**Notes:**
The value is true if the audio engine is running, otherwise, false.
(Read only property)

### 18.5.26 Events

#### 18.5.27 ConfigurationChanged(notification as NSNotificationMBS)

MBS AVFoundation Plugin, Plugin Version: 15.3, Console & Web: No, Mac: Yes, Win: No, Linux: No.
**Function:** Posted when the audio engine configuration changes.
**Notes:** When the audio engines I/O unit observes a change to the audio input or output hardwares channel count or sample rate, the audio engine stops, uninitializes itself, and issues this notification.
class AVAudioEnvironmentDistanceAttenuationParametersMBS

18.6.1 class AVAudioEnvironmentDistanceAttenuationParametersMBS

Function: The AVAudioEnvironmentDistanceAttenuationParameters class specifies the attenuation distance, the gradual loss in audio intensity, and characteristics.
Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

18.6.2 Methods

18.6.3 available as boolean

Function: Whether this class is available for use.
Notes: Should return true on OS X 10.10 and newer.

18.6.4 Constructor

Function: The private constructor.

18.6.5 Properties

18.6.6 distanceAttenuationModel as Integer

Function: The distance attenuation model describing the drop-off in gain as the source moves away from the listener.
Notes: The default value is the AVAudioEnvironmentDistanceAttenuationModelInverse attenuation model.
(Read and Write property)

18.6.7 Handle as Integer

Function: The internal object reference.
18.6.8 maximumDistance as Double

**Function:** The distance, in meters, beyond which no further attenuation is applied.  
**Notes:**  
The default value is 100000.0 meters.  
This property is relevant for the AVAudioEnvironmentDistanceAttenuationModelInverse attenuation model.  
(Read and Write property)

18.6.9 referenceDistance as Double

**Function:** The minimum distance, in meters, at which attenuation is applied.  
**Notes:**  
The default value is 1.0 meter.  
This property is relevant for the AVAudioEnvironmentDistanceAttenuationModelInverse and AVAudioEnvironmentDistanceAttenuationModelLinear attenuation models.  
(Read and Write property)

18.6.10 rolloffFactor as Double

**Function:** Determines the attenuation curve.  
**Notes:**  
A higher value results in a steeper attenuation curve. The default value is 1.0. The value must be greater than 0.0.  
This property is relevant for the AVAudioEnvironmentDistanceAttenuationModelExponential, AVAudioEnvironmentDistanceAttenuationModelInverse, and AVAudioEnvironmentDistanceAttenuationModelLinear attenuation models.  
(Read and Write property)
18.6.11 Constants

18.6.12 DistanceAttenuationModelExponential = 1

MBS AVFoundation Plugin, Plugin Version: 15.3. Function: One of the distance attenuation models. Notes: Calculated as distanceGain = (distance / referenceDistance) ^(-rolloffFactor).

18.6.13 DistanceAttenuationModelInverse = 2

MBS AVFoundation Plugin, Plugin Version: 15.3. Function: One of the distance attenuation models. Notes: Calculated as distanceGain = referenceDistance / (referenceDistance + rolloffFactor * (distance referenceDistance)).

18.6.14 DistanceAttenuationModelLinear = 3

MBS AVFoundation Plugin, Plugin Version: 15.3. Function: One of the distance attenuation models. Notes: Calculated as distanceGain = (1 rolloffFactor * (distance referenceDistance) / (maximumDistance referenceDistance)).
18.7. class AVAudioEnvironmentNodeMBS

18.7.1 class AVAudioEnvironmentNodeMBS


Function: The AVAudioEnvironmentNode class is a mixer node that simulates a 3D audio environment.

Notes:

Any node that conforms to the AVAudioMixing protocol (for example, AVAudioPlayerNode) can act as a source in this environment.

The environment has an implicit listener. By controlling the listeners position and orientation, the application controls the way the user experiences the virtual world. In addition, this node also defines properties for distance attenuation and reverberation that help characterize the environment.

It is important to note that only inputs with a mono channel connection format to the environment node are spatialized. If the input is stereo, the audio is passed through without being spatialized. Currently inputs with connection formats of more than 2 channels are not supported.

In order to set the environment nodes output to a multichannel format, use an AVAudioFormatMBS having one of the following Audio Channel Layout Tags.

- kAudioChannelLayoutTag_AudioUnit_4
- kAudioChannelLayoutTag_AudioUnit_5_0
- kAudioChannelLayoutTag_AudioUnit_6_0
- kAudioChannelLayoutTag_AudioUnit_7_0
- kAudioChannelLayoutTag_AudioUnit_7_0_Front
- kAudioChannelLayoutTag_AudioUnit_8

Subclass of the AVAudioNodeMBS class.

18.7.2 Methods

18.7.3 Constructor


Function: The constructor.
18.7.4 Properties

18.7.5 distanceAttenuationParameters as AVAudioEnvironmentDistanceAttenuationParametersMBS

Function: The distance attenuation parameters for the environment.
Notes: (Read only property)

18.7.6 nextAvailableInputBus as Integer

Function: Finds an unused input bus.
Notes: This method finds and returns the first input bus to which no other node is connected.
(Read only property)

18.7.7 obstruction as Double

Function: Simulates filtering of the direct path of sound due to an obstacle.
Notes: The value of obstruction is in decibels. Only the direct path of sound between the source and listener are blocked.
The default value is 0.0. The range of valid values is -100 to 0. This property is currently implemented only by the AVAudioEnvironmentNode class mixer.
(Read and Write property)

18.7.8 occlusion as Double

Function: Simulates filtering of the direct and reverb paths of sound due to an obstacle.
Notes: The value of obstruction is in decibels. Both the direct and reverb paths of sound between the source and listener are blocked.
The default value is 0.0. The range of valid values is -100 to 0. This property is currently implemented only
18.7. CLASS AVAUDIOENVIRONMENTNODEMBS

by the AVAudioEnvironmentNode class mixer.
(Read and Write property)

18.7.9 outputVolume as Double

Function: The mixer’s output volume.
Notes:
This accesses the mixer’s output volume (0.0-1.0, inclusive).
(Read and Write property)

18.7.10 pan as Double

Function: The buss’s stereo pan.
Notes:
The default value is 0.0. A value in the range -1.0 to 1.0. This property is currently implemented only by the AVAudioEnvironmentNode class mixer.
(Read and Write property)

18.7.11 position as AVAudio3DPointMBS

Function: The location of the source in the 3D environment.
Notes:
The coordinates are specified in meters. This property is currently implemented only by the AVAudioEnvironmentNode class mixer.
(Read and Write property)

18.7.12 rate as Double

Function: Changes the playback rate of the input signal.
Notes:
A value of 2.0 results in the output audio playing one octave higher. A value of 0.5, results in the output audio playing one octave lower.
CHAPTER 18. AVFOUNDATIONNODE

The default value is 1.0. The range of valid values is 0.5 to 2.0. This property is currently implemented only by the AVAudioEnvironmentNode class mixer.
(Read and Write property)

18.7.13 renderingAlgorithm as Integer

Function: Type of rendering algorithm used.
Notes:
Depending on the current output format of the AVAudioEnvironmentNode instance, only a subset of the rendering algorithms may be supported. An array of valid rendering algorithms is retrieved by calling the applicableRenderingAlgorithms function of the AVAudioEnvironmentNode instance.

The default rendering algorithm is AVAudio3DMixingRenderingAlgorithmEqualPowerPanning. This property is currently implemented only by the AVAudioEnvironmentNode class mixer.
(Read and Write property)

18.7.14 reverbBlend as Double

Function: Controls the blend of dry and reverb processed audio.
Notes:
This property controls the amount of the sources audio that will be processed by the reverb by the AVAudioEnvironmentNode instance. A value of 0.5 will result in an equal blend of dry and processed (wet) audio.

The default is 0.0. The range of valid values is 0.0 (completely dry) to 1.0 (completely wet). This property is currently implemented only by the AVAudioEnvironmentNode class mixer.
(Read and Write property)

18.7.15 reverbParameters as AVAudioEnvironmentReverbParametersMBS

Function: The reverb parameters for the environment.
Notes: (Read only property)
18.7.16 volume as Double


**Function:** The buss’s input volume.

**Notes:**

The default value is 1.0. The range of valid values are 0.0 to 1.0. This property is currently implemented only by the AVAudioEnvironmentNode and AVAudioMixerNode class mixers.

(Read and Write property)
18.8  class AVAudioEnvironmentReverbParametersMBS

18.8.1  class AVAudioEnvironmentReverbParametersMBS

**Function:** The AVAudioEnvironmentReverbParameters class encapsulates the parameters that you use to control the reverb of the AVAudioEnvironmentNode class.

**Notes:**
Reverberation can be used to simulate the acoustic characteristics of an environment. The AVAudioEnvironmentNode class has a built-in reverb that describes the space that the listener is in.

The reverb also has a single filter that sits at the end of the chain. You can use this filter to shape the overall sound of the reverb. For instance, select one of the reverb presets to simulate the general space and then use the filter to brighten or darken the overall sound.

You cannot create a standalone instance of AVAudioEnvironmentReverbParameters. Only an instance vended by a source object, such as an AVAudioEnvironmentNode instance is valid.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

18.8.2  Methods

18.8.3  available as boolean

**Function:** Whether this class is available for use.
**Notes:** Should return true on OS X 10.10 and newer.

18.8.4  Constructor

**Function:** The private constructor.

18.8.5  loadFactoryReverbPreset(preset as Integer)

**Function:** Loads one of the reverbs factory presets.
**Notes:** Loading a factory reverb preset changes the sound of the reverb. This is independent of the filter which follows the reverb in the signal chain.
18.8.6 Properties

18.8.7 enable as Boolean

**Function:** Enables the reverberation.
**Notes:**
The default value is false.
(Read and Write property)

18.8.8 filterParameters as AVAudioUnitEQFilterParametersMBS

**Function:** The filter that applies to the output of the reverb.
**Notes:** (Read only property)

18.8.9 Handle as Integer

**Function:** The internal object reference.
**Notes:** (Read and Write property)

18.8.10 level as Double

**Function:** The master level, in decibels, of the reverb.
**Notes:**
The default value is 0.0. The values must be within the range of -40 to 40 dB.
(Read and Write property)
18.9 class AVAudioFileMBS

18.9.1 class AVAudioFileMBS

Function: The AVAudioFile class represents an audio file that can be opened for reading or writing.
Notes:
Regardless of the file's actual format, you read and write the file using AVAudioPCMBuffer objects, that contain samples in AVAudioCommonFormat, referred to as the file's processing format. Conversions are performed to and from the file's actual format.

Reads and writes are always sequential, but random access is possible by setting the framePosition property.

18.9.2 Methods

18.9.3 available as boolean

Function: Whether this class is available for use.
Notes: Should return true on OS X 10.10 and newer.

18.9.4 Constructor(File as FolderItem, byref error as NSErrorMBS)

Function: Opens a file for reading.
Notes:
file: The path of the file to read.
Error: Returns, by-reference, a description of the error, if an error occurs.
See also:

- 18.9.5 Constructor(File as FolderItem, commonFormat as Integer, Interleaved as Boolean, byref error as NSErrorMBS) 3627
- 18.9.6 Constructor(File as FolderItem, settings as Dictionary, byref error as NSErrorMBS) 3627
- 18.9.7 Constructor(File as FolderItem, settings as Dictionary, commonFormat as Integer, Interleaved as Boolean, byref error as NSErrorMBS) 3628
18.9. CLASS AV_AUDIOFILEMBS

18.9.5 Constructor(File as FolderItem, commonFormat as Integer, Interleaved as Boolean, byref error as NSErrorMBS)


**Function:** Open a file for reading using a specified processing format.

**Notes:**
- file: The path of the file to read.
- format: The processing format to use when reading from the file.
- interleaved: Whether to use an interleaved processing format.
- Error: Returns, by-reference, a description of the error, if an error occurs.

Returns an initialized audio file object for reading.

The file format may be deinterleaved float, that is AVAudioPCMFormatFloat32. The processing format refers to the buffers read from the file. The content is read and converted from the file format to the processing format. The processing format must be at the same sample rate as the actual file contents and must be linear PCM, whether or not the processing buffer is interleaved float is determined by the interleaved parameter.

See also:
- 18.9.4 Constructor(File as FolderItem, byref error as NSErrorMBS) 3626
- 18.9.6 Constructor(File as FolderItem, settings as Dictionary, byref error as NSErrorMBS) 3627
- 18.9.7 Constructor(File as FolderItem, settings as Dictionary, commonFormat as Integer, Interleaved as Boolean, byref error as NSErrorMBS) 3628

18.9.6 Constructor(File as FolderItem, settings as Dictionary, byref error as NSErrorMBS)


**Function:** Open a file for writing.

**Notes:**
- file: The path of the file to create for writing.
- settings: The format of the file to create. (See the settings property in the AVAudioRecorder class.)
- Error: Returns, by-reference, a description of the error, if an error occurs.

Returns an initialized audio file object for writing.

The file type to create is inferred from the file extension of fileURL. This method will overwrite a file at the specified URL if a file already exists.
The file is opened for writing using the standard format, AVAudioPCMFormatFloat32.

See also:
- 18.9.4 Constructor(File as FolderItem, byref error as NSErrorMBS) 3626
- 18.9.5 Constructor(File as FolderItem, commonFormat as Integer, Interleaved as Boolean, byref error as NSErrorMBS) 3627
- 18.9.7 Constructor(File as FolderItem, settings as Dictionary, commonFormat as Integer, Interleaved as Boolean, byref error as NSErrorMBS) 3628

18.9.7 Constructor(File as FolderItem, settings as Dictionary, commonFormat as Integer, Interleaved as Boolean, byref error as NSErrorMBS)

Function: Open a file for writing using a specified processing format.
Notes:
file: The path to write the file.
settings: The format of the file to create.
format: The processing format to use when writing to the file.
interleaved: Whether to use an interleaved processing format.
Error: Returns, by-reference, a description of the error, if an error occurs.

Returns an initialized audio file object for writing.

The file type to create is inferred from the file extension of file.
This method will overwrite a file at the specified URL if a file already exists.
See also:
- 18.9.4 Constructor(File as FolderItem, byref error as NSErrorMBS) 3626
- 18.9.5 Constructor(File as FolderItem, commonFormat as Integer, Interleaved as Boolean, byref error as NSErrorMBS) 3627
- 18.9.6 Constructor(File as FolderItem, settings as Dictionary, byref error as NSErrorMBS) 3627

18.9.8 fileDuration(file as folderItem) as Double

MBS AVFoundation Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Queries duration of an audio file.
Notes:
This uses different AVAudioFile API than rest of AVAudioFileMBS class.
We discovered a bug in Apples frameworks to report wrong length for some MP3 files and this function seems to be closer to the real duration of the file.
18.9. CLASS AVAUDIOFILEMBS

18.9.9 readIntoBuffer(buffer as AVAudioPCMBufferMBS, byref error as NSErrorMBS) as Boolean


**Function:** The buffer from which to read into the file.

**Notes:**

buffer: The buffer from which to read the file. Its format must match the files processing format.

Error: Returns, by-reference, a description of the error, if an error occurs.

Returns true, if the read was successful; otherwise false.

Reading sequentially from the framePosition property, attempts to fill the buffer to its capacity. On return, the buffers length property indicates the number of sample frames successfully read.

See also:

- 18.9.10 readIntoBuffer(buffer as AVAudioPCMBufferMBS, frameCount as Integer, byref error as NSErrorMBS) as Boolean

18.9.10 readIntoBuffer(buffer as AVAudioPCMBufferMBS, frameCount as Integer, byref error as NSErrorMBS) as Boolean


**Function:** Read a portion of a buffer.

**Notes:**

buffer: The buffer from which to read the file. Its format must match the files processing format.

frames: The number of frames to read.

Error: Returns, by-reference, a description of the error, if an error occurs.

Returns true, if the read was successful; otherwise false.

Like the read method, but can be used to read fewer frames than the buffer frameCapacity.

See also:

- 18.9.9 readIntoBuffer(buffer as AVAudioPCMBufferMBS, byref error as NSErrorMBS) as Boolean

18.9.11 writeFromBuffer(buffer as AVAudioPCMBufferMBS, byref error as NSErrorMBS) as Boolean


**Function:** Write a buffer.

**Notes:**
buffer: The buffer from which to write to the file. Its format must match the files processing format.
Error: Returns, by-reference, a description of the error, if an error occurs.

Returns true, if the read was successful.

Writes sequentially. The buffer’s frameLength signifies how much of the buffer is to be written.

18.9.12 Properties

18.9.13 fileFormat as AVAudioFormatMBS

Function: The on-disk format of the file.
Notes: (Read only property)

18.9.14 FramePosition as Int64

Function: The position in the file at which the next read or write operation will occur.
Notes:
Set the framePosition property to perform a seek before a read or write. A read or write operation advances the frame position value by the number of frames read or written.
(Read and Write property)

18.9.15 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

18.9.16 Length as Int64

Function: The number of sample frames in the file.
Notes:
This can be computationally expensive to compute for the first time.
(Read only property)
18.9.17 processingFormat as AVAudioFormatMBS


**Function:** The processing format of the file.

**Notes:** (Read only property)

18.9.18 URL as String


**Function:** The URL the file is reading or writing.

**Notes:** (Read only property)
18.10 class AVAudioFormatMBS

18.10.1 class AVAudioFormatMBS

**Function:** The AVAudioFormat class wraps a Core Audio AudioStreamBasicDescription struct, with convenience initializers and accessors for common formats, including Core Audios standard deinterleaved 32-bit floating point format.
**Notes:** Instances of this class are immutable.

18.10.2 Methods

18.10.3 available as boolean

**Function:** Whether this class is available for use.
**Notes:** Should return true on OS X 10.10 and newer.

18.10.4 Constructor(format as Integer, sampleRate as Double, channels as Integer, interleaved as Boolean)

**Function:** Initializes a newly allocated audio format instance.
**Notes:**
- format: The audio format. See AVAudioCommonFormat for values.
- sampleRate: The sample rate, in hertz.
- channels: The channel count.
- interleaved: True if the audio format is interleaved; otherwise false.

See also:
- 18.10.5 Constructor(format as Integer, sampleRate as Double, interleaved as Boolean, layout as AVAudioChannelLayoutMBS)
- 18.10.6 Constructor(sampleRate as Double, channels as Integer)
- 18.10.7 Constructor(sampleRate as Double, layout as AVAudioChannelLayoutMBS)
- 18.10.8 Constructor(Settings as Dictionary)
18.10. **CLASS AVAUDIOFORMATMBS**

18.10.5 **Constructor(format as Integer, sampleRate as Double, interleaved as Boolean, layout as AVAudioChannelLayoutMBS)**


**Function:** Initializes a newly allocated audio format instance with the specified auto format, sample rate, interleaved format and channel layout.

**Notes:**

- format: The audio format. See AVAudioCommonFormat for values.
- sampleRate: The sample rate, in hertz.
- interleaved: True if the audio format is interleaved; otherwise false.
- layout: The channel layout. Must not be nil.

See also:

- 18.10.4 Constructor(format as Integer, sampleRate as Double, channels as Integer, interleaved as Boolean) 3632
- 18.10.6 Constructor(sampleRate as Double, channels as Integer) 3633
- 18.10.7 Constructor(sampleRate as Double, layout as AVAudioChannelLayoutMBS) 3634
- 18.10.8 Constructor(Settings as Dictionary) 3634

18.10.6 **Constructor(sampleRate as Double, channels as Integer)**


**Function:** Initializes a newly allocated audio format instance with the specified sample rate and channel count.

**Notes:**

- sampleRate: The sample rate, in hertz.
- channels: The channel count.

The returned AVAudioFormat instance uses the AVAudioPCMFormatFloat32 format.

See also:

- 18.10.4 Constructor(format as Integer, sampleRate as Double, channels as Integer, interleaved as Boolean) 3632
- 18.10.5 Constructor(format as Integer, sampleRate as Double, interleaved as Boolean, layout as AVAudioChannelLayoutMBS) 3633
- 18.10.7 Constructor(sampleRate as Double, layout as AVAudioChannelLayoutMBS) 3634
- 18.10.8 Constructor(Settings as Dictionary) 3634
18.10.7 Constructor(sampleRate as Double, layout as AVAudioChannelLayoutMBS)


**Function:** Initializes a newly allocated audio format instance as a deinterleaved float with the specified sample rate and channel layout.

**Example:**

```vbnet
Function StereoFormat() As AVAudioFormatMBS
    // stereo format with standard layout tag
    dim qlayout as new QTAudioChannelLayoutMBS
    qlayout.ChannelLayoutTag = QTAudioChannelLayoutMBS.kAudioChannelLayoutTag_Stereo

    dim layout as new AVAudioChannelLayoutMBS(qlayout)
    dim pf as new AVAudioFormatMBS(44100, layout)

    Return pf
End Function
```

**Notes:**

- sampleRate: The sample rate, in hertz.
- layout: The channel layout. Must not be nil.

The returned AVAudioFormat instance uses the AVAudioPCMFormatFloat32 format.

See also:

- 18.10.4 Constructor(format as Integer, sampleRate as Double, channels as Integer, interleaved as Boolean) 3632
- 18.10.5 Constructor(format as Integer, sampleRate as Double, interleaved as Boolean, layout as AVAudioChannelLayoutMBS) 3633
- 18.10.6 Constructor(sampleRate as Double, channels as Integer) 3633
- 18.10.8 Constructor(Settings as Dictionary) 3634

18.10.8 Constructor(Settings as Dictionary)


**Function:** Initializes a newly allocated audio format instance using a settings dictionary.

**Notes:**

- settings: The settings dictionary. See AV Foundation Audio Settings Constants for supported key/value pairs.
Many settings dictionary elements pertain to encoder settings, not the basic format, and will be ignored. See also:

- 18.10.4 Constructor(format as Integer, sampleRate as Double, channels as Integer, interleaved as Boolean) 3632
- 18.10.5 Constructor(format as Integer, sampleRate as Double, interleaved as Boolean, layout as AVAudioChannelLayoutMBS) 3633
- 18.10.6 Constructor(sampleRate as Double, channels as Integer) 3633
- 18.10.7 Constructor(sampleRate as Double, layout as AVAudioChannelLayoutMBS) 3634

18.10.9  isEqual(other as AVAudioFormatMBS) as boolean

Function: Returns a Boolean value that indicates whether the audio format instance and a given object have identical format settings.
Notes:
object: The object to be compared.

Returns true if the receiver and object are equal, otherwise false.

This method defines what it means for instances to be equal. The two objects are considered equal if and only if they return identical values for all the settings.

18.10.10  Properties

18.10.11  channelCount as Integer

Function: The number of channels of audio data.
Notes: (Read only property)

18.10.12  channelLayout as AVAudioChannelLayoutMBS

Function: The underlying audio channel layout.
Notes:
The value is the underlying AVAudioChannelLayout instance.
(Read only property)
18.10.13 commonFormat as Integer

Function: Returns the common format identifier.
Notes: (Read only property)

18.10.14 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

18.10.15 Interleaved as Boolean

Function: Describes whether the samples are interleaved.
Notes: For non-PCM formats, this value is undefined.
(Read only property)

18.10.16 sampleRate as Double

Function: The audio format sampling rate in hertz.
Notes: (Read only property)

18.10.17 settings as Dictionary

Function: The format represented as a dictionary with keys from AVAudioSettings.
Notes: Not all formats representable by an AudioStreamBasicDescription struct (the underlying implementation) can be represented in a settings dictionary; in that case, nil is returned.
(Read only property)
18.10. CLASS AVAUDIOFORMATMBS

18.10.18 Standard as Boolean

**Function:** Describes whether the format is deinterleaved native-endian float.
**Notes:**
True if the format is deinterleaved native-endian float (AVAudioPCMFormatFloat32), otherwise false.
(Read only property)

18.10.19 Constants

18.10.20 AVAudioOtherFormat = 0

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the common audio formats.
**Notes:** A format which is not 16/32bit integer or 32/64bit float.

18.10.21 AVAudioPCMFormatFloat32 = 1

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the common audio formats.
**Notes:** Native-endian floats. This is the standard format.

18.10.22 AVAudioPCMFormatFloat64 = 2

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the common audio formats.
**Notes:** Native-endian doubles.

18.10.23 AVAudioPCMFormatInt16 = 3

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the common audio formats.
**Notes:** Signed 16-bit native-endian integers.

18.10.24 AVAudioPCMFormatInt32 = 4

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the common audio formats.
**Notes:** Signed 32-bit native-endian integers.
18.11 class AVAudioInputNodeMBS

18.11.1 class AVAudioInputNodeMBS

Function: The AVAudioInputNode class represents a node that connects to the system’s audio input.
Notes:
This node has one element. The format of the input scope reflects the audio hardware sample rate and
channel count. The format of the output scope is initially the same as that of the input, but you may set it
to a different format, in which case the node will convert.
Subclass of the AVAudioIONodeMBS class.

18.11.2 Methods

18.11.3 Constructor

Function: The private constructor.

18.11.4 Properties

18.11.5 obstruction as Double

Function: Simulates filtering of the direct path of sound due to an obstacle.
Notes:
The value of obstruction is in decibels. Only the direct path of sound between the source and listener are
blocked.
The default value is 0.0. The range of valid values is -100 to 0. This property is currently implemented only
by the AVAudioEnvironmentNode class mixer.
(Read and Write property)

18.11.6 occlusion as Double

Function: Simulates filtering of the direct and reverb paths of sound due to an obstacle.
Notes:
The value of obstruction is in decibels. Both the direct and reverb paths of sound between the source and listener are blocked.

The default value is 0.0. The range of valid values is -100 to 0. This property is currently implemented only by the AVAudioEnvironmentNode class mixer.
(Read and Write property)

18.11.7  pan as Double

Function: The buss’s stereo pan.
Notes:
The default value is 0.0. A value in the range -1.0 to 1.0. This property is currently implemented only by the AVAudioEnvironmentNode class mixer.
(Read and Write property)

18.11.8  position as AVAudio3DPointMBS

Function: The location of the source in the 3D environment.
Notes:
The coordinates are specified in meters. This property is currently implemented only by the AVAudioEnvironmentNode class mixer.
(Read and Write property)

18.11.9  rate as Double

Function: Changes the playback rate of the input signal.
Notes:
A value of 2.0 results in the output audio playing one octave higher. A value of 0.5, results in the output audio playing one octave lower.

The default value is 1.0. The range of valid values is 0.5 to 2.0. This property is currently implemented only by the AVAudioEnvironmentNode class mixer.
(Read and Write property)
CHAPTER 18. AVFOUNDATIONNODE

18.11.10 renderingAlgorithm as Integer


Function: Type of rendering algorithm used.

Notes:

Depending on the current output format of the AVAudioEnvironmentNode instance, only a subset of the rendering algorithms may be supported. An array of valid rendering algorithms is retrieved by calling the applicableRenderingAlgorithms function of the AVAudioEnvironmentNode instance.

The default rendering algorithm is AVAudio3DMixingRenderingAlgorithmEqualPowerPanning. This property is currently implemented only by the AVAudioEnvironmentNode class mixer.

The rendering algorithms differ in terms of quality and cpu cost. AVAudio3DMixingRenderingAlgorithmEqualPowerPanning is the simplest panning algorithm and also the least expensive computationally.

If the AVAudioEnvironmentNode instance is set to a multichannel output format, only certain rendering algorithms know how to render to all of the output channels (currently AVAudio3DMixingRenderingAlgorithmSoundField). If any of the other rendering algorithms are selected, the AVAudioEnvironmentNode instance will render to only the first two output channels.

With the exception of AVAudio3DMixingRenderingAlgorithmSoundField, while the mixer is rendering to multi channel hardware, audio data will only be rendered to channels 1 & 2. (Read and Write property)

18.11.11 reverbBlend as Double


Function: Controls the blend of dry and reverb processed audio.

Notes:

This property controls the amount of the sources audio that will be processed by the reverb by the AVAudioEnvironmentNode instance. A value of 0.5 will result in an equal blend of dry and processed (wet) audio.

The default is 0.0. The range of valid values is 0.0 (completely dry) to 1.0 (completely wet). This property is currently implemented only by the AVAudioEnvironmentNode class mixer. (Read and Write property)
18.11. CLASS AVAUDIOINPUTNODEMBS

18.11.12 volume as Double


Function: The buss’s input volume.

Notes:
The default value is 1.0. The range of valid values are 0.0 to 1.0. This property is currently implemented only by the AVAudioEnvironmentNode and AVAudioMixerNode class mixers.
(Read and Write property)

18.11.13 Constants

18.11.14 RenderingAlgorithmEqualPowerPanning = 0

MBS AVFoundation Plugin, Plugin Version: 15.3. Function: One of the types of rendering algorithms available per input bus of the environment node.

Notes: Pans the data of the mixer bus into a stereo field. This algorithm is analogous to the pan knob found on a mixing board channel strip.

18.11.15 RenderingAlgorithmHRTF = 2

MBS AVFoundation Plugin, Plugin Version: 15.3. Function: One of the types of rendering algorithms available per input bus of the environment node.

Notes: The Head Related Transfer Function is a high quality algorithm using filtering to emulate 3 dimensional space in headphones. HRTF is a cpu intensive algorithm.

18.11.16 RenderingAlgorithmSoundField = 3

MBS AVFoundation Plugin, Plugin Version: 15.3. Function: One of the types of rendering algorithms available per input bus of the environment node.

Notes: Designed for rendering to multi channel hardware. The mixer takes data being rendered with SoundField and distributes it amongst all the output channels with a weighting toward the location in which the sound derives. It is very effective for ambient sounds, which may derive from a specific location in space, yet should be heard through the listeners entire space.

18.11.17 RenderingAlgorithmSphericalHead = 1

MBS AVFoundation Plugin, Plugin Version: 15.3. Function: One of the types of rendering algorithms available per input bus of the environment node.

Notes: Designed to emulate 3 dimensional space in headphones by simulating inter-aural time delays and
other spatial cues. This algorithm is slightly less CPU intensive than AVAudio3DMixingRenderingAlgorithmHRTF.

18.11.18 RenderingAlgorithmStereoPassThrough = 5

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the types of rendering algorithms available per input bus of the environment node. **Notes:** This algorithm should be used when no localization is desired for the source data. Setting this algorithm tells the mixer to take mono/stereo input and pass it directly to channels 1 & 2 without localization.
18.12. class AVAudioIONodeMBS

18.12.1. class AVAudioIONodeMBS

Function: The AVAudioIONode class is the base class for nodes that connects to the system’s audio input
or output.
Notes: Subclass of the AVAudioNodeMBS class.

18.12.2. Methods

18.12.3. Constructor

Function: The private constructor.

18.12.4. Properties

18.12.5. audioUnit as Integer

Function: The node’s underlying audio unit, if any.
Notes: Value is the handle.
(Read only property)

18.12.6. presentationLatency as Double

Function: The presentation, or hardware, latency.
Notes: (Read only property)
18.13 class AVAudioMixerNodeMBS

18.13.1 class AVAudioMixerNodeMBS

Function: The AVAudioMixerNode class represents a node that mixes its inputs to a single output.
Notes:
Mixers may have any number of inputs. The mixer node accepts input at any sample rate and efficiently combines sample rate conversions. It also accepts any channel count and will correctly upmix or downmix to the output channel count.
Subclass of the AVAudioNodeMBS class.

18.13.2 Methods

18.13.3 Constructor

Function: The constructor.

18.13.4 Properties

18.13.5 nextAvailableInputBus as Integer

Function: Returns an unused input bus.
Notes:
This method finds and returns the first input bus to which no other node is connected.
(Read only property)

18.13.6 obstruction as Double

Function: Simulates filtering of the direct path of sound due to an obstacle.
Notes:
The value of obstruction is in decibels. Only the direct path of sound between the source and listener are blocked.
The default value is 0.0. The range of valid values is -100 to 0. This property is currently implemented only
18.13. CLASS AVAUDIOMIXERNODEMBS

by the AVAudioEnvironmentNode class mixer.
(Read and Write property)

18.13.7 occlusion as Double

Function: Simulates filtering of the direct and reverb paths of sound due to an obstacle.
Notes:
The value of obstruction is in decibels. Both the direct and reverb paths of sound between the source and
listener are blocked.

The default value is 0.0. The range of valid values is -100 to 0. This property is currently implemented only
by the AVAudioEnvironmentNode class mixer.
(Read and Write property)

18.13.8 pan as Double

Function: The buss’s stereo pan.
Notes:
The default value is 0.0. A value in the range -1.0 to 1.0. This property is currently implemented only by
the AVAudioEnvironmentNode class mixer.
(Read and Write property)

18.13.9 position as AVAudio3DPointMBS

Function: The location of the source in the 3D environment.
Notes:
The coordinates are specified in meters. This property is currently implemented only by the AVAudioEnvi-
ronmentNode class mixer.
(Read and Write property)

18.13.10 rate as Double

Function: Changes the playback rate of the input signal.
Notes:

A value of 2.0 results in the output audio playing one octave higher. A value of 0.5, results in the output audio playing one octave lower.

The default value is 1.0. The range of valid values is 0.5 to 2.0. This property is currently implemented only by the AVAudioEnvironmentNode class mixer.
(Read and Write property)

18.13.11 renderingAlgorithm as Integer

Function: Type of rendering algorithm used.
Notes:

Depending on the current output format of the AVAudioEnvironmentNode instance, only a subset of the rendering algorithms may be supported. An array of valid rendering algorithms is retrieved by calling the applicableRenderingAlgorithms function of the AVAudioEnvironmentNode instance.

The default rendering algorithm is AVAudio3DMixingRenderingAlgorithmEqualPowerPanning. This property is currently implemented only by the AVAudioEnvironmentNode class mixer.
(Read and Write property)

18.13.12 reverbBlend as Double

Function: Controls the blend of dry and reverb processed audio.
Notes:

This property controls the amount of the sources audio that will be processed by the reverb by the AVAudioEnvironmentNode instance. A value of 0.5 will result in an equal blend of dry and processed (wet) audio.

The default is 0.0. The range of valid values is 0.0 (completely dry) to 1.0 (completely wet). This property is currently implemented only by the AVAudioEnvironmentNode class mixer.
(Read and Write property)

18.13.13 volume as Double

Function: The buss’s input volume.
Notes:
The default value is 1.0. The range of valid values are 0.0 to 1.0. This property is currently implemented only by the AVAudioEnvironmentNode and AVAudioMixerNode class mixers. (Read and Write property)
18.14 class AVAudioNodeMBS

18.14.1 class AVAudioNodeMBS


Function: The AVAudioNode class is an abstract class for an audio generation, processing, or I/O block.

Notes:

AVAudioEngine objects contain instances of various AVAudioNode subclasses. This base class provides certain common functionality.

Nodes have input and output busses, which can be thought of as connection points. For example, an effect typically has one input bus and one output bus. A mixer typically has multiple input busses and one output bus.

Busses have formats, expressed in terms of sample rate and channel count. When making connections between nodes, often the format must match exactly. However, there are exceptions such as the AVAudioMixerNode and AVAudioOutputNode classes.

Nodes do not currently provide useful functionality until attached to an engine. This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

18.14.2 Methods

18.14.3 available as boolean


Function: Whether this class is available for use.

Notes: Should return true on OS X 10.10 and newer.

18.14.4 Constructor


Function: The private constructor.

18.14.5 inputFormatForBus(busIndex as Integer) as AVAudioFormatMBS


Function: Returns the input format for the specified bus.
18.14. CLASS AVAUDIONODEMBS

Notes: Returns an AVAudioFormatMBS object representing the input format of the bus.

18.14.6  installTapOnBus(busIndex as Integer, bufferSize as UInt32 = 0, format as AVAudioFormatMBS = nil, tag as Variant = nil)

Function: Installs an audio tap on the bus to record, monitor, and observe the output of the node.
Notes:
bus: The node output bus to which to attach the tap.
bufferSize: The requested size of the incoming buffers. The implementation may choose another size.
format: If non-nil, attempts to apply this as the format of the specified output bus.

This should only be done when attaching to an output bus which is not connected to another node; an error will result otherwise. The tap and connection formats (if non-nil) on the specified bus should be identical. Otherwise, the latter operation will override any previously set format.

For AVAudioOutputNode, tap format must be specified as nil.

The plugin calls the Tap event with the data periodically.

Only one tap may be installed on any bus. Taps may be safely installed and removed while the engine is running.

18.14.7  nameForInputBus(busIndex as Integer) as string

Function: The name of an input bus.

18.14.8  nameForOutputBus(busIndex as Integer) as string

Function: The name of the output bus.

18.14.9  outputFormatForBus(busIndex as Integer) as AVAudioFormatMBS

Function: Returns the output format for the specified bus.
CHAPTER 18. AVFOUNDATIONNODE

Notes: Returns an AVAudioFormatMBS object representing the input format of the bus.

18.14.10 removeTapOnBus(busIndex as Integer)

Function: Removes an audio tap on a bus.
Notes: bus: The node output bus whose tap is to be removed.

18.14.11 reset

Function: Clear a unit’s previous processing state.

18.14.12 Properties

18.14.13 engine as AVAudioEngineMBS

Function: The audio engine of the node.
Notes:
Returns nil if the node is not attached to an audio engine.
(Read only property)

18.14.14 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

18.14.15 lastRenderTime as AVAudioTimeMBS

Function: The time for which the node most recently rendered.
Notes:
Return nil if the engine is not running or if the node is not connected to an input or output node.
(Read only property)
18.14.16  **numberOfInputs** as Integer

**Function:** The number of input busses for the node.
**Notes:** (Read only property)

18.14.17  **numberOfOutputs** as Integer

**Function:** The number of output busses for the node.
**Notes:** (Read only property)

18.14.18  **Events**

18.14.19  **Tap**(bus as Integer, bufferSize as UInt32, format as AVAudioFormatMBS, buffer as AVAudioPCMBufferMBS, time as AVAudioTimeMBS, tag as Variant)

MBS AVFoundation Plugin, Plugin Version: 15.3, Console & Web: No, Mac: Yes, Win: No, Linux: No.
**Function:** The tap event.
**Notes:** Called after using installTapOnBus periodically.
18.15 class AVAudioOutputNodeMBS

Function: The AVAudioOutputNode class represents a audio node that connects to the system’s audio output.
Notes:
This audio node has one element. The format of the output scope reflects the audio hardware sample rate and channel count. The format of the input scope is initially the same as that of the output, but you may set it to a different format, in which case the audio node will convert.
Subclass of the AVAudioIONodeMBS class.

18.15.2 Methods

18.15.3 Constructor

Function: The private constructor.

18.15.4 Properties

18.15.5 CurrentDeviceID as UInt32

Function: Get or set the current device.
Notes:
Please check OutputDevices dictionary for which devices are available.
(Read and Write property)

18.15.6 DefaultDeviceID as UInt32

Function: Queries the Core Audio ID of the default device.
Notes: (Read only property)
18.15.7 OutputDevices as Dictionary

Function: Queries a dictionary with output devices.
Notes:

Key is the ID and value is the name of the device.
(Read only property)
18.16 class AVAudioPCMBufferMBS

18.16.1 class AVAudioPCMBufferMBS


**Function:** The AVAudioPCMBuffer class is a subclass of AVAudioBuffer for use with PCM audio formats.

**Notes:**
The PCM buffer class also provides methods useful for manipulating buffers of audio in PCM format. Subclass of the AVAudioBufferMBS class.

18.16.2 Methods

18.16.3 Constructor(format as AVAudioFormatMBS, frameCapacity as Integer)


**Function:** Initializes a newly allocated PCM audio buffer instance for PCM audio data.

**Notes:**
- format: The format of the PCM audio to be contained in the buffer.
- frameCapacity: The capacity of the buffer in PCM sample frames.

18.16.4 floatChannelDataCopy(ChannelIndex as Integer) as Memoryblock


**Function:** Copies buffer’s audio samples as floating point values.

**Notes:** Returns memoryblock with samples only for the given channel.

18.16.5 int16ChannelDataCopy(ChannelIndex as Integer) as Memoryblock


**Function:** Copies buffer’s audio samples as 16-bit integer point values.

**Notes:** Returns memoryblock with samples only for the given channel.

18.16.6 int32ChannelDataCopy(ChannelIndex as Integer) as Memoryblock


**Function:** Copies buffer’s audio samples as 32-bit integer point values.
18.16. **CLASS AVAUDIOPCMBUFFERMBS**

**Notes:** Returns memoryblock with samples only for the given channel.

### 18.16.7 level(ChannelIndex as Integer) as Double


**Function:** Calculates level for a channel.

**Notes:**
Value returned is between around 0.0 (nothing) to 1.0 (maximum).
Negative values are for errors.

### 18.16.8 Properties

#### 18.16.9 floatChannelData as Ptr


**Function:** The buffer's audio samples as floating point values.

**Notes:**
The floatChannelData property returns pointers to the buffers audio samples, if the buffers format is 32-bit float. It returns nil if it is another format.

The returned pointer is to format.channelCount pointers to float. Each of these pointers is to frameLength valid samples, which are spaced by stride samples.

If the format is not interleaved, as with the standard deinterleaved float format, then the pointers will be to separate chunks of memory and the stride property value is 1.

If the format is interleaved, then the pointers will refer to the same buffer of interleaved samples, each offset by 1 frame, and the stride property value is the number of interleaved channels.  
(Read only property)

#### 18.16.10 frameCapacity as Integer


**Function:** The buffer's capacity, in audio sample frames.

**Notes:** (Read only property)
18.16.11  frameLength as Integer

**Function:** The current number of valid sample frames in the buffer.
**Notes:**
You may modify the length of the buffer as part of an operation that modifies its contents. The length must be less than or equal to the frameCapacity. Modifying frameLength will update the mDataByteSize field in each of the underlying AudioBufferList structs AudioBuffer struct correspondingly, and vice versa. Note that in the case of deinterleaved formats, the mDataByteSize field will refer the size of one channels worth of audio samples.

The length must be less than or equal to the frameCapacity. In the case of deinterleaved formats, frameCapacity will refer to the size of one channels worth of audio samples.

(Read and Write property)

18.16.12  int16ChannelData as Ptr

**Function:** Access the buffer’s 16bit integer audio samples.
**Notes:**
The int16ChannelData property returns the buffer’s audio samples if the buffer’s format has 2-byte integer samples, or nil if it is another format.

See floatChannelData for more information.

(Read only property)

18.16.13  int32ChannelData as Ptr

**Function:** Access the buffer’s 32-bit integer audio samples.
**Notes:**
The int32ChannelData property returns the buffer’s audio samples if the buffer’s format has 4-byte integer samples, or nil if it is another format.

See floatChannelData for more information.

(Read only property)
18.16.14 stride as Integer

**Function:** The buffer’s number of interleaved channels.
**Notes:** (Read only property)
18.17 class AVAudioPlayerNodeMBS

18.17.1 class AVAudioPlayerNodeMBS


**Function:** The AVAudioPlayerNode class plays buffers or segments of audio files.

**Notes:**

AVAudioPlayerNode supports scheduling the playback of AVAudioBuffer instances, or segments of audio files opened via AVAudioFile. Buffers and segments may be scheduled at specific points in time, or to play immediately following preceding segments.

Normally, you will want to configure the nodes output format with the same number of channels as are in the files and buffers to be played. Otherwise, channels will be dropped or added as required. It is usually better to use an AVAudioMixerNode to do this.

Similarly, when playing file segments, the node will sample rate convert if necessary, but it is often preferable to configure the nodes output sample rate to match that of the file(s) and use a mixer to perform the rate conversion.

When playing buffers, there is an implicit assumption that the buffers are at the same sample rate as the nodes output format.

This class overrides the AVAudioNode method reset and unschedules all previously scheduled buffers and file segments, and also returns the player timeline to sample time 0.

**Player Timeline**

The usual AVAudioNode sample times (as observed by lastRenderTime) have an arbitrary zero point. AVAudioPlayerNode superimposes a second player timeline on top of this, to reflect when the player was started, and intervals during which it was paused. The methods nodeTimeForPlayerTime and playerTimeForNodeTime convert between the two.

**Scheduling Playback Time**

The scheduleBuffer, scheduleFile, and scheduleSegment methods take an AVAudioTime when parameter. This is interpreted as follows:

- If the when parameter is nil:
  - If there have been previous commands, the new one is played immediately following the last one.
  - Otherwise, if the node is playing, the event is played in the very near future.
  - Otherwise, the command is played at sample time 0.
- If the when parameter is a sample time, the parameter is interpreted as such.
18.17. CLASS AVAUDIOPLAYERNODEMBS

- If the when parameter is a host time it is ignored unless sample time not valid.

The scheduling methods will fail if:

- A buffer’s channel count does not match that of the node’s output format.
- A file can’t be accessed.
- An AVAudioTime specifies neither a valid sample time or host time.
- A segment’s start frame or frame count is negative.

Subclass of the AVAudioNodeMBS class.

18.17.2 Methods

18.17.3 Constructor

Function: The constructor.

18.17.4 nodeTimeForPlayerTime(playerTime as AVAudioTimeMBS) as AVAudioTimeMBS

Function: Convert from player time to node time.
Notes:
playerTime: A time relative to the players start time.

Returns a node time.

This method and its inverse playerTimeForNodeTime are discussed in The Player Timeline. If the player is not playing when this method is called, nil is returned.

18.17.5 pause

Function: Pause playback.
Notes: The player’s sample time does not advance while the node is paused.
18.17.6  play

**Function:** Start or resume playback immediately.
**Notes:** This is equivalent to playAtTime with a value of nil.

18.17.7  playAtTime(time as AVAudioTimeMBS = nil)

**Function:** Start or resume playback at a specific time.
**Notes:**
when: The node time at which to start or resume playback. Passing nil starts playback immediately.

This node is initially paused. Requests to play buffers or file segments are enqueued, and any necessary decoding begins immediately. Playback does not begin, however, until the player has started playing, via this method.

18.17.8  playerTimeForNodeTime(nodeTime as AVAudioTimeMBS) as AVAudioTimeMBS

**Function:** Convert from node time to player time.
**Notes:**
nodeTime: The node time.

Returns a time relative to the players start time.

This method and its inverse nodeTimeForPlayerTime are discussed in The Player Timeline. If the player is not playing when this method is called, nil is returned.

18.17.9  prepareWithFrameCount(frameCount as UInt32)

**Function:** Prepares previously scheduled file regions or buffers for playback.
**Notes:** frameCount: The number of sample frames of data to be prepared before returning.
18.17.10  scheduleBuffer(buffer as AVAudioPCMBufferMBS, tag as Variant = nil)

Function: Schedule playing samples from an audio buffer.
Notes:

buffer: The buffer to play.

Calls scheduleBufferCompleted event later when playback is done.
time will be nil and options be zero in that case.

Schedules the buffer to be played following any previously scheduled commands.
See also:

• 18.17.11 scheduleBuffer(buffer as AVAudioPCMBufferMBS, time as AVAudioTimeMBS, options as Integer, tag as Variant = nil) 3661

18.17.11  scheduleBuffer(buffer as AVAudioPCMBufferMBS, time as AVAudioTimeMBS, options as Integer, tag as Variant = nil)

Function: Schedule playing samples from an audio buffer at the specified time and with the specified playback options.
Notes:

buffer: The buffer to play.
when: The time at which to play the buffer.
options: Playback options.

Calls later scheduleBufferCompleted event after the buffer has completely played or the player is stopped.
See also:

• 18.17.10 scheduleBuffer(buffer as AVAudioPCMBufferMBS, tag as Variant = nil) 3661

18.17.12  scheduleFile(file as AVAudioFileMBS, time as AVAudioTimeMBS, tag as Variant = nil)

Function: Schedule playing of an entire audio file.
Notes:

file: The file to play.
when: The time at which to play the buffer.
Calls later scheduleFileCompleted event when playback is done.

18.17.13  **scheduleSegment**(file as AVAudioFileMBS, time as AVAudioTimeMBS, startFrame as Int64, frameCount as Int64, tag as Variant = nil)

*Function*: Schedule playing a segment of an audio file.
*Notes*: 
file: The audio file of the file to play.
startFrame: The starting frame position in the stream.
frameCount: The number of frames to play.
when: The time at which to play the buffer.

Calls later scheduleSegmentCompleted event.

18.17.14  **stop**

*Function*: Clear all of the node's previously scheduled events and stop playback.
*Notes*: All of the nodes previously scheduled events are cleared, including any that are in the middle of playing. The nodes sample time (and therefore the times to which new events are to be scheduled) is reset to 0, and will not proceed until the node is started again by sending a play or playAtTime message.

18.17.15  **Properties**

18.17.16  **obstruction as Double**

*Function*: Simulates filtering of the direct path of sound due to an obstacle.
*Notes*: 
The value of obstruction is in decibels. Only the direct path of sound between the source and listener are blocked.

The default value is 0.0. The range of valid values is -100 to 0. This property is currently implemented only by the AVAudioEnvironmentNode class mixer.
*(Read and Write property)*
18.17.17  occlusion as Double

Function: Simulates filtering of the direct and reverb paths of sound due to an obstacle.
Notes:
The value of obstruction is in decibels. Both the direct and reverb paths of sound between the source and listener are blocked.

The default value is 0.0. The range of valid values is -100 to 0. This property is currently implemented only by the AVAudioEnvironmentNode class mixer.
(Read and Write property)

18.17.18  pan as Double

Function: The buss's stereo pan.
Notes:
The default value is 0.0. A value in the range -1.0 to 1.0. This property is currently implemented only by the AVAudioEnvironmentNode class mixer.
(Read and Write property)

18.17.19  Playing as Boolean

Function: Indicates whether or not the player is playing.
Notes: (Read only property)

18.17.20  position as AVAudio3DPointMBS

Function: The location of the source in the 3D environment.
Notes:
The coordinates are specified in meters. This property is currently implemented only by the AVAudioEnvironmentNode class mixer.
(Read and Write property)
18.17.21 rate as Double

Function: Changes the playback rate of the input signal.
Notes:
A value of 2.0 results in the output audio playing one octave higher. A value of 0.5, results in the output audio playing one octave lower.

The default value is 1.0. The range of valid values is 0.5 to 2.0. This property is currently implemented only by the AVAudioEnvironmentNode class mixer.
(Read and Write property)

18.17.22 renderingAlgorithm as Integer

Function: Type of rendering algorithm used.
Notes:
Depending on the current output format of the AVAudioEnvironmentNode instance, only a subset of the rendering algorithms may be supported. An array of valid rendering algorithms is retrieved by calling the applicableRenderingAlgorithms function of the AVAudioEnvironmentNode instance.

The default rendering algorithm is AVAudio3DMixingRenderingAlgorithmEqualPowerPanning. This property is currently implemented only by the AVAudioEnvironmentNode class mixer.
(Read and Write property)

18.17.23 reverbBlend as Double

Function: Controls the blend of dry and reverb processed audio.
Notes:
This property controls the amount of the sources audio that will be processed by the reverb by the AVAudioEnvironmentNode instance. A value of 0.5 will result in an equal blend of dry and processed (wet) audio.

The default is 0.0. The range of valid values is 0.0 (completely dry) to 1.0 (completely wet). This property is currently implemented only by the AVAudioEnvironmentNode class mixer.
(Read and Write property)
18.17. **CLASS AVAUDIOPLAYERNODEMBS**

18.17.24 **volume as Double**

**Function:** The buss’s input volume.  
**Notes:**  
The default value is 1.0. The range of valid values are 0.0 to 1.0. This property is currently implemented only by the AVAudioEnvironmentNode and AVAudioMixerNode class mixers.  
(Read and Write property)

18.17.25 **Events**

18.17.26 **scheduleBufferCompleted(buffer as AVAudioPCMBufferMBS, time as AVAudioTimeMBS, options as Integer, tag as Variant)**

MBS AVFoundation Plugin, Plugin Version: 15.3, Console & Web: No, Mac: Yes, Win: No, Linux: No.  
**Function:** Called after the buffer has completely played or the player is stopped.

18.17.27 **scheduleFileCompleted(file as AVAudioFileMBS, time as AVAudioTimeMBS, tag as Variant)**

MBS AVFoundation Plugin, Plugin Version: 15.3, Console & Web: No, Mac: Yes, Win: No, Linux: No.  
**Function:** Called after the file has completely played or the player is stopped.

18.17.28 **scheduleSegmentCompleted(file as AVAudioFileMBS, startFrame as Int64, frameCount as Int64, time as AVAudioTimeMBS, tag as Variant)**

MBS AVFoundation Plugin, Plugin Version: 15.3, Console & Web: No, Mac: Yes, Win: No, Linux: No.  
**Function:** Called after the segment has completely played or the player is stopped.

18.17.29 **Constants**

18.17.30 **AVAudioPlayerNodeBufferInterrupts = 2**

MBS AVFoundation Plugin, Plugin Version: 15.3.  
**Function:** One of the flags to control buffer scheduling.  
**Notes:** The buffer interrupts any buffer already playing.
18.17.31 AVAudioPlayerNodeBufferInterruptsAtLoop = 4

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the flags to control buffer scheduling. **Notes:** The buffer interrupts any buffer already playing, at its loop point.

18.17.32 AVAudioPlayerNodeBufferLoops = 1

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the flags to control buffer scheduling. **Notes:** The buffer loops indefinitely.
18.18. CLASS AVAUDIOTIMEMBS

18.18 class AVAudioTimeMBS

18.18.1 class AVAudioTimeMBS

Function: The AVAudioTime class is used by AVAudioEngine to represent time.
Notes: Instances of the class are immutable.
A single moment in time may be represented in two different ways:

- Using mach_absolute_time(), the system’s basic clock. Referred to as host time.
- Audio samples at a particular sample rate.

A single AVAudioTime instance may contain either or both representations; it might represent only a sample
time, only a host time, or both.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

18.18.2 Methods

18.18.3 available as boolean

Function: Whether this class is available for use.
Notes: Should return true on OS X 10.10 and newer.

18.18.4 Constructor

Function: The private constructor.

18.18.5 extrapolateTimeFromAnchor(anchorTime as AVAudioTimeMBS) as AVAudioTimeMBS

Function: Creates an audio time object by converting between host and sample time.
Notes:
anchorTime: An AVAudioTime instance with a more complete AudioTimeStamp than that of the receiver.
Returns a newly created and initialized AVAudioTime instance with the extrapolated time.

If anchorTime is an AVAudioTime instance where both host time and sample time are valid, and the receiver is another timestamp where only one of the two is valid, this method returns a new AVAudioTime instance copied from the receiver and where any additional valid fields provided by the anchor are also valid.

18.18.6  

**hostTimeForSeconds(Seconds as Double) as UInt64**


**Function:** Converts seconds to host time.

**Notes:**

seconds: The number of seconds.

Returns the seconds represented as host time.

18.18.7  

**secondsForHostTime(HostTime as UInt64) as Double**


**Function:** Converts host time to seconds.

**Notes:**

hostTime: The host time.

Returns the host time represented as seconds.

18.18.8  

**timeWithHostTime(HostTime as UInt64) as AVAudioTimeMBS**


**Function:** Creates an audio time object with the specified host time.

**Notes:**

hostTime: The host time.

Returns a newly created and initialized AVAudioTime instance with the extrapolated time.

See also:

- 18.18.9  

**timeWithHostTime(hostTime as UInt64, SampleTime as Int64, sampleRate as Double) as AVAudioTimeMBS**
18.18.9  timeWithHostTime(hostTime as UInt64, SampleTime as Int64, sampleRate as Double) as AVAudioTimeMBS

**Function:** Creates an audio time object with the specified host time, sample time, and sample rate.

**Notes:**
- hostTime: The host time.
- sampleTime: The sample time.
- sampleRate: The sample rate.

Returns a newly created and initialized AVAudioTime instance with the specified host time, sample time, and sample rate.

See also:
- 18.18.8 timeWithHostTime(HostTime as UInt64) as AVAudioTimeMBS

18.18.10  timeWithSampleTime(SampleTime as Int64, sampleRate as Double) as AVAudioTimeMBS

**Function:** Creates an audio time object with the specified sample time and sample rate.

**Notes:**
- sampleTime: The sample time.
- sampleRate: The sample rate.

Returns a newly created and initialized AVAudioTime instance with the specified sample time and sample rate.

18.18.11  Properties

18.18.12  Handle as Integer

**Function:** The internal object reference.

**Notes:** (Read and Write property)

18.18.13  hostTime as UInt64

**Function:** The host time.
CHAPTER 18. AVFOUNDATIONNODE

Notes: (Read only property)

18.18.14  hostTimeValid as Boolean

Function: Whether the host time value is valid.
Notes:
True if the hostTime property is valid, otherwise false.
(Read only property)

18.18.15  sampleRate as Double

Function: The sample rate at which the sample time is being expressed.
Notes: (Read only property)

18.18.16  sampleTime as Int64

Function: The time as a number of audio samples, as tracked by the current audio device.
Notes: (Read only property)

18.18.17  sampleTimeValid as Boolean

Function: Whether the sample time and sample rate properties are valid.
Notes: (Read only property)
18.19 class AVAudioUnitComponentManagerMBS

18.19.1 class AVAudioUnitComponentManagerMBS


**Function:** The AVAudioUnitComponentManager class is a singleton object that provides a way to find audio components that are registered with the system.

**Notes:**

It provides methods to search and query various information about the audio components without opening them. Currently, only audio components that are audio units can only be searched.

The class also supports predefined system tags and arbitrary user tags. Each audio unit can be tagged as part of its definition. AudioUnit Hosts such as Logic or GarageBand can present groupings of audio units based on the tags.

Searching for audio units can be done in various ways:

- Using a NSPredicate instance that contains search strings for tags or descriptions
- Using a block to match on a custom criteria.
- Using an AudioComponentDescription.

Available in OS X v10.10 and later.

18.19.2 Methods

18.19.3 allComponents as AVAudioUnitComponentMBS()


**Function:** Finds all components.

**Example:**

```plaintext
// Needs OS X 10.10 or newer
dim m as new AVAudioUnitComponentManagerMBS

dim a() as AVAudioUnitComponentMBS = m.allComponents

for each c as AVAudioUnitComponentMBS in a
    dim d as AVAudioComponentDescriptionMBS = c.audioComponentDescription
    'List.AddRow c.Name, c.ManufacturerName, c.LocalizedTypeName, c.VersionString, d.componentType+
    ""+d.componentSubType
```
// we look for the mixer
// AUMixer Apple Mixer 1.6.0 aumx smxr

if d.componentType = "aumx" and d.componentSubType = "smxr" then
dim aa as new AVAudioUnitMBS(d)
MsgBox aa.Name
end if

next

### 18.19.4 available as boolean

**Function:** Whether this class is available for use.
**Notes:** Should return true on OS X 10.10 and newer.

### 18.19.5 AVAudioUnitComponentTagsDidChangeNotification as String

**Function:** The notification name for the notification sent when tags changed.

### 18.19.6 componentsMatchingDescription(Description as AVAudioComponentDescriptionMBS) as AVAudioUnitComponentMBS()

**Function:** An array of audio component objects that matches the description.
**Notes:** description: The AudioComponentDescription struct to match. The type, subtype and manufacturer fields are used to search for matching audio units. A value of "" or 0 for any of these fields is a wildcard and returns the first match found.

### 18.19.7 componentsPassingTest(tag as Variant = nil) as AVAudioUnitComponentMBS()

**Function:** An array of audio components that pass the Test event.
**Notes:** For each AudioComponent found by the manager, the Test event will be called. If the block returns true then the AVAudioComponent instance is added to the array.
18.19. CLASS AVAUDIOUNITCOMPONENTMANAGERMBS

18.19.8 Constructor

Function: The constructor.

18.19.9 Destructor

Function: The destructor.

18.19.10 sharedAudioUnitComponentManager as AVAudioUnitComponentManagerMBS

Function: Returns the shared component manager.

18.19.11 standardLocalizedTagNames as string()

Function: An array of the the localized standard system tags defined by the audio units.

18.19.12 tagNames as string()

Function: An array of all tags associated with the current user, as well as all system tags defined by the audio units.

18.19.13 Properties

18.19.14 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)
18.19.15 Events

18.19.16 TagsDidChange(notification as NSNotificationMBS)

MBS AVFoundation Plugin, Plugin Version: 15.3, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The event called when tags changed.

18.19.17 Test(component as AVAudioUnitComponentMBS, byref stop as Boolean, tag as Variant) as Boolean

MBS AVFoundation Plugin, Plugin Version: 15.3, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The event to apply to the audio unit components.
Notes:
Component: The component to test.
stop: A reference to a Boolean value. The block can set the value to true to stop further processing of the search. The stop argument is an out-only argument. You should only ever set this Boolean to true within the event.

The event returns a Boolean value that indicates whether comp passed the test.
18.20. class AVAudioUnitComponentMBS

18.20.1 class AVAudioUnitComponentMBS

MBS AVFoundation Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The AVAudioUnitComponent class provides details about an audio unit such as: type, subtype, manufacturer, and location. **Example:**

```cpp
// Needs OS X 10.10 or newer
dim m as new AVAudioUnitComponentManagerMBS

dim a() as AVAudioUnitComponentMBS = m.allComponents

for each c as AVAudioUnitComponentMBS in a
dim d as AVAudioComponentDescriptionMBS = c.audioComponentDescription
'List.AddRow c.Name, c.ManufacturerName, c.LocalizedTypeName, c.VersionString, d.componentType+
"+d.componentSubType

// we look for the mixer
// AUMixer Apple Mixer 1.6.0 aumx smxr

if d.componentType = "aumx" and d.componentSubType = "smxr" then
    dim aa as new AVAudioUnitMBS(d)
    MsgBox aa.Name
end if
next
```

**Notes:**

User tags can be added to the AVAudioUnitComponent which can be queried later for display.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

18.20.2 Methods

18.20.3 allTagNames as string()

MBS AVFoundation Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An array of tag names for the audio unit component.
18.20.4 available as boolean

**Function:** Whether this class is available for use.
**Notes:** Should return true on OS X 10.10 and newer.

18.20.5 Constructor

**Function:** The private constructor.

18.20.6 SetUserTagNames(tags() as string)

**Function:** Sets an array of tags created by the user.

18.20.7 supportsNumberOfChannels(numInputChannels as Integer, numOutputChannels as Integer) as boolean

**Function:** Returns whether the audio unit component supports the specified number of input and output channels.
**Notes:**
numInputChannels: The number of input channels.
numOutputChannels: The number of output channels.

Returns true if the audio unit component supports the specified number of input and output channels, otherwise false.

18.20.8 userTagNames as string()

**Function:** An array of tags created by the user.
18.20. CLASS AVAUDIOUNITCOMPONENTMBS

18.20.9  Properties

18.20.10  audioComponentDescription as AVAudioComponentDescriptionMBS

Function: The AudioComponentDescription of the audio unit component.
Notes: (Read only property)

18.20.11  componentFile as FolderItem

Function: The folderitem of the audio unit component.
Notes: (Read only property)

18.20.12  componentURL as String

Function: The URL of the audio unit component.
Notes: (Read only property)

18.20.13  configurationDictionary as Dictionary

Function: The audio unit components configuration dictionary.
Notes: (Read only property)

18.20.14  Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

18.20.15  hasCustomView as Boolean

Function: Whether the audio unit component has a custom view.
Notes:
True if the component has a custom view, otherwise false.
(Read only property)

18.20.16 hasMIDIInput as Boolean

Function: Whether the audio unit component has midi input.
Notes: (Read only property)

18.20.17 hasMIDIOutput as Boolean

Function: Whether the audio unit component has midi output.
Notes: (Read only property)

18.20.18 iconFile as FolderItem

Function: The folderitem of an icon the represents the audio unit component.
Notes: (Read only property)

18.20.19 iconURL as String

Function: The URL of an icon the represents the audio unit component.
Notes: (Read only property)

18.20.20 LocalizedTypeName as String

Function: The localized type name of the component.
Notes: (Read only property)
18.20.21 ManufacturerName as String

**Function:** The name of the manufacturer of the audio unit component.
**Notes:** (Read only property)

18.20.22 Name as String

**Function:** The name of the audio unit component.
**Notes:** (Read only property)

18.20.23 passesAUVal as Boolean

**Function:** Whether the audio unit component passes the AUVal.
**Notes:**
True if the component passes the AUVal, otherwise false.
(Read only property)

18.20.24 SandboxSafe as Boolean

**Function:** Whether the audio unit component is safe for sandboxing.
**Notes:**
True if the component is safe for sandboxing, otherwise false. This only applies to the current process.
(Read only property)

18.20.25 TypeName as String

**Function:** The audio unit component type.
**Notes:** (Read only property)
**18.20.26 Version as Integer**


**Function:** The audio unit component version number.

**Notes:**

The version number is an NSNumber comprised of a hexadecimal number with major, minor, and a dot-release format: 0xMMMMmmDD.

(Read only property)

**18.20.27 VersionString as String**


**Function:** A string representing the audio unit component version number.

**Notes:** (Read only property)
18.21. CLASS AVAUDIOUNITDELAYMBS

18.21 class AVAudioUnitDelayMBS

18.21.1 class AVAudioUnitDelayMBS

Function: The AVAudioUnitDelay class is an AVAudioUnitEffect subclass that implements a delay effect.
Notes:
A delay unit delays the input signal by the specified time interval and then blends it with the input signal. The amount of high frequency roll-off can also be controlled in order to simulate the effect of a tape delay. Subclass of the AVAudioUnitEffectMBS class.

18.21.2 Methods

18.21.3 Constructor

Function: The constructor.

18.21.4 Properties

18.21.5 delayTime as Double

Function: The time taken by the delayed input signal to reach the output.
Notes:
The delay is specified in seconds. The default value is 1. The valid range of values is 0 to 2 seconds.
(Read and Write property)

18.21.6 feedback as Double

Function: The amount of the output signal fed back into the delay line.
Notes:
The feedback is specified as a percentage. The default value is 50%. The valid range of values is -100% to 100%.
(Read and Write property)
18.21.7 lowPassCutoff as Double

Function: The cutoff frequency, in Hz, above which high frequency content is rolled off.
Notes:
The default value is 15000 Hz. The valid range of values is 10 Hz through (sampleRate/2).
(Read and Write property)

18.21.8 wetDryMix as Double

Function: The blend of the wet and dry signals.
Notes:
The blend is specified as a percentage. The default value is 100%. The valid range of values is 0% (all dry) through 100% (all wet).
(Read and Write property)
18.22. class AVAudioUnitDistortionMBS

18.22.1 class AVAudioUnitDistortionMBS

Function: The AVAudioUnitDistortion class is an AVAudioUnitEffect subclass that implements a multi-stage distortion effect.
Notes: Subclass of the AVAudioUnitEffectMBS class.

18.22.2 Methods

18.22.3 Constructor

Function: The constructor.

18.22.4 loadFactoryPreset(preset as Integer)

Function: Configures the audio distortion unit by loading a distortion preset.
Notes: preset: The distortion preset. See AVAudioUnitDistortionPreset for possible values.

18.22.5 Properties

18.22.6 preGain as Double

Function: The gain, in decibels, applied to the signal before being distorted.
Notes:
The default value is -6 db. The valid range of values is -80 db to 20 db.
(Read and Write property)

18.22.7 wetDryMix as Double

Function: The blend of the distorted and dry signals.
Notes:
The blend is specified as a percentage. The default value is 50%. The range is 0% (all dry) through 100% (all wet).
(Read and Write property)

18.22.8 Constants

18.22.9 PresetDrumsBitBrush = 0

MBS AVFoundation Plugin, Plugin Version: 15.3. Function: One of the preset audio distortions. Notes: Preset that provides a DrumsBitBrush distortion.

18.22.10 PresetDrumsBufferBeats = 1

MBS AVFoundation Plugin, Plugin Version: 15.3. Function: One of the preset audio distortions. Notes: Preset that provides a DrumsBuffersBitBrush distortion.

18.22.11 PresetDrumsLoFi = 2

MBS AVFoundation Plugin, Plugin Version: 15.3. Function: One of the preset audio distortions. Notes: Preset that provides a DrumsLoFi distortion.

18.22.12 PresetMultiBrokenSpeaker = 3

MBS AVFoundation Plugin, Plugin Version: 15.3. Function: One of the preset audio distortions. Notes: Preset that provides a MultiBrokenSpeaker distortion.

18.22.13 PresetMultiCellphoneConcert = 4

MBS AVFoundation Plugin, Plugin Version: 15.3. Function: One of the preset audio distortions. Notes: Preset that provides a MultiCellphoneConcert distortion.

18.22.14 PresetMultiDecimated1 = 5

MBS AVFoundation Plugin, Plugin Version: 15.3. Function: One of the preset audio distortions. Notes: Preset that provides a MultiDecimated1 distortion.
18.22.15  PresetMultiDecimated2 = 6

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the preset audio distortions. **Notes:** Preset that provides a MultiDecimated2 distortion.

18.22.16  PresetMultiDecimated3 = 7

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the preset audio distortions. **Notes:** Preset that provides a MultiDecimated3 distortion.

18.22.17  PresetMultiDecimated4 = 8

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the preset audio distortions. **Notes:** Preset that provides a MultiDecimated4 distortion.

18.22.18  PresetMultiDistortedCubed = 10

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the preset audio distortions. **Notes:** Preset that provides a MultiDistortedCubed distortion.

18.22.19  PresetMultiDistortedFunk = 9

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the preset audio distortions. **Notes:** Preset that provides a MultiDistortedFunk distortion.

18.22.20  PresetMultiDistortedSquared = 11

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the preset audio distortions. **Notes:** Preset that provides a MultiDistortedSquared distortion.

18.22.21  PresetMultiEcho1 = 12

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the preset audio distortions. **Notes:** Preset that provides a MultiEcho1 distortion.
18.22.22 PresetMultiEcho2 = 13

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the preset audio distortions. **Notes:** Preset that provides a MultiEcho2 distortion.

18.22.23 PresetMultiEchoTight1 = 14

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the preset audio distortions. **Notes:** Preset that provides a MultiEchoTight1 distortion.

18.22.24 PresetMultiEchoTight2 = 15

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the preset audio distortions. **Notes:** Preset that provides a MultiEchoTight2 distortion.

18.22.25 PresetMultiEverythingIsBroken = 16

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the preset audio distortions. **Notes:** Preset that provides a MultiEverythingIsBroken distortion.

18.22.26 PresetSpeechAlienChatter = 17

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the preset audio distortions. **Notes:** Preset that provides a SpeechAlienChatter distortion.

18.22.27 PresetSpeechCosmicInterference = 18

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the preset audio distortions. **Notes:** Preset that provides a SpeechCosmicInterference distortion.

18.22.28 PresetSpeechGoldenPi = 19

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the preset audio distortions. **Notes:** Preset that provides a SpeechGoldenPi distortion.
18.22.29 PresetSpeechRadioTower = 20

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the preset audio distortions.  
**Notes:** Preset that provides a SpeechRadioTower distortion.

18.22.30 PresetSpeechWaves = 21

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the preset audio distortions.  
**Notes:** Preset that provides a SpeechWaves distortion.
18.23 class AVAudioUnitEffectMBS

18.23.1 class AVAudioUnitEffectMBS

Function: An AVAudioUnitEffect class that processes audio in real-time using AudioUnits of type: effect, music effect, panner, remote effect or remote music effect.
Notes:
These effects run in real-time and process some number of audio input samples to produce number of audio output samples. A delay unit is an example of an effect unit.
Subclass of the AVAudioUnitMBS class.

18.23.2 Methods

18.23.3 Constructor(audioComponentDescription as AVAudioComponentDescriptionMBS)

Function: Initializes an AVAudioUnitEffect object.
Notes:
audioComponentDescription: AudioComponentDescription of the AudioUnit to be instantiated.
The audioComponentDescription must be one of these types kAudioUnitType_Effect, kAudioUnitType_MusicEffect, kAudioUnitType_Panner, kAudioUnitType_RemoteEffect, or kAudioUnitType_RemoteMusicEffect.

18.23.4 Properties

18.23.5 bypass as Boolean

Function: Bypass state of the AudioUnit.
Notes: (Read and Write property)
18.24. class AVAudioUnitEQFilterParametersMBS

18.24.1 class AVAudioUnitEQFilterParametersMBS


**Function:** The AVAudioUnitEQFilterParameters class encapsulates the parameters used by an AVAudioUnitEQ instance.

**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

18.24.2 Methods

18.24.3 Constructor


**Function:** The private constructor.

18.24.4 Properties

18.24.5 bandwidth as Double


**Function:** The bandwidth of the EQ filter, in octaves.

**Notes:**
The value range of values is 0.05 to 5.0 octaves.
(Read and Write property)

18.24.6 bypass as Boolean


**Function:** The bypass state of the EQ filter band.

**Notes:**
True if the bypass is active, otherwise false.
(Read and Write property)
18.24.7  filterType as Integer

**Function:** The EQ filter type.
**Notes:**
The default value is AVAudioUnitEQFilterTypeParametric.
(Read and Write property)

18.24.8  frequency as Double

**Function:** The frequency of the EQ filter, in hertz.
**Notes:**
The valid range of values is 20 Hz through (SampleRate/2).
(Read and Write property)

18.24.9  gain as Double

**Function:** The gain of the EQ filter, in decibels.
**Notes:**
The default value is 0 db. The valid range of values is -96 db through 24 db.
(Read and Write property)

18.24.10  Constants

18.24.11  FilterTypeBandPass = 5

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the filter types available to use with the filterType property.
**Notes:** Band pass filter. The required parameters are: frequency (center) and bandwidth.

18.24.12  FilterTypeBandStop = 6

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the filter types available to use with the filterType property.
**Notes:** Band stop filter (notch filter). The required parameters are: frequency (center) and bandwidth.
18.24.13 FilterTypeHighPass = 2

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the filter types available to use with the filterType property.  
**Notes:** Simple Butterworth 2nd order high pass filter. The required parameters are: frequency (-3 dB cutoff at specified frequency).

18.24.14 FilterTypeHighShelf = 8

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the filter types available to use with the filterType property.  
**Notes:** High shelf filter. The required parameters are: frequency (center) and gain.

18.24.15 FilterTypeLowPass = 1

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the filter types available to use with the filterType property.  
**Notes:** Simple Butterworth 2nd order low pass filter. The required parameters are: frequency (-3 dB cutoff at specified frequency).

18.24.16 FilterTypeLowShelf = 7

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the filter types available to use with the filterType property.  
**Notes:** Low shelf filter. The required parameters are: frequency (center) and gain.

18.24.17 FilterTypeParametric = 0

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the filter types available to use with the filterType property.  
**Notes:** Parametric filter based on Butterworth analog prototype. The required parameters are: frequency (center), bandwidth, and gain.

18.24.18 FilterTypeResonantHighPass = 4

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the filter types available to use with the filterType property.
Notes: High pass filter with resonance support (using the bandwidth parameter). The required parameters are: frequency (-3 dB cutoff at specified frequency) and bandwidth.

18.24.19 FilterTypeResonantHighShelf = 10

MBS AVFoundation Plugin, Plugin Version: 15.3. Function: One of the filter types available to use with the filterType property. Notes: High shelf filter with resonance support (using the bandwidth parameter). The required parameters are: frequency (center), bandwidth, and gain.

18.24.20 FilterTypeResonantLowPass = 3

MBS AVFoundation Plugin, Plugin Version: 15.3. Function: One of the filter types available to use with the filterType property. Notes: Low pass filter with resonance support (using the bandwidth parameter). The required parameters are: frequency (-3 dB cutoff at specified frequency) and bandwidth.

18.24.21 FilterTypeResonantLowShelf = 9

MBS AVFoundation Plugin, Plugin Version: 15.3. Function: One of the filter types available to use with the filterType property. Notes: Low shelf filter with resonance support (using the bandwidth parameter). The required parameters are: frequency (center), bandwidth, and gain.
18.25. CLASS AVAUDIOUNITEQMBS

18.25 class AVAudioUnitEQMBS

18.25.1 class AVAudioUnitEQMBS

Function: The AVAudioUnitEQ class is an AVAudioUnitEffect subclass that implements a multi-band equalizer.
Notes: The AVAudioUnitEQFilterParameters class encapsulates the filter parameters that are returned in the bands property array. Subclass of the AVAudioUnitEffectMBS class.

18.25.2 Methods

18.25.3 bands as AVAudioUnitEQFilterParametersMBS()

Function: An array of AVAudioUnitEQFilterParameters objects.
Notes: The number of elements in the array is equal to the number of bands.

18.25.4 Constructor

Function: The private constructor.
See also:

• 18.25.5 Constructor(bands as Integer) 3693

18.25.5 Constructor(bands as Integer)

Function: Initializes a newly allocated AVAudioUnitEQ instance.
Notes: Bands: The number of bands created by the EQ.
See also:

• 18.25.4 Constructor 3693
18.25.6 Properties

18.25.7 globalGain as Double

Function: The overall gain adjustment applied to the signal, in decibels.
Notes: The default value is 0 db. The valid range of values is -96 db to 24 db.
(Read and Write property)
18.26. class AVAudioUnitGeneratorMBS

18.26.1 class AVAudioUnitGeneratorMBS

Function: The AVAudioUnitGenerator is an AVAudioUnit subclass that generates audio output.
Notes:
An AVAudioUnitGenerator represents an AudioUnit of type kAudioUnitType_Generator or kAudioUnitType_RemoteGenerator. A generator will have no audio input, but will produce audio output. An example is a tone generator.
Subclass of the AVAudioUnitMBS class.

18.26.2 Methods

18.26.3 Constructor(audioComponentDescription as AVAudioComponentDescriptionMBS)

Function: Initializes a newly allocated AVAudioUnitGenerator instance.
Notes:
audioComponentDescription: The audio component description.

The AudioComponentDescription struct componentType field must be kAudioUnitType_Generator or kAudioUnitType_RemoteGenerator.

18.26.4 Properties

18.26.5 bypass as Boolean

Function: The bypass state of the audio unit.
Notes:
True if the bypass state is enabled, otherwise false.
(Read and Write property)
18.26.6 obstruction as Double

Function: Simulates filtering of the direct path of sound due to an obstacle.
Notes: The value of obstruction is in decibels. Only the direct path of sound between the source and listener are blocked.
The default value is 0.0. The range of valid values is -100 to 0. This property is currently implemented only by the AVAudioEnvironmentNode class mixer.
(Read and Write property)

18.26.7 occlusion as Double

Function: Simulates filtering of the direct and reverb paths of sound due to an obstacle.
Notes: The value of obstruction is in decibels. Both the direct and reverb paths of sound between the source and listener are blocked.
The default value is 0.0. The range of valid values is -100 to 0. This property is currently implemented only by the AVAudioEnvironmentNode class mixer.
(Read and Write property)

18.26.8 pan as Double

Function: The buss’s stereo pan.
Notes: The default value is 0.0. A value in the range -1.0 to 1.0. This property is currently implemented only by the AVAudioEnvironmentNode class mixer.
(Read and Write property)

18.26.9 position as AVAudio3DPointMBS

Function: The location of the source in the 3D environment.
Notes:
18.26. CLASS AVAUDIOUNITGENERATORMBS

The coordinates are specified in meters. This property is currently implemented only by the AVAudioEnvironmentNode class mixer.
(Read and Write property)

18.26.10 rate as Double

Function: Changes the playback rate of the input signal.
Notes:
A value of 2.0 results in the output audio playing one octave higher. A value of 0.5, results in the output audio playing one octave lower.

The default value is 1.0. The range of valid values is 0.5 to 2.0. This property is currently implemented only by the AVAudioEnvironmentNode class mixer.
(Read and Write property)

18.26.11 renderingAlgorithm as Integer

Function: Type of rendering algorithm used.
Notes:
Depending on the current output format of the AVAudioEnvironmentNode instance, only a subset of the rendering algorithms may be supported. An array of valid rendering algorithms is retrieved by calling the applicableRenderingAlgorithms function of the AVAudioEnvironmentNode instance.

The default rendering algorithm is AVAudio3DMixingRenderingAlgorithmEqualPowerPanning. This property is currently implemented only by the AVAudioEnvironmentNode class mixer.
(Read and Write property)

18.26.12 reverbBlend as Double

Function: Controls the blend of dry and reverb processed audio.
Notes:
This property controls the amount of the sources audio that will be processed by the reverb by the AVAudioEnvironmentNode instance. A value of 0.5 will result in an equal blend of dry and processed (wet) audio.

The default is 0.0. The range of valid values is 0.0 (completely dry) to 1.0 (completely wet). This property
is currently implemented only by the AVAudioEnvironmentNode class mixer.
(Read and Write property)

18.26.13 volume as Double

Function: The buss’s input volume.
Notes: The default value is 1.0. The range of valid values are 0.0 to 1.0. This property is currently implemented
only by the AVAudioEnvironmentNode and AVAudioMixerNode class mixers.
(Read and Write property)
18.27 class AVAudioUnitMBS

18.27.1 class AVAudioUnitMBS

**Function:** The AVAudioUnit class is a subclass of the AVAudioNode class that, depending on the type of
the audio unit, processes audio either in real-time or non real-time.
**Notes:** Subclass of the AVAudioNodeMBS class.

18.27.2 Methods

18.27.3 AddPropertyListener(ID as UInt32)

**Function:** Registers to receive notifications for when a property changes.
**Notes:**
When an audio unit property value changes, a PropertyListener event can be called by the audio unit to
inform interested parties that this event has occurred.

You must call RemovePropertyListener when you are done with the audio unit.

Lasterror is set.

18.27.4 Constructor

**Function:** The private constructor.
See also:

* 18.27.5 Constructor(audioComponentDescription as AVAudioComponentDescriptionMBS)

18.27.5 Constructor(audioComponentDescription as AVAudioComponentDescriptionMBS)

**Function:** Initializes a newly allocated audio component specified by the description.
**Example:**

// Needs OS X 10.10 or newer
dim m as new AVAudioUnitComponentManagerMBS
dim a() as AVAudioUnitComponentMBS = m.allComponents

for each c as AVAudioUnitComponentMBS in a
    dim d as AVAudioComponentDescriptionMBS = c.audioComponentDescription
    'List.AddRow c.Name, c.ManufacturerName, c.LocalizedTypeName, c.VersionString, d.componentType+
    "+d.componentSubType

    // we look for the mixer
    // AUMixer Apple Mixer 1.6.0 aumx smxr
    if d.componentType = "aumx" and d.componentSubType = "smxr" then
        dim aa as new AVAudioUnitMBS(d)
        MsgBox aa.Name
    end if
next

Notes: audioComponentDescription: The description of the audio unit to be initialized.
See also:
- 18.27.4 Constructor

18.27.6 CreateView(PreferredSize as NSSizeMBS) as NSViewMBS

Function: Creates view if possible for the audio unit.
Example:

    // audiounit is property of window
    dim audiounit as new AVAudioUnitTimePitchMBS

    dim preferredSize as new NSSizeMBS(200,100)
    // view is property of window
    dim view as NSViewMBS = audiounit.CreateView(preferredSize)

    dim w as new NSWindowMBS(self)

    // set position
    view setFrameOrigin(new NSPointMBS(100, 100))

    // add to window
    w.contentView.addSubview view
18.27. CLASS AVAUDIOUNITMBS

Notes:

Returns nil in case of error.
PreferredSize is the preferred size of the control.

18.27.7 Destructor

Function: The destructor.

18.27.8 GetParameter(ID as UInt32, Scope as UInt32, Element as UInt32) as Single

Function: Get the value of a parameter as specified by its ID, scope and element.
Notes:

LastError is set.
If no error occurs, the result is the parameter value.
Please check Apple's documentation for possible parameters.

18.27.9 GetProperty(ID as UInt32, Scope as UInt32, Element as UInt32) as Memoryblock

Function: Retrieves the value of a specified property.
Notes:

The plugin queries the data size, creates a memoryblock, queries the value and returns it.
LastError is set.

18.27.10 GetPropertyInfo(ID as UInt32, Scope as UInt32, Element as UInt32, byref WriteAble as Boolean) as UInt32

Function: Retrieves information about a specified property.
Notes:

The API can be used to retrieve both the size of the property, and whether it is writable or not. In order to
get a general answer on the capability of an audio unit, this function should be called before the audio unit
is initialized (as some properties are writable when the audio unit is initialized, and others not)
18.27.11  `installLevelMonitor(CallsPerSecond as Integer, tag as Variant = nil)`

**Function:** Installs the handler to call LevelMonitor event regularly.
**Notes:** CallsPerSecond can be between 5 and 50. Tag is stored and passed to the event.

18.27.12  `RemovePropertyListener(ID as UInt32)`

**Function:** Remove a previously registered property listener.

18.27.13  `setParameter(ID as UInt32, Scope as UInt32, Element as UInt32, Value as Single, inBufferOffsetInFrames as UInt32 = 0)`

**Function:** Set the value of a parameter as specified by its ID, scope and element.
**Notes:**
Parameter IDs are consistent across all of the elements in a scope - so for a mixer, the "input volume" parameter can be applied on any input, and the particular input is specified by the elementID.

Lasterror is set.
Please check Apple's documentation for possible parameters.

18.27.14  `setProperty(ID as UInt32, Scope as UInt32, Element as UInt32, data as Memoryblock)`

**Function:** Sets the value of a specified property.
**Notes:**
Some properties can be cleared by passing data = nil.
Lasterror is set.
18.27.15 Properties

18.27.16 audioComponentDescription as AVAudioComponentDescriptionMBS

Function: The audio compression description of the underlying Core Audio audio unit.
Notes: (Read only property)

18.27.17 audioUnitHandle as Integer

Function: The internal handle for the audio unit.
Notes: (Read only property)

18.27.18 lastError as Integer

Function: The last error code for the property/parameter functions.
Notes:
Zero means no error.
(Read and Write property)

18.27.19 ManufacturerName as String

Function: The name of the manufacturer of the audio unit.
Notes: (Read only property)

18.27.20 Name as String

Function: The name of the audio unit.
Notes: (Read only property)
18.27.21 Version as Integer

Function: The version number of the audio unit.
Notes: (Read only property)

18.27.22 Events

18.27.23 LevelMonitor(Level0 as Double, Level1 as Double, Level2 as Double,
Level3 as Double, Level4 as Double, Level5 as Double, Level6 as Double,
Level7 as Double, tag as Variant)

MBS AVFoundation Plugin, Plugin Version: 15.3, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Reports level values.
Notes: We pass 8 level parameters for up to 8 channels.

18.27.24 PropertyListener(ID as UInt32, Scope as UInt32, Element as UInt32)

MBS AVFoundation Plugin, Plugin Version: 15.3, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The property listener event.
Notes:
When you listen for changes on a property, this event can be called.
Either synchronous on main thread or when received on other threads, the plugin will run it asynchronously
on main thread.
18.28. **CLASS AVAUDIOUNITMIDIINSTRUMENTMBS**

18.28  **class AVAudioUnitMIDIInstrumentMBS**


**Function:** The AVAudioUnitMIDIInstrument class is an abstract class representing music devices or remote instruments.

**Notes:**

An AVAudioUnitMIDIInstrument subclass can be used in a chain that processes realtime input (live) and has general concept of music events, for example, notes.

Available in OS X v10.10 and later.
Subclass of the AVAudioUnitMBS class.

18.28.2  **Methods**

18.28.3  **Constructor(audioComponentDescription as AVAudioComponentDescriptionMBS)**


**Function:** Initializes a MIDI instrument audio unit with the specified component description.

**Notes:**

description: The AudioComponentDescription struct. The component of type must be kAudioUnitType_MusicDevice or kAudioUnitType_RemoteInstrument.

18.28.4  **sendController(Controller as Integer, Value as Integer, Channel as Integer)**


**Function:** Send a MIDI controller event to the instrument.

**Notes:**

ccontroller: Specifies a standard MIDI controller number. The valid range is 0 to 127.

cvalue: Value for the controller. The valid range is 0 to 127.

cchannel: The channel number to which the event is sent.

18.28.5  **sendMIDIEvent(midiStatus as Integer, data1 as Integer)**


**Function:** Sends a MIDI event which contains one data byte to the instrument.

**Notes:**
midiStatus: The STATUS value of the MIDI event.
data1: The data byte of the MIDI event.

See also:

- 18.28.6 sendMIDIEvent(midiStatus as Integer, data1 as Integer, data2 as Integer)

18.28.6 sendMIDIEvent(midiStatus as Integer, data1 as Integer, data2 as Integer)

Function: Sends a MIDI event which contains two data bytes to the instrument.
Notes:
midiStatus: The STATUS value of the MIDI event.
data1: The first data byte of the MIDI event.
data2: The first data byte of the MIDI event.
See also:

- 18.28.5 sendMIDIEvent(midiStatus as Integer, data1 as Integer)

18.28.7 sendMIDISysExEvent(data as MemoryBlock)

Function: Sends a MIDI System Exclusive event to the instrument.
Notes: midiData: A memoryblock object containing the complete SysEx data including start(F0) and termination(F7) bytes.

18.28.8 sendPitchBend(pitchbend as Integer, Channel as Integer)

Function: Sends MIDI Pitch Bend event to the instrument.
Notes:
pitchbend: Value of the pitch bend. The valid range of values is 0 to 16383.
channel: The channel number to which the event is sent.

If this method is not invoked, then the pitch bend is the default value of 8192 (no pitch).

18.28.9 sendPressure(pressure as Integer, Channel as Integer)

Function: Sends MIDI channel pressure event to the instrument.
Notes:

pressure: The value of the pressure. The valid range is 0 to 127.
channel: The channel number to which the event is sent.

18.28.10 `sendPressureForKey(Key as Integer, value as Integer, Channel as Integer)`


Function: Sends MIDI Polyphonic key pressure event to the instrument.
Notes:

key: The key (note) number to which the pressure event applies. The valid range is 0 to 127.
value: The value of the pressure. The valid range is 0 to 127.
channel: The channel number to which the event is sent.

18.28.11 `sendProgramChange(program as Integer, bankMSB as Integer, bankLSB as Integer, Channel as Integer)`


Function: Sends a MIDI Program Change and Bank Select events to the instrument.
Notes:

program: Specifies the program (preset) number within the bank to load. The valid range is 0 to 127.
bankMSB: Specifies the most significant byte value for the bank to select. The valid range is 0 to 127.
bankLSB: Specifies the least significant byte value for the bank to select. The valid range is 0 to 127.
channel: The channel number to which the event is sent.
See also:

- 18.28.12 `sendProgramChange(program as Integer, Channel as Integer)`

18.28.12 `sendProgramChange(program as Integer, Channel as Integer)`


Function: Sends a MIDI Program Change and Bank Select events to the instrument.
Notes:

program: Specifies the program. The valid range is 0 to 127.
channel: The channel number to which the event is sent.

The instrument will be loaded from the bank that has been previous set by MIDI Bank Select controller
messages (0 and 31). If none has been set, bank 0 will be used.
See also:
• 18.28.11 sendProgramChange(program as Integer, bankMSB as Integer, bankLSB as Integer, Channel as Integer)

18.28.13 startNote(note as Integer, Velocity as Integer, Channel as Integer)

Function: Sends a MIDI Note On event to the instrument.
Notes:

- note: The note number (key) to play. The valid range is 0 to 127.
- velocity: Specifies the volume at which the note is played. The valid range is 0 to 127.
- channel: The channel number to which the event is sent.

18.28.14 stopNote(note as Integer, Channel as Integer)

Function: Sends a MIDI Note Off event to the instrument
Notes:

- note: The note number (key) to stop. The valid range is 0 to 127.
- channel: The channel number to which the event is sent.
18.29 class AVAudioUnitReverbMBS

18.29.1 class AVAudioUnitReverbMBS

Function: The AVAudioUnitReverb class is an AVAudioUnitEffect subclass that implements a reverb effect.
Notes:
A reverb simulates the acoustic characteristics of a particular environment. Use the different presets to simulate a particular space and blend it in with the original signal using the wetDryMix property. Subclass of the AVAudioUnitEffectMBS class.

18.29.2 Methods

18.29.3 Constructor

Function: The constructor.

18.29.4 loadFactoryPreset(preset as Integer)

Function: Configures the audio unit a reverb preset.
Notes:
preset: The reverb preset. See AVAudioUnitReverbPreset for the supported values.
The default value is AVAudioUnitReverbPresetMediumHall.

18.29.5 Properties

18.29.6 wetDryMix as Double

Function: The blend of the wet and dry signals.
Notes:
The blend is specified as a percentage. The range is 0% (all dry) through 100% (all wet).
(Read and Write property)
18.29.7 Constants

18.29.8 PresetCathedral = 8

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the reverb presets. **Notes:** The reverb preset with the acoustic characteristics of a cathedral environment.

18.29.9 PresetLargeChamber = 7

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the reverb presets. **Notes:** The reverb preset with the acoustic characteristics of a large-sized chamber environment.

18.29.10 PresetLargeHall = 4

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the reverb presets. **Notes:** The reverb preset with the acoustic characteristics of a large-sized hall environment.

18.29.11 PresetLargeHall2 = 12

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the reverb presets. **Notes:** The reverb preset with the acoustic characteristics of an alternate large-sized hall environment.

18.29.12 PresetLargeRoom = 2

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the reverb presets. **Notes:** The reverb preset with the acoustic characteristics of a large-sized room environment.

18.29.13 PresetLargeRoom2 = 9

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the reverb presets. **Notes:** The reverb preset with the acoustic characteristics of an alternate large-sized room environment.
18.29.14 PresetMediumChamber = 6

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the reverb presets.  
**Notes:** The reverb preset with the acoustic characteristics of a medium-sized chamber environment.

18.29.15 PresetMediumHall = 3

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the reverb presets.  
**Notes:** The reverb preset with the acoustic characteristics of a medium-sized hall environment. This is the default value for the audio unit.

18.29.16 PresetMediumHall2 = 10

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the reverb presets.  
**Notes:** The reverb preset with the acoustic characteristics of an alternate medium-sized hall environment.

18.29.17 PresetMediumHall3 = 11

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the reverb presets.  
**Notes:** The reverb preset with the acoustic characteristics of an alternate medium-sized hall environment.

18.29.18 PresetMediumRoom = 1

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the reverb presets.  
**Notes:** The reverb preset with the acoustic characteristics of a medium-sized room environment.

18.29.19 PresetPlate = 5

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the reverb presets.  
**Notes:** The reverb preset with the acoustic characteristics of a plate environment.

18.29.20 PresetSmallRoom = 0

MBS AVFoundation Plugin, Plugin Version: 15.3. **Function:** One of the reverb presets.  
**Notes:** The reverb preset with the acoustic characteristics of a small-sized room environment.
18.30  class AVAudioUnitSamplerMBS

18.30.1  class AVAudioUnitSamplerMBS

Function: The AVAudioUnitSampler class encapsulates Apple’s Sampler Audio Unit.
Notes: The sampler audio unit can be configured by loading different types of instruments such as an .aupreset file, a DLS or SF2 sound bank, an EXS24 instrument, a single audio file or with an array of audio files. The output is a single stereo bus.
Subclass of the AVAudioUnitMIDIInstrumentMBS class.

18.30.2  Methods

18.30.3  Constructor

Function: The private constructor.
See also:

- 18.30.4 Constructor(audioComponentDescription as AVAudioComponentDescriptionMBS) 3712

18.30.4  Constructor(audioComponentDescription as AVAudioComponentDescriptionMBS)

Function: Initializes a MIDI instrument audio unit with the specified component description.
See also:

- 18.30.3 Constructor 3712

18.30.5  loadAudioFilesAtFiles(Files() as folderitem, byref error as NSErrorMBS) as boolean

Function: Configures the sampler by loading the specified audio files.
Notes: Files: An array of files for the audio files.
Error: Returns, by-reference, a description of the error, if an error occurs.
Returns true if the sampler was configured with the audio file(s); otherwise false.

The audio files are loaded into a new instrument with each audio file placed into its own sampler zone. Any information contained in the audio file regarding their placement in the instrument, for example, root key, key range, will be used.

### 18.30.6 loadAudioFilesAtURLs(URLs() as string, byref error as NSErrorMBS) as boolean


**Function:** Configures the sampler by loading the specified audio files.

**Notes:**
- URLs: An array of URLs for the audio files.
- Error: Returns, by-reference, a description of the error, if an error occurs.

Returns true if the sampler was configured with the audio file(s); otherwise false.

The audio files are loaded into a new instrument with each audio file placed into its own sampler zone. Any information contained in the audio file regarding their placement in the instrument, for example, root key, key range, will be used.

### 18.30.7 loadInstrumentAtFile(File as folderitem, byref error as NSErrorMBS) as boolean


**Function:** Configures the sampler with the specified instrument file.

**Notes:**
- File: The file containing the instrument.
- Error: Returns, by-reference, a description of the error, if an error occurs.

Returns true if the sampler was configured with the instrument file; otherwise false.

The instrument can be of one of the following types: Logic or GarageBand EXS24, samplers native .aupreset file or an audio file, for example, .caf, .aiff, .wav, or .mp3.

In the case of single audio file, it is loaded into a new default instrument and any information contained in the audio file regarding its placement in the instrument, for example, root key, key range, will be used.
18.30.8  loadInstrumentAtURL(URL as string, byref error as NSErrorMBS) as boolean


**Function:** Configures the sampler with the specified instrument file.

**Notes:**

URL: The URL of the file containing the instrument.
Error: Returns, by-reference, a description of the error, if an error occurs.

Returns true if the sampler was configured with the instrument file; otherwise false.

The instrument can be of one of the following types: Logic or GarageBand EXS24, samplers native .aupreset file or an audio file, for example, .caf, .aiff, .wav, or .mp3.

In the case of single audio file, it is loaded into a new default instrument and any information contained in the audio file regarding its placement in the instrument, for example, root key, key range, will be used.

18.30.9  loadSoundBankInstrumentAtFile(bankFile as folderitem, program as Integer, bankMSB as Integer, bankLSB as Integer, byref error as NSErrorMBS) as boolean


**Function:** loads a specific instrument from the specified sound bank.

**Notes:**

bankFile: Soundbank file. The file can be either a DLS bank (.dls) or a SoundFont bank (.sf2).
program: program number for the instrument to load
bankMSB: MSB for the bank number for the instrument to load. This is usually 0x79 for melodic instruments and 0x78 for percussion instruments.
bankLSB: LSB for the bank number for the instrument to load. This is often 0, and represents the "bank variation".
Error: the status of the operation

This method reads from file and allocates memory, so it should not be called on a real time thread.
18.30. **CLASS AVAUDIOUNITSAMPLERMBS**

18.30.10 **loadSoundBankInstrumentAtURL**

```plaintext
loadSoundBankInstrumentAtURL(bankURL as string, program as Integer, bankMSB as Integer, bankLSB as Integer, byref error as NSErrorMBS) as boolean
```

**Function:** loads a specific instrument from the specified sound bank.  
**Notes:**  
- bankURL: URL for a Soundbank file. The file can be either a DLS bank (.dls) or a SoundFont bank (.sf2).  
- program: program number for the instrument to load  
- bankMSB: MSB for the bank number for the instrument to load. This is usually 0x79 for melodic instruments and 0x78 for percussion instruments.  
- bankLSB: LSB for the bank number for the instrument to load. This is often 0, and represents the "bank variation".  
- Error: the status of the operation  
This method reads from file and allocates memory, so it should not be called on a real time thread.

18.30.11 **Properties**

18.30.12 **globalTuning as Double**

**Function:** Adjusts the tuning of all the notes played.  
**Notes:**  
The tuning unit is cents. The default value is 0.0. The range of valid values is -2400 to 2400 cents.  
(Read and Write property)

18.30.13 **masterGain as Double**

**Function:** Adjusts the gain, in decibels, of all the notes played.  
**Notes:**  
The default value is 0.0 db. The range of valid values is -90.0 db to 12.0 db.  
(Read and Write property)

18.30.14 **stereoPan asDouble**

**Function:** Adjusts the stereo panning for all the notes played.
Notes:

The default value is 0.0. The range of valid values is -1.0 to 1.0.
(Read and Write property)
18.31  class AVAudioUnitTimeEffectMBS

18.31.1  class AVAudioUnitTimeEffectMBS

**Function:** The AVAudioUnitTimeEffect class is an AVAudioUnit subclass that processes audio in non-realtime.  
**Notes:**
An AVAudioUnitTimeEffect instance represents an AVAudioUnit of type aufc (kAudioUnitType_FormatConverter). These effects do not process audio in real-time. The AVAudioUnitVarispeed class is an example of a time effect unit. Subclass of the AVAudioUnitMBS class.

18.31.2  Methods

18.31.3  Constructor(audioComponentDescription as AVAudioComponentDescriptionMBS)

**Function:** Initializes a newly allocated audio component specified by the description.  
**Notes:**
audioComponentDescription: The description of the audio unit to be initialized. The componentType field of the description struct must be kAudioUnitType_FormatConverter (aufc).

If the componentType field of the audioComponentDescription struct is not kAudioUnitType_FormatConverter an exception is raised.

18.31.4  Properties

18.31.5  bypass as Boolean

**Function:** Returns the bypass state of the audio unit.  
**Notes:**
If true then the audio unit processing is being bypassed.  
(Read and Write property)
18.32 class AVAudioUnitTimePitchMBS

18.32.1 class AVAudioUnitTimePitchMBS

Function: The AVAudioUnitTimePitch class is an AVAudioUnitTimeEffect subclass that provides good
quality playback rate and pitch shifting independent of each other.
Notes: Subclass of the AVAudioUnitTimeEffectMBS class.

18.32.2 Methods

18.32.3 Constructor

Function: The constructor.

18.32.4 Properties

18.32.5 overlap as Double

Function: The amount of overlap between segments of the input audio signal.
Notes:
A higher value results in fewer artifacts in the output signal.
The default value is 8.0. The range of values is 3.0 to 32.0.
(Read and Write property)

18.32.6 pitch as Double

Function: The amount by which the input signal is pitch shifted.
Notes:
The pitch is measured in cents, a logarithmic value used for measuring musical intervals. One octave is equal
to 1200 cents. One musical semitone is equal to 100 cents.
The default value is 1.0. The range of values is -2400 to 2400.
(Read and Write property)
18.32.7 rate as Double


**Function:** The playback rate of the input signal.

**Notes:**

The default value is 1.0. The range of supported values is 1/32 to 32.0.

(Read and Write property)
18.33 class AVAudioUnitVarispeedMBS

18.33.1 class AVAudioUnitVarispeedMBS

Function: The AVAudioUnitVarispeed class is an AVAudioUnitTimeEffect subclass that allows control of
the playback rate.
Notes: Subclass of the AVAudioUnitTimeEffectMBS class.

18.33.2 Methods

18.33.3 Constructor

Function: The constructor.

18.33.4 Properties

18.33.5 Rate as Double

Function: The audio playback rate.
Notes:
The varispeed audio unit resamples the input signal, as a result changing the playback rate also changes the
pitch. For example, changing the rate to 2.0 results in the output audio playing one octave higher. Similarly
changing the rate to 0.5, results in the output audio playing one octave lower.

The pitch is measured in cents, a logarithmic value used for measuring musical intervals. One octave is equal
to 1200 cents. One musical semitone is equal to 100 cents.

Using the rate value you calculate the pitch (in cents) using the formula pitch = 1200.0 * log2(rate). Con-
versely, you calculate the appropriate rate for a desired pitch with the formula rate = pow(2, cents/1200.0).

The default value is 1.0. The range of values is 0.25 to 4.0. The unit of rate is unspecified.
(Read and Write property)
Chapter 19

AVMovie

19.1 class AVFragmentedMovieMBS

19.1.1 class AVFragmentedMovieMBS

Function: The movie class for fragmented movies.
Notes: A subclass of AVMovie for handling fragmented movie files. An AVFragmentedMovie is capable of changing
the values of certain of its properties and those of its tracks, if it’s associated with an instance of AVFragmentedMovieMinder when one or more movie fragments are appended to the movie file.
Subclass of the AVMovieMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

19.1.2 Methods

19.1.3 AVFragmentedMovieContainsMovieFragmentsDidChangeNotification as string

Function: One of the notification names.
Notes: Posted after the value of @”containsMovieFragments” has already been loaded and the AVFragmentedMovie is added to an AVFragmentedMovieMinder, either when 1) movie fragments are detected in
the movie file on disk after it had previously contained none or when 2) no movie fragments are detected in
the movie file on disk after it had previously contained one or more.

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19.1.4 AVFragmentedMovieDurationDidChangeNotification as string

Function: One of the notification names.
Notes: Posted when the duration of an AVFragmentedMovie changes while it’s being minded by an AVFragmentedMovieMinder, but only for changes that occur after the status of the value of @"duration" has reached AVKeyValueStatusLoaded.

19.1.5 AVFragmentedMovieWasDefragmentedNotification as string

Function: One of the notification names.
Notes: Posted when the movie file on disk is defragmented while an AVFragmentedMovie is being minded by an AVFragmentedMovieMinder, but only if the defragmentation occurs after the status of the value of @"canContainMovieFragments" has reached AVKeyValueStatusLoaded.

19.1.6 Constructor

Function: The private constructor.

19.1.7 fragmentedMovieTracks as AVFragmentedMovieTrackMBS()

Function: The tracks in a movie.
Notes: The value of this property is an array of tracks the movie contains; the tracks are of type AVFragmentedMovieTrack.

19.1.8 fragmentedMovieTracksWithMediaCharacteristic(mediaCharacteristic as string) as AVFragmentedMovieTrackMBS()

Function: Provides an array of AVFragmentedMovieTracks of the asset that present media with the specified characteristic.
Notes: mediaCharacteristic: The media characteristic according to which the receiver filters its AVFragmentedMovieTracks. (Media characteristics are defined in AVMediaFormat.h)
An array of AVFragmentedMovieTracks; may be empty if no tracks with the specified characteristic are available.
19.1. CLASS AVFRAGMENTEDMOVIEMBS

Becomes callable without blocking when the key "tracks" has been loaded

19.1.9 fragmentedMovieTracksWithMediaType(mediaType as string) as AVFragmentedMovieTrackMBS()

Function: Provides an array of AVFragmentedMovieTracks of the asset that present media of the specified media type.
Notes:

mediaType: The media type according to which the receiver filters its AVFragmentedMovieTracks. (Media types are defined in AVMediaFormat.h)
An array of AVFragmentedMovieTracks; may be empty if no tracks of the specified media type are available.
Becomes callable without blocking when the key "tracks" has been loaded

19.1.10 fragmentedMovieTrackWithTrackID(ID as Integer) as AVFragmentedMovieTrackMBS

Function: Provides an instance of AVFragmentedMovieTrack that represents the track of the specified trackID.
Notes:

ID: The trackID of the requested AVFragmentedMovieTrack.

An instance of AVFragmentedMovieTrack; may be nil if no track of the specified trackID is available.
Becomes callable without blocking when the key "tracks" has been loaded
19.2 class AVFragmentedMovieTrackMBS

19.2.1 class AVFragmentedMovieTrackMBS

Function: The class for a movie track from a fragmented movie.
Notes:
A subclass of AVMovieTrack for handling tracks of fragmented movie files. An AVFragmentedMovieTrack is capable of changing the values of certain of its properties, if its parent movie is associated with an instance of AVFragmentedMovieMinder when one or more movie fragments are appended to the movie file.
Subclass of the AVMovieTrackMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

19.2.2 Methods

19.2.3 AVFragmentedMovieTrackSegmentsDidChangeNotification as String

Function: One of the notification names for fragmented movies.
Notes: Posted when the array of segments of an AVFragmentedMovieTrack changes while the associated instance of AVFragmentedMovie is being minded by an AVFragmentedMovieMinder, but only for changes that occur after the status of the value of "segments" has reached AVKeyValueStatusLoaded.

19.2.4 AVFragmentedMovieTrackTimeRangeDidChangeNotification as String

Function: One of the notification names for fragmented movies.
Notes: Posted when the timeRange of an AVFragmentedMovieTrack changes while the associated instance of AVFragmentedMovie is being minded by an AVFragmentedMovieMinder, but only for changes that occur after the status of the value of "timeRange" has reached AVKeyValueStatusLoaded.

19.2.5 AVFragmentedMovieTrackTotalSampleDataLengthDidChangeNotification as String

Function: One of the notification names for fragmented movies.
Notes: This notification name has been deprecated. Use either AVFragmentedMovieTrackTimeRangeDidChangeNotification or AVFragmentedMovieTrackSegmentsDidChangeNotification instead; in either case, you can assume that timing changes to fragmented tracks result in changes to the total length of the sample.
19.2. CLASS AVFRAGMENTEDMOVIETRACKMBS

data used by the track.

19.2.6 Constructor

**Function:** The private constructor.
19.3 class AVMediaDataStorageMBS

19.3.1 class AVMediaDataStorageMBS

Function: The class for media storage.
Notes: Available on OS X 10.11 and newer.

19.3.2 Methods

19.3.3 available as boolean

Function: Whether this class is available.
Example:

```lisp
if not AVMediaDataStorageMBS.available then
    MsgBox "This application requires a newer OS X version."
end if
```

Notes: Returns true on OS X 10.11.

19.3.4 Constructor

Function: The private constructor.
See also:

- 19.3.5 Constructor(File as FolderItem, Options as Dictionary = nil)
- 19.3.6 Constructor(URL as String, Options as Dictionary = nil)

19.3.5 Constructor(File as FolderItem, Options as Dictionary = nil)

Function: Creates an AVMediaDataStorage object associated with a folderitem.
Notes:

File: A folderitem that specifies a file where sample data that is added to a movie or track should be written.
options: A dictionary object that contains keys for specifying options for the initialization of the AVMedia-
DataStorage object. Currently no keys are defined.
19.3. CLASS AVMEDIADATASTORAGEMBS

Raises exception if things go wrong.
See also:

- 19.3.4 Constructor
- 19.3.6 Constructor(URL as String, Options as Dictionary = nil)

19.3.6 Constructor(URL as String, Options as Dictionary = nil)

Function: Creates an AVMediaDataStorage object associated with a file URL.
Notes:

URL: An URL that specifies a file where sample data that is added to a movie or track should be written.
options: A dictionary object that contains keys for specifying options for the initialization of the AVMediaDataStorage object. Currently no keys are defined.

Raises exception if things go wrong.
See also:

- 19.3.4 Constructor
- 19.3.5 Constructor(File as FolderItem, Options as Dictionary = nil)

19.3.7 Properties

19.3.8 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

19.3.9 URL as String

Function: The URL from which the receiver was initialized; may be "".
Notes: (Read only property)
19.4 class AVMovieMBS

19.4.1 class AVMovieMBS


**Function:** AVMovie represents the audiovisual containers in a file that conforms to the QuickTime movie file format or to one of the related ISO base media file formats (such as MPEG-4).

**Example:**

```vbs
dim f as FolderItem = SpecialFolder.Desktop.Child("test.m4v")
dim m as new AVMovieMBS(f, nil)
MsgBox str(m.duration.Seconds)+" seconds."
```

**Notes:**

AVMovie supports operations involving the format-specific portions of the QuickTime Movie model that are not supported by AVAsset. For instance, you can retrieve the movie header from an existing QuickTime movie file. You can also use AVMovie to write a movie header into a new file, thereby creating a reference movie.

A mutable subclass of AVMovie, AVMutableMovie, provides methods that support the familiar Movie editing model; for instance, you can use AVMutableMovie to copy media data from one track and paste that data into another track. You can also use AVMutableMovie to establish track references from one track to another (for example, to set one track as a chapter track of another track). If you want to perform editing operations on individual tracks, you can use the associated classes AVMovieTrack and AVMutableMovieTrack.

You need to use AVMovie and AVMutableMovie only when operating on format-specific features of a QuickTime or ISO base media file. You generally do not need to use these classes just to open and play QuickTime movie files or ISO base media files. Instead, you can use the classes AVURLAsset and AVPlayerItem. If however you already have an AVMutableMovie and want to play it or inspect it, you can make an immutable snapshot of the AVMutableMovie.

Subclass of the AVAssetMBS class.

19.4.2 Methods

19.4.3 available as Boolean


**Function:** Whether this class is available.

**Example:**

```vbs
if not AVMovieMBS.available then
    MsgBox "This application requires a newer OS X version."
```
Notes: Returns true on OS X 10.10.

19.4.4 AVMovieReferenceRestrictionsKey as String

Function: Indicates the restrictions used by the movie when resolving references to external media data.
Notes:
The value of this key is an NSNumber wrapping an AVAssetReferenceRestrictions enum value or the logical combination of multiple such values. See AVAsset.h for the declaration of the AVAssetReferenceRestrictions enum.
Some movies can contain references to media data stored outside the movie’s container, for example in another file. This key can be used to specify a policy to use when these references are encountered. If a movie contains one or more references of a type that is forbidden by the reference restrictions, loading of movie properties will fail. In addition, such a movie cannot be used with other AVFoundation modules, such as AVPlayerItem or AVAssetExportSession.

19.4.5 Constructor

Function: The private constructor.
See also:

- 19.4.6 Constructor(Data as MemoryBlock, Options as Dictionary = nil) 3729
- 19.4.7 Constructor(File as FolderItem, Options as Dictionary = nil) 3730
- 19.4.8 Constructor(URL as String, Options as Dictionary = nil) 3731

19.4.6 Constructor(Data as MemoryBlock, Options as Dictionary = nil)

Function: Creates an AVMovie object from a movie header stored in an data parameter.
Notes:
data: An Memoryblock containing a movie header. We make a copy of that.
options: Dictionary object that contains keys for specifying options for the initialization of the AVMovie object. Currently no keys are defined.
CHAPTER 19. AVMOVIE

You can use this method to operate on movie headers that are not stored in files; this might include movie headers on the pasteboard (which do not contain media data). In general you should avoid loading an entire movie file with its media data into an instance of Memoryblock/String! By default, the defaultMediaDataStorage property will be nil and each associated AVMovieTrack’s mediaDataStorage property will be nil. If you want to create an AVMutableMovie from an NSData object and then append sample buffers to any of its tracks, you must first set one of these properties to indicate where the sample data should be written.

In case of error raises an exception.

Available on OS X 10.11.
See also:

- 19.4.5 Constructor
- 19.4.7 Constructor(File as FolderItem, Options as Dictionary = nil)
- 19.4.8 Constructor(URL as String, Options as Dictionary = nil)

19.4.7 Constructor(File as FolderItem, Options as Dictionary = nil)

Function: Creates an AVMovie object from a movie header stored in a QuickTime movie file or ISO base media file.
Example:

```dim f as FolderItem = SpecialFolder.Desktop.Child("test.m4v")
dim m as new AVMovieMBS(f, nil)
MsgBox str(m.duration.Seconds)+" seconds."
```

Notes:

File: A folderItem that specifies a file containing a movie header.
options: A Dictionary object that contains keys for specifying options for the initialization of the AVMovie object. Currently no keys are defined.

By default, the defaultMediaDataStorage property will be nil and each associated AVMovieTrack’s mediaDataStorage property will be nil.
If you want to create an AVMutableMovie from a file and then append sample buffers to any of its tracks, you must first set one of these properties to indicate where the sample data should be written.

Raises exception if something goes wrong.
See also:

- 19.4.5 Constructor
19.4. CLASS AVMOVIEMBS

- 19.4.6 Constructor(Data as MemoryBlock, Options as Dictionary = nil)
- 19.4.8 Constructor(URL as String, Options as Dictionary = nil)

19.4.8 Constructor(URL as String, Options as Dictionary = nil)

**Function:** Creates an AVMovie object from a movie header stored in a QuickTime movie file or ISO base media file.

**Notes:**

URL: An URL that specifies a file containing a movie header.
options: A Dictionary object that contains keys for specifying options for the initialization of the AVMovie object. Currently no keys are defined.

Returns An AVMovie object or nil in case of error.
By default, the defaultMediaDataStorage property will be nil and each associated AVMovieTrack’s mediaDataStorage property will be nil.
If you want to create an AVMutableMovie from a file and then append sample buffers to any of its tracks, you must first set one of these properties to indicate where the sample data should be written.

Raises exception if something goes wrong.
See also:

- 19.4.5 Constructor
- 19.4.6 Constructor(Data as MemoryBlock, Options as Dictionary = nil)
- 19.4.7 Constructor(File as FolderItem, Options as Dictionary = nil)

19.4.9 copy as AVMovieMBS

**Function:** Creates a copy of the movie.

**Example:**

```plaintext
dim f as FolderItem = SpecialFolder.Desktop.Child("test.m4v")
dim m as new AVMovieMBS(f, nil)

dim c as AVMutableMovieMBS = m.mutableCopy

Break // now edit

dim k as AVMovieMBS = c.copy

break // now we have k with snapshot and can still edit c
```
19.4.10  **movieHeaderWithFileType(fileType as String, byref error as NSErrorMBS) as MemoryBlock**


**Function:** Creates a memoryblock object containing the movie header of the AVMovie object.

**Notes:**

fileType: A UTI indicating the specific file format of the movie header (e.g. AVFileTypeQuickTimeMovie for a QuickTime movie).

Error: If an error occurs reading the movie header, describes the nature of the failure.

The movie header will be a pure reference movie, with no base URL, suitable for use on the pasteboard.

Returns memoryblock in case of success or nil in case of error.

Available on OS X 10.11 or newer.

19.4.11  **movieTracks as AVMovieTrackMBS()**


**Function:** The tracks in a movie.

**Notes:** The value of this property is an array of tracks the movie contains; the tracks are of type AVMovieTrack.

19.4.12  **movieTracksWithMediaCharacteristic(mediaCharacteristic as string) as AVMovieTrackMBS()**


**Function:** Provides an array of AVMovieTracks of the asset that present media with the specified characteristic.

**Example:**

```vba
    dim f as FolderItem = SpecialFolder.Desktop.Child(“test.m4v”)
dim m as new AVMovieMBS(f, nil)

dim videotracks() as AVMovieTrackMBS = m.movieTracksWithMediaCharacteristic(AVFoundationMBS.AVMediaCharacteristicVisual)

    MsgBox str(UBound(videotracks)+1)+” visual tracks”
```

**Notes:**

mediaCharacteristic: The media characteristic according to which the receiver filters its AVMovieTracks.
19.4. CLASS AVMOVIEMBS

(Media characteristics are defined in AVMediaFormat.h)
An array of AVMovieTracks; may be empty if no tracks with the specified characteristic are available. Becomes callable without blocking when the key "tracks" has been loaded.

19.4.13 movieTracksWithMediaType(mediaType as string) as AVMovieTrackMBS()

Function: Provides an array of AVMovieTracks of the asset that present media of the specified media type.
Example:
   dim f as FolderItem = SpecialFolder.Desktop.Child("test.m4v")
   dim m as new AVMovieMBS(f, nil)

   dim videotracks() as AVMovieTrackMBS = m.movieTracksWithMediaType(AVFoundationMBS.AV медиаTypeVideo)
   MsgBox str(UBound(videotracks)+1)+" video tracks"

Notes:
mediaType: The media type according to which the receiver filters its AVMovieTracks. (Media types are defined in AVMediaFormat.h)
An array of AVMovieTracks; may be empty if no tracks of the specified media type are available. Becomes callable without blocking when the key "tracks" has been loaded.

19.4.14 movieTrackWithTrackID(ID as Integer) as AVMovieTrackMBS

Function: Provides an instance of AVMovieTrack that represents the track of the specified trackID.
Notes:
ID: The trackID of the requested AVMovieTrack.

Returns n instance of AVMovieTrack; may be nil if no track of the specified trackID is available. Becomes callable without blocking when the key "tracks" has been loaded

19.4.15 movieTypes as String()

Function: Provides the file types the AVMovie class understands.
Example:
Notes: Returns an array of UTIs identifying the file types the AVMovie class understands.

19.4.16 movieWithData(Data as MemoryBlock, Options as Dictionary = nil) as AVMovieMBS

Function: Creates an AVMovie object from a movie header stored in an data parameter.
Notes:
- data: An Memoryblock/String containing a movie header. We make a copy of that.
- options: Dictionary object that contains keys for specifying options for the initialization of the AVMovie object. Currently no keys are defined.
- Returns An AVMovie object or nil in case of error.
You can use this method to operate on movie headers that are not stored in files; this might include movie headers on the pasteboard (which do not contain media data). In general you should avoid loading an entire movie file with its media data into an instance of Memoryblock/String! By default, the defaultMediaDataStorage property will be nil and each associated AVMovieTrack’s mediaDataStorage property will be nil.
If you want to create an AVMutableMovie from an NSData object and then append sample buffers to any of its tracks, you must first set one of these properties to indicate where the sample data should be written.
See also:

- 19.4.17 movieWithData(Data as String, Options as Dictionary = nil) as AVMovieMBS

19.4.17 movieWithData(Data as String, Options as Dictionary = nil) as AVMovieMBS

Function: Creates an AVMovie object from a movie header stored in an data parameter.
Example:

```// load movie in memory```
```
dim f as FolderItem = SpecialFolder.Desktop.Child(”test.m4v”)
dim b as BinaryStream = BinaryStream.Open(f)
```

```// now open it from memory```
```
dim s as string = b.Read(b.Length)
dim m as AVMovieMBS = AVMovieMBS.movieWithData(s)
```

MsgBox str(m.duration.Seconds)+” seconds.”
19.4. CLASS AVMOVIEMBS

Notes:

data: An Memoryblock/String containing a movie header. We make a copy of that.
options: Dictionary object that contains keys for specifying options for the initialization of the AVMovie object. Currently no keys are defined.
Returns An AVMovie object or nil in case of error.
You can use this method to operate on movie headers that are not stored in files; this might include movie headers on the pasteboard (which do not contain media data). In general you should avoid loading an entire movie file with its media data into an instance of Memoryblock/String! By default, the defaultMediaDataStorage property will be nil and each associated AVMovieTrack’s mediaDataStorage property will be nil.
If you want to create an AVMutableMovie from an NSData object and then append sample buffers to any of its tracks, you must first set one of these properties to indicate where the sample data should be written.
See also:

- 19.4.16 movieWithData(Data as MemoryBlock, Options as Dictionary = nil) as AVMovieMBS 3734

19.4.18 movieWithFile(File as FolderItem, Options as Dictionary = nil) as AVMovieMBS

Function: Creates an AVMovie object from a movie header stored in a QuickTime movie file or ISO base media file.
Example:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.m4v")
dim m as AVMovieMBS = AVMovieMBS.movieWithFile(f)
MsgBox str(m.duration.Seconds)+" seconds."

Notes:
File: A folderitem that specifies a file containing a movie header.
options: A Dictionary object that contains keys for specifying options for the initialization of the AVMovie object. Currently no keys are defined.
Returns An AVMovie object or nil in case of error.
By default, the defaultMediaDataStorage property will be nil and each associated AVMovieTrack’s mediaDataStorage property will be nil.
If you want to create an AVMutableMovie from a file and then append sample buffers to any of its tracks, you must first set one of these properties to indicate where the sample data should be written.
19.4.19 **movieWithURL**(*URL* as String, *Options* as Dictionary = nil) as AVMovieMBS

**Function:** Creates an AVMovie object from a movie header stored in a QuickTime movie file or ISO base media file.
**Notes:**
- **URL:** An URL that specifies a file containing a movie header.
- **options:** A Dictionary object that contains keys for specifying options for the initialization of the AVMovie object. Currently no keys are defined.
**Returns** An AVMovie object or nil in case of error.

By default, the defaultMediaDataStorage property will be nil and each associated AVMovieTrack’s mediaDataStorage property will be nil.
If you want to create an AVMutableMovie from a file and then append sample buffers to any of its tracks, you must first set one of these properties to indicate where the sample data should be written.

19.4.20 **mutableCopy** as AVMutableMovieMBS

**Function:** Creates a mutable copy of the movie.
**Example:**
```plaintext
dim f as FolderItem = SpecialFolder.Desktop.Child("test.m4v")
dim m as new AVMovieMBS(f, nil)

dim c as AVMutableMovieMBS = m.mutableCopy

Break // now edit

dim k as AVMovieMBS = c.copy

break // now we have k with snapshot and can still edit c
```

19.4.21 **writeMovieHeaderToFile**(*File* as FolderItem, *fileType* as String, *options* as Integer, byref *error* as NSErrorMBS) as Boolean

**Function:** Writes the movie header to a destination file.
**Notes:**
- **File:** A folderitem indicating where to write the movie header.
- **fileType:** A UTI indicating the specific file format (e.g. AVFileTypeQuickTimeMovie for a QuickTime movie).
19.4. CLASS AVMOVIEMBS

options: An integer whose bits specify options for the writing of the movie header. Can be AVMovieWritingTruncateDestinationToMovieHeaderOnly.
Error: If an error occurs writing the movie header, describes the nature of the failure.

Data references in the output movie header are adjusted to be relative to the destination URL. Note that modifications to instances of AVMutableMovie, to their constituent AVMutableMovieTracks, or to their collections of metadata are committed to storage when their movie headers are written.

19.4.22 writeMovieHeaderToURL(URL as String, fileType as String, options as Integer, byref error as NSErrorMBS) as Boolean

Function: Writes the movie header to a destination URL.
Notes:
URL: An URL indicating where to write the movie header.
fileType: A UTI indicating the specific file format (e.g. AVFileTypeQuickTimeMovie for a QuickTime movie).
options: An integer whose bits specify options for the writing of the movie header. Can be AVMovieWritingTruncateDestinationToMovieHeaderOnly.
Error: If an error occurs writing the movie header, describes the nature of the failure.

Data references in the output movie header are adjusted to be relative to the destination URL. Note that modifications to instances of AVMutableMovie, to their constituent AVMutableMovieTracks, or to their collections of metadata are committed to storage when their movie headers are written.

19.4.23 Properties

19.4.24 canContainMovieFragments as Boolean

Function: Indicates whether the movie file is capable of being extended by fragments.
Notes:
The value of this property is true if an 'mvex' box is present in the 'moov' box. The 'mvex' box is necessary in order to signal the possible presence of later 'moof' boxes.
(Read only property)
19.4.25  containsMovieFragments as Boolean

Function: Indicates whether the movie file is extended by at least one movie fragment.
Notes:
The value of this property is YES if canContainMovieFragments is YES and at least one 'moof' box is present
after the 'moov' box.
Available on OS X 10.11 or newer.
(Read only property)

19.4.26  Data as MemoryBlock

Function: The data block with which the instance of AVMovie was initialized; may be nil.
Notes:
Available on OS X 10.11 or newer.
(Read only property)

19.4.27  defaultMediaDataStorage as AVMediaDataStorageMBS

Function: The default storage container for media data added to a movie.
Notes:
The value of this property is an AVMediaDataStorage object that indicates where sample data that is added
to a movie should be written by default.
(Read only property)

19.4.28  URL as String

Function: The URL with which the instance of AVMovie was initialized; may be ""
Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.m4v")
dim m as new AVMovieMBS(f, nil)
MsgBox m.URL
```
19.4.29 Constants

19.4.30 AVMovieWritingTruncateDestinationToMovieHeaderOnly = 1

MBS AVFoundation Plugin, Plugin Version: 16.0. **Function:** One of the options for writeMovieHeaderToURL.
**Notes:**
If set, writing the movie header will truncate all existing data in the destination file and write a new movie header, thereby creating a pure reference movie file.
A file type box will be written at the beginning of the file. If not set, writing the movie header will remove any existing movie header in the destination file and write a new movie header, preserving any other data in the file. If the destination file was empty, a file type box will be written at the beginning of the file.
You would not want to use the AVMovieWritingTruncateDestinationToMovieHeaderOnly option if you had written sample data to the destination file using (for example) insertTimeRange with copySampleData set to true, since that data would be lost.
19.5 class AVMovieTrackMBS

19.5.1 class AVMovieTrackMBS

Function: AVMovieTrack represents the tracks of audiovisual containers in a file that conforms to the
QuickTime movie file format or to one of the related ISO base media file formats (such as MPEG-4).
Example:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.m4v")
dim m as new AVMovieMBS(f, nil)

dim videotracks() as AVMovieTrackMBS = m.movieTracksWithMediaCharacteristic(AVFoundationMBS.AV-
MediaCharacteristicFrameBased)

for each videotrack as AVMovieTrackMBS in videotracks
dim s as CGSizeMBS = videotrack.naturalSize
MsgBox str(s.Width)+" x " + str(s.Height)
next

Notes:
Subclass of the AVAssetTrackMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

19.5.2 Methods

19.5.3 available as Boolean

Function: Whether this class is available.
Example:

if not AVMovieTrackMBS.available then
MsgBox "This application requires a newer OS X version."
end if

Notes: Returns true on OS X 10.10.
19.5.4 Constructor

Function: The private constructor.

19.5.5 Properties

19.5.6 alternateGroupID as Integer

Function: An integer indicating the track as a member of a particular alternate group.
Notes: (Read only property)

19.5.7 mediaDataStorage as AVMediaDataStorageMBS

Function: The storage container for media data added to a track.
Notes: The value of this property is an AVMediaDataStorage object that indicates the location at which media data
inserted or appended to the track will be written.
(Read only property)

19.5.8 mediaDecodeTimeRange as CMTimeRangeMBS

Function: A CMTimeRange indicating the range of decode times for the track’s media.
Notes: (Read only property)

19.5.9 mediaPresentationTimeRange as CMTimeRangeMBS

Function: A CMTimeRange indicating the range of presentation times for the track’s media.
Notes: (Read only property)
19.6 class AVMutableMovieMBS

19.6.1 class AVMutableMovieMBS


**Function:** AVMutableMovie adds to its immutable superclass, AVMovie, several categories of methods for editing QuickTime movie files, e.g. inserting and removing time ranges of media, adding and removing tracks, and modifying the metadata collections stored therein. 

**Notes:**

By default, after creating an AVMutableMovie the defaultMediaDataStorage property will be nil and each associated AVMutableMovieTrack’s mediaDataStorage property will be nil. If you want to create an AVMutableMovie from a file and then append sample buffers to any of its tracks, you must first set one of these properties to indicate where the sample data should be written.

Available in OS X 10.11. 
Subclass of the AVMovieMBS class.

19.6.2 Methods

19.6.3 addMutableTracksCopyingSettingsFromTracks(existingTracks() as AVMovieTrackMBS, options as Dictionary) as AVMutableMovieTrackMBS()


**Function:** Adds one or more empty tracks to the target movie, copying track settings from the source tracks. 

**Notes:**

existingTracks: An array of AVMovieTrack objects. 
options: An dictionary object that contains keys for specifying options for the initialization of the new AVMutableMovieTrack objects. Currently no keys are defined; pass nil for default initialization behavior. 
Returns An array of AVMutableMovieTrack objects; the index of a track in this array is the same as the index of its source track in the existingTracks array. 
This method creates one or more empty tracks in the target movie and configures those tracks with settings (such as track userdata and metadata, width, height, and preferred volume) copied from the source tracks in the existingTracks array. Also, properties involving pairs of tracks (such as track references) are copied from the source tracks to the target tracks.

19.6.4 addMutableTrackWithMediaType(mediaType as String, track as AVMovieTrackMBS, options as Dictionary) as AVMutableMovieTrackMBS


**Function:** Adds an empty track to the target movie.
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Notes:

mediaType: The media type of the new track (e.g. AVMediaTypeVideo for a video track).
track: If you wish to transfer settings from an existing track, including trackuserdata
and metadata, width, height, preferred volume, etc., pass a reference to an
AVMovieTrack representing that track. Otherwise pass nil.

options: An Dictionary object that contains keys for specifying options for the initialization of the new
AVMutableMovieTrack object. Currently no keys are defined; pass nil for default initialization behavior.
Returns An AVMutableMovieTrack object or nil in case of error.
The trackID of the newly added track is a property of the returned instance of AVMutableMovieTrack.

19.6.5 Constructor

Function: The constructor to create blank new movie.
See also:
- 19.6.6 Constructor(Data as MemoryBlock, Options as Dictionary = nil) 3743
- 19.6.7 Constructor(Data as MemoryBlock, Options as Dictionary = nil, byref error as NSErrorMBS) 3744
- 19.6.8 Constructor(File as FolderItem, Options as Dictionary = nil) 3745
- 19.6.9 Constructor(File as FolderItem, Options as Dictionary = nil, byref error as NSErrorMBS) 3746
- 19.6.10 Constructor(Movie as AVMovieMBS = nil, Options as Dictionary = nil, byref error as NSErrorMBS) 3747
- 19.6.11 Constructor(URL as String, Options as Dictionary = nil) 3747
- 19.6.12 Constructor(URL as String, Options as Dictionary = nil, byref error as NSErrorMBS) 3748

19.6.6 Constructor(Data as MemoryBlock, Options as Dictionary = nil)

Function: Creates an AVMutableMovie object from a movie header stored in a Memoryblock/string.
Notes:
data: A memoryblock containing a movie header.
options: An dictionary object that contains keys for specifying options for the initialization of the AV-
MutableMovie object. Currently no keys are defined.
Error: If an error occurs creating a movie, describes the nature of the failure.
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Raises exception in case of error.

You can use this method to operate on movie headers that are not stored in files. In general you should avoid loading an entire movie file with its media data into an instance of memoryblock!

By default, the defaultMediaDataStorage property will be nil and each associated AVMutableMovieTrack’s mediaDataStorage property will be nil. If you want to create an AVMutableMovie from an memoryblock and then append sample buffers to any of its tracks, you must first set one of these properties to indicate where the sample data should be written.

See also:

- 19.6.5 Constructor
- 19.6.7 Constructor(Data as MemoryBlock, Options as Dictionary = nil, byref error as NSErrorMBS)
- 19.6.8 Constructor(File as FolderItem, Options as Dictionary = nil)
- 19.6.9 Constructor(File as FolderItem, Options as Dictionary = nil, byref error as NSErrorMBS)
- 19.6.10 Constructor(Movie as AVMovieMBS = nil, Options as Dictionary = nil, byref error as NSErrorMBS)
- 19.6.11 Constructor(URL as String, Options as Dictionary = nil)
- 19.6.12 Constructor(URL as String, Options as Dictionary = nil, byref error as NSErrorMBS)

19.6.7 Constructor(Data as MemoryBlock, Options as Dictionary = nil, byref error as NSErrorMBS)


Function: Creates an AVMutableMovie object from a movie header stored in a Memoryblock/string.

Notes:

data: A memoryblock containing a movie header.
options: An dictionary object that contains keys for specifying options for the initialization of the AVMutableMovie object. Currently no keys are defined.
Error: If an error occurs creating a movie, describes the nature of the failure.

Raises exception in case of error.

You can use this method to operate on movie headers that are not stored in files. In general you should avoid loading an entire movie file with its media data into an instance of memoryblock!

By default, the defaultMediaDataStorage property will be nil and each associated AVMutableMovieTrack’s mediaDataStorage property will be nil. If you want to create an AVMutableMovie from an memoryblock...
19.6. CLASS AVMUTABLEMOViembs

and then append sample buffers to any of its tracks, you must first set one of these properties to indicate
where the sample data should be written.

See also:

- 19.6.5 Constructor
- 19.6.6 Constructor(Data as MemoryBlock, Options as Dictionary = nil)
- 19.6.8 Constructor(File as FolderItem, Options as Dictionary = nil)
- 19.6.9 Constructor(File as FolderItem, Options as Dictionary = nil, byref error as NSErrorMBS)
- 19.6.10 Constructor(Movie as AVMovieMBS = nil, Options as Dictionary = nil, byref error as NSErrorMBS)
- 19.6.11 Constructor(URL as String, Options as Dictionary = nil)
- 19.6.12 Constructor(URL as String, Options as Dictionary = nil, byref error as NSErrorMBS)

19.6.8 Constructor(File as FolderItem, Options as Dictionary = nil)


Function: Creates an AVMutableMovie object from a movie header stored in a QuickTime movie file or
ISO base media file.

Notes:

File: An folderitem that specifies a file containing a movie header.
options: An Dictionary object that contains keys for specifying options for the initialization of the AV-
MutableMovie object. Currently no keys are defined.
Error: If an error occurs creating a movie, describes the nature of the failure.

Returns An AVMutableMovie object or nil in case of error.

Raises exception in case of error.

By default, the defaultMediaDataStorage property will be nil and each associated AVMutableMovieTrack's
mediaDataStorage property will be nil.
If you want to create an AVMutableMovie from a file and then append sample buffers to any of its tracks,
you must first set one of these properties to indicate where the sample data should be written.
See also:

- 19.6.5 Constructor
- 19.6.6 Constructor(Data as MemoryBlock, Options as Dictionary = nil)
- 19.6.7 Constructor(Data as MemoryBlock, Options as Dictionary = nil, byref error as NSErrorMBS)
19.6.9 Constructor(File as FolderItem, Options as Dictionary = nil, byref error as NSErrorMBS)


Function: Creates an AVMutableMovie object from a movie header stored in a QuickTime movie file or ISO base media file.

Notes:
File: An folderitem that specifies a file containing a movie header.
options: An Dictionary object that contains keys for specifying options for the initialization of the AVMutableMovie object. Currently no keys are defined.
Error: If an error occurs creating a movie, describes the nature of the failure.

Returns An AVMutableMovie object or nil in case of error.

Raises exception in case of error.

By default, the defaultMediaDataStorage property will be nil and each associated AVMutableMovieTrack’s mediaDataStorage property will be nil.
If you want to create an AVMutableMovie from a file and then append sample buffers to any of its tracks, you must first set one of these properties to indicate where the sample data should be written.

See also:

• 19.6.5 Constructor 3743
• 19.6.6 Constructor(Data as MemoryBlock, Options as Dictionary = nil) 3743
• 19.6.7 Constructor(Data as MemoryBlock, Options as Dictionary = nil, byref error as NSErrorMBS) 3744
• 19.6.8 Constructor(File as FolderItem, Options as Dictionary = nil) 3745
• 19.6.10 Constructor(Movie as AVMovieMBS = nil, Options as Dictionary = nil, byref error as NSErrorMBS) 3747
• 19.6.11 Constructor(URL as String, Options as Dictionary = nil) 3747
• 19.6.12 Constructor(URL as String, Options as Dictionary = nil, byref error as NSErrorMBS) 3748
19.6. CLASS AVMUTABLEMOVIEMBS

19.6.10 Constructor(Movie as AVMovieMBS = nil, Options as Dictionary = nil, byref error as NSErrorMBS)

**Function:** Creates an AVMutableMovie object without tracks (and therefore without media).
**Notes:**

movie: If you wish to transfer settings from an existing movie (including movie userdata and metadata, preferred rate, preferred volume, etc.), pass a reference to an AVMovie object representing that movie. Otherwise pass nil. The userdata and metadata from the source movie may need to be converted if the format of that movie differs from fileType; you may wish to inspect the userdata or metadata of the receiver to ensure that important data was copied.

options: A dictionary object that contains keys for specifying options for the initialization of the AVMutableMovie object. Currently no keys are defined; pass nil for default initialization behavior.

Error: If an error occurs creating a movie, describes the nature of the failure.

Raises exception in case of error.

By default, the defaultMediaDataStorage property will be nil and each associated AVMovieTrack’s mediaDataStorage property will be nil. If you want to create an AVMutableMovie from an NSData object and then append sample buffers to any of its tracks, you must first set one of these properties to indicate where the sample data should be written.

See also:

- 19.6.5 Constructor
- 19.6.6 Constructor(Data as MemoryBlock, Options as Dictionary = nil)
- 19.6.7 Constructor(Data as MemoryBlock, Options as Dictionary = nil, byref error as NSErrorMBS)
- 19.6.8 Constructor(File as FolderItem, Options as Dictionary = nil)
- 19.6.9 Constructor(File as FolderItem, Options as Dictionary = nil, byref error as NSErrorMBS)
- 19.6.11 Constructor(URL as String, Options as Dictionary = nil)
- 19.6.12 Constructor(URL as String, Options as Dictionary = nil, byref error as NSErrorMBS)

19.6.11 Constructor(URL as String, Options as Dictionary = nil)

**Function:** Creates an AVMutableMovie object from a movie header stored in a QuickTime movie file or ISO base media file.
**Notes:**

URL: An URL that specifies a file containing a movie header.

options: An Dictionary object that contains keys for specifying options for the initialization of the AVMutableMovie object. Currently no keys are defined.
Error: If an error occurs creating a movie, describes the nature of the failure. Optional.

Raises exception in case of error.

By default, the defaultMediaDataStorage property will be nil and each associated AVMutableMovieTrack’s mediaDataStorage property will be nil.

If you want to create an AVMutableMovie from a file and then append sample buffers to any of its tracks, you must first set one of these properties to indicate where the sample data should be written.

See also:

- 19.6.5 Constructor
- 19.6.6 Constructor(Data as MemoryBlock, Options as Dictionary = nil) 3743
- 19.6.7 Constructor(Data as MemoryBlock, Options as Dictionary = nil, byref error as NSErrorMBS) 3744
- 19.6.8 Constructor(File as FolderItem, Options as Dictionary = nil) 3745
- 19.6.9 Constructor(File as FolderItem, Options as Dictionary = nil, byref error as NSErrorMBS) 3746
- 19.6.10 Constructor(Movie as AVMovieMBS = nil, Options as Dictionary = nil, byref error as NSErrorMBS) 3747
- 19.6.12 Constructor(URL as String, Options as Dictionary = nil, byref error as NSErrorMBS) 3748

19.6.12 Constructor(URL as String, Options as Dictionary = nil, byref error as NSErrorMBS)


Function: Creates an AVMutableMovie object from a movie header stored in a QuickTime movie file or ISO base media file.

Notes:

URL: An URL that specifies a file containing a movie header.
options: An Dictionary object that contains keys for specifying options for the initialization of the AVMutableMovie object. Currently no keys are defined.
Error: If an error occurs creating a movie, describes the nature of the failure. Optional.

Raises exception in case of error.

By default, the defaultMediaDataStorage property will be nil and each associated AVMutableMovieTrack’s mediaDataStorage property will be nil.

If you want to create an AVMutableMovie from a file and then append sample buffers to any of its tracks, you must first set one of these properties to indicate where the sample data should be written.

See also:
19.6. CLASS AVMUTABLEMOVIEMBS

- 19.6.5 Constructor

- 19.6.6 Constructor(Data as MemoryBlock, Options as Dictionary = nil)

- 19.6.7 Constructor(Data as MemoryBlock, Options as Dictionary = nil, byref error as NSErrorMBS)

- 19.6.8 Constructor(File as FolderItem, Options as Dictionary = nil)

- 19.6.9 Constructor(File as FolderItem, Options as Dictionary = nil, byref error as NSErrorMBS)

- 19.6.10 Constructor(Movie as AVMovieMBS = nil, Options as Dictionary = nil, byref error as NSErrorMBS)

- 19.6.11 Constructor(URL as String, Options as Dictionary = nil)

19.6.13 insertEmptyTimeRange(timeRange as CMTimeRangeMBS)

Function: Adds an empty time range to the target movie.
Notes: timeRange: The time range to be made empty. Note that you cannot add empty time ranges to the end of a movie.

19.6.14 insertTimeRange(timeRange as CMTimeRangeMBS, asset as AVAssetMBS, atTime as CMTimeMBS, copySampleData as Boolean, byref Error as NSErrorMBS) as boolean

Function: Inserts all the tracks of a timeRange of an asset into a movie.
Notes:

- timeRange: The time range of the asset to be inserted.
- asset: An AVAsset object indicating the source of the inserted media. Only instances of AVURLAsset and AVComposition are supported. Must not be nil.
- startTime: The time in the target movie at which the media is to be inserted.
- copySampleData: A boolean value that indicates whether sample data is to be copied from the source to the destination during edits. If true, the sample data is written to the location specified by the track property mediaDataStorage if non-nil, or else by the movie property defaultMediaDataStorage if non-nil; if both are nil, the method will fail and return false. If false, sample data will not be written and sample references to the samples in their original container will be added as necessary.
- Note that in this case, this method will fail if the source AVAsset is not able to provide sample reference information for the original container.
- Error: If the insertion fails, an error object that describes the nature of the failure.
Returns a boolean value that indicates the success of the insertion.

This method may add new tracks to the target movie to ensure that all tracks of the asset are represented in the inserted timeRange.
Existing content at the specified startTime will be pushed out by the duration of timeRange.

19.6.15 metadata as AVMetadataItemMBS()

Function: A collection of metadata stored by the movie.
Notes: The value of this property is an array of AVMetadataItem objects representing the collection of metadata stored by the movie.

19.6.16 movieWithData(Data as MemoryBlock, Options as Dictionary = nil, byref Error as NSErrorMBS) as AVMovieMBS

Function: Creates an AVMutableMovie object from a movie header stored in a Memoryblock/string.
Notes:
data: A memoryblock/string containing a movie header.
options: An dictionary object that contains keys for specifying options for the initialization of the AVMutableMovie object. Currently no keys are defined.
Error: If an error occurs creating a movie, describes the nature of the failure.

Returns an AVMutableMovie object or nil in case of error.

You can use this method to operate on movie headers that are not stored in files. In general you should avoid loading an entire movie file with its media data into an instance of memoryblock!

By default, the defaultMediaDataStorage property will be nil and each associated AVMutableMovieTrack's mediaDataStorage property will be nil. If you want to create an AVMutableMovie from an memoryblock and then append sample buffers to any of its tracks, you must first set one of these properties to indicate where the sample data should be written.
See also:

- 19.6.17 movieWithData(Data as String, Options as Dictionary = nil, byref Error as NSErrorMBS) as AVMovieMBS
19.6.17 movieWithData(Data as String, Options as Dictionary = nil, byref Error as NSErrorMBS) as AVMovieMBS


**Function:** Creates an AVMutableMovie object from a movie header stored in a Memoryblock/string.

**Notes:**
- data: A memoryblock/string containing a movie header.
- options: An dictionary object that contains keys for specifying options for the initialization of the AVMutableMovie object. Currently no keys are defined.
- Error: If an error occurs creating a movie, describes the nature of the failure.

**Returns** An AVMutableMovie object or nil in case of error.

You can use this method to operate on movie headers that are not stored in files. In general you should avoid loading an entire movie file with its media data into an instance of memoryblock!

By default, the defaultMediaDataStorage property will be nil and each associated AVMutableMovieTrack’s mediaDataStorage property will be nil. If you want to create an AVMutableMovie from an memoryblock and then append sample buffers to any of its tracks, you must first set one of these properties to indicate where the sample data should be written.

See also:
- 19.6.16 movieWithData(Data as MemoryBlock, Options as Dictionary = nil, byref Error as NSErrorMBS) as AVMovieMBS

19.6.18 movieWithFile(File as FolderItem, Options as Dictionary = nil, byref Error as NSErrorMBS) as AVMovieMBS


**Function:** Creates an AVMutableMovie object from a movie header stored in a QuickTime movie file or ISO base media file.

**Notes:**
- File: An folderitem that specifies a file containing a movie header.
- options: An Dictionary object that contains keys for specifying options for the initialization of the AVMutableMovie object. Currently no keys are defined.
- Error: If an error occurs creating a movie, describes the nature of the failure.

**Returns** An AVMutableMovie object or nil in case of error.

By default, the defaultMediaDataStorage property will be nil and each associated AVMutableMovieTrack’s mediaDataStorage property will be nil.

If you want to create an AVMutableMovie from a file and then append sample buffers to any of its tracks,
you must first set one of these properties to indicate where the sample data should be written.

19.6.19 movieWithSettingsFromMovie(Movie as AVMovieMBS, Options as Dictionary = nil, byref Error as NSErrorMBS) as AVMovieMBS


Function: Creates an AVMutableMovie object without tracks (and therefore without media).

Notes:

movie: If you wish to transfer settings from an existing movie (including movie userdata and metadata, preferred rate, preferred volume, etc.), pass a reference to an AVMovie object representing that movie. Otherwise pass nil. The userdata and metadata from the source movie may need to be converted if the format of that movie differs from fileType; you may wish to inspect the userdata or metadata of the receiver to ensure that important data was copied.

options: A dictionary object that contains keys for specifying options for the initialization of the AVMutableMovie object. Currently no keys are defined; pass nil for default initialization behavior.

Error: If an error occurs creating a movie, describes the nature of the failure.

Returns An AVMutableMovie object or nil in case of error.

By default, the defaultMediaDataStorage property will be nil and each associated AVMovieTrack’s mediaDataStorage property will be nil. If you want to create an AVMutableMovie from an NSData object and then append sample buffers to any of its tracks, you must first set one of these properties to indicate where the sample data should be written.

19.6.20 movieWithURL(URL as String, Options as Dictionary = nil, byref Error as NSErrorMBS) as AVMovieMBS


Function: Creates an AVMutableMovie object from a movie header stored in a QuickTime movie file or ISO base media file.

Notes:

URL: An URL that specifies a file containing a movie header.

options: A dictionary object that contains keys for specifying options for the initialization of the AVMutableMovie object. Currently no keys are defined.

Error: If an error occurs creating a movie, describes the nature of the failure.

Returns An AVMutableMovie object or nil in case of error.

By default, the defaultMediaDataStorage property will be nil and each associated AVMutableMovieTrack’s mediaDataStorage property will be nil.
If you want to create an AVMutableMovie from a file and then append sample buffers to any of its tracks, you must first set one of these properties to indicate where the sample data should be written.

19.6.21 `mutableMovieTracks` as `AVMutableMovieTrackMBS()`


**Function:** The tracks in a mutable movie.

**Notes:** The value of this property is an array of tracks the mutable movie contains; the tracks are of type `AVMutableMovieTrack`.

19.6.22 `mutableMovieTracksWithMediaCharacteristic(mediaCharacteristic as string)` as `AVMutableMovieTrackMBS()`


**Function:** Provides an array of `AVMutableMovieTracks` of the asset that present media with the specified characteristic.

**Notes:**
- `mediaCharacteristic`: The media characteristic according to which the receiver filters its `AVMutableMovieTracks`. (Media characteristics are defined in `AVMediaFormat.h`)
- An array of `AVMutableMovieTracks`; may be empty if no tracks with the specified characteristic are available.
- Becomes callable without blocking when the key "tracks" has been loaded.

19.6.23 `mutableMovieTracksWithMediaType(mediaType as string)` as `AVMutableMovieTrackMBS()`


**Function:** Provides an array of `AVMutableMovieTracks` of the asset that present media of the specified media type.

**Notes:**
- `mediaType`: The media type according to which the receiver filters its `AVMutableMovieTracks`. (Media types are defined in `AVMediaFormat.h`)
- An array of `AVMutableMovieTracks`; may be empty if no tracks of the specified media type are available.
- Becomes callable without blocking when the key "tracks" has been loaded.
19.6.24 mutableMovieTrackWithTrackID(ID as Integer) as AVMutableMovieTrackMBS

**Function:** Provides an instance of AVMutableMovieTrack that represents the track of the specified trackID.  
**Notes:**  
ID: The trackID of the requested AVMutableMovieTrack.  

An instance of AVMutableMovieTrack; may be nil if no track of the specified trackID is available.  
Becomes callable without blocking when the key "tracks" has been loaded.

19.6.25 mutableTrackCompatibleWithTrack(track as AVAssetTrackMBS) as AVMutableMovieTrackMBS

**Function:** Provides a reference to a track of a mutable movie into which any time range of an AVAssetTrack can be inserted (via insertTimeRange:ofTrack).  
**Notes:**  
track: A reference to the AVAssetTrack from which a time range may be inserted.  
Returns An AVMutableMovieTrack that can accommodate the insertion.  
If no such track is available, the result is nil. A new track of the same media type as the AVAssetTrack can be created via addMutableTrackWithMediaType, and this new track will be compatible.  

For best performance, the number of tracks in a movie should be kept to a minimum, corresponding to the number for which media data must be presented in parallel. If media data of the same type is to be presented serially, even from multiple assets, a single track of that media type should be used. This method, mutableTrackCompatibleWithTrack, can help the client to identify an existing target track for an insertion.

19.6.26 removeTimeRange(timeRange as CMTimeRangeMBS)

**Function:** Removes a specified time range from a movie.  
**Notes:** timeRange: The time range to be removed.

19.6.27 removeTrack(track as AVMovieTrackMBS)

**Function:** Removes a track from the target movie.
19.6. CLASS AVMUTABLEMOVIE MBS

Notes: track: The track to be removed.

19.6.28 scaleTimeRange(timeRange as CMTTimeRangeMBS, duration as CMT-TimeMBS)

Function: Changes the duration of a time range of a movie.
Notes:
timeRange: The time range to be scaled.
duration: The new duration of the time range.

19.6.29 setMetadata(items() as AVMetadataItemMBS)

Function: Sets the metadata.

19.6.30 Properties

19.6.31 defaultMediaDataStorage as AVMediaDataStorageMBS

Function: The default storage container for media data added to a movie.
Notes:
The value of this property is an AVMediaDataStorage object that indicates where sample data that is added
to a movie should be written, for any track for whose mediaDataStorage property is nil.
(Read and Write property)

19.6.32 interleavingPeriod as CMTTimeMBS

Function: A CMTTime that indicates the duration for interleaving runs of samples of each track.
Notes:
The default interleaving period is 0.5 seconds.
(Read and Write property)
19.6.33 modified as Boolean

Function: Whether a movie has been modified.
Notes: The value of this property is a boolean that indicates whether the AVMutableMovie object has been modified since it was created, was last written, or had its modified state cleared via assignment Modified = false.
(Read and Write property)

19.6.34 preferredRate as Double

Function: The natural rate at which the movie is to be played; often but not always 1.0.
Notes: (Read and Write property)

19.6.35 preferredTransform as CMTimeMBS

Function: A CGAffineTransform indicating the transform specified in the movie’s storage container as the preferred transformation of the visual media data for display purposes; the value is often but not always CGAffineTransformIdentity.
Notes: (Read and Write property)

19.6.36 preferredVolume as Double

Function: The preferred volume of the audible media data of the movie; often but not always 1.0.
Notes: (Read and Write property)

19.6.37 timescale as Integer

Function: For file types that contain a 'moov' atom, such as QuickTime Movie files, specifies the time scale of the movie.
Notes: The default movie time scale is 600. In certain cases, you may want to set this to a different value. For instance, a movie that contains a single audio track should typically have the movie time scale set to the
19.6. **CLASS AVMUTABLEMOVIEMBS**

media time scale of that track.

This property should be set on a new empty movie before any edits are performed on the movie. (Read and Write property)
19.7 class AVMutableMovieTrackMBS

19.7.1 class AVMutableMovieTrackMBS

Function: AVMutableMovieTrack provides the track-level editing interface of an AVMutableMovie.  
Notes:  
Media can be inserted into a movie track and other editing operations performed via an instance of this class.  
Available on OS X 10.11.  
Subclass of the AVMovieTrackMBS class.  
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

19.7.2 Methods

19.7.3 addTrackAssociationToTrack(movieTrack as AVMovieTrackMBS, trackAssociationType as String)

Function: Establishes a track association of a specific type between two tracks.  
Notes:  
movieTrack: An AVMovieTrack object that is to be associated with the receiver.  
trackAssociationType: The type of track association to add between the receiver and the specified movieTrack (for instance, AVTrackAssociationTypeChapterList).

19.7.4 Constructor

Function: The private constructor.

19.7.5 insertEmptyTimeRange(timeRange as CMTimeRangeMBS)

Function: Adds an empty time range to the target track.  
Notes: timeRange: The time range to be made empty. Note that you cannot add empty time ranges to the end of a track.
19.7.6 **insertTimeRange(**timeRange as CMTimeRangeMBS, assetTrack as AVAssetTrackMBS, atTime as CMTimeMBS, copySampleData as Boolean, byref Error as NSErrorMBS) as boolean


**Function:** Inserts a portion of an AVAssetTrack object into the target movie.

**Notes:**
- **timeRange:** The time range from the track from which media is to be inserted.
- **track:** An AVAssetTrack object indicating the source of the inserted media. Only AVAssetTracks of AVURLAssets and AVCompositions are supported. Must not be nil.
- **startTime:** The time in the target track at which the media is to be inserted.
- **copySampleData:** A boolean value that indicates whether sample data is to be copied from the source to the destination during edits.

If true, the sample data is written to the file specified by the track property mediaDataStorage if non-nil, or else by the movie property defaultMediaDataStorage if non-nil; if both are nil, the method will fail and return NO.

If false, sample data will not be written and sample references to the samples in their original container will be added as necessary. Note that in this case, this method will fail if the original samples are fragmented.

**Error:** If the insertion fails, describes the nature of the failure.

Returns a boolean value that indicates the success of the insertion.

19.7.7 **metadata as AVMetadataItemMBS()**


**Function:** A collection of metadata stored by the track.

**Notes:** The value of this property is an array of AVMetadataItem objects representing the collection of metadata stored by the track.

19.7.8 **removeTimeRange(**timeRange as CMTimeRangeMBS) **


**Function:** Removes a specified time range from a track.

**Notes:** timeRange: The time range to be removed.
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19.7.9  removeTrackAssociationToTrack(movieTrack as AVMovieTrackMBS, trackAssociationType as String)

Function: Removes a track association of a specific type between two tracks.
Notes:
movieTrack: An AVMovieTrack object that is associated with the receiver.
trackAssociationType: The type of track association to remove between the receiver and the specified movieTrack (for instance, AVTrackAssociationTypeChapterList).

19.7.10 scaleTimeRange(timeRange as CMTimeRangeMBS, duration as CMTimeMBS)

Function: Changes the duration of a time range of a track.
Notes:
timeRange: The time range to be scaled.
duration: The new duration of the time range.

19.7.11 setMetadata(items() as AVMetadataItemMBS)

Function: Sets the metadata items.

19.7.12 Properties

19.7.13 alternateGroupID as Integer

Function: An integer indicating the track as a member of a particular alternate group.
Notes: (Read and Write property)

19.7.14 cleanApertureDimensions as CGSizeMBS

Function: A CGSize indicating the clean aperture dimensions of the track.
Notes: (Read and Write property)
19.7.15 Enabled as Boolean

Function: A boolean value indicating whether the track is enabled by default for presentation.
Notes: (Read and Write property)

19.7.16 encodedPixelsDimensions as CGSize

Function: A CGSize indicating the dimensions encoded pixels dimensions of the track.
Notes: (Read and Write property)

19.7.17 extendedLanguageTag as String

Function: The language tag associated with the track.
Notes:
The value of this property is an IETF BCP 47 (RFC 4646) language identifier indicating the language tag associated with the track; may be "" if no language tag is indicated.
(Read and Write property)

19.7.18 hasProtectedContent as Boolean

Function: Whether a track contains protected content.
Notes:
The value of this property is a boolean that indicates whether the track contains protected content.
(Read only property)

19.7.19 languageCode as String

Function: The language associated with the track.
Notes:
The value of this property is an ISO 639-2/T language code indicating the language associated with the track; may be "" if no language is indicated.
(Read and Write property)
19.7.20 layer as Integer

Function: The layer level of the visual media data of the track.
Notes: (Read and Write property)

19.7.21 mediaDataStorage as AVMediaDataStorageMBS

Function: The storage container for media data added to a track.
Notes: The value of this property is an AVMediaDataStorage object that indicates the location at which media data
inserted or appended to the track will be written.
(Read and Write property)

19.7.22 Modified as Boolean

Function: Whether a track has been modified.
Notes: The value of this property is a boolean that indicates whether the AVMutableMovieTrack object has been
modified since it was created, was last written, or had its modified state cleared via an assignment: Modified
= false.
(Read and Write property)

19.7.23 naturalSize as CGSizeMBS

Function: A CGSize indicating the dimensions at which the visual media data of the track should be dis-
played.
Notes: (Read and Write property)

19.7.24 preferredMediaChunkAlignment as Integer

Function: For file types that support media chunk alignment, the boundary for media chunk alignment (in
bytes).
Notes:
The default value is 0, which means that the receiver will choose an appropriate default value.
A value of 1 implies that no padding should be used to achieve a particular chunk alignment. It is an error to set a negative value for chunk alignment.
(Read and Write property)

### 19.7.25 preferredMediaChunkDuration as CMTimeMBS

**Function:** For file types that support media chunk durations, the maximum duration to be used for each chunk of sample data written to the file.
**Notes:**
The total duration of the samples in a chunk will be no greater than this preferred chunk duration, or the duration of a single sample if the sample’s duration is greater than this preferred chunk duration.

The default value is kCMTimeInvalid, which means that the receiver will choose an appropriate default chunk duration. It is an error to set a chunk duration that is negative or non-numeric.

This property and preferredMediaChunkSize, which also specifies the size of a chunk, are mutually exclusive. Thus, if both properties are set, the last setting is honored.
(Read and Write property)

### 19.7.26 preferredMediaChunkSize as Integer

**Function:** For file types that support media chunk sizes, the maximum size (in bytes) to be used for each chunk of sample data written to the file.
**Notes:**
The total size of the samples in a chunk will be no larger than this preferred chunk size, or the size of a single sample if the sample is larger than this preferred chunk size.

The default value is 0, which means that the receiver will choose an appropriate default chunk size. It is an error to set a negative chunk size.

This property and preferredMediaChunkDuration, which also specifies the size of a chunk, are mutually exclusive.
Thus, if both properties are set, the last setting is honored.
(Read and Write property)
19.7.27 preferredTransform as CGAffineTransformMBS

Function: A CGAffineTransform indicating the transform specified in the track’s storage container as the preferred transformation of the visual media data for display purposes; the value is often but not always CGAffineTransformIdentity.
Notes: (Read and Write property)

19.7.28 preferredVolume as Double

Function: The preferred volume of the audible media data of the track; often but not always 1.0.
Notes: (Read and Write property)

19.7.29 productionApertureDimensions as CGSizeMBS

Function: A CGSize indicating the production aperture dimensions of the track.
Notes: (Read and Write property)

19.7.30 sampleReferenceBaseURL as String

Function: For file types that support writing sample references, such as QuickTime Movie files, specifies the base URL that sample references are relative to; may be nil.
Notes:
If the value of this property can be resolved as an absolute URL, the sample locations written to the file when appending sample references to this track will be relative to this URL. The URL must point to a location contained by any common parent directory of the locations that will be referenced. For example, setting the sampleReferenceBaseURL property to "file:///Users/johnappleseed/Movies/" and appending sample buffers that refer to "file:///Users/johnappleseed/Movies/data/movie1.mov" will cause the sample reference "data/movie1.mov" to be written to the movie file.

If the value of the property cannot be resolved as an absolute URL or if it points to a location that is not contained by any common parent directory of the locations that will be referenced, the location will be written unmodified.

The default value is ",", which means that the location will be written unmodified.
(Read and Write property)
19.7. **CLASS AVMUTABLEMOVIETRACKMBS**

19.7.31 **timescale as Integer**


**Function:** For file types that contain a ‘moov’ atom, such as QuickTime Movie files, specifies the time scale of the track’s media.

**Notes:**

The default media time scale is 0.

This property should be set on a new empty track before any edits are performed on the track.

(Read and Write property)
Chapter 20

Barcode

20.1  class BarcodeGeneratorMBS

20.1.1  class BarcodeGeneratorMBS

**Function:** The class to generate barcodes.  
**Example:**  
```vbnet
dim b as new BarcodeGeneratorMBS  
b.Symbology = b.BarcodeQrcode  
b.Scale = 2  
b.BorderWidth = 4  
b.Encode "Hello Xojo Developer!"  
Backdrop = b.Picture
```

**Notes:**  
The MBS Plugin uses the zint library (BSD license).  
Please also see the manual for Zint (included in examples) for special options for individual barcodes.

20.1.2  Methods

20.1.3  Constructor

**Function:** The constructor.
20.1.4 Destructor


20.1.5 EANChecksum(text as string) as string

MBS Barcode Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calculates checksums for EAN.  
**Example:**
```
// returns "3" for 12 digit EAN:
MsgBox BarcodeGeneratorMBS.EANChecksum("425098421626")
```

**Notes:**
Returns checksum character.

For EAN 8, please use UPCChecksum function.

20.1.6 Encode(text as string, width as single = 0, height as single = 0, RotationAngle as Integer = 0)

**Example:**
```
dim b as new BarcodeGeneratorMBS
b.Symbology = b.BarcodeQrcode
b.Scale = 2
b.BorderWidth = 4
b.Encode "Hello Xojo Developer!"
Backdrop = b.Picture
```

**Notes:**
If width is zero, we use automatic width.
If height is zero, we use automatic height. Default height for some 2D bars is 30 units.  
RotationAngle can be 0, 90, 180 or 270.  
You can set options before calling and query other properties (like picture after this)
20.1.7 ISBNChecksum(text as string) as string

MBS Barcode Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Example:

// returns 6 for 9 digit ISBN:
MsgBox BarcodeGeneratorMBS.ISBNChecksum("074755100")

Notes: Returns checksum character.

20.1.8 SVG as String

Function: Creates SVG as text.
Example:

dim z as new BarcodeGeneratorMBS

// try QR Code
z.Symbology = BarcodeGeneratorMBS.BarcodeQrcode
z.Encode ”Hello World”

dim s1 as string = z.SVG

// try SVG
z.Symbology = BarcodeGeneratorMBS.BarcodeEanX
z.Encode ”123456789012”

dim s2 as string = z.SVG

break // check SVG

Notes: Lasterror and ErrorText are set.

20.1.9 UPCChecksum(text as string) as string

Function: Calculates UPC checksum.
Example:
dim s as string = "24796"
MsgBox BarcodeGeneratorMBS.UPCChecksum(s)

Notes: String must contain numbers.

20.1.10 ValidSymbologyID(ID as Integer) as Boolean


20.1.11 WritePS(path as string) as Integer

dim z as new BarcodeGeneratorMBS
z.Symbology = BarcodeGeneratorMBS.BarcodeUpca
z.Encode "72527270270"
dim f as FolderItem = SpecialFolder.Desktop.Child("barcode.eps")
dim e as Integer = z.WritePS(f.UnixpathMBS)
if z.ErrorText.len >0 then
  MsgBox z.ErrorText
else
  MsgBox "OK"
end if

Notes:
Returns error code. Lasterror and ErrorText is also set.
File path should be ASCII only (other characters not guaranteed) and maybe point to temp file somewhere.

20.1.12 WriteSVG(path as string) as Integer

Example:

```
Dim z As New BarcodeGeneratorMBS

z.Symbology = BarcodeGeneratorMBS.BarcodeUpca
z.Encode "72527270270"

Dim f As FolderItem = SpecialFolder.Desktop.Child("barcode.svg")
Dim e As Integer = z.WriteSVG(f.UnixpathMBS)
If z.ErrorText.len > 0 Then
    MsgBox z.ErrorText
Else
    MsgBox "OK"
End If
```

Notes:
Returns error code. Lasterror is set.
ErrorText is also set.
File path should be ASCII only (other characters not guaranteed) and maybe point to temp file somewhere.

20.1.13 Properties

20.1.14 BackColor as Color

**Function:** The background color.
**Notes:**
By default white.
Please set before Encode to take effect while encoding barcode.
(Read and Write property)

20.1.15 BitmapByteLength as Integer

**Function:** The byte length of a bitmap.
**Notes:** (Read only property)
20.1.16 BitmapHeight as Integer

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Height of stored bitmap image (in pixels). **Notes:** (Read only property)

20.1.17 BitmapWidth as Integer

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Width of stored bitmap image (in pixels). **Notes:** (Read only property)

20.1.18 BorderWidth as Integer

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Border width. **Notes:**
Default 0.
Please set before Encode to take effect while encoding barcode. (Read and Write property)

20.1.19 DotSize as Single

MBS Barcode Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The dot size. **Notes:** (Read and Write property)

20.1.20 ECI as Integer

MBS Barcode Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** ECI field. **Notes:** (Read and Write property)

20.1.21 ErrorText as String

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Error message in the event that an error occurred.
20.1.22 ForeColor as Color

**Function:** The foreground color.
**Notes:**
- By default black.
- Please set before Encode to take effect while encoding barcode.
- (Read and Write property)

20.1.23 Height as Integer

**Function:** Symbol height.
**Notes:**
- Default 50.
- (Read and Write property)

20.1.24 InputMode as Integer

**Function:** Set encoding of input data.
**Notes:**
- Default binary mode.
- Please set before Encode to take effect while encoding barcode.
- (Read and Write property)

20.1.25 LastError as Integer

**Function:** The last error code.
**Notes:** (Read and Write property)
20.1.26 Option1 as Integer

**Function:** Symbology specific options.
**Notes:**
Please set before Encode to take effect while encoding barcode.
(Read and Write property)

20.1.27 Option2 as Integer

**Function:** Symbology specific options.
**Notes:**
Please set before Encode to take effect while encoding barcode.
(Read and Write property)

20.1.28 Option3 as Integer

**Function:** Symbology specific options.
**Notes:**
Please set before Encode to take effect while encoding barcode.
(Read and Write property)

20.1.29 OutputOptions as Integer

**Function:** Binding or box parameters.
**Notes:**
Use OutputOptionBind, OutputOptionBox or OutputOptionNone.
Please set before Encode to take effect while encoding barcode.
(Read and Write property)

20.1.30 Picture as Picture

**Function:** The barcode picture.
20.1.1. Render as ZintRenderMBS

Function: The render information.
Notes: 
You can check this classes and draw the barcode yourself. 
For Example with DynaPDF as vector graphics. 

Only available after you called Encode method. 
(Read and Write property)

20.1.32 Rows as Integer

Function: Number of rows used by the symbol or, if using barcode stacking, the row to be used by the next symbol. 
Notes: (Read only property)

20.1.33 Scale as Single

Function: Scale factor for adjusting size of image. 
Example: 

```pascal
dim b as new BarcodeGeneratorMBS 
b.Symbology = b.BarcodeQrcode 
b.Scale = 4 
b.BorderWidth = 4 
b.Encode "Hello Xojo Developer!" 
Backdrop = b.Picture
```

Notes: 
Default is 1.0 
Please set before Encode to take effect while encoding barcode. 
(Read and Write property)
20.1.34  **ShowText as Boolean**


**Function:** Whether to show the text below the barcode.

**Notes:**

Please set before Encode to take effect while encoding barcode.
(Read and Write property)

20.1.35  **Symbology as Integer**


**Function:** Symbology to use.

**Notes:**

e.g. BarcodeEANX.

Please set before Encode to take effect while encoding barcode.
(Read and Write property)

20.1.36  **Text as String**


**Function:** Human readable text, which usually consists of the input data plus one or more check digits.

**Notes:**

Uses UTF-8 formatting.
(Read only property)

20.1.37  **WhitespaceWidth as Integer**


**Function:** The width of the whitespace.

**Notes:**

Please set before Encode to take effect while encoding barcode.
(Read and Write property)

20.1.38  **Width as Integer**


**Function:** Width of the generated symbol.
20.1.39 Constants

20.1.40 BarcodeAuspost = 63

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Australia Post Standard Customer

20.1.41 BarcodeAusredirect = 68

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Australia Post Redirection

20.1.42 BarcodeAusreply = 66

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Australia Post Reply Paid

20.1.43 BarcodeAusroute = 67

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Australia Post Routing

20.1.44 BarcodeAzrune = 128

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Aztec Runes

20.1.45 BarcodeAztec = 92

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Aztec Code
20.1.46  **BarcodeC25Iata = 4**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Code 2 of 5 IATA

20.1.47  **BarcodeC25Ind = 7**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Code 2 of 5 Industrial

20.1.48  **BarcodeC25Inter = 3**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Interleaved 2 of 5

20.1.49  **BarcodeC25Logic = 6**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Code 2 of 5 Data Logic

20.1.50  **BarcodeC25Matrix = 2**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Standard Code 2 of 5

20.1.51  **BarcodeChannel = 140**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Channel Code

20.1.52  **BarcodeCodabar = 18**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Codabar
20.1.53  BarcodeCodablock = 74

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants
**Notes:** Coda Block F

20.1.54  BarcodeCode11 = 1

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants
**Notes:** Code 11

20.1.55  BarcodeCode128 = 20

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants
**Notes:** Code 128 (automatic subset switching)

20.1.56  BarcodeCode128B = 60

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants
**Notes:** Code 128 (Subset B)

20.1.57  BarcodeCode16K = 23

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants
**Notes:** Code 16K

20.1.58  BarcodeCode32 = 129

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants
**Notes:** Code 32

20.1.59  BarcodeCode39 = 8

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants
**Notes:** Code 3 of 9 (Code 39)
20.1.60  **BarcodeCode49 = 24**
MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Code 49

20.1.61  **BarcodeCode93 = 25**
MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Code 93

20.1.62  **BarcodeCodeOne = 141**
MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Code One

20.1.63  **BarcodeDaft = 93**
MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** DAFT Code

20.1.64  **BarcodeDatamatrix = 71**
MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Data Matrix

20.1.65  **BarcodeDotCode = 115**
MBS Barcode Plugin, Plugin Version: 16.5. **Function:** One of the barcode symbology constants  
**Notes:** DotCode

20.1.66  **BarcodeDpident = 22**
MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Deutsche Post Identcode
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20.1.67 BarcodeDpleit = 21
MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants
**Notes:** Deutsche Post Leitcode

20.1.68 BarcodeEan128 = 16
MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants
**Notes:** GS1-128

20.1.69 BarcodeEan128Cc = 131
MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants
**Notes:** Composite Symbol with GS1-128 linear component

20.1.70 BarcodeEan13 = 13
MBS Barcode Plugin, Plugin Version: 14.2. **Function:** One of the barcode symbology constants

20.1.71 BarcodeEan14 = 72
MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants
**Notes:** EAN-14

20.1.72 BarcodeEan8 = 13
MBS Barcode Plugin, Plugin Version: 14.2. **Function:** One of the barcode symbology constants

20.1.73 BarcodeEANCheck = 14
MBS Barcode Plugin, Plugin Version: 16.5. **Function:** One of the barcode symbology constants
**Notes:** EAN Checks
20.1.74  **BarcodeEanx = 13**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** EAN

20.1.75  **BarcodeEanxCc = 130**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Composite Symbol with EAN linear component

20.1.76  **BarcodeExcode39 = 9**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Extended Code 3 of 9 (Code 39+)

20.1.77  **BarcodeFim = 49**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** FIM

20.1.78  **BarcodeFlat = 28**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Flattermarken

20.1.79  **BarcodeGridmatrix = 142**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Grid Matrix

20.1.80  **BarcodeHanXin = 116**

MBS Barcode Plugin, Plugin Version: 16.5. **Function:** One of the barcode symbology constants  
**Notes:** HanXin
20.1.81  **BarcodeHibc128** = 98

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** HIBC Code 128

20.1.82  **BarcodeHibc39** = 99

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** HIBC Code 39

20.1.83  **BarcodeHibcAztec** = 112

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** HIBC Aztec Code

20.1.84  **BarcodeHibcBlockf** = 110

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** HIBC Block F

20.1.85  **BarcodeHibcDm** = 102

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** HIBC Data Matrix

20.1.86  **BarcodeHibcMicpdf** = 108

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** HIBC MicroPDF417

20.1.87  **BarcodeHibcPdf** = 106

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** HIBC PDF417
20.1.88  BarcodeHibcQr = 104

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants
**Notes:** HIBC QR Code

20.1.89  BarcodeIsbnx = 69

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants
**Notes:** ISBN (EAN-13 with verification stage)

20.1.90  BarcodeItf14 = 89

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants
**Notes:** ITF-14

20.1.91  BarcodeJapanpost = 76

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants
**Notes:** Japanese Post

20.1.92  BarcodeKix = 90

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants
**Notes:** Dutch Post KIX Code

20.1.93  BarcodeKoreapost = 77

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants
**Notes:** Korea Post

20.1.94  BarcodeLogmars = 50

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants
**Notes:** LOGMARS
20.1.95  **BarcodeMaxicode = 57**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Maxicode

20.1.96  **BarcodeMicropdf417 = 84**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** MicroPDF417

20.1.97  **BarcodeMicroqr = 97**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Micro QR Code

20.1.98  **BarcodeMsiPlessey = 47**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** MSI Plessey

20.1.99  **BarcodeNve18 = 75**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** NVE-18

20.1.100 **BarcodeOnecode = 85**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** USPS OneCode

20.1.101 **BarcodePdf417 = 55**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** PDF417
20.1.102  **BarcodePdf417Trunc = 56**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** PDF417 Truncated

20.1.103  **BarcodePharma = 51**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Pharmacode One-Track

20.1.104  **BarcodePharmaTwo = 53**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Pharmacode Two-Track
20.1.105 BarcodePlanet = 82

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants
**Notes:** PLANET

20.1.106 BarcodePlessey = 86

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants
**Notes:** Plessey Code

20.1.107 BarcodePostnet = 40

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants
**Notes:** PostNet

20.1.108 BarcodePzn = 52

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants
**Notes:** PZN

20.1.109 BarcodeQrcode = 58

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants
**Notes:** QR Code

20.1.110 BarcodeRm4Scc = 70

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants
**Notes:** Royal Mail 4 State (RM4SCC)

20.1.111 BarcodeRss14 = 29

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants
**Notes:** GS1 DataBar-14
## 20.1.112 BarcodeRss14Cc = 132

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Composite Symbol with GS1 DataBar-14 linear component

## 20.1.113 BarcodeRss14OmniCc = 138

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Composite Symbol with GS1 DataBar-14 Stacked Omnidirectional component

## 20.1.114 BarcodeRss14Stack = 79

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** GS1 DataBar-14 Stacked

## 20.1.115 BarcodeRss14StackCc = 137

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Composite Symbol with GS1 DataBar-14 Stacked component

## 20.1.116 BarcodeRss14StackOmni = 80

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** GS1 DataBar-14 Stacked Omnidirectional

## 20.1.117 BarcodeRssExp = 31

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** GS1 DataBar Expanded

## 20.1.118 BarcodeRssExpCc = 134

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Composite Symbol with GS1 DataBar Extended component
20.1.119 **BarcodeRssExpstack = 81**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** GS1 DataBar Expanded Stacked

20.1.120 **BarcodeRssExpstackCc = 139**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Composite Symbol with GS1 DataBar Expanded Stacked component

20.1.121 **BarcodeRssLtd = 30**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** GS1 DataBar Limited

20.1.122 **BarcodeRssLtdCc = 133**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Composite Symbol with GS1 DataBar Limited component

20.1.123 **BarcodeTelepen = 32**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Telepen Alpha

20.1.124 **BarcodeTelepenNum = 87**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** Telepen Numeric

20.1.125 **BarcodeUpca = 34**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants  
**Notes:** UPC A
20.1.126  BarcodeUpcaCc = 135

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants
**Notes:** Composite Symbol with UPC A linear component

20.1.127  BarcodeUPCACheck = 35

MBS Barcode Plugin, Plugin Version: 16.5. **Function:** One of the barcode symbology constants
**Notes:** UPCA Check

20.1.128  BarcodeUpce = 37

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants
**Notes:** UPC E

20.1.129  BarcodeUpceCc = 136

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the barcode symbology constants
**Notes:** Composite Symbol with UPC E linear component

20.1.130  BarcodeUPCECheck = 38

MBS Barcode Plugin, Plugin Version: 16.5. **Function:** One of the barcode symbology constants
**Notes:** UPCE Check

20.1.131  ErrorEncodingProblem = 9

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the error constants.
**Notes:** A problem has occurred during encoding of the data. This should never happen. Please contact the developer if you encounter this error.

20.1.132  ErrorFileAccess = 10

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the error constants.
**Notes:** Zint was unable to open the requested output file. This is usually a file permissions problem.
20.1.133  **ErrorInvalidCheck = 7**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the error constants.  
**Notes:** An ISBN with an incorrect check digit has been entered. No symbol has been generated.

20.1.134  **ErrorInvalidData = 6**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the error constants.  
**Notes:** The data to be encoded includes characters which are not permitted by the selected symbology (e.g. alphabetic characters in an EAN symbol). No symbol has been generated.

20.1.135  **ErrorInvalidOption = 8**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the error constants.  
**Notes:** One of the values in zint_struct was set incorrectly and Zint was unable to guess what it should have been. No symbol has been generated.

20.1.136  **ErrorMemory = 11**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the error constants.  
**Notes:** Zint ran out of memory. This should only be a problem with legacy systems.

20.1.137  **ErrorTooLong = 5**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the error constants.  
**Notes:** The input data is too long or too short for the selected symbology. No symbol has been generated.

20.1.138  **InputModeData = 0**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the input mode constants.  
**Notes:** Uses full ASCII range interpreted as Latin-1 or binary data.

20.1.139  **InputModeGS1 = 2**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the input mode constants.  
**Notes:** Encodes GS1 data using FNC1 characters.
20.1.140  **InputModeKanji = 3**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the input mode constants.  
**Notes:** Kanji

20.1.141  **InputModeSJIS = 4**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the input mode constants.  
**Notes:** SJJS

20.1.142  **InputModeUnicode = 1**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the input mode constants.  
**Notes:** Uses pre-formatted UTF-8 input.

20.1.143  **OptionDMRE = 101**

MBS Barcode Plugin, Plugin Version: 16.5. **Function:** One of the output options.

20.1.144  **OptionSquare = 100**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the options.  
**Notes:** An extra feature is available for Data Matrix symbols which allows Zint to automatically resize the symbol as required but also prevents Zint from using rectangular symbols. To set this mode set the value `Option3 = OptionSquare`.

20.1.145  **OutputOptionBind = 2**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the output options.  
**Notes:** Boundary bars above and below the symbol and between rows if stacking multiple symbols.
20.1. CLASS BARCODEGENERATORMBS

20.1.146 OutputOptionBoldText = 64

MBS Barcode Plugin, Plugin Version: 16.5. **Function:** One of the output options.  
**Notes:** Use bold text.

20.1.147 OutputOptionBox = 4

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the output options.  
**Notes:** Add a box surrounding the symbol and whitespace.

20.1.148 OutputOptionCMYKColors = 128

MBS Barcode Plugin, Plugin Version: 16.5. **Function:** One of the output options.  
**Example:**
```csharp
dim z as new BarcodeGeneratorMBS
// enable CMYK
z.OutputOptions = z.OutputOptionCMYKColors
```

**Notes:**
use CMYK colors for Postscript output.  
For images, you can use plugin functions to convert RGB to CMYK if needed.

20.1.149 OutputOptionDottyMode = 256

MBS Barcode Plugin, Plugin Version: 16.5. **Function:** One of the output options.

20.1.150 OutputOptionNoASCII = 1

MBS Barcode Plugin, Plugin Version: 16.5. **Function:** One of the output options.

20.1.151 OutputOptionNone = 0

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the output options.  
**Notes:** No box or boundary bars.
20.1.152  **OutputOptionReaderInit = 16**

MBS Barcode Plugin, Plugin Version: 16.5. **Function:** One of the output options.

20.1.153  **OutputOptionSmallText = 32**

MBS Barcode Plugin, Plugin Version: 16.5. **Function:** One of the output options.  
**Notes:** Use small text.

20.1.154  **OutputOptionStdOut = 8**

MBS Barcode Plugin, Plugin Version: 16.5. **Function:** One of the output options.  
**Notes:** Write to stdout.

20.1.155  **WarnInvalidOption = 2**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the error constants.  
**Notes:** One of the values was set incorrectly but Zint has made a guess at what it should have been and generated a barcode accordingly.

20.1.156  **WarnUseECI = 3**

MBS Barcode Plugin, Plugin Version: 16.5. **Function:** One of the error constants.  
**Notes:** The warning to use ECI.
20.2. CLASS BARCODESCANNERMBS

20.2 class BarcodeScannerMBS

20.2.1 class BarcodeScannerMBS

MBS Picture Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
A class to read a barcode from a given picture.
Deprecated: This item is deprecated and should no longer be used. You can use zxing classes instead.
Notes: Deprecated in favor of new zxing classes.

20.2.2 Methods

20.2.3 Scan(p as picture) as boolean

Function:
Scans for a barcode on the picture.
Notes:
The barcode is searched on the middle vertical line from the left to right.
So the picture you pass can be as small as just one pixel height.
The barcode should be horizontal centered in that picture for best results.
Returns true on success and false on failure.
See also:

- 20.2.4 Scan(p as picture, lines() as Integer) as boolean

20.2.4 Scan(p as picture, lines() as Integer) as boolean

Function:
Scans for a barcode on the picture.
Example:

```dim i as Integer
dim lines(-1) as Integer
dim b as BarcodeScannerMBS
dim p as Picture
// set b to your scanner and p to your picture
for i=0 to 99
    lines.append i*10 // search every 10th line on a 1000 pixel high image.
next```
if b.scan(p,lines) then
// ok
end if

Notes:
The barcode is searched on the lines with the given offsets from the left to right.

The lines array must have at least one entry specifying the lines to search on.
If the values in the lines array are out of bounds, they are ignored. The first line has the value 0.

So the picture you pass can be as small as just one pixel height.
The barcode should be horizontal centered in that picture for best results.

Returns true on success and false on failure.
See also:

• 20.2.3 Scan(p as picture) as boolean

20.2.5 Properties

20.2.6 Barcode as String

MBS Picture Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
The barcode result of the last scan.
Notes:
If the last scan was successful, this property has a value.
If the last scan failed, this property is empty.
(Read and Write property)

20.2.7 CheckDigits as Boolean

MBS Picture Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Whether to calculate the checksum.
Notes:
Normal 12 or 13 digit barcodes have the last number being a checksum.
If it does not match, the barcode is declined.

Default is false.
(Read and Write property)
20.2.8 LastBarcode as String

MBS Picture Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The barcode result of the last successful scan.

**Notes:**
If a scan fails, this value still has the value of the last successful scan.
(Read and Write property)

20.2.9 LastPicture as Picture

MBS Picture Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last picture used for the scan.

**Notes:** (Read and Write property)

20.2.10 MinimumLength as Integer

MBS Picture Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The minimum length of barcodes.

**Notes:**
Set to 0 to disable.

To avoid false barcodes, any barcode is rejected which does not have the sufficient length.

Default is 13.
(Read and Write property)

20.2.11 Mode as Integer

MBS Picture Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The mode of the scanner.

**Notes:**
Mode 0 is to scan EANs.
Mode 1 is to scan 2/5 family barcodes.
(Read and Write property)
20.3 class ZintRenderHexagonMBS

20.3.1 class ZintRenderHexagonMBS

Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

20.3.2 Methods

20.3.3 Constructor


20.3.4 Properties

20.3.5 NextObject as ZintRenderHexagonMBS

Notes: This is nil on the last object in the chain. (Read and Write property)

20.3.6 X as Single

Notes: (Read only property)

20.3.7 Y as Single

Notes: (Read only property)
20.4. CLASS ZINTRENDERLINEMBS

20.4 class ZintRenderLineMBS

20.4.1 class ZintRenderLineMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for a line to draw.  
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

20.4.2 Methods

20.4.3 Constructor


20.4.4 Properties

20.4.5 Length as Single

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The length of the line.  
**Notes:** (Read only property)

20.4.6 NextObject as ZintRenderLineMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The next line object in the chain.  
**Notes:**  
This is nil on the last object in the chain.  
(Read and Write property)

20.4.7 Width as Single

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The width of the line.  
**Notes:**
You need to know the orientation of the barcode to know how to draw it
(Read only property)

**20.4.8 X as Single**

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The X coordinate.  
**Notes:** (Read only property)

**20.4.9 Y as Single**

**Notes:** (Read only property)
20.5. class ZintRenderMBS

20.5.1 class ZintRenderMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for render information. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

20.5.2 Methods

20.5.3 Constructor


20.5.4 hexagons as ZintRenderHexagonMBS()

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns array with all the hexagon objects.

20.5.5 lines as ZintRenderLineMBS()

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns array with all the line objects.

20.5.6 rings as ZintRenderRingMBS()

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns array with all the ring objects.

20.5.7 strings as ZintRenderStringMBS()

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns array with all the string objects.
20.5.8 Properties

20.5.9 FirstHexagon as ZintRenderHexagonMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The first hexagon object in the chain of string objects. Notes: (Read and Write property)

20.5.10 FirstLine as ZintRenderLineMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The first line object in the chain of string objects. Notes: (Read and Write property)

20.5.11 FirstRing as ZintRenderRingMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The first ring object in the chain of string objects. Notes: (Read and Write property)

20.5.12 FirstString as ZintRenderStringMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The first string object in the chain of string objects. Notes: (Read and Write property)

20.5.13 Height as Single

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The height of the barcode. Notes: (Read only property)

20.5.14 Width as Single

20.5. **CLASS ZINTRENDERMBS**

**Notes:** (Read only property)
20.6 class ZintRenderRingMBS

20.6.1 class ZintRenderRingMBS

**Function:** The class for a ring to draw.  
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

20.6.2 Methods

20.6.3 Constructor

**Function:** The private constructor.

20.6.4 Properties

20.6.5 LineWidth as Single

**Function:** The width of the line.  
**Notes:** (Read only property)

20.6.6 NextObject as ZintRenderRingMBS

**Function:** The next ring object in the chain.  
**Notes:** This is nil on the last object in the chain.  
(Read and Write property)

20.6.7 Radius as Single

**Function:** The radius for this ring.  
**Notes:** (Read only property)
20.6.8  X as Single

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The X coordinate.  
**Notes:** (Read only property)

20.6.9  Y as Single

**Notes:** (Read only property)
20.7  class ZintRenderStringMBS

20.7.1  class ZintRenderStringMBS

Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

20.7.2  Methods

20.7.3  Constructor


20.7.4  Properties

20.7.5  FontSize as Single

Notes: (Read only property)

20.7.6  Length as Integer

Notes: (Read and Write property)

20.7.7  NextObject as ZintRenderStringMBS

Notes:
This is nil on the last object in the chain.
(Read and Write property)
20.7. **CLASS ZINTRENDERSTRINGMBS**

### 20.7.8 Text as String

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The text.

**Notes:**
Plugin assumes string is in UTF-8.
(Read and Write property)

### 20.7.9 Width as Single

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The width of the string.

**Notes:** (Read only property)

### 20.7.10 X as Single

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The X coordinate.

**Notes:** (Read only property)

### 20.7.11 Y as Single


**Notes:** (Read only property)
20.8  class zxingAztecReaderMBS

20.8.1  class zxingAztecReaderMBS

Notes: Subclass of the zxingReaderMBS class.

20.8.2  Methods

20.8.3  Constructor

20.9. **CLASS ZXINGBARCODEFORMATMBS**

20.9  class zxingBarcodeFormatMBS

20.9.1  class zxingBarcodeFormatMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for a barcode format.

20.9.2  Methods

20.9.3  Constructor(value as Integer)


20.9.4  Properties

20.9.5  Name as String

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The name of the barcode for display. **Notes:** (Read only property)

20.9.6  Value as Integer

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The numeric value for this barcode. **Notes:** (Read and Write property)

20.9.7  Constants

20.9.8  kFormatAzTec = 1

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the possible barcode format constants. **Notes:** Aztec
20.9.9 \texttt{kFormatCoda128} = 5

MBS Barcode Plugin, Plugin Version: 13.5. \textbf{Function:} One of the possible barcode format constants. 
\textbf{Notes:} Code 128 1D format.

20.9.10 \texttt{kFormatCoda39} = 3

MBS Barcode Plugin, Plugin Version: 13.5. \textbf{Function:} One of the possible barcode format constants. 
\textbf{Notes:} Coda 39

20.9.11 \texttt{kFormatCoda93} = 4

MBS Barcode Plugin, Plugin Version: 13.5. \textbf{Function:} One of the possible barcode format constants. 
\textbf{Notes:} Code 39 1D format.

20.9.12 \texttt{kFormatCodaBar} = 2

MBS Barcode Plugin, Plugin Version: 13.5. \textbf{Function:} One of the possible barcode format constants. 
\textbf{Notes:} Coabar

20.9.13 \texttt{kFormatCodaEAN13} = 8

MBS Barcode Plugin, Plugin Version: 13.5. \textbf{Function:} One of the possible barcode format constants. 
\textbf{Notes:} EAN-13 1D format.

20.9.14 \texttt{kFormatCodaEAN8} = 7

MBS Barcode Plugin, Plugin Version: 13.5. \textbf{Function:} One of the possible barcode format constants. 
\textbf{Notes:} EAN-8 1D format

20.9.15 \texttt{kFormatCodaITF} = 9

MBS Barcode Plugin, Plugin Version: 13.5. \textbf{Function:} One of the possible barcode format constants. 
\textbf{Notes:} ITF (Interleaved Two of Five) 1D format.
20.9.16 kFormatCodaPDF417 = 11

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the possible barcode format constants.  
**Notes:** PDF417 format.

20.9.17 kFormatCodaQRCode = 12

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the possible barcode format constants.  
**Notes:** QR Code 2D barcode format.

20.9.18 kFormatCodaRSSExpanded = 14

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the possible barcode format constants.  
**Notes:** Coda RSS Expanded

20.9.19 kFormatCodaUPCA = 15

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the possible barcode format constants.  
**Notes:** UPC-A 1D format.

20.9.20 kFormatCodaUPCE = 16

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the possible barcode format constants.  
**Notes:** UPC-E 1D format.

20.9.21 kFormatCodaUPCEANExtension = 17

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the possible barcode format constants.  
**Notes:** UPC EAN Extension

20.9.22 kFormatCodeRSS14 = 13

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the possible barcode format constants.  
**Notes:** RSS 14
20.9.23 kFormatDataMatrix = 6

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the possible barcode format constants. **Notes:** DataMatrix 2D barcode format.
20.10. CLASS ZXINGBINARIZERMBS

20.10 class zxingBinarizerMBS

20.10.1 class zxingBinarizerMBS

**Function:** The binarazer class.

**Notes:**
This class provides binary values for luminance values.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

20.10.2 Methods

20.10.3 Constructor

**Function:** The private constructor.

20.10.4 createBinarizer(source as zxingLuminanceSourceMBS) as zxingBinarizerMBS

**Function:** Creates a new binarizer for the given luminance source.

20.10.5 Properties

20.10.6 Handle as Integer

**Function:** The internal object reference.

**Notes:** (Read only property)

20.10.7 Height as Integer

**Function:** Queries height of the image.

**Notes:** (Read only property)
20.10.8 LuminanceSource as zxingLuminanceSourceMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The luminance source used.  
**Notes:** (Read only property)

20.10.9 Width as Integer

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries width of the image.  
**Notes:** (Read only property)
20.11.  CLASS ZXINGBINARYBITMAPMBS

20.11  class zxingBinaryBitmapMBS

20.11.1  class zxingBinaryBitmapMBS

Function:  This class is the core bitmap class used by ZXing to represent 1 bit data.
Notes:  Reader objects accept a BinaryBitmap and attempt to decode it.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

20.11.2  Methods

20.11.3  Constructor


20.11.4  CreateWithPicture(pic as picture, hybrid as boolean = false) as zxingBinaryBitmapMBS

Notes:  if hybrid is true, we use internally the HybridBinarizer, else the GlobalHistogramBinarizer.

20.11.5  crop(left as Integer, top as Integer, width as Integer, height as Integer) as zxingBinaryBitmapMBS


20.11.6  rotateCounterClockwise as zxingBinaryBitmapMBS

20.11.7 string as string


20.11.8 Properties

20.11.9 Handle as Integer


20.11.10 Height as Integer

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Queries height of the image. Notes: (Read only property)

20.11.11 isCropSupported as Boolean

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Whether this bitmap can be cropped. Notes: (Read only property)

20.11.12 isRotateSupported as Boolean

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Whether this bitmap supports counter-clockwise rotation. Notes: (Read only property)

20.11.13 LuminanceSource as zxingLuminanceSourceMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Queries the luminance source for this bitmap. Notes: (Read only property)
20.11.14 Width as Integer

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries width of the image.  
**Notes:** (Read only property)
20.12 class zxingBitArrayMBS

20.12.1 class zxingBitArrayMBS


20.12.2 Methods

20.12.3 clear

Example:

dim b as new zxingBitArrayMBS(10)
b.set(2)
// show
MsgBox b.Text
// clear the bits
b.clear
// and show again
MsgBox b.Text

20.12.4 Constructor(size as Integer)


20.12.5 get(index as Integer) as boolean


20.12.6 getNextSet(fromIndex as Integer) as Integer

20.12.7  getNextUnset(fromIndex as Integer) as Integer


20.12.8  isRange(start as Integer, ende as Integer, value as boolean) as boolean

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Efficient method to check if a range of bits is set, or not set.

20.12.9  PictureColumn(pic as picture, Column as Integer) as zxingBitArrayMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries a column of a picture as bit array.

20.12.10  PictureRow(pic as picture, row as Integer) as zxingBitArrayMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries a row of a picture as bit array.

20.12.11  reverse


**Example:**

```vba
dim b as new zxingBitArrayMBS(10)
b.set(2)
// show
MsgBox b.Text
// reverse the bits
b.reverse
// and show again
MsgBox b.Text
```
Notes: This does reverse order, not inverse the values.

20.12.12 set(index as Integer)


```vba
dim b as new zxingBitArrayMBS(10)
// show
MsgBox b.Text
// set a bit
b.set(5)
// and show again
MsgBox b.Text
```

20.12.13 setBulk(index as Integer, newBits as Integer)


```vba
dim b as new zxingBitArrayMBS(10)
// show
MsgBox b.Text
// set the bits
b.setBulk(2, & b101010101 )
// and show again
MsgBox b.Text
```

20.12.14 Properties

20.12.15 Handle as Integer

20.12. CLASS ZXINGBITARRAYMBS

20.12.16 Size as Integer

**Function:** Returns size of the array.
**Example:**

```vbnet
dim b as new zxingBitArrayMBS(10)
MsgBox str(b.size)
```

**Notes:** (Read only property)

20.12.17 Text as String

**Function:** Returns text representation.
**Example:**

```vbnet
dim b as new zxingBitArrayMBS(10)
// show
MsgBox b.Text
// set a bit
b.set(5)
// and show again
MsgBox b.Text
```

**Notes:** (Read only property)
20.13 class zxingChecksumExceptionMBS

20.13.1 class zxingChecksumExceptionMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the exceptions from zxing. **Notes:** Subclass of the zxingReaderExceptionMBS class.
20.14 class zxingCodaBarReaderMBS

20.14.1 class zxingCodaBarReaderMBS


20.14.2 Methods

20.14.3 Constructor


20.14.4 decodeRow(rowNumber as Integer, row as zxingBitArrayMBS) as zxingResultMBS


20.14.5 validatePattern(start as Integer)

20.15  class zxingCode128ReaderMBS

20.15.1  class zxingCode128ReaderMBS

Notes: Subclass of the zxingOneDReaderMBS class.

20.15.2  Methods

20.15.3  BarcodeFormat as zxingBarcodeFormatMBS


20.15.4  Constructor

Notes: Was private until version 17.5.

20.15.5  decodeRow(rowNumber as Integer, row as zxingBitArrayMBS) as zxingResultMBS

20.16. class zxingCode39ReaderMBS

20.16.1. class zxingCode39ReaderMBS


20.16.2. Methods

20.16.3. Constructor(usingCheckDigit as boolean = false, extendedMode as boolean = false)


20.16.4. decodeRow(rowNumber as Integer, row as zxingBitArrayMBS) as zxingResultMBS

20.17  class zxingCode93ReaderMBS

20.17.1  class zxingCode93ReaderMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Decodes Code 93 barcodes. **Notes:** Subclass of the zxingOneDReaderMBS class.

20.17.2  Methods

20.17.3  Constructor


20.17.4  decodeRow(rowNumber as Integer, row as zxingBitArrayMBS) as zxingResultMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Trys to decode a barcode from one row of pixels.
20.18. CLASS ZXINGDATAMATRIXREADERMBS

20.18  class zxingDataMatrixReaderMBS

20.18.1  class zxingDataMatrixReaderMBS

**Notes:** Subclass of the zxingReaderMBS class.

20.18.2  Methods

20.18.3  Constructor

CHAPTER 20. BARCODE

20.19  class zxingDecodeHintsMBS

20.19.1  class zxingDecodeHintsMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for hints to the scanner. **Notes:** This gives an idea to decoder on what you may expect.

20.19.2  Methods

20.19.3  addFormat(format as zxingBarcodeFormatMBS)

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds a barcode format. **Notes:** The class will set the corresponding hint for this format.

20.19.4  clear

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Clears the hints.

20.19.5  Constructor

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor. **See also:**

- 20.19.6 Constructor(other as zxingDecodeHintsMBS)
- 20.19.7 Constructor(value as Integer)

20.19.6  Constructor(other as zxingDecodeHintsMBS)

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The copy constructor. **See also:**

- 20.19.5 Constructor
- 20.19.7 Constructor(value as Integer)
20.19. CLASS ZXINGDECODEHINTSMBS

20.19.7 Constructor(value as Integer)

Function: The constructor to use a given hint.
See also:

- 20.19.5 Constructor
- 20.19.6 Constructor(other as zxingDecodeHintsMBS)

20.19.8 containsFormat(format as zxingBarcodeFormatMBS) as boolean

Function: Whether a given hint is set in this hints set.

20.19.9 DefaultHint as zxingDecodeHintsMBS

Function: The default hint set.
Notes: This is combination: ONED_HINT, QR_CODE_HINT, DATA_MATRIX_HINT, AZTEC_HINT and PDF_417_HINT.

20.19.10 Destructor

Function: The destructor.

20.19.11 OneDHint as zxingDecodeHintsMBS

Function: The 1D hint set.
Notes: This is combination: CODE_39_HINT, CODE_93_HINT, CODE_128_HINT, ITF_HINT, CODABAR_HINT and PRODUCT_HINT.

20.19.12 ProductHint as zxingDecodeHintsMBS

Function: The product barcode hint set.
Notes: This is combination: UPC_A_HINT, UPC_E_HINT, EAN_13_HINT, EAN_8_HINT and RSS_14_HINT.

20.19.13 Properties

20.19.14 Handle as Integer

**Notes:** (Read and Write property)

20.19.15 isEmpty as Boolean

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this hints set is empty.  
**Notes:** (Read only property)

20.19.16 TryHarder as Boolean

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether try harder flag is set.  
**Notes:** (Read and Write property)

20.19.17 Constants

20.19.18 ASSUME_GS1 = & h0800000

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the possible hint constants.  
**Notes:** Assume GS1

20.19.19 AZTEC_HINT = 2

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the possible hint constants.  
**Notes:** Aztec
20.19.20 CHARACTER_SET = &h4000000

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the possible hint constants.  
**Notes:** Character Set

20.19.21 CODABAR_HINT = 4

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the possible hint constants.  
**Notes:** Codabar

20.19.22 CODE_128_HINT = &h020

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the possible hint constants.  
**Notes:** Code 128

20.19.23 CODE_39_HINT = 8

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the possible hint constants.  
**Notes:** Code 39

20.19.24 CODE_93_HINT = &h010

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the possible hint constants.  
**Notes:** Code 93

20.19.25 DATA_MATRIX_HINT = &h0040

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the possible hint constants.  
**Notes:** Data Matrix

20.19.26 EAN_13_HINT = &h000100

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the possible hint constants.  
**Notes:** EAN 13
20.19.27  **EAN_8_HINT = \& h000080**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the possible hint constants.  
**Notes:** EAN 8

20.19.28  **ITF_HINT = \& h000200**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the possible hint constants.  
**Notes:** ITF

20.19.29  **PDF_417_HINT = \& h000800**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the possible hint constants.  
**Notes:** PDF 317

20.19.30  **QR_CODE_HINT = \& h001000**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the possible hint constants.  
**Notes:** QR Code

20.19.31  **RSS_14_HINT = \& h002000**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the possible hint constants.  
**Notes:** RSS 14

20.19.32  **RSS_EXPANDED_HINT = \& h004000**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the possible hint constants.  
**Notes:** RSS Expanded

20.19.33  **TRYHARDER_HINT = \& h8000000**

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the possible hint constants.  
**Notes:** Whether to spend more CPU time to get better result.
20.19.34  UPC_A_HINT = & h008000

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the possible hint constants.  
**Notes:** UPC A

20.19.35  UPC_EAN_EXTENSION_HINT = & h020000

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the possible hint constants.  
**Notes:** UPC EAN with extension

20.19.36  UPC_E_HINT = & h010000

MBS Barcode Plugin, Plugin Version: 13.5. **Function:** One of the possible hint constants.  
**Notes:** UPC E
20.20 class zxingDetectorExceptionMBS

20.20.1 class zxingDetectorExceptionMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the exceptions from zxing. **Notes:** Subclass of the zxingExceptionMBS class.
20.21. CLASS ZXINGEAN13READERMBS

20.21 class zxingEAN13ReaderMBS

20.21.1 class zxingEAN13ReaderMBS

**Function:** Decodes of the EAN-13 format.

**Example:**

```vbscript
dim g as new BarcodeGeneratorMBS
    g.Symbology = g.BarcodeEanx
    g.BorderWidth = 5
    g.Scale = 2
    g.Encode "036000291452"
    g.Height = 100
dim p as Picture = g.Picture

    window1.Backdrop = p

dim b as zxingBinaryBitmapMBS = zxingBinaryBitmapMBS.CreateWithPicture(p)
dim x as new zxingEAN13ReaderMBS
    dim result as zxingResultMBS = x.decode(b)
dim bf as zxingBarcodeFormatMBS = result.BarcodeFormat

    MsgBox bf.Name+": " +result.Text

    Exception r as zxingExceptionMBS
    MsgBox r.message
```

**Notes:** Subclass of the zxingUPCEANReaderMBS class.

20.21.2 Methods

20.21.3 BarcodeFormat as zxingBarcodeFormatMBS

**Function:** The barcode format.

20.21.4 Constructor

**Function:** The constructor.
20.21.5 decodeMiddle(row as zxingBitArrayMBS, start as Integer, byref resultString as string) as Integer

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Trys to decode a barcode from one row of pixels.
20.22. class zxingEAN8ReaderMBS

20.22.1. class zxingEAN8ReaderMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Decoding of the EAN-8 format. **Notes:** Subclass of the zxingUPCEANReaderMBS class.

20.22.2. Methods

20.22.3. BarcodeFormat as zxingBarcodeFormatMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The barcode format.

20.22.4. Constructor


20.22.5. decodeMiddle(row as zxingBitArrayMBS, start as Integer, byref resultString as string) as Integer

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Trys to decode a barcode from one row of pixels.
20.23 class zxingExceptionMBS

20.23.1 class zxingExceptionMBS

20.24. class zxingFormatExceptionMBS

20.24.1 class zxingFormatExceptionMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the exceptions from zxing. **Notes:** Subclass of the zxingReaderExceptionMBS class.
20.25 class zxingGlobalHistogramBinarizerMBS

20.25.1 class zxingGlobalHistogramBinarizerMBS


**Function:** One of the binarizer.

**Notes:**

This Binarizer implementation uses the old ZXing global histogram approach. It is suitable for low-end mobile devices which don’t have enough CPU or memory to use a local thresholding algorithm. However, because it picks a global black point, it cannot handle difficult shadows and gradients.

Faster mobile devices and all desktop applications should probably use HybridBinarizer instead. Subclass of the zxingBinarizerMBS class.

20.25.2 Methods

20.25.3 Constructor(LuminanceSource as zxingLuminanceSourceMBS)

20.26. class zxingHybridBinarizerMBS

20.26.1. class zxingHybridBinarizerMBS


Function: One of the binarizer.

Notes:

This class implements a local thresholding algorithm, which while slower than the GlobalHistogramBinarizer, is fairly efficient for what it does. It is designed for high frequency images of barcodes with black data on white backgrounds. For this application, it does a much better job than a global blackpoint with severe shadows and gradients. However it tends to produce artifacts on lower frequency images and is therefore not a good general purpose binarizer for uses outside ZXing.

This class extends GlobalHistogramBinarizer, using the older histogram approach for 1D readers, and the newer local approach for 2D readers. 1D decoding using a per-row histogram is already inherently local, and only fails for horizontal gradients. We can revisit that problem later, but for now it was not a win to use local blocks for 1D.

This Binarizer is the default for the unit tests and the recommended class for library users. Subclass of the zxingGlobalHistogramBinarizerMBS class.

20.26.2 Methods

20.26.3 Constructor(LuminanceSource as zxingLuminanceSourceMBS)


Function: The constructor.
20.27 class zxingIllegalArgumentExceptionMBS

20.27.1 class zxingIllegalArgumentExceptionMBS

20.28. **CLASS ZXINGILLEGALSTATEEXCEPTIONMBS**

### 20.28 class zxingIllegalStateExceptionMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the exceptions from zxing. **Notes:** Subclass of the zxingReaderExceptionMBS class.
20.29  class zxingITFReaderMBS

20.29.1  class zxingITFReaderMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Decodes an ITF barcode. **Notes:** Subclass of the zxingOneDReaderMBS class.

20.29.2  Methods

20.29.3  Constructor


20.29.4  decodeRow(rowNumber as Integer, row as zxingBitArrayMBS) as zxingResultMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Tries to decode a barcode from one row of pixels.
20.30 class zxingLuminanceSourceMBS

20.30.1 class zxingLuminanceSourceMBS

Function: The class for an image source.
Notes: The purpose of this class hierarchy is to abstract different bitmap implementations across platforms into a standard interface for requesting greyscale luminance values. The interface only provides immutable methods; therefore crop and rotation create copies. This is to ensure that one Reader does not modify the original luminance source and leave it in an unknown state for other Readers in the chain.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

20.30.2 Methods

20.30.3 Constructor

Function: The private constructor.

20.30.4 CreateWithPicture(pic as picture) as zxingLuminanceSourceMBS

Function: Creates a new luminance source for this picture.
Notes: Returns nil on error like low memory.

20.30.5 crop(left as Integer, top as Integer, width as Integer, height as Integer) as zxingLuminanceSourceMBS

Function: Returns a new object with cropped image data.
Notes: Implementations may keep a reference to the original data rather than a copy. Only callable if isCropSupported() is true.

left: The left coordinate, 0 <= left < Width.
top: The top coordinate, 0 <= top <= Height.
width: The width of the rectangle to crop.
height: The height of the rectangle to crop.
Returns A cropped version of this object.

20.30.6  invert as zxingLuminanceSourceMBS


20.30.7  rotateCounterClockwise as zxingLuminanceSourceMBS


20.30.8  string as string


20.30.9  Properties

20.30.10  Handle as Integer

Notes: (Read only property)

20.30.11  Height as Integer

Notes: (Read only property)

20.30.12  isCropSupported as Boolean

20.30.13 isRotateSupported as Boolean

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this bitmap supports counter-clockwise rotation. **Notes:** (Read only property)

20.30.14 Width as Integer

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The width of the bitmap. **Notes:** (Read only property)
20.31 class zxingMultiFormatOneDReaderMBS

20.31.1 class zxingMultiFormatOneDReaderMBS


20.31.2 Methods

20.31.3 Constructor(hints as zxingDecodeHintsMBS)


20.31.4 decodeRow(rowNumber as Integer, row as zxingBitArrayMBS) as zxingResultMBS

20.32  class zxingMultiFormatReaderMBS

20.32.1  class zxingMultiFormatReaderMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This interface attempt to read several barcodes from one image. **Notes:** Subclass of the zxingReaderMBS class.

20.32.2  Methods

20.32.3  Constructor


20.32.4  decodeWithState(image as zxingBinaryBitmapMBS) as zxingResultMBS


20.32.5  setHints(hints as zxingDecodeHintsMBS)

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the hint to use for decoding.
20.33 class zxingMultiFormatUPCEANReaderMBS

20.33.1 class zxingMultiFormatUPCEANReaderMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A reader that can read all available UPC/EAN formats. **Notes:** If a caller wants to try to read all such formats, it is most efficient to use this implementation rather than invoke individual readers. Subclass of the zxingOneDReaderMBS class.

20.33.2 Methods

20.33.3 Constructor(hints as zxingDecodeHintsMBS)


20.33.4 decodeRow(rowNumber as Integer, row as zxingBitArrayMBS) as zxingResultMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Tries to decode a barcode from one row of pixels.
20.34  class zxingNotFoundExceptionMBS

20.34.1  class zxingNotFoundExceptionMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the exceptions from zxing.  **Notes:** Subclass of the zxingExceptionMBS class.
20.35  class zxingOneDReaderMBS

20.35.1  class zxingOneDReaderMBS

**Function:** Encapsulates functionality and implementation that is common to all families of one-dimensional  
barcodes.  
**Notes:**  
Subclass of the zxingReaderMBS class.  
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

20.35.2  Methods

20.35.3  Constructor

**Function:** The private constructor.

20.35.4  decodeRow(rowNumber as Integer, row as zxingBitArrayMBS) as zxingResultMBS

**Function:** Trys to decode a barcode from one row of pixels.
20.36. **CLASS ZXINGPDF417READERMBS**

20.36 **class zxingPDF417ReaderMBS**

20.36.1 **class zxingPDF417ReaderMBS**

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This class can detect and decode PDF417 codes in an image. **Notes:** Subclass of the zxingReaderMBS class.

20.36.2 **Methods**

20.36.3 **Constructor**


20.36.4 **reset**

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Resets the decoder.
20.37 class zxingQRCodeReaderMBS

20.37.1 class zxingQRCodeReaderMBS


**Function:** This class can detect and decode QR Codes in an image.

**Example:**

```vbnet
dim g as new BarcodeGeneratorMBS
    g.Symbology = g.BarcodeQrcode
    g.BorderWidth = 5
    g.Scale = 2
    g.Encode "Hello World"

dim p as Picture = g.Picture
    window1.Backdrop = p

dim b as zxingBinaryBitmapMBS = zxingBinaryBitmapMBS.CreateWithPicture(p)
dim x as new zxingQRCodeReaderMBS
    dim result as zxingResultMBS = x.decode(b)
    dim bf as zxingBarcodeFormatMBS = result.BarcodeFormat
    MsgBox bf.Name + ": " + result.Text

Exception r as zxingExceptionMBS
    MsgBox r.message
```

**Notes:** Subclass of the zxingReaderMBS class.

20.37.2 Methods

20.37.3 Constructor


**Function:** The constructor.
20.38 class zxingReaderExceptionMBS

20.38.1 class zxingReaderExceptionMBS


**Function:** The general exception class throw when something goes wrong during decoding of a barcode.

**Notes:**

This includes, but is not limited to, failing checksums / error correction algorithms, being unable to locate finder timing patterns, and so on.

Subclass of the zxingExceptionMBS class.
20.39 class zxingReaderMBS

20.39.1 class zxingReaderMBS

Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

20.39.2 Methods

20.39.3 Constructor


20.39.4 decode(image as zxingBinaryBitmapMBS) as zxingResultMBS

See also:

- 20.39.5 decode(image as zxingBinaryBitmapMBS, hints as zxingDecodeHintsMBS) as zxingResultMBS 3856

20.39.5 decode(image as zxingBinaryBitmapMBS, hints as zxingDecodeHintsMBS) as zxingResultMBS

Notes: Hints may help to limit what to expect and makes it faster.
See also:

- 28.18.43 decode(image as zxingBinaryBitmapMBS) as zxingResultMBS 4697
20.39.6 Properties

20.39.7 Handle as Integer

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal object reference. **Notes:** (Read only property)
20.40 class zxingReedSolomonExceptionMBS

20.40.1 class zxingReedSolomonExceptionMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the exceptions from zxing. **Notes:** Subclass of the zxingExceptionMBS class.
20.41. **CLASS ZXINGRESULTMBS**

20.41  **class zxingResultMBS**

20.41.1  **class zxingResultMBS**

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Encapsulates the result of decoding a barcode within an image.<br><br>**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

20.41.2  **Methods**

20.41.3  **BarcodeFormat as zxingBarcodeFormatMBS**

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Representing the format of the barcode that was decoded.

20.41.4  **Constructor**


20.41.5  **Data as Memoryblock**

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Raw text encoded by the barcode, if applicable, otherwise nil.

20.41.6  **ResultPoint(index as integer) as zxingResultPointMBS**

MBS Barcode Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries point with given index.<br><br>**Notes:** Index from 0 to PointCount-1.

20.41.7  **ResultPoints as zxingResultPointMBS()**

MBS Barcode Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries list of points.
20.41.8  **Text as string**

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function**: Raw text encoded by the barcode, if applicable, otherwise "".

20.41.9  **Properties**

20.41.10  **Handle as Integer**

**Notes**: (Read only property)

20.41.11  **PointCount as Integer**

MBS Barcode Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function**: Queries number of points.
**Notes**: (Read only property)
20.42. CLASS ZXINGRESULTPOINTMBS

20.42 class zxingResultPointMBS

20.42.1 class zxingResultPointMBS


Notes: Typically, this would be the location of a finder pattern or the corner of the barcode, for example.

20.42.2 Methods

20.42.3 Constructor


See also:

• 20.42.4 Constructor(x as single, y as single)

20.42.4 Constructor(x as single, y as single)


See also:

• 20.42.3 Constructor

20.42.5 distance(p1 as zxingResultPointMBS, p2 as zxingResultPointMBS) as single


See also:

• 20.42.6 distance(x1 as single, y1 as single, x2 as single, y2 as single) as single

20.42.6 distance(x1 as single, y1 as single, x2 as single, y2 as single) as single


See also:

• 20.42.5 distance(p1 as zxingResultPointMBS, p2 as zxingResultPointMBS) as single
20.42.7 equals(other as zxingResultPointMBS) as boolean


20.42.8 Properties

20.42.9 Handle as Integer


20.42.10 X as Single

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The x value. Notes: (Read only property)

20.42.11 Y as Single

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The y value. Notes: (Read only property)
20.43. class zxingUPCARReaderMBS

20.43.1 class zxingUPCARReaderMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Decodes of the UPC-A format. **Notes:** Subclass of the zxingUPCEANReaderMBS class.

20.43.2 Methods

20.43.3 BarcodeFormat as zxingBarcodeFormatMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The barcode format.

20.43.4 Constructor


20.43.5 decodeMiddle(row as zxingBitArrayMBS, start as Integer, byref resultString as string) as Integer

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Tries to decode a barcode from one row of pixels.

20.43.6 decodeRow(rowNumber as Integer, row as zxingBitArrayMBS) as zxingResultMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Tries to decode a barcode from one row of pixels. **See also:**

- 20.43.7 decodeRow(rowNumber as Integer, row as zxingBitArrayMBS, startGuardBegin as Integer, startGuardEnd as Integer) as zxingResultMBS
20.43.7  decodeRow(rowNumber as Integer, row as zxingBitArrayMBS, startGuardBegin as Integer, startGuardEnd as Integer) as zxingResultMBS


**Function:**  Tries to decode a barcode from one row of pixels.

See also:

- 20.43.6 decodeRow(rowNumber as Integer, row as zxingBitArrayMBS) as zxingResultMBS
20.44 class zxingUPCEANReaderMBS

20.44.1 class zxingUPCEANReaderMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Encapsulates functionality and implementation that is common to UPC and EAN families of one-dimensional barcodes. **Notes:** Subclass of the zxingOneDReaderMBS class. This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

20.44.2 Methods

20.44.3 BarcodeFormat as zxingBarcodeFormatMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The barcode format.

20.44.4 BarcodeFormatName(BarcodeFormat as Integer) as string

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries the barcode format name for a number.

20.44.5 checkChecksum(s as string) as boolean

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Checks the checksum of a barcode. **Example:**
```
dim s as string = "036000291452"
dim r as new zxingUPCAReaderMBS

dim testOK as Boolean = r.checkChecksum("036000291452")
dim testFail as Boolean = r.checkChecksum("036000291453")
break // see values in debugger
```

**Notes:** Computes the UPC/EAN checksum on a string of digits, and reports whether the checksum is correct or not.
20.44.6 Constructor


20.44.7 `decodeMiddle(row as zxingBitArrayMBS, start as Integer, byref resultString as string) as Integer`

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Trys to decode a barcode from one row of pixels.

20.44.8 `decodeRow(rowNumber as Integer, row as zxingBitArrayMBS) as zxingResultMBS`

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Trys to decode a barcode from one row of pixels. See also:

- 20.44.9 `decodeRow(rowNumber as Integer, row as zxingBitArrayMBS, rangeStart as Integer, rangeLength as Integer) as zxingResultMBS`

20.44.9 `decodeRow(rowNumber as Integer, row as zxingBitArrayMBS, rangeStart as Integer, rangeLength as Integer) as zxingResultMBS`

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Trys to decode a barcode from one row of pixels. See also:

- 20.44.8 `decodeRow(rowNumber as Integer, row as zxingBitArrayMBS) as zxingResultMBS`
20.45.1 class zxingUPCEReaderMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Decodes of the UPC-E format. **Notes:** Subclass of the zxingUPCEANReaderMBS class.

20.45.2 Methods

20.45.3 BarcodeFormat as zxingBarcodeFormatMBS

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The barcode format.

20.45.4 Constructor


20.45.5 convertUPCEtoUPCA(upce as string) as string

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Expands a UPC-E value back into its full, equivalent UPC-A code value. **Notes:** upce: UPC-E code as string of digits. Returns equivalent UPC-A code as string of digits.

20.45.6 decodeMiddle(row as zxingBitArrayMBS, start as Integer, byref resultString as string) as Integer

MBS Barcode Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Trys to decode a barcode from one row of pixels.
Chapter 21

Base 64

21.1 Globals

21.1.1 DecodeBase64MBS(s as string) as string

MBS Encryption Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Decodes the base 64 text string into its original binary data. **Notes:** Improved in MBS Plugin 2.7. Memory needed is around lenb(s)*2.

21.1.2 EncodeBase64MBS(s as string, breakposition as Integer, breakstring as string) as string

MBS Encryption Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Encodes the binary data in the string into a base64 text string. **Notes:** Improved in MBS Plugin 2.7 to support breakposition and breakstring. If you don’t need them, just pass 0 and “”. Memory needed is around lenb(s)*2.8.

21.1.3 uuDecodeMBS(data as string, byref name as string, byref mode as Integer) as string

MBS Encryption Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** UU Decoding. **Example:**

```vbs
    dim f as FolderItem = SpecialFolder.Desktop.Child("test.uu")
    dim b as BinaryStream = BinaryStream.Open(f)
```
dim name as string
dim mode as Integer

dim s as String = b.Read(b.Length)
dim d as string = uuDecodeMBS(s, name, mode)

dim p as Picture = Picture.FromData(d)

Backdrop = p

Notes:
Decodes UU encoded data. name and mode properties are filled.
Returns empty text if something goes wrong.
Raises out of memory exception in case of low memory situation.

21.1.4  uuEncodeMBS(data as string, name as string, mode as Integer = & 0755) as string

Function: UU Encoding.
Example:

dim f as FolderItem = SpecialFolder.Desktop.Child(“test.jpg”)
dim b as BinaryStream = BinaryStream.Open(f)
dim s as string = b.Read(b.Length)

dim d as string = uuEncodeMBS(s, “test”)"

f = SpecialFolder.Desktop.Child(“test.txt”)
b = BinaryStream.Create(f, true)

b.Write d

Notes:
Encodes binary data as text similar to Base64.
The data is prefixed with file name and mode.

Returns empty text if something goes wrong.
Raises out of memory exception in case of low memory situation.
21.2 class Base64MBS

21.2.1 class Base64MBS

MBS Encryption Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Encodes and decodes Base64 with events. **Notes:** The global functions may be faster as they don’t use events.

21.2.2 Methods

21.2.3 DecodeBase64(s as string) as string

MBS Encryption Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Decodes the base 64 text string into its original binary data. **Notes:** Memory needed is around lenb(s)*2.

21.2.4 EncodeBase64(s as string, breakposition as Integer, breakstring as string) as string

MBS Encryption Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Encodes the binary data in the string into a base64 text string. **Notes:** Improved in MBS Plugin 2.7 to support breakposition and breakstring. If you don’t need them, just pass 0 and “”. Memory needed is around lenb(s)*2.8.

21.2.5 Properties

21.2.6 Yield as Boolean

MBS Encryption Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the class should give CPU time to Realbasic so windows can be updated and other threads go on. **Notes:** Default is false. (Read and Write property)
21.2.7 Events

21.2.8 Finished(wascanceled as boolean)

MBS Encryption Plugin, Plugin Version: 3.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: Called when the encoding function returns.
Notes: wascanceled is true if the Working Event got a true returned.

21.2.9 Start

MBS Encryption Plugin, Plugin Version: 3.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: Called when encoding or decoding is started.

21.2.10 Working(percent as Double) as boolean

MBS Encryption Plugin, Plugin Version: 3.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: Called after each 4 KB chunk.
Notes: You can return true to cancel the process.
Chapter 22

Basic

22.1 Globals

22.1.1  DifferenceMBS(extends StartDate as date, EndDate as date) as DateDifferenceMBS

MBS Util Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calculates the difference between two dates.  
**Example:**

```
    dim d as date
    dim e as date
    dim r as DateDifferenceMBS
    dim s as string

    d=new date
    d.Year=2008
    d.Month=7
    d.Day=2
    d.Hour=10
    d.Minute=48
    d.Second=22

    e=new date
    e.Year=2010
    e.Month=7
    e.Day=1
    e.Hour=10
    e.Minute=36
    e.Second=0
```
r=d.DifferenceMBS(e)

s=  "Years: " +str(r.Year)+EndOfLine
s=s+"Months: " +str(r.month)+EndOfLine
s=s+"Days: " +str(r.day)+EndOfLine
s=s+"Hours: " +str(r.hour)+EndOfLine
s=s+"Minutes: " +str(r.Minute)+EndOfLine
s=s+"Seconds: " +str(r.Second)+EndOfLine

MsgBox s

// shows: "Years: 1 Months: 11 Days: 29 Hours: 22 Minutes: 47 Seconds: 38"

Notes:

Returns nil on any errors. (one of the dates is nil or property getter don’t work)
Valid only for dates from the gregorian calendar.

Calculates the difference between the older and newer date. The dates are sorted, so the difference is always a positive.
You can see Swap property to see if first date is after second date.

22.1.2 ReturnErrPtrMBS as Integer

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A callback to use for GS8.

22.1.3 ReturnInPtrMBS as Integer

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A callback to use for GS8.

22.1.4 ReturnOutPtrMBS as Integer

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A callback to use for GS8.
22.1.5 HideCursorMBS

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Hides the mouse Cursor.

**Example:**

HideCursorMBS

22.1.6 ShowCursorMBS

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Shows the mouse Cursor.

**Example:**

ShowCursorMBS

22.1.7 cloneMemoryBlockMBS(s as memoryblock) as memoryblock

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Clones the memory-block.

**Example:**

```vbnet
dim m as MemoryBlock = "Hello"
dim n as MemoryBlock = cloneMemoryBlockMBS(m)
m.Byte(1)=asc("a")
n.Byte(1)=asc("u")

dim a as string = m
dim b as string = n
MsgBox a+" " +b
```

**Notes:** May return nil on low memory conditions.
22.1.8  cloneMemoryBlockWithLengthMBS(s as memoryblock, len as Integer) as memoryblock

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Clones the memory-block.

**Example:**
```basic
    dim m as MemoryBlock = "Hello"
    dim n as MemoryBlock = cloneMemoryBlockWithLengthMBS(m, 5)
    m.Byte(1) = asc("a")
    n.Byte(1) = asc("u")
    dim a as string = m
    dim b as string = n
    MsgBox a + " " + b
```

**Notes:** May return nil on low memory conditions.

22.1.9  cloneStringMBS(s as string) as string

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Clones the string.

**Notes:**
May return "" on low memory conditions.
The encoding of the string is copied in RB 4.5 or newer.

22.1.10  GetEncodingOfStringMBS(s as string) as UInt32

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the internal value for the encoding.

**Example:**
```basic
    dim s as string = "Hello"
    MsgBox hex(GetEncodingOfStringMBS(s)) // shows 8000100 for UTF8
```

**Notes:**
Only useful on Realbasic 4.5 and newer.
Some example values for encoding:
### 22.1. GLOBALS

<table>
<thead>
<tr>
<th>Encoding</th>
<th>Codepage/Character Set</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MacRoman</td>
<td>0</td>
<td>Also for ASCII or binary data used.</td>
</tr>
<tr>
<td>WindowsLatin1</td>
<td>&amp; h0500</td>
<td>ANSI codepage 1252</td>
</tr>
<tr>
<td>ISOLatin1</td>
<td>&amp; h0201</td>
<td>ISO 8859-1</td>
</tr>
<tr>
<td>NextStepLatin</td>
<td>&amp; h0B01</td>
<td>NextStep encoding</td>
</tr>
<tr>
<td>Unicode</td>
<td>&amp; h0100</td>
<td>16 bit Unicode</td>
</tr>
<tr>
<td>UTF8</td>
<td>&amp; h08000100</td>
<td>8 bit Unicode</td>
</tr>
<tr>
<td>Invalid</td>
<td>&amp; hFFFFFFFF</td>
<td>(Binary)</td>
</tr>
<tr>
<td>Invalid</td>
<td>&amp; hFFFFF</td>
<td>(Binary)</td>
</tr>
</tbody>
</table>

Renamed from `GetStringEncoding` to `GetEncodingOfString` in MBS Plugin 3.1.

#### 22.1.11 MemoryBlockToStringMBS(s as memoryblock) as string

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a copy of the content of the memoryblock as a string.

**Example:**

```vba
dim m as MemoryBlock = NewMemoryBlock(6)
m.CString(0) = "Hello"
MsgBox MemoryBlockToStringMBS(m)
```

**Notes:**

- May return "" on low memory conditions.
- As some memoryblocks don’t have a known length, you can provide one as a second parameter.

#### 22.1.12 MemoryBlockToStringWithLengthMBS(s as memoryblock,len as Integer) as string

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a copy of the content of the memoryblock as a string.

**Example:**

```vba
dim m as MemoryBlock = NewMemoryBlock(6)
m.CString(0) = "Hello"
MsgBox MemoryBlockToStringWithLengthMBS(m,5)
```
Notes:
May return "" on low memory conditions.
As some memory blocks don't have a known length, you can provide one as a second parameter.

22.1.13 OSTypeFromStringMBS (str as string) as Integer

MBS Util Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns an integer representing a 4 byte String.
**Example:**
MsgBox str(OSTypeFromStringMBS("MBSP"))

Notes:
This OSType datatype is used on Mac OS for 4 letter codes.
e.g. the type and creator code for a file.

22.1.14 SetEncodingOfStringMBS (s as string, encoding as UINT32)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the internal value
for the encoding of this string.
**Example:**
dim s as string = ""
dim t as string = ConvertEncoding(s, encodings.UTF16)
dim m as MemoryBlock = t // memory block has bytes from UTF16 string without knowing the encoding
dim u as string = m // convert back to a string without encoding
MsgBox u // shows wrong characters
SetEncodingOfStringMBS u, 256 // set to UTF-16
MsgBox u

Notes:
Only useful on Realbasic 4.5 and newer.
Some example values for encoding:

Renamed from SetStringEncoding to SetEncodingOfString in MBS Plugin 3.1.
22.1.15  **StringFromOSTypeMBS(value as Integer) as string**

MBS Util Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a 4 byte string for the given integer.  
**Example:**

```vbs
MsgBox StringFromOSTypeMBS(1296192336) // shows MBSP
```

**Notes:**

This OSType datatype is used on Mac OS for 4 letter codes. e.g. the type and creator code for a file.

22.1.16  **StringToMemoryBlockMBS(s as string) as memoryblock**

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a copy of the content of the string as a memoryblock.  
**Example:**

```vbs
dim m as MemoryBlock = StringToMemoryBlockMBS("Hello")
MsgBox m.StringValue(0,5)
```

**Notes:** May return nil on low memory conditions.

22.1.17  **BitwiseXORStringBytesMBS(s as string, v as Integer) as string**

MBS Util Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Bitwise XOR with a string’s bytes.  
**Example:**
dim a as string = "Hello"
dim b as string = BitwiseXORStringBytesMBS(a,1) // encode
dim c as string = BitwiseXORStringBytesMBS(b,1) // decode
MsgBox b
MsgBox c

Notes:
Memory usage is around lenb(s)*2.
Returns nil on low memory.
v should be in range of 0 to 255.
If you use this function two times on a string, you get the original back.
Any encoding information is lost.

22.1.18 Color2IntegerMBS(colorValue as Color) as UInt32

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns the RGB value of the color as an integer.
Example:
dim c as color
dim i as UInt32

c=rgb(255,255,255)
i=Color2IntegerMBS(c)

MsgBox hex(i) // FFFFFF
c=rgb(& h12 ,& H34 ,& h56)
i=Color2IntegerMBS(c)

MsgBox hex(i) // 123456

Notes:
Same as:
i=c.red*65536+c.green*256+c.blue

22.1.19 Integer2ColorMBS(intValue as UInt32) as Color

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns the integer as if it is a color.
Example:

dim c as color
dim i as UInt32
c=Integer2ColorMBS(i)

Notes:
Same as:
c=rgb(i\65536 mod 256, i\256 mod 256, i mod 256)

22.2 class DateDifferenceMBS

22.2.1 class DateDifferenceMBS


Example:

// calculate difference between now and a date in 2008.

dim d as date
dim r as DateDifferenceMBS
dim s as string
dim c as Clipboard
d=new date
d.Year=2008
d.Month=7
d.Day=2
d.Hour=10
d.Minute=48
d.Second=22
dim e as new date // today
r=new DateDifferenceMBS(d, e)

s= "Years: "+str(r.Year)+EndOfLine
s=s+"Months: "+str(r.month)+EndOfLine
s=s+"Days: "+str(r.day)+EndOfLine
s=s+"Hours: "+str(r.Hour)+EndOfLine
s=s+"Minutes: "+str(r.Minute)+EndOfLine
s=s+"Seconds: "+str(r.Second)+EndOfLine
CHAPTER 22. BASIC

MsgBox s

Notes:
Calculates the difference between the older and newer date. The dates are sorted, so the difference is always a positive.
You can see Swap property to see if first date is after second date.

This class allows you to know exactly how many months/years are between two dates. Something that TotalSeconds calculations will not give you!

22.2.2 Methods

22.2.3 Calc(StartDate as date, EndDate as date) as boolean

MBS Util Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Calculates the difference between two dates.
Example:

    dim d as date
    dim e as date
    dim r as DateDifferenceMBS
    dim s as string
    dim c as Clipboard

    d=new date
    d.Year=2008
    d.Month=7
    d.Day=2
    d.Hour=10
    d.Minute=48
    d.Second=22

    e=new date
    e.Year=2010
    e.Month=7
    e.Day=1
    e.Hour=10
    e.Minute=36
    e.Second=0

    r=new DateDifferenceMBS
if r.Calc(d,e) then

s= "Years:  "+str(r.Year)+EndOfLine
s=s+"Months:  "+str(r.month)+EndOfLine
s=s+"Days:  "+str(r.day)+EndOfLine
s=s+"Hours:  "+str(r.hour)+EndOfLine
s=s+"Minutes:  "+str(r.Minute)+EndOfLine
s=s+"Seconds:  "+str(r.Second)+EndOfLine

MsgBox s

// shows: "Years: 1 Months: 11 Days: 29 Hours: 22 Minutes: 47 Seconds: 38"
end if

Notes:

Returns false on any errors and true on success.
Valid only for dates from the gregorian calendar.
Sets ready property.

Calculates the difference between the older and newer date. The dates are sorted, so the difference is always a positive.
You can see Swap property to see if first date is after second date.

22.2.4 Constructor

See also:

• 22.2.5 Constructor(StartDate as date, EndDate as date)

22.2.5 Constructor(StartDate as date, EndDate as date)

Notes: Internally calls Calc and sets ready property.
See also:

• 22.2.4 Constructor
22.2.6  isLeapYear(year as Integer) as boolean

MBS Util Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Checks whether a year is a leap year.

**Example:**

```basic
if DateDifferenceMBS.isLeapYear(2004) then
    messagebox "2004 is a leap year"
else
    messagebox "2004 is not a leap year"
end if
```

**Notes:** Valid only for dates from the gregorian calendar.

22.2.7  Properties

22.2.8  Day as Integer

MBS Util Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The day of the date difference.

**Notes:** (Read only property)

22.2.9  EndDate as Date

MBS Util Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The end date used to do the calculation.

**Notes:** (Read only property)

22.2.10  EndDay as Integer

MBS Util Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The day of the end date.

**Notes:** (Read only property)

22.2.11  EndHour as Integer

MBS Util Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The hour of the end date.
22.2. CLASS DATEDIFFERENCEMBS

Notes: (Read only property)

22.2.12 EndMinute as Integer

MBS Util Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The minute of the end date.
*Notes: (Read only property)*

22.2.13 EndMonth as Integer

MBS Util Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The month of the end date.
*Notes: (Read only property)*

22.2.14 EndSecond as Integer

MBS Util Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The second of the end date.
*Notes: (Read only property)*

22.2.15 EndTotalSeconds as Double

MBS Util Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The total seconds value of the end date.
*Notes: (Read and Write property)*

22.2.16 EndYear as Integer

MBS Util Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The year of the end date.
*Notes: (Read only property)*

22.2.17 Hour as Integer

MBS Util Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The hour of the date difference.
22.2.18 Minute as Integer

MBS Util Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The minute of the date difference. **Notes:** (Read only property)

22.2.19 Month as Integer

MBS Util Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The month of the date difference. **Notes:** (Read only property)

22.2.20 Ready as Boolean

MBS Util Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the date calculation has been performed. **Notes:** Using the constructor with nil dates can lead into an invalid state in which ready is false. (Read only property)

22.2.21 Second as Integer

MBS Util Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The second of the date difference. **Notes:** (Read only property)

22.2.22 StartDate as Date

MBS Util Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The start date of the date used. **Notes:** (Read only property)
22.2. CLASS DATEDIFFERENCEMBS

22.2.23 StartDay as Integer

MBS Util Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The day of the start date.
**Notes:** (Read only property)

22.2.24 StartHour as Integer

MBS Util Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The hour of the start date.
**Notes:** (Read only property)

22.2.25 StartMinute as Integer

MBS Util Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The minute of the start date.
**Notes:** (Read only property)

22.2.26 StartMonth as Integer

MBS Util Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The month of the start date.
**Notes:** (Read only property)

22.2.27 StartSecond as Integer

MBS Util Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The second of the start date.
**Notes:** (Read only property)

22.2.28 StartTotalSeconds as Double

MBS Util Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The total seconds value of the start date.
**Notes:** (Read and Write property)
22.2.29  StartYear as Integer

MBS Util Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The year of the start date. Notes: (Read only property)

22.2.30  Swap as Boolean

MBS Util Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Whether dates have been swapped. Notes:
Dates are swapped if enddate is before startdate. (Read only property)

22.2.31  TotalDay as Integer

MBS Util Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The number of days between Example:

```vbnet
dim d as new date(2011, 9, 25)
dim e as new date(2012, 1, 1)

dim diff as new DateDifferenceMBS

if diff.Calc(d, e) then
    MsgBox str(diff.TotalDay) + ” days between dates.” // should be 98
end if
```

Notes:
Our day, month and year properties are about how many days, months and years are between start and end dates. This property gives you the total number of days. So day may be 6 and month be 3 and totaldays could be 98 if there are two months with 31 days included and one with 30 days. (Read only property)
22.2. CLASS DATEDIFFERENCEMBS

22.2.32  TotalSeconds as Double

MBS Util Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The total seconds value of the difference between the dates.
**Notes:** (Read and Write property)

22.2.33  Year as Integer

MBS Util Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The year of the date difference.
**Notes:** (Read only property)
22.3 class UniversalCharacterDetectionMBS

22.3.1 class UniversalCharacterDetectionMBS

MBS Util Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for universal character encoding detection.

**Notes:**
Based on the Mozilla project.

You can pass a string with bytes to this class and receive an encoding as answer. Similar to the Guess-JapaneseEncoding function built into REALbasic.

Possible encoding names used by this class: Big5, EUC-JP, EUC-KR, x-euc-tw, gb18030, windows-1252, UTF-8, UTF-16BE, X-ISO-10646-UCS-4-3412, UTF-32BE, X-ISO-10646-UCS-4-2143, UTF-32LE, UTF-16LE.

22.3.2 Methods

22.3.3 AddData(data as string)

MBS Util Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Passes more data to the engine for analysis.

**Notes:** The string encoding from REALbasic is ignored. Only the raw data bytes are examined.

22.3.4 Constructor(filter as Integer)

MBS Util Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor.

**Notes:** filter: which languages to detect or ignore. Use the filter* constants.

22.3.5 Finish

MBS Util Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Notify the engine that data no more data will come.

**Notes:** This method can fire the Report event.
22.3.6 Properties

22.3.7 LastCharSet as String

MBS Util Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last character set reported in the report event. **Notes:** (Read and Write property)

22.3.8 Events

22.3.9 Report(Charset as string)

MBS Util Plugin, Plugin Version: 10.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event called when an encoding was detected. **Notes:** This event allows you to pass more and more data and as soon as the event fires you can decide to stop probing.

22.3.10 Constants

22.3.11 FilterAll = 31

MBS Util Plugin, Plugin Version: 10.0. **Function:** One of the language filter constants. **Notes:** All languages.

22.3.12 FilterChinese = 3

MBS Util Plugin, Plugin Version: 10.0. **Function:** One of the language filter constants. **Notes:** Traditional and Simplified Chinese together.

22.3.13 FilterChineseSimplified = 1

MBS Util Plugin, Plugin Version: 10.0. **Function:** One of the language filter constants. **Notes:** Simplified Chinese.
22.3.14  FilterChineseTraditional = 2

MBS Util Plugin, Plugin Version: 10.0. **Function:** One of the language filter constants.  
**Notes:** Traditional Chinese.

22.3.15  FilterCJK = 15

MBS Util Plugin, Plugin Version: 10.0. **Function:** One of the language filter constants.  
**Notes:** Chinese, Japanese and Korean together.

22.3.16  FilterJapanese = 4

MBS Util Plugin, Plugin Version: 10.0. **Function:** One of the language filter constants.  
**Notes:** Japanese

22.3.17  FilterKorean = 8

MBS Util Plugin, Plugin Version: 10.0. **Function:** One of the language filter constants.  
**Notes:** Korean

22.3.18  FilterNonCJK = 16

MBS Util Plugin, Plugin Version: 10.0. **Function:** One of the language filter constants.  
**Notes:** Non Chinese/Japanese/Korean languages.
Chapter 23

Bluetooth

23.1 class CBATTRequestMBS

23.1.1 class CBATTRequestMBS


Function: The CBATTRequest class represents Attribute Protocol (ATT) read and write requests from remote central devices (represented by CBCentral objects).

Notes:

Remote centrals use these ATT requests to read and write characteristic values on local peripherals (represented by CBPeripheralManager objects). Local peripherals, on the other hand, use the properties of CBATTRequest objects to respond to the read and write requests appropriately, using the respondToRequest:withResult: method of the CBPeripheralManager class.

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

23.1.2 Methods

23.1.3 Available as boolean


Function: Whether this class is available.

Notes: Returns true on macOS 10.9 or newer.
23.1.4 Constructor

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.

23.1.5 Properties

23.1.6 central as CBCentralMBS

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The remote central device that originated the request. **Notes:** (Read only property)

23.1.7 characteristic as CBCharacteristicMBS

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The characteristic whose value is to be read or written. **Notes:** (Read only property)

23.1.8 Handle as Integer

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference. **Notes:** (Read and Write property)

23.1.9 offset as UInt64

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The zero-based index of the first byte for the read or write request. **Notes:**

You can use the value of this property to ensure that the ATT request is attempting to read or write within the proper bounds of the characteristics value. For an example of how to take a requests offset property into account when responding to a read or write request, see Responding to Read and Write Requests from a Central in Apple documentation. (Read only property)
23.1. CLASS CBATTREQUESTMBS

23.1.10 value as MemoryBlock


Function: The data being read or written.

Notes:

The value of this property differs according to the type of request. For read requests, the property of this value is nil and should be set before responding to the remote central through the respondToRequest method. For write requests, the value of this property is the data that is to be written to the characteristics value. (Read and Write property)
CHAPTER 23. BLUETOOTH

23.2 class CBAttributeMBS

23.2.1 class CBAttributeMBS


**Function:** CBAtribute is an abstract base class that defines behavior common to the collection of objects that represent aspects of services offered by a peripheral.

**Notes:**

Concrete subclasses of CBAtribute (and their mutable counterparts) are used to represent the services a peripheral offers, the characteristics of those services, and the descriptors attached to those characteristics. The concrete subclasses are:

- CBService
- CBCharacteristic
- CBDescriptor

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

23.2.2 Methods

23.2.3 Available as boolean


**Function:** Whether this class is available.

**Notes:** Returns true on macOS 10.13 or newer.

23.2.4 Constructor


**Function:** The private constructor.

23.2.5 Properties

23.2.6 Handle as Integer


**Function:** The internal object reference.
23.2. **CLASS CBATTRIBUTEMBS**

**Notes:** (Read and Write property)

### 23.2.7 UUID as CBUUIDMBS

**Function:** The Bluetooth-specific UUID of the attribute.  
**Notes:**  
This property is a 128-bit UUID that identifies the attribute.  
(Read only property)
23.3 class CBCentralManagerMBS

23.3.1 class CBCentralManagerMBS


Function: CBCentralManager objects are used to manage discovered or connected remote peripheral devices (represented by CBPeripheral objects), including scanning for, discovering, and connecting to advertising peripherals.

Notes:
Before you call CBCentralManager methods, the state of the central manager object must be powered on, as indicated by the CBCentralManagerStatePoweredOn constant. This state indicates that the central device (your iPhone or iPad, for instance) supports Bluetooth low energy and that Bluetooth is on and available to use.
Subclass of the CBManagerMBS class.

23.3.2 Methods

23.3.3 Available as boolean


Function: Whether this class is available.
Notes: Returns true on MacOS 10.7 or later.

23.3.4 cancelPeripheralConnection(Peripheral as CBPeripheralMBS)


Function: Cancels an active or pending local connection to a peripheral.
Notes:
peripheral: The peripheral to which the central manager is either trying to connect or has already connected.

This method is nonblocking, and any CBPeripheral class commands that are still pending to peripheral may or may not complete. Because other apps may still have a connection to the peripheral, canceling a local connection does not guarantee that the underlying physical link is immediately disconnected. From the apps perspective, however, the peripheral is considered disconnected, and the central manager object calls the didDisconnectPeripheral event.
23.3. CLASS CBCENTRALMANAGERMBS

23.3.5 CBATTErrorDomain as String

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The domain for Core Bluetooth ATT errors. **Notes:** This value is used in the NSError class.

23.3.6 CBCentralManagerOptionRestoreIdentifierKey as String

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys used to pass options to the CBCentralManager method. **Notes:**

A string containing a unique identifier (UID) for the central manager that is being instantiated. The system uses this UID to identify a specific central manager. As a result, the UID must remain the same for subsequent executions of the app in order for the central manager to be successfully restored.

23.3.7 CBCentralManagerOptionShowPowerAlertKey as String

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys used to pass options to the CBCentralManager method. **Notes:**

A Boolean value that specifies whether the system should display a warning dialog to the user if Bluetooth is powered off when the central manager is instantiated. The value for this key is a number. If the key is not specified, the default value is false.

23.3.8 CBCentralManagerRestoredStatePeripheralsKey as String

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the options keys. **Notes:**

See connectPeripheral method. An array of CBPeripheral objects containing all peripherals that were connected or pending connection at the time the application was terminated by the system. When possible, all known information for each peripheral will be restored, including any discovered services, characteristics and descriptors, as well as characteristic notification states.
23.3.9 CBCentralManagerRestoredStateScanOptionsKey as String

Function: One of the options keys.
Notes:
A dictionary containing the scan options at the time the application was terminated by the system.
See also scanForPeripheralsWithServices method.

23.3.10 CBCentralManagerRestoredStateScanServicesKey as String

Function: One of the options keys.
Notes:
An array of CBUUID objects containing the service(s) being scanned for at the time the application was terminated by the system.
See also scanForPeripheralsWithServices method.

23.3.11 CBCentralManagerScanOptionAllowDuplicatesKey as String

Function: One of the keys used to pass options to the scanForPeripheralsWithServices method.
Notes:
A Boolean value that specifies whether the scan should run without duplicate filtering.
The value for this key is a number. If true, filtering is disabled and a discovery event is generated each time the central receives an advertising packet from the peripheral. Disabling this filtering can have an adverse effect on battery life and should be used only if necessary. If false, multiple discoveries of the same peripheral are coalesced into a single discovery event. If the key is not specified, the default value is false.

23.3.12 CBCentralManagerScanOptionSolicitedServiceUUIDsKey as String

Function: One of the keys used to pass options to the scanForPeripheralsWithServices method.
Notes:
An array of service UUIDs (represented by CBUUID objects) that you want to scan for.
Specifying this scan option causes the central manager to also scan for peripherals soliciting any of the services contained in the array.
23.3.13 CBConnectPeripheralOptionNotifyOnConnectionKey as String


Function: One of the keys used to pass options to the connectPeripheral method.

Notes:
A Boolean value that specifies whether the system should display an alert for a given peripheral if the app is suspended when a successful connection is made.
The value for this key is a number. This key is useful for apps that have not specified the bluetooth-central background mode and cannot display their own alert. If more than one app has requested notification for a given peripheral, the one that was most recently in the foreground receives the alert. If the key is not specified, the default value is false.

23.3.14 CBConnectPeripheralOptionNotifyOnDisconnectionKey as String


Function: One of the keys used to pass options to the connectPeripheral method.

Notes:
A Boolean value that specifies whether the system should display a disconnection alert for a given peripheral if the app is suspended at the time of the disconnection.
The value for this key is a number. This key is useful for apps that have not specified the bluetooth-central background mode and cannot display their own alert. If more than one app has requested notification for a given peripheral, the one that was most recently in the foreground receives the alert. If the key is not specified, the default value is false.

23.3.15 CBConnectPeripheralOptionNotifyOnNotificationKey as String


Function: One of the keys used to pass options to the connectPeripheral method.

Notes:
A Boolean value that specifies whether the system should display an alert for all notifications received from a given peripheral if the app is suspended at the time.
The value for this key is a number. This key is useful for apps that have not specified the bluetooth-central background mode and cannot display their own alert. If more than one app has requested notification for a given peripheral, the one that was most recently in the foreground receives the alert. If the key is not specified, the default value is false.

23.3.16 CBEErrorDomain as String


Function: The domain for Core Bluetooth errors.
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Notes: This value is used in the NSError class.

23.3.17 connectPeripheral(peripheral as CBPeripheralMBS, options as Dictionary = nil)

Notes:
peripheral: The peripheral to which the central is attempting to connect.
options: A dictionary to customize the behavior of the connection. For available options, see Peripheral Connection Options.

If a local connection to a peripheral is successfully established, the central manager object calls the centralManager:didConnectPeripheral: method of its delegate object. If the connection attempt fails, the central manager object calls the didFailToConnectPeripheral event. Attempts to connect to a peripheral do not time out. To explicitly cancel a pending connection to a peripheral, call the cancelPeripheralConnection method. The cancelPeripheralConnection method is implicitly called when peripheral is deallocated.

23.3.18 Constructor(options as dictionary = nil)

Notes: options: An optional dictionary containing initialization options for a central manager.

23.3.19 Destructor


23.3.20 retrieveConnectedPeripheralsWithServices(serviceUUIDs() as CBUUIDMBS) as CBPeripheralMBS()

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a list of the peripherals (containing any of the specified services) currently connected to the system.
Notes:
serviceUUIDs: A list of service UUIDs (represented by CBUUID objects).
Returns a list of the peripherals that are currently connected to the system and that contain any of the
services specified in the serviceUUID parameter.

The list of connected peripherals can include those that are connected by other apps and that will need to
be connected locally using the connectPeripheral method before they can be used.

23.3.21 retrievePeripheralsWithIdentifiers(identifiers() as NSUUIDMBS) as CBPeripheralMBS()

Function: Returns a list of known peripherals by their identifiers.
Notes:
identifiers: A list of peripheral identifiers (represented by NSUUID objects) from which CBPeripheral objects
can be retrieved.

Returns a list of peripherals that the central manager is able to match to the provided identifiers.

23.3.22 scanForPeripheralsWithServices(serviceUUIDs() as CBUUIDMBS = nil, options as Dictionary = nil)

Function: Scans for peripherals that are advertising services.
Notes:
serviceUUIDs: An array of CBUUID objects that the app is interested in. In this case, each CBUUID object
represents the UUID of a service that a peripheral is advertising.
options: An optional dictionary specifying options to customize the scan. For available options, see Peripheral Scanning Options.

You can provide an array of CBUUID objects representing service UUIDs in the serviceUUIDs parameter.
When you do, the central manager returns only peripherals that advertise the services you specify (recom-
mended). If the serviceUUIDs parameter is nil, all discovered peripherals are returned regardless of their
supported services (not recommended). If the central manager is already scanning with different parameters,
the provided parameters replace them. When the central manager object discovers a peripheral, it calls the
didDiscoverPeripheral event.
Apps that have specified the bluetooth-central background mode are allowed to scan while in the background.
That said, they must explicitly scan for one or more services by specifying them in the serviceUUIDs pa-
parameter. The CBCentralManager scan option is ignored while scanning in the background.
23.3.23 stopScan

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Asks the central manager to stop scanning for peripherals.

23.3.24 Properties

23.3.25 isScanning as Boolean

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether or not the central is currently scanning. **Notes:** (Read only property)

23.3.26 Events

23.3.27 DidConnectPeripheral(peripheral as CBPeripheralMBS)

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Invoked when a connection is successfully created with a peripheral. **Notes:**

peripheral: The peripheral that has been connected to the system.

This method is invoked when a call to connectPeripheral is successful. You typically implement this method to set the peripherals delegate and to discover its services.

23.3.28 DidDisconnectPeripheral(peripheral as CBPeripheralMBS, error as NSErrorMBS)

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Invoked when an existing connection with a peripheral is torn down. **Notes:**

peripheral: The peripheral that has been disconnected.

error: If an error occurred, the cause of the failure.

This method is invoked when a peripheral connected via the connectPeripheral method is disconnected. If the disconnection was not initiated by cancelPeripheralConnection, the cause is detailed in error. After this method is called, no more methods are invoked on the peripheral devices CBPeripheralDelegate object. Note that when a peripheral is disconnected, all of its services, characteristics, and characteristic descriptors
are invalidated.

**23.3.29 DidDiscoverPeripheral**(peripheral as CBPeripheralMBS, advertisementData as Dictionary, RSSI as String)

**Function:** Invoked when the central manager discovers a peripheral while scanning.  
**Notes:**

peripheral: The discovered peripheral.  
advertisementData: A dictionary containing any advertisement data.  
RSSI: The current received signal strength indicator (RSSI) of the peripheral, in decibels.

The advertisement data can be accessed through the keys listed in Advertisement Data Retrieval Keys. You must retain a local copy of the peripheral if any command is to be performed on it. In use cases where it makes sense for your app to automatically connect to a peripheral that is located within a certain range, you can use RSSI data to determine the proximity of a discovered peripheral device.

**23.3.30 DidFailToConnectPeripheral**(peripheral as CBPeripheralMBS, error as NSErrorMBS)

**Function:** Invoked when the central manager fails to create a connection with a peripheral.  
**Notes:**

peripheral: The peripheral that failed to connect.  
error: The cause of the failure.

This method is invoked when a connection initiated via the connectPeripheral method fails to complete. Because connection attempts do not time out, a failed connection usually indicates a transient issue, in which case you may attempt to connect to the peripheral again.

**23.3.31 DidUpdateState**

**Function:** Invoked when the central managers state is updated.  
**Notes:** You implement this required method to ensure that Bluetooth low energy is supported and available to use on the central device. You should issue commands to the central manager only when the state of the central manager is powered on, as indicated by the CBCentralManagerStatePoweredOn constant. A state with a value lower than CBCentralManagerStatePoweredOn implies that scanning has stopped and that any connected peripherals have been disconnected. If the state moves below CBCentralManagerStatePow-
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eredOff, all CBPeripheral objects obtained from this central manager become invalid and must be retrieved or discovered again. For a complete list and discussion of the possible values representing the state of the central manager, see the CBCentralManagerState enumeration in CBCentralManager.

23.3.32   WillRestoreState(dict as dictionary)

**Function:** Invoked when the central manager is about to be restored by the system.  
**Notes:**

dict: A dictionary containing information about the central manager that was preserved by the system at the time the app was terminated. For the available keys to this dictionary, see Central Manager State Restoration Options.

For apps that opt in to the state preservation and restoration feature of Core Bluetooth, this is the first method invoked when your app is relaunched into the background to complete some Bluetooth-related task. Use this method to synchronize the state of your app with the state of the Bluetooth system.

23.3.33   Constants

23.3.34   CBATTErrorAttributeNotFound = & h0A

**Function:** One of the att error codes.  
**Notes:** The attribute is not found within the specified attribute handle range.

23.3.35   CBATTErrorAttributeNotLong = & h0B

**Function:** One of the att error codes.  
**Notes:** The attribute cannot be read or written using the ATT read blob request.

23.3.36   CBATTErrorInsufficientAuthentication = 5

**Function:** One of the att error codes.  
**Notes:** The attribute requires authentication before its value can be read or written.
23.3. CBCENTRALMANAGERMBS

23.3.37 CBATTErrorInsufficientAuthorization = 8

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the att error codes. **Notes:** The attribute requires authorization before its value can be read or written.

23.3.38 CBATTErrorInsufficientEncryption = &h0F

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the att error codes. **Notes:** The attribute requires encryption before its value can be read or written.

23.3.39 CBATTErrorInsufficientEncryptionKeySize = &h0C

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the att error codes. **Notes:** The encryption key size used for encrypting this link is insufficient.

23.3.40 CBATTErrorInsufficientResources = &h11

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the att error codes. **Notes:** Resources are insufficient to complete the ATT request.

23.3.41 CBATTErrorInvalidAttributeValueLength = &h0D

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the att error codes. **Notes:** The length of the attributes value is invalid for the intended operation.

23.3.42 CBATTErrorInvalidHandle = 1

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the att error codes. **Notes:** The attribute handle is invalid on this peripheral.

23.3.43 CBATTErrorInvalidOffset = 7

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the att error codes. **Notes:** The specified offset value was past the end of the attributes value.
23.3.44  CBATTErrorInvalidPdu = 4

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the att error codes.  
**Notes:** The attribute Protocol Data Unit (PDU) or message is invalid.

23.3.45  CBATTErrorPrepareQueueFull = 9

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the att error codes.  
**Notes:** The prepare queue is full, because too many prepare write requests have been queued.

23.3.46  CBATTErrorReadNotPermitted = 2

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the att error codes.  
**Notes:** The attributes value cannot be read.

23.3.47  CBATTErrorRequestNotSupported = 6

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the att error codes.  
**Notes:** The attribute server does not support the request received by the client.

23.3.48  CBATTErrorSuccess = 0

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the att error codes.  
**Notes:** The ATT command or request successfully completed.

23.3.49  CBATTErrorUnlikelyError = & h0E

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the att error codes.  
**Notes:** The ATT request has encountered an unlikely error and therefore could not be completed.

23.3.50  CBATTErrorUnsupportedGroupType = & h10

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the att error codes.  
**Notes:** The attribute type is not a supported grouping attribute as defined by a higher-layer specification.
23.3.51 CBATTErrorWriteNotPermitted = 3

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the att error codes. 
**Notes:** The attributes value cannot be written.

23.3.52 CBCentralManagerStatePoweredOff = 4

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the states. 
**Notes:** Bluetooth is currently powered off.

23.3.53 CBCentralManagerStatePoweredOn = 5

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the states. 
**Notes:** Bluetooth is currently powered on and is available to use.

23.3.54 CBCentralManagerStateResetting = 1

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the states. 
**Notes:** The connection with the system service was momentarily lost; an update is imminent.

23.3.55 CBCentralManagerStateUnauthorized = 3

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the states. 
**Notes:** The app is not authorized to use the Bluetooth low energy peripheral/server role.

23.3.56 CBCentralManagerStateUnknown = 0

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the states. 
**Notes:** The current state of the peripheral manager is unknown; an update is imminent.

23.3.57 CBCentralManagerStateUnsupported = 2

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the states. 
**Notes:** The platform doesn’t support the Bluetooth low energy peripheral/server role.
23.3.58  CBErrorAlreadyAdvertising = 9

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the error codes.  
**Notes:** The peripheral is already advertising.

23.3.59  CBErrorConnectionFailed = 10

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the error codes.  
**Notes:** The connection failed.

23.3.60  CBErrorConnectionLimitReached = 11

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the error codes.  
**Notes:** The device already has the maximum number of connections.

23.3.61  CBErrorConnectionTimeout = 6

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the error codes.  
**Notes:** The connection timed out.

23.3.62  CBErrorInvalidHandle = 2

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the error codes.  
**Notes:** The specified attribute handle is invalid.

23.3.63  CBErrorInvalidParameters = 1

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the error codes.  
**Notes:** The specified parameters are invalid.

23.3.64  CBErrorNotConnected = 3

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the error codes.  
**Notes:** The device is not currently connected.
23.3. CLASS CBCENTRALMANAGERMBS

23.3.65 CBErrorOperationCancelled = 5

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the error codes. **Notes:** The operation is canceled.

23.3.66 CBErrorOutOfSpace = 4

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the error codes. **Notes:** The device has run out of space to complete the intended operation.

23.3.67 CBErrorPeripheralDisconnected = 7

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the error codes. **Notes:** The peripheral disconnected.

23.3.68 CBErrorUnknown = 0

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the error codes. **Notes:** An unknown error occurred.

23.3.69 CBErrorUnknownDevice = 12

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the error codes. **Notes:** Unknown device.

23.3.70 CBErrorUUIDNotAllowed = 8

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the error codes. **Notes:** The specified UUID is not permitted.
23.4  class CBCentralMBS

23.4.1  class CBCentralMBS

Function: The central CoreBluetooth class.
Notes:
The CBCentral class represents remote central devices that have connected to an app implementing the
peripheral role on a local device. That is, when you are implementing the peripheral role using the CBPeripheralManager class, centrals that connect to your local peripheral are represented as CBCentral objects.
Remote centrals are identified by universally unique identifiers (UUIDs), represented by NSUUID objects.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

23.4.2  Methods

23.4.3  Available as boolean

Function: Whether this class is available.
Notes: Returns true on MacOS 10.9 or newer.

23.4.4  Constructor

Function: The private constructor.

23.4.5  Properties

23.4.6  maximumUpdateValueLength as Integer

Function: The maximum amount of data, in bytes, that the central can receive in a single notification or
indication.
Notes: (Read only property)
23.5. CLASS CBCHARACTERISTICMBS

23.5 class CBCharacteristicMBS

23.5.1 class CBCharacteristicMBS

Function: The class for a service characteristic. 
Notes:
CBCharacteristic and its subclass CBMutableCharacteristic represent further information about a peripher-
als service. CBCharacteristic objects in particular represent the characteristics of a remote peripherals 
service (remote peripheral devices are represented by CBPeripheral objects). A characteristic contains a sin-
gle value and any number of descriptors describing that value. The properties of a characteristic determine 
how the value of the characteristic can be used and how the descriptors can be accessed. 
Subclass of the CBAttributeMBS class. 
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

23.5.2 Methods

23.5.3 Constructor

Function: The private constructor.

23.5.4 descriptors as CBDescriptorMBS()

Function: A list of the descriptors that have been discovered in this characteristic. 
Notes: The value of this property is an array of CBDescriptor objects that represent a characteristics de-
scriptors. Characteristic descriptors provide more information about a characteristics value. For example, 
they may describe the value in human-readable form and describe how the value should be formatted for 
presentation purposes. For more information about characteristic descriptors, see CBDescriptor.

23.5.5 Properties

23.5.6 isBroadcasted as Boolean

Function: Whether the characteristic is currently broadcasted or not. 
Notes: 
Available in MacOS 10.9 or newer.
23.5.7 isNotifying as Boolean

Function: A Boolean value indicating whether the characteristic is currently notifying a subscribed central of its value.
Notes:
True if you have enabled notifications or indications for the characteristic by successfully calling the setNotifyValue method of the CBPeripheral class. If the value of this property is true, the peripheral updates the subscribed central that it is connected to whenever the characteristics value has changed. If the value of the property is false, notifications (or indications) have not been enabled for the characteristic, and the peripheral does not update the central that it is connected to whenever the characteristics value has changed. (Read only property)

23.5.8 properties as Integer

Function: The properties of the characteristic.
Notes:
The properties of a characteristic determine how the characteristics value and descriptors can be used and accessed. For a list of the possible values representing the properties of a characteristic, see constants. (Read only property)

23.5.9 service as CBServiceMBS

Function: The service that this characteristic belongs to.
Notes: (Read only property)

23.5.10 value as MemoryBlock

Function: The value of the characteristic.
Notes:
This property contains the value of the characteristic. For example, a temperature measurement characteristic of a health thermometer service may have a value that indicates a temperature in Celsius.
23.5. CLASS CBCHARACTERISTICMBS

(Read only property)

23.5.11 Constants

23.5.12 kPropertyAuthenticatedSignedWrites = & h40

Notes: Signed writes of the characteristics value are permitted, without a response from the peripheral to indicate that the write was successful.

23.5.13 kPropertyBroadcast = 1

Notes: The characteristics value can be broadcast using a characteristic configuration descriptor.

23.5.14 kPropertyExtendedProperties = & h80

Notes: Additional characteristic properties are defined in the characteristic extended properties descriptor.

23.5.15 kPropertyIndicate = & h20

Notes: Indications of the characteristics value are permitted, with a response from the central to indicate that the indication was received.

23.5.16 kPropertyIndicateEncryptionRequired = & h200

Notes: Only trusted devices can enable indications of the characteristics value.

23.5.17 kPropertyNotify = & h10

Notes: Notifications of the characteristics value are permitted, without a response from the central to indi-
cate that the notification was received.

23.5.18  kPropertyNotifyEncryptionRequired = & h100

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function**: One of the property constants.  
**Notes**: Only trusted devices can enable notifications of the characteristics value.

23.5.19  kPropertyRead = 2

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function**: One of the property constants.  
**Notes**: The characteristics value can be read.

23.5.20  kPropertyWrite = 8

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function**: One of the property constants.  
**Notes**: The characteristics value can be written, with a response from the peripheral to indicate that the write was successful.

23.5.21  kPropertyWriteWithoutResponse = 4

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function**: One of the property constants.  
**Notes**: The characteristics value can be written, without a response from the peripheral to indicate that the write was successful.
23.6. **CLASS CBDESCRIPTORMBS**

23.6  **class CBDescriptorMBS**

**Function:** The CoreBluetooth class for a characteristic description.  
**Notes:**

CBDescriptor and its subclass CBMutableDescriptor represent a descriptor of a peripherals characteristic.  
CBDescriptor objects in particular represent the descriptors of a remote peripherals characteristic (remote peripheral devices are represented by CBPeripheral objects). Descriptors provide further information about a characteristics value. For example, they may describe the value in human-readable form and describe how the value should be formatted for presentation purposes. Characteristic descriptors also indicate whether a characteristics value is configured on a server (a peripheral) to indicate or notify a client (a central) when the value of the characteristic changes.

There are six predefined types of descriptors that along with their corresponding value types are detailed in CBUUID. CBDescriptor lists the predefined types of descriptors and the CBUUIDMBS constants that are used to represent them.

<table>
<thead>
<tr>
<th>Descriptor type</th>
<th>Descriptor constant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Characteristic extended properties</td>
<td>CBUUIDMBS.CBUUIDCharacteristicExtendedPropertiesString</td>
</tr>
<tr>
<td>Characteristic user description</td>
<td>CBUUIDMBS.CBUUIDCharacteristicUserDescriptionString</td>
</tr>
<tr>
<td>Client characteristic configuration</td>
<td>CBUUIDMBS.CBUUIDClientCharacteristicConfigurationString</td>
</tr>
<tr>
<td>Server characteristic configuration</td>
<td>CBUUIDMBS.CBUUIDServerCharacteristicConfigurationString</td>
</tr>
<tr>
<td>Characteristic format</td>
<td>CBUUIDMBS.CBUUIDCharacteristicFormatString</td>
</tr>
<tr>
<td>Characteristic aggregate format</td>
<td>CBUUIDMBS.CBUUIDCharacteristicAggregateFormatString</td>
</tr>
</tbody>
</table>

Subclass of the CBAAttributeMBS class.

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

23.6.2  **Methods**

23.6.3  **Available as boolean**

**Function:** Whether this class is available.  
**Notes:** Returns true on MacOS 10.7 or newer.
23.6.4 Constructor


23.6.5 Properties

23.6.6 Characteristic as CBCharacteristicMBS

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The characteristic that this descriptor belongs to. Notes: (Read only property)

23.6.7 Value as Variant


The value types for the various types of descriptors are detailed in CBUUID. You can read the value of a descriptor by calling the readValueForDescriptor: method of the CBPeripheral class. You can write the value of a descriptor by calling the writeValue method of the CBPeripheral class. That said, you cannot use the writeValue method to write the value of a client configuration descriptor (CBUUIDClientCharacteristicConfigurationString); instead, you should use the setNotifyValue method of the CBPeripheral class to configure client indications or notifications of a characteristics value on a server. (Read only property)
23.7. class CBL2CAPChannelMBS

23.7.1 class CBL2CAPChannelMBS


23.7.2 Methods

23.7.3 Available as boolean

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  Function: Whether the class is available.
Notes: Returns true on MacOS 10.13.

23.7.4 Constructor


23.7.5 Properties

23.7.6 Handle as Integer

Notes: (Read and Write property)

23.7.7 inputStream as NSInputStreamMBS

Notes: (Read only property)
23.7.8 outputStream as NSOutputStreamMBS

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: An NSStream used for writing data to the peer. Notes: (Read only property)

23.7.9 peer as CBPeerMBS

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The peer connected to the channel. Notes: (Read only property)

23.7.10 PSM as Integer

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The PSM (Protocol/Service Multiplexer) of the channel. Notes: (Read only property)
23.8. class CBManagerMBS

23.8.1 class CBManagerMBS

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The abstract base class for Core Bluetooth manager objects (central and peripheral). **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

23.8.2 Methods

23.8.3 Available as boolean

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the class is available. **Notes:** Returns true on MacOS 10.13 or newer.

23.8.4 Constructor

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.

23.8.5 Properties

23.8.6 Handle as Integer

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference. **Notes:** (Read and Write property)

23.8.7 State as Integer

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The state of the manager. **Notes:** (Read only property)
23.8.8 Constants

23.8.9 `kStatePoweredOff = 4`

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the state constants.  
**Notes:** Bluetooth is currently powered off.

23.8.10 `kStatePoweredOn = 5`

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the state constants.  
**Notes:** Bluetooth is currently powered on and available to use.

23.8.11 `kStateResetting = 1`

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the state constants.  
**Notes:** The connection with the system service was momentarily lost, update imminent.

23.8.12 `kStateUnauthorized = 3`

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the state constants.  
**Notes:** The application is not authorized to use the Bluetooth Low Energy role.

23.8.13 `kStateUnknown = 0`

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the state constants.  
**Notes:** State unknown, update imminent.

23.8.14 `kStateUnsupported = 2`

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the state constants.  
**Notes:** The platform doesn’t support the Bluetooth Low Energy Central/Client role.
23.9. **CLASS CBMUTABLECHARACTERISTICMBS**

23.9  **class CBMutableCharacteristicMBS**


**Function:** CBMutableCharacteristic objects represent the characteristics of a local peripherals service (local peripheral devices are represented by CBPeripheralManager objects).

**Notes:**

This class adds write access to many of the properties in the CBCharacteristic class it inherits from.

You use this class to create a characteristic and to set its properties and permissions as desired. After you create a characteristic and add it to a local service, you can publish it (and the service) to the peripherals local database using the addService method of the CBPeripheralManager class. After you publish a characteristic, the characteristic is cached and you can no longer make changes to it.

Subclass of the CBCharacteristicMBS class.

23.9.2  **Methods**

23.9.3  **Available as boolean**


**Function:** Whether the class is available.

**Notes:** Returns true on MacOS 10.9 or later.

23.9.4  **Constructor(UUID as CBUUIDMBS, properties as Integer, value as MemoryBlock, permissions as Integer)**


**Function:** Returns a newly initialized mutable characteristic with specified permissions, properties, and value.

**Notes:**

UUID: A 128-bit UUID that identifies the characteristic.
properties: The properties of the characteristic.
value: The characteristic value to be cached. If nil, the value is dynamic and will be requested on demand.
permissions: The permissions of the characteristic value.

Returns a newly initialized mutable characteristic.

If you specify a value for the characteristic, the value is cached and its properties and permissions are set to CBCharacteristicPropertyRead and CBAtributePermissionsReadable, respectively. Therefore, if you need
the value of a characteristic to be writeable, or if you expect the value to change during the lifetime of the published service to which the characteristic belongs, you must specify the value to be nil. So doing ensures that the value is treated dynamically and requested by the peripheral manager whenever the peripheral manager receives a read or write request from a central. When the peripheral manager receives a read or write request from a central, it calls the didReceiveReadRequest or the didReceiveWriteRequests event, respectively.

23.9.5 setDescriptors(Descriptors() as CBDescriptorMBS)

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Set the list of descriptors that describe the characteristic. **Notes:** The value of this property is an array of CBDescriptor objects that represent a characteristics descriptors. Characteristic descriptors provide more information about a characteristics value. For example, they may describe the value in human-readable form and describe how the value should be formatted for presentation purposes. For more information about characteristic descriptors, see CBDescriptor.

23.9.6 subscribedCentrals as CBDescriptorMBS()

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A list of centrals currently subscribed to the characteristics value. **Notes:** The value of this property is an array of CBCentral objects that are currently subscribed to the characteristics value. The array is empty if the characteristic is not configured to support notifications or indications. Even if the characteristic is configured to support notifications or indications, the array is empty if no centrals are currently subscribing to the characteristics value.

23.9.7 Properties

23.9.8 permissions as Integer

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The permissions of the characteristic value. **Notes:** Characteristic permissions represent the read, write, and encryption permissions for a characteristics value. For a complete list and discussion of the characteristic permissions that may be set, see constants. (Read and Write property)

23.9.9 properties as Integer

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The properties of the characteristic.
The properties of a characteristic determine how the characteristics value and descriptors can be used and accessed. The characteristic properties CBCharacteristicPropertyBroadcast and CBCharacteristicPropertyExtendedProperties are not allowed for mutable characteristics. That is, you cannot set these properties when you initialize a CBMutableCharacteristic object using the Constructor method. For a list of the possible values representing the properties of a characteristic, see the CBCharacteristicProperties enumeration in CBCharacteristic.

(Read and Write property)

23.9.10 value as MemoryBlock


**Function:** The value of the characteristic.

**Notes:**

This property contains the value of the characteristic. For example, a temperature measurement characteristic of a health thermometer service may have a value that indicates a temperature in Celsius.

(Read and Write property)

23.9.11 Constants

23.9.12 kReadable = 1

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the permission flags.

**Notes:** The characteristics value has read-only permission.

23.9.13 kReadEncryptionRequired = 4

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the permission flags.

**Notes:** The characteristics value is readable only by trusted devices.

23.9.14 kWriteable = 2

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the permission flags.

**Notes:** The characteristics value has write-only permission.
23.9.15  \texttt{kWriteEncryptionRequired} = 8

MBS Bluetooth Plugin, Plugin Version: 18.1. \textbf{Function:} One of the permission flags. 
\textbf{Notes:} The characteristics value is writeable only by trusted devices.
23.10. **CLASS CBMUTABLEDESCRIPTORMBS**

### 23.10.1 class CBMutableDescriptorMBS


**Function:** CBMutableDescriptor objects represent the descriptors of a local peripherals characteristic (local peripheral devices are represented by CBPeripheralManager objects).

**Notes:**

You use the CBMutableDescriptor class to create a local characteristic descriptor. After you create a descriptor and associate it with a local characteristic, you can publish it (along with the characteristic and local service to which it belongs) to the peripherals local database via the addService: method of the CBPeripheralManager class. After you publish a local descriptor, the descriptor is cached and you can no longer make changes to it.

There are six predefined types of descriptors that along with their corresponding value types are detailed in CBUUID. That said, only two of these are currently supported when creating local, mutable descriptors: the characteristic user description descriptor and the characteristic format descriptor, represented by the CBUUID constants CBUUIDCharacteristicUserDescriptionString and CBUUIDCharacteristicFormatString, respectively. The system automatically creates the characteristic extended properties descriptor and the client characteristic configuration descriptor, depending on the properties of the characteristic to which the descriptor belongs.

Subclass of the CBDescriptorMBS class.

### 23.10.2 Methods

#### 23.10.3 Constructor(UUID as CBUUIDMBS, value as variant)


**Function:** Returns a newly initialized mutable descriptor with a specified value.

**Notes:**

UUID: A 128-bit UUID that identifies the characteristic. You must use only one of the two currently supported descriptor types: CBUUIDCharacteristicUserDescriptionString or CBUUIDCharacteristicFormatString. For more details about these descriptor types, see CBUUID.

value: The descriptor value to be cached. This value is required (that is, it must not be nil) and cannot be updated dynamically after the descriptor has been published.

Returns a newly initialized mutable descriptor.

The value type of value depends on the type of descriptor.

- The value type of a characteristic user description descriptor (CBUUIDCharacteristicUserDescription-
String) is a string that can be used to provide a human-readable description of the characteristics value.

- The value type of a characteristic format descriptor (CUUIDCharacteristicFormatString) is a memory block that can be used to specify how the characteristics value should be formatted for presentation purposes.

If you want to create a local characteristic format descriptor, the descriptors value must conform to the attribute value of the characteristic format descriptor as defined in the Bluetooth 4.0 specification, Volume 3, Part G, Section 3.3.3.5 (for more information, see Bluetooth 4.0 Characteristic Presentation Format).
23.11. CLASS CBMUTABLESERVICEMBS

23.11 class CBMutableServiceMBS

23.11.1 class CBMutableServiceMBS


Function: The CBMutableService class adds write access to all of the properties in the CBService class it inherits from.

Notes:

You use this class to create a service or an included service on a local peripheral device (represented by a CBPeripheralManager object). After you create a service, you can add it to the peripherals local database using the addService method of the CBPeripheralManager class. After you add a service to the peripherals local database, the service is cached and you can no longer make changes to it.

Subclass of the CBServiceMBS class.

23.11.2 Methods

23.11.3 Constructor(UUID as CBUUIDMBS, isPrimary as Boolean)


Function: Returns a newly initialized mutable service specified by UUID and service type.

Notes:

UUID: A 128-bit UUID that identifies the service.

isPrimary: A Boolean value indicating whether the type of service is primary or secondary. If the value is true, the type of service is primary. If the value is false, the type of service is secondary.

23.11.4 setCharacteristics(characteristics() as CBCharacteristicMBS)


Function: Sets list of characteristics of a service.

Notes: An array containing CBCharacteristic objects that represent a services characteristics. Characteristics provide further details about a peripherals service. For example, a heart rate service may contain one characteristic that describes the intended body location of the devices heart rate sensor and another characteristic that transmits heart rate measurement data.

23.11.5 setIncludedServices(includedServices() as CBServiceMBS)


Function: Sets the list of included services.

Notes: A service of a peripheral may contain a reference to other services that are available on the periph-
eral. These other services are the included services of the service.
23.12. class CBPeerMBS

23.12.1 class CBPeerMBS

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The CBPeer class is an abstract base class that defines common behavior for objects representing remote devices. **Notes:**
You typically do not create instances of either CBPeer or its concrete subclasses. Instead, the system creates them for you during the process of peer discovery.

Your app running on the local device takes the role of either a central (by creating an instance of CBCentralManager) or a peripheral (by creating an instance of CBPeripheralManager), and interacts through the manager with remote devices in the opposite role. During the process of peer discovery, where a central device scans for peripherals advertising services, the system creates objects from the concrete subclasses of CBPeer to represent discovered remote devices.

The concrete subclasses of CBPeer are:

- CBPeripheralMBS
- CBCentralMBS

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

23.12.2 Methods

23.12.3 Available as boolean

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this class is available. **Notes:** Returns true on Mac OS 10.13 or newer.

23.12.4 Constructor

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.
23.12.5 copy as CBPeerMBS

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy.

23.12.6 Properties

23.12.7 Handle as Integer

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference.  
**Notes:** (Read and Write property)

23.12.8 identifier as String

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The UUID associated with the peer.  
**Notes:**  
The value of this property represents the unique identifier of the peer. The first time a local manager encounters a peer, the system assigns the peer a UUID, represented by a new NSUUID object. Peers are identified by NSUUID UUIDs instead of by the CBUUID objects that identify a peripherals services, characteristics, and characteristic descriptors.  
(Read only property)
23.13. **CLASS CBPERIPHERALMANAGERMBS**

23.13 class CBPeripheralManagerMBS

23.13.1 class CBPeripheralManagerMBS


**Function:** The CoreBluetooth peripheral manager class.

**Notes:**

CBPeripheralManager objects are used to manage published services within the local peripheral devices Generic Attribute Profile (GATT) database and to advertise these services to central devices (represented by CBCentral objects). While a service is in the database, it is visible to, and can be accessed by, any connected central. That said, if your app has not specified the bluetooth-peripheral background mode, the contents of its services become disabled when it is in the background or in a suspended state; any remote central trying to access the services characteristic value or characteristic descriptors receives an error.

Before you call CBPeripheralManager methods, the state of the peripheral manager object must be powered on, as indicated by the kStatePoweredOn. This state indicates that the peripheral device (your iPhone or iPad, for instance) supports Bluetooth low energy and that its Bluetooth is on and available to use. Subclass of the CBManagerMBS class.

23.13.2 Methods

23.13.3 addService(service as CBMutableServiceMBS)


**Function:** Publishes a service and any of its associated characteristics and characteristic descriptors to the local GATT database.

**Notes:**

service: The service you want to publish.

When you add a service to the database, the peripheral manager calls the didAddService:error event. If the service contains any included services, you must publish them first.

23.13.4 authorizationStatus as integer


**Function:** Returns the apps authorization status for sharing data while in the background state.

**Notes:**

A value indicating whether the app is authorized to share data using Bluetooth services while in the background. For a list of the possible values, see constants.
The authorization status of a given app is managed by the system and determined by several factors. Apps must be explicitly authorized to share data using Bluetooth services while in the background state. The system automatically displays a request for user authorization when your app first attempts to use Bluetooth services to share data.

Calling this method does not prompt the user for access. Instead, you use this method to detect restricted access and simply hide any affected UI features from the user.

### 23.13.5 Available as boolean

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Checks whether this class is available.  
**Notes:** Returns true for MacOS 10.9 or newer.

### 23.13.6 CBPeripheralManagerOptionRestoreIdentifierKey as String

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys used to pass options to the Constructor.  
**Notes:**  
A string containing a unique identifier (UID) for the peripheral manager that is being instantiated. The system uses this UID to identify a specific peripheral manager. As a result, the UID must remain the same for subsequent executions of the app in order for the peripheral manager to be successfully restored.

### 23.13.7 CBPeripheralManagerOptionShowPowerAlertKey as String

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys used to pass options to the Constructor.  
**Notes:**  
A Boolean value that specifies whether the system should display a warning dialog to the user if Bluetooth is powered off when the peripheral manager is instantiated. The value for this key is a boolean. If the key is not specified, the default value is false.

### 23.13.8 CBPeripheralManagerRestoredStateAdvertisementDataKey as String

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys used to pass options to the constructor.  
**Notes:** A dictionary containing the data that the peripheral manager was advertising at the time the app was terminated by the system.
23.13. CLASS CBPERIPHERALMANAGERMBS

23.13.9 CBPeripheralManagerRestoredStateServicesKey as String

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys used to pass options to the constructor. **Notes:** An array of CBMutableService objects that contains all of the services that were published to the local peripherals database at the time the app was terminated by the system.

23.13.10 Constructor(options as Dictionary = nil)

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes the peripheral manager.

23.13.11 Destructor

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The destructor.

23.13.12 removeAllServices

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes all published services from the local GATT database. **Notes:** Because the GATT database is shared among apps on the local peripheral device, this method removes only the services that you have added using the addService method. Any services that have been published by other apps on the local peripheral device are not removed from the GATT database.

23.13.13 removeService(service as CBMutableServiceMBS)

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes a specified published service from the local GATT database. **Notes:**

service: The service you want to remove.

Because the GATT database is shared among apps on the local peripheral device, more than one instance of a service may exist in the database. As a result, this method removes only the instance of the service that your app added to the database (using the addService method). If the service is included by any other services, you must remove them first.
CHAPTER 23. BLUETOOTH

23.13.14 respondToRequest(request as CBATTRequestMBS, error as integer)

Function: Responds to a read or write request from a connected central.
Notes:
request: The read or write request that was received from the connected central. For more information
about read and write requests, see CBATTRequest.
result: The result of attempting to fulfill the request. For a list of possible results, see Core Bluetooth
Constants.

When the peripheral manager receives a request (represented as a CBATTRequest object) from a connected
central to read or write a characteristics value, it calls the didReceiveReadRequest or didReceiveWriteRequests
event. Each time one of these events is called, you call this method to respond to the corresponding read or
write request.

23.13.15 setDesiredConnectionLatency(latency as integer, central as CBCentralMBS)

Function: Sets the desired connection latency for an existing connection to a central device.
Notes:
latency: The desired connection latency. For a list of the possible connection latency values that you may
set for the peripheral manager, see CBPeripheralManagerConnectionLatency.
central: The central that the peripheral manager is currently connected to.

The latency of a peripheral-central connection controls how frequently messages can be exchanged between
the peripheral and the central to which the peripheral is connected. By setting a desired connection latency,
you manage the relationship between the frequency with which data is exchanged and the resulting bat-
tery performance of the peripheral device. When you call this method to set the connection latency, note
that connection latency changes are not guaranteed. And so, the resultant latency may vary. If you do
not explicitly set a latency, the connection latency is set to the latency that was chosen by the central de-
vice when the connection was first established. Typically, it is not necessary to change the connection latency.

23.13.16 startAdvertising(advertisementData as Dictionary)

Function: Invoked when you start advertising the local peripheral devices data.
Notes:
error: If an error occurred, the cause of the failure.
This event is invoked when your app calls the `startAdvertising` method to begin advertising the local peripheral devices data. If successful, the error parameter is nil. If there is a problem advertising the data, the error parameter returns the cause of the failure.

### 23.13.17 stopAdvertising

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Stops advertising peripheral manager data. **Notes:** Call this method when you no longer want to advertise peripheral manager data.

### 23.13.18 updateValue(value as MemoryBlock, characteristic as CBMutableCharacteristicMBS, onSubscribedCentrals() as CBCentralMBS = nil) as Boolean

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sends an updated characteristic value to one or more subscribed centrals, via a notification or indication. **Notes:**

- value: The characteristic value you want to send via a notification or indication.
- characteristic: The characteristic whose value has changed.
- centrals: A list of centrals (represented by CBCentral objects) that have subscribed to receive updates of the characteristics value. If nil, all subscribed centrals are updated. Centrals that have not subscribed to a characteristics value are ignored.

Returns true if the update is successfully sent to the subscribed central or centrals. false if the update is not successfully sent because the underlying transmit queue is full.

You use this method to send updates of a characteristics valuethrough a notification or indicationto selected centrals that have subscribed to that characteristics value. If the method returns false because the underlying transmit queue is full, the peripheral manager calls the peripheralManagerIsReadyToUpdateSubscribers event when more space in the transmit queue becomes available. After this delegate method is called, you may resend the update.

If the length of the value parameter exceeds the length of the maximumUpdateValueLength property of a subscribed CBCentral, the value parameter is truncated accordingly.
23.13.19 Properties

23.13.20 isAdvertising as Boolean

Function: A Boolean value indicating whether the peripheral is currently advertising data.
Notes:
true if the peripheral is currently advertising data as a result of you successfully calling the startAdvertising method. false if the peripheral is not currently advertising data.
(Read only property)

23.13.21 Events

23.13.22 DidAddService(service as CBServiceMBS, error as NSErrorMBS)

Function: Invoked when you publish a service, and any of its associated characteristics and characteristic descriptors, to the local Generic Attribute Profile (GATT) database.
Notes:
service: The service that was added to the local GATT database.
error: If an error occurred, the cause of the failure.
This event is invoked when your app calls the addService method to publish a service to the local peripherals GATT database. If the service is successfully published to the local database, the error parameter is nil. If unsuccessful, the error parameter returns the cause of the failure.

23.13.23 DidOpenL2CAPChannel(channel as CBL2CAPChannelMBS, error as NSErrorMBS)


23.13.24 DidPublishL2CAPChannel(PSM as Integer, error as NSErrorMBS)

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: This event is the response to a publishL2CAPChannel call.
Notes:
PSM: The PSM of the channel that was published.
error: If an error occurred, the cause of the failure.
The PSM will contain the PSM that was assigned for the published channel

### 23.13.25 DidReceiveReadRequest(Request as CBATTRequestMBS)

**Function:** Invoked when a local peripheral device receives an Attribute Protocol (ATT) read request for a characteristic that has a dynamic value.
**Notes:**
request: A CBATTRequest object that represents a request to read a characteristics value.

Each time this method is invoked, you call the respondToRequest method of the CBPeripheralManager class exactly once to respond to the read request.

### 23.13.26 DidReceiveWriteRequests(requests() as CBATTRequestMBS)

**Function:** Invoked when a local peripheral device receives an Attribute Protocol (ATT) write request for a characteristic that has a dynamic value.
**Notes:**
requests: A list of one or more CBATTRequest objects, each representing a request to write the value of a characteristic.

In the same way that you respond to a read request, each time this method is invoked, you call the respondToRequest:withResult: method of the CBPeripheralManager class exactly once. If the requests parameter contains multiple requests, treat them as you would a single request if any individual request cannot be fulfilled, you should not fulfill any of them. Instead, call the respondToRequest method immediately, and provide a result that indicates the cause of the failure.

When you respond to a write request, note that the first parameter of the respondToRequest method expects a single CBATTRequest object, even though you received an array of them from the didReceiveWriteRequests event. To respond properly, pass in the first request of the requests array.

### 23.13.27 DidStartAdvertising(error as NSErrorMBS)

**Function:** Advertising did start.
**Notes:**
error: If an error occurred, the cause of the failure.

This event returns the result of a startAdvertising call. If advertisement could not be started, the cause will be detailed in the error parameter.

### 23.13.28 DidSubscribeToCharacteristic(central as CBCentralMBS, characteristic as CBCharacteristicMBS)


**Function:** Invoked when a remote central device subscribes to a characteristics value.

**Notes:**
- central: The remote central device that subscribed to the characteristics value.
- characteristic: The characteristic whose value has been subscribed to.

This method is invoked when a remote central device subscribes to the value of one of the local peripherals characteristics, by enabling notifications or indications on the characteristics value. You should use the invocation of this method as a cue to start sending the subscribed central updates as the characteristics value changes. To send updated characteristic values to subscribed centrals, use the updateValue method of the CBPeripheralManager class.

### 23.13.29 DidUnpublishL2CAPChannel(PSM as Integer, error as NSErrorMBS)


**Function:** This event is the response to a unpublishL2CAPChannel call.

**Notes:**
- PSM: The PSM of the channel that was published.
- error: If an error occurred, the cause of the failure.

### 23.13.30 DidUnsubscribeFromCharacteristic(central as CBCentralMBS, characteristic as CBCharacteristicMBS)


**Function:** Invoked when a remote central device unsubscribes from a characteristics value.

**Notes:**
- central: The remote central device that subscribed to the characteristics value.
- characteristic: The characteristic whose value has been unsubscribed from.

This method is invoked when a remote central device unsubscribes from the value of one of the local periph-
erals characteristics, by disabling notifications or indications on the characteristics value. You should use
the invocation of this method as a cue to stop sending the subscribed central updates as the characteristics
value changes.

23.13.31  DidUpdateState

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Func-

tion: Invoked when the peripheral manager’s state is updated.

Notes: You implement this required method to ensure that Bluetooth low energy is supported and available
to use on the local peripheral device. Issue commands to the peripheral manager only when the state of the
peripheral manager is powered on, as indicated by the kStatePoweredOn constant. A state with a value lower
than CBPeripheralManagerStatePoweredOn implies that advertising has stopped and that any connected
centrals have been disconnected. If the state moves below CBPeripheralManagerStatePoweredOff, advertis-
ing has stopped and must be explicitly restarted. In addition, the local database is cleared and all services
must be explicitly added again. For a complete list and discussion of the possible values representing the
state of the peripheral manager, see the CBPeripheralManagerState enumeration in CBPeripheralManager.

23.13.32  IsReadyToUpdateSubscribers

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Func-

tion: Invoked when a local peripheral device is again ready to send characteristic value updates.

Notes: When a call to the updateValue method fails because the underlying queue used to transmit the
updated characteristic value is full, the peripheralManagerIsReadyToUpdateSubscribers: method is invoked
when more space in the transmit queue becomes available. You can then implement this event to resend the
value.

23.13.33  WillRestoreState(dic as dictionary)

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Func-

tion: Invoked when the peripheral manager is about to be restored by the system.

Notes:

dict: A dictionary containing information about the peripheral manager that was preserved by the system
at the time the app was terminated. For the available keys to this dictionary, see Peripheral Manager State
Restoration Options.

For apps that opt in to the state preservation and restoration feature of Core Bluetooth, this is the first
method invoked when your app is relaunched into the background to complete some Bluetooth-related task.
Use this method to synchronize the state of your app with the state of the Bluetooth system.
23.13.34 Constants

23.13.35 \texttt{kAuthorizationStatusAuthorized} = 3

MBS Bluetooth Plugin, Plugin Version: 18.1. \textbf{Function}: One of the values representing the current authorization state of the peripheral manager.
\textbf{Notes}: This app is authorized to share data using Bluetooth services while in the background state.

23.13.36 \texttt{kAuthorizationStatusDenied} = 2

MBS Bluetooth Plugin, Plugin Version: 18.1. \textbf{Function}: One of the values representing the current authorization state of the peripheral manager.
\textbf{Notes}: The user explicitly denied this app from sharing data using Bluetooth services while in the background state.

23.13.37 \texttt{kAuthorizationStatusNotDetermined} = 0

MBS Bluetooth Plugin, Plugin Version: 18.1. \textbf{Function}: One of the values representing the current authorization state of the peripheral manager.
\textbf{Notes}: The user has not yet made a choice regarding whether this app can share data using Bluetooth services while in the background state.

23.13.38 \texttt{kAuthorizationStatusRestricted} = 1

MBS Bluetooth Plugin, Plugin Version: 18.1. \textbf{Function}: One of the values representing the current authorization state of the peripheral manager.
\textbf{Notes}: This app is not authorized to share data using Bluetooth services while in the background state. The user cannot change this app's status, possibly due to active restrictions such as parental controls being in place.

23.13.39 \texttt{kConnectionLatencyHigh} = 2

MBS Bluetooth Plugin, Plugin Version: 18.1. \textbf{Function}: One of the values representing the connection latency of the peripheral manager.
\textbf{Notes}: Extending battery life has priority over rapid communication.
23.13.40  \textit{kConnectionLatencyLow} = 0

MBS Bluetooth Plugin, Plugin Version: 18.1. \textbf{Function:} One of the values representing the connection latency of the peripheral manager. 
\textbf{Notes:} Rapid communication has priority over battery life.

23.13.41  \textit{kConnectionLatencyMedium} = 1

MBS Bluetooth Plugin, Plugin Version: 18.1. \textbf{Function:} One of the values representing the connection latency of the peripheral manager. 
\textbf{Notes:} A balance exits between communication frequency and battery life.

23.13.42  \textit{kStatePoweredOff} = 4

MBS Bluetooth Plugin, Plugin Version: 18.1. \textbf{Function:} One of the state constants. 
\textbf{Notes:} Bluetooth is currently powered off.

23.13.43  \textit{kStatePoweredOn} = 5

MBS Bluetooth Plugin, Plugin Version: 18.1. \textbf{Function:} One of the state constants. 
\textbf{Notes:} Bluetooth is currently powered on and is available to use.

23.13.44  \textit{kStateResetting} = 1

MBS Bluetooth Plugin, Plugin Version: 18.1. \textbf{Function:} One of the state constants. 
\textbf{Notes:} The connection with the system service was momentarily lost; an update is imminent.

23.13.45  \textit{kStateUnauthorized} = 3

MBS Bluetooth Plugin, Plugin Version: 18.1. \textbf{Function:} One of the state constants. 
\textbf{Notes:} The app is not authorized to use the Bluetooth low energy peripheral/server role.

23.13.46  \textit{kStateUnknown} = 0

MBS Bluetooth Plugin, Plugin Version: 18.1. \textbf{Function:} One of the state constants. 
\textbf{Notes:} The current state of the peripheral manager is unknown; an update is imminent.
23.13.47 \texttt{kStateUnsupported} = 2

MBS Bluetooth Plugin, Plugin Version: 18.1. \textbf{Function:} One of the state constants. 
\textbf{Notes:} The platform doesn’t support the Bluetooth low energy peripheral/server role.
23.14. **CLASS CBPERIPHERALMBS**

23.14 class CBPeripheralMBS

23.14.1 class CBPeripheralMBS


**Function:** The CBPeripheral class represents remote peripheral devices that your app by means of a central manager (an instance of CBCentralManager) has discovered advertising or is currently connected to.

**Notes:**

Peripherals are identified by universally unique identifiers (UUIDs), represented by NSUUID objects. Peripherals may contain one or more services or provide useful information about their connected signal strength.

You use this class to discover, explore, and interact with the services available on a remote peripheral that supports Bluetooth low energy. A service encapsulates the way part of the device behaves. For example, one service of a heart rate monitor may be to expose heart rate data from the monitor's heart rate sensor. Services themselves are made up of characteristics or included services (references to other services). Characteristics provide further details about a peripherals service. For example, the heart rate service just described may contain one characteristic that describes the intended body location of the device's heart rate sensor and another characteristic that transmits heart rate measurement data. Finally, characteristics contain any number of descriptors that provide more information about the characteristics value, such as a human-readable description and a way to format the value.

Subclass of the CBPeerMBS class.

23.14.2 Methods

23.14.3 Available as boolean


**Function:** Whether this class is available.

**Notes:** Returns true on Mac OS 10.7 and newer.

23.14.4 Constructor(Peripheral as CBPeripheralMBS)


**Function:** The constructor.

**Notes:** You can subclass this class and fill events. Than when you get a Peripheral, you can call this constructor to make a new object of your subclass with the given Peripheral and connect the event.
23.14.5 Destructor

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The destructor.

23.14.6 discoverCharacteristics(characteristicUUIDs() as CBUUIDMBS = nil, service as CBServiceMBS)

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Discovers the specified characteristics of a service. **Notes:** characteristicUUIDs: An array of CBUUID objects that you are interested in. Here, each CBUUID object represents a UUID that identifies the type of a characteristic you want to discover. service: The service whose characteristics you want to discover.

An array of CBUUID objects representing characteristic UUIDs can be provided in the characteristicUUIDs parameter. As a result, the peripheral returns only the characteristics of the service that your app is interested in (recommended). If the characteristicUUIDs parameter is nil, all the characteristics of the service are returned; setting the parameter to nil is considerably slower and is not recommended. When the peripheral discovers one or more characteristics of the specified service, it calls the didDiscoverCharacteristicsForService event. If the characteristics of a service are successfully discovered, you can access them through the services characteristics property.

23.14.7 discoverDescriptorsForCharacteristic(Characteristic as CBCharacteristicMBS)

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Discovers the descriptors of a characteristic. **Notes:** characteristic: The characteristic whose descriptors you want to discover.

When the peripheral discovers one or more descriptors of the specified characteristic, it calls the didDiscoverDescriptorsForCharacteristic event. If the descriptors of a characteristic are successfully discovered, you can access them through the characteristics descriptors property.
23.14.8  discoverIncludedServices(includedServiceUUIDs() as CBUUIDMBS = nil, service as CBServiceMBS)

**Function:** Discovers the specified included services of a service.  
**Notes:**

- includedServiceUUIDs: An array of CBUUID objects that you are interested in. Here, each CBUUID object represents a UUID that identifies the type of included service you want to discover.
- service: The service whose included services you want to discover.

You can provide an array of CBUUID objects representing included service UUIDs in the includedServiceUUIDs parameter. When you do, the peripheral returns only the included services of the service that your app is interested in (recommended). If the includedServiceUUIDs parameter is nil, all the included services of the service are returned; setting the parameter to nil is considerably slower and is not recommended. When the peripheral discovers one or more included services of the specified service, it calls the didDiscoverIncludedServicesForService event. If the included services of a service are successfully discovered, you can access them through the service’s includedServices property.

23.14.9  discoverServices(serviceUUIDs() as CBUUIDMBS = nil)

**Function:** Discovers the specified services of the peripheral.  
**Notes:**

- serviceUUIDs: An array of CBUUID objects that you are interested in. Here, each CBUUID object represents a UUID that identifies the type of service you want to discover.

You can provide an array of CBUUID objects representing service UUIDs in the serviceUUIDs parameter. When you do, the peripheral returns only the services of the peripheral that your app is interested in (recommended). If the serviceUUIDs parameter is nil, all the available services of the peripheral are returned; setting the parameter to nil is considerably slower and is not recommended. When the peripheral discovers one or more services, it calls the didDiscoverServices event. If the services of the peripheral are successfully discovered, you can access them through the peripheral’s services property.

23.14.10  maximumWriteValueLengthForType(Type as Integer) as Integer

**Function:** The maximum amount of data, in bytes, that can be sent to a characteristic in a single write type.  
**Notes:** Type can be kWriteWithResponse or kWriteWithoutResponse.
23.14.11 readRSSI

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Retrieves the current RSSI value for the peripheral while it is connected to the central manager.

**Notes:** In macOS, when you call this method to retrieve the RSSI of the peripheral while it is currently connected to the central manager, the peripheral calls the peripheralDidUpdateRSSI event. If the RSSI value of the peripheral is successfully retrieved, you can access it through the peripherals RSSI property.

23.14.12 readValueForCharacteristic(Characteristic as CBCharacteristicMBS)

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Retrieves the value of a specified characteristic.

**Notes:**

characteristic: The characteristic whose value you want to read.

When you call this method to read the value of a characteristic, the peripheral calls the peripheral:didUpdateValueForCharacteristic:method of its delegate object. If the value of the characteristic is successfully retrieved, you can access it through the characteristics value property.

Not all characteristics are guaranteed to have a readable value. You can determine whether a characteristics value is readable by accessing the relevant properties of the CBCharacteristicProperties enumeration, which are detailed in CBCharacteristic.

23.14.13 readValueForDescriptor(descriptor as CBDescriptorMBS)

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Retrieves the value of a specified characteristic descriptor.

**Notes:**

descriptor: The characteristic descriptor whose value you want to read.

When you call this method to read the value of a characteristic descriptor, the peripheral calls the didUpdateValueForDescriptor event. If the value of the characteristic descriptor is successfully retrieved, you can access it through the characteristic descriptors value property.

23.14.14 services as CBServiceMBS()

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A list of services on the peripheral that have been discovered.

**Notes:** Returns an array of services (represented by CBService objects) that were discovered on the peripheral through a successful call to the discoverServices method. If you have yet to call the discoverServices
method to discover the services of the peripheral, or if there was an error in doing so, the value of this property is nil.

### 23.14.15 setNotifyValue(enabled as Boolean, Characteristic as CBCharacteristicMBS)


**Function:** Sets notifications or indications for the value of a specified characteristic.

**Notes:**

- **enabled**: A Boolean value indicating whether you wish to receive notifications or indications whenever the characteristics value changes. true if you want to enable notifications or indications for the characteristics value. false if you do not want to receive notifications or indications whenever the characteristics value changes.

- **characteristic**: The specified characteristic.

When you enable notifications for the characteristics value, the peripheral calls the didUpdateNotificationStateForCharacteristic event to indicate whether or not the action succeeded. If successful, the peripheral then calls the didUpdateValueForCharacteristic event whenever the characteristic value changes. Because it is the peripheral that chooses when to send an update, your app should be prepared to handle them as long as notifications or indications remain enabled. If the specified characteristic is configured to allow both notifications and indications, calling this method enables notifications only. You can disable notifications and indications for a characteristics value by calling this method with the enabled parameter set to false.

### 23.14.16 writeValue(data as MemoryBlock, Characteristic as CBCharacteristicMBS, Type as Integer)


**Function:** Writes the value of a characteristic.

**Notes:**

- **data**: The value to be written.
- **characteristic**: The characteristic whose value is to be written.
- **type**: The type of write to be executed. For a list of the possible types of writes to a characteristics value, see CBCharacteristicWriteType.

When you call this method to write the value of a characteristic, the peripheral calls the didWriteValueForCharacteristic event only if you specified the write type as CBCharacteristicMBS.kWriteWithResponse. The response you receive through the didWriteValueForCharacteristic event indicates whether the write was successful; if the write failed, it details the cause of the failure in an error. If you specify the write type as CBCharacteristicWriteWithoutResponse, the write is best-effort and not guaranteed. If the write does not
succeed in this case, you are not notified nor do you receive an error indicating the cause of the failure. The data passed into the data parameter is copied, and you can dispose of it after the method returns. Characteristics may allow only certain type of writes to be performed on their value. To determine which types of writes are permitted to a characteristics value, you access the relevant properties of the CBCharacteristicProperties enumeration, which are detailed in CBCharacteristic.

See also:

- 23.14.17 writeValue(data as MemoryBlock, Descriptor as CBDescriptorMBS)

### 23.14.17 writeValue(data as MemoryBlock, Descriptor as CBDescriptorMBS)


**Function:** Writes the value of a characteristic descriptor.

**Notes:**

data: The value to be written.
descriptor: The descriptor whose value is to be written.

When you call this method to write the value of a characteristic descriptor, the peripheral calls the peripheral:didWriteValueForDescriptor:error: method of its delegate object. The data passed into the data parameter is copied, and you can dispose of it after the method returns. You cannot use this method to write the value of a client configuration descriptor (represented by the CBUIDClientCharacteristicConfigurationString constant), which describes how notification or indications are configured for a characteristics value with respect to a client. If you want to manage notifications or indications for a characteristics value, you must use the setNotifyValue method instead.

See also:

- 23.14.16 writeValue(data as MemoryBlock, Characteristic as CBCharacteristicMBS, Type as Integer)

### 23.14.18 Properties

#### 23.14.19 CanSendWriteWithoutResponse as Boolean


**Function:** True if the remote device has space to send a write without response.

**Notes:**

If this value is false, the value will be set to true after the current writes have been flushed, and IsReadyToSendWriteWithoutResponse event will be called.

(Read only property)
23.14. Class CBPeripheralMBS

23.14.20 Name as String

**Function:** The name of the peripheral.
**Notes:**
The value of this property is a string containing the device name of the peripheral. You can access this property to retrieve a human-readable name of the peripheral. There may be two types of names associated with a peripheral: one that the device advertises and another that the device publishes in its database as its Bluetooth low energy Generic Access Profile (GAP) device name. Although this property may contain either type of name, the GAP device name takes priority. This means that if a peripheral has both types of names associated with it, this property returns its GAP device name.
(Read only property)

23.14.21 RSSI as String

**Function:** The RSSI, in decibels, of the peripheral.
**Notes:**
Returns a number, in decibels, that indicates the RSSI of the peripheral while it is currently connected to the central manager. You can use a connected peripherals RSSI property to determine the peripherals proximity. The default value of this property is nil and is set the first time you successfully call the readRSSI method.
(Read only property)

23.14.22 State as Integer

**Function:** The current connection state of the peripheral.
**Notes:**
The value of this property represents the current connection state of the peripheral. For a list of the possible values of this property, see CBPeripheralState.
(Read only property)

23.14.23 Events

23.14.24 DidDiscoverCharacteristicsForService(service as CBServiceMBS, error as NSErrorMBS)

**Function:** Invoked when you discover the characteristics of a specified service.
Notes:
peripheral: The peripheral providing this information.
service: The service that the characteristics belong to.
error: If an error occurred, the cause of the failure.

This event is invoked when your app calls the discoverCharacteristics method. If the characteristics of the specified service are successfully discovered, you can access them through the service’s characteristics property. If successful, the error parameter is nil. If unsuccessful, the error parameter returns the cause of the failure.

23.14.25 DidDiscoverDescriptorsForCharacteristic(characteristic as CBCharacteristicMBS, error as NSErrorMBS)

Function: Invoked when you discover the descriptors of a specified characteristic.
Notes:
peripheral: The peripheral providing this information.
characteristic: The characteristic that the characteristic descriptors belong to.
error: If an error occurred, the cause of the failure.

This event is invoked when your app calls the discoverDescriptorsForCharacteristic method. If the characteristic descriptors of the specified characteristic are successfully discovered, you can access them through the characteristics descriptors property. If successful, the error parameter is nil. If unsuccessful, the error parameter returns the cause of the failure.

23.14.26 DidDiscoverIncludedServicesForService(service as CBServiceMBS, error as NSErrorMBS)

Function: Invoked when you discover the included services of a specified service.
Notes:
peripheral: The peripheral providing this information.
service: The CBService object containing the included service.
error: If an error occurred, the cause of the failure.

This event is invoked when your app calls the discoverIncludedServices method. If the included services of the specified service are successfully discovered, you can access them through the services includedServices property. If successful, the error parameter is nil. If unsuccessful, the error parameter returns the cause of the failure.
23.14.27  DidDiscoverServices(error as NSErrorMBS)

Function: Invoked when you discover the peripherals available services.
Notes:

peripheral: The peripheral that the services belong to.
error: If an error occurred, the cause of the failure.

This event is invoked when your app calls the discoverServices method. If the services of the peripheral are successfully discovered, you can access them through the peripherals services property. If successful, the error parameter is nil. If unsuccessful, the error parameter returns the cause of the failure.

23.14.28  DidModifyServices(invalidatedServices() as CBServiceMBS)

Function: Invoked when a peripherals services have changed.
Notes:

invalidatedServices: A list of services that have been invalidated.

This method is invoked whenever one or more services of a peripheral have changed. A peripherals services have changed if:

- A service is removed from the peripherals database
- A new service is added to the peripherals database
- A service that was previously removed from the peripherals database is readded to the database at a different location

If you previously discovered any of the services that have changed, they are provided in the invalidated-Services parameter and can no longer be used. You can use the discoverServices method to discover any new services that have been added to the peripherals database or to find out whether any of the invalidated services that you were using (and want to continue using) have been added back to a different location in the peripherals database.

23.14.29  DidOpenL2CAPChannel(channel as CBL2CAPChannelMBS, error as NSErrorMBS)

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Called when channel is opened.
23.14.30 DidReadRSSI(RSSI as String, error as NSErrorMBS)

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Invoked after you call readRSSI to retrieve the value of the peripherals current RSSI while it is connected to the central manager. **Notes:**

peripheral: The peripheral providing this information.
RSSI: The RSSI, in decibels, of the peripheral.
error: If an error occurred, the cause of the failure.

This event is invoked when your app calls the readRSSI method. If successful, the error parameter is nil and the parameter RSSI reports the receivers signal strength, in decibels. If unsuccessful, the error parameter returns the cause of the failure.

23.14.31 DidUpdateName

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Invoked when a peripherals name changes. **Notes:** The event is invoked whenever the peripheral devices Generic Access Profile (GAP) device name has changed. Since a peripheral device can change its GAP device name, you can implement this method if your app needs to display the current name of the peripheral device.

23.14.32 DidUpdateNotificationStateForCharacteristic(characteristic as CBCharacteristicMBS, error as NSErrorMBS)

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Invoked when the peripheral receives a request to start or stop providing notifications for a specified characteristics value. **Notes:**

characteristic: The characteristic for which notifications of its value are to be configured.
error: If an error occurred, the cause of the failure.

This event is invoked when your app calls the setNotifyValue method. If successful, the error parameter is nil. If unsuccessful, the error parameter returns the cause of the failure.

23.14.33 DidUpdateRSSI(error as NSErrorMBS)

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Invoked when you retrieve the value of the peripherals current RSSI while it is connected to the
central manager.

**Notes:**

error: If an error occurred, the cause of the failure.

This event is invoked when your app calls the readRSSI method. If successful, the error parameter is nil. If unsuccessful, the error parameter returns the cause of the failure.

### 23.14.34 DidUpdateValueForCharacteristic(characteristic as CBCharacteristicMBS, error as NSErrorMBS)


**Function:** Invoked when you retrieve a specified characteristics value, or when the peripheral device notifies your app that the characteristics value has changed.

**Notes:**

peripheral: The peripheral providing this information.
characteristic: The characteristic whose value has been retrieved.
error: If an error occurred, the cause of the failure.

This method is invoked when your app calls the readValueForCharacteristic method, or when the peripheral notifies your app that the value of the characteristic for which notifications and indications are enabled (via a successful call to setNotifyValue for Characteristic) has changed. If successful, the error parameter is nil. If unsuccessful, the error parameter returns the cause of the failure.

### 23.14.35 DidUpdateValueForDescriptor(descriptor as CBDescriptorMBS, error as NSErrorMBS)


**Function:** Invoked when you retrieve a specified characteristic descriptors value.

**Notes:**

peripheral: The peripheral providing this information.
descriptor: The characteristic descriptor whose value has been retrieved.
error: If an error occurred, the cause of the failure.

This event is invoked when your app calls the readValueForDescriptor method. If successful, the error parameter is nil. If unsuccessful, the error parameter returns the cause of the failure.
23.14.36 DidWriteValueForCharacteristic(characteristic as CBCharacteristicMBS, error as NSErrorMBS)

**Function:** Invoked when you write data to a characteristics value.
**Notes:**

- peripheral: The peripheral providing this information.
- characteristic: The characteristic whose value has been written.
- error: If an error occurred, the cause of the failure.

This event is invoked only when your app calls the writeValue for Characteristic method with the CBCharacteristicWriteWithResponse constant specified as the write type. If successful, the error parameter is nil. If unsuccessful, the error parameter returns the cause of the failure.

23.14.37 DidWriteValueForDescriptor(descriptor as CBDescriptorMBS, error as NSErrorMBS)

**Function:** Invoked when you write data to a characteristic descriptors value.
**Notes:**

- descriptor: The characteristic descriptor whose value has been written.
- error: If an error occurred, the cause of the failure.

This event is invoked when your app calls the writeValue for Descriptor method. If successful, the error parameter is nil. If unsuccessful, the error parameter returns the cause of the failure.

23.14.38 IsReadyToSendWriteWithoutResponse

**Function:** The peripheral providing this update.
**Notes:** This event is invoked after a failed call to writeValue for Characteristic, when peripheral is again ready to send characteristic value updates.

23.14.39 Constants

23.14.40 kStateConnected = 2

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the values representing the current connection state of the peripheral.
23.14. CLASS CBPERIPHERALMBS

Notes: The peripheral is currently connected to the central manager.

23.14.41 kStateConnecting = 1

MBS Bluetooth Plugin, Plugin Version: 18.1. Function: One of the values representing the current connection state of the peripheral.
Notes: The peripheral is currently in the process of connecting to the central manager.

23.14.42 kStateDisconnected = 0

MBS Bluetooth Plugin, Plugin Version: 18.1. Function: One of the values representing the current connection state of the peripheral.
Notes: The peripheral is currently not connected to the central manager.

23.14.43 kStateDisconnecting = 3

MBS Bluetooth Plugin, Plugin Version: 18.1. Function: One of the values representing the current connection state of the peripheral.
Notes: The peripheral is currently in the process of disconnecting from the central manager.

23.14.44 kWriteWithoutResponse = 1

MBS Bluetooth Plugin, Plugin Version: 18.1. Function: One of the constants to specify which type of write is to be performed on a CBCharacteristic.
Notes: Writes without response.

23.14.45 kWriteWithResponse = 0

MBS Bluetooth Plugin, Plugin Version: 18.1. Function: One of the constants to specify which type of write is to be performed on a CBCharacteristic.
Notes: Write with Response.
23.15 class CBServiceMBS

23.15.1 class CBServiceMBS

Notes:
CBService and its subclass CBMutableService represent a peripherals servicea collection of data and associated behaviors for accomplishing a function or feature of a device (or portions of that device). CBService objects in particular represent services of a remote peripheral device (represented by a CBPeripheral object). Services are either primary or secondary and may contain a number of characteristics or included services (references to other services).
Subclass of the CBAAttributeMBS class.

23.15.2 Methods

23.15.3 Available as boolean

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether this class is available.
Notes: Returns true on MacOS 10.7 or newer.

23.15.4 characteristics as CBCharacteristicMBS()

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A list of characteristics that have been discovered in this service.
Notes: This array contains CBCharacteristic objects that represent a services characteristics. Characteristics provide further details about a peripherals service. For example, a heart rate service may contain one characteristic that describes the intended body location of the devices heart rate sensor and another characteristic that transmits heart rate measurement data.

23.15.5 Constructor

23.15.6 includedServices as CBServiceMBS()

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A list of included services that have been discovered in this service. Notes: This array contains CBService objects that represent the included services of a service. A service of a peripheral may contain a reference to other services that are available on the peripheral. These other services are the included services of the service and can be discovered using the discoverIncludedServices method of the CBPeripheral class.

23.15.7 Properties

23.15.8 isPrimary as Boolean

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A Boolean value indicating whether the type of service is primary or secondary. Notes: A peripherals service is either primary or secondary. A primary service describes the primary function of a device and can be included by another service. A secondary service describes a service that is relevant only in the context of another service that has referenced it. For example, the primary service of a heart rate monitor may be to expose heart rate data from the monitors heart rate sensor, whereas a secondary service may be to expose the sensors battery data. If the value of this property is true, the type of service is primary. If the value of this property is false, the type of service is secondary. (Read only property)

23.15.9 peripheral as CBPeripheralMBS

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The peripheral to which this service belongs. Notes: (Read only property)
23.16 class CBUUIDMBS

Function: The class for UUIDs in CoreBluetooth.
Notes: 
Instances of the CBUUID class represent the 128-bit universally unique identifiers (UUIDs) of attributes used in Bluetooth low energy communication, such as a peripherals services, characteristics, and characteristic descriptors. This class provides a number of factory methods for dealing with long UUIDs when developing your app. For example, instead of passing around the string representation of a 128-bit Bluetooth low energy attribute in your code, you can create a CBUUID object that represents it, and pass that around instead.

Though not all UUIDs that identify Bluetooth-specific attributes are predefined by the Bluetooth Special Interest Group (SIG), Bluetooth SIG has defined and published a number of commonly used UUIDs that have been shortened to 16-bits or 32-bits for convenience. The CBUUID class provides methods that automatically transform these predefined shorter UUIDs into their 128-bit equivalent UUIDs. When you create a CBUUID object from a predefined 16-bit or 32-bit UUID, Core Bluetooth pre-fills the rest of the 128-bit UUID with the Bluetooth base UUID, which is defined in the Bluetooth 4.0 specification, Volume 3, Part F, Section 3.2.1.

In addition to providing methods for creating CBUUID objects, this class defines constants that represent the UUIDs of the Bluetooth-defined characteristic descriptors, which are defined in the Bluetooth 4.0 specification, Volume 3, Part G, Section 3.3.3.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

23.16.2 Methods

23.16.3 Available as boolean

Function: Whether this class is available.
Notes: Returns true on macOS 10.7 or newer.

23.16.4 CBAdvertisementDataIsConnectable as String

Function: One of the keys used in an advertisementData dictionary.
Notes: 
A Boolean value that indicates whether the advertising event type is connectable.
The value for this key is a boolean. You can use this value to determine whether a peripheral is connectable at a particular moment.
23.16.5 CBAdvertisementDataLocalNameKey as String

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys used in an advertisementData dictionary. **Notes:** A string containing the local name of a peripheral.

23.16.6 CBAdvertisementDataManufacturerDataKey as String

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys used in an advertisementData dictionary. **Notes:** A memoryblock containing the manufacturer data of a peripheral.

23.16.7 CBAdvertisementDataOverflowServiceUUIDsKey as String

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys used in an advertisementData dictionary. **Notes:** An array of one or more CBUUID objects, representing CBService UUIDs that were found in the overflow area of the advertisement data. Due to the nature of the data stored in this area, UUIDs listed here are best effort and may not always be accurate. For details about the overflow area of advertisement data, see the startAdvertising: method in CBPeripheralManager.

23.16.8 CBAdvertisementDataServiceDataKey as String

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys used in an advertisementData dictionary. **Notes:** A dictionary containing service-specific advertisement data. The keys are CBUUID objects, representing CBService UUIDs. The values are NSData objects, representing service-specific data.

23.16.9 CBAdvertisementDataServiceUUIDsKey as String

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys used in an advertisementData dictionary.
Notes: An array of service UUIDs.

23.16.10 CBAdvertisementDataSolicitedServiceUUIDsKey as String

Notes: An array of one or more CBUUID objects, representing CBService UUIDs.

23.16.11 CBAdvertisementDataTxPowerLevelKey as String

Notes: A number containing the transmit power of a peripheral.
This key and value are available if the broadcaster (peripheral) provides its Tx power level in its advertising packet. Using the RSSI value and the Tx power level, it is possible to calculate path loss.

23.16.12 CBUUIDCharacteristicAggregateFormatString as String


23.16.13 CBUUIDCharacteristicExtendedPropertiesString as String

Notes: The corresponding value for this descriptor is a number.

23.16.14 CBUUIDCharacteristicFormatString as String

Notes: The corresponding value for this descriptor is a memoryblock.
23.16. **CLASS CBUUIDMBS**

23.16.15 **CBUUIDCharacteristicUserDescriptionString as String**

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The string representation of the UUID for the user description descriptor. **Notes:** The corresponding value for this descriptor is a string.

23.16.16 **CBUUIDCharacteristicValidRangeString as String**

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The string representation of the UUID for the valid range descriptor.

23.16.17 **CBUUIDClientCharacteristicConfigurationString as String**

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The string representation of the UUID for the client configuration descriptor. **Notes:** The corresponding value for this descriptor is a number.

23.16.18 **CBUUIDL2CAPPSMCharacteristicString as String**

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the characteristics keys. **Notes:** The PSM (a little endian uint16_t) of an L2CAP Channel associated with the GATT service containing this characteristic. Servers can publish this characteristic with the UUID ABDD3056-28FA-441D-A470-55A75A52553A

23.16.19 **CBUUIDServerCharacteristicConfigurationString as String**

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The string representation of the UUID for the server configuration descriptor. **Notes:** The corresponding value for this descriptor is a number.

23.16.20 **Constructor**

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.
23.16.21 copy as CBUUIDMBS

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy of the object.

23.16.22 isEqual(other as CBUUIDMBS) as Boolean

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Checks whether two UUIDs are equal. **Notes:** Returns true if both are equal.

23.16.23 Operator Compare(other as CBUUIDMBS) as Integer

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Compares two objects for Xojo's comparison operators.

23.16.24 UUIDWithData(mem as MemoryBlock) as CBUUIDMBS

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns a CBUUID object from a 16-bit, 32-bit, or 128-bit UUID data container. **Notes:** This method is useful when the UUID of a Bluetooth attribute is formatted in raw bytes.

23.16.25 UUIDWithNSUUID(uuid as NSUUIDMBS) as CBUUIDMBS

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns a CBUUID object from an NSUUID object.

23.16.26 UUIDWithString(s as string) as CBUUIDMBS

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns a CBUUID object from a 16-bit, 32-bit, or 128-bit UUID string. **Notes:** Specify 128-bit UUIDs as a string of hexadecimal digits punctuated by hyphens, for example, 68753A44-4D6F-1226-9C60-0050E4C00067. Specify 16-bit or 32-bit UUIDs as a string of 4 or 8 hexadecimal digits, respectively.
23.16.27 Properties

23.16.28 data as MemoryBlock

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The data of the UUID.  
**Notes:** (Read only property)

23.16.29 Handle as Integer

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference.  
**Notes:** (Read and Write property)

23.16.30 UUIDString as String

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The UUID represented as a string.  
**Notes:** (Read only property)
Chapter 24

Calendar

24.1  class CalAlarmMBS

24.1.1  class CalAlarmMBS

Function: The class for an Alarm in iCal.
Example:

// start a connection to the calendar database
dim s as new CalCalendarStoreMBS

// needed for the error details
dim e as NSErrorMBS

// create a new calendar
dim c as new CalEventMBS

dim StartDate as date = new date
StartDate.day = StartDate.day + 1 // start tomorrow

dim calendars() as CalCalendarMBS = s.calendars

// set properties
c.Title="new Event"
c.startDate=StartDate
c.calendar=calendars(0) // add to first calendar

dim EndDate as new date(StartDate) // one hour after start
EndDate.hour = EndDate.hour + 1

c.endDate=EndDate

3967
```vbscript
dim a as new CalAlarmMBS // Send email one hour earlier
a.action = a.CalAlarmActionEmail
a.relativeTrigger = -3600
a.emailAddress="some@email.address"
c.addAlarm a // attach an alarm

// save event
call s.saveEvent(c.s.CalSpanAllEvents, e)
if e<>nil then
    MsgBox e.localizedDescription
else
    MsgBox "New event was created."
end if
```

**Notes:** Requires Mac OS X 10.5 to work.

### 24.1.2 Methods

#### 24.1.3 Constructor


**Function:** This constructor creates a new empty alarm object.

**Example:**
```
dim a as new CalAlarmMBS // add alarm
a.action = a.CalAlarmActionDisplay
a.relativeTrigger = -3600*24 // 24 Hours before
```

### 24.1.4 triggerDateRelativeTo(currentdate as date) as date


**Function:** Returns the date of the trigger relative to the given date.
24.1.6 absoluteTrigger as date

Function: The absolute trigger value.
Notes: The time that an alarm goes off is referred to as the trigger. Alarms have either a relative trigger, which means the alarm fires a certain number of seconds before an alarm occurs, or an absolute trigger, which specifies the exact time the alarm will trigger off.

Setting an absoluteTrigger will also set the relativeTrigger to 0.
(Read and Write property)

24.1.7 acknowledged as date

Function: The acknowledged date for the alarm.
Notes: (Read and Write property)

24.1.8 action as String

Function: The action used for this alarm.
Notes: See the CalAlarmAction* constants.
(Read and Write property)

24.1.9 emailAddress as String

Function: The email address to notify.
Notes: Setting an emailAddress will also set the action to CalAlarmEmail as well as set the sound and URL to nil.
(Read and Write property)
24.1.10  relatedTo as String

Function: Related to text.
Notes: (Read and Write property)

24.1.11  relativeTrigger as Double

Function: The absolute relative value.
Notes: The time that an alarm goes off is referred to as the trigger. Alarms have either a relative trigger, which means the alarm fires a certain number of seconds before an alarm occurs, or an absolute trigger, which specifies the exact time the alarm will trigger off.

Setting a relativeTrigger will also set the absoluteTrigger to 0.
(Read and Write property)

24.1.12  sound as String

Function: The sound file to play.
Notes: Setting a sound will also set the action to CalAlarmSound as well as set the emailAddress and URL to nil. Expects the name of a system alert. See NSSound.
(Read and Write property)

24.1.13  url as string

Function: The URL to launch when the alarm comes.
Notes: Setting a URL will also set the action to CalAlarmProcedure as well as set the emailAddress and sound to nil. The URL must be a file URL.
(Read and Write property)
24.1.14 Constants

24.1.15 CalAlarmActionDisplay=”DISPLAY”
MBS MacFrameworks Plugin, Plugin Version: 7.7. **Function:** One of the alarm action constants. **Notes:** Display the event.

24.1.16 CalAlarmActionEmail=”EMAIL”
MBS MacFrameworks Plugin, Plugin Version: 7.7. **Function:** One of the alarm action constants. **Notes:** Send an email.

24.1.17 CalAlarmActionProcedure=”PROCEDURE”
MBS MacFrameworks Plugin, Plugin Version: 7.7. **Function:** One of the alarm action constants.

24.1.18 CalAlarmActionSound=”AUDIO”
MBS MacFrameworks Plugin, Plugin Version: 7.7. **Function:** One of the alarm action constants. **Notes:** Play a sound.
24.2  class CalAttendeeMBS

24.2.1  class CalAttendeeMBS

**Function:** The class for an Attendee.  
**Notes:**  
Requires Mac OS X 10.5 to work.  
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

24.2.2  Methods

24.2.3  Constructor

**Function:** The private constructor.

24.2.4  Properties

24.2.5  address as String

**Function:** The address of this attendee.  
**Notes:** (Read only property)

24.2.6  commonName as String

**Function:** The user-entered name of the attendee.  
**Notes:** (Read only property)

24.2.7  Handle as Integer

**Function:** The internal used CalAttendee reference.  
**Notes:** (Read and Write property)
24.2. Class CalAttendeeEMBS

24.2.8 status as String


Function: The attendee status.

Notes:
Use the CalAttendeeStatus* constants.

For now (Mac OS X 10.5), it is not possible to modify an event’s attendees or the attendees themselves. (Read only property)

24.2.9 Constants

24.2.10 CalAttendeeStatusAccepted="ACCEPTED"

MBS MacFrameworks Plugin, Plugin Version: 7.7. Function: These constants are used to describe the user’s confirmation status for an attendee.

24.2.11 CalAttendeeStatusDeclined="DECLINED"

MBS MacFrameworks Plugin, Plugin Version: 7.7. Function: These constants are used to describe the user’s confirmation status for an attendee.

24.2.12 CalAttendeeStatusNeedsAction="NEEDS-ACTION"

MBS MacFrameworks Plugin, Plugin Version: 7.7. Function: These constants are used to describe the user’s confirmation status for an attendee.

Notes: This is the default status for an attendee.

24.2.13 CalAttendeeStatusTentative="TENTATIVE"

MBS MacFrameworks Plugin, Plugin Version: 7.7. Function: These constants are used to describe the user’s confirmation status for an attendee.
24.3 class CalCalendarItemMBS

24.3.1 class CalCalendarItemMBS

_FUNCTION_ The class for a calendar item in iCal.

_Notes:_
This class and its subclasses should be used to get information about CalEvent and CalTasks. Accessors for
properties common to both of these classes are included here.

Requires Mac OS X 10.5 to work.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

24.3.2 _Methods_

24.3.3 _addAlarm(alarm as CalAlarmMBS)_

_FUNCTION_ Adds one alarm.

24.3.4 _addAlarms(alarms() as CalAlarmMBS)_

_FUNCTION_ Adds an array of alarms.

24.3.5 _alarms as CalAlarmMBS()_

_FUNCTION_ An array of CalAlarms associated with the calendar item.

24.3.6 _Constructor_

_FUNCTION_ The private constructor.
24.3. CLASS CALCALENDARITEMMBS

24.3.7 hasAlarm as Boolean

Function: Whether this item has an alarm associated.

24.3.8 nextAlarmDate as date

Function: Returns the next alarm date.

24.3.9 removeAlarm(alarm as CalAlarmMBS)

Function: Removes one alarm.

24.3.10 removeAlarms(alarms() as CalAlarmMBS)

Function: Removes the alarms.

24.3.11 setalarms(alarms() as CalAlarmMBS)

Function: Sets the alarms for this item.

24.3.12 Show

Function: Shows the item in iCal.
Example:

dim c as new CalCalendarStoreMBS

// search for some events within last year
dim d as new date
dim e as new date
d.Year = d.Year -1
dim events() as CalEventMBS = c.events(d, e)

// pick one, show title and show in iCal
MsgBox Events(30).Title
events(30).show

24.3.13 Properties

24.3.14 calendar as CalCalendarMBS

Function: The calendar of this item.
Notes: (Read and Write property)

24.3.15 dateStamp as date

Function: The datestamp of this calendar item.
Notes:
This value is read only.
(Read only property)

24.3.16 Handle as Integer

Function: The internal used CalCalendarItem reference.
Notes: (Read and Write property)

24.3.17 notes as String

Function: The notes text for this item.
Example:

dim c as new CalCalendarStoreMBS

// set the date range where we look for event
24.3. **CLASS CALCALENDARITEMMBS**

```vba
dim sd as new date(2016,6,7,0,0,0)
dim ed as new date(2016,6,7,23,59,59)

// look for an event on that date
dim a() as CalEventMBS = c.events(sd,ed, c.calendars)
dim e as CalEventMBS = a(1)

// show notes
MsgBox e.notes

// change it
e.notes = "Just a test"

// check again
MsgBox e.notes

// Save
dim error as NSErrorMBS
dim ok as Boolean = c.saveEvent(e, c.CalSpanThisEvent, error)

if ok then
    MsgBox "OK"
else if error <> nil then
    MsgBox error.localizedDescription
else
    MsgBox "Failed."
end if
```

**Notes:** (Read and Write property)

### 24.3.18 title as String


**Function:** The title for this calendar item.

**Example:**

```vba
// init
dim s as new CalCalendarStoreMBS

// Get date range for today
dim Startdate as new date
dim Enddate as new date

Startdate.hour = 0
Startdate.Minute = 0
```
Startdate.Second = 0
Enddate.hour = 23
Enddate.minute = 59
Enddate.second = 59

// Query events on all calendars
dim events() as CalEventMBS = s.events(Startdate,Enddate)

// Display result
dim lines(-1) as string
for each e as CalEventMBS in events
    lines.Append e.Title
next
eMsgBox Join(lines,EndOfLine)

Notes: (Read and Write property)

24.3.19  uid as String

Function: The unique ID for this item.
Example:

// start a connection to the calendar database
dim s as new CalCalendarStoreMBS

// needed for the error details
dim e as NSErrorMBS

// create a new calendar event
dim c as new CalEventMBS

dim calendars() as CalCalendarMBS = s.calendars

// set properties
c>Title="new Event"
c.startDate=new date
c.calendar=calendars(0) // add to first calendar

dim d as new date
d.hour=d.hour+1
c.endDate=d
24.3. **CLASS CALCALENDARITEMMBS**

```objectivec
// save event
call s.saveEvent(c,s.CalSpanAllEvents, e)
if e<>nil then
    MsgBox e.localizedDescription
else
    // show the UID
    MsgBox "New event was created with UID: " + c.uid
end if
```

**Notes:**

This value is read only.
(Read only property)

### 24.3.20 URL as String

**Function:** The URL for this calendar item.
**Notes:** (Read and Write property)
24.4 class CalCalendarMBS

24.4.1 class CalCalendarMBS

**Function:** A class for the iCal calendars.
**Example:**

```vbnet
// start a connection to the calendar database
dim s as new CalCalendarStoreMBS

// needed for the error details
dim e as NSErrorMBS

// create a new calendar
dim c as new CalCalendarMBS

// set properties
c.Title="New Calendar"
c.notes="Just a test"

// save calendar
call s.saveCalendar(c,e)
if e<>nil then
    MsgBox e.localizedDescription
else
    MsgBox "New calendar was created."
end if
```

**Notes:**
Requires Mac OS X 10.5 to work.
This class can be used to get attributes of a calendar, but cannot be used to get the list of events or tasks in a calendar.

24.4.2 Methods

24.4.3 Constructor
24.4. CLASS CALCALENDARMBS

// start a connection to the calendar database
dim s as new CalCalendarStoreMBS

// needed for the error details
dim e as NSErrorMBS

// create a new calendar
dim c as new CalCalendarMBS

// set properties
c.Title="New Calendar"
c.notes="Just a test"

// save calendar
call s.saveCalendar(c,e)
if e<>nil then
  MsgBox e.localizedDescription
else
  MsgBox "New calendar was created."
end if

Notes: All calendars created with this API will be of type CalCalendarTypeLocal.

24.4.4 Properties

24.4.5 Color as NSColorMBS

Function: The color for this calendar.
Notes: (Read and Write property)

24.4.6 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)


**24.4.7 isEditable as Boolean**


**Function:** Whether this calendar is editable.

**Notes:**
This property is read only.
(Read only property)

**24.4.8 notes as String**


**Function:** The notes for this calendar.

**Notes:** (Read and Write property)

**24.4.9 title as String**


**Function:** The title of this calendar.

**Example:**
```
dim c as new CalCalendarStoreMBS
dim ca() as CalCalendarMBS = c.calendars
for each cc as CalCalendarMBS in ca
    MsgBox cc.Title+EndOfLine+cc.type+EndOfLine+cc.notes
next
```

**Notes:** (Read and Write property)

**24.4.10 type as String**


**Function:** The type of this calendar.

**Notes:**
This property is read only.

use the CalCalendarType* constants.
(Read only property)
24.4.11  uid as String

**Function:** The unique ID for this calendar.
**Notes:**
This property is read only.
(Read only property)

24.4.12  Constants

24.4.13  CalCalendarTypeBirthday="Birthday"

MBS MacFrameworks Plugin, Plugin Version: 7.7. **Function:** One of the calendar types.
**Example:**
// searches for the birthday calendar and than lists all birthdays in the next month

dim cals(-1) as CalCalendarMBS
dim a() as CalCalendarMBS
dim i as Integer
dim cal as CalCalendarMBS
dim sd, ed as date
dim ea() as CalEventMBS
dim e as CalEventMBS

dim c as new CalCalendarStoreMBS

a=c.calendars
for each cal in a
MsgBox "Calendar: " +cal.Title
if cal.type=cal.CalCalendarTypeBirthday then
cals.Append cal
end if
next

sd=new date
ed=new date
ed.Month=sd.Month+1

ea=c.events(sd,ed,cals)

for each e in ea
MsgBox "Event: " +e.Title
next
24.4.14 CalCalendarTypeCalDAV="CalDAV"
MBS MacFrameworks Plugin, Plugin Version: 7.7. Function: One of the calendar types.

24.4.15 CalCalendarTypeExchange="Exchange"

24.4.16 CalCalendarTypeIMAP="IMAP"
MBS MacFrameworks Plugin, Plugin Version: 7.7. Function: One of the calendar types.

24.4.17 CalCalendarTypeLocal="Local"
MBS MacFrameworks Plugin, Plugin Version: 7.7. Function: One of the calendar types.

24.4.18 CalCalendarTypeSubscription="Subscription"
MBS MacFrameworks Plugin, Plugin Version: 7.7. Function: One of the calendar types.
24.5. CLASS CALCALENDARSTOREMBS

24.5 class CalCalendarStoreMBS

24.5.1 class CalCalendarStoreMBS


Function: The class for the calendar storage.

Example:

// init
dim s as new CalCalendarStoreMBS

// find calendar by name
dim myCalendar as CalCalendarMBS
dim calendars() as CalCalendarMBS = s.calendars

for each ca as CalCalendarMBS in calendars
if ca.Title = "Private Events" then
myCalendar=ca
exit
end if
next

// Get date range for today

dim Startdate as new date

dim Enddate as new date

Startdate.hour = 0
Startdate.Minute = 0
Startdate.Second = 0

Enddate.hour = 23
Enddate.minute = 59
Enddate.second = 59

// Query events on this calendar
dim events() as CalEventMBS = s.events(Startdate,Enddate, myCalendar)

// Display result
dim lines(-1) as string

for each e as CalEventMBS in events
lines.Append e.Title
next

MsgBox Join(lines,EndOfLine)

Notes:
CHAPTER 24. CALENDAR

Requires Mac OS X 10.5 to work.

Calendar saving and modification errors:

CalCalendarNotEditableError = 1025 Events and tasks cannot be added to an uneditable calendar
CalDateInvalidError = 1026 The start date of an event must be earlier than its end date
CalCalendarNotInRepository = 1027 Events' and tasks' calendar property must be a calendar in the user's calendar store
CalCalendarTitleNotUniqueError = 1028 Calendar titles must be unique

And the domain for the errors is: CalCalendarStoreErrorDomain

24.5.2 Methods

24.5.3 calendars as CalCalendarMBS()

Function: An array of all the user's calendars, represented as CalCalendars.
Example:

dim c as new CalCalendarStoreMBS
dim ca() as CalCalendarMBS
ca=c.calendars
for each cc as CalCalendarMBS in ca
MsgBox cc.Title+EndOfLine+cc.type+EndOfLine+cc.notes
next

Notes:
If the user has iCal data from a previous version of Mac OS X, but has not launched iCal in 10.5, this will return an array of empty calendars. iCal needs to be launched at least once in order to migrate the user's calendar data.

If no calendar data from any version of Mac OS X exists, then this method will create and return two default calendars, named Home and Work.

24.5.4 calendarWithTitle(Title as string) as CalCalendarMBS

Function: Queries all calendars and searches for one with the given title.
24.5. **CLASS CALCALENDARSTOREMBS**

Example:

```vba
dim cs as new CalCalendarStoreMBS

// delete one
dim c as CalCalendarMBS = cs.calendarWithTitle("Just Testing")
dim e as NSErrorMBS
if cs.removeCalendar(c, e) then
    MsgBox "deleted"
else
    MsgBox "Failed to remove: " + e.LocalizedDescription
end if
```

Notes:
Title comparison is case insensitive.
Returns nil on any error.

### 24.5.5 calendarWithUID(UID as string) as CalCalendarMBS

**Function:** The calendar associated with the specific UID.
**Notes:** If no record with this UID exists, nil is returned.

### 24.5.6 Constructor

**Function:** The class for the calendar storage.
**Notes:** This is the main class. Keep an object of it around as long as you use the calendar classes.

### 24.5.7 events(StartDate as date, EndDate as date) as CalEventMBS()

**Function:** This method returns an array of all the CalEvents which match the condition.
**Example:**

```vba
dim c as new CalCalendarStoreMBS

dim i, count as Integer
dim ta() as CalEventMBS
dim ct as CalEventMBS
```
dim sd as new date
dim ed as new date

ed.day=ed.day+1
// events within the next 24 hours

ta=c.events(sd,ed)
for each ct in ta
    msgbox ct.Title+EndOfLine+ct.location+EndOfLine+ct.startDate.LongDate+” ”+ct.startDate.LongTime
next

Notes:

This is the function which uses all calendars.

For performance reasons, this method will only return occurrences of repeating events that fall within a
specific four year timespan. If the date range between the startDate and endDate is greater than four years,
then the timespan containing recurrences is always the first four years of date range.

See also:

- 24.5.8 events(StartDate as date, EndDate as date, calendar as CalCalendarMBS) as CalEventMBS() 3988
- 24.5.9 events(StartDate as date, EndDate as date, calendars() as CalCalendarMBS) as CalEventMBS() 3990
- 24.5.10 events(StartDate as date, EndDate as date, eventUID as string) as CalEventMBS() 3990
- 24.5.11 events(StartDate as date, EndDate as date, eventUID as string, calendar as CalCalendarMBS) as CalEventMBS() 3991
- 24.5.12 events(StartDate as date, EndDate as date, eventUID as string, calendars() as CalCalendarMBS) as CalEventMBS() 3991

24.5.8 events(StartDate as date, EndDate as date, calendar as CalCalendarMBS) as CalEventMBS()

Function: This method returns an array of all the CalEvents which match the condition.
Example:

// init
dim s as new CalCalendarStoreMBS

// find calendar by name
dim myCalendar as CalCalendarMBS
24.5. *CLASS CALCALENDARSTOREMBS*

```vba
Dim calendars() As CalCalendarMBS = s.calendars

For Each ca As CalCalendarMBS In calendars
    If ca.Title = "Private Events" Then
        MyCalendar = ca
        Exit
    End If
Next

' Get date range for today
Dim StartDate As New Date
Dim EndDate As New Date

StartDate.Hour = 0
StartDate.Minute = 0
StartDate.Second = 0

EndDate.Hour = 23
EndDate.Minute = 59
EndDate.Second = 59

' Query events on this calendar
Dim events() As CalEventMBS = s.events(StartDate, EndDate, MyCalendar)

' Display result
Dim lines(-1) As String
For Each e As CalEventMBS In events
    lines.Append e.Title
Next

MsgBox Join(lines, vbCrLf)
```

**Notes:** For performance reasons, this method will only return occurrences of repeating events that fall within a specific four year timespan. If the date range between the startDate and endDate is greater than four years, then the timespan containing recurrences is always the first four years of date range.

See also:

- 24.5.7 `events(StartDate as date, EndDate as date) as CalEventMBS()` 3987
- 24.5.9 `events(StartDate as date, EndDate as date, calendars() as CalCalendarMBS) as CalEventMBS()` 3990
- 24.5.10 `events(StartDate as date, EndDate as date, eventUID as string) as CalEventMBS()` 3990
- 24.5.11 `events(StartDate as date, EndDate as date, eventUID as string, calendar as CalCalendarMBS) as CalEventMBS()` 3991
24.5.9  **events(StartDate as date, EndDate as date, calendars() as CalCalendarMBS) as CalEventMBS()**


**Function:** This method returns an array of all the CalEvents which match the condition.

**Notes:** For performance reasons, this method will only return occurrences of repeating events that fall within a specific four year timespan. If the date range between the startDate and endDate is greater than four years, then the timespan containing recurrences is always the first four years of date range.

See also:

- 24.5.7 **events(StartDate as date, EndDate as date) as CalEventMBS()**
- 24.5.8 **events(StartDate as date, EndDate as date, calendar as CalCalendarMBS) as CalEventMBS()**
- 24.5.10 **events(StartDate as date, EndDate as date, eventUID as string) as CalEventMBS()**
- 24.5.11 **events(StartDate as date, EndDate as date, eventUID as string, calendar as CalCalendarMBS) as CalEventMBS()**
- 24.5.12 **events(StartDate as date, EndDate as date, eventUID as string, calendars() as CalCalendarMBS) as CalEventMBS()**

24.5.10  **events(StartDate as date, EndDate as date, eventUID as string) as CalEventMBS()**


**Function:** This method returns an array of all the CalEvents which match the condition.

**Notes:**

This is the function which uses all calendars.

For performance reasons, this method will only return occurrences of repeating events that fall within a specific four year timespan. If the date range between the startDate and endDate is greater than four years, then the timespan containing recurrences is always the first four years of date range.

See also:

- 24.5.7 **events(StartDate as date, EndDate as date) as CalEventMBS()**
- 24.5.8 **events(StartDate as date, EndDate as date, calendar as CalCalendarMBS) as CalEventMBS()**
- 24.5.9 **events(StartDate as date, EndDate as date, calendars() as CalCalendarMBS) as CalEventMBS()**
24.5. **CLASS CALCALENDARSTOREMBS**

- 24.5.11 events(StartDate as date, EndDate as date, eventUID as string, calendar as CalCalendarMBS) as CalEventMBS()

- 24.5.12 events(StartDate as date, EndDate as date, eventUID as string, calendars() as CalCalendarMBS) as CalEventMBS()

24.5.11 **events(StartDate as date, EndDate as date, eventUID as string, calendar as CalCalendarMBS) as CalEventMBS()**

**Function:** This method returns an array of all the CalEvents which match the condition.  
**Notes:** For performance reasons, this method will only return occurrences of repeating events that fall within a specific four year timespan. If the date range between the startDate and endDate is greater than four years, then the timespan containing recurrences is always the first four years of date range.  
See also:

- 24.5.7 events(StartDate as date, EndDate as date) as CalEventMBS() 3987

- 24.5.8 events(StartDate as date, EndDate as date, calendar as CalCalendarMBS) as CalEventMBS() 3988

- 24.5.9 events(StartDate as date, EndDate as date, calendars() as CalCalendarMBS) as CalEventMBS() 3990

- 24.5.10 events(StartDate as date, EndDate as date, eventUID as string) as CalEventMBS() 3990

- 24.5.12 events(StartDate as date, EndDate as date, eventUID as string, calendars() as CalCalendarMBS) as CalEventMBS() 3991

24.5.12 **events(StartDate as date, EndDate as date, eventUID as string, calendars() as CalCalendarMBS) as CalEventMBS()**

**Function:** This method returns an array of all the CalEvents which match the condition.  
**Notes:** For performance reasons, this method will only return occurrences of repeating events that fall within a specific four year timespan. If the date range between the startDate and endDate is greater than four years, then the timespan containing recurrences is always the first four years of date range.  
See also:

- 24.5.7 events(StartDate as date, EndDate as date) as CalEventMBS() 3987

- 24.5.8 events(StartDate as date, EndDate as date, calendar as CalCalendarMBS) as CalEventMBS() 3988

- 24.5.9 events(StartDate as date, EndDate as date, calendars() as CalCalendarMBS) as CalEventMBS() 3990

- 24.5.10 events(StartDate as date, EndDate as date, eventUID as string) as CalEventMBS() 3990
24.5.11 events(StartDate as date, EndDate as date, eventUID as string, calendar as CalCalendarMBS) as CalEventMBS()

24.5.13 eventsMT(StartDate as date, EndDate as date, calendars() as CalCalendarMBS = nil) as CalEventMBS()


Function:  This method returns an array of all the CalEvents which match the condition.

Notes:
For performance reasons, this method will only return occurrences of repeating events that fall within a specific four year timespan. If the date range between the startDate and endDate is greater than four years, then the timespan containing recurrences is always the first four years of date range.

If calendars array is nil, we use all calendars.

The work is performed on an extra thread, so this function can yield time to other Xojo (Real Studio) threads. For best user experience run this command on a Xojo (Real Studio) thread, so your GUI stays responsive.

24.5.14 eventWithUID(UID as string, occurrence as date) as CalEventMBS


Function:  Searches the event with the given unique ID.

Example:

```xojo
// connect to calendar storage
dim c as new CalCalendarStoreMBS

// find event with given UID
dim e as CalEventMBS = c.eventWithUID(“M2CD-6-1-EEB42862-8BD6-4880-AF91-4AEEADD900B6”, nil)

// and display title
MsgBox e.Title
```

Notes:
Returns nil on any error.

uid: The unique identifier of an event.
date: The date of a recurring event. Pass nil if the event is not recurring.
24.5. **CLASS CALCALENDARSTOREMBS**

Returns a CalEvent object that matches the specified unique identifier and date. Returns nil if the event is not found, or the event is recurring and date is not specified.

Available in Mac OS X v10.5 and later.

24.5.15 **removeCalendar(calendar as CalCalendarMBS, byref error as NSErrorMBS) as boolean**


**Function:** Deletes a calendar.

**Example:**

```vba
dim cs as new CalCalendarStoreMBS

// before

dim calendars1() as CalCalendarMBS = cs.calendars
dim list1() as string

for each c1 as CalCalendarMBS in calendars1
    list1.Append c1.Title
next

MsgBox Join(list1, EndOfLine)

// delete one

dim c as CalCalendarMBS = cs.calendarWithTitle("Just Testing")
dim e as NSErrorMBS
if cs.removeCalendar(c, e) then
    MsgBox "deleted"
else
    MsgBox "Failed to remove: " + e.localizedDescription
end if

// after

dim calendars2() as CalCalendarMBS = cs.calendars
dim list2() as string

for each c2 as CalCalendarMBS in calendars2
    list2.Append c2.Title
next

MsgBox Join(list2, EndOfLine)
```
24.5.16 removeEvent(theEvent as CalEventMBS, span as Integer, byref error as NSErrorMBS) as boolean


**Function:** Removes the event from the calendar.

**Example:**

```plaintext
// start a connection to the calendar database
dim s as new CalCalendarStoreMBS

// needed for the error details
dim e as NSErrorMBS

// create a new calendar event
dim c as new CalEventMBS

dim calendars() as CalCalendarMBS = s.calendars

// set properties
c.Title="new Event"
c.startDate=new date
c.calendar=calendars(0) // add to first calendar

dim d as new date
d.hour=d.hour+1
c.endDate=d

// save event
call s.saveEvent(c,s.CalSpanAllEvents, e)
if e<>nil then
    MsgBox e.localizedDescription
else
    MsgBox "New event was created with UID: " +c.uid

    e = nil

// and delete it
if s.removeEvent(c, s.CalSpanAllEvents, e) then
    MsgBox "Event deleted."
else
    MsgBox e.localizedDescription
end if
end if
```
24.5. CLASS CALCALENDARSTOREMBS

Notes:
Returns true on success and false on failure.
Error is stored in the error object.

24.5.17 removeTask(task as CalTaskMBS, byref error as NSErrorMBS) as boolean

Function: Removes the task from the calendar.
Notes:
Returns true on success and false on failure.
Error is stored in the error object.

24.5.18 saveCalendar(calendar as CalCalendarMBS, byref error as NSErrorMBS) as boolean

Function: Writes changes to calendar.
Example:

```vbnet
dim cs as new CalCalendarStoreMBS
dim c as new CalCalendarMBS
c.Title = "Just Testing"

dim e as NSErrorMBS
if cs.saveCalendar(c, e) then
    MsgBox "OK"
else
    MsgBox "Failed "+e.localizedDescription
end if
```

Notes:
The saveCalendar and the removeCalendar calendars allow the client to add, modify, and remove calendars in the user’s calendar store. saveCalendar should be used both to add a new calendar to the calendar store, and to modify a calendar already in the store.

The only calendars that can be added with this API are local calendars; it is not possible to add subscribed
or CalDAV calendars, or the birthday calendar.

Changes made to a CalCalendar are not persisted until that calendar has been passed to saveCalendar. If saveCalendar is not called, the changes will be lost.

24.5.19   saveEvent(theEvent as CalEventMBS, span as Integer, byref error as NSErrorMBS) as boolean


Function: This method allows the client to add or modify events in the user’s calendar store.
Notes:
This method should be used both to add a new event to the calendar store, and to modify an event already in the calendar store.
If the event being saved is a repeating event, the second argument is used to describe whether the change being made should apply to future occurrences of that event, all occurrences, or only this instance. This is analogous to options on the dialog iCal presents when a user modifies a recurring event (though iCal’s UI does not provide a way to change all events, past and present).

Changes made to a CalEvent are not persisted until that event has been passed to saveEvent. If saveEvent is not called, the changes will be lost.

Applying changes to all events or all future events may cause the UID or the occurrence date of the event to change.

24.5.20   saveTask(task as CalTaskMBS, byref error as NSErrorMBS) as boolean


Function: Saves the specified task to the calendar store.
Example:

```vba
dim s as new CalCalendarStoreMBS
dim t as new CalTaskMBS
dim a() as CalCalendarMBS = s.calendars
dim d as new date
d.Month = d.Month + 1

t.calendar = a(0)
t.Title = "Test"
t.URL = "http://www.mbsplugins.de/"
t.priority = t.CalPriorityMedium
t.dueDate = d
```
24.5. CLASS CALCALENDARSTOREMBS

```vbnet
t.notes = "just a test"
t.isCompleted = false

dim e as NSErrorMBS
if s.saveTask(t, e) then
  MsgBox "saved"
else
  MsgBox "failed to save"
end if
```

**Notes:**

- **task:** The task to save.
- **error:** If this method returns false, an NSError object describing the error.

Returns true on success; otherwise, returns false and sets the error argument to an NSError object describing the error.

Use this method to save new task objects and modifications to existing task objects. Changes to task objects are not persistent until this method is invoked. The calendar property needs to be set before attempting to save a task.

Available in Mac OS X v10.5 and later.

### 24.5.21 tasks as CalTaskMBS()

**Function:** This method returns an array of all the CalTasks.

**Notes:** This is the function which uses all calendars.

See also:

- 24.5.22 tasks(calendar as CalCalendarMBS) as CalTaskMBS() 3997
- 24.5.23 tasks(calendars() as CalCalendarMBS) as CalTaskMBS() 3998

### 24.5.22 tasks(calendar as CalCalendarMBS) as CalTaskMBS()

**Function:** This method returns an array of all the CalTasks which match the condition.

See also:

- 24.5.21 tasks as CalTaskMBS() 3997
24.5.23 tasks(calendars() as CalCalendarMBS) as CalTaskMBS()


Function: This method returns an array of all the CalTasks which match the condition.

See also:

- 24.5.21 tasks as CalTaskMBS()

- 24.5.22 tasks(calendar as CalCalendarMBS) as CalTaskMBS()

24.5.24 TasksCompletedSince(completedSince as date) as CalTaskMBS()


Function: This method returns an array of all the CalTasks which match the condition.

Notes: This is the function which uses all calendars.

See also:

- 124.11.18 TasksCompletedSince(completedSince as date, calendar as CalCalendarMBS) as CalTaskMBS() 17365

- 24.5.26 TasksCompletedSince(completedSince as date, calendars() as CalCalendarMBS) as CalTaskMBS() 3998

24.5.25 TasksCompletedSince(completedSince as date, calendar as CalCalendarMBS) as CalTaskMBS()


Function: This method returns an array of all the CalTasks which match the condition.

See also:

- 24.5.24 TasksCompletedSince(completedSince as date) as CalTaskMBS() 3998

- 24.5.26 TasksCompletedSince(completedSince as date, calendars() as CalCalendarMBS) as CalTaskMBS() 3998

24.5.26 TasksCompletedSince(completedSince as date, calendars() as CalCalendarMBS) as CalTaskMBS()


Function: This method returns an array of all the CalTasks which match the condition.

See also:
24.5. **CLASS CALCALENDARSTOREMBS**

- 24.5.24 `TasksCompletedSince(completedSince as date) as CalTaskMBS()` 3998
- 24.11.18 `TasksCompletedSince(completedSince as date, calendar as CalCalendarMBS) as CalTaskMBS()` 17365

24.5.27 **taskWithUID(UID as string) as CalTaskMBS**

**Function:** Searches the task with the given unique ID.
**Notes:** Returns nil on any error.

24.5.28 **UncompletedTasks as CalTaskMBS()**

**Function:** This method returns an array of all the CalTasks which match the condition.
**Example:**
```vbscript
dim c as new CalCalendarStoreMBS
dim ta() as CalTaskMBS = c.UncompletedTasks
for each ct as CalTaskMBS in ta
    msgbox ct.Title+EndOfLine+str(ct.priority)+EndOfLine+ct.dueDate.LongDate
next
```

**Notes:** This is the function which uses all calendars.
See also:
- 24.5.29 `UncompletedTasks(calendar as CalCalendarMBS) as CalTaskMBS()` 3999
- 24.5.30 `UncompletedTasks(calendars() as CalCalendarMBS) as CalTaskMBS()` 4000

24.5.29 **UncompletedTasks(calendar as CalCalendarMBS) as CalTaskMBS()**

**Function:** This method returns an array of all the CalTasks which match the condition.
See also:
- 24.5.28 `UncompletedTasks as CalTaskMBS()` 3999
- 24.5.30 `UncompletedTasks(calendars() as CalCalendarMBS) as CalTaskMBS()` 4000
24.5.30 UncompletedTasks(calendars() as CalCalendarMBS) as CalTaskMBS()

Function: This method returns an array of all the CalTasks which match the condition.
See also:
- 24.5.28 UncompletedTasks as CalTaskMBS()
- 24.5.29 UncompletedTasks(calendar as CalCalendarMBS) as CalTaskMBS()

24.5.31 UncompletedTasksDueBefore(dueDate as date) as CalTaskMBS()

Function: This method returns an array of all the CalTasks which match the condition.
Notes: This is the function which uses all calendars.
See also:
- 24.5.32 UncompletedTasksDueBefore(dueDate as date, calendar as CalCalendarMBS) as CalTaskMBS()
- 24.5.33 UncompletedTasksDueBefore(dueDate as date, calendars() as CalCalendarMBS) as CalTaskMBS()

24.5.32 UncompletedTasksDueBefore(dueDate as date, calendar as CalCalendarMBS) as CalTaskMBS()

Function: This method returns an array of all the CalTasks which match the condition.
See also:
- 24.5.31 UncompletedTasksDueBefore(dueDate as date) as CalTaskMBS()
- 24.5.33 UncompletedTasksDueBefore(dueDate as date, calendars() as CalCalendarMBS) as CalTaskMBS()

24.5.33 UncompletedTasksDueBefore(dueDate as date, calendars() as CalCalendarMBS) as CalTaskMBS()

Function: This method returns an array of all the CalTasks which match the condition.
See also:
- 24.5.31 UncompletedTasksDueBefore(dueDate as date) as CalTaskMBS()
- 24.5.32 UncompletedTasksDueBefore(dueDate as date, calendar as CalCalendarMBS) as CalTaskMBS()
24.5. CLASS CALCALENDARSTOREMBS

24.5.34 Properties

24.5.35 Handle as Integer

Function: The internal used CalCalendarStore reference.  
Notes: (Read and Write property)

24.5.36 Events

24.5.37 CalendarsChanged(Externally as boolean, InsertedRecords() as string, UpdatedRecords() as string, DeletedRecords() as string)

Function: The event being called when some calendars changed.  
Notes: 
The Calendar Store frameworks posts notifications when any application, including yours, makes changes to the user’s calendar data.

Externally is true if this changes are not made by your application.

The three events give you the unique IDs of the calendars which have been inserted, updated or modified.

If all three arrays are nil/empty, that indicates everything has changed, and the client should refresh the calendar, event, and task information currently being used. Since this tends to be an expensive and inconvenient operation, it will only occur under unusual circumstances, such as when restoring from backup.

24.5.38 EventsChanged(Externally as boolean, InsertedRecords() as string, UpdatedRecords() as string, DeletedRecords() as string)

Function: The event being called when some events changed.  
Notes: 
The Calendar Store frameworks posts notifications when any application, including yours, makes changes to the user’s calendar data.

Externally is true if this changes are not made by your application.
The three events give you the unique IDs of the events which have been inserted, updated or modified.

If all three arrays are nil/empty, that indicates everything has changed, and the client should refresh the calendar, event, and task information currently being used. Since this tends to be an expensive and inconvenient operation, it will only occur under unusual circumstances, such as when restoring from backup.

24.5.39 TasksChanged(Externally as boolean, InsertedRecords() as string, UpdatedRecords() as string, DeletedRecords() as string)

Function: The event being called when some tasks changed.  
Notes: The Calendar Store frameworks posts notifications when any application, including yours, makes changes to the user's calendar data.

Externally is true if this changes are not made by your application.

The three events give you the unique IDs of the tasks which have been inserted, updated or modified.

If all three arrays are nil/empty, that indicates everything has changed, and the client should refresh the calendar, event, and task information currently being used. Since this tends to be an expensive and inconvenient operation, it will only occur under unusual circumstances, such as when restoring from backup.

24.5.40 Constants

24.5.41 CalSpanAllEvents=2

MBS MacFrameworks Plugin, Plugin Version: 7.7. Function: One of the Calendar Span constants.

24.5.42 CalSpanFutureEvents=1

MBS MacFrameworks Plugin, Plugin Version: 7.7. Function: One of the Calendar Span constants.
24.5. **CLASS CALCALENDARSTOREMBS**

24.5.43 **CalSpanThisEvent=0**

MBS MacFrameworks Plugin, Plugin Version: 7.7. **Function:** One of the Calendar Span constants.
24.6  class CalEventMBS

24.6.1  class CalEventMBS


Function: The class to handle events in iCal.

Example:

// start a connection to the calendar database
dim s as new CalCalendarStoreMBS

// needed for the error details
dim e as NSErrorMBS

// create a new event
dim c as new CalEventMBS

// set properties
dim calendars() as CalCalendarMBS = s.calendars
c.Title="new Event"
c.startDate=new date
c.calendar=calendars(0) // add to first calendar

dim d as new date
d.hour=d.hour+1
c.endDate=d

// save event
call s.saveEvent(c,s.CalSpanAllEvents, e)
if e<>nil then
    MsgBox e.localizedDescription
else
    MsgBox "New event was created."
end if

Notes:

Requires Mac OS X 10.5 to work.
Subclass of the CalCalendarItemMBS class.
24.6. CLASS CALEVENTMBS

24.6.2 Methods

24.6.3 attendees as CalAttendeeMBS()

Function: The attendees for this event.
Notes: It is not possible to modify an event’s attendees in Mac OS X 10.5.

24.6.4 Constructor

Function: The constructor to which creates a new event.
Example:

// start a connection to the calendar database
Dim s As New CalCalendarStoreMBS

// needed for the error details
Dim e As NSErrorMBS

// create a new event
Dim c As New CalEventMBS

// set properties
Dim calendars() As CalCalendarMBS = s.calendars
C.Title = "new Event"
C.startDate = New Date
C.calendar = calendars(0) // add to first calendar

Dim d As New Date
D.Hour = D.Hour + 1
C.endDate = d

// save event
Call s.saveEvent(c, s.CalSpanAllEvents, e)
If e <> nil Then
MsgBox e.localizedDescription
Else
MsgBox "New event was created."
End If

Notes: The calendar property must be set before calling saveTask on a new task.
24.6.5 Properties

24.6.6 endDate as date

Function: The end date.
Example:

```basic
dim e as CalEventMBS
msgbox e.endDate.longdate+ ” ”+e.endDate.longtime
```

Notes:
The client is responsible for making sure they never attempt to save an event with a start date that occurs after the endDate, or an endDate that occurs before the startDate. Calling saveEvent: on an improperly configured event will fail.
(Read and Write property)

24.6.7 isAllDay as boolean

Function: Whether this event is all day.
Notes:
True for all day events.
(Read and Write property)

24.6.8 isDetached as boolean

Function: Whether this event is detached.
Notes:
These properties are only meaningful for CalEvents which are instances of a repeating event.

If this CalEvent is an instance of a repeating event, and an attribute of this CalEvent has been changed to from the default value generated by the repeating event, isDetached will return true. If the CalEvent is unchanged from its default state, or is not a repeating event, isDetached returns false.
(Read only property)
24.6.9 location as string


Function: The location of this event.

Example:

```vbnet
dim c as new CalCalendarStoreMBS

// set the date range where we look for event
dim sd as new date(2016,6,7,0,0,0)
dim ed as new date(2016,6,7,23,59,59)

// look for an event on that date
dim a() as CalEventMBS = c.events(sd, ed, c.calendars)
dim e as CalEventMBS = a(1)

// show location
MsgBox e.location

// change it
e.location = "Hamburg"

// check again
MsgBox e.location

// Save
dim error as NSErrorMBS
dim ok as Boolean = c.saveEvent(e, c.CalSpanThisEvent, error)

if ok then
    MsgBox "OK"
else if error <> nil then
    MsgBox error.localizedDescription
else
    MsgBox "Failed."
end if
```

Notes: (Read and Write property)

24.6.10 occurrence as date


Function: The occurrences of this event.

Notes:
These properties are only meaningful for CalEvents which are instances of a repeating event.

Returns the occurrence date of a CalEvent. Since all instances of a repeating event have the same UID, we need another way to differentiate between those CalEvents. This method returns the NSDate on which this event was originally scheduled to occur. This value will remain the same even if the event has been detached and its start date has changed. For CalEvents not part of a repeating pattern, this method will return the same value as startDate.
(Read only property)

### 24.6.11 recurrenceRule as CalRecurrenceRuleMBS

**Function:** The recurrence rule for this event.
**Example:**

```// create a recurrence event:

dim c as new CalCalendarStoreMBS
    dim e as new CalEventMBS
    dim error as NSErrorMBS
    dim s as string
    dim ed as new date
    dim rule as CalRecurrenceRuleMBS
    dim rend as CalRecurrenceEndMBS

ed.day=21
    ed.Month=7
    ed.Year=2008

e.endDate=ed

    dim sd as new date

        sd.day=18
        sd.Month=7
        sd.Year=2008

e.startDate=sd
    e.isAllDay=true
    e.location="Example Location"

    rule=CalRecurrenceRuleMBS.initYearlyRecurrence(1,nil)

    dim calendars() as CalCalendarMBS = c.calendars
    e.Title="Example Title"
    e.calendar=calendars(0) // pick first calendar
```
24.6. CLASS CALEVENTMBS

e.notes="Example Notes"
e.URL="http://www.monkeybreadsoftware.de"
e.recurrenceRule=rule

if c.saveEvent(e, c.CalSpanAllEvents, error) then
if error<>Nil then s=error.localizedDescription
MsgBox "OK"+EndOfLine+s
else
if error<>Nil then s=error.localizedDescription
MsgBox "Failed"+EndOfLine+s
end if

Notes:
Set to nil to remove recurrence rule.
(Read and Write property)

24.6.12 startDate as date

Function: The start date.
Example:

dim e as CalEventMBS
msgbox e.startDate.longdate+" "+e.startDate.longtime

Notes:
The client is responsible for making sure they never attempt to save an event with a start date that occurs
after the endDate, or an endDate that occurs before the startDate. Calling saveEvent: on an improperly
configured event will fail.
(Read and Write property)
24.7 class CalNthWeekDayMBS

24.7.1 class CalNthWeekDayMBS

**Function:** CalNthWeekDay specifies the nth instance of a particular day of the week, such as the third Tuesday of every month.
**Notes:**
Requires Mac OS X 10.5 to work.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

24.7.2 Methods

24.7.3 Constructor

**Function:** The private constructor.

24.7.4 Properties

24.7.5 dayOfTheWeek as Integer

**Function:** The day of the week.
**Notes:**
Valid values for dayOfTheWeek are integers 1-7, which correspond to days of the week with Sunday = 1.
(Read only property)

24.7.6 weekNumber as Integer

**Function:** The week number.
**Notes:**
Valid values for weekNumber portion are 1, 2, 3, 4, or -1, where a value of -1 indicates the last week.
(Read only property)
24.8. **CLASS CALRECURRENCEENDMBS**

24.8  **class CalRecurrenceEndMBS**

24.8.1  **class CalRecurrenceEndMBS**


**Function:** The class to specify the end of a recurring calendar event.

**Notes:**

CalRecurrenceEnd is an attribute of CalRecurrenceRule that defines how long the recurrence is scheduled to repeat.

The recurrence can be defined either with an integer that indicates the total number times it repeats, or with a date, after which it no longer repeats. An event which is set to never end should have its CalRecurrenceEnd set to nil.

If the end of the pattern is defines with a date, the client must pass a valid date, nil cannot be passed. If the end of the pattern is defined as terms of a number of occurrences, the occurrenceCount passed to the initializer must be positive, it cannot be 0. If the client attempts to initialize a CalRecurrenceEnd with a nil date or OccurrenceCount of 0, an exception is raised.

A CalRecurrenceEnd initialized with an end date will return 0 for occurrenceCount. One initialized with a number of occurrences will return nil for its endDate.

Requires Mac OS X 10.5 to work.

24.8.2  **Methods**

24.8.3  **Constructor(endDate as date)**


**Function:** The constructor for a new recurrence end based on an end date.

See also:

- 24.8.4  **Constructor(occurrenceCount as Integer)**

24.8.4  **Constructor(occurrenceCount as Integer)**


**Function:** The constructor for a new recurrence end based on an occurrence count.

See also:

- 24.8.3  **Constructor(endDate as date)**
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24.8.5 Properties

24.8.6 endDate as date

Function: The end date.
Notes:
This property is read only.
(Read only property)

24.8.7 occurrenceCount as Integer

Function: The occurrence count.
Notes:
This property is read only.
(Read only property)

24.8.8 usesEndDate as boolean

Function: Whether the end date is used.
Notes:
This property is read only.
(Read only property)
24.9. **CLASS CALRECURRENCERULEMBS**

24.9  **class CalRecurrenceRuleMBS**

24.9.1  **class CalRecurrenceRuleMBS**


**Function:** The class for the recurrence rules.

**Example:**

```plaintext
// start a connection to the calendar database
dim s as new CalCalendarStoreMBS

// needed for the error details
dim e as NSErrorMBS

dim r as CalRecurrenceRuleMBS = CalRecurrenceRuleMBS.initYearlyRecurrence(1, nil) // repeat every year without end

  dim a as new CalAlarmMBS // add alarm
  a.action = a.CalAlarmActionDisplay
  a.relativeTrigger = -3600*24 // 24 Hours before

  // create a new calendar
dim c as new CalEventMBS

dim d as new date(2011, 04, 20) // the date

  // set properties
dim calendars() as CalCalendarMBS = s.calendars
c.Title="Test Birthday"
c.startDate=d
c.recurrenceRule = r
c.calendar=calendars(1) // add to second calendar
c.addAlarm(a)
c.endDate = d
c.isAllDay = true

  // save event
call s.saveEvent(c,s.CalSpanAllEvents, e)
  if e<>nil then
    MsgBox e.localizedDescription
  else
    MsgBox "New event was created."
  end if
```

**Notes:**
CHAPTER 24. CALENDAR

Requires Mac OS X 10.5 to work.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

24.9.2 Methods

24.9.3 Constructor

Function: The private constructor.

24.9.4 daysOfMonth as Integer()

Function: This property can be accessed as an array containing one or more integers corresponding to the
days of the month the event recurs.
Notes:
This property is valid for rules whose CalRecurrenceType is CalMonthlyRecurrence, and that were initialized
with one or more specific days of the month (not with a day of the week and week of the month).
For all other CalRecurrenceRules, this property is empty.

24.9.5 daysOfWeek as Integer()

Function: This property can be accessed as an array containing one or more integers corresponding to the
days of the week the event recurs.
Notes: This property is valid for rules whose CalRecurrenceType is CalWeeklyRecurrence. For all other
CalRecurrenceRules, this property is empty.

24.9.6 initDailyRecurrence(interval as Integer, RecurrenceEnd as CalRecurrenceEndMBS) as CalRecurrenceRuleMBS

Function: Daily Recurrence initializer.
Notes: Two parameters are included in every CalRecurrenceRule initializer. The first is the interval, which
is described above and indicates how many CalRecurrenceTypes make up the period of the recurrence (every
week, every other week, etc.). The second is a CalRecurrenceEnd, which describes when the CalRecurrenceRule ends. If valid values for these two parameters are not included, nil is returned. There are simple
initializers for each CalRecurrenceType which take only these two parameters.

### 24.9.7 initMonthlyRecurrence(interval as Integer, DayOfTheWeek as Integer, WeekOfTheMonth as Integer, RecurrenceEnd as CalRecurrenceEndMBS) as CalRecurrenceRuleMBS

**Function:** Monthly Recurrence initializer.
**Notes:**
This initializer allows the client to specify a repeating monthly pattern in terms of a day of the week and a week of the month that the event repeats. An example is an event that recurs the first Monday of every month.

Two parameters are included in every CalRecurrenceRule initializer. The first is the interval, which is described above and indicates how many CalRecurrenceTypes make up the period of the recurrence (every week, every other week, etc.). The second is a CalRecurrenceEnd, which describes when the CalRecurrenceRule ends. If valid values for these two parameters are not included, nil is returned. There are simple initializers for each CalRecurrenceType which take only these two parameters.

Valid values for days of the week are integers 1-7, which correspond to days of the week with Sunday = 1. Valid values for weeks of the month are integers 1-4 and -1, which is used to indicate the last week of the month.

See also:

- 24.9.8 initMonthlyRecurrence(interval as Integer, DaysOfTheMonth() as Integer, RecurrenceEnd as CalRecurrenceEndMBS) as CalRecurrenceRuleMBS
- 24.9.9 initMonthlyRecurrence(interval as Integer, RecurrenceEnd as CalRecurrenceEndMBS) as CalRecurrenceRuleMBS

### 24.9.8 initMonthlyRecurrence(interval as Integer, DaysOfTheMonth() as Integer, RecurrenceEnd as CalRecurrenceEndMBS) as CalRecurrenceRuleMBS

**Function:** Monthly Recurrence initializer.
**Notes:**
This initializer allows the client to specify multiple days of the month that an event will recur. This method should be used to initialize events that occur more than once a month, in a set monthly pattern.

Two parameters are included in every CalRecurrenceRule initializer. The first is the interval, which is described above and indicates how many CalRecurrenceTypes make up the period of the recurrence (every week, every other week, etc.). The second is a CalRecurrenceEnd, which describes when the CalRecurrenceRule ends. If valid values for these two parameters are not included, nil is returned. There are simple
initializers for each CalRecurrenceType which take only these two parameters.

Valid values for days of the month are integers 1-31.

See also:

- 24.9.7 initMonthlyRecurrence(interval as Integer, DayOfTheWeek as Integer, WeekOfTheMonth as Integer, RecurrenceEnd as CalRecurrenceEndMBS) as CalRecurrenceRuleMBS
- 24.9.9 initMonthlyRecurrence(interval as Integer, RecurrenceEnd as CalRecurrenceEndMBS) as CalRecurrenceRuleMBS

**24.9.9 initMonthlyRecurrence(interval as Integer, RecurrenceEnd as CalRecurrenceEndMBS) as CalRecurrenceRuleMBS**


**Function:** Monthly Recurrence initializer.

**Notes:** Two parameters are included in every CalRecurrenceRule initializer. The first is the interval, which is described above and indicates how many CalRecurrenceTypes make up the period of the recurrence (every week, every other week, etc.). The second is a CalRecurrenceEnd, which describes when the CalRecurrenceRule ends. If valid values for these two parameters are not included, nil is returned. There are simple initializers for each CalRecurrenceType which take only these two parameters.

See also:

- 24.9.7 initMonthlyRecurrence(interval as Integer, DayOfTheWeek as Integer, WeekOfTheMonth as Integer, RecurrenceEnd as CalRecurrenceEndMBS) as CalRecurrenceRuleMBS
- 24.9.8 initMonthlyRecurrence(interval as Integer, DaysOfTheMonth() as Integer, RecurrenceEnd as CalRecurrenceEndMBS) as CalRecurrenceRuleMBS

**24.9.10 initWeeklyRecurrence(interval as Integer, DaysOfTheWeek() as Integer, RecurrenceEnd as CalRecurrenceEndMBS) as CalRecurrenceRuleMBS**


**Function:** Weekly Recurrence initializers.

**Notes:**

This initializer allows the client to specify multiple days of the week that an event will recur. This initializer should be used to initialize events that occur more than once a week, in a set weekly pattern.

Two parameters are included in every CalRecurrenceRule initializer. The first is the interval, which is described above and indicates how many CalRecurrenceTypes make up the period of the recurrence (every week, every other week, etc.). The second is a CalRecurrenceEnd, which describes when the CalRecurrenceRule ends. If valid values for these two parameters are not included, nil is returned. There are simple initializers for each CalRecurrenceType which take only these two parameters.
Valid values for days of the week are integers 1-7, which correspond to days of the week with Sunday = 1. See also:

- 24.9.11 initWeeklyRecurrence(interval as Integer, RecurrenceEnd as CalRecurrenceEndMBS) as CalRecurrenceRuleMBS

24.9.11 initWeeklyRecurrence(interval as Integer, RecurrenceEnd as CalRecurrenceEndMBS) as CalRecurrenceRuleMBS


Function: Weekly Recurrence initializers.

Notes: Two parameters are included in every CalRecurrenceRule initializer. The first is the interval, which is described above and indicates how many CalRecurrenceTypes make up the period of the recurrence (every week, every other week, etc.). The second is a CalRecurrenceEnd, which describes when the CalRecurrenceRule ends. If valid values for these two parameters are not included, nil is returned. There are simple initializers for each CalRecurrenceType which take only these two parameters. See also:

- 24.9.10 initWeeklyRecurrence(interval as Integer, DaysOfTheWeek() as Integer, RecurrenceEnd as CalRecurrenceEndMBS) as CalRecurrenceRuleMBS

24.9.12 initYearlyRecurrence(interval as Integer, DayOfTheWeek as Integer, WeekOfTheMonth as Integer, MonthsOfTheYear() as Integer, RecurrenceEnd as CalRecurrenceEndMBS) as CalRecurrenceRuleMBS


Function: Yearly Recurrence initializer.

Notes:

This initializer allows the client to specify multiple months of the year that an event will recur. This method should be used to initialize events that recur on the same day of the week, in the same week of a month, of possibly more than one month a year, in a set yearly pattern. An example is an event that occurs every year on the last Friday of sixth and twelfth months.

Two parameters are included in every CalRecurrenceRule initializer. The first is the interval, which is described above and indicates how many CalRecurrenceTypes make up the period of the recurrence (every week, every other week, etc.). The second is a CalRecurrenceEnd, which describes when the CalRecurrenceRule ends. If valid values for these two parameters are not included, nil is returned. There are simple initializers for each CalRecurrenceType which take only these two parameters.

Valid values for days of the week are integers 1-7, which correspond to days of the week with Sunday = 1. Valid values for weeks of the month are integers 1-4 and -1, which is used to indicate the last week of the month.

Valid values for months of the year are integers 1-12, which correspond to months of the year with January
CHAPTER 24. CALENDAR

= 1.

See also:

- 24.9.13 initYearlyRecurrence(interval as Integer, MonthsOfTheYear() as Integer, RecurrenceEnd as CalRecurrenceEndMBS) as CalRecurrenceRuleMBS

- 24.9.14 initYearlyRecurrence(interval as Integer, RecurrenceEnd as CalRecurrenceEndMBS) as CalRecurrenceRuleMBS

24.9.13 initYearlyRecurrence(interval as Integer, MonthsOfTheYear() as Integer, RecurrenceEnd as CalRecurrenceEndMBS) as CalRecurrenceRuleMBS


Function: Yearly Recurrence initializer.

Notes:

This initializer allows the client to specify multiple months of the year that an event will recur. This method should be used to initialize events that occur on the same date, in more than month a year, in a set monthly pattern. An example is an event that occurs every year on the first day of the first and seventh months.

Two parameters are included in every CalRecurrenceRule initializer. The first is the interval, which is described above and indicates how many CalRecurrenceTypes make up the period of the recurrence (every week, every other week, etc.). The second is a CalRecurrenceEnd, which describes when the CalRecurrenceRule ends. If valid values for these two parameters are not included, nil is returned. There are simple initializers for each CalRecurrenceType which take only these two parameters.

Valid values for months of the year are integers 1-12, which correspond to months of the year with January = 1.

See also:

- 24.9.12 initYearlyRecurrence(interval as Integer, DayOfTheWeek as Integer, WeekOfTheMonth as Integer, MonthsOfTheYear() as Integer, RecurrenceEnd as CalRecurrenceEndMBS) as CalRecurrenceRuleMBS

- 24.9.14 initYearlyRecurrence(interval as Integer, RecurrenceEnd as CalRecurrenceEndMBS) as CalRecurrenceRuleMBS

24.9.14 initYearlyRecurrence(interval as Integer, RecurrenceEnd as CalRecurrenceEndMBS) as CalRecurrenceRuleMBS


Function: Yearly Recurrence initializer.

Example:

// create a recurrence event:
dim c as new CalCalendarStoreMBS
dim e as new CalEventMBS
dim error as NSErrorMBS
dim s as string
dim ed as new date
dim rule as CalRecurrenceRuleMBS
dim rend as CalRecurrenceEndMBS

ed.day=21
ed.Month=7
ed.Year=2008

e.endDate=ed

dim sd as new date

sd.day=18
sd.Month=7
sd.Year=2008

e.startDate=sd
e.isAllDay=true
e.location="Example Location"

rule=CalRecurrenceRuleMBS.initYearlyRecurrence(1,nil)

dim calendars() as CalCalendarMBS = c.calendars
e.Title="Example Title"
e.calendar=calendars(0) // pick first calendar
e.notes="Example Notes"
e.URL="http://www.monkeybreadsoftware.de"
e.recurrenceRule=rule

if c.saveEvent(e, c.CalSpanAllEvents, error) then
  if error<>Nil then s=error.localizedDescription
  MsgBox "OK”+EndOfLine+s
else
  if error<>Nil then s=error.localizedDescription
  MsgBox "Failed”+EndOfLine+s
end if

Notes: Two parameters are included in every CalRecurrenceRule initializer. The first is the interval, which is described above and indicates how many CalRecurrenceTypes make up the period of the recurrence (every week, every other week, etc.). The second is a CalRecurrenceEnd, which describes when the CalRecurrenceRule ends. If valid values for these two parameters are not included, nil is returned. There are simple
initializers for each CalRecurrenceType which take only these two parameters.

See also:

- 24.9.12 initYearlyRecurrence(interval as Integer, DayOfTheWeek as Integer, WeekOfTheMonth as Integer, MonthsOfTheYear() as Integer, RecurrenceEnd as CalRecurrenceEndMBS) as CalRecurrenceRuleMBS
- 24.9.13 initYearlyRecurrence(interval as Integer, MonthsOfTheYear() as Integer, RecurrenceEnd as CalRecurrenceEndMBS) as CalRecurrenceRuleMBS

24.9.15 monthsOfTheYear as Integer()


Function: This property can be accessed as an array containing one or more integer corresponding to the months of the year the event recurs.

Notes: This property is valid for rules whose CalRecurrenceType is CalYearlyRecurrence. For all other CalRecurrenceRules, this property is empty.

24.9.16 nthWeekDaysOfTheMonth as CalNthWeekDayMBS()


Function: This property can be accessed as an array containing exactly one CalNthWeekDay corresponding to the week of the month the event recurs.

Notes: This property is valid for rules whose CalRecurrenceType is CalMonthlyRecurrence or CalYearlyRecurrence, and that were initialized with a day of the week and week of the month. For all other CalRecurrenceRules, this property is empty.

24.9.17 Properties

24.9.18 firstDayOfTheWeek as Integer


Function: The first day of the week.

Notes:

Recurrence patterns can specify which day of the week should be treated as the first day. Possible values for this property are integers 0 and 1-7, which correspond to days of the week with Sunday = 1. Zero indicates that the property is not set for this recurrence. The first day of the week only affects the way the recurrence is expanded for weekly recurrence patterns with an interval greater than 1. For those types of recurrence patterns, the CalendarStore framework will set firstDayOfTheWeek to be 2 (Monday). In all other cases, this property will be set to zero. The iCalendar spec stipulates that the default value is Monday if this property is not set.
24.9. **CLASS CALRECURRENCERULEMBS**

(Read only property)

### 24.9.19 Handle as Integer

**Function:** The internal used CalRecurrenceRule reference.
**Notes:** (Read and Write property)

### 24.9.20 recurrenceEnd as CalRecurrenceEndMBS

**Function:** This property defines when the repeating event is scheduled to end.
**Notes:**
- The end date can be specified by a number of occurrences, or with an end date.
- Value can be nil.
- This is a read only property.
(Read only property)

### 24.9.21 recurrenceInterval as Integer

**Function:** Specifies how often the rule repeats over the given recurrence type.
**Notes:**
- An interval of 1 indicates that the event repeats every time unit, while an interval of 2 indicates that the repetition occurs in every other unit, etc.
- This is a read only property.
(Read only property)

### 24.9.22 recurrenceType as Integer

**Function:** This property designates the unit of time used to describe the recurrence pattern.
**Notes:**
- CalRecurrenceType designates the unit of time used to describe the recurrence. It has four possible values, which correspond to recurrence rules that are defined in terms of days, weeks, months, and years.
The interval of a CalRecurrenceRule is an Integer which specifies how often the recurrence rule repeats over the unit of time described by the CalRecurrenceType. For example, if the CalRecurrenceType is CalWeeklyRecurrence, then an interval of 1 means the pattern is repeated every week. A NSUInteger of 2 indicates it is repeated every other week, 3 means every third week, and so on. The Integer must be a positive integer; 0 is not a valid value, and nil will be returned if the client attempts to initialize a rule with a negative or zero interval.

Together, CalRecurrenceType and interval define how often the CalRecurrenceRule’s pattern repeats. This is a read only property.  
(Read only property)

### 24.9.23 Constants

### 24.9.24 CalRecurrenceDaily=0

MBS MacFrameworks Plugin, Plugin Version: 7.7. **Function:** One of the recurrence type constants.

### 24.9.25 CalRecurrenceMonthly=2

MBS MacFrameworks Plugin, Plugin Version: 7.7. **Function:** One of the recurrence type constants.

### 24.9.26 CalRecurrenceWeekly=1

MBS MacFrameworks Plugin, Plugin Version: 7.7. **Function:** One of the recurrence type constants.

### 24.9.27 CalRecurrenceYearly=3

MBS MacFrameworks Plugin, Plugin Version: 7.7. **Function:** One of the recurrence type constants.
24.10.1 class CalTaskMBS


**Function:** The class for tasks in iCal.

**Example:**

```vba
dim calStore as new CalCalendarStoreMBS
dim err as NSErrorMBS ' needed for the error details
dim newTask as new CalTaskMBS ' create a new reminder

// find existign tasks
dim tasks() as CalTaskMBS = calStore.tasks

// set properties
newTask.Title="new reminder"
newTask.Priority=9
newTask.DueDate=new date

//

newTask.calendar = tasks(0).calendar ' add to first List of reminders

call calStore.saveTask(newTask,err) ' save reminder
if err<>nil then
    MsgBox err.localizedDescription
else
    MsgBox "New reminder was created."
end if
```

**Notes:**
Requires Mac OS X 10.5 to work.
Subclass of the CalCalendarItemMBS class.

24.10.2 Methods

24.10.3 Constructor


**Function:** The constructor to create a new empty task.

**Example:**
dim s as new CalCalendarStoreMBS
dim t as new CalTaskMBS
dim a() as CalCalendarMBS = s.calendars
dim d as new date
d.Month = d.Month + 1

t.calendar = a(0)
t.Title = "Test"
t.URL = "http://www.mbsplugins.de/"
t.priority = t.CalPriorityMedium
t.dueDate = d
t.notes = "just a test"
t.isCompleted = false

dim e as NSErrorMBS
if s.saveTask(t, e) then
    MsgBox "saved"
else
    MsgBox "failed to save"
end if

Notes: The calendar property must be set before calling saveTask on a new task.

24.10.4 Properties

24.10.5 completedDate as date

Function: The date the task was completed.
Notes: The properties isCompleted and CompletedDate are inextricably linked. Setting isCompleted to be true, will set the completedDate to be now, and setting any completedDate will change isCompleted to be true. Similarly, setting isCompleted to be false will set the completedDate to be nil, and setting the completedDate changes isCompleted to false.
(Read and Write property)

24.10.6 dueDate as date

Function: The date the task is due.
Example:

```vbnet
dim c as new CalCalendarStoreMBS

dim i, count as Integer
dim ta() as CalTaskMBS
dim ct as CalTaskMBS

ta = c.UncompletedTasks
for each ct in ta
    msgbox ct.Title + vbCrLf + str(ct.priority) + vbCrLf + ct.dueDate.LongDate
next
```

Notes: (Read and Write property)

24.10.7 isCompleted as Boolean


**Function:** Whether the task has been completed.

**Notes:**

The properties isCompleted and CompletedDate are inextricably linked. Setting isCompleted to be true,
will set the completedDate to be now, and setting any completedDate will change isCompleted to be true.
Similarly, setting isCompleted to be false will set the completedDate to be nil, and setting the completedDate
changes isCompleted to false.
(Read and Write property)

24.10.8 priority as Integer


**Function:** The priority of this task.

**Notes:**

The iCalendar specification allows priority to be specified with an integer in the range of 0-9, with 0 repre-
senting an undefined priority, 1 the highest priority, and 9 the lowest priority. When a user sets the priority
to high, medium or low in iCal saves the priority as 1, 5, or 9 respectively. Clients are encouraged to use
these values when setting a task’s priority, but is is possible to specify any integer value from 0 to 9. In iCal,
a task with a priority in the range of 1-4 will show up as high priority, a task with a priority of 5 will be
displayed as having medium priority, and 6-9 will be displayed as having a low priority.
(Read and Write property)
24.10.9 Constants

24.10.10 CalPriorityHigh=1
MBS MacFrameworks Plugin, Plugin Version: 7.7. **Function:** One of the constants for the priority property.

24.10.11 CalPriorityLow=9
MBS MacFrameworks Plugin, Plugin Version: 7.7. **Function:** One of the constants for the priority property.

24.10.12 CalPriorityMedium=5
MBS MacFrameworks Plugin, Plugin Version: 7.7. **Function:** One of the constants for the priority property.

24.10.13 CalPriorityNone=0
MBS MacFrameworks Plugin, Plugin Version: 7.7. **Function:** One of the constants for the priority property.
24.11. CLASS EKALARMMBS

24.11 class EKAlarmMBS

24.11.1 class EKAlarmMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

Function: An EKAlarm object represents an alarm in Event Kit.

Notes:
Use the alarmWithAbsoluteDate: and alarmWithRelativeOffset class methods to create an alarm and use the properties to set information about an alarm. In OS X Mountain Lion, you can specify an action to trigger when the alarm fires via the emailAddress, soundName, or url property.

Subclass of the EKObjectMBS class.

24.11.2 Methods

24.11.3 alarmWithAbsoluteDate(d as date) as EKAlarmMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: No, Mac: Yes, Win: No, Linux: No.

Function: Creates and returns an alarm with an absolute date.

24.11.4 alarmWithRelativeOffset(offset as Double) as EKAlarmMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: No, Mac: Yes, Win: No, Linux: No.

Function: Creates and returns an alarm with a relative offset.

Notes:
offset: The offset from the start of an event, at which the alarm fires.

Negative offset values fire before the start of the event, while positive values fire after the start.

24.11.5 Constructor(date as date)

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

Function: Creates and returns an alarm with an absolute date.

See also:

• 24.11.6 Constructor(offset as Double)
24.11.6 Constructor(offset as Double)

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  
**Function:** Creates and returns an alarm with a relative offset.  
**Notes:**  
offset: The offset from the start of an event, at which the alarm fires.  
Negative offset values fire before the start of the event, while positive values fire after the start.  
See also:  
- 24.11.5 Constructor(date as date)

24.11.7 copy as EKAlarmMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  
**Function:** Creates a copy of an alarm.

24.11.8 Properties

24.11.9 absoluteDate as date

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  
**Function:** The absolute date for the alarm.  
**Notes:**  
If you set this property for a relative offset alarm, it loses the relative offset and becomes an absolute alarm.  
(Read and Write property)

24.11.10 emailAddress as String

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  
**Function:** The recipient of an email to send when the alarm triggers.  
**Notes:**  
Assigning this property a value will set the soundName and url properties to nil.  
(Read and Write property)
24.11. CLASS EKALARMMBS

24.11.11 proximity as Integer

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** A value indicating how a location-based alarm is triggered.
**Notes:**
Alarms can be set to trigger when entering or exiting a location specified by structuredLocation. By default, alarms are not affected by location.
(Read and Write property)

24.11.12 relativeOffset as Double

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** The offset from the start of an event, at which the alarm fires.
**Notes:**
If you set this value for an absolute alarm, it loses its absolute date and becomes a relative offset alarm.
(Read and Write property)

24.11.13 soundName as String

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** The name of the sound to play when the alarm triggers.
**Notes:**
The value of this property is the name of a system sound that can be used with the soundNamed class method to create an NSSound object. Assigning this property a value will set the emailAddress and url properties to nil.
(Read and Write property)

24.11.14 structuredLocation as EKStructuredLocationMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** The location to trigger an alarm.
**Notes:**
This property is used in conjunction with proximity to perform geofence-based triggering of reminders.
(Read and Write property)
24.11.15  type as Integer

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The type of action to trigger when the alarm fires.
Notes:
To set the type of alarm, define one of emailAddress, soundName, or url.
(Read only property)

24.11.16  url as String

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The URL to open when the alarm triggers.
Notes:
Assigning this property a value will set the emailAddress and soundName properties to nil.
Available in OS X v10.8 and later.
Deprecated in OS X v10.9.
(Read and Write property)

24.11.17  Constants

24.11.18  kProximityEnter = 1

MBS Mac64bit Plugin, Plugin Version: 15.3. Function: A value indicating whether an alarm is triggered
by entering or exiting a region.
Notes: The alarm is set to fire when entering a region.

24.11.19  kProximityLeave = 2

MBS Mac64bit Plugin, Plugin Version: 15.3. Function: A value indicating whether an alarm is triggered
by entering or exiting a region.
Notes: The alarm is set to fire when leaving a region.

24.11.20  kProximityNone = 0

MBS Mac64bit Plugin, Plugin Version: 15.3. Function: A value indicating whether an alarm is triggered
by entering or exiting a region.
Notes: The alarm has no proximity trigger.

24.11.21 kTypeAudio = 1

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the possible values that can be read from the type property.
**Notes:** Play audio

24.11.22 kTypeDisplay = 0

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the possible values that can be read from the type property.
**Notes:** Display alert

24.11.23 kTypeEmail = 3

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the possible values that can be read from the type property.
**Notes:** Email

24.11.24 kTypeProcedure = 2

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the possible values that can be read from the type property.
**Notes:** Procedure
24.12 class EKCalendarItemMBS

24.12.1 class EKCalendarItemMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The class for a calendar item. Notes:
The EKCalendarItem class is an abstract superclass for calendar events and reminders. This class provides common properties and methods for accessing properties of calendar items such as the ability to set the calendar, title, and location as well as support for attaching notes, displaying attendees, setting multiple alarms, and specifying recurrence rules. Subclass of the EKObjectMBS class. This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

24.12.2 Methods

24.12.3 addAlarm(alarm as EKAlarmMBS)

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Adds an alarm to the receiver. Notes:

24.12.4 addRecurrenceRule(rule as EKRecurrenceRuleMBS)

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Adds a recurrence rule to the recurrence rule array. Notes: The implementation only supports a single recurrence rule. Adding a recurrence rule replaces the single recurrence rule.

24.12.5 alarms as EKAlarmMBS()

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The alarms associated with the calendar item, as an array of EKAlarm objects. Notes: This property is empty if the calendar item has no alarms.
24.12.6 attendees as EKParticipantMBS()

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attendees associated with the calendar item, as an array of EKParticipant objects. **Notes:** This property is read-only; it is not possible to add attendees with Event Kit. This property is nil if the calendar item has no attendees.

24.12.7 recurrenceRules as EKRecurrenceRuleMBS()

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The recurrence rules for the calendar item. **Notes:** The implementation only supports a single recurrence rule.

24.12.8 removeAlarm(alarm as EKAlarmMBS)

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes an alarm from the calendar item.

24.12.9 removeRecurrenceRule(rule as EKRecurrenceRuleMBS)

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes a recurrence rule from the recurrence rule array. **Notes:** The implementation only supports a single recurrence rule.

24.12.10 setAlarms(alarms() as EKAlarmMBS)

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the alarms array.

24.12.11 setRecurrenceRules(rules() as EKRecurrenceRuleMBS)

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the recurrences rules array.
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24.12.12 Properties

24.12.13 calendar as EKCalendarMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The calendar for the calendar item. Notes: (Read and Write property)

24.12.14 calendarItemExternalIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The calendar items external identifier as provided by the calendar server. Notes: This identifier allows you to access the same event or reminder across multiple devices.

There are some cases where duplicate copies of a calendar item can exist in the same database:

- A calendar item was imported from an ICS file into multiple calendars
- An event was created in a calendar shared with the user and the user was also invited to the event
- The user is a delegate of a calendar that also has this event
- A subscribed calendar was added to multiple accounts

In such cases, you should choose between calendar items based on other factors, such as the calendar or source.

Recurring event identifiers are the same for all occurrences. If you wish to differentiate between occurrences, you may want to use the start date.

For Exchange servers, the identifier is different between iOS and OS X and different between devices for reminders. (Read only property)

24.12.15 calendarItemIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The calendar items unique identifier. Notes:
This property is set when the calendar item is created and can be used as a local identifier. Use calendarItemWithIdentifier to look up the item by this value.

A full sync with the calendar will lose this identifier. You should have a plan for dealing with a calendar whose identifier is no longer fetch-able by caching its other properties.
(Read only property)

### 24.12.16 creationDate as Date

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** The date that this calendar item was created.

**Notes:**
If nil, this property was not set or was synced in this state.
(Read only property)

### 24.12.17 hasAlarms as Boolean

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** A Boolean value that indicates whether the calendar item has alarms.

**Notes:**
If true, the calendar item has alarms; otherwise it does not.
(Read only property)

### 24.12.18 hasAttendees as Boolean

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** A Boolean value that indicates whether the calendar item has attendees.

**Notes:**
If true, the calendar item has attendees; otherwise it does not.
(Read only property)

### 24.12.19 hasNotes as Boolean

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** A Boolean value that indicates whether the calendar item has notes.

**Notes:**
If true, the calendar item has notes; otherwise it does not.
(Read only property)

### 24.12.20 hasRecurrenceRules as Boolean

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** A Boolean value that indicates whether the calendar item has recurrence rules.
**Notes:**
If true, the calendar item has recurrence rules; otherwise it does not.
The implementation only supports a single recurrence rule. Adding a recurrence rule replaces the single recurrence rule.
(Read only property)

### 24.12.21 lastModifiedDate as Date

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** The date that the calendar item was last modified.
**Notes:** (Read only property)

### 24.12.22 location as String

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** The location associated with the calendar item.
**Notes:**
This property is "" if the calendar item has no location.
(Read and Write property)

### 24.12.23 notes as String

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** The notes associated with the calendar item.
**Notes:** (Read and Write property)
**24.12.24 timeZone as NSTimeZoneMBS**

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 
**Function:** The time zone for the calendar item. 
**Notes:**
If nil, the calendar item is a floating event. A floating event is not tied to a particular time zone. It occurs at a given time regardless of the time zone, for example, lunch at noon. The start and end times of a floating event should be set as if they were in the system time zone. 
(Read and Write property)

**24.12.25 title as String**

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 
**Function:** The title for the calendar item. 
**Notes:** (Read and Write property)

**24.12.26 URL as String**

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 
**Function:** The URL for the calendar item. 
**Notes:** (Read and Write property)
24.13 class EKCalendarMBS

24.13.1 class EKCalendarMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: An instance of the EKCalendar class represents a calendar in Event Kit.
Notes:
Use the properties in this class to get attributes about a calendar, such as its title and type. Use the calendarForEntityType method to create a calendar object.
Subclass of the EKObjectMBS class.

24.13.2 Methods

24.13.3 calendarForEntityType(entityType as Integer, eventStore as EKEventStoreMBS) as EKCalendarMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Creates a new calendar that can contain the given entity type.
Notes:
entityType: The entity type that this calendar may support.
eventStore: The event store in which to create this calendar.

Returns the created calendar.

You can only create calendars that accept either reminders or events. Some servers might allow mixing the two, although it is not common.

24.13.4 Constructor(entityType as Integer, eventStore as EKEventStoreMBS)

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Creates a new calendar that can contain the given entity type.
Notes:
entityType: The entity type that this calendar may support.
eventStore: The event store in which to create this calendar.

Returns the created calendar.

You can only create calendars that accept either reminders or events. Some servers might allow mixing the
two, although it is not common.

### 24.13.5 Properties

#### 24.13.6 allowedEntityTypes as Integer

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** The entity types this calendar can contain.
**Notes:**
While Event Kit only allows creation of single-entity calendars, other servers might allow mixed-entity calendars.
(Read only property)

#### 24.13.7 allowsContentModifications as Boolean

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** A Boolean value that indicates whether you can add, edit, and delete items in the calendar.
**Notes:** (Read only property)

#### 24.13.8 calendarIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** A unique identifier for the calendar.
**Notes:**
This property is set when the calendar is created and can be used as a local identifier. Use calendarWithIdentifier to get a calendar with the specified identifier.

A full sync with the calendar will lose this identifier. You should have a plan for dealing with a calendar whose identifier is no longer fetch-able by caching its other properties.
(Read only property)

#### 24.13.9 color as NSColorMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** The calendars color.
**Notes:** (Read and Write property)
24.13.10  Immutable as Boolean

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** A Boolean value indicating whether the calendars properties can be edited or deleted.

**Notes:**
If true, the calendar is immutable; otherwise it is not. Events and reminders can still be added to an immutable calendar.
(Read only property)

24.13.11  source as EKSourceMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** The source object representing the account to which this calendar belongs.

**Notes:**
This property can only be set for newly created calendar objects. This property is read-only after the first time it is set; setting a value to this property after the first time it is set will result in an error. Therefore, moving a calendar from one source to another is not supported.
(Read and Write property)

24.13.12  Subscribed as Boolean

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** A Boolean value indicating whether the calendar is a subscribed calendar.

**Notes:**
If true, the calendar is a subscribed calendar; otherwise it is not.
(Read only property)

24.13.13  supportedEventAvailabilities as Integer

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** The event availability settings supported by this calendar, as indicated by a bitmask.

**Notes:**
If the calendar does not support event availability settings, this value is EKCalendarEventAvailabilityNone.
(Read only property)
24.13. CLASS EKCALENDAR.MBS

24.13.14 title as String

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The calendars title.
**Notes:** (Read and Write property)

24.13.15 type as Integer

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The calendars type.
**Notes:**
CalDAV-subscribed calendars are of type EKCalendarTypeCalDAV with Subscribed set to true. (Read only property)

24.13.16 Constants

24.13.17 kEntityMaskEvent = 1

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the entity types.
**Notes:** Event

24.13.18 kEntityMaskReminder = 2

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the entity types.
**Notes:** Reminder

24.13.19 kEntityTypeEvent = 0

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the entity types.
**Notes:** Entity Event

24.13.20 kEntityTypeReminder = 1

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the entity types.
**Notes:** Entity Reminder
24.13.21 kEventAvailabilityBusy = 1

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the event availabilities constants. **Notes:** Busy

24.13.22 kEventAvailabilityFree = 2

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the event availabilities constants. **Notes:** Free

24.13.23 kEventAvailabilityNone = 0

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the event availabilities constants. **Notes:** Not available

24.13.24 kEventAvailabilityTentative = 4

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the event availabilities constants. **Notes:** Tentative

24.13.25 kEventAvailabilityUnavailable = 8

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the event availabilities constants. **Notes:** Unavailable

24.13.26 kTypeBirthday = 4

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the possible calendar types. **Notes:** A birthday calendar.

24.13.27 kTypeCalDAV = 1

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the possible calendar types. **Notes:** A CalDAV or iCloud calendar.
24.13.28  kTypeExchange = 2

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the possible calendar types.  
**Notes:** An Exchange calendar.

24.13.29  kTypeLocal = 0

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the possible calendar types.  
**Notes:** A local calendar.

24.13.30  kTypeSubscription = 3

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the possible calendar types.  
**Notes:** A locally subscribed calendar.
24.14 class EKEventMBS

24.14.1 class EKEventMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** An instance of the EKEvent class represents an event added to a calendar in the Event Kit framework.

**Notes:**

Use the eventWithEventStore method to create a new event. Use the properties in the class to get and modify certain information about an event. Other properties, such as the events title and calendar, are inherited from the parent class EKCalendarItem.

Subclass of the EKCalendarItemMBS class.

24.14.2 Methods

24.14.3 compareStartDateWithEvent(other as EKEventMBS) as Integer

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** Compares the start date of the receiving event with the start date of another event.

**Notes:**

other: The event to compare against.

NSOrderedAscending -1 if the start date of the receiver precedes the start date of other.
NSOrderedSame 0 if the start dates of the two events are identical.
NSOrderedDescending 1 if the start date of the receiver comes after the start date of other.

24.14.4 Constructor(eventStore as EKEventStoreMBS)

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** Creates and returns a new event belonging to a specified event store.

**Notes:** eventStore: The event store to which the event belongs.

24.14.5 eventWithEventStore(eventStore as EKEventStoreMBS) as EKEventMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** Creates and returns a new event belonging to a specified event store.

**Notes:** eventStore: The event store to which the event belongs.
24.14.6 refresh as boolean

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** Updates the events data with the current information in the Calendar database.

**Notes:**
If the event was successfully refreshed, true; otherwise, false.

You should call this method only on events that your application is editing, and only when your application receives the EKEventStoreChangedNotification notification. If this method returns false, the event has been deleted or otherwise invalidated, and you should not continue to use it.

This method does not replace the values of any properties that you have modified.

24.14.7 Properties

24.14.8 AllDay as Boolean

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** A Boolean value that indicates whether the event is an all-day event.

**Notes:** (Read and Write property)

24.14.9 availability as Integer

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** The availability setting for the event.

**Notes:**
This setting is used by CalDAV and Exchange servers to indicate how the event should be treated for scheduling purposes.

If the events calendar does not support availability settings, this property’s value is EKEventAvailabilityNotSupported.
(Read and Write property)

24.14.10 birthdayPersonUniqueID as String

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** The Address Book framework record identifier of the person for this birthday event.

**Notes:**
This property is only set if this is a birthday event; otherwise the property is "."
(Read only property)

24.14.11  

**endDate as Date**

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The end date for the event.
**Notes:** (Read and Write property)

24.14.12  

**eventIdentifier as String**

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A unique identifier for the event.
**Notes:**
You can use this identifier to look up an event with the EKEventStore method eventWithIdentifier. If the calendar of an event changes, its identifier most likely changes as well.
(Read only property)

24.14.13  

**isDetached as Boolean**

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value that indicates whether an event is a detached instance of a repeating event.
**Notes:**
This value is true if and only if the event is part of a repeating event and one or more of its attributes have been modified from the repeating events default attributes.
(Read only property)

24.14.14  

**occurrenceDate as Date**

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The original occurrence date of an event if it is part of a recurring series.
**Notes:**
This value will remain the same even if the event has been detached and its start date has changed. Floating events (such as all-day events) are returned in the default time zone.
(Read only property)
24.14. CLASS EKEVENTMBS

24.14.15 organizer as EKParticipantMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The organizer associated with the event.
Notes:
This property is nil if the event has no organizer.
(Read only property)

24.14.16 startDate as Date

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The start date of the event.
Notes:
Floating events such as all-day events are returned in the default time zone.
(Read and Write property)

24.14.17 status as Integer

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The status of the event.
Notes:
You should act based on an events status only if the status is EKEventStatusCanceled, which indicates that the event has been canceled. Other statuses should be considered informational.
(Read only property)

24.14.18 Constants

24.14.19 kAvailabilityBusy = 0

MBS Mac64bit Plugin, Plugin Version: 15.3. Function: One of the event availability.
Notes: The event has a busy availability setting.

24.14.20 kAvailabilityFree = 1

MBS Mac64bit Plugin, Plugin Version: 15.3. Function: One of the event availability.
Notes: The event has a free availability setting.
24.14.21 kAvailabilityNotSupported = -1

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the event availability. **Notes:** Availability settings are not supported by the events calendar.

24.14.22 kAvailabilityTentative = 2

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the event availability. **Notes:** The event has a tentative availability setting.

24.14.23 kAvailabilityUnavailable = 3

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the event availability. **Notes:** The event has an unavailable availability setting.

24.14.24 kStatusCanceled = 3

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the event status constants. **Notes:** The event has no status.

24.14.25 kStatusConfirmed = 1

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the event status constants. **Notes:** The event has no status.

24.14.26 kStatusNone = 0

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the event status constants. **Notes:** The event has no status.

24.14.27 kStatusTentative = 2

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the event status constants. **Notes:** The event has no status.
24.15. class EKEventStoreMBS

24.15.1 class EKEventStoreMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An instance of the EKEventStore class represents the Calendar database. **Notes:** It is an applications point of contact for accessing calendar and reminder data.

You must request access to an entity type after the event store is initialized with requestAccessToEntityType for data to return.

Acceptable entity types are EKEntityMaskEvent for events and EKEntityMaskReminder for reminders. Create a predicate, or a search query for events, with the predicateForEventsWithStartDate method. Fetch and process events that match a given predicate with the eventsMatchingPredicate: and enumerateEventsMatchingPredicate methods. Save and delete events from the event store with the saveEvent and removeEvent methods. Subclass of the EKObjectMBS class.

24.15.2 Methods

24.15.3 authorizationStatusForEntityType(entityType as Integer) as Integer

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the authorization status for the given entity type. **Notes:** Available in OS X v10.9 and later.

24.15.4 Available as boolean

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this class is available. **Notes:** Returns true on Mac OS X 10.8 and newer with 64-bit.

24.15.5 calendarItemsWithExternalIdentifier(identifier as string) as EKCalendarItemMBS()

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns either the events first occurrences or the reminders with the specified external identifier. **Notes:**
externalIdentifier: The calendar items external identifier.

Returns an array of calendar items with the specified identifier.

The external identifier can be obtained from the calendarItemExternalIdentifier property. There may be more than one matching calendar item due to reasons discussed in calendarItemExternalIdentifier.

24.15.6 calendarItemWithIdentifier(identifier as string) as EKCalendarItemMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns either the events first occurrence or the reminder with the specified identifier. **Notes:** Returns the reminder or the first occurrence of an event with the specified identifier.

24.15.7 calendarsForEntityType(types as Integer) as EKCalendarMBS()

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns calendars that support a given entity type, such as reminders or events.

24.15.8 calendarWithIdentifier(identifier as string) as EKCalendarMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the calendar with the specified identifier.

24.15.9 cancelFetchRequest(request as EKFetchRequestMBS)

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Cancels the request to fetch reminders. **Notes:**

Pass the request you got from fetchRemindersMatchingPredicate method.
The fetchRemindersMatchingPredicateCompleted event will not fire.

24.15.10 commit(byref error as NSErrorMBS)

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Commits all unsaved changes to the event store. **Notes:**
24.15. **CLASS EKEVENTSTOREMBS**

error: The error variable to be filled with an error object.

If the commit operation succeeded, true is returned; otherwise, false. Returns true even when there are no changes to commit.

This method allows you to save batched changes to the event store. For example, if you pass false as the commit parameter to the saveCalendar, removeCalendar, saveEvent, or removeEvent methods, the changes are not saved until this method is invoked. Likewise, if you pass true as the commit parameter to the aforementioned methods, there is no need to call this method.

### 24.15.11 Constructor

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** The default constructor.

See also:
- 24.15.12 Constructor(types as Integer)

### 24.15.12 Constructor(types as Integer)

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** Initializes access to the event store with support for the given entity type.

**Notes:**
Available in OS X v10.8 and later.
Deprecated in OS X v10.9.

See also:
- 24.15.11 Constructor

### 24.15.13 Destructor

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** The destructor.

### 24.15.14 EKErrorDomain as string

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** The EventKit error domain.
24.15.15 EKEventStoreChangedNotification as string

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The changed notification name.  
**Notes:** Posted whenever changes are made to the Calendar database, including adding, removing, and changing events or reminders. Individual changes are not described. When you receive this notification, you should refetch all EKEvent and EKReminder objects you have accessed, as they are considered stale. If you are actively editing an event and do not wish to refetch it unless it is absolutely necessary to do so, you can call the refresh method on it. If the method returns true, you do not need to refetch the event.

24.15.16 enumerateEventsMatchingPredicate(predicate as NSPredicateMBS, tag as Variant = nil)

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Finds all events that match a given predicate and calls enumerateEventsMatchingPredicateUpdate event for each event found.  
**Notes:**  
predicate: The search predicate. Must be created with the predicateForEventsWithStartDate:endDate:calendars method.  
Only events that have been committed are included in enumeration. Events saved using saveEvent:span:commit:error: with the commit parameter set to NO must call commit beforehand to be included.  
This method is synchronous.

24.15.17 eventsMatchingPredicate(predicate as NSPredicateMBS) as EKEventMBS()

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns all events that match a given predicate.  
**Notes:**  
Returns all events that match predicate, as an array of EKEvent objects.  
Only events that have been committed are included in the results. Events saved using saveEvent with the commit parameter set to false must call commit beforehand to be included.  
This method is synchronous.
24.15. **CLASS EKEVENTSTOREMBS**

24.15.18 *eventsMatchingPredicateAsync*(predicate as NSPredicateMBS, tag as Variant = nil)

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** Returns all events that match a given predicate.

**Notes:**
Calls later eventsMatchingPredicateAsyncCompleted event with all events that match predicate, as an array of EKEvent objects.

Only events that have been committed are included in the results. Events saved using saveEvent with the commit parameter set to false must call commit beforehand to be included.

This method is asynchronous.

24.15.19 *eventsWithExternalIdentifier*(identifier as string) as EKCalendarItemMBS()

MBS Mac64bit Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** Returns events with the specified external identifier.

**Notes:** Same as calendarItemsWithExternalIdentifier, but only returning events.

24.15.20 *eventWithIdentifier*(identifier as string) as EKEventMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** Returns the first occurrence of an event with a given identifier.

**Notes:** The event corresponding to identifier, or nil if no event is found.

24.15.21 *fetchRemindersMatchingPredicate*(predicate as NSPredicateMBS, tag as Variant = nil) as EKFetchRequestMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** Fetches reminders matching a given predicate asynchronously.

**Notes:**

predicate: The search predicate.

Returns a value to be used in cancelFetchRequest to cancel the request later if desired.

Only reminders that have been committed are included in the results. Reminders saved using saveReminder with the commit parameter set to NO must call commit beforehand to be included.
This method fetches reminders asynchronously. Calls FetchedReminders event later on success.

**24.15.22** fetchRemindersMatchingPredicateSync(predicate as NSPredicateMBS) as EKReminderMBS()

MBS Mac64bit Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** Fetches reminders matching a given predicate synchronously.

**Notes:**
Same as fetchRemindersMatchingPredicate, except that we wait for result and return it without calling an event.

Only reminders that have been committed are included in the results. Reminders saved using saveReminder with the commit parameter set to NO must call commit beforehand to be included.

**24.15.23** predicateForCompletedRemindersWithCompletionDate(startDate as date, endDate as date) as NSPredicateMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** Fetches completed reminders in a set of calendars within an optional range.

**Notes:**
startDate: The starting bound of the range to search.
endDate: The ending bound of the range to search.
calendars: Optional. An array of calendars to search.

The created predicate to be used for fetchRemindersMatchingPredicate methods.

Pass nil for startDate to find all reminders completed before endDate. Similarly, pass nil for both startDate and endDate to get all complete reminders in the specified calendars.

See also:

- **24.15.24** predicateForCompletedRemindersWithCompletionDate(startDate as date, endDate as date, calendars() as EKCalendarMBS) as NSPredicateMBS
24.15.24 predicateForCompletedRemindersWithCompletionDate(startDate as date, endDate as date, calendars() as EKCalendarMBS) as NSPredicateMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

Function: Fetches completed reminders in a set of calendars within an optional range.

Notes:

startDate: The starting bound of the range to search.
endDate: The ending bound of the range to search.
calendars: Optional. An array of calendars to search.

The created predicate to be used for fetchRemindersMatchingPredicate methods.

Pass nil for startDate to find all reminders completed before endDate. Similarly, pass nil for both startDate and endDate to get all complete reminders in the specified calendars.

See also:

- 24.15.23 predicateForCompletedRemindersWithCompletionDate(startDate as date, endDate as date) as NSPredicateMBS

24.15.25 predicateForEvents(startDate as date, endDate as date) as NSPredicateMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

Function: Creates and returns a predicate for finding events in the event store that fall within a given date range.

Notes:

startDate: The start date of the range of events fetched.
endDate: The end date of the range of events fetched.
calendars: Optional. The calendars to search, as an array of EKCalendarMBS objects. Passing nil indicates to search all calendars.

See also:

- 24.15.26 predicateForEvents(startDate as date, endDate as date, calendars() as EKCalendarMBS) as NSPredicateMBS

24.15.26 predicateForEvents(startDate as date, endDate as date, calendars() as EKCalendarMBS) as NSPredicateMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

Function: Creates and returns a predicate for finding events in the event store that fall within a given date range.

Notes:
startDate: The start date of the range of events fetched.
endDate: The end date of the range of events fetched.
calendar: Optional. The calendars to search, as an array of EKCalendarMBS objects. Passing nil indicates to search all calendars.

See also:

- 24.15.25 predicateForEvents(startDate as date, endDate as date) as NSPredicateMBS

24.15.27 predicateForIncompleteRemindersWithDueDate(startDate as date, endDate as date) as NSPredicateMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

Function: Fetches incomplete reminders in a set of calendars within an optional range.

Notes:

startDate: The starting bound of the range to search.
endDate: The ending bound of the range to search.
calendar: Optional. An array of calendars to search.

The created predicate to be used for fetchRemindersMatchingPredicate:completion:.

Pass nil for startDate to find all reminders due before endDate. Similarly, pass nil for both startDate and endDate to get all incomplete reminders in the specified calendars.

See also:

- 24.15.28 predicateForIncompleteRemindersWithDueDate(startDate as date, endDate as date, calendars() as EKCalendarMBS) as NSPredicateMBS

24.15.28 predicateForIncompleteRemindersWithDueDate(startDate as date, endDate as date, calendars() as EKCalendarMBS) as NSPredicateMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

Function: Fetches incomplete reminders in a set of calendars within an optional range.

Notes:

startDate: The starting bound of the range to search.
endDate: The ending bound of the range to search.
calendar: Optional. An array of calendars to search.

The created predicate to be used for fetchRemindersMatchingPredicate:completion:.

Pass nil for startDate to find all reminders due before endDate. Similarly, pass nil for both startDate and endDate to get all incomplete reminders in the specified calendars.

See also:
• 24.15.27 predicateForIncompleteRemindersWithDueDate(startDate as date, endDate as date) as NSPredicateMBS

24.15.29 predicateForRemindersInCalendar(calendar as EKCalendarMBS) as NSPredicateMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Fetches all reminders in a calendar. **Notes:** The created predicate to be used for fetchRemindersMatchingPredicate methods.

24.15.30 predicateForRemindersInCalendars(calendars() as EKCalendarMBS) as NSPredicateMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Fetches all reminders in a set of calendars. **Notes:** The created predicate to be used for fetchRemindersMatchingPredicate methods.

24.15.31 refreshSourcesIfNecessary

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Pulls new data from remote sources if necessary. **Notes:** Use this method to pull new data from remote sources if the local data is out of date.

24.15.32 remindersWithExternalIdentifier(identifier as string) as EKCalendarItemMBS()

MBS Mac64bit Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns reminders with the specified external identifier. **Notes:** Same as calendarItemsWithExternalIdentifier, but only returning reminders.

24.15.33 reminderWithIdentifier(identifier as string) as EKCalendarItemMBS

MBS Mac64bit Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the reminder with the specified identifier. **Notes:** Same as calendarItemWithIdentifier, but for reminders only.
24.15.34 removeCalendar(calendar as EKCalendarMBS, commit as boolean, byref error as NSErrorMBS) as boolean

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Removes a calendar from the event store by either batching or committing the changes.
Notes:
- calendar: The calendar to be removed.
- commit: True to remove the calendar immediately; otherwise, the change is batched until the commit: method is invoked.
- error: The error that occurred, if any; otherwise, nil.

Returns true if successful; otherwise, false.
This method raises an exception if calendar belongs to another event store.

24.15.35 removeEvent(event as EKEventMBS, span as Integer, commit as boolean, byref error as NSErrorMBS) as boolean

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Removes an event or recurring events from the event store by either batching or committing the changes.
Notes:
- event: The event to remove.
- span: The span to use. Indicates whether the remove affects future instances of the event in the case of a recurring event.
- commit: True to remove the event immediately; otherwise, the change is batched until the commit: method is invoked.
- error: The error that occurred, if any did. Otherwise, nil.

If the event has successfully removed, true; otherwise, false. Also returns false if event cannot be removed because it is not in the event store.

This method raises an exception if it is passed an event from another event store.

24.15.36 removeReminder(reminder as EKReminderMBS, commit as boolean, byref error as NSErrorMBS) as boolean

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Removes a reminder from the event store by either committing or batching the changes.
Notes:
- reminder: The reminder to be removed.
commit: A Boolean value indicating whether to remove the reminder immediately or to batch the removals; passing NO will not commit the removal from the event store until the commit: method is invoked.
error: The error that occurred, if any; otherwise, nil.

If successful, true; otherwise, false.
This method raises an exception if reminder belongs to another event store.

24.15.37 requestAccessToEntityType(entityType as Integer, tag as Variant = nil)

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Prompts the user to grant or deny access to event or reminder data.
Notes:
entityType: The event or reminder entity type.

Requesting access to an event store asynchronously prompts your users for permission to use their data. The user is only prompted the first time your app requests access to an entity type; any subsequent instantiations of EKEventStore uses existing permissions. When the user taps to grant or deny access, the requestAccessToEntityTypeCompleted event will be called on an arbitrary queue. Your app is not blocked while the user decides to grant or deny permission.

After users choose their permission level, the event store either calls the event. Available in OS X v10.9 and later.

24.15.38 reset

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Returns the event store to its saved state.
Notes: This method updates all the properties of all the objects with their corresponding values in the event store. Any local changes that were not saved before invoking this method will be lost. All objects that were created or retrieved using this store are disassociated from it and should be considered invalid.

24.15.39 saveCalendar(calendar as EKCalendarMBS, commit as boolean, byref error as NSErrorMBS) as boolean

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Saves a calendar to the event store by either committing or batching the changes.
Notes:
calendar: The calendar to be saved.
commit: True to save the calendar immediately; otherwise, the change is batched until the commit method is invoked.
error: The error that occurred, if any; otherwise, nil.

Returns true if successful; otherwise, false.

This method raises an exception if calendar belongs to another event store.

24.15.40  saveEvent(event as EKEventMBS, span as Integer, commit as boolean, byref error as NSErrorMBS) as boolean

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Saves an event or recurring events to the event store by either batching or committing the changes.
Notes:

   event: The event to be saved.
   span: The span to use. Indicates whether the save affects future instances of the event in the case of a recurring event.
   commit: To save the event immediately, pass true; otherwise, the change is batched until the commit method is invoked.
   error: The error that occurred, if any; otherwise, nil.

Returns if successful, true; otherwise, false. Also returns false if event does not need to be saved because it has not been modified.

This method raises an exception if it is passed an event from another event store.

When an event is saved, it is updated in the Calendar database. Any fields you did not modify are updated to reflect the most recent value in the database. If the event has been deleted from the database, it is re-created as a new event.

24.15.41  saveReminder(reminder as EKReminderMBS, commit as boolean, byref error as NSErrorMBS) as boolean

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Saves changes to a reminder by either committing or batching the changes.
Notes:

   reminder: The reminder to be saved.
24.15. CLASS EKEVENTSTOREMBS

commit: A Boolean value indicating whether to save the reminder immediately or to batch the changes; passing NO will not commit changes to the event store until the commit: method is invoked.
error: The error that occurred, if any; otherwise, nil.

If successful, true; otherwise, false.
This method raises an exception if reminder belongs to another event store.

24.15.42 sources as EKSourceMBS()

Notes: An EKSource object represents an account that contains calendars.

24.15.43 sourceWithIdentifier(identifier as string) as EKSourceMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a source with the specified identifier.

24.15.44 Properties

24.15.45 defaultCalendarForNewEvents as EKCalendarMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The calendar that events are added to by default, as specified by user settings.
Notes: (Read only property)

24.15.46 defaultCalendarForNewReminders as EKCalendarMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The calendar that events are added to by default, as specified by user settings.
Notes: (Read only property)

24.15.47 eventStoreIdentifier as String

Notes:
If the store is damaged, it is re-created and given a new identifier. If this value is different from a fetched value, you should take the appropriate action. 
(Read only property)

24.15.48 Events

24.15.49 Changed

Notes: Posted whenever changes are made to the Calendar database, including adding, removing, and changing events or reminders. Individual changes are not described. When you receive this notification, you should refetch all EKEvent and EKReminder objects you have accessed, as they are considered stale. If you are actively editing an event and do not wish to refetch it unless it is absolutely necessary to do so, you can call the refresh method on it. If the method returns true, you do not need to refetch the event.

24.15.50 enumerateEventsMatchingPredicateUpdate(e as EKEventMBS, byref stop as boolean, predicate as NSPredicateMBS, tag as Variant)


24.15.51 eventsMatchingPredicateAsyncCompleted(events() as EKEventMBS, predicate as NSPredicateMBS, tag as Variant)


24.15.52 fetchRemindersMatchingPredicateCompleted(reminders() as EKReminderMBS, predicate as NSPredicateMBS, tag as Variant)

24.15.53 requestAccessToEntityTypeCompleted(entityType as Integer, granted as Boolean, error as NSErrorMBS, tag as Variant)

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event called by requestAccessToEntityType once decision is made.

24.15.54 Constants

24.15.55 kAuthorizationStatusAuthorized = 3

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the constants to indicates the current authorization status for a specific entity type. 
**Notes:** The app is authorized to access the service.

24.15.56 kAuthorizationStatusDenied = 2

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the constants to indicates the current authorization status for a specific entity type. 
**Notes:** The user explicitly denied access to the service for the app.

24.15.57 kAuthorizationStatusNotDetermined = 0

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the constants to indicates the current authorization status for a specific entity type. 
**Notes:** The user has not yet made a choice regarding whether the app may access the service.

24.15.58 kAuthorizationStatusRestricted = 1

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the constants to indicates the current authorization status for a specific entity type. 
**Notes:** The app is not authorized to access the service. The user cannot change this apps authorization status, possibly due to active restrictions such as parental controls being in place.

24.15.59 kEntityMaskEvent = 1

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the entity types. 
**Notes:** Event
24.15.60  \textbf{kEntityMaskReminder} = 2

MBS Mac64bit Plugin, Plugin Version: 15.3. \textbf{Function}: One of the entity types.  
\textbf{Notes}: Reminder

24.15.61  \textbf{kEntityTypeEvent} = 0

MBS Mac64bit Plugin, Plugin Version: 15.3. \textbf{Function}: One of the entity types.  
\textbf{Notes}: Entity Event

24.15.62  \textbf{kEntityTypeReminder} = 1

MBS Mac64bit Plugin, Plugin Version: 15.3. \textbf{Function}: One of the entity types.  
\textbf{Notes}: Entity Reminder

24.15.63  \textbf{kErrorAlarmGreaterThanRecurrence} = 8

MBS Mac64bit Plugin, Plugin Version: 15.3. \textbf{Function}: One of the error constants.  
\textbf{Notes}: The alarm interval is greater than the recurrence interval.

24.15.64  \textbf{kErrorAlarmProximityNotSupported} = 21

MBS Mac64bit Plugin, Plugin Version: 15.3. \textbf{Function}: One of the error constants.  
\textbf{Notes}: The source does not allow geofences on alarms.

24.15.65  \textbf{kErrorCalendarDoesNotAllowEvents} = 22

MBS Mac64bit Plugin, Plugin Version: 15.3. \textbf{Function}: One of the error constants.  
\textbf{Notes}: The calendar does not allow events to be added.
24.15.66 kErrorCalendarDoesNotAllowReminders = 23
MBS Mac64bit Plugin, Plugin Version: 15.3. Function: One of the error constants. Notes: The calendar does not allow reminders to be added.

24.15.67 kErrorCalendarHasNoSource = 14
MBS Mac64bit Plugin, Plugin Version: 15.3. Function: One of the error constants. Notes: The calendar cannot be saved with no source set.

24.15.68 kErrorCalendarIsImmutable = 16
MBS Mac64bit Plugin, Plugin Version: 15.3. Function: One of the error constants. Notes: The calendar is immutable and cannot be modified or deleted.

24.15.69 kErrorCalendarReadOnly = 6
MBS Mac64bit Plugin, Plugin Version: 15.3. Function: One of the error constants. Notes: The calendar is read-only and cannot have events added to it.

24.15.70 kErrorCalendarSourceCannotBeModified = 15
MBS Mac64bit Plugin, Plugin Version: 15.3. Function: One of the error constants. Notes: The calendar cannot be moved to another source.

24.15.71 kErrorDatesInverted = 4
MBS Mac64bit Plugin, Plugin Version: 15.3. Function: One of the error constants. Notes: The events end date occurs before its start date.

24.15.72 kErrorDurationGreaterThanRecurrence = 7
MBS Mac64bit Plugin, Plugin Version: 15.3. Function: One of the error constants. Notes: The duration of an event is greater than its recurrence interval.
24.15.73  kErrorEventNotMutable = 0

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the error constants.
**Notes:** The event is not mutable and cannot be saved or deleted.

24.15.74  kErrorInternalFailure = 5

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the error constants.
**Notes:** An internal error occurred.

24.15.75  kErrorInvalidSpan = 13

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the error constants.
**Notes:** An invalid span was passed when saving or deleting.

24.15.76  kErrorInvitesCannotBeMoved = 12

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the error constants.
**Notes:** The event cannot be moved because it is an invite.

24.15.77  kErrorNoCalendar = 1

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the error constants.
**Notes:** The event is not associated with a calendar.

24.15.78  kErrorNoEndDate = 3

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the error constants.
**Notes:** The event has no end date set.

24.15.79  kErrorNoStartDate = 2

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the error constants.
**Notes:** The event has no start date set.
24.15. **CLASS EKEVENTSTOREMBS**

24.15.80  **kErrorObjectBelongsToDifferentStore = 11**

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the error constants. **Notes:** The object belongs to a different calendar store.

24.15.81  **kErrorRecurringReminderRequiresDueDate = 18**

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the error constants. **Notes:** The recurring reminder requires a due date.

24.15.82  **kErrorReminderLocationsNotSupported = 20**

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the error constants. **Notes:** The source doesn’t support locations on reminders.

24.15.83  **kErrorSourceDoesNotAllowCalendarAddDelete = 17**

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the error constants. **Notes:** The source doesn’t allow calendars to be added or deleted.

24.15.84  **kErrorSourceDoesNotAllowEvents = 25**

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the error constants. **Notes:** The source does not allow calendars supporting event entity types.

24.15.85  **kErrorSourceDoesNotAllowReminders = 24**

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the error constants. **Notes:** The source does not allow calendars supporting reminder entity types.

24.15.86  **kErrorStartDateCollidesWithOtherOccurrence = 10**

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the error constants. **Notes:** The events start date collides with another occurrence of the event.
24.15.87  kErrorStartDateTooFarInFuture = 9

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the error constants.  
**Notes:** The start date is further into the future than the calendar can display.

24.15.88  kErrorStructuredLocationsNotSupported = 19

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the error constants.  
**Notes:** The source to which this calendar belongs does not support structured locations.

24.15.89  kSpanFutureEvents = 1

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the event span constants.  
**Notes:** Modifications to this event instance should also affect future instances of this event.

24.15.90  kSpanThisEvent = 0

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the event span constants.  
**Notes:** Modifications to this event instance should affect only this instance.

24.15.91  kWeekDayFriday = 6

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the weekday constants.  
**Notes:** Friday

24.15.92  kWeekDayMonday = 2

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the weekday constants.  
**Notes:** Monday

24.15.93  kWeekDaySaturday = 7

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the weekday constants.  
**Notes:** Saturday
24.15.94 kWeekDaySunday = 1

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the weekday constants. **Notes:** Sunday

24.15.95 kWeekDayThursday = 5

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the weekday constants. **Notes:** Thursday

24.15.96 kWeekDayTuesday = 3

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the weekday constants. **Notes:** Tuesday

24.15.97 kWeekDayWednesday = 4

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the weekday constants. **Notes:** Wednesday
24.16 class EKFetchRequestMBS

24.16.1 class EKFetchRequestMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The class for an ongoing fetch report.
Notes:
If request object is destroyed, the request is cancelled, if it is not yet finished.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

24.16.2 Methods

24.16.3 Constructor


24.16.4 Properties

24.16.5 Handle as Integer

Notes: (Read and Write property)
24.17. CLASS EKOBJECTMBS

24.17  class EKObjectMBS

24.17.1  class EKObjectMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 
Function: The EKObject class is an abstract superclass for all Event Kit classes whose instances are persistent.
Notes: It provides fine control when saving and restoring property settings. For example, you can find out if a persistent object was modified locally and whether it needs to be saved. If the object has changed in the event store since it was fetched, you can refresh the local copy by keeping local changes or by removing local changes. You can also roll back the object to the state when it was first fetched.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

24.17.2  Methods

24.17.3  Constructor

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 
Function: The private constructor.

24.17.4  hasChanges as boolean

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 
Function: Returns whether this object or any of the objects it contains has uncommitted changes.
Notes: Returns true if there are uncommitted changes; otherwise, false.

24.17.5  isNew as boolean

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 
Function: Returns whether this object has ever been saved.
Notes: Returns true if the object has not been saved; otherwise, false.

24.17.6  refresh as boolean

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 
Function: Merges changes to this object with the latest saved values.
Notes:
If the operation is successful, YES; if the object was deleted in the event store, false. If this method returns false, the object should be released.

This method merges the local changes to properties of this object with the latest values in the event store. This method updates only properties that have not been modified locally, so you do not lose any changes by invoking this method. You can also use this method to see whether an object was deleted from the event store.

**24.17.7 reset**

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns this object to its saved state. **Notes:** This method updates all the properties of this object with the corresponding values in the event store. Any local changes that were not saved before invoking this method are lost. This method does nothing if the object was never saved.

**24.17.8 rollback**

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Rolls back the property values of this object to its original state when it was first fetched. **Notes:** Any local changes to this object are lost when invoking this method. This method does not refetch property values from the event store. This method does nothing if the object was never changed.

**24.17.9 Properties**

**24.17.10 Handle as Integer**

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Internal object reference. **Notes:** (Read and Write property)
24.18. CLASS EKPARTICIPANTMBS

24.18 class EKParticipantMBS

24.18.1 class EKParticipantMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

Function: An EKParticipant object represents a participant in a calendar event.

Notes:
A participant can be a person, group, room, or other resource.

Do not create EKParticipant objects directly. Instead, use the property attendees on EKCalendarItem to return an array of EKParticipant objects.

Event Kit cannot add participants to an event nor change participant information. Use the properties in this class to get information about a participant.
Subclass of the EKObjectMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

24.18.2 Methods

24.18.3 ABPersonInAddressBook(addressBook as Variant) as Variant

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

Function: Returns the address book record that represents the participant.

Notes:
Please pass a ABAddressbookMBS object for the addressBook parameter. You get back a ABPersonMBS object.
The address book record for the participant, or nil if the record is not found.
This method searches for a record match based on the participants email address.

24.18.4 Constructor

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

Function: The private constructor.

24.18.5 copy as EKParticipantMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

Function: Creates a copy of the participant.
24.18.6 Properties

24.18.7 isCurrentUser as Boolean

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: A Boolean value indicating whether this participant represents the owner of this account.  
**Notes**: (Read only property)

24.18.8 name as String

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: The participants name.  
**Notes**: (Read only property)

24.18.9 participantRole as Integer

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: The participants role in the event.  
**Notes**: (Read only property)

24.18.10 participantStatus as Integer

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: The participants attendance status.  
**Notes**: (Read only property)

24.18.11 participantType as Integer

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: The participants type.  
**Notes**: (Read only property)
24.18. **CLASS EKPARTICIPANTMBS**

### 24.18.12 person as Variant

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** The person in the shared addressbook instance.

**Notes:**
Value is an ABPersonMBS object.
(Read only property)

### 24.18.13 URL as String

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** The URL representing this participant.

**Notes:** (Read only property)

### 24.18.14 Constants

#### 24.18.15 kRoleChair = 3

MBS Mac64bit Plugin, Plugin Version: 15.3.

**Function:** Represents a participants role for an event.

**Notes:** The participant is the chair of the event.

#### 24.18.16 kRoleNonParticipant = 4

MBS Mac64bit Plugin, Plugin Version: 15.3.

**Function:** Represents a participants role for an event.

**Notes:** The participant does not have an active role in the event.

#### 24.18.17 kRoleOptional = 2

MBS Mac64bit Plugin, Plugin Version: 15.3.

**Function:** Represents a participants role for an event.

**Notes:** The participants attendance is optional.

#### 24.18.18 kRoleRequired = 1

MBS Mac64bit Plugin, Plugin Version: 15.3.

**Function:** Represents a participants role for an event.

**Notes:** The participants attendance is required.
24.18.19 $k\text{RoleUnknown} = 0$

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** Represents a participant’s role for an event. **Notes:** The participant’s role is unknown.

24.18.20 $k\text{StatusAccepted} = 2$

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the status constants. **Notes:** The participant has accepted the event.

24.18.21 $k\text{StatusCompleted} = 6$

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the status constants. **Notes:** The participant’s event has completed.

24.18.22 $k\text{StatusDeclined} = 3$

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the status constants. **Notes:** The participant has declined the event.

24.18.23 $k\text{StatusDelegated} = 5$

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the status constants. **Notes:** The participant has delegated attendance to another participant.

24.18.24 $k\text{StatusInProcess} = 7$

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the status constants. **Notes:** The participant’s event is currently in process.

24.18.25 $k\text{StatusPending} = 1$

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the status constants. **Notes:** The participant has yet to respond to the event.
24.18.26  kStatusTentative = 4

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the status constants.
**Notes:** The participants attendance status is tentative.

24.18.27  kStatusUnknown = 0

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the status constants.
**Notes:** The participants attendance status is unknown.

24.18.28  kTypeGroup = 4

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** Represents a participants type.
**Notes:** The participant is a group.

24.18.29  kTypePerson = 1

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** Represents a participants type.
**Notes:** The participant is a person.

24.18.30  kTypeResource = 3

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** Represents a participants type.
**Notes:** The participant is a resource.

24.18.31  kTypeRoom = 2

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** Represents a participants type.
**Notes:** The participant is a room.

24.18.32  kTypeUnknown = 0

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** Represents a participants type.
**Notes:** The participants type is unknown.
24.19 class EKRecurrenceDayOfWeekMBS

24.19.1 class EKRecurrenceDayOfWeekMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The EKRecurrenceDayOfWeek class represents a day of the week for use with an EKRecurrenceRule object.

**Notes:** A day of the week can optionally have a week number, indicating a specific day in the recurrence rules frequency. For example, a day of the week with a day value of Tuesday and a week number of 2 would represent the second Tuesday of every month in a monthly recurrence rule, and the second Tuesday of every year in a yearly recurrence rule. A day of the week with a week number of 0 ignores its week number.

24.19.2 Methods

24.19.3 Constructor(dayOfTheWeek as Integer)

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns a day of the week with a given day and week number.

**Notes:**

dayOfTheWeek: The day of the week. Values range from 1 to 7, with Sunday being 1.
weekNumber: Optional, the week number.

See also:

- 24.19.4 Constructor(dayOfTheWeek as Integer, weekNumber as Integer)

24.19.4 Constructor(dayOfTheWeek as Integer, weekNumber as Integer)

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns a day of the week with a given day and week number.

**Notes:**

dayOfTheWeek: The day of the week. Values range from 1 to 7, with Sunday being 1.
weekNumber: Optional, the week number.

See also:

- 24.19.3 Constructor(dayOfTheWeek as Integer)

24.19.5 copy as EKRecurrenceDayOfWeekMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy of this object.
24.19. **CLASS EKRECURRENCEDAYOFWEEKMBS**

### 24.19.6 dayOfWeek(dayOfTheWeek as Integer) as EKRecurrenceDayOfWeekMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns a day of the week with a given day.
**Notes:**
The week number of the returned day of the week is 0.
Values range from 1 to 7, with Sunday being 1.
See also:
- 24.19.7 dayOfWeek(dayOfTheWeek as Integer, weekNumber as Integer) as EKRecurrenceDayOfWeekMBS

### 24.19.7 dayOfWeek(dayOfTheWeek as Integer, weekNumber as Integer) as EKRecurrenceDayOfWeekMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an autoreleased day of the week with a given day and week number.
**Notes:**
dayOfTheWeek: The day of the week. Values range from 1 to 7, with Sunday being 1.
weekNumber: The week number.
See also:
- 24.19.6 dayOfWeek(dayOfTheWeek as Integer) as EKRecurrenceDayOfWeekMBS

### 24.19.8 Properties

#### 24.19.9 dayOfTheWeek as Integer

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The day of the week.
**Notes:**
Values are from 1 to 7, with Sunday being 1.
(Read only property)

#### 24.19.10 Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Internal object reference.
**Notes:** (Read and Write property)
24.19.11 weekNumber as Integer

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** The week number of the day of the week.

**Notes:**
Values range from 53 to 53. A negative value indicates a value from the end of the range. 0 indicates the week number is irrelevant.
(Read only property)

24.19.12 Constants

24.19.13 kFriday = 6

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** Day constant for Friday.

**Notes:** Friday

24.19.14 kMonday = 2

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** Day constant for Monday.

**Notes:** Monday

24.19.15 kSaturday = 7

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** Day constant for Saturday.

**Notes:** Saturday

24.19.16 kSunday = 1

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** Day constant for Sunday.

**Notes:** Sunday

24.19.17 kThursday = 5

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** Day constant for Thursday.

**Notes:** Thursday
24.19. CLASS EKRECURRENCE\DAYOFWEEKMBS

24.19.18 kTuesday = 3

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** Day constant for Tuesday.
**Notes:** Tuesday

24.19.19 kWednesday = 4

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** Day constant for Wednesday.
**Notes:** Wednesday
24.20 class EKRecurrenceEndMBS

24.20.1 class EKRecurrenceEndMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The EKRecurrenceEnd class defines the end of a recurrence rule defined by an EKRecurrenceRule object.

**Notes:** The recurrence end can be specified by a date (date-based) or by a maximum count of occurrences (count-based). An event which is set to never end should have its EKRecurrenceEnd set to nil.

24.20.2 Methods

24.20.3 Constructor(endDate as date)

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns a date-based recurrence end with a given end date.

**Notes:** The end date argument must be a valid NSDate and not nil; otherwise an exception will be raised.

See also:

- 24.20.4 Constructor(occurrenceCount as Integer)

24.20.4 Constructor(occurrenceCount as Integer)

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns a count-based recurrence end with a given maximum occurrence count.

**Notes:** The maximum occurrence count argument must be a positive integer and not 0; otherwise an exception will be raised.

See also:

- 24.20.3 Constructor(endDate as date)

24.20.5 copy as EKRecurrenceEndMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy of the object.

24.20.6 recurrenceEndWithEndDate(endDate as date) as EKRecurrenceEndMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns a date-based recurrence end with a given end date.
24.20. CLASS EKRECURRENCEENDMBS

Notes: The end date argument must be a valid NSDate and not nil; otherwise an exception will be raised.

24.20.7 recurrenceEndWithOccurrenceCount(occurrenceCount as Integer) as EKRecurrenceEndMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Initializes and returns a count-based recurrence end with a given maximum occurrence count. Notes: The maximum occurrence count argument must be a positive integer and not 0; otherwise an exception will be raised.

24.20.8 Properties

24.20.9 endDate as Date

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The end date of the recurrence end, or nil if the recurrence end is count-based. Notes: (Read only property)

24.20.10 Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Internal object reference. Notes: (Read and Write property)

24.20.11 occurrenceCount as Integer

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The occurrence count of the recurrence end, or 0 if the recurrence end is date-based. Notes: (Read only property)
24.21 class EKRecurrenceRuleMBS

24.21.1 class EKRecurrenceRuleMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  
**Function:** The EKRecurrenceRule class is used to describe the recurrence pattern for a recurring event.  
**Notes:**  
After you create a recurrence rule, assign it to an event with the recurrenceRule method of EKEvent.  
Recurrence rules can have an end, represented by an EKRecurrenceEnd object. The end can be based on a specific date or a maximum number of occurrences.  
Subclass of the EKObjectMBS class.

24.21.2 Methods

24.21.3 Constructor(type as Integer, interval as Integer, days() as EKRecurrenceDayOfWeekMBS, monthDays() as Integer, months() as Integer, weeksOfTheYear() as Integer, daysOfTheYear() as Integer, setPositions() as Integer, end as EKRecurrenceEndMBS = nil)

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  
**Function:** Initializes and returns a recurrence rule with a given frequency and additional scheduling information.  
**Notes:**  
type: The frequency of the recurrence rule. Can be daily, weekly, monthly, or yearly.  
interval: The interval between instances of this recurrence. For example, a weekly recurrence rule with an interval of 2 occurs every other week. Must be greater than 0.  
days: The days of the week that the event occurs, as an array of EKRecurrenceDayOfWeek objects.  
monthDays: The days of the month that the event occurs, as an array of integers. Values can be from 1 to 31 and from -1 to -31. This parameter is only valid for recurrence rules of type EKRecurrenceFrequency-Monthly.  
months: the months of the year that the event occurs, as an array of integers. Values can be from 1 to 12. This parameter is only valid for recurrence rules of type EKRecurrenceFrequencyYearly.  
weeksOfTheYear: The weeks of the year that the event occurs, as an array of integers. Values can be from 1 to 53 and from -1 to -53. This parameter is only valid for recurrence rules of type EKRecurrenceFrequencyYearly.  
daysOfTheYear: The days of the year that the event occurs, as an array of integers. Values can be from 1 to 366 and from -1 to -366. This parameter is only valid for recurrence rules of type EKRecurrenceFrequencyYearly.  
setPositions: An array of ordinal numbers that filters which recurrences to include in the recurrence rules frequency. See setPositions for more information.  
end: The end of the recurrence rule.
Handle is zero if invalid values are provided.

Negative values indicate counting backwards from the end of the recurrence rules frequency.

See also:

- 24.21.4 Constructor(type as Integer, interval as Integer, end as EKRecurrenceEndMBS = nil)

### 24.21.4 Constructor(type as Integer, interval as Integer, end as EKRecurrenceEndMBS = nil)

**MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Initializes and returns a simple recurrence rule with a given frequency, interval, and end.

**Notes:**

type: The frequency of the recurrence rule. Can be daily, weekly, monthly, or yearly.

interval: The interval between instances of this recurrence. For example, a weekly recurrence rule with an interval of 2 occurs every other week. Must be greater than 0.

end: The end of the recurrence rule.

Handle is zero if invalid values are provided.

See also:

- 24.21.3 Constructor(type as Integer, interval as Integer, days() as EKRecurrenceDayOfWeekMBS, monthDays() as Integer, months() as Integer, weeksOfTheYear() as Integer, daysOfTheYear() as Integer, setPositions() as Integer, end as EKRecurrenceEndMBS = nil)

### 24.21.5 copy as EKRecurrenceRuleMBS

**MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Creates a copy of the recurrence rule.

### 24.21.6 daysOfTheMonth as Integer()

**MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** The days of the month associated with the recurrence rule, as an array of integers.

**Notes:**

Values can be from 1 to 31 and from -1 to -31. This property value is valid only for recurrence rules that were initialized with specific days of the month and a frequency type of EKRecurrenceFrequencyMonthly. Negative values indicate counting backwards from the end of the month.
24.21.7 **daysOfWeek as Integer()**

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The days of the week associated with the recurrence rule, as an array of EKRecurrenceDayOfWeek objects.

**Notes:** This property value is valid only for recurrence rules that were initialized with specific days of the week and a frequency type of EKRecurrenceFrequencyWeekly, EKRecurrenceFrequencyMonthly, or EKRecurrenceFrequencyYearly.

24.21.8 **daysOfYear as Integer()**

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The days of the year associated with the recurrence rule, as an array of integers.

**Notes:**

Values can be from 1 to 366 and from -1 to -366. This property value is valid only for recurrence rules initialized with a frequency type of EKRecurrenceFrequencyYearly.

Negative values indicate counting backwards from the end of the year.

24.21.9 **monthsOfYear as Integer()**

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The months of the year associated with the recurrence rule, as an array of integers.

**Notes:** Values can be from 1 to 12. This property value is valid only for recurrence rules initialized with specific months of the year and a frequency type of EKRecurrenceFrequencyYearly.

24.21.10 **setPositions as Integer()**

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An array of ordinal numbers that filters which recurrences to include in the recurrence rules frequency.

**Notes:**

For example, a yearly recurrence rule that has a daysOfWeek value that specifies Monday through Friday, and a setPositions array containing 2 and -1, occurs only on the second weekday and last weekday of every year.

Values can be from 1 to 366 and from -1 to -366.

Negative values indicate counting backwards from the end of the recurrence rules frequency (week, month,
24.21.11 weeksOfTheYear as Integer()

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The weeks of the year associated with the recurrence rule, as an array of integers.
Notes:
Values can be from 1 to 53 and from -1 to -53. This property value is valid only for recurrence rules initialized with specific weeks of the year and a frequency type of EKRecurrenceFrequencyYearly. Negative values indicate counting backwards from the end of the year.

24.21.12 Properties

24.21.13 calendarIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The identifier for the recurrence rules calendar.
Notes: (Read only property)

24.21.14 firstDayOfTheWeek as Integer

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Indicates which day of the week the recurrence rule treats as the first day of the week.
Notes:
Values of 1 to 7 correspond to Sunday through Saturday. A value of 0 indicates that this property is not set for the recurrence rule.
(Read only property)

24.21.15 frequency as Integer

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The frequency of the recurrence rule.
Notes: (Read only property)
24.21.16  interval as Integer

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Specifies how often the recurrence rule repeats over the unit of time indicated by its frequency.
Notes: For example, a recurrence rule with a frequency type of EKRecurrenceFrequencyWeekly and an interval of 2 repeats every two weeks.
(Read only property)

24.21.17  recurrenceEnd as EKRecurrenceEndMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Indicates when the recurrence rule ends.
Notes: This can be represented by an end date or a number of occurrences.
(Read and Write property)

24.21.18  Constants

24.21.19  kRecurrenceFrequencyDaily = 0

MBS Mac64bit Plugin, Plugin Version: 15.3. Function: One of the frequencies for recurrence rules.
Notes: Indicates a daily recurrence rule.

24.21.20  kRecurrenceFrequencyMonthly = 2

MBS Mac64bit Plugin, Plugin Version: 15.3. Function: One of the frequencies for recurrence rules.
Notes: Indicates a monthly recurrence rule.

24.21.21  kRecurrenceFrequencyWeekly = 1

MBS Mac64bit Plugin, Plugin Version: 15.3. Function: One of the frequencies for recurrence rules.
Notes: Indicates a weekly recurrence rule.
24.21.22  kRecurrenceFrequencyYearly = 3

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the frequencies for recurrence rules. **Notes:** Indicates a yearly recurrence rule.
24.22  class EKReminderMBS

24.22.1  class EKReminderMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** An instance of the EKReminder class represents a reminder added to a calendar in the Event
Kit framework.

**Notes:**
Use the reminderWithEventStore: method to create a new reminder. Use the properties in the class to get
and modify certain information about a reminder.
Subclass of the EKCalendarItemMBS class.

24.22.2  Methods

24.22.3  Constructor(eventStore as EKEventStoreMBS)

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** Creates and returns a new reminder in the given event store.

24.22.4  reminderWithEventStore(eventStore as EKEventStoreMBS) as EKReminderMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: No, Mac: Yes, Win: No, Linux: No.

**Function:** Creates and returns a new reminder in the given event store.

24.22.5  Properties

24.22.6  completed as Boolean

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** A Boolean value determining whether or not the reminder is marked completed.

**Notes:**
Setting this property to true will set completionDate to the current date; setting this property to false will
set completionDate to nil.

If the reminder was completed using a different client, you may encounter the case where this property is
true, but completionDate is nil.
(Read and Write property)
24.22.7 completionDate as date

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The completion date as a date.  
**Notes:** (Read and Write property)

24.22.8 dueDate as date

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The due date.  
**Notes:** (Read only property)

24.22.9 dueDateComponents as NSDateComponentsMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The date by which the reminder should be completed.  
**Notes:**

The use of date components allows the due date and its time zone to be represented in a single property. A nil time zone represents a floating date. Setting a date component without an hour, minute and second component will set the reminder to be an all-day reminder. If this property is set, the calendar must be set to NSGregorianCalendar; otherwise an exception is raised.

This componentss timeZone property is independent of time zone properties on startDateComponents and its super EKCalendarItem object. By default, the due date is set to the system time zone.

On iOS, Event Kit requires that a start date is set if the due date is set, however this is not a requirement on OS X.  
(Read and Write property)

24.22.10 priority as Integer

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The priority of the reminder.  
**Notes:**

Priorities run from 1 (highest) to 9 (lowest). A priority of 0 means no priority. Saving a reminder with any other priority will fail. Per RFC 5545, priorities of 1-4 are considered "high," a priority of 5 is "medium," and priorities of 6-9 are "low."
24.22.11 startDateComponents as NSDateComponentsMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

Function: The start date of the task.

Notes:

The use of date components allows the start date and its time zone to be represented in a single property. A nil time zone represents a floating date. Setting a date component without an hour, minute and second component will set the reminder to be an all-day reminder. If this property is set, the calendar must be set to NSGregorianCalendar; otherwise an exception is raised.

The start date component's timeZone property corresponds to the timeZone property on EKCalendarItem. A change in one value will cause a change in the other. Setting the time zone directly on the components does not guarantee that your changes will be saved; instead, pull this property from the reminder, set the time zone on it, and assign it back to the reminder:

(Read and Write property)

24.22.12 Constants

24.22.13 kPriorityHigh = 1

MBS Mac64bit Plugin, Plugin Version: 15.3. Function: One of the priority constants.

Notes: High

24.22.14 kPriorityLow = 9

MBS Mac64bit Plugin, Plugin Version: 15.3. Function: One of the priority constants.

Notes: Low

24.22.15 kPriorityMedium = 5

MBS Mac64bit Plugin, Plugin Version: 15.3. Function: One of the priority constants.

Notes: Medium
24.22. CLASS EKREMINDERMBS

24.22.16 kPriorityNone = 0

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the priority constants. **Notes:** No priority
24.23 class EKSourceMBS

24.23.1 class EKSourceMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** An instance of the EKSource class represents the account that a calendar belongs to.

**Notes:**
You do not create instances of this class. You retrieve EKSource objects from an EKEventStore object. Use the sources property to get all the EKSource objects for an event store, and use the methods in this class to access properties of the source object.

Subclass of the EKObjectMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

24.23.2 Methods

24.23.3 calendarsForEntityType(types as Integer) as EKCalendarMBS()

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** Returns the calendars that belong to this source object that support a particular entity type.

**Notes:** entityType: The entity type of either an event or a reminder.

24.23.4 Constructor

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** The private constructor.

24.23.5 Properties

24.23.6 sourceIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** A unique identifier for the source object.

**Notes:** (Read only property)

24.23.7 sourceType as Integer

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** The type of this source object.
24.23. **CLASS EKSOURCEMBS**

**Notes:** (Read only property)

24.23.8 **title as String**

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of this source object.  
**Notes:** (Read only property)

24.23.9 **Constants**

24.23.10 **kTypeBirthdays = 5**

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the source types.  
**Notes:** Represents a birthday source.

24.23.11 **kTypeCalDAV = 2**

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the source types.  
**Notes:** Represents a CalDAV or iCloud source.

24.23.12 **kTypeExchange = 1**

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the source types.  
**Notes:** Represents an Exchange source.

24.23.13 **kTypeLocal = 0**

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the source types.  
**Notes:** Represents a local source.

24.23.14 **kTypeMobileMe = 3**

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the source types.  
**Notes:** Represents a MobileMe source.
24.23.15  kTypeSubscribed = 4

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the source types.  
**Notes:** Represents a subscribed source.
24.24. **CLASS EKSTRUCTUREDLLOCATIONMBS**

24.24 **class EKStructuredLocationMBS**

24.24.1 **class EKStructuredLocationMBS**

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The EKStructuredLocation class specifies a geofence that can be used to trigger the alarm of a calendar item. **Notes:**

Use `locationWithTitle` to create a new structured location, then set it to the `structuredLocation` property of an `EKAlarm` object.

Subclass of the `EKObjectMBS` class.

24.24.2 **Methods**

24.24.3 **Constructor(title as string)**

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new structured location. **Notes:** `title`: The title of the location.

24.24.4 **copy as EKObjectMBS**

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy of the location.

24.24.5 **locationWithTitle(title as string) as EKStructuredLocationMBS**

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new structured location. **Notes:** `title`: The title of the location.

24.24.6 **Properties**

24.24.7 **geoLocation as Variant**

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The core location. **Notes:**
Value is a CLLocationMBS object.
(Read and Write property)

### 24.24.8 radius as Double

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A minimum distance from the core location that would trigger the alarm or reminder.
**Notes:**
To use the default radius, set this property to 0.
(Read and Write property)

### 24.24.9 title as String

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The title of the location.
**Notes:** (Read and Write property)
Chapter 25

Canon EOS Digital

25.1 class EdsBaseMBS

25.1.1 class EdsBaseMBS

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The base object class.

25.1.2 Methods

25.1.3 ChildCount as UInt32

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the number of child objects of the designated object. **Notes:** Example: Number of files in a directory. Lasterror is set.

25.1.4 GetPropertyData(PropertyID as UInt32, Param as Int32 = 0) as Memoryblock

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets property information from the object. **Notes:** PropertyID: Designate the property ID.
Param: Designate additional property information. Use additional property information if multiple items of information such as picture styles can be set or retrieved for a property. Values that can be designated for each property are as follows.

LastError is set.

The plugin queries size first, allocates storage and queries value and returns it to you as function result. So please check Lasterror after calling so you know whether an error occurred. Returns EDS_ERR_OK on normal completion. Otherwise, see the EDS Error Lists for error codes. See Also

Regarding retrieval of the camera property data in particular, the conditions that can be retrieved vary depending on the values of other property data. For further information, see Properties in SDK Manual.

25.1.5 GetPropertyDataBool(PropertyID as UInt32, Param as Int32 = 0) as Boolean

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Gets property information from the object. Notes:

PropertyID: Designate the property ID. Param: Designate additional property information. Use additional property information if multiple items of information such as picture styles can be set or retrieved for a property. Values that can be designated for each property are as follows.

LastError is set.

The plugin queries size first, allocates storage and queries value and returns it to you as function result. So please check Lasterror after calling so you know whether an error occurred. Returns EDS_ERR_OK on normal completion. Otherwise, see the EDS Error Lists for error codes. See Also

Regarding retrieval of the camera property data in particular, the conditions that can be retrieved vary depending on the values of other property data. For further information, see Properties in SDK Manual.

25.1.6 GetPropertyDataInt32(PropertyID as UInt32, Param as Int32 = 0) as Int32

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Gets property information from the object. Notes:
25.1. CLASS EDSBASEMBS

PropertyID: Designate the property ID.
Param: Designate additional property information. Use additional property information if multiple items of information such as picture styles can be set or retrieved for a property.
Values that can be designated for each property are as follows.

Lasterror is set.

The plugin queries size first, allocates storage and queries value and returns it to you as function result. So please check Lasterror after calling so you know whether an error occurred.
Returns EDS_ERR_OK on normal completion. Otherwise, see the EDS Error Lists for error codes. See Also

Regarding retrieval of the camera property data in particular, the conditions that can be retrieved vary depending on the values of other property data. For further information, see Properties in SDK Manual.

25.1.7 GetPropertyDataInt32Array(PropertyID as UInt32, Param as Int32 = 0) as Integer()

Function: Gets property information from the object.
Notes:
PropertyID: Designate the property ID.
Param: Designate additional property information. Use additional property information if multiple items of information such as picture styles can be set or retrieved for a property.
Values that can be designated for each property are as follows.

Lasterror is set.

The plugin queries size first, allocates storage and queries value and returns it to you as function result. So please check Lasterror after calling so you know whether an error occurred.
Returns EDS_ERR_OK on normal completion. Otherwise, see the EDS Error Lists for error codes. See Also

Regarding retrieval of the camera property data in particular, the conditions that can be retrieved vary depending on the values of other property data. For further information, see Properties in SDK Manual.

25.1.8 GetPropertyDataPoint(PropertyID as UInt32, Param as Int32 = 0) as EdsPointMBS

Function: Gets property information from the object.
Notes:

PropertyID: Designate the property ID.
Param: Designate additional property information. Use additional property information if multiple items of information such as picture styles can be set or retrieved for a property.
Values that can be designated for each property are as follows.

LastError is set.

The plugin queries size first, allocates storage and queries value and returns it to you as function result. So please check Lasterror after calling so you know whether an error occurred.
Returns EDS_ERR_OK on normal completion. Otherwise, see the EDS Error Lists for error codes. See Also

Regarding retrieval of the camera property data in particular, the conditions that can be retrieved vary depending on the values of other property data. For further information, see Properties in SDK Manual.

25.1.9 GetPropertyDataRational(PropertyID as UInt32, Param as Int32 = 0) as EdsRationalMBS

Function: Gets property information from the object.
Notes:

PropertyID: Designate the property ID.
Param: Designate additional property information. Use additional property information if multiple items of information such as picture styles can be set or retrieved for a property.
Values that can be designated for each property are as follows.

LastError is set.

The plugin queries size first, allocates storage and queries value and returns it to you as function result. So please check Lasterror after calling so you know whether an error occurred.
Returns EDS_ERR_OK on normal completion. Otherwise, see the EDS Error Lists for error codes. See Also

Regarding retrieval of the camera property data in particular, the conditions that can be retrieved vary depending on the values of other property data. For further information, see Properties in SDK Manual.
25.1. CLASS EDSBASEMBS

25.1.10 GetPropertyDataRationalArray(PropertyID as UInt32, Param as Int32 = 0) as EdsRationalMBS()


Function: Gets property information from the object.

Notes:

PropertyID: Designate the property ID.
Param: Designate additional property information. Use additional property information if multiple items of information such as picture styles can be set or retrieved for a property.
Values that can be designated for each property are as follows.

Lasterror is set.

The plugin queries size first, allocates storage and queries value and returns it to you as function result. So please check Lasterror after calling so you know whether an error occurred.
Returns EDS_ERR_OK on normal completion. Otherwise, see the EDS Error Lists for error codes. See Also

Regarding retrieval of the camera property data in particular, the conditions that can be retrieved vary depending on the values of other property data. For further information, see Properties in SDK Manual.

25.1.11 GetPropertyDataRect(PropertyID as UInt32, Param as Int32 = 0) as EdsRectMBS


Function: Gets property information from the object.

Notes:

PropertyID: Designate the property ID.
Param: Designate additional property information. Use additional property information if multiple items of information such as picture styles can be set or retrieved for a property.
Values that can be designated for each property are as follows.

Lasterror is set.

The plugin queries size first, allocates storage and queries value and returns it to you as function result. So please check Lasterror after calling so you know whether an error occurred.
Returns EDS_ERR_OK on normal completion. Otherwise, see the EDS Error Lists for error codes. See Also

Regarding retrieval of the camera property data in particular, the conditions that can be retrieved vary depending on the values of other property data. For further information, see Properties in SDK Manual.
25.1.12 GetPropertyDataSize(PropertyID as UInt32, Param as Int32 = 0) as EdsSizeMBS


**Function:** Gets property information from the object.

**Notes:**

PropertyID: Designate the property ID.
Param: Designate additional property information. Use additional property information if multiple items of information such as picture styles can be set or retrieved for a property.
Values that can be designated for each property are as follows.

LastError is set.

The plugin queries size first, allocates storage and queries value and returns it to you as function result. So please check Lasterror after calling so you know whether an error occurred.

Returns EDS_ERR_OK on normal completion. Otherwise, see the EDS Error Lists for error codes. See Also Regarding retrieval of the camera property data in particular, the conditions that can be retrieved vary depending on the values of other property data. For further information, see Properties in SDK Manual.

25.1.13 GetPropertyDataString(PropertyID as UInt32, Param as Int32 = 0) as String


**Function:** Gets property information from the object.

**Notes:**

PropertyID: Designate the property ID.
Param: Designate additional property information. Use additional property information if multiple items of information such as picture styles can be set or retrieved for a property.
Values that can be designated for each property are as follows.

LastError is set.

The plugin queries size first, allocates storage and queries value and returns it to you as function result. So please check Lasterror after calling so you know whether an error occurred.

Returns EDS_ERR_OK on normal completion. Otherwise, see the EDS Error Lists for error codes. See Also Regarding retrieval of the camera property data in particular, the conditions that can be retrieved vary depending on the values of other property data. For further information, see Properties in SDK Manual.
25.1.14  **GetPropertyDataType(PropertyID as UInt32, Param as Int32 = 0) as UInt32**

**Function:** Gets property information from the object.
**Notes:**
PropertyID: Designate the property ID.
Param: Designate additional property information. Use additional property information if multiple items of information such as picture styles can be set or retrieved for a property.
Values that can be designated for each property are as follows.

Lasterror is set.

The plugin queries size first, allocates storage and queries value and returns it to you as function result. So please check Lasterror after calling so you know whether an error occurred.
Returns EDS_ERR_OK on normal completion. Otherwise, see the EDS Error Lists for error codes. See Also

Regarding retrieval of the camera property data in particular, the conditions that can be retrieved vary depending on the values of other property data. For further information, see Properties in SDK Manual.

25.1.15  **GetPropertyDataUInt32(PropertyID as UInt32, Param as Int32 = 0) as UInt32**

**Function:** Gets property information from the object.
**Example:**
```plaintext
// we set bit for redirecting output to PC, leave other bits as they are.
dim device as UInt32 = camera.GetPropertyDataUInt32(camera.kEdsPropID_Evf_OutputDevice)
if camera.lasterror = EDSModuleMBS.EDS_ERR_OK then

device = Bitwise.BitOr(device, EDSModuleMBS.kEdsEvfOutputDevice_PC)
camera.SetPropertyDataUInt32 camera.kEdsPropID_Evf_OutputDevice, 0, device
end if
```

**Notes:**
PropertyID: Designate the property ID.
Param: Designate additional property information. Use additional property information if multiple items of information such as picture styles can be set or retrieved for a property.
Values that can be designated for each property are as follows.
Lasterror is set.

The plugin queries size first, allocates storage and queries value and returns it to you as function result. So please check Lasterror after calling so you know whether an error occurred. Returns EDS_ERR_OK on normal completion. Otherwise, see the EDS Error Lists for error codes. See Also

Regarding retrieval of the camera property data in particular, the conditions that can be retrieved vary depending on the values of other property data. For further information, see Properties in SDK Manual.

25.1.16 GetPropertyDataUInt32Array(PropertyID as UInt32, Param as Int32 = 0) as UInt32()

Function: Gets property information from the object.
Notes:
PropertyID: Designate the property ID.
Param: Designate additional property information. Use additional property information if multiple items of information such as picture styles can be set or retrieved for a property.
Values that can be designated for each property are as follows.

Lasterror is set.

The plugin queries size first, allocates storage and queries value and returns it to you as function result. So please check Lasterror after calling so you know whether an error occurred.
Returns EDS_ERR_OK on normal completion. Otherwise, see the EDS Error Lists for error codes. See Also

Regarding retrieval of the camera property data in particular, the conditions that can be retrieved vary depending on the values of other property data. For further information, see Properties in SDK Manual.

25.1.17 GetPropertyDataUInt8(PropertyID as UInt32, Param as Int32 = 0) as UInt8

Function: Gets property information from the object.
Notes:
PropertyID: Designate the property ID.
Param: Designate additional property information. Use additional property information if multiple items of information such as picture styles can be set or retrieved for a property.
Values that can be designated for each property are as follows.
Lasterror is set.

The plugin queries size first, allocates storage and queries value and returns it to you as function result. So please check Lasterror after calling so you know whether an error occurred. Returns EDS_ERR_OK on normal completion. Otherwise, see the EDS Error Lists for error codes. See Also

Regarding retrieval of the camera property data in particular, the conditions that can be retrieved vary depending on the values of other property data. For further information, see Properties in SDK Manual.

25.1.18  GetPropertyDesc(PropertyID as UInt32) as Memoryblock

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets a list of property data that can be set for the object, as well as maximum and minimum values. **Notes:** PropertyID: Designate a property ID.

LastError is set. Returns a memoryblock with EdsPropertyDesc structure data. This structure has:

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>form</td>
<td>Int32(0)</td>
<td>Reserved (currently, always 0)</td>
</tr>
<tr>
<td>access</td>
<td>Int32(4)</td>
<td>Reserved (currently, always 0)</td>
</tr>
<tr>
<td>numElements</td>
<td>Int32(8)</td>
<td>Indicates the number of property data list elements stored in the PropDesc array.</td>
</tr>
<tr>
<td>propDesc</td>
<td>Int32(12+n*4)</td>
<td>A property data array. The meaning of PropDesc array elements varies depending on the property type.</td>
</tr>
</tbody>
</table>

For details on properties and the meaning of array elements that can be set in the data list, see the Properties section in SDK manual.

25.1.19  GetPropertyElementCount(PropertyID as UInt32) as UInt32

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries property description and returns the number of items for a property.
25.1.20 GetPropertySize(PropertyID as UInt32, Param as Int32 = 0) as UInt32


Function: Gets the byte size and data type of a designated property from a camera object or image object.

Notes:
PropertyID: Designate the property ID.
Param: Additional information of the property. Used to designate multiple additional items of information, if the property has such information that can be set or retrieved. For descriptions of values that can be designated for each property, see the description of Param for GetPropertyData.

Returns the property size. The data type and value returned varies depending on the property ID. See "Property Details" for further information in the SDK manual.
Lasterror is set.

25.1.21 SetProgress(progress as EdsProgressMBS, options as Integer)


Function: Sets progress events.

Notes: An event is received as notification of progress during processing that takes a relatively long time, such as downloading files from a remote camera. If you register the callback function, the EDSDK calls the callback function during execution or on completion of the following APIs. This timing can be used in updating on-screen progress bars, for example.

25.1.22 SetPropertyData(PropertyID as UInt32, Param as Int32, data as Memoryblock)


Function: Sets property data for the object.

Notes:
PropertyID: Designate the property ID.
Param: Designate additional property information. Use additional property information if multiple items of information such as picture styles can be set or retrieved for a property. For descriptions of values that can be designated for each property, see the description of Param for GetPropertyData in the manual SDK.

Property size is automatically taken from data.size by plugin and passed for you.
Lasterror is set.

Note: When you set properties of an image object (EdsImageRef), this API maintains the change internally.
25.1. **CLASS EDSBASEMBS**

25.1.23 **SetPropertyDataBool(PropertyID as UInt32, Param as Int32, data as Boolean)**


**Function:** Sets property data for the object.

**Notes:**

PropertyID: Designate the property ID.
Param: Designate additional property information. Use additional property information if multiple items of information such as picture styles can be set or retrieved for a property. For descriptions of values that can be designated for each property, see the description of Param for GetPropertyData in the manual SDK.

Property size is automatically calculated by plugin and passed for you.
LastError is set.

Note: When you set properties of an image object (EdsImageRef), this API maintains the change internally.

25.1.24 **SetPropertyDataInt32(PropertyID as UInt32, Param as Int32, data as Int32)**


**Function:** Sets property data for the object.

**Notes:**

PropertyID: Designate the property ID.
Param: Designate additional property information. Use additional property information if multiple items of information such as picture styles can be set or retrieved for a property. For descriptions of values that can be designated for each property, see the description of Param for GetPropertyData in the manual SDK.

Property size is automatically calculated by plugin and passed for you.
LastError is set.

Note: When you set properties of an image object (EdsImageRef), this API maintains the change internally.

25.1.25 **SetPropertyDataInt32Array(PropertyID as UInt32, Param as Int32, data() as Integer)**


**Function:** Sets property data for the object.

**Notes:**

PropertyID: Designate the property ID.
Param: Designate additional property information. Use additional property information if multiple items of information such as picture styles can be set or retrieved for a property. For descriptions of values that can be designated for each property, see the description of Param for GetPropertyData in the manual SDK.

Property size is automatically calculated by plugin and passed for you. Lasterror is set.

Note: When you set properties of an image object (EdsImageRef), this API maintains the change internally.

25.1.26 SetPropertyDataPoint(PropertyID as UInt32, Param as Int32, data as EdsPointMBS)

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Sets property data for the object. Notes:

PropertyID: Designate the property ID.
Param: Designate additional property information. Use additional property information if multiple items of information such as picture styles can be set or retrieved for a property. For descriptions of values that can be designated for each property, see the description of Param for GetPropertyData in the manual SDK.

Property size is automatically calculated by plugin and passed for you. Lasterror is set.

Note: When you set properties of an image object (EdsImageRef), this API maintains the change internally.

25.1.27 SetPropertyDataRational(PropertyID as UInt32, Param as Int32, data as EdsRationalMBS)

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Sets property data for the object. Notes:

PropertyID: Designate the property ID.
Param: Designate additional property information. Use additional property information if multiple items of information such as picture styles can be set or retrieved for a property. For descriptions of values that can be designated for each property, see the description of Param for GetPropertyData in the manual SDK.

Property size is automatically calculated by plugin and passed for you. Lasterror is set.
25.1. CLASS EDSBASEMBS

Note: When you set properties of an image object (EdsImageRef), this API maintains the change internally.

25.1.28 SetPropertyDataRationalArray(PropertyID as U32, Param as I32, data() as EdsRationalMBS)


Function: Sets property data for the object.

Notes:

PropertyID: Designate the property ID.
Param: Designate additional property information. Use additional property information if multiple items of information such as picture styles can be set or retrieved for a property. For descriptions of values that can be designated for each property, see the description of Param for GetPropertyData in the manual SDK.

Property size is automatically calculated by plugin and passed for you.
Lasterror is set.

Note: When you set properties of an image object (EdsImageRef), this API maintains the change internally.

25.1.29 SetPropertyDataRect(PropertyID as U32, Param as I32, data as EdsRectMBS)


Function: Sets property data for the object.

Notes:

PropertyID: Designate the property ID.
Param: Designate additional property information. Use additional property information if multiple items of information such as picture styles can be set or retrieved for a property. For descriptions of values that can be designated for each property, see the description of Param for GetPropertyData in the manual SDK.

Property size is automatically calculated by plugin and passed for you.
Lasterror is set.

Note: When you set properties of an image object (EdsImageRef), this API maintains the change internally.
25.1.30 **SetPropertyDataSize(PropertyID as UInt32, Param as Int32, data as EdsSizeMBS)**


**Function:** Sets property data for the object.

**Notes:**

PropertyID: Designate the property ID.
Param: Designate additional property information. Use additional property information if multiple items of information such as picture styles can be set or retrieved for a property. For descriptions of values that can be designated for each property, see the description of Param for GetPropertyData in the manual SDK.

Property size is automatically calculated by plugin and passed for you.
Lasterror is set.

Note: When you set properties of an image object (EdsImageRef), this API maintains the change internally.

25.1.31 **SetPropertyDataString(PropertyID as UInt32, Param as Int32, data as String)**


**Function:** Sets property data for the object.

**Notes:**

PropertyID: Designate the property ID.
Param: Designate additional property information. Use additional property information if multiple items of information such as picture styles can be set or retrieved for a property. For descriptions of values that can be designated for each property, see the description of Param for GetPropertyData in the manual SDK.

Property size is automatically calculated by plugin and passed for you.
Lasterror is set.

Note: When you set properties of an image object (EdsImageRef), this API maintains the change internally.

25.1.32 **SetPropertyDataUInt32(PropertyID as UInt32, Param as Int32, data as UInt32)**


**Function:** Sets property data for the object.

**Example:**
/ we set bit for redirecting output to PC, leave other bits as they are.

```pascal
dim device as UInt32 = camera.GetPropertyDataUInt32(camera.kEdsPropID_Evf_OutputDevice)
if camera.lasterror = EDSModuleMBS.EDS_ERR_OK then

device = Bitwise.BitOr(device, EDSModuleMBS.kEdsEvfOutputDevice_PC)
camera.SetPropertyDataUInt32 camera.kEdsPropID_Evf_OutputDevice, 0, device
end if
```

Notes:

PropertyID: Designate the property ID.
Param: Designate additional property information. Use additional property information if multiple items of information such as picture styles can be set or retrieved for a property. For descriptions of values that can be designated for each property, see the description of Param for GetPropertyData in the manual SDK.

Property size is automatically calculated by plugin and passed for you.
Lasterror is set.

Note: When you set properties of an image object (EdsImageRef), this API maintains the change internally.

25.1.33 SetPropertyDataUInt32Array(PropertyID as UInt32, Param as Int32, data() as UInt32)

Function: Sets property data for the object.
Notes:

PropertyID: Designate the property ID.
Param: Designate additional property information. Use additional property information if multiple items of information such as picture styles can be set or retrieved for a property. For descriptions of values that can be designated for each property, see the description of Param for GetPropertyData in the manual SDK.

Property size is automatically calculated by plugin and passed for you.
Lasterror is set.

Note: When you set properties of an image object (EdsImageRef), this API maintains the change internally.
25.1.34 SetPropertyDataUInt8(PropertyID as UInt32, Param as Int32, data as UInt8)

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets property data for the object. 
**Notes:**

PropertyID: Designate the property ID.
Param: Designate additional property information. Use additional property information if multiple items of information such as picture styles can be set or retrieved for a property. For descriptions of values that can be designated for each property, see the description of Param for GetPropertyData in the manual SDK.

Property size is automatically calculated by plugin and passed for you. 
LastError is set.

Note: When you set properties of an image object (EdsImageRef), this API maintains the change internally.

25.1.35 Properties

25.1.36 DataRef as String

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The reference to stream data. 
**Notes:** (Read only property)

25.1.37 Handle as Integer

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal object reference. 
**Notes:** (Read and Write property)

25.1.38 Lasterror as Integer

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last error code of last command. 
**Notes:**

See EDS_ERR_* constants in EDSModuleMBS.
(Read and Write property)
25.1. CLASS EDSBASEMBS

25.1.39 MemoryRef as Memoryblock

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The reference to stream data.  
**Notes:** (Read only property)

25.1.40 Progress as EdsProgressMBS

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Register a progress event.  
**Notes:** (Read only property)

25.1.41 Constants

25.1.42 kEdsDataType_Bool = 1

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the data type constants.  
**Notes:** Boolean

25.1.43 kEdsDataType_Bool_Array = 30

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the data type constants.  
**Notes:** Array of Boolean

25.1.44 kEdsDataType_ByteBlock = 14

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the data type constants.  
**Notes:** Bytes (use memoryblock)

25.1.45 kEdsDataType_Double = 13

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the data type constants.  
**Notes:** Double
25.1.46  \texttt{kEdsDataType\_Float} = 12

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the data type constants.  
\textbf{Notes}: Float

25.1.47  \texttt{kEdsDataType\_FocusInfo} = 101

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the data type constants.  
\textbf{Notes}: Focus info. Use \texttt{EdsFocusInfoMBS}.

25.1.48  \texttt{kEdsDataType\_Int16} = 4

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the data type constants.  
\textbf{Notes}: Int16

25.1.49  \texttt{kEdsDataType\_Int16\_Array} = 32

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the data type constants.  
\textbf{Notes}: Array of Int16

25.1.50  \texttt{kEdsDataType\_Int32} = 8

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the data type constants.  
\textbf{Notes}: Int32

25.1.51  \texttt{kEdsDataType\_Int32\_Array} = 33

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the data type constants.  
\textbf{Notes}: Array of Int32

25.1.52  \texttt{kEdsDataType\_Int64} = 10

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the data type constants.  
\textbf{Notes}: Int64
25.1.53  \textit{kEdsDataType\_Int8} = 3

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the data type constants.  
\textbf{Notes:} Int8

25.1.54  \textit{kEdsDataType\_Int8\_Array} = 31

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the data type constants.  
\textbf{Notes:} Array of Int8

25.1.55  \textit{kEdsDataType\_PictureStyleDesc} = 102

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the data type constants.  
\textbf{Notes:} A Picture style description. Use EdsPictureStyleDescMBS.

25.1.56  \textit{kEdsDataType\_Point} = 21

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the data type constants.  
\textbf{Notes:} Point (use EdsPointMBS)

25.1.57  \textit{kEdsDataType\_Rational} = 20

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the data type constants.  
\textbf{Notes:} Rational value

25.1.58  \textit{kEdsDataType\_Rational\_Array} = 37

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the data type constants.  
\textbf{Notes:} Array of rational numbers (Use EdsRationalMBS)

25.1.59  \textit{kEdsDataType\_Rect} = 22

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the data type constants.  
\textbf{Notes:} Rectangle (use EdsRectMBS)
25.1.60 kEdsDataType_String = 2

MBS Cameras Plugin, Plugin Version: 12.1. Function: One of the data type constants. Notes: String value

25.1.61 kEdsDataType_Time = 23

MBS Cameras Plugin, Plugin Version: 12.1. Function: One of the data type constants. Notes: Time (use EdsTimeMBS)

25.1.62 kEdsDataType_UInt16 = 7

MBS Cameras Plugin, Plugin Version: 12.1. Function: One of the data type constants. Notes: UInt16

25.1.63 kEdsDataType_UInt16_Array = 35

MBS Cameras Plugin, Plugin Version: 12.1. Function: One of the data type constants. Notes: Array of UInt16

25.1.64 kEdsDataType_UInt32 = 9

MBS Cameras Plugin, Plugin Version: 12.1. Function: One of the data type constants. Notes: UInt32

25.1.65 kEdsDataType_UInt32_Array = 36

MBS Cameras Plugin, Plugin Version: 12.1. Function: One of the data type constants. Notes: Array of UInt32

25.1.66 kEdsDataType_UInt64 = 11

MBS Cameras Plugin, Plugin Version: 12.1. Function: One of the data type constants. Notes: UInt64
25.1. CLASS EDSBASEMBS

25.1.67  kEdsDataType_UINT8 = 6

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the data type constants.  
**Notes:** UInt8

25.1.68  kEdsDataType_UINT8_Array = 34

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the data type constants.  
**Notes:** Array of UInt8

25.1.69  kEdsDataType_Unknown = 0

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the data type constants.  
**Notes:** Unknown

25.1.70  kEdsProgressOption_Done = 1

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Progress Option Constants  
**Notes:** Call a progress callback function when the progress reaches 100% .

25.1.71  kEdsProgressOption_NoReport = 0

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Progress Option Constants  
**Notes:** Do not call a progress callback function.

25.1.72  kEdsProgressOption_Periodically = 2

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Progress Option Constants  
**Notes:** Call a progress callback function periodically.

25.1.73  kEdsPropID_AEBracket = & h0000040e

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants.  
**Notes:** Please check the ESDK API Programming Reference for details.
25.1.74  kEdsPropID_AEMode = & h00000400


25.1.75  kEdsPropID_AEModeSelect = & h00000436

MBS Cameras Plugin, Plugin Version: 12.5. Function: One of the property constants. Notes: New in 2.11 SDK.

25.1.76  kEdsPropID_AFMode = & h00000404


25.1.77  kEdsPropID_Artist = & h00000418


25.1.78  kEdsPropID_AtCapture_Flag = & h80000000


25.1.79  kEdsPropID_Av = & h00000405

25.1. **CLASS EDSBASEMBS**

25.1.80  **kEdsPropID_AvailableShots = & h0000040a**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants.  
**Notes:** Please check the ESDK API Programming Reference for details.

25.1.81  **kEdsPropID_BatteryLevel = & h00000008**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants.  
**Notes:** Please check the ESDK API Programming Reference for details.

25.1.82  **kEdsPropID_BatteryQuality = & h00000010**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants.  
**Notes:** Please check the ESDK API Programming Reference for details.

25.1.83  **kEdsPropID_BodyIDEx = & h00000015**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants.  
**Notes:** Please check the ESDK API Programming Reference for details.

25.1.84  **kEdsPropID_Bracket = & h00000009**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants.  
**Notes:** Please check the ESDK API Programming Reference for details.

25.1.85  **kEdsPropID_CFn = & h00000009**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants.  
**Notes:** Please check the ESDK API Programming Reference for details.

25.1.86  **kEdsPropID_ClickWBPoint = & h00000301**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants.  
**Notes:** Please check the ESDK API Programming Reference for details.
25.1.87 \texttt{kEdsPropID\_ColorMatrix} = \& h00000113

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the property constants.  
\textbf{Notes}: Please check the EDSDK API Programming Reference for details.

25.1.88 \texttt{kEdsPropID\_ColorSaturation} = \& h0000010a

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the property constants.  
\textbf{Notes}: Please check the EDSDK API Programming Reference for details.

25.1.89 \texttt{kEdsPropID\_ColorSpace} = \& h0000010d

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the property constants.  
\textbf{Notes}: Please check the EDSDK API Programming Reference for details.

25.1.90 \texttt{kEdsPropID\_ColorTemperature} = \& h00000107

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the property constants.  
\textbf{Notes}: Please check the EDSDK API Programming Reference for details.

25.1.91 \texttt{kEdsPropID\_ColorTone} = \& h0000010b

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the property constants.  
\textbf{Notes}: Please check the EDSDK API Programming Reference for details.

25.1.92 \texttt{kEdsPropID\_Contrast} = \& h00000109

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the property constants.  
\textbf{Notes}: Please check the EDSDK API Programming Reference for details.

25.1.93 \texttt{kEdsPropID\_Copyright} = \& h00000419

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the property constants.  
\textbf{Notes}: Please check the EDSDK API Programming Reference for details.
25.1. CLASS EDSBASEMBS

25.1.94  kEdsPropID_CurrentFolder = & h0000000d

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the propeperty constants. **Notes:** Please check the EDSDK API Programming Reference for details.

25.1.95  kEdsPropID_CurrentStorage = & h0000000c

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the propeperty constants. **Notes:** Please check the EDSDK API Programming Reference for details.

25.1.96  kEdsPropID_DateTime = & h00000006

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the propeperty constants. **Notes:** Please check the EDSDK API Programming Reference for details.

25.1.97  kEdsPropID_DepthOfField = & h0000041b

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the propeperty constants. **Notes:** Please check the EDSDK API Programming Reference for details.

25.1.98  kEdsPropID_DigitalExposure = & h00000105

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the propeperty constants. **Notes:** Please check the EDSDK API Programming Reference for details.

25.1.99  kEdsPropID_DriveMode = & h00000401

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the propeperty constants. **Notes:** Please check the EDSDK API Programming Reference for details.

25.1.100 kEdsPropID_EFCompensation = & h0000041e

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the propeperty constants. **Notes:** Please check the EDSDK API Programming Reference for details.
25.1.101  

```
25.1.101  kEdsPropID_Evf_AFMode = & h0000050E
```

MBS Cameras Plugin, Plugin Version: 12.1.  **Function:** One of the property constants.  
**Notes:** Please check the EDSDK API Programming Reference for details.

25.1.102  

```
25.1.102  kEdsPropID_Evf_ColorTemperature = & h00000503
```

MBS Cameras Plugin, Plugin Version: 12.1.  **Function:** One of the property constants.  
**Notes:** Please check the EDSDK API Programming Reference for details.

25.1.103  

```
25.1.103  kEdsPropID_Evf_CoordinateSystem = & h00000540
```

MBS Cameras Plugin, Plugin Version: 12.1.  **Function:** One of the property constants.  
**Notes:** Please check the EDSDK API Programming Reference for details.

25.1.104  

```
25.1.104  kEdsPropID_Evf_DepthOfFieldPreview = & h00000504
```

MBS Cameras Plugin, Plugin Version: 12.1.  **Function:** One of the property constants.  
**Notes:** Please check the EDSDK API Programming Reference for details.
25.1. **CLASS EDSBASEMBS**

25.1.105 *kEdsPropID_Evf_FocusAid = & h00000509*

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants.  
**Notes:** Please check the EDSDK API Programming Reference for details.

25.1.106 *kEdsPropID_Evf_Histogram = & h0000050A*

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants.  
**Notes:** Please check the EDSDK API Programming Reference for details.

25.1.107 *kEdsPropID_Evf_HistogramB = & h00000518*

MBS Cameras Plugin, Plugin Version: 12.5. **Function:** One of the property constants.  
**Notes:** Please check the EDSDK API Programming Reference for details.  
New in 2.11 SDK.

25.1.108 *kEdsPropID_Evf_HistogramG = & h00000517*

MBS Cameras Plugin, Plugin Version: 12.5. **Function:** One of the property constants.  
**Notes:** Please check the EDSDK API Programming Reference for details.  
New in 2.11 SDK.

25.1.109 *kEdsPropID_Evf_HistogramR = & h00000516*

MBS Cameras Plugin, Plugin Version: 12.5. **Function:** One of the property constants.  
**Notes:** Please check the EDSDK API Programming Reference for details.  
New in 2.11 SDK.

25.1.110 *kEdsPropID_Evf_HistogramStatus = & h0000050C*

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants.  
**Notes:** Please check the EDSDK API Programming Reference for details.
25.1.111  kEdsPropID_Evf_HistogramY = & h00000515

MBS Cameras Plugin, Plugin Version: 12.5. **Function:** One of the property constants.
**Notes:**
Please check the EDSDK API Programming Reference for details.
New in 2.11 SDK.

25.1.112  kEdsPropID_Evf_ImageClipRect = & h00000545

MBS Cameras Plugin, Plugin Version: 12.5. **Function:** One of the property constants.
**Notes:**
Please check the EDSDK API Programming Reference for details.
New in 2.11 SDK.

25.1.113  kEdsPropID_Evf_ImagePosition = & h0000050B

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants.
**Notes:** Please check the EDSDK API Programming Reference for details.

25.1.114  kEdsPropID_Evf_Mode = & h00000501

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants.
**Notes:** Please check the EDSDK API Programming Reference for details.

25.1.115  kEdsPropID_Evf_OutputDevice = & h00000500

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants.
**Example:**

```c
// we set bit for redirecting output to PC, leave other bits as they are.
dim device as UInt32 = camera.GetPropertyDataUInt32(camera.kEdsPropID_Evf_OutputDevice)
if camera.lasterror = EDSModuleMBS.EDS_ERR_OK then

device = Bitwise.BitOr(device, EDSModuleMBS.kEdsEvfOutputDevice_PC)
camera.SetPropertyDataUInt32 camera.kEdsPropID_Evf_OutputDevice, 0, device
end if
```
25.1. CLASS EDSBASEMBS

Notes: Please check the ESDK API Programming Reference for details.

25.1.116  kEdsPropID_Evf_WhiteBalance = & h00000502

MBS Cameras Plugin, Plugin Version: 12.1. Function: One of the property constants.
Notes: Please check the ESDK API Programming Reference for details.

25.1.117  kEdsPropID_Evf_Zoom = & h00000507

MBS Cameras Plugin, Plugin Version: 12.1. Function: One of the property constants.
Notes: Please check the ESDK API Programming Reference for details.

25.1.118  kEdsPropID_Evf_ZoomPosition = & h00000508

MBS Cameras Plugin, Plugin Version: 12.1. Function: One of the property constants.
Notes: Please check the ESDK API Programming Reference for details.

25.1.119  kEdsPropID_Evf_ZoomRect = & h00000541

MBS Cameras Plugin, Plugin Version: 12.1. Function: One of the property constants.
Notes: Please check the ESDK API Programming Reference for details.

25.1.120  kEdsPropID_ExposureCompensation = & h00000407

MBS Cameras Plugin, Plugin Version: 12.1. Function: One of the property constants.
Notes: Please check the ESDK API Programming Reference for details.

25.1.121  kEdsPropID_FEBracket = & h0000040f

MBS Cameras Plugin, Plugin Version: 12.1. Function: One of the property constants.
Notes: Please check the ESDK API Programming Reference for details.
25.1.122  kEdsPropID_FilterEffect = & h00000110

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants.  
**Notes:** Please check the ESDK API Programming Reference for details.

25.1.123  kEdsPropID_FirmwareVersion = & h00000007

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants.  
**Notes:** Please check the ESDK API Programming Reference for details.

25.1.124  kEdsPropID_Flash Compensation = & h00000408

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants.  
**Notes:** Please check the ESDK API Programming Reference for details.

25.1.125  kEdsPropID_FlashMode = & h00000414

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants.  
**Notes:** Please check the ESDK API Programming Reference for details.

25.1.126  kEdsPropID_FlashOn = & h00000412

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants.  
**Notes:** Please check the ESDK API Programming Reference for details.

25.1.127  kEdsPropID_FocalLength = & h00000409

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants.  
**Notes:** Please check the ESDK API Programming Reference for details.

25.1.128  kEdsPropID_FocusInfo = & h00000104

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants.  
**Notes:** Please check the ESDK API Programming Reference for details.
25.1.129 kEdsPropID_GPSAltitude = & h00000806


25.1.130 kEdsPropID_GPSAltitudeRef = & h00000805


25.1.131 kEdsPropID_GPSDateStamp = & h0000081D


25.1.132 kEdsPropID_GPSLatitude = & h00000802


25.1.133 kEdsPropID_GPSLatitudeRef = & h00000801


25.1.134 kEdsPropID_GPSLongitude = & h00000804


25.1.135 kEdsPropID_GPSLongitudeRef = & h00000803

25.1.136  \textit{kEdsPropID_GPSMapDatum} = \& h00000812

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the property constants.  
\textbf{Notes}: Please check the EDSDK API Programming Reference for details.

25.1.137  \textit{kEdsPropID_GPSSatellites} = \& h00000808

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the property constants.  
\textbf{Notes}: Please check the EDSDK API Programming Reference for details.

25.1.138  \textit{kEdsPropID_GPSStatus} = \& h00000809

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the property constants.  
\textbf{Notes}: Please check the EDSDK API Programming Reference for details.

25.1.139  \textit{kEdsPropID_GPSTimeStamp} = \& h00000807

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the property constants.  
\textbf{Notes}: Please check the EDSDK API Programming Reference for details.

25.1.140  \textit{kEdsPropID_GPSVersionID} = \& h00000800

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the property constants.  
\textbf{Notes}: Please check the EDSDK API Programming Reference for details.

25.1.141  \textit{kEdsPropID_HDDirectoryStructure} = \& h00000020

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the property constants.  
\textbf{Notes}: Please check the EDSDK API Programming Reference for details.

25.1.142  \textit{kEdsPropID_ICCProfile} = \& h00000103

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the property constants.  
\textbf{Notes}: Please check the EDSDK API Programming Reference for details.
25.1.143  kEdsPropID_ImageQuality = & h00000100

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants. 
**Notes:** Please check the EDSDK API Programming Reference for details.

25.1.144  kEdsPropID_ISOBracket = & h00000410

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants. 
**Notes:** Please check the EDSDK API Programming Reference for details.

25.1.145  kEdsPropID_ISOSpeed = & h00000402

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants. 
**Notes:** Please check the EDSDK API Programming Reference for details.

25.1.146  kEdsPropID_JpegQuality = & h00000101

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants. 
**Notes:** Please check the EDSDK API Programming Reference for details.

25.1.147  kEdsPropID_LensName = & h0000040d

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants. 
**Notes:** Please check the EDSDK API Programming Reference for details.

25.1.148  kEdsPropID_LensStatus = & h00000416

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants. 
**Notes:** Please check the EDSDK API Programming Reference for details.

25.1.149  kEdsPropID_LINEAR = & h00000300

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants. 
**Notes:** Please check the EDSDK API Programming Reference for details.
25.1.150 \texttt{kEdsPropID_MakerName} = \& \texttt{h00000005}

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the property constants.  
\textbf{Notes}: Please check the EDSDK API Programming Reference for details.

25.1.151 \texttt{kEdsPropID_MeteringMode} = \& \texttt{h00000403}

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the property constants.  
\textbf{Notes}: Please check the EDSDK API Programming Reference for details.

25.1.152 \texttt{kEdsPropID_MyMenu} = \& \texttt{h000000e}

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the property constants.  
\textbf{Notes}: Please check the EDSDK API Programming Reference for details.

25.1.153 \texttt{kEdsPropID_NoiseReduction} = \& \texttt{h00000411}

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the property constants.  
\textbf{Notes}: Please check the EDSDK API Programming Reference for details.

25.1.154 \texttt{kEdsPropID_Orientation} = \& \texttt{h00000102}

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the property constants.  
\textbf{Notes}: Please check the EDSDK API Programming Reference for details.

25.1.155 \texttt{kEdsPropID_OwnerName} = \& \texttt{h0000004}

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the property constants.  
\textbf{Notes}: Please check the EDSDK API Programming Reference for details.

25.1.156 \texttt{kEdsPropID_ParameterSet} = \& \texttt{h00000112}

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the property constants.  
\textbf{Notes}: Please check the EDSDK API Programming Reference for details.
25.1.157  kEdsPropID_PhotoEffect = & h0000010f

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants.  
**Notes:** Please check the EDSDK API Programming Reference for details.

25.1.158  kEdsPropID_PictureStyle = & h00000114

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants.  
**Notes:** Please check the EDSDK API Programming Reference for details.

25.1.159  kEdsPropID_PictureStyleCaption = & h00000200

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants.  
**Notes:** Please check the EDSDK API Programming Reference for details.

25.1.160  kEdsPropID_PictureStyleDesc = & h00000115

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants.  
**Notes:** Please check the EDSDK API Programming Reference for details.

25.1.161  kEdsPropID_ProductName = & h00000002

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants.  
**Notes:** Please check the EDSDK API Programming Reference for details.

25.1.162  kEdsPropID_Record = & h00000510

MBS Cameras Plugin, Plugin Version: 12.5. **Function:** One of the property constants.  
**Notes:** Please check the EDSDK API Programming Reference for details.  
New in 2.11 SDK.
25.1.163 \texttt{kEdsPropID\_RedEye} = \& \texttt{h00000413}

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the proeprty constants. \textbf{Notes:} Please check the EDSDK API Programming Reference for details.

25.1.164 \texttt{kEdsPropID\_SaveTo} = \& \texttt{h0000000b}

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the proeprty constants. \textbf{Notes:} Please check the EDSDK API Programming Reference for details.

25.1.165 \texttt{kEdsPropID\_Sharpness} = \& \texttt{h0000010c}

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the proeprty constants. \textbf{Notes:} Please check the EDSDK API Programming Reference for details.

25.1.166 \texttt{kEdsPropID\_ToneCurve} = \& \texttt{h0000010e}

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the proeprty constants. \textbf{Notes:} Please check the EDSDK API Programming Reference for details.

25.1.167 \texttt{kEdsPropID\_ToningEffect} = \& \texttt{h00000111}

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the proeprty constants. \textbf{Notes:} Please check the EDSDK API Programming Reference for details.

25.1.168 \texttt{kEdsPropID\_Tv} = \& \texttt{h00000406}

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the proeprty constants. \textbf{Notes:} Please check the EDSDK API Programming Reference for details.

25.1.169 \texttt{kEdsPropID\_Unknown} = \& \texttt{h0000ffff}

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the proeprty constants. \textbf{Notes:} Please check the EDSDK API Programming Reference for details.
25.1.170 kEdsPropID_WBCoeffs = & h00000302

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants.  
**Notes:** Please check the EDSDK API Programming Reference for details.

25.1.171 kEdsPropID_WhiteBalance = & h00000106

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants.  
**Notes:** Please check the EDSDK API Programming Reference for details.

25.1.172 kEdsPropID_WhiteBalanceBracket = & h0000040c

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants.  
**Notes:** Please check the EDSDK API Programming Reference for details.

25.1.173 kEdsPropID_WhiteBalanceShift = & h00000108

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the property constants.  
**Notes:** Please check the EDSDK API Programming Reference for details.
25.2 class EdsCameraAddedHandlerMBS

25.2.1 class EdsCameraAddedHandlerMBS

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This class is to monitor for cameras being added. Notes: Constructor registers callback for event and sets lasterror code.

25.2.2 Events

25.2.3 CameraAdded as Integer

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: This event is called when a new camera is added. Notes: Returns EDS_ERR_OK if successful. Otherwise, ensure the implementation returns an appropriate error code.
25.3.  **CLASS EDSCAMERALISTMBS**

25.3  **class EdsCameraListMBS**

25.3.1  **class EdsCameraListMBS**


**Function:** The object for a list of cameras.

**Notes:**

This object represents an enumeration of the cameras remotely connected to the host PC by USB interface. This object can be used to select the camera to be controlled from among the cameras currently connected with EDSDK client application. This object can also be used when getting an EdsCameraMBS child object. Subclass of the EdsBaseMBS class.

25.3.2  **Methods**

25.3.3  **Child(index as UInt32) as EdsCameraMBS**


**Function:** Gets an indexed child object of the designated object.

**Notes:**

Index is 0 based and range from 0 to ChildCount-1. Lasterror is set.
25.4  class EdsCameraMBS

25.4.1  class EdsCameraMBS

Function: This object represents a remotely connected camera.
Notes:
This object is used to control the camera or to get an EdsVolumeMBS object when accessing the memory
card, which is a child object of the camera.
Subclass of the EdsBaseMBS class.

25.4.2  Methods

25.4.3  Child(index as UInt32) as EdsVolumeMBS

Function: Gets an indexed child object of the designated object.
Notes:
Index is 0 based and range from 0 to ChildCount-1.
Lasterror is set.

25.4.4  CloseSession

Notes: Lasterror is set.

25.4.5  DateTime as EdsTimeMBS

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Convenience function to query date and time values.
Notes:
Calls GetPropertyData for you with kEdsPropID_DateTime.
Lasterror is set.
25.4. CLASS EDSCAMERAMBS

25.4.6 DeviceInfo as EdsDeviceInfoMBS

Function: Gets device information, such as the device name.
Notes: Because device information of remote cameras is stored on the host computer, you can use this API before
the camera object initiates communication (that is, before a session is opened).
LastError is set.
Returns nil on any error.

25.4.7 DownloadEvfImage(image as EdsEvfImageMBS, OldSDK as boolean)

Function: Downloads the live view image data set for a camera currently in live view mode.
Notes: Live view can be started by using the property ID:kEdsPropertyID_Evf_OutputDevice and data:EdsOutputDevice_PC to call SetPropertyData.
In addition to image data, information such as zoom, focus position, and histogram data is included in the
image data set. Image data is saved in a stream maintained by EdsEvfImageMBS. GetPropertyData can be
used to get information such as the zoom, focus position, etc.
Although the information of the zoom and focus position can be obtained from EdsEvfImageMBS, settings
are applied to EdsCameraMBS.
LastError is set.
If you use 2.11 SDK, please pass OldSDK=false. If you use 2.10 SDK, please pass OldSDK=true. The two
SDKs handle this function differently, so you need to tell the plugin which SDK you use. Using wrong value
will likely lead to a crash.

25.4.8 FocusInfo as EdsFocusInfoMBS

Function: Convenience function to query focus information.
Notes: Lasterror is set.
This queries kEdsPropID_FocusInfo with GetPropertyData for you and returns an EdsFocusInfoMBS object.
25.4.9 **OpenSession**

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Establishes a logical connection with a remote camera.

**Notes:**
Use this API after getting the camera’s EdsCamera object. Lasterror is set.

25.4.10 **Parent as EdsCameraListMBS**

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the parent object of the designated object.

**Notes:** Lasterror is set.

25.4.11 **PictureStyleDesc as EdsPictureStyleDescMBS**

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Convenience function to query Picture Style Description information.

**Notes:**
Calls GetPropertyData for you with kEdsPropID_PictureStyleDesc and returns object with values. Lasterror is set.

25.4.12 **SendCommand(command as Integer, param as Integer = 0)**

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sends a command such as "Shoot" to a remote camera.

**Example:**

```vba
dim camera as EdsCameraMBS // your camera object

camera.SendCommand camera.kEdsCameraCommand_TakePicture
```

**Notes:**
Command: The command ID to send to the object. See kEdsCameraCommand* constants.
Param: Specify the x-coordinate in the upper 16 bit and the y-coordinate in the lower 16 bit for kEdsCameraCommand_DoClickWBEvf only. Lasterror is set.
25.4. SendStatusCommand(command as Integer, param as Integer = 0)


Function: Sets the remote camera state or mode.

Notes:

command: Designate the particular mode ID to set the camera to. See kEdsCameraStatusCommand* constants.
Param: Currently unused. Designate 0.
LastError is set.

Please check SDK manual for details.

25.4.14 SetCapacity(numberOfFreeClusters as Integer, bytesPerSector as Integer, reset as boolean)


Function: Sets the remaining HDD capacity on the host computer (excluding the portion from image transfer), as calculated by subtracting the portion from the previous time.

Notes:

Set a reset flag initially and designate the cluster length and number of free clusters.
Some cameras can display the number of shots left on the camera based on the available disk capacity of the host computer.
For these cameras, after the storage destination is set to the computer, use this API to notify the camera of the available disk capacity of the host computer.

LastError is set.

25.4.15 Constants

25.4.16 kEdsCameraCommand_BulbEnd = 3


Notes:

Lock the UI before bulb shooting.
An exposure time event is generated at the start of bulb shooting. (kEdsStateEvent_BulbExposureTime)
25.4.17  kEdsCameraCommand_BulbStart = 2

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the camera command constants.  
**Notes:** Starts bulb shooting/ Ends bulb shooting

25.4.18  kEdsCameraCommand_DoClickWBEvf = & h00000104

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the camera command constants.  
**Notes:**  
Adjusts the white balance of the live view image at the specified position  
This command is supported only in live view mode.

25.4.19  kEdsCameraCommand_DoEvfAf = & h00000102

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the camera command constants.  
**Notes:**  
 Controls auto focus in live view mode.  
This command is supported by the EOS 50D or EOS 5D Mark II or later cameras, and only in live view mode.

25.4.20  kEdsCameraCommand_DriveLensEvf = & h00000103

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the camera command constants.  
**Notes:**  
Drives the lens and adjusts focus  
This command is supported only in live view mode.

25.4.21  kEdsCameraCommand_EvfAf_OFF = 0

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the camera command constants.

25.4.22  kEdsCameraCommand_EvfAf_ON = 1

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the camera command constants.
25.4.23  kEdsCameraCommand_ExtendShutdownTimer = 1

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the camera command constants.  **Notes:** Requests to extend the time for the auto shut-off timer. (Keep Device On)

25.4.24  kEdsCameraCommand_PressShutterButton = 4

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the camera command constants.  **Notes:**
Controls shutter button operations.
This command is supported by the EOS 50D or EOS 5D Mark II or later cameras.

25.4.25  kEdsCameraCommand_ShutterButton_Completely = 3

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the camera command constants.

25.4.26  kEdsCameraCommand_ShutterButton_Completely_NonAF = \& h00010003

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the camera command constants.

25.4.27  kEdsCameraCommand_ShutterButton_Halfway = 1

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the camera command constants.

25.4.28  kEdsCameraCommand_ShutterButton_Halfway_NonAF = \& h00010001

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the camera command constants.

25.4.29  kEdsCameraCommand_ShutterButton_OFF = 0

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the camera command constants.
25.4.30  kEdsCameraCommand_TakePicture = 0

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the camera command constants.
**Notes:** Requests the camera to shoot.

25.4.31  kEdsCameraStatusCommand_EnterDirectTransfer = 2

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the camera status commands.

25.4.32  kEdsCameraStatusCommand_ExitDirectTransfer = 3

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the camera status commands.

25.4.33  kEdsCameraStatusCommandUILayout = 0

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the camera status commands.

25.4.34  kEdsCameraStatusCommand_UIUnlock = 1

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the camera status commands.

25.4.35  kEdsProgressOption_Done = 1

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Progress Option Constants
**Notes:** Call a progress callback function when the progress reaches 100% .

25.4.36  kEdsProgressOption_NoReport = 0

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Progress Option Constants
**Notes:** Do not call a progress callback function.
25.4.37  kEdsProgressOption_Periodically = 2

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Progress Option Constants
**Notes:** Call a progress callback function periodically.
25.5 class EdsCameraStateEventHandlerMBS

25.5.1 class EdsCameraStateEventHandlerMBS

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class to receive camera state events.

25.5.2 Methods

25.5.3 Add(camera as EdsCameraMBS, CameraStateEvent as UInt32)

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Designate event for receiving events related to camera object states.
**Notes:** Lasterror is set.

25.5.4 Constructor

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates an event handler object.
**Notes:** You can later add objects to it.
See also:

- 25.5.5 Constructor(camera as EdsCameraMBS, CameraStateEvent as UInt32) 4146

25.5.5 Constructor(camera as EdsCameraMBS, CameraStateEvent as UInt32)

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Designate event for receiving events related to camera object states.
**Notes:** Lasterror is set.
See also:

- 25.5.4 Constructor 4146

25.5.6 Events

25.5.7StateChanged(StateEvent as UInt32, EventData as UInt32) as Integer

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Called when the state changed.
**Notes:**
StateEvent: Indicate the event type supplemented. Designate one of the event types subject to supplementation, as designated by Constructor/Add. Events that occur can be determined based on the event type.

Returns EDS_ERR_OK if successful. In other cases, see the EDS Error Lists.
25.6 class EdsDeviceInfoMBS

25.6.1 class EdsDeviceInfoMBS

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for device information.

25.6.2 Properties

25.6.3 DeviceDescription as String

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The device name. **Notes:** (Read and Write property)

25.6.4 deviceSubType as UInt32

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The device subtype. **Notes:**

- Canon PTP cameras: 1
- Canon PTP-IP cameras: 2

If the camera involved in PTP communication is connected to a Windows computer on which WIA is installed, 0 is specified in DeviceSubType, representing standard Windows PTP. **(Read and Write property)**

25.6.5 PortName as String

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The port name. **Notes:** (Read and Write property)

25.6.6 reserved as UInt32

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reserved for the future.
25.6. CLASS EDSDEVICEINFOMBS

Notes: (Read and Write property)
25.7 class EdsDirectoryItemInfoMBS

25.7.1 class EdsDirectoryItemInfoMBS

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This class represents directory item information for the memory card in the camera.

25.7.2 Properties

25.7.3 DateTime as UInt32

MBS Cameras Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The date and time value. **Notes:** New in 2.11 SDK. (Read and Write property)

25.7.4 FileName as String

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the directory name or file name if successful. **Notes:** Example: "_MG_0060.JPG" (Read and Write property)

25.7.5 Format as UInt32

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the directory item type. **Notes:** See kEdsImageType* constants. (Read and Write property)

25.7.6 GroupID as UInt32

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The group ID for this file.
25.7. CLASS EDSDIRECTORYITEMINFOMBS

Notes:
A non-zero integer. The same group ID is assigned to files that belong to the same group, such as RAW+JPEG images or RAW+AVI images.
(Read and Write property)

25.7.7 IsFolder as Boolean

Function: Whether this is a folder.
Notes:
If a folder: True
If not a folder: False
(Read and Write property)

25.7.8 Option as UInt32

Function: The option property.
Notes:
An option when a direct transfer request is received (a kEdsObjectEvent_DirItemRequestTransferDT event).
kEdsTransferOptionToDesktop is set when [Wallpaper] in the direct transfer is executed by means of camera operations.
Prohibit it under other timing conditions.
(Read and Write property)

25.7.9 Size as UInt64

Function: The file size.
Notes:
For folders, the file size is indicated as 0.
(Read and Write property)
25.7.10 Constants

25.7.11 kEdsImageType_CR2 = 6
MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the image type constants. **Notes:** CR2

25.7.12 kEdsImageType_CRW = 2
MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the image type constants. **Notes:** CRW

25.7.13 kEdsImageType_Jpeg = 1
MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the image type constants. **Notes:** JPEG

25.7.14 kEdsImageType_RAW = 4
MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the image type constants. **Notes:** RAW

25.7.15 kEdsImageType_Unknown = 0
MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the image type constants. **Notes:** Unknown
25.8. **CLASS EDSDIRECTORYITEMMBS**

25.8. **class EdsDirectoryItemMBS**

25.8.1. **class EdsDirectoryItemMBS**


**Function:** This object represents a file or folder on the camera.

**Notes:**

When files are downloaded from the camera, each file to be downloaded is treated as one of these objects.

Subclass of the EdsBaseMBS class.

25.8.2. **Methods**

25.8.3. **Child(index as UInt32) as EdsDirectoryItemMBS**


**Function:** Gets an indexed child object of the designated object.

**Notes:**

Index is 0 based and range from 0 to ChildCount-1.

Lasterror is set.

25.8.4. **DeleteDirectoryItem**


**Function:** Deletes a camera folder or file.

**Notes:**

If folders with subdirectories are designated, all files are deleted except protected files.

Don’t use the object after you deleted it.

Lasterror is set.

25.8.5. **DirectoryItemInfo as EdsDirectoryItemInfoMBS**


**Function:** Gets information about the directory or file objects on the memory card (volume) in a remote camera.

**Notes:**

Lasterror is set.

Returns nil on any error.
25.8.6 Download(ReadSize as UInt64, stream as EdsStreamMBS)

**Function:** Downloads a file on a remote camera (in the camera memory or on a memory card) to the host computer.
**Notes:**
The downloaded file is sent directly to a file stream created in advance.
When dividing the file being retrieved, call this API repeatedly. Also in this case, make the data block size a multiple of 512 (bytes), excluding the final block.

ReadSize: Designate the size in bytes to download.
stream: Specifies the destination stream.

Lasterror is set.

25.8.7 DownloadCancel

**Function:** Must be executed when downloading of a directory item is canceled.
**Notes:**
Calling this API makes the camera cancel file transmission. It also releases resources.
This operation need not be executed when using DownloadThumbnail.
Lasterror is set.
In applications that take locally released images on the camera and load them on host computer, if the application receives a file transfer request from the camera when the file is not needed (by means of kEdsObjectEvent.DirItemRequestTransfer or kEdsObjectEvent.DirItemRequestTransferDT), this API must be called to notify the camera that transmission has been canceled.
Normally, delete callback function registration at the moment an event is not needed.

25.8.8 DownloadComplete

**Function:** Must be called when downloading of directory items is complete.
**Notes:**
Executing this API makes the camera recognize that file transmission is complete.
This operation need not be executed when using DownloadThumbnail.
Lasterror is set.
If transfer of a file that was divided is canceled, call DownloadCancel instead of this API to notify the camera that downloading of the directory item has been canceled.

### 25.8.9 DownloadThumbnail(stream as EdsStreamMBS)

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Extracts and downloads thumbnail information from image files in a camera. **Notes:**

Thumbnail information in the camera’s image files is downloaded to the host computer. Downloaded thumbnails are sent directly to a file stream created in advance.

- **stream:** Designate the stream for saving extracted thumbnails.
- **Lasterror** is set.

### 25.8.10 Parent as EdsDirectoryItemMBS

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the parent object of the designated object. **Notes:** Lasterror is set.

### 25.8.11 Properties

### 25.8.12 FileAttributes as Integer

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets attributes of files on a camera. **Example:**

```vbnet
dim d as EdsDirectoryItemMBS 'your directory item
dim a as Integer = d.FileAttributes
if bitwiseAnd(a, d.kEdsFileAttribute_ReadOnly)<>0 then
    msgbox "ReadOnly."
end if
```

**Notes:**

Returns the file attributes.

As for the file attributes, OR values of the value defined by kEdsFileAttribute* constants can be retrieved. Thus, when determining the file attributes, you must check if an attribute flag is set for target attributes.
Use BitwiseAnd to check for different flags. Lasterror is set.

If you assign value, this property changes attributes of files on a camera. (Read and Write computed property)

### 25.8.13 Constants

#### 25.8.14 kEdsFileAttribute_Archive = & h20

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the file attribute constants. **Notes:** Archive attribute

#### 25.8.15 kEdsFileAttribute_Hidden = 2

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the file attribute constants. **Notes:** Hidden attribute

#### 25.8.16 kEdsFileAttribute_Normal = 0

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the file attribute constants. **Notes:** A standard file

#### 25.8.17 kEdsFileAttribute_ReadOnly = 1

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the file attribute constants. **Notes:** Read-only

#### 25.8.18 kEdsFileAttribute_System = 4

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the file attribute constants. **Notes:** System attribute
25.9. **CLASS EDSEVFIMAGEMBS**

25.9  **class EdsEvfImageMBS**

25.9.1  **class EdsEvfImageMBS**


**Function:** This object represents PC live view image data.

**Notes:**

When using a camera model that supports live view, live view image data set can be downloaded from the camera. Information such as zoom and histogram data is included with image data.

Subclass of the EdsBaseMBS class.

25.9.2  **Methods**

25.9.3  **Constructor(stream as EdsStreamMBS, OldSDK as boolean = false)**


**Function:** Creates an object used to get the live view image data set.

**Notes:**

Lasterror is set.

See EdsCreateEvfImageRef in the SDK documentation.

If you use 2.11 SDK, please pass OldSDK=false. If you use 2.10 SDK, please pass OldSDK=true. The two SDKs handle this function differently, so you need to tell the plugin which SDK you use. Using wrong value will likely lead to a crash.
25.10 class EdsFocusInfoMBS

25.10.1 class EdsFocusInfoMBS

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This class represents focus information. **Notes:** It stores kEdsPropID_FocusInfo property data.

25.10.2 Methods

25.10.3 FocusPoint(index as Integer) as EdsFocusPointMBS

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The array of focus points. **Notes:** Index from 0 to 127, but of course lower than PointNumber.

25.10.4 Properties

25.10.5 ExecuteMode as Integer

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The execute mode. **Notes:** (Read and Write property)

25.10.6 ImageRect as EdsRectMBS

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The rectangle of the image. **Notes:** (Read and Write property)

25.10.7 PointNumber as Integer

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Number of frames. **Notes:** (Read and Write property)
25.11. CLASS EDSFOCUSPOINTMBS

25.11  class EdsFocusPointMBS

25.11.1  class EdsFocusPointMBS

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This class represents the AF frame information of focus information. **Notes:** It stores AF frame information of the kEdsPropID_FocusInfo property.

25.11.2  Properties

25.11.3  JustFocus as Boolean

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the frame is just focus. **Notes:** (Read and Write property)

25.11.4  Rect as EdsRectMBS

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The rectangle of the frame. **Notes:** (Read and Write property)

25.11.5  Reserved as UInt32

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reserved. **Notes:** (Read and Write property)

25.11.6  Selected as Boolean

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Wether the point is selected. **Notes:** (Read and Write property)
25.11.7 Valid as Boolean

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if the frame is valid.

**Notes:** (Read and Write property)
25.12. CLASS EDSIMAGEINFOMBS

25.12 class EdsImageInfoMBS

25.12.1 class EdsImageInfoMBS

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This class represents various information found in image data.

25.12.2 Properties

25.12.3 componentDepth as UInt32


25.12.4 effectiveRect as EdsRectMBS

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The effective image rectangle. Notes: This means the area excluding the black bands on the top and bottom of the thumbnail image. (Read and Write property)

25.12.5 height as UInt32

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The image height in pixels. Notes: (Read and Write property)

25.12.6 numOfComponents as UInt32

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Number of color components in image. Notes: (Read and Write property)
25.12.7 reserved1 as UInt32

Notes: (Read and Write property)

25.12.8 reserved2 as UInt32

Notes: (Read and Write property)

25.12.9 width as UInt32

Notes: (Read and Write property)
25.13. CLASS EDSIMAGEMBS

25.13 class EdsImageMBS

25.13.1 class EdsImageMBS

Function: This object represents image data.
Notes:
This data is obtained from image files. This object is used to retrieve and control information included with
an image such as thumbnails and parameters.
Subclass of the EdsBaseMBS class.

25.13.2 Methods

25.13.3 CacheImage(UseCache as boolean)

Function: Switches a setting on and off for creation of an image cache in the SDK for a designated image
object during extraction (processing) of the image data.
Notes:
Creating the cache increases the processing speed, starting from the second time.
UseCache: Image Cache on/off.
LastError is set.

25.13.4 Constructor(stream as EdsImageMBS)

Function: Creates an image object from an image file.
Notes:
Without modification, stream objects cannot be worked with as images. Thus, when extracting images from
image files, you must use this API to create image objects.
The image object created this way can be used to get image information (such as the height and width,
number of color components, and resolution), thumbnail image data, and the image data itself.
LastError is set.

25.13.5 DateTime as EdsTimeMBS

Function: Convenience function to query date and time values.
Notes:
Calls GetPropertyData for you with kEdsPropID_DateTime. Lasterror is set.

25.13.6 **FocusInfo as EdsFocusInfoMBS**


**Function:** Convenience function to query focus information.

**Notes:**
This queries kEdsPropID_FocusInfo with GetPropertyData for you and returns an EdsFocusInfoMBS object.

25.13.7 **Image(ImageSource as Integer, TargetImageType as Integer, Source as EdsRectMBS, Dest as EdsSizeMBS, DestStream as EdsStreamMBS)**


**Function:** Gets designated image data from an image file, in the form of a designated rectangle.

**Notes:**
Returns uncompressed results for JPEG compressed images and processed results in the designated pixel order (RGB, Top-down BGR, and so on) for RAW images. Additionally, by designating the input/output rectangle, it is possible to get reduced, enlarged, or partial images. However, because images corresponding to the designated output rectangle are always returned by the SDK, the SDK does not take the aspect ratio into account. To maintain the aspect ratio, you must keep the aspect ratio in mind when designating the rectangle. Lasterror is set.

**ImageSource:** Designate the type of image data to get from the image file (thumbnail, preview, and so on). Designate values as defined in kEdsImageSrc* constants.

**TargetImageType:** Designate the output image type. Because the output format of EdsGetImage may only be RGB, only kEdsTargetImageType_RGB or kEdsTargetImageType_RGB16 can be designated.

However, image types exceeding the resolution of ImageSource cannot be designated.

**Example:** Suppose the source image resolution (componentDepth) retrieved by means of ImageInfo() is 8 bits
- > The resolution that can be retrieved by means of Image () is also 8 bits
- > Thus, only kEdsTargetImageType_RGB is available.

**Source:** Designate the coordinates and size of the rectangle to be retrieved (processed) from the source image.
**Dest:** Designate the rectangle size for output.
**DestStream:** Designate the memory or file stream for output of the image.

Lasterror is set.
• To maintain the aspect ratio, you must keep the aspect ratio in mind when designating a rectangle.
• In calculating the data size of the output file, the original image data resolution is not used.

Instead, the resolution of the image type designated by inImageType is used. For example, the calculation for kEdsTargetImageType_RGB is \(3 \times (R, G, \text{and } B) \times 8\) (resolution) \(\times\) width \(\times\) height \(8\) (bytes). Similarly, kEdsTargetImageType_RGB16 is calculated by \(3 \times 16 \times\) width \(\times\) height \(8\) (bytes).

### 25.13.8 ImageInfo(ImageSource as Integer) as EdsImageInfoMBS

**Function:** Gets image information from a designated image object. 
**Notes:**
Here, image information means the image width and height, number of color components, resolution, and effective image area. Lasterror is set.

### 25.13.9 PictureStyleDesc as EdsPictureStyleDescMBS

**Function:** Convenience function to query Picture Style Description information. 
**Notes:**
Calls GetPropertyData for you with kEdsPropID_PictureStyleDesc and returns object with values. Lasterror is set.

### 25.13.10 ReflectImageProperty

**Function:** Incorporates image object property changes (effected by means of EdsSetPropertyData) in the stream. 
**Notes:** Lasterror is set.

### 25.13.11 SaveImage(TargetImageType as Integer, DestStream as EdsStreamMBS, JPEGQuality as Integer = 0, iccProfileStream as EdsStreamMBS)

**Function:** Saves as a designated image type after RAW processing. 
**Notes:**
TargetImageType: Designate the image type to produce. Designate the following image types. See kEdsTargetImageType* constants.
JPEGQuality: Image quality for JPEG compression
iccProfileStream: ICC profile stream.

Lasterror is set.

25.13.12 Constants

25.13.13 kEdsImageSrc_FullView = 0

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the image source constants.
**Notes:** The image itself (a full-sized image)

25.13.14 kEdsImageSrc_Preview = 2

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the image source constants.
**Notes:** A preview image

25.13.15 kEdsImageSrc_RAWFullView = 4

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the image source constants.
**Notes:** A RAW full-sized image

25.13.16 kEdsImageSrc_RAWThumbnail = 3

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the image source constants.
**Notes:** A RAW thumbnail image

25.13.17 kEdsImageSrc_Thumbnail = 1

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the image source constants.
**Notes:** A thumbnail image
25.13.18 kEdsTargetImageType_DIB = 11

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the target image type constants.  
**Notes:** Device Independent Bitmap

25.13.19 kEdsTargetImageType_JPEG = 1

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the target image type constants.  
**Notes:** JPEG

25.13.20 kEdsTargetImageType_RGB = 9

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the target image type constants.  
**Notes:** 8-bit RGB, chunky format

25.13.21 kEdsTargetImageType_RGB16 = 10

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the target image type constants.  
**Notes:** 16-bit RGB, chunky format

25.13.22 kEdsTargetImageType_TIFF = 7

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the target image type constants.  
**Notes:** 8-bit TIFF

25.13.23 kEdsTargetImageType_TIFF16 = 8

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the target image type constants.  
**Notes:** 16-bit TIFF

25.13.24 kEdsTargetImageType_Unknown = 0

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the target image type constants.  
**Notes:** Folder, or unknown image type
25.14 module EDSModuleMBS

25.14.1 module EDSModuleMBS

Function: The main module for the EDS SDK.
Notes:
Please get a copy of the SDK with the manual, so you can lookup some details.
The documentation coming with the plugin shows the classes and some specifics for Real Studio, but not all
the details.

Typically SDK functions return a EdsError value. The plugin gives you that value by lasterror properties.

25.14.2 Methods

25.14.3 GetCameraList as EdsCameraListMBS

Function: Gets camera list objects.
Notes:
Lasterror is set.
Returns the camera list object or nil.

25.14.4 GetEvent

Function: This function acquires an event.
Notes:
In console application, please call this function regularly to acquire the event from a camera.
Lasterror is set.

25.14.5 Initialize

Function: Initializes the libraries.
Notes:
When using the EDSDK libraries, you must call this API once before using EDSDK APIs.
Lasterror is set.
25.14.6 Lasterror as Integer

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last error code of any EDS function in all the classes.

25.14.7 LoadLibrary(file as folderitem, IsVersion2 as Boolean) as boolean

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads the SDK. **Example:**

```vba
dim file as FolderItem

// find DLL in application folder
if TargetWin32 then
    file = GetFolderItem("EDSDK.dll")
else if TargetMacOS then
    // find Framework in inside frameworks folder in app bundle

    file = frameworks.Child("EDSDK.framework")
else
    MsgBox "not supported."
end if

// load framework or DLL
if EDSModuleMBS.LoadLibrary(file) then
    // continue
end if
```

**Notes:**

Pass folderitem for framework on Mac or DLL on Windows. Returns true on success. After loading, you need to call Initialize method.

If you use 2.x SDK, please set IsVersion2 to true. For 3.x SDK, please set IsVersion2 to false. The 3.x SDK uses 64-bit integer, while the older one uses 32-bit integers. Using wrong switch, you get wrong numbers. See also:
25.14.8 LoadLibrary(path as string, IsVersion2 as Boolean) as boolean


**Function:** Loads the SDK.

**Notes:**
- Pass path for framework on Mac or DLL on Windows.
- Returns true on success.
- After loading, you need to call Initialize method.

If you use 2.x SDK, please set IsVersion2 to true.
For 3.x SDK, please set IsVersion2 to false.
The 3.x SDK uses 64-bit integer, while the older one uses 32-bit integers.
Using wrong switch, you get wrong numbers.
See also:

- 25.14.7 LoadLibrary(file as folderitem, IsVersion2 as Boolean) as boolean

25.14.9 Terminate


**Function:** Terminates use of the libraries.

**Notes:**
- Calling this function releases all resources allocated by the libraries.
- Lasterror is set.

25.14.10 Constants

25.14.11 EdsImageQuality_LJ = & h0010ff0f

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.

**Notes:** Jpeg Large

25.14.12 EdsImageQuality_LJF = & h0013ff0f

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.

**Notes:** Jpeg Large Fine
25.14.13  EdsImageQuality_LJN = & h0012ff0f

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants. **Notes:** Jpeg Large Normal

25.14.14  EdsImageQuality_LR = & h0064ff0f

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants. **Notes:** RAW

25.14.15  EdsImageQuality_LRLJ = & h00640010

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants. **Notes:** RAW + Jpeg Large

25.14.16  EdsImageQuality_LRLJF = & h00640013

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants. **Notes:** RAW + Jpeg Large Fine

25.14.17  EdsImageQuality_LRLJN = & h00640012

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants. **Notes:** RAW + Jpeg Large Normal

25.14.18  EdsImageQuality_LRM1J = & h00640510

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants. **Notes:** RAW + Jpeg Middle1

25.14.19  EdsImageQuality_LRM2J = & h00640610

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants. **Notes:** RAW + Jpeg Middle2
25.14.20 EdsImageQuality_LRMJF = & h00640113

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants. **Notes:** RAW + Jpeg Middle Fine

25.14.21 EdsImageQuality_LRMJN = & h00640112

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants. **Notes:** RAW + Jpeg Middle Normal

25.14.22 EdsImageQuality_LRS1JF = & h00640E13

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants. **Notes:** RAW + Jpeg Small1 Fine

25.14.23 EdsImageQuality_LRS1JN = & h00640E12

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants. **Notes:** RAW + Jpeg Small1 Normal

25.14.24 EdsImageQuality_LRS2JF = & h00640F13

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants. **Notes:** RAW + Jpeg Small2

25.14.25 EdsImageQuality_LRS3JF = & h00641013

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants. **Notes:** RAW + Jpeg Small3

25.14.26 EdsImageQuality_LRSJ = & h00640210

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants. **Notes:** RAW + Jpeg Small
25.14.27 EdsImageQuality_LRSJF = & h00640213

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** RAW + Jpeg Small Fine

25.14.28 EdsImageQuality_LRSJN = & h00640212

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** RAW + Jpeg Small Normal

25.14.29 EdsImageQuality_M1J = & h0510ff0f

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** Jpeg Middle1

25.14.30 EdsImageQuality_M2J = & h0610ff0f

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** Jpeg Middle2

25.14.31 EdsImageQuality_MJF = & h0113ff0f

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** Jpeg Middle Fine

25.14.32 EdsImageQuality_MJN = & h0112ff0f

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** Jpeg Middle Normal

25.14.33 EdsImageQuality_MR = & h0164ff0f

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** MRAW(SRAW1)
25.14.34  EdsImageQuality_MRLJ = & h01640010

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** MRAW(SRAW1) + Jpeg Large

25.14.35  EdsImageQuality_MRLJF = & h01640013

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** MRAW(SRAW1) + Jpeg Large Fine

25.14.36  EdsImageQuality_MRLJN = & h01640012

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** MRAW(SRAW1) + Jpeg Large Normal

25.14.37  EdsImageQuality_MRM1J = & h01640510

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** MRAW(SRAW1) + Jpeg Middle1

25.14.38  EdsImageQuality_MRM2J = & h01640610

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** MRAW(SRAW1) + Jpeg Middle2

25.14.39  EdsImageQuality_MRMJF = & h01640113

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** MRAW(SRAW1) + Jpeg Middle Fine

25.14.40  EdsImageQuality_MRMJN = & h01640112

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** MRAW(SRAW1) + Jpeg Middle Normal
25.14.1  **EdsImageQuality_MRS1JF = & h01640E13**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** MRAW(SRAW1) + Jpeg Small1 Fine

25.14.2  **EdsImageQuality_MRS1JN = & h01640E12**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** MRAW(SRAW1) + Jpeg Small1 Normal

25.14.3  **EdsImageQuality_MRS2JF = & h01640F13**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** MRAW(SRAW1) + Jpeg Small2

25.14.4  **EdsImageQuality_MRS3JF = & h01641013**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** MRAW(SRAW1) + Jpeg Small3

25.14.5  **EdsImageQuality_MRSJ = & h01640210**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** MRAW(SRAW1) + Jpeg Small

25.14.6  **EdsImageQuality_MRSJF = & h01640213**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** MRAW(SRAW1) + Jpeg Small Fine

25.14.7  **EdsImageQuality_MRSJN = & h01640212**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** MRAW(SRAW1) + Jpeg Small Normal
25.14.48  EdsImageQuality_S1JF = & h0E13ff0f

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** Jpeg Small1 Fine

25.14.49  EdsImageQuality_S1JN = & h0E12ff0f

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** Jpeg Small1 Normal

25.14.50  EdsImageQuality_S2JF = & h0F13ff0f

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** Jpeg Small2

25.14.51  EdsImageQuality_S3JF = & h1013ff0f

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** Jpeg Small3

25.14.52  EdsImageQuality_SJ = & h0210ff0f

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** Jpeg Small

25.14.53  EdsImageQuality_SJF = & h0213ff0f

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** Jpeg Small Fine

25.14.54  EdsImageQuality_SJN = & h0212ff0f

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** Jpeg Small Normal
25.14.55 \textbf{EdsImageQuality\_SR} = \& \text{h}0264ff0f

\textbf{Notes}: SRAW(SRAW2)

25.14.56 \textbf{EdsImageQuality\_SRLJ} = \& \text{h}02640010

\textbf{Notes}: SRAW(SRAW2) + Jpeg Large

25.14.57 \textbf{EdsImageQuality\_SRLJF} = \& \text{h}02640013

\textbf{Notes}: SRAW(SRAW2) + Jpeg Large Fine

25.14.58 \textbf{EdsImageQuality\_SRLJN} = \& \text{h}02640012

\textbf{Notes}: SRAW(SRAW2) + Jpeg Large Normal

25.14.59 \textbf{EdsImageQuality\_SRM1J} = \& \text{h}02640510

\textbf{Notes}: SRAW(SRAW2) + Jpeg Middle1

25.14.60 \textbf{EdsImageQuality\_SRM2J} = \& \text{h}02640610

\textbf{Notes}: SRAW(SRAW2) + Jpeg Middle2

25.14.61 \textbf{EdsImageQuality\_SRMJF} = \& \text{h}02640113

\textbf{Notes}: SRAW(SRAW2) + Jpeg Middle Fine
25.14.62 EdsImageQuality_SRMJN = & h02640112

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** SRAW(SRAW2) + Jpeg Middle Normal

25.14.63 EdsImageQuality_SRS1JF = & h02640E13

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** SRAW(SRAW2) + Jpeg Small1 Fine

25.14.64 EdsImageQuality_SRS1JN = & h02640E12

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** SRAW(SRAW2) + Jpeg Small1 Normal

25.14.65 EdsImageQuality_SRS2JF = & h02640F13

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** SRAW(SRAW2) + Jpeg Small2

25.14.66 EdsImageQuality_SRS3JF = & h02641013

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** SRAW(SRAW2) + Jpeg Small3

25.14.67 EdsImageQuality_SRSJ = & h02640210

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** SRAW(SRAW2) + Jpeg Small

25.14.68 EdsImageQuality_SRSJF = & h02640213

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.  
**Notes:** SRAW(SRAW2) + Jpeg Small Fine
25.14.69  EdsImageQuality_SRSJN = &h02640212

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.
**Notes:** SRAW(SRAW2) + Jpeg Small Normal

25.14.70  EdsImageQuality_Unknown = & hffffffff

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Image Quality constants.
**Notes:** Unknown

25.14.71  EDS_CMP_ID_CLIENT_COMPONENTID = & h01000000

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the ED-SDK Base Component IDs.

25.14.72  EDS_CMP_ID_HLSDK_COMPONENTID = & h03000000

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the ED-SDK Base Component IDs.

25.14.73  EDS_CMP_ID_LLSDK_COMPONENTID = & h02000000

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the ED-SDK Base Component IDs.

25.14.74  EDS_COMPONENTID_MASK = & h7F000000

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Error Code Masks constants.

25.14.75  EDS_ERRORID_MASK = & h0000FFFF

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Error Code Masks constants.

25.14.76  EDS_ERR_CANNOT_MAKE_OBJECT = & h0000A104

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.
25.14.77  **EDS_ERR_CAPTURE_ALREADY_TERMINATED = & h00002018**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.78  **EDS_ERR_COMM_BUFFER_FULL = & h000000C3**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.79  **EDS_ERR_COMM_DEVICE_INCOMPATIBLE = & h000000C2**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.80  **EDS_ERR_COMM_DISCONNECTED = & h000000C1**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.81  **EDS_ERR_COMM_PORT_IS_IN_USE = & h000000C0**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.82  **EDS_ERR_COMM_USB_BUS_ERR = & h000000C4**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.83  **EDS_ERR_DEVICEPROP_NOT_SUPPORTED = & h0000200A**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.84  **EDS_ERR_DEVICE_BUSY = & h00000081**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.
25.14.85  EDS_ERR_DEVICE_CF_GATE_CHANGED = & h00000089

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.86  EDS_ERR_DEVICE_DIAL_CHANGED = & h0000008A

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.87  EDS_ERR_DEVICE_DISK_ERROR = & h00000088

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.88  EDS_ERR_DEVICE_EMERGENCY = & h00000083

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.89  EDS_ERR_DEVICE_INTERNAL_ERROR = & h00000085

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.90  EDS_ERR_DEVICE_INVALID = & h00000082

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.91  EDS_ERR_DEVICE_INVALID_PARAMETER = & h00000086

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.92  EDS_ERR_DEVICE_MEMORY_FULL = & h00000084

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.
25.14.93  **EDS_ERR_DEVICE_NOT_FOUND = & h00000080**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.94  **EDS_ERR_DEVICE_NOT_INSTALLED = & h0000008B**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.95  **EDS_ERR_DEVICE_NOT_LAUNCHED = & h000000E4**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.96  **EDS_ERRDEVICE NOT RELEASED = & h0000008D**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.97  **EDS_ERR_DEVICE_NO_DISK = & h00000087**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.98  **EDS_ERR_DEVICE_STAY_AWAKE = & h0000008C**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.99  **EDS_ERR_DIR_ENTRY_EXISTS = & h00000043**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.100  **EDS_ERR_DIR_ENTRY_NOT_FOUND = & h00000042**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.
25.14.101  \textbf{EDS\_ERR\_DIR\_IO\_ERROR} = \& h00000041

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the error constants.

25.14.102  \textbf{EDS\_ERR\_DIR\_NOT\_EMPTY} = \& h00000044

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the error constants.

25.14.103  \textbf{EDS\_ERR\_DIR\_NOT\_FOUND} = \& h00000040

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the error constants.
25.14.104   **EDS_ERR_ENUM NA = & h000000F0**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.105   **EDS_ERR_FILE_ALREADY_EXISTS = & h0000002B**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.106   **EDS_ERR_FILE_CLOSE_ERROR = & h00000024**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.107   **EDS_ERR_FILE_DATA_CORRUPT = & h0000002D**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.108   **EDS_ERR_FILE_DISK_FULL_ERROR = & h0000002A**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.109   **EDS_ERR_FILE_FORMAT_UNRECOGNIZED = & h0000002C**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.110   **EDS_ERR_FILE_IO_ERROR = & h00000020**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.111   **EDS_ERR_FILE_NAMING NA = & h0000002E**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.
25.14.112 EDS_ERR_FILE_NOT_FOUND = & h00000022
MBS Cameras Plugin, Plugin Version: 12.1. Function: One of the error constants.

25.14.113 EDS_ERR_FILE_OPEN_ERROR = & h00000023
MBS Cameras Plugin, Plugin Version: 12.1. Function: One of the error constants.

25.14.114 EDS_ERR_FILE_PERMISSION_ERROR = & h00000029
MBS Cameras Plugin, Plugin Version: 12.1. Function: One of the error constants.

25.14.115 EDS_ERR_FILE_READ_ERROR = & h00000027
MBS Cameras Plugin, Plugin Version: 12.1. Function: One of the error constants.

25.14.116 EDS_ERR_FILE_SEEK_ERROR = & h00000025
MBS Cameras Plugin, Plugin Version: 12.1. Function: One of the error constants.

25.14.117 EDS_ERR_FILE_TELL_ERROR = & h00000026
MBS Cameras Plugin, Plugin Version: 12.1. Function: One of the error constants.

25.14.118 EDS_ERR_FILE_TOO_MANY_OPEN = & h00000021
MBS Cameras Plugin, Plugin Version: 12.1. Function: One of the error constants.

25.14.119 EDS_ERR_FILE_WRITE_ERROR = & h00000028
MBS Cameras Plugin, Plugin Version: 12.1. Function: One of the error constants.
25.14.120  **EDS_ERR_HANDLE_NOT_FOUND = \& h000000F2**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.121  **EDS_ERR_INCOMPATIBLE_VERSION = 6**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.122  **EDS_ERR_INCOMPLETE_TRANSFER = \& h00002007**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.123  **EDS_ERR_INTERNAL_ERROR = 2**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.124  **EDS_ERR_INVALID_CODE_FORMAT = \& h00002016**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.125  **EDS_ERR_INVALID_DEVICEPROP_FORMAT = \& h0000201B**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.126  **EDS_ERR_INVALID_DEVICEPROP_VALUE = \& h0000201C**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.127  **EDS_ERR_INVALID_FN_CALL = \& h000000F1**

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.
25.14. **MODULE EDSMODULEMBS**

25.14.128 **EDS_ERR_INVALID_FN_POINTER** = & h00000065

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.129 **EDS_ERR_INVALID_HANDLE** = & h00000061

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.130 **EDS_ERR_INVALID_ID** = & h000000F3

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.131 **EDS_ERR_INVALID_INDEX** = & h00000063

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.132 **EDS_ERR_INVALID_LENGTH** = & h00000064

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.133 **EDS_ERR_INVALID_OBJECTFORMATCODE** = & h0000200B

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.134 **EDS_ERR_INVALID_PARAMETER** = & h00000060

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.135 **EDS_ERR_INVALID_PARENTOBJECT** = & h0000201A

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.
25.14.136  EDS_ERR_INVALID_POINTER = & h00000062

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.137  EDS_ERR_INVALID_SORT_FN = & h00000066

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.138  EDS_ERR_INVALID_STRAGEID = & h00002008

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.139  EDS_ERR_INVALID_TRANSACTIONID = & h00002004

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.140  EDS_ERR_LAST_GENERIC_ERROR_PLUS_ONE = & h000000F5

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.141  EDS_ERR_LENS_COVER_CLOSE = & h0000A006

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.142  EDS_ERR_LOW_BATTERY = & h0000A101

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.143  EDS_ERR_MEM_ALLOC_FAILED = 3

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.
25.14.144  EDS_ERR_MEM_FREE_FAILED = 4

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.145  EDS_ERR_MISSING_SUBCOMPONENT = & h000000A

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.146  EDS_ERR_NOT_CAMERA_SUPPORT_SDK_VERSION = & h00002021

MBS Cameras Plugin, Plugin Version: 12.5. **Function:** One of the error constants.  
**Notes:** New in 2.11 SDK.

25.14.147  EDS_ERR_NOT_SUPPORTED = 7

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.148  EDS_ERR_NO_VALID_OBJECTINFO = & h00002015

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.149  EDS_ERR_OBJECT_NOTREADY = & h0000A102

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.150  EDS_ERR_OK = 0

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.151  EDS_ERR_OPERATION_CANCELLED = 5

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.
25.14.152  EDS_ERR_OPERATION_REFUSED = & h0000A005

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.153  EDS_ERR_PARTIAL_DELETION = & h00002012

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.154  EDS_ERR_PROPERTIES_MISMATCH = & h00000051

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.155  EDS_ERR_PROPERTIES_NOT_LOADED = & h00000053

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.156  EDS_ERR_PROPERTIES_UNAVAILABLE = & h00000050

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.157  EDS_ERR_PROTECTION_VIOLATION = 9

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.158  EDS_ERR_SELECTION_UNAVAILABLE = & h000000B

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.159  EDS_ERR_SELF_TEST_FAILED = & h00002011

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.
25.14.160  EDS_ERR_SESSION_ALREADY_OPEN = & h0000201E

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.161  EDS_ERR_SESSION_NOT_OPEN = & h00002003

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.162  EDS_ERR_SPECIFICATION_BY_FORMAT_UNSUPPORTED = & h00002014

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.163  EDS_ERR_SPECIFICATION_OF_DESTINATION_UNSUPPORTED = & h00002020

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.164  EDS_ERR_STI_DEVICE_CREATE_ERROR = & h000000E2

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.165  EDS_ERR_STI_DEVICE_RELEASE_ERROR = & h000000E3

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.166  EDS_ERR_STI_INTERNAL_ERROR = & h000000E1

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.
25.14.167  **EDS_ERR_STI_UNKNOWN_ERROR = & h000000E0**
MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.168  **EDS_ERR_STREAM_ALREADY_OPEN = & h000000A2**
MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.169  **EDS_ERR_STREAM_BAD_OPTIONS = & h000000AB**
MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.170  **EDS_ERR_STREAM_CLOSE_ERROR = & h000000A4**
MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.171  **EDS_ERR_STREAM_COULDNT_BEGIN_THREAD = & h000000AA**
MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.172  **EDS_ERR_STREAM_END_OF_STREAM = & h000000AC**
MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.173  **EDS_ERR_STREAM_IO_ERROR = & h000000A0**
MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.174  **EDS_ERR_STREAM_NOT_OPEN = & h000000A1**
MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.175  EDS_ERR_STREAM_OPEN_ERROR = & h000000A3

25.14.176  EDS_ERR_STREAM_PERMISSION_ERROR = & h000000A9

25.14.177  EDS_ERR_STREAM_READ_ERROR = & h000000A7

25.14.178  EDS_ERR_STREAMSEEK_ERROR = & h000000A5

25.14.179  EDS_ERR_STREAM_TELL_ERROR = & h000000A6

25.14.180  EDS_ERR_STREAM_WRITE_ERROR = & h000000A8

25.14.181  EDS_ERR_TAKE_PICTURE_AF_NG = & h00008D01

25.14.182  EDS_ERR_TAKE_PICTURE_CARD_NG = & h00008D07
25.14.183  \textbf{EDS\_ERR\_TAKE\_PICTURE\_CARD\_PROTECT\_NG} = \& h00008D08

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the error constants.

25.14.184  \textbf{EDS\_ERR\_TAKE\_PICTURE\_MIRROR\_UP\_NG} = \& h00008D03

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the error constants.

25.14.185  \textbf{EDS\_ERR\_TAKE\_PICTURE\_MOVIE\_CROP\_NG} = \& h00008D09

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the error constants.

25.14.186  \textbf{EDS\_ERR\_TAKE\_PICTURE\_NO\_CARD\_NG} = \& h00008D06

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the error constants.

25.14.187  \textbf{EDS\_ERR\_TAKE\_PICTURE\_RESERVED} = \& h00008D02

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the error constants.

25.14.188  \textbf{EDS\_ERR\_TAKE\_PICTURE\_SENSOR\_CLEANING\_NG} = \& h00008D04

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the error constants.

25.14.189  \textbf{EDS\_ERR\_TAKE\_PICTURE\_SILENCE\_NG} = \& h00008D05

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the error constants.

25.14.190  \textbf{EDS\_ERR\_TAKE\_PICTURE\_STROBO\_CHARGE\_NG} = \& h00008D0A

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the error constants.
25.14.191  EDS_ERR_TRANSACTION_CANCELED = 0x201F

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.192  EDS_ERR_UNEXPECTED_EXCEPTION = 8

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.193  EDS_ERR_UNIMPLEMENTED = 1

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.194  EDS_ERR_UNKNOWN_COMMAND = 0xA001

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.195  EDS_ERR_UNKNOWN_VENDOR_CODE = 0x2017

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.196  EDS_ERR_USB_DEVICE_LOCK_ERROR = 0x000D0

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.197  EDS_ERR_USB_DEVICE_UNLOCK_ERROR = 0x000D1

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.

25.14.198  EDS_ERR_WAIT_TIMEOUT_ERROR = 0x000F4

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the error constants.
25.14.199  \texttt{EDS_ISSPECIFIC\_MASK} = \& h80000000


25.14.200  \texttt{EDS\_MAX\_NAME} = 256

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} The maximum file name length is limited to \texttt{EDS\_MAX\_NAME}.

25.14.201  \texttt{EDS\_RESERVED\_MASK} = \& h00FF0000


25.14.202  \texttt{EDS\_TRANSFER\_BLOCK\_SIZE} = 512

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} The transfer block size.

25.14.203  \texttt{Evf\_AFMode\_Live} = 1

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the AF Mode constants.  
\textbf{Notes:} Live Mode

25.14.204  \texttt{Evf\_AFMode\_LiveFace} = 2

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the AF Mode constants.  
\textbf{Notes:} Live Face Mode

25.14.205  \texttt{Evf\_AFMode\_Quick} = 0

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the AF Mode constants.  
\textbf{Notes:} Quick Mode
25.14.206  \texttt{kEdsAEMode\_Av} = 2

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the shooting mode constants. 
\textbf{Notes:} Aperture Priority AE

25.14.207  \texttt{kEdsAEMode\_A\_DEP} = 5

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the shooting mode constants. 
\textbf{Notes:} Auto Depth-of-Field AE

25.14.208  \texttt{kEdsAEMode\_Bulb} = 4

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the shooting mode constants. 
\textbf{Notes:} Bulb

25.14.209  \texttt{kEdsAEMode\_Closeup} = 14

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the shooting mode constants. 
\textbf{Notes:} Close-Up

25.14.210  \texttt{kEdsAEMode\_CreativeAuto} = 19

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the shooting mode constants. 
\textbf{Notes:} Creative Auto

25.14.211  \texttt{kEdsAEMode\_Custom} = 7

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the shooting mode constants. 
\textbf{Notes:} Camera settings registered

25.14.212  \texttt{kEdsAEMode\_DEP} = 6

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the shooting mode constants. 
\textbf{Notes:} Depth-of-Field AE
25.14.213  \texttt{kEdsAEMode\_FlashOff} = 15

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the shooting mode constants.  
\textbf{Notes:} Flash Off

25.14.214  \texttt{kEdsAEMode\_Green} = 9

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the shooting mode constants.  
\textbf{Notes:} Auto

25.14.215  \texttt{kEdsAEMode\_Landscape} = 13

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the shooting mode constants.  
\textbf{Notes:} Landscape

25.14.216  \texttt{kEdsAEMode\_Lock} = 8

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the shooting mode constants.  
\textbf{Notes:} Lock

25.14.217  \texttt{kEdsAEMode\_Manual} = 3

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the shooting mode constants.  
\textbf{Notes:} Manual Exposure

25.14.218  \texttt{kEdsAEMode\_Movie} = 20

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the shooting mode constants.  
\textbf{Notes:} Not documented.

25.14.219  \texttt{kEdsAEMode\_NightPortrait} = 10

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function:} One of the shooting mode constants.  
\textbf{Notes:} Night Scene Portrait
25.14.220 kEdsAEMode_PhotoInMovie = 21

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the shooting mode constants. **Notes:** Photo In Movie (This value is valid for only Image.)

25.14.221 kEdsAEMode_Photography = 12

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the shooting mode constants. **Notes:** Portrait

25.14.222 kEdsAEMode_Program = 0

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the shooting mode constants. **Notes:** Program AE

25.14.223 kEdsAEMode_SceneIntelligentAuto = 22

MBS Cameras Plugin, Plugin Version: 12.5. **Function:** One of the shooting mode constants. **Notes:**

Auto
New in 2.11 SDK.

25.14.224 kEdsAEMode_Sports = 11

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the shooting mode constants. **Notes:** Sports

25.14.225 kEdsAEMode_Tv = 1

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the shooting mode constants. **Notes:** Shutter-Speed Priority AE
25.14.226  kEdsAEMode_Uknown = & hffffffff

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the shooting mode constants.
**Notes:** Not valid/no settings changes

25.14.227  kEdsBatteryLevel2_AC = & HFFFFFFFF

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the battery level constants.

25.14.228  kEdsBatteryLevel2_BCLevel = 0

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the battery level constants.

25.14.229  kEdsBatteryLevel2_Empty = 0

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the battery level constants.

25.14.230  kEdsBatteryLevel2_Error = 0

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the battery level constants.

25.14.231  kEdsBatteryLevel2_Half = 49

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the battery level constants.

25.14.232  kEdsBatteryLevel2_Hi = 69

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the battery level constants.

25.14.233  kEdsBatteryLevel2_Low = 9

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the battery level constants.
25.14.234  kEdsBatteryLevel2_Normal = 80

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the battery level constants.

25.14.235  kEdsBatteryLevel2_Quarter = 19

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the battery level constants.

25.14.236  kEdsBracket_AEB = & h01

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the bracket constants.  
**Notes:** AE bracket

25.14.237  kEdsBracket_FEB = & h08

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the bracket constants.  
**Notes:** FE bracket

25.14.238  kEdsBracket_ISOB = & h02

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the bracket constants.  
**Notes:** ISO bracket

25.14.239  kEdsBracket_Unknown = & hffffffff

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the bracket constants.  
**Notes:** Bracket off

25.14.240  kEdsBracket_WBB = & h04

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the bracket constants.  
**Notes:** WB bracket
25.14.241 kEdsColorMatrix_1 = 1
MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the color matrix constants.

25.14.242 kEdsColorMatrix_2 = 2
MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the color matrix constants.

25.14.243 kEdsColorMatrix_3 = 3
MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the color matrix constants.

25.14.244 kEdsColorMatrix_4 = 4
MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the color matrix constants.

25.14.245 kEdsColorMatrix_5 = 5
MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the color matrix constants.

25.14.246 kEdsColorMatrix_6 = 6
MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the color matrix constants.

25.14.247 kEdsColorMatrix_7 = 7
MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the color matrix constants.

25.14.248 kEdsColorMatrix_Custom = 0
MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the color matrix constants.
25.14.249  kEdsColorSpace_AdobeRGB = 2

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the colorspace constants.

25.14.250  kEdsColorSpace_sRGB = 1

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the colorspace constants.

25.14.251  kEdsColorSpace_Unknown = & hffffffff

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the colorspace constants.

25.14.252  kEdsCompressQuality_Fine = 3

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the image quality constants.

25.14.253  kEdsCompressQuality_Lossless = 4

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the image quality constants.

25.14.254  kEdsCompressQuality_Normal = 2

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the image quality constants.

25.14.255  kEdsCompressQuality_SuperFine = 5

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the image quality constants.

25.14.256  kEdsCompressQuality_Unknown = & hffffffff

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the image quality constants.
25.14.257 kEdsETTL2ModeAverage = 1

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the ETTL2 Mode evaluative constants. **Notes:** Average

25.14.258 kEdsETTL2ModeEvaluative = 0

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the ETTL2 Mode evaluative constants. **Notes:** Evaluative

25.14.259 kEdsEvfDepthOfFieldPreview_OFF = & h00000000

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Depth of Field Preview Constants. **Notes:** Off

25.14.260 kEdsEvfDepthOfFieldPreview_ON = & h00000001

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Depth of Field Preview Constants. **Notes:** On

25.14.261 kEdsEvfDriveLens_Far1 = & h00008001

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Drive Lens constants.

25.14.262 kEdsEvfDriveLens_Far2 = & h00008002

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Drive Lens constants.

25.14.263 kEdsEvfDriveLens_Far3 = & h00008003

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Drive Lens constants.
25.14.264  kEdsEvfDriveLens_Near1 = & \text{h00000001}

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Drive Lens constants.

25.14.265  kEdsEvfDriveLens_Near2 = & \text{h00000002}

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Drive Lens constants.

25.14.266  kEdsEvfDriveLens_Near3 = & \text{h00000003}

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Drive Lens constants.

25.14.267  kEdsEvfOutputDevice_PC = 2

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Output Device constants.  
**Notes:** The live view image can be transferred to the PC.

25.14.268  kEdsEvfOutputDevice_TFT = 1

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Output Device constants.  
**Notes:** Live view is displayed on the camera’s TFT.

25.14.269  kEdsEvfZoom_Fit = 1

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Zoom constants.  
**Notes:** Entire screen

25.14.270  kEdsEvfZoom_x10 = 10

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Zoom constants.  
**Notes:** 10 times.
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kEdsEvfZoom_x5 = 5</td>
<td>MBS Cameras Plugin, Plugin Version: 12.1. <strong>Function:</strong> One of the Zoom constants. <strong>Notes:</strong> 5 times</td>
</tr>
<tr>
<td>kEdsFilterEffect_Green = 4</td>
<td>MBS Cameras Plugin, Plugin Version: 12.1. <strong>Function:</strong> One of the filter effect constants. <strong>Notes:</strong> Green</td>
</tr>
<tr>
<td>kEdsFilterEffect_None = 0</td>
<td>MBS Cameras Plugin, Plugin Version: 12.1. <strong>Function:</strong> One of the filter effect constants. <strong>Notes:</strong> No effect</td>
</tr>
<tr>
<td>kEdsFilterEffect_Orange = 2</td>
<td>MBS Cameras Plugin, Plugin Version: 12.1. <strong>Function:</strong> One of the filter effect constants. <strong>Notes:</strong> Orange</td>
</tr>
<tr>
<td>kEdsFilterEffect_Red = 3</td>
<td>MBS Cameras Plugin, Plugin Version: 12.1. <strong>Function:</strong> One of the filter effect constants. <strong>Notes:</strong> Red</td>
</tr>
<tr>
<td>kEdsFilterEffect_Yellow = 1</td>
<td>MBS Cameras Plugin, Plugin Version: 12.1. <strong>Function:</strong> One of the filter effect constants. <strong>Notes:</strong> Yellow</td>
</tr>
<tr>
<td>kEdsImageQualityForLegacy_LJ = &amp; h001f000f</td>
<td>MBS Cameras Plugin, Plugin Version: 12.1. <strong>Function:</strong> One of the Legacy Image Quality constants. <strong>Notes:</strong> Jpeg Large</td>
</tr>
</tbody>
</table>
25.14.278  kEdsImageQualityForLegacy_LJF = & h00130000

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Legacy Image Quality constants.  
**Notes:** Jpeg Large Fine

25.14.279  kEdsImageQualityForLegacy_LJN = & h00120000

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Legacy Image Quality constants.  
**Notes:** Jpeg Large Normal

25.14.280  kEdsImageQualityForLegacy_LR = & h00240000

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Legacy Image Quality constants.  
**Notes:** RAW

25.14.281  kEdsImageQualityForLegacy_LR2 = & h002f000f

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Legacy Image Quality constants.  
**Notes:** RAW

25.14.282  kEdsImageQualityForLegacy_LR2LJ = & h002f001f

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Legacy Image Quality constants.  
**Notes:** RAW + Jpeg Large

25.14.283  kEdsImageQualityForLegacy_LR2M1J = & h002f051f

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Legacy Image Quality constants.  
**Notes:** RAW + Jpeg Middle1

25.14.284  kEdsImageQualityForLegacy_LR2M2J = & h002f061f

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Legacy Image Quality constants.  
**Notes:** RAW + Jpeg Middle2
25.14.285 kEdsImageQualityForLegacy_LR2SJ = & h002f021f

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Legacy Image Quality constants.  
**Notes:** RAW + Jpeg Small

25.14.286 kEdsImageQualityForLegacy_LRLJF = & h00240013

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Legacy Image Quality constants.  
**Notes:** RAW + Jpeg Large Fine

25.14.287 kEdsImageQualityForLegacy_LRLJN = & h00240012

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Legacy Image Quality constants.  
**Notes:** RAW + Jpeg Large Normal

25.14.288 kEdsImageQualityForLegacy_LRMJF = & h00240113

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Legacy Image Quality constants.  
**Notes:** RAW + Jpeg Middle Fine

25.14.289 kEdsImageQualityForLegacy_LRMJN = & h00240112

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Legacy Image Quality constants.  
**Notes:** RAW + Jpeg Middle Normal

25.14.290 kEdsImageQualityForLegacy_LRSJF = & h00240213

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Legacy Image Quality constants.  
**Notes:** RAW + Jpeg Small Fine

25.14.291 kEdsImageQualityForLegacy_LRSJN = & h00240212

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Legacy Image Quality constants.  
**Notes:** RAW + Jpeg Small Normal
25.14.292 kEdsImageQualityForLegacy_M1J = & h051f000f

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Legacy Image Quality constants.  
**Notes:** Jpeg Middle1

25.14.293 kEdsImageQualityForLegacy_M2J = & h061f000f

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Legacy Image Quality constants.  
**Notes:** Jpeg Middle2

25.14.294 kEdsImageQualityForLegacy_MJF = & h01130000

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Legacy Image Quality constants.  
**Notes:** Jpeg Middle Fine

25.14.295 kEdsImageQualityForLegacy_MJN = & h01120000

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Legacy Image Quality constants.  
**Notes:** Jpeg Middle Normal

25.14.296 kEdsImageQualityForLegacy_SJ = & h021f000f

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Legacy Image Quality constants.  
**Notes:** Jpeg Small

25.14.297 kEdsImageQualityForLegacy_SJF = & h02130000

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Legacy Image Quality constants.  
**Notes:** Jpeg Small Fine

25.14.298 kEdsImageQualityForLegacy_SJN = & h02120000

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Legacy Image Quality constants.  
**Notes:** Jpeg Small Normal
25.14.299 \texttt{kEdsImageQualityForLegacy\_Unknown = & hffffffff}

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Legacy Image Quality constants. 
**Notes:** Unknown

25.14.300 \texttt{kEdsImageSize\_Large = 0}

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the image size constants. 
**Notes:** Large

25.14.301 \texttt{kEdsImageSize\_Middle = 1}

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the image size constants. 
**Notes:** Middle

25.14.302 \texttt{kEdsImageSize\_Middle1 = 5}

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the image size constants. 
**Notes:** Middle

25.14.303 \texttt{kEdsImageSize\_Middle2 = 6}

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the image size constants. 
**Notes:** Middle

25.14.304 \texttt{kEdsImageSize\_Small = 2}

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the image size constants. 
**Notes:** Small

25.14.305 \texttt{kEdsImageSize\_Small1 = 14}

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the image size constants. 
**Notes:** Small
25.14.306  kEdsImageSize_Small2 = 15

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the image size constants.  
**Notes:** Small

25.14.307  kEdsImageSize_Small3 = 16

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the image size constants.  
**Notes:** Small

25.14.308  kEdsImageSize_Unknown = & hffffffff

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the image size constants.  
**Notes:** Unknown

25.14.309  kEdsObjectEvent_All = & h00000200

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Object event constants.

25.14.310  kEdsObjectEvent_DirItemCancelTransferDT = & h0000020a

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Object event constants.

25.14.311  kEdsObjectEvent_DirItemContentChanged = & h00000207

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Object event constants.

25.14.312  kEdsObjectEvent_DirItemCreated = & h00000204

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Object event constants.
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25.14.313  kEdsObjectEvent_DirItemInfoChanged = & h00000206

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Object event constants.

25.14.314  kEdsObjectEvent_DirItemRemoved = & h00000205

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Object event constants.

25.14.315  kEdsObjectEvent_DirItemRequestTransfer = & h00000208

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Object event constants.

25.14.316  kEdsObjectEvent_DirItemRequestTransferDT = & h00000209

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Object event constants.

25.14.317  kEdsObjectEvent_FolderUpdateItems = & h00000203

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Object event constants.

25.14.318  kEdsObjectEvent_VolumeAdded = & h0000020c

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Object event constants.

25.14.319  kEdsObjectEvent_VolumeInfoChanged = & h00000201

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Object event constants.

25.14.320  kEdsObjectEvent_VolumeRemoved = & h0000020d

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Object event constants.
25.14. MODULE EDSMODULEMB5

25.14.321 kEdsObjectEvent_VolumeUpdateItems = & h00000202

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Object event constants.

25.14.322 kEdsPhotoEffect_Monochrome = 5

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the photo effect constants.  
**Notes:** Black and white

25.14.323 kEdsPhotoEffect_Off = 0

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the photo effect constants.  
**Notes:** Off (Color Effect deactivated. Normal shooting.)

25.14.324 kEdsPictureStyle_Auto = & h0087

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the picture style constants.  
**Notes:** Auto

25.14.325 kEdsPictureStyle_Faithful = & h0085

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the picture style constants.  
**Notes:** Faithful

25.14.326 kEdsPictureStyle_Landscape = & h0083

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the picture style constants.  
**Notes:** Landscape

25.14.327 kEdsPictureStyle_Monochrome = & h0086

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the picture style constants.  
**Notes:** Monochrome
**25.14.328**  kEdsPictureStyle_Neutral = & h0084

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the picture style constants.  
**Notes:** Neutral

**25.14.329**  kEdsPictureStyle_PC1 = & h0041

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the picture style constants.  
**Notes:** PC1

**25.14.330**  kEdsPictureStyle_PC2 = & h0042

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the picture style constants.  
**Notes:** PC2

**25.14.331**  kEdsPictureStyle_PC3 = & h0043

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the picture style constants.  
**Notes:** PC3

**25.14.332**  kEdsPictureStyle_Portrait = & h0082

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the picture style constants.  
**Notes:** Portrait

**25.14.333**  kEdsPictureStyle_Standard = & h0081

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the picture style constants.  
**Notes:** Standard

**25.14.334**  kEdsPictureStyle_User1 = & h0021

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the picture style constants.  
**Notes:** User defined
25.14.  MODULE EDSMODULEMBS

25.14.335  kEdsPictureStyle_User2  =  & h0022

MBS Cameras Plugin, Plugin Version: 12.1.  Function: One of the picture style constants.
Notes: User defined

25.14.336  kEdsPictureStyle_User3  =  & h0023

MBS Cameras Plugin, Plugin Version: 12.1.  Function: One of the picture style constants.
Notes: User defined

25.14.337  kEdsPropertyEvent_All  =  & h00000100

MBS Cameras Plugin, Plugin Version: 12.1.  Function: One of the property event constants.
Notes: One of the state events for EdsPropertyEventHandlerMBS class. Please check EDSDK API Pro-
gramming Reference for details.

25.14.338  kEdsPropertyEvent_PropertyChanged  =  & h00000101

MBS Cameras Plugin, Plugin Version: 12.1.  Function: One of the property event constants.
Notes: One of the state events for EdsPropertyEventHandlerMBS class. Please check EDSDK API Pro-
gramming Reference for details.

25.14.339  kEdsPropertyEvent_PropertyDescChanged  =  & h00000102

MBS Cameras Plugin, Plugin Version: 12.1.  Function: One of the property event constants.
Notes: One of the state events for EdsPropertyEventHandlerMBS class. Please check EDSDK API Pro-
gramming Reference for details.

25.14.340  kEdsSaveTo_Both  =  3

MBS Cameras Plugin, Plugin Version: 12.1.  Function: One of the SaveTo constants.
Notes: Save both ways (memory card of a remote camera and by downloading to a host computer)
25.14.341  kEdsSaveTo_Camera = 1

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the SaveTo constants.
**Notes:** Save on a memory card of a remote camera.

25.14.342  kEdsSaveTo_Host = 2

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the SaveTo constants.
**Notes:** Save by downloading to a host computer.

25.14.343  kEdsStateEvent_AfResult = & h00000309

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the state event constants.
**Notes:** One of the state events for EdsCameraStateEventHandlerMBS class. Please check EDSLK API Programming Reference for details.

25.14.344  kEdsStateEvent_All = & h00000300

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the state event constants.
**Notes:** One of the state events for EdsCameraStateEventHandlerMBS class. Please check EDSLK API Programming Reference for details.

25.14.345  kEdsStateEvent_BulbExposureTime = & h00000310

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the state event constants.
**Notes:** One of the state events for EdsCameraStateEventHandlerMBS class. Please check EDSLK API Programming Reference for details.

25.14.346  kEdsStateEvent_CaptureError = & h00000305

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the state event constants.
**Notes:** One of the state events for EdsCameraStateEventHandlerMBS class. Please check EDSLK API Programming Reference for details.
25.14. MODULE EDSMODULEMBS

25.14.347 kEdsStateEvent_InternalError = & h00000306

MBS Cameras Plugin, Plugin Version: 12.1. **Function**: One of the state event constants.
**Notes**: One of the state events for EdsCameraStateEventHandlerMBS class. Please check EDSDK API Programming Reference for details.

25.14.348 kEdsStateEvent_JobStatusChanged = & h00000302

MBS Cameras Plugin, Plugin Version: 12.1. **Function**: One of the state event constants.
**Notes**: One of the state events for EdsCameraStateEventHandlerMBS class. Please check EDSDK API Programming Reference for details.

25.14.349 kEdsStateEvent_Shutdown = & h00000301

MBS Cameras Plugin, Plugin Version: 12.1. **Function**: One of the state event constants.
**Notes**: One of the state events for EdsCameraStateEventHandlerMBS class. Please check EDSDK API Programming Reference for details.

25.14.350 kEdsStateEvent_ShutDownTimerUpdate = & h00000304

MBS Cameras Plugin, Plugin Version: 12.1. **Function**: One of the state event constants.
**Notes**: One of the state events for EdsCameraStateEventHandlerMBS class. Please check EDSDK API Programming Reference for details.

25.14.351 kEdsStateEvent_WillSoonShutDown = & h00000303

MBS Cameras Plugin, Plugin Version: 12.1. **Function**: One of the state event constants.
**Notes**: One of the state events for EdsCameraStateEventHandlerMBS class. Please check EDSDK API Programming Reference for details.

25.14.352 kEdsStroboModeExternalATTL = 2

MBS Cameras Plugin, Plugin Version: 12.1. **Function**: One of the Strobo Mode constants.
25.14.353 kEdsStroboModeExternalAuto = 4

MBS Cameras Plugin, Plugin Version: 12.1. **Function**: One of the Strobo Mode constants.

25.14.354 kEdsStroboModeExternalETTL = 1

MBS Cameras Plugin, Plugin Version: 12.1. **Function**: One of the Strobo Mode constants.


MBS Cameras Plugin, Plugin Version: 12.1. **Function**: One of the Strobo Mode constants.

25.14.356 kEdsStroboModeExternalTTL = 3

MBS Cameras Plugin, Plugin Version: 12.1. **Function**: One of the Strobo Mode constants.

25.14.357 kEdsStroboModeInternal = 0

MBS Cameras Plugin, Plugin Version: 12.1. **Function**: One of the Strobo Mode constants.


MBS Cameras Plugin, Plugin Version: 12.1. **Function**: One of the Strobo Mode constants.

25.14.359 kEdsTonigEffect_Blue = 2

MBS Cameras Plugin, Plugin Version: 12.1. **Function**: One of the Tonig Effect constants.

25.14.360 kEdsTonigEffect_Green = 4

MBS Cameras Plugin, Plugin Version: 12.1. **Function**: One of the Tonig Effect constants.
25.14.361 kEdsTonigEffect_None = 0

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Tonig Effect constants.

25.14.362 kEdsTonigEffect_Purple = 3

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Tonig Effect constants.

25.14.363 kEdsTonigEffect_Sepia = 1

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Tonig Effect constants.

25.14.364 kEdsTransferOption_ByDirectTransfer = 1

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Transfer Option constants.

25.14.365 kEdsTransferOption_ByRelease = 2

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Transfer Option constants.

25.14.366 kEdsTransferOption_ToDesktop = & h00000100

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Transfer Option constants.

25.14.367 kEdsWhiteBalance_Auto = 0

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the white balance constants.  
**Notes:** Auto

25.14.368 kEdsWhiteBalance_Click = -1

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the white balance constants.  
**Notes:** Setting the white balance by clicking image coordinates.
25.14.369  \texttt{kEdsWhiteBalance\_Cloudy} = 2

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the white balance constants. 
\textbf{Notes}: Cloudy

25.14.370  \texttt{kEdsWhiteBalance\_ColorTemp} = 9

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the white balance constants. 
\textbf{Notes}: Color temperature

25.14.371  \texttt{kEdsWhiteBalance\_Daylight} = 1

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the white balance constants. 
\textbf{Notes}: Daylight

25.14.372  \texttt{kEdsWhiteBalance\_Fluorescent} = 4

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the white balance constants. 
\textbf{Notes}: Fluorescent

25.14.373  \texttt{kEdsWhiteBalance\_Pasted} = -2

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the white balance constants. 
\textbf{Notes}: White balance copied from another image.

25.14.374  \texttt{kEdsWhiteBalance\_PCSet1} = 10

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the white balance constants. 
\textbf{Notes}: Custom white balance: PC-1

25.14.375  \texttt{kEdsWhiteBalance\_PCSet2} = 11

MBS Cameras Plugin, Plugin Version: 12.1. \textbf{Function}: One of the white balance constants. 
\textbf{Notes}: Custom white balance: PC-2
25.14. MODULE EDSMODULEMBS

25.14.376  kEdsWhiteBalance_PCSets3 = 12

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the white balance constants.  
**Notes:** Custom white balance: PC-3

25.14.377  kEdsWhiteBalance_PCSets4 = 20

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the white balance constants.  
**Notes:** Custom white balance: PC-4

25.14.378  kEdsWhiteBalance_PCSets5 = 21

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the white balance constants.  
**Notes:** Custom white balance: PC-5

25.14.379  kEdsWhiteBalance_Shade = 8

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the white balance constants.  
**Notes:** Shade


MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the white balance constants.  
**Notes:** Flash

25.14.381  kEdsWhiteBalance_Tangsten = 3

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the white balance constants.  
**Notes:** Tungsten


MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the white balance constants.  
**Notes:** Manual (set by shooting a white card or paper)

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the white balance constants.  
**Notes:** Manual 2


MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the white balance constants.  
**Notes:** Manual 3


MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the white balance constants.  
**Notes:** Manual 4

25.14.386 $k_{\text{EdsWhiteBalance.WhitePaper5}} = 19$

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the white balance constants.  
**Notes:** Manual 5
25.15  CLASS EDSOBJECTEVENTHANDLERMBS

25.15  class EdsObjectEventHandlerMBS

25.15.1  class EdsObjectEventHandlerMBS

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class to watch for object events.

25.15.2  Methods

25.15.3  Add(camera as EdsBaseMBS, ObjectEvent as UInt32)

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Registers event handler to listen for object events. **Notes:** Lasterror is set.

25.15.4  Constructor

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Constructor to create object event handler. **Notes:** You can add objects to watch for events later. See also:

• 25.15.5 Constructor(camera as EdsBaseMBS, ObjectEvent as UInt32)

25.15.5  Constructor(camera as EdsBaseMBS, ObjectEvent as UInt32)

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates object event handler and registers it to listen object events. **Notes:** Lasterror is set. See also:

• 25.15.4 Constructor

25.15.6  Events

25.15.7  ObjectChanged(EventCode as Integer, obj as EdsBaseMBS) as Integer

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event called when an object changed. **Notes:**
obj: The target object.

Return EDS_ERR_OK if successful. In other cases, see the EDS Error Lists.
25.16. **CLASS EDSPICTURERESTYLEDESCMBS**

### 25.16.1 class EdsPictureStyleDescMBS

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Use this class when retrieving picture styles.

### 25.16.2 Properties

#### 25.16.3 ColorTone as Int32

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The Color tone.  
**Notes:** An integer from 4 to 4. (Read and Write property)

#### 25.16.4 Contrast as Int32

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The Contrast setting.  
**Notes:** An integer from 4 to 4. (Read and Write property)

#### 25.16.5 FilterEffect as UInt32

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The Monochrome filter effect  
**Notes:**  
0: None  
1: Yellow  
2: Orange  
3: Red  
4: Green  
& hFFFFFFFE: Unknown  
(Read and Write property)
25.16.6 Saturation as Int32

Function: The saturation value.
Notes: An integer from 4 to 4.
(Read and Write property)

25.16.7 sharpFineness as UInt32

Function: The sharp fineness value.
Notes: Only for 3.x SDK.
(Read and Write property)

25.16.8 Sharpness as UInt32

Function: The Sharpness value.
Notes: An integer from 0 to 7.
(Read and Write property)

25.16.9 sharpThreshold as UInt32

Function: The sharp threshold value.
Notes: Only for 3.x SDK.
(Read and Write property)

25.16.10 ToningEffect as UInt32

Function: Monochrome tone.
Notes:
0: None
1: Sepia
2: Blue
3: Violet
(Read and Write property)
25.17 class EdsPointMBS

25.17.1 class EdsPointMBS

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This class is generally used to represent a set of coordinates.

25.17.2 Properties

25.17.3 X as Integer

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The x value.  
**Notes:** (Read and Write property)

25.17.4 Y as Integer

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The y value.  
**Notes:** (Read and Write property)
25.18. class EdsProgressMBS

25.18.1 class EdsProgressMBS

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for progress event.  
**Notes:** Please make subclass or put it on a window to receive events.

25.18.2 Events

25.18.3 Progress(Percent as UInt32, byref Cancel as boolean) as Integer

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The progress event.  
**Notes:**  
Percent: Indicates the progress in a range of 0 - 100%.  
Cancel: To cancel processing in progress, set this variable to true.

For example, if this argument is set to true during file transfer from the camera, the EDSDK notifies the camera that file transfer has been canceled, and transfer of those files is canceled.

Return EDS_ERR_OK (0) if everything is okay.

25.18.4 Constants

25.18.5 kEdsProgressOption.Done = 1

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Progress Option Constants  
**Notes:** Call a progress callback function when the progress reaches 100%.

25.18.6 kEdsProgressOption.NoReport = 0

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Progress Option Constants  
**Notes:** Do not call a progress callback function.
25.18.7 kEdsProgressOption_Periodically = 2

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Progress Option Constants
**Notes:** Call a progress callback function periodically.
25.19. **CLASS EdsPropertyEventHandlerMBS**

25.19  **class EdsPropertyEventHandlerMBS**

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for a property event handler.

25.19.2  **Methods**

25.19.3  **Add(camera as EdsCameraMBS, PropertyEvent as UInt32)**

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Registers this event handler to report property events for the given camera. **Notes:** Lasterror is set.

25.19.4  **Constructor**

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Constructor to create property event handler. **Notes:** You can add cameras to watch for properties later. See also:

- 25.19.5 Constructor(camera as EdsCameraMBS, PropertyEvent as UInt32)

25.19.5  **Constructor(camera as EdsCameraMBS, PropertyEvent as UInt32)**

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Constructor to create property event handler and registers this event handler to report property events for the given camera. **Notes:** Lasterror is set. See also:

- 25.19.4 Constructor
25.19.6 Events

25.19.7 PropertyChanged(PropertyEvent as UInt32, PropertyID as UInt32, Param as UInt32) as Integer


Notes:

PropertyEvent: Indicate the event type supplemented. Designate one of the event types subject to supplementation, as designated by EdsSetPropertyEventHandler. Events that occur can be determined based on the event type.

PropertyID: Returns the property ID created by the event.

Param: Used to identify information created by the event for custom function (CF) properties or other properties that have multiple items of information.

Returns EDS.ERR_OK if successful. In other cases, see the EDS Error Lists.
25.20  class EdsRationalMBS

25.20.1  class EdsRationalMBS

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This class is generally used to represent fractions.  
**Notes:** It is used with many properties such as kEdsPropID_Av and kEdsPropID_Tv.

25.20.2  Properties

25.20.3  denominator as UInt32

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The denominator part of the fraction.  
**Notes:** (Read and Write property)

25.20.4  numerator as Int32

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The numerator part of the fraction.  
**Notes:** (Read and Write property)
25.21 class EdsRectMBS

25.21.1 class EdsRectMBS

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This class is generally used to indicate the coordinates of a rectangle.

25.21.2 Properties

25.21.3 Height as Integer

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The height of the rectangle. Notes: (Read and Write property)

25.21.4 Point as EdsPointMBS

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Get or set the location of the rectangle. Notes: (Read and Write property)

25.21.5 Size as EdsSizeMBS

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Get or set the size of the rectangle. Notes: (Read and Write property)

25.21.6 Width as Integer

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The width of the rectangle. Notes: (Read and Write property)

25.21.7 X as Integer

25.21. CLASS EDSRECTMBS

Notes: (Read and Write property)

25.21.8 Y as Integer

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The y position. **Notes:** (Read and Write property)
25.22 class EdsSizeMBS

25.22.1 class EdsSizeMBS

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This class generally represents the width and height of a rectangle.

25.22.2 Properties

25.22.3 Height as Integer

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The height value.  
**Notes:** (Read and Write property)

25.22.4 Width as Integer

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The width value.  
**Notes:** (Read and Write property)
25.23. class EdsStreamMBS

25.23.1 class EdsStreamMBS

**Function:** The class for a file/data stream.  
**Notes:**  
Use it to specify a destination for downloading image data or as source for reading data.  
Subclass of the EdsBaseMBS class.

25.23.2 Methods

25.23.3 Constructor(data as string)

**Function:** Creates a stream from the memory buffer you prepared.  
**Notes:**  
Unlike the buffer size of streams created by means of EdsCreateMemoryStream, the buffer size you prepare for streams created this way does not expand.

Lasterror is set.

See also:

- 25.23.4 Constructor(Memory as Memoryblock, size as Int64 = -1, offset as Integer = 0)  
- 25.23.5 Constructor(path as folderitem, CreateDisposition as Integer, DesiredAccess as Integer)  
- 25.23.6 Constructor(path as string, CreateDisposition as Integer, DesiredAccess as Integer)  
- 25.23.7 Constructor(size as UInt64)

25.23.4 Constructor(Memory as Memoryblock, size as Int64 = -1, offset as Integer = 0)

**Function:** Creates a stream from the memory buffer you prepare.  
**Notes:**  
Unlike the buffer size of streams created by means of CreateMemoryStream, the buffer size you prepare for streams created this way does not expand.

Lasterror is set.

See also:

- 25.23.3 Constructor(data as string)

Function: Creates a new file on a host computer (or opens an existing file) and creates a file stream for access to the file.

Notes:

If a new file is designated before executing this API, the file is actually created following the timing of writing by means of EdsWrite or the like with respect to an open stream.

path: Designate the file name of a new file or a file to open.

CreateDisposition: Designate how the file is handled (that is, its disposition) if it exists or does not exist. Designate a value defined in kEdsFileCreateDisposition*.

DesiredAccess: Pass kEdsAccess_Read, kEdsAccess_Write or kEdsAccess_ReadWrite. Lasterror is set.

See also:

- 25.23.3 Constructor(data as string) 4237
- 25.23.4 Constructor(Memory as Memoryblock, size as Int64 = -1, offset as Integer = 0) 4237
- 25.23.6 Constructor(path as string, CreateDisposition as Integer, DesiredAccess as Integer) 4238
- 25.23.7 Constructor(size as UInt64) 4239
25.23. **CLASS EDSSTREAMMBS**

Lasterror is set.

See also:

- 25.23.3 Constructor(data as string)
- 25.23.4 Constructor(Memory as Memoryblock, size as Int64 = -1, offset as Integer = 0)
- 25.23.5 Constructor(path as folderitem, CreateDisposition as Integer, DesiredAccess as Integer)
- 25.23.7 Constructor(size as UInt64)

25.23.7 **Constructor(size as UInt64)**


**Function:** Creates a stream in the memory of a host computer.

**Notes:**
In the case of writing in excess of the allocated buffer size, the memory is automatically extended.
Lasterror is set.

See also:

- 25.23.3 Constructor(data as string)
- 25.23.4 Constructor(Memory as Memoryblock, size as Int64 = -1, offset as Integer = 0)
- 25.23.5 Constructor(path as folderitem, CreateDisposition as Integer, DesiredAccess as Integer)
- 25.23.6 Constructor(path as string, CreateDisposition as Integer, DesiredAccess as Integer)

25.23.8 **CopyData(WriteSize as UInt64, outStream as EdsStreamMBS)**


**Function:** Copies data from the copy source stream to the copy destination stream.

**Notes:**
The read or write position of the data to copy is determined from the current file read or write position of the respective stream.
After this API is executed, the read or write positions of the copy source and copy destination streams are moved an amount corresponding to WriteSize in the positive direction.
Lasterror is set.

25.23.9 **CreateEvfImageRef as EdsEvfImageMBS**


**Function:** Creates an object used to get the live view image data set.

**Notes:**
Lasterror is set.
See EdsCreateEvfImageRef in the SDK documentation.

### 25.23.10 CreateFileStream(path as folderitem, CreateDisposition as Integer, DesiredAccess as Integer) as EdsStreamMBS

**Function:** Creates a new file on a host computer (or opens an existing file) and creates a file stream for access to the file.
**Notes:**
If a new file is designated before executing this API, the file is actually created following the timing of writing by means of EdsWrite or the like with respect to an open stream.

- **path:** Designate the file name of a new file or a file to open.
- **CreateDisposition:** Designate how the file is handled (that is, its disposition) if it exists or does not exist. Designate a value defined in kEdsFileCreateDisposition*.
- **DesiredAccess:** Pass kEdsAccess_Read, kEdsAccess_Write or kEdsAccess_ReadWrite.
- **Lasterror** is set.

See also:
- 25.23.11 CreateFileStream(path as string, CreateDisposition as Integer, DesiredAccess as Integer) as EdsStreamMBS

### 25.23.11 CreateFileStream(path as string, CreateDisposition as Integer, DesiredAccess as Integer) as EdsStreamMBS

**Function:** Creates a new file on a host computer (or opens an existing file) and creates a file stream for access to the file.
**Notes:**
If a new file is designated before executing this API, the file is actually created following the timing of writing by means of EdsWrite or the like with respect to an open stream.

- **path:** Designate the file name of a new file or a file to open.
- **CreateDisposition:** Designate how the file is handled (that is, its disposition) if it exists or does not exist. Designate a value defined in kEdsFileCreateDisposition*.
- **DesiredAccess:** Pass kEdsAccess_Read, kEdsAccess_Write or kEdsAccess_ReadWrite.
- **Lasterror** is set.

See also:
- 25.23.10 CreateFileStream(path as folderitem, CreateDisposition as Integer, DesiredAccess as Integer) as EdsStreamMBS
25.23. **CLASS EDSSTREAMMBS**

### 25.23.12 CreateImage as EdsImageMBS


**Function:** Creates an image object from an image file.

**Notes:**

Without modification, stream objects cannot be worked with as images. Thus, when extracting images from image files, you must use this API to create image objects.

The image object created this way can be used to get image information (such as the height and width, number of color components, and resolution), thumbnail image data, and the image data itself. Lasterror is set.

### 25.23.13 CreateMemoryStream(size as UInt32) as EdsStreamMBS


**Function:** Creates a stream in the memory of a host computer.

**Notes:**

In the case of writing in excess of the allocated buffer size, the memory is automatically extended. Lasterror is set.

### 25.23.14 CreateMemoryStreamFromMemoryblock(Memory as Memoryblock, size as Integer = -1, offset as Integer = 0) as EdsStreamMBS


**Function:** Creates a stream from the memory buffer you prepare.

**Notes:**

Unlike the buffer size of streams created by means of CreateMemoryStream, the buffer size you prepare for streams created this way does not expand. Lasterror is set.

### 25.23.15 CreateMemoryStreamFromString(data as string) as EdsStreamMBS


**Function:** Creates a stream from the memory buffer you prepared.

**Notes:**

Unlike the buffer size of streams created by means of CreateMemoryStream, the buffer size you prepare for streams created this way does not expand. Lasterror is set.
25.23.16 Length as UInt64

Function: Gets the stream size.
Notes:
Returns the number of bytes of the stream.
LastError is set.

25.23.17 Pointer as Ptr

Function: Gets the pointer to the start address of memory managed by the memory stream.
Notes:
As the EDSDK automatically resizes the buffer, the memory stream provides you with the same access methods as for the file stream. If access is attempted that is excessive with regard to the buffer size for the stream, data before the required buffer size is allocated is copied internally, and new writing occurs. Thus, the buffer pointer might be switched on an unknown timing. Caution in use is therefore advised.
LastError is set.

25.23.18 Position as UInt64

Function: Gets the current read or write position of the stream (that is, the file position indicator).
Notes:
Returns the current read or write position of the stream (that is, to the offset position from the beginning of the stream). (The beginning of the stream is 0.)
LastError is set.

The stream’s initial read or write position is 0. If Write or Read is used to write or read from the stream, the indicator is moved an amount corresponding to that size in the positive direction.
When intentionally changing the read or write position of the stream, use Seek.

25.23.19 Read(size as UInt64) as string

Function: Reads data with given maximum length into the buffer, starting at the current read or write position of the stream.
Notes:
The size of data actually read can be slower. Lasterror is set.

25.23.20 Seek(Offset as Int64, origin as Integer)

**Function:** Moves the read or write position of the stream (that is, the file position indicator). 
**Notes:**
- Offset: Designate the number of bytes to move the file position indicator. 
- Origin: Designate the origin for moving from the read or write position. Designate any of the following, as defined in constant kEdsSeek*.
- Lasterror is set.

25.23.21 Write(Data as string) as UInt64

**Function:** Writes data of a designated buffer to the current read or write position of the stream. 
**Notes:**
- Lasterror is set. 
- Returns number of bytes written.

25.23.22 Constants

25.23.23 kEdsAccess_Error = -1

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the file access constants. 
**Notes:** Error

25.23.24 kEdsAccess_Read = 0

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the file access constants. 
**Notes:** Open a read-only stream.
25.23.25  kEdsAccess_ReadWrite = 2

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the file access constants.  
**Notes:** Allow reading and writing.

25.23.26  kEdsAccess_Write = 1

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the file access constants.  
**Notes:** Open a write-only stream.

25.23.27  kEdsFileCreateDisposition_CreateAlways = 1

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the file create disposition constants.  
**Notes:** Creates a new file. If the designated file already exists, that file is overwritten and existing attributes is erased.

25.23.28  kEdsFileCreateDisposition_CreateNew = 0

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the file create disposition constants.  
**Notes:** Creates a new file. An error occurs if the designated file already exists.

25.23.29  kEdsFileCreateDisposition_OpenAlways = 3

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the file create disposition constants.  
**Notes:** If the file exists, it is opened. If the designated file does not exist, a new file is created.

25.23.30  kEdsFileCreateDisposition_OpenExisting = 2

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the file create disposition constants.  
**Notes:** Opens a file. An error occurs if the designated file does not exist.

25.23.31  kEdsFileCreateDisposition_TruncateExisting = 4

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the file create disposition constants.  
**Notes:** Opens a file and sets the file size to 0 bytes.
25.23. CLASS EDSSTREAMMBS

25.23.32 kEdsSeek_Begin = 1

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the seek origin constants.  
**Notes:** Moves the file position indicator from the beginning of the stream forward by inOffset bytes.

25.23.33 kEdsSeek_Cur = 0

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the seek origin constants.  
**Notes:** Moves the file position indicator from the current position in the stream forward by inOffset bytes.

25.23.34 kEdsSeek_End = 2

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the seek origin constants.  
**Notes:**  
Moves the file position indicator from the end of the stream by offset bytes.  
To move toward the beginning, designate a negative value.  
Positive values will move the indicator beyond the end of the file.
25.24 class EdsTimeMBS

25.24.1 class EdsTimeMBS

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This class represents the camera time or the shooting date of an image. **Notes:** It is used to store kEdsPropID_DateTime property data.

25.24.2 Methods

25.24.3 Date as Date

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Convenience function to return the same date as a Real Studio date object.

25.24.4 Properties

25.24.5 Day as UInt32

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The day value. **Notes:** Value from 1 to 31. (Read and Write property)

25.24.6 Hour as UInt32

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The hour value. **Notes:** Value from 0 to 23. (Read and Write property)

25.24.7 Milliseconds as UInt32

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The millisecond value.
25.24. **CLASS EDSTIMEMBS**

**Notes:** (Read and Write property)

### 25.24.8 Minute as UInt32


**Function:** The minute value.

**Notes:**
Value from 0 to 59.
(Read and Write property)

### 25.24.9 Month as UInt32


**Function:** The month value.

**Notes:**
1=January, 2=February, ...
Value from 1 to 12.
(Read and Write property)

### 25.24.10 Second as UInt32


**Function:** The second value.

**Notes:**
Value from 0 to 59.
(Read and Write property)

### 25.24.11 Year as UInt32


**Function:** The year value.

**Notes:**
This is a 4 digit year number.
(Read and Write property)
25.25 class EdsVolumeInfoMBS

25.25.1 class EdsVolumeInfoMBS

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for volume information.

25.25.2 Properties

25.25.3 Access as Integer

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The access rights.
**Notes:**
See kEdsAccess* constants.
(Read and Write property)

25.25.4 FreeSpaceInBytes as UInt64

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Available capacity (in bytes)
**Notes:** (Read and Write property)

25.25.5 MaxCapacity as UInt64

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Maximum size (in bytes)
**Notes:** (Read and Write property)

25.25.6 StorageType as Integer

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The storage type.
**Notes:**
See kEdsStorage* constants.
(Read and Write property)
25.25.7 VolumeLabel as String

MBS Cameras Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Volume name. **Notes:** (Read and Write property)

25.25.8 Constants

25.25.9 kEdsAccess_Error = -1

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Access Mode Constants

25.25.10 kEdsAccess_Read = 0

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Access Mode Constants

25.25.11 kEdsAccess_ReadWrite = 2

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Access Mode Constants

25.25.12 kEdsAccess_Write = 1

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Access Mode Constants

25.25.13 kEdsStorageType_CF = 1

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Storage Type Constants **Notes:** Compact flash

25.25.14 kEdsStorageType_HD = 4

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Storage Type Constants **Notes:** HD card
25.25.15 kEdsStorageType_Non = 0

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Storage Type Constants
**Notes:** No memory card inserted

25.25.16 kEdsStorageType_SD = 2

MBS Cameras Plugin, Plugin Version: 12.1. **Function:** One of the Storage Type Constants
**Notes:** SD card
25.26  class EdsVolumeMBS


Function: The class for a volume on the camera’s recording media

Notes:
This object represents the memory card inside the camera. If the camera model allows two memory cards
to be installed at once, the EdsVolumeRef object represents one memory card each. This object is used to
get an EdsDirectoryItemRef object, which is a child object, when performing operations on a file or folder
on the memory card.
Subclass of the EdsBaseMBS class.

25.26.2  Methods

25.26.3  Child(index as UInt32) as EdsDirectoryItemMBS


Function: Gets an indexed child object of the designated object.

Notes:
Index is 0 based and range from 0 to ChildCount-1.
LastError is set.

25.26.4  FormatVolume


Function: Formats volumes of memory cards in a camera.

Notes:
LastError is set.
Be careful to avoid doing this when the camera is not in the right mode. Lock the UI, for example.

25.26.5  Parent as EdsCameraMBS


Function: Gets the parent object of the designated object.

Notes: Lasterror is set.
25.26.6 VolumeInfo as EdsVolumeInfoMBS

**Function:** Gets volume information for a memory card in the camera.
**Notes:**
Lasterror is set.
Returns nil on any error.
Chapter 26

Carbon Events

26.1 class CarbonApplicationEventsMBS

26.1.1 class CarbonApplicationEventsMBS

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for receiving events sent to the application. **Notes:** Even if the name of the class includes Carbon, it works fine with Cocoa applications for most events.

26.1.2 Methods

26.1.3 CreateTypeStringWithOSType(ostype as string) as CFStringMBS

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a type string object for the use in the ServiceGetTypes event.

26.1.4 Listen

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Starts listening for events sent to your application.
26.1.5 Properties

26.1.6 Available as boolean

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this events are firing.

**Notes:**
Still each event may have it’s own requirement.
(Read only property)

26.1.7 EventCount as Integer

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The mouse event counter.

**Notes:**
Increases whenever one of the following events occurs:
MouseUp, MouseMoved, MouseDragged and MouseDown.
(Read and Write property)

26.1.8 Lasterror as Integer

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last reported Mac OS error code.

**Notes:**
0 if successful, -1 if function is not available.
(Read and Write property)

26.1.9 MouseButton as Integer

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The mouse buttons used at the time of the last mouse event.

**Notes:**
Set by the MouseDragged, the MouseDown and the MouseUp event.
(Read and Write property)
26.1.10 MouseChord as Integer

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The mouse chord state at the time of the last mouse event. **Notes:** Set by the MouseDragged, the MouseDown and the MouseUp event. (Read and Write property)

26.1.11 MouseClickCount as Integer

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The mouse click count at the time of the last mouse event. **Notes:** Set by the MouseDragged, the MouseDown and the MouseUp event. (Read and Write property)

26.1.12 MouseDeltaX as Single

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The mouse movement at the time of the last mouse event. **Notes:** Set by the MouseMoved and the MouseDragged event. (Read and Write property)

26.1.13 MouseDeltaY as Single

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The mouse movement at the time of the last mouse event. **Notes:** Set by the MouseMoved and the MouseDragged event. (Read and Write property)

26.1.14 MouseModifierKeys as Integer

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The modifier key state at the time of the last mouse event. **Notes:**
CHAPTER 26. CARBON EVENTS

Set by the MouseMoved, the MouseDragged, the MouseDown and the MouseUp event.

The modifiers field contains information about the state of the modifier keys and the mouse button at the time the event was posted.

Each of the modifier keys is represented by a specific bit in the modifiers field. You can use these constants as masks to test the setting of various bits in the modifiers field:

- activeFlag: 1 set if window being activated or if mouse-down event caused foreground switch
- btnState: 128 set if mouse button up
- cmdKey: 256 set if Command key down
- shiftKey: 512 set if Shift key down
- alphaLock: 1024 set if Caps Lock key down
- optionKey: 2048 set if Option key down
- controlKey: 4096 set if Control key down
- rightshiftKey: 8192 set if right Shift key down
- rightoptionKey: 16384 set if right Option key down
- rightcontrolKey: 32768 set if right Control key down

If your application attaches special meaning to any of these keys in combination with other keys or when the mouse button is down, you can test the state of the modifiers field to determine the action your application should take. For example, you can use this information to determine whether the user pressed the Command key and another key to make a menu choice.

Some keyboards do not distinguish between the right or left Control, Shift, and Option keys; for example, the virtual key code for the right Shift key and left Shift key might be the same. For these keyboards, if the user presses the Control, Shift, or Option key, the Event Manager sets only the bits corresponding to the shiftKey, optionKey, and controlKey constants. For keyboards that do distinguish between these keys, the Event Manager sets the bits in the modifiers field to indicate whether the right or left Control, Shift, or Option keys were pressed. For example, the Event Manager sets bit 13 in the modifiers field if the user presses the right Shift key and sets bit 9 if the user presses the left Shift key. In most cases your application should not need to distinguish between the left and right Control, Shift, and Option keys.

(Read and Write property)

26.1.15 MouseX as Single

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The mouse position at the time of the last mouse event.

**Notes:**

Set by the MouseMoved, the MouseDragged, the MouseDown and the MouseUp event.

(Read and Write property)
26.1.16 MouseY as Single

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The mouse position at the time of the last mouse event. **Notes:** Set by the MouseMoved, the MouseDragged, the MouseDown and the MouseUp event. (Read and Write property)

26.1.17 Tablet as Boolean

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether you want to get the tablet event data. **Notes:** As not every application needs tablet event information, this is optional. Set to true to get the TabletPoint and TabletProximity parameters filled in the events. Tablet functions may or may not work in Realbasic’s debug mode (some RB versions work and some not). (Read and Write property)

26.1.18 TabletPoint as CarbonEventsTabletPointMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Saves the current tablet point object. **Notes:** Whenever an event is received and the tablet property is true and there is point information available, a reference to the CarbonEventsTabletPointMBS object (from the event) is stored in this property. So this property enables you to access the current state information of the tablet by just looking on the last state reported. Tablet functions may or may not work in Realbasic’s debug mode (some RB versions work and some not). (Read and Write property)

26.1.19 TabletProximity as CarbonEventsTabletProximityMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Saves the current tablet proximity object. **Notes:**
Whenever an event is received and the tablet property is true and there is proximity information available, a reference to the CarbonEventsTabletProximityMBS object (from the event) is stored in this property.

So this property enables you to access the current state information of the tablet by just looking on the last state reported.

Tablet functions may or may not work in Realbasic’s debug mode (some RB versions work and some not). (Read and Write property)

### 26.1.20 Events

#### 26.1.21 ApplicationActivated

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called whenever your application is actived.  
**Notes:** In older versions this event was misspelled: ApplicationActived

#### 26.1.22 ApplicationDeactivated

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called whenever your application is deactivated.  
**Notes:** In older versions this event was misspelled: ApplicationDeactived

#### 26.1.23 ApplicationGetDockTileMenu as Integer

MBS MacCF Plugin, Plugin Version: 3.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called whenever the system likes to know which menu to display in the dock tile.  
**Notes:** Create a menu using the MenuMBS class and return the handle property to this event as the result.

#### 26.1.24 ApplicationHidden

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The application was hidden.  
**Notes:** Only used on Mac OS X 10.2 and newer.
26.1. CLASS CARBONAPPLICATIONEVENTSMBS

26.1.25 ApplicationLaunched(ProcessSerial as memoryblock)

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Called whenever an application is launched.
**Notes:**
ProcessSerial is a memoryblock to 8 bytes defining the process serial number.
ProcessSerial may be nil on very low memory.

26.1.26 ApplicationQuit

MBS MacCF Plugin, Plugin Version: 5.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The application is requested to quit.
**Notes:** Current Realbasic versions seems to handle this event before the plugin can get it, so currently this
event does not fire. (tested with RB 5.5 and 2005r2)

26.1.27 ApplicationShown

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The application was shown.
**Notes:** Only used on Mac OS X 10.2 and newer.

26.1.28 ApplicationSwitched(ProcessSerial as memoryblock)

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Called whenever the frontmost application is changed.
**Example:**
```vba
sub ApplicationSwitched(ProcessSerial as memoryblock)
' This even works in built applications.
dim s as String
dim p as ProcessMBS
if ProcessSerial<>nil then
    p=new ProcessMBS
p.Update
    s=p.Name
end if
List.InsertRow 0,"Application switched to "+s+","nend sub
```
Notes:
ProcessSerial is a memoryblock to 8 bytes defining the process serial number. ProcessSerial may be nil on very low memory.

26.1.29 ApplicationSystemUIModeChanged(SystemUIMode as Integer)


26.1.30 ApplicationTerminated(ProcessSerial as memoryblock)

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Called whenever an application quits. Notes: ProcessSerial is a memoryblock to 8 bytes defining the process serial number. ProcessSerial may be nil on very low memory. Note that the process serial number may no longer be valid when this event is called.

26.1.31 GestureEnded(GlobalMouseX as Double, GlobalMouseY as Double, WindowHandle as Integer, WindowMouseX as Double, WindowMouseY as Double, WindowPartCode as Integer, KeyModifiers as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 9.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: This event is called when the gesture ends. Notes: GlobalMouseX and GlobalMouseY specify the mouse position. If WindowHandle is not 0, it contains the handle for the current window on that mouse position and WindowMouseX/WindowMouseY specify the window relative position. The WindowPartCode specifies which part of the window was hit. (See WindowPartCode definition in Apple documentation.) Possible values for the key modifier:
activeFlag = 1 = & h000001
btnState = 128 = & h000080
cmdKey = 256 = & h000100
shiftKey = 512 = & h000200
alphaLock = 1024 = & h000400
optionKey = 2048 = & h000800
controlKey = 4096 = & h001000
rightShiftKey = 8192 = & h002000
rightOptionKey = 16384 = & h004000
rightControlKey = 32768 = & h008000
NumLock = 65536 = & h010000
Fn = 131072 = & h020000

Return true if you handled the event.

Supported on Mac OS X 10.5.5 and newer.
If not supported with the current hardware, this event is never called.

26.1.32 GestureMagnify(GlobalMouseX as Double, GlobalMouseY as Double, WindowHandle as Integer, WindowMouseX as Double, WindowMouseY as Double, WindowPartCode as Integer, KeyModifiers as Integer, MagnificationAmount as Double) as boolean

MBS MacCF Plugin, Plugin Version: 9.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
This event is called several times while the magnify gesture is performed.
**Notes:**
MagnificationAmount the magnification amount.

GlobalMouseX and GlobalMouseY specify the mouse position. If WindowHandle is not 0, it contains the handle for the current window on that mouse position and WindowMouseX/WindowMouseY specify the window relative position. The WindowPartCode specifies which part of the window was hit. (See WindowPartCode definition in Apple documentation.)

Possible values for the key modifier:

Return true if you handled the event.

Supported on Mac OS X 10.5.5 and newer.
If not supported with the current hardware, this event is never called.
26.1.33 GestureRotate(GlobalMouseX as Double, GlobalMouseY as Double, WindowHandle as Integer, WindowMouseX as Double, WindowMouseY as Double, WindowPartCode as Integer, KeyModifiers as Integer, RotationAmount as Double) as boolean

MBS MacCF Plugin, Plugin Version: 9.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
This event is called several times while the rotation gesture is performed.

**Notes:**
The RotationAmount in polar coordinates.

GlobalMouseX and GlobalMouseY specify the mouse position. If WindowHandle is not 0, it contains the handle for the current window on that mouse position and WindowMouseX/WindowMouseY specify the window relative position. The WindowPartCode specifies which part of the window was hit. (See WindowPartCode definition in Apple documentation.)

Possible values for the key modifier:

<table>
<thead>
<tr>
<th>Key Modifier</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>activeFlag</td>
<td>1</td>
</tr>
<tr>
<td>btnState</td>
<td>128</td>
</tr>
<tr>
<td>cmdKey</td>
<td>256</td>
</tr>
<tr>
<td>shiftKey</td>
<td>512</td>
</tr>
<tr>
<td>alphaLock</td>
<td>1024</td>
</tr>
<tr>
<td>optionKey</td>
<td>2048</td>
</tr>
<tr>
<td>controlKey</td>
<td>4096</td>
</tr>
<tr>
<td>rightShiftKey</td>
<td>8192</td>
</tr>
<tr>
<td>rightOptionKey</td>
<td>16384</td>
</tr>
<tr>
<td>rightControlKey</td>
<td>32768</td>
</tr>
<tr>
<td>NumLock</td>
<td>65536</td>
</tr>
<tr>
<td>Fn</td>
<td>131072</td>
</tr>
</tbody>
</table>
26.1. CLASS CARBONAPPLICATIONEVENTSMBS

Return true if you handled the event.

Supported on Mac OS X 10.5.5 and newer.
If not supported with the current hardware, this event is never called.

26.1.34 GestureStarted(GlobalMouseX as Double, GlobalMouseY as Double, WindowHandle as Integer, WindowMouseX as Double, WindowMouseY as Double, WindowPartCode as Integer, KeyModifiers as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 9.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
This event is called when a gesture starts.

**Notes:**
GlobalMouseX and GlobalMouseY specify the mouse position. If WindowHandle is not 0, it contains the handle for the current window on that mouse position and WindowMouseX/WindowMouseY specify the window relative position. The WindowPartCode specifies which part of the window was hit. (See WindowPartCode definition in Apple documentation.)

Possible values for the key modifier:

- activeFlag = 1 = & h000001
- btnState = 128 = & h000080
- cmdKey = 256 = & h000100
- shiftKey = 512 = & h000200
- alphaLock = 1024 = & h000400
- optionKey = 2048 = & h000800
- controlKey = 4096 = & h001000
- rightShiftKey = 8192 = & h002000
- rightOptionKey = 16384 = & h004000
- rightControlKey = 32768 = & h008000
- NumLock = 65536 = & h010000
- Fn = 131072 = & h020000

Return true if you handled the event.

Supported on Mac OS X 10.5.5 and newer.
If not supported with the current hardware, this event is never called.
CHAPTER 26. CARBON EVENTS

26.1.35  GestureSwipe(GlobalMouseX as Double, GlobalMouseY as Double, WindowHandle as Integer, WindowMouseX as Double, WindowMouseY as Double, WindowPartCode as Integer, KeyModifiers as Integer, SwipeDirectionX as Double, SwipeDirectionY as Double) as boolean

MBS MacCF Plugin, Plugin Version: 9.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** This event is called for a swipe gesture. **Notes:**

SwipeDirectionX and SwipeDirectionY specify the swipe direction. GlobalMouseX and GlobalMouseY specify the mouse position. If WindowHandle is not 0, it contains the handle for the current window on that mouse position and WindowMouseX/WindowMouseY specify the window relative position. The WindowPartCode specifies which part of the window was hit. (See WindowPartCode definition in Apple documentation.)

Possible values for the key modifier:

- activeFlag = 1 = & h000001
- btnState = 128 = & h000080
- cmdKey = 256 = & h000100
- shiftKey = 512 = & h000200
- alphaLock = 1024 = & h000400
- optionKey = 2048 = & h000800
- controlKey = 4096 = & h001000
- rightShiftKey = 8192 = & h002000
- rightOptionKey = 16384 = & h004000
- rightControlKey = 32768 = & h008000
- NumLock = 65536 = & h010000
- Fn = 131072 = & h020000

Return true if you handled the event.

Supported on Mac OS X 10.5.5 and newer. If not supported with the current hardware, this event is never called.

26.1.36  HotKeyPressed(signature as Integer, id as Integer)

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The hotkey was pressed.
26.1.37  HotKeyReleased(signature as Integer, id as Integer)

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The hotkey was released.
**Notes:** Works not on Carbon inside Mac OS 9!

26.1.38  KeyboardRawKeyDown(maccharcode as Integer, keycode as Integer, modifiers as Integer, keyboardtype as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
A key was pressed.
**Notes:**
Does only work in Carbon target, not in Cocoa. Please use NSEventMonitorMBS class instead.
If you return true you tell the system that you handled the event.

Possible values for the key modifier:

- activeFlag = 1 = & h000001
- btnState = 128 = & h000080
- cmdKey = 256 = & h000100
- shiftKey = 512 = & h000200
- alphaLock = 1024 = & h000400
- optionKey = 2048 = & h000800
- controlKey = 4096 = & h001000
- rightShiftKey = 8192 = & h002000
- rightOptionKey = 16384 = & h004000
- rightControlKey = 32768 = & h008000
- NumLock = 65536 = & h010000
- Fn = 131072 = & h020000

26.1.39  KeyboardRawKeyModifiersChanged(modifierkeys as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The state of the modifier keys changed.
**Notes:**
Does only work in Carbon target, not in Cocoa. Please use NSEventMonitorMBS class instead.
If you return true you tell the system that you handled the event.

Possible values for the key modifier:
activeFlag = 1 = & h000001
btnState = 128 = & h000080
cmdKey = 256 = & h000100
shiftKey = 512 = & h000200
alphaLock = 1024 = & h000400
optionKey = 2048 = & h000800
controlKey = 4096 = & h001000
rightShiftKey = 8192 = & h002000
rightOptionKey = 16384 = & h004000
rightControlKey = 32768 = & h008000
NumLock = 65536 = & h010000
Fn = 131072 = & h020000

26.1.40 KeyboardRawKeyRepeat(maccharcode as Integer, keycode as Integer, modifiers as Integer, keyboardtype as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
A key is still down.

**Notes:**
Does only work in Carbon target, not in Cocoa. Please use NSEventMonitorMBS class instead.
If you return true you tell the system that you handled the event.

Possible values for the key modifier:

activeFlag = 1 = & h000001
btnState = 128 = & h000080
cmdKey = 256 = & h000100
shiftKey = 512 = & h000200
alphaLock = 1024 = & h000400
optionKey = 2048 = & h000800
controlKey = 4096 = & h001000
rightShiftKey = 8192 = & h002000
rightOptionKey = 16384 = & h004000
rightControlKey = 32768 = & h008000
NumLock = 65536 = & h010000
Fn = 131072 = & h020000

26.1.41 KeyboardRawKeyUp(maccharcode as Integer, keycode as Integer, modifiers as Integer, keyboardtype as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
A key was released.

**Notes:**
Does only work in Carbon target, not in Cocoa. Please use NSEventMonitorMBS class instead. If you return true you tell the system that you handled the event.

Possible values for the key modifier:

- activeFlag = 1 = & h000001
- btnState = 128 = & h000080
- cmdKey = 256 = & h000100
- shiftKey = 512 = & h000200
- alphaLock = 1024 = & h000400
- optionKey = 2048 = & h000800
- controlKey = 4096 = & h001000
- rightShiftKey = 8192 = & h002000
- rightOptionKey = 16384 = & h004000
- rightControlKey = 32768 = & h008000
- NumLock = 65536 = & h010000
- Fn = 131072 = & h020000

### 26.1.42 MenuPopulate(MenuHandle as Integer)

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The system asks the application to update the menu bar. **Notes:**

The application can change the menubar just a second before the user sees it.

This event is also sent whenever a command key is searched.

Works on CarbonLib 1.6 or newer.

Added MenuHandle parameter in v5.2.

### 26.1.43 MouseDown(x as single, y as single, modifierKeys as Integer, button as Integer, clickcount as Integer, MouseChord as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** An event which fires when a mousebuton is down. **Notes:**

In case the tablet property is true, the TabletPoint or the TabletProximity property is filled with an object.

Tablet functions may or may not work in Realbasic’s debug mode (some RB versions work and some not).
CHAPTER 26. CARBON EVENTS

26.1.44 MouseDragged(x as single, y as single, modifierKeys as Integer, deltax as single, deltay as single, button as Integer, clickcount as Integer, MouseChord as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** An event which fires when the mouse is dragged.

**Notes:**
In case the tablet property is true, the TabletPoint or the TabletProximity property is filled with an object.

Tablet functions may or may not work in Realbasic’s debug mode (some RB versions work and some not).

26.1.45 MouseMoved(x as single, y as single, modifierKeys as Integer, deltax as single, deltay as single) as boolean

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** An event which fires when the mouse is moved.

**Notes:**
In case the tablet property is true, the TabletPoint or the TabletProximity property is filled with an object.

Tablet functions may or may not work in Realbasic’s debug mode (some RB versions work and some not).

26.1.46 MouseUp(x as single, y as single, modifierKeys as Integer, button as Integer, clickcount as Integer, MouseChord as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** An event which fires when a mousebutton is released.

**Notes:**
In case the tablet property is true, the TabletPoint or the TabletProximity property is filled with an object.

Tablet functions may or may not work in Realbasic’s debug mode (some RB versions work and some not).

26.1.47 MouseWheelMoved(modifierKeys as Integer, axis as Integer, delta as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called whenever the mouse wheel is moved.

**Example:**
function MouseWheelMoved(modifierKeys as Integer, axis as Integer, delta as Integer) as boolean

dim d as Integer
const cmdKey=256
const shiftKey=512
const alphaLock=1024
const optionKey=2048
const controlKey=4096
const rightShiftKey=8192
const rightOptionKey=16384
const rightControlKey=32768

const kEventMouseWheelAxisY=1
const kEventMouseWheelAxisX=0

if axis=kEventMouseWheelAxisY then
    d=delta

if BitwiseAnd(modifierKeys,optionkey)<0 then
    d=d*4 // scroll faster with option
end if

List.ScrollPosition=List.ScrollPosition-d
end if

List.InsertRow 0,"MouseWheelMoved"+str(delta)
end function

Notes:
Currently axis is only 0 or 1, but in future new input devices may have up to 32 axises.

Added a boolean function result in version 3.2. If you return true the event is handled by you. Else it's
passed to the next receiver of events.

26.1.48 ProcessCommand(AttributeFlags as Integer, CommandId as Integer, Handle as Integer, Index as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 3.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
Called whenever a command is to process.
Notes:
Called for example when the DockTileMenu is used.
It seems like handle and index are optional.
Renamed Attributes parameter to AttributeFlags in plugin version 8.2.

### 26.1.49 ServiceCopy(Scrap as CarbonEventsScrapMBS) as boolean

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called whenever a service needs something from you.  
**Notes:**  
You have to fill the scrap.  
Return true if you handled the event.

### 26.1.50 ServiceGetTypes(copytypes as CFMutableArrayMBS, pastetypes as CFMutableArrayMBS) as boolean

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called whenever the Mac OS needs to know what types you can process. **Example:**

```objective-c
function ServiceGetTypes(copytypes as CFMutableArrayMBS, pastetypes as CFMutableArrayMBS) as boolean
    pastetypes.Append me.CreateTypeStringWithOSType("TEXT") // Speak text
    pastetypes.Append me.CreateTypeStringWithOSType("TIFF") // for Grab
    copytypes.Append me.CreateTypeStringWithOSType("TEXT")
end function
```

**Notes:**  
Fill the arrays with your content type codes.  
Use the CreateTypeStringWithOSType function to make strings with the type codes.  
Return true if you handled the event.

### 26.1.51 ServicePaste(Scrap as CarbonEventsScrapMBS) as boolean

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called whenever a service gives something to you.  
**Notes:**  
You have to do something with the content of the scrap.  
Return true if you handled the event.
26.1.52 ServicePerform(Scrap as CarbonEventsScrapMBS, MessageName as CFStringMBS, UserData as CFStringMBS) as boolean

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Called whenever you should perform a service.
**Notes:**
You have to do something with the content of the scrap.
Return true if you handled the event.

26.1.53 VolumeMounted(VolumeRefNum as Integer, VolumeRoot as FolderItem)

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Called whenever a volume is mounted.
**Example:**
```
sub VolumeMounted(VolumeRefNum as Integer)
    dim s as String
    dim f as FolderItem

    f=NewVolumeFolderItemMBS(VolumeRefNum)
    if f<>nil then
        s=f.DisplayName
    end if

    List.InsertRow 0,"A volume was mounted: " +s
end sub
```

**Notes:** VolumeRefNum is the number of the mounted volume. You may keep a list of mounted volumes if you need to know which was is unmounted later.

26.1.54 VolumeUnmounted(VolumeRefNum as Integer)

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Called whenever a volume is unmounted.
**Example:**
```
sub VolumeUnmounted(VolumeRefNum as Integer)
    // If you keep a list you can identify the volume...
    List.InsertRow 0,"A volume was unmounted."
end sub
```
Notes: VolumeRefNum is the number of the mounted volume. You may keep a list of mounted volumes if you need to know which was is unmounted later.
26.2. class CarbonEventsIdleTimerMBS

26.2.1 class CarbonEventsIdleTimerMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class for an idle timer.
**Notes:** An idle timer is called whenever the user didn’t use the mouse or the keyboard for a given time period.

26.2.2 Methods

26.2.3 Constructor(delay as Double, interval as Double)

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Installs an idle timer.
**Notes:**
Idle timers are only called when there is no user activity occurring in the application. This means that the user is not actively clicking/typing, and is also not in the middle of tracking a control, menu, or window. TrackMouseLocation actually disables all idle timers automatically for you.

**Parameters:**

*delay:* The delay before firing this timer after a user input event has come in. For example, if you want to start your timer 2 seconds after the user stops typing, etc. you would pass 2.0 into this parameter. Each time the user types a key (or whatever), this timer is reset. If we are considered to be idle when an idle timer is installed, the first time it fires will be inDelay seconds from the time it is installed. So if you installed it in the middle of control tracking, say, it wouldn’t fire until the user stopped tracking. But if you installed it at app startup and the user hasn’t typed/clicked, it would fire in delay seconds.

*interval:* The timer interval (pass 0 for a one-shot timer, which executes once but does not repeat). You may also pass kEventDurationForever (-1) to create a one-shot timer.

In older plugins this was called Create, but later changed to Constructor to make usage easier.
26.2.4 Properties

26.2.5 Available as Boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** True if this timer can work.

**Notes:**
Should always be true on Mac OS X and false on Windows or Mac OS Classic.
(Read only property)

26.2.6 Lasterror as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last error code reported.

**Notes:**
0 for successful.
-1 for function not available.
else a Mac OS error code.
(Read and Write property)

26.2.7 Events

26.2.8 Action(state as Integer)

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called when an idle timer fires.

**Notes:**

Constants for state:

The user has gone idle (not touched an input device) for the duration specified in your idle timer. This is the first message you will receive. Start your engines!

kEventLoopIdleTimerStarted = 1

If you specified an interval on your idle timer, your idle timer proc will be called with this message, letting you know it is merely firing at the interval specified. If you did not specify an interval, this message is not sent.

kEventLoopIdleTimerIdling = 2
26.2. **CLASS CARBONEVENTSIDLETIMERMBS**

The user is back! Stop everything! This is your cue to stop any processing if you need to.

\[ \text{kEventLoopIdleTimerStopped} = 3 \]
26.3 class CarbonEventsScrapMBS

26.3.1 class CarbonEventsScrapMBS

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a clipboard used for the carbon service events. **Notes:** This is Carbon API. You may want to prefer NSPasteboardMBS class for new projects.

26.3.2 Methods

26.3.3 AddData(FlavorType as string, data as string)

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds data to the scrap.

26.3.4 AddText(Text as string)

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds plain text to the scrap.

26.3.5 AddUnicodeText(Text as string)

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds 16bit unicode text to the scrap. **Notes:** Your string must be in 16 bit unicode. Else you may run into crashes.

26.3.6 clear

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Clears the scrap.

26.3.7 DataAvailable(FlavorType as string) as boolean

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Looks whether data is available or not for this type. **Notes:**
This function is much faster then if you use datasize.
Returns false on any error.

26.3.8 DataSize(FlavorType as string) as Integer

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the data size of an item in the scrap.
**Notes:**
Some data provider generate the data for the scrap only if you read it, so this function may be slower than just DataAvailable.
Returns 0 on any error.

26.3.9 FlavorCount as Integer

MBS MacCF Plugin, Plugin Version: 12.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The number of flavor in the clipboard.
**Notes:** Calling this function recreates the internal flavor list.

26.3.10 FlavorFlags(index as Integer) as Integer

MBS MacCF Plugin, Plugin Version: 12.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the flags of the given flavor.
**Notes:**
Index goes from 0 to count-1.
Returns 0 on any error.
Flags are a combination of type values:
1 - private data (Sender only)
2 - translated data

26.3.11 FlavorType(index as Integer) as string

MBS MacCF Plugin, Plugin Version: 12.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the type of the given flavor.
**Notes:**
Index goes from 0 to count-1.
Returns "" on any error.
26.3.12GetData(FlavorType as string) as string

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the data of an item in the scrap.
**Notes:**
Some data provider generate the data for the scrap only if you read it, so this function may be slower than just DataAvailable.
Returns "" on any error.

26.3.13GetFile(byref file as folderitem) as boolean

MBS MacCF Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Tries to get a file reference from the scrap.
**Notes:**
Returns true on success and false on failure.
On newer Mac OS X versions with 12.4 plugin, we fixed this function. But there we can’t provide type, creator and flags.
See also:

- 26.3.14 GetFile(byref file as folderitem, byref type as string, byref creator as string, byref flags as Integer) as boolean

26.3.14GetFile(byref file as folderitem, byref type as string, byref creator as string, byref flags as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Tries to get a file reference from the scrap.
**Notes:**
Returns true on success and false on failure.
Type and Creator are the Mac OS 9 file types.
flags are the normal Finderflags as you get them if using GetFileFlagsMBS(file).

On newer Mac OS X versions with 12.4 plugin, we fixed this function. But there we can’t provide type, creator and flags.
See also:

- 26.3.13 GetFile(byref file as folderitem) as boolean
26.3.15  GetText as string

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the plain text from the scrap.
**Notes:**
Some data provider generate the data for the scrap only if you read it, so this function may be slower than just TextAvailable.
Returns "" on any error.

26.3.16  GetUnicodeText as string

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the unicode text from the scrap.
**Notes:**
Some data provider generate the data for the scrap only if you read it, so this function may be slower than just TextAvailable.
Returns "" on any error.

26.3.17  PictAvailable as boolean

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Looks whether Mac PICT data is available.
**Notes:** Returns false on any error.

26.3.18  TextAvailable as boolean

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Like Dataavailable, but just for text.
**Notes:**
This function is much faster then if you use Textsize.
Checks only for plain TEXT, not for unicode or styled text.
Returns false on any error.

26.3.19  TextSize as Integer

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Like DataSize, but just for text.
**Notes:**
CHAPTER 26. CARBON EVENTS

Checks only for plain TEXT, not for unicode or styled text.
Returns 0 on any error.

26.3.20  **UnicodeTextAvailable as boolean**

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
True if unicode text is available.
**Notes:**
This function is much faster then if you use UnicodeTextsize.
Returns false on any error.

26.3.21  **UnicodeTextSize as Integer**

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the number of available characters in the unicode string part of the scrap.
**Notes:** Returns 0 on any error.

26.3.22  **Properties**

26.3.23  **Handle as Integer**

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The handle to the scrap.
**Notes:** (Read and Write property)

26.3.24  **Release as Boolean**

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Whether the destructor should destroy the handle later.
**Notes:** (Read and Write property)
26.4. class CarbonEventsTabletPointMBS

26.4.1. class CarbonEventsTabletPointMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class for details about the current point information.

26.4.2. Properties

26.4.3. AbsX as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Absolute x coordinate in tablet space at full tablet resolution.
**Notes:** (Read and Write property)

26.4.4. AbsY as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Absolute y coordinate in tablet space at full tablet resolution.
**Notes:** (Read and Write property)

26.4.5. AbsZ as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Absolute z coordinate in tablet space at full tablet resolution.
**Notes:** (Read and Write property)

26.4.6. Buttons as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Which buttons are pressed.
**Notes:**
One bit per button - bit 0 is first button - 1 = closed.
(Read and Write property)
26.4.7  DeviceID as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
System-assigned unique device ID - matches to deviceID field in proximity event.
**Notes:** (Read and Write property)

26.4.8  Pressure as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Scaled pressure value.
**Notes:**
MAXPRESSURE=(2^16)-1, MINPRESSURE=0.
(Read and Write property)

26.4.9  Rotation as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Fixed-point representation of device rotation in a 10.6 format.
**Notes:** (Read and Write property)

26.4.10  TangentialPressure as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Tangential pressure on the device; range same as tilt.
**Notes:** (Read and Write property)

26.4.11  TiltX as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Scaled tilt x value.
**Notes:**
range is -(2^15)-1 to (2^15)-1 (-32767 to 32767)
(Read and Write property)
26.4.12  TiltY as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Scaled tilt y value. Notes:

range is -((2^15)-1) to (2^15)-1 (-32767 to 32767). (Read and Write property)

26.4.13  Vendor1 as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Vendor-defined signed 16-bit integer. Notes: (Read and Write property)

26.4.14  Vendor2 as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Vendor-defined signed 16-bit integer. Notes: (Read and Write property)

26.4.15  Vendor3 as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Vendor-defined signed 16-bit integer. Notes: (Read and Write property)
26.5 class CarbonEventsTabletProximityMBS

26.5.1 class CarbonEventsTabletProximityMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class for the tablet proximity details.

26.5.2 Properties

26.5.3 CapabilityMask as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Mask representing the capabilities of the device.
**Notes:**
Unsigned 32 bit integer.
(Read and Write property)

26.5.4 DeviceID as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
System-assigned unique device ID - matches to deviceID field in tablet event.
**Notes:**
Unsigned 16 bit integer.
(Read and Write property)

26.5.5 EnterProximity as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Whether the pen entered or was leaving.
**Notes:**
non-zero = entering; zero = leaving
(Read and Write property)

26.5.6 PointerID as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Vendor-defined ID of the specific pointing device.
26.5. **CLASS CARBONEVENTSTABLETPROXIMITYMBS**

Notes:
Unsigned 16 bit integer.
(Read and Write property)

### 26.5.7 PointerSerialNumber as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Vendor-defined serial number of the specific pointing device.
**Notes:**
Unsigned 32 bit integer.
(Read and Write property)

### 26.5.8 PointerType as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Type of pointing device.
**Notes:**
No values defined for this function by Apple.
Unsigned 8 bit integer.
(Read and Write property)

### 26.5.9 SystemTabletID as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
System-assigned unique tablet ID.
**Notes:**
Unsigned 16 bit integer.
(Read and Write property)

### 26.5.10 TabletID as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Vendor-defined tablet ID - typically will be USB product ID for the tablet.
**Notes:**
Unsigned 16 bit integer.
(Read and Write property)
26.5.11 UniqueID as Memoryblock

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Vendor-defined unique ID for this pointer.  
**Notes:**  
A 64bit integer value stored in an eight byte memoryblock.  
(Read and Write property)

26.5.12 VendorID as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Vendor-defined ID - typically will be USB vendor ID.  
**Notes:**  
Unsigned 16 bit integer.  
(Read and Write property)

26.5.13 VendorPointerType as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Vendor-defined pointer type.  
**Notes:**  
Unsigned 16 bit integer.  
(Read and Write property)
26.6. class CarbonEventsTimerMBS

26.6.1 class CarbonEventsTimerMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
A class for a Carbon timer.
**Notes:** Compare to a REALbasic timer, the CarbonEventsTimerMBS will fire more often, for example if a menu is open.

26.6.2 Methods

26.6.3 Constructor

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new timer.
**Notes:**
Lasterror is set.
In older plugins this was called Create, but later changed to Constructor to make usage easier.

26.6.4 Properties

26.6.5 Available as Boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Whether the time can fire.
**Notes:**
Should be true in Carbon applications.
(Read only property)

26.6.6 Lasterror as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The last error code reported.
**Notes:**
0 for successfull.
-1 for function not available.
else a Mac OS error code.
(Read and Write property)
26.6.7 Mode as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The timer mode.

**Notes:**
Like a RB timer: 0 - off, 1 - single, 2 - multiple.
The timer may fire directly when set.
(Read and Write property)

26.6.8 Period as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The period of the timer in milliseconds.

**Notes:**
Added to make it compatible to normal RB code.
(Read and Write property)

26.6.9 PeriodSeconds as Double

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The period of the timer in seconds.

**Notes:**
Set to 1 to fire the timer every second.
If you set this to 0.000001, you can get something like 13500 events per second. See Timer Benchmark example project.
(Read and Write property)

26.6.10 Events

26.6.11 Action

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Called whenever the timer fires.

**Notes:**
There seems to be a bug in some RB versions:
If you draw into a window in this timer’s action event, you may draw not in the window graphics port, but in the current graphics port. If you click on the menu bar to open a menu, you draw over this menu.
To work around this you can add a line before drawing: TheWindow.Show
26.7. **CLASS CARBONHOTKEYMBS**

### 26.7 class CarbonHotKeyMBS

**Function:**
A class for creating hot keys.

**Example:**

```batch
const activeFlag = 1
const btnState = 128
const cmdKey = 256
const shiftKey = 512
const alphaLock = 1024
const optionKey = 2048
const controlKey = 4096
const rightShiftKey = 8192
const rightOptionKey = 16384
const rightControlKey = 32768

dim MyEvents1 as CarbonApplicationEventsMBS
// use a global property to store your instance of your subclass
dim p as CarbonHotKeyMBS // this should also be global

MyEvents1.Listen

p=new CarbonHotKeyMBS
p.AddKey(& h24, optionKey, OSTypeFromStringMBS("MBSG"), 5)

if p.LastError<>0 then
MsgBox "The Hotkey could not be registered!"
end if

// key will be released when p is destroyed on closing the window.
```

**Notes:** The CarbonHotKeyMBS has carbon in the name, but works fine with Cocoa, too. The Cocoa event handling system is based internally on the Carbon event handling. If you need to catch NSEvents, please use NSEventMonitorMBS class.
26.7.2 Methods

26.7.3 AddKey(keycode as Integer, keymodifier as Integer, hotkeysignature as Integer, hotkeyid as Integer)

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creates a hot key binding.
Notes: Please use only one CarbonHotKeyMBS object for each hotkey you want to use.

Keycode is the same keycode as for the sprite surface.

Possible values for the key modifier:
- activeFlag = 1
- btnState = 128
- cmdKey = 256
- shiftKey = 512
- alphaLock = 1024
- optionKey = 2048
- controlKey = 4096
- rightShiftKey = 8192
- rightOptionKey = 16384
- rightControlKey = 32768

The Signature should be unique. Best if you use your application's creator code.
The ID is for your application to check which hot key was pressed in the HotKey events of the CarbonApplicationEventsMBS class.

Some keycode values:

26.7.4 RemoveKey

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Removes the hot key binding.
Notes: Called by the destructor if you don't call it.
26.7. CLASS CARBONHOTKEYMBS

26.7.5 Properties

26.7.6 HotKeyID as Integer

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The ID used for this hotkey. **Notes:** (Read only property)

26.7.7 HotKeyRef as Integer

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle for this hotkey. **Notes:** Used internally for releasing it later. (Read only property)

26.7.8 HotKeySignature as Integer

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Signature used for this hotkey. **Notes:** The signature should be the creator code of your application to make it unique. (Read only property)

26.7.9 KeyCode as Integer

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The keycode used for this hotkey. **Notes:** (Read only property)

26.7.10 KeyModifier as Integer

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The KeyModifier used for this hotkey. **Notes:** (Read only property)
26.7.11 LastError as Integer

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last Mac OS error code reported from one of the functions. **Notes:** (Read only property)
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<th>Description</th>
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<td>0x4C</td>
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<td>0x4D</td>
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<td>0x5C</td>
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<td>&amp; h7C</td>
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<td>0x7D</td>
<td>&amp; h7D</td>
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<tr>
<td>0x7E</td>
<td>&amp; h7E</td>
</tr>
<tr>
<td>0x7F</td>
<td>&amp; h7F</td>
</tr>
</tbody>
</table>
26.8 class CarbonMonitorEventsMBS

26.8.1 class CarbonMonitorEventsMBS

MBS MacCF Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for receiving events sent to the application while monitoring events.

**Notes:**

The CarbonMonitorEventsMBS class is a special class used to monitor user input events across all processes. When such a class is listening, the Carbon Event Manager examines the event type for user input event types, such as mouse-down, mouse-up, key-down, and so forth. It then requests that the WindowServer make copies of any of these events that are sent to any process, and deliver them to the current process also. These events are queued into the main thread’s event queue, and during normal event dispatching are sent directly to the event handlers installed on the event monitor class. Monitored events are not sent through the normal event dispatching path for the current process; they will pass through the event dispatcher target, and will then be sent directly to the event monitor target.

Handlers installed on the event monitor class will only receive events when the current application is inactive. When the current application is active, all event flow occurs through the event dispatcher target, and no events are sent to the event monitor target.

Currently, the event monitor supports the following event kinds: kEventRawKeyDown, kEventRawKeyUp, kEventRawKeyRepeat, kEventRawKeyModifiersChanged, kEventMouseDown, kEventMouseUp, kEventMouseMove, kEventMouseDragged, kEventMouseWheelMoved, kEventTabletPoint, and kEventTabletProximity.

Note that both Carbon and Cocoa password edit text controls enable a secure input mode while the focus is on the control, which prevents keyboard events from being passed to other applications. This prevents the monitoring event target from being used to sniff password keystrokes.

For added security, GetEventMonitorTarget requires that "Enable access for assistive devices" be checked in the Universal Access preference pane in order to monitor RawKeyDown, RawKeyUp, and RawKeyRepeat events. If this control is not checked, you can still install handlers for these events on the event monitor class, but no events of these types will be sent to your handler. Administrator privileges are required to enable this feature.

Accessibility made need to be turned on. On Mac OS X 10.9 this may not work in debug apps, but only in build apps after second launch.
26.8.** CLASS CARBONMONITOREVENTSMBS**

**26.8.2 Methods**

**26.8.3 Listen**

MBS MacCF Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Starts listening for events send to your application.

**26.8.4 Properties**

**26.8.5 Available as Boolean**

MBS MacCF Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this events are firing.

**Notes:**
Still each event may have it’s own requirement.
(Read only property)

**26.8.6 EventCount as Integer**

MBS MacCF Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The mouse event counter.

**Notes:**
Increases whenever one of the following events occurs:
MouseUp, MouseMoved, MouseDragged and MouseDown.
(Read and Write property)

**26.8.7 Lasterror as Integer**

MBS MacCF Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last reported Mac OS error code.

**Notes:**
0 if successful, -1 if function is not available.
(Read and Write property)
26.8.8 MouseButton as Integer

MBS MacCF Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The mouse buttons used at the time of the last mouse event. **Notes:** Set by the MouseDragged, the MouseDown and the MouseUp event. (Read and Write property)

26.8.9 MouseChord as Integer

MBS MacCF Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The mouse chord state at the time of the last mouse event. **Notes:** Set by the MouseDragged, the MouseDown and the MouseUp event. (Read and Write property)

26.8.10 MouseClickCount as Integer

MBS MacCF Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The mouse click count at the time of the last mouse event. **Notes:** Set by the MouseDragged, the MouseDown and the MouseUp event. (Read and Write property)

26.8.11 MouseDeltaX as Single

MBS MacCF Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The mouse movement at the time of the last mouse event. **Notes:** Set by the MouseMoved and the MouseDragged event. (Read and Write property)

26.8.12 MouseDeltaY as Single

MBS MacCF Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The mouse movement at the time of the last mouse event. **Notes:**
Set by the MouseMoved and the MouseDragged event.
(Read and Write property)

26.8.13 MouseModifierKeys as Integer

MBS MacCF Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The modifier key state at the time of the last mouse event.

**Notes:**
Set by the MouseMoved, the MouseDragged, the MouseDown and the MouseUp event.

The modifiers field contains information about the state of the modifier keys and the mouse button at the
time the event was posted.

Each of the modifier keys is represented by a specific bit in the modifiers field. You can use these constants
as masks to test the setting of various bits in the modifiers field:

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>activeFlag</td>
<td>1</td>
<td>set if window being activated or if mouse-down event caused foreground switch</td>
</tr>
<tr>
<td>btnState</td>
<td>128</td>
<td>set if mouse button up</td>
</tr>
<tr>
<td>cmdKey</td>
<td>256</td>
<td>set if Command key down</td>
</tr>
<tr>
<td>shiftKey</td>
<td>512</td>
<td>set if Shift key down</td>
</tr>
<tr>
<td>alphaLock</td>
<td>1024</td>
<td>set if Caps Lock key down</td>
</tr>
<tr>
<td>optionKey</td>
<td>2048</td>
<td>set if Option key down</td>
</tr>
<tr>
<td>controlKey</td>
<td>4096</td>
<td>set if Control key down</td>
</tr>
<tr>
<td>rightshiftKey</td>
<td>8192</td>
<td>set if right Shift key down</td>
</tr>
<tr>
<td>rightoptionKey</td>
<td>16384</td>
<td>set if right Option key down</td>
</tr>
<tr>
<td>rightcontrolKey</td>
<td>32768</td>
<td>set if right Control key down</td>
</tr>
</tbody>
</table>

If your application attaches special meaning to any of these keys in combination with other keys or when the
mouse button is down, you can test the state of the modifiers field to determine the action your application
should take. For example, you can use this information to determine whether the user pressed the Command
key and another key to make a menu choice.

Some keyboards do not distinguish between the right or left Control, Shift, and Option keys; for example,
the virtual key code for the right Shift key and left Shift key might be the same. For these keyboards, if
the user presses the Control, Shift, or Option key, the Event Manager sets only the bits corresponding to
the shiftKey, optionKey, and controlKey constants. For keyboards that do distinguish between these keys,
the Event Manager sets the bits in the modifiers field to indicate whether the right or left Control, Shift,
or Option keys were pressed. For example, the Event Manager sets bit 13 in the modifiers field if the user
presses the right Shift key and sets bit 9 if the user presses the left Shift key. In most cases your application
should not need to distinguish between the left and right Control, Shift, and Option keys.
(Read and Write property)
26.8.14 MouseX as Single

MBS MacCF Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The mouse position at the time of the last mouse event.
**Notes:**
Set by the MouseMoved, the MouseDragged, the MouseDown and the MouseUp event.
(Read and Write property)

26.8.15 MouseY as Single

MBS MacCF Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The mouse position at the time of the last mouse event.
**Notes:**
Set by the MouseMoved, the MouseDragged, the MouseDown and the MouseUp event.
(Read and Write property)

26.8.16 Tablet as Boolean

MBS MacCF Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Whether you want to get the tablet event data.
**Notes:**
As not every application needs tablet event information, this is optional.
Set to true to get the TabletPoint and TabletProximity parameters filled in the events.

Tablet functions may or may not work in Realbasic’s debug mode (some RB versions work and some not).
(Read and Write property)

26.8.17 TabletPoint as CarbonEventsTabletPointMBS

MBS MacCF Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Saves the current tablet point object.
**Notes:**
Whenever an event is received and the tablet property is true and there is point information available, a reference to the CarbonEventsTabletPointMBS object (from the event) is stored in this property.

So this property enables you to access the current state information of the tablet by just looking on the last state reported.
Tablet functions may or may not work in Realbasic’s debug mode (some RB versions work and some not). (Read and Write property)

### 26.8.18 TabletProximity as CarbonEventsTabletProximityMBS

MBS MacCF Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Saves the current tablet proximity object.  
**Notes:**  
Whenever an event is received and the tablet property is true and there is proximity information available, a reference to the CarbonEventsTabletProximityMBS object (from the event) is stored in this property.  
So this property enables you to access the current state information of the tablet by just looking on the last state reported.  
Tablet functions may or may not work in Realbasic’s debug mode (some RB versions work and some not). (Read and Write property)

### 26.8.19 Events

#### 26.8.20 KeyboardRawKeyDown(maccharcode as Integer, keycode as Integer, modifiers as Integer, keyboardtype as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 4.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** A key was pressed.  
**Notes:**  
If you return true you tell the system that you handled the event.  
Possible values for the key modifier:  

For added security, GetEventMonitorTarget requires that ”Enable access for assistive devices” be checked in the Universal Access preference pane in order to monitor RawKeyDown, RawKeyUp, and RawKeyRepeat events. If this control is not checked, you can still install handlers for these events on the event monitor class, but no events of these types will be sent to your handler. Administrator privileges are required to enable this feature.
activeFlag = 1 = & h000001
btnState = 128 = & h000080
cmdKey = 256 = & h000100
shiftKey = 512 = & h000200
alphaLock = 1024 = & h000400
optionKey = 2048 = & h000800
controlKey = 4096 = & h001000
rightShiftKey = 8192 = & h002000
rightOptionKey = 16384 = & h004000
rightControlKey = 32768 = & h008000
NumLock = 65536 = & h010000
Fn = 131072 = & h020000

26.8.21 KeyboardRawKeyModifiersChanged(modifierkeys as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 4.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The state of the modifier keys changed.

**Notes:**
If you return true you tell the system that you handled the event.

Possible values for the key modifier:

activeFlag = 1 = & h000001
btnState = 128 = & h000080
cmdKey = 256 = & h000100
shiftKey = 512 = & h000200
alphaLock = 1024 = & h000400
optionKey = 2048 = & h000800
controlKey = 4096 = & h001000
rightShiftKey = 8192 = & h002000
rightOptionKey = 16384 = & h004000
rightControlKey = 32768 = & h008000
NumLock = 65536 = & h010000
Fn = 131072 = & h020000

For added security, GetEventMonitorTarget requires that ”Enable access for assistive devices” be checked in
the Universal Access preference pane in order to monitor RawKeyDown, RawKeyUp, and RawKeyRepeat
events. If this control is not checked, you can still install handlers for these events on the event monitor
class, but no events of these types will be sent to your handler. Administrator privileges are required to
enable this feature.
26.8.22  KeyboardRawKeyRepeat(maccharcode as Integer, keycode as Integer, modifiers as Integer, keyboardtype as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 4.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
A key is still down.
**Notes:**
If you return true you tell the system that you handled the event.

Possible values for the key modifier:

<table>
<thead>
<tr>
<th>Modifier</th>
<th>Value</th>
<th>Hex</th>
</tr>
</thead>
<tbody>
<tr>
<td>activeFlag</td>
<td>1</td>
<td>&amp;h000001</td>
</tr>
<tr>
<td>btnState</td>
<td>128</td>
<td>&amp;h000080</td>
</tr>
<tr>
<td>cmdKey</td>
<td>256</td>
<td>&amp;h000100</td>
</tr>
<tr>
<td>shiftKey</td>
<td>512</td>
<td>&amp;h000200</td>
</tr>
<tr>
<td>alphaLock</td>
<td>1024</td>
<td>&amp;h000400</td>
</tr>
<tr>
<td>optionKey</td>
<td>2048</td>
<td>&amp;h000800</td>
</tr>
<tr>
<td>controlKey</td>
<td>4096</td>
<td>&amp;h001000</td>
</tr>
<tr>
<td>rightShiftKey</td>
<td>8192</td>
<td>&amp;h002000</td>
</tr>
<tr>
<td>rightOptionKey</td>
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<td>&amp;h004000</td>
</tr>
<tr>
<td>rightControlKey</td>
<td>32768</td>
<td>&amp;h008000</td>
</tr>
<tr>
<td>NumLock</td>
<td>65536</td>
<td>&amp;h010000</td>
</tr>
<tr>
<td>Fn</td>
<td>131072</td>
<td>&amp;h020000</td>
</tr>
</tbody>
</table>

For added security, GetEventMonitorTarget requires that "Enable access for assistive devices" be checked in the Universal Access preference pane in order to monitor RawKeyDown, RawKeyUp, and RawKeyRepeat events. If this control is not checked, you can still install handlers for these events on the event monitor class, but no events of these types will be sent to your handler. Administrator privileges are required to enable this feature.

26.8.23  KeyboardRawKeyUp(maccharcode as Integer, keycode as Integer, modifiers as Integer, keyboardtype as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 4.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
A key was released.
**Notes:**
If you return true you tell the system that you handled the event.

Possible values for the key modifier:

For added security, GetEventMonitorTarget requires that "Enable access for assistive devices" be checked in the Universal Access preference pane in order to monitor RawKeyDown, RawKeyUp, and RawKeyRepeat events.
events. If this control is not checked, you can still install handlers for these events on the event monitor class, but no events of these types will be sent to your handler. Administrator privileges are required to enable this feature.

### 26.8.24 MouseDown(x as single, y as single, modifierKeys as Integer, button as Integer, clickcount as Integer, MouseChord as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 4.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** An event which fires when a mousebutton is down. **Notes:**

In case the tablet property is true, the TabletPoint or the TabletProximity property is filled with an object.

Tablet functions may or may not work in Realbasic’s debug mode (some RB versions work and some not).

### 26.8.25 MouseDragged(x as single, y as single, modifierKeys as Integer, deltax as single, deltay as single, button as Integer, clickcount as Integer, MouseChord as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 4.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** An event which fires when the mouse is dragged. **Notes:**

In case the tablet property is true, the TabletPoint or the TabletProximity property is filled with an object.

Tablet functions may or may not work in Realbasic’s debug mode (some RB versions work and some not).
26.8.26 MouseMoved(x as single, y as single, modifierKeys as Integer, deltax as single, deltay as single) as boolean

MBS MacCF Plugin, Plugin Version: 4.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** An event which fires when the mouse is moved.

**Notes:**
In case the tablet property is true, the TabletPoint or the TabletProximity property is filled with an object.

Tablet functions may or may not work in Realbasic’s debug mode (some RB versions work and some not).

26.8.27 MouseUp(x as single, y as single, modifierKeys as Integer, button as Integer, clickcount as Integer, MouseChord as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 4.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** An event which fires when a mousebutton is released.

**Notes:**
In case the tablet property is true, the TabletPoint or the TabletProximity property is filled with an object.

Tablet functions may or may not work in Realbasic’s debug mode (some RB versions work and some not).

26.8.28 MouseWheelMoved(modifierKeys as Integer, axis as Integer, delta as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 4.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called whenever the mouse wheel is moved.

**Example:**

```plaintext
function MouseWheelMoved(modifierKeys as Integer, axis as Integer, delta as Integer) as boolean
    dim d as Integer
    const cmdKey=256
    const shiftKey=512
    const alphaLock=1024
    const optionKey=2048
    const controlKey=4096
    const rightShiftKey=8192
    const rightOptionKey=16384
    const rightControlKey=32768
    const kEventMouseWheelAxisY=1
    const kEventMouseWheelAxisX=0
```
if axis=kEventMouseWheelAxisY then
  d=delta

  if BitwiseAnd(modifierKeys,optionkey)<>0 then
    d=d*4 // scroll faster with option
  end if

  List.ScrollPosition=List.ScrollPosition-d
end if

List.InsertRow 0,"MouseWheelMoved "+str(delta)
end function

Notes:

Currently axis is only 0 or 1, but in future new input devices may have up to 32 axises.

Added a boolean function result in version 3.2. If you return true the event is handled by you. Else it’s passed to the next receiver of events.
26.9. class CarbonSystemEventsMBS

26.9.1 class CarbonSystemEventsMBS

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for receiving system events sent to the application.

26.9.2 Methods

26.9.3 Listen

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Starts listening for events send to your application.

26.9.4 Properties

26.9.5 Available as Boolean

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this events are firing.

**Notes:**
Still each event may have it’s own requirement.
(Read only property)

26.9.6 Lasterror as Integer

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last reported Mac OS error code.

**Notes:**
0 if successful, -1 if function is not available.
(Read and Write property)
26.9.7 Events

26.9.8 DisplayReconfigured

MBS MacCF Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Notification that the Display configuration has changed.

**Notes:**
This event is sent to all handlers registered for it on the application event target. When this event is received, applications may wish to update geometry and color depth usage or perform a redraw based on the new configuration.

Sent in Mac OS X 10.5 and newer.

26.9.9 DisplaysAsleep

MBS MacCF Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** All connected displays have gone to sleep.

**Notes:** Sent in Mac OS X 10.4 and newer.

26.9.10 DisplaysAwake

MBS MacCF Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** All connected displays have awoken.

**Notes:** Sent in Mac OS X 10.4 and newer.

26.9.11 TimeDateChanged

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The system time and/or date has changed via the preferences panel.

**Notes:**
Requires Mac OS X 10.3 or newer.
The RB date class may not recognize the case when just the time zone changed.

26.9.12 UserSessionActivated

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The current user login session has been activated.

**Notes:**
Requires Mac OS X 10.3 or newer.

From Apple's documentation:

When a user switch occurs, Mac OS X generates events for all interested applications. Events are sent to applications in a login session whenever the login session is activated or deactivated. If a login session is not being activated or deactivated, it receives no events. You can use the activation events to perform the following kinds of tasks:

- Halt or restart sound playback
- Halt or restart animations
- Give up or acquire shared resources
- Put your application into a quiescent state to improve overall system performance

Event Timing

User switch notifications are sent to applications at the same time the switch occurs. Because the switch occurs relatively quickly, this is normally not a problem. However, it is possible for an application to receive its activation event before other applications have received their deactivation events. This could lead to potential race conditions between applications releasing and acquiring shared resources.

To avoid race conditions, applications in the session being deactivated should continue to release any shared resources as soon as possible. Applications in the session being activated should delay the acquisition of any shared resources until those resources are actually used. Not only can this help avoid potential race conditions, it can also improve overall system performance. If your application needs a particular resource right away but encounters errors while trying to acquire it, set a timer and try to acquire the resource again a short time later.

26.9.13 UserSessionDeactivated

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The current user login session has been deactivated.

**Notes:**
Requires Mac OS X 10.3 or newer.

From Apple’s documentation:

When a user switch occurs, Mac OS X generates events for all interested applications. Events are sent to applications in a login session whenever the login session is activated or deactivated. If a login session is not being activated or deactivated, it receives no events. You can use the activation events to perform the
following kinds of tasks:

- Halt or restart sound playback
- Halt or restart animations
- Give up or acquire shared resources
- Put your application into a quiescent state to improve overall system performance

Event Timing

User switch notifications are sent to applications at the same time the switch occurs. Because the switch occurs relatively quickly, this is normally not a problem. However, it is possible for an application to receive its activation event before other applications have received their deactivation events. This could lead to potential race conditions between applications releasing and acquiring shared resources. To avoid race conditions, applications in the session being deactivated should continue to release any shared resources as soon as possible. Applications in the session being activated should delay the acquisition of any shared resources until those resources are actually used. Not only can this help avoid potential race conditions, it can also improve overall system performance. If your application needs a particular resource right away but encounters errors while trying to acquire it, set a timer and try to acquire the resource again a short time later.
26.10. class CarbonWindowsEventsMBS

26.10.1 class CarbonWindowsEventsMBS

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for receiving events sent to a window. **Notes:** Only for Carbon target. Will not work with Cocoa windows.

26.10.2 Methods

26.10.3 Listen(win as window)

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Starts listening for events send to the given window.

26.10.4 ListenOnWindowsHandle(windowHandle as Integer)

MBS MacCF Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Starts listening for events send to the given window. **Notes:** You can use the WindowHandle from the CocoaColorPanel class.

26.10.5 Properties

26.10.6 Available as boolean

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** whether this events are firing. **Notes:** (Read only property)

26.10.7 EventCount as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The mouse event counter. **Notes:** Increases whenever one of the following events occurs: MouseUp, MouseMoved, MouseDragged and MouseDown. (Read and Write property)
26.10.8 Lasterror as Integer

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last reported Mac OS error code. **Notes:**
0 if successful, -1 if function is not available. (Read and Write property)

26.10.9 MouseButton as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The mouse buttons used at the time of the last mouse event. **Notes:**
Set by the MouseDragged, the MouseDown and the MouseUp event. (Read and Write property)

26.10.10 MouseChord as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The mouse chord state at the time of the last mouse event. **Notes:**
Set by the MouseDragged, the MouseDown and the MouseUp event. (Read and Write property)

26.10.11 MouseClickCount as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The mouse click count at the time of the last mouse event. **Notes:**
Set by the MouseDragged, the MouseDown and the MouseUp event. (Read and Write property)

26.10.12 MouseDeltaX as Single

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The mouse movement at the time of the last mouse event. **Notes:**
26.10.13  MouseDeltaY as Single

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The mouse movement at the time of the last mouse event.
**Notes:**
Set by the MouseMoved and the MouseDragged event.
(Read and Write property)

26.10.14  MouseModifierKeys as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The modifier key state at the time of the last mouse event.
**Notes:**
Set by the MouseMoved, the MouseDragged, the MouseDown and the MouseUp event.
The modifiers field contains information about the state of the modifier keys and the mouse button at the
time the event was posted.

Each of the modifier keys is represented by a specific bit in the modifiers field. You can use these constants
as masks to test the setting of various bits in the modifiers field:

- activeFlag 1  set if window being activated or if mouse-down event caused foreground switch
- btnState 128  set if mouse button up
- cmdKey 256  set if Command key down
- shiftKey 512  set if Shift key down
- alphaLock 1024  set if Caps Lock key down
- optionKey 2048 set if Option key down
- controlKey 4096 set if Control key down
- rightshiftKey 8192  set if right Shift key down
- rightoptionKey 16384 set if right Option key down
- rightcontrolKey 32768  set if right Control key down

If your application attaches special meaning to any of these keys in combination with other keys or when the
mouse button is down, you can test the state of the modifiers field to determine the action your application
should take. For example, you can use this information to determine whether the user pressed the Command
key and another key to make a menu choice.
Some keyboards do not distinguish between the right or left Control, Shift, and Option keys; for example, the virtual key code for the right Shift key and left Shift key might be the same. For these keyboards, if the user presses the Control, Shift, or Option key, the Event Manager sets only the bits corresponding to the shiftKey, optionKey, and controlKey constants. For keyboards that do distinguish between these keys, the Event Manager sets the bits in the modifiers field to indicate whether the right or left Control, Shift, or Option keys were pressed. For example, the Event Manager sets bit 13 in the modifiers field if the user presses the right Shift key and sets bit 9 if the user presses the left Shift key. In most cases your application should not need to distinguish between the left and right Control, Shift, and Option keys.

(Read and Write property)

### 26.10.15 MouseX as Single

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The mouse position at the time of the last mouse event. **Notes:**

Set by the MouseMoved, the MouseDragged, the MouseDown and the MouseUp event. (Read and Write property)

### 26.10.16 MouseY as Single

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The mouse position at the time of the last mouse event. **Notes:**

Set by the MouseMoved, the MouseDragged, the MouseDown and the MouseUp event. (Read and Write property)

### 26.10.17 Tablet as Boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether you want to get the tablet event data. **Notes:**

As not every application needs tablet event information, this is optional.

Set to true to get the TabletPoint and TabletProximity parameters filled in the events.

Tablet functions may or may not work in Realbasic's debug mode (some RB versions work and some not). (Read and Write property)
26.10.18 TabletPoint as CarbonEventsTabletPointMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Saves the current tablet point object.

**Notes:**
Whenever an event is received and the tablet property is true and there is point information available, a reference to the CarbonEventsTabletPointMBS object (from the event) is stored in this property.

So this property enables you to access the current state information of the tablet by just looking on the last state reported.

Tablet functions may or may not work in Realbasic’s debug mode (some RB versions work and some not). (Read and Write property)

26.10.19 TabletProximity as CarbonEventsTabletProximityMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Saves the current tablet proximity object.

**Notes:**
Whenever an event is received and the tablet property is true and there is proximity information available, a reference to the CarbonEventsTabletProximityMBS object (from the event) is stored in this property.

So this property enables you to access the current state information of the tablet by just looking on the last state reported.

Tablet functions may or may not work in Realbasic’s debug mode (some RB versions work and some not). (Read and Write property)

26.10.20 Events

26.10.21 GestureEnded(GlobalMouseX as Double, GlobalMouseY as Double, WindowHandle as Integer, WindowMouseX as Double, WindowMouseY as Double, WindowPartCode as Integer, KeyModifiers as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 9.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** This event is called when the gesture ends.

**Notes:**
GlobalMouseX and GlobalMouseY specify the mouse position. If WindowHandle is not 0, it contains the
handle for the current window on that mouse position and WindowMouseX/WindowMouseY specify the
window relative position. The WindowPartCode specifies which part of the window was hit. (See Window-
PartCode definition in Apple documentation.)

Possible values for the key modifier:

<table>
<thead>
<tr>
<th>Modifier</th>
<th>Value</th>
<th>Hex</th>
</tr>
</thead>
<tbody>
<tr>
<td>activeFlag</td>
<td>1</td>
<td>&amp; h000001</td>
</tr>
<tr>
<td>btnState</td>
<td>128</td>
<td>&amp; h000080</td>
</tr>
<tr>
<td>cmdKey</td>
<td>256</td>
<td>&amp; h000100</td>
</tr>
<tr>
<td>shiftKey</td>
<td>512</td>
<td>&amp; h000200</td>
</tr>
<tr>
<td>alphaLock</td>
<td>1024</td>
<td>&amp; h000400</td>
</tr>
<tr>
<td>optionKey</td>
<td>2048</td>
<td>&amp; h000800</td>
</tr>
<tr>
<td>controlKey</td>
<td>4096</td>
<td>&amp; h001000</td>
</tr>
<tr>
<td>rightShiftKey</td>
<td>8192</td>
<td>&amp; h002000</td>
</tr>
<tr>
<td>rightOptionKey</td>
<td>16384</td>
<td>&amp; h004000</td>
</tr>
<tr>
<td>rightControlKey</td>
<td>32768</td>
<td>&amp; h008000</td>
</tr>
<tr>
<td>NumLock</td>
<td>65536</td>
<td>&amp; h010000</td>
</tr>
<tr>
<td>Fn</td>
<td>131072</td>
<td>&amp; h020000</td>
</tr>
</tbody>
</table>

Return true if you handled the event.

Supported on Mac OS X 10.5.5 and newer.
If not supported with the current hardware, this event is never called.

26.10.22 GestureMagnify(GlobalMouseX as Double, GlobalMouseY as Double, WindowHandle as Integer, WindowMouseX as Double, WindowMouseY as Double, WindowPartCode as Integer, KeyModifiers as Integer, MagnificationAmount as Double) as boolean

MBS MacCF Plugin, Plugin Version: 9.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
This event is called several times while the magnify gesture is performed.
**Notes:**
MagnificationAmount the magnification amount.

GlobalMouseX and GlobalMouseY specify the mouse position. If WindowHandle is not 0, it contains the
handle for the current window on that mouse position and WindowMouseX/WindowMouseY specify the
window relative position. The WindowPartCode specifies which part of the window was hit. (See Window-
PartCode definition in Apple documentation.)

Possible values for the key modifier:
26.10. CLASS CARBONWINDOWSEVENTSMBS

activeFlag = 1 = & h000001
btnState = 128 = & h000080
cmdKey = 256 = & h000100
shiftKey = 512 = & h000200
alphaLock = 1024 = & h000400
optionKey = 2048 = & h000800
controlKey = 4096 = & h001000
rightShiftKey = 8192 = & h002000
rightOptionKey = 16384 = & h004000
rightControlKey = 32768 = & h008000
NumLock = 65536 = & h010000
Fn = 131072 = & h020000

Return true if you handled the event.

Supported on Mac OS X 10.5.5 and newer.
If not supported with the current hardware, this event is never called.

26.10.23 GestureRotate(GlobalMouseX as Double, GlobalMouseY as Double, WindowHandle as Integer, WindowMouseX as Double, WindowMouseY as Double, WindowPartCode as Integer, KeyModifiers as Integer, RotationAmount as Double) as boolean

MBS MacCF Plugin, Plugin Version: 9.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** This event is called several times while the rotation gesture is performed.
**Notes:**
The RotationAmount in polar coordinates.

GlobalMouseX and GlobalMouseY specify the mouse position. If WindowHandle is not 0, it contains the handle for the current window on that mouse position and WindowMouseX/WindowMouseY specify the window relative position. The WindowPartCode specifies which part of the window was hit. (See WindowPartCode definition in Apple documentation.)

Possible values for the key modifier:

Return true if you handled the event.

Supported on Mac OS X 10.5.5 and newer.
If not supported with the current hardware, this event is never called.
26.10.24 GestureStarted(GlobalMouseX as Double, GlobalMouseY as Double, WindowHandle as Integer, WindowMouseX as Double, WindowMouseY as Double, WindowPartCode as Integer, KeyModifiers as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 9.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
This event is called when a gesture starts.
**Notes:**
GlobalMouseX and GlobalMouseY specify the mouse position. If WindowHandle is not 0, it contains the handle for the current window on that mouse position and WindowMouseX/WindowMouseY specify the window relative position. The WindowPartCode specifies which part of the window was hit. (See WindowPartCode definition in Apple documentation.)

Possible values for the key modifier:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>activeFlag</td>
<td>1</td>
</tr>
<tr>
<td>btnState</td>
<td>128</td>
</tr>
<tr>
<td>cmdKey</td>
<td>256</td>
</tr>
<tr>
<td>shiftKey</td>
<td>512</td>
</tr>
<tr>
<td>alphaLock</td>
<td>1024</td>
</tr>
<tr>
<td>optionKey</td>
<td>2048</td>
</tr>
<tr>
<td>controlKey</td>
<td>4096</td>
</tr>
<tr>
<td>rightShiftKey</td>
<td>8192</td>
</tr>
<tr>
<td>rightOptionKey</td>
<td>16384</td>
</tr>
<tr>
<td>rightControlKey</td>
<td>32768</td>
</tr>
<tr>
<td>NumLock</td>
<td>65536</td>
</tr>
<tr>
<td>Fn</td>
<td>131072</td>
</tr>
</tbody>
</table>

Return true if you handled the event.
Supported on Mac OS X 10.5.5 and newer.
If not supported with the current hardware, this event is never called.

**26.10.25 GestureSwipe**

```
GestureSwipe(GlobalMouseX as Double, GlobalMouseY as Double, WindowHandle as Integer, WindowMouseX as Double, WindowMouseY as Double, WindowPartCode as Integer, KeyModifiers as Integer, SwipeDirectionX as Double, SwipeDirectionY as Double) as boolean
```

MBS MacCF Plugin, Plugin Version: 9.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**

This event is called for a swipe gesture.

**Notes:**

SwipeDirectionX and SwipeDirectionY specify the swipe direction.

GlobalMouseX and GlobalMouseY specify the mouse position. If WindowHandle is not 0, it contains the handle for the current window on that mouse position and WindowMouseX/WindowMouseY specify the window relative position. The WindowPartCode specifies which part of the window was hit. (See WindowPartCode definition in Apple documentation.)

Possible values for the key modifier:

- `activeFlag` = 1 = & h000001
- `btnState` = 128 = & h000080
- `cmdKey` = 256 = & h000100
- `shiftKey` = 512 = & h000200
- `alphaLock` = 1024 = & h000400
- `optionKey` = 2048 = & h000800
- `controlKey` = 4096 = & h001000
- `rightShiftKey` = 8192 = & h002000
- `rightOptionKey` = 16384 = & h004000
- `rightControlKey` = 32768 = & h008000
- `NumLock` = 65536 = & h010000
- `Fn` = 131072 = & h020000

Return true if you handled the event.

Supported on Mac OS X 10.5.5 and newer.
If not supported with the current hardware, this event is never called.
26.10.26 MouseDown(x as single, y as single, modifierKeys as Integer, button as Integer, clickcount as Integer, MouseChord as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** An event which fires when a mouse button is down.

26.10.27 MouseDragged(x as single, y as single, modifierKeys as Integer, deltax as single, deltay as single, button as Integer, clickcount as Integer, MouseChord as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** An event which fires when the mouse is dragged.

**Notes:**
In case the tablet property is true, the TabletPoint or the TabletProximity property is filled with an object.

Tablet functions may or may not work in Realbasic’s debug mode (some RB versions work and some not).

26.10.28 MouseMoved(x as single, y as single, modifierKeys as Integer, deltax as single, deltay as single) as boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** An event which fires when the mouse is moved.

**Notes:**
In case the tablet property is true, the TabletPoint or the TabletProximity property is filled with an object.

Tablet functions may or may not work in Realbasic’s debug mode (some RB versions work and some not).

26.10.29 MouseUp(x as single, y as single, modifierKeys as Integer, button as Integer, clickcount as Integer, MouseChord as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** An event which fires when a mouse button is released.

**Notes:**
In case the tablet property is true, the TabletPoint or the TabletProximity property is filled with an object.

Tablet functions may or may not work in Realbasic’s debug mode (some RB versions work and some not).
26.10.30  MouseWheelMoved(modifierKeys as Integer, axis as Integer, delta as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called whenever the mouse wheel is moved with the mouse cursor within your window.  

**Example:**

```vbnet
function MouseWheelMoved(modifierKeys as Integer, axis as Integer, delta as Integer) as boolean
    dim d as Integer
    const cmdKey=256
    const shiftKey=512
    const alphaLock=1024
    const optionKey=2048
    const controlKey=4096
    const rightShiftKey=8192
    const rightOptionKey=16384
    const rightControlKey=32768
    const kEventMouseWheelAxisY=1
    const kEventMouseWheelAxisX=0

    if axis=kEventMouseWheelAxisY then
        d=delta
        if BitwiseAnd(modifierKeys,optionkey)<0 then
            d=d*4 // scroll faster with option
        end if
        List.ScrollPosition=List.ScrollPosition-d
    end if

    List.InsertRow 0,"MouseWheelMoved "+str(delta)
end function
```

**Notes:** Currently axis is only 0 or 1, but in future new input devices may have up to 32 axises.

26.10.31  WindowBoundsChanging(original as object, previous as object, current as object, flags as Integer)
26.10.32 WindowClickCloseRgn(ClickedWindowHandle as Integer, UnderMouseWindowHandle as Integer, globalX as single, globalY as single, x as single, y as single, modifierKeys as Integer, button as Integer, clickcount as Integer, MouseChord as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 11.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
This event is called when the close button area of the window was clicked.

**Notes:**
ClickedWindowHandle: The handle of the window that was clicked. 0 if not available.
UnderMouseWindowHandle: The handle of the window under the mouse. 0 if not available.
globalX and globalY: global mouse coordinates.
X and Y: mouse coordinates relative to window.
modifierkeys: which keys are pressed. (see CarbonWindowsEventsMBS.MouseModifierKeys for details)
button: Which mouse button was pressed.
clickcount: Whether this is a single click, double click, etc.
MouseChord: Which other mouse buttons were pressed when the event was generated.

Return true if you handled the event and false if not.

26.10.33 WindowClickCollapseRgn(ClickedWindowHandle as Integer, UnderMouseWindowHandle as Integer, globalX as single, globalY as single, x as single, y as single, modifierKeys as Integer, button as Integer, clickcount as Integer, MouseChord as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 11.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
This event is called when the collapse button area of the window was clicked.

**Notes:**
ClickedWindowHandle: The handle of the window that was clicked. 0 if not available.
UnderMouseWindowHandle: The handle of the window under the mouse. 0 if not available.
globalX and globalY: global mouse coordinates.
X and Y: mouse coordinates relative to window.
modifierkeys: which keys are pressed. (see CarbonWindowsEventsMBS.MouseModifierKeys for details)
button: Which mouse button was pressed.
clickcount: Whether this is a single click, double click, etc.
MouseChord: Which other mouse buttons were pressed when the event was generated.

Return true if you handled the event and false if not.
26.10.34 WindowClickContentRgn(ClickedWindowHandle as Integer, UnderMouseWindowHandle as Integer, globalX as single, globalY as single, x as single, y as single, modifierKeys as Integer, button as Integer, clickcount as Integer, MouseChord as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 11.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** This event is called when the content area of the window was clicked.

**Notes:**

ClickedWindowHandle: The handle of the window that was clicked. 0 if not available.
UnderMouseWindowHandle: The handle of the window under the mouse. 0 if not available.
globalX and globalY: global mouse coordinates.
x and Y: mouse coordinates relative to window.
modifierkeys: which keys are pressed. (see CarbonWindowsEventsMBS.MouseModifierKeys for details)
button: Which mouse button was pressed.
clickcount: Whether this is a single click, double click, etc.
MouseChord: Which other mouse buttons were pressed when the event was generated.

Return true if you handled the event and false if not.

26.10.35 WindowClickDragRgn(ClickedWindowHandle as Integer, UnderMouseWindowHandle as Integer, globalX as single, globalY as single, x as single, y as single, modifierKeys as Integer, button as Integer, clickcount as Integer, MouseChord as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 11.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** This event is called when the drag area of the window was clicked.

**Notes:**

ClickedWindowHandle: The handle of the window that was clicked. 0 if not available.
UnderMouseWindowHandle: The handle of the window under the mouse. 0 if not available.
globalX and globalY: global mouse coordinates.
x and Y: mouse coordinates relative to window.
modifierkeys: which keys are pressed. (see CarbonWindowsEventsMBS.MouseModifierKeys for details)
button: Which mouse button was pressed.
clickcount: Whether this is a single click, double click, etc.
MouseChord: Which other mouse buttons were pressed when the event was generated.

Return true if you handled the event and false if not.
26.10.36  WindowClickProxyIconRgn(ClickedWindowHandle as Integer, UnderMouseWindowHandle as Integer, globalX as single, globalY as single, x as single, y as single, modifierKeys as Integer, button as Integer, clickcount as Integer, MouseChord as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 11.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
This event is called when the proxy icon area of the window was clicked.

**Notes:**
- ClickedWindowHandle: The handle of the window that was clicked. 0 if not available.
- UnderMouseWindowHandle: The handle of the window under the mouse. 0 if not available.
- globalX and globalY: Global mouse coordinates.
- X and Y: Mouse coordinates relative to window.
- modifierKeys: Which keys are pressed. (see CarbonWindowsEventsMBS.MouseModifierKeys for details)
- button: Which mouse button was pressed.
- clickcount: Whether this is a single click, double click, etc.
- MouseChord: Which other mouse buttons were pressed when the event was generated.

Return true if you handled the event and false if not.

26.10.37  WindowClickResizeRgn(ClickedWindowHandle as Integer, UnderMouseWindowHandle as Integer, globalX as single, globalY as single, x as single, y as single, modifierKeys as Integer, button as Integer, clickcount as Integer, MouseChord as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 11.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
This event is called when the resize widget area of the window was clicked.

**Notes:**
- ClickedWindowHandle: The handle of the window that was clicked. 0 if not available.
- UnderMouseWindowHandle: The handle of the window under the mouse. 0 if not available.
- globalX and globalY: Global mouse coordinates.
- X and Y: Mouse coordinates relative to window.
- modifierKeys: Which keys are pressed. (see CarbonWindowsEventsMBS.MouseModifierKeys for details)
- button: Which mouse button was pressed.
- clickcount: Whether this is a single click, double click, etc.
- MouseChord: Which other mouse buttons were pressed when the event was generated.

Return true if you handled the event and false if not.
26.10. CLASS CARBONWINDOWSEVENTSMBS

26.10.38 WindowClickStructureRgn(ClickedWindowHandle as Integer, UnderMouseWindowHandle as Integer, globalX as single, globalY as single, x as single, y as single, modifierKeys as Integer, button as Integer, clickcount as Integer, MouseChord as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 11.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
This event is called when the window structure area of the window was clicked.
**Notes:**
- ClickedWindowHandle: The handle of the window that was clicked. 0 if not available.
- UnderMouseWindowHandle: The handle of the window under the mouse. 0 if not available.
- globalX and globalY: global mouse coordinates.
- X and Y: mouse coordinates relative to window.
- modifierkeys: which keys are pressed. (see CarbonWindowsEventsMBS.MouseModifierKeys for details)
- button: Which mouse button was pressed.
- clickcount: Whether this is a single click, double click, etc.
- MouseChord: Which other mouse buttons were pressed when the event was generated.

Return true if you handled the event and false if not.

26.10.39 WindowClickToolbarButtonRgn(ClickedWindowHandle as Integer, UnderMouseWindowHandle as Integer, globalX as single, globalY as single, x as single, y as single, modifierKeys as Integer, button as Integer, clickcount as Integer, MouseChord as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 11.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
This event is called when the toolbar button area of the window was clicked.
**Notes:**
- ClickedWindowHandle: The handle of the window that was clicked. 0 if not available.
- UnderMouseWindowHandle: The handle of the window under the mouse. 0 if not available.
- globalX and globalY: global mouse coordinates.
- X and Y: mouse coordinates relative to window.
- modifierkeys: which keys are pressed. (see CarbonWindowsEventsMBS.MouseModifierKeys for details)
- button: Which mouse button was pressed.
- clickcount: Whether this is a single click, double click, etc.
- MouseChord: Which other mouse buttons were pressed when the event was generated.

Return true if you handled the event and false if not.
26.10.40 WindowClickZoomRgn(ClickedWindowHandle as Integer, UnderMouseWindowHandle as Integer, globalX as single, globalY as single, x as single, y as single, modifierKeys as Integer, button as Integer, clickcount as Integer, MouseChord as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 11.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
This event is called when the zoom button area of the window was clicked.

**Notes:**
- ClickedWindowHandle: The handle of the window that was clicked. 0 if not available.
- UnderMouseWindowHandle: The handle of the window under the mouse. 0 if not available.
- globalX and globalY: global mouse coordinates.
- X and Y: mouse coordinates relative to window.
- modifierkeys: which keys are pressed. (see CarbonWindowsEventsMBS.MouseModifierKeys for details)
- button: Which mouse button was pressed.
- clickcount: Whether this is a single click, double click, etc.
- MouseChord: Which other mouse buttons were pressed when the event was generated.

Return true if you handled the event and false if not.

26.10.41 WindowClose as boolean

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Called whenever the window should close.

**Notes:**
- Return false to run the default handler.
- Return true to tell the system that you handled this event.

26.10.42 WindowCloseAll as boolean

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Called whenever all windows should close.

**Notes:**
- Return false to run the default handler.
- Return true to tell the system that you handled this event.

26.10.43 WindowCollapse as boolean

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Called when the window is going to collapse.
26.10. CLASS CARBONWINDOWSEVENTSMBS

Notes:
Return false to run the default handler.
Return true to tell the system that you handled this event.

26.10.44 WindowCollapseAll as boolean

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Called when all windows are going to collapse.
Notes:
Return false to run the default handler.
Return true to tell the system that you handled this event.

26.10.45 WindowCollapsed as boolean

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Called whenever the window is collapsed.
Notes:
Return false to run the default handler.
Return true to tell the system that you handled this event.

26.10.46 WindowCollapsing as boolean

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Called while the window is collapsing.
Notes:
Return false to run the default handler.
Return true to tell the system that you handled this event.

26.10.47 WindowExpand as boolean

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Called whenever the window should expand.
Notes:
Return false to run the default handler.
Return true to tell the system that you handled this event.
26.10.48  WindowExpandAll as boolean

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Called whenever all windows should expand.
**Notes:**
Return false to run the default handler.
Return true to tell the system that you handled this event.

26.10.49  WindowExpanded as boolean

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Called whenever the window is expanded.
**Notes:**
Return false to run the default handler.
Return true to tell the system that you handled this event.

26.10.50  WindowExpanding as boolean

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Called while the window is expanding.
**Notes:**
Return false to run the default handler.
Return true to tell the system that you handled this event.

26.10.51  WindowHidden as boolean

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Called whenever the window is hidden.
**Notes:**
Return false to run the default handler.
Return true to tell the system that you handled this event.

26.10.52  WindowHiding as boolean

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Called while the window is hiding.
**Notes:**
26.10. CLASS CARBONWINDOWSEVENTSMBS

Return false to run the default handler.
Return true to tell the system that you handled this event.

26.10.53 WindowRestoreFromDock as boolean

MBS MacCF Plugin, Plugin Version: 7.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Called when the minimized window is clicked to be restored.
**Notes:** Return true to block this or return false to allow the restore to go on.

26.10.54 WindowShowing as boolean

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Called while the window is showing.
**Notes:**
Return false to run the default handler.
Return true to tell the system that you handled this event.

26.10.55 WindowShown as boolean

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Called whenever the window is shown.
**Notes:**
Return false to run the default handler.
Return true to tell the system that you handled this event.

26.10.56 WindowToolbarButtonClicked as boolean

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Called whenever the toolbar button is pressed.
**Notes:** Return true to tell the system that you handled this event. Else you may get this event two tims on a metal window. (Boolean result added in plugin version 4.1)
26.10.57  \textbf{WindowTransitionCompleted}(TransitionAction as Integer, TransactionEffect as Integer)


26.10.58  \textbf{WindowTransitionStarted}(TransitionAction as Integer, TransactionEffect as Integer)


26.10.59  \textbf{WindowZoom} as boolean

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. \textbf{Function:} Called whenever the window should zoom.  
\textbf{Notes:} 
Return false to run the default handler.  
Return true to tell the system that you handled this event.

26.10.60  \textbf{WindowZoomAll} as boolean

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. \textbf{Function:} Called whenever all windows should zoom.  
\textbf{Notes:} 
Return false to run the default handler.  
Return true to tell the system that you handled this event.

26.10.61  \textbf{WindowZoomed} as boolean

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. \textbf{Function:} Called whenever the window was zoomed.  
\textbf{Notes:} 
Return false to run the default handler.  
Return true to tell the system that you handled this event.
Chapter 27

Catalog Search

27.1  class CatSearchMBS

27.1.1  class CatSearchMBS

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Allows you to search fast on your harddisk.

**Example:**

dim cs as new CatSearchMBS

if cs.Search(volume(0), true) then

  // set search params

  cs.Name = "REALbasic"
  cs.PartialName = true

  dim response as Integer
  do
    response = cs.SearchNext
    if response = 0 then // still searching

      if cs.Result<>nil then // did we find something?
        Listbox1.AddRow cs.Result.Name

      if Listbox1.ListCount = 100 then
        Return // stop after 100 entries
    end if
  end if

end if
CHAPTER 27. CATALOG SEARCH

end
loop until response <0
end if

Notes:
Depending on what and how you want to search, you can decide whether MDQueryMBS or CatSearchMBS is the better choice.

This class implements the PBCatSearch function of the Mac OS File Manager. This is a very fast routine to find specific types of files on a volume. The MacOS tool Sherlock (aka Find File) uses this function to its quick search on local volumes.

There are some restrictions to CatSearchMBS: Is it not supported on every volume! Whether it is supported or not depends on the File System format used on the Volume: HFS, HFS+ and most File Servers support it, while Floppy Disks, ISO 9660 and UDF formatted disks, used on some CDs and on most DVD-ROMs, might not support it.

This version of this plugin can now handle those cases where CatSearchMBS is not supported, too: If a volume does not support CatSearchMBS, you can choose to fall back to the classic recursive directory search, which is much slower, but gives you the same results.

(This new feature is achieved by using a C library called "MoreFiles", written by Jim Luther, one of Apple’s File System ”gurus".)

27.1.2 Methods

27.1.3 close

Function: The destructor.
Notes:
There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)
27.1. CLASS CATSEARCHMBS

27.1.4 Search(volume as FolderItem, allowRecursiveSearch as Boolean) as Boolean

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes the Search engine.

**Notes:**

Call this to initiate a search a volume. If the returned value is false, then an error has occurred (either there is not enough free memory or the volume wasn’t valid). If the returned value is true, everything is okay.

The volume parameter can be anything that identifies the volume, including any file or folder on it.

If allowRecursiveSearch is true and the volume is a folder you search only the folder on this volume, but using recursive directory search.

The allowRecursiveSearch parameter determines whether the search shall use the slower recursive directory scan method if the volume does not support CatSearchMBS. If you pass false for a volume that does not support CatSearchMBS, this method will fail, and return false.

Update: Newer plugin versions (4.x?) allow to search folders if allowRecursiveSearch=true.

27.1.5 SearchNext as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Searches for the next matching file

**Example:**

// Here's an example of a proper search loop:

dim cs as CatSearchMBS
// ....

dim response as Integer
do
If UserCancelled then
exit
end
response = cs.SearchNext
if response = 0 then
// ... read cs.result and process the found item
end
loop until response <0
Notes:
Once the search criteria has been set, call this function repeatedly as long as it returns non-negative values.
Once the result is negative, the search is finished and CatSearchClose should be called.

These are the possible non-negative return values:

0  a match has been found, and the found item can be inquired by calling Result.
1  a certain amount of time has passed (see ResponseTimeout). You can ignore this result and continue to search.
2  files or folders were added or removed to the volume. You may ignore this error by simply continuing the search.
-39 (eofErr)  end of search, no more matches

27.1.6 Properties

27.1.7 BackupDateEnd as Integer

Function: The end of the backup date search range.
Notes:
This value is an unsigned integer. If you assign a double from a date totalseconds property, please move it to the matching range like in the example project "Find stuff from today".
(Read and Write property)

27.1.8 BackupDateStart as Integer

Function: The start of the backup date search range.
Notes:
This value is an unsigned integer. If you assign a double from a date totalseconds property, please move it to the matching range like in the example project "Find stuff from today".
(Read and Write property)

27.1.9 CreationDateEnd as Integer

Function: The end of the creation date search range.
27.1. CLASS CATSEARCHMBS

Notes:
This value is an unsigned integer. If you assign a double from a date totalseconds property, please move it to the matching range like in the example project "Find stuff from today".
(Read and Write property)

27.1.10 CreationDateStart as Integer

Notes:
This value is an unsigned integer. If you assign a double from a date totalseconds property, please move it to the matching range like in the example project "Find stuff from today".
(Read and Write property)

27.1.11 creator as String

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
dim c as CatSearchMBS
   c.Creator="ttxt"
' will look for files created by the SimpleText application.
Notes:
The above Creator property allows you to specify the search criteria. Without setting any property from this class, a search will find nothing.

Note: If you set one of this properties, all criterias must match to get a match back from a call to SearchNext.
(Read and Write property)

27.1.12 FileFlags as Integer

Example:
dim c as CatSearchMBS
c.FileFlags=& H4000 // Invisible
c.FileFlagsMask=& H4000 // only look on the invisible flag

Notes:
CHAPTER 27. CATALOG SEARCH

The above FileFlags property allows you to specify the search criteria. Without setting any property from this class, a search will find nothing.

Note: If you set one of this properties, all criteria must match to get a match back from a call to SearchNext.

There is a FileFlags and a FileFlagsMask property which must be used together: bits set in FileFlagsMask specify which bits of FileFlags shall be tested. Those bits will then be compared to the corresponding bits of the files’ (and folders’) flags on the searched volume. If they are identical, you have a match.

The meaning of the flags are as follows (you can use BitwiseOr or + to combine them):

- bit 15, value & H8000: isAlias
- bit 14 value & H4000: isInvisible
- bit 13, value & H2000: hasBundle (has a BNDL resource)
- bit 12, value & H1000: nameLocked
- bit 11, value & H0800: isStationary
- bit 10, value & H0400: hasCustomIcon
- bit 8, value & H0100: hasBeenInitiated (Finder has seen the file since it has been created)
- bit 7, value & H0080: hasNoINITs (there is no INIT rsrc in the Extension file)
- bit 6, value & H0040: isShared
- bits 1-3, value & H000E: color (as a 3-bit value from 0-7)

For example, to find only invisible files, use & H4000 for the FileFlagsMask and the same value for the FileFlags, or to find only visible files, use the same FileFlagsMask, but 0 for the FileFlags. To find stationaries that do not have a custom icon, use & H0C00 (=& H0800+& H0400) for the FileFlagsMask and & H0800 for the FileFlags.
(Read and Write property)

### 27.1.13 FileFlagsMask as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The file flags mask to search for.

**Example:**

```vba
dim c as CatSearchMBS
c.FileFlags=& H4000 ' Invisible
c.FileFlagsMask=& H4000 ' only look on the invisible flag
```

**Notes:**

The above FileFlagsMask property allows you to specify the search criteria. Without setting any property from this class, a search will find nothing.
27.1. CLASS CATSEARCHMBS

Note: If you set one of this properties, all criterias must match to get a match back from a call to SearchNext.

There is a FileFlags and a FileFlagsMask property which must be used together: bits set in FileFlagsMask specify which bits of FileFlags shall be tested. Those bits will then be compared to the corresponding bits of the files’ (and folders’) flags on the searched volume. If they are identical, you have a match.

The meaning of the flags are as follows (you can use BitwiseOr or + to combine them):

- bit 15, value & H8000: isAlias
- bit 14 value & H4000: isInvisible
- bit 13, value & H2000: hasBundle (has a BNDL resource)
- bit 12, value & H1000: nameLocked
- bit 11, value & H0800: isStationary
- bit 10, value & H0400: hasCustomIcon
- bit 8, value & H0100: hasBeenInited (Finder has seen the file since it has been created)
- bit 7, value & H0080: hasNoINITs (there is no INIT rsrc in the Extension file)
- bit 6, value & H0040: isShared
- bits 1-3, value & H000E: color (as a 3-bit value from 0-7)

For example, to find only invisible files, use & H4000 for the FileFlagsMask and the same value for the FileFlags, or to find only visible files, use the same FileFlagsMask, but 0 for the FileFlags. To find stationaries that do not have a custom icon, use & H0C00 (=& H0800+& H0400) for the FileFlagsMask and & H0800 for the FileFlags.

(Read and Write property)

27.1.14 FileType as String


Example:

```vbnet
dim c as CatSearchMBS
c.FileType="TEXT"
' will look for plain Text files.
```

Notes:

The above Creator property allows you to specify the search criteria. Without setting any property from this class, a search will find nothing.
Note: If you set one of this properties, all criterias must match to get a match back from a call to SearchNext.
(Read and Write property)

### 27.1.15 LogicalDataForkSizeEnd as UInt64

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The maximum logical data fork file size.

**Example:**

```vbnet
dim c as CatSearchMBS
c.LogicalDataForkSizeStart=0
c.LogicalDataForkSizeEnd=102400 // search for files <= 100 KB.
```

**Notes:**
You can assign -1 to have no upper limit.
(Read and Write property)

### 27.1.16 LogicalDataForkSizeStart as UInt64

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The minimum logical data fork file size.

**Example:**

```vbnet
dim c as CatSearchMBS
c.LogicalDataForkSizeStart=0
c.LogicalDataForkSizeEnd=102400 // search for files <= 100 KB.
```

**Notes:** (Read and Write property)

### 27.1.17 LogicalResForkSizeEnd as UInt64

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The maximum logical resource fork file size.

**Example:**

```vbnet
dim c as CatSearchMBS
c.LogicalResForkSizeStart=0
c.LogicalResForkSizeEnd=102400 // search for files <= 100 KB.
```
Notes:
You can assign -1 to have no upper limit.
(Read and Write property)

27.1.18 LogicalResForkSizeStart as UInt64

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The minimum logical resource fork file size.
**Example:**
```vbnet
dim c as CatSearchMBS
c.LogicalResForkSizeStart=0
c.LogicalResForkSizeEnd=102400 // search for files <= 100 KB.
```

Notes: (Read and Write property)

27.1.19 ModificationDateEnd as Integer

MBS MacClassic Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The end of the modification date search range.
**Notes:**
This value is an unsigned integer. If you assign a double from a date totalseconds property, please move it to the matching range like in the example project "Find stuff from today".
(Read and Write property)

27.1.20 ModificationDateStart as Integer

MBS MacClassic Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The start of the modification date search range.
**Notes:**
This value is an unsigned integer. If you assign a double from a date totalseconds property, please move it to the matching range like in the example project "Find stuff from today".
(Read and Write property)
27.1.21 name as String

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Set's the name for the search.

**Example:**

```plaintext
dim c as CatSearchMBS
c.Name="Apple"
c.partialname=true
```

**Notes:**

The above name property allows you to specify the search criteria. Without setting any property from this class, a search will find nothing.

Note: If you set one of this properties, all criterias must match to get a match back from a call to SearchNext.

If you pass true to the partialname property, you'll get a match any time the item's name contains the searched name. Otherwise, the entire name must match.

This property is encoded with system encoding. You need to convert strings from an editfield in RB 5 to match the system encoding which is not UTF8.

(Read and Write property)

27.1.22 PartialName as boolean

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** whether or not the name property contains only a partial file name.

**Example:**

```plaintext
dim c as CatSearchMBS
c.Name="Apple"
c.partialname=true
```

**Notes:**

If you pass true to the partialname property, you'll get a match any time the item's name contains the searched name. Otherwise, the entire name must match.

(Read and Write property)
27.1. **CLASS CATSEARCHMBS**

27.1.23  **PhysicalDataForkSizeEnd as UInt64**

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The maximum physical data fork file size.

**Example:**

```vba
dim c as CatSearchMBS
c.PhysicalDataForkSizeStart=0
c.PhysicalDataForkSizeEnd=102400 // search for files <= 100 KB.
```

**Notes:**

You can assign -1 to have no upper limit.
(Read and Write property)

27.1.24  **PhysicalDataForkSizeStart as UInt64**

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The minimum physical data fork file size.

**Example:**

```vba
dim c as CatSearchMBS
c.PhysicalDataForkSizeStart=0
c.PhysicalDataForkSizeEnd=102400 // search for files <= 100 KB.
```

**Notes:** (Read and Write property)

27.1.25  **PhysicalResForkSizeEnd as UInt64**

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The maximum physical resource fork file size.

**Example:**

```vba
dim c as CatSearchMBS
c.PhysicalResForkSizeStart=0
c.PhysicalResForkSizeEnd=102400 // search for files <= 100 KB.
```

**Notes:**

You can assign -1 to have no upper limit.
(Read and Write property)
27.1.26 PhysicalResForkSizeStart as UInt64

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The minimum physical resource fork file size.

**Example:**

```plaintext
dim c as CatSearchMBS
  c.PhysicalResForkSizeStart=0
  c.PhysicalResForkSizeEnd=102400 // search for files <= 100 KB.
```

**Notes:** (Read and Write property)

27.1.27 ResponseTimeout as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the timeout for the search.

**Example:**

```plaintext
dim c as CatSearchMBS
  c.ResponseTimeout=1000 // one second
```

**Notes:**

Sets the maximum time that may pass before SearchNext shall return even if no item has been found yet. The default is 15ms.

If you set the timeout to 0, then SearchNext will only return if an item has been found or if the search is finished.

**Background:**

Searching for a file or folder, especially if the volume does not support CatSearchMBS, can take a lot of time. While the search is in progress, you might want the user to give still access to your app’s user interface. If SearchNext would only return once an item is found, the user interface might not be responsive for several seconds, up to minutes. RB’s threads would not help here. To solve this, SearchNext returns in timely intervals even when it has nothing found yet. At that time, RB can respond to any user interaction, if necessary. This happens then automatically. All you have to do is to call SearchNext again.

(Read and Write property)
27.1.28 Result as folderitem

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the current file and returns nil if none was found.

**Notes:**
After CatSearchNext has returned zero, this function returns the found item else nil.
(Read and Write property)

27.1.29 UsedCatSearchForLastSearch as Boolean

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** whether the last search used the fast catalog search or the slow directory search.

**Notes:** (Read and Write property)

27.1.30 UseIndexedSearch as Boolean

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Forces the class to use indexed search.

**Notes:** (Read and Write property)
Chapter 28

ChartDirector

28.1  class CDAngularAxisMBS

28.1.1 class CDAngularAxisMBS


Function: The AngularAxis class represents angular axes in polar charts. The angular axis is the axis representing the angular component of a polar coordinate.

Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

28.1.2 Methods

28.1.3 addLabel(pos as Double, label as string)


Function: Adds an extra label on the axis.

Notes:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>pos</td>
<td>(Mandatory)</td>
<td>The position on the axis to add the label.</td>
</tr>
<tr>
<td>label</td>
<td>(Mandatory)</td>
<td>The text label to add.</td>
</tr>
</tbody>
</table>

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28.1.4 addZone(startValue as Double, endValue as Double, fillColor as color, edgeColor as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addZone method, but uses color instead of integer data type for passing color values.

See also:

- 28.1.5 addZone(startValue as Double, endValue as Double, fillColor as Integer, edgeColor as Integer = -1)
- 28.1.6 addZone(startValue as Double, endValue as Double, startRadius as Double, endRadius as Double, fillColor as color, edgeColor as color)
- 28.1.7 addZone(startValue as Double, endValue as Double, startRadius as Double, endRadius as Double, fillColor as Integer, edgeColor as Integer)

28.1.5 addZone(startValue as Double, endValue as Double, fillColor as Integer, edgeColor as Integer = -1)


**Function:** Adds an angular zone to the polar chart.

**Notes:**

This method is just a short cut to AngularAxis.addZone, in which the starting radius is always 0, and ending radius is the radius of the polar plot region. In other words, the angular zone is a sector on the polar chart.

**Parameters:**

- **startValue** (Mandatory) The data value that marks the start angular position of the zone.
- **endValue** (Mandatory) The data value that marks the end angular position of the zone.
- **fillColor** (Mandatory) The fill color of the zone.
- **edgeColor** -1 The edge color of the zone. The default is the same as the fill color.

See also:

- 28.1.4 addZone(startValue as Double, endValue as Double, fillColor as color, edgeColor as color)
- 28.1.6 addZone(startValue as Double, endValue as Double, startRadius as Double, endRadius as Double, fillColor as color, edgeColor as color)
- 28.1.7 addZone(startValue as Double, endValue as Double, startRadius as Double, endRadius as Double, fillColor as Integer, edgeColor as Integer)
28.1.6 addZone(startValue as Double, endValue as Double, startRadius as Double, endRadius as Double, fillColor as color, edgeColor as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addZone method, but uses color instead of integer data type for passing color values.

**See also:**
- 28.1.4 addZone(startValue as Double, endValue as Double, fillColor as color, edgeColor as color)
- 28.1.5 addZone(startValue as Double, endValue as Double, fillColor as Integer, edgeColor as Integer = -1)
- 28.1.7 addZone(startValue as Double, endValue as Double, startRadius as Double, endRadius as Double, fillColor as Integer, edgeColor as Integer)

28.1.7 addZone(startValue as Double, endValue as Double, startRadius as Double, endRadius as Double, fillColor as Integer, edgeColor as Integer)


**Function:** Adds an angular zone to the polar chart.

**Notes:**
An angular zone marks an angular region that spans from a start angle to an end angle, where the angles are specified as data values on the angular axis scale. The addZone method allows you to specify a starting and ending radius in pixels for drawing the zone.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>startValue</td>
<td>(Mandatory)</td>
<td>The data value that marks the start angular position of the zone.</td>
</tr>
<tr>
<td>endValue</td>
<td>(Mandatory)</td>
<td>The data value that marks the end angular position of the zone.</td>
</tr>
<tr>
<td>startRadius</td>
<td>(Mandatory)</td>
<td>The starting radius of the zone in pixels.</td>
</tr>
<tr>
<td>endRadius</td>
<td>(Mandatory)</td>
<td>The ending radius of the zone in pixels.</td>
</tr>
<tr>
<td>fillColor</td>
<td>(Mandatory)</td>
<td>The fill color of the zone.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The edge color of the zone. The default is the same as the fill color.</td>
</tr>
</tbody>
</table>

**See also:**
- 28.1.4 addZone(startValue as Double, endValue as Double, fillColor as color, edgeColor as color)
- 28.1.5 addZone(startValue as Double, endValue as Double, fillColor as Integer, edgeColor as Integer = -1)
- 28.1.6 addZone(startValue as Double, endValue as Double, startRadius as Double, endRadius as Double, fillColor as color, edgeColor as color)
28.1.8 Constructor

MBS ChartDirector Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The private constructor.

28.1.9 getAxisImageMap

```
(noOfSegments as Integer, mapWidth as Integer, url as string, queryFormat as string = "", extraAttr as string = "", offsetX as Integer = 0, offsetY as Integer = 0) as string
```

**Function:** Generates an HTML image map for the axis itself.

**Notes:**
This method is similar to AngularAxis.getHTMLImageMap. The difference is instead of generating an image map for the labels, it generates an image map for the axis itself. The axis will be divided into a number of segments, with an image map entry created for each segment.

**Parameters:**
- `noOfSegments` (Mandatory): The number of segments to divide the axis into.
- `mapWidth` (Mandatory): The width of the axis used for the purpose of generating the image map.
- `url` (Mandatory): The URL to be used in the "href" attribute of the image map. Parameter Substitution and Formatting is supported. Use an empty string if no href attribute is needed.
- `queryFormat` "": A text string representing the template of the query parameters to be appended to the URL. Parameter Substitution and Formatting is supported. The special keyword " { default } " represents the default query parameters. This is useful for specifying appending to the default. Note that an empty string means to use the default query query parameters. To specify no query parameter, use a space character.
- `extraAttr` "": A text string to specify additional attributes to add to the `<area>` tag. Parameter Substitution and Formatting is supported.
- `offsetX` 0: An offset to be added to all x coordinates in the image map. This is useful if the current image will be shifted and inserted into another image. In this case, the image map will need to be shifted by the same offset.
- `offsetY` 0: An offset to be added to all y coordinates in the image map. See offsetX above for description.

**Return Value**
A text string containing the image map generated.
28.1. CLASS CDANGULARAXISMBS

28.1.10  getHTMLImageMap(url as string, queryFormat as string = "", extraAttr as string = "", offsetX as Integer = 0, offsetY as Integer = 0) as string

**Function:** Generates an HTML image map for the axis labels. 
**Notes:** 
This method should be called only after creating the chart image (eg. using BaseChart.makeChart). The image map cannot be determined without creating the chart image first. This method accepts a URL as its argument. When generating an image map, it appends query parameters to the URL to indicate which legend entry the user has clicked. 

The following is an example image map generated for an axis with 3 labels.

```html
area shape="rect" coords="30,220,70,239" href="handler.asp?value=0& label=John"
area shape="rect" coords="70,220,110,239" href="handler.asp?value=1& label=Mary"
area shape="rect" coords="110,220,150,239" href="handler.asp?value=2& label=Peter"
```

The image map consists of multiple `<area>` tags, one for each label. In the `href` attributes, query parameters are appended to the URL to provide information on the label clicked. 

The image map produced by ChartDirector does not include the `<map>` and `</map>` tag. This is intentional so that you can add additional custom `<area>` tags to the image map, or append multiple image maps together. 

The format of the appended URL parameters is determined using the `queryFormat` argument, which by default is:

```
value= { value } & label= { label }
```

The texts in curly brackets (i.e. { value }, { label }) will be replaced by the actual values when generating the image map. For example, { label } will be replaced by the label text. Please refer to Parameter Substitution and Formatting on all available parameters and how to format them. 

In addition to customizing the query parameters, ChartDirector supports additional HTML attributes in the `<area>` tags using the `extraAttr` argument. For example, the following `extraAttr` will add a "title" HTML attribute to every `<area>` tag. The "title" attribute will be displayed as "tool tip" when the mouse moves over the image map.

```
title='Click me for details on { label }'
```

Another common usage of the `extraAttr` argument is to add "onmouseover" and "onmouseout" HTML attributes to handle user interaction using Javascript on the browser. 

**Return Value**
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>url</td>
<td>The URL to be used in the &quot;href&quot; attribute of the image map. Parameter Substitution and Formatting is supported. Use an empty string if no href attribute is needed.</td>
</tr>
<tr>
<td>queryFormat</td>
<td>A text string representing the template of the query parameters to be appended to the URL. Parameter Substitution and Formatting is supported. The special keyword &quot;{ default }&quot; represents the default query parameters. This is useful for specifying appending to the default. Note that an empty string means to use the default query parameters. To specify no query parameter, use a space character.</td>
</tr>
<tr>
<td>extraAttr</td>
<td>A text string to specify additional attributes to add to the &lt;area&gt; tag. Parameter Substitution and Formatting is supported.</td>
</tr>
<tr>
<td>offsetX</td>
<td>An offset to be added to all x coordinates in the image map. This is useful if the current image will be shifted and inserted into another image. In this case, the image map will need to be shifted by the same offset.</td>
</tr>
<tr>
<td>offsetY</td>
<td>An offset to be added to all y coordinates in the image map. See offsetX above for description.</td>
</tr>
</tbody>
</table>

A text string containing the image map generated.

### 28.1.11 setLabelGap(d as Integer)


**Function:** Sets the distance between the axis labels and the axis.

**Notes:**

**Parameters:**

- **d** (Mandatory) The distance between the axis label and axis in pixels.

### 28.1.12 setLabels(labels() as Double, formatString as string = "") as CD-TextBoxMBS


**Function:** Sets the numeric labels to be used on the axis.

**Notes:**

This method is typically used to set the angular axis to enumerated scale. For more details on what is enumerated axis scale, please refer to AngularAxis.setLabels. In some cases, it may be desirable to skip some labels. If you want to leave a label position empty, use kNoValue as the axis label.

**Return Value**

A TextBox object representing the prototype of the obj. This may be used to fine-tune the appearance of
28.1. CLASS CDANGULARAXISMBS

Parameter       Default       Description
labels          (Mandatory)   An array of numbers to be used as the axis labels.
formatString    ""            A format string to specified how to format the labels into human readable
                          form. Please refer to Axis.setLabelFormat for the syntax of the format string.
                          An empty string means the format will be automatically determined.

See also:

- 165.2.1 setLabels(labels() as string) as CDTextBoxMBS

28.1.13 setLabels(labels() as string) as CDTextBoxMBS


Function: Sets the text labels to be used on the axis.

Notes:

Parameter       Default       Description
lowerLimit      (Mandatory)   The lower bound of the axis.
upperLimit      (Mandatory)   The upper bound of the axis.
labels          (Mandatory)   An array of text strings to be used as the labels on the axis. ChartDirector
                          will distribute the labels evenly on the axis.

This method is typically used in radar charts to set the angular axis to enumerated scale.
In enumerated scale, the labels are laid out evenly on the perimeter of the polar plot area. It is like the
labels are at on the vertices of an n-side polygon, where n is the number of labels. Radial grid lines are
drawn from the center to the vertices.
The angular coordinates of the data points are determined based on their position in the data array. The
first data point will be at the same angular coordinate as the first vertex, the second data point at the second
vertex, and so on.
Internally, ChartDirector will assign a value of 0 to the first axis label, 1 to the second axis label, and so on.
These values are not visible. Only the axis labels are visible. However, these values may be useful for some
ChartDirector features that need to reference the axis position by value, such as adding extra labels using
AngularAxis.addLabel.

Parameter       Default       Description
text            (Mandatory)   An array of strings containing the text of the labels.

Return Value
A TextBox object representing the prototype of the obj. This may be used to fine-tune the appearance of
the obj.
See also:

- 28.1.12 setLabels(labels() as Double, formatString as string = "") as CDTextBoxMBS
setLabelStyle(font as string = "bold", fontsize as Double = 8, fontcolor as Integer = & hffff0002, fontAngle as Double = 0) as CDTextBoxMBS


**Function:** Sets the font style used to for the axis labels.

**Notes:**

See Font Specification for details on various font attributes.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>font</td>
<td>&quot;bold&quot;</td>
<td>The font used to draw the labels.</td>
</tr>
<tr>
<td>fontSize</td>
<td>10</td>
<td>The font size used to draw the labels in points.</td>
</tr>
<tr>
<td>fontColor</td>
<td>TextColor</td>
<td>The color used to draw the labels.</td>
</tr>
<tr>
<td>fontAngle</td>
<td>0</td>
<td>The rotation angle of the labels.</td>
</tr>
</tbody>
</table>

**Return Value**

A TextBox object representing the prototype of the obj. This may be used to fine-tune the appearance of the obj.

See font specification here:

http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml

setLinearScale(lowerLimit as Double, upperLimit as Double, labels() as string)


**Function:** Sets the axis to use the given linear scale and the given labels.

**Notes:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>lowerLimit</td>
<td>(Mandatory)</td>
<td>The lower bound of the axis.</td>
</tr>
<tr>
<td>upperLimit</td>
<td>(Mandatory)</td>
<td>The upper bound of the axis.</td>
</tr>
<tr>
<td>labels</td>
<td>(Mandatory)</td>
<td>An array of text strings to be used as the labels on the axis. ChartDirector will distribute the labels evenly on the axis.</td>
</tr>
</tbody>
</table>

See also:

- 165.4.6 setLinearScale(lowerLimit as Double, upperLimit as Double, majorTickInc as Double = 0, minorTickInc as Double = 0)

**Function:** Sets the axis to use the given linear scale.

**Notes:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>lowerLimit</td>
<td>(Mandatory)</td>
<td>The lower bound of the axis.</td>
</tr>
<tr>
<td>upperLimit</td>
<td>(Mandatory)</td>
<td>The upper bound of the axis.</td>
</tr>
<tr>
<td>majorTickInc</td>
<td>0</td>
<td>Adds major ticks to the axis, where the major ticks are separated by majorTickInc in value. Each major tick will have an associated text label for the value if the axis at the tick. The default value of 0 means no major tick is used.</td>
</tr>
<tr>
<td>minorTickInc</td>
<td>0</td>
<td>Adds minor ticks to the axis, where the minor ticks are separated by minorTickInc in value. The default value of 0 means no minor tick is used.</td>
</tr>
</tbody>
</table>

See also:

- 28.1.15 setLinearScale(lowerLimit as Double, upperLimit as Double, labels() as string)
28.2 class CD AngularMeterMBS

28.2.1 class CD AngularMeterMBS


**Function:** The AngularMeter class represents angular meters.

**Example:**

```csharp
// The value to display on the meter
const value = 27.48

// Create an AngularMeter object of size 200 x 115 pixels, with silver background
// color, black border, 2 pixel 3D border border and rounded corners
dim m as new CD AngularMeterMBS(200, 115, CDBaseChartMBS.silverColor, & h000000 , 2)
m.setRoundedFrame

// Set the meter center at (100, 100), with radius 85 pixels, and span from -90
// to +90 degrees (semi-circle)
m.setMeter(100, 100, 85, -90, 90)

// Meter scale is 0 - 100, with major tick every 20 units, minor tick every 10
// units, and micro tick every 5 units
m.setScale(0, 100, 20, 10, 5)

// Set 0 - 60 as green (66FF66) zone
m.addZone(0, 60, 0, 85, & h66ff66)

// Set 60 - 80 as yellow (FFFF33) zone
m.addZone(60, 80, 0, 85, & hffff33)

// Set 80 - 100 as red (FF6666) zone
m.addZone(80, 100, 0, 85, & hff6666)

// Add a text label centered at (100, 60) with 12 pts Arial Bold font
call m.addText(100, 60, "PSI", "arialbd.ttf", 12, CDBaseChartMBS.kTextColor, CDBaseChartMBS.kCenter)

// Add a text box at the top right corner of the meter showing the value
// formatted to 2 decimal places, using white text on a black background, and
// with 1 pixel 3D depressed border
m.addText(156, 8, m.formatValue(value, "2"), "arial.ttf", 8, & hffffff).setBackground(& h000000 , 0, -1)

// Add a semi-transparent blue (40666699) pointer with black border at the
// specified value
call m.addPointer(value, & h40666699, & h000000)

// Output the chart
Backdrop=m.makeChartPicture
```
Notes: Subclass of the CDBaseMeterMBS class.

28.2.2 Methods

28.2.3 addGlare

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Adds glare effect to the meter.
Notes:
The glare effect is created by brightening part of the meter face.
The face is divided by an arc, of which one part is brightened. The glare effect works best for meters with
dark background.
All parameters are optional.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>radius</td>
<td>NoValue</td>
<td>The radius of the face of the meter. The default is the meter scale radius as set by AngularMeter.setMeter.</td>
</tr>
<tr>
<td>span</td>
<td>135</td>
<td>The angular span of the arc that divides the face into two parts. The dividing arc intersects with the face border at two points. The angular span is defined as center angle of these two points (that is, the angle subtended at the meter center by these two points).</td>
</tr>
<tr>
<td>rotate</td>
<td>0</td>
<td>By default, the glare will be symmetrically with respect to the vertical axis. This argument can be used to rotate the glare clockwise in degrees.</td>
</tr>
<tr>
<td>glareRadius</td>
<td>NoValue</td>
<td>The radius of the arc that divides the face into two parts. A positive value means the arc will result in a convex glare, while a negative means concave glare. The default is equal to 1.5 times of the face radius.</td>
</tr>
<tr>
<td>intensity</td>
<td>0.13</td>
<td>The intensity of the glare, which must be from 0 to 1. A value of 0 means no glare, while a value of 1 means the glare will be 100% white.</td>
</tr>
</tbody>
</table>

See also:

- 28.2.4 addGlare(radius as Double, span as Double = 135, rotate as Double = 0.0) 4354
- 28.2.5 addGlare(radius as Double, span as Double, rotate as Double, glareRadius as Double, intensity as Double = 0.13) 4354
28.2.4 addGlare(radius as Double, span as Double = 135, rotate as Double = 0.0)

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Adds glare effect to the meter.
**Notes:**

The glare effect is created by brightening part of the meter face.
The face is divided by an arc, of which one part is brightened. The glare effect works best for meters with
dark background.
All parameters are optional.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>radius</td>
<td>NoValue</td>
<td>The radius of the face of the meter. The default is the meter scale radius as set by AngularMeter.setMeter.</td>
</tr>
<tr>
<td>span</td>
<td>135</td>
<td>The angular span of the arc that divides the face into two parts. The dividing arc intersects with the face border at two points. The angular span is defined as center angle of these two points (that is, the angle subtended at the meter center by these two points).</td>
</tr>
<tr>
<td>rotate</td>
<td>0</td>
<td>By default, the glare will be symmetrically with respect to the vertical axis. This argument can be used to rotate the glare clockwise in degrees.</td>
</tr>
<tr>
<td>glareRadius</td>
<td>NoValue</td>
<td>The radius of the arc that divides the face into two parts. A positive value means the arc will result in a convex glare, while a negative means concave glare. The default is equal to 1.5 times of the face radius.</td>
</tr>
<tr>
<td>intensity</td>
<td>0.13</td>
<td>The intensity of the glare, which must be from 0 to 1. A value of 0 means no glare, while a value of 1 means the glare will be 100% white.</td>
</tr>
</tbody>
</table>

See also:

- 28.2.3 addGlare 4353
- 28.2.5 addGlare(radius as Double, span as Double, rotate as Double, glareRadius as Double, intensity as Double = 0.13) 4354

28.2.5 addGlare(radius as Double, span as Double, rotate as Double, glareRadius as Double, intensity as Double = 0.13)

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Adds glare effect to the meter.
**Notes:**

The glare effect is created by brightening part of the meter face.
The face is divided by an arc, of which one part is brightened. The glare effect works best for meters with
dark background.
All parameters are optional.
### 28.2. CLASS CDANGULARMETERMBS

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>radius</td>
<td>NoValue</td>
<td>The radius of the face of the meter. The default is the meter scale radius as set by AngularMeter.setMeter.</td>
</tr>
<tr>
<td>span</td>
<td>135</td>
<td>The angular span of the arc that divides the face into two parts. The dividing arc intersects with the face border at two points. The angular span is defined as center angle of these two points (that is, the angle subtended at the meter center by these two points).</td>
</tr>
<tr>
<td>rotate</td>
<td>0</td>
<td>By default, the glare will be symmetrically with respect to the vertical axis. This argument can be used to rotate the glare clockwise in degrees.</td>
</tr>
<tr>
<td>glareRadius</td>
<td>NoValue</td>
<td>The radius of the arc that divides the face into two parts. A positive value means the arc will result in a convex glare, while a negative means concave glare. The default is equal to 1.5 times of the face radius.</td>
</tr>
<tr>
<td>intensity</td>
<td>0.13</td>
<td>The intensity of the glare, which must be from 0 to 1. A value of 0 means no glare, while a value of 1 means the glare will be 100% white.</td>
</tr>
</tbody>
</table>

See also:

- 28.2.3 addGlare
- 28.2.4 addGlare(radius as Double, span as Double = 135, rotate as Double = 0.0)

#### 28.2.6 addPointer(value as Double, fillColor as color, edgeColor as color = &cFFFFFFFF, pointerType as Integer = 6) as CDMeterPointerMBS

**MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:** Adds a new style pointer to the meter.

**Notes:**

When compared to classical pointers (added by CDBaseMeterMBS.addPointer), new style pointers are thinner. They are designed to be used with the new style meter cap (see CDAngularMeterMBS.setCap2). They are also designed to have their base and tip movable in the radial direction, which means they can be detached from the center, and can even points from the outside inwards.

Parameters are optional and colors can be passed as Integer or color values.

Return a MeterPointer object representing the pointer. You may use this object to fine-tune the appearance of the pointer.

See also:

- 28.2.7 addPointer(value as Double, fillColor as color, edgeColor as color, pointerType as Integer, startOffset as Double) as CDMeterPointerMBS
- 28.2.8 addPointer(value as Double, fillColor as color, edgeColor as color, pointerType as Integer, startOffset as Double, endOffset as Double) as CDMeterPointerMBS
- 28.2.9 addPointer(value as Double, fillColor as color, edgeColor as color, pointerType as Integer, startOffset as Double, endOffset as Double, widthRatio as Double) as CDMeterPointerMBS
28.2.10 addPointer(value as Double, fillColor as Integer, edgeColor as Integer = -1, pointerType as Integer = 6) as CDMeterPointerMBS

28.2.11 addPointer(value as Double, fillColor as Integer, edgeColor as Integer, pointerType as Integer, startOffset as Double) as CDMeterPointerMBS

28.2.12 addPointer(value as Double, fillColor as Integer, edgeColor as Integer, pointerType as Integer, startOffset as Double, endOffset as Double) as CDMeterPointerMBS

28.2.13 addPointer(value as Double, fillColor as Integer, edgeColor as Integer, pointerType as Integer, startOffset as Double, endOffset as Double, widthRatio as Double) as CDMeterPointerMBS

28.2.7 addPointer(value as Double, fillColor as color, edgeColor as color, pointerType as Integer, startOffset as Double) as CDMeterPointerMBS

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Adds a new style pointer to the meter.

Notes:

When compared to classical pointers (added by CDBaseMeterMBS.addPointer), new style pointers are thinner. They are designed to be used with the new style meter cap (see CDAngularMeterMBS.setCap2). They are also designed to have their base and tip movable in the radial direction, which means they can be detached from the center, and can even point from the outside inwards.

Parameters are optional and colors can be passed as Integer or color values.

Return a MeterPointer object representing the pointer. You may use this object to fine-tune the appearance of the pointer.

See also:
### 28.2. CLASS CDANGULARMETERMBS

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>value</td>
<td>(Mandatory)</td>
<td>The value that the pointer points to.</td>
</tr>
<tr>
<td>fillColor</td>
<td>(Mandatory)</td>
<td>The fill color of the pointer.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The edge color of the pointer. -1 means the edge color is the same as the fill color.</td>
</tr>
<tr>
<td>pointerType</td>
<td>TriangularPointer2</td>
<td>The pointer shape. Please refer to MeterPointer.setShapeAndOffset for the available shapes.</td>
</tr>
<tr>
<td>startOffset</td>
<td>NoValue</td>
<td>The distance between the starting point of the pointer with the meter center, expressed as a ratio to the scale radius. NoValue means the radius is automatically determined. Please refer to MeterPointer.setShapeAndOffset for more information about this argument.</td>
</tr>
<tr>
<td>endOffset</td>
<td>NoValue</td>
<td>The distance between the ending point of the pointer with the meter center, expressed as a ratio to the scale radius. NoValue means the radius is automatically determined. Please refer to MeterPointer.setShapeAndOffset for more information about this argument.</td>
</tr>
<tr>
<td>widthRatio</td>
<td>NoValue</td>
<td>The width of the pointer relative to the default width. NoValue means the width is automatically determined.</td>
</tr>
</tbody>
</table>

- 28.2.6 addPointer(value as Double, fillColor as color, edgeColor as color = & cFFFFFFFF, pointerType as Integer = 6) as CDMeterPointerMBS
- 28.2.8 addPointer(value as Double, fillColor as color, edgeColor as color, pointerType as Integer, startOffset as Double, endOffset as Double) as CDMeterPointerMBS
- 28.2.9 addPointer(value as Double, fillColor as color, edgeColor as color, pointerType as Integer, startOffset as Double, endOffset as Double, widthRatio as Double) as CDMeterPointerMBS
- 28.2.10 addPointer(value as Double, fillColor as Integer, edgeColor as Integer = -1, pointerType as Integer = 6) as CDMeterPointerMBS
- 28.2.11 addPointer(value as Double, fillColor as Integer, edgeColor as Integer, pointerType as Integer, startOffset as Double) as CDMeterPointerMBS
- 28.2.12 addPointer(value as Double, fillColor as Integer, edgeColor as Integer, pointerType as Integer, startOffset as Double, edgeOffset as Double) as CDMeterPointerMBS
- 28.2.13 addPointer(value as Double, fillColor as Integer, edgeColor as Integer, pointerType as Integer, startOffset as Double, endOffset as Double, widthRatio as Double) as CDMeterPointerMBS

### 28.2.8 addPointer(value as Double, fillColor as color, edgeColor as color, pointerType as Integer, startOffset as Double, endOffset as Double) as CD-MeterPointerMBS

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Adds a new style pointer to the meter.

**Notes:**

When compared to classical pointers (added by CDBaseMeterMBS.addPointer), new style pointers are thinner. They are designed to be used with the new style meter cap (see CDAngularMeterMBS.setCap2). They
are also designed to have their base and tip movable in the radial direction, which means they can be detached from the center, and can even point from the outside inwards.
Parameters are optional and colors can be passed as Integer or color values.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>value</td>
<td>(Mandatory)</td>
<td>The value that the pointer points to.</td>
</tr>
<tr>
<td>fillColor</td>
<td>(Mandatory)</td>
<td>The fill color of the pointer.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The edge color of the pointer. -1 means the edge color is the same as the fill color.</td>
</tr>
<tr>
<td>pointerType</td>
<td>TriangularPointer2</td>
<td>The pointer shape. Please refer to MeterPointer.setShapeAndOffset for the available shapes.</td>
</tr>
<tr>
<td>startOffset</td>
<td>NoValue</td>
<td>The distance between the starting point of the pointer with the meter center, expressed as a ratio to the scale radius. NoValue means the radius is automatically determined. Please refer to MeterPointer.setShapeAndOffset for more information about this argument.</td>
</tr>
<tr>
<td>endOffset</td>
<td>NoValue</td>
<td>The distance between the ending point of the pointer with the meter center, expressed as a ratio to the scale radius. NoValue means the radius is automatically determined. Please refer to MeterPointer.setShapeAndOffset for more information about this argument.</td>
</tr>
<tr>
<td>widthRatio</td>
<td>NoValue</td>
<td>The width of the pointer relative to the default width. NoValue means the width is automatically determined.</td>
</tr>
</tbody>
</table>

Return a MeterPointer object representing the pointer. You may use this object to fine-tune the appearance of the pointer.

See also:

- 28.2.6 addPointer(value as Double, fillColor as color, edgeColor as color = & cFFFFFFFF, pointerType as Integer = 6) as CDMeterPointerMBS
- 28.2.7 addPointer(value as Double, fillColor as color, edgeColor as color, pointerType as Integer, startOffset as Double) as CDMeterPointerMBS
- 28.2.9 addPointer(value as Double, fillColor as color, edgeColor as color, pointerType as Integer, startOffset as Double, endOffset as Double, widthRatio as Double) as CDMeterPointerMBS
- 28.2.10 addPointer(value as Double, fillColor as Integer, edgeColor as Integer = -1, pointerType as Integer = 6) as CDMeterPointerMBS
- 28.2.11 addPointer(value as Double, fillColor as Integer, edgeColor as Integer, pointerType as Integer, startOffset as Double) as CDMeterPointerMBS
- 28.2.12 addPointer(value as Double, fillColor as Integer, edgeColor as Integer, pointerType as Integer, startOffset as Double, endOffset as Double) as CDMeterPointerMBS
- 28.2.13 addPointer(value as Double, fillColor as Integer, edgeColor as Integer, pointerType as Integer, startOffset as Double, endOffset as Double, widthRatio as Double) as CDMeterPointerMBS
28.2.9  addPointer(value as Double, fillColor as color, edgeColor as color, pointerType as Integer, startOffset as Double, endOffset as Double, widthRatio as Double) as CDMeterPointerMBS

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Adds a new style pointer to the meter.

Notes:
When compared to classical pointers (added by CDBaseMeterMBS.addPointer), new style pointers are thinner. They are designed to be used with the new style meter cap (see CDAngularMeterMBS.setCap2). They are also designed to have their base and tip movable in the radial direction, which means they can be detached from the center, and can even points from the outside inwards.

Parameters are optional and colors can be passed as Integer or color values.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>value</td>
<td>(Mandatory)</td>
<td>The value that the pointer points to.</td>
</tr>
<tr>
<td>fillColor</td>
<td>(Mandatory)</td>
<td>The fill color of the pointer.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The edge color of the pointer. -1 means the edge color is the same as the fill color.</td>
</tr>
<tr>
<td>pointerType</td>
<td>TriangularPointer2</td>
<td>The pointer shape. Please refer to MeterPointer.setShapeAndOffset for the available shapes.</td>
</tr>
<tr>
<td>startOffset</td>
<td>NoValue</td>
<td>The distance between the starting point of the pointer with the meter center, expressed as a ratio to the scale radius. NoValue means the radius is automatically determined. Please refer to MeterPointer.setShapeAndOffset for more information about this argument.</td>
</tr>
<tr>
<td>endOffset</td>
<td>NoValue</td>
<td>The distance between the ending point of the pointer with the meter center, expressed as a ratio to the scale radius. NoValue means the radius is automatically determined. Please refer to MeterPointer.setShapeAndOffset for more information about this argument.</td>
</tr>
<tr>
<td>widthRatio</td>
<td>NoValue</td>
<td>The width of the pointer relative to the default width. NoValue means the width is automatically determined.</td>
</tr>
</tbody>
</table>

Return a MeterPointer object representing the pointer. You may use this object to fine-tune the appearance of the pointer.

See also:

- 28.2.6 addPointer(value as Double, fillColor as color, edgeColor as color = & cFFFFFFFF, pointerType as Integer = 6) as CDMeterPointerMBS 4355
- 28.2.7 addPointer(value as Double, fillColor as color, edgeColor as color, pointerType as Integer, startOffset as Double) as CDMeterPointerMBS 4356
- 28.2.8 addPointer(value as Double, fillColor as color, edgeColor as color, pointerType as Integer, startOffset as Double, endOffset as Double) as CDMeterPointerMBS 4357
- 28.2.10 addPointer(value as Double, fillColor as Integer, edgeColor as Integer = -1, pointerType as Integer = 6) as CDMeterPointerMBS 4360
- 28.2.11 addPointer(value as Double, fillColor as Integer, edgeColor as Integer, pointerType as Integer, startOffset as Double) as CDMeterPointerMBS 4361
28.2.10  addPointer(value as Double, fillColor as Integer, edgeColor as Integer = -1, pointerType as Integer = 6) as CDMeterPointerMBS

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Adds a new style pointer to the meter.

Notes:
When compared to classical pointers (added by CDBaseMeterMBS.addPointer), new style pointers are thinner. They are designed to be used with the new style meter cap (see CDAngularMeterMBS.setCap2). They are also designed to have their base and tip movable in the radial direction, which means they can be detached from the center, and can even points from the outside inwards. Parameters are optional and colors can be passed as Integer or color values.

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<tr>
<td>value</td>
<td>(Mandatory)</td>
<td>The value that the pointer points to.</td>
</tr>
<tr>
<td>fillColor</td>
<td>(Mandatory)</td>
<td>The fill color of the pointer.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The edge color of the pointer. -1 means the edge color is the same as the fill color.</td>
</tr>
<tr>
<td>pointerType</td>
<td>TriangularPointer2</td>
<td>The pointer shape. Please refer to MeterPointer.setShapeAndOffset for the available shapes.</td>
</tr>
<tr>
<td>startOffset</td>
<td>NoValue</td>
<td>The distance between the starting point of the pointer with the meter center, expressed as a ratio to the scale radius. NoValue means the radius is automatically determined. Please refer to MeterPointer.setShapeAndOffset for more information about this argument.</td>
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<tr>
<td>endOffset</td>
<td>NoValue</td>
<td>The distance between the ending point of the pointer with the meter center, expressed as a ratio to the scale radius. NoValue means the radius is automatically determined. Please refer to MeterPointer.setShapeAndOffset for more information about this argument.</td>
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<td>NoValue</td>
<td>The width of the pointer relative to the default width. NoValue means the width is automatically determined.</td>
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</table>

Return a MeterPointer object representing the pointer. You may use this object to fine-tune the appearance of the pointer.

See also:

- 28.2.6 addPointer(value as Double, fillColor as color, edgeColor as color = & cFFFFFFFF, pointerType as Integer = 6) as CDMeterPointerMBS
- 28.2.7 addPointer(value as Double, fillColor as color, edgeColor as color, pointerType as Integer, startOffset as Double) as CDMeterPointerMBS
- 28.2.8 addPointer(value as Double, fillColor as color, edgeColor as color, pointerType as Integer, startOffset as Double, endOffset as Double) as CDMeterPointerMBS
28.2.11 addPointer(value as Double, fillColor as Integer, edgeColor as Integer, pointerType as Integer, startOffset as Double) as CDMeterPointerMBS

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Adds a new style pointer to the meter.

**Notes:**
When compared to classical pointers (added by CDBaseMeterMBS.addPointer), new style pointers are thinner. They are designed to be used with the new style meter cap (see CDAngularMeterMBS.setCap2). They are also designed to have their base and tip movable in the radial direction, which means they can be detached from the center, and can even points from the outside inwards.

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</tr>
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Return a MeterPointer object representing the pointer. You may use this object to fine-tune the appearance of the pointer.

See also:

- 28.2.6 addPointer(value as Double, fillColor as color, edgeColor as color = & cFFFFFFFF, pointerType as Integer = 6) as CDMeterPointerMBS
28.2.7 addPointer(value as Double, fillColor as color, edgeColor as color, pointerType as Integer, startOffset as Double) as CDMeterPointerMBS

28.2.8 addPointer(value as Double, fillColor as color, edgeColor as color, pointerType as Integer, startOffset as Double, endOffset as Double) as CDMeterPointerMBS

28.2.9 addPointer(value as Double, fillColor as color, edgeColor as color, pointerType as Integer, startOffset as Double, endOffset as Double, widthRatio as Double) as CDMeterPointerMBS

28.2.10 addPointer(value as Double, fillColor as Integer, edgeColor as Integer = -1, pointerType as Integer = 6) as CDMeterPointerMBS

28.2.12 addPointer(value as Double, fillColor as Integer, edgeColor as Integer, pointerType as Integer, startOffset as Double, endOffset as Double) as CDMeterPointerMBS

28.2.13 addPointer(value as Double, fillColor as Integer, edgeColor as Integer, pointerType as Integer, startOffset as Double, endOffset as Double, widthRatio as Double) as CDMeterPointerMBS

28.2.12 addPointer(value as Double, fillColor as Integer, edgeColor as Integer, pointerType as Integer, startOffset as Double, endOffset as Double) as CDMeterPointerMBS

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Adds a new style pointer to the meter.

Notes:
When compared to classical pointers (added by CDBaseMeterMBS.addPointer), new style pointers are thinner. They are designed to be used with the new style meter cap (see CDAngularMeterMBS.setCap2). They are also designed to have their base and tip movable in the radial direction, which means they can be detached from the center, and can even points from the outside inwards.
Parameters are optional and colors can be passed as Integer or color values.

Return a MeterPointer object representing the pointer. You may use this object to fine-tune the appearance of the pointer.

See also:

- 28.2.6 addPointer(value as Double, fillColor as color, edgeColor as color = & cFFFFFFFF, pointerType as Integer = 6) as CDMeterPointerMBS
- 28.2.7 addPointer(value as Double, fillColor as color, edgeColor as color, pointerType as Integer, startOffset as Double) as CDMeterPointerMBS
- 28.2.8 addPointer(value as Double, fillColor as color, edgeColor as color, pointerType as Integer, startOffset as Double, endOffset as Double) as CDMeterPointerMBS
- 28.2.9 addPointer(value as Double, fillColor as color, edgeColor as color, pointerType as Integer, startOffset as Double, endOffset as Double, widthRatio as Double) as CDMeterPointerMBS
- 28.2.10 addPointer(value as Double, fillColor as Integer, edgeColor as Integer = -1, pointerType as Integer = 6) as CDMeterPointerMBS
28.2. CLASS CDANGULARMETERMBS

<table>
<thead>
<tr>
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<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>value</td>
<td>(Mandatory)</td>
<td>The value that the pointer points to.</td>
</tr>
<tr>
<td>fillColor</td>
<td>(Mandatory)</td>
<td>The fill color of the pointer.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The edge color of the pointer. -1 means the edge color is the same as the fill color.</td>
</tr>
<tr>
<td>pointerType</td>
<td>TriangularPointer2</td>
<td>The pointer shape. Please refer to MeterPointer.setShapeAndOffset for the available shapes.</td>
</tr>
<tr>
<td>startOffset</td>
<td>NoValue</td>
<td>The distance between the starting point of the pointer with the meter center, expressed as a ratio to the scale radius. NoValue means the radius is automatically determined. Please refer to MeterPointer.setShapeAndOffset for more information about this argument.</td>
</tr>
<tr>
<td>endOffset</td>
<td>NoValue</td>
<td>The distance between the ending point of the pointer with the meter center, expressed as a ratio to the scale radius. NoValue means the radius is automatically determined. Please refer to MeterPointer.setShapeAndOffset for more information about this argument.</td>
</tr>
<tr>
<td>widthRatio</td>
<td>NoValue</td>
<td>The width of the pointer relative to the default width. NoValue means the width is automatically determined.</td>
</tr>
</tbody>
</table>

- 28.2.11 addPointer(value as Double, fillColor as Integer, edgeColor as Integer, pointerType as Integer, startOffset as Double) as CDMeterPointerMBS
- 28.2.13 addPointer(value as Double, fillColor as Integer, edgeColor as Integer, pointerType as Integer, startOffset as Double, endOffset as Double, widthRatio as Double) as CDMeterPointerMBS

28.2.13 addPointer(value as Double, fillColor as Integer, edgeColor as Integer, pointerType as Integer, startOffset as Double, endOffset as Double, widthRatio as Double) as CDMeterPointerMBS

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Adds a new style pointer to the meter.

**Notes:**

When compared to classical pointers (added by CDBaseMeterMBS.addPointer), new style pointers are thinner. They are designed to be used with the new style meter cap (see CDAngularMeterMBS.setCap2). They are also designed to have their base and tip movable in the radial direction, which means they can be detached from the center, and can even points from the outside inwards.

Parameters are optional and colors can be passed as Integer or color values.

Return a MeterPointer object representing the pointer. You may use this object to fine-tune the appearance of the pointer.

See also:

- 28.2.6 addPointer(value as Double, fillColor as color, edgeColor as color = & cFFFFFFFF, pointerType as Integer = 6) as CDMeterPointerMBS
- 28.2.7 addPointer(value as Double, fillColor as color, edgeColor as color, pointerType as Integer, startOffset as Double) as CDMeterPointerMBS
CHAPTER 28. CHARTDIRECTOR

### Argument Default Description

- **value** (Mandatory) The value that the pointer points to.
- **fillColor** (Mandatory) The fill color of the pointer.
- **edgeColor** -1 The edge color of the pointer. -1 means the edge color is the same as the fill color.
- **pointerType** TriangularPointer2 The pointer shape. Please refer to MeterPointer.setShapeAndOffset for the available shapes.
- **startOffset** NoValue The distance between the starting point of the pointer with the meter center, expressed as a ratio to the scale radius. NoValue means the radius is automatically determined. Please refer to MeterPointer.setShapeAndOffset for more information about this argument.
- **endOffset** NoValue The distance between the ending point of the pointer with the meter center, expressed as a ratio to the scale radius. NoValue means the radius is automatically determined. Please refer to MeterPointer.setShapeAndOffset for more information about this argument.
- **widthRatio** NoValue The width of the pointer relative to the default width. NoValue means the width is automatically determined.

- 28.2.8 addPointer(value as Double, fillColor as color, edgeColor as color, pointerType as Integer, startOffset as Double, endOffset as Double) as CDMeterPointerMBS
- 28.2.9 addPointer(value as Double, fillColor as color, edgeColor as color, pointerType as Integer, startOffset as Double, endOffset as Double, widthRatio as Double) as CDMeterPointerMBS
- 28.2.10 addPointer(value as Double, fillColor as Integer, edgeColor as Integer = -1, pointerType as Integer = 6) as CDMeterPointerMBS
- 28.2.11 addPointer(value as Double, fillColor as Integer, edgeColor as Integer, pointerType as Integer, startOffset as Double) as CDMeterPointerMBS
- 28.2.12 addPointer(value as Double, fillColor as Integer, edgeColor as Integer, pointerType as Integer, startOffset as Double, endOffset as Double) as CDMeterPointerMBS

28.2.14  addRing(startRadius as Integer, endRadius as Integer, fillColor as color, edgeColor as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Same as the other addRing method, but uses color instead of integer data type for passing color values.

See also:

- 28.2.15 addRing(startRadius as Integer, endRadius as Integer, fillColor as Integer, edgeColor as Integer = -1)
28.2.15  addRing(startRadius as Integer, endRadius as Integer, fillColor as Integer, edgeColor as Integer = -1)

Function: Adds a circular ring or a circle to the meter.
Notes:
A ring is the region between two concentric circles. This method is most often used for adding circular borders and backgrounds for the meter, and for some other decorative purposes. For example, one can add a circle with a metallic background color as the 'face' of the meter meter using this method.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>startRadius</td>
<td>(Mandatory)</td>
<td>The starting radius of the ring in pixels. To add a circle, set the start radius to 0.</td>
</tr>
<tr>
<td>endRadius</td>
<td>(Mandatory)</td>
<td>The ending radius of the ring in pixels.</td>
</tr>
<tr>
<td>fillColor</td>
<td>(Mandatory)</td>
<td>The fill color of the ring.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The edge color of the ring. The default is the same as the fill color.</td>
</tr>
</tbody>
</table>

See also:
- 28.2.14 addRing(startRadius as Integer, endRadius as Integer, fillColor as color, edgeColor as color)

28.2.16  addRingSector(startRadius as Integer, endRadius as Integer, a1 as Double, a2 as Double, fillColor as color, edgeColor as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other addRingSector method, but uses color instead of integer data type for passing color values.
See also:
- 28.2.17 addRingSector(startRadius as Integer, endRadius as Integer, a1 as Double, a2 as Double, fillColor as Integer, edgeColor as Integer = -1)

28.2.17  addRingSector(startRadius as Integer, endRadius as Integer, a1 as Double, a2 as Double, fillColor as Integer, edgeColor as Integer = -1)

Function: Adds a ring sector or a sector to the meter.
Notes:
This method is similar to the AngularMeter.addRing method, except that the ring it adds does not span the complete circle, but just part of the circle.
Parameter | Default (Mandatory) | Description
---|---|---
startRadius | The starting radius of the ring sector in pixels. To add a sector, set the starting radius to 0.
endRadius | The ending radius of the ring sector in pixels.
a1 | The starting angle of the ring sector in degrees. The angle is measured in degrees clockwise, with 0 being the upward pointing direction.
a2 | The ending angle of the ring sector in degrees. The angle is measured in degrees clockwise, with 0 being the upward pointing direction.
fillColor | The fill color of the ring sector.
edgeColor | The edge color of the ring sector. The default is the same as the fill color.

See also:

- 28.2.16 addRingSector(startRadius as Integer, endRadius as Integer, a1 as Double, a2 as Double, fillColor as color, edgeColor as color)

### 28.2.18 addScaleBackground(bgRadius as Integer, fillColor as color, edgeWidth as Integer = 0, edgeColor as color = & cFFFFFFFF, scaleRadius as Integer = -2147483647)

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Adds a background to the meter scale.  
**Notes:**  
The scale background is a circle segment (a circle with a part cut-off by a chord). Its radius is usually configured as larger than that of the meter scale. In this case, its angular span will also be larger than that of the meter scale. In the above sample, the meter scale spans 180 degrees. The scale background spans more than 180 degrees so that it can maintain a margin at the bottom side (the chord side). Most arguments are optional and colors can be passed as Integer or color value.  
See also:

- 28.2.19 addScaleBackground(bgRadius as Integer, fillColor as color, edgeWidth as Integer, edgeColor as color, scaleRadius as Integer, startAngle as Double, endAngle as Double)

- 28.2.20 addScaleBackground(bgRadius as Integer, fillColor as Integer, edgeWidth as Integer = 0, edgeColor as Integer = -1, scaleRadius as Integer = -2147483647)

- 28.2.21 addScaleBackground(bgRadius as Integer, fillColor as Integer, edgeWidth as Integer, edgeColor as Integer, scaleRadius as Integer, startAngle as Double, endAngle as Double)
28.2. CLASS CDANGULARMETERMBS

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>bgRadius</td>
<td>(Mandatory)</td>
<td>The radius of the circle segment to be used as the scale background.</td>
</tr>
<tr>
<td>fillColor</td>
<td>(Mandatory)</td>
<td>The fill color of the circle segment (the background color).</td>
</tr>
<tr>
<td>edgeWidth</td>
<td>0</td>
<td>The edge width of the circle segment. A positive width means the edge is</td>
</tr>
<tr>
<td></td>
<td></td>
<td>internal to the circle segment. A negative width means the edge is external</td>
</tr>
<tr>
<td></td>
<td></td>
<td>to the circle segment.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The edge color. The default value of -1 means the edge color is the same as</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the fill color.</td>
</tr>
<tr>
<td>scaleRadius</td>
<td>-0x7ffffff</td>
<td>The radius of the meter scale. ChartDirector uses this value to compute the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>extra angular span the circle segment must have in order to maintain proper</td>
</tr>
<tr>
<td></td>
<td></td>
<td>margin at the chord side. This argument is usually not necessary as Chart-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Director already know the scale radius from the meter configuration. This</td>
</tr>
<tr>
<td></td>
<td></td>
<td>argument can be used if you would like to use a &quot;fake&quot; scale radius to draw</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the scale background for special effects.</td>
</tr>
<tr>
<td>startAngle</td>
<td>NoValue</td>
<td>The start angle of the meter scale. ChartDirector uses this value to compute</td>
</tr>
<tr>
<td></td>
<td></td>
<td>start angle of the circle segment. This argument is usually not necessary as</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ChartDirector already know the start angle from the meter configuration. This</td>
</tr>
<tr>
<td></td>
<td></td>
<td>argument can be used if you would like to use a &quot;fake&quot; angle to draw the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>scale background for special effects.</td>
</tr>
<tr>
<td>endAngle</td>
<td>NoValue</td>
<td>The end angle of the meter scale. ChartDirector uses this value to compute</td>
</tr>
<tr>
<td></td>
<td></td>
<td>end angle of the circle segment. This argument is usually not necessary as</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ChartDirector already know the end angle from the meter configuration. This</td>
</tr>
<tr>
<td></td>
<td></td>
<td>argument can be used if you would like to use a &quot;fake&quot; angle to draw the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>scale background for special effects.</td>
</tr>
</tbody>
</table>

28.2.19 addScaleBackground(bgRadius as Integer, fillColor as color, edgeWidth as Integer, edgeColor as color, scaleRadius as Integer, startAngle as Double, endAngle as Double)

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Adds a background to the meter scale.

Notes:

The scale background is a circle segment (a circle with a part cut-off by a chord). Its radius is usually configured as larger than that of the meter scale. In this case, its angular span will also be larger than that of the meter scale. In the above example, the meter scale spans 180 degrees. The scale background spans more than 180 degrees so that it can maintain a margin at the bottom side (the chord side).

Most arguments are optional and colors can be passed as Integer or color value.

See also:

- 28.2.18 addScaleBackground(bgRadius as Integer, fillColor as color, edgeWidth as Integer = 0, edgeColor as color = & cFFFFFFF, scaleRadius as Integer = -2147483647)
- 28.2.20 addScaleBackground(bgRadius as Integer, fillColor as Integer, edgeWidth as Integer = 0, edgeColor as Integer = -1, scaleRadius as Integer = -2147483647)
28.2.21 addScaleBackground(bgRadius as Integer, fillColor as Integer, edgeWidth as Integer, edgeColor as Integer, scaleRadius as Integer, startAngle as Double, endAngle as Double)

28.2.20 addScaleBackground(bgRadius as Integer, fillColor as Integer, edgeWidth as Integer = 0, edgeColor as Integer = -1, scaleRadius as Integer = -2147483647)

The scale background is a circle segment (a circle with a part cut-off by a chord). Its radius is usually configured as larger than that of the meter scale. In this case, its angular span will also be larger than that of the meter scale. In the above sample, the meter scale spans 180 degrees. The scale background spans more than 180 degrees so that it can maintain a margin at the bottom side (the chord side).

Most arguments are optional and colors can be passed as Integer or color value.

See also:

- 28.2.18 addScaleBackground(bgRadius as Integer, fillColor as color, edgeWidth as Integer = 0, edgeColor as color = & cFFFFFFFF, scaleRadius as Integer = -2147483647)
28.2. CLASS CDANGULARMETERMBS

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>bgRadius</td>
<td>(Mandatory)</td>
<td>The radius of the circle segment to be used as the scale background.</td>
</tr>
<tr>
<td>fillColor</td>
<td>(Mandatory)</td>
<td>The fill color of the circle segment (the background color).</td>
</tr>
<tr>
<td>edgeWidth</td>
<td>0</td>
<td>The edge width of the circle segment. A positive width means the edge is</td>
</tr>
<tr>
<td></td>
<td></td>
<td>internal to the circle segment. A negative width means the edge is external</td>
</tr>
<tr>
<td></td>
<td></td>
<td>to the circle segment.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The edge color. The default value of -1 means the edge color is the same as</td>
</tr>
<tr>
<td>scaleRadius</td>
<td>-0xffffffff</td>
<td>The radius of the meter scale. ChartDirector uses this value to compute the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>extra angular span the circle segment must have in order to maintain proper</td>
</tr>
<tr>
<td></td>
<td></td>
<td>margin at the chord side. This argument is usually not necessary as Chart-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Director already know the scale radius from the meter configuration. This</td>
</tr>
<tr>
<td></td>
<td></td>
<td>argument can be used if you would like to use a &quot;fake&quot; scale radius to</td>
</tr>
<tr>
<td></td>
<td></td>
<td>draw the scale background for special effects.</td>
</tr>
<tr>
<td>startAngle</td>
<td>NoValue</td>
<td>The start angle of the meter scale. ChartDirector uses this value to compute</td>
</tr>
<tr>
<td></td>
<td></td>
<td>start angle of the circle segment. This argument is usually not necessary</td>
</tr>
<tr>
<td></td>
<td></td>
<td>as ChartDirector already know the start angle from the meter configuration.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>This argument can be used if you would like to use a &quot;fake&quot; angle to draw</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the scale background for special effects.</td>
</tr>
<tr>
<td>endAngle</td>
<td>NoValue</td>
<td>The end angle of the meter scale. ChartDirector uses this value to compute</td>
</tr>
<tr>
<td></td>
<td></td>
<td>end angle of the circle segment. This argument is usually not necessary as</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ChartDirector already know the end angle from the meter configuration. This</td>
</tr>
<tr>
<td></td>
<td></td>
<td>argument can be used if you would like to use a &quot;fake&quot; angle to draw the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>scale background for special effects.</td>
</tr>
</tbody>
</table>

28.2.19 addScaleBackground(bgRadius as Integer, fillColor as color, edgeWidth as Integer, edgeColor as color, scaleRadius as Integer, startAngle as Double, endAngle as Double) 4367

28.2.21 addScaleBackground(bgRadius as Integer, fillColor as Integer, edgeWidth as Integer, edgeColor as Integer, scaleRadius as Integer, startAngle as Double, endAngle as Double) 4369

28.2.21 addScaleBackground(bgRadius as Integer, fillColor as Integer, edgeWidth as Integer, edgeColor as Integer, scaleRadius as Integer, startAngle as Double, endAngle as Double)

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Adds a background to the meter scale.

Notes:

The scale background is a circle segment (a circle with a part cut-off by a chord). Its radius is usually configured as larger than that of the meter scale. In this case, its angular span will also be larger than that of the meter scale. In the above sample, the meter scale spans 180 degrees. The scale background spans more than 180 degrees so that it can maintain a margin at the bottom side (the chord side).

Most arguments are optional and colors can be passed as Integer or color value.

See also:
### Chapter 28. CHARTDIRECTOR

**Argument Default Description**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>bgRadius</td>
<td>(Mandatory)</td>
<td>The radius of the circle segment to be used as the scale background.</td>
</tr>
<tr>
<td>fillColor</td>
<td>(Mandatory)</td>
<td>The fill color of the circle segment (the background color).</td>
</tr>
<tr>
<td>edgeWidth</td>
<td>0</td>
<td>The edge width of the circle segment. A positive width means the edge is</td>
</tr>
<tr>
<td></td>
<td></td>
<td>internal to the circle segment. A negative width means the edge is external</td>
</tr>
<tr>
<td></td>
<td></td>
<td>to the circle segment.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The edge color. The default value of -1 means the edge color is the same as</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the fill color.</td>
</tr>
<tr>
<td>scaleRadius</td>
<td>-0x7fffffff</td>
<td>The radius of the meter scale. ChartDirector uses this value to compute the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>extra angular span the circle segment must have in order to maintain proper</td>
</tr>
<tr>
<td></td>
<td></td>
<td>margin at the chord side. This argument is usually not necessary as Chart-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Director already know the scale radius from the meter configuration. This</td>
</tr>
<tr>
<td></td>
<td></td>
<td>argument can be used if you would like to use a &quot;fake&quot; scale radius to draw</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the scale background for special effects.</td>
</tr>
<tr>
<td>startAngle</td>
<td>NoValue</td>
<td>The start angle of the meter scale. ChartDirector uses this value to compute</td>
</tr>
<tr>
<td></td>
<td></td>
<td>start angle of the circle segment. This argument is usually not necessary as</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ChartDirector already know the start angle from the meter configuration.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>This argument can be used if you would like to use a &quot;fake&quot; angle to draw</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the scale background for special effects.</td>
</tr>
<tr>
<td>endAngle</td>
<td>NoValue</td>
<td>The end angle of the meter scale. ChartDirector uses this value to compute</td>
</tr>
<tr>
<td></td>
<td></td>
<td>end angle of the circle segment. This argument is usually not necessary as</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ChartDirector already know the end angle from the meter configuration.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>This argument can be used if you would like to use a &quot;fake&quot; angle to draw</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the scale background for special effects.</td>
</tr>
</tbody>
</table>

- 28.2.18 addScaleBackground(bgRadius as Integer, fillColor as color, edgeWidth as Integer = 0, edge-Color as color = & cFFFFFFFF, scaleRadius as Integer = -2147483647)  4366
- 28.2.19 addScaleBackground(bgRadius as Integer, fillColor as color, edgeWidth as Integer, edgeColor as color, scaleRadius as Integer, startAngle as Double, endAngle as Double)  4367
- 28.2.20 addScaleBackground(bgRadius as Integer, fillColor as Integer, edgeWidth as Integer = 0, edgeColor as Integer = -1, scaleRadius as Integer = -2147483647)  4368

#### 28.2.22 addZone(startValue as Double, endValue as Double, fillColor as color, edgeColor as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Same as the other addZone method, but uses color instead of integer data type for passing color values.

See also:

- 28.2.23 addZone(startValue as Double, endValue as Double, fillColor as Integer, edgeColor as Integer = -1)  4371
- 28.2.24 addZone(startValue as Double, endValue as Double, startRadius as Integer, endRadius as Integer, fillColor as color, edgeColor as color)  4371
28.2.23 addZone(startValue as Double, endValue as Double, fillColor as Integer, edgeColor as Integer = -1)


**Function:** Adds a colored zone to the meter.

**Notes:**
This method is just a short cut to AngularMeter.addZone, in which the starting radius is always 0, and ending radius is the radius of the meter scale. In other words, the zone is a sector on the meter.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>startValue</td>
<td>(Mandatory)</td>
<td>The data value that marks the start position of the zone.</td>
</tr>
<tr>
<td>endValue</td>
<td>(Mandatory)</td>
<td>The data value that marks the end position of the zone.</td>
</tr>
<tr>
<td>fillColor</td>
<td></td>
<td>The fill color of the zone.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The edge color of the zone. The default is the same as the fill color.</td>
</tr>
</tbody>
</table>

See also:

- 28.2.22 addZone(startValue as Double, endValue as Double, fillColor as color, edgeColor as color) 4370
- 28.2.24 addZone(startValue as Double, endValue as Double, startRadius as Integer, endRadius as Integer, fillColor as color, edgeColor as color) 4371
- 165.4.244 addZone(startValue as Double, endValue as Double, startRadius as Integer, endRadius as Integer, fillColor as Integer, edgeColor as Integer = -1) 19626

28.2.24 addZone(startValue as Double, endValue as Double, startRadius as Integer, endRadius as Integer, fillColor as color, edgeColor as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addZone method, but uses color instead of integer data type for passing color values.

See also:

- 28.2.22 addZone(startValue as Double, endValue as Double, fillColor as color, edgeColor as color) 4370
- 28.2.23 addZone(startValue as Double, endValue as Double, fillColor as Integer, edgeColor as Integer = -1) 4371
- 165.4.244 addZone(startValue as Double, endValue as Double, startRadius as Integer, endRadius as Integer, fillColor as Integer, edgeColor as Integer = -1) 19626
CHAPTER 28. CHARTDIRECTOR

28.2.25 addZone(startValue as Double, endValue as Double, startRadius as Integer, endRadius as Integer, fillColor as Integer, edgeColor as Integer = -1)

**Function:** Adds a colored zone to the meter.
**Notes:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>startValue</td>
<td>(Mandatory)</td>
<td>The data value that marks the start position of the zone.</td>
</tr>
<tr>
<td>endValue</td>
<td>(Mandatory)</td>
<td>The data value that marks the end position of the zone.</td>
</tr>
<tr>
<td>startRadius</td>
<td>(Mandatory)</td>
<td>The starting radius of the zone in pixels.</td>
</tr>
<tr>
<td>endRadius</td>
<td>(Mandatory)</td>
<td>The ending radius of the zone in pixels.</td>
</tr>
<tr>
<td>fillColor</td>
<td>(Mandatory)</td>
<td>The fill color of the zone.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The edge color of the zone. The default is the same as the fill color.</td>
</tr>
</tbody>
</table>

See also:

- 28.2.22 addZone(startValue as Double, endValue as Double, fillColor as color, edgeColor as color) 4370
- 28.2.23 addZone(startValue as Double, endValue as Double, fillColor as Integer, edgeColor as Integer = -1) 4371
- 28.2.24 addZone(startValue as Double, endValue as Double, startRadius as Integer, endRadius as Integer, fillColor as color, edgeColor as color) 4371

28.2.26 Constructor(width as Integer, height as Integer, bgColor as color, edgeColor as color, raisedEffect as Integer = 0)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other Constructor method, but uses color instead of integer data type for passing color values.
**See also:**

- 28.2.27 Constructor(width as Integer, height as Integer, bgColor as Integer = & hffff0000, edgeColor as Integer = & hff000000, raisedEffect as Integer = 0) 4372

28.2.27 Constructor(width as Integer, height as Integer, bgColor as Integer = & hffff0000, edgeColor as Integer = & hff000000, raisedEffect as Integer = 0)

**Function:** Creates a new AngularMeter object.
**Notes:**

See also:
28.2. CLASS CDANGULARMETERMBS

Parameter  Default  Description
width      (Mandatory)  The width of the chart in pixels.
height     (Mandatory)  The height of the chart in pixels.
bgColor    BackgroundColor  The background color of the chart.
edgeColor  Transparent  The edge color of the chart.
raisedEffect  0  The 3D border width. For positive values, the border will appear raised. For negative values, the border will appear depressed. A zero value means the border will appear flat.

- 28.2.26 Constructor(width as Integer, height as Integer, bgColor as color, edgeColor as color, raisedEffect as Integer = 0)

28.2.28 relativeLinearGradient(gradient() as Double, angle as Double = 0.0, radius as Double = -1.0) as Integer

MBS ChartDirector Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function:  Creates a linear gradient color relative to the meter center and radius.

Notes:
A general linear gradient color can be created by CDBaseChartMBS.linearGradientColor, which involves specifying the x and y coordinates of the starting and ending points and the color stops. The relativeLinearGradient simplifies creating a linear gradient by assuming the gradient line passes through the meter center at a configurable angle.

The linear gradient is defined using an array of numbers, in which each pair of numbers represents the relative distance and its associated color. The relative distance is the ratio of the absolute distance to the reference radius, which defaults to the meter scale radius (set by AngularMeter.setMeter).

For example, to define a linear gradient with blue (0000FF) at the bottom-left of reference radius, green (00FF00) at the center, and red (FF0000) at the top-right of the reference radius, the angle should be set to 45 degrees, and the array of numbers should be:

-1.0, & H0000ff, 0.0, & H00ff00, 1.0, & Hff0000

The relative distances in the array should be arranged in increasing order. It is possible to define a relative linear gradient shorter or longer than the reference radius by using a relative distance of magnitude smaller or greater than 1. A negative relative distance means the distance is measured at the opposite side of center.

Returns a 32-bit integer representing the linear gradient color.
## 28.2.29 relativeRadialGradient(gradient() as Double, radius as Double = -1.0) as Integer

MBS ChartDirector Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Creates a radial gradient color relative to the meter center and radius.

**Notes:**

A general radial gradient color can be created by CDBaseChartMBS.radialGradientColor, which involves specifying the center x and y coordinates, horizontal and vertical radii, and the color stops. The relativeRadialGradient simplifies creating a radial gradient by assuming the center of the radial gradient to be the meter center, and the radial pattern is circular (so that the vertical and horizontal radii are the same), and default to using the meter scale radius (set by AngularMeter.setMeter) as the reference radius.

The radial gradient is defined using an array of numbers, in which each pair of numbers represents the relative radius and its associated color. The relative radius is the ratio of the absolute radius to the reference radius.

For example, to define a radial gradient with blue (0000FF) at the center, green (00FF00) at the mid-point between the center and the reference radius, and red at the reference radius, the numbers should be:

0.0, & H0000ff, 0.5, & H00ff00, 1.0, & Hff0000

The relative radii in the array must be arranged in increasing order. It is possible to define a relative radial gradient smaller or larger than the reference radius by using a relative radius smaller or greater than 1.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>gradient</td>
<td>(Mandatory)</td>
<td>An numeric array defining the color stops. Please refer to the description above for details.</td>
</tr>
<tr>
<td>angle</td>
<td>0</td>
<td>The direction of the linear gradient line. It is specified as a clockwise angle in degrees, with 0 being the upward pointing direction.</td>
</tr>
<tr>
<td>radius</td>
<td>-1</td>
<td>The reference radius to define the relative distance. The default is the meter scale radius (set by CDAngularMeterMBS.setMeter).</td>
</tr>
</tbody>
</table>

Returns a 32-bit integer representing the radial gradient color.
28.2.30  setCap(radius as Integer, fillColor as color, edgeColor as color)

MBS ChartDirector Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Set the radius and color of the pointer cap.
**Notes:**

The pointer cap is a circle at the center of the meter above the meter pointer. By default, it is a small circle 3 pixels in radius, so it looks like a "pivot" for the pointer for it to rotate about the center.

You may change the radius and colors of this circle using this method to achieve other visual effects.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>radius</td>
<td>(Mandatory)</td>
<td>The radius of pointer cap circle in pixels.</td>
</tr>
<tr>
<td>fillColor</td>
<td>(Mandatory)</td>
<td>The fill color of the pointer cap circle.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>LineColor</td>
<td>The edge color of the pointer cap circle.</td>
</tr>
</tbody>
</table>

See also:

- 28.2.31 setCap(radius as Integer, fillColor as Integer, edgeColor as Integer = & hffff0001)

28.2.31  setCap(radius as Integer, fillColor as Integer, edgeColor as Integer = & hffff0001)

**Function:** Set the radius and color of the pointer cap.
**Notes:**

The pointer cap is a circle at the center of the meter above the meter pointer. By default, it is a small circle 3 pixels in radius, so it looks like a "pivot" for the pointer for it to rotate about the center.

You may change the radius and colors of this circle using this method to achieve other visual effects.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>radius</td>
<td>(Mandatory)</td>
<td>The radius of pointer cap circle in pixels.</td>
</tr>
<tr>
<td>fillColor</td>
<td>(Mandatory)</td>
<td>The fill color of the pointer cap circle.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>LineColor</td>
<td>The edge color of the pointer cap circle.</td>
</tr>
</tbody>
</table>

See also:

- 28.2.30 setCap(radius as Integer, fillColor as color, edgeColor as color)
28.2.32  setCap2(backcolor as Color = & c888888, frontColor as Color = & c000000, frontEdgeColor as Color = & c888888)

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Configures the meter to use new style pointer cap.

**Notes:**

The new style pointer cap is a circular object covering the center of the meter. It is designed to be used with new style pointers (added with AngularMeter.addPointer2). The cap consists of two circles, one at the background below the pointer, and one covering the pointer. The pointer will appear to be sandwiched between these two circles.

Arguments are optional and colors can be passed as Integer or color value.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>backColor</td>
<td>0x888888</td>
<td>The fill color of the back circle.</td>
</tr>
<tr>
<td>frontColor</td>
<td>0x000000</td>
<td>The fill color of the front circle.</td>
</tr>
<tr>
<td>frontEdgeColor</td>
<td>0x888888</td>
<td>The edge color of the front circle.</td>
</tr>
<tr>
<td>lightingRatio</td>
<td>NoValue</td>
<td>By default, lighting effect is applied to the back circle and the edge of the front circle, such that the bottom-right side will appear to be darkened. This argument configures how bright the bottom-right side is. The default value is 0.2, which means the bottom-right side is 20% as bright as the top-left side. Setting this argument to 1 disables the lighting effect.</td>
</tr>
<tr>
<td>backRadiusRatio</td>
<td>NoValue</td>
<td>The radius of the back circle, expressed as a ratio to the meter scale radius (set with AngularMeter.setMeter). The default is 0.15.</td>
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</tr>
<tr>
<td>frontEdgeWidthRatio</td>
<td>NoValue</td>
<td>The edge width of the front circle, expressed as a ratio to the meter scale radius (set with AngularMeter.setMeter). The default is 0.01.</td>
</tr>
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</table>

See also:

- 28.2.33 setCap2(backcolor as Color, frontColor as Color, frontEdgeColor as Color, lightingRatio as Double) 4377
- 28.2.34 setCap2(backcolor as Color, frontColor as Color, frontEdgeColor as Color, lightingRatio as Double, backRadiusRatio as Double) 4378
- 28.2.35 setCap2(backcolor as Color, frontColor as Color, frontEdgeColor as Color, lightingRatio as Double, backRadiusRatio as Double, frontRadiusRatio as Double) 4379
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- 28.2.37 setCap2(backcolor as Integer = & h888888, frontColor as Integer = & h000000, frontEdgeColor as Integer = & h888888) 4382
- 28.2.38 setCap2(backcolor as Integer, frontColor as Integer, frontEdgeColor as Integer, lightingRatio as Double) 4383
28.2.33  setCap2(backColor as Color, frontColor as Color, frontEdgeColor as Color, lightingRatio as Double)

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Configures the meter to use new style pointer cap.

**Notes:**

The new style pointer cap is a circular object covering the center of the meter. It is designed to be used with new style pointers (added with AngularMeter.addPointer2). The cap consists of two circles, one at the background below the pointer, and one covering the pointer. The pointer will appear to be sandwiched between these two circles.

Arguments are optional and colors can be passed as Integer or color value.

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<td>frontEdgeColor</td>
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<td>The edge color of the front circle.</td>
</tr>
<tr>
<td>lightingRatio</td>
<td>NoValue</td>
<td>By default, lighting effect is applied to the back circle and the edge of the front circle, such that the bottom-right side will appear to be darkened. This argument configures how bright the bottom-right side is. The default value is 0.2, which means the bottom-right side is 20% as bright as the top-left side. Setting this argument to 1 disables the lighting effect.</td>
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- 28.2.32 setCap2(backcolor as Color = & c888888, frontColor as Color = & c000000, frontEdgeColor as Color = & c888888)  
- 28.2.34 setCap2(backcolor as Color, frontColor as Color, frontEdgeColor as Color, lightingRatio as Double, backRadiusRatio as Double)  
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28.2.38 setCap2(backcolor as Integer, frontColor as Integer, frontEdgeColor as Integer, lightingRatio as Double)

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28.2.40 setCap2(backcolor as Integer, frontColor as Integer, frontEdgeColor as Integer, lightingRatio as Double, backRadiusRatio as Double, frontRadiusRatio as Double)

28.2.41 setCap2(backcolor as Integer, frontColor as Integer, frontEdgeColor as Integer, lightingRatio as Double, backRadiusRatio as Double, frontRadiusRatio as Double, frontEdgeWidthRatio as Double)

28.2.34 setCap2(backcolor as Color, frontColor as Color, frontEdgeColor as Color, lightingRatio as Double, backRadiusRatio as Double, frontRadiusRatio as Double)

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Configures the meter to use new style pointer cap.

Notes:
The new style pointer cap is a circular object covering the center of the meter. It is designed to be used with new style pointers (added with AngularMeter.addPointer2). The cap consists of two circles, one at the background below the pointer, and one covering the pointer. The pointer will appear to be sandwiched between these two circles. Arguments are optional and colors can be passed as Integer or color value.

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<tr>
<td>lightingRatio</td>
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28.2. CLASS CDANGULARMETERMBS

See also:

- 28.2.32 setCap2(backcolor as Color = & c888888, frontColor as Color = & c000000, frontEdgeColor as Color = & c888888) 4376
- 28.2.33 setCap2(backcolor as Color, frontColor as Color, frontEdgeColor as Color, lightingRatio as Double) 4377
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- 28.2.41 setCap2(backcolor as Integer, frontColor as Integer, frontEdgeColor as Integer, lightingRatio as Double, backRadiusRatio as Double, frontRadiusRatio as Double, frontEdgeWidthRatio as Double) 4386

28.2.35 setCap2(backcolor as Color, frontColor as Color, frontEdgeColor as Color, lightingRatio as Double, backRadiusRatio as Double, frontRadiusRatio as Double)

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
Function: Configures the meter to use new style pointer cap.  
Notes:  
The new style pointer cap is a circular object covering the the center of the meter. If is designed to be used with new style pointers (added with AngularMeter.addPointer2). The cap consists of two circles, one at the background below the pointer, and one covering the pointer. The pointer will appear to be sandwiched between these two circles.  
Arguments are optional and colors can be passed as Integer or color value.

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### Argument Default Description

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**MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:** Configures the meter to use new style pointer cap.

**Notes:**
The new style pointer cap is a circular object covering the center of the meter. It is designed to be used with new style pointers (added with AngularMeter.addPointer2). The cap consists of two circles, one at the background below the pointer, and one covering the pointer. The pointer will appear to be sandwiched between these two circles.

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MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Configures the meter to use new style pointer cap.

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<td>frontEdgeWidthRatio</td>
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<td>The edge width of the front circle, expressed as a ratio to the meter scale radius</td>
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28.2. CLASS CDANGULARMETERMBS

See also:

- 28.2.32 setCap2(backcolor as Color = & c888888, frontColor as Color = & c000000, frontEdgeColor as Color = & c888888) 4376
- 28.2.33 setCap2(backcolor as Color, frontColor as Color, frontEdgeColor as Color, lightingRatio as Double) 4377
- 28.2.34 setCap2(backcolor as Color, frontColor as Color, frontEdgeColor as Color, lightingRatio as Double, backRadiusRatio as Double) 4378
- 28.2.35 setCap2(backcolor as Color, frontColor as Color, frontEdgeColor as Color, lightingRatio as Double, backRadiusRatio as Double, frontRadiusRatio as Double) 4379
- 28.2.36 setCap2(backcolor as Color, frontColor as Color, frontEdgeColor as Color, lightingRatio as Double, backRadiusRatio as Double, frontRadiusRatio as Double, frontEdgeWidthRatio as Double) 4380
- 28.2.37 setCap2(backcolor as Integer = & h888888, frontColor as Integer = & h000000, frontEdgeColor as Integer = & h888888) 4382
- 28.2.38 setCap2(backcolor as Integer, frontColor as Integer, frontEdgeColor as Integer, lightingRatio as Double) 4383
- 28.2.40 setCap2(backcolor as Integer, frontColor as Integer, frontEdgeColor as Integer, lightingRatio as Double, backRadiusRatio as Double, frontRadiusRatio as Double) 4385
- 28.2.41 setCap2(backcolor as Integer, frontColor as Integer, frontEdgeColor as Integer, lightingRatio as Double, backRadiusRatio as Double, frontRadiusRatio as Double, frontEdgeWidthRatio as Double) 4386

28.2.40 setCap2(backcolor as Integer, frontColor as Integer, frontEdgeColor as Integer, lightingRatio as Double, backRadiusRatio as Double, frontRadiusRatio as Double) 4380

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Configures the meter to use new style pointer cap.

**Notes:**

The new style pointer cap is a circular object covering the the center of the meter. If is designed to be used with new style pointers (added with AngularMeter.addPointer2). The cap consists of two circles, one at the background below the pointer, and one covering the pointer. The pointer will appear to be sandwiched between these two circles.

Arguments are optional and colors can be passed as Integer or color value.

See also:

- 28.2.32 setCap2(backcolor as Color = & c888888, frontColor as Color = & c000000, frontEdgeColor as Color = & c888888) 4376
Argument | Default | Description
---|---|---
backColor | 0x888888 | The fill color of the back circle.
frontColor | 0x000000 | The fill color of the front circle.
frontEdgeColor | 0x888888 | The edge color of the front circle.
lightingRatio | NoValue | By default, lighting effect is applied to the back circle and the edge of the front circle, such that the bottom-right side will appear to be darkened. This argument configures how bright the bottom-right side is. The default value is 0.2, which means the bottom-right side is 20% as bright as the top-left side. Setting this argument to 1 disables the lighting effect.
backRadiusRatio | NoValue | The radius of the back circle, expressed as a ratio to the meter scale radius (set with AngularMeter.setMeter). The default is 0.15.
frontRadiusRatio | NoValue | The radius of the front circle, expressed as a ratio to the meter scale radius (set with AngularMeter.setMeter). The default is 0.11.
frontEdgeWidthRatio | NoValue | The edge width of the front circle, expressed as a ratio to the meter scale radius (set with AngularMeter.setMeter). The default is 0.01.

- 28.2.33 setCap2(backcolor as Color, frontColor as Color, frontEdgeColor as Color, lightingRatio as Double)
- 28.2.34 setCap2(backcolor as Color, frontColor as Color, frontEdgeColor as Color, lightingRatio as Double, backRadiusRatio as Double)
- 28.2.35 setCap2(backcolor as Color, frontColor as Color, frontEdgeColor as Color, lightingRatio as Double, backRadiusRatio as Double, frontRadiusRatio as Double)
- 28.2.36 setCap2(backcolor as Color, frontColor as Color, frontEdgeColor as Color, lightingRatio as Double, backRadiusRatio as Double, frontRadiusRatio as Double, frontEdgeWidthRatio as Double)
- 28.2.37 setCap2(backcolor as Integer = & h888888, frontColor as Integer = & h000000, frontEdgeColor as Integer = & h888888)
- 28.2.38 setCap2(backcolor as Integer, frontColor as Integer, frontEdgeColor as Integer, lightingRatio as Double)
- 28.2.39 setCap2(backcolor as Integer, frontColor as Integer, frontEdgeColor as Integer, lightingRatio as Double, backRadiusRatio as Double)
- 28.2.41 setCap2(backcolor as Integer, frontColor as Integer, frontEdgeColor as Integer, lightingRatio as Double, backRadiusRatio as Double, frontRadiusRatio as Double, frontEdgeWidthRatio as Double)

28.2.41 setCap2(backcolor as Integer, frontColor as Integer, frontEdgeColor as Integer, lightingRatio as Double, backRadiusRatio as Double, frontRadiusRatio as Double, frontEdgeWidthRatio as Double)

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Configures the meter to use new style pointer cap.

**Notes:**
28.2. **CLASS CDANGULARMETERMBS**

The new style pointer cap is a circular object covering the center of the meter. It is designed to be used with new style pointers (added with AngularMeter.addPointer2). The cap consists of two circles, one at the background below the pointer, and one covering the pointer. The pointer will appear to be sandwiched between these two circles.

Arguments are optional and colors can be passed as Integer or color value.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>backColor</td>
<td>0x888888</td>
<td>The fill color of the back circle.</td>
</tr>
<tr>
<td>frontColor</td>
<td>0x000000</td>
<td>The fill color of the front circle.</td>
</tr>
<tr>
<td>frontEdgeColor</td>
<td>0x888888</td>
<td>The edge color of the front circle.</td>
</tr>
<tr>
<td>lightingRatio</td>
<td>NoValue</td>
<td>By default, lighting effect is applied to the back circle and the edge of the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>front circle, such that the bottom-right side will appear to be darkened.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>This argument configures how bright the bottom-right side is. The default</td>
</tr>
<tr>
<td></td>
<td></td>
<td>value is 0.2, which means the bottom-right side is 20% as bright as the top-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>left side. Setting this argument to 1 disables the lighting effect.</td>
</tr>
<tr>
<td>backRadiusRatio</td>
<td>NoValue</td>
<td>The radius of the back circle, expressed as a ratio to the meter scale</td>
</tr>
<tr>
<td></td>
<td></td>
<td>radius (set with AngularMeter.setMeter). The default is 0.15.</td>
</tr>
<tr>
<td>frontRadiusRatio</td>
<td>NoValue</td>
<td>The radius of the front circle, expressed as a ratio to the meter scale</td>
</tr>
<tr>
<td></td>
<td></td>
<td>radius (set with AngularMeter.setMeter). The default is 0.11.</td>
</tr>
<tr>
<td>frontEdgeWidthRatio</td>
<td>NoValue</td>
<td>The edge width of the front circle, expressed as a ratio to the meter scale</td>
</tr>
<tr>
<td></td>
<td></td>
<td>radius (set with AngularMeter.setMeter). The default is 0.01.</td>
</tr>
</tbody>
</table>

See also:

- 28.2.32 setCap2(backcolor as Color = & c888888, frontColor as Color = & c000000, frontEdgeColor as Color = & c888888)
- 28.2.33 setCap2(backcolor as Color, frontColor as Color, frontEdgeColor as Color, lightingRatio as Double)
- 28.2.34 setCap2(backcolor as Color, frontColor as Color, frontEdgeColor as Color, lightingRatio as Double, backRadiusRatio as Double)
- 28.2.35 setCap2(backcolor as Color, frontColor as Color, frontEdgeColor as Color, lightingRatio as Double, backRadiusRatio as Double, frontRadiusRatio as Double)
- 28.2.36 setCap2(backcolor as Color, frontColor as Color, frontEdgeColor as Color, lightingRatio as Double, backRadiusRatio as Double, frontRadiusRatio as Double, frontEdgeWidthRatio as Double)
- 28.2.37 setCap2(backcolor as Integer = & h888888, frontColor as Integer = & h000000, frontEdgeColor as Integer = & h888888)
- 28.2.38 setCap2(backcolor as Integer, frontColor as Integer, frontEdgeColor as Integer, lightingRatio as Double)
- 28.2.39 setCap2(backcolor as Integer, frontColor as Integer, frontEdgeColor as Integer, lightingRatio as Double, backRadiusRatio as Double)
- 28.2.40 setCap2(backcolor as Integer, frontColor as Integer, frontEdgeColor as Integer, lightingRatio as Double, backRadiusRatio as Double, frontRadiusRatio as Double)
28.2.42  setMeter(cx as Integer, cy as Integer, radius as Integer, startAngle as Double, endAngle as Double)


**Function:** Sets the position and angle range of the meter.

**Notes:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cx</td>
<td>(Mandatory)</td>
<td>The x-coordinate of the center of the meter.</td>
</tr>
<tr>
<td>cy</td>
<td>(Mandatory)</td>
<td>The y-coordinate of the center of the meter.</td>
</tr>
<tr>
<td>radius</td>
<td>(Mandatory)</td>
<td>The radius of the meter.</td>
</tr>
<tr>
<td>startAngle</td>
<td>(Mandatory)</td>
<td>The start angle of the meter. The angle is measured in degrees clockwise, with 0 being the upward pointing direction.</td>
</tr>
<tr>
<td>endAngle</td>
<td>(Mandatory)</td>
<td>The end angle of the meter. The angle is measured in degrees clockwise, with 0 being the upward pointing direction.</td>
</tr>
</tbody>
</table>
28.2.43 Screenshots

28.2.44 squareameter.jpg

**Function:** A meter created using ChartDirector with the CDAngularMeterMBS class.
28.3   class CDAreaLayerMBS

28.3.1   class CDAreaLayerMBS


Function: The AreaLayer class represents area layers.

Example:

// The data for the area chart
dim data0(-1) as Double = array(42, 49, 33, 38, 51, 46, 29, 41, 44, 57, 59, 52, 37, 34, 51, 56, 56, 60, 70, 76, 63, 67, 75, 64, 51.0)
dim data1(-1) as Double = array(50, 45, 47, 34, 42, 49, 63, 62, 73, 59, 56, 50, 64, 60, 67, 67, 58, 59, 73, 77, 84, 82, 80, 84, 89.0)
dim data2(-1) as Double = array(61, 79, 85, 66, 53, 39, 24, 21, 37, 56, 37, 22, 21, 33, 13, 17, 4, 23, 16, 25, 9, 10, 5, 7, 16.0)

// Create a XYChart object of size 500 x 300 pixels
dim c as new CDXYChartMBS(500, 300)

// Set the plotarea at (90, 30) and of size 300 x 240 pixels.
call c.setPlotArea(90, 30, 300, 240)

// Add a legend box at (405, 100)
call c.addLegend(405, 100)

// Add a title to the chart
call c.addTitle("Daily System Load")

// Add a title to the y axis. Draw the title upright (font angle = 0)
c.yAxis.setTitle("Database"+endofline.unix+"Queries"+endofline.unix+"(per sec)" ).setFontAngle(0)

// Set the labels on the x axis.
call c.xAxis.setLabels(labels)

// Display 1 out of 2 labels on the x-axis. Show minor ticks for remaining labels.
c.xAxis.setLabelStep(2, 1)

// Add an area layer
dim layer as CDAreaLayerMBS
layer = c.addAreaLayer

// Draw the area layer in 3D
layer.set3D

// Add the three data sets to the area layer
28.3. CLASS CDAREALAYERMBS

```java
call layer.addDataSet(data0, -1, "Server # 1")
call layer.addDataSet(data1, -1, "Server # 2")
call layer.addDataSet(data2, -1, "Server # 3")
```

// Output the chart
Backdrop=c.makeChartPicture

Notes:
Subclass of the CDLayerMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

28.3.2 Methods

28.3.3 setGapColor(fillColor as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other setGapColor method, but uses color instead of integer data type for passing color values.
See also:
- 28.3.4 setGapColor(fillColor as Integer)

28.3.4 setGapColor(fillColor as Integer)

Function: Sets the color used to fill the area under kNoValue data points.
Notes:
By default, if there are kNoValue data points, ChartDirector will interpolate using the remaining data points.
The area will remain continuous.
This method can be used to set up an alternative color to represent the area at kNoValue data point positions. In particular, if the fillColor argument is set to Transparent, the kNoValue data points will result in gaps in the area.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>fillColor</td>
<td>(Mandatory)</td>
<td>The color used to fill the area region at kNoValue data point positions.</td>
</tr>
</tbody>
</table>

See also:
28.3.5 setMinLabelSize(s as Integer)


Function: Sets the minimum height (or width if x and y axes are swapped) of an area below which data labels will be hidden.

Notes:

In ChartDirector, for an area layer, data labels (Layer.setDataLabelStyle) are drawn internal to the area, while the aggregate labels (Layer.setAggregateLabelStyle) are drawn external to the area.

ChartDirector will disable data labels if the area height (or width if x and y axes are swapped) is too small to contain the data label.

By default, ChartDirector will automatically determine what is meant by "too small". The setMinLabelSize method can be used to manually defined the threshold for "too small".

Sometimes it may be desirable to display the data label even though it cannot be contained within the area. In this case, the setMinLabelSize can be used to set the threshold to 0.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>s</td>
<td>(Mandatory)</td>
<td>The minimum height (or width if x and y axes are swapped) of an area below which data labels will be hidden.</td>
</tr>
</tbody>
</table>
28.4  class CDArrayMBS

28.4.1  class CDArrayMBS

**Function:** The CDArrayMBS class is a utility class used to perform array computations.

28.4.2  Methods

28.4.3  abs

**Function:** Replaces each element of the CDArrayMBS object by its absolute value.

28.4.4  acc

**Function:** Replaces each element of the CDArrayMBS object by the accumulated total of its previous element (including itself).

28.4.5  addArray(value as CDArrayMBS)

**Function:** The array will be added by adding the each array element to the corresponding element of the CDArrayMBS object.  
**Notes:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Values</td>
<td>(Mandatory)</td>
<td>A CDArrayMBS with numbers to be added to the CDArrayMBS object.</td>
</tr>
</tbody>
</table>

This method does not append a new value to the array.  
See also:

- 28.4.6 addArray(value() as Double)

28.4.6  addArray(value() as Double)

**Function:** The array will be added by adding the each array element to the corresponding element of the
CDArrayMBS object.

**Example:**

```vba
dim src(-1) as Double = Array( 63.1, 10.15, 6.15, 2.88 )
dim data As New CDArrayMBS(array(1.0, 1.0, 1.0, 1.0))

data.addArray( src )

dim lines(-1) as string

lines.Append str(data.count) + " values:"
lines.Append ""
lines.Append str(Data.getvalue(0))
lines.Append str(Data.getvalue(1))
lines.Append str(Data.getvalue(2))
lines.Append str(Data.getvalue(3))

MsgBox Join(lines, EndOfLine)
```

**Notes:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>(Mandatory)</td>
<td>An array of numbers to be added to the CDArrayMBS object.</td>
</tr>
</tbody>
</table>

This method does not append a new value to the array.

See also:

- 28.4.5 addArray(value as CDArrayMBS)

**28.4.7 addValue(value as Double)**


**Function:** Adds a number to every element of the CDArrayMBS object.

**Example:**

```vba
dim data As New CDArrayMBS(array(1.0, 2.0, 3.0, 4.0))
data.addValue(5)

dim lines(-1) as string

lines.Append str(data.count) + " values:"
lines.Append ""
lines.Append str(Data.getvalue(0))
lines.Append str(Data.getvalue(1))
```
28.4. CLASS CDARRAYMBS

lines.Append str(Data.getvalue(2))
lines.Append str(Data.getvalue(3))
MsgBox Join(lines, EndOfLine)

Notes:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>(Mandatory)</td>
<td>A number to be added to every element of the CDArrayMBS object.</td>
</tr>
</tbody>
</table>

This method does not append a new value to the array.

28.4.8 aggregate(srcArray() as Double, aggregateMethod as Integer, param as Double = 50.0) as CDArrayMBS


**Function:** Aggregates a data array by merging groups of elements, similar to the GROUP BY clause in SQL statements.

**Notes:**

This primary usage of this method is for changing data resolution, such as to convert a daily data into weekly data.

If the data is from a database, aggregation can often be more efficiently and conveniently performed by using the GROUP BY clause of SQL. This method should only be used when the data are not coming from a database, or the aggregation method are not supported by the database used.

In this method, the CDArrayMBS object represents the delimiters used to group elements in the srcArray. The positions of all non-NoValue elements in the CDArrayMBS object will be used as delimiters positions.

For example, if the CDArrayMBS object consists of an array of 50 elements, and only the elements at 0, 10, 20, 30, 40 are not NoValue, then the groups will be defined as positions 0 - 9, 10 - 19, 20 - 29, 30 - 39 and 40 - 49.

Note that a group includes the starting delimiter position but excludes the ending delimiter position.

The CDArrayMBS object is typically created by applying CDArrayMBS.selectStartOfHour, CDArrayMBS.selectStartOfDay, CDArrayMBS.selectStartOfWeek, CDArrayMBS.selectStartOfMonth, CDArrayMBS.selectStartOfYear or CDArrayMBS.selectRegularSpacing to a data array.
For example, to group daily data into weekly data, one may create a CDArrayMBS object with the dates of the daily data, then CDArrayMBS.selectStartOfWeek to select only the elements representing the start of a week. The resulting CDArrayMBS object can then be used to aggregate daily data into weekly data.

Due to aggregation, the length of the output array will usually be shorter than, and never be longer than, the length of the input array.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>srcArray</td>
<td>(Mandatory)</td>
<td>The array to be aggregated.</td>
</tr>
<tr>
<td>aggregateMethod</td>
<td>(Mandatory)</td>
<td>The method to aggregate the data, which must be one of AggregateSum, AggregateAvg, AggregateStdDev, AggregateMin, AggregateMed, AggregateMax, AggregatePercentile, AggregateFirst, AggregateLast, AggregateCount.</td>
</tr>
<tr>
<td>param</td>
<td>50</td>
<td>The aggregation parameter, if needed. Currently, only AggregatePercentile needs a parameter to specify the percentile used.</td>
</tr>
</tbody>
</table>

28.4.9 aggregateValues(srcArray() as Double, aggregateMethod as Integer, param as Double = 50.0) as Double()

MBS ChartDirector Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Aggregates a data array by merging groups of elements, similar to the GROUP BY clause in SQL statements. Notes: This primary usage of this method is for changing data resolution, such as to convert a daily data into weekly data. If the data is from a database, aggregation can often be more efficiently and conveniently performed by using the GROUP BY clause of SQL. This method should only be used when the data are not coming from a database, or the aggregation method are not supported by the database used. In this method, the CDArrayMBS object represents the delimiters used to group elements in the srcArray. The positions of all non-kNoValue elements in the CDArrayMBS object will be used as delimiters positions. For example, if the CDArrayMBS object consists of an array of 50 elements, and only the elements at 0, 10, 20, 30, 40 are not NoValue, then the groups will be defined as positions 0 - 9, 10 - 19, 20 - 29, 30 - 39 and 40 - 49. Note that a group includes the starting delimiter position but excludes the ending delimiter position. The CDArrayMBS object is typically created by applying CDArrayMBS.selectStartOfDay, CDArrayMBS.selectStartOfWeek, CDArrayMBS.selectStartOfMonth, CDArrayMBS.selectStartOfYear or CDArrayMBS.selectRegularSpacing to a data array.
For example, to group daily data into weekly data, one may create an CDArrayMBS object with the dates of the daily data, then CDArrayMBS.selectStartOfWeek to select only the elements representing the start of a week. The resulting CDArrayMBS object can then be used to aggregate daily data into weekly data.

Due to aggregation, the length of the output array will usually be shorter than, and never be longer than, the length of the input array.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>srcArray</td>
<td>(Mandatory)</td>
<td>The array to be aggregated.</td>
</tr>
<tr>
<td>aggregateMethod</td>
<td>(Mandatory)</td>
<td>The method to aggregate the data, which must be one of AggregateSum, AggregateAvg, AggregateStdDev, AggregateMin, AggregateMed, AggregateMax, AggregatePercentile, AggregateFirst, AggregateLast, AggregateCount.</td>
</tr>
<tr>
<td>param</td>
<td>50</td>
<td>The aggregation parameter, if needed. Currently, only AggregatePercentile needs a parameter to specify the percentile used.</td>
</tr>
</tbody>
</table>

### 28.4.10 avg as Double


**Function:** Gets the avg value of the elements of the CDArrayMBS object.

**Example:**

```plaintext
dim data As New CDArrayMBS(array(1.0, 2.0, 3.0, 4.0))
MsgBox str(data.avg) // shows 2.5
```

### 28.4.11 Constructor


**Function:** The dummy constructor doing nothing.

See also:

- 28.4.12 Constructor(a as CDArrayMBS) 4397
- 28.4.13 Constructor(data() as Double) 4398

### 28.4.12 Constructor(a as CDArrayMBS)


**Function:** Creates an CDArrayMBS object and initialize it with the given array.

See also:
28.4.13 Constructor(data() as Double)

Function: Creates an CDArrayMBS object and initialize it with the given array.
See also:

- 28.4.11 Constructor
- 28.4.12 Constructor(a as CDArrayMBS)

28.4.14 count as Integer

Function: Returns the number of elements in this array object.
Example:

```vbs
dim data As New CDArrayMBS(array(1.0, 2.0, 3.0, 4.0))
MsgBox str(data.count) // shows 4
```

28.4.15 delta(offset as Integer = 1)

Function: Subtracts each element of the CDArrayMBS object by an earlier element in the same CDArrayMBS object.
Notes:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>offset</td>
<td>1</td>
<td>The difference in position between an element and the earlier element to be subtracted from it.</td>
</tr>
</tbody>
</table>

28.4.16 divArray(value as CDArrayMBS)

Function: Divides the CDArrayMBS object by the given array.
Notes:
28.4. CLASS CDARRAYMBS

The CDArrayMBS object will be divided by dividing each of its elements by the corresponding element in the given array.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Values</td>
<td>(Mandatory)</td>
<td>A CDArrayMBS with numbers used as divisors to divide the CDArrayMBS object.</td>
</tr>
</tbody>
</table>

See also:

- 28.4.17 divArray(value() as Double)

28.4.17 divArray(value() as Double)


**Function:** Divides the CDArrayMBS object by the given array.

**Example:**

```vbs
dim src(-1) as Double = Array( 63.1, 10.15, 6.15, 2.88 )
dim data As New CDArrayMBS(array(2.0, 2.0, 2.0, 2.0))

data.divArray( src )

dim lines(-1) as string

lines.Append str(data.count)+" values:"
lines.Append ""
lines.Append str(Data.getvalue(0))
lines.Append str(Data.getvalue(1))
lines.Append str(Data.getvalue(2))
lines.Append str(Data.getvalue(3))

MsgBox Join(lines,EndOfLine)
```

**Notes:**

The CDArrayMBS object will be divided by dividing each of its elements by the corresponding element in the given array.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>(Mandatory)</td>
<td>An array of numbers used as divisors to divide the CDArrayMBS object.</td>
</tr>
</tbody>
</table>

See also:
28.4.18 divValue(value as Double)


**Function:** Divides every element of the CDArrayMBS object by the given number.

**Example:**

```vbnet
dim data As New CDArrayMBS(array(1.0, 2.0, 3.0, 4.0))

data.divValue(5)

dim lines(-1) as string

lines.Append str(data.count)+" values:"
lines.Append ">"
lines.Append str(data.getvalue(0))
lines.Append str(data.getvalue(1))
lines.Append str(data.getvalue(2))
lines.Append str(data.getvalue(3))

MsgBox Join(lines,EndOfLine)
```

**Notes:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>(Mandatory)</td>
<td>A number to be used as divisor to divide every element of the CDArrayMBS object.</td>
</tr>
</tbody>
</table>

28.4.19 expAvg(smoothingFactor as Double)


**Function:** Replaces each element of the CDArrayMBS object by its exponential average.

**Notes:**

The exponential average is computed by:

\[
\text{avg}(n) = \text{value}(n) \times \text{smoothingFactor} + \text{avg}(n - 1) \times (1 - \text{smoothingFactor})
\]

where \( \text{avg}(n) \) is the exponential average of the \( n \)th element, and \( \text{value}(n) \) is the value of the \( n \)th element.

For the first element \((n = 0)\), its exponential average is assumed to be equal to its original value.
28.4. CLASS CDARRAYMBS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>smoothingFactor</td>
<td>(Mandatory)</td>
<td>The smoothing factor used for computing exponential average. It should be between 0 - 1.</td>
</tr>
</tbody>
</table>

### 28.4.20 financeDiv(values() as Double, zeroByZeroValue as Double)


**Function:** Divides the CDArrayMBS object by the given array, with special handling of the case of zero divided by zero.

**Notes:**

In many financial formulas, it is possible to have cases of zero divided by zero. For example, the Relative Strength Index is defined as the ratio between positive price changes and absolute value of all price changes over a period of time. In case the price does not change at all during that period, and the RSI will become zero divided by zero.

Traditionally, under the above case, the RSI will be consider as 50% .

To handle these special cases, the financeDiv method has an argument specifying what value to assume in case the division is zero divided by zero.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>(Mandatory)</td>
<td>An array of numbers used as divisors to divide the CDArrayMBS object.</td>
</tr>
<tr>
<td>zeroByZeroValue</td>
<td>(Mandatory)</td>
<td>The value to use if the division is zero divided by zero.</td>
</tr>
</tbody>
</table>

### 28.4.21 getvalue(index as Integer) as Double


**Function:** Returns the value with the given index.

**Notes:** Returns zero if the value does not exist.

### 28.4.22 insert(value as Double, len as Integer, insertPoint as Integer = -1)


**Function:** Inserts some constant elements to the CDArrayMBS object.

**Notes:**

See also:
## 28.4.23 insert(value() as Double, insertPoint as Integer = -1)


**Function:** Inserts the elements of an array to the CDArrayMBS object.

### Notes:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>(Mandatory)</td>
<td>An array to be inserted to the CDArrayMBS object.</td>
</tr>
<tr>
<td>insertPoint</td>
<td>-1</td>
<td>The position of the insertion point. The new elements will be inserted just before the insertion point. -1 means inserting elements at the end of the array.</td>
</tr>
</tbody>
</table>

See also:

- 28.4.22 insert(value as Double, len as Integer, insertPoint as Integer = -1)

## 28.4.24 lowess(smoothness as Double = 0.25, iteration as Integer = 0)


**Function:** Fits a curve through the data points in the CDArrayMBS object using the LOWESS algorithm.

### Example:

```plaintext
// generate some values
dim values() as Double
dim x as Double
for i as Integer = 1 to 10
    x = x + rnd - 0.5
    values.Append x
next

// make array
dim c as new CDArrayMBS(values)
dim oldValues() as Double = c.Values

// now run Algorithm
c.lowess(1.0) // 1.0 so we see it
```
// now get new values
dim newValues() as Double = c.Values

// the rest is for displaying in MsgBox:
dim oldValueStrings() as string
dim newValueStrings() as string

for each v as Double in oldValues
    oldValueStrings.Append str(v)
next

for each v as Double in newValues
    newValueStrings.Append str(v)
next

MsgBox join(oldValueStrings, " ")+EndOfLine+EndOfLine+join(newValueStrings, " ")

Notes:
The full name of LOWESS is "Robust locally weighted regression and smoothing scatterplots". It is a commonly used algorithm for drawing a smooth curve through a number of points.

LOWESS works by assuming a small segment of any curve can be approximated by a straight line. For each data point, LOWESS finds the n nearest points to that data point (n is configurable), and performs weighted linear regression using a tricube weighting function. It then adjust the coordinates of the data point based on the result of the weighted linear regression.

LOWESS can run in multiple iterations, in which case it should converge to a stable curve - thus it is called "robust".

In most cases, LOWESS behaves better than many other smoothing algorithms, such as moving average, moving median, exponential average. Curves draw using LOWESS look smoother, yet they track the data points better. Also, LOWESS behaves well at the end points. On the other hand, methods based on moving windows (e.g. moving averages) do not work on the first few data points, because they need sufficient data points to fill the moving window first.

In this method, each element of the CDArrayMBS object will be replaced by the corresponding value computed using the LOWESS algorithm.

For LOWESS to have any smoothing effect at all, n must be at least 3. You may need to use a large smoothness factor if you only have a few data points.
CHAPTER 28. CHARTDIRECTOR

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>smoothness</td>
<td>0.25</td>
<td>The smoothness factor. It must be between 0 - 1. It is the portion of points used in finding the n nearest points. In other words, ( n = \text{smoothness} \times \text{no_of_points} ). A larger value will result in a smoother the curve. A smaller value will result in the curve tracking the data points better.</td>
</tr>
</tbody>
</table>

iteration 0 The number of additional iteration used in the LOWESS algorithm. Unless your data is extremely noisy, in most case no additional iteration is necessary.

See also:

- 28.4.25 lowess(values() as Double, smoothness as Double = 0.25, iteration as Integer = 0) 4404

28.4.25 lowess(values() as Double, smoothness as Double = 0.25, iteration as Integer = 0)


**Function:** Fits a curve through the data points in the CDArrayMBS object using the LOWESS algorithm, where the spacing of the data points is supplied by the given array.

**Notes:**

Please refer to CDArrayMBS.lowess for a brief description of the LOWESS algorithm.

In this method, each element of the CDArrayMBS object will be replaced by the corresponding value computed using the LOWESS algorithm.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>(Mandatory)</td>
<td>An array of numbers providing the x coordinates of the data points in the CDArrayMBS object.</td>
</tr>
<tr>
<td>smoothness</td>
<td>0.25</td>
<td>The smoothness factor. It must be between 0 - 1. It is the portion of points used in finding the n nearest points. In other words, ( n = \text{smoothness} \times \text{no_of_points} ). A larger value will result in a smoother the curve. A smaller value will result in the curve tracking the data points better.</td>
</tr>
</tbody>
</table>

For LOWESS to have any smoothing effect at all, n must be at least 3. You may need to use a large smoothness factor if you only have a few data points.

See also:

- 28.4.24 lowess(smoothness as Double = 0.25, iteration as Integer = 0) 4402
28.4. CLASS CDARRAYMBS

iteration 0 The number of additional iteration used in the LOWESS algorithm. Unless your data is extremely noisy, in most case no additional iteration is necessary.

28.4.26 max as Double

Function: Gets the maximum value of the elements of the CDArrayMBS object.
Example:

```vbs
dim data As New CDArrayMBS(array(1.0, 2.0, 3.0, 4.0))
MsgBox str(data.max) // shows 4.0
```

28.4.27 maxIndex as Integer

Function: Gets the index of the maximum value element of the CDArrayMBS object.

28.4.28 med as Double

Function: Gets the med value of the elements of the CDArrayMBS object.
Example:

```vbs
dim data As New CDArrayMBS(array(1.0, 2.0, 3.0, 4.0, 1.0))
MsgBox str(data.med) // shows 2.0
MsgBox str(data.avg) // shows 2.2
```

28.4.29 min as Double

Function: Gets the minimum value of the elements of the CDArrayMBS object.
Example:

```vbs
dim data As New CDArrayMBS(array(1.0, 2.0, 3.0, 4.0))
MsgBox str(data.min) // shows 1.0
```
28.4.30  \texttt{minIndex as Integer}

\textbf{Function:} Gets the index of the minimum value element of the CDArrayMBS object.

28.4.31  \texttt{movAvg(interval as Integer)}

\textbf{Function:} Replaces each element of the CDArrayMBS object by its moving average.
\textbf{Notes:}

The interval parameter specifies the window size for computing moving average. The moving average is computed as the average of the current element with the previous \((\text{interval} - 1)\) elements. No moving average can be computed for the first \((\text{interval} - 1)\) elements, because there are insufficient previous elements. So the first \((\text{interval} - 1)\) elements will be replaced with \texttt{kNoValue}.

\begin{tabular}{lll}
\textbf{Parameter} & \textbf{Default} & \textbf{Description} \\
\hline
interval & (Mandatory) & The window size.
\end{tabular}

28.4.32  \texttt{movCorr(interval as Integer, value() as Double)}

\textbf{Function:} Replaces each element of the CDArrayMBS object by the moving correlation with another array or with itself.
\textbf{Notes:}

The interval parameter specifies the window size for computing moving correlation. The moving correlation is computed as the correlation coefficient between the CDArrayMBS object and the other array, where only the current element and the previous \((\text{interval} - 1)\) elements are considered in the computation.

If the other array is not provided, it is assumed to be the sequence of numbers 0, 1, 2, 3, 4,... This is equivalent to checking if the elements of the CDArrayMBS object is linear.

No moving correlation can be computed for the first \((\text{interval} - 1)\) elements, because there are insufficient previous elements. So the first \((\text{interval} - 1)\) elements will be replaced with \texttt{kNoValue}.

\begin{tabular}{lll}
\textbf{Parameter} & \textbf{Default} & \textbf{Description} \\
\hline
interval & (Mandatory) & The window size.  \\
\texttt{[Empty\_Array]} & & The array to be correlated with the CDArrayMBS object. If this argument is an empty array, the sequence of numbers 0, 1, 2, 3, 4 ... will be used instead.
\end{tabular}
28.4.33 movMax(interval as Integer)


**Function:** Replaces each element of the CDArrayMBS object by its moving maximum.

**Notes:**
The interval parameter specifies the window size for computing moving average. The moving average is computed as the maximum of the current element with the previous (interval - 1) elements. No moving maximum can be computed for the first (interval - 1) elements, because there are insufficient previous elements. So the first (interval - 1) elements will be replaced with kNoValue.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>interval</td>
<td>(Mandatory)</td>
<td>The window size.</td>
</tr>
</tbody>
</table>

28.4.34 movMed(interval as Integer)


**Function:** Replaces each element of the CDArrayMBS object by its moving median.

**Notes:**
The interval parameter specifies the window size for computing moving average. The moving average is computed as the median of the current element with the previous (interval - 1) elements. No moving median can be computed for the first (interval - 1) elements, because there are insufficient previous elements. So the first (interval - 1) elements will be replaced with kNoValue.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>interval</td>
<td>(Mandatory)</td>
<td>The window size.</td>
</tr>
</tbody>
</table>

28.4.35 movMin(interval as Integer)


**Function:** Replaces each element of the CDArrayMBS object by its moving minimum.

**Notes:**
The interval parameter specifies the window size for computing moving average. The moving average is computed as the minimum of the current element with the previous (interval - 1) elements. No moving minimum can be computed for the first (interval - 1) elements, because there are insufficient previous elements. So the first (interval - 1) elements will be replaced with kNoValue.
### 28.4.36 movPercentile(interval as Integer, percentile as Double)


**Function:** Replaces each element of the CDArrayMBS object by its moving percentile.

**Notes:**

The interval parameter specifies the window size for computing moving average. The moving average is computed as the percentile of the current element with the previous (interval - 1) elements. No moving percentile can be computed for the first (interval - 1) elements, because there are insufficient previous elements. So the first (interval - 1) elements will be replaced with kNoValue.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>interval</td>
<td>(Mandatory)</td>
<td>The window size.</td>
</tr>
<tr>
<td>percentile</td>
<td>(Mandatory)</td>
<td>The percentile to be computed. It should be between 0 - 100.</td>
</tr>
</tbody>
</table>

### 28.4.37 movStdDev(interval as Integer)


**Function:** Replaces each element of the CDArrayMBS object by its moving standard deviation.

**Notes:**

The interval parameter specifies the window size for computing moving average. The moving average is computed as the standard deviation of the current element with the previous (interval - 1) elements. No moving standard deviation can be computed for the first (interval - 1) elements, because there are insufficient previous elements. So the first (interval - 1) elements will be replaced with kNoValue.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>interval</td>
<td>(Mandatory)</td>
<td>The window size.</td>
</tr>
</tbody>
</table>

### 28.4.38 mulArray(value as CDArrayMBS)


**Function:** Multiplies an array to the CDArrayMBS object.

**Notes:**

The array will be multiplied by multiplying each array element with the corresponding element of the CDArrayMBS object.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>interval</td>
<td>(Mandatory)</td>
<td>The window size.</td>
</tr>
</tbody>
</table>
Parameter | Default | Description
---|---|---
Values | (Mandatory) | A CDArrayMBS with numbers to be multiplied to the CDArrayMBS object.

See also:

- 28.4.39 mulArray(value() as Double)

### 28.4.39 mulArray(value() as Double)


**Function:** Multiplies an array to the CDArrayMBS object.

**Example:**

```vba
dim src(-1) as Double = Array( 63.1, 10.15, 6.15, 2.88 )
dim data As New CDArrayMBS(array(2.0, 2.0, 2.0, 2.0))
data.mulArray( src )
dim lines(-1) as string
lines.Append str(data.count)+" values:"
lines.Append ""
lines.Append str(data.getvalue(0))
lines.Append str(data.getvalue(1))
lines.Append str(data.getvalue(2))
lines.Append str(data.getvalue(3))
MsgBox Join(lines,EndOfLine)
```

**Notes:**

The array will be multiplied by multiplying each array element with the corresponding element of the CDArrayMBS object.

Parameter | Default | Description
---|---|---
b | (Mandatory) | An array of numbers to be multiplied to the CDArrayMBS object.

See also:

- 28.4.38 mulArray(value as CDArrayMBS)
### 28.4.40 mulValue(value as Double)


**Function:** Multiplies a number to every element of the CDArrayMBS object.

**Example:**

```vbs
dim data As New CDArrayMBS(array(1.0, 2.0, 3.0, 4.0))

data.mulValue(5)

dim lines(-1) as string

lines.Append str(data.count) + " values:"
lines.Append ""
lines.Append str(data.getvalue(0))
lines.Append str(data.getvalue(1))
lines.Append str(data.getvalue(2))
lines.Append str(data.getvalue(3))

MsgBox Join(lines, EndOfLine)
```

**Notes:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>(Mandatory)</td>
<td>A number to be multiplied to every element of the CDArrayMBS object.</td>
</tr>
</tbody>
</table>

### 28.4.41 percentile(p as Double)


**Function:** Gets the required percentile value of the elements of the CDArrayMBS object.

**Notes:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p</td>
<td>(Mandatory)</td>
<td>The percentile to get. It should be between 0 - 100.</td>
</tr>
</tbody>
</table>

### 28.4.42 rate(offset as Integer = 1)


**Function:** Divides each element of the CDArrayMBS object by an earlier element in the same CDArrayMBS object.

**Notes:**
28.4. CLASS CDARRAYMBS

Parameter Default Description
offset 1 The difference in position between an element and the earlier element to divide it.

28.4.43 replace(a as Double, b as Double)

Function: Finds elements that are equal to a given value and replace it with another value.
Notes:

Parameter Default Description
a (Mandatory) The value to be replaced.
b (Mandatory) The replacing value.

28.4.44 result as memoryblock

Function: Gets the content of the CDArrayMBS object as a memoryblock.

28.4.45 selectEQZ

Function: Selects the elements of the CDArrayMBS object by checking if the elements of the given decisionArray is equal to zero.
Notes:
The selected elements will be left unchanged. The remaining elements will be replaced by the given fillValue.

If the decisionArray is empty, the CDArrayMBS object itself will function as the decision array.

Parameter Default Description
decisionArray [ Empty_Array ] An array of numbers used to decide whether the corresponding elements in the CDArrayMBS object is selected or not.
fillValue 0 The value used to replace the elements that are not selected.

See also:

• 28.4.46 selectEQZ(decisionArray() as Double, fillValue as Double = 0)
28.4.46 \texttt{selectEQZ(\texttt{decisionArray()} as Double, fillValue as Double = 0)}

\textbf{Function}: Selects the elements of the CDArrayMBS object by checking if the elements of the given decisionArray is equal to zero.
\textbf{Notes}:
The selected elements will be left unchanged. The remaining elements will be replaced by the given fillValue.

If the decisionArray is empty, the CDArrayMBS object itself will function as the decision array.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>decisionArray</td>
<td>[ Empty_Array ]</td>
<td>An array of numbers used to decide whether the corresponding elements in the CDArrayMBS object is selected or not.</td>
</tr>
<tr>
<td>fillValue</td>
<td>0</td>
<td>The value used to replace the elements that are not selected.</td>
</tr>
</tbody>
</table>

See also:
- \texttt{28.4.45 selectEQZ}  

28.4.47 \texttt{selectGEZ}

\textbf{Function}: Selects the elements of the CDArrayMBS object by checking if the elements of the given decisionArray is greater than or equal to zero.
\textbf{Notes}:
If the decisionArray is empty, the CDArrayMBS object itself will function as the decision array.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>decisionArray</td>
<td>[ Empty_Array ]</td>
<td>An array of numbers used to decide whether the corresponding elements in the CDArrayMBS object is selected or not.</td>
</tr>
<tr>
<td>fillValue</td>
<td>0</td>
<td>The value used to replace the elements that are not selected.</td>
</tr>
</tbody>
</table>

See also:
- \texttt{28.4.48 selectGEZ(\texttt{decisionArray()} as Double, fillValue as Double = 0)}

28.4.48 \texttt{selectGEZ(\texttt{decisionArray()} as Double, fillValue as Double = 0)}

\textbf{Function}: Selects the elements of the CDArrayMBS object by checking if the elements of the given decisionArray is greater than or equal to zero.
\textbf{Notes}:
If the decisionArray is empty, the CDArrayMBS object itself will function as the decision array.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>decisionArray</td>
<td>[ Empty_Array ]</td>
<td>An array of numbers used to decide whether the corresponding elements in the CDArrayMBS object is selected or not.</td>
</tr>
<tr>
<td>fillValue</td>
<td>0</td>
<td>The value used to replace the elements that are not selected.</td>
</tr>
</tbody>
</table>

See also:
- 28.4.47 selectGEZ

### 28.4.49 selectGTZ


**Function:** Selects the elements of the CDArrayMBS object by checking if the elements of the given decisionArray is greater than zero.

**Notes:**

The selected elements will be left unchanged. The remaining elements will be replaced by the given fillValue.

If the decisionArray is empty, the CDArrayMBS object itself will function as the decision array.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>decisionArray</td>
<td>[ Empty_Array ]</td>
<td>An array of numbers used to decide whether the corresponding elements in the CDArrayMBS object is selected or not.</td>
</tr>
<tr>
<td>fillValue</td>
<td>0</td>
<td>The value used to replace the elements that are not selected.</td>
</tr>
</tbody>
</table>

See also:
- 28.4.50 selectGTZ(decisionArray() as Double, fillValue as Double = 0)

### 28.4.50 selectGTZ(decisionArray() as Double, fillValue as Double = 0)


**Function:** Selects the elements of the CDArrayMBS object by checking if the elements of the given decisionArray is greater than zero.

**Notes:**

The selected elements will be left unchanged. The remaining elements will be replaced by the given fillValue.

If the decisionArray is empty, the CDArrayMBS object itself will function as the decision array.
### Parameter Default Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>decisionArray</td>
<td>[ Empty_Array ]</td>
<td>An array of numbers used to decide whether the corresponding elements in the CDArrayMBS object is selected or not.</td>
</tr>
<tr>
<td>fillValue</td>
<td>0</td>
<td>The value used to replace the elements that are not selected.</td>
</tr>
</tbody>
</table>

See also:

- **28.4.49 selectGTZ**
- **28.4.51 selectLEZ**

#### 28.4.51 selectLEZ

**Function:** Selects the elements of the CDArrayMBS object by checking if the elements of the given decisionArray is less than or equal to zero.

**Notes:**

The selected elements will be left unchanged. The remaining elements will be replaced by the given fillValue.

If the decisionArray is empty, the CDArrayMBS object itself will function as the decision array.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>decisionArray</td>
<td>[ Empty_Array ]</td>
<td>An array of numbers used to decide whether the corresponding elements in the CDArrayMBS object is selected or not.</td>
</tr>
<tr>
<td>fillValue</td>
<td>0</td>
<td>The value used to replace the elements that are not selected.</td>
</tr>
</tbody>
</table>

See also:

- **28.4.52 selectLEZ(decisionArray() as Double, fillValue as Double = 0)**

#### 28.4.52 selectLEZ(decisionArray() as Double, fillValue as Double = 0)

**Function:** Selects the elements of the CDArrayMBS object by checking if the elements of the given decisionArray is less than or equal to zero.

**Notes:**

The selected elements will be left unchanged. The remaining elements will be replaced by the given fillValue.

If the decisionArray is empty, the CDArrayMBS object itself will function as the decision array.

See also:

- **28.4.51 selectLEZ**
### 28.4. CLASS CDARRAYMBS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>decisionArray</td>
<td>[ Empty_Array ]</td>
<td>An array of numbers used to decide whether the corresponding elements in the CDArrayMBS object is selected or not.</td>
</tr>
<tr>
<td>fillValue</td>
<td>0</td>
<td>The value used to replace the elements that are not selected.</td>
</tr>
</tbody>
</table>

#### 28.4.53 selectLTZ

**MBS ChartDirector Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:** Selects the elements of the CDArrayMBS object by checking if the elements of the given decisionArray is less than zero.

**Notes:**

The selected elements will be left unchanged. The remaining elements will be replaced by the given fillValue.

If the decisionArray is empty, the CDArrayMBS object itself will function as the decision array.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>decisionArray</td>
<td>[ Empty_Array ]</td>
<td>An array of numbers used to decide whether the corresponding elements in the CDArrayMBS object is selected or not.</td>
</tr>
<tr>
<td>fillValue</td>
<td>0</td>
<td>The value used to replace the elements that are not selected.</td>
</tr>
</tbody>
</table>

See also:

- 28.4.54 selectLTZ(decisionArray() as Double, fillValue as Double = 0)

#### 28.4.54 selectLTZ(decisionArray() as Double, fillValue as Double = 0)

**MBS ChartDirector Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:** Selects the elements of the CDArrayMBS object by checking if the elements of the given decisionArray is less than zero.

**Notes:**

The selected elements will be left unchanged. The remaining elements will be replaced by the given fillValue.

If the decisionArray is empty, the CDArrayMBS object itself will function as the decision array.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>decisionArray</td>
<td>[ Empty_Array ]</td>
<td>An array of numbers used to decide whether the corresponding elements in the CDArrayMBS object is selected or not.</td>
</tr>
<tr>
<td>fillValue</td>
<td>0</td>
<td>The value used to replace the elements that are not selected.</td>
</tr>
</tbody>
</table>

See also:
28.4.55 selectNEZ


**Function:** The selected elements will be left unchanged. The remaining elements will be replaced by the given fillValue.

**Notes:**

If the decisionArray is empty, the CDArrayMBS object itself will function as the decision array.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>decisionArray</td>
<td>[ Empty_Array ]</td>
<td>An array of numbers used to decide whether the corresponding elements in the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CDArrayMBS object is selected or not.</td>
</tr>
<tr>
<td>fillValue</td>
<td>0</td>
<td>The value used to replace the elements that are not selected.</td>
</tr>
</tbody>
</table>

See also:

- 28.4.56 selectNEZ(decisionArray() as Double, fillValue as Double = 0)

28.4.56 selectNEZ(decisionArray() as Double, fillValue as Double = 0)


**Function:** The selected elements will be left unchanged. The remaining elements will be replaced by the given fillValue.

**Notes:**

If the decisionArray is empty, the CDArrayMBS object itself will function as the decision array.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>decisionArray</td>
<td>[ Empty_Array ]</td>
<td>An array of numbers used to decide whether the corresponding elements in the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CDArrayMBS object is selected or not.</td>
</tr>
<tr>
<td>fillValue</td>
<td>0</td>
<td>The value used to replace the elements that are not selected.</td>
</tr>
</tbody>
</table>

See also:

- 28.4.55 selectNEZ

28.4.57 selectRegularSpacing(majorTickStep as Integer, minorTickStep as Integer = 0, initialMargin as Integer = 0)


**Function:** Selects an evenly spaced subset of elements of the CDArrayMBS object.
28.4. CLASS CDARRAYMBS

Notes:
The primary purpose of this method is to select the regularly spaced elements as ticks on an enumerated axis.

For example, if the majorTickStep is 10, and minorTickStep is 5, this method will select one out of 10 elements as major tick elements, and one out of 5 elements as minor tick elements.

Major tick elements will remain intact. The remaining minor ticks elements will have their values replaced with MinorTickOnly. Non-selected elements will have their values replaced with kNoValue, so they will not appear on the axis. The resulting array can be used directly in Axis.setLabels.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>majorTickStep</td>
<td>(Mandatory)</td>
<td>The spacing between major ticks.</td>
</tr>
<tr>
<td>minorTickStep</td>
<td>0</td>
<td>The spacing between minor ticks. The default value of 0 means no minor tick will be used.</td>
</tr>
<tr>
<td>initialMargin</td>
<td>0</td>
<td>The position of the first tick.</td>
</tr>
</tbody>
</table>

28.4.58 selectStartOfDay(majorTickStep as Integer = 1, initialMargin as Double = 10800.0)


Function: Selects the elements of the CDArrayMBS object that represents a different day from the previous element.

Notes:
This method assumes the elements of the CDArrayMBS object are dates/times.

The primary purpose of this method is to select the appropriate elements as ticks on an enumerated axis.

Suppose you want to plot a variable against time. The x-values of the data points will be an array of dates/times. If an enumerated x-axis is used (see Axis.setLabels), there will be a tick at every data point, which may be too dense if there are too many data points.

This method can be used to reduce the ticks to one tick per day (or one tick per multiple days). This is by selecting the dates/times in the data array only if it is not the same day as the previous element in the array. The selected elements will be left unchanged, while the elements not select will be replaced by kNoValue. The resulting array can be used directly in Axis.setLabels.

For the first data point, there is no previous data point to compare, so it is handled differently. The first data point will be selected if it is near the beginning of the day it represents. By default, near means within 3 hours (10800 seconds). This is configurable using the initialMargin argument.
Note that if the data points does not have data in a certain time range, no element can be selected in that time range, and so there will be no tick for that time range. This is appropriate for many chart types, such as finance charts, in which missing time ranges (non-trading hours, holidays, etc) are traditionally skipped.

However, if the data points may contain missing time ranges, but the ticks cannot be skipped, it may be more appropriate to use a non-enumerated x-axis by using Layer.setXData and Axis.setDateScale.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>majorTickStep</td>
<td>1</td>
<td>The tick step. The default value of 1 means one tick per day. A value of n means one tick per n days.</td>
</tr>
<tr>
<td>initialMargin</td>
<td>10800</td>
<td>The margin for the first data point. The first data point will be selected if it is within initialMargin number of seconds from beginning of the day it represents. The default is 3 hours (10800 seconds).</td>
</tr>
</tbody>
</table>

28.4.59 selectStartOfHour(majorTickStep as Integer = 1, initialMargin as Double = 300.0)

MBS ChartDirector Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Selects the elements of the CDArrayMBS object that represents a different hour from the previous element. **Notes:**

This method assumes the elements of the CDArrayMBS object are dates/times.

The primary purpose of this method is to select the appropriate elements as ticks on an enumerated axis.

Suppose you want to plot a variable against time. The x-values of the data points will be an array of dates/times. If an enumerated x-axis is used (see Axis.setLabels), there will be a tick at every data point, which may be too dense if there are too many data points.

This method can be used to reduce the ticks to one tick per hour (or one tick per multiple hours). This is by selecting the dates/times in the data array only if it is not the same hour as the previous element in the array. The selected elements will be left unchanged, while the elements not select will be replaced by kNoValue. The resulting array can be used directly in Axis.setLabels2.

For the first data point, there is no previous data point to compare, so it is handled differently. The first data point will be selected if it is near the beginning of the hour it represents. By default, near means within 300 seconds. This is configurable using the initialMargin argument.
28.4. CLASS CDARRAYMBS

Note that if the data points does not have data in a certain time range, no element can be selected in that time range, and so there will be no tick for that time range. This is appropriate for many chart types, such as finance charts, in which missing time ranges (non-trading hours, holidays, etc) are traditionally skipped.

However, if the data points may contain missing time ranges, but the ticks cannot be skipped, it may be more appropriate to use a non-enumerated x-axis by using Layer.setXData and Axis.setDateScale.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>majorTickStep</td>
<td>1</td>
<td>The tick step. The default value of 1 means one tick per hour. A value of n means one tick per n hours.</td>
</tr>
<tr>
<td>initialMargin</td>
<td>300</td>
<td>The margin for the first data point. The first data point will be selected if it is within initialMargin number of seconds from beginning of the hour it represents. The default is 300 seconds.</td>
</tr>
</tbody>
</table>

28.4.60 selectStartOfMinute(majorTickStep as Integer = 1, initialMargin as Double = 5.0)

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Selects the elements of the array that represents a different minute from the previous element.

Notes:

This method assumes the elements of the ArrayMath object are dates/times.

The primary purpose of this method is to select the appropriate elements as ticks on an enumerated axis.

Suppose you want to plot a variable against time. The x-values of the data points will be an array of dates/times. If an enumerated x-axis is used (see CDAxisMBS.setLabels), there will be a tick at every data point, which may be too dense if there are too many data points.

This method can be used to reduce the ticks to one tick per minute (or one tick per multiple minutes). This is by selecting the dates/times in the data array only if it is not the same minute as the previous element in the array. The selected elements will be left unchanged, while the elements not select will be replaced by kNoValue. The resulting array can be used directly in CDAxisMBS.setLabels2.

For the first data point, there is no previous data point to compare, so it is handled differently. The first data point will be selected if it is near the beginning of the minute it represents. By default, near means within 5 seconds. This is configurable using the initialMargin argument.

Note that if the data points does not have data in a certain time range, no element can be selected in that time range, and so there will be no tick for that time range. This is appropriate for many chart types, such as finance charts, in which missing time ranges (non-trading hours, holidays, etc) are traditionally skipped.
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However, if the data points may contain missing time ranges, but the ticks cannot be skipped, it may be more appropriate to use a non-enumerated x-axis by using CDLayerMBS.setXData and CDAxisMBS.setDateScale3 (or CDAxisMBS.setDateScale or CDAxisMBS.setDateScale2).

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>majorTickStep</td>
<td>1</td>
<td>The tick step. A value of n means one tick per n minutes.</td>
</tr>
<tr>
<td>initialMargin</td>
<td>5</td>
<td>The margin for the first data point. The first data point will be selected if it is within initialMargin number of seconds from beginning of the minute it represents. The default is 5 seconds.</td>
</tr>
</tbody>
</table>

28.4.61 selectStartOfDay(majorTickStep as Integer = 1, initialMargin as Double = 432000.0)


**Function:** Selects the elements of the CDArrayMBS object that represents a different month from the previous element.

**Notes:**
This method assumes the elements of the CDArrayMBS object are dates/times.

The primary purpose of this method is to select the appropriate elements as ticks on an enumerated axis.

Suppose you want to plot a variable against time. The x-values of the data points will be an array of dates/times. If an enumerated x-axis is used (see Axis.setLabels), there will be a tick at every data point, which may be too dense if there are too many data points.

This method can be used to reduce the ticks to one tick per month (or one tick per multiple months). This is by selecting the dates/times in the data array only if it is not the same month as the previous element in the array. The selected elements will be left unchanged, while the elements not select will be replaced by kNoValue. The resulting array can be used directly in Axis.setLabels.

For the first data point, there is no previous data point to compare, so it is handled differently. The first data point will be selected if it is near the beginning of the month it represents. By default, near means within 5 days (432000 seconds). This is configurable using the initialMargin argument.

Note that if the data points does not have data in a certain time range, no element can be selected in that time range, and so there will be no tick for that time range. This is appropriate for many chart types, such as finance charts, in which missing time ranges (non-trading hours, holidays, etc) are traditionally skipped.
However, if the data points may contain missing time ranges, but the ticks cannot be skipped, it may be more appropriate to use a non-enumerated x-axis by using Layer.setXData and Axis.setDateScale.

### Parameter Default Description

- **majorTickStep**: 1
  - The tick step. The default value of 1 means one tick per month. A value of n means one tick per n months.

- **initialMargin**: 432000
  - The margin for the first data point. The first data point will be selected if it is within initialMargin number of seconds from beginning of the month it represents. The default is 5 days (432000 seconds).

#### 28.4.62 selectStartOfSecond(majorTickStep as Integer = 1, initialMargin as Double = 0.1)

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Selects the elements of the ArrayMath object that represents a different second from the previous element.

**Notes:**

This method assumes the elements of the ArrayMath object are dates/times.

The primary purpose of this method is to select the appropriate elements as ticks on an enumerated axis.

Suppose you want to plot a variable against time. The x-values of the data points will be an array of dates/times. If an enumerated x-axis is used (see CDAxisMBS.setLabels), there will be a tick at every data point, which may be too dense if there are too many data points.

This method can be used to reduce the ticks to one tick per second (or one tick per multiple seconds). This is by selecting the dates/times in the data array only if it is not the same second as the previous element in the array. The selected elements will be left unchanged, while the elements not select will be replaced by NoValue. The resulting array can be used directly in CDAxisMBS.setLabels2.

For the first data point, there is no previous data point to compare, so it is handled differently. The first data point will be selected if it is near the beginning of the second it represents. By default, near means within 0.1 second. This is configurable using the initialMargin argument.

Note that if the data points does not have data in a certain time range, no element can be selected in that time range, and so there will be no tick for that time range. This is appropriate for many chart types, such as finance charts, in which missing time ranges (non-trading hours, holidays, etc) are traditionally skipped.

However, if the data points may contain missing time ranges, but the ticks cannot be skipped, it may be more appropriate to use a non-enumerated x-axis by using CDLayerMBS.setXData and CDAxisMBS.set-
CHAPTER 28. CHARTDIRECTOR

DateScale3 (or CDAxisMBS.setDateScale or CDAxisMBS.setDateScale2).

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>majorTickStep</td>
<td>1</td>
<td>The tick step. A value of n means one tick per n seconds.</td>
</tr>
<tr>
<td>initialMargin</td>
<td>0.1</td>
<td>The margin for the first data point. The first data point will be selected if it is within initialMargin number of seconds from beginning of the second it represents. The default is 0.1 second.</td>
</tr>
</tbody>
</table>

28.4.63 selectStartOfWeek(majorTickStep as Integer = 1, initialMargin as Double = 172800.0)


**Function:** Selects the elements of the CDArrayMBS object that represents a different week from the previous element.

**Notes:**

This method assumes the elements of the CDArrayMBS object are dates/times.

The primary purpose of this method is to select the appropriate elements as ticks on an enumerated axis.

Suppose you want to plot a variable against time. The x-values of the data points will be an array of dates/times. If an enumerated x-axis is used (see Axis.setLabels), there will be a tick at every data point, which may be too dense if there are too many data points.

This method can be used to reduce the ticks to one tick per week (or one tick per multiple weeks). This is by selecting the dates/times in the data array only if it is not the same week as the previous element in the array. The selected elements will be left unchanged, while the elements not select will be replaced by kNoValue. The resulting array can be used directly in Axis.setLabels.

For the first data point, there is no previous data point to compare, so it is handled differently. The first data point will be selected if it is near the beginning of the week it represents. By default, near means within 2 days (172800 seconds). This is configurable using the initialMargin argument.

Note that if the data points does not have data in a certain time range, no element can be selected in that time range, and so there will be no tick for that time range. This is appropriate for many chart types, such as finance charts, in which missing time ranges (non-trading hours, holidays, etc) are traditionally skipped.

However, if the data points may contain missing time ranges, but the ticks cannot be skipped, it may be more appropriate to use a non-enumerated x-axis by using Layer.setXData and Axis.setDateScale.
## 28.4. CLASS CDARRAYMBS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>majorTickStep</td>
<td>1</td>
<td>The tick step. The default value of 1 means one tick per week. A value of n</td>
</tr>
<tr>
<td></td>
<td></td>
<td>means one tick per n weeks.</td>
</tr>
<tr>
<td>initialMargin</td>
<td>172800</td>
<td>The margin for the first data point. The first data point will be selected if</td>
</tr>
<tr>
<td></td>
<td></td>
<td>it is within initialMargin number of seconds from beginning of the week it</td>
</tr>
<tr>
<td></td>
<td></td>
<td>represents. The default is 2 days (172800 seconds).</td>
</tr>
</tbody>
</table>

### 28.4.64 selectStartOfYear(majorTickStep as Integer = 1, initialMargin as Double = 5184000.0)


**Function:** Selects the elements of the CDArrayMBS object that represents a different year from the previous element.

**Notes:**

This method assumes the elements of the CDArrayMBS object are dates/times. The primary purpose of this method is to select the appropriate elements as ticks on an enumerated axis.

Suppose you want to plot a variable against time. The x-values of the data points will be an array of dates/times. If an enumerated x-axis is used (see Axis.setLabels), there will be a tick at every data point, which may be too dense if there are too many data points.

This method can be used to reduce the ticks to one tick per year (or one tick per multiple years). This is by selecting the dates/times in the data array only if it is not the same year as the previous element in the array. The selected elements will be left unchanged, while the elements not select will be replaced by kNoValue. The resulting array can be used directly in Axis.setLabels.

For the first data point, there is no previous data point to compare, so it is handled differently. The first data point will be selected if it is near the beginning of the year it represents. By default, near means within 60 days (5184000 seconds). This is configurable using the initialMargin argument.

Note that if the data points does not have data in a certain time range, no element can be selected in that time range, and so there will be no tick for that time range. This is appropriate for many chart types, such as finance charts, in which missing time ranges (non-trading hours, holidays, etc) are traditionally skipped.

However, if the data points may contain missing time ranges, but the ticks cannot be skipped, it may be more appropriate to use a non-enumerated x-axis by using Layer.setXData and Axis.setDateScale.
Parameter | Default | Description
--- | --- | ---
majorTickStep | 1 | The tick step. The default value of 1 means one tick per year. A value of \( n \) means one tick per \( n \) years.
initialMargin | 5184000 | The margin for the first data point. The first data point will be selected if it is within initialMargin number of seconds from beginning of the year it represents. The default is 60 days (5184000 seconds).

28.4.65 \( \text{shift}(\text{offset as Integer } = 1) \)


**Function:** Shifts the array "rightwards".

**Notes:**

If the array does not have any kNoValue data points, this method will shift the point at position "\( n \)" to "\( n + \text{offset} \)". On the "right" side of the array (the side with the largest index), points that are shifted outside the array will be discarded. On the "left" side of the array, fillValue data points will be shifted in.

If the array contains kNoValue data points, these points are not shifted. Conceptually, one can imagine the non-NoValue points being shifted to the next non-NoValue positions, and the process repeats offset number of times.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>offset</td>
<td>1</td>
<td>The number of positions to shift the array &quot;rightwards.&quot;</td>
</tr>
<tr>
<td>fillValue</td>
<td>kNoValue</td>
<td>The new value to be shifted into the array.</td>
</tr>
</tbody>
</table>

See also:

- 28.4.66 \( \text{shift}(\text{offset as Integer, fillValue as Double}) \)

28.4.66 \( \text{shift}(\text{offset as Integer, fillValue as Double}) \)


**Function:** Shifts the array "rightwards".

**Notes:**

If the array does not have any kNoValue data points, this method will shift the point at position "\( n \)" to "\( n + \text{offset} \)". On the "right" side of the array (the side with the largest index), points that are shifted outside the array will be discarded. On the "left" side of the array, fillValue data points will be shifted in.

If the array contains kNoValue data points, these points are not shifted. Conceptually, one can imagine the non-NoValue points being shifted to the next non-NoValue positions, and the process repeats offset number of times.
28.4. CLASS CDARRAYMBS

Parameter | Default | Description
----------|---------|------------------
offset     | 1       | The number of positions to shift the array "rightwards."
fillValue  | kNoValue| The new value to be shifted into the array.

See also:

- 28.4.65 shift(offset as Integer = 1)

28.4.67 stdDev as Double


**Function:** Gets the stdDev value of the elements of the CDArrayMBS object.

**Example:**

```plaintext
dim data As New CDArrayMBS(array(1.0, 2.0, 3.0, 4.0))
MsgBox str(data.stdDev) // shows 1.118034
```

28.4.68 subArray(value as CDArrayMBS)


**Function:** Subtracts an array from the CDArrayMBS object.

**Notes:**

The array will be subtracted by subtracting each array element from the corresponding element of the CDArrayMBS object.

Parameter | Default | Description
----------|---------|------------------
Values     | (Mandatory) | A CDArrayMBS with numbers to be subtracted from the CDArrayMBS object.

See also:

- 28.4.69 subArray(value() as Double)

28.4.69 subArray(value() as Double)


**Function:** Subtracts an array from the CDArrayMBS object.

**Example:**

```plaintext
dim src(-1) as Double = Array( 63.1, 10.15, 6.15, 2.88 )
dim data As New CDArrayMBS(array(1.0, 1.0, 1.0, 1.0))
```


```vbnet
data.subArray( src )

dim lines(-1) as string

lines.Append str(data.count)+" values:")
lines.Append ""
lines.Append str(Data.getvalue(0))
lines.Append str(Data.getvalue(1))
lines.Append str(Data.getvalue(2))
lines.Append str(Data.getvalue(3))

MsgBox Join(lines,EndOfLine)
```

**Notes:**

The array will be subtracted by subtracting each array element from the corresponding element of the CDArrayMBS object.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>(Mandatory)</td>
<td>An array of numbers to be subtracted from the CDArrayMBS object.</td>
</tr>
</tbody>
</table>

See also:

- 28.4.68 subArray(value as CDArrayMBS)

**28.4.70 subValue(value as Double)**


**Function:** Subtracts a number from every element of the CDArrayMBS object.

**Example:**

```vbnet
dim data As New CDArrayMBS(array(1.0, 2.0, 3.0, 4.0))
data.subValue(5)

dim lines(-1) as string

lines.Append str(data.count)+" values:")
lines.Append ""
lines.Append str(Data.getvalue(0))
lines.Append str(Data.getvalue(1))
lines.Append str(Data.getvalue(2))
lines.Append str(Data.getvalue(3))
```
28.4. **CLASS CDARRAYMBS**

MsgBox Join(lines,EndOfLine)

**Notes:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>(Mandatory)</td>
<td>A number to be subtracted from every element of the CDArrayMBS object.</td>
</tr>
</tbody>
</table>

### 28.4.71 sum as Double

**MBS ChartDirector Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:** Gets the sum value of the elements of the CDArrayMBS object.

**Example:**

```vbnet
dim data As New CDArrayMBS(array(1.0, 2.0, 3.0, 4.0))
MsgBox str(data.sum) // shows 10.0
```

### 28.4.72 trim(startIndex as Integer = 0, len as Integer = -1)

**MBS ChartDirector Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:** Trims the CDArrayMBS object by keeping only some elements in the middle.

**Notes:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>startIndex</td>
<td>0</td>
<td>The index for the first element to keep.</td>
</tr>
<tr>
<td>len</td>
<td>-1</td>
<td>The number of elements to keep. -1 means keeping all elements from the startIndex to the end of the array.</td>
</tr>
</tbody>
</table>

### 28.4.73 Values as Double()

**MBS ChartDirector Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:** Copies all the values of this array object into a REALbasic array.

**Notes:** On error the array returned is empty.
### 28.5 class CDAxisMBS

#### 28.5.1 class CDAxisMBS

**Function:** The Axis class represents x and y axes in XY charts.  
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

### 28.5.2 Methods

#### 28.5.3 addLabel(pos as Double, label as string)

**Function:** Adds an extra label on the axis.  
**Notes:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>pos</td>
<td>(Mandatory)</td>
<td>The position on the axis to add the label.</td>
</tr>
<tr>
<td>label</td>
<td>(Mandatory)</td>
<td>The text label to add.</td>
</tr>
</tbody>
</table>

#### 28.5.4 addMark(value as Double, lineColor as color, text as string = "", font as string = "", fontsize as Double = 8) as CDMarkMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Same as the other addMark method, but uses color instead of integer data type for passing color values.  
**See also:**

- 28.5.5 addMark(value as Double, lineColor as Integer, text as string = "", font as string = "", fontsize as Double = 8) as CDMarkMBS

#### 28.5.5 addMark(value as Double, lineColor as Integer, text as string = "", font as string = "", fontsize as Double = 8) as CDMarkMBS

**Function:** Adds a mark line to the chart.  
**Notes:**  
A mark line is a line drawn on the plot area. This line is usually used to indicate some special values, such as a "target value", "threshold value", "target date", etc.
A mark line attached to the horizontal axis will be vertical across the plot area. A mark line drawn using the vertical axis will be horizontal across the plot area. In either case, the mark line label will be added to the axis at the mark line position.

The location of the mark line label can be changed by using TextBox.setAlignment. For example, by setting the alignment to TopCenter, the mark line label will be drawn on the top center of the mark line.

By default, the mark line is drawn at the front of the chart layers. You may change it to draw at the back of the plot area (that is, like grid lines) using Mark.setDrawOnTop.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>value</td>
<td>(Mandatory)</td>
<td>The value on the axis to draw the mark line.</td>
</tr>
<tr>
<td>lineColor</td>
<td>(Mandatory)</td>
<td>The color of the mark line.</td>
</tr>
<tr>
<td>text</td>
<td>&quot;&quot;</td>
<td>The text label for the mark line. An empty string means there is no text label. By default, the text label and the tick on the axis will be drawn using the same color as the mark line. You can modify the colors by using the Mark.setMarkColor method.</td>
</tr>
<tr>
<td>font</td>
<td>&quot;&quot;</td>
<td>The font used to draw the text label.</td>
</tr>
<tr>
<td>fontSize</td>
<td>8</td>
<td>The font size used to draw the text label in points.</td>
</tr>
</tbody>
</table>

See also:

- 28.5.4 addMark(value as Double, lineColor as color, text as string = "", font as string = "", fontsize as Double = 8) as CDMarkMBS

28.5.6 addZone(startValue as Double, endValue as Double, colorvalue as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addZone method, but uses color instead of integer data type for passing color values.

See also:

- 28.5.7 addZone(startValue as Double, endValue as Double, colorvalue as Integer)
A zone is a range of values. For example, "10 to 20" is a zone. Typically, zones are used to classify data ranges. For example, you may classify 0 - 60 as the normal zone, 60 - 90 as the warning zone, and 90 - 100 as the critical zone.

A zone based on a horizontal axis will be drawn as a vertical band. A zone based on a vertical axis will be drawn as a horizontal band. Zones are always drawn at the back of the plot area.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>startValue</td>
<td>(Mandatory)</td>
<td>The start value (the lower bound) for the zone.</td>
</tr>
<tr>
<td>endValue</td>
<td>(Mandatory)</td>
<td>The end value (the upper bound) for the zone.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the zone.</td>
</tr>
</tbody>
</table>

See also:

- 28.5.6 addZone(startValue as Double, endValue as Double, colorvalue as color)

28.5.8 Constructor

MBS ChartDirector Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The private constructor.

28.5.9 copyAxis(axis as CDAxisMBS)

Function: Copies the scale and labels from another axis.
Notes:
This method is typically used to ensure the axes on different charts are identical. For example, if multiple charts are drawn and are stacked up, and you want the x-axes of the charts to be the same for easy comparison, you may copy the x-axis from one chart to the other charts.

The differences between copyAxis and Axis.syncAxis are:

Axis.syncAxis relates the axes with a linear relationship, so the axes may not be exact copies of one another.

Axis.syncAxis synchronizes axis scale and copies only scale related labels, such as the labels generated by auto-scaling, Axis.setLinearScale, Axis.setLogScale or Axis.setDateScale.

copyAxis copies all labels, including labels created using Axis.setLabels, which may be arbitrary text.
28.5. CLASS CDAXISMBS

Parameter | Default | Description
---|---|---
axis | (Mandatory) | The axis to copy from.

28.5.10 getAlignment as Integer

Function: Gets the side of the plot area that the axis is associated with.
Notes: This method is only applicable to XYChart objects.

28.5.11 getAxisImageMap(noOfSegments as Integer, mapWidth as Integer, url as string, queryFormat as string = "", extraAttr as string = "", offsetX as Integer = 0, offsetY as Integer = 0) as string

Function: Generates an HTML image map for the axis itself.
Notes:
This method is similar to Axis.getHTMLImageMap. The difference is instead of generating an image map for the labels, it generates an image map for the axis itself. The axis will be divided into a number of segments, with an image map entry created for each segment.

Parameter | Default | Description
---|---|---
noOfSegments | (Mandatory) | The number of segments to divide the axis into.
mapWidth | (Mandatory) | The width of the axis used for the purpose of generating the image map.
url | (Mandatory) | The URL to be used in the "href" attribute of the image map. Parameter Substitution and Formatting is supported. Use an empty string if no href attribute is needed.
queryFormat | "" | A text string representing the template of the query parameters to be appended to the URL. Parameter Substitution and Formatting is supported. The special keyword "{ default }" represents the default query parameters. This is useful for specifying appending to the default. Note that an empty string means to use the default query query parameters. To specify no query parameter, use a space character.
extraAttr | "" | A text string to specify additional attributes to add to the <area> tag. Parameter Substitution and Formatting is supported.
offsetX | 0 | An offset to be added to all x coordinates in the image map. This is useful if the current image will be shifted and inserted into another image. In this case, the image map will need to be shifted by the same offset.
offsetY | 0 | An offset to be added to all y coordinates in the image map. See offsetX above for description.
28.5.12  getCoor(value as Double) as Integer

Function: Gets the geometric coordinates given the data value.

28.5.13  getFormattedLabel(v as Double, options as string = "") as string

Function: Gets the label at the specified position on the axis, formatting one if necessary.
Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>v (Mandatory)</td>
<td></td>
<td>The position specified as a value on the axis scale.</td>
</tr>
<tr>
<td>formatString</td>
<td>&quot;&quot;</td>
<td>The format string used to format a label if necessary. Please refer to Axis.setLabelFormat for the syntax of the format string. An empty string means the format will be automatically determined.</td>
</tr>
</tbody>
</table>

28.5.14  getHTMLImageMap(url as string, queryFormat as string = "", extraAttr as string = "", offsetX as Integer = 0, offsetY as Integer = 0) as string

Function: Generates an HTML image map for the axis labels.
Notes:

This method should be called only after creating the chart image (eg. using BaseChart.makeChart). The image map cannot be determined without creating the chart image first.

This method accepts a URL as its argument. When generating an image map, it appends query parameters to the URL to indicate which legend entry the user has clicked.

The following is an example image map generated for an axis with 3 labels.

```html
<area shape="rect" coords="30,220,70,239" href="handler.asp?value=0&label=John">
<area shape="rect" coords="70,220,110,239" href="handler.asp?value=1&label=Mary">
<area shape="rect" coords="110,220,150,239" href="handler.asp?value=2&label=Peter">
```

The image map consists of multiple <area> tags, one for each label. In the "href" attributes, query parameters are appended to the URL to provide information on the label clicked.
28.5. **CLASS CDAXISMBS**

The image map produces by ChartDirector does not include the `<map>` and `</map>` tag. This is intentional so that you can add additional custom `<area>` tags to the image map, or append multiple image maps together.

The format of the appended URL parameters is determined using the queryFormat argument, which by default is:

```
value={value} & label={label}
```

The texts in curly brackets (i.e. `{value}`, `{label}`) will be replaced by the actual values when generating the image map. For example, `{label}` will be replaced by the label text.

Please refer to Parameter Substitution and Formatting on all available parameters and how to format them.

In addition to customizing the query parameters, ChartDirector supports additional HTML attributes in the `<area>` tags using the extraAttr argument.

For example, the following extraAttr will add a "title" HTML attribute to every `<area>` tag. The "title" attribute will be displayed as "tool tip" when the mouse moves over the image map.

```
title='Click me for details on {label} '
```

Another common usage of the extraAttr argument is to add "onmouseover" and "onmouseout" HTML attributes to handle user interaction using Javascript on the browser.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>url</td>
<td>(Mandatory)</td>
<td>The URL to be used in the &quot;href&quot; attribute of the image map.</td>
</tr>
</tbody>
</table>

Parameter Substitution and Formatting is supported. Use an empty string if no href attribute is needed.

### 28.5.15 `getLabel(i as Double) as string`


**Function:** Gets the label at the specified position on the axis.

**Notes:**

Return Value

Returns the label at the specified position, or a "" string if there is no label at that position.
queryFormat ""  A text string representing the template of the query parameters to be appended to the URL. Parameter Substitution and Formatting is supported. The special keyword " { default } " represents the default query parameters. This is useful for specifying appending to the default. Note that an empty string means to use the default query query parameters. To specify no query parameter, use a space character.

extraAttr ""  A text string to specify additional attributes to add to the <area> tag. Parameter Substitution and Formatting is supported.

offsetX 0  An offset to be added to all x coordinates in the image map. This is useful if the current image will be shifted and inserted into another image. In this case, the image map will need to be shifted by the same offset.

offsetY 0  An offset to be added to all y coordinates in the image map. See offsetX above for description.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>(Mandatory)</td>
<td>The position specified as a value on the axis scale.</td>
</tr>
</tbody>
</table>

### 28.5.16 getLabelTable as CDMLTableMBS

**Function:** Gets the CDML table created by CDAxisMBS.makeLabelTable.

### 28.5.17 getMaxValue as Double

**Function:** Gets the upper bound of the axis.  
**Notes:** The upper bound of an axis is known only after auto-scaling. So this method should be called only after ChartDirector has finished auto-scaling (e.g. after calling BaseChart.layout to explicitly auto-scale the axis).

### 28.5.18 getMinValue as Double

**Function:** Gets the lower bound of the axis.  
**Notes:** The lower bound of an axis is known only after auto-scaling. So this method should be called only after ChartDirector has finished auto-scaling (e.g. after calling BaseChart.layout to explicitly auto-scale the axis).
28.5.19 getThickness as Integer


Function: Gets the thickness of the axis.

Notes:

The axis can be considered as a line, with one side facing the internal of the plot area, and the other side not facing the plot area. By default, the latter side includes the axis labels and axis title (although ChartDirector allows the axis to be configured so that the labels and titles are internal to the plot area).

The thickness of an axis only refers to the thickness of the side not facing the plot area. For a vertical axis, it is the width of the bounding box of that side, including the axis ticks, labels and title if they are on that side. For a horizontal axis, it is the height of the bounding box.

The intention of this method is to allow the chart to be adjusted to leave enough space for the axis labels and title.

This method should be called only after axis layout (after calling CXYChartMBS.layoutAxes, CDBaseChartMBS.layout or CXYChartMBS.packPlotArea).

Arguments:
None

Return Value
The thickness of the axis in pixels.

28.5.20 getTicks as CDArrayMBS


Function: Gets the values of the ticks.

Notes:

Return Value
An array of numbers representing the values of the ticks.

28.5.21 getX as Integer


Function: Gets the x-coordinate of starting point of the axis.

Notes: For an XYChart object, the starting point of a horizontal axis is its left end point, and the starting point of a vertical axis is its bottom end point. For a PolarChart object, the starting point of a radial axis
is the origin. For other types of charts, the starting point of an axis is undefined.

28.5.22 getY as Integer


Function: Gets the y-coordinate of starting point of the axis.

Notes: For an XYChart object, the starting point of a horizontal axis is its left end point, and the starting point of a vertical axis is its bottom end point. For a PolarChart object, the starting point of a radial axis is the origin. For other types of charts, the starting point of an axis is undefined.

28.5.23 makeLabelTable as CDMLTableMBS


Function: Creates a CDML table and docks it to the axis, with one row (for horizontal axis) or column (for vertical axis) containing the axis labels.

Notes: Before calling this method, it is necessarily to set the labels on the axis first using CDAxisMBS.setLabels. You should only use this method on a label based axis with no label stepping.

This method will automatically indent the axis (see CDAxisMBS.setIndent), and set the tick offset to 0.5 (see CDAxisMBS.setTickOffset). This is to ensure the plot area grid lines align with the table grid lines (instead of align with the labels).

You may use the returned CDMLTableMBS object to insert additional rows and/or columns to the table. A common application of this method is to insert the data values to the table, so the chart will have a data table docked to the axis, aligned with the chart contents.

Arguments:
None

Return Value
A CDMLTable object containing the axis labels.

28.5.24 setAngle(angle as Double)


Function: Sets the angular coordinates of the data points.
28.5.25  

```plaintext
setAutoScale(topExtension as Double = 0.1, bottomExtension as Double = 0.1, zeroAffinity as Double = 0.8)
```


**Function:**
Sets the margins at the two ends of the axis during auto-scaling, and whether to start the axis from zero.

**Notes:**
During auto-scaling, it is often desirable to leave some margins at the ends of the axis. For example, suppose in a bar chart, the longest bar is 10 units. If auto-scaling chooses 0 - 10 as the scale, the longest bar will touch the top edge of the plot area. In many cases, the chart will look better if there is some margin so that the longest bar does not touch the top edge.

The setAutoScale can be used to reserve some margins at the ends of the axis by using a scale that is larger than necessary. For example, in the above case, if a scale of 0 - 12 is used, then the longest bar will not touch the top edge.

Other common reasons for reserving margins at the ends of the axis include making sure the data labels (which may be drawn on top of the data points) will not go outside the plot area, and that objects put at the top or bottom of the plot area (such as legend box and custom text box) will not overlap with the data points.

Note that there is an alternative way to reserve space at the ends of the axis - the Axis.setMargin method.

In the setAutoScale method, the amount of margins reserved is controlled by the topExtension and bottomExtension arguments. These arguments determine the portion of the axis where no data point can reach. For example, a topExtension of 0.2 will ensure no data point can fall within the top 20% of the axis.

Note that ChartDirector will not extend the scale across the 0 point.

For example, suppose the data range is 0.1 - 9.9. If 10% margin is added to the bottom end of the axis, the bottom end may become negative. In this case, ChartDirector will extend the bottom end to 0 at most.

In other words, if the data range is completely positive, ChartDirector will not extend the axis to negative, as it would be undesirable in most applications. The same applies if the data range is completely negative.

For a purely positive axis, the bottom end has "zero affinity". That means ChartDirector will tend to choose 0 as the bottom end because zero is a natural starting point for the axis. However, if the data range is too extreme (e.g. the data is in the range 10000 - 10005), it may be "unreasonable" to choose 0 as the axis starting point. In this case, ChartDirector will not use 0 as the axis starting point.

ChartDirector will determine that it is "unreasonable" to use 0 as the axis starting point if the data fluctuation (the difference between the maximum and minimum data values) is too small compare with the data value. ChartDirector test the "too small" condition using the formula:
maxDataValue * zeroAffinity < minDataValue

where zeroAffinity by default is 0.8.

Similar "zero affinity" mechanism applies to the top end of the axis for a purely negative axis. If the data range contains both positive and negative values, the zero point is always included.

The zeroAffinity argument of the setAutoScale method allows you to modify the zero affinity when performing auto-scaling. Zero affinity should be between 0 and 1. A large value encourages ChartDirector to start the axis from zero.

A zero affinity of 1 means the axis always includes the zero point. A zero affinity of 0 means that the axis is scaled purely according to the data range, without any preference for the zero point.

Note that zero affinity is ignored for log scale axis as log scale axis cannot contain 0.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>topExtension</td>
<td>0.1</td>
<td>The top portion of the axis that no data point should fall into. For example, a value of 0.2 means no data value will fall within the top 20% of the axis. The topExtension must be between 0 to 1.</td>
</tr>
<tr>
<td>bottomExtension</td>
<td>0.1</td>
<td>The bottom portion of the axis that no data point should fall into. For example, a value of 0.2 means no data value will fall within the bottom 20% of the axis. The bottomExtension must be between 0 to 1.</td>
</tr>
<tr>
<td>zeroAffinity</td>
<td>0.8</td>
<td>The tendency of ChartDirector to include zero in the axis during auto-scaling. The value must be between 0 and 1. A large value encourages ChartDirector to start the axis from zero. A value of 1 means the axis always includes the zero point. A value of 0 means there is no preference for the zero point during auto-scaling.</td>
</tr>
</tbody>
</table>

28.5.26 setColors(axisColor as color, labelColor as color, titleColor as color, tickColor as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Same as the other setColors method, but uses color instead of integer data type for passing color values.

See also:

- 28.5.27 setColors(axisColor as Integer, labelColor as Integer = & hfff0002, titleColor as Integer = -1, tickColor as Integer = -1)
28.5. CLASS CDAXISMBS

28.5.27 setColors(axisColor as Integer, labelColor as Integer = & hffff0002, titleColor as Integer = -1, tickColor as Integer = -1)

MBS ChartDirector Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the colors of the axis itself, axis label, axis title and axis ticks. **Notes:**

By default, the axis and axis ticks are drawn using the LineColor, while the axis label and axis title are drawn using the TextColor. You may use this method to change their colors.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>axisColor</td>
<td>(Mandatory)</td>
<td>The color of the axis itself.</td>
</tr>
<tr>
<td>labelColor</td>
<td>TextColor</td>
<td>The color of the axis labels.</td>
</tr>
<tr>
<td>titleColor</td>
<td>-1</td>
<td>The color of the axis title. -1 means the axis title color is the same as the axis label color.</td>
</tr>
<tr>
<td>tickColor</td>
<td>-1</td>
<td>The color of the axis ticks. -1 means the axis ticks color is the same as the axis color.</td>
</tr>
</tbody>
</table>

See also:

- 169.12.71 setColors(axisColor as color, labelColor as color, titleColor as color, tickColor as color) 19918

28.5.28 setDateScale(formatString as string = "")

MBS ChartDirector Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the axis to use date auto-scale. **Notes:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>formatString</td>
<td>&quot;&quot;</td>
<td>The format used for the labels on the axis. Please refer to AxissetLabelFormat for the syntax of the format string. An empty string means the format will be automatically determined.</td>
</tr>
</tbody>
</table>

See also:

- 28.5.29 setDateScale(lowerLimit as Double, upperLimit as Double, labels() as string) 4440
- 28.5.30 setDateScale(lowerLimit as Double, upperLimit as Double, majorTickInc as Double = 0, minorTickInc as Double = 0) 4440
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28.5.29 setDateScale(lowerLimit as Double, upperLimit as Double, labels() as string)

Function: Sets the axis to use the given date scale and the given labels.
Notes:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>lowerLimit</td>
<td>(Mandatory)</td>
<td>The lower bound of the axis, representing using one of the ChartDirector supported date format.</td>
</tr>
<tr>
<td>upperLimit</td>
<td>(Mandatory)</td>
<td>The upper bound of the axis, representing using one of the ChartDirector supported date format.</td>
</tr>
<tr>
<td>labels</td>
<td></td>
<td>An array of text strings to be used as the labels on the axis. ChartDirector will distribute the labels evenly on the axis. By default, all labels are associated with major ticks. These can be modified by using ',' or 'textasciitilde ' as the first character. Please refer to Axis.setLabels for details.</td>
</tr>
</tbody>
</table>

See also:

- 28.5.28 setDateScale(formatString as string = "")
- 28.5.30 setDateScale(lowerLimit as Double, upperLimit as Double, majorTickInc as Double = 0, minorTickInc as Double = 0)

28.5.30 setDateScale(lowerLimit as Double, upperLimit as Double, majorTickInc as Double = 0, minorTickInc as Double = 0)

Function: Sets the axis to use the given date scale.
Notes:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>lowerLimit</td>
<td>(Mandatory)</td>
<td>The lower bound of the axis, representing using one of the ChartDirector supported date format.</td>
</tr>
<tr>
<td>upperLimit</td>
<td>(Mandatory)</td>
<td>The upper bound of the axis, representing using one of the ChartDirector supported date format.</td>
</tr>
<tr>
<td>majorTickInc</td>
<td>0</td>
<td>Adds major ticks to the axis, where the major ticks are separated by majorTickInc seconds. Each major tick will have an associated text label for the value if the axis at the tick. The value 30 * 86400 will be assume to mean one month (which actually contains a variable number of seconds), and 60 * 86400 will be assumed to mean 2 months and so on. The value 360 * 86400 therefore means 12 months, or 1 year. The default value of 0 means the major ticks will be automatically determined. In this case, the lowerLimit and upperLimit may be automatically adjusted to align with the ticks. Use kNoValue to disable major ticks.</td>
</tr>
<tr>
<td>minorTickInc</td>
<td>0</td>
<td>Adds minor ticks to the x-axis, where the minor ticks are separated by minorTickInc seconds.</td>
</tr>
</tbody>
</table>

The value 30 * 86400 will be assume to mean one month (which actually contains a variable number of seconds), and 60 * 86400 will be assumed to mean 2 months and so on. The value 360 * 86400 therefore
28.5. **CLASS CDAxisMBS**

means 12 months, or 1 year.

The default value of 0 means no minor tick is used.

See also:

- 28.5.28 setDateScale(formatString as string = "")
- 28.5.29 setDateScale(lowerLimit as Double, upperLimit as Double, labels() as string)

**28.5.31 setFormatCondition(condition as string, operand as Double = 0)**


**Function:** Specifies the condition that subsequent Axis.setLabelFormat and Axis.setMultiFormat will become applicable.

**Notes:**

In some applications, the axis range can vary greatly. For example, for a date/time axis, the ticks on the axis can be hourly ticks if the duration is short, or daily ticks (or even monthly or yearly) if the duration is long. One can always use a universal axis format that is applicable in all cases (such as "mmm dd, yyyy<br>hh:mm:ss"), or one can leave ChartDirector to automatically come up with a suitable axis format.

Sometimes it may be desirable to explicitly specify different axis formats depending on tick types. For example, one may want to specify a certain format if the ticks are hourly, and another format if the ticks are daily.

If it is possible to predict which kind of ticks will be on the axis, one can always use "if" statements to specify different axis formats for various cases.

The setFormatCondition method is for cases in which it is difficult to predict which type of ticks would appear on the axis. For example, in an auto-scaled axis in which the duration can vary continuously, in some marginal cases, it is difficult to predict if auto-scaling will choose hourly or daily ticks.

The setFormatCondition method allows you to specify a condition to be tested against the auto-scaling result, so that subsequent Axis.setLabelFormat or Axis.setMultiFormat will be applicable only if the condition is true.

The types of condition supported are:

<table>
<thead>
<tr>
<th>Condition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
"align"  Test if all the ticks are aligned to the operand. Use 3600 for testing hourly alignment, 86400 (1 day = 86400) for daily alignment, 30 * 86400 for monthly alignment and 360 * 86400 for yearly alignment. (Note: The values for monthly and yearly alignments are special values recognized by ChartDirector. They work even if a month or year is not exactly 30 or 360 days.)

">"  Test if the maximum absolute value of the ticks is larger than the operand. This is useful when one needs to apply different formats to large numbers (eg. use scientific formats if the axis range exceed certain values).

">="  Test if the maximum absolute value of the ticks is larger than or equal to the operand.

"<"  Test if the maximum absolute value of the ticks is less than the operand.

"<="  Test if the maximum absolute value of the ticks is less than or equal to the operand.

"=="  Test if the maximum absolute value of the ticks is equal to the operand.

"="  Same as "==" above.

"!="  Test if the maximum absolute value of the ticks is not equal to the operand.

"<>"  Same as "!=" above.

"else"  This condition is true if and only if the previous condition is false.

"true"  This condition is always true. It is useful as a "catch all" condition.

"false"  This condition is always false.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>condition</td>
<td>(Mandatory)</td>
<td>The type of condition to test. Must be one of the condition types in the above table. This text string is case sensitive.</td>
</tr>
<tr>
<td>operand</td>
<td>0</td>
<td>The operand for condition types that need an operand.</td>
</tr>
</tbody>
</table>

28.5.32  setIndent(indent as boolean)


**Function:** Specifies if the axis should be "indented" or not.

**Notes:**

Normally, the x-axis is automatically scaled so that x coordinate of first data point is at the beginning of the x-axis, and the x coordinate last data point is at the end of the axis. If a line layer is drawn, the line will span from the left border of the plot area to the right border of the plot area.

However, for bar layer, if the x-axis is scaled as above, half of the first bar and half of the last bar will be outside the plot area. The same applies to HLOC layers, candlestick layers and box-whisker layers.

When the axis is "indented", some margins will be reserved at the ends of the axis, so that all data representation are within the plot area.
By default, "indented" mode is automatically used in x-axis for charts that contain bar, HLOC, candlestick or box-whisker layers.

The setIndent method allows you to manually configure whether "indented" mode is used or not. One common usage is to align the x-axes in different charts.

For example, suppose a web page contains a bar chart and a line chart. The bar chart will be using "indented" mode x-axis, while the line chart will be using "non-indented" mode. If the two charts are on top of one another for ease of comparison (common for finance style charts), it is desirable that their x-axes should align. In this case, the setIndent method can be used to force the line chart to use indented mode x-axis.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>indent</td>
<td>(Mandatory)</td>
<td>A true value sets the axis to indented mode. A false value sets the axis to non-indented mode.</td>
</tr>
</tbody>
</table>

28.5.33 setLabelAlignment(alignment as Integer, minLabelSpace as Integer = 3)

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Sets the label alignment.

28.5.34 setLabelFormat(formatString as string)

MBS ChartDirector Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Sets the format for numeric or date/time axis labels.

Example:

dim c as CDAxisMBS

// you can use label formats like this:

c.setLabelFormat("<block,halign=left><font=timesbi.ttf,size=12,underline=1>{ label } <*/font*> <br> US$ { value } K ( { percent } % )")

// we can reduce that to this:

c.setLabelFormat(" { label } { value } { percent } % ")

// and it shows 3 numbers. With | 1 after the variable name, we define the decimals after dot:
c.setLabelFormat(" { label } { value | 1 } { percent | 1 } % ")

// and

c.setLabelFormat(" { label } { value | 1., } { percent | 1., } % ")

// uses dot for thousands and comma for decimal separator.

Notes:

By default, ChartDirector will try to guess if the axis represents numbers or dates. If the axis represents numbers, it will use " { value } " as the default format. If the axis represents dates, it will guess the format based on resolution of the dates (e.g. whether the dates contain hourly data or monthly data, etc). It may use formats such as { value | mm/dd/yy<*br*>hh:mm:ss }, { value | mm/dd/yy hh:mm:ss }, { value | mm/dd/yyyy }, { value | mm/yyyy } or { value | yyyy }.

Please refer to Parameter Substitution and Formatting on all available parameters and how to format them.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>formatString</td>
<td>(Mandatory)</td>
<td>The format string.</td>
</tr>
</tbody>
</table>

### 28.5.35 setLabelGap(d as Integer)


**Function:** Sets the distance between the axis labels and the ticks on the axis.

**Notes:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>d</td>
<td>(Mandatory)</td>
<td>The distance between the axis label and the tick in pixels.</td>
</tr>
</tbody>
</table>

### 28.5.36 setLabelOffset(offset as Double)


**Function:** Shifts the axis labels from its default position along the axis.

**Notes:**

This method expects the offset along the axis being a value on the axis scale. The Box.setPos method of the axis label prototype (obtained using Axis.setLabelStyle) can also be used to shift the labels, with the offsets specified in pixel units.
28.5. CLASS CDAXISMBS

Parameter | Default | Description
offset | (Mandatory) | The distance to shift the labels along the axis as a value on the axis scale.

28.5.37 setLabels(labels() as Double, formatString as string = "") as CDTextBoxMBS


Function: Sets the numeric/date/time labels to be used on the axis.

Notes:
This method is typically used to set the x-axis to enumerated scale. For more details on what is enumerated axis scale, please refer to Axis.setLabels.

This method assumes the labels are in their "native" form (that is, not formatted). Please refer to Date Representation for the native date/time formats supported in ChartDirector.

If the labels are already formatted into human readable form (that is, they are text strings), use Axis.setLabels instead.

One common issue is that there may be too many labels on the axis. In this case, the Axis.setLabelStep method may be used show only a regularly spaced subset of labels on the axis.

For date/time labels, another alternative is to use Axis.setMultiFormat, which uses filters to select important dates/times (such as dates/times representing the start of a month) for display as labels.

A third method to avoid too many labels is to remove some labels by replacing them with kNoValue before passing them to ChartDirector. If you want to remove the label text but leave a minor tick, use MinorTick-Only as the label value.

labels (Mandatory) An array of numbers/dates to be used as the axis labels.
formatString "" A format string to specified how to format the labels into human readable form. Please refer to Axis.setLabelFormat for the syntax of the format string. An empty string means the format will be automatically determined.

Return Value
A TextBox object representing the prototype of the obj. This may be used to fine-tune the appearance of the obj.
See also:

• 28.5.38 setLabels(labels() as string) as CDTextBoxMBS
28.5.38 setLabels(labels() as string) as CDTextBoxMBS


Function: Sets the text labels to be used on the axis.

Notes:

This method is typically used to set the x-axis to enumerated scale. In enumerated scale, the data points are associated with the x-axis by position. The first data point will be plotted at the first label position on the x-axis, the second data point at the second label position, and so on.

Enumerated axis is a very flexible axis type. It is most suitable for chart types where the data points are evenly spaced on the x-axis. The axis labels can be any text. They do not need to be numbers or dates. If they are numbers or dates, you can format them in any way you like before calling this method.

Internally, ChartDirector will assign a value of 0 to the first axis label, 1 to the second axis label, and so on. These values are not visible. Only the axis labels are visible. However, these values may be useful for some ChartDirector features that need to reference the axis position by value, such as adding mark lines using Axis.addMark.

By default, all axis labels will be associated major ticks. To associate a label with a minor tick, use '-' as the first character of the label. To draw a label without any tick at all, use 'textasciitilde' as the first character of the label.

Leading '-' or 'textasciitilde' characters are tick specification characters and will not appear on the labels. They just specify the the tick style to be associated with the labels. If you want have a label that actually begins these characters, add '\\' as the first character as the escape character.

One common issue is that there may be too many labels on the axis. In this case, the Axis.setLabelStep method may be used show only a regularly spaced subset of labels on the axis.

Another method is to remove some labels is to replace them with empty strings before passing them to ChartDirector. If you want to remove the label text but leave a major tick, use a space character " " as the label text. If you want to remove the label text but leave a major tick, use "-" as the label text.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>text</td>
<td>(Mandatory)</td>
<td>An array of strings containing the text of the labels.</td>
</tr>
</tbody>
</table>

Return Value
A TextBox object representing the prototype of the obj. This may be used to fine-tune the appearance of the obj.

See also:
28.5. **CLASS CDAXISMBS**

- 28.5.37 `setLabels(labels() as Double, formatString as string = "") as CDTextBoxMBS 4445

28.5.39 `setLabelStep(majorTickStep as Integer, minorTickStep as Integer = 0, majorTickOffset as Integer = 0, minorTickOffset as Integer = -2147483647)`


**Function:** Shows a regularly spaced subset of the axis labels on the axis.

**Notes:**

This method is typically used in conjunction with `Axis.setLabels`. These two methods define the full set of labels on the axis, one for each data point in a data set. In many cases, there may be too many labels and the axis may become overcrowded with labels. The `setLabelStep` method will cause the axis to show a regularly spaced subset of labels instead all labels.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>majorTickStep</td>
<td>(Mandatory)</td>
<td>The spacing between visible labels (major ticks). For example, a value of 10 means displaying 1 label for every 10 labels.</td>
</tr>
<tr>
<td>minorTickStep</td>
<td>0</td>
<td>For labels that are not displayed, ChartDirector can optionally put a minor tick in its place. The argument specifies the spacing between minor ticks. For example, a value of 5 means displaying 1 minor tick for every 5 labels. The default value of 0 means no minor tick is used.</td>
</tr>
<tr>
<td>majorTickOffset</td>
<td>0</td>
<td>The offset used for selecting the labels. For example, if <code>majorTickStep</code> is set to 10, by default, ChartDirector will select the labels with index 0, 10, 20, 30 and so on. If the <code>majorTickOffset</code> argument is set to 3, then ChartDirector will select labels with index 3, 13, 23, 33 and so on.</td>
</tr>
<tr>
<td>minorTickOffset</td>
<td>-7fffffff</td>
<td>The offset used for selecting minor tick points. The usage is the same as the <code>majorTickOffset</code> argument, except it applies to minor tick points. The default is to use the same value as <code>majorTickOffset</code>.</td>
</tr>
</tbody>
</table>

28.5.40 `setLabelStyle(font as string = "", fontsize as Double = 8, fontcolor as Integer = & hf000002, fontAngle as Double = 0)` as `CDTextBoxMBS`


**Function:** Sets the font style used to for the axis labels.

**Notes:**

See Font Specification for details on various font attributes.

**Return Value**

A `TextBox` object representing the prototype of the object. This may be used to fine-tune the appearance of the object.

See font specification here:
Parameter | Default | Description
--- | --- | ---
font | "" | The font used to draw the labels.
fontSize | 8 | The font size used to draw the labels in points.
fontColor | TextColor | The color used to draw the labels.
fontAngle | 0 | The rotation angle of the labels.

http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml

See also:

- 28.5.41 `setLabelStyle(font as string, fontsize as Double, fontcolor as color, fontAngle as Double = 0)` as CDTextBoxMBS

**28.5.41 setLabelStyle(font as string, fontsize as Double, fontcolor as color, fontAngle as Double = 0) as CDTextBoxMBS**

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other `setLabelStyle` method, but uses color instead of integer data type for passing color values.

See also:

- 28.5.40 `setLabelStyle(font as string = "", fontsize as Double = 8, fontcolor as Integer = & hff0002, fontAngle as Double = 0)` as CDTextBoxMBS

**28.5.42 setLength(length as Integer)**


**Function:** Sets the length of the axis.

**28.5.43 setLinearScale(formatString as string = "")**


**Function:** Sets the axis to use linear auto-scale.

**Notes:**

Parameter | Default | Description
--- | --- | ---
formatString | "" | The format used for the labels on the axis. Please refer to `AxissetLabelFormat` for the syntax of the format string. An empty string means the format will be automatically determined.

See also:
28.5. **CLASS CDAXISMBS**

- 28.5.44 `setLinearScale(lowerLimit as Double, upperLimit as Double, labels() as string)`
- 28.5.45 `setLinearScale(lowerLimit as Double, upperLimit as Double, majorTickInc as Double = 0, minorTickInc as Double = 0)`

### 28.5.44 setLinearScale(lowerLimit as Double, upperLimit as Double, labels() as string)


**Function:** Sets the axis to use the given linear scale and the given labels.

**Notes:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>lowerLimit</td>
<td>(Mandatory)</td>
<td>The lower bound of the axis.</td>
</tr>
<tr>
<td>upperLimit</td>
<td>(Mandatory)</td>
<td>The upper bound of the axis.</td>
</tr>
<tr>
<td>labels</td>
<td></td>
<td>An array of text strings to be used as the labels on the axis. ChartDirector will distribute the labels evenly on the axis. By default, all labels are associated with major ticks. These can be modified by using ',' or '#' as the first character. Please refer to Axis.setLabels for details.</td>
</tr>
</tbody>
</table>

See also:

- 28.5.43 `setLinearScale(formatString as string = "")`
- 28.5.45 `setLinearScale(lowerLimit as Double, upperLimit as Double, majorTickInc as Double = 0, minorTickInc as Double = 0)`

### 28.5.45 setLinearScale(lowerLimit as Double, upperLimit as Double, majorTickInc as Double = 0, minorTickInc as Double = 0)


**Function:** Sets the axis to use the given linear scale.

**Notes:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>lowerLimit</td>
<td>(Mandatory)</td>
<td>The lower bound of the axis.</td>
</tr>
<tr>
<td>upperLimit</td>
<td>(Mandatory)</td>
<td>The upper bound of the axis.</td>
</tr>
<tr>
<td>majorTickInc</td>
<td>0</td>
<td>Adds major ticks to the axis, where the major ticks are separated by majorTickInc in value. Each major tick will have an associated text label for the value if the axis at the tick. The default value of 0 means the major ticks will be automatically determined. In this case, the lowerLimit and upperLimit may be automatically adjusted to align with the ticks. Use kNoValue to disable major ticks.</td>
</tr>
<tr>
<td>minorTickInc</td>
<td>0</td>
<td>Adds minor ticks to the axis, where the minor ticks are separated by minorTickInc in value. The default value of 0 means no minor tick is used.</td>
</tr>
</tbody>
</table>

See also:
• 28.5.43 setLinearScale(formatString as string = "")

• 28.5.44 setLinearScale(lowerLimit as Double, upperLimit as Double, labels() as string)

28.5.46 setLogScale(formatString as string = "")


Function: Sets the axis to use logarithmic auto-scale.

Notes:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>formatString</td>
<td>&quot;&quot;</td>
<td>The format used for the labels on the axis. Please refer to Axis.setLabelFormat for the syntax of the format string. An empty string means the format will be automatically determined.</td>
</tr>
</tbody>
</table>

See also:

• 28.5.47 setLogScale(lowerLimit as Double, upperLimit as Double, labels() as string)

• 28.5.48 setLogScale(lowerLimit as Double, upperLimit as Double, majorTickInc as Double = 0, minorTickInc as Double = 0)

28.5.47 setLogScale(lowerLimit as Double, upperLimit as Double, labels() as string)


Function: Sets the axis to use the given logarithmic scale and the given labels.

Notes:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>lowerLimit</td>
<td>(Mandatory)</td>
<td>The lower bound of the axis.</td>
</tr>
<tr>
<td>upperLimit</td>
<td>(Mandatory)</td>
<td>The upper bound of the axis.</td>
</tr>
<tr>
<td>labels</td>
<td>(Mandatory)</td>
<td>An array of text strings to be used as the labels on the axis. ChartDirector will distribute the labels evenly on the axis. By default, all labels are associated with major ticks. These can be modified by using ‘‘ or ‘‘ as the first character. Please refer to Axis.setLabels for details.</td>
</tr>
</tbody>
</table>

See also:

• 28.5.46 setLogScale(formatString as string = "")

• 28.5.48 setLogScale(lowerLimit as Double, upperLimit as Double, majorTickInc as Double = 0, minorTickInc as Double = 0)
28.5.48 setLogScale(lowerLimit as Double, upperLimit as Double, majorTickInc as Double = 0, minorTickInc as Double = 0)


**Function:** Sets the axis to use the given logarithmic scale.

**Notes:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>lowerLimit</td>
<td>(Mandatory)</td>
<td>The lower bound of the axis.</td>
</tr>
<tr>
<td>upperLimit</td>
<td>(Mandatory)</td>
<td>The upper bound of the axis.</td>
</tr>
<tr>
<td>majorTickInc</td>
<td>0</td>
<td>Adds major ticks to the axis, where the major ticks are separated by majorTickInc in ratio. For example, a value of 10 means each tick will be 10 times the value of the previous tick. Each major tick will have an associated text label for the value if the axis at the tick. The special predefined constant LogTick (= 1.6e308) means the tick increment will be using the non-regular ratio 1, 2, 5, 10, 20, 50, 100, .... The default value of 0 means the major ticks will be automatically determined. In this case, the lowerLimit and upperLimit may be automatically adjusted to align with the ticks. Use kNoValue to disable major ticks.</td>
</tr>
<tr>
<td>minorTickInc</td>
<td>0</td>
<td>Adds minor ticks to the axis, where the minor ticks are separated by minorTickInc in ratio.</td>
</tr>
</tbody>
</table>

The special constant LogTick means the tick increment will be using the non-regular ratio 1, 2, 5, 10, 20, 50, 100, ....

The default value of 0 means no minor tick is used.

See also:

- 28.5.46 setLogScale(formatString as string = "") 4450
- 28.5.47 setLogScale(lowerLimit as Double, upperLimit as Double, labels() as string) 4450

28.5.49 setMargin(topMargin as Integer, bottomMargin as Integer = 0)


**Function:** Reserve margins at the ends of the axis.

**Notes:**

This method is usually used to reserve space in the plot area. For example, if some margin is reserved at the top of the vertical y-axis, the top of the plot area will contain no data points. It is because this region would be outside the active range of the y-axis. If anything is put at the top of the plot area (such as a legend box or custom text), it will not overlap with the data points.

Note if auto-scaling is used, there is an alternative way to reserve space at the top and/or bottom of the plot area - the Axis.setAutoScale method.
Parameter | Default | Description
--- | --- | ---
topMargin | (Mandatory) | The margin reserved at the top end (or right end for horizontal axis) of the axis in pixels.
bottomMargin | 0 | The margin reserved at the bottom end (or left end for horizontal axis) of the axis in pixels.

### 28.5.50 setMinTickInc(value as Double)


**Function:** Sets the minimum distance between two ticks on the axis for auto-scaled axis.

**Notes:**
The most common use of this method is to ensure the ticks are of integer values (the minimum distance set to 1).

ChartDirector auto-scaling will automatically determine the optimal number of ticks and labels on the axis. However, in some cases, the nature of the data may be such that the ticks should assume only certain discrete values (such as must be integers). This method will inform ChartDirector for this constraint when performing auto-scaling.

For a log scale axis, because the axis ticks are unevenly spaced, the minimum distance will be handled as the minimum value allowed for the axis scale.

### Parameter Default Description

- **inc** (Mandatory) The minimum distance between two ticks on the axis as a data value.

### 28.5.51 setMultiFormat(filter as Integer, format as string, labelSpan as Integer = 1, promoteFirst as boolean=true)


**Function:** Adds one filter and format string to the multi-format lists.

**Notes:**
Please refer to Axis.setMultiFormat on how to use this method.

See also:

- 28.5.52 setMultiFormat(filter1 as Integer, format1 as string, filter2 as Integer, format2 as string, labelSpan as Integer = 1, promoteFirst as boolean=true)
### 28.5. CLASS CDAXISMBS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>filterId</td>
<td>(Mandatory)</td>
<td>The filter that defines a subset of labels.</td>
</tr>
<tr>
<td>formatString</td>
<td>(Mandatory)</td>
<td>The format string for formatting the subset defined by the above filter.</td>
</tr>
<tr>
<td>labelSpan</td>
<td>1</td>
<td>The number of label positions that are claimed by one label. If a label occupies more than 1 position, ChartDirector will not put labels on nearby positions, even if they meet the filter criteria.</td>
</tr>
<tr>
<td>promoteFirst</td>
<td>true</td>
<td>If set to true, the first label will be promoted to a higher filter category in the multi-format list.</td>
</tr>
</tbody>
</table>

### 28.5.52 setMultiFormat(filter1 as Integer, format1 as string, filter2 as Integer, format2 as string, labelSpan as Integer = 1, promoteFirst as boolean=true)


**Function:** Sets multiple formats for numeric or date/time axis labels.

**Notes:**

This method is typically used to format date/time labels. For example, for an axis that spans 90 days, this method can be used to format the first labels of each month in bold as "mmm-dd", while other labels are shown in normal font as "dd".

The multiple formats are defined as a list of filters and format strings. If the label value satisfies the first filter, it will be formatted using the first format string. Otherwise if the label value satisfies the second filter, it will be formatted using the second format string, and so on. If a label value does not satisfy any filter, it will be discarded.

In the above example, the first filter can be a "start of month" filter (created using Chart::StartOfMonthFilter), and the first format string can be "\{ value | mmm-dd \}". The second filter can be the "all pass" filter (created using Chart::AllPassFilter), and the format string can be "\{ value | dd \}".

Supported filters in ChartDirector include:

For the format strings, please refer to Parameter Substitution and Formatting on their syntax.

A single setMultiFormat method supports two filters and two format strings. You can use multiple setMultiFormat methods to add more filters and format strings.

One common issue in putting labels on the axis is that there may be too many labels on the axis. The setMultiFormat method supports a labelSpan argument that specifies how many label positions a single label will occupy. If a label occupies more than 1 position, ChartDirector will not put labels on nearby positions, even if they meet the filter criteria.
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<table>
<thead>
<tr>
<th>Filter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chart::StartOfHourFilter</td>
<td>Creates a data filter that matches date/times that represent the start of a new hour in a date/time series.</td>
</tr>
<tr>
<td>Chart::StartOfDayFilter</td>
<td>Creates a data filter that matches date/times that represent the start of a new day in a date/time series.</td>
</tr>
<tr>
<td>Chart::StartOfWeekFilter</td>
<td>Creates a data filter that matches date/times that represent the start of a new week in a date/time series.</td>
</tr>
<tr>
<td>Chart::StartOfMonthFilter</td>
<td>Creates a data filter that matches date/times that represent the start of a new month in a date/time series.</td>
</tr>
<tr>
<td>Chart::StartOfYearFilter</td>
<td>Creates a data filter that matches date/times that represent the start of a new year in a date/time series.</td>
</tr>
<tr>
<td>Chart::RegularSpacingFilter</td>
<td>Creates a data filter that matches 1 out of every N elements.</td>
</tr>
<tr>
<td>Chart::AllPassFilter</td>
<td>Creates a data filter that matches every element.</td>
</tr>
<tr>
<td>Chart::NonePassFilter</td>
<td>Creates a data filter that matches no element.</td>
</tr>
<tr>
<td>Chart::SelectItemFilter</td>
<td>Creates a data filter that matches one specified item.</td>
</tr>
</tbody>
</table>

The setMultiFormat method supports special handling of the first label on the axis. For example, in the above example, we may want to show the first label as "mmm-dd", even if it is not actually the "start of month". The promoteFirst argument, if set to true, will cause the first label to be promoted to a higher filter category in the multi-format list. For example, if the first label satisfies only the second filter, it will be formatted as if it satisfies the first filter.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>filter1</td>
<td>(Mandatory)</td>
<td>The filter that defines the first kind of labels.</td>
</tr>
<tr>
<td>format1</td>
<td></td>
<td>The format string for the first kind of labels.</td>
</tr>
<tr>
<td>filter2</td>
<td>(Mandatory)</td>
<td>The filter that defines the second kind of labels.</td>
</tr>
<tr>
<td>format2</td>
<td>(Mandatory)</td>
<td>The format string for the second kind of labels.</td>
</tr>
<tr>
<td>labelSpan</td>
<td>1</td>
<td>The number of label positions that are claimed by one label. If a label occupies more than 1 position, ChartDirector will not put labels on nearby positions, even if they meet the filter criteria.</td>
</tr>
<tr>
<td>promoteFirst</td>
<td>true</td>
<td>If set to true, the first label will be promoted to a higher filter category in the multi-format list.</td>
</tr>
</tbody>
</table>

See also:

- 28.5.51 setMultiFormat(filter as Integer, format as string, labelSpan as Integer = 1, promoteFirst as boolean=true)

28.5.53 setOffset(x as Integer, y as Integer)


Function: Sets the positional offset of the axis.

Notes:

By default, ChartDirector draws horizontal axes at the top/bottom borders of the plot area, and vertical
28.5. **CLASS CDAXISMBS**

axes at the left/right borders of the plot area.

This method can be used to shift an axis from its standard position.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>(Mandatory)</td>
<td>The x offset in pixels.</td>
</tr>
<tr>
<td>y</td>
<td>(Mandatory)</td>
<td>The y offset in pixels.</td>
</tr>
</tbody>
</table>

### 28.5.54 setReverse(value as boolean=true)


**Function:** Reverse the axis.

**Notes:**

For a normal vertical axis, the axis starts from the bottom and increase its value towards the top. For a normal horizontal axis, the axis starts from the left and increase its value towards the right. The setReverse method can be used to reverse the direction of the axis.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>true</td>
<td>A true value means the axis is reversed. A false value means the axis is not reversed.</td>
</tr>
</tbody>
</table>

### 28.5.55 setRounding(roundMin as boolean, roundMax as boolean)


**Function:** Controls whether to round the ends of the axis to align with tick positions.

**Notes:**

For example, if the axis is from 0.33 - 9.7, ChartDirector may round it to 0 - 10 so that the ends 0 and 10 are properly aligned with the ticks.

By default, ChartDirector will round the axis ends for the y-axis, but not for the x-axis. An exception is a chart containing a scatter layer, where both x and y axes will be rounded.
### 28.5.56 setTickColor(majorTickColor as color, minorTickColor as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other setTickColor method, but uses color instead of integer data type for passing color values.

See also:
- 28.5.57 setTickColor(majorTickColor as Integer, minorTickColor as Integer = -1)

### 28.5.57 setTickColor(majorTickColor as Integer, minorTickColor as Integer = -1)


**Function:** Sets the colors of the axis ticks.

**Notes:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>majorTickColor</td>
<td>(Mandatory)</td>
<td>The color of the major ticks.</td>
</tr>
<tr>
<td>minorTickColor</td>
<td>-1</td>
<td>The color of the major ticks. -1 means the color is the same as majorTickColor</td>
</tr>
</tbody>
</table>

See also:
- 28.5.56 setTickColor(majorTickColor as color, minorTickColor as color)

### 28.5.58 setTickDensity(majorTickSpacing as Integer, minorTickSpacing as Integer = -1)


**Function:** Sets the density of the axis ticks.

**Notes:**

Tick density is the desired distance between two ticks in pixels. When ChartDirector performs auto-scaling, it will decide how many ticks to put on the axis based on tick density.

Note that the actual tick density chosen in auto-scaling may not be exactly the same as the desired tick density. It is because ChartDirector may have other constraints in choosing the ticks, such as the ticks and axis range should be neat numbers, and the axis must contain an integral number of ticks, etc. ChartDirector
may use a tick distance that is larger than suggested, but never smaller.

Parameter | Default | Description
---|---|---
majorTickSpacing | (Mandatory) | Specify the desired distance between two major ticks in pixels.
minorTickSpacing | -1 | Specify the desired distance between two minor ticks in pixels. -1 means minor ticks are not used.

### 28.5.59 setTickLength(majorTickLen as Integer)


**Function:** Sets the length of the axis ticks.

**Notes:**
A positive tick length means the ticks are drawn outside the plot area. A negative tick length means the ticks are drawn inside the plot area.

Parameter | Default | Description
---|---|---
majorTickLen | (Mandatory) | The length of the major ticks in pixels. The length of the minor ticks will automatically be set to half the length of the major ticks.

See also:
- 28.5.60 setTickLength(majorTickLen as Integer, minorTickLen as Integer)

### 28.5.60 setTickLength(majorTickLen as Integer, minorTickLen as Integer)


**Function:** Sets the length of the major and minor axis ticks.

**Notes:**
A positive tick length means the ticks are drawn outside the plot area. A negative tick length means the ticks are drawn inside the plot area.

Parameter | Default | Description
---|---|---
majorTickLen | (Mandatory) | The length of the major ticks in pixels.
minorTickLen | (Mandatory) | The length of the minor ticks in pixels.

See also:
- 28.5.59 setTickLength(majorTickLen as Integer)
28.5.61 setTickOffset(offset as Double)


**Function:** Shifts the position of the ticks along the axis.

**Notes:**

By default, ChartDirector draws the ticks at the label position. This method is typically used to shift the ticks so that the ticks are between two labels, rather than aligned with the label.

The offset is specified as a value on the axis scale. For a label based axis (configured using Axis.setLabels), shifting with an offset of 0.5 means shifting half the label interval. This will achieve the effect of putting the ticks in between the labels.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>offset</td>
<td>(Mandatory)</td>
<td>The distance to shift the ticks along the axis as a value on the axis scale.</td>
</tr>
</tbody>
</table>

28.5.62 setTickWidth(majorTickWidth as Integer, minorTickWidth as Integer = -1)


**Function:** Sets the width of the axis ticks.

**Notes:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>majorTickWidth</td>
<td>(Mandatory)</td>
<td>The width of the major ticks in pixels.</td>
</tr>
<tr>
<td>minorTickWidth</td>
<td>-1</td>
<td>The width of the minor ticks in pixels. -1 means the width is the same as majorTickWidth.</td>
</tr>
</tbody>
</table>

28.5.63 setTitle(text as string, font as string = "", fontsize as Double = 8, fontcolor as Integer = &hffff0002) as CDTextBoxMBS


**Function:** Adds a title to the axis.

**Notes:**

See Font Specification for details on various font attributes.

**Return Value**

A TextBox object representing the axis title. This may be used to fine-tune the appearance of the axis title.

See font specification here:
### 28.5. CLASS CDAXISMBS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>text</td>
<td>(Mandatory)</td>
<td>The title text.</td>
</tr>
<tr>
<td>font</td>
<td>&quot;&quot;</td>
<td>The font used to draw the title. If no font is specified, the default is &quot;bold&quot;.</td>
</tr>
<tr>
<td>fontSize</td>
<td>8</td>
<td>The size of the font in points.</td>
</tr>
<tr>
<td>fontColor</td>
<td>TextColor</td>
<td>The color used to draw the title text.</td>
</tr>
</tbody>
</table>

http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml

See also:

- 28.5.64 setTitle(text as string, font as string, fontsize as Double, fontcolor as color) as CDTextBoxMBS

### 28.5.64 setTitle(text as string, font as string, fontsize as Double, fontcolor as color) as CDTextBoxMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other setTitle method, but uses color instead of integer data type for passing color values.

See also:

- 28.5.63 setTitle(text as string, font as string = "", fontsize as Double = 8, fontcolor as Integer = &hffff0002) as CDTextBoxMBS

### 28.5.65 setTitlePos(alignment as Integer, titleGap as Integer = 3)


**Function:** Sets the position of the axis title relative to the axis.

**Notes:**

- By default, the axis title will be drawn at the middle of the axis outside the plot area. You may change the location of the title. For example, instead of drawing the y-axis title at the middle of the axis, you may want draw it at the top of the axis.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>alignment</td>
<td>(Mandatory)</td>
<td>The position of the title relative to the axis.</td>
</tr>
<tr>
<td>titleGap</td>
<td>3</td>
<td>The distance between the axis title and the axis in pixels.</td>
</tr>
</tbody>
</table>

### 28.5.66 setWidth(width as Integer)


**Function:** Sets the line width of the axis.

**Notes:**
Parameter | Default | Description
--- | --- | ---
width | (Mandatory) | The line width of the axis in pixels.

### 28.5.67 syncAxis(axis as CDAxisMBS, slope as Double = 1.0, intercept as Double = 0.0)


**Function:** Synchronizes this axis with another axis using a linear formula.

**Notes:**
This method is typically used if the two axes represent the same quantity but in different units. For example, one axis may represent temperature in Celsius, and the other in Fahrenheit, or they may represent lengths in meters and feet.

The scale of this axis (value) will be related to the scale of the another axis (value2) using the following formula:

\[ \text{value} = \text{value2} \times \text{slope} + \text{intercept} \]

Typically, one of the axis will be for actual charting, and its scale will be determined in the standard way using auto or manual scaling. Then the second axis is set to synchronize with the first axis.

Parameter | Default | Description
--- | --- | ---
axis | (Mandatory) | The axis to synchronize to.
slope | 1 | The slope for synchronizing this axis to the other axis.
intercept | 0 | The intercept parameter for synchronizing this axis to the other axis.
28.6. class CDBarLayerMBS

28.6.1 class CDBarLayerMBS


Function: The BarLayer class represents bar layers. BarLayer is a subclass of Layer.

Notes:

Subclass of the CDLayerMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

28.6.2 Methods

28.6.3 setBarGap(barGap as Double)


Function: Sets the gap between the bars in a bar chart layer.

Notes:

In the setBarGap method, the gap between the bars is expressed as the portion of the space between the bars. For example, a bar gap of 0.2 means 20% of the distance between two adjacent bars is the gap between the bars.

A bar gap of 0 means there is no gap in between the bars. The bar gap can be negative. In this case, the bars will overlap. The predefined constant TouchBar ( = -1.7E-100) means the bars will ”touch”, that is, the bar borders overlap, so two adjacent bars will share the same border.

For multi-bar layers (bar layers using the Side data combine method, or for stacked bar layers with multiple data groups), barGap refers to the portion of the space between bar groups, while subBarGap refers to the portion of the space between bars within the bar group.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>barGap</td>
<td></td>
<td>The portion of the space between the bars (or between bar groups for multi-bar layers).</td>
</tr>
<tr>
<td>subBarGap</td>
<td>0.2</td>
<td>This argument only applies to multi-bar charts. It is the portion of the space between the bars in a bar group.</td>
</tr>
</tbody>
</table>

See also:

- 28.6.4 setBarGap(barGap as Double, subBarGap as Double)
28.6.4  setBarGap(barGap as Double, subBarGap as Double)

Function: Sets the gap between the bars in a bar chart layer.
Notes:

In the setBarGap method, the gap between the bars is expressed as the portion of the space between the bars. For example, a bar gap of 0.2 means 20% of the distance between two adjacent bars is the gap between the bars.

A bar gap of 0 means there is no gap in between the bars. The bar gap can be negative. In this case, the bars will overlap. The predefined constant TouchBar (= -1.7E-100) means the bars will "touch", that is, the bar borders overlap, so two adjacent bars will share the same border.

For multi-bar layers (bar layers using the Side data combine method, or for stacked bar layers with multiple data groups), barGap refers to the portion of the space between bar groups, while subBarGap refers to the portion of the space between bars within the bar group.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>barGap</td>
<td>(Mandatory)</td>
<td>The portion of the space between the bars (or between bar groups for multi-bar layers).</td>
</tr>
<tr>
<td>subBarGap</td>
<td>0.2</td>
<td>This argument only applies to multi-bar charts. It is the portion of the space between the bars in a bar group.</td>
</tr>
</tbody>
</table>

See also:

- 28.6.3 setBarGap(barGap as Double) 4461

28.6.5  setBarShape(shape as Integer, dataGroup as Integer = -1, dataItem as Integer = -1)

Function: Sets the shape of the bar(s) using built-in shapes.
Notes:

See also:

- 28.6.6 setBarShape(shape() as Integer, dataGroup as Integer = -1, dataItem as Integer = -1) 4462

28.6.6  setBarShape(shape() as Integer, dataGroup as Integer = -1, dataItem as Integer = -1)

Function: Sets the shape of the bar(s) to a custom shape defined using an array of (x, y) coordinates.
28.6. **CLASS CDBARLAYERMBS**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>shape</td>
<td>(Mandatory)</td>
<td>The bar shape to use. Please refer to Shape Specification on how shapes are specified.</td>
</tr>
<tr>
<td>dataGroup</td>
<td>-1</td>
<td>The index of the data group that the shape applies to. In a multi-stacked bar, the data sets that are stacked up into a single bar forms a data group. In a multi-bar chart, each data set is a data group by itself. The default value of -1 means the shape applies to all data groups.</td>
</tr>
<tr>
<td>dataItem</td>
<td>-1</td>
<td>The index of the data points that the shape applies to. For example, if set to 3, the shape will only apply to the 4th bar (index starts from 0) in each data series. The default value of -1 means the shape applies to all data points.</td>
</tr>
</tbody>
</table>

**Notes:**

- 28.6.5 setBarShape(shape as Integer, dataGroup as Integer = -1, dataItem as Integer = -1) 4462

**28.6.7 setBarWidth(barWidth as Integer, subBarWidth as Integer = -1)**

**Function:** Sets the width of the bars. 
**Notes:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>barWidth</td>
<td>(Mandatory)</td>
<td>The width of the bars (or bar groups for multi-bar layers) in pixels.</td>
</tr>
<tr>
<td>subBarWidth</td>
<td>-1</td>
<td>This argument only applies to multi-bar charts. It is the width of the bars in a bar group in pixels.</td>
</tr>
</tbody>
</table>

**28.6.8 setIconSize(height as Integer, width as Integer = -1)**

**Function:** Sets the size of the icon(s) to be used in legend box.
Notes:

By default, if a legend box is available on the chart, ChartDirector will insert an legend entry for any named data sets in the legend box. The icons for the data sets will be the shape of the bars. The size of the icons will be determined using the key size settings of the legend box (see LegendBox.setKeySize).

This method can be used to override the legend box settings to specify a custom width/height for the icons of the current BarLayer.

If the icon size is set to 0, a square color box will be used as the icon without regarding the shape of the bar.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the icon in pixels.</td>
</tr>
<tr>
<td>width</td>
<td>-1</td>
<td>The width of the icon in pixels. The default value of -1 means the width is the same as the height.</td>
</tr>
</tbody>
</table>

28.6.9  setMinImageMapSize(s as Integer)

MBS ChartDirector Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the minimum height (or width if the x-axis and y-axis are swapped with CDXYChartMBS.swapXY) of the hot spots defined by the image map.

**Notes:**

By default, the hot spots defined by image map exactly cover the bars. For very short bars, the hot spots may be very small, and it may become difficult to move the mouse over the hot spots.

This method ensures the hot spots are at least of certain size, even if the bars are shorter. The default is 5 pixels.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>size</td>
<td>(Mandatory)</td>
<td>The minimum height (or width if the x-axis and y-axis are swapped with CDXYChartMBS.swapXY) of the hot spots defined by the image map.</td>
</tr>
</tbody>
</table>

28.6.10  setMinLabelSize(s as Integer)

MBS ChartDirector Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the minimum height (or width for horizontal bars) of the bar segments below which data labels will be hidden.

**Notes:**
In ChartDirector, for a bar layer, data labels (Layer.setDataLabelStyle) are drawn internal to the bar segment, while the aggregate labels (Layer.setAggregateLabelStyle) are drawn external to the bar.

ChartDirector will disable data labels for a bar segment if the bar segment is too short to contain the data label.

By default, ChartDirector will automatically determine what is meant by "too short". The setMinLabelSize method can be used to manually defined the threshold for "too short".

Sometimes it may be desirable to display the data label even though it cannot be contained within the bar segment. In this case, the setMinLabelSize can be used to set the threshold to 0.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>setMinLabelSize</td>
<td>(Mandatory)</td>
<td>The minimum length of the bar segments in pixels, below which data labels will be hidden.</td>
</tr>
</tbody>
</table>

### 28.6.11 setOverlapRatio(overlapRatio as Double, firstOnTop as boolean=true)


**Function:** Sets overlapping among bars in within a bar group in a multi-bar chart.

**Notes:**

By default, in a multi-bar chart, the bars are not overlapped, but are separated with a gap in between. This method can be used to set an alternative style, where the bars partially overlap.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>overlapRatio</td>
<td>(Mandatory)</td>
<td>The overlapping ratio between adjacent bars in a bar group. Should be between 0 to 1.</td>
</tr>
<tr>
<td>firstOnTop</td>
<td>true</td>
<td>If this value is true, the first data set will be on top of the second data during overlapping, and the second data set will be on top of the third data set, and so on. If this value is false, then the overlapping order will be reversed.</td>
</tr>
</tbody>
</table>

### 28.6.12 setRoundedCorners

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Configures rounded corners for rectangular bars.

**Notes:**

A rectangular bar has 4 corners. Two of them are at the base of the bar, while the other two are at the "data end" of the bar. Note that the base of the bar can be any side of the bar, depending on whether the
bar is positive or negative, vertical or horizontal.

For the 2 base corners, one of them is at the negative x direction while the other is at the positive x direction. The same applies to the two data end corners.

This method accepts 0, 1, 2 or 4 radius values. The usage of these values depend how many values are provided as follows.

<table>
<thead>
<tr>
<th>Values Provided</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>The radii of the data end corners are automatically determined. The radii of the base corners are set to 0.</td>
</tr>
<tr>
<td>1</td>
<td>The radii of the data end corners are set to the specified value. The radii of the base corners are set to 0.</td>
</tr>
<tr>
<td>2</td>
<td>The radii of the data end corners are set to the first value. The radii of the base corners are set to the second value.</td>
</tr>
<tr>
<td>4</td>
<td>The radius of the data end corner at the negative x direction is set to the first value. The radius of the data end corner at the positive x direction is set to the second value. The radius of the base corner at the negative x direction is set to the third value. The radius of the base corner at the positive x direction is set to the fourth value.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r1</td>
<td>-&amp; h7fffffff</td>
<td>The first radius. See description above on how this radius value is used.</td>
</tr>
<tr>
<td>r2</td>
<td>-&amp; h7fffffff</td>
<td>The second radius. See description above on how this radius value is used.</td>
</tr>
<tr>
<td>r3</td>
<td>-&amp; h7fffffff</td>
<td>The third radius. See description above on how this radius value is used.</td>
</tr>
<tr>
<td>r4</td>
<td>-&amp; h7fffffff</td>
<td>The fourth radius. See description above on how this radius value is used.</td>
</tr>
</tbody>
</table>

See also:

- 28.6.13 setRoundedCorners(r1 as Integer, r2 as Integer = -2147483647, r3 as Integer = -2147483647, r4 as Integer = -2147483647)

28.6.13 setRoundedCorners(r1 as Integer, r2 as Integer = -2147483647, r3 as Integer = -2147483647, r4 as Integer = -2147483647)

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Configures rounded corners for rectangular bars. Notes: A rectangular bar has 4 corners. Two of them are at the base of the bar, while the other two are at the "data end" of the bar. Note that the base of the bar can be any side of the bar, depending on whether the
bar is positive or negative, vertical or horizontal.

For the 2 base corners, one of them is at the negative x direction while the other is at the positive x direction. The same applies to the two data end corners.

This method accepts 0, 1, 2 or 4 radius values. The usage of these values depend how many values are provided as follows.

<table>
<thead>
<tr>
<th>Values Provided</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>The radii of the data end corners are automatically determined. The radii of the base corners are set to 0.</td>
</tr>
<tr>
<td>1</td>
<td>The radii of the data end corners are set to the specified value. The radii of the base corners are set to 0.</td>
</tr>
<tr>
<td>2</td>
<td>The radii of the data end corners are set to the first value. The radii of the base corners are set to the second value.</td>
</tr>
<tr>
<td>4</td>
<td>The radius of the data end corner at the negative x direction is set to the first value. The radius of the data end corner at the positive x direction is set to the second value. The radius of the base corner at the negative x direction is set to the third value. The radius of the base corner at the positive x direction is set to the fourth value.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r1</td>
<td>-&amp; h7fffffff</td>
<td>The first radius. See description above on how this radius value is used.</td>
</tr>
<tr>
<td>r2</td>
<td>-&amp; h7fffffff</td>
<td>The second radius. See description above on how this radius value is used.</td>
</tr>
<tr>
<td>r3</td>
<td>-&amp; h7fffffff</td>
<td>The third radius. See description above on how this radius value is used.</td>
</tr>
<tr>
<td>r4</td>
<td>-&amp; h7fffffff</td>
<td>The fourth radius. See description above on how this radius value is used.</td>
</tr>
</tbody>
</table>

See also:

- 28.6.12 setRoundedCorners
28.7  class CDBaseBoxLayerMBS

28.7.1  class CDBaseBoxLayerMBS

Function:
The BaseBoxLayer class is the base class for layers that uses isolated symbols to represent multiple data
sets. These include BoxWhiskerLayer, HLOCLayer and CandleStickLayer.
Notes:
Subclass of the CDLayerMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin
functions.

28.7.2  Methods

28.7.3  setDataGap(gap as Double)

Function: Sets the symbol width by specifying the gap ratio between adjacent symbols.
Notes:
Parameter Default Description
--- ----------- ------------------------------------
gap (Mandatory) The gap between two adjacent symbols as the portion of the space between the
midpoints of the elements. The gap must be in the range 0 - 1. A value of 0 (the default) means there is no gap between two adjacent symbols.

28.7.4  setDataWidth(width as Integer)

Function: Sets the symbol width by specifying the pixel width of the symbols.
Notes:
Parameter Default Description
--- ----------- ------------------------------------
width (Mandatory) The width of the symbols in pixels.

28.7.5  setMinImageMapSize(size as Integer)

Function: Sets the minimum height (or width if the x-axis and y-axis are swapped with CDXY-
Chapter \ref{chartmbs.swapxy} of the hot spots defined by the image map.

\textbf{Notes:}

By default, the hot spots defined by image map exactly cover the bars. For very short bars, the hot spots may be very small, and it may become difficult to move the mouse over the hot spots. This method ensures the hot spots are at least of certain size, even if the bars are shorter. The default is 5 pixels.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>size</td>
<td>(Mandatory)</td>
<td>The minimum height (or width if the x-axis and y-axis are swapped with \texttt{CDXYChartMBS.swapXY}) of the hot spots defined by the image map.</td>
</tr>
</tbody>
</table>

\section{setRoundedCorners(r1 as Integer)}

\textbf{MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.}

\textbf{Function:} Configures rounded corners for the boxes.

\textbf{Notes:}

This method currently is only supported by the BoxWhiskerLayer.

A box has 4 corners, two of them are at "box-top", and two of them are at "box-bottom". Note that "box-top" and "bottom-bottom" refer to the sides of the box representing the boxTop and boxBottom parameters in \texttt{CDXYChartMBS.addBoxWhiskerLayer} or \texttt{CDXYChartMBS.addBoxLayer}. Note that they are not necessarily the geometric top or bottom of the box. For example, if the y-axis is reversed (such as configured using \texttt{CDAxisMBS.setReverse}), the top and bottom side may be reversed. For horizontal boxes (with \texttt{CDXYChartMBS.swapXY} in effect), the box-top and box-bottom sides may actually be the right and left sides.

Of the 2 box-top corners, one of them is at the negative x direction while the other is at the positive x direction. The same applies to the box-bottom corners.

This method accepts 0, 1, 2 or 4 radius values. The usage of these values depend how many values are provided as follows.

See also:

- \ref{setRoundedCorners(r1 as Integer, r2 as Integer, r3 as Integer = -2147483647, r4 as Integer = -2147483647)}
Values Provided | Description
--- | ---
0 | The radii of all the box corners are automatically determined.
1 | The radii of all the box corners are set to the specified value.
2 | The radii of the box-top corners are set to the first value. The radii of the box-bottom corners are set to the second value.
4 | The radius of the box-top corner at the negative x direction is set to the first value. The radius of the box-top corner at the positive x direction is set to the second value. The radius of the box-bottom corner at the negative x direction is set to the third value. The radius of the box-bottom corner at the positive x direction is set to the fourth value.

Argument | Default | Description
--- | --- | ---
r1 | -0x7fffffff | The first radius. See description above on how this radius value is used.
r2 | -0x7fffffff | The second radius. See description above on how this radius value is used.
r3 | -0x7fffffff | The third radius. See description above on how this radius value is used.
r4 | -0x7fffffff | The fourth radius. See description above on how this radius value is used.

28.7.7 setRoundedCorners(r1 as Integer, r2 as Integer, r3 as Integer = -2147483647, r4 as Integer = -2147483647)

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Configures rounded corners for the boxes.
**Notes:**
This method currently is only supported by the BoxWhiskerLayer.

A box has 4 corners, two of them are at "box-top", and two of them are at "box-bottom". Note that "box-top" and "bottom-bottom" refer to the sides of the box representing the boxTop and boxBottom parameters in CDXYChartMBS.addBoxWhiskerLayer or CDXYChartMBS.addBoxLayer. Note that they are not necessarily the geometric top or bottom of the box. For example, if the y-axis is reversed (such as configured using CDAxisMBS.setReverse), the top and bottom side may be reversed. For horizontal boxes (with CDXYChartMBS.swapXY in effect), the box-top and box-bottom sides may actually be the right and left sides.

Of the 2 box-top corners, one of them is at the negative x direction while the other is at the positive x direction. The same applies to the box-bottom corners.

This method accepts 0, 1, 2 or 4 radius values. The usage of these values depend how many values are provided as follows.

See also:
28.7. CLASS CDBASEBOXLAYERMBS

Values Provided      Description
0                     The radii of all the box corners are automatically determined.
1                     The radii of all the box corners are set to the specified value.
2                     The radii of the box-top corners are set to the first value. The radii of the
                      box-bottom corners are set to the second value.
4                     The radius of the box-top corner at the negative x direction is set to the first
                      value. The radius of the box-top corner at the positive x direction is set to the
                      second value. The radius of the box-bottom corner at the negative x direction
                      is set to the third value. The radius of the box-bottom corner at the positive
                      x direction is set to the fourth value.

Argument     Default     Description
r1           -0x7fffffff The first radius. See description above on how this radius value is used.
r2           -0x7fffffff The second radius. See description above on how this radius value is used.
r3           -0x7fffffff The third radius. See description above on how this radius value is used.
r4           -0x7fffffff The fourth radius. See description above on how this radius value is used.

• 28.7.6 setRoundedCorners(r1 as Integer)
28.8 class CDBaseChartMBS

28.8.1 class CDBaseChartMBS

**Function:** The BaseChart class is an abstract class containing methods that are common to all chart types.  
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

28.8.2 Methods

28.8.3 addExtraField(numbers() as Double)

**Function:** Adds an array of numbers/dates to be used as an extra field in various places.  
**Notes:** This method merely stores the data inside the chart object. The Parameter Substitution and Formatting mechanism will determine how the data are to be used.

A common use for extra fields is to specify extra information (such as a custom serial number for the data points) to be displayed on data labels or on tool tips, or to supply extra query parameters in clickable charts. All these are achieved by specifying the extra field on the data label template or image map templates during parameter substitution.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>numbers</td>
<td>(Mandatory)</td>
<td>An array of numbers/dates to be stored inside the chart object.</td>
</tr>
</tbody>
</table>

See also:

- 28.8.4 addExtraField(paths() as folderitem)  
- 28.8.5 addExtraField(texts() as string)

28.8.4 addExtraField(paths() as folderitem)

**Function:** Adds an array of file paths to be used as an extra field in various places.  
**Notes:** This method merely stores the data inside the chart object. The Parameter Substitution and Formatting mechanism will determine how the data are to be used.
28.8.  **CLASS CDBASECHARTMBS**

A common use for extra fields is to specify extra information (such as a custom serial number for the data points) to be displayed on data labels or on tool tips, or to supply extra query parameters in clickable charts. All these are achieved by specifying the extra field on the data label template or image map templates during parameter substitution.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>texts</td>
<td>(Mandatory)</td>
<td>An array of text to be stored inside the chart object.</td>
</tr>
</tbody>
</table>

See also:

- 28.8.3 addExtraField(numbers() as Double) 4472
- 28.8.5 addExtraField(texts() as string) 4473

### 28.8.5 addExtraField(texts() as string)

**MBS ChartDirector Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:** Adds an array of text to be used as an extra field in various places.

**Notes:**

This method merely stores the data inside the chart object. The Parameter Substitution and Formatting mechanism will determine how the data are to be used.

A common use for extra fields is to specify extra information (such as a custom serial number for the data points) to be displayed on data labels or on tool tips, or to supply extra query parameters in clickable charts. All these are achieved by specifying the extra field on the data label template or image map templates during parameter substitution.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>texts</td>
<td>(Mandatory)</td>
<td>An array of text to be stored inside the chart object.</td>
</tr>
</tbody>
</table>

See also:

- 28.8.3 addExtraField(numbers() as Double) 4472
- 28.8.4 addExtraField(paths() as folderitem) 4472

### 28.8.6 addLegend(x as Integer, y as Integer, noOfCols as Integer, font as string = "", fontsize as Double = 10) as CDLegendBoxMBS

**MBS ChartDirector Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:** Adds a legend box to the chart with grid layout.

**Notes:**
In grid layout, the legend box will be divided into a table in which all cells are of the same width. The legend entries will fill the cells from left to right, top to bottom.

The number of columns can be specified using the noOfCols argument. If this argument is set to the special constant AutoGrid (= -2), the number of columns will be automatically determined based on the longest legend entry. If this argument is 0, the legend box will use a flow layout (from left to right and then top to bottom, in which the entries may not be vertically aligned).

In any case, the number of rows in the table is automatically determined so as to have enough cells for all legend entries.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>(Mandatory)</td>
<td>The x coordinate of the reference point of the legend box. By default, the reference point is the top-left corner of the box, but can be configured by using TextBox.setAlignment.</td>
</tr>
<tr>
<td>y</td>
<td>(Mandatory)</td>
<td>The y coordinate of the reference point of the legend box. By default, the reference point is the top-left corner of the box, but can be configured by using TextBox.setAlignment.</td>
</tr>
<tr>
<td>noOfCols</td>
<td>(Mandatory)</td>
<td>The number of columns in the legend box. The special value AutoGrid (= -2) means the number of columns is automatically determined. If this argument is 0, the legend box will use a flow layout (from left to right and then top to bottom, in which the entries may not be vertically aligned).</td>
</tr>
<tr>
<td>font</td>
<td>&quot;&quot;</td>
<td>The font name of the font for drawing the legend text. The default is &quot;normal&quot;. See Font Specification for details on various font attributes.</td>
</tr>
<tr>
<td>fontSize</td>
<td>10</td>
<td>The font size of the legend text.</td>
</tr>
</tbody>
</table>

Return Value
A LegendBox object representing the legend box. You may use this object to fine-tune the appearance of the legend box.

See font specification here:
http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml

See also:

- 28.8.7 addLegend(x as Integer, y as Integer, vertical as boolean=true, font as string = "", fontsize as Double = 10) as CDLegendBoxMBS

28.8.7 addLegend(x as Integer, y as Integer, vertical as boolean=true, font as string = "", fontsize as Double = 10) as CDLegendBoxMBS


Function: Adds a legend box to the chart.
Notes:
The entries in the legend box will flow from top to bottom (one line per entry), or from left to right and then top to bottom (like flowing text), depending on the vertical argument. For grid layout, use BaseChart.addLegend2.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>(Mandatory)</td>
<td>The x coordinate of the reference point of the legend box. By default, the reference point is the top-left corner of the box, but can be configured by using TextBox.setAlignment.</td>
</tr>
<tr>
<td>y</td>
<td>(Mandatory)</td>
<td>The y coordinate of the reference point of the legend box. By default, the reference point is the top-left corner of the box, but can be configured by using TextBox.setAlignment.</td>
</tr>
<tr>
<td>vertical</td>
<td>true</td>
<td>A true value means the legend keys are laid out vertically (one line per entry). A false value means the legend keys are laid out horizontal and flow like text (from left to right, top to bottom).</td>
</tr>
<tr>
<td>font</td>
<td>&quot;&quot;</td>
<td>The font name of the font for drawing the legend text. The default is &quot;normal&quot;. See Font Specification for details on various font attributes.</td>
</tr>
<tr>
<td>fontSize</td>
<td>10</td>
<td>The font size of the legend text.</td>
</tr>
</tbody>
</table>

Return Value
A LegendBox object representing the legend box. You may use this object to fine-tune the appearance of the legend box.

See font specification here:
http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml
See also:

- 28.8.6 addLegend(x as Integer, y as Integer, noOfCols as Integer, font as string = "", fontsize as Double = 10) as CDLegendBoxMBS

28.8.8 addLine(x1 as Integer, y1 as Integer, x2 as Integer, y2 as Integer, colorvalue as color, lineWidth as Integer = 1) as CDLineMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Same as the other addLine method, but uses color instead of integer data type for passing color values.
See also:

- 28.8.9 addLine(x1 as Integer, y1 as Integer, x2 as Integer, y2 as Integer, colorvalue as Integer = & hffff0001, lineWidth as Integer = 1) as CDLineMBS
28.8.9 addLine(x1 as Integer, y1 as Integer, x2 as Integer, y2 as Integer, colorValue as Integer = & hffff0001, lineWidth as Integer = 1) as CDLineMBS


**Function**: Adds a line to the chart.

**Notes**:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>x1</td>
<td>(Mandatory)</td>
<td>The x coordinate of the first endpoint of the line.</td>
</tr>
<tr>
<td>y1</td>
<td>(Mandatory)</td>
<td>The y coordinate of the first endpoint of the line.</td>
</tr>
<tr>
<td>x2</td>
<td>(Mandatory)</td>
<td>The x coordinate of the second endpoint of the line.</td>
</tr>
<tr>
<td>y2</td>
<td>(Mandatory)</td>
<td>The y coordinate of the second endpoint of the line.</td>
</tr>
<tr>
<td>color</td>
<td>LineColor</td>
<td>The color of the line.</td>
</tr>
<tr>
<td>lineWidth</td>
<td>1</td>
<td>The width of the line.</td>
</tr>
</tbody>
</table>

**Return Value**

A Line object representing the line added. You may use this object to fine-tune the appearance of the line.

**See also**:

- 28.8.8 addLine(x1 as Integer, y1 as Integer, x2 as Integer, y2 as Integer, colorValue as color, lineWidth as Integer = 1) as CDLineMBS

28.8.10 addTable(x as Integer, y as Integer, alignment as Integer, col as Integer, row as Integer) as CDMLTableMBS


**Function**: Adds a CDML table to the chart.

**Notes**:

**Arguments**:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>(Mandatory)</td>
<td>The x-coordinate of the reference point used to position the table.</td>
</tr>
<tr>
<td>y</td>
<td>(Mandatory)</td>
<td>The y-coordinate of the reference point used to position the table.</td>
</tr>
<tr>
<td>alignment</td>
<td>(Mandatory)</td>
<td>The alignment of the table with respect to the reference point. For example, a value of kTopLeft means the reference point is the top-left corner of the table. See Alignment Specification for supported alignment types.</td>
</tr>
<tr>
<td>col</td>
<td>(Mandatory)</td>
<td>The number of columns in the table.</td>
</tr>
<tr>
<td>row</td>
<td>(Mandatory)</td>
<td>The number of rows in the table.</td>
</tr>
</tbody>
</table>

Returns a CDMLTableMBS object representing the CDML table added.
28.8.11 addText(x as Integer, y as Integer, text as string, font as string = "", fontsize as Double = 8, fontcolor as Integer = & hffff0002, alignment as Integer = 7, angle as Double = 0, vertical as boolean=false) as CDTextBoxMBS


Function: Adds a text box to the chart.

Notes:
By default, only the text is visible, the box is transparent. This method returns a TextBox object that can be used to change the appearance of the text box.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>(Mandatory)</td>
<td>The x coordinate of the left of the text box.</td>
</tr>
<tr>
<td>y</td>
<td>(Mandatory)</td>
<td>The y coordinate of the top of the text box.</td>
</tr>
<tr>
<td>text</td>
<td>(Mandatory)</td>
<td>The text to shown in the text box. See ChartDirector Mark Up Language on how to embed special tags in the text for sophisticated formatting.</td>
</tr>
<tr>
<td>font</td>
<td>&quot;&quot;</td>
<td>The font used to draw the text. See Font Specification for details on various font attributes.</td>
</tr>
<tr>
<td>fontSize</td>
<td>8</td>
<td>The font size used to draw the text.</td>
</tr>
<tr>
<td>fontColor</td>
<td>TextColor</td>
<td>The color used to draw the text.</td>
</tr>
<tr>
<td>alignment</td>
<td>TopLeft</td>
<td>The alignment of the text within the text box. See Alignment Specification for supported alignment types.</td>
</tr>
<tr>
<td>angle</td>
<td>0</td>
<td>The rotation angle of the text within the text box.</td>
</tr>
<tr>
<td>vertical</td>
<td>false</td>
<td>Indicate whether the text should be laid out vertically (from top to bottom) or horizontally (from left to right).</td>
</tr>
</tbody>
</table>

Return Value
A TextBox object representing the text box. This may be used to fine-tune the appearance of the text box.

See font specification here:
http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml

See also:

- 28.8.12 addText(x as Integer, y as Integer, text as string, font as string, fontsize as Double, fontcolor as color, alignment as Integer = 7, angle as Double = 0, vertical as boolean=false) as CDTextBoxMBS

28.8.12 addText(x as Integer, y as Integer, text as string, font as string, fontsize as Double, fontcolor as color, alignment as Integer = 7, angle as Double = 0, vertical as boolean=false) as CDTextBoxMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Same as the other addText method, but uses color instead of integer data type for passing color
values.
See also:

- 28.8.11 addText(x as Integer, y as Integer, text as string, font as string = "", fontsize as Double = 8, fontcolor as Integer = & hffff0002, alignment as Integer = 7, angle as Double = 0, vertical as boolean=false) as CDTextBoxMBS

28.8.13 addTitle(alignment as Integer, text as string, font as string = "", fontsize as Double = 12, fontColor as Integer = & hffff0002, bgColor as Integer = & hff000000, edgeColor as Integer = & hff000000) as CDTextBoxMBS


**Function:** Adds a title to the chart.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>alignment</td>
<td>(Mandatory)</td>
<td>The position on the title on the chart. See Alignment Specification for supported alignment types.</td>
</tr>
<tr>
<td>text</td>
<td>(Mandatory)</td>
<td>The text for the title. See ChartDirector Mark Up Language on how to embed special tags in the text for sophisticated formatting.</td>
</tr>
<tr>
<td>font</td>
<td>&quot;&quot;</td>
<td>The font used to draw the title text. The default is &quot;bold&quot;. See Font Specification for details on various font attributes.</td>
</tr>
<tr>
<td>fontSize</td>
<td>12</td>
<td>The font size in points for the title text.</td>
</tr>
<tr>
<td>fontColor</td>
<td>TextColor</td>
<td>The color of the title text.</td>
</tr>
<tr>
<td>bgColor</td>
<td>Transparent</td>
<td>The background color of the title box.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>Transparent</td>
<td>The border color of the title box.</td>
</tr>
</tbody>
</table>

**Return Value**

A TextBox object representing the title box. This may be used to fine-tune the appearance of the title box.

See font specification here:
http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml

See also:

- 89.31.10 addTitle(alignment as Integer, text as string, font as string, fontsize as Double, fontColor as color, bgColor as color, edgeColor as color) as CDTextBoxMBS

- 28.8.15 addTitle(text as string, font as string = "", fontsize as Double = 12, fontColor as Integer = & hffff0002, bgColor as Integer = & hff000000, edgeColor as Integer = & hff000000) as CDTextBoxMBS

- 28.8.16 addTitle(text as string, font as string, fontsize as Double, fontColor as color, bgColor as color, edgeColor as color) as CDTextBoxMBS
28.8.14 addTitle(alignment as Integer, text as string, font as string, fontsize as Double, fontColor as color, bgColor as color, edgeColor as color) as CDTextBoxMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Same as the other addTitle method, but uses color instead of integer data type for passing color values.

See also:

- 28.8.13 addTitle(alignment as Integer, text as string, font as string = "", fontsize as Double = 12, fontColor as Integer = & hff000002, bgColor as Integer = & hff000000, edgeColor as Integer = & hff000000) as CDTextBoxMBS
- 28.8.15 addTitle(text as string, font as string = "", fontsize as Double = 12, fontColor as Integer = & hff000002, bgColor as Integer = & hff000000, edgeColor as Integer = & hff000000) as CDTextBoxMBS
- 28.8.16 addTitle(text as string, font as string, fontsize as Double, fontColor as color, bgColor as color, edgeColor as color) as CDTextBoxMBS

28.8.15 addTitle(text as string, font as string = "", fontsize as Double = 12, fontColor as Integer = & hff000002, bgColor as Integer = & hff000000, edgeColor as Integer = & hff000000) as CDTextBoxMBS

MBS ChartDirector Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds a title at the top center of the chart.

**Notes:**
The title is contained within a box, of which the width is the same as the width of the chart, and the height is automatically adjusted to fit the text. The box is initially invisible, but can be made visible by setting the bgColor and edgeColor.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>text</td>
<td>(Mandatory)</td>
<td>The text for the title. See ChartDirector Mark Up Language on how to embed special tags in the text for sophisticated formatting.</td>
</tr>
<tr>
<td>font</td>
<td>&quot;&quot;</td>
<td>The font used to draw the title text. The default is &quot;bold&quot;. See Font Specification for details on various font attributes.</td>
</tr>
<tr>
<td>fontSize</td>
<td>12</td>
<td>The font size in points for the title text.</td>
</tr>
<tr>
<td>fontColor</td>
<td>TextColor</td>
<td>The color of the title text.</td>
</tr>
<tr>
<td>bgColor</td>
<td>Transparent</td>
<td>The background color of the title box.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>Transparent</td>
<td>The border color of the title box.</td>
</tr>
</tbody>
</table>

**Return Value**
A TextBox object representing the title box. This may be used to fine-tune the appearance of the title box.
See font specification here:
http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml

See also:

- 28.8.13 addTitle(alignment as Integer, text as string, font as string = "", fontsize as Double = 12, 
  fontColor as Integer = & hffff0002, bgColor as Integer = & hff000000, edgeColor as Integer = & 
  hff000000) as CDTextBoxMBS

- 89.31.10 addTitle(alignment as Integer, text as string, font as string, fontsize as Double, fontColor as 
  color, bgColor as color, edgeColor as color) as CDTextBoxMBS

- 28.8.16 addTitle(text as string, font as string, fontsize as Double, fontColor as color, bgColor as color, 
  edgeColor as color) as CDTextBoxMBS

28.8.16  addTitle(text as string, font as string, fontsize as Double, fontColor as 
          color, bgColor as color, edgeColor as color) as CDTextBoxMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other addTitle method, but uses color instead of integer data type for passing color
values.
See also:

- 28.8.13 addTitle(alignment as Integer, text as string, font as string = "", fontsize as Double = 12, 
  fontColor as Integer = & hffff0002, bgColor as Integer = & hff000000, edgeColor as Integer = & 
  hff000000) as CDTextBoxMBS

- 89.31.10 addTitle(alignment as Integer, text as string, font as string, fontsize as Double, fontColor as 
  color, bgColor as color, edgeColor as color) as CDTextBoxMBS

- 28.8.15 addTitle(text as string, font as string = "", fontsize as Double = 12, fontColor as Integer = & 
  hff000002, bgColor as Integer = & hff000000, edgeColor as Integer = & hff000000) as CDTextBoxMBS

28.8.17  adjustBrightness(ColorValue as color, brightness as Double) as Integer

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other adjustBrightness method, but uses color instead of integer data type for 
passing color values.
See also:

- 28.8.18 adjustBrightness(ColorValue as Integer, brightness as Double) as Integer

28.8.18  adjustBrightness(ColorValue as Integer, brightness as Double) as Integer

Function: Creates a color that is a darkened or brightened version of the given color.
Notes:
A brightness less than 1 means the color is darkened, while a brightness greater than 1 means the color is 
brightened. For example, a brightness of 0.5 means the color is half as bright as the original color. If the 
original color is red, the color will become dark red. Conversely, a brightness of 2 means the color is twice 
as bright as the original color. If the original color is red, the color will become light red.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>c</td>
<td>(Mandatory)</td>
<td>The given color.</td>
</tr>
<tr>
<td>brightness</td>
<td>(Mandatory)</td>
<td>A non-negative number represent the factor to darken or brighten the color.</td>
</tr>
</tbody>
</table>

Return Value
A 32-bit integer representing the darkened or brightened color.
See also:

- 89.34.22 adjustBrightness(ColorValue as color, brightness as Double) as Integer

28.8.19 AllPassFilter as Integer

Function: Creates a data filter that matches every element.
Notes:
This method is typically used in Axis.setMultiFormat and Axis.setMultiFormat2 as a "catch all" filter.

Return Value
An integer filter id representing the filter.

28.8.20 ArrowShape(angle as Double = 0.0, widthRatio as Double = 1, stemWidthRatio as Double = 0.5, stemLengthRatio as Double = 0.5) as Integer

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Gets the shape id that represents an arrow shape.
Notes:
Please refer to Shape Specification for samples and more information on using shapes in ChartDirector.

Returns an integer shape id representing the arrow shape.
28.8.21  **barLighting**(startBrightness as Double = 0.75, endBrightness as Double = 1.5) as Integer


**Function:** A special shading effect for rectangular and polygonal bars on a CDBarLayerMBS.

**Notes:**

It shades all surfaces of a 2D or 3D bar with gradient colors.

For the front surface of a bar, the gradient is from base line of the bar to the end of the bar. For example, for a vertical bar pointing upwards, the gradient is from bottom to the top. Similarly, for a horizontal bar pointing rightwards, the gradient is from left to right.

For a 3D bar, the gradient for the top surface of a vertical bar or the right surface of a horizontal bar is from front to back. The gradients for the side surfaces are the same as for the front surface.

The gradient is specified with two brightness values at the gradient end points. A brightness less than 1 means the color is darkened, while a brightness greater than 1 means the color is brightened. For example, a brightness of 0.5 means the color is half as bright as the original color. If the original color is red, the color will become dark red. Conversely, a brightness of 2 means the color is twice as bright as the original color. If the original color is red, the color will become light red.

The followings are some examples demonstrating this effect.

The barLighting method returns an integer representing this effect. The integer can be used as the second argument to CDLayerMBS.setBorderColor for CDBarLayerMBS objects to apply the effect to bars.

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>startBrightness</td>
<td>0.75</td>
<td>The brightness at the starting point.</td>
</tr>
<tr>
<td>endBrightness</td>
<td>1.5</td>
<td>The brightness at the ending point.</td>
</tr>
</tbody>
</table>
28.8. **CLASS CDBASECHARTMBS**

Return Value
An integer representing the bar lighting effect.

### 28.8.22 blueMetalGradient as Integer()


**Function:** A constant array of integers to represent a gradient that looks like a blue metallic color.

**Notes:**

The array is in a format that can be directly used in BaseChart.gradientColor2 and DrawArea.gradientColor2. Its contents (in hex) is:

```
00 9898E0 60 F0F0FF B0 D8D8F0 100 9898E0
```

See Color Specification on how colors are represented in ChartDirector.

### 28.8.23 brushedGoldColor(texture as Integer = 2, angle as Integer = 90) as Integer


**Function:** Creates a brushed golden color, most commonly used as a background color.

**Notes:**

This method is a short cut to the CDBaseChartMBS.brushedMetalColor method, using yellow (FFEE44 in hex) as the base color.

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>texture</td>
<td>2</td>
<td>The strength of the brushed texture. Must be 0, 1, 2 or 3 for no texture, light texture, medium texture and strong texture.</td>
</tr>
<tr>
<td>angle</td>
<td>90</td>
<td>The direction for brightness modulation, specified as a clockwise angle in degrees, with 0 being the upward pointing direction.</td>
</tr>
</tbody>
</table>

**Return Value:**

A 32-bit integer representing the brushed golden color.
28.8.24 brushedMetalColor(c as Integer, texture as Integer = 2, angle as Integer = 90) as Integer

**Function:** Creates a color by modulates the brightness of another color to create brushed metallic shiny effects.
**Notes:**
The brightness of the color will vary smoothly across the image in a given a direction, so as to produce a shiny effect. The color will then be modulated with a horizontal texture to create the brushed effect. The modulation period will be the same as the size of the image, so this method is best use to create background colors.

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>c</td>
<td>(Mandatory)</td>
<td>The color to be modulated.</td>
</tr>
<tr>
<td>texture</td>
<td>2</td>
<td>The strength of the brushed texture. Must be 0, 1, 2 or 3 for no texture, light texture, medium texture and strong texture.</td>
</tr>
<tr>
<td>angle</td>
<td>90</td>
<td>The direction for brightness modulation, specified as a clockwise angle in degrees, with 0 being the upward pointing direction.</td>
</tr>
</tbody>
</table>

**Return Value:**
A 32-bit integer representing the brushed metallic color.

28.8.25 brushedSilverColor(texture as Integer = 2, angle as Integer = 90) as Integer

**Function:** Creates a brushed silver color, most commonly used as a background color.
**Notes:**
This method is a short cut to the CDBaseChartMBS.brushedMetalColor method, using grey (DDDDDD in hex) as the base color.

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>texture</td>
<td>2</td>
<td>The strength of the brushed texture. Must be 0, 1, 2 or 3 for no texture, light texture, medium texture and strong texture.</td>
</tr>
<tr>
<td>angle</td>
<td>90</td>
<td>The direction for brightness modulation, specified as a clockwise angle in degrees, with 0 being the upward pointing direction.</td>
</tr>
</tbody>
</table>
28.8. **CLASS CDBASECHARTMBS**

Return Value
A 32-bit integer representing the brushed silver color.

### 28.8.26 bSearch(values() as Double, value as Double) as Double

**MBS ChartDirector Plugin, Plugin Version:** 12.3, **Console & Web:** Yes, **Mac:** Yes, **Win:** Yes, **Linux:** Yes.

**Function:** Uses binary search to search for a value in an array.

**Notes:**
This method returns the array index of the value in the array, which must be sorted in ascending order.

If the value is in between two elements of the array, this method returns a non-integer that interpolates the indexes of the two elements. For example, suppose the array consists of 3 elements [4, 6, 10]. If this method is used to search for the value 7, it will return 1.25.

If the value is smaller or larger than all the elements in the array, this method returns the nearest index, which must be either 0 or the index of the last element of the array.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>(Mandatory)</td>
<td>The array to be searched.</td>
</tr>
<tr>
<td>v</td>
<td>(Mandatory)</td>
<td>The value to search for.</td>
</tr>
</tbody>
</table>

Returns the index of the value within the array. If the value is in between two elements of the array, this method returns a non-integer that interpolates the indexes of the two elements. If the value is smaller or larger than all the elements in the array, this method returns the nearest index.

### 28.8.27 chartTime(t as Integer) as Double

**MBS ChartDirector Plugin, Plugin Version:** 8.2, **Console & Web:** Yes, **Mac:** Yes, **Win:** Yes, **Linux:** Yes.

**Function:** Converts a UNIX time (seconds elapsed since 01-01-1970 00:00:00 GMT) to the date/time format used by ChartDirector.

**Notes:**
The UNIX time will be converted assuming based on local time zone (the time zone settings of the operating system).

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>t</td>
<td>(Mandatory)</td>
<td>A time represented as seconds elapsed since 01-01-1970 00:00:00 GMT.</td>
</tr>
</tbody>
</table>

Return Value
CHAPTER 28. CHARTDIRECTOR

The second elapsed since 01-01-0001 00:00:00 to the given time.

See also:

- 28.8.28 chartTime(year as Integer, month as Integer, day as Integer, hour as Integer = 0, minute as Integer = 0, second as Integer = 0) as Double

28.8.28 chartTime(year as Integer, month as Integer, day as Integer, hour as Integer = 0, minute as Integer = 0, second as Integer = 0) as Double


Function: Obtain the second elapsed since 01-01-0001 00:00:00 to the given time, which is the date/time format used by ChartDirector.

Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>y</td>
<td>(Mandatory)</td>
<td>The year component of the given time.</td>
</tr>
<tr>
<td>m</td>
<td>(Mandatory)</td>
<td>The month component of the given time</td>
</tr>
<tr>
<td>d</td>
<td>(Mandatory)</td>
<td>The day of month component of the given time</td>
</tr>
<tr>
<td>h</td>
<td>0</td>
<td>The hour component of the given time.</td>
</tr>
<tr>
<td>n</td>
<td>0</td>
<td>The minute component of the given time.</td>
</tr>
<tr>
<td>s</td>
<td>0</td>
<td>The second component of the given time.</td>
</tr>
</tbody>
</table>

Return Value
The second elapsed since 01-01-0001 00:00:00 to the given time.

See also:

- 28.8.27 chartTime(t as Integer) as Double

28.8.29 ClearTypeColor(gamma as Double = 0) as Integer


Function: Gets a value to represent that standard ClearType or a similar technology be used for font rendering.

Notes:

This constant is used in BaseChart.setAntiAlias and DrawArea.setAntiAlias.

ClearType is a Microsoft font rendering technology that renders text more accurately with subpixel rendering. Similar technologies include Quartz in Mac OS X, Adobe CoolType and other unnamed algorithms. Although this API uses ClearType in its name, ChartDirector may use ClearType or a similar technology depending on the operating system and programming language.

In most modern flat panel displays, a pixel is consisted of 3 sub-pixels R, G and B for the red, green and blue colors, typically arranged horizontally. So a row of pixels is actually a sequence of subpixels like RG-
BRGBRGBRGB... To display a white pixel, the display hardware turns on the RGB subpixels.

It happens a white dot can also be made by turning on the GB subpixels of one pixel, and the R subpixel of the next pixel to the right. This will result in 3 consecutive subpixels GBR, which is also white. This white dot will be in between the two pixels, with 2/3 on the left pixel, and 1/3 on the right pixel. In other words, it is possible to position a white dot in between two pixels without blurring it. ClearType uses this effect to render text with subpixel accuracy.

Apart from subpixel rendering, ClearType may adjust the glyph shapes to fit the pixel grid (technically called hinting) differently from classical rendering. As a result, the glyph shapes and sizes in ClearType may be different from classical rendering.

One issue with ClearType is that it is hardware dependent. To work perfectly, it needs to know the subpixels ordering of the display. In many applications, the charts are rendered on one computer, but viewed using another computer. For example, in a web application, the charts can be rendered on the server but displayed on the browser computer. The chart generating computer may not know the subpixel configuration of the viewing computer. If ClearType is used, there is a risk that the text may look suboptimal on the viewing computer.

To address the above issues, ChartDirector supports a hardware independent ClearType method, represented by ClearTypeMono. This is basically ClearType with subpixel rendering disabled. The resulting text has no color distortion. Black and white text will not be as sharp as standard ClearType, but is still better than classical anti-alias. The charts rendered can be viewed equally well with different types of displays. This is especially useful for applications in which the charts are rendered and viewed by different computers.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>gamma</td>
<td>0</td>
<td>Specifies the level of gamma correction used for ClearType font rendering. This is usually a number between 1 to 2.5. A value of 0 means the default gamma level.</td>
</tr>
</tbody>
</table>

**28.8.30 ClearTypeMono(gamma as Double = 0) as Integer**


**Function:** Gets a value to represent that hardware independent ClearType or a similar technology be used for font rendering.

**Notes:**

This constant is used in BaseChart.setAntiAlias and DrawArea.setAntiAlias.

Please refer to ClearTypeColor on the detail explanation of what is standard ClearType and hardware independent ClearType.
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28.8.31 ColorToInteger(c as color, alpha as Integer = 0) as Integer

Function: Converts a REALbasic color object to an integer for ChartDirector.

28.8.32 Constructor

MBS ChartDirector Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The private constructor.

28.8.33 Cross2Shape(width as Double = 0.5) as Integer

Function: Gets the shape id that represents a 'X' shape.
Notes: Please refer to Shape Specification for samples and more information on using shapes in ChartDirector.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>width</td>
<td>(Mandatory)</td>
<td>The percentage width of the arms of the a 'X' relative to the entire shape. Must be between 0 and 1.</td>
</tr>
</tbody>
</table>

Return Value
An integer shape id representing the a 'X' shape.

28.8.34 CrossShape(width as Double = 0.5) as Integer

Function: Gets the shape id that represents a '+' shape.
Notes: Please refer to Shape Specification for samples and more information on using shapes in ChartDirector.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>gamma</td>
<td>0</td>
<td>Specifies the level of gamma correction used for ClearType font rendering. This is usually a number between 1 to 2.5. A value of 0 means the default gamma level.</td>
</tr>
</tbody>
</table>
28.8. CLASS CDBASECHARTMBS

Argument Default Description
width (Mandatory) The percentage width of the arms of the a ’+’ relative to the entire shape. Must be between 0 and 1.

Return Value
An integer shape id representing the a ’+’ shape.

28.8.35 cylinderEffect(orientation as Integer = 5, ambientIntensity as Double = 0.5, diffuseIntensity as Double = 0.5, specularIntensity as Double = 0.75, shininess as Integer = 8) as Integer


Function: A special shading effect that emulates the lighting of a cylinder surface.

Notes:
This effect adjusts the brightness of the color of a rectangular box to make it look like cylindrical. The brightness is adjusted according to the Phong lighting model, in which the light source is from the viewer direction and is far away.

The cylinderEffect method returns an integer representing this effect. The integer can be used as the third argument to CDBoxMBS.setBackground to apply the effect to Box objects (including derived objects such as CDTextBoxMBS objects).

This effect is automatically used for cylindrical bars in a CDBarLayerMBS. You may use this method to adjust the lighting parameters by using its return value as the second argument to CDLayerMBS.setBorderColor.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>orientation</td>
<td>kCenter</td>
<td>The orientation of the cylinder. A value of kTop or kBottom means the cylinder is vertical. A value of kLeft or kRight means the cylinder is horizontal. A value of kCenter means the orientation is automatically determined. For a CDBarLayerMBS, the orientation will be the same as the orientation of the bars. For other objects (eg. CDTextBoxMBS objects), if the object height is bigger than its width, the cylinder will be treated as vertical, otherwise it will be treated as horizontal.</td>
</tr>
<tr>
<td>ambientIntensity</td>
<td>0.5</td>
<td>The ambient reflection coefficient of the Phong lighting model.</td>
</tr>
<tr>
<td>diffuseIntensity</td>
<td>0.5</td>
<td>The diffuse reflection coefficient of the Phong lighting model.</td>
</tr>
<tr>
<td>specularIntensity</td>
<td>0.75</td>
<td>The specular reflection coefficient of the Phong lighting model.</td>
</tr>
<tr>
<td>shininess</td>
<td>8</td>
<td>The shininess coefficient of the Phong lighting model.</td>
</tr>
</tbody>
</table>
Return Value
An integer representing the cylinder effect.

28.8.36  dashLineColor(colorvalue as color, patternCode as Integer = & h0505) as Integer

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other dashLineColor method, but uses color instead of integer data type for passing color values.
See also:

- 28.8.37 dashLineColor(colorvalue as Integer, patternCode as Integer = & h0505) as Integer

28.8.37  dashLineColor(colorvalue as Integer, patternCode as Integer = & h0505) as Integer

Function: A constant equals to 0505 (in hex) to represent a dash line pattern for use in dash colors.
Notes: See Color Specification on how colors are represented in ChartDirector.
See also:

- 28.8.36 dashLineColor(colorvalue as color, patternCode as Integer = & h0505) as Integer

28.8.38  defaultPalette as Integer()

MBS ChartDirector Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns the default palette.

28.8.39  Destructor

Function: The destructor for the base chart.

28.8.40  enableVectorOutput

Function: Enables true vector graphics output.
Notes:
By default, when creating the output image, ChartDirector draws directly onto an output buffer representing the bitmap of the image. For example, for a chart 800 x 600 pixels in size, the output buffer may represent a 800 x 600 bitmap. The output buffer size is unchanged no matter how many items are drawn onto it. Even if the output contains 1 million elements (e.g. 1 million symbols), the size of the output buffer is still the same.

On the other hand, a true vector output is indefinitely scalable and can be considered as having infinite resolution. To produce a true vector output, it is necessary to remember the graphics operations for every element in the output buffer. The output buffer size is therefore proportional to the number of elements to draw.

This method tells ChartDirector that it needs to remember the graphics operations to prepare for true vector output. If true vector output is needed, this method should be called immediately after creating the BaseChart object.

If this method is not called, and a vector graphics output format is used (such as SVG), instead of a true vector output, ChartDirector will output a raster image using the vector graphics format. (Most vector graphics formats support embedded raster images.)

28.8.41 flatBorder(thickness as Integer) as Integer

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Specifies a flat border of a given width.

Notes:

The flatBorder method returns an integer representing this effect. The integer can be used as the third argument to Box.setBackground to apply the effect to Box objects (including derived objects such as TextBox objects). It may also be used as the second argument to Layer.setBorderColor for BarLayer or BoxWhiskerLayer objects to apply the effect to bars or boxes.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>width</td>
<td>(Mandatory)</td>
<td>The border width. A positive value means the border is drawn inside the box or bar. A negative value means the border is outside the box or bar.</td>
</tr>
</tbody>
</table>

Returns an integer representing using flat border of the specified width.

28.8.42 formatValue(value as Double, formatstring as string) as string


Function: Formats a number/date using the ChartDirector formatting syntax as is in Parameter Substitution and Formatting.

Notes:
CHAPTER 28. CHARTDIRECTOR

Argument Default Description
value (Mandatory) The value to be formatted.
formatString (Mandatory) The format string, using `{ value }` to denote the value. For example, `$ `{ value | 2, }` can be used to format the value to 2 decimal points, using ",," as the thousand separator, and with a `'$'` sign in front.

28.8.43 getAbsOffsetX as Integer

Function: Gets the x offset of the chart relative to the outermost MultiChart container.
Notes: Returns an integer representing the x offset in pixels relative to the outermost MultiChart container, or 0 if the chart is not within a MultiChart container.

28.8.44 getAbsOffsetY as Integer

Function: Gets the y offset of the chart relative to the outermost MultiChart container.
Notes: Returns an integer representing the y offset in pixels relative to the outermost MultiChart container, or 0 if the chart is not within a MultiChart container.

28.8.45 getChartMetrics as string

Function: Gets the chart metrics for passing to CChartViewer to support view ports.
Notes:
The format of the chart metrics is not published.
Return Value
A text string representing the chart metrics.

28.8.46 getChartWeekDay(t as Double) as Integer

Function: Gets the weekday represented by a ChartDirector date/time.
Notes:
Argument Default Description
t (Mandatory) A ChartDirector date/time, that is, a number representing seconds elapsed since 01-01-0001 00:00:00.
28.8. **CLASS CDBASECHARTMBS**

**Return Value**
An integer from 0 - 6 representing Sun - Sat.

### 28.8.47 getChartYMD(t as Double) as Integer


**Function:** Gets the year, month and day represented by a ChartDirector date/time.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>t</td>
<td>(Mandatory)</td>
<td>A ChartDirector date/time, that is, a number representing seconds elapsed since 01-01-0001 00:00:00.</td>
</tr>
</tbody>
</table>

**Return Value**
An integer which when represented in decimal notation is yyyyymmdd, where yyyy is the year, mm is the month (1 - 12), and dd is the day (1 - 31).

### 28.8.48 getColor(index as Integer) as Integer


**Function:** Gets the color at the specified position of the palette.

**Notes:**
See Color Specification on how colors are represented in ChartDirector.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>paletteEntry</td>
<td>(Mandatory)</td>
<td>An index to the palette.</td>
</tr>
</tbody>
</table>

**Return Value**
The requested color.

### 28.8.49 getCopyright as string


**Function:** Returns the copyright string of the ChartDirector library.

**Example:**
MsgBox CDBaseChartMBS.getCopyright
// displays "Copyright (c) 2006 Advanced Software Engineering Limited"
### 28.8.50 `getDescription` as string


**Function:** Returns the library description.

**Example:**

```vbnet
MsgBox CDBaseChartMBS.getDescription // displays "ChartDirector"
```

### 28.8.51 `getDrawArea` as CDDrawAreaMBS


**Function:** Retrieves the internal DrawArea object that is used to draw the chart.

**Notes:**

The most common reason of accessing the internal DrawArea object is to add custom drawings (lines, texts, shapes, etc) to the chart.

If the custom drawings are drawn before drawing the chart image (eg. using BaseChart.makeChart, BaseChart.makeChart or BaseChart.makeChart3), the custom drawings will be at the background of the chart.

**Return Value**

A DrawArea object that can be used to add custom text and shapes to the chart.

### 28.8.52 `getHeight` as Integer


**Function:** Gets the height of the chart.

### 28.8.53 `getHTMLImageMap(url as string, queryFormat as string = ", extraAttr as string = ", offsetX as Integer = 0, offsetY as Integer = 0) as string


**Function:** Generates an HTML image map for the chart.

**Notes:**

This method generates an image map to represent all data points on the chart. It does not include legend box, title box or custom text box. Please use LegendBox.getHTMLImageMap or Box.getImageCoor to pro-
duce image maps for these objects.

This method should be called only after creating the chart image (e.g. using BaseChart.makeChart, BaseChart.makeChart or BaseChart.makeChart3). The image map cannot be determined without creating the chart image first.

This method accepts a URL as its argument. When generating an image map, it appends query parameters to the URL to indicate which data point the user has clicked.

The following is an example image map generated for a bar chart with 3 bars.

```html
<area shape="rect" coords="34,219,63,139" href="myurl.cpp?x=0& xLabel=Mon& dataSet=0& dataSetName=Revenue& value=100" />
<area shape="rect" coords="74,219,103,119" href="myurl.cpp?x=1& xLabel=Tue& dataSet=0& dataSetName=Revenue& value=125" />
<area shape="rect" coords="114,219,143,22" href="myurl.cpp?x=2& xLabel=Wed& dataSet=0& dataSetName=Revenue& value=245.78" />
```

The image map consists of multiple `<area>` tags, one for each bar in the chart. In the "href" attributes, query parameters are appended to the URL to provide information on the bar clicked.

The image map produces by ChartDirector does not include the `<map>` and `</map>` tag. This is intentional so that you can add additional custom `<area>` tags to the image map, or append multiple image maps together.

The type of query parameters to append to the URL depends on the chart type and layer type. The default query parameters are as follows.

**Chart/Layer Type**

- **Default Query Format**

<table>
<thead>
<tr>
<th>Type</th>
<th>Query Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pie chart</td>
<td><code>sector={\text{sector}}&amp;label={\text{label}}&amp;value={\text{value}}&amp;percent={\text{percent}}</code></td>
</tr>
<tr>
<td>Bar, Line, Spline, Step Line, Area and Scatter layers</td>
<td><code>x={\text{x}}&amp;xLabel={\text{xLabel}}&amp;dataSet={\text{dataSet}}&amp;dataSetName={\text{dataSetName}}&amp;value={\text{value}}</code></td>
</tr>
<tr>
<td>Percentage Bar and Percentage Area layers</td>
<td><code>x={\text{x}}&amp;xLabel={\text{xLabel}}&amp;dataSet={\text{dataSet}}&amp;dataSetName={\text{dataSetName}}&amp;value={\text{value}}&amp;percent={\text{percent}}</code></td>
</tr>
<tr>
<td>HLOC and CandleStick layers</td>
<td><code>x={\text{x}}&amp;xLabel={\text{xLabel}}&amp;high={\text{high}}&amp;low={\text{low}}&amp;open={\text{open}}&amp;close={\text{close}}</code></td>
</tr>
<tr>
<td>Box-Whisker layer</td>
<td><code>x={\text{x}}&amp;xLabel={\text{xLabel}}&amp;top={\text{top}}&amp;bottom={\text{bottom}}&amp;max={\text{max}}&amp;min={\text{min}}&amp;med={\text{med}}</code></td>
</tr>
<tr>
<td>Trend layer</td>
<td><code>dataSetName={\text{dataSetName}}</code></td>
</tr>
<tr>
<td>Vector layer and Polar Vector layer</td>
<td><code>x={\text{x}}&amp;xLabel={\text{xLabel}}&amp;dataSetName={\text{dataSetName}}&amp;value={\text{value}}&amp;dir={\text{dir}}&amp;len={\text{len}}</code></td>
</tr>
<tr>
<td>Polar Line, Area, Spline Line and Spline Area layers</td>
<td>&quot;x={\text{x}}&amp;label={\text{label}}&amp;name={\text{name}}&amp;value={\text{value}}&quot;</td>
</tr>
</tbody>
</table>

The texts in curly brackets (e.g. `{ sector }`, `{ dataSet }`, etc.) will be replaced by the actual values when
CHAPTER 28. CHARTDIRECTOR

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generating the image map. For example, \{ sector \} will be replaced by the sector number of the sector.

ChartDirector allows developers to modify the query parameters by using the queryFormat argument. For example, if \"x= { x } & v= { value } \" is used as the queryFormat for a XYChart, only the x position and the value of the data point will be included in query parameters.

Please refer to Parameter Substitution and Formatting on all available parameters and their meanings.

In addition to customizing the query parameters, ChartDirector supports additional HTML attributes in the <area> tags by using the extraAttr argument.

For example, the following extraAttr will add an "title" HTML attribute to every <area> tag. The attribute which will contain the x-axis label and the value of the data point. The "title" attribute will be displayed as "tool tip" when the mouse moves over the image map.

title=' \{ xlabel \} : \{ value \} '

Another common usage of the extraAttr argument is to add "onmouseover" and "onmouseout" HTML attributes to handle user interaction using Javascript on the browser.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>url</td>
<td>(Mandatory)</td>
<td>The URL to be used in the &quot;href&quot; attribute of the image map. Parameter Substitution and Formatting is supported. Use an empty string if no href attribute is needed.</td>
</tr>
<tr>
<td>queryFormat</td>
<td>&quot;&quot;</td>
<td>A text string representing the template of the query parameters to be appended to the URL. Parameter Substitution and Formatting is supported.</td>
</tr>
</tbody>
</table>

The special keyword \" \{ default \} \" represents the default query parameters. This is useful for specifying appending to the default.

Note that an empty string means to use the default query parameters. To specify no query parameter, use a space character.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>extraAttr</td>
<td>&quot;&quot;</td>
<td>A text string to specify additional attributes to add to the &lt;area&gt; tag. Parameter Substitution and Formatting is supported.</td>
</tr>
<tr>
<td>offsetX</td>
<td>0</td>
<td>An offset to be added to all x coordinates in the image map. This is useful if the current image will be shifted and inserted into another image. In this case, the image map will need to be shifted by the same offset.</td>
</tr>
<tr>
<td>offsetY</td>
<td>0</td>
<td>An offset to be added to all y coordinates in the image map. See offsetX above for description.</td>
</tr>
</tbody>
</table>
28.8. **CLASS CDBASECHARTMBS**

Return Value
A text string containing the image map generated.

---

28.8.54 **getLegend as CDLegendBoxMBS**


**Function:** Gets the LegendBox object representing the legend box in the chart.

**Notes:**
The LegendBox obtained using this method is not fixed. This allows you to add more keys to the legend box, and change the legend box fonts, etc. However, this also means that the legend box size (Box.getWidth and Box.getHeight) is undefined.

To obtain the width and height of the legend box, use BaseChart.layoutLegend.

**Return Value**
The LegendBox object representing the legend box in the chart.

---

28.8.55 **GetPath(path as folderitem) as string**


**Function:** Gets a path string for a folderitem.

**Notes:** Returns the path in the UTF8 format as ChartDirector needs them.

---

28.8.56 **getVersion as Integer**


**Function:** Gets ChartDirector version information.

**Example:**
```
dim v as Integer = CDBaseChartMBS.getVersion

dim v1 as Integer = Bitwise.BitAnd( Bitwise.ShiftRight(v, 24), 255)
dim v2 as Integer = Bitwise.BitAnd( Bitwise.ShiftRight(v, 16), 255)
dim v3 as Integer = Bitwise.BitAnd( v, 65535)

MsgBox str(v1)+"."+str(V2)+"."+str(V3)
```

**Notes:**
The version number is encoded as a 32-bit integer. The most significant 8 bits is the major version number. The next 8 bits are the minor version number. The least significant 16 bits are the build number.
Return Value
The version information encoded in a 32-bit integer.

28.8.57 getWidth as Integer

**Function:** Gets the width of the chart.

28.8.58 glassEffect(glareSize as Integer = 3, glareDirection as Integer = 8, raisedEffect as Integer = 5) as Integer

**Function:** A complex shading effect that emulates tinted glass or semi-transparent plastic material.  
**Notes:**
This effect involves glare and variation of lighting caused by reflection and refraction inside the material. It is best explained by viewing the examples.

**Example**

**Location of lighting effect**

- **Error Line Chart**
  The title is shaded using glass effect, with NormalGlare, lighting from Top, and raised effect of 5 pixels.
- **Donut Chart**
  Both the title and the sector labels are shaded using glass effect with ReducedGlare, lighting from Top, and raised effect of 5 pixels.
- **Glass Multi-Bar Chart**
  The bars are shaded using glass effect, with NormalGlare, lighting from Left, and raised effect of 5 pixels.

Currently, this effect only works well for long, thin objects, such as title bars, text boxes and bars in bar charts.

The glassEffect method returns an integer representing this effect. The integer can be used as the third argument to Box.setBackground to apply the effect it objects derived from Box (such as labels and titles represented by TextBox). It may also be used as the second argument to Layer.setBorderColor for BarLayer objects to apply the effect to bars.

Usually, NormalGlare is best for thin objects with lightly colored background, while ReducedGlare is best for dark background objects or not-so-thin objects (eg. text boxes using white text on a dark background, or with more than 1 line of text).

Return Value
28.8. **CLASS CDBASECHARTMBS**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>glareSize</td>
<td>NormalGlare</td>
<td>The amount of glare. Must be one of the predefined constants NormalGlare, ReducedGlare or NoGlare. With NormalGlare and ReducedGlare, the glare will cover around 50% and 35% of the object. If NoGlare is used, there will be no glare and the effect will not look like glass at all, but is equivalent to the CDBaseChartMBS.softLighting effect.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>glareDirection</th>
<th>Top</th>
<th>The direction of the glare, which must be one of the predefined constants Top, Right, Bottom, Left.</th>
</tr>
</thead>
<tbody>
<tr>
<td>raisedEffect</td>
<td>5</td>
<td>With glass shading effect, the object will appear to have some 3D depth. The raisedEffect argument controls the amount of 3D depth in pixels.</td>
</tr>
</tbody>
</table>

An integer representing the glass effect.

28.8.59 **goldColor(angle as Integer = 90) as Integer**

**Function:** Creates a golden color, most commonly used as a background color.  
**Notes:**  
This method is a short cut to the CDBaseChartMBS.metalColor method, using yellow (FFEE44 in hex) as the base color.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>angle</td>
<td>90</td>
<td>The direction for brightness modulation, specified as a clockwise angle in degrees, with 0 being the upward pointing direction.</td>
</tr>
</tbody>
</table>

**Return Value**  
A 32-bit integer representing the golden color.

28.8.60 **goldGradient as Integer()**

**Function:** A constant array of integers to represent a gradient that looks like a golden color.  
**Notes:**  
The array is in a format that can be directly used in BaseChart.gradientColor and DrawArea.gradientColor. Its contents (in hex) is:
See Color Specification on how colors are represented in ChartDirector.

28.8.61  \texttt{gradientColor(colors() as color, angle as Double = 90, scale as Double = 1.0, startX as Integer = 0, startY as Integer = 0) as Integer}

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
\textbf{Function:} Same as the other \texttt{gradientColor} method, but uses \texttt{color} instead of integer data type for passing color values.
See also:

- 28.8.62 \texttt{gradientColor(colors() as Integer, angle as Double = 90, scale as Double = 1.0, startX as Integer = 0, startY as Integer = 0) as Integer} 4500
- 28.8.63 \texttt{gradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, startColor as color, endColor as color) as Integer} 4501
- 28.8.64 \texttt{gradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, startColor as Integer, endColor as Integer) as Integer} 4501

28.8.62  \texttt{gradientColor(colors() as Integer, angle as Double = 90, scale as Double = 1.0, startX as Integer = 0, startY as Integer = 0) as Integer}

\textbf{Function:} Creates a multi-point linear gradient color.
\textbf{Notes:}
This method is for backward compatibility. Use BaseChart linearGradientColor2 instead.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>colorArray</td>
<td>(Mandatory)</td>
<td>An array defining the positions and colors of the pixels along the reference gradient line segment.</td>
</tr>
<tr>
<td>angle</td>
<td>90</td>
<td>The direction of the reference gradient line segment in degrees, measured clockwise, with 0 degree as the upward pointing direction. The default direction is horizontal from left to right (90 degrees).</td>
</tr>
<tr>
<td>scale</td>
<td>1.0</td>
<td>The scaling factor for the reference gradient line segment. By default, the reference gradient line segment is 256 pixels in length. The scaling factor can be used to stretch or compress the gradient line segment.</td>
</tr>
<tr>
<td>startX</td>
<td>0</td>
<td>The x coordinate of the starting point of the reference gradient line segment.</td>
</tr>
<tr>
<td>startY</td>
<td>0</td>
<td>The y coordinate of the starting point of the reference gradient line segment.</td>
</tr>
</tbody>
</table>

\textbf{Return Value}
A 32-bit integer representing the linear gradient color.
See also:
28.8. **CLASS CDBASECHARTMBS**

- 28.8.61 gradientColor(colors() as color, angle as Double = 90, scale as Double = 1.0, startX as Integer = 0, startY as Integer = 0) as Integer

- 28.8.63 gradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, startColor as color, endColor as color) as Integer

- 28.8.64 gradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, startColor as Integer, endColor as Integer) as Integer

**28.8.63 gradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, startColor as color, endColor as color) as Integer**

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Same as the other gradientColor method, but uses color instead of integer data type for passing color values.  
**See also:**

- 28.8.61 gradientColor(colors() as color, angle as Double = 90, scale as Double = 1.0, startX as Integer = 0, startY as Integer = 0) as Integer

- 28.8.62 gradientColor(colors() as Integer, angle as Double = 90, scale as Double = 1.0, startX as Integer = 0, startY as Integer = 0) as Integer

- 28.8.64 gradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, startColor as Integer, endColor as Integer) as Integer

**28.8.64 gradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, startColor as Integer, endColor as Integer) as Integer**

**Function:** Creates a two-point linear gradient color.  
**Notes:**

This method is for backward compatibility. Use BaseChart.linearGradientColor instead.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>startX</td>
<td>(Mandatory)</td>
<td>The x coordinate of the starting point of the reference gradient line segment.</td>
</tr>
<tr>
<td>startY</td>
<td>(Mandatory)</td>
<td>The y coordinate of the starting point of the reference gradient line segment.</td>
</tr>
<tr>
<td>endX</td>
<td>(Mandatory)</td>
<td>The x coordinate of the ending point of the reference gradient line segment.</td>
</tr>
<tr>
<td>endY</td>
<td>(Mandatory)</td>
<td>The y coordinate of the ending point of the reference gradient line segment.</td>
</tr>
<tr>
<td>startColor</td>
<td>(Mandatory)</td>
<td>The color at the starting point of the reference gradient line segment.</td>
</tr>
<tr>
<td>endColor</td>
<td>(Mandatory)</td>
<td>The color at the ending point of the reference gradient line segment.</td>
</tr>
</tbody>
</table>

**Return Value**

A 32-bit integer representing the linear gradient color.  
**See also:**
• 28.8.61 gradientColor(colors() as color, angle as Double = 90, scale as Double = 1.0, startX as Integer = 0, startY as Integer = 0) as Integer 4500
• 28.8.62 gradientColor(colors() as Integer, angle as Double = 90, scale as Double = 1.0, startX as Integer = 0, startY as Integer = 0) as Integer 4500
• 28.8.63 gradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, startColor as color, endColor as color) as Integer 4501

28.8.65 greenMetalGradient as Integer()

Function: A constant array of integers to represent a gradient that looks like a green metallic color.
Notes:
The array is in a format that can be directly used in BaseChart.gradientColor2 and DrawArea.gradientColor2. Its contents (in hex) is:

00 98E098 60 F0FFF0 B0 D8F0D8 100 98E098
See Color Specification on how colors are represented in ChartDirector.

28.8.66 halfColor(c as Integer) as Integer

Function: Creates a color that is half the intensity of the given color.
Notes:
Argument Default Description
--- --- ---
\(c\) (Mandatory) The given color.

Return Value
A 32-bit integer representing the half intensity color.

28.8.67 initDynamicLayer as CDDrawAreaMBS

Function: Initializes a dynamic layer for drawing text and shapes.
Notes:
This method clears the existing dynamic layer, or creates a new one if there is no existing dynamic layer. This method returned a DrawArea object that can be used to draw on the dynamic layer. The dynamic layer can later be removed using BaseChart.removeDynamicLayer.
The design of the dynamic layer is for drawing small, rapidly updatable contents for desktop applications. For example, the dynamic layer can be used to implement a cross-hair mouse cursor, with text showing the location of the mouse cursor. To do this, in the mouse move event handler, BaseChart.initDynamicLayer can be used to create or clear the dynamic layer. The returned DrawArea object can then be used to draw the cross hair cursor (as two straight lines) and the text. When the mouse cursor leaves the chart, BaseChart.removeDynamicLayer can be used in the mouse out event handler to remove the cross-hair cursor and the text.

Note that as long as the dynamic layer is not removed with BaseChart.removeDynamicLayer, only the returned DrawArea object should be used to draw things on the dynamic layer. No other objects should be used to draw on the chart.

Returns a DrawArea object that can be used to add text and shapes to the dynamic layer.

28.8.68  kDataBound as Double

MBS ChartDirector Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A constant equals to -1.7E-100 to represent that the interpolated z values should not exceed the minimum or maximum values of the original data. **Notes:** This constant is used in ContourLayer.setZBounds.

28.8.69  kLinearTick as Double

MBS ChartDirector Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A constant equals to +1.5E+308 to represent that the ticks in a log scale axis should be 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 style increments.

28.8.70  kLogTick as Double

MBS ChartDirector Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A constant equals to +1.6e308 to represent that the ticks in a log scale axis should be 1 - 2 - 5 - 10 style increments. **Notes:** This constant is used in Axis.setLogScale.

28.8.71  kMicroTickOnly as Double

MBS ChartDirector Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A constant equals to -1.6e308 to represent that the label position should contain a micro tick only.
Notes: This constant is used in Axis.setLabels and BaseMeter.setScale.

28.8.72 kMinorTickOnly as Double

Function: A constant equals to -1.7e308 to represent that the label position should contain a minor tick only.
Notes: This constant is used in Axis.setLabels.

28.8.73 kNoValue as Double

Function: A constant equals to 1.7E+308 to represent missing values in ChartDirector.
Notes: Please refer to No Value Specification for more details.

28.8.74 kTickInc as Double

Function: A constant equals to +1E+200 to represent the distance between major ticks.
Notes: This constant is used in CDAxisMBS.setLogScale.

28.8.75 kTouchBar as Double

Function: A constant equals to -1.7e-100 to represent that the bars in a bar layer should touch each others with no gap in between.
Notes: This constant is used in BarLayer.setBarGap.

28.8.76 layout

Function: Perform auto-scaling of the axis and compute the positions of the various objects in the chart.
Notes:
BaseChart.layout is automatically called when drawing the chart image (eg. using BaseChart.makeChart, BaseChart.makeChart or BaseChart.makeChart3). There is usually no need to call BaseChart.layout explicitly.
However, if you would like to add custom objects to the chart whose positions depend on the axis scales or position of other objects, you may need to call BaseChart.layout explicit to auto-scaling the axis. An example is to draw a custom label at the maximum value point of a data line.

### 28.8.77 layoutLegend as CDLegendBoxMBS

**Function:** Lays out and gets the LegendBox object representing the legend box in the chart.  
**Notes:** Once the legend box has been laid out, the width and height is known and can be obtained using Box.getWidth and Box.getHeight. However, you may not perform actions that may affect the legend box sizes, such as changing the fonts or adding more data. You may still move the legend box around by using Box.setPos.  

The most common use of this method is to position the legend box based on its actual size.  
**Return Value**  
The LegendBox object representing the legend box in the chart.

### 28.8.78 linearGradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, colors() as color, periodic as boolean=false) as Integer

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Same as the other linearGradientColor method, but uses color instead of integer data type for passing color values.  
**See also:**  
- 28.8.79 linearGradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, colors() as Integer, periodic as boolean=false) as Integer 4505  
- 28.8.80 linearGradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, startColor as color, endColor as color, periodic as boolean=false) as Integer 4507  
- 28.8.81 linearGradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, startColor as Integer, endColor as Integer, periodic as boolean=false) as Integer 4507

### 28.8.79 linearGradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, colors() as Integer, periodic as boolean=false) as Integer

**Function:** Creates a multi-point linear gradient color.  
**Notes:**
In this method, the color points are defined as an array of positions and colors along a reference line segment, in the following format:

position0, color0, position1, color1, ..., positionN, colorN

The positions are specified as a number from 0 - 256 (0 - 100 in hex), in which 0 represents the starting point of the reference line segment, and 256 (100 in hex) represents the ending point of the reference line segment.

For example, the array (in hex):

000000, FF0000, 000080, FFFF00, 000100, 00FF00

means the starting point (000000) is red (FF0000), the mid-point (000080 in hex) is yellow (FFFF00), and the ending point (000100 in hex) is green (00FF00).

One common usage of multi-point gradient colors is to define colors that have metallic look and feel. ChartDirector comes from several predefined gradient color arrays as follows.

NameValue (in Hex)

goldGradient 000000, FFE743, 000060, FFFFE0, 0000B0, FFF0B0, 000100, FFE743
silverGradient 000000, CSC8C8, 000060, F8F8F8, 0000B0, E0E0E0, 000100, CSC8C8
redMetalGradient 000000, E09898, 000060, F0FFF0, 0000B0, F0D8D8, 000100, E09898
greenMetalGradient 000000, 98E098, 000060, F0FFF0, 0000B0, D8F0D8, 000100, 98E098
blueMetalGradient 000000, 9898E0, 000060, F0F0FF, 0000B0, D8D8F0, 000100, 9898E0

Argument Default Description
startX (Mandatory) The x coordinate of the starting point of the reference gradient line segment.
startY (Mandatory) The y coordinate of the starting point of the reference gradient line segment.
endX (Mandatory) The x coordinate of the ending point of the reference gradient line segment.
endY (Mandatory) The y coordinate of the ending point of the reference gradient line segment.
colorArray (Mandatory) An array defining the positions and colors of the pixels along the reference gradient line segment.
periodic false Specifies whether the gradient will repeat itself periodically. If the gradient does not repeat itself, the points that lie beyond the end points of the gradient line segment will assume the colors of the end points.

Return Value
A 32-bit integer representing the linear gradient color.
See also:

• 28.8.78 linearGradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, colors() as color, periodic as boolean=false) as Integer 4505
28.8. \textit{CLASS CDBASECHARTMBS}

- 28.8.80 \texttt{linearGradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, startColor as color, endColor as color, periodic as boolean=false) as Integer} 4507
- 28.8.81 \texttt{linearGradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, startColor as Integer, endColor as Integer, periodic as boolean=false) as Integer} 4507

\textbf{28.8.80} \texttt{linearGradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, startColor as color, endColor as color, periodic as boolean=false) as Integer}

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. \textbf{Function}: Same as the other \texttt{linearGradientColor} method, but uses color instead of integer data type for passing color values.

See also:

- 28.8.78 \texttt{linearGradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, colors() as color, periodic as boolean=false) as Integer} 4505
- 28.8.79 \texttt{linearGradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, colors() as Integer, periodic as boolean=false) as Integer} 4505
- 28.8.81 \texttt{linearGradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, startColor as Integer, endColor as Integer, periodic as boolean=false) as Integer} 4507

\textbf{28.8.81} \texttt{linearGradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, startColor as Integer, endColor as Integer, periodic as boolean=false) as Integer}


\textbf{Notes:}

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>startX</td>
<td>(Mandatory)</td>
<td>The x coordinate of the starting point of the reference gradient line segment.</td>
</tr>
<tr>
<td>startY</td>
<td>(Mandatory)</td>
<td>The y coordinate of the starting point of the reference gradient line segment.</td>
</tr>
<tr>
<td>endX</td>
<td>(Mandatory)</td>
<td>The x coordinate of the ending point of the reference gradient line segment.</td>
</tr>
<tr>
<td>endY</td>
<td>(Mandatory)</td>
<td>The y coordinate of the ending point of the reference gradient line segment.</td>
</tr>
<tr>
<td>startColor</td>
<td>(Mandatory)</td>
<td>The color at the starting point of the reference gradient line segment.</td>
</tr>
<tr>
<td>endColor</td>
<td>(Mandatory)</td>
<td>The color at the ending point of the reference gradient line segment.</td>
</tr>
<tr>
<td>periodic</td>
<td>false</td>
<td>Specifies whether the gradient will repeat itself periodically. If the gradient does not repeat itself, the points that lie beyond the end points of the gradient line segment will assume the colors of the end points.</td>
</tr>
</tbody>
</table>

\textbf{Return Value}
A 32-bit integer representing the linear gradient color.

See also:
28.8.78 linearGradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, colors() as color, periodic as boolean=false) as Integer 4505

28.8.79 linearGradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, colors() as Integer, periodic as boolean=false) as Integer 4505

28.8.80 linearGradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, startColor as color, endColor as color, periodic as boolean=false) as Integer 4507

28.8.82 makeChart as CDDrawAreaMBS

**Function:** Generates the chart in internal format and return a DrawArea object to allow adding custom drawings on top of the chart.
**Notes:**
If you want to add custom drawings at the background of the chart, use the BaseChart.getDrawArea method to obtain the DrawArea instead.

After finish adding custom drawings, the resulting chart can then be output using other chart output methods.
**Return Value**
A DrawArea object that can be used to add custom text and shapes to the chart.
**See also:**
- 28.8.83 makeChart(format as Integer) as string 4508
- 28.8.84 makeChart(path as folderitem) as boolean 4509

28.8.83 makeChart(format as Integer) as string

**Function:** Generates the chart as an image in memory.
**Notes:**
This method is most often used to output the chart directly to an HTTP stream.

ChartDirector supports PNG, JPG, GIF, WBMP and BMP formats, denoted by the following predefined constants:

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
</table>

For vector output (SVG), please call enableVectorOutput early.
28.8. CLass CDBaseChartMBS

| PNG  | 0 | The PNG format.          |
| GIF  | 1 | The GIF format.          |
| JPG  | 2 | The JPEG format.         |
| WMP  | 3 | The WAP bitmap format.   |
| BMP  | 4 | The BMP format.          |
| SVG  | 5 | Normal SVG.              |
| SVGZ | 6 | Compressed SVG           |

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>format</td>
<td>(Mandatory)</td>
<td>A constant representing the format of the image.</td>
</tr>
</tbody>
</table>

Return Value
A memory block containing the binary image of the chart in the requested format.
See also:

- 28.8.82 makeChart as CDDrawAreaMBS
- 28.8.83 makeChart(format as Integer) as string

28.8.84 makeChart(path as folderitem) as boolean

Function: Generates the chart image and save it into a file.
Notes:
ChartDirector supports PNG, JPG, GIF, WBMP and BMP. The format used are selected based on file extension, which should be png, jpg, jpeg, gif, wbmp, wmp or bmp.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>filename</td>
<td>(Mandatory)</td>
<td>The name of the file to save the image.</td>
</tr>
</tbody>
</table>

Return Value
A true value indicates no error. A false value indicates the operation is unsuccessful.
See also:

- 28.8.82 makeChart as CDDrawAreaMBS
- 28.8.83 makeChart(format as Integer) as string
28.8.85 makeChartPicture as picture

**Function:** Generates the chart as a picture.  
**Notes:** Returns nil on any error.

28.8.86 metalColor(c as Integer, angle as Integer = 90) as Integer

**Function:** Creates a color by modulates the brightness of another color to create metallic shiny effects.  
**Notes:**  
The brightness of the color will vary smoothly across the image in a given a direction, so as to produce a shiny effect. The modulation period will be the same as the size of the image, so this method is best use to create background colors.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>c</td>
<td>(Mandatory)</td>
<td>The color to be modulated.</td>
</tr>
<tr>
<td>angle</td>
<td>90</td>
<td>The direction for brightness modulation, specified as a clockwise angle in degrees, with 0 being the upward pointing direction.</td>
</tr>
</tbody>
</table>

**Return Value**

A 32-bit integer representing the metallic color.

28.8.87 NonePassFilter as Integer

**Function:** Creates a data filter that matches no element.  
**Notes:**  
This method is typically used in Axis.setMultiFormat and Axis.setMultiFormat2 as a "deny all" filter.  
**Return Value**

An integer filter id representing the filter.

28.8.88 patternColor(colorvalues() as color, height as Integer, startX as Integer = 0, startY as Integer = 0) as Integer

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Same as the other patternColor method, but uses color instead of integer data type for passing color values.  
**See also:**
28.8. **CLASS CDBASECHARTMBS**

- 28.8.89 `patternColor(colorvalues() as Integer, height as Integer, startX as Integer = 0, startY as Integer = 0) as Integer`
- 28.8.90 `patternColor(file as folderitem, startX as Integer = 0, startY as Integer = 0) as Integer`
- 28.8.91 `patternColor(pic as picture, startX as Integer = 0, startY as Integer = 0) as Integer`

### 28.8.89 `patternColor(colorvalues() as Integer, height as Integer, startX as Integer = 0, startY as Integer = 0) as Integer`

**Description:**
**Function:** Creates a pattern color using an array of colors as the bitmap pattern.
**Notes:**
A pattern color is a dynamic color that changes according to a 2D periodic pattern. When it is used to fill an area, the area will look like being tiled with a wallpaper pattern.

**Argument Default Description**
- `colorArray` *(Mandatory)*: An array of colors representing the colors of the bitmap pixels. The color of the pixel at \((x, y)\) should correspond to index \((x + y * \text{width} - 1)\) of the array.
- `height` *(Mandatory)*: The height of the bitmap in pixels. (The width is automatically computed as the size of the color array divided by the height.)
- `startX`: 0 The x coordinate of a reference point to align with the top-left corner the pattern.
- `startY`: 0 The y coordinate of a reference point to align with the top-left corner the pattern.

**Return Value**
A 32-bit integer representing the pattern color.

**See also:**
- 28.8.88 `patternColor(colorvalues() as color, height as Integer, startX as Integer = 0, startY as Integer = 0) as Integer`
- 28.8.90 `patternColor(file as folderitem, startX as Integer = 0, startY as Integer = 0) as Integer`
- 28.8.91 `patternColor(pic as picture, startX as Integer = 0, startY as Integer = 0) as Integer`

### 28.8.90 `patternColor(file as folderitem, startX as Integer = 0, startY as Integer = 0) as Integer`

**Description:**
**Function:** Creates a pattern color by loading the pattern from an image file.
**Notes:**

...
A pattern color is a dynamic color that changes according to a 2D periodic pattern. When it is used to fill an area, the area will look like being tiled with a wallpaper pattern.

ChartDirector will automatically detect the image file format using the file extension, which must either png, jpg, jpeg, gif, wbmp or wmp (case insensitive).

Please refer to BaseChart.setSearchPath on the directory that ChartDirector will search for the file.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>filename</td>
<td>(Mandatory)</td>
<td>An image file providing the pattern.</td>
</tr>
<tr>
<td>startX</td>
<td>0</td>
<td>The x coordinate of a reference point to align with the top-left corner the pattern.</td>
</tr>
<tr>
<td>startY</td>
<td>0</td>
<td>The y coordinate of a reference point to align with the top-left corner the pattern.</td>
</tr>
</tbody>
</table>

Return Value
A 32-bit integer representing the pattern color.

See also:

- 28.8.88 `patternColor(colorvalues() as color, height as Integer, startX as Integer = 0, startY as Integer = 0) as Integer` 4510
- 28.8.89 `patternColor(colorvalues() as Integer, height as Integer, startX as Integer = 0, startY as Integer = 0) as Integer` 4511
- 28.8.91 `patternColor(pic as picture, startX as Integer = 0, startY as Integer = 0) as Integer` 4512

**28.8.91 `patternColor(pic as picture, startX as Integer = 0, startY as Integer = 0) as Integer`**

MBS ChartDirector Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Creates a pattern color using a picture.

**Notes:**
A pattern color is a dynamic color that changes according to a 2D periodic pattern. When it is used to fill an area, the area will look like being tiled with a wallpaper pattern.

Return Value
A 32-bit integer representing the pattern color.

See also:

- 28.8.88 `patternColor(colorvalues() as color, height as Integer, startX as Integer = 0, startY as Integer = 0) as Integer` 4510
28.8. **CLASS CDBASECHARTMBS**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>pic</td>
<td>(Mandatory) A picture. The color of the pixel at ((x, y)) should correspond to index ((x + y \times \text{width} - 1)) of the array.</td>
<td></td>
</tr>
<tr>
<td>startX</td>
<td>0</td>
<td>The x coordinate of a reference point to align with the top-left corner the pattern.</td>
</tr>
<tr>
<td>startY</td>
<td>0</td>
<td>The y coordinate of a reference point to align with the top-left corner the pattern.</td>
</tr>
</tbody>
</table>

- 28.8.89 `patternColor(colorvalues() as Integer, height as Integer, startX as Integer = 0, startY as Integer = 0) as Integer` 4511
- 28.8.90 `patternColor(file as folderitem, startX as Integer = 0, startY as Integer = 0) as Integer` 4511

**28.8.92 phongLighting(ambientIntensity as Double = 0.5, diffuseIntensity as Double = 0.5, specularIntensity as Double = 0.75, shininess as Integer = 8) as Integer**

MBS ChartDirector Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the parameters for the phong lighting effect. **Notes:**

The return value of this method can be used as the second argument to `Layer.setBorderColor` to configure phong lighting effect for the layer.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ambientIntensity</td>
<td>0.5</td>
<td>The ambient reflection coefficient of the Phong lighting model.</td>
</tr>
<tr>
<td>diffuseIntensity</td>
<td>0.5</td>
<td>The diffuse reflection coefficient of the Phong lighting model.</td>
</tr>
<tr>
<td>specularIntensity</td>
<td>0.75</td>
<td>The specular reflection coefficient of the Phong lighting model.</td>
</tr>
<tr>
<td>shininess</td>
<td>8</td>
<td>The shininess coefficient of the Phong lighting model.</td>
</tr>
</tbody>
</table>

**28.8.93 Polygon2Shape(slide as Integer) as Integer**

MBS ChartDirector Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the shape id that represents a polygon in an alternative orientation. **Notes:**

Please refer to Shape Specification for samples and more information on using shapes in ChartDirector.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>side</td>
<td>(Mandatory) The number of sides the polygon has.</td>
<td></td>
</tr>
</tbody>
</table>
Return Value
An integer shape id representing the polygon in an alternative orientation.

28.8.94 PolygonShape(slide as Integer) as Integer

**Function:** Gets the shape id that represents a polygon.
**Notes:**
Please refer to Shape Specification for samples and more information on using shapes in ChartDirector.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>side</td>
<td>(Mandatory)</td>
<td>The number of sides the polygon has.</td>
</tr>
</tbody>
</table>

Return Value
An integer shape id representing the polygon.

28.8.95 PolynomialRegression(n as Integer) as Integer

**Function:** Sets the degree of the polynomial regression to be used in a trend layer.
**Notes:**
This method is used to specify the polynomial regression type in CDTrendLayerMBS.setRegressionType.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>(Mandatory)</td>
<td>The degree of the polynomial.</td>
</tr>
</tbody>
</table>

Return Value
An integer representing a polynomial regression of degree n to be used as an argument to CDTrendLayerMBS.setRegressionType.

28.8.96 radialGradientColor(cx as Integer, cy as Integer, rx as Integer, ry as Integer, data() as Integer, periodic as boolean=false) as Integer

**Function:** Creates a multi-point radial gradient color.
Notes:
In this method, the color points are defined as an array of radial distances and colors, in the following format:

distance0, color0, distance1, color1, ..., distanceN, colorN
The distances are specified as a number from 0 - 256 (0 - 100 in hex), in which 0 represents the center of the gradient defining ellipse, and 256 (100 in hex) represents the perimeter of the gradient defining ellipse.

For example, the array (in hex):

000000, FF0000, 000080, FFFF00, 000100, 00FF00
means the center (000000) is red (FF0000), the mid-point (000080 in hex) is yellow (FFFF00), and the perimeter (000100 in hex) is green (00FF00).

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cx</td>
<td>(Mandatory)</td>
<td>The x coordinate of the center of the radial gradient.</td>
</tr>
<tr>
<td>cy</td>
<td>(Mandatory)</td>
<td>The y coordinate of the center of the radial gradient.</td>
</tr>
<tr>
<td>rx</td>
<td>(Mandatory)</td>
<td>The horizontal radius of the radial gradient defining ellipse.</td>
</tr>
<tr>
<td>ry</td>
<td>(Mandatory)</td>
<td>The vertical radius of the radial gradient defining ellipse.</td>
</tr>
<tr>
<td>colorArray</td>
<td>(Mandatory)</td>
<td>An array defining the radial distances and colors.</td>
</tr>
<tr>
<td>periodic</td>
<td>false</td>
<td>Specifies whether the gradient will repeat itself periodically. If the gradient does not repeat itself, the points that lie outside the gradient defining ellipse will assume the color at the perimeter of the gradient defining ellipse.</td>
</tr>
</tbody>
</table>

Return Value
A 32-bit integer representing the radial gradient color.

See also:
- 28.8.97 radialGradientColor(cx as Integer, cy as Integer, rx as Integer, ry as Integer, startColor as color, endColor as color, periodic as boolean=false) as Integer

28.8.98 radialGradientColor(cx as Integer, cy as Integer, rx as Integer, ry as Integer, startColor as Integer, endColor as Integer, periodic as boolean=false) as Integer

28.8.97 radialGradientColor(cx as Integer, cy as Integer, rx as Integer, ry as Integer, startColor as color, endColor as color, periodic as boolean=false) as Integer

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Same as the other radialGradientColor method, but uses color instead of integer data type for passing color values.

See also:
28.8.98 radialGradientColor(cx as Integer, cy as Integer, rx as Integer, ry as Integer, startColor as Integer, endColor as Integer, periodic as boolean=false) as Integer


**Function:** Creates a two-point radial gradient color.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cx</td>
<td>(Mandatory)</td>
<td>The x coordinate of the center of the radial gradient.</td>
</tr>
<tr>
<td>cy</td>
<td>(Mandatory)</td>
<td>The y coordinate of the center of the radial gradient.</td>
</tr>
<tr>
<td>rx</td>
<td>(Mandatory)</td>
<td>The horizontal radius of the radial gradient defining ellipse.</td>
</tr>
<tr>
<td>ry</td>
<td>(Mandatory)</td>
<td>The vertical radius of the radial gradient defining ellipse.</td>
</tr>
<tr>
<td>startColor</td>
<td>(Mandatory)</td>
<td>The color at the center of the gradient defining ellipse.</td>
</tr>
<tr>
<td>endColor</td>
<td>(Mandatory)</td>
<td>The color at the perimeter of the gradient defining ellipse.</td>
</tr>
<tr>
<td>periodic</td>
<td>false</td>
<td>Specifies whether the gradient will repeat itself periodically. If the gradient does not repeat itself, the points that lie outside the gradient defining ellipse will assume the color at the perimeter of the gradient defining ellipse.</td>
</tr>
</tbody>
</table>

**Return Value**
A 32-bit integer representing the radial gradient color.

See also:

- 28.8.96 radialGradientColor(cx as Integer, cy as Integer, rx as Integer, ry as Integer, data() as Integer, periodic as boolean=false) as Integer 4514
- 28.8.97 radialGradientColor(cx as Integer, cy as Integer, rx as Integer, ry as Integer, startColor as color, endColor as color, periodic as boolean=false) as Integer 4515

28.8.99 redMetalGradient as Integer()


**Function:** A constant array of integers to represent a gradient that looks like a red metallic color.

**Notes:**

The array is in a format that can be directly used in BaseChart.gradientColor and DrawArea.gradientColor. Its contents (in hex) is:
See Color Specification on how colors are represented in ChartDirector.

### 28.8.100 RegularSpacingFilter(labelStep as Integer = 1, initialMargin as Integer = 0) as Integer

**MBS ChartDirector Plugin, Plugin Version:** 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Creates a data filter that matches 1 out of every N elements.  
**Notes:**  
This method is typically used in Axis.setMultiFormat and Axis.setMultiFormat2 to select specific elements for formatting as axis labels.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>labelStep</td>
<td>1</td>
<td>Picks 1 out of every &quot;labelStep&quot; number of elements. For example, if this argument is 3, only 1 of every 3 elements will be selected.</td>
</tr>
<tr>
<td>initialMargin</td>
<td>0</td>
<td>Adds an offset when determining the elements to be selected. For example, if the labelStep is 3, the selected indexes should be 0, 3, 6, 9, ... If initialMargin is set to 1, the indexes becomes 1, 4, 7, 10, ...</td>
</tr>
</tbody>
</table>

**Return Value**  
An integer filter id representing the filter.

### 28.8.101 removeDynamicLayer

**MBS ChartDirector Plugin, Plugin Version:** 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Removes the dynamic layer if any.

### 28.8.102 RGB(r as Integer, g as Integer, b as Integer, a as Integer = 0) as Integer

**MBS ChartDirector Plugin, Plugin Version:** 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Creates a RGB color.
28.8.103 SelectItemFilter(item as Integer) as Integer

Function: Creates a data filter that matches the specified item.
Notes:
This method is typically used in Axis.setMultiFormat and Axis.setMultiFormat2 to select a specific element for special formatting.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>item</td>
<td>(Mandatory)</td>
<td>The index of the specified item.</td>
</tr>
</tbody>
</table>

Return Value
An integer filter id representing the filter.

28.8.104 setAMPM(am as string, pm as string)

Function: Sets the names to be used to denote morning and afternoon.
Notes:
The default is to use "am" and "pm".

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>am</td>
<td>(Mandatory)</td>
<td>The name used to denote morning.</td>
</tr>
<tr>
<td>pm</td>
<td>(Mandatory)</td>
<td>The name used to denote afternoon.</td>
</tr>
</tbody>
</table>

28.8.105 setAntiAlias(shapeAntiAlias as Boolean, textAntiAlias as Integer)

Function: Controls whether anti-alias is used when drawing lines, shapes and text.
Notes:
For anti-aliasing text, ChartDirector supports the following modes.

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
</table>

Currently, ChartDirector will anti-alias only large or bold fonts. For small fonts, assuming it is of high quality, anti-alias is unnecessary. It is because high quality fonts are normally designed to be sharp and clear at low resolution. Anti-aliasing will blur the fonts and make them look worse.
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NoAntiAlias 0 Disable anti-alias when drawing text
AntiAlias 1 Always use anti-alias when drawing text
AutoAntiAlias 2 Automatically determine if anti-alias should be used for the text. This is the default.

However, for complicated fonts (e.g. some fonts with oriental characters), or for lower quality fonts (e.g. some freeware fonts), anti-alias may be necessary. In this case, it may be needed to force anti-aliasing of all fonts using AntiAlias mode.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>shapeAntiAlias</td>
<td>true</td>
<td>A true value enables anti-alias when drawing lines and shapes. A false value</td>
</tr>
<tr>
<td></td>
<td></td>
<td>disables anti-alias when drawing lines and shapes</td>
</tr>
<tr>
<td>textAntiAlias</td>
<td>AutoAntiAlias</td>
<td>The text anti-alias mode, which must be one of AutoAntiAlias, AntiAlias or</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NoAntiAlias.</td>
</tr>
</tbody>
</table>

28.8.106 setBackground(colorvalue as color, edgeColor as color, raisedEffect as Integer = 0)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other setBackground method, but uses color instead of integer data type for passing color values.

See also:

- 28.8.107 setBackground(colorvalue as Integer, edgeColor as Integer = & hff000000, raisedEffect as Integer = 0)

28.8.107 setBackground(colorvalue as Integer, edgeColor as Integer = & hff000000, raisedEffect as Integer = 0)


**Function:** Sets the background color, border color and 3D border effect of the chart.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The background color of the chart.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>Transparent</td>
<td>The border color of the chart.</td>
</tr>
<tr>
<td>raisedEffect</td>
<td>0</td>
<td>The 3D border width. For positive values, the border will appear raised. For</td>
</tr>
<tr>
<td></td>
<td></td>
<td>negative values, the border will appear depressed. A zero value means the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>border will appear flat.</td>
</tr>
</tbody>
</table>

See also:
28.8.106 setBackground(colorvalue as color, edgeColor as color, raisedEffect as Integer = 0)

28.8.108 setBgImage(img as string, align as Integer = 5)

**Function:** Uses the image from the specified file as the background image of the chart.
**Notes:**
ChartDirector will automatically detect the image file format using the file extension, which must either png, jpg, jpeg, gif, wbmp or wmp (case insensitive).

Please refer to BaseChart.setSearchPath on the directory that ChartDirector will search for the file.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>img</td>
<td>(Mandatory)</td>
<td>The image file that is used as the background image of the chart.</td>
</tr>
<tr>
<td>align</td>
<td>Center</td>
<td>The alignment of the background image relative to the chart. See Alignment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Specification for supported alignment types.</td>
</tr>
</tbody>
</table>

28.8.109 setBorder(colorvalue as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other setBorder method, but uses color instead of integer data type for passing color values.
See also:

- 28.8.110 setBorder(colorvalue as Integer)

28.8.110 setBorder(colorvalue as Integer)

**Function:** Deprecated. Use SetBackground instead.
See also:

- 28.8.109 setBorder(colorvalue as color)

28.8.111 setColor(paletteEntry as Integer, colorvalue as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other setColor method, but uses color instead of integer data type for passing color values.
See also:
28.8. **CLASS CDBASECHARTMBS**

- 28.8.112 `setColor(paletteEntry as Integer, colorvalue as Integer)`

### 28.8.112 setColor(paletteEntry as Integer, colorvalue as Integer)


**Function:** Change the color at the specified position in the palette.

**Notes:**
See Color Specification on how colors are represented in ChartDirector.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>paletteEntry</td>
<td>(Mandatory)</td>
<td>An index to the palette.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color to change to.</td>
</tr>
</tbody>
</table>

See also:

- 28.8.111 `setColor(paletteEntry as Integer, colorvalue as color)`

### 28.8.113 setColors(numbers() as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other setColors method, but uses color instead of integer data type for passing color values.

See also:

- 28.8.114 `setColors(numbers() as Integer)`
- 28.8.115 `setColors(paletteEntry as Integer, numbers() as color)`
- 28.8.116 `setColors(paletteEntry as Integer, numbers() as Integer)`

### 28.8.114 setColors(numbers() as Integer)


**Function:** Change the colors in the palette.

**Notes:**
See Color Specification on how colors are represented in ChartDirector.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>colors</td>
<td>(Mandatory)</td>
<td>An array of colors to change to.</td>
</tr>
</tbody>
</table>

See also:
28.8.115 setColors(paletteEntry as Integer, numbers() as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Same as the other setColors method, but uses color instead of integer data type for passing color values.

See also:

- 28.8.113 setColors(numbers() as color)  4521
- 28.8.114 setColors(numbers() as Integer)  4521
- 28.8.116 setColors(paletteEntry as Integer, numbers() as Integer)  4522

28.8.116 setColors(paletteEntry as Integer, numbers() as Integer)

**Function:** Change the colors in the palette, starting from the specified position in the palette.

**Notes:**
See Color Specification on how colors are represented in ChartDirector.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>paletteEntry</td>
<td>(Mandatory)</td>
<td>An index to the palette to start changing the colors.</td>
</tr>
<tr>
<td>colors</td>
<td>(Mandatory)</td>
<td>An array of colors to change to.</td>
</tr>
</tbody>
</table>

See also:

- 28.8.113 setColors(numbers() as color)  4521
- 28.8.114 setColors(numbers() as Integer)  4521
- 28.8.115 setColors(paletteEntry as Integer, numbers() as color)  4522

28.8.117 setDefaultColors(paletteEntry as Integer = 0)

**Function:** Sets the default colors.
28.8.118  

**setDefaultFonts(normal as string, bold as string, italic as string, boldItalic as string)**


**Function:** Sets the defaults for normal, bold, italic and bold-italic fonts.

**Notes:**

See Font Specification for details on various font attributes.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default (Mandatory)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>normal</td>
<td>The default normal font. This is the same as the first font in the font table.</td>
<td></td>
</tr>
<tr>
<td>bold</td>
<td>&quot;&quot;</td>
<td>The default bold font. This is the same as the second font in the font table. An empty string means the default is unchanged.</td>
</tr>
<tr>
<td>italic</td>
<td>&quot;&quot;</td>
<td>The default italic font. This is the same as the third font in the font table. An empty string means the default is unchanged.</td>
</tr>
<tr>
<td>boldItalic</td>
<td>&quot;&quot;</td>
<td>The default bold-italic font. This is the same as the fourth font in the font table. An empty string means the default is unchanged.</td>
</tr>
</tbody>
</table>

See font specification here:
http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml

28.8.119  

**setDropShadow(ColorValue as color, OffsetX as Integer = 5, OffsetY as Integer = & h7fffffff, blurRadius as Integer = 5)**

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other setDropShadow method, but uses color instead of integer data type for passing color values.

See also:

- 28.8.120 setDropShadow(ColorValue as Integer = & hAAAAAA, OffsetX as Integer = 5, OffsetY as Integer = & h7fffffff, blurRadius as Integer = 5)

28.8.120  

**setDropShadow(ColorValue as Integer = & hAAAAAA, OffsetX as Integer = 5, OffsetY as Integer = & h7fffffff, blurRadius as Integer = 5)**


**Function:** Adds a drop shadow to the chart.

**Notes:**

The drop shadow effect is created using a single color representation of the non-transparent part of the chart, offsetted by an amount, and put under the chart. The drop shadow can be blurred to create a soft drop
shadow effect.

Note that adding a drop shadow will increase the width and height of the chart image so as to accommodate the drop shadow.

Because the drop shadow is located exterior to the original chart, it uses an exterior background color different from the background color of the original chart. The exterior background color is by default white, and can be configured with CDBaseChartMBS.setRoundedFrame.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>color</td>
<td>AAAAAA</td>
<td>The color of the drop shadow.</td>
</tr>
<tr>
<td>offsetX</td>
<td>5</td>
<td>The x offset of the drop shadow.</td>
</tr>
<tr>
<td>offsetY</td>
<td>7fffffff</td>
<td>The y offset of the drop shadow. 7fffffff means it is the same as the x offset.</td>
</tr>
<tr>
<td>blurRadius</td>
<td>5</td>
<td>The blur radius of the drop shadow.</td>
</tr>
</tbody>
</table>

See also:

- 28.8.119 setDropShadow(ColorValue as color, OffsetX as Integer = 5, OffsetY as Integer = 7fffffff, blurRadius as Integer = 5)

28.8.121 SetFontSearchPath(path as folderitem)


Example:

```pascal
dim FontFolder as folderitem = SpecialFolder.Desktop.Child("fonts")
CDBaseChartMBS.SetFontSearchPath FontFolder
```

Notes:

This method can be used to configure the font search path. You may set your own font search path, or add additional search path before or after the default search path. The usage us like:

```pascal
CDBaseChartMBS.setFontSearchPath("myPath1;myPath2;% PATH% ;myPath3;myPath4");
```

In the above % PATH% (case sensitive) represents the default search path. This method must be called before the ChartDirector font system is used. It is suggested it be called before any ChartDirector methods. Once ChartDirector tries to look for the fonts (eg. to get font metrics so as to layout a chart), the search
path cannot be changed without restarting the process.

e.g. if you use ubuntu, you can install the ttf-mscorefonts-installer package and call this method with "/usr/share/fonts/truetype/msttcorefonts" as the path. No backslash on the end of a path, please.

See also:

- 28.8.122 SetFontSearchPath(path as string)

28.8.122 SetFontSearchPath(path as string)

Function: Sets the font search path.

Example:

```pascal
if TargetLinux then
  CDBaseChartMBS.SetFontSearchPath "'/usr/share/fonts/truetype"
else
  // on Mac and Windows we use system fonts.
end if
```

Notes:

This method can be used to configure the font search path. You may set your own font search path, or add additional search path before or after the default search path. The usage us like:

```pascal
CDBaseChartMBS.setFontSearchPath("myPath1;myPath2;% PATH% ;myPath3;myPath4");
```

In the above % PATH% (case sensitive) represents the default search path. This method must be called before the ChartDirector font system is used. It is suggested it be called before any ChartDirector methods. Once ChartDirector tries to look for the fonts (eg. to get font metrics so as to layout a chart), the search path cannot be changed without restarting the process.

e.g. if you use ubuntu, you can install the ttf-mscorefonts-installer package and call this method with "/usr/share/fonts/truetype/msttcorefonts" as the path. No backslash on the end of a path, please.

See also:

- 28.8.121 SetFontSearchPath(path as folderitem)

28.8.123 setFontTable(index as Integer, font as string)

Function: Sets an entry in the font table to the specified font name.

Notes:
The first 4 fonts in the font table have special significance. They are the defaults for normal, bold, italic and bold-italic fonts.

See Font Specification for details on various font attributes.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>index</td>
<td>(Mandatory)</td>
<td>An index to the font table, starting from 0.</td>
</tr>
<tr>
<td>font</td>
<td>(Mandatory)</td>
<td>The font name to be put into the font table.</td>
</tr>
</tbody>
</table>

See font specification here:
http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml

28.8.124 **setLicenseCode(n as string, enddate as Integer, v1 as Integer, v2 as Integer)**

**Function:** Registers the chartdirector plugin and library.

28.8.125 **setMonthNames(names() as string)**

**Function:** Sets the names of the months for date/time formatting purposes.
**Notes:**
The default is to use the first 3 characters of the English month names (Jan, Feb, Mar ...).

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>names</td>
<td>(Mandatory)</td>
<td>An array of 12 text strings to be used as the month names.</td>
</tr>
</tbody>
</table>

28.8.126 **setNumberFormat(thousandSeparator as string = ”", textasciitilde ”, decimalPointChar as string = ".", signChar as string = "-")**

**Function:** Sets the characters used for thousand separator, decimal point, and negative sign.
**Notes:**
28.8. **CLASS CDBASECHARTMBS**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>thousandSeparator</td>
<td>'textasciitilde'</td>
<td>The thousand separator. Use 'textasciitilde' to mean no thousand separator.</td>
</tr>
<tr>
<td>textasciitilde</td>
<td></td>
<td></td>
</tr>
<tr>
<td>decimalPointChar</td>
<td>'.'</td>
<td>The decimal point character.</td>
</tr>
<tr>
<td>signChar</td>
<td>'-'</td>
<td>The negative sign character.</td>
</tr>
</tbody>
</table>

### 28.8.127 setOutputOptions(options as string)

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Sets output format options for the next chart output. Currently, only SVG, SVGZ and PDF output formats support output options.

**Notes:**

An output option can be a flag (such as "compress") or an attribute-value pair (such as "width=800"). Multiple output options can be joined using semicolons as delimiters.

#### SVG Options

<table>
<thead>
<tr>
<th>SVG Option</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>compress</td>
<td>Flag</td>
<td>Compressed the SVG, that is, output SVGZ.</td>
</tr>
<tr>
<td>bitmap</td>
<td>Flag</td>
<td>Render the chart as a bitmap and output the bitmap as SVG.</td>
</tr>
<tr>
<td>noxmldecl</td>
<td>Flag</td>
<td>Do not include the xml declaration line &quot;&lt;xml version=&quot;1.0&quot; .... &gt;&quot; in the SVG.</td>
</tr>
<tr>
<td>nodoctype</td>
<td>Flag</td>
<td>Do not include the document type declaration line &quot;&lt;!DOCTYPE svg PUBLIC .... &gt;&quot; in the SVG.</td>
</tr>
<tr>
<td>width</td>
<td>Flag / Attribute</td>
<td>Specifies the width attribute of the SVG. By default, ChartDirector will not include the width or height attribute in the SVG output. In this case, the SVG is variable in size and would assume the size of its container. For example, if the SVG is inside a &lt;DIV&gt; block in a web page, it will assume the size of the DIV block. If the &quot;width&quot; option is used as a flag, ChartDirector will include the width attribute in the SVG and set it to the chart width. If the &quot;width&quot; option is used as an attribute (such as &quot;width=800&quot;), ChartDirector will include the width attribute in the SVG and set it to the specified value. The specified value should be some text that is valid as SVG width. Examples are &quot;100&quot; and &quot;75%&quot;.</td>
</tr>
<tr>
<td>height</td>
<td>Flag / Attribute</td>
<td>Specifies the height attribute of the SVG. See the description on &quot;width&quot; above on how to use it.</td>
</tr>
</tbody>
</table>

#### PDF Options

### 28.8.128 setRoundedFrame(extColor as color, r1 as Integer = 10, r2 as Integer = -1, r3 as Integer = -1, r4 as Integer = -1)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other setRoundedFrame method, but uses color instead of integer data type for
PDF Option | Type     | Description                                   
-----------|----------|-----------------------------------------------
bitmap     | Flag     | Render the chart as a bitmap and output the bitmap as PDF. 
width      | Attribute| The width of the chart in the PDF in pixel unit. By default, ChartDirector will use the pixel width of the chart as the width of the chart in PDF. The "width" attribute can be used to specify an alternative value. The value must be a number. 
height     | Attribute| The width of the chart in the PDF in pixel unit. See the description on "width" above for how to use it. 
pagewidth  | Attribute| The page width in pixel unit. By default, ChartDirector will set the page width to the same width as the chart. The "pagewidth" attribute can be used to specify an alternative value. The value must be a number. 
pageheight | Attribute| The page height in pixel unit. By default, ChartDirector will set the page height to the same height as the chart. The "pageheight" attribute can be used to specify an alternative value. The value must be a number. 
leftx      | Attribute| The x coordinate of the left side of the chart within the page in pixel unit. By default, ChartDirector will center the chart in the page. The "leftx" attribute can be used to specify an alternative horizontal position. The coordinate must be a number. 
topy       | Attribute| The y coordinate of the top side of the chart within the page in pixel unit. By default, ChartDirector will center the chart in the page. The "topy" attribute can be used to specify an alternative vertical position. The coordinate must be a number. 
dpi        | Attribute| Specify the factor for conversion from pixel to physical unit. The PDF viewer will convert the pixel unit into physical unit (eg. inches) so that it can be layout on paper or other physical media. The default conversion factor for the chart is 96 pixels per inch. The "dpi" attribute can be used to specify an alternative value. The value must be a number. 

Argument | Default | Description
-----------|---------|-----------------------------------------------
options    | (Mandatory) | A list of options delimited by semicolons.

passing color values.  
See also:

- 28.8.129 setRoundedFrame(extColor as Integer = & hFFFFFFF, r1 as Integer = 10, r2 as Integer = -1, r3 as Integer = -1, r4 as Integer = -1)

28.8.129 setRoundedFrame(extColor as Integer = & hFFFFFFF, r1 as Integer = 10, r2 as Integer = -1, r3 as Integer = -1, r4 as Integer = -1)

**Function:** Sets the border style of the chart to rounded corners.  
**Notes:**  
The underlying drawing surface for a chart is always rectangular. When rounded corners are used, part
of the drawing surface (the regions external to the rounded corners) will be outside the chart border. The extColor argument specifies the color to be used for the external regions. Typically, it is set to the same color as the background the container that will be hosting the chart.

For example, in a web page, the extColor may be set to the same color as the web page background.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>extColor</td>
<td>FFFFFF</td>
<td>The exterior background color.</td>
</tr>
<tr>
<td>r1</td>
<td>10</td>
<td>The radius of the top-left rounded corner in pixels.</td>
</tr>
<tr>
<td>r2</td>
<td>-1</td>
<td>The radius of the top-right rounded corner in pixels. The default value of -1 means it is the same as the radius of the top-left corner.</td>
</tr>
<tr>
<td>r3</td>
<td>-1</td>
<td>The radius of the bottom-right rounded corner in pixels. The default value of -1 means it is the same as the radius of the top-left corner.</td>
</tr>
<tr>
<td>r4</td>
<td>-1</td>
<td>The radius of the bottom-left rounded corner in pixels. The default value of -1 means it is the same as the radius of the top-left corner.</td>
</tr>
</tbody>
</table>

See also:

- 28.8.128 setRoundedFrame(extColor as color, r1 as Integer = 10, r2 as Integer = -1, r3 as Integer = -1, r4 as Integer = -1)

28.8.130 setSearchPath(path as string)


**Function:** Sets the file system search path for loading image files.

**Notes:**

The plugin uses folderItems for most file operations, so this method is not needed for most operations.

Several ChartDirector operations involve loading image files. Examples are wallpapers (BaseChart.setWallpaper), background images (BaseChart.setBgImage and PlotArea.setBackgroundColor), user-defined symbols (DataSet.setDataSymbol2) or for embedding images in text using ChartDirector Mark Up Language.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>path</td>
<td>(Mandatory)</td>
<td>A list of directories, separated with the path separator of your operating system (&quot;;&quot; for Windows, &quot;:&quot; for Linux/UNIX).</td>
</tr>
</tbody>
</table>

28.8.131 setSize(width as Integer, height as Integer)


**Function:** Sets the size of the chart.
### 28.8.132 setThickFrame(thickness as Integer, frameColor as Integer = -1, outerEdgeColor as Integer = -1, innerEdgeColor as Integer = -1)

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Sets a thick frame around the chart.

**Notes:**

The thick frame can have 3 colors for the frame itself, the outer edge and the inner edge.

In some applications, the frame color may be similar to the external background color. An common example is a "silver" frame (which is actually a light grey gradient) against a white background. In this case, the frame effect may look less than optimal. An outer edge of different color (such as darker grey) can often help to highlight the frame. Similarly, if the frame color is similar to the chart background, an inner edge of different color may help to improve the frame effect.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>thickness</td>
<td>(Mandatory)</td>
<td>The frame thickness.</td>
</tr>
<tr>
<td>frameColor</td>
<td>-1</td>
<td>The frame color. The default value of -1 means the frame color is the same as the outer edge color.</td>
</tr>
<tr>
<td>outerEdgeColor</td>
<td>-1</td>
<td>The outer edge color. The default value of -1 means the outer edge color is the same as the current edge color, which can be set in the chart constructor or in BaseChart.setBackground.</td>
</tr>
<tr>
<td>innerEdgeColor</td>
<td>-1</td>
<td>The inner edge color. The default value of -1 means the inner edge color is the same as the frame color.</td>
</tr>
</tbody>
</table>

### 28.8.133 setTransparentColor(c as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other setTransparentColor method, but uses color instead of integer data type for passing color values.

**See also:**

- 28.8.134 setTransparentColor(c as Integer)
28.8.134  setTransparentColor(c as Integer)


**Function:** Specifies a certain color to mean transparent when creating the image output, or to include alpha transparency channel in the output.

**Notes:**

Alpha transparency: In addition to red, green and blue levels, there is a transparency level associated with each pixel, which can range from completely transparent to completely opaque. The data associated with the transparency information is called the alpha channel.

Single color transparency: The image itself has no alpha channel, but a certain color is used to mean completely transparent. For internal drawing, ChartDirector always use alpha transparency. However, when outputting the image as an image file, ChartDirector by default will remove the alpha channel to reduce image size. It is because many image displaying software do not support alpha transparency. For example, the IE browser only supports single color transparency but not alpha transparency.

If you want to use single color transparency in the output, you may specify the transparent color as the argument to the setTransparentColor method. Note that only GIF and PNG can support single color transparency. JPEG, BMP and WBMP cannot support transparency at all.

If you do want to keep the alpha channel in final output, you may pass -1 as the argument to setTransparentColor. Note that the only image format that can support alpha transparency is PNG.

One important thing to note is that the IE browser (and possibly many image displaying software) only supports single color transparency for palette based images with up to 256 colors, but not for true color images. For this reason, if single color transparency is used, ChartDirector will automatically reduce the image to 256 colors if it has more than 256 colors. This may result in lost of image quality, especially if the image contains gradient colors.

Therefore, due to the limitations of the current generations of image displaying software, for highest image quality, sometimes it may be beneficial to not using transparency in image output, but to set the image background color to the same color as the container background.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>c</td>
<td>(Mandatory)</td>
<td>The color that is designated as the transparent color. If -1 is used, the full alpha transparency channel will be included in the final output.</td>
</tr>
</tbody>
</table>

See also:

- 28.8.133 setTransparentColor(c as color)
28.8.135  setTransparentColors(paletteEntry as Integer = 0)

**Function:** Sets the color palette to transparent colors.

28.8.136  setWallpaper(img as folderitem)

**Function:** Uses the image from the specified file as the wallpaper to repetitively fill the background of the chart.
**Notes:**
ChartDirector will automatically detect the image file format using the file extension, which must either png, jpg, jpeg, gif, wbmp or wmp (case insensitive).

Please refer to BaseChart.setSearchPath on the directory that ChartDirector will search for the file.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>img</td>
<td>(Mandatory)</td>
<td>The image file that is used as the background wallpaper of the chart.</td>
</tr>
</tbody>
</table>

28.8.137  setWeekDayNames(names() as string)

**Function:** Sets the names of the week days for date/time formatting purposes.
**Notes:**
The default is to use the first 3 characters of the English week day names (Sun, Mon, Tue, ...).

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>names</td>
<td>(Mandatory)</td>
<td>An array of 7 text strings to be used as the week day names.</td>
</tr>
</tbody>
</table>

28.8.138  setWhiteOnBlackColors(paletteEntry as Integer = 0)

**Function:** Sets the color palette to white on black colors.
28.8.139  silverColor(angle as Integer = 90) as Integer

Function: Creates a silver color, most commonly used as a background color.
Notes: This method is a short cut to the CDBaseChartMBS.metalColor method, using grey (CCCCCC in hex) as the base color.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>angle</td>
<td>90</td>
<td>The direction for brightness modulation, specified as a clockwise angle in degrees, with 0 being the upward pointing direction.</td>
</tr>
</tbody>
</table>

Return Value
A 32-bit integer representing the silver color.

28.8.140  silverGradient as Integer()

Function: A constant array of integers to represent a gradient that looks like a silver color.
Notes: The array is in a format that can be directly used in BaseChart.gradientColor2 and DrawArea.gradientColor2. Its contents (in hex) is:

00 C8C8C8 60 F8F8F8 B0 E0E0E0 100 C8C8C8

See Color Specification on how colors are represented in ChartDirector.

28.8.141  softLighting(direction as Integer = 8, raisedEffect as Integer = 4) as Integer

Function: A special shading effect that looks like gradient coloring.
Notes: This effect is best explained by viewing the examples.

ExampleLocation of lighting effect

The softLighting method returns an integer representing this effect. The integer can be used as the third argument to Box.setBackground to apply the effect it objects derived from Box (such as labels and titles.
Soft Multi-Bar Chart: The bars are shaded using soft lighting effect, with light direction from Top, and raised effect of 4 pixels.

Soft Bar Shading: The bars are shaded using soft lighting effect, with light direction from Left, and raised effect of 4 pixels.

Spline Line Chart: The title is shaded using soft lighting effect, with light direction from Right, and raised effect of 4 pixels.

represented by TextBox). It may also be used as the second argument to Layer.setBorderColor for BarLayer objects to apply the effect to bars.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>direction</td>
<td>Top</td>
<td>The direction of the lighting, which must be one of the predefined constants Top, Bottom, Right or Left.</td>
</tr>
<tr>
<td>raisedEffect</td>
<td>4</td>
<td>With soft lighting effect, the object will appear to have some 3D depth. The raisedEffect argument controls the amount of 3D depth in pixels.</td>
</tr>
</tbody>
</table>

Return Value
An integer representing the soft lighting effect.

28.8.142 StarShape(slide as Integer) as Integer

Function: Gets the shape id that represents a star shape.
Notes:
Please refer to Shape Specification for samples and more information on using shapes in ChartDirector.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>side</td>
<td>(Mandatory)</td>
<td>The number of points the polygon has.</td>
</tr>
</tbody>
</table>

Return Value
An integer shape id representing the star shape.

28.8.143 StartOfDayFilter(labelStep as Integer = 1, initialMargin as Double = 0.05) as Integer

Function: Creates a data filter that matches date/times that represent the start of a new day in a date/time
### 28.8. **CLASS CDBASECHARTMBS**

In a date/time series, an element is considered that start of a new day if it is of a different day than the previous element. It does not need to be at exactly the starting instance of the day.

For the first element of the date/time series, because there is no previous element to compare with, it will be considered as the start of a new day if it is "near" the exact starting instance of the current day, in which "near" is defined using the initialMargin argument, expressed as a ratio (0 to 1) of the day duration.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>labelStep</td>
<td>1</td>
<td>For dates/times that matches the start of day criteria, picks only 1 out of every &quot;labelStep&quot; number of elements. For example, if this argument is 3, only 1 of every 3 elements that at at the start of day will be selected.</td>
</tr>
<tr>
<td>initialMargin</td>
<td>0.05</td>
<td>If the first label is &quot;near&quot; the exact starting instance of the current day to within the ratio specified in the initial margin, it will be considered to have matched the start of day criteria.</td>
</tr>
</tbody>
</table>

**Return Value**

An integer filter id representing the filter.

#### 28.8.144 **StartOfDayFilter**(labelStep as Integer = 1, initialMargin as Double = 0.05) as Integer

This method is typically used in Axis.setMultiFormat and Axis.setMultiFormat2 to select specific dates/times for formatting as axis labels.

For the first element of the date/time series, because there is no previous element to compare with, it will be considered as the start of a new hour if it is "near" the exact starting instance of the current hour, in which "near" is defined using the initialMargin argument, expressed as a ratio (0 to 1) of the hour duration.
CHAPTER 28. CHARTDIRECTOR

**Argument Default Description**

- **labelStep**: 1
  For dates/times that matches the start of hour criteria, picks only 1 out of every "labelStep" number of elements. For example, if this argument is 3, only 1 of every 3 elements that at at the start of hour will be selected.

- **initialMargin**: 0.05
  If the first label is "near" the exact starting instance of the current hour to within the ratio specified in the initial margin, it will be considered to have matched the start of hour criteria.

**Return Value**

An integer filter id representing the filter.

---

**28.8.145 StartOfMinuteFilter(labelStep as Integer = 1, initialMargin as Double = 0.05) as Integer**

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Creates a data filter that matches date/times that represent the start of a new minute in a date/time series.

**Notes:**

This method is typically used in Axis.setMultiFormat and Axis.setMultiFormat2 to select specific dates/times for formatting as axis labels.

In a date/time series, an element is considered that start of a new minute if it is of a different minute than the previous element. It does not need to be at exactly the starting instance of the minute.

For the first element of the date/time series, because there is no previous element to compare with, it will be considered as the start of a new minute if it is "near" the exact starting instance of the current minute, in which "near" is defined using the initialMargin argument, expressed as a ratio (0 to 1) of the minute duration.

**Argument Default Description**

- **labelStep**: 1
  For dates/times that matches the start of minute criteria, picks only 1 out of every "labelStep" number of elements. For example, if this argument is 3, only 1 of every 3 elements that at at the start of minute will be selected.

- **initialMargin**: 0.05
  If the first label is "near" the exact starting instance of the current minute to within the ratio specified in the initial margin, it will be considered to have matched the start of minute criteria.

**Returns:**

An integer filter id representing the filter.
### StartOfMonthFilter


**Function:** Creates a data filter that matches date/times that represent the start of a new month in a date/time series.

**Notes:**

This method is typically used in Axis.setMultiFormat and Axis.setMultiFormat2 to select specific dates/times for formatting as axis labels.

In a date/time series, an element is considered that start of a new month if it is of a different month than the previous element. It does not need to be at exactly the starting instance of the month.

For the first element of the date/time series, because there is no previous element to compare with, it will be considered as the start of a new month if it is "near" the exact starting instance of the current month, in which "near" is defined using the initialMargin argument, expressed as a ratio (0 to 1) of the month duration.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>labelStep</td>
<td>1</td>
<td>For dates/times that matches the start of month criteria, picks only 1 out of every &quot;labelStep&quot; number of elements. For example, if this argument is 3, only 1 of every 3 elements that at at the start of month will be selected.</td>
</tr>
<tr>
<td>initialMargin</td>
<td>0.05</td>
<td>If the first label is &quot;near&quot; the exact starting instance of the current month to within the ratio specified in the initial margin, it will be considered to have matched the start of month criteria.</td>
</tr>
</tbody>
</table>

**Return Value**

An integer filter id representing the filter.

### StartOfSecondFilter

**MBS ChartDirector Plugin**, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Creates a data filter that matches date/times that represent the start of a new second in a date/time series.

**Notes:**

This method is typically used in Axis.setMultiFormat and Axis.setMultiFormat2 to select specific dates/times for formatting as axis labels.

In a date/time series, an element is considered that start of a new second if it is of a different second than the previous element. It does not need to be at exactly the starting instance of the second.
For the first element of the date/time series, because there is no previous element to compare with, it will be considered as the start of a new second if it is "near" the exact starting instance of the current second, in which "near" is defined using the initialMargin argument, expressed as a ratio (0 to 1) of the second duration.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>labelStep</td>
<td>1</td>
<td>For dates/times that matches the start of second criteria, picks only 1 out of every &quot;labelStep&quot; number of elements. For example, if this argument is 3, only 1 of every 3 elements that at at the start of second will be selected.</td>
</tr>
<tr>
<td>initialMargin</td>
<td>0.05</td>
<td>If the first label is &quot;near&quot; the exact starting instance of the current second to within the ratio specified in the initial margin, it will be considered to have matched the start of second criteria.</td>
</tr>
</tbody>
</table>

Returns an integer filter id representing the filter.

28.8.148 StartOfWeekFilter(labelStep as Integer = 1, initialMargin as Double = 0.05) as Integer

**Function:** Creates a data filter that matches date/times that represent the start of a new week in a date/time series.  
**Notes:**  
This method is typically used in Axis.setMultiFormat and Axis.setMultiFormat2 to select specific dates/times for formatting as axis labels.

In a date/time series, an element is considered that start of a new week if it is of a different week than the previous element. It does not need to be at exactly the starting instance of the week.

For the first element of the date/time series, because there is no previous element to compare with, it will be considered as the start of a new week if it is "near" the exact starting instance of the current week, in which "near" is defined using the initialMargin argument, expressed as a ratio (0 to 1) of the week duration.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>labelStep</td>
<td>1</td>
<td>For dates/times that matches the start of week criteria, picks only 1 out of every &quot;labelStep&quot; number of elements. For example, if this argument is 3, only 1 of every 3 elements that at at the start of week will be selected.</td>
</tr>
<tr>
<td>initialMargin</td>
<td>0.05</td>
<td>If the first label is &quot;near&quot; the exact starting instance of the current week to within the ratio specified in the initial margin, it will be considered to have matched the start of week criteria.</td>
</tr>
</tbody>
</table>

Return Value
28.8. CLASS CDBASECHARTMBS

An integer filter id representing the filter.

28.8.149 StartOfYearFilter(labelStep as Integer = 1, initialMargin as Double = 0.05) as Integer


Function: Creates a data filter that matches date/times that represent the start of a new year in a date/time series.

Notes:
This method is typically used in Axis.setMultiFormat and Axis.setMultiFormat2 to select specific dates/times for formatting as axis labels.

In a date/time series, an element is considered that start of a new year if it is of a different year than the previous element. It does not need to be at exactly the starting instance of the year.

For the first element of the date/time series, because there is no previous element to compare with, it will be considered as the start of a new year if it is "near" the exact starting instance of the current year, in which "near" is defined using the initialMargin argument, expressed as a ratio (0 to 1) of the year duration.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>labelStep</td>
<td>1</td>
<td>For dates/times that matches the start of year criteria, picks only 1 out of every &quot;labelStep&quot; number of elements. For example, if this argument is 3, only 1 of every 3 elements that at at the start of year will be selected.</td>
</tr>
<tr>
<td>initialMargin</td>
<td>0.05</td>
<td>If the first label is &quot;near&quot; the exact starting instance of the current year to within the ratio specified in the initial margin, it will be considered to have matched the start of year criteria.</td>
</tr>
</tbody>
</table>

Return Value
An integer filter id representing the filter.

28.8.150 testFont(font as string, fontIndex as Integer, fontHeight as Double, fontWidth as Double, angle as Double, byref buffer as string) as boolean


Function: A diagnostic function to perform a font loading test.

Example:

```vba
dim buffer as string
call CDBaseChartMBS.testFont("arial.ttf", 0, 12, 12, 0, buffer)
```
Notes:

From experience, the most common issue for font loading is unable to access server side fonts using anonymous user account for a web application, probably due to security restrictions. This diagnostic function can return the cause of problem to aid trouble-shooting.

Other uses of this function is to trace out where does ChartDirector search for the fonts, and the substitution font in case the request font is not available.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>font</td>
<td>(Mandatory)</td>
<td>The font name. See Font Specification for details on various font attributes.</td>
</tr>
<tr>
<td>fontIndex</td>
<td>(Mandatory)</td>
<td>The font index if the font name refers to a font collection. An index of 0 means the first font.</td>
</tr>
<tr>
<td>fontHeight</td>
<td>(Mandatory)</td>
<td>The font height in points. This parameter will not affect font loading if the exact font exists, but will affect which substitution font to use if the font does not exist.</td>
</tr>
<tr>
<td>fontWidth</td>
<td>(Mandatory)</td>
<td>The font width in points. This parameter will not affect font loading if the exact font exists, but will affect which substitution font to use if the font does not exist.</td>
</tr>
<tr>
<td>angle</td>
<td>(Mandatory)</td>
<td>The rotation angle of the text. The angle is measured in degrees in clockwise direction. This parameter will not affect font loading if the exact font exists, but will affect which substitution font to use if the font does not exist.</td>
</tr>
<tr>
<td>buffer</td>
<td>(Mandatory)</td>
<td>A string to hold the result of the font loading test.</td>
</tr>
</tbody>
</table>

See font specification here:
http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml

28.8.151 transparentPalette as Integer()

MBS ChartDirector Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Returns the default transparent palette.

28.8.152 whiteOnBlackPalette as Integer()

MBS ChartDirector Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Returns the default white on black palette.
28.8. CLASS CDBASECHARTMBS

28.8.153 Properties

28.8.154 ScaleFactor as Double


**Function:** Scale factor for charts.

**Notes:**
When the plugin internally passes a pixel number to ChartDirector library, we multiply by this factor. When numbers come back we divide by factor.
Default is 1.
(Read and Write property)

28.8.155 Constants

28.8.156 kAggregateAvg = 1

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 1 to represent using the average as the aggregated value in CDArrayMBS.aggregate.

28.8.157 kAggregateCount = 9

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 9 to represent using the item count as the aggregated value in CDArrayMBS.aggregate.

28.8.158 kAggregateFirst = 7

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 7 to represent using the first value as the aggregated value in CDArrayMBS.aggregate.

28.8.159 kAggregateLast = 8

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 8 to represent using the last value as the aggregated value in CDArrayMBS.aggregate.
28.8.160  kAggregateMax = 5

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 5 to represent using the maximum value as the aggregated value in CDArrayMBS.aggregate.

28.8.161  kAggregateMed = 4

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 4 to represent using the median value as the aggregated value in CDArrayMBS.aggregate.

28.8.162  kAggregateMin = 3

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 3 to represent using the minimum value as the aggregated value in CDArrayMBS.aggregate.

28.8.163  kAggregatePercentile = 6

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 6 to represent using the percentile value as the aggregated value in CDArrayMBS.aggregate.

28.8.164  kAggregateStdDev = 2

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 2 to represent using the standard deviation as the aggregated value in CDArrayMBS.aggregate.

28.8.165  kAggregateSum = 0

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 0 to represent using the sum as the aggregated value in CDArrayMBS.aggregate.

28.8.166  kAltDashLine = \& h0A050505

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 0A050505 (in hex) to represent a alternating long/short dash line pattern for use in dash colors.

**Notes:** See Color Specification on how colors are represented in ChartDirector.
28.8. **CLASS CDBASECHARTMBS**

28.8.167  **kAngularAxisScale = 1**

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 1 to represent that the size is measured using the angular-axis scale.
**Notes:** This constant is used in PolarLayer.setSymbolScale.

28.8.168  **kAntiAlias = 1**

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 1 to represent that text should be drawn with anti-alias.
**Notes:** This constant is used in BaseChart.setAntiAlias and DrawArea.setAntiAlias.

28.8.169  **kArrowPointer = 2**

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 2 to represent the arrow style meter pointer.
**Notes:** This constant is used in MeterPointer.setShape.

28.8.170  **kArrowPointer2 = 3**

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 3 to represent the alternative arrow style meter pointer.
**Notes:** This constant is used in MeterPointer.setShape.

28.8.171  **kAutoAntiAlias = 2**

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 2 to represent that text should be drawn with anti-alias if necessary based on font attributes.
**Notes:** This constant is used in BaseChart.setAntiAlias and DrawArea.setAntiAlias.

28.8.172  **kAutoGrid = -2**

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to -2 to represent that the number of columns in the legend box with grid layout is automatically determine.
**Notes:** This constant is used in BaseChart.addLegend and LegendBox.setCols.
28.8.173  **kBackgroundColor = & hFFFF0000**

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to FFFF0000 (in hex) to represent the background color.  
**Notes:** See Color Specification on how colors are represented in ChartDirector.

28.8.174  **kBesselFilter = 13**

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 13 to represent a Bessel graphical re-sampling filter.  
**Notes:** Please refer to Re-Sampling Filters for more information graphical filters in ChartDirector.

28.8.175  **kBlackmanFilter = 12**

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 12 to represent a Blackman graphical re-sampling filter.  
**Notes:** Please refer to Re-Sampling Filters for more information graphical filters in ChartDirector.

28.8.176  **kBMP = 4**

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 4 to represent the BMP image format.  
**Notes:** The BMP format.  
This constant is used in BaseChart.makeChart.

28.8.177  **kBOTTOM = 2**

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 2 to represent the bottom position.  
**Notes:** See Alignment Specification for supported alignment types.

28.8.178  **kBOTTOMCENTER = 2**

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 2 to represent the bottom center position.
28.8.179  \texttt{kBottomLeft} = 1

MBS ChartDirector Plugin, Plugin Version: 8.2. \textbf{Function}: A constant equals to 1 to represent the bottom left position.
\textbf{Notes}: See Alignment Specification for supported alignment types.

28.8.180  \texttt{kBottomLeft2} = 12

MBS ChartDirector Plugin, Plugin Version: 8.2. \textbf{Function}: A constant equals to 12 to represent the alternative exterior bottom left position.
\textbf{Notes}: See Alignment Specification for supported alignment types.

28.8.181  \texttt{kBottomRight} = 3

MBS ChartDirector Plugin, Plugin Version: 8.2. \textbf{Function}: A constant equals to 3 to represent the bottom right position.
\textbf{Notes}: See Alignment Specification for supported alignment types.

28.8.182  \texttt{kBottomRight2} = 13

MBS ChartDirector Plugin, Plugin Version: 8.2. \textbf{Function}: A constant equals to 13 to represent the alternative exterior bottom right position.
\textbf{Notes}: See Alignment Specification for supported alignment types.

28.8.183  \texttt{kBoxFilter} = 0

MBS ChartDirector Plugin, Plugin Version: 8.2. \textbf{Function}: A constant equals to 0 to represent a Box graphical re-sampling filter.
\textbf{Notes}: Please refer to Re-Sampling Filters for more information graphical filters in ChartDirector.

28.8.184  \texttt{kBSplineFilter} = 3

MBS ChartDirector Plugin, Plugin Version: 8.2. \textbf{Function}: A constant equals to 3 to represent a B-spline graphical re-sampling filter.
Notes: Please refer to Re-Sampling Filters for more information graphical filters in ChartDirector.

28.8.185 \textbf{kCatromFilter} = 5

MBS ChartDirector Plugin, Plugin Version: 8.2. \textbf{Function:} A constant equals to 5 to represent a Catrom graphical re-sampling filter.  
\textbf{Notes:} Please refer to Re-Sampling Filters for more information graphical filters in ChartDirector.

28.8.186 \textbf{kCenter} = 5

MBS ChartDirector Plugin, Plugin Version: 8.2. \textbf{Function:} A constant equals to 5 to represent the center position.  
\textbf{Notes:} See Alignment Specification for supported alignment types.

28.8.187 \textbf{kChartBackZ} = \& h100

MBS ChartDirector Plugin, Plugin Version: 8.2. \textbf{Function:} A constant equals to 100 (in hex) to represent the z-order of the back surface of the chart.  
\textbf{Notes:} This constant is used in Box.setZOrder, Line.setZOrder and MeterPointer.setZOrder.

28.8.188 \textbf{kChartDir\_AllPassFilterTag} = 7

MBS ChartDirector Plugin, Plugin Version: 8.2. \textbf{Function:} One of the filter tag constants.

28.8.189 \textbf{kChartDir\_ArrowSymbol} = 18

MBS ChartDirector Plugin, Plugin Version: 15.1. \textbf{Function:} The constant for the arrow symbol.

28.8.190 \textbf{kChartDir\_CustomSymbol} = 14

MBS ChartDirector Plugin, Plugin Version: 8.2. \textbf{Function:} One of the symbol constants.
28.8.191 kChartDir_NonePassFilterTag = 8

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** One of the filter tag constants.

28.8.192 kChartDir_Polygon2Symbol = 12

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** One of the symbol constants.

28.8.193 kChartDir_PolygonSymbol = 11

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** One of the symbol constants.

28.8.194 kChartDir-RegularSpacingFilterTag = 6

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** One of the filter tag constants.

28.8.195 kChartDir_SelectItemFilterTag = 9

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** One of the filter tag constants.

28.8.196 kChartDir_StarSymbol = 13

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** One of the symbol constants.

28.8.197 kChartDir_StartOfDayFilterTag = 2

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** One of the filter tag constants.

28.8.198 kChartDir_StartOfHourFilterTag = 1

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** One of the filter tag constants.
28.8.199  \text{kChartDir\_StartOfMinuteFilterTag} = 10

MBS ChartDirector Plugin, Plugin Version: 15.1. \textbf{Function:} One of the filter tag constants.

28.8.200  \text{kChartDir\_StartOfMonthFilterTag} = 4

MBS ChartDirector Plugin, Plugin Version: 8.2. \textbf{Function:} One of the filter tag constants.

28.8.201  \text{kChartDir\_StartOfSecondFilterTag} = 11

MBS ChartDirector Plugin, Plugin Version: 15.1. \textbf{Function:} One of the filter tag constants.

28.8.202  \text{kChartDir\_StartOfWeekFilterTag} = 3

MBS ChartDirector Plugin, Plugin Version: 8.2. \textbf{Function:} One of the filter tag constants.

28.8.203  \text{kChartDir\_StartOfYearFilterTag} = 5

MBS ChartDirector Plugin, Plugin Version: 8.2. \textbf{Function:} One of the filter tag constants.

28.8.204  \text{kChartFrontZ} = \& hffff

MBS ChartDirector Plugin, Plugin Version: 8.2. \textbf{Function:} A constant equals to ffff (in hex) to represent the z-order of the front surface of the chart.  
\textbf{Notes:} This constant is used in Box.setZOrder, Line.setZOrder and MeterPointer.setZOrder.

28.8.205  \text{kCircleLayout} = 1

MBS ChartDirector Plugin, Plugin Version: 8.2. \textbf{Function:} A constant equals to 1 to represent the circular label layout method for pie/donut charts.  
\textbf{Notes:} This constant is used in PieChart.setLabelLayout.
28.8. **CLASS CDBASECHARTMBS**

### 28.8.206 kCircleShape = 7

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 7 to represent a circle. **Notes:** Please refer to Shape Specification for samples and more information on using shapes in ChartDirector.

### 28.8.207 kCircleShapeNoShading = 10

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 10 to represent a circle with no shaping. **Notes:** Please refer to Shape Specification for samples and more information on using shapes in ChartDirector.

### 28.8.208 kCircleSymbol = 7

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** One of the symbol constants.

### 28.8.209 kClearType = 3

MBS ChartDirector Plugin, Plugin Version: 12.3. **Function:** One of the anti alias modes.

### 28.8.210 kCompatAntiAlias = 6

MBS ChartDirector Plugin, Plugin Version: 12.3. **Function:** A constant equals to 6 to represent that text should be drawn with an automatically determined anti-alias method that behaves the same way as in ChartDirector 5.0.x or earlier versions. **Notes:** This constant is used in BaseChart.setAntiAlias and DrawArea.setAntiAlias.

### 28.8.211 kConcaveShading = 4

MBS ChartDirector Plugin, Plugin Version: 9.2. **Function:** A constant equals to 4 to represent concave sector shading style.
28.8.212  \textit{kConstrainedLinearRegression} = 0

MBS ChartDirector Plugin, Plugin Version: 9.2. \textbf{Function}: A constant equals to 0 to represent that constrained linear regression be used to draw a trend line.

28.8.213  \textit{kCross2Symbol} = 9

MBS ChartDirector Plugin, Plugin Version: 8.2. \textbf{Function}: One of the symbol constants.

28.8.214  \textit{kCrossSymbol} = 8

MBS ChartDirector Plugin, Plugin Version: 8.2. \textbf{Function}: One of the symbol constants.

28.8.215  \textit{kDashLine} = \& h0505

MBS ChartDirector Plugin, Plugin Version: 8.2. \textbf{Function}: A constant equals to 00000505 (in hex) to represent a dash line pattern for use in dash colors.
\textbf{Notes}: See Color Specification on how colors are represented in ChartDirector.

28.8.216  \textit{kDataColor} = \& hFFFFFF008

MBS ChartDirector Plugin, Plugin Version: 8.2. \textbf{Function}: A constant equals to FFFF0008 (in hex) to represent the starting index of automatic data color.
\textbf{Notes}:
The array is in a format that can be directly used in BaseChart.setColors and DrawArea.setColorTable.

See Color Specification on how colors are represented in ChartDirector.

28.8.217  \textit{kDefaultShading} = 0

MBS ChartDirector Plugin, Plugin Version: 9.2. \textbf{Function}: A constant equals to 0 to represent default sector shading style.
28.8. CLASS CDBASECHARTMBS

28.8.218  kDepth = 2

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 2 to represent the "Depth" data representation method for multiple data sets.
**Notes:** This constant is used in XYChart.addBarLayer, XYChart.addAreaLayer, and Layer.setDataCombineMethod.

28.8.219  kDiamondPointer = 0

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 0 to represent the diamond style meter pointer.
**Notes:** This constant is used in MeterPointer.setShape.

28.8.220  kDiamondShape = 2

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 2 to represent a diamond shape.
**Notes:** Please refer to Shape Specification for samples and more information on using shapes in ChartDirector.

28.8.221  kDiamondSymbol = 2

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** One of the symbol constants.

28.8.222  kDirectionHorizontal = 0

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 0 to represent that the zoom and/or scroll orientation is horizontal.
**Notes:** This constant is used in CChartViewer.setZoomDirection and CChartViewer.setScrollDirection.

28.8.223  kDirectionHorizontalVertical = 2

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 2 to represent that the zoom and/or scroll orientation can be both horizontal and vertical.
**Notes:** This constant is used in CChartViewer.setZoomDirection and CChartViewer.setScrollDirection.
28.8.224 kDirectionVertical = 1

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 1 to represent that the zoom and/or scroll orientation is vertical.
**Notes:** This constant is used in CChartViewer.setZoomDirection and CChartViewer.setScrollDirection.

28.8.225 kDotDashLine = & h05050205

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 05050205 (in hex) to represent a dot-dash line pattern for use in dash colors.
**Notes:** See Color Specification on how colors are represented in ChartDirector.

28.8.226 kDotLine = & h0202

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 00000202 (in hex) to represent a dot-line pattern for use in dash colors.
**Notes:** See Color Specification on how colors are represented in ChartDirector.

28.8.227 kEndPoints = 3

MBS ChartDirector Plugin, Plugin Version: 9.2. **Function:** A constant equals to 3 to represent that the vector lengths and directions are measured by specifying the end points.

28.8.228 kErrorDiffusion = 2

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 2 to represent that the error diffusion dithering method should be used if dithering is required.
**Notes:** This constant is used in DrawArea.setDitherMethod.

28.8.229 kExponentialRegression = -1

MBS ChartDirector Plugin, Plugin Version: 9.2. **Function:** A constant equals to -1 to represent that exponential regression be used to draw a trend line.
**28.8. CDBASECHARTMBS**

**28.8.230  kFlatShading = 1**

MBS ChartDirector Plugin, Plugin Version: 9.2. **Function:** A constant equals to 1 to represent flat sector shading style.

**28.8.231  kForcePalette = 1**

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 1 to represent that palette based image format should always be used (dither the image if necessary). **Notes:** This constant is used in DrawArea.setPaletteMode.

**28.8.232  kGaussianFilter = 9**

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 9 to represent a Gaussian graphical re-sampling filter. **Notes:** Please refer to Re-Sampling Filters for more information graphical filters in ChartDirector.

**28.8.233  kGIF = 1**

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 1 to represent the GIF image format. **Notes:** The GIF format. This constant is used in BaseChart.makeChart.

**28.8.234  kGlassSphere2Shape = 16**

MBS ChartDirector Plugin, Plugin Version: 9.2. **Function:** A constant equals to 16 to represent a bright glass sphere.

**28.8.235  kGlassSphereShape = 15**

MBS ChartDirector Plugin, Plugin Version: 9.2. **Function:** A constant equals to 15 to represent a glass sphere.
28.8.236 kGlobalGradientShading = 3

MBS ChartDirector Plugin, Plugin Version: 9.2. **Function:** A constant equals to 3 to represent global gradient sector shading style.

28.8.237 kGridLinesZ = & h2000

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 2000 (in hex) to represent the z-order of the grid lines of the chart.  
**Notes:** This constant is used in Box.setZOrder, Line.setZOrder and MeterPointer.setZOrder.

28.8.238 kHammingFilter = 11

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 11 to represent a Hamming graphical re-sampling filter.  
**Notes:** Please refer to Re-Sampling Filters for more information graphical filters in ChartDirector.

28.8.239 kHanningFilter = 10

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 10 to represent a Hanning graphical re-sampling filter.  
**Notes:** Please refer to Re-Sampling Filters for more information graphical filters in ChartDirector.

28.8.240 kHermiteFilter = 4

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 4 to represent a Hermite graphical re-sampling filter.  
**Notes:** Please refer to Re-Sampling Filters for more information graphical filters in ChartDirector.

28.8.241 kHLOCDefault = 0

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 0 to represent that the HLOC symbols should be drawn using the same color.  
**Notes:** This constant is used in XYChart.addHLOCLayer and HLOCLayer.setColorMethod.
28.8.242  kHLOCOpenClose = 1

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 1 to represent that the HLOC symbols should be drawn using two alternative colors based on whether the closing price is higher than the opening price.

**Notes:** This constant is used in XYChart.addHLOCLayer and HLOCLayer.setColorMethod.

28.8.243  kHLOCUpDown = 2

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 2 to represent that the HLOC symbols should be drawn using two alternative colors based on whether the closing price is higher than the previous closing price.

**Notes:** This constant is used in XYChart.addHLOCLayer and HLOCLayer.setColorMethod.

28.8.244  kInvertedTriangleShape = 6

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 6 to represent a triangle pointing downwards.

**Notes:** Please refer to Shape Specification for samples and more information on using shapes in ChartDirector.

28.8.245  kInvertedTriangleSymbol = 6

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** One of the symbol constants.

28.8.246  kJPG = 2

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 2 to represent the JPG image format.

**Notes:**
The JPEG format.
This constant is used in BaseChart.makeChart.

28.8.247  kLanczosFilter = 8

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 8 to represent a Lanczos graphical re-sampling filter.
Notes: Please refer to Re-Sampling Filters for more information graphical filters in ChartDirector.

28.8.248  kLeft = 4

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 4 to represent the left position.
**Notes:** See Alignment Specification for supported alignment types.

28.8.249  kLeftTriangleShape = 5

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 5 to represent a triangle pointing leftwards.
**Notes:** Please refer to Shape Specification for samples and more information on using shapes in ChartDirector.

28.8.250  kLeftTriangleSymbol = 5

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** One of the symbol constants.

28.8.251  kLinearFilter = 1

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 1 to represent a Linear graphical re-sampling filter.
**Notes:** Please refer to Re-Sampling Filters for more information graphical filters in ChartDirector.

28.8.252  kLinearRegression = 1

MBS ChartDirector Plugin, Plugin Version: 9.2. **Function:** A constant equals to 1 to represent that linear regression be used to draw a trend line.

28.8.253  kLineColor = & hFFFF0001

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to FFFF0001 (in hex) to represent the default line color.
**Notes:** See Color Specification on how colors are represented in ChartDirector.
28.8. **CLASS CDBASECHARTMBS**

### 28.8.254  *kLinePointer = 4*

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 4 to represent the line style meter pointer.  
**Notes:** This constant is used in MeterPointer.setShape.

### 28.8.255  *kLinePointer2 = 7*

MBS ChartDirector Plugin, Plugin Version: 15.1. **Function:** A constant equals to 7 to represent the line style meter pointer.  
**Notes:** This constant is used in MeterPointer.setShape.

### 28.8.256  *kLocalGradientShading = 2*

MBS ChartDirector Plugin, Plugin Version: 9.2. **Function:** A constant equals to 2 to represent local gradient sector shading style.

### 28.8.257  *kLogarithmicRegression = -2*

MBS ChartDirector Plugin, Plugin Version: 9.2. **Function:** A constant equals to -2 to represent that logarithmic regression be used to draw a trend line.  
**Notes:** This constant is used in CDTrendLayerMBS.setRegressionType.

### 28.8.258  *kMitchellFilter = 6*

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 6 to represent a Mitchell graphical re-sampling filter.  
**Notes:** Please refer to Re-Sampling Filters for more information graphical filters in ChartDirector.

### 28.8.259  *kMonotonicAuto = 4*

MBS ChartDirector Plugin, Plugin Version: 9.2. **Function:** A constant equals to 4 to represent that the system will automatically determine whether to constrained a spline curve to not overshooting or undershooting in the x-axis direction and/or the y-axis direction.
**28.8.260**  kMonotonicNone = 0

MBS ChartDirector Plugin, Plugin Version: 9.2. **Function:** A constant equals to 0 to represent that a spline curve is not constraint to flow in any direction.

**28.8.261**  kMonotonicX = 1

MBS ChartDirector Plugin, Plugin Version: 9.2. **Function:** A constant equals to 1 to represent that a spline curve is constrained to not overshooting or undershooting in the x-axis direction.

**28.8.262**  kMonotonicXY = 3

MBS ChartDirector Plugin, Plugin Version: 9.2. **Function:** A constant equals to 3 to represent that a spline curve is constrained to not overshooting or undershooting in both the x-axis direction and the y-axis direction.

**28.8.263**  kMonotonicY = 2

MBS ChartDirector Plugin, Plugin Version: 9.2. **Function:** A constant equals to 2 to represent that a spline curve is constrained to not overshooting or undershooting in the y-axis direction.

**28.8.264**  kNoAntiAlias = 0

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 0 to represent that text should be drawn without using anti-alias.  
**Notes:** This constant is used in BaseChart.setAntiAlias and DrawArea.setAntiAlias.

**28.8.265**  kNoGlare = 1

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 1 to represent disabling the glare in CDBaseChartMBS.glassEffect shading style.

**28.8.266**  kNoLegend = 2

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 2 to represent that no legend keys should be added to the legend box.
28.8.  CLASS CDBASECHARTMBS

Notes: This constant is used in Layer.setLegendOrder.

28.8.267  kNoPalette = 2

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 2 to represent that true color image format should always be used.
**Notes:** This constant is used in DrawArea.setPaletteMode.

28.8.268  kNormalGlare = 3

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 3 to represent using normal glare strength in CDBaseChartMBS.glassEffect shading style.

28.8.269  kNormalLegend = 0

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 0 to represent that the legend keys order should follow the creation order of the data sets.
**Notes:** This constant is used in Layer.setLegendOrder.

28.8.270  kNoShape = 0

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** The constant to specify that no shape is used.

28.8.271  kNoSymbol = 0

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** One of the symbol constants.

28.8.272  kOrderedDither = 1

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 1 to represent that the ordered dithering method should be used if dithering is required.
**Notes:** This constant is used in DrawArea.setDitherMethod.
28.8.273  kOverlay = 0

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 0 to represent the "Overlay" data representation method for multiple data sets.
**Notes:** This constant is used in XYChart.addBarLayer, XYChart.addAreaLayer, and Layer.setDataCombineMethod.

28.8.274  kPalette = & hFFFF0000

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to FFFF0000 (in hex) to represent the starting index of the color palette.
**Notes:** See Color Specification on how colors are represented in ChartDirector.

28.8.275  kPDF = 7

MBS ChartDirector Plugin, Plugin Version: 15.1. **Function:** A constant equals to 7 to represent the AGF image format.
**Notes:** The PDF format.

28.8.276  kPencilPointer = 5

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 5 to represent the pencil style meter pointer.
**Notes:** This constant is used in MeterPointer.setShape.

28.8.277  kPercentage = 4

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 4 to represent the "Percentage" data representation method for multiple data sets.
**Notes:** This constant is used in XYChart.addBarLayer, XYChart.addAreaLayer and Layer.setDataCombineMethod.

28.8.278  kPixelScale = 0

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 0 to represent that the size is measured in pixels.
Notes: This constant is used in LineLayer.setSymbolScale, PolarLayer.setSymbolScale, XYChart.addVectorLayer, PolarChart.addVectorLayer, VectorLayer.setVector and PolarVectorLayer.setVector.

28.8.279 kPlotAreaZ = & h1000

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 1000 (in hex) to represent the z-order of the plot area back surface of the chart.
**Notes:** This constant is used in Box.setZOrder, Line.setZOrder and MeterPointer.setZOrder.

28.8.280 kPNG = 0

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 0 to represent the PNG image format.
**Notes:**
The PNG format.
This constant is used in BaseChart.makeChart.

28.8.281 kQTIMG = 9

MBS ChartDirector Plugin, Plugin Version: 15.1. **Function:** A constant equals to 9 to represent the AGF image format.
**Notes:** The QT Image format.

28.8.282 kQuadraticFilter = 2

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 2 to represent a Quadratic graphical re-sampling filter.
**Notes:** Please refer to Re-Sampling Filters for more information graphical filters in ChartDirector.

28.8.283 kQuantize = 0

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 0 to represent that the quantize dithering method should be used if dithering is required.
**Notes:** This constant is used in DrawArea.setDitherMethod.
28.8.284 \( \text{kRadialAxisScale} = 2 \)

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 2 to represent that the size is measured using the radial-axis scale. **Notes:** This constant is used in PolarLayer.setSymbolScale, PolarChart.addVectorLayer and PolarVectorLayer.setVector.

28.8.285 \( \text{kRadialShading} = 7 \)

MBS ChartDirector Plugin, Plugin Version: 9.2. **Function:** A constant equals to 7 to represent radial sector shading style.

28.8.286 \( \text{kRectangularFrame} = 4 \)

MBS ChartDirector Plugin, Plugin Version: 9.2. **Function:** A constant equals to 4 to represent rectangular frame only surface shading style.

28.8.287 \( \text{kRectangularShading} = 2 \)

MBS ChartDirector Plugin, Plugin Version: 9.2. **Function:** A constant equals to 2 to represent rectangular surface shading style.

28.8.288 \( \text{kReducedGlare} = 2 \)

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 2 to represent using reduced glare strength in CDBaseChartMBS.glassEffect shading style.

28.8.289 \( \text{kReverseLegend} = 1 \)

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 1 to represent that the legend keys order is the reverse of the creation order of the data sets. **Notes:** This constant is used in Layer.setLegendOrder.
28.8. CLASS CDBASECHARTMBS

28.8.290  kRight = 6

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 6 to represent the right position.  
**Notes:** See Alignment Specification for supported alignment types.

28.8.291  kRightTriangleShape = 4

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 4 to represent a triangle pointing rightwards.  
**Notes:** Please refer to Shape Specification for samples and more information on using shapes in ChartDirector.

28.8.292  kRightTriangleSymbol = 4

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** One of the symbol constants.

28.8.293  kRingShading = 8

MBS ChartDirector Plugin, Plugin Version: 9.2. **Function:** A constant equals to 8 to represent ring sector shading style.

28.8.294  kRoundedEdgeNoGlareShading = 5

MBS ChartDirector Plugin, Plugin Version: 9.2. **Function:** One constant for shadings.

28.8.295  kRoundedEdgeShading = 6

MBS ChartDirector Plugin, Plugin Version: 9.2. **Function:** A constant equals to 6 to represent rounded edge sector shading style.

28.8.296  kSameAsMainColor = & hFFFF0007

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to FFF0007 (in hex) to represent the current main color.
Notes: See Color Specification on how colors are represented in ChartDirector.

28.8.297 kSide = 3

MBS ChartDirector Plugin, Plugin Version: 8.2. Function: A constant equals to 3 to represent the "Side" data representation method for multiple data sets.
Notes: This constant is used in XYChart.addBarLayer, XYChart.addAreaLayer and Layer.setDataCombineMethod.

28.8.298 kSideLayout = 0

MBS ChartDirector Plugin, Plugin Version: 8.2. Function: A constant equals to 0 to represent the side label layout method for pie/donut charts.
Notes: This constant is used in PieChart.setLabelLayout.

28.8.299 kSincFilter = 7

MBS ChartDirector Plugin, Plugin Version: 8.2. Function: A constant equals to 7 to represent a Sinc graphical re-sampling filter.
Notes: Please refer to Re-Sampling Filters for more information graphical filters in ChartDirector.

28.8.300 kSmoothShading = 0

MBS ChartDirector Plugin, Plugin Version: 9.2. Function: A constant equals to 0 to represent smooth surface shading style.

28.8.301 kSolidSphereShape = 17

MBS ChartDirector Plugin, Plugin Version: 9.2. Function: A constant equals to 17 to represent a solid sphere.

28.8.302 kSquareShape = 1

MBS ChartDirector Plugin, Plugin Version: 8.2. Function: A constant equals to 1 to represent a square.
Notes: Please refer to Shape Specification for samples and more information on using shapes in ChartDi-
28.8. **CLASS CDBASECHARTMBS**

rector.

### 28.8.303 kSquareSymbol = 1

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** One of the symbol constants.

### 28.8.304 kStack = 1

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 1 to represent the "Stack" data representation method for multiple data sets. **Notes:** This constant is used in XYChart.addBarLayer, XYChart.addAreaLayer and Layer.setDataCombineMethod.

### 28.8.305 kSVG = 5

MBS ChartDirector Plugin, Plugin Version: 9.2. **Function:** A constant equals to 5 to represent the SVG image format. **Notes:** The SVG format.

### 28.8.306 kSVGZ = 6

MBS ChartDirector Plugin, Plugin Version: 9.2. **Function:** A constant equals to 5 to represent the compressed SVG image format. **Notes:** The compressed SVG format.

### 28.8.307 kTextColor = & hFFFF0002

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to FFFF0002 (in hex) to represent the default text color. **Notes:** See Color Specification on how colors are represented in ChartDirector.

### 28.8.308 kTop = 8

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 8 to represent the top position.
Notes: See Alignment Specification for supported alignment types.

28.8.309 kTopCenter = 8

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 8 to represent the top center position.
*Notes:* See Alignment Specification for supported alignment types.

28.8.310 kTopLeft = 7

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 7 to represent the top left position.
*Notes:* See Alignment Specification for supported alignment types.

28.8.311 kTopLeft2 = 10

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 10 to represent the alternative exterior top left position.
*Notes:* See Alignment Specification for supported alignment types.

28.8.312 kTopRight = 9

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 9 to represent the top right position.
*Notes:* See Alignment Specification for supported alignment types.

28.8.313 kTopRight2 = 11

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 11 to represent the alternative exterior top right position.
*Notes:* See Alignment Specification for supported alignment types.

28.8.314 kTransparent = &hFF000000

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to FF000000 (in hex) to represent the transparent color.
28.8.315  kTriangleShape = 3

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 3 to represent a triangle pointing upwards.
**Notes:** Please refer to Shape Specification for samples and more information on using shapes in ChartDirector.

28.8.316  kTriangleSymbol = 3

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** One of the symbol constants.

28.8.317  kTriangularFrame = 3

MBS ChartDirector Plugin, Plugin Version: 9.2. **Function:** A constant equals to 3 to represent triangular frame only surface shading style.

28.8.318  kTriangularPointer = 1

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 1 to represent the triangular style meter pointer.
**Notes:** This constant is used in MeterPointer.setShape.

28.8.319  kTriangularPointer2 = 6

MBS ChartDirector Plugin, Plugin Version: 15.1. **Function:** A constant equals to 6 to represent the new triangular style meter pointer.

28.8.320  kTriangularShading = 1

MBS ChartDirector Plugin, Plugin Version: 9.2. **Function:** A constant equals to 1 to represent triangular surface shading style.
28.8.321  kTryPalette = 0

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 0 to represent that palette based image format should be used if the image contains 256 colors or less.
**Notes:** This constant is used in DrawArea.setPaletteMode.

28.8.322  kWMP = 3

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 3 to represent the WAP bitmap image format.
**Notes:**
The WAP bitmap format.
This constant is used in BaseChart.makeChart.

28.8.323  kXAxisAtOrigin = 1

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 1 to represent that the x-axis should intersect with the zero point of the y-axis if it exists on the chart.
**Notes:** This constant is used in XYChart.setAxisAtOrigin.

28.8.324  kXAxisScale = 1

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 1 to represent that the size is measured using the x-axis scale.
**Notes:** This constant is used in LineLayer.setSymbolScale, XYChart.addVectorLayer and VectorLayer.setSizeVector.

28.8.325  kXAxisSymmetric = 1

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 1 to represent that the x-axis should be symmetrical about the origin.
**Notes:** This constant is used in XYChart.setAxisAtOrigin.

28.8.326  kXAxisSymmetricIfNeeded = 2

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 2 to represent that the x-axis should be symmetrical about the origin if the data contain both positive and negative values.
28.8. **CLASS CDBASECHARTMBS**

**Notes:** This constant is used in `XYChart.setAxisAtOrigin`.

### 28.8.327 kXYAxisAtOrigin = 3

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 3 to represent that the x-axis and y-axis should intersect at the origin if it exists on the chart.

**Notes:** This constant is used in `XYChart.setAxisAtOrigin`.

### 28.8.328 kXYAxisSymmetric = 16

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 16 to represent that the x-axis and y-axis should be symmetrical about the origin.

**Notes:** This constant is used in `XYChart.setAxisAtOrigin`.

### 28.8.329 kXYAxisSymmetricIfNeeded = 32

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 32 to represent that the x-axis and y-axis should be symmetrical about the origin if the data contain both positive and negative values.

**Notes:** This constant is used in `XYChart.setAxisAtOrigin`.

### 28.8.330 kYAxisAtOrigin = 2

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 2 to represent that the y-axis should intersect with the zero point of the x-axis if it exists on the chart.

**Notes:** This constant is used in `XYChart.setAxisAtOrigin`.

### 28.8.331 kYAxisScale = 2

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 2 to represent that the size is measured using y-axis scale.

**Notes:** This constant is used in `LineLayer.setSymbolScale`, `XYChart.addVectorLayer` and `VectorLayer.setVector`.
28.8.332 kYAxisSymmetric = 4

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 4 to represent that the y-axis should be symmetrical about the origin.
**Notes:** This constant is used in XYChart.setAxisAtOrigin.

28.8.333 kYAxisSymmetricIfNeeded = 8

MBS ChartDirector Plugin, Plugin Version: 8.2. **Function:** A constant equals to 8 to represent that the y-axis should be symmetrical about the origin if the data contain both positive and negative values.
**Notes:** This constant is used in XYChart.setAxisAtOrigin.
28.9. **CLASS CDBASEMETERMBS**

28.9 **class CDBaseMeterMBS**

28.9.1 **class CDBaseMeterMBS**


**Function:** The BaseMeter class represents a generic meter.

**Notes:**

Subclass of the CDBaseChartMBS class.

This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

28.9.2 **Methods**

28.9.3 **addColorScale(colorStops() as Double, startPos as Integer = -2147483647, startDate as Integer = -2147483647, endPos as Integer = -2147483647, endWidth as Integer = -2147483647, edgeColor as Integer = -1)**

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Adds a color scale to the meter.

**Notes:**

A color scale is similar to a meter scale. Instead of using labels to denote the values, a color scale uses different colors for different values. The colors can vary continuously or in discrete steps. The width of the color scale can also vary based on the value. There can be multiple more than one color scale in a meter.

A color scale is defined with an array of numbers. For a continuous color scale, each pair of numbers represents a value and its associated color. For example, to define a continuous color scale in which 0 is blue (0000FF), 50 is yellow (FFFF00) and 100 is red (FF0000), the numbers should be:

0.0, & h0000ff, 50.0, & hffff00, 100.0, & hff0000

For a step color scale, the number of colors would be one less than the number of values. For example, to define a step color scale in which 0 to 50 is red (FF0000), and 50 to 100 is green (00FF00), the numbers will be:

0.0, & hff0000, 50.0, & h00ff00, 100.0

See also:

- 28.9.4 **addColorScale(colorStops() as Double, startPos as Integer, startDate as Integer, endPos as Integer, endWidth as Integer, edgeColor as color)**
CHAPTER 28. CHARTDIRECTOR

Argument Default Description

colorStops (Mandatory) An array of numbers alternating between values and colors. If the number count is even, the array will define a continuous color scale, otherwise it will define a step color scale.

startPos -& h7fffffff The position of the starting point of the color scale. For an angular meter, the position refers to the radius, and the default is the meter scale radius (see AngularMeter.setMeter). For a linear meter, the position refers to the x or y coordinate depending on whether the meter is vertical or horizontal, and the default is the leftX or topY coordinate of the meter scale (see LinearMeter.setMeter).

startWidth -& h7fffffff The width at the starting point of the color scale. A positive value means the width is in the direction of increasing "position", while a negative value means decreasing "position". Please refer to the description of startPos on the meaning of "position" for various types of meters. The default is the length of the major tick (see BaseMeter.setTickLength).

endPos -& h7fffffff The position of the ending point of the color scale. Please refer to the description of startPos above on how the position parameter is interpreted. The default is for the ending position to be equal to the starting position.

endWidth -& h7fffffff The width at the ending point of the color scale. Please refer to the description of startWidth above on how the width parameter is interpreted. The default is for the ending width to be equal to the starting width.

edgeColor -1 The edge color of the color scale. The default is to have no edge.

28.9.4 addColorScale(colorStops() as Double, startPos as Integer, startWidth as Integer, endPos as Integer, endWidth as Integer, edgeColor as color)

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Adds a color scale to the meter.
Notes:

A color scale is similar to a meter scale. Instead of using labels to denote the values, a color scale uses different colors for different values. The colors can vary continuously or in discrete steps. The width of the color scale can also vary based on the value. There can be multiple more than one color scale in a meter.

A color scale is defined with an array of numbers. For a continuous color scale, each pair of numbers represents a value and its associated color. For example, to define a continuous color scale in which 0 is blue (0000FF), 50 is yellow (FFFF00) and 100 is red (FF0000), the numbers should be:

0.0, & h0000ff, 50.0, & hffff00, 100.0, & hff0000

For a step color scale, the number of colors would be one less than the number of values. For example, to define a step color scale in which 0 to 50 is red (FF0000), and 50 to 100 is green (00FF00), the numbers will be:

0.0, & hff0000, 50.0, & h00ff00, 100.0
### 28.9. CLASS CDBASEMETERMBS

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>colorStops</td>
<td>(Mandatory)</td>
<td>An array of numbers alternating between values and colors. If the number count is even, the array will define a continuous color scale, otherwise it will define a step color scale.</td>
</tr>
<tr>
<td>startPos</td>
<td>-&amp; h7fffffff</td>
<td>The position of the starting point of the color scale. For an angular meter, the position refers to the radius, and the default is the meter scale radius (see AngularMeter.setMeter). For a linear meter, the position refers to the x or y coordinate depending on whether the meter is vertical or horizontal, and the default is the leftX or topY coordinate of the meter scale (see LinearMeter.setMeter).</td>
</tr>
<tr>
<td>startWidth</td>
<td>-&amp; h7fffffff</td>
<td>The width at the starting point of the color scale. A positive value means the width is in the direction of increasing &quot;position&quot;, while a negative value means decreasing &quot;position&quot;. Please refer to the description of startPos on the meaning of &quot;position&quot; for various types of meters. The default is the length of the major tick (see BaseMeter.setTickLength).</td>
</tr>
<tr>
<td>endPos</td>
<td>-&amp; h7fffffff</td>
<td>The position of the ending point of the color scale. Please refer to the description of startPos above on how the position parameter is interpreted. The default is for the ending position to be equal to the starting position.</td>
</tr>
<tr>
<td>endWidth</td>
<td>-&amp; h7fffffff</td>
<td>The width at the ending point of the color scale. Please refer to the description of startWidth above on how the width parameter is interpreted. The default is for the ending width to be equal to the starting width.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The edge color of the color scale. The default is to have no edge.</td>
</tr>
</tbody>
</table>

See also:

- 28.9.3 addColorScale(colorStops() as Double, startPos as Integer = -2147483647, startWidth as Integer = -2147483647, endPos as Integer = -2147483647, endWidth as Integer = -2147483647, edgeColor as Integer = -1)

### 28.9.5 addLabel(v as Double, label as string)


**Function:** Adds a label to a specific position on the meter scale.

**Notes:**

By default, all labels will be associated major ticks on the scale. To associate a label with a minor tick instead, use '-' as the first character of the label. To associate a label with a micro tick instead, use ':' as the first character of the label. To draw the label without any tick at all, use ‘\textasciitilde’ as the first character of the label.

Leading ‘\textasciitilde’, ‘\textasciitilde’ or ‘:\’ characters are tick specification characters and will not appear on the labels. They just specify the the tick style to be associated with the labels. If you want have a label that actually begins these characters, add ‘\textasciitilde’ as the first character as the escape character.
In some cases, it may be desirable to skip some labels. If you want to draw a major, minor or micro tick without any label, use ‘ ’ (a space character), ‘,’ or ‘;’ as the only character in the label text. If you want leave a label position empty without a tick or a label, use an empty string.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>pos</td>
<td>(Mandatory)</td>
<td>The position to add the label to in meter scale unit.</td>
</tr>
<tr>
<td>label</td>
<td>(Mandatory)</td>
<td>The label to add to the meter scale.</td>
</tr>
</tbody>
</table>

### 28.9.6 addPointer(value as Double, fillColor as color, edgeColor as color) as CDMeterPointerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addPointer method, but uses color instead of integer data type for passing color values.

See also:

- 28.9.7 addPointer(value as Double, fillColor as Integer = & hffff0001, edgeColor as Integer = -1) as CDMeterPointerMBS

### 28.9.7 addPointer(value as Double, fillColor as Integer = & hffff0001, edgeColor as Integer = -1) as CDMeterPointerMBS


**Function:** Adds a pointer to the meter.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>value</td>
<td>(Mandatory)</td>
<td>The value that the pointer will point to.</td>
</tr>
<tr>
<td>fillColor</td>
<td>LineColor</td>
<td>The fill color of the pointer.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The edge color of the pointer. The default value of -1 means the edge color is the same as the fill color.</td>
</tr>
</tbody>
</table>

See also:

- 28.9.6 addPointer(value as Double, fillColor as color, edgeColor as color) as CDMeterPointerMBS

### 28.9.8 getCoor(v as Double) as Integer


**Function:** Gets the geometric coordinates given the data value.

**Notes:**
For an angular meter, this method returns the angular position of the pointer for the given data value in degrees. The angle is measured in the clockwise direction, with 0 being the upward pointing direction.

For a linear meter, this method returns the linear pixel offset of the pointer for the given data value.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>v</td>
<td>(Mandatory)</td>
<td>The input data value.</td>
</tr>
</tbody>
</table>

Return Value
The geometric representation of the data value, which is an angle in degrees for an angular meter, and a linear pixel offset for a linear meter.

### 28.9.9 getLabel(v as Double) as string

**Function:** Gets the label at the specified position on the meter scale.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>(Mandatory)</td>
<td>The position specified as a value on the meter scale.</td>
</tr>
</tbody>
</table>

Return Value
Returns the label at the specified position, or a null string if there is no label at that position.

### 28.9.10 getTicks as CDArrayMBS

**Function:** Returns the positions of all ticks as values on the meter scale.

**Notes:**

Return Value
All array of numbers representing the positions of the ticks as values on the meter scale.

### 28.9.11 setLabelFormat(mainLabelFormat as string)

**Function:** Sets the format of the labels computed by ChartDirector.

**Example:**
dim c as CDBaseMeterMBS

// you can use label formats like this:

c.setLabelFormat("<block,halign=left><font=timesbi.ttf,size=12,underline=1>{ label }<font><br>US$ { value } K ( { percent } % )")

// we can reduce that to this:

c.setLabelFormat(" { label } { value } { percent } % ")

// and it shows 3 numbers. With | 1 after the variable name, we define the decimals after dot:

c.setLabelFormat(" { label } { value | 1 } { percent | 1 } % ")

// and

c.setLabelFormat(" { label } { value | 1., } { percent | 1., } % ")

// uses dot for thousands and comma for decimal separator.

Notes:

The method is mainly used when BaseMeter.setScale is used, in which case the label values are not directly specified but are computed by ChartDirector. For example, a format string of " { value | 2 } " will format the values with 2 decimal places.

Please refer to Parameter Substitution and Formatting on all available format parameters.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>formatString</td>
<td>(Mandatory)</td>
<td>The format string.</td>
</tr>
</tbody>
</table>

28.9.12  setLabelPos(labelInside as boolean, labelOffset as Integer = 0)


Function: Sets the positions of the meter scale labels.

Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>labelInside</td>
<td>(Mandatory)</td>
<td>A true value means that the labels are on the 'inward' side of the meter scale. A false value means the labels are on the 'outward' side of the meter scale.</td>
</tr>
</tbody>
</table>

For an angular meter, the default is for the labels on the 'inward' side. For a linear meter, the default is for
the labels on the 'outward' side.

labelOffset 0 The offset, in pixels, of the labels position relative to the standard position. If the major tick is at the same side as the label, the standard starting position of the label is at the end point of the major tick. Otherwise, the standard starting position is on the meter scale.

A positive labelOffset means the labels should move more towards the 'inward' or 'outward' side, depending on the first parameter. A negative labelOffset means moving the labels towards the opposite direction.

28.9.13 setLabelStyle(font as string = "", fontsize as Double = -1, fontcolor as Integer = & hffff0002, fontAngle as Double = 0) as CDTextBoxMBS


Function: Sets the font style used to for the meter labels.

Notes:
See Font Specification for details on various font attributes.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>font</td>
<td>&quot;bold&quot;</td>
<td>The font used to draw the labels.</td>
</tr>
<tr>
<td>fontSize</td>
<td>-1</td>
<td>The font size used to draw the labels in points. A value of -1 means the font size is not changed. The default font size is 10 points for angular meters, and 8 points for linear meters.</td>
</tr>
<tr>
<td>fontColor</td>
<td>TextColor</td>
<td>The color used to draw the labels.</td>
</tr>
<tr>
<td>fontAngle</td>
<td>0</td>
<td>The rotation angle of the labels.</td>
</tr>
</tbody>
</table>

Return Value
A TextBox object representing the prototype of the obj. This may be used to fine-tune the appearance of the obj.

See font specification here:
http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml
See also:

• 28.9.14 setLabelStyle(font as string, fontsize as Double, fontcolor as color, fontAngle as Double = 0) as CDTextBoxMBS
CHAPTER 28. CHARTDIRECTOR

28.9.14 setLabelStyle(font as string, fontsize as Double, fontcolor as color, fontAngle as Double = 0) as CDTextBoxMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other setLabelStyle method, but uses color instead of integer data type for passing color values.
See also:
- 28.9.13 setLabelStyle(font as string = "", fontsize as Double = -1, fontcolor as Integer = & hffff0002, fontAngle as Double = 0) as CDTextBoxMBS 4577

28.9.15 setLineWidth(axisWidth as Integer, majorTickWidth as Integer = 1, minorTickWidth as Integer = 1, microTickWidth as Integer = 1)

Function: Sets the line widths of the scale line and the ticks on the meter.
Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>axisWidth</td>
<td>(Mandatory)</td>
<td>The line width for drawing the meter scale line in pixels. For an angular meter, the default is 1 pixel. For a linear meter, the default is 2 pixels.</td>
</tr>
<tr>
<td>majorTickWidth</td>
<td>1</td>
<td>The line width of the major ticks in pixels. For a linear meter, if this method is not called, the initial major tick width is set to 2 pixels.</td>
</tr>
<tr>
<td>minorTickWidth</td>
<td>1</td>
<td>The line width of the minor ticks in pixels.</td>
</tr>
<tr>
<td>microTickWidth</td>
<td>1</td>
<td>The line width of the micro ticks in pixels.</td>
</tr>
</tbody>
</table>

28.9.16 setMeterColors(axisColor as color, labelColor as color, tickColor as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other setMeterColors method, but uses color instead of integer data type for passing color values.
See also:
- 28.9.17 setMeterColors(axisColor as Integer, labelColor as Integer = -1, tickColor as Integer = -1) 4578

28.9.17 setMeterColors(axisColor as Integer, labelColor as Integer = -1, tickColor as Integer = -1)

Function: Sets the colors of the meter scale line, scale label and tick.
Notes:
See also:
28.9. CLASS CDBASEMETERMBS
Argument
axisColor
labelColor

Default
(Mandatory)
-1

tickColor

-1

Description
The color for drawing the meter scale line. The default is LineColor.
The color for drawing the scale labels. Passing -1 in this argument means the
label color is not changed. The default label color is TextColor.
The color for drawing the ticks. Passing -1 in this argument means the tick
color is not changed. The default tick color is LineColor.

• 28.9.16 setMeterColors(axisColor as color, labelColor as color, tickColor as color)

28.9.18

4579

4578

setScale(lowerLimit as Double, upperLimit as Double, labels() as Double, formatstring as string = ””)

Function: Sets the meter to use the given scale with the given numeric labels and tick positions.
Notes:
ChartDirector will distribute the labels evenly on the scale. By default, all labels are associated with major
ticks. If you want certain positions to show a minor or micro ticks only, use MinorTickOnly or MicroTickOnly as the label values for those positions.
Argument
lowerLimit
upperLimit
labels
formatString

Default
(Mandatory)
(Mandatory)
(Mandatory)
””

Description
The lower limit of the meter scale.
The upper limit of the meter scale.
An array of numbers to be used as the labels on the meter scale.
The format string for formatting the numbers. An empty string means the
format will be automatically determined.

See also:
• 28.9.19 setScale(lowerLimit as Double, upperLimit as Double, labels() as string)

4579

• 28.9.20 setScale(lowerLimit as Double, upperLimit as Double, majorTickInc as Double = 0, minorTickInc as Double = 0, microTickInc as Double = 0)
4580

28.9.19

setScale(lowerLimit as Double, upperLimit as Double, labels() as string)

Function: Sets the meter to use the given scale with the given text labels and tick positions.
Notes:
ChartDirector will distribute the labels evenly on the scale. By default, all labels are associated with major
ticks. These can be modified by using ’-’, ’
textasciitilde ’ or ’:’ as the first character. Please refer to BaseMeter.addLabel for details.


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Argument | Default | Description
--- | --- | ---
lowerLimit | (Mandatory) | The lower limit of the meter scale.
upperLimit | (Mandatory) | The upper limit of the meter scale.
labels | (Mandatory) | An array of text strings to be used as the labels on the meter scale.

See also:

- 28.9.18 setScale(lowerLimit as Double, upperLimit as Double, labels() as Double, formatstring as string = "")
- 28.9.20 setScale(lowerLimit as Double, upperLimit as Double, majorTickInc as Double = 0, minorTickInc as Double = 0, microTickInc as Double = 0)

28.9.20 setScale(lowerLimit as Double, upperLimit as Double, majorTickInc as Double = 0, minorTickInc as Double = 0, microTickInc as Double = 0)

Function: Sets the meter to use the given scale.
Notes:

Argument | Default | Description
--- | --- | ---
lowerLimit | (Mandatory) | The lower limit of the meter scale.
upperLimit | (Mandatory) | The upper limit of the meter scale.
majorTickInc | 0 | The interval between major ticks. For example, a value of 10 means a major tick every 10 units in the meter scale. Each major tick will have an associated label for the value at the tick. A value of 0 disables major ticks.
minorTickInc | 0 | The interval between minor ticks. For example, a value of 5 means a minor tick every 5 units in the meter scale. A value of 0 disables minor ticks.
microTickInc | 0 | The interval between minor ticks. For example, a value of 1 means a minor tick every 1 units in the meter scale. A value of 0 disables micro ticks.

See also:

- 28.9.18 setScale(lowerLimit as Double, upperLimit as Double, labels() as Double, formatstring as string = "")
- 28.9.19 setScale(lowerLimit as Double, upperLimit as Double, labels() as string)

28.9.21 setTickLength(majorLen as Integer)

Function: Set the lengths of the ticks.
Notes:
28.9. **CLASS CDBASEMETERMBS**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>majorLen</td>
<td>(Mandatory)</td>
<td>The length of the major ticks in pixels. A positive value means the tick is at the 'outward' direction of the meter. A negative value means the tick is at the 'inward' direction.</td>
</tr>
<tr>
<td>minorLen</td>
<td>-7fffffff</td>
<td>The length of the minor ticks in pixels. The default is 60% of the length of the major ticks.</td>
</tr>
<tr>
<td>microLen</td>
<td>-7fffffff</td>
<td>The length of the micro ticks in pixels. The default is 50% of the length of the minor ticks.</td>
</tr>
</tbody>
</table>

For an angular meter, the default is -10 (10 pixels at the inward direction). For a horizontal linear meter, the default is the same height as the meter scale region in the inward direction. For a vertical linear meter, the default is the same width as the meter scale region in the inward direction.

See also:
- 28.9.22 setTickLength(majorLen as Integer, minorLen as Integer) 4581
- 28.9.23 setTickLength(majorLen as Integer, minorLen as Integer, microLen as Integer) 4582

### 28.9.22 setTickLength(majorLen as Integer, minorLen as Integer)

**Function:** Set the lengths of the ticks.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>majorLen</td>
<td>(Mandatory)</td>
<td>The length of the major ticks in pixels. A positive value means the tick is at the 'outward' direction of the meter. A negative value means the tick is at the 'inward' direction.</td>
</tr>
</tbody>
</table>

For an angular meter, the default is -10 (10 pixels at the inward direction). For a horizontal linear meter, the default is the same height as the meter scale region in the inward direction. For a vertical linear meter, the default is the same width as the meter scale region in the inward direction.

See also:
- 28.9.21 setTickLength(majorLen as Integer) 4580
- 28.9.23 setTickLength(majorLen as Integer, minorLen as Integer, microLen as Integer) 4582
CHAPTER 28. CHARTDIRECTOR

minorLen -7fffffff The length of the minor ticks in pixels. The default is 60% of the length of the major ticks.

microLen -7fffffff The length of the micro ticks in pixels. The default is 50% of the length of the minor ticks.

28.9.23 setTickLength(majorLen as Integer, minorLen as Integer, microLen as Integer)


Function: Set the lengths of the ticks.

Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>majorLen</td>
<td>(Mandatory)</td>
<td>The length of the major ticks in pixels. A positive value means the tick is at the 'outward' direction of the meter. A negative value means the tick is at the 'inward' direction.</td>
</tr>
<tr>
<td>minorLen</td>
<td>-7fffffff</td>
<td>The length of the minor ticks in pixels. The default is 60% of the length of the major ticks.</td>
</tr>
<tr>
<td>microLen</td>
<td>-7fffffff</td>
<td>The length of the micro ticks in pixels. The default is 50% of the length of the minor ticks.</td>
</tr>
</tbody>
</table>

For an angular meter, the default is -10 (10 pixels at the inward direction). For a horizontal linear meter, the default is the same height as the meter scale region in the inward direction. For a vertical linear meter, the default is the same width as the meter scale region in the inward direction.

See also:

- 28.9.21 setTickLength(majorLen as Integer) 4580
- 28.9.22 setTickLength(majorLen as Integer, minorLen as Integer) 4581
28.10. CLASS CDBOXMBS

28.10 class CDBoxMBS

28.10.1 class CDBoxMBS

**Function:** The Box class represents boxes.
**Notes:**
It is used as the base class for more complex classes (such as the TextBox class).
Subclass of the CDDrawObjMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

28.10.2 Methods

28.10.3 Constructor

MBS ChartDirector Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The private constructor.

28.10.4 getHeight as Integer

**Function:** Gets the height of the box.
**Notes:**
In some usages, the height of a box may be dynamically determined. An example is the height of an
LegendBox, which cannot be known until all data are available. In these cases, the height is undefined
until the chart or at least the legend box has been laid out (using BaseChart.layout or BaseChart.layout-
Legend), or the chart image has been drawn (eg. using BaseChart.makeChart, BaseChart.makeChart2 or
BaseChart.makeChart3).
**Return Value**
The height of the box in pixels.

28.10.5 getImageCoor(OffsetX as Integer = 0, OffsetY as Integer = 0) as string

**Function:** Gets the image map coordinates of the box as HTML image map attributes.
**Notes:**
The image map coordinates will be in the following format:
shape="rect" cords=" [ x1 ] , [ y1 ] , [ x2 ] , [ y2 ] "

where \((x_1, y_1)\) and \((x_2, y_2)\) are opposite corners of the box. The format is designed so that it can easily be incorporated into HTML image maps.

This method should be called only after creating the chart image (eg. using BaseChart.makeChart, BaseChart.makeChart2 or BaseChart.makeChart3). The image map cannot be determined without creating the chart image first.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>offsetX</td>
<td>0</td>
<td>An offset to be added to all x coordinates in the image map. This is useful if the current image will be shifted and inserted into another image. In this case, the image map will need to be shifted by the same offset.</td>
</tr>
<tr>
<td>offsetY</td>
<td>0</td>
<td>An offset to be added to all y coordinates in the image map. See offsetX above for description.</td>
</tr>
</tbody>
</table>

Return Value
A text string representing the coordinates of the box in HTML image map attribute format.

### 28.10.6 getLeftX as Integer


**Function:** Gets the left x pixel coordinate of the box.

**Notes:**

In some cases, the left x coordinate of a box may be dynamically determined. An example is the left x coordinate of an CDLegendBoxMBS with alignment set to Center. To determine the left x coordinate, the size of the box must be known first. For these cases, the left x coordinate is undefined until the legend box or the entire chart has been laid out (using CDBaseChartMBS.layout or CDBaseChartMBS.layoutLegend), or the chart image has been drawn (eg. using CDBaseChartMBS.makeChart).

**Arguments:**
None

**Return Value**
The the left x pixel coordinate of the box.

### 28.10.7 getTopY as Integer


**Function:** Gets the top y pixel coordinate of the box.

**Notes:**
In some cases, the top y coordinate of a box may be dynamically determined. An example is the top y coordinate of an CDLegendBoxMBS with alignment set to Center. To determine the top y coordinate, the size of the box must be known first. For these cases, the top y coordinate is undefined until the legend box or the entire chart has been laid out (using CDBaseChartMBS.layout or CDBaseChartMBS.layoutLegend), or the chart image has been drawn (e.g. using CDBaseChartMBS.makeChart).

Arguments:
None

Return Value
The top y pixel coordinate of the box.

28.10.8 getWidth as Integer

Function: Gets the width of the box.
Notes:
In some usages, the width of a box may be dynamically determined. An example is the width of an LegendBox, which cannot be known until all data are available. In these cases, the width is undefined until the chart or at least the legend box has been laid out (using BaseChart.layout or BaseChart.layoutLegend), or the chart image has been drawn (e.g. using BaseChart.makeChart, BaseChart.makeChart2 or BaseChart.makeChart3).
Return Value
The width of the box in pixels.

28.10.9 setBackground(colorvalue as color, edgeColor as color, raisedEffect as Integer = 0)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other setBackground method, but uses color instead of integer data type for passing color values.
See also:
• 28.10.10 setBackground(colorvalue as Integer, edgeColor as Integer = -1, raisedEffect as Integer = 0)

28.10.10 setBackground(colorvalue as Integer, edgeColor as Integer = -1, raisedEffect as Integer = 0)

Function: Sets the background color, border color and 3D border effect of the box.
Notes:
Argument Default Description

- color (Mandatory) The background color of the box.
- edgeColor -1 The border color of the box.
- raisedEffect 0 The 3D border width. For positive values, the border will appear raised. For negative values, the border will appear depressed. A zero value means the border will appear flat. This argument is also used to support Chart::glassEffect and Chart::softLighting effects.

See also:

- 28.10.9 setBackground(colorvalue as color, edgeColor as color, raisedEffect as Integer = 0)

28.10.11 setPos(x as Integer, y as Integer)


Function: Sets the coordinates of the top-left corner of the box.

Example:

```plaintext
// Create a XYChart object of size 250 x 250 pixels
dim c as new CDXYChartMBS(250, 250)

// Add a bar chart layer using the given data
dim t as CDTextBoxMBS = c.addBarLayer(data)
t.setPos(0, -10) // move 10 up
```

Notes:

- x (Mandatory) The x coordinate of the left of the box.
- y (Mandatory) The y coordinate of the top of the box.

28.10.12 setRoundedCorners(r1 as Integer = 10, r2 as Integer = -1, r3 as Integer = -1, r4 as Integer = -1)


Function: Sets the border style to use rounded corners.

Notes:
28.10. CLASS CDBOXMBS

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r1</td>
<td>10</td>
<td>The radius of the top-left rounded corner in pixels.</td>
</tr>
<tr>
<td>r2</td>
<td>-1</td>
<td>The radius of the top-right rounded corner in pixels. The default value of -1 means it is the same as the radius of the top-left corner.</td>
</tr>
<tr>
<td>r3</td>
<td>-1</td>
<td>The radius of the bottom-right rounded corner in pixels. The default value of -1 means it is the same as the radius of the top-left corner.</td>
</tr>
<tr>
<td>r4</td>
<td>-1</td>
<td>The radius of the bottom-left rounded corner in pixels. The default value of -1 means it is the same as the radius of the top-left corner.</td>
</tr>
</tbody>
</table>

28.10.13 setSize(w as Integer, h as Integer)


Function: Sets the width and height of the box.

Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>w</td>
<td>(Mandatory)</td>
<td>The width of the box in pixels.</td>
</tr>
<tr>
<td>h</td>
<td>(Mandatory)</td>
<td>The height of the box in pixels.</td>
</tr>
</tbody>
</table>
28.11 class CDBoxWhiskerLayerMBS

28.11.1 class CDBoxWhiskerLayerMBS

Function: The BoxWhiskerLayer class represents box-whisker layers.
Notes:
Subclass of the CDBaseBoxLayerMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

28.11.2 Methods

28.11.3 setBoxColor(item as Integer, boxColor as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other setBoxColor method, but uses color instead of integer data type for passing color values.
See also:
- 28.11.4 setBoxColor(item as Integer, boxColor as Integer) 4588

28.11.4 setBoxColor(item as Integer, boxColor as Integer)

Function: Sets the color for a single box.
Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>item</td>
<td>(Mandatory)</td>
<td>The index of the box to change color. The first box is 0, while the Nth box is N - 1.</td>
</tr>
<tr>
<td>boxColor</td>
<td>(Mandatory)</td>
<td>The color to use to fill the box.</td>
</tr>
</tbody>
</table>

See also:
- 28.11.3 setBoxColor(item as Integer, boxColor as color) 4588

28.11.5 setBoxColors(colors() as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other setBoxColors method, but uses color instead of integer data type for passing
28.11. **CLASS CDBOXWHISKERLAYERMBS**

color values.

See also:

- 28.11.6 setBoxColors(colors() as color, names() as string) 4589
- 28.11.7 setBoxColors(colors() as Integer) 4589
- 28.11.8 setBoxColors(colors() as Integer, names() as string) 4590

### 28.11.6 setBoxColors(colors() as color, names() as string)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other setBoxColors method, but uses color instead of integer data type for passing color values.

See also:

- 28.11.5 setBoxColors(colors() as color) 4588
- 28.11.7 setBoxColors(colors() as Integer) 4589
- 28.11.8 setBoxColors(colors() as Integer, names() as string) 4590

### 28.11.7 setBoxColors(colors() as Integer)


**Function:** Sets the colors for all boxes.

**Notes:**

The method will set the BoxWhiskerLayer into multi-color mode. The colors of each box will be obtained from the given colors array. If there are insufficient colors in the array, the remaining boxes will be auto-colored.

If the names argument is given, the names will appear in the legend box if one is configured for the chart.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>colors</td>
<td>(Mandatory)</td>
<td>An array of colors to be used as the color of the boxes.</td>
</tr>
<tr>
<td>names</td>
<td>[ Empty_Array ]</td>
<td>An array of names to be used in the legend box, if one is configured for the chart.</td>
</tr>
</tbody>
</table>

See also:

- 28.11.5 setBoxColors(colors() as color) 4588
- 28.11.6 setBoxColors(colors() as color, names() as string) 4589
- 28.11.8 setBoxColors(colors() as Integer, names() as string) 4590
28.11.8  setBoxColors(colors() as Integer, names() as string)

Function: Sets the colors for all boxes.
Notes:
The method will set the BoxWhiskerLayer into multi-color mode. The colors of each box will be obtained
from the given colors array. If there are insufficient colors in the array, the remaining boxes will be auto-
colored.

If the names argument is given, the names will appear in the legend box if one is configured for the chart.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>colors</td>
<td>(Mandatory)</td>
<td>An array of colors to be used as the color of the boxes.</td>
</tr>
<tr>
<td>names</td>
<td>[ Empty_Array ]</td>
<td>An array of names to be used in the legend box, if one is configured for the chart.</td>
</tr>
</tbody>
</table>

See also:

- 28.11.5 setBoxColors(colors() as color) 4588
- 28.11.6 setBoxColors(colors() as color, names() as string) 4589
- 28.11.7 setBoxColors(colors() as Integer) 4589

28.11.9  setWhiskerBrightness(whiskerBrightness as Double)

Function: Sets the whisker colors as darken or brightened fill colors of the boxes for BoxWhiskerLayer in
multi-color mode.
Notes:
In multi-color mode, the boxes of a BoxWhiskerLayer can have different fill colors. Instead of specifying
a single whisker color for all boxes, ChartDirector supports deriving the whisker colors by darkening or
brightening the corresponding fill colors.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
</table>
| whiskerBrightness | (Mandatory)    | The brightness factor. A value less than 1 means darkening. A value larger
than 1 means brightening. A zero value means black.                        |
28.12. class CDCandleStickLayerMBS

28.12.1 class CDCandleStickLayerMBS

Function: The CandleStickLayer class represents candlestick layers.
Notes:
Subclass of the CDBaseBoxLayerMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

28.12.2 Methods

28.12.3 setColors(upFillColor as color, upLineColor as color, downFillColor as color, downLineColor as color)

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Configures the colors for candlesticks.
Notes:
The standard way to color a candlestick is to color it based on whether it is on an "up" or "down" trading session, in which "up" is defined as the closing price higher than or equal to the opening price, otherwise it is "down".

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>upFillColor</td>
<td>(Mandatory)</td>
<td>The fill color for &quot;up&quot; trading sessions.</td>
</tr>
<tr>
<td>upLineColor</td>
<td>(Mandatory)</td>
<td>The line color for &quot;up&quot; trading sessions.</td>
</tr>
<tr>
<td>downFillColor</td>
<td>(Mandatory)</td>
<td>The fill color for &quot;down&quot; trading sessions.</td>
</tr>
<tr>
<td>downLineColor</td>
<td>(Mandatory)</td>
<td>The line color for &quot;down&quot; trading sessions.</td>
</tr>
</tbody>
</table>

See also:

- 28.12.4 setColors(upFillColor as Integer, upLineColor as Integer, downFillColor as Integer, downLineColor as Integer)

28.12.4 setColors(upFillColor as Integer, upLineColor as Integer, downFillColor as Integer, downLineColor as Integer)

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Configures the colors for candlesticks.
Notes:
The standard way to color a candlestick is to color it based on whether it is on an "up" or "down" trading session, in which "up" is defined as the closing price higher than or equal to the opening price, otherwise it is "down".

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>upFillColor</td>
<td>(Mandatory)</td>
<td>The fill color for &quot;up&quot; trading sessions.</td>
</tr>
<tr>
<td>upLineColor</td>
<td>(Mandatory)</td>
<td>The line color for &quot;up&quot; trading sessions.</td>
</tr>
<tr>
<td>downFillColor</td>
<td>(Mandatory)</td>
<td>The fill color for &quot;down&quot; trading sessions.</td>
</tr>
<tr>
<td>downLineColor</td>
<td>(Mandatory)</td>
<td>The line color for &quot;down&quot; trading sessions.</td>
</tr>
</tbody>
</table>

See also:

- 28.12.3 setColors(upFillColor as color, upLineColor as color, downFillColor as color, downLineColor as color)

28.12.5 setExtraColors(upDownFillColor as color, upDownLineColor as color, downDownFillColor as color, downDownLineColor as color, leadValue as Double = -1.7E308)

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Configures additional colors for candlesticks.

**Notes:**

The standard way to color a candlestick is to color it using the method as mentioned in CandleStickLayer.setColors, in which "up" is defined as the closing price higher than or equal to the opening price.

In some applications, it may be desirable to vary the candlestick colors based on an alternative definition of "up" and "down", in which "up" is defined as the closing price higher than or equal to that of the previous trading session.

With these two definitions of "up" and "down", a candlestick can have 4 states. It can be "up/up" ("up" as according to both the standard and alternative definitions), "up/down" ("up" according to the standard definition, "down" according to the alternative definition), "down/up" or "down/down".

The setExtraColors method can be used to configure the "up/down" and "down/down" colors. If this method is used, the colors configured with CandleStickLayer.setColors will be considered as the "up/up" and "down/up" colors.

See also:

- 28.12.6 setExtraColors(upDownFillColor as Integer, upDownLineColor as Integer, downDownFillColor as Integer, downDownLineColor as Integer, leadValue as Double = -1.7E308)
### 28.12.6 `setExtraColors(upDownFillColor as Integer, upDownLineColor as Integer, downDownFillColor as Integer, downDownLineColor as Integer, leadValue as Double = -1.7E308)`

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Configures additional colors for candlesticks.

**Notes:**

The standard way to color a candlestick is to color it using the method as mentioned in `CandleStickLayer.setColors`, in which "up" is defined as the closing price higher than or equal to the opening price.

In some applications, it may be desirable to vary the candlestick colors based on an alternative definition of "up" and "down", in which "up" is defined as the closing price higher than or equal to that of the previous trading session.

With these two definitions of "up" and "down", a candlestick can have 4 states. It can be "up/up" ("up" according to both the standard and alternative definitions), "up/down" ("up" according to the standard definition, "down" according to the alternative definition), "down/up" or "down/down".

The `setExtraColors` method can be used to configure the "up/down" and "down/down" colors. If this method is used, the colors configured with `CandleStickLayer.setColors` will be considered as the "up/up" and "down/up" colors.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>upDownFillColor</code></td>
<td>(Mandatory)</td>
<td>The fill color for &quot;up/down&quot; days.</td>
</tr>
<tr>
<td><code>upDownLineColor</code></td>
<td>(Mandatory)</td>
<td>The line color for &quot;up/down&quot; days.</td>
</tr>
<tr>
<td><code>downDownFillColor</code></td>
<td>(Mandatory)</td>
<td>The fill color for &quot;down/down&quot; days.</td>
</tr>
<tr>
<td><code>downDownLineColor</code></td>
<td>(Mandatory)</td>
<td>The line color for &quot;down/down&quot; days.</td>
</tr>
<tr>
<td><code>leadValue</code></td>
<td>[ -Infinity ]</td>
<td>The closing price before the first trading session, which is used to determine if the first trading session is &quot;up&quot; or &quot;down&quot; according to the alternative definition.</td>
</tr>
</tbody>
</table>

See also:

- 28.12.5 `setExtraColors(upDownFillColor as color, upDownLineColor as color, downDownFillColor as color, downDownLineColor as color, leadValue as Double = -1.7E308)`


28.13 class CDColorAxisMBS

28.13.1 class CDColorAxisMBS


**Function:** The ColorAxis class represents color axes.

**Notes:**

It is a subclass of Axis.

A color axis is similar to an x or y axis. However, instead of mapping data values to positions, a color axis maps data values to colors. Color axes are used in CDContourLayerMBS and in CDSurfaceChartMBS objects.

Similar to an x or y axis, a color axis is visually represented as a thin bar that can be horizontal or vertical, and has a scale along its length. The scale can be set explicitly or can be determined by auto-scaling.

If you are using the color axis on a surface chart, please note that by default, the color axis scale is synchronized to the z axis. You need to use CDAxisMBS.syncAxis to cancel the synchronization before you can independently set the color axis scale.

In addition to the scale, a color axis is colored with a continuous color gradient or discrete color steps along its length. This maps the values on the axis with colors.

For an x or y axis, the major and minor ticks correspond to major and minor grid lines on the chart. For a color axis, these ticks correspond to major and minor contour lines on the chart.

Like an x or y axis, you can add marks to the color axis using Axis.addMark. They will become mark contour lines on the chart.

The color axis, if visible, acts as a color legend. The axis stem is a thin rectangle 15 pixels in width, configurable with CDAxisMBS.setWidth. A bounding box can be added to surround the color axis using CDCColorAxisMBS.setBoundingBox.

A color axis works normally (determines color mapping and contour levels) even if it is not displayed.

Subclass of the CDAxisMBS class.

This is a subclass of an abstract class. You can't create an instance, but you can get one from various plugin functions.
28.13.2 Methods

28.13.3 getColor as Integer


Function: Gets the color given the data value.

Notes: You must call CDXYChartMBS.layoutAxes, CDBaseChartMBS.layout or CDXYChartMBS.packPlotArea first before calling this method. ChartDirector needs to perform auto-scaling and layout the axis before it can compute the color.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>z</td>
<td>(Mandatory)</td>
<td>The data value.</td>
</tr>
</tbody>
</table>

Return Value

The color that corresponds to the data value.

28.13.6 setAxisBorder(edgeColor as color, raisedEffect as Integer = 0)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Same as the other setAxisBorder method, but uses color instead of integer data type for passing color values.

See also:
28.13.7  \texttt{setAxisBorder(edgeColor as Integer, raisedEffect as Integer = 0)}


\textbf{Function:} Sets the position of the color axis.

\textbf{Notes:}

\textbf{Arguments:}

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>(Mandatory)</td>
<td>The x-coordinate of the reference point used to position the color axis.</td>
</tr>
<tr>
<td>y</td>
<td>(Mandatory)</td>
<td>The y-coordinate of the reference point used to position the color axis.</td>
</tr>
<tr>
<td>alignment</td>
<td>(Mandatory)</td>
<td>The alignment of the color axis with respect to the reference point. For example, a value of kTopLeft means the reference point is the top-left corner of the color axis. See Alignment Specification for supported alignment types.</td>
</tr>
</tbody>
</table>

See also:

- 28.13.6 \texttt{setAxisBorder(edgeColor as color, raisedEffect as Integer = 0)}

28.13.8  \texttt{setAxisPos(x as Integer, y as Integer, alignment as Integer)}


\textbf{Function:} Sets the position and alignment of the color axis.

28.13.9  \texttt{setBoundingBox(fillColor as color, edgeColor as color, raisedEffect as Integer = 0)}

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

\textbf{Function:} Same as the other \texttt{setBoundingBox} method, but uses color instead of integer data type for passing color values.

See also:

- 28.13.10 \texttt{setBoundingBox(fillColor as Integer, edgeColor as Integer = & hff000000, raisedEffect as Integer = 0)}

28.13.10  \texttt{setBoundingBox(fillColor as Integer, edgeColor as Integer = & hff000000, raisedEffect as Integer = 0)}


\textbf{Function:} Sets the background color, border color and 3D border effect of the bounding box.
28.13. CLASS CDCOLORAXISMBS

Notes:

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>fillColor</td>
<td>(Mandatory)</td>
<td>The background color of the bounding box.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>kTransparent</td>
<td>The border color of the bounding box.</td>
</tr>
<tr>
<td>raisedEffect</td>
<td>0</td>
<td>The 3D border width. For positive values, the border will appear raised. For negative values, the border will appear depressed. A zero value means the border will appear flat. This argument is also used to support CDBaseChartMBS.glassEffect, CDBaseChartMBS.softLighting and CDBaseChartMBS.cylinderEffect effects.</td>
</tr>
</tbody>
</table>

See also:

- 28.13.9 setBoundingBox(fillColor as color, edgeColor as color, raisedEffect as Integer = 0)

28.13.11 setBoxMargin(leftMargin as Integer, rightMargin as Integer, topMargin as Integer, bottomMargin as Integer)


Function: Sets the margins of the bounding box in pixels.

Notes:
The margins of a bounding box refer to the distances between the borders of the bounding box to the color axis inside.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>leftMargin</td>
<td>(Mandatory)</td>
<td>The left margin in pixels.</td>
</tr>
<tr>
<td>rightMargin</td>
<td>(Mandatory)</td>
<td>The right margin in pixels.</td>
</tr>
<tr>
<td>topMargin</td>
<td>(Mandatory)</td>
<td>The top margin in pixels.</td>
</tr>
<tr>
<td>bottomMargin</td>
<td>(Mandatory)</td>
<td>The bottom margin in pixels.</td>
</tr>
</tbody>
</table>

See also:

- 28.13.12 setBoxMargin(m as Integer)

28.13.12 setBoxMargin(m as Integer)


Function: Sets all margins (left, right, top, and bottom) of the bounding box to the same value.
CHAPTER 28. CHARTDIRECTOR

Notes:
The margins of a bounding box refer to the distances between the borders of the bounding box to the color axis inside.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>m</td>
<td>(Mandatory)</td>
<td>The left, right, top and bottom margins in pixels.</td>
</tr>
</tbody>
</table>

See also:

- 28.13.11 setBoxMargin(leftMargin as Integer, rightMargin as Integer, topMargin as Integer, bottomMargin as Integer)

28.13.13 setColorGradient(isContinuous as boolean, Colors() as color, underflowColor as color, overflowColor as color)


Function: Sets the continuous color gradient or discrete color steps for the color axis.

Notes:

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>isContinuous</td>
<td>true</td>
<td>True to set to continuous color gradient. False to set to discrete color steps.</td>
</tr>
<tr>
<td>colors</td>
<td>[Empty Array]</td>
<td>An array of colors used to define the continuous color gradient. If an empty array is used, the colors are automatically determined.</td>
</tr>
</tbody>
</table>

ChartDirector will interpolate between the colors to create the continuous gradient. If discrete color steps are used, ChartDirector will take samples along the continuous color gradient. The number of samples is determined by the number of ticks on the axis, and may not equal the number of colors in the colors array.

<table>
<thead>
<tr>
<th>OverflowColor</th>
<th>-1</th>
<th>The color to use if a value exceeds the maximum value of the axis scale. -1 means the overflowColor is the same color at the maximum value.</th>
</tr>
</thead>
<tbody>
<tr>
<td>UnderflowColor</td>
<td>-1</td>
<td>The color to use if a value falls below the minimum value of the axis scale. -1 means the underflowColor is the same color at the minimum value.</td>
</tr>
</tbody>
</table>

See also:

- 28.13.14 setColorGradient(isContinuous as boolean, Colors() as color, underflowColor as Integer, overflowColor as Integer = -1)
28.13.14  setColorGradient(isContinuous as boolean, Colors() as color, underflowColor as Integer, overflowColor as Integer = -1)


**Function:** Sets the continuous color gradient or discrete color steps for the color axis.

**Notes:**

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>isContinuous</td>
<td>true</td>
<td>True to set to continuous color gradient. False to set to discrete color steps.</td>
</tr>
<tr>
<td>colors</td>
<td>[Empty_Array]</td>
<td>An array of colors used to define the continuous color gradient. If an empty array is used, the colors are automatically determined.</td>
</tr>
</tbody>
</table>

ChartDirector will interpolate between the colors to create the continuous gradient. If discrete color steps are used, ChartDirector will take samples along the continuous color gradient. The number of samples is determined by the number of ticks on the axis, and may not equal the number of colors in the colors array.

- **overflowColor**  -1 The color to use if a value exceeds the maximum value of the axis scale. -1 means the overflowColor is the same color at the maximum value.
- **underflowColor** -1 The color to use if a value falls below the minimum value of the axis scale. -1 means the underflowColor is the same color at the minimum value.

See also:

- 59.6.1 setColorGradient(isContinuous as boolean, Colors() as color, underflowColor as color, overflowColor as color) 10567
- 28.13.15 setColorGradient(isContinuous as boolean, Colors() as Integer, underflowColor as Integer = -1, overflowColor as Integer = -1) 4599
- 28.13.16 setColorGradient(isContinuous as boolean=true) 4600

28.13.15  setColorGradient(isContinuous as boolean, Colors() as Integer, underflowColor as Integer = -1, overflowColor as Integer = -1)


**Function:** Sets the continuous color gradient or discrete color steps for the color axis.

**Notes:**
Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>isContinuous</td>
<td>true</td>
<td>True if set to continuous color gradient. False to set to discrete color steps.</td>
</tr>
<tr>
<td>colors</td>
<td>[Empty Array]</td>
<td>An array of colors used to define the continuous color gradient. If an empty array is used, the colors are automatically determined.</td>
</tr>
</tbody>
</table>

ChartDirector will interpolate between the colors to create the continuous gradient. If discrete color steps are used, ChartDirector will take samples along the continuous color gradient. The number of samples is determined by the number of ticks on the axis, and may not equal the number of colors in the colors array.

overflowColor  -1 The color to use if a value exceeds the maximum value of the axis scale. -1 means the overflowColor is the same color at the maximum value.
underflowColor -1 The color to use if a value falls below the minimum value of the axis scale. -1 means the underflowColor is the same color at the minimum value.

See also:

- 59.6.1 setColorGradient(isContinuous as boolean, Colors() as color, underflowColor as color, overflowColor as color) 10567
- 28.13.14 setColorGradient(isContinuous as boolean, Colors() as color, underflowColor as Integer, overflowColor as Integer = -1) 4599
- 28.13.16 setColorGradient(isContinuous as boolean=true) 4600

28.13.16 setColorGradient(isContinuous as boolean=true)

MBS ChartDirector Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the continuous color gradient or discrete color steps for the color axis.

**Notes:**

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>isContinuous</td>
<td>true</td>
<td>True if set to continuous color gradient. False to set to discrete color steps.</td>
</tr>
<tr>
<td>colors</td>
<td>[Empty Array]</td>
<td>An array of colors used to define the continuous color gradient. If an empty array is used, the colors are automatically determined.</td>
</tr>
</tbody>
</table>

ChartDirector will interpolate between the colors to create the continuous gradient. If discrete color steps are used, ChartDirector will take samples along the continuous color gradient. The number of samples is determined by the number of ticks on the axis, and may not equal the number of colors in the colors array.
28.13. CLASS CDCOLORAXISMBS

overflowColor -1 The color to use if a value exceeds the maximum value of the axis scale. -1 means the overflowColor is the same color at the maximum value.

underflowColor -1 The color to use if a value falls below the minimum value of the axis scale. -1 means the underflowColor is the same color at the minimum value.

See also:

- 59.6.1 setColorGradient(isContinuous as boolean, Colors() as color, underflowColor as color, overflowColor as color) 10567
- 28.13.14 setColorGradient(isContinuous as boolean, Colors() as color, underflowColor as Integer, overflowColor as Integer = -1) 4599
- 28.13.15 setColorGradient(isContinuous as boolean, Colors() as Integer, underflowColor as Integer = -1, overflowColor as Integer = -1) 4599

28.13.17 setColorScale(colorStops() as Double, underflowColor as Integer = -1, overflowColor as Integer = -1)

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Sets the axis scale and the associated colors.

Notes:
The axis scale and the associated colors are defined with an array of numbers. For a color scale with continuous color gradient, each pair of numbers represents a value and its associated color. For example, for a continuous color scale in which 0 is blue (0000FF), 50 is yellow (FFFF00) and 100 is red (FF0000), the numbers should be:

0.0, & h0000ff, 50.0, & hffff00, 100.0, & hf0000

For a color scale with discrete color steps, the number of colors would be one less than the number of values. For example, to define a step color scale in which 0 to 50 is red (FF0000), and 50 to 100 is green (00FF00), the numbers will be:

0.0, & hff000, 50.0, & h0ff00, 100.0

28.13.18 setCompactAxis(b as boolean=true)


Function: Sets whether to compact the axis or not.

Notes:
**TABLE 28.13.19 setLevels(maxLevels as Integer)**

**Function:** Sets the maximum number of contour intervals on the axis.  
**Notes:**  
If discrete color steps are used, the number of contour intervals is the number of color steps on the axis.  

For a general color axis, the number of contour intervals is equal to the number of ticks minus 1. For example, an axis with 6 ticks at [ 0, 2, 4, 6, 8, 10 ] has 6 contour lines and 5 contour intervals.  

The main usage of this method is to limit the number of contour lines and/or color steps on the contour layer.  

If this method is never called, the default maximum number of contour intervals is 16.
Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>maxLevels</td>
<td>(Mandatory) An integer representing the maximum number of contour intervals.</td>
</tr>
</tbody>
</table>

### 28.13.20 setRoundedCorners(r1 as Integer = 10, r2 as Integer = -1, r3 as Integer = -1, r4 as Integer = -1)


**Function:** Sets the border style of the bounding box to rounded corners.

**Notes:**

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r1</td>
<td>10</td>
<td>The radius of the top-left rounded corner in pixels.</td>
</tr>
<tr>
<td>r2</td>
<td>-1</td>
<td>The radius of the top-right rounded corner in pixels. -1 means it is the same as the radius of the top-left corner.</td>
</tr>
<tr>
<td>r3</td>
<td>-1</td>
<td>The radius of the bottom-right rounded corner in pixels. -1 means it is the same as the radius of the top-left corner.</td>
</tr>
<tr>
<td>r4</td>
<td>-1</td>
<td>The radius of the bottom-left rounded corner in pixels. -1 means it is the same as the radius of the top-left corner.</td>
</tr>
</tbody>
</table>
28.14 class CDContourLayerMBS

28.14.1 class CDContourLayerMBS


**Function:** The ContourLayer class represents contour layers

**Notes:**

CDContourLayerMBS is a subclass of CDLayerMBS.

CDContourLayerMBS objects are created by using CDXYChartMBS.addContourLayer.

The data for the CDContourLayerMBS are the z values at some points in the xy plane. Both gridded and scattered data points are supported.

Using the data, the ContourLayer computes the z values of all pixels in the xy plane. The computation can be based on spline or bilinear/line surface fitting, configurable using CDContourLayerMBS.setSmoothInterpolation.

The ContourLayer then colors the pixels based on the z values, and draws contour lines to join positions with the same z values. The color mapping and contour levels are controlled by the ColorAxis object of the ContourLayer, obtainable using CDContourLayerMBS.colorAxis.

If you need to change colors for the contour layer, please use ColorAxis setColorGradient:

Call myContourLayer.colorAxis().setColorGradient(True, anArrayOfColors)

ChartDirector will then use the array of colors, and interpolate among them, to fill the contour layer. For example, if the array of colors contain 3 colors red, green and blue, ChartDirector will interpolate from red to green for half of the z-levels, and green to blue for the other half.

Subclass of the CDLayerMBS class.

This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

28.14.2 Methods

28.14.3 colorAxis as CDColorAxisMBS


**Function:** Gets the ColorAxis object representing the color axis (color legend).
28.14.4 setColorAxis(x as Integer, y as Integer, alignment as Integer, length as Integer, orientation as Integer) as CDColorAxisMBS


**Function:** Sets the position, length and orientation of the color axis (color legend).

**Notes:**

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>(Mandatory)</td>
<td>The x-coordinate of the reference point used to position the color axis.</td>
</tr>
<tr>
<td>y</td>
<td>(Mandatory)</td>
<td>The y-coordinate of the reference point used to position the color axis.</td>
</tr>
<tr>
<td>alignment</td>
<td>(Mandatory)</td>
<td>The alignment of the color axis with respect to the reference point. For example, a value of kTopLeft means the reference point is the top-left corner of the color axis. See Alignment Specification for supported alignment types.</td>
</tr>
<tr>
<td>length</td>
<td>(Mandatory)</td>
<td>The length of the color axis in pixels.</td>
</tr>
<tr>
<td>orientation</td>
<td>(Mandatory)</td>
<td>The orientation of the color axis. A value of kTop/kBottom means the axis is horizontal, and the axis labels are at top/bottom side of the axis. A value of kLeft/kRight means the axis is vertical, and the axis labels are at the left/right side of the axis.</td>
</tr>
</tbody>
</table>

28.14.5 setContourColor(contourColor as color, minorContourColor as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other setContourColor method, but uses color instead of integer data type for passing color values.

See also:

- 28.14.6 setContourColor(contourColor as Integer, minorContourColor as Integer = -1)

28.14.6 setContourColor(contourColor as Integer, minorContourColor as Integer = -1)


**Function:** Sets contour line colors.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>contourColor</td>
<td>(Mandatory)</td>
<td>The major contour line color. If this method is never called, the default contour line color is semi-transparent black (&amp; h80000000).</td>
</tr>
<tr>
<td>minorContourColor</td>
<td>-1</td>
<td>The minor contour line color. -1 means the minor contour line color is the same as the major contour line color.</td>
</tr>
</tbody>
</table>

See also:
28.14.7 setContourWidth(contourWidth as Integer, minorContourWidth as Integer = -1)


**Function:** Sets contour line widths.

**Notes:**

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>contourWidth</td>
<td>(Mandatory)</td>
<td>The major contour line width in pixels. If this method is never called, the default contour line width is 1 pixel.</td>
</tr>
<tr>
<td>minorContourWidth</td>
<td>-1</td>
<td>The minor contour line width. -1 means the minor contour line width is the same as the major contour line width.</td>
</tr>
</tbody>
</table>

28.14.8 setExactContour(contour as boolean = true)


**Function:** Sets whether to use exact contours or boundary contours.

**Notes:**

In exact contour mode, the contour at \( z = N \) refers to all points at \( z = N \). For example, the contour at \( z = 10 \) refers to all points at \( z = 10 \). These points normally constitute lines. However, in case there is an exactly flat region at \( z = 10 \), the entire region will be the contour and will be colored using the contour color. In other words, instead of lines, a contour can become a region.

In boundary contour mode, the contour at \( z = N \) refers to the boundary between \( z < N \) and \( z >= N \), except for the highest contour in which case the contour is the boundary between \( z <= N \) and \( z > N \). With this method, if there is a flat region, the contour will occur at the boundary of the region.

If this method is never called, the default is to use boundary contour mode.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>contour</td>
<td>true</td>
<td>A true value specifies exact contour mode for standard contours, otherwise boundary contour mode will be used.</td>
</tr>
<tr>
<td>markContour</td>
<td>[Same_As_Contour]</td>
<td>A true value specifies exact contour mode for mark contours. A false value specifies boundary contour mode for mark contours. A mark contour is an extra contour added using Axis.addMark on the color axis (obtained using ContourLayer.colorAxis). If this parameter is not specified, the default is to use the same contour mode as standard contours.</td>
</tr>
</tbody>
</table>
28.14. CLASS CDCONTOURLAYERMBS

See also:

- 28.14.9 setExactContour(contour as boolean, markContour as boolean)

28.14.9 setExactContour(contour as boolean, markContour as boolean)


**Function:** Sets whether to use exact contours or boundary contours.

**Notes:**

In exact contour mode, the contour at \( z = N \) refers to all points at \( z = N \). For example, the contour at \( z = 10 \) refers to all points at \( z = 10 \). These points normally constitute lines. However, in case there is an exactly flat region at \( z = 10 \), the entire region will be the contour and will be colored using the contour color. In other words, instead of lines, a contour can become a region.

In boundary contour mode, the contour at \( z = N \) refers to the boundary between \( z < N \) and \( z > N \), except for the highest contour in which case the contour is the boundary between \( z <= N \) and \( z > N \). With this method, if there is a flat region, the contour will occur at the boundary of the region.

If this method is never called, the default is to use boundary contour mode.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>contour</td>
<td>true</td>
<td>A true value specifies exact contour mode for standard contours, otherwise boundary contour mode will be used.</td>
</tr>
<tr>
<td>markContour</td>
<td>[Same_As_Contour]</td>
<td>A true value specifies exact contour mode for mark contours. A false value specifies boundary contour mode for mark contours. A mark contour is an extra contour added using Axis.addMark on the color axis (obtained using ContourLayer.colorAxis). If this parameter is not specified, the default is to use the same contour mode as standard contours.</td>
</tr>
</tbody>
</table>

See also:

- 28.14.8 setExactContour(contour as boolean = true)

28.14.10 setSmoothInterpolation(b as boolean)


**Function:** Sets whether to use spline or bilinear/linear surface interpolation.

**Notes:**

The data points for the contour layer are samples of the \( z \) values at certain gridded or scattered \((x, y)\) points. However, to draw the contour and to color the layer, it is necessarily to know the \( z \) values at all pixels in the \( xy \) plane. ChartDirector uses surface interpolation to compute the \( z \) values at all pixels from the given data points.
In spline surface interpolation, ChartDirector will compute a smooth surface that passes through all data points. In bilinear/linear surface interpolation, ChartDirector will use the data points to partition the \((x, y)\) plane into rectangular or triangular regions, and will fit bilinear or linear surfaces to the regions.

Spline surface interpolation generally produces smoother contours and is the default.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(b)</td>
<td>(Mandatory)</td>
<td>A true value means to use spline surface interpolation. A false value means to use bilinear/linear surface interpolation.</td>
</tr>
</tbody>
</table>

### 28.14.11 setZBounds(minZ as Double, maxZ as Double)


**Function:** Clips the \(z\) values to the given bounds.

**Notes:**

In spline surface interpolation (see ContourLayer.setSmoothInterpolation), it is possible that the interpolated surface contains regions that are higher than the highest data point, or lower than the lowest data point.

As an example, consider a linear sequence of points with \(z\) values \([10, 20, 30, 40, 40, 30, 20, 10]\). The first 4 points represent an upward slope, while the last 4 points represent a download slope. If these points are to be joined with a smooth spline, the peak will naturally fall somewhere between the middle two points and exceed 40. So there will be a region in the spline higher than the highest data point.

In some applications, it may be desirable to limit the \(z\) values to certain bounds. For example, if the data are about rainfall, it is not desirable if the interpolated surface falls below 0, as there cannot be negative rainfall. The setZBounds method can be used to clip the interpolated surface to the desired bounds.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>minZ</td>
<td>DataBound</td>
<td>The minimum (z) value to clip to. Use NoValue if there is no minimum (z) bound. The special constant DataBound means that the minimum (z) value is the minimum data value.</td>
</tr>
<tr>
<td>maxZ</td>
<td>DataBound</td>
<td>The maximum (z) value to clip to. Use NoValue if there is no maximum (z) bound. The special constant DataBound means that the maximum (z) value is the maximum data value.</td>
</tr>
</tbody>
</table>
28.14.12  \texttt{setZData(zData() \text{ as Double})}


\textbf{Function:} Sets the z data used for the contour chart.

\textbf{Notes:}

Arguments:

\begin{tabular}{lll}
\textbf{Argument} & \textbf{Default} & \textbf{Description} \\
\hline
\texttt{zData} & (Mandatory) & An array of numbers as the z data for the contour chart. \\
\end{tabular}
**Function:** A XY chart showing a contour layer created using ChartDirector with the CDXYChartMBS class.
28.15  class CDDatasetMBS

28.15.1  class CDDatasetMBS

Function: The Dataset class represents data sets.
Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

28.15.2  Methods

28.15.3  Constructor

MBS ChartDirector Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The private constructor.

28.15.4  getDataColor as Integer

Function: Gets the main color used to draw the data set.
Notes: Returns the main color used to draw the data set.

28.15.5  getDataName as string

Function: Gets the name of the data set.
Notes: Return the name of the data set.

28.15.6  getLegendIcon as string

Function: Gets the CDML representation of the legend icon for the data set.
Notes:
The CDML representation can be used in any ChartDirector API that supports CDML. Note that the CDML representation is only valid in the BaseChart object that contains the data set. It is not allowed to use the CDML representation obtained from one chart in a different chart.
The legend icon is the same icon that would appear in the LegendBox. If you modify the icon using methods of the LegendBox object (such as using LegendBox.setKeyBorder to set the legend icon border), the modification will also apply to the icon returned by this method.

Returns the CDML representation of the legend icon for the data set.

### 28.15.7 getPosition(i as Integer) as Double

**MBS ChartDirector Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:** Gets the positional value of a data point.

**Notes:**

The positional value is the value used to position the data point. Usually, the positional value is equal to the data value. However, for chart types in which the data sets are combined using the Stack or Percentage method, the positional value can be different from the data value. For example, for stacked charts, the positional value of a data point is equal to the accumulative value of the corresponding data points from data sets added before the target data set.

**Argument Default Description**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>(Mandatory)</td>
<td>The data point index of the data point. The first data point is 0; the nth data point is (n - 1).</td>
</tr>
</tbody>
</table>

Returns the positional value of the data point.

### 28.15.8 getUseYAxis as CDAxisMBS

**MBS ChartDirector Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:** Gets the y-axis to use when drawing the data set.

**Notes:** Returns an Axis object representing the y-axis to use when drawing the data set.

### 28.15.9 getValue(i as Integer) as Double

**MBS ChartDirector Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:** Gets the value of a data point.

**Notes:**

**Argument Default Description**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>(Mandatory)</td>
<td>The data point index of the data point. The first data point is 0; the nth data point is (n - 1).</td>
</tr>
</tbody>
</table>
28.15.10 dataSet(data() as Double)

Function: Sets the data for this dataset.

28.15.11 dataSetColor(dataColor as color, edgeColor as color, shadowColor as color, shadowEdgeColor as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other dataSetColor method, but uses color instead of integer data type for passing color values.
See also:

- 28.15.12 dataSetColor(dataColor as Integer, edgeColor as Integer = -1, shadowColor as Integer = -1, shadowEdgeColor as Integer = -1)

28.15.12 dataSetColor(dataColor as Integer, edgeColor as Integer = -1, shadowColor as Integer = -1, shadowEdgeColor as Integer = -1)

Function: Sets the colors used to draw the data set.
Notes:
The usage of the colors depend on the layer type. For example, in a bar layer, the dataColor and edgeColor are used as the fill and border color of the bar. In a line layer, the dataColor is used as the color of the line, while the edgeColor is used as the border of the line for 3D lines, and is ignored for 2D lines.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>dataColor</td>
<td>(Mandatory)</td>
<td>The main color used to draw the data set.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The color used to draw the edges or borders of the data set, if any. -1 means that the edges are drawn using the default border color of the layer (defined using Layer.setBorderColor).</td>
</tr>
<tr>
<td>shadowColor</td>
<td>-1</td>
<td>The color to use to draw 3D shadows of the data set, if any. -1 means the shadow color will be a &quot;darker&quot; version of the dataColor, created by reducing the RGB intensities of the dataColor in half.</td>
</tr>
<tr>
<td>shadowEdgeColor</td>
<td>-1</td>
<td>The color to use to draw edges of the 3D shadows of the data set, if any. -1 means the shadow color will be a &quot;darker&quot; version of the edgeColor, created by reducing the RGB intensities of the edgeColor in half.</td>
</tr>
</tbody>
</table>

See also:
28.15.13  setDataLabelFormat(formatString as string)


**Function:** Sets the data label format for the data set.

**Notes:**

To set the label format for all data sets in a layer, use Layer.setDataLabelFormat.

For details description of data label format, please refer to Layer.setDataLabelFormat.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>formatString</td>
<td>(Mandatory)</td>
<td>The format string.</td>
</tr>
</tbody>
</table>

28.15.14  setDataLabelStyle(font as string = "", fontSize as Double = 8, fontColor as Integer = 0, fontAngle as Double = 0) as CDTextBoxMBS


**Function:** Enables data labels and sets their styles.

**Notes:**

To set the data label styles for all data sets in a layer, use Layer.setDataLabelStyle.

For details description of data labels, please refer to :Layer.setDataLabelStyle.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>font</td>
<td>&quot;&quot;</td>
<td>The font used to draw the labels.</td>
</tr>
<tr>
<td>fontSize</td>
<td>8</td>
<td>The font size used to draw the labels.</td>
</tr>
<tr>
<td>fontColor</td>
<td>TextColor</td>
<td>The color used to draw the labels.</td>
</tr>
<tr>
<td>fontAngle</td>
<td>0</td>
<td>The rotation angle of the labels.</td>
</tr>
</tbody>
</table>

**Return Value**

A TextBox object representing the prototype of the obj. This may be used to fine-tune the appearance of the obj.

See also:

- 28.15.15 setDataLabelStyle(font as string, fontSize as Double, fontColor as color, fontAngle as Double = 0) as CDTextBoxMBS
28.15.15  setDataLabelStyle(font as string, fontsize as Double, fontcolor as color, fontangle as Double = 0) as CDTextBoxMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Same as the other setDataLabelStyle method, but uses color instead of integer data type for passing color values.  
See also:

- 28.15.14 setDataLabelStyle(font as string = "", fontsize as Double = 8, fontcolor as Integer = 0, fontangle as Double = 0) as CDTextBoxMBS

28.15.16  setDataName(name as string)

**Function:** Sets the name of the data set.  
**Notes:**
The name will be used in the legend box, if one is available for the chart.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>name</td>
<td>(Mandatory)</td>
<td>The name of the data set.</td>
</tr>
</tbody>
</table>

28.15.17  setDataSymbol(drawobj as CDDrawAreaMBS)

**Function:** Uses a DrawArea object as the graphics symbol to plot the data points.  
**Notes:**
In the current version of ChartDirector, data symbols are supported only in LineLayer, SplineLayer, StepLineLayer and ScatterLayer. To use data symbols in other layer types, add a ScatterLayer on top of that layer.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>obj</td>
<td>(Mandatory)</td>
<td>A DrawArea object to be used as the symbol.</td>
</tr>
</tbody>
</table>

See also:

- 28.15.18 setDataSymbol(file as folderitem)  
- 28.15.19 setDataSymbol(ImageFilePath as string)  
- 28.15.20 setDataSymbol(pic as Picture)
28.15.18 **setDataSymbol(file as folderitem)**


**Function:** Load an image from a file and use it as the graphics symbol to plot the data points.

**Notes:**
ChartDirector will automatically detect the image file format using the file extension, which must either png, jpg, jpeg, gif, wbmp or wmp (case insensitive).

Please refer to BaseChart.setSearchPath on the directory that ChartDirector will search for the file.

In the current version of ChartDirector, data symbols are supported only in LineLayer, SplineLayer, StepLineLayer and ScatterLayer. To use data symbols in other layer types, add a ScatterLayer on top of that layer.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>image</td>
<td>(Mandatory)</td>
<td>The filename of the image file. The image type is determined based on file extension, which must be png, jpg/jpeg, gif or wbmp/wmp.</td>
</tr>
</tbody>
</table>

See also:

- 28.15.17 setDataSymbol(drawobj as CDDrawAreaMBS) 4615
- 28.15.19 setDataSymbol(ImageFilePath as string) 4617
- 28.15.20 setDataSymbol(pic as Picture) 4617
- 28.15.21 setDataSymbol(polygon() as Integer, size as Integer = 11, fillColor as Integer = -1, edgeColor as Integer = -1) 4618
- 28.15.22 setDataSymbol(polygon() as Integer, size as Integer, fillColor as color, edgeColor as color) 4619
- 28.15.23 setDataSymbol(symbol as Integer, size as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1, lineWidth as Integer = 1) 4619
- 28.15.24 setDataSymbol(symbol as Integer, size as Integer, fillColor as color, edgeColor as color, lineWidth as Integer = 1) 4620
28.15.19  **setDataSymbol(ImageFilePath as string)**

MBS ChartDirector Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Load an image from a file and use it as the graphics symbol to plot the data points.

**Notes:**
ChartDirector will automatically detect the image file format using the file extension, which must either png, jpg, jpeg, gif, wbmp or wmp (case insensitive).

Please refer to BaseChart.setSearchPath on the directory that ChartDirector will search for the file.

In the current version of ChartDirector, data symbols are supported only in LineLayer, SplineLayer, StepLineLayer and ScatterLayer. To use data symbols in other layer types, add a ScatterLayer on top of that layer.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>image</td>
<td>(Mandatory)</td>
<td>The filename of the image file. The image type is determined based on file extension, which must be png, jpg/jpeg, gif or wbmp/wmp.</td>
</tr>
</tbody>
</table>

See also:

- 28.15.17 setDataSymbol(drawobj as CDDrawAreaMBS) 4615
- 28.15.18 setDataSymbol(file as folderitem) 4616
- 28.15.20 setDataSymbol(pic as Picture) 4617
- 28.15.21 setDataSymbol(polygon() as Integer, size as Integer = 11, fillcolor as Integer = -1, edgeColor as Integer = -1) 4618
- 28.15.22 setDataSymbol(polygon() as Integer, size as Integer, fillcolor as color, edgeColor as color) 4619
- 28.15.23 setDataSymbol(symbol as Integer, size as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1, lineWidth as Integer = 1) 4619
- 28.15.24 setDataSymbol(symbol as Integer, size as Integer, fillColor as color, edgeColor as color, lineWidth as Integer = 1) 4620

28.15.20  **setDataSymbol(pic as Picture)**

MBS ChartDirector Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Uses a picture object as the graphics symbol to plot the data points.

**Notes:**
In the current version of ChartDirector, data symbols are supported only in LineLayer, SplineLayer, StepLineLayer and ScatterLayer. To use data symbols in other layer types, add a ScatterLayer on top of that layer.

See also:
CHAPTER 28. CHARTDIRECTOR

Argument Default Description

obj (Mandatory) A picture object to be used as the symbol.

- 28.15.17 setDataSymbol(drawobj as CDDrawAreaMBS)
- 28.15.18 setDataSymbol(file as folderitem)
- 28.15.19 setDataSymbol(ImageFilePath as string)
- 28.15.21 setDataSymbol(polygon() as Integer, size as Integer = 11, fillcolor as Integer = -1, edgeColor as Integer = -1)
- 28.15.22 setDataSymbol(polygon() as Integer, size as Integer, fillcolor as color, edgeColor as color)
- 28.15.23 setDataSymbol(symbol as Integer, size as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1, lineWidth as Integer = 1)
- 28.15.24 setDataSymbol(symbol as Integer, size as Integer, fillColor as color, edgeColor as color, lineWidth as Integer = 1)

28.15.21 setDataSymbol(polygon() as Integer, size as Integer = 11, fillcolor as Integer = -1, edgeColor as Integer = -1)


Function: Uses a custom polygon as the graphics symbol to plot the data points.

Notes:
In the current version of ChartDirector, data symbols are supported only in LineLayer, SplineLayer, StepLineLayer and ScatterLayer. To use data symbols in other layer types, add a ScatterLayer on top of that layer.

Argument Default Description

polygon (Mandatory) An array of integers representing the coordinates the polygon vertices. See Shape Specification on how the custom shape is defined.
size 11 The nominal width and height of the symbol in pixels.
fillColor -1 The color used to fill the symbol. -1 means the color of the data set will be used.
edgeColor -1 The edge color used to draw the edge of the symbol. -1 means the edge color of the data set will be used.

See also:
- 28.15.17 setDataSymbol(drawobj as CDDrawAreaMBS)
- 28.15.18 setDataSymbol(file as folderitem)
- 28.15.19 setDataSymbol(ImageFilePath as string)
28.15. **CLASS CDDATASETMB**

- 28.15.20 `setDataSymbol(pic as Picture)`

- 28.15.22 `setDataSymbol(polygon() as Integer, size as Integer, fillcolor as color, edgeColor as color)`

- 28.15.23 `setDataSymbol(symbol as Integer, size as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1, lineWidth as Integer = 1)`

- 28.15.24 `setDataSymbol(symbol as Integer, size as Integer, fillColor as color, edgeColor as color, lineWidth as Integer = 1)`

### 28.15.22 `setDataSymbol(polygon() as Integer, size as Integer, fillcolor as color, edgeColor as color)`

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other `setDataSymbol` method, but uses color instead of integer data type for passing color values.

See also:

- 28.15.17 `setDataSymbol(drawobj as CDDrawAreaMBS)`

- 28.15.18 `setDataSymbol(file as folderitem)`

- 28.15.19 `setDataSymbol(ImageFilePath as string)`

- 28.15.20 `setDataSymbol(pic as Picture)`

- 28.15.21 `setDataSymbol(polygon() as Integer, size as Integer = 11, fillcolor as Integer = -1, edgeColor as Integer = -1)`

- 28.15.23 `setDataSymbol(symbol as Integer, size as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1, lineWidth as Integer = 1)`

- 28.15.24 `setDataSymbol(symbol as Integer, size as Integer, fillColor as color, edgeColor as color, lineWidth as Integer = 1)`

### 28.15.23 `setDataSymbol(symbol as Integer, size as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1, lineWidth as Integer = 1)`


**Function:** Uses one of the built-in symbols as the graphics symbol to plot the data points.

**Notes:**

In the current version of ChartDirector, data symbols are supported only in LineLayer, SplineLayer, StepLineLayer and ScatterLayer. To use data symbols in other layer types, add a ScatterLayer on top of that layer.

See also:

- 28.15.17 `setDataSymbol(drawobj as CDDrawAreaMBS)`
CHAPTER 28. CHARTDIRECTOR

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>symbol</td>
<td>(Mandatory)</td>
<td>One of the predefined shape constants representing the symbol shape. See Shape Specification for the available built-in shapes.</td>
</tr>
<tr>
<td>size</td>
<td>5</td>
<td>The width and height of the symbol in pixels.</td>
</tr>
<tr>
<td>fillColor</td>
<td>-1</td>
<td>The color used to fill the symbol. -1 means the color of the data set will be used.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The edge color used to draw the edge of the symbol. -1 means the edge color of the data set will be used.</td>
</tr>
<tr>
<td>lineWidth</td>
<td>1</td>
<td>The line width used for drawing the symbols.</td>
</tr>
</tbody>
</table>

• 28.15.18 setDataSymbol(file as folderitem) 4616
• 28.15.19 setDataSymbol(ImageFilePath as string) 4617
• 28.15.20 setDataSymbol(pic as Picture) 4617
• 28.15.21 setDataSymbol(polygon() as Integer, size as Integer = 11, fillcolor as Integer = -1, edgeColor as Integer = -1) 4618
• 28.15.22 setDataSymbol(polygon() as Integer, size as Integer, fillcolor as color, edgeColor as color) 4619
• 28.15.23 setDataSymbol(symbol as Integer, size as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1, lineWidth as Integer = 1) 4619

28.15.24 setDataSymbol(symbol as Integer, size as Integer, fillColor as color, edgeColor as color, lineWidth as Integer = 1)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Same as the other setDataSymbol method, but uses color instead of integer data type for passing color values. See also:

• 28.15.17 setDataSymbol(drawobj as CDDrawAreaMBS) 4615
• 28.15.18 setDataSymbol(file as folderitem) 4616
• 28.15.19 setDataSymbol(ImageFilePath as string) 4617
• 28.15.20 setDataSymbol(pic as Picture) 4617
• 28.15.21 setDataSymbol(polygon() as Integer, size as Integer = 11, fillcolor as Integer = -1, edgeColor as Integer = -1) 4618
• 28.15.22 setDataSymbol(polygon() as Integer, size as Integer, fillcolor as color, edgeColor as color) 4619
28.15. CLASS CDDATASETMB

28.15.25  setLineWidth(w as Integer)

**Function:** Sets the line width of lines when drawing the data set.
**Notes:**
This method only applies to layers that employ lines to represent data (e.g. line layer).

If this method is not called, the default line width for the layer will be used (set using Layer.setLineWidth).

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>w</td>
<td>(Mandatory)</td>
<td>The width of the line in pixels.</td>
</tr>
</tbody>
</table>

28.15.26  setSymbolOffset(offsetX as Integer, offsetY as Integer)

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Offset the symbols in the x and y directions in pixel unit.
**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xOffset</td>
<td>(Mandatory)</td>
<td>The x offset in pixels. A positive value mean shifting to the right.</td>
</tr>
<tr>
<td>yOffset</td>
<td>(Mandatory)</td>
<td>The y offset in pixels. A positive value mean shifting to the bottom.</td>
</tr>
</tbody>
</table>

28.15.27  setUseYAxis(axis as CDAxisMB)

**Function:** Determine if the primary or secondary y-axis should be used when drawing the data set.
**Notes:**
To set the y-axis to use for all data sets within a layer, use Layer.setUseYAxis2.

Note: DataSet.setUseYAxis is a more general method that can support more than 2 y-axes.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>true</td>
<td>A true value means the secondary y-axis will be used. A false value means the primary y-axis will be used.</td>
</tr>
</tbody>
</table>

See also:

- 28.15.28 setUseYAxis(b as boolean=true)
28.15.28 `setUseYAxis(b as boolean=true)`


**Function:** Determine the y-axis to use when drawing the data set.

**Notes:**

To set the y-axis to use for all data sets within a layer, use Layer.setUseYAxis.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>(Mandatory)</td>
<td>The y-axis to use when drawing the data set.</td>
</tr>
</tbody>
</table>

See also:

- 28.15.27 `setUseYAxis(axis as CDAxisMBS)`
28.16. class CDDrawAreaMBS

28.16.1. class CDDrawAreaMBS


**Function:** The DrawArea class represents drawing surfaces, with methods for performing graphics primitives (such as drawing lines, shapes and texts) and the surfaces.

**Notes:**

All ChartDirector chart objects contain an internal DrawArea object for drawing the charts. This DrawArea object is accessible via BaseChart.getDrawArea or BaseChart.makeChart. This allows developers to apply custom graphics operations on the charts.

ChartDirector also supports creating standalone DrawArea objects by calling the DrawArea.DrawArea constructor. One common application is to use ChartDirector as a general purpose graphics library (e.g. adding text annotations to existing images, creating GIF buttons on the fly, etc).

28.16.2. Methods

28.16.3. adjustBrightness(c as Integer, brightness as Double) as Integer


**Function:** Creates a color that is a darkened or brightened version of the given color.

**Notes:**

A brightness less than 1 means the color is darkened, while a brightness greater than 1 means the color is brightened. For example, a brightness of 0.5 means the color is half as bright as the original color. If the original color is red, the color will become dark red. Conversely, a brightness of 2 means the color is twice as bright as the original color. If the original color is red, the color will become light red.

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>c</td>
<td>(Mandatory)</td>
<td>The given color.</td>
</tr>
<tr>
<td>brightness</td>
<td>(Mandatory)</td>
<td>A non-negative number represent the factor to darken or brighten the color.</td>
</tr>
</tbody>
</table>

**Return Value**

A 32-bit integer representing the darkened or brightened color.
28.16.4  `affineTransform(a as Double, b as Double, c as Double, d as Double, e as Double, f as Double, bgColor as color, filter as Integer = 2, blur as Double = 1.0)`

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other `affineTransform` method, but uses color instead of integer data type for passing color values.
See also:

- 28.16.5 `affineTransform(a as Double, b as Double, c as Double, d as Double, e as Double, f as Double, bgColor as Integer = & hFFFFFFF, filter as Integer = 2, blur as Double = 1.0)`

28.16.5  `affineTransform(a as Double, b as Double, c as Double, d as Double, e as Double, f as Double, bgColor as Integer = & hFFFFFFF, filter as Integer = 2, blur as Double = 1.0)`

**Function:** Perform affine transformation on the drawing surface.
**Notes:**
An affine transformation is an operation where every pixel is copied to another pixel according to the formula.

\[
\begin{align*}
x_{\text{Dest}} &= a \times x_{\text{Src}} + b \times y_{\text{Src}} + c \\
y_{\text{Dest}} &= d \times x_{\text{Src}} + e \times y_{\text{Src}} + f
\end{align*}
\]

where \((x_{\text{Src}}, y_{\text{Src}})\) is a source pixel, and \((x_{\text{Dest}}, y_{\text{Dest}})\) is where it should go to.

Many graphics operation, such as translation, rotation, and resizing, can be considered as a special case of affine transformation.

See also:

- 28.16.4 `affineTransform(a as Double, b as Double, c as Double, d as Double, e as Double, f as Double, bgColor as color, filter as Integer = 2, blur as Double = 1.0)`

28.16.6  `arc(cx as Integer, cy as Integer, rx as Integer, ry as Integer, a1 as Double, a2 as Double, c as Integer)`

**Function:** Draws a circular or elliptical arc.
**Notes:**
### Argument Default Description

**a** (Mandatory) The parameter 'a' in the coordinate transformation formula "\( x_{\text{Dest}} = a \times x_{\text{Src}} + b \times y_{\text{Src}} + c \)".

**b** (Mandatory) The parameter 'b' in the coordinate transformation formula "\( x_{\text{Dest}} = a \times x_{\text{Src}} + b \times y_{\text{Src}} + c \)".

**c** (Mandatory) The parameter 'c' in the coordinate transformation formula "\( x_{\text{Dest}} = a \times x_{\text{Src}} + b \times y_{\text{Src}} + c \)".

**d** (Mandatory) The parameter 'd' in the coordinate transformation formula "\( y_{\text{Dest}} = d \times x_{\text{Src}} + e \times y_{\text{Src}} + f \)".

**e** (Mandatory) The parameter 'e' in the coordinate transformation formula "\( y_{\text{Dest}} = d \times x_{\text{Src}} + e \times y_{\text{Src}} + f \)".

**f** (Mandatory) The parameter 'f' in the coordinate transformation formula "\( y_{\text{Dest}} = d \times x_{\text{Src}} + e \times y_{\text{Src}} + f \)".

**bgColor** FFFFFF The background color used to fill destination pixels that are not mapped to any source pixels.

**filter** LinearFilter The filter to use for re-sampling.

**blur** 1 The blur factor to use for re-sampling.

---

### Function: circle(cx as Integer, cy as Integer, rx as Integer, ry as Integer, edgeColor as color, fillColor as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other circle method, but uses color instead of integer data type for passing color values.

See also:

- 28.16.8 circle(cx as Integer, cy as Integer, rx as Integer, ry as Integer, edgeColor as Integer, fillColor as color as Integer)
28.16.8  \texttt{circle(cx as Integer, cy as Integer, rx as Integer, ry as Integer, edgeColor as Integer, fillColor as Integer)}

\textbf{Function}: Draws a circle or an ellipse.  
\textbf{Notes}:  

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cx</td>
<td>(Mandatory)</td>
<td>The x coordinate of the center of the circle or ellipse.</td>
</tr>
<tr>
<td>cy</td>
<td>(Mandatory)</td>
<td>The y coordinate of the center of the circle or ellipse.</td>
</tr>
<tr>
<td>rx</td>
<td>(Mandatory)</td>
<td>The horizontal radius of the circle or ellipse.</td>
</tr>
<tr>
<td>ry</td>
<td>(Mandatory)</td>
<td>The vertical radius of the circle or ellipse.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>(Mandatory)</td>
<td>The border color. To disable border, set the edgeColor the same as the fillColor.</td>
</tr>
<tr>
<td>fillColor</td>
<td>(Mandatory)</td>
<td>The fill color. To disable filling, set the fillColor to Transparent.</td>
</tr>
</tbody>
</table>

See also:  
- 28.16.7 \texttt{circle(cx as Integer, cy as Integer, rx as Integer, ry as Integer, edgeColor as color, fillColor as color)}

28.16.9  \texttt{clone(d as CDDrawAreaMBS, x as Integer, y as Integer, align as Integer, newWidth as Integer = -1, newHeight as Integer = -1, filter as Integer = 2, blur as Double = 1.0)}

\textbf{Function}: Copy the current DrawArea object to another DrawArea object, with optional resizing.  
\textbf{Notes}:  

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>d</td>
<td>(Mandatory)</td>
<td>The destination DrawArea object where the current DrawArea is copied to.</td>
</tr>
<tr>
<td>x</td>
<td>(Mandatory)</td>
<td>The x coordinate of a reference point in the destination DrawArea object.</td>
</tr>
<tr>
<td>y</td>
<td>(Mandatory)</td>
<td>The y coordinate of a reference point in the destination DrawArea object.</td>
</tr>
<tr>
<td>align</td>
<td>(Mandatory)</td>
<td>The alignment of the current DrawArea relative to the reference point. See Alignment Specification for supported alignment types.</td>
</tr>
<tr>
<td>newWidth</td>
<td>-1</td>
<td>The new width to which the current DrawArea will be resized before copying.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The default value -1 means no resizing.</td>
</tr>
<tr>
<td>newHeight</td>
<td>-1</td>
<td>The new height to which the current DrawArea will be resized before copying.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The default value -1 means no resizing.</td>
</tr>
<tr>
<td>filter</td>
<td>LinearFilter</td>
<td>The filter to use for re-sampling. (Only applies if there is resizing.)</td>
</tr>
<tr>
<td>blur</td>
<td>1</td>
<td>The blur factor to use for re-sampling. (Only applies if there is resizing.)</td>
</tr>
</tbody>
</table>
28.16. CLASS CDDRAWAREAMBS

28.16.10 Constructor

MBS ChartDirector Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a DrawArea object.

28.16.11 cylinder(cx as Integer, cy as Integer, rx as Integer, ry as Integer, a1 as Double, a2 as Double, depthX as Integer, depthY as Integer, edgeColor as color, fillColor as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Same as the other cylinder method, but uses color instead of integer data type for passing color values. **See also:**

- 28.16.12 cylinder(cx as Integer, cy as Integer, rx as Integer, ry as Integer, a1 as Double, a2 as Double, depthX as Integer, depthY as Integer, edgeColor as Integer, fillColor as Integer)

28.16.12 cylinder(cx as Integer, cy as Integer, rx as Integer, ry as Integer, a1 as Double, a2 as Double, depthX as Integer, depthY as Integer, edgeColor as Integer, fillColor as Integer)

MBS ChartDirector Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Draws a cylinder surface as the area spanned by moving an arc. **Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cx</td>
<td>(Mandatory)</td>
<td>The x coordinate of the center of the circle or ellipse for the arc.</td>
</tr>
<tr>
<td>cy</td>
<td>(Mandatory)</td>
<td>The y coordinate of the center of the circle or ellipse for the arc.</td>
</tr>
<tr>
<td>rx</td>
<td>(Mandatory)</td>
<td>The horizontal radius of the circle or ellipse.</td>
</tr>
<tr>
<td>ry</td>
<td>(Mandatory)</td>
<td>The vertical radius of the circle or ellipse.</td>
</tr>
<tr>
<td>a1</td>
<td>(Mandatory)</td>
<td>The start angle of the arc. The angle is measured clockwise, with 0 degree being the upward pointing direction.</td>
</tr>
<tr>
<td>a2</td>
<td>(Mandatory)</td>
<td>The end angle of the arc. The angle is measured clockwise, with 0 degree being the upward pointing direction.</td>
</tr>
<tr>
<td>depthX</td>
<td>(Mandatory)</td>
<td>The x displacement representing the motion of the arc to span the cylinder.</td>
</tr>
<tr>
<td>depthY</td>
<td>(Mandatory)</td>
<td>The y displacement representing the motion of the arc to span the cylinder.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>(Mandatory)</td>
<td>The border color. To disable border, set the edgeColor the same as the fillColor.</td>
</tr>
<tr>
<td>fillColor</td>
<td>(Mandatory)</td>
<td>The fill color. To disable filling, set the fillColor to Transparent.</td>
</tr>
</tbody>
</table>

**See also:**

- 28.16.11 cylinder(cx as Integer, cy as Integer, rx as Integer, ry as Integer, a1 as Double, a2 as Double, depthX as Integer, depthY as Integer, edgeColor as color, fillColor as color)
28.16.13  
dashLineColor(colorvalue as color, patternCode as Integer = & h0505) 
as Integer

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other dashLineColor method, but uses color instead of integer data type for passing 
color values.
See also:

- 168.6.4 dashLineColor(colorvalue as Integer, patternCode as Integer = & h0505) as Integer

28.16.14  
dashLineColor(colorvalue as Integer, patternCode as Integer = & h0505) 
as Integer

Function: Creates a dash line color.
Notes:
A dash line color is a dynamic color that switches on and off periodically. When it is used to draw a line, 
the line will appear as a dash line.

The style of the dash line is defined by a pattern code, which is a 4-byte integer. A value of PPQQRSS 
(in hex) means the first PP pixels are turned on, followed by QQ pixels turned off, followed by RR pixels 
turned on, followed by SS pixels turned off, and then restart from PP again.

ChartDirector comes from several predefined constants for common dash line patterns.

Constant Value (in Hex) Dash Line Style

<table>
<thead>
<tr>
<th>Pattern</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DashLine</td>
<td>00000505</td>
</tr>
<tr>
<td>DotLine</td>
<td>00000202</td>
</tr>
<tr>
<td>DotDashLine</td>
<td>05050205</td>
</tr>
<tr>
<td>AltDashLine</td>
<td>0A050505</td>
</tr>
</tbody>
</table>

Argument Default Description

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color to draw the dash line.</td>
</tr>
<tr>
<td>patternCode</td>
<td>DashLine</td>
<td>A 4-byte integer representing the style of the dash line.</td>
</tr>
</tbody>
</table>

Return Value
A 32-bit integer representing the dash line color.
See also:

- 168.5.18 dashLineColor(colorvalue as color, patternCode as Integer = & h0505) as Integer
28.16.15 enableVectorOutput


**Function:** Enables true vector graphics output.

**Notes:**

By default, when creating the output image, ChartDirector draws directly onto an output buffer representing the bitmap of the image. For example, for a chart 800 x 600 pixels in size, the output buffer may represent a 800 x 600 bitmap. The output buffer size is unchanged no matter how many items are drawn onto it. Even if the output contains 1 million elements (e.g. 1 million symbols), the size of the output buffer is still the same.

On the other hand, a true vector output is indefinitely scalable and can be considered as having infinite resolution. To produce a true vector output, it is necessary to remember the graphics operations for every element in the output buffer. The output buffer size is therefore proportional to the number of elements to draw.

This method tells ChartDirector that it needs to remember the graphics operations to prepare for true vector output. If true vector output is needed, this method should be called immediately after creating the DrawArea object.

If this method is not called, and a vector graphics output format is used (such as SVG), instead of a true vector output, ChartDirector will output a raster image using the vector graphics format. (Most vector graphics formats support embedded raster images.)

28.16.16 fill(x as Integer, y as Integer, colorvalue as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other fill method, but uses color instead of integer data type for passing color values.

See also:

- 28.16.17 fill(x as Integer, y as Integer, colorvalue as color, borderColor as color)
- 28.16.18 fill(x as Integer, y as Integer, colorvalue as Integer)
- 28.16.19 fill(x as Integer, y as Integer, colorvalue as Integer, borderColor as Integer)

28.16.17 fill(x as Integer, y as Integer, colorvalue as color, borderColor as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other fill method, but uses color instead of integer data type for passing color values.

See also:

- 28.16.16 fill(x as Integer, y as Integer, colorvalue as color)
• 28.16.18 fill(x as Integer, y as Integer, colorvalue as Integer) 4630

• 28.16.19 fill(x as Integer, y as Integer, colorvalue as Integer, borderColor as Integer) 4630

28.16.18  fill(x as Integer, y as Integer, colorvalue as Integer)


**Function:** Flood fill a region using the specified color.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>(Mandatory)</td>
<td>The x coordinate one pixel inside the region to be filled.</td>
</tr>
<tr>
<td>y</td>
<td>(Mandatory)</td>
<td>The y coordinate one pixel inside the region to be filled.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color used to fill the region.</td>
</tr>
</tbody>
</table>

See also:

• 28.16.16 fill(x as Integer, y as Integer, colorvalue as color) 4629

• 28.16.17 fill(x as Integer, y as Integer, colorvalue as color, borderColor as color) 4629

• 28.16.19 fill(x as Integer, y as Integer, colorvalue as Integer, borderColor as Integer) 4630

28.16.19  fill(x as Integer, y as Integer, colorvalue as Integer, borderColor as Integer)


**Function:** Fill a region using the specified color, where the region is bounded by a given border color.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>(Mandatory)</td>
<td>The x coordinate one pixel inside the region to be filled.</td>
</tr>
<tr>
<td>y</td>
<td>(Mandatory)</td>
<td>The y coordinate one pixel inside the region to be filled.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color used to fill the region.</td>
</tr>
<tr>
<td>borderColor</td>
<td>(Mandatory)</td>
<td>The color of the border that bounds the region.</td>
</tr>
</tbody>
</table>

See also:

• 28.16.16 fill(x as Integer, y as Integer, colorvalue as color) 4629

• 28.16.17 fill(x as Integer, y as Integer, colorvalue as color, borderColor as color) 4629

• 28.16.18 fill(x as Integer, y as Integer, colorvalue as Integer) 4630
28.16.20  getARGBColor(c as Integer) as Integer

**Function:** Obtain the ARGB color given a palette color.
**Notes:**
If the given color is already in ARGB format, the same value is returned.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>c</td>
<td>(Mandatory)</td>
<td>The color to be changed to ARGB format.</td>
</tr>
</tbody>
</table>

**Return Value**
The ARGB color converted from the given color.

28.16.21  getHeight as Integer

**Function:** Gets the height of the drawing surface.

28.16.22  getPixel(x as Integer, y as Integer) as Integer

**Function:** Gets the color of a pixel.
**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>(Mandatory)</td>
<td>The x coordinate of the pixel.</td>
</tr>
<tr>
<td>y</td>
<td>(Mandatory)</td>
<td>The y coordinate of the pixel.</td>
</tr>
</tbody>
</table>

**Return Value**
The color of the pixel.

28.16.23  getWidth as Integer

**Function:** Gets the width of the drawing surface.
28.16.24  gradientColor(colors() as color, angle as Double = 90, scale as Double = 1.0, startX as Integer = 0, startY as Integer = 0) as Integer

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other gradientColor method, but uses color instead of integer data type for passing color values.

See also:

- 28.16.25 gradientColor(colors() as Integer, angle as Double = 90, scale as Double = 1.0, startX as Integer = 0, startY as Integer = 0) as Integer

- 28.16.26 gradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, startColor as color, endColor as color) as Integer

- 28.16.27 gradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, startColor as Integer, endColor as Integer) as Integer

28.16.25  gradientColor(colors() as Integer, angle as Double = 90, scale as Double = 1.0, startX as Integer = 0, startY as Integer = 0) as Integer


**Function:** Creates a multi-point linear gradient color.

**Notes:**

This method is for backward compatibility. Use DrawArea.linearGradientColor2 instead.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>colorArray</td>
<td>(Mandatory)</td>
<td>An array defining the positions and colors of the pixels along the reference</td>
</tr>
<tr>
<td>angle</td>
<td>90</td>
<td>The direction of the reference gradient line segment in degrees, measured</td>
</tr>
<tr>
<td></td>
<td></td>
<td>clockwise, with 0 degree as the upward pointing direction. The default</td>
</tr>
<tr>
<td></td>
<td></td>
<td>direction is horizontal from left to right (90 degrees).</td>
</tr>
<tr>
<td>scale</td>
<td>1.0</td>
<td>The scaling factor for the reference gradient line segment. By default, the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>reference gradient line segment is 256 pixels in length. The scaling factor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>can be use to stretch or compress the gradient line segment.</td>
</tr>
<tr>
<td>startX</td>
<td>0</td>
<td>The x coordinate of the starting point of the reference gradient line segment.</td>
</tr>
<tr>
<td>startY</td>
<td>0</td>
<td>The y coordinate of the starting point of the reference gradient line segment.</td>
</tr>
</tbody>
</table>

**Return Value**

A 32-bit integer representing the linear gradient color.

See also:

- 28.16.24 gradientColor(colors() as color, angle as Double = 90, scale as Double = 1.0, startX as Integer = 0, startY as Integer = 0) as Integer

- 28.16.26 gradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, startColor as color, endColor as color) as Integer
28.16.26 gradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, startColor as Integer, endColor as Integer) as Integer

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other gradientColor method, but uses color instead of integer data type for passing color values.

**See also:**
- 28.16.24 gradientColor(colors() as color, angle as Double = 90, scale as Double = 1.0, startX as Integer = 0, startY as Integer = 0) as Integer
- 28.16.25 gradientColor(colors() as Integer, angle as Double = 90, scale as Double = 1.0, startX as Integer = 0, startY as Integer = 0) as Integer
- 28.16.27 gradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, startColor as Integer, endColor as Integer) as Integer

28.16.27 gradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, startColor as color, endColor as color) as Integer


**Function:** Creates a two-point linear gradient color.

**Notes:**
This method is for backward compatibility. Use DrawArea.linearGradientColor instead.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>startX</td>
<td>(Mandatory)</td>
<td>The x coordinate of the starting point of the reference gradient line segment.</td>
</tr>
<tr>
<td>startY</td>
<td>(Mandatory)</td>
<td>The y coordinate of the starting point of the reference gradient line segment.</td>
</tr>
<tr>
<td>endX</td>
<td>(Mandatory)</td>
<td>The x coordinate of the ending point of the reference gradient line segment.</td>
</tr>
<tr>
<td>endY</td>
<td>(Mandatory)</td>
<td>The y coordinate of the ending point of the reference gradient line segment.</td>
</tr>
<tr>
<td>startColor</td>
<td>(Mandatory)</td>
<td>The color at the starting point of the reference gradient line segment.</td>
</tr>
<tr>
<td>endColor</td>
<td>(Mandatory)</td>
<td>The color at the ending point of the reference gradient line segment.</td>
</tr>
</tbody>
</table>

**Return Value**
A 32-bit integer representing the linear gradient color.

**See also:**
- 28.16.24 gradientColor(colors() as color, angle as Double = 90, scale as Double = 1.0, startX as Integer = 0, startY as Integer = 0) as Integer
- 28.16.25 gradientColor(colors() as Integer, angle as Double = 90, scale as Double = 1.0, startX as Integer = 0, startY as Integer = 0) as Integer
28.16.28 halfColor(c as Integer) as Integer

**Function:** Creates a color that is half the intensity of the given color.
**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>c</td>
<td></td>
<td>The given color.</td>
</tr>
</tbody>
</table>

**Return Value**
A 32-bit integer representing the half intensity color.

28.16.29 hCylinderTransform(yDiameter as Integer, bgColor as color, filter as Integer = 2, blur as Double = 1.0)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other hCylinderTransform method, but uses color instead of integer data type for passing color values.
**See also:**
- 28.16.30 hCylinderTransform(yDiameter as Integer, bgColor as Integer = & hFFFFFF, filter as Integer = 2, blur as Double = 1.0)

28.16.30 hCylinderTransform(yDiameter as Integer, bgColor as Integer = & hFFFFFF, filter as Integer = 2, blur as Double = 1.0)

**Function:** Wraps the drawing surface onto a horizontal cylinder.
**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>yDiameter</td>
<td>(Mandatory)</td>
<td>The diameter of the cylinder in pixels.</td>
</tr>
<tr>
<td>bgColor</td>
<td>FFFFFF</td>
<td>The background color used to fill the space left after transformation.</td>
</tr>
<tr>
<td>filter</td>
<td>LinearFilter</td>
<td>The filter to use for re-sampling.</td>
</tr>
<tr>
<td>blur</td>
<td>1</td>
<td>The blur factor to use for re-sampling.</td>
</tr>
</tbody>
</table>

**See also:**
- 28.16.29 hCylinderTransform(yDiameter as Integer, bgColor as color, filter as Integer = 2, blur as Double = 1.0)
28.16.31  hFlip


**Function:** Flip the drawing surface along the central horizontal line.

28.16.32  hline(x1 as Integer, x2 as Integer, y as Integer, c as Integer)


**Function:** Draws a horizontal line.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>x1</td>
<td>(Mandatory)</td>
<td>The x coordinate of the first end-point of the line.</td>
</tr>
<tr>
<td>x2</td>
<td>(Mandatory)</td>
<td>The x coordinate of the second end-point of the line.</td>
</tr>
<tr>
<td>y</td>
<td>(Mandatory)</td>
<td>The y coordinate of the line.</td>
</tr>
<tr>
<td>c</td>
<td>(Mandatory)</td>
<td>The color of the line.</td>
</tr>
</tbody>
</table>

28.16.33  hTriangleTransform(tWidth as Integer = -1, bgColor as Integer = &hFFFFFF, filter as Integer = 2, blur as Double = 1.0)


**Function:** Wraps the drawing surface onto a horizontal triangle pointing leftwards.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>tWidth</td>
<td>-1</td>
<td>The width of the triangle in pixels.</td>
</tr>
<tr>
<td>bgColor</td>
<td>FFFFFF</td>
<td>The background color used to fill the space left after transformation.</td>
</tr>
<tr>
<td>filter</td>
<td>LinearFilter</td>
<td>The filter to use for re-sampling.</td>
</tr>
<tr>
<td>blur</td>
<td>1</td>
<td>The blur factor to use for re-sampling.</td>
</tr>
</tbody>
</table>

See also:

- 28.16.34 hTriangleTransform(tWidth as Integer, bgColor as color, filter as Integer = 2, blur as Double = 1.0)

28.16.34  hTriangleTransform(tWidth as Integer, bgColor as color, filter as Integer = 2, blur as Double = 1.0)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other hTriangleTransform method, but uses color instead of integer data type for passing color values.

See also:
- 28.16.33 hTriangleTransform(tWidth as Integer = -1, bgColor as Integer = & hFFFFFF, filter as Integer = 2, blur as Double = 1.0)

28.16.35  initDynamicLayer


**Function:** Initializes a dynamic layer for drawing text and shapes.

**Notes:**
This method clears the existing dynamic layer, or creates a new one if there is no existing dynamic layer.
This method returned a DrawArea object that can be used to draw on the dynamic layer. The dynamic layer can later be removed using BaseChart.removeDynamicLayer.

The design of the dynamic layer is for drawing small, rapidly updatable contents for desktop applications.
For example, the dynamic layer can be used to implement a cross-hair mouse cursor, with text showing the location of the mouse cursor. To do this, in the mouse move event handler, BaseChart.initDynamicLayer can be used to create or clear the dynamic layer. The returned DrawArea object can then be used to draw the cross hair cursor (as two straight lines) and the text. When the mouse cursor leaves the chart, BaseChart.removeDynamicLayer can be used in the mouse out event handler to remove the cross-hair cursor and the text.

Note that as long as the dynamic layer is not removed with BaseChart.removeDynamicLayer, only the returned DrawArea object should be used to draw things on the dynamic layer. No other objects should be used to draw on the chart.

Returns a DrawArea object that can be used to add text and shapes to the dynamic layer.

28.16.36  line(x1 as Double, y1 as Double, x2 as Double, y2 as Double, color-Value as color, lineWidth as Integer = 1)

MBS ChartDirector Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Draw a straight line.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>x1</td>
<td>(Mandatory)</td>
<td>The x coordinate of the first end-point of the line.</td>
</tr>
<tr>
<td>y1</td>
<td>(Mandatory)</td>
<td>The y coordinate of the first end-point of the line.</td>
</tr>
<tr>
<td>x2</td>
<td>(Mandatory)</td>
<td>The x coordinate of the second end-point of the line.</td>
</tr>
<tr>
<td>y2</td>
<td>(Mandatory)</td>
<td>The y coordinate of the second end-point of the line.</td>
</tr>
<tr>
<td>c</td>
<td>(Mandatory)</td>
<td>The color of the line.</td>
</tr>
<tr>
<td>lineWidth</td>
<td>1</td>
<td>The line width (thickness).</td>
</tr>
</tbody>
</table>

See also:
28.16. CLASS CDDRAW'EAMBS

- 28.16.37 line(x1 as Double, y1 as Double, x2 as Double, y2 as Double, colorValue as Integer, lineWidth as Integer = 1)

28.16.37 line(x1 as Double, y1 as Double, x2 as Double, y2 as Double, colorValue as Integer, lineWidth as Integer = 1)

**Function:** Draw a straight line.
**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>x1</td>
<td>(Mandatory)</td>
<td>The x coordinate of the first end-point of the line.</td>
</tr>
<tr>
<td>y1</td>
<td>(Mandatory)</td>
<td>The y coordinate of the first end-point of the line.</td>
</tr>
<tr>
<td>x2</td>
<td>(Mandatory)</td>
<td>The x coordinate of the second end-point of the line.</td>
</tr>
<tr>
<td>y2</td>
<td>(Mandatory)</td>
<td>The y coordinate of the second end-point of the line.</td>
</tr>
<tr>
<td>c</td>
<td>(Mandatory)</td>
<td>The color of the line.</td>
</tr>
<tr>
<td>lineWidth</td>
<td>1 (Mandatory)</td>
<td>The line width (thickness).</td>
</tr>
</tbody>
</table>

See also:

- 28.16.36 line(x1 as Double, y1 as Double, x2 as Double, y2 as Double, colorValue as color, lineWidth as Integer = 1)

28.16.38 linearGradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, colors() as color, periodic as boolean=false) as Integer

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other linearGradientColor method, but uses color instead of integer data type for passing color values.
**See also:**

- 28.16.39 linearGradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, colors() as Integer, periodic as boolean=false) as Integer
- 28.16.40 linearGradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, startColor as color, endColor as color, periodic as boolean=false) as Integer
- 28.16.41 linearGradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, startColor as Integer, endColor as Integer, periodic as boolean=false) as Integer
28.16.39 linearGradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, colors() as Integer, periodic as boolean=false) as Integer


**Function:** Creates a multi-point linear gradient color.

**Notes:**

In this method, the color points are defined as an array of positions and colors along a reference line segment, in the following format:

position0, color0, position1, color1, ..., positionN, colorN

The positions are specified as a number from 0 - 256 (0 - 100 in hex), in which 0 represents the starting point of the reference line segment, and 256 (100 in hex) represents the ending point of the reference line segment.

For example, the array (in hex):

000000, FF0000, 000080, FFFF00, 000100, 00FF00

means the starting point (000000) is red (FF0000), the mid-point (000080 in hex) is yellow (FFFF00), and the ending point (000100 in hex) is green (00FF00).

One common usage of multi-point gradient colors is to define colors that have metallic look and feel. ChartDirector comes from several predefined gradient color arrays as follows.

**Name** | **Value (in Hex)**
--- | ---
goldGradient | 000000, FFE743, 000060, FFFFE0, 0000B0, FFF0B0, 000100, FFE743
silverGradient | 000000, C8C8C8, 000060, F8F8F8, 0000B0, E0E0E0, 000100, C8C8C8
redMetalGradient | 000000, E09898, 000060, FFF0F0, 0000B0, F0D8D8, 000100, E09898
greenMetalGradient | 000000, 98E098, 000060, F0FFF0, 0000B0, D8F0D8, 000100, 98E098
blueMetalGradient | 000000, 9898E0, 000060, F0F0FF, 0000B0, D8D8F0, 000100, 9898E0

**Return Value**

A 32-bit integer representing the linear gradient color.

See also:

- 28.16.38 linearGradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, colors() as color, periodic as boolean=false) as Integer
- 28.16.40 linearGradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, startColor as color, endColor as color, periodic as boolean=false) as Integer
- 28.16.41 linearGradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, startColor as Integer, endColor as Integer, periodic as boolean=false) as Integer
28.16. CLASS CDDRAWAREAMBS

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>startX</td>
<td>(Mandatory)</td>
<td>The x coordinate of the starting point of the reference gradient line segment.</td>
</tr>
<tr>
<td>startY</td>
<td>(Mandatory)</td>
<td>The y coordinate of the starting point of the reference gradient line segment.</td>
</tr>
<tr>
<td>endX</td>
<td>(Mandatory)</td>
<td>The x coordinate of the ending point of the reference gradient line segment.</td>
</tr>
<tr>
<td>endY</td>
<td>(Mandatory)</td>
<td>The y coordinate of the ending point of the reference gradient line segment.</td>
</tr>
<tr>
<td>colorArray</td>
<td>(Mandatory)</td>
<td>An array defining the positions and colors of the pixels along the reference gradient line segment.</td>
</tr>
<tr>
<td>periodic</td>
<td>false</td>
<td>Specifies whether the gradient will repeat itself periodically. If the gradient does not repeat itself, the points that lie beyond the end points of the gradient line segment will assume the colors of the end points.</td>
</tr>
</tbody>
</table>

28.16.40 linearGradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, startColor as color, endColor as color, periodic as boolean=false) as Integer

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other linearGradientColor method, but uses color instead of integer data type for passing color values.

See also:

- 28.16.38 linearGradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, colors() as color, periodic as boolean=false) as Integer
- 28.16.39 linearGradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, colors() as Integer, periodic as boolean=false) as Integer
- 28.16.41 linearGradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, startColor as Integer, endColor as Integer, periodic as boolean=false) as Integer

28.16.41 linearGradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, startColor as Integer, endColor as Integer, periodic as boolean=false) as Integer


**Function:** Creates a two-point linear gradient color.

**Notes:**

Return Value

A 32-bit integer representing the linear gradient color.

See also:

- 28.16.38 linearGradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, colors() as color, periodic as boolean=false) as Integer
- 28.16.39 linearGradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, colors() as Integer, periodic as boolean=false) as Integer
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Argument Default Description
startX (Mandatory) The x coordinate of the starting point of the reference gradient line segment.
startY (Mandatory) The y coordinate of the starting point of the reference gradient line segment.
endX (Mandatory) The x coordinate of the ending point of the reference gradient line segment.
endY (Mandatory) The y coordinate of the ending point of the reference gradient line segment.
startColor (Mandatory) The color at the starting point of the reference gradient line segment.
derColor (Mandatory) The color at the ending point of the reference gradient line segment.
periodic false Specifies whether the gradient will repeat itself periodically. If the gradient does not repeat itself, the points that lie beyond the end points of the gradient line segment will assume the colors of the end points.

- 28.16.40 linearGradientColor(startX as Integer, startY as Integer, endX as Integer, endY as Integer, startColor as color, endColor as color, periodic as boolean=false) as Integer

28.16.42 load(path as string) as boolean

Function: Load an image file into the current DrawArea.
Notes:
This method will overwrite the current DrawArea. The image type is determined based on file extension, which must be png, jpg/jpeg, gif or wbmp/wmp.

Argument Default Description
filename (Mandatory) The filename of the image to be loaded.

Return Value
A true value indicates no error. A false value indicates the operation is unsuccessful.

28.16.43 loadGIF(path as string) as boolean

Function: Load a GIF image into the current DrawArea.
Notes:
This method will overwrite the current DrawArea.

Argument Default Description
filename (Mandatory) The filename of the image to be loaded.

Return Value
A true value indicates no error. A false value indicates the operation is unsuccessful.

### 28.16.44 `loadJPG(path as string) as boolean`


**Function:** Load a JPG image into the current DrawArea.

**Notes:**
This method will overwrite the current DrawArea.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>filename</td>
<td>(Mandatory)</td>
<td>The filename of the image to be loaded.</td>
</tr>
</tbody>
</table>

**Return Value**
A true value indicates no error. A false value indicates the operation is unsuccessful.

### 28.16.45 `loadPNG(path as string) as boolean`


**Function:** Load a PNG image into the current DrawArea.

**Notes:**
This method will overwrite the current DrawArea.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>filename</td>
<td>(Mandatory)</td>
<td>The filename of the image to be loaded.</td>
</tr>
</tbody>
</table>

**Return Value**
A true value indicates no error. A false value indicates the operation is unsuccessful.

### 28.16.46 `loadWMP(path as string) as boolean`


**Function:** Load a WAP bitmap image into the current DrawArea.

**Notes:**
This method will overwrite the current DrawArea.
### Argument Default Description

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>filename</td>
<td>(Mandatory)</td>
<td>The filename of the image to be loaded.</td>
</tr>
</tbody>
</table>

**Return Value**

A true value indicates no error. A false value indicates the operation is unsuccessful.

---

#### 28.16.47 `merge(d as CDDrawAreaMBS, x as Integer, y as Integer, align as Integer, transparency as Integer)`

**MBS ChartDirector Plugin, Plugin Version:** 8.2, **Console & Web:** Yes, **Mac:** Yes, **Win:** Yes, **Linux:** Yes.  
**Function:** Copy another DrawArea to the current DrawArea.  
**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>d</td>
<td>(Mandatory)</td>
<td>A DrawArea object representing the source.</td>
</tr>
<tr>
<td>x</td>
<td>(Mandatory)</td>
<td>The x coordinate of a reference point in the current DrawArea.</td>
</tr>
<tr>
<td>y</td>
<td>(Mandatory)</td>
<td>The y coordinate of a reference point in the current DrawArea.</td>
</tr>
<tr>
<td>align</td>
<td>(Mandatory)</td>
<td>The alignment of the source DrawArea relative to the reference point. See Alignment Specification for supported alignment types.</td>
</tr>
<tr>
<td>transparency</td>
<td>(Mandatory)</td>
<td>Specify the transparency level when copying the other DrawArea to the current DrawArea. A value of 0 means non-transparent. A value of 255 means totally transparent.</td>
</tr>
</tbody>
</table>

---

#### 28.16.48 `move(xOffset as Double, yOffset as Double, bgColor as color, filter as Integer = 2, blur as Double = 1.0)`

**MBS ChartDirector Plugin, Plugin Version:** 11.1, **Console & Web:** Yes, **Mac:** Yes, **Win:** Yes, **Linux:** Yes.  
**Function:** Same as the other move method, but uses color instead of integer data type for passing color values.  
**See also:**

- 28.16.49 `move(xOffset as Double, yOffset as Double, bgColor as Integer = & hFFFFFF, filter as Integer = 2, blur as Double = 1.0)`

### 28.16.49 `move(xOffset as Double, yOffset as Double, bgColor as Integer = & hFFFFFF, filter as Integer = 2, blur as Double = 1.0)`

**MBS ChartDirector Plugin, Plugin Version:** 8.2, **Console & Web:** Yes, **Mac:** Yes, **Win:** Yes, **Linux:** Yes.  
**Function:** Moves the drawing surface.  
**Notes:**
### 28.16. CLASS CDDRAWAREAMBS

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xOffset</td>
<td>(Mandatory)</td>
<td>The pixel offset to move towards the left.</td>
</tr>
<tr>
<td>yOffset</td>
<td>(Mandatory)</td>
<td>The pixel offset to move towards the bottom.</td>
</tr>
<tr>
<td>bgColor</td>
<td>FFFFFF</td>
<td>The background color used to fill the space left after moving.</td>
</tr>
<tr>
<td>filter</td>
<td>LinearFilter</td>
<td>The filter to use for re-sampling. (Only applies for fractional pixel offsets.)</td>
</tr>
<tr>
<td>blur</td>
<td>1</td>
<td>The blur factor to use for re-sampling. (Only applies for fractional pixel offsets.)</td>
</tr>
</tbody>
</table>

See also:

- 28.16.48 move(xOffset as Double, yOffset as Double, bgColor as color, filter as Integer = 2, blur as Double = 1.0)

### 28.16.50 out(file as folderitem) as boolean


**Function:** Writes the DrawArea to an image file.

**Notes:**

The file format is determined based on file extension, which must be png, jpg/jpeg, gif, wbmp/wmp or bmp.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>filename</td>
<td>(Mandatory)</td>
<td>The filename of the output image file.</td>
</tr>
</tbody>
</table>

**Return Value**

A true value indicates no error. A false value indicates the operation is unsuccessful.

### 28.16.51 outBMP as string


**Function:** Writes the DrawArea as a BMP image to memory.

See also:

- 28.16.52 outBMP(file as folderitem) as boolean

### 28.16.52 outBMP(file as folderitem) as boolean


**Function:** Writes the DrawArea to a BMP image file.

**Notes:**
Argument Default Description
filename (Mandatory) The filename of the output image file.

Return Value
A true value indicates no error. A false value indicates the operation is unsuccessful.
See also:

- 28.16.51 outBMP as string

28.16.53 outGIF as string

Function: Writes the DrawArea as a GIF image to memory.
See also:

- 28.16.54 outGIF(file as folderitem) as boolean

28.16.54 outGIF(file as folderitem) as boolean

Function: Writes the DrawArea to a GIF image file.
Notes:

Argument Default Description
filename (Mandatory) The filename of the output image file.

Return Value
A true value indicates no error. A false value indicates the operation is unsuccessful.
See also:

- 28.16.53 outGIF as string

28.16.55 outJPG(file as folderitem, quality as Integer = 80) as boolean

Function: Writes the DrawArea to a JPEG image file.
Notes:

Return Value
A true value indicates no error. A false value indicates the operation is unsuccessful.
See also:

- 28.16.56 outJPG(quality as Integer = 80) as string
28.16. CLASS CDDRAWAREAMBS

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>filename</td>
<td>(Mandatory)</td>
<td>The filename of the output image file.</td>
</tr>
<tr>
<td>quality</td>
<td>80</td>
<td>The quality of the image.</td>
</tr>
</tbody>
</table>

28.16.56  outJPG(quality as Integer = 80) as string

Function: Writes the DrawArea as a JPEG image to memory.
Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>quality</td>
<td>80</td>
<td>The quality of the image.</td>
</tr>
</tbody>
</table>

Return Value
A binary string containing the JPEG image.
See also:
- 28.16.55 outJPG(file as folderitem, quality as Integer = 80) as boolean

28.16.57  outPDF as string

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Writes the DrawArea as a PDF image to memory.
See also:
- 28.16.58 outPDF(file as folderitem) as boolean

28.16.58  outPDF(file as folderitem) as boolean

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Writes the DrawArea to a PDF image file.
Notes: A return value being true indicates no error. A false value indicates the operation is unsuccessful.
See also:
- 28.16.57 outPDF as string

28.16.59  outPicture as picture

Function: Writes the DrawArea into a picture.
Notes: Returns nil on any error.
28.16.60 outPNG as string


**Function:** Writes the DrawArea as a PNG image to memory.

See also:

- 28.16.61 outPNG(file as folderitem) as boolean

28.16.61 outPNG(file as folderitem) as boolean


**Function:** Writes the DrawArea to a PNG image file.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>filename</td>
<td>(Mandatory)</td>
<td>The filename of the output image file.</td>
</tr>
</tbody>
</table>

**Return Value**

A true value indicates no error. A false value indicates the operation is unsuccessful.

See also:

- 28.16.60 outPNG as string

28.16.62 outSVG(file as folderitem, options as string = "") as boolean


**Function:** Writes the DrawArea to a SVG or SVGZ image file.

**Notes:**

To output true vector graphics in SVG or SVGZ format, please ensure DrawArea.enableVectorOutput is called immediately after creating the DrawArea object. Otherwise the output will be a bitmap image embedded in SVG or SVGZ.

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>file</td>
<td>(Mandatory)</td>
<td>The file of the output image file.</td>
</tr>
<tr>
<td>options</td>
<td>&quot;&quot;</td>
<td>A text string specifying optional parameters for the SVG output. Currently, the only supported text string is &quot;compress&quot;, which means to create a SVGZ (compressed SVG) instead of a regular SVG.</td>
</tr>
</tbody>
</table>

See also:
28.16. CLASS CDDRAWAREAMBS

- 28.16.63 outSVG(options as string = "") as string

28.16.63 outSVG(options as string = "") as string


Function: Writes the DrawArea as a SVG or SVGZ image to memory.

Notes:
To output true vector graphics in SVG or SVGZ format, please ensure DrawArea.enableVectorOutput is called immediately after creating the DrawArea object. Otherwise the output will be a bitmap image embedded in SVG or SVGZ.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>options</td>
<td>&quot;&quot;</td>
<td>A text string specifying optional parameters for the SVG output. Currently, the only supported text string is &quot;compress&quot;, which means to create a SVGZ (compressed SVG) instead of a regular SVG.</td>
</tr>
</tbody>
</table>

Return Value
A memory block containing the SVG or SVGZ image.

See also:
- 28.16.62 outSVG(file as folderitem, options as string = "") as boolean

28.16.64 outWMP as string


Function: Writes the DrawArea to a WAP bitmap image file.

See also:
- 28.16.65 outWMP(file as folderitem) as boolean

28.16.65 outWMP(file as folderitem) as boolean


Function: Writes the DrawArea to a WAP bitmap image file.

Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>filename</td>
<td>(Mandatory)</td>
<td>The filename of the output image file.</td>
</tr>
</tbody>
</table>
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Return Value
A true value indicates no error. A false value indicates the operation is unsuccessful.
See also:

- 28.16.64 outWMP as string

28.16.66 patternColor(colors() as color, height as Integer, startX as Integer = 0, startY as Integer = 0) as Integer

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other patternColor method, but uses color instead of integer data type for passing color values.
See also:

- 28.16.67 patternColor(colors() as Integer, height as Integer, startX as Integer = 0, startY as Integer = 0) as Integer
- 28.16.68 patternColor(file as folderitem, startX as Integer = 0, startY as Integer = 0) as Integer

28.16.67 patternColor(colors() as Integer, height as Integer, startX as Integer = 0, startY as Integer = 0) as Integer

Function: Creates a pattern color using an array of colors as the bitmap pattern.
Notes:
A pattern color is a dynamic color that changes according to a 2D periodic pattern. When it is used to fill an area, the area will look like being tiled with a wallpaper pattern.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>colorArray</td>
<td>(Mandatory)</td>
<td>An array of colors representing the colors of the bitmap pixels. The color of the pixel at (x, y) should correspond to index (x + y * width - 1) of the array.</td>
</tr>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the bitmap in pixels. (The width is automatically computed as the size of the color array divided by the height.)</td>
</tr>
<tr>
<td>startX</td>
<td>0</td>
<td>The x coordinate of a reference point to align with the top-left corner the pattern.</td>
</tr>
<tr>
<td>startY</td>
<td>0</td>
<td>The y coordinate of a reference point to align with the top-left corner the pattern.</td>
</tr>
</tbody>
</table>

Return Value
A 32-bit integer representing the pattern color.
See also:

- 28.16.66 patternColor(colors() as color, height as Integer, startX as Integer = 0, startY as Integer = 0) as Integer
28.16.68 patternColor(file as folderitem, startX as Integer = 0, startY as Integer = 0) as Integer

Function: Creates a pattern color by loading the pattern from an image file.
Notes:
A pattern color is a dynamic color that changes according to a 2D periodic pattern. When it is used to fill an area, the area will look like being tiled with a wallpaper pattern.

ChartDirector will automatically detect the image file format using the file extension, which must either png, jpg, jpeg, gif, wbmp or wmp (case insensitive).

Please refer to DrawArea.setSearchPath on the directory that ChartDirector will search for the file.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>filename</td>
<td>(Mandatory)</td>
<td>An image file providing the pattern.</td>
</tr>
<tr>
<td>startX</td>
<td>0</td>
<td>The x coordinate of a reference point to align with the top-left corner the pattern.</td>
</tr>
<tr>
<td>startY</td>
<td>0</td>
<td>The y coordinate of a reference point to align with the top-left corner the pattern.</td>
</tr>
</tbody>
</table>

Return Value
A 32-bit integer representing the pattern color.
See also:

• 28.16.66 patternColor(colors() as color, height as Integer, startX as Integer = 0, startY as Integer = 0) as Integer

• 28.16.67 patternColor(colors() as Integer, height as Integer, startX as Integer = 0, startY as Integer = 0) as Integer

28.16.69 Pixel(x as Integer, y as Integer, c as Integer)

Function: Draw a pixel.
Notes:
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<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>(Mandatory)</td>
<td>The x coordinate of the pixel.</td>
</tr>
<tr>
<td>y</td>
<td>(Mandatory)</td>
<td>The y coordinate of the pixel.</td>
</tr>
<tr>
<td>c</td>
<td>(Mandatory)</td>
<td>The color of the pixel.</td>
</tr>
</tbody>
</table>

28.16.70  
**polygon(x() as Double, y() as Double, edgeColor as color, fillColor as color)**

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Same as the other polygon method, but uses color instead of integer data type for passing color values.  
See also:
- 28.16.71 polygon(x() as Double, y() as Double, edgeColor as Integer, fillColor as Integer) 4650
- 28.16.72 polygon(x() as Integer, y() as Integer, edgeColor as color, fillColor as color) 4650
- 28.16.73 polygon(x() as Integer, y() as Integer, edgeColor as Integer, fillColor as Integer) 4651

28.16.71  
**polygon(x() as Double, y() as Double, edgeColor as Integer, fillColor as Integer)**

**Function:** Draws a polygon.  
**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the x coordinates of the vertices of a polygon.</td>
</tr>
<tr>
<td>y</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the y coordinates of the vertices of a polygon.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>(Mandatory)</td>
<td>The border color. To disable border, set the edgeColor the same as the fillColor.</td>
</tr>
<tr>
<td>fillColor</td>
<td>(Mandatory)</td>
<td>The fill color. To disable filling, set the fillColor to Transparent.</td>
</tr>
</tbody>
</table>

See also:
- 28.16.70 polygon(x() as Double, y() as Double, edgeColor as color, fillColor as color) 4650
- 28.16.72 polygon(x() as Integer, y() as Integer, edgeColor as color, fillColor as color) 4650
- 28.16.73 polygon(x() as Integer, y() as Integer, edgeColor as Integer, fillColor as Integer) 4651

28.16.72  
**polygon(x() as Integer, y() as Integer, edgeColor as color, fillColor as color)**

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Same as the other polygon method, but uses color instead of integer data type for passing color values.
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values.

See also:

- 28.16.70 polygon(x() as Double, y() as Double, edgeColor as color, fillColor as color) 4650
- 28.16.71 polygon(x() as Double, y() as Double, edgeColor as Integer, fillColor as Integer) 4650
- 28.16.73 polygon(x() as Integer, y() as Integer, edgeColor as Integer, fillColor as Integer) 4651

28.16.73  **polygon(x() as Integer, y() as Integer, edgeColor as Integer, fillColor as Integer)**


**Function:** Draws a polygon.

**Notes:**

- **x** (Mandatory) An array of numbers representing the x coordinates of the vertices of a polygon.
- **y** (Mandatory) An array of numbers representing the y coordinates of the vertices of a polygon.
- **edgeColor** (Mandatory) The border color. To disable border, set the edgeColor the same as the fillColor.
- **fillColor** (Mandatory) The fill color. To disable filling, set the fillColor to Transparent.

See also:

- 28.16.70 polygon(x() as Double, y() as Double, edgeColor as color, fillColor as color) 4650
- 28.16.71 polygon(x() as Double, y() as Double, edgeColor as Integer, fillColor as Integer) 4650
- 28.16.72 polygon(x() as Integer, y() as Integer, edgeColor as color, fillColor as color) 4650

28.16.74  **radialGradientColor(cx as Integer, cy as Integer, rx as Integer, ry as Integer, data() as Integer, periodic as boolean=false) as Integer**


**Function:** Creates a multi-point radial gradient color.

**Notes:**

In this method, the color points are defined as an array of radial distances and colors, in the following format:

```
distance0, color0, distance1, color1, ..., distanceN, colorN
```

The distances are specified as a number from 0 - 256 (0 - 100 in hex), in which 0 represents the center of the gradient defining ellipse, and 256 (100 in hex) represents the perimeter of the gradient defining ellipse.

For example, the array (in hex):
means the center (000000) is red (FF0000), the mid-point (000080 in hex) is yellow (FFFF00), and the perimeter (000100 in hex) is green (00FF00).

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cx</td>
<td>(Mandatory)</td>
<td>The x coordinate of the center of the radial gradient.</td>
</tr>
<tr>
<td>cy</td>
<td>(Mandatory)</td>
<td>The y coordinate of the center of the radial gradient.</td>
</tr>
<tr>
<td>rx</td>
<td>(Mandatory)</td>
<td>The horizontal radius of the radial gradient defining ellipse.</td>
</tr>
<tr>
<td>ry</td>
<td>(Mandatory)</td>
<td>The vertical radius of the radial gradient defining ellipse.</td>
</tr>
<tr>
<td>colorArray</td>
<td>(Mandatory)</td>
<td>An array defining the radial distances and colors.</td>
</tr>
<tr>
<td>periodic</td>
<td>false</td>
<td>Specifies whether the gradient will repeat itself periodically. If the gradient does not repeat itself, the points that lie outside the gradient defining ellipse will assume the color at the perimeter of the gradient defining ellipse.</td>
</tr>
</tbody>
</table>

Return Value
A 32-bit integer representing the radial gradient color.

See also:
- 28.16.75 radialGradientColor(cx as Integer, cy as Integer, rx as Integer, ry as Integer, startColor as color, endColor as color, periodic as boolean=false) as Integer
- 28.16.76 radialGradientColor(cx as Integer, cy as Integer, rx as Integer, ry as Integer, startColor as Integer, endColor as Integer, periodic as boolean=false) as Integer

28.16.75 radialGradientColor(cx as Integer, cy as Integer, rx as Integer, ry as Integer, startColor as color, endColor as color, periodic as boolean=false) as Integer

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Same as the other radialGradientColor method, but uses color instead of integer data type for passing color values.

See also:
- 28.16.74 radialGradientColor(cx as Integer, cy as Integer, rx as Integer, ry as Integer, data() as Integer, periodic as boolean=false) as Integer
- 28.16.76 radialGradientColor(cx as Integer, cy as Integer, rx as Integer, ry as Integer, startColor as Integer, endColor as Integer, periodic as boolean=false) as Integer

28.16.76 radialGradientColor(cx as Integer, cy as Integer, rx as Integer, ry as Integer, startColor as Integer, endColor as Integer, periodic as boolean=false) as Integer


Function: Creates a two-point radial gradient color.
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Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cx</td>
<td>(Mandatory)</td>
<td>The x coordinate of the center of the radial gradient.</td>
</tr>
<tr>
<td>cy</td>
<td>(Mandatory)</td>
<td>The y coordinate of the center of the radial gradient.</td>
</tr>
<tr>
<td>rx</td>
<td>(Mandatory)</td>
<td>The horizontal radius of the radial gradient defining ellipse.</td>
</tr>
<tr>
<td>ry</td>
<td>(Mandatory)</td>
<td>The vertical radius of the radial gradient defining ellipse.</td>
</tr>
<tr>
<td>startColor</td>
<td>(Mandatory)</td>
<td>The color at the center of the gradient defining ellipse.</td>
</tr>
<tr>
<td>endColor</td>
<td>(Mandatory)</td>
<td>The color at the perimeter of the gradient defining ellipse.</td>
</tr>
<tr>
<td>periodic</td>
<td>false</td>
<td>Specifies whether the gradient will repeat itself periodically. If the gradient does not repeat itself, the points that lie outside the gradient defining ellipse will assume the color at the perimeter of the gradient defining ellipse.</td>
</tr>
</tbody>
</table>

Return Value

A 32-bit integer representing the radial gradient color.

See also:

- 28.16.74 radialGradientColor(cx as Integer, cy as Integer, rx as Integer, ry as Integer, data() as Integer, periodic as boolean=false) as Integer
- 28.16.75 radialGradientColor(cx as Integer, cy as Integer, rx as Integer, ry as Integer, startColor as color, endColor as color, periodic as boolean=false) as Integer

28.16.77 rAffineTransform(a as Double, b as Double, c as Double, d as Double, e as Double, f as Double, bgColor as color, filter as Integer = 2, blur as Double = 1.0)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Same as the other rAffineTransform method, but uses color instead of integer data type for passing color values.

See also:

- 28.16.78 rAffineTransform(a as Double, b as Double, c as Double, d as Double, e as Double, f as Double, bgColor as Integer = & hFFFFFF, filter as Integer = 2, blur as Double = 1.0)

28.16.78 rAffineTransform(a as Double, b as Double, c as Double, d as Double, e as Double, f as Double, bgColor as Integer = & hFFFFFF, filter as Integer = 2, blur as Double = 1.0)


Function: Perform reverse affine transformation on the drawing surface.

Notes:

A reverse affine transformation is an operation where every pixel is copied from another pixel according to the formula.
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xSrc = a * xDest + b * yDest + cySrc = d * xDest + e * yDest + f
where (xDest, yDest) is a destination pixel, and (xSrc, ySrc) is where it should come from.

Many graphics operation, such as translation, rotation, and resizing, can be considered as a special case of reverse affine transformation.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>(Mandatory)</td>
<td>The parameter 'a' in the coordinate transformation formula &quot;xSrc = a * xDest + b * yDest + c&quot;.</td>
</tr>
<tr>
<td>b</td>
<td>(Mandatory)</td>
<td>The parameter 'b' in the coordinate transformation formula &quot;xSrc = a * xDest + b * yDest + c&quot;.</td>
</tr>
<tr>
<td>c</td>
<td>(Mandatory)</td>
<td>The parameter 'c' in the coordinate transformation formula &quot;xSrc = a * xDest + b * yDest + c&quot;.</td>
</tr>
<tr>
<td>d</td>
<td>(Mandatory)</td>
<td>The parameter 'd' in the coordinate transformation formula &quot;ySrc = d * xDest + e * yDest + f&quot;.</td>
</tr>
<tr>
<td>e</td>
<td>(Mandatory)</td>
<td>The parameter 'e' in the coordinate transformation formula &quot;ySrc = d * xDest + e * yDest + f&quot;.</td>
</tr>
<tr>
<td>f</td>
<td>(Mandatory)</td>
<td>The parameter 'f' in the coordinate transformation formula &quot;ySrc = d * xDest + e * yDest + f&quot;.</td>
</tr>
<tr>
<td>bgColor</td>
<td>FFFFFF</td>
<td>The background color used to fill destination pixels that are not mapped to any source pixels.</td>
</tr>
<tr>
<td>filter</td>
<td>LinearFilter</td>
<td>The filter to use for re-sampling.</td>
</tr>
<tr>
<td>blur</td>
<td>1</td>
<td>The blur factor to use for re-sampling.</td>
</tr>
</tbody>
</table>

See also:

- 28.16.77 rAffineTransform(a as Double, b as Double, c as Double, d as Double, e as Double, f as Double, bgColor as color, filter as Integer = 2, blur as Double = 1.0) 4653

28.16.79  rect(x1 as Integer, y1 as Integer, x2 as Integer, y2 as Integer, edgeColor as color, fillColor as color, raisedEffect as Integer = 0)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Same as the other rect method, but uses color instead of integer data type for passing color values.
See also:

- 28.16.80 rect(x1 as Integer, y1 as Integer, x2 as Integer, y2 as Integer, edgeColor as Integer, fillColor as Integer, raisedEffect as Integer = 0) 4655
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28.16.80 rect(x1 as Integer, y1 as Integer, x2 as Integer, y2 as Integer, edgeColor as Integer, fillColor as Integer, raisedEffect as Integer = 0)


Function: Draws a rectangle.

Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>x1</td>
<td>(Mandatory)</td>
<td>The x coordinate of one corner of the rectangle.</td>
</tr>
<tr>
<td>y1</td>
<td>(Mandatory)</td>
<td>The y coordinate of one corner of the rectangle.</td>
</tr>
<tr>
<td>x2</td>
<td>(Mandatory)</td>
<td>The x coordinate of the opposite corner of the rectangle.</td>
</tr>
<tr>
<td>y2</td>
<td>(Mandatory)</td>
<td>The y coordinate of the opposite corner of the rectangle.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>(Mandatory)</td>
<td>The border color. To disable border, set the edgeColor the same as the fillColor.</td>
</tr>
<tr>
<td>fillColor</td>
<td>(Mandatory)</td>
<td>The fill color. To disable filling, set the fillColor to Transparent.</td>
</tr>
<tr>
<td>raisedEffect</td>
<td>0</td>
<td>The 3D border width. For positive values, the border will appear raised. For negative values, the border will appear depressed. A zero value means the border will appear flat. This argument is also used to support CDBaseChartMBS.glassEffect and CDBaseChartMBS.softLighting effects.</td>
</tr>
</tbody>
</table>

See also:

- 28.16.79 rect(x1 as Integer, y1 as Integer, x2 as Integer, y2 as Integer, edgeColor as color, fillColor as color, raisedEffect as Integer = 0)

28.16.81 reduceColors(colorCount as Integer, blackAndWhite as boolean=false) as Integer


Function: Reduces the number of colors in the image.

Notes:

The colors in the image will be reduced to at most the number of colors specified, which should be 16 - 256. You may also set the image to black and white. In this case, the color count means number of grey levels.

The colors will be reduced by computing an optimal palette for the image. The image will then be converted using the palette based on the current dithering settings (see DrawArea.setDitherMethod).

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>colorCount</td>
<td>(Mandatory)</td>
<td>The maximum number of colors that image should have after after reduction. Must be between 16 - 256.</td>
</tr>
<tr>
<td>blackAndWhite</td>
<td>false</td>
<td>A true value means the image will be converted to black and white (with grey levels). A false value means the image will not be converted to black and white.</td>
</tr>
</tbody>
</table>

Return Value
The actual number of colors the converted image has.

### 28.16.82 `removeDynamicLayer(keepOriginal as boolean = false)`

**Function:** Removes the dynamic layer if any.

### 28.16.83 `resize(newWidth as Integer, newHeight as Integer, filter as Integer = 1, blur as Double = 1.0)`

**Function:** Resizes the drawing surface.
**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>newWidth</td>
<td>(Mandatory)</td>
<td>The new width of the drawing surface in pixels.</td>
</tr>
<tr>
<td>newHeight</td>
<td>(Mandatory)</td>
<td>The new height of the drawing surface in pixels.</td>
</tr>
<tr>
<td>filter</td>
<td>LinearFilter</td>
<td>The filter to use for re-sampling.</td>
</tr>
<tr>
<td>blur</td>
<td>1</td>
<td>The blur factor to use for re-sampling.</td>
</tr>
</tbody>
</table>

### 28.16.84 `ring(cx as Integer, cy as Integer, rx as Integer, ry as Integer, rx2 as Integer, ry2 as Integer, edgeColor as color, fillColor as color)`

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other ring method, but uses color instead of integer data type for passing color values.
**See also:**

- `28.16.85 ring(cx as Integer, cy as Integer, rx as Integer, ry as Integer, rx2 as Integer, ry2 as Integer, edgeColor as Integer, fillColor as Integer)`

### 28.16.85 `ring(cx as Integer, cy as Integer, rx as Integer, ry as Integer, rx2 as Integer, ry2 as Integer, edgeColor as Integer, fillColor as Integer)`

**Function:** Draws a ring.
**See also:**

- `28.16.84 ring(cx as Integer, cy as Integer, rx as Integer, ry as Integer, rx2 as Integer, ry2 as Integer, edgeColor as color, fillColor as color)`
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28.16.86 ringSector(cx as Integer, cy as Integer, rx as Integer, ry as Integer, rx2 as Integer, ry2 as Integer, a1 as Double, a2 as Double, edgeColor as color, fillColor as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other ringSector method, but uses color instead of integer data type for passing color values.
See also:

- 28.16.87 ringSector(cx as Integer, cy as Integer, rx as Integer, ry as Integer, rx2 as Integer, ry2 as Integer, a1 as Double, a2 as Double, edgeColor as Integer, fillColor as Integer)

28.16.87 ringSector(cx as Integer, cy as Integer, rx as Integer, ry as Integer, rx2 as Integer, ry2 as Integer, a1 as Double, a2 as Double, edgeColor as Integer, fillColor as Integer)

Function: Draws a ring sector.
See also:

- 28.16.86 ringSector(cx as Integer, cy as Integer, rx as Integer, ry as Integer, rx2 as Integer, ry2 as Integer, a1 as Double, a2 as Double, edgeColor as color, fillColor as color)

28.16.88 rotate(angle as Double, bgColor as color, cx as Double = -1, cy as Double = -1, filter as Integer = 2, blur as Double = 1.0)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other rotate method, but uses color instead of integer data type for passing color values.
See also:

- 28.16.89 rotate(angle as Double, bgColor as Integer = & hFFFFFF, cx as Double = -1, cy as Double = -1, filter as Integer = 2, blur as Double = 1.0)

28.16.89 rotate(angle as Double, bgColor as Integer = & hFFFFFF, cx as Double = -1, cy as Double = -1, filter as Integer = 2, blur as Double = 1.0)

Function: Rotate the drawing surface.
Notes:
See also:
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Argument Default Description
angle (Mandatory) The rotation angle measured clockwise in degrees.
bgColor FFFFFF The background color used to fill the space left after rotation.
cx -1 The x coordinate of the center of rotation. -1 means rotating about the center of the drawing surface.
icy -1 The y coordinate of the center of rotation. -1 means rotating about the center of the drawing surface.
filter LinearFilter The filter to use for re-sampling.
blur 1 The blur factor to use for re-sampling.

- 28.16.88 rotate(angle as Double, bgColor as color, cx as Double = -1, cy as Double = -1, filter as Integer = 2, blur as Double = 1.0)

28.16.90 sector(cx as Integer, cy as Integer, rx as Integer, ry as Integer, a1 as Double, a2 as Double, edgeColor as color, fillColor as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other sector method, but uses color instead of integer data type for passing color values.
See also:

- 28.16.91 sector(cx as Integer, cy as Integer, rx as Integer, ry as Integer, a1 as Double, a2 as Double, edgeColor as Integer, fillColor as Integer)

28.16.91 sector(cx as Integer, cy as Integer, rx as Integer, ry as Integer, a1 as Double, a2 as Double, edgeColor as Integer, fillColor as Integer)

Function: Draws a circular or elliptical sector.
Notes:

Argument Default Description
cx (Mandatory) The x coordinate of the center of the circle or ellipse.
cy (Mandatory) The y coordinate of the center of the circle or ellipse.
rx (Mandatory) The horizontal radius of the circle or ellipse.
ry (Mandatory) The vertical radius of the circle or ellipse.
a1 (Mandatory) The start angle of the sector in degrees. The angle is measured clockwise, with 0 degree being the upward pointing direction.
a2 (Mandatory) The end angle of the sector in degrees. The angle is measured clockwise, with 0 degree being the upward pointing direction.
edgeColor (Mandatory) The border color. To disable border, set the edgeColor the same as the fillColor.
fillColor (Mandatory) The fill color. To disable filling, set the fillColor to Transparent.

See also:
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- 28.16.90 sector(cx as Integer, cy as Integer, rx as Integer, ry as Integer, a1 as Double, a2 as Double, edgeColor as color, fillColor as color)

28.16.92 setAntiAlias(shapeAntiAlias as boolean=true, textAntiAlias as Integer = 2)


**Function:** Controls whether anti-alias is used when drawing lines, shapes and text.

**Notes:**
For anti-aliasing text, ChartDirector supports the following modes.

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NoAntiAlias</td>
<td>0</td>
<td>Disable anti-alias when drawing text</td>
</tr>
<tr>
<td>AntiAlias</td>
<td>1</td>
<td>Always use anti-alias when drawing text</td>
</tr>
<tr>
<td>AutoAntiAlias</td>
<td>2</td>
<td>Automatically determine if anti-alias should be used for the text. This is the default.</td>
</tr>
</tbody>
</table>

Currently, ChartDirector will anti-alias only large or bold fonts. For small fonts, assuming it is of high quality, anti-alias is unnecessary. It is because high quality fonts are normally designed to be sharp and clear at low resolution. Anti-aliasing will blur the fonts and make them look worse.

However, for complicated fonts (e.g. some fonts with oriental characters), or for lower quality fonts (e.g. some freeware fonts), anti-alias may be necessary. In this case, it may be needed to force anti-aliasing of all fonts using AntiAlias mode.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>shapeAntiAlias</td>
<td>true</td>
<td>A true value enables anti-alias when drawing lines and shapes. A false value disables anti-alias when drawing lines and shapes</td>
</tr>
<tr>
<td>textAntiAlias</td>
<td>AutoAntiAlias</td>
<td>The text anti-alias mode, which must be one of AutoAntiAlias, AntiAlias or NoAntiAlias.</td>
</tr>
</tbody>
</table>

28.16.93 setAntiAliasText(value as Integer)


**Function:** Set how text is antialiased.
28.16.94 setBgColor(c as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other setBgColor method, but uses color instead of integer data type for passing color values.
See also:

- 28.16.95 setBgColor(c as Integer)

28.16.95 setBgColor(c as Integer)

**Function:** Sets the background color of the image.
**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>c</td>
<td>(Mandatory)</td>
<td>The background color of the image.</td>
</tr>
</tbody>
</table>

See also:

- 28.16.94 setBgColor(c as color)

28.16.96 setClipRect(left as Integer, top as Integer, right as Integer, bottom as Integer)

**Function:** Sets the clip rectangle.
**Notes:**

When performing graphics operation, only regions inside the clip rectangle will be affected. Regions outside will be unaffected.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>left</td>
<td>(Mandatory)</td>
<td>The x coordinate of the left side of the clip rectangle.</td>
</tr>
<tr>
<td>top</td>
<td>(Mandatory)</td>
<td>The y coordinate of the top side of the clip rectangle.</td>
</tr>
<tr>
<td>right</td>
<td>(Mandatory)</td>
<td>The x coordinate of the right side of the clip rectangle.</td>
</tr>
<tr>
<td>bottom</td>
<td>(Mandatory)</td>
<td>The y coordinate of the bottom side of the clip rectangle.</td>
</tr>
</tbody>
</table>

28.16.97 setColorTable(colors() as color, offset as Integer)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other setColorTable method, but uses color instead of integer data type for passing
color values.
See also:

- 28.16.98 setColorTable(colors() as Integer, offset as Integer)

**28.16.98 setColorTable(colors() as Integer, offset as Integer)**

**Function:** Change the colors in the palette starting with the specified offset position.
**Notes:**
See Color Specification on how colors are represented in ChartDirector.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>colors</td>
<td>(Mandatory)</td>
<td>An array of colors to replace the colors in the palette.</td>
</tr>
<tr>
<td>offset</td>
<td>(Mandatory)</td>
<td>The position in the palette to start the replacement.</td>
</tr>
</tbody>
</table>

See also:

- 28.16.97 setColorTable(colors() as color, offset as Integer)

**28.16.99 setDefaultFonts(normal as string, bold as string, italic as string, boldItalic as string)**

**Function:** Sets the defaults for normal, bold, italic and bold-italic fonts.
**Notes:**
See Font Specification for details on various font attributes.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>normal</td>
<td>(Mandatory)</td>
<td>The default normal font. This is the same as the first font in the font table.</td>
</tr>
<tr>
<td>bold</td>
<td>&quot;&quot;</td>
<td>The default bold font. This is the same as the second font in the font table.</td>
</tr>
<tr>
<td>italic</td>
<td>&quot;&quot;</td>
<td>The default italic font. This is the same as the third font in the font table. An empty string means the default is unchanged.</td>
</tr>
<tr>
<td>boldItalic</td>
<td>&quot;&quot;</td>
<td>The default bold-italic font. This is the same as the fourth font in the font table. An empty string means the default is unchanged.</td>
</tr>
</tbody>
</table>

See font specification here:
http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml
28.16.100  setDitherMethod(value as Integer)


**Function:** Sets the dithering method in case dithering is necessary.

**Notes:**

Dithering is a process of reducing the colors of an image. It is required if an image has more colors than can be supported by the image format. For example, a GIF image can only have 256 colors. If the actual image contains more than 256 colors, dithering is needed to reduce the colors to less than 256.

The dithering method must be one of the following predefined constants.

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantize</td>
<td>0</td>
<td>ChartDirector will first compute an optimal 256-color palette based on colors on the actual image. It then replaces the color of each pixel with the nearest color in the palette. This is the default method and produces the best result in most cases.</td>
</tr>
<tr>
<td>OrderedDither</td>
<td>1</td>
<td>Use the ordered dithering algorithm with a 4 x 4 matrix, and with the standard web-safe palette. The web-safe palette is a palette compatible with very old browsers (e.g. Netscape 1.x and 2.x browsers) on 256-color displays.</td>
</tr>
<tr>
<td>ErrorDiffusion</td>
<td>2</td>
<td>Similar to OrderedDither but use the Floyd and Steinberg error diffusion algorithm.</td>
</tr>
</tbody>
</table>

Web-safe palette is not an optimal palette. In most cases, this method is not as good as the Quantize method. Use this method only if you have to use the web-safe palette.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>m</td>
<td>(Mandatory)</td>
<td>The dithering method to use in case dithering is necessary.</td>
</tr>
</tbody>
</table>

28.16.101  setFontTable(index as Integer, font as string)


**Function:** Sets an entry in the font table to the specified font name.

**Notes:**

The first 4 fonts in the font table have special significance. They are the defaults for normal, bold, italic and bold-italic fonts.
28.16. CLASS CDDRAWAREAMBS

See Font Specification for details on various font attributes.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>index</td>
<td>(Mandatory)</td>
<td>An index to the font table, starting from 0.</td>
</tr>
<tr>
<td>font</td>
<td>(Mandatory)</td>
<td>The font name to be put into the font table.</td>
</tr>
</tbody>
</table>

See font specification here:
http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml

28.16.102 setInterlace(value as boolean)


**Function:** Sets the interlace mode when creating the image.

**Notes:**

Note that in many case an interlaced image is less compressible, and may have a large image size. The default is non-interlace.

Note that this method only applies to image formats that support interlacing (GIF and PNG). It is ignored for image formats that does not support interlacing.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>(Mandatory)</td>
<td>A true value means the image is interlaced. A false value means the image is non-interlaced.</td>
</tr>
</tbody>
</table>
28.16.103 setOutputOptions(options as string)

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Sets output format options for the next chart output. Currently, only SVG, SVGZ and PDF output formats support output options.

**Notes:**
An output option can be a flag (such as "compress") or an attribute-value pair (such as "width=800"). Multiple output options can be joined using semicolons as delimiters.

**SVG Options**

<table>
<thead>
<tr>
<th>SVG Option</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>compress</td>
<td>Flag</td>
<td>Compressed the SVG, that is, output SVGZ.</td>
</tr>
<tr>
<td>bitmap</td>
<td>Flag</td>
<td>Render the chart as a bitmap and output the bitmap as SVG.</td>
</tr>
<tr>
<td>noxmldecl</td>
<td>Flag</td>
<td>Do not include the xml declaration line &quot;&lt;?xml version=&quot;1.0&quot; .... &gt;&quot; in the SVG.</td>
</tr>
<tr>
<td>nodocdecl</td>
<td>Flag</td>
<td>Do not include the document type declaration line &quot;&lt;!DOCTYPE svg PUBLIC .... &gt;&quot; in the SVG.</td>
</tr>
<tr>
<td>width</td>
<td>Flag / Attribute</td>
<td>Specifies the width attribute of the SVG. By default, ChartDirector will not include the width or height attribute in the SVG output. In this case, the SVG is variable in size and would assume the size of its container. For example, if the SVG is inside a &lt;DIV&gt;block in a web page, it will assume the size of the DIV block. If the &quot;width&quot; option is used as a flag, ChartDirector will include the width attribute in the SVG and set it to the chart width. If the &quot;width&quot; option is used as an attribute (such as &quot;width=800&quot;), ChartDirector will include the width attribute in the SVG and set it to the specified value. The specified value should be some text that is valid as SVG width. Examples are &quot;100&quot; and &quot;75%&quot;.</td>
</tr>
<tr>
<td>height</td>
<td>Flag / Attribute</td>
<td>Specifies the height attribute of the SVG. See the description on &quot;width&quot; above on how to use it.</td>
</tr>
</tbody>
</table>

**PDF Options**

The PDF viewer will convert the pixel unit into physical unit (eg. inches) so that it can be layout on paper or other physical media. The default conversion factor for the chart is 96 pixels per inch. The "dpi" attribute can be used to specify an alternative value. The value must be a number.

28.16.104 setPaletteMode(value as Integer)


**Function:** Sets the palette mode to use when writing the image in PNG format.

**Notes:**
The PNG format supports both palette based images and true color images. Palette based images can only
28.16. CLASS CDDRAWAREAMBS

PDF Option  Type  Description
bitmap  Flag  Render the chart as a bitmap and output the bitmap as PDF.
width  Attribute  The width of the chart in the PDF in pixel unit. By default, ChartDirector will use the pixel width of the chart as the width of the chart in PDF. The "width" attribute can be used to specify an alternative value. The value must be a number.
height  Attribute  The width of the chart in the PDF in pixel unit. See the description on "width" above for how to use it.
pagewidth  Attribute  The page width in pixel unit. By default, ChartDirector will set the page width to the same width as the chart. The "pagewidth" attribute can be used to specify an alternative value. The value must be a number.
pageheight  Attribute  The page height in pixel unit. By default, ChartDirector will set the page height to the same height as the chart. The "pageheight" attribute can be used to specify an alternative value. The value must be a number.
leftx  Attribute  The x coordinate of the left side of the chart within the page in pixel unit. By default, ChartDirector will center the chart in the page. The "leftx" attribute can be used to specify an alternative horizontal position. The coordinate must be a number.
topy  Attribute  The y coordinate of the top side of the chart within the page in pixel unit. By default, ChartDirector will center the chart in the page. The "topy" attribute can be used to specify an alternative vertical position. The coordinate must be a number.
dpi  Attribute  Specify the factor for conversion from pixel to physical unit.

Argument  Default  Description
options  (Mandatory)  A list of options delimited by semicolons.

have 256 colors, but is smaller in size.

The palette mode must be one of the following predefined constants.

Constant  Value  Description
TryPalette  0  Use palette mode if the image contains less than 256 colors, otherwise use true color mode. This is the default.
ForcePalette  1  Use palette mode. If the image contains more than 256 colors, reduce it to 256 colors using dithering (see DrawArea.setDitherMethod).
NoPalette  2  Use true color mode.
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66  Argument       Default      Description
  p                        (Mandatory)  The palette mode for PNG images.

28.16.105  setSize(path as string)

Function:  Sets the file system search path for loading image files.
Notes:
Several ChartDirector operations involve loading image files. Examples are wallpapers (BaseChart.setWall-
paper), background images (BaseChart.setBgImage and PlotArea setBackground2), user-defined symbols
(DataSet.setDataSymbol2) or for embedding images in text using ChartDirector Mark Up Language.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>path</td>
<td>(Mandatory)</td>
<td>A list of directories, separated with the path separator of your operating system (&quot;;&quot;,&quot;.&quot; for Windows, &quot;:&quot; for Linux/UNIX).</td>
</tr>
</tbody>
</table>

28.16.106  setSize(width as Integer, height as Integer, bgColor as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function:  Same as the other setSize method, but uses color instead of integer data type for passing color
values.
See also:
• 28.16.107 setSize(width as Integer, height as Integer, bgColor as Integer = & hFFFFFF)

28.16.107  setSize(width as Integer, height as Integer, bgColor as Integer = & hFFFFFF)

Function:  Sets the size and background color of the drawing surface.
Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>width</td>
<td>(Mandatory)</td>
<td>The width of the drawing surface in pixels.</td>
</tr>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the drawing surface in pixels.</td>
</tr>
<tr>
<td>bgColor</td>
<td>FFFFFF</td>
<td>The background color of the drawing surface.</td>
</tr>
</tbody>
</table>

See also:
• 184.4.9 setSize(width as Integer, height as Integer, bgColor as color)
28.16. CLASS CDDRAWAREAMBS

28.16.108 setTransparentColor(value as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Same as the other setTransparentColor method, but uses color instead of integer data type for passing color values.

See also:

• 28.16.109 setTransparentColor(value as Integer)

28.16.109 setTransparentColor(value as Integer)


Function: Specifies a certain color to mean transparent when creating the image output, or to include alpha transparency channel in the output.

Notes:

There are two types of transparency:

Alpha transparency: In addition to red, green and blue levels, there is a transparency level associated with each pixel, which can range from completely transparent to completely opaque. The data associated with the transparency information is called the alpha channel.

Single color transparency: The image itself has no alpha channel, but a certain color is used to mean completely transparent. For internal drawing, ChartDirector always use alpha transparency. However, when outputting the image as an image file, ChartDirector by default will remove the alpha channel to reduce image size. It is because many image displaying software do not support alpha transparency. For example, the IE browser only supports single color transparency but not alpha transparency.

If you want to use single color transparency in the output, you may specify the transparent color as the argument to the setTransparentColor method. Note that only GIF and PNG can support single color transparency. JPEG, BMP and WBMP cannot support transparency at all.

If you do want to keep the alpha channel in final output, you may pass -1 as the argument to setTransparentColor. Note that the only image format that can support alpha transparency is PNG.

One important thing to note is that the IE browser (and possibly many image displaying software) only supports single color transparency for palette based images with up to 256 colors, but not for true color images. For this reason, if single color transparency is used, ChartDirector will automatically reduce the image to 256 colors if it has more than 256 colors. This may result in lost of image quality, especially if the image contains gradient colors.

Therefore, due to the limitations of the current generations of image displaying software, for highest image quality, sometimes it may be beneficial to not using transparency in image output, but to set the image
background color to the same color as the container background.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>c</td>
<td>(Mandatory)</td>
<td>The color that is designated as the transparent color. If -1 is used, the full alpha transparency channel will be included in the final output.</td>
</tr>
</tbody>
</table>

See also:

- 28.16.108 setTransparentColor(value as color)

28.16.110 shearTransform(xShear as Double, yShear as Double = 0, bgColor as Integer = & hFFFFFF, filter as Integer = 2, blur as Double = 1.0)

MBS ChartDirector Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Shear the drawing surface. **Notes:** Shearing can be applied along the horizontal direction and/or vertical direction. A rectangle, after shearing, will become a parallelogram.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xShear</td>
<td>(Mandatory)</td>
<td>The number of pixels to shear leftwards.</td>
</tr>
<tr>
<td>yShear</td>
<td>0</td>
<td>The number of pixels to shear downwards.</td>
</tr>
<tr>
<td>bgColor</td>
<td>FFFFFF</td>
<td>The background color used to fill the space left after transformation.</td>
</tr>
<tr>
<td>filter</td>
<td>LinearFilter</td>
<td>The filter to use for re-sampling.</td>
</tr>
<tr>
<td>blur</td>
<td>1</td>
<td>The blur factor to use for re-sampling.</td>
</tr>
</tbody>
</table>

See also:

- 28.16.111 shearTransform(xShear as Double, yShear as Double, bgColor as color, filter as Integer = 2, blur as Double = 1.0)

28.16.111 shearTransform(xShear as Double, yShear as Double, bgColor as color, filter as Integer = 2, blur as Double = 1.0)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Same as the other shearTransform method, but uses color instead of integer data type for passing color values. **See also:**

- 28.16.110 shearTransform(xShear as Double, yShear as Double = 0, bgColor as Integer = & hFFFFFF, filter as Integer = 2, blur as Double = 1.0)
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28.16.112  \(\text{sphereTransform}(\text{xDiameter as Integer, yDiameter as Integer, bgColor as color, filter as Integer } = 2, \text{ blur as Double } = 1.0)\)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other sphereTransform method, but uses color instead of integer data type for passing color values.

See also:

- 28.16.113  \(\text{sphereTransform}(\text{xDiameter as Integer, yDiameter as Integer, bgColor as Integer } = \& \text{hFFFFFF, filter as Integer } = 2, \text{ blur as Double } = 1.0)\)

28.16.113  \(\text{sphereTransform}(\text{xDiameter as Integer, yDiameter as Integer, bgColor as Integer } = \& \text{hFFFFFF, filter as Integer } = 2, \text{ blur as Double } = 1.0)\)

**Function:** Wraps the drawing surface onto a sphere or ellipsoid.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xDiameter</td>
<td>(Mandatory)</td>
<td>The horizontal diameter of the sphere or ellipsoid in pixels.</td>
</tr>
<tr>
<td>yDiameter</td>
<td>(Mandatory)</td>
<td>The vertical diameter of the sphere or ellipsoid in pixels.</td>
</tr>
<tr>
<td>bgColor</td>
<td>FFFFFF</td>
<td>The background color used to fill the space left after transformation.</td>
</tr>
<tr>
<td>filter</td>
<td>LinearFilter</td>
<td>The filter to use for re-sampling.</td>
</tr>
<tr>
<td>blur</td>
<td>1</td>
<td>The blur factor to use for re-sampling.</td>
</tr>
</tbody>
</table>

See also:

- 28.16.112  \(\text{sphereTransform}(\text{xDiameter as Integer, yDiameter as Integer, bgColor as color, filter as Integer } = 2, \text{ blur as Double } = 1.0)\)

28.16.114  \(\text{surface}(\text{cx1 as Double, y1 as Double, x2 as Double, y2 as Double, depthX as Integer, depthY as Integer, edgeColor as color, fillColor as color})\)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other surface method, but uses color instead of integer data type for passing color values.

See also:

- 28.16.115  \(\text{surface}(\text{cx1 as Double, y1 as Double, x2 as Double, y2 as Double, depthX as Integer, depthY as Integer, edgeColor as Integer, fillColor as Integer})\)
28.16.115 surface(cx1 as Double, y1 as Double, x2 as Double, y2 as Double, depthX as Integer, depthY as Integer, edgeColor as Integer, fillColor as Integer)


**Function:** Draws a parallelogram.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>x1</td>
<td>(Mandatory)</td>
<td>The x coordinate of the first end-point of one line of the parallelogram.</td>
</tr>
<tr>
<td>y1</td>
<td>(Mandatory)</td>
<td>The y coordinate of the first end-point of one line of the parallelogram.</td>
</tr>
<tr>
<td>x2</td>
<td>(Mandatory)</td>
<td>The x coordinate of the second end-point of one line of the parallelogram.</td>
</tr>
<tr>
<td>y2</td>
<td>(Mandatory)</td>
<td>The y coordinate of the second end-point of one line of the parallelogram.</td>
</tr>
<tr>
<td>depthX</td>
<td>(Mandatory)</td>
<td>The x displacement of the line segment that is parallel to the line segment above.</td>
</tr>
<tr>
<td>depthY</td>
<td>(Mandatory)</td>
<td>The y displacement of the line segment that is parallel to the line segment above.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>(Mandatory)</td>
<td>The border color. To disable border, set the edgeColor the same as the fillColor.</td>
</tr>
<tr>
<td>fillColor</td>
<td>(Mandatory)</td>
<td>The fill color. To disable filling, set the fillColor to Transparent.</td>
</tr>
</tbody>
</table>

See also:

- 28.16.114 surface(cx1 as Double, y1 as Double, x2 as Double, y2 as Double, depthX as Integer, depthY as Integer, edgeColor as color, fillColor as color)

28.16.116 text(str as string, font as string, fontIndex as Integer, fontHeight as Double, fontWidth as Double, angle as Double, vertical as boolean)

as CDTTFTextMBS


**Function:** Creates a TTFText object representing a text block.

**Notes:**

The TTFText object contains methods to measure and draw the text. This method is useful if the size of the text is needed before deciding where to draw it.

**Return Value**

The TTFText object created.

See font specification here:

http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml

See also:

- 28.16.117 text(str as string, font as string, fontIndex as Integer, fontHeight as Double, fontWidth as
28.16. CLASS CDDRAWREAMBS

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>text</td>
<td>(Mandatory)</td>
<td>A string representing the text to be drawn. See ChartDirector Mark Up Language on how to embed special tags in the text for sophisticated formatting.</td>
</tr>
<tr>
<td>font</td>
<td>(Mandatory)</td>
<td>The font name. See Font Specification for details on various font attributes.</td>
</tr>
<tr>
<td>fontIndex</td>
<td>(Mandatory)</td>
<td>The font index in case the font name refers to a font collection. An index of 0 means the first font.</td>
</tr>
<tr>
<td>fontHeight</td>
<td>(Mandatory)</td>
<td>The font height in points.</td>
</tr>
<tr>
<td>fontWidth</td>
<td>(Mandatory)</td>
<td>The font width in points.</td>
</tr>
<tr>
<td>angle</td>
<td>(Mandatory)</td>
<td>The rotation angle of the text.</td>
</tr>
<tr>
<td>vertical</td>
<td>(Mandatory)</td>
<td>A true value means the text is layout vertically (from top to bottom). A false value means the is layout horizontally (from left to right).</td>
</tr>
</tbody>
</table>

Double, angle as Double, vertical as boolean, x as Integer, y as Integer, colorvalue as color, alignment as Integer = 7)

- 28.16.118 text(str as string, font as string, fontIndex as Integer, fontHeight as Double, fontWidth as Double, angle as Double, vertical as boolean, x as Integer, y as Integer, colorvalue as Integer, alignment as Integer = 7)
- 28.16.119 text(str as string, font as string, fontsize as Double) as CDTTFTextMBS
- 28.16.120 text(str as string, font as string, fontsize as Double, x as Integer, y as Integer, colorvalue as color)
- 28.16.121 text(str as string, font as string, fontsize as Double, x as Integer, y as Integer, colorvalue as Integer)

28.16.117  text(str as string, font as string, fontIndex as Integer, fontHeight as Double, fontWidth as Double, angle as Double, vertical as boolean, x as Integer, y as Integer, colorvalue as color, alignment as Integer = 7)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other text method, but uses color instead of integer data type for passing color values.

See also:

- 28.16.116 text(str as string, font as string, fontIndex as Integer, fontHeight as Double, fontWidth as Double, angle as Double, vertical as boolean) as CDTTFTextMBS
- 28.16.118 text(str as string, font as string, fontIndex as Integer, fontHeight as Double, fontWidth as Double, angle as Double, vertical as boolean, x as Integer, y as Integer, colorvalue as Integer, alignment as Integer = 7)
- 28.16.119 text(str as string, font as string, fontsize as Double) as CDTTFTextMBS
- 28.16.120 text(str as string, font as string, fontsize as Double, x as Integer, y as Integer, colorvalue as color)
28.16.118 text(str as string, font as string, fontIndex as Integer, fontHeight as Double, fontWidth as Double, angle as Double, vertical as boolean, x as Integer, y as Integer, colorvalue as Integer, alignment as Integer = 7)


Function: Draws text.

Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>str</td>
<td>(Mandatory)</td>
<td>A string representing the text to be drawn. See ChartDirector Mark Up Language on how to embed special tags in the text for sophisticated formatting.</td>
</tr>
<tr>
<td>font</td>
<td>(Mandatory)</td>
<td>The font name. See Font Specification for details on various font attributes.</td>
</tr>
<tr>
<td>fontIndex</td>
<td>(Mandatory)</td>
<td>The font index in case the font name refers to a font collection. An index of 0 means the first font.</td>
</tr>
<tr>
<td>fontHeight</td>
<td>(Mandatory)</td>
<td>The font height in points.</td>
</tr>
<tr>
<td>fontWidth</td>
<td>(Mandatory)</td>
<td>The font width in points.</td>
</tr>
<tr>
<td>angle</td>
<td>(Mandatory)</td>
<td>The rotation angle of the text. The angle is measured in degrees in clockwise direction.</td>
</tr>
<tr>
<td>vertical</td>
<td>(Mandatory)</td>
<td>A true value means the text is layout vertically (from top to bottom). A false value means the is layout horizontally (from left to right).</td>
</tr>
<tr>
<td>x</td>
<td>(Mandatory)</td>
<td>The x coordinate of a reference point to align the text.</td>
</tr>
<tr>
<td>y</td>
<td>(Mandatory)</td>
<td>The y coordinate of a reference point to align the text.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the text.</td>
</tr>
<tr>
<td>alignment</td>
<td>TopLeft</td>
<td>The position of the text relative to the reference point. See Alignment Specification for supported alignment types.</td>
</tr>
</tbody>
</table>

See font specification here:
http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml

See also:

- 28.16.116 text(str as string, font as string, fontIndex as Integer, fontHeight as Double, fontWidth as Double, angle as Double, vertical as boolean) as CDTTFTextMBS

- 28.16.117 text(str as string, font as string, fontIndex as Integer, fontHeight as Double, fontWidth as Double, angle as Double, vertical as boolean, x as Integer, y as Integer, colorvalue as color, alignment as Integer = 7)

- 28.16.119 text(str as string, font as string, fontIndex as Integer, fontHeight as Double) as CDTTFTextMBS

- 28.16.120 text(str as string, font as string, fontIndex as Integer, fontHeight as Double, x as Integer, y as Integer, colorvalue as color)

- 28.16.121 text(str as string, font as string, fontIndex as Integer, fontHeight as Double, x as Integer, y as Integer, colorvalue as Integer)
28.16.119  text(str as string, font as string, fontsize as Double) as CDTTFTextMBS


**Function:** Creates a TTFText object representing a text block.

**Notes:**
The TTFText object contains methods to measure and draw the text. This method is useful if the size of the text is needed before deciding where the draw it.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
</table>
| str        | (Mandatory) | A string representing the text to be drawn. See ChartDirector Mark Up Lan-
|            |             | guage on how to embed special tags in the text for sophisticated formatting. |
| font       | (Mandatory) | The font name. See Font Specification for details on various font attributes. |
| fontSize   | (Mandatory) | The font size in points.                                                    |

**Return Value**
The TTFText object created.

See font specification here:
http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml

See also:
- 28.16.116 text(str as string, font as string, fontIndex as Integer, fontHeight as Double, fontWidth as Double, angle as Double, vertical as boolean) as CDTTFTextMBS
- 28.16.117 text(str as string, font as string, fontIndex as Integer, fontHeight as Double, fontWidth as Double, angle as Double, vertical as boolean, x as Integer, y as Integer, colorvalue as color, alignment as Integer = 7)
- 28.16.118 text(str as string, font as string, fontIndex as Integer, fontHeight as Double, fontWidth as Double, angle as Double, vertical as boolean, x as Integer, y as Integer, colorvalue as Integer, alignment as Integer = 7)
- 28.16.120 text(str as string, font as string, fontsize as Double, x as Integer, y as Integer, colorvalue as color)
- 28.16.121 text(str as string, font as string, fontsize as Double, x as Integer, y as Integer, colorvalue as Integer)

28.16.120  text(str as string, font as string, fontsize as Double, x as Integer, y as Integer, colorvalue as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other text method, but uses color instead of integer data type for passing color
values.

See also:

- 28.16.116 text(str as string, font as string, fontIndex as Integer, fontHeight as Double, fontWidth as Double, angle as Double, vertical as boolean) as CDTTFTextMBS

- 28.16.117 text(str as string, font as string, fontIndex as Integer, fontHeight as Double, fontWidth as Double, angle as Double, vertical as boolean, x as Integer, y as Integer, colorvalue as color, alignment as Integer = 7)

- 28.16.118 text(str as string, font as string, fontIndex as Integer, fontHeight as Double, fontWidth as Double, angle as Double, vertical as boolean, x as Integer, y as Integer, colorvalue as Integer, alignment as Integer = 7)

- 28.16.119 text(str as string, font as string, fontsize as Double) as CDTTFTextMBS

- 28.16.121 text(str as string, font as string, fontsize as Double, x as Integer, y as Integer, colorvalue as Integer)

**28.16.121 text(str as string, font as string, fontsize as Double, x as Integer, y as Integer, colorvalue as Integer)**


**Function:** Draws text.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>str</td>
<td>(Mandatory)</td>
<td>A string representing the text to be drawn. See ChartDirector Mark Up Language on how to embed special tags in the text for sophisticated formatting.</td>
</tr>
<tr>
<td>font</td>
<td>(Mandatory)</td>
<td>The font name. See Font Specification for details on various font attributes.</td>
</tr>
<tr>
<td>fontSize</td>
<td>(Mandatory)</td>
<td>The font size in points.</td>
</tr>
<tr>
<td>x</td>
<td>(Mandatory)</td>
<td>The x coordinate of the top-left corner of the text.</td>
</tr>
<tr>
<td>y</td>
<td>(Mandatory)</td>
<td>The y coordinate of the top-left corner of the text.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the text.</td>
</tr>
</tbody>
</table>

See font specification here:
http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml

See also:

- 28.16.116 text(str as string, font as string, fontIndex as Integer, fontHeight as Double, fontWidth as Double, angle as Double, vertical as boolean) as CDTTFTextMBS

- 28.16.117 text(str as string, font as string, fontIndex as Integer, fontHeight as Double, fontWidth as Double, angle as Double, vertical as boolean, x as Integer, y as Integer, colorvalue as color, alignment as Integer = 7)

- 28.16.118 text(str as string, font as string, fontIndex as Integer, fontHeight as Double, fontWidth as Double, angle as Double, vertical as boolean, x as Integer, y as Integer, colorvalue as Integer, alignment as Integer = 7)
28.16. CLASS CDDRAWAREAMBS

- 28.16.119 text(str as string, font as string, fontsize as Double) as CDTTFTextMBS
- 28.16.120 text(str as string, font as string, fontsize as Double, x as Integer, y as Integer, colorvalue as color)

28.16.122 tile(d as CDDrawAreaMBS, transparency as Integer)

**Function:** Copy another DrawArea to the current DrawArea as a wallpaper.
**Notes:**
The wallpaper image will be tiled repeatedly on the current DrawArea until the entire DrawArea is covered.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>d</td>
<td>(Mandatory)</td>
<td>A DrawArea object representing the source.</td>
</tr>
<tr>
<td>transparency</td>
<td>(Mandatory)</td>
<td>Specify the transparency level when copying the other DrawArea to the current DrawArea. A value of 0 means non-transparent. A value of 255 means totally transparent.</td>
</tr>
</tbody>
</table>

28.16.123 vCylinderTransform(xDiameter as Integer, bgColor as color, filter as Integer = 2, blur as Double = 1.0)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other vCylinderTransform method, but uses color instead of integer data type for passing color values.
**See also:**
- 28.16.124 vCylinderTransform(xDiameter as Integer, bgColor as Integer = & hFFFFFF, filter as Integer = 2, blur as Double = 1.0)

28.16.124 vCylinderTransform(xDiameter as Integer, bgColor as Integer = & hFFFFFF, filter as Integer = 2, blur as Double = 1.0)

**Function:** Wraps the drawing surface onto a vertical cylinder.
**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xDiameter</td>
<td>(Mandatory)</td>
<td>The diameter of the cylinder in pixels.</td>
</tr>
<tr>
<td>bgColor</td>
<td>FFFFFF</td>
<td>The background color used to fill the space left after transformation.</td>
</tr>
<tr>
<td>filter</td>
<td>LinearFilter</td>
<td>The filter to use for re-sampling.</td>
</tr>
<tr>
<td>blur</td>
<td>1</td>
<td>The blur factor to use for re-sampling.</td>
</tr>
</tbody>
</table>
28.16.125  vFlip

**Function:** Flip the drawing surface along the central vertical line.

28.16.126  vline(y1 as Integer, y2 as Integer, x as Integer, c as Integer)

**Function:** Draws a vertical line.
**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>y1</td>
<td>(Mandatory)</td>
<td>The y coordinate of the first end-point of the line.</td>
</tr>
<tr>
<td>y2</td>
<td>(Mandatory)</td>
<td>The y coordinate of the second end-point of the line.</td>
</tr>
<tr>
<td>x</td>
<td>(Mandatory)</td>
<td>The x coordinate of the line.</td>
</tr>
<tr>
<td>c</td>
<td>(Mandatory)</td>
<td>The color of the line.</td>
</tr>
</tbody>
</table>

28.16.127  vTriangleTransform(tHeight as Integer = -1, bgColor as Integer = & hFFFFFF, filter as Integer = 2, blur as Double = 1.0)

**Function:** Wraps the drawing surface onto a vertical triangle pointing upwards.
**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>tHeight</td>
<td>-1</td>
<td>The height of the triangle in pixels.</td>
</tr>
<tr>
<td>bgColor</td>
<td>FFFFFF</td>
<td>The background color used to fill the space left after transformation.</td>
</tr>
<tr>
<td>filter</td>
<td>LinearFilter</td>
<td>The filter to use for re-sampling.</td>
</tr>
<tr>
<td>blur</td>
<td>1</td>
<td>The blur factor to use for re-sampling.</td>
</tr>
</tbody>
</table>

See also:

- 28.16.128 vTriangleTransform(tHeight as Integer, bgColor as color, filter as Integer = 2, blur as Double = 1.0)

See also:

- 28.16.123 vCylinderTransform(xDiameter as Integer, bgColor as color, filter as Integer = 2, blur as Double = 1.0)
28.16. CLASS CDDRAWAREAMBS

28.16.128 vTriangleTransform(tHeight as Integer, bgColor as color, filter as Integer = 2, blur as Double = 1.0)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Same as the other vTriangleTransform method, but uses color instead of integer data type for passing color values.  
See also:

- 28.16.127 vTriangleTransform(tHeight as Integer = -1, bgColor as Integer = & hFFFFFF, filter as Integer = 2, blur as Double = 1.0)

28.16.129 waveTransform(period as Integer, amplitude as Double, direction as Double = 0, startAngle as Double = 0, longitudinal as boolean=false, bgColor as Integer = & hFFFFFF, filter as Integer = 2, blur as Double = 1.0)

**Function:** Moves the pixels on the drawing surface according to a sinusoidal function to achieve a wave effect.  
**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>period</td>
<td>(Mandatory)</td>
<td>The period of the wave in pixels.</td>
</tr>
<tr>
<td>amplitude</td>
<td>(Mandatory)</td>
<td>The amplitude of the wave in pixels.</td>
</tr>
<tr>
<td>direction</td>
<td>0</td>
<td>The propagation direction of the wave. The upward pointing direction is 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>degree, and the angle is measured clockwise.</td>
</tr>
<tr>
<td>startAngle</td>
<td>0</td>
<td>The initial phase angle of the wave in degrees.</td>
</tr>
<tr>
<td>longitudinal</td>
<td>false</td>
<td>Determine if the wave is transversal or longitudinal. true means transversal.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>false means longitudinal.</td>
</tr>
<tr>
<td>bgColor</td>
<td>FFFFFFFF</td>
<td>The background color used to fill the space left after transformation.</td>
</tr>
<tr>
<td>filter</td>
<td>LinearFilter</td>
<td>The filter to use for re-sampling.</td>
</tr>
<tr>
<td>blur</td>
<td>1</td>
<td>The blur factor to use for re-sampling.</td>
</tr>
</tbody>
</table>

See also:

- 28.16.130 waveTransform(period as Integer, amplitude as Double, direction as Double, startAngle as Double, longitudinal as boolean, bgColor as color, filter as Integer = 2, blur as Double = 1.0)

28.16.130 waveTransform(period as Integer, amplitude as Double, direction as Double, startAngle as Double, longitudinal as boolean, bgColor as color, filter as Integer = 2, blur as Double = 1.0)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Same as the other waveTransform method, but uses color instead of integer data type for passing
color values.
See also:

- 28.16.129 waveTransform(period as Integer, amplitude as Double, direction as Double = 0, startAngle as Double = 0, longitudinal as boolean=false, bgColor as Integer = &hFFFFFF, filter as Integer = 2, blur as Double = 1.0)
28.17.  CLASS CDDRAWOBJMBS

28.17  class CDDrawObjMBS

28.17.1  class CDDrawObjMBS

Function: This is the base class for several drawing related subclasses.
Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

28.17.2  Methods

28.17.3  Constructor

MBS ChartDirector Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The private constructor.

28.17.4  paint(d as CDDrawAreaMBS)

Function: Draws the content to this object into a drawarea.

28.17.5  setZOrder(z as Integer)

Function: Sets the z-order.
28.18 **class CDFinanceChartMBS**

28.18.1 **class CDFinanceChartMBS**


**Function:** FinanceChart is a financial charting library built on top of the main ChartDirector library.

**Notes:**

It extends CDMultiChartMBS by implementing many financial indicators, and allowing complex financial charts to be composed easily.

**Key Features:**

- **Arbitrary Financial Chart Composition:** Allows a complex financial chart to be constructed by stacking a main financial chart with arbitrary number of indicator charts in any order.

- **Main Chart Layers:** The main chart can show information in Candlestick or OHLC, and/or various price lines, such as closing price line, weighted close line, typical price line or median price line.

- **Moving Averages:** Chart can include arbitrary number of moving average lines of configurable types and periods. Supports simple, exponential, triangular and weighted moving averages.

- **Parabolic SAR:** A parabolic SAR indicator can be added to the main price chart.

- **Bands and Envelops:** Built-in Bollinger Band layer, Donchian Channel layer, and moving average envelopes. Also supports custom-defined bands.

- **Volume Bars:** Volume Bars can be displayed as part of the main chart, or as a separate indicator chart.

- **Axis Styles:** Axis can be log or linear scale, and can display on left or right side of the chart.

- **Built-In Indicators:** Accumulation/Distribution, Aroon Up/Down, Aroon Oscillator, Average Directional Index, Average True Range (including raw True Range), Bollinger Band Width, Commodity Channel Index, Chaikin Money Flow, Chaikin Oscillator, Chaikin Volatility, Close Location Value, Detrended Price Oscillator, Donchian Channel Width, Ease of Movement, Fast Stochastic, MACD, Mass Index, Money Flow Index, Momentum, Negative Volume Index, On Balance Volume, Performance, Percentage Price Oscillator, Positive Volume Index, Percentage Volume Oscillator, Price Volume Trend, Rate of Change, Relative Strength Index, Slow Stochastic, Standard Deviation, Stochastic RSI, TRIX, Ultimate Oscillator, Volume, William % R.

- **Custom Lines and Indicators:** Extensible design allows developers to implement additional lines and indicator types.

- **Customizable Look and Feel:** Extensible design allows developers to implement additional lines and indicator types.

**Using FinanceChart:**

You create an instance of FinanceChart. Next, you may add data to it using setData. After that, you may add the main chart (addMainChart) and other indicator charts to display the data graphically. These charts
may be added in any order.

For the main chart, you may:

- Display price information using Candlesticks (addCandleStick) or HLOC (addHLOC) symbols
- Add various price lines (addCloseLine, addWeightedClose, addTypicalPrice, addMedianPrice)
- Add moving average lines of different types and periods (addSimpleMovingAvg, addExpMovingAvg, addTriMovingAvg, addWeightedMovingAvg)
- Add Parabolic SAR (addParabolicSAR)
- Add price bands or envelops: (addBollingerBand, addDonchianChannel, addEnvelop)
- Add custom lines or bands (addLineIndicator2, addBand)
- Add volume bars (addVolBars)

For indicator charts, FinanceChart includes a wide variety of indicators. Please refer to the table below for details. You may also add your own custom indicator chart using addLineIndicator and addBarIndicator.

In addition to chart building methods, FinanceChart also has a number of chart formatting methods, such as addPlotAreaTitle to add chart title, setPlotAreaStyle to control background color and grid lines, setDateLabelFormat to control date/time formatting, etc.

Furthermore, as FinanceChart is a subclass of CDMultiChartMBS, and the main and indicator charts are implemented as XYChart objects, they can use the powerful ChartDirector API for formatting (eg. background images, custom logos, custom text boxes, metallic colors, etc).

Subclass of the CDMultiChartMBS class.

### 28.18.2 Methods

#### 28.18.3 addAccDist(height as Integer, ColorValue as color) as CDXYChartMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Same as the other addAccDist method, but uses color instead of integer data type for passing color values.

See also:

- 28.18.4 addAccDist(height as Integer, ColorValue as Integer) as CDXYChartMBS
28.18.4 addAccDist(height as Integer, ColorValue as Integer) as CDXYChartMBS


Function: Adds an Accumulation/Distribution indicator chart.

Notes:

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the indicator chart in pixels.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the indicator line.</td>
</tr>
</tbody>
</table>

Return Value
A CDXYChartMBS object representing the chart created.

See also:

- 28.18.3 addAccDist(height as Integer, ColorValue as color) as CDXYChartMBS

28.18.5 addADX(height as Integer, period as Integer, posColor as color, negColor as color, ColorValue as color) as CDXYChartMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Same as the other addADX method, but uses color instead of integer data type for passing color values.

See also:

- 28.18.6 addADX(height as Integer, period as Integer, posColor as Integer, negColor as Integer, ColorValue as Integer) as CDXYChartMBS

28.18.6 addADX(height as Integer, period as Integer, posColor as Integer, negColor as Integer, ColorValue as Integer) as CDXYChartMBS


Function: Adds an Average Directional Index indicators chart.

Notes:

Arguments:

Return Value
A CDXYChartMBS object representing the chart created.

See also:

- 28.18.5 addADX(height as Integer, period as Integer, posColor as color, negColor as color, ColorValue as color) as CDXYChartMBS
28.18. CLASS CDFINANCECHARTMBS

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the indicator chart in pixels.</td>
</tr>
<tr>
<td>period</td>
<td>(Mandatory)</td>
<td>The period to compute the indicator.</td>
</tr>
<tr>
<td>posColor</td>
<td>(Mandatory)</td>
<td>The color of the Positive Directional Index line.</td>
</tr>
<tr>
<td>negColor</td>
<td>(Mandatory)</td>
<td>The color of the Negative Directional Index line.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the Average Directional Index line.</td>
</tr>
</tbody>
</table>

28.18.7 addAroon(height as Integer, period as Integer, upColor as color, downColor as color) as CDXYChartMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Same as the other addAroon method, but uses color instead of integer data type for passing color values.

See also:

- 28.18.8 addAroon(height as Integer, period as Integer, upColor as Integer, downColor as Integer) as CDXYChartMBS

28.18.8 addAroon(height as Integer, period as Integer, upColor as Integer, downColor as Integer) as CDXYChartMBS


Function: Adds an Aroon Up/Down indicators chart.

Notes:

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the indicator chart in pixels.</td>
</tr>
<tr>
<td>period</td>
<td>(Mandatory)</td>
<td>The period to compute the indicators.</td>
</tr>
<tr>
<td>upColor</td>
<td>(Mandatory)</td>
<td>The color of the Aroon Up indicator line.</td>
</tr>
<tr>
<td>downColor</td>
<td>(Mandatory)</td>
<td>The color of the Aroon Down indicator line.</td>
</tr>
</tbody>
</table>

Return Value

A CDXYChartMBS object representing the chart created.

See also:

- 28.18.7 addAroon(height as Integer, period as Integer, upColor as color, downColor as color) as CDXYChartMBS


**CHAPTER 28. CHARTDIRECTOR**

### 28.18.9 addAroonOsc(height as Integer, period as Integer, ColorValue as color) as CDXYChartMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addAroonOsc method, but uses color instead of integer data type for passing color values.

See also:

- 28.18.10 addAroonOsc(height as Integer, period as Integer, ColorValue as Integer) as CDXYChartMBS

### 28.18.10 addAroonOsc(height as Integer, period as Integer, ColorValue as Integer) as CDXYChartMBS


**Function:** Adds an Aroon Oscillator indicator chart.

**Notes:**

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the indicator chart in pixels.</td>
</tr>
<tr>
<td>period</td>
<td>(Mandatory)</td>
<td>The period to compute the indicator.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the indicator line.</td>
</tr>
</tbody>
</table>

**Return Value**

A CDXYChartMBS object representing the chart created.

See also:

- 28.18.9 addAroonOsc(height as Integer, period as Integer, ColorValue as color) as CDXYChartMBS

### 28.18.11 addATR(height as Integer, period as Integer, color1 as color, color2 as color) as CDXYChartMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addATR method, but uses color instead of integer data type for passing color values.

See also:

- 28.18.12 addATR(height as Integer, period as Integer, color1 as Integer, color2 as Integer) as CDXYChartMBS

- 28.18.12 addATR(height as Integer, period as Integer, color1 as Integer, color2 as Integer) as CDXYChartMBS
28.18.12 addATR(height as Integer, period as Integer, color1 as Integer, color2 as Integer) as CDXYChartMBS


**Function:** Adds an Average True Range indicators chart.

**Notes:**

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the indicator chart in pixels.</td>
</tr>
<tr>
<td>period</td>
<td>(Mandatory)</td>
<td>The period to compute the indicator.</td>
</tr>
<tr>
<td>color1</td>
<td>(Mandatory)</td>
<td>The color of the True Range line.</td>
</tr>
<tr>
<td>color2</td>
<td>(Mandatory)</td>
<td>The color of the Average True Range line.</td>
</tr>
</tbody>
</table>

**Return Value**

A CDXYChartMBS object representing the chart created.

See also:

- 28.18.11 addATR(height as Integer, period as Integer, color1 as color, color2 as color) as CDXYChartMBS

28.18.13 addBand(upperLine() as Double, lowerLine() as Double, LineColor as color, FillColor as color, Name as string) as CDInterLineLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addBand method, but uses color instead of integer data type for passing color values.

See also:

- 43.11.4 addBand(upperLine() as Double, lowerLine() as Double, LineColor as Integer, FillColor as Integer, Name as string) as CDInterLineLayerMBS

28.18.14 addBand(upperLine() as Double, lowerLine() as Double, LineColor as Integer, FillColor as Integer, Name as string) as CDInterLineLayerMBS


**Function:** Adds a generic band to the main finance chart.

**Notes:**

This method is used internally by other methods to add various bands (eg. Bollinger band, Donchian channels, etc).
Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>upperLine</td>
<td>(Mandatory)</td>
<td>The data series for the upper band line.</td>
</tr>
<tr>
<td>lowerLine</td>
<td>(Mandatory)</td>
<td>The data series for the lower band line.</td>
</tr>
<tr>
<td>lineColor</td>
<td>(Mandatory)</td>
<td>The color of the upper and lower band line.</td>
</tr>
<tr>
<td>fillColor</td>
<td>(Mandatory)</td>
<td>The color to fill the region between the upper and lower band lines.</td>
</tr>
<tr>
<td>name</td>
<td>(Mandatory)</td>
<td>The name of the band.</td>
</tr>
</tbody>
</table>

Return Value
An CDInterLineLayerMBS object representing the filled region.

See also:
- 28.18.13 addBand(upperLine() as Double, lowerLine() as Double, LineColor as color, FillColor as color, Name as string) as CDInterLineLayerMBS

28.18.15 addBarIndicator(chart as CDXYChartMBS, data() as Double, ColorValue as color, name as string) as CDBarLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other addBarIndicator method, but uses color instead of integer data type for passing color values.

See also:
- 28.18.16 addBarIndicator(chart as CDXYChartMBS, data() as Double, ColorValue as Integer, name as string) as CDBarLayerMBS
- 28.18.17 addBarIndicator(height as Integer, data() as Double, ColorValue as color, name as string) as CDXYChartMBS
- 28.18.18 addBarIndicator(height as Integer, data() as Double, ColorValue as Integer, name as string) as CDXYChartMBS

28.18.16 addBarIndicator(chart as CDXYChartMBS, data() as Double, ColorValue as Integer, name as string) as CDBarLayerMBS

**Function:** Adds a bar layer to an existing indicator chart.
**Notes:**

Arguments:

Return Value
A CDBarLayerMBS object representing the bar layer created.

See also:
**28.18.15** addBarIndicator(chart as CDXYChartMBS, data() as Double, ColorValue as color, name as string) as CDBarLayerMBS

**28.18.17** addBarIndicator(height as Integer, data() as Double, ColorValue as color, name as string) as CDXYChartMBS

**28.18.18** addBarIndicator(height as Integer, data() as Double, ColorValue as Integer, name as string) as CDXYChartMBS

---

**28.18.17** addBarIndicator(height as Integer, data() as Double, ColorValue as color, name as string) as CDXYChartMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Same as the other addBarIndicator method, but uses color instead of integer data type for passing color values.

See also:

- **28.18.15** addBarIndicator(chart as CDXYChartMBS, data() as Double, ColorValue as color, name as string) as CDBarLayerMBS
- **28.18.16** addBarIndicator(chart as CDXYChartMBS, data() as Double, ColorValue as Integer, name as string) as CDBarLayerMBS
- **28.18.18** addBarIndicator(height as Integer, data() as Double, ColorValue as Integer, name as string) as CDXYChartMBS

**28.18.18** addBarIndicator(height as Integer, data() as Double, ColorValue as Integer, name as string) as CDXYChartMBS

MBS ChartDirector Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds a generic bar indicator chart.

**Notes:**

Arguments:

- **Return Value**
  - A CDXYChartMBS object representing the chart created.
  
See also:
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28.18.15 `addBarIndicator(chart as CDXYChartMBS, data() as Double, ColorValue as color, name as string)` as CDBarLayerMBS

- 28.18.16 `addBarIndicator(chart as CDXYChartMBS, data() as Double, ColorValue as Integer, name as string)` as CDBarLayerMBS

- 28.18.17 `addBarIndicator(height as Integer, data() as Double, ColorValue as color, name as string)` as CDXYChartMBS

28.18.19 `addBollingerBand(period as Integer, bandWidth as Double, lineColor as color, FillColor as color)` as CDInterLineLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addBollingerBand method, but uses color instead of integer data type for passing color values.

See also:

- 28.18.20 `addBollingerBand(period as Integer, bandWidth as Double, lineColor as Integer, FillColor as Integer)` as CDInterLineLayerMBS

28.18.20 `addBollingerBand(period as Integer, bandWidth as Double, lineColor as Integer, FillColor as Integer)` as CDInterLineLayerMBS


**Function:** Adds a Bollinger band to the main chart.

**Notes:**

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>period</td>
<td>(Mandatory)</td>
<td>The period to compute the band.</td>
</tr>
<tr>
<td>bandWidth</td>
<td>(Mandatory)</td>
<td>The half-width of the band in terms multiples of standard deviation. Typically 2 is used.</td>
</tr>
<tr>
<td>lineColor</td>
<td>(Mandatory)</td>
<td>The color of the lines defining the upper and lower limits.</td>
</tr>
<tr>
<td>fillColor</td>
<td>(Mandatory)</td>
<td>The color to fill the regional within the band.</td>
</tr>
</tbody>
</table>

Return Value
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An CDInterLineLayerMBS object representing the band created.
See also:

- 28.18.19 addBollingerBand(period as Integer, bandWidth as Double, lineColor as color, FillColor as color) as CDInterLineLayerMBS

28.18.21  addBollingerWidth(height as Integer, period as Integer, width as Double, colorValue as color) as CDXYChartMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other addBollingerWidth method, but uses color instead of integer data type for passing color values.
See also:

- 28.18.22 addBollingerWidth(height as Integer, period as Integer, width as Double, colorValue as Integer) as CDXYChartMBS

28.18.22  addBollingerWidth(height as Integer, period as Integer, width as Double, colorValue as Integer) as CDXYChartMBS

Function: Adds a Bollinger Band Width indicator chart.
Notes:

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the indicator chart in pixels.</td>
</tr>
<tr>
<td>period</td>
<td>(Mandatory)</td>
<td>The period to compute the indicator.</td>
</tr>
<tr>
<td>width</td>
<td>(Mandatory)</td>
<td>The band width to compute the indicator.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the indicator line.</td>
</tr>
</tbody>
</table>

Return Value
A CDXYChartMBS object representing the chart created.
See also:

- 28.18.21 addBollingerWidth(height as Integer, period as Integer, width as Double, colorValue as color) as CDXYChartMBS
28.18.23 addCandleStick(upColor as color, downColor as color) as CDCandleStickLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addCandleStick method, but uses color instead of integer data type for passing color values.

See also:

- 28.18.24 addCandleStick(upColor as Integer, downColor as Integer) as CDCandleStickLayerMBS

28.18.24 addCandleStick(upColor as Integer, downColor as Integer) as CDCandleStickLayerMBS


**Function:** Adds a candlestick layer to the main chart.

**Notes:**

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>upColor</td>
<td>(Mandatory)</td>
<td>The candle color for a up day.</td>
</tr>
<tr>
<td>downColor</td>
<td>(Mandatory)</td>
<td>The candle color for a down day.</td>
</tr>
</tbody>
</table>

**Return Value**

A CDCandleStickLayerMBS object representing the candlestick layer created.

See also:

- 28.18.23 addCandleStick(upColor as color, downColor as color) as CDCandleStickLayerMBS

28.18.25 addCCI(height as Integer, period as Integer, ColorValue as color, range as Double, upColor as color, downColor as color) as CDXYChartMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addCCI method, but uses color instead of integer data type for passing color values.

See also:

- 28.18.26 addCCI(height as Integer, period as Integer, ColorValue as Integer, range as Double, upColor as Integer, downColor as Integer) as CDXYChartMBS
28.18.26 addCCI(height as Integer, period as Integer, ColorValue as Integer, range as Double, upColor as Integer, downColor as Integer) as CDXYChartMBS


**Function:** Adds a Community Channel Index indicator chart.

**Notes:**

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the indicator chart in pixels.</td>
</tr>
<tr>
<td>period</td>
<td>(Mandatory)</td>
<td>The period to compute the indicator.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the indicator line.</td>
</tr>
<tr>
<td>range</td>
<td>(Mandatory)</td>
<td>The distance between the middle line and the upper and lower threshold lines.</td>
</tr>
<tr>
<td>upColor</td>
<td>(Mandatory)</td>
<td>The fill color when the indicator exceeds the upper threshold line.</td>
</tr>
<tr>
<td>downColor</td>
<td>(Mandatory)</td>
<td>The fill color when the indicator falls below the lower threshold line.</td>
</tr>
</tbody>
</table>

**Return Value**

A CDXYChartMBS object representing the chart created.

**See also:**

- 28.18.25 addCCI(height as Integer, period as Integer, ColorValue as color, range as Double, upColor as color, downColor as color) as CDXYChartMBS

28.18.27 addChaikinMoneyFlow(height as Integer, period as Integer, ColorValue as color) as CDXYChartMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addChaikinMoneyFlow method, but uses color instead of integer data type for passing color values.

**See also:**

- 28.18.28 addChaikinMoneyFlow(height as Integer, period as Integer, ColorValue as Integer) as CDXYChartMBS

28.18.28 addChaikinMoneyFlow(height as Integer, period as Integer, ColorValue as Integer) as CDXYChartMBS


**Function:** Adds a Chaikin Money Flow indicator chart.

**Notes:**
### Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the indicator chart in pixels.</td>
</tr>
<tr>
<td>period</td>
<td>(Mandatory)</td>
<td>The period to compute the indicator.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the indicator line.</td>
</tr>
</tbody>
</table>

#### Return Value

A CDXYChartMBS object representing the chart created.

#### See also:

- 28.18.27 addChaikinMoneyFlow(height as Integer, period as Integer, ColorValue as color) as CDXYChartMBS
- 28.18.29 addChaikinOscillator(height as Integer, ColorValue as color) as CDXYChartMBS
- 28.18.30 addChaikinOscillator(height as Integer, ColorValue as Integer) as CDXYChartMBS

### Function:

**addChaikinOscillator**

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addChaikinOscillator method, but uses color instead of integer data type for passing color values.

**See also:**

- 28.18.30 addChaikinOscillator(height as Integer, ColorValue as Integer) as CDXYChartMBS

### Notes:

#### Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the indicator chart in pixels.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the indicator line.</td>
</tr>
</tbody>
</table>

#### Return Value

A CDXYChartMBS object representing the chart created.

#### See also:

- 28.18.29 addChaikinOscillator(height as Integer, ColorValue as color) as CDXYChartMBS
- 28.18.30 addChaikinOscillator(height as Integer, ColorValue as Integer) as CDXYChartMBS
28.18.31  **addChaikinVolatility**(height as Integer, period1 as Integer, period2 as Integer, ColorValue as color) as CDXYChartMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addChaikinVolatility method, but uses color instead of integer data type for passing color values.

See also:

- 28.18.32 addChaikinVolatility(height as Integer, period1 as Integer, period2 as Integer, ColorValue as Integer) as CDXYChartMBS

28.18.32  **addChaikinVolatility**(height as Integer, period1 as Integer, period2 as Integer, ColorValue as Integer) as CDXYChartMBS


**Function:** Adds a Chaikin Volatility indicator chart.

**Notes:**

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the indicator chart in pixels.</td>
</tr>
<tr>
<td>period1</td>
<td>(Mandatory)</td>
<td>The period to smooth the range.</td>
</tr>
<tr>
<td>period2</td>
<td>(Mandatory)</td>
<td>The period to compute the rate of change of the smoothed range.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the indicator line.</td>
</tr>
</tbody>
</table>

**Return Value**

A CDXYChartMBS object representing the chart created.

See also:

- 28.18.31 addChaikinVolatility(height as Integer, period1 as Integer, period2 as Integer, ColorValue as color) as CDXYChartMBS

28.18.33  **addCloseLine**(ColorValue as color) as CDLineLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addCloseLine method, but uses color instead of integer data type for passing color values.

See also:

- 28.18.34 addCloseLine(ColorValue as Integer) as CDLineLayerMBS
28.18.34  **addCloseLine(ColorValue as Integer) as CDLineLayerMBS**

**Function:** Adds a closing price line on the main chart.  
**Notes:**

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the line.</td>
</tr>
</tbody>
</table>

**Return Value**
A CDLineLayerMBS object representing the line created.

See also:

- 28.18.33 addCloseLine(ColorValue as color) as CDLineLayerMBS

28.18.35  **addCLV(height as Integer, ColorValue as color) as CDXYChartMBS**

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Same as the other addCLV method, but uses color instead of integer data type for passing color values.  
See also:

- 28.18.36 addCLV(height as Integer, ColorValue as Integer) as CDXYChartMBS

28.18.36  **addCLV(height as Integer, ColorValue as Integer) as CDXYChartMBS**

**Function:** Adds a Close Location Value indicator chart.  
**Notes:**

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the indicator chart in pixels.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the indicator line.</td>
</tr>
</tbody>
</table>

**Return Value**
A CDXYChartMBS object representing the chart created.

See also:

- 28.18.35 addCLV(height as Integer, ColorValue as color) as CDXYChartMBS
28.18. addComparison(data() as Double, ColorValue as color, Name as string) as CDLineLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other addComparison method, but uses color instead of integer data type for passing color values.
See also:

- 28.18.38 addComparison(data() as Double, ColorValue as Integer, Name as string) as CDLineLayerMBS

28.18.38 addComparison(data() as Double, ColorValue as Integer, Name as string) as CDLineLayerMBS

Function: Adds a data series to the main chart for comparison with the closing price.
Notes:
The data series added will be scaled so that the first visible point in the data series will coincide the first visible point of the main closing price. This facilitate comparing the performance of the closing price with the data series. The data series typically is the closing price of another stock, or the value of a market index.

Arguments:

Argument | Default | Description
---|---|---
data | (Mandatory) | An array of numbers representing the data series.
color | (Mandatory) | The color of the line.
name | (Mandatory) | The name of the data series.

Return Value:
A LineLayer object representing the comparison line created.
See also:

- 28.18.37 addComparison(data() as Double, ColorValue as color, Name as string) as CDLineLayerMBS

28.18.39 addDonchianChannel(period as Integer, lineColor as color, FillColor as color) as CDInterLineLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other addDonchianChannel method, but uses color instead of integer data type for passing color values.
See also:
• 28.18.40 addDonchianChannel(period as Integer, lineColor as Integer, FillColor as Integer) as CDInterLineLayerMBS

28.18.40 addDonchianChannel(period as Integer, lineColor as Integer, FillColor as Integer) as CDInterLineLayerMBS


**Function:** Adds a Donchian channel to the main chart.

**Notes:**

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>period</td>
<td>(Mandatory)</td>
<td>The period to compute the band.</td>
</tr>
<tr>
<td>lineColor</td>
<td>(Mandatory)</td>
<td>The color of the lines defining the upper and lower limits.</td>
</tr>
<tr>
<td>fillColor</td>
<td>(Mandatory)</td>
<td>The color to fill the regional within the band.</td>
</tr>
</tbody>
</table>

**Return Value**

An CDInterLineLayerMBS object representing the band created.

See also:

• 28.18.39 addDonchianChannel(period as Integer, lineColor as color, FillColor as color) as CDInterLineLayerMBS

28.18.41 addDonchianWidth(height as Integer, period as Integer, ColorValue as color) as CDXYChartMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addDonchianWidth method, but uses color instead of integer data type for passing color values.

See also:

• 28.18.42 addDonchianWidth(height as Integer, period as Integer, ColorValue as Integer) as CDXYChartMBS

28.18.42 addDonchianWidth(height as Integer, period as Integer, ColorValue as Integer) as CDXYChartMBS


**Function:** Adds a Donchian Channel Width indicator chart.

**Notes:**
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<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the indicator chart in pixels.</td>
</tr>
<tr>
<td>period</td>
<td>(Mandatory)</td>
<td>The period to compute the indicator.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the indicator line.</td>
</tr>
</tbody>
</table>

Arguments:

Return Value
A CDXYChartMBS object representing the chart created.
See also:

- 28.18.41 addDonchianWidth(height as Integer, period as Integer, ColorValue as color) as CDXYChartMBS

28.18.43 addDPO(height as Integer, period as Integer, ColorValue as color) as CDXYChartMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other addDPO method, but uses color instead of integer data type for passing color values.
See also:

- 28.18.44 addDPO(height as Integer, period as Integer, ColorValue as Integer) as CDXYChartMBS

28.18.44 addDPO(height as Integer, period as Integer, ColorValue as Integer) as CDXYChartMBS

Function: Adds a Detrended Price Oscillator indicator chart.
Notes:
Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the indicator chart in pixels.</td>
</tr>
<tr>
<td>period</td>
<td>(Mandatory)</td>
<td>The period to compute the indicator.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the indicator line.</td>
</tr>
</tbody>
</table>

Return Value
A CDXYChartMBS object representing the chart created.
See also:
28.18.43 addDPO(height as Integer, period as Integer, ColorValue as color) as CDXYChartMBS

28.18.45 addEaseOfMovement(height as Integer, period as Integer, ColorValue1 as color, ColorValue2 as color) as CDXYChartMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Same as the other addEaseOfMovement method, but uses color instead of integer data type for passing color values.

See also:

28.18.45 addEaseOfMovement(height as Integer, period as Integer, ColorValue1 as color, ColorValue2 as color) as CDXYChartMBS

28.18.46 addEaseOfMovement(height as Integer, period as Integer, ColorValue1 as Integer, ColorValue2 as Integer) as CDXYChartMBS


Function: Adds a Ease of Movement indicator chart.

Notes:

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the indicator chart in pixels.</td>
</tr>
<tr>
<td>period</td>
<td>(Mandatory)</td>
<td>The period to smooth the indicator.</td>
</tr>
<tr>
<td>color1</td>
<td>(Mandatory)</td>
<td>The color of the indicator line.</td>
</tr>
<tr>
<td>color2</td>
<td>(Mandatory)</td>
<td>The color of the smoothed indicator line.</td>
</tr>
</tbody>
</table>

Return Value
A CDXYChartMBS object representing the chart created.

See also:

28.18.46 addEaseOfMovement(height as Integer, period as Integer, ColorValue1 as Integer, ColorValue2 as Integer) as CDXYChartMBS

28.18.47 addEnvelop(period as Integer, range as Double, lineColor as color, FillColor as color) as CDInterLineLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Same as the other addEnvelop method, but uses color instead of integer data type for passing color values.

See also:
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- 28.18.48 addEnvelop(period as Integer, range as Double, lineColor as Integer, FillColor as Integer) as CDInterLineLayerMBS

28.18.48  addEnvelop(period as Integer, range as Double, lineColor as Integer, FillColor as Integer) as CDInterLineLayerMBS


**Function:** Adds a price envelop to the main chart.

**Notes:**
The price envelop is defined as a ratio around a moving average. For example, a ratio of 0.2 means 20% above and below the moving average.

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>period</td>
<td>(Mandatory)</td>
<td>The period for the moving average.</td>
</tr>
<tr>
<td>range</td>
<td>(Mandatory)</td>
<td>The ratio above and below the moving average.</td>
</tr>
<tr>
<td>lineColor</td>
<td>(Mandatory)</td>
<td>The color of the lines defining the upper and lower limits.</td>
</tr>
<tr>
<td>fillColor</td>
<td>(Mandatory)</td>
<td>The color to fill the regional within the band.</td>
</tr>
</tbody>
</table>

**Return Value**
An CDInterLineLayerMBS object representing the band created.

See also:
- 28.18.47 addEnvelop(period as Integer, range as Double, lineColor as color, FillColor as color) as CDInterLineLayerMBS

28.18.49  addExpMovingAvg(period as Integer, ColorValue as color) as CDLineLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addExpMovingAvg method, but uses color instead of integer data type for passing color values.

See also:
- 28.18.50 addExpMovingAvg(period as Integer, ColorValue as Integer) as CDLineLayerMBS

28.18.50  addExpMovingAvg(period as Integer, ColorValue as Integer) as CDLineLayerMBS


**Function:** Adds an exponential moving average line on the main chart.
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Notes:

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>period</td>
<td>(Mandatory)</td>
<td>The moving average period</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the line.</td>
</tr>
</tbody>
</table>

Return Value
A CDLineLayerMBS object representing the line created.

See also:

- 28.18.49 addExpMovingAvg(period as Integer, ColorValue as color) as CDLineLayerMBS

28.18.51 addFastStochastic(height as Integer, period1 as Integer, period2 as Integer, ColorValue1 as color, ColorValue2 as color) as CDXYChartMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other addFastStochastic method, but uses color instead of integer data type for passing color values.

See also:

- 28.18.52 addFastStochastic(height as Integer, period1 as Integer, period2 as Integer, ColorValue1 as Integer, ColorValue2 as Integer) as CDXYChartMBS

28.18.52 addFastStochastic(height as Integer, period1 as Integer, period2 as Integer, ColorValue1 as Integer, ColorValue2 as Integer) as CDXYChartMBS

Function: Adds a Fast Stochastic indicator chart.

Notes:

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the indicator chart in pixels.</td>
</tr>
<tr>
<td>period1</td>
<td>(Mandatory)</td>
<td>The period to compute the % K line.</td>
</tr>
<tr>
<td>period2</td>
<td>(Mandatory)</td>
<td>The period to compute the % D line.</td>
</tr>
<tr>
<td>color1</td>
<td>(Mandatory)</td>
<td>The color of the % K line.</td>
</tr>
<tr>
<td>color2</td>
<td>(Mandatory)</td>
<td>The color of the % D line.</td>
</tr>
</tbody>
</table>
28.18. **CLASS CDFINANCECHARTMBS**

Return Value
A CDXYChartMBS object representing the chart created.
See also:

- 28.18.51 addFastStochastic(height as Integer, period1 as Integer, period2 as Integer, ColorValue1 as color, ColorValue2 as color) as CDXYChartMBS

28.18.53 **addHLOC(upColor as color, downColor as color) as CDHLOCLayerMBS**

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other addHLOC method, but uses color instead of integer data type for passing color values.
See also:

- 28.18.54 addHLOC(upColor as Integer, downColor as Integer) as CDHLOCLayerMBS

28.18.54 **addHLOC(upColor as Integer, downColor as Integer) as CDHLOCLayerMBS**

Function: Adds a HLOC layer to the main chart.
Notes:
Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>upColor</td>
<td>(Mandatory)</td>
<td>The candle color for a up day.</td>
</tr>
<tr>
<td>downColor</td>
<td>(Mandatory)</td>
<td>The candle color for a down day.</td>
</tr>
</tbody>
</table>

Return Value
A CDHLOCLayerMBS object representing the HLOC layer created.
See also:

- 28.18.53 addHLOC(upColor as color, downColor as color) as CDHLOCLayerMBS

28.18.55 **addIndicator(height as Integer) as CDXYChartMBS**

Function: Adds a blank indicator chart to the finance chart.
Notes:
Used internally to add other indicators. Override to change the default formatting (eg. axis fonts, etc.) of the various indicators.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the chart in pixels.</td>
</tr>
</tbody>
</table>

Return Value
A CDXYChartMBS object representing the chart created.

28.18.56  \texttt{addLineIndicator(chart as CDXYChartMBS, data() as Double, ColorValue as color, name as string) as CDLineLayerMBS}

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

\textbf{Function:} Same as the other \texttt{addLineIndicator} method, but uses color instead of integer data type for passing color values.

See also:

- 28.18.56 \texttt{addLineIndicator(chart as CDXYChartMBS, data() as Double, ColorValue as color, name as string) as CDLineLayerMBS} 4702
- 28.18.57 \texttt{addLineIndicator(chart as CDXYChartMBS, data() as Double, ColorValue as Integer, name as string) as CDLineLayerMBS} 4702
- 28.18.58 \texttt{addLineIndicator(height as Integer, data() as Double, ColorValue as color, name as string) as CDXYChartMBS} 4703
- 28.18.59 \texttt{addLineIndicator(height as Integer, data() as Double, ColorValue as Integer, name as string) as CDXYChartMBS} 4703

28.18.57  \texttt{addLineIndicator(chart as CDXYChartMBS, data() as Double, ColorValue as Integer, name as string) as CDLineLayerMBS}


\textbf{Function:} Adds a line to an existing indicator chart.

\textbf{Notes:}

Arguments:

Return Value
A CDLineLayerMBS object representing the line created.

See also:

- 28.18.56 \texttt{addLineIndicator(chart as CDXYChartMBS, data() as Double, ColorValue as color, name as string) as CDLineLayerMBS} 4702
### 28.18. CLASS CDFINANCECHARTMBS

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>c</td>
<td>(Mandatory)</td>
<td>The indicator chart to add the line to.</td>
</tr>
<tr>
<td>data</td>
<td>(Mandatory)</td>
<td>The data series of the indicator line.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the indicator line.</td>
</tr>
<tr>
<td>name</td>
<td>(Mandatory)</td>
<td>The name of the indicator.</td>
</tr>
</tbody>
</table>

- 28.18.58 `addLineIndicator(height as Integer, data() as Double, ColorValue as color, name as string) as CDXYChartMBS`
- 28.18.59 `addLineIndicator(height as Integer, data() as Double, ColorValue as Integer, name as string) as CDXYChartMBS`

#### 28.18.58 `addLineIndicator(height as Integer, data() as Double, ColorValue as color, name as string) as CDXYChartMBS`

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other `addLineIndicator` method, but uses color instead of integer data type for passing color values.

See also:
- 28.18.56 `addLineIndicator(chart as CDXYChartMBS, data() as Double, ColorValue as color, name as string) as CDLineLayerMBS`
- 28.18.57 `addLineIndicator(chart as CDXYChartMBS, data() as Double, ColorValue as Integer, name as string) as CDLineLayerMBS`
- 28.18.59 `addLineIndicator(height as Integer, data() as Double, ColorValue as Integer, name as string) as CDXYChartMBS`

#### 28.18.59 `addLineIndicator(height as Integer, data() as Double, ColorValue as Integer, name as string) as CDXYChartMBS`


**Function:** Adds a generic line indicator chart.

**Notes:**

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the indicator chart in pixels.</td>
</tr>
<tr>
<td>data</td>
<td>(Mandatory)</td>
<td>The data series of the indicator line.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the indicator line.</td>
</tr>
<tr>
<td>name</td>
<td>(Mandatory)</td>
<td>The name of the indicator.</td>
</tr>
</tbody>
</table>
Return Value
A CDXYChartMBS object representing the chart created.
See also:

- 28.18.56 addLineIndicator(chart as CDXYChartMBS, data() as Double, ColorValue as color, name as string) as CDLineLayerMBS
- 28.18.57 addLineIndicator(chart as CDXYChartMBS, data() as Double, ColorValue as Integer, name as string) as CDLineLayerMBS
- 28.18.58 addLineIndicator(height as Integer, data() as Double, ColorValue as color, name as string) as CDXYChartMBS

28.18.60 addMACD(height as Integer, period1 as Integer, period2 as Integer, period3 as Integer, ColorValue as color, signalColor as color, divColor as color) as CDXYChartMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other addMACD method, but uses color instead of integer data type for passing color values.
See also:

- 28.18.61 addMACD(height as Integer, period1 as Integer, period2 as Integer, period3 as Integer, ColorValue as Integer, signalColor as Integer, divColor as Integer) as CDXYChartMBS

28.18.61 addMACD(height as Integer, period1 as Integer, period2 as Integer, period3 as Integer, ColorValue as Integer, signalColor as Integer, divColor as Integer) as CDXYChartMBS

Function: Adds a MACD indicator chart.
Notes:
Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the indicator chart in pixels.</td>
</tr>
<tr>
<td>period1</td>
<td>(Mandatory)</td>
<td>The first moving average period to compute the indicator.</td>
</tr>
<tr>
<td>period2</td>
<td>(Mandatory)</td>
<td>The second moving average period to compute the indicator.</td>
</tr>
<tr>
<td>period3</td>
<td>(Mandatory)</td>
<td>The moving average period of the signal line.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the indicator line.</td>
</tr>
<tr>
<td>signalColor</td>
<td>(Mandatory)</td>
<td>The color of the signal line.</td>
</tr>
<tr>
<td>divColor</td>
<td>(Mandatory)</td>
<td>The color of the divergent bars.</td>
</tr>
</tbody>
</table>
28.18. CLASS CDFINANCECHARTMBS

Return Value
A CDXYChartMBS object representing the chart created.

See also:

- 28.18.60 addMACD(height as Integer, period1 as Integer, period2 as Integer, period3 as Integer, ColorValue as color, signalColor as color, divColor as color) as CDXYChartMBS

28.18.62 addMainChart(height as Integer) as CDXYChartMBS


Function: Adds the main chart - the chart that shows the data for the prices.

Notes:
The chart added is initially empty. Other methods, such as CDFinanceChartMBS.addCandleStick and CDFinanceChartMBS.addSimpleMovingAvg, may be used to add various layers to the chart.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the main chart in pixels.</td>
</tr>
</tbody>
</table>

Return Value
A CDXYChartMBS object representing the main chart created.

28.18.63 addMassIndex(height as Integer, ColorValue as color, upColor as color, downColor as color) as CDXYChartMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Same as the other addMassIndex method, but uses color instead of integer data type for passing color values.

See also:

- 28.18.64 addMassIndex(height as Integer, ColorValue as Integer, upColor as Integer, downColor as Integer) as CDXYChartMBS

28.18.64 addMassIndex(height as Integer, ColorValue as Integer, upColor as Integer, downColor as Integer) as CDXYChartMBS


Function: Adds a Mass Index indicator chart.

Notes:
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Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the indicator chart in pixels.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the indicator line.</td>
</tr>
<tr>
<td>upColor</td>
<td>(Mandatory)</td>
<td>The fill color when the indicator exceeds the upper threshold line.</td>
</tr>
<tr>
<td>downColor</td>
<td>(Mandatory)</td>
<td>The fill color when the indicator falls below the lower threshold line.</td>
</tr>
</tbody>
</table>

Return Value
A CDXYChartMBS object representing the chart created.
See also:

- 28.18.63 addMassIndex(height as Integer, ColorValue as color, upColor as color, downColor as color) as CDXYChartMBS 4705

28.18.65 addMedianPrice(ColorValue as color) as CDLineLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other addMedianPrice method, but uses color instead of integer data type for passing color values.
See also:

- 28.18.66 addMedianPrice(ColorValue as Integer) as CDLineLayerMBS 4706

28.18.66 addMedianPrice(ColorValue as Integer) as CDLineLayerMBS

**Function:** Adds a median price line on the main chart.
**Notes:**

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the line.</td>
</tr>
</tbody>
</table>

Return Value
A CDLineLayerMBS object representing the line created.
See also:

- 28.18.65 addMedianPrice(ColorValue as color) as CDLineLayerMBS 4706
28.18. CLASS CDFINANCECHARTMBS

28.18.67 addMFI(height as Integer, period as Integer, ColorValue as color, range as Double, upColor as color, downColor as color) as CDXYChartMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addMFI method, but uses color instead of integer data type for passing color values.

See also:

- 28.18.68 addMFI(height as Integer, period as Integer, ColorValue as Integer, range as Double, upColor as Integer, downColor as Integer) as CDXYChartMBS

28.18.68 addMFI(height as Integer, period as Integer, ColorValue as Integer, range as Double, upColor as Integer, downColor as Integer) as CDXYChartMBS


**Function:** Adds a Money Flow Index indicator chart.

**Notes:**

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the indicator chart in pixels.</td>
</tr>
<tr>
<td>period</td>
<td>(Mandatory)</td>
<td>The period to compute the indicator.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the indicator line.</td>
</tr>
<tr>
<td>range</td>
<td>(Mandatory)</td>
<td>The distance between the middle line and the upper and lower threshold lines.</td>
</tr>
<tr>
<td>upColor</td>
<td>(Mandatory)</td>
<td>The fill color when the indicator exceeds the upper threshold line.</td>
</tr>
<tr>
<td>downColor</td>
<td>(Mandatory)</td>
<td>The fill color when the indicator falls below the lower threshold line.</td>
</tr>
</tbody>
</table>

Return Value

A CDXYChartMBS object representing the chart created.

See also:

- 28.18.67 addMFI(height as Integer, period as Integer, ColorValue as color, range as Double, upColor as color, downColor as color) as CDXYChartMBS

28.18.69 addMomentum(height as Integer, period as Integer, ColorValue as color) as CDXYChartMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addMomentum method, but uses color instead of integer data type for passing color values.

See also:
• 28.18.70 addMomentum(height as Integer, period as Integer, ColorValue as Integer) as CDXYChartMBS

28.18.70 addMomentum(height as Integer, period as Integer, ColorValue as Integer) as CDXYChartMBS


**Function:** Adds a Momentum indicator chart.

**Notes:**

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the indicator chart in pixels.</td>
</tr>
<tr>
<td>period</td>
<td>(Mandatory)</td>
<td>The period to compute the indicator.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the indicator line.</td>
</tr>
</tbody>
</table>

**Return Value**

A CDXYChartMBS object representing the chart created.

See also:

• 28.18.69 addMomentum(height as Integer, period as Integer, ColorValue as color) as CDXYChartMBS

28.18.71 addNVI(height as Integer, period as Integer, ColorValue as color, signalColor as color) as CDXYChartMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addNVI method, but uses color instead of integer data type for passing color values.

See also:

• 28.18.72 addNVI(height as Integer, period as Integer, ColorValue as Integer, signalColor as Integer) as CDXYChartMBS

28.18.72 addNVI(height as Integer, period as Integer, ColorValue as Integer, signalColor as Integer) as CDXYChartMBS


**Function:** Adds a Negative Volume Index indicator chart.

**Notes:**
28.18. CLASS CDFINANCECHARTMBS

Argument Default Description
height (Mandatory) The height of the indicator chart in pixels.
period (Mandatory) The period to compute the signal line.
color (Mandatory) The color of the indicator line.
signalColor (Mandatory) The color of the signal line.

Arguments:

Return Value
A CDXYChartMBS object representing the chart created.
See also:

• 28.18.71 addNVI(height as Integer, period as Integer, ColorValue as color, signalColor as color) as CDXYChartMBS

28.18.73 addOBV(height as Integer, ColorValue as color) as CDXYChartMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
Function: Same as the other addOBV method, but uses color instead of integer data type for passing color values.
See also:

• 28.18.74 addOBV(height as Integer, ColorValue as Integer) as CDXYChartMBS

28.18.74 addOBV(height as Integer, ColorValue as Integer) as CDXYChartMBS

Function: Adds an On Balance Volume indicator chart.
Notes:

Arguments:

Argument Default Description
height (Mandatory) The height of the indicator chart in pixels.
color (Mandatory) The color of the indicator line.

Return Value
A CDXYChartMBS object representing the chart created.
See also:

• 28.18.73 addOBV(height as Integer, ColorValue as color) as CDXYChartMBS
28.18.75  addParabolicSAR(accInitial as Double, accIncrement as Double, accMaximum as Double, symbolType as Integer, symbolSize as Integer, fillColor as color, edgeColor as color) as CDLineLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Same as the other addParabolicSAR method, but uses color instead of integer data type for passing color values.

See also:

- 28.18.76 addParabolicSAR(accInitial as Double, accIncrement as Double, accMaximum as Double, symbolType as Integer, symbolSize as Integer, fillColor as Integer, edgeColor as Integer) as CDLineLayerMBS

28.18.76  addParabolicSAR(accInitial as Double, accIncrement as Double, accMaximum as Double, symbolType as Integer, symbolSize as Integer, fillColor as Integer, edgeColor as Integer) as CDLineLayerMBS


Function: Adds a parabolic SAR indicator to the main chart.

Notes:

Arguments

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>accInitial</td>
<td>(Mandatory)</td>
<td>The initial acceleration. A common value to use is 0.02.</td>
</tr>
<tr>
<td>accIncrement</td>
<td>(Mandatory)</td>
<td>The incremental acceleration. A common value to use is 0.02.</td>
</tr>
<tr>
<td>accMaximum</td>
<td>(Mandatory)</td>
<td>The maximum acceleration. A common value to use is 0.2.</td>
</tr>
<tr>
<td>symbolType</td>
<td>(Mandatory)</td>
<td>The symbol used to plot the parabolic SAR. One of the predefined shape constants representing the symbol shape. See Shape Specification for the available built-in shapes.</td>
</tr>
<tr>
<td>symbolSize</td>
<td>(Mandatory)</td>
<td>The width and height of the symbol in pixels</td>
</tr>
<tr>
<td>fillColor</td>
<td>(Mandatory)</td>
<td>The color used to fill the symbol.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>(Mandatory)</td>
<td>The edge color used to draw the edge of the symbol.</td>
</tr>
</tbody>
</table>

Return Value

A CDLineLayerMBS object representing the parabolic SAR created.

See also:

- 28.18.75 addParabolicSAR(accInitial as Double, accIncrement as Double, accMaximum as Double, symbolType as Integer, symbolSize as Integer, fillColor as color, edgeColor as color) as CDLineLayerMBS
28.18. **addPerformance**(height as Integer, ColorValue as color) as CDXY-ChartMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other addPerformance method, but uses color instead of integer data type for passing color values.
**Notes:**
- See also:
  - 28.18.78 addPerformance(height as Integer, ColorValue as Integer) as CDXYChartMBS

28.18.**addPerformance**(height as Integer, ColorValue as Integer) as CDXY-ChartMBS

**Function:** Adds a Performance indicator chart.
**Notes:**
**Arguments:**
- **height**: (Mandatory) The height of the indicator chart in pixels.
- **color**: (Mandatory) The color of the indicator line.

**Return Value**
A CDXYChartMBS object representing the chart created.
**See also:**
- 28.18.77 addPerformance(height as Integer, ColorValue as color) as CDXYChartMBS

28.18.**addPlotAreaTitle**(alignment as Integer, text as string) as CDTTextBoxMBS

**Function:** Adds a text title above the plot area.
**Notes:**
- You may add multiple title above the plot area by calling this method multiple times.
**Arguments:**

**Return Value**
The CDTTextBoxMBS object representing the text box above the plot area, which may be used to fine-tune the appearance of the text.
### Argument Default Description

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>alignment</td>
<td>(Mandatory)</td>
<td>The alignment with respect to the region that is on top of the plot area. See Alignment Specification for supported alignment types.</td>
</tr>
<tr>
<td>text</td>
<td>(Mandatory)</td>
<td>The text to add.</td>
</tr>
</tbody>
</table>

#### 28.18.80 addPPO(height as Integer, period1 as Integer, period2 as Integer, period3 as Integer, ColorValue as color, signalColor as color, divColor as color) as CDXYChartMBS

**MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:** Same as the other `addPPO` method, but uses color instead of integer data type for passing color values.

**See also:**

- 28.18.81 addPPO(height as Integer, period1 as Integer, period2 as Integer, period3 as Integer, ColorValue as Integer, signalColor as Integer, divColor as Integer) as CDXYChartMBS

#### 28.18.81 addPPO(height as Integer, period1 as Integer, period2 as Integer, period3 as Integer, ColorValue as Integer, signalColor as Integer, divColor as Integer) as CDXYChartMBS

**MBS ChartDirector Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:** Adds a Percentage Price Oscillator indicator chart.

**Notes:**

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the indicator chart in pixels.</td>
</tr>
<tr>
<td>period1</td>
<td>(Mandatory)</td>
<td>The first moving average period to compute the indicator.</td>
</tr>
<tr>
<td>period2</td>
<td>(Mandatory)</td>
<td>The second moving average period to compute the indicator.</td>
</tr>
<tr>
<td>period3</td>
<td>(Mandatory)</td>
<td>The moving average period of the signal line.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the indicator line.</td>
</tr>
<tr>
<td>signalColor</td>
<td>(Mandatory)</td>
<td>The color of the signal line.</td>
</tr>
<tr>
<td>divColor</td>
<td>(Mandatory)</td>
<td>The color of the divergent bars.</td>
</tr>
</tbody>
</table>

**Return Value**

A `CDXYChartMBS` object representing the chart created.

**See also:**

- 28.18.80 addPPO(height as Integer, period1 as Integer, period2 as Integer, period3 as Integer, ColorValue as color, signalColor as color, divColor as color) as CDXYChartMBS
28.18.82 addPVI(height as Integer, period as Integer, ColorValue as color, signalColor as color) as CDXYChartMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other addPVI method, but uses color instead of integer data type for passing color values.

See also:
- 28.18.83 addPVI(height as Integer, period as Integer, ColorValue as Integer, signalColor as Integer) as CDXYChartMBS

28.18.83 addPVI(height as Integer, period as Integer, ColorValue as Integer, signalColor as Integer) as CDXYChartMBS

**Function:** Adds a Positive Volume Index indicator chart.

**Notes:**

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the indicator chart in pixels.</td>
</tr>
<tr>
<td>period</td>
<td>(Mandatory)</td>
<td>The period to compute the signal line.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the indicator line.</td>
</tr>
<tr>
<td>signalColor</td>
<td>(Mandatory)</td>
<td>The color of the signal line.</td>
</tr>
</tbody>
</table>

**Return Value**
A CDXYChartMBS object representing the chart created.

See also:
- 28.18.82 addPVI(height as Integer, period as Integer, ColorValue as color, signalColor as color) as CDXYChartMBS

28.18.84 addPVO(height as Integer, period1 as Integer, period2 as Integer, period3 as Integer, ColorValue as color, signalColor as color, divColor as color) as CDXYChartMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other addPVO method, but uses color instead of integer data type for passing color values.

See also:
- 28.18.85 addPVO(height as Integer, period1 as Integer, period2 as Integer, period3 as Integer, ColorValue as Integer, signalColor as Integer, divColor as Integer) as CDXYChartMBS
28.18.85  addPVO(height as Integer, period1 as Integer, period2 as Integer, period3 as Integer, ColorValue as Integer, signalColor as Integer, divColor as Integer) as CDXYChartMBS


**Function:** Adds a Percentage Volume Oscillator indicator chart.

**Notes:**

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the indicator chart in pixels.</td>
</tr>
<tr>
<td>period1</td>
<td>(Mandatory)</td>
<td>The first moving average period to compute the indicator.</td>
</tr>
<tr>
<td>period2</td>
<td>(Mandatory)</td>
<td>The second moving average period to compute the indicator.</td>
</tr>
<tr>
<td>period3</td>
<td>(Mandatory)</td>
<td>The moving average period of the signal line.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the indicator line.</td>
</tr>
<tr>
<td>signalColor</td>
<td>(Mandatory)</td>
<td>The color of the signal line.</td>
</tr>
<tr>
<td>divColor</td>
<td>(Mandatory)</td>
<td>The color of the divergent bars.</td>
</tr>
</tbody>
</table>

**Return Value**

A CDXYChartMBS object representing the chart created.

**See also:**

- 28.18.84 addPVO(height as Integer, period1 as Integer, period2 as Integer, period3 as Integer, ColorValue as color, signalColor as color, divColor as color) as CDXYChartMBS

28.18.86  addPVT(height as Integer, ColorValue as color) as CDXYChartMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addPVT method, but uses color instead of integer data type for passing color values.

**See also:**

- 28.18.87 addPVT(height as Integer, ColorValue as Integer) as CDXYChartMBS

28.18.87  addPVT(height as Integer, ColorValue as Integer) as CDXYChartMBS


**Function:** Adds a Price Volume Trend indicator chart.

**Notes:**

**Arguments:**
### 28.18. CLASS CDFINANCECHARTMBS

**Argument Default Description**
- **height** (Mandatory) The height of the indicator chart in pixels.
- **color** (Mandatory) The color of the indicator line.

**Return Value**
A CDXYChartMBS object representing the chart created.

**See also:**
- 28.18.86 addPVT(height as Integer, ColorValue as color) as CDXYChartMBS

#### 28.18.88 addROC(height as Integer, period as Integer, ColorValue as color) as CDXYChartMBS

**MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:** Same as the other addROC method, but uses color instead of integer data type for passing color values.

**See also:**
- 28.18.89 addROC(height as Integer, period as Integer, ColorValue as Integer) as CDXYChartMBS

#### 28.18.89 addROC(height as Integer, period as Integer, ColorValue as Integer) as CDXYChartMBS

**MBS ChartDirector Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:** Adds a Rate of Change indicator chart.

**Notes:**

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the indicator chart in pixels.</td>
</tr>
<tr>
<td>period</td>
<td>(Mandatory)</td>
<td>The period to compute the indicator.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the indicator line.</td>
</tr>
</tbody>
</table>

**Return Value**
A CDXYChartMBS object representing the chart created.

**See also:**
- 28.18.88 addROC(height as Integer, period as Integer, ColorValue as color) as CDXYChartMBS
### 28.18.90 addRSI(height as Integer, period as Integer, ColorValue as color, range as Double, upColor as color, downColor as color) as CDXYChartMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addRSI method, but uses color instead of integer data type for passing color values.

**See also:**
- 28.18.91 addRSI(height as Integer, period as Integer, ColorValue as Integer, range as Double, upColor as Integer, downColor as Integer) as CDXYChartMBS

### 28.18.91 addRSI(height as Integer, period as Integer, ColorValue as Integer, range as Double, upColor as Integer, downColor as Integer) as CDXYChartMBS


**Function:** Adds a Relative Strength Index indicator chart.

**Notes:**

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the indicator chart in pixels.</td>
</tr>
<tr>
<td>period</td>
<td>(Mandatory)</td>
<td>The period to compute the indicator.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the indicator line.</td>
</tr>
<tr>
<td>range</td>
<td>(Mandatory)</td>
<td>The distance between the middle line and the upper and lower threshold lines.</td>
</tr>
<tr>
<td>upColor</td>
<td>(Mandatory)</td>
<td>The fill color when the indicator exceeds the upper threshold line.</td>
</tr>
<tr>
<td>downColor</td>
<td>(Mandatory)</td>
<td>The fill color when the indicator falls below the lower threshold line.</td>
</tr>
</tbody>
</table>

**Return Value**

A CDXYChartMBS object representing the chart created.

**See also:**
- 28.18.90 addRSI(height as Integer, period as Integer, ColorValue as color, range as Double, upColor as color, downColor as color) as CDXYChartMBS

### 28.18.92 addSimpleMovingAvg(period as Integer, ColorValue as color) as CDLineLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addSimpleMovingAvg method, but uses color instead of integer data type for passing color values.

**See also:**
28.18. CLASS CDFINANCECHARTMBS

- 28.18.93 addSimpleMovingAvg(period as Integer, ColorValue as Integer) as CDLineLayerMBS

28.18.93 addSimpleMovingAvg(period as Integer, ColorValue as Integer) as CDLineLayerMBS


**Function:** Adds a simple moving average line on the main chart.

**Notes:**

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>period</td>
<td>(Mandatory)</td>
<td>The moving average period</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the line.</td>
</tr>
</tbody>
</table>

**Return Value**

A CDLineLayerMBS object representing the line created.

See also:

- 28.18.92 addSimpleMovingAvg(period as Integer, ColorValue as color) as CDLineLayerMBS

28.18.94 addSlowStochastic(height as Integer, period1 as Integer, period2 as Integer, ColorValue1 as color, ColorValue2 as color) as CDXYChartMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addSlowStochastic method, but uses color instead of integer data type for passing color values.

See also:

- 28.18.95 addSlowStochastic(height as Integer, period1 as Integer, period2 as Integer, ColorValue1 as Integer, ColorValue2 as Integer) as CDXYChartMBS

28.18.95 addSlowStochastic(height as Integer, period1 as Integer, period2 as Integer, ColorValue1 as Integer, ColorValue2 as Integer) as CDXYChartMBS


**Function:** Adds a Slow Stochastic indicator chart.

**Notes:**

**Arguments:**
Return Value
A CDXYChartMBS object representing the chart created.

See also:

- 28.18.94 addSlowStochastic(height as Integer, period1 as Integer, period2 as Integer, ColorValue1 as color, ColorValue2 as color) as CDXYChartMBS
- 28.18.96 addStdDev(height as Integer, period as Integer, ColorValue as color) as CDXYChartMBS
- 28.18.97 addStdDev(height as Integer, period as Integer, ColorValue as Integer) as CDXYChartMBS
28.18.96 addStdDev(height as Integer, period as Integer, ColorValue as color) as CDXYChartMBS

28.18.98 addStochRSI(height as Integer, period as Integer, ColorValue as color, range as Double, upColor as color, downColor as color) as CDXYChartMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addStochRSI method, but uses color instead of integer data type for passing color values.

See also:

- 28.18.99 addStochRSI(height as Integer, period as Integer, ColorValue as Integer, range as Double, upColor as Integer, downColor as Integer) as CDXYChartMBS

28.18.99 addStochRSI(height as Integer, period as Integer, ColorValue as Integer, range as Double, upColor as Integer, downColor as Integer) as CDXYChartMBS


**Function:** Adds a Stochastic RSI indicator chart.

**Notes:**

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the indicator chart in pixels.</td>
</tr>
<tr>
<td>period</td>
<td>(Mandatory)</td>
<td>The period to compute the indicator.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the indicator line.</td>
</tr>
<tr>
<td>range</td>
<td>(Mandatory)</td>
<td>The distance between the middle line and the upper and lower threshold lines.</td>
</tr>
<tr>
<td>upColor</td>
<td>(Mandatory)</td>
<td>The fill color when the indicator exceeds the upper threshold line.</td>
</tr>
<tr>
<td>downColor</td>
<td>(Mandatory)</td>
<td>The fill color when the indicator falls below the lower threshold line.</td>
</tr>
</tbody>
</table>

**Return Value**

A CDXYChartMBS object representing the chart created.

See also:

- 28.18.98 addStochRSI(height as Integer, period as Integer, ColorValue as color, range as Double, upColor as color, downColor as color) as CDXYChartMBS
28.18.100  addThreshold(chart as CDXYChartMBS, layer as CDLineLayerMBS, topRange as Double, topColor as color, bottomRange as Double, bottomColor as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Same as the other addThreshold method, but uses color instead of integer data type for passing color values. See also:

- 28.18.101 addThreshold(chart as CDXYChartMBS, layer as CDLineLayerMBS, topRange as Double, topColor as Integer, bottomRange as Double, bottomColor as Integer)

28.18.101  addThreshold(chart as CDXYChartMBS, layer as CDLineLayerMBS, topRange as Double, topColor as Integer, bottomRange as Double, bottomColor as Integer)

MBS ChartDirector Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Adds an upper/lower threshold range to an existing indicator chart. Notes: Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>c</td>
<td>(Mandatory)</td>
<td>The indicator chart to add the threshold range to.</td>
</tr>
<tr>
<td>layer</td>
<td>(Mandatory)</td>
<td>The line layer that the threshold range applies to.</td>
</tr>
<tr>
<td>topRange</td>
<td>(Mandatory)</td>
<td>The upper threshold.</td>
</tr>
<tr>
<td>topColor</td>
<td>(Mandatory)</td>
<td>The color to fill the region of the line that is above the upper threshold.</td>
</tr>
<tr>
<td>bottomRange</td>
<td>(Mandatory)</td>
<td>The lower threshold.</td>
</tr>
<tr>
<td>bottomColor</td>
<td>(Mandatory)</td>
<td>The color to fill the region of the line that is below the lower threshold.</td>
</tr>
</tbody>
</table>

See also:

- 28.18.100 addThreshold(chart as CDXYChartMBS, layer as CDLineLayerMBS, topRange as Double, topColor as color, bottomRange as Double, bottomColor as color)

28.18.102  addTriMovingAvg(period as Integer, ColorValue as color) as CDLineLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Same as the other addTriMovingAvg method, but uses color instead of integer data type for passing color values. See also:

- 28.18.103 addTriMovingAvg(period as Integer, ColorValue as Integer) as CDLineLayerMBS
28.18. CLASS CDFINANCECHARTMBS

28.18.103 addTriMovingAvg(period as Integer, ColorValue as Integer) as CDLineLayerMBS

Function: Adds a triangular moving average line on the main chart.
Notes:

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>period</td>
<td>(Mandatory)</td>
<td>The moving average period</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the line.</td>
</tr>
</tbody>
</table>

Return Value
A CDLineLayerMBS object representing the line created.
See also:

- 28.18.102 addTriMovingAvg(period as Integer, ColorValue as color) as CDLineLayerMBS

28.18.104 addTRIX(height as Integer, Period as Integer, ColorValue as color) as CDXYChartMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other addTRIX method, but uses color instead of integer data type for passing color values.
See also:

- 28.18.105 addTRIX(height as Integer, Period as Integer, ColorValue as Integer) as CDXYChartMBS

28.18.105 addTRIX(height as Integer, Period as Integer, ColorValue as Integer) as CDXYChartMBS

Function: Adds a TRIX indicator chart.
Notes:

Arguments:

Return Value
A CDXYChartMBS object representing the chart created.
See also:
**Argument Default Description**
- **height** *(Mandatory)* The height of the indicator chart in pixels.
- **period** *(Mandatory)* The period to compute the indicator.
- **color** *(Mandatory)* The color of the indicator line.

- 28.18.104 addTRIX(height as Integer, Period as Integer, ColorValue as color) as CDXYChartMBS

**28.18.106 addTypicalPrice(ColorValue as color) as CDLineLayerMBS**

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other addTypicalPrice method, but uses color instead of integer data type for passing color values.
**See also:**
- 28.18.107 addTypicalPrice(ColorValue as Integer) as CDLineLayerMBS

**28.18.107 addTypicalPrice(ColorValue as Integer) as CDLineLayerMBS**

**Function:** Adds a typical price line on the main chart.
**Notes:**
**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the line.</td>
</tr>
</tbody>
</table>

**Return Value**
A CDLineLayerMBS object representing the line created.
**See also:**
- 28.18.106 addTypicalPrice(ColorValue as color) as CDLineLayerMBS

**28.18.108 addUltimateOscillator(height as Integer, period1 as Integer, period2 as Integer, period3 as Integer, ColorValue as color, range as Double, upColor as color, downColor as color) as CDXYChartMBS**

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other addUltimateOscillator method, but uses color instead of integer data type for passing color values.
**See also:**
28.18.109 addUltimateOscillator(\text{height as Integer, period1 as Integer, period2 as Integer, period3 as Integer, ColorValue as Integer, range as Double, upColor as Integer, downColor as Integer}) as CDXYChartMBS


Function: Adds an Ultimate Oscillator indicator chart.

Notes:

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the indicator chart in pixels.</td>
</tr>
<tr>
<td>period1</td>
<td>(Mandatory)</td>
<td>The first moving average period to compute the indicator.</td>
</tr>
<tr>
<td>period2</td>
<td>(Mandatory)</td>
<td>The second moving average period to compute the indicator.</td>
</tr>
<tr>
<td>period3</td>
<td>(Mandatory)</td>
<td>The third moving average period to compute the indicator.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the indicator line.</td>
</tr>
<tr>
<td>range</td>
<td>(Mandatory)</td>
<td>The distance between the middle line and the upper and lower threshold lines.</td>
</tr>
<tr>
<td>upColor</td>
<td>(Mandatory)</td>
<td>The fill color when the indicator exceeds the upper threshold line.</td>
</tr>
<tr>
<td>downColor</td>
<td>(Mandatory)</td>
<td>The fill color when the indicator falls below the lower threshold line.</td>
</tr>
</tbody>
</table>

Return Value

A CDXYChartMBS object representing the chart created.

See also:

- 28.18.108 addUltimateOscillator(\text{height as Integer, period1 as Integer, period2 as Integer, period3 as Integer, ColorValue as color, range as Double, upColor as color, downColor as color}) as CDXYChartMBS

28.18.110 addVolBars(\text{height as Integer, upColor as color, downColor as color, flatColor as color}) as CDBarLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Same as the other addVolBars method, but uses color instead of integer data type for passing color values.

See also:

- 28.18.111 addVolBars(\text{height as Integer, upColor as Integer, downColor as Integer, flatColor as Integer}) as CDBarLayerMBS
28.18.111 addVolBars(height as Integer, upColor as Integer, downColor as Integer, flatColor as Integer) as CDBarLayerMBS

**Function:** Adds a volume bar chart layer on the main chart.  
**Notes:**

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the bar chart layer in pixels.</td>
</tr>
<tr>
<td>upColor</td>
<td>(Mandatory)</td>
<td>The color to used on an ‘up’ day. An ‘up’ day is a day where the closing price is higher than that of the previous day.</td>
</tr>
<tr>
<td>downColor</td>
<td>(Mandatory)</td>
<td>The color to used on a ‘down’ day. A ‘down’ day is a day where the closing price is lower than that of the previous day.</td>
</tr>
<tr>
<td>flatColor</td>
<td>(Mandatory)</td>
<td>The color to used on a ‘flat’ day. A ‘flat’ day is a day where the closing price is the same as that of the previous day.</td>
</tr>
</tbody>
</table>

Return Value  
A CDBarLayerMBS object representing the bar layer created.

See also:

- 28.18.110 addVolBars(height as Integer, upColor as color, downColor as color, flatColor as color) as CDBarLayerMBS  
- 28.18.112 addVolIndicator(height as Integer, upColor as color, downColor as color, flatColor as color) as CDXYChartMBS

28.18.112 addVolIndicator(height as Integer, upColor as color, downColor as color, flatColor as color) as CDXYChartMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Same as the other addVolIndicator method, but uses color instead of integer data type for passing color values.  
See also:

- 28.18.113 addVolIndicator(height as Integer, upColor as Integer, downColor as Integer, flatColor as Integer) as CDXYChartMBS

28.18.113 addVolIndicator(height as Integer, upColor as Integer, downColor as Integer, flatColor as Integer) as CDXYChartMBS

**Function:** Adds a Volume indicator chart.  
**Notes:**

**Arguments:**
28.18. **CLASS CDFINANCECHARTMBS**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the indicator chart in pixels.</td>
</tr>
<tr>
<td>upColor</td>
<td>(Mandatory)</td>
<td>The color to used on an 'up' day. An 'up' day is a day where the closing price is higher than that of the previous day.</td>
</tr>
<tr>
<td>downColor</td>
<td>(Mandatory)</td>
<td>The color to used on a 'down' day. A 'down' day is a day where the closing price is lower than that of the previous day.</td>
</tr>
<tr>
<td>flatColor</td>
<td>(Mandatory)</td>
<td>The color to used on a 'flat' day. A 'flat' day is a day where the closing price is the same as that of the previous day.</td>
</tr>
</tbody>
</table>

**Return Value**

A CDXYChartMBS object representing the chart created.

See also:

- 28.18.112 addVolIndicator(height as Integer, upColor as color, downColor as color, flatColor as color) as CDXYChartMBS

---

**28.18.114 addWeightedClose(ColorValue as color) as CDLineLayerMBS**

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addWeightedClose method, but uses color instead of integer data type for passing color values.

See also:

- 28.18.115 addWeightedClose(ColorValue as Integer) as CDLineLayerMBS

---

**28.18.115 addWeightedClose(ColorValue as Integer) as CDLineLayerMBS**


**Function:** Adds a weighted close line on the main chart.

**Notes:**

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the line.</td>
</tr>
</tbody>
</table>

**Return Value**

A CDLineLayerMBS object representing the line created.

See also:

- 28.18.114 addWeightedClose(ColorValue as color) as CDLineLayerMBS
28.18.116  addWeightedMovingAvg(period as Integer, ColorValue as color) as CDLineLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addWeightedMovingAvg method, but uses color instead of integer data type for passing color values.

See also:

- 28.18.117 addWeightedMovingAvg(period as Integer, ColorValue as Integer) as CDLineLayerMBS 4726

28.18.117  addWeightedMovingAvg(period as Integer, ColorValue as Integer) as CDLineLayerMBS


**Function:** Adds a weighted moving average line on the main chart.

**Notes:**

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>period</td>
<td>(Mandatory)</td>
<td>The moving average period</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the line.</td>
</tr>
</tbody>
</table>

**Return Value**

A CDLineLayerMBS object representing the line created.

See also:

- 28.18.116 addWeightedMovingAvg(period as Integer, ColorValue as color) as CDLineLayerMBS 4726

28.18.118  addWilliamR(height as Integer, period as Integer, ColorValue as color, range as Double, upColor as color, downColor as color) as CDXYChartMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addWilliamR method, but uses color instead of integer data type for passing color values.

See also:

- 28.18.119 addWilliamR(height as Integer, period as Integer, ColorValue as Integer, range as Double, upColor as Integer, downColor as Integer) as CDXYChartMBS 4727
28.18.119  addWilliamR(height as Integer, period as Integer, ColorValue as Integer, range as Double, upColor as Integer, downColor as Integer) as CDXYChartMBS

Function: Adds a William % R indicator chart.
Notes:
Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the indicator chart in pixels.</td>
</tr>
<tr>
<td>period</td>
<td>(Mandatory)</td>
<td>The period to compute the indicator.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the indicator line.</td>
</tr>
<tr>
<td>range</td>
<td>(Mandatory)</td>
<td>The distance between the middle line and the upper and lower threshold lines.</td>
</tr>
<tr>
<td>upColor</td>
<td>(Mandatory)</td>
<td>The fill color when the indicator exceeds the upper threshold line.</td>
</tr>
<tr>
<td>downColor</td>
<td>(Mandatory)</td>
<td>The fill color when the indicator falls below the lower threshold line.</td>
</tr>
</tbody>
</table>

Return Value
A CDXYChartMBS object representing the chart created.
See also:

- 28.18.118 addWilliamR(height as Integer, period as Integer, ColorValue as color, range as Double, upColor as color, downColor as color) as CDXYChartMBS

28.18.120  Constructor(width as Integer)

Function: Creates a new FinanceChart object.
Notes:
Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>width</td>
<td>(Mandatory)</td>
<td>The width of the chart in pixels. The height will be automatically determined as the chart is built.</td>
</tr>
</tbody>
</table>

28.18.121  currentChart as CDXYChartMBS

MBS ChartDirector Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns the current chart of this finance chart.
Notes: While you add parts to the finance chart, you can access the last one here.
28.18.122 enableAntiAlias(antiAlias as boolean)

Function: Enables/Disables anti-alias.
Notes:
Enabling anti-alias makes the line smoother. Disabling anti-alias make the chart file size smaller, and so can be downloaded faster through the Internet. The default is to enable anti-alias.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>antiAlias</td>
<td>(Mandatory)</td>
<td>True to enable anti-alias. False to disable anti-alias.</td>
</tr>
</tbody>
</table>

28.18.123 getToolTipDateFormat as string

Function: Gets the date/time format string to use for tool tips.
Notes:
The format string returned will be one of the format strings specified when calling CDFinanceChartMBS.setToolTipDateFormat based on data point spacing, or the equivalent default value. The format string may then be used in other ChartDirector functions such as CDBaseChartMBS.getHTMLImageMap for producing image maps.

Returns the date/time format string to use for tool tips.

28.18.124 mainChart as CDXYChartMBS

MBS ChartDirector Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns the main chart of this finance chart.

28.18.125 setAxisOnRight(b as Boolean)

Function: Sets whether the main y-axis is on right of left side of the plot area.
Notes:
The default is on right.
Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>(Mandatory)</td>
<td>A true value means the y-axis is on right. A false value means the y-axis is on left.</td>
</tr>
</tbody>
</table>

28.18.126 `setData(timeStamps() as Double, highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, volData() as Double, extraPoints as Integer)`


Function: Sets the data to be used in the chart.

Notes:
If some of the data are not available, some artificial values should be used. For example, if the high and low values are not available, you may use closeData as highData and lowData.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>timeStamps</td>
<td>(Mandatory)</td>
<td>An array of dates/times for the time intervals.</td>
</tr>
<tr>
<td>highData</td>
<td>(Mandatory)</td>
<td>The high values in the time intervals.</td>
</tr>
<tr>
<td>lowData</td>
<td>(Mandatory)</td>
<td>The low values in the time intervals.</td>
</tr>
<tr>
<td>openData</td>
<td>(Mandatory)</td>
<td>The open values in the time intervals.</td>
</tr>
<tr>
<td>closeData</td>
<td>(Mandatory)</td>
<td>The close values in the time intervals.</td>
</tr>
<tr>
<td>volData</td>
<td>(Mandatory)</td>
<td>The volume values in the time intervals.</td>
</tr>
<tr>
<td>extraPoints</td>
<td>(Mandatory)</td>
<td>The number of leading time intervals that are not displayed in the chart. These intervals are typically used for computing indicators that require extra leading data, such as moving averages.</td>
</tr>
</tbody>
</table>

28.18.127 `setDateLabelFormat(yearFormat as string, firstMonthFormat as string, otherMonthFormat as string, firstDayFormat as string, otherDayFormat as string, firstHourFormat as string, otherHourFormat as string)`


Function: Sets the date/time formats to use for the x-axis labels under various cases.

Notes:
See Parameter Substitution and Formatting on the syntax of ChartDirector format strings.
Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>yearFormat</td>
<td>(Mandatory)</td>
<td>The format for displaying labels on an axis with yearly ticks. The default is &quot;{ value</td>
</tr>
<tr>
<td>firstMonthFormat</td>
<td>(Mandatory)</td>
<td>The format for displaying labels on an axis with monthly ticks. This parameter applies to the first available month of a year (usually January) only, so it can be formatted differently from the other labels. The default is &quot;&lt;font=bold*&gt;{ value</td>
</tr>
<tr>
<td>otherMonthFormat</td>
<td>(Mandatory)</td>
<td>The format for displaying labels on an axis with monthly ticks. This parameter applies to months other than the first available month of a year. The default is &quot; { value</td>
</tr>
<tr>
<td>firstDayFormat</td>
<td>(Mandatory)</td>
<td>The format for displaying labels on an axis with daily ticks. This parameter applies to the first available day of a month only, so it can be formatted differently from the other labels. The default is &quot;&lt;font=bold*&gt;{ value</td>
</tr>
<tr>
<td>otherDayFormat</td>
<td>(Mandatory)</td>
<td>The format for displaying labels on an axis with daily ticks. This parameter applies to days other than the first available day of a month. The default is &quot; { value</td>
</tr>
<tr>
<td>firstHourFormat</td>
<td>(Mandatory)</td>
<td>The format for displaying labels on an axis with hourly resolution. This parameter applies to the first tick of a day only, so it can be formatted differently from the other labels. The default is &quot;&lt;font=bold*&gt;{ value</td>
</tr>
<tr>
<td>otherHourFormat</td>
<td>(Mandatory)</td>
<td>The format for displaying labels on an axis with hourly resolution. This parameter applies to ticks at hourly boundaries, except the first tick of a day. The default is &quot; { value</td>
</tr>
</tbody>
</table>

28.18.128 setDateLabelSpacing(labelSpacing as Integer)


**Function:** Sets the minimum label spacing between two labels on the time axis.

**Notes:**

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>labelSpacing</td>
<td>(Mandatory)</td>
<td>The label spacing in pixels. The default is 50 pixels.</td>
</tr>
</tbody>
</table>

28.18.129 setLegendStyle(font as string, fontSize as Double, fontColor as color, bgColor as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other setLegendStyle method, but uses color instead of integer data type for passing color values.

See also:
28.18.130 setLegendStyle(font as string, fontSize as Double, fontColor as Integer, bgColor as Integer)

Function: Sets legend font style and background color.
Notes:
The default is Arial 8 pt black font on a semi-transparent light grey (80CCCCCC) background.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>font</td>
<td>(Mandatory)</td>
<td>The font of the legend text.</td>
</tr>
<tr>
<td>fontSize</td>
<td>(Mandatory)</td>
<td>The font size of the legend text in points.</td>
</tr>
<tr>
<td>fontColor</td>
<td>(Mandatory)</td>
<td>The color of the legend text.</td>
</tr>
<tr>
<td>bgColor</td>
<td>(Mandatory)</td>
<td>The background color of the legend box.</td>
</tr>
</tbody>
</table>

See also:

- 28.18.129 setLegendStyle(font as string, fontSize as Double, fontColor as color, bgColor as color) 4730

28.18.131 setLogScale(b as Boolean)

Function: Determines if log scale should be used for the main chart.
Notes:
The default is to use linear scale.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>(Mandatory)</td>
<td>A true value means using log scale. A false value means using linear scale.</td>
</tr>
</tbody>
</table>
28.18.132  setMargins(leftMargin as Integer, topMargin as Integer, rightMargin as Integer, bottomMargin as Integer)

Function: Sets the margins around the plot area.
Notes: The default is 40 pixels for the left and right margins, and 30 pixels for the top margin and 35 pixels for the bottom margin.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>leftMargin</td>
<td>(Mandatory)</td>
<td>The distance from the left side of the plot area to the left side of the chart.</td>
</tr>
<tr>
<td>topMargin</td>
<td>(Mandatory)</td>
<td>The distance from the top of the plot area to the top of the chart.</td>
</tr>
<tr>
<td>rightMargin</td>
<td>(Mandatory)</td>
<td>The distance from the right side of the plot area to the right side of the chart.</td>
</tr>
<tr>
<td>bottomMargin</td>
<td>(Mandatory)</td>
<td>The distance from the bottom of the plot area to the bottom of the chart.</td>
</tr>
</tbody>
</table>

28.18.133  setNumberLabelFormat(formatString as string)

Function: Sets the number format to use.
Notes: The default number format in FinanceChart is "P3". See Parameter Substitution and Formatting on the syntax of ChartDirector format strings.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>formatString</td>
<td>(Mandatory)</td>
<td>The format for displaying numbers.</td>
</tr>
</tbody>
</table>

28.18.134  setPercentageAxis as CDAxisMBS

Function: Label the axis of the main chart in percentage unit.
Notes: By default, the axis of the main chart will be labelled in price unit. If a percentage axis is used, the axis will be labelled in percentage unit, with the first visible point of the closing price being 100%.
28.18.135  setPlotAreaBorder(borderColor as color, borderGap as Integer)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other setPlotAreaBorder method, but uses color instead of integer data type for passing color values.

See also:
- 28.18.136 setPlotAreaBorder(borderColor as Integer, borderGap as Integer)

28.18.136  setPlotAreaBorder(borderColor as Integer, borderGap as Integer)

**Function:** Sets the plot area border color and the gap distance between charts.
**Notes:**
The default is a grey (888888) border with two 2 pixels gap between charts.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>borderColor</td>
<td>(Mandatory)</td>
<td>The plot area border color.</td>
</tr>
<tr>
<td>borderGap</td>
<td>(Mandatory)</td>
<td>The distance between charts.</td>
</tr>
</tbody>
</table>

See also:
- 28.18.135 setPlotAreaBorder(borderColor as color, borderGap as Integer)

28.18.137  setPlotAreaStyle(bgColor as color, majorHGridColor as color, majorVGridColor as color, minorHGridColor as color, minorVGridColor as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other setPlotAreaStyle method, but uses color instead of integer data type for passing color values.

See also:
- 28.18.138 setPlotAreaStyle(bgColor as Integer, majorHGridColor as Integer, majorVGridColor as Integer, minorHGridColor as Integer, minorVGridColor as Integer)
28.18.138  setPlotAreaStyle(bgColor as Integer, majorHGridColor as Integer, majorVGridColor as Integer, minorHGridColor as Integer, minorVGridColor as Integer)


**Function:** Sets the plot area background and grid colors.

**Notes:**

The default is a white background with light grey (DDDDDD) grid lines.

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>bgColor</td>
<td>(Mandatory)</td>
<td>The plot area background color.</td>
</tr>
<tr>
<td>majorHGridColor</td>
<td>(Mandatory)</td>
<td>Major horizontal grid color.</td>
</tr>
<tr>
<td>majorVGridColor</td>
<td>(Mandatory)</td>
<td>Major vertical grid color.</td>
</tr>
<tr>
<td>minorHGridColor</td>
<td>(Mandatory)</td>
<td>Minor horizontal grid color. In current version, minor horizontal grid is not used.</td>
</tr>
<tr>
<td>minorVGridColor</td>
<td>(Mandatory)</td>
<td>Minor vertical grid color.</td>
</tr>
</tbody>
</table>

See also:

- 28.18.137 setPlotAreaStyle(bgColor as color, majorHGridColor as color, majorVGridColor as color, minorHGridColor as color, minorVGridColor as color)

28.18.139  setToolTipDateFormat(monthFormat as string, dayFormat as string, hourFormat as string)


**Function:** Sets the date/time formats to use for the tool tips under various cases.

**Notes:**

See Parameter Substitution and Formatting on the syntax of ChartDirector format strings.

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>monthFormat</td>
<td>(Mandatory)</td>
<td>The tool tip format to use if the data point spacing is one or more months (more than 30 days). The default is &quot; [ { xLabel</td>
</tr>
<tr>
<td>dayFormat</td>
<td>(Mandatory)</td>
<td>The tool tip format to use if the data point spacing is 1 day to less than 30 days. The default is &quot; [ { xLabel</td>
</tr>
<tr>
<td>hourFormat</td>
<td>(Mandatory)</td>
<td>The tool tip format to use if the data point spacing is less than 1 day. The default is &quot; [ { xLabel</td>
</tr>
</tbody>
</table>
28.18.140 setXAxisStyle(font as string, fontSize as Double, fontColor as color, fontAngle as Double)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Same as the other setXAxisStyle method, but uses color instead of integer data type for passing color values.

See also:
- 28.18.141 setXAxisStyle(font as string, fontSize as Double, fontColor as Integer, fontAngle as Double)

28.18.141 setXAxisStyle(font as string, fontSize as Double, fontColor as Integer, fontAngle as Double)


Function: Sets x-axis label style.

Notes:
The default is Arial 8 pt black color as font with no text rotation.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>font</td>
<td>(Mandatory)</td>
<td>The font of the axis labels.</td>
</tr>
<tr>
<td>fontSize</td>
<td>(Mandatory)</td>
<td>The font size of the axis labels in points.</td>
</tr>
<tr>
<td>fontColor</td>
<td>(Mandatory)</td>
<td>The color of the axis labels.</td>
</tr>
<tr>
<td>fontAngle</td>
<td>(Mandatory)</td>
<td>The rotation of the axis labels.</td>
</tr>
</tbody>
</table>

See also:
- 28.18.140 setXAxisStyle(font as string, fontSize as Double, fontColor as color, fontAngle as Double)

28.18.142 setYAxisStyle(font as string, fontSize as Double, fontColor as color, bgColor as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Same as the other setYAxisStyle method, but uses color instead of integer data type for passing color values.

See also:
- 28.18.143 setYAxisStyle(font as string, fontSize as Double, fontColor as Integer, bgColor as Integer)
28.18.143 setYAxisStyle(font as string, fontSize as Double, fontColor as Integer, bgColor as Integer)


**Function:** Sets y-axis label style.

**Notes:**

The default is Arial 8 pt black color, with 14 pixels margin.

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>font</td>
<td>(Mandatory)</td>
<td>The font of the axis labels.</td>
</tr>
<tr>
<td>fontSize</td>
<td>(Mandatory)</td>
<td>The font size of the axis labels in points.</td>
</tr>
<tr>
<td>fontColor</td>
<td>(Mandatory)</td>
<td>The color of the axis labels.</td>
</tr>
<tr>
<td>axisMargin</td>
<td>(Mandatory)</td>
<td>The margin at the top of the y-axis in pixels (to leave space for the legend box).</td>
</tr>
</tbody>
</table>

See also:

- 28.18.142 setYAxisStyle(font as string, fontSize as Double, fontColor as color, bgColor as color)
Function: A finance chart created using ChartDirector with the CDFinanceChartMBS class.
**Function:** A finance chart created using ChartDirector with the CDFinanceChartMBS class.
28.19 class CDFinanceSimulatorMBS


**Function:** FinanceSimulator is a utility class to produce tables with random numbers that look like valid financial data series.

**Notes:** It facilitates testing and demonstrating ChartDirector financial charts without needing a real database table.

28.19.2 Methods

28.19.3 Constructor(seed as Integer, startTime as Double, endTime as Double, resolution as Integer)


**Function:** Creates a FinanceSimulator object.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>seed</td>
<td>(Mandatory)</td>
<td>The seed to be used in the random number generator.</td>
</tr>
<tr>
<td>startTime</td>
<td>(Mandatory)</td>
<td>The start date/time of the financial date series.</td>
</tr>
<tr>
<td>endTime</td>
<td>(Mandatory)</td>
<td>The end date/time of the financial date series.</td>
</tr>
<tr>
<td>resolution</td>
<td>(Mandatory)</td>
<td>The resolution of the financial data series in seconds. For example, a value of 86400 means daily data (1 day = 86400 seconds). A value of 7 * 86400 means weekly data. A value of 30 * 86400 means monthly data.</td>
</tr>
</tbody>
</table>

See also:

- 28.19.4 Constructor(seed as string, startTime as Double, endTime as Double, resolution as Integer) 4739

28.19.4 Constructor(seed as string, startTime as Double, endTime as Double, resolution as Integer)


**Function:** Creates a FinanceSimulator object.

**Notes:**

See also:

- 28.19.3 Constructor(seed as Integer, startTime as Double, endTime as Double, resolution as Integer) 4739
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<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>seed</td>
<td>(Mandatory)</td>
<td>The seed to be used in the random number generator.</td>
</tr>
<tr>
<td>startTime</td>
<td>(Mandatory)</td>
<td>The start date/time of the financial date series.</td>
</tr>
<tr>
<td>endTime</td>
<td>(Mandatory)</td>
<td>The end date/time of the financial date series.</td>
</tr>
<tr>
<td>resolution</td>
<td>(Mandatory)</td>
<td>The resolution of the financial data series in seconds. For example, a value of 86400 means daily data (1 day = 86400 seconds). A value of 7 * 86400 means weekly data. A value of 30 * 86400 means monthly data.</td>
</tr>
</tbody>
</table>

28.19.5 getCloseData as CDArrayMBS

**Function:** Gets the close data series.

28.19.6 getHighData as CDArrayMBS

**Function:** Gets the high data series.

28.19.7 getLowData as CDArrayMBS

**Function:** Gets the low data series.

28.19.8 getOpenData as CDArrayMBS

**Function:** Gets the open data series.

28.19.9 getTimeStamps as CDArrayMBS

**Function:** Gets the timestamps of the data series.
28.19.10  getVolData as CDArrayMBS


**Function:** Gets the volume data series.
28.20 class CDHLOCLayerMBS

28.20.1 class CDHLOCLayerMBS

Function: The HLOCLayer class represents high-low-open-close layers.
Notes:
Subclass of the CDBaseBoxLayerMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

28.20.2 Methods

28.20.3 setColorMethod(colorMethod as Integer, riseColor as color, fallColor as color, leadValue as Double = -1.7E308)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other setColorMethod method, but uses color instead of integer data type for passing color values.
See also:
- 28.20.4 setColorMethod(colorMethod as Integer, riseColor as Integer, fallColor as Integer = -1, leadValue as Double = -1.7E308)

28.20.4 setColorMethod(colorMethod as Integer, riseColor as Integer, fallColor as Integer = -1, leadValue as Double = -1.7E308)

Function: Sets the coloring method for the HLOC symbols.
Notes:
See XYChart.addHLOCLayer for the supported coloring methods for HLOC symbols.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>colorMethod</td>
<td>(Mandatory)</td>
<td>The method to color the HLOC layer. Please refer to XYChart.addHLOCLayer3 for the supported coloring methods.</td>
</tr>
<tr>
<td>riseColor</td>
<td>(Mandatory)</td>
<td>The color to be used on an &quot;up&quot; day.</td>
</tr>
<tr>
<td>fallColor</td>
<td>-1</td>
<td>The color to be used on a &quot;down&quot; day. The default value of -1 means it is the same as the riseColor.</td>
</tr>
<tr>
<td>leadValue</td>
<td>[-Infinity]</td>
<td>The lead value to act as the closing pricing before the first day, so as to determine if the first day is an &quot;up&quot; or &quot;down&quot; day.</td>
</tr>
</tbody>
</table>
28.20. **CLASS CDHLOCLAYERMBS**

See also:

- 28.20.3 `setColorMethod(colorMethod as Integer, riseColor as color, fallColor as color, leadValue as Double = -1.7E308)`
28.21 class CDImageMapHandlerMBS

28.21.1 class CDImageMapHandlerMBS

MBS ChartDirector Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: ImageMapHandler is a utility class to handle image maps in HTML format (that is, as <AREA> tags). Notes: It determines if a given point is on a hot spot as defined by the image map, and retrieves the hot spot parameters.

The BaseChart.getHTMLImageMap method can be used to automatically generate image maps for charts automatically.

The advantages of using HTML image map format is that it is easy for developers to customize the hot spots. For example, one can create custom buttons in the chart image by drawing custom text boxes, and then create custom image maps to define the text boxes as hot spots. These custom image maps can be appended to the image maps generated by BaseChart.getHTMLImageMap using simple string concatenation.

ImageMapHandler will process the various attributes of the HTML &lt;AREA&gt; tags as follows:

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>coords</td>
<td>This attribute defines the position and shape of the hot spot.</td>
</tr>
<tr>
<td>href</td>
<td>The URL specified in this attribute will become the attributes of the hot spot. The path portion of the URL will become the path attribute, while the query parameters will become the attributes of the hot spot as is.</td>
</tr>
<tr>
<td>title</td>
<td>This attribute defines the tool tip text to display when the mouse moves over and stops on the hot spot.</td>
</tr>
</tbody>
</table>

28.21.2 Methods

28.21.3 Constructor(ImageMap as string)

MBS ChartDirector Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Constructs an image map handler object for the given image map. Notes:
**28.21.1**  CLASS CDIMAGEMAPHANDLERMBS

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>imageMap</td>
<td>(Mandatory)</td>
<td>A text string representing the image map in HTML format.</td>
</tr>
</tbody>
</table>

### 28.21.4  getHotSpot(xCoordinate as Integer, yCoordinate as Integer) as Integer


**Function:** Gets the hot spot under the given point as the current hot spot.

**Notes:**

This method will retrieve the hot spot under the given point as the "current hot spot". Its attributes can then be retrieved using ImageMapHandler.getKey, ImageMapHandler.getValue and ImageMapHandler.getValue2.

This method returns an integer representing the hot spot, or -1 if the point is not over any hot spot. Each hot spot region is represented by a unique integer, which can be any arbitrary number. The number is mainly used to determine if the cursor has changed from one hot spot to another hot spot.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>(Mandatory)</td>
<td>The x coordinate of a point of which the hot spot is to be retrieved.</td>
</tr>
<tr>
<td>y</td>
<td>(Mandatory)</td>
<td>The y coordinate of a point of which the hot spot is to be retrieved.</td>
</tr>
</tbody>
</table>

**Return Value**

An integer representing the hot spot, or -1 if the given point is not over any hot spot.

### 28.21.5  getKey(i as Integer) as string


**Function:** Gets the key of an attribute of the current hot spot.

**Notes:**

Each hot spot is associated with an arbitrary number of attributes, in which each attribute consists of a key and a value. This method returns the key of the (i + 1)th attribute. (The first attribute is 0, while the nth attribute is n - 1.)

If the argument i is equal or larger than the number of attributes, an null string will be returned. This behaviour can be used to enumerate the attributes and to determine how many attributes are associated for the hot spot.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>(Mandatory)</td>
<td>The index of the attribute to retrieve (index of first attribute is 0).</td>
</tr>
</tbody>
</table>
28.21.6  getValue(i as Integer) as string


Function: Gets the value of an attribute of the current hot spot by using its numeric index.

Notes:
Each hot spot is associated with an arbitrary number of attributes, in which each attribute consists of a key and a value. This method returns the value of the \((i + 1)\)th attribute. (The first attribute is 0, while the \(n\)th attribute is \(n - 1\).)

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>(Mandatory)</td>
<td>The index of the attribute to retrieve (index of first attribute is 0).</td>
</tr>
</tbody>
</table>

Return Value
A string representing the value of the attribute, or null if there is no such attribute.

See also:
- 28.21.7 getValue(key as string) as string

28.21.7  getValue(key as string) as string


Function: Gets the value of an attribute of the current hot spot by using its key.

Notes:
Each hot spot is associated with an arbitrary number of attributes, in which each attribute consists of a key and a value. This method returns the value of the attribute given the key.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>key</td>
<td>(Mandatory)</td>
<td>A text string representing the key of the attribute.</td>
</tr>
</tbody>
</table>

Return Value
A string representing the value of the attribute, or null if there is no such attribute.

See also:
- 28.21.6 getValue(i as Integer) as string
28.22. **CLASS CDINTERLINELAYERMBS**

### 28.22 class CDInterLineLayerMBS

#### 28.22.1 class CDInterLineLayerMBS


**Function:** The InterLineLayer class represents interline layers.

**Notes:**
Interline layers are used to color the region between two lines. The lines can come from a variety of layer types, such as line layers, spline layers, step line layers, trend layers or axis mark lines. Subclass of the CDLayerMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

### 28.22.2 Methods

#### 28.22.3 setGapColor(gapColor12 as Color, gapColor21 as Color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other setGapColor method, but uses color instead of integer data type for passing color values.

**See also:**
- 28.22.4 setGapColor(gapColor12 as Integer, gapColor21 as Integer = -1)

#### 28.22.4 setGapColor(gapColor12 as Integer, gapColor21 as Integer = -1)


**Function:** Sets the color used to fill the area under NoValue data points.

**Notes:**
By default, if there are NoValue data points on the lines, ChartDirector will interpolate across the points. The region will remain continuous.

This method can be used to set up an alternative colors to represent the regions at NoValue data point positions. In particular, if the colors are set to Transparent, the NoValue data points will result in gaps in the fill region.

**See also:**
- 28.22.3 setGapColor(gapColor12 as Color, gapColor21 as Color)
<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>gapColor12</td>
<td>(Mandatory)</td>
<td>The color used to fill the region under NoValue positions when value of the first line is greater of the value of the second line.</td>
</tr>
<tr>
<td>gapColor21</td>
<td>-1</td>
<td>The color used to fill the region under NoValue positions when value of the second line is greater of the value of the first line. The default value of -1 means it is the same as gapColor12.</td>
</tr>
</tbody>
</table>
28.23.1  class CDLayerMBS

Function: The Layer class is the base class for all XYChart layer classes.
Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

28.23.2  Methods

28.23.3  addCustomAggregateLabel(dataItem as Integer, label as string, font as string = "", fontSize as Double = 8, fontColor as Integer = & hffff0002, fontAngle as Double = 0) as CDTextBoxMBS

Function: Adds a custom aggregate label to an aggregated object.
Notes:
Aggregate data labels applies to layer types that contains "aggregated data", such as stacked bar layer and stacked area layer. In these layer types, data labels (see Layer.setDataLabelStyle) represents a single data item, while aggregate labels represents the stacked object.

See Font Specification for details on various font attributes.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>dataItem</td>
<td>(Mandatory)</td>
<td>The index of the aggregated object. The first aggregated object is 0, while the nth aggregated object is (n - 1).</td>
</tr>
<tr>
<td>label</td>
<td>(Mandatory)</td>
<td>A text string representing the custom aggregate label. Parameter Substitution and Formatting is supported.</td>
</tr>
<tr>
<td>font</td>
<td>&quot;&quot;</td>
<td>The font used to draw the labels.</td>
</tr>
<tr>
<td>fontSize</td>
<td>8</td>
<td>The font size used to draw the labels.</td>
</tr>
<tr>
<td>fontColor</td>
<td>TextColor</td>
<td>The color used to draw the labels.</td>
</tr>
<tr>
<td>fontAngle</td>
<td>0</td>
<td>The rotation angle of the labels.</td>
</tr>
</tbody>
</table>

Return Value
A TextBox object representing the prototype of the obj. This may be used to fine-tune the appearance of the obj.

See font specification here:
http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml
See also:
28.23.4 addCustomAggregateLabel(dataItem as Integer, label as string, font as string, fontSize as Double, fontColor as color, fontAngle as Double = 0) as CDTextBoxMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addCustomAggregateLabel method, but uses color instead of integer data type for passing color values.

See also:

- 28.23.3 addCustomAggregateLabel(dataItem as Integer, label as string, font as string = "", fontSize as Double = 8, fontColor as Integer = & hffff0002, fontAngle as Double = 0) as CDTextBoxMBS

28.23.5 addCustomDataLabel(dataSet as Integer, dataItem as Integer, label as string, font as string = "", fontSize as Double = 8, fontColor as Integer = & hffff0002, fontAngle as Double = 0) as CDTextBoxMBS


**Function:** Adds a custom data label to a data point.

**Notes:**
Data labels are text used label data points in the layer. Please refer to Layer.setDataLabelStyle for a more detail description.

See Font Specification for details on various font attributes.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>dataSet</td>
<td>(Mandatory)</td>
<td>The data set number for the data point. The first data set is 0, while the nth data set is (n - 1).</td>
</tr>
<tr>
<td>dataItem</td>
<td>(Mandatory)</td>
<td>The data point number for the data point within the data set. The first data point is 0, while the nth data point is (n - 1).</td>
</tr>
<tr>
<td>label</td>
<td>(Mandatory)</td>
<td>A text string representing the data label. Parameter Substitution and Formatting is supported.</td>
</tr>
<tr>
<td>font</td>
<td>&quot;&quot;</td>
<td>The font used to draw the label.</td>
</tr>
<tr>
<td>fontSize</td>
<td>8</td>
<td>The font size used to draw the label.</td>
</tr>
<tr>
<td>fontColor</td>
<td>TextColor</td>
<td>The color used to draw the label.</td>
</tr>
<tr>
<td>fontAngle</td>
<td>0</td>
<td>The rotation angle of the label.</td>
</tr>
</tbody>
</table>

**Return Value**
A TextBox object representing the prototype of the obj. This may be used to fine-tune the appearance of the obj.
28.23. **CLASS CDLAYERMBS**

See font specification here:
http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml

See also:

- 28.23.5 `addCustomDataLabel(dataSet as Integer, dataItem as Integer, label as string, font as string = "", fontSize as Double = 8, fontColor as Integer = & hffff0002, fontAngle as Double = 0) as CDTextBoxMBS` 4750

**28.23.6 addCustomDataLabel(dataSet as Integer, dataItem as Integer, label as string, font as string, fontSize as Double, fontColor as color, fontAngle as Double = 0) as CDTextBoxMBS**

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addCustomDataLabel method, but uses color instead of integer data type for passing color values.

See also:

- 28.23.5 `addCustomDataLabel(dataSet as Integer, dataItem as Integer, label as string = "", fontSize as Double = 8, fontColor as Integer = & hffff0002, fontAngle as Double = 0) as CDTextBoxMBS` 4750

**28.23.7 addCustomGroupLabel(dataGroup as Integer, dataItem as Integer, label as string = "", fontSize as Double = 8, fontColor as Integer = & hffff0002, fontAngle as Double = 0) as CDTextBoxMBS**


**Function:** Adds a custom data group label to object representing the group.

**Notes:**

Data group label applies to layer types that may represent data groups. See Layer.addDataGroup on how data groups are created and the layer types that support data groups.

See Font Specification for details on various font attributes.

**Return Value**

A TextBox object representing the prototype of the obj. This may be used to fine-tune the appearance of the obj.

See font specification here:
http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml

See also:

- 28.23.8 `addCustomGroupLabel(dataGroup as Integer, dataItem as Integer, label as string, fontSize as Double, fontColor as color, fontAngle as Double = 0) as CDTextBoxMBS` 4752
28.23.8  addCustomGroupLabel(dataGroup as Integer, dataItem as Integer, label as string, font as string, fontSize as Double, fontColor as color, fontAngle as Double = 0) as CDTextBoxMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other addCustomGroupLabel method, but uses color instead of integer data type for passing color values.

See also:

- 28.23.7 addCustomGroupLabel(dataGroup as Integer, dataItem as Integer, label as string, font as string ="", fontSize as Double = 8, fontColor as Integer = & hffff0002, fontAngle as Double = 0) as CDTextBoxMBS

28.23.9  addDataGroup(name as string)

**Function:** Open a new data group.
**Notes:**
Currently, only stacked bar layers support data groups for creating "multi-stacked" bars.

In a normal stacked bar layer, all data sets are stacked on top of one another, creating one stacked bar per x-axis position. If data grouping is used, data sets within the same data group with be stacked up. So there may be multiple stacked bars in each x-axis position. These stacked bars are drawn side by side.

When you add a data set using Layer.addDataSet, the data set will belong to the current data group. The addDataGroup method can be used to open a new data group, so that subsequent data sets will belong to that new group.

You may associate a name with a data group. The name can then be used in data labels or image maps to identify the data group.
### 28.23. CLASS CDLAYERMBS

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>name</td>
<td>&quot;&quot;</td>
<td>Name of the data group.</td>
</tr>
</tbody>
</table>

#### 28.23.10 addDataSet(data as CDArrayMBS, colorvalue as color, name as string = "") as CDDatasetMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addDataSet method, but uses color instead of integer data type for passing color values.

**See also:**
- 28.23.11 addDataSet(data as CDArrayMBS, colorvalue as Integer = -1, name as string = "") as CDataSetMBS
- 28.23.12 addDataSet(data() as Double, colorvalue as color, name as string = "") as CDDatasetMBS
- 28.23.13 addDataSet(data() as Double, colorvalue as Integer = -1, name as string = "") as CDataSetMBS

#### 28.23.11 addDataSet(data as CDArrayMBS, colorvalue as Integer = -1, name as string = "") as CDDatasetMBS


**Function:** Adds a data set to the chart layer.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>data</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the data set.</td>
</tr>
<tr>
<td>color</td>
<td>-1</td>
<td>The color to draw the data item. -1 means that the color is automatically selected from the palette.</td>
</tr>
<tr>
<td>name</td>
<td>&quot;&quot;</td>
<td>The name of the data set. The name will be used in the legend box, if one is available. An empty string means the data set has no name.</td>
</tr>
</tbody>
</table>

**Return Value**

A Dataset object representing the data set added. You may use the methods of this object to fine-tune how the data set is drawn on the chart.

**See also:**
- 28.23.10 addDataSet(data as CDArrayMBS, colorvalue as color, name as string = "") as CDDatasetMBS
- 28.23.12 addDataSet(data() as Double, colorvalue as color, name as string = "") as CDDatasetMBS
28.23.12  addDataSet(data() as Double, colorvalue as color, name as string = ") as CDDataSetMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other addDataSet method, but uses color instead of integer data type for passing color values.
See also:

• 28.23.10 addDataSet(data as CDArrayMBS, colorvalue as color, name as string = ") as CDDataSetMBS
  4753

• 28.23.11 addDataSet(data as CDArrayMBS, colorvalue as Integer = -1, name as string = ") as CD-
  DataSetMBS
  4753

• 28.23.13 addDataSet(data() as Double, colorvalue as Integer = -1, name as string = ") as CD-
  DataSetMBS
  4754

28.23.13  addDataSet(data() as Double, colorvalue as Integer = -1, name as string = ") as CDDataSetMBS

Function: Adds a data set to the chart layer.
Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>data</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the data set.</td>
</tr>
<tr>
<td>color</td>
<td>-1</td>
<td>The color to draw the data item. -1 means that the color is automatically selected from the palette.</td>
</tr>
<tr>
<td>name</td>
<td>&quot;&quot;</td>
<td>The name of the data set. The name will be used in the legend box, if one is available. An empty string means the data set has no name.</td>
</tr>
</tbody>
</table>

Return Value
A DataSet object representing the data set added. You may use the methods of this object to fine-tune how the data set is drawn on the chart.
See also:

• 28.23.10 addDataSet(data as CDArrayMBS, colorvalue as color, name as string = "") as CDDataSetMBS
  4753

• 28.23.11 addDataSet(data as CDArrayMBS, colorvalue as Integer = -1, name as string = "") as CD-
  DataSetMBS
  4753

• 28.23.12 addDataSet(data() as Double, colorvalue as color, name as string = "") as CDDataSetMBS
  4754
28.23. CLASS CDLAYERMBS

28.23.14 addExtraField(numbers() as Double)


**Function:** Adds an array of numbers/dates to be used as an extra field in various places.

**Notes:**
This method merely stores the data inside the layer object. The Parameter Substitution and Formatting mechanism will determine how the data are to be used.

A common use for extra fields is to specify extra information (such as a custom serial number for the data points) to be displayed on data labels or on tool tips, or to supply extra query parameters in clickable charts. All these are achieved by specifying the extra field on the data label template or image map templates during parameter substitution.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>numbers</td>
<td>(Mandatory)</td>
<td>An array of numbers/dates to be stored inside the layer object.</td>
</tr>
</tbody>
</table>

See also:
- 28.23.15 addExtraField(texts() as string)

28.23.15 addExtraField(texts() as string)


**Function:** Adds an array of text to be used as an extra field in various places.

**Notes:**
This method merely stores the data inside the layer object. The Parameter Substitution and Formatting mechanism will determine how the data are to be used.

A common use for extra fields is to specify extra information (such as a custom serial number for the data points) to be displayed on data labels or on tool tips, or to supply extra query parameters in clickable charts. All these are achieved by specifying the extra field on the data label template or image map templates during parameter substitution.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>texts</td>
<td>(Mandatory)</td>
<td>An array of text to be stored inside the layer object.</td>
</tr>
</tbody>
</table>

See also:
- 28.23.14 addExtraField(numbers() as Double)
28.23.16  alignLayer(layer as CDLayerMBS, dataSet as Integer)

**Function:** Aligns the layer with a data set of another bar chart layer in Side layout.
**Notes:**
The Side layout is a layout method specific to the bar chart layer. In this layout method, multiple bars belonging to the same x-position are laid out side by side. Thus the bars are not centered exactly on the x-position, but are shifted. The shift amount depends on the data set numbers of the bars.

In some cases, it may be necessary to overlay another layer (eg. a line chart layer, or a box-whisker chart layer) on top of the bars. The alignLayer method ensures the data points are shifted by the same amount as a given data set on a given BarLayer.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>layer</td>
<td>(Mandatory)</td>
<td>The BarLayer which contains the bars to synchronize with.</td>
</tr>
<tr>
<td>dataSet</td>
<td>(Mandatory)</td>
<td>The data set of the bars to synchronize with.</td>
</tr>
</tbody>
</table>

28.23.17  Constructor

MBS ChartDirector Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The private constructor.

28.23.18  getDataSet(dataSet as Integer) as CDDatasetMBS

**Function:** Gets the requested DataSet object.
**Notes:**
<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>dataSet</td>
<td>(Mandatory)</td>
<td>A data set number, starting from 0. The first data set object is 0, and the nth data set is (n-1).</td>
</tr>
</tbody>
</table>

Return Value
The requested DataSet object.

28.23.19  getDataSetByZ(z as Integer) as CDDatasetMBS

**Function:** Gets a DataSet object based on the order in which it is being drawn.
28.23. CLASS CDLAYERMBS

Notes:

In certain layer types, the data sets are drawn in a certain order. For example, in a line layer, the data sets represent lines and they are drawn one by one. In contrast, for a candlestick layer, the high, low, open and close data sets are combined into candlestick symbols, and there is no specific order on which data sets are drawn.

This method can be used to get the data set based on the order it is being drawn. If the data sets are not drawn in any specific order, this method will return the data sets in the reverse order to which it is added to the layer.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>zIndex</td>
<td>(Mandatory)</td>
<td>The z-index of the required data set. The z-index of the first data set drawn is 0. The z-index for the Nth data set drawn is N - 1.</td>
</tr>
</tbody>
</table>

Returns the DataSet object at the specified z-order.

28.23.20 getDataSetCount as Integer

Function: Gets the number of data sets in the layer.
Notes: Returns the number of data sets in the layer.

28.23.21 getHTMLImageMap(url as string, queryFormat as string = "", extraAttr as string = "", offsetX as Integer = 0, offsetY as Integer = 0) as string

Function: Generates an HTML image map for all data points as represented on the layer.
Notes: Please refer to BaseChart.getHTMLImageMap for the detail description of this method.

This method should be called only after creating the chart image (e.g. using BaseChart.makeChart, BaseChart.makeChart2 or BaseChart.makeChart3). The image map cannot be determined without creating the chart image first.

The special keyword " { default } " represents the default query parameters. This is useful for specifying appending to the default.

Note that an empty string means to use the default query query parameters. To specify no query parameter,
## Argument Default Description

**url** *(Mandatory)*
The URL to be used in the "href" attribute of the image map. Parameter Substitution and Formatting is supported. Use an empty string if no href attribute is needed.

**queryFormat** 
A text string representing the template of the query parameters to be appended to the URL. Parameter Substitution and Formatting is supported.

**extraAttr** 
A text string to specify additional attributes to add to the &lt;area&gt; tag. Parameter Substitution and Formatting is supported.

**offsetX**
An offset to be added to all x coordinates in the image map. This is useful if the current image will be shifted and inserted into another image. In this case, the image map will need to be shifted by the same offset.

**offsetY**
An offset to be added to all y coordinates in the image map. See offsetX above for description.

### Returns

A text string containing the image map generated.

---

### 28.23.22 getImageCoor(dataSet as Integer, dataItem as Integer = & h80000001, offsetX as Integer = 0, offsetY as Integer = 0) as string


**Function:** Gets the image map coordinates of a data point as represented in the layer as HTML image map attributes.

**Notes:**

The image map coordinates will be in the following format:

```
shape="[ shape ]" cords="[ x1 ] , [ y1 ] , [ x2 ] , [ y2 ] ..."
```

This format is specially designed so that it can easily be incorporated into HTML image maps.

This method should be called only after creating the chart image (e.g. using BaseChart.makeChart, BaseChart.makeChart2 or BaseChart.makeChart3). The image map cannot be determined without creating the chart image first.

**Return Value**

A text string representing the coordinates of the data point as represented in the layer in HTML image map attribute format.
getImageCoor2(dataItem as Integer, offsetX as Integer = 0, offsetY as Integer = 0) as string


Function: Gets the image map coordinates of a region containing all data points at the given x-position as HTML image map attributes.

Notes:
For example, in a stacked bar chart, this method will obtain the image map coordinates of the whole stacked bar, which contains multiple data points at the same x-position.

The image map coordinates will be in the following format:

shape="" cords=" [ x1 ] , [ y1 ] , [ x2 ] , [ y2 ] ..."

This format is specially designed so that it can easily be included into HTML image maps.

This method should be called only after creating the chart image (eg. using BaseChart.makeChart, BaseChart.makeChart2 or BaseChart.makeChart3). The image map cannot be determined without creating the chart image first.
28.23.24  **getLegendIcon(dataSetNo as Integer) as string**

**Function:** Gets the textual representation of the legend icon for a data set.  
**Notes:**  
The textual representation can be used in any ChartDirector API that supports the ChartDirector Mark Up Language. A common usage is to insert the icon to a cell in a CDMLTable to label the data series in the table, or to create a custom legend table.

The legend icon is the same legend icon that would be used in the CDLegendBoxMBS. If you modify the icon appearance using the methods of the CDLegendBoxMBS object (such as using CDLegendBoxMBS.setKeyBorder to configure the legend key border), the modification will also apply to the icon returned this method.

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>dataSetNo</td>
<td>(Mandatory)</td>
<td>The data set for which the legend icon represents.</td>
</tr>
</tbody>
</table>

**Return Value**  
The textual representation of the legend icon for the data set.

28.23.25  **getNearestXValue(target as Double) as Double**

**Function:** Gets the x data value that is nearest to the specified x pixel coordinate.  
**Notes:**  
This method will search all x data values in the Layer to look for the x data value that is nearest to the given x coordinate. If there are two x data values equally near to the specified x pixel coordinate, this method will arbitrarily return one of the values.

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xCoor</td>
<td>(Mandatory)</td>
<td>The x pixel coordinate to search for.</td>
</tr>
</tbody>
</table>

Returns the x data value that is nearest to the specified x coordinate.
28.23. CLASS CDLAYERMBS

28.23.26  getXCoor(value as Double) as Integer

Function: Gets the x pixel coordinate of a point given the x data value.
Notes:
Note: You must call BaseChart.layout first before calling this method. It is because ChartDirector needs to
perform auto-scaling and determine the axis scale first before it can compute the coordinates.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>v</td>
<td>(Mandatory)</td>
<td>The x data value.</td>
</tr>
</tbody>
</table>

Return Value
The x coordinate of the x data value.

28.23.27  getXIndexOf(xValue as Double, tolerance as Double = 0) as Integer

Function: Gets the data point index at the specified x data value.
Notes:
The index can be used in DataSet.getValue and DataSet.getPosition to obtain the y values and positions of
the data points for all data sets in the layer.

The tolerance argument is to allow this method to consider data points that are not exactly at xValue, but
are within tolerance from it.

If multiple data points at within tolerance, this method will return the index of the data point nearest to
xValue. If multiple data points are equally near to xValue, this method will choose one arbitrarily and return
its data point index. If no data points are found, this method will return -1.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xValue</td>
<td>(Mandatory)</td>
<td>The x data value used to look for the data points in order to get the data point index of the nearest data point.</td>
</tr>
<tr>
<td>tolerance</td>
<td>0</td>
<td>The tolerance allowed for data points that are not exactly at the specified xValue.</td>
</tr>
</tbody>
</table>

Returns the data point index of the data point nearest to the specified x data value up to the specified tolerance, or -1 if no data points are found.
### 28.23.28 `getXPosition(i as Integer) as Double`


**Function:** Gets the x positional value of a data point, as measured on the primary x-axis.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>(Mandatory)</td>
<td>The data point index of the data point. The first data point is 0; the nth data point is ( (n - 1) ).</td>
</tr>
</tbody>
</table>

### 28.23.29 `getYCoor(value as Double, axis as boolean=true) as Integer`


**Function:** Gets the y pixel coordinate of a point given the y data value.

**Notes:**

Note: You must call `BaseChart.layout` first before calling this method. It is because ChartDirector needs to perform auto-scaling and determine the axis scale first before it can compute the coordinates.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>v</td>
<td>(Mandatory)</td>
<td>The y data value.</td>
</tr>
<tr>
<td>yAxis</td>
<td>[ Null ]</td>
<td>The y-axis to use to determine the pixel coordinates of data values. The y-axis may be obtained using <code>XYChart.yAxis</code>, <code>XYChart.yAxis2</code> or <code>XYChart.addAxis</code>. The default is to use the primary y-axis.</td>
</tr>
</tbody>
</table>

For backward compatibility, the axis argument can also be a boolean value. A true value means the primary y-axis. A false value means the secondary y-axis.

**Return Value**
The y coordinate of the y data value.

**See also:**

- 28.23.30 `getYCoor(value as Double, axis as CDAxisMBS) as Integer`

### 28.23.30 `getYCoor(value as Double, axis as CDAxisMBS) as Integer`


**Function:** Gets the y pixel coordinate of a point given the y data value.

**Notes:**

Note: You must call `BaseChart.layout` first before calling this method. It is because ChartDirector needs to perform auto-scaling and determine the axis scale first before it can compute the coordinates.
28.23. CLASS CDLAYERMBS

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>v</td>
<td>(Mandatory)</td>
<td>The y data value.</td>
</tr>
<tr>
<td>yAxis</td>
<td>[ Null ]</td>
<td>The y-axis to use to determine the pixel coordinates of data values. The y-axis may be obtained using XYChart.yAxis, XYChart.yAxis2 or XYChart.addAxis. The default is to use the primary y-axis.</td>
</tr>
</tbody>
</table>

For backward compatibility, the axis argument can also be a boolean value. A true value means the primary y-axis. A false value means the secondary y-axis.

Return Value
The y coordinate of the y data value.

See also:
- 28.23.29 getYCoor(value as Double, axis as boolean=true) as Integer

28.23.31 moveBack(layer as CDLayerMBS=nil)


**Function:** Moves the layer in front of another layer.

**Notes:**
By default, the front to back ordering of the Layer objects are the same as the order in which they are added to the chart. For example, a layer added first will be in front of a layer added last.

This method can be used to move the layer behind another layer.

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>layer</td>
<td>nil</td>
<td>The Layer for this layer to move behind. A nil object means the layer will be moved behind all current layers.</td>
</tr>
</tbody>
</table>

28.23.32 moveFront(layer as CDLayerMBS=nil)


**Function:** Moves the layer in front of another layer.

**Notes:**
By default, the front to back ordering of the CDLayerMBS objects are the same as the order in which they are added to the chart. For example, a layer added first will be in front of a layer added last.
CHAPTER 28. CHARTDIRECTOR

This method can be used to move the layer in front of another layer.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>layer</td>
<td>nil</td>
<td>The Layer for this layer to move in front of. The default value of null means the layer will be moved in front of all current layers.</td>
</tr>
</tbody>
</table>

28.23.33  set3D(d as Integer = -1, zGap as Integer = 0)


Function: Sets the 3D depth of the layer, and the 3D gap between the current layer and the next layer.

Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>d</td>
<td>-1</td>
<td>The 3D depth of the layer in pixels. -1 means the 3D depth is automatically calculated.</td>
</tr>
<tr>
<td>zGap</td>
<td>0</td>
<td>The 3D gap between the current layer and the next layer in pixels.</td>
</tr>
</tbody>
</table>

28.23.34  setAggregateLabelFormat(formatString as string)


Function: Sets the aggregate label format.

Notes:

By default, the aggregate label format is " { value } ". Please refer to Parameter Substitution and Formatting on available parameters and how to format them.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>formatString</td>
<td>(Mandatory)</td>
<td>The format string.</td>
</tr>
</tbody>
</table>

28.23.35  setAggregateLabelStyle(font as string = "", fontSize as Double = 8, fontcolor as Integer = & hff0002, fontAngle as Double = 0) as CDTextBoxMBS


Function: Enables aggregate labels and sets their styles.

Notes:
Aggregate data labels applies to layer types that contains "aggregated data", such as stacked bar layer and stacked area layer. In these layer types, data labels (see Layer.setDataLabelStyle) represents a single data item, while aggregate labels represents the stacked object.

See Font Specification for details on various font attributes.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>font</td>
<td>&quot;&quot;</td>
<td>The font used to draw the labels.</td>
</tr>
<tr>
<td>fontSize</td>
<td>8</td>
<td>The font size used to draw the labels.</td>
</tr>
<tr>
<td>fontColor</td>
<td>TextColor</td>
<td>The color used to draw the labels.</td>
</tr>
<tr>
<td>fontAngle</td>
<td>0</td>
<td>The rotation angle of the labels.</td>
</tr>
</tbody>
</table>

Return Value
A TextBox object representing the prototype of the obj. This may be used to fine-tune the appearance of the obj.

See font specification here:
http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml

See also:
- 28.23.36 setAggregateLabelStyle(font as string, fontSize as Double, fontcolor as color, fontAngle as Double = 0) as CDTextBoxMBS

28.23.36 setAggregateLabelStyle(font as string, fontSize as Double, fontcolor as color, fontAngle as Double = 0) as CDTextBoxMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other setAggregateLabelStyle method, but uses color instead of integer data type for passing color values.

See also:
- 28.23.35 setAggregateLabelStyle(font as string = "", fontSize as Double = 8, fontcolor as Integer = &hffff0002, fontAngle as Double = 0) as CDTextBoxMBS

28.23.37 setBaseLine(BaseLine as Double)

**Function:** Sets the baseline for the data representation.

**Notes:**
Certain data representation, such as bars in bar layers and area in area layers, are drawn from a base line. The base line by default is \( y = 0 \).
For example, for a vertical bar layer, the bars start from $y = 0$ and grow upwards for positive data (assuming the y-axis is not reversed), and downwards for negative data.

This method can be used to modify the base line to other values.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>baseLine</td>
<td>(Mandatory)</td>
<td>The value of the base line.</td>
</tr>
</tbody>
</table>

**28.23.38 setBorderColor(colorvalue as color, lightingEffect as Integer = 0)**


**Function:** Sets the default border color and 3D raised effect when drawing data sets on the layer.

**Notes:**

This method only applies to layers that represents data with elements that have borders (e.g. bar layer).

This method affect all data sets. To set the color of one particular data set, use DataSet.setDataColor.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The border color.</td>
</tr>
<tr>
<td>raisedEffect</td>
<td>0</td>
<td>The 3D border width. For positive values, the border will appear raised. For negative values, the border will appear depressed. A zero value means the border will appear flat. This argument is also used to support glassEffect and softLighting effects.</td>
</tr>
</tbody>
</table>

See also:

- 28.23.39 setBorderColor(colorvalue as Integer, lightingEffect as Integer = 0)

**28.23.39 setBorderColor(colorvalue as Integer, lightingEffect as Integer = 0)**


**Function:** Sets the default border color and 3D raised effect when drawing data sets on the layer.

**Notes:**

This method only applies to layers that represents data with elements that have borders (e.g. bar layer).

This method affect all data sets. To set the color of one particular data set, use DataSet.setDataColor.
28.23. CLASS CDLAYERMBS

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The border color.</td>
</tr>
<tr>
<td>raisedEffect</td>
<td>0</td>
<td>The 3D border width. For positive values, the border will appear raised. For</td>
</tr>
<tr>
<td></td>
<td></td>
<td>negative values, the border will appear depressed. A zero value means the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>border will appear flat. This argument is also used to support glassEffect</td>
</tr>
<tr>
<td></td>
<td></td>
<td>and softLighting effects.</td>
</tr>
</tbody>
</table>

See also:

- 28.23.38 setBorderColor(colorvalue as color, lightingEffect as Integer = 0)

28.23.40 setDataCombineMethod(m as Integer)


**Function:** Sets the method used to combine multiple data sets in a layer.

**Notes:**

This method is used only for layers that can combine multiple data sets in different ways. Some layers can only support a subset of the data combine methods defined below.

<table>
<thead>
<tr>
<th>Constant Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Side</td>
<td>3 The data sets are combined by plotting the data representation side by side.</td>
</tr>
<tr>
<td>Stack</td>
<td>1 The data sets are combined by stacking up their data representations.</td>
</tr>
<tr>
<td>Overlay</td>
<td>0 The data sets are combined by drawing them independently, overlapping each</td>
</tr>
<tr>
<td></td>
<td>others.</td>
</tr>
<tr>
<td>Percentage</td>
<td>4 The data sets are combined similar to the Stack method, except that the data</td>
</tr>
<tr>
<td></td>
<td>is scaled so that each stack always summed up to 100. In other words, the</td>
</tr>
<tr>
<td></td>
<td>region that a data item occupies in a stack represents the percentage of the</td>
</tr>
<tr>
<td></td>
<td>data item relative to sum of all the data items in the stack.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>m</td>
<td>(Mandatory)</td>
<td>one of the predefined constants representing the data combine method to use.</td>
</tr>
</tbody>
</table>

28.23.41 setDataLabelFormat(formatString as string)


**Function:** Sets the data label format.

**Notes:**
This method affects all data labels in the layer. To set the label format for one particular data set only, use DataSet.setDataLabelFormat.

Data labels are text used label data points in the layer. Please refer to Layer.setDataLabelStyle for a more detail description.

By default, the data label format is "\{ value \}". Please refer to Parameter Substitution and Formatting on available parameters and how to format them.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>formatString</td>
<td>(Mandatory)</td>
<td>The format string.</td>
</tr>
</tbody>
</table>

28.23.42  

```
setDataSetLabelStyle(font as string = "", fontSize as Double = 8, fontColor as color, fontAngle as Double = 0) as CDTextBoxMBS
```

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 

**Function:** Same as the other setDataLabelStyle method, but uses color instead of integer data type for passing color values.

**See also:**

- 28.23.43 setDataLabelStyle(font as string = "", fontSize as Double = 8, fontcolor as Integer = & hffff0002, fontAngle as Double = 0) as CDTextBoxMBS

28.23.43  

```
setDataSetLabelStyle(font as string = "", fontSize as Double = 8, fontcolor as Integer = & hffff0002, fontAngle as Double = 0) as CDTextBoxMBS
```


**Function:** Enables data labels and sets their styles.

**Notes:**

This method affects all data labels in the layer. To set the style for one particular data set only, use DataSet.setDataLabelStyle.

Data labels are text used label data points in the layer. Different layer types put data labels in different positions. For example, in a bar chart, data labels are put at the internal end of the bar. For a line chart, data labels are put above the data points.

For some chart types, the position of the data labels can be manipulated by calling the TextBox.setAlignment method of the TextBox object returned by the setDataLabelStyle method.
28.23. CLASS CDLAYERMBS

See Font Specification for details on various font attributes.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>font</td>
<td>&quot;&quot;</td>
<td>The font used to draw the labels.</td>
</tr>
<tr>
<td>fontSize</td>
<td>8</td>
<td>The font size used to draw the labels.</td>
</tr>
<tr>
<td>fontColor</td>
<td>TextColor</td>
<td>The color used to draw the labels.</td>
</tr>
<tr>
<td>fontAngle</td>
<td>0</td>
<td>The rotation angle of the labels.</td>
</tr>
</tbody>
</table>

Return Value
A TextBox object representing the prototype of the obj. This may be used to fine-tune the appearance of the obj.

See font specification here:
http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml

See also:
- 28.23.42 setDataLabelStyle(font as string = "", fontSize as Double = 8, fontColor as color, fontAngle as Double = 0) as CDTextBoxMBS 4768

28.23.44 setHTMLImageMap(url as string, queryFormat as string = "", extraAttr as string = "")


Function: Override the default arguments used when generating HTML image map for the layer.

Notes:
BaseChart.getHTMLImageMap can be used to generate HTML image map for the whole chart. When BaseChart.getHTMLImageMap is used, the image map for all layers will be generated based on the arguments supplied to BaseChart.getHTMLImageMap.

The setHTMLImageMap method can be used to override those arguments for a chart layer, so the image map for that layer can be different.

For a detail description of image maps, please refer to BaseChart.getHTMLImageMap.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>url</td>
<td>(Mandatory)</td>
<td>The URL to be used in the &quot;href&quot; attribute of the image map. Parameter Substitution and Formatting is supported.</td>
</tr>
</tbody>
</table>

The special keyword " { default } " represents the global URL as specified in BaseChart.getHTMLImageMap. This field is useful for specifying appending to the global URL.
Note that an empty string also means to use the global URL. To specify no URL, use the special keyword " \{ none \ } ".

To disable the entire image map, use the special keyword " \{ disable \ } ".

\textbf{queryFormat "} A text string representing the template of the query parameters to be appended to the URL. Parameter Substitution and Formatting is supported.

The special keyword " \{ default \ } " represents the global query parameters as specified in \texttt{BaseChart.getHTMLImageMap}. This field is useful for specifying appending to the global query parameters.

Note that an empty string also means to use the global query parameters. To specify no query parameters, use the special keyword " \{ none \ } ".

\textbf{extraAttr "} A text string to specify additional attributes to add to the \texttt{&lt;area&gt;} tag. Parameter Substitution and Formatting is supported.

The special keyword " \{ default \ } " represents the global additional attributes as specified in \texttt{BaseChart.getHTMLImageMap}. This field is useful for specifying appending to the global additional attributes.

Note that an empty string also means to use the global additional attributes. To specify no additional attributes, use the special keyword " \{ none \ } ".

\section*{28.23.45 \texttt{setLegend(m as Integer)}}


\textbf{Function:} Sets the order of the data set names as appeared in the legend box.

\textbf{Notes:}

This method is for backward compatibility. It is equivalent to \texttt{Layer.setLegendOrder(m)}.

\begin{tabular}{lll} 
\textbf{Argument} & \textbf{Default} & \textbf{Description} \\
\texttt{m} & (Mandatory) & One of the predefined constants representing the legend entry ordering method for data sets within the layer. \\
\end{tabular}
28.23. **setLegendOrder** (dataSetOrder as Integer, layerOrder as Integer = -1)


**Function:** Sets the order of the data set names as appeared in the legend box.

**Notes:**

By default, ChartDirector will add named data sets to the legend box. The ordering of the entries follows the order in which the layers are created. For data sets within the same layer, the ordering follows the order in which the data sets are added.

To support flexible ordering of the legend entries, ChartDirector employs a legend entry priority system. Please refer to LegendBox for details of the legend entry priority system.

The base priority of the layer can be specified using the layerOrder argument. The priority of the data sets within a layer can be modified by using the dataSetOrder argument, which must be one of the following predefined constants.

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NormalLegend</td>
<td>0</td>
<td>The data set priority is 10 x (data_set_index + 1). Legend entries are ordered in the order with which the data sets are created.</td>
</tr>
<tr>
<td>ReverseLegend</td>
<td>1</td>
<td>The data sets priority is the reverse of the normal data set priority. Legend entries are ordered in the reverse order with which the data sets are created.</td>
</tr>
<tr>
<td>NoLegend</td>
<td>2</td>
<td>The data set names are not added to the legend box at all.</td>
</tr>
</tbody>
</table>

**Argument**    | **Default** | **Description**
------        | -------   | ---------------------------------------------------------------|
dataSetOrder  | (Mandatory) | One of the predefined constants representing the legend entry ordering method for data sets within the layer. |
layerOrder    | -1        | The base legend entry priority of the layer. The default value of -1 means the priority is 10000 x (layer_index + 1). |

28.23.47. **setLineWidth** (w as Integer)


**Function:** Sets the default line width of lines when drawing data sets on the layer.

**Notes:**

This method only applies to layers that employ lines to represent data (e.g. line layer).

This method affect all data sets. To set the line width of one particular data set, use DataSet.setLineWidth.
### 28.23.48 setUseYAxis(axis as CDAxisMBS)


**Function:** Determine the y-axis to use when drawing the data sets.

**Notes:**
This method affects all data sets in the layer. To set the y-axis to use for a particular data set, use DataSet.setUseYAxis.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>(Mandatory)</td>
<td>The y-axis to use when drawing the data sets.</td>
</tr>
</tbody>
</table>

### 28.23.49 setUseYAxis2(b as boolean=true)


**Function:** Determine if the primary or secondary y-axis should be used when drawing the data sets.

**Notes:**
This method affects all data sets in the layer. To set the y-axis to use for a particular data set, use DataSet.setUseYAxis2.

Note: Layer.setUseYAxis is a more general method that can support more than 2 y-axes.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>true</td>
<td>A true value means the secondary y-axis will be used. A false value means the primary y-axis will be used.</td>
</tr>
</tbody>
</table>

### 28.23.50 setXData(data as CDArrayMBS)


**Function:** Sets the x values of the data points in the data sets.

**Notes:**
In most ChartDirector XY chart layers, when a data set is added, only the y Values for the data points are needed. For example, in a bar layer, you just need to specify the values of the bars (y values). ChartDirector will automatically layout the bars evenly on the x-axis. You can then specify the labels on the x-axis using
In ChartDirector, this type of x-axis scaling is called "enumerated" scale. Please refer to Axis.setLabels for a more detailed explanation of "enumerated" scale.

However, in some cases, it may be necessary to specify the x values explicitly. For example, if a chart contains data points that are not evenly distributed on the x-axis, it is necessary to specify the x values explicitly. It is because enumerated scale always assumes the data points are distributed evenly on the x-axis. In this case, the setXData method can be used to specify the x values for the data points.

In general, if the data points are evenly distributed on the x-axis, it is recommended that enumerated x-scale be used and no x values are necessary. Even the data points are evenly distributed, except that some data points are missing, it is still possible to use enumerated x-scale by using the NoValue constant to represent missing data points.

On the other hand, if the data points are by its nature not evenly distributed, the x values should be provided explicitly using the setXData method.

Each layer only supports one x values series. All data sets in the layer will use the same x value series. If two data sets have different x values, they should be put in two separate layers.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the x value series.</td>
</tr>
</tbody>
</table>

See also:

- 28.23.51 setXData(data() as Double)
- 28.23.52 setXData(dates() as date)
- 28.23.53 setXData(minValue as Double, maxValue as Double)

**28.23.51 setXData(data() as Double)**

MBS ChartDirector Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the x values of the data points in the data sets. **Notes:**

In most ChartDirector XY chart layers, when a data set is added, only the y values for the data points are needed. For example, in a bar layer, you just need to specify the values of the bars (y values). ChartDirector will automatically layout the bars evenly on the x-axis. You can then specify the labels on the x-axis using Axis.setLabels.
In ChartDirector, this type of x-axis scaling is called "enumerated" scale. Please refer to Axis.setLabels for a more detail explanation of "enumerated" scale.

However, in some cases, it may be necessary to specify the x values explicitly. For example, if a chart contains data points that are not evenly distributed on the x-axis, it is necessary to specify the x values explicitly. It is because enumerated scale always assume the data points are distributed evenly on the x-axis. In this case, the setXData method can be used to specify the x values for the data points.

In general, if the data points are evenly distributed on the x-axis, it is recommended enumerated x-scale be used and no x values are necessary. Even the data points are evenly distributed, except that some data points are missing, it is still possible to use enumerated x-scale by using the NoValue constant to represent missing data points.

On the other hand, if the data points are by its nature not evenly distributed, the x values should be provided explicitly using the setXData method.

Each layer only supports one x values series. All data sets in the layer will use the same x value series. If two data sets have different x values, they should be put in two separate layers.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the x value series.</td>
</tr>
</tbody>
</table>

See also:

- 28.23.50 setXData(data as CDArrayMBS) 4772
- 28.23.52 setXData(dates() as date) 4774
- 28.23.53 setXData(minValue as Double, maxValue as Double) 4775

28.23.52 setXData(dates() as date)

MBS ChartDirector Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Sets the x values of the data points in the data sets.

Notes:

In most ChartDirector XY chart layers, when a data set is added, only the y Values for the data points are needed. For example, in a bar layer, you just need to specify the values of the bars (y values). ChartDirector will automatically layout the bars evenly on the x-axis. You can then specify the labels on the x-axis using Axis.setLabels.

In ChartDirector, this type of x-axis scaling is called "enumerated" scale. Please refer to Axis.setLabels for a more detail explanation of "enumerated" scale.
However, in some cases, it may be necessary to specify the x values explicitly. For example, if a chart contains data points that are not evenly distributed on the x-axis, it is necessary to specify the x values explicitly. It is because enumerated scale always assume the data points are distributed evenly on the x-axis. In this case, the setXData method can be used to specify the x values for the data points.

In general, if the data points are evenly distributed on the x-axis, it is recommended enumerated x-scale be used and no x values are necessary. Even the data points are evenly distributed, except that some data points are missing, it is still possible to use enumerated x-scale by using the NoValue constant to represent missing data points.

On the other hand, if the data points are by its nature not evenly distributed, the x values should be provided explicitly using the setXData method.

Each layer only supports one x values series. All data sets in the layer will use the same x value series. If two data sets have different x values, they should be put in two separate layers.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the x value series.</td>
</tr>
</tbody>
</table>

See also:

- 28.23.50 setXData(data as CDArrayMBS) 4772
- 28.23.51 setXData(data() as Double) 4773
- 28.23.53 setXData(minValue as Double, maxValue as Double) 4775

28.23.53 setXData(minValue as Double, maxValue as Double)

**Function:** Sets the x values of the data points in the data sets as evenly distributed in a range. 
**Notes:**

This method is most useful when two layers contain data at different x axis scale. An example is a line layer with one data point per minute, and another line layer with one data point per 5 minutes.

In the above example, in one hour, the first layer will have 60 data points, while the second layer will have 12 data points. If enumerated x-scale is used, the x-axis will contain 60 positions evenly distributed. The 60 data points in the first layer will corresponds to the 60 positions in the x-axis, which is correct. However, the 12 data points in the second layer will corresponds to the first 12 positions on the x-axis, which is not the desired result.

Instead, the 12 data points in the second layer should corresponds to positions 0, 5, 10, 15, .... A little thought will review that the 12 data points in the second layer should be distributed evenly among positions...
0 - 55. The setXData2 method can be used to inform ChartDirector about the scaling used in the second layer.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>minValue</td>
<td>(Mandatory)</td>
<td>The x value of the first point in a data set.</td>
</tr>
<tr>
<td>maxValue</td>
<td>(Mandatory)</td>
<td>The x value of the last point in the data set.</td>
</tr>
</tbody>
</table>

See also:

- 28.23.50 setXData(data as CDArrayMBS) 4772
- 28.23.51 setXData(data() as Double) 4773
- 28.23.52 setXData(dates() as date) 4774

28.23.54  xZoneColor(threshold as Double, belowColor as color, aboveColor as color) as Integer

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other xZoneColor method, but uses color instead of integer data type for passing color values.

See also:

- 28.23.55 xZoneColor(threshold as Double, belowColor as Integer, aboveColor as Integer) as Integer 4776

28.23.55  xZoneColor(threshold as Double, belowColor as Integer, aboveColor as Integer) as Integer


**Function:** Creates a x-zone color. A x-zone will change from one color to another depending on a threshold value on the x-axis.

**Notes:**

For example, if a x-zone color is used as the line color in a line layer, the line will switch from one color to another when its passes through a certain value on the x-axis. Similarly, if a x-zone color is used as the fill color in an area layer, the area will switch from one color to another when it passes through a certain value on the x-axis.

The two colors used in a x-zone color can be other dynamic colors. For example, one color could be a solid color, while the other color could be a dash line color (see !BaseChart.dashLineColor). When this x-zone color is as the line color, the line will change from a solid style to a dash line style when the line passes through a certain value on the x-axis.
You may create x-zone colors with more than 2 zones by cascading multiple x-zone colors.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>threshold</td>
<td>(Mandatory)</td>
<td>The x value serving as the threshold for switching between two colors.</td>
</tr>
<tr>
<td>belowColor</td>
<td>(Mandatory)</td>
<td>The color to use when the x-axis value of the pixel is smaller than the threshold.</td>
</tr>
<tr>
<td>aboveColor</td>
<td>(Mandatory)</td>
<td>The color to use when the x-axis value of the pixel is greater than the threshold.</td>
</tr>
</tbody>
</table>

Return Value
A 32-bit integer representing the x-zone color.

See also:

- 28.23.54 xZoneColor(threshold as Double, belowColor as color, aboveColor as color) as Integer

28.23.56 yZoneColor(threshold as Double, belowColor as color, aboveColor as color, yAxis as boolean=true) as Integer

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Same as the other yZoneColor method, but uses color instead of integer data type for passing color values.

See also:

- 28.23.57 yZoneColor(threshold as Double, belowColor as color, aboveColor as color, yAxis as CDAxisMBS) as Integer
- 28.23.58 yZoneColor(threshold as Double, belowColor as Integer, aboveColor as Integer, yAxis as boolean=true) as Integer
- 28.23.59 yZoneColor(threshold as Double, belowColor as Integer, aboveColor as Integer, yAxis as CDAxisMBS) as Integer

28.23.57 yZoneColor(threshold as Double, belowColor as color, aboveColor as color, yAxis as CDAxisMBS) as Integer

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Same as the other yZoneColor method, but uses color instead of integer data type for passing color values.

See also:

- 28.23.56 yZoneColor(threshold as Double, belowColor as color, aboveColor as color, yAxis as boolean=true) as Integer
- 28.23.58 yZoneColor(threshold as Double, belowColor as Integer, aboveColor as Integer, yAxis as boolean=true) as Integer
- 28.23.59 yZoneColor(threshold as Double, belowColor as Integer, aboveColor as Integer, yAxis as CDAxisMBS) as Integer
28.23.58  yZoneColor(threshold as Double, belowColor as Integer, aboveColor as Integer, yAxis as boolean=true) as Integer


**Function:** Creates a y-zone color. A y-zone will change from one color to another depending on a threshold value on the y-axis.

**Notes:**

For example, if a y-zone color is used as the fill color in an area layer, the area will switch from one color to another when its value is higher than a certain value on the y-axis.

The two colors used in a y-zone color can be other dynamic colors. You may create y-zone colors with more than 2 zones by cascading multiple y-zone colors.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>threshold</td>
<td>(Mandatory)</td>
<td>The y value serving as the threshold for switching between two colors.</td>
</tr>
<tr>
<td>belowColor</td>
<td>(Mandatory)</td>
<td>The color to use when the y-axis value of the pixel is smaller than the threshold.</td>
</tr>
<tr>
<td>aboveColor</td>
<td>(Mandatory)</td>
<td>The color to use when the y-axis value of the pixel is greater than the threshold.</td>
</tr>
<tr>
<td>yAxis</td>
<td>[ Null ]</td>
<td>The y-axis to use to determine the pixel coordinates of data values. The y-axis may be obtained using XYChart.yAxis, XYChart.yAxis2 or XYChart.addAxis. The default is to use the primary y-axis.</td>
</tr>
</tbody>
</table>

For backward compatibility, the axis argument can also be a boolean value. A true value means the primary y-axis. A false value means the secondary y-axis.

**Return Value**
A 32-bit integer representing the y-zone color.

**See also:**

- 28.23.56 yZoneColor(threshold as Double, belowColor as color, aboveColor as color, yAxis as boolean=true) as Integer 4777
- 28.23.57 yZoneColor(threshold as Double, belowColor as color, aboveColor as color, yAxis as CDAxisMBS) as Integer 4777
- 28.23.59 yZoneColor(threshold as Double, belowColor as Integer, aboveColor as Integer, yAxis as CDAxisMBS) as Integer 4778

28.23.59  yZoneColor(threshold as Double, belowColor as Integer, aboveColor as Integer, yAxis as CDAxisMBS) as Integer


**Function:** Creates a y-zone color. A y-zone will change from one color to another depending on a threshold value on the y-axis.

**Notes:**
For example, if a y-zone color is used as the fill color in an area layer, the area will switch from one color to another when its value is higher than a certain value on the y-axis.

The two colors used in a y-zone color can be other dynamic colors. You may create y-zone colors with more than 2 zones by cascading multiple y-zone colors.

Argument | Default | Description
--- | --- | ---
threshold | (Mandatory) | The y value serving as the threshold for switching between two colors.
belowColor | (Mandatory) | The color to use when the y-axis value of the pixel is smaller than the threshold.
aboveColor | (Mandatory) | The color to use when the y-axis value of the pixel is greater than the threshold.
yAxis | [ Null ] | The y-axis to use to determine the pixel coordinates of data values. The y-axis may be obtained using XYChart.yAxis, XYChart.yAxis2 or XYChart.addAxis. The default is to use the primary y-axis.

For backward compatibility, the axis argument can also be a boolean value. A true value means the primary y-axis. A false value means the secondary y-axis.

Return Value
A 32-bit integer representing the y-zone color.

See also:

- 28.23.56 yZoneColor(threshold as Double, belowColor as color, aboveColor as color, yAxis as boolean=true) as Integer 4777
- 28.23.57 yZoneColor(threshold as Double, belowColor as color, aboveColor as color, yAxis as CDAxisMBS) as Integer 4777
- 28.23.58 yZoneColor(threshold as Double, belowColor as Integer, aboveColor as Integer, yAxis as boolean=true) as Integer 4778
28.24 class CDLegendBoxMBS

28.24.1 class CDLegendBoxMBS


Function: The class LegendBox represents legend boxes.

Notes:
Subclass of the CDTextBoxMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

28.24.2 Methods

28.24.3 addKey(pos as Integer, text as string, colorvalue as color, lineWidth as Integer = -1, drawarea as CDDrawAreaMBS=nil)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Same as the other addKey method, but uses color instead of integer data type for passing color values.

See also:
• 28.24.4 addKey(pos as Integer, text as string, colorvalue as Integer, lineWidth as Integer = -1, drawarea as CDDrawAreaMBS=nil) 4780
• 28.24.5 addKey(text as string, colorvalue as color, lineWidth as Integer = -1, drawarea as CDDrawAreaMBS=nil) 4781
• 28.24.6 addKey(text as string, colorvalue as Integer, lineWidth as Integer = -1, drawarea as CDDrawAreaMBS=nil) 4781

28.24.4 addKey(pos as Integer, text as string, colorvalue as Integer, lineWidth as Integer = -1, drawarea as CDDrawAreaMBS=nil)


Function: Adds a custom entry to the legend box with a given legend entry priority.

Notes:
See LegendBox for more information on legend entry priority system.

See also:
• 28.24.3 addKey(pos as Integer, text as string, colorvalue as color, lineWidth as Integer = -1, drawarea as CDDrawAreaMBS=nil) 4780
### 28.24. CLASS CDLEGENDBOXMBS

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>pos</td>
<td>(Mandatory)</td>
<td>The legend entry priority</td>
</tr>
<tr>
<td>text</td>
<td>(Mandatory)</td>
<td>The text of the legend entry.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The icon color of the legend entry.</td>
</tr>
<tr>
<td>lineWidth</td>
<td>0</td>
<td>The line width for legend entry that represents lines in line charts.</td>
</tr>
<tr>
<td>drawarea</td>
<td>[ Null ]</td>
<td>A DrawArea containing the data symbol represents the legend entry. This is primarily used for legend entries in line charts with data symbols, or in scatter charts.</td>
</tr>
</tbody>
</table>

- 28.24.5 addKey(text as string, colorvalue as color, lineWidth as Integer = -1, drawarea as CDDrawAreaMBS=nil)

- 28.24.6 addKey(text as string, colorvalue as Integer, lineWidth as Integer = -1, drawarea as CDDrawAreaMBS=nil)

### 28.24.5 addKey(text as string, colorvalue as color, lineWidth as Integer = -1, drawarea as CDDrawAreaMBS=nil)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addKey method, but uses color instead of integer data type for passing color values.

See also:

- 28.24.3 addKey(pos as Integer, text as string, colorvalue as color, lineWidth as Integer = -1, drawarea as CDDrawAreaMBS=nil)

- 28.24.4 addKey(pos as Integer, text as string, colorvalue as Integer, lineWidth as Integer = -1, drawarea as CDDrawAreaMBS=nil)

- 28.24.6 addKey(text as string, colorvalue as Integer, lineWidth as Integer = -1, drawarea as CDDrawAreaMBS=nil)

### 28.24.6 addKey(text as string, colorvalue as Integer, lineWidth as Integer = -1, drawarea as CDDrawAreaMBS=nil)


**Function:** Adds a custom entry to the legend box.

**Notes:**

This method adds an entry within a legend entry priority of 1 (followed by 2, 3, 4, ... for repeated calls). This has higher priority than entries added automatically by ChartDirector for representing data sets. As a result, by default, the custom entry will appear before the automatic entries.

To control the order of the custom entry relative to the automatic entries, use LegendBox.addKey2.
CHAPTER 28. CHARTDIRECTOR

See LegendBox for more information on legend entry priority system.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>text</td>
<td>(Mandatory)</td>
<td>The text of the legend entry.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The icon color of the legend entry.</td>
</tr>
<tr>
<td>lineWidth</td>
<td>0</td>
<td>The line width for legend entry that represents lines in line charts.</td>
</tr>
<tr>
<td>drawarea</td>
<td>[ Null ]</td>
<td>A DrawArea containing the data symbol represents the legend entry. This is primarily used for legend entries in line charts with data symbols, or in scatter charts.</td>
</tr>
</tbody>
</table>

See also:

- 28.24.3 addKey(pos as Integer, text as string, colorvalue as color, lineWidth as Integer = -1, drawarea as CDDrawAreaMBS=nil) 4780
- 28.24.4 addKey(pos as Integer, text as string, colorvalue as Integer, lineWidth as Integer = -1, drawarea as CDDrawAreaMBS=nil) 4780
- 28.24.5 addKey(text as string, colorvalue as color, lineWidth as Integer = -1, drawarea as CDDrawAreaMBS=nil) 4781

28.24.7 getHTMLImageMap(url as string, queryFormat as string = "", extraAttr as string = "", offsetX as Integer = 0, offsetY as Integer = 0) as string


Function: Generates an HTML image map for the legend.

Notes:

By default, ChartDirector will add named data representation to the legend box. For pie charts, named sectors (sectors that have text labels) will be added. For xy charts, named data sets will be added. For polar charts, named layers will be added.

You may add custom entries to the legend box by using LegendBox.addKey.

To control the ordering of the legend entries, ChartDirector employs a legend entry priority system. Each entry is given a priority number, and the entries are ordered according to ascending priority (unless reversed by using LegendBox.setReverse).

For a PieChart, the legend entry priority of a sector is 10000 x (sector_index + 1). The Nth sector has sector_index (N - 1). That means the ordering of the sectors in the legend box is the same as the data array.

For an XYChart, the base legend entry priority for a layer is 10000 x (layer_index + 1). Within a layer, the data set priority is 10 x (data_set_index + 1). For example, the legend entry priority for the 5th dataset in
the 3rd layer will be 30050. That means the ordering of the data sets in the legend box follows the order in which the layers are created. For data sets within the same layer, the ordering follows the order in which the data sets are added. The ordering can be modified by using Layer.setLegendOrder.

For an PolarChart, the legend entry priority of a layer is 10000 x (layer_index + 1). That means the ordering of the layers in the legend box follows the order in which the layers are created.

For custom entries added using LegendBox.addKey2, you may control the legend entry priority. That means you may insert custom entries anywhere relative to the automatic entries added by ChartDirector.

28.24.8  getImageCoor(dataItem as Integer, offsetX as Integer = 0, offsetY as Integer = 0) as string


Function: Gets the image map coordinates of an legend entry as HTML image map attributes.

Notes:

The image map coordinates will be of the following format:

```
shape="rect" cords=" [ x1 ] , [ y1 ] , [ x2 ] , [ y2 ] "
```

where (x1, y1) and (x2, y2) are opposite corners of the box that enclosed the legend entry. The format is specially designed so that it can easily be included into HTML image maps.

This method should be called only after creating the chart image (eg. using BaseChart.makeChart, BaseChart.makeChart2 or BaseChart.makeChart3). The image map cannot be determined without creating the chart image first.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>dataItem</td>
<td>(Mandatory)</td>
<td>The legend entry number, starting from 0. The first legend entry is 0. The nth legend entry is (n-1).</td>
</tr>
<tr>
<td>offsetX</td>
<td>0</td>
<td>An offset to be added to all x coordinates in the image map. This is useful if the current image will be shifted and inserted into another image. In this case, the image map will need to be shifted by the same offset.</td>
</tr>
<tr>
<td>offsetY</td>
<td>0</td>
<td>An offset to be added to all y coordinates in the image map. See offsetX above for description.</td>
</tr>
</tbody>
</table>

Return Value

A text string representing the coordinates of the legend entry in HTML image map attribute format.
28.24.9 setCols(noOfCols as Integer)

Function: Sets the number of columns in the legend box.
Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>noOfCols</td>
<td>(Mandatory)</td>
<td>The number of columns in the legend box. The special value AutoGrid (= -2) means the number of columns is automatically determined. If this argument is 0, the legend box will use a flow layout (from left to right and then top to bottom, in which the entries may not be vertically aligned).</td>
</tr>
</tbody>
</table>

28.24.10 setKeyBorder(edgeColor as color, raisedEffect as Integer = 0)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other setKeyBorder method, but uses color instead of integer data type for passing color values.
See also:
- 28.24.11 setKeyBorder(edgeColor as Integer, raisedEffect as Integer = 0)

28.24.11 setKeyBorder(edgeColor as Integer, raisedEffect as Integer = 0)

Function: Sets the default border color of the legend icon.
Notes:
This method applies only to data sets of which the icons are rectangles showing the colors of the data sets. If the icon is a shape or symbol (such as for a line with data point symbols), the border color of the original shape or symbol is always used.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>edgeColor</td>
<td>(Mandatory)</td>
<td>The border color. The 3D border width. For positive values, the border will appear raised. For negative values, the border will appear depressed. A zero value means the border will appear flat. This argument is also used to support Chart::glassEffect and Chart::softLighting effects.</td>
</tr>
<tr>
<td>raisedEffect</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

See also:
- 28.24.10 setKeyBorder(edgeColor as color, raisedEffect as Integer = 0)
28.24. **CLASS CDLEGENDBOXMBS**

### 28.24.12 setKeySize(width as Integer = -1, height as Integer = -1, gap as Integer = -1)


**Function:** Sets the size of the legend icon and its distance from the legend text.

**Notes:**
Each legend entry consists of an icon and a text description. By default, the size of the icon and its distance from the text is determined automatically based on font size. This method can be used to override the default.

**Argument Default Description**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>width (Mandatory)</td>
<td></td>
<td>The width of the legend icon in pixels.</td>
</tr>
<tr>
<td>height</td>
<td>-1</td>
<td>The height of the legend icon in pixels. -1 means the height is automatically determined.</td>
</tr>
<tr>
<td>gap</td>
<td>-1</td>
<td>The distance between the legend icon and the legend text in pixels. -1 means the distance is automatically determined.</td>
</tr>
</tbody>
</table>

### 28.24.13 setKeySpacing(keySpacing as Integer, lineSpacing as Integer = -1)


**Function:** Sets the distance between two legend entries.

**Notes:**
In horizontal legend layout, the legend entries will flow from left to right, top to bottom, with a horizontal gap between two legend entries. In vertical legend layout, the legend entries will flow from top to bottom, with one entry per line.

By default, the horizontal gap and the line spacing is automatically determined based on font size. This method can be used to set the horizontal gap and line spacing in pixels.

**Argument Default Description**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>keySpacing (Mandatory)</td>
<td></td>
<td>The horizontal gap between two legend entries for horizontal legend layout, expressed in pixels.</td>
</tr>
<tr>
<td>lineSpacing</td>
<td>-1</td>
<td>The line spacing between two lines in the legend box, expressed in pixels. -1 means the line spacing is automatically determined.</td>
</tr>
</tbody>
</table>

### 28.24.14 setLineStyleKey(b as boolean=true)


**Function:** Determines whether to always use "line style legend keys" or not.

**Notes:**
By default, ChartDirector will use a small colored square box as the legend key icon. This allows people to determine the colors for the data representations.

In some cases, colors alone cannot distinguish the data representations. For example, in a line chart with multiple lines, it is possible all lines are of the same color, and are distinguished by line styles (solid, dash, dotted, etc), or the lines may be distinguished by data symbols (small circles, squares, etc) on the lines.

For charts with non-solid lines (eg. dash, dotted, etc) or lines with data symbols, ChartDirector will use "line style legend keys" for the lines. A line style legend key consist a of line with an optional data symbol, which reflects the line style and data symbol representing the data series.

This method can be used to force ChartDirector to always use the "line style legend keys".

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>true</td>
<td>A true value means to always use &quot;line style legend keys&quot;. A false value means to automatically determined if &quot;line style legend keys&quot; should be used.</td>
</tr>
</tbody>
</table>

28.24.15  `setReverse(b as boolean=true)`


Function: Reverses the ordering of the legend entries.

Notes: By default, the legend entries are ordered based on ascending legend entry priority number. This method can be used to change the ordering to following descending legend entry priority number instead.

See LegendBox for more information on legend entry priority system.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>true</td>
<td>A true value means the legend entries are ordered based on descending legend entry priority number. false value means the legend entries are ordered based on ascending legend entry priority number.</td>
</tr>
</tbody>
</table>
28.25.  CLASS CDLINEARMETERMBS

28.25  class CDLinearMeterMBS

28.25.1  class CDLinearMeterMBS

**Function:** The LinearMeter class represents linear meters.
**Notes:** Subclass of the CDBaseMeterMBS class.

28.25.2  Methods

28.25.3  addBar(startValue as Double, endValue as Double, colorvalue as color, effect as Integer = 0, roundedCorner as Integer = 0) as CDTextBoxMBS

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Adds a bar to the meter.
**Notes:**
This method adds an empty TextBox to the meter. It configures the textbox position, size and color so that
it looks like a bar on the meter scale.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>startValue</td>
<td>(Mandatory)</td>
<td>The start value of the bar.</td>
</tr>
<tr>
<td>endValue</td>
<td>(Mandatory)</td>
<td>The end value of the bar.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the bar.</td>
</tr>
<tr>
<td>raisedEffect</td>
<td>0</td>
<td>The 3D border width. For positive values, the border will appear raised. For negative values, the border will appear depressed. A zero value means the border will appear flat. This argument can also be used to specify Chart::glassEffect, Chart::softLighting, Chart::cylinderEffect or Chart::flatBorder effects.</td>
</tr>
<tr>
<td>roundedCorners</td>
<td>0</td>
<td>The radius for the two corners at the end position of the bar.</td>
</tr>
</tbody>
</table>

Returns a CDTextBoxMBS object representing the bar. This may be used to fine-tune the appearance of
the bar.
See also:

- 28.25.4 addBar(startValue as Double, endValue as Double, colorvalue as Integer, effect as Integer = 0, roundedCorner as Integer = 0) as CDTextBoxMBS

28.25.4  addBar(startValue as Double, endValue as Double, colorvalue as Integer, effect as Integer = 0, roundedCorner as Integer = 0) as CDTextBoxMBS

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Adds a bar to the meter.
CHAPTER 28. CHARTDIRECTOR

Notes:

This method adds an empty TextBox to the meter. It configures the textbox position, size and color so that it looks like a bar on the meter scale.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>startValue</td>
<td>(Mandatory)</td>
<td>The start value of the bar.</td>
</tr>
<tr>
<td>endValue</td>
<td>(Mandatory)</td>
<td>The end value of the bar.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the bar.</td>
</tr>
<tr>
<td>raisedEffect</td>
<td>0</td>
<td>The 3D border width. For positive values, the border will appear raised. For negative values, the border will appear depressed. A zero value means the border will appear flat. This argument can also be used to specify Chart::glassEffect, Chart::softLighting, Chart::cylinderEffect or Chart::flatBorder effects.</td>
</tr>
<tr>
<td>roundedCorners</td>
<td>0</td>
<td>The radius for the two corners at the end position of the bar.</td>
</tr>
</tbody>
</table>

Returns a CDTextBoxMBS object representing the bar. This may be used to fine-tune the appearance of the bar.

See also:

• 28.25.3 addBar(startValue as Double, endValue as Double, colorvalue as color, effect as Integer = 0, roundedCorner as Integer = 0) as CDTextBoxMBS

28.25.5 addZone(startValue as Double, endValue as Double, colorvalue as color, label as string = "") as CDTextBoxMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Same as the other addZone method, but uses color instead of integer data type for passing color values.

See also:

• 28.25.6 addZone(startValue as Double, endValue as Double, colorvalue as Integer, label as string = "") as CDTextBoxMBS

28.25.6 addZone(startValue as Double, endValue as Double, colorvalue as Integer, label as string = "") as CDTextBoxMBS


Function: Adds a zone to the meter.

Notes:

Return Value

A TextBox object representing the label. This may be used to fine-tune the appearance of the label.

See also:

• 28.25.5 addZone(startValue as Double, endValue as Double, colorvalue as color, label as string = ") as CDTextBoxMBS
28.25. **CLASS CLINEARMETERMBS**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>startValue</td>
<td>(Mandatory)</td>
<td>The start value (the lower bound) for the zone.</td>
</tr>
<tr>
<td>endValue</td>
<td>(Mandatory)</td>
<td>The end value (the upper bound) for the zone.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the zone.</td>
</tr>
<tr>
<td>label</td>
<td>&quot;&quot;</td>
<td>The text to be put at the center of the zone.</td>
</tr>
</tbody>
</table>

### 28.25.7 Constructor(width as Integer, height as Integer, bgColor as color, edgeColor as color, raisedEffect as Integer = 0)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other Constructor method, but uses color instead of integer data type for passing color values.

See also:

- 28.25.8 Constructor(width as Integer, height as Integer, bgColor as Integer = & hffff0000, edgeColor as Integer = & hff000000, raisedEffect as Integer = 0)

### 28.25.8 Constructor(width as Integer, height as Integer, bgColor as Integer = & hffff0000, edgeColor as Integer = & hff000000, raisedEffect as Integer = 0)


**Function:** Creates a new LinearMeter object.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>width</td>
<td>(Mandatory)</td>
<td>The width of the chart in pixels.</td>
</tr>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the chart in pixels.</td>
</tr>
<tr>
<td>bgColor</td>
<td>BackgroundColor</td>
<td>The background color of the chart.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>Transparent</td>
<td>The edge color of the chart.</td>
</tr>
<tr>
<td>raisedEffect</td>
<td>0</td>
<td>The 3D border width. For positive values, the border will appear raised. For negative values, the border will appear depressed. A zero value means the border will appear flat.</td>
</tr>
</tbody>
</table>

See also:

- 28.25.7 Constructor(width as Integer, height as Integer, bgColor as color, edgeColor as color, raisedEffect as Integer = 0)

### 28.25.9 setMeter(leftX as Integer, topY as Integer, width as Integer, height as Integer, axisPos as Integer = 4, isReversed as boolean=false)


**Function:** Sets the orientation and position of the meter plot area.
Notes:

The plot area is a rectangular region of the linear meter. The meter scale (the labels showing the values) will be on one external side of the plot area (say on the left side). The pointer starts on the opposite side and points towards the meter scale.

This method defines the position and size of the rectangular region, as well as which side the meter scale is on. If the scale is on the left or right side, the meter is assumed to be a horizontal linear meter. If the scale is on the top or bottom side, the meter is assumed to be a vertical linear meter.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>leftX</td>
<td>(Mandatory)</td>
<td>The x-coordinate of the top-left corner of the meter plot area.</td>
</tr>
<tr>
<td>topY</td>
<td>(Mandatory)</td>
<td>The y-coordinate of the top-left corner of the meter plot area.</td>
</tr>
<tr>
<td>width</td>
<td>(Mandatory)</td>
<td>The horizontal width of the meter plot area.</td>
</tr>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The vertical height of the meter plot area.</td>
</tr>
<tr>
<td>axisPos</td>
<td>Left</td>
<td>The position of the meter scale. The scale should be on one of the 4 sides of the plot area border, specified by Left, Top, Right and Bottom.</td>
</tr>
<tr>
<td>isReversed</td>
<td>false</td>
<td>By default, if the meter is horizontal, the meter scale will run from left to right. If the meter is vertical, the meter scale will run from bottom to top. If this argument is set to true, the meter scale will be reversed.</td>
</tr>
</tbody>
</table>

28.25.10 setRail(railColor as color, railWidth as Integer = 2, railOffset as Integer = 6)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Same as the other setRail method, but uses color instead of integer data type for passing color values.

See also:

• 28.25.11 setRail(railColor as Integer, railWidth as Integer = 2, railOffset as Integer = 6)

28.25.11 setRail(railColor as Integer, railWidth as Integer = 2, railOffset as Integer = 6)


Function: Sets the position, width and color of the pointer rail.

Notes:

The pointer rail is the locus traced out by the starting point of the meter pointer as the pointer slides on the meter. The pointer rail is on the opposite side of the meter scale.

See also:
<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>railColor</td>
<td>(Mandatory)</td>
<td>The color of the pointer rail.</td>
</tr>
<tr>
<td>railWidth</td>
<td>2</td>
<td>The line width of the pointer rail in pixels.</td>
</tr>
<tr>
<td>railOffset</td>
<td>6</td>
<td>The gap between the pointer rail and the plot area in pixels. A negative value will mean the pointer rail may move within the plot area.</td>
</tr>
</tbody>
</table>

- 28.25.10 setRail(railColor as color, railWidth as Integer = 2, railOffset as Integer = 6)
Function: A meter with three pointers created using ChartDirector with the CDLinearMeterMBS class.
28.26. CLASS CDLINELAYERMBS

28.26. class CDLineLayerMBS

28.26.1. class CDLineLayerMBS

**Function:** The LineLayer class represents line layers.  
**Notes:**  
Subclass of the CDLayerMBS class.  
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.


28.26.3. getLine(dataSet as Integer = 0) as CDLineObjMBS

**Function:** Retrieves an opaque LineObj representing a line in the line layer. The opaque LineObj is to be used in XYChart.addInterLineLayer for adding coloring between lines.  
**Notes:**  
<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>dataSet</td>
<td>0</td>
<td>The data set number for the line. The first data set is 0. The nth data set is (n - 1).</td>
</tr>
</tbody>
</table>

Return Value  
An opaque LineObj representing the requested line.

28.26.4. setFastLineMode(b as boolean = true)

**Function:** Enables or disables fast line mode.  
**Notes:**  
In a chart, the plot area width is usually a few hundred to around 2000 pixels. For a line chart that "flows" horizontally (eg. from left to right), if there are a lot more data points (eg. 100000 data points than the plot area pixel width, many of the points would be at the same x-pixel coordinates. The line segments joining the data points at the same x-pixel coordinates would just be oscillating up and down, overlapping themselves. What is visible at each x-pixel position is essentially a line joining the minimum point and the maximum point.  

In fast line mode, ChartDirector will automatically detect that there are too many points in the same x-pixel
coordinate, and draws only a line segment joining the extreme points at that coordinate. The resulting line is visually indistinguishable from a line in which the line segments join all data points. The fast line mode can significantly reduce the number of points drawn without affecting the chart appearance.

The fast line mode has no effect if there are not significantly more data points than the pixel width of the plot area. For charts with evenly spaced data points, the fast line mode would only act on x-pixel positions with too many data points. Thus the fast line mode can be enabled on line charts regardless of the number of data points.

The fast line mode should not be used if the data points are not flowing horizontally (or vertically if XY-Chart.swapXY is in effect), but are flowing in random directions.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>true</td>
<td>A true value enables fast line mode. A false value disables fast line mode.</td>
</tr>
</tbody>
</table>

### 28.26.5 setGapColor(lineColor as color, lineWidth as Integer = -1)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Same as the other setGapColor method, but uses color instead of integer data type for passing color values.

See also:

- 28.26.6 setGapColor(lineColor as Integer, lineWidth as Integer = -1)

### 28.26.6 setGapColor(lineColor as Integer, lineWidth as Integer = -1)

MBS ChartDirector Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the color and style of the line used for jumping across NoValue data points.

**Notes:**

By default, the color of the line for jumping across NoValue data points is Transparent, which means the line will become discontinuous.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>lineColor</td>
<td>(Mandatory)</td>
<td>The line color of the line used for jumping across NoValue data points</td>
</tr>
<tr>
<td>lineWidth</td>
<td>-1</td>
<td>The line width of the line used for jumping across NoValue data points. -1 means the width will be the same as the line width of the line for drawing normal data points.</td>
</tr>
</tbody>
</table>

See also:
28.26. setGapColor(lineColor as color, lineWidth as Integer = -1) - Sets the gap color and line width.

28.26.7 setImageMapWidth(Width as Integer)


**Function:** Sets the effective width of the line used for producing image maps.

**Notes:**
For thin lines, it is hard to click on the lines. So for the purpose of producing image maps for a line chart, ChartDirector can assume the line is very thick. The default is 10 pixels.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>width</td>
<td>(Mandatory)</td>
<td>The effective width of the line used for producing image maps.</td>
</tr>
</tbody>
</table>

28.26.8 setSymbolScale(zDataX() as Double, scaleTypeX as Integer = 0)


**Function:** Sets the size of the symbol for each data point (for creating bubble charts).

**Notes:**
One common usage for this method is to draw circle symbols of different sizes at each data points, creating a bubble chart. This method supports any valid data symbols. You can create bubble charts with square bubbles, or even custom data symbols. Also, this method supports independent x and y direction sizing, so you can create bubbles elliptical in shape, and use the horizontal and vertical radius to represent different data.

ChartDirector supports specifying sizes as pixels or in axis scale. The unit is specified by using the following predefined constants.

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PixelScale</td>
<td>0</td>
<td>The unit is measured in pixels.</td>
</tr>
<tr>
<td>XAxisScale</td>
<td>1</td>
<td>The unit is measured in x-axis scale.</td>
</tr>
<tr>
<td>YAxisScale</td>
<td>2</td>
<td>The unit is measured in y-axis scale.</td>
</tr>
</tbody>
</table>

See also:

- 28.26.9 setSymbolScale(zDataX() as Double, scaleTypeX as Integer, zDataY() as Double, scaleTypeY as Integer = 0)
28.26.9 setSymbolScale(zDataX() as Double, scaleTypeX as Integer, zDataY() as Double, scaleTypeY as Integer = 0)


Function: Sets the size of the symbol for each data point (for creating bubble charts).

Notes:
One common usage for this method is to draw circle symbols of different sizes at each data points, creating a bubble chart.

This method supports any valid data symbols. You can create bubble charts with square bubbles, or even custom data symbols. Also, this method supports independent x and y direction sizing, so you can create bubbles elliptical in shape, and use the horizontal and vertical radius to represent different data.

ChartDirector supports specifying sizes as pixels or in axis scale. The unit is specified by using the following predefined constants.

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PixelScale</td>
<td>0</td>
<td>The unit is measured in pixels.</td>
</tr>
<tr>
<td>XAxisScale</td>
<td>1</td>
<td>The unit is measured in x-axis scale.</td>
</tr>
<tr>
<td>YAxisScale</td>
<td>2</td>
<td>The unit is measured in y-axis scale.</td>
</tr>
</tbody>
</table>

See also:
- 28.26.8 setSymbolScale(zDataX() as Double, scaleTypeX as Integer = 0)
<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>zDataX</td>
<td>(Mandatory)</td>
<td>The sizes of the symbols at the x-axis direction, expressed using the unit defined by the scaleTypeX argument.</td>
</tr>
<tr>
<td>scaleTypeX</td>
<td>PixelScale</td>
<td>The unit for zDataX, which must be one of the predefined constants in the table above.</td>
</tr>
<tr>
<td>zDataY</td>
<td>[ Empty_Array ]</td>
<td>The sizes of the symbols at the y-axis direction, expressed using the unit defined by the scaleTypeY argument. An empty array means the sizes at the y-axis direction are the means as the sizes at the x-axis direction.</td>
</tr>
<tr>
<td>scaleTypeY</td>
<td>PixelScale</td>
<td>The unit for zDataY, which must be one of the predefined constants in the table above.</td>
</tr>
</tbody>
</table>
28.27 class CDLineMBS

28.27.1 class CDLineMBS

Function: The Line class represents straight lines.  
Notes:  
Subclass of the CDDrawObjMBS class.  
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

28.27.2 Methods

28.27.3 setColor(c as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
Function: Same as the other setColor method, but uses color instead of integer data type for passing color values.  
See also:  
• 28.27.4 setColor(c as Integer) 4798

28.27.4 setColor(c as Integer)

Function: Sets the color of the line.  
Notes:  
By default, the color of the line is LineColor. To draw a dash line, you can use a dash line color (created using BaseChart_dashLineColor or DrawArea_dashLineColor).

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>c</td>
<td>(Mandatory)</td>
<td>The color of the line.</td>
</tr>
</tbody>
</table>

See also:  
• 28.27.3 setColor(c as color) 4798
28.27. **CLASS CDLINEMBS**

### 28.27.5 `setPos(x1 as Integer, y1 as Integer, x2 as Integer, y2 as Integer)`


**Function:** Sets the end-points of the line.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>x1</td>
<td>(Mandatory)</td>
<td>The x coordinate of the first end-point of the line.</td>
</tr>
<tr>
<td>y1</td>
<td>(Mandatory)</td>
<td>The y coordinate of the first end-point of the line.</td>
</tr>
<tr>
<td>x2</td>
<td>(Mandatory)</td>
<td>The x coordinate of the second end-point of the line.</td>
</tr>
<tr>
<td>y2</td>
<td>(Mandatory)</td>
<td>The y coordinate of the second end-point of the line.</td>
</tr>
</tbody>
</table>

### 28.27.6 `setWidth(w as Integer)`


**Function:** Sets the width of the line in pixels.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>w</td>
<td>(Mandatory)</td>
<td>The width (thickness) of the line in pixels.</td>
</tr>
</tbody>
</table>
28.28 class CDLineObjMBS

28.28.1 class CDLineObjMBS

Function: The line object class.
Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

28.28.2 Methods

28.28.3 Constructor

MBS ChartDirector Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The private constructor.
28.29. **CLASS CDMARKMBS**

28.29 **class CDMarkMBS**

28.29.1 **class CDMarkMBS**


**Function:** The Mark class represents mark lines.

**Notes:**
Subclass of the CDTextBoxMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

28.29.2 **Methods**

28.29.3 **getLine as CDLineObjMBS**


**Function:** Retrieves an opaque LineObj representing the mark line. The opaque LineObj is to be used in XYChart.addInterLineLayer for adding coloring between lines.

**Notes:**
Return Value
An opaque LineObj representing the mark line.

28.29.4 **setDrawOnTop(b as boolean)**


**Function:** Determine whether the mark line is drawn at the front of the chart layers, or at the back of the plot area (that is, like grid lines).

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>(Mandatory)</td>
<td>A true value means drawing the mark line at the front of the chart layers. A false value means drawing the mark line at the back of the plot area.</td>
</tr>
</tbody>
</table>

28.29.5 **setLineWidth(width as Integer)**


**Function:** Sets the line width of the mark line.

**Notes:**
4802

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<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>w</td>
<td>(Mandatory)</td>
<td>The mark line width in pixels.</td>
</tr>
</tbody>
</table>

28.29.6  **setMarkColor(lineColor as color, textColor as color, tickColor as color)**

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other setMarkColor method, but uses color instead of integer data type for passing color values.

**Notes:**

- 28.29.7 setMarkColor(lineColor as Integer, textColor as Integer = -1, tickColor as Integer = -1) 4802

28.29.7  **setMarkColor(lineColor as Integer, textColor as Integer = -1, tickColor as Integer = -1)**


**Function:** Sets the line, text and tick colors of the mark line.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>lineColor</td>
<td>(Mandatory)</td>
<td>The color of the mark line.</td>
</tr>
<tr>
<td>textColor</td>
<td>-1</td>
<td>The color of the text label that will be shown on the axis. -1 means the text label color is the same as the line color.</td>
</tr>
<tr>
<td>tickColor</td>
<td>-1</td>
<td>The color of the tick that will be shown on the axis. -1 means the tick color is the same as the line color.</td>
</tr>
</tbody>
</table>

See also:

- 28.29.6 setMarkColor(lineColor as color, textColor as color, tickColor as color) 4802

28.29.8  **setValue(value as Double)**


**Function:** Sets the value of the mark line.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>value</td>
<td>(Mandatory)</td>
<td>The value of the mark.</td>
</tr>
</tbody>
</table>
28.30. CLASS CDMETERPOINTERMBS

28.30 class CDMeterPointerMBS

28.30.1 class CDMeterPointerMBS

**Function:** The MeterPointer class represents meter pointers.  
**Notes:** Subclass of the CDDrawObjMBS class.  
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

28.30.2 Methods

28.30.3 setColor(fillColor as color, edgeColor as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Same as the other setColor method, but uses color instead of integer data type for passing color values.  
See also:  
• 28.30.4 setColor(fillColor as Integer, edgeColor as Integer = -1)

28.30.4 setColor(fillColor as Integer, edgeColor as Integer = -1)

**Function:** Sets the fill and border colors of the meter pointer.  
**Notes:**  
<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>fillColor</td>
<td>(Mandatory)</td>
<td>The fill color of the meter pointer.</td>
</tr>
</tbody>
</table>
| edgeColor      | -1          | The border color of the meter pointer. The default value of -1 means it is the same as the fill color.  
See also:  
• 28.30.3 setColor(fillColor as color, edgeColor as color)

28.30.5 setPos(value as Double)

**Function:** Sets the value the pointer points to on the meter scale.  
**Notes:**
Argument | Default | Description
--- | --- | ---
value | (Mandatory) | The value the pointer points to.

### 28.30.6 setShape(pointerCoor() as Integer)


**Function:** Sets the shape of the meter pointer to a custom polygon.

**Notes:**
The custom polygon is specified as a list of numbers representing the (x, y) coordinates of polygon vertices.

For an angular meter, the polygon should be defined with a nominal dimension of 1000 units. ChartDirector will scale the polygon so that 1000 units will become the radius of the meter.

For a linear meter, the length of the pointer should be defined with a nominal dimension of 1000 units. ChartDirector will scale the polygon so that 1000 units will be the length required for the pointer to reach the meter scale. The width of the pointer will be in 0.1 pixel units (that is, 10 units = 1 pixel).

The coordinate system for defining the polygon is that the x-axis points from left to right, and the y-axis points from bottom to top. The polygon will be defined as a pointer with the pivot at the origin, pointing to the upward direction.

As an example, the coordinates of the standard diamond pointer for an angular meter are:

0, -100, -50, -50, 0, 1000, 50, -50

The coordinates for the standard pencil pointer for a linear meter are:

-30, 0, 30, 0, 30, 768, 0, 1000, -30, 768

After scaling the pointers based on the nominal units, ChartDirector will in addition applies the lengthRatio and widthRatio scaling factor to the pointer. These ratios allow you to change the pointer sizes without changing the polygon definition. For example, if you want the meter pointer to be only 80% of the radius in the angular meter, you can set the lengthRatio to 0.80.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>pointerCoor</td>
<td>(Mandatory)</td>
<td>An array of numbers x0, y0, x1, y1, x2, y2, ..., representing the coordinates the polygon vertices.</td>
</tr>
<tr>
<td>lengthRatio</td>
<td>NoValue</td>
<td>The length ratio applies to the pointer. NoValue means the lengthRatio is not modified. The default is 1.0 for angular meters and 0.75 for linear meters.</td>
</tr>
<tr>
<td>widthRatio</td>
<td>NoValue</td>
<td>The width ratio applies to the pointer. NoValue means the widthRatio is not modified. The default is 1.0.</td>
</tr>
</tbody>
</table>

See also:
28.30.  CLASS CDMETERPOINTERMBS

- 28.30.7 setShape(pointerCoor() as Integer, lengthRatio as Double) 4805
- 28.30.8 setShape(pointerCoor() as Integer, lengthRatio as Double, widthRatio as Double) 4806
- 28.30.9 setShape(pointerType as Integer) 4807
- 28.30.10 setShape(pointerType as Integer, lengthRatio as Double) 4808
- 28.30.11 setShape(pointerType as Integer, lengthRatio as Double, widthRatio as Double) 4809

28.30.7  setShape(pointerCoor() as Integer, lengthRatio as Double)


Function: Sets the shape of the meter pointer to a custom polygon.

Notes:
The custom polygon is specified as a list of numbers representing the (x, y) coordinates of polygon vertices.

For an angular meter, the polygon should be defined with a nominal dimension of 1000 units. ChartDirector will scale the polygon so that 1000 units will become the radius of the meter.

For a linear meter, the length of the pointer should be defined with a nominal dimension of 1000 units. ChartDirector will scale the polygon so that 1000 units will be the length required for the pointer to reach the meter scale. The width of the pointer will be in 0.1 pixel units (that is, 10 units = 1 pixel).

The coordinate system for defining the polygon is that the x-axis points from left to right, and the y-axis points from bottom to top. The polygon will be defined as a pointer with the pivot at the origin, pointing to the upward direction.

As an example, the coordinates of the standard diamond pointer for an angular meter are:

0, -100, -50, -50, 0, 1000, 50, -50

The coordinates for the standard pencil pointer for a linear meter are:

-30, 0, 30, 0, 30, 768, 0, 1000, -30, 768

After scaling the pointers based on the nominal units, ChartDirector will in addition applies the lengthRatio and widthRatio scaling factor to the pointer. These ratios allow you to change the pointer sizes without changing the polygon definition. For example, if you want the meter pointer to be only 80% of the radius in the angular meter, you can set the lengthRatio to 0.80.

See also:

- 28.30.6 setShape(pointerCoor() as Integer) 4804
- 28.30.8 setShape(pointerCoor() as Integer, lengthRatio as Double, widthRatio as Double) 4806
Argument Default Description
pointerCoor (Mandatory) An array of numbers \(x_0, y_0, x_1, y_1, x_2, y_2, \ldots\), representing the coordinates the polygon vertices.
lenghtRatio NoValue The length ratio applies to the pointer. NoValue means the lengthRatio is not modified. The default is 1.0 for angular meters and 0.75 for linear meters.
widthRatio NoValue The width ratio applies to the pointer. NoValue means the widthRatio is not modified. The default is 1.0.

- 28.30.9 setShape(pointerType as Integer)
- 28.30.10 setShape(pointerType as Integer, lengthRatio as Double)
- 28.30.11 setShape(pointerType as Integer, lengthRatio as Double, widthRatio as Double)

28.30.8 setShape(pointerCoor() as Integer, lengthRatio as Double, widthRatio as Double)


**Function:** Sets the shape of the meter pointer to a custom polygon.

**Notes:**
The custom polygon is specified as a list of numbers representing the \((x, y)\) coordinates of polygon vertices.

For an angular meter, the polygon should be defined with a nominal dimension of 1000 units. ChartDirector will scale the polygon so that 1000 units will become the radius of the meter.

For a linear meter, the length of the pointer should be defined with a nominal dimension of 1000 units. ChartDirector will scale the polygon so that 1000 units will be the length required for the pointer to reach the meter scale. The width of the pointer will be in 0.1 pixel units (that is, 10 units = 1 pixel).

The coordinate system for defining the polygon is that the x-axis points from left to right, and the y-axis points from bottom to top. The polygon will be defined as a pointer with the pivot at the origin, pointing to the upward direction.

As an example, the coordinates of the standard diamond pointer for an angular meter are:

0, -100, -50, -50, 0, 1000, 50, -50

The coordinates for the standard pencil pointer for a linear meter are:

-30, 0, 30, 0, 30, 768, 0, 1000, -30, 768

After scaling the pointers based on the nominal units, ChartDirector will in addition applies the lengthRatio and widthRatio scaling factor to the pointer. These ratios allow you to change the pointer sizes without changing the polygon definition. For example, if you want the meter pointer to be only 80% of the radius in
the angular meter, you can set the lengthRatio to 0.80.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>pointerCoor</td>
<td>(Mandatory)</td>
<td>An array of numbers x0, y0, x1, y1, x2, y2, ..., representing the coordinates the polygon vertices.</td>
</tr>
<tr>
<td>lengthRatio</td>
<td>NoValue</td>
<td>The length ratio applies to the pointer. NoValue means the lengthRatio is not modified. The default is 1.0 for angular meters and 0.75 for linear meters.</td>
</tr>
<tr>
<td>widthRatio</td>
<td>NoValue</td>
<td>The width ratio applies to the pointer. NoValue means the widthRatio is not modified. The default is 1.0.</td>
</tr>
</tbody>
</table>

See also:

- 28.30.6 setShape(pointerCoor() as Integer) 4804
- 28.30.7 setShape(pointerCoor() as Integer, lengthRatio as Double) 4805
- 28.30.9 setShape(pointerType as Integer) 4807
- 28.30.10 setShape(pointerType as Integer, lengthRatio as Double) 4808
- 28.30.11 setShape(pointerType as Integer, lengthRatio as Double, widthRatio as Double) 4809

28.30.9 setShape(pointerType as Integer)


**Function:** Sets the shape of the meter pointer to one of the built-in shapes.

**Notes:**

The built-in symbols are specified by using the following predefined constants as the pointerType argument.

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DiamondPointer</td>
<td>0</td>
<td>The blue pointers in the meters above.</td>
</tr>
<tr>
<td>TriangularPointer</td>
<td>1</td>
<td>The purple pointers in the meters above.</td>
</tr>
<tr>
<td>ArrowPointer</td>
<td>2</td>
<td>The red pointers in the meters above.</td>
</tr>
<tr>
<td>ArrowPointer2</td>
<td>3</td>
<td>The yellow pointers in the meters above.</td>
</tr>
<tr>
<td>LinePointer</td>
<td>4</td>
<td>The green pointers in the meters above.</td>
</tr>
<tr>
<td>PencilPointer</td>
<td>5</td>
<td>The grey pointers in the meters above.</td>
</tr>
</tbody>
</table>

The length and width of the pointer can be scaled by using the lengthRatio and widthRatio arguments. The meters above are using default length and width ratios, which are both 1 for angular meters, and 0.75 and 1 for linear meters.

See also:
Argument | Default | Description
---|---|---
pointerType | (Mandatory) | One of the predefined pointer shape constants to specify the pointer shape to use.
lengthRatio | NoValue | The length ratio applies to the pointer. NoValue means the lengthRatio is not modified. The default is 1.0 for angular meters and 0.75 for linear meters.
widthRatio | NoValue | The width ratio applies to the pointer. NoValue means the widthRatio is not modified. The default is 1.0.

- 28.30.6 setShape(pointerCoor() as Integer) 4804
- 28.30.7 setShape(pointerCoor() as Integer, lengthRatio as Double) 4805
- 28.30.8 setShape(pointerCoor() as Integer, lengthRatio as Double, widthRatio as Double) 4806
- 28.30.10 setShape(pointerType as Integer, lengthRatio as Double) 4808
- 28.30.11 setShape(pointerType as Integer, lengthRatio as Double, widthRatio as Double) 4809

### 28.30.10 setShape(pointerType as Integer, lengthRatio as Double)


**Function:** Sets the shape of the meter pointer to one of the built-in shapes.

**Notes:**
The built-in symbols are specified by using the following predefined constants as the pointerType argument.

#### Constant Value Description

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DiamondPointer</td>
<td>0</td>
<td>The blue pointers in the meters above.</td>
</tr>
<tr>
<td>TriangularPointer</td>
<td>1</td>
<td>The purple pointers in the meters above.</td>
</tr>
<tr>
<td>ArrowPointer</td>
<td>2</td>
<td>The red pointers in the meters above.</td>
</tr>
<tr>
<td>ArrowPointer2</td>
<td>3</td>
<td>The yellow pointers in the meters above.</td>
</tr>
<tr>
<td>LinePointer</td>
<td>4</td>
<td>The green pointers in the meters above.</td>
</tr>
<tr>
<td>PencilPointer</td>
<td>5</td>
<td>The grey pointers in the meters above.</td>
</tr>
</tbody>
</table>

The length and width of the pointer can be scaled by using the lengthRatio and widthRatio arguments. The meters above are using default length and width ratios, which are both 1 for angular meters, and 0.75 and 1 for linear meters.

See also:

- 28.30.6 setShape(pointerCoor() as Integer) 4804
- 28.30.7 setShape(pointerCoor() as Integer, lengthRatio as Double) 4805
### 28.30. CLASS CDMETERPOINTERMBS

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>pointerType</td>
<td>(Mandatory)</td>
<td>One of the predefined pointer shape constants to specify the pointer shape to use.</td>
</tr>
<tr>
<td>lengthRatio</td>
<td>NoValue</td>
<td>The length ratio applies to the pointer. NoValue means the lengthRatio is not modified. The default is 1.0 for angular meters and 0.75 for linear meters.</td>
</tr>
<tr>
<td>widthRatio</td>
<td>NoValue</td>
<td>The width ratio applies to the pointer. NoValue means the widthRatio is not modified. The default is 1.0.</td>
</tr>
</tbody>
</table>

- **28.30.8 setShape(pointerCoor() as Integer, lengthRatio as Double, widthRatio as Double)**
- **28.30.9 setShape(pointerType as Integer)**
- **28.30.11 setShape(pointerType as Integer, lengthRatio as Double, widthRatio as Double)**

### 28.30.11 setShape(pointerType as Integer, lengthRatio as Double, widthRatio as Double)

MBS ChartDirector Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the shape of the meter pointer to one of the built-in shapes. **Notes:**

The built-in symbols are specified by using the following predefined constants as the pointerType argument.

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DiamondPointer</td>
<td>0</td>
<td>The blue pointers in the meters above.</td>
</tr>
<tr>
<td>TriangularPointer</td>
<td>1</td>
<td>The purple pointers in the meters above.</td>
</tr>
<tr>
<td>ArrowPointer</td>
<td>2</td>
<td>The red pointers in the meters above.</td>
</tr>
<tr>
<td>ArrowPointer2</td>
<td>3</td>
<td>The yellow pointers in the meters above.</td>
</tr>
<tr>
<td>LinePointer</td>
<td>4</td>
<td>The green pointers in the meters above.</td>
</tr>
<tr>
<td>PencilPointer</td>
<td>5</td>
<td>The grey pointers in the meters above.</td>
</tr>
</tbody>
</table>

The length and width of the pointer can be scaled by using the lengthRatio and widthRatio arguments. The meters above are using default length and width ratios, which are both 1 for angular meters, and 0.75 and 1 for linear meters.

See also:

- **28.30.6 setShape(pointerCoor() as Integer)**
- **28.30.7 setShape(pointerCoor() as Integer, lengthRatio as Double)**
- **28.30.8 setShape(pointerCoor() as Integer, lengthRatio as Double, widthRatio as Double)**
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Argument Default Description

pointerType (Mandatory) One of the predefined pointer shape constants to specify the pointer shape to use.

lengthRatio NoValue The length ratio applies to the pointer. NoValue means the lengthRatio is not modified. The default is 1.0 for angular meters and 0.75 for linear meters.

widthRatio NoValue The width ratio applies to the pointer. NoValue means the widthRatio is not modified. The default is 1.0.

28.30.9 setShape(pointerType as Integer)
28.30.10 setShape(pointerType as Integer, lengthRatio as Double)
28.30.12 setShapeAndOffset(pointerCoor() as Integer)

28.30.12 setShapeAndOffset(pointerCoor() as Integer)

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Sets the shape of new style angular meter pointers to a custom polygon.

Notes:

The custom polygon is specified as a list of numbers representing the (x, y) coordinates of the polygon vertices, with the x-axis pointing from left to right and the y-axis pointing from bottom to top. The direction of the pointer should be pointing upwards, with the starting point at y = 0, and the ending point at y = 1000.

As an example, the coordinates of the new style triangular pointer are:

-15, 0, 15, 0, 0, 1000, 1000

The coordinates for the new style line pointer are:

-5, 0, 5, 0, 5, 1000, -5, 1000

In actual usage, ChartDirector will rotate the polygon to point it to the desired value, and adjust the polygon size and position based on the startOffset, endOffset and widthRatio arguments. Please refer to MeterPointer.setShapeAndOffset2 for the meaning of these arguments.

See also:

• 28.30.13 setShapeAndOffset(pointerCoor() as Integer, startOffset as Double)
• 28.30.14 setShapeAndOffset(pointerCoor() as Integer, startOffset as Double, endOffset as Double)
• 28.30.15 setShapeAndOffset(pointerCoor() as Integer, startOffset as Double, endOffset as Double, widthRatio as Double)
• 28.30.16 setShapeAndOffset(pointerType as Integer)
### Argument Default Description

- **pointerCoor** (Mandatory) An array of numbers x0, y0, x1, y1, x2, y2, ..., representing the coordinates the polygon vertices.
- **startOffset** NoValue The position of the starting point as a ratio to the scale radius. NoValue means the position is automatically determined.
- **endOffset** NoValue The position of the ending point as a ratio to the scale radius. NoValue means the position is automatically determined.
- **widthRatio** NoValue The width of the pointer relative to the default width. NoValue means the width is automatically determined.

### 28.30.17 setShapeAndOffset(pointerType as Integer, startOffset as Double)

### 28.30.18 setShapeAndOffset(pointerType as Integer, startOffset as Double, endOffset as Double)

### 28.30.19 setShapeAndOffset(pointerType as Integer, startOffset as Double, endOffset as Double, widthRatio as Double)

### 28.30.13 setShapeAndOffset(pointerCoor() as Integer, startOffset as Double)

**MBS ChartDirector Plugin, Plugin Version:** 15.1, **Console & Web:** Yes, **Mac:** Yes, **Win:** Yes, **Linux:** Yes.  
**Function:** Sets the shape of new style angular meter pointers to a custom polygon.  
**Notes:**  
The custom polygon is specified as a list of numbers representing the (x, y) coordinates of the polygon vertices, with the x-axis pointing from left to right and the y-axis pointing from bottom to top. The direction of the pointer should be pointing upwards, with the starting point at y = 0, and the ending point at y = 1000.

As an example, the coordinates of the new style triangular pointer are:

-15, 0, 15, 0, 0, 1000, 1000

The coordinates for the new style line pointer are:

-5, 0, 5, 0, 5, 1000, -5, 1000

In actual usage, ChartDirector will rotate the polygon to point it to the desired value, and adjust the polygon size and position based on the startOffset, endOffset and widthRatio arguments. Please refer to MeterPointer.setShapeAndOffset2 for the meaning of these arguments.

See also:

- **28.30.12 setShapeAndOffset(pointerCoor() as Integer)**
- **28.30.14 setShapeAndOffset(pointerCoor() as Integer, startOffset as Double, endOffset as Double)**
CHAPTER 28. CHARTDIRECTOR

Argument Default Description
pointerCoor (Mandatory) An array of numbers x0, y0, x1, y1, x2, y2, ..., representing the coordinates the polygon vertices.
startOffset NoValue The position of the starting point as a ratio to the scale radius. NoValue means the position is automatically determined.
endOffset NoValue The position of the ending point as a ratio to the scale radius. NoValue means the position is automatically determined.
widthRatio NoValue The width of the pointer relative to the default width. NoValue means the width is automatically determined.

- 28.30.15 setShapeAndOffset(pointerCoor() as Integer, startOffset as Double, endOffset as Double, widthRatio as Double) 4814
- 28.30.16 setShapeAndOffset(pointerType as Integer) 4815
- 28.30.17 setShapeAndOffset(pointerType as Integer, startOffset as Double) 4816
- 28.30.18 setShapeAndOffset(pointerType as Integer, startOffset as Double, endOffset as Double) 4817
- 28.30.19 setShapeAndOffset(pointerType as Integer, startOffset as Double, endOffset as Double, widthRatio as Double)

28.30.14 setShapeAndOffset(pointerCoor() as Integer, startOffset as Double, endOffset as Double)

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Sets the shape of new style angular meter pointers to a custom polygon.

Notes:
The custom polygon is specified as a list of numbers representing the (x, y) coordinates of the polygon vertices, with the x-axis pointing from left to right and the y-axis pointing from bottom to top. The direction of the pointer should be pointing upwards, with the starting point at y = 0, and the ending point at y = 1000.

As an example, the coordinates of the new style triangular pointer are:

-15, 0, 15, 0, 1000, 1000

The coordinates for the new style line pointer are:

-5, 0, 5, 0, 5, 1000, -5, 1000

In actual usage, ChartDirector will rotate the polygon to point it to the desired value, and adjust the polygon size and position based on the startOffset, endOffset and widthRatio arguments. Please refer to MeterPointer.setShapeAndOffset2 for the meaning of these arguments.
28.30. CLASS CDMETERPOINTERMBS

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>pointerCoor</td>
<td>(Mandatory)</td>
<td>An array of numbers x0, y0, x1, y1, x2, y2, ..., representing the coordinates</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the polygon vertices.</td>
</tr>
<tr>
<td>startOffset</td>
<td>NoValue</td>
<td>The position of the starting point as a ratio to the scale radius. NoValue means</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the position is automatically determined.</td>
</tr>
<tr>
<td>endOffset</td>
<td>NoValue</td>
<td>The position of the ending point as a ratio to the scale radius. NoValue means</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the position is automatically determined.</td>
</tr>
<tr>
<td>widthRatio</td>
<td>NoValue</td>
<td>The width of the pointer relative to the default width. NoValue means the width</td>
</tr>
<tr>
<td></td>
<td></td>
<td>is automatically determined.</td>
</tr>
</tbody>
</table>

See also:

- 28.30.12 setShapeAndOffset(pointerCoor() as Integer) 4810
- 28.30.13 setShapeAndOffset(pointerCoor() as Integer, startOffset as Double) 4811
- 28.30.15 setShapeAndOffset(pointerCoor() as Integer, startOffset as Double, endOffset as Double, widthRatio as Double) 4813
- 28.30.16 setShapeAndOffset(pointerType as Integer) 4814
- 28.30.17 setShapeAndOffset(pointerType as Integer, startOffset as Double) 4815
- 28.30.18 setShapeAndOffset(pointerType as Integer, startOffset as Double, endOffset as Double) 4816
- 28.30.19 setShapeAndOffset(pointerType as Integer, startOffset as Double, endOffset as Double, widthRatio as Double) 4817

28.30.15 setShapeAndOffset(pointerCoor() as Integer, startOffset as Double, endOffset as Double, widthRatio as Double)

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Sets the shape of new style angular meter pointers to a custom polygon.
Notes:
The custom polygon is specified as a list of numbers representing the (x, y) coordinates of the polygon vertices, with the x-axis pointing from left to right and the y-axis pointing from bottom to top. The direction of the pointer should be pointing upwards, with the starting point at y = 0, and the ending point at y = 1000.

As an example, the coordinates of the new style triangular pointer are:

-15, 0, 15, 0, 0, 1000, 1000

The coordinates for the new style line pointer are:
In actual usage, ChartDirector will rotate the polygon to point it to the desired value, and adjust the polygon size and position based on the startOffset, endOffset and widthRatio arguments. Please refer to MeterPointer.setShapeAndOffset2 for the meaning of these arguments.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>pointerCoor</td>
<td>(Mandatory)</td>
<td>An array of numbers x0, y0, x1, y1, x2, y2, ..., representing the coordinates the polygon vertices.</td>
</tr>
<tr>
<td>startOffset</td>
<td>NoValue</td>
<td>The position of the starting point as a ratio to the scale radius. NoValue means the position is automatically determined.</td>
</tr>
<tr>
<td>endOffset</td>
<td>NoValue</td>
<td>The position of the ending point as a ratio to the scale radius. NoValue means the position is automatically determined.</td>
</tr>
<tr>
<td>widthRatio</td>
<td>NoValue</td>
<td>The width of the pointer relative to the default width. NoValue means the width is automatically determined.</td>
</tr>
</tbody>
</table>

See also:

- 28.30.12 setShapeAndOffset(pointerCoor() as Integer) 4810
- 28.30.13 setShapeAndOffset(pointerCoor() as Integer, startOffset as Double) 4811
- 28.30.14 setShapeAndOffset(pointerCoor() as Integer, startOffset as Double, endOffset as Double) 4812
- 28.30.16 setShapeAndOffset(pointerType as Integer) 4814
- 28.30.17 setShapeAndOffset(pointerType as Integer, startOffset as Double) 4815
- 28.30.18 setShapeAndOffset(pointerType as Integer, startOffset as Double, endOffset as Double) 4816
- 28.30.19 setShapeAndOffset(pointerType as Integer, startOffset as Double, endOffset as Double, widthRatio as Double) 4817

### 28.30.16 setShapeAndOffset(pointerType as Integer)

Sets the shape of new style angular meter pointers.

#### Function:
MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Sets the shape of new style angular meter pointers.

#### Notes:

New style pointers are designed to have configurable starting and ending points, as well as configurable width. In this documentation, the ending point refers to the "tip" of the pointer, while the starting point is the "base" of the pointer.

By default, the starting and ending points are at -0.15 and 0.95. It means the distance between the starting point and the center is 15% of the scale radius. The negative sign means that relative to the center, the starting point is at the opposite direction to the value the pointer is supposed to point to. Similarly, the distance between the ending point and the center is 95% of the scale radius, which means the ending point
should be quite close to the outer rim of the meter scale.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>pointerType</td>
<td>(Mandatory)</td>
<td>Should be TriangularPointer2 for new style triangular pointer, and Line-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pointer2 for new style line pointer.</td>
</tr>
<tr>
<td>startOffset</td>
<td>NoValue</td>
<td>The radius the pointer starts at, expressed as a ratio to the scale radius. No-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Value means the radius is automatically determined.</td>
</tr>
<tr>
<td>endOffset</td>
<td>NoValue</td>
<td>The radius the pointer ends at, expressed as a ratio to the scale radius. NoValue means the radius is automatically determined.</td>
</tr>
<tr>
<td>widthRatio</td>
<td>NoValue</td>
<td>The width of the pointer relative to the default width. NoValue means the</td>
</tr>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

See also:

- 28.30.12 setShapeAndOffset(pointerCoor() as Integer) 4810
- 28.30.13 setShapeAndOffset(pointerCoor() as Integer, startOffset as Double) 4811
- 28.30.14 setShapeAndOffset(pointerCoor() as Integer, startOffset as Double, endOffset as Double) 4812
- 28.30.15 setShapeAndOffset(pointerCoor() as Integer, startOffset as Double, endOffset as Double, widthRatio as Double) 4813
- 28.30.17 setShapeAndOffset(pointerType as Integer, startOffset as Double) 4815
- 28.30.18 setShapeAndOffset(pointerType as Integer, startOffset as Double, endOffset as Double) 4816
- 28.30.19 setShapeAndOffset(pointerType as Integer, startOffset as Double, endOffset as Double, widthRatio as Double) 4817

28.30.17 setShapeAndOffset(pointerType as Integer, startOffset as Double)

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Sets the shape of new style angular meter pointers.

**Notes:**

New style pointers are designed to have configurable starting and ending points, as well as configurable width. In this documentation, the ending point refers to the "tip" of the pointer, while the starting point is the "base" of the pointer.

By default, the starting and ending points are at -0.15 and 0.95. It means the distance between the starting point and the center is 15% of the scale radius. The negative sign means that relative to the center, the starting point is at the opposite direction to the value the pointer is supposed to point to. Similarly, the distance between the ending point and the center is 95% of the scale radius, which means the ending point should be quite close to the outer rim of the meter scale.

See also:
CHAPTER 28. CHARTDIRECTOR

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- 28.30.12 setShapeAndOffset(pointerCoor() as Integer) 4810
- 28.30.13 setShapeAndOffset(pointerCoor() as Integer, startOffset as Double) 4811
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- 28.30.19 setShapeAndOffset(pointerType as Integer, startOffset as Double, endOffset as Double, widthRatio as Double) 4817

28.30.18 setShapeAndOffset(pointerType as Integer, startOffset as Double, endOffset as Double)

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Sets the shape of new style angular meter pointers.

Notes:
New style pointers are designed to have configurable starting and ending points, as well as configurable width. In this documentation, the ending point refers to the "tip" of the pointer, while the starting point is the "base" of the pointer.

By default, the starting and ending points are at -0.15 and 0.95. It means the distance between the starting point and the center is 15% of the scale radius. The negative sign means that relative to the center, the starting point is at the opposite direction to the value the pointer is supposed to point to. Similarly, the distance between the ending point and the center is 95% of the scale radius, which means the ending point should be quite close to the outer rim of the meter scale.

See also:
- 28.30.12 setShapeAndOffset(pointerCoor() as Integer) 4810
28.30. CLASS CDMETERPOINTERMBS

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- 28.30.13 setShapeAndOffset(pointerCoor() as Integer, startOffset as Double) 4811
- 28.30.14 setShapeAndOffset(pointerCoor() as Integer, startOffset as Double, endOffset as Double) 4812
- 28.30.15 setShapeAndOffset(pointerCoor() as Integer, startOffset as Double, endOffset as Double, widthRatio as Double) 4813
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- 28.30.17 setShapeAndOffset(pointerType as Integer, startOffset as Double) 4815
- 28.30.19 setShapeAndOffset(pointerType as Integer, startOffset as Double, endOffset as Double, widthRatio as Double) 4817

28.30.19 setShapeAndOffset(pointerType as Integer, startOffset as Double, endOffset as Double, widthRatio as Double)

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Sets the shape of new style angular meter pointers.

**Notes:**

New style pointers are designed to have configurable starting and ending points, as well as configurable width. In this documentation, the ending point refers to the "tip" of the pointer, while the starting point is the "base" of the pointer.

By default, the starting and ending points are at -0.15 and 0.95. It means the distance between the starting point and the center is 15% of the scale radius. The negative sign means that relative to the center, the starting point is at the opposite direction to the value the pointer is supposed to point to. Similarly, the distance between the ending point and the center is 95% of the scale radius, which means the ending point should be quite close to the outer rim of the meter scale.

See also:

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- 28.30.13 setShapeAndOffset(pointerCoor() as Integer, startOffset as Double) 4811
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<tbody>
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<td></td>
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<td>The radius the pointer starts at, expressed as a ratio to the scale radius.</td>
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<td></td>
<td>NoValue means the radius is automatically determined.</td>
</tr>
<tr>
<td>endOffset</td>
<td>NoValue</td>
<td>The radius the pointer ends at, expressed as a ratio to the scale radius.</td>
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</tr>
<tr>
<td>widthRatio</td>
<td>NoValue</td>
<td>The width of the pointer relative to the default width. NoValue means the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>width is automatically determined.</td>
</tr>
</tbody>
</table>

- 28.30.14 setShapeAndOffset(pointerCoor() as Integer, startOffset as Double, endOffset as Double) 4812
- 28.30.15 setShapeAndOffset(pointerCoor() as Integer, startOffset as Double, endOffset as Double, widthRatio as Double) 4813
- 28.30.16 setShapeAndOffset(pointerType as Integer) 4814
- 28.30.17 setShapeAndOffset(pointerType as Integer, startOffset as Double) 4815
- 28.30.18 setShapeAndOffset(pointerType as Integer, startOffset as Double, endOffset as Double) 4816
28.31. **CLASS CDMLTABLEMBS**

### 28.31 class CDMLTableMBS

#### 28.31.1 class CDMLTableMBS

**Function:** The class for a legend table.  
**Notes:**  
Subclass of the CDDrawObjMBS class.  
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

#### 28.31.2 Methods

#### 28.31.3 appendCol as CDTextBoxMBS

**Function:** Appends a column.

#### 28.31.4 appendRow as CDTextBoxMBS

**Function:** Appends a row.

#### 28.31.5 getCell(col as Integer, row as Integer) as CDTextBoxMBS

**Function:** Returns the textbox object for the cell.  
**Notes:** The index of column and row is zero based.

#### 28.31.6 getColCount as Integer

**Function:** Returns the number of columns.
28.31.7 `getColStyle(col as Integer) as CDTextBoxMBS`

**Function:** Returns the column style.
**Notes:** col is zero based.

28.31.8 `getColWidth(col as Integer) as Integer`

**Function:** Returns the width of a column.
**Notes:** col is zero based.

28.31.9 `getHeight as Integer`

**Function:** Returns the height of the table.

28.31.10 `getRowCount as Integer`

**Function:** Returns the number of row.

28.31.11 `getRowHeight(row as Integer) as Integer`

**Function:** Returns the height of a row.
**Notes:** row is zero based.

28.31.12 `getRowStyle(row as Integer) as CDTextBoxMBS`

**Function:** Returns the row style.
**Notes:** row is zero based.
28.31. **CLASS CDMLTABLEMBS**

### 28.31.13 `getStyle` as `CDTextBoxMBS`

**Function:** Returns the textbox defining the style of the table.

### 28.31.14 `getWidth` as Integer

**Function:** Returns the width of the table.

### 28.31.15 `insertCol(col as Integer)` as `CDTextBoxMBS`

**Function:** Inserts a column at the given column.  
**Notes:** col is zero based.

### 28.31.16 `insertRow(row as Integer)` as `CDTextBoxMBS`

**Function:** Inserts a row on the given position.  
**Notes:** row is zero based.

### 28.31.17 `layout`

**Function:** Layouts the table, so you can get the size.

### 28.31.18 `setCell(col as Integer, row as Integer, width as Integer, height as Integer, text as string)` as `CDTextBoxMBS`

**Function:** Sets the cell to the given text.  
**Notes:** col and row are zero based.
28.31.19 `setPos(x as Integer, y as Integer, alignment as Integer = 7)`

**Function:** Sets the position of the table.
**Notes:** x and y are zero based.

28.31.20 `setText(col as Integer, row as Integer, text as string) as CDTextBoxMBS`

**Function:** Sets the text of a cell.
**Notes:** col and row are zero based.
28.32. **CLASS CDMULTICHARTMBS**

28.32 class CDMultiChartMBS

28.32.1 class CDMultiChartMBS


**Function:** The MultiChart class represents multi-chart.

**Notes:**

A multi-chart is a container to contain multiple charts. You can use a multi-chart to combine multiple BaseChart objects (or its subclass such as PieChart, XYChart, PolarChart, AngularMeter or LinearMeter) into one image.

Subclass of the CDBaseChartMBS class.

28.32.2 Methods

28.32.3 addChart(x as Integer, y as Integer, c as CDBaseChartMBS)


**Function:** Adds a BaseChart object (or its subclass such as PieChart, XYChart, PolarChart, AngularMeter or LinearMeter) into the multi-chart.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>Mandatory</td>
<td>The x coordinate of a point in the multi-chart that is to align with the top-left corner of the added BaseChart.</td>
</tr>
<tr>
<td>y</td>
<td>Mandatory</td>
<td>The y coordinate of a point in the multi-chart that is to align with the top-left corner of the added BaseChart.</td>
</tr>
<tr>
<td>c</td>
<td>Mandatory</td>
<td>The BaseChart object to be added to the multi-chart.</td>
</tr>
</tbody>
</table>

28.32.4 Constructor(width as Integer = 640, height as Integer = 480, bgColor as color, edgeColor as color, raisedEffect as Integer = 0)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other Constructor method, but uses color instead of integer data type for passing color values.

See also:

- 28.32.5 Constructor(width as Integer = 640, height as Integer = 480, bgColor as Integer = & hffff0000, edgeColor as Integer = & hff000000, raisedEffect as Integer = 0)
28.32.5 Constructor(width as Integer = 640, height as Integer = 480, bgColor as Integer = & hffff0000, edgeColor as Integer = & hff000000, raisedEffect as Integer = 0)

Function: Creates a new MultiChart object.
Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>width</td>
<td>(Mandatory)</td>
<td>The width of the chart in pixels.</td>
</tr>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the chart in pixels.</td>
</tr>
<tr>
<td>bgColor</td>
<td>BackgroundColor</td>
<td>The background color of the chart.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>Transparent</td>
<td>The edge color of the chart.</td>
</tr>
<tr>
<td>raisedEffect</td>
<td>0</td>
<td>The 3D border width. For positive values, the border will appear raised. For negative values, the border will appear depressed. A zero value means the border will appear flat.</td>
</tr>
</tbody>
</table>

See also:

- 28.32.4 Constructor(width as Integer = 640, height as Integer = 480, bgColor as color, edgeColor as color, raisedEffect as Integer = 0)

28.32.6 getChart(index as Integer) as CDBaseChartMBS

Function: Gets the specified chart in the MultiChart.
Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>0</td>
<td>The index of the chart. The index of the first chart set added to the MultiChart is 0. The index of the Nth data set added to the MultiChart is N - 1.</td>
</tr>
</tbody>
</table>

28.32.7 getChartCount as Integer

Function: Gets the number of charts in the MultiChart.
Notes: Returns the number of charts in the MultiChart.

28.32.8 setMainChart(c as CDBaseChartMBS)

Function: Sets the chart that receives view port mouse actions (for zooming and scrolling support).
## Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>c</td>
<td>(Mandatory)</td>
<td>The chart that is to receive view port mouse actions.</td>
</tr>
</tbody>
</table>
28.33 class CDNotInitializedExceptionMBS

28.33.1 class CDNotInitializedExceptionMBS

Function: Exception raised if method is called on an uninitialized object.
Notes:
Please report this as it may be a bug.
Subclass of the RuntimeException class.
28.34.1 class CDPaneChartMBS

Function: The PieChart class represents pie charts.
Notes: Subclass of the CDBaseChartMBS class.

28.34.2 Methods

28.34.3 Constructor(width as Integer = 640, height as Integer = 480, bgcolor as color, edgeColor as color, raisedEffect as Integer = 0)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other Constructor method, but uses color instead of integer data type for passing color values.
See also:

- 28.34.4 Constructor(width as Integer = 640, height as Integer = 480, bgcolor as Integer = &hFFFF0000, edgeColor as Integer = &hFF000000, raisedEffect as Integer = 0)

28.34.4 Constructor(width as Integer = 640, height as Integer = 480, bgcolor as Integer = &hFFFF0000, edgeColor as Integer = &hFF000000, raisedEffect as Integer = 0)

Function: Creates a new PieChart object.
Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>width</td>
<td>(Mandatory)</td>
<td>The width of the chart in pixels.</td>
</tr>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the chart in pixels.</td>
</tr>
<tr>
<td>bgColor</td>
<td>BackgroundColor</td>
<td>The background color of the chart.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>Transparent</td>
<td>The edge color of the chart.</td>
</tr>
<tr>
<td>raisedEffect</td>
<td>0</td>
<td>The 3D border width. For positive values, the border will appear raised. For negative values, the border will appear depressed. A zero value means the border will appear flat.</td>
</tr>
</tbody>
</table>

See also:

- 28.34.3 Constructor(width as Integer = 640, height as Integer = 480, bgcolor as color, edgeColor as color, raisedEffect as Integer = 0)
28.34.5 sector(sectorNo as Integer) as CDSectorMBS

**Function:** Retrieves the Sector object representing a single sector in the pie chart.
**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>sectorNo</td>
<td>(Mandatory)</td>
<td>The sector number of the sector to retrieve, starting from 0. The first sector is 0. The nth sector is (n-1).</td>
</tr>
</tbody>
</table>

**Return Value**

The requested Sector object.

28.34.6 set3D(depth as Integer = -1, angle as Double = -1, shadowMode as boolean=false)

**Function:** Adds 3D effects to the pie.
**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>depth</td>
<td>-1</td>
<td>The 3D depth of the pie in pixels. -1 means the depth is automatically determined.</td>
</tr>
<tr>
<td>angle</td>
<td>-1</td>
<td>The 3D view angle in degrees. Must be 0 - 90 for standard 3D mode, and 0 - 360 in shadow 3D mode. -1 means the angle is automatically determined.</td>
</tr>
<tr>
<td>shadowMode</td>
<td>false</td>
<td>Flag to indicate whether the pie is in standard 3D or shadow 3D mode. A true value means shadow 3D mode. A false value means standard 3D mode.</td>
</tr>
</tbody>
</table>

See also:

- 28.34.7 set3D(depths() as Double, angle as Double = 45, shadowMode as boolean=false) 4828

28.34.7 set3D(depths() as Double, angle as Double = 45, shadowMode as boolean=false)

**Function:** Adds 3D effects to the pie, where each sector can have a different 3D depth.
**Notes:**

See also:

- 28.34.6 set3D(depth as Integer = -1, angle as Double = -1, shadowMode as boolean=false) 4828
28.34. **CLASS CDPIECHARTMBS**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>depths</td>
<td>(Mandatory)</td>
<td>An array of integers representing the 3D depths for the sectors.</td>
</tr>
<tr>
<td>angle</td>
<td>45</td>
<td>The 3D view angle in degrees. Must be 0 - 90 for standard 3D mode, and 0 - 360 in shadow 3D mode. -1 means the angle is automatically determined.</td>
</tr>
<tr>
<td>shadowMode</td>
<td>false</td>
<td>Flag to indicate whether the pie is in standard 3D or shadow 3D mode. A true value means shadow 3D mode. A false value means standard 3D mode.</td>
</tr>
</tbody>
</table>

### 28.34.8 setData(data() as Double)


**Function:** Sets the data used to draw the pie chart.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>data</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the data points.</td>
</tr>
<tr>
<td>labels</td>
<td>[ Empty_Array ]</td>
<td>An array of text strings representing the labels of the sectors. An empty array means no sector label.</td>
</tr>
</tbody>
</table>

See also:

- 28.34.9 setData(data() as Double, label() as string)

### 28.34.9 setData(data() as Double, label() as string)


**Function:** Sets the data used to draw the pie chart.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>data</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the data points.</td>
</tr>
<tr>
<td>labels</td>
<td>[ Empty_Array ]</td>
<td>An array of text strings representing the labels of the sectors. An empty array means no sector label.</td>
</tr>
</tbody>
</table>

See also:

- 28.34.8 setData(data() as Double)

### 28.34.10 setDonutSize(x as Integer, y as Integer, r as Integer, r2 as Integer)


**Function:** Sets the position and size of the donut in the donut chart.

**Notes:**
CHAPTER 28. CHARTDIRECTOR

Argument | Default | Description
---|---|---
x | (Mandatory) | The x coordinate of the donut center.
y | (Mandatory) | The y coordinate of the donut center.
r | (Mandatory) | The inner radius of the donut.
r2 | (Mandatory) | The outer radius of the donut.

28.34.11 setExplode(sectorNo as Integer, distance as Integer = -1)

**Function:** Explode a sector from the pie.
**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>sectorNo</td>
<td>(Mandatory)</td>
<td>The sector number of the sector to be exploded from the pie, starting from 0.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The first sector is 0. The nth sector is (n - 1).</td>
</tr>
<tr>
<td>distance</td>
<td>-1</td>
<td>The explosion distance in pixels. -1 means the distance is automatically determined.</td>
</tr>
</tbody>
</table>

28.34.12 setExplodeGroup(startSector as Integer, endSector as Integer, distance as Integer = -1)

**Function:** Explode a group of sectors from the pie.
**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>startSector</td>
<td>(Mandatory)</td>
<td>The sector number of the first sector in the sector group to be exploded.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The first sector is 0. The nth sector is (n - 1).</td>
</tr>
<tr>
<td>endSector</td>
<td>(Mandatory)</td>
<td>The sector number of the last sector in the sector group to be exploded.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The first sector is 0. The nth sector is (n - 1).</td>
</tr>
<tr>
<td>distance</td>
<td>-1</td>
<td>The explosion distance in pixels. -1 means the distance is automatically determined.</td>
</tr>
</tbody>
</table>

28.34.13 setJoinLine(joinLineColor as color, joinLineWidth as Integer = -1)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other setJoinLine method, but uses color instead of integer data type for passing color values.
See also:

- 28.34.14 setJoinLine(joinLineColor as Integer, joinLineWidth as Integer = -1)
28.34. **CLASS CDPIECHARTMBS**

### 28.34.14 setJoinLine(joinLineColor as Integer, joinLineWidth as Integer = -1)

MBS ChartDirector Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the color and width of the join lines used to connect the sector labels to the sector perimeter. **Notes:**

This method affects all sectors. To set the color and width of the join line for one particular sector only, use Sector.setJoinLine.

By default, for circular label layout, the join line color is Transparent. For side label layout, the join line color is SameAsMainColor.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>joinLineColor</td>
<td>(Mandatory)</td>
<td>The color of the line that joins the sector perimeter with the sector label.</td>
</tr>
<tr>
<td>joinLineWidth</td>
<td>1</td>
<td>The line width of the join line.</td>
</tr>
</tbody>
</table>

See also:

- 28.34.13 setJoinLine(joinLineColor as color, joinLineWidth as Integer = -1)

### 28.34.15 setLabelFormat(formatString as string)

MBS ChartDirector Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the format of the all sector labels. **Example:**

```vba
dim c as CDPieChartMBS

// you can use label formats like this:

c.setLabelFormat("<block,halign=left><font=timesbi.ttf,size=12,underline=1>{ label } <*/font*> <*br*> US$ { value } K ( { percent } % )")

// we can reduce that to this:

c.setLabelFormat(" { label } { value } { percent } % ")

// and it shows 3 numbers. With | 1 after the variable name, we define the decimals after dot:

// and

c.setLabelFormat(" { label } { value | 1 } { percent | 1 } % ")
```

// and

```vba
c.setLabelFormat(" { label } { value | 1., } { percent | 1., } % ")
```
// uses dot for thousands and comma for decimal separator.

Notes:
This method affects all sectors. To set the label format for one particular sector only, use Sector.setLabelFormat.

The default sector label format depends on the label layout method used (see PieChart.setLabelLayout).

Label Layout MethodDefault Label Format

Circular Layout  \{ label \} & lt;*br*& gt; \{ percent \} %

(The "& lt;*br*& gt;" above is the CDML syntax for a line break.)

Side Layout  \{ label \} ( \{ percent \} % )

Please refer to Parameter Substitution and Formatting on all available parameters and how to format them.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>formatString</td>
<td>(Mandatory)</td>
<td>The format string.</td>
</tr>
</tbody>
</table>

28.34.16  setLabelLayout(layoutMethod as Integer, pos as Integer = -1, topBound as Integer = -1, bottomBound as Integer = -1)

**Function:** Sets the layout method and location of the sector labels.
**Notes:**
This method affects all sectors. To set the sector label layout method and location for one particular sector only, use Sector.setLabelLayout.

ChartDirector supports two sector label layout methods - circular layout and side layout. The layout method is determined using the layoutMethod argument, which must be one of the following predefined constants.

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
</table>

In the circular layout method, the sector labels are positioned around the perimeter of the pie.

In the side layout method, there is an invisible rectangle containing the pie, where the rectangle can be wider than the diameter of the pie. The sector labels are positioned on the left and right sides outside the rectangle. Because the labels can be quite far away from the sectors, join lines are typically used to connect the labels to the sectors.

The circular layout method usually uses less space and is the default layout method. However, if the pie chart contains a lot of small sectors, the labels may overlap with each other, due to insufficient space on the pie perimeter to position the labels.

The side layout method has the advantages that it can avoid label overlapping. In the side layout method, labels will automatically shift up and down to avoid overlapping.

One common issue in pie charts is the data contain a lot of small sectors. If the data are sorted, the small sectors will be crowded together instead of distributed evenly. Although the side layout method can avoid label overlapping by shifting the labels up and down, some labels may need to be shifted great distances.

Label layout can often be improved if the small sectors are near the horizontal axis. It is because the amount of vertical label space for a sector is greatest at the horizontal axis. This can be achieved by choosing an appropriate start angle (using PieChart.setStartAngle).

If the data is in ascending order (small sectors crowded at the beginning), a start angle of 45 degrees with clockwise sector layout is recommended. With this setting, the first few sectors (the smallest sectors) will be at around 45 - 135 degrees, so is near the horizontal axis (90 degrees). Similarly, if the data is in descending order (small sectors crowded at the end), a start angle of 135 degrees with clockwise sector layout can be used.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>layoutMethod</td>
<td>(Mandatory)</td>
<td>Specify the layout method. Must be one of the predefined constants CircleLayout or SideLayout.</td>
</tr>
<tr>
<td>pos</td>
<td>-1</td>
<td>For circular layout, it is the distance between the sector perimeter and the sector label. A negative value (but not -1) means the sector label will be drawn in the interior of the sector. For side layout, it is the distance between the pie perimeter and the left or right edges of the invisible containing rectangle (equal to the width of the rectangle minus the pie diameter and then divided by 2).</td>
</tr>
</tbody>
</table>

In either case, -1 means the distance is automatically determined.
**28.34.17 setLabelPos(pos as Integer, joinLineColor as color)**

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other setLabelPos method, but uses color instead of integer data type for passing color values.

See also:

- 28.34.18 setLabelPos(pos as Integer, joinLineColor as Integer = -1)

**28.34.18 setLabelPos(pos as Integer, joinLineColor as Integer = -1)**


**Function:** Sets the circular label layout method, and configure the join lines used to connect the sector labels to the sector perimeter.

**Notes:**

This method affects all sectors. To set the sector label position or join line color for one particular sector only, use Sector.setLabelPos.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>pos (Mandatory)</td>
<td></td>
<td>The distance between the sector perimeter and the sector label. A negative</td>
</tr>
<tr>
<td></td>
<td></td>
<td>value means the sector label will be drawn in the interior of the sector.</td>
</tr>
<tr>
<td>joinLineColor</td>
<td>-1</td>
<td>The color of the line that joins the sector perimeter with the sector label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The default is Transparent. The join line is ignored if the sector label is</td>
</tr>
<tr>
<td></td>
<td></td>
<td>inside the sector.</td>
</tr>
</tbody>
</table>

See also:

- 28.34.17 setLabelPos(pos as Integer, joinLineColor as color)
28.34. **CLASS CDPIECHARTMBS**

**28.34.19 setLabelStyle(font as string = "", fontsize as Double = 8, fontColor as Integer = & hffff0002) as CDTextBoxMBS**


**Function:** Sets the style used to draw all sector labels.

**Notes:**

This method affects all sectors. To set the label style for one particular sector only, use Sector.setLabelStyle.

See Font Specification for details on various font attributes.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>font</td>
<td>&quot;&quot;</td>
<td>The font used to draw the sector labels.</td>
</tr>
<tr>
<td>fontSize</td>
<td>8</td>
<td>The font size in points.</td>
</tr>
<tr>
<td>fontColor</td>
<td>TextColor</td>
<td>The text color for the sector labels.</td>
</tr>
</tbody>
</table>

**Return Value**

A TextBox object representing the prototype of the obj. This may be used to fine-tune the appearance of the obj.

See font specification here:

http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml

See also:

- 28.34.20 setLabelStyle(font as string, fontsize as Double, fontColor as color) as CDTextBoxMBS 4835

**28.34.20 setLabelStyle(font as string, fontsize as Double, fontColor as color) as CDTextBoxMBS**

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other setLabelStyle method, but uses color instead of integer data type for passing color values.

See also:

- 28.34.19 setLabelStyle(font as string = "", fontsize as Double = 8, fontColor as Integer = & hffff0002) as CDTextBoxMBS 4835

**28.34.21 setLineColor(edgeColor as color, joinLineColor as color)**

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other setLineColor method, but uses color instead of integer data type for passing color values.

See also:
28.34.22 setLineColor(edgeColor as Integer, joinLineColor as Integer = -1)


**Function:** Sets the sector edge color and join line color.

**Notes:**
This method affects all sectors. To set the sector label position and join line color for one particular sector, use Sector.setColor.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>edgeColor</td>
<td>(Mandatory)</td>
<td>The colors for the edges of the sectors. By default, the edge color is SameAsMainColor, which means the edge color is the same as the fill color of the sector, and the sector will appear borderless.</td>
</tr>
<tr>
<td>joinLineColor</td>
<td>-1</td>
<td>The color of the line that join the sector perimeter with the sector label. By default, for circular label layout, the join line color is Transparent. For side label layout, the join line color is SameAsMainColor.</td>
</tr>
</tbody>
</table>

See also:

- 28.34.21 setLineColor(edgeColor as color, joinLineColor as color)

28.34.23 setPieSize(x as Integer, y as Integer, r as Integer)


**Function:** Sets the position and size of the pie in the pie chart.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>(Mandatory)</td>
<td>The x coordinate of the pie center.</td>
</tr>
<tr>
<td>y</td>
<td>(Mandatory)</td>
<td>The y coordinate of the pie center.</td>
</tr>
<tr>
<td>r</td>
<td>(Mandatory)</td>
<td>The radius of the pie.</td>
</tr>
</tbody>
</table>

28.34.24 setSectorStyle(shadingMethod as Integer, edgeColor as color, edgeWidth as Integer = -1)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other setSectorStyle method, but uses color instead of integer data type for passing color values.

See also:
28.34. `CLASS CDPIECHARTMBS`

- 28.34.25 `setSectorStyle(shadingMethod as Integer, edgeColor as Integer = -1, edgeWidth as Integer = -1)`

### 28.34.25 setSectorStyle(shadingMethod as Integer, edgeColor as Integer = -1, edgeWidth as Integer = -1)


**Function:** Sets the sector shading style, edge color and edge width.

**Notes:**
This method affects all sectors. To set the sector shading style, edge color and edge width for one particular sector, use `CDSectorMBS.setStyle`.

ChartDirector supports various shading effects, which are best illustrated using examples.

The followings are textual descriptions of the shading effects.

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DefaultShading</td>
<td>0</td>
<td>This is the default shading method. The top surfaces are shaded with flat colors. For 3D sectors, the cylindrical surfaces are shaded with cylindrical lighting effects.</td>
</tr>
<tr>
<td>FlatShading</td>
<td>1</td>
<td>All surfaces are shaded with flat colors.</td>
</tr>
<tr>
<td>LocalGradientShading</td>
<td>2</td>
<td>The top surfaces are shaded with linear gradient colors. For each sector, the gradient is from the bottom of the sector bounding box to the top of the sector bounding box, with the bottom side brighter and the top side darker. For 3D sectors, the cylindrical surfaces are shaded with cylindrical lighting effects.</td>
</tr>
<tr>
<td>GlobalGradientShading</td>
<td>3</td>
<td>The top surfaces are shaded with linear gradient colors. The gradient is from the bottom the pie bounding box to the top of the pie bounding box, with the bottom side brighter and the top side darker. For 3D sectors, the cylindrical surfaces are shaded with cylindrical lighting effects.</td>
</tr>
<tr>
<td>ConcaveShading</td>
<td>4</td>
<td>The top surfaces are shaded with a special effect so that they look concave, with the pie center appears to be depressed relative to the perimeter. For 3D sectors, the cylindrical surfaces are shaded with cylindrical lighting effects.</td>
</tr>
<tr>
<td>RoundedEdgeShading</td>
<td>6</td>
<td>The top surfaces are shaded with a special effect so that the pie looks raised with a rounded raised edge at the perimeter.</td>
</tr>
<tr>
<td>RadialShading</td>
<td>7</td>
<td>The top surfaces are shaded with radial gradient colors, with the pie center brighter and the perimeter darker. For 3D sectors, the cylindrical surfaces are shaded with cylindrical lighting effects.</td>
</tr>
<tr>
<td>RingShading</td>
<td>8</td>
<td>This effect is intended to be used with 2D donut charts only. The top surfaces are shaded with a special effect so that a 2D donut will look like a torus.</td>
</tr>
</tbody>
</table>

**Arguments:**

**See also:**
28.34.24 setSectorStyle(shadingMethod as Integer, edgeColor as color, edgeWidth as Integer = -1)

28.34.26 setStartAngle(startAngle as Double, clockWise as boolean=true)


**Function:** Sets the angle of the first sector in the pie and the layout direction for the sectors.

**Notes:**
By default, the start angle is 0 degree (the upward pointing direction), and subsequent sectors are drawn clockwise.
Function: A pie chart with legend created using ChartDirector with the CDPieChartMBS class.
Function: A pie chart with small sectors created using ChartDirector with the CDPieChartMBS class.
Function: A donut created using ChartDirector with the CDPieChartMBS class.
28.35 class CDPlotAreaMBS

28.35.1 class CDPlotAreaMBS

Function: The PlotArea class represents plot areas in XY charts.
Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

28.35.2 Methods

28.35.3 Constructor

MBS ChartDirector Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The private constructor.

28.35.4 getBottomY as Integer

Function: Gets the bottom y pixel coordinate of the plot area.
Notes: Returns the bottom y pixel coordinate of the plot area.

28.35.5 getHeight as Integer

Function: Gets the height of the plot area.

28.35.6 getLeftX as Integer

Function: Gets the left x pixel coordinate of the plot area.

28.35.7 getRightX as Integer

Function: Gets the right x pixel coordinate of the plot area.
Notes: Returns the right x pixel coordinate of the plot area.

### 28.35.8 `getTopY` as Integer


**Function:** Gets the top y pixel coordinate of the plot area.

**Notes:**

In some cases, the top y coordinate of a box may be dynamically determined. An example is the top y coordinate of an LegendBox with alignment set to Center. To determine the top y coordinate, the size of the box must be known first. For these cases, the top y coordinate is undefined until the legend box or the entire chart has been laid out (using `CDBaseChartMBS.layout` or `CDBaseChartMBS.layoutLegend`), or the chart image has been drawn (e.g. using `CDBaseChartMBS.makeChart`).

**Arguments:**

None

**Return Value**

The top y pixel coordinate of the plot area.

### 28.35.9 `getWidth` as Integer


**Function:** Gets the width of the plot area.

### 28.35.10 `moveGridBefore(layer as CDLayerMBS=nil)`


**Function:** Moves the grid lines in front of a Layer.

**Notes:**

By default, the grid lines will be drawn at the back of the plot area, behind all the layers. This method can be used to move the grid lines in front of a given layer.

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>layer</td>
<td>nil</td>
<td>The Layer for the grid lines to move in front of.</td>
</tr>
</tbody>
</table>
28.35.11  set4QBgColor(Q1Color as color, Q2Color as color, Q3Color as color, Q4Color as color, edgeColor as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other set4QBgColor method, but uses color instead of integer data type for passing color values.
See also:

- 28.35.12 set4QBgColor(Q1Color as Integer, Q2Color as Integer, Q3Color as Integer, Q4Color as Integer, edgeColor as Integer = -1)

28.35.12  set4QBgColor(Q1Color as Integer, Q2Color as Integer, Q3Color as Integer, Q4Color as Integer, edgeColor as Integer = -1)

**Function:** Sets using 4 background plot area colors for 4 quadrants.
**Notes:**
The first quadrant is the region defined by x > 0 and y > 0. The second quadrant is the region defined by x < 0 and y > 0. The third quadrant is the region defined by x < 0 and y < 0. The fourth quadrant is the region defined by x > 0 and y < 0. These 4 regions can be colored using 4 different background colors.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1Color</td>
<td>(Mandatory)</td>
<td>The background color to be used for the first quadrant.</td>
</tr>
<tr>
<td>Q2Color</td>
<td>(Mandatory)</td>
<td>The background color to be used for the second quadrant.</td>
</tr>
<tr>
<td>Q3Color</td>
<td>(Mandatory)</td>
<td>The background color to be used for the third quadrant.</td>
</tr>
<tr>
<td>Q4Color</td>
<td>(Mandatory)</td>
<td>The background color to be used for the fourth quadrant.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The border color of the plot area. -1 means to use the default, which is Line-Color. However, if the axes are configured in 4 quadrant mode (see XYChart.setAxisAtOrigin), the default will change to Transparent.</td>
</tr>
</tbody>
</table>

See also:

- 28.35.11 set4QBgColor(Q1Color as color, Q2Color as color, Q3Color as color, Q4Color as color, edgeColor as color)

28.35.13  setAltBgColor(horizontal as Boolean, color1 as color, color2 as color, edgeColor as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other setAltBgColor method, but uses color instead of integer data type for passing color values.
See also:
28.35.14 setAltBgColor(horizontal as Boolean, color1 as Integer, color2 as Integer, edgeColor as Integer = -1)


**Function:** Sets alternating plot area background color.

**Notes:**
This method can be used to specify two colors that will be used alternatively to draw horizontal or vertical bands on the plot area background, using major grid lines as boundaries for the bands.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>horizontal</td>
<td>(Mandatory)</td>
<td>true means to use horizontal bands. false means to use vertical bands.</td>
</tr>
<tr>
<td>color1</td>
<td>(Mandatory)</td>
<td>The first color to be used as the alternating background color.</td>
</tr>
<tr>
<td>color2</td>
<td>(Mandatory)</td>
<td>The second color to be used as the alternating background color.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The border color of the plot area. -1 means to use the default, which is Line-Color. However, if the axes are configured in 4 quadrant mode (see XYChart.setAxisAtOrigin), the default will change to Transparent.</td>
</tr>
</tbody>
</table>

See also:
- 28.35.13 setAltBgColor(horizontal as Boolean, color1 as color, color2 as color, edgeColor as color) 4844

28.35.15 setBackground(colorvalue as color, altBgColor as color, edgeColor as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other setBackground method, but uses color instead of integer data type for passing color values.

See also:
- 28.35.16 setBackground(colorvalue as Integer, altBgColor as Integer = -1, edgeColor as Integer = -1) 4845
- 28.35.17 setBackground(file as folderitem, align as Integer = 5) 4846

28.35.16 setBackground(colorvalue as Integer, altBgColor as Integer = -1, edgeColor as Integer = -1)


**Function:** Sets the background colors and the border color of the plot area.

**Notes:**
A plot area can have one or two background colors. If it has two background colors, they are drawn alternatively as horizontal bands on the major background grid.

ChartDirector Ver 4.0 introduces two new methods PlotArea.setAltBgColor and PlotArea.set4QBgColor. They are used for vertical alternating bands, and for supporting 4 background colors for 4 quadrants.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The background color.</td>
</tr>
<tr>
<td>altBgColor</td>
<td>-1</td>
<td>The second background color. -1 means there is no second background color.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The border color of the plot area. -1 means to use the default, which is Line-Color. However, if the axes are configured in 4 quadrant mode (see XYChart.setAxisAtOrigin), the default will change to Transparent.</td>
</tr>
</tbody>
</table>

See also:

- 28.35.15 setBackground(colorvalue as color, altBgColor as color, edgeColor as color) 4845
- 28.35.17 setBackground(file as folderitem, align as Integer = 5) 4846

28.35.17  setBackground(file as folderitem, align as Integer = 5)

MBS ChartDirector Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the specified image file as the background image of the plot area. **Notes:** ChartDirector will automatically detect the image file format using the file extension, which must either png, jpg, jpeg, gif, wbmp or wmp (case insensitive).

Please refer to BaseChart.setSearchPath on the directory that ChartDirector will search for the file.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>img</td>
<td>(Mandatory)</td>
<td>The image file that is used as the background image of the plot area.</td>
</tr>
<tr>
<td>align</td>
<td>Center</td>
<td>The alignment of the background image relative to the plot area. See Alignment Specification for supported alignment types.</td>
</tr>
</tbody>
</table>

See also:

- 28.35.15 setBackground(colorvalue as color, altBgColor as color, edgeColor as color) 4845
- 28.35.16 setBackground(colorvalue as Integer, altBgColor as Integer = -1, edgeColor as Integer = -1) 4845
28.35.18  setGridAxis(xGridAxis as CDAxisMBS, yGridAxis as CDAxisMBS)


**Function:** Sets the axis used for drawing grid lines.

**Notes:**

By default, the grid lines will be based on the ticks on the primary x-axis (CDXYChartMBS.xAxis) and primary y-axis (CDXYChartMBS.yAxis). This method may be used to specify alternative x-axis and y-axis to base the grid lines on.

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xGridAxis</td>
<td>(Mandatory)</td>
<td>The x-axis used for drawing grid lines.</td>
</tr>
<tr>
<td>yGridAxis</td>
<td>(Mandatory)</td>
<td>The y-axis used for drawing grid lines.</td>
</tr>
</tbody>
</table>

28.35.19  setGridColor(hGridColor as color, vGridColor as color, minorHGridColor as color, minorVGridColor as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other setGridColor method, but uses color instead of integer data type for passing color values.

**Notes:**

**Argument Default Description**

| hGridColor (Mandatory) | The color for the horizontal grid lines associated with major ticks. |
| vGridColor Transparent | The color for the vertical grid lines associated with major ticks.    |
| minorHGridColor -1     | The color for the horizontal grid lines associated with minor ticks. -1 means the color is the same as hGridColor. |
| minorVGridColor -1     | The color for the vertical grid lines associated with minor ticks. -1 means the color is the same as vGridColor. |

See also:

- 28.35.20 setGridColor(hGridColor as Integer, vGridColor as Integer = & hff000000, minorHGridColor as Integer = -1, minorVGridColor as Integer = -1) 4847

28.35.20  setGridColor(hGridColor as Integer, vGridColor as Integer = & hff000000, minorHGridColor as Integer = -1, minorVGridColor as Integer = -1)


**Function:** Sets the horizontal and vertical grid colors of the plot area.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>hGridColor</td>
<td>(Mandatory)</td>
<td>The color for the horizontal grid lines associated with major ticks.</td>
</tr>
<tr>
<td>vGridColor</td>
<td>Transparent</td>
<td>The color for the vertical grid lines associated with major ticks.</td>
</tr>
<tr>
<td>minorHGridColor</td>
<td>-1</td>
<td>The color for the horizontal grid lines associated with minor ticks. -1 means the color is the same as hGridColor.</td>
</tr>
<tr>
<td>minorVGridColor</td>
<td>-1</td>
<td>The color for the vertical grid lines associated with minor ticks. -1 means the color is the same as vGridColor.</td>
</tr>
</tbody>
</table>

See also:
• 28.35.19 setGridColor(hGridColor as color, vGridColor as color, minorHGridColor as color, minorVGridColor as color)

28.35.21 setGridWidth(hGridWidth as Integer, vGridWidth as Integer = -1, minorHGridWidth as Integer = -1, minorVGridWidth as Integer = -1)

Function: Sets the horizontal and vertical grid line width.

Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>hGridWidth</td>
<td>(Mandatory)</td>
<td>The line width for the horizontal grid lines associated with major ticks.</td>
</tr>
<tr>
<td>vGridWidth</td>
<td>-1</td>
<td>The line width for the vertical grid lines associated with major ticks. -1 means the vertical grid line width is the same as hGridWidth.</td>
</tr>
<tr>
<td>minorHGridWidth</td>
<td>-1</td>
<td>The line width for the horizontal grid lines associated with minor ticks. -1 means the color is the same as hGridWidth.</td>
</tr>
<tr>
<td>minorVGridWidth</td>
<td>-1</td>
<td>The line width for the horizontal grid lines associated with minor ticks. -1 means the color is the same as vGridWidth.</td>
</tr>
</tbody>
</table>
28.36  class CDPolarAreaLayerMBS

28.36.1  class CDPolarAreaLayerMBS


**Function:** The PolarAreaLayer class represents polar area layers.

**Notes:**

Subclass of the CDPolarLayerMBS class.

This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.
28.37 class CDPolarChartMBS

28.37.1 class CDPolarChartMBS

Function: The PolarChart class represents polar charts (including radar charts).
Notes: Subclass of the CDBaseChartMBS class.

28.37.2 Methods

28.37.3 addAreaLayer(data() as Double, colorvalue as color, name as string = "") as CDPolarAreaLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other addAreaLayer method, but uses color instead of integer data type for passing color values.
See also:
- 28.37.4 addAreaLayer(data() as Double, colorvalue as Integer = -1, name as string = ") as CDPolarAreaLayerMBS
- 28.37.5 addAreaLayer(dates() as date, colorvalue as color, name as string = "") as CDPolarAreaLayerMBS
- 28.37.6 addAreaLayer(dates() as date, colorvalue as Integer = -1, name as string = ") as CDPolarAreaLayerMBS

28.37.4 addAreaLayer(data() as Double, colorvalue as Integer = -1, name as string = ") as CDPolarAreaLayerMBS

Function: Adds a polar area layer to the polar chart.
Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>data</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the data points in the layer.</td>
</tr>
<tr>
<td>color</td>
<td>-1</td>
<td>The color to draw the area. -1 means that the color is automatically selected from the palette.</td>
</tr>
<tr>
<td>name</td>
<td>&quot;&quot;</td>
<td>The name of the layer. The name will be used in the legend box, if one is available. An empty string means the layer has no name.</td>
</tr>
</tbody>
</table>

Return Value
A PolarAreaLayer object representing the chart layer created.
See also:
addAreaLayer(dates() as date, colorvalue as color, name as string = "") as CDPolarAreaLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Same as the other addAreaLayer method, but uses color instead of integer data type for passing color values.

See also:

- 28.37.3 addAreaLayer(data() as Double, colorvalue as color, name as string = "") as CDPolarAreaLayerMBS
- 28.37.4 addAreaLayer(data() as Double, colorvalue as Integer = -1, name as string = "") as CDPolarAreaLayerMBS
- 28.37.6 addAreaLayer(dates() as date, colorvalue as Integer = -1, name as string = "") as CDPolarAreaLayerMBS

addAreaLayer(dates() as date, colorvalue as Integer = -1, name as string = "") as CDPolarAreaLayerMBS

MBS ChartDirector Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Adds a polar area layer to the polar chart.

Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>data</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the data points in the layer.</td>
</tr>
<tr>
<td>color</td>
<td>-1</td>
<td>The color to draw the area. -1 means that the color is automatically selected from the palette.</td>
</tr>
<tr>
<td>name</td>
<td>&quot;&quot;</td>
<td>The name of the layer. The name will be used in the legend box, if one is available. An empty string means the layer has no name.</td>
</tr>
</tbody>
</table>

Return Value
A PolarAreaLayer object representing the chart layer created.

See also:

- 28.37.3 addAreaLayer(data() as Double, colorvalue as color, name as string = "") as CDPolarAreaLayerMBS
28.37.7 addLineLayer(data() as Double, colorvalue as color, name as string = "") as CDPolarLineLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Same as the other addLineLayer method, but uses color instead of integer data type for passing color values.

See also:

• 28.37.8 addLineLayer(data() as Double, colorvalue as Integer = -1, name as string = "") as CDPolarLineLayerMBS

• 28.37.9 addLineLayer(dates() as date, colorvalue as color, name as string = "") as CDPolarLineLayerMBS

• 28.37.10 addLineLayer(dates() as date, colorvalue as Integer = -1, name as string = "") as CDPolarLineLayerMBS

28.37.8 addLineLayer(data() as Double, colorvalue as Integer = -1, name as string = "") as CDPolarLineLayerMBS


Function: Adds a polar line layer to the polar chart.

Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>data</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the data points in the layer.</td>
</tr>
<tr>
<td>color</td>
<td>-1</td>
<td>The color to draw the line. -1 means that the color is automatically selected from the palette.</td>
</tr>
<tr>
<td>name</td>
<td>&quot;&quot;</td>
<td>The name of the layer. The name will be used in the legend box, if one is available. An empty string means the layer has no name.</td>
</tr>
</tbody>
</table>

Return Value
A PolarLineLayer object representing the chart layer created.

See also:

• 28.37.7 addLineLayer(data() as Double, colorvalue as color, name as string = "") as CDPolarLineLayerMBS

• 28.37.9 addLineLayer(dates() as date, colorvalue as color, name as string = "") as CDPolarLineLayerMBS
28.37. CLASS CDPOLARCHARTMBS

- 28.37.10 addLineLayer(dates() as date, colorvalue as Integer = -1, name as string = "") as CDPolarLineLayerMBS 4853

28.37.9 addLineLayer(dates() as date, colorvalue as color, name as string = "") as CDPolarLineLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Same as the other addLineLayer method, but uses color instead of integer data type for passing color values.

See also:

- 28.37.7 addLineLayer(data() as Double, colorvalue as color, name as string = "") as CDPolarLineLayerMBS 4852
- 28.37.8 addLineLayer(data() as Double, colorvalue as Integer = -1, name as string = "") as CDPolarLineLayerMBS 4852
- 28.37.10 addLineLayer(dates() as date, colorvalue as Integer = -1, name as string = "") as CDPolarLineLayerMBS 4853

28.37.10 addLineLayer(dates() as date, colorvalue as Integer = -1, name as string = "") as CDPolarLineLayerMBS

MBS ChartDirector Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Adds a polar line layer to the polar chart.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>data</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the data points in the layer.</td>
</tr>
<tr>
<td>color</td>
<td>-1</td>
<td>The color to draw the line. -1 means that the color is automatically selected from the palette.</td>
</tr>
<tr>
<td>name</td>
<td>&quot;&quot;</td>
<td>The name of the layer. The name will be used in the legend box, if one is available. An empty string means the layer has no name.</td>
</tr>
</tbody>
</table>

**Return Value**

A PolarLineLayer object representing the chart layer created.

See also:

- 28.37.7 addLineLayer(data() as Double, colorvalue as color, name as string = "") as CDPolarLineLayerMBS 4852
- 28.37.8 addLineLayer(data() as Double, colorvalue as Integer = -1, name as string = "") as CDPolarLineLayerMBS 4852
- 28.37.9 addLineLayer(dates() as date, colorvalue as color, name as string = "") as CDPolarLineLayerMBS 4853
CHAPTER 28. CHARTDIRECTOR

28.37.11 addSplineAreaLayer(data() as Double, colorvalue as color, name as string = "") as CDPolarSplineAreaLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Same as the other addSplineAreaLayer method, but uses color instead of integer data type for passing color values.

See also:

- 28.37.12 addSplineAreaLayer(data() as Double, colorvalue as Integer = -1, name as string = "") as CDPolarSplineAreaLayerMBS
- 28.37.13 addSplineAreaLayer(dates() as date, colorvalue as color, name as string = "") as CDPolarSplineAreaLayerMBS
- 28.37.14 addSplineAreaLayer(dates() as date, colorvalue as Integer = -1, name as string = "") as CDPolarSplineAreaLayerMBS

28.37.12 addSplineAreaLayer(data() as Double, colorvalue as Integer = -1, name as string = "") as CDPolarSplineAreaLayerMBS


Function: Adds a polar spline area layer to the polar chart.

Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>data</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the data points in the layer.</td>
</tr>
<tr>
<td>color</td>
<td>-1</td>
<td>The color to draw the spline area. -1 means that the color is automatically selected from the palette.</td>
</tr>
<tr>
<td>name</td>
<td>&quot;&quot;</td>
<td>The name of the layer. The name will be used in the legend box, if one is available. An empty string means the layer has no name.</td>
</tr>
</tbody>
</table>

Return Value
A PolarSplineAreaLayer object representing the chart layer created.

See also:

- 28.37.11 addSplineAreaLayer(data() as Double, colorvalue as color, name as string = "") as CDPolarSplineAreaLayerMBS
- 28.37.13 addSplineAreaLayer(dates() as date, colorvalue as color, name as string = "") as CDPolarSplineAreaLayerMBS
- 28.37.14 addSplineAreaLayer(dates() as date, colorvalue as Integer = -1, name as string = "") as CDPolarSplineAreaLayerMBS
### 28.37.13 addSplineAreaLayer(dates() as date, colorvalue as color, name as string = "") as CDPolarSplineAreaLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addSplineAreaLayer method, but uses color instead of integer data type for passing color values.

See also:

- 28.37.11 addSplineAreaLayer(data() as Double, colorvalue as color, name as string = "") as CDPolarSplineAreaLayerMBS
- 28.37.12 addSplineAreaLayer(data() as Double, colorvalue as Integer = -1, name as string = "") as CDPolarSplineAreaLayerMBS
- 28.37.14 addSplineAreaLayer(dates() as date, colorvalue as Integer = -1, name as string = "") as CDPolarSplineAreaLayerMBS

### 28.37.14 addSplineAreaLayer(dates() as date, colorvalue as Integer = -1, name as string = "") as CDPolarSplineAreaLayerMBS

MBS ChartDirector Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Adds a polar spline area layer to the polar chart.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>data</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the data points in the layer.</td>
</tr>
<tr>
<td>color</td>
<td>-1</td>
<td>The color to draw the spline area. -1 means that the color is automatically selected from the palette.</td>
</tr>
<tr>
<td>name</td>
<td>&quot;&quot;</td>
<td>The name of the layer. The name will be used in the legend box, if one is available. An empty string means the layer has no name.</td>
</tr>
</tbody>
</table>

**Return Value**

A PolarSplineAreaLayer object representing the chart layer created.

See also:

- 28.37.11 addSplineAreaLayer(data() as Double, colorvalue as color, name as string = "") as CDPolarSplineAreaLayerMBS
- 28.37.12 addSplineAreaLayer(data() as Double, colorvalue as Integer = -1, name as string = "") as CDPolarSplineAreaLayerMBS
- 28.37.13 addSplineAreaLayer(dates() as date, colorvalue as color, name as string = "") as CDPolarSplineAreaLayerMBS
28.37.15 addSplineLineLayer(data() as Double, colorvalue as color, name as string = "") as CDPolarSplineLineLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other addSplineLineLayer method, but uses color instead of integer data type for passing color values.

See also:

- 28.37.16 addSplineLineLayer(data() as Double, colorvalue as Integer = -1, name as string = "") as CDPolarSplineLineLayerMBS
- 28.37.17 addSplineLineLayer(dates() as date, colorvalue as color, name as string = "") as CDPolarSplineLineLayerMBS
- 28.37.18 addSplineLineLayer(dates() as date, colorvalue as Integer = -1, name as string = "") as CDPolarSplineLineLayerMBS

28.37.16 addSplineLineLayer(data() as Double, colorvalue as Integer = -1, name as string = "") as CDPolarSplineLineLayerMBS

**Function:** Adds a polar spline line layer to the polar chart.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>data</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the data points in the layer.</td>
</tr>
<tr>
<td>color</td>
<td>-1</td>
<td>The color to draw the spline line. -1 means that the color is automatically selected from the palette.</td>
</tr>
<tr>
<td>name</td>
<td>&quot;&quot;</td>
<td>The name of the layer. The name will be used in the legend box, if one is available. An empty string means the layer has no name.</td>
</tr>
</tbody>
</table>

**Return Value**

A PolarSplineLineLayer object representing the chart layer created.

See also:

- 28.37.15 addSplineLineLayer(data() as Double, colorvalue as color, name as string = "") as CDPolarSplineLineLayerMBS
- 28.37.17 addSplineLineLayer(dates() as date, colorvalue as color, name as string = "") as CDPolarSplineLineLayerMBS
- 28.37.18 addSplineLineLayer(dates() as date, colorvalue as Integer = -1, name as string = "") as CDPolarSplineLineLayerMBS
28.37.17 addSplineLineLayer(dates() as date, colorvalue as color, name as string = "") as CDPolarSplineLineLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
Function: Same as the other addSplineLineLayer method, but uses color instead of integer data type for passing color values.
See also:

- 28.37.15 addSplineLineLayer(data() as Double, colorvalue as color, name as string = "") as CDPolarSplineLineLayerMBS
- 28.37.16 addSplineLineLayer(data() as Double, colorvalue as Integer = -1, name as string = "") as CDPolarSplineLineLayerMBS
- 28.37.18 addSplineLineLayer(dates() as date, colorvalue as Integer = -1, name as string = "") as CDPolarSplineLineLayerMBS

28.37.18 addSplineLineLayer(dates() as date, colorvalue as Integer = -1, name as string = "") as CDPolarSplineLineLayerMBS

MBS ChartDirector Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
Function: Adds a polar spline line layer to the polar chart.
Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>data</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the data points in the layer.</td>
</tr>
<tr>
<td>color</td>
<td>-1</td>
<td>The color to draw the spline line. -1 means that the color is automatically selected from the palette.</td>
</tr>
<tr>
<td>name</td>
<td>&quot;&quot;</td>
<td>The name of the layer. The name will be used in the legend box, if one is available. An empty string means the layer has no name.</td>
</tr>
</tbody>
</table>

Return Value
A PolarSplineLineLayer object representing the chart layer created.
See also:

- 28.37.15 addSplineLineLayer(data() as Double, colorvalue as color, name as string = "") as CDPolarSplineLineLayerMBS
- 28.37.16 addSplineLineLayer(data() as Double, colorvalue as Integer = -1, name as string = "") as CDPolarSplineLineLayerMBS
- 28.37.17 addSplineLineLayer(dates() as date, colorvalue as color, name as string = "") as CDPolarSplineLineLayerMBS
28.37.19 addVectorLayer(rdata() as Double, adata() as Double, lengths() as Double, directions() as Double, lengthScale as Integer = 0, colorvalue as Integer = -1, name as string = "") as CD PolarVectorLayerMBS


**Function:** Adds a vector layer to the chart.

**Notes:**

The vectors are specified as 4 data series, representing the radial and angular coordinates of the reference points to put the vectors, and the lengths and directions of the vectors.

By default, the vector starts from the reference point and points away from it. You may use PolarVectorLayer.setArrowAlignment to specify other options, such as for the vectors to point into the reference point, or to have the reference as a pivot at the mid-point of the vector.

ChartDirector supports specifying vectors lengths as pixels or in axis scale. The unit is specified by using the following predefined constants.

**Constant** | **Value** | **Description**
--- | --- | ---
PixelScale | 0 | The unit is measured in pixels.
RadialAxisScale | 2 | The unit is measured in the radial axis scale.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>rData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the radial coordinates for the reference points of the vectors.</td>
</tr>
<tr>
<td>aData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the angular coordinates for the reference points of the vectors.</td>
</tr>
<tr>
<td>lengths</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the lengths of the vectors, in unit as specified in the lengthScale argument.</td>
</tr>
<tr>
<td>directions</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the direction of the vectors as a clockwise angle in degrees, where 0 is upward pointing direction.</td>
</tr>
<tr>
<td>lengthScale</td>
<td>PixelScale</td>
<td>The unit for the lengths, which must be one of the predefined constants in the table above.</td>
</tr>
<tr>
<td>color</td>
<td>-1</td>
<td>The color to draw the data points. -1 means that the color is automatically selected from the palette.</td>
</tr>
<tr>
<td>name</td>
<td>&quot;&quot;</td>
<td>The name of the layer. The name will be used in the legend box, if one is available. An empty string means the layer has no name.</td>
</tr>
</tbody>
</table>

**Return Value**

A PolarVectorLayer object representing the vector layer created.

**See also:**

- 28.37.20 addVectorLayer(rdata() as Double, adata() as Double, lengths() as Double, directions() as
28.37. **CLASS CDPOLARChartMBS**

Double, lengthScale as Integer, colorvalue as color, name as string = "") as CDPolarVectorLayerMBS

28.37.20 **addVectorLayer(rdata() as Double, adata() as Double, lengths() as Double, directions() as Double, lengthScale as Integer, colorvalue as color, name as string = "") as CDPolarVectorLayerMBS**

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Same as the other addVectorLayer method, but uses color instead of integer data type for passing color values. 

See also:

- 28.37.19 addVectorLayer(rdata() as Double, adata() as Double, lengths() as Double, directions() as Double, lengthScale as Integer = 0, colorvalue as Integer = -1, name as string = "") as CDPolarVectorLayerMBS

28.37.21 **Constructor(width as Integer = 640, height as Integer = 480, bgColor as color, edgeColor as color, raisedEffect as Integer = 0)**

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Same as the other Constructor method, but uses color instead of integer data type for passing color values. 

See also:

- 28.37.22 Constructor(width as Integer = 640, height as Integer = 480, bgColor as Integer = & hffff0000, edgeColor as Integer = & hff000000, raisedEffect as Integer = 0)

28.37.22 **Constructor(width as Integer = 640, height as Integer = 480, bgColor as Integer = & hffff0000, edgeColor as Integer = & hff000000, raisedEffect as Integer = 0)**

MBS ChartDirector Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new PolarChart object. 

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>width</td>
<td>(Mandatory)</td>
<td>The width of the chart in pixels.</td>
</tr>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the chart in pixels.</td>
</tr>
<tr>
<td>bgColor</td>
<td>BackgroundColor</td>
<td>The background color of the chart.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>Transparent</td>
<td>The edge color of the chart.</td>
</tr>
<tr>
<td>raisedEffect</td>
<td>0</td>
<td>The 3D border width. For positive values, the border will appear raised. For negative values, the border will appear depressed. A zero value means the border will appear flat.</td>
</tr>
</tbody>
</table>
See also:

- 28.37.21 Constructor(width as Integer = 640, height as Integer = 480, bgColor as color, edgeColor as color, raisedEffect as Integer = 0)

### 28.37.23 `getXCoor(r as Double, a as Double) as Integer`


**Function:** Gets the x pixel coordinate of a point given its radial and angular coordinates.

**Notes:**

The radial and angular coordinates are measured using the scale of the radial and angular axes. In particular, the scale of the angular axis may not be in degrees or radians. See AngularAxis.setLabels and AngularAxis.setLinearScale on how the angular axis scale is defined.

Note: You must call BaseChart.layout first before calling this method. It is because ChartDirector needs to perform auto-scaling and determine the axis scale first before it can compute the coordinates.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r</td>
<td>(Mandatory)</td>
<td>The radial coordinate of the point.</td>
</tr>
<tr>
<td>a</td>
<td>(Mandatory)</td>
<td>The angular coordinate of the point.</td>
</tr>
</tbody>
</table>

**Return Value**

The x pixel coordinate of the point.

### 28.37.24 `getYCoor(r as Double, a as Double) as Integer`


**Function:** Gets the y pixel coordinate of a point given its radial and angular coordinates.

**Notes:**

The radial and angular coordinates are measured using the scale of the radial and angular axes. In particular, the scale of the angular axis may not be in degrees or radians. See AngularAxis.setLabels and AngularAxis.setLinearScale on how the angular axis scale is defined.

Note: You must call BaseChart.layout first before calling this method. It is because ChartDirector needs to perform auto-scaling and determine the axis scale first before it can compute the coordinates.

**Return Value**

The y pixel coordinate of the point.
Argument | Default | Description
--- | --- | ---
r | (Mandatory) | The radial coordinate of the point.
a | (Mandatory) | The angular coordinate of the point.

**28.37.25 setGridColor(rGridColor as color, rGridWidth as Integer, aGridColor as color, aGridWidth as Integer = 1)**

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other setGridColor method, but uses color instead of integer data type for passing color values.

**Notes:**

- **28.37.26 setGridColor(rGridColor as Integer = &h80000000, rGridWidth as Integer = 1, aGridColor as Integer = &h80000000, aGridWidth as Integer = 1)**

**28.37.26 setGridColor(rGridColor as Integer = &h80000000, rGridWidth as Integer = 1, aGridColor as Integer = &h80000000, aGridWidth as Integer = 1)**


**Function:** Sets the grid colors and widths of the polar plot area.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>rGridColor</td>
<td>80000000</td>
<td>The color of grid lines in the radial direction (from the center outwards).</td>
</tr>
<tr>
<td>rGridWidth</td>
<td>1</td>
<td>The line width for grid lines in the radial direction (from the center outwards).</td>
</tr>
<tr>
<td>aGridColor</td>
<td>80000000</td>
<td>The color of grid lines in the angular direction (concentric circles around the center).</td>
</tr>
<tr>
<td>aGridWidth</td>
<td>1</td>
<td>The line width of grid lines in the angular direction (concentric circles around the center). The line width is only used if the polar plot area is using a polygon grid (see PolarChart.setGridStyle). If circular grid is used, the line width is always 1.</td>
</tr>
</tbody>
</table>

See also:

- **28.37.25 setGridColor(rGridColor as color, rGridWidth as Integer, aGridColor as color, aGridWidth as Integer = 1)**

**28.37.27 setGridStyle(polygonGrid as boolean, gridOnTop as boolean=true)**


**Function:** Configure whether to use circular grids or polygon grids, and whether the grid lines are on top.
of the polar plot area or are at the back.

Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>polygonGrid</td>
<td>(Mandatory)</td>
<td>A true value means polygonal grid will be used. A false value means circular grid will be used.</td>
</tr>
<tr>
<td>gridOnTop</td>
<td>true</td>
<td>A true value means the grid lines will be on top of the polar plot area. A false value means the grid lines will be at the bottom of the polar plot area.</td>
</tr>
</tbody>
</table>

28.37.28 setPlotArea(x as Integer, y as Integer, r as Integer, bgColor as color, edgeColor as color, edgeWidth as Integer = 1)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Same as the other setPlotArea method, but uses color instead of integer data type for passing color values.

See also:

- 28.37.29 setPlotArea(x as Integer, y as Integer, r as Integer, bgColor as Integer = & hff000000, edgeColor as Integer = & hff000000, edgeWidth as Integer = 1) 4862

28.37.29 setPlotArea(x as Integer, y as Integer, r as Integer, bgColor as Integer = & hff000000, edgeColor as Integer = & hff000000, edgeWidth as Integer = 1)


Function: Sets the position, background colors, border color and border width of the polar plot area.

Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>(Mandatory)</td>
<td>The x coordinate of the center of the polar plot area.</td>
</tr>
<tr>
<td>y</td>
<td>(Mandatory)</td>
<td>The y coordinate of the center of the polar plot area.</td>
</tr>
<tr>
<td>r</td>
<td>(Mandatory)</td>
<td>The radius of the polar plot area in pixels.</td>
</tr>
<tr>
<td>bgColor</td>
<td>Transparent</td>
<td>The background color of the polar plot area.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>Transparent</td>
<td>The border color of the polar plot area.</td>
</tr>
<tr>
<td>edgeWidth</td>
<td>1</td>
<td>The border width of the polar plot area. The border width is only used if the polar plot area is using a polygon grid (see PolarChart.setGridStyle). If circular grid is used, the border width is always 1.</td>
</tr>
</tbody>
</table>

See also:

- 28.37.28 setPlotArea(x as Integer, y as Integer, r as Integer, bgColor as color, edgeColor as color, edgeWidth as Integer = 1) 4862
28.37. CLASS CDPOLARCHARTMBS

28.37.30 setPlotAreaBg(bgColor1 as color, bgColor2 as color, altRings as boolean = true)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other setPlotAreaBg method, but uses color instead of integer data type for passing color values.
See also:

- 28.37.31 setPlotAreaBg(bgColor1 as Integer, bgColor2 as Integer, altRings as boolean = true)

28.37.31 setPlotAreaBg(bgColor1 as Integer, bgColor2 as Integer, altRings as boolean = true)

Function: Sets alternating background colors for the polar plot area.
Notes: ChartDirector supports using two alternating background colors for the polar plot area. The colors can change on the radial direction, resulting in concentric circles, on and the angular direction, resulting in alternating sectors.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>bgColor1</td>
<td>(Mandatory)</td>
<td>The first background color.</td>
</tr>
<tr>
<td>bgColor2</td>
<td>-1</td>
<td>The second background color. The default value of -1 means it is the same as the first background color.</td>
</tr>
<tr>
<td>altRings</td>
<td>true</td>
<td>A true value means the background colors alternate in the radial direction, resulting in concentric circles. A false value means the background colors alternates in the angular direction, resulting in alternating sectors.</td>
</tr>
</tbody>
</table>

See also:

- 28.37.30 setPlotAreaBg(bgColor1 as color, bgColor2 as color, altRings as boolean = true)

28.37.32 setStartAngle(startAngle as Double, clockwise as boolean=true)

Function: Sets the angle of the radial axis, and the layout direction of radial grid lines.
Notes: The default radial axis angle is 0 degree, which means the radial axis is upward pointing.
<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>startAngle</td>
<td>(Mandatory)</td>
<td>The angle of the radial axis in degrees. The upward pointing direction is 0 degree, with angle measured in the clockwise direction.</td>
</tr>
<tr>
<td>clockwise</td>
<td>true</td>
<td>A true value means the radial grid line will be laid out in the clockwise direction. A false value means the radial grid lines will be laid out in the counter-clockwise direction.</td>
</tr>
</tbody>
</table>

### 28.37.33 Properties

**28.37.34 angularAxis as CDAngularAxisMBS**

**Function:** Gets the AngularAxis object representing the angular axis of the polar chart.  
**Notes:** (Read only property)

**28.37.35 radialAxis as CDRadialAxisMBS**

**Function:** Gets the RadialAxis object representing the radial axis of the polar chart.  
**Notes:** (Read only property)
**Function:** A polar chart created using ChartDirector with the CDPolarChartMBS class.
28.37.38 polarzones.jpg

**Chemical Concentration**

- **Under-Absorp**
- **Normal**
- **Over-Absorp**

**Function:** A polar chart created using ChartDirector with the CDPolarChartMBS class.
CHAPTER 28. CHARTDIRECTOR

28.38 class CDPolarLayerMBS

28.38.1 class CDPolarLayerMBS


Function: The PolarLayer class is the base class for all PolarChart layer classes.

Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

28.38.2 Methods

28.38.3 addCustomDataLabel(i as Integer, label as string, font as string = "", fontSize as Double = 8, fontColor as Integer = & hffff0002, fontAngle as Double = 0) as CDTextBoxMBS


Function: Adds a custom data label to a data point.

Notes:

See Font Specification for details on various font attributes.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>(Mandatory)</td>
<td>The data point number for the data point. The first data point is 0, while the nth data point is (n - 1).</td>
</tr>
<tr>
<td>label</td>
<td>(Mandatory)</td>
<td>A text string representing the data label. Parameter Substitution and Formatting is supported.</td>
</tr>
<tr>
<td>font</td>
<td>&quot;&quot;</td>
<td>The font used to draw the label.</td>
</tr>
<tr>
<td>fontSize</td>
<td>8</td>
<td>The font size used to draw the label.</td>
</tr>
<tr>
<td>fontColor</td>
<td>TextColor</td>
<td>The color used to draw the label.</td>
</tr>
<tr>
<td>fontAngle</td>
<td>0</td>
<td>The rotation angle of the label.</td>
</tr>
</tbody>
</table>

Return Value

A TextBox object representing the prototype of the obj. This may be used to fine-tune the appearance of the obj.

See font specification here:
http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml

See also:

- 28.38.4 addCustomDataLabel(i as Integer, label as string, font as string, fontSize as Double, fontColor as color, fontAngle as Double = 0) as CDTextBoxMBS
28.38.4 addCustomDataLabel(i as Integer, label as string, font as string, fontSize as Double, fontColor as color, fontAngle as Double = 0) as CDTextBoxMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addCustomDataLabel method, but uses color instead of integer data type for passing color values.

See also:

- 28.38.3 addCustomDataLabel(i as Integer, label as string, font as string = "", fontSize as Double = 8, fontColor as Integer = & hffff0002, fontAngle as Double = 0) as CDTextBoxMBS

28.38.5 Constructor

MBS ChartDirector Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The private constructor.

28.38.6 getHTMLImageMap(url as string, queryFormat as string = "", extraAttr as string = "", offsetX as Integer = 0, offsetY as Integer = 0) as string


**Function:** Generates an HTML image map for all data points on the layer.

**Notes:**

This method should be called only after creating the chart image (eg. using BaseChart.makeChart, BaseChart.makeChart2 or BaseChart.makeChart3). The image map cannot be determined without creating the chart image first.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>url</td>
<td>(Mandatory)</td>
<td>The URL to be used in the &quot;href&quot; attribute of the image map. Parameter</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Substitution and Formatting is supported. Use an empty string if no href</td>
</tr>
<tr>
<td></td>
<td></td>
<td>attribute is needed.</td>
</tr>
<tr>
<td>queryFormat</td>
<td>&quot;&quot;</td>
<td>A text string representing the template of the query parameters to be</td>
</tr>
<tr>
<td></td>
<td></td>
<td>appended to the URL. Parameter Substitution and Formatting is supported.</td>
</tr>
</tbody>
</table>

The special keyword " { default } " represents the default query parameters. This is useful for specifying appending to the default.

Note that an empty string means to use the default query query parameters. To specify no query parameter, use a space character.
extraAttr  ""  A text string to specify additional attributes to add to the &lt;area&gt; tag. Parameter Substitution and Formatting is supported.

offsetX  0  An offset to be added to all x coordinates in the image map. This is useful if the current image will be shifted and inserted into another image. In this case, the image map will need to be shifted by the same offset.

offsetY  0  An offset to be added to all y coordinates in the image map. See offsetX above for description.

Return Value
A text string containing the image map generated.

28.38.7  getImageCoor(dataItem as Integer, offsetX as Integer = 0, offsetY as Integer = 0) as string

Function:  Gets the image map coordinates of a data point.
Notes:
The image map coordinates will be in the following format:

\[
\text{shape=\"rect\" cords=\"[ x1 ] , [ y1 ] , [ x2 ] , [ y2 ] \"}
\]
This format is specially designed so that it can easily be included into HTML image maps.

This method should be called only after creating the chart image (eg. using BaseChart.makeChart, BaseChart.makeChart2 or BaseChart.makeChart3). The image map cannot be determined without creating the chart image first.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>dataItem</td>
<td>(Mandatory)</td>
<td>The data point number for the data point. The first data point is 0, while the nth data point is (n - 1).</td>
</tr>
<tr>
<td>offsetX</td>
<td>0</td>
<td>An offset to be added to all x coordinates in the image map. This is useful if the current image will be shifted and inserted into another image. In this case, the image map will need to be shifted by the same offset.</td>
</tr>
<tr>
<td>offsetY</td>
<td>0</td>
<td>An offset to be added to all y coordinates in the image map. See offsetX above for description.</td>
</tr>
</tbody>
</table>

Return Value
A text string representing the image map coordinates of the data points as HTML image map attributes.
28.38.8 setAngles(data() as Double)

**Function:** Sets the angular coordinates of the data points.

**Notes:**

Note that the angular coordinates are measured using the scale of the angular axis, which may not be in degrees or radians. See AngularAxis.setLabels and AngularAxis.setLinearScale on how the angular axis scale is defined.

If this method is not called, the first data point is assumed to have an angular coordinate of 0, and the nth data point is assumed to have an angular coordinate of (n - 1). This is common for radar charts, in which enumerated scale is used for the angular axis (see AngularAxis.setLabels).

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>angles</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the angular coordinates of the data points.</td>
</tr>
</tbody>
</table>

28.38.9 setBorderColor(edgeColor as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other setBorderColor method, but uses color instead of integer data type for passing color values.

See also:

- 28.38.10 setBorderColor(edgeColor as Integer)

28.38.10 setBorderColor(edgeColor as Integer)

**Function:** Sets the border color for drawing the data on the layer.

**Notes:**

This method only applies to layers that represents data with elements that have borders (e.g. polar area layer and polar spline area layer).

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>edgeColor</td>
<td>(Mandatory)</td>
<td>The border color.</td>
</tr>
</tbody>
</table>

See also:

- 28.38.9 setBorderColor(edgeColor as color)
CHAPTER 28. CHARTDIRECTOR

28.38.11  setData(data() as Double, colorvalue as color, name as string = "")

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other setData method, but uses color instead of integer data type for passing color values.
See also:

- 28.38.12 setData(data() as Double, colorvalue as Integer = -1, name as string = "")

28.38.12  setData(data() as Double, colorvalue as Integer = -1, name as string = ")

Function: Sets the values of the data points.
See also:

- 28.38.11 setData(data() as Double, colorvalue as color, name as string = "")

28.38.13  setDataLabelFormat(formatString as string)

Function: Sets the data label format.
Notes:
By default, the data label format is " { value } ". Please refer to Parameter Substitution and Formatting on available parameters and how to format them.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>formatString</td>
<td>(Mandatory)</td>
<td>The format string.</td>
</tr>
</tbody>
</table>

28.38.14  setDataLabelStyle(font as string = ", fontsize as Double = 8, font-
color as Integer = 0, fontangle as Double = 0) as CDTextBoxMBS

Function: Enables data labels and sets their styles.
Notes:
Return Value
A TextBox object representing the prototype of the obj. This may be used to fine-tune the appearance of the obj.
See also:
28.38. **CLASS CDPOLARLAYERMBS**

### Argument Default Description
- **font** `""` The font used to draw the labels.
- **fontSize** `8` The font size used to draw the labels.
- **fontColor** `TextColor` The color used to draw the labels.
- **fontAngle** `0` The rotation angle of the labels.

- **28.38.15 setDataLabelStyle(font as string, fontsize as Double, fontcolor as color, fontangle as Double = 0) as CDTextBoxMBS**

---

### 28.38.15 setDataLabelStyle(font as string, fontsize as Double, fontcolor as color, fontangle as Double = 0) as CDTextBoxMBS

**MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:** Same as the other setDataLabelStyle method, but uses color instead of integer data type for passing color values.

**See also:**
- **28.38.14 setDataLabelStyle(font as string = "", fontsize as Double = 8, fontcolor as Integer = 0, fontangle as Double = 0) as CDTextBoxMBS**

---

### 28.38.16 setDataSymbol(area as CDDrawAreaMBS)

**MBS ChartDirector Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:** Uses a DrawArea object as the graphics symbol to plot the data points.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>obj</td>
<td>(Mandatory)</td>
<td>A DrawArea object to be used as the symbol.</td>
</tr>
</tbody>
</table>

**See also:**
- **28.38.17 setDataSymbol(image as folderitem)**
- **28.38.18 setDataSymbol(pic as Picture)**
- **28.38.19 setDataSymbol(polygon() as Integer, size as Integer = 11, fillcolor as Integer = -1, edgecolor as Integer = -1)**
- **28.38.20 setDataSymbol(polygon() as Integer, size as Integer, fillcolor as color, edgecolor as Integer = -1)**
- **28.38.21 setDataSymbol(symbol as Integer, size as Integer = 7, fillColor as Integer = -1, edgeColor as Integer = -1, lineWidth as Integer = 1)**
- **28.38.22 setDataSymbol(symbol as Integer, size as Integer, fillColor as color, edgeColor as color, lineWidth as Integer = 1)**
28.38.17  **setDataSetSymbol(image as folderitem)**


**Function:** Load an image from a file and use it as the graphics symbol to plot the data points.

**Notes:**

ChartDirector will automatically detect the image file format using the file extension, which must either png, jpg, jpeg, gif, wbmp or wmp (case insensitive).

Please refer to BaseChart.setSearchPath on the directory that ChartDirector will search for the file.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>image</td>
<td>(Mandatory)</td>
<td>The filename of the image file. The image type is determined based on file</td>
</tr>
<tr>
<td></td>
<td></td>
<td>extension, which must be png, jpg/jpeg, gif or wbmp/wmp.</td>
</tr>
</tbody>
</table>

See also:

- 28.38.16 setDataSetSymbol(area as CDDrawAreaMBS)
- 28.38.18 setDataSetSymbol(pic as Picture)
- 28.38.19 setDataSetSymbol(polygon() as Integer, size as Integer = 11, fillcolor as Integer = -1, edgecolor as Integer = -1)
- 28.38.20 setDataSetSymbol(polygon() as Integer, size as Integer, fillcolor as color, edgecolor as Integer = -1)
- 28.38.21 setDataSetSymbol(symbol as Integer, size as Integer = 7, fillColor as Integer = -1, edgeColor as Integer = -1, lineWidth as Integer = 1)
- 28.38.22 setDataSetSymbol(symbol as Integer, size as Integer, fillColor as color, edgeColor as color, lineWidth as Integer = 1)

28.38.18  **setDataSetSymbol(pic as Picture)**

MBS ChartDirector Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Uses a picture object as the graphics symbol to plot the data points.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>obj</td>
<td>(Mandatory)</td>
<td>A picture object to be used as the symbol.</td>
</tr>
</tbody>
</table>

See also:

- 28.38.16 setDataSetSymbol(area as CDDrawAreaMBS)
28.38. **CLASS CDPOLARLAYERMBS**

- 28.38.17 setDataSymbol(image as folderitem)

- 28.38.19 setDataSymbol(polygon() as Integer, size as Integer = 11, fillcolor as Integer = -1, edgecolor as Integer = -1)

- 28.38.20 setDataSymbol(polygon() as Integer, size as Integer, fillcolor as color, edgecolor as Integer = -1)

- 28.38.21 setDataSymbol(symbol as Integer, size as Integer = 7, fillColor as Integer = -1, edgeColor as Integer = -1, lineWidth as Integer = 1)

- 28.38.22 setDataSymbol(symbol as Integer, size as Integer, fillColor as color, edgeColor as color, lineWidth as Integer = 1)

**28.38.19 setDataSymbol(polygon() as Integer, size as Integer = 11, fillcolor as Integer = -1, edgecolor as Integer = -1)**


**Function:** Uses a custom polygon as the graphics symbol to plot the data points.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>polygon</td>
<td>(Mandatory)</td>
<td>An array of integers representing the coordinates the polygon vertices. See Shape Specification on how the custom shape is defined.</td>
</tr>
<tr>
<td>size</td>
<td>11</td>
<td>The nominal width and height of the symbol in pixels.</td>
</tr>
<tr>
<td>fillColor</td>
<td>-1</td>
<td>The color used to fill the symbol. -1 means the color of the data set will be used.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The edge color used to draw the edge of the symbol. -1 means the edge color of the data set will be used.</td>
</tr>
</tbody>
</table>

See also:

- 28.38.16 setDataSymbol(area as CDDrawAreaMBS)
- 28.38.17 setDataSymbol(image as folderitem)
- 28.38.18 setDataSymbol(pic as Picture)
- 28.38.20 setDataSymbol(polygon() as Integer, size as Integer, fillcolor as color, edgecolor as Integer = -1)
- 28.38.21 setDataSymbol(symbol as Integer, size as Integer = 7, fillColor as Integer = -1, edgeColor as Integer = -1, lineWidth as Integer = 1)
- 28.38.22 setDataSymbol(symbol as Integer, size as Integer, fillColor as color, edgeColor as color, lineWidth as Integer = 1)
28.38.20 setDataSymbol(polygon() as Integer, size as Integer, fillcolor as color, edgecolor as Integer = -1)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other setDataSymbol method, but uses color instead of integer data type for passing color values.

See also:

- 28.38.16 setDataSymbol(area as CDDrawAreaMBS)
- 28.38.17 setDataSymbol(image as folderitem)
- 28.38.18 setDataSymbol(pic as Picture)
- 28.38.19 setDataSymbol(polygon() as Integer, size as Integer = 11, fillcolor as Integer = -1, edgecolor as Integer = -1)
- 28.38.21 setDataSymbol(symbol as Integer, size as Integer = 7, fillColor as Integer = -1, edgeColor as Integer = -1, lineWidth as Integer = 1)
- 28.38.22 setDataSymbol(symbol as Integer, size as Integer, fillColor as color, edgeColor as color, lineWidth as Integer = 1)

28.38.21 setDataSymbol(symbol as Integer, size as Integer = 7, fillColor as Integer = -1, edgeColor as Integer = -1, lineWidth as Integer = 1)


**Function:** Uses one of the built-in symbols as the graphics symbol to plot the data points.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>symbol</td>
<td>(Mandatory)</td>
<td>One of the predefined shape constants representing the symbol shape. See Shape Specification for the available built-in shapes.</td>
</tr>
<tr>
<td>size</td>
<td>7</td>
<td>The width and height of the symbol in pixels.</td>
</tr>
<tr>
<td>fillColor</td>
<td>-1</td>
<td>The color used to fill the symbol. -1 means the color of the data set will be used.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The edge color used to draw the edge of the symbol. -1 means the edge color of the data set will be used.</td>
</tr>
<tr>
<td>lineWidth</td>
<td>1</td>
<td>The line width used for drawing the symbols.</td>
</tr>
</tbody>
</table>

See also:

- 28.38.16 setDataSymbol(area as CDDrawAreaMBS)
- 28.38.17 setDataSymbol(image as folderitem)
- 28.38.18 setDataSymbol(pic as Picture)
28.38. CLASS CDPOLARLAYERMBS

- 28.38.19 setDataSymbol(polygon() as Integer, size as Integer = 11, fillcolor as Integer = -1, edgecolor as Integer = -1) 4875
- 28.38.20 setDataSymbol(polygon() as Integer, size as Integer, fillcolor as color, edgecolor as Integer = -1) 4876
- 28.38.22 setDataSymbol(symbol as Integer, size as Integer, fillColor as color, edgeColor as color, lineWidth as Integer = 1) 4877

28.38.22 setDataSymbol(symbol as Integer, size as Integer, fillColor as color, edgeColor as color, lineWidth as Integer = 1)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Same as the other setDataSymbol method, but uses color instead of integer data type for passing color values.

See also:

- 28.38.16 setDataSymbol(area as CDDrawAreaMBS) 4873
- 28.38.17 setDataSymbol(image as folderitem) 4874
- 28.38.18 setDataSymbol(pic as Picture) 4874
- 28.38.19 setDataSymbol(polygon() as Integer, size as Integer = 11, fillcolor as Integer = -1, edgecolor as Integer = -1) 4875
- 28.38.20 setDataSymbol(polygon() as Integer, size as Integer, fillcolor as color, edgecolor as Integer = -1) 4876
- 28.38.21 setDataSymbol(symbol as Integer, size as Integer = 7, fillColor as Integer = -1, edgeColor as Integer = -1, lineWidth as Integer = 1) 4876

28.38.23 setHTMLImageMap(url as string, queryFormat as string = "", extraAttr as string = "")


Function: Override the default arguments used when generating HTML image map for the layer.

Notes:

BaseChart.getHTMLImageMap can be used to generate HTML image map for the whole chart. When BaseChart.getHTMLImageMap is used, the image map for all layers will be generated based on the arguments supplied to BaseChart.getHTMLImageMap.

The setHTMLImageMap method can be used to override those arguments for a chart layer, so the image map for that layer can be different.
CHAPTER 28. CHARTDIRECTOR

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>url</td>
<td>(Mandatory)</td>
<td>The URL to be used in the &quot;href&quot; attribute of the image map. Parameter Substitution and Formatting is supported.</td>
</tr>
</tbody>
</table>

For a detail description of image maps, please refer to BaseChart.getHTMLImageMap.

The special keyword " { default } " represents the global URL as specified in BaseChart.getHTMLImageMap. This field is useful for specifying appending to the global URL.

Note that an empty string also means to use the global URL. To specify no URL, use the special keyword " { none } ".

To disable the entire image map, use the special keyword " { disable } ".

queryFormat    "" A text string representing the template of the query parameters to be appended to the URL. Parameter Substitution and Formatting is supported.

The special keyword " { default } " represents the global query parameters as specified in BaseChart.getHTMLImageMap. This field is useful for specifying appending to the global query parameters.

Note that an empty string also means to use the global query parameters. To specify no query parameters, use the special keyword " { none } ".

extraAttr    "" A text string to specify additional attributes to add to the &lt;area&gt; tag. Parameter Substitution and Formatting is supported.

The special keyword " { default } " represents the global additional attributes as specified in BaseChart.getHTMLImageMap. This field is useful for specifying appending to the global additional attributes.

Note that an empty string also means to use the global additional attributes. To specify no additional attributes, use the special keyword " { none } ".

28.38.24 setImageMapWidth(width as Integer)

Function: Sets the effective size of a data point for producing image maps.
Notes:
For the purpose of producing image maps for the data points, the sizes of the data points are assumed to be the size of the data symbols. If no data symbol is used, an effective size is assumed. The default is 10 pixels in width and height.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>width</td>
<td>(Mandatory)</td>
<td>The effective width and height of the data point for the purpose of producing image maps.</td>
</tr>
</tbody>
</table>

**28.38.25 setLineWidth(w as Integer)**


**Function:** Sets the line width of lines when drawing the data on the layer.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>w</td>
<td>(Mandatory)</td>
<td>The width of the line in pixels.</td>
</tr>
</tbody>
</table>

**28.38.26 setSymbolOffset(offsetX as Integer, offsetY as Integer)**

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Offset the symbols in the x and y directions in pixel unit.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xOffset</td>
<td>(Mandatory)</td>
<td>The x offset in pixels. A positive value mean shifting to the right.</td>
</tr>
<tr>
<td>yOffset</td>
<td>(Mandatory)</td>
<td>The y offset in pixels. A positive value mean shifting to the bottom.</td>
</tr>
</tbody>
</table>

**28.38.27 setSymbolScale(data() as Double, scaleType as Integer = 0)**


**Function:** Sets the size of the symbol for each data point (for creating bubble charts).

**Notes:**

One common usage for this method is to draw circle symbols of different sizes at each data points, creating a bubble chart.

This method supports any valid data symbols. You can create bubble charts with square bubbles, or even custom data symbols.
ChartDirector supports specifying sizes as pixels or in axis scale. The unit is specified by using the following predefined constants.

Constant | Value | Description
---|---|---
PixelScale | 0 | The unit is measured in pixels.
RadialAxisScale | 2 | The unit is measured in the radial axis scale.

**Argument | Default | Description**
---|---|---
zData | (Mandatory) | The sizes of the symbols, expressed using the unit defined by the scaleType argument.
scaleType | PixelScale | The unit for zData, which must be one of the predefined constants in the table above.
28.39.1 class CDPolarLineLayerMBS

Function: The PolarLineLayer class represents polar area layers.
Notes:
Subclass of the CDPolarLayerMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

28.39.2 Methods

28.39.3 setCloseLoop(b as boolean)

Function: Specifies whether the polar line should form a close loop (joining the last point to the first point) or not.
Notes:
<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>(Mandatory)</td>
<td>A true value means the polar line should form a close loop. A false value means the polar line should not form a close loop.</td>
</tr>
</tbody>
</table>

28.39.4 setGapColor(lineColor as color, lineWidth as Integer)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other setGapColor method, but uses color instead of integer data type for passing color values.
See also:
- 28.39.5 setGapColor(lineColor as Integer, lineWidth as Integer)

28.39.5 setGapColor(lineColor as Integer, lineWidth as Integer)

Function: Sets the color and style of the line used for jumping across NoValue data points.
Notes:
By default, the color of the line for jumping across NoValue data points is Transparent, which means the line will become discontinuous.
Argument | Default | Description
---|---|---
lineColor | (Mandatory) | The line color of the line used for jumping across NoValue data points.
lineWidth | -1 | The line width of the line used for jumping across NoValue data points. -1 means the width will be the same as the line width of the line for drawing normal data points.

See also:

- 28.39.4 `setGapColor(lineColor as color, lineWidth as Integer)`
28.40  class CDPaneSplineAreaLayerMBS

28.40.1  class CDPaneSplineAreaLayerMBS


**Function:** The PolarSplineAreaLayer class represents polar spline area layers.

**Notes:**
Subclass of the CDPaneAreaLayerMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

28.40.2  Methods

28.40.3  setTension(tension as Double)


**Function:** Sets the tension to use when computing the spline curve.

**Notes:**
The tension parameter should be between -1 and 1. A positive tension will make the spline tighter. The spline curve will become straight line segments when tension is 1. A negative tension will make the spline looser.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>tension</td>
<td>(Mandatory)</td>
<td>The tension of the spline, which should be between -1 and 1.</td>
</tr>
</tbody>
</table>
28.41 class CDPolarSplineLineLayerMBS

28.41.1 class CDPolarSplineLineLayerMBS


Function: The PolarSplineLineLayer class represents polar spline line layers.

Notes:

Subclass of the CDPolarLineLayerMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

28.41.2 Methods

28.41.3 setTension(tension as Double)


Function: Sets the tension to use when computing the spline curve.

Notes:

The tension parameter should be between -1 and 1. A positive tension will make the spline tighter. The spline curve will become straight line segments when tension is 1. A negative tension will make the spline looser.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>tension</td>
<td>(Mandatory)</td>
<td>The tension of the spline, which should be between -1 and 1.</td>
</tr>
</tbody>
</table>
28.42.  CLASS CDPOLARVECTORLAYERMBS

28.42  class CDPolarVectorLayerMBS

28.42.1  class CDPolarVectorLayerMBS


Function: The PolarVectorLayer class represents polar vector layers.

Notes:
Subclass of the CDPolarLayerMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

28.42.2  Methods

28.42.3  setArrowAlignment(alignment as Integer)


Function: Sets the alignment of the vector relative to the data point.

Notes:
<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>alignment</td>
<td>(Mandatory)</td>
<td>A BottomCenter value means the vector will point away from the data point (the default). A TopCenter value means the vector will point into the data point. A Center value means the center of the vector will be at the data point.</td>
</tr>
</tbody>
</table>

28.42.4  setArrowHead(polygon() as Integer)


Function: Sets a custom shape to be used as the arrow head.

Notes:
The custom shape is specified as an array of integers x0, y0, x1, y1, x2, y2 ... representing the coordinates of the vertices of the custom polygonal shape.

The polygon should be defined with a bounding square of 10 x 10 units, in which the x-axis is from left to right, and the y-axis from bottom to top. The origin is assumed to be the bottom center of the arrow (the point where the arrow head joins the arrow stem). The shape is assumed to represent an arrow pointing upwards.

As an example, the followings are the integer array that represents the standard ChartDirector vector arrow head:
ChartDirector will automatically scale the shape to the actual width and height as specified in PolarVectorLayer.setArrowHead.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>polygon</td>
<td>(Mandatory)</td>
<td>An array of integers x0, y0, x1, y1, x2, y2 ... representing the coordinates the polygon vertices on a 10 x 10 units grid.</td>
</tr>
</tbody>
</table>

See also:

- 28.42.5 setArrowHead(width as Integer, height as Integer)

### 28.42.5 setArrowHead(width as Integer, height as Integer)


**Function:** Sets the size of the arrow head.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>width</td>
<td>(Mandatory)</td>
<td>The width of the arrow head in pixels. The default width is 8 pixels.</td>
</tr>
<tr>
<td>height</td>
<td>0</td>
<td>The height of the arrow head in pixels. The default value of 0 means the height is the same as the width.</td>
</tr>
</tbody>
</table>

See also:

- 28.42.4 setArrowHead(polygon() as Integer)

### 28.42.6 setArrowStem(polygon() as Integer)


**Function:** Sets a custom shape to be used as the arrow stem.

**Notes:**

By default, the arrow stem is just a straight line, with the line width controlled using PolarLayer.setLineWidth. The setArrowStem method can specify a custom shape for the arrow stem.

The custom shape is specified as an array of integers x0, y0, x1, y1, x2, y2 ... representing the coordinates of the vertices of the custom polygonal shape.

The polygon should be defined with a bounding square of 10 x 100 units, in which the x-axis is from left to right, and the y-axis from bottom to top. The origin is assumed to be the starting point of the arrow stem.
and the shape is assumed to represent an arrow stem pointing upwards.

ChartDirector will automatically scale the shape so that the total arrow length (head + stem) is the required length of the arrow as according to actual data, and the stem width is as specified in PolarLayer.setLineWidth.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>polygon</td>
<td>(Mandatory)</td>
<td>An array of integers x0, y0, x1, y1, x2, y2 ... representing the coordinates the polygon vertices on a 10 x 100 units grid.</td>
</tr>
</tbody>
</table>

### 28.42.7 setIconSize(height as Integer, width as Integer = 0)


**Function:** Sets the size of the icon to be used in legend box.

**Notes:**

By default, if a legend box is available on the chart, ChartDirector will insert an legend entry if the PolarVectorLayer is named. The size of the icon will be the size of the vectors used on the chart, using a short vector length to fit the legend box.

This method can be used to override the legend box settings to specify a custom width/height for the icons of the current PolarVectorLayer.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the icon in pixels.</td>
</tr>
<tr>
<td>width</td>
<td>0</td>
<td>The width of the icon in pixels. The default value of 0 means the width is automatically determined.</td>
</tr>
</tbody>
</table>

### 28.42.8 setVector(lengths() as Double, directions() as Double, lengthScale as Integer = 0)


**Function:** Sets the lengths and directions for the vectors.

**Notes:**

ChartDirector supports specifying lengths as pixels or in axis scale. The unit is specified by using the following predefined constants.

```
Constant    Value    Description
```

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>lengths</td>
<td></td>
<td></td>
</tr>
<tr>
<td>directions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>lengthScale</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>
PixelScale 0 The unit is measured in pixels.
RadialAxisScale 2 The unit is measured in the radial axis scale.

Argument Default Description
lengths (Mandatory) An array of numbers representing the lengths of the vectors, in unit as specified in the lengthScale argument.
directions (Mandatory) An array of numbers representing the direction of the vectors as a clockwise angle in degrees, where 0 is upward pointing direction.
lengthScale PixelScale The unit for the lengths, which must be one of the predefined constants in the table above.

28.42.9 setVectorMargin(startMargin as Double)

Function: Sets the vector margin.
See also:

• 28.42.10 setVectorMargin(startMargin as Double, endMargin as Double)

28.42.10 setVectorMargin(startMargin as Double, endMargin as Double)

Function: Sets the vector margin.
See also:

• 28.42.9 setVectorMargin(startMargin as Double)
28.43. **CLASS CDPYRAMIDCHARTMBS**

28.43  **class CDPyramidChartMBS**

MBS ChartDirector Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The PyramidChart class represents pyramid charts (including cone charts and funnel charts). **Notes:**

The PyramidChart class is a subclass of BaseChart. Subclass of the CDBaseChartMBS class.

28.43.2  **Methods**

28.43.3  **Constructor**(width as Integer = 640, height as Integer = 480, bgColor as Integer = & hffff0000, edgeColor as Integer = & hff000000, raisedEffect as Integer = 0)

MBS ChartDirector Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new PyramidChart object. **Notes:**

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>width</td>
<td>(Mandatory)</td>
<td>The width of the chart in pixels.</td>
</tr>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the chart in pixels.</td>
</tr>
<tr>
<td>bgColor</td>
<td>kBackgroundColor</td>
<td>The background color of the chart.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>kTransparent</td>
<td>The edge color of the chart.</td>
</tr>
<tr>
<td>raisedEffect</td>
<td>0</td>
<td>The 3D border width. For positive values, the border will appear raised. For negative values, the border will appear depressed. A zero value means the border will appear flat.</td>
</tr>
</tbody>
</table>

See also:

- 28.43.4 Constructor(width as Integer, height as Integer, bgColor as color, edgeColor as color, raisedEffect as Integer = 0)

28.43.4  **Constructor**(width as Integer, height as Integer, bgColor as color, edgeColor as color, raisedEffect as Integer = 0)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Same as the other Constructor method, but uses color instead of integer data type for passing
color values.
See also:

- 28.43.3 Constructor(width as Integer = 640, height as Integer = 480, bgColor as Integer = & hffff0000,
  edgeColor as Integer = & hff000000, raisedEffect as Integer = 0)

28.43.5 getLayer(layerNo as Integer) as CDPyramidLayerMBS

Function: Retrieves the PyramidLayer object representing a single pyramid layer in the pyramid chart.
Notes:
You must call CDPyramidChartMBS.setData to create the layers first before calling this method.
Arguments

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>layerNo</td>
<td>(Mandatory)</td>
<td>The layer number of the pyramid layer to retrieve, starting from 0. The first</td>
</tr>
<tr>
<td></td>
<td></td>
<td>pyramid layer is 0. The nth pyramid layer is (n-1).</td>
</tr>
</tbody>
</table>

Return Value
The requested CDPyramidLayerMBS object.

28.43.6 setCenterLabel(labelTemplate as string = "", font as string = "", font-
  Size as Double = 8, fontColor as Integer = -1) as CDTextBoxMBS

Function: Adds labels to the center of the pyramid layers.
Notes:
This method affects all pyramid layers. To apply this method to one particular pyramid layer only, use
CDPyramidLayerMBS.setCenterLabel.

See Parameter Substitution and Formatting on available format parameters for the template.

See Font Specification for details on various font attributes.

Arguments:

Return Value
A CDTextBoxMBS object representing the prototype of the labels. This may be used to fine-tune the ap-
pearance of the labels.
### 28.43. **CLASS CDPYRAMIDCHARTMBS**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>labelTemplate</td>
<td>&quot; { skip } &quot;</td>
<td>The label template. &quot; { skip } &quot; means to keep the existing value unchanged.</td>
</tr>
<tr>
<td>font</td>
<td>&quot; { skip } &quot;</td>
<td>The font style. &quot; { skip } &quot; means to keep the existing value unchanged.</td>
</tr>
<tr>
<td>fontSize</td>
<td>-1</td>
<td>The font size in points. -1 means to keep the existing value unchanged.</td>
</tr>
<tr>
<td>fontColor</td>
<td>-1</td>
<td>The font color. -1 means to keep the existing value unchanged.</td>
</tr>
</tbody>
</table>

See font specification here:
http://www.monkeybreadsoftware.net/faq-chartdirectorfontsizepecification.shtml

See also:

- 28.43.7 **setCenterLabel(labelTemplate as string, font as string, fontSize as Double, fontColor as color)** as CDTextBoxMBS

### 28.43.7 **setCenterLabel(labelTemplate as string, font as string, fontSize as Double, fontColor as color)** as CDTextBoxMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other setCenterLabel method, but uses color instead of integer data type for passing color values.

See also:

- 28.43.6 **setCenterLabel(labelTemplate as string = "", font as string = "", fontSize as Double = 8, fontColor as Integer = -1)** as CDTextBoxMBS

### 28.43.8 **setConeSize(cx as Integer, cy as Integer, radius as Integer, height as Integer)**


**Function:** Sets the position and size of the cone in a cone chart.

**Notes:**

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cx</td>
<td>(Mandatory)</td>
<td>The x-coordinate of the center of the cone. The center of the cone is the midpoint of the vertical axis of the cone.</td>
</tr>
<tr>
<td>cy</td>
<td>(Mandatory)</td>
<td>The y-coordinate of the center of the cone. The center of the cone is the midpoint of the vertical axis of the cone.</td>
</tr>
<tr>
<td>radius</td>
<td>(Mandatory)</td>
<td>The radius of the base of the cone.</td>
</tr>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the cone.</td>
</tr>
</tbody>
</table>
CHAPTER 28. CHARTDIRECTOR

28.43.9 setData(data() as Double)

Function: Sets the data used to draw the pyramid chart.
Notes:
Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>data</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the data values.</td>
</tr>
<tr>
<td>labels</td>
<td>[ Empty_Array ]</td>
<td>An array of text strings representing the labels of the layers. An empty array means no layer label.</td>
</tr>
</tbody>
</table>

See also:
- 28.43.10 setData(data() as Double, labels() as string)

28.43.10 setData(data() as Double, labels() as string)

Function: Sets the data used to draw the pyramid chart.
Notes:
Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>data</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the data values.</td>
</tr>
<tr>
<td>labels</td>
<td>[ Empty_Array ]</td>
<td>An array of text strings representing the labels of the layers. An empty array means no layer label.</td>
</tr>
</tbody>
</table>

See also:
- 28.43.9 setData(data() as Double)

28.43.11 setFunnelSize(cx as Integer, cy as Integer, radius as Integer, height as Integer, tubeRadius as Double = 0.2, tubeHeight as Double = 0.3)

Function: Sets the position and size of the funnel in a funnel chart.
Notes:
A funnel is similar to an inverted cone, except that the vertex of the cone is replaced by a tube.
Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cx</td>
<td>(Mandatory)</td>
<td>The x-coordinate of the center of the funnel. The center of the funnel is the midpoint of the vertical axis of the funnel.</td>
</tr>
<tr>
<td>cy</td>
<td>(Mandatory)</td>
<td>The y-coordinate of the center of the funnel. The center of the funnel is the midpoint of the vertical axis of the funnel.</td>
</tr>
<tr>
<td>radius</td>
<td>(Mandatory)</td>
<td>The radius of the mouth of the funnel.</td>
</tr>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the funnel, inclusive of the tube.</td>
</tr>
<tr>
<td>tubeRadius</td>
<td>0.2</td>
<td>The radius of the tube, as a ratio to the radius of the mouth of the funnel.</td>
</tr>
<tr>
<td>tubeHeight</td>
<td>0.3</td>
<td>The height (length) of the tube, as a ratio to the total height of the funnel. It must be between 0 to 1.</td>
</tr>
</tbody>
</table>

28.43.12 setGradientShading(startBrightness as Double, endBrightness as Double)

**Function:** Sets gradient shading mode.

**Notes:**

Gradient shading only applies to 2D and 3D pyramids, and 2D cones and funnels. 3D cones and funnels always use Phong lighting (see CDPyramidChartMBS.setLighting).

The gradient is specified with two brightness values at the gradient end points. A brightness less than 1 means the color is darkened, while a brightness greater than 1 means the color is brightened. For example, a brightness of 0.5 means the color is half as bright as the original color. If the original color is red, the color will become dark red. Conversely, a brightness of 2 means the color is twice as bright as the original color. If the original color is red, the color will become light red.

For a pyramid or cone layer, the gradient is from left edge to the right edge. For a funnel chart, the gradient is from the right edge to the left edge.

For a pyramid chart, this is the default coloring method. If this method is never called, the default brightness is from 0.75 to 2.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>startBrightness</td>
<td>(Mandatory)</td>
<td>The brightness at the starting point.</td>
</tr>
<tr>
<td>endBrightness</td>
<td>(Mandatory)</td>
<td>The brightness at the ending point.</td>
</tr>
</tbody>
</table>
28.43.13  setJoinLine(ColorValue as color, width as Integer = -1)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other setJoinLine method, but uses color instead of integer data type for passing color values.
See also:

- 28.43.14 setJoinLine(ColorValue as Integer, width as Integer = -1)

28.43.14  setJoinLine(ColorValue as Integer, width as Integer = -1)

**Function:** Sets the color and line width of the join lines that join the pyramid layers with the left and right labels.
**Notes:**
This method affects all pyramid layers. To apply this method to one particular pyramid layer only, use PyramidLayer.setJoinLine.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the join line. -1 means to keep the existing value unchanged.</td>
</tr>
<tr>
<td>width</td>
<td>-1</td>
<td>The width of the line join. -1 means to keep the existing value unchanged.</td>
</tr>
</tbody>
</table>

See also:

- 28.43.13 setJoinLine(ColorValue as color, width as Integer = -1)

28.43.15  setJoinLineGap(pyramidGap as Integer)

**Function:** Sets the gaps of the join lines that join the pyramid layers with the left and right labels.
**Notes:**
This method affects all pyramid layers. To apply this method to one particular pyramid layer only, use CDPyramidLayerMBS.setJoinLineGap.

By default, the starting point of the join line connects to the pyramid layer edge with a 3 pixels gap. The join line is horizontal, and its length is such that the ending point is 10 pixels outside the pyramid bounding box. The label text box connects to the ending point with a 3 pixels gap.
This method allows the gaps and positions of the join line end points to be configured to other values.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>pyramidGap</td>
<td>(Mandatory)</td>
<td>The gap in pixels between the starting point of the join line and the pyramid layer edge.</td>
</tr>
<tr>
<td>pyramidMargin</td>
<td>10</td>
<td>The distance in pixels between the ending point of the join line and the pyramid bounding box.</td>
</tr>
<tr>
<td>textGap</td>
<td>3</td>
<td>The gap in pixels between the label text box and the ending point of the join line.</td>
</tr>
</tbody>
</table>

See also:

- 28.43.16 setJoinLineGap(pyramidGap as Integer, pyramidMargin as Integer)
- 28.43.17 setJoinLineGap(pyramidGap as Integer, pyramidMargin as Integer, textGap as Integer)

**28.43.16 setJoinLineGap(pyramidGap as Integer, pyramidMargin as Integer)**

**Function:** Sets the gaps of the join lines that join the pyramid layers with the left and right labels.  
**Notes:**  
This method affects all pyramid layers. To apply this method to one particular pyramid layer only, use CDPyramidLayerMBS.setJoinLineGap.

By default, the starting point of the join line connects to the pyramid layer edge with a 3 pixels gap. The join line is horizontal, and its length is such that the ending point is 10 pixels outside the pyramid bounding box. The label text box connects to the ending point with a 3 pixels gap.

This method allows the gaps and positions of the join line end points to be configured to other values.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>pyramidGap</td>
<td>(Mandatory)</td>
<td>The gap in pixels between the starting point of the join line and the pyramid layer edge.</td>
</tr>
<tr>
<td>pyramidMargin</td>
<td>10</td>
<td>The distance in pixels between the ending point of the join line and the pyramid bounding box.</td>
</tr>
<tr>
<td>textGap</td>
<td>3</td>
<td>The gap in pixels between the label text box and the ending point of the join line.</td>
</tr>
</tbody>
</table>
28.43.17 setJoinLineGap(pyramidGap as Integer, pyramidMargin as Integer, textGap as Integer)


Function: Sets the gaps of the join lines that join the pyramid layers with the left and right labels.

Notes:
This method affects all pyramid layers. To apply this method to one particular pyramid layer only, use CDPyramidLayerMBS.setJoinLineGap.

By default, the starting point of the join line connects to the pyramid layer edge with a 3 pixels gap. The join line is horizontal, and its length is such that the ending point is 10 pixels outside the pyramid bounding box. The label text box connects to the ending point with a 3 pixels gap.

This method allows the gaps and positions of the join line end points to be configured to other values.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>pyramidGap</td>
<td>(Mandatory)</td>
<td>The gap in pixels between the starting point of the join line and the pyramid layer edge.</td>
</tr>
<tr>
<td>pyramidMargin</td>
<td>10</td>
<td>The distance in pixels between the ending point of the join line and the pyramid bounding box.</td>
</tr>
<tr>
<td>textGap</td>
<td>3</td>
<td>The gap in pixels between the label text box and the ending point of the join line.</td>
</tr>
</tbody>
</table>

See also:

- 28.43.15 setJoinLineGap(pyramidGap as Integer) 4894
- 28.43.16 setJoinLineGap(pyramidGap as Integer, pyramidMargin as Integer) 4895

28.43.18 setLayerBorder(ColorValue as color, width as Integer = -1)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Same as the other setLayerBorder method, but uses color instead of integer data type for passing color values.

See also:
28.43. **CLASS CDPYRAMIDCHARTMBS**

- 28.43.19 `setLayerBorder(ColorValue as Integer, width as Integer = -1)`

28.43.19 **setLayerBorder(ColorValue as Integer, width as Integer = -1)**


**Function:** Sets the color and line width of the layer border.

**Notes:**
This method affects all pyramid layers. To apply this method to one particular pyramid layer only, use `CDPyramidLayerMBS.setLayerBorder`.

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the layer border. -1 means to keep the existing value unchanged.</td>
</tr>
<tr>
<td>width</td>
<td>-1</td>
<td>The width of the layer border. -1 means to keep the existing value unchanged.</td>
</tr>
</tbody>
</table>

See also:

- 28.43.18 `setLayerBorder(ColorValue as color, width as Integer = -1)`

28.43.20 **setLayerGap(layerGap as Double)**


**Function:** Sets the gaps between pyramid layers.

**Notes:**
This method affects all pyramid layers. To apply this method to one particular pyramid layer only, use `CDPyramidLayerMBS.setLayerGap`.

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>layerGap</td>
<td>(Mandatory)</td>
<td>The gap between layers as a ratio to the height of the pyramid. The gap must be greater than or equals 0. The sum of all gaps must be less than 1.</td>
</tr>
</tbody>
</table>

28.43.21 **setLeftLabel(labelTemplate as string = "", font as string = "", fontSize as Double = 8, fontColor as Integer = -1) as CDTextBoxMBS**


**Function:** Adds labels to the left of the pyramid layers.
Notes:

This method affects all pyramid layers. To apply this method to one particular pyramid layer only, use CDPyramidLayerMBS.setLeftLabel.

See Parameter Substitution and Formatting on available format parameters for the template.

See Font Specification for details on various font attributes.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>template</td>
<td>&quot; { skip } &quot;</td>
<td>The label template. &quot; { skip } &quot; means to keep the existing value unchanged.</td>
</tr>
<tr>
<td>font</td>
<td>&quot; { skip } &quot;</td>
<td>The font style. &quot; { skip } &quot; means to keep the existing value unchanged.</td>
</tr>
<tr>
<td>fontSize</td>
<td>-1</td>
<td>The font size in points. -1 means to keep the existing value unchanged.</td>
</tr>
<tr>
<td>fontColor</td>
<td>-1</td>
<td>The font color. -1 means to keep the existing value unchanged.</td>
</tr>
</tbody>
</table>

Return Value

A CDTTextBoxMBS object representing the prototype of the labels. This may be used to fine-tune the appearance of the labels.

See font specification here:
http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml

See also:

- 28.43.22 setLeftLabel(labelTemplate as string, font as string, fontSize as Double, fontColor as color) as CDTTextBoxMBS

28.43.22 setLeftLabel(labelTemplate as string, font as string, fontSize as Double, fontColor as color) as CDTTextBoxMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Same as the other setLeftLabel method, but uses color instead of integer data type for passing color values.

See also:

- 28.43.21 setLeftLabel(labelTemplate as string = "", font as string = "", fontSize as Double = 8, fontColor as Integer = -1) as CDTTextBoxMBS
**28.43.23**  
```
setLighting(ambientIntensity as Double = 0.5, diffuseIntensity as Double = 0.5, specularIntensity as Double = 1, shininess as Double = 8)
```

**Function:** Sets Phong lighting mode.  
**Notes:**  
This method adjusts the brightness of the surfaces as according to the Phong lighting model, in which the light source is from the viewer direction and is far away.  

For a cone or funnel chart, this is the default coloring method.  

For a pyramid chart, only ambient and diffuse reflections are used.  

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ambientIntensity</td>
<td>0.5</td>
<td>The ambient reflection coefficient of the Phong lighting model.</td>
</tr>
<tr>
<td>diffuseIntensity</td>
<td>0.5</td>
<td>The diffuse reflection coefficient of the Phong lighting model.</td>
</tr>
<tr>
<td>specularIntensity</td>
<td>1</td>
<td>The specular reflection coefficient of the Phong lighting model.</td>
</tr>
<tr>
<td>shininess</td>
<td>8</td>
<td>The shininess coefficient of the Phong lighting model.</td>
</tr>
</tbody>
</table>

**28.43.24**  
```
setPyramidSides(noOfSides as Integer)
```

**Function:** Sets the number of sides of the base polygon in a pyramid chart.  
**Notes:**  
By default, the base of a pyramid is a square. This method can be used to change it to other regular polygon.  

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>noOfSides</td>
<td>(Mandatory)</td>
<td>The number of sides of the base polygon in a pyramid chart.</td>
</tr>
</tbody>
</table>

**28.43.25**  
```
setPyramidSize(cx as Integer, cy as Integer, radius as Integer, height as Integer)
```

**Function:** Sets the position and size of the pyramid in a pyramid chart.
CHAPTER 28. CHARTDIRECTOR

Notes:
Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cx</td>
<td>(Mandatory)</td>
<td>The x-coordinate of the center of the pyramid. The center of the pyramid is the midpoint of the vertical axis of the pyramid.</td>
</tr>
<tr>
<td>cy</td>
<td>(Mandatory)</td>
<td>The y-coordinate of the center of the pyramid. The center of the pyramid is the midpoint of the vertical axis of the pyramid.</td>
</tr>
<tr>
<td>radius</td>
<td>(Mandatory)</td>
<td>For a square pyramid, it is the length of the square. For a pyramid with other regular polygonal base, it is the radius of the circumcircle of the base.</td>
</tr>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the pyramid.</td>
</tr>
</tbody>
</table>

28.43.26  setRightLabel(labelTemplate as string = "", font as string = "", fontSize as Double = 8, fontColor as Integer = -1) as CDTextBoxMBS


Function: Adds labels to the right of the pyramid layers.

Notes:
This method affects all pyramid layers. To apply this method to one particular pyramid layer only, use CDPyramidLayerMBS.setRightLabel.

See Parameter Substitution and Formatting on available format parameters for the template.

See Font Specification for details on various font attributes.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>template</td>
<td>&quot; { skip } &quot;</td>
<td>The label template. &quot; { skip } &quot; means to keep the existing value unchanged.</td>
</tr>
<tr>
<td>font</td>
<td>&quot; { skip } &quot;</td>
<td>The font style. &quot; { skip } &quot; means to keep the existing value unchanged.</td>
</tr>
<tr>
<td>fontSize</td>
<td>-1</td>
<td>The font size in points. -1 means to keep the existing value unchanged.</td>
</tr>
<tr>
<td>fontColor</td>
<td>-1</td>
<td>The font color. -1 means to keep the existing value unchanged.</td>
</tr>
</tbody>
</table>

Return Value:
A TextBox object representing the prototype of the labels. This may be used to fine-tune the appearance of the labels.

See font specification here:
http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml
See also:
28.43. setRightLabel(labelTemplate as string, font as string, fontSize as Double, fontColor as color) as CDTextBoxMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other setRightLabel method, but uses color instead of integer data type for passing color values.

See also:

- 28.43.26 setRightLabel(labelTemplate as string = "", font as string = "", fontSize as Double = 8, fontColor as Integer = -1) as CDTextBoxMBS

28.43.28 setViewAngle(elevation as Double, rotation as Double = 0, twist as Double = 0)


**Function:** Sets the 3D view angles.

**Notes:**

ChartDirector uses elevation, rotation and twist angles to specify the 3D view angles.

To explain the meaning of the angles, imagine the object being viewed is put at the center of a hollow sphere, and a camera (the view point) is put at the surface of the sphere, directed inwards to the center to look at the object.

The elevation angle refers to the "latitude" of the camera. An elevation angle of 0 degrees means the camera is at the "equator" pointing to the object from the side. An elevation angle of 90 degrees means the camera is at the "north pole" pointing down to the object. An angle elevation of -90 degrees means the camera is at the "south pole", pointing up to the object.

The rotation angle refers to the "longitude" of the camera. If the elevation is 0 degrees, and the rotation angle varies from 0 to 360 degrees, the camera will move around the "equator" in the easterly direction (counter-clockwise when viewed from the north pole).

The twist angle is for rotating the camera itself while still pointing to the object. For example, a twist angle of 90 degrees means you are holder the camera "vertically" instead of "horizontally". The rotation is clockwise from the view point of the person holding the camera.

Note that from the view point of the camera, the object will appear to be rotating in the opposite direction. For example, as the rotation angle rotates the camera counter-clockwise along the "equator", the object will
appear to be rotating clockwise on the screen.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>elevation</td>
<td>(Mandatory)</td>
<td>The elevation angle in degrees.</td>
</tr>
<tr>
<td>rotation</td>
<td>0</td>
<td>The rotation angle in degrees.</td>
</tr>
<tr>
<td>twist</td>
<td>0</td>
<td>The twist angle in degrees.</td>
</tr>
</tbody>
</table>
Function: A pyramid chart showing a cone created using ChartDirector with the CDPyramidChartMBS class.
A pyramid chart created using ChartDirector with the CDPyramidChartMBS class.
28.44. CLASS CDPYRAMIDLAYERMBS

28.44  class CDPyramidLayerMBS

28.44.1  class CDPyramidLayerMBS

**Function:** The PyramidLayer class represents pyramid layers (including cone and funnel layers).

**Notes:**

The PyramidLayer object is obtained using PyramidChart.getLayer.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

28.44.2  Methods

28.44.3  Constructor

MBS ChartDirector Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The private constructor.

28.44.4  setCenterLabel(labelTemplate as string = "", font as string = "", fontSize as Double = 8, fontColor as Integer = -1) as CDTextBoxMBS

**Function:** Adds a label to the center of the pyramid layer.

**Notes:**

To apply this method to all pyramid layers, use CDPyramidChartMBS.setCenterLabel.

See Parameter Substitution and Formatting on available format parameters for the template.

See Font Specification for details on various font attributes.

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>template</td>
<td>&quot; { skip } &quot;</td>
<td>The label template. &quot; { skip } &quot; means to keep the existing value unchanged.</td>
</tr>
<tr>
<td>font</td>
<td>&quot; { skip } &quot;</td>
<td>The font style. &quot; { skip } &quot; means to keep the existing value unchanged.</td>
</tr>
<tr>
<td>fontSize</td>
<td>-1</td>
<td>The font size in points. -1 means to keep the existing value unchanged.</td>
</tr>
<tr>
<td>fontColor</td>
<td>-1</td>
<td>The font color. -1 means to keep the existing value unchanged.</td>
</tr>
</tbody>
</table>

Return Value
A CDTextBoxMBS object representing the prototype of the label. This may be used to fine-tune the appearance of the label.

See font specification here:
http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml
See also:

- 28.44.5 setCenterLabel(labelTemplate as string, font as string, fontSize as Double, fontColor as color) as CDTextBoxMBS

28.44.5 setCenterLabel(labelTemplate as string, font as string, fontSize as Double, fontColor as color) as CDTextBoxMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Same as the other setCenterLabel method, but uses color instead of integer data type for passing color values.
See also:

- 28.44.4 setCenterLabel(labelTemplate as string = "", font as string = "", fontSize as Double = 8, fontColor as Integer = -1) as CDTextBoxMBS

28.44.6 setColor(ColorValue as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Same as the other setColor method, but uses color instead of integer data type for passing color values.
See also:

- 28.44.7 setColor(ColorValue as Integer)

28.44.7 setColor(ColorValue as Integer)

MBS ChartDirector Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the color of the pyramid layer.
See also:

- 28.44.6 setColor(ColorValue as color)

28.44.8 setJoinLine(ColorValue as color, width as Integer = -1)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Same as the other setJoinLine method, but uses color instead of integer data type for passing
color values.

See also:

- 28.44.9 setJoinLine(ColorValue as Integer, width as Integer = -1)

**28.44.9 setJoinLine(ColorValue as Integer, width as Integer = -1)**


**Function:** Sets the color and line width of the join line that joins the pyramid layer with the left and right labels.

**Notes:**

To apply this method to all pyramid layers, use CDPyramidChartMBS.setJoinLine.

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the join line. -1 means to keep the existing value unchanged.</td>
</tr>
<tr>
<td>width</td>
<td>-1</td>
<td>The width of the line join. -1 means to keep the existing value unchanged.</td>
</tr>
</tbody>
</table>

See also:

- 28.44.8 setJoinLine(ColorValue as color, width as Integer = -1)

**28.44.10 setJoinLineGap(pyramidGap as Integer)**


**Function:** Sets the gaps of the join line that joins the pyramid layer with the left and right labels.

**Notes:**

To apply this method to all pyramid layers, use CDPyramidChartMBS.setJoinLineGap.

By default, the starting point of the join line connects to the pyramid layer edge with a 3 pixels gap. The join line is horizontal, and its length is such that the ending point is 10 pixels outside the pyramid bounding box. The label text box connects to the ending point with a 3 pixels gap.

This method allows the gaps and positions of the join line end points to be configured to other values.

**Arguments:**

See also:
CHAPTER 28. CHARTDIRECTOR

28.44.11 setJoinLineGap(pyramidGap as Integer, pyramidMargin as Integer)

28.44.12 setJoinLineGap(pyramidGap as Integer, pyramidMargin as Integer, textGap as Integer)

**28.44.11 setJoinLineGap(pyramidGap as Integer, pyramidMargin as Integer)**


**Function:** Sets the gaps of the join line that joins the pyramid layer with the left and right labels.

**Notes:**
To apply this method to all pyramid layers, use CDPyramidChartMBS.setJoinLineGap.

By default, the starting point of the join line connects to the pyramid layer edge with a 3 pixels gap. The join line is horizontal, and its length is such that the ending point is 10 pixels outside the pyramid bounding box. The label text box connects to the ending point with a 3 pixels gap.

This method allows the gaps and positions of the join line end points to be configured to other values.

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>pyramidGap</td>
<td>(Mandatory)</td>
<td>The gap in pixels between the starting point of the join line and the pyramid layer edge.</td>
</tr>
<tr>
<td>pyramidMargin</td>
<td>10</td>
<td>The distance in pixels between the ending point of the join line and the pyramid bounding box.</td>
</tr>
<tr>
<td>textGap</td>
<td>3</td>
<td>The gap in pixels between the label text box and the ending point of the join line.</td>
</tr>
</tbody>
</table>

See also:

- 28.44.10 setJoinLineGap(pyramidGap as Integer)
- 28.44.12 setJoinLineGap(pyramidGap as Integer, pyramidMargin as Integer, textGap as Integer)
28.44.12 setJoinLineGap(pyramidGap as Integer, pyramidMargin as Integer, textGap as Integer)

**Function:** Sets the gaps of the join line that joins the pyramid layer with the left and right labels.
**Notes:**
To apply this method to all pyramid layers, use CDPyramidChartMBS.setJoinLineGap.

By default, the starting point of the join line connects to the pyramid layer edge with a 3 pixels gap. The join line is horizontal, and its length is such that the ending point is 10 pixels outside the pyramid bounding box. The label text box connects to the ending point with a 3 pixels gap.

This method allows the gaps and positions of the join line end points to be configured to other values.

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>pyramidGap</td>
<td>(Mandatory)</td>
<td>The gap in pixels between the starting point of the join line and the pyramid layer edge.</td>
</tr>
<tr>
<td>pyramidMargin</td>
<td>10</td>
<td>The distance in pixels between the ending point of the join line and the pyramid bounding box.</td>
</tr>
<tr>
<td>textGap</td>
<td>3</td>
<td>The gap in pixels between the label text box and the ending point of the join line.</td>
</tr>
</tbody>
</table>

See also:

- 28.44.10 setJoinLineGap(pyramidGap as Integer)
- 28.44.11 setJoinLineGap(pyramidGap as Integer, pyramidMargin as Integer)

28.44.13 setLayerBorder(ColorValue as color, width as Integer = -1)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other setLayerBorder method, but uses color instead of integer data type for passing color values.

See also:

- 28.44.14 setLayerBorder(ColorValue as Integer, width as Integer = -1)

28.44.14 setLayerBorder(ColorValue as Integer, width as Integer = -1)

**Function:** Sets the color and line width of the layer border.
Notes:

To apply this method to all pyramid layers, use CDPyramidChartMBS.setLayerBorder.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the layer border. -1 means to keep the existing value unchanged.</td>
</tr>
<tr>
<td>width</td>
<td>-1</td>
<td>The width of the layer border. -1 means to keep the existing value unchanged.</td>
</tr>
</tbody>
</table>

See also:

- 28.44.13 setLayerBorder(ColorValue as color, width as Integer = -1)

28.44.15 setLayerGap(layerGap as Double)


**Function:** Sets the gap between this pyramid layer and the next pyramid layer.

**Notes:**

To apply this method to all pyramid layers, use CDPyramidChartMBS.setLayerGap.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>layerGap</td>
<td>(Mandatory)</td>
<td>The gap between layers as a ratio to the height of the pyramid. The gap must be greater than or equals 0. The sum of all gaps must be less than 1.</td>
</tr>
</tbody>
</table>

28.44.16 setLeftLabel(labelTemplate as string = "", font as string = "", fontSize as Double = 8, fontColor as Integer = -1) as CDTextBoxMBS


**Function:** Adds a label to the left of the pyramid layer.

**Notes:**

To apply this method to all pyramid layers, use CDPyramidChartMBS.setLeftLabel.

See Parameter Substitution and Formatting on available format parameters for the template.

See Font Specification for details on various font attributes.
28.44. **CLASS CDPYRAMIDLAYERMBS**

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>template</td>
<td>&quot; { skip } &quot;</td>
<td>The label template. &quot; { skip } &quot; means to keep the existing value unchanged.</td>
</tr>
<tr>
<td>font</td>
<td>&quot; { skip } &quot;</td>
<td>The font style. &quot; { skip } &quot; means to keep the existing value unchanged.</td>
</tr>
<tr>
<td>fontSize</td>
<td>-1</td>
<td>The font size in points. -1 means to keep the existing value unchanged.</td>
</tr>
<tr>
<td>fontColor</td>
<td>-1</td>
<td>The font color. -1 means to keep the existing value unchanged.</td>
</tr>
</tbody>
</table>

Return Value

A CDTextBoxMBS object representing the prototype of the label. This may be used to fine-tune the appearance of the label.

See font specification here:

http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml

See also:

- 28.44.17 setLeftLabel(labelTemplate as string, font as string, fontSize as Double, fontColor as color) as CDTextBoxMBS

---

### 28.44.17 setLeftLabel(labelTemplate as string, font as string, fontSize as Double, fontColor as color) as CDTextBoxMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other setLeftLabel method, but uses color instead of integer data type for passing color values.

See also:

- 28.44.16 setLeftLabel(labelTemplate as string = "", font as string = "", fontSize as Double = 8, fontColor as Integer = -1) as CDTextBoxMBS

---

### 28.44.18 setRightLabel(labelTemplate as string = "", font as string = "", fontSize as Double = 8, fontColor as Integer = -1) as CDTextBoxMBS


**Function:** Adds a label to the right of the pyramid layer.

**Notes:**

To apply this method to all pyramid layers, use CDPyramidChartMBS.setRightLabel.

See Parameter Substitution and Formatting on available format parameters for the template.

See Font Specification for details on various font attributes.
CHAPTER 28. CHARTDIRECTOR

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>template</td>
<td>&quot; { skip } &quot;</td>
<td>The label template. &quot; { skip } &quot; means to keep the existing value unchanged.</td>
</tr>
<tr>
<td>font</td>
<td>&quot; { skip } &quot;</td>
<td>The font style. &quot; { skip } &quot; means to keep the existing value unchanged.</td>
</tr>
<tr>
<td>fontSize</td>
<td>-1</td>
<td>The font size in points. -1 means to keep the existing value unchanged.</td>
</tr>
<tr>
<td>fontColor</td>
<td>-1</td>
<td>The font color. -1 means to keep the existing value unchanged.</td>
</tr>
</tbody>
</table>

Return Value

A CDTextBoxMBS object representing the prototype of the label. This may be used to fine-tune the appearance of the label.

See font specification here:
http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml

See also:

- 28.44.19 setRightLabel(labelTemplate as string, font as string, fontSize as Double, fontColor as color) as CDTextBoxMBS

28.44.19 setRightLabel(labelTemplate as string, font as string, fontSize as Double, fontColor as color) as CDTextBoxMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Same as the other setRightLabel method, but uses color instead of integer data type for passing color values.

See also:

- 28.44.18 setRightLabel(labelTemplate as string = "", font as string = "", fontSize as Double = 8, fontColor as Integer = -1) as CDTextBoxMBS
28.45. class CDRadialAxisMBS


Function: The RadialAxis class represents radial axes in polar charts.

Notes:

In the current version of ChartDirector, RadialAxis is implemented as a special configuration of Axis.
Subclass of the CDAxisMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.
28.46  class CDRanSeriesMBS

28.46.1  class CDRanSeriesMBS

Function:  RanSeries is a utility class to produce random series.
Notes:  It facilitates testing and demonstrating ChartDirector programs without needing a real data source.

28.46.2  Methods

28.46.3  Constructor(seed as Integer)

Function:  Creates a RanSeries object.
Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>seed</td>
<td>(Mandatory)</td>
<td>The seed to be used in the random number generator.</td>
</tr>
</tbody>
</table>

28.46.4  create(seed as Integer) as CDRanSeriesMBS

Function:  Creates a RanSeries object.
Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>seed</td>
<td>(Mandatory)</td>
<td>The seed to be used in the random number generator.</td>
</tr>
</tbody>
</table>

28.46.5  get2DSeries(xLen as Integer, yLen as Integer, minValue as Double, maxValue as Double) as Double()

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function:  Gets an array of random numbers representing points on a 2D grid in which the difference between neighbouring points is random.
Notes:

Returns an array of random numbers representing points on a 2D grid in which the difference between neighbouring points is random. The array will contain (xLen * yLen) elements. The element at index (y * xLen + x) represents the point at (x, y), in which x and y are integers such that 0 <= x < xLen and 0 <= y < yLen.
### 28.46.6 `getDateSeries(len as Integer, startTime as Double, tickInc as Double, weekDayOnly as boolean = false) as Double()`


**Function:** Gets an array of date/time values.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>len</td>
<td>(Mandatory)</td>
<td>The number of random values to get.</td>
</tr>
<tr>
<td>startTime</td>
<td>(Mandatory)</td>
<td>The date/time of the first record in the column.</td>
</tr>
<tr>
<td>tickInc</td>
<td>(Mandatory)</td>
<td>The change in date/time for subsequent records in seconds. The value 30 * 86400 is assumed to mean 1 month (which is not a constant interval), and its multiplies are assumed to mean multiple months. In particular, the value 360 * 86400 is assumed to mean 12 months, or 1 year.</td>
</tr>
<tr>
<td>weekDayOnly</td>
<td>false</td>
<td>A true value means skipping dates that are not weekdays (Saturday and Sunday). A % F value means no skipping.</td>
</tr>
</tbody>
</table>

Returns an array of date/time values.

### 28.46.7 `getSeries(len as Integer, minValue as Double, maxValue as Double) as Double()`


**Function:** Gets an array of numbers that fluctuate randomly.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>len</td>
<td>(Mandatory)</td>
<td>The number of random values to get.</td>
</tr>
<tr>
<td>startValue</td>
<td>(Mandatory)</td>
<td>The first value in the sequence.</td>
</tr>
<tr>
<td>minDelta</td>
<td>(Mandatory)</td>
<td>The minimum change between two consecutive numbers.</td>
</tr>
<tr>
<td>maxDelta</td>
<td>(Mandatory)</td>
<td>The maximum change between two consecutive numbers.</td>
</tr>
<tr>
<td>lowerLimit</td>
<td>[-Infinity ]</td>
<td>The minimum allowed value of the numbers.</td>
</tr>
<tr>
<td>upperLimit</td>
<td>[+Infinity ]</td>
<td>The maximum allowed value of the numbers.</td>
</tr>
</tbody>
</table>

Returns an array of numbers that fluctuate randomly.

See also:
28.46.8 getSeries(len as Integer, startValue as Double, minDelta as Double, maxDelta as Double) as Double()

Function: Gets an array of numbers that fluctuate randomly.
Notes:
<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>len</td>
<td>(Mandatory)</td>
<td>The number of random values to get.</td>
</tr>
<tr>
<td>startValue</td>
<td>(Mandatory)</td>
<td>The first value in the sequence.</td>
</tr>
<tr>
<td>minDelta</td>
<td>(Mandatory)</td>
<td>The minimum change between two consecutive numbers.</td>
</tr>
<tr>
<td>maxDelta</td>
<td>(Mandatory)</td>
<td>The maximum change between two consecutive numbers.</td>
</tr>
<tr>
<td>lowerLimit</td>
<td>[-Infinity]</td>
<td>The minimum allowed value of the numbers.</td>
</tr>
<tr>
<td>upperLimit</td>
<td>[+Infinity]</td>
<td>The maximum allowed value of the numbers.</td>
</tr>
</tbody>
</table>

Returns an array of numbers that fluctuate randomly.
See also:
- 28.46.7 getSeries(len as Integer, minValue as Double, maxValue as Double) as Double()
- 28.46.9 getSeries(len as Integer, startValue as Double, minDelta as Double, maxDelta as Double, lowerLimit as Double) as Double() 4916
- 28.46.10 getSeries(len as Integer, startValue as Double, minDelta as Double, maxDelta as Double, lowerLimit as Double, upperLimit as Double) as Double() 4917

28.46.9 getSeries(len as Integer, startValue as Double, minDelta as Double, maxDelta as Double, lowerLimit as Double) as Double()

Function: Gets an array of numbers that fluctuate randomly.
Notes:
Returns an array of numbers that fluctuate randomly.
See also:
- 28.46.7 getSeries(len as Integer, minValue as Double, maxValue as Double) as Double() 4915
28.46. CLASS CDRANSERIESMBS

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>len</td>
<td>(Mandatory)</td>
<td>The number of random values to get.</td>
</tr>
<tr>
<td>startValue</td>
<td>(Mandatory)</td>
<td>The first value in the sequence.</td>
</tr>
<tr>
<td>minDelta</td>
<td>(Mandatory)</td>
<td>The minimum change between two consecutive numbers.</td>
</tr>
<tr>
<td>maxDelta</td>
<td>(Mandatory)</td>
<td>The maximum change between two consecutive numbers.</td>
</tr>
<tr>
<td>lowerLimit</td>
<td>[-Infinity]</td>
<td>The minimum allowed value of the numbers.</td>
</tr>
<tr>
<td>upperLimit</td>
<td>[+Infinity]</td>
<td>The maximum allowed value of the numbers.</td>
</tr>
</tbody>
</table>

- 28.46.8 getSeries(len as Integer, startValue as Double, minDelta as Double, maxDelta as Double) as Double()
- 28.46.10 getSeries(len as Integer, startValue as Double, minDelta as Double, maxDelta as Double, lowerLimit as Double, upperLimit as Double) as Double()

28.46.10 getSeries(len as Integer, startValue as Double, minDelta as Double, maxDelta as Double, lowerLimit as Double, upperLimit as Double) as Double()


Function: Gets an array of numbers that fluctuate randomly.

Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>len</td>
<td>(Mandatory)</td>
<td>The number of random values to get.</td>
</tr>
<tr>
<td>startValue</td>
<td>(Mandatory)</td>
<td>The first value in the sequence.</td>
</tr>
<tr>
<td>minDelta</td>
<td>(Mandatory)</td>
<td>The minimum change between two consecutive numbers.</td>
</tr>
<tr>
<td>maxDelta</td>
<td>(Mandatory)</td>
<td>The maximum change between two consecutive numbers.</td>
</tr>
<tr>
<td>lowerLimit</td>
<td>[-Infinity]</td>
<td>The minimum allowed value of the numbers.</td>
</tr>
<tr>
<td>upperLimit</td>
<td>[+Infinity]</td>
<td>The maximum allowed value of the numbers.</td>
</tr>
</tbody>
</table>

Returns an array of numbers that fluctuate randomly.

See also:

- 28.46.7 getSeries(len as Integer, minValue as Double, maxValue as Double) as Double()
- 28.46.8 getSeries(len as Integer, startValue as Double, minDelta as Double, maxDelta as Double) as Double()
- 28.46.9 getSeries(len as Integer, startValue as Double, minDelta as Double, maxDelta as Double, lowerLimit as Double) as Double()
CHAPTER 28. CHARTDIRECTOR

28.47  class CDRanTableMBS

28.47.1  class CDRanTableMBS

Function: RanTable is a utility class to produce tables with random numbers.
Notes: It facilitates testing and demonstrating ChartDirector programs without needing a real database table.

28.47.2  Methods

28.47.3  Constructor(seed as Integer, noOfCols as Integer, noOfRows as Integer)

Function: Creates a RanTable object.
Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>seed</td>
<td>(Mandatory)</td>
<td>The seed to be used in the random number generator.</td>
</tr>
<tr>
<td>noOfCols</td>
<td>(Mandatory)</td>
<td>The number of columns in the random number table.</td>
</tr>
<tr>
<td>noOfRows</td>
<td>(Mandatory)</td>
<td>The number of rows in the random number table.</td>
</tr>
</tbody>
</table>

28.47.4  getCol(colNo as Integer) as CDArrayMBS

Function: Gets the request column as an array of numbers.
Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>(Mandatory)</td>
<td>The column to get. The first column is 0. The nth column is (n - 1).</td>
</tr>
</tbody>
</table>

Return Value
An array containing numbers from the requested column.

28.47.5  selectDate(colNo as Integer, minDate as Double, maxDate as Double) as Integer

Function: Selects the rows within a certain date range.
Notes:
After executing this method, the RanTable will be reduced to only contain rows that are within minDate and maxDate (inclusive of both dates).

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>colNo</td>
<td>(Mandatory)</td>
<td>The date column to be used as selection criteria.</td>
</tr>
<tr>
<td>minDate</td>
<td>(Mandatory)</td>
<td>The minimum date (earliest date).</td>
</tr>
<tr>
<td>maxDate</td>
<td>(Mandatory)</td>
<td>The maximum date (latest date).</td>
</tr>
</tbody>
</table>

### 28.47.6 setCol(colNo as Integer, minValue as Double, maxValue as Double)


**Function:** Fill the given column in the RanTable with random numbers in the given range.

**Notes:**

- The column to fill. The first column is 0. The nth column is (n - 1).
- The minimum value of the random number.
- The maximum value of the random number.

See also:

- 28.47.7 setCol(colNo as Integer, startValue as Double, minDelta as Double, maxDelta as Double) 4919
- 28.47.8 setCol(colNo as Integer, startValue as Double, minDelta as Double, maxDelta as Double, lowerLimit as Double) 4920
- 28.47.9 setCol(colNo as Integer, startValue as Double, minDelta as Double, maxDelta as Double, lowerLimit as Double, upperLimit as Double) 4920

### 28.47.7 setCol(colNo as Integer, startValue as Double, minDelta as Double, maxDelta as Double)


**Function:** Fill the given column in the RanTable with random numbers that fluctuates within a given speed.

**Notes:**

See also:

- 28.47.6 setCol(colNo as Integer, minValue as Double, maxValue as Double) 4919
- 28.47.7 setCol(colNo as Integer, startValue as Double, minDelta as Double, maxDelta as Double) 4919
- 28.47.8 setCol(colNo as Integer, startValue as Double, minDelta as Double, maxDelta as Double, lowerLimit as Double) 4920
- 28.47.9 setCol(colNo as Integer, startValue as Double, minDelta as Double, maxDelta as Double, lowerLimit as Double, upperLimit as Double) 4920
CHAPTER 28. CHARTDIRECTOR

Argument Default Description

colNo (Mandatory) The column to fill. The first column is 0. The nth column is (n - 1).

startValue (Mandatory) The value of the first record in the column.

minDelta (Mandatory) The minimum change allowed for between the current random number and the previous random number. This parameter is usually negative.

maxDelta (Mandatory) The maximum change allowed for between the current random number and the previous random number.

lowerLimit [ -Infinity ] The minimum value of the random number.

upperLimit [ +Infinity ] The maximum value of the random number.

28.47.8 setCol(colNo as Integer, startValue as Double, minDelta as Double, maxDelta as Double, lowerLimit as Double, upperLimit as Double)


Function: Fill the given column in the RanTable with random numbers that fluctuates within a given speed.

Notes:

See also:

- 28.47.6 setCol(colNo as Integer, minValue as Double, maxValue as Double) 4919
- 28.47.7 setCol(colNo as Integer, startValue as Double, minDelta as Double, maxDelta as Double) 4919
- 28.47.9 setCol(colNo as Integer, startValue as Double, minDelta as Double, maxDelta as Double, lowerLimit as Double, upperLimit as Double) 4920

28.47.9 setCol(colNo as Integer, startValue as Double, minDelta as Double, maxDelta as Double, lowerLimit as Double, upperLimit as Double)


Function: Fill the given column in the RanTable with random numbers that fluctuates within a given speed.

Notes:

See also:
28.47. **CLASS CDRANTABLEMBS**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>colNo</td>
<td>(Mandatory)</td>
<td>The column to fill. The first column is 0. The nth column is (n - 1).</td>
</tr>
<tr>
<td>startValue</td>
<td>(Mandatory)</td>
<td>The value of the first record in the column.</td>
</tr>
<tr>
<td>minDelta</td>
<td>(Mandatory)</td>
<td>The minimum change allowed for between the current random number and the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>previous random number. This parameter is usually negative.</td>
</tr>
<tr>
<td>maxDelta</td>
<td>(Mandatory)</td>
<td>The maximum change allowed for between the current random number and the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>previous random number.</td>
</tr>
<tr>
<td>lowerLimit</td>
<td>([-\infty])</td>
<td>The minimum value of the random number.</td>
</tr>
<tr>
<td>upperLimit</td>
<td>([+\infty])</td>
<td>The maximum value of the random number.</td>
</tr>
</tbody>
</table>

- 28.47.6 setCol(colNo as Integer, minValue as Double, maxValue as Double) 4919
- 28.47.7 setCol(colNo as Integer, startValue as Double, minDelta as Double, maxDelta as Double) 4919
- 28.47.8 setCol(colNo as Integer, startValue as Double, minDelta as Double, maxDelta as Double, lowerLimit as Double) 4920

**28.47.10 setDateCol(i as Integer, startTime as Double, tickInc as Double, weekDayOnly as boolean=false)**


**Function:** Fill the given column in the RanTable with a date/time series.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>(Mandatory)</td>
<td>The column to fill. The first column is 0. The nth column is (n - 1).</td>
</tr>
<tr>
<td>startTime</td>
<td>(Mandatory)</td>
<td>The date/time of the first record in the column.</td>
</tr>
<tr>
<td>tickInc</td>
<td>(Mandatory)</td>
<td>The change in date/time for subsequent records in seconds. The value 30 *</td>
</tr>
<tr>
<td></td>
<td></td>
<td>86400 is assumed to mean 1 month (which is not a constant interval), and its</td>
</tr>
<tr>
<td></td>
<td></td>
<td>multiplies are assumed to mean multiple months. In particular, the value 360</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* 86400 is assumed to mean 12 months, or 1 year.</td>
</tr>
<tr>
<td>weekDayOnly</td>
<td>false</td>
<td>A true value means skipping dates that are not weekdays (Saturday and Sun-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>day). A % F value means no skipping.</td>
</tr>
</tbody>
</table>

**28.47.11 setHLOCCols(i as Integer, startValue as Double, minDelta as Double, maxDelta as Double, lowerLimit as Double = 0.0)**


**Function:** Fill 4 columns in the RanTable with random high, low, open and close records.

**Notes:**

The 4 columns will meet the constraints that for each record, the high value will be greater than or equal to the low value, and both the open and close values will be in between the high and low values.
### Argument Default Description

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>i</code></td>
<td>(Mandatory)</td>
<td>The column number of the &quot;high&quot; column. The next column will be assumed to be &quot;low&quot;, followed by &quot;open&quot; and &quot;close&quot;. The column number starts at 0. The first column is 0. The nth column is (n - 1).</td>
</tr>
<tr>
<td><code>startValue</code></td>
<td>(Mandatory)</td>
<td>The initial &quot;open&quot; value.</td>
</tr>
<tr>
<td><code>minDelta</code></td>
<td>(Mandatory)</td>
<td>The minimum change allowed for between the current &quot;open&quot; and the previous &quot;close&quot; value, as well as between the current &quot;close&quot; value and the current &quot;open&quot; value. This parameter is usually negative.</td>
</tr>
<tr>
<td><code>maxDelta</code></td>
<td>(Mandatory)</td>
<td>The maximum change allowed for between the current &quot;open&quot; and the previous &quot;close&quot; value, as well as between the current &quot;close&quot; value and the current &quot;open&quot; value.</td>
</tr>
<tr>
<td><code>lowerLimit</code></td>
<td>0</td>
<td>The minimum value for &quot;high&quot;, &quot;low&quot;, &quot;open&quot; and &quot;close&quot;.</td>
</tr>
<tr>
<td><code>upperLimit</code></td>
<td>[ +Infinity ]</td>
<td>The maximum value for &quot;high&quot;, &quot;low&quot;, &quot;open&quot; and &quot;close&quot;.</td>
</tr>
</tbody>
</table>

See also:

- 28.47.12 setHLOCCols(i as Integer, `startValue` as Double, `minDelta` as Double, `maxDelta` as Double, `lowerLimit` as Double, `upperLimit` as Double)

### 28.47.12 setHLOCCols(i as Integer, `startValue` as Double, `minDelta` as Double, `maxDelta` as Double, `lowerLimit` as Double, `upperLimit` as Double)

**MBS ChartDirector Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:** Fill 4 columns in the RanTable with random high, low, open and close records.

**Notes:**

The 4 columns will meet the constraints that for each record, the high value will be greater than or equal to the low value, and both the open and close values will be in between the high and low values.
• 28.47.11 setHLOCCols(i as Integer, startValue as Double, minDelta as Double, maxDelta as Double, lowerLimit as Double = 0.0)
28.48 class CDScatterLayerMBS

28.48.1 class CDScatterLayerMBS


**Function:** The ScatterLayer class represents scatter layers.

**Notes:**
Subclass of the CDLineLayerMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.
28.49. CLASS CDSECTORMBS

28.49 class CDSectorMBS

28.49.1 class CDSectorMBS


**Function:** The Sector class represents sectors.

**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

28.49.2 Methods

28.49.3 Constructor

MBS ChartDirector Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The private constructor.

28.49.4 getImageCoor(offsetX as Integer = 0, offsetY as Integer = 0) as string


**Function:** Gets the image map coordinates of the sector as HTML image map attributes.

**Notes:**

The image map coordinates will be in the following format:

```
shape="poly" cords=" [ x1 ] , [ y1 ] , [ x2 ] , [ y2 ] ...
```

where (x1, y1), (x2, y2) ... are vertices of a polygon that approximate the sector. The format is specially designed so that it can easily be incorporated into HTML image maps.

This method should be called only after creating the chart image (eg. using BaseChart.makeChart, BaseChart.makeChart2 or BaseChart.makeChart3). The image map cannot be determined without creating the chart image first.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>offsetX</td>
<td>0</td>
<td>An offset to be added to all x coordinates in the image map. This is useful if the current image will be shifted and inserted into another image. In this case, the image map will need to be shifted by the same offset.</td>
</tr>
<tr>
<td>offsetY</td>
<td>0</td>
<td>An offset to be added to all y coordinates in the image map. See offsetX above for description.</td>
</tr>
</tbody>
</table>

**Return Value**

A text string representing the coordinates of the sector in HTML image map attribute format.
28.49.5  getLabelCoor(offsetX as Integer = 0, offsetY as Integer = 0) as string

**Function:** Gets the image map coordinates of the sector label as HTML image map attributes.

**Notes:**
The image map coordinates will be in the following format:

```
shape="rect" cords="[ x1 ], [ y1 ], [ x2 ], [ y2 ]"
```

where \((x1, y1)\) and \((x2, y2)\) are opposite corners of the box that encloses the sector label. The format is specially designed so that it can easily be incorporated into HTML image maps.

This method should be called only after creating the chart image (eg. using `BaseChart.makeChart`, `BaseChart.makeChart2` or `BaseChart.makeChart3`). The image map cannot be determined without creating the chart image first.

**Argument** | **Default** | **Description**
--- | --- | ---
offsetX | 0 | An offset to be added to all x coordinates in the image map. This is useful if the current image will be shifted and inserted into another image. In this case, the image map will need to be shifted by the same offset.
offsetY | 0 | An offset to be added to all y coordinates in the image map. See offsetX above for description.

**Return Value**
A text string representing the coordinates of the sector label in HTML image map attribute format.

28.49.6  setColor(colorvalue as color, edgeColor as color, joinLineColor as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other setColor method, but uses color instead of integer data type for passing color values.

See also:
- 28.49.7 setColor(colorvalue as Integer, edgeColor as Integer = -1, joinLineColor as Integer = -1) 4926

28.49.7  setColor(colorvalue as Integer, edgeColor as Integer = -1, joinLineColor as Integer = -1)

**Function:** Sets the fill color, edge color and join line color of the sector.
Notes:

By default, the edge color is SameAsMainColor. For the join line color, if the circular label layout method is used, the default is Transparent, otherwise the default is SameAsMainColor.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the sector.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The edge color of the sector. -1 means the color is unchanged.</td>
</tr>
<tr>
<td>joinLineColor</td>
<td>-1</td>
<td>The color of the line that join the sector perimeter with the sector label. -1 means the color is unchanged.</td>
</tr>
</tbody>
</table>

See also:

- 28.49.6 setColor(colorvalue as color, edgeColor as color, joinLineColor as color)

28.49.8 setExplode(distance as Integer = -1)

Function: Explode the sector.
Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>distance</td>
<td>-1</td>
<td>The explosion distance in pixels. -1 means the distance is automatically determined.</td>
</tr>
</tbody>
</table>

28.49.9 setJoinLine(joinLineColor as color, joinLineWidth as Integer = 1)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other setJoinLine method, but uses color instead of integer data type for passing color values.
See also:

- 28.49.10 setJoinLine(joinLineColor as Integer, joinLineWidth as Integer = 1)

28.49.10 setJoinLine(joinLineColor as Integer, joinLineWidth as Integer = 1)

Function: Sets the color and width of the join line used to connect the sector label to the sector perimeter.
Notes:

By default, for circular label layout, the join line color is Transparent. For side label layout, the join line color is SameAsMainColor.
CHAPTER 28. CHARTDIRECTOR

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>joinLineColor</td>
<td>(Mandatory)</td>
<td>The color of the line that joins the sector perimeter with the sector label.</td>
</tr>
<tr>
<td>joinLineWidth</td>
<td>1</td>
<td>The line width of the join line.</td>
</tr>
</tbody>
</table>

See also:

- 28.49.9 setJoinLine(joinLineColor as color, joinLineWidth as Integer = 1)

28.49.11 setLabelFormat(formatString as string = "")


**Function:** Sets the format of the sector label.

**Example:**

```plaintext
dim c as CDSectorMBS

// you can use label formats like this:

c.setLabelFormat("\{"block,halign=left\} \{"font=timesbi.ttf,size=12,underline=1\}\{ label \} \{"/font\}\{br\}\US\{ value \} K ( \{ percent \} % ")")

// we can reduce that to this:

c.setLabelFormat("\{ label \} \{ value \} \{ percent \} %")

// and it shows 3 numbers. With | 1 after the variable name, we define the decimals after dot:

c.setLabelFormat("\{ label \} \{ value | 1 \} \{ percent | 1 \} %")

// and

c.setLabelFormat("\{ label \} \{ value | 1. \} \{ percent | 1. \} %")

// uses dot for thousands and comma for decimal separator.
```

**Notes:**

To set the label format for all sectors, use PieChart.setLabelFormat.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>formatString</td>
<td>(Mandatory)</td>
<td>The format string. See PieChart.setLabelFormat for details.</td>
</tr>
</tbody>
</table>
28.49. **CLASS CDSECTORMBS**

28.49.12 **setLabelLayout(layoutMethod as Integer, pos as Integer = -1)**


**Function:** Sets the layout method and location of the sector label.

**Notes:**

To set the sector label layout method and location for all sectors, use PieChart.setLabelLayout.

ChartDirector supports two sector label layout methods - circular layout and side layout. For detail descriptions, please refer to PieChart.setLabelLayout.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default (Mandatory)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>layoutMethod</td>
<td></td>
<td>Specify the layout method. Must be one of the predefined constants CircleLayout or SideLayout.</td>
</tr>
<tr>
<td>pos</td>
<td>-1</td>
<td>For circular layout, it is the distance between the sector perimeter and the sector label. A negative value (but not -1) means the sector label will be drawn in the interior of the sector. For side layout, it is the distance between the pie perimeter and the left or right edges of the invisible containing rectangle (equal to the width of the rectangle minus the pie diameter and then divided by 2). In either case, -1 means the distance is automatically determined.</td>
</tr>
</tbody>
</table>

28.49.13 **setLabelPos(pos as Integer, joinLineColor as color)**

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other setLabelPos method, but uses color instead of integer data type for passing color values.

See also:

- 28.49.14 setLabelPos(pos as Integer, joinLineColor as Integer = -1)

28.49.14 **setLabelPos(pos as Integer, joinLineColor as Integer = -1)**


**Function:** Sets the circular label layout method, and configure the join lines used to connect the sector label to the sector perimeter.

**Notes:**

To set the sector label position or join line color for all sectors, use PieChart.setLabelPos.

See also:
CHAPTER 28. CHARTDIRECTOR

Argument Default Description
pos (Mandatory) The distance between the sector perimeter and the sector label. A negative value means the sector label will be drawn in the interior of the sector.
joinLineColor -1 The color of the line that joins the sector perimeter with the sector label. The default is Transparent. The join line is ignored if the sector label is inside the sector.

- 28.49.13 setLabelPos(pos as Integer, joinLineColor as color)

28.49.15 setLabelStyle(font as string = "", fontSize as Double = 8, fontColor as Integer = & hfff0002) as CDTextBoxMBS

Function: Sets the style used to draw the sector label.
Notes:
To set the label style for all sector labels, use PieChart.setLabelStyle.

See Font Specification for details on various font attributes.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>font</td>
<td>&quot;&quot;</td>
<td>The font used to draw the sector label.</td>
</tr>
<tr>
<td>fontSize</td>
<td>8</td>
<td>The font size in points.</td>
</tr>
<tr>
<td>fontColor</td>
<td>TextColor</td>
<td>The text color for the sector label.</td>
</tr>
</tbody>
</table>

Return Value
A TextBox object representing the prototype of the obj. This may be used to fine-tune the appearance of the obj.

See font specification here:
http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml
See also:
- 28.49.16 setLabelStyle(font as string, fontSize as Double, fontcolor as color) as CDTextBoxMBS

28.49.16 setLabelStyle(font as string, fontSize as Double, fontColor as color) as CDTextBoxMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other setLabelStyle method, but uses color instead of integer data type for passing color values.
See also:
28.49. CLASS CDSECTORMBS

- 28.49.15 setLabelStyle(font as string = "", fontsize as Double = 8, fontcolor as Integer = & hffff0002) as CDTextBoxMBS

28.49.17 setStyle(shadingMethod as Integer, edgeColor as color, edgeWidth as Integer = -1)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other setStyle method, but uses color instead of integer data type for passing color values.
See also:
- 28.49.18 setStyle(shadingMethod as Integer, edgeColor as Integer = -1, edgeWidth as Integer = -1)

28.49.18 setStyle(shadingMethod as Integer, edgeColor as Integer = -1, edgeWidth as Integer = -1)

**Function:** Sets the sector shading style, edge color and edge width.
**Notes:**
This method is the same as CDPieChartMBS.setSectorStyle, except it only affects one sector. Please refer to CDPieChartMBS.setSectorStyle for the detail explanation of this method.

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>shadingMethod</td>
<td>(Mandatory)</td>
<td>The sector shading style to use. -1 means to keep the existing value unchanged.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The edge color of the sector. -1 means to keep the existing value unchanged.</td>
</tr>
<tr>
<td>edgeWidth</td>
<td>-1</td>
<td>The edge width of the sector. -1 means to keep the existing value unchanged.</td>
</tr>
</tbody>
</table>

See also:
- 28.49.17 setStyle(shadingMethod as Integer, edgeColor as color, edgeWidth as Integer = -1)
28.50  class CDSplineLayerMBS

28.50.1  class CDSplineLayerMBS

Function: The SplineLayer class represents spline layers.
Notes:
In the current version of ChartDirector, SplineLayer is implemented as a special configuration of LineLayer. Subclass of the CDLineLayerMBS class. This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

28.50.2  Methods

28.50.3  setMonotonicity(m as Integer)

Function: Sets the monotonicity constraint when computing the spline curve.
Notes:
Monotonicity means a sequence is increasing or decreasing in one direction. For example, the sequence 1, 2, 3, 4 is monotonically increasing, while the sequence 1, 3, 2, 5, 4 is not monotonic.

A standard spline curve can overshoot or undershoot if the underlying points have "sharp corners". That means without any constrain, even if the data points are monotonic, the spline curve joining the points is not necessarily monotonic. It can overshoot and then "fall back".

In many charts, it may be desirable to constraint the spline curve to flow in a certain direction. For example, in a time based chart, it may be desirable to constraint the curve always flow from left to right.

ChartDirector supports the following monotonic modes.

Arguments:

28.50.4  setTension(tension as Double)

Function: Sets the tension to use when computing the spline curve.
Notes:
The tension parameter should be between -1 and 1. A positive tension will make the spline tighter. The
<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MonotonicNone</td>
<td>0</td>
<td>The spline curve is not constraint to flow in any direction. This results in the smoothest spline curve.</td>
</tr>
<tr>
<td>MonotonicX</td>
<td>1</td>
<td>The spline curve is constraint to not overshooting or undershooting in the x-axis direction. This means if the data points are monotonic in the x-axis direction, the spline curve will also be monotonic in the x-axis direction.</td>
</tr>
<tr>
<td>MonotonicY</td>
<td>2</td>
<td>The spline curve is constraint to not overshooting or undershooting in the y-axis direction. This means if the data points are monotonic in the y-axis direction, the spline curve will also be monotonic in the y-axis direction.</td>
</tr>
<tr>
<td>MonotonicXY</td>
<td>3</td>
<td>The spline curve is constraint to not overshooting or undershooting in both the x-axis and the y-axis directions. This means if the data points are monotonic in the x-axis direction, the spline curve will also be monotonic in the x-axis direction. If the data points are monotonic in the y-axis direction, the spline curve will also be monotonic in the y-axis direction.</td>
</tr>
<tr>
<td>MonotonicAuto</td>
<td>4</td>
<td>Automatically choose between MonotonicX, MonotonicY or MonotonicXY, depending on whether the data points are monotonic in the x-axis direction, or y-axis direction, or both.</td>
</tr>
</tbody>
</table>

spline curve will become straight line segments when tension is 1. A negative tension will make the spline looser.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>monotonicMode</td>
<td>(Mandatory)</td>
<td>The monotonic constraint of the spline curve. Must be one of the constants in the above table. If this method is never called for a spline layer, the default is MonotonicAuto.</td>
</tr>
<tr>
<td>tension</td>
<td>(Mandatory)</td>
<td>The tension of the spline, which should be between -1 and 1.</td>
</tr>
</tbody>
</table>
28.51 class CDStepLineLayerMBS

28.51.1 class CDStepLineLayerMBS


Function: The StepLineLayer class represents step line layers.

Notes:
Subclass of the CDLineLayerMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

28.51.2 Methods

28.51.3 setAlignment(a as Integer)


Function: Sets the alignment of the steps relative to the data points.

Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>(Mandatory)</td>
<td>The alignment of the steps relative to the data points. Must be one of the predefined constants Left, Center or Right.</td>
</tr>
</tbody>
</table>
28.52. **CLASS CDSURFACECHARTMBS**

### 28.52.1 class CDSurfaceChartMBS

**Function:** The SurfaceChart class represents surface charts.
**Notes:** Subclass of the CDThreeDChartMBS class.

### 28.52.2 Methods

#### 28.52.3 Constructor(width as Integer = 640, height as Integer = 480, bgColor as Integer = & hffff0000, edgeColor as Integer = & hff000000, raisedEffect as Integer = 0)

**Function:** Creates a new SurfaceChart object.
**Notes:**

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>width</td>
<td>(Mandatory)</td>
<td>The width of the chart in pixels.</td>
</tr>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the chart in pixels.</td>
</tr>
<tr>
<td>bgColor</td>
<td>kBackgroundColor</td>
<td>The background color of the chart.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>kTransparent</td>
<td>The edge color of the chart.</td>
</tr>
<tr>
<td>raisedEffect</td>
<td>0</td>
<td>The 3D border width. For positive values, the border will appear raised. For negative values, the border will appear depressed. A zero value means the border will appear flat.</td>
</tr>
</tbody>
</table>

See also:

- 28.52.4 Constructor(width as Integer, height as Integer, bgColor as color, edgeColor as color, raisedEffect as Integer = 0)

#### 28.52.4 Constructor(width as Integer, height as Integer, bgColor as color, edgeColor as color, raisedEffect as Integer = 0)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other Constructor method, but uses color instead of integer data type for passing color values.
**See also:**
28.52.5 setBackSideBrightness(brightness as Double)

**Function:** Sets the back side brightness as a ratio of the front side brightness.
**Notes:**
The surface of a surface chart has two sides. The side that is facing the positive z direction of the plot region is the front side. The side that is facing the negative z direction of the plot region is the back side.

By default, the back side brightness is half the front side brightness. This method can be used to adjust the ratio.

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>brightness</td>
<td>(Mandatory)</td>
<td>The ratio of the back side brightness to the front side brightness.</td>
</tr>
</tbody>
</table>

28.52.6 setBackSideColor(ColorValue as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other setBackSideColor method, but uses color instead of integer data type for passing color values.
**See also:**

- 28.52.7 setBackSideColor(ColorValue as Integer)

28.52.7 setBackSideColor(ColorValue as Integer)

**Function:** Sets the color of the back side of the surface.
**Notes:**
The surface of a surface chart has two sides. The side that is facing the positive z direction of the plot region is the front side. The side that is facing the negative z direction of the plot region is the back side.

By default, the back side is colored similar to the front side, but with different brightness of lighting parameters. This method can be used to color the back side with a fixed color instead.
28.52. **CLASS CDSURFACECHARTMBS**

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color used for the back side.</td>
</tr>
</tbody>
</table>

See also:

- 28.52.6 `setBackSideColor(ColorValue as color)`

### 28.52.8 `setBackSideLighting(ambientLight as Double, diffuseLight as Double, specularLight as Double, shininess as Double)`


**Function:** Sets the Phong lighting parameters for the back side of the surface.

**Notes:**

The surface of a surface chart has two sides. The side that is facing the positive z direction of the plot region is the front side. The side that is facing the negative z direction of the plot region is the back side.

ChartDirector uses the Phong lighting model to adjust the brightness of the surface to make it look realistic. The default lighting parameters for the back side is half the brightness of those for the front side. This method may be used to set alternative lighting parameters for the back side.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ambientIntensity</td>
<td>(Mandatory)</td>
<td>The ambient reflection coefficient of the Phong lighting model.</td>
</tr>
<tr>
<td>diffuseIntensity</td>
<td>(Mandatory)</td>
<td>The diffuse reflection coefficient of the Phong lighting model.</td>
</tr>
<tr>
<td>specularIntensity</td>
<td>(Mandatory)</td>
<td>The specular reflection coefficient of the Phong lighting model.</td>
</tr>
<tr>
<td>shininess</td>
<td>(Mandatory)</td>
<td>The shininess coefficient of the Phong lighting model.</td>
</tr>
</tbody>
</table>

### 28.52.9 `setContourColor(contourColor as color, minorContourColor as color)`

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other `setContourColor` method, but uses color instead of integer data type for passing color values.

See also:

- 28.52.10 `setContourColor(contourColor as Integer, minorContourColor as Integer = -1)`
**28.52.10 setContourColor(contourColor as Integer, minorContourColor as Integer = -1)**

**Function:** Sets the colors of the contour lines on the surface.  
**Notes:**  
The contour lines are lines that join regions of the same z value on the surface. The contour levels are determined by the ticks on the z-axis. Major ticks associate with major contour lines. Minor ticks associate with minor contour lines.  
**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>contourColor</td>
<td>(Mandatory)</td>
<td>The color of the major contour lines.</td>
</tr>
<tr>
<td>minorContourColor</td>
<td>-1</td>
<td>The color of the minor contour lines. -1 means it is the same as the contourColor.</td>
</tr>
</tbody>
</table>

See also:  
- 28.52.9 setContourColor(contourColor as color, minorContourColor as color)

**28.52.11 setData(xData() as Double, yData() as Double, zData() as Double)**

**Function:** Sets the data for the surface chart.  
**Notes:**  
ChartDirector supports both gridded and scattered data. If the data points are on a rectangular grid with no missing points, they will be handled as gridded data. Otherwise, they will be handled as scattered data.  
For gridded data, you may provide the x and y values of the grid, and the z values of the data points. For a 10 x 15 grid, that means the x data series should have 10 values, the y data series should have 15 values, and the z data series should have 150 values. The x and y data series should be strictly monotonic (either strictly increasing or strictly decreasing).  
For both gridded and scattered data, you may also provide the (x, y, z) values of the data points. For example, for 150 data points, the x, y and z data series should each have 150 values. ChartDirector will automatically detect if the data points are gridded or scattered.  
**Arguments:**
28.52.12 setInterpolation(xSamples as Integer, ySamples as Integer = -1, isSmooth as boolean=true)


Function: Enables and sets the degree and method of interpolation of the data points.

Notes:

A surface chart consists of planar patches, drawn using the data points as the vertices. To create visually smooth surfaces, we may use a large number of small planar patches. However, this requires a large number of data points.

For example, consider a plot region of which the x and y dimensions are both 400 pixels in length. To create a smooth surface, if gridded data are used, the distance between grid lines should be no more than a few pixels. Suppose a grid spacing of 8 pixels is used. The grid size will be 51 x 51, and 2601 data points will be needed.

If the number of available data points are too small to create a smooth surface, this method can be used to generate a denser grid of data points from the original data points using interpolation.

Two types of interpolation are supported. In spline surface interpolation, ChartDirector will compute a smooth surface that passes through the original data points, and sample the spline surface for the new data points. In bilinear/linear interpolation, ChartDirector will apply bilinear/linear interpolation to its vertices of the original patches to compute the new data points.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xSamples</td>
<td>(Mandatory)</td>
<td>The number of samples on the x-dimension to interpolate to.</td>
</tr>
<tr>
<td>ySamples</td>
<td>-1</td>
<td>The number of samples on the y-dimension to interpolate to. -1 means it is the same as xSamples.</td>
</tr>
<tr>
<td>isSmooth</td>
<td>true</td>
<td>A true value means to use spline surface interpolation. A false value means to use bilinear/linear interpolation.</td>
</tr>
</tbody>
</table>
28.52.13  setLighting(ambientIntensity as Double, diffuseIntensity as Double, specularIntensity as Double, shininess as Double)


Function: Sets the Phong lighting parameters for the front side of the surface.

Notes:
The surface of a surface chart has two sides. The side that is facing the positive z direction of the plot region is the front side. The side that is facing the negative z direction of the plot region is the back side.

ChartDirector uses the Phong lighting model to adjust the brightness of the surface to make it look realistic. The light source is assumed to be from the direction of the viewer and is far away. The default lighting parameters for the front side are 0.5 for both ambient and diffuse reflections, 1 for specular reflection and 8 for shininess.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ambientIntensity</td>
<td>(Mandatory)</td>
<td>The ambient reflection coefficient of the Phong lighting model.</td>
</tr>
<tr>
<td>diffuseIntensity</td>
<td>(Mandatory)</td>
<td>The diffuse reflection coefficient of the Phong lighting model.</td>
</tr>
<tr>
<td>specularIntensity</td>
<td>(Mandatory)</td>
<td>The specular reflection coefficient of the Phong lighting model.</td>
</tr>
<tr>
<td>shininess</td>
<td>(Mandatory)</td>
<td>The shininess coefficient of the Phong lighting model.</td>
</tr>
</tbody>
</table>

28.52.14  setShadingMode(shadingMode as Integer, wireWidth as Integer = 1)


Function: Sets the shading mode for the surface.

Notes:
ChartDirector supports the following methods for shading the surface.

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kSmoothShading</td>
<td>0</td>
<td>The brightness of the surface varies smoothly.</td>
</tr>
<tr>
<td>kTriangularShading</td>
<td>0</td>
<td>The surface is divided into triangular patches.</td>
</tr>
<tr>
<td>kRectangularShading</td>
<td>0</td>
<td>The surface is divided into rectangular patches.</td>
</tr>
<tr>
<td>kTriangularFrame</td>
<td>0</td>
<td>The surface is divided into triangular patches.</td>
</tr>
<tr>
<td>kRectangularFrame</td>
<td>0</td>
<td>The surface is divided into rectangular patches.</td>
</tr>
</tbody>
</table>

Arguments:
28.52.15 **setSurfaceAxisGrid(majorXGridColor as color, majorYGridColor as color, minorXGridColor as color, minorYGridColor as color)**

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other setSurfaceAxisGrid method, but uses color instead of integer data type for passing color values.

See also:

- 28.52.16 setSurfaceAxisGrid(majorXGridColor as Integer, majorYGridColor as Integer = -1, minorXGridColor as Integer = -1, minorYGridColor as Integer = -1)

28.52.16 **setSurfaceAxisGrid(majorXGridColor as Integer, majorYGridColor as Integer = -1, minorXGridColor as Integer = -1, minorYGridColor as Integer = -1)**


**Function:** Sets the colors of the axis grid lines on the surface.

**Notes:**

Axis grid lines are grid lines associated with the ticks on the x and y axes. Major grid lines associate with major ticks. Minor grid lines associate with minor ticks. They can be drawn on the surface of the surface chart, and on the plot region walls. This method is for the surface of the surface chart. For the plot region walls, see CDSurfaceChartMBS.setWallGrid.

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>majorXGridColor</td>
<td>(Mandatory)</td>
<td>The color of the major x-axis grid lines on the surface.</td>
</tr>
<tr>
<td>majorYGridColor</td>
<td>-1</td>
<td>The color of the major y-axis grid lines on the surface. -1 means it is the same as the majorXGridColor.</td>
</tr>
<tr>
<td>minorXGridColor</td>
<td>-1</td>
<td>The color of the minor x-axis grid lines on the surface. -1 means it is the same as the majorXGridColor.</td>
</tr>
<tr>
<td>minorYGridColor</td>
<td>-1</td>
<td>The color of the minor y-axis grid lines on the surface. -1 means it is the same as the majorYGridColor.</td>
</tr>
</tbody>
</table>

See also:

- 28.52.15 setSurfaceAxisGrid(majorXGridColor as color, majorYGridColor as color, minorXGridColor as color, minorYGridColor as color)
28.52.17  setSurfaceDataGrid(xGridColor as color, yGridColor as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other setSurfaceDataGrid method, but uses color instead of integer data type for passing color values.
See also:

- 28.52.18 setSurfaceDataGrid(xGridColor as Integer, yGridColor as Integer = -1)

28.52.18  setSurfaceDataGrid(xGridColor as Integer, yGridColor as Integer = -1)

**Function:** Sets the colors of the data grid lines on the surface.
**Notes:**
Data grid lines are grid lines that define the positions of the data points. They can be drawn on the surface of the surface chart.

**Arguments:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xGridColor</td>
<td>(Mandatory)</td>
<td>The color of the x data grid lines.</td>
</tr>
<tr>
<td>yGridColor</td>
<td>-1</td>
<td>The color of the y data grid lines. -1 means it is the same as the yGridColor.</td>
</tr>
</tbody>
</table>

See also:

- 28.52.17 setSurfaceDataGrid(xGridColor as color, yGridColor as color)
Function: A surface chart created using ChartDirector with the CDSurfaceChartMBS class.
Function: A surface chart created using ChartDirector with the CDSurfaceChartMBS class.
**Function:** A surface chart created using ChartDirector with the CDSurfaceChartMBS class.
Function: A surface chart created using ChartDirector with the CDSurfaceChartMBS class.
Function: A surface chart created using ChartDirector with the CDSurfaceChartMBS class.
28.53  class CDTextBoxMBS

28.53.1  class CDTextBoxMBS

Function: The TextBox class represents text boxes.
Notes:
Subclass of the CDBoxMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

28.53.2  Methods

28.53.3  setAlignment(a as Integer)

Function: Sets the alignment of the text relative to the container box.
Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>(Mandatory)</td>
<td>The alignment specification. See Alignment Specification for supported alignment types.</td>
</tr>
</tbody>
</table>

28.53.4  setFontAngle(angle as Double, vertical as boolean=false)

Function: Sets the rotation angle and layout direction of the text.
Notes:

See Font Specification for details on various font attributes.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>angle</td>
<td>(Mandatory)</td>
<td>The text rotation angle. Rotation is measured in counter-clockwise direction in degrees.</td>
</tr>
<tr>
<td>vertical</td>
<td>false</td>
<td>Determine if the font is layout horizontally (from left to right) or vertically (from top to down). Vertical layout is common for Oriental languages such as Chinese, Japanese and Korean. A true value means vertical layout. A false value means horizontal layout.</td>
</tr>
</tbody>
</table>

See font specification here:
http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml
28.53.5 setFontColor(colorvalue as color)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other setFontColor method, but uses color instead of integer data type for passing color values.
See also:
- 28.53.6 setFontColor(colorvalue as Integer)

28.53.6 setFontColor(colorvalue as Integer)

**Function:** Sets the color of the text.
**Notes:**
If this method is not called, TextColor will be used to draw the text.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The font color.</td>
</tr>
</tbody>
</table>

See also:
- 28.53.5 setFontColor(colorvalue as color)

28.53.7 setFontSize(fontHeight as Double, fontWidth as Double = 0)

**Function:** Sets the font height and width in points.
**Notes:**
See Font Specification for details on various font attributes.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>fontHeight</td>
<td>(Mandatory)</td>
<td>The font height in points.</td>
</tr>
<tr>
<td>fontWidth</td>
<td>0</td>
<td>The font width in points. If the font width is zero, it is assumed to be the same as the font height.</td>
</tr>
</tbody>
</table>

See font specification here:
http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml
28.53.8 setFontStyle(font as string, fontIndex as Integer = 0)

Function: Sets the font of the text by specifying the file that contains the font.
Notes:

See Font Specification for details on various font attributes.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>font</td>
<td>(Mandatory)</td>
<td>The font name.</td>
</tr>
<tr>
<td>fontIndex</td>
<td>0</td>
<td>The font index in case the font name refers to a font collection. An index of 0 means the first font.</td>
</tr>
</tbody>
</table>

See font specification here:
http://www.monkeybreadsoftware.net/faq-chartdirectorfontspecification.shtml

28.53.9 setHeight(height as Integer)

Function: Sets the height of the text box.
Notes:

By default, the height of the text box is automatically determined to be just enough to hold the text. The setHeight method can be used to specified a fix height.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the text box in pixels.</td>
</tr>
</tbody>
</table>

28.53.10 setMargin(leftMargin as Integer, rightMargin as Integer, topMargin as Integer, bottomMargin as Integer)

Function: Sets the margins of the text box in pixels.
Notes:

The margins of a text box are the distances between the borders of the text box to the text inside. By default, the left and right margins are approximately half the font width, and the top and bottom margins are approximately 1/4 of the font height.

See also:

- 28.53.11 setMargin(m as Integer)
28.53. **CLASS CDTEXTBOXMBS**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>leftMargin</td>
<td>(Mandatory)</td>
<td>The left margin in pixels.</td>
</tr>
<tr>
<td>rightMargin</td>
<td>(Mandatory)</td>
<td>The right margin in pixels.</td>
</tr>
<tr>
<td>topMargin</td>
<td>(Mandatory)</td>
<td>The top margin in pixels.</td>
</tr>
<tr>
<td>bottomMargin</td>
<td>(Mandatory)</td>
<td>The bottom margin in pixels.</td>
</tr>
</tbody>
</table>

### 28.53.11 setMargin(m as Integer)


**Function:** Sets all margins (left, right, top, and bottom) of the text box to the same value.

**Notes:**

The margins of a text box are the distances between the borders of the text box to the text inside. By default, the left and right margins are approximately half the font width, and the top and bottom margins are approximately 1/4 of the font height.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>m</td>
<td>(Mandatory)</td>
<td>The left, right, top and bottom margins in pixels.</td>
</tr>
</tbody>
</table>

See also:

- 28.53.10 setMargin(leftMargin as Integer, rightMargin as Integer, topMargin as Integer, bottomMargin as Integer)

### 28.53.12 setMaxWidth(width as Integer)


**Function:** Sets the maximum width of the text box and wraps text if necessary.

**Notes:**

By default, the width of the text box is automatically determined to be the length of the text. This method can be used to limit the width of the text box. If the text requires a longer width for display, it will be wrapped into multiple lines.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>maxWidth</td>
<td>(Mandatory)</td>
<td>The maximum width of the text box in pixels.</td>
</tr>
</tbody>
</table>

### 28.53.13 setText(text as string)


**Function:** Sets the text to be shown in the text box.

**Notes:**

See ChartDirector Mark Up Language on how to embed special tags in the text for sophisticated formatting.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>text</td>
<td>(Mandatory)</td>
<td>The text to be displayed in the text box.</td>
</tr>
</tbody>
</table>

### 28.53.14 setTruncate(maxWidth as Integer, maxLines as Integer = 1)


**Function:** Sets the maximum number of lines in the text box, and truncate the text if it exceeds the line count.

**Notes:**

The maxWidth parameter of this method specifies the maximum width of the text box. If the text requires a longer width for display, it will be wrapped into multiple lines. However, if the number of lines exceed maxLines, the text will be truncated, with the last visible characters replaced with "...".

If maxLines is 1 (the default), the text will never be wrapped and will be truncated directly if it needs more than maxWidth for display.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>maxWidth</td>
<td>(Mandatory)</td>
<td>The maximum width of the text box in pixels.</td>
</tr>
<tr>
<td>maxLines</td>
<td>1</td>
<td>The maximum number of lines that the text box can have. The text will be truncated if it exceeds the maximum number of lines.</td>
</tr>
</tbody>
</table>

### 28.53.15 setWidth(width as Integer)


**Function:** Sets the width of the text box and wraps text if necessary.

**Notes:**

By default, the width of the text box is automatically determined to be the length of the text. The setWidth method can be used to specified a fix width. If the text requires a longer width for display, the text will be wrapped into multiple lines.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>width</td>
<td>(Mandatory)</td>
<td>The width of the text box in pixels.</td>
</tr>
</tbody>
</table>
28.54  class CDThreeDChartMBS

28.54.1  class CDThreeDChartMBS

**Function:** The ThreeDChart class is an abstract class containing methods that are common to all true 3D chart types.
**Notes:**
ThreeDChart is a subclass of BaseChart.
Subclass of the CDBaseChartMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

28.54.2  Methods

28.54.3  colorAxis as CDCColorAxisMBS

**Function:** Gets the ColorAxis object representing the color axis (color legend).
**Notes:** Returns the ColorAxis object representing the color axis.

28.54.4  Constructor

**Function:** The private constructor.
**Notes:**
The ThreeDChart class is an abstract class containing methods that are common to all true 3D chart types.
ThreeDChart is a subclass of BaseChart.
This constructor is private to make sure you don’t create an object from this class by error. Please use designated functions to create objects.

28.54.5  getXCoor(xValue as Double, yValue as Double, zValue as Double) as Integer

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Gets the x pixel coordinate of a point given its x, y and z data values.
**Notes:**
Note: You must call BaseChart.layout first before calling this method. ChartDirector needs to perform auto-scaling and layout the axis before it can compute pixel coordinates from data values.
CHAPTER 28. CHARTDIRECTOR

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>(Mandatory)</td>
<td>The x data value of the point.</td>
</tr>
<tr>
<td>y</td>
<td>(Mandatory)</td>
<td>The y data value of the point.</td>
</tr>
<tr>
<td>z</td>
<td>(Mandatory)</td>
<td>The z data value of the point.</td>
</tr>
</tbody>
</table>

Returns the x pixel coordinate of the point.

**28.54.6 getYCoor(xValue as Double, yValue as Double, zValue as Double) as Integer**

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Gets the y pixel coordinate of a point given its x, y and z data values.  
**Notes:**  
You must call BaseChart.layout first before calling this method. ChartDirector needs to perform auto-scaling and layout the axis before it can compute pixel coordinates from data values.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>(Mandatory)</td>
<td>The x data value of the point.</td>
</tr>
<tr>
<td>y</td>
<td>(Mandatory)</td>
<td>The y data value of the point.</td>
</tr>
<tr>
<td>z</td>
<td>(Mandatory)</td>
<td>The z data value of the point.</td>
</tr>
</tbody>
</table>

Returns the y pixel coordinate of the point.

**28.54.7 setColorAxis(x as Integer, y as Integer, alignment as Integer, length as Integer, orientation as Integer) as CDColorAxisMBS**

**Function:** Sets the position, length and orientation of the color axis (color legend).  
**Notes:**

**28.54.8 setPerspective(perspective as Double)**

**Function:** Sets the strength of the perspective effect.  
**Notes:**  
When taking the photograph of a scene, things closer to the camera are larger in the photograph, while things farther from the camera are smaller. For example, two trees of exactly the same height but at different distances from the camera will have different heights as measured in the photograph. This is known as
### 28.54. CLASS CDTHREEDCHARTMBS

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>(Mandatory)</td>
<td>The x-coordinate of the reference point used to position the color axis.</td>
</tr>
<tr>
<td>y</td>
<td>(Mandatory)</td>
<td>The y-coordinate of the reference point used to position the color axis.</td>
</tr>
<tr>
<td>alignment</td>
<td>(Mandatory)</td>
<td>The alignment of the color axis with respect to the reference point. For example, a value of TopLeft means the reference point is the top-left corner of the color axis. See Alignment Specification for supported alignment types.</td>
</tr>
<tr>
<td>length</td>
<td>(Mandatory)</td>
<td>The length of the color axis in pixels.</td>
</tr>
<tr>
<td>orientation</td>
<td>(Mandatory)</td>
<td>The orientation of the color axis. A value of Top/Bottom means the axis is horizontal, and the axis labels are at top/bottom side of the axis. A value of Left/Right means the axis is vertical, and the axis labels are at the left/right side of the axis.</td>
</tr>
</tbody>
</table>

This method configures the strength of the perspective effect for a ThreeDChart object. The nearer part of the plot region will be magnified, while the farther part will be reduced. The average size of the plot region will be approximately unchanged.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>perspective</td>
<td>(Mandatory)</td>
<td>The strength of the perspective effect. It approximately represents the maximum percentage magnification of the plot region, which is the same as the maximum percentage reduction. A value of 0 means no perspective effect. This value is usually between 0 to 100. If this method is never called, the default is 12.</td>
</tr>
</tbody>
</table>

### 28.54.9 setPlotRegion(cx as Integer, cy as Integer, xWidth as Integer, yDepth as Integer, zHeight as Integer)


**Function:** Sets the position of the plot region.

**Notes:**

The plot region is a 3D box, with x, y, and z axes along its border, using a right-hand cartesian coordinate system.

To create the chart image, you may imagine a camera taking a photograph of the box. The photograph can be taken at different angles, configurable with ThreeDChart.setViewAngle. The position of the plot region in the photograph is such that the center of the plot region is at a given point (cx, cy) on the image.
## 28.54.10 setViewAngle(elevation as Double, rotation as Double = 0, twist as Double = 0)


**Function:** Sets the 3D view angles.

**Notes:**

ChartDirector uses elevation, rotation and twist angles to specify the 3D view angles.

To explain the meaning of the angles, imagine the object being viewed is put at the center of a hollow sphere, and a camera (the view point) is put at the surface of the sphere, directed inwards to the center to look at the object.

The elevation angle refers to the "latitude" of the camera. An elevation angle of 0 degrees means the camera is at the "equator" pointing to the object from the side. An elevation angle of 90 degrees means the camera is at the "north pole" pointing down to the object. An angle elevation of -90 degrees means the camera is at the "south pole", pointing up to the object.

The rotation angle refers to the "longitude" of the camera. If the elevation is 0 degrees, and the rotation angle varies from 0 to 360 degrees, the camera will move around the "equator" in the easterly direction (counter-clockwise when viewed from the north pole).

The twist angle is for rotating the camera itself while still pointing to the object. For example, a twist angle of 90 degrees means you are holder the camera "vertically" instead of "horizontally". The rotation is clockwise from the view point of the person holding the camera.

Note that from the view point of the camera, the object will appear to be rotating in the opposite direction. For example, as the rotation angle rotates the camera counter-clockwise along the "equator", the object will appear to be rotating clockwise on the screen.

Note: The twist angle is not supported in the current version of ChartDirector. It should always be 0, and should be considered as a reserved argument for future use.
28.54.4 CLASS CDTHREECHARTMBS

### Argument Default Description
- **elevation** *(Mandatory)* The elevation angle in degrees.
- **rotation** 0 The rotation angle in degrees.
- **twist** 0 The twist angle in degrees.

---

### 28.54.11 setWallColor(xyColor as color, yzColor as color, zxColor as color, borderColor as color)


**Function:** Sets the color of the plot region walls.

**Notes:**
By default, the plot region walls are light grey (eeeeee) in color, with a grey (888888) border. This method can be used to modify the colors.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xyColor</td>
<td>(Mandatory)</td>
<td>The color of the xy wall.</td>
</tr>
<tr>
<td>yzColor</td>
<td>-1</td>
<td>The color of the yz wall. -1 means it is the same as xyColor.</td>
</tr>
<tr>
<td>zxColor</td>
<td>-1</td>
<td>The color of the zx wall. -1 means it is the same as xyColor.</td>
</tr>
<tr>
<td>borderColor</td>
<td>-1</td>
<td>The color of the wall border. -1 means to keep the existing value unchanged.</td>
</tr>
</tbody>
</table>

**See also:**
- 28.54.12 setWallColor(xyColor as Integer, yzColor as Integer = -1, zxColor as Integer = -1, borderColor as Integer = -1)

---

### 28.54.12 setWallColor(xyColor as Integer, yzColor as Integer = -1, zxColor as Integer = -1, borderColor as Integer = -1)


**Function:** Sets the color of the plot region walls.

**Notes:**
By default, the plot region walls are light grey (eeeeee) in color, with a grey (888888) border. This method can be used to modify the colors.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xyColor</td>
<td>(Mandatory)</td>
<td>The color of the xy wall.</td>
</tr>
<tr>
<td>yzColor</td>
<td>-1</td>
<td>The color of the yz wall. -1 means it is the same as xyColor.</td>
</tr>
<tr>
<td>zxColor</td>
<td>-1</td>
<td>The color of the zx wall. -1 means it is the same as xyColor.</td>
</tr>
<tr>
<td>borderColor</td>
<td>-1</td>
<td>The color of the wall border. -1 means to keep the existing value unchanged.</td>
</tr>
</tbody>
</table>

**See also:**
• 28.54.11 `setWallColor(xyColor as color, yzColor as color, zxColor as color, borderColor as color)` 4957

28.54.13 `setWallGrid(majorXGridColor as color, majorYGridColor as color, majorZGridColor as color, minorXGridColor as color, minorYGridColor as color, minorZGridColor as color)`


**Function:** Sets the grid line colors on plot region walls.

**Notes:**

The grid lines on the walls are associated with the ticks on the x, y and z axes. Major ticks associate with major grid lines. Minor ticks associate with minor grid lines. By default, the major grid lines are light grey (cccccc), and the minor grid lines are lighter grey (dddddd). This method can be used to modify the grid line colors.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>majorXGridColor</td>
<td>(Mandatory)</td>
<td>The color of the major x-axis grid lines on the walls.</td>
</tr>
<tr>
<td>majorYGridColor</td>
<td>-1</td>
<td>The color of the major y-axis grid lines on the walls. -1 means it is the same as the majorXGridColor.</td>
</tr>
<tr>
<td>majorZGridColor</td>
<td>-1</td>
<td>The color of the major z-axis grid lines on the walls. -1 means it is the same as the majorXGridColor.</td>
</tr>
<tr>
<td>minorXGridColor</td>
<td>-1</td>
<td>The color of the minor x-axis grid lines on the walls. -1 means it is the same as the majorXGridColor.</td>
</tr>
<tr>
<td>minorYGridColor</td>
<td>-1</td>
<td>The color of the minor y-axis grid lines on the walls. -1 means it is the same as the majorYGridColor.</td>
</tr>
<tr>
<td>minorZGridColor</td>
<td>-1</td>
<td>The color of the minor z-axis grid lines on the walls. -1 means it is the same as the majorZGridColor.</td>
</tr>
</tbody>
</table>

See also:

• 28.54.14 `setWallGrid(majorXGridColor as Integer, majorYGridColor as Integer = -1, majorZGridColor as Integer = -1, minorXGridColor as Integer = -1, minorYGridColor as Integer = -1, minorZGridColor as Integer = -1)` 4958

28.54.14 `setWallGrid(majorXGridColor as Integer, majorYGridColor as Integer = -1, majorZGridColor as Integer = -1, minorXGridColor as Integer = -1, minorYGridColor as Integer = -1, minorZGridColor as Integer = -1)`


**Function:** Sets the grid line colors on plot region walls.

**Notes:**

The grid lines on the walls are associated with the ticks on the x, y and z axes. Major ticks associate with major grid lines. Minor ticks associate with minor grid lines. By default, the major grid lines are light grey (cccccc), and the minor grid lines are lighter grey (dddddd). This method can be used to modify the grid line colors.
(cccccc), and the minor grid lines are lighter grey (dddddd). This method can be used to modify the grid line colors.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>majorXGridColor</td>
<td>(Mandatory)</td>
<td>The color of the major x-axis grid lines on the walls.</td>
</tr>
<tr>
<td>majorYGridColor</td>
<td>-1</td>
<td>The color of the major y-axis grid lines on the walls. -1 means it is the same as the majorXGridColor.</td>
</tr>
<tr>
<td>majorZGridColor</td>
<td>-1</td>
<td>The color of the major z-axis grid lines on the walls. -1 means it is the same as the majorXGridColor.</td>
</tr>
<tr>
<td>minorXGridColor</td>
<td>-1</td>
<td>The color of the minor x-axis grid lines on the walls. -1 means it is the same as the majorXGridColor.</td>
</tr>
<tr>
<td>minorYGridColor</td>
<td>-1</td>
<td>The color of the minor y-axis grid lines on the walls. -1 means it is the same as the majorYGridColor.</td>
</tr>
<tr>
<td>minorZGridColor</td>
<td>-1</td>
<td>The color of the minor z-axis grid lines on the walls. -1 means it is the same as the majorZGridColor.</td>
</tr>
</tbody>
</table>

See also:

- 28.54.13 setWallGrid(majorXGridColor as color, majorYGridColor as color, majorZGridColor as color, minorXGridColor as color, minorYGridColor as color, minorZGridColor as color)

28.54.15 setWallThickness(xyThickness as Integer, yzThickness as Integer = -1, zxThickness as Integer = -1)


**Function:** Sets the thickness of the plot region walls.

**Notes:**

By default, the plot region walls are 10 pixels thick. This method can be used to modify the thickness.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xyThickness</td>
<td>(Mandatory)</td>
<td>The thickness of the xy wall in pixels.</td>
</tr>
<tr>
<td>yzThickness</td>
<td>-1</td>
<td>The thickness of the yz wall in pixels. -1 means it is the same as xyThickness.</td>
</tr>
<tr>
<td>zxThickness</td>
<td>-1</td>
<td>The thickness of the zx wall in pixels. -1 means it is the same as xyThickness.</td>
</tr>
</tbody>
</table>

28.54.16 setWallVisibility(xyVisible as boolean, yzVisible as boolean, zxVisible as boolean)


**Function:** Shows or hides the plot region walls.

**Notes:**

By default, all walls are visible. This method can be used to hide some or all of the walls.
CHAPTER 28. CHARTDIRECTOR

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xyVisible</td>
<td>(Mandatory)</td>
<td>A true value means the xy wall is visible. A false value means the xy wall is hidden.</td>
</tr>
<tr>
<td>yzVisible</td>
<td>(Mandatory)</td>
<td>A true value means the yz wall is visible. A false value means the yz wall is hidden.</td>
</tr>
<tr>
<td>zxVisible</td>
<td>(Mandatory)</td>
<td>A true value means the zx wall is visible. A false value means the zx wall is hidden.</td>
</tr>
</tbody>
</table>

28.54.17  setZAxisPos(pos as Integer)


**Function:** Sets the position of the z-axis.

**Notes:**
In a ThreeDChart object, the z-axis can be drawn either on the left side or the right side. By default, ChartDirector will draw the z-axis on the side that is nearer to the viewer.

This method can be used to specify which side the z-axis should be drawn.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>pos</td>
<td>(Mandatory)</td>
<td>The position of the z-axis, which must be either Left or Right.</td>
</tr>
</tbody>
</table>

28.54.18  Properties

28.54.19  xAxis as CDAxisMBS


**Function:** Retrieves the x-axis of the ThreeDChart object.

**Notes:**
Returns the Axis object representing the x-axis of the ThreeDChart object.
(Read only property)

28.54.20  yAxis as CDAxisMBS


**Function:** Retrieves the y-axis of the ThreeDChart object.

**Notes:**
Returns the Axis object representing the y-axis of the ThreeDChart object.
(Read only property)
28.54.21  zAxis as CDAxisMBS

**Function:** Retrieves the z-axis of the ThreeDChart object.

**Notes:**

Returns the Axis object representing the z-axis of the ThreeDChart object.
(Read only property)
28.55 class CDThreeDScatterChartMBS

28.55.1 class CDThreeDScatterChartMBS


**Function:** The ThreeDScatterChart class represents 3D scatter charts.

**Notes:**
ThreeDScatterChart is a subclass of ThreeDChart. Subclass of the CDThreeDChartMBS class.

28.55.2 Methods

28.55.3 `addScatterGroup(xData() as Double, yData() as Double, zData() as Double, name as string = "", symbol as Integer = 7, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDThreeDScatterGroupMBS`


**Function:** Adds a group of scatter symbols to the ThreeDScatterChart.

**Notes:**
A scatter chart can be considered as a special configuration of a line chart, in the data symbols are enabled and the line width is set to zero. Therefore only the data symbols are visible and the chart appears as scattered.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the x values of the data points.</td>
</tr>
<tr>
<td>yData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the y values of the data points.</td>
</tr>
<tr>
<td>zData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the z values of the data points.</td>
</tr>
<tr>
<td>name</td>
<td>&quot;&quot;</td>
<td>The name of the symbol group. The name will be used in the legend box, if one is available. An empty string means the symbol group has no name.</td>
</tr>
<tr>
<td>symbol</td>
<td>CircleShape</td>
<td>One of the predefined symbol constants to specify the symbol to use. (See Shape Specification for available built-in shapes.)</td>
</tr>
<tr>
<td>symbolSize</td>
<td>5</td>
<td>The width and height of the symbol in pixels.</td>
</tr>
<tr>
<td>fillColor</td>
<td>-1</td>
<td>The color used to fill the symbol. -1 means that the color is automatically selected from the palette. SameAsMainColor means the color is based on the z value of the symbol as according to the ColorAxis (accessible via ThreeDChart.colorAxis).</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The edge color used to draw the edge of the symbol. -1 means using LineColor as the edge color.</td>
</tr>
</tbody>
</table>

Returns a ThreeDScatterGroup object representing the symbol group created.

See also:
28.55.4 addScatterGroup(xData() as Double, yData() as Double, zData() as Double, name as string, symbol as Integer, symbolSize as Integer, fillColor as color, edgeColor as color) as CDThreeDScatterGroupMBS


Function: Adds a group of scatter symbols to the ThreeDScatterChart.

Notes:

A scatter chart can be considered as a special configuration of a line chart, in the data symbols are enabled and the line width is set to zero. Therefore only the data symbols are visible and the chart appears as scattered.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the x values of the data points.</td>
</tr>
<tr>
<td>yData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the y values of the data points.</td>
</tr>
<tr>
<td>zData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the z values of the data points.</td>
</tr>
<tr>
<td>name</td>
<td>&quot;&quot;</td>
<td>The name of the symbol group. The name will be used in the legend box, if one is available. An empty string means the symbol group has no name.</td>
</tr>
<tr>
<td>symbol</td>
<td>CircleShape</td>
<td>One of the predefined symbol constants to specify the symbol to use. (See Shape Specification for available built-in shapes.)</td>
</tr>
<tr>
<td>symbolSize</td>
<td>5</td>
<td>The width and height of the symbol in pixels.</td>
</tr>
<tr>
<td>fillColor</td>
<td>-1</td>
<td>The color used to fill the symbol. -1 means that the color is automatically selected from the palette. SameAsMainColor means the color is based on the z value of the symbol as according to the ColorAxis (accessible via ThreeDChart.colorAxis).</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The edge color used to draw the edge of the symbol. -1 means using LineColor as the edge color.</td>
</tr>
</tbody>
</table>

Returns a ThreeDScatterGroup object representing the symbol group created.

See also:

- 28.55.3 addScatterGroup(xData() as Double, yData() as Double, zData() as Double, name as string = "", symbol as Integer = 7, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDThreeDScatterGroupMBS
28.55.5 Constructor(width as Integer = 640, height as Integer = 480, bgColor as Integer = & hffff0000, edgeColor as Integer = & hff000000, raisedEffect as Integer = 0)


**Function:** Creates a new ThreeDScatterChart object.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>width</td>
<td>(Mandatory)</td>
<td>The width of the chart in pixels.</td>
</tr>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the chart in pixels.</td>
</tr>
<tr>
<td>bgColor</td>
<td>BackgroundColor</td>
<td>The background color of the chart.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>Transparent</td>
<td>The edge color of the chart.</td>
</tr>
<tr>
<td>raisedEffect</td>
<td>0</td>
<td>The 3D border width. For positive values, the border will appear raised. For negative values, the border will appear depressed. A zero value means the border will appear flat.</td>
</tr>
</tbody>
</table>

See also:

- 28.55.6 Constructor(width as Integer, height as Integer, bgColor as color, edgeColor as color, raisedEffect as Integer = 0)

28.55.6 Constructor(width as Integer, height as Integer, bgColor as color, edgeColor as color, raisedEffect as Integer = 0)


**Function:** Creates a new ThreeDScatterChart object.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>width</td>
<td>(Mandatory)</td>
<td>The width of the chart in pixels.</td>
</tr>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the chart in pixels.</td>
</tr>
<tr>
<td>bgColor</td>
<td>BackgroundColor</td>
<td>The background color of the chart.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>Transparent</td>
<td>The edge color of the chart.</td>
</tr>
<tr>
<td>raisedEffect</td>
<td>0</td>
<td>The 3D border width. For positive values, the border will appear raised. For negative values, the border will appear depressed. A zero value means the border will appear flat.</td>
</tr>
</tbody>
</table>

See also:

- 28.55.5 Constructor(width as Integer = 640, height as Integer = 480, bgColor as Integer = & hffff0000, edgeColor as Integer = & hff000000, raisedEffect as Integer = 0)
28.56.  CLASS CDTHREEDSCATTERGROUPMBS

28.56  class CDThreeDScatterGroupMBS

28.56.1  class CDThreeDScatterGroupMBS

**Function:** The ThreeDScatterGroup class represents a group of scatter symbols in a ThreeDScatterChart object.
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

28.56.2  Methods

28.56.3  Constructor

**Function:** The private constructor.

28.56.4  setDataSymbol(DrawArea as CDDrawAreaMBS)

**Function:** Uses a DrawArea object as the graphics symbol to plot the data points.
**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>obj</td>
<td>(Mandatory)</td>
<td>A DrawArea object to be used as the symbol.</td>
</tr>
</tbody>
</table>

See also:

- 28.56.5 setDataSymbol(file as folderitem) 4966
- 28.56.6 setDataSymbol(ImageFilePath as string) 4966
- 28.56.7 setDataSymbol(pic as Picture) 4967
- 28.56.8 setDataSymbol(polygon() as Integer, size as Integer = 11, fillColor as color, edgeColor as color) 4968
- 28.56.9 setDataSymbol(polygon() as Integer, size as Integer = 11, fillColor as Integer = -1, edgeColor as Integer = -1) 4969
- 28.56.10 setDataSymbol(symbol as Integer, size as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1, lineWidth as Integer = 1) 4970
- 28.56.11 setDataSymbol(symbol as Integer, size as Integer, fillColor as color) 4970
• 28.56.12 setDataSymbol(symbol as Integer, size as Integer, fillColor as color, edgeColor as color, lineWidth as Integer = 1)

28.56.5  setDataSymbol(file as folderitem)

MBS ChartDirector Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Load an image from a file and use it as the graphics symbol to plot the data points.

**Notes:**
ChartDirector will automatically detect the image file format using the file extension, which must either png, jpg, jpeg, gif, wbmp or wmp (case insensitive).

Please refer to BaseChart.setSearchPath on the directory that ChartDirector will search for the file.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>image</td>
<td>(Mandatory)</td>
<td>The filename of the image file. The image type is determined based on file extension, which must be png, jpg/jpeg, gif or wbmp/wmp.</td>
</tr>
</tbody>
</table>

See also:

• 28.56.4 setDataSymbol(DrawArea as CDDrawAreaMBS)
• 28.56.6 setDataSymbol(ImageFilePath as string)
• 28.56.7 setDataSymbol(pic as Picture)
• 28.56.8 setDataSymbol(polygon() as Integer, size as Integer = 11, fillColor as color, edgeColor as color)
• 28.56.9 setDataSymbol(polygon() as Integer, size as Integer = 11, fillColor as Integer = -1, edgeColor as Integer = -1)
• 28.56.10 setDataSymbol(symbol as Integer, size as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1, lineWidth as Integer = 1)
• 28.56.11 setDataSymbol(symbol as Integer, size as Integer, fillColor as color)
• 28.56.12 setDataSymbol(symbol as Integer, size as Integer, fillColor as color, edgeColor as color, lineWidth as Integer = 1)

28.56.6  setDataSymbol(ImageFilePath as string)

MBS ChartDirector Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Load an image from a file and use it as the graphics symbol to plot the data points.

**Notes:**
ChartDirector will automatically detect the image file format using the file extension, which must either png, jpg, jpeg, gif, wbmp or wbmp (case insensitive).

Please refer to BaseChart setSearchPath on the directory that ChartDirector will search for the file.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>image</td>
<td>(Mandatory)</td>
<td>The filename of the image file. The image type is determined based on file extension, which must be png, jpg/jpeg, gif or wbmp/wbmp.</td>
</tr>
</tbody>
</table>

See also:

- 28.56.4 setDataSymbol(DrawArea as CDDrawAreaMBS) 4965
- 28.56.5 setDataSymbol(file as folderitem) 4966
- 28.56.7 setDataSymbol(pic as Picture) 4967
- 28.56.8 setDataSymbol(polygon() as Integer, size as Integer = 11, fillColor as color, edgeColor as color) 4968
- 28.56.9 setDataSymbol(polygon() as Integer, size as Integer = 11, fillColor as Integer = -1, edgeColor as Integer = -1) 4969
- 28.56.10 setDataSymbol(symbol as Integer, size as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1, lineWidth as Integer = 1) 4970
- 28.56.11 setDataSymbol(symbol as Integer, size as Integer, fillColor as color) 4970
- 28.56.12 setDataSymbol(symbol as Integer, size as Integer, fillColor as color, edgeColor as color, lineWidth as Integer = 1) 4971

### 28.56.7 setDataSymbol(pic as Picture)

MBS ChartDirector Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Uses a picture object as the graphics symbol to plot the data points.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>obj</td>
<td>(Mandatory)</td>
<td>A picture object to be used as the symbol.</td>
</tr>
</tbody>
</table>

See also:

- 28.56.4 setDataSymbol(DrawArea as CDDrawAreaMBS) 4965
- 28.56.5 setDataSymbol(file as folderitem) 4966
28.56.8 **setDataSymbol(polygon() as Integer, size as Integer = 11, fillColor as color, edgeColor as color)**


**Function:** Uses a custom polygon as the graphics symbol to plot the data points.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>polygon</td>
<td>(Mandatory)</td>
<td>An array of integers representing the coordinates the polygon vertices. See Shape Specification on how the custom shape is defined.</td>
</tr>
<tr>
<td>size</td>
<td>11</td>
<td>The nominal width and height of the symbol in pixels.</td>
</tr>
<tr>
<td>fillColor</td>
<td>-1</td>
<td>The color used to fill the symbol. -1 means that the color is automatically selected from the palette. SameAsMainColor means the color is based on the z value of the symbol as according to the ColorAxis (accessible via ThreeD-Chart.colorAxis).</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The edge color used to draw the edge of the symbol. -1 means using LineColor as the edge color.</td>
</tr>
</tbody>
</table>

See also:

- 28.56.4 setDataSymbol(DrawArea as CDDrawAreaMBS)
- 28.56.5 setDataSymbol(file as folderitem)
- 28.56.6 setDataSymbol(ImageFilePath as string)
- 28.56.7 setDataSymbol(pic as Picture)
- 28.56.9 setDataSymbol(polygon() as Integer, size as Integer = 11, fillColor as Integer = -1, edgeColor as Integer = -1)
- 28.56.10 setDataSymbol(symbol as Integer, size as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1, lineWidth as Integer = 1)
28.56. **CLASS CDTHREEDSCATTERGROUPMBS**

- 28.56.11 `setDataSymbol(symbol as Integer, size as Integer, fillColor as color)`
- 28.56.12 `setDataSymbol(symbol as Integer, size as Integer, fillColor as color, edgeColor as color, lineWidth as Integer = 1)`

**28.56.9 setDataSymbol(polygon() as Integer, size as Integer = 11, fillColor as Integer = -1, edgeColor as Integer = -1)**


**Function:** Uses a custom polygon as the graphics symbol to plot the data points.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>polygon</td>
<td>(Mandatory)</td>
<td>An array of integers representing the coordinates the polygon vertices. See Shape Specification on how the custom shape is defined.</td>
</tr>
<tr>
<td>size</td>
<td>11</td>
<td>The nominal width and height of the symbol in pixels.</td>
</tr>
<tr>
<td>fillColor</td>
<td>-1</td>
<td>The color used to fill the symbol. -1 means that the color is automatically selected from the palette. SameAsMainColor means the color is based on the z value of the symbol as according to the ColorAxis (accessible via ThreeD-Chart.colorAxis).</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The edge color used to draw the edge of the symbol. -1 means using LineColor as the edge color.</td>
</tr>
</tbody>
</table>

See also:

- 28.56.4 `setDataSymbol(DrawArea as CDDrawAreaMBS)`
- 28.56.5 `setDataSymbol(file as folderitem)`
- 28.56.6 `setDataSymbol(ImageFilePath as string)`
- 28.56.7 `setDataSymbol(pic as Picture)`
- 28.56.8 `setDataSymbol(polygon() as Integer, size as Integer = 11, fillColor as color, edgeColor as color)`
- 28.56.10 `setDataSymbol(symbol as Integer, size as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1, lineWidth as Integer = 1)`
- 28.56.11 `setDataSymbol(symbol as Integer, size as Integer, fillColor as color)`
- 28.56.12 `setDataSymbol(symbol as Integer, size as Integer, fillColor as color, edgeColor as color, lineWidth as Integer = 1)`
28.56.10  setDataSymbol(symbol as Integer, size as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1, lineWidth as Integer = 1)

Function: Uses a custom polygon as the graphics symbol to plot the data points.
Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>polygon</td>
<td>(Mandatory)</td>
<td>An array of integers representing the coordinates the polygon vertices. See Shape Specification on how the custom shape is defined.</td>
</tr>
<tr>
<td>size</td>
<td>11</td>
<td>The nominal width and height of the symbol in pixels.</td>
</tr>
<tr>
<td>fillColor</td>
<td>-1</td>
<td>The color used to fill the symbol. -1 means that the color is automatically selected from the palette. SameAsMainColor means the color is based on the z value of the symbol as according to the ColorAxis (accessible via ThreeD-Chart.colorAxis).</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The edge color used to draw the edge of the symbol. -1 means using LineColor as the edge color.</td>
</tr>
</tbody>
</table>

See also:

- 28.56.4 setDataSymbol(DrawArea as CDDrawAreaMBS) 4965
- 28.56.5 setDataSymbol(file as folderitem) 4966
- 28.56.6 setDataSymbol(ImageFilePath as string) 4966
- 28.56.7 setDataSymbol(pic as Picture) 4967
- 28.56.8 setDataSymbol(polygon() as Integer, size as Integer = 11, fillColor as color, edgeColor as color) 4968
- 28.56.9 setDataSymbol(polygon() as Integer, size as Integer = 11, fillColor as Integer = -1, edgeColor as Integer = -1) 4969
- 28.56.11 setDataSymbol(symbol as Integer, size as Integer, fillColor as color) 4970
- 28.56.12 setDataSymbol(symbol as Integer, size as Integer, fillColor as color, edgeColor as color, lineWidth as Integer = 1) 4971

28.56.11  setDataSymbol(symbol as Integer, size as Integer, fillColor as color)

Function: Uses a custom polygon as the graphics symbol to plot the data points.
Notes:
See also:

- 28.56.4 setDataSymbol(DrawArea as CDDrawAreaMBS) 4965
### 28.56. CLASS CDTHREEDSCATTERGROUPMBS

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>polygon</td>
<td>(Mandatory)</td>
<td>An array of integers representing the coordinates the polygon vertices. See Shape Specification on how the custom shape is defined.</td>
</tr>
<tr>
<td>size</td>
<td>11</td>
<td>The nominal width and height of the symbol in pixels.</td>
</tr>
<tr>
<td>fillColor</td>
<td>-1</td>
<td>The color used to fill the symbol. -1 means that the color is automatically selected from the palette. SameAsMainColor means the color is</td>
</tr>
<tr>
<td></td>
<td></td>
<td>based on the z value of the symbol as according to the ColorAxis (accessible via ThreeDChart.colorAxis).</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The edge color used to draw the edge of the symbol. -1 means using LineColor as the edge color.</td>
</tr>
</tbody>
</table>

- 28.56.5 setDataSymbol(file as folderitem)
- 28.56.6 setDataSymbol(ImageFilePath as string)
- 28.56.7 setDataSymbol(pic as Picture)
- 28.56.8 setDataSymbol(polygon() as Integer, size as Integer = 11, fillColor as color, edgeColor as color)

- 28.56.9 setDataSymbol(polygon() as Integer, size as Integer = 11, fillColor as Integer = -1, edgeColor as Integer = -1)
- 28.56.10 setDataSymbol(symbol as Integer, size as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1, lineWidth as Integer = 1)
- 28.56.12 setDataSymbol(symbol as Integer, size as Integer, fillColor as color, edgeColor as color, lineWidth as Integer = 1)

**28.56.12 setDataSymbol(symbol as Integer, size as Integer, fillColor as color, edgeColor as color, lineWidth as Integer = 1)**


**Function:** Uses a custom polygon as the graphics symbol to plot the data points.

**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>polygon</td>
<td>(Mandatory)</td>
<td>An array of integers representing the coordinates the polygon vertices. See Shape Specification on how the custom shape is defined.</td>
</tr>
<tr>
<td>size</td>
<td>11</td>
<td>The nominal width and height of the symbol in pixels.</td>
</tr>
<tr>
<td>fillColor</td>
<td>-1</td>
<td>The color used to fill the symbol. -1 means that the color is automatically selected from the palette. SameAsMainColor means the color is</td>
</tr>
<tr>
<td></td>
<td></td>
<td>based on the z value of the symbol as according to the ColorAxis (accessible via ThreeDChart.colorAxis).</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The edge color used to draw the edge of the symbol. -1 means using LineColor as the edge color.</td>
</tr>
</tbody>
</table>

See also:
• 28.56.4 setDataSymbol(DrawArea as CDDrawAreaMBS) 4965
• 28.56.5 setDataSymbol(file as folderitem) 4966
• 28.56.6 setDataSymbol(ImageFilePath as string) 4966
• 28.56.7 setDataSymbol(pic as Picture) 4967
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• 28.56.9 setDataSymbol(polygon() as Integer, size as Integer = 11, fillColor as Integer = -1, edgeColor as Integer = -1) 4969
• 28.56.10 setDataSymbol(symbol as Integer, size as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1, lineWidth as Integer = 1) 4970
• 28.56.11 setDataSymbol(symbol as Integer, size as Integer, fillColor as color) 4970

28.56.13 setDropLine

**Function:** Sets the drop line color and width.  
**Notes:**  
Drop lines are vertical lines that join the data points to the bottom of the plot region. It helps in visualizing the height of the data points.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>dropLineColor</td>
<td>(Mandatory)</td>
<td>The color of the drop line.</td>
</tr>
<tr>
<td>dropLineWidth</td>
<td>1</td>
<td>The width of the drop line.</td>
</tr>
</tbody>
</table>

See also:

• 28.56.14 setDropLine(dropLineColor as color, dropLineWidth as Integer = 1) 4972
• 28.56.15 setDropLine(dropLineColor as Integer, dropLineWidth as Integer = 1) 4973

28.56.14 setDropLine(dropLineColor as color, dropLineWidth as Integer = 1)

**Function:** Sets the drop line color and width.  
**Notes:**  
Drop lines are vertical lines that join the data points to the bottom of the plot region. It helps in visualizing the height of the data points.

See also:
28.56. CLASS CDTHREEDSCATTERGROUPMBS

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>dropLineColor</td>
<td>(Mandatory)</td>
<td>The color of the drop line.</td>
</tr>
<tr>
<td>dropLineWidth</td>
<td>1</td>
<td>The width of the drop line.</td>
</tr>
</tbody>
</table>

- 28.56.13 setDropLine
- 28.56.15 setDropLine(dropLineColor as Integer, dropLineWidth as Integer = 1)

28.56.15 setDropLine(dropLineColor as Integer, dropLineWidth as Integer = 1)


**Function:** Sets the drop line color and width.

**Notes:**

Drop lines are vertical lines that join the data points to the bottom of the plot region. It helps in visualizing the height of the data points.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>dropLineColor</td>
<td>(Mandatory)</td>
<td>The color of the drop line.</td>
</tr>
<tr>
<td>dropLineWidth</td>
<td>1</td>
<td>The width of the drop line.</td>
</tr>
</tbody>
</table>

See also:
- 28.56.13 setDropLine
- 28.56.14 setDropLine(dropLineColor as color, dropLineWidth as Integer = 1)

28.56.16 setLegendIcon(width as Integer, height as Integer = -1, color as Integer = -1)


**Function:** Uses one of the built-in symbols as the graphics symbol to plot the data points.

**Notes:**

See also:
- 28.56.17 setLegendIcon(width as Integer, height as Integer, color as color)

28.56.17 setLegendIcon(width as Integer, height as Integer, color as color)


**Function:** Uses one of the built-in symbols as the graphics symbol to plot the data points.

**Notes:**
CHAPTER 28. CHARTDIRECTOR

Argument | Default | Description
--- | --- | ---
symbol | (Mandatory) | One of the predefined shape constants representing the symbol shape. See Shape Specification for the available built-in shapes.
size | 5 | The width and height of the symbol in pixels.
fillColor | -1 | The color used to fill the symbol. -1 means that the color is automatically selected from the palette. kSameAsMainColor means the color is based on the z value of the symbol as according to the ColorAxis (accessible via ThreeDChart.colorAxis).
edgeColor | -1 | The edge color used to draw the edge of the symbol. -1 means using LineColor as the edge color.
lineWidth | 1 | The line width used for drawing the symbols.

See also:

- 28.56.16 setLegendIcon(width as Integer, height as Integer = -1, color as Integer = -1) 4973

28.56.18 setSymbolOffset(offsetX as Integer, offsetY as Integer)

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Offset the symbols in the x and y directions in pixel unit.
Notes:

Argument | Default | Description
--- | --- | ---
xOffset | (Mandatory) | The x offset in pixels. A positive value mean shifting to the right.
yOffset | (Mandatory) | The y offset in pixels. A positive value mean shifting to the bottom.
28.57. class CDtrendLayerMBS

28.57.1 class CDtrendLayerMBS


Function: The TrendLayer class represents trend layers.

Notes:
The trend layer performs linear regression analysis on the data points, and represents the result as a best fit straight line with optional confidence and prediction bands.

In linear regression analysis, the data points are assumed to be related by:

\[ y = m \times x + c + \text{err} \]

where \( m \) and \( c \) are constants, and \( \text{err} \) is a random variable.

Linear regression analysis estimates \( m \), \( c \) and \( \text{err} \) based on available data using the least square method. Using estimated values of \( m \) and \( c \), the line \( y = m \times x + c \) are plotted as the best fit straight line based on available data.

However, as \( m \) and \( c \) are estimations based on available data, it may not be exactly equal to the "real" \( m \) and \( c \). In ChartDirector, the uncertainties are represented visually as a confidence band around the regression line. For example, the 95% confidence band means there are 95% probability that the "real" line is in that band.

To predict a data point (infer \( y \) given \( x \)), we can use the formula:

\[ y = m \times x + c + \text{err} \]

based on estimated values of \( m \), \( c \) and \( \text{err} \).

The uncertainties of the data point is contributed by the uncertainties in \( m \) and \( c \), as well as \( \text{err} \). In ChartDirector, the uncertainties of the data points are represented visually as a prediction band around the regression line. For example, a 95% prediction band means there are 95% probability that a data point will be in that band.

The prediction band is always wider than the confidence band. It is because the uncertainties of the regression line is contributed by \( m \) and \( c \), while the uncertainties of the data points are contributed by \( m \), \( c \) and \( \text{err} \). The \( \text{err} \) term makes the data points less certain that the regression line.

Subclass of the CDLayerMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.
28.57.2 Methods

28.57.3 addConfidenceBand(confidence as Double, upperFillColor as color, upperEdgeColor as color, upperLineWidth as Integer, lowerFillColor as color, lowerEdgeColor as color, lowerLineWidth as Integer = -1)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Same as the other addConfidenceBand method, but uses color instead of integer data type for passing color values.

See also:

- 28.57.4 addConfidenceBand(confidence as Double, upperFillColor as Integer, upperEdgeColor as Integer = & hFF000000, upperLineWidth as Integer = -1, lowerFillColor as Integer = -1, lowerEdgeColor as Integer = -1, lowerLineWidth as Integer = -1) 4976

28.57.4 addConfidenceBand(confidence as Double, upperFillColor as Integer, upperEdgeColor as Integer = & hFF000000, upperLineWidth as Integer = -1, lowerFillColor as Integer = -1, lowerEdgeColor as Integer = -1, lowerLineWidth as Integer = -1)


Function: Adds a confidence band to the trend layer.

Notes:

Please refer to the description of TrendLayer on what is a confidence band.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>confidence</td>
<td>(Mandatory)</td>
<td>The confidence level - must be between 0 - 1.</td>
</tr>
<tr>
<td>upperFillColor</td>
<td>(Mandatory)</td>
<td>The fill color for the upper side of the confidence band (the portion that is above the regression line).</td>
</tr>
<tr>
<td>upperEdgeColor</td>
<td>Transparent</td>
<td>The border color for the upper side of the confidence band (the portion that is above the regression line).</td>
</tr>
<tr>
<td>upperLineWidth</td>
<td>1</td>
<td>The border width for the upper side of the confidence band (the portion that is above the regression line).</td>
</tr>
<tr>
<td>lowerFillColor</td>
<td>-1</td>
<td>The fill color for the lower side of the confidence band (the portion that is below the regression line). -1 means the color is the same as upperFillColor.</td>
</tr>
<tr>
<td>lowerEdgeColor</td>
<td>-1</td>
<td>The border color for the lower side of the confidence band (the portion that is below the regression line). -1 means the color is the same as upperEdgeColor.</td>
</tr>
<tr>
<td>lowerLineWidth</td>
<td>-1</td>
<td>The border width for the lower side of the confidence band (the portion that is below the regression line). -1 means the color is the same as upperLineWidth.</td>
</tr>
</tbody>
</table>

See also:

- 28.57.3 addConfidenceBand(confidence as Double, upperFillColor as color, upperEdgeColor as color, upperLineWidth as Integer, lowerFillColor as color, lowerEdgeColor as color, lowerLineWidth as Integer = -1) 4976
28.57.5  addPredictionBand(\text{confidence as Double, upperFillColor as color, upperEdgeColor as color, upperLineWidth as Integer, lowerFillColor as color, lowerEdgeColor as color, lowerLineWidth as Integer = -1})

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

\textbf{Function:} Same as the other addPredictionBand method, but uses color instead of integer data type for passing color values.

See also:

\begin{itemize}
  \item 28.57.6 addPredictionBand(\text{confidence as Double, upperFillColor as Integer, upperEdgeColor as Integer = \& hFF000000, upperLineWidth as Integer = -1, lowerFillColor as Integer = -1, lowerEdgeColor as Integer = -1, lowerLineWidth as Integer = -1})
\end{itemize}

28.57.6  addPredictionBand(\text{confidence as Double, upperFillColor as Integer, upperEdgeColor as Integer = \& hFF000000, upperLineWidth as Integer = -1, lowerFillColor as Integer = -1, lowerEdgeColor as Integer = -1, lowerLineWidth as Integer = -1})


\textbf{Function:} Adds a prediction band to the trend layer.

\textbf{Notes:}

Please refer to the description of TrendLayer on what is a prediction band.

\begin{tabular}{|c|c|c|}
\hline
Argument & Default & Description \\
\hline
\text{confidence} & (Mandatory) & The confidence level - must be between 0 - 1. \\
\hline
\text{upperFillColor} & (Mandatory) & The fill color for the upper side of the prediction band (the portion that is above the regression line). \\
\hline
\text{upperEdgeColor} & Transparent & The border color for the upper side of the prediction band (the portion that is above the regression line). \\
\hline
\text{upperLineWidth} & 1 & The border width for the upper side of the prediction band (the portion that is above the regression line). \\
\hline
\text{lowerFillColor} & -1 & The fill color for the lower side of the prediction band (the portion that is below the regression line). -1 means the color is the same as upperFillColor. \\
\hline
\text{lowerEdgeColor} & -1 & The border color for the lower side of the prediction band (the portion that is below the regression line). -1 means the color is the same as upperEdgeColor. \\
\hline
\text{lowerLineWidth} & -1 & The border width for the lower side of the prediction band (the portion that is below the regression line). -1 means the color is the same as upperLineWidth. \\
\hline
\end{tabular}

See also:

\begin{itemize}
  \item 28.57.5 addPredictionBand(\text{confidence as Double, upperFillColor as color, upperEdgeColor as color, upperLineWidth as Integer, lowerFillColor as color, lowerEdgeColor as color, lowerLineWidth as Integer = -1})
\end{itemize}
28.57.7  getCoefficient(index as Integer) as Double

**Function:** Gets the coefficients of the regression function.
**Notes:** The coefficients depend on the regression type. They are indexed as a0, a1, a2, ... in the regression type table published on TrendLayer.

28.57.8  getCorrelation as Double

**Function:** Gets the correlation coefficient of the trend line.

28.57.9  getIntercept as Double

**Function:** Gets the y-axis intercept of the trend line.

28.57.10  getLine as CDLineObjMBS

**Function:** Retrieves an opaque LineObj representing the trend line. The opaque LineObj is to be used in XYChart.addInterLineLayer for adding coloring between lines.

28.57.11  getSlope as Double

**Function:** Gets the slope of the trend line.

28.57.12  getStdError as Double

**Function:** Gets the standard error of the trend line.
28.57.13 setImageMapWidth(w as Integer)

**Function:** Sets the effective width of the line used for producing image maps.
**Notes:**
For thin lines, it is hard to click on the lines. So for the purpose of producing image maps for a line chart, ChartDirector can assume the line is very thick. The default is 10 pixels.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>width</td>
<td>(Mandatory)</td>
<td>The effective width of the line used for producing image maps.</td>
</tr>
</tbody>
</table>

28.57.14 setRegressionType(regressionType as Integer)

**Function:** Sets the regression type to be used.
**Notes:**
RegressionType:
Must be one of the constants kLinearRegression, kConstrainedLinearRegression, kExponentialRegression and kLogarithmicRegression, or the return value of BaseChartMBS.PolynomialRegression. They represent linear regression, constrained linear regression, exponential regression, logarithmic regression, and polynomial regression of configurable degree.
28.58  class CDTTFTextMBS

28.58.1  class CDTTFTextMBS

**Function:** The TTFText class represents text blocks.  
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

28.58.2  Methods

28.58.3  Constructor

MBS ChartDirector Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The private constructor.

28.58.4  destroy

**Function:** Destroys the text object.  
**Notes:** Normally you don’t need to call this.

28.58.5  draw(x as Integer, y as Integer, colorvalue as color, alignment as Integer = 7)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Same as the other draw method, but uses color instead of integer data type for passing color values.  
See also:  
- 28.58.6 draw(x as Integer, y as Integer, colorvalue as Integer, alignment as Integer = 7)  

28.58.6  draw(x as Integer, y as Integer, colorvalue as Integer, alignment as Integer = 7)

**Function:** Draws the text block.  
**Notes:**  
See also:
28.58. **CLASS CDTTTEXTMBS**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>(Mandatory)</td>
<td>The x coordinate of a reference point to align the text.</td>
</tr>
<tr>
<td>y</td>
<td>(Mandatory)</td>
<td>The y coordinate of a reference point to align the text.</td>
</tr>
<tr>
<td>color</td>
<td>(Mandatory)</td>
<td>The color of the text.</td>
</tr>
<tr>
<td>alignment</td>
<td>TopLeft</td>
<td>The location of the text relative to the reference point. See Alignment Specification for supported alignment types.</td>
</tr>
</tbody>
</table>

- **28.58.5 draw(x as Integer, y as Integer, colorvalue as color, alignment as Integer = 7)**

**28.58.7 getHeight as Integer**

**Function:** Gets the height of the text block.

**28.58.8 getLineDistance as Integer**

**Function:** Gets the distance between two lines in the text block.  
**Notes:**

Return Value  
The distance between two lines in the text block in pixels.

**28.58.9 getLineHeight as Integer**

**Function:** Gets the height of a typical line in the text block.

**28.58.10 getWidth as Integer**

**Function:** Gets the width of the text block.
28.59  class CDVectorLayerMBS

28.59.1  class CDVectorLayerMBS

Function: The VectorLayer class represents vector layers.
Notes:
Subclass of the CDLayerMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

28.59.2  Methods

28.59.3  setArrowAlignment(alignment as Integer)

Function: Sets the alignment of the vector relative to the data point.
Notes:
<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>alignment</td>
<td>(Mandatory)</td>
<td>A BottomCenter value means the vector will point away from the data point (the default). A TopCenter value means the vector will point into the data point. A Center value means the center of the vector will be at the data point.</td>
</tr>
</tbody>
</table>

28.59.4  setArrowHead(polygon() as Integer)

Function: Sets a custom shape to be used as the arrow head.
Notes:
The custom shape is specified as an array of integers x0, y0, x1, y1, x2, y2 ... representing the coordinates of the vertices of the custom polygonal shape.

The polygon should be defined with a bounding square of 10 x 10 units, in which the x-axis is from left to right, and the y-axis from bottom to top. The origin is assumed to be the bottom center of the arrow (the point where the arrow head joins the arrow stem). The shape is assumed to represent an arrow pointing upwards.

As an example, the followings are the integer array that represents the standard ChartDirector vector arrow head:
ChartDirector will automatically scale the shape to the actual width and height as specified in VectorLayer.setArrowHead.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>polygon</td>
<td>(Mandatory)</td>
<td>An array of integers (x_0, y_0, x_1, y_1, x_2, y_2) ... representing the coordinates the polygon vertices on a (10 \times 10) units grid.</td>
</tr>
</tbody>
</table>

See also:

- 28.59.5 `setArrowHead(width as Integer, height as Integer = 0)`

### 28.59.5 `setArrowHead(width as Integer, height as Integer = 0)`

**Function:** Sets the size of the arrow head.  
**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>width</td>
<td>(Mandatory)</td>
<td>The width of the arrow head in pixels. The default width is 8 pixels.</td>
</tr>
<tr>
<td>height</td>
<td>0</td>
<td>The height of the arrow head in pixels. The default value of 0 means the height is the same as the width.</td>
</tr>
</tbody>
</table>

See also:

- 28.59.4 `setArrowHead(polygon() as Integer)`

### 28.59.6 `setArrowStem(polygon() as Integer)`

**Function:** Sets a custom shape to be used as the arrow stem.  
**Notes:**

By default, the arrow stem is just a straight line, with the line width controlled using Layer.setLineWidth. The `setArrowStem` method can specify a custom shape for the arrow stem.

The custom shape is specified as an array of integers \(x_0, y_0, x_1, y_1, x_2, y_2\) ... representing the coordinates of the vertices of the custom polygonal shape.

The polygon should be defined with a bounding square of \(10 \times 100\) units, in which the x-axis is from left to right, and the y-axis from bottom to top. The origin is assumed to be the starting point of the arrow stem,
and the shape is assumed to represent an arrow stem pointing upwards.

ChartDirector will automatically scale the shape so that the total arrow length (head + stem) is the required length of the arrow as according to actual data, and the stem width is as specified in Layer.setLineWidth.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>polygon</td>
<td>(Mandatory)</td>
<td>An array of integers x0, y0, x1, y1, x2, y2 ... representing the coordinates the polygon vertices on a 10 x 100 units grid.</td>
</tr>
</tbody>
</table>

28.59.7 setIconSize(height as Integer, width as Integer = 0)

**Function:** Sets the size of the icon to be used in legend box.  
**Notes:**  
By default, if a legend box is available on the chart, ChartDirector will insert an legend entry if the VectorLayer is named. The size of the icon will be the size of the vectors used on the chart, using a short vector length to fit the legend box.  
This method can be used to override the legend box settings to specify a custom width/height for the icons of the current VectorLayer.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the icon in pixels.</td>
</tr>
<tr>
<td>width</td>
<td>0</td>
<td>The width of the icon in pixels. The default value of 0 means the width is automatically determined.</td>
</tr>
</tbody>
</table>

28.59.8 setVector(lengths() as Double, directions() as Double, lengthScale as Integer = 0)

**Function:** Sets the lengths and directions for the vectors.  
**Notes:**  
ChartDirector supports specifying lengths as pixels or in axis scale. The unit is specified by using the following predefined constants.
28.59. CLASS CDVECTORLAYERMBS

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PixelScale</td>
<td>0</td>
<td>The unit is measured in pixels.</td>
</tr>
<tr>
<td>XAxisScale</td>
<td>1</td>
<td>The unit is measured in x-axis scale.</td>
</tr>
<tr>
<td>YAxisScale</td>
<td>2</td>
<td>The unit is measured in y-axis scale.</td>
</tr>
</tbody>
</table>

Argument  Default Description
lengths    (Mandatory) An array of numbers representing the lengths of the vectors, in unit as specified in the lengthScale argument.
directions (Mandatory) An array of numbers representing the direction of the vectors as a clockwise angle in degrees, where 0 is upward pointing direction.
lengthScale PixelScale The unit for the lengths, which must be one of the predefined constants in the table above.

28.59.9 setVectorMargin(startMargin as Double)


Function: Sets the margins to shorten the vectors.

Notes:
By default, vectors will be drawn from the given start points to the given end points.

In some cases, it may be desirable to shorten the vectors so that they do not start exactly at the start points and/or end exactly at the end points. For example, the vectors may be used to point to some circular symbols created by a ScatterLayer. The vectors may need to point to the perimeter of the circles, rather than their centers. This can be achieved by shortening the vectors by the radius of the circles.

Arguments:

Argument  Default Description
startMargin (Mandatory) The length to shorten at the start of the vector in pixels.
endMargin   NoValue The length to shorten at the end of the vector in pixels. NoValue means the length is the same as startMargin.

See also:
- 28.59.10 setVectorMargin(startMargin as Double, endMargin as Double)

28.59.10 setVectorMargin(startMargin as Double, endMargin as Double)


Function: Sets the margins to shorten the vectors.

Notes:
By default, vectors will be drawn from the given start points to the given end points.

In some cases, it may be desirable to shorten the vectors so that they do not start exactly at the start points and/or end exactly at the end points. For example, the vectors may be used to point to some circular symbols created by a ScatterLayer. The vectors may need to point to the perimeter of the circles, rather than their centers. This can be achieved by shortening the vectors by the radius of the circles.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>startMargin</td>
<td>(Mandatory)</td>
<td>The length to shorten at the start of the vector in pixels. NoValue means the length is the same as startMargin.</td>
</tr>
<tr>
<td>endMargin</td>
<td>NoValue</td>
<td>The length to shorten at the end of the vector in pixels. NoValue means the length is the same as startMargin.</td>
</tr>
</tbody>
</table>

See also:

- 28.59.9 setVectorMargin(startMargin as Double)
28.60. class CDViewPortManagerMBS


Function: A view port can be imagined as a rectangular window of an underlying rectangular surface.

Notes:
For example, a chart that has 10 years of data can be imagined as a very long chart. If one only displays one of the year, we can say the view port covers only 10% of the underlying chart.

With the view port concept, scrolling can be handled as moving the view port, while zooming in and out can be handled as changing the view port size.

ViewPortManager is a utility class for handling view ports. It manages mapping of the mouse and display pixel coordinates to view port coordinates, and supports various user interface constraints that limits how the view port may be changed.

View port coordinates are represented as fractions of the width or height of the underlying surface. For example, the width of a view port is represented as a fraction of the width of the underlying surface, so it must be between 0 to 1. A value of 0.1 means the view port width is 10% of the underlying surface width.

If you are using MFC, there is no need to create a ViewPortManager object directly. You may simply use the MFC CChartViewer control, which is a derived class of ViewPortManager and contains all its functions.

If you are using other GUI framework, and would like to perform zooming and scrolling functions by mouse drag, the ViewPortManager may be useful to you. The section Using ChartDirector with Other GUI Frameworks contains outlines on how the ViewPortManager may be used in general GUI frameworks.

28.60.2 Methods

28.60.3 canZoomIn(zoomDirection as Integer) as boolean


Function: Checks if it is possible to zoom in further at a certain direction without violating zoom in limits.

Notes:
See ViewPortManager.setZoomInWidthLimit and ViewPortManager.setZoomInHeightLimit on how to configure zoom in limits.

Return Value
True if can zoom in further, otherwise false.
### 28.60.4 canZoomOut(zoomDirection as Integer) as boolean


**Function:** Checks if it is possible to zoom out further at a certain direction without violating zoom out limits.

**Notes:**
See ViewPortManager.setZoomOutWidthLimit and ViewPortManager.setZoomOutHeightLimit on how to configure zoom out limits.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>zoomDirection</td>
<td>(Mandatory)</td>
<td>The zoom direction to check. Must be one of the predefined constants DirectionHorizontal, DirectionVertical and DirectionHorizontalVertical for horizontal, vertical and bi-directional zooming.</td>
</tr>
</tbody>
</table>

**Return Value**
True if can zoom out further, otherwise false.

### 28.60.5 clearAllRanges


**Function:** A convenience method to clear all the ranges configured using setFullRange.

### 28.60.6 commitPendingSyncAxis(baseChart as CDBaseChartMBS)


**Function:** The commitPendingSyncAxis is a method to actually perform the function in syncLinearAxisWithViewPort, syncLogAxisWithViewPort and syncDateAxisWithViewPort.


**28.60.7 Constructor**


**Function:** Creates a new viewport.

---

**28.60.8 dragTo(scrollDirection as Integer, x as Integer, y as Integer) as boolean**


**Function:** Scrolls the view port to reflect dragging of the underlying rectangular surface.

**Notes:**

The amount of drag is measured as changed in mouse cursor coordinates since the call to ViewPortManager.startDrag. A positive change means the dragging is to the right or bottom. A negative change means the dragging is to the left or top.

The drag is considered as applying to the underlying surface. The view port moves in the opposite direction to the drag. For example, dragging the underlying surface to the right is equivalent to moving the view port to the left.

The view port may not change at all if it has reached the borders of the underlying surface.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>scrollDirection</td>
<td>(Mandatory)</td>
<td>The allowed scroll direction. Must be one of the predefined constants DirectionHorizontal, DirectionVertical and DirectionHorizontalVertical for horizontal, vertical and bi-directional scrolling.</td>
</tr>
<tr>
<td>deltaX</td>
<td>(Mandatory)</td>
<td>The change in mouse x-coordinates. A positive change means the drag is to the right. A negative change means the drag is to the right.</td>
</tr>
<tr>
<td>deltaY</td>
<td>(Mandatory)</td>
<td>The change in mouse y-coordinates. A positive change means the drag is to the bottom. A negative change means the drag is to the top.</td>
</tr>
</tbody>
</table>

---

**28.60.9 getPlotAreaHeight as Integer**


**Function:** Gets the height of the plot area in pixels.

**Notes:**

Return Value
The height of the plot area in pixels.
28.60.10  getPlotAreaLeft as Integer

Function: Gets the x-coordinate of the left side of the plot area in pixels.
Notes:
Return Value
The x-coordinate of the left side of the plot area in pixels.

28.60.11  getPlotAreaTop as Integer

Function: Gets the y-coordinate of the top side of the plot area in pixels.

28.60.12  getPlotAreaWidth as Integer

Function: Gets the width of the plot area in pixels.

28.60.13  getValueAtViewPort(id as string, ratio as Double, isLogScale as boolean = false) as Double

Function: Converts a view port coordinate to a value of the specified data scale.
Notes:
Please refer to ViewPortManager.setFullRange on how to define a data scale.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td>(Mandatory)</td>
<td>The name of the data scale.</td>
</tr>
<tr>
<td>vpCoor</td>
<td>(Mandatory)</td>
<td>The view port coordinate.</td>
</tr>
<tr>
<td>isLogScale</td>
<td>false</td>
<td>true if the conversion is based on a logarithmic scale. false if the conversion is based on a non-logarithmic scale.</td>
</tr>
</tbody>
</table>

Returns the value of the specified data scale at the view port coordinate.
28.60.14 `getViewPortAtValue(id as string, ratio as Double, isLogScale as boolean = false) as Double`

**Function:** Converts a value of the specified data scale to a view port coordinate.  
**Notes:**  
Please refer to ViewPortManager.setFullRange on how to define a data scale.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td>(Mandatory)</td>
<td>The name of the data scale.</td>
</tr>
<tr>
<td>value</td>
<td>(Mandatory)</td>
<td>The value to be converted.</td>
</tr>
<tr>
<td>isLogScale</td>
<td>false</td>
<td>true if the conversion is based on a logarithmic scale. false if the conversion is based on a non-logarithmic scale.</td>
</tr>
</tbody>
</table>

Returns the view port coordinate at the value of the specified data scale.

28.60.15 `getViewPortHeight as Double`

**Function:** Gets the height of the view port.  
**Notes:** The view port height is expressed as a fraction of the height of the underlying surface. It should be between 0 and 1.

28.60.16 `getViewPortLeft as Double`

**Function:** Gets the position of the left side of the view port.  
**Notes:** The position of the view port left side is its distance from the left side of the underlying surface, as a fraction of the width of the underlying surface. It should be between 0 and 1.

28.60.17 `getViewPortTop as Double`

**Function:** Gets the position of the top side of the view port.  
**Notes:** The position of the view port top side is its distance from the top side of the underlying surface, as a fraction of the height of the underlying surface. It should be between 0 and 1.
28.60.18 getViewPortWidth as Double

Function: Gets the width of the view port.
Notes: The view port width is expressed as a fraction of the width of the underlying surface. It should be between 0 and 1.

28.60.19 getZoomInHeightLimit as Double

Function: Gets the view port height at maximum zoom in for mouse zoom in actions.

28.60.20 getZoomInWidthLimit as Double

Function: Gets the view port width at maximum zoom in for mouse zoom in actions.

28.60.21 getZoomOutHeightLimit as Double

Function: Gets the view port height at maximum zoom out for mouse zoom out actions.

28.60.22 getZoomOutWidthLimit as Double

Function: Gets the view port width at maximum zoom out for mouse zoom out actions.

28.60.23 inExtendedPlotArea(x as Integer, y as Integer) as boolean

Function: Determines if a given (x, y) coordinate is within the extended plot area (the plot area plus the extra margin sets up using setPlotAreaMouseMargin).
28.60. **CLASS CDVIEWPORTMANAGERMBS**

28.60.24 **inPlotArea**(x as Integer, y as Integer) as boolean

**Function:** Determines if a given point is within the plot area.
**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>(Mandatory)</td>
<td>The x coordinate of the point in pixel unit.</td>
</tr>
<tr>
<td>y</td>
<td>(Mandatory)</td>
<td>The y coordinate of the point in pixel unit.</td>
</tr>
</tbody>
</table>

Return Value
True if the point is within the plot area, otherwise false.

28.60.25 **setChartMetrics**(metrics as string)

**Function:** Sets the chart metrics to the ViewPortManager so it knows the positions of the necessary chart objects for supporting view ports.
**Notes:**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>metrics</td>
<td>(Mandatory)</td>
<td>A text string obtained from BaseChart.getChartMetrics that represents the metrics of the chart.</td>
</tr>
</tbody>
</table>

28.60.26 **setFullRange**(ID as string, minValue as Double, maxValue as Double)

**Function:** Defines the full range of a view port data scale.
**Notes:**

In the ChartDirector zooming and scrolling framework, the view port coordinates are expressed as the visible fractions of the "full data scale". For example, if the "full data scale" is 10 years horizontally, a view port width of 0.1 means that 1 year of data are visible.

The setFullRange method defines the full range of a data scale and gives it a name. As ChartDirector supports multiple x-axes and y-axes, so there can be multiple data scales with different names. The name can be used in other ChartDirector APIs to convert between the view port coordinates and data scale (see ViewPortManager.getValueAtViewPort, ViewPortManager.getViewPortAtValue), and to configure an Axis to reflect the visible data scale (see ViewPortManager.syncLinearAxisWithViewPort, ViewPortManager.syncLogAxisWithViewPort and ViewPortManager.syncDateAxisWithViewPort).
Argument Default Description
id (Mandatory) The name of the data scale.
minValue (Mandatory) The minimum value of the data scale.
maxValue (Mandatory) The maximum value of the data scale.

28.60.27 setPlotAreaMouseMargin(leftMargin as Integer, rightMargin as Integer, topMargin as Integer, bottomMargin as Integer)

**Function:** Configures area for mouse tracking.
**Notes:** SetPlotAreaMouseMargin configures some margins outside the plot area, so that a mouse cursor in that region (and therefore just outside the plot area) will still be considered to be exactly at the boundary of the plot area for the purpose of triggering plot area mouse events. Without this mechanism, it would be difficult to put the mouse exactly at the edge of the plot area (as it is too easy to "overshoot” the edge). Putting the mouse exactly at the edge is very useful for "track cursors” as this tracks the first or last data point.

28.60.28 setViewPortHeight(value as Double)

**Function:** Sets the height of the view port.
**Notes:**
The view port height is expressed as a fraction of the height of the underlying surface. It should be between 0 and 1.

Argument Default Description
height (Mandatory) The height of the view port.

28.60.29 setViewPortLeft(value as Double)

**Function:** Sets the position of the left side of the view port.
**Notes:**
The position of the view port left side is its distance from the left side of the underlying surface, as a fraction of the width of the underlying surface. It should be between 0 and 1.
28.60. **CLASS CDVIEWPORTMANAGERMBS**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>left</td>
<td>(Mandatory)</td>
<td>The position of the left side of the view port.</td>
</tr>
</tbody>
</table>

28.60.30 **setViewPortTop(value as Double)**


**Function:** Sets the position of the top side of the view port.

**Notes:**
The position of the view port top side is its distance from the top side of the underlying surface, as a fraction of the height of the underlying surface. It should be between 0 and 1.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>top</td>
<td>(Mandatory)</td>
<td>The position of the top side of the view port.</td>
</tr>
</tbody>
</table>

28.60.31 **setViewPortWidth(value as Double)**


**Function:** Sets the width of the view port.

**Notes:**
The view port width is expressed as a fraction of the width of the underlying surface. It should be between 0 and 1.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>width</td>
<td>(Mandatory)</td>
<td>The width of the view port.</td>
</tr>
</tbody>
</table>

28.60.32 **setZoomInHeightLimit(value as Double)**


**Function:** Sets the view port height at maximum zoom in.

**Notes:**
In many applications, it is desirable to set a maximum zoom in level, instead of allowing the user to zoom in indefinitely.

This method determines the minimum allowed view port height. It should be between 0 and 1. The default is 0.01, which means a maximum zoom in of 100x (the view port see only 1% of the underlying surface).
28.60.33 setZoomInWidthLimit(value as Double)


**Function:** Sets the view port width at maximum zoom in.

**Notes:**
In many applications, it is desirable to set a maximum zoom in level, instead of allowing the user to zoom in indefinitely.

This method determines the minimum allowed view port width. It should be between 0 and 1. The default is 0.01, which means a maximum zoom in of 100x (the view port see only 1% of the underlying surface).

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The minimum allowed view port height.</td>
</tr>
</tbody>
</table>

28.60.34 setZoomOutHeightLimit(value as Double)


**Function:** Sets the view port height at maximum zoom in.

**Notes:**
In many applications, it is desirable to set a maximum zoom in level, instead of allowing the user to zoom in indefinitely.

This method determines the minimum allowed view port height. It should be between 0 and 1. The default is 0.01, which means a maximum zoom in of 100x (the view port see only 1% of the underlying surface).

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The minimum allowed view port height.</td>
</tr>
</tbody>
</table>

28.60.35 setZoomOutWidthLimit(value as Double)


**Function:** Gets the view port width at maximum zoom out for mouse zoom out actions.
28.60. **CLASS CDVIEWPORTMANAGERMBS**

### 28.60.36 startDrag

**Function:** Takes a snapshot of the view port to prepare for dragging.
**Notes:** This method must be called before calling ViewPortManager.dragTo.

### 28.60.37 syncDateAxisWithViewPort(id as string, axis as CDAxisMBS)

**Function:** Synchronizes a date/time Axis with the part of the data scale in view port.
**Notes:**
- If the data scale has already been defined (see ViewPortManager.setFullRange on how to define a data scale), this method will compute the visible data scale based on the view port coordinates using date/time interpolation, and then sets the axis to that date/time scale.
- If the data scale has not been defined, this method will define the data scale based on the axis scale and the view port coordinates using date/time extrapolation. Because the axis scale may not be known at the time of calling this method (the axis could be auto-scaled by ChartDirector, which may not occur until the chart is rendered), the definition of the data scale will not occur immediately, but will be pending until the chart is to be displayed.

  If your charting code calls this method but never defines the full data scale or the view port coordinates (in which case the view port defaults to showing the complete data scale), then the first time the code is executed, the data scale will be defined to be equal to the axis scale. Subsequently, when the user zooms into the chart (which means the view port coordinates are changed), the same charting code will set up the axis scale to the range that the user has zoomed to.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td>(Mandatory)</td>
<td>The name of the data scale.</td>
</tr>
<tr>
<td>axis</td>
<td>(Mandatory)</td>
<td>The Axis object to synchronize with.</td>
</tr>
</tbody>
</table>

### 28.60.38 syncLinearAxisWithViewPort(id as string, axis as CDAxisMBS)

**Function:** Synchronizes a linear Axis with the part of the data scale in view port.
**Notes:**
- If the data scale has already been defined (see ViewPortManager.setFullRange on how to define a data scale), this method will compute the visible data scale based on the view port coordinates using linear interpolation, and then sets the axis to that linear scale.
CHAPTER 28. CHARTDIRECTOR

If the data scale has not been defined, this method will define the data scale based on the axis scale and the view port coordinates using linear extrapolation. Because the axis scale may not be known at the time of calling this method (the axis could be auto-scaled by ChartDirector, which may not occur until the chart is rendered), the definition of the data scale will not occur immediately, but will be pending until the chart is to be displayed.

If your charting code calls this method but never defines the full data scale or the view port coordinates (in which case the view port defaults to showing the complete data scale), then the first time the code is executed, the data scale will be defined to be equal to the axis scale. Subsequently, when the user zooms into the chart (which means the view port coordinates are changed), the same charting code will set up the axis scale to the range that the user has zoomed to.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td>(Mandatory)</td>
<td>The name of the data scale.</td>
</tr>
<tr>
<td>axis</td>
<td>(Mandatory)</td>
<td>The Axis object to synchronize with.</td>
</tr>
</tbody>
</table>

28.60.39 syncLogAxisWithViewPort(id as string, axis as CDAxisMBS)


Function: Synchronizes a logarithmic Axis with the part of the data scale in view port.

Notes:

If the data scale has already been defined (see ViewPortManager.setFullRange on how to define a data scale), this method will compute the visible data scale based on the view port coordinates using logarithmic interpolation, and then sets the axis to that logarithmic scale.

If the data scale has not been defined, this method will define the data scale based on the axis scale and the view port coordinates using logarithmic extrapolation. Because the axis scale may not be known at the time of calling this method (the axis could be auto-scaled by ChartDirector, which may not occur until the chart is rendered), the definition of the data scale will not occur immediately, but will be pending until the chart is to be displayed.

If your charting code calls this method but never defines the full data scale or the view port coordinates (in which case the view port defaults to showing the complete data scale), then the first time the code is executed, the data scale will be defined to be equal to the axis scale. Subsequently, when the user zooms into the chart (which means the view port coordinates are changed), the same charting code will set up the axis scale to the range that the user has zoomed to.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td>(Mandatory)</td>
<td>The name of the data scale.</td>
</tr>
<tr>
<td>axis</td>
<td>(Mandatory)</td>
<td>The Axis object to synchronize with.</td>
</tr>
</tbody>
</table>
28.60.40  updateFullRangeH(id as string, minValue as Double, maxValue as Double, updateType as Integer) as boolean

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Updates the full range of a horizontal viewport data scale.
Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td>(Mandatory)</td>
<td>The name of the horizontal data scale.</td>
</tr>
<tr>
<td>minValue</td>
<td>(Mandatory)</td>
<td>The new minimum value of the data scale.</td>
</tr>
<tr>
<td>maxValue</td>
<td>(Mandatory)</td>
<td>The new maximum value of the data scale.</td>
</tr>
<tr>
<td>updateType</td>
<td>(Mandatory)</td>
<td>The method to update the viewport. Must be one of ViewPortNoUpdate, KeepVisibleRange, ScrollWithMax or ScrollWithMin.</td>
</tr>
</tbody>
</table>

28.60.41  updateFullRangeV(id as string, minValue as Double, maxValue as Double, updateType as Integer) as boolean

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Updates the full range of a vertical viewport data scale.
Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td>(Mandatory)</td>
<td>The name of the vertical data scale.</td>
</tr>
<tr>
<td>minValue</td>
<td>(Mandatory)</td>
<td>The new minimum value of the data scale.</td>
</tr>
<tr>
<td>maxValue</td>
<td>(Mandatory)</td>
<td>The new maximum value of the data scale.</td>
</tr>
<tr>
<td>updateType</td>
<td>(Mandatory)</td>
<td>The method to update the viewport. Must be one of ViewPortNoUpdate, KeepVisibleRange, ScrollWithMax or ScrollWithMin.</td>
</tr>
</tbody>
</table>

28.60.42  validateViewPort

Function: Ensures the view port left, top, width and height are within valid ranges and adjusts them if necessary.
Notes: The valid ranges of the view port width and height should be 0 to 1. The view port left should be in between 0 and (1 - view port width). The view port top should be in between 0 and (1 - view port height).

28.60.43  zoomAround(x as Integer, y as Integer, xZoomRatio as Double, yZoomRatio as Double) as boolean

MBS ChartDirector Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Zoom at a given point using the zoom ratio.
28.60.44 `zoomAt(zoomDirection as Integer, x as Integer, y as Integer, zoomRatio as Double) as boolean`


**Function:**Zooms in/out around a certain point.

**Notes:**
This method adjusts the view port position and size to reflect zooming in/out around the given point. If possible, the given point will be at the center of the view port after zooming in/out.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>zoomDirection</td>
<td>(Mandatory)</td>
<td>The allowed zoom direction. Must be one of the predefined constants DirectionHorizontal, DirectionVertical and DirectionHorizontalVertical for horizontal, vertical and bi-directional zooming.</td>
</tr>
<tr>
<td>x</td>
<td>(Mandatory)</td>
<td>The x-coordinate of the point to zoom around.</td>
</tr>
<tr>
<td>y</td>
<td>(Mandatory)</td>
<td>The y-coordinate of the point to zoom around.</td>
</tr>
<tr>
<td>zoomRatio</td>
<td>(Mandatory)</td>
<td>The zoom magnification factor. For example, a value of 2 means zooming in by 2x. A value of 0.5 means zooming out by 2x.</td>
</tr>
</tbody>
</table>

**Return Value**
True if view port is changed, otherwise false. It is possible for no zooming to occur if zoom limits are reached. See ViewPortManager.setZoomInWidthLimit, ViewPortManager.setZoomOutWidthLimit, ViewPortManager.setZoomInHeightLimit and ViewPortManager.setZoomOutHeightLimit for the meaning of zoom limits.

28.60.45 `zoomTo(zoomDirection as Integer, x1 as Integer, y1 as Integer, x2 as Integer, y2 as Integer) as boolean`


**Function:**Zooms to the selected rectangular region.

**Notes:**
This method updates the view port position and size to reflect a rectangular region on the chart. (x1, y1) and (x2, y2) are opposite vertices of the rectangular region in pixel coordinates.

The final view port position may not exactly reflect the rectangular region because of zoom limits. See ViewPortManager.setZoomInWidthLimit, ViewPortManager.setZoomOutWidthLimit, ViewPortManager.setZoomInHeightLimit and ViewPortManager.setZoomOutHeightLimit for the meaning of zoom limits.

**Return Value**
True if view port is changed, otherwise false.
<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>zoomDirection</td>
<td>(Mandatory)</td>
<td>The allowed zoom direction. Must be one of the predefined constants DirectionHorizontal, DirectionVertical and DirectionHorizontalVertical for horizontal, vertical and bi-directional zooming.</td>
</tr>
<tr>
<td>x1</td>
<td>(Mandatory)</td>
<td>The x-coordinate of one vertices of the selected rectangular region.</td>
</tr>
<tr>
<td>y1</td>
<td>(Mandatory)</td>
<td>The y-coordinate of one vertices of the selected rectangular region.</td>
</tr>
<tr>
<td>x2</td>
<td>(Mandatory)</td>
<td>The x-coordinate of the vertex that is opposite to the vertex (x1, y1).</td>
</tr>
<tr>
<td>y2</td>
<td>(Mandatory)</td>
<td>The y-coordinate of the vertex that is opposite to the vertex (x1, y1).</td>
</tr>
</tbody>
</table>
28.61 class CDXYChartMBS

28.61.1 class CDXYChartMBS

**Function:** The XYChart class represents XY charts. 
**Notes:** Subclass of the CDBaseChartMBS class.

28.61.2 Methods

28.61.3 addAreaLayer(data() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDAreaLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Same as the other addAreaLayer method, but uses color instead of integer data type for passing color values. 
**See also:**

- 28.61.4 addAreaLayer(data() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDAreaLayerMBS
- 28.61.5 addAreaLayer(dataCombineMethod as Integer = 1, depth as Integer = 0) as CDAreaLayerMBS
- 28.61.6 addAreaLayer(dates() as date, colorvalue as color, name as string = "", depth as Integer = 0) as CDAreaLayerMBS
- 28.61.7 addAreaLayer(dates() as date, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDAreaLayerMBS

28.61.4 addAreaLayer(data() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDAreaLayerMBS

**Function:** Adds an area chart layer to the XYChart, and specify the data set to use for drawing the area. 
**Notes:** 
**Return Value**
An AreaLayer object representing the area layer created. 
**See also:**

- 28.61.3 addAreaLayer(data() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDAreaLayerMBS
- 28.61.5 addAreaLayer(dataCombineMethod as Integer = 1, depth as Integer = 0) as CDAreaLayerMBS
28.61. CLASS CXYCHARTMBS

Parameter | Default | Description
--- | --- | ---
data | (Mandatory) | An array of numbers representing the data set.
color | -1 | The color to draw the area. -1 means that the color is automatically selected from the color palette.
name | "" | The name of the data set. The name will be used in the legend box, if one is available. An empty string means the data set has no name.
depth | 0 | The 3D depth of the area layer.

- 28.61.6 addAreaLayer(dates() as date, colorvalue as color, name as string = "", depth as Integer = 0) as CDAreaLayerMBS
- 28.61.7 addAreaLayer(dates() as date, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDAreaLayerMBS

28.61.5 addAreaLayer(dataCombineMethod as Integer = 1, depth as Integer = 0) as CDAreaLayerMBS


**Function:** Adds an empty area chart layer to the XYChart.

**Notes:**
This method is typically used to add multiple data sets to a single bar layer. First an empty area chart layer is created, then the data sets can be added using Layer.addDataSet.

The dataCombineMethod parameter specifies how to combine the data sets together in the area layer. The followings methods are supported:

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stack</td>
<td>1</td>
<td>The data sets are combined by stacking up the areas.</td>
</tr>
<tr>
<td>Percentage</td>
<td>4</td>
<td>The data sets are combined similar to stacked area, except that the data are scaled so that the area always stacked up to 100. An area strip within the stacked area therefore represents the percentage of the data item relative to sum of all the data items in the stacked area.</td>
</tr>
</tbody>
</table>

- Parameter | Default | Description
- dataCombineMethod | Stack | The method to combine the data sets together in the area layer.
- depth | 0 | The 3D depth of the area layer.

**Return Value**
An AreaLayer object representing the area layer created.

See also:
28.61.6 `addAreaLayer(dates() as date, colorvalue as color, name as string = "", depth as Integer = 0) as CDAreaLayerMBS`  

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Same as the other addAreaLayer method, but uses color instead of integer data type for passing color values.  
See also:  
- 28.61.3 `addAreaLayer(data() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDAreaLayerMBS`  
- 28.61.4 `addAreaLayer(data() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDAreaLayerMBS`  
- 28.61.5 `addAreaLayer(dataCombineMethod as Integer = 1, depth as Integer = 0) as CDAreaLayerMBS`  
- 28.61.7 `addAreaLayer(dates() as date, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDAreaLayerMBS`  

28.61.7 `addAreaLayer(dates() as date, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDAreaLayerMBS`  

MBS ChartDirector Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Adds an area chart layer to the XYChart, and specify the data set to use for drawing the area.  
**Notes:**  
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>data</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the data set.</td>
</tr>
<tr>
<td>color</td>
<td>-1</td>
<td>The color to draw the area. -1 means that the color is automatically selected from the color palette.</td>
</tr>
<tr>
<td>name</td>
<td>&quot;&quot;</td>
<td>The name of the data set. The name will be used in the legend box, if one is available. An empty string means the data set has no name.</td>
</tr>
<tr>
<td>depth</td>
<td>0</td>
<td>The 3D depth of the area layer.</td>
</tr>
</tbody>
</table>
Return Value
An AreaLayer object representing the area layer created.
See also:

- 28.61.3 addAreaLayer(data() as Double, colorvalue as color, name as string = ””, depth as Integer = 0) as CDAreaLayerMBS
- 28.61.4 addAreaLayer(data() as Double, colorvalue as Integer = -1, name as string = ””, depth as Integer = 0) as CDAreaLayerMBS
- 28.61.5 addAreaLayer(dataCombineMethod as Integer = 1, depth as Integer = 0) as CDAreaLayerMBS
- 28.61.6 addAreaLayer(dates() as date, colorvalue as color, name as string = ””, depth as Integer = 0) as CDAreaLayerMBS

28.61.8 addAxis(align as Integer, offset as Integer) as CDAxisMBS

Function: Adds an additional axis to the chart.
Notes:
By default, ChartDirector XY charts have 2 x-axes and 2 y-axes at the 4 borders of the plot area. The addAxis method can be used to create additional axis.

The new axis will be put at one of the 4 borders of the plot area. To avoid overlapping with existing axis, the new axis will not be put exactly as the plot area border, but at an offset from it.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>align</td>
<td>(Mandatory)</td>
<td>Specifies which side of the plot area is the primary side of the axis. Must be one of the constants Left, Right, Top and Bottom for the 4 sides of the plot area.</td>
</tr>
<tr>
<td>offset</td>
<td>(Mandatory)</td>
<td>An offset in pixels to move the axis away from the plot area. If a negative value is used, it will mean to move the axis into the plot area.</td>
</tr>
</tbody>
</table>

28.61.9 addBarLayer(data() as Double, colors() as color, depth as Integer = 0) as CDBarLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other addBarLayer method, but uses color instead of integer data type for passing color values.
See also:

- 28.61.10 addBarLayer(data() as Double, colors() as color, names() as string, depth as Integer = 0) as CDBarLayerMBS
28.61.10 addBarLayer(data() as Double, colors() as color, names() as string, depth as Integer = 0) as CDBarLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Same as the other addBarLayer method, but uses color instead of integer data type for passing color values.

See also:

- 28.61.11 addBarLayer(data() as Double, colors() as Integer, depth as Integer = 0) as CDBarLayerMBS 5006
- 28.61.12 addBarLayer(data() as Double, colors() as Integer, names() as string, depth as Integer = 0) as CDBarLayerMBS 5008
- 28.61.13 addBarLayer(data() as Double, colorvalue as color, name as string = ””, depth as Integer = 0) as CDBarLayerMBS 5009
- 28.61.14 addBarLayer(data() as Double, colorvalue as Integer = -1, name as string = ””, depth as Integer = 0) as CDBarLayerMBS 5009
- 28.61.15 addBarLayer(dataCombineMethod as Integer = 3, depth as Integer = 0) as CDBarLayerMBS 5010

28.61.11 addBarLayer(data() as Double, colors() as Integer, depth as Integer = 0) as CDBarLayerMBS

MBS ChartDirector Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds an empty bar layer to the XYChart.

**Example:**
// Create a XYChart object of size 250 x 250 pixels
dim c as new CDXYChartMBS(250, 250)

// Add a bar chart layer using the given data
dim t as CDTextBoxMBS = c.addBarLayer(data)
t.setPosition(0, -10) // move 10 up

Notes:
This method is typically used to add multiple data sets to a single bar layer. First an empty bar layer is created, then the data sets can be added using Layer.addDataSet.

The dataCombineMethod parameter specifies how to combine the data sets together in the bar layer. The followings methods are supported:

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Side</td>
<td>3</td>
<td>The data sets are combined by plotting the bars side by side.</td>
</tr>
<tr>
<td>Stack</td>
<td>1</td>
<td>The data sets are combined by stacking up the bar segments.</td>
</tr>
<tr>
<td>Overlay</td>
<td>0</td>
<td>The data sets are combined similar to stacked bars. However, in Overlay, one data set is assumed to already include the other data set. For example, if the data sets are &quot;average&quot; and &quot;peak&quot;, the &quot;peak&quot; cannot be stacked on top of &quot;average&quot;, because the &quot;peak&quot; already contains &quot;average&quot;. In the Overlay style, only &quot;peak - average&quot; is stacked on top of &quot;average&quot;, and so the total bar length will be &quot;peak&quot;.</td>
</tr>
<tr>
<td>Percentage</td>
<td>4</td>
<td>The data sets are combined similar to stacked bars, except that the data in a bar are scaled so that they summed to 100. In other words, all stacked bars will be of the same length. A bar segment within a bar represents the percentage of the data item relative to sum of all the data items in the stacked bar.</td>
</tr>
</tbody>
</table>

Parameter | Default | Description |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>dataCombineMethod</td>
<td>Side</td>
<td>The method to combine the data sets together in the bar layer.</td>
</tr>
<tr>
<td>depth</td>
<td>0</td>
<td>The 3D depth of the bar layer.</td>
</tr>
</tbody>
</table>

Return Value
A BarLayer object representing the bar layer created.

To set some more options like transparent border of the bar, please use the methods in CDBarLayerMBS class. e.g. setBorderColor(CDXYChartMBS.kTransparent) will make them transparent.

See also:
- 28.61.9 addBarLayer(data() as Double, colors() as color, depth as Integer = 0) as CDBarLayerMBS 5005
28.61.12 addBarLayer(data() as Double, colors() as Integer, names() as string, depth as Integer = 0) as CDBarLayerMBS


**Function:** Adds a multi-color bar layer to the XYChart, and specify the data set to use for drawing the bars.

**Notes:**
A multi-color bar layer is a bar layer in which each bar has a different color. In a normal bar layer, each data set has a different color, but the bars in the same data set have the same color.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>data</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the data set.</td>
</tr>
<tr>
<td>colors</td>
<td>(Mandatory)</td>
<td>An array of colors to draw the bars. An empty array means the colors are automatically selected from the palette.</td>
</tr>
<tr>
<td>names</td>
<td>[ Empty_Array ]</td>
<td>An array of text strings as the names of the bars. The names will be used in the legend box, if one is available. An empty array means that bars have no name.</td>
</tr>
<tr>
<td>depth</td>
<td>0</td>
<td>The 3D depth of the bar layer.</td>
</tr>
</tbody>
</table>

**Return Value**
A BarLayer object representing the bar layer created.

To set some more options like transparent border of the bar, please use the methods in CDBarLayerMBS class. e.g. setBorderColor(CDXYChartMBS.kTransparent) will make them transparent.

See also:
- 28.61.9 addBarLayer(data() as Double, colors() as color, depth as Integer = 0) as CDBarLayerMBS 5005
- 28.61.10 addBarLayer(data() as Double, colors() as color, names() as string, depth as Integer = 0) as CDBarLayerMBS 5006
28.61. CLASS CXYCHARTMBS

• 28.61.11 addBarLayer(data() as Double, colors() as Integer, depth as Integer = 0) as CDBarLayerMBS 5006

• 28.61.13 addBarLayer(data() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDBarLayerMBS 5009

• 28.61.14 addBarLayer(data() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDBarLayerMBS 5009

• 28.61.15 addBarLayer(dataCombineMethod as Integer = 3, depth as Integer = 0) as CDBarLayerMBS 5010

28.61.13 addBarLayer(data() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDBarLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Same as the other addBarLayer method, but uses color instead of integer data type for passing color values.

See also:

• 28.61.9 addBarLayer(data() as Double, colors() as color, depth as Integer = 0) as CDBarLayerMBS 5005

• 28.61.10 addBarLayer(data() as Double, colors() as color, names() as string, depth as Integer = 0) as CDBarLayerMBS 5006

• 28.61.11 addBarLayer(data() as Double, colors() as Integer, depth as Integer = 0) as CDBarLayerMBS 5006

• 28.61.12 addBarLayer(data() as Double, colors() as Integer, names() as string, depth as Integer = 0) as CDBarLayerMBS 5008

• 28.61.14 addBarLayer(data() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDBarLayerMBS 5009

• 28.61.15 addBarLayer(dataCombineMethod as Integer = 3, depth as Integer = 0) as CDBarLayerMBS 5010

28.61.14 addBarLayer(data() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDBarLayerMBS


Function: Adds a bar layer to the XYChart, and specify the data set to use for drawing the bars.

Notes:

Return Value
A BarLayer object representing the bar layer created.
Parameter | Default | Description
--- | --- | ---
data | (Mandatory) | An array of numbers representing the data set.
color | -1 | The color to draw the bars. -1 means that the color is automatically selected from the palette.
names | "" | The name of the data set. The name will be used in the legend box, if one is available. An empty string means the data set has no name.
depth | 0 | The 3D depth of the bar layer.

To set some more options like transparent border of the bar, please use the methods in CDBarLayerMBS class. e.g. setBorderColor(CDXYChartMBS.kTransparent) will make them transparent.

See also:

- 28.61.9 addBarLayer(data() as Double, colors() as color, depth as Integer = 0) as CDBarLayerMBS
- 28.61.10 addBarLayer(data() as Double, colors() as color, names() as string, depth as Integer = 0) as CDBarLayerMBS
- 28.61.11 addBarLayer(data() as Double, colors() as Integer, depth as Integer = 0) as CDBarLayerMBS
- 28.61.12 addBarLayer(data() as Double, colors() as Integer, names() as string, depth as Integer = 0) as CDBarLayerMBS
- 28.61.13 addBarLayer(data() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDBarLayerMBS
- 28.61.15 addBarLayer(dataCombineMethod as Integer = 3, depth as Integer = 0) as CDBarLayerMBS

28.61.15 addBarLayer(dataCombineMethod as Integer = 3, depth as Integer = 0) as CDBarLayerMBS


**Function:** Adds an empty bar layer to the XYChart.

**Notes:**

This method is typically used to add multiple data sets to a single bar layer. First an empty bar layer is created, then the data sets can be added using Layer.addDataSet.

The dataCombineMethod parameter specifies how to combine the data sets together in the bar layer. The followings methods are supported:

**Return Value**
A BarLayer object representing the bar layer created.
### 28.61. CLASS CDXYCHARTMBS

#### Constant Value Description

- **Side**: The data sets are combined by plotting the bars side by side.
- **Stack**: The data sets are combined by stacking up the bar segments.
- **Overlay**: The data sets are combined similar to stacked bars. However, in Overlay, one data set is assumed to already include the other data set. For example, if the data sets are "average" and "peak", the "peak" cannot be stacked on top of "average", because the "peak" already contains "average". In the Overlay style, only "peak - average" is stacked on top of "average", and so the total bar length will be "peak".
- **Percentage**: The data sets are combined similar to stacked bars, except that the data in a bar are scaled so that they summed to 100. In other words, all stacked bars will be of the same length. A bar segment within a bar represents the percentage of the data item relative to sum of all the data items in the stacked bar.

#### Parameter Default Description

- **dataCombineMethod Side**: The method to combine the data sets together in the bar layer.
- **depth 0**: The 3D depth of the bar layer.

To set some more options like transparent border of the bar, please use the methods in CDBarLayerMBS class. e.g. `setBorderColor(CDXYChartMBS.kTransparent)` will make them transparent.

See also:

- **28.61.9 addBarLayer(data() as Double, colors() as color, depth as Integer = 0) as CDBarLayerMBS 5005**
- **28.61.10 addBarLayer(data() as Double, colors() as color, names() as string, depth as Integer = 0) as CDBarLayerMBS 5006**
- **28.61.11 addBarLayer(data() as Double, colors() as Integer, depth as Integer = 0) as CDBarLayerMBS 5006**
- **28.61.12 addBarLayer(data() as Double, colors() as Integer, names() as string, depth as Integer = 0) as CDBarLayerMBS 5008**
- **28.61.13 addBarLayer(data() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDBarLayerMBS 5009**
- **28.61.14 addBarLayer(data() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDBarLayerMBS 5009**

**28.61.16 addBoxLayer(boxTop() as Double, boxBottom() as Double, colorvalue as color, name as string = "") as CDBoxWhiskerLayerMBS**

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function**: Same as the other addBoxLayer method, but uses color instead of integer data type for passing
color values.
See also:

- 28.61.17 addBoxLayer(boxTop() as Double, boxBottom() as Double, colorvalue as Integer = -1, name as string = "") as CDBoxWhiskerLayerMBS

**28.61.17 addBoxLayer(boxTop() as Double, boxBottom() as Double, colorvalue as Integer = -1, name as string = "") as CDBoxWhiskerLayerMBS**

**Function:** Adds a floating box layer to the XYChart, and specify the data sets to use for drawing the layer.

**Notes:**
This method is a simplification of XYChart.addBoxWhiskerLayer. Instead of adding a full box-whisker layer, only the box part is used, resulting in a chart layer displaying floating boxes.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>boxTop</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the top edge of the box.</td>
</tr>
<tr>
<td>boxBottom</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the bottom edge of the box.</td>
</tr>
<tr>
<td>color</td>
<td>-1</td>
<td>The color to draw the area. -1 means that the color is automatically selected from the color palette.</td>
</tr>
<tr>
<td>name</td>
<td>&quot;&quot;</td>
<td>The name of the data set. The name will be used in the legend box, if one is available. An empty string means the data set has no name.</td>
</tr>
</tbody>
</table>

**Return Value**
A BoxWhiskerLayer object representing the box-whisker layer created.
See also:

- 28.61.16 addBoxLayer(boxTop() as Double, boxBottom() as Double, colorvalue as color, name as string = "") as CDBoxWhiskerLayerMBS

**28.61.18 addBoxWhiskerLayer(boxTop() as Double, boxBottom() as Double) as CDBoxWhiskerLayerMBS**

**Function:** Adds a box-whisker layer to the XYChart, and specify the data sets to use for drawing the layer.

**Notes:**
Traditionally, each box-whisker symbol represents 5 values, which are the as maximum, 3rd quartile, median, 1st quartile and minimum of some data samples.

A vertical box-whisker symbol (on a non-swapped XY chart) consists of a vertical line joining the maximum and minimum points, a box extending from the 1st quartile point to the 3rd quartile point, and 3 horizontal
mark lines at the maximum, median and minimum points.

In practice, the box-whisker symbol is not limited to representing the maximum, 3rd quartile, median, 1st quartile and minimum values. It can be used to represent any ordered values.

The boxTop and boxBottom data sets specifies the top and bottom edges of the box. The maxData, minData and midData specifies the top, bottom and middle mark lines.

You can use empty arrays to disable showing some parts of the box-whisker symbol.

For example, if you just want to show a floating box, you can use only boxTop and boxBottom and set the maxData, minData and midData to empty arrays.

Similarly, if the boxTop, boxBottom and midData are set to empty arrays, only the top and bottom mark lines and the joining center line are visible. This style is most often used as "error bands" together with line charts.

In addition to maxData, minData and midData, you can add additional mark lines to the box-whisker element by adding more data sets using Layer.addDataSet.

By default, the box-whisker symbol will be drawn using the colors specified in the fillColor, whiskerColor and edgeColor argument. The fillColor and edgeColor are used as the fill and border colors of the box, while the whiskerColor is used as the color of the center line and the mark lines.

Internally, ChartDirector maps the colors of different parts of the box-whisker symbol to data set colors as shown in the following table. You may control the colors of the box-whisker symbol in more details by setting the data set colors directly. The data set objects can be obtained using Layer.getDataSet, and the colors can be changed using DataSet.setDataColor.

<table>
<thead>
<tr>
<th>Box-Whisker Symbol Color</th>
<th>Data Set Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fill color of the box</td>
<td>Data Color for the first data set (index = 0)</td>
</tr>
<tr>
<td>Border color of the box</td>
<td>Edge Color for the first data set (index = 0)</td>
</tr>
<tr>
<td>Center line color</td>
<td>Data Color for the second data set (index = 1)</td>
</tr>
<tr>
<td>Maximum value mark line color</td>
<td>Data Color for the third data set (index = 2)</td>
</tr>
<tr>
<td>Minimum value mark line color</td>
<td>Data Color for the fourth data set (index = 3)</td>
</tr>
<tr>
<td>Middle value mark line color</td>
<td>Data Color for the fifth data set (index = 4)</td>
</tr>
<tr>
<td>Mark line color for additional mark lines</td>
<td>Data Color for the data set representing the additional mark line</td>
</tr>
</tbody>
</table>

Return Value
A BoxWhiskerLayer object representing the box-whisker layer created.
See also:

- 28.61.19 addBoxWhiskerLayer(boxTop() as Double, boxBottom() as Double, maxData() as Double) as
Parameter | Default | Description
--- | --- | ---
boxTop | (Mandatory) | An array of numbers representing the top edge of the box.
boxBottom | (Mandatory) | An array of numbers representing the bottom edge of the box.
maxData | [ Empty Array ] | An array of numbers representing the maximum value mark lines.
minData | [ Empty Array ] | An array of numbers representing the minimum value mark lines.
midData | [ Empty Array ] | An array of numbers representing the middle value mark lines.
fillColor | -1 | The color used to fill the box. -1 means that the color is automatically selected from the palette.
whiskerColor |LineColor | The color used to draw the central line and mark lines.
edgeColor |LineColor | The color used to draw the border of the box.


**Function:** Adds a box-whisker layer to the XYChart, and specify the data sets to use for drawing the layer.

**Notes:**
Traditionally, each box-whisker symbol represents 5 values, which are the as maximum, 3rd quartile, median, 1st quartile and minimum of some data samples.

A vertical box-whisker symbol (on a non-swapped XY chart) consists of a vertical line joining the maximum and minimum points, a box extending from the 1st quartile point to the 3rd quartile point, and 3 horizontal mark lines at the maximum, median and minimum points.

In practice, the box-whisker symbol is not limited to representing the maximum, 3rd quartile, median, 1st quartile and minimum values. It can be used to represent any ordered values.

The boxTop and boxBottom data sets specifies the top and bottom edges of the box. The maxData, minData and midData specifies the top, bottom and middle mark lines.
You can use empty arrays to disable showing some parts of the box-whisker symbol.

For example, if you just want to show a floating box, you can use only `boxTop` and `boxBottom` and set the `maxData`, `minData` and `midData` to empty arrays.

Similarly, if the `boxTop`, `boxBottom` and `midData` are set to empty arrays, only the top and bottom mark lines and the joining center line are visible. This style is most often used as "error bands" together with line charts.

In addition to `maxData`, `minData` and `midData`, you can add additional mark lines to the box-whisker element by adding more data sets using `Layer.addDataSet`.

By default, the box-whisker symbol will be drawn using the colors specified in the `fillColor`, `whiskerColor` and `edgeColor` argument. The `fillColor` and `edgeColor` are used as the fill and border colors of the box, while the `whiskerColor` is used as the color of the center line and the mark lines.

Internally, ChartDirector maps the colors of different parts of the box-whisker symbol to data set colors as shown in the following table. You may control the colors of the box-whisker symbol in more details by setting the data set colors directly. The data set objects can be obtained using `Layer.getDataSet`, and the colors can be changed using `DataSet.setDataColor`.

<table>
<thead>
<tr>
<th>Box-Whisker Symbol Color</th>
<th>Data Set Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fill color of the box</td>
<td>Data Color for the first data set (index = 0)</td>
</tr>
<tr>
<td>Border color of the box</td>
<td>Edge Color for the first data set (index = 0)</td>
</tr>
<tr>
<td>Center line color</td>
<td>Data Color for the second data set (index = 1)</td>
</tr>
<tr>
<td>Maximum value mark line color</td>
<td>Data Color for the third data set (index = 2)</td>
</tr>
<tr>
<td>Minimum value mark line color</td>
<td>Data Color for the fourth data set (index = 3)</td>
</tr>
<tr>
<td>Middle value mark line color</td>
<td>Data Color for the fifth data set (index = 4)</td>
</tr>
<tr>
<td>Mark line color for additional mark lines</td>
<td>Data Color for the data set representing the additional mark line</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>boxTop</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the top edge of the box.</td>
</tr>
<tr>
<td>boxBottom</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the bottom edge of the box.</td>
</tr>
<tr>
<td>maxData</td>
<td>[ Empty_Array ]</td>
<td>An array of numbers representing the maximum value mark lines.</td>
</tr>
<tr>
<td>minData</td>
<td>[ Empty_Array ]</td>
<td>An array of numbers representing the minimum value mark lines.</td>
</tr>
<tr>
<td>midData</td>
<td>[ Empty_Array ]</td>
<td>An array of numbers representing the middle value mark lines.</td>
</tr>
<tr>
<td>fillColor</td>
<td>-1</td>
<td>The color used to fill the box. -1 means that the color is automatically selected from the palette.</td>
</tr>
<tr>
<td>whiskerColor</td>
<td>LineColor</td>
<td>The color used to draw the central line and mark lines.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>LineColor</td>
<td>The color used to draw the border of the box.</td>
</tr>
</tbody>
</table>

Return Value
A `BoxWhiskerLayer` object representing the box-whisker layer created.

See also:
28.61.20 addBoxWhiskerLayer(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double) as CDBoxWhiskerLayerMBS

28.61.21 addBoxWhiskerLayer(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColor as color, whiskerColor as color, edgeColor as color) as CDBoxWhiskerLayerMBS

28.61.22 addBoxWhiskerLayer(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColor as Integer = -1, whiskerColor as Integer = &hffffff0001, edgeColor as Integer = -1) as CDBoxWhiskerLayerMBS

28.61.20 addBoxWhiskerLayer(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double) as CDBoxWhiskerLayerMBS


**Function:** Adds a box-whisker layer to the XYChart, and specify the data sets to use for drawing the layer.

**Notes:**
Traditionally, each box-whisker symbol represents 5 values, which are the as maximum, 3rd quartile, median, 1st quartile and minimum of some data samples.

A vertical box-whisker symbol (on a non-swapped XY chart) consists of a vertical line joining the maximum and minimum points, a box extending from the 1st quartile point to the 3rd quartile point, and 3 horizontal mark lines at the maximum, median and minimum points.

In practice, the box-whisker symbol is not limited to representing the maximum, 3rd quartile, median, 1st quartile and minimum values. It can be used to represent any ordered values.

The boxTop and boxBottom data sets specifies the top and bottom edges of the box. The maxData, minData and midData specifies the top, bottom and middle mark lines.

You can use empty arrays to disable showing some parts of the box-whisker symbol.

For example, if you just want to show a floating box, you can use only boxTop and boxBottom and set the maxData, minData and midData to empty arrays.

Similarly, if the boxTop, boxBottom and midData are set to empty arrays, only the top and bottom mark lines and the joining center line are visible. This style is most often used as "error bands" together with line charts.
In addition to maxData, minData and midData, you can add additional mark lines to the box-whisker element by adding more data sets using Layer.addDataSet.

By default, the box-whisker symbol will be drawn using the colors specified in the fillColor, whiskerColor and edgeColor argument. The fillColor and edgeColor are used as the fill and border colors of the box, while the whiskerColor is used as the color of the center line and the mark lines.

Internally, ChartDirector maps the colors of different parts of the box-whisker symbol to data set colors as shown in the following table. You may control the colors of the box-whisker symbol in more details by setting the data set colors directly. The data set objects can be obtained using Layer.getDataSet, and the colors can be changed using DataSet.setDataColor.

<table>
<thead>
<tr>
<th>Box-Whisker Symbol Color</th>
<th>Data Set Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fill color of the box</td>
<td>Data Color for the first data set (index = 0)</td>
</tr>
<tr>
<td>Border color of the box</td>
<td>Edge Color for the first data set (index = 0)</td>
</tr>
<tr>
<td>Center line color</td>
<td>Data Color for the second data set (index = 1)</td>
</tr>
<tr>
<td>Maximum value mark line color</td>
<td>Data Color for the third data set (index = 2)</td>
</tr>
<tr>
<td>Minimum value mark line color</td>
<td>Data Color for the fourth data set (index = 3)</td>
</tr>
<tr>
<td>Middle value mark line color</td>
<td>Data Color for the fifth data set (index = 4)</td>
</tr>
<tr>
<td>Mark line color for additional mark lines</td>
<td>Data Color for the data set representing the additional mark line</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>boxTop</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the top edge of the box.</td>
</tr>
<tr>
<td>boxBottom</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the bottom edge of the box.</td>
</tr>
<tr>
<td>maxData</td>
<td>[Empty_Array]</td>
<td>An array of numbers representing the maximum value mark lines.</td>
</tr>
<tr>
<td>minData</td>
<td>[Empty_Array]</td>
<td>An array of numbers representing the minimum value mark lines.</td>
</tr>
<tr>
<td>midData</td>
<td>[Empty_Array]</td>
<td>An array of numbers representing the middle value mark lines.</td>
</tr>
<tr>
<td>fillColor</td>
<td>-1</td>
<td>The color used to fill the box. -1 means that the color is automatically selected from the palette.</td>
</tr>
<tr>
<td>whiskerColor</td>
<td>LineColor</td>
<td>The color used to draw the central line and mark lines.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>LineColor</td>
<td>The color used to draw the border of the box.</td>
</tr>
</tbody>
</table>

Return Value

A BoxWhiskerLayer object representing the box-whisker layer created.

See also:

- 28.61.18 addBoxWhiskerLayer(boxTop() as Double, boxBottom() as Double) as CDBoxWhiskerLayerMBS 5012
- 28.61.19 addBoxWhiskerLayer(boxTop() as Double, boxBottom() as Double, maxData() as Double) as CDBoxWhiskerLayerMBS 5014
- 28.61.21 addBoxWhiskerLayer(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColor as color, whiskerColor as color, edgeColor as color) as CDBoxWhiskerLayerMBS 5018
• 28.61.22 addBoxWhiskerLayer(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColor as Integer = -1, whiskerColor as Integer = & hffff0001, edgeColor as Integer = -1) as CDBoxWhiskerLayerMBS

28.61.21 addBoxWhiskerLayer(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColor as color, whiskerColor as color, edgeColor as color) as CDBoxWhiskerLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Same as the other addBoxWhiskerLayer method, but uses color instead of integer data type for passing color values.

See also:

• 28.61.18 addBoxWhiskerLayer(boxTop() as Double, boxBottom() as Double) as CDBoxWhiskerLayerMBS
• 28.61.19 addBoxWhiskerLayer(boxTop() as Double, boxBottom() as Double, maxData() as Double) as CDBoxWhiskerLayerMBS
• 28.61.20 addBoxWhiskerLayer(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double) as CDBoxWhiskerLayerMBS
• 28.61.22 addBoxWhiskerLayer(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColor as Integer = -1, whiskerColor as Integer = & hffff0001, edgeColor as Integer = -1) as CDBoxWhiskerLayerMBS

28.61.22 addBoxWhiskerLayer(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColor as Integer = -1, whiskerColor as Integer = & hffff0001, edgeColor as Integer = -1) as CDBoxWhiskerLayerMBS

**Function:** Adds a box-whisker layer to the XYChart, and specify the data sets to use for drawing the layer.  
**Notes:**

Traditionally, each box-whisker symbol represents 5 values, which are the as maximum, 3rd quartile, median, 1st quartile and minimum of some data samples.

A vertical box-whisker symbol (on a non-swapped XY chart) consists of a vertical line joining the maximum and minimum points, a box extending from the 1st quartile point to the 3rd quartile point, and 3 horizontal mark lines at the maximum, median and minimum points.

In practice, the box-whisker symbol is not limited to representing the maximum, 3rd quartile, median, 1st quartile and minimum values. It can be used to represent any ordered values.
The boxTop and boxBottom data sets specify the top and bottom edges of the box. The maxData, minData and midData specify the top, bottom and middle mark lines.

You can use empty arrays to disable showing some parts of the box-whisker symbol.

For example, if you just want to show a floating box, you can use only boxTop and boxBottom and set the maxData, minData and midData to empty arrays.

Similarly, if the boxTop, boxBottom and midData are set to empty arrays, only the top and bottom mark lines and the joining center line are visible. This style is most often used as "error bands" together with line charts.

In addition to maxData, minData and midData, you can add additional mark lines to the box-whisker element by adding more data sets using Layer.addDataSet.

By default, the box-whisker symbol will be drawn using the colors specified in the fillColor, whiskerColor and edgeColor argument. The fillColor and edgeColor are used as the fill and border colors of the box, while the whiskerColor is used as the color of the center line and the mark lines.

Internally, ChartDirector maps the colors of different parts of the box-whisker symbol to data set colors as shown in the following table. You may control the colors of the box-whisker symbol in more details by setting the data set colors directly. The data set objects can be obtained using Layer.getDataSet, and the colors can be changed using DataSet.setDataColor.

<table>
<thead>
<tr>
<th>Box-Whisker Symbol Color</th>
<th>Data Set Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fill color of the box</td>
<td>Data Color for the first data set (index = 0)</td>
</tr>
<tr>
<td>Border color of the box</td>
<td>Edge Color for the first data set (index = 0)</td>
</tr>
<tr>
<td>Center line color</td>
<td>Data Color for the second data set (index = 1)</td>
</tr>
<tr>
<td>Maximum value mark line color</td>
<td>Data Color for the third data set (index = 2)</td>
</tr>
<tr>
<td>Minimum value mark line color</td>
<td>Data Color for the fourth data set (index = 3)</td>
</tr>
<tr>
<td>Middle value mark line color</td>
<td>Data Color for the fifth data set (index = 4)</td>
</tr>
<tr>
<td>Mark line color for additional mark lines</td>
<td>Data Color for the data set representing the additional mark line</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>boxTop</td>
<td>(Mandatory) An array of numbers representing the top edge of the box.</td>
</tr>
<tr>
<td>boxBottom</td>
<td>(Mandatory) An array of numbers representing the bottom edge of the box.</td>
</tr>
<tr>
<td>maxData</td>
<td>[ Empty_Array ] An array of numbers representing the maximum value mark lines.</td>
</tr>
<tr>
<td>minData</td>
<td>[ Empty_Array ] An array of numbers representing the minimum value mark lines.</td>
</tr>
<tr>
<td>midData</td>
<td>[ Empty_Array ] An array of numbers representing the middle value mark lines.</td>
</tr>
<tr>
<td>fillColor</td>
<td>-1 The color used to fill the box. -1 means that the color is automatically selected from the palette.</td>
</tr>
<tr>
<td>whiskerColor</td>
<td>LineColor The color used to draw the central line and mark lines.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>LineColor The color used to draw the border of the box.</td>
</tr>
</tbody>
</table>
Return Value
A BoxWhiskerLayer object representing the box-whisker layer created.
See also:

- 28.61.18 addBoxWhiskerLayer(boxTop() as Double, boxBottom() as Double) as CDBoxWhiskerLayerMBS 5012
- 28.61.19 addBoxWhiskerLayer(boxTop() as Double, boxBottom() as Double, maxData() as Double) as CDBoxWhiskerLayerMBS 5014
- 28.61.20 addBoxWhiskerLayer(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double) as CDBoxWhiskerLayerMBS 5016
- 28.61.21 addBoxWhiskerLayer(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColor as color, whiskerColor as color, edgeColor as color) as CDBoxWhiskerLayerMBS 5018

28.61.23 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double) as CDBoxWhiskerLayerMBS

Function: Adds a multi-color box-whisker layer to the XYChart, and specify the data sets to use for drawing the layer.
Notes:
This method is similar to XYChart.addBoxWhiskerLayer, except that the layer will be added in multi-color mode. Please refer to XYChart.addBoxWhiskerLayer on basic information of what is a box-whisker layer.

In multi-color mode, the boxes of a BoxWhiskerLayer can have different fill colors. For the whisker, instead of specifying a single whisker color for all boxes, ChartDirector computes the whisker colors by darkening or brightening the corresponding fill colors using a configurable brightness factor.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>boxTop</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the top edge of the box.</td>
</tr>
<tr>
<td>boxBottom</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the bottom edge of the box.</td>
</tr>
<tr>
<td>maxData</td>
<td>Empty_Array</td>
<td>An array of numbers representing the maximum value mark lines.</td>
</tr>
<tr>
<td>minData</td>
<td>Empty_Array</td>
<td>An array of numbers representing the minimum value mark lines.</td>
</tr>
<tr>
<td>midData</td>
<td>Empty_Array</td>
<td>An array of numbers representing the middle value mark lines.</td>
</tr>
<tr>
<td>fillColors</td>
<td>Empty_Array</td>
<td>An array of colors to be used as the fill color of the boxes. If there are insufficient colors in the array for the boxes, the remaining boxes will have their colors automatically selected from the palette.</td>
</tr>
<tr>
<td>whiskerBrightness</td>
<td>0.5</td>
<td>The brightness factor for whisker color. A value less than 1 means darkening. A value larger than 1 means brightening. A zero value means black.</td>
</tr>
<tr>
<td>names</td>
<td>Empty_Array</td>
<td>An array of names for the boxes to be used in the legend box, if one is configured for the chart.</td>
</tr>
</tbody>
</table>

Return Value
28.61. CLASS CXYCHARTMBS

A BoxWhiskerLayer object representing the box-whisker layer created.

See also:

- 28.61.24 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double) as CDBoxWhiskerLayerMBS

- 28.61.25 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double) as CDBoxWhiskerLayerMBS

- 28.61.26 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double) as CDBoxWhiskerLayerMBS

- 28.61.27 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColors() as color, whiskerBrightness as Double = 0.5) as CDBoxWhiskerLayerMBS

- 28.61.28 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColors() as color, whiskerBrightness as Double, names() as string) as CDBoxWhiskerLayerMBS

- 28.61.29 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColors() as Integer, whiskerBrightness as Double = 0.5) as CDBoxWhiskerLayerMBS

- 28.61.30 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColors() as Integer, whiskerBrightness as Double, names() as string) as CDBoxWhiskerLayerMBS

28.61.24 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double) as CDBoxWhiskerLayerMBS


**Function:** Adds a multi-color box-whisker layer to the XYChart, and specify the data sets to use for drawing the layer.

**Notes:**

This method is similar to XYChart.addBoxWhiskerLayer, except that the layer will be added in multi-color mode. Please refer to XYChart.addBoxWhiskerLayer on basic information of what is a box-whisker layer.

In multi-color mode, the boxes of a BoxWhiskerLayer can have different fill colors. For the whisker, instead of specifying a single whisker color for all boxes, ChartDirector computes the whisker colors by darkening or brightening the corresponding fill colors using a configurable brightness factor.

**Return Value**

A BoxWhiskerLayer object representing the box-whisker layer created.

See also:

- 28.61.23 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double) as CDBoxWhiskerLayerMBS
Parameter | Default | Description
--- | --- | ---
boxTop | (Mandatory) | An array of numbers representing the top edge of the box.
boxBottom | (Mandatory) | An array of numbers representing the bottom edge of the box.
maxData | [ Empty Array ] | An array of numbers representing the maximum value mark lines.
minData | [ Empty Array ] | An array of numbers representing the minimum value mark lines.
midData | [ Empty Array ] | An array of numbers representing the middle value mark lines.
fillColors | [ Empty Array ] | An array of colors to be used as the fill color of the boxes. If there are insufficient colors in the array for the boxes, the remaining boxes will have their colors automatically selected from the palette.
whiskerBrightness | 0.5 | The brightness factor for whisker color. A value less than 1 means darkening. A value larger than 1 means brightening. A zero value means black.
names | [ Empty Array ] | An array of names for the boxes to be used in the legend box, if one is configured for the chart.

- 28.61.25 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double) as CDBoxWhiskerLayerMBS
- 28.61.26 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double) as CDBoxWhiskerLayerMBS
- 28.61.27 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColors() as color, whiskerBrightness as Double = 0.5) as CDBoxWhiskerLayerMBS
- 28.61.28 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColors() as color, whiskerBrightness as Double, names() as string) as CDBoxWhiskerLayerMBS
- 28.61.29 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColors() as Integer, whiskerBrightness as Double = 0.5) as CDBoxWhiskerLayerMBS
- 28.61.30 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColors() as Integer, whiskerBrightness as Double, names() as string) as CDBoxWhiskerLayerMBS

28.61.25 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double) as CDBoxWhiskerLayerMBS

This method is similar to XYChart.addBoxWhiskerLayer, except that the layer will be added in multi-color mode. Please refer to XYChart.addBoxWhiskerLayer on basic information of what is a box-whisker layer.
In multi-color mode, the boxes of a BoxWhiskerLayer can have different fill colors. For the whisker, instead of specifying a single whisker color for all boxes, ChartDirector computes the whisker colors by darkening or brightening the corresponding fill colors using a configurable brightness factor.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
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</tr>
</thead>
<tbody>
<tr>
<td>boxTop</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the top edge of the box.</td>
</tr>
<tr>
<td>boxBottom</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the bottom edge of the box.</td>
</tr>
<tr>
<td>maxData</td>
<td>[Empty_Array]</td>
<td>An array of numbers representing the maximum value mark lines.</td>
</tr>
<tr>
<td>minData</td>
<td>[Empty_Array]</td>
<td>An array of numbers representing the minimum value mark lines.</td>
</tr>
<tr>
<td>midData</td>
<td>[Empty_Array]</td>
<td>An array of numbers representing the middle value mark lines.</td>
</tr>
<tr>
<td>fillColors</td>
<td>[Empty_Array]</td>
<td>An array of colors to be used as the fill color of the boxes. If there are insufficient colors in the array for the boxes, the remaining boxes will have their colors automatically selected from the palette.</td>
</tr>
<tr>
<td>whiskerBrightness</td>
<td>0.5</td>
<td>The brightness factor for whisker color. A value less than 1 means darkening, A value larger than 1 means brightening. A zero value means black.</td>
</tr>
<tr>
<td>names</td>
<td>[Empty_Array]</td>
<td>An array of names for the boxes to be used in the legend box, if one is configured for the chart.</td>
</tr>
</tbody>
</table>

Return Value
A BoxWhiskerLayer object representing the box-whisker layer created.

See also:
- 28.61.23 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double) as CDBoxWhiskerLayerMBS
- 28.61.24 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double) as CDBoxWhiskerLayerMBS
- 28.61.26 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double) as CDBoxWhiskerLayerMBS
- 28.61.27 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColors() as color, whiskerBrightness as Double = 0.5) as CDBoxWhiskerLayerMBS
- 28.61.28 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColors() as color, whiskerBrightness as Double, names() as string) as CDBoxWhiskerLayerMBS
- 28.61.29 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColors() as Integer, whiskerBrightness as Double = 0.5) as CDBoxWhiskerLayerMBS
- 28.61.30 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColors() as Integer, whiskerBrightness as Double, names() as string) as CDBoxWhiskerLayerMBS
addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, 
maxData() as Double, minData() as Double, midData() as Double) as 
CDBoxWhiskerLayerMBS


Function: Adds a multi-color box-whisker layer to the XYChart, and specify the data sets to use for drawing 
the layer.

Notes:

This method is similar to XYChart.addBoxWhiskerLayer, except that the layer will be added in multi-color 
mode. Please refer to XYChart.addBoxWhiskerLayer on basic information of what is a box-whisker layer.

In multi-color mode, the boxes of a BoxWhiskerLayer can have different fill colors. For the whisker, instead 
of specifying a single whisker color for all boxes, ChartDirector computes the whisker colors by darkening or 
brightening the corresponding fill colors using a configurable brightness factor.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>boxTop</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the top edge of the box.</td>
</tr>
<tr>
<td>boxBottom</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the bottom edge of the box.</td>
</tr>
<tr>
<td>maxData</td>
<td>[Empty_Array]</td>
<td>An array of numbers representing the maximum value mark lines.</td>
</tr>
<tr>
<td>minData</td>
<td>[Empty_Array]</td>
<td>An array of numbers representing the minimum value mark lines.</td>
</tr>
<tr>
<td>midData</td>
<td>[Empty_Array]</td>
<td>An array of numbers representing the middle value mark lines.</td>
</tr>
<tr>
<td>fillColors</td>
<td>[Empty_Array]</td>
<td>An array of colors to be used as the fill color of the boxes. If there are insufficient colors in the array for the boxes, the remaining boxes will have their colors automatically selected from the palette.</td>
</tr>
<tr>
<td>whiskerBrightness</td>
<td>0.5</td>
<td>The brightness factor for whisker color. A value less than 1 means darkening. A value larger than 1 means brightening. A zero value means black.</td>
</tr>
<tr>
<td>names</td>
<td>[Empty_Array]</td>
<td>An array of names for the boxes to be used in the legend box, if one is configured for the chart.</td>
</tr>
</tbody>
</table>

Return Value
A BoxWhiskerLayer object representing the box-whisker layer created.

See also:

- 28.61.23 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double) as CDBoxWhiskerLayerMBS 5020
- 28.61.24 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double) as CDBoxWhiskerLayerMBS 5021
- 28.61.25 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double) as CDBoxWhiskerLayerMBS 5022
- 28.61.27 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, 
  minData() as Double, midData() as Double, fillColors() as color, whiskerBrightness as Double = 0.5) 
as CDBoxWhiskerLayerMBS 5025
- 28.61.28 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double,
28.61. **CLASS CDXYCHARTMBS**

minData() as Double, midData() as Double, fillColors() as color, whiskerBrightness as Double, names() as string) as CDBoxWhiskerLayerMBS

- 28.61.29 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColors() as color, whiskerBrightness as Double = 0.5) as CDBoxWhiskerLayerMBS

- 28.61.30 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColors() as Integer, whiskerBrightness as Double, names() as string) as CDBoxWhiskerLayerMBS

28.61.27 `addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColors() as color, whiskerBrightness as Double = 0.5) as CDBoxWhiskerLayerMBS`

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other `addBoxWhiskerLayer2` method, but uses color instead of integer data type for passing color values.

See also:

- 28.61.23 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double) as CDBoxWhiskerLayerMBS

- 28.61.24 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double) as CDBoxWhiskerLayerMBS

- 28.61.25 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double) as CDBoxWhiskerLayerMBS

- 28.61.26 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double) as CDBoxWhiskerLayerMBS

- 28.61.28 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColors() as color, whiskerBrightness as Double, names() as string) as CDBoxWhiskerLayerMBS

- 28.61.29 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColors() as Integer, whiskerBrightness as Double = 0.5) as CDBoxWhiskerLayerMBS

- 28.61.30 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColors() as Integer, whiskerBrightness as Double, names() as string) as CDBoxWhiskerLayerMBS
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28.61.28 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColors() as color, whiskerBrightness as Double, names() as string) as CDBoxWhiskerLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Same as the other addBoxWhiskerLayer2 method, but uses color instead of integer data type for passing color values.

See also:

- 28.61.23 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double) as CDBoxWhiskerLayerMBS 5020
- 28.61.24 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double) as CDBoxWhiskerLayerMBS 5021
- 28.61.25 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double) as CDBoxWhiskerLayerMBS 5022
- 28.61.26 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double) as CDBoxWhiskerLayerMBS 5023
- 28.61.27 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColors() as color, whiskerBrightness as Double = 0.5) as CDBoxWhiskerLayerMBS 5024
- 28.61.28 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColors() as Integer, names() as string) as CDBoxWhiskerLayerMBS 5025
- 28.61.29 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColors() as Integer, whiskerBrightness as Double = 0.5) as CDBoxWhiskerLayerMBS 5026
- 28.61.30 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColors() as Integer, whiskerBrightness as Double, names() as string) as CDBoxWhiskerLayerMBS 5028

28.61.29 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColors() as Integer, whiskerBrightness as Double = 0.5) as CDBoxWhiskerLayerMBS

**Function:** Adds a multi-color box-whisker layer to the XYChart, and specify the data sets to use for drawing the layer.

**Notes:**

This method is similar to XYChart.addBoxWhiskerLayer, except that the layer will be added in multi-color mode. Please refer to XYChart.addBoxWhiskerLayer on basic information of what is a box-whisker layer.
In multi-color mode, the boxes of a BoxWhiskerLayer can have different fill colors. For the whisker, instead of specifying a single whisker color for all boxes, ChartDirector computes the whisker colors by darkening or brightening the corresponding fill colors using a configurable brightness factor.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>boxTop</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the top edge of the box.</td>
</tr>
<tr>
<td>boxBottom</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the bottom edge of the box.</td>
</tr>
<tr>
<td>maxData</td>
<td>[ Empty_Array ]</td>
<td>An array of numbers representing the maximum value mark lines.</td>
</tr>
<tr>
<td>minData</td>
<td>[ Empty_Array ]</td>
<td>An array of numbers representing the minimum value mark lines.</td>
</tr>
<tr>
<td>midData</td>
<td>[ Empty_Array ]</td>
<td>An array of numbers representing the middle value mark lines.</td>
</tr>
<tr>
<td>fillColors</td>
<td>[ Empty_Array ]</td>
<td>An array of colors to be used as the fill color of the boxes. If there are insufficient colors in the array for the boxes, the remaining boxes will have their colors automatically selected from the palette.</td>
</tr>
<tr>
<td>whiskerBrightness</td>
<td>0.5</td>
<td>The brightness factor for whisker color. A value less than 1 means darkening. A value larger than 1 means brightening. A zero value means black.</td>
</tr>
<tr>
<td>names</td>
<td>[ Empty_Array ]</td>
<td>An array of names for the boxes to be used in the legend box, if one is configured for the chart.</td>
</tr>
</tbody>
</table>

Return Value
A BoxWhiskerLayer object representing the box-whisker layer created.
See also:

- 28.61.23 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double) as CDBoxWhiskerLayerMBS 5020
- 28.61.24 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double) as CDBoxWhiskerLayerMBS 5021
- 28.61.25 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double) as CDBoxWhiskerLayerMBS 5022
- 28.61.26 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double) as CDBoxWhiskerLayerMBS 5024
- 28.61.27 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColors() as color, whiskerBrightness as Double = 0.5) as CDBoxWhiskerLayerMBS 5025
- 28.61.28 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColors() as color, whiskerBrightness as Double, names() as string) as CDBoxWhiskerLayerMBS 5026
- 28.61.30 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColors() as Integer, whiskerBrightness as Double, names() as string) as CDBoxWhiskerLayerMBS 5028
28.61.30  addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double, fillColors() as Integer, whiskerBrightness as Double, names() as string) as CDBoxWhiskerLayerMBS


Function: Adds a multi-color box-whisker layer to the XYChart, and specify the data sets to use for drawing the layer.

Notes: This method is similar to XYChart.addBoxWhiskerLayer, except that the layer will be added in multi-color mode. Please refer to XYChart.addBoxWhiskerLayer on basic information of what is a box-whisker layer.

In multi-color mode, the boxes of a BoxWhiskerLayer can have different fill colors. For the whisker, instead of specifying a single whisker color for all boxes, ChartDirector computes the whisker colors by darkening or brightening the corresponding fill colors using a configurable brightness factor.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>boxTop</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the top edge of the box.</td>
</tr>
<tr>
<td>boxBottom</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the bottom edge of the box.</td>
</tr>
<tr>
<td>maxData</td>
<td>[Empty Array]</td>
<td>An array of numbers representing the maximum value mark lines.</td>
</tr>
<tr>
<td>minData</td>
<td>[Empty Array]</td>
<td>An array of numbers representing the minimum value mark lines.</td>
</tr>
<tr>
<td>midData</td>
<td>[Empty Array]</td>
<td>An array of numbers representing the middle value mark lines.</td>
</tr>
<tr>
<td>fillColors</td>
<td>[Empty Array]</td>
<td>An array of colors to be used as the fill color of the boxes. If there are insufficient colors in the array for the boxes, the remaining boxes will have their colors automatically selected from the palette.</td>
</tr>
<tr>
<td>whiskerBrightness</td>
<td>0.5</td>
<td>The brightness factor for whisker color. A value less than 1 means darkening. A value larger than 1 means brightening. A zero value means black.</td>
</tr>
<tr>
<td>names</td>
<td>[Empty Array]</td>
<td>An array of names for the boxes to be used in the legend box, if one is configured for the chart.</td>
</tr>
</tbody>
</table>

Return Value
A BoxWhiskerLayer object representing the box-whisker layer created.

See also:

- 28.61.23 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double) as CDBoxWhiskerLayerMBS 5020
- 28.61.24 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double) as CDBoxWhiskerLayerMBS 5021
- 28.61.25 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double) as CDBoxWhiskerLayerMBS 5022
- 28.61.26 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double, minData() as Double, midData() as Double) as CDBoxWhiskerLayerMBS 5024
• 28.61.27 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double,
  minData() as Double, midData() as Double, fillColors() as color, whiskerBrightness as Double = 0.5)
as CDBoxWhiskerLayerMBS 5025
• 28.61.28 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double,
  minData() as Double, midData() as Double, fillColors() as color, whiskerBrightness as Double,
  names() as string) as CDBoxWhiskerLayerMBS 5026
• 28.61.29 addBoxWhiskerLayer2(boxTop() as Double, boxBottom() as Double, maxData() as Double,
  minData() as Double, midData() as Double, fillColors() as Integer, whiskerBrightness as Double =
  0.5) as CDBoxWhiskerLayerMBS

28.61.31  addCandleStickLayer(highData() as Double, lowData() as Double, openData() as Double,
  closeData() as Double, riseColor as color, fallColor as color, edgeColor as color) as CDCandleStickLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other addCandleStickLayer method, but uses color instead of integer data type for
passing color values.

See also:

• 28.61.32 addCandleStickLayer(highData() as Double, lowData() as Double, openData() as Double,
  closeData() as Double, riseColor as Integer = -1, fallColor as Integer = 0, edgeColor as Integer = &
  hffff0001) as CDCandleStickLayerMBS 5029

28.61.32  addCandleStickLayer(highData() as Double, lowData() as Double, openData() as Double,
  closeData() as Double, riseColor as Integer = -1, fallColor as Integer = 0, edgeColor as Integer = &
  hffff0001) as CDCandleStickLayerMBS

**Function:** Adds a candlestick layer to the XYChart, and specify the data sets to use for drawing the layer.

**Notes:**

By default, the candlestick symbol will be drawn using the colors specified in the riseColor, fallColor and
edgeColor argument. The riseColor and fallColor are used to fill the candle depending on whether the opening
value or closing value is larger. The edgeColor is used to the center line and the border of the candle.

Internally, ChartDirector maps the colors of different parts of the candlestick symbol to data set colors as
shown in the following table. You may control the colors of the candlestick symbol in more details by setting
the data set colors directly. The data set objects can be obtained using Layer.getDataSet, and the colors
can be changed using DataSet.setDataColor.

**Return Value**

A CandleStickLayer object representing the candlestick layer created.
Candlestick Symbol Color | Data Set Color
--- | ---
Fill color for "up" candlesticks | Data Color for the first data set (index = 0).
Fill color for "down" candlesticks | Data Color for the second data set (index = 1).
Border color | Edge Color for the first data set (index = 0).
Center line color | Edge Color for the second data set (index = 1).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>highData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the high values.</td>
</tr>
<tr>
<td>lowData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the low values.</td>
</tr>
<tr>
<td>openData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the opening values.</td>
</tr>
<tr>
<td>closeData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the closing values.</td>
</tr>
<tr>
<td>riseColor</td>
<td>FFFFFF</td>
<td>The color used to fill the candle if the closing value is higher than the opening value.</td>
</tr>
<tr>
<td>fallColor</td>
<td>000000</td>
<td>The color used to fill the candle if the opening value is higher than the closing value.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>LineColor</td>
<td>The color used to draw the center line and the border of the candle.</td>
</tr>
</tbody>
</table>

See also:

- 28.61.31 addCandleStickLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, riseColor as color, fallColor as color, edgeColor as color) as CDCandleStickLayerMBS

28.61.33 addContourLayer(xData() as Double, yData() as Double, zData() as Double) as CDContourLayerMBS


**Function:** Adds a contour layer to the XYChart, and specify the data sets to use for drawing the layer.

**Notes:**

ChartDirector supports both gridded and scattered data. If the data points are on a rectangular grid with no missing points, they will be handled as gridded data. Otherwise, they will be handled as scattered data. For gridded data, you may provide the x and y values of the grid, and the z values of the data points. For a 10 x 15 grid, that means the x data series should have 10 values, the y data series should have 15 values, and the z data series should have 150 values. The x and y data series should be strictly monotonic (either strictly increasing or strictly decreasing).

For both gridded and scattered data, you may also provide the (x, y, z) values of the data points. For example, for 150 data points, the x, y and z data series should each have 150 values. ChartDirector will automatically detect if the data points are gridded or scattered.

**Arguments:**

**Return Value:**
A ContourLayer object representing the contour layer created.
### 28.61.34 addHLOCLayer as CDHLOCLayerMBS


**Function:** Adds an empty high-low-open-close (HLOC) layer to the XYChart.

**Notes:**

- **Return Value**
  - A HLOCLayer object representing the HLOC layer created.

See also:

- 28.61.35 addHLOCLayer(highData() as Double, lowData() as Double) as CDHLOCLayerMBS
- 28.61.36 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double) as CDHLOCLayerMBS
- 28.61.37 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, colorValue as color) as CDHLOCLayerMBS
- 28.61.38 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, colorValue as Integer = -1) as CDHLOCLayerMBS
- 28.61.39 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, upColor as color, downColor as color, colorMode as Integer = -1) as CDHLOCLayerMBS
- 28.61.40 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, upColor as color, downColor as color, colorMode as Integer, leadValue as Double) as CDHLOCLayerMBS
- 28.61.41 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, upColor as Integer, downColor as Integer, colorMode as Integer = -1) as CDHLOCLayerMBS
- 28.61.42 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, upColor as Integer, downColor as Integer, colorMode as Integer, leadValue as Double) as CDHLOCLayerMBS

---

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the x data series.</td>
</tr>
<tr>
<td>yData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the y data series.</td>
</tr>
<tr>
<td>zData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the z data series.</td>
</tr>
</tbody>
</table>
CHAPTER 28. CHARTDIRECTOR

28.61.35 addHLOCLayer(highData() as Double, lowData() as Double) as CDHLOCLayerMBS


Function: Adds a high-low-open-close (HLOC) layer to the XYChart, and specify the data sets to use for drawing the layer.

Notes:

In this method, all HLOC symbols will be drawn using the color specified in the color argument. Use XYChart.addHLOCLayer for multi-color HLOC layers.

Internally, ChartDirector maps the colors of different parts of the HLOC symbol to data set colors as shown in the following table. You may control the colors of the HLOC symbol in more details by setting the data set colors directly. The data set objects can be obtained using Layer.getDataSet, and the colors can be changed using DataSet.setDataColor.

<table>
<thead>
<tr>
<th>HLOC Symbol Color</th>
<th>Data Set Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Line</td>
<td>Data Color for the first data set (index = 0)</td>
</tr>
<tr>
<td>Open Mark Line</td>
<td>Data Color for the third data set (index = 2)</td>
</tr>
<tr>
<td>Close Mark Line</td>
<td>Data Color for the fourth data set (index = 3)</td>
</tr>
</tbody>
</table>

Parameter | Default | Description
-----------|---------|-------------------
highData   | (Mandatory) | An array of numbers representing the high values. An empty array means there is no high value data available.
lowData    | (Mandatory) | An array of numbers representing the low values. An empty array means there is no low value data available.
openData   | [ Empty_Array ] | An array of numbers representing the opening values. An empty array means there is no opening value data available.
closeData  | [ Empty_Array ] | An array of numbers representing the closing values. An empty array means there is no closing value data available.
color      | -1       | The color to draw the HLOC symbol. -1 means that the color is automatically selected from the palette.

Return Value

A HLOCLayer object representing the HLOC layer created.

See also:

- 28.61.34 addHLOCLayer as CDHLOCLayerMBS
- 28.61.36 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double) as CDHLOCLayerMBS
- 28.61.37 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, colorValue as color) as CDHLOCLayerMBS
28.61.  **CLASS CDXYCHARTMBS**

- 28.61.38 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, colorValue as Integer = -1) as CDHLOCLayerMBS

- 28.61.39 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, upColor as color, downColor as color, colorMode as Integer = -1) as CDHLOCLayerMBS

- 28.61.40 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, upColor as color, downColor as color, colorMode as Integer, leadValue as Double) as CDHLOCLayerMBS

- 28.61.41 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, upColor as Integer, downColor as Integer, colorMode as Integer = -1) as CDHLOCLayerMBS

- 28.61.42 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, upColor as Integer, downColor as Integer, colorMode as Integer, leadValue as Double) as CDHLOCLayerMBS

28.61.36  **addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double) as CDHLOCLayerMBS**


**Function:** Adds a high-low-open-close (HLOC) layer to the XYChart, and specify the data sets to use for drawing the layer.

**Notes:**

In this method, all HLOC symbols will be drawn using the color specified in the color argument. Use XYChart.addHLOCLayer for multi-color HLOC layers.

Internally, ChartDirector maps the colors of different parts of the HLOC symbol to data set colors as shown in the following table. You may control the colors of the HLOC symbol in more details by setting the data set colors directly. The data set objects can be obtained using Layer.getDataSet, and the colors can be changed using DataSet.setDataColor.

<table>
<thead>
<tr>
<th>HLOC Symbol Color</th>
<th>Data Set Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Line</td>
<td>Data Color for the first data set (index = 0)</td>
</tr>
<tr>
<td>Open Mark Line</td>
<td>Data Color for the third data set (index = 2)</td>
</tr>
<tr>
<td>Close Mark Line</td>
<td>Data Color for the fourth data set (index = 3)</td>
</tr>
</tbody>
</table>

**Return Value**

A HLOCLayer object representing the HLOC layer created.

See also:

- 28.61.34 addHLOCLayer as CDHLOCLayerMBS
CHAPTER 28. CHARTDIRECTOR

Parameter | Default | Description
---|---|---
highData | (Mandatory) | An array of numbers representing the high values. An empty array means there is no high value data available.
lowData | (Mandatory) | An array of numbers representing the low values. An empty array means there is no low value data available.
openData | [ Empty_Array ] | An array of numbers representing the opening values. An empty array means there is no opening value data available.
closeData | [ Empty_Array ] | An array of numbers representing the closing values. An empty array means there is no closing value data available.
color | -1 | The color to draw the HLOC symbol. -1 means that the color is automatically selected from the palette.

- 28.61.35 addHLOCLayer(highData() as Double, lowData() as Double) as CDHLOCLayerMBS 5032
- 28.61.37 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, colorValue as color) as CDHLOCLayerMBS 5034
- 28.61.38 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, colorValue as Integer = -1) as CDHLOCLayerMBS 5035
- 28.61.39 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, upColor as color, downColor as color, colorMode as Integer = -1) as CDHLOCLayerMBS 5036
- 28.61.40 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, upColor as color, downColor as color, colorMode as Integer, leadValue as Double) as CDHLOCLayerMBS 5037
- 28.61.41 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, upColor as Integer, downColor as Integer, colorMode as Integer = -1) as CDHLOCLayerMBS 5038
- 28.61.42 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, upColor as Integer, downColor as Integer, colorMode as Integer, leadValue as Double) as CDHLOCLayerMBS 5039

28.61.37 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, colorValue as color) as CDHLOCLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addHLOCLayer method, but uses color instead of integer data type for passing color values.

See also:
- 28.61.34 addHLOCLayer as CDHLOCLayerMBS 5031
- 28.61.35 addHLOCLayer(highData() as Double, lowData() as Double) as CDHLOCLayerMBS 5032
28.61.38 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, colorValue as Integer = -1) as CDHLOCLayerMBS

Function: Adds a high-low-open-close (HLOC) layer to the XYChart, and specify the data sets to use for drawing the layer.

Notes:
In this method, all HLOC symbols will be drawn using the color specified in the color argument. Use XYChart.addHLOCLayer for multi-color HLOC layers.

Internally, ChartDirector maps the colors of different parts of the HLOC symbol to data set colors as shown in the following table. You may control the colors of the HLOC symbol in more details by setting the data set colors directly. The data set objects can be obtained using Layer.getDataSet, and the colors can be changed using DataSet.setDataColor.

<table>
<thead>
<tr>
<th>HLOC Symbol Color</th>
<th>Data Set Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Line</td>
<td>Data Color for the first data set (index = 0)</td>
</tr>
<tr>
<td>Open Mark Line</td>
<td>Data Color for the third data set (index = 2)</td>
</tr>
<tr>
<td>Close Mark Line</td>
<td>Data Color for the fourth data set (index = 3)</td>
</tr>
</tbody>
</table>

Return Value
A HLOCLayer object representing the HLOC layer created.

See also:
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<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>highData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the high values. An empty array means there is no high value data available.</td>
</tr>
<tr>
<td>lowData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the low values. An empty array means there is no low value data available.</td>
</tr>
<tr>
<td>openData</td>
<td>[ Empty_Array ]</td>
<td>An array of numbers representing the opening values. An empty array means there is no opening value data available.</td>
</tr>
<tr>
<td>closeData</td>
<td>[ Empty_Array ]</td>
<td>An array of numbers representing the closing values. An empty array means there is no closing value data available.</td>
</tr>
<tr>
<td>color</td>
<td>-1</td>
<td>The color to draw the HLOC symbol. -1 means that the color is automatically selected from the palette.</td>
</tr>
</tbody>
</table>

- 28.61.34 addHLOCLayer as CDHLOCLayerMBS
- 28.61.35 addHLOCLayer(highData() as Double, lowData() as Double) as CDHLOCLayerMBS
- 28.61.36 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double) as CDHLOCLayerMBS
- 28.61.37 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, colorValue as color) as CDHLOCLayerMBS
- 28.61.39 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, upColor as color, downColor as color, colorMode as Integer = -1) as CDHLOCLayerMBS
- 28.61.40 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, upColor as color, downColor as color, colorMode as Integer, leadValue as Double) as CDHLOCLayerMBS
- 28.61.41 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, upColor as Integer, downColor as Integer, colorMode as Integer = -1) as CDHLOCLayerMBS
- 28.61.42 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, upColor as Integer, downColor as Integer, colorMode as Integer, leadValue as Double) as CDHLOCLayerMBS

**28.61.39 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, upColor as color, downColor as color, colorMode as Integer = -1) as CDHLOCLayerMBS**

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Same as the other addHLOCLayer method, but uses color instead of integer data type for passing color values.

See also:
- 28.61.34 addHLOCLayer as CDHLOCLayerMBS
28.61. **CLASS CDXYCHARTMBS**

- 28.61.35 `addHLOCLayer(highData() as Double, lowData() as Double) as CDHLOCLayerMBS` 5032
- 28.61.36 `addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double) as CDHLOCLayerMBS` 5033
- 28.61.37 `addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, colorValue as color) as CDHLOCLayerMBS` 5034
- 28.61.38 `addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, colorValue as Integer = -1) as CDHLOCLayerMBS` 5035
- 28.61.40 `addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, upColor as color, downColor as color, colorMode as Integer, leadValue as Double) as CDHLOCLayerMBS` 5037
- 28.61.41 `addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, upColor as Integer, downColor as Integer, colorMode as Integer = -1) as CDHLOCLayerMBS` 5038
- 28.61.42 `addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, upColor as Integer, downColor as Integer, colorMode as Integer, leadValue as Double) as CDHLOCLayerMBS` 5039

28.61.40 **addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, upColor as color, downColor as color, colorMode as Integer, leadValue as Double) as CDHLOCLayerMBS**

**MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:** Same as the other `addHLOCLayer` method, but uses color instead of integer data type for passing color values.

See also:

- 28.61.34 `addHLOCLayer as CDHLOCLayerMBS` 5031
- 28.61.35 `addHLOCLayer(highData() as Double, lowData() as Double) as CDHLOCLayerMBS` 5032
- 28.61.36 `addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double) as CDHLOCLayerMBS` 5033
- 28.61.37 `addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, colorValue as color) as CDHLOCLayerMBS` 5034
- 28.61.38 `addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, colorValue as Integer = -1) as CDHLOCLayerMBS` 5035
- 28.61.39 `addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, upColor as color, downColor as color, colorMode as Integer = -1) as CDHLOCLayerMBS` 5036
28.61.41  

```
addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, upColor as Integer, downColor as Integer, colorMode as Integer = -1) as CDHLOCLayerMBS
```

28.61.42  

```
addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, upColor as Integer, downColor as Integer, colorMode as Integer, leadValue as Double) as CDHLOCLayerMBS
```


**Function:** Adds a multi-color high-low-open-close (HLOC) layer to the XYChart, and specify the data sets to use for drawing the layer.

**Notes:**

ChartDirector supports drawing the HLOC symbol using different colors depending on whether the data represents an "up" day or "down" day. ChartDirector supports different definitions of what is an "up" day and "down" day, denoted using the following constants.

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HLOCDefault</td>
<td>0</td>
<td>Do not distinguish between &quot;up&quot; and &quot;down&quot; days and use the same color for all HLOC symbols.</td>
</tr>
<tr>
<td>HLOCOpenClose</td>
<td>1</td>
<td>An up day is a day of which the closing value is on or above the opening value. This is the same definition commonly used in candlestick charts.</td>
</tr>
<tr>
<td>HLOCUpDown</td>
<td>2</td>
<td>An up day is a day of which the closing value is on or above the closing value of the previous day.</td>
</tr>
</tbody>
</table>

**Return Value**

A HLOCLayer object representing the HLOC layer created.

**See also:**

- 28.61.34  
  
```
addHLOCLayer as CDHLOCLayerMBS
```

- 28.61.35  
  
```
addHLOCLayer(highData() as Double, lowData() as Double) as CDHLOCLayerMBS
```

- 28.61.36  
  
```
addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double) as CDHLOCLayerMBS
```

- 28.61.37  
  
```
addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, colorValue as color) as CDHLOCLayerMBS
```

- 28.61.38  
  
```
addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, colorValue as Integer = -1) as CDHLOCLayerMBS
```
### 28.61. CLASS CDXYCHARTMBS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>highData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the high values. An empty array means there is no high value data available.</td>
</tr>
<tr>
<td>lowData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the low values. An empty array means there is no low value data available.</td>
</tr>
<tr>
<td>openData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the opening values. An empty array means there is no opening value data available.</td>
</tr>
<tr>
<td>closeData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the closing values. An empty array means there is no closing value data available.</td>
</tr>
<tr>
<td>upColor</td>
<td>(Mandatory)</td>
<td>The color to be used on an &quot;up&quot; day.</td>
</tr>
<tr>
<td>downColor</td>
<td>(Mandatory)</td>
<td>The color to be used on a &quot;down&quot; day.</td>
</tr>
<tr>
<td>colorMode</td>
<td>-1</td>
<td>The method used to determine if a day is an &quot;up&quot; or &quot;down&quot;. Must be one of the constants in the above table. The default value of -1 means the colorMode is automatically determine to be either HLOCDelFault or HLOCUpDown, depending on whether upColor and downColor are the same or different.</td>
</tr>
<tr>
<td>leadValue</td>
<td>[ -Infinity ]</td>
<td>The lead value to act as the closing pricing before the first day, so as to determine if the first day is an &quot;up&quot; or &quot;down&quot; day.</td>
</tr>
</tbody>
</table>

- 28.61.39 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, upColor as color, downColor as color, colorMode as Integer = -1) as CDHLOCLayerMBS 5036
- 28.61.40 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, upColor as color, downColor as color, colorMode as Integer, leadValue as Double) as CDHLOCLayerMBS 5037
- 28.61.42 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, upColor as Integer, downColor as Integer, colorMode as Integer, leadValue as Double) as CDHLOCLayerMBS 5039

#### 28.61.42 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, upColor as Integer, downColor as Integer, colorMode as Integer, leadValue as Double) as CDHLOCLayerMBS

MBS ChartDirector Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds a multi-color high-low-open-close (HLOC) layer to the XYChart, and specify the data sets to use for drawing the layer. **Notes:** ChartDirector supports drawing the HLOC symbol using different colors depending on whether the data represents an "up" day or "down" day. ChartDirector supports different definitions of what is an "up" day and "down" day, denoted using the following constants. **Return Value** A HLOCLayer object representing the HLOC layer created.
### Constant Value Description

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HLOCDefault</td>
<td>0</td>
<td>Do not distinguish between &quot;up&quot; and &quot;down&quot; days and use the same color for all HLOC symbols.</td>
</tr>
<tr>
<td>HLOCOpenClose</td>
<td>1</td>
<td>An up day is a day of which the closing value is on or above the opening value. This is the same definition commonly used in candlestick charts.</td>
</tr>
<tr>
<td>HLOCUpDown</td>
<td>2</td>
<td>An up day is a day of which the closing value is on or above the closing value of the previous day.</td>
</tr>
</tbody>
</table>

### Parameter Default Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>highData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the high values. An empty array means there is no high value data available.</td>
</tr>
<tr>
<td>lowData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the low values. An empty array means there is no low value data available.</td>
</tr>
<tr>
<td>openData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the opening values. An empty array means there is no opening value data available.</td>
</tr>
<tr>
<td>closeData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the closing values. An empty array means there is no closing value data available.</td>
</tr>
<tr>
<td>upColor</td>
<td>(Mandatory)</td>
<td>The color to be used on an &quot;up&quot; day.</td>
</tr>
<tr>
<td>downColor</td>
<td>(Mandatory)</td>
<td>The color to be used on a &quot;down&quot; day.</td>
</tr>
<tr>
<td>colorMode</td>
<td>-1</td>
<td>The method used to determine if a day is an &quot;up&quot; or &quot;down&quot;. Must be one of the constants in the above table. The default value of -1 means the colorMode is automatically determine to be either HLOCDefault or HLOCUpDown, depending on whether upColor and downColor are the same or different.</td>
</tr>
<tr>
<td>leadValue</td>
<td>[-Infinity]</td>
<td>The lead value to act as the closing pricing before the first day, so as to determine if the first day is an &quot;up&quot; or &quot;down&quot; day.</td>
</tr>
</tbody>
</table>

See also:

- 28.61.34 addHLOCLayer as CDHLOCLayerMBS 5031
- 28.61.35 addHLOCLayer(highData() as Double, lowData() as Double) as CDHLOCLayerMBS 5032
- 28.61.36 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double) as CDHLOCLayerMBS 5033
- 28.61.37 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, colorValue as color) as CDHLOCLayerMBS 5034
- 28.61.38 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, colorValue as Integer = -1) as CDHLOCLayerMBS 5035
- 28.61.39 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, upColor as color, downColor as color, colorMode as Integer = -1) as CDHLOCLayerMBS 5036
- 28.61.40 addHLOCLayer(highData() as Double, lowData() as Double, openData() as Double, closeData() as Double, upColor as color, downColor as color, colorMode as Integer, leadValue as Double) as CDHLOCLayerMBS 5037
28.61.43  **addInterLineLayer(line1 as CDLineObjMBS, line2 as CDLineObjMBS, color12 as color, color21 as color) as CDInterLineLayerMBS**

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Same as the other addInterLineLayer method, but uses color instead of integer data type for passing color values.  
See also:

- 28.61.44 addInterLineLayer(line1 as CDLineObjMBS, line2 as CDLineObjMBS, color12 as Integer, color21 as Integer = -1) as CDInterLineLayerMBS

28.61.44  **addInterLineLayer(line1 as CDLineObjMBS, line2 as CDLineObjMBS, color12 as Integer, color21 as Integer = -1) as CDInterLineLayerMBS**

**Function:** Adds an inter-line layer the XYChart. An inter-line layer is used to fill the region between any two lines (straight lines, spline curves, step lines, etc).  
**Notes:**  
This method expects two "line" objects representing the two lines. The line objects can be obtained using LineLayer.getLine (inherited by SplineLayer and StepLineLayer), TrendLayer.getLine, and Mark.getLine.  

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>line1</td>
<td>(Mandatory)</td>
<td>An opaque line object representing the first line.</td>
</tr>
<tr>
<td>line2</td>
<td>(Mandatory)</td>
<td>An opaque line object representing the second line.</td>
</tr>
<tr>
<td>color12</td>
<td>(Mandatory)</td>
<td>The color used to fill the region of the lines when line1 &gt; line2.</td>
</tr>
<tr>
<td>color21</td>
<td>-1</td>
<td>The color used to fill the region of the lines when line2 &gt; line1. -1 means this color is the same as color12.</td>
</tr>
</tbody>
</table>

**Return Value**  
An InterLineLayer object representing the inter-line layer created.  
See also:

- 28.61.43 addInterLineLayer(line1 as CDLineObjMBS, line2 as CDLineObjMBS, color12 as color, color21 as color) as CDInterLineLayerMBS
28.61.45  addLineLayer(data as CDArrayMBS, colorvalue as color, name as string = "", depth as Integer = 0) as CDLineLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addLineLayer method, but uses color instead of integer data type for passing color values.

See also:

- 28.61.46 addLineLayer(data as CDArrayMBS, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDLineLayerMBS 5042
- 28.61.47 addLineLayer(data() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDLineLayerMBS 5043
- 28.61.48 addLineLayer(data() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDLineLayerMBS 5043
- 28.61.49 addLineLayer(dataCombineMethod as Integer = 0, depth as Integer = 0) as CDLineLayerMBS 5044

28.61.46  addLineLayer(data as CDArrayMBS, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDLineLayerMBS


**Function:** Adds a line layer to the XYChart, and specify the data set to use for drawing the line.

**Notes:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>data</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the data set.</td>
</tr>
<tr>
<td>color</td>
<td>-1</td>
<td>The color to draw the line. -1 means that the color is automatically selected from the palette.</td>
</tr>
<tr>
<td>name</td>
<td>&quot;&quot;</td>
<td>The name of the data set. The name will be used in the legend box, if one is available. An empty string means the data set has no name.</td>
</tr>
<tr>
<td>depth</td>
<td>0</td>
<td>The 3D depth of the line layer.</td>
</tr>
</tbody>
</table>

**Return Value**

A LineLayer object representing the line layer created.

See also:

- 28.61.45 addLineLayer(data as CDArrayMBS, colorvalue as color, name as string = "", depth as Integer = 0) as CDLineLayerMBS 5042
- 28.61.47 addLineLayer(data() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDLineLayerMBS 5043
- 28.61.48 addLineLayer(data() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDLineLayerMBS 5043
28.61. CLASS CDXYCHARTMBS

- 28.61.49 addLineLayer(dataCombineMethod as Integer = 0, depth as Integer = 0) as CDLineLayerMBS

28.61.47 addLineLayer(data() as Double, colorvalue as color, name as string = ", depth as Integer = 0) as CDLineLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addLineLayer method, but uses color instead of integer data type for passing color values.

See also:

- 28.61.45 addLineLayer(data as CDArrayMBS, colorvalue as color, name as string = "", depth as Integer = 0) as CDLineLayerMBS
- 28.61.46 addLineLayer(data as CDArrayMBS, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDLineLayerMBS
- 28.61.48 addLineLayer(data() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDLineLayerMBS
- 28.61.49 addLineLayer(dataCombineMethod as Integer = 0, depth as Integer = 0) as CDLineLayerMBS

28.61.48 addLineLayer(data() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDLineLayerMBS


**Function:** Adds a line layer to the XYChart, and specify the data set to use for drawing the line.

**Notes:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>data</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the data set.</td>
</tr>
<tr>
<td>color</td>
<td>-1</td>
<td>The color to draw the line. -1 means that the color is automatically selected from the palette.</td>
</tr>
<tr>
<td>name</td>
<td>&quot;&quot;</td>
<td>The name of the data set. The name will be used in the legend box, if one is available. An empty string means the data set has no name.</td>
</tr>
<tr>
<td>depth</td>
<td>0</td>
<td>The 3D depth of the line layer.</td>
</tr>
</tbody>
</table>

**Return Value**

A LineLayer object representing the line layer created.

See also:

- 28.61.45 addLineLayer(data as CDArrayMBS, colorvalue as color, name as string = "", depth as Integer = 0) as CDLineLayerMBS
28.61.46 addLineLayer(data as CDArrayMBS, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDLineLayerMBS
5042

28.61.47 addLineLayer(data() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDLineLayerMBS
5043

28.61.49 addLineLayer(dataCombineMethod as Integer = 0, depth as Integer = 0) as CDLineLayerMBS
5044

28.61.49 addLineLayer(dataCombineMethod as Integer = 0, depth as Integer = 0) as CDLineLayerMBS


**Function:** Adds an empty line layer to the XYChart.

**Notes:**
This method is typically used to add multiple data sets to a single line layer. First an empty line layer is created, then the data sets can be added using Layer.addDataSet.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>dataCombineMethod</td>
<td>Overlay</td>
<td>In this version of ChartDirector, this parameter is ignored.</td>
</tr>
<tr>
<td>depth</td>
<td>0</td>
<td>The 3D depth of the line layer.</td>
</tr>
</tbody>
</table>

**Return Value**
A LineLayer object representing the line layer created.

See also:

- 28.61.45 addLineLayer(data as CDArrayMBS, colorvalue as color, name as string = "", depth as Integer = 0) as CDLineLayerMBS
- 28.61.46 addLineLayer(data as CDArrayMBS, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDLineLayerMBS
- 28.61.47 addLineLayer(data() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDLineLayerMBS
- 28.61.48 addLineLayer(data() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDLineLayerMBS

28.61.50 addScatterLayer(xData() as Double, yData() as Double, name as string = "", symbol as Integer = 1, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDSctrLayerMBS


**Function:** Adds a scatter chart layer to the XYChart.

**Notes:**
A scatter chart can be considered as a special configuration of a line chart, in the data symbols are enabled and the line width is set to zero. Therefore only the data symbols are visible and the chart appears as scattered.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the x values of the data points. If no explicit x coordinates are used in the chart (e.g. using an enumerated x-axis), an empty array may be used for this argument.</td>
</tr>
<tr>
<td>yData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the y values of the data points.</td>
</tr>
<tr>
<td>name</td>
<td>&quot;&quot;</td>
<td>The name of the data set. The name will be used in the legend box, if one is available. An empty string means the data set has no name.</td>
</tr>
<tr>
<td>symbol</td>
<td>SquareShape</td>
<td>One of the predefined symbol constants to specify the symbol to use. (See Shape Specification for available built-in shapes.)</td>
</tr>
<tr>
<td>symbolSize</td>
<td>5</td>
<td>The width and height of the symbol in pixels.</td>
</tr>
<tr>
<td>fillColor</td>
<td>-1</td>
<td>The color used to fill the symbol. -1 means that the color is automatically selected from the palette.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The edge color used to draw the edge of the symbol. The default value of -1 means using LineColor as the edge color.</td>
</tr>
</tbody>
</table>

Return Value
A ScatterLayer object representing the scatter layer created.

See also:
- 28.61.51 addScatterLayer(xData() as Double, yData() as Double, name as string, symbol as Integer, symbolSize as Integer, fillColor as color, edgeColor as color) as CDScatterLayerMBS
- 28.61.52 addScatterLayer(xDate() as date, yDate() as date, name as string = "", symbol as Integer = 1, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDScatterLayerMBS
- 28.61.53 addScatterLayer(xDate() as date, yDate() as date, name as string, symbol as Integer, symbolSize as Integer, fillColor as color, edgeColor as color) as CDScatterLayerMBS
- 28.61.54 addScatterLayer(xDate() as date, yDate() as Double, name as string = "", symbol as Integer = 1, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDScatterLayerMBS
- 28.61.55 addScatterLayer(xDate() as Double, yDate() as date, name as string = "", symbol as Integer, symbolSize as Integer, fillColor as color, edgeColor as color) as CDScatterLayerMBS
- 28.61.56 addScatterLayer(xDate() as Double, yDate() as date, name as string = "", symbol as Integer = 1, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDScatterLayerMBS
- 28.61.57 addScatterLayer(xDate() as Double, yDate() as date, name as string, symbol as Integer, symbolSize as Integer, fillColor as color, edgeColor as color) as CDScatterLayerMBS
28.61.51  addScatterLayer(xData() as Double, yData() as Double, name as string, symbol as Integer, symbolSize as Integer, fillColor as color, edgeColor as color) as CDScatterLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function:  Same as the other addScatterLayer method, but uses color instead of integer data type for passing color values.

See also:

- 28.61.50 addScatterLayer(xData() as Double, yData() as Double, name as string = "", symbol as Integer = 1, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDScatterLayerMBS
- 28.61.52 addScatterLayer(xDate() as date, yDate() as date, name as string = "", symbol as Integer = 1, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDScatterLayerMBS
- 28.61.53 addScatterLayer(xDate() as date, yDate() as date, name as string, symbol as Integer, symbolSize as Integer, fillColor as color, edgeColor as color) as CDScatterLayerMBS
- 28.61.54 addScatterLayer(xDate() as date, yDate() as Double, name as string = "", symbol as Integer = 1, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDScatterLayerMBS
- 28.61.55 addScatterLayer(xDate() as Date, yDate() as Double, name as string, symbol as Integer, symbolSize as Integer, fillColor as color, edgeColor as color) as CDScatterLayerMBS
- 28.61.56 addScatterLayer(xDate() as Double, yDate() as date, name as string = "", symbol as Integer = 1, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDScatterLayerMBS
- 28.61.57 addScatterLayer(xDate() as Double, yDate() as Date, name as string, symbol as Integer, symbolSize as Integer, fillColor as color, edgeColor as color) as CDScatterLayerMBS

28.61.52  addScatterLayer(xDate() as Date, yDate() as Date, name as string = "", symbol as Integer = 1, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDScatterLayerMBS

MBS ChartDirector Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function:  Adds a scatter chart layer to the XYChart.

Notes:

A scatter chart can be considered as a special configuration of a line chart, in the data symbols are enabled and the line width is set to zero. Therefore only the data symbols are visible and the chart appears as scattered.

Return Value
A ScatterLayer object representing the scatter layer created.

See also:
### Parameter Default Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the x values of the data points. If no explicit x coordinates are used in the chart (e.g., using an enumerated x-axis), an empty array may be used for this argument.</td>
</tr>
<tr>
<td>yData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the y values of the data points.</td>
</tr>
<tr>
<td>name</td>
<td>&quot;&quot;</td>
<td>The name of the data set. The name will be used in the legend box, if one is available. An empty string means the data set has no name.</td>
</tr>
<tr>
<td>symbol</td>
<td>SquareShape</td>
<td>One of the predefined symbol constants to specify the symbol to use. (See Shape Specification for available built-in shapes.)</td>
</tr>
<tr>
<td>symbolSize</td>
<td>5</td>
<td>The width and height of the symbol in pixels.</td>
</tr>
<tr>
<td>fillColor</td>
<td>-1</td>
<td>The color used to fill the symbol. -1 means that the color is automatically selected from the palette.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The edge color used to draw the edge of the symbol. The default value of -1 means using LineColor as the edge color.</td>
</tr>
</tbody>
</table>

- 28.61.50 `addScatterLayer(xData() as Double, yData() as Double, name as string = "", symbol as Integer = 1, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDScatterLayerMBS`  
- 28.61.51 `addScatterLayer(xData() as Double, yData() as Double, name as string, symbol as Integer, symbolSize as Integer, fillColor as color, edgeColor as color) as CDScatterLayerMBS`  
- 28.61.53 `addScatterLayer(xDate() as date, yDate() as date, name as string, symbol as Integer, symbolSize as Integer, fillColor as color, edgeColor as color) as CDScatterLayerMBS`  
- 28.61.54 `addScatterLayer(xDate() as date, yDate() as Double, name as string = "", symbol as Integer = 1, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDScatterLayerMBS`  
- 28.61.55 `addScatterLayer(xDate() as date, yDate() as Double, name as string, symbol as Integer, symbolSize as Integer, fillColor as color, edgeColor as color) as CDScatterLayerMBS`  
- 28.61.56 `addScatterLayer(xDate() as Double, yDate() as date, name as string = "", symbol as Integer = 1, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDScatterLayerMBS`  
- 28.61.57 `addScatterLayer(xDate() as Double, yDate() as date, name as string, symbol as Integer, symbolSize as Integer, fillColor as color, edgeColor as color) as CDScatterLayerMBS`  

### 28.61.53 `addScatterLayer(xDate() as date, yDate() as date, name as string, symbol as Integer, symbolSize as Integer, fillColor as color, edgeColor as color) as CDScatterLayerMBS`

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Same as the other `addScatterLayer` method, but uses color instead of integer data type for passing color values.  
See also:
28.61.50 addScatterLayer(xData() as Double, yData() as Double, name as string = "", symbol as Integer = 1, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDScatterLayerMBS

28.61.51 addScatterLayer(xData() as Double, yData() as Double, name as string, symbol as Integer, symbolSize as Integer, fillColor as Integer, edgeColor as Integer) as CDScatterLayerMBS

28.61.52 addScatterLayer(xDate() as Date, yData() as Double, name as string = "", symbol as Integer = 1, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDScatterLayerMBS

28.61.53 addScatterLayer(xDate() as Date, yData() as Double, name as string, symbol as Integer, symbolSize as Integer, fillColor as Integer, edgeColor as Integer) as CDScatterLayerMBS

28.61.54 addScatterLayer(xDate() as Date, yDate() as Double, name as string = "", symbol as Integer = 1, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDScatterLayerMBS

28.61.55 addScatterLayer(xDate() as Date, yDate() as Double, name as string, symbol as Integer, symbolSize as Integer, fillColor as Integer, edgeColor as Integer) as CDScatterLayerMBS

28.61.56 addScatterLayer(xDate() as Date, yDate() as Date, name as string = "", symbol as Integer = 1, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDScatterLayerMBS

28.61.57 addScatterLayer(xDate() as Date, yDate() as Date, name as string, symbol as Integer, symbolSize as Integer, fillColor as Integer, edgeColor as Integer) as CDScatterLayerMBS

28.61.54 addScatterLayer(xDate() as Date, yDate() as Double, name as string = "", symbol as Integer = 1, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDScatterLayerMBS

MBS ChartDirector Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Adds a scatter chart layer to the XYChart.

Notes:
A scatter chart can be considered as a special configuration of a line chart, in the data symbols are enabled and the line width is set to zero. Therefore only the data symbols are visible and the chart appears as scattered.

Return Value
A ScatterLayer object representing the scatter layer created.

See also:
• 28.61.50 addScatterLayer(xData() as Double, yData() as Double, name as string = "", symbol as Integer = 1, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDScatterLayerMBS
• 28.61.51 addScatterLayer(xData() as Double, yData() as Double, name as string, symbol as Integer, symbolSize as Integer, fillColor as Integer, edgeColor as Integer) as CDScatterLayerMBS
### Parameter | Default | Description
--- | --- | ---
xData | (Mandatory) | An array of numbers representing the x values of the data points. If no explicit x coordinates are used in the chart (e.g., using an enumerated x-axis), an empty array may be used for this argument.
yData | (Mandatory) | An array of numbers representing the y values of the data points.
name | "" | The name of the data set. The name will be used in the legend box, if one is available. An empty string means the data set has no name.
symbol | SquareShape | One of the predefined symbol constants to specify the symbol to use. (See Shape Specification for available built-in shapes.)
symbolSize | 5 | The width and height of the symbol in pixels.
fillColor | -1 | The color used to fill the symbol. -1 means that the color is automatically selected from the palette.
edgeColor | -1 | The edge color used to draw the edge of the symbol. The default value of -1 means using LineColor as the edge color.

- **28.61.52** addScatterLayer(xDate() as date, yDate() as date, name as string = "", symbol as Integer = 1, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDScatterLayerMBS
- **28.61.53** addScatterLayer(xDate() as date, yDate() as date, name as string, symbol as Integer, symbolSize as Integer, fillColor as color, edgeColor as color) as CDScatterLayerMBS
- **28.61.55** addScatterLayer(xDate() as date, yDate() as Double, name as string, symbol as Integer, symbolSize as Integer, fillColor as color, edgeColor as color) as CDScatterLayerMBS
- **28.61.56** addScatterLayer(xDate() as Double, yDate() as date, name as string = "", symbol as Integer = 1, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDScatterLayerMBS
- **28.61.57** addScatterLayer(xDate() as Double, yDate() as date, name as string, symbol as Integer, symbolSize as Integer, fillColor as color, edgeColor as color) as CDScatterLayerMBS

### 28.61.55 addScatterLayer(xDate() as date, yDate() as Double, name as string, symbol as Integer, symbolSize as Integer, fillColor as color, edgeColor as color) as CDScatterLayerMBS

MBS ChartDirector Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Adds a scatter chart layer to the XYChart.

**Notes:**
A scatter chart can be considered as a special configuration of a line chart, in the data symbols are enabled and the line width is set to zero. Therefore only the data symbols are visible and the chart appears as scattered.

**Return Value**
A ScatterLayer object representing the scatter layer created.

See also:
### Parameter Default Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the x values of the data points. If no explicit x coordinates are used in the chart (e.g., using an enumerated x-axis), an empty array may be used for this argument.</td>
</tr>
<tr>
<td>yData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the y values of the data points.</td>
</tr>
<tr>
<td>name</td>
<td>&quot;&quot;</td>
<td>The name of the data set. The name will be used in the legend box, if one is available. An empty string means the data set has no name.</td>
</tr>
<tr>
<td>symbol</td>
<td>SquareShape</td>
<td>One of the predefined symbol constants to specify the symbol to use. (See Shape Specification for available built-in shapes.)</td>
</tr>
<tr>
<td>symbolSize</td>
<td>5</td>
<td>The width and height of the symbol in pixels.</td>
</tr>
<tr>
<td>fillColor</td>
<td>-1</td>
<td>The color used to fill the symbol. -1 means that the color is automatically selected from the palette.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The edge color used to draw the edge of the symbol. The default value of -1 means using LineColor as the edge color.</td>
</tr>
</tbody>
</table>

#### 28.61.50 addScatterLayer(xData() as Double, yData() as Double, name as string = "", symbol as Integer = 1, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDScatterLayerMBS

#### 28.61.51 addScatterLayer(xData() as Double, yData() as Double, name as string, symbol as Integer, symbolSize as Integer, fillColor as color, edgeColor as color) as CDScatterLayerMBS

#### 28.61.52 addScatterLayer(xDate() as date, yDate() as date, name as string = "", symbol as Integer = 1, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDScatterLayerMBS

#### 28.61.53 addScatterLayer(xDate() as date, yDate() as date, name as string, symbol as Integer, symbolSize as Integer, fillColor as color, edgeColor as color) as CDScatterLayerMBS

#### 28.61.54 addScatterLayer(xDate() as date, yDate() as Double, name as string = "", symbol as Integer = 1, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDScatterLayerMBS

#### 28.61.55 addScatterLayer(xDate() as Double, yDate() as date, name as string = "", symbol as Integer = 1, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDScatterLayerMBS

#### 28.61.56 addScatterLayer(xDate() as Double, yDate() as Double, name as string = "", symbol as Integer = 1, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDScatterLayerMBS

MBS ChartDirector Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Adds a scatter chart layer to the XYChart.

**Notes:**
A scatter chart can be considered as a special configuration of a line chart, in the data symbols are enabled and the line width is set to zero. Therefore only the data symbols are visible and the chart appears as scattered.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the x values of the data points. If no explicit x coordinates are used in the chart (eg. using an enumerated x-axis), an empty array may be used for this argument.</td>
</tr>
<tr>
<td>yData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the y values of the data points.</td>
</tr>
<tr>
<td>name</td>
<td>&quot;&quot;</td>
<td>The name of the data set. The name will be used in the legend box, if one is available. An empty string means the data set has no name.</td>
</tr>
<tr>
<td>symbol</td>
<td>SquareShape</td>
<td>One of the predefined symbol constants to specify the symbol to use. (See Shape Specification for available built-in shapes.)</td>
</tr>
<tr>
<td>symbolSize</td>
<td>5</td>
<td>The width and height of the symbol in pixels.</td>
</tr>
<tr>
<td>fillColor</td>
<td>-1</td>
<td>The color used to fill the symbol. -1 means that the color is automatically selected from the palette.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The edge color used to draw the edge of the symbol. The default value of -1 means using LineColor as the edge color.</td>
</tr>
</tbody>
</table>

Return Value
A ScatterLayer object representing the scatter layer created.
See also:

- 28.61.50 addScatterLayer(xData() as Double, yData() as Double, name as string = "", symbol as Integer = 1, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDScatterLayerMBS
- 28.61.51 addScatterLayer(xData() as Double, yData() as Double, name as string, symbol as Integer, symbolSize as Integer, fillColor as color, edgeColor as color) as CDScatterLayerMBS
- 28.61.52 addScatterLayer(xDate() as date, yDate() as date, name as string = "", symbol as Integer = 1, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDScatterLayerMBS
- 28.61.53 addScatterLayer(xDate() as date, yDate() as date, name as string, symbol as Integer, symbolSize as Integer, fillColor as color, edgeColor as color) as CDScatterLayerMBS
- 28.61.54 addScatterLayer(xDate() as date, yDate() as Double, name as string = "", symbol as Integer = 1, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDScatterLayerMBS
- 28.61.55 addScatterLayer(xDate() as Double, yDate() as date, name as string, symbol as Integer, symbolSize as Integer, fillColor as color, edgeColor as color) as CDScatterLayerMBS
- 28.61.57 addScatterLayer(xDate() as Double, yDate() as date, name as string, symbol as Integer, symbolSize as Integer, fillColor as color, edgeColor as color) as CDScatterLayerMBS
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28.61.57 addScatterLayer(xDate() as Double, yDate() as date, name as string, symbol as Integer, symbolSize as Integer, fillColor as color, edgeColor as color) as CDScatterLayerMBS

MBS ChartDirector Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Adds a scatter chart layer to the XYChart.

**Notes:**

A scatter chart can be considered as a special configuration of a line chart, in the data symbols are enabled and the line width is set to zero. Therefore only the data symbols are visible and the chart appears as scattered.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the x values of the data points. If no explicit x coordinates are used in the chart (eg. using an enumerated x-axis), an empty array may be used for this argument.</td>
</tr>
<tr>
<td>yData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the y values of the data points.</td>
</tr>
<tr>
<td>name</td>
<td>&quot;&quot;</td>
<td>The name of the data set. The name will be used in the legend box, if one is available. An empty string means the data set has no name.</td>
</tr>
<tr>
<td>symbol</td>
<td>SquareShape</td>
<td>One of the predefined symbol constants to specify the symbol to use. (See Shape Specification for available built-in shapes.)</td>
</tr>
<tr>
<td>symbolSize</td>
<td>5</td>
<td>The width and height of the symbol in pixels.</td>
</tr>
<tr>
<td>fillColor</td>
<td>-1</td>
<td>The color used to fill the symbol. -1 means that the color is automatically selected from the palette.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The edge color used to draw the edge of the symbol. The default value of -1 means using LineColor as the edge color.</td>
</tr>
</tbody>
</table>

**Return Value**

A ScatterLayer object representing the scatter layer created.

See also:

- 28.61.50 addScatterLayer(xData() as Double, yData() as Double, name as string = "", symbol as Integer = 1, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDScatterLayerMBS
- 28.61.51 addScatterLayer(xData() as Double, yData() as Double, name as string, symbol as Integer, symbolSize as Integer, fillColor as color, edgeColor as color) as CDScatterLayerMBS
- 28.61.52 addScatterLayer(xDate() as date, yDate() as date, name as string = "", symbol as Integer = 1, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDScatterLayerMBS
- 28.61.53 addScatterLayer(xDate() as date, yDate() as date, name as string, symbol as Integer, symbolSize as Integer, fillColor as color, edgeColor as color) as CDScatterLayerMBS
- 28.61.54 addScatterLayer(xDate() as date, yDate() as Double, name as string = "", symbol as Integer = 1, symbolSize as Integer = 5, fillColor as Integer = -1, edgeColor as Integer = -1) as CDScatterLayerMBS
28.61.58  addSplineLayer as CDSplineLayerMBS


**Function:** Adds a spline layer to the XYChart.

**Notes:**

In a spline layer, the data points are connected together using cardinal spline curves (as opposed to straight lines). The "tension" of the curve can be configured using SplineLayer.setTension.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>data</td>
<td>[ Empty_Array ]</td>
<td>An array of numbers representing the data set.</td>
</tr>
<tr>
<td>color</td>
<td>-1</td>
<td>The color to draw the spline line. -1 means that the color is automatically selected from the palette.</td>
</tr>
<tr>
<td>name</td>
<td>&quot;&quot;</td>
<td>The name of the data set. The name will be used in the legend box, if one is available. An empty string means the data set has no name.</td>
</tr>
</tbody>
</table>

**Return Value**

A SplineLayer object representing the spline layer created.

See also:

- 28.61.59 addSplineLayer(data() as Double, colorvalue as color, name as string = "") as CDSplineLayerMBS
- 28.61.60 addSplineLayer(data() as Double, colorvalue as Integer = -1, name as string = "") as CDSplineLayerMBS

28.61.59  addSplineLayer(data() as Double, colorvalue as color, name as string = ")" as CDSplineLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addSplineLayer method, but uses color instead of integer data type for passing color values.

See also:

- 28.61.58 addSplineLayer as CDSplineLayerMBS
- 28.61.60 addSplineLayer(data() as Double, colorvalue as Integer = -1, name as string = ")") as CDSplineLayerMBS
28.61.60  addSplineLayer(data() as Double, colorvalue as Integer = -1, name as string = "") as CDSplineLayerMBS

**Function:** Adds a spline layer to the XYChart.
**Notes:**
In a spline layer, the data points are connected together using cardinal spline curves (as opposed to straight lines). The "tension" of the curve can be configured using SplineLayer.setTension.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>data</td>
<td>[ Empty_Array ]</td>
<td>An array of numbers representing the data set.</td>
</tr>
<tr>
<td>color</td>
<td>-1</td>
<td>The color to draw the spline line. -1 means that the color is automatically selected from the palette.</td>
</tr>
<tr>
<td>name</td>
<td>&quot;&quot;</td>
<td>The name of the data set. The name will be used in the legend box, if one is available. An empty string means the data set has no name.</td>
</tr>
</tbody>
</table>

**Return Value**
A SplineLayer object representing the spline layer created.

See also:
- 28.61.58 addSplineLayer as CDSplineLayerMBS
- 28.61.59 addSplineLayer(data() as Double, colorvalue as color, name as string = "") as CDSplineLayerMBS

28.61.61  addStepLineLayer as CDStepLineLayerMBS

**Function:** Adds a step line chart layer to the XYChart.
**Notes:**
In a step line layer, the data points are connected together using steps. The alignment of the steps relative to the data points can be configured using StepLineLayer.setAlignment.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>data</td>
<td>[ Empty_Array ]</td>
<td>An array of numbers representing the data set.</td>
</tr>
<tr>
<td>color</td>
<td>-1</td>
<td>The color to draw the step line. -1 means that the color is automatically selected from the palette.</td>
</tr>
<tr>
<td>name</td>
<td>&quot;&quot;</td>
<td>The name of the data set. The name will be used in the legend box, if one is available. An empty string means the data set has no name.</td>
</tr>
</tbody>
</table>

**Return Value**
A StepLineLayer object representing the step line layer created.

See also:
- 28.61.58 addSplineLayer as CDSplineLayerMBS
28.61.62  addStepLineLayer(data() as Double, colorvalue as color, name as string = ””) as CDStepLineLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Same as the other addStepLineLayer method, but uses color instead of integer data type for passing color values. 

See also:

- 28.61.61 addStepLineLayer as CDStepLineLayerMBS
- 28.61.63 addStepLineLayer(data() as Double, colorvalue as Integer = -1, name as string = ””) as CDStepLineLayerMBS

28.61.63  addStepLineLayer(data() as Double, colorvalue as Integer = -1, name as string = ””) as CDStepLineLayerMBS

**Function:** Adds a step line chart layer to the XYChart. 

**Notes:**

In a step line layer, the data points are connected together using steps. The alignment of the steps relative to the data points can be configured using StepLineLayer.setAlignment.

<table>
<thead>
<tr>
<th>Parameter</th>
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<tbody>
<tr>
<td>data</td>
<td>[ Empty_Array ]</td>
<td>An array of numbers representing the data set.</td>
</tr>
<tr>
<td>color</td>
<td>-1</td>
<td>The color to draw the step line. -1 means that the color is automatically</td>
</tr>
<tr>
<td></td>
<td></td>
<td>selected from the palette.</td>
</tr>
<tr>
<td>name</td>
<td>””</td>
<td>The name of the data set. The name will be used in the legend box, if one is</td>
</tr>
<tr>
<td></td>
<td></td>
<td>available. An empty string means the data set has no name.</td>
</tr>
</tbody>
</table>

**Return Value**

A StepLineLayer object representing the step line layer created.

See also:

- 28.61.61 addStepLineLayer as CDStepLineLayerMBS
- 28.61.62 addStepLineLayer(data() as Double, colorvalue as color, name as string = ””) as CDStepLineLayerMBS
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28.61.64 addTrendLayer(Data() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDTrendLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addTrendLayer method, but uses color instead of integer data type for passing color values.

See also:

- 28.61.65 addTrendLayer(Data() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDTrendLayerMBS 5056
- 28.61.66 addTrendLayer(dates() as date, colorvalue as color, name as string = "", depth as Integer = 0) as CDTrendLayerMBS 5057
- 28.61.67 addTrendLayer(dates() as date, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDTrendLayerMBS 5058
- 28.61.68 addTrendLayer(dates() as date, yData() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDTrendLayerMBS 5059
- 28.61.69 addTrendLayer(dates() as date, yData() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDTrendLayerMBS 5060
- 28.61.70 addTrendLayer(xData() as Double, yData() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDTrendLayerMBS 5061
- 28.61.71 addTrendLayer(xData() as Double, yData() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDTrendLayerMBS 5061

28.61.65 addTrendLayer(Data() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDTrendLayerMBS


**Function:** Adds a trend chart layer to the XYChart, and specify the data set to use for drawing the trend line.

**Notes:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>data</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the data set.</td>
</tr>
<tr>
<td>color</td>
<td>-1</td>
<td>The color to draw the line. -1 means that the color is automatically selected from the palette.</td>
</tr>
<tr>
<td>name</td>
<td>&quot;&quot;</td>
<td>The name of the data set. The name will be used in the legend box, if one is available. An empty string means the data set has no name.</td>
</tr>
<tr>
<td>depth</td>
<td>0</td>
<td>The 3D depth of the line layer.</td>
</tr>
</tbody>
</table>

**Return Value**

A TrendLayer object representing the trend layer created.

See also:
28.61. **CLASS CDXYCHARTMBS**

- 28.61.64 `addTrendLayer(Data() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDTrendLayerMBS` 5056
- 28.61.66 `addTrendLayer(dates() as date, colorvalue as color, name as string = "", depth as Integer = 0) as CDTrendLayerMBS` 5057
- 28.61.67 `addTrendLayer(dates() as date, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDTrendLayerMBS` 5058
- 28.61.68 `addTrendLayer(dates() as date, yData() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDTrendLayerMBS` 5059
- 28.61.69 `addTrendLayer(dates() as date, yData() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDTrendLayerMBS` 5060
- 28.61.70 `addTrendLayer(xData() as Double, yData() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDTrendLayerMBS` 5061
- 28.61.71 `addTrendLayer(xData() as Double, yData() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDTrendLayerMBS` 5062

### 28.61.66 `addTrendLayer(dates() as date, colorvalue as color, name as string = "", depth as Integer = 0) as CDTrendLayerMBS`


**Function:** Adds a trend chart layer to the XYChart, and specify the data set to use for drawing the trend line.

**Notes:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>data</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the data set.</td>
</tr>
<tr>
<td>color</td>
<td>-1</td>
<td>The color to draw the line. -1 means that the color is automatically selected from the palette.</td>
</tr>
<tr>
<td>name</td>
<td>&quot;&quot;</td>
<td>The name of the data set. The name will be used in the legend box, if one is available. An empty string means the data set has no name.</td>
</tr>
<tr>
<td>depth</td>
<td>0</td>
<td>The 3D depth of the line layer.</td>
</tr>
</tbody>
</table>

**Return Value**

A TrendLayer object representing the trend layer created.

**See also:**

- 28.61.64 `addTrendLayer(Data() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDTrendLayerMBS` 5056
- 28.61.65 `addTrendLayer(Data() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDTrendLayerMBS` 5056
- 28.61.67 `addTrendLayer(dates() as date, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDTrendLayerMBS` 5058
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- 28.61.68 `addTrendLayer(dates() as date, yData() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDTrendLayerMBS` 5059
- 28.61.69 `addTrendLayer(dates() as date, yData() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDTrendLayerMBS` 5059
- 28.61.70 `addTrendLayer(xData() as Double, yData() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDTrendLayerMBS` 5060
- 28.61.71 `addTrendLayer(xData() as Double, yData() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDTrendLayerMBS` 5061

28.61.67 `addTrendLayer(dates() as date, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDTrendLayerMBS` 5058


**Function:** Adds a trend chart layer to the XYChart, and specify the data set to use for drawing the trend line.

**Notes:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>data</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the data set.</td>
</tr>
<tr>
<td>color</td>
<td>-1</td>
<td>The color to draw the line. -1 means that the color is automatically selected from the palette.</td>
</tr>
<tr>
<td>name</td>
<td>&quot;&quot;</td>
<td>The name of the data set. The name will be used in the legend box, if one is available. An empty string means the data set has no name.</td>
</tr>
<tr>
<td>depth</td>
<td>0</td>
<td>The 3D depth of the line layer.</td>
</tr>
</tbody>
</table>

**Return Value**

A TrendLayer object representing the trend layer created.

See also:

- 28.61.64 `addTrendLayer(Data() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDTrendLayerMBS` 5056
- 28.61.65 `addTrendLayer(Data() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDTrendLayerMBS` 5056
- 28.61.66 `addTrendLayer(dates() as date, colorvalue as color, name as string = "", depth as Integer = 0) as CDTrendLayerMBS` 5057
- 28.61.68 `addTrendLayer(dates() as date, yData() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDTrendLayerMBS` 5059
- 28.61.69 `addTrendLayer(dates() as date, yData() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDTrendLayerMBS` 5059
- 28.61.70 `addTrendLayer(xData() as Double, yData() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDTrendLayerMBS` 5060
28.61. **CLASS CDXYCHARTMBS**

- 28.61.71 `addTrendLayer(xData() as Double, yData() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDTrendLayerMBS` 5061

28.61.68 `addTrendLayer(dates() as date, yData() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDTrendLayerMBS`

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Same as the other `addTrendLayer` method, but uses color instead of integer data type for passing color values.

See also:

- 28.61.64 `addTrendLayer(Data() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDTrendLayerMBS` 5056
- 28.61.65 `addTrendLayer(Data() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDTrendLayerMBS` 5056
- 28.61.66 `addTrendLayer(dates() as date, colorvalue as color, name as string = "", depth as Integer = 0) as CDTrendLayerMBS` 5057
- 28.61.67 `addTrendLayer(dates() as date, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDTrendLayerMBS` 5058
- 28.61.69 `addTrendLayer(dates() as date, yData() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDTrendLayerMBS` 5059
- 28.61.70 `addTrendLayer(xData() as Double, yData() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDTrendLayerMBS` 5060
- 28.61.71 `addTrendLayer(xData() as Double, yData() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDTrendLayerMBS` 5061

28.61.69 `addTrendLayer(dates() as date, yData() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDTrendLayerMBS`

MBS ChartDirector Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds a trend chart layer to the XYChart, and specify the x and y values for drawing the trend line.

**Notes:**

Return Value
A TrendLayer object representing the trend layer created.

See also:

- 28.61.64 `addTrendLayer(Data() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDTrendLayerMBS` 5056
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<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the x values of the data points.</td>
</tr>
<tr>
<td>yData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the y values of the data points.</td>
</tr>
<tr>
<td>color</td>
<td>-1</td>
<td>The color to draw the line. -1 means that the color is automatically selected from the palette.</td>
</tr>
<tr>
<td>name</td>
<td>&quot;&quot;</td>
<td>The name of the data set. The name will be used in the legend box, if one is available. An empty string means the data set has no name.</td>
</tr>
<tr>
<td>depth</td>
<td>0</td>
<td>The 3D depth of the line layer.</td>
</tr>
</tbody>
</table>

- 28.61.65 addTrendLayer(Data() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDTrendLayerMBS 5056
- 28.61.66 addTrendLayer(dates() as date, colorvalue as color, name as string = "", depth as Integer = 0) as CDTrendLayerMBS 5057
- 28.61.67 addTrendLayer(dates() as date, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDTrendLayerMBS 5058
- 28.61.68 addTrendLayer(dates() as date, yData() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDTrendLayerMBS 5059
- 28.61.70 addTrendLayer(xData() as Double, yData() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDTrendLayerMBS 5060
- 28.61.71 addTrendLayer(xData() as Double, yData() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDTrendLayerMBS 5061

#### 28.61.70 addTrendLayer(xData() as Double, yData() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDTrendLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Same as the other addTrendLayer method, but uses color instead of integer data type for passing color values.

See also:

- 28.61.64 addTrendLayer(Data() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDTrendLayerMBS 5056
- 28.61.65 addTrendLayer(Data() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDTrendLayerMBS 5056
- 28.61.66 addTrendLayer(dates() as date, colorvalue as color, name as string = "", depth as Integer = 0) as CDTrendLayerMBS 5057
- 28.61.67 addTrendLayer(dates() as date, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDTrendLayerMBS 5058
28.61. **CLASS CXYCHARTMBS**

- 28.61.68 `addTrendLayer(dates() as date, yData() as Double, colorvalue as color, name as string = "", depth as Integer = 0) as CDTrendLayerMBS`  
- 28.61.69 `addTrendLayer(dates() as date, yData() as Double, colorvalue as Integer = -1, name as string = ", depth as Integer = 0) as CDTrendLayerMBS`  
- 28.61.71 `addTrendLayer(xData() as Double, yData() as Double, colorvalue as Integer = -1, name as string = "", depth as Integer = 0) as CDTrendLayerMBS`

---

**28.61.71 addTrendLayer(xData() as Double, yData() as Double, colorvalue as Integer = -1, name as string = ", depth as Integer = 0) as CDTrendLayerMBS**

**Function:** Adds a trend chart layer to the XYChart, and specify the x and y values for drawing the trend line.  
**Notes:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>xData</code></td>
<td>(Mandatory)</td>
<td>An array of numbers representing the x values of the data points.</td>
</tr>
<tr>
<td><code>yData</code></td>
<td>(Mandatory)</td>
<td>An array of numbers representing the y values of the data points.</td>
</tr>
<tr>
<td><code>color</code></td>
<td>-1</td>
<td>The color to draw the line. -1 means that the color is automatically selected from the palette.</td>
</tr>
<tr>
<td><code>name</code></td>
<td>&quot;&quot;</td>
<td>The name of the data set. The name will be used in the legend box, if one is available. An empty string means the data set has no name.</td>
</tr>
<tr>
<td><code>depth</code></td>
<td>0</td>
<td>The 3D depth of the line layer.</td>
</tr>
</tbody>
</table>

**Return Value**
A TrendLayer object representing the trend layer created.

**See also:**

- 28.61.64 `addTrendLayer(Data() as Double, colorvalue as color, name as string = ", depth as Integer = 0) as CDTrendLayerMBS`  
- 28.61.65 `addTrendLayer(Data() as Double, colorvalue as Integer = -1, name as string = ", depth as Integer = 0) as CDTrendLayerMBS`  
- 28.61.66 `addTrendLayer(dates() as date, colorvalue as color, name as string = ", depth as Integer = 0) as CDTrendLayerMBS`  
- 28.61.67 `addTrendLayer(dates() as date, colorvalue as Integer = -1, name as string = ", depth as Integer = 0) as CDTrendLayerMBS`  
- 28.61.68 `addTrendLayer(dates() as date, yData() as Double, colorvalue as color, name as string = ", depth as Integer = 0) as CDTrendLayerMBS`  
- 28.61.69 `addTrendLayer(dates() as date, yData() as Double, colorvalue as Integer = -1, name as string = ", depth as Integer = 0) as CDTrendLayerMBS`
28.61.70  addTrendLayer(xData() as Double, yData() as Double, colorValue as color, name as string = "", depth as Integer = 0) as CDTrendLayerMBS

28.61.72  addVectorLayer(dates() as date, yData() as Double, directions() as Double, lengths() as Double, lengthScale as Integer = 0, colorValue as Integer = -1, name as string = "") as CDVectorLayerMBS

MBS ChartDirector Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Adds a vector layer to the chart.
**Notes:**
The vectors are specified as 4 data series, representing the x and y coordinates of the reference points to put the vectors, and the lengths and directions of the vectors.

By default, the vector starts from the reference point and points away from it. You may use VectorLayer.setArrowAlignment to specify other options, such as for the vectors to point into the reference point, or to have the reference as a pivot at the mid-point of the vector.

ChartDirector supports specifying vectors lengths as pixels or in axis scale. The unit is specified by using the following predefined constants.

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PixelScale</td>
<td>0</td>
<td>The unit is measured in pixels.</td>
</tr>
<tr>
<td>XAxisScale</td>
<td>1</td>
<td>The unit is measured in x-axis scale.</td>
</tr>
<tr>
<td>YAxisScale</td>
<td>2</td>
<td>The unit is measured in y-axis scale.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the x coordinates for the reference points of the vectors.</td>
</tr>
<tr>
<td>yData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the y coordinates for the reference points of the vectors.</td>
</tr>
<tr>
<td>lengths</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the lengths of the vectors, in unit as specified in the lengthScale argument.</td>
</tr>
<tr>
<td>directions</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the direction of the vectors as a clockwise angle in degrees, where 0 is upward pointing direction.</td>
</tr>
<tr>
<td>lengthScale</td>
<td>PixelScale</td>
<td>The unit for the lengths, which must be one of the predefined constants in the table above.</td>
</tr>
<tr>
<td>color</td>
<td>-1</td>
<td>The color to draw the data points. -1 means that the color is automatically selected from the palette.</td>
</tr>
<tr>
<td>name</td>
<td>&quot;&quot;</td>
<td>The name of the layer. The name will be used in the legend box, if one is available. An empty string means the layer has no name.</td>
</tr>
</tbody>
</table>

Return Value
A VectorLayer object representing the vector layer created.
See also:

- 28.61.73 `addVectorLayer(dates() as date, yData() as Double, directions() as Double, lengths() as Double, lengthScale as Integer, colorvalue as color, name as string = "") as CDVectorLayerMBS` 5063
- 28.61.74 `addVectorLayer(xData() as Double, yData() as Double, directions() as Double, lengths() as Double, lengthScale as Integer = 0, colorvalue as Integer = -1, name as string = "") as CDVectorLayerMBS` 5063
- 28.61.75 `addVectorLayer(xData() as Double, yData() as Double, directions() as Double, lengths() as Double, lengthScale as Integer, colorvalue as color, name as string = "") as CDVectorLayerMBS` 5065

**28.61.73 addVectorLayer(dates() as date, yData() as Double, directions() as Double, lengths() as Double, lengthScale as Integer, colorvalue as color, name as string = "") as CDVectorLayerMBS**

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other addVectorLayer method, but uses color instead of integer data type for passing color values.
See also:

- 28.61.72 `addVectorLayer(dates() as date, yData() as Double, directions() as Double, lengths() as Double, lengthScale as Integer = 0, colorvalue as Integer = -1, name as string = "") as CDVectorLayerMBS` 5062
- 28.61.74 `addVectorLayer(xData() as Double, yData() as Double, directions() as Double, lengths() as Double, lengthScale as Integer = 0, colorvalue as Integer = -1, name as string = "") as CDVectorLayerMBS` 5063
- 28.61.75 `addVectorLayer(xData() as Double, yData() as Double, directions() as Double, lengths() as Double, lengthScale as Integer, colorvalue as color, name as string = "") as CDVectorLayerMBS` 5065

**28.61.74 addVectorLayer(xData() as Double, yData() as Double, directions() as Double, lengths() as Double, lengthScale as Integer = 0, colorvalue as Integer = -1, name as string = "") as CDVectorLayerMBS**

**Function:** Adds a vector layer to the chart.
**Notes:**
The vectors are specified as 4 data series, representing the x and y coordinates of the reference points to put the vectors, and the lengths and directions of the vectors.

By default, the vector starts from the reference point and points away from it. You may use `VectorLayer.setArrowAlignment` to specify other options, such as for the vectors to point into the reference point, or to
have the reference as a pivot at the mid-point of the vector.

ChartDirector supports specifying vectors lengths as pixels or in axis scale. The unit is specified by using the following predefined constants.

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PixelScale</td>
<td>0</td>
<td>The unit is measured in pixels.</td>
</tr>
<tr>
<td>XAxisScale</td>
<td>1</td>
<td>The unit is measured in x-axis scale.</td>
</tr>
<tr>
<td>YAxisScale</td>
<td>2</td>
<td>The unit is measured in y-axis scale.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the x coordinates for the reference points of the vectors.</td>
</tr>
<tr>
<td>yData</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the y coordinates for the reference points of the vectors.</td>
</tr>
<tr>
<td>lengths</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the lengths of the vectors, in unit as specified in the lengthScale argument.</td>
</tr>
<tr>
<td>directions</td>
<td>(Mandatory)</td>
<td>An array of numbers representing the direction of the vectors as a clockwise angle in degrees, where 0 is upward pointing direction.</td>
</tr>
<tr>
<td>lengthScale</td>
<td>PixelScale</td>
<td>The unit for the lengths, which must be one of the predefined constants in the table above.</td>
</tr>
<tr>
<td>color</td>
<td>-1</td>
<td>The color to draw the data points. -1 means that the color is automatically selected from the palette.</td>
</tr>
<tr>
<td>name</td>
<td>&quot;&quot;</td>
<td>The name of the layer. The name will be used in the legend box, if one is available. An empty string means the layer has no name.</td>
</tr>
</tbody>
</table>

Return Value
A VectorLayer object representing the vector layer created.
See also:

- 28.61.72 addVectorLayer(dates() as date, yData() as Double, directions() as Double, lengths() as Double, lengthScale as Integer = 0, colorvalue as Integer = -1, name as string = "") as CDVectorLayerMBS 5062

- 28.61.73 addVectorLayer(dates() as date, yData() as Double, directions() as Double, lengths() as Double, lengthScale as Integer, colorvalue as color, name as string = "") as CDVectorLayerMBS 5063

- 28.61.75 addVectorLayer(xData() as Double, yData() as Double, directions() as Double, lengths() as Double, lengthScale as Integer, colorvalue as color, name as string = "") as CDVectorLayerMBS 5065
28.61.75 addVectorLayer(xData() as Double, yData() as Double, directions() as Double, lengths() as Double, lengthScale as Integer, colorvalue as color, name as string = "") as CDVectorLayerMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other addVectorLayer method, but uses color instead of integer data type for passing color values.

See also:

- 28.61.72 addVectorLayer(dates() as date, yData() as Double, directions() as Double, lengths() as Double, lengthScale as Integer = 0, colorvalue as Integer = -1, name as string = "") as CDVectorLayerMBS

- 28.61.73 addVectorLayer(dates() as date, yData() as Double, directions() as Double, lengths() as Double, lengthScale as Integer, colorvalue as color, name as string = "") as CDVectorLayerMBS

- 28.61.74 addVectorLayer(xData() as Double, yData() as Double, directions() as Double, lengths() as Double, lengthScale as Integer = 0, colorvalue as Integer = -1, name as string = "") as CDVectorLayerMBS

28.61.76 Constructor(width as Integer = 640, height as Integer = 480, bgcolor as Integer = & hFFFF0000, edgeColor as Integer = & hFF000000, raisedEffect as Integer = 0)


**Function:** Creates a new XYChart object.

**Notes:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>width</td>
<td>(Mandatory)</td>
<td>The width of the chart in pixels.</td>
</tr>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the chart in pixels.</td>
</tr>
<tr>
<td>bgColor</td>
<td>BackgroundColor</td>
<td>The background color of the chart.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>Transparent</td>
<td>The edge color of the chart.</td>
</tr>
<tr>
<td>raisedEffect</td>
<td>0</td>
<td>The 3D border width. For positive values, the border will appear raised. For negative values, the border will appear depressed. A zero value means the border will appear flat.</td>
</tr>
</tbody>
</table>

See also:

- 28.61.77 Constructor(width as Integer, height as Integer, bgColor as color, edgeColor as color, raisedEffect as Integer = 0)
CHAPTER 28. CHARTDIRECTOR

28.61.77 Constructor(width as Integer, height as Integer, bgcolor as color, edgeColor as color, raisedEffect as Integer = 0)

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Same as the other Constructor method, but uses color instead of integer data type for passing color values.
See also:
- 28.61.76 Constructor(width as Integer = 640, height as Integer = 480, bgcolor as Integer = & hFFFF0000, edgeColor as Integer = & hFF000000, raisedEffect as Integer = 0)

28.61.78 getLayer(i as Integer) as CDLayerMBS

Function: Gets a Layer object based on the order in which it is being added to the chart.
Notes:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>(Mandatory)</td>
<td>The index of the data layer. The index of the first layer added to the chart is 0. The index of the Nth layer added to the chart is N - 1.</td>
</tr>
</tbody>
</table>

28.61.79 getLayerByZ(i as Integer) as CDLayerMBS

Function: Gets a Layer object based on the order in which it is being drawn.
Notes:

In ChartDirector, by default, the first layer added will stay on the top of the chart. The second layer will be added under the first layer, and so on. It means The layers will be drawn in the reverse order that they are added to the chart. The ordering can be configured with Layer.moveFront or Layer.moveBack.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>zIndex</td>
<td>(Mandatory)</td>
<td>The z-index of the required layer. The z-index of the first layer drawn is 0. The z-index for the Nth layer drawn is N - 1.</td>
</tr>
</tbody>
</table>

28.61.80 getLayerCount as Integer

Function: Gets the number of layers in the chart.
28.61. CLASS CDXYCHARTMBS

28.61.81 getNearestXValue(xCoor as Double) as Double


**Function:** Gets the x data value that is nearest to the specified x pixel coordinate.

**Notes:**
This method will search all x data values in the XYChart to look for the x data value that is nearest to the given x coordinate. If there are two x data values equally near to the specified x pixel coordinate, this method will arbitrarily return one of the values.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xCoor</td>
<td>(Mandatory)</td>
<td>The x pixel coordinate to search for.</td>
</tr>
</tbody>
</table>

Returns the x data value that is nearest to the specified x coordinate.

28.61.82 getPlotArea as CDPlotAreaMBS


**Function:** Gets the PlotArea object representing the plot area.

28.61.83 getXCoor(value as Double) as Integer


**Function:** Gets the x pixel coordinate of a point given the x data value.

**Notes:**
Note: You must call BaseChart.layout first before calling this method. It is because ChartDirector needs to perform auto-scaling and determine the axis scale first before it can compute the coordinates.

For a 3D chart, this method will get the pixel coordinate of the data value on the top surface of the chart. Use Layer.getXCoor to obtain the pixel coordinate of the data value on a particular chart layer.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>v</td>
<td>(Mandatory)</td>
<td>The x data value.</td>
</tr>
</tbody>
</table>

Return Value
The x coordinate of the x data value.
CHAPTER 28. CHARTDIRECTOR

28.61.84  **getXValue(xCoor as Integer) as Double**


**Function:**
Gets the x data value given the x pixel coordinate.

**Notes:**
Note: This method should be used only after ChartDirector has output the chart image, or after XYChart.layoutAxes, BaseChart.layout or XYChart.packPlotArea has been called. ChartDirector needs to perform auto-scaling and layout the axis before it can convert between pixel coordinates and data values.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xCoor</td>
<td>(Mandatory)</td>
<td>The x pixel coordinate.</td>
</tr>
</tbody>
</table>

Returns the x data value at the x pixel coordinate.

28.61.85  **getYCoor(value as Double, yAxis as CDAxisMBS=nil) as Integer**


**Function:**
Gets the y pixel coordinate of a point given the y data value.

**Notes:**
Note: You must call BaseChart.layout first before calling this method. It is because ChartDirector needs to perform auto-scaling and determine the axis scale first before it can compute the coordinates.

For a 3D chart, this method will get the pixel coordinate of the data value on the top surface of the chart. Use Layer.getYCoor to obtain the pixel coordinate of the data value on a particular chart layer.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>v</td>
<td>(Mandatory)</td>
<td>The y data value.</td>
</tr>
<tr>
<td>yAxis</td>
<td>[ Null ]</td>
<td>The y-axis to use to determine the pixel coordinates of data values. The y-axis may be obtained using XYChart.yAxis, XYChart.yAxis2 or XYChart.addAxis. The default is to use the primary y-axis.</td>
</tr>
</tbody>
</table>

Return Value
The y coordinate of the y data value.

28.61.86  **getYValue(yCoor as Integer, axis as CDAxisMBS = nil) as Double**


**Function:**
Gets the y data value given the y pixel coordinate.

**Notes:**
Note: This method should be used only after ChartDirector has output the chart image, or after XYChart.layoutAxes, BaseChart.layout or XYChart.packPlotArea has been called. ChartDirector needs to perform auto-scaling and layout the axis before it can convert between pixel coordinates and data values.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>yCoor</td>
<td>(Mandatory)</td>
<td>The y pixel coordinate.</td>
</tr>
<tr>
<td>yAxis</td>
<td>[ Null ]</td>
<td>The y-axis to use to determine the pixel coordinates of data values. The y-axis may be obtained using XYChart.yAxis, XYChart.yAxis2 or XYChart.addAxis. The default is to use the primary y-axis.</td>
</tr>
</tbody>
</table>

Returns the y data value at the y pixel coordinate.

### 28.61.87 layoutAxes


**Function:** Performs axis auto-scaling and sets the axis positions and lengths.

**Notes:**
ChartDirector automatically calls this method when creating the chart output (e.g. using BaseChart.makeChart). There is usually no need to call this method explicitly.

However, if you would like to draw custom objects whose positions or contents depend on the axis scales, you may call this method to auto-scaling the axes before creating the chart output.

The axes will auto-scale based on the data at the time of calling this method. New data added afterwards will not affect the axis scale.

You should not modify the axis scale (e.g. using Axis.setLinearScale, Axis.setLabels, etc) after calling this method.

### 28.61.88 packPlotArea(leftX as Integer, topY as Integer, rightX as Integer, bottomY as Integer, minWidth as Integer = 0, minHeight as Integer = 0)


**Function:** Adjusts the plot area size and position to fit the plot area and the axis labels in a bounding box.

**Notes:**
In some charts, the axis labels may vary widely and can be very short or very long. It may be difficult to determine to plot area position and size so as to reserve reasonable and sufficient space for the axis labels. This method adjusts the size and position of the plot area, so that the plot area, together with the axis
labels can fit within a given bounding box.
Note that this method only adjusts for the thickness of the primary and secondary axes, and assumes they
are at the border of the plot area. For other axes, you may use Axis.getThickness to get their thickness and
adjust the plot area size and position accordingly.
For this method to determine the thickness of the axes, it needs to auto-scale the axes to determine the axis
labels. That means all the data should be entered to the chart before calling this method.
Furthermore, the labels generated by auto-scaling depend on the number of labels that can fit on the axis,
which in turn depends on the plot area size. So even the final plot area size is determined by this method,
the XYChart.setPlotArea must still be used to set a reasonable initial plot area size.
To adjust only the plot area width and horizontal position, and leave the height and vertical position un-
changed, simply use a bounding box with zero height (eg. set both topY and bottomY to 0). Similarly, to
adjust only the height and vertical position, use a bounding box with zero width.
In some extreme cases, the axis labels may be so long that the plot area needs to adjust to an unreasonably
small size, or even zero in size. For example, the axis labels may be names entered by the user, and the
user may enter a name thousands of characters long. These extreme cases should be avoided by checking
and limiting the length of the labels before passing the labels to ChartDirector. This method also has a
safeguard for these unreasonable labels by ensuring the plot area will not shrink below a given minimum size.

Arguments:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>leftX</td>
<td>(Mandatory)</td>
<td>The left x coordinate of the bounding box.</td>
</tr>
<tr>
<td>topY</td>
<td>(Mandatory)</td>
<td>The top y coordinate of the bounding box.</td>
</tr>
<tr>
<td>rightX</td>
<td>(Mandatory)</td>
<td>The right x coordinate of the bounding box.</td>
</tr>
<tr>
<td>bottomY</td>
<td>(Mandatory)</td>
<td>The bottom y coordinate of the bounding box.</td>
</tr>
<tr>
<td>minWidth</td>
<td>0</td>
<td>The minimum width the plot area can adjust to.</td>
</tr>
<tr>
<td>minHeight</td>
<td>0</td>
<td>The minimum height the plot area can adjust to.</td>
</tr>
</tbody>
</table>

28.61.89  setAxisAtOrigin(originMode as Integer = 3, symmetryMode as Integer = 0)

Function: Sets the chart into 4 quadrant mode. The axes may intersect at origin inside the plot area (as
opposed to at the border of the plot area).
Notes:
By default, ChartDirector puts the axes at the border of the plot area. This ensures the axes and the axes
labels will not block the contents of the plot area.

However, in some cases, it may be desirable for the axes to intersect at the origin. The axes may need to
move inside the plot area.

ChartDirector allows you to move the primary x-axis and/or y-axis to so that they intersect with the zero
point of the other axis. The following constants represent different possibilities:

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>XAxisAtOrigin</td>
<td>1</td>
<td>Move the x-axis so that it will intersect with the zero point of the y-axis, if that point exists.</td>
</tr>
<tr>
<td>YAxisAtOrigin</td>
<td>2</td>
<td>Move the y-axis so that it will intersect with the zero point of the x-axis, if that point exists.</td>
</tr>
<tr>
<td>XYAxisAtOrigin</td>
<td>3</td>
<td>Move the x-axis so that it will intersect with the zero point of the y-axis, if that point exists. Move the y-axis so that it will intersect with the zero point of the x-axis, if that point exists.</td>
</tr>
</tbody>
</table>

In addition to ensure the axes intersects at the origin, ChartDirector allows you to control if the axes are symmetrical about the origin with the following flags. Multiple flags can be specified by "or" them together.

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>XAxisSymmetric</td>
<td>1</td>
<td>Adjust the x-axis so that it becomes symmetrical about the zero point, that is, the positive and negative part of the x-axis will be of the same length.</td>
</tr>
<tr>
<td>XAxisSymmetricIfNeeded</td>
<td>2</td>
<td>Adjust the x-axis will be symmetrical about the zero point if the axis scale needs both positive and negative values.</td>
</tr>
<tr>
<td>YAxisSymmetric</td>
<td>4</td>
<td>Adjust the y-axis so that it becomes symmetrical about the zero point, that is, the positive and negative part of the y-axis will be of the same length.</td>
</tr>
<tr>
<td>YAxisSymmetricIfNeeded</td>
<td>8</td>
<td>Adjust the y-axis will be symmetrical about the zero point if the axis scale needs both positive and negative values.</td>
</tr>
<tr>
<td>XYAxisSymmetric</td>
<td>16</td>
<td>Adjust the x-axes and y-axes so that they become symmetrical about the zero point. The positive and negative parts of the x-axes and the y-axes will all be of the same length.</td>
</tr>
<tr>
<td>XYAxisSymmetricIfNeeded</td>
<td>32</td>
<td>Adjust the x-axes and y-axes so that they become symmetrical about the zero point. However, if an axis does not need both positive and negative values, it will not be adjusted.</td>
</tr>
</tbody>
</table>

Parameter Default Description
originMode XYAxisAtOrigin predefined constants to determine which axis needs to move to intersect with the zero point of the other axis.
symmetryMode 0 Flags to determine if the axes need to be symmetrical about the origin.

28.61.90  setClipping(margin as Integer = 0)


Notes:
In normal usage, ChartDirector will auto-scale the axis to ensure all the data points will be within the plot area.
However, if manual scaling is used (e.g. using Axis.setLinearScale), it is possible to choose an axis scale such that some data points will be outside the plot area. So some of the data representation (bars, lines, etc) will be outside the plot area.

This method can be used to clip the plot area, so that any data representation that is outside the plot area will not be drawn.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>margin</td>
<td>0</td>
<td>Additional margin, measured in pixels, to be added to the 4 sides of the plot area for the purpose of clipping. A positive value means the clipping region will be larger than the plot area. A negative value means the clipping region will be smaller than the plot area. The default value of 0 means the clipping region is equal to the plot area.</td>
</tr>
</tbody>
</table>

28.61.91 setPlotArea(x as Integer, y as Integer, width as Integer, height as Integer, bgColor as color, altBgColor as color, edgeColor as color, hGridColor as color, vGridColor as color) as CDPlotAreaMBS

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Same as the other setPlotArea method, but uses color instead of integer data type for passing color values.

See also:

- 28.61.92 setPlotArea(x as Integer, y as Integer, width as Integer, height as Integer, bgColor as Integer = & hff000000, altBgColor as Integer = -1, edgeColor as Integer = -1, hGridColor as Integer = & hc0c0c0, vGridColor as Integer = & hff000000) as CDPlotAreaMBS

28.61.92 setPlotArea(x as Integer, y as Integer, width as Integer, height as Integer, bgColor as Integer = & hff000000, altBgColor as Integer = -1, edgeColor as Integer = -1, hGridColor as Integer = & hc0c0c0, vGridColor as Integer = & hff000000) as CDPlotAreaMBS


Function: Sets the position, size, background colors, edge color and grid colors of the plot area.

Notes:

Return Value
A PlotArea object representing the plot area.

See also:

- 28.61.91 setPlotArea(x as Integer, y as Integer, width as Integer, height as Integer, bgColor as color, altBgColor as color, edgeColor as color, hGridColor as color, vGridColor as color) as CDPlotAreaMBS
28.61. CLASS CDXYCHARTMBS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>(Mandatory)</td>
<td>The x coordinate of the left of the plot area.</td>
</tr>
<tr>
<td>y</td>
<td>(Mandatory)</td>
<td>The y coordinate of the top of the plot area.</td>
</tr>
<tr>
<td>width</td>
<td>(Mandatory)</td>
<td>The width of the plot area in pixels.</td>
</tr>
<tr>
<td>height</td>
<td>(Mandatory)</td>
<td>The height of the plot area in pixels.</td>
</tr>
<tr>
<td>bgColor</td>
<td>Transparent</td>
<td>The background color of the plot area.</td>
</tr>
<tr>
<td>altBgColor</td>
<td>-1</td>
<td>The second background color of the plot area. -1 means there is no second</td>
</tr>
<tr>
<td></td>
<td></td>
<td>background color. If there is a second background color, the two background</td>
</tr>
<tr>
<td></td>
<td></td>
<td>colors will be used alternatively as horizontal bands on the background grid.</td>
</tr>
<tr>
<td>edgeColor</td>
<td>-1</td>
<td>The border color of the plot area. -1 means to use the default, which is Line-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color. However, if the axes are configured in 4 quadrant mode (see XYChart.se-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>tAxisAtOrigin), the default will change to Transparent.</td>
</tr>
<tr>
<td>hGridColor</td>
<td>C0C0C0</td>
<td>The horizontal grid color.</td>
</tr>
<tr>
<td>vGridColor</td>
<td>Transparent</td>
<td>The vertical grid color.</td>
</tr>
</tbody>
</table>

**28.61.93 setTrimData(startPos as Integer, len as Integer = & h7fffffff)**

**Function:** Uses only a subset of the data series to draw charts.  
**Notes:**

In finance charts, "lead data" are commonly needed to plot technical indicators. For example, to show a 20-days moving average line for 30 days, one needs 50 days of data. It is because computing 20-days moving average requires 20 days of "lead data". The setTrimData method is a convenience method for trimming off these "lead data" so they will not appear on the chart.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>startPos</td>
<td>(Mandatory)</td>
<td>The index for the first data position to use for plotting charts.</td>
</tr>
<tr>
<td>len</td>
<td>7FFFFFFF</td>
<td>The length of the data points used for plotting charts.</td>
</tr>
</tbody>
</table>

**28.61.94 setXAxisOnTop(value as boolean=true)**

**Function:** Interchange the position of the primary x-axis and the secondary x-axis.  
**Notes:**

By default, the primary x-axis is the x-axis on the bottom side of the plot area (left side if XYChart.swapXY is in effect), and the secondary x-axis is on the top side of the plot area (right side if XYChart.swapXY is in effect). This method can be used to interchange their positions.
### Parameter, Default, Description

**b**  
Default: **true**  
Description: A true value means to interchange the positions of the primary and secondary x-axes. A false value means using the default positions for the primary and secondary x-axes.

#### 28.61.95  setYAxisOnRight(value as boolean=true)

**Function:** Interchange the position of the primary y-axis and the secondary y-axis.  
**Notes:**  
By default, the primary y-axis is the y-axis on the left side of the plot area (bottom side if XYChart.swapXY is in effect), and the secondary y-axis is on the right side of the plot area (top side if XYChart.swapXY is in effect). This method can be used to interchange their positions.

**Parameter, Default, Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>true</td>
<td>A true value means to interchange the positions of the primary and secondary y-axes. A false value means using the default positions for the primary and secondary y-axes.</td>
</tr>
</tbody>
</table>

#### 28.61.96  swapXY(value as boolean=true)

**Function:** Swap the position of the x and y axes, so the x-axes will become vertical, and the y-axes will become horizontal.  
**Notes:**  
After swapping the x and y axes, the charts will appear rotated. For example, the bars in a bar chart will become horizontal instead of vertical, and the area in a stacked area chart will grow from left to right (instead of bottom to top).

**Parameter, Default, Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>true</td>
<td>A true value means the x and y axes will be swapped. A false value means the x and y axes not be swapped.</td>
</tr>
</tbody>
</table>

#### 28.61.97  syncYAxis(slope as Double = 1, intercept as Double = 0)

**Function:** Sets a linear formula to synchronize the secondary y-axis scale to the primary y-axis scale.  
**Notes:**
The formula is in the format:

\[ y_2 = y_1 \times \text{slope} + \text{intercept} \]

This method is usually used if the two y-axes represent the same measurement using different units. Examples including temperature in Celsius and in Fahrenheit, and length in meters and feet.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>slope</td>
<td>1</td>
<td>The slope parameter for the formula linking the secondary y-axis to the primary y-axis.</td>
</tr>
<tr>
<td>intercept</td>
<td>0</td>
<td>The intercept parameter for the formula linking the secondary y-axis to the primary y-axis.</td>
</tr>
</tbody>
</table>

**28.61.98** \texttt{xZoneColor(threshold as Double, belowColor as color, aboveColor as color) as Integer}

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same as the other \texttt{xZoneColor} method, but uses color instead of integer data type for passing color values.

See also:

- 28.61.99 \texttt{xZoneColor(threshold as Double, belowColor as Integer, aboveColor as Integer) as Integer}

**28.61.99** \texttt{xZoneColor(threshold as Double, belowColor as Integer, aboveColor as Integer) as Integer}


**Function:** Creates a x-zone color. A x-zone will change from one color to another depending on a threshold value on the x-axis.

**Notes:**

For example, if a x-zone color is used as the line color in a line layer, the line will switch from one color to another when its passes through a certain value on the x-axis. Similarly, if a x-zone color is used as the fill color in an area layer, the area will switch from one color to another when it passes through a certain value on the x-axis.

The two colors used in a x-zone color can be other dynamic colors. For example, one color could be a solid color, while the other color could be a dash line color (see \texttt{!BaseChart.dashLineColor}). When this x-zone color is as the line color, the line will change from a solid style to a dash line style when the line passes through a certain value on the x-axis.
You may create x-zone colors with more than 2 zones by cascading multiple x-zone colors.

For a 3D chart, this method will get the zone color at the top surface of the chart. Use Layer.xZoneColor to obtain the zone color for a particular chart layer.

- **threshold** (Mandatory) The x value serving as the threshold for switching between two colors.
- **belowColor** (Mandatory) The color to use when the x-axis value of the pixel is smaller than the threshold.
- **aboveColor** (Mandatory) The color to use when the x-axis value of the pixel is greater than the threshold.

Return Value
A 32-bit integer representing the x-zone color.

See also:
- [28.61.98 xZoneColor(threshold as Double, belowColor as color, aboveColor as color) as Integer](#)
- [28.61.100 yZoneColor(threshold as Double, belowColor as color, aboveColor as color, yAxis as CDAxisMBS=nil) as Integer](#)
- [28.61.101 yZoneColor(threshold as Double, belowColor as Integer, aboveColor as Integer, yAxis as CDAxisMBS=nil) as Integer](#)

**28.61.100  yZoneColor(threshold as Double, belowColor as color, aboveColor as color, yAxis as CDAxisMBS=nil) as Integer**

MBS ChartDirector Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Same as the other yZoneColor method, but uses color instead of integer data type for passing color values.

See also:
- [28.61.101 yZoneColor(threshold as Double, belowColor as Integer, aboveColor as Integer, yAxis as CDAxisMBS=nil) as Integer](#)

**28.61.101  yZoneColor(threshold as Double, belowColor as Integer, aboveColor as Integer, yAxis as CDAxisMBS=nil) as Integer**

**Function:** Creates a x-zone color. A x-zone will change from one color to another depending on a threshold value on the x-axis.

**Notes:**
For example, if a x-zone color is used as the line color in a line layer, the line will switch from one color to another when its passes through a certain value on the x-axis. Similarly, if a x-zone color is used as the fill color in an area layer, the area will switch from one color to another when it passes through a certain value on the x-axis.

The two colors used in a x-zone color can be other dynamic colors. For example, one color could be a solid color, while the other color could be a dash line color (see !BaseChart.dashLineColor). When this x-zone color is as the line color, the line will change from a solid style to a dash line style when the line passes
You may create x-zone colors with more than 2 zones by cascading multiple x-zone colors.

For a 3D chart, this method will get the zone color at the top surface of the chart. Use Layer.xZoneColor to obtain the zone color for a particular chart layer.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>threshold</td>
<td>(Mandatory)</td>
<td>The x value serving as the threshold for switching between two colors.</td>
</tr>
<tr>
<td>belowColor</td>
<td>(Mandatory)</td>
<td>The color to use when the x-axis value of the pixel is smaller than the threshold.</td>
</tr>
<tr>
<td>aboveColor</td>
<td>(Mandatory)</td>
<td>The color to use when the x-axis value of the pixel is greater than the threshold.</td>
</tr>
</tbody>
</table>

Return Value
A 32-bit integer representing the x-zone color.

See also:

- 28.61.100 yZoneColor(threshold as Double, belowColor as color, aboveColor as color, yAxis as CDAxisMBS=nil) as Integer

28.61.102 Properties

28.61.103 xAxis as CDAxisMBS


**Function:** Retrieves the Axis object representing primary x-axis of the XYChart.

**Notes:**
By default, the primary x-axis is the x-axis on the bottom side of the plot area (left side if XYChart.swapXY is in effect), and the secondary x-axis is on the top side of the plot area (right side if XYChart.swapXY is in effect). You may interchange their positions using XYChart.setXAxisOnTop.

Return Value
The Axis object representing the primary x-axis of the XYChart.
(Read only property)
28.61.104  xAxis2 as CDAxisMBS

**Function:** Retrieves the Axis object representing secondary x-axis of the XYChart.
**Notes:**
By default, the primary x-axis is the x-axis on the bottom side of the plot area (left side if XYChart.swapXY is in effect), and the secondary x-axis is on the top side of the plot area (right side if XYChart.swapXY is in effect). You may interchange their positions using XYChart.setXAxisOnTop.

Return Value
The Axis object representing the secondary x-axis of the XYChart.
(Read only property)

28.61.105  yAxis as CDAxisMBS

**Function:** Retrieves the Axis object representing primary y-axis of the XYChart.
**Notes:**
Return Value
The Axis object representing the primary y-axis of the XYChart.
(Read only property)

28.61.106  yAxis2 as CDAxisMBS

**Function:** Retrieves the Axis object representing secondary y-axis of the XYChart.
**Notes:**
By default, the primary y-axis is the y-axis on the left side of the plot area (bottom side if XYChart.swapXY is in effect), and the secondary y-axis is on the right side of the plot area (top side if XYChart.swapXY is in effect). You may interchange their positions using XYChart.setYAxisOnRight.

Return Value
The Axis object representing the secondary y-axis of the XYChart.
(Read only property)
**Function:** A line chart created using ChartDirector with the CDXYChartMBS class.
Function: A bar chart created using ChartDirector with the CDXYChartMBS class.
Chapter 29

Clipboard

29.1 class ClipboardMBS

29.1.1 class ClipboardMBS


Function: A clipboard class for Mac OS.

Notes:

For all datatypes, the available function is faster than the size function. And the both functions are faster than the getter function.

This is older Carbon API. You may want to prefer NSPasteboardMBS class with new projects. Only available in Mac 32 bit applications. Will not be ported to 64 bit.

29.1.2 Methods

29.1.3 AddData(FlavorType as string, data as string)


29.1.4 AddText(Text as string)

29.1.5 AddUnicodeText(Text as string)

MBS MacClassic Plugin, Plugin Version: 4.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Adds unicode text to the clipboard.  
**Notes:** UTF16 encoded strings only.

29.1.6 clear

MBS MacClassic Plugin, Plugin Version: 4.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Clears the clipboard.  
**Notes:** You must clear before you add something.

29.1.7 close

MBS MacClassic Plugin, Plugin Version: 4.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The destructor.  
**Notes:**  
There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.  
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

29.1.8 DataAvailable(FlavorType as string) as boolean

MBS MacClassic Plugin, Plugin Version: 4.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether data is available.

29.1.9 DataSize(FlavorType as string) as Integer

MBS MacClassic Plugin, Plugin Version: 4.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the byte size of the selected data.

29.1.10 GetData(FlavorType as string) as string

MBS MacClassic Plugin, Plugin Version: 4.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the data of a given type.  
**Example:**
29.1. CLASS CLIPBOARDMBS

// Take PICT data from clipboard

dim c as ClipboardMBS
dim s as string

c=new ClipboardMBS

if c.DataAvailable("PICT") then
s=c.GetData("PICT")

if s<>"" then
Backdrop=BuildPictureWithPicHandleDataMBS(s)
end if
end if

29.1.11 GetText as string


29.1.12 GetUnicodeText as string

Notes: UTF16 encoded strings only.

29.1.13 PictAvailable as boolean


29.1.14 ScrapFlavorCount as Integer

Example:
dim clip as ClipboardMBS
dim i,c,c1,c2 as Integer
dim s as string

clip=new ClipboardMBS

c=clip.ScrapFlavorCount

s=str(c)+" types: ", "    
c1=c-1

c2=c-2

for i=0 to c2
    s=S+clip.ScrapFlavorType(i)+", ", "
next

if c>0 then
    s=S+clip.ScrapFlavorType(c1)
end if

MsgBox s

Notes: Calling this function recreates the internal flavor list in the Realbasic clipboard object.

29.1.15 ScrapFlavorFlags(index as Integer) as Integer

Function: Returns the flags of the given flavor.
Notes:
Index goes from 0 to count-1.
Returns 0 on any error.

Flags are a combination of type values:
1 - private data (Sender only)
2 - translated data

29.1.16 ScrapFlavorType(index as Integer) as string

Function: Returns the type of the given flavor.
29.1. CLASS CLIPBOARDMBS

Notes:
Index goes from 0 to count-1.
Returns "" on any error.

29.1.17 TextAvailable as boolean


29.1.18 TextSize as Integer


29.1.19 UnicodeTextAvailable as boolean

Notes: UTF16 encoded strings only.

29.1.20 UnicodeTextSize as Integer

Notes: UTF16 encoded strings only.

29.1.21 Properties

29.1.22 Handle as Integer

Notes:
Carbon only.
(Read only property)
29.2 class NSPasteboardItemDataProviderMBS

29.2.1 class NSPasteboardItemDataProviderMBS

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This protocol is implemented by the data provider of a pasteboard item to provide the data for a particular UTI type. **Notes:** You can specify an object as a pasteboard data provider for a pasteboard item using NSPasteboard-ItemMBS's setDataProviderForTypes method. The data provider must implement this protocol to provide data upon request.

29.2.2 Methods

29.2.3 Constructor

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

29.2.4 Destructor

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The destructor.

29.2.5 Properties

29.2.6 Handle as Integer

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference. **Notes:** (Read and Write property)

29.2.7 Events

29.2.8 Finished(Pasteboard as NSPasteboardMBS)

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Informs the receiver that the pasteboard no longer needs the data provider for any of its pasteboard items. **Notes:**
One data provider can provide data for more than one pasteboard item. This method is called when the pasteboard no longer needs the data provider for any of its pasteboard items. This can be either because the data provider has fulfilled all promises, or because ownership of the pasteboard has changed.

Available in OS X v10.6 and later.

29.2.9 `provideDataForType(Pasteboard as NSPasteboardMBS, item as NSPasteboardItemMBS, type as string)`

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Asks the receiver to provide data for a specified type to a given pasteboard. (required)
**Notes:**
pasteboard: A pasteboard to which the receiver has promised to provide data.
item: A pasteboard item for which the receiver has promised to provide data
type: A UTI type string.

The receiver was previously set as the provider using `setDataProviderForTypes`. Available in OS X v10.6 and later.
29.3 class NSPasteboardItemMBS

29.3.1 class NSPasteboardItemMBS

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** NSPasteboardItem is a generic class to represent an item on a pasteboard.

**Example:**

```
dim n as new NSPasteboardItemMBS

dim type as string = NSPasteboardmbs.NSPasteboardTypeString
n.stringForType(type) = "Hello World"
MsgBox n.stringForType(type)
```

**Notes:**

There are three main uses for an NSPasteboardItem object:

- Providing data on the pasteboard.
  You can create one or more pasteboard items, set data or data providers for types, and write to them pasteboard.

- Customizing data already on the pasteboard.
  As a delegate or subclass, you can retrieve the pasteboard items currently on the pasteboard, read the existing types and data and set new data and data providers for types as needed.

- Retrieving data from the pasteboard.
  You can retrieve pasteboard items from the pasteboard then read the data for types you’re interested in.

A pasteboard item can be associated with a single pasteboard. When you create an item, it can be written to any pasteboard. When you pass an item to a pasteboard in writeObjects, that item becomes bound to the pasteboard it was written to. When you retrieve items from a pasteboard using pasteboardItems, the returned items are associated with the messaged pasteboard. Passing an item that is already associated with a pasteboard into writeObjects: causes an exception to be raised.

Pasteboard items are intended to be used during a single pasteboard interaction, not held onto and used repeatedly. A pasteboard item is only valid until the owner of the pasteboard changes.

**Important:** If a pasteboard item is stale because the pasteboard owner has changed, it returns nil or false values from its methods.
29.3. CLASS NSPASTEBOARDITEMMBS

29.3.2 Methods

29.3.3 availableTypeFromArray(types() as string) as string

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns from a given array of types the the first type contained in the pasteboard item, according to the ordering of types.

**Notes:**

types: An array of strings representing UTIs, arranged in order of preference (most preferred as the 0th element in the array).

Returns the first (according to the sender’s ordering of types) type in types contained in the pasteboard item, or nil if the receiver does not contain any types given in types.

The method checks for UTI conformance of the requested types, preferring an exact match to conformance. Available in OS X v10.6 and later.

29.3.4 Constructor

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

29.3.5 Destructor

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The destructor.

29.3.6 setDataProviderForType(dataProvider as NSPasteboardItemDataProviderMBS, types() as string) as boolean

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the data provider for the specified types.

**Notes:**

dataProvider: A pasteboard data provider.
types: An array of strings indicating the UTIs for the data representations dataProvider may provide.

Returns true if the data provider was set successfully, otherwise false.
This method registers the data provider to be messaged to provide the data for any of the specified types when requested.
Available in OS X v10.6 and later.

29.3.7 types as string()

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns an array of UTI strings of the data types supported by the receiver.
Notes: Available in OS X v10.6 and later.

29.3.8 Properties

29.3.9 dataProvider as NSPasteboardItemDataProviderMBS

Notes:
You should keep your dataprovider alive, so the object is not destroyed while pasteboarditem is used.
In this property we keep a reference to the data provider for you.
(Read and Write property)

29.3.10 Handle as Integer

Notes: (Read and Write property)

29.3.11 dataForType(type as string) as memoryblock

Example:

dim n as new NSPasteboardItemMBS

dim data as MemoryBlock = ”Hello World”
dim type as string = NSPasteboardmbs.NSPasteboardTypeString
n.dataForType(type) = data
29.3. **CLASS NSPASTEBOARDITEMMBS**

```vba
dim d as MemoryBlock = n.dataForType(type)
MsgBox DefineEncoding(d, encodings.UTF8)
```

**Notes:** (Read and Write computed property)

### 29.3.12 `propertyListForType(type as string) as Variant`

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The value for a specified type as a property list.  
**Notes:**  
Stores a property list object (array, dictionary, string, numbers, memoryblocks)  
Available in OS X v10.6 and later.  
(Read and Write computed property)

### 29.3.13 `stringForType(type as string) as string`

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The value for the specified type as a string.  
**Example:**

```vba
dim n as new NSPasteboardItemMBS

dim type as string = NSPasteboardmbs.NSPasteboardTypeString
n.stringForType(type) = "Hello World"
MsgBox n.stringForType(type)
```

**Notes:**

- type: A UTI type string.  
Available in OS X v10.6 and later.  
(Read and Write computed property)
29.4 class NSPasteboardMBS

29.4.1 class NSPasteboardMBS


Example:

dim p as new NSPasteboardMBS

MsgBox join(p.types,EndOfLine)

Notes:

NSPasteboard objects transfer data to and from the pasteboard server. The server is shared by all running applications. It contains data that the user has cut or copied, as well as other data that one application wants to transfer to another. NSPasteboard objects are an application's sole interface to the server and to all pasteboard operations.

An NSPasteboard object is also used to transfer data between applications and service providers listed in each application’s Services menu. The drag pasteboard (NSDragPboard) is used to transfer data that is being dragged by the user.

The plugin class NSPasteboardMBS does not implement all features of the NSPasteboard. If you miss something, please email us.

29.4.2 Methods

29.4.3 addType(type as string) as Integer


Notes:

types: An array of strings, each of which specifies a type of data that can be provided to the pasteboard.

Returns the new change count, or 0 if there was an error adding the types.

This method adds promises for the specified types to the first pasteboard item.

You use this methods to declare additional types of data for the first pasteboard item in the receiver. You
can also use it to replace existing types added by a previous declareTypes or addTypes call.

The types parameter specifies the types of data you are promising to the pasteboard. The types should be ordered according to the preference of the source application, with the most preferred type coming first (typically, the richest representation). New types are added to the end of the list containing any existing types, if any.

If you specify a type that has already been declared, this method replaces the owner of that type with the value in newOwner. In addition, any data already written to the pasteboard for that type is removed.

29.4.4 addTypes(types() as string) as Integer

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds promises for the specified types to the first pasteboard item.

**Notes:**

- types: An array of strings, each of which specifies a type of data that can be provided to the pasteboard.

Returns the new change count, or 0 if there was an error adding the types.

This method adds promises for the specified types to the first pasteboard item.

You use this method to declare additional types of data for the first pasteboard item in the receiver. You can also use it to replace existing types added by a previous declareTypes or addTypes call.

The types parameter specifies the types of data you are promising to the pasteboard. The types should be ordered according to the preference of the source application, with the most preferred type coming first (typically, the richest representation). New types are added to the end of the list containing any existing types, if any.

If you specify a type that has already been declared, this method replaces the owner of that type with the value in newOwner. In addition, any data already written to the pasteboard for that type is removed.

29.4.5 changeCount as Integer

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver’s change count.

**Example:**
dim p as new NSPasteboardMBS(NSPasteboardMBS.NSGeneralPboard)

MsgBox str(p.changeCount)

**Notes:**
The change count starts at zero when a client creates the receiver and becomes the first owner. The change count subsequently increments each time the pasteboard ownership changes.

The change count is also returned from clearContents and declareTypes. You can therefore record the change count at the time that you take ownership of the pasteboard and later compare it with the value returned from changeCount to determine whether you still have ownership.

### 29.4.6 clearContents as Integer

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Clears the existing contents of the pasteboard. **Example:**

dim p as new NSPasteboardMBS(NSPasteboardMBS.NSGeneralPboard)

MsgBox str(p.clearContents)

**Notes:**
Clears the existing contents of the pasteboard, preparing it for new contents. This is the first step in providing data on the pasteboard.

Available in Mac OS X v10.6 and later.

### 29.4.7 Constructor

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new NSPasteboardMBS object linked to the general NSPasteboard object. **Example:**

dim p as new NSPasteboardMBS

MsgBox join(p.types,EndOfLine)
29.4. CLASS NSPASTEBOARDMBS

Notes: On success the handle property is not 0.
See also:

- 29.4.8 Constructor(name as string)

29.4.8 Constructor(name as string)

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creates a new NSPasteboardMBS object linked to the pasteboard with the specified name.

Example:

```pascal
dim p as new NSPasteboardMBS(NSPasteboardMBS.NSFindPboard)

// shows last find string
MsgBox p.stringForType(p.NSPasteboardTypeString)
```

Notes: On success the handle property is not 0.
See also:

- 29.4.7 Constructor

29.4.9 declareType(type as string) as Integer

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Prepares the receiver for a change in its contents by declaring the new types of data it will contain.

Notes:

type: An strings that specify the type of data that may be added to the new pasteboard. The types should be ordered according to the preference of the source application, with the most preferred type coming first (typically, the richest representation).

Returns the receiver’s new change count.

This method is the equivalent of invoking clearContents, implicitly writing the first pasteboard item, and then calling addTypes to promise types for the first pasteboard item.

In Mac OS X v10.5 and earlier, this method is the first step in writing data to the pasteboard and must precede the messages that actually write the data. A declareTypes message essentially changes the contents of the receiver: It invalidates the current contents of the receiver and increments its change count.
29.4.10  declareTypes(types() as string) as Integer

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Prepares the receiver for a change in its contents by declaring the new types of data it will contain. **Notes:**

type: An array of Strings that specify the types of data that may be added to the new pasteboard. The types should be ordered according to the preference of the source application, with the most preferred type coming first (typically, the richest representation).

Returns the receiver’s new change count.

This method is the equivalent of invoking clearContents, implicitly writing the first pasteboard item, and then calling addTypes to promise types for the first pasteboard item.

In Mac OS X v10.5 and earlier, this method is the first step in writing data to the pasteboard and must precede the messages that actually write the data. A declareTypes message essentially changes the contents of the receiver: It invalidates the current contents of the receiver and increments its change count.

29.4.11  generalPasteboard as NSPasteboardMBS

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the general NSPasteboard object. **Example:**

dim p as NSPasteboardMBS = NSPasteboardMBS.generalPasteboard
MsgBox join(p.types, EndOfLine)

29.4.12  name as string

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver’s name. **Example:**

dim p as new NSPasteboardMBS

MsgBox p.name
29.4.13 NSColorPboardType as string

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the common pasteboard data types.

**Notes:**

NSColor data.
On Mac OS X v10.6 and later, use NSPasteboardTypeColor (and you read and write colors directly to and from the pasteboard).

29.4.14 NSDragPboard as string

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for pasteboards.

**Example:**

```dim p as new NSPasteboardMBS(NSPasteboardMBS.NSDragPboard)
MsgBox p.name```

**Notes:**

The pasteboard that stores data to be moved as the result of a drag operation.
For additional information on working with the drag pasteboard, see Drag and Drop Programming Topics for Cocoa.

29.4.15 NSFilenamesPboardType as string

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the common pasteboard data types.

**Notes:**

An array of strings designating one or more filenames.
On Mac OS X v10.6 and later, use writeObjects to write file URLs to the pasteboard.

29.4.16 NSFilesPromisePboardType as string

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the common pasteboard data types.

**Notes:**

Promised files.
On Mac OS X v10.6 and later, use kPasteboardTypeFileURLPromise instead.
For information on promised files, see Dragging Files in Drag and Drop Programming Topics for Cocoa.

### 29.4.17 NSFindPboard as string

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for pasteboards.

**Example:**

```vbnet
dim p as new NSPasteboardMBS(NSPasteboardMBS.NSFindPboard)
MsgBox p.name
```

**Notes:**
The pasteboard that holds information about the current state of the active application’s find panel. This information permits users to enter a search string into the find panel, then switch to another application to conduct another search.

### 29.4.18 NSFontPboard as string

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for pasteboards.

**Example:**

```vbnet
dim p as new NSPasteboardMBS(NSPasteboardMBS.NSFontPboard)
MsgBox p.name
```

**Notes:** The pasteboard that holds font and character information and supports Copy Font and Paste Font commands that may be implemented in a text editor.

### 29.4.19 NSFontPboardType as string

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the common pasteboard data types.

**Notes:**
Font and character information.
On Mac OS X v10.6 and later, use NSPasteboardTypeFont instead.
29.4. **CLASS NSPASTEBOARDMBS**

29.4.20 **NSGeneralPboard as string**

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for pasteboards. **Example:**

```vba
Dim p As New NSPasteboardMBS(NSPasteboardMBS.NSGeneralPboard)
MsgBox p.name
```

**Notes:**
The pasteboard that’s used for ordinary cut, copy, and paste operations. This pasteboard holds the contents of the last selection that’s been cut or copied.

29.4.21 **NSHTMLPboardType as string**

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the common pasteboard data types. **Notes:**

HTML (which an NSTextView object can read from, but not write to). On Mac OS X v10.6 and later, use NSPasteboardTypeHTML instead.

29.4.22 **NSInkTextPboardType as string**

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the common pasteboard data types. **Notes:**

Ink text data. On Mac OS X v10.6 and later, use kUTTypeInkText instead. For information on ink text objects, see Using Ink Services in Your Application.

29.4.23 **NSMultipleTextSelectionPboardType as string**

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the common pasteboard data types. **Notes:**

Multiple text selection. On Mac OS X v10.6 and later, use NSPasteboardTypeMultipleTextSelection instead.
Available in Mac OS X v10.5 and later.

### 29.4.24 NSPasteboardTypeColor as string

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for defining UTIs for common pasteboard data types.  
**Notes:**  
Color data (an NSColor object).  
Available in Mac OS X v10.6 and later.

### 29.4.25 NSPasteboardTypeFindPanelSearchOptions as string

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for defining UTIs for common pasteboard data types.  
**Notes:**  
Type for the Find panel metadata property list.  
Available in Mac OS X v10.6 and later.

### 29.4.26 NSPasteboardTypeFont as string

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for defining UTIs for common pasteboard data types.  
**Notes:**  
Font and character information.  
Available in Mac OS X v10.6 and later.

### 29.4.27 NSPasteboardTypeHTML as string

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for defining UTIs for common pasteboard data types.  
**Notes:**  
HTML data.  
Available in Mac OS X v10.6 and later.
29.4.28  **NSPasteboardTypeMultipleTextSelection as string**

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for defining UTIs for common pasteboard data types. **Notes:**

Multiple text selection.
Available in Mac OS X v10.6 and later.

29.4.29  **NSPasteboardTypePDF as string**

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for defining UTIs for common pasteboard data types. **Notes:**

PDF data.
Available in Mac OS X v10.6 and later.

29.4.30  **NSPasteboardTypePNG as string**

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for defining UTIs for common pasteboard data types. **Notes:**

PNG image data.
Available in Mac OS X v10.6 and later.

29.4.31  **NSPasteboardTypeRTF as string**

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for defining UTIs for common pasteboard data types. **Notes:**

Rich Text Format (RTF) data.
Available in Mac OS X v10.6 and later.

29.4.32  **NSPasteboardTypeRTFD as string**

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for defining UTIs for common pasteboard data types. **Notes:**
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RTFD formatted file contents.
Available in Mac OS X v10.6 and later.

29.4.33 NSPasteboardTypeRuler as string

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for defining UTIs for common pasteboard data types.
**Notes:**
Paragraph formatting information.
Available in Mac OS X v10.6 and later.

29.4.34 NSPasteboardTypeSound as string

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for defining UTIs for common pasteboard data types.
**Notes:**
Sound data (an NSSound object).
Available in Mac OS X v10.6 and later.

29.4.35 NSPasteboardTypeString as string

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for defining UTIs for common pasteboard data types.
**Notes:**
String data.
Available in Mac OS X v10.6 and later.

29.4.36 NSPasteboardTypeTabularText as string

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for defining UTIs for common pasteboard data types.
**Notes:**
A string containing tab-separated fields of text.
Available in Mac OS X v10.6 and later.
29.4. CLASS NSPASTEBOARDMBS

29.4.37 NSPasteboardTypeTIFF as string

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for defining UTIs for common pasteboard data types.  
**Notes:**  
Tag Image File Format (TIFF) data.  
Available in Mac OS X v10.6 and later.

29.4.38 NSPDFPboardType as string

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the common pasteboard data types.  
**Notes:**  
PDF data.  
On Mac OS X v10.6 and later, use NSPasteboardTypePDF instead.

29.4.39 NSPICTPboardType as string

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the common pasteboard data types.  
**Notes:**  
QuickDraw picture data.  
The PICT format was formally deprecated in Mac OS X v10.4 along with QuickDraw. You should not be explicitly providing or looking for PICT data on the pasteboard.  
To aid in this deprecation, if PICT is the only image type on the pasteboard, as is sometimes the case when copying images from 32-bit Carbon applications, a translated image type will be automatically reported and provided by NSPasteboard. The translated type is added to the types array ahead of PICT so that the deprecated PICT format is not the preferred format. In addition, when an application provides image data to NSPasteboard, the Carbon Pasteboard Manager will automatically make a PICT translation available to 32-bit Carbon applications.  
Although NSPICTPboardType, and its UTI equivalent kUTTypePICT, will appear in a pasteboard’s type array retrieved from the existing NSPasteboard API, it may cease to be reported in future releases.

29.4.40 NSPostScriptPboardType as string

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the common pasteboard data types.  
**Notes:**  
Encapsulated PostScript (EPS) code.
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On Mac OS X v10.6 and later, use "com.adobe.encapsulated-postscript" instead.

29.4.41 NSRTFDBoardType as string

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the common pasteboard data types. **Notes:**

RTFD formatted file contents.
On Mac OS X v10.6 and later, use NSPasteboardTypeRTFD instead.

29.4.42 NSRTFBoardType as string

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the common pasteboard data types. **Notes:**

Rich Text Format (RTF) data.
On Mac OS X v10.6 and later, use NSPasteboardTypeRTF instead.

29.4.43 NSRulerBoard as string

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for pasteboards. **Example:**

```dim p as new NSPasteboardMBS(NSPasteboardMBS.NSRulerBoard)
MsgBox p.name```

**Notes:** The pasteboard that holds information about paragraph formats in support of the Copy Ruler and Paste Ruler commands that may be implemented in a text editor.

29.4.44 NSRulerBoardType as string

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the common pasteboard data types. **Notes:**

Paragraph formatting information.
On Mac OS X v10.6 and later, use NSPasteboardTypeRuler instead.
29.4.45 **NSStringPboardType as string**

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the common pasteboard data types.  
**Notes:**  
String data.  
On Mac OS X v10.6 and later, use NSPasteboardTypeString instead.

29.4.46 **NSTabularTextPboardType as string**

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the common pasteboard data types.  
**Notes:**  
A string containing tab-separated fields of text.  
On Mac OS X v10.6 and later, use NSPasteboardTypeTabularText instead.

29.4.47 **NSTIFFPboardType as string**

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the common pasteboard data types.  
**Notes:**  
Tag Image File Format (TIFF) data.  
On Mac OS X v10.6 and later, use NSPasteboardTypeTIFF instead.

29.4.48 **NSURLPboardType as string**

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the common pasteboard data types.  
**Notes:**  
NSURL data for one file or resource.  
On Mac OS X v10.6 and later, use writeObjects: to write URLs directly to the pasteboard instead.  
On Mac OS X v10.5 and earlier: to write an URL to a pasteboard you use writeToPasteboard: (NSURL); to get an URL from a pasteboard you use URLFromPasteboard: (NSURL).
29.4.49  NSVCardPboardType as string

Notes: VCard data.
On Mac OS X v10.6 and later, use kUTTypeVCard instead.

29.4.50  pasteboardItems as NSPasteboardItemMBS()

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns all the items held by the receiver.
Notes: Returns all the items held by the receiver, or nil if there is an error retrieving pasteboard items.
Available in OS X v10.6 and later.

29.4.51  pasteboardWithName(name as string) as NSPasteboardMBS

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the pasteboard with the specified name.
Example:
```dim p as NSPasteboardMBS = NSPasteboardMBS.pasteboardWithName(NSPasteboardMBS.NSFindPboard)
// shows last find string
MsgBox p.stringForType(p.NSPasteboardTypeString)```

29.4.52  pasteboardWithUniqueName as NSPasteboardMBS

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creates and returns a new pasteboard with a name that is guaranteed to be unique with respect to other pasteboards on the computer.
Notes: This method is useful for applications that implement their own interprocess communication using pasteboards.
29.4.53 releaseGlobally

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Releases the receiver’s resources in the pasteboard server.

**Notes:**
After this method is invoked, no other application can use the receiver.

A temporary, privately named pasteboard can be released this way when it is no longer needed, but a standard pasteboard should never be released globally.

29.4.54 SetPasteboardItems(items() as NSPasteboardItemMBS) as Boolean

MBS MacBase Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Writes pasteboard items to the pasteboard.

**Notes:** Returns true if the array was successfully added, otherwise false.

29.4.55 types as string()

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of the receiver’s supported data types.

**Example:**
```vbscript
dim p as new NSPasteboardMBS
MsgBox join(p.types,EndOfLine)
```

**Notes:**
An array of Strings containing the union of the types of data declared for all the pasteboard items on the receiver. The returned types are listed in the order they were declared.

You must send a types or availableTypeFromArray message before reading any data from an NSPasteboard object.

29.4.56 URLFromPasteboard as string

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Reads the URL string off of pasteboard.
Notes: Returns "" if pasteboard does not contain data of type NSURLPboardType.

29.4.57  writeURLToPasteboard(URL as string)

Notes: You must declare an NSURLPboardType data type for pasteboard before invoking this method; otherwise it returns without doing anything.

29.4.58  Properties

29.4.59  Handle as Integer

Example:
   dim p as new NSPasteboardMBS
   MsgBox hex(p.Handle)

Notes: (Read and Write property)

29.4.60  dataForType(type as string) as Memoryblock

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Get the data for the specified type from the first item in the receiver that contains the type or sets the given data as the representation for the specified type for the first item on the receiver.
Example:
   dim p as new NSPasteboardMBS
   // may have chr(0) on the end!
   MsgBox p.dataForType(p.NSPasteboardTypeString)

Notes:
Returns a data object containing the data for the specified type from the first item in the receiver that contains the type, or "" if the contents of the pasteboard changed since they were last checked.
This method may also return nil if the pasteboard server cannot supply the data in time for example, if the pasteboard's owner is slow in responding to a pasteboard:provideDataForType: message and the interprocess communication times out.

Errors other than a timeout raise a NSPasteboardCommunicationException (a NSExceptionMBS in Real Studio).

If "" is returned, the application should put up a panel informing the user that it was unable to carry out the paste operation.

For standard text data types such as string, RTF, and RTFD, the text data from each item is returned as one combined result separated by newlines.

(Read and Write computed property)

29.4.61 propertyListForType(type as string) as Variant

MBS MacBase Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The property list for the specified type from the first item in the receiver that contains the type.
Notes:
dataType: The pasteboard data type containing the property-list data.

The property list for the specified type from the first item in the receiver that contains the type. This object consists of NSArray, NSData, NSDictionary, or NSString objects or any combination thereof.

This method invokes the dataForType method.
You must send types or availableTypeFromArray before invoking propertyListForType.
(Read and Write computed property)

29.4.62 stringForType(type as string) as string

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Get/Set the given string as the representation for the specified type for the first item on the receiver.
Example:

dim p as new NSPasteboardMBS

MsgBox p.stringForType(p.NSPasteboardTypeString)

Notes:
A concatenation of the strings for the specified type from all the items in the receiver that contain the type, or nil if none of the items contain strings of the specified type.

This method invokes `dataForType` to obtain the string. If the string cannot be obtained, `stringForType` returns "". See `dataForType` for a description of what will cause "" to be returned.

In Mac OS X v10.6 and later, if the receiver contains multiple items that can provide string, RTF, or RTFD data, the text data from each item is returned as a combined result separated by newlines. (Read and Write computed property)
Chapter 30

Clipper

30.1  class ClipperEngineMBS

30.1.1  class ClipperEngineMBS

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The Clipper class encapsulates boolean operations on polygons (intersection, union, difference and XOR), which is also called polygon clipping. **Notes:** Input polygons, both subject and clip sets, are passed to a Clipper object by its AddPath and AddPaths methods, and the clipping operation is performed by calling its Execute method. Multiple boolean operations can be performed on the same input polygon sets by repeat calls to Execute.

30.1.2  Methods

30.1.3  AddPath(path as ClipperPathMBS, PolyType as ClipperMBS.PolyType, Closed as Boolean) as Boolean

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Any number of subject and clip paths can be added to a clipping task, either individually via the AddPath() method, or as groups via the AddPaths() method, or even using both methods. **Notes:** 'Subject' paths may be either open (lines) or closed (polygons) or even a mixture of both, but 'clipping' paths must always be closed. Clipper allows polygons to clip both lines and other polygons, but doesn’t allow lines to clip either lines or polygons.

With closed paths, orientation should conform with the filling rule that will be passed via Clippper’s Execute method.
Path Coordinate range:
Path coordinates must be between & h3FFFFFFFFFFFFFFF (4.6e+18), otherwise a range error will be thrown when attempting to add the path to the Clipper object. If coordinates can be kept between 0x3FFFFFFF (1.0e+9), a modest increase in performance (approx. 15-20%) over the larger range can be achieved by avoiding large integer math.

Return Value:
The function will return false if the path is invalid for clipping. A path is invalid for clipping when:

- it has less than 2 vertices
- it has 2 vertices but is not an open path
- the vertices are all co-linear and it is not an open path

Returns true on success.
See also:
- 30.1.4 AddPath(path as ClipperPathMBS, PolyType as Integer, Closed as Boolean) as Boolean

30.1.4 AddPath(path as ClipperPathMBS, PolyType as Integer, Closed as Boolean) as Boolean

MBS Tools Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Any number of subject and clip paths can be added to a clipping task, either individually via the AddPath() method, or as groups via the AddPaths() method, or even using both methods.
See also:
- 30.1.3 AddPath(path as ClipperPathMBS, PolyType as ClipperMBS.PolyType, Closed as Boolean) as Boolean

30.1.5 AddPaths(paths as ClipperPathsMBS, PolyType as ClipperMBS.PolyType, Closed as Boolean) as Boolean

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Any number of subject and clip paths can be added to a clipping task, either individually via the AddPath() method, or as groups via the AddPaths() method, or even using both methods.
Notes:
'subject' paths may be either open (lines) or closed (polygons) or even a mixture of both, but 'clipping' paths must always be closed. Clipper allows polygons to clip both lines and other polygons, but doesn't allow lines to clip either lines or polygons.
With closed paths, orientation should conform with the filling rule that will be passed via Clipper’s Execute method.

Path Coordinate range:
Path coordinates must be between \&h3FFFFFFFFFFFFF (4.6e+18), otherwise a range error will be thrown when attempting to add the path to the Clipper object. If coordinates can be kept between 0x3FFFFFFF (1.0e+9), a modest increase in performance (approx. 15-20%) over the larger range can be achieved by avoiding large integer math.

Return Value:
The function will return false if the path is invalid for clipping. A path is invalid for clipping when:

- it has less than 2 vertices
- it has 2 vertices but is not an open path
- the vertices are all co-linear and it is not an open path

Returns true on success.

See also:

- 30.1.6 AddPaths(paths as ClipperPathsMBS, PolyType as Integer, Closed as Boolean) as Boolean 5113

### 30.1.6 AddPaths(paths as ClipperPathsMBS, PolyType as Integer, Closed as Boolean) as Boolean

MBS Tools Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Any number of subject and clip paths can be added to a clipping task, either individually via the AddPath() method, or as groups via the AddPaths() method, or even using both methods.

See also:

- 30.1.5 AddPaths(paths as ClipperPathsMBS, PolyType as ClipperMBS.PolyType, Closed as Boolean) as Boolean 5112

### 30.1.7 Clear

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The Clear method removes any existing subject and clip polygons allowing the Clipper object to be reused for clipping operations on different polygon sets.
CHAPTER 30. CLIPPER

30.1.8 Constructor(initOptions as integer = 0)

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The Clipper constructor creates an instance of the Clipper class.

**Notes:**
One or more InitOptions may be passed as a parameter to set the corresponding properties. (These properties can still be set or reset after construction.)

**Options:**
- ReverseSolution 1
- StrictlySimple 2
- PreserveCollinear 4

30.1.9 Execute(clipType as ClipperMBS.ClipType, byref solution as ClipperPathsMBS, fillType as ClipperMBS.PolyFillType) as Boolean

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Executes the clipper engine.

See also:
- 30.1.10 Execute(clipType as ClipperMBS.ClipType, byref solution as ClipperPathsMBS, subjFillType as ClipperMBS.PolyFillType, clipFillType as ClipperMBS.PolyFillType) as Boolean
- 30.1.11 Execute(clipType as ClipperMBS.ClipType, byref solution as ClipperPolyTreeMBS, fillType as ClipperMBS.PolyFillType) as Boolean
- 30.1.12 Execute(clipType as ClipperMBS.ClipType, byref solution as ClipperPolyTreeMBS, subjFillType as ClipperMBS.PolyFillType, clipFillType as ClipperMBS.PolyFillType) as Boolean
- 30.1.13 Execute(clipType as Integer, byref solution as ClipperPathsMBS, fillType as Integer) as Boolean
- 30.1.14 Execute(clipType as Integer, byref solution as ClipperPathsMBS, subjFillType as Integer, clipFillType as Integer) as Boolean
- 30.1.15 Execute(clipType as Integer, byref solution as ClipperPolyTreeMBS, fillType as Integer) as Boolean
- 30.1.16 Execute(clipType as Integer, byref solution as ClipperPolyTreeMBS, subjFillType as Integer, clipFillType as Integer) as Boolean
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30.1.10 Execute(clipType as ClipperMBS.ClipType, byref solution as ClipperPathsMBS, subjFillType as ClipperMBS.PolyFillType, clipFillType as ClipperMBS.PolyFillType) as Boolean

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Executes the clipper engine.

See also:

- 30.1.9 Execute(clipType as ClipperMBS.ClipType, byref solution as ClipperPathsMBS, fillType as ClipperMBS.PolyFillType) as Boolean 5114
- 30.1.11 Execute(clipType as ClipperMBS.ClipType, byref solution as ClipperPolyTreeMBS, fillType as ClipperMBS.PolyFillType) as Boolean 5115
- 30.1.12 Execute(clipType as ClipperMBS.ClipType, byref solution as ClipperPolyTreeMBS, subjFillType as ClipperMBS.PolyFillType, clipFillType as ClipperMBS.PolyFillType) as Boolean 5116
- 30.1.13 Execute(clipType as Integer, byref solution as ClipperPathsMBS, fillType as Integer) as Boolean 5116
- 30.1.14 Execute(clipType as Integer, byref solution as ClipperPathsMBS, subjFillType as Integer, clipFillType as Integer) as Boolean 5118
- 30.1.15 Execute(clipType as Integer, byref solution as ClipperPolyTreeMBS, fillType as Integer) as Boolean 5118
- 30.1.16 Execute(clipType as Integer, byref solution as ClipperPolyTreeMBS, subjFillType as Integer, clipFillType as Integer) as Boolean 5119

30.1.11 Execute(clipType as ClipperMBS.ClipType, byref solution as ClipperPolyTreeMBS, fillType as ClipperMBS.PolyFillType) as Boolean

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Executes the clipper engine.

See also:

- 30.1.9 Execute(clipType as ClipperMBS.ClipType, byref solution as ClipperPathsMBS, fillType as ClipperMBS.PolyFillType) as Boolean 5114
- 30.1.10 Execute(clipType as ClipperMBS.ClipType, byref solution as ClipperPathsMBS, subjFillType as ClipperMBS.PolyFillType, clipFillType as ClipperMBS.PolyFillType) as Boolean 5115
- 30.1.12 Execute(clipType as ClipperMBS.ClipType, byref solution as ClipperPolyTreeMBS, subjFillType as ClipperMBS.PolyFillType, clipFillType as ClipperMBS.PolyFillType) as Boolean 5116
- 30.1.13 Execute(clipType as Integer, byref solution as ClipperPathsMBS, fillType as Integer) as Boolean 5116
- 30.1.14 Execute(clipType as Integer, byref solution as ClipperPathsMBS, subjFillType as Integer, clipFillType as Integer) as Boolean 5118
30.1.12 Execute(clipType as ClipperMBS.ClipType, byref solution as ClipperPolyTreeMBS, subjFillType as ClipperMBS.PolyFillType, clipFillType as ClipperMBS.PolyFillType) as Boolean


See also:

• 30.1.9 Execute(clipType as ClipperMBS.ClipType, byref solution as ClipperPathsMBS, fillType as ClipperMBS.PolyFillType) as Boolean

• 30.1.10 Execute(clipType as ClipperMBS.ClipType, byref solution as ClipperPathsMBS, subjFillType as ClipperMBS.PolyFillType, clipFillType as ClipperMBS.PolyFillType) as Boolean

• 30.1.11 Execute(clipType as ClipperMBS.ClipType, byref solution as ClipperPolyTreeMBS, fillType as ClipperMBS.PolyFillType) as Boolean

• 30.1.13 Execute(clipType as Integer, byref solution as ClipperPathsMBS, fillType as Integer) as Boolean

• 30.1.14 Execute(clipType as Integer, byref solution as ClipperPathsMBS, subjFillType as Integer, clipFillType as Integer) as Boolean

• 30.1.15 Execute(clipType as Integer, byref solution as ClipperPolyTreeMBS, fillType as Integer) as Boolean

• 30.1.16 Execute(clipType as Integer, byref solution as ClipperPolyTreeMBS, subjFillType as Integer, clipFillType as Integer) as Boolean

30.1.13 Execute(clipType as Integer, byref solution as ClipperPathsMBS, fillType as Integer) as Boolean


Notes:

Once subject and clip paths have been assigned (via AddPath and/or AddPaths), Execute can then perform the clipping operation (intersection, union, difference or XOR) specified by the clipType parameter.

The solution parameter can be either a Paths or PolyTree. The Paths is simpler than the PolyTree. Because of this it is quicker to populate and hence clipping performance is a little better (it’s roughly 10% faster).
However, the PolyTree class provides more information about the returned paths which may be important to users. Firstly, the PolyTree class preserves nested parent-child polygon relationships (ie outer polygons owning/containing holes and holes owning/containing other outer polygons etc). Also, only the PolyTree class can differentiate between open and closed paths since each PolyNode has an IsOpen property. (The Path structure has no member indicating whether it’s open or closed.) For this reason, when open paths are passed to a Clipper object, the user must use a PolyTree object as the solution parameter, otherwise an exception will be raised.

When a PolyTree object is used in a clipping operation on open paths, two ancilliary functions have been provided to quickly separate out open and closed paths from the solution - ClipperMBS.OpenPathsFromPolyTree and ClipperMBS.ClosedPathsFromPolyTree. PolyTreeToPaths is also available to convert path data to a Paths structure (irrespective of whether they’re open or closed).

There are several things to note about the solution paths returned:

- they aren’t in any specific order
- they should never overlap or be self-intersecting (but see notes on rounding)
- holes will be oriented opposite outer polygons
- the solution fill type can be considered either EvenOdd or NonZero since it will comply with either filling rule
- polygons may rarely share a common edge (though this is now very rare as of version 6)

The subjFillType and clipFillType parameters define the polygon fill rule to be applied to the polygons (ie closed paths) in the subject and clip paths respectively. (It’s usual though obviously not essential that both sets of polygons use the same fill rule.)

Execute can be called multiple times without reassigning subject and clip polygons (ie when different clipping operations are required on the same polygon sets).

See also:

- 30.1.9 Execute(clipType as ClipperMBS.ClipType, byref solution as ClipperPathsMBS, fillType as ClipperMBS.PolyFillType) as Boolean
- 30.1.10 Execute(clipType as ClipperMBS.ClipType, byref solution as ClipperPathsMBS, subjFillType as ClipperMBS.PolyFillType, clipFillType as ClipperMBS.PolyFillType) as Boolean
- 30.1.11 Execute(clipType as ClipperMBS.ClipType, byref solution as ClipperPolyTreeMBS, fillType as ClipperMBS.PolyFillType) as Boolean
- 30.1.12 Execute(clipType as ClipperMBS.ClipType, byref solution as ClipperPolyTreeMBS, subjFillType as ClipperMBS.PolyFillType, clipFillType as ClipperMBS.PolyFillType) as Boolean
- 30.1.14 Execute(clipType as Integer, byref solution as ClipperPathsMBS, subjFillType as Integer, clipFillType as Integer) as Boolean
30.1.14  Execute(clipType as Integer, byref solution as ClipperPathsMBS, subjFillType as Integer, clipFillType as Integer) as Boolean

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Executes the clipper engine.

See also:

- 30.1.9 Execute(clipType as ClipperMBS.ClipType, byref solution as ClipperPathsMBS, fillType as ClipperMBS.PolyFillType) as Boolean
- 30.1.10 Execute(clipType as ClipperMBS.ClipType, byref solution as ClipperPathsMBS, subjFillType as ClipperMBS.PolyFillType, clipFillType as ClipperMBS.PolyFillType) as Boolean
- 30.1.11 Execute(clipType as ClipperMBS.ClipType, byref solution as ClipperPolyTreeMBS, fillType as ClipperMBS.PolyFillType) as Boolean
- 30.1.12 Execute(clipType as ClipperMBS.ClipType, byref solution as ClipperPolyTreeMBS, subjFillType as ClipperMBS.PolyFillType, clipFillType as ClipperMBS.PolyFillType) as Boolean
- 30.1.13 Execute(clipType as Integer, byref solution as ClipperPathsMBS, fillType as Integer) as Boolean
- 30.1.15 Execute(clipType as Integer, byref solution as ClipperPolyTreeMBS, fillType as Integer) as Boolean
- 30.1.16 Execute(clipType as Integer, byref solution as ClipperPolyTreeMBS, subjFillType as Integer, clipFillType as Integer) as Boolean

30.1.15  Execute(clipType as Integer, byref solution as ClipperPolyTreeMBS, fillType as Integer) as Boolean

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Executes the clipper engine.

See also:

- 30.1.9 Execute(clipType as ClipperMBS.ClipType, byref solution as ClipperPathsMBS, fillType as ClipperMBS.PolyFillType) as Boolean
- 30.1.10 Execute(clipType as ClipperMBS.ClipType, byref solution as ClipperPathsMBS, subjFillType as ClipperMBS.PolyFillType, clipFillType as ClipperMBS.PolyFillType) as Boolean
- 30.1.11 Execute(clipType as ClipperMBS.ClipType, byref solution as ClipperPolyTreeMBS, fillType as ClipperMBS.PolyFillType) as Boolean
- 30.1.12 Execute(clipType as ClipperMBS.ClipType, byref solution as ClipperPolyTreeMBS, subjFillType as ClipperMBS.PolyFillType, clipFillType as ClipperMBS.PolyFillType) as Boolean
- 30.1.13 Execute(clipType as Integer, byref solution as ClipperPathsMBS, fillType as Integer) as Boolean
- 30.1.15 Execute(clipType as Integer, byref solution as ClipperPolyTreeMBS, fillType as Integer) as Boolean
- 30.1.16 Execute(clipType as Integer, byref solution as ClipperPolyTreeMBS, subjFillType as Integer, clipFillType as Integer) as Boolean
30.1. **CLASS CLIPPERENGINEMBS**

- **30.1.12** Execute(clipType as ClipperMBS.ClipType, byref solution as ClipperPolyTreeMBS, subjFillType as ClipperMBS.PolyFillType, clipFillType as ClipperMBS.PolyFillType) as Boolean 5116
- **30.1.13** Execute(clipType as Integer, byref solution as ClipperPathsMBS, fillType as Integer) as Boolean 5116
- **30.1.14** Execute(clipType as Integer, byref solution as ClipperPathsMBS, subjFillType as Integer, clipFillType as Integer) as Boolean 5118
- **30.1.16** Execute(clipType as Integer, byref solution as ClipperPolyTreeMBS, subjFillType as Integer, clipFillType as Integer) as Boolean 5119

**30.1.16 Execute(clipType as Integer, byref solution as ClipperPolyTreeMBS, subjFillType as Integer, clipFillType as Integer) as Boolean**

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Executes the clipper engine.

See also:

- **30.1.9** Execute(clipType as ClipperMBS.ClipType, byref solution as ClipperPathsMBS, fillType as ClipperMBS.PolyFillType) as Boolean 5114
- **30.1.10** Execute(clipType as ClipperMBS.ClipType, byref solution as ClipperPathsMBS, subjFillType as ClipperMBS.PolyFillType, clipFillType as ClipperMBS.PolyFillType) as Boolean 5115
- **30.1.11** Execute(clipType as ClipperMBS.ClipType, byref solution as ClipperPolyTreeMBS, fillType as ClipperMBS.PolyFillType) as Boolean 5115
- **30.1.12** Execute(clipType as ClipperMBS.ClipType, byref solution as ClipperPolyTreeMBS, subjFillType as ClipperMBS.PolyFillType, clipFillType as ClipperMBS.PolyFillType) as Boolean 5115
- **30.1.13** Execute(clipType as Integer, byref solution as ClipperPathsMBS, fillType as Integer) as Boolean 5116
- **30.1.14** Execute(clipType as Integer, byref solution as ClipperPathsMBS, subjFillType as Integer, clipFillType as Integer) as Boolean 5118
- **30.1.15** Execute(clipType as Integer, byref solution as ClipperPolyTreeMBS, fillType as Integer) as Boolean 5118

**30.1.17 GetBounds(byref left as integer, byref top as integer, byref right as integer, byref bottom as integer)**

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This method returns the axis-aligned bounding rectangle of all polygons that have been added to the Clipper object.

**Notes:** This call is more efficient than querying all bounds properties.
30.1.18  Properties

30.1.19  BoundsBottom as Integer

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Bottom of bounds.
**Notes:**
This method returns the bottom value of the axis-aligned bounding rectangle of all polygons that have been added to the Clipper object.
(Read only property)

30.1.20  BoundsLeft as Integer

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Left of bounds.
**Notes:**
This method returns the left value of the axis-aligned bounding rectangle of all polygons that have been added to the Clipper object.
(Read only property)

30.1.21  BoundsRight as Integer

**Notes:**
This method returns the right value of the axis-aligned bounding rectangle of all polygons that have been added to the Clipper object.
(Read only property)

30.1.22  BoundsTop as Integer

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Top of bounds.
**Notes:**
This method returns the top value of the axis-aligned bounding rectangle of all polygons that have been added to the Clipper object.
(Read only property)
30.1.23 Handle as Integer

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal object reference. **Notes:** (Read and Write property)

30.1.24 Owner as Variant

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The parent object. **Notes:** To avoid Xojo freeing the parent too quick, we keep a reference here. (Read only property)

30.1.25 PreserveCollinear as Boolean

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to preserve collinear in input polygons. **Notes:** By default, when three or more vertices are collinear in input polygons (subject or clip), the Clipper object removes the ‘inner’ vertices before clipping. When enabled the PreserveCollinear property prevents this default behavior to allow these inner vertices to appear in the solution. (Read and Write property)

30.1.26 ReverseSolution as Boolean

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** When this property is set to true, polygons returned in the solution parameter of the Execute() method will have orientations opposite to their normal orientations. **Notes:** (Read and Write property)

30.1.27 StrictlySimple as Boolean

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to do strictly simple polygon. **Notes:** Terminology:
• A simple polygon is one that does not self-intersect.

• A weakly simple polygon is a simple polygon that contains ‘touching’ vertices, or ‘touching’ edges.

• A strictly simple polygon is a simple polygon that does not contain ‘touching’ vertices, or ‘touching’ edges.

Vertices ‘touch’ if they share the same coordinates (and are not adjacent). An edge touches another if one of its end vertices touches another edge excluding its adjacent edges, or if they are co-linear and overlapping (including adjacent edges).

Polygons returned by clipping operations (see Clipper.Execute()) should always be simple polygons. When the StrictlySimply property is enabled, polygons returned will be strictly simple, otherwise they may be weakly simple. It’s computationally expensive ensuring polygons are strictly simple and so this property is disabled by default.

Note: There’s currently no guarantee that polygons will be strictly simple since ‘simplifying’ is still a work in progress.
(Read and Write property)

30.1.28 Tag as Variant

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The tag value.
**Notes:**
You can store here whatever value you like.
(Read and Write property)
30.2. CLASS CLIPPEREXCEPTIONMBS

30.2 class ClipperExceptionMBS

30.2.1 class ClipperExceptionMBS

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The exception class for clipper.

**Notes:** Subclass of the RuntimeException class.
30.3  module ClipperMBS

30.3.1  module ClipperMBS

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The central module for Clipper library methods.

30.3.2  Methods

30.3.3  Area(path as ClipperPathMBS) as double

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This function returns the area of the supplied polygon.
**Notes:** It’s assumed that the path is closed and does not self-intersect. Depending on orientation, this value may be positive or negative. If Orientation is true, then the area will be positive and conversely, if Orientation is false, then the area will be negative.

30.3.4  CleanPolygon(InPoly as ClipperPathMBS, byref OutPolys as ClipperPathsMBS, distance as double = 1.415)

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a clean polygon.
**Notes:**
Removes vertices:
- that join co-linear edges, or join edges that are almost co-linear (such that if the vertex was moved no more than the specified distance the edges would be co-linear)
- that are within the specified distance of an adjacent vertex
- that are within the specified distance of a semi-adjacent vertex together with their out-lying vertices
Vertices are semi-adjacent when they are separated by a single (out-lying) vertex.

The distance parameter’s default value is approximately 2 so that a vertex will be removed when adjacent or semi-adjacent vertices having their corresponding X and Y coordinates differing by no more than 1 unit. (If the edges are semi-adjacent the out-lying vertex will be removed too.)

This function is overloaded. In the first definition, the InPoly and OutPolys parameters can reference the same Path object though in that case the calling code might be clearer if the second definition (accepting a single Paths parameter) is used.
**See also:**
- 30.3.5  CleanPolygon(Poly as ClipperPathMBS, distance as double = 1.415)
30.3. **MODULE CLIPPERMBS**

30.3.5 **CleanPolygon(Poly as ClipperPathMBS, distance as double = 1.415)**

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a clean polygon.

**Notes:**

Removes vertices:
- that join co-linear edges, or join edges that are almost co-linear (such that if the vertex was moved no more than the specified distance the edges would be co-linear)
- that are within the specified distance of an adjacent vertex
- that are within the specified distance of a semi-adjacent vertex together with their out-lying vertices

Vertices are semi-adjacent when they are separated by a single (out-lying) vertex.

The distance parameter’s default value is approximately 2 so that a vertex will be removed when adjacent or semi-adjacent vertices having their corresponding X and Y coordinates differing by no more than 1 unit. (If the edges are semi-adjacent the out-lying vertex will be removed too.)

This function is overloaded. In the first definition, the in_poly and out_poly parameters can reference the same Path object though in that case the calling code might be clearer if the second definition (accepting a single Paths parameter) is used.

See also:

- 30.3.4 CleanPolygon(InPoly as ClipperPathMBS, byref OutPolys as ClipperPathsMBS, distance as double = 1.415)

30.3.6 **CleanPolygons(InPoly as ClipperPathsMBS, byref OutPolys as ClipperPathsMBS, distance as double = 1.415)**

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates clean polygons.

**Notes:**

Removes vertices:
- that join co-linear edges, or join edges that are almost co-linear (such that if the vertex was moved no more than the specified distance the edges would be co-linear)
- that are within the specified distance of an adjacent vertex
- that are within the specified distance of a semi-adjacent vertex together with their out-lying vertices

Vertices are semi-adjacent when they are separated by a single (out-lying) vertex.

The distance parameter’s default value is approximately 2 so that a vertex will be removed when adjacent or semi-adjacent vertices having their corresponding X and Y coordinates differing by no more than 1 unit. (If the edges are semi-adjacent the out-lying vertex will be removed too.)

This function is overloaded. In the first definition, the InPoly and OutPoly parameters can reference the same Paths object though in that case the calling code might be clearer if the second definition (accepting
30.3.7 CleanPolygons(Poly as ClipperPathsMBS, distance as double = 1.415)


Notes:
Removes vertices:
- that join co-linear edges, or join edges that are almost co-linear (such that if the vertex was moved no more than the specified distance the edges would be co-linear)
- that are within the specified distance of an adjacent vertex
- that are within the specified distance of a semi-adjacent vertex together with their out-lying vertices

Vertices are semi-adjacent when they are separated by a single (out-lying) vertex.

The distance parameter’s default value is approximately 2 so that a vertex will be removed when adjacent or semi-adjacent vertices having their corresponding X and Y coordinates differing by no more than 1 unit. (If the edges are semi-adjacent the out-lying vertex will be removed too.)

This function is overloaded. In the first definition, the InPoly and OutPoly parameters can reference the same Paths object though in that case the calling code might be clearer if the second definition (accepting a single Paths parameter) is used.

See also:
- 30.3.6 CleanPolygons(InPoly as ClipperPathsMBS, byref OutPolys as ClipperPathsMBS, distance as double = 1.415)

30.3.8 ClosedPathsFromPolyTree(polytree as ClipperPolyTreeMBS, byref paths as ClipperPathsMBS)

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This function filters out open paths from the PolyTree structure and returns only closed paths in a Paths structure.

30.3.9 EllipsePoints(Left as Double, Top as Double, Right as Double, Bottom as Double) as ClipperPathMBS


Example:
30.3. **MODULE CLIPPERMBS**

```vbnet
dim p as ClipperPathMBS = ClipperMBS.EllipsePoints(100,100,300,300)
```

30.3.10 **MinkowskiDiff(poly1 as ClipperPathMBS, poly2 as ClipperPathMBS, byref solution as ClipperPathsMBS)**


**Notes:**

Minkowski Difference is performed by subtracting each point in a polygon from the set of points in an open or closed path. A key feature of Minkowski Difference is that when it’s applied to two polygons, the resulting polygon will contain the coordinate space origin whenever the two polygons touch or overlap. (This function is often used to determine when polygons collide.)

In the image on the left the blue polygon is the 'minkowski difference' of the two red boxes. The black dot represents the coordinate space origin.

30.3.11 **MinkowskiSum(pattern as ClipperPathMBS, path as ClipperPathMBS, byref solution as ClipperPathsMBS, pathIsClosed as boolean)**


**Notes:** Minkowski Addition is performed by adding each point in a polygon 'pattern' to the set of points in an open or closed path. The resulting polygon (or polygons) defines the region that the 'pattern' would pass over in moving from the beginning to the end of the 'path'.

See also:

- 30.3.12 **MinkowskiSum(pattern as ClipperPathMBS, paths as ClipperPathsMBS, byref solution as ClipperPathsMBS, pathIsClosed as boolean)**

30.3.12 **MinkowskiSum(pattern as ClipperPathMBS, paths as ClipperPathsMBS, byref solution as ClipperPathsMBS, pathIsClosed as boolean)**


**Notes:** Minkowski Addition is performed by adding each point in a polygon 'pattern' to the set of points in an open or closed path. The resulting polygon (or polygons) defines the region that the 'pattern' would pass over in moving from the beginning to the end of the 'path'.

See also:
30.3.11 MinkowskiSum(pattern as ClipperPathMBS, path as ClipperPathMBS, byref solution as ClipperPathsMBS, pathIsClosed as boolean)

30.3.13 OpenPathsFromPolyTree(polytree as ClipperPolyTreeMBS, byref paths as ClipperPathsMBS)

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
This function filters out closed paths from the PolyTree structure and returns only open paths in a Paths structure.

30.3.14 Orientation(path as ClipperPathMBS) as boolean

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Queries orientation of path.
Notes:
Orientation is only important to closed paths. Given that vertices are declared in a specific order, orientation refers to the direction (clockwise or counter-clockwise) that these vertices progress around a closed path.

Orientation is also dependent on axis direction:

- On Y-axis positive upward displays, Orientation will return true if the polygon’s orientation is counter-clockwise.
- On Y-axis positive downward displays, Orientation will return true if the polygon’s orientation is clockwise.

Notes:

- Self-intersecting polygons have indeterminate orientations in which case this function won’t return a meaningful value.
- The majority of 2D graphic display libraries (eg GDI, GDI+, XLib, Cairo, AGG, Graphics32) and even the SVG file format have their coordinate origins at the top-left corner of their respective viewports with their Y axes increasing downward. However, some display libraries (eg Quartz, OpenGL) have their coordinate origins undefined or in the classic bottom-left position with their Y axes increasing upward.
- For Non-Zero filled polygons, the orientation of holes must be opposite that of outer polygons.
- For closed paths (polygons) in the solution returned by Clipper’s Execute method, their orientations will always be true for outer polygons and false for hole polygons (unless the ReverseSolution property has been enabled).
30.3.15  **PointInPolygon(path as ClipperPathMBS, pt as ClipperPointMBS) as Integer**

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns 0 when false, -1 when pt is on poly and +1 when pt is in poly.  
**Notes:** It’s assumed that ‘poly’ is closed and does not self-intersect.

30.3.16  **PolyTreeToPaths(polytree as ClipperPolyTreeMBS, byref paths as ClipperPathsMBS)**

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function converts a PolyTree structure into a Paths structure.

30.3.17  **ReversePath(path as ClipperPathMBS)**

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reverses the vertex order (and hence orientation) in the specified path.

30.3.18  **ReversePaths(paths as ClipperPathsMBS)**

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reverses the vertex order (and hence orientation) in each contained path.

30.3.19  **SimplifyPolygon(InPoly as ClipperPathMBS, byref OutPolys as ClipperPathsMBS,fillType as ClipperMBS.PolyFillType = ClipperMBS.PolyFillType.EvenOdd)**

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Removes self-intersections from the supplied polygon (by performing a boolean union operation using the nominated PolyFillType).  
**Notes:** Polygons with non-contiguous duplicate vertices (ie ‘touching’) will be split into two polygons.  
**Note:** There’s currently no guarantee that polygons will be strictly simple since ‘simplifying’ is still a work in progress.  
**See also:**
30.3.20  **SimplifyPolygon(InPoly as ClipperPathMBS, byref OutPolys as ClipperPathsMBS, fillType as Integer)**

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Removes self-intersections from the supplied polygon (by performing a boolean union operation using the nominated PolyFillType).

**Notes:**

Polygons with non-contiguous duplicate vertices (ie 'touching’) will be split into two polygons.

Note: There’s currently no guarantee that polygons will be strictly simple since ‘simplifying’ is still a work in progress.

See also:

- 30.3.19  **SimplifyPolygon(InPoly as ClipperPathMBS, byref OutPolys as ClipperPathsMBS, fillType as ClipperMBS.PolyFillType = ClipperMBS.PolyFillType.EvenOdd)**

30.3.21  **SimplifyPolygons(InPolys as ClipperPathsMBS, byref OutPolys as ClipperPathsMBS, fillType as ClipperMBS.PolyFillType = ClipperMBS.PolyFillType.EvenOdd)**

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Removes self-intersections from the supplied polygons (by performing a boolean union operation using the nominated PolyFillType).

**Notes:**

Polygons with non-contiguous duplicate vertices (ie 'vertices are touching’) will be split into two polygons.

This function is overloaded. In the first definition, the InPolys and OutPolys parameters can reference the same Paths object though in that case the calling code might be clearer if the second definition (accepting a single Paths parameter) is used.

Note: There’s currently no guarantee that polygons will be strictly simple since ‘simplifying’ is still a work in progress.

See also:

- 30.3.22  **SimplifyPolygons(InPolys as ClipperPathsMBS, byref OutPolys as ClipperPathsMBS, fillType as Integer)**
- 30.3.23  **SimplifyPolygons(Polys as ClipperPathsMBS, fillType as ClipperMBS.PolyFillType = ClipperMBS.PolyFillType.EvenOdd)**
30.3. **MODULE CLIPPERMBS**

- 30.3.24 SimplifyPolygons(Polys as ClipperPathsMBS, fillType as Integer)

### 30.3.22 SimplifyPolygons(InPolys as ClipperPathsMBS, byref OutPolys as ClipperPathsMBS, fillType as Integer)

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Removes self-intersections from the supplied polygons (by performing a boolean union operation using the nominated PolyFillType).

**Notes:**

Polygons with non-contiguous duplicate vertices (ie 'vertices are touching') will be split into two polygons.

This function is overloaded. In the first definition, the InPolys and OutPolys parameters can reference the same Paths object though in that case the calling code might be clearer if the second definition (accepting a single Paths parameter) is used.

**Note:** There’s currently no guarantee that polygons will be strictly simple since ‘simplifying’ is still a work in progress.

See also:

- 30.3.21 SimplifyPolygons(InPolys as ClipperPathsMBS, byref OutPolys as ClipperPathsMBS, fillType as ClipperMBS.PolyFillType = ClipperMBS.PolyFillType.EvenOdd) 5130
- 30.3.23 SimplifyPolygons(Polys as ClipperPathsMBS, fillType as ClipperMBS.PolyFillType = ClipperMBS.PolyFillType.EvenOdd) 5131
- 30.3.24 SimplifyPolygons(Polys as ClipperPathsMBS, fillType as Integer) 5132

### 30.3.23 SimplifyPolygons(Polys as ClipperPathsMBS, fillType as ClipperMBS.PolyFillType = ClipperMBS.PolyFillType.EvenOdd)

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Removes self-intersections from the supplied polygons (by performing a boolean union operation using the nominated PolyFillType).

**Notes:**

Polygons with non-contiguous duplicate vertices (ie 'vertices are touching') will be split into two polygons.

This function is overloaded. In the first definition, the InPolys and OutPolys parameters can reference the same Paths object though in that case the calling code might be clearer if the second definition (accepting a single Paths parameter) is used.

**Note:** There’s currently no guarantee that polygons will be strictly simple since ‘simplifying’ is still a work in progress.

See also:
30.3.24 SimplifyPolygons(Polys as ClipperPathsMBS, fillType as Integer)

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Removes self-intersections from the supplied polygons (by performing a boolean union operation using the nominated PolyFillType).

**Notes:**
Polygons with non-contiguous duplicate vertices (ie 'vertices are touching') will be split into two polygons.

This function is overloaded. In the first definition, the InPolys and OutPolys parameters can reference the same Paths object though in that case the calling code might be clearer if the second definition (accepting a single Paths parameter) is used.

Note: There’s currently no guarantee that polygons will be strictly simple since 'simplifying' is still a work in progress.
See also:

- 30.3.21 SimplifyPolygons(InPolys as ClipperPathsMBS, byref OutPolys as ClipperPathsMBS, fillType as ClipperMBS.PolyFillType = ClipperMBS.PolyFillType.EvenOdd) 5130
- 30.3.22 SimplifyPolygons(InPolys as ClipperPathsMBS, byref OutPolys as ClipperPathsMBS, fillType as Integer) 5131
- 30.3.23 SimplifyPolygons(Polys as ClipperPathsMBS, fillType as ClipperMBS.PolyFillType = ClipperMBS.PolyFillType.EvenOdd) 5131

30.3.25 TranslatePath(path as ClipperPathMBS, delta as ClipperPointMBS) as ClipperPathMBS

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Offsets each point in path by x and y.

**Notes:** Returns a new path.
See also:

- 30.3.26 TranslatePath(path as ClipperPathMBS, x as Int64, y as Int64) as ClipperPathMBS 5133
30.3.26 TranslatePath(path as ClipperPathMBS, x as Int64, y as Int64) as ClipperPathMBS

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Offsets each point in path by x and y.  
**Notes:** Returns a new path.  
See also:

- 30.3.25 TranslatePath(path as ClipperPathMBS, delta as ClipperPointMBS) as ClipperPathMBS

30.3.27 Version as string

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries the version of the Clipper library used.

30.3.28 Constants

30.3.29 hiRange = & h3FFFFFFFFFFFFFFFF

MBS Tools Plugin, Plugin Version: 18.0. **Function:** The higher range.

30.3.30 loRange = & h3FFFFFFF

MBS Tools Plugin, Plugin Version: 18.0. **Function:** The lower range.
30.4 class ClipperOffsetMBS

30.4.1 class ClipperOffsetMBS

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The ClipperOffset class encapsulates the process of offsetting (inflating/deflating) both open and closed paths using a number of different join types and end types. **Notes:** Preconditions for offsetting: 1. The orientations of closed paths must be consistent such that outer polygons share the same orientation, and any holes have the opposite orientation (ie non-zero filling). Open paths must be oriented with closed outer polygons. 2. Polygons must not self-intersect. Limitations: When offsetting, small artefacts may appear where polygons overlap. To avoid these artefacts, offset overlapping polygons separately.

30.4.2 Methods

30.4.3 AddPath(path as ClipperPathMBS, joinType as ClipperMBS.JoinType, endType as ClipperMBS.EndType)

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds a Path to a ClipperOffset object in preparation for offsetting. **Notes:** Any number of paths can be added, and each has its own JoinType and EndType. All 'outer' Paths must have the same orientation, and any 'hole' paths must have reverse orientation. Closed paths must have at least 3 vertices. Open paths may have as few as one vertex. Open paths can only be offset with positive deltas. See also: * 30.4.4 AddPath(path as ClipperPathMBS, joinType as Integer, endType as Integer)

30.4.4 AddPath(path as ClipperPathMBS, joinType as Integer, endType as Integer)

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds a Path to a ClipperOffset object in preparation for offsetting. **Notes:** Any number of paths can be added, and each has its own JoinType and EndType. All 'outer' Paths must have the same orientation, and any 'hole' paths must have reverse orientation. Closed paths must have at least 3 vertices. Open paths may have as few as one vertex. Open paths can only be offset with positive
deltas.

See also:

- 30.4.3 AddPath(path as ClipperPathMBS, joinType as ClipperMBS.JoinType, endType as ClipperMBS.EndType)

30.4.5 AddPaths(paths as ClipperPathsMBS, joinType as ClipperMBS.JoinType, endType as ClipperMBS.EndType)

**Function:** Adds Paths to a ClipperOffset object in preparation for offsetting.

**Notes:** Any number of paths can be added, and each path has its own JoinType and EndType. All 'outer' Paths must have the same orientation, and any 'hole' paths must have reverse orientation. Closed paths must have at least 3 vertices. Open paths may have as few as one vertex. Open paths can only be offset with positive deltas.

See also:

- 30.4.6 AddPaths(paths as ClipperPathsMBS, joinType as Integer, endType as Integer)

30.4.6 AddPaths(paths as ClipperPathsMBS, joinType as Integer, endType as Integer)

**Function:** Adds Paths to a ClipperOffset object in preparation for offsetting.

**Notes:** Any number of paths can be added, and each path has its own JoinType and EndType. All 'outer' Paths must have the same orientation, and any 'hole' paths must have reverse orientation. Closed paths must have at least 3 vertices. Open paths may have as few as one vertex. Open paths can only be offset with positive deltas.

See also:

- 30.4.5 AddPaths(paths as ClipperPathsMBS, joinType as ClipperMBS.JoinType, endType as ClipperMBS.EndType)

30.4.7 Clear

**Function:** This method clears all paths from the ClipperOffset object, allowing new paths to be assigned.

30.4.8 Constructor(miterLimit as double = 2.0, roundPrecision as double = 0.25)

**Function:** Initializes the clipper offset.
Notes: The ClipperOffset constructor takes 2 optional parameters: MiterLimit and ArcTolerance. These two parameters correspond to properties of the same name. MiterLimit is only relevant when JoinType is jtMiter, and ArcTolerance is only relevant when JoinType is jtRound or when EndType is etOpenRound.

30.4.9 Execute(byref Paths as ClipperPathsMBS, delta as double)

Notes: This method takes two parameters. The first is the structure that receives the result of the offset operation (either a PolyTree or a Paths structure). The second parameter is the amount to which the supplied paths will be offset. Negative delta values shrink polygons and positive delta expand them.

This method can be called multiple times, offsetting the same paths by different amounts (ie using different deltas).
See also:
- 30.4.10 Execute(byref PolyTree as ClipperPolyTreeMBS, delta as double)

30.4.10 Execute(byref PolyTree as ClipperPolyTreeMBS, delta as double)

Notes: This method takes two parameters. The first is the structure that receives the result of the offset operation (either a PolyTree or a Paths structure). The second parameter is the amount to which the supplied paths will be offset. Negative delta values shrink polygons and positive delta expand them.

This method can be called multiple times, offsetting the same paths by different amounts (ie using different deltas).
See also:
- 30.4.9 Execute(byref Paths as ClipperPathsMBS, delta as double)

30.4.11 Properties

30.4.12 ArcTolerance as Double

Notes:
Firstly, this field/property is only relevant when JoinType = jtRound and/or EndType = etRound.

Since flattened paths can never perfectly represent arcs, this field/property specifies a maximum acceptable imprecision ('tolerance') when arcs are approximated in an offsetting operation. Smaller values will increase 'smoothness' up to a point though at a cost of performance and in creating more vertices to construct the arc.

The default ArcTolerance is 0.25 units. This means that the maximum distance the flattened path will deviate from the 'true' arc will be no more than 0.25 units (before rounding).

Reducing tolerances below 0.25 will not improve smoothness since vertex coordinates will still be rounded to integer values. The only way to achieve sub-integer precision is through coordinate scaling before and after offsetting (see example below).

It’s important to make ArcTolerance a sensible fraction of the offset delta (arc radius). Large tolerances relative to the offset delta will produce poor arc approximations but, just as importantly, very small tolerances will substantially slow offsetting performance while providing unnecessary degrees of precision. This is most likely to be an issue when offsetting polygons whose coordinates have been scaled to preserve floating point precision.

Example:
Imagine a set of polygons (defined in floating point coordinates) that is to be offset by 10 units using round joins, and the solution is to retain floating point precision up to at least 6 decimal places.
To preserve this degree of floating point precision, and given that Clipper and ClipperOffset both operate on integer coordinates, the polygon coordinates will be scaled up by 108 (and rounded to integers) prior to offsetting. Both offset delta and ArcTolerance will also need to be scaled by this same factor. If ArcTolerance was left unscaled at the default 0.25 units, every arc in the solution would contain a fraction of 44 THOUSAND vertices while the final arc imprecision would be 0.25 10-8 units (ie once scaling was reversed). However, if 0.1 units was an acceptable imprecision in the final unscaled solution, then ArcTolerance should be set to 0.1 scaling_factor (0.1 108 ). Now if scaling is applied equally to both ArcTolerance and to Delta Offset, then in this example the number of vertices (steps) defining each arc would be a fraction of 23.

The formula for the number of steps in a full circular arc is ... Pi / acos(1 - arc_tolerance / abs(delta))
(Read and Write property)

30.4.13 Handle as Integer

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
The internal object reference.
Notes: (Read and Write property)
30.4.14 MiterLimit as Double

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The miter limit.
**Notes:**
This property sets the maximum distance in multiples of delta that vertices can be offset from their original positions before squaring is applied. (Squaring truncates a miter by 'cutting it off' at 1 delta distance from the original vertex.)

The default value for MiterLimit is 2 (ie twice delta). This is also the smallest MiterLimit that’s allowed. If mitering was unrestricted (ie without any squaring), then offsets at very acute angles would generate unacceptably long 'spikes'.
(Read and Write property)

30.4.15 Owner as Variant

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The parent object.
**Notes:**
To avoid Xojo freeing the parent too quick, we keep a reference here.
(Read only property)

30.4.16 Tag as Variant

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The tag value.
**Notes:**
You can store here whatever value you like.
(Read and Write property)
30.5. CLASS CLIPPERPATHMBS

30.5 class ClipperPathMBS

30.5.1 class ClipperPathMBS

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This class contains a sequence of IntPoint vertices defining a single contour (see also terminology).

**Notes:**
Paths may be open and represent a series of line segments bounded by 2 or more vertices, or they may be closed and represent polygons. Whether or not a path is open depends on context. Closed paths may be 'outer' contours or 'hole' contours. Which they are depends on orientation.

Multiple paths can be grouped into a Paths class: ClipperPathsMBS.

30.5.2 Methods

30.5.3 Append(item as ClipperPointMBS)

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Appends a new point to the path.

See also:

- 30.5.4 Append(X as Int64, Y as Int64)

30.5.4 Append(X as Int64, Y as Int64)

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Appends a new path.

**Notes:** Without creating intermediate Xojo ClipperPointMBS object.

See also:

- 30.5.3 Append(item as ClipperPointMBS)

30.5.5 Area as double

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function returns the area of the supplied polygon.

**Example:**

```vbs
dim points() as ClipperPointMBS
points.Append new ClipperPointMBS(1,2)
points.Append new ClipperPointMBS(4,2)
```
points.Append new ClipperPointMBS(4,6)
points.Append new ClipperPointMBS(1,6)

`dim path as new ClipperPathMBS(points)`
`dim area as Double = path.Area`

**Notes:** It’s assumed that the path is closed and does not self-intersect. Depending on orientation, this value may be positive or negative. If Orientation is true, then the area will be positive and conversely, if Orientation is false, then the area will be negative.

### 30.5.6 Clear

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Cleans the path.

### 30.5.7 Constructor

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new empty path.
See also:
- 30.5.8 Constructor(otherPath as ClipperPathMBS)
- 30.5.9 Constructor(points() as ClipperPointMBS)

### 30.5.8 Constructor(otherPath as ClipperPathMBS)

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new path with the copy of old path.
See also:
- 30.5.7 Constructor
- 30.5.9 Constructor(points() as ClipperPointMBS)

### 30.5.9 Constructor(points() as ClipperPointMBS)

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new path with given points.
See also:
30.5. **CLASS CLIPPERPATHMBS**

- 30.5.7 Constructor
- 30.5.8 Constructor(otherPath as ClipperPathMBS)

30.5.10 **Equal(otherPath as ClipperPathMBS) as boolean**

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Checks if two paths are equal. **Notes:** Returns true if both are equal.

30.5.11 **Insert(Index as Integer, item as ClipperPointMBS)**

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Inserts a point into the path at given index. **Notes:** Index = 0 adds as first path.

30.5.12 **Orientation as boolean**

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries orientation of path. **Example:**

```vba
dim points() as ClipperPointMBS
points.Append new ClipperPointMBS(1,2)
points.Append new ClipperPointMBS(4,2)
points.Append new ClipperPointMBS(4,6)
points.Append new ClipperPointMBS(1,6)
dim path as new ClipperPathMBS(points)
dim Orientation as boolean = path.Orientation
```

**Notes:**

Orientation is only important to closed paths. Given that vertices are declared in a specific order, orientation refers to the direction (clockwise or counter-clockwise) that these vertices progress around a closed path.

Orientation is also dependent on axis direction:

- On Y-axis positive upward displays, Orientation will return true if the polygon’s orientation is counter-clockwise.
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- On Y-axis positive downward displays, Orientation will return true if the polygon’s orientation is clockwise.

Notes:

- Self-intersecting polygons have indeterminate orientations in which case this function won’t return a meaningful value.

- The majority of 2D graphic display libraries (eg GDI, GDI+, XLib, Cairo, AGG, Graphics32) and even the SVG file format have their coordinate origins at the top-left corner of their respective viewports with their Y axes increasing downward. However, some display libraries (eg Quartz, OpenGL) have their coordinate origins undefined or in the classic bottom-left position with their Y axes increasing upward.

- For Non-Zero filled polygons, the orientation of holes must be opposite that of outer polygons.

- For closed paths (polygons) in the solution returned by Clipper’s Execute method, their orientations will always be true for outer polygons and false for hole polygons (unless the ReverseSolution property has been enabled).

30.5.13 PointInPolygon(pt as ClipperPointMBS) as Integer

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns 0 when false, -1 when pt is on poly and +1 when pt is in poly.

Example:

dim points() as ClipperPointMBS

points.Append new ClipperPointMBS(1,2)
points.Append new ClipperPointMBS(4,2)
points.Append new ClipperPointMBS(4,6)
points.Append new ClipperPointMBS(1,6)

dim path as new ClipperPathMBS(points)

dim b1 as Integer = path.PointInPolygon(new ClipperPointMBS(2,2)) // -1 on line
dim b2 as Integer = path.PointInPolygon(new ClipperPointMBS(22,2)) // 0 outside
dim b3 as Integer = path.PointInPolygon(new ClipperPointMBS(2,3)) // 1 = inside

Notes: It’s assumed that ‘poly’ is closed and does not self-intersect.
30.5. **CLASS CLIPPERPATHMBS**

### 30.5.14 Remove(index as integer)

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Removes a point.

### 30.5.15 ReversePath

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reverses the vertex order (and hence orientation) in the specified path.

### 30.5.16 TranslatePath(delta as ClipperPointMBS) as ClipperPathMBS

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Offsets each point in path by x and y.  
**Notes:** Returns a new path.  
See also:

- 30.5.17 TranslatePath(x as Int64, y as Int64) as ClipperPathMBS

### 30.5.17 TranslatePath(x as Int64, y as Int64) as ClipperPathMBS

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Offsets each point in path by x and y.  
**Notes:** Returns a new path.  
See also:

- 30.5.16 TranslatePath(delta as ClipperPointMBS) as ClipperPathMBS

### 30.5.18 Values as ClipperPointMBS()

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates copy of path as Xojo array or ClipperPointMBS.

### 30.5.19 ValuesToArray(dest() as ClipperPointMBS)

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds ClipperPointMBS objects for the points in the path to the Xojo array.  
**Notes:** Mainly for older Realbasic versions where the plugin can’t create an array for you.
30.5.20 Properties

30.5.21 Count as Integer

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns number of points in path. 
**Notes:** (Read only property)

30.5.22 Empty as Boolean

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if path is empty. 
**Notes:** (Read only property)

30.5.23 Handle as Integer

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal object reference. 
**Notes:** (Read and Write property)

30.5.24 Owner as Variant

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The parent object. 
**Notes:** To avoid Xojo freeing the parent too quick, we keep a reference here. 
(Read only property)

30.5.25 Tag as Variant

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tag value. 
**Notes:** You can store here whatever value you like. 
(Read and Write property)
30.5.26 Value(Index as Integer) as ClipperPointMBS

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries or sets a value in the path.

**Notes:**

Raises exception if out of bounds.

(Read and Write computed property)
30.6  class ClipperPathsMBS

30.6.1  class ClipperPathsMBS

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for a list of paths.

**Notes:**
This class is fundamental to the Clipper Library. It’s a list or array of one or more Path structures. (The Path structure contains an ordered list of vertices that make a single contour.)

Paths may open (a series of line segments), or they may closed (polygons). Whether or not a path is open depends on context. Closed paths may be 'outer’ contours or 'hole’ contours. Which they are depends on orientation.

30.6.2  Methods

30.6.3  Append(item as ClipperPathMBS)

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Appends a new path to the paths.

30.6.4  Clear

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Clears the path.

30.6.5  Constructor

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new empty path.

See also:

- 30.6.6 Constructor(otherPaths as ClipperPathsMBS)

30.6.6  Constructor(otherPaths as ClipperPathsMBS)

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new paths list with the copy of old paths list.

See also:
30.6. CLASS CLIPPERPATHSMBS

• 30.6.5 Constructor

30.6.7 Equal(otherPaths as ClipperPathsMBS) as boolean

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Checks if two path lists are equal.  
**Notes:** Returns true if both are equal.

30.6.8 Insert(Index as Integer, item as ClipperPathMBS)

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Inserts a path into the path list at given index.  
**Notes:** Index = 0 adds as first point.

30.6.9 Remove(index as integer)

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Removes a path.

30.6.10 Reverse

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reverses the vertex order (and hence orientation) in the specified paths.

30.6.11 Values as ClipperPathMBS()

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates copy of path list as Xojo array or ClipperPathMBS.

30.6.12 ValuesToArray(dest() as ClipperPathMBS)

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds ClipperPathMBS objects for the paths in the path list to the Xojo array.  
**Notes:** Mainly for older Realbasic versions where the plugin can’t create an array for you.
30.6.13 Properties

30.6.14 Count as Integer

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns number of paths in paths.  
**Notes:** (Read only property)

30.6.15 Empty as Boolean

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if path list is empty.  
**Notes:** (Read only property)

30.6.16 Handle as Integer

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal object reference.  
**Notes:** (Read and Write property)

30.6.17 Owner as Variant

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The parent object.  
**Notes:**  
To avoid Xojo freeing the parent too quick, we keep a reference here.  
(Read only property)

30.6.18 Tag as Variant

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tag value.  
**Notes:**  
You can store here whatever value you like.  
(Read and Write property)
30.6.19  Value(Index as Integer) as ClipperPathMBS

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries or sets a value in the path.

**Notes:**

Raises exception if out of bounds.
(Read and Write computed property)
30.7 class ClipperPointMBS

30.7.1 class ClipperPointMBS

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for a point.
**Notes:** All functions accept nil as a point with values 0/0.

30.7.2 Methods

30.7.3 Constructor(x as Int64 = 0, y as Int64 = 0)

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new point with given values.

30.7.4 Equal(other as ClipperPointMBS) as boolean

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Compares two points.
**Notes:**
Returns true if both have same value.
All functions accept nil as a point with values 0/0.

30.7.5 Point(x as Int64 = 0, y as Int64 = 0) as ClipperPointMBS

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new point with given values.

30.7.6 Properties

30.7.7 X as Int64

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The x coordinate.
**Notes:** (Read and Write property)
30.7.8  Y as Int64

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The y coordinate.
**Notes:** (Read and Write property)
30.8 class ClipperPolyNodeMBS

30.8.1 class ClipperPolyNodeMBS

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for a poly node.

**Notes:**
PolyNodes are encapsulated within a PolyTree container, and together provide a data structure representing the parent-child relationships of polygon contours returned by Clipper’s Execute method.

A PolyNode object represents a single polygon. Its IsHole property indicates whether it’s an outer or a hole. PolyNodes may own any number of PolyNode children (Childs), where children of outer polygons are holes, and children of holes are (nested) outer polygons.

30.8.2 Methods

30.8.3 Constructor

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor for a new object.

30.8.4 Properties

30.8.5 ChildCount as Integer

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of PolyNode Childs directly owned by the PolyNode object.

**Notes:** (Read only property)

30.8.6 Childs as ClipperPolyNodesMBS

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The children.

**Notes:**
A read-only list of PolyNode.
Outer PolyNode childs contain hole PolyNodes, and hole PolyNode childs contain nested outer PolyNodes. (Read only property)
30.8. **CLASS CLIPPERPOLYNODEMBS**

**30.8.7 Contour as ClipperPathMBS**

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a path list which contains any number of vertices.  
**Notes:** (Read and Write property)

**30.8.8 Handle as Integer**

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal object reference.  
**Notes:** (Read and Write property)

**30.8.9 IsHole as Boolean**

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true when the PolyNode's polygon (Contour) is a hole.  
**Notes:** Children of outer polygons are always holes, and children of holes are always (nested) outer polygons. The IsHole property of a PolyTree object is undefined but its children are always top-level outer polygons. (Read only property)

**30.8.10 IsOpen as Boolean**

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true when the PolyNode's Contour results from a clipping operation on an open contour (path).  
**Notes:** Only top-level PolyNodes can contain open contours. (Read only property)

**30.8.11 NextNode as ClipperPolyNodeMBS**

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The returned Polynode will be the first child if any, otherwise the next sibling, otherwise the next sibling of the Parent etc.  
**Notes:** A PolyTree can be traversed very easily by calling First() followed by NextNode in a loop until the returned object is a nil reference ...
30.8.12 Owner as Variant

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The parent object.

**Notes:**
To avoid Xojo freeing the parent too quick, we keep a reference here.
(Read only property)

30.8.13 ParentNode as ClipperPolyNodeMBS

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the parent PolyNode.

**Notes:**
The PolyTree object (which is also a PolyNode) does not have a parent and will return a null pointer.
(Read only property)

30.8.14 Tag as Variant

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tag value.

**Notes:**
You can store here whatever value you like.
(Read and Write property)
30.9.  CLASS CLIPPERPOLYNODESMBS

30.9  class ClipperPolyNodesMBS

30.9.1  class ClipperPolyNodesMBS

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for the node list.

30.9.2  Methods

30.9.3  Append(item as ClipperPolyNodeMBS)

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Appends a new node to the node list.

30.9.4  Clear

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Clears the node list.

30.9.5  Constructor

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new empty node list.

See also:

- 30.9.6 Constructor(otherPolyNodes as ClipperPolyNodesMBS)

30.9.6  Constructor(otherPolyNodes as ClipperPolyNodesMBS)

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new poly node list with the copy of old poly node list.

See also:

- 30.9.5 Constructor

30.9.7  Equal(otherPolyNodes as ClipperPolyNodesMBS) as boolean

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Checks if two node lists are equal.
Notes: Returns true if both are equal.

### 30.9.8 Insert/Index as Integer, item as ClipperPolyNodeMBS)

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Inserts a poly node into the node list at given index. **Notes:** Index = 0 adds as first node.

### 30.9.9 Remove/index as integer)

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Removes a node.

### 30.9.10 Values as ClipperPolyNodeMBS()

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates copy of node list as Xojo array or ClipperPolyNodeMBS.

### 30.9.11 Properties

#### 30.9.12 Count as Integer

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns number of nodes. **Notes:** (Read only property)

#### 30.9.13 Empty as Boolean

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if list is empty. **Notes:** (Read only property)

#### 30.9.14 Handle as Integer

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal object reference.
30.9. **CLASS CLIPPERPOLYNODESMBS**

**Notes:** (Read and Write property)

### 30.9.15 Owner as Variant

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The parent object.

**Notes:**
To avoid Xojo freeing the parent too quick, we keep a reference here.
(Read only property)

### 30.9.16 Tag as Variant

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tag value.

**Notes:**
You can store here whatever value you like.
(Read and Write property)

### 30.9.17 Value(Index as Integer) as ClipperPolyNodeMBS

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries or sets a value in the node list.

**Notes:**
Raises exception if out of bounds.
(Read and Write computed property)
30.10 class ClipperPolyTreeMBS

30.10.1 class ClipperPolyTreeMBS

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** PolyTree is intended as a read-only data structure that should only be used to receive solutions from clipping and offsetting operations.

**Notes:**

PolyTree’s two major advantages over the Paths structure are: it properly represents the parent-child relationships of the returned polygons; it differentiates between open and closed paths. However, since PolyTree is a more complex structure than the Paths structure, and since it’s more computationally expensive to process (the Execute method being roughly 5-10% slower), it should used only be when parent-child polygon relationships are needed, or when open paths are being ‘clipped’.

An empty PolyTree object can be passed as the solution parameter in ClipperEngineMBS.Execute and in ClipperOffsetMBS.Execute. Once the clipping or offsetting operation is completed, the method returns with the PolyTree structure filled with data representing the solution.

A PolyTree object is a container for any number of PolyNode children, with each contained PolyNode representing a single polygon contour (either an outer or hole polygon). PolyTree itself is a specialized PolyNode whose immediate children represent the top-level outer polygons of the solution. (Its own Contour property is always empty.) The contained top-level PolyNodes may contain their own PolyNode children representing hole polygons that may also contain children representing nested outer polygons etc. Children of outers will always be holes, and children of holes will always be outers.

PolyTrees can also contain open paths. Open paths will always be represented by top level PolyNodes. Two functions are provided to quickly separate out open and closed paths from a polytree - OpenPathsFromPolyTree and ClosedPathsFromPolyTree.

Subclass of the ClipperPolyNodeMBS class.

30.10.2 Methods

30.10.3 Clear

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This method clears any PolyNode children contained by PolyTree the object.

**Notes:** Clear does not need to be called explicitly. The Clipper.Execute method that accepts a PolyTree parameter will automatically clear the PolyTree object before propagating it with new PolyNodes. Likewise, PolyTree’s destructor will also automatically clear any contained PolyNodes.
30.10. **CLASS CLIPPERPOLYTREEMBS**

### 30.10.4 Constructor

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Creates a new empty polytree.

See also:

- 30.10.5 Constructor(otherPolyNodes as ClipperPolyTreeMBS)

### 30.10.5 Constructor(otherPolyNodes as ClipperPolyTreeMBS)

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Creates a copy of an existing poly tree.

See also:

- 30.10.4 Constructor

### 30.10.6 Properties

### 30.10.7 First as ClipperPolyNodeMBS

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

The first node.

**Notes:**

This method returns the first outer polygon contour if any, otherwise a null pointer.

This function is almost equivalent to calling Childs [ 0 ] except that when a PolyTree object is empty (has no children), calling Childs [ 0 ] would raise an out of range exception.

(Read only property)

### 30.10.8 Total as Integer

MBS Tools Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Returns the total number of PolyNodes (polygons) contained within the PolyTree.

**Notes:**

This value is not to be confused with ChildCount which returns the number of immediate children only (Childs) contained by PolyTree.

(Read only property)
Chapter 31

CloudKit

31.1 class CKAcceptSharesOperationMBS

31.1.1 class CKAcceptSharesOperationMBS


31.1.2 Methods

31.1.3 Constructor

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Initializes and returns an operation object configured to process share metadata. Notes: You can use the returned CKAcceptSharesOperation only once. When executed, this query object processes the share metadata. See also:

- 31.1.4 Constructor(shareMetadatas() as CKShareMetadataMBS) 5161

31.1.4 Constructor(shareMetadatas() as CKShareMetadataMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Initializes and returns an operation object configured to process the specified share objects. Notes: shareMetadatas: An array of CKShareMetadataMBS objects. This parameter is used to initialize the value in the shareMetadatas property. If you specify nil, you must assign an appropriate value to the
shareMetadatas property before executing the operation.
See also:

• 31.1.3 Constructor

### 31.1.5 setShareMetadatas(shareMetadatas() as CKShareMetadataMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the metadata of the shares that you want to process. **Notes:** Use this property to view or change the metadata of the share objects you want to process. If you intend to specify or change the value of this property, do so before executing the operation or submitting the operation object to a queue.

### 31.1.6 shareMetadatas as CKShareMetadataMBS()

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The metadata of the shares that you want to process. **Notes:** Use this property to view or change the metadata of the share objects you want to process. If you intend to specify or change the value of this property, do so before executing the operation or submitting the operation object to a queue.

### 31.1.7 Events

### 31.1.8 acceptSharesCompleted(operationError as NSErrorMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** This event is called when the operation completes. **Notes:**

The Completed event of the underlying NSOperation is also called if both are set. If the error is CKErrorPartialFailure, the errors userInfo dictionary contains a dictionary of shareURL objects to errors keyed off of CKPartialErrorsByItemIDKey. This call happens as soon as the server has seen all record changes and may be invoked while the server is processing the side effects of those changes.

The event is executed serially with respect to the other progress blocks of the operation. If you intend to use this event to process results, update the value of this property before executing the operation or submitting the operation object to a queue.
MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event to execute for each share metadata that the server has processed.

**Notes:**

If the error is nil the share was successfully accepted. Each time the block is executed, it is executed serially with respect to the other progress blocks of the operation.

If you intend to use this event to process results, set it before executing the operation or submitting the operation object to a queue.
31.2 class CKAssetMBS

31.2.1 class CKAssetMBS


31.2.2 Methods

31.2.3 Available as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether this class is available. Notes: Should be true for OS X 10.10 and newer in 64-bit application.

31.2.4 Constructor(file as FolderItem)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Initialize an asset to be saved with the content at the given file. See also:

- 31.2.5 Constructor(URL as String)

31.2.5 Constructor(URL as String)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Initialize an asset to be saved with the content at the given file URL. See also:

- 31.2.4 Constructor(file as FolderItem)

31.2.6 Properties

31.2.7 fileURL as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The URL to the file. Notes:
31.2. CLASS CKASSETMBS

Local file URL where fetched records are cached and saved records originate from.
(Read only property)

31.2.8 Handle as Integer

Notes: (Read and Write property)
31.3 class CKContainerMBS

31.3.1 class CKContainerMBS


Function: An encapsulation of content associated with an app, including content that is accessible to all users and content that is available only to a specific user.

Notes:
A container object manages all explicit and implicit attempts to access the contents of the container.

Every app has a default container object that manages its own native content. If you develop a suite of apps, you can also access any container objects for which you have the appropriate entitlements. Each new container distinguishes between publicly available data and data that is private to the current user. Private data is always stored in the appropriate container directory in the users iCloud account.

see

31.3.2 Methods

31.3.3 accountStatus(tag as Variant = nil)


Function: Reports whether the current users iCloud account can be accessed.

Notes: This method determines the status of the current users iCloud account asynchronously, reporting the results to the block in the completionHandler parameter. Call this method before accessing the private database to determine whether that database is available. While your app is running, use the NSUbiquityIdentityDidChangeNotification notification to detect account changes and call this method again to retrieve the status for the new account.

31.3.4 addOperation(operation as CKOperationMBS)


Function: Queues an operation for execution in the current container.

Notes:
operation: The CKOperationMBS to enqueue. Make sure the operation object you provide is fully configured and ready to be enqueued. Do not change the settings of this object after calling this method.

This method adds the operation object to an operation queue managed by the container itself. Operation objects in the containers queue execute concurrently with default priorities in background threads.
This method changes the operation objects container (if any) to the current container.

### 31.3.5 Available as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this class is available.  
**Notes:** Should be true for OS X 10.10 and newer in 64-bit application.

### 31.3.6 CKAccountChangedNotification as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The account changed notification name.

### 31.3.7 CKCurrentUserDefaultName as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The default name for the current user.

### 31.3.8 CKErrorDomain as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The error domain name for CloudKit.

### 31.3.9 CKErrorRetryAfterKey as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the user dictionary keys for error dictionaries.  
**Notes:** On CKErrorServiceUnavailable or CKErrorRequestRateLimited errors the userInfo dictionary may contain a number that specifies the period of time in seconds after which the client may retry the request.

### 31.3.10 CKOwnerDefaultName as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The user ID representing the current user. Use this value when creating zone IDs.
31.3.11 **CKPartialErrorsByItemIDKey as String**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** When a CKErrorPartialFailure happens this key will be set in the error’s userInfo dictionary. **Notes:** The value of this key will be a dictionary, and the values will be errors for individual items with the keys being the item IDs that failed.

31.3.12 **CKRecordChangedErrorAncestorRecordKey as String**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the error details keys. **Notes:** If the server rejects a record save because it has been modified since the last time it was read, a CKErrorServerRecordChanged error will be returned and it will contain versions of the record in its userInfo dictionary. Apply your custom conflict resolution logic to the server record (CKServerRecordKey) and attempt a save of that record.

31.3.13 **CKRecordChangedErrorClientRecordKey as String**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the error details keys. **Notes:** If the server rejects a record save because it has been modified since the last time it was read, a CKErrorServerRecordChanged error will be returned and it will contain versions of the record in its userInfo dictionary. Apply your custom conflict resolution logic to the server record (CKServerRecordKey) and attempt a save of that record.

31.3.14 **CKRecordChangedErrorServerRecordKey as String**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the error details keys. **Notes:** If the server rejects a record save because it has been modified since the last time it was read, a CKErrorServerRecordChanged error will be returned and it will contain versions of the record in its userInfo dictionary. Apply your custom conflict resolution logic to the server record (CKServerRecordKey) and attempt a save of that record.
31.3. CLASS CKCONTAINERMBS

31.3.15 Constructor

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

31.3.16 containerWithIdentifier(name as string) as CKContainerMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the container object associated with the specified identifier.  
**Notes:**

containerIdentifier: The bundle identifier of the app whose container you want to access. The bundle identifier must be in the apps com.apple.developer.icloud-container-identifiers entitlement. This parameter must not be nil.

Returns the container object for the designated apps content, or nil if the container cannot be found.

The specified identifier must correspond to one of the ubiquity containers listed in the iCloud capabilities section of your Xcode project. Including the identifier with your apps capabilities adds the corresponding entitlements to your app. To access your apps default container, use the defaultContainer method instead.

31.3.17 defaultContainer as CKContainerMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the default container object for managing the current apps content.  
**Notes:**

Returns the container object associated with the current apps content. This method always returns a valid container object.

Use this method to retrieve the container for your apps native content. This container is the one your app typically uses to store its data. If you want the container for a different app, create and initialize that container using the containerWithIdentifier method.

During development, the returned container object points to a development version of your apps container. When you ship your app, the returned object points to the live production environment.
31.3.18 discoverAllContactUserInfos(tag as Variant = nil)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Retrieves information about all discoverable users that are known to the current user. **Notes:**

Use this method to retrieve information about other users of the app. This method returns information about those users who meet the following criteria:

- There is contact information for the user in the current users address book.
- The user has run the app.
- The user has granted the CKApplicationPermissionUserDiscoverability permission to your app for this container.

This method searches for the users asynchronously and with a low priority. If you want the task to execute with a higher priority, create a CKDiscoverAllContactsOperationMBS object and configure the desired priority.

31.3.19 discoverAllIdentities(tag as Variant = nil)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Fetches all user records that match an entry in the users address book. **Notes:**

This method searches for the user asynchronously and with a low priority. If you want the task to execute with a higher priority, create a CKDiscoverAllContactsOperation object and configure the desired priority.

31.3.20 discoverUserIdentityWithEmailAddress(emailAddress as string, tag as Variant = nil)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the user record ID associated in the users contacts with the email address. **Notes:**

email: The email address used to locate the user.

Use this method to retrieve the ID of a user that is known to the current user. The user you are searching for must meet the following criteria:

- The user must be in the current users address book.
31.3. CLASS CKCONTAINERMBS

- The user must have run the app.
- The user must have granted the userDiscoverability permission for this container.

This method searches for the user asynchronously and with a low priority. If you want the task to execute with a higher priority, create a CKDiscoverUserInfosOperationMBS object and configure the desired priority.

31.3.21 discoverUserIdentityWithPhoneNumber(phoneNumber as string, tag as Variant = nil)


Function: Returns the user record ID associated in the users contacts with the phone number.

Notes:
phoneNumber: The phone number used to locate the user.

Use this method to retrieve the ID of a user that is known to the current user. The user you are searching for must meet the following criteria:

- The user must be in the current users address book.
- The user must have run the app.
- The user must have granted the userDiscoverability permission for this container.

This method searches for the user asynchronously and with a low priority. If you want the task to execute with a higher priority, create a CKDiscoverUserInfosOperationMBS object and configure the desired priority.

31.3.22 discoverUserIdentityWithUserRecordID(userRecordID as CKRecordIDMBS, tag as Variant = nil)


Function: Retrieves information about a single user based on the ID of the corresponding user record.

Notes:
userRecordID: The ID of the user record.

Use this method to retrieve information about a user for which you already have a user record ID. The user you are searching for must meet the following criteria:

- The user must have run the app.
• The user must have granted the userDiscoverability permission for this container.

This method searches for the user asynchronously and with a low priority. If you want the task to execute with a higher priority, create a CKDiscoverUserInfosOperationMBS object and configure the desired priority.

31.3.23 discoverUserInfoWithEmailAddress(emailAddress as string, tag as Variant = nil)

Function: Retrieves information about a single user based on that users email address. 
Notes: 
email: The iCloud email address of the user you want to locate. 

Use this method to retrieve the ID of a user that is known to the current user. The user you are searching for must meet the following criteria:

• The user must be in the current users address book. 
• The user must have run the app. 
• The user must have granted the CKApplicationPermissionUserDiscoverability permission for this container. 

This method searches for the user asynchronously and with a low priority. If you want the task to execute with a higher priority, create a CKDiscoverUserInfosOperationMBS object and configure the desired priority.

31.3.24 discoverUserInfoWithUserRecordID(userRecordID as CKRecordIDMBS, tag as Variant = nil)

Function: Retrieves information about a single user based on the ID of the corresponding user record. 
Notes: 
userRecordID: The ID of the user record. 

Use this method to retrieve information about a user for which you already have a user record ID. The user you are searching for must meet the following criteria:

• The user must have run the app.
31.3. **CLASS CKCONTAINERMBS**

- The user must have granted the CKApplicationPermissionUserDiscoverability permission for this container.

This method searches for the user asynchronously and with a low priority. If you want the task to execute with a higher priority, create a CKDiscoverUserInfosOperationMBS object and configure the desired priority.

### 31.3.25 fetchAllLongLivedOperationIDs(tag as Variant = nil)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the identifiers of the running or recently completed long-lived operations. **Notes:** A long-lived operation is an operation that continues to run after the app exits, described in CKOperationMBS. To get the operation object for an identifier, use the fetchLongLivedOperationWithID method.

### 31.3.26 fetchLongLivedOperationWithID(operationID as string, tag as Variant = nil)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the running or recently completed long-lived operation specified by the operation identifier. **Notes:**

- operationID: The identifier of the long-lived operation you want to fetch.

A long-lived operation is an operation that continues to run after the app exits, described in CKOperationMBS. To receive the callbacks for a long-lived operations, set its completion block and add it to an operation queue.

### 31.3.27 fetchShareParticipantWithEmailAddress(emailAddress as string, tag as Variant = nil)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Retrieves information about a single share participant (a person who accepted a shared record) based on that participants email address. **Notes:**

- emailAddress: The iCloud email address of the share participant you want to locate.

This method searches for the share participant asynchronously and with a low priority. If you want the task to execute with a higher priority, create a CKFetchShareParticipantsOperationMBS object and configure the desired priority.
### 31.3.28 fetchShareParticipantWithPhoneNumber

**Function:** Retrieves information about a single share participant (a person who accepted a shared record) based on that participant's phone number.

**Notes:**

- `phoneNumber`: The phone number used to locate the share participant.

This method searches for the share participant asynchronously and with a low priority. If you want the task to execute with a higher priority, create a `CKFetchShareParticipantsOperationMBS` object and configure the desired priority.

### 31.3.29 fetchShareParticipantWithUserRecordID

**Function:** Retrieves information about a single share participant based on the ID of the corresponding user record.

**Notes:**

- `userRecordID`: The ID of the user record.

This method searches for the share participant asynchronously and with a low priority. If you want the task to execute with a higher priority, create a ` CKFetchShareParticipantsOperationMBS` object and configure the desired priority.

### 31.3.30 fetchUserRecordID

**Function:** Returns the user record ID associated with the current user.

**Notes:**

- At startup time, fetching the user record ID may take longer while CloudKit makes the initial iCloud account request. After the initial fetch, accessing the user record ID should take less time. If no iCloud account is associated with the device, or if access to the user's iCloud account is restricted, this method returns an error of type `CKErrorNotAuthenticated`. 


31.3. CLASS CKCONTAINERMBS

31.3.31 requestApplicationPermission(applicationPermission as Integer, tag as Variant = nil)

Function: Requests the specified permission from the user to make the user's identity discoverable.
Notes:
applicationPermission: The requested permission. This requested permission applies to the current container only and will not impact permissions granted for other containers. For a list of possible values, see CKApplicationPermissions.

To implement social features in your app, it is possible to correlate a user record with the user's actual name, but your app must get permission from the user to do so. Making a user record discoverable to the friends (contacts) of that user involves calling the requestApplicationPermission method and asking for the CKApplicationPermissionUserDiscoverability permission. When you call that method, CloudKit asks the user on your behalf whether the user record should be made discoverable. If the user grants the request, that user's contacts can discover that user's true identity when running the app. To discover the contacts of the current user, you use the discoverAllContactUserInfos method or one of several other methods to get the related user information.

The first time you request a permission on any of the user's devices, the user is prompted to grant or deny the request. Once the user grants or denies a permission, subsequent requests for the same permission (on the same or separate devices), do not prompt the user again.

This method runs asynchronously and delivers the results to the block you provide.

31.3.32 statusForApplicationPermission(applicationPermission as Integer, tag as Variant = nil)

Function: Checks the status of the specified permission asynchronously.
Notes:
applicationPermission: The permission whose status you want to check. For a list of possible values, see CKApplicationPermissions.

Use this method to determine the extra capabilities granted to your app by the user. If your app has not yet requested a specific permission, calling this method may yield the value CKApplicationPermissionStatusInitialState for the permission. When that value is returned, call the requestApplicationPermission method to request the permission from the user.
31.3.33 Properties

31.3.34 containerIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The string that identifies the app's container. **Notes:** Use the value in this property to distinguish between different container objects in your app. (Read only property)

31.3.35 Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference. **Notes:** (Read and Write property)

31.3.36 privateCloudDatabase as CKDatabaseMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The database containing the users private data. **Notes:** The database in this property is available only if the device has an active iCloud account. Access to the database is limited to the user of that iCloud account by default. The current user owns all content in the private database and is allowed to read and write that content. Data in the private database is not visible in the developer portal or to any other users. Data stored in the private database counts against the storage quota of the current users iCloud account. If there is no active iCloud account on the users device, this property still returns a valid database object, but attempts to use that object will return errors. To determine if there is an active iCloud account on the device, use the accountStatus method. (Read only property)

31.3.37 publicCloudDatabase as CKDatabaseMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The database containing the data shared by all users. **Notes:**
The database in this property is available regardless of whether the users device has an active iCloud account. The contents of the public database are readable by all users of the app, and users have write access to the records (and other data objects) they create. Data in the public database is also visible in the developer portal, where you can assign roles to users and restrict access as needed.

Data stored in the public database counts against your apps iCloud storage quota and not against the quota of any single user.

(Read only property)

**31.3.38 sharedCloudDatabase as CKDatabaseMBS**

**Function:** The database containing shared user data.  
**Notes:**

The database in this property is available only if the device has an active iCloud account. Permissions on the database are limited to the user based on the permissions of the enclosing CKShareMBS object (representing the record that has been shared). The current user does not own the content in the shared database and is allowed to read and write that content only if that permission has been granted in the CKShareMBS. Data in the shared database is not visible in the developer portal or to any user who has not been granted access.

Data stored in the shared database does not count against the storage quota of the current users iCloud account.

If there is no active iCloud account on the users device, this property still returns a valid database object, but attempts to use the object will return errors. To determine whether the device has an active iCloud account use the accountStatus method.

(Read only property)

**31.3.39 Events**

**31.3.40 accountStatusCompleted(accountStatus as Integer, error as NSErrorMBS, tag as Variant)**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event to be called when accountStatus is returned.  
**Notes:**

accountStatus: The status of the current users iCloud account.  
error: An error object, or nil if the status is determined successfully. Use the information in the error object to determine whether the problem has a workaround.
### discoverAllContactUserInfosCompleted

**Function:** The event to execute with the results for discoverAllContactUserInfos method.

**Notes:**
Your block must be capable of executing on any thread of the app. This block returns no value and takes the following parameters:

- **userInfos:** An array of CKDiscoveredUserInfoMBS objects. Each object in the array contains information about the user, including the ID of the corresponding user record. If no users are discovered, the provided array is empty.
- **error:** An error object if a problem occurs, or nil if the IDs are retrieved successfully.

### discoverAllIdentitiesWithCompleted

**Function:** The event to execute with the results for discoverAllIdentities method.

**Notes:**
This event returns no value and takes the following parameters:

- **userIdentities:** An array of CKUserIdentityMBS objects that match entries in the users contacts.
- **error:** An error object if a problem occurs or nil if the fetch completed successfully.

### discoverUserIdentityWithEmailAddressCompleted

**Function:** The event to execute with the results for discoverUserIdentityWithEmailAddress method.

**Notes:**
This event returns no value and takes the following parameters:

- **userInfo:** The user (CKUserIdentityMBS object) associated with the email address, or nil if an identity could not be located.
- **error:** An error object if a problem occurs or nil if the CKUserIdentityMBS is retrieved successfully.
31.3.44 discoverUserIdentityWithPhoneNumberCompleted(phoneNumber as String, userInfo as CKUserIdentityMBS, error as NSErrorMBS, tag as Variant)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The event to execute with the results for discoverUserIdentityWithPhoneNumber method.

Notes:
This event returns no value and takes the following parameters:

userInfo: The user (CKUserIdentityMBS object) associated with the phone number, or nil if an identity could not be located.
error: An error object if a problem occurs, or nil if the CKUserIdentityMBS is retrieved successfully.

31.3.45 discoverUserIdentityWithUserRecordIDCompleted(userRecordID as CKRecordIDMBS, userInfo as CKUserIdentityMBS, error as NSErrorMBS, tag as Variant)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The event to execute with the results for discoverUserIdentityWithUserRecordID.

Notes:
This event returns no value and takes the following parameters:

userInfo
An object containing information about the user, or nil if the user is not found.

error
An error object if a problem occurs, or nil if the ID is retrieved successfully.

31.3.46 discoverUserInfoWithEmailAddressCompleted(emailAddress as String, userInfo as CKDiscoveredUserInfoMBS, error as NSErrorMBS, tag as Variant)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The event to execute with the results for discoverUserInfoWithEmailAddress method.

Notes:
This event returns no value and takes the following parameters:

userInfo: An object containing information about the user or nil if the user is not found.
error: An error object if a problem occurs or nil if the ID is retrieved successfully.
31.3.47 discoverUserInfoWithUserRecordIDCompleted(userRecordID as CKRecordIDMBS, userInfo as CKDiscoveredUserInfoMBS, error as NSErrorMBS, tag as Variant)

Notes: This event returns no value and takes the following parameters:

userInfo: An object containing information about the user or nil if the user is not found.
error: An error object if a problem occurs or nil if the ID is retrieved successfully.

31.3.48 fetchAllLongLivedOperationIDsCompleted(outstandingOperationIDs() as String, error as NSErrorMBS, tag as Variant)

Notes: outstandingOperationsByIDs: An array containing the identifiers for all the active long-lived operations. If a long-lived operation is canceled or completed, it is no longer an active operation, and its identifier will not be included in this array. An operation is complete if the app successfully receives the completion callback.
error: An error object, or nil if the fetch is successful.

31.3.49 fetchLongLivedOperationWithIDCompleted(operationID as String, outstandingOperation as CKOperationMBS, error as NSErrorMBS, tag as Variant)

Notes: outstandingOperation: The proxy object for the corresponding long-lived operation. If a long-lived operation was canceled or completed, this is nil.
error: An error object, or nil if the fetch is successful.
31.3.50 fetchShareParticipantWithEmailAddressCompleted(emailAddress as String, shareParticipant as CKShareParticipantMBS, error as NSErrorMBS, tag as Variant)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event to execute with the results for fetchShareParticipantWithEmailAddress method.

**Notes:**
This event returns no value and takes the following parameters:

- shareParticipant: An object containing information about the share participant, or nil if the participant is not found.
- error: An error object if a problem occurs, or nil if the participant is retrieved successfully.

31.3.51 fetchShareParticipantWithPhoneNumberCompleted(phoneNumber as String, shareParticipant as CKShareParticipantMBS, error as NSErrorMBS, tag as Variant)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event to execute with the results for fetchShareParticipantWithPhoneNumber method.

**Notes:**
- shareParticipant: An object containing information about the share participant, or nil if the participant is not found.
- error: An error object if a problem occurs, or nil if the participant is retrieved successfully.

31.3.52 fetchShareParticipantWithUserRecordIDCompleted(userRecordID as CKRecordIDMBS, shareParticipant as CKShareParticipantMBS, error as NSErrorMBS, tag as Variant)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event called for fetchShareParticipantWithUserRecordID.

**Notes:**
This event returns no value and takes the following parameters:

- shareParticipant: An object containing information about the share participant, or nil if the participant is not found.
- error: An error object if a problem occurs, or nil if the participant is retrieved successfully.
31.3.53 fetchUserRecordIDCompleted(userRecordID as CKRecordIDMBS, error as NSErrorMBS, tag as Variant)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event to execute with the results for fetchUserRecordID method.

**Notes:**
- recordID: The ID of the user record for the current user, or nil if the current device is not configured with an iCloud account.
- error: An error object if a problem occurs, or nil if the record ID is retrieved successfully.

31.3.54 requestApplicationPermissionCompleted(applicationPermissionStatus as Integer, accountStatus as Integer, error as NSErrorMBS, tag as Variant)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event to execute with the results for requestApplicationPermission method.

31.3.55 statusForApplicationPermissionCompleted(applicationPermissionStatus as Integer, accountStatus as Integer, error as NSErrorMBS, tag as Variant)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event to execute with the results for statusForApplicationPermission method.

31.3.56 Constants

31.3.57 CKAccountStatusAvailable = 1

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the constants indicating the availability of the users iCloud account.

**Notes:** The users iCloud account is available and may be used by this app.

31.3.58 CKAccountStatusCouldNotDetermine = 0

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the constants indicating the availability of the users iCloud account.

**Notes:** An error occurred during an attempt to retrieve the account status. Consult the provided NSError
31.3.59  CKAccountStatusNoAccount = 3

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the constants indicating the availability of the users iCloud account.
**Notes:** The users iCloud account is not available because no account information has been provided for this device.

31.3.60  CKAccountStatusRestricted = 2

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the constants indicating the availability of the users iCloud account.
**Notes:** The users iCloud account is not available. Access was denied due to Parental Controls or Mobile Device Management restrictions.

31.3.61  CKApplicationPermissionStatusCouldNotComplete = 1

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the constants indicating whether the app has been granted a specific permission.
**Notes:** An error occurred during the getting or setting of the app permission. Consult the provided NSErrorMBS object for more information.

31.3.62  CKApplicationPermissionStatusDenied = 2

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the constants indicating whether the app has been granted a specific permission.
**Notes:** The user denied access to the permission.

31.3.63  CKApplicationPermissionStatusGranted = 3

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the constants indicating whether the app has been granted a specific permission.
**Notes:** The user granted access to the permission.
31.3.64  **CKApplicationPermissionStatusInitialState = 0**

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the constants indicating whether the app has been granted a specific permission.  
**Notes:** The user has not yet decided whether to grant this permission. Use the requestApplicationPermission method to ask the user to grant the permission.

31.3.65  **CKApplicationPermissionUserDiscoverability = 1**

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** The current user is discoverable (through the users email address) to other users of the app.

31.3.66  **ErrorAlreadyShared = 30**

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the error constants.  
**Notes:** A record/share cannot be saved, doing so would cause a hierarchy of records to exist in multiple shares.

31.3.67  **ErrorAssetFileModified = 17**

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the error constants.  
**Notes:** Asset file content was modified while being saved.

31.3.68  **ErrorAssetFileNotFound = 16**

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the error constants.  
**Notes:** Asset file was not found.

31.3.69  **ErrorBadContainer = 5**

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the error constants.  
**Notes:** Un-provisioned or unauthorized container. Try provisioning the container before retrying the operation.
31.3.70  **ErrorBadDatabase = 24**

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the error constants.  
**Notes:** Operation could not be completed on the given database. Likely caused by attempting to modify zones in the public database.

31.3.71  **ErrorBatchRequestFailed = 22**

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the error constants.  
**Notes:** One of the items in this batch operation failed in a zone with atomic updates, so the entire batch was rejected.

31.3.72  **ErrorChangeTokenExpired = 21**

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the error constants.  
**Notes:** The previousServerChangeToken value is too old and the client must re-sync from scratch.

31.3.73  **ErrorConstraintViolation = 19**

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the error constants.  
**Notes:** The server rejected the request because there was a conflict with a unique field.

31.3.74  **ErrorIncompatibleVersion = 18**

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the error constants.  
**Notes:** App version is less than the minimum allowed version.

31.3.75  **ErrorInternalError = 1**

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the error constants.  
**Notes:** CloudKit.framework encountered an error. This is a non-recoverable error.

31.3.76  **ErrorInvalidArguments = 12**

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the error constants.  
**Notes:** Bad client request (bad record graph, malformed predicate)
31.3.77 ErrorLimitExceeded = 27

MBS Mac64bit Plugin, Plugin Version: 16.5. Function: One of the error constants.
Notes: The request to the server was too large. Retry this request as a smaller batch.

31.3.78 ErrorManagedAccountRestricted = 32

MBS Mac64bit Plugin, Plugin Version: 16.5. Function: One of the error constants.
Notes: Request was rejected due to a managed account restriction.

31.3.79 ErrorMissingEntitlement = 8

MBS Mac64bit Plugin, Plugin Version: 16.5. Function: One of the error constants.
Notes: Missing entitlement

31.3.80 ErrorNetworkFailure = 4

MBS Mac64bit Plugin, Plugin Version: 16.5. Function: One of the error constants.
Notes: Network error (available but CFNetwork gave us an error)

31.3.81 ErrorNetworkUnavailable = 3

MBS Mac64bit Plugin, Plugin Version: 16.5. Function: One of the error constants.
Notes: Network not available

31.3.82 ErrorNotAuthenticated = 9

MBS Mac64bit Plugin, Plugin Version: 16.5. Function: One of the error constants.
Notes: Not authenticated (writing without being logged in, no user record)
31.3. CLASS CKCONTAINERMBS

31.3.83 ErrorOperationCancelled = 20

MBS Mac64bit Plugin, Plugin Version: 16.5. Function: One of the error constants. Notes: A CKOperation was explicitly cancelled.

31.3.84 ErrorPartialFailure = 2

MBS Mac64bit Plugin, Plugin Version: 16.5. Function: One of the error constants. Notes: Some items failed, but the operation succeeded overall. Check CKPartialErrorsByItemIDKey in the userInfo dictionary for more details.

31.3.85 ErrorParticipantMayNeedVerification = 33

MBS Mac64bit Plugin, Plugin Version: 16.5. Function: One of the error constants. Notes: Share Metadata cannot be determined, because the user is not a member of the share. There are invited participants on the share with email addresses or phone numbers not associated with any iCloud account. The user may be able to join the share if they can associate one of those email addresses or phone numbers with their iCloud account via the system Share Accept UI. Call UIApplication’s openURL on this share URL to have the user attempt to verify their information.

31.3.86 ErrorPermissionFailure = 10

MBS Mac64bit Plugin, Plugin Version: 16.5. Function: One of the error constants. Notes: Access failure (save, fetch, or shareAccept)

31.3.87 ErrorQuotaExceeded = 25

MBS Mac64bit Plugin, Plugin Version: 16.5. Function: One of the error constants. Notes: Saving a record would exceed quota

31.3.88 ErrorReferenceViolation = 31

MBS Mac64bit Plugin, Plugin Version: 16.5. Function: One of the error constants. Notes: The target of a record’s parent or share reference was not found.
31.3.89  ErrorRequestRateLimited = 7
MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the error constants.  
**Notes:** Client is being rate limited

31.3.90  ErrorResultsTruncated = 13
MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the error constants.  
**Notes:** Results Truncated. Deprecated and will not be returned. 

31.3.91  ErrorServerRecordChanged = 14
MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the error constants.  
**Notes:** The record was rejected because the version on the server was different. 

31.3.92  ErrorServerRejectedRequest = 15
MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the error constants.  
**Notes:** The server rejected this request. This is a non-recoverable error. 

31.3.93  ErrorServiceUnavailable = 6
MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the error constants.  
**Notes:** Service unavailable 

31.3.94  ErrorTooManyParticipants = 29
MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the error constants.  
**Notes:** A share cannot be saved because there are too many participants attached to the share. 

31.3.95  ErrorUnknownItem = 11
MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the error constants.  
**Notes:** Record does not exist
31.3. CLASS CKCONTAINERMBS

31.3.96 ErrorUserDeletedZone = 28

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the error constants.
**Notes:** The user deleted this zone through the settings UI. Your client should either remove its local data or prompt the user before attempting to re-upload any data to this zone.

31.3.97 ErrorZoneBusy = 23

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the error constants.
**Notes:** The server is too busy to handle this zone operation. Try the operation again in a few seconds.

31.3.98 ErrorZoneNotFound = 26

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the error constants.
**Notes:** The specified zone does not exist on the server.
31.4 class CKDatabaseMBS

31.4.1 class CKDatabaseMBS


**Function:** A conduit for accessing and for performing operations on the public and private data of an app container.

**Notes:**
An app container has a public database whose data is accessible to all users and a private database whose data is accessible only to the current user. A database object takes requests for data and applies them to the appropriate part of the container.

You do not create database objects yourself, nor should you subclass CKDatabaseMBS. Your apps CKContainerMBS objects provide the CKDatabaseMBS objects you use to access the associated data. Use database objects as-is to perform operations on data.

The public database is always available, regardless of whether the device has an active iCloud account. When no iCloud account is available, your app may fetch records and perform queries on the public database, but it may not save changes. (Saving records to the public database requires an active iCloud account to identify the owner of those records.) Access to the private database always requires an active iCloud account on the device.

see

31.4.2 Methods

31.4.3 addOperation(operation as CKDatabaseOperationMBS)


**Function:** Executes the specified operation asynchronously against the current database.

**Notes:**
operation: The operation object to execute. You must configure the operation object with any dependencies and completion handlers before calling this method. If this parameter is nil, the method does nothing.

Do not change the properties of the operation object after calling this method. Prior to executing the operation, this method sets the operation objects database property to the current database, replacing any previously assigned database.

This method executes the operation object with the priority you assigned to the object through its queuePriority property.
31.4. CLASS CKDATABASEMBS

31.4.4 Available as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this class is available. **Notes:** Should be true for OS X 10.10 and newer in 64-bit application.

31.4.5 Constructor(Container as CKContainerMBS, databaseScope as Integer)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Retrieves the database with the appropriate scope. **Notes:**

databaseScope: The scope of the database you want returned.

Returns an initialized CKDatabase object with the appropriate scope. This convenience method returns the database associated with the specified container that is of the scope requested.

31.4.6 deleteRecordWithID(recordID as CKRecordIDMBS, tag as Variant = nil)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Deletes the specified record asynchronously, with a low priority, from the current database. **Notes:**

recordID: The ID of the record you want to delete. This method throws an exception if this parameter is nil.

Deleting a record may trigger additional deletions if the record was referenced by other records. This method reports only the ID of the record you asked to delete. CloudKit does not report deletions triggered by owning relationships between records.

This method deletes the record with a low priority, which may cause the task to execute after higher-priority tasks. To delete records more urgently, create a CKModifyRecordsOperationMBS object with the desired priority. You can also use that operation object to delete multiple records simultaneously.
31.4.7 deleteRecordWithIDSync(recordID as CKRecordIDMBS, byref error as NSErrorMBS)


Function: Deletes the specified record synchronously, with a low priority, from the current database.

Notes:

recordID: The ID of the record you want to delete. This method throws an exception if this parameter is nil.

Deleting a record may trigger additional deletions if the record was referenced by other records. This method reports only the ID of the record you asked to delete. CloudKit does not report deletions triggered by owning relationships between records.

This method deletes the record with a low priority, which may cause the task to execute after higher-priority tasks. To delete records more urgently, create a CKModifyRecordsOperationMBS object with the desired priority. You can also use that operation object to delete multiple records simultaneously.

31.4.8 deleteRecordZone(zoneID as CKRecordZoneIDMBS, tag as Variant = nil)


Function: Deletes one record zone (and its contents) asynchronously, with a low priority, from the current database.

Notes:

zoneID: The ID of the zone you want to delete. This method throws an exception if this parameter is nil.

Deleting a zone permanently deletes the zone and all records in that zone. After deleting the zone, you can use the same ID to create a new empty zone.

This method deletes the record zone with a low priority, which may cause the task to execute after higher-priority tasks. To delete the record zone more urgently, create a CKModifyRecordZonesOperationMBS object with the desired priority. You can also use that operation object to delete multiple record zones simultaneously.

31.4.9 deleteSubscriptionWithID(subscriptionID as String, tag as Variant = nil)


Function: Deletes one subscription object asynchronously, with a low priority, from the current database.

Notes:
subscriptionID: The ID of the subscription object to delete. This method throws an exception if this parameter is nil.

Deleting a subscription stops the subscription from watching its changed records and sending alerts.

This method deletes the subscription object with a low priority, which may cause the task to execute after higher-priority tasks. To delete the subscription more urgently, create a CKModifySubscriptionsOperationMBS object with the desired priority. You can also use that operation object to delete multiple subscription objects simultaneously.

31.4.10 fetchAllRecordZones(tag as Variant = nil)

Function: Fetches all record zones asynchronously, with a low priority, from the current database.
Notes:
Use this method to locate the record zones in this database. Record zones represent groups of records with a common purpose.

This method fetches record zones with a low priority, which may cause the task to execute after higher-priority tasks. To fetch record zones more urgently, create a CKFetchRecordZonesOperationMBS object with the desired priority.

31.4.11 fetchAllSubscriptions(tag as Variant = nil)

Function: Fetches all subscription objects asynchronously, with a low priority, from the current database.
Notes:
Use this method to locate the subscriptions in the current database. Subscriptions represent persistent queries on the server. A subscription can be used to alert the app when records change.

This method fetches the subscription objects with a low priority, which may cause the task to execute after higher-priority tasks. To fetch subscriptions more urgently, create a CKFetchSubscriptionsOperationMBS object with the desired priority.
31.4.12 fetchRecordWithID(recordID as CKRecordIDMBS, tag as Variant = nil)

Function: Fetches one record asynchronously, with a low priority, from the current database.
Notes:
recordID: The ID of the record you want to fetch. This method throws an exception if this parameter is nil.

Use this method to fetch records that are not urgent to your app's execution. This method fetches the record with a low priority, which may cause the fetch to execute after higher-priority tasks. To fetch records more urgently, create a CKFetchRecordsOperation object with the desired priority. You can also use that operation object to fetch multiple records simultaneously.

31.4.13 fetchRecordWithIDSync(recordID as CKRecordIDMBS, byref record as CKRecordMBS, byref error as NSErrorMBS)

Function: Fetches one record synchronously, with a low priority, from the current database.
Notes:
recordID: The ID of the record you want to fetch. This method throws an exception if this parameter is nil.
record: The requested record object. If no such record is found, this parameter is nil.
error: An error object, or nil if the record was fetched successfully. Use the information in the error object to determine whether a problem has a workaround.

Use this method to fetch records that are not urgent to your app's execution. This method fetches the record with a low priority, which may cause the fetch to execute after higher-priority tasks. To fetch records more urgently, create a CKFetchRecordsOperation object with the desired priority. You can also use that operation object to fetch multiple records simultaneously.

31.4.14 fetchRecordZoneWithID(zoneID as CKRecordZoneIDMBS, tag as Variant = nil)

Function: Fetches one record zone asynchronously, with a low priority, from the current database.
Notes:
zoneID: The ID of the record zone. This method throws an exception if this parameter is nil.

Use this method to retrieve a record zone whose ID you already know. You might retrieve a record zone object so that you can assess its capabilities.
31.4. CLASS CKDATABASEMBS

This method fetches the record zone with a low priority, which may cause the task to execute after higher-priority tasks. To fetch the record zone more urgently, create a CKFetchRecordZonesOperationMBS object with the desired priority. You can also use that operation object to fetch multiple record zones simultaneously.

31.4.15 fetchSubscriptionWithID(subscriptionID as String, tag as Variant = nil)

Function: Fetches one subscription object asynchronously, with a low priority, from the current database.  
Notes:  
subscriptionID: The ID of the subscription object. This method throws an exception if this parameter is nil.

Use this method to retrieve a subscription object whose ID you already know. You might retrieve a subscription object so that you can assess its attributes or update the notification information used to generate alerts.

This method fetches the subscription object with a low priority, which may cause the task to execute after higher-priority tasks. To fetch the subscription more urgently, create a CKFetchSubscriptionsOperationMBS object with the desired priority. You can also use that operation object to fetch multiple subscription objects simultaneously.

31.4.16 performQuery(query as CKQueryMBS, zoneID as CKRecordZoneIDMBS, tag as Variant = nil)

Function: Searches the specified zone asynchronously for records that match the query parameters.  
Notes:  
query: The query object containing the parameters for the search. This method throws an exception if this parameter is nil. For information about how to construct queries, see CKQueryMBS.  
zoneID: The ID of the zone to search. Search results are limited to records in the specified zone. Specify nil to search the default zone of the database.

Use this method to execute searches against the current database. Do not use this method when the number of returned records is potentially more than a few hundred records; when more records are needed, create an execute a CKQueryOperationMBS instead of calling performQuery:inZoneWithID on the CKDatabaseMBS. For efficiency, all queries automatically limit the number of returned records based on current conditions. If your query hits the maximum value, this method returns only the first portion of the overall results. The number of returned records should be sufficient in most cases, but to get the entire set of records you must create and execute a CKQueryOperationMBS object instead. Query operations also return a maximum number of results, but when they do, they provide a cursor object that you can use to fetch the next batch of results.
You can search any content that is represented by a CKRecord object, including user records. You cannot use this method to search for CKSubscriptionMBS or CKRecordZoneMBS objects.

### 31.4.17 saveRecord(record as CKRecordMBS, tag as Variant = nil)


**Function:** Saves one record asynchronously, with a low priority, to the current database, if the record has never been saved or if it is newer than the version on the server.

**Notes:**
- record: The record to save. This method throws an exception if this parameter is nil.
- This method saves the record only if it has never been saved before or if it is newer than the version on the server. You cannot use this method to overwrite newer versions of a record on the server.
- This method saves the record with a low priority, which may cause the task to execute after higher-priority tasks. To save records more urgently, create a CKModifyRecordsOperationMBS object with the desired priority. You can also use that operation object to save multiple records simultaneously.

### 31.4.18 saveRecordSync(record as CKRecordMBS, byref error as NSErrorMBS)


**Function:** Saves one record synchronously, with a low priority, to the current database, if the record has never been saved or if it is newer than the version on the server.

**Notes:**
- record: The record to save. This method throws an exception if this parameter is nil.
- This method saves the record only if it has never been saved before or if it is newer than the version on the server. You cannot use this method to overwrite newer versions of a record on the server.
- This method saves the record with a low priority, which may cause the task to execute after higher-priority tasks. To save records more urgently, create a CKModifyRecordsOperationMBS object with the desired priority. You can also use that operation object to save multiple records simultaneously.

### 31.4.19 saveRecordZone(zone as CKRecordZoneMBS, tag as Variant = nil)


**Function:** Saves one record zone asynchronously, with a low priority, to the current database.
31.4. CLASS CKDATABASEMBS

Notes:

zone: The zone you want to save to the database. This method throws an exception if this parameter is nil.

Use this method to save a record zone to the database so that you can subsequently store records in it. Record zones must be saved before you attempt to save any records that reside in that zone. Because this method executes asynchronously, use the completion handler to verify that the zone was saved successfully before attempting to save any records.

This method saves the record zone with a low priority, which may cause the task to execute after higher-priority tasks. To save the record zone more urgently, create a CKModifyRecordZonesOperationMBS object with the priority you want. You can also use that operation object to save multiple record zones all at once.

31.4.20 saveSubscription(subscription as CKSubscriptionMBS, tag as Variant = nil)


Function: Saves one subscription object asynchronously, with a low priority, to the current database.

Notes:

subscription: The subscription object you want to save to the database. This method throws an exception if this parameter is nil.

Use this method to save a subscription to the database so that the subscription can begin watching for changes.

This method saves the subscription object with a low priority, which may cause the task to execute after higher-priority tasks. To save the subscription more urgently, create a CKModifySubscriptionsOperationMBS object with the desired priority. You can also use that operation object to save multiple subscription objects simultaneously.

31.4.21 Properties

31.4.22 databaseScope as Integer


Function: The type of database (public, private, or shared).

Notes: (Read only property)
31.4.23 Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference. **Notes:** (Read and Write property)

31.4.24 Events

31.4.25 `deleteRecordWithIDCompleted(recordID as CKRecordIDMBS, error as NSErrorMBS, tag as Variant)`

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The block to execute with the results for deleteRecordWithID method. **Notes:**

recordID: The ID of the record you attempted to delete.
error: An error object, or nil if the record zone was deleted successfully. Use the information in the error object to determine whether a problem has a workaround.

31.4.26 `deleteRecordZoneWithIDCompleted(zoneID as CKRecordZoneIDMBS, error as NSErrorMBS, tag as Variant)`

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The block to execute with the results for deleteRecordZone method. **Notes:**

zoneID: The ID of the zone that you tried to delete.
error: An error object, or nil if the record zone was deleted successfully. Use the information in the error object to determine whether a problem has a workaround.

31.4.27 `deleteSubscriptionWithIDCompleted(subscriptionID as String, error as NSErrorMBS, tag as Variant)`

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event to execute with the results for deleteSubscriptionWithID method. **Notes:**

subscriptionID: The ID of the subscription object you attempted to delete.
error: An error object, or nil if the subscription was deleted successfully. Use the information in the error object to determine whether a problem has a workaround.
31.4. CLASS CKDATABASEMBS

31.4.28 fetchAllRecordZonesCompleted(zones() as CKRecordZoneMBS, error as NSErrorMBS, tag as Variant)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event to execute with the results for fetchAllRecordZones method. **Notes:**

zones: An array of CKRecordZoneMBS objects. The returned array always contains at least one record zone corresponding to the default zone.
error: An error object, or nil if the record zones were fetched successfully. Use the information in the error object to determine whether a problem has a workaround.

31.4.29 fetchAllSubscriptionsCompleted(subscriptions() as CKSubscriptionMBS, error as NSErrorMBS, tag as Variant)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event to execute with the results for fetchAllSubscriptions. **Notes:**

subscriptions: An array of CKSubscription objects. If the subscription objects cannot be retrieved, the array is empty.
error: An error object, or nil if the subscriptions were fetched successfully. Use the information in the error object to determine whether a problem has a workaround.

31.4.30 fetchRecordWithIDCompleted(recordID as CKRecordIDMBS, record as CKRecordMBS, error as NSErrorMBS, tag as Variant)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event to execute with the results. **Notes:**

record: The requested record object. If no such record is found, this parameter is nil.
error: An error object, or nil if the record was fetched successfully. Use the information in the error object to determine whether a problem has a workaround.

31.4.31 fetchRecordZoneWithIDCompleted(zoneID as CKRecordZoneIDMBS, zone as CKRecordZoneMBS, error as NSErrorMBS, tag as Variant)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event to execute with the results for fetchRecordZoneWithID method. **Notes:**
zone: The requested CKRecordZone object or nil if the object is not found or cannot be retrieved.
error: An error object, or nil if the record zone was fetched successfully. Use the information in the error
object to determine whether a problem has a workaround.

31.4.32 fetchSubscriptionWithIDCompleted(subscriptionID as String, subscription as CKSubscriptionMBS, error as NSErrorMBS, tag as Variant)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The event to execute with the results for fetchSubscriptionWithID.
Notes:
subscription: The requested subscription object or nil if the object is not found or cannot be retrieved.
error: An error object, or nil if the subscription was fetched successfully. Use the information in the error
object to determine whether a problem has a workaround.

31.4.33 performQueryCompleted(query as CKQueryMBS, zoneID as CKRecordZoneIDMBS, results() as CKRecordMBS, error as NSErrorMBS, tag as Variant)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The event to execute with the search results.
Notes:
The event to execute with the search results for performQuery method.
results: An array containing zero or more CKRecord objects. The returned records correspond to the records in the specified zone that match the parameters of the query.
error: An error object, or nil if the query was completed successfully. Use the information in the error object to determine whether a problem has a workaround.

31.4.34 saveRecordCompleted(record as CKRecordMBS, error as NSErrorMBS, tag as Variant)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The event to execute with the results for saveRecord.
Notes:
record: The record object you attempted to save.
error: An error object, or nil if the record was saved successfully. Use the information in the error object to
determine whether a problem has a workaround.

31.4.35  saveRecordZoneCompleted(zone as CKRecordZoneMBS, error as NSErrorMBS, tag as Variant)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event to execute with the results for saveRecordZone method.  
**Notes:**  
zone: The CKRecordZone object you attempted to save.  
error: An error object, or nil if the record zone was saved successfully. Use the information in the error object to determine whether a problem has a workaround.

31.4.36  saveSubscriptionCompleted(subscription as CKSubscriptionMBS, error as NSErrorMBS, tag as Variant)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The block to execute with the results for saveSubscription method.  
**Notes:**  
subscription: The subscription object you attempted to save.  
error: An error object, or nil if the subscription was saved successfully. Use the information in the error object to determine whether a problem has a workaround.

31.4.37  Constants

31.4.38  ScopePrivate = 2

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the database scopes.  
**Notes:** The private database.

31.4.39  ScopePublic = 1

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the database scopes.  
**Notes:** The public database.
31.4.40 ScopeShared = 3

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the database scopes. **Notes:** The shared database.
31.5 class CKDatabaseNotificationMBS

31.5.1 class CKDatabaseNotificationMBS

Function: A notification object about a database.
Notes:
Subclass of the CKNotificationMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

31.5.2 Methods

31.5.3 Constructor


31.5.4 Properties

31.5.5 databaseScope as Integer

Notes: (Read only property)
31.6 class CKDatabaseOperationMBS

31.6.1 class CKDatabaseOperationMBS

**Function:** The CKDatabaseOperation class is an abstract parent class for operations that act on the public or private databases in a container. 
**Notes:**
Database operations typically involve fetching and saving records and other database objects, as well as queries on the contents of the database. You use the property of this class to tell the operation object which database to use when executing its task. Do not subclass this class or create instances of it. Instead, create instances of one of its concrete subclasses.

Available on macOS 10.12 or newer. 
Subclass of the CKOperationMBS class.

31.6.2 Methods

31.6.3 Constructor

**Function:** The private constructor.

31.6.4 Properties

31.6.5 database as CKDatabaseMBS

**Function:** The database that is the target of the operation. 
**Notes:**
For operations you plan to execute from your own custom queue, use this property to specify the target database. Setting the database also sets the corresponding container, inherited from the CKOperationMBS parent class. If the value of this property is nil, the operation targets the private database of the apps default container.

The default value of this property is nil. 
(Read and Write property)
31.7.  CLASS CKDATABASESUBSCRIPTIONMBS

31.7  class CKDatabaseSubscriptionMBS

31.7.1  class CKDatabaseSubscriptionMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A subscription for database changes.  
**Notes:** Subclass of the CKSubscriptionMBS class.

31.7.2  Methods

31.7.3  Available as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this class is available.  
**Notes:** Should be true for OS X 10.12 and newer in 64-bit application.

31.7.4  Constructor

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.  
See also:

- 31.7.5 Constructor(subscriptionID as string)

31.7.5  Constructor(subscriptionID as string)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.  
See also:

- 31.7.4 Constructor

31.7.6  copy as CKDatabaseSubscriptionMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy of this object.
31.7.7 Properties

31.7.8 recordType as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The record type.
**Notes:** (Read and Write property)
31.8. class CKDiscoverAllContactsOperationMBS

31.8.1 class CKDiscoverAllContactsOperationMBS


Function: A CKDiscoverAllContactsOperation object retrieves the IDs of all discoverable users that are also in the users address book.

Notes:

The search of the users address book does not return any personal data about the users contacts. The search returns only the IDs of the corresponding user records, which contain only data that your app puts there. CloudKit uses the address book information to identify users of the app that the current user knows. Because the system accesses the address book instead of your app, the system does not display a prompt to the user when that access occurs.

Users of an app must opt in to discoverability before their user records can be accessed. To opt in for a user, your app must call the requestApplicationPermission:completion: method of your container object and request the userDiscoverability permission. Calling that method prompts the user to grant or deny the permission.

If you assign a completion block to the completionBlock property of the operation object, the completion block is called after the operation executes and returns its results to you. You can use a completion block to perform housekeeping chores related to the operation, but do not use it to process the results of the operation itself. Any completion block you specify should be prepared to handle the failure of the operation to complete its task, whether due to an error or an explicit cancellation.

No Address Book access dialog will be displayed.
Available in OS X 10.10 and newer. Deprecated in 10.12 in favor of CKDiscoverAllUserIdentitiesOperationMBS classes.
Subclass of the CKOperationMBS class.

31.8.2 Methods

31.8.3 Constructor


Function: The constructor.
31.8.4 Events

31.8.5 `discoverAllContactsCompleted(userInfos() as CKDiscoveredUserInfoMBS, 
operationError as NSErrorMBS)`

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event to use to process the search results.
**Notes:**
The event has no return value and takes the following parameters:

- `userRecordIDs`: An array of CKDiscoveredUserInfoMBS objects. Each ID corresponds to a user of the app who opts in to discovery by other known users. Use this ID to retrieve the corresponding user record.
- `operationError`: An error object containing information about a problem, or nil if the user record IDs are retrieved successfully.

This event is executed only once, at the conclusion of the operation. If you intend to use this block to process results, set it before executing the operation or submitting the operation object to a queue.
31.9. **CLASS CKDISCOVERALLUSERIDENTITIESOPERATIONMBS** 5209

31.9  class CKDiscoverAllUserIdentitiesOperationMBS

31.9.1  class CKDiscoverAllUserIdentitiesOperationMBS

**Function:** An operation that finds all discoverable users in the devices contacts.
**Notes:**
The operation will not generate a dialog indicating that the contacts are being accessed.

Available in OS X 10.12 and newer.
Subclass of the CKOperationMBS class.

31.9.2  Methods

31.9.3  Constructor

**Function:** Initializes and returns an operation object configured to search the devices contacts.
**Notes:** You can use the returned CKDiscoverAllUserIdentitiesOperationMBS only once. When executed, this query object performs a new search and returns a batch of results.
See also:

- 31.9.4 Constructor(accessToken as CKUserIdentityLookupInfoMBS) 5209

31.9.4  Constructor(accessToken as CKUserIdentityLookupInfoMBS)

**Function:** The constructor.
See also:

- 31.9.3 Constructor 5209

31.9.5  Events

31.9.6  discoverAllUserIdentitiesCompleted(operationError as NSErrorMBS)

**Function:** The event to execute with the results.
**Notes:**
operationError: An error object that contains the information about a problem or nil if the results are
retrieved successfully.

This event is executed only once and represents your last chance to process the operation results. It is
executed after all of the individual progress blocks but before the operations completed event. The block is
executed serially with respect to the other progress blocks of the operation. If you intend to use this block to
process results, update the value of this property before executing the operation or submitting the operation
object to a queue.

31.9.7  userIdentityDiscovered(identity as CKUserIdentityMBS)

Notes:

identity: A CKUserIdentityMBS object that was discovered in the devices contacts.

This event is executed once for each identity that is discovered. Each time the block is executed, it is exe-
cuted serially with respect to the other progress blocks of the operation.

If you intend to use this block to process results, set it before executing the operation or submitting the
operation object to a queue.
31.10. **CLASS CKDISCOVEREDUSERINFOMBS**

### 31.10.1 class CKDiscoveredUserInfoMBS

**Function:** A CKDiscoveredUserInfo object contains information about a discoverable user in a database.

**Notes:**
You do not create instances of this class yourself. Instead, use a CKDiscoverAllContactsOperation object or other means to retrieve these objects.

Available in OS X 10.10 and newer.  
Deprecated in OS X 10.12 in favor of CKUserIdentityMBS class.

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

### 31.10.2 Methods

### 31.10.3 Available as Boolean

**Function:** Whether this class is available.

**Notes:** Should be true for OS X 10.10 and newer in 64-bit application.

### 31.10.4 Constructor

**Function:** The private constructor.

### 31.10.5 Properties

### 31.10.6 displayContact as Variant

**Function:** Contains the given and family name of the user who is not associated with the local Address Book.

**Notes:**
DisplayContact is not associated with the local Address Book. It is a wrapper around information known to the CloudKit server, including first and last names.

Value is a CNContactMBS object.
31.10.7 first_name as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The first name of the user. Notes: (Read only property)

31.10.8 Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The internal object reference. Notes: (Read and Write property)

31.10.9 last_name as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The last name of the user. Notes: (Read only property)

31.10.10 user_record_id as CKRecordIDMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The ID of the user record. Notes: Use this value to retrieve the user record associated with the specified user. The user record does not contain any personal information about the user by default. Your app can add data to the user record but should not add any sensitive user data to it. (Read only property)
31.11. CLASS CKDISCOVERUSERIDENTITIESOPERATIONMBS

31.11 class CKDiscoverUserIdentitiesOperationMBS

31.11.1 class CKDiscoverUserIdentitiesOperationMBS

Notes: Subclass of the CKOperationMBS class.

31.11.2 Methods

31.11.3 Constructor

Function: Initializes and returns an operation object configured to discover user identities.
Notes: You can use the returned CKDiscoverUserIdentitiesOperation only once. When executed, this query object processes the share metadata.
See also:

- 31.11.4 Constructor(userIdentityLookupInfos() as CKUserIdentityLookupInfoMBS)

31.11.4 Constructor(userIdentityLookupInfos() as CKUserIdentityLookupInfoMBS)

Function: Initializes and returns an operation object configured to discover all user identities associated with the specified lookup info.
Notes:

userIdentityLookupInfos: An array of CKUserIdentityLookupInfoMBS objects. This parameter is used to initialize the value in the userIdentityLookupInfos property. If you specify nil, you must assign an appropriate value to the userIdentityLookupInfos property before executing the operation.

Returns an initialized operation object.
See also:

- 31.11.3 Constructor

31.11.5 setUserIdentityLookupInfos(IDs() as CKUserIdentityLookupInfoMBS)

Function: Sets the lookup info (email address, phone number, or record ID) used to discover user identities.
Notes: Use this property to view or change the lookup info used to discover user identities. If you intend to specify or change the value of this property, do so before executing the operation or submitting the operation.
object to a queue.

31.11.6 userIdentityLookupInfos as CKUserIdentityLookupInfoMBS()

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The lookup info (email address, phone number, or record ID) used to discover user identities. **Notes:** Use this property to view or change the lookup info used to discover user identities. If you intend to specify or change the value of this property, do so before executing the operation or submitting the operation object to a queue.

31.11.7 Events

31.11.8 discoverUserIdentitiesCompleted(operationError as NSErrorMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The block to execute when the operation has completed. **Notes:** This block is called when the operation completes. The completionBlock of the underlying NSOperationMBS is also called if both are set. This block is executed serially with respect to the other progress blocks of the operation. If you intend to use this block to process results, update the value of this property before executing the operation or submitting the operation object to a queue.

31.11.9 userIdentityDiscovered(identity as CKUserIdentityMBS, lookupInfo as CKUserIdentityLookupInfoMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event to execute for each user identity that has been discovered. **Notes:**

Each time the event is executed, it is executed serially with respect to the other progress blocks of the operation.

If you intend to use this event to process results, set it before executing the operation or submitting the operation object to a queue.
31.12. CLASS CKDISCOVERUSERINFOSOPERATIONMBS

31.12 class CKDiscoverUserInfosOperationMBS

31.12.1 class CKDiscoverUserInfosOperationMBS


**Function:** A CKDiscoverUserInfosOperation object retrieves the IDs for discoverable users whose email addresses or user record IDs you already know.

**Notes:**
This operation returns information about the corresponding users.

Users of an app must opt in to discoverability before their user records can be accessed. To opt in for a user, your app must call the requestApplicationPermission:completion: method of your container object and request the userDiscoverability permission. Calling that method prompts the user to grant or deny the permission.

If you assign a completed event of the operation object, the completed event is called after the operation executes and returns its results to you. You can use a completed event to perform housekeeping chores related to the operation, but do not use it to process the results of the operation itself. Any completed event you specify should be prepared to handle the failure of the operation to complete its task, whether due to an error or an explicit cancellation.

Subclass of the CKOperationMBS class.

31.12.2 Methods

31.12.3 Constructor(emailAddresses() as String, userRecordIDs() as CKRecordIDMBS)


**Function:** Initializes the operation object with the specified email addresses.

**Notes:**
emailAddresses: An array of strings, each of which contains a single email address to look for. The value you specify is used to initialize the value of the emailAddresses property. If you specify nil for this parameter, assign at least one email address to the emailAddresses property before executing the operation object.

userRecordIDs: An array of CKRecordIDMBS objects, each of which contains the ID of a user record to look for. The value you specify is used to initialize the value of the userRecordIDs property. If you specify nil for this parameter, assign at least one email address to the userRecordIDs property before executing the operation object.

The email addresses you specify need not belong to users in the current users address book. The users associated with those email addresses must be discoverable for their user record ID to be returned.
31.12.4 emailAddresses as String()

Function: The email addresses of the users whose information you want to retrieve.

Notes: This property contains an array of strings, each of which corresponds to a single email address. Use this property to add or remove email addresses to the operation. If you intend to change the property value, do so before executing the operation or submitting the operation object to a queue.

The default value of this property is set to the email addresses you specify in the Constructor.

31.12.5 setEmailAddresses(emails() as String)

Function: Sets the email addresses of the users whose information you want to retrieve.

Notes: This property contains an array of strings, each of which corresponds to a single email address. Use this property to add or remove email addresses to the operation. If you intend to change the property value, do so before executing the operation or submitting the operation object to a queue.

The default value of this property is set to the email addresses you specify in the Constructor.

31.12.6 setUserRecordIDs(IDs() as CKRecordIDMBS)

Function: Sets the IDs of the users whose information you want to retrieve.

Notes: This property contains an array of CKRecordIDMBS objects, each of which corresponds to the ID of a user record. Use this property to add or remove record IDs to the operation. If you intend to change the value of this property, you must do so before executing the operation or submitting the operation object to a queue.

The default value of this property is set to the record IDs you specify in the Constructor.

31.12.7 userRecordIDs as CKRecordIDMBS()

Function: The IDs of the users whose information you want to retrieve.

Notes:
This property contains an array of CKRecordIDMBS objects, each of which corresponds to the ID of a user record. Use this property to add or remove record IDs to the operation. If you intend to change the value of this property, you must do so before executing the operation or submitting the operation object to a queue.

The default value of this property is set to the record IDs you specify in the Constructor.

### 31.12.8 Events

#### 31.12.9 discoverUserInfosCompleted(emailsToUserInfos as Dictionary, userRecordIDsToUserInfos as Dictionary, operationError as NSErrorMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event to use to process the search results.

**Notes:**

The event has no return value and takes the following parameters:

- **emailsToUserInfos:** A dictionary whose keys are events with the email addresses you provided in the emailAddresses property. The value of each key is a CKDiscoveredUserInfo object that identifies the user associated with the email address. Use that object to get the users name and fetch the corresponding user record.
- **userRecordIDsToUserInfos:** A dictionary whose keys are the CKRecordIDMBS objects you provided. The value of each key is a CKDiscoveredUserInfo object that identifies the user associated with the user record. You can use that object to get the users name.
- **operationError:** An error object containing information about a problem, or nil if the results are retrieved successfully.

This event is executed only once, at the conclusion of the operation. If you intend to use this block to process results, set it before executing the operation or submitting the operation object to a queue.
31.13 class CKFetchDatabaseChangesOperationMBS

31.13.1 class CKFetchDatabaseChangesOperationMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An operation that fetches changes to the database. **Notes:** Subclass of the CKDatabaseOperationMBS class.

31.13.2 Methods

31.13.3 Constructor

**Constructor**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns an operation object configured with the previous change token. **Notes:**

previousServerChangeToken: The previous change token.

Returns an initialized operation object.

After initializing the operation, assign a block to the fetchDatabaseChangesCompletionBlock property to process the results.

If a change anchor from a previous CKFetchDatabaseChangesOperation is passed in, only the zones that have changed since that anchor will be returned.

This per-database CKServerChangeToken is not to be confused with the per-recordZone CKServerChangeToken from CKFetchRecordZoneChangesOperationMBS.

If this is your first fetch or if you wish to re-fetch all zones, pass nil for the change token. Change tokens are opaque and clients should not infer any behavior based on their content.

31.13.4 Properties

31.13.5 fetchAllChanges as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Configuration setting to control whether this operation makes repeated calls to the server. **Notes:**
When this property is set to true, the operation sends repeated requests to the server until all record zone changes have been fetched. When this property is set to false, it is the responsibility of the caller to issue subsequent fetch-change operations when moreComing is true in a fetchDatabaseChangesCompleted invocation.

fetchAllChanges is true by default.
(Read and Write property)

### 31.13.6 previousServerChangeToken as CKServerChangeTokenMBS

**Function:** The change token from a previous fetch operation.
**Notes:**
Assign the token you received previously from the fetchDatabaseChangesCompleted event to this property. Doing so yields only the changes that have occurred since your last fetch operation. If you specify nil for this parameter, the operation starts fetching changes at the beginning.
(Read and Write property)

### 31.13.7 resultsLimit as Integer

**Function:** The maximum number of results to fetch with this operation.
**Notes:**
Use this property to limit the number of changes processed in one operation. When the results limit is reached, the operation object updates the original token you provided and returns it to you to let you know that more results are available.
(Read and Write property)

### 31.13.8 Events

### 31.13.9 changeTokenUpdated(serverChangeToken as CKServerChangeTokenMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event to execute when the change token has changed.
**Notes:** This event will be executed periodically, giving you an updated change token so that already-fetched record zone changes do not need to be re-fetched on a subsequent operation.
31.13.10 fetchDatabaseChangesCompleted(serverChangeToken as CKServerChangeTokenMBS, moreComing as Boolean, operationError as NSErrorMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event to execute when the operation completes.

**Notes:**

serverChangeToken: The current server change token to be stored and used in subsequent CKFetchDatabaseChangesOperation instances.
moreComing: Indicates if this is the last record zone change. If fetchAllChanges is false, it is the responsibility of the client to create additional CKFetchDatabaseChangesOperation instances for the additional changes.
operationError: An error object containing information about a problem, or nil if the results are retrieved successfully.

The client is responsible for saving the change token at the end of the operation and passing it into the next call to CKFetchDatabaseChangesOperationMBS. If the server returns a CKErrorChangeTokenExpired error, the previousServerChangeToken value was too old and the client should toss its local cache and re-fetch the changes in this record zone starting with a nil previousServerChangeToken.

31.13.11 recordZoneWithIDChanged(zoneID as CKRecordZoneIDMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The block that processes a single record zone change.

**Notes:**

The event returns no value and takes the following parameter:

zoneID: The CKRecordZoneID corresponding to the record zone that changed.

31.13.12 recordZoneWithIDWasDeleted(zoneID as CKRecordZoneIDMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event that processes a single record zone deletion.

**Notes:**

The event returns no value and takes the following parameter:

zoneID: The CKRecordZoneID corresponding to the record zone that was deleted.
31.14  class CKFetchNotificationChangesOperationMBS

31.14.1  class CKFetchNotificationChangesOperationMBS


**Function:** A CKFetchNotificationChangesOperationMBS object retrieves unread CKNotification objects from a container.

**Notes:**

Notification objects contain the data associated with push notifications that have already been sent to an app. Fetch notification objects to identify changes that your app might have missed or to retrieve the complete push notification payload, which might have been truncated when it was delivered to the device.

After fetching the current notifications, you can mark some or all of them as read using a CKMarkNotificationsReadOperation object. Marking a notification as read prevents it from being returned by subsequent fetch operations.

The events to process the fetched notifications are executed serially on an internal queue that is managed by the operation object. Your events must be capable of executing on a background thread, so any tasks that require access to the main thread must be redirected accordingly.

The completion event is called after the operation executes and returns its results to you. You can use a completed event to perform housekeeping chores related to the operation, but do not use it to process the results of the operation itself. Any completion event you specify should be prepared to handle the failure of the operation to complete its task, whether due to an error or an explicit cancellation.

Subclass of the CKOperationMBS class.

31.14.2  Methods

31.14.3  Constructor(previousServerChangeToken as CKServerChangeTokenMBS)


**Function:** Initializes and returns an operation object set to fetch notification changes.

**Notes:**

previousServerChangeToken: The change token from a previous fetch operation, or nil to fetch all changes. When you specify a change token, the operation object fetches only the changes that occurred since the change token was generated.

Returns an initialized operation object.

The first time you fetch notifications, specify nil for the previousServerChangeToken to get information about all push notifications that have been sent. When that operation finishes executing, it passes a change
token to your completion block. Save that change token and use it to initialize new operation objects that fetch only the newly generated notification objects.

If you mark one or more notifications as read using a CKMarkNotificationsReadOperationMBS object, those notifications are not returned, even if you specify nil for previousServerChangeToken.

### 31.14.4 Properties

#### 31.14.5 moreComing as Boolean

**MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** A Boolean value indicating that more notifications are waiting to be delivered.

**Notes:**

Access this property only from your fetchNotificationChangesCompletionBlock block. When the value is true, your completed event should create another CKFetchNotificationChangesOperation object and use it to fetch the next batch of results. Use the change token passed to your completion block to configure the new operation object. Specifying the change token prevents the new operation object from returning older notifications.

(Read only property)

#### 31.14.6 previousServerChangeToken as CKServerChangeTokenMBS

**MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** The change token from a previous fetch operation.

**Notes:**

Assign the token you received previously from the fetchNotificationChangesCompleted event to this property. Doing so yields only the notifications that have arrived since your last fetch operation. If you specify nil for this parameter, the operation starts fetching notifications at the beginning of the list and returns all but those that have already been marked as read.

(Read and Write property)

#### 31.14.7 resultsLimit as Integer

**MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** The maximum number of results to fetch with this operation.

**Notes:**

Use this property to limit the number of push notifications processed in one operation. When the results limit is reached, the operation object updates the original token you provided and returns it to you to let you know that more results are available.
31.14.8 Events

31.14.9 fetchNotificationChangesCompleted(serverChangeToken as CKServerChangeTokenMBS, operationError as NSErrorMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The event that is executed after all requested notifications are fetched.

Notes:

The event returns no value and takes the following parameters:

- serverChangeToken: An opaque object that you can use during subsequent fetch operations to retrieve the next batch of notifications.
- operationError: An error object containing information about a problem, or nil if the results are retrieved successfully.

The operation object executes this event only once, which represents your last chance to process the operation results. This event is executed after all individual progress events but before the operations completion event. The event is executed serially with respect to the other progress events of the operation.

If you intend to use this event to process results, set it before executing the operation or submitting the operation object to a queue.

In your event, check the value of the moreComing property to determine if there are more results waiting on the server. If the value of that property is true, use the value in the serverChangeToken parameter to configure a new CKFetchNotificationChangesOperationMBS object to fetch the next batch of results.

31.14.10 notificationChanged(notification as CKNotificationMBS)


Notes:

The event returns no value and takes the following parameter:

- notification: The CKNotification object corresponding to a push notification. The actual object passed to this method is a concrete subclass of CKNotification that contains specific details about the source of the change.
The operation object executes this event once for each push notification that is found. Each time the event is executed, it is executed serially with respect to the other progress events of the operation.

If you intend to use this event to process results, set it before executing the operation or submitting the operation object to a queue.
31.15. **CLASS CKFETCHRECORDCHANGESOPERATIONMBS**

31.15  *class* CKFetchRecordChangesOperationMBS

31.15.1  *class* CKFetchRecordChangesOperationMBS


**Function:** A CKFetchRecordChangesOperation object reports on the changed and deleted records in the specified record zone.

**Notes:**

Use this type of operation object to optimize fetch operations for locally managed sets of records. Specifically, use it when you maintain a local cache of your record data and need to synchronize that cache periodically with the server.

To get the most benefit out of a CKFetchRecordChangesOperation object, you must maintain a local cache of the records from the specified zone. Each time you fetch changes from that zone, the server provides a token that identifies your request. With each subsequent fetch request, you initialize the operation object with the token from the previous request, and the server returns only the records that changed since that request.

The blocks you assign to process the fetched records are executed serially on an internal queue managed by the operation. Your blocks must be capable of executing on a background thread, so any tasks that require access to the main thread must be redirected accordingly.

The completed event is called after the operation executes and returns its results to you. You can use a completion block to perform housekeeping chores related to the operation, but do not use it to process the results of the operation itself. Any completion block you specify should be prepared to handle the failure of the operation to complete its task, whether due to an error or an explicit cancellation.

Available in 10.10 and newer and deprecated with 10.12.
Subclass of the CKDatabaseOperationMBS class.

31.15.2  **Methods**

31.15.3  **Constructor(recordZoneID as CKRecordZoneIDMBS, previousServerChangeToken as CKServerChangeTokenMBS)**


**Function:** Initializes and returns an operation object configured to fetch changes in the specified record zone.

**Notes:**

recordZoneID: The zone containing the records you want to fetch. The zone can be a custom zone. Syncing the default zone is not supported.
previousServerChangeToken: The change token from a previous fetch operation. This is the token passed to your fetchRecordChangesCompleted event during a previous fetch operation. Use this token to limit the returned data to only those changes that have occurred since you last made the same fetch request. If you specify nil for this parameter, the operation object fetches all records and their contents.

Returns an initialized operation object.

When initializing the operation object, use the token from a previous fetch request if you have one. You can archive tokens and write them to disk for later use if needed.

The returned operation object is configured to retrieve all changed fields of the record, including any assets stored in those fields. If you want to minimize the amount of data returned even further, configure the desiredKeys property with the subset of keys whose values you want to fetch.

After initializing the operation, associate at least one progress block with the operation object (excluding the completion block) to process the results.

### 31.15.4 desiredKeys as String()

**Function:** The fields to fetch for the requested records.  
**Notes:**  
Use this property to limit the amount of data retrieved for each record during the fetch operation. This property contains an array of strings, each of which contains the name of a field from the target records. When you retrieve a given record, only fields whose names match one of the keys in this property are included in the returned record. The default value is nil, which causes all keys of the record to be fetched.

Because the records you fetch can be of different types, the array should contain the merged set of all field names for the requested records and include at least one field name from each record type.

If you intend to specify the desired set of keys, set the value of this property before executing the operation or submitting it to a queue.

### 31.15.5 setDesiredKeys(desiredKeys() as String)

**Function:** Sets the fields to fetch for the requested records.  
**Notes:**  
Use this property to limit the amount of data retrieved for each record during the fetch operation. This
property contains an array of strings, each of which contains the name of a field from the target records. When you retrieve a given record, only fields whose names match one of the keys in this property are included in the returned record. The default value is nil, which causes all keys of the record to be fetched.

Because the records you fetch can be of different types, the array should contain the merged set of all field names for the requested records and include at least one field name from each record type.

If you intend to specify the desired set of keys, set the value of this property before executing the operation or submitting it to a queue.

### 31.15.6 Properties

#### 31.15.7 moreComing as Boolean

**Function:** A Boolean value indicating that more results are available.  
**Notes:**  
If the server is unable to deliver all of the changed results with this operation object, it sets this property to true before executing the fetchRecordChangesCompleted event. To fetch the remaining changes, create a new CKFetchRecordChangesOperationMBS object using the change token returned by the server.  
(Read only property)

#### 31.15.8 previousServerChangeToken as CKServerChangeTokenMBS

**Function:** The token that identifies the starting point for retrieving changes.  
**Notes:**  
Each fetch request returns a unique token in addition to any changes. The token is passed as a parameter to your fetchRecordChangesCompleted event. During a subsequent fetch request, providing the previous token causes the server to return only the changes that have occurred since the last fetch request. Tokens are opaque data objects that you can write to disk safely and reuse later.

Typically, you set the value of this property when you initialize the operation object. If you intend to change the record zone, update the value of the property before executing the operation or submitting it to a queue.  
(Read and Write property)
31.15.9 recordZoneID as CKRecordZoneIDMBS

**Function:** The ID of the record zone whose records you want to fetch.  
**Notes:**  
Typically, you set the value of this property when you initialize the operation object. If you intend to change  
the record zone, update the value before executing the operation or submitting it to a queue.  
(Read and Write property)

31.15.10 resultsLimit as Integer

**Function:** The maximum number of changed records to report with this operation object.  
**Notes:**  
Use this property to limit the number of results in situations where you expect the number of changed  
records might be large. The default value is 0, which causes the server to choose an appropriate number of  
results to return based on dynamic conditions.  
When the number of returned results exceeds the results limit, the operation object sets the moreComing  
property to true before executing the fetchRecordChangesCompleted event. In your event, check the value  
of that property, and if it is true, create a new CKFetchRecordChangesOperationMBS object to fetch more  
results.  
(Read and Write property)

31.15.11 Events

31.15.12 fetchRecordChangesCompleted(serverChangeToken as CKServerChange-
TokenMBS, clientChangeTokenData as MemoryBlock, operationError  
as NSErrorMBS)

**Function:** The event to execute when all changes have been reported.  
**Notes:**  
The block returns no value and takes the following parameters:  
serverChangeToken: The new change token from the server. You can store this token locally and use it  
during subsequent fetch operations to limit the results to records that changed since this operation executed.
clientChangeToken: The last client change token received from this device. If this change token is not the last change token you provided, the server may not have received the associated changes.

operationError: An error object containing information about a problem, or nil if the changes are retrieved successfully.

Your implementation of this block should check the moreComing property of the operation object to ensure that the server was able to deliver all results. If that property is set to true, you must create another operation object (using the value in the serverChangeToken parameter) to fetch any remaining changes.

The operation object executes this block only once, at the conclusion of the operation. It is executed after all individual change blocks but before the operations completed event. The block is executed serially with respect to the other progress blocks of the operation.

If you intend to use this event to process results, set it before executing the operation or submitting the operation object to a queue.

31.15.13 recordChanged(record as CKRecordMBS)


Notes:

The event returns no value and takes the following parameters:

record: The record that changed. If you specified a value for the desiredKeys property, the record only contains the fields specified in the desiredKeys property.

The operation object executes this event once for each record in the zone that changed since the previous fetch request. Each time the block is executed, it is executed serially with respect to the other progress blocks of the operation. If no records changed, the block is not executed.

If you intend to use this event to process results, set it before executing the operation or submitting it to a queue.

31.15.14 recordWithIDWasDeleted(recordID as CKRecordIDMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The block to execute with the ID of a record that was deleted.

Notes:

The block returns no value and takes the following parameters:
recordID: The ID of the record that was deleted.

The operation object executes this block once for each record in the zone that was deleted since the previous fetch request. Each time the event is executed, it is executed serially with respect to the other progress blocks of the operation. If no records were deleted, this event is not executed.

If you intend to use this event to process results, set it before executing the operation or submitting it to a queue.
31.16. CLASS CKFETCHRECORDSOPERATIONMBS

31.16 class CKFetchRecordsOperationMBS

31.16.1 class CKFetchRecordsOperationMBS


**Function:** A CKFetchRecordsOperation object retrieves CKRecord objects (whose IDs you already know) from iCloud.

**Notes:**
Use this operation to retrieve the entire contents of each record or only a subset of its contained values. As records become available, the operation object reports progress about the state of the operation to several different blocks, which you can use to process the results.

Fetching records is a common use of CloudKit, even if your app does not cache record IDs locally. For example, when you fetch a record related to the current record through a CKReference object, you use the ID in the reference to perform the fetch.

The blocks you assign to process the fetched records are executed serially on an internal queue managed by the fetch records operation. Your blocks must be capable of executing on a background thread, so any tasks that require access to the main thread must be redirected accordingly.

In addition to data records, a fetch records operation can fetch the current user record. The fetchCurrentUserRecordOperation() method returns a specially configured operation object that retrieves the current user record. That record is a standard CKRecord object whose contents are empty initially. You can add data to the user record and save it as needed. Because a discoverable user record can be accessed by other users of the app, never store sensitive personal information such as passwords in the user record. If you must store sensitive information about a user, do so in a separate record that is accessible only to that user.

The completed event is called after the operation executes and returns its results to you. You can use a completion block to perform housekeeping chores related to the operation, but do not use it to process the results of the operation itself. Any completion block you specify should be prepared to handle the failure of the operation to complete its task, whether due to an error or an explicit cancellation.

Subclass of the CKDatabaseOperationMBS class.

31.16.2 Methods

31.16.3 Constructor


**Function:** The constructor.

See also:

- 31.16.4 Constructor(recordIDs() as CKRecordIDMBS)
31.16.4 Constructor(recordIDs() as CKRecordIDMBS)


Function: Initializes and returns an operation object configured to fetch the records with the specified IDs.

Notes:

recordIDs: An array of CKRecordIDMBS objects representing the records you want to retrieve. This parameter is used to initialize the value in the recordIDs property. If specify nil, you must assign an appropriate value to the recordIDs property before executing the operation.

If any of the objects in the array are not CKRecordIDMBS objects, this method raises an exception.

Returns an initialized operation object.

The returned operation object is configured to retrieve all fields of the record, including any assets stored in those fields. If you want to minimize the amount of data returned initially, configure the desiredKeys property with the subset of keys whose values you want to retrieve.

See also:

• 31.16.3 Constructor

31.16.5 desiredKeys as String()


Function: The fields to fetch for the requested records.

Notes:

Use this property to limit the amount of data retrieved for each record during the fetch operation. This property contains an array of strings, each of which contains the name of a field from the target records. When you retrieve a given record, only fields whose names match one of the keys in this property are included in the returned record. The default value of this property is nil, which causes all keys of the record to be fetched.

Because the records you fetch can be of different types, the array should contain the merged set of all field names for the requested records and should include at least one field name from each record type.

If you intend to specify a value other than nil, do so before executing the operation or submitting the operation object to a queue.

31.16.6 fetchCurrentUserRecordOperation as CKFetchRecordsOperationMBS


Function: Returns an operation object that can be used to fetch the current user record.
Notes: The returned operation object searches for the single record corresponding to the current user record. You must associate at least one progress block with the operation object (excluding the completed event) to process the results.

31.16.7 recordIDs as CKRecordIDMBS()

Function: The array of IDs corresponding to the records to fetch.

Notes: Use this property to view or change the IDs of the records you want to retrieve. Each item in the array must be a CKRecordIDMBS object. If you used the fetchCurrentUserRecordOperation method to create the operation object, the contents of this property are ignored and the value is set to nil.

If you intend to specify a value other than nil, do so before executing the operation or submitting the operation object to a queue. The records you fetch do not need to be in the same record zone. The record ID for each record provides the zone information needed by the server to fetch the corresponding record.

31.16.8 setDesiredKeys(desiredKeys() as String)

Function: Set the fields to fetch for the requested records.

Notes: Use this property to limit the amount of data retrieved for each record during the fetch operation. This property contains an array of strings, each of which contains the name of a field from the target records. When you retrieve a given record, only fields whose names match one of the keys in this property are included in the returned record. The default value of this property is nil, which causes all keys of the record to be fetched.

Because the records you fetch can be of different types, the array should contain the merged set of all field names for the requested records and should include at least one field name from each record type.

If you intend to specify a value other than nil, do so before executing the operation or submitting the operation object to a queue.

31.16.9 setRecordIDs(IDs() as CKRecordIDMBS)

Function: Sets the array of IDs corresponding to the records to fetch.

Notes:
Use this property to view or change the IDs of the records you want to retrieve. Each item in the array must be a CKRecordIDMBS object. If you used the fetchCurrentUserRecordOperation method to create the operation object, the contents of this property are ignored and the value is set to nil.

If you intend to specify a value other than nil, do so before executing the operation or submitting the operation object to a queue. The records you fetch do not need to be in the same record zone. The record ID for each record provides the zone information needed by the server to fetch the corresponding record.

31.16.10 Events

31.16.11 fetchRecordsCompleted(recordsByRecordID as Dictionary, operationError as NSErrorMBS)


Function: The event to execute after all records are fetched or have received appropriate errors.

Notes:
The event returns no value and takes the following parameters:

recordsByRecordID: A dictionary containing the records that are retrieved successfully. Each key in the dictionary is a CKRecordID object corresponding to a record you requested. The value of each key is the corresponding CKRecord object that was retrieved from the database.

operationError: An error object containing information about a problem, or nil if the results are retrieved successfully.

The operation object executes this event only once and is your last chance to process the operation results. The event is executed after all of the individual progress events but before the operations completed event. The event is executed serially with respect to the other progress events of the operation.

This event reports an error of type CKErrorPartialFailure when it retrieves only some of the records successfully. The userInfo dictionary of the error contains a CKPartialErrorsByItemIDKey key whose value is an NSDictionary object. The keys of that dictionary are the IDs of the records that were not retrieved, and the corresponding values are error objects containing information about what happened.

If you intend to use this event to process results, set it before executing the operation or submitting the operation object to a queue.
31.16.12 RecordCompleted(record as CKRecordMBS, recordID as CKRecordIDMBS, error as NSErrorMBS)


**Function:** The event to execute when the results of a single record are available.

**Notes:**
The event returns no value and takes the following parameters:
- **record:** The retrieved record, or nil if the specified record cannot be retrieved.
- **recordID:** The ID of the record. This value corresponds to one of the IDs you specified in the recordIDs property.
- **error:** An error object containing information about a problem, or nil if the results are retrieved successfully.

The operation object executes this block once for each record ID in the recordIDs property. Each time the block is executed, it is executed serially with respect to the other progress blocks of the operation.

If you intend to use this event to process results, set it before executing the operation or submitting the operation object to a queue.

31.16.13 RecordProgress(recordID as CKRecordIDMBS, progress as Double)


**Function:** The event to execute with progress information for individual records.

**Notes:**
The event returns no value and takes the following parameters:
- **recordID:** The ID of the record that is being retrieved.
- **progress:** The amount of the record that has been downloaded, represented as a percentage of the total. The range of this value is 0.0 to 1.0, where 0.0 means nothing has been downloaded, and 1.0 means the download is complete.

The operation object executes this block zero or more times for each record ID in the recordIDs property. Each time the block is executed, it is executed serially with respect to the other progress events of the operation. You can use this event to track the ongoing progress of the download operation and possibly to provide feedback to the user.

If you intend to use this block to process results, set it before executing the operation or submitting the operation object to a queue.
31.17 class CKFetchRecordZoneChangesOperationMBS

31.17.1 class CKFetchRecordZoneChangesOperationMBS


31.17.2 Methods

31.17.3 Constructor(recordZoneIDs() as CKRecordZoneIDMBS, optionsByRecordZoneID as Dictionary = nil)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Initializes and returns an operation object configured to fetch record zone changes. Notes: The returned operation object is configured to retrieve all record zones passed in. If you want to minimize the amount of data returned even further, configure the CKFetchRecordZoneChangesOptionsMBS property for each record zone.

After initializing the operation, associate at least one progress block with the operation object (excluding the completion block) to process the results.

optionsByRecordZoneID: The options per zone. recordZoneIDs: The record zones that should be fetched.

31.17.4 recordZoneIDs as CKRecordZoneIDMBS()

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The IDs of the record zones whose records you want to fetch. Notes: Typically, you set the value of this property when you initialize the operation object. If you intend to change the record zones, update the value before executing the operation or submitting it to a queue.

31.17.5 setRecordZoneIDs(IDs() as CKRecordZoneIDMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Sets the IDs of the record zones whose records you want to fetch. Notes: Typically, you set the value of this property when you initialize the operation object. If you in-
tend to change the record zones, update the value before executing the operation or submitting it to a queue.

### 31.17.6 Properties

#### 31.17.7 fetchAllChanges as Boolean


**Function:** A Boolean value indicating whether repeated requests should be sent to the server.

**Notes:**

If true, this operation sends repeated requests to the server until CKFetchRecordZoneChangesOperationMBS is false. The server calls recordZoneFetchCompletionBlock with an incremental change token after every request. The default value is true.

(Read and Write property)

#### 31.17.8 optionsByRecordZoneID as Dictionary


**Function:** Options for each zone that is retrieved from the server.

**Notes:**

Each CKRecordZoneIDMBS can have its own CKFetchRecordZoneChangesOptionsMBS object that allows you to configure what is fetched for that zone. See CKFetchRecordZoneChangesOptionsMBS for details on what options can be set.

(Read and Write property)

### 31.17.9 Events

#### 31.17.10 fetchRecordZoneChangesCompleted(operationError as NSErrorMBS)


**Function:** The event to use to process the record zone changes.

**Notes:**

The event has no return value and takes the following parameter:

- **operationError:** An error object containing information about a problem, or nil if the record zone changes were retrieved successfully.
31.17.11 recordChanged(record as CKRecordMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The block to execute with the contents of a changed record. **Notes:**

The block returns no value and takes the following parameter:

record: The record that changed. If you specified a value for the desiredKeys property, the record only contains the fields specified in the desiredKeys property.

The operation object executes this block once for each record in the zone that changed since the previous fetch request. Each time the block is executed, it is executed serially with respect to the other progress blocks of the operation. If no records changed, the block is not executed.

If you intend to use this block to process results, set it before executing the operation or submitting it to a queue.

31.17.12 recordWithIDWasDeleted(recordID as CKRecordIDMBS, recordType as string)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event to execute with the ID of a record that was deleted. **Notes:**

The event returns no value and takes the following parameter:

recordID: The ID of the record that was deleted.

The operation object executes this block once for each record that was deleted since the previous fetch request. Each time the block is executed, it is executed serially with respect to the other progress blocks of the operation. If no records were deleted, this block is not executed.

If you intend to use this block to process results, set it before executing the operation or submitting it to a queue.
31.17.13 recordZoneChangeTokensUpdated(recordZoneID as CKRecordZoneIDMBS, serverChangeToken as CKServerChangeTokenMBS, clientChangeTokenData as MemoryBlock)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event to execute when the change token has been updated.

**Notes:**

The event returns no value and takes the following parameters:

- `recordZoneID`: The ID of the zone with the updated token.
- `serverChangeToken`: The new change token from the server. You can store this token locally and use it during subsequent fetch operations to limit the results to records that changed since this operation executed.
- `clientChangeTokenData`: The last client change token received from this device. If this change token is not the last change token you provided, the server may not have received the associated changes.

The operation object executes this block once for each record zone. Each time the block is executed, it is executed serially with respect to the other progress blocks of the operation.

If you intend to use this block to process results, set it before executing the operation or submitting it to a queue.

31.17.14 recordZoneFetchCompleted(recordZoneID as CKRecordZoneIDMBS, serverChangeToken as CKServerChangeTokenMBS, clientChangeTokenData as MemoryBlock, moreComing as boolean, recordZoneError as NSErrorMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event to execute when the fetch for a zone has completed.

**Notes:**

The block returns no value and takes the following parameters:

- `recordZoneID`: The ID of the zone with the updated token.
- `serverChangeToken`: The current server change token to be stored and used in subsequent CKFetchRecordZoneChangesOperation instances.
- `clientChangeTokenData`: The last client change token received from this device. If this change token is not the last change token you provided, the server may not have received the associated changes.
- `moreComing`: Indicates if this is the last record zone change. If fetchAllChanges is false, it is the responsibility of the client to create additional CKFetchRecordZoneChangesOperationMBS instances for the additional changes.
- `recordZoneError`: An error object containing information about a problem, or nil if the results are retrieved successfully.
The client is responsible for saving the change token at the end of the operation and passing it into the next call to CKFetchRecordZoneChangesOperationMBS. Each time the block is executed, it is executed serially with respect to the other progress blocks of the operation.

If you intend to use this event to process results, set it before executing the operation or submitting it to a queue.
31.18. CLASS CKFETCHRECORDZONECHANGESOPTIONSMBS

31.18. class CKFetchRecordZoneChangesOptionsMBS

31.18.1. class CKFetchRecordZoneChangesOptionsMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Options when fetching record zone changes.

31.18.2. Methods

31.18.3. Constructor

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

31.18.4. desiredKeys as String()

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The fields to fetch for the requested records.

**Notes:**

Use this property to limit the amount of data retrieved for each record during the fetch operation. This property contains an array of strings, each of which contains the name of a field from the target records. When you retrieve a given record, only fields whose names match one of the keys in this property are included in the returned record. The default value is nil, which causes all keys of the record to be fetched.

Because the records you fetch can be of different types, the array should contain the merged set of all field names for the requested records and include at least one field name from each record type.

If you intend to specify the desired set of keys, set the value of this property before executing the operation or submitting it to a queue.

31.18.5. setDesiredKeys(desiredKeys() as String)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the fields to fetch for the requested records.

**Notes:**

Use this property to limit the amount of data retrieved for each record during the fetch operation. This property contains an array of strings, each of which contains the name of a field from the target records. When you retrieve a given record, only fields whose names match one of the keys in this property are included.
in the returned record. The default value is nil, which causes all keys of the record to be fetched.

Because the records you fetch can be of different types, the array should contain the merged set of all field names for the requested records and include at least one field name from each record type.

If you intend to specify the desired set of keys, set the value of this property before executing the operation or submitting it to a queue.

### 31.18.6 Properties

### 31.18.7 Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference.

**Notes:** (Read and Write property)

### 31.18.8 previousServerChangeToken as CKServerChangeTokenMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The token that identifies the starting point for retrieving changes.

**Notes:**

Each fetch request returns a unique token in addition to any changes. The token is passed as a parameter to your fetchRecordChangesCompleted event. During a subsequent fetch request, providing the previous token causes the server to return only the changes that have occurred since the last fetch request. Tokens are opaque data objects that you can write to disk safely and reuse later.

Typically, you set the value of this property when you initialize the operation object. If you intend to change the record zone, update the value of the property before executing the operation or submitting it to a queue. (Read and Write property)

### 31.18.9 resultsLimit as Integer

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The maximum number of changed records to report with this operation object.

**Notes:**

Use this property to limit the number of results in situations where you expect the number of changed records might be large. The default value is 0, which causes the server to choose an appropriate number of results to return based on dynamic conditions.
When the number of returned results exceeds the results limit, the operation object sets the moreComing property to true before executing the fetchRecordChangesCompleted event. In your block, check the value of that property, and if it is true, create a new CKFetchRecordChangesOperationMBS object to fetch more results.
(Read and Write property)
31.19 class CKFetchRecordZonesOperationMBS

31.19.1 class CKFetchRecordZonesOperationMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A CKFetchRecordZonesOperation object retrieves CKRecordZone objects (whose IDs you already know) from iCloud.

**Notes:**
Use this operation object to fetch record zones so that you can ascertain their capabilities.

The completed event is called after the operation executes and returns its results to you. You can use a completion block to perform housekeeping chores related to the operation, but do not use it to process the results of the operation itself. Any completion block you specify should be prepared to handle the failure of the operation to complete its task, whether due to an error or an explicit cancellation.

Subclass of the CKDatabaseOperationMBS class.

31.19.2 Methods

31.19.3 Constructor

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.

See also:

- 31.19.4 Constructor(recordZoneIDs() as CKRecordZoneIDMBS)

31.19.4 Constructor(recordZoneIDs() as CKRecordZoneIDMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns an operation object configured to fetch the specified record zones.

**Notes:**
zoneIDs: An array of CKRecordZoneID objects representing the zones you want to retrieve. This parameter is used to initialize the value in the recordZoneIDs property. If you specify nil, you must assign a value to the recordZoneIDs property before executing the operation.

Returns an initialized operation object.

See also:

- 31.19.3 Constructor
31.19. **CLASS CKFETCHRECORDZONESOPERATIONMBS**

31.19.5  **fetchAllRecordZonesOperation as CKFetchRecordZonesOperationMBS**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an operation object that can be used to fetch all record zones in the current database.

31.19.6  **recordZoneIDs as CKRecordZoneIDMBS()**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The IDs of the record zones you want to retrieve.

**Notes:**
Use this property to view or change the IDs of the record zones you want to retrieve. Each item in the array must be a CKRecordZoneID object. If you intend to change the value of this property, do so before executing the operation or submitting the operation object to a queue.

If you used the fetchAllRecordZonesOperationMBS method to create the operation object, the contents of this property are ignored and the default value is set to nil.

31.19.7  **setRecordZoneIDs(IDs() as CKRecordZoneIDMBS)**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the IDs of the record zones you want to retrieve.

**Notes:**
Use this property to view or change the IDs of the record zones you want to retrieve. Each item in the array must be a CKRecordZoneID object. If you intend to change the value of this property, do so before executing the operation or submitting the operation object to a queue.

If you used the fetchAllRecordZonesOperationMBS method to create the operation object, the contents of this property are ignored and the default value is set to nil.

31.19.8  **Events**

31.19.9  **fetchRecordZonesCompleted(recordZonesByZoneID as Dictionary, operationError as NSErrorMBS)**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event to execute with the fetch results.

**Notes:**
The event returns no value and takes the following parameters:
recordZonesByZoneID: A dictionary that maps the requested IDs to the retrieved objects. The keys in the
dictionary are the CKRecordZoneID objects you requested, and the values are the corresponding CKRecord-
Zone objects.

operationError: An error object containing information about a problem, or nil if the results are retrieved
successfully.

The operation object executes this block only once and it is your only chance to process the operation results.
The block is executed before the operations completion block. Your block must be capable of executing on
a background thread, so any tasks that require access to the main thread must be redirected accordingly.

If you intend to use this block to process results, set it before executing the operation or submitting the
operation object to a queue.

This block reports an error of type CKErrorPartialFailure when it retrieves only some of the record zones
successfully. The userInfo dictionary of the error contains a CKPartialErrorsByItemIDKey key whose value
is a dictionary. The keys of that dictionary are the IDs of the record zones that were not retrieved, and the
corresponding values are error objects containing information about what happened.
31.20. **CLASS CKFETCHSHAREMETADATAPROPERTIESMBS**

31.20  class CKFetchShareMetadataOperationMBS

31.20.1  class CKFetchShareMetadataOperationMBS


**Function:** An operation that fetches shared record metadata for one or more shares.

**Notes:**

This operation may be run in any container that the client has access to.

Subclass of the CKOperationMBS class.

31.20.2  Methods

31.20.3  Available as Boolean


**Function:** Whether this class is available.

**Notes:** Should be true for OS X 10.12 and newer in 64-bit application.

31.20.4  Constructor(URLs() as String)


**Function:** Initializes and returns an operation object configured to fetch the metadata for the specified shares.

**Notes:**

shareURLs: An array of URLs. This parameter is used to initialize the value in the shareURLs property. If you specify nil, you must assign an appropriate value to the shareURLs property before executing the operation.

Returns an initialized operation object.

31.20.5  rootRecordDesiredKeys as String()


**Function:** Keys to be fetched if the root record is to be fetched.

**Notes:**

This property declares which user-defined keys should be fetched and added to the resulting root record. This property is only consulted if shouldFetchRootRecord is set to true.
If this property is set to nil, the entire root record is downloaded.
If this property is set to an empty array, no user fields are downloaded.

This property defaults to nil.

31.20.6  setRootRecordDesiredKeys(rootRecordDesiredKeys() as String)

**Function:** Sets the keys to be fetched if the root record is to be fetched.
**Notes:**
This property declares which user-defined keys should be fetched and added to the resulting root record.
This property is only consulted if shouldFetchRootRecord is set to true.

If this property is set to nil, the entire root record is downloaded.
If this property is set to an empty array, no user fields are downloaded.

This property defaults to nil.

31.20.7  setShareURLs(URLs() as String)

**Function:** Sets the URLs of the shares that you want to process.
**Notes:** Use this property to view or change the URLs of the share objects that you want to fetch. If you intend to specify or change the value of this property, do so before executing the operation or submitting the operation object to a queue.

31.20.8  shareURLs as String()

**Function:** The URLs of the shares that you want to process.
**Notes:** Use this property to view or change the URLs of the share objects that you want to fetch. If you intend to specify or change the value of this property, do so before executing the operation or submitting the operation object to a queue.
31.20.  CLASS CKFETCHSHAREMETADATAMBSOPERATIONMBS

31.20.9  Properties

31.20.10 shouldFetchRootRecord as Boolean

Function: A flag to indicate whether the root record should be retrieved.
Notes:
If this property is set to true, the resulting CKShareMetadataMBS has a rootRecord object filled out. The resulting CKShareMetadata has a rootRecordID property regardless of the value of this property. This property defaults to false.
(Read and Write property)

31.20.11 Events

31.20.12 fetchShareMetadataCompleted(operationError as NSErrorMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The event to execute when the operation has completed.
Notes:
This block is called when the operation completes. The Complete of the underlying NSOperation is also called if both are implemented.
The event is executed serially with respect to the other progress events of the operation. If you intend to use this event to process results, update the value of this property before executing the operation or submitting the operation object to a queue.

31.20.13 ShareMetadataFetched(shareURL as String, shareMetadata as CKShareMetadataMBS, error as NSErrorMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The event to execute for each share metadata that has been fetched from the server.
Notes:
If error is nil then the share was successfully accepted. Each time the event is executed, it is executed serially with respect to the other progress blocks of the operation.
If you intend to use this event to process results, set it before executing the operation or submitting the operation object to a queue.
31.21 class CKFetchShareParticipantsOperationMBS

31.21.1 class CKFetchShareParticipantsOperationMBS


31.21.2 Methods

31.21.3 Constructor

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Initializes and returns an operation object configured to fetch share participants. Notes: You can use the returned CKFetchShareParticipantsOperation only once. When executed, this query object fetches the share participants.

Note
If userIdentityLookupInfos is not set prior to executing the operation, it returns immediately with no results.

See also:
- 31.21.4 Constructor(userIdentityLookupInfos() as CKUserIdentityLookupInfoMBS)

31.21.4 Constructor(userIdentityLookupInfos() as CKUserIdentityLookupInfoMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Initializes and returns an operation object configured to fetch the specified share participants. Notes: userIdentityLookupInfos: An array of CKUserIdentityLookupInfoMBS objects. This parameter is used to initialize the value in the userIdentityLookupInfos property. If you specify nil, you must assign an appropriate value to the userIdentityLookupInfos property before executing this operation.

Returns an initialized operation object.
See also:
- 31.21.3 Constructor
31.21.5  setUserIdentityLookupInfos(userIdentityLookupInfos() as CKUserIdentityLookupInfoMBS)

**Function:** Sets the user identities that are used to fetch the share participants.  
**Notes:**  
Use this property to view or change the user identities you want to fetch against. If you intend to specify or change the value of this property, do so before executing the operation or submitting the operation object to a queue.  

Note  
If userIdentityLookupInfos is not set prior to executing the operation, it returns immediately with no results.

31.21.6  userIdentityLookupInfos as CKUserIdentityLookupInfoMBS()  

**Function:** The user identities that are used to fetch the share participants.  
**Notes:**  
Use this property to view or change the user identities you want to fetch against. If you intend to specify or change the value of this property, do so before executing the operation or submitting the operation object to a queue.  

Note  
If userIdentityLookupInfos is not set prior to executing the operation, it returns immediately with no results.

31.21.7  Events  

31.21.8  fetchShareParticipantsCompleted(operationError as NSErrorMBS)

**Function:** The event to execute when the operation has completed.  
**Notes:**  
This event is called when the operation complete. The Completed of the underlying NSOperation is also called if both are set.  

The event is executed serially with respect to the other progress blocks of the operation. If you intend to use this event to process results, update the value of this property before executing the operation or submitting the operation object to the queue.
31.21.9  shareParticipantFetched(participant as CKShareParticipantMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event to execute for each share participant that has been fetched from the server.

**Notes:**

Each time the event is executed, it is executed serially with respect to the other progress events of the operation.

If you intend to use this event to process results, set it before executing the operation or submitting the operation object to a queue.
31.22. CLASS CKFETCHSUBSCRIPTIONSOPERATIONMBS

31.22 class CKFetchSubscriptionsOperationMBS

31.22.1 class CKFetchSubscriptionsOperationMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A CKFetchSubscriptionsOperation object retrieves CKSubscription objects (whose IDs you already know) from iCloud and can fetch all subscriptions associated with the current user.

**Notes:**

You might fetch subscription objects so you can examine or modify their parameters; for example, to adjust the delivery options for push notifications generated by the subscription.

The completion event is called after the operation executes and returns its results to you. You can use a completion block to perform housekeeping chores related to the operation, but do not use it to process the results of the operation itself. Any completion block you specify should be prepared to handle the failure of the operation to complete its task, whether due to an error or an explicit cancellation.

Subclass of the CKDatabaseOperationMBS class.

31.22.2 Methods

31.22.3 Constructor

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.

See also:

- 31.22.4 Constructor(subscriptionIDs() as String)

31.22.4 Constructor(subscriptionIDs() as String)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns an operation object configured to fetch the specified subscriptions.

**Notes:**

subscriptionIDs: An array of strings, each of which contains the ID of a subscription object you want to retrieve. This parameter is used to initialize the value in the subscriptionIDs property. If you specify nil, you must assign an appropriate value to the subscriptionIDs property before executing the operation.

Returns an initialized operation object.

See also:

- 31.22.3 Constructor
31.22.5 fetchAllSubscriptionsOperation as CKFetchSubscriptionsOperationMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an operation object that retrieves all of the users subscription objects in the current database. **Notes:** Returns a newly allocated operation object that fetches the active subscription objects operating on behalf of the current user.

31.22.6 setSubscriptionIDs(emails() as String)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the IDs of the subscription objects you want to retrieve. **Notes:** Use this property to view or change the IDs of the subscription objects you want to retrieve. Each item in the array must be a string whose value is the ID of the subscription object you want to retrieve. If you intend to specify or change the value for this property, do so before executing the operation or submitting the operation object to a queue.

If you used the fetchAllSubscriptionsOperation method to create the operation object, the contents of this property are ignored and its value is set to nil.

31.22.7 subscriptionIDs as String()

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The IDs of the subscription objects you want to retrieve. **Notes:** Use this property to view or change the IDs of the subscription objects you want to retrieve. Each item in the array must be a string whose value is the ID of the subscription object you want to retrieve. If you intend to specify or change the value for this property, do so before executing the operation or submitting the operation object to a queue.

If you used the fetchAllSubscriptionsOperation method to create the operation object, the contents of this property are ignored and its value is set to nil.
31.22.8 Events

31.22.9 fetchSubscriptionCompleted(subscriptionsBySubscriptionID as Dictionary, operationError as NSErrorMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event to execute with the fetch results.

**Notes:**

The event returns no value and takes the following parameters:

- `subscriptionsBySubscriptionID`: A dictionary that maps the requested IDs to the retrieved objects. The keys in the dictionary are the NSString objects with the IDs of the subscription objects you requested and the values are the corresponding CKSubscription objects.
- `operationError`: An error object containing information about a problem, or nil if the results are retrieved successfully.

The operation object executes this block only once and it is your only chance to process the operation results. The block is executed before the operations completion block. Your block must be capable of executing on a background thread, so any tasks that require access to the main thread must be redirected accordingly.

If you intend to use this block to process results, set it before executing the operation or submitting the operation object to a queue.

This block reports an error of type CKErrorPartialFailure when it retrieves only some of the subscriptions successfully. The userInfo dictionary of the error contains a CKPartialErrorsByItemIDKey key whose value is a dictionary. The keys of that dictionary are the IDs of the subscriptions that were not retrieved and the corresponding values are error objects containing information about what happened.
31.23 class CKFetchWebAuthTokenOperationMBS

31.23.1 class CKFetchWebAuthTokenOperationMBS

**Function:** The CKFetchWebAuthTokenOperation object fetches a web authentication token given an API token that you obtain from CloudKit Dashboard.

**Notes:**
Use the add method in the CKDatabase class to add this operation to the operation queue of the public database.
Subclass of the CKDatabaseOperationMBS class.

31.23.2 Methods

31.23.3 Constructor(APIToken as string)

**Function:** Initializes and returns a CKFetchWebAuthTokenOperationMBS object with the specified API token.
**Notes:** APItoken: An API token that allows access to an apps container.

31.23.4 Properties

31.23.5 APIToken as String

**Function:** An API token that allows access to an apps container.
**Notes:** (Read and Write property)

31.23.6 Events

31.23.7 fetchWebAuthTokenCompleted(webAuthToken as string, operationError as NSErrorMBS)

**Function:** The event to execute when this CKFetchWebAuthTokenOperation object fetches the web authentication token.
**Notes:**
The event returns no value and takes the following parameters:
webAuthToken: If the operation is successful, the web authentication token; otherwise, nil.
operationError: An error object containing information about a problem, or nil if the results are retrieved successfully.

The operation object executes this block only once and it is your only chance to process the operation results. Your block must be capable of executing on a background thread, so any tasks that require access to the main thread must be redirected accordingly.
31.24 class CKLocationSortDescriptorMBS

31.24.1 class CKLocationSortDescriptorMBS

**Function:** A CKLocationSortDescriptor object sorts records containing location data based on their distance from a location that you specify.
**Notes:**
You can add a location sort descriptor to your queries when searching for records. At creation time, you must provide the sort descriptor with a key whose value is a CLLocation object. The sort descriptor uses the value of that key to perform the sort.

Distances are computed by drawing a direct line between the two locations that follows the curvature of the Earth. Distances do not take into account altitude changes between the two locations.
Subclass of the NSSortDescriptorMBS class.

31.24.2 Methods

31.24.3 Available as Boolean

**Function:** Whether this class is available.
**Notes:** Should be true for OS X 10.10 and newer in 64-bit application.

31.24.4 Constructor

**Function:** Private constructor.
See also:
- 31.24.5 Constructor(key as string, relativeLocation as Variant)

31.24.5 Constructor(key as string, relativeLocation as Variant)

**Function:** Initializes and returns a location sort descriptor object.
**Notes:**
key: The name of the key whose value is a CLLocationMBS object. The key must belong to the records being sorted. The sort descriptor uses this key to retrieve the corresponding value from the record.
relativeLocation: The reference location to use when sorting. Records are sorted based on their distance to
31.24. CLASS CKLOCATIONSORTDESCRIPTORMBS

this location.

Returns an initialized location sort descriptor object, or nil if the object cannot be initialized.

During sorting, the sort descriptor computes the distance between the value in the relativeLocation parameter and the location value found in the specified key of each record. It then sorts the records in ascending order using the distance between the two points. You cannot change the sort order.

relativeLocation must be a CLLocationMBS object.

See also:

- 31.24.4 Constructor

31.24.6 Properties

31.24.7 relativeLocation as Variant


Function: The reference location against which records are sorted.

Notes:

Value is a CLLocationMBS.
(Read only property)
31.25 class CKMarkNotificationsReadOperationMBS

31.25.1 class CKMarkNotificationsReadOperationMBS

Function: A CKMarkNotificationsReadOperation object marks push notifications as read by your app so that they do not show up in future fetch results.
Notes:
If your app uses push notifications to track changes to records, you can use this operation object to note which push notifications do not need to be processed again.

The completion event is called after the operation executes and returns its results to you. You can use a completion block to perform housekeeping chores related to the operation, but do not use it to process the results of the operation itself. Any completion block you specify should be prepared to handle the failure of the operation to complete its task, whether due to an error or an explicit cancellation.
Subclass of the CKOperationMBS class.

31.25.2 Methods

31.25.3 Constructor

Function: The private constructor.
See also:
- 31.25.4 Constructor(IDs() as CKNotificationIDMBS)

31.25.4 Constructor(IDs() as CKNotificationIDMBS)

Function: Initializes and returns an operation object configured to mark the specified notifications as read.
Notes:
notificationIDs: An array of CKNotificationIDMBS objects representing the notifications you want to mark as read. Use this parameter to initialize the value in the notificationIDs property. If you specify nil, assign an appropriate value to the notificationIDs property before executing the operation.

If any objects in the array are not CKNotificationIDMBS objects, this method raises an exception.

Returns an initialized operation object.
See also:
31.25.5 **notificationIDs as CKNotificationIDMBS()**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The array of notifications to mark as read. **Notes:** Use this property to view or change the IDs of the notifications you want to mark as read. Each item in the array must be a CKNotificationIDMBS object. If you intend to specify a value for this property, do so before executing the operation or submitting the operation object to a queue.

31.25.6 **setNotificationIDs(IDs() as CKNotificationIDMBS)**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the array of notifications to mark as read. **Notes:** Use this property to view or change the IDs of the notifications you want to mark as read. Each item in the array must be a CKNotificationIDMBS object. If you intend to specify a value for this property, do so before executing the operation or submitting the operation object to a queue.

31.25.7 **Events**

31.25.8 **markNotificationsReadCompleted(notificationIDsMarkedRead() as CKNotificationIDMBS, operationError as NSErrorMBS)**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event to execute when all results of the operation are known. **Notes:**

The event returns no value and takes the following parameters:

- notificationIDsMarkedRead: An array of CKNotificationID objects corresponding to the notifications that were successfully marked as read.
- operationError: An error object containing information about a problem, or nil if all notifications are updated successfully.

The operation object executes this block only once and it is your only chance to process the operation results. If you intend to use this block to process results, set it before executing the operation or submitting the operation object to a queue.

This block reports an error of type CKErrorPartialFailure when it is able to update only some of the notifications successfully. The userInfo dictionary of the error contains a CKPartialErrorsByItemIDKey key whose value is a dictionary. The keys of that dictionary are the IDs of the notifications that were not updated, and
the corresponding values are error objects containing information about what happened.
31.26 class CKModifyBadgeOperationMBS

31.26.1 class CKModifyBadgeOperationMBS


Function: A CKModifyBadgeOperation object updates the badge value applied to the app's icon.

Notes:
This operation object can update the badge for the current device or for all of the users' devices.

The completion event is called after the operation executes and returns its results to you. You can use a completion event to perform housekeeping chores related to the operation, but do not use it to process the results of the operation itself. Any completion event you specify should be prepared to handle the failure of the operation to complete its task, whether due to an error or an explicit cancellation.

Subclass of the CKOperationMBS class.

31.26.2 Methods

31.26.3 Constructor


Function: The private constructor.

See also:
- 31.26.4 Constructor(badgeValue as Integer)

31.26.4 Constructor(badgeValue as Integer)


Function: Initializes and returns an operation object for setting the badge of the app.

Notes: badgeValue: The numerical value of the app's badge. Specify 0 to remove the badge.

See also:
- 31.26.3 Constructor

31.26.5 Properties

31.26.6 badgeValue as Integer


Function: The numerical value to apply to the app's badge.

Notes:
The initial value of this property is set to the value you specified using the Constructor. If you intend to change the value, do so before executing the operation or submitting it to a queue.
(Read and Write property)

31.26.7 Events

31.26.8 modifyBadgeCompleted(operationError as NSErrorMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The event to execute with the results of the operation.
Notes:
The event returns no value and takes the following parameters:

operationError: An error object containing information about a problem, or nil if the badge is applied successfully.

This event is executed only once and represents your only chance to process the operation results. If you intend to use this event to process results, set it before executing the operation or submitting the operation object to a queue.
31.27 class CKModifyRecordsOperationMBS

31.27.1 class CKModifyRecordsOperationMBS

Function: A CKModifyRecordsOperationMBS object saves changes to one or more CKRecordMBS objects.
Notes:
After modifying the fields of a record, use this type of operation object to save those changes to a database. You also use instances of this class to delete records permanently from a database.

see https://developer.apple.com/reference/cloudkit/ckmodifyrecordsoperation
Subclass of the CKDatabaseOperationMBS class.

31.27.2 Methods

31.27.3 Constructor

Function: The private constructor.
See also:
- 31.27.4 Constructor(recordsToSave() as CKRecordMBS, recordIDsToDelete() as CKRecordIDMBS)

31.27.4 Constructor(recordsToSave() as CKRecordMBS, recordIDsToDelete() as CKRecordIDMBS)

Function: Initializes and returns an operation object configured to save and delete the specified records.
Notes:
recordsToSave: An array of CKRecordMBS objects representing the records to save, if any. You may specify nil for this parameter.
recordIDsToDelete: An array of CKRecordIDMBS objects representing the records you want to delete, if any. You may specify nil for this parameter.

Returns an initialized operation object.

The records you intend to save or delete must all reside in the same database, which you can specify when you configure the operation object. Saving a record that is not in the current database creates it in the
database. Trying to delete a record that does not exist in the current database returns an error for that record.

See also:

• 31.27.3 Constructor

31.27.5 recordIDsToDelete as CKRecordIDMBS()

Function: The IDs of the records to delete permanently from the database.
Notes:
This property contains the array of CKRecordID objects that identify the records to delete. The initial contents of the array are set to the records you specified in the Constructor.

If you intend to change the value of this property, do so before executing the operation or submitting the operation object to a queue.

When deleting records, the operation object reports progress only on the records you specify in this property. Deleting records can trigger the deletion of related records if there is an owner-owned relationship between the records involving a CKReference object. When additional deletions occur, they are not reported to the progress blocks of this object. For that reason, it is important to understand the implications of the ownership model you use when you relate records to each other through a CKReference object. For more information about owner-owned relationships, see CKReference.

31.27.6 recordsToSave as CKRecordMBS()

Function: The records to save to the database.
Notes:
This property contains the array of CKRecordMBS objects that you want to save. The initial contents of the array are set to the records you specified in the constructor. You can modify this array as needed before executing the operation. The records must all target the same database but may belong to different zones in the database.

If you intend to change the value of this property, do so before executing the operation or submitting the operation object to a queue.
31.27.7 setrecordIDsToDelete(IDs() as CKRecordIDMBS)

Function: Sets the IDs of the records to delete permanently from the database.
Notes:
This property contains the array of CKRecordID objects that identify the records to delete. The initial contents of the array are set to the records you specified in the Constructor.

If you intend to change the value of this property, do so before executing the operation or submitting the operation object to a queue.

When deleting records, the operation object reports progress only on the records you specify in this property. Deleting records can trigger the deletion of related records if there is an owner-owned relationship between the records involving a CKReference object. When additional deletions occur, they are not reported to the progress blocks of this object. For that reason, it is important to understand the implications of the ownership model you use when you relate records to each other through a CKReference object. For more information about owner-owned relationships, see CKReference.

31.27.8 setRecordsToSave(IDs() as CKRecordMBS)

Function: Sets the records to save to the database.
Notes:
This property contains the array of CKRecordMBS objects that you want to save. The initial contents of the array are set to the records you specified in the constructor. You can modify this array as needed before executing the operation. The records must all target the same database but may belong to different zones in the database.

If you intend to change the value of this property, do so before executing the operation or submitting the operation object to a queue.

31.27.9 Properties

31.27.10 atomic as Boolean

Function: A Boolean value indicating whether the entire operation fails when one or more records in the same zone cannot be written.
Notes:
Modifying records atomically prevents you from updating your data in a way that would leave it in an
inconsistent state. You use atomic updates when you want to write multiple records to the same record zone. If there is a failure to modify any of the records in a particular zone, no changes are made to the other records in that same zone. The zone itself must have the CKRecordZoneCapabilityAtomic capability for this behavior to apply. If a record zone does not support the atomic capability, setting this property has no effect.

The default value of this property is true, which causes all modifications within a single record zone to be made atomically. If your operation object contains records in multiple record zones, a failure in one zone does not prevent modifications to records in a different zone. Changing the value of this property to false causes the records to be modified individually, regardless of whether the record zone supports atomic modifications. (Read and Write property)

### 31.27.11 clientChangeTokenData as MemoryBlock


**Function:** A data token used to track client-side changes to records.

**Notes:**

When you modify records from a fetch operation, specify a client-generated data token using this property to indicate which version of the record you last modified. Compare the data token you supplied to the data token in the next record fetch to confirm the server has successfully received the devices last modify request.

The default value is nil.

If you intend to change the value of this property, do so before executing the operation or submitting the operation object to a queue.

(Read and Write property)

### 31.27.12 savePolicy as Integer


**Function:** The policy to apply when the server contains a newer version of a specific record.

**Notes:**

Each record has a change tag that allows the server to track when that record was saved. When you save a record, CloudKit compares the change tag in your local copy of the record with the one on the server. If the two tags do not match meaning that there is a potential conflict the server uses the value in this property to determine how to proceed.

The default value of this property is CKRecordSaveIfServerRecordUnchanged. If you intend to change the value of this property, do so before executing the operation or submitting the operation object to a queue.

(Read and Write property)
31.27.13 Events

31.27.14 modifyRecordsCompleted(savedRecords() as CKRecordMBS, deletedRecordIDs() as CKRecordIDMBS, operationError as NSErrorMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The event to execute after the status of all changes is known.
Notes:
The event returns no value and takes the following parameters:

- savedRecords: The array of CKRecordMBS objects you tried to save.
- deletedRecordIDs: The array of CKRecordIDMBS objects corresponding to the records you tried to delete.
- operationError: An error object containing information about a problem, or nil if the results are saved successfully.

This event is executed only once and represents your last chance to process the operation results. It is executed after all individual progress blocks have completed but before the operations completion block. The block is executed serially with respect to the other progress blocks of the operation.

If you intend to use this block to process results, set it before executing the operation or submitting the operation object to a queue.

This block reports an error of type CKErrorPartialFailure when it saves or deletes only some of the records successfully. The userInfo dictionary of the error contains a CKPartialErrorsByItemIDKey key whose value is a dictionary. The keys of that dictionary are the IDs of the records that were not saved or deleted, and the corresponding values are error objects containing information about what happened.

31.27.15 RecordCompleted(record as CKRecordMBS, error as NSErrorMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The event to execute when the save results of a single record are known.
Notes:
The event returns no value and takes the following parameters:

- record: A CKRecordMBS object that you attempted to save.
- error: An error object containing information about a problem, or nil if the record was saved successfully.

This block is executed once for each record in the recordsToSave property. Each time the block is executed, it is executed serially with respect to the other progress events of the operation.
If you intend to use this event to process results, set it before executing the operation or submitting the operation object to a queue. Use this block to take any actions after the status of saving the record is known.

### 31.27.16 RecordProgress(record as CKRecordMBS, progress as Double)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event to execute with progress information for an individual record. **Notes:**

The block returns no value and takes the following parameters:

- record: The CKRecordMBS object that is in the process of being saved.
- progress: The amount of progress toward saving the record, expressed as a percentage of its total size. This value is a number between 0.0 and 1.0, where 0.0 means none of the record is saved and 1.0 means the entire record has been saved.

The operation object executes this block zero or more times for each record in the recordsToSave property. Each time the block is executed, it is executed serially with respect to the other progress blocks of the operation.

If you intend to use this block to process results, set it before executing the operation or submitting the operation object to a queue. Use this block to track the ongoing progress of the upload operation and possibly to provide feedback to the user.

### 31.27.17 Constants

#### 31.27.18 SaveAllKeys = 2

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the constants indicating the policy to apply when saving records. **Notes:** A policy that saves all keys of the record (including those that have not changed) to the server, overwriting any values currently on the server. Keys present only on the server remain unchanged.

#### 31.27.19 SaveChangedKeys = 1

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the constants indicating the policy to apply when saving records. **Notes:** A policy that saves only those fields of the record that actually changed, overwriting any values currently on the server. Unmodified fields are left untouched.
31.27.20  SaveIfServerRecordUnchanged = 0

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the constants indicating the policy to apply when saving records.

**Notes:** A policy that saves the record only if the local copy of the record is based on the record still on the server. The server maintains a change tag for each record automatically. When you fetch a record, that change tag is included with the rest of the records data. If the change tag in your local record matches the change tag of the record on the server, the save operation proceeds normally. If the server record contains a newer change tag, the record is not saved and an error of type CKErrorServerRecordChanged is reported.
31.28 class CKModifyRecordZonesOperationMBS

31.28.1 class CKModifyRecordZonesOperationMBS


Function: A CKModifyRecordZonesOperationMBS object saves or deletes record zones.

Notes:

After creating one or more record zones, use this operation object to save those zones to the database. You can also use it to delete existing zones and the records they contain.

The completion event is called after the operation executes and returns its results to you. You can use a completion event to perform housekeeping chores related to the operation, but do not use it to process the results of the operation itself. Any completion block you specify should be prepared to handle the failure of the operation to complete its task, whether due to an error or an explicit cancellation.

Subclass of the CKDatabaseOperationMBS class.

31.28.2 Methods

31.28.3 Constructor


Function: The private constructor.

See also:

- 31.28.4 Constructor(recordZonesToSave() as CKRecordZoneMBS, recordZoneIDsToDelete() as CKRecordZoneIDMBS)

31.28.4 Constructor(recordZonesToSave() as CKRecordZoneMBS, recordZoneIDsToDelete() as CKRecordZoneIDMBS)


Function: Initializes and returns an operation object configured to save and delete the specified record zones.

Notes:

recordZonesToSave: An array of CKRecordZoneMBS objects representing the record zones to save. You may specify nil for this parameter.

recordZoneIDsToDelete: An array of CKRecordZoneIDMBS objects representing the record zones you want to delete, if any. You may specify nil for this parameter.

Returns an initialized operation object.
The record zones you intend to save or delete must all reside in the same database, which you specify when configuring the operation object. Deleting a record zone also deletes any records it contains. Trying to delete a record zone that does not exist in the current database returns an error.

See also:

- 31.28.3 Constructor

31.28.5 recordZoneIDsToDelete as CKRecordZoneIDMBS()

Function: The IDs of the record zones to delete permanently from the database.

Notes:

This property contains an array of CKRecordZoneIDMBS objects identifying the zones you want to delete. You set the initial contents of this property with the Constructor. You can assign a new array as needed before executing the operation. The record zones must all be located in the same database. You may specify nil or an empty array for this property.

If you intend to change the value of this property, do so before executing the operation or submitting it to a queue.

31.28.6 recordZonesToSave as CKRecordZoneMBS()

Function: The record zones to save to the database.

Notes:

This property contains an array of CKRecordZoneMBS objects representing the zones you want to save. You set the initial contents of this property with the Constructor. You can assign a new array as needed before executing the operation. The record zones must all target the same database. You may specify nil or an empty array for this property.

If you intend to change the value of this property, do so before executing the operation or submitting it to a queue.

31.28.7 setRecordZoneIDsToDelete(IDs() as CKRecordZoneIDMBS)

Function: Set the IDs of the record zones to delete permanently from the database.
31.28.8  setRecordZonesToSave(IDs() as CKRecordZoneMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the record zones to save to the database.

31.28.9  Events

31.28.10  modifyRecordZonesCompleted(savedRecordZones() as CKRecordZoneMBS, deletedRecordZoneIDs() as CKRecordZoneIDMBS, operationError as NSErrorMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event to execute after the status of all changes is known.

**Notes:**
The event returns no value and takes the following parameters:

- `savedRecordZones`: An array of `CKRecordZone` objects you tried to save.
- `deletedRecordZoneIDs`: An array of `CKRecordZoneID` objects corresponding to the record zones you tried to delete.
- `operationError`: An error object containing information about a problem, or `nil` if the results are saved successfully.

This block is executed only once and represents your only chance to process the operation results. If you intend to use this block to process results, set it before executing the operation or submitting the operation object to a queue.

This event reports an error of type `CKErrorPartialFailure` when it saves or deletes only some of the record zones successfully. The `userInfo` dictionary of the error contains a `CKPartialErrorsByItemIDKey` key whose value is a dictionary. The keys of that dictionary are the IDs of the record zones that were not saved or deleted, and the corresponding values are error objects containing information about what happened.
31.29. **CLASS CKMODIFYSUBSCRIPTIONSOPERATIONMBS**

### 31.29 class CKModifySubscriptionsOperationMBS

**MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** A CKModifySubscriptionsOperation object saves changes to one or more CKSubscription objects.

**Notes:**

After creating or changing the configuration of a subscription object, use this type of operation object to save those changes to an iCloud container. You also use instances of this class to delete subscriptions permanently from a database.

The complete event is called after the operation executes and returns its results to you. You can use a completion event to perform housekeeping chores related to the operation, but do not use it to process the results of the operation itself. Any completion event you specify should be prepared to handle the failure of the operation to complete its task, whether due to an error or an explicit cancellation.

Available in macOS 10.10 and newer in 64-bit applications.
Subclass of the CKDatabaseOperationMBS class.

### 31.29.2 Methods

#### 31.29.3 Constructor(subscriptionsToSave() as CKSubscriptionMBS, subscriptionIDsToDelete() as String = nil)

**MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Initializes and returns an operation object configured to save and delete the specified subscriptions.

**Notes:**

subscriptionsToSave: An array of CKSubscription objects representing the subscriptions to save or update. You may specify nil for this parameter.
subscriptionIDsToDelete: An array of strings representing the IDs of the subscriptions you want to delete, if any. You may specify nil for this parameter.

The subscriptions you intend to save or delete must all reside in the same container, which you must specify when configuring the operation object. Saving a subscription that is not in the current database creates it in the database. Trying to delete a subscription that does not exist in the current database returns an error for that subscription.
31.29.4 setSubscriptionIDsToDelete(SubscriptionIDsToDelete() as String)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the IDs of the subscriptions you want to delete permanently from the database.

31.29.5 setSubscriptionsToSave(IDs() as CKSubscriptionMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the subscriptions to save to the database.

31.29.6 subscriptionIDsToDelete as String()

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The IDs of the subscriptions you want to delete permanently from the database. **Notes:**

This property contains the array of strings that identify the subscriptions to delete. The initial contents of the array are set to the records you specified with the Constructor.

If you intend to change the set of subscriptions to be deleted, update the value of this property before executing the operation or submitting the operation object to a queue.

31.29.7 subscriptionsToSave as CKSubscriptionMBS()

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The subscriptions to save to the database. **Notes:**

This property contains the array of CKSubscriptionMBS objects that you want to save. The initial contents of the array are set to the subscriptions you specified with the Constructor. You can modify this array as needed before executing the operation. After saving the subscription objects, the server begins applying the criteria from those objects to the contents of the database, generating push notifications as appropriate.

If you intend to change the set of subscriptions to be saved, update the value of this property before executing the operation or submitting the operation object to a queue.
31.29.8 Events

31.29.9 modifySubscriptionsCompleted(savedSubscriptions() as CKSubscription-MBS, deletedSubscriptionIDs() as String, operationError as NSErrorMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event to execute after the status of all changes is known.

**Notes:**
The event returns no value and takes the following parameters:

- **savedSubscriptions:** The array of CKSubscription objects you tried to save.
- **deletedSubscriptionIDs:** An array of NSString objects corresponding to the subscriptions you tried to delete.
- **operationError:** An error object containing information about a problem, or nil if the results are saved successfully.

The operation object executes this block only once and represents your last chance to process the operation results. The block is executed on a background thread of your app. If you intend to use this block to process results, set it before executing the operation or submitting the operation object to a queue.

This block reports an error of type CKErrorPartialFailure when it saves or delete only some of the subscriptions successfully. The userInfo dictionary of the error contains a CKPartialErrorsByItemIDKey key whose value is a dictionary. The keys of that dictionary are the IDs of the subscriptions that were not saved or deleted, and the corresponding values are error objects containing information about what happened.
31.30 class CKNotificationIDMBS

31.30.1 class CKNotificationIDMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A CKNotificationID object uniquely identifies a push notification sent from a container. Notes: You do not create notification IDs directly. The server creates them when it creates the CKNotification objects that correspond to the push notifications sent to your app. You can compare two IDs using the isEqual method to determine if two notification objects are the same. This class defines no methods or properties. This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

31.30.2 Methods

31.30.3 Available as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether this class is available. Notes: Should be true for OS X 10.10 and newer in 64-bit application.

31.30.4 Constructor


31.30.5 IsEqual(Other as CKNotificationIDMBS) as boolean

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Checks if two objects are equal.

31.30.6 Properties

31.30.7 Handle as Integer

31.30.  CLASS CKNOTIFICATIONIDMBS

Notes: (Read and Write property)
31.31 class CKNotificationInfoMBS

31.31.1 class CKNotificationInfoMBS


Function: A CKNotificationInfo object specifies the push notification data that the server sends to your app when a subscription finds a match.

Notes: When configuring a CKSubscriptionMBS object, create one of these objects and use it to specify the type of push notifications you want generated when the subscriptions trigger condition is met. You can provide a message for an alert panel, information about the sounds to play, and information about whether the app should be badged. You can also ask the server to provide information about the record that triggered the notification.

see https://developer.apple.com/reference/cloudkit/cknotificationinfo

31.31.2 Methods

31.31.3 alertLocalizationArgs as String()


Function: The array of fields to use when building an alert message.

Notes: Use of this property is optional. This property contains an array of strings, each of which corresponds to a field of the record that triggered the push notification. Those names are used to retrieve the corresponding values from the record. The values themselves must be string, integer, double, or dates. Do not specify keys with other values. String values that are greater than 100 characters in length may be truncated when added to the push notification.

If you use % @ for your substitution variables, those variables are replaced by walking the array in order. If you use variables of the form % n$ @, where n is an integer, n represents the index (starting at 1) of the item in the array to use. Thus, the first item in the array replaces the variable % 1$ @, the second item replaces the variable % 2$ @, and so on. You can use indexed substitution variables to change the order of items in the resulting string, which might be necessary when you localize your apps messages.

31.31.4 Available as Boolean


Function: Whether this class is available.
31.31. **CLASS CKNOTIFICATIONINFOMBS**

**Notes:** Should be true for OS X 10.10 and newer in 64-bit application.

### 31.31.5 Constructor

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.

### 31.31.6 copy as CKNotificationInfoMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy of this object.

### 31.31.7 desiredKeys as String()

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The names of fields to include in the push notification payload. **Notes:**

This property contains an array of strings, each of which corresponds to the name of a field in the record that triggered the notification. When a push notification is delivered, the keys and their corresponding values are included in the payload of the push notification. You can include a maximum of three keys in the array.

For the keys you specify, the allowable values are string, integer, double, CLLocationMBS, date, and CKReferenceMBS. You cannot specify keys whose values contain other data types. String values that are greater than 100 characters in length may be truncated when added to the push notification.

### 31.31.8 setAlertLocalizationArgs(args() as String)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the array of fields to use when building an alert message. **Notes:**

Use of this property is optional. This property contains an array of strings, each of which corresponds to a field of the record that triggered the push notification. Those names are used to retrieve the corresponding values from the record. The values themselves must be string, integer, double, or dates. Do not specify keys with other values. String values that are greater than 100 characters in length may be truncated when added to the push notification.

If you use % @ for your substitution variables, those variables are replaced by walking the array in order.
If you use variables of the form \( \% n$ @ \), where \( n \) is an integer, \( n \) represents the index (starting at 1) of the item in the array to use. Thus, the first item in the array replaces the variable \( \% 1$ @ \), the second item replaces the variable \( \% 2$ @ \), and so on. You can use indexed substitution variables to change the order of items in the resulting string, which might be necessary when you localize your apps messages.

### 31.31.9 setDesiredKeys(desiredKeys() as String)

**Function:** Sets the names of fields to include in the push notification payload.

**Notes:**

This property contains an array of strings, each of which corresponds to the name of a field in the record that triggered the notification. When a push notification is delivered, the keys and their corresponding values are included in the payload of the push notification. You can include a maximum of three keys in the array.

For the keys you specify, the allowable values are string, integer, double, CLLocationCoordinateMBS, date, and CKReferenceMBS. You cannot specify keys whose values contain other data types. String values that are greater than 100 characters in length may be truncated when added to the push notification.

### 31.31.10 Properties

#### 31.31.11 alertActionLocalizationKey as String

**Function:** The key that identifies the text to use for the action button in the alert panel.

**Notes:**

This property identifies the text to use for the button to open your app. Specifically, it contains the name of a key to look up in the apps Localizable.strings file, the value of which is used for the button title.

Specifying a value for this property is optional. When its value is nil, the alert panel triggered by the push notification contains only an OK button to dismiss the alert. When its value is not nil, the alert panel contains one button to dismiss the alert and a second button to open your app.

(Read and Write property)

#### 31.31.12 alertBody as String

**Function:** The text to use for the alert message.

**Notes:**
Use of this property is optional. If you set its value, the corresponding push notification causes the device to display an alert with the specified message. If you want to use a localized string for the alert message, specify a value for the alertLocalizationKey property instead.

(Read and Write property)

### 31.31.13 alertLaunchImage as String


**Function:** The filename of an image to use as a launch image.

**Notes:**

Use of this property is optional. If you specify a value, the string is used to locate an image file in the app bundle. That image is displayed as a launch image when the user launches the app after receiving a push notification.

(Read and Write property)

### 31.31.14 alertLocalizationKey as String


**Function:** The key that identifies the localized string to use for the alert message.

**Notes:**

Use of this property is optional. If you set its value, the corresponding push notification causes the device to display an alert on the users device. The push notification obtains the text for the alert by looking up the specified key in your apps Localizable.strings file. If you specify a value for this property, the value in the alertBody property is ignored.

For information about localizing string resources, see Internationalization and Localization Guide.

(Read and Write property)

### 31.31.15 category as String


**Function:** Name of the action group corresponding to this notification.

**Notes:**

Categories allow you to present custom actions to the user on your push notifications. For more information, read UIMutableUserNotificationCategory.

(Read and Write property)
31.31.16 Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference.
**Notes:** (Read and Write property)

31.31.17 shouldBadge as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean setting that controls whether a badge value should be incremented.
**Notes:**
The default value of this property is false. Setting it to true causes the system to increment the current badge count for the app whenever the corresponding push notification is delivered.
(Read and Write property)

31.31.18 shouldSendContentAvailable as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value indicating whether the push notification should include the content-available flag.
**Notes:**
When this property is true, the server includes the content-available flag in the push notifications payload. That flag causes the system to wake or launch an app that is not currently running. The app is then given background execution time to download any data related to the push notification, such as the set of records that changed. If the app is already running in the foreground, the inclusion of this flag has no additional effect and the notification is delivered to the app delegate for processing as usual.

The default value of this property is false.
(Read and Write property)

31.31.19 soundName as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of the sound file to play when a notification arrives.
**Notes:**
Use of this property is optional. If you specify a value, the string is used to locate a sound file in the app bundle. That sound file is played as an alert when a push notification arrives on the users device. If the specified sound file does not exist, or if you specify the string default for this property, the system plays the default alert sound.
31.31. CLASS CKNOTIFICATIONINFOMBS

(Read and Write property)
31.32 class CKNotificationMBS

31.32.1 class CKNotificationMBS


Function: A CKNotificationMBS object represents a push notification that was sent to your app.

Notes:

Notification objects wrap the data associated with a push notification. Use notification objects to wrap recently received push notification data or to fetch notification objects representing already delivered push notifications from a container. In both cases, the information in the notification object tells you what changed.

The CKNotificationMBS class itself is an abstract class. When you create a new notification object from a payload dictionary, the constructor instantiates a subclass of the appropriate type. Similarly, when you fetch notifications from a container, what you receive are instances of a concrete subclass. The base CKNotificationMBS class provides information about the push notification and how it was delivered. Specific subclasses contain specific data indicating what change actually occurred.

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

31.32.2 Methods

31.32.3 alertLocalizationArgs as String()


Function: The array of fields used to build the alert message

Notes:

This property contains an array of NSString objects, each of which corresponds to a field of the record that triggered the push notification. Use the field values to replace any substitution variables in the alert strings specified by the notificationFromRemoteNotificationDictionary or Identifying the Notification Object properties. The field values must be string, integer, double, or dates. String values that are greater than 100 characters in length may be truncated when added to the push notification.

If you used `% @` for your substitution variables, those variables are replaced by walking the array in order. If you use variables of the form `% n$ @`, where n is an integer, n represents the index (starting at 1) of the item in the array to use. Thus, the first item in the array replaces the variable `% 1$ @`, the second item replaces the variable `% 2$ @`, and so on. You can use indexed substitution variables to change the order of items in the resulting string, which might be necessary when you localize your apps messages.
31.32.4 Constructor


31.32.5 notificationFromRemoteNotificationDictionary(notificationDictionary as Dictionary) as CKNotificationMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creates and returns a new notification object using the specified payload data. Notes: notificationDictionary: The payload data for the push notification. This dictionary is the same one passed to your app delegatesdidReceiveRemoteNotification method. This parameter must not be nil. Returns a new notification object initialized with the payload data. Use this method to initialize a notification object from a push notification received by your app.

31.32.6 Properties

31.32.7 alertActionLocalizationKey as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The key that identifies the text to use for the action button in the alert panel. Notes: When this property is nil, the alert panel triggered by the push notification contains only an OK button to dismiss the alert. When this property is not nil, the alert panel contains one button to dismiss the alert and a second button to open your app. This property identifies the text to use for the button to open your app. Specifically, it contains the name of a key to look up in the apps Localizable.strings file, the value of which is used for the button title. (Read only property)

31.32.8 alertBody as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The text of the alert message. Notes: This property contains the nonlocalized version of the message string displayed by the alert.
31.32.9  alertLaunchImage as String


**Function:** The filename of the launch image displayed when your app is launched from the push notification alert.

**Notes:**

The string in this property is used to locate an image file in the app bundle.

(Read only property)

31.32.10  alertLocalizationKey as String


**Function:** The key that identifies the localized string to use for the alert message.

**Notes:**

When delivered to your app, the push notification gets the text for the alert by looking up the specified key in your apps Localizable.strings file. When this property is set, the value in the notificationFromRemoteNotificationDictionary property is ignored.

(Read only property)

31.32.11  badge as Integer


**Function:** The current badge value.

**Notes:**

The value of this property is the integer value displayed in the apps badge at the time the push notification was sent.

(Read only property)

31.32.12  category as String


**Function:** Name of the action group corresponding to this notification.

**Notes:**

Categories allow you to present custom actions to the user on your push notifications. For more information, read UIMutableUserNotificationCategory.
31.32. **CLASS CKNOTIFICATIONMBS**

(Read only property)

### 31.32.13 containerIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The ID of the container whose content triggered the notification. **Notes:** (Read only property)

### 31.32.14 Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference. **Notes:** (Read and Write property)

### 31.32.15 isPruned as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value indicating whether some push notification content was removed prior to delivery. **Notes:**


(Read only property)

### 31.32.16 notificationID as CKNotificationIDMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The ID of the notification. **Notes:** (Read only property)

### 31.32.17 notificationType as Integer

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The type of event that generated the notification. **Notes:**

Different notification types correspond to different subclasses of CKNotificationMBS, so you can use the value in this property to determine how to handle the notification data.
31.32.18  soundName as String


Function: The name of the sound file to play when a notification arrives.

Notes:
This property contains the string used to locate a sound file in your apps bundle. That sound file is played
as an alert when a push notification arrives on the users device. If the specified sound file does not exist, or
if you specify the string default for this property, the system plays the default alert sound.
(Read only property)

31.32.19  subscriptionID as String


Function: The identifier of the subscription that caused this notification to fire.

Notes: (Read only property)

31.32.20  Constants

31.32.21  TypeDatabase = 4

MBS Mac64bit Plugin, Plugin Version: 16.5. Function: One of the notification type constants.

Notes: A notification generated when the contents of a database changed.

31.32.22  TypeQuery = 1

MBS Mac64bit Plugin, Plugin Version: 16.5. Function: One of the notification type constants.

Notes: A notification generated based on the conditions set forth in a subscription object.

31.32.23  TypeReadNotification = 3

MBS Mac64bit Plugin, Plugin Version: 16.5. Function: One of the notification type constants.

Notes: A notification that your app previously marked as read using a CKMarkNotificationsReadOperationMBS object.
31.32. CLASS CKNOTIFICATIONMBS

31.32.24 TypeRecordZone = 2

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the notification type constants. **Notes:** A notification generated when the contents of a record zone changed.
31.33 class CKOperationMBS

31.33.1 class CKOperationMBS

**Function:** The abstract base class for all operations that can be executed against a CloudKit database.

**Notes:**

see

31.33.2 Methods

31.33.3 cancel

**Function:** Advises the operation object that it should stop executing its task.

**Notes:**

This method does not force your operation code to stop. The code for your operation must invoke the
isCancelled method periodically to determine whether the operation should be stopped. Once cancelled, an
operation cannot be restarted.

If the operation is already finished executing, this method has no effect. Canceling an operation that is
currently in an operation queue, but not yet executing, causes it to be removed from the queue (although
not necessarily right away).

31.33.4 Constructor

**Function:** The constructor.

31.33.5 isCancelled as boolean

**Function:** Returns a Boolean value indicating whether the operation has been cancelled.

**Notes:**

True if the operation was explicitly cancelled by an invocation of the operation’s cancel method; otherwise,
false. This method may return true even if the operation is currently executing.
Discussion
Canceling an operation does not actively stop the operation’s code from executing. An operation object is responsible for calling this method periodically and stopping itself if the method returns true.

31.33.6  isExecuting as boolean

Function: Returns a Boolean value indicating whether the operation is currently executing.  
Notes: True if the operation is executing; otherwise, false if the operation has not been started or is already finished.

31.33.7  isFinished as boolean

Function: A Boolean value indicating whether the operation is done executing.  
Notes: True if the operation is no longer executing; otherwise, false.

31.33.8  start

Function: Begins the execution of the operation.  
Notes: The default implementation of this method configures the execution environment for a non-concurrent operation and invokes the operation’s main method. As part of the default configuration, this method performs several checks to ensure that the non-concurrent operation can actually run and generates appropriate KVO notifications for each change in the operation’s state. If the operation’s operation has already been performed, was cancelled, or is not yet ready to run, this method throws an NSInvalidArgumentException exception. If the operation is to be performed on a separate thread, this method may return before the operation itself completes on the other thread.

31.33.9  Properties

31.33.10  allowsCellularAccess as Boolean

Function: A Boolean value indicating whether the operation object may send data over the cell network.  
Notes: When you send or receive many records, or when you send records with large assets, you might set this property to false to avoid consuming too much of the users cellular data bandwidth. For operations involving
only a few records, it is fine to leave this property set to true, which is the default.

When this property is set to false, the operation executes normally but fails if Wi-Fi is not available.
(Read and Write property)

### 31.33.11 container as CKContainerMBS

**Function:** The container to use for the operation. 
**Notes:**
The container sets the context for where the operation should perform its work. The addOperation method of both the CKContainerMBS and CKDatabaseMBS classes implicitly sets the value of this property to their container.

If you execute the operation yourself, either directly or using a custom operation queue, it is recommended that you set the value of this property explicitly. If the value is nil when you execute an operation, the operation object implicitly executes against your apps default container.
(Read and Write property)

### 31.33.12 Handle as Integer

**Function:** The handle to the internal used NSOperation reference. 
**Notes:** (Read and Write property)

### 31.33.13 longLived as Boolean

**Function:** A Boolean value indicating whether the operation is long-lived. 
**Notes:**
To create a long-lived operation, set to true. The default value is false. If the operation is running or is a long-lived operation fetched from a CKContainer object, changing this property value has no effect.

For more information on long-lived operations, read Long-Lived Operations. 
(Read and Write property)
31.33. CLASS CKOPERATIONMBS

31.33.14 operationID as String


**Function:** A unique identifier for a long-lived operation.

**Notes:**
Use this property to fetch a long-lived operation using the fetchLongLivedOperationWithID method in the CKContainer class. For more information on long-lived operations, read Long-Lived Operations.
(Read only property)

31.33.15 timeoutIntervalForRequest as Double


**Function:** The timeout interval to use when waiting for additional data.

**Notes:**
This property determines the request timeout interval for the operation. The request timeout interval controls how long (in seconds) the operation should wait for additional data to arrive before giving up. The timer associated with this value is reset whenever new data arrives. When the request timer reaches the specified interval without receiving any new data, it triggers a timeout.

The default value is 60 seconds.
(Read and Write property)

31.33.16 timeoutIntervalForResource as Double


**Function:** The maximum amount of time that a resource request should be allowed to take.

**Notes:**
This property determines the resource timeout interval for this operation. The resource timeout interval controls how long (in seconds) to wait for the entire operation to complete before giving up. The resource timer starts when the operation is initiated and counts until either the operation completes or this timeout interval is reached, whichever comes first.

The default value is 7 days.
(Read and Write property)
31.33.17 Events

31.33.18 Completed


31.33.19 LongLivedOperationWasPersisted

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The event to execute when the server starts storing callbacks for this long-lived operation.

Notes:

If your app exits before this event is called, the long-lived operation identifier is not included in the results of the fetchAllLongLivedOperationIDs method.

For more information on long-lived operations, read Long-Lived Operations.
31.34. CLASS CKQUERYCURSORMBS

31.34 class CKQueryCursorMBS

31.34.1 class CKQueryCursorMBS

**Function:** A CKQueryCursor object is an opaque data object that marks the stopping point for a query and the starting point for retrieving the remaining results.
**Notes:**
You do not create instances of this class yourself. When fetching records using a CKQueryOperation object, if the number of results exceeds the results limit value set for the query, the server provides you with a query cursor object. Use that cursor object to initialize a new CKQueryOperationMBS and retrieve the next batch of results for the same query.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

31.34.2 Methods

31.34.3 Available as Boolean

**Function:** Whether this class is available.
**Notes:** Should be true for OS X 10.10 and newer in 64-bit application.

31.34.4 Constructor

**Function:** The private constructor.

31.34.5 copy as CKQueryCursorMBS

**Function:** Creates a copy of this object.

31.34.6 Properties

31.34.7 Handle as Integer

**Function:** The internal object reference.
Notes: (Read and Write property)
31.35. CLASS CKQUERYMBS

31.35 class CKQueryMBS

31.35.1 class CKQueryMBS


Function: A CKQuery object manages the criteria to apply when searching for records in a database.

Notes:

You create a query object as the first step in the search process. The query object stores the search parameters, including the type of records to search, the match criteria (predicate) to apply, and the sort parameters to apply to the results. The second step is to use the query object to initialize a CKQueryOperation object, which you then execute to generate the results.

see https://developer.apple.com/reference/cloudkit/ckquery

31.35.2 Methods

31.35.3 Available as Boolean


Function: Whether this class is available.

Notes: Should be true for OS X 10.10 and newer in 64-bit application.

31.35.4 Constructor


Function: The private constructor.

See also:

- 31.35.5 Constructor(RecordType as String, predicate as NSPredicateMBS) 5299

31.35.5 Constructor(RecordType as String, predicate as NSPredicateMBS)


Function: Initializes and returns a query object with the specified parameters.

Notes:

recordType: The type of record to search. Specify the name of one of your apps supported record types. This method throws an exception if this parameter is nil or contains an empty string.
predicate: The search predicate to apply to the prospective records. Only records matching the predicate criteria are returned in the search results. For guidelines on how to construct predicates for your queries,
see Predicate Rules for Query Objects. This parameter must not be nil.

Returns an initialized query object.

Discussion
You cannot change the record type and predicate of a query object after you create it. If you want to search for a different set of records using a different set of search criteria, create a new query object. You can add sort descriptors to the query and change them later as needed.

You cannot query for user records and executing a query where the record type is set to CKRecordType-UserRecordMBS results in an error. You must fetch user records directly using their ID.

See also:
- 31.35.4 Constructor

31.35.6 setSortDescriptors(sortDescriptors() as NSSortDescriptorMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Sets the sort descriptors to use when organizing the query results.

31.35.7 sortDescriptors as NSSortDescriptorMBS()


Notes:
This property contains an array of NSSortDescriptor objects. You can add sort descriptors to a query object and change them later as needed. Each sort descriptor contains a field name of the intended record type and information about whether to sort values in that field in ascending or descending order. The default value of this property is nil, which means that records are returned in an indeterminate order.

The order of the items in the array matches the order in which the sort descriptors are applied to the results. In other words, the first sort descriptor in the array is applied first, followed by the second sort descriptor if needed, and the third, and so on.

31.35.8 Properties

31.35.9 Handle as Integer

### 31.35.10 predicate as NSPredicateMBS


**Function:** The search criteria to use when matching records.

**Notes:**

A predicate contains one or more expressions that evaluate to true or false. Expressions are often value-based comparisons, but predicates support other types of operators, including string comparisons and aggregate operations. For guidelines on how to construct predicates for your queries, see Predicate Rules for Query Objects.

This property is set at initialization time and cannot be changed later.

(Read only property)

### 31.35.11 recordType as String


**Function:** The record type to search.

**Notes:**

Searches return only records of the specified type. This property is set at initialization time and cannot be changed later.

The record type is an app-specific string that you use to distinguish among the records of your app. The records of a given type all represent different instances of the same information. For example, an employee record type might store the employees name, phone number, and a reference to the employees manager.

(Read only property)
31.36 class CKQueryNotificationMBS

31.36.1 class CKQueryNotificationMBS


**Function:** A CKQueryNotification object represents a push notification that was generated by a subscription object.

**Notes:** Subscription objects represent persistent queries on the server. When the server detects a change related to a subscription, it sends a push notification to the client that created the subscription and logs the push notification in the container. You use instances of this class to get information about the record involved in the push notification.

see https://developer.apple.com/reference/cloudkit/ckquerynotification

Subclass of the CKNotificationMBS class.

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

31.36.2 Methods

31.36.3 Constructor


**Function:** The private constructor.

31.36.4 Properties

31.36.5 databaseScope as Integer


**Function:** The database scope.

**Notes:** (Read only property)

31.36.6 isPublicDatabase as Boolean


**Function:** A Boolean value indicating whether the record is in the public database.

**Notes:**
The value of this property is true if the record is in the public database, or false if it is in the current users private database.
(Read only property)

### 31.36.7 queryNotificationReason as Integer

Function: The event that triggered the delivery of the push notification.

Notes:
Subscription-initiated notifications are triggered by the creation, deletion, or updating of a single record. The record in question must match the predicate specified by the subscription object for an event to be triggered.
(Read only property)

### 31.36.8 recordFields as Dictionary

Function: A dictionary of the fields that changed.

Notes:
For updated and newly created records, this property contains the desired keys requested by the subscription object. When you configure the CKNotificationInfoMBS object of a subscription object, you can specify the names of one or more fields in the desiredKeys property of that notification information object. When a push notification is triggered, the values for each of those keys is retrieved from the record and included in the push notifications payload, space permitting.

For query notification objects fetched from a container, all keys and values are present. For query notification objects generated from an incoming push notification, one or more keys and values may be missing. Push notification payloads are limited in size, and record fields are one of the first pieces of data to be excluded when that size limit is exceeded. For information about the order in which fields are removed, see the overview of this class.
(Read only property)

### 31.36.9 recordID as CKRecordIDMBS

Function: The identifier of the record that was created, deleted, or updated.

Notes:
Use this identifier to fetch the record from the container. Check the value of the isPublicDatabase property to determine which database to fetch it from.
31.36.10 Constants

31.36.11 ReasonRecordCreated = 1

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the constants indicating the event that triggered the notification. 
**Notes:** A record matching the subscriptions predicate was created.

31.36.12 ReasonRecordDeleted = 3

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the constants indicating the event that triggered the notification. 
**Notes:** A record matching the subscriptions predicate was deleted.

31.36.13 ReasonRecordUpdated = 2

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the constants indicating the event that triggered the notification. 
**Notes:** A record matching the subscriptions predicate was updated.
31.37. **CLASS CKQUERYOPERATIONMBS**

31.37 **class CKQueryOperationMBS**

31.37.1 **class CKQueryOperationMBS**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A CKQueryOperation object is a concrete operation that you can use to execute queries against a database. **Notes:** A query operation takes the query parameters you provide and applies those parameters to the specified database and zone, delivering any matching records asynchronously to the blocks that you provide.

see https://developer.apple.com/reference/cloudkit/ckqueryoperation
Subclass of the CKDatabaseOperationMBS class.

31.37.2 **Methods**

31.37.3 **CKQueryOperationMaximumResults as Integer**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A placeholder value representing the maximum number of results to retrieve. **Notes:** The value of this constant does not correspond to the actual number of records. The actual maximum value is determined dynamically by the server based on various conditions.

31.37.4 **Constructor**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor. See also:

- 31.37.5 Constructor(query as CKQueryMBS) 5305
- 31.37.6 Constructor(queryCursor as CKQueryCursorMBS) 5306

31.37.5 **Constructor(query as CKQueryMBS)**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns an operation object configured to search for records in the specified zone. **Notes:** query: The query to use during the search. This parameter must not be nil.
Returns an initialized operation object.

You can use the returned CKQueryOperationMBS object only once to perform a search, but the object you specify in the query parameter can be reused as needed. When executed, this query object performs a new search and returns the first batch of results. If there are more results available, you must create a separate query object using the provided cursor object.

See also:

- 31.37.4 Constructor
- 31.37.6 Constructor(queryCursor as CKQueryCursorMBS)

31.37.6 Constructor(queryCursor as CKQueryCursorMBS)

Function: Initializes and returns an operation object that returns more results from a previous search.
Notes:

cursor: The cursor object identifying the previous search. This value is passed to the completion block of the previous search.

Returns an initialized operation object ready to continue the search.

Use this method to initialize a query operation that retrieves the next batch of results from a previous search. When executing searches based on a cursor, do not cache cursor objects for a long time before using them. A cursor is not a snapshot of the previous search results; it stores a relative offset into the results list. An operation object created using a cursor performs a new search, sorts the new set of results, and uses the previous offset value to determine where the next batch of results starts.

See also:

- 31.37.4 Constructor
- 31.37.5 Constructor(query as CKQueryMBS)

31.37.7 desiredKeys as String()

Function: The fields to retrieve for the requested records.
Notes:

Use this property to limit the amount of data retrieved for each record during the search operation. The value is an array of strings, each of which contains the name of a field from the target records. When you retrieve a given record, only fields whose names match one of the specified keys are included in the returned record. If you specify nil, the operation retrieves all keys for the record. The default value of this property is nil.
If you intend to specify a value, you must do so before executing the operation or submitting the operation object to a queue.

### 31.37.8 setDesiredKeys(desiredKeys() as String)


**Function:** Sets the fields to retrieve for the requested records.

**Notes:**
Use this property to limit the amount of data retrieved for each record during the search operation. The value is an array of strings, each of which contains the name of a field from the target records. When you retrieve a given record, only fields whose names match one of the specified keys are included in the returned record. If you specify nil, the operation retrieves all keys for the record. The default value of this property is nil.

If you intend to specify a value, you must do so before executing the operation or submitting the operation object to a queue.

### 31.37.9 Properties

#### 31.37.10 cursor as CKQueryCursorMBS


**Function:** The data cursor to use for continuing the search.

**Notes:**
You set the initial value of this property with the Constructor. When you use a cursor, the contents of the query property are ignored. The data cursor stored in this property is an opaque object that is provided to you by the server.

If you intend to specify or change the value in this property, do so before executing the operation or submitting the operation object to a queue.

(Read and Write property)

#### 31.37.11 query as CKQueryMBS


**Function:** The query to use for the search.

**Notes:**
You set the initial value of this property with the Constructor method. When the value in the cursor property is nil, the query operation uses the CKQueryMBS object in this property to execute a new search and
return the results to your completion handler. If the cursor value is not nil, the cursor is used instead.

If you intend to specify or change the value of this property, do so before executing the operation or submitting the operation object to a queue.

(Read and Write property)

### 31.37.12 resultsLimit as Integer


**Function:** The maximum number of records to return at one time.

**Notes:**

For most queries, leave the value of this property set to the default value, which is represented by the CK-QueryOperationMaximumResults constant. When using that value, the server chooses a limit that aims to provide an optimal number of results that returns as many records as possible while minimizing delays in receiving those records. However, if you know that you want to process a fixed number of results, change the value of this property accordingly.

(Read and Write property)

### 31.37.13 zoneID as CKRecordZoneIDMBS


**Function:** The ID of the zone containing the records to search.

**Notes:**

When set, the value of this property limits the scope of the search to the records in the specified zone. If no zone is specified, the search takes place on all zones.

When you initialize the operation object using the Constructor method, the value of this property is set to nil and any changes you make to the property are ignored. When the operation object is executed, the cursor object provides the zone information from the initial search that generated the cursor.

(Read and Write property)

### 31.37.14 Events

### 31.37.15 queryCompleted(cursor as CKQueryCursorMBS, operationError as NSErrorMBS)
The block returns no value and takes the following parameters:

cursor: A CKQueryCursorMBS object that indicates there are more results to fetch or nil if the results parameter contains all of the remaining search results. Use the provided object to initialize a new query operation object when you are ready to retrieve the next batch of results.

operationError: An error object containing information about a problem, or nil if the results are retrieved successfully.

This block is executed only once and represents your last chance to process the operation results. It is executed after all of the individual progress blocks but before the operations completion block. The block is executed serially with respect to the other progress blocks of the operation. If you intend to use this block to process results, update the value of this property before executing the operation or submitting the operation object to a queue.

When the results of a query operation are known, the operation object uses this block to deliver the available set of records to your app. If the number of records exceeds the value in resultsLimit, the operation object provides an opaque data object in the cursor parameter of your block that you can use to retrieve the next batch of results. You must create a separate operation object using that cursor to get the next batch of results.

31.37.16 recordFetched(record as CKRecordMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event to execute for each record returned by the query.

**Notes:**

record: A CKRecordMBS object matching the search criteria.

After identifying and sorting the records, the operation object executes this block once for each record in the sorted results. The block is executed serially with respect to all progress blocks of the operation object, so you can expect only one block at a time to be executing for this operation object.

If you intend to use this block to process results, set it before executing the operation or submitting the operation object to a queue.

**Warning**

Query indexes are updated asynchronously so they are not guaranteed to be current. If you query for records that you recently changed and not allow enough time for those changes to be processed, the query results may be incorrect. The results may not contain the correct records and the records may be out of order.
31.38 class CKQuerySubscriptionMBS

31.38.1 class CKQuerySubscriptionMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Subscription that fires whenever a change matches the specified predicate.  
**Notes:** Subclass of the CKSubscriptionMBS class.

31.38.2 Methods

31.38.3 Constructor(RecordType as String, predicate as NSPredicateMBS, querySubscriptionOptions as Integer)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns a query-based subscription that monitors records with the specified options.  
**Notes:**  
recordType: The string that identifies the type of records to track. You are responsible for naming your apps record types. This parameter must not be nil or an empty string.  
predicate: The matching criteria to apply to the records. This parameter must not be nil. For information about the operators that are supported in search predicates, see the discussion in CKQuery.  
querySubscriptionOptions: A bitmask of the configuration options for the subscription. Specify at least one of the following values: CKSubscriptionOptionsFiresOnRecordCreation, CKSubscriptionOptionsFiresOnRecordUpdate, or CKSubscriptionOptionsFiresOnRecordDeletion. 

Returns a subscription object initialized to track record-related changes.

The object returned by this method is configured as a query-based subscription searching records in the target database. The subscription monitors the specified type of records in all of the users record zones and generates push notifications when the search criteria are met.  
See also:

- 31.38.4 Constructor(RecordType as String, predicate as NSPredicateMBS, subscriptionID as string, querySubscriptionOptions as Integer)
31.38. CLASS CKQUERYSUBSCRIPTIONMBS

apps record types. This parameter must not be nil or an empty string.
predicate: The matching criteria to apply to the records. This parameter must not be nil. For information
about the operators that are supported in search predicates, see the discussion in CKQuery.
subscriptionID: The unique name of the subscription. This string must be unique in the specified database
and must not be nil.
querySubscriptionOptions: A bitmask of the configuration options for the subscription. Specify at least one
of the following values: CKSubscriptionOptionsFiresOnRecordCreation, CKSubscriptionOptionsFiresOn-
RecordUpdate, or CKSubscriptionOptionsFiresOnRecordDeletion.

Returns a subscription object initialized to track record-related changes.

The object returned by this method is configured as a query-based subscription searching records in the
target database. The subscription monitors the specified type of records in all of the users record zones and
generates push notifications when the search criteria are met.
See also:

• 31.38.3 Constructor(RecordType as String, predicate as NSPredicateMBS, querySubscriptionOptions
  as Integer)

31.38.5 copy as CKQuerySubscriptionMBS


31.38.6 Properties

31.38.7 predicate as NSPredicateMBS

Notes:

A query-based subscription uses its search predicate to identify potential matches for records. It combines
the predicate information with the value in the querySubscriptionOptions property to determine the conditions under which to send a push notification to the app.

The search predicate defines the records that the subscription object monitors for changes. The value in this
property is used only if the subscriptionType property is set to CKSubscriptionTypeQueryMBS; otherwise,
it is ignored. (Read only property)
31.38.8  querySubscriptionOptions as Integer

Function:  Option flags describing the firing behavior of the subscription

Notes:  Set the value of this property at initialization time. When configuring a query-based subscription, one of
the following values must be specified:

CKQuerySubscriptionOptionsFiresOnRecordCreation
CKQuerySubscriptionOptionsFiresOnRecordUpdate
CKQuerySubscriptionOptionsFiresOnRecordDeletion

If an option flag is not set, an NSInvalidArgumentException is thrown.
(Read only property)

31.38.9  recordType as String

Function:  The record type being monitored in a query-based subscription. (read-only)

Notes:  The value of this property applies only to query-based subscriptions and is set automatically by the Con-
structor. For all other types of subscription objects, the value of this property is ignored and set to nil.
(Read only property)

31.38.10  zoneID as CKRecordZoneIDMBS

Function:  Zone that this query subscription is scoped to.

Notes:  The value of this property applies both to query-based subscriptions and zone-based subscriptions. Specifying
a record zone limits the search scope to the records in that zone. In the case of a zone-based subscription,
the search encompasses all records in the zone. For a query-based subscription, the search encompasses only
records of a specific type in that zone.

For zone-based subscriptions, the value of this property is set automatically by the Constructor. For all
other subscription types, the default value is nil. To apply a zone to a query-based subscriptions, you must
assign a value explicitly.
(Read only property)
31.38.11 Constants

31.38.12 OptionsFiresOnce = 8
MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the option values for notifications. **Notes:** Fire only once.

31.38.13 OptionsFiresOnRecordCreation = 1
MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the option values for notifications. **Notes:** Fire at record creation.

31.38.14 OptionsFiresOnRecordDeletion = 4
MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the option values for notifications. **Notes:** Fire on record deletion.

31.38.15 OptionsFiresOnRecordUpdate = 2
MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the option values for notifications. **Notes:** Fire on record update.
31.39 class CKRecordIDMBS

31.39.1 class CKRecordIDMBS


Function: A CKRecordID object uniquely identifies a record in a database.

Notes:
Record ID objects are normally created automatically when you create a new record, but you might also create IDs in several specific situations. For example, you must create record ID objects when you want to save a record in a zone other than the default zone. You can also create record ID objects when you want to retrieve records whose IDs you know from a database.

see https://developer.apple.com/reference/cloudkit/ckrecordid

31.39.2 Methods

31.39.3 Available as Boolean


Function: Whether this class is available.

Notes: Should be true for OS X 10.10 and newer in 64-bit application.

31.39.4 Constructor


Function: The private constructor.
See also:

- 31.39.5 Constructor(recordName as string) 5314
- 31.39.6 Constructor(recordName as string, zoneID as CKRecordZoneIDMBS) 5315

31.39.5 Constructor(recordName as string)


Function: Initializes and returns a new record ID with the specified name in the default zone.

Notes:
recordName: The name to use to identify the record. The string must contain only ASCII characters and must not exceed 255 characters. If you specify nil or an empty string for this parameter, this method throws
an exception.

Returns an initialized record ID object or nil if the object cannot be created.

Use this method when you are creating or searching for records in the default zone.

See also:

- 31.39.4 Constructor
- 31.39.6 Constructor(recordName as string, zoneID as CKRecordZoneIDMBS)

31.39.6 Constructor(recordName as string, zoneID as CKRecordZoneIDMBS)

**Function:** Initializes and returns a new record ID with the specified name and zone information.  
**Notes:**

- recordName: The name to use to identify the record. The string must contain only ASCII characters and must not exceed 255 characters. If you specify nil or an empty string for this parameter, this method throws an exception.
- zoneID: The ID of the zone in which to place the record. This parameter must not be nil.

Returns an initialized record ID object or nil if the object cannot be created.

Use this method when you create or search for records in a zone other than the default zone. The value in the zoneID parameter must represent a zone that already exists in the database. If the record zone does not exist yet, save the corresponding CKRecordZoneMBS object to the database before attempting to save any CKRecordMBS objects in that zone.

See also:

- 31.39.4 Constructor
- 31.39.5 Constructor(recordName as string)

31.39.7 copy as CKRecordIDMBS

**Function:** Creates a copy of this object.

31.39.8 IsEqual(Other as CKRecordIDMBS) as boolean

**Function:** Checks if two objects are equal.
31.39.9 Properties

31.39.10 Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference.  
**Notes:** (Read and Write property)

31.39.11 recordName as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The unique name of the record.  
**Notes:** (Read only property)

31.39.12 zoneID as CKRecordZoneIDMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The ID of the zone containing the record.  
**Notes:** (Read only property)
31.40. CLASS CKRECORDMBS

31.40.1 class CKRecordMBS

Function: A dictionary of key-value pairs that you use to fetch and save the data of your app.
Notes:
Records are the fundamental objects you use to manage data in CloudKit. You may define any number of record types for your app, with each record type corresponding to a different type of information you need. Within a given record type, you then define one or more fields, each of which has a name and a data value. Records can contain simple data types such as strings and numbers or more complex types such as geographic locations or pointers to other records.

An important step in using CloudKit is defining the record types your app supports. Each new record object contains no keys or values initially. During development, you can add new keys and values at any time. The first time you set a value for a key and save the record, the server associates that type with the key for all records of the same type. (The CKRecordMBS class does not enforce these type constraints or do any local validation of a records contents; those constraints are enforced by the server when you save records.)

Note

The ability to add new keys is only possible during development. When you deploy to a production environment, the server returns an error when you try to specify an unknown record type or try to save a record containing unknown keys.
Although records act like dictionaries, there are still limitations to the types of values you can assign to keys. The following are the object types that the CKRecord class supports. Attempting to specify objects of any other type is a programmer error and will fail. Fields of all types are searchable unless otherwise noted.

see also

31.40.2 Methods

31.40.3 allKeys as String()

Function: Returns an array of strings corresponding to all keys currently in the record.
Notes:
Returns an array of strings. The returned array contains only the keys that have corresponding values in the record. If no keys are set for the record, this method returns an empty array.
This method may not return all possible keys in the record. Specifically, the method does not return keys whose values are nil.

### 31.40.4 allTokens as String()

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of strings that you can use for full-text searches of the fields string-based values.  
**Notes:** Returns an array of strings containing data from the records string-based fields.

When performing your own full-text searches, you can use this method to get a list of strings for your search. The method acts only on keys whose values are NSString objects. It breaks each value string apart at whitespace boundaries, creates new strings for each word, adds the new strings to an array, and returns the array. This tokenized version of the records string values makes it easier to do string-based comparisons of individual words.

### 31.40.5 Available as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this class is available.  
**Notes:** Should be true for OS X 10.10 and newer in 64-bit application.

### 31.40.6 changedKeys as String()

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of strings representing the keys that have changed recently.  
**Notes:** An array of strings, each of which represents a key whose value has changed since the record was downloaded or saved. If no keys have changed, this method returns an empty array.

### 31.40.7 CKRecordTypeUserRecord as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The record type for an user record.
31.40. CLASS CKRECORDMBS

31.40.8 Constructor


Function: The private constructor.

See also:

- 31.40.9 Constructor(RecordType as String)
- 31.40.10 Constructor(RecordType as String, recordID as CKRecordIDMBS)
- 31.40.11 Constructor(RecordType as String, zoneID as CKRecordZoneIDMBS)

31.40.9 Constructor(RecordType as String)


Function: Initializes and returns a new record of the specified type.

Example:

```plaintext
// Create a new record of type "employee".

dim myRecord as new CKRecordMBS("employee")
```

Notes:

recordType: A string reflecting the type of record that you want to create. This string becomes the type of record thereafter and cannot be changed. You define the record types that your app supports and use them to distinguish between records with different types of data. This parameter must not be nil or contain an empty string.

Record type names must consist of one or more alphanumeric characters and must start with a letter. Type names may include underscore characters as long as they do not start with that character. Spaces are not allowed in the names.

Returns an initialized record object or nil if the record cannot be created.

Use this method to initialize a new record object in the default zone of the database. The newly created record contains no data in any of its fields and is assigned a unique ID.

New records exist only in memory until you explicitly save them to iCloud. In addition, new records are sparse by default and have no values assigned to the fields you defined. (In fact, until you set the value of a key explicitly, getting the value of a key in a new record returns nil.) Even though a record has an associated type, that type information is ignored until you save the record.

Save the record using a CKModifyRecordsOperationMBS object or using the saveRecord method of CKDatabaseMBS to transfer the records contents to the server.
Constructors

**31.40.10 Constructor(RecordType as String, recordID as CKRecordIDMBS)**


**Function:** Initializes and returns a record using an ID that you provide.

**Notes:**

- `recordType`: A string reflecting the type of record that you want to create. Define the record types that your app supports, and use them to distinguish between records with different types of data. This parameter must not be nil or contain an empty string. Record type names consist of one or more alphanumeric characters and start with a letter. Type names may include underscore characters if they do not start with that character. Spaces are not allowed in record type names.
- `recordID`: The ID to assign to the record itself. When creating the ID, you can specify the zone in which to place the record. The ID cannot currently be in use by any other record and must not be nil.

Returns an initialized record object or nil if the record cannot be created.

**Discussion**

Use this method to initialize a new record object with the specified ID. The newly created record contains no data.

Upon creation, record objects exist only in memory on the local device. Save the record using a CKModifyRecordsOperationMBS object or using the saveRecord method of CKDatabaseMBS to transfer the records contents to the server.

**31.40.11 Constructor(RecordType as String, zoneID as CKRecordZoneIDMBS)**


**Function:** Initializes and returns a record in the specified zone.

**Notes:**
recordType: A string reflecting the type of record that you want to create. Define the record types that your app supports, and use them to distinguish between records with different types of data. This parameter must not be nil or contain an empty string. Record type names consist of one or more alphanumeric characters and start with a letter. Type names may include underscore characters if they do not start with that character. Spaces are not allowed in record type names.

zoneID: The ID of the record zone in which to place the record.

Returns an initialized record object, or nil if the record cannot be created.

Use this method to initialize a new record object in the specified record zone.

Upon creation, the new record contains no data and exists only in memory on the local device. Save the record using a CKModifyRecordsOperationMBS object or using the saveRecord:completion: method of CKDatabase to transfer the records contents to the server.

See also:

- 31.40.8 Constructor
- 31.40.9 Constructor(RecordType as String)
- 31.40.10 Constructor(RecordType as String, recordID as CKRecordIDMBS)

31.40.12 copy as CKRecordMBS


31.40.13 setParentReferenceFromRecord(parentRecord as CKRecordMBS)


Notes:

parentRecord: A record that you want to set as the parent to this record.

This method creates and sets a CKReferenceMBS object for the CKRecordMBS passed in. The resulting CKReferenceMBS will have its action set to none.

31.40.14 setParentReferenceFromRecordID(parentRecordID as CKRecordIDMBS)

31.40.15 Properties

31.40.16 creationDate as Date


**Function:** The time when the record was first saved to the server.

**Notes:**

The creation date reflects the time at which a record with the current records ID was created on the server. For new instances of this class, the value of this property is initially set to nil. When you save the record to the server, the value is updated with the appropriate creation date for the record. (Read only property)

31.40.17 creatorUserRecordID as CKRecordIDMBS


**Function:** The ID of the user who created the record.

**Notes:**

Use the value in this property to retrieve the user record of the user who created this record. Every user of the app has a unique user record that is empty by default. Apps can add data to the user record on behalf of the user but should not store sensitive data in it. (Read only property)

31.40.18 Handle as Integer


**Function:** The internal object reference.

**Notes:** (Read and Write property)

31.40.19 lastModifiedUserRecordID as CKRecordIDMBS


**Function:** The ID of the user who last modified the record.

**Notes:**

Use the value in this property to retrieve the user record of the user who last modified this record. Every user of the app has a unique user record that is empty by default. Apps can add data to the user record on behalf of the user but should not store sensitive data in it.
31.40. CLASS CKRECORDMBS

(Read only property)

31.40.20 modificationDate as Date

Function: The time when the record was last saved to the server.
Notes:
The modification date reflects the time at which a record with the current records ID was last saved to the server. For new instances of this class, the value of this property is initially set to nil. When you save the record to the server, the value is updated with the appropriate modification date for the record.
(Read only property)

31.40.21 parent as CKReferenceMBS

Function: A reference to the parent record to this record.
Notes:
A parent reference is used to teach CloudKit about the hierarchy of your records. This hierarchy of records will be shared if the share reference is set on a record.

A parent record reference must have a none set.

The target of a parent reference must exist at save time either already on the server, or part of the same CKModifyRecordsOperationMBS batch.

You are encouraged to set up the parent relationships as part of normal record saves, even if you are not planning on sharing records at this time. This allows you to share and unshare a hierarchy of records at a later date by only modifying the top level record, setting or clear its share reference.
(Read and Write property)

31.40.22 recordChangeTag as String

Function: A string containing the server change token for the record.
Notes:
When you fetch a record from the server, you get the current version of that record as it exists on the server. However, at any time after you fetch a record, other users might save a newer version of the record to the server. Every time a record is saved, the server updates the records change token to a new value. When you
save your instance of the record to the server, the server compares the token in your record with the token on the server. If the two tokens match, the server knows that you modified the latest version of the record and that your changes can be applied right away. If the two tokens do not match, the server applies the save policy your app specified to determine how to proceed.

In your own code, you can use change tokens to distinguish between two different versions of the same record. (Read only property)

### 31.40.23 recordID as CKRecordIDMBS

**Function:** The unique ID of the record.
**Notes:**
The ID of a new record is always set at initialization time. If you use the Constructor method to initialize the record, the ID is derived from the CKRecordIDMBS object you provide. In all other cases, the record generates a UUID and bases its ID on that value. The ID of a record never changes over the lifetime of that record.

When you save a new record object to the server, the server validates the uniqueness of the record but reports an error only if the save policy calls for it. Specifically, it reports an error when the save policy is set to ifServerRecordUnchanged, which is the default. For other save policies, the server overwrites the contents of the existing record accordingly. (Read only property)

### 31.40.24 recordType as String

**Function:** The app-defined string that identifies the type of the record.
**Notes:**
Use this string to differentiate between different record types in your app. The string is primarily for your benefit, so choose type names that reflect the data in the corresponding records. (Read only property)

### 31.40.25 share as CKReferenceMBS

**Function:** A reference to the share associated with the sharing of this record.
**Notes:**
The share property (CKReferenceMBS) on a record will be removed when the corresponding CKShare object is deleted from the server. Send this record in the same batch as the share that is being deleted, and this
31.40. **CLASS CKRECORDMBS**

records share property will be updated.

Sharing is only supported in zones with the CKRecordZoneCapabilitySharing capability. The default zone does not support sharing.

If any records have a parent reference to this record, they are implicitly shared alongside this record.

Note

Records in a hierarchy must only exist within one share. If a child record in a hierarchy already has a share reference set, you will get a CKErrorAlreadyShared error if you try to share any of that records parents. (Read only property)

**31.40.26 dataForKey(key as string) as MemoryBlock**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The value for the given key stored in the record as data. **Notes:** (Read and Write computed property)

**31.40.27 objectForKey(key as string) as Variant**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The value for the given key stored in the record. **Notes:**

key: The string that identifies a field in the record. Key names consist of one or more alphanumeric characters and start with a letter. You may also include underscore characters if you do not use an underscore as the first character in the name. Spaces are not allowed in key names.

Returns the object associated with the specified key or nil if no such key exists in the record.

New records do not contain any keys or values initially. Values are always one of the object types listed in Supported Data Types.

You access the fields of a CKRecord object the same way you access key-value pairs in an NS MUTABLE DICTIONARY. The CKRecord class defines the objectForKey: and setObject:forKey: methods for getting and setting values. It also supports dictionary index notation. (Read and Write computed property)
31.40.28 **stringForKey(key as string) as string**


**Function:** The value for the given key stored in the record as string.

**Notes:**
- If field contains a number, we convert it to string for you.
- (Read and Write computed property)

31.40.29 **textForKey(key as string) as text**


**Function:** The value for the given key stored in the record as text.

**Notes:**
- If field contains a number, we convert it to text for you.
- (Read and Write computed property)
31.41. class CKRecordZoneIDMBS

Overview
A record zone ID distinguishes one zone from another by a name string and the ID of the user that created the zone. Both strings must be ASCII strings that do not exceed 255 characters. For automatically created record zones, the ID name string is based on a UUID and is therefore guaranteed to be unique. When creating your own record zone ID objects, you are free to use names that have more meaning to your app or to the user, providing each zone name is unique within the specified database. The owner name must be either the current user name (obtained from the fetchUserRecordID method) or the name of another user.

When creating new record zones, make the name string in the record zone ID unique in the target database. Public databases do not support custom zones, and zones in a private database can only be created by the user that owns the database.

This class is not intended to be subclassed.

Interacting with Record Zone IDs
After you create a CKRecordZoneIDMBS object, interactions with that object typically include:

- Creating a CKRecordIDMBS object so that you can fetch or create records in that zone.
- Retrieving an existing CKRecordZoneMBS object from the database.

You do not need to create a CKRecordZoneIDMBS object in order to create a CKRecordZoneMBS object. The CKRecordZoneMBS class has initialization methods that create a record zone ID using the name string you provide.

Creating Record Zone IDs to Use with Records
To create a new record in a custom zone, first create a CKRecordZoneIDMBS object that specifies the zone name. Use the record zone ID to create a CKRecordID and then use the record ID to create the record itself.

Fetching a Record Zone Object from the Database
To fetch a CKRecordZoneMBS object from a database, use a CKFetchRecordZonesOperationMBS object.
or the fetchRecordZoneWithID method of the CKDatabaseMBS class. Both techniques take a CKRecordZoneIDMBS object that you provide and retrieve the corresponding record zone object asynchronously. If you use the operation object, you can retrieve multiple record zones at the same time.

### 31.41.2 Methods

### 31.41.3 Available as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this class is available.  
**Notes:** Should be true for OS X 10.10 and newer in 64-bit application.

### 31.41.4 Constructor(zoneName as string, ownerName as string)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns a record zone ID with the specified name and owner.  
**Notes:**  
zoneName: The name that identifies the record zone. The string must contain only ASCII characters and must not exceed 255 characters. To specify the default zone of the current database, pass the CKRecordZoneDefaultName constant for this parameter. This parameter must not be nil or the empty string.  
ownerName: The user who created the record zone. To specify the current user, use the CKOwnerDefaultName constant. If you specify nil or an empty string for this parameter, this method throws an exception.  

Returns an initialized record zone ID object or nil if the object cannot be created.

Use this method to create a record zone ID for use in creating or fetching a record zone.

### 31.41.5 copy as CKRecordZoneIDMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy of this object.

### 31.41.6 IsEqual(Other as CKRecordZoneIDMBS) as boolean

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Checks if two objects are equal.
31.41.7 Properties

31.41.8 Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference. **Notes:** (Read and Write property)

31.41.9 ownerName as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The ID of the user who owns the record zone. **Notes:** (Read only property)

31.41.10 zoneName as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The unique name of the record zone. **Notes:** (Read only property)
31.42 class CKRecordZoneMBS

31.42.1 class CKRecordZoneMBS


Function: A definition of a custom area for organizing related records in a database.

Notes:

Zones are an important part of how you organize your data. The public and private databases have a single default zone. In the private database you can use CKRecordZoneMBS objects to create additional custom zones as needed. Use custom zones to arrange and encapsulate groups of related records in the private database. Custom zones support other capabilities too, such as the ability to write multiple records as a single atomic transaction.

Treat each custom zone as a single unit of data that is separate from every other zone in the database. Inside the zone, you add records as you would anywhere else. You can also create links between the records inside a zone by using the CKReferenceMBS class. However, the CKReferenceMBS class does not support cross-zone linking, so each reference object must point to a record in the same zone as the current record.

Use the CKRecordZoneMBS class as-is and do not subclass.

Creating a Custom Record Zone

For the most part, you use instances of this class to create and manage custom zones. Although you can use this class to retrieve a databases default zone, most operations act on records in the default zone by default, so you rarely need to specify it explicitly.

To create a custom zone, use CKRecordZoneMBS to create the zone object, and then save that zone to the users private database using a CKModifyRecordZonesOperationMBS object. You cannot save any records in the zone until you save it to the database. When creating records, explicitly specify the zone ID if you want the records to reside in a specific zone; otherwise, they will be saved to the default zone. You cannot create custom zones in a public database.

After creating a CKRecordZoneMBS object and saving it to the database, you do not interact with the object much. Instead, most interactions occur with its associated CKRecordZoneIDMBS object, which you use to refer to the zone when creating records.

31.42.2 Methods

31.42.3 Available as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether this class is available.
31.42. CLASS CKRECORDZONEMBS

Notes: Should be true for OS X 10.10 and newer in 64-bit application.

31.42.4 CKRecordZoneDefaultName as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The name of the default zone. Notes: Use this constant when you need to refer to the default zone by name, perhaps when creating a zone ID. The default zone has no special capabilities.

31.42.5 Constructor(zoneID as CKRecordZoneIDMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Initializes and returns a record zone object using the specified ID. Notes: zoneID: The ID for the new zone. This parameter must not be nil.

Returns the new custom zone, or nil if the zone cannot be created.

Use this method when you want to create a new record zone based on the information in a zone ID. After creating the zone, save it to the server using a CKModifyRecordZonesOperationMBS object or the save method of the CKDatabaseMBS class.

Do not use this method to create a CKRecordZoneMBS object corresponding to a zone that already exists in the database. If the zone exists, fetch it using a CKFetchRecordZonesOperationMBS object or the fetch method of the CKDatabaseMBS class. See also:

• 31.42.6 Constructor(zoneName as string)

31.42.6 Constructor(zoneName as string)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Initializes and returns a record zone object with the specified name. Notes: zoneName: The name of the new zone. Zone names inside a user’s private database are unique, consist of ASCII characters, are no longer than 255 characters, and do not start with an underscore (_) character. One way to ensure the uniqueness of zone names is to create a string based on a UUID, but you can also use other techniques.
If this parameter is nil or is an empty string, the method throws an exception.

Returns the new custom zone, or nil if the zone cannot be created.

Use this method to create a new record zone. The new zone has the name you provide and the zones owner is set to the current user. After creating the zone, save it to the server using a CKModifyRecordZonesOperationMBS object or the saveRecordZone method of the CKDatabase class. You must save the zone to the server before attempting to save any records to that zone.

Do not use this method to create a CKRecordZone object corresponding to a zone that already exists in the database. If the zone exists, fetch it using a CKFetchRecordZonesOperationMBS object or the fetchRecordZoneWithID method of the CKDatabase class.

See also:
- 31.42.5 Constructor(zoneID as CKRecordZoneIDMBS)

31.42.7 copy as CKRecordZoneMBS


31.42.8 defaultRecordZone as CKRecordZoneMBS


Notes:
The default record zone for a database.

Always use this method to retrieve the default zone for a database. The returned object can be used to specify the default zone for either the public or private database of a container. You do not need to save the returned zone object before using it. The owner of the zone is set to CKOwnerDefaultName, which corresponds to the current user.

The default zone of a database is a convenient place to store and access records. Whenever you do not explicitly assign a zone to a record, CloudKit puts the record in the default zone.

The disadvantage of using the default zone for storing records is that it does not have any special capabilities. You cannot save a group of records to iCloud atomically in the default zone. Similarly, you cannot use a CKFetchRecordChangesOperationMBS object on records in the default zone.
31.42. **CLASS CKRECORDZONEMBS**

### 31.42.9 Properties

#### 31.42.10 capabilities as Integer

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The capabilities supported by the zone. **Notes:**

The server determines the capabilities of the zone and sets the value of this property when you save the record zone. Always check this property before performing tasks that require a specific capability.

Typically, default zones do not support any special capabilities. Custom zones in a private database normally support all options.

For more information about what you can do with specific capabilities, see Capabilities* constants. *(Read only property)*

#### 31.42.11 Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference. **Notes:** *(Read and Write property)*

#### 31.42.12 zoneID as CKRecordZoneIDMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The unique ID of the zone. **Notes:**

The zone ID contains the name of the zone and the name of the user who owns the zone. Use this property to access both of those values. *(Read only property)*

#### 31.42.13 Constants

#### 31.42.14 CapabilityAtomic = 2

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the constants indicating the special capabilities supported by a zone. **Notes:**
A capability that allows changes to multiple records to be made atomically.

When you use a CKModifyRecordsOperationMBS object to save records, if the server is unable to save the changes for one record, it does not save the changes for any of the records. When combined with the CK-RecordSaveIfServerRecordUnchanged policy of the operation object, this behavior prevents your app from overwriting changes to a group of records if one of the records was modified elsewhere.

### 31.42.15 CapabilityFetchChanges = 1

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the constants indicating the special capabilities supported by a zone.

**Notes:**

A capability that allows you to fetch only the changed values in records.

This capability makes the creation of offline caches more efficient. Instead of fetching the entire record every time, use a CKFetchRecordChangesOperationMBS object to fetch only the values that changed, and use the returned data to update your caches. Doing so minimizes the amount of data you receive from the server. You can still fetch the entire record using a CKFetchRecordsOperationMBS object if you want.

### 31.42.16 CapabilitySharing = 4

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the constants indicating the special capabilities supported by a zone.

**Notes:** Sharing
31.43. CLASS CKRECORDZONENOTIFICATIONMBS

31.43 class CKRecordZoneNotificationMBS

31.43.1 class CKRecordZoneNotificationMBS


Function: A notification that is caused by changes to the contents of a record zone.

Notes:
Zone-related changes occur when existing records in the zone are modified, when new records are added, and when existing records are deleted. Use instances of this class to determine which zone triggered the notification.

You do not create instances of this class directly. When your app receives a push notification, call the notificationFromRemoteNotificationDictionary method of CKNotificationMBS to generate a notification object of the appropriate type. You can also fetch previously delivered notifications from a container using a CKFetchNotificationChangesOperationMBS object. If the notification was triggered due to a record zone change, the operation object delivers an instance of CKRecordZoneNotificationMBS with its notificationType property set to CKNotificationTypeRecordZoneMBS. Use the record zone notification object to get the record zone information and other push-related data.

If a push notifications payload is too large, pieces of data may be dropped until the payload meets the allowed size limit. The data that alerts the user is the most important and is dropped last. Data values in this class are among the first to be dropped, with values being dropped in the following order:

1. containerIdentifier defined in the CKNotification class.
2. recordZoneID
3. Other properties of the CKNotification class.

Subclass of the CKNotificationMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

31.43.2 Methods

31.43.3 Constructor

31.43.4 Properties

31.43.5 databaseScope as Integer

Function: The type of database (public, private, or shared) associated with the zone.
Notes:
For more details on the values returned, see CKDatabaseMBS.Scope* constants.
(Read only property)

31.43.6 recordZoneID as CKRecordZoneIDMBS

Function: The ID of the zone that changed.
Notes:
Use the value of this property to fetch the corresponding zone from the database.
(Read only property)
31.44. class CKRecordZoneSubscriptionMBS

31.44.1 class CKRecordZoneSubscriptionMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A subscription that causes a push notification to fire whenever any change happens in the specified record zone.

**Notes:** Subclass of the CKSubscriptionMBS class.

31.44.2 Methods

31.44.3 Constructor(zoneID as CKRecordZoneIDMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns a subscription object that monitors all records in the specified record zone.

**Notes:**

- zoneID: The ID of the record zone containing the records you want to monitor. This parameter must not be nil.

Returns a subscription object initialized to track changes to the contents of the specified record zone.

The object returned by this method is configured as a zone-based subscription, which generates a push notification when any changes are made to the records in the specified zone.

See also:

- 31.44.4 Constructor(zoneID as CKRecordZoneIDMBS, subscriptionID as string)

31.44.4 Constructor(zoneID as CKRecordZoneIDMBS, subscriptionID as string)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns a subscription object that monitors the specified zone and has a custom name that you provide.

**Notes:**

- zoneID: The ID of the record zone containing the records you want to monitor. This parameter must not be nil.
- subscriptionID: The unique name of the subscription object. This string must be unique for each subscription object in the container. This parameter must not be nil.

Returns a subscription object initialized to track changes to the contents of a record zone.
The CKRecordZoneSubscriptionMBS returned by this method is configured as a zone-based subscription, which generates a push notification when any changes are made to the records in the specified zone. See also:

- 31.44.3 Constructor(zoneID as CKRecordZoneIDMBS)

### 31.44.5 copy as CKRecordZoneSubscriptionMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy of this object.

### 31.44.6 Properties

#### 31.44.7 recordType as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The record type being monitored in a query-based subscription. (read-only)

**Notes:**

The value of this property applies only to query-based subscriptions and is set automatically by the CKRecordZoneSubscriptionMBS and CKRecordZoneSubscriptionMBS methods. For all other types of subscription objects, the value of this property is ignored and set to nil.

(Read and Write property)

#### 31.44.8 zoneID as CKRecordZoneIDMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Zone that the specified query subscription is scoped to.

**Notes:**

The value of this property applies both to query-based subscriptions and zone-based subscriptions. Specifying a record zone limits the search scope to the records in that zone. In the case of a zone-based subscription, the search encompasses all records in the zone. For a query-based subscription, the search encompasses only records of recordType in that zone.

For zone-based subscriptions, the value of this property is set automatically by the CKRecordZoneSubscriptionMBS or CKRecordZoneSubscriptionMBS methods. For all other subscription types, the default value is nil. To apply a zone to a query-based subscription, you must assign a value explicitly.

(Read only property)
31.45.  CLASS CKREFERENCEMBS

31.45  class CKReferenceMBS

31.45.1  class CKReferenceMBS

Function: A CKReference object creates a many-to-one relationship between records in your database.
Notes:
Each reference object stores information about the one record that is the target of the reference. You then
save the reference object in the fields of one or more records to create a link from those records to the target.
Both records must be located in the same zone of the same database.

see

31.45.2  Methods

31.45.3  Available as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether this class is available.
Notes: Should be true for OS X 10.10 and newer in 64-bit application.

31.45.4  Constructor

Function: The private constructor.
See also:

- 31.45.5 Constructor(record as CKRecordMBS, action as Integer = 0) 5339
- 31.45.6 Constructor(recordID as CKRecordIDMBS, action as Integer = 0) 5340

31.45.5  Constructor(record as CKRecordMBS, action as Integer = 0)

Function: Initializes and returns a reference object that points to the specified record object.
Notes:
record: The target record of the reference.
action: The ownership options to put in place for the records. If you specify the deleteSelf option, the object
referred to by the recordID parameter becomes the owner of any objects that use this reference object. For
a list of possible values, see CKReferenceAction.

Returns an initialized reference object that points to the specified record, or nil if the reference cannot be initialized.

Use this method to initialize a reference to a local record object. The local record can be one that you just created or one that you fetched previously from the server.

When you create a reference object for use in a search predicate, the predicate ignores the value in the action parameter. Search predicates use only the ID of the record during their comparison.

See also:

- 31.45.4 Constructor
- 31.45.5 Constructor(record as CKRecordMBS, action as Integer = 0)

### 31.45.6 Constructor(recordID as CKRecordIDMBS, action as Integer = 0)


**Function:** Initializes and returns a reference object that points to the record with the specified ID.

**Notes:**

recordID: The ID of the target record. This method throws an exception if you specify nil for this parameter.

action: The ownership option to put in place between the target record and any records that incorporate this reference object. If you specify the deleteSelf option, the record referred to by the recordID parameter owns (or acts as the parent) of any objects that use this reference object. For a list of possible values, see CKReferenceActionMBS.

Returns an initialized reference object that points to the specified record, or nil if the reference cannot be initialized.

Use this method when you have only the ID of the record that is to become the target of a link. You might use this method if you saved only the ID of the record to a local data cache.

When you create a reference object for use in a search predicate, the predicate ignores the value in the action parameter. Search predicates use only the ID of the record during their comparison.

See also:

- 31.45.4 Constructor
- 31.45.5 Constructor(record as CKRecordMBS, action as Integer = 0)
31.45.7 copy as CKReferenceMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy of this object.

31.45.8 Properties

31.45.9 Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference. **Notes:** (Read and Write property)

31.45.10 recordID as CKRecordIDMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The ID of the referenced record. **Notes:** Use the ID in this property to fetch the record on the other end of the link. (Read only property)

31.45.11 referenceAction as Integer

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The ownership behavior for the records. **Notes:** The value in this property determines what action, if any, to take when the target of the reference object that is, the object pointed to in the recordID property is deleted. When this property is set to deleteSelf, deleting the target object deletes any records that contain that reference in one of their fields. When this property is set to none, deleting the target object does not delete any additional objects. (Read only property)

31.45.12 Constants

31.45.13 ActionDeleteSelf = 1

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the actions. **Notes:**
The delete action for referenced records.
Deleting a record also deletes any records containing CKReferenceMBS objects that point to that record. The deletion of the additional records may trigger a cascade deletion of more records. The deletions are asynchronous in the default zone and immediate in a custom zone.

31.45.14 ActionNone = 0

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the actions.
**Notes:**

No action when a referenced record is deleted.
Deleting a parent record does not delete the children that refer to that parent. The CKReference object still contains the ID of the deleted record and is not updated automatically.
31.46. CLASS CKSERVERCHANGETOKENMBS

31.46. class CKServerChangeTokenMBS


**Function:** A CKServerChangeTokenMBS object is an opaque data object that identifies a specific version of a record.

**Notes:**
You do not create instances of this class yourself. When fetching records using a CKFetchRecordChangeOperation object, the server provides one of these objects along with the record changes. The next time you fetch the records, pass the previous token to the server. Passing the previous token tells the server what portions of the records to fetch and return to your app.

This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

31.46.2. Methods

31.46.3. Available as Boolean


**Function:** Whether this class is available.

**Notes:** Should be true for OS X 10.10 and newer in 64-bit application.

31.46.4. Constructor


**Function:** The private constructor.

31.46.5. copy as CKServerChangeTokenMBS


**Function:** Creates a copy of this object.

31.46.6. IsEqual(Other as CKServerChangeTokenMBS) as boolean


**Function:** Checks if two objects are equal.
31.46.7 Properties

31.46.8 description as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The description text.  
**Notes:** (Read only property)

31.46.9 Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference.  
**Notes:** (Read and Write property)
31.47. CLASS CKSHAREMBS

31.47 class CKShareMBS

31.47.1 class CKShareMBS


Function: A reference to a shared record.

Notes:
Available in macOS 10.12 and newer.
Subclass of the CKRecordMBS class.

31.47.2 Methods

31.47.3 addParticipant(participant as CKShareParticipantMBS)


Function: Adds a participant to this share.

Notes:
participant: The participant to be added to this share.

If a participant with a matching userIdentity already exists in this share, that existing participants properties are updated; no new participant is added.

To modify the list of participants, a share must have publicPermission set to CKShareParticipantPermission-None. You cannot mix and match private users and public users in the same share. Only certain participant types may be added via this API; see CKShareParticipantMBS.

31.47.4 Available as Boolean


Function: Whether this class is available.

Notes: Should be true for OS X 10.12 and newer in 64-bit application.

31.47.5 CKRecordTypeShare as String


Function: The type of record for a share.
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31.47.6 CKShareThumbnailImageDataKey as String

Function: One of the predefined keys in the CKRecordTypeShare schema.
Notes:
They’re used by the out of process UI flow to send a share, and as part of the share acceptance flow. These
are optional.

Value is a data blob suitable to pass into NSImageMBS.imageWithData.

31.47.7 CKShareTitleKey as String

Function: One of the predefined keys in the CKRecordTypeShare schema.
Notes:
They’re used by the out of process UI flow to send a share, and as part of the share acceptance flow. These
are optional.

Value is a string. Example for a recipe sharing app: "Pot Roast"

31.47.8 CKShareTypeKey as String

Function: One of the predefined keys in the CKRecordTypeShare schema.
Notes:
They’re used by the out of process UI flow to send a share, and as part of the share acceptance flow. These
are optional.

Value is a string representing a UTI. Example for a recipe sharing app: "com.mycompany.recipe"

31.47.9 Constructor

Function: The constructor.
See also:

• 31.47.10 Constructor(RecordType as String)
31.47. **CLASS CKSHAREMBS**

- 31.47.10 Constructor(RecordType as String)

  **Function:** The constructor.
  See also:
  - 31.47.9 Constructor  
  - 31.47.11 Constructor(RecordType as String, recordID as CKRecordIDMBS)  
  - 31.47.12 Constructor(RecordType as String, zoneID as CKRecordZoneIDMBS)  
  - 31.47.13 Constructor(rootRecord as CKRecordMBS)  
  - 31.47.14 Constructor(rootRecord as CKRecordMBS, shareID as CKRecordIDMBS)  

- 31.47.11 Constructor(RecordType as String, recordID as CKRecordIDMBS)

  **Function:** The constructor.
  See also:
  - 31.47.9 Constructor  
  - 31.47.10 Constructor(RecordType as String)  
  - 31.47.12 Constructor(RecordType as String, zoneID as CKRecordZoneIDMBS)  
  - 31.47.13 Constructor(rootRecord as CKRecordMBS)  
  - 31.47.14 Constructor(rootRecord as CKRecordMBS, shareID as CKRecordIDMBS)  

- 31.47.12 Constructor(RecordType as String, zoneID as CKRecordZoneIDMBS)

  **Function:** The constructor.
  See also:
  - 31.47.9 Constructor  
  - 31.47.10 Constructor(RecordType as String)
31.47.13 Constructor(rootRecord as CKRecordMBS)

Function: Initializes and returns a share object.
Notes: When saving a newly created CKShare, you must save the share and its rootRecord in the same CKModifyRecordsOperationMBS batch.
See also:
- 31.47.9 Constructor
- 31.47.10 Constructor(RecordType as String)
- 31.47.11 Constructor(RecordType as String, recordID as CKRecordIDMBS)
- 31.47.12 Constructor(RecordType as String, zoneID as CKRecordZoneIDMBS)
- 31.47.14 Constructor(rootRecord as CKRecordMBS, shareID as CKRecordIDMBS)

31.47.14 Constructor(rootRecord as CKRecordMBS, shareID as CKRecordIDMBS)

Function: Initializes and returns a share object.
Notes:
rootRecord: The record being shared.
shareID: The CKRecordID associated with this share.

When saving a newly created CKShare, save the share and its rootRecord in the same CKModifyRecordsOperationMBS batch.
See also:
- 31.47.9 Constructor
- 31.47.10 Constructor(RecordType as String)
- 31.47.11 Constructor(RecordType as String, recordID as CKRecordIDMBS)
- 31.47.12 Constructor(RecordType as String, zoneID as CKRecordZoneIDMBS)
- 31.47.13 Constructor(rootRecord as CKRecordMBS)
31.47.15  **participants as CKShareParticipantMBS()**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An array containing metadata objects for all participants in this share. **Notes:** The participants array contains all participants on the share that the current user has permissions to see. At a minimum, this array includes the owner and the current user.

31.47.16  **removeParticipant(participant as CKShareParticipantMBS)**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes a participant from the share. **Notes:**

participant: The participant to be removed from this share.

To modify the list of participants, a share must have publicPermission set to CKShareParticipantPermission-None. You cannot mix and match private users and public users in the same share. Only certain participant types may be added via this API; see CKShareParticipantMBS.

31.47.17  **Properties**

31.47.18  **currentUserParticipant as CKShareParticipantMBS**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The current users metadata for this share. **Notes:**

This computed property accesses the participants property and returns the CKShareParticipant that is associated with the current user. (Read only property)

31.47.19  **owner as CKShareParticipantMBS**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The share owners metadata. **Notes:**

This computed property accesses the participants property and returns the CKShareParticipant that is associated with the owner of this share. (Read only property)
31.47.20 publicPermission as Integer

Function: Definition of permissions new users joining this share will have initially.
Notes:
Shares with publicPermission more permissive than CKShareParticipantPermissionNone are joinable by any user with access to the shares URL. If the value is set to CKShareParticipantPermissionReadWrite, then those users can also create and modify records in the share. By default, public permission is CKShareParticipantPermissionNone. Changing the public permission to CKShareParticipantPermissionNone results in all public participants being removed when the share is saved.
(Read and Write property)

31.47.21 URL as String

Function: A URL that can be used to invite participants to this share.
Notes:
This property is only available after a share record has been saved to the server. This URL is stable and is tied to the rootRecord. If you share a rootRecord, delete the share, and then re-share the same rootRecord via a newly created share, that newly created shares URL will be identical to the prior shares URL.
(Read only property)
31.48. CLASS CKSHAREMETADATAMBS

31.48  class CKShareMetadataMBS

31.48.1  class CKShareMetadataMBS


31.48.2  Methods

31.48.3  Available as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether this class is available. Notes: Should be true for OS X 10.12 and newer in 64-bit application.

31.48.4  Constructor


31.48.5  copy as CKShareMetadataMBS


31.48.6  Properties

31.48.7  containerIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The unique identifier for the container associated with this share. Notes: This read only property can be used to fetch the container associated with this share. (Read only property)
31.48.8 Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference.  
**Notes:** (Read and Write property)

31.48.9 ownerIdentity as CKUserIdentityMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The identity of the owner of the associated share.  
**Notes:** This read only property is used to access the owner of the share.  
(Read only property)

31.48.10 participantPermission as Integer

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Permissions associated with the user who retrieved the metadata for this share.  
**Notes:** This property reflects the permissions associated with the participant who invoked the CKFetchShareMetadataOperationMBS.  
(Read only property)

31.48.11 participantStatus as Integer

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The participation status of the user who retrieved the metadata for this share.  
**Notes:** This property reflects the status of the participant who invoked the CKFetchShareMetadataOperationMBS.  
See CKShareParticipantMBS for the statuses available.  
(Read only property)

31.48.12 participantType as Integer

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The type of the user who retrieved the metadata for this share.  
**Notes:**
This property reflects the \texttt{participantType} of the participant who invoked the \texttt{CKFetchShareMetadataOperationMBS}. See \texttt{CKShareParticipantMBS} for the types available.

(Read only property)

31.48.13 \textbf{rootRecord as CKRecordMBS}

\textbf{Function}: The root record associated with this share.
\textbf{Notes}:
This read only property contains a reference to the root record associated with this share. This property can be nil if the \texttt{CKFetchShareMetadataOperationMBS} did not set \texttt{shouldFetchRootRecord} to true.
(Read only property)

31.48.14 \textbf{rootRecordID as CKRecordIDMBS}

\textbf{Function}: The unique identifier for the root record associated with this share.
\textbf{Notes}:
This property is populated even if \texttt{shouldFetchRootRecord} is set to false on the \texttt{CKFetchShareMetadataOperationMBS} and can be used to retrieve the \texttt{rootRecord} if the record was not retrieved with the metadata.
(Read only property)

31.48.15 \textbf{share as CKShareMBS}

\textbf{Function}: The associated share.
\textbf{Notes}:
This read only property contains a reference to the \texttt{CKShareMBS} that this \texttt{CKShareMetadataMBS} is associated with.
(Read only property)
31.49 class CKShareParticipantMBS

31.49.1 class CKShareParticipantMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A reference to a person who accepted a shared record.

**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

31.49.2 Methods

31.49.3 Available as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this class is available.

**Notes:** Should be true for OS X 10.10 and newer in 64-bit application.

31.49.4 Constructor

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.

31.49.5 copy as CKShareParticipantMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy of this object.

31.49.6 Properties

31.49.7 acceptanceStatus as Integer

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The current state of the users acceptance of this share. (read-only)

**Notes:**
This property contains the current state of the participants acceptance of this share. For a list of possible values, see CKShareParticipantAcceptanceStatus* constants.
(Read only property)
31.49. CLASS CKSHAREPARTICIPANTMBS

31.49.8 Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference.  
**Notes:** (Read and Write property)

31.49.9 permission as Integer

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The permission level that the user has for this share.  
**Notes:**  
This property controls the permissions that the participant has for this share. For a list of possible values, see CKShareParticipantPermission* constants.  
(Read and Write property)

31.49.10 type as Integer

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The participant type.  
**Notes:**  
The property controls the participant type for the share. For a list of possible values, see CKShareParticipantType* constants.  
(Read and Write property)

31.49.11 userIdentity as CKUserIdentityMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The identity of the participant. (read-only)  
**Notes:**  
This property contains a reference to the user identity for the share participant.  
(Read only property)

31.49.12 Constants

31.49.13 CKShareParticipantAcceptanceStatusAccepted = 2  

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the status values of a participant.  
**Notes:** The participant has accepted the share request.
31.49.14  CKShareParticipantAcceptanceStatusPending = 1

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the status values of a participant. **Notes:** The participant has not accepted the share request.

31.49.15  CKShareParticipantAcceptanceStatusRemoved = 3

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the status values of a participant. **Notes:** The participant was removed from the share.

31.49.16  CKShareParticipantAcceptanceStatusUnknown = 0

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the status values of a participant. **Notes:** The participants status is unknown.

31.49.17  CKShareParticipantPermissionNone = 1

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the permissions granted constants for the participant. **Notes:** The participant does not have any permissions for this share.

31.49.18  CKShareParticipantPermissionReadOnly = 2

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the permissions granted constants for the participant. **Notes:** The participant has read only permissions for this share.

31.49.19  CKShareParticipantPermissionReadWrite = 3

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the permissions granted constants for the participant. **Notes:** The participant has full read and write permissions for this share.
31.49. **CLASS CKSHAREPARTICIPANTMBS**

### 31.49.20 CKShareParticipantPermissionUnknown = 0

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the permissions granted constants for the participant.
**Notes:** The current status of the participant’s permissions is unknown.

### 31.49.21 CKShareParticipantTypeOwner = 1

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the participant types.
**Notes:** The participant is the owner of the share. As owner, the user can add private users to the share.

### 31.49.22 CKShareParticipantTypePrivateUser = 3

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the participant types.
**Notes:** The participant is a private user and can access the share.

### 31.49.23 CKShareParticipantTypePublicUser = 4

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the participant types.
**Notes:** The participant is a public user. Public users are self-added when the participant accesses the shareURL. Owners cannot add public users.

### 31.49.24 CKShareParticipantTypeUnknown = 0

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the participant types.
**Notes:** The type of the participant cannot be determined.
31.50 class CKSubscriptionMBS

31.50.1 class CKSubscriptionMBS

Function: Use a CKSubscription object to track changes occurring on the server.
Notes:
A subscription acts like a persistent query on the server that can track the creation, deletion, and modification of records. When changes occur, they trigger the delivery of push notifications so that your app can respond appropriately.

see

Available in 10.10 in 64-bit, but most is deprecated by Apple with 10.12.

31.50.2 Methods

31.50.3 Available as Boolean

Function: Whether this class is available.
Notes: Should be true for OS X 10.10 and newer in 64-bit application.

31.50.4 Constructor

Function: The private constructor.
See also:

- 31.50.5 Constructor(RecordType as String, predicate as NSPredicateMBS, querySubscriptionOptions as Integer) 5359
- 31.50.6 Constructor(RecordType as String, predicate as NSPredicateMBS, subscriptionID as string, querySubscriptionOptions as Integer) 5359
- 31.50.7 Constructor(zoneID as CKRecordZoneIDMBS, subscriptionID as string, subscriptionOptions as Integer) 5360
- 31.50.8 Constructor(zoneID as CKRecordZoneIDMBS, subscriptionOptions as Integer) 5361
**31.50.5 Constructor(RecordType as String, predicate as NSPredicateMBS, querySubscriptionOptions as Integer)**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns a query-based subscription that monitors records with the specified options. **Notes:**

- **recordType:** The string that identifies the type of records to track. You are responsible for naming your apps record types. This parameter must not be nil or an empty string.
- **predicate:** The matching criteria to apply to the records. This parameter must not be nil. For information about the operators that are supported in search predicates, see the discussion in CKQueryMBS.
- **subscriptionOptions:** A bitmask of the configuration options for the subscription. You must specify at least one of the following values: CKSubscriptionOptionsFiresOnRecordCreation, CKSubscriptionOptionsFiresOnRecordUpdate, or CKSubscriptionOptionsFiresOnRecordDeletion.

Returns a subscription object initialized to track record-related changes.

The object returned by this method is configured as a query-based subscription for searching records in the target database. The subscription monitors the specified type of records in all of the users record zones and generates push notifications when the search criteria are met.

See also:

- 31.50.4 Constructor
- 31.50.6 Constructor(RecordType as String, predicate as NSPredicateMBS, subscriptionID as string, querySubscriptionOptions as Integer)
- 31.50.7 Constructor(zoneID as CKRecordZoneIDMBS, subscriptionID as string, subscriptionOptions as Integer)
- 31.50.8 Constructor(zoneID as CKRecordZoneIDMBS, subscriptionOptions as Integer)

**31.50.6 Constructor(RecordType as String, predicate as NSPredicateMBS, subscriptionID as string, querySubscriptionOptions as Integer)**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns a query-based subscription that monitors records with the specified options. **Notes:**

- **recordType:** The string that identifies the type of records to track. You are responsible for naming your apps record types. This parameter must not be nil or an empty string.
- **predicate:** The matching criteria to apply to the records. This parameter must not be nil. For information about the operators that are supported in search predicates, see the discussion in CKQueryMBS.
- **subscriptionOptions:** A bitmask of the configuration options for the subscription. You must specify at least one of the following values: CKSubscriptionOptionsFiresOnRecordCreation, CKSubscriptionOptionsFiresOnRecordUpdate, or CKSubscriptionOptionsFiresOnRecordDeletion.
Returns a subscription object initialized to track record-related changes.

The object returned by this method is configured as a query-based subscription for searching records in the target database. The subscription monitors the specified type of records in all of the users record zones and generates push notifications when the search criteria are met.

See also:

- 31.50.4 Constructor
- 31.50.5 Constructor(RecordType as String, predicate as NSPredicateMBS, querySubscriptionOptions as Integer)
- 31.50.7 Constructor(zoneID as CKRecordZoneIDMBS, subscriptionID as string, subscriptionOptions as Integer)
- 31.50.8 Constructor(zoneID as CKRecordZoneIDMBS, subscriptionOptions as Integer)

31.50.7 Constructor(zoneID as CKRecordZoneIDMBS, subscriptionID as string, subscriptionOptions as Integer)


**Function:** Initializes and returns a subscription object that monitors the specified zone and has a custom name that you provide.

**Notes:**

- zoneID: The ID of the record zone containing the records you want to monitor. This parameter must not be nil.
- subscriptionID: The unique name of the subscription object. This string must be unique for all other subscription objects in the container. This parameter must not be nil.
- subscriptionOptions: The configuration options for the subscription. You must specify 0 for this parameter. Zone subscriptions currently do not support any options.

Returns a subscription object initialized to track changes to the contents of a record zone.

The object returned by this method is configured as a zone-based subscription, which generates a push notification when any changes are made to the records in the specified zone.

See also:

- 31.50.4 Constructor
- 31.50.5 Constructor(RecordType as String, predicate as NSPredicateMBS, querySubscriptionOptions as Integer)
- 31.50.6 Constructor(RecordType as String, predicate as NSPredicateMBS, subscriptionID as string, querySubscriptionOptions as Integer)
- 31.50.8 Constructor(zoneID as CKRecordZoneIDMBS, subscriptionOptions as Integer)
31.50.8 Constructor(zoneID as CKRecordZoneIDMBS, subscriptionOptions as Integer)


**Function:** Initializes and returns a subscription object that monitors all records in the specified record zone.  
**Notes:**  
zoneID: The ID of the record zone containing the records you want to monitor. This parameter must not be nil.  
subscriptionOptions: The configuration options for the subscription. You must specify 0 for this parameter. Zone subscriptions currently do not support any options.  

Returns a subscription object initialized to track changes to the contents of a record zone.  

The object returned by this method is configured as a zone-based subscription, which generates a push notification when any changes are made to the records in the specified zone.  

See also:

- 31.50.4 Constructor
- 31.50.5 Constructor(RecordType as String, predicate as NSPredicateMBS, querySubscriptionOptions as Integer)
- 31.50.6 Constructor(RecordType as String, predicate as NSPredicateMBS, subscriptionID as string, querySubscriptionOptions as Integer)
- 31.50.7 Constructor(zoneID as CKRecordZoneIDMBS, subscriptionID as string, subscriptionOptions as Integer)

31.50.9 copy as CKSubscriptionMBS


**Function:** Creates a copy of this object.  

31.50.10 Properties

31.50.11 Handle as Integer


**Function:** The internal object reference.  
**Notes:** (Read and Write property)
31.50.12 notificationInfo as CKNotificationInfoMBS


Function: The configuration data for push notifications sent by the subscription.

Notes:

If you want your subscriptions push notifications to alert the user to corresponding changes, assign a value to this property. The server uses the information in the CKNotificationInfoMBS object to determine the delivery options for notifications. For example, you can specify the alert text to display and the name of a special sound file to play. When a push notification involves a record, you can also specify which fields of the record to include in the push notifications payload data.

If you do not assign a value to this property, the server still sends push notifications to your app but those notifications do not cause the system to alert the user. The default value of this property is nil.

(Read only property)

31.50.13 predicate as NSPredicateMBS


Function: The matching criteria to apply to records.

Notes:

A query-based subscription uses its search predicate to identify potential matches for records. It combines the predicate information with the value in the subscriptionOptions property to determine the conditions under which to send a push notification to the app.

The search predicate defines the records that the subscription object monitors for changes. The value in this property is used only if the subscriptionTypeMBS property is set to CKSubscriptionTypeQuery; otherwise, it is ignored.

(Read only property)

31.50.14 recordType as String


Function: The record type being monitored in a query-based subscription.

Notes:

The value of this property applies only to query-based subscriptions and is set automatically by the constructors. For all other types of subscription objects, the value of this property is ignored and set to nil.

(Read only property)
31.50. **CLASS CKSUBSCRIPTIONMBS**

### 31.50.15 subscriptionID as String

**Function:** The unique identifier for the subscription.

**Notes:**
If you initialize the subscription object using the constructor, the default value of this property is set to the value provided by those methods. In all other cases, an ID based on a UUID is generated for you automatically.

(Read only property)

### 31.50.16 subscriptionOptions as Integer

**Function:** The options for triggering notifications.

**Notes:**
Set the value of this property at initialization time. When configuring a query-based subscription, you must specify at least one of the following values: CKSubscriptionOptionsFiresOnRecordCreation, CKSubscriptionOptionsFiresOnRecordUpdate, or CKSubscriptionOptionsFiresOnRecordDeletion.

(Read only property)

### 31.50.17 subscriptionType as Integer

**Function:** The type of behavior provided by the subscription.

**Notes:**
The value of this property is set automatically at creation time. Use it to distinguish between query-based subscriptions and those that monitor specific types of data.

(Read only property)

### 31.50.18 zoneID as CKRecordZoneIDMBS

**Function:** The ID of the record zone to monitor.

**Notes:**
The value of this property applies both to query-based subscriptions and zone-based subscriptions. Specifying a record zone limits the search scope to the records in that zone. In the case of a zone-based subscription, the search encompasses all records in the zone. For a query-based subscription, the search encompasses only records of a specific type in that zone.
For zone-based subscriptions, the value of this property is set automatically by the constructor. For all other subscription types, the default value is nil. To apply a zone to a query-based subscriptions, you must assign a value explicitly.

(Read only property)

### 31.50.19 Constants

**31.50.20 OptionsFiresOnce = 8**

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the configuration options for a subscription. **Notes:** An option for sending a push notification only one time. After sending the push notification, the server deletes the subscription object. This option applies only to query-based subscriptions.

### 31.50.21 OptionsFiresOnRecordCreation = 1

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the configuration options for a subscription. **Notes:** An option for generating a push notification when a record that matches the search criteria in the predicate property is created. This option applies only to query-based subscriptions.

### 31.50.22 OptionsFiresOnRecordDeletion = 4

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the configuration options for a subscription. **Notes:** An option for generating a push notification when a record that matched the search criteria in the predicate property was deleted. This option applies only to query-based subscriptions.

### 31.50.23 OptionsFiresOnRecordUpdate = 2

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the configuration options for a subscription. **Notes:** An option for generating a push notification when changes are made to the fields of a record that cause the record to match the search criteria specified in the predicate property. This option applies only to query-based subscriptions.

### 31.50.24 TypeDatabase = 3

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the constants that identify a subscriptions behavior. **Notes:** A constant indicating the subscription is a query-based subscription. This type of subscription
tracks the creation, modification, or deletion of a specific type of record.

31.50.25 TypeQuery = 1

MBS Mac64bit Plugin, Plugin Version: 16.5. Function: One of the constants that identify a subscriptions behavior.
Notes: A constant indicating the subscription is a query-based subscription. This type of subscription tracks the creation, modification, or deletion of a specific type of record.

31.50.26 TypeRecordZone = 2

MBS Mac64bit Plugin, Plugin Version: 16.5. Function: One of the constants that identify a subscriptions behavior.
Notes: A constant indicating the subscription is a zone-based subscription. The subscription tracks changes to records in a specific record zone.
31.51 class CKUserIdentityLookupInfoMBS

31.51.1 class CKUserIdentityLookupInfoMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An object that represents information you use to fetch users. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

31.51.2 Methods

31.51.3 Available as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this class is available. **Notes:** Should be true for OS X 10.12 and newer in 64-bit application.

31.51.4 Constructor

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor. **Notes:** Please use the shared methods to constructor instances. This constructor is private to make sure you don’t create an object from this class by error. Please use designated functions to create objects.

31.51.5 copy as CKUserIdentityLookupInfoMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy of this object.

31.51.6 lookupInfosWithEmailAddress(emailAddress as string) as CKUserIdentityLookupInfoMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of user identity lookup objects configured with email addresses as the search criteria. **Notes:**
emails: An array of strings that represent the email addresses to use to configure the CKUserIdentityLookupInfoMBS objects.

Returns an array of CKUserIdentityLookupInfoMBS objects that are configured with the email addresses that were passed in.
May return nil in case of error.

Once initialized, these objects can be passed into a CKDiscoverUserIdentitiesOperationMBS, or a CKFetchShareParticipantsOperationMBS to retrieve the CKUserIdentity objects for the user.

### 31.51.7 lookupInfosWithEmails(emailAddresses() as string) as CKUserIdentityLookupInfoMBS()

**Function:** Returns an array of user identity lookup objects configured with email addresses as the search criteria.
**Notes:**
emails: An array of strings that represent the email addresses to use to configure the CKUserIdentityLookupInfoMBS objects.

Returns an array of CKUserIdentityLookupInfoMBS objects that are configured with the email addresses that were passed in.
May return nil in case of error.

Once initialized, these objects can be passed into a CKDiscoverUserIdentitiesOperationMBS, or a CKFetchShareParticipantsOperationMBS to retrieve the CKUserIdentityMBS objects for the user.

### 31.51.8 lookupInfosWithPhoneNumbers(phoneNumbers() as string) as CKUserIdentityLookupInfoMBS()

**Function:** Returns an array of user identity lookup objects configured with phone numbers as the search criteria.
**Notes:**
phoneNumbers: An array of strings that represent the phone numbers to use to configure the CKUserIdentityLookupInfoMBS objects.

Returns an array of CKUserIdentityLookupInfoMBS objects that are configured with the phone numbers that were passed in.
May return nil in case of error.

Once initialized, these objects can be passed into a CKDiscoverUserIdsOperationMBS, or a CKFetchShareParticipantsOperationMBS to retrieve the CKUserIdentityMBS objects for the user.

### 31.51.9 lookupInfosWithRecordIDs(userRecordIDs() as CKRecordIDMBS) as CKUserIdentityLookupInfoMBS()

**MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Returns an array of user identity lookup objects configured with phone numbers as the search criteria.

**Notes:**

- **userRecordIDs:** An array of CKRecordIDMBS objects that are used to configure the CKUserIdentityLookupInfoMBS objects.

Returns an array of CKUserIdentityLookupInfoMBS objects that are configured with the CKRecordIDMBS objects that were passed in.

### 31.51.10 lookupInfosWithUserRecordID(userRecordID as CKRecordIDMBS) as CKUserIdentityLookupInfoMBS

**MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Initializes and returns a look up info object with the user record ID property configured.

**Notes:**

- **userRecordID:** The user record ID to use to look up the user.

Returns an user identity lookup object initialized to look up a user by the users record ID, or nil if the object cannot be initialized.

Once initialized, this object can be passed into CKDiscoverUserIdsOperationMBS, or a CKFetchShareParticipantsOperationMBS to retrieve the CKUserIdentityMBS for the user.

### 31.51.11 lookupInfosWithPhoneNumber(phoneNumber as string) as CKUserIdentityLookupInfoMBS

**MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Initializes and returns a look up info object with the phone number property configured.

**Notes:**
31.51. CLASS CKUSERIDENTITYLOOKUPINFOMBS

phoneNumber: The phone number to use to look up the user.

Returns an user identity lookup object initialized to look up a user by the users phone number, or nil if the object cannot be initialized.

Once initialized, this object can be passed into a CKDiscoverUserIdentitieMBS, or a CKFetchSharePa-

ticipantsOperationMBS to retrieve the CKUserIdentityMBS for the user.

31.51.12 Properties

31.51.13 emailAddress as String

Function: The email address of the user whose information you want to retrieve.
Notes:
This property corresponds to a single email address associated with the user whose information you wish to look up.
(Read only property)

31.51.14 Handle as Integer

Notes: (Read and Write property)

31.51.15 phoneNumber as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The phone number of the user whose information you want to retrieve.
Notes:
This property corresponds to a single phone number associated with the user whose information you wish to look up.
(Read only property)
31.51.16 userRecordID as CKRecordIDMBS


**Function:** The ID of the user record.

**Notes:**

Use this value to retrieve the user record associated with the specified user. The user record does not contain any personal information about the user by default. Your app can add data to the user record but should not add any sensitive user data to it.

(Read only property)
31.52. **CLASS CKUSERIDENTITYMBS**

31.52. **class CKUserIdentityMBS**

31.52.1 **class CKUserIdentityMBS**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A reference to a user. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

31.52.2 **Methods**

31.52.3 **Available as Boolean**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this class is available. **Notes:** Should be true for OS X 10.12 and newer in 64-bit application.

31.52.4 **Constructor**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.

31.52.5 **copy as CKUserIdentityMBS**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy of this object.

31.52.6 **Properties**

31.52.7 **description as String**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The description text. **Notes:** (Read only property)
31.52.8 Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference. **Notes:** (Read and Write property)

31.52.9 hasiCloudAccount as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value indicating whether this user has an iCloud account. **Notes:** The value is true if this CKUserIdentity has an iCloud account associated with it; otherwise, false. (Read only property)

31.52.10 localizedDisplayName as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The localized display name. **Notes:** (Read only property)

31.52.11 lookupInfo as CKUserIdentityLookupInfoMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The information (phone number, email address, etc.) used to retrieve this user. **Notes:** The information that is passed into a CKDiscoverUserIdentitesOperationMBS or CKFetchShareParticipantsOperationMBS object to retrieve the user identity. (Read only property)

31.52.12 nameComponents as NSPersonNameComponentsMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of the user associated with the specified user identity object. **Notes:** This property can be used to display the name of the user associated with this CKUserIdentity object. (Read only property)
31.52. CLASS CKUSERIDENTITYMBS

31.52.13 userRecordID as CKRecordIDMBS


Function: Unique identifier for this record.

Notes:
This property is the unique identifier associated with this CKUserIdentity.
(Read only property)
31.53 class NSPersonNameComponentsMBS

31.53.1 class NSPersonNameComponentsMBS

**Function:** An NSPersonNameComponents object encapsulates the components of a person’s name in an extendable, object-oriented manner. 
**Notes:** It is used to specify a person’s name by providing the components comprising a full name: given name, middle name, family name, prefix, suffix, nickname, and phonetic representation.

31.53.2 Methods

31.53.3 Available as Boolean

**Function:** Whether this class is available. 
**Notes:** Should be true for OS X 10.11 and newer.

31.53.4 Constructor

**Function:** The private constructor.

31.53.5 copy as CKQueryCursorMBS

**Function:** Creates a copy of this object.

31.53.6 Properties

31.53.7 familyName as String

**Function:** Name bestowed upon an individual to denote membership in a group or family. (for example, Appleseed). 
**Notes:** (Read and Write property)
31.53.8  givenName as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Name bestowed upon an individual to differentiate them from other members of a group that share a family name (for example, Johnathan).
**Notes:** (Read and Write property)

31.53.9  Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference.
**Notes:** (Read and Write property)

31.53.10  middleName as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Secondary name bestowed upon an individual to differentiate them from others that have the same given name (for example, Maple).
**Notes:** (Read and Write property)

31.53.11  namePrefix as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The portion of a names full form of address that precedes the name itself (for example, Dr., Mr., Ms.).
**Notes:** (Read and Write property)

31.53.12  nameSuffix as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The portion of a names full form of address that follows the name itself (for example, Esq., Jr., Ph.D.).
**Notes:** (Read and Write property)

31.53.13  nickname as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Name substituted for the purposes of familiarity (for example, "Johnny").
**Notes:** (Read and Write property)
31.53.14 phoneticRepresentation as NSPersonNameComponentsMBS


Function: The phonetic representation name components of the receiver.

Notes:

Each component of the receiver with a value should have a corresponding value for any value set for this property. nil by default.

(Read and Write property)
Chapter 32

Cocoa

32.1 control CocoaControlMBS

32.1.1 control CocoaControlMBS

Function: The control to embed NSViews into a REALbasic window.
Notes: Due the way Cocoa event handling works, the keydown event handler (and others) do not work with this control. To actually get an event, you’d have to use a subclass of CustomNSViewMBS and handle events there. In the CustomNSViewMBS you add the actual view you like to have. So all events not handled by this view, fall through to your CustomNSViewMBS.
On Carbon the RS framework intercepts events and calls keydown event.
Requires the window being composite for Carbon targets which is currently not available for modal windows in Real Studio.

32.1.2 Properties

32.1.3 Available as Boolean

Function: Whether this control can work.
Notes: Returns true on Mac OS X 10.5 (or newer) and false on any other OS.
(Read only property)
32.1.4 View as NSViewMBS

Function: The view used with this control.
Notes:
You define this view in the GetView event.
(Read only property)

32.1.5 WantsFocus as Boolean

Function: Whether this control wants to have focus.
Notes:
By default this is true.
(Read and Write property)

32.1.6 Events

32.1.7 EnableMenuItems

Function: The event where you can enable menu items.

32.1.8 GetView as NSViewMBS

Function: Asks your application which NSView should be used.
Example:
// an example on how to use this event:

Function GetView() As NSViewMBS
  dim n as NSTextViewMBS

  // create a textview:
  n=new NSTextViewMBS(0, 0, CocoaControlMBS1.Width, CocoaControlMBS1.Height)
  n.ContinuousSpellCheckingEnabled=true
  Return n
End Function

Notes:
Return a NSView setup as you like.
You may also want to keep a reference to the view you use for easier access.

32.1.9 MenuAction(HitItem as MenuItem) As Boolean

Function: Called when a menuitem is choosen.
Notes: This allows the control to react on its relevant menu items. Please return true if you handled it or false to give others a chance.

32.1.10 MouseDown(x as Integer, y as Integer, Modifiers as Integer) As Boolean

Function: The mouse button was pressed inside the controls region at the location passed in to x, y.
Notes:
The coordinates x and y are local to the control, i.e. they represent the position of the mouse click relative to the upper-left corner or the Control.
Return True if you are going to handle the MouseDown. In such a case:

- The Action event, if any, will not execute and the state of the object will not change.
- You will receive the MouseDrag and MouseUp events.

If you return False, the system handles the MouseDown so the above event handlers do not get called.

32.1.11 MouseDrag(x as Integer, y as Integer)

Function: This event fires continuously after the mouse button was pressed inside the Control.
Notes:
Mouse location is local to the control passed in to x, y.
As this event is fired continuously (hundreds of time per second), it is your responsibility to determine if the mouse has really moved.
32.1.12 MouseUp(x as Integer, y as Integer)

**Function:** The mouse button was released.
**Notes:** Use the x and y parameters to determine if the mouse button was released within the control’s boundaries.

32.1.13 ScaleFactorChanged(NewFactor as Double)

**Function:** The backing store scale factor has changed.
**Notes:** Please invalidate any cached bitmaps or other relevant state.
32.2. class ContainerControl

32.2.1 class ContainerControl

Plugin Version: 14.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The container class in Xojo.

32.2.2 Methods

32.2.3 NSViewMBS as NSViewMBS

MBS MacBase Plugin, Plugin Version: 14.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a NSViewMBS object for the given container.

**Example:**

MsgBox ContainerControl1.NSViewMBS.className

**Notes:** This way you can manipulate Cocoa container controls directly.
32.3 class CustomNSToolbarItemMBS

32.3.1 class CustomNSToolbarItemMBS

Function: The class for a custom toolbar item.
Notes: Use this class if you need to fill events.
Subclass of the NSToolbarItemMBS class.

32.3.2 Methods

32.3.3 Constructor(itemIdentifier as string)

Function: The constructor.
Notes: itemIdentifier: The identifier for the receiver. itemIdentifier is never seen by users and should not be localized.
The identifier is used by the toolbar and its delegate to identify the kind of the toolbar item.

32.3.4 Destructor

Function: The destructor.

32.3.5 Events

32.3.6 Action

Function: The action event called when user clicks toolbar item.

32.3.7 allowsDuplicatesInToolbar as boolean

Function: Returns a Boolean value that indicates whether the receiver can be represented in the toolbar.
32.3. CLASS CUSTOMNSTOOLBARITEMMBS

at more than one position.

**Notes:**

You use this event to override the default behavior in a subclass. By default, if an item with the same identifier is already in the toolbar, dragging it in again will effectively move it to the new position.

If you leave this event empty (no code), you get the default behavior.

32.3.8 validate as boolean


**Function:** Validates a toolbar item.

**Notes:**

If this event is implemented and returns false, NSToolbar will disable theItem; returning true causes theItem to be enabled.

NSToolbar only calls this method for image items.

validate is called very frequently, so it must be efficient.

If you don’t have code in this event, the plugin will simply return enabled value.

This methods may not be called if you set Autovalidates to true.
32.4 class CustomNSToolbarMBS

32.4.1 class CustomNSToolbarMBS

Function: The toolbar class for the case you need to use the events.
Notes: Subclass of the NSToolbarMBS class.

32.4.2 Methods

32.4.3 Constructor(Identifier as string)

Function: One of the standard toolbar item identifiers.

32.4.4 Destructor

Function: The destructor.

32.4.5 Events

32.4.6 allowsSizeMode(mode as Integer, SuperAllows as boolean) as boolean

Function: Whether to allow the given size mode.
Example:

Function allowsSizeMode(mode as Integer, SuperAllows as boolean) As boolean
# if DebugBuild then
System.DebugLog CurrentMethodName+” ”+str(SuperAllows)
# endif

if mode = NSToolbarMBS.NSToolbarSizeModeSmall then
Return false
else
Return SuperAllows
end if

End Function
Notes:
If you have nothing in the event, the default behavior is to allow all.
You can return false for a mode to disable it. e.g. NSToolbarSizeModeSmall
SuperAllows parameter tells you if mode is enabled by default.

32.4.7 itemForItemIdentifier(identifier as string, willBeInsertedIntoToolbar as boolean) as NSToolbarItemMBS

Function: Sent to request a new toolbar item; returns a toolbar item of the identified kind for the specified toolbar.
Notes:
itemIdentifier: The identifier for the requested item.
willBeInsertedIntoToolbar: True if the item will be immediately inserted into the toolbar. If flag is false the toolbar item is being requested for display in the toolbar customization sheet and should always be enabled or provide some other canonical representation. If you ignore this parameter the same toolbar item will be used in the toolbar and in the customization sheet.
Return Value
The toolbar item for the specified toolbar and identifier. Return nil to indicate that the identified kind of toolbar item is not supported. When an item is requested again, you may return the same NSToolbarItem object returned earlier or a different instance.

Implement this method to create new toolbar item instances. This method is called lazily on behalf of a toolbar instance, which must be the sole owner of the toolbar item. A toolbar may ask again for a kind of toolbar item already supplied to it, in which case this method may return the same toolbar item it returned before or a different one. If your delegate services multiple toolbars, each attached to a different window, it is best to return a different item for each toolbaran NSToolbarItem object can only be in one toolbar at a time.

If the item is a custom view item, the NSView object must be fully formed when the item is returned. Do not assume that the returned item is going to be added as an active item in the toolbar, as it could be that it will be used only in the customization palette. (The customization palette makes a copy of the returned item.)

This event must be implemented if the associated toolbar is created programatically.

32.4.8 toolbarAllowedItemIdentifiers as string()

Function: Sent to discover the allowed item identifiers for a toolbar.
Notes:
An array of toolbar item identifiers for toolbar, specifying the contents and the order of the items in the configuration palette.

Every allowed item must be explicitly listed, even the standard ones. The identifiers returned should include all of those returned by toolbarDefaultItemIdentifiers.

This event must be implemented if the associated toolbar is created programatically.

32.4.9 toolbarDefaultItemIdentifiers as string()

Function: Sent to discover the default item identifiers for a toolbar.
Notes:
Return an array of toolbar item identifiers for toolbar, specifying the contents and the order of the items in the default toolbar configuration.

During initialization of toolbar, this method is called only if a toolbar configuration for the identifier of toolbar is not found in the user preferences. This method is called during initialization of the toolbar customization palette.

This event must be implemented if the associated toolbar is created programatically.

32.4.10 toolbarDidRemoveItem(item as NSToolbarItemMBS, notification as NSNotificationMBS)

Function: Sent just after an item has been removed from a toolbar.
Notes: This method allows you to remove information related to the item that may have been cached.

32.4.11 toolbarItemAction(item as NSToolbarItemMBS)

Function: The action event called when user clicks toolbar item.
Notes: Only for instances of CustomNSToolbarItemMBS, the plugin can forward the allowsDuplicatesIn-Toolbar event to the CustomNSToolbarMBS, so you can handle it in a central place for all toolbar items.
32.4. CLASS CUSTOMNSTOOLBARMBS

32.4.12 toolbarItemAllowsDuplicatesInToolbar(item as NSToolbarItemMBS) as boolean

Function: Returns a Boolean value that indicates whether the receiver can be represented in the toolbar at more than one position.
Notes:
You use this event to override the default behavior in a subclass.
By default, if an item with the same identifier is already in the toolbar, dragging it in again will effectively move it to the new position.

If you leave this event empty (no code), you get the default behavior.

Only for instances of CustomNSToolbarItemMBS, the plugin can forward the allowsDuplicatesInToolbar event to the CustomNSToolbarMBS, so you can handle it in a central place for all toolbar items.

32.4.13 toolbarItemValidate(item as NSToolbarItemMBS) as boolean

Function: Validates a toolbar item.
Notes:
If this event is implemented and returns false, NSToolbar will disable theItem; returning true causes theItem to be enabled.

NSToolbar only calls this method for image items.
validateis called very frequently, so it must be efficient.

If you don’t have code in this event, the plugin will simply return enabled value.
This methods may not be called if you set Autovalidates to true.

Only for instances of CustomNSToolbarItemMBS, the plugin can forward the allowsDuplicatesInToolbar event to the CustomNSToolbarMBS, so you can handle it in a central place for all toolbar items.

32.4.14 toolbarSelectableItemIdentifiers as string()

Function: Sent to discover the selectable item identifiers for a toolbar.
Notes:
Return an array of item identifiers that should indicate selection in the specified toolbar.
Toolbars that need to indicate item selection should return an array containing the identifiers of the selectable toolbar items.

If implemented, toolbar will display the currently selected item with a visual highlight. Clicking on an item whose identifier is selectable will automatically update the toolbar’s selected item identifier, when possible. Clicking an item whose identifier is not selectable will not update the toolbar’s selected item identifier.

32.4.15 toolbarWillAddItem(item as NSToolbarItemMBS, notification as NSNotificationMBS)


Function: Sent just before a new item is added to a toolbar.

Notes: If you need to cache a reference to a toolbar item or need to set up some initial state before a toolbar item is added, this is where to do it.
32.5.  MODULE DICTIONARYSERVICEMBS

32.5  module DictionaryServiceMBS

32.5.1  module DictionaryServiceMBS

Function: The Dictionary Services module.
Notes:
Dictionary Services provides functions that let you access dictionaries programmatically from within your application.

A dictionary is any look-up reference that is built using the Dictionary Development Kit. The contents of a dictionary can serve many purposes. The most typical use is to provide definitions for a single language, but you can create content for a thesaurus, bilingual dictionaries (such as English-Japanese), in-house glossaries, and professional dictionaries (such as legal, medical, and technical).

Available in Mac OS X v10.5 and later.

32.5.2  Methods

32.5.3  GetTermRangeInString(text as string, offset as Integer=0) as boolean

Function: Determines the range of the longest word or phrase with respect to an offset.
Notes:
text: Text that contains the word or phrase to look up.
offset: A character offset in the textString parameter.

Return Value

The range that specifies the location, around the specified offset, of the word or phrase, or the value -1. The range is stored in the RangePosition and RangeLength properties and the function returns true. On any error it returns false.

You can use this function to determine the range of text that contains a word or phrase. After you determine the range, you can pass the result to the functions TextDefinition and Show.

To see how this works, follow these steps:
In Mac OS X v10.5 or later, open Text Edit.
Type It is a foggy day in San Francisco, California.
Control-click Francisco (don’t select it). Then, choose ”Lookup in Dictionary”.

Note that the Dictionary window appears with a definition of San Francisco. The function GetTermRangeInString automatically detected the range of the phrase San Francisco, using Francisco as the text string to search for and a character offset in this string. The function expanded the range until it found a possible match.

You can also point the cursor at the word Francisco and, without making a selection or clicking, type Command-Control-D. GetTermRangeInString detects the range.

The function GetTermRangeInString only returns the range. You must call TextDefinition to copy the definition and Show to display the definition in a Dictionary window.

Available in Mac OS X v10.5 and later.

### 32.5.4 RangeLength as Integer

**Function:** The length from the range.  
**Notes:**  
This value set by the GetTermRangeInString function.  
(Read and Write computed property)

### 32.5.5 RangePosition as Integer

**Function:** The position from the range.  
**Notes:**  
This value set by the GetTermRangeInString function.  
(Read and Write computed property)

### 32.5.6 Show(text as string, start as Integer = 0, length as Integer = 0, textOriginX as Double = 0, textOriginY as Double = 0) as boolean

**Function:** Displays dictionary search result in a dictionary window.  
**Notes:**  
text: Text that contains the word or phrase to look up.
start and length:
If you are using this function to show the results associated with text selected by the user, then provide
the selection range of the textString parameter. If you are using this function to show the results associ-
atied with calling the DCSGetTermRangeInString function, then provide the range returned by that function.

This function opens a window to display the definition of a word or phrase.

Available in Mac OS X v10.5 and later.

32.5.7 TextDefinition(text as string, position as Integer=0, length as Integer=0) as string

Function: Returns the definition associated with the provided text range.
Notes:

text: Text that contains the word or phrase to look up.

position and length: A range that specifies the location of the word or phrase in the textString parameter.
If text string exactly specifies the word or phrase that you want to look up, you can pass the range of the
text string. For example, for the word make, you would pass (0,4) to specify the range.

If the textString parameter contains the word or phrase, but does not specify it exactly, then pass the range
returned by the function GetTermRangeInString.

Return Value:
The definition of the word or phrase, as plain text. The returned text does not contain any elements that
are marked with a priority attribute whose value is 2.

This function returns the description of the first matching record found in the the active dictionaries. It
searches first in the default word definition dictionary which, in the English environment, is the Oxford
dictionary.

Available in Mac OS X v10.5 and later.
32.6 class NSAlertMBS

32.6.1 class NSAlertMBS


32.6.2 Methods

32.6.3 addButtonWithTitle(title as string) as Variant

MBS MacCocoa Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Customize the buttons in the alert panel. **Example:**

// make dialog
dim a as NSAlertMBS = NSAlertMBS.alertWithMessageText("Hello World", "First Button", "Second Button")

// add button
dim thirdButton as NSButtonMBS = a.addButtonWithTitle("Third Button")

// and show dialog
call a.runModal

**Notes:**

Buttons are added from right to left (for left to right languages).
Returns NSButtonMBS object.

32.6.4 alertWithError(error as NSErrorMBS) as NSAlertMBS

MBS MacCocoa Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Given an NSError, create an NSAlert that can be used to present the error to the user. **Notes:** The error’s localized description, recovery suggestion, and recovery options will be used to set the alert’s message text, informative text, and button titles, respectively.
32.6. CLASS NSALERTMBS

32.6.5 alertWithMessageText(MessageText as string, defaultButton as string = "", alternateButton as string = "", otherButton as string = ",", informativeText as string = "") as NSAlertMBS


32.6.6 beginSheetModalForWindow(win as NSWindowMBS)


**Notes:**
If the alert has an alertStyle of NSCriticalAlertStyle, it will be shown as a "critical" sheet; it will otherwise be presented as a normal sheet.
Calls later SheetDidEnd event with the result.

Please keep a reference to the dialog object alive to avoid trouble.
e.g. store reference in parent window, global property or app property.
See also:

- 32.6.7 beginSheetModalForWindow(win as window)

32.6.7 beginSheetModalForWindow(win as window)


**Notes:**
If the alert has an alertStyle of NSCriticalAlertStyle, it will be shown as a "critical" sheet; it will otherwise be presented as a normal sheet.
Calls later SheetDidEnd event with the result.

Please keep a reference to the dialog object alive to avoid trouble.
e.g. store reference in parent window, global property or app property.
See also:

- 32.6.6 beginSheetModalForWindow(win as NSWindowMBS)

32.6.8 buttons as Variant()

MBS MacCocoa Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Get the buttons, where the rightmost button is at index 0.
Example:

```vbnet
dim a as NSAlertMBS = NSAlertMBS.alertWithMessageText("Hello World", "First Button", "Second Button")
dim buttons() as Variant = a.buttons

for each b as NSButtonMBS in buttons
    MsgBox b.title
next
```

Notes: Returns NSButtonMBS array.

### 32.6.9 close

**Notes:** The SheetDidEnd event will not run.

### 32.6.10 Constructor

**Notes:** Use properties to configure the dialog.

### 32.6.11 Destructor


### 32.6.12 layout

**Notes:** Can be used to indicate that the alert panel should do immediate layout, overriding the default behavior of laying out lazily just before showing panel. You should only call this method if you want to do your own custom layout after it returns. You should call this method only after you have finished with NSAlert customization, including setting message and informative text, and adding buttons and an accessory view if needed. You can make layout changes after this method returns, in particular to adjust the frame of an
accessory view. Note that the standard layout of the alert may change in the future, so layout customization should be done with caution.

### 32.6.13 `runModal` as Integer

MBS MacCocoa Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Run the alert as an application-modal panel and return the result.

### 32.6.14 Properties

#### 32.6.15 `accessoryView` as `NSViewMBS`

MBS MacCocoa Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The accessory view displayed in the alert panel. **Notes:** By default, the accessory view is positioned below the informative text and the suppression button (if any) and above the alert buttons, left-aligned with the informative text. If you want to customize the location of the accessory view, you must first call layout method. (Read and Write property)

#### 32.6.16 `alertStyle` as Integer

MBS MacCocoa Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The alert style. **Notes:** Value can be:

- `NSWarningAlertStyle` 0 Warning
- `NSInformationalAlertStyle` 1 Information
- `NSCriticalAlertStyle` 2 Critical Error

(Read and Write property)

#### 32.6.17 `helpAnchor` as String

32.6.18 icon as NSImageMBS


**Notes:**
By default uses the image named NSApplicationIcon. (Read and Write property)

32.6.19 informativeText as String

MBS MacCocoa Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The informative text.

**Notes:** (Read and Write property)

32.6.20 messageText as String


**Notes:** (Read and Write property)

32.6.21 showsHelp as Boolean

MBS MacCocoa Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether to show help button.

**Notes:**
True adds a help button to the alert panel. When the help button is pressed, the delegate is first consulted. If the event does not implement ShowHelp event or returns false, then NSHelpManager.openHelpAnchor is called with a nil book and the anchor specified by HelpAnchor, if any. An exception will be raised if the delegate returns false and there is no help anchor set. (Read and Write property)

32.6.22 ShowsSuppressionButton as Boolean

MBS MacCocoa Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates whether or not the alert should contain a suppression checkbox.
Notes:
The default is false. This checkbox is typically used to give the user an option to not show this alert again. If shown, the suppression button will have a default localized title similar to "Do not show this message again". You can customize this title using alert.suppressionButton.Title. When the alert is dismissed, you can get the state of the suppression button, using [[ alert suppressionButton ] state ] and store the result in user defaults, for example. This setting can then be checked before showing the alert again. By default, the suppression button is positioned below the informative text, and above the accessory view (if any) and the alert buttons, and left-aligned with the informative text. However do not count on the placement of this button, since it might be moved if the alert panel user interface is changed in the future. If you need a checkbox for purposes other than suppression text, it is recommended you create your own using an accessory view.
(Read and Write property)

32.6.23 suppressionButton as Variant

Function: Returns a suppression button which may be customized, including the title and the initial state.
Example:

| // make dialog |
| dim a as NSAlertMBS = NSAlertMBS.alertWithMessageText("Hello World", "First Button", "Second Button") |
| // get button |
| dim suppressionButton as NSButtonMBS = a.suppressionButton |
| // change title |
| suppressionButton.title = "Hello World Button" |
| // want to show it |
| a.ShowsSuppressionButton = true |
| // and show dialog |
| call a.runModal |

Notes:
You can also use this method to get the state of the button after the alert is dismissed, which may be stored in user defaults and checked before showing the alert again. In order to show the suppression button in the alert panel, you must set ShowsSuppressionButton to true.
Returns NSButtonMBS object.
(Read only property)
32.6.24  TimedOut as Boolean

Function: Whether we got a timeout.
Notes:
This is set to true when a timeout occurred.
(Read only property)

32.6.25  timeOut as Double

Function: Timeout for the dialog.
Notes:
Set this to the number of seconds after which the dialog should close.
(Read and Write property)

32.6.26  window as Variant

Function: Returns the application-modal panel or the document-modal sheet corresponding to this alert.
Notes: (Read only property)

32.6.27  Events

32.6.28  SheetDidEnd(returnCode as Integer)

Function: The sheet did finish.

32.6.29  ShowHelp as boolean

Function: Show custom help.
Notes: See ShowHelp property.
32.6. CLASS NSALERTMBS

32.6.30 Constants

32.6.31 NSAlertFirstButtonReturn = 1000

MBS MacCocoa Plugin, Plugin Version: 14.2. Function: One of the button return codes. Notes: First (rightmost) button

32.6.32 NSAlertSecondButtonReturn = 1001


32.6.33 NSAlertThirdButtonReturn = 1002


32.6.34 NSCriticalAlertStyle = 2


32.6.35 NSInformationalAlertStyle = 1


32.6.36 NSWarningAlertStyle = 0

32.7 class NSAnimationContextMBS

32.7.1 class NSAnimationContextMBS

Function: The Cocoa class for the context of a NSAnimation.
Notes: Available in Mac OS X v10.5 and later.

32.7.2 Methods

32.7.3 beginGrouping

Function: Creates a new animation grouping.
Notes: Available in Mac OS X v10.5 and later.

32.7.4 Constructor

Function: Creates a new NSAnimationContextMBS object with the current animation context.
Notes: Available in Mac OS X v10.5 and later.

32.7.5 currentContext as NSAnimationContextMBS

Function: Returns the current animation context.
Notes: Available in Mac OS X v10.5 and later.

32.7.6 endGrouping

Function: Ends the current animation grouping.
Notes: Available in Mac OS X v10.5 and later.
32.7. CLASS NSANIMATIONCONTEXTMBS

32.7.7 Properties

32.7.8 Handle as Integer

Function: The internal reference to the NSAnimationContext object.
Notes: (Read and Write property)

32.7.9 duration as Double

Function: The duration used when animating object properties that support animation.
Example:
NSAnimationContextMBS.currentContext.duration = 0.5

Notes:
Any animations that occur as a result of setting the values of animatable properties in the current context will run for this duration.

Available in Mac OS X v10.5 and later.
(Read and Write computed property)
32.8  class NSAnimationMBS

Function:  Objects of the NSAnimation class manage the timing and progress of animations in the user interface.
Notes:  
The class also lets you link together multiple animations so that when one animation ends another one starts. It does not provide any drawing support for animation and does not directly deal with views, targets, or actions.

NSAnimation objects have several characteristics, including duration, frame rate, and animation curve, which describes the relative speed of the animation over its course. You can set progress marks in an animation, each of which specifies a percentage of the animation completed; when an animation reaches a progress mark, it notifies its delegate and posts a notification to any observers. Animations execute in one of three blocking modes: blocking, non-blocking on the main thread, and non-blocking on a separate thread. The non-blocking modes permit the handling of user events while the animation is running.

32.8.2 Methods

32.8.3 clearStartAnimation

Function:  Clears linkage to another animation that causes the receiver to start.

32.8.4 clearStopAnimation

Function:  Clears linkage to another animation that causes the receiver to stop.

32.8.5 Constructor(duration as Double, animationCurve as Integer)

Function:  Initializes the object with the specified duration and animation-curve values.
Notes:  
duration: The number of seconds over which the animation occurs. Specifying a negative number raises an exception.
animationCurve: An NSAnimationCurve constant that describes the relative speed of the animation over...
its course; if it is zero, the default curve (NSAnimationEaseInOut) is used.

You can always later change the duration of an NSAnimation object by sending it a setDuration: message, even while the animation is running. See "Constants" for descriptions of the NSAnimationCurve constants.

32.8.6 currentValue as Double


32.8.7 Destructor


32.8.8 isAnimating as boolean

MBS MacFrameworks Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a Boolean value that indicates whether the receiver is currently animating. Notes: True if the receiver is animating, false otherwise.

32.8.9 startAnimation

MBS MacFrameworks Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Starts the animation represented by the receiver. Notes: The receiver retains itself and is then autoreleased at the end of the animation or when it receives stopAnimation. If the blocking mode is NSAnimationBlocking, the method only returns after the animation has completed or the delegate sends it stopAnimation. If the receiver has a progress of 1.0, it starts again at 0.0.

32.8.10 stopAnimation

MBS MacFrameworks Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Stops the animation represented by the receiver. Notes: The current progress of the receiver is not reset. When this method is sent to instances of NSViewAnimation (a subclass of NSAnimation) the receiver moves to the end frame location.
32.8.11 Properties

32.8.12 Handle as Integer

Function: The internal reference to the animation object.
Notes: (Read and Write property)

32.8.13 animationBlockingMode as Integer

Function: The blocking mode of the receiver.
Notes: A constant representing the blocking mode the animation is next scheduled to run under. See "NSAnimationBlockingMode" for valid values.
If the constant is NSAnimationNonblocking, the animation runs in the main thread in one of the standard run-loop modes or in a mode returned from runLoopModesForAnimating. If animationBlockingMode is NSAnimationNonblockingThreaded, a new thread is spawned to run the animation.
The default mode is NSAnimationBlocking, which means that the animation runs on the main thread in a custom run-loop mode that blocks user events. The new blocking mode takes effect the next time the receiver is started and has no effect on an animation underway.
(Read and Write computed property)

32.8.14 animationCurve as Integer

Function: The animation curve the receiver is running under.
Notes: The animation curve describes the relative frame rate over the course of the animation. See NSAnimation* constants.
(Read and Write computed property)

32.8.15 currentProgress as Double

Function: The current progress of the receiver.
Notes:
The current progress is a value between 0.0 and 1.0 that represents the percentage of the animation currently completed. (Read and Write computed property)

### 32.8.16 duration as Double

**Function:** The duration of the animation, in seconds.  
**Notes:** (Read and Write computed property)

### 32.8.17 frameRate as Double

**Function:** The frame rate of the animation.  
**Notes:**  
The frame rate is the number of updates per second. It is not guaranteed to be accurate because of differences between systems on the time needed to process a frame. (Read and Write computed property)

### 32.8.18 Events

### 32.8.19 CurrentProgressChanged(progress as Double)

**Function:** The event called whenever the current value changes.

### 32.8.20 Constants

### 32.8.21 NSAnimationBlocking=0

MBS MacFrameworks Plugin, Plugin Version: 10.0.  
**Function:** One of the constants to indicate the blocking mode of an NSAnimation object when it is running.  
**Notes:**  
Requests the animation to run in the main thread in a custom run-loop mode that blocks user input.  

This is the default.
32.8.22  **NSAnimationEaseIn=1**

MBS MacFrameworks Plugin, Plugin Version: 10.0. **Function:** One of the constants to describe the curve of an animation that is, the relative speed of an animation from start to finish.  
**Notes:** Describes an animation that slows down as it reaches the end.

32.8.23  **NSAnimationEaseInOut=0**

MBS MacFrameworks Plugin, Plugin Version: 10.0. **Function:** One of the constants to describe the curve of an animation that is, the relative speed of an animation from start to finish.  
**Notes:** Describes an S-curve in which the animation slowly speeds up and then slows down near the end of the animation. This constant is the default.

32.8.24  **NSAnimationEaseOut=2**

MBS MacFrameworks Plugin, Plugin Version: 10.0. **Function:** One of the constants to describe the curve of an animation that is, the relative speed of an animation from start to finish.  
**Notes:** Describes an animation that slowly speeds up from the start.

32.8.25  **NSAnimationLinear=3**

MBS MacFrameworks Plugin, Plugin Version: 10.0. **Function:** One of the constants to describe the curve of an animation that is, the relative speed of an animation from start to finish.  
**Notes:** Describes an animation in which there is no change in frame rate.

32.8.26  **NSAnimationNonblocking=1**

MBS MacFrameworks Plugin, Plugin Version: 10.0. **Function:** One of the constants to indicate the blocking mode of an NSAnimation object when it is running.  
**Notes:** Requests the animation to run in a standard or specified run-loop mode that allows user input.

32.8.27  **NSAnimationNonblockingThreaded=2**

MBS MacFrameworks Plugin, Plugin Version: 10.0. **Function:** One of the constants to indicate the blocking mode of an NSAnimation object when it is running.  
**Notes:**
Requests the animation to run in a separate thread that is spawned by the NSAnimation object.

The secondary thread has its own run loop.
32.9  class NSAppearanceMBS

32.9.1  class NSAppearanceMBS

Function: The appearance class.
Notes:

An NSAppearance object represents a file that specifies a standard or custom appearance that applies to a
subset of UI elements in an app. An app can contain multiple appearance files and because NSAppearance
conforms to NSCoding you can use Interface Builder to assign UI elements to an appearance.

Typically, you customize a window by using Xcode to create an appearance file that contains the views you
want to customize and the custom art that should be applied to them. Xcode transforms the files art content
into a runtime format that AppKit can draw when the specified views are displayed.

If the art for a specific view cant be found, AppKit searches for the art in the appearances of the views
ancestors. A nil appearance means that a view uses the default Aqua appearance; a non-nil appearance
means that the view uses an ancestors appearance.

When AppKit draws a control, it automatically sets the current appearance on the current thread to the
controls appearance. The current appearance can influence the actual drawing path and the return values
you get when you access system fonts and colors. The current appearance also affects the appearance of text
and images, such as the text and template images that can be displayed in a toolbar.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

32.9.2  Methods

32.9.3  appearance(item as Variant) as NSAppearanceMBS

Function: The appearance of the receiver, in an NSAppearance object.
Example:

dim v as NSViewMBS = PushButton1.NSViewMBS
dim a as NSAppearanceMBS = NSAppearanceMBS.appearance(v)

MsgBox a.name

Notes: The default value for this property is nil, which means that the receiver uses the appearance it
inherits from the nearest ancestor that has set an appearance. When you set appearance to a non-nil value,
the receiver and the views it contains use the specified appearance.
32.9.4 appearanceNamed(name as string) as NSAppearanceMBS

Function: Returns the NSAppearance object with the specified name.
Notes:
name: The name of a standard or custom appearance.
Returns a standard or custom appearance object.

When you specify a standard appearance name such as NSAppearanceNameAquathis method returns a built-in appearance. If you specify a custom appearance name, this method searches the main bundle for an appearance file that has the specified name.
Available in OS X v10.9 and later.
See also:
• 32.9.5 appearanceNamed(name as string, bundle as NSBundleMBS) as NSAppearanceMBS

32.9.5 appearanceNamed(name as string, bundle as NSBundleMBS) as NSAppearanceMBS

Function: Creates an NSAppearance object initialized to the specified appearance file in the specified bundle.
Notes:
name: The name of the appearance file to search for, without any path information.
bundle: The bundle in which to search for the appearance file. If bundle is nil, this method searches in the main bundle.

Returns an initialized appearance object, or nil if an error occurs.
Available in OS X v10.9 and later.
See also:
• 32.9.4 appearanceNamed(name as string) as NSAppearanceMBS

32.9.6 Available as boolean

32.9.7 Constructor


32.9.8 currentAppearance as NSAppearanceMBS

Example:
MsgBox NSAppearanceMBS.currentAppearance.name

Notes:
When a UI element draws on the screen, it automatically sets the appearance that it's using on the current thread.
Available in OS X v10.9 and later.

32.9.9 effectiveAppearance(item as Variant) as NSAppearanceMBS

MBS MacExtras Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The appearance that will be used when the receiver is drawn onscreen, in an NSAppearance object.
Notes:
The default value for this property is provided by the nearest ancestor of the receiver that has set an appearance.
You can use this property to ensure that an offscreen view sets the appropriate current appearance when it draws onscreen.
Available in OS X v10.9 and later.

32.9.10 NSAppearanceNameAqua as string

32.9.11  **NS AppearanceNameLightContent** as string

**Function:** The name of the standard appearance that can be used by controls in light content areas (not including window-frame areas).

32.9.12  **NS AppearanceNameVibrantDark** as string

**Function:** The name of the vibrant dark appearance.  
**Notes:**  
Available on Mac OS X 10.10 and newer.  
Should only be set on an NSVisualEffectView, or one of its container subviews.

32.9.13  **NS AppearanceNameVibrantLight** as string

**Function:** The name of the vibrant dark appearance.  
**Notes:**  
Available on Mac OS X 10.10 and newer.  
Should only be set on an NSVisualEffectView, or one of its container subviews.

32.9.14  **setAppearance(item as Variant, appearance as NSAppearanceMBS)**

**Function:** Sets the appearance of the receiver, in an NSAppearance object.  
**Notes:** The default value for this property is nil, which means that the receiver uses the appearance it inherits from the nearest ancestor that has set an appearance. When you set appearance to a non-nil value, the receiver and the views it contains use the specified appearance.

32.9.15  **setCurrentAppearance(appearance as NSAppearanceMBS = nil)**

**Function:** Sets the current appearance to the specified NSAppearance object.  
**Notes:**  
appearance: The NSAppearance object that should be used for the window or view, or nil to specify the default appearance.
When you set an appearance on a window, all views in that window including the window background and controls in both the frame and content areas use that appearance. By default, AppKit sets the current appearance for standard windows and views during window drawing, so you don’t need to use this method unless you want to change the current appearance of a specific window or view.

You can use this method to set the current appearance for an offscreen view to the appearance that will be used when the view is drawn. To do this, use the offscreen views effectiveAppearance for the appearance parameter.

Available in OS X v10.9 and later.

### 32.9.16 Properties

#### 32.9.17 allowsVibrancy as Boolean


**Function:** Query allowsVibrancy to see if the given appearance actually needs vibrant drawing.

**Notes:**

You may want to draw differently if the current appearance is vibrant.

(Read only property)

#### 32.9.18 Handle as Integer


**Function:** The internal object reference.

**Notes:** (Read and Write property)

#### 32.9.19 name as String


**Function:** The name of the appearance.

**Example:**

MsgBox NSApearanceMBS.currentAppearance.name

**Notes:** (Read only property)
32.10. class NSApplicationDelegateMBS

32.10.1 class NSApplicationDelegateMBS


Function: The class for an Cocoa application delegate.

Notes:
Please install in app Constructor. App.Open may be too late.

Using this class you can get application related events before (!) the app class gets it. And of course more events than just the ones the app class have.

Only for Cocoa desktop targets.

In general the plugin calls first the event. Depending on the result it may pass the event to the Real Studio application delegate. If you have no code in the plugin event, everything just passes through and you should not see a difference.

The plugin application delegate is installed with the Constructor and uninstalled in the Destructor.

The original delegate from Real Studio is preserved and all messages are forwarded to it. Also when this object is destroyed, the old delegate is restored.

32.10.2 Events

32.10.3 applicationDidBecomeActive(Notification as NSNotificationMBS)


Function: Sent by the default notification center immediately after the application becomes active.

32.10.4 applicationDidChangeScreenParameters(Notification as NSNotificationMBS)


Function: Sent by the default notification center when the configuration of the displays attached to the computer is changed (either programmatically or when the user changes settings in the Displays control panel).
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32.10.5 applicationDidDecodeRestorableState(coder as NSCoderMBS)

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: This event gives you the chance to restore your own state.

32.10.6 applicationDidFailToRegisterForRemoteNotificationsWithError(error as NSErrorMBS)


32.10.7 applicationDidFinishLaunching(Notification as NSNotificationMBS)

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Sent by the default notification center after the application has been launched and initialized but before it has received its first event. Notes: Delegates can implement this method to perform further initialization. This method is called after the application’s main run loop has been started but before it has processed any events. If the application was launched by the user opening a file, the delegate’s applicationOpenFile method is called before this method. If you want to perform initialization before any files are opened, implement the applicationWillFinishLaunching method in your delegate, which is called before applicationOpenFile."

32.10.8 applicationDidHide(Notification as NSNotificationMBS)

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Sent by the default notification center immediately after the application is hidden.

32.10.9 applicationDidReceiveRemoteNotification(userInfo as Dictionary)

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: A notification was received. Notes: The dictionary contains payload like this:
key "aps" contains another dictionary. This second dictionary contains keys like "alert", "badge" and "sound".

Available on Mac OS X 10.7 or newer.

### 32.10.10 applicationDidRegisterForRemoteNotificationsWithDeviceToken(deviceToken as memoryblock)

**Function:** Application registered for remote notifications.  
**Notes:**  
Tell your server the device token ID and use it in your push notifications.  
Distinguish between iOS and Mac versions of your app!

Available on Mac OS X 10.7 or newer.

### 32.10.11 applicationDidResignActive(Notification as NSNotificationMBS)

**Function:** Sent by the default notification center immediately after the application is deactivated.

### 32.10.12 applicationDidUnhide(Notification as NSNotificationMBS)

**Function:** Sent by the default notification center immediately after the application is made visible.

### 32.10.13 applicationDidUpdate(Notification as NSNotificationMBS)

**Function:** Sent by the default notification center immediately after the application object updates its windows.

### 32.10.14 applicationDockMenu as NSMenuMBS

**Function:** Allows the delegate to supply a dock menu for the application dynamically.  
**Notes:** Return the menu to display in the dock. Or nil for having no/default menu.
32.10.15  applicationOpenFile(filename as string) as boolean

Function: Tells the delegate to open a single file.
Notes:
filename: The path of the file to open.

Return yes if the file was successfully opened or false if it was not.

Sent directly by application to the delegate. The method should open the file filename, returning true if the file is successfully opened, and false otherwise. If the user started up the application by double-clicking a file, the delegate receives the applicationOpenFile message before receiving applicationDidFinishLaunching. (applicationWillFinishLaunching is sent before applicationOpenFile.)

If you return false, the plugin will pass the event to the default Real Studio runtime application delegate, so the OpenDocument event can fire.

32.10.16  applicationOpenFiles(filenames() as string) as boolean

Function: Tells the delegate to open multiple files.
Notes:
sender: The application object associated with the delegate.
filenames: An array of strings containing the names of the files to open.

Identical to applicationOpenFile except that the receiver opens multiple files corresponding to the file names in the filenames array. Delegates should invoke the replyToOpenOrPrint method upon success or failure, or when the user cancels the operation.

If you add code to this event, it is possible that OpenDocument event in Real Studio does not fire.

32.10.17  applicationOpenFileWithoutUI(filename as string) as boolean

Function: Tells the delegate to open a file programmatically.
Notes:
filename: The name of the file to open.
Return true if the file was successfully opened or false if it was not.

Sent directly by sender to the delegate to request that the file filename be opened as a linked file. The method should open the file without bringing up its application’s user interface; that is, work with the file is under programmatic control of sender, rather than under keyboard control of the user.

If you add code to this event, it is possible that OpenDocument event in Real Studio does not fire.

32.10.18  applicationOpenTempFile(filename as string) as boolean

Function: Tells the delegate to open a temporary file.
Notes:
filename: The name of the temporary file to open.

True if the file was successfully opened or false if it was not.

Sent directly by application to the delegate. The method should attempt to open the file filename, returning true if the file is successfully opened, and false otherwise.

By design, a file opened through this method is assumed to be temporary; it’s the application’s responsibility to remove the file at the appropriate time.

If you add code to this event, it is possible that OpenDocument event in Real Studio does not fire.

32.10.19  applicationOpenUntitledFile as boolean

Function: Tells the delegate to open an untitled file.
Notes:
Return true if the file was successfully opened or false if it was not.
Sent directly by application to the delegate to request that a new, untitled file be opened.

If you return false, the plugin will pass the event to the default Real Studio runtime application delegate.

If you add code to this event, it is possible that OpenDocument event in Real Studio does not fire.
32.10.20  applicationPrintFile(filename as string) as boolean


Function:  Sent when the user starts up the application on the command line with the -NSPrint option.

Notes:

filename:  The name of the file to print.

Returns true if the file was successfully printed or false if it was not.

This message is sent directly by application to the delegate. The application terminates (using the terminate method) after this method returns.

If at all possible, this method should print the file without displaying the user interface. For example, if you pass the -NSPrint option to the TextEdit application, TextEdit assumes you want to print the entire contents of the specified file. However, if the application opens more complex documents, you may want to display a panel that lets the user choose exactly what they want to print.

32.10.21  applicationPrintFiles(fileNames() as string, printSettings as dictionary, showPrintPanels as boolean) as boolean


Function:  Prints a group of files.

Notes:

fileNames:  An array of strings, each of which contains the name of a file to print.

printSettings:  A dictionary containing NSPrintInfo-compatible print job attributes.

showPrintPanels:  A Boolean that specifies whether the print panel should be displayed for each file printed. Print progress indicators will be presented even if this value is false.

Return a constant indicating whether printing was successful. For a list of possible values, see NSPrinting* constants.

Return NSPrintingReplyLater if the result of printing cannot be returned immediately, for example, if printing will cause the presentation of a sheet. If your method returns NSPrintingReplyLater it must always invoke the NSApplicationMBS method replyToOpenOrPrint when the entire print operation has been completed, successfully or not.
32.10.22 applicationShouldHandleReopen(hasVisibleWindows as boolean) as boolean

Function: Sent by the application to the delegate prior to default behavior to reopen (rapp) AppleEvents.
Notes:
flag: Indicates whether the NSApplication object found any visible windows in your application. You can use this value as an indication of whether the application would do anything if you return true.

Return true if you want the application to perform its normal tasks or false if you want the application to do nothing.

These events are sent whenever the Finder reactivates an already running application because someone double-clicked it again or used the dock to activate it.

By default the Application Kit will handle this event by checking whether there are any visible NSWindow (not NSPanel) objects, and, if there are none, it goes through the standard untitled document creation (the same as it does if application is launched without any document to open). For most document-based applications, an untitled document will be created.

The application delegate will also get a chance to respond to the normal untitled document delegate methods. If you implement this method in your application delegate, it will be called before any of the default behavior happens. If you return true, then NSApplication will proceed as normal. If you return false, then NSApplication will do nothing. So, you can either implement this method with a version that does nothing, and return false if you do not want anything to happen at all (not recommended), or you can implement this method, handle the event yourself in some custom way, and return false.

Miniaturized windows, windows in the Dock, are considered visible by this method, and cause flag to return true, despite the fact that miniaturized windows return false when sent an isVisible message.

Having no code in the event will tell the plugin to return true.

32.10.23 applicationShouldOpenUntitledFile as boolean

Function: Invoked immediately before opening an untitled file.
Notes:
Return true if the application should open a new untitled file or false if it should not.

Use this method to decide whether the application should open a new, untitled file. Note that applicationOpenUntitledFile is invoked if this method returns true.
If you return false here, the NewDocument event in Real Studio may not fire. Having no code in this event is the same as returning true.

32.10.24 applicationShouldTerminate as Integer

Function: Sent to notify the delegate that the application is about to terminate.
Notes:
One of the values defined in NSTerminate* constants indicating whether the application should terminate.

This method is called after the application’s Quit menu item has been selected, or after the terminate method has been called. Generally, you should return NSTerminateNow to allow the termination to complete, but you can cancel the termination process or delay it somewhat as needed. For example, you might delay termination to finish processing some critical data but then terminate the application as soon as you are done by calling the replyToApplicationShouldTerminate method.

32.10.25 applicationShouldTerminateAfterLastWindowClosed as boolean

Function: Invoked when the user closes the last window the application has open.
Notes:
Return false if the application should not be terminated when its last window is closed; otherwise, true to terminate the application.

The application sends this message to your delegate when the application’s last window is closed. It sends this message regardless of whether there are still panels open. (A panel in this case is defined as being an instance of NSPanel or one of its subclasses.)

If your implementation returns false, control returns to the main event loop and the application is not terminated. If you return true, your delegate’s applicationShouldTerminate method is subsequently invoked to confirm that the application should be terminated.

Having no code in this event is the same as returning false.
32.10.26  applicationWillBecomeActive(Notification as NSNotificationMBS)

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sent by the default notification center immediately before the application becomes active.

32.10.27  applicationWillEncodeRestorableState(coder as NSCoderMBS)

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Event called to give you chance to encode any additional state into the NSCoder.  **Notes:** If the restorable state managed by the delegate changes, you must call NSApplicationMBS.invalidateRestorableState so that it will be re-encoded.

32.10.28  applicationWillFinishLaunching(Notification as NSNotificationMBS)

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sent by the default notification center immediately before the application object is initialized.

32.10.29  applicationWillHide(Notification as NSNotificationMBS)

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sent by the default notification center immediately before the application is hidden.

32.10.30  applicationWillPresentError(error as NSErrorMBS) as NSErrorMBS

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sent to the delegate before the specified application presents an error message to the user.  **Notes:** error: The error object that is used to construct the error message. Your implementation of this method can return a new NSError object or the same one in this parameter.  

Return the error object to display.

You can implement this delegate method to customize the presentation of any error presented by your application, as long as no code in your application overrides either of the NSResponder methods presentError in a way that prevents errors from being passed down the responder chain to the application object.

Your implementation of this delegate method can examine error and, if its localized description or recovery
information is unhelpfully generic, return an error object with specific localized text that is more suitable for presentation in alert sheets and dialogs. If you do this, always use the domain and error code of the NSError object to distinguish between errors whose presentation you want to customize and those you do not. Don’t make decisions based on the localized description, recovery suggestion, or recovery options because parsing localized text is problematic. If you decide not to customize the error presentation, just return the passed-in error object.

If you have no code in this event or you return nil, the plugin passes the given error back to the Cocoa runtime.

### 32.10.31 applicationWillResignActive(Notification as NSNotificationMBS)

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sent by the default notification center immediately before the application is deactivated.

### 32.10.32 applicationWillTerminate(Notification as NSNotificationMBS)

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sent by the default notification center immediately before the application terminates.

### 32.10.33 applicationWillUnhide(Notification as NSNotificationMBS)

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sent by the default notification center immediately after the application is unhidden.

### 32.10.34 applicationWillUpdate(Notification as NSNotificationMBS)

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sent by the default notification center immediately before the application object updates its windows.

### 32.10.35 restoreWindowWithIdentifier(identifier as string, state as NSCoderMBS, byref resultWindow as Variant, byref error as NSErrorMBS) as boolean

MBS MacCocoa Plugin, Plugin Version: 13.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Invoked to request that a window be restored. **Notes:**
If you plan to use this event, please initialize the NSApplicationDelegateMBS subclass in app.constructor.

identifier: The unique interface item identifier string that was previously associated with the window. Use this string to determine which window to create.
state: A coder object containing the window state information. This coder object contains the combined restorable state of the window, which can include the state of the window, its delegate, window controller, and document object. You can use this state to determine which window to create.

Pass back with the parameters:
The window that was created or nil if the window could not be created.
An error object if the window was not recognized or could not be created for whatever reason; otherwise, specify nil. In OS X 10.7, the error parameter is ignored.

Return true if the window was restored; otherwise false.

If the receiver knows how to restore the identified window, it should invoke the completion handler with the window, possibly creating it. It is acceptable to use a pre-existing window, though you should not pass the same window to more than one completion handler. If the receiver cannot restore the identified window (for example, the window referenced a document that has been deleted), it should invoke the completion handler with a nil window.

The receiver is application is passed the identifier of the window, which allows it to quickly check for known windows. For example, you might give your preferences window an identifier of "preferences" in the nib, and then check for that identifier in your implementation. The receiver is also passed the NSCoder instance containing the combined restorable state of the window, its delegate, the window controller, and any document. The receiver may decode information previously stored in the coder to determine what window to restore.

Available in OS X v10.7 and later.

The plugin implements this method for NSApplication and forwards the message to this event. If you return true, please set either error or resultWindow values. resultWindow must be an NSWindowMBS or a window object.

### 32.10.36 Constants

#### 32.10.37 NSPrintingCancelled = 0

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the constant values to reply to ApplicationPrintFiles event.
**Notes:** Printing was cancelled.
32.10.38 NSPrintingFailure = 3

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the constant values to reply to ApplicationPrintFiles event.
**Notes:** Printing failed.

32.10.39 NSPrintingReplyLater = 2

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the constant values to reply to ApplicationPrintFiles event.
**Notes:** The result of printing cannot be returned immediately, for example, if printing will cause the presentation of a sheet. If your method returns NSPrintingReplyLater it must always invoke replyToOpenOrPrint when the entire print operation has been completed, successfully or not.

32.10.40 NSPrintingSuccess = 1

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the constant values to reply to ApplicationPrintFiles event.
**Notes:** Printing was successful.

32.10.41 NSTerminateCancel = 0

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the constants to answer application-ShouldTerminate event.
**Notes:** The application should not be terminated.

32.10.42 NSTerminateLater = 2

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the constants to answer application-ShouldTerminate event.
**Notes:** It may be OK to proceed with termination later. Returning this value causes Cocoa to run the run loop in the NSModalPanelRunLoopMode until your application subsequently calls replyToApplication-ShouldTerminate with the value true or false. This return value is for delegates that need to provide document modal alerts (sheets) in order to decide whether to quit.
32.10.43  **NSTerminateNow = 1**

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the constants to answer application-ShouldTerminate event.  
**Notes:** It is OK to proceed with termination.
32.11 class NSApplicationMBS

32.11.1 class NSApplicationMBS

Function: The cocoa application class.
Example:

```vbnet
dim a as NSApplicationMBS = NSApplicationMBS.sharedApplication

// set a custom picture

dim p as Picture = LogoMBS(500)
dim n as new NSImageMBS(p)
a.applicationIconImage = n

// restore
'a.applicationIconImage = nil
```

Notes:
The plugin only implements a small subset of what's available in Cocoa. If you miss something, please send us an email.

You can get an instance of this class using one of three ways:

- app.NSApplicationMBS function
- new NSApplicationMBS
- NSApplicationMBS.sharedInstance

32.11.2 Methods

32.11.3 activateIgnoringOtherApps(flag as boolean)

Function: Makes the receiver the active application.
Notes:
flag: If false, the application is activated only if no other application is currently active. If true, the application activates regardless.
The flag parameter is normally set to false. When the Finder launches an application, using a value of false for flag allows the application to become active if the user waits for it to launch, but the application remains unobtrusive if the user activates another application. Regardless of the setting of flag, there may be a time lag before the application activates; you should not assume the application will be active immediately after sending this message.

You rarely need to invoke this method. Under most circumstances, the Application Kit takes care of proper activation. However, you might find this method useful if you implement your own methods for inter-application communication.

You don’t need to send this message to make one of the application’s NSWindows key. When you send a makeKeyWindow message to an NSWindow object, you ensure that it is the key window when the application is active.

32.11.4 addWindowsItem(win as NSWindowMBS, title as string, isFilename as boolean)

Function: Adds an item to the Window menu for a given window.
Notes:

- win: The window being added to the menu. If this window object already exists in the Window menu, this method has no effect.
- Title: The string to display for the window’s menu item. How the string is interpreted is dependent on the value in the isFilename parameter.
- isFilename: If false, title appears literally in the menu; otherwise, title is assumed to be a converted pathname with the name of the file preceding the path (the way the NSWindow method setTitleWithRepresentedFilename shows a title)

You rarely need to invoke this method directly because Cocoa places an item in the Window menu automatically whenever you set the title of an NSWindow object.

32.11.5 arrangeInFront

Function: Arranges windows listed in the Window menu in front of all other windows.
Example:

```javascript
dim a as new NSApplicationMBS
a.arrangeInFront
```
Notes: Windows associated with the application but not listed in the Window menu are not ordered to the front.

32.11.6 cancelUserAttentionRequest(request as Integer)

Function: Cancels a previous user attention request.
Notes:
request: The request identifier returned by the requestUserAttention method.

A request is also canceled automatically by user activation of the application.

32.11.7 changeWindowsItem(win as NSWindowMBS, title as string, isFilename as boolean)

Function: Changes the item for a given window in the Window menu to a given string.
Notes:
win: The window whose title you want to change in the Window menu. If win is not in the Window menu, this method adds it.
title: The string to display for the window's menu item. How the string is interpreted is dependent on the value in the isFilename parameter.
isFilename: If false, title appears literally in the menu; otherwise, title is assumed to be a converted pathname with the name of the file preceding the path (the way the NSWindow method setTitleWithRepresentedFilename shows a title)

32.11.8 completeStateRestoration

Function: Completes the extended state restoration.
Notes:
This method informs the application that the extended state restoration is completed for the balancing.

If a window has some state that may take a long time to restore, such as a web page, you may use this method and methods to completeStateRestoration to extend the period of this crash protection beyond the default.

You call extendStateRestoration within your implementation of restoreWindowWithIdentifier. You would
then call completeStateRestoration some time after the window is fully restored. If the app crashes in the interim, then it may offer to discard restorable state on the next launch.

The extendStateRestoration and completeStateRestoration method act as a counter. Each call to extendStateRestoration increments the counter, and must be matched with a corresponding call to completeStateRestoration which decrements it. When the counter reaches zero, the app is considered to have been fully restored, and any further calls are silently ignored.

This method is thread safe.
Available in OS X v10.7 and later.

### 32.11.9 Constructor

**Function:** The constructor.  
**Example:**

```plaintext
dim n as new NSApplicationMBS

n.dockTile.badgeLabel = "Hello"
n.dockTile.showsApplicationBadge = true
```

**Notes:** Creates an object which points to the shared NSApplication instance.

### 32.11.10 deactivate

**Function:** Deactivates the receiver.  
**Example:**

```plaintext
dim a as new NSApplicationMBS

a.deactivate
```

**Notes:** Normally, you shouldn’t invoke this method the Application Kit is responsible for proper deactivation.
32.11.11 disableRelaunchOnLogin


Function: Disable relaunching this app on login, if the app was running at the time the user logged out.

Notes:

These methods increment and decrement a counter respectively; if the counter is 0 at the time the user logs out, then the app may be relaunched when the user logs back in. The counter is initially zero, so by default apps are relaunched.

If your app should not be relaunched because it launches via some other mechanism (e.g. launchd), then the recommended usage is to call disableRelaunchOnLogin once, and never pair it with an enable call.

If your app should not be relaunched because it triggers a restart (e.g. an installer), then the recommended usage is to call disableRelaunchOnLogin immediately before you attempt to trigger a restart, and enableRelaunchOnLogin immediately after. This is because the user may cancel restarting; if the user later restarts for another reason, then your app should be brought back.

These methods are thread safe.
Available on Mac OS X 10.7 or newer.

32.11.12 discardEventsMatchingMask(mask as Integer, beforeEvent as NSEventMBS)


Function: Removes all events matching the given mask and generated before the specified event.

Notes:

mask: Contains one or more flags indicating the types of events to discard. The constants section of the NSEvent class defines the constants you can add together to create this mask. The discussion section also lists some of the constants that are typically used.

lastEvent: A marker event that you use to indicate which events should be discarded. Events that occurred before this event are discarded but those that occurred after it are not.

Use this method to ignore any events that occurred before a specific event. For example, suppose your app has a tracking loop that you exit when the user releases the mouse button. You could use this method, specifying NSAnyEventMask as the mask argument and the ending mouse-up event as the lastEvent argument, to discard all events that occurred while you were tracking mouse movements in your loop. Passing the mouse-up event as lastEvent ensures that any events that might have occurred after the mouse-up event (that is, that appear in the queue after the mouse-up event) are not discarded.

Typically, you send this message to an NSWindow object, rather than to the app object. Discarding events for a window clears out all of the events for that window only, leaving events for other windows in place.
For the mask parameter, you can add together event type constants such as the following:

- NSLeftMouseDownMask
- NSLeftMouseUpMask
- NSRightMouseDownMask
- NSRightMouseUpMask
- NSMouseMovedMask
- NSLeftMouseDraggedMask
- NSRightMouseDraggedMask
- NSMouseEnteredMask
- NSMouseExitedMask
- NSKDownMask
- NSKUpMask
- NSFflagsChangedMask
- NSPeriodicMask
- NSCursorUpdateMask
- NSAnyEventMask

This method can also be called in subthreads. Events posted in subthreads bubble up in the main thread event queue.

32.11.13 enabledRemoteNotificationTypes as Integer

**Notes:** Available on Mac OS X 10.7 or newer.
32.11.14  enableRelaunchOnLogin


Function: Enable relaunching this app on login, if the app was running at the time the user logged out.

Notes:
These methods increment and decrement a counter respectively; if the counter is 0 at the time the user logs out, then the app may be relaunched when the user logs back in. The counter is initially zero, so by default apps are relaunched.

If your app should not be relaunched because it launches via some other mechanism (e.g. launchd), then the recommended usage is to call disableRelaunchOnLogin once, and never pair it with an enable call.

If your app should not be relaunched because it triggers a restart (e.g. an installer), then the recommended usage is to call disableRelaunchOnLogin immediately before you attempt to trigger a restart, and enableRelaunchOnLogin immediately after. This is because the user may cancel restarting; if the user later restarts for another reason, then your app should be brought back.

These methods are thread safe.
Available on Mac OS X 10.7 or newer.

32.11.15  extendStateRestoration


Function: Allows an application to extend its state restoration period.

Notes:
This method allows an application to extend the state restoration period beyond the usual. For example, the app crashes before state restoration is complete, then it may offer to discard restorable state on the next launch.

If a window has some state that may take a long time to restore, such as a web page, you may use this method and methods to completeStateRestoration to extend the period of this crash protection beyond the default.

You call extendStateRestoration within your implementation of restoreWindowWithIdentifier. You would then call completeStateRestoration some time after the window is fully restored. If the app crashes in the interim, then it may offer to discard restorable state on the next launch.

The extendStateRestoration and completeStateRestoration method act as a counter. Each call to extendStateRestoration increments the counter, and must be matched with a corresponding call to completeStateRestoration which decrements it. When the counter reaches zero, the app is considered to have been fully restored, and any further calls are silently ignored.
This method is thread safe.
Available in OS X v10.7 and later.

32.11.16 hide

**Function:** Hides all the receiver’s windows, and the next application in line is activated.
**Example:**

```
NSApplicationMBS.sharedApplication.hide
```

**Notes:** This method is usually invoked when the user chooses Hide in the application’s main menu. When this method begins, it posts an NSApplicationWillHideNotification to the default notification center. When it completes successfully, it posts an NSApplicationDidHideNotification.

32.11.17 hideOtherApplications

**Function:** Hides all applications, except the receiver.
**Example:**

```
NSApplicationMBS.sharedApplication.hideOtherApplications
```

32.11.18 invalidateRestorableState

**Function:** Invalidates the restorable state.
**Notes:** applicationWillEncodeRestorableState event will be called soon in your NSApplicationDelegateMBS subclass to get a new state encoded.

32.11.19 miniaturizeAll

**Function:** Miniaturizes all the receiver’s windows.
**Example:**
32.11.20 modalWindow as NSWindowMBS

Function: Returns the modal window that the receiver is displaying.
Example:

```csharp
// show title of current dialog
MsgBox NSApplicationMBS.sharedApplication.modalWindow.Title
```

Notes:
Returns the modal window being displayed or nil if no modal window is being displayed.

This method returns the current standalone modal window. It does not return sheets that are attached to other windows. If you need to retrieve a sheet window, use the attachedSheet method of NSWindow.

32.11.21 nextEventMatchingMask(mask as Integer, untilDate as date, mode as String, dequeueFlag as boolean) as NSEventMBS

Function: Returns the next event matching a given mask, or nil if no such event is found before a specified expiration date.
Example:

```csharp
Function MouseDown(X As Integer, Y As Integer) Handles MouseDown as Boolean
// in mousedown event

dim a as NSApplicationMBS = NSApplicationMBS.sharedApplication

// check current event
dim e as NSEventMBS = a.currentEvent

// check next mouse up event
dim d as new date
d.Second = d.Second + 2 // maximum 2 seconds wait time

dim n as NSEventMBS = a.nextEventMatchingMask(NSEventMBS.NSLeftMouseUpMask, d, NSRunLoopMBS.NSDefaultRunLoopMode, false)

// e->mouseDown
```
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// e->mouseUp, if already available

Break
End Function

Notes:

mask: Contains one or more flags indicating the types of events to return. The constants section of the
NSEvent class defines the constants you can add together to create this mask. The discardEventsMatching-
Mask method also lists several of these constants.
expiration: The expiration date for the current event request. Specifying nil for this parameter is equivalent
to returning a date object using the distantPast method.
mode: The run loop mode in which to run while looking for events. The mode you specify also determines
which timers and run-loop observers may fire while the app waits for the event.
flag: Specify true if you want the event removed from the queue.

Returns the event object whose type matches one of the event types specified by the mask parameter.

You can use this method to short circuit normal event dispatching and get your own events. For example,
you may want to do this in response to a mouse-down event in order to track the mouse while its button is
down. (In such an example, you would pass the appropriate event types for mouse-dragged and mouse-up
events to the mask parameter and specify the NSEventTrackingRunLoopMode run loop mode.) Events that
do not match one of the specified event types are left in the queue.
You can specify one of the run loop modes defined by AppKit or a custom run loop mode used specifically
by your app. AppKit defines the following run-loop modes:

- NSDefaultRunLoopMode
- NSEventTrackingRunLoopMode
- NSModalPanelRunLoopMode
- NSConnectionReplyMode

32.11.22 NSAppKitVersionNumber as Double

Function: This constant identifies the installed version of the Application Kit framework.
Example:

const NSAppKitVersionNumber10_0 = 577
const NSAppKitVersionNumber10_1 = 620
const NSAppKitVersionNumber10_2 = 663
const NSAppKitVersionNumber10_2_3 = 663.6
const NSAppKitVersionNumber10_3 = 743
const NSAppKitVersionNumber10_3_2 = 743.14
const NSAppKitVersionNumber10_3_3 = 743.2
const NSAppKitVersionNumber10_3_5 = 743.24
const NSAppKitVersionNumber10_3_7 = 743.33
const NSAppKitVersionNumber10_3_9 = 743.36
const NSAppKitVersionNumber10_4 = 824
const NSAppKitVersionNumber10_4_1 = 824.1
const NSAppKitVersionNumber10_4_3 = 824.23
const NSAppKitVersionNumber10_4_4 = 824.33
const NSAppKitVersionNumber10_4_7 = 824.41
const NSAppKitVersionNumber10_5 = 949
const NSAppKitVersionNumber10_5_2 = 949.27
const NSAppKitVersionNumber10_5_3 = 949.33
const NSAppKitVersionNumber10_6 = 1038
const NSAppKitVersionNumber10_7 = 1138
const NSAppKitVersionNumber10_7_2 = 1138.23

if NSApplicationMBS.NSAppKitVersionNumber >= NSAppKitVersionNumber10_5 then
    MsgBox "This is Mac OS X 10.5 or newer."
end if

Notes: See NSAppKitVersionNumber* constants.

32.11.23 NSApplicationDidBecomeActiveNotification as string

Function: One of the notification names.
Notes:
Posted immediately after the application becomes active.
The notification object is sharedApplication. This notification does not contain a userInfo dictionary.

32.11.24 NSApplicationDidChangeScreenParametersNotification as string

Function: One of the notification names.
Notes:
Posted when the configuration of the displays attached to the computer is changed.
The configuration change can be made either programmatically or when the user changes settings in the Displays control panel. The notification object is sharedApplication. This notification does not contain a userInfo dictionary.
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32.11.25 **NSApplicationDidFinishLaunchingNotification as string**


**Function:** One of the notification names.

**Notes:**

Posted at the end of the finishLaunching method to indicate that the application has completed launching and is ready to run.

The notification object is sharedApplication. This notification does not contain a userInfo dictionary.

32.11.26 **NSApplicationDidFinishRestoringWindowsNotification as string**


**Function:** Posted when the application is finished restoring windows.

**Notes:**

The notification is posted when the application is finished restoring windows, that is, when all the completion handlers from restoreWindowWithIdentifier have been called. This is always posted after NSApplicationWillFinishLaunchingNotification, but may be posted before or after NSApplicationDidFinishLaunchingNotification, depending on whether clients copy the completion handlers and invoke them later. If there were no windows to restore, then this notification is still posted at the corresponding point in app launch (between NSApplicationWillFinishLaunchingNotification and NSApplicationDidFinishLaunchingNotification).

The notification object is sharedApplication. This notification does not contain a userInfo dictionary.

Available in OS X v10.7 and later.

32.11.27 **NSApplicationDidHideNotification as string**


**Function:** One of the notification names.

**Notes:**

Posted at the end of the hide method to indicate that the application is now hidden.

The notification object is NSApp. This notification does not contain a userInfo dictionary.

32.11.28 **NSApplicationDidResignActiveNotification as string**


**Function:** One of the notification names.

**Notes:**

Posted immediately after the application gives up its active status to another application.

The notification object is NSApp. This notification does not contain a userInfo dictionary.
32.11.29 **NSApplicationDidUnhideNotification as string**


**Function:** One of the notification names.

**Notes:**
Posted at the end of the unhideWithoutActivation method to indicate that the application is now visible.
The notification object is NSApp. This notification does not contain a userInfo dictionary.

32.11.30 **NSApplicationDidUpdateNotification as string**


**Function:** One of the notification names.

**Notes:**
Posted at the end of the updateWindows method to indicate that the application has finished updating its windows.
The notification object is NSApp. This notification does not contain a userInfo dictionary.

32.11.31 **NSApplicationLaunchIsDefaultLaunchKey as string**


**Function:** One of the keys for the userinfo dictionary on didFinishLaunching.

**Notes:**
The following key is present in the userInfo of NSApplicationDidFinishLaunchingNotification or in the didFinishLaunching event. Its value is a number containing a bool. It will be false if the app was launched to open or print a file, to perform a Service, if the app had saved state that will be restored, or if the app launch was in some other sense not a "default" launch. Otherwise its value will be true.

Available on Mac OS X 10.7 or newer.

32.11.32 **NSApplicationLaunchRemoteNotificationKey as string**


**Function:** One of the keys for the userinfo dictionary on didFinishLaunching.

**Notes:**
User info keys for NSApplicationDidFinishLaunchingNotification.
Available on Mac OS X 10.7 or newer.
32.11.33 **NSApplicationLaunchUserNotificationKey** as string


**Function**: One of the user info keys for NSApplicationDidFinishLaunchingNotification.

**Example**:

```
Sub applicationDidFinishLaunching(Notification as NSNotificationMBS)
    dim userInfo as Dictionary = Notification.userInfo
    dim key as string = NSApplicationMBS.NSApplicationLaunchUserNotificationKey
    dim UserNotification as NSUserNotificationMBS = userInfo.Lookup(key, nil)
    if UserNotification <> nil then
        MsgBox UserNotification.identifier + ": " + UserNotification.informativeText
    end if
End Sub
```

**Notes**:

This key is present in the userInfo of NSApplicationDidFinishLaunchingNotification. It will be present if your application was launched because a user activated a notification in the Notification Center. Its value is an NSUserNotification object.

Available in Mac OS X 10.8.

32.11.34 **NSApplicationWillBecomeActiveNotification** as string


**Function**: One of the notification names.

**Notes**:

Posted immediately after the application becomes active.

The notification object is NSApp. This notification does not contain a userInfo dictionary.

32.11.35 **NSApplicationWillFinishLaunchingNotification** as string


**Function**: One of the notification names.

**Notes**:

Posted at the start of the finishLaunching method to indicate that the application has completed its initialization process and is about to finish launching.
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The notification object is NSApp. This notification does not contain a userInfo dictionary.

32.11.36 NSApplicationWillHideNotification as string

Function: One of the notification names.
Notes:
Posted at the start of the hide method to indicate that the application is about to be hidden.
The notification object is NSApp. This notification does not contain a userInfo dictionary.

32.11.37 NSApplicationWillResignActiveNotification as string

Function: One of the notification names.
Notes:
Posted immediately before the application gives up its active status to another application.
The notification object is sharedApplication. This notification does not contain a userInfo dictionary.

32.11.38 NSApplicationWillTerminateNotification as string

Function: One of the notification names.
Notes:
Posted by the terminate method to indicate that the application will terminate.
Posted only if the delegate method applicationWillTerminate returns true. The notification object is
sharedApplication. This notification does not contain a userInfo dictionary.

32.11.39 NSApplicationWillUnhideNotification as string

Function: One of the notification names.
Notes:
Posted at the start of the unhideWithoutActivation method to indicate that the application is about to
become visible.
The notification object is sharedApplication. This notification does not contain a userInfo dictionary.
32.11.40 **NSApplicationWillUpdateNotification as string**


**Function:** One of the notification names.

**Notes:**

Posted at the start of the updateWindows method to indicate that the application is about to update its windows.
The notification object is sharedApplication. This notification does not contain a userInfo dictionary.

32.11.41 **orderFrontCharacterPalette**


**Function:** Opens the character palette.

**Example:**

```dim a as new NSApplicationMBS
a.orderFrontCharacterPalette```

**Notes:**

Available in Mac OS X v10.3 and later.
This shows the special characters palette.

32.11.42 **orderFrontStandardAboutPanel**


**Function:** Displays a standard About window.

**Example:**

```dim a as new NSApplicationMBS
a.orderFrontStandardAboutPanel```

**Notes:** This method calls orderFrontStandardAboutPanelWithOptions with a nil argument. See orderFrontStandardAboutPanelWithOptions for a description of what’s displayed.
32.11.43 orderFrontStandardAboutPanelWithOptions(options as dictionary)


**Function:** Displays a standard About window with information from a given options dictionary.

**Example:**

```plaintext
dim a as new NSApplicationMBS

// this image has no mask, so you’ll see a white border
dim p as Picture = LogoMBS(500)
dim n as new NSImageMBS(p)
dim options as new Dictionary

// show window with default values
'a.orderFrontStandardAboutPanel

// we overwrite default values with new values
options.Value("Credits") = NSAttributedStringMBS.attributedStringWithString("Written by Christian Schmitz")
options.Value("ApplicationName") = "MyCoolApp"
options.Value("Version") = "1.2.3"
options.Value("Copyright") = " 2011 Monkeybread Software"
options.Value("ApplicationIcon") = n

a.orderFrontStandardAboutPanelWithOptions(options)
```

**Exception** ex as NSExceptionMBS
MsgBox ex.message

**Notes:**

options: A dictionary whose keys define the contents of the About window. See the discussion for a description of the available keys.

The following strings are keys that can occur in optionsDictionary:

32.11.44 OverlayApplicationIconImage(image as NSImageMBS)


**Function:** Overlays the image.

**Example:**

```plaintext
// draw a picture with a red dot on the top left

dim p as new Picture(512,512,32)
```
"""
"""
An NSAttributedStringMBS displayed in the info area of the panel. If not specified, this method then looks for a file named "Credits.html", "Credits.rtf", and "Credits.rtfd", in that order, in the bundle returned by the NSBundle class method mainBundle. The first file found is used. If none is found, the info area is left blank.

"ApplicationName" A string displayed as the application’s name. If not specified, this method then uses the value of CFBundleName (localizable). If neither is found, this method uses the process name.

"ApplicationIcon" A NSImageMBS object displayed as the application’s icon. If not specified, this method then looks for an image named "NSApplicationIcon", using NSImageMBS.imageNamed("NSApplicationIcon"). If neither is available, this method uses the generic application icon.

"Version" A string with the build version number of the application ("58.4"), displayed as "(v58.4)". If not specified, obtain from the CFBundleVersion key in infoDictionary; if not specified, leave blank (the "(v)" is not displayed).

"Copyright" A string with a line of copyright information. If not specified, this method then looks for the value of NSHumanReadableCopyright in the localized version infoDictionary. If neither is available, this method leaves the space blank.

"ApplicationVersion" A string with the application version ("Mac OS X", "3", "WebObjects 4.5", "AppleWorks 6","..."). If not specified, obtain from the CFBundleShortVersionString key in infoDictionary. If neither is available, the build version, if available, is printed alone, as "Version x.x".

dim g as Graphics = p.Graphics
g.ForeColor = & c FF0000
g.FillRect 0,0,128,128
g = p.mask.Graphics
g.ForeColor = & c FFFFFF
g.Fillrect 0,0,512,512
g.ForeColor = & c 000000
g.Filloval 0,0,128,128
Backdrop = p

// create nsimage
dim n as new NSImageMBS(p,p.mask)

// and overlay over original image
NSApplicationMBS.sharedApplication.OverlayApplicationIconImage n

Notes:

Same as setting applicationIconImage, but instead overlays the original image with the new image. This
way you can show custom badges. For normal text badges, use NSDockTileMBS class.

Pass image = nil to reset application dock icon.

Size of the image seems to be 128 Pixel by default, but could go up to 1024 in the future. Plugin scales up or down as needed for you.

### 32.11.45 postEvent(e as NSEventMBS, atStart as boolean)

MBS MacCocoa Plugin, Plugin Version: 17.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds a given event to the receivers event queue. **Notes:**

* anEvent: The event object to post to the queue.
* flag: Specify true to add the event to the front of the queue; otherwise, specify false to add the event to the back of the queue.

This method can also be called in subthreads. Events posted in subthreads bubble up in the main thread event queue.

### 32.11.46 preventWindowOrdering

MBS MacCocoa Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Suppresses the usual window ordering in handling the most recent mouse-down event. **Notes:** This method is only useful for mouse-down events when you want to prevent the window that receives the event from being ordered to the front.

### 32.11.47 registerForRemoteNotificationTypes(type as Integer)

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Registers for remote notifications. **Example:**

NSApplicationMBS.sharedApplication.registerForRemoteNotificationTypes NSApplicationMBS.NSRemoteNotificationTypeBadge

**Notes:**

Only applications distributed through the Mac App Store may use Push notifications.
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Type can only be NSRemoteNotificationTypeBadge currently for Mac OS X 10.7.0.

Available on Mac OS X 10.7 or newer.

32.11.48 removeWindowsItem(win as NSWindowMBS)


Function: Removes the Window menu item for a given window.

Notes:

Win: The window whose menu item is to be removed.

This method doesn't prevent the item from being automatically added again. Use the excludedFromWindowsMenu method of NSWindow if you want the item to remain excluded from the Window menu.

32.11.49 replyToApplicationShouldTerminate(reply as boolean)


Function: Responds to NSTerminateLater once the application knows whether it can terminate.

Notes:

souldTerminate: Specify true if you want the application to terminate; otherwise, specify false.

If your application delegate returns NSTerminateLater from its applicationShouldTerminate event, your code must subsequently call this method to let the NSApplication object know whether it can actually terminate itself.

32.11.50 replyToOpenOrPrint(reply as Integer)


Function: Handles errors that might occur when the user attempts to open or print files.

Notes:

reply: The error that occurred. For a list of possible values, see "Constants."

Delegates should invoke this method if an error is encountered in the applicationOpenFiles or applicationPrintFiles delegate methods.
32.11.51  requestUserAttention(type as Integer) as Integer

Function: Starts a user attention request.
Example:

dim a as NSApplicationMBS = NSApplicationMBS.sharedApplication

if not a.isActive then // only when we are in background
call a.requestUserAttention(a.NSInformationalRequest) // dock bounces
end if

Notes:

requestType: The severity of the request. Can be NSInformationalRequest or NSCriticalRequest.

Returns the identifier for the request. You can use this value to cancel the request later using the cancelUser-
AttentionRequest method.

Activating the application cancels the user attention request. A spoken notification will occur if spoken
notifications are enabled. Sending requestUserAttention to an application that is already active has no effect.

If the inactive application presents a modal panel, this method will be invoked with NSCriticalRequest au-
tomatically. The modal panel is not brought to the front for an inactive application.

32.11.52  runModalForWindow(win as NSWindowMBS) as Integer

Function: Starts a modal event loop for the specified window.
Notes:

win: The window to be displayed modally. If it is not already visible, the window is centered on the screen
using the value in its center method and made visible and key. If it is already visible, it is simply made key.

Returns an integer indicating the reason that this method returned.

This method runs a modal event loop for the specified window synchronously. It displays the specified win-
dow, makes it key, starts the run loop, and processes events for that window. (You do not need to show the
window yourself.) While the app is in that loop, it does not respond to any other events (including mouse,
keyboard, or window-close events) unless they are associated with the window. It also does not perform any
tasks (such as firing timers) that are not associated with the modal run loop. In other words, this method
consumes only enough CPU time to process events and dispatch them to the action methods associated with
You can exit the modal loop by calling the stopModal, stopModalWithCode, or abortModal methods from your modal window code. If you use the stopModalWithCode method to stop the modal event loop, this method returns the argument passed to stopModalWithCode. If you use stopModal instead, this method returns the constant NSModalResponseStop (-1000). If you use abortModal, this method returns the constant NSModalResponseAbort (-1001).

32.11.53 runPageLayout

**Function:** Displays the app’s page layout panel, an instance of NSPageLayout.  
**Example:**  
NSApplicationMBS.sharedApplication.runPageLayout

**Notes:** If the NSPageLayout instance does not exist, this method creates one. This method is typically invoked when the user chooses Page Setup from the application’s File menu.

32.11.54 sendEvent(theEvent as NSEventMBS)

**Function:** Dispatches an event to other objects.  
**Notes:**  
You rarely invoke sendEvent directly, although you might want to override this method to perform some action on every event. sendEvent messages are sent from the main event loop (the run method). sendEvent is the method that dispatches events to the appropriate respondersNSApp handles application events, the NSWindow object indicated in the event record handles window-related events, and mouse and key events are forwarded to the appropriate NSWindow object for further dispatching.

If you need to override sendEvent method, please call MBS support.

32.11.55 sharedApplication as NSApplicationMBS

**Function:** Returns the application instance, creating it if it doesn’t exist yet.  
**Notes:** The plugin makes sure that there is only one application object by returning the same object each time.
32.11.56  showHelp

Function: Shows help.
Example:
NSApplicationMBS.sharedApplication.showHelp

Notes: If your project is properly registered, and the necessary keys have been set in the property list, this method launches Help Viewer and displays the first page of your app's help book.

32.11.57  startDictation

Function: Starts dictation.
Example:
NSApplicationMBS.sharedApplication.startDictation

Notes: For Mac OS X 10.8.

32.11.58  stopDictation

Notes: For Mac OS X 10.8.

32.11.59  terminate

Function: Terminates the receiver.
Example:
NSApplicationMBS.sharedApplication.terminate

Notes:
This method is typically invoked when the user chooses Quit or Exit from the application’s menu.
When invoked, this method performs several steps to process the termination request. First, it asks the application’s document controller (if one exists) to save any unsaved changes in its documents. During this process, the document controller can cancel termination in response to input from the user. If the document controller does not cancel the operation, this method then calls the delegate’s applicationShouldTerminate method. If applicationShouldTerminate returns NSTerminateCancel, the termination process is aborted and control is handed back to the main event loop. If the method returns NSTerminateLater, the application runs its run loop in the NSModalPanelRunLoopMode mode until the replyToApplicationShouldTerminate method is called with the value true or false. If the applicationShouldTerminate method returns NSTerminateNow, this method posts a NSApplicationWillTerminateNotification notification to the default notification center.

Do not bother to put final cleanup code in your application’s main() functionit will never be executed. If cleanup is necessary, perform that cleanup in the delegate’s applicationWillTerminate method.

### 32.11.60 `unhide`

**Function:** Restores hidden windows to the screen and makes the receiver active.  
**Example:**  
NSApplicationMBS.sharedApplication.unhide

### 32.11.61 `unhideAllApplications`

**Function:** Unhides all applications, including the receiver.  
**Example:**  
NSApplicationMBS.sharedApplication.unhideAllApplications

**Notes:** This action causes each application to order its windows to the front, which could obscure the currently active window in the active application.

### 32.11.62 `unhideWithoutActivation`

**Function:** Restores hidden windows without activating their owner (the receiver).  
**Example:**
NSApplicationMBS.sharedApplication.unhideWithoutActivation

Notes: When this method begins, it posts an NSApplicationWillUnhideNotification to the default notification center. If it completes successfully, it posts an NSApplicationDidUnhideNotification.

32.11.63 unregisterForRemoteNotifications

Function: Unregisters for remote notifications. 
Example: 
NSApplicationMBS.sharedApplication.unregisterForRemoteNotifications

Notes: Available on Mac OS X 10.7 or newer.

32.11.64 updateWindows

Function: Sends an update message to each onscreen window. 
Notes: 
This method is invoked automatically in the main event loop after each event when running in NSDefaultRunLoopMode or NSModalRunLoopMode. This method is not invoked automatically when running in NSEventTrackingRunLoopMode. 
When this method begins, it posts an NSApplicationWillUpdateNotification to the default notification center. When it successfully completes, it posts an NSApplicationDidUpdateNotification.

32.11.65 updateWindowsItem(win as NSWindowMBS)

Function: Updates the Window menu item for a given window to reflect the edited status of that window. 
Notes: 
win: The window whose menu item is to be updated. 

You rarely need to invoke this method because it is invoked automatically when the edit status of an NSWindow object is set.
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32.11.66 windows as NSWindowMBS()

Function: Returns an array containing the receiver’s window objects.
Example:

// show all window titles in message boxes
for each w as NSWindowMBS in NSApplicationMBS sharedApplication.windows
    MsgBox w.Title
next

Notes: Returns an array of NSWindow objects. This array includes both onscreen and offscreen windows.

32.11.67 windowWithWindowNumber(windowNumber as Integer) as NSWindowMBS

Function: Returns the window corresponding to the specified window number.
Example:

dim w as window = window1
w.Title = "This is our test window"

// get a window ID somewhere
dim WindowID as Integer = CGWindowMBS.GetWindowID(w)

// now find back the window
dim n as NSWindowMBS = NSApplicationMBS sharedApplication.windowWithWindowNumber(windowid)

MsgBox n.Title

Notes:

windowNumber: The unique window number associated with the desired NSWindow object.

Returns the desired window object or nil if the window could not be found.
32.11.68 Properties

32.11.69 activationPolicy as Integer

Function: The application’s activation policy.
Notes: Currently, NSApplicationActivationPolicyNone and NSApplicationActivationPolicyAccessory may be changed to NSApplicationActivationPolicyRegular, but other modifications are not supported.

Available in Mac OS X v10.6 and later.
(Read and Write property)

32.11.70 applicationIconImage as NSImageMBS

Function: The image used for the receiver’s icon.
Example:

```vbscript
dim pic as Picture = LogoMBS(500)
dim mask as new Picture(500, 500, 32)
dim g as Graphics = mask.Graphics

g.ForeColor = & c FFFFFF
g.FillRect 0,0,g.Width, g.Height
g.ForeColor = & c 000000
g.FillOval 0,0,g.Width, g.Height

dim n as new NSImageMBS(pic,mask)

NSApplicationMBS.sharedApplication.applicationIconImage = n
```

Notes:
An image containing the application’s icon.

This property can set the icon in the dock application tile. This method scales the image as necessary so that it fits in the dock tile. You can use this method to change your application icon while running. To restore your application’s original icon, you pass nil to this method.
(Read and Write property)
32.11. CLASS NSAPPLICATIONMBS

32.11.71 currentEvent as NSEventMBS

**Function:** Returns the current event, the last event the receiver retrieved from the event queue.
**Notes:**
The last event object retrieved by the application.

NSApp receives events and forwards them to the affected NSWindow objects, which then distribute them
to the objects in its view hierarchy.

Only for Cocoa applications.
(Read only property)

32.11.72 currentSystemPresentationOptions as Integer

**Function:** Returns the set of application presentation options that are currently in effect for the system.
**Example:**
```
dim a as new NSApplicationMBS
MsgBox "currentSystemPresentationOptions: " + str(a.currentSystemPresentationOptions)
```

**Notes:**
The presentation options. See NSApplicationPresentation* constants and combine them using a C bitwise
OR operator.

These are the presentation options that have been put into effect by the currently active application.
(Read only property)

32.11.73 dockTile as NSDockTileMBS

**Function:** Returns the application’s Dock tile.
**Example:**
```
dim a as new NSApplicationMBS
a.dockTile.badgeLabel = "Hello"
```
32.11.74 Handle as Integer

MBS MacCocoa Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal reference to the NSApplication object.

**Notes:** (Read and Write property)

32.11.75 helpMenu as NSMenuMBS

MBS MacCocoa Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The help menu used by the application.

**Notes:**

If helpMenu is nil, the system will append the help to an appropriate menu and will not return a reference to that menu when this method is called.

Available in Mac OS X v10.6 and later.

If helpMenu is a non-nil menu it is set as the Help menu, and Spotlight for Help will be installed in it. If helpMenu is nil, AppKit will install Spotlight for Help into a menu of its choosing, and that menu is not returned from helpMenu.

If you wish to completely suppress Spotlight for Help, you can set a menu that does not appear in the menu bar.

NSApplication retains its Help menu and releases it when a different menu is set. (Read and Write property)

32.11.76 isActive as Boolean


**Function:** Returns a Boolean value indicating whether this is the active application.

**Example:**
32.11.  CLASS NSAPPLICATIONMBS

    dim a as NSApplicationMBS = NSApplicationMBS.sharedApplication
    MsgBox "isActive:" + str(a.isActive)

Notes:
True if this is the active application; false otherwise.
(Read only property)

32.11.77  isFullKeyboardAccessEnabled as Boolean

Function: Returns that status of Full Keyboard Access set in the Keyboard preference pane.
Example:
    dim a as NSApplicationMBS = NSApplicationMBS.sharedApplication
    MsgBox "isFullKeyboardAccessEnabled:" + str(a.isFullKeyboardAccessEnabled)

Notes:
True if Full Keyboard Access is enabled, otherwise false.
You may use this status to implement your own key loop or to implement in-control tabbing behavior similar to NSTableView.

Available in Mac OS X v10.6 and later.
(Read only property)

32.11.78  isHidden as Boolean

Function: Returns a Boolean value indicating whether the receiver is hidden.
Example:
    MsgBox str(NSApplicationMBS.sharedApplication.isHidden)

Notes:
True if the receiver is hidden, false otherwise.
(Read only property)
32.11.79  isRunning as Boolean

Function: Returns a Boolean value indicating whether the main event loop is running.
Example:
ErrMsg str(NSApplicationMBS.sharedApplication.isRunning)

Notes:
True if the main event loop is running; false otherwise.
False means the stop: method was invoked.
Should always be true for a Real Studio application.
(Read only property)

32.11.80  keyWindow as NSWindowMBS

Function: Returns the window that currently receives keyboard events.
Example:
// title of front window
ErrMsg NSApplicationMBS.sharedApplication.keyWindow.Title

Notes:
The window object currently receiving keyboard events or nil if there is no key window.
This method might return nil if the application hasn’t finished loading yet or if the receiver is not active.
Does return nil in Carbon applications.
(Read only property)

32.11.81  mainMenu as NSMenuMBS

Function: The menu object representing the application’s menu bar.
Example:
// shows titles of the menus in a Cocoa app
dim m as NSMenuMBS = NSApplicationMBS.sharedApplication.mainMenu
if m<>nil then
    dim c as Integer = m.numberOfItems-1
    for i as Integer = 0 to c
        MsgBox m.Item(i).Title
    next
end if

Notes:
Returns nil on a Carbon application.
(Read and Write property)

32.11.82 mainWindow as NSWindowMBS

Function: Returns the main window.
Example:
// shows title in Cocoa, but not in Carbon
MsgBox NSApplicationMBS.sharedInstance().mainWindow.Title

Notes:
The application’s main window or nil if there is no main window.
This method might return nil if the application hasn’t finished loading, if the receiver is not active, or if the
application is hidden.
(Read only property)

32.11.83 presentationOptions as Integer

Function: The presentation options that should be in effect for the system when this application is active.
Example:
dim a as new NSApplicationMBS
// hide dock
a.presentationOptions = NSApplicationMBS.NSApplicationPresentationAutoHideDock
Notes:
Available in Mac OS X v10.6 and later.

Only certain combinations of "NSApplicationPresentationOptions" flags are supported. When given an invalid combination of option flags this method raises an exception NSInvalidArgumentException exception.

See NSApplicationPresentation* constants.
(Read and Write property)

32.11.84 servicesProvider as NSServiceProviderMBS

Function: Registers or queries the service provider.
Notes:
The service provider is an object that performs all services the application provides to other applications. When another application requests a service from the receiver, it sends the service request to aProvider. Service requests can arrive immediately after the service provider is set, so invoke this method only when your application is ready to receive requests.

Please keep an object reference around so the object is not going out of scope too early!
(Read and Write property)

32.11.85 userInterfaceLayoutDirection as Integer

Function: The layout direction of the user interface.
Notes:
This property contains the general user interface layout flow directions. For a list of possible values, see NSUserInterfaceLayoutDirection.

NSUserInterfaceLayoutDirectionLeftToRight = 0
NSUserInterfaceLayoutDirectionRightToLeft = 1

Available in OS X v10.6 and later.
(Read only property)
32.11. CLASS NSAPPLICATIONMBS

32.11.86 windowsMenu as NSMenuMBS

MBS MacCocoa Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The window menu or nil if such a menu does not exist or has not yet been created. Notes: (Read and Write property)

32.11.87 Constants

32.11.88 NSApplicationActivationPolicyAccessory = 1

MBS MacCocoa Plugin, Plugin Version: 11.2. Function: One of the activation policy constants. Notes: The application does not appear in the Dock and does not have a menu bar, but it may be activated programmatically or by clicking on one of its windows. This corresponds to value of the LSUIElement key in the application's Info.plist being 1. Available in Mac OS X v10.6 and later.

32.11.89 NSApplicationActivationPolicyProhibited = 2

MBS MacCocoa Plugin, Plugin Version: 11.2. Function: One of the activation policy constants. Notes: The application does not appear in the Dock and may not create windows or be activated. This corresponds to the value of the LSBackgroundOnly key in the application’s Info.plist being 1. This is also the default for unbundled executables that do not have Info.plist. Available in Mac OS X v10.6 and later.

32.11.90 NSApplicationActivationPolicyRegular = 0

MBS MacCocoa Plugin, Plugin Version: 11.2. Function: One of the activation policy constants. Notes: The application is an ordinary app that appears in the Dock and may have a user interface. This is the default for bundled apps, unless overridden in the Info.plist. Available in Mac OS X v10.6 and later.

32.11.91 NSApplicationPresentationAutoHideDock = 1

MBS MacCocoa Plugin, Plugin Version: 11.2. Function: One of the control constants for presentationOptions and currentSystemPresentationOptions functions.
Example:

dim a as new NSApplicationMBS

// hide dock
a.presentationOptions = NSApplicationMBS.NSApplicationPresentationAutoHideDock

32.11.92  NSApplicationPresentationAutoHideMenuBar = 4

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the control constants for presentationOptions and currentSystemPresentationOptions functions.

32.11.93  NSApplicationPresentationAutoHideToolbar = 2048

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the control constants for presentationOptions and currentSystemPresentationOptions functions.

**Notes:**
Fullscreen window toolbar is detached from window and hides/shows with autoHidden menuBar. May be used only when both NSApplicationPresentationFullScreen and NSApplicationPresentationAutoHideMenuBar are also set

Available on Mac OS X 10.7 or newer.

32.11.94  NSApplicationPresentationDefault = 0

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the control constants for presentationOptions and currentSystemPresentationOptions functions.

32.11.95  NSApplicationPresentationDisableAppleMenu = 16

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the control constants for presentationOptions and currentSystemPresentationOptions functions.
32.11. **CLASS NSAPPLICATIONMBS**

32.11.96 **NSApplicationPresentationDisableForceQuit = 64**

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the control constants for presentationOptions and currentSystemPresentationOptions functions.

32.11.97 **NSApplicationPresentationDisableHideApplication = 256**

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the control constants for presentationOptions and currentSystemPresentationOptions functions.

32.11.98 **NSApplicationPresentationDisableMenuBarTransparency = 512**

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the control constants for presentationOptions and currentSystemPresentationOptions functions.

32.11.99 **NSApplicationPresentationDisableProcessSwitching = 32**

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the control constants for presentationOptions and currentSystemPresentationOptions functions.

32.11.100 **NSApplicationPresentationDisableSessionTermination = 128**

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the control constants for presentationOptions and currentSystemPresentationOptions functions.

32.11.101 **NSApplicationPresentationFullScreen = 1024**

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the control constants for presentationOptions and currentSystemPresentationOptions functions.

**Notes:**
Application is in fullscreen mode.
Available on Mac OS X 10.7 or newer.
32.11.102  NSApplicationPresentationHideDock = 2

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the control constants for presentationOptions and currentSystemPresentationOptions functions.

32.11.103  NSApplicationPresentationHideMenuBar = 8

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the control constants for presentationOptions and currentSystemPresentationOptions functions.

32.11.104  NSCriticalRequest = 0

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the constants for the level of severity of a user attention request.

**Notes:**

The user attention request is a critical request.
The dock icon will bounce until either the application becomes active or the request is canceled.
32.11. CLASS NSAPPLICATIONMBS

32.11.105 NSInformationalRequest = 10

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the constants for the level of severity of a user attention request.

**Notes:**
The user attention request is an informational request. The dock icon will bounce for one second. The request, though, remains active until either the application becomes active or the request is canceled.

32.11.106 NSRemoteNotificationTypeAlert = 4

MBS MacCocoa Plugin, Plugin Version: 12.3. **Function:** One of the notification type constants.

**Notes:** Available in Mac OS X 10.8.

32.11.107 NSRemoteNotificationTypeBadge = 1

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the notification type constants.

32.11.108 NSRemoteNotificationTypeNone = 0

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the notification type constants.

32.11.109 NSRemoteNotificationTypeSound = 2

MBS MacCocoa Plugin, Plugin Version: 12.3. **Function:** One of the notification type constants.

**Notes:** Available in Mac OS X 10.8.
32.12 class NSAttributedStringMBS

32.12.1 class NSAttributedStringMBS

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class to represent a string in the Cocoa world with attached attributes.

**Example:**

```vba
dim a as new NSAttributedStringMBS
if a.initWithHTML("<B>Hello</B>") then
    MsgBox a.htmlString
end if
```

32.12.2 Methods

32.12.3 AsCFAttributedString as Variant

MBS MacBase Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a new CFAttributedStringMBS object pointing to same attributed string.

**Example:**

```vba
// make NS version
dim n as new NSAttributedStringMBS
if n.initWithString("Hello World") then
    // convert
    dim c as CFAttributedStringMBS = n.AsCFAttributedString
    // and check content
    MsgBox c.String
end if
```

**Notes:** For passing to functions which need a CFAttributedStringMBS.

32.12.4 attributeAtIndex(name as string, location as UInt64) as Variant

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the value for an attribute with a given name of the character at a given index, and by reference the range over which the attribute applies.

**Notes:**
name: The name of an attribute.
location: The index for which to return attributes. This value must not exceed the bounds of the receiver.
effectiveRange: Optional. If the named attribute exists at index, upon return aRange contains a range over which the named attribute’s value applies. If the named attribute does not exist at index, upon return aRange contains the range over which the attribute does not exist.
The range isn’t necessarily the maximum range covered by attributeName, and its extent is implementation-dependent. If you need the maximum range, use the other variant of this method.

Returns the value for the attribute named attributeName of the character at index index, or nil if there is no such attribute.
Raises an NSRangeException if index lies beyond the end of the receiver’s characters.

For information about where to find the attribute keys for the returned dictionary, see the overview section of this document.
See also:

• 32.12.5 attributeAtIndex(name as string, location as UInt64, inRange as NSRangeMBS) as Variant

32.12.5 attributeAtIndex(name as string, location as UInt64, inRange as NSRangeMBS) as Variant

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the value for the attribute with a given name of the character at a given index, and by reference the range over which the attribute applies.

Notes:

name: The name of an attribute.
location: The index at which to test for attributeName.
longestEffectiveRange: Optional. If the named attribute exists at index, upon return aRange contains the full range over which the value of the named attribute is the same as that at index, clipped to rangeLimit. If the named attribute does not exist at index, upon return aRange contains the full range over which the attribute does not exist, clipped to rangeLimit.
inRange: The range over which to search for continuous presence of attributeName. This value must not exceed the bounds of the receiver.

Returns the value for the attribute named attributeName of the character at index, or nil if there is no such attribute.

 Raises an NSRangeException if index or any part of rangeLimit lies beyond the end of the receiver’s characters.

If you don’t need the longest effective range, it’s far more efficient to use the other variant method to retrieve the attribute value.
For information about where to find the attribute keys for the returned dictionary, see the overview section of this document.

See also:

- 32.12.4 attributeAtIndex(name as string, location as UInt64) as Variant

32.12.6 attributeAtIndex2(name as string, location as UInt64, byref effectiveRange as NSRangeMBS) as Variant

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the value for an attribute with a given name of the character at a given index, and by reference the range over which the attribute applies.

**Notes:**

name: The name of an attribute.
location: The index for which to return attributes. This value must not exceed the bounds of the receiver.
effectiveRange: Optional. If the named attribute exists at index, upon return aRange contains a range over which the named attribute’s value applies. If the named attribute does not exist at index, upon return aRange contains the range over which the attribute does not exist.
The range isn’t necessarily the maximum range covered by attributeName, and its extent is implementation-dependent. If you need the maximum range, use the other variant of this method.

Returns the value for the attribute named attributeName of the character at index index, or nil if there is no such attribute.
Raises an NSRangeException if index lies beyond the end of the receiver’s characters.

For information about where to find the attribute keys for the returned dictionary, see the overview section of this document.

See also:

- 32.12.7 attributeAtIndex2(name as string, location as UInt64, byref longestEffectiveRange as NSRangeMBS, inRange as NSRangeMBS) as Variant

32.12.7 attributeAtIndex2(name as string, location as UInt64, byref longestEffectiveRange as NSRangeMBS, inRange as NSRangeMBS) as Variant

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the value for the attribute with a given name of the character at a given index, and by reference the range over which the attribute applies.

**Notes:**

name: The name of an attribute.
location: The index at which to test for attributeName.
**32.12. **CLASS NSATTRIBUTEDSTRINGMBS

longestEffectiveRange: Optional. If the named attribute exists at index, upon return aRange contains the full range over which the value of the named attribute is the same as that at index, clipped to rangeLimit. If the named attribute does not exist at index, upon return aRange contains the full range over which the attribute does not exist, clipped to rangeLimit.

inRange: The range over which to search for continuous presence of attributeName. This value must not exceed the bounds of the receiver.

Returns the value for the attribute named attributeName of the character at index, or nil if there is no such attribute.

Raises an NSRangeException if index or any part of rangeLimit lies beyond the end of the receiver’s characters.

If you don’t need the longest effective range, it’s far more efficient to use the other variant method to retrieve the attribute value.

For information about where to find the attribute keys for the returned dictionary, see the overview section of this document.

See also:

- 32.12.6 attributeAtIndex2(name as string, location as UInt64, byref effectiveRange as NSRangeMBS) as Variant

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**32.12.8 **attributedStringWithAttachment(attachment as NSTextAttachmentMBS) as NSAttributedStringMBS

MBS MacBase Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an attributed string with an attachment.

**Example:**

```
dim content as MemoryBlock = "Hello World"
dim f as NSFileWrapperMBS = NSFileWrapperMBS.initRegularFileWithContents(content)
f.filename = "HelloWorld.txt"

dim a as new NSTextAttachmentMBS(f)
dim s as NSAttributedStringMBS = NSAttributedStringMBS.attributedStringWithAttachment(a)
```

**Notes:** This is a convenience method for creating an attributed string containing an attachment using NSAttachmentCharacter as the base character.
32.12.9 `attributedStringWithAttributedString` (text as NSAttributedStringMBS) as NSAttributedStringMBS

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Initializes string with content of the given attributed string.

32.12.10 `attributedStringWithDocFormat` (data as memoryblock) as NSAttributedStringMBS

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Initializes string with content of given DOC file data. **Notes**: `documentAttributes`: Optional dictionary to receive the attributes. See also:

- 32.12.11 `attributedStringWithDocFormat` (data as memoryblock, byref `DocumentAttributes` as dictionary) as NSAttributedStringMBS

32.12.11 `attributedStringWithDocFormat` (data as memoryblock, byref `DocumentAttributes` as dictionary) as NSAttributedStringMBS

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Initializes string with content of given DOC file data. **Notes**: `documentAttributes`: Optional dictionary to receive the attributes. See also:

- 32.12.10 `attributedStringWithDocFormat` (data as memoryblock) as NSAttributedStringMBS

32.12.12 `attributedStringWithHTML` (data as memoryblock) as NSAttributedStringMBS

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Initializes string with content of given HTML file data. **Notes**: `documentAttributes`: Optional dictionary to receive the attributes. See also:

- 32.12.13 `attributedStringWithHTML` (data as memoryblock, BaseURL as string) as NSAttributedStringMBS
- 32.12.14 `attributedStringWithHTML` (data as memoryblock, BaseURL as string, byref `DocumentAttributes` as dictionary) as NSAttributedStringMBS
- 32.12.15 `attributedStringWithHTML` (data as memoryblock, byref `DocumentAttributes` as dictionary) as NSAttributedStringMBS
32.12.13 attributedStringWithHTML(data as memoryblock, BaseURL as string) as NSAttributedStringMBS

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes the object with html code from a given url. **Notes:** documentAttributes: Optional dictionary to receive the attributes. See also:

- 32.12.12 attributedStringWithHTML(data as memoryblock) as NSAttributedStringMBS
- 32.12.14 attributedStringWithHTML(data as memoryblock, BaseURL as string, byref DocumentAttributes as dictionary) as NSAttributedStringMBS
- 32.12.15 attributedStringWithHTML(data as memoryblock, byref DocumentAttributes as dictionary) as NSAttributedStringMBS

32.12.14 attributedStringWithHTML(data as memoryblock, BaseURL as string, byref DocumentAttributes as dictionary) as NSAttributedStringMBS

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes the object with html code from a given url. **Notes:** documentAttributes: Optional dictionary to receive the attributes. See also:

- 32.12.12 attributedStringWithHTML(data as memoryblock) as NSAttributedStringMBS
- 32.12.13 attributedStringWithHTML(data as memoryblock, BaseURL as string) as NSAttributedStringMBS
- 32.12.15 attributedStringWithHTML(data as memoryblock, byref DocumentAttributes as dictionary) as NSAttributedStringMBS

32.12.15 attributedStringWithHTML(data as memoryblock, byref DocumentAttributes as dictionary) as NSAttributedStringMBS

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes string with content of given HTML file data. **Notes:** documentAttributes: Optional dictionary to receive the attributes. See also:

- 32.12.12 attributedStringWithHTML(data as memoryblock) as NSAttributedStringMBS
- 32.12.13 attributedStringWithHTML(data as memoryblock, BaseURL as string) as NSAttributedStringMBS
- 32.12.14 attributedStringWithHTML(data as memoryblock, BaseURL as string, byref DocumentAttributes as dictionary) as NSAttributedStringMBS
32.12.16  **attributedStringWithHTMLOld(data as string) as NSAttributedStringMBS**

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes string with content of given HTML file data. **Notes:** With plugin version 9.4 the attributedStringWithHTML method uses the system function to parse html. The old plugin function is available with the name attributedStringWithHTMLOld.

32.12.17  **attributedStringWithPath(file as folderitem) as NSAttributedStringMBS**

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes string with content of file at the given file. **Example:**

```swift
// load rtfd file into textarea
dim file as FolderItem = SpecialFolder.Desktop.Child("test.rtfd")
dim n as NSAttributedStringMBS = NSAttributedStringMBS.attributedStringWithPath(file)
dim t as NSTextViewMBS = TextArea1.NSTextViewMBS
    t.textStorage.setAttributedString(n)
```

**Notes:** documentAttributes: Optional dictionary to receive the attributes. See also:

- 32.12.18 attributedStringWithPath(file as folderitem, byref DocumentAttributes as dictionary) as NSAttributedStringMBS 5470
- 32.12.19 attributedStringWithPath(path as string) as NSAttributedStringMBS 5471
- 32.12.20 attributedStringWithPath(path as string, byref DocumentAttributes as dictionary) as NSAttributedStringMBS 5471

32.12.18  **attributedStringWithPath(file as folderitem, byref DocumentAttributes as dictionary) as NSAttributedStringMBS**

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes string with content of file at the given file. **Notes:** documentAttributes: Optional dictionary to receive the attributes. See also:

- 32.12.17 attributedStringWithPath(file as folderitem) as NSAttributedStringMBS 5470
- 32.12.19 attributedStringWithPath(path as string) as NSAttributedStringMBS 5471
- 32.12.20 attributedStringWithPath(path as string, byref DocumentAttributes as dictionary) as NSAttributedStringMBS 5471
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32.12.19 attributedStringWithPath(path as string) as NSAttributedStringMBS

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Initializes string with content of file at the given path string. Notes: documentAttributes: Optional dictionary to receive the attributes. See also:

- 32.12.17 attributedStringWithPath(file as folderitem) as NSAttributedStringMBS
- 32.12.18 attributedStringWithPath(file as folderitem, byref DocumentAttributes as dictionary) as NSAttributedStringMBS
- 32.12.20 attributedStringWithPath(path as string, byref DocumentAttributes as dictionary) as NSAttributedStringMBS

32.12.20 attributedStringWithPath(path as string, byref DocumentAttributes as dictionary) as NSAttributedStringMBS

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Initializes string with content of file at the given path string. Notes: documentAttributes: Optional dictionary to receive the attributes. See also:

- 32.12.17 attributedStringWithPath(file as folderitem) as NSAttributedStringMBS
- 32.12.18 attributedStringWithPath(file as folderitem, byref DocumentAttributes as dictionary) as NSAttributedStringMBS
- 32.12.19 attributedStringWithPath(path as string) as NSAttributedStringMBS

32.12.21 attributedStringWithRTF(data as memoryblock) as NSAttributedStringMBS

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Initializes string with content of given RTF file data. Notes: documentAttributes: Optional dictionary to receive the attributes. See also:

- 32.12.22 attributedStringWithRTF(data as memoryblock, byref DocumentAttributes as dictionary) as NSAttributedStringMBS

32.12.22 attributedStringWithRTF(data as memoryblock, byref DocumentAttributes as dictionary) as NSAttributedStringMBS

32.12.23 attributedStringWithRTFD(data as memoryblock) as NSAttributedStringMBS

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes string with content of given RTFD file data. **Notes:** documentAttributes: Optional dictionary to receive the attributes. See also:

- 32.12.21 attributedStringWithRTF(data as memoryblock) as NSAttributedStringMBS

32.12.24 attributedStringWithRTFD(data as memoryblock, byref DocumentAttributes as dictionary) as NSAttributedStringMBS

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes string with content of given RTFD file data. **Notes:** documentAttributes: Optional dictionary to receive the attributes. See also:

- 32.12.23 attributedStringWithRTFD(data as memoryblock) as NSAttributedStringMBS

32.12.25 attributedStringWithString(text as string) as NSAttributedStringMBS

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes string with content of given plain text. **Example:**

```plaintext
// create Hello World in red
dim a as NSAttributedStringMBS = NSAttributedStringMBS.attributedStringWithString("Hello World")
dim m as NSMutableAttributedStringMBS = a.mutableCopy
m.addAttribute(a.NSForegroundColorAttributeName, NSColorMBS.redColor, new NSMakeRange(0, m.length))

// put it in a textarea
TextArea1.NSTextViewMBS.textStorage.setAttributedString m
```

**Notes:** documentAttributes: Optional dictionary to receive the attributes. See also:
32.12. CLASS NSAttributedStringMBS

- 32.12.26 attributedStringWithString(text as string, withAttributes as dictionary) as NSAttributedStringMBS

32.12.26 attributedStringWithString(text as string, withAttributes as dictionary) as NSAttributedStringMBS

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Initializes string with content of given plain text. **Notes**: documentAttributes: Optional dictionary to receive the attributes. See also:

- 32.12.25 attributedStringWithString(text as string) as NSAttributedStringMBS

32.12.27 attributedStringWithURL(file as folderitem) as NSAttributedStringMBS

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Initializes string with content of file at the given file. **Notes**: documentAttributes: Optional dictionary to receive the attributes. See also:

- 32.12.28 attributedStringWithURL(file as folderitem, byref DocumentAttributes as dictionary) as NSAttributedStringMBS
- 32.12.29 attributedStringWithURL(url as string) as NSAttributedStringMBS
- 32.12.30 attributedStringWithURL(url as string, byref DocumentAttributes as dictionary) as NSAttributedStringMBS

32.12.28 attributedStringWithURL(file as folderitem, byref DocumentAttributes as dictionary) as NSAttributedStringMBS

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Initializes string with content of file at the given file. **Notes**: documentAttributes: Optional dictionary to receive the attributes. See also:

- 32.12.27 attributedStringWithURL(file as folderitem) as NSAttributedStringMBS
- 32.12.29 attributedStringWithURL(url as string) as NSAttributedStringMBS
- 32.12.30 attributedStringWithURL(url as string, byref DocumentAttributes as dictionary) as NSAttributedStringMBS
32.12.29 attributedStringWithURL(url as string) as NSAttributedStringMBS

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes string with content of file at the given url.
**Notes:** documentAttributes: Optional dictionary to receive the attributes.
See also:
- 32.12.27 attributedStringWithURL(file as folderitem) as NSAttributedStringMBS
- 32.12.28 attributedStringWithURL(file as folderitem, byref DocumentAttributes as dictionary) as NSAttributedStringMBS
- 32.12.30 attributedStringWithURL(url as string, byref DocumentAttributes as dictionary) as NSAttributedStringMBS

32.12.30 attributedStringWithURL(url as string, byref DocumentAttributes as dictionary) as NSAttributedStringMBS

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes string with content of file at the given url.
**Notes:** documentAttributes: Optional dictionary to receive the attributes.
See also:
- 32.12.27 attributedStringWithURL(file as folderitem) as NSAttributedStringMBS
- 32.12.28 attributedStringWithURL(file as folderitem, byref DocumentAttributes as dictionary) as NSAttributedStringMBS
- 32.12.29 attributedStringWithURL(url as string) as NSAttributedStringMBS

32.12.31 attributedSubstringFromRange(range as NSRangeMBS) as NSAttributedStringMBS

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an NSAttributedString object consisting of the characters and attributes within a given range in the receiver.
**Notes:**
Range: The range from which to create a new attributed string. aRange must lie within the bounds of the receiver.

Returns an NSAttributedString object consisting of the characters and attributes within aRange in the receiver.

Raises an NSRangeException if any part of aRange lies beyond the end of the receiver’s characters. This method treats the length of the string as a valid range value that returns an empty string.
32.12. **CLASS NSATTRIBUTEDSTRINGMBS**

### 32.12.32 attributesAtIndex(location as UInt64) as dictionary

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the attributes for the character at a given index.

**Notes:**

*location:* The index for which to return attributes. This value must lie within the bounds of the receiver.

*Range:* Optional. Upon return, the range over which the attributes and values are the same as those at index. This range isn’t necessarily the maximum range covered, and its extent is implementation-dependent. If you need the maximum range, use other variant of this method.

Returns the attributes for the character at index.

Raises an NSRangeException if index lies beyond the end of the receiver’s characters.

See also:

- 32.12.33 attributesAtIndex(location as UInt64, inRange as NSRangeMBS) as dictionary

### 32.12.33 attributesAtIndex(location as UInt64, inRange as NSRangeMBS) as dictionary

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the attributes for the character at a given index, and by reference the range over which the attributes apply.

**Notes:**

*location:* The index for which to return attributes. This value must not exceed the bounds of the receiver.

*range:* Optional. Upon return contains the maximum range over which the attributes and values are the same as those at index, clipped to range Limit.

*inRange:* The range over which to search for continuous presence of the attributes at index. This value must not exceed the bounds of the receiver.

Raises an NSRangeException if index or any part of rangeLimit lies beyond the end of the receiver’s characters.

If you don’t need the range information, it’s far more efficient to use the other variant of this method to retrieve the attribute value.

For information about where to find the attribute keys for the returned dictionary, see the overview section of this document.

See also:

- 32.12.32 attributesAtIndex(location as UInt64) as dictionary
32.12.34 **attributesAtIndex2** (location as UInt64, byref range as NSRangeMBS) as dictionary

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the attributes for the character at a given index.

**Notes:**
- location: The index for which to return attributes. This value must lie within the bounds of the receiver.
- Range: Optional. Upon return, the range over which the attributes and values are the same as those at index. This range isn’t necessarily the maximum range covered, and its extent is implementation-dependent. If you need the maximum range, use other variant of this method.

Returns the attributes for the character at index.

Raises an NSRangeException if index lies beyond the end of the receiver’s characters.

See also:
- 32.12.35 attributesAtIndex2 (location as UInt64, byref range as NSRangeMBS, inRange as NSRangeMBS) as dictionary

32.12.35 **attributesAtIndex2** (location as UInt64, byref range as NSRangeMBS, inRange as NSRangeMBS) as dictionary

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the attributes for the character at a given index, and by reference the range over which the attributes apply.

**Notes:**
- location: The index for which to return attributes. This value must not exceed the bounds of the receiver.
- range: Optional. Upon return contains the maximum range over which the attributes and values are the same as those at index, clipped to range Limit.
- inRange: The range over which to search for continuous presence of the attributes at index. This value must not exceed the bounds of the receiver.

Raises an NSRangeException if index or any part of rangeLimit lies beyond the end of the receiver’s characters.

If you don’t need the range information, it’s far more efficient to use the other variant of this method to retrieve the attribute value.

For information about where to find the attribute keys for the returned dictionary, see the overview section of this document.

See also:
- 32.12.34 attributesAtIndex2 (location as UInt64, byref range as NSRangeMBS) as dictionary
32.12. CLASS NSATTRIBUTEDSTRINGMBS

32.12.36 copy as NSAttributedStringMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy of the attributed string.

32.12.37 CopyToClipboard as Boolean

MBS MacBase Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Copies styled text to clipboard.

32.12.38 dataFromRange(offset as Integer, length as Integer, documentAttributes as dictionary = nil, byref error as NSErrorMBS) as memoryblock

MBS MacBase Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an data object that contains a text stream corresponding to the characters and attributes within the given range.  
**Notes:**  
offset and length: The range.  
documentAttributes: A required dictionary specifying the document attributes. The dictionary contains values from Document Types and must at least contain NSDocumentTypeDocumentAttribute.  
error: An in-out variable containing an encountered error, if any.

Returns the data for the attributed string, or nil if failure. When nil, error encapsulates the error information.  
Raises an NSRangeException if any part of range lies beyond the end of the receivers characters.

32.12.39 docFormatFromRange(documentAttributes as dictionary = nil) as MemoryBlock

MBS MacBase Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates DOC data from the whole string.  
**Notes:**  
Same as docFormatFromRange(0,length)  
Returns nil on failure.  
documentAttributes can optionally be a dictionary with document attributes like author or title.  
See also:

- 32.12.40 docFormatFromRange(offset as Integer, length as Integer, documentAttributes as dictionary = nil) as MemoryBlock
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32.12.40  docFormatFromRange(offset as Integer, length as Integer, documentAttributes as dictionary = nil) as MemoryBlock

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates DOC data from the current string range. **Notes:** Returns nil on failure. documentAttributes can optionally be a dictionary with document attributes like author or title. See also:

- 32.12.39  docFormatFromRange(documentAttributes as dictionary = nil) as MemoryBlock

32.12.41  fileWrapperFromRange(offset as Integer, length as Integer, documentAttributes as dictionary = nil, byref Error as NSErrorMBS) as NSFileWrapperMBS

MBS MacBase Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an NSFileWrapper object that contains a text stream corresponding to the characters and attributes within the given range. **Example:**

```plaintext
// get styled text from htmlviewer
dim w as WebViewMBS = HTMLViewer1.WebViewMBS
dim f as WebFrameMBS = w.mainFrame
dim v as WebFrameViewMBS = f.frameView
dim d as WebDocumentViewMBS = v.documentView
dim n as NSAttributedStringMBS = d.attributedString
// package it
dim da as new Dictionary
da.Value(n.NSDocumentTypeDocumentAttribute) = n.NSRTFDTextDocumentType
dim e as NSErrorMBS
dim fw as NSFileWrapperMBS = n.fileWrapperFromRange(0, n.Length, da, e)
if e <> nil then
    MsgBox e.localizedDescription
    Return
end if

// write to disk
dim file as FolderItem = SpecialFolder.Desktop.Child("test.rtfd")
if fw.writeFile(file, e) then
    MsgBox "OK"
else
    MsgBox e.localizedDescription
```


Notes:

offset and length: The range.
documentAttributes: A required dictionary specifying the document attributes. The dictionary contains values from Document Types and must at least contain NSDocumentTypeDocumentAttribute.
error: An in-out variable containing an encountered error, if any.

Returns a file wrapper for the appropriate document type, or nil if failure. When nil, error encapsulates the error information.

Raises an NSRangeException if any part of range lies beyond the end of the receivers characters.

32.12.42 FromClipboard as NSAttributedStringMBS


32.12.43 GeneratePDF(PrintOptions as Variant = nil) as MemoryBlock


Example:

// read file
dim fi as FolderItem = SpecialFolder.Desktop.Child("test.docx")

dim d as new Dictionary
dim n as NSAttributedStringMBS = NSAttributedStringMBS.attributedStringWithPath(fi, d)

// write pdf
dim p as MemoryBlock = n.GeneratePDF(nil)

dim fo as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim bo as BinaryStream = BinaryStream.Create(fo)
bo.Write p

Notes: PrintOptions is optional NSPrintInfoMBS object for print settings like margin.
32.12.44  htmlString as string

MBS MacBase Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A self made function to return the text content as html string preserving the style information.

**Example:**

```dim s as NSAttributedStringMBS
s=new NSAttributedStringMBS
if s.initwithhtml("<b>Hello</b>") then
    MsgBox s.htmlstring // shows "<b>Hello</b>
    MsgBox s.text // shows "Hello"
end if```

**Notes:**
Does not always work well, but can help.
(Apple has no official function for this)

32.12.45  initWithAttributedString(text as NSAttributedStringMBS) as boolean

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes string with content of the given attributed string.

**Notes:** Returns true on success.

32.12.46  initWithDocFormat(data as MemoryBlock) as boolean

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes string with content of given DOC file data.

**Notes:**
Returns true on success.

documentAttributes: Optional dictionary to receive the attributes.

See also:

- 32.12.47 initWithDocFormat(data as memoryblock, byref documentAttributes as dictionary) as boolean
32.12. **CLASS NSATTRIBUTEDSTRINGMBS**

32.12.47 **initWithDocFormat**(data as memoryblock, byref documentAttributes as dictionary) as boolean

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes string with content of given DOC file data.  
**Notes:**  
Returns true on success.  
documentAttributes: Optional dictionary to receive the attributes.  
See also:
- 32.12.46 **initWithDocFormat**(data as MemoryBlock) as boolean

32.12.48 **initWithHTML**(data as MemoryBlock) as boolean

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes string with content of given HTML file data.  
**Example:**
```
dim n as NSAttributedStringMBS
n=new NSAttributedStringMBS
if n.initWithHTML("<b>test</b>") then
    MsgBox n.text
else
    MsgBox "failed"
end if

dim attribText as new NSAttributedStringMBS
dim text as string = "<P>Hello </P>"

If attribText.initWithHTML(text) Then
    MsgBox attribText.text
End If
```

**Notes:**
- documentAttributes: Optional dictionary to receive the attributes.  
- Returns true on success.
- With plugin version 9.4 this uses the system function to parse html. The old plugin function is available with the name initWithHTMLOld.
- On Mac OS X 10.6 the text encoding expected is ISO Latin 1 as far as I see.
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See also:

- 32.12.49 initWithHTML(data as MemoryBlock, BaseURL as string) as boolean
- 32.12.50 initWithHTML(data as memoryblock, BaseURL as string, byref documentAttributes as dictionary) as boolean
- 32.12.51 initWithHTML(data as memoryblock, byref documentAttributes as dictionary) as boolean

32.12.49  initWithHTML(data as MemoryBlock, BaseURL as string) as boolean


Example:

```vbnet
dim n as NSAttributedStringMBS
n=new NSAttributedStringMBS
if n.initWithHTML("<b>test</b>","http://www.apple.com") then
    MsgBox n.text
else
    MsgBox "failed"
end if
```

Notes:

Returns true on success.
documentAttributes: Optional dictionary to receive the attributes.

See also:

- 32.12.48 initWithHTML(data as MemoryBlock) as boolean
- 32.12.50 initWithHTML(data as memoryblock, BaseURL as string, byref documentAttributes as dictionary) as boolean
- 32.12.51 initWithHTML(data as memoryblock, byref documentAttributes as dictionary) as boolean

32.12.50  initWithHTML(data as memoryblock, BaseURL as string, byref documentAttributes as dictionary) as boolean


Notes:
32.12. CLASS NSATTRIBUTESTRINGMBS

Returns true on success. 
documentAttributes: Optional dictionary to receive the attributes. 
See also:

- 32.12.48 initWithHTML(data as MemoryBlock) as boolean
- 32.12.49 initWithHTML(data as MemoryBlock, BaseURL as string) as boolean
- 32.12.50 initWithHTML(data as memoryblock, BaseURL as string, byref documentAttributes as dictionary) as boolean

32.12.51 initWithHTML(data as memoryblock, byref documentAttributes as dictionary) as boolean

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes string with content of given HTML file data. 
**Notes:** Returns true on success. documentAttributes: Optional dictionary to receive the attributes.

With plugin version 9.4 this uses the system function to parse html. The old plugin function is available with the name initWithHTMLOld.

On Mac OS X 10.6 the text encoding expected is ISO Latin 1 as far as I see. 
See also:

- 32.12.48 initWithHTML(data as MemoryBlock) as boolean
- 32.12.49 initWithHTML(data as MemoryBlock, BaseURL as string) as boolean
- 32.12.50 initWithHTML(data as memoryblock, BaseURL as string, byref documentAttributes as dictionary) as boolean

32.12.52 initWithHTMLOld(data as string) as boolean

MBS MacBase Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes string with content of given HTML file data. 
**Notes:** With plugin version 9.4 the initWithHTML method uses the system function to parse html. The old plugin function is available with the name initWithHTMLOld.

32.12.53 initWithPath(file as folderitem) as boolean

MBS MacBase Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes string with content of file at the given file.
Notes:

documentAttributes: Optional dictionary to receive the attributes.
Returns true on success.
See also:

- 32.12.54 initWithPath(file as folderitem, byref documentAttributes as dictionary) as boolean
- 32.12.55 initWithPath(path as string) as boolean
- 32.12.56 initWithPath(path as string, byref documentAttributes as dictionary) as boolean

32.12.54  initWithPath(file as folderitem, byref documentAttributes as dictionary) as boolean

Notes:

documentAttributes: Optional dictionary to receive the attributes.
Returns true on success.
See also:

- 32.12.53 initWithPath(file as folderitem) as boolean
- 32.12.55 initWithPath(path as string) as boolean
- 32.12.56 initWithPath(path as string, byref documentAttributes as dictionary) as boolean

32.12.55  initWithPath(path as string) as boolean

Notes:

documentAttributes: Optional dictionary to receive the attributes.
Returns true on success.
See also:

- 32.12.53 initWithPath(file as folderitem) as boolean
- 32.12.54 initWithPath(file as folderitem, byref documentAttributes as dictionary) as boolean
- 32.12.56 initWithPath(path as string, byref documentAttributes as dictionary) as boolean
32.12. **CLASS NSATTACHEDSTRINGMBS**

### 32.12.56 initWithPath(path as string, byref documentAttributes as dictionary) as boolean

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes string with content of file at the given path string. **Notes:**

documentAttributes: Optional dictionary to receive the attributes.
Returns true on success.
See also:

- 32.12.53 initWithPath(file as folderitem) as boolean
- 32.12.54 initWithPath(file as folderitem, byref documentAttributes as dictionary) as boolean
- 32.12.55 initWithPath(path as string) as boolean

### 32.12.57 initWithRTF(data as MemoryBlock) as boolean

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes string with content of given RTF file data. **Notes:**

documentAttributes: Optional dictionary to receive the attributes.
Returns true on success.
See also:

- 32.12.58 initWithRTF(data as memoryblock, byref documentAttributes as dictionary) as boolean

### 32.12.58 initWithRTF(data as memoryblock, byref documentAttributes as dictionary) as boolean

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes string with content of given RTF file data. **Notes:**

documentAttributes: Optional dictionary to receive the attributes.
Returns true on success.
See also:

- 32.12.57 initWithRTF(data as MemoryBlock) as boolean

### 32.12.59 initWithRTFD(data as MemoryBlock) as boolean

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes string with content of given RTFD file data. **Notes:**
documentAttributes: Optional dictionary to receive the attributes.
Returns true on success.
See also:

- 32.12.60 initWithRTFD(data as memoryblock, byref documentAttributes as dictionary) as boolean

32.12.60 initWithRTFD(data as memoryblock, byref documentAttributes as dictionary) as boolean

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes string with content of given RTFD file data.
**Notes:**
documentAttributes: Optional dictionary to receive the attributes.
Returns true on success.
See also:

- 32.12.59 initWithRTFD(data as MemoryBlock) as boolean

32.12.61 initWithString(text as string) as boolean

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes string with content of given plain text.
**Example:**

```plaintext
dim n as NSAttributedStringMBS
n=new NSAttributedStringMBS
if ninitWithHTML("test") then
    MsgBox n.text
else
    MsgBox "failed"
end if
```

**Notes:**
documentAttributes: Optional dictionary to receive the attributes.
Returns true on success.
See also:

- 32.12.62 initWithString(text as string, withAttributes as Dictionary) as boolean
32.12. CLASS NSATTRIBUTEDSTRINGMBS

32.12.62 initWithString(text as string, withAttributes as Dictionary) as boolean

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes string with content of given plain text. **Example:**

```vba
dim n as NSAttributedStringMBS
n=new NSAttributedStringMBS
if n.initWithHTML("test") then
    MsgBox n.text
else
    MsgBox "failed"
end if
```

**Notes:**

documentAttributes: Optional dictionary to receive the attributes.
Returns true on success.
See also:

- 32.12.61 initWithString(text as string) as boolean

32.12.63 initWithURL(file as folderitem) as boolean

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes string with content of file at the given file. **Example:**

```vba
dim n as NSAttributedStringMBS
n=new NSAttributedStringMBS
if n.initWithURL(SpecialFolder.Desktop.Child("testfile")) then
    MsgBox n.text
else
    MsgBox "failed"
end if
```

**Notes:**

documentAttributes: Optional dictionary to receive the attributes.
Returns true on success.
See also:

- 32.12.64 initWithURL(file as folderitem, byref documentAttributes as dictionary) as boolean
- 32.12.65 initWithURL(url as string) as boolean
32.12.64 initWithURL(file as folderitem, byref documentAttributes as dictionary) as boolean

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes string with content of file at the given file.

**Example:**

```plaintext
dim n as NSAttributedStringMBS
dim documentAttributes as dictionary
n=new NSAttributedStringMBS
if n.initWithURL(SpecialFolder.Desktop.Child("testfile"), documentAttributes) then
    MsgBox n.text
else
    MsgBox "failed"
end if
```

**Notes:**

documentAttributes: Optional dictionary to receive the attributes.
Returns true on success.
See also:

- 32.12.63 initWithURL(file as folderitem) as boolean
- 32.12.65 initWithURL(url as string) as boolean
- 32.12.66 initWithURL(url as string, byref documentAttributes as dictionary) as boolean

32.12.65 initWithURL(url as string) as boolean

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes string with content of file at the given url.

**Notes:**

documentAttributes: Optional dictionary to receive the attributes.
Returns true on success.
See also:

- 32.12.63 initWithURL(file as folderitem) as boolean
- 32.12.65 initWithURL(url as string) as boolean
- 32.12.66 initWithURL(url as string, byref documentAttributes as dictionary) as boolean
32.12. CLASS NSATTRIBUTEDSTRINGMBS

32.12.66 initWithURL(url as string, byref documentAttributes as dictionary) as boolean

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes string with content of file at the given url.

**Notes:**

documentAttributes: Optional dictionary to receive the attributes.

Returns true on success.

See also:

- 32.12.63 initWithURL(file as folderitem) as boolean
- 32.12.64 initWithURL(file as folderitem, byref documentAttributes as dictionary) as boolean
- 32.12.65 initWithURL(url as string) as boolean

32.12.67 isEqualToAttributedString(other as NSAttributedStringMBS) as Boolean

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Compares both strings.

**Example:**

```vba
dim n as NSAttributedStringMBS
dim m as NSAttributedStringMBS

n=new NSAttributedStringMBS
if n.initWithString("test") then
    MsgBox n.text
else
    MsgBox "failed"
end if

m=new NSAttributedStringMBS
if m.initWithString("test") then
    MsgBox n.text
else
    MsgBox "failed"
end if

if m isEqualToAttributedString(n) then
    MsgBox "Ok"
else
    MsgBox "failed"
end if

m=new NSAttributedStringMBS
if m.initWithString("test2") then
```

```
MsgBox n.text
else
MsgBox "failed"
end if

if m.isEqualToAttributedString(n) then
MsgBox "failed"
else
MsgBox "Ok"
end if

Notes: Returns true if they are equal in content.

32.12.68 itemNumberInTextList(list as NSTextListMBS, location as Integer) as Integer

MBS MacBase Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the index of the item at the given location within the list.
Notes:
list: The text list.
location: The location of the item.

Returns the index within the list.

32.12.69 lineRangeForRange(range as NSRangeMBS) as NSRangeMBS

MBS MacBase Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the range of characters representing the line or lines containing a given range.
Notes:
Range: A range within the receiver. The value must not exceed the bounds of the receiver.

The range of characters representing the line or lines containing aRange, including the line termination characters.

32.12.70 mutableCopy as NS MutableAttributedStringMBS

Example:

```plaintext
// create Hello World in red
dim a as NSAttributedStringMBS = NSAttributedStringMBS.attributedStringWithString("Hello World")
dim m as NSMutableAttributedStringMBS = a.mutableCopy

m.addAttribute(a.NSForegroundColorAttributeName, NSColorMBS.redColor, new NSRangeMBS(0, m.length))

// put it in a textarea
TextArea1.NSTextViewMBS.textStorage.setAttributedString m
```

### 32.12.71 NSAttributedStringAttributeName as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names for NSAttributedString.  
**Notes:**  
NSTextAttachment  
Default nil, no attachment

### 32.12.72 NSAttributedStringAuthorDocumentAttribute as string

**Example:**

```plaintext
// get some attributed text:
dim t as new NSAttributedStringMBS
call t.initWithString("Hello World")

// set document attributes
dim dic as new Dictionary
dic.Value(t.NSAuthorDocumentAttribute) = "Test User"

// get rtf
dim rtf as string = t.RTFFromRange(dic)

// write to file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.rtf")
dim b as BinaryStream = BinaryStream.Create(f, true)
b.Write rtf
```
Notes:

string containing author name.
Available in Mac OS X v10.4 and later.

32.12.73  **NSBackgroundColorAttributeName as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names for NSAttributedString. **Notes:**

NSColor
Default nil, no background

32.12.74  **NSBackgroundColorDocumentAttribute as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for document wide attributes in a NSAttributedString. **Notes:**

NSColor, representing the document-wide page background color.
Mac OS X v10.3 and earlier string constant is "BackgroundColor". For applications linked on versions prior to Mac OS X v10.5, HTML import sets the NSBackgroundColorDocumentAttribute to NSColorMBS.whiteColor in cases in which the HTML does not specify a background color. For applications linked on Mac OS X v10.5 and later, no NSBackgroundColorDocumentAttribute is set in these cases.
Available in Mac OS X v10.4 and later.

32.12.75  **NSBaselineOffsetAttributeName as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names for NSAttributedString. **Notes:**

Number containing floating point value, as points offset from baseline
Default 0.0

32.12.76  **NSBaseURLDocumentOption as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names for NSAttributedString.
32.12. CLASS NSATTRIBUTEDSTRINGMBS

Notes:
For HTML documents; NSURL containing base URL. Previous string constant was @"BaseUrl"
Available in Mac OS X v10.4 and later.

32.12.77 NSBottomMarginDocumentAttribute as string


Example:

```vbnet
// get some attributed text:
dim t as new NSAttributedStringMBS
call t.initWithString("Hello World")

// set document attributes
dim dic as new Dictionary
dic.Value(t.NSBottomMarginDocumentAttribute) = 20
dic.Value(t.NSLeftMarginDocumentAttribute) = 20
dic.Value(t.NSRightMarginDocumentAttribute) = 20
dic.Value(t.NSTopMarginDocumentAttribute) = 20
dic.Value(t.NSAuthorDocumentAttribute) = "Test User"

// get rtf
dim rtf as string = t.RTFFromRange(dic)

// write to file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.rtf")
dim b as BinaryStream = BinaryStream.Create(f, true)
b.Write rtf
```

Notes:
Number, containing a float, in points.
Mac OS X v10.3 and earlier string constant is "BottomMargin".
Available in Mac OS X v10.4 and later.

32.12.78 NSCategoryDocumentAttribute as string


Notes:
string containing the document’s category.
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Available in Mac OS X v10.6 and later.

32.12.79  NSCharacterEncodingDocumentAttribute as string

Notes:
Number, containing an int specifying the stringEncoding for the file; for reading and writing plain text files and writing HTML; default for plain text is the default encoding; default for HTML is UTF-8. Mac OS X v10.3 and earlier string constant is "CharacterEncoding".
Available in Mac OS X v10.4 and later.

32.12.80  NSCharacterEncodingDocumentOption as string

Notes:
For plain text documents; Number containing the unsigned int stringEncoding to override any encoding specified in an HTML document. Previous string constant was @"CharacterEncoding".
Available in Mac OS X v10.4 and later.

32.12.81  NSCharacterShapeAttributeName as string

Notes:
An integer value. The value is interpreted as Apple Type Services kCharacterShapeType selector + 1. The default value is 0 (disable). 1 is kTraditionalCharactersSelector, and so on. Refer to <ATS/SFNGLayoutTypes.h> and "Font Features" in ATSUI Programming Guide for additional information.
Available in Mac OS X v10.0 and later.

32.12.82  NSCocoaVersionDocumentAttribute as string

Notes:
Number, containing a float. For RTF files only, stores the version of Cocoa with which the file was created.
32.12. **CLASS NSATTRIBUTEDSTRING**

Absence of this value indicates RTF file not created by Cocoa or its predecessors. Values less than 100 are preMac OS X; 100 is Mac OS X v10.0 or v10.1; 102 is Mac OS X v10.2 and 10.3; values greater than 102 correspond to values of NSAppKitVersionNumber on Mac OS X v10.4 and later. Mac OS X v10.3 and earlier string constant is "CocoaRTFVersion". Available in Mac OS X v10.4 and later.

32.12.83 **NSCommentDocumentAttribute as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for document wide attributes in a NSAttributedString. **Notes:**

string containing document comments. Available in Mac OS X v10.4 and later.

32.12.84 **NSCompanyDocumentAttribute as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for document wide attributes in a NSAttributedString. **Notes:**

string containing company or organization name. Available in Mac OS X v10.4 and later.

32.12.85 **NSConvertedDocumentAttribute as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for document wide attributes in a NSAttributedString. **Notes:**

Number, containing an int. Indicates whether the file was converted by a filter service. If missing or 0, the file was originally in the format specified by document type. If negative, the file was originally in the format specified by document type, but the conversion to NSAttributedString may have been lossy. If 1 or more, it was converted to this type by a filter service. Mac OS X v10.3 and earlier string constant is @"Converted". Available in Mac OS X v10.4 and later.

32.12.86 **NSCopyrightDocumentAttribute as string**

32.12.87 **NSCreationTimeDocumentAttribute as string**

**Notes:**  
NSDate containing the creation date of the document; note that this is not the file system creation date of the file, but of the document.  
Available in Mac OS X v10.4 and later.

32.12.88 **NSCursorAttributeName as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names for NSAttributedString.  
**Notes:**  
NSCursor Default as returned by the NSCursor method IBeamCursor  
Available in Mac OS X v10.3 and later.

32.12.89 **NSDefaultAttributesDocumentAttribute as string**

MBS MacBase Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the document attributes.  
**Notes:**  
NSDictionary containing attributes to be applied to plain files. Used by reader methods. This key in options can specify the default attributes applied to the entire document contents. The document attributes can contain this key indicating the actual attributes used.  
Available on Mac OS X 10.11.

32.12.90 **NSDefaultAttributesDocumentOption as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names for NSAttributedString.  
**Notes:**
For plain text documents; Dictionary containing attributes to be applied to plain files. Previous string constant was @"DefaultAttributes". Available in Mac OS X v10.4 and later.

**32.12.91 NSDefaultTabIntervalDocumentAttribute as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for document wide attributes in a NSAttributedString. **Notes:**
Number containing a float. Represents the document-wide default tab stop interval. Mac OS X v10.3 and earlier string constant is "DefaultTabInterval". Available in Mac OS X v10.4 and later.

**32.12.92 NSDocFormatTextDocumentType as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the values for the NSDocumentTypeDocumentAttribute key in the document attributes dictionary. **Notes:** Microsoft Word document.

**32.12.93 NSDocumentTypeDocumentAttribute as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for document wide attributes in a NSAttributedString. **Notes:**
How the document was interpreted; one of the values in "Document Types." Mac OS X v10.3 and earlier string constant is "DocumentType". Available in Mac OS X v10.4 and later.

**32.12.94 NSDocumentTypeDocumentOption as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names for NSAttributedString. **Notes:**
One of the document types described in "Document Types," indicating a document type to be forced when loading the document. Previous string constant was @"DocumentType". Available in Mac OS X v10.4 and later.
32.12.95 **NSEditorDocumentAttribute as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for document wide attributes in a NSAttributedString. **Notes:**

string containing name of person who last edited the document. Available in Mac OS X v10.4 and later.

32.12.96 **NSExcludedElementsDocumentAttribute as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names for NSAttributedString related to HTML generation. **Notes:**

An Array object containing string objects, representing HTML elements not to be used in generated HTML. Available in Mac OS X v10.4 and later.

NSExcludedElementsDocumentAttribute allows control over the tags used. The recognized values in the NSExcludedElementsDocumentAttribute array are (case-insensitive) HTML tags, plus DOCTYPE (representing a doctype declaration) and XML (representing an XML declaration). By default, if this attribute is not present, the excluded elements will be those deprecated in HTML 4 (APPLET, BASEFONT, CENTER, DIR, FONT, ISINDEX, MENU, S, STRIKE, and U) plus XML. If XML is on the list, HTML forms are used; if XML is not on the list, XHTML forms are used where there is a distinction.

32.12.97 **NSExpansionAttributeName as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names for NSAttributedString. **Notes:**

Number containing floating point value, as log of expansion factor to be applied to glyphs
Default 0.0, no expansion
Available in Mac OS X v10.3 and later.

32.12.98 **NSFileTypeDocumentAttribute as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for document wide attributes in a NSAttributedString. **Notes:**

string indicating which document type was used to interpret the document, specified as a UTI; for reading, this is available along with NSDocumentTypeDocumentAttribute, but for writing the two are mutually ex-
32.12.99  **NSFileTypeDocumentOption as string**


**Notes:**

string indicating a document type to be forced when loading the document, specified as a UTI string; mutually exclusive with NSDocumentTypeDocumentOption.

Available in Mac OS X v10.6 and later.

32.12.100  **NSFontAttributeName as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** One of the attribute names for NSAttributedString.

**Example:**

MsgBox NSAttributedStringMBS.NSFontAttributeName

Dim NSGraphics as New NSGraphicsMBS()
Dim NSFont as NSFontMBS = NSFontMBS.fontWithName("Helvetica", 11.0)
Dim NSAttributes as New Dictionary

NSAttributes.value(NSAttributedStringMBS.NSFontAttributeName) = nsfont

Dim stringWidth as Double = NSGraphics.sizeWithAttributes("Hello World", NSAttributes).Width
MsgBox("StringWidth from NSGraphicsMBS: " + Str(stringWidth))

**Notes:**

NSFont
Default Helvetica 12-point

32.12.101  **NSForegroundColorAttributeName as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** One of the attribute names for NSAttributedString.

**Notes:**

NSColor
5500

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Default blackColor
Available in Mac OS X v10.0 and later.

32.12.102 NSGlyphInfoAttributeName as string


Notes:
The name of an NSGlyphInfo object.
NSLayoutManager assigns the glyph specified by this glyph info to the entire attribute range, provided that its contents match the specified base string, and that the specified glyph is available in the font specified by NSFontAttributeName.
Available in Mac OS X v10.2 and later.
32.12. CLASS NSATTRIBUTEDSTRINGMBS

32.12.103 NSHTMLTextDocumentType as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the values for the NSDocumentTypeDocumentAttribute key in the document attributes dictionary. **Notes:** Hypertext Markup Language (HTML) document.

32.12.104 NSHyphenationFactorDocumentAttribute as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for document wide attributes in a NSAttributedString. **Notes:**
Number, containing a float; 0 = off, 1 = full hyphenation.
Mac OS X v10.3 and earlier string constant is "HyphenationFactor".
Available in Mac OS X v10.4 and later.

32.12.105 NSKernAttributeName as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names for NSAttributedString. **Notes:**
Number containing floating point value, as points by which to modify default kerning
Default nil, use default kerning specified in font file; 0.0, kerning off; non-zero, points by which to modify
default kerning
Available in Mac OS X v10.0 and later.

32.12.106 NSKeywordsDocumentAttribute as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for document wide attributes in a NSAttributedString. **Notes:**
Array of string, containing keywords.
Available in Mac OS X v10.4 and later.

32.12.107 NSLeftMarginDocumentAttribute as string

Notes:
Number, containing a float, in points.
Mac OS X v10.3 and earlier string constant is "LeftMargin".
Available in Mac OS X v10.4 and later.

32.12.108 **NSLigatureAttributeName as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names for NSAttributedString. **Notes:**
Number containing integer
Default 1, standard ligatures; 0, no ligatures; 2, all ligatures.

32.12.109 **NSLinkAttributeName as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names for NSAttributedString. **Notes:**
NSURL (preferred) or string
Default nil, no link
Available in Mac OS X v10.0 and later.

32.12.110 **NSMacSimpleTextDocumentType as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the values for the NSDocumentTypeDocumentAttribute key in the document attributes dictionary. **Notes:** Macintosh SimpleText document.

32.12.111 **NSManagerDocumentAttribute as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for document wide attributes in a NSAttributedString. **Notes:**
string containing the name of the author's manager.
Available in Mac OS X v10.6 and later.
32.12. CLASS NSAttributedStringMBS

32.12.112 NSMarkedClauseSegmentAttributeName as string

Notes:
Number containing an integer, as an index in marked text indicating clause segments
Available in Mac OS X v10.5 and later.

32.12.113 NSModificationTimeDocumentAttribute as string

Notes:
NSDate containing the modification date of the document contents.
Available in Mac OS X v10.4 and later.

32.12.114 NSObliquenessAttributeName as string

Notes:
Number containing floating point value, as skew to be applied to glyphs
Default 0.0, no skew
Available in Mac OS X v10.3 and later.

32.12.115 NSOfficeOpenXMLTextDocumentType as string

Notes:
ECMA Office Open XML text document format.
Available in Mac OS X v10.5 and later.
32.12.116 NSOpenDocumentTextDocumentType as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the values for the NSDocumentTypeDocumentAttribute key in the document attributes dictionary.  
**Notes:**  
OASIS Open Document text document format.  
Available in Mac OS X v10.5 and later.

32.12.117 NSPaperSizeDocumentAttribute as string

**Notes:**  
NSString, containing NSSize.  
Mac OS X v10.3 and earlier string constant is "PaperSize".  
Available in Mac OS X v10.4 and later.

32.12.118 NSParagraphStyleAttributeName as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names for NSAttributedString.  
**Example:**  
```swift  
// change line spacing in a Label

dim n as NSTextFieldMBS = Label1.NSTextFieldMBS  
dim a as NSAttributedStringMBS = n.attributedStringValue

dim p as NSParagraphStyleMBS = a.attributeAtIndex(a.NSParagraphStyleAttributeName, 0)  
dim m as NSParagraphStyleMBS = p.mutableCopy  
m.setLineSpacing 5

dim s as NSAttributedStringMBS = a.mutableCopy  
s.addAttribute(a.NSParagraphStyleAttributeName, m, new NSRangeMBS(0, s.length))

n.attributedStringValue = s
```

**Notes:**  
NSParagraphStyle  
Default as returned by the NSParagraphStyle method defaultParagraphStyle
32.12.119  **NSPlainTextDocumentType** as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the values for the NSDocumentTypeDocumentAttribute key in the document attributes dictionary. **Notes:** Plain text document.

32.12.120  **NSPrefixSpacesDocumentAttribute** as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names for NSAttributedString related to HTML generation. **Notes:**
An Number containing an integer (default 0) representing the number of spaces per level by which to indent certain nested HTML elements. Available in Mac OS X v10.4 and later.

NSPrefixSpacesDocumentAttribute allows some control over formatting.

32.12.121  **NSReadOnlyDocumentAttribute** as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for document wide attributes in a NSAttributedString. **Notes:**
Number, containing int. If missing or 0 or negative, not read only; 1 or more, read only.
Note that this has nothing to do with the file system protection on the file, but instead can affect how the file should be displayed to the user. 
Mac OS X v10.3 and earlier string constant is "ReadOnly". Available in Mac OS X v10.4 and later.

32.12.122  **NSRightMarginDocumentAttribute** as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for document wide attributes in a NSAttributedString. **Notes:**
Number, containing a float, in points. Mac OS X v10.3 and earlier string constant is "RightMargin".
Available in Mac OS X v10.4 and later.

### 32.12.123 NSRTFDTextDocumentType as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the values for the NSDocumentTypeDocumentAttribute key in the document attributes dictionary. **Notes:** Rich text format with attachments document.

### 32.12.124 NSRTFTTextDocumentType as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the values for the NSDocumentTypeDocumentAttribute key in the document attributes dictionary. **Notes:** Rich text format document.

### 32.12.125 NSShadowAttributeName as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names for NSAttributedString. **Notes:**

NSShadow
Default nil, no shadow.
Available in Mac OS X v10.3 and later.

### 32.12.126 NSSpellingStateAttributeName as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names for NSAttributedString. **Notes:**

An integer value. Defaults to 0, indicating no grammar or spelling error. See "NSSpellingStateAttributeName Flags" for possible values.
This key is available in Mac OS X v10.2 and later, but its interpretation changed in Mac OS X v10.5. Previously, any non-zero value caused the spelling indicator to be displayed. For Mac OS X v10.5 and later, the (integer) value is treated as being composed of the spelling and grammar flags.
Available in Mac OS X v10.5 and later.
32.12. CLASS NSAttributedStringMBS

32.12.127 NSStrikethroughColorAttributeName as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: One of the attribute names for NSAttributedString. **Notes**: NSColor
Default nil, same as foreground color
Available in Mac OS X v10.3 and later.

32.12.128 NSStrikethroughStyleAttributeName as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: One of the attribute names for NSAttributedString. **Example**:

```// underline selected text in TextArea1```
```dim t as NSTextViewMBS = TextArea1.NSTextViewMBS
dim s as NSTextStorageMBS = t.textStorage```
```const NSUnderlineStyleSingle = 1```
```dim d as Dictionary = t.selectedTextAttributes```
```d.Value(NSAttributedStringMBS.NSStrikethroughStyleAttributeName) = NSUnderlineStyleSingle```
```t.selectedTextAttributes = d```

**Notes**: Number containing integer
Default 0, no strikethrough. See "Underlining Patterns", "Underlining Styles", and "Underline Masks" in Apple Documentation for mask values.
Available in Mac OS X v10.3 and later.

32.12.129 NSStrokeColorAttributeName as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: One of the attribute names for NSAttributedString. **Notes**: NSColor
Default nil, same as foreground color
Available in Mac OS X v10.3 and later.
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32.12.130  **NSStrokeWidthAttributeName as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names for NSAttributedString. **Notes:**

Number containing floating point value, as percent of font point size
Default 0, no stroke; positive, stroke alone; negative, stroke and fill (a typical value for outlined text would be 3.0)
Available in Mac OS X v10.3 and later.

32.12.131  **NSSubjectDocumentAttribute as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for document wide attributes in a NSAttributedString. **Notes:**

string containing subject of document.
Available in Mac OS X v10.4 and later.

32.12.132  **NSSuperscriptAttributeName as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names for NSAttributedString. **Notes:**

Number containing integer
Default 0

32.12.133  **NSTextAlternativesAttributeName as string**

MBS MacBase Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names. **Notes:**

An NSTextAlternatives object. Used primarily as a temporary attribute, with primaryString equal to the substring for the range to which it is attached, and alternativeStrings representing alternatives for that string that may be presented to the user.
Available on OS X 10.8 and newer.
32.12.134 NSTextEffectAttributeName as string

MBS MacBase Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names. **Notes:** NSString, default nil: no text effect

32.12.135 NSTextEffectLetterpressStyle as string

MBS MacBase Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the text effect names. **Notes:** Available on Mac OS X 10.10 or newer.

32.12.136 NSTextEncodingNameDocumentAttribute as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names for NSAttributedString related to HTML generation. **Notes:**

An string object containing the name, IANA or otherwise, of a text encoding to be used; mutually exclusive with NSCharacterEncodingDocumentAttribute. Available in Mac OS X v10.4 and later.

Either NSCharacterEncodingDocumentAttribute or NSTextEncodingNameDocumentAttribute may be used to control the encoding used for generated HTML; character entities are used for characters not representable in the specified encoding.

32.12.137 NSTextEncodingNameDocumentOption as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names for NSAttributedString. **Notes:**

String containing the name, IANA or otherwise, of a text encoding to override any encoding specified in an HTML document. Mutually exclusive with @"CharacterEncoding". Previous string constant was @"TextEncodingName". Available in Mac OS X v10.4 and later.
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32.12.138 NSTextLayoutSectionOrientation as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants used as by the NSLayoutOrientationSectionsAttribute. Notes: An Number containing an NSTextLayoutOrientation value. The default value is NSTextLayoutOrientationHorizontal. Available in Mac OS X v10.7 and later.

32.12.139 NSTextLayoutSectionRange as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants used as by the NSLayoutOrientationSectionsAttribute. Notes: An NSValue containing an NSRange representing a character range. The default value is a range covering the entire string. Available in Mac OS X v10.7 and later.

32.12.140 NSTextLayoutSectionsAttribute as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the attribute names for NSAttributedString. Notes: An Array containing dictionaries. Each dictionary describes a layout orientation section. The dictionary can have two attributes: NSTextLayoutSectionOrientation and NSTextLayoutSectionRange. When there is a gap between sections, it’s assumed to have NSTextLayoutOrientationHorizontal. Available in Mac OS X v10.7 and later.

32.12.141 NSTextSizeMultiplierDocumentOption as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the attribute names for NSAttributedString. Notes: Specifies a scale factor for font sizes. Number containing float, default 1.0; for HTML only, corresponding to WebView’s textSizeMultiplier. There is no textual equivalent for Mac OS X v10.3. Available in Mac OS X v10.4 and later.
32.12.142 NSTimeoutDocumentOption as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names for NSAttributedString. **Notes:**

Number containing float. Time in seconds to wait for a document to finish loading. Previous string constant was @"Timeout".
Available in Mac OS X v10.4 and later.

32.12.143 NSTitleDocumentAttribute as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for document wide attributes in a NSAttributedString. **Notes:**

String containing document title.
Available in Mac OS X v10.4 and later.

32.12.144 NSToolTipAttributeName as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names for NSAttributedString. **Notes:**

String
Default nil, no tooltip
Available in Mac OS X v10.3 and later.

32.12.145 NSTopMarginDocumentAttribute as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for document wide attributes in a NSAttributedString. **Notes:**

Number, containing a float, in points.
Mac OS X v10.3 and earlier string constant is "TopMargin".
Available in Mac OS X v10.4 and later.
32.12.146  **NSUnderlineColorAttributeName as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names for NSAttributedString. 

**Notes:**

NSColor
Default nil, same as foreground color  
Available in Mac OS X v10.3 and later.

32.12.147  **NSUnderlineStyleAttributeName as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names for NSAttributedString. 

**Notes:**

Number containing integer  
Default 0, no underline. See "Underlining Patterns", "Underlining Styles", and "Underline Masks" in Apple Documentation for mask values.

32.12.148  **NSVerticalGlyphFormAttributeName as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names for NSAttributedString. 

**Notes:**

An Number containing an integer value, 0 means horizontal text and 1 indicates vertical text. If no value specified, it’s interpreted to determine the setting based on higher-level vertical orientation settings such as NSTextLayoutOrientation . The behavior for any other value is undefined.  
Available in Mac OS X v10.7 and later.

32.12.149  **NSViewModeDocumentAttribute as string**


**Notes:**

NSValue, containing an int; 0 = normal; 1 = page layout (use value of "PaperSize").  
Mac OS X v10.3 and earlier string constant is "ViewMode".  
Available in Mac OS X v10.4 and later.
32.12.150  **NSViewSizeDocumentAttribute as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for document wide attributes in a NSAttributedString. **Notes:**

NSValue, containing NSSize. Mac OS X v10.3 and earlier string constant is "ViewSize". Available in Mac OS X v10.4 and later.

32.12.151  **NSViewZoomDocumentAttribute as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for document wide attributes in a NSAttributedString. **Notes:**

Mac OS X v10.3 and earlier string constant is "ViewZoom". NSValue, containing a float; 100 = 100% zoom. Available in Mac OS X v10.4 and later.

32.12.152  **NSWebArchiveTextDocumentType as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the values for the NSDocumentTypeDocumentAttribute key in the document attributes dictionary. **Notes:** Web Kit WebArchive document.

32.12.153  **NSWebPreferencesDocumentOption as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names for NSAttributedString. **Notes:**

WebPreferences; for HTML only, specifies a WebPreferences object. If not present, a default set of preferences is used. Previous string constant was @"WebPreferences". Available in Mac OS X v10.4 and later.

32.12.154  **NSWebResourceLoadDelegateDocumentOption as string**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names for NSAttributedString.
Notes:

WebResourceLoadDelegateMBS; for HTML only, specifies an object to serve as the web resource loading delegate.
If not present, a default delegate is used that permits the loading of subsidiary resources but does not respond to authentication challenges. Previous string constant was @"WebResourceLoadDelegate".
Available in Mac OS X v10.4 and later.

32.12.155 NSWordMLTextDocumentType as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the values for the NSDocumentTypeDocumentAttribute key in the document attributes dictionary.
**Notes:** Microsoft Word XML (WordML schema) document.

32.12.156 NSWritingDirectionAttributeName as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute names for NSAttributedString.
**Example:**

```swift
const NSWritingDirectionNatural = -1 // Determines direction using the Unicode Bidi Algorithm rules P2 and P3
const NSWritingDirectionLeftToRight = 0 // Left to right writing direction
const NSWritingDirectionRightToLeft = 1 // Right to left writing direction

const NSTextWritingDirectionEmbedding = 0
const NSTextWritingDirectionOverride = 2

dim t as NSTextStorageMBS = TextArea1.NSTextViewMBS.textStorage
// get hello in arabic
dim a as NSAttributedStringMBS = NSAttributedStringMBS.attributedStringWithString("")
dim m asNSMutableAttributedStringMBS = a.mutableCopy

// now set attributes for right to left
m.addAttribute t.NSWritingDirectionAttributeName, array(NSWritingDirectionRightToLeft+NSTextWritingDirectionOverride), new NSRangeMBS(0,m.Length)

// and add to textarea
t.appendAttributedString m
```

**Notes:**
An Array of Numbers.
This provides a means to override the default bidi algorithm, equivalent to the use of bidi control characters LRE, RLE, LRO, or RLO paired with PDF, as a higher-level attribute. This is the NSAttributedString equivalent of HTML’s dir attribute and/or BDO element. The array represents nested embeddings or overrides, in order from outermost to innermost. The values of the Numbers should be 0, 1, 2, or 3, for LRE, RLE, LRO, or RLO respectively; these should be regarded as NSWritingDirectionLeftToRight or NSWritingDirectionRightToLeft plus NSTextWritingDirectionEmbedding or NSTextWritingDirectionOverride.
Available in Mac OS X v10.6 and later.

32.12.157  **paragraphRangeForRange**(range as NSRangeMBS) as NSRangeMBS

**Function:** Returns the range of characters representing the paragraph or paragraphs containing a given range.  
**Notes:**
Range: A range within the receiver. The range must not exceed the bounds of the receiver.

The range of characters representing the paragraph or paragraphs containing range, including the paragraph termination characters.

A paragraph is any segment of text delimited by a carriage return (U+000D), newline (U+000A), or paragraph separator (U+2029).

32.12.158  **rangeOfTextList**(list as NSTextListMBS, location as Integer) as NSRangeMBS

**Function:** Returns the range of the given text list that contains the given location.  
**Notes:**
list: The text list.  
location: The location in the text list.

Returns the range of the given text list containing the location.

32.12.159  **rtf** as MemoryBlock

**Function:** Returns the content of this attributed string as a RTF string.  
**Example:**
CHAPTER 32. COCOA

```
dim s as NSAttributedStringMBS
s=new NSAttributedStringMBS
if s.initWithString("Hello") then
    MsgBox s.RTF
end if
```

// shows this text:
// { \rtf1\ansi\ansicpg1252\cocoartf949
// { \fonttbl\f0{\swiss\fcharset0 Helvetica; }
// { \colortbl: \red255\green255\blue255; }
// \pard\tx560\tx1120\tx1680\tx2240\tx2800\tx3360\tx3920\tx4480\tx5040\tx5600\tx6160\tx6720\qf1\ql\qnatural\pardirnatural
// \f0\fs24 \cf0 Hello }

**Notes:** Same as RTFFromRange(0,length)

### 32.12.160 RTFDFileWrapperFromRange(offset as Integer, length as Integer, documentAttributes as dictionary = nil) as NSFileWrapperMBS

MBS MacBase Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an NSFileWrapper object that contains an RTFD document corresponding to the characters and attributes within the given range.

**Notes:**
- offset and length: The range.
- documentAttributes: A required dictionary specifying the document attributes. The dictionary contains values from Document Types and must at least contain NSDocumentTypeDocumentAttribute. If there are no document-level attributes, dict can be nil.

Returns a file wrapper containing the RTFD data.

The file wrapper also includes the document-level attributes in docAttributes, as explained in RTF Files and Attributed Strings.

Raises an NSRangeException if any part of aRange lies beyond the end of the receivers characters.

You can save the file wrapper using the NSFileWrapper method writeToFile.
32.12. CLASS NSATTRIBUTEDSTRINGMBS

32.12.161 RTFDFromRange(documentAttributes as dictionary = nil) as MemoryBlock

MBS MacBase Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates RTFD data from the current string range.

**Notes:**
- Returns nil on failure.
- Same as RTFDFromRange(0,length)
- documentAttributes can optionally be a dictionary with document attributes like author or title.

See also:

- 32.12.162 RTFDFromRange(offset as Integer, length as Integer, documentAttributes as dictionary = nil) as MemoryBlock

32.12.162 RTFDFromRange(offset as Integer, length as Integer, documentAttributes as dictionary = nil) as MemoryBlock

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates RTFD data from the current string range.

**Notes:**
- Returns nil on failure.
- documentAttributes can optionally be a dictionary with document attributes like author or title.

See also:

- 32.12.161 RTFDFromRange(documentAttributes as dictionary = nil) as MemoryBlock

32.12.163 RTFFromRange(documentAttributes as dictionary = nil) as MemoryBlock

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates RTF data from whole string.

**Notes:**
- Returns nil on failure.
- Same as RTFFromRange(0,length)
- documentAttributes can optionally be a dictionary with document attributes like author or title.

See also:

- 32.12.164 RTFFromRange(offset as Integer, length as Integer, documentAttributes as dictionary = nil) as MemoryBlock
**32.12.164** R**TFFromRange**(offset as Integer, length as Integer, documentAttributes as dictionary = nil) as MemoryBlock

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates RTF data from the current string range.

**Example:**

```plaintext
// get some attributed text:
dim t as new NSAttributedStringMBS
call t.initWithString("Hello World")

// set document attributes
dim dic as new Dictionary
dic.Value(t.NSBottomMarginDocumentAttribute) = 20
dic.Value(t.NSLeftMarginDocumentAttribute) = 20
dic.Value(t.NSRightMarginDocumentAttribute) = 20
dic.Value(t.NSTopMarginDocumentAttribute) = 20
dic.Value(t.NSAuthorDocumentAttribute) = "Test User"

// get rtf
dim rtf as string = t.RTFFromRange(dic)

// write to file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.rtf")
dim b as BinaryStream = BinaryStream.Create(f, true)
b.Write rtf
```

**Notes:**

Returns nil on failure.
documentAttributes can optionally be a dictionary with document attributes like author or title.
See also:

- **32.12.163** R**TFFromRange**(documentAttributes as dictionary = nil) as MemoryBlock

**32.12.165** **Properties**

**32.12.166** containsAttachments as boolean

MBS MacBase Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this attributed string has attachments.

**Notes:** (Read only property)
32.12.5  CLASS NSAttributedStringMBS

32.12.167  Handle as Integer


**Notes:**
Must not be nil to have the object being valid.
(Read and Write property)

32.12.168  length as Integer

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Length of text in characters.

**Example:**

```plaintext
dim n as NSAttributedStringMBS

n=new NSAttributedStringMBS
if n.initWithString("test") then
    MsgBox str(n.length) // shows 4
else
    MsgBox "failed"
end if
```

**Notes:** (Read only property)

32.12.169  Range as NSRangeMBS

MBS MacBase Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates range for whole text.

**Notes:** (Read only property)

32.12.170  text as string

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The plain text.

**Notes:** (Read only property)
32.12.171 Constants

32.12.172 NSSpellingStateGrammarFlag = 1

MBS MacBase Plugin, Plugin Version: 17.4. **Function:** One of the constants for spelling state. **Notes:** Flag for grammar issues.

32.12.173 NSSpellingStateSpellingFlag = 0

MBS MacBase Plugin, Plugin Version: 17.4. **Function:** One of the constants for spelling state. **Notes:** Flag for spelling issues.

32.12.174 NSUnderlineByWord = & h8000

MBS MacBase Plugin, Plugin Version: 17.4. **Function:** One of the underline constants. **Notes:** Draw the line only underneath or through words, not whitespace.

32.12.175 NSUnderlinePatternDash = & h0200

MBS MacBase Plugin, Plugin Version: 17.4. **Function:** One of the underline constants. **Notes:** Draw a line of dashes.

32.12.176 NSUnderlinePatternDashDot = & h0300

MBS MacBase Plugin, Plugin Version: 17.4. **Function:** One of the underline constants. **Notes:** Draw a line of alternating dashes and dots.

32.12.177 NSUnderlinePatternDashDotDot = & h0400

MBS MacBase Plugin, Plugin Version: 17.4. **Function:** One of the underline constants. **Notes:** Draw a line of alternating dashes and two dots.
32.12.178  **NSUnderlinePatternDot** = &h0100

MBS MacBase Plugin, Plugin Version: 17.4. **Function:** One of the underline constants.  
**Notes:** Draw a line of dots.

32.12.179  **NSUnderlinePatternSolid** = 0

MBS MacBase Plugin, Plugin Version: 17.4. **Function:** One of the underline constants.  
**Notes:** Draw a solid line.

32.12.180  **NSUnderlineStyleDouble** = 9

MBS MacBase Plugin, Plugin Version: 17.4. **Function:** One of the underline constants.  
**Notes:** Draw a double line.

32.12.181  **NSUnderlineStyleNone** = 0

MBS MacBase Plugin, Plugin Version: 17.4. **Function:** One of the underline constants.  
**Notes:** Do not draw a line.

32.12.182  **NSUnderlineStyleSingle** = 1

MBS MacBase Plugin, Plugin Version: 17.4. **Function:** One of the underline constants.  
**Example:**

```plaintext
// underline selected text in TextArea1

dim t as NSTextViewMBS = TextArea1.NSTextViewMBS
dim s as NSTextStorageMBS = t.textStorage

dim d as Dictionary = t.selectedTextAttributes
d.Value(NSAttributedStringMBS.NSStrikethroughStyleAttributeName) = s.NSUnderlineStyleSingle
t.selectedTextAttributes = d
```

**Notes:** Draw a single line.
32.12.183  **NSUnderlineStyleThick = 2**

MBS MacBase Plugin, Plugin Version: 17.4. **Function:** One of the underline constants.  
**Notes:** Draw a thick line.

32.12.184  **NSWritingDirectionEmbedding = 0**

MBS MacBase Plugin, Plugin Version: 17.4. **Function:** One of the writing direction constants.  
**Notes:** Text is embedded in text with another writing direction. For example, an English quotation in the middle of an Arabic sentence could be marked as being embedded left-to-right text.

32.12.185  **NSWritingDirectionOverride = 1**

MBS MacBase Plugin, Plugin Version: 17.4. **Function:** One of the writing direction constants.  
**Notes:** Enables character types with inherent directionality to be overridden when required for special cases, such as for part numbers made of mixed English, digits, and Hebrew letters to be written from right to left.
32.13. CLASS NSAutoreleasePoolMBS

32.13 class NSAutoreleasePoolMBS

32.13.1 class NSAutoreleasePoolMBS

MBS Main Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for memory management in Cocoa.

**Example:**

```plaintext
dim pool as NSAutoreleasePoolMBS

sub MyThread.Run
    pool=new NSAutoreleasePoolMBS
    // do work
end sub
```

**Notes:** If you use threads, you need to create a NSAutoreleasePoolMBS on the start to have correct Cocoa memory manager.

32.13.2 Methods

32.13.3 Constructor

MBS Main Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor to create a new Autorelease Pool.

**Example:**

```plaintext
// Cleanup memory for Cocoa objects

Sub Action()  // in Timer
  static LastPool as NSAutoreleasePoolMBS = nil
  static CurrentPool as NSAutoreleasePoolMBS = nil

  LastPool = CurrentPool
  CurrentPool = new NSAutoreleasePoolMBS
End Sub
```

**Notes:** The example code above is not needed in REALbasic 2009r4 and above as the runtime does it automatically for you.
32.13.4 Properties

32.13.5 Handle as Integer

MBS Main Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle to the internally used NSAutoreleasePool object. **Notes:** (Read and Write property)
32.14.1 **NSLogMBS(message as string)**

MBS Main Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Writes a message to the Console.app on Mac OS X.

**Example:**

```vbnet
Sub Log(message as string)
    if TargetMacOS then
        NSLogMBS message
    else
        System.DebugLog message
    end if
End Sub
```

**Notes:** As with Mac OS X 10.8 the system.debugLog method does not write to Console.app. So use this function.

32.14.2 **NSStringArraySortMBS(texts() as string, options as Integer) as string()**

MBS Main Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sorts array of string with options.

**Example:**

```vbnet
// constants for the function:
const NSCaseInsensitiveSearch = 1
const NSLiteralSearch = 2
const NSBackwardsSearch = 4
const NSAnchoredSearch = 8
const NSNumericSearch = 64
const NSDiacriticInsensitiveSearch = 128
const NSWidthInsensitiveSearch = 256
const NSForcedOrderingSearch = 512
const NSOrderedAscending = -1
const NSOrderedSame = 0
const NSOrderedDescending = 1

// test array

dim a() as string = array("Test 1", "Test 2", "Test 12")
```
// sort with Cocoa sorting
dim r() as string = NSStringArraySortMBS(a, NSDiacriticInsensitiveSearch +
NSWidthInsensitiveSearch +
NSCaseInsensitiveSearch +
NSNumericSearch)

// sort with xojo
a.sort

// show result
MsgBox "Cocoa: " + Join(r, " ")+EndOfLine+
"Xojo: " + Join(a, " ")

Notes: This function allows you to use NSStringCompareMBS for array sorting.

32.14.3 NSStringCompareMBS(s as string, t as string, options as Integer) as Integer

MBS Main Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Compares two things using the Cocoa string functions.
Example:

// constants for the function:
const NSCaseInsensitiveSearch = 1
const NSLiteralSearch = 2
const NSBackwardsSearch = 4
const NSAnchoredSearch = 8
const NSNumericSearch = 64
const NSDiacriticInsensitiveSearch = 128
const NSWidthInsensitiveSearch = 256
const NSForcedOrderingSearch = 512
const NSOrderedAscending = -1
const NSOrderedSame = 0
const NSOrderedDescending = 1

if NSStringCompareMBS("Hello","hello", NSCaseInsensitiveSearch)=0 then
msgbox "equal (correct)"
else
msgbox "not equal"
end if

if NSStringCompareMBS("Hello","hello", 0)=0 then
msgbox "equal"
else
msgbox "not equal (correct)"
end if

if NSStringCompareMBS("Hello","Hell", NSDiacriticInsensitiveSearch)=0 then
msgbox "equal (correct)"
else
msgbox "not equal"
end if

Notes:

Following constants can be used for the compare:

- **NSCaseInsensitiveSearch** 1  Case Insensitive
- **NSLiteralSearch** 2  Exact character-by-character equivalence
- **NSBackwardsSearch** 4  Search from end of source string
- **NSAnchoredSearch** 8  Search is limited to start (or end, if NSBackwardsSearch) of source string
- **NSNumericSearch** 64  Added in 10.2: Numbers within strings are compared using numeric value, that is, Foo2.txt < Foo7.txt < Foo25.txt; only applies to compare methods, not find
- **NSDiacriticInsensitiveSearch** 128  If specified, ignores diacritics (o-umlaut = o)
- **NSWidthInsensitiveSearch** 256  If specified, ignores width differences ('a' = UFF41)
- **NSForcedOrderingSearch** 512  If specified, comparisons are forced to return either NSOrderedAscending or NSOrderedDescending if the strings are equivalent but not strictly equal, for stability when sorting (e.g. "aaa" > "AAA" with NSCaseInsensitiveSearch specified)

The constants NSDiacriticInsensitiveSearch, NSWidthInsensitiveSearch and NSForcedOrderingSearch are only for Mac OS X 10.5 and newer versions.

Returns value constants:

- **NSOrderedAscending** -1
- **NSOrderedSame** 0
- **NSOrderedDescending** 1

32.14.4  **NSMakePointMBS(x as Double, y as Double) as NSPointMBS**

MBS Main Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**  Creates a NSPoint object based on coordinates.
32.14.5  **NSMakeRangeMBS(location as UInt32, length as UInt32) as NSRangeMBS**

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new range with the given values.

32.14.6  **NSMakeRectMBS(x as Double, y as Double, w as Double, h as Double) as NSRectMBS**

MBS Main Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a NSRect object based on coordinates and size.

32.14.7  **NSMakeSizeMBS(w as Double, h as Double) as NSSizeMBS**

MBS Main Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a NSSize object based on a size.

32.14.8  **CenterResizeAddWindowMBS(win as window)**

MBS MacExtras Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Adds a window to the list of center resizing windows. **Notes:** Please call in open event of window.

32.14.9  **CenterResizeInstallMBS**

MBS MacExtras Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Installs the center resize function. **Notes:** The plugin can provide for Xojo and Real Studio the center based window resizing. Call this method early in app.open to prepare everything.

Then register windows with CenterResizeAddWindowMBS in window open event and unregister with CenterResizeRemoveWindowMBS in window close event. This works for all windows you register.
32.15. **CLASS NSBUNDLEMBS**

### 32.14.10 CenterResizeRemoveWindowMBS(win as window)

MBS MacExtras Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Removes a window from the list of center resizing windows. **Notes:** Please call in Close event of window.

### 32.15 class NSBundleMBS

#### 32.15.1 class NSBundleMBS

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An NSBundle object represents a location in the file system that groups code and resources that can be used in a program. **Example:**

```vbnet
MsgBox NSBundleMBS.mainBundle.bundlePath
```

**Notes:**

NSBundle objects locate program resources, dynamically load and unload executable code, and assist in localization. You build a bundle in Xcode using one of these project types: Application, Framework, plug-ins. Although bundle structures vary depending on the target platform and the type of bundle you are building, the NSBundle class hides this underlying structure in most (but not all) cases. Many of the methods you use to load resources from a bundle automatically locate the appropriate starting directory and look for resources in known places.

#### 32.15.2 Methods

##### 32.15.3 allBundles as NSBundleMBS()

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of all the application’s non-framework bundles. **Example:**

```vbnet
dim a(-1) as NSBundleMBS = NSBundleMBS.allBundles
dim lines(-1) as string
for each n as NSBundleMBS in a
    lines.Append n.bundlePath
next
MsgBox Join(lines,EndOfLine)
```
Notes: The returned array includes the main bundle and all bundles that have been dynamically created but doesn’t contain any bundles that represent frameworks.

32.15.4 allFrameworks as NSBundleMBS()

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of all of the application’s bundles that represent frameworks.

**Example:**

```vbscript
dim a(-1) as NSBundleMBS = NSBundleMBS.allFrameworks
dim lines(-1) as string

for each n as NSBundleMBS in a
    lines.Append n.bundlePath
next

MsgBox Join(lines,EndOfLine)
```

**Notes:**

Returns an array of all of the application’s bundles that represent frameworks. Only frameworks with one or more Objective-C classes in them are included.

The returned array includes frameworks that are linked into an application when the application is built and bundles for frameworks that have been dynamically created.

32.15.5 builtInPlugInsFolder as folderitem

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the full pathname of the receiver’s subdirectory containing plug-ins.

**Example:**

```vbscript
MsgBox NSBundleMBS.mainBundle.builtInPlugInsFolder.DisplayName
```

**Notes:** This method returns the appropriate path for modern application and framework bundles. This method may not return a path for non-standard bundle formats or for some older bundle formats.
32.15.6 **builtInPlugInsPath as string**

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the full pathname of the receiver’s subdirectory containing plug-ins.  
**Example:**

MsgBox NSBundleMBS.mainBundle.builtInPlugInsPath

**Notes:** This method returns the appropriate path for modern application and framework bundles. This method may not return a path for non-standard bundle formats or for some older bundle formats.

32.15.7 **bundleFolder as folderitem**

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the full pathname of the receiver’s bundle directory.  
**Example:**

MsgBox NSBundleMBS.mainBundle.bundleFolder.DisplayName

32.15.8 **bundleIdentifier as string**

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver’s bundle identifier.  
**Example:**

```dim n as NSBundleMBS = NSBundleMBS.mainBundle
MsgBox n.bundleIdentifier```

**Notes:** Returns the receiver’s bundle identifier, which is defined by the CFBundleIdentifier key in the bundle’s information property list.

32.15.9 **bundlePath as string**

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the full pathname of the receiver’s bundle directory.  
**Example:**

MsgBox NSBundleMBS.mainBundle.bundlePath
32.15.10  bundleWithIdentifier(identifier as string) as NSBundleMBS

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the previously created NSBundle instance that has the specified bundle identifier.

Example:

// create with path
dim x as NSBundleMBS = NSBundleMBS.bundleWithIdentifier(SpecialFolder.Applications.Child("iTunes.app"))
MsgBox x.bundlePath

// once the bundle is known it will be in the allBundles array and be found with bundleWithIdentifier:
dim n as NSBundleMBS = NSBundleMBS.bundleWithIdentifier("com.apple.iTunes")
MsgBox n.bundlePath

Notes:
The previously created NSBundle instance that has the bundle identifier identifier. Returns nil if the requested bundle is not found.

This method is typically used by frameworks and plug-ins to locate their own bundle at runtime. This method may be somewhat more efficient than trying to locate the bundle using the bundleForClass method.

32.15.11  bundleWithPath(path as folderitem) as NSBundleMBS

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns an NSBundle object that corresponds to the specified directory.

Example:

// create with path
dim x as NSBundleMBS = NSBundleMBS.bundleWithPath(SpecialFolder.Applications.Child("iTunes.app"))
MsgBox x.bundlePath

Notes:
Returns the NSBundle object that corresponds to fullPath, or nil if fullPath does not identify an accessible bundle directory.

This method allocates and initializes the returned object if there is no existing NSBundle associated with fullPath, in which case it returns the existing object.

See also:
32.15. **CLASS NSBUNDLEMBS**

- 32.15.12 `bundleWithPath(path as string) as NSBundleMBS` 5533

### 32.15.12 `bundleWithPath(path as string) as NSBundleMBS`

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an `NSBundle` object that corresponds to the specified directory.

**Example:**

```vbnet
// create with path
dim x as NSBundleMBS = NSBundleMBS.bundleWithPath(“/Applications/iTunes.app”)
MsgBox x.bundlePath
```

**Notes:**

Returns the `NSBundle` object that corresponds to `fullPath`, or nil if `fullPath` does not identify an accessible bundle directory.

This method allocates and initializes the returned object if there is no existing `NSBundle` associated with `fullPath`, in which case it returns the existing object.

See also:

- 32.15.11 `bundleWithPath(path as folderitem) as NSBundleMBS` 5532

### 32.15.13 Constructor(path as folderitem)

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an `NSBundle` object that corresponds to the specified directory.

**Example:**

```vbnet
dim n as new NSBundleMBS(SpecialFolder.Applications.Child(“iTunes.app”))
dim d as Dictionary = n.infoDictionary
MsgBox d.Value(“CFBundleName”)
```

**Notes:**

Creates the `NSBundle` object that corresponds to `fullPath`, or fails if `fullPath` does not identify an accessible bundle directory. On failure the handle property is 0.

This method allocates and initializes the returned object if there is no existing `NSBundle` associated with `fullPath`, in which case it returns the existing object.

See also:

- 32.15.14 `Constructor(path as string)` 5534
32.15.14 Constructor(path as string)

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an NSBundle object that corresponds to the specified directory. 

**Example:**
```
dim n as new NSBundleMBS("/Applications/iTunes.app")
dim d as Dictionary = n.infoDictionary
MsgBox d.Value("CFBundleName")
```

**Notes:**
Creates the NSBundle object that corresponds to fullPath, or fails if fullPath does not identify an accessible bundle directory. On failure the handle property is 0.

This method allocates and initializes the returned object if there is no existing NSBundle associated with fullPath, in which case it returns the existing object. 

See also:
- 32.15.13 Constructor(path as folderitem)

32.15.15 developmentLocalization as string

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the localization used to create the bundle. 

**Example:**
```
MsgBox NSBundleMBS.mainBundle.developmentLocalization
```

**Notes:** The returned localization corresponds to the value in the CFBundleDevelopmentRegion key of the bundle’s property list (Info.plist).

32.15.16 executableArchitectures as Integer()

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of numbers indicating the architecture types supported by the bundle’s executable. 

**Example:**
```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.app")
dim b as new NSBundleMBS(f)

dim lines(-1) as string
```
for each e as Integer in b.executableArchitectures
    dim s as string
    Select case e
        case NSBundleMBS.NSBundleExecutableArchitectureI386
            s = "i386"
        case NSBundleMBS.NSBundleExecutableArchitecturePPC
            s = "PPC"
        case NSBundleMBS.NSBundleExecutableArchitecturePPC64
            s = "PPC 64-bit"
        case NSBundleMBS.NSBundleExecutableArchitectureX86_64
            s = "x86 64-bit"
        case 12
            s = "iPhone"
        else
            s = Str(e)
    end Select
    lines.Append hex(e) + ": " + s
next

MsgBox Join(lines, EndOfLine)

Notes: This method scans the bundle’s Mach-O executable and returns all of the architecture types it finds. Because they are taken directly from the executable, the returned values may not always correspond to one of the well-known CPU types defined in "Mach-O Architecture."

32.15.17 executableFile as folderitem

Example:
MsgBox NSBundleMBS.mainBundle.executableFile.AbsolutePath

32.15.18 executablePath as string

Example:
MsgBox NSBundleMBS.mainBundle.executablePath
32.15.19  infoDictionary as dictionary

Example:

```vba
dim n as new NSBundleMBS(SpecialFolder.Applications.Child("iTunes.app"))
dim d as Dictionary = n.infoDictionary

dim lines(-1) as string

for each key as Variant in d.keys
    dim value as Variant = d.Value(key)
    
    // special handle folderitems
    if value isa FolderItem then
        dim f as FolderItem = value
    value = f.Name
    end if

    lines.Append key.StringValue + " ->" + value.StringValue
next

MsgBox Join(lines,EndOfLine)
```

Notes: Returns a dictionary, constructed from the bundle’s Info.plist file, that contains information about the receiver. If the bundle does not contain an Info.plist file, a valid dictionary is returned but this dictionary contains only private keys that are used internally by the NSBundle class. The NSBundle class may add extra keys to this dictionary for its own use.

32.15.20  isLoaded as boolean

Example:

```vba
MsgBox str(NSBundleMBS.mainBundle.isLoaded) // mainbundle is always loaded
```

Notes: Returns true if the bundle’s code is currently loaded, otherwise false.
32.15.21 load as boolean

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Dynamically loads the bundle’s executable code into a running program, if the code has not already been loaded.

**Notes:**
Returns true if the method successfully loads the bundle’s code or if the code has already been loaded, otherwise false.

You can use this method to load the code associated with a dynamically loaded bundle, such as a plug-in or framework. Prior to Mac OS X version 10.5, a bundle would attempt to load its code if it had any only once. Once loaded, you could not unload that code. In Mac OS X version 10.5 and later, you can unload a bundle’s executable code using the unload method.

You don’t need to load a bundle’s executable code to search the bundle’s resources.

---

32.15.22 localizations as string()

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a list of all the localizations contained within the receiver’s bundle.

**Example:**
MsgBox join(NSBundleMBS.mainBundle.localizations,EndOfLine)

**Notes:** Return an array, containing strings, that specifies all the localizations contained within the receiver’s bundle.

---

32.15.23 localizedInfoDictionary as dictionary

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a dictionary with the keys from the bundle’s localized property list.

**Example:**
dim n as new NSBundleMBS(SpecialFolder.Applications.Child("iTunes.app"))
dim d as Dictionary = n.localizedInfoDictionary
dim lines(-1) as string
for each key as Variant in d.keys
dim value as Variant = d.Value(key)
// special handle folderitems
if value isa FolderItem then
dim f as FolderItem = value
value = f.Name
end if

lines.Append key.StringValue + " ->" + value.StringValue
next

MsgBox Join(lines, EndOfLine)

**Notes:**

Returns a dictionary with the keys from the bundle’s localized property list (InfoPlist.strings).

This method uses the preferred localization for the current user when determining which resources to return. If the preferred localization is not available, this method chooses the most appropriate localization found in the bundle.

### 32.15.24 localizedStringForKey(key as string, value as string="", tableName as string="") as string

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Returns a localized version of the string designated by the specified key and residing in the specified table.

**Notes:**

- **key:** The key for a string in the table identified by tableName.
- **value:** The value to return if key is "" or if a localized string for key can’t be found in the table.
- **tableName:** The receiver’s string table to search. If tableName is an empty string, the method attempts to use the table in Localizable.strings.

Returns a localized version of the string designated by key in table tableName. If value is nil or an empty string, and a localized string is not found in the table, returns key. If key and value are both nil, returns the empty string.

For more details about string localization and the specification of a .strings file, see "Working With Localized Strings."

Using the user default NSShowNonLocalizedStrings, you can alter the behavior of localizedStringForKey to log a message when the method can’t find a localized string. If you set this default to true (in the global domain or in the application’s domain), then when the method can’t find a localized string in the table, it logs a message to the console and capitalizes key before returning it.

The following example cycles through a static array of keys when a button is clicked, gets the value for each key from a strings table named Buttons.strings, and sets the button title with the returned value:
### 32.15.25 mainBundle as NSBundleMBS

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the NSBundle object that corresponds to the directory where the current application executable is located.

**Example:**

MsgBox NSBundleMBS.mainBundle.bundlePath

**Notes:**

Returns the NSBundle object that corresponds to the directory where the application executable is located, or nil if a bundle object could not be created.

This method allocates and initializes a bundle object if one doesn’t already exist. The new object corresponds to the directory where the application executable is located. Be sure to check the return value to make sure you have a valid bundle. This method may return a valid bundle object even for unbundled applications. In general, the main bundle corresponds to an application file package or application wrapper: a directory that bears the name of the application and is marked by a ”.app” extension.

### 32.15.26 pathForResource(name as string, extension as string) as folderitem

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the full pathname for the resource identified by the specified name and file extension.

**Notes:**

name: The name of the resource file.

extension: If extension is an empty string, the extension is assumed not to exist and the file URL is the first
file encountered that exactly matches name.

Returns the full pathname for the resource file or nil if the file could not be located.

The method first looks for a matching resource file in the non-localized resource directory of the specified bundle. (In Mac OS X, this directory is typically called Resources but in iPhone OS, it is the main bundle directory.) If a matching resource file is not found, it then looks in the top level of any available language-specific ".lproj" directories. (The search order for the language-specific directories corresponds to the user’s preferences.) It does not recurse through other subdirectories at any of these locations. For more details see Bundles and Localization.

The following code fragment gets the path to a plist within the bundle, and loads it into a dictionary.

See also:

- 32.15.28 pathForResource(name as string, extension as string, subpath as string) as folderitem
- 32.15.29 pathForResource(name as string, extension as string, subpath as string, localizationName as string) as folderitem

32.15.28 pathForResource(name as string, extension as string, subpath as string) as folderitem

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Returns the full pathname for the resource identified by the specified name and file extension and located in the specified bundle subdirectory.

**Notes:**

name: The name of the resource file.

extension: If extension is an empty string, the extension is assumed not to exist and the file URL is the first file encountered that exactly matches name.

subpath: The name of the bundle subdirectory.

Returns the full pathname for the resource file or nil if the file could not be located.

If subpath is "", this method searches the top-level nonlocalized resource directory and the top-level of any language-specific directories. (In Mac OS X, the top-level nonlocalized resource directory is typically called Resources but in iPhone OS, it is the main bundle directory.) For example, suppose you have a Mac OS X application with a modern bundle and you specify "Documentation" for the subpath parameter. This method would first look in the Contents/Resources/Documentation directory of the bundle, followed by the Documentation subdirectories of each language-specific .lproj directory. (The search order for the language-specific directories corresponds to the user’s preferences.) This method does not recurse through any other subdirectories at any of these locations. For more details see Bundles and Localization.

See also:

- 32.15.27 pathForResource(name as string, extension as string) as folderitem
32.15. **CLASS NSBUNDLEMBS**

- 32.15.29 `pathForResource(name as string, extension as string, subpath as string, localizationName as string) as folderitem`

### 32.15.29 `pathForResource(name as string, extension as string, subpath as string, localizationName as string) as folderitem`

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Returns the full pathname for the resource identified by the specified name and file extension, located in the specified bundle subdirectory, and limited to global resources and those associated with the specified localization.

**Notes:**

- `name`: The name of the resource file.
- `extension`: If extension is an empty string, the extension is assumed not to exist and the file URL is the first file encountered that exactly matches `name`.
- `subpath`: The name of the bundle subdirectory to search.
- `localizationName`: The name of the localization. This parameter should correspond to the name of one of the bundle’s language-specific resource directories without the .lproj extension.

Returns the full pathname for the resource file or nil if the file could not be located.

This method is equivalent to `pathForResource ofType`, except that only nonlocalized resources and those in the language-specific .lproj directory specified by `localizationName` are searched.

There should typically be little reason to use this method—see Getting the Current Language and Locale.

**See also:**

- 32.15.27 `pathForResource(name as string, extension as string) as folderitem`
- 32.15.28 `pathForResource(name as string, extension as string, subpath as string) as folderitem`

### 32.15.30 `pathForSoundResource(name as string) as folderitem`

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Returns the location of the specified sound resource file.

**Notes:**

- `name`: The name of the sound resource file, without any pathname information. Including a filename extension is optional.

Returns the folderItem of the resource file or nil if the file was not found.

Sound resources are those files in the bundle that are recognized by the NSSound class. The types of sound files can be determined by calling the `soundUnfilteredFileTypes` method of NSSound.
32.15.31 preferredLocalizations as string()

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of strings indicating the actual localizations contained in the receiver’s bundle. **Notes:** An array of strings, each of which identifies the a localization in the receiver’s bundle. The localizations in the array are not returned in any particular order.

32.15.32 privateFrameworksFolder as folderitem

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the full pathname of the receiver’s subdirectory containing frameworks. **Notes:** This method returns the appropriate path for modern application and framework bundles. This method may not return a path for non-standard bundle formats or for some older bundle formats.

32.15.33 privateFrameworksPath as string

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the full pathname of the receiver’s subdirectory containing frameworks. **Notes:** This method returns the appropriate path for modern application and framework bundles. This method may not return a path for non-standard bundle formats or for some older bundle formats.

32.15.34 resourceFolder as folderitem

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the full pathname of the receiving bundle’s subdirectory containing resources.

32.15.35 resourcePath as string

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the full pathname of the receiving bundle’s subdirectory containing resources.

32.15.36 sharedFrameworksFolder as folderitem

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the full pathname of the receiver’s subdirectory containing shared frameworks.
Notes: This method returns the appropriate path for modern application and framework bundles. This method may not return a path for non-standard bundle formats or for some older bundle formats.

32.15.37 sharedFrameworksPath as string

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the full pathname of the receiver’s subdirectory containing shared frameworks. **Notes:** This method returns the appropriate path for modern application and framework bundles. This method may not return a path for non-standard bundle formats or for some older bundle formats.

32.15.38 sharedSupportFolder as folderitem

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the full pathname of the receiver's subdirectory containing shared support files. **Notes:** This method returns the appropriate path for modern application and framework bundles. This method may not return a path for non-standard bundle formats or for some older bundle formats.

32.15.39 sharedSupportPath as string

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the full pathname of the receiver’s subdirectory containing shared support files. **Notes:** This method returns the appropriate path for modern application and framework bundles. This method may not return a path for non-standard bundle formats or for some older bundle formats.

32.15.40 unload as boolean

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Unloads the code associated with the receiver. **Notes:**

Returns true if the bundle was successfully unloaded or was not already loaded; otherwise, false if the bundle could not be unloaded.

This method attempts to unload a bundle's executable code using the underlying dynamic loader (typically dyld). You may use this method to unload plug-in and framework bundles when you no longer need the code they contain. You should use this method to unload bundles that were loaded using the methods of the NSBundle class only. Do not use this method to unload bundles that were originally loaded using the bundle-manipulation functions in Core Foundation.

It is the responsibility of the caller to ensure that no in-memory objects or data structures refer to the code.
being unloaded. For example, if you have an object whose class is defined in a bundle, you must release that object prior to unloading the bundle. Similarly, your code should not attempt to access any symbols defined in an unloaded bundle.

Prior to Mac OS X version 10.5, code could not be unloaded once loaded, and this method would always return false. In Mac OS X version 10.5 and later, you can unload a bundle’s executable code using this method.

Available in Mac OS X v10.5 and later.

32.15.41 Properties

32.15.42 Handle as Integer

Example:
MsgBox hex(NSBundleMBS.mainBundle.Handle)

Notes: (Read and Write property)

32.15.43 Constants

32.15.44 NSBundleExecutableArchitectureI386 = 7

MBS MacBase Plugin, Plugin Version: 9.8. Function: One of the constants describe the CPU types that a bundle’s executable code may support.
Notes:
Specifies the 32-bit Intel architecture.
Available in Mac OS X v10.5 and later.

32.15.45 NSBundleExecutableArchitecturePPC = & h12

MBS MacBase Plugin, Plugin Version: 9.8. Function: One of the constants describe the CPU types that a bundle’s executable code may support.
Notes:
Specifies the 32-bit PowerPC architecture.
Available in Mac OS X v10.5 and later.
32.15.46  **NSBundleExecutableArchitecturePPC64 = & h01000012**

MBS MacBase Plugin, Plugin Version: 9.8. **Function:** One of the constants describe the CPU types that a bundle's executable code may support.

**Notes:**
Specifies the 64-bit PowerPC architecture.
Available in Mac OS X v10.5 and later.

32.15.47  **NSBundleExecutableArchitectureX86_64 = & h01000007**

MBS MacBase Plugin, Plugin Version: 9.8. **Function:** One of the constants describe the CPU types that a bundle's executable code may support.

**Notes:**
Specifies the 64-bit Intel architecture.
Available in Mac OS X v10.5 and later.
32.16 class NSCalendarMBS

32.16.1 class NSCalendarMBS

Notes:
see also https://developer.apple.com/library/mac/# documentation/Cocoa/Reference/Foundation/Classes/NSCalendar_Class/Reference/NSCalendar.html

32.16.2 Methods

32.16.3 autoupdatingCurrentCalendar as NSCalendarMBS

Notes:
Settings you get from this calendar do change as the user’s settings change (contrast with currentCalendar).

Note that if you cache values based on the calendar or related information those caches will of course not be automatically updated by the updating of the calendar object.

Available in Mac OS X v10.5 and later.

32.16.4 calendarIdentifier as string


32.16.5 Constructor

See also:

• 32.16.6 Constructor(identifier as string)
32.16. CLASS NSCALENDARMBS

32.16.6 Constructor(identifier as string)

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes a newly-allocated NSCalendar object for the calendar specified by a given identifier. See also:

- 32.16.5 Constructor

32.16.7 copy as NSCalendarMBS

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a copy of the calendar object.

32.16.8 currentCalendar as NSCalendarMBS

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the logical calendar for the current user. **Notes:** The returned calendar is formed from the settings for the current user’s chosen system locale overlaid with any custom settings the user has specified in System Preferences. Settings you get from this calendar do not change as System Preferences are changed, so that your operations are consistent (contrast with autoupdatingCurrentCalendar).

32.16.9 description as string

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The description for this timezone.

32.16.10 Print

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Writes the calendar to debug output. **Notes:** This may help for debugging and you see output in console app.
32.16.11 Properties

32.16.12 Handle as Integer

**Notes:** (Read and Write property)

32.16.13 firstWeekday as Integer

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The index of the first weekday.  
**Notes:** (Read and Write computed property)

32.16.14 locale as NSLocaleMBS

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The locale.  
**Notes:** (Read and Write computed property)

32.16.15 minimumDaysInFirstWeek as Integer

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The minimum number of days in the first week.  
**Notes:** (Read and Write computed property)

32.16.16 timeZone as NSTimeZoneMBS

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The time zone.  
**Notes:** (Read and Write computed property)
32.17. CLASS NSCHARACTERSETMBS

32.17 class NSCharacterSetMBS

32.17.1 class NSCharacterSetMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

An NSCharacterSet object represents a set of Unicode-compliant characters.

**Example:**

```java
// get the Symbol font
dim n as NSFontMBS = NSFontMBS.fontWithName("Symbol",10)

// what characters are defined for this font?
dim c as NSCharacterSetMBS = n.coveredCharacterSet

// display a string with all the characters
MsgBox c.StringValue
```

**Notes:**

NSString and NSScanner objects use NSCharacterSet objects to group characters together for searching operations, so that they can find any of a particular set of characters during a search. The cluster’s two public classes, NSCharacterSet and NSMunableCharacterSet, declare the programmatic interface for static and dynamic character sets, respectively.

The objects you create using these classes are referred to as character set objects (and when no confusion will result, merely as character sets). Because of the nature of class clusters, character set objects aren’t actual instances of the NSCharacterSet or NSMunableCharacterSet classes but of one of their private sub-classes. Although a character set object’s class is private, its interface is public, as declared by these abstract superclasses, NSCharacterSet and NSMunableCharacterSet. The character set classes adopt the NSCopying and NSMunableCopying protocols, making it convenient to convert a character set of one type to the other.

The NSCharacterSet class declares the programmatic interface for an object that manages a set of Unicode characters (see the NSString class cluster specification for information on Unicode). NSCharacterSet’s principal primitive method, characterIsMember:, provides the basis for all other instance methods in its interface. A subclass of NSCharacterSet needs only to implement this method, plus mutableCopyWithZone:, for proper behavior. For optimal performance, a subclass should also override bitmapRepresentation, which otherwise works by invoking characterIsMember: for every possible Unicode value.

NSCharacterSet is "toll-free bridged" with its Cocoa Foundation counterpart, CFCharacterSet Reference. This means that the Core Foundation type is interchangeable in function or method calls with the bridged Foundation object. Therefore, in a method where you see an NSCharacterSet * parameter, you can pass a CFCharacterSetRef, and in a function where you see a CFCharacterSetRef parameter, you can pass an NSCharacterSet instance (you cast one type to the other to suppress compiler warnings). See Interchangeable Data Types for more information on toll-free bridging.
The mutable subclass of NSCharacterSet is NSMutableCharacterSet.

### 32.17.2 Methods

#### 32.17.3 alphanumericCharacterSet as NSCharacterSetMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a character set containing the characters in the categories Letters, Marks, and Numbers.

**Example:**

```dim n as NSCharacterSetMBS = NSCharacterSetMBS.alphanumericCharacterSet
MsgBox left(n,200) // show only first 200 chars```

**Notes:** Informally, this set is the set of all characters used as basic units of alphabets, syllabaries, ideographs, and digits.

#### 32.17.4 bitmapRepresentation as MemoryBlock

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a memoryblock object encoding the receiver in binary format.

**Notes:**

This format is suitable for saving to a file or otherwise transmitting or archiving.

A raw bitmap representation of a character set is a byte array of $2^{16}$ bits (that is, 8192 bytes). The value of the bit at position $n$ represents the presence in the character set of the character with decimal Unicode value $n$.

#### 32.17.5 capitalizedLetterCharacterSet as NSCharacterSetMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a character set containing the characters in the category of Titlecase Letters.

**Example:**

```dim n as NSCharacterSetMBS = NSCharacterSetMBS.capitalizedLetterCharacterSet
MsgBox n```
32.17. CLASS NSCHARACTERSETMBS

32.17.6 characterIsMember(Character as Integer) as boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value that indicates whether a given character is in the receiver.
**Example:**
```
// get the Symbol font
dim n as NSFontMBS = NSFontMBS.fontWithName("Arial",10)

// what characters are defined for this font?
dim c as NSCharacterSetMBS = n.coveredCharacterSet

// is letter A part of this font?
MsgBox "A included: " + str(c.characterIsMember(asc("A")))
```

32.17.7 characterSetWithBitmapRepresentation(data as MemoryBlock) as NSCharac
terSetMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a character set containing characters determined by a given bitmap representation.
**Notes:**
This method is useful for creating a character set object with data from a file or other external data source.

A raw bitmap representation of a character set is a byte array of $2^{16}$ bits (that is, 8192 bytes). The value of the bit at position $n$ represents the presence in the character set of the character with decimal Unicode value $n$.

32.17.8 characterSetWithCharactersInString(aString as string) as NSCharac
terSetMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a character set containing the characters in a given string.
**Example:**
```
dim n as NSCharacterSetMBS = NSCharacterSetMBS.characterSetWithCharactersInString("Hello World")
MsgBox n
```

**Notes:** A character set containing the characters in aString. Returns an empty character set if aString is empty.
32.17.9  **characterSetWithContentsOfFile(aString as string) as NSStringCharacterSet**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a character set read from the bitmap representation stored in the file a given path.

**Notes:**
To read a bitmap representation from any file, use the NSData method `dataWithContentsOfFile` and pass the result to `characterSetWithBitmapRepresentation`.

This method doesn’t use filenames to check for the uniqueness of the character sets it creates. To prevent duplication of character sets in memory, cache them and make them available through an API that checks whether the requested set has already been loaded.

See also:
- 32.17.10 `characterSetWithContentsOfFile(file as folderitem) as NSStringCharacterSet`

32.17.10  **characterSetWithContentsOfFile(file as folderitem) as NSStringCharacterSet**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a character set read from the bitmap representation stored in the file a given path.

**Notes:**
To read a bitmap representation from any file, use the NSData method `dataWithContentsOfFile` and pass the result to `characterSetWithBitmapRepresentation`.

This method doesn’t use filenames to check for the uniqueness of the character sets it creates. To prevent duplication of character sets in memory, cache them and make them available through an API that checks whether the requested set has already been loaded.

See also:
- 32.17.9 `characterSetWithContentsOfFile(aString as string) as NSStringCharacterSet`

32.17.11  **characterSetInRange(r as NSRangeMBS) as NSStringCharacterSet**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a character set containing characters with Unicode values in a given range.

**Example:**
```plaintext
dim r as NSRangeMBS = NSMakeRangeMBS(asc(“a”),26) // all small letters
dim n as NSStringCharacterSetMBS = NSStringCharacterSetMBS.characterSetInRange(r)
MsgBox n
```
32.17. CLASS NSCharacterSetMBS

Notes:

r: A range of Unicode values.

r.location is the value of the first character to return; aRange.location + r.length-1 is the value of the last.

Returns a character set containing characters whose Unicode values are given by aRange. If aRange.length is 0, returns an empty character set.

This code excerpt creates a character set object containing the lowercase English alphabetic characters:

32.17.12 componentsSeparatedByCharactersInSet(s as string) as String()

MBS MacBase Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 
**Function:** Returns an array containing substrings from the receiver that have been divided by characters in a given set.
**Notes:**

self: A character set containing the characters to use to split the receiver. Must not be nil.
s: The text to process.

Returns an array of string containing substrings from the receiver that have been divided by characters in separator.

The substrings in the array appear in the order they did in the receiver. Adjacent occurrences of the separator characters produce empty strings in the result. Similarly, if the string begins or ends with separator characters, the first or last substring, respectively, is empty.

32.17.13 Constructor

**Function:** The constructor to create an empty character set.

32.17.14 controlCharacterSet as NSCharacterSetMBS

**Function:** Returns a character set containing the characters in the categories of Control or Format Characters.
**Notes:** These characters are specifically the Unicode values U+0000 to U+001F and U+007F to U+009F.
32.17.15  copy as NSCharacterSetMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy of the character set.

32.17.16  decimalDigitCharacterSet as NSCharacterSetMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a character set containing the characters in the category of Decimal Numbers.  
**Example:**

```plaintext
dim n as NSCharacterSetMBS = NSCharacterSetMBS.decimalDigitCharacterSet
MsgBox n
```

**Notes:** Informally, this set is the set of all characters used to represent the decimal values 0 through 9. These characters include, for example, the decimal digits of the Indic scripts and Arabic.

32.17.17  decomposableCharacterSet as NSCharacterSetMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a character set containing all individual Unicode characters that can also be represented as composed character sequences.  
**Notes:**

Returns a character set containing all individual Unicode characters that can also be represented as composed character sequences (such as for letters with accents), by the definition of "standard decomposition" in version 3.2 of the Unicode character encoding standard.

These characters include compatibility characters as well as pre-composed characters.

Note: This character set doesn’t currently include the Hangul characters defined in version 2.0 of the Unicode standard.

32.17.18  hasMemberInPlane(thePlane as Integer) as boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value that indicates whether the receiver has at least one member in a given character plane.  
**Notes:** This method makes it easier to find the plane containing the members of the current character set.
32.17. **CLASS NSCHARACTERSETMBS**

The Basic Multilingual Plane is plane 0.

---

**32.17.19 illegalCharacterSet as NSCharacterSetMBS**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a character set containing values in the category of Non-Characters or that have not yet been defined in version 3.2 of the Unicode standard.

---

**32.17.20 invertedSet as NSCharacterSetMBS**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a character set containing only characters that don’t exist in the receiver. **Notes:** Inverting an immutable character set is much more efficient than inverting a mutable character set.

---

**32.17.21 isSupersetOfSet(theOtherSet as NSCharacterSetMBS) as boolean**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value that indicates whether the receiver is a superset of another given character set. **Notes:** Returns true if the receiver is a superset of theOtherSet, otherwise false. Available in Mac OS X v10.2 and later.

---

**32.17.22 letterCharacterSet as NSCharacterSetMBS**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a character set containing the characters in the categories Letters and Marks. **Example:**

```plaintext
dim n as NSCharacterSetMBS = NSCharacterSetMBS.letterCharacterSet
MsgBox n
```

**Notes:** Informally, this set is the set of all characters used as letters of alphabets and ideographs.
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32.17.23 longCharacterIsMember(theLongChar as Integer) as boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value that indicates whether a given long character is a member of the receiver. **Notes:**

Returns true if theLongChar is in the receiver, otherwise false. This method supports the specification of 32-bit characters. Available in Mac OS X v10.2 and later.

32.17.24 lowercaseLetterCharacterSet as NSCharacterSetMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a character set containing the characters in the category of Lowercase Letters. **Example:**

```
dim n as NSCharacterSetMBS = NSCharacterSetMBS.lowercaseLetterCharacterSet
MsgBox n
```

**Notes:** Informally, this set is the set of all characters used as lowercase letters in alphabets that make case distinctions.

32.17.25 mutableCopy as NSMutableCharacterSetMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a mutable copy of the character set.

32.17.26 newlineCharacterSet as NSCharacterSetMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a character set containing the newline characters. **Example:**

```
dim n as NSCharacterSetMBS = NSCharacterSetMBS.newLineCharacterSet
MsgBox n
```

**Notes:**

A character set containing the newline characters (U+000A, U+000D, U+0085). Available in Mac OS X v10.5 and later.
32.17.27 nonBaseCharacterSet as NSCharacterSetMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a character set containing the characters in the category of Marks.

**Example:**
```vbscript
dim n as NSCharacterSetMBS = NSCharacterSetMBS.nonBaseCharacterSet
MsgBox n
```

**Notes:** This set is also defined as all legal Unicode characters with a non-spacing priority greater than 0. Informally, this set is the set of all characters used as modifiers of base characters.

32.17.28 Operator_Convert as string

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a string containing all characters in this set.

**Example:**
```vbscript
dim r as NSRangeMBS = NSMakeRangeMBS(asc(“a”),26) // all small letters
dim n as NSCharacterSetMBS = NSCharacterSetMBS.characterSetWithRange(r)
MsgBox n
```

**Notes:** This way you can use a character set directly with functions expecting a string like msgbox.

32.17.29 punctuationCharacterSet as NSCharacterSetMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a character set containing the characters in the category of Punctuation.

**Example:**
```vbscript
dim n as NSCharacterSetMBS = NSCharacterSetMBS.punctuationCharacterSet
MsgBox n
```

**Notes:** Informally, this set is the set of all non-whitespace characters used to separate linguistic units in scripts, such as periods, dashes, parentheses, and so on.
32.17.30  rangeOfCharacterFromSet(s as string, options as Integer = 0, searchRange as NSRangeMBS = nil) as NSRangeMBS

MBS MacBase Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Finds and returns the range in the receiver of the first character from a given character set found in a given range with given options. **Notes:**

- `self`: A character set. This value must not be nil.
- `s`: The text to process:
- `options`: A mask specifying search options. The following options may be specified by combining them with bitwise OR operator: `NSAnchoredSearch (8), NSBackwardsSearch (4)`.
- `searchRange`: Optional, the range in which to search. The range must not exceed the bounds of the receiver.

Raises a NSException if search range is invalid.

Returns the range in the receiver of the first character found from set within search range. Returns a range of `{ NSNotFound, 0 }` if none of the characters in aSet are found.

Because pre-composed characters in set can match composed character sequences in the receiver, the length of the returned range can be greater than 1. For example, if you search for "" in the string "strudel", the returned range is `{ 3,2 }`.

**Special Considerations**

This method detects all invalid ranges (including those with negative lengths). For applications linked against OS X v10.6 and later, this error causes an exception; for applications linked against earlier releases, this error causes a warning, which is displayed just once per application execution.

32.17.31  stringByTrimmingCharactersInSet(s as string) as String

MBS MacBase Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a new string made by removing from both ends of the receiver characters contained in a given character set. **Notes:**

Returns a new string made by removing from both ends of the receiver characters contained in set. If the receiver is composed entirely of characters from set, the empty string is returned.

Use whitespaceCharacterSet or whitespaceAndNewlineCharacterSet to remove whitespace around strings.
32.17. **CLASS NSCharacterSetMBS**

### 32.17.32 StringValue as string

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a string containing all characters in this set.  
**Example:**

```vbnet
// get the Symbol font
dim n as NSFontMBS = NSFontMBS.fontWithName("Symbol",10)

// what characters are defined for this font?
dim c as NSCharacterSetMBS = n.coveredCharacterSet

// display a string with all the characters
MsgBox c.StringValue
```

### 32.17.33 symbolCharacterSet as NSCharacterSetMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a character set containing the characters in the category of Symbols.  
**Example:**

```vbnet
dim n as NSCharacterSetMBS = NSCharacterSetMBS.symbolCharacterSet
MsgBox n
```

**Notes:**  
These characters include, for example, the dollar sign ($ ) and the plus (+) sign. Available in Mac OS X v10.3 and later.

### 32.17.34 uppercaseLetterCharacterSet as NSCharacterSetMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a character set containing the characters in the categories of Uppercase Letters and Titlecase Letters.  
**Example:**

```vbnet
dim n as NSCharacterSetMBS = NSCharacterSetMBS.uppercaseLetterCharacterSet
MsgBox n
```

**Notes:** Informally, this set is the set of all characters used as uppercase letters in alphabets that make case distinctions.
32.17.35 whitespaceAndNewlineCharacterSet as NSCharacterSetMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a character set containing only the whitespace characters space (U+0020) and tab (U+0009) and the newline and nextline characters (U+000A U+000D, U+0085).

**Example:**

```vbnet
dim n as NSCharacterSetMBS = NSCharacterSetMBS.whitespaceAndNewlineCharacterSet
MsgBox n
```

32.17.36 whitespaceCharacterSet as NSCharacterSetMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a character set containing only the in-line whitespace characters space (U+0020) and tab (U+0009).

**Example:**

```vbnet
dim n as NSCharacterSetMBS = NSCharacterSetMBS.whitespaceCharacterSet
MsgBox n
```

**Notes:** This set doesn’t contain the newline or carriage return characters.

32.17.37 Properties

32.17.38 Handle as Integer

MBS MacBase Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference.

**Notes:** (Read and Write property)

32.17.39 Constants

32.17.40 NSOpenStepUnicodeReservedBase=& hF400

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** A constant to specify lower bound for a Unicode character range reserved for Apple’s corporate use.

**Notes:** Specifies lower bound for a Unicode character range reserved for Apple’s corporate use (the range is 0xF4000xF8FF).
32.18  class NSCoderMBS

32.18.1  class NSCoderMBS

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The plugin class for NSCoder.

**Example:**

```plaintext
// make archiver
dim a as new NSKeyedArchiverMBS

// add a string
a.encodeString "Hello World", "Greeting"

// finish
a.finishEncoding

// query data
dim m as MemoryBlock = a.archiverData

// start unarchiver
dim u as new NSKeyedUnarchiverMBS(m)

// query and display a value
dim s as string = u.decodeString("Greeting")
MsgBox s
```

**Notes:**

The NSCoder abstract class declares the interface used by concrete subclasses to transfer objects and other Objective-C data items between memory and some other format. This capability provides the basis for archiving (where objects and data items are stored on disk) and distribution (where objects and data items are copied between different processes or threads). The concrete subclasses provided by Foundation for these purposes are NSArchiver, NSUnarchiver, NSKeyedArchiver, NSKeyedUnarchiver, and NSPortCoder. Concrete subclasses of NSCoder are referred to in general as coder classes, and instances of these classes as coder objects (or simply coders). A coder object that can only encode values is referred to as an encoder object, and one that can only decode values as a decoder object.

 NSCoder operates on objects, scalars, C arrays, structures, and strings, and on pointers to these types. It does not handle types whose implementation varies across platforms, such as union, void *, function pointers, and long chains of pointers. A coder object stores object type information along with the data, so an object decoded from a stream of bytes is normally of the same class as the object that was originally encoded into the stream. An object can change its class when encoded, however; this is described in Archives and Serializations Programming Guide.
For details of how to create a subclass of NSCoder, see "Subclassing NSCoder" in Archives and Serializations Programming Guide.

The plugin implements this class because it is needed to encode and decode the window state. This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

32.18.2 Methods

32.18.3 allowsKeyedCoding as boolean

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a Boolean value that indicates whether the receiver supports keyed coding of objects. Notes: The default implementation returns false. Concrete subclasses that support keyed coding, such as NSKeyedArchiver, need to override this method to return true.

32.18.4 Constructor


32.18.5 containsValueForKey(key as string) as boolean

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a Boolean value that indicates whether an encoded value is available for a string.

32.18.6 decodeBool(key as string) as boolean

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Decodes and returns a boolean value that was previously encoded with encodeBool and associated with the string key.

32.18.7 decodeBytes(key as string) as MemoryBlock

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Decodes a buffer of data whose types are unspecified.
32.18.8  decodeCFOBJECTMBS(key as string) as Variant


**Notes:**
This is a special convenience methods to decode CF* classes which are bridged to Cocoa objects. Like CFDictionary, CFURL, CFData, CFString, CFNumber, CFArray and a few others.

32.18.9  decodeDictionary(key as string) as Dictionary

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Decodes a dictionary.

32.18.10  decodeDouble(key as string) as Double

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Decodes and returns a double value that was previously encoded with either encodeFloat or encodeDouble and associated with the string key.

32.18.11  decodeFloat(key as string) as single

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Decodes and returns a float value that was previously encoded with encodeFloat or encodeDouble and associated with the string key.

32.18.12  decodeInt32(key as string) as Int32

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Decodes and returns a 32-bit integer value that was previously encoded with encodeInt, encodeInteger, encodeInt32, or encodeInt64 and associated with the string key.

**Notes:** If the encoded integer does not fit into a 32-bit integer, the method raises an NSRangeException.

32.18.13  decodeInt64(key as string) as Int64

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Decodes and returns a 64-bit integer value that was previously encoded with encodeInt, encodeInteger,
encodeInt32, or encodeInt64 and associated with the string key.

### 32.18.14 decodeNSURLFile(key as string) as folderitem


### 32.18.15 decodeNSURLString(key as string) as String


### 32.18.16 decodePoint(key as string) as CGPointMBS

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Decodes a point object.

### 32.18.17 decodeRect(key as string) as CGRectMBS

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Decodes a rectangle.

### 32.18.18 decodeSize(key as string) as CGSizeMBS

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Decodes a size object.

### 32.18.19 decodeString(key as string) as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Decodes a string.
### 32.18.20 encodeBool(value as boolean, key as string)

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Encodes value and associates it with the string key.

### 32.18.21 encodeBytes(value as MemoryBlock, key as string)

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Encodes a buffer of data whose types are unspecified.

### 32.18.22 encodeCFOBJECTMBS(value as Variant, key as string)

MBS MacBase Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Encodes a CFOBJECT.

**Notes:**
This is a special convenience method to encode CF* classes which are bridged to Cocoa objects. Like CFDictionary, CFURL, CFData, CFString, CFNumber, CFArray and a few others.

### 32.18.23 encodeDictionary(value as Dictionary, key as string)


**Notes:**
Not all objects can be inside the dictionary. Cocoa objects, string, booleans and numbers are okay.

### 32.18.24 encodeDouble(value as Double, key as string)

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Encodes value and associates it with the string key.

### 32.18.25 encodeFloat(value as single, key as string)

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Encodes value and associates it with the string key.
32.18.26  encodeInt32(value as Int32, key as string)

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Encodes the 32-bit integer value and associates it with the string key.

32.18.27  encodeInt64(value as Int64, key as string)

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Encodes the 64-bit integer value and associates it with the string key.

32.18.28  encodeNSURLFile(value as folderitem, key as string)

MBS MacBase Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Encodes a folderitem as NSURL.

32.18.29  encodeNSURLString(value as String, key as string)

MBS MacBase Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Encodes a string with URL as NSURL object.

32.18.30  encodePoint(value as NSPointMBS, key as string)

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Encodes a point object.

32.18.31  encodeRect(value as NSRectMBS, key as string)

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Encodes a rectangle.

32.18.32  encodeSize(value as NSSizeMBS, key as string)

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Encodes a size object.
### 32.18.33 `encodeString(value as string, key as string)`

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Encodes a string.

### 32.18.34 `systemVersion as Integer`

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** During encoding, this method should return the system version currently in effect. **Notes:**

During decoding, this method should return the version that was in effect when the data was encoded.

By default, this method returns the current system version, which is appropriate for encoding but not for decoding. Subclasses that implement decoding must override this method to return the system version of the data being decoded.

### 32.18.35 Properties

#### 32.18.36 Handle as Integer

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal reference for this object. **Notes:** (Read and Write property)
32.19 class NSCursorMBS

32.19.1 class NSCursorMBS

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Instances of the NSCursor class manage the appearance of the cursor.

**Example:**

```vba
Dim im As NSImageMBS
Dim p As Picture
Dim m As Picture
Dim theCursor As NSCursorMBS
Dim test As Boolean

// create a blue ball picture
p = NewPicture(16,16,32)
p.Graphics.ForeColor = & c0000FF
p.Graphics.FillRect 0,0,16,16

m = NewPicture(16,16,32)
m.Graphics.ForeColor = & c000000
m.Graphics.Filloval 0,0,16,16

// Create a new NSImage
im=New NSImageMBS(p,m)

// Create a cursor from the NSImage
theCursor=New NSCursorMBS(im, 10, 10)

Title = Str(theCursor.Handle)

// Make this the active cursor
theCursor.set

// display picture
p.Mask.Graphics.DrawPicture m,0,0
Backdrop = p

// so you see it for a second before RB resets the cursor
DelayMBS 1.0
```

**Notes:**

In Cocoa, you can change the currently displayed cursor based on the position of the mouse over one of your views. You might use this technique to provide visual feedback about what actions the user can take with the mouse. For example, you might display one of the resize cursors whenever the mouse moves over
a portion of your view that acts as a custom resizing handle. To set this up, you associate a cursor object with one or more cursor rectangles in the view.

Cursor rectangles are a specialized type of tracking rectangles, which are used to monitor the mouse location in a view. Views implement cursor rectangles using tracking rectangles but provide methods for setting and refreshing cursor rectangles that are distinct from the generic tracking rectangle interface. For information on how to set up cursor rectangles, see "Handling Tracking-Rectangle and Cursor-Update Events in Views".

### 32.19.2 Methods

#### 32.19.3 `arrowCursor` as `NSCursorMBS`

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the default cursor, the arrow cursor.  
**Example:**

```plaintext
// shows cursor in window
dim c as NSCursorMBS = NSCursorMBS.arrowCursor
dim i as NSImageMBS = c.image
window1.Backdrop=i.CopyPictureWithMask
```

**Notes:** The default cursor, a slanted arrow with its hot spot at the tip. The arrow cursor is the one you’re used to seeing over buttons, scrollers, and many other objects in the window system.

#### 32.19.4 `closedHandCursor` as `NSCursorMBS`

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the closed-hand system cursor.  
**Example:**

```plaintext
// shows cursor in window
dim c as NSCursorMBS = NSCursorMBS.closedHandCursor
dim i as NSImageMBS = c.image
window1.Backdrop=i.CopyPictureWithMask
```
32.19.5  **Constructor(image as NSImageMBS, foregroundColorHint as NSColorMBS, backgroundColorHint as NSColorMBS, HotSpotX as Double, HotSpotY as Double)**

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes the cursor with the specified image and hot spot.
See also:

- 32.19.6 Constructor(image as NSImageMBS, HotSpotX as Double, HotSpotY as Double)

32.19.6  **Constructor(image as NSImageMBS, HotSpotX as Double, HotSpotY as Double)**

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes the cursor with the specified image and hot spot.
See also:

- 32.19.5 Constructor(image as NSImageMBS, foregroundColorHint as NSColorMBS, backgroundColorHint as NSColorMBS, HotSpotX as Double, HotSpotY as Double)

32.19.7  **contextualMenuCursor as NSCursorMBS**

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the contextual menu system cursor.
**Example:**

```cpp
// shows cursor in window
dim c as NSCursorMBS = NSCursorMBS.contextualMenuCursor
dim i as NSImageMBS = c.image
window1.Backdrop=i.CopyPictureWithMask
```

**Notes:** Available in Mac OS X v10.6 and later.

32.19.8  **crosshairCursor as NSCursorMBS**

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the cross-hair system cursor.
**Example:**

```cpp
// shows cursor in window
dim c as NSCursorMBS = NSCursorMBS.crosshairCursor
dim i as NSImageMBS = c.image
```
32.19. **CLASS NSCURSORMBS**

window1.Backdrop=i.CopyPictureWithMask

**Notes:** This cursor is used for situations when precise location is required (where the lines cross is the hot spot).

### 32.19.9 currentCursor as NSCursorMBS

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the application’s current cursor.

**Example:**

```vbnet
// shows cursor in window
dim c as NSCursorMBS = NSCursorMBS.currentCursor
dim i as NSImageMBS = c.image
window1.Backdrop=i.CopyPictureWithMask
```

**Notes:** The top cursor on the application’s cursor stack. This cursor may not be the visible cursor on the screen if a different application is currently active.

### 32.19.10 currentSystemCursor as NSCursorMBS

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the current system cursor.

**Example:**

```vbnet
// shows cursor in window
dim c as NSCursorMBS = NSCursorMBS.currentSystemCursor
dim i as NSImageMBS = c.image
window1.Backdrop=i.CopyPictureWithMask
```

**Notes:**
Returns a cursor whose image and hot spot match those of the currently-displayed cursor on the system. This method returns the current system cursor regardless of which application set the cursor, and whether Cocoa or Carbon APIs were used to set it. This method replaces the now deprecated QDGetCursorData function. Available in Mac OS X v10.6 and later.
32.19.11  disappearingItemCursor as NSCursorMBS

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a cursor indicating that the current operation will result in a disappearing item. **Example:**

```vbnet
// shows cursor in window
dim c as NSCursorMBS = NSCursorMBS.disappearingItemCursor
dim i as NSImageMBS = c.image
window1.Backdrop=i.CopyPictureWithMask
```

**Notes:**
The system cursor that indicates that the current operation will result in a disappearing item (for example, when dragging an item from the dock or a toolbar).

Available in Mac OS X v10.3 and later.

32.19.12  dragCopyCursor as NSCursorMBS

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a cursor indicating that the current operation will result in a copy action. **Example:**

```vbnet
// shows cursor in window
dim c as NSCursorMBS = NSCursorMBS.dragCopyCursor
dim i as NSImageMBS = c.image
window1.Backdrop=i.CopyPictureWithMask
```

**Notes:** Available in Mac OS X v10.6 and later.

32.19.13  dragLinkCursor as NSCursorMBS

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a cursor indicating that the current operation will result in a link action. **Example:**

```vbnet
// shows cursor in window
dim c as NSCursorMBS = NSCursorMBS.dragLinkCursor
dim i as NSImageMBS = c.image
window1.Backdrop=i.CopyPictureWithMask
```
Notes: Available in Mac OS X v10.6 and later.

32.19.14 hide

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Makes the current cursor invisible.

**Notes:**
If another cursor becomes current, that cursor will be invisible, too. It will remain invisible until you invoke the unhide method.

hide overrides setHiddenUntilMouseMoves.

32.19.15 hotSpotX as Double

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the position of the cursor’s hot spot.

**Example:**

```csharp
// shows cursor in window
dim c as NSCursorMBS = NSCursorMBS.arrowCursor

MsgBox str(c.hotSpotX) + "/" + str(c.hotSpotY)
```

**Notes:**
The point describing the position of the hot spot, specified according to the cursor’s flipped coordinate system.

For a more complete explanation, see the class description.

Note that an NSCursor object is immutable: you cannot change its hot spot after it’s created. Instead, use the Constructor to create a new cursor with the new settings.

32.19.16 hotSpotY as Double

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the position of the cursor’s hot spot.
Example:

```vbs
// shows cursor in window
dim c as NSCursorMBS = NSCursorMBS.arrowCursor
MsgBox str(c.hotSpotX)+"/"+str(c.hotSpotY)
```

Notes:
The point describing the position of the hot spot, specified according to the cursor’s flipped coordinate system.

For a more complete explanation, see the class description.

Note that an NSCursor object is immutable: you cannot change its hot spot after it’s created. Instead, use the Constructor to create a new cursor with the new settings.

### 32.19.17 IBeamCursor as NSCursorMBS

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a cursor that looks like a capital I with a tiny crossbeam at its middle.

**Example:**

```vbs
// shows cursor in window
dim c as NSCursorMBS = NSCursorMBS.IBeamCursor
dim i as NSImageMBS = c.image
window1.Backdrop=i.CopyPictureWithMask
```

**Notes:** The I-beam cursor. This is the cursor that you’re used to seeing over editable or selectable text. The I-beam cursor’s default hot spot is where the crossbeam intersects the I.

### 32.19.18 IBeamCursorForVerticalLayout as NSCursorMBS

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a cursor that looks like a capital I with a tiny crossbeam at its middle.

**Example:**

```vbs
// shows cursor in window
dim c as NSCursorMBS = NSCursorMBS.IBeamCursorForVerticalLayout
dim i as NSImageMBS = c.image
window1.Backdrop=i.CopyPictureWithMask
```
Notes: Available in Mac OS X 10.7.

### 32.19.19 image as NSImageMBS

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver’s image.

**Example:**
```plaintext
// shows cursor in window
dim c as NSCursorMBS = NSCursorMBS.arrowCursor
dim i as NSImageMBS = c.image
window1.Backdrop=i.CopyPictureWithMask
```

Notes: The cursor image or nil if none exists

Note that an NSCursor object is immutable: you cannot change its image after it’s created. Instead, use the constructor to create a new cursor with the new settings.

### 32.19.20 isSetOnMouseEntered as boolean

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value indicating whether the receiver becomes current on receiving a mouseEntered message.

**Notes:**

True if the receiver will become current when it receives a mouseEntered message; otherwise, false.

To receive such a message, the receiver must first be assigned a cursor rectangle. This assignment can be made using the NSView method addCursorRect. For a more complete explanation, see the class description.

### 32.19.21 isSetOnMouseExited as boolean

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value indicating whether the receiver becomes current when it receives a mouse-Exited message.

**Notes:**
True if the receiver becomes current when it receives a mouseExited: message; otherwise, false.

To receive such a message, the receiver must first be assigned a cursor rectangle. This assignment can be made using the NSView method addCursorRect. For a more complete explanation, see the class description.

### 32.19.22 mouseEntered(e as NSEventMBS)

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Automatically sent to the receiver when the cursor enters a cursor rectangle owned by the receiver. **Notes:**

If used after setOnMouseEntered has been called with an argument of true, mouseEntered can make the receiver the current cursor.

In your programs, you won’t invoke mouseEntered explicitly. It’s only included in the class interface so you can override it.

For a more complete explanation, see "Handling Tracking-Rectangle and Cursor-Update Events in Views" and the NSView method addTrackingRect.

### 32.19.23 mouseExited(e as NSEventMBS)

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Automatically sent to the receiver when the cursor exits a cursor rectangle owned by the receiver. **Notes:**

Like mouseEntered, this message is part of the class interface only so you can override it.

For a more complete explanation, see "Handling Tracking-Rectangle and Cursor-Update Events in Views" and the NSView method addTrackingRect.

### 32.19.24 openHandCursor as NSCursorMBS

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the open-hand system cursor. **Example:**

```cpp
// shows cursor in window
dim c as NSCursorMBS = NSCursorMBS.openHandCursor
dim i as NSImageMBS = c.image
window1.Backdrop=i.CopyPictureWithMask
```
Notes: Available in Mac OS X v10.3 and later.

32.19.25 operationNotAllowedCursor as NSCursorMBS

Notes: This cursor indicates that the operation that is being attempted, perhaps dragging to an item that can't accept the drag type, is being denied.
Available in Mac OS X v10.6 and later.

32.19.26 pointingHandCursor as NSCursorMBS

Example:
```javascript
// shows cursor in window
dim c as NSCursorMBS = NSCursorMBS.pointingHandCursor
dim i as NSImageMBS = c.image
window1.Backdrop=i.CopyPictureWithMask
```
Notes: The pointing-hand cursor. The tip of the pointing finger is the hot spot.

32.19.27 pop

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Pops the current cursor off the top of the stack.
Notes: The new object on the top of the stack becomes the current cursor. If the current cursor is the only cursor on the stack, this method does nothing.
See also:
- 32.19.28 pop
32.19.28 pop

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sends a pop message to the receiver's class.

See also:
- 32.19.27 pop

32.19.29 push

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Puts the receiver on top of the cursor stack and makes it the current cursor.

32.19.30 resizeDownCursor as NSCursorMBS

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the resize-down system cursor.

**Example:**

```plaintext
// shows cursor in window
dim c as NSCursorMBS = NSCursorMBS.resizeDownCursor
dim i as NSImageMBS = c.image
window1Backdrop = i.CopyPictureWithMask
```

**Notes:**

The resize-down cursor. This cursor is used when moving or resizing an object to indicate that the user can move only in the indicated direction.

Available in Mac OS X v10.3 and later.

32.19.31 resizeLeftCursor as NSCursorMBS

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the resize-left system cursor.

**Example:**

```plaintext
// shows cursor in window
dim c as NSCursorMBS = NSCursorMBS.resizeLeftCursor
dim i as NSImageMBS = c.image
window1Backdrop = i.CopyPictureWithMask
```
Notes:
The resize-left cursor. This cursor is used when moving or resizing an object to indicate that the user can move only in the indicated direction.

Available in Mac OS X v10.3 and later.

32.19.32  resizeLeftRightCursor as NSCursorMBS

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the resize-left-and-right system cursor.

**Example:**

```vbnet
// shows cursor in window
dim c as NSCursorMBS = NSCursorMBS.resizeLeftRightCursor
dim i as NSImageMBS = c.image
window1.Backdrop=i.CopyPictureWithMask
```

Notes:
The resize-left-and-right cursor. This cursor is used when moving or resizing an object and the object can be moved left or right.

Available in Mac OS X v10.3 and later.

32.19.33  resizeRightCursor as NSCursorMBS

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the resize-right system cursor.

**Example:**

```vbnet
// shows cursor in window
dim c as NSCursorMBS = NSCursorMBS.resizeRightCursor
dim i as NSImageMBS = c.image
window1.Backdrop=i.CopyPictureWithMask
```

Notes:
The resize-right cursor. This cursor is used when moving or resizing an object to indicate that the user can
move only in the indicated direction.

Available in Mac OS X v10.3 and later.

### 32.19.34 resizeUpCursor as NSCursorMBS

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the resize-up system cursor.  
**Example:**

```plaintext
// shows cursor in window
dim c as NSCursorMBS = NSCursorMBS.resizeUpCursor
dim i as NSImageMBS = c.image
window1.Backdrop=i.CopyPictureWithMask
```

**Notes:**
The resize-up cursor. This cursor is used when moving or resizing an object to indicate that the user can move only in the indicated direction.

Available in Mac OS X v10.3 and later.

### 32.19.35 resizeUpDownCursor as NSCursorMBS

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the resize-up-and-down system cursor.  
**Example:**

```plaintext
// shows cursor in window
dim c as NSCursorMBS = NSCursorMBS.resizeUpDownCursor
dim i as NSImageMBS = c.image
window1.Backdrop=i.CopyPictureWithMask
```

**Notes:**
The resize-up-and-down cursor. This cursor is used when moving or resizing an object and the object can be moved up or down.

Available in Mac OS X v10.3 and later.
32.19.36  ringCursorWithDiameter(diameter as Double) as NSCursorMBS

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creates a ring cursor with the given size.
Example:

// shows cursor in window
dim c as NSCursorMBS = NSCursorMBS.ringCursorWithDiameter(20)
dim i as NSImageMBS = c.image
window1.Backdrop=i.CopyPictureWithMask

32.19.37  set

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Makes the receiver the current cursor.
Notes: If your application is not the front application, the system will ignore this set message!

32.19.38  setHiddenUntilMouseMoves(value as boolean)

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Sets whether the cursor is hidden until the mouse moves.
Notes:
value: True to hide the cursor until one of the following occurs:
The mouse moves.
You invoke the method again, with flag set to false.

Do not try to counter this method by invoking unhide. The results are undefined.

32.19.39  setOnMouseEntered(flag as boolean)

Notes:
True if the receiver accepts future mouseEntered event messages; otherwise it ignores them.

Accepting mouseEntered event messages allows the cursor to be made the current cursor when the cursor enters a view’s cursor rectangle.
32.19.40 setOnMouseExited(flag as boolean)

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 
**Function:** Sets whether the receiver accepts mouseExited events.

**Notes:**
flag: True if the receiver accepts future mouseExited: event messages; otherwise it ignores them.

Accepting mouseExited event messages allows the cursor to be made the current cursor when the cursor exits a view’s cursor rectangle.

32.19.41 unhide

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 
**Function:** Negates an earlier call to hide by showing the current cursor.

32.19.42 Properties

32.19.43 Handle as Integer

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 
**Function:** The internal used NSCursor reference.

**Notes:** (Read and Write property)
32.20 class NSDateComponentsMBS

32.20.1 class NSDateComponentsMBS

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** NSDateComponents encapsulates the components of a date in an extendable, object-oriented manner. **Notes:** It is used to specify a date by providing the temporal components that make up a date and time: hour, minutes, seconds, day, month, year, and so on. It can also be used to specify a duration of time, for example, 5 hours and 16 minutes. An NSDateComponents object is not required to define all the component fields. When a new instance of NSDateComponents is created the date components are set to NSUndefinedDateComponent.

32.20.2 Methods

32.20.3 Constructor

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates new date components object.

32.20.4 copy as NSDateComponentsMBS

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a copy of the date component object.

32.20.5 date as date

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The date. **Notes:** Available in Mac OS X v10.7 and later.

32.20.6 description as string

32.20.7  NSUndefinedDateComponent as Integer

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This constant specifies that an NSDateComponents component is undefined.

32.20.8  Print

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Writes the date components to debug output.  
**Notes:** This may help for debugging and you see output in console app.

32.20.9  Properties

32.20.10 Handle as Integer

**Notes:** (Read and Write property)

32.20.11 calendar as NSCalendarMBS

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The calendar.  
**Notes:** (Read and Write computed property)

32.20.12 day as Integer

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of day units.  
**Notes:** (Read and Write computed property)

32.20.13 era as Integer

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of era units.  
**Notes:** (Read and Write computed property)
32.20.14  hour as Integer

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of hour units.  
**Notes:** (Read and Write computed property)

32.20.15  isLeapMonth as Boolean

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether it is leap month.  
**Notes:**  
Available on Mac OS X 10.8.  
(Read and Write computed property)

32.20.16  minute as Integer

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of minute units.  
**Notes:** (Read and Write computed property)

32.20.17  month as Integer

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of month units.  
**Notes:** (Read and Write computed property)

32.20.18  quarter as Integer

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of quarters.  
**Notes:** (Read and Write computed property)

32.20.19  second as Integer

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of second units.
32.20.20  timeZone as NSTimeZoneMBS

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The time zone.  
**Notes:** (Read and Write computed property)

32.20.21  week as Integer

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of week units.  
**Notes:** (Read and Write computed property)

32.20.22  weekday as Integer

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of weekday units.  
**Notes:**  
Weekday units are the numbers 1 through n, where n is the number of days in the week. For example, in the Gregorian calendar, n is 7 and Sunday is represented by 1.  
(Read and Write computed property)

32.20.23  weekdayOrdinal as Integer

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The ordinal number of weekday units.  
**Notes:**  
Weekday ordinal units represent the position of the weekday within the next larger calendar unit, such as the month. For example, 2 is the weekday ordinal unit for the second Friday of the month.  
(Read and Write computed property)

32.20.24  weekOfMonth as Integer

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The week of the month.
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**Notes:** (Read and Write computed property)

---

### 32.20.25 **weekOfYear as Integer**

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The week of the year.  
**Notes:** (Read and Write computed property)

---

### 32.20.26 **year as Integer**

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of year unit.  
**Notes:** (Read and Write computed property)

---

### 32.20.27 **yearForWeekOfYear as Integer**

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The year for the week of the year.  
**Notes:** (Read and Write computed property)
32.21 class NSDirectoryEnumeratorMBS

32.21.1 class NSDirectoryEnumeratorMBS

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An NSDirectoryEnumerator object enumerates the contents of a directory, returning the pathnames of all files and directories contained within that directory.

**Example:**

```vbs
dim d as new NSDirectoryEnumeratorMBS(SpecialFolder.Desktop)
dim f as string = d.nextObject
while len(f)>0
List.AddRow f
f=d.nextObject
wend
```

**Notes:**

These pathnames are relative to the directory.

An enumeration is recursive, including the files of all subdirectories, and crosses device boundaries. An enumeration does not resolve symbolic links, or attempt to traverse symbolic links that point to directories. Subclass of theNSEnumeratorMBS class.

32.21.2 Methods

32.21.3 Constructor(folder as folderitem)

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an NSDirectoryEnumerator object that enumerates the contents of the directory at a given path.

**Example:**

```vbs
dim d as new NSDirectoryEnumeratorMBS(SpecialFolder.Desktop)
MsgBox d.nextObject // shows "\DS_Store% or some other file name
```

**Notes:**

An NSDirectoryEnumerator object that enumerates the contents of the directory at path. If path is a filename, the method returns an enumerator object that enumerates no filesthe first call to
nextObject will return nil.

Because the enumeration is deep that is, it lists the contents of all subdirectories this enumerator object is useful for performing actions that involve large file-system subtrees. This method does not resolve symbolic links encountered in the traversal process, nor does it recurse through them if they point to a directory. See also:

- 32.21.4 Constructor(path as string)

### 32.21.4 Constructor(path as string)

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creates and returns an NSDirectoryEnumerator object that enumerates the contents of the directory at a given path.

**Example:**

```vbscript
dim d as new NSDirectoryEnumeratorMBS("/Applications")
dim f as FolderItem = d.nextFile

while f<>Nil
List.AddRow f.Name

// if this is a folder, we skip the sub folders
d.skipDescendents

f=d.nextFile
wend
```

**Notes:**

An NSDirectoryEnumerator object that enumerates the contents of the directory at path.

If path is a filename, the method returns an enumerator object that enumerates no files the first call to nextObject will return nil.

Because the enumeration is deep that is, it lists the contents of all subdirectories this enumerator object is useful for performing actions that involve large file-system subtrees. This method does not resolve symbolic links encountered in the traversal process, nor does it recurse through them if they point to a directory. See also:

- 32.21.3 Constructor(folder as folderitem)
32.21.5 Destructor

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The destructor for this class.

32.21.6 directoryAttributes as dictionary

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an Dictionary object that contains the attributes of the directory at which enumeration started.

32.21.7 fileAttributes as dictionary

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an object that contains the attributes of the most recently returned file or subdirectory (as referenced by the pathname).

**Example:**

```vba
dim d as new NSDirectoryEnumeratorMBS(SpecialFolder.Desktop)
dim f as FolderItem = d.nextFile

while f<>Nil
    List.AddRow f.Name
    dim di as Dictionary = d.fileAttributes
    dim size as int64 = di.Value(d.NSFileSize)
    List.AddRow f.Name+” (”+str(size)+” Bytes)”

    f=d.nextFile
wend
```

32.21.8 level as Integer

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the number of levels deep the current object is in the directory hierarchy being enumerated.

**Example:**

```vba
dim d as new NSDirectoryEnumeratorMBS(SpecialFolder.Desktop)
dim f as FolderItem = d.nextFile
```
while f<>Nil
List.AddRow f.Name+” ”+str(d.level)

f=d.nextFile
wend

Notes: Available in Mac OS X v10.6 and later.

32.21.9 nextFile as folderitem

Example:

dim d as new NSDirectoryEnumeratorMBS(SpecialFolder.Desktop)
dim f as string = d.nextObject

while len(f)>0
List.AddRow f

f=d.nextObject
wend

Notes:
The next folderitem from the collection being enumerated, or nil when all objects have been enumerated.

Same as nextObject, but returns a folderitem.

32.21.10 NSFileAppendOnly as string

Notes: The key in a file attribute dictionary whose value indicates whether the file is read-only.

32.21.11 NSFileBusy as string

Notes: The key in a file attribute dictionary whose value indicates whether the file is busy.

32.21.12 NSFileCreationDate as string

Notes: The key in a file attribute dictionary whose value indicates the file’s creation date.

32.21.13 NSFileDeviceIdentifier as string

Notes: The key in a file attribute dictionary whose value indicates the identifier for the device on which the file resides.

32.21.14 NSFileExtensionHidden as string

Notes: The key in a file attribute dictionary whose value indicates whether the file’s extension is hidden.

32.21.15 NSFileGroupOwnerAccountID as string

Notes: The key in a file attribute dictionary whose value indicates the file’s group ID.

32.21.16 NSFileGroupOwnerAccountName as string

Notes: The key in a file attribute dictionary whose value indicates the group name of the file’s owner.
32.21.17  **NSFileHFSCreatorCode as string**

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the attributes dictionaries.  
**Notes:** The key in a file attribute dictionary whose value indicates the file’s HFS creator code.

32.21.18  **NSFileHFSTypeCode as string**

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the attributes dictionaries.  
**Notes:** The key in a file attribute dictionary whose value indicates the file’s HFS type code.

32.21.19  **NSFileImmutable as string**

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the attributes dictionaries.  
**Notes:** The key in a file attribute dictionary whose value indicates whether the file is mutable.

32.21.20  **NSFileModificationDate as string**

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the attributes dictionaries.  
**Notes:** The key in a file attribute dictionary whose value indicates the file’s last modified date.

32.21.21  **NSFileOwnerAccountID as string**

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the attributes dictionaries.  
**Notes:** The key in a file attribute dictionary whose value indicates the file’s owner’s account ID.

32.21.22  **NSFileOwnerAccountName as string**

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the attributes dictionaries.  
**Notes:** The key in a file attribute dictionary whose value indicates the name of the file’s owner.
### 32.21.23 NSFilePosixPermissions as string

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the attributes dictionaries. **Notes:** The key in a file attribute dictionary whose value indicates the file's Posix permissions.

### 32.21.24 NSFileReferenceCount as string

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the attributes dictionaries. **Notes:** The key in a file attribute dictionary whose value indicates the file's reference count.

### 32.21.25 NSFileSize as string

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the attributes dictionaries. **Example:**

```vba
dim d as new NSDirectoryEnumeratorMBS(SpecialFolder.Desktop)
dim f as FolderItem = d.nextFile

while f<>Nil
List.AddRow f.Name

dim di as Dictionary = d.fileAttributes
dim size as int64 = di.Value(d.NSFileSize)
List.AddRow f.Name+" ("+str(size)+" Bytes)"

f=d.nextFile
wend
```

**Notes:** The key in a file attribute dictionary whose value indicates the file's size in bytes.

### 32.21.26 NSFileSystemFileNumber as string

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the attributes dictionaries. **Notes:** The key in a file attribute dictionary whose value indicates the file's filesystem file number.
32.21.27 NSFileSystemFreeNodes as string

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the attributes dictionaries.  
**Notes:** The key in a file system attribute dictionary whose value indicates the number of free nodes in the file system.

32.21.28 NSFileSystemFreeSize as string

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the attributes dictionaries.  
**Notes:** The key in a file system attribute dictionary whose value indicates the amount of free space on the file system.

32.21.29 NSFileSystemNodes as string

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the attributes dictionaries.  
**Notes:** The key in a file system attribute dictionary whose value indicates the number of free nodes in the file system.

32.21.30 NSFileSystemNumber as string

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the attributes dictionaries.  
**Notes:** The key in a file system attribute dictionary whose value indicates the filesystem number of the file system.

32.21.31 NSFileSystemSize as string

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the attributes dictionaries.  
**Notes:** The key in a file system attribute dictionary whose value indicates the size of the file system.

32.21.32 NSFileType as string

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the attributes dictionaries.
Notes: The key in a file attribute dictionary whose value indicates the file’s type.

32.21.33 **NSFileTypeBlockSpecial as string**

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the file type property.
**Notes:** Block special file

32.21.34 **NSFileTypeCharacterSpecial as string**

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the file type property.
**Notes:** Character special file

32.21.35 **NSFileTypeDirectory as string**

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the file type property.
**Notes:** Directory

32.21.36 **NSFileTypeRegular as string**

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the file type property.
**Notes:** Regular file

32.21.37 **NSFileTypeSocket as string**

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the file type property.
**Notes:** Socket

32.21.38 **NSFileTypeSymbolicLink as string**

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the file type property.
32.21.39 NSFileTypeUnknown as string

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the file type property.
**Notes:** Unknown

32.21.40 Path as string

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The path used in the constructor.

32.21.41 skipDescendents

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Causes the receiver to skip recursion into the most recently obtained subdirectory.
32.22 class NSDockTileMBS

32.22.1 class NSDockTileMBS


**Function:** The cocoa class to customize the dock tile.

**Notes:**

The NSDockTile class lets you customize the visual representation for your application’s miniaturized windows and application icon as they appear in the Dock. You do not create Dock tile objects explicitly in your application. Instead, you retrieve the Dock tile for an existing window or for the application by calling that object’s dockTile method.

Typically, you do not subclass the NSDockTile class. Instead, you use the methods of the class to make the following customizations:

- Badge the tile with a custom string.
- Remove or show the application icon badge.
- Draw the tile content yourself.

If you decide to draw the tile content yourself, you must provide a custom content view to handle the drawing.

**Application Dock Tiles**

An application Dock tile defaults to display the application’s applicationIconImage.

The application Dock tile never shows a smaller application icon badge.

Whether using the default or custom view, the application Dock tile may be badged with a short custom string.

**Window Dock Tiles**

A window Dock tile defaults to display a miniaturized version of the windows contents with a badge derived from the application Dock icon, including any customized application Dock icon. The default window Dock tile image may not be badged with a custom string.

A window Dock tile can use a custom view to draw the Dock icon. If a custom view is used, no application badge will be added, but the text label will be overlaid on top of the icon.
Available in Mac OS X v10.5 and later.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

### 32.22.2 Methods

### 32.22.3 Constructor

**Function:** The private constructor.

### 32.22.4 display

**Function:** Redraws the dock tile’s content.
**Notes:**
If a custom content view is provided, Cocoa calls the drawRect method of that view (and its subviews) to draw the tile's content.

You can call this method to force the redrawing of the dock tile contents. You might do this if the contents of the underlying application or window change in a way that would require a refreshing of the tile. Some types of system activity, such as resizing the dock, may trigger automatic redrars of the tile. In most cases, however, your application is responsible for triggering redrars.

Cocoa does not automatically redraw the contents of your dock tile. Instead, your application must explicitly send display messages to the dock tile object whenever the contents of your view change and need to be redrawn.

### 32.22.5 owner as Variant

**Function:** Returns the object represented by the dock tile.
**Example:**

```vba
dim d as NSDockTileMBS = NSApplicationMBS.sharedApplication.dockTile
if d<>nil then
dim t as Introspection.TypeInfo = Introspection.GetType(d.owner)
MsgBox t.FullName // shows NSApplicationMBS
end if
```
Notes: The object represented by the dock tile. This is either the NSApplicationMBS object or one of your application’s NSWindowMBS objects.

32.22.6 size as NSSizeMBS

Function: Returns the size of the tile.
Example:

dim d as NSDockTileMBS = NSApplicationMBS.sharedApplication.dockTile

if d<>nil then
    MsgBox str(d.size.Width)+” x ”+str(d.size.Height)
    // 128 x 128 in Mac OS X 10.5 and 10.6
end if

Notes: The size returned by this method corresponds to the size of the backing store in the dock, which may be bigger than the actual tile displayed on the screen.

32.22.7 Properties

32.22.8 Handle as Integer

Function: The internal reference to the docktile object.
Notes: (Read and Write property)

32.22.9 badgeLabel as string

Function: The tile’s current badge label.
Example:

dim d as NSDockTileMBS = NSApplicationMBS.sharedApplication.dockTile

if d<>nil then
    // this works in Carbon and Cocoa applications :-)
d.badgeLabel = "Hello"
d.showsApplicationBadge = true
end if

Notes:
The localized string to be displayed in the tile’s badging area. This string may be empty.
(Read and Write computed property)

32.22.10 contentView as NSViewMBS

Function: The view used to draw the dock tile contents.
Notes:
The view you specify should be height and width resizable.

Cocoa does not automatically redraw the contents of your dock tile. Instead, your application must explicitly
send display messages to the dock tile object whenever the contents of your view change and need to be
redrawn. Your dock tile view is responsible for drawing the entire contents of the dock tile. Your view does
not need to draw the application or custom string badges.
(Read and Write computed property)

32.22.11 showsApplicationBadge as boolean

Function: Whether the tile should be badged with the application’s icon.
Example:

dim d as NSDockTileMBS = NSApplicationMBS.sharedApplication.dockTile

if d<>nil then
    // this works in Carbon and Cocoa applications :-) 

d.badgeLabel = "Hello"
d.showsApplicationBadge = true
end if

Notes:
Miniaturized windows include the application badge by default to convey the associated application to the
user. In Mac OS X v10.5 and later, application tiles do not support the application badge. A miniaturized
window with a custom view does not draw the application badge.

The application icon is positioned automatically in the tile by the NSDockTile object. (Read and Write computed property)
32.23.  class NSEnumeratorMBS

32.23.1  class NSEnumeratorMBS

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: NSEnumerator is an abstract class, instances of whose subclasses enumerate collections of other objects, such as arrays and dictionaries.

Example:

```vbs
dim d as new NSDirectoryEnumeratorMBS(SpecialFolder.Desktop)
MsgBox d.nextObject
```

Notes:
You send nextObject repeatedly to a newly created NSEnumerator object to have it return the next object in the original collection. When the collection is exhausted, nil is returned. You cannot "reset" an enumerator after it has exhausted its collection. To enumerate a collection again, you need a new enumerator.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

32.23.2  Methods

32.23.3  allObjects as Variant()

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns an array of objects the receiver has yet to enumerate.

Example:

```vbs
dim d as new NSDirectoryEnumeratorMBS(SpecialFolder.Desktop)

dim a(-1) as Variant = d.allObjects
dim lines(-1) as string

for each v as Variant in a
lines.Append v
next

MsgBox Join(lines, EndOfLine) // shows all stuff on desktop
```

Notes:
Put another way, the array returned by this method does not contain objects that have already been enumerated with previous nextObject messages.
Invoking this method exhausts the enumerator’s collection so that subsequent invocations of nextObject
32.23.4 Constructor


32.23.5 nextObject as Variant

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the next object from the collection being enumerated.

**Example:**

```
Dim d As New NSDirectoryEnumeratorMBS(SpecialFolder.Desktop)
MsgBox d.nextObject  // shows "DS_Store" or some other file name
```

**Notes:** The next object from the collection being enumerated, or nil when all objects have been enumerated.

32.23.6 Properties

32.23.7 Handle as Integer

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal reference to the NSEnumerator object.

**Notes:** (Read and Write property)
32.24. class NSErrorMBS

32.24.1. class NSErrorMBS

MBS Main Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for error information in the Cocoa World.

32.24.2. Methods

32.24.3. Constructor(Handle as Integer)

MBS Main Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor for a handle value of NSError.

**Notes:**
Retains reference number and destructor later releases it.
Handle must be a NSError reference number and should not be zero.

32.24.4. Properties

32.24.5. code as Integer

MBS Main Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This is a domain specific error code.

**Notes:** (Read only property)

32.24.6. description as string

MBS Main Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the description for this object.

**Notes:** (Read only property)

32.24.7. domain as string

MBS Main Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The error domain.

**Notes:**
Domains are described by names that are arbitrary strings used to differentiate groups of codes; for custom domain using reverse-DNS naming will help avoid conflicts.  
(Read only property)

### 32.24.8 Handle as Integer

**Function:** The internal used handle for the NSError reference.  
**Notes:** (Read and Write property)

### 32.24.9 localizedDescription as string

**Function:** The localized error description.  
**Example:**

```vba
dim f as FolderItem=SpecialFolder.Desktop.Child("test.mov")
dim q as new QTKitMovieMBS(f)
dim e as NSErrorMBS

f=SpecialFolder.Desktop.Child("test2.aif")
MsgBox str(q.Handle)

if q.exportToFile(f,"AIFF","soun","") then
    MsgBox "ok"
else
    MsgBox "Fail"
end if

if e<>Nil then
    MsgBox e.localizedDescription
end if
```

**Notes:**  
The primary user-presentable message for the error. This method can be overridden by subclasses wishing to present better error strings. By default this looks for NSLocalizedDescriptionKey in the user info. If not present, it manufactures a string from the domain and code. Also, for some of the built-in domains it knows about, it might try to fetch an error string by calling a domain-specific function. In the absence of a custom error string, the manufactured one might not be suitable for presentation to the user, but can be used in logs or debugging.
32.24.10  `localizedFailureReason as string`

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a string containing the localized explanation of the reason for the error.

**Notes:**
A string containing the localized explanation of the reason for the error. By default this method returns the object in the user info dictionary for the key `NSLocalizedFailureReasonErrorKey`.
This method can be overridden by subclasses to present customized error strings.
Available in Mac OS X v10.4 and later.
(Read only property)

32.24.11  `localizedRecoverySuggestion as string`

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a string containing the localized recovery suggestion for the error.

**Notes:**
Returns a string containing the localized recovery suggestion for the error. By default this method returns the object in the user info dictionary for the key `NSLocalizedRecoverySuggestionErrorKey`. If the user info dictionary doesn’t contain a value for `NSLocalizedRecoverySuggestionErrorKey`, nil is returned.

The returned string is suitable for displaying as the secondary message in an alert panel.

This method can be overridden by subclasses to present customized recovery suggestion strings.

Available in Mac OS X v10.4 and later.
(Read only property)

32.24.12  `userInfo as dictionary`

MBS Main Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver’s user info dictionary.

**Notes:**
The receiver’s user info dictionary, or nil if the user info dictionary has not been set.
(Read only property)
32.25 class NSEventMBS

32.25.1 class NSEventMBS

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Cocoa class for an user event. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

32.25.2 Methods

32.25.3 Constructor

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.

32.25.4 doubleClickInterval as Double

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the time, in seconds, in which a second mouse click must occur in order to be considered a double click. **Notes:** This is a system setting, overriding this method will have no effect. Available in Mac OS X v10.6 and later.

32.25.5 eventWithCGEvent(CGEventRef as Integer) as NSEventMBS

MBS MacBase Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an event object that is based on a Core Graphics type of event. **Notes:** The returned object retains the CGEventRef object (cgEvent) until it (the Xojo and Objective-C object) is freed then releases the CGEventRef object. If no Cocoa event corresponds to the CGEventRef object, this method returns nil.

32.25.6 isMouseCoalescingEnabled as boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates whether mouse-movement event coalescing is enabled.
32.25. CLASS NSEVENTMBS

Notes: Available in Mac OS X v10.5 and later.

32.25.7 keyRepeatDelay as Double

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns the length of time a key must be held down in order to generate the first key repeat event.
Notes:
This is a system setting, overriding this method will have no effect.
Available in Mac OS X v10.6 and later.

32.25.8 keyRepeatInterval as Double

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns the length between subsequent key repeat events being posted.
Notes:
This is a system setting, overriding this method will have no effect.
Available in Mac OS X v10.6 and later.

32.25.9 modifierFlagsGlobal as UInt32

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns the currently pressed modifier flags.
Notes:
This returns the state of devices combined with synthesized events at the moment, independent of which
events have been delivered via the event stream.
Available in Mac OS X v10.6 and later.

32.25.10 mouseLocation as NSPointMBS

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Reports the current mouse position in screen coordinates.
Notes:
This method is similar to the NSWindow method mouseLocationOutsideOfEventStream. It returns the
location regardless of the current event or pending events. The difference between these methods is that
mouseLocationOutsideOfEventStream returns a point in the receiving window’s coordinates and mouseLo-
cation returns the same information in screen coordinates.
32.25.11 pressedMouseButtons as UInt32

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the indices of the currently depressed mouse buttons.

**Notes:**
The indices of the currently depressed mouse buttons.

A return value of \(1 << 0\) corresponds to left the mouse, \(1 << 1\) corresponds to the right mouse, \(1 << n\), \(n >= 2\) to other mouse buttons.

This returns the state of devices combined with synthesized events at the moment, independent of which events have been delivered via the event stream, so this method is not suitable for tracking.

Available in Mac OS X v10.6 and later.

32.25.12 setMouseCoalescingEnabled(Value as boolean)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether mouse-movement event coalescing is enabled.

**Notes:**
This method affects mouse-moved, mouse-dragged, and tablet events. Mouse-movement event coalescing is enabled by default.

Available in Mac OS X v10.5 and later.

32.25.13 Properties

32.25.14 absoluteX as Integer

MBS MacBase Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Reports the absolute x coordinate of a pointing device on its tablet at full tablet resolution.

**Notes:**
For the coordinate to be valid, the receiver should represent an event generated by a tablet pointing device (otherwise 0 is returned). This method is valid only for mouse events with a subtype of NSTabletPointEventSubtype and for events of type NSTabletPoint. Use this value if you want to scale from tablet
location to screen location yourself; otherwise use the class method mouseLocation or the instance method locationInWindow.

Available in Mac OS X v10.4 and later.
(Read only property)

### 32.25.15 absoluteY as Integer

MBS MacBase Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Reports the absolute y coordinate of a pointing device on its tablet at full tablet resolution.

**Notes:**
For the coordinate to be valid, the receiver should represent an event generated by a tablet pointing device (otherwise 0 is returned). This method is valid only for mouse events with a subtype of NSTabletPointEventSubtype and for events of type NSTabletPoint. Use this value if you want to scale from tablet location to screen location yourself; otherwise use the class method mouseLocation or the instance method locationInWindow.

Available in Mac OS X v10.4 and later.
(Read only property)

### 32.25.16 absoluteZ as Integer

MBS MacBase Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Reports the absolute z coordinate of pointing device on its tablet at full tablet resolution.

**Notes:**
For the coordinate to be valid, the receiver should represent an event generated by a tablet pointing device (otherwise 0 is returned). The z coordinate does not represent pressure. It registers the depth coordinate returned by some tablet devices with wheels; if the device is something other than these, 0 is returned. This method is valid only for mouse events with a subtype of NSTabletPointEventSubtype and for events of type NSTabletPoint.

Available in Mac OS X v10.4 and later.
(Read only property)

### 32.25.17 associatedEventsMask as Integer

MBS MacBase Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The event mask describing the various events that you may also get during this event sequence.

**Notes:**
This message is valid for Mouse events. Useful for determining if the input device issuing this mouse event can also simultaneously issue NSEventGetTypePressure events.
(Read only property)

### 32.25.18 buttonMask as Integer

MBS MacBase Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a bit mask identifying the buttons pressed when the tablet event represented by the receiver was generated.

**Notes:**
Use one or more of the button-mask constants described in Constants to determine which buttons of the pointing device are pressed. This method is valid only for mouse events with a subtype of NSTabletPointEventSubtype and for events of type NSTabletPoint.

Available in Mac OS X v10.4 and later.

Constants to use:

- NSPenTipMask = 1 The pen tip is activated.
- NSPenLowerSideMask = 2 The button on the lower side of the device is activated.
- NSPenUpperSideMask = 4 The button on the upper side of the device is activated.

(Read only property)

### 32.25.19 buttonNumber as Integer

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the button number for the mouse button that generated an NSOtherMouse... event.

**Notes:**
This method is intended for use with the NSOtherMouseDown, NSOtherMouseUp, and NSOtherMouse-Dragged events, but will return values for NSLeftMouse... and NSRightMouse... events also.

(Read only property)

### 32.25.20 capabilityMask as Integer

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a mask whose set bits indicate the capabilities of the tablet device that generated the event
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represented by the receiver.

Notes:

These bits are vendor-defined. This method is valid only for mouse events with a subtype of NSTabletProximityEventSubtype and for events of type NSTabletProximity.

Available in Mac OS X v10.4 and later.

(Read only property)

32.25.21 CGEventRef as Integer

MBS MacBase Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Core Graphics event object corresponding to this event.

Notes:

The CGEventRef opaque type returned. If no CGEventRef object corresponding to the NSEvent object can be created, this method returns 0.

(Read only property)

32.25.22 characters as string

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the characters associated with the receiving key-up or key-down event.

Notes:

These characters are derived from a keyboard mapping that associates various key combinations with Unicode characters. Raises an NSInternalInconsistencyException if sent to any other kind of event object.

This method returns an empty string for dead keys, such as Option-e. However, for a key combination such as Option-Shift-e this method returns the standard accent ("'").

(Read only property)

32.25.23 charactersIgnoringModifiers as string

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the characters generated by the receiving key event as if no modifier key (except for Shift) applies.

Notes:

Raises an NSInternalInconsistencyException if sent to a nonkey event.

This method returns the non-modifier key character pressed for dead keys, such as Option-e. For example, Option-e (no shift key) returns an "e" for this method, whereas the characters method returns an empty
This method is useful for determining "basic" key values in a hardware-independent manner, enabling such features as keyboard equivalents defined in terms of modifier keys plus character keys. For example, to determine if the user typed Alt-S, you don’t have to know whether Alt-S generates a German double ess, an integral sign, or a section symbol. You simply examine the string returned by this method along with the event’s modifier flags, checking for “s” and NSAlternateKeyMask.

(Read only property)

### 32.25.24 clickCount as Integer

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the number of mouse clicks associated with the receiver, which represents a mouse-down or mouse-up event.

**Notes:**
Raises an NSInternalInconsistencyException if sent to a nonmouse event.

Returns 0 for a mouse-up event if a time threshold has passed since the corresponding mouse-down event. This is because if this time threshold passes before the mouse button is released, it is no longer considered a mouse click, but a mouse-down event followed by a mouse-up event.

The return value of this method is meaningless for events other than mouse-down or mouse-up events.

(Read only property)

### 32.25.25 data1 as Integer

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns additional data associated with the receiver.

**Notes:**
The value returned by this method is dependent on the event type, and is defined by the originator of the event. Raises an NSInternalInconsistencyException if sent to an event not of type NSAppKitDefined, NSSystemDefined, NSApplicationDefined, or NSPeriodic.

NSPeriodic events don’t use this attribute.

(Read only property)
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32.25.26  data2 as Integer

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns additional data associated with the receiver.

**Notes:**

The value returned by this method is dependent on the event type, and is defined by the originator of the event. Raises an NSInternalInconsistencyException if sent to an event not of type NSAppKitDefined, NSSystemDefined, NSApplicationDefined, or NSPeriodic.

NSPeriodic events don’t use this attribute.

(Read only property)

32.25.27  deltaX as Double

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the x-coordinate change for a scroll wheel, mouse-move, or mouse-drag event.

**Notes:** (Read only property)

32.25.28  deltaY as Double

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the y-coordinate change for a scroll wheel, mouse-move, or mouse-drag event.

**Notes:**

The behavior of this method may seem counter-intuitive: as the mouse moves up the screen, the value is negative; and as it moves down the screen, the value is positive. The reason for this behavior is that NSEvent computes this delta value in device space, which is flipped, but both the screen and the window’s base coordinate system are not flipped.

(Read only property)

32.25.29  deltaZ as Double

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the z-coordinate change for a scroll wheel, mouse-move, or mouse-drag event.

**Notes:** (Read only property)
32.25.30  description as string

MBS MacBase Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the description for this object.
Notes: (Read only property)

32.25.31  deviceID as Integer

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a special identifier that is used to match tablet-pointer events with the tablet-proximity event represented by the receiver.
Notes:
All tablet-pointer events generated in the period between the device entering and leaving tablet proximity have the same device ID. This message is valid only for mouse events with subtype NSTabletPointEventSubtype or NSTabletProximityEventSubtype, and for NSTabletPoint and NSTabletProximity events. Available in Mac OS X v10.4 and later.
(Read only property)

32.25.32  eventNumber as Integer

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the counter value of the latest mouse or tracking-rectangle event object; every system-generated mouse and tracking-rectangle event increments this counter.
Notes:
Raises an NSInternalInconsistencyException if sent to any other type of event object.
(Read only property)

32.25.33  Handle as Integer

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The handle to the internal used NSEvent class.
Notes: (Read and Write property)

32.25.34  hasPreciseScrollingDeltas as boolean

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns whether there are precise scrolling deltas available.
Notes:
Returns true if precise scrolling deltas are available; false otherwise.

This method is valid for NSScrollWheel events. A generic scroll wheel issues rather coarse scroll deltas. Some mice and trackpads provide much more precise delta. This method determines how the values of the scrollingDeltaX and scrollingDeltaY should be interpreted.
Available in OS X v10.7 and later.
(Read only property)

**32.25.35 isARepeat as boolean**

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns true if the receiving key event is a repeat caused by the user holding the key down, false if the key event is new.
**Notes:**
Raises an NSInternalInconsistencyException if sent to an NSFlagsChanged event or other nonkey event.
(Read only property)

**32.25.36 isDirectionInvertedFromDevice as boolean**

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns whether the user has changed the device inversion.
**Notes:**
This method valid for NSEventScrollWheel and NSEventTypeSwipe events. The user may choose to change the scrolling behavior such that it feels like they are moving the content instead of the scroll bar.

To accomplish this, deltaX and deltaY and scrollingDeltaX and scrollingDeltaY values are automatically inverted for NSEventScrollWheel events according to the user’s preferences.

The direction of fluid swipes matches the direction of scrolling and as such for NSEventTypeSwipe events gestureAmount is inverted. However, for some uses of NSEventScrollWheel and NSEventTypeSwipe events, the behavior should not respect the user preference. This method allows you to determine when the event has been inverted and compensate by multiplying -1 if needed.

Available in OS X v10.7 and later.
(Read only property)
32.25.37 \textbf{isEnteringProximity as boolean}

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. \textbf{Function:} Returns true to indicate that a pointing device is entering the proximity of its tablet and false when it is leaving it.

\textbf{Notes:}
This method is valid for mouse events with subtype NSTabletProximityEventSubtype and for NSTablet-Proximity events.
Available in Mac OS X v10.4 and later.
(Read only property)

32.25.38 \textbf{keyCode as Integer}

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. \textbf{Function:} Returns the virtual key code for the keyboard key associated with the receiving key event.

\textbf{Notes:}
The virtual key code. The returned value is hardware-independent. The value returned is the same as the value returned in the kEventParamKeyCode when using Carbon Events.

Raises an NSInternalInconsistencyException if sent to a non-key event.
(Read only property)

32.25.39 \textbf{locationInWindow as NSPointMBS}

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. \textbf{Function:} Returns the receiver's location in the base coordinate system of the associated window.

\textbf{Notes:}
For nonmouse events the return value of this method is undefined.

With NSMouseMoved and possibly other events, the receiver can have a nil window (that is, window returns nil). In this case, locationInWindow returns the event location in screen coordinates.
(Read only property)

32.25.40 \textbf{magnification as Double}

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. \textbf{Function:} Returns the change in magnification.

\textbf{Notes:}
The change in magnification that should be added to the current scaling of an item to achieve the new scale factor. This message is valid for events of type NSEventMagnifyType. Available in Mac OS X v10.6 and later. (Read only property)

32.25.41  modifierFlags as Integer

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns an integer bit field indicating the modifier keys in effect for the receiver. Notes: You can examine individual flag settings using the C bitwise AND operator with the predefined key masks. The lower 16 bits of the modifier flags are reserved for device-dependent bits. (Read only property)

32.25.42  pointingDeviceID as Integer

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the index of the pointing device currently in proximity with the tablet. Notes: This index is significant for multimode (or Dual Tracking) tablets that support multiple concurrent pointing devices; the index is incremented for each pointing device that comes into proximity. Otherwise, zero is always returned. The receiver of this message should be a mouse event object with subtype NSTabletProximityEventSubtype or an event of type NSTabletProximity. Available in Mac OS X v10.4 and later. (Read only property)

32.25.43  pointingDeviceSerialNumber as Integer

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the vendor-assigned serial number of a pointing device of a certain type. Notes: Devices of different types, such as a puck and a pen, may have the same serial number. The receiver of this message should be a mouse event object with subtype NSTabletProximityEventSubtype or an event of type NSTabletProximity. Available in Mac OS X v10.4 and later. (Read only property)
32.25.44  pointingDeviceType as Integer

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns a NSPointingDeviceType constant indicating the kind of pointing device associated with the receiver.  
**Notes:**  
For example, the device could be a pen, eraser, or cursor pointing device. This method is valid for mouse events with subtype NSTabletProximityEventSubtype and for NSTabletProximity events. See "Constants" for descriptions of valid NSPointingDeviceType constants.  

Available in Mac OS X v10.4 and later.  
(Read only property)

32.25.45  pressure as Double

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns a value from 0.0 through 1.0 indicating the pressure applied to the input device (used for appropriate devices).  
**Notes:**  
For devices that aren’t pressure-sensitive, the value is either 0.0 or 1.0. Raises an NSInternalInconsistencyException if sent to a nonmouse event.  

For tablet pointing devices that are in proximity, the pressure value is 0.0 if they are not actually touching the tablet. As the device is pressed into the tablet, the value is increased.  
(Read only property)

32.25.46  rotation as Double

MBS MacBase Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns the rotation in degrees of the tablet pointing device associated with the receiver.  
**Notes:**  
Many devices do not support rotation, in which case the returned value is 0.0. This method is valid only for mouse events with subtype NSTabletPointEventSubtype and for NSTabletPoint events.  

Available in Mac OS X v10.4 and later.  
(Read only property)
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32.25.47 scrollingDeltaX as Double

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the scroll wheel horizontal delta.

**Notes:**
This is the preferred method for accessing NSScrollWheel delta values. When hasPreciseScrollingDeltas returns false, your application may which to modify this value.

Available in OS X v10.7 and later.
(Read only property)

32.25.48 scrollingDeltaY as Double

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the scroll wheel vertical delta.

**Notes:**
This is the preferred method for accessing NSScrollWheel delta values. When hasPreciseScrollingDeltas returns false, multiply the value returned by this method by the line or row height. Otherwise scroll by the returned amount.

Available in OS X v10.7 and later.
(Read only property)

32.25.49 stage as Integer

MBS MacBase Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The stage of pressure events.

**Notes:**
This message is valid for NSEventTypePressure events.
Pressure gesture events go through multiple stages.
(Read only property)

32.25.50 stageTransition as Double

MBS MacBase Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The stage transition for pressure events.

**Notes:**
This message is valid for NSEventTypePressure events. Positive stageTransition describes approaching the
next stage of the pressure gesture. Negative stageTransition describes approaching release of the current stage.
(Read only property)

### 32.25.51 subtype as Integer

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the subtype of the receiving event object.

**Notes:**

Raises an NSInternalInconsistencyException if sent to an event not of type NSAppKitDefined, NSSystemDefined, NSApplicationDefined, or NSPeriodic.

NSPeriodic events don’t use this attribute.

This method is also valid for mouse events on Mac OS X v10.4 and later. See the predefined mouse and tablet subtypes.
(Read only property)

### 32.25.52 systemTabletID as Integer

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the index of the tablet device connected to the system.

**Notes:**

If multiple tablets are connected to the system, the system-tablet ID is incremented for each subsequent one. If there is only one tablet device, its system-tablet ID is zero. The receiver of this message should be a mouse event object with subtype NSTabletProximityEventSubtype or an event of type NSTabletProximity.

Available in Mac OS X v10.4 and later.
(Read only property)

### 32.25.53 tabletID as Integer

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the USB model identifier of the tablet device associated with the receiver.

**Notes:**

This method is valid for mouse events with subtype NSTabletProximityEventSubtype and for NSTablet-Proximity events.
Available in Mac OS X v10.4 and later.
32.25.54  **tangentialPressure as Double**

MBS MacBase Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Reports the tangential pressure on the device that generated the event represented by the receiver.  
**Notes:**
The value returned can range from -1.0 to 1.0.  Tangential pressure is also known as barrel pressure.  Only some pointing devices support tangential pressure.  This method is valid for mouse events with subtype NSTabletPointEventSubtype and for NSTabletPoint events.

Available in Mac OS X v10.4 and later.  
(Read only property)

32.25.55  **tilt as NSPointMBS**

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Reports the scaled tilt values of the pointing device that generated the event represented by the receiver.  
**Notes:**
The value returned can range from -1.0 to 1.0 for both axes.  An x-coordinate value that is negative indicates a tilt to the left and a positive value indicates a tilt to the right; a y-coordinate value that is negative indicates a tilt to the top and a positive value indicates a tilt to the bottom.  If the device is perfectly perpendicular to the table surface, the values are 0.0 for both axes.  This method is valid for mouse events with subtype NSTabletPointEventSubtype and for NSTabletPoint events.

Available in Mac OS X v10.4 and later.  
(Read only property)

32.25.56  **timestamp as Double**

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns the time the receiver occurred in seconds since system startup.  
**Notes:** (Read only property)
32.25.57 trackingNumber as Integer

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the identifier of a mouse-tracking event.

**Notes:**
This method returns either an NSTrackingArea object or a NSTrackingRectTag constant depending on whether the event was generated from an NSTrackingArea object or a call to addTrackingRect:owner:userData:assumeInside:. Valid mouse-tracking methods are of types NSMouseEntered, NSMouseExited, and NSCursorUpdate. This method raises an NSInternalInconsistencyException if sent to any other type of event.

The NSTrackingArea class is new with Mac OS X version 10.5
(Read only property)

32.25.58 type as Integer

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The type of the receiving event.

**Notes:**
The type must be one of the following:

- NSLeftMouseDown
- NSLeftMouseUp
- NSRightMouseDown
- NSRightMouseUp
- NSOtherMouseDown
- NSOtherMouseUp
- NSMouseMoved
- NSLeftMouseDragged
- NSRightMouseDragged
- NSOtherMouseDragged
- NSMouseEntered
- NSMouseExited
- NSWKeyDown
- NSWKeyUp
- NSFlagsChanged
- NSAppKitDefined
- NSSystemDefined
- NSAApplicationDefined
- NSPeriodic
- NSCursorUpdate
- NSScrollWheel
(Read only property)
32.25.59 uniqueID as UInt64

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the unique identifier of the pointing device that generated the event represented by the receiver.

**Notes:**
Also known as tool ID, this is a unique number recorded in the chip inside every pointing device. The unique ID makes it possible to assign a specific pointing device to a specific tablet. You can also use it to "sign" documents or to restrict access to document layers to a specific pointing device. This method is valid for mouse events with subtype NSTabletProximityEventSubtype and for NSTabletProximity events. Available in Mac OS X v10.4 and later.
(Read only property)

32.25.60 vendorID as Integer

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the vendor identifier of the tablet associated with the receiver.

**Notes:**
The tablet is typically a USB device. This method is valid only for mouse events with subtype NSTabletProximityEventSubtype and for NSTabletProximity events. Available in Mac OS X v10.4 and later.
(Read only property)

32.25.61 vendorPointingDeviceType as Integer

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a coded bit field whose set bits indicate the type of pointing device (within a vendor selection) associated with the receiver.

**Notes:**
See the vendor documentation for an interpretation of significant bits. This method is valid only for mouse events with subtype NSTabletProximityEventSubtype and for NSTabletProximity events. Available in Mac OS X v10.4 and later.
(Read only property)

32.25.62 window as NSWindowMBS

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the window object associated with the receiver.
Notes:
A periodic event, however, has no window; in this case the return value is undefined.
(Read only property)

### 32.25.63 windowNumber as Integer

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the identifier for the window device associated with the receiver.

Notes:
A periodic event, however, has no window; in this case the return value is undefined.
(Read only property)

### 32.25.64 Constants

#### 32.25.65 NSAlphaShiftKeyMask = &h10000

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing device-independent bits found in event modifier flags.

Notes: Set if Caps Lock key is pressed.

#### 32.25.66 NSAlternateKeyMask = &h80000

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing device-independent bits found in event modifier flags.

Notes: Set if Option or Alternate key is pressed.

#### 32.25.67 NSAnyEventMask = &hFFFFFFFF

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for masks for the events.

Notes: Pass them to the NSCell method sendActionOn to specify when an NSCell should send its action message.

#### 32.25.68 NSAppKitDefined=13

MBS MacBase Plugin, Plugin Version: 7.7. **Function:** One of the event types.
32.25.69  **NSAppKitDefinedMask = & h2000**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for masks for the events.  
**Notes:** Pass them to the NSCell method sendActionOn to specify when an NSCell should send its action message.

32.25.70  **NSApplicationActivatedEventType = 1**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing the types of events defined by the Application Kit.  
**Notes:** The application has been activated.

32.25.71  **NSApplicationDeactivatedEventType = 2**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing the types of events defined by the Application Kit.  
**Notes:** The application has been deactivated.

32.25.72  **NSApplicationDefined=15**

MBS MacBase Plugin, Plugin Version: 7.7. **Function:** One of the event types.

32.25.73  **NSApplicationDefinedMask = & h8000**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for masks for the events.  
**Notes:** Pass them to the NSCell method sendActionOn to specify when an NSCell should send its action message.

32.25.74  **NSAWTEventType = 16**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing the types of events defined by the Application Kit.  
**Notes:** An event type used to support Java applications.
32.25.75  **NSBeginFunctionKey = & hF72A**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.
**Notes:** Begin key. Not on most Macintosh keyboards.

32.25.76  **NSBreakFunctionKey = & hF732**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.
**Notes:** Break key. Not on most Macintosh keyboards.

32.25.77  **NSClearDisplayFunctionKey = & hF73A**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.
**Notes:** Clear Display key. Not on most Macintosh keyboards.

32.25.78  **NSClearLineFunctionKey = & hF739**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.
**Notes:** Clear/Num Lock key.

32.25.79  **NSCommandKeyMask = & h100000**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing device-independent bits found in event modifier flags.
**Notes:** Set if Command key is pressed.

32.25.80  **NSControlKeyMask = & h40000**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing device-independent bits found in event modifier flags.
**Notes:** Set if Control key is pressed.
32.25. **CLASS NSEVENTMBS**

32.25.81 **NSCursorPointingDevice=2**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants represent pointing-device types for NSTabletProximity events or mouse events with subtype NSTabletProximityEventSubtype.  
**Notes:**  
The `pointingDeviceType` method returns one of these constants.  
Represents a cursor (or puck-like) pointing device.  
Available in Mac OS X v10.4 and later.

32.25.82 **NSCursorUpdate=17**

MBS MacBase Plugin, Plugin Version: 7.7. **Function:** One of the event types.

32.25.83 **NSCursorUpdateMask = & h20000**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for masks for the events.  
**Notes:** Pass them to the `NSCell` method `sendActionOn` to specify when an `NSCell` should send its action message.

32.25.84 **NSDeleteCharFunctionKey = & hF73E**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.  
**Notes:** Delete Character key. Not on most Macintosh keyboards.

32.25.85 **NSDeleteFunctionKey = & hF728**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.  
**Notes:** Forward Delete key.

32.25.86 **NSDeleteLineFunctionKey = & hF73C**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.  
**Notes:** Delete Line key. Not on most Macintosh keyboards.
32.25.87 NSDeviceIndependentModifierFlagsMask = & hffff0000

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** The mask for all device independent modifier flags.  
**Notes:**  
Used to retrieve only the device-independent modifier flags, allowing applications to mask off the device-dependent modifier flags, including event coalescing information.

Available in Mac OS X v10.4 and later.

32.25.88 NSDownArrowFunctionKey = & hF701

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.  
**Notes:** Down Arrow key.

32.25.89 NSEndFunctionKey = & hF72B

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.  
**Notes:** End key.

32.25.90 NSEraserPointingDevice=3

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants represent pointing-device types for NSTabletProximity events or mouse events with subtype NSTabletProximityEventSubtype.  
**Notes:**  
The pointingDeviceType method returns one of these constants.  
Represents the eraser end of a stylus-like pointing device.  
Available in Mac OS X v10.4 and later.

32.25.91 NSEventMaskBeginGesture = & h80000

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for masks for the events.  
**Notes:**  
Pass them to the NSCell method sendActionOn to specify when an NSCell should send its action message.  
Available in Mac OS X v10.6 and later.
32.25.92  **NSEventMaskEndGesture = & h100000**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for masks for the events. **Notes:**

Pass them to the NSCell method sendActionOn to specify when an NSCell should send its action message. Available in Mac OS X v10.6 and later.

32.25.93  **NSEventMaskGesture = & h20000000**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for masks for the events. **Notes:**

Pass them to the NSCell method sendActionOn to specify when an NSCell should send its action message. Available in Mac OS X v10.6 and later.

32.25.94  **NSEventMaskMagnify = & h40000000**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for masks for the events. **Notes:**

Pass them to the NSCell method sendActionOn to specify when an NSCell should send its action message. Available in Mac OS X v10.6 and later.

32.25.95  **NSEventMaskRotate = & h40000**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for masks for the events. **Notes:**

Pass them to the NSCell method sendActionOn to specify when an NSCell should send its action message. Available in Mac OS X v10.6 and later.

32.25.96  **NSEventMaskSwipe = & h80000000**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for masks for the events. **Notes:**

Pass them to the NSCell method sendActionOn to specify when an NSCell should send its action message. Available in Mac OS X v10.6 and later.
32.25.97(NSEventTypeBeginGesture=19)

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for events.

**Notes:**
An event that represents a gesture beginning.
Available in Mac OS X v10.6 and later.

32.25.98(NSEventTypeEndGesture=20)

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for events.

**Notes:**
An event that represents some type of gesture such as NSEventTypeMagnify, NSEventTypeSwipe, NSEventTypeRotate, NSEventTypeBeginGesture, or NSEventTypeEndGesture.
Available in Mac OS X v10.6 and later.

32.25.99(NSEventTypeGesture=29)

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the event types.

**Notes:**
An event that represents some type of gesture such as NSEventTypeMagnify, NSEventTypeSwipe, NSEventTypeRotate, NSEventTypeBeginGesture, or NSEventTypeEndGesture.
Available in Mac OS X v10.6 and later.

32.25.100(NSEventTypeMagnify=30)

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the event types.

**Notes:**
An event representing a pinch open or pinch close gesture.
Available in Mac OS X v10.6 and later.

32.25.101(NSEventTypePressure = 34)

MBS MacBase Plugin, Plugin Version: 15.1. **Function:** One of the event types.

**Notes:** A force touch pressure event.
32.25.102 **NSEventTypeQuickLook = 33**

MBS MacBase Plugin, Plugin Version: 15.1. **Function:** One of the event types.  
**Notes:** The quicklook event.

32.25.103 **NSEventTypeRotate=18**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the event types.  
**Notes:**  
An event representing a rotation gesture.  
Available in Mac OS X v10.6 and later.

32.25.104 **NSEventTypeSmartMagnify = 32**

MBS MacBase Plugin, Plugin Version: 15.1. **Function:** One of the event types.  
**Notes:** The smart magnify event.
32.25.105 NSEventTypeSwipe=31

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the event types.
**Notes:**
An event representing a swipe gesture.
Available in Mac OS X v10.6 and later.

32.25.106 NSExecuteFunctionKey = & hF742

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.
**Notes:** Execute key. Not on most Macintosh keyboards.

32.25.107 NSF10FunctionKey = & hF70D

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.
**Notes:** F10 key.

32.25.108 NSF11FunctionKey = & hF70E

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.
**Notes:** F11 key.

32.25.109 NSF12FunctionKey = & hF70F

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.
**Notes:** F12 key.

32.25.110 NSF13FunctionKey = & hF710

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.
**Notes:** F13 key.
32.25. CLASS NSEVENTMBS

32.25.111 NSF14FunctionKey = & hF711

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard. 
**Notes:** F14 key.

32.25.112 NSF15FunctionKey = & hF712

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard. 
**Notes:** F15 key.

32.25.113 NSF16FunctionKey = & hF713

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard. 
**Notes:** F16 key.

32.25.114 NSF17FunctionKey = & hF714

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard. 
**Notes:** F17 key.

32.25.115 NSF18FunctionKey = & hF715

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard. 
**Notes:** F18 key.

32.25.116 NSF19FunctionKey = & hF716

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard. 
**Notes:** F19 key.
32.25.117  NSF1FunctionKey = & hF704

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.
**Notes:** F1 key.

32.25.118  NSF20FunctionKey = & hF717

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.
**Notes:** F20 key.

32.25.119  NSF21FunctionKey = & hF718

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.
**Notes:** F21 key. Not on most Macintosh keyboards.

32.25.120  NSF22FunctionKey = & hF719

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.
**Notes:** F22 key. Not on most Macintosh keyboards.

32.25.121  NSF23FunctionKey = & hF71A

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.
**Notes:** F23 key. Not on most Macintosh keyboards.

32.25.122  NSF24FunctionKey = & hF71B

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.
**Notes:** F24 key. Not on most Macintosh keyboards.
32.25.123 NSF25FunctionKey = & hF71C

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.  
**Notes:** F25 key. Not on most Macintosh keyboards.

32.25.124 NSF26FunctionKey = & hF71D

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.  
**Notes:** F26 key. Not on most Macintosh keyboards.

32.25.125 NSF27FunctionKey = & hF71E

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.  
**Notes:** F27 key. Not on most Macintosh keyboards.

32.25.126 NSF28FunctionKey = & hF71F

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.  
**Notes:** F28 key. Not on most Macintosh keyboards.

32.25.127 NSF29FunctionKey = & hF720

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.  
**Notes:** F29 key. Not on most Macintosh keyboards.

32.25.128 NSF2FunctionKey = & hF705

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.  
**Notes:** F2 key.
32.25.129 NSF30FunctionKey = & hF721

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.  
**Notes:** F30 key. Not on most Macintosh keyboards.

32.25.130 NSF31FunctionKey = & hF722

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.  
**Notes:** F31 key. Not on most Macintosh keyboards.

32.25.131 NSF32FunctionKey = & hF723

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.  
**Notes:** F32 key. Not on most Macintosh keyboards.

32.25.132 NSF33FunctionKey = & hF724

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.  
**Notes:** F33 key. Not on most Macintosh keyboards.

32.25.133 NSF34FunctionKey = & hF725

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.  
**Notes:** F34 key. Not on most Macintosh keyboards.

32.25.134 NSF35FunctionKey = & hF726

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.  
**Notes:** F35 key. Not on most Macintosh keyboards.
32.25.135 NSF3FunctionKey = \& hF706

MBS MacBase Plugin, Plugin Version: 9.6. Function: One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.
Notes: F3 key.

32.25.136 NSF4FunctionKey = \& hF707

MBS MacBase Plugin, Plugin Version: 9.6. Function: One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.
Notes: F4 key.

32.25.137 NSF5FunctionKey = \& hF708

MBS MacBase Plugin, Plugin Version: 9.6. Function: One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.
Notes: F5 key.

32.25.138 NSF6FunctionKey = \& hF709

MBS MacBase Plugin, Plugin Version: 9.6. Function: One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.
Notes: F6 key.

32.25.139 NSF7FunctionKey = \& hF70A

MBS MacBase Plugin, Plugin Version: 9.6. Function: One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.
Notes: F7 key.

32.25.140 NSF8FunctionKey = \& hF70B

MBS MacBase Plugin, Plugin Version: 9.6. Function: One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.
Notes: F8 key.
32.25.141  **NSF9FunctionKey = \& hF70C**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.  
**Notes:** F9 key.

32.25.142  **NSFindFunctionKey = \& hF745**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.  
**Notes:** Find key. Not on most Macintosh keyboards.

32.25.143  **NSFlagsChanged=12**

MBS MacBase Plugin, Plugin Version: 7.7. **Function:** One of the event types.

32.25.144  **NSFlagsChangedMask = \& h1000**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for masks for the events.  
**Notes:** Pass them to the NSCell method sendActionOn to specify when an NSCell should send its action message.

32.25.145  **NSFunctionKeyMask = \& h800000**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing device-independent bits found in event modifier flags.  
**Notes:** Set if any function key is pressed. The function keys include the F keys at the top of most keyboards (F1, F2, and so on) and the navigation keys in the center of most keyboards (Help, Forward Delete, Home, End, Page Up, Page Down, and the arrow keys).

32.25.146  **NSHelpFunctionKey = \& hF746**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.  
**Notes:** Help key.
32.25.147  **NSHelpKeyMask = & h400000**

MBS MacBase Plugin, Plugin Version: 9.6. **Function**: One of the constants representing device-independent bits found in event modifier flags.  
**Notes**: Set if the Help key is pressed.

32.25.148  **NSHomeFunctionKey = & hF729**

MBS MacBase Plugin, Plugin Version: 9.6. **Function**: One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.  
**Notes**: Home key.

32.25.149  **NSInsertCharFunctionKey = & hF73D**

MBS MacBase Plugin, Plugin Version: 9.6. **Function**: One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.  
**Notes**: Insert Character key. Not on most Macintosh keyboards.

32.25.150  **NSInsertFunctionKey = & hF727**

MBS MacBase Plugin, Plugin Version: 9.6. **Function**: One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.  
**Notes**: Insert key. Not on most Macintosh keyboards.

32.25.151  **NSInsertLineFunctionKey = & hF73B**

MBS MacBase Plugin, Plugin Version: 9.6. **Function**: One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.  
**Notes**: Insert Line key. Not on most Macintosh keyboards.

32.25.152  **NSKeyDown=10**

MBS MacBase Plugin, Plugin Version: 7.7. **Function**: One of the event types.
32.25.153 NSKeyDownMask = & h400

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for masks for the events. **Notes:** Pass them to the NSCell method sendActionOn to specify when an NSCell should send its action message.

32.25.154 NSKeyUp=11

MBS MacBase Plugin, Plugin Version: 7.7. **Function:** One of the event types.

32.25.155 NSKeyUpMask = & h800

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for masks for the events. **Notes:** Pass them to the NSCell method sendActionOn to specify when an NSCell should send its action message.

32.25.156 NSLeftArrowFunctionKey = & hF702

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard. **Notes:** Left Arrow key.

32.25.157 NSLeftMouseDown=1

MBS MacBase Plugin, Plugin Version: 7.7. **Function:** One of the event types.

32.25.158 NSLeftMouseDownMask = 2

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for masks for the events. **Notes:** Pass them to the NSCell method sendActionOn to specify when an NSCell should send its action message.

32.25.159 NSLeftMouseDragged=6

MBS MacBase Plugin, Plugin Version: 7.7. **Function:** One of the event types.
32.25.160  NSLeftMouseDownDraggedMask = 64

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for masks for the events. **Notes:** Pass them to the NSCell method sendActionOn to specify when an NSCell should send its action message.

32.25.161  NSLeftMouseUp = 2

MBS MacBase Plugin, Plugin Version: 7.7. **Function:** One of the event types.

32.25.162  NSLeftMouseDownUpMask = 4

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for masks for the events. **Notes:** Pass them to the NSCell method sendActionOn to specify when an NSCell should send its action message.

32.25.163  NSMenuFunctionKey = & hF735

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard. **Notes:** Menu key. Not on most Macintosh keyboards.

32.25.164  NSModeSwitchFunctionKey = & hF747

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard. **Notes:** Mode Switch key. Not on most Macintosh keyboards.

32.25.165  NSMouseEntered = 8

MBS MacBase Plugin, Plugin Version: 7.7. **Function:** One of the event types.

32.25.166  NSMouseEnteredMask = & h100

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for masks for the events. **Notes:** Pass them to the NSCell method sendActionOn to specify when an NSCell should send its action
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message.

**32.25.167 NSMouseEventSubtype = 0**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing mouse-event subtypes for mouse and tablet events (accessed with the subtype method).

**Notes:**
Indicates a purely mouse event.
Available in Mac OS X v10.4 and later.

**32.25.168 NSMouseExited=9**

MBS MacBase Plugin, Plugin Version: 7.7. **Function:** One of the event types.

**32.25.169 NSMouseExitedMask = & h200**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for masks for the events.
**Notes:** Pass them to the NSCell method sendActionOn to specify when an NSCell should send its action message.

**32.25.170 NSMouseMoved=5**

MBS MacBase Plugin, Plugin Version: 7.7. **Function:** One of the event types.

**32.25.171 NSMouseMovedMask = 32**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for masks for the events.
**Notes:** Pass them to the NSCell method sendActionOn to specify when an NSCell should send its action message.

**32.25.172 NSNextFunctionKey = & hF740**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.
32.25. CLASS NSEVENTMBS

Notes: Next key. Not on most Macintosh keyboards.

32.25.173  **NSNumericPadKeyMask = & h200000**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing device-independent bits found in event modifier flags. 
**Notes:** Set if any key in the numeric keypad is pressed. The numeric keypad is generally on the right side of the keyboard. This is also set if any of the arrow keys are pressed (NSUpArrowFunctionKey, NSDownArrowFunctionKey, NSLeftArrowFunctionKey, and NSRightArrowFunctionKey).

32.25.174  **NSOtherMouseDown=25**

MBS MacBase Plugin, Plugin Version: 7.7. **Function:** One of the event types.

32.25.175  **NSOtherMouseDownMask = & h2000000**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for masks for the events. 
**Notes:** Pass them to the NSCell method sendActionOn to specify when an NSCell should send its action message.

32.25.176  **NSOtherMouseDragged=27**

MBS MacBase Plugin, Plugin Version: 7.7. **Function:** One of the event types.

32.25.177  **NSOtherMouseDraggedMask = & h8000000**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for masks for the events. 
**Notes:** Pass them to the NSCell method sendActionOn to specify when an NSCell should send its action message.

32.25.178  **NSOtherMouseUp=26**

MBS MacBase Plugin, Plugin Version: 7.7. **Function:** One of the event types.
**32.25.179**  \( \text{NSOtherMouseUpMask} = \& \text{h}4000000 \)

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for masks for the events.  
**Notes:** Pass them to the NSCell method sendActionOn to specify when an NSCell should send its action message.

**32.25.180**  \( \text{NSPageDownFunctionKey} = \& \text{h}F72D \)

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.  
**Notes:** Page Down key.

**32.25.181**  \( \text{NSPageUpFunctionKey} = \& \text{h}F72C \)

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.  
**Notes:** Page Up key.

**32.25.182**  \( \text{NSPauseFunctionKey} = \& \text{h}F730 \)

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.  
**Notes:** Pause key. Not on most Macintosh keyboards.

**32.25.183**  \( \text{NSPenLowerSideMask}=2 \)

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for masks for the events.  
**Notes:** Pass them to the NSCell method sendActionOn to specify when an NSCell should send its action message.

**32.25.184**  \( \text{NSPenPointingDevice}=1 \)

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants represent pointing-device types for NSTabletProximity events or mouse events with subtype NSTabletProximityEventSubtype.  
**Notes:**  
The pointingDeviceType method returns one of these constants.  
Represents the tip end of a stylus-like pointing device.
Available in Mac OS X v10.4 and later.

**32.25.185  NSPenTipMask=1**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for masks for the events. **Notes:** Pass them to the NSCell method sendActionOn to specify when an NSCell should send its action message.

**32.25.186  NSPenUpperSideMask=4**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for masks for the events. **Notes:** Pass them to the NSCell method sendActionOn to specify when an NSCell should send its action message.

**32.25.187  NSPeriodic=16**

MBS MacBase Plugin, Plugin Version: 7.7. **Function:** One of the event types.

**32.25.188  NSPeriodicMask = & h10000**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for masks for the events. **Notes:** Pass them to the NSCell method sendActionOn to specify when an NSCell should send its action message.

**32.25.189  NSPowerOffEventType = 1**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** This constant denotes that the user is turning off the computer. **Notes:** Specifies that the user is turning off the computer.

**32.25.190  NSPrevFunctionKey = & hF73F**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard. **Notes:** Previous key. Not on most Macintosh keyboards.
32.25.191  **NSPrintFunctionKey = & hF738**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard. **Notes:** Print key. Not on most Macintosh keyboards.

32.25.192  **NSPrintScreenFunctionKey = & hF72E**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard. **Notes:** Print Screen key. Not on most Macintosh keyboards.

32.25.193  **NSRedoFunctionKey = & hF744**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard. **Notes:** Redo key. Not on most Macintosh keyboards.

32.25.194  **NSResetFunctionKey = & hF733**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard. **Notes:** Reset key. Not on most Macintosh keyboards.

32.25.195  **NSRightArrowFunctionKey = & hF703**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard. **Notes:** Right Arrow key.

32.25.196  **NSRightMouseDown=3**

MBS MacBase Plugin, Plugin Version: 7.7. **Function:** One of the event types.
32.25.197  **NSRightMouseDownMask = 8**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for masks for the events.  
**Notes:** Pass them to the NSCell method sendActionOn to specify when an NSCell should send its action message.

32.25.198  **NSRightMouseDragged=7**

MBS MacBase Plugin, Plugin Version: 7.7. **Function:** One of the event types.

32.25.199  **NSRightMouseDraggedMask = 128**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for masks for the events.  
**Notes:** Pass them to the NSCell method sendActionOn to specify when an NSCell should send its action message.

32.25.200  **NSRightMouseUp=4**

MBS MacBase Plugin, Plugin Version: 7.7. **Function:** One of the event types.

32.25.201  **NSRightMouseUpMask = 16**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for masks for the events.  
**Notes:** Pass them to the NSCell method sendActionOn to specify when an NSCell should send its action message.

32.25.202  **NSScreenChangedEventType = 8**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing the types of events defined by the Application Kit.  
**Notes:** An NSWindow has changed screens.

32.25.203  **NSScrollLockFunctionKey = &HF72F**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.
Notes: Scroll Lock key. Not on most Macintosh keyboards.

32.25.204  NSScrollWheel=22

MBS MacBase Plugin, Plugin Version: 7.7. Function: One of the event types.

32.25.205  NSScrollWheelMask = & h400000

MBS MacBase Plugin, Plugin Version: 9.6. Function: One of the constants for masks for the events.
Notes: Pass them to the NSCell method sendActionOn to specify when an NSCell should send its action message.

32.25.206  NSSelectFunctionKey = & hF741

MBS MacBase Plugin, Plugin Version: 9.6. Function: One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.
Notes: Select key. Not on most Macintosh keyboards.

32.25.207  NSShiftKeyMask = & h20000

MBS MacBase Plugin, Plugin Version: 9.6. Function: One of the constants representing device-independent bits found in event modifier flags.
Notes: Set if Shift key is pressed.

32.25.208  NSStopFunctionKey = & hF734

MBS MacBase Plugin, Plugin Version: 9.6. Function: One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.
Notes: Stop key. Not on most Macintosh keyboards.

32.25.209  NSSysReqFunctionKey = & hF731

MBS MacBase Plugin, Plugin Version: 9.6. Function: One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard.
Notes: System Request key. Not on most Macintosh keyboards.
32.25. CLASS NSEVENTMBS

32.25.210 NSSystemDefined=14

MBS MacBase Plugin, Plugin Version: 7.7. **Function:** One of the event types.

32.25.211 NSSystemDefinedMask = & h4000

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for masks for the events. **Notes:** Pass them to the NSCell method sendActionOn to specify when an NSCell should send its action message.

32.25.212 NSSystemFunctionKey = & hF737

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard. **Notes:** System key. Not on most Macintosh keyboards.

32.25.213 NSTabletPoint=23

MBS MacBase Plugin, Plugin Version: 7.7. **Function:** One of the event types.

32.25.214 NSTabletPointEventSubtype = 1

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing mouse-event subtypes for mouse and tablet events (accessed with the subtype method). **Notes:** Indicates a tablet-pointer event; see description of NSTabletPoint. Available in Mac OS X v10.4 and later.

32.25.215 NSTabletPointMask = & h800000

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for masks for the events. **Notes:** Pass them to the NSCell method sendActionOn to specify when an NSCell should send its action message.
32.25.216 NSTabletProximity = 24

MBS MacBase Plugin, Plugin Version: 7.7. **Function:** One of the event types.

32.25.217 NSTabletProximityEventSubtype = 2

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing mouse-event subtypes for mouse and tablet events (accessed with the subtype method). **Notes:** Indicates a tablet-proximity event; see description of NSTabletProximity. Available in Mac OS X v10.4 and later.

32.25.218 NSTabletProximityMask = &h1000000

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for masks for the events. **Notes:** Pass them to the NSCell method sendActionOn to specify when an NSCell should send its action message. Available in Mac OS X v10.4 and later.

32.25.219 NSTouchEventSubtype = 3

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing mouse-event subtypes for mouse and tablet events (accessed with the subtype method). **Notes:** Indicates a touch event subtype. Available in Mac OS X v10.6 and later.

32.25.220 NSUndoFunctionKey = &hF743

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF7000xF8FF) that are reserved for function keys on the keyboard. **Notes:** Undo key. Not on most Macintosh keyboards.
32.25. CLASS NSEVENTMBS

32.25.221 NSUnknownPointingDevice=0

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants represent pointing-device types for NSTabletProximity events or mouse events with subtype NSTabletProximityEventSubtype.  
**Notes:**
The pointingDeviceType method returns one of these constants.  
Represents an unknown type of pointing device.  
Available in Mac OS X v10.4 and later.

32.25.222 NSUpArrowFunctionKey = & hF700

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF700xF8FF) that are reserved for function keys on the keyboard.  
**Notes:** Up Arrow key.

32.25.223 NSUserFunctionKey = & hF736

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing Unicode characters (0xF700xF8FF) that are reserved for function keys on the keyboard.  
**Notes:** User key. Not on most Macintosh keyboards.

32.25.224 NSWindowExposedEventType = 0

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing the types of events defined by the Application Kit.  
**Notes:** A non-retained NSWindow has been exposed.

32.25.225 NSWindowMovedEventType = 4

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants representing the types of events defined by the Application Kit.  
**Notes:** An NSWindow has moved.
32.26 class NSEventMonitorMBS

32.26.1 class NSEventMonitorMBS

Function: The class for watching events in Cocoa.
Notes: For Mac OS X 10.5 compatibility, please use CarbonMonitorEventsMBS class.

32.26.2 Methods

32.26.3 addGlobalMonitorForEventsMatchingMask(mask as UInt64) as boolean

Function: Installs an event monitor that receives copies of events posted to other applications.
Notes:
mask: An event mask specifying which events you wish to monitor. See NSEventMBS constants for possible values.

Events are delivered asynchronously to your app and you can only observe the event; you cannot modify or otherwise prevent the event from being delivered to its original target application.

Key-related events may only be monitored if accessibility is enabled or if your application is trusted for accessibility access (see AXIsProcessTrusted).

Note that your handler will not be called for events that are sent to your own application.

Special Considerations
In OS X v 10.6, event monitors are only able to monitor the following event types:

NSScrollWheel
NSTabletPoint
NSTabletProximity
NSKeyDown (Key repeats are determined by sending the event an isARepeat message.)

Available in OS X v10.6 and later.

### 32.26.4  `addLocalMonitorForEventsMatchingMask(mask as UInt64) as boolean`

**Function:** Installs an event monitor that receives copies of events posted to this application before they are dispatched.
**Notes:**

- mask: An event mask specifying which events you wish to monitor. See NSEventMBS constants for possible values.

Calls the LocalEvent event. You can return the event unmodified, create and return a new NSEventMBS object, or return nil to stop the dispatching of the event.

Your handler will not be called for events that are consumed by nested event-tracking loops such as control tracking, menu tracking, or window dragging; only events that are dispatched through the applications sendEvent method will be passed to your handler.

Note: The monitor Block is called for all future events that match mask.

**Special Considerations**

In OS X v 10.6, event monitors are only able to monitor the following event types:

- NSFlagsChanged
- NSLeftMouseDown
- NSLeftMouseDragged
- NSLeftMouseUp
- NSRightMouseUp
- NSOtherMouseUp
- NSRightMouseDragged
- NSOtherMouseDragged
- NSOtherMouseDown
- NSOtherMouseDragged
- NSScrollWheel
- NSTabletPoint
- NSTabletProximity
- NSRightMouseDown
NSKeyDown (Key repeats are determined by sending the event an isARepeat message.)

Available in OS X v10.6 and later.

### 32.26.5 Available as boolean

**Function:** Whether event monitoring is available.
**Notes:** Returns true on Mac OS X 10.6 and newer.

### 32.26.6 Constructor

**Function:** The constructor.
**Notes:** Initializes the object.

### 32.26.7 Destructor

**Function:** The destructor.
**Notes:** Remove all event monitors you added.

### 32.26.8 Properties

#### 32.26.9 Count as Integer

**Function:** Returns number of event monitors you added.
**Notes:** (Read only property)

### 32.26.10 Events

#### 32.26.11 GlobalEvent(e as NSEventMBS)

**Function:** This event is called for global system events.
**Notes:**
32.26. CLASS NSEVENTMONITORMBS

It is passed the event to monitor. You are unable to change the event, merely observe it.

Events are delivered asynchronously to your app and you can only observe the event; you cannot modify or otherwise prevent the event from being delivered to its original target application.

32.26.12 LocalEvent(e as NSEventMBS) as NSEventMBS


**Function:** This event is called for local application events.

**Notes:** You can return the event unmodified, create and return a new NSEventMBS object, or return nil to stop the dispatching of the event.
32.27  class NSExceptionHandlerMBS

32.27.1  class NSExceptionHandlerMBS

MBS Main Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The class for a global handler to catch unhandled cocoa exceptions.

**Notes:**
Previous plugin versions tried to show a dialog to inform you. Now you can intercept that.
If code is in this event, we do not show the dialog from the plugin.

32.27.2  Methods

32.27.3  Disable

MBS Main Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Disables the global exception handler.

32.27.4  Enable

MBS Main Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Enables the global exception handler.

**Notes:** By default the MBS Plugin automatically enables it when you use Cocoa classes.

32.27.5  Events

32.27.6  CaughtException(e as NSExceptionMBS, IsMainThread as boolean)

MBS Main Plugin, Plugin Version: 13.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
An exception was caught.

**Notes:** If IsMainThread is true, you can show a dialog/window. But if it’s false, you may be in trouble on
a worker thread and showing a dialog can cause more trouble.
32.28  class NSExceptionMBS

32.28.1  class NSExceptionMBS

MBS Main Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  Function:
The Cocoa exception class.

Example:

dim m1 as new NSMenuMBS
dim m2 as new NSMenuMBS
dim n as new NSMenuItemMBS

n.CreateMenuItem

m1.addItem n
m2.addItem n  // raises an exception as a menuitem can’t be in two menus.

Exception e as NSExceptionMBS
MsgBox e.Message

// e.reason: "Item to be inserted into menu already is in another menu"
// e.name: "NSInternalInconsistencyException"
// e.message: "A Cocoa NSInternalInconsistencyException was not handled: Item to be inserted into menu
already is in another menu"

Notes:
The plugin installs exception handling code. If you use the NSExceptionMBS class somewhere in your code,
the NSException plugin part will be included and a NSExceptionMBS object will be
Subclass of the RuntimeException class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

32.28.2  Methods

32.28.3  callStackSymbols as string()

MBS Main Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  Function:
Returns an array containing the current call symbols.

Notes:
This method returns an array of strings describing the call stack backtrace at the moment the exception was
first raised. The format of each string is non-negotiable and is determined by the backtrace symbols API.
(like BacktraceMBS function)
32.28.4 Constructor

MBS Main Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.

32.28.5 RaiseException(name as string, reason as string, userInfo as dictionary)

MBS Main Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Raises an exception.
**Notes:** The plugin does not catch it right away here, so this is a way to pass back an exception to the Cocoa frameworks.

32.28.6 Properties

32.28.7 Name as string

MBS Main Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of the exception. (Its type)
**Notes:** (Read only property)

32.28.8 Reason as string

MBS Main Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Reason the exception was raised.
**Notes:** (Read only property)

32.28.9 UserInfo as Dictionary

MBS Main Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Dictionary object containing application-specific data pertaining to the receiver.
**Notes:** Returns nil if no application-specific data exists. As an example, if a method’s return value caused the exception to be raised, the return value might be available to the exception handler through this method.
(Read only property)
32.28.10 Constants

32.28.11 **NSDestinationInvalidException = ”NSDestinationInvalidException”**

MBS Main Plugin, Plugin Version: 7.4. **Function:** One of the exception names.

32.28.12 **NSGenericException = ”NSGenericException”**

MBS Main Plugin, Plugin Version: 7.4. **Function:** One of the exception names.

32.28.13 **NSInternalInconsistencyException = ”NSInternalInconsistencyException”**

MBS Main Plugin, Plugin Version: 7.4. **Function:** One of the exception names.

32.28.14 **NSInvalidArgumentException = ”NSInvalidArgumentException”**

MBS Main Plugin, Plugin Version: 7.4. **Function:** One of the exception names.

32.28.15 **NSInvalidReceivePortException = ”NSInvalidReceivePortException”**

MBS Main Plugin, Plugin Version: 7.4. **Function:** One of the exception names.

32.28.16 **NSInvalidSendPortException = ”NSInvalidSendPortException”**

MBS Main Plugin, Plugin Version: 7.4. **Function:** One of the exception names.

32.28.17 **NSMallocException = ”NSMallocException”**

MBS Main Plugin, Plugin Version: 7.4. **Function:** One of the exception names.
32.28.18  **NSObjectInaccessibleException = ”NSObjectInaccessibleException”**
MBS Main Plugin, Plugin Version: 7.4. **Function:** One of the exception names.

32.28.19  **NSObjectNotAvailableException = ”NSObjectNotAvailableException”**
MBS Main Plugin, Plugin Version: 7.4. **Function:** One of the exception names.

32.28.20  **NSPortReceiveException = ”NSPortReceiveException”**
MBS Main Plugin, Plugin Version: 7.4. **Function:** One of the exception names.

32.28.21  **NSPortSendException = ”NSPortSendException”**
MBS Main Plugin, Plugin Version: 7.4. **Function:** One of the exception names.

32.28.22  **NSPortTimeoutException = ”NSPortTimeoutException”**
MBS Main Plugin, Plugin Version: 7.4. **Function:** One of the exception names.

32.28.23  **NSRangeException = ”NSRangeException”**
MBS Main Plugin, Plugin Version: 7.4. **Function:** One of the exception names.
class NSFileWrapperMBS

MBS MacBase Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The NSFileWrapper class provides access to the attributes and contents of file-system nodes.

Example:

// insert a file to textview
Public Sub InsertFile(textview as NSTextViewMBS, f as FolderItem)
    // read to file
    Dim b As BinaryStream = BinaryStream.Open(f)
    Dim s As String = b.Read(b.Length)

    // build wrapper
    Dim fileWrapper As NSFileWrapperMBS = NSFileWrapperMBS.initRegularFileWithContents(s)
    fileWrapper.preferredFilename = f.name

    // make attachment
    Dim fileAttachment As NSTextAttachmentMBS = fileWrapper
    Dim attributedString As NSAttributedStringMBS = NSAttributedStringMBS.attributedStringWithAttachment(fileAttachment)

    // add to a NSTextViewMBS
    textview.insertText attributedString

End Sub

Notes:

A file-system node is a file, directory, or symbolic link. Instances of this class are known as file wrappers.

File wrappers represent a file-system node as an object that can be displayed as an image (and possibly edited in place), saved to the file system, or transmitted to another application.

There are three types of file wrappers:

- Regular-file file wrapper: Represents a regular file.
- Directory file wrapper: Represents a directory.
- Symbolic-link file wrapper: Represents a symbolic link.

A file wrapper has these attributes:
• Filename. Name of the file-system node the file wrapper represents.

• File-system attributes. See NSFileManager Class Reference for information on the contents of the attributes dictionary.

• Regular-file contents. Applicable only to regular-file file wrappers.

• File wrappers. Applicable only to directory file wrappers.

• Destination node. Applicable only to symbolic-link file wrappers.

32.29.2 Methods

32.29.3 addFileWrapper(child as NSFileWrapperMBS) as String

MBS MacBase Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Adds a child file wrapper to the receiver, which must be a directory file wrapper.

Notes:

child: File wrapper to add to the directory.

Returns Dictionary key used to store fileWrapper in the directorys list of file wrappers. The dictionary key is a unique filename, which is the same as the passed-in file wrapper’s preferred filename unless that name is already in use as a key in the directorys dictionary of children. See Working with Directory Wrappers in File System Programming Guide for more information about the file-wrapper list structure.

Use this method to add an existing file wrapper as a child of a directory file wrapper. If the file wrapper does not have a preferred filename, set the preferredFilename property to give it one before calling addFileWrapper. To create a new file wrapper and add it to a directory, use the addRegularFileWithContents method.

Special Considerations
This method raises NSInternalInconsistencyException if the receiver is not a directory file wrapper.
This method raises NSInvalidArgumentException if the child file wrapper doesn't have a preferred name.

32.29.4 addRegularFileWithContents(Data as MemoryBlock, preferredFilename as string) as String

MBS MacBase Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creates a regular-file file wrapper with the given contents and adds it to the receiver, which must be a directory file wrapper.

Notes:
32.29. **CLASS NSFILEWRAPPERMBS**

data: Contents for the new regular-file file wrapper.
filename: Preferred filename for the new regular-file file wrapper.

Returns Dictionary key used to store the new file wrapper in the directory’s list of file wrappers. The dictionary key is a unique filename, which is the same as the passed-in file wrapper’s preferred filename unless that name is already in use as a key in the directory’s dictionary of children. See Working with Directory Wrappers in File System Programming Guide for more information about the file-wrapper list structure.

This is a convenience method. The default implementation allocates a new file wrapper, initializes it with initRegularFileWithContents, set its preferredFilename property, adds it to the directory with addFileWrapper, and returns what addFileWrapper returned.

This method raises NSInternalInconsistencyException if the receiver is not a directory file wrapper. This method raises NSInvalidArgumentException if you pass nil or an empty value for filename.

Available in OS X v10.0 and later.

### 32.29.5 Constructor

MBS MacBase Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.

### 32.29.6 initDirectoryWithFileWrappers(childrenByPreferredName as Dictionary) as NSFileWrapperMBS

MBS MacBase Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes the receiver as a directory file wrapper, with a given file-wrapper list. **Notes:**

childrenByPreferredName: Key-value dictionary of file wrappers with which to initialize the receiver. The dictionary must contain entries whose values are the file wrappers that are to become children and whose keys are filenames. See Working with Directory Wrappers in File System Programming Guide for more information about the file-wrapper list structure.

Returns initialized file wrapper for fileWrappers.

After initialization, the file wrapper is not associated with a file-system node until you save it using write-ToURL:options:originalContentsURL:

The receiver is initialized with open permissions: anyone can read, write, or modify the directory on disk.
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If any file wrapper in the directory doesn't have a preferred filename, its preferred name is automatically set to its corresponding key in the childrenByPreferredName dictionary.

### 32.29.7 initRegularFileWithContents(data as MemoryBlock) as NSFileWrapperMBS

MBS MacBase Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes the receiver as a regular-file file wrapper.

**Example:**

```lisp
Dim content as MemoryBlock = "Hello World"
Dim f as NSFileWrapperMBS = NSFileWrapperMBS.initRegularFileWithContents(content)
f.filename = "HelloWorld.txt"
```

**Notes:**

After initialization, the file wrapper is not associated with a file-system node until you save it using writeToURL.
The file wrapper is initialized with open permissions: anyone can write to or read the file wrapper.

### 32.29.8 initWithFile(File as folderItem, Options as Integer, byref error as NSErrorMBS) as NSFileWrapperMBS

MBS MacBase Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes a file wrapper instance whose kind is determined by the type of file-system node located by the folderitem.

**Example:**

```lisp
Dim file as FolderItem = SpecialFolder.desktop.child("todo.rtf")
Dim e as NSErrorMBS
Dim f as NSFileWrapperMBS = NSFileWrapperMBS.initWithFile(file, 0, e)
If e <> nil Then
    MsgBox e.localizedDescription
Else
    Dim dic as Dictionary = f.fileAttributes
    Break // read dic in debugger
End If
```

**Notes:**

Nothing to note for this function.
32.29. **CLASS NSFILEWRAPPERMBS**

File: FolderItem of the file-system node the file wrapper is to represent.

options: Option flags for reading the node located at folderItem. Can be NSFileWrapperReadingImmediate
and/or NSFileWrapperReadingWithoutMapping.

Error: If an error occurs, upon return contains an NSErrorMBS object that describes the problem.

Returns File wrapper for the file-system node at folderItem. May be a directory, file, or symbolic link,
depending on what is located at the folderItem. Returns nil if reading is not successful.

If folderItem is a directory, this method recursively creates file wrappers for each node within that directory.
Use the fileWrappers property to get the file wrappers of the nodes contained by the directory.

Available in OS X v10.6 and later.

---

32.29.9 **initWithSerializedRepresentation(data as MemoryBlock) as NSFileWrapperMBS**

MBS MacBase Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Initializes the receiver as a regular-file file wrapper from given serialized data.

**Example:**

```swift
// get a wrapper
dim file as FolderItem = SpecialFolder.desktop.child("todo.rtf")
dim e as NSErrorMBS
dim f as NSFileWrapperMBS = NSFileWrapperMBS.initWithFile(file, 0, e)
dim data as MemoryBlock = f.serializedRepresentation

// later restore it
dim other as NSFileWrapperMBS = NSFileWrapperMBS.initWithSerializedRepresentation(data)
MsgBox other.preferredFilename
```

**Notes:**

serializedRepresentation: Serialized representation of a file wrapper in the format used for the NSFileCon-
tentsPasteboardType pasteboard type. Data of this format is returned by such methods as serializedRepresen-
tation and RTFDInRange (in NSAttributedString).

Returns regular-file file wrapper initialized from serializedRepresentation.
The file wrapper is not associated with a file-system node until you save it using writeToURL.
32.29.10 initWithURL(URL as string, Options as Integer, byref error as NSErrorMBS) as NSFileWrapperMBS

MBS MacBase Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes a file wrapper instance whose kind is determined by the type of file-system node located by the URL.

**Notes:**
- url: URL of the file-system node the file wrapper is to represent.
- options: Option flags for reading the node located at url. Can be NSFileWrapperReadingImmediate and/or NSFileWrapperReadingWithoutMapping.
- Error: If an error occurs, upon return contains an NSErrorMBS object that describes the problem.

Returns File wrapper for the file-system node at url. May be a directory, file, or symbolic link, depending on what is located at the URL. Returns nil if reading is not successful.

If url is a directory, this method recursively creates file wrappers for each node within that directory. Use the fileWrappers property to get the file wrappers of the nodes contained by the directory.

Available in OS X v10.6 and later.

32.29.11 keyForFileWrapper(child as NSFileWrapperMBS) as String

MBS MacBase Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the dictionary key used by a directory to identify a given file wrapper.

**Notes:**
- child: The child file wrapper for which you want the key.

Returns Dictionary key used to store the file wrapper in the directory’s list of file wrappers. The dictionary key is a unique filename, which may not be the same as the passed-in file wrapper’s preferred filename if more than one file wrapper in the directory’s dictionary of children has the same preferred filename. See Working with Directory Wrappers in File System Programming Guide for more information about the file-wrapper list structure. Returns nil if the file wrapper specified in child is not a child of the directory.

**Special Considerations**
This method raises NSInternalInconsistencyException if the receiver is not a directory file wrapper.
32.29.12 matchesContentsOfFile(File as Folderitem) as Boolean

MBS MacBase Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates whether the contents of a file wrapper matches a directory, regular file, or symbolic link on disk.

**Notes:**

file: Folderitem of the file-system node with which to compare the file wrapper.

Returns true when the contents of the file wrapper match the contents of url, false otherwise.

The contents of files are not compared; matching of regular files is based on file modification dates. For a directory, children are compared against the files in the directory, recursively.

Because children of directory file wrappers are not read immediately by the initWithURL:options:error: method unless the NSFileWrapperReadingImmediate reading option is used, even a newly-created directory file wrapper might not have the same contents as the directory on disk. You can use this method to determine whether the file wrapper’s contents in memory need to be updated.

If the file wrapper needs updating, use the readFromURL:options:error: method with the NSFileWrapper-ReadingImmediate reading option.

This table describes which attributes of the file wrapper and file-system node are compared to determine whether the file wrapper matches the node on disk:

<table>
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</tr>
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<tbody>
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</tr>
<tr>
<td>Directory</td>
<td>Children (recursive).</td>
</tr>
<tr>
<td>Symbolic link</td>
<td>Destination pathname.</td>
</tr>
</tbody>
</table>

Available in OS X v10.6 and later.

32.29.13 matchesContentsOfURL(URL as String) as Boolean

MBS MacBase Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates whether the contents of a file wrapper matches a directory, regular file, or symbolic link on disk.

**Notes:**

url: URL of the file-system node with which to compare the file wrapper.
Returns true when the contents of the file wrapper match the contents of url, false otherwise.

The contents of files are not compared; matching of regular files is based on file modification dates. For a directory, children are compared against the files in the directory, recursively.

Because children of directory file wrappers are not read immediately by the initWithURL:options:error: method unless the NSFileWrapperReadingImmediate reading option is used, even a newly-created directory file wrapper might not have the same contents as the directory on disk. You can use this method to determine whether the file wrapper’s contents in memory need to be updated.

If the file wrapper needs updating, use the readFromURL:options:error: method with the NSFileWrapper-ReadingImmediate reading option.

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<tr>
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<td>Destination pathname.</td>
</tr>
</tbody>
</table>

Available in OS X v10.6 and later.

32.29.14 readFromFile(File as Folderitem, Options as Integer = 0, byref Error as NSErrorMBS) as Boolean

MBS MacBase Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Recursively rereads the entire contents of a file wrapper from the specified location on disk.
Notes:
File: Folderitem of the file-system node corresponding to the file wrapper.
options: Option flags for reading the node located at url.
Error: If an error occurs, upon return contains an NSError object that describes the problem.

Returns true if successful. If not successful, returns false after setting outError to an NSErrorMBS object that describes the reason why the file wrapper could not be reread.

When reading a directory, children are added and removed as necessary to match the file system.
Available in OS X v10.6 and later.
32.29.15 readFromURL(URL as String, Options as Integer = 0, byref Error as NSErrorMBS) as Boolean

MBS MacBase Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Recursively rereads the entire contents of a file wrapper from the specified location on disk. **Notes:**

- **url:** URL of the file-system node corresponding to the file wrapper.
- **options:** Option flags for reading the node located at url.
- **Error:** If an error occurs, upon return contains an NSError object that describes the problem.

Returns true if successful. If not successful, returns false after setting outError to an NSErrorMBS object that describes the reason why the file wrapper could not be reread.

When reading a directory, children are added and removed as necessary to match the file system. Available in OS X v10.6 and later.

32.29.16 removeFileWrapper(child as NSFileWrapperMBS)

MBS MacBase Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes a child file wrapper from the receiver, which must be a directory file wrapper. **Notes:** This method raises NSInternalInconsistencyException if the receiver is not a directory file wrapper.

32.29.17 writeToFile(File as FolderItem, Options as Integer = 0, originalContentsURL as FolderItem = nil, byref Error as NSErrorMBS) as Boolean

MBS MacBase Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Recursively writes the entire contents of a file wrapper to a given file-system URL. **Example:**

```javascript
// get styled text from htmlviewer
dim w as WebViewMBS = HTMLViewer1.WebViewMBS
dim f as WebFrameMBS = w.mainFrame
dim v as WebFrameViewMBS = f.frameView
dim d as WebDocumentViewMBS = v.documentView
dim n as NSAttributedStringMBS = d.attributedString

// package it
dim da as new Dictionary
da.Value(n.NSDocumentTypeDocumentAttribute) = n.NSRTFDTextDocumentType

dim e as NSErrorMBS
```
dim fw as NSFileWrapperMBS = n.fileWrapperFromRange(0, n.Length, da, e)
if e <> nil then
    MsgBox e.localizedDescription
    Return
end if

// write to disk
dim file as FolderItem = SpecialFolder.Desktop.Child("test.rtffd")
if fw.writeToFile(file, e) then
    MsgBox "OK"
else
    MsgBox e.localizedDescription
end if

Notes:
File: FolderItem of the file-system node to which the file wrappers contents are written.
options: Option flags for writing to the node located at url.
originalContentsURL: The location of a previous revision of the contents being written. The default implementation of this method attempts to avoid unnecessary I/O by writing hard links to regular files instead of actually writing out their contents when the contents have not changed. The child file wrappers must return accurate values when its filename property is accessed for this to work. Use the NSFileWrapperWritingWithNameUpdating writing option to increase the likelihood of that. Specify nil for this parameter if there is no earlier version of the contents or if you want to ensure that all the contents are written to files.
Error: If an error occurs, upon return contains an NSError object that describes the problem.

Returns true when the write operation is successful. If not successful, returns false after setting outError to an NSError object that describes the reason why the file wrappers contents could not be written.

Available in OS X v10.6 and later.

32.29.18 writeToFile(URL as String, Options as Integer = 0, originalContentsURL as String = "", byref Error as NSErrorMBS) as Boolean

MBS MacBase Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Recursively writes the entire contents of a file wrapper to a given file-system URL.
Notes:
url: URL of the file-system node to which the file wrappers contents are written.
options: Option flags for writing to the node located at url.
originalContentsURL: The location of a previous revision of the contents being written. The default implementation of this method attempts to avoid unnecessary I/O by writing hard links to regular files instead of actually writing out their contents when the contents have not changed. The child file wrappers must return accurate values when its filename property is accessed for this to work. Use the NSFileWrapperWritingWithNameUpdating writing option to increase the likelihood of that. Specify nil for this parameter if there is no earlier version of the contents or if you want to ensure that all the contents are written to files.
ingWithNameUpdating writing option to increase the likelihood of that. Specify nil for this parameter if there is no earlier version of the contents or if you want to ensure that all the contents are written to files.

Error: If an error occurs, upon return contains an NSError object that describes the problem.

Returns true when the write operation is successful. If not successful, returns false after setting outError to an NSError object that describes the reason why the file wrappers contents could not be written.

Available in OS X v10.6 and later.

### 32.29.19 Properties

#### 32.29.20 Directory as Boolean

**MBS MacBase Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:** This property contains a boolean value indicating whether the file wrapper is a directory file wrapper. (read-only)

**Notes:**

This property will contain true when the file wrapper is a directory file wrapper, otherwise it contains false. Invocations of readFromURL may change the value of this property, if the type of the file on disk has changed. (Read only property)

#### 32.29.21 fileAttributes as Dictionary

**MBS MacBase Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:** A dictionary of file attributes.

**Example:**

```plaintext
dim file as FolderItem = SpecialFolder.desktop.child("todo.rtf")
dim e as NSErrorMBS
dim f as NSFileWrapperMBS = NSFileWrapperMBS.initWithFile(file, 0, e)
if e <> nil then
    MsgBox e.localizedDescription
else
    dim dic as Dictionary = f.fileAttributes
    Break // read dic in debugger
end if
```

**Notes:**

The file attributes dictionary is the same format as that returned by attributesOfItemAtPath (see NSFile-
32.29.22 filename as String


Example:

```vba
dim content as MemoryBlock = "Hello World"
dim f as NSFileWrapperMBS = NSFileWrapperMBS.initRegularFileWithContents(content)
f.filename = "HelloWorld.txt"
```

Notes:

This property contains the file wrappers filename, or nil when the file wrapper has no corresponding file-system node.

The filename is used for record-keeping purposes only and is set automatically when the file wrapper is created from the file system using initWithURL and when its saved to the file system using writeToURL (although this method allows you to request that the filename not be updated).

The filename is usually the same as the preferred filename, but might instead be a name derived from the preferred filename. You can use this method to get the name of a child that’s just been read. Don’t use this method to get the name of a child that’s about to be written, because the name might be about to change; send keyForFileWrapper to the parent instead.

(Read and Write property)

32.29.23 fileWrappers as Dictionary


Notes:

The dictionary contains entries whose values are the file wrappers and whose keys are the unique filenames that have been assigned to each one. See Working with Directory Wrappers in File System Programming Guide for more information about the file-wrapper list structure.

This property may contain nil if the user modifies the directory after you call readFromURL or initWithURL but before NSFileWrapper has read the contents of the directory. Use the NSFileWrapperReadingImmediate reading option to reduce the likelihood of that problem.
This property raises NSInternalInconsistencyException if the file wrapper object is not a directory file wrapper.
(Read only property)

### 32.29.24 Handle as Integer

MBS MacBase Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference.

**Notes:**

Must not be 0 to have the object being valid.
(Read and Write property)

### 32.29.25 icon as NSImageMBS

MBS MacBase Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An image that can be used to represent the file wrapper to the user.

**Example:**

```vbnet
dim file as FolderItem = SpecialFolder.desktop.child("todo.rtf")
dim e as NSErrorMBS
dim f as NSFileWrapperMBS = NSFileWrapperMBS.initWithFile(file, 0, e)
dim img as NSImageMBS = f.icon
dim pic as Picture = img.CopyPictureWithMask
window1Backdrop = pic
```

**Notes:**

An application does not have to use this icon; for example, a file viewer typically looks up icons automatically based on file extensions, and so wouldn't need this one. Similarly, if a file wrapper represents an image file, an application can display the image directly rather than a file icon.

This method may return nil if the file wrapper is a child created when its parent was read from the file system, and the child was modified before it was read. Use the NSFileWrapperReadingImmediate reading option to reduce the likelihood of that problem.

Because the NSImage object that's returned might be shared by many NSFileWrapper objects, you must not mutate it. If you need to mutate the returned object, make a copy first and mutate the copy instead.
(Read and Write property)
32.29.26  preferredFilename as String

MBS MacBase Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The preferred filename for the file wrapper object.

**Example:**

```vba
// get a wrapper
dim file as FolderItem = SpecialFolder.desktop.child("todo.rtf")
dim e as NSErrorMBS
dim f as NSFileWrapperMBS = NSFileWrapperMBS.initWithFile(file, 0, e)
dim data as MemoryBlock = f.serializedRepresentation

// later restore it
dim other as NSFileWrapperMBS = NSFileWrapperMBS.initWithSerializedRepresentation(data)
MsgBox other.preferredFilename
```

**Notes:**

This name is normally used as the dictionary key when a child file wrapper is added to a directory file wrapper. However, if another file wrapper with the same preferred name already exists in the directory file wrapper when this object is added, the filename assigned as the dictionary key may differ from the preferred filename.

When you change the preferred filename, the default implementation of this property causes the existing parent directory file wrappers to remove and re-add the child to accommodate the change. Preferred filenames of children are not preserved when you write a file wrapper to disk and then later instantiate another file wrapper by reading the file from disk. If you need to preserve the user-visible names of attachments, you have to store the names yourself.

(Read and Write property)

32.29.27  RegularFile as Boolean

MBS MacBase Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This property contains a boolean value that indicates whether the file wrapper object is a regular-file. (read-only)

**Notes:**

This property contains true when the file wrapper object is a regular-file wrapper, otherwise it contains false. Invocations of readFromURL may change the value of this property if the type of the file on disk has changed.

(Read only property)
32.29. CLASS NSFILEWRAPPERMBS

32.29.28 regularFileContents as MemoryBlock

MBS MacBase Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The contents of the file-system node associated with a regular-file file wrapper. (read-only)

Notes:
This property may contain nil if the user modifies the file after you call readFromURL or initWithURL but before NSFileWrapper has read the contents of the file. Use the NSFileWrapperReadingImmediate reading option to reduce the likelihood of that problem.
This property raises NSInternalInconsistencyException if the file wrapper object is not a regular-file file wrapper.
(Read only property)

32.29.29 serializedRepresentation as MemoryBlock

MBS MacBase Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The contents of the file wrapper as an opaque collection of data. (read-only)

Example:
```
// get a wrapper
dim file as FolderItem = SpecialFolder.desktop.child("todo.rtf")
dim e as NSErrorMBS
dim f as NSFileWrapperMBS = NSFileWrapperMBS.initWithFile(file, 0, e)
dim data as MemoryBlock = f.serializedRepresentation

// later restore it
dim other as NSFileWrapperMBS = NSFileWrapperMBS.initWithSerializedRepresentation(data)
MsgBox other.preferredFilename
```

Notes:
This property contains an MemoryBlock in the format used by the pasteboard type NSFileContentsPboardType. This MemoryBlock is also suitable for passing to initWithSerializedRepresentation.
This property may contain nil if the user modifies the contents of the file-system node after you call readFromURL or initWithURL/File but before NSFileWrapper has read the contents of the file. Use the NSFileWrapperReadingImmediate reading option to reduce the likelihood of that problem.
(Read only property)

32.29.30 SymbolicLink as Boolean

MBS MacBase Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A boolean that indicates whether the file wrapper object is a symbolic-link file wrapper. (read-only)
Notes:
This property contains true when the file wrapper object is a symbolic-link file wrapper, false otherwise.
Invocations of readFromURL may change the value contained by this property, if the type of the file on disk has changed.
(Read only property)

32.29.31 symbolicLinkDestinationURL as String

MBS MacBase Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The URL referenced by the file wrapper object, which must be a symbolic-link file wrapper. (read-only)
Notes:
This property may contain nil if the user modifies the symbolic link after you call readFromURL or initWithURL but before NSFileWrapper has read the contents of the link. Use the NSFileWrapperReadingImmediate reading option to reduce the likelihood of that problem.
This property raises NSInternalInconsistencyException if the file wrapper object is not a symbolic-link file wrapper.
(Read only property)

32.29.32 Constants

32.29.33 NSFileWrapperReadingImmediate = 1

MBS MacBase Plugin, Plugin Version: 15.0. Function: One of the reading options.
Notes:
If reading with this option succeeds, then subsequent uses of fileWrappers, regularFileContents, symbolicLinkDestinationURL, and serializedRepresentation sent to the file wrapper and all its child file wrappers will fail and return nil only if an actual error occurs (for example, the volume has disappeared or the file server is unreachable)not as a result of the user moving or deleting files.

For performance reasons, NSFileWrapper may not read the contents of some file packages immediately even when this option is chosen. For example, because the contents of bundles (not all file packages are bundles) are immutable to the user, NSFileWrapper may read the children of such a directory lazily.

You can use this option to take a snapshot of a file or folder for writing later. For example, an application like TextEdit can use this option when creating new file wrappers to represent attachments that the user creates by copying and pasting or dragging and dropping from the Finder to a TextEdit document. Don’t use this option when reading a document file package, because that would cause unnecessarily bad performance. For example, an application wouldn’t use this option when creating file wrappers to represent attachments as it’s opening a document stored in a file package.
### 32.29.34 NSFileWrapperReadingWithoutMapping = 2

**MBS MacBase Plugin, Plugin Version: 15.0.** **Function:** One of the reading options.  
**Notes:**  
Whether file mapping for regular file wrappers is disallowed.

You can use this option to keep NSFileWrapper from memory-mapping files. This is useful if you want to make sure your application doesn’t hold files open (mapped files are open files), therefore preventing the user from ejecting DVDs, unmounting disk partitions, or unmounting disk images. In OS X v10.6 and later, NSFileWrapper memory-maps files that are on internal drives only. It never memory-maps files on external drives or network volumes, regardless of whether this option is used.

Available in OS X v10.6 and later.

### 32.29.35 NSFileWrapperWritingAtomic = 1

**MBS MacBase Plugin, Plugin Version: 15.0.** **Function:** One of the writing options.  
**Notes:**  
Whether writing is done atomically.

You can use this option to ensure that, when overwriting a file package, the overwriting either completely succeeds or completely fails, with no possibility of leaving the file package in an inconsistent state. Because this option causes additional I/O, you shouldn’t use it unnecessarily. For example, don’t use this option in an override of:  

```swift
- [NSDocument writeToURL]
```

, because NSDocument safe-saving is already done atomically.

Available in OS X v10.6 and later.

### 32.29.36 NSFileWrapperWritingWithNameUpdating = 2

**MBS MacBase Plugin, Plugin Version: 15.0.** **Function:** One of the writing options.  
**Notes:**  
Whether descendant file wrappers filename properties are set if the writing succeeds.

This option is necessary when your application passes a URL in the originalContentsURL parameter to the writeToURL method. Without using this option (and reusing child file wrappers properly), subsequent
invocations of writeToURL would not be able to reliably create hard links in a new file package, because the record of names in the old file package would be out of date.

Available in OS X v10.6 and later.
32.30. CLASS NSFONTDESCRIPTORMBS

32.30 class NSFontDescriptorMBS

32.30.1 class NSFontDescriptorMBS

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Cocoa class for a font descriptor.

**Notes:**

NSFontDescriptor objects provide a mechanism to describe a font with a dictionary of attributes. This font descriptor can be used later to create or modify an NSFont object. Mac OS X v10.4 and later provides a font matching capability, so that you can partially describe a font by creating a font descriptor with, for example, just a family name. You can then find all the available fonts on the system with a matching family name using matchingFontDescriptorsWithMandatoryKeys.

There are several ways to create a new NSFontDescriptor object. You can use the Constructor, fontDescriptorWithFontAttributes or fontDescriptorWithName, to create a font descriptor based on either your custom attributes dictionary or on a specific font’s name and size. Alternatively you can use one of the fontDescriptor instance methods (such as fontDescriptorWithFace) to create a modified version of an existing descriptor. The latter methods are useful if you have an existing descriptor and simply want to change one aspect.

All attributes in the attributes dictionary are optional.

32.30.2 Methods

32.30.3 Constructor(AttributesDic as Dictionary)

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns a new font descriptor with the specified attributes.

**Notes:** attributes: The attributes for the new font descriptor. If nil, the font descriptor’s attribute dictionary will be empty.

32.30.4 copy as NSFontDescriptorMBS

MBS MacBase Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy of the object.
32.30.5  fontAttributes as Dictionary

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver’s dictionary of attributes.

32.30.6  fontDescriptorByAddingAttributes(AttributesDic as Dictionary) as NSFontDescriptorMBS

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a new font descriptor that is the same as the receiver but with the specified attributes taking precedence over the existing ones.

32.30.7  fontDescriptorWithFace(newFace as string) as NSFontDescriptorMBS

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a new font descriptor that is the same as the receiver but with the specified face. **Notes:**

newFace: The new font face.

Returns the new font descriptor.
Available in Mac OS X v10.4 and later.

32.30.8  fontDescriptorWithFamily(newFamily as string) as NSFontDescriptorMBS

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a new font descriptor whose attributes are the same as the receiver but from the specified family. **Notes:**

newFamily: The new font family.

Returns the new font descriptor.
Available in Mac OS X v10.4 and later.
32.30.9  fontDescriptorWithFontAttributes(AttributesDic as Dictionary) as NSFontDescriptorMBS


Notes:

attributes: The attributes for the font descriptor. If nil, the font descriptor’s dictionary will be empty.

Returns the new font descriptor.

32.30.10  fontDescriptorWithMatrix(matrix as Variant) as NSFontDescriptorMBS

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  Function: Returns a new font descriptor that is the same as the receiver but with the specified matrix.

Notes:

matrix: The new font matrix. Must be a NSAffineTransformMBS object.

Returns the new font descriptor.
Available in Mac OS X v10.4 and later.

32.30.11  fontDescriptorWithName(fontName as string, matrix as Variant) as NSFontDescriptorMBS

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  Function: Returns a font descriptor with the NSFontNameAttribute and NSFontMatrixAttribute dictionary attributes set to the given values.

Notes:

fontName: The value for NSFontNameAttribute.
matrix: The value for NSFontMatrixAttribute. Must be a NSAffineTransformMBS object or nil!

Returns the new font descriptor.
Available in Mac OS X v10.4 and later.
See also:

- 32.30.12 fontDescriptorWithName(fontName as string, size as Double) as NSFontDescriptorMBS
32.30.12  **fontDescriptorWithName(fontName as string, size as Double) as NSFontDescriptorMBS**

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a font descriptor with the NSFontNameAttribute and NSFontSizeAttribute dictionary attributes set to the given values.

**Notes:**
- **fontName:** The value for NSFontNameAttribute.
- **size:** The value for NSFontSizeAttribute.

Returns the new font descriptor.

Available in Mac OS X v10.3 and later.

See also:

- 32.30.11 fontDescriptorWithName(fontName as string, matrix as Variant) as NSFontDescriptorMBS

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32.30.13  **fontDescriptorWithSize(newPointSize as Double) as NSFontDescriptorMBS**

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a new font descriptor that is the same as the receiver but with the specified point size.

**Notes:**
- **newPointSize:** The new point size.

Returns the new font descriptor.

Available in Mac OS X v10.4 and later.

32.30.14  **fontDescriptorWithSymbolicTraits(SymbolicTraits as Integer) as NSFontDescriptorMBS**

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a new font descriptor that is the same as the receiver but with the specified symbolic traits taking precedence over the existing ones.

**Example:**

```swift
// get a bold font
dim n as NSFontMBS = NSFontMBS.boldSystemFontOfSize(13)
dim f as NSFontDescriptorMBS = n.fontDescriptor
dim w as Integer = f.symbolicTraits

// find similar font without bold
```
f = f.fontDescriptorWithSymbolicTraits(BitwiseAnd(w, Bitwise.OnesComplement(f.NSFontBoldTrait)))

// now check it
dim d as Dictionary = f.fontAttributes
w = f.symbolicTraits

if BitwiseAnd(w, f.NSFontBoldTrait) <> 0 then
    MsgBox "bold"
else
    MsgBox "not bold"
end if

Notes:
symbolicTraits: The new symbolic traits.

Returns the new font descriptor.
Available in Mac OS X v10.4 and later.

32.30.15 matchingFontDescriptorsWithMandatoryKeys as NSFontDescriptorMBS()

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns all the fonts available on the system whose specified attributes match those of the receiver. Notes: mandatoryKeys: Optional, keys that must be identical to be matched. Can be nil.

Returns the matching font descriptors.

For example, suppose there are two versions of a given font installed that differ in the number of glyphs covered (the new version has more glyphs). If you explicitly specify NSFontNameAttribute as the only mandatory key, then a font descriptor that specifies a font name and character set by default matches both versions, since the character set attribute is not used for matching. If you specify that font name and character set keys are mandatory, the returned array contains only the font that matches both keys.

Available in Mac OS X v10.4 and later.
See also:
- 32.30.16 matchingFontDescriptorsWithMandatoryKeys(mandatoryKeys() as string) as NSFontDescriptorMBS()
32.30.16 matchingFontDescriptorsWithMandatoryKeys(mandatoryKeys() as string) as NSFontDescriptorMBS()

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns all the fonts available on the system whose specified attributes match those of the receiver. **Notes:**

mandatoryKeys: Optional, keys that must be identical to be matched. Can be nil.

Returns the matching font descriptors.

For example, suppose there are two versions of a given font installed that differ in the number of glyphs covered (the new version has more glyphs). If you explicitly specify NSFontNameAttribute as the only mandatory key, then a font descriptor that specifies a font name and character set by default matches both versions, since the character set attribute is not used for matching. If you specify that font name and character set keys are mandatory, the returned array contains only the font that matches both keys.

Available in Mac OS X v10.4 and later. See also:

- 32.30.15 matchingFontDescriptorsWithMandatoryKeys as NSFontDescriptorMBS() 5685

32.30.17 matchingFontDescriptorWithMandatoryKeys as NSFontDescriptorMBS

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a normalized font descriptor whose specified attributes match those of the receiver. **Notes:**

mandatoryKeys: Optional, keys that must be identical to be matched. Can be nil.

Returns the matching font descriptor. The returned font descriptor is the first element returned from matchingFontDescriptorsWithMandatoryKeys. See also:

- 32.30.18 matchingFontDescriptorWithMandatoryKeys(mandatoryKeys() as string) as NSFontDescriptorMBS 5686

32.30.18 matchingFontDescriptorWithMandatoryKeys(mandatoryKeys() as string) as NSFontDescriptorMBS

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a normalized font descriptor whose specified attributes match those of the receiver. **Notes:**
mandatoryKeys: Optional, keys that must be identical to be matched. Can be nil.

Returns the matching font descriptor.
The returned font descriptor is the first element returned from matchingFontDescriptorsWithMandatoryKeys.
See also:

- 32.30.17 matchingFontDescriptorWithMandatoryKeys as NSFontDescriptorMBS

32.30.19  matrix as Variant

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the current transform matrix of the receiver.
**Notes:** Must be a NSAffineTransformMBS object or nil!

32.30.20  NSFontCascadeListAttribute as string

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute keys.
**Notes:**
An array with sub-descriptors.
The default value is the system default cascading list for user’s locale.
Available in Mac OS X v10.4 and later.

32.30.21  NSFontCharacterSetAttribute as string

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute keys.
**Notes:**
An NSCharacterSetMBS instance that represents the set of Unicode characters covered by the font.
The default value is supplied by the font.
Available in Mac OS X v10.4 and later.

32.30.22  NSFontColorAttribute as string

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute keys.
**Notes:**
An optional memory block that specifies the font color.
(Deprecated. Use NSForegroundColorAttributeName instead.)
Available in Mac OS X v10.3 and later.
Deprecated in Mac OS X v10.4.

### 32.30.23 NSFontFaceAttribute as string

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute keys. **Notes:** An optional string that specifies the font face.

### 32.30.24 NSFontFamilyAttribute as string

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute keys. **Notes:** An optional string that specifies the font family.

### 32.30.25 NSFontFeatureSelectorIdentifierKey as string

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for font descriptor attributes. **Notes:**
A number specifying a font feature selector such as common ligature off, traditional character shape, and so on. See "Font Features" in ATSUI Programming Guide for predefined feature selectors. Available in Mac OS X v10.5 and later.

### 32.30.26 NSFontFeatureTypeIdentifierKey as string

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for font descriptor attributes. **Notes:**
A number specifying a font feature type such as ligature, character shape, and so on. See "Font Features" in ATSUI Programming Guide for predefined feature types. Available in Mac OS X v10.5 and later.
32.30. CLASS NSFONTDESCRIPTORMBS

32.30.27 NSFontFixedAdvanceAttribute as string

Notes: A number containing a float value that overrides the glyph advancement specified by the font. The default value is 0.0.

32.30.28 NSFontMatrixAttribute as string

Notes: An NSAffineTransformMBS instance that specifies the font’s transformation matrix. The default value is the identity matrix. Available in Mac OS X v10.4 and later.

32.30.29 NSFontNameAttribute as string

Notes: An optional string that specifies the font name.

32.30.30 NSFontSizeAttribute as string

Notes: An optional string, containing a float value, that specifies the font size.

32.30.31 NSFontSlantTrait as string

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the keys to retrieve information about a font descriptor from its trait dictionary.
Notes: The relative slant angle value as a number. The valid value range is from -1.0 to 1.0. The value of 0.0 corresponds to 0 degree clockwise rotation from the vertical and 1.0 corresponds to 30 degrees clockwise rotation.
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Available in Mac OS X v10.4 and later.

32.30.32 **NSFontSymbolicTrait as string**

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys to retrieve information about a font descriptor from its trait dictionary. **Notes:**
The symbolic traits value as a number. Available in Mac OS X v10.4 and later.

32.30.33 **NSFontTraitsAttribute as string**

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute keys. **Notes:**
A Dictionary instance instance fully describing font traits. The default value is supplied by the font. See "Font traits dictionary keys" for dictionary keys. Available in Mac OS X v10.4 and later.

32.30.34 **NSFontVariationAttribute as string**

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute keys. **Notes:**
A dictionary instance that describes the font’s variation axis. The default value is supplied by the font. See "Font variation axis dictionary keys" for dictionary keys. Available in Mac OS X v10.4 and later.

32.30.35 **NSFontVariationAxisDefaultValueKey as string**

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys to retrieve information about a font descriptor from its variation axis dictionary. **Notes:**
The default axis value as a number. Available in Mac OS X v10.4 and later.
32.30. **CLASS NSFONTDESCRIPTORMBS**

32.30.36 **NSFontVariationAxisIdentifierKey as string**

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys to retrieve information about a font descriptor from its variation axis dictionary. **Notes:**
The axis identifier value as a number.
Available in Mac OS X v10.4 and later.

32.30.37 **NSFontVariationAxisMaximumValueKey as string**

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys to retrieve information about a font descriptor from its variation axis dictionary. **Notes:**
The maximum axis value as a number.
Available in Mac OS X v10.4 and later.

32.30.38 **NSFontVariationAxisMinimumValueKey as string**

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys to retrieve information about a font descriptor from its variation axis dictionary. **Notes:**
The minimum axis value as a number.
Available in Mac OS X v10.4 and later.

32.30.39 **NSFontVariationAxisNameKey as string**

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys to retrieve information about a font descriptor from its variation axis dictionary. **Notes:**
The localized variation axis name.
Available in Mac OS X v10.4 and later.

32.30.40 **NSFontVisibleNameAttribute as string**

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute keys.
Notes: An optional string that specifies the font’s visible name.

### 32.30.41 NSFontWeightTrait as string

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys to retrieve information about a font descriptor from its trait dictionary. **Notes:**

The normalized weight value as a number. The valid value range is from -1.0 to 1.0. The value of 0.0 corresponds to the regular or medium font weight. Available in Mac OS X v10.4 and later.

### 32.30.42 NSFontWidthTrait as string

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys to retrieve information about a font descriptor from its trait dictionary. **Notes:**

The relative inter-glyph spacing value as a number. The valid value range is from -1.0 to 1.0. The value of 0.0 corresponds to the regular glyph spacing. Available in Mac OS X v10.4 and later.

### 32.30.43 pointSize as Double

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the point size of the receiver. **Example:**

```dim f as NSFontMBS = NSFontMBS.fontWithName("Arial", 12)
dim d as NSFontDescriptorMBS = f.fontDescriptor
MsgBox str(d.pointSize)```

### 32.30.44 postscriptName as string

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the PostScript name of the receiver. **Example:**

```dim f as NSFontMBS = NSFontMBS.fontWithName("Arial", 12)
dim d as NSFontDescriptorMBS = f.fontDescriptor```
32.30. **CLASS NSFONTDESCRIPTORMBS**

MsgBox d.postscriptName

### 32.30.45 `symbolicTraits as Integer`

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a bit mask that describes the traits of the receiver.

**Example:**

```vba
dim n as NSFontMBS = NSFontMBS.boldSystemFontOfSize(13)
dim f as NSFontDescriptorMBS = n.fontDescriptor
dim w as Integer = f.symbolicTraits

if BitwiseAnd(w, f.NSFontBoldTrait) <> 0 then
    MsgBox "bold"
else
    MsgBox "not bold"
end if
```

**Notes:**

Typeface information is specified by the lower 16 bits of system trait value.

The font family class constants classify certain stylistic qualities of the font. These values correspond closely to the font class values in the OpenType OS/2 table. The class values are bundled in the upper four bits of the NSFontSymbolicTraits and can be accessed via NSFontFamilyClassMask. For more information about the specific meaning of each identifier, refer to the OpenType specification.

### 32.30.46 `variantForKey(key as string) as Variant`

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the font attribute specified by the given key.

### 32.30.47 Properties

### 32.30.48 Handle as Integer

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal reference.
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Notes: (Read and Write property)

32.30.49 Constants

32.30.50 NSFontBoldTrait = 2

MBS MacBase Plugin, Plugin Version: 12.1. **Function:** One of the typeface constants for symbolic traits. **Notes:**
The font’s typestyle is boldface.
Available in Mac OS X v10.4 and later.

32.30.51 NSFontClarendonSerifsClass = & h40000000

MBS MacBase Plugin, Plugin Version: 12.1. **Function:** One of the font family class constants. **Notes:**
The font’s style is a variation of the Oldstyle Serifs and the Transitional Serifs.
Available in Mac OS X v10.4 and later.

32.30.52 NSFontCondensedTrait = 64

MBS MacBase Plugin, Plugin Version: 12.1. **Function:** One of the typeface constants for symbolic traits. **Notes:**
The font’s typestyle is condensed. Expanded and condensed traits are mutually exclusive.
Available in Mac OS X v10.4 and later.

32.30.53 NSFontExpandedTrait = 32

MBS MacBase Plugin, Plugin Version: 12.1. **Function:** One of the typeface constants for symbolic traits. **Notes:**
The font’s typestyle is expanded. Expanded and condensed traits are mutually exclusive.
Available in Mac OS X v10.4 and later.
32.30.54 **NSFontFamilyClassMask = &hF0000000**

MBS MacBase Plugin, Plugin Version: 12.1. **Function:** The font family class mask used to access NSFontFamilyClass values.

**Notes:**
Available in Mac OS X v10.4 and later.
This constant is used to access NSFontFamilyClass values in the upper four bits of NSFontSymbolicTraits.

32.30.55 **NSFontFreeformSerifsClass = &h70000000**

MBS MacBase Plugin, Plugin Version: 12.1. **Function:** One of the font family class constants.

**Notes:**
The font’s style includes serifs, but it expresses a design freedom that does not generally fit within the other serif design classifications.
Available in Mac OS X v10.4 and later.

32.30.56 **NSFontItalicTrait = 1**

MBS MacBase Plugin, Plugin Version: 12.1. **Function:** One of the typeface constants for symbolic traits.

**Notes:**
The font’s typestyle is italic.
Available in Mac OS X v10.4 and later.

32.30.57 **NSFontModernSerifsClass = &h30000000**

MBS MacBase Plugin, Plugin Version: 12.1. **Function:** One of the font family class constants.

**Notes:**
The font’s style is based on the Latin printing style of the 20th century.
Available in Mac OS X v10.4 and later.

32.30.58 **NSFontMonoSpaceTrait = 1024**

MBS MacBase Plugin, Plugin Version: 12.1. **Function:** One of the typeface constants for symbolic traits.

**Notes:**
The font uses fixed-pitch glyphs if available. The font may have multiple glyph advances (many CJK glyphs contain two spaces).
32.30.59  NSFontOldStyleSerifsClass = & h10000000

MBS MacBase Plugin, Plugin Version: 12.1. **Function:** One of the font family class constants.  
**Notes:** The font’s style is based on the Latin printing style of the 15th to 17th century.  
Available in Mac OS X v10.4 and later.

32.30.60  NSFontOrnamentalsClass = & h90000000

MBS MacBase Plugin, Plugin Version: 12.1. **Function:** One of the font family class constants.  
**Notes:** The font’s style includes highly decorated or stylized character shapes such as those typically used in headlines.  
Available in Mac OS X v10.4 and later.

32.30.61  NSFontSansSerifClass = & h80000000

MBS MacBase Plugin, Plugin Version: 12.1. **Function:** One of the font family class constants.  
**Notes:** The font’s style includes most basic letter forms (excluding Scripts and Ornamentals) that do not have serifs on the strokes.  
Available in Mac OS X v10.4 and later.

32.30.62  NSFontScriptsClass = & hA0000000

MBS MacBase Plugin, Plugin Version: 12.1. **Function:** One of the font family class constants.  
**Notes:** The font’s style is among those typefaces designed to simulate handwriting.  
Available in Mac OS X v10.4 and later.
32.30. **CLASS NSFONTDESCRIPTORMBS**

### 32.30.63 NSFontSlabSerifsClass = & h50000000

MBS MacBase Plugin, Plugin Version: 12.1. **Function:** One of the font family class constants. **Notes:**
The font’s style is characterized by serifs with a square transition between the strokes and the serifs (no brackets).
Available in Mac OS X v10.4 and later.

### 32.30.64 NSFontSymbolicClass = & hC0000000

MBS MacBase Plugin, Plugin Version: 12.1. **Function:** One of the font family class constants. **Notes:**
The font’s style is generally design independent, making it suitable for special characters (icons, dingbats, technical symbols, and so on) that may be used equally well with any font.
Available in Mac OS X v10.4 and later.

### 32.30.65 NSFontTransitionalSerifsClass = & h20000000

MBS MacBase Plugin, Plugin Version: 12.1. **Function:** One of the font family class constants. **Notes:**
The font’s style is based on the Latin printing style of the 18th to 19th century.
Available in Mac OS X v10.4 and later.

### 32.30.66 NSFontUIOptimizedTrait = 4096

MBS MacBase Plugin, Plugin Version: 12.1. **Function:** One of the typeface constants for symbolic traits. **Notes:**
The font synthesizes appropriate attributes for user interface rendering, such as control titles, if necessary.
Available in Mac OS X v10.4 and later.

### 32.30.67 NSFontUnknownClass = 0

MBS MacBase Plugin, Plugin Version: 12.1. **Function:** One of the font family class constants. **Notes:**
The font has no design classification.
Available in Mac OS X v10.4 and later.
32.30.68  \texttt{NSFontVerticalTrait = 2048}

MBS MacBase Plugin, Plugin Version: 12.1. \textbf{Function:} One of the typeface constants for symbolic traits.  
\textbf{Notes:}  
The font uses vertical glyph variants and metrics.  
Available in Mac OS X v10.4 and later.
32.31 class NSFontManagerMBS

### 32.31.1 class NSFontManagerMBS

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** NSFontManager is the center of activity for the font conversion system.

**Example:**

```vbnet
// pick some font
dim n1 as NSFontMBS = nsfontmbs.fontWithName("Book Antiqua bold", 12)
dim fm as new NSFontManagerMBS

// remove all font traits
dim n2 as NSFontMBS = fm.convertFontToNotHaveTrait(n1, fm.traitsOfFont(n1))

// show name of base font
MsgBox n2.fontName
```

**Notes:**

It records the currently selected font, updates the Font panel and Font menu to reflect the selected font, initiates font changes, and converts fonts in response to requests from text-bearing objects. In a more prosaic role, NSFontManager can be queried for the fonts available to the application and for the particular attributes of a font, such as whether it’s condensed or extended.

As of Mac OS X version 10.3, font collections are managed by NSFontManager.

### 32.31.2 Methods

#### 32.31.3 addCollection(collectionName as String, Options as Integer = 0) as Boolean

MBS MacCocoa Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds a specified font collection to the font manager with a given set of options.

**Notes:**

collectionName: The collection to add.
Options: Pass NSFontCollectionApplicationOnlyMask to make the collection available only to the application.
Return true if the font collection was successfully added; otherwise, false.
32.31.4  addFontDescriptorsToCollection(descriptors() as NSFontDescriptorMBS, collectionName as String)

**Function:** Adds an array of font descriptors to the specified font collection.
**Example:**

```plaintext
dim fontManager as NSFontManagerMBS = NSFontManagerMBS.sharedFontManager

dim collectionNames() as string = fontManager.collectionNames
dim collectionName as string = collectionNames(collectionNames.Ubound) // get last one

dim fonts() as NSFontDescriptorMBS = fontManager.fontDescriptorsInCollection(collectionName)

// add Helvetica to this collection

dim font as NSFontMBS = NSFontMBS.fontWithName(“Helvetica”, 12)
dim fontDescriptor as NSFontDescriptorMBS = font.fontDescriptor

fontManager.addFontDescriptorsToCollection(array(fontDescriptor), collectionName)

dim fonts2() as NSFontDescriptorMBS = fontManager.fontDescriptorsInCollection(collectionName)

// fonts2 should have one more entry than fonts

Break
```

**Notes:**
- **descriptors:** The font descriptors to add.
- **collectionName:** The font collection to which descriptors are added.

32.31.5  availableFontFamilies as string()

**Function:** Returns the names of the font families available in the system.
**Example:**

```plaintext
dim n as new NSFontManagerMBS

dim names() as string = n.availableFontFamilies

MsgBox Join(names,EndOfLine)
```

**Notes:** These fonts are in various system font directories.
32.31. **CLASS NSFONTMANAGERMBS**

32.31.6 **availableFontNamesMatchingFontDescriptor(descriptor as NSFontDescriptorMBS) as String()**

MBS MacCocoa Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Returns the names of the fonts that match the attributes in the given font descriptor.

32.31.7 **availableFontNamesWithTraits(traits as Integer) as string()**

MBS MacCocoa Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Returns the names of the fonts available in the system whose traits are described exactly by the given font trait mask (not the NSFont objects themselves).

**Example:**
```pascal
  dim n as new NSFontManagerMBS
  dim names() as string = n.availableFontNamesWithTraits(n.NSBoldFontMask)

  MsgBox str(UBound(names)+1)+” fonts: ”+Join(names,”, ”)
```

**Notes:**
- **traits**: The font traits for which to return font names. You specify the desired traits by combining the font trait mask values described in Constants using the bitwiseor operator.

- Returns the names of the corresponding fonts.

- These fonts are in various system font directories.

  - If fontTraitMask is 0, this method returns all fonts that are neither italic nor bold. This result is the same one you’d get if fontTraitMask were NSUnitalicFontMask | NSUnboldFontMask.

32.31.8 **availableFonts as string()**

MBS MacCocoa Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Returns the names of the fonts available in the system (not the NSFont objects themselves).

**Example:**
```pascal
  dim n as new NSFontManagerMBS
  dim names() as string = n.availableFonts

  MsgBox Join(names,EndOfLine)
```
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Notes: These fonts are in various system font directories.

32.31.9 availableMembersOfFontFamily(FontFamily as string) as Variant()

Function: Returns an array with one entry for each available member of a font family.
Example:

dim n as new NSFontManagerMBS
dim members() as Variant = n.availableMembersOfFontFamily(”Times”)

for each m as Variant in members
    dim member() as Variant = m
    MsgBox ”Postscript name: ”+member(0)+EndOfLine+”Suffix: ”+member(1)+EndOfLine+”Font weight: ”+member(2)+EndOfLine+”Font trait: ”+member(3)
next

Notes:

family: The name of a font family, like one that availableFontFamilies returns.

Returns the available members of family.

Each entry of the returned variant array is another variant array with four members, as follows:

0. The PostScript font name, as a string.
1. The part of the font name used in the font panel that’s not the font name, as a string. This value is not localized for example, ”Roman”, ”Italic”, or ”Bold”.
2. The font’s weight, as a double.
3. The font’s traits, as a double.

The members of the family are arranged in the font panel order (narrowest to widest, lightest to boldest, plain to italic).
32.31.10  collectionNames as string()

**Function:** Returns the names of the currently loaded font collections.  
**Example:**

```vba
dim n as new NSFontManagerMBS
dim names() as string = n.collectionNames
MsgBox Join(names, EndOfLine)
```

**Notes:** The names of the current font collections.

32.31.11  Constructor

**Function:** Initializes the object with the shared instance of the font manager for the application, creating it if necessary.

32.31.12  convertAttributes(dic as dictionary) as dictionary

**Function:** Converts attributes in response to an object initiating an attribute change, typically the Font panel or Font menu.

32.31.13  convertFont(font as NSFontMBS) as NSFontMBS

**Function:** Converts the given font according to the object that initiated a font change, typically the Font panel or Font menu.

32.31.14  convertFontToFace(font as NSFontMBS, face as string) as NSFontMBS

**Function:** Returns a font whose traits are as similar as possible to those of the given font except for the typeface, which is changed to the given typeface.  
**Example:**
dim fontManager as new NSFontManagerMBS
// you have a font
dim font as NSFontMBS = NSFontMBS.fontWithName("Helvetica", 12)

// change font face
font = fontManager.convertFontToFace(font, "Helvetica-BoldOblique")

MsgBox font.fontName // shows Helvetica-BoldOblique

Notes:
Font: The font whose traits are matched.
face: The new typeface; a fully specified family-face name, such as Helvetica-BoldOblique or Times-Roman.

Returns a font with matching traits and the given typeface, or aFont if it can’t be converted.

This method attempts to match the weight and posture of aFont as closely as possible. Italic is mapped to Oblique, for example. Weights are mapped based on an approximate numeric scale of 0 to 15.

32.31.15 convertFontToFamily(font as NSFontMBS, family as string) as NSFontMBS

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a font whose traits are as similar as possible to those of the given font except for the font family, which is changed to the given family.

Example:

dim fontManager as new NSFontManagerMBS
// you have a font
dim font as NSFontMBS = NSFontMBS.fontWithName("Helvetica", 12)

// change font family
font = fontManager.convertFontToFamily(font, "Arial")

MsgBox font.fontName // shows ArialMT

Notes:
Font: The font whose traits are matched.
family: The new font family; a generic font name, such as Helvetica or Times.

Returns a font with matching traits and the given family, or aFont if it can’t be converted.
This method attempts to match the weight and posture of aFont as closely as possible. Italic is mapped to Oblique, for example. Weights are mapped based on an approximate numeric scale of 0 to 15.

32.31.16  `convertFontToHaveTrait(font as NSFontMBS, trait as Integer) as NSFontMBS`


**Function:** Returns a font whose traits are the same as those of the given font, except that the traits are changed to include the single specified trait.

**Example:**
```vbs
dim n as new NSFontManagerMBS
dim f as NSFontMBS = NSFontMBS.fontWithName("Times", 12.0)
dim g as NSFontMBS = n.convertFontToHaveTrait(f, n.NSBoldFontMask)
MsgBox g.fontName // Times-Bold
```

**Notes:**
- Font: The font whose traits are matched.
- Trait: The new trait; may be any one of the traits described in Constants. Using NSUnboldFontMask or NSUnitalicFontMask removes the bold or italic trait, respectively.

Returns a font with matching traits including the given trait, or font if it can’t be converted. Using NSUnboldFontMask or NSUnitalicFontMask removes the bold or italic trait, respectively.

32.31.17  `convertFontToNotHaveTrait(font as NSFontMBS, trait as Integer) as NSFontMBS`


**Function:** Returns an NSFont object with the same traits as the given font, except for the traits in the given font trait mask, which are removed.

**Example:**
```vbs
dim n as new NSFontManagerMBS
dim f as NSFontMBS = NSFontMBS.fontWithName("Times-Bold", 12.0)
dim g as NSFontMBS = n.convertFontToHaveTrait(f, n.NSUnBoldFontMask)
MsgBox g.fontName // Times-Roman
```
Notes:
Font: The font whose traits are matched.
trait: The mask for the traits to remove, created using the bitwiseOr operator to combine the traits described in Constants. Using NSUnboldFontMask or NSUnitalicFontMask removes the bold or italic trait, respectively.
Returns a font with matching traits minus the given traits, or font if it can’t be converted.

32.31.18 convertFontToSize(font as NSFontMBS, size as Double) as NSFontMBS

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns an NSFont object whose traits are the same as those of the given font, except for the size, which is changed to the given size.
Example:

dim fontManager as new NSFontManagerMBS
	// you have a font
dim font as NSFontMBS = NSFontMBS.fontWithName("Helvetica", 12)

	// change font size
font = fontManager.convertFontToSize(font, 20)

MsgBox str(font.pointSize)

Notes:
Font: The font whose traits are matched.
size: The new font size.

Returns a font with matching traits except in the new size, or aFont if it can’t be converted.

32.31.19 convertFontTraits(traits as Integer) as Integer

Notes:
traits: The current font traits.

Returns the new traits mask value to be used by convertFont:.

This method is intended to be invoked to query the font traits while the action message (usually changeFont:)
32.31. **CLASS NSFONTMANAGERMBS**

is being invoked when the current font action is either NSAddTraitFontAction or NSRemoveTraitFontAction.

Available in Mac OS X v10.5 and later.

### 32.31.20 `convertWeightOfFont(font as NSFontMBS, up as boolean) as NSFontMBS`


**Function:** Returns an NSFont object whose weight is greater or lesser than that of the given font, if possible.

**Example:**

```
dim n as new NSFontManagerMBS
dim f as NSFontMBS = NSFontMBS.fontWithName("Times", 12.0)
dim g as NSFontMBS = n.convertWeightOfFont(f, true)
```

MsgBox g.fontName // Times-Bold

**Notes:**

- **up:** If true, a heavier font is returned; if it’s false, a lighter font is returned.
- **Font:** The font whose weight is increased or decreased.

Returns a font with matching traits except for the new weight, or font if it can’t be converted.

### 32.31.21 `fontDescriptorsInCollection(collectionName as String) as NSFontDescriptorMBS()`


**Function:** Returns an array of the font descriptors in the collection specified by the given collection name.

**Example:**

```
dim fontManager as NSFontManagerMBS = NSFontManagerMBS.sharedFontManager
dim collectionNames() as string = fontManager.collectionNames
dim collectionName as string = collectionNames(collectionNames.Ubound) // get last one
dim fonts() as NSFontDescriptorMBS = fontManager.fontDescriptorsInCollection(collectionName)
```

Break
32.31.22  fontHasTraits(fontName as string, Traits as Integer) as boolean

**Function:** Indicates whether the given font has all the specified traits.

**Example:**

```
    dim n as NSFontMBS = NSFontMBS.boldSystemFontOfSize(12)
    dim m as new NSFontManagerMBS

    dim isBold as Boolean = m.fontHasTraits(n.fontName, m.NSBoldFontMask)
    dim isItalic as Boolean = m.fontHasTraits(n.fontName, m.NSItalicFontMask)

    MsgBox "is bold: " + str(isBold) + _
    EndOfLine + "is italic: " + str(isItalic)
```

**Notes:**

- **typeface:** The name of the font.
- **fontTraitMask:** The font traits to test, specified by combining the font trait mask values described in Constants using the bitwiseOR operation.

Returns true if the font named typeface has all the traits specified in fontTraitMask; false if it doesn’t.

Using NSUnboldFontMask returns true if the font is not bold, false otherwise. Using NSUnitalicFontMask returns true if the font is not italic, false otherwise.

32.31.23  isMultiple as boolean

**Function:** Indicates whether the last font selection recorded has multiple fonts.

**Notes:** Returns true if the last font selection recorded has multiple fonts; false if it’s a single font.

32.31.24  orderFrontFontPanel

**Function:** This action method opens the Font panel by sending it an orderFront message, creating the Font panel if necessary.
32.31.25 orderFrontStylesPanel


32.31.26 removeCollection(collectionName as String) as Boolean


32.31.27 removeFontDescriptorFromCollection(descriptor as NSFontDescriptorMBS, collectionName as String)


32.31.28 selectedFont as NSFontMBS


32.31.29 setSelectedAttributes(dic as dictionary, isMultiple as boolean)

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Informs the paragraph and character formatting panels when text in a selection has changed attributes. Notes: dic: The new attributes. isMultiple: If true, informs the panel that multiple fonts or attributes are enclosed within the selection. This method is used primarily by NSTextView. Available in Mac OS X v10.3 and later.
32.31.30  setSelectedFont(font as NSFontMBS, isMultiple as boolean)

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Records the given font as the currently selected font and updates the Font panel to reflect this.

Notes:

font: The font to set as selected.
isMultiple: If true, the Font panel indicates that more than one font is contained in the selection; if false, it does not.

An object that manipulates fonts should invoke this method whenever it becomes first responder and whenever its selection changes. It shouldn’t invoke this method in the process of handling a changeFont message, as this causes the font manager to lose the information necessary to effect the change. After all fonts have been converted, the font manager itself records the new selected font.

32.31.31  sharedFontManager as NSFontManagerMBS

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the shared instance of the font manager for the application, creating it if necessary.

32.31.32  traitsOfFont(font as NSFontMBS) as Integer


Example:

```dim n as NSFontMBS = NSFontMBS.boldSystemFontOfSize(12)
dim m as new NSFontManagerMBS

// shows 2 which is m.NSBoldFontMask
MsgBox str(m.traitsOfFont(n))```

Notes:

Font: The font whose traits are returned.
Returns the font traits, returned as a mask created by combining values listed in Constants with the bitwise OR operation.
32.31.33  weightOfFont(font as NSFontMBS) as Integer

**Function:** Returns a rough numeric measure the weight of the given font.  
**Example:**

```vbnet
dim n as NSFontMBS = NSFontMBS.boldSystemFontOfSize(12)  
dim m as new NSFontManagerMBS  
MsgBox str(m.weightOfFont(n))
```

**Notes:**

Font: The font whose weight is returned.

A rough numeric measure the weight of the given font, where 0 indicates the lightest possible weight, 5 indicates a normal or book weight, and 9 or more indicates a bold or heavier weight.

32.31.34  Properties

32.31.35  Handle as Integer

**Function:** The internal object reference.  
**Notes:** (Read and Write property)

32.31.36  Enabled as boolean

**Function:** Whether the font conversion system’s user interface items (the Font panel and Font menu items) are enabled.  
**Notes:**

True if the font conversion system’s user interface items (the Font panel and Font menu items) are enabled; false if they’re not.  
(Read and Write computed property)
32.31.37 Constants

32.31.38 NSAddTraitFontAction = 2

MBS MacCocoa Plugin, Plugin Version: 9.8. **Function:** One of the constants for use with modifyFont method.
**Notes:** Converts the font to have an additional trait using convertFontToHaveTrait.

32.31.39 NSBoldFontMask = 2

MBS MacCocoa Plugin, Plugin Version: 9.8. **Function:** One of the constants for use with mask of traits assigned to a font.
**Notes:** A mask that specifies a bold font.

32.31.40 NSCompressedFontMask = & h00000200

MBS MacCocoa Plugin, Plugin Version: 9.8. **Function:** One of the constants for use with mask of traits assigned to a font.
**Notes:** A mask that specifies a compressed font.

32.31.41 NSCondensedFontMask = & h00000400

MBS MacCocoa Plugin, Plugin Version: 9.8. **Function:** One of the constants for use with mask of traits assigned to a font.
**Notes:** A mask that specifies a condensed font.

32.31.42 NSExpandedFontMask = & h00000200

MBS MacCocoa Plugin, Plugin Version: 9.8. **Function:** One of the constants for use with mask of traits assigned to a font.
**Notes:** A mask that specifies an expanded font.

32.31.43 NSFixedPitchFontMask = & h00000400

MBS MacCocoa Plugin, Plugin Version: 9.8. **Function:** One of the constants for use with mask of traits assigned to a font.
32.31. CLASS NSFONTMANAGERMBS

Notes: A mask that specifies a fixed pitch font.

32.31.44 NSFontCollectionApplicationOnlyMask = 1

Notes: makes the collection available only to the application. This option is not yet implemented.

32.31.45 NSHeavierFontAction = 5

Notes: Converts the font to a heavier weight using convertWeightofFont.

32.31.46 NSItalicFontMask = 1

Notes: A mask that specifies an italic font.

32.31.47 NSLighterFontAction = 6

Notes: Converts the font to a lighter weight using convertWeightofFont.

32.31.48 NSNarrowFontMask = & h00000010

Notes: A mask that specifies a narrow font.

32.31.49 NSNoFontChangeAction = 0

Notes: No action; the font is returned unchanged.

32.31.50 NSNonStandardCharacterSetFontMask = 8

MBS MacCocoa Plugin, Plugin Version: 9.8. **Function:** One of the constants for use with mask of traits assigned to a font.
**Notes:** A mask that specifies a font that uses a non-standard character set.

32.31.51 NSPosterFontMask = & h00000100

MBS MacCocoa Plugin, Plugin Version: 9.8. **Function:** One of the constants for use with mask of traits assigned to a font.
**Notes:** A mask that specifies a poster-style font.

32.31.52 NSRemoveTraitFontAction = 7

MBS MacCocoa Plugin, Plugin Version: 9.8. **Function:** One of the constants for use with modifyFont method.
**Notes:** Converts the font to remove a trait using convertFonttoNotHaveTrait.

32.31.53 NSSizeDownFontAction = 4

MBS MacCocoa Plugin, Plugin Version: 9.8. **Function:** One of the constants for use with modifyFont method.
**Notes:** Converts the font to a smaller size using convertFonttoSize.

32.31.54 NSSizeUpFontAction = 3

MBS MacCocoa Plugin, Plugin Version: 9.8. **Function:** One of the constants for use with modifyFont method.
**Notes:** Converts the font to a larger size using convertFonttoSize.

32.31.55 NSSmallCapsFontMask = & h00000080

MBS MacCocoa Plugin, Plugin Version: 9.8. **Function:** One of the constants for use with mask of traits assigned to a font.
32.31. **CLASS NSFONTMANAGERMBS**

Notes: A mask that specifies a small-caps font.

### 32.31.56 NSUnboldFontMask = 4

MBS MacCocoa Plugin, Plugin Version: 9.8. **Function:** One of the constants for use with mask of traits assigned to a font.

Notes: A mask that specifies a font that is not bold.

### 32.31.57 NSUnitalicFontMask = & h01000000

MBS MacCocoa Plugin, Plugin Version: 9.8. **Function:** One of the constants for use with mask of traits assigned to a font.

Notes: A mask that specifies a font that is not italic.

### 32.31.58 NSViaPanelFontAction = 1

MBS MacCocoa Plugin, Plugin Version: 9.8. **Function:** One of the constants for use with modifyFont method.

Notes: Converts the font according to the NSFontPanel method panelConvertFont.
32.32 class NSFontMBS

32.32.1 class NSFontMBS

MBS MacBase Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a font in the Cocoa world. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

32.32.2 Methods

32.32.3 advancementForGlyph(aGlyph as Integer) as NSSizeMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the nominal spacing for the given glyph—the distance the current point moves after showing the glyph, taking into account the receiver’s size. **Notes:** This spacing is given according to the glyph’s movement direction, which is either strictly horizontal or strictly vertical.

32.32.4 boldSystemFontOfSize(size as Double) as NSFontMBS

MBS MacBase Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Aqua system font used for standard interface items that are rendered in boldface type in the specified size. **Example:**

```python
dim n as NSFontMBS = NSFontMBS.boldSystemFontOfSize(12)
```

```plaintext
MsgBox n.description
// shows: "LucidaGrande-Bold 12.00 pt. P [ ] (0x1c082c0) fobj=0x1c09d30, spc=3.96"
```

**Notes:** If fontSize is 0 or negative, returns the boldface system font at the default size.

32.32.5 boundingRectForGlyph(aGlyph as Integer) asNSRectMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the bounding rectangle for the specified glyph, scaled to the receiver’s size. **Notes:** Japanese fonts encoded with the scheme "EUC12-NJE-CFEncoding" do not have individual metrics or bounding boxes available for the glyphs above 127. For those glyphs, this method returns the bounding
rectangle for the font instead.

### 32.32.6 Constructor

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.

### 32.32.7 `controlContentFontOfSize(size as Double) as NSFontMBS`

MBS MacBase Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the font used for the content of controls in the specified size.  
**Example:**

```vbs
dim n as NSFontMBS = NSFontMBS.controlContentFontOfSize(12)
MsgBox n.description
```

**Notes:** For example, in a table, the user’s input uses the control content font, and the table’s header uses another font. If `fontSize` is 0 or negative, returns the control content font at the default size.

### 32.32.8 file as folderitem

MBS MacBase Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries the folderitem for this font.  
**Notes:** One file may give several font faces.

### 32.32.9 `fontDescriptor as NSFontDescriptorMBS`

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver’s font descriptor.  
**Notes:**  
A font descriptor object that describes the receiver.

The font descriptor contains a mutable dictionary of optional attributes for creating an NSFont object. See documentation on NSFontDescriptor for more information.
32.32.10  fontWithDescriptor(fontDescriptor as NSFontDescriptorMBS, font-Size as Double) as NSFontMBS

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a font object for the specified font descriptor and font size.

**Notes:**

- fontDescriptor: A font descriptor object.
- fontSize: The size in points to which the font is scaled.

Returns a font object for the specified descriptor and size.

In most cases, you can simply use fontWithName to create standard scaled fonts.

Available in Mac OS X v10.4 and later.

See also:

- 32.32.11 fontWithDescriptor(fontDescriptor as NSFontDescriptorMBS, TextTransform as Variant) as NSFontMBS

32.32.11  fontWithDescriptor(fontDescriptor as NSFontDescriptorMBS, Text-Transform as Variant) as NSFontMBS

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a font object for the specified font descriptor and text transform.

**Notes:**

- fontDescriptor: The font descriptor object describing the font to return.
- textTransform: An affine transformation applied to the font. Must be a NSAffineTransformMBS object or nil!

Returns a font object for the specified name and transform.

In most cases, you can simply use fontWithName to create standard scaled fonts. If textTransform is non-nil, it has precedence over NSFontMatrixAttribute in fontDescriptor.

Available in Mac OS X v10.4 and later.

See also:

- 32.32.10 fontWithDescriptor(fontDescriptor as NSFontDescriptorMBS, font-size as Double) as NS-FontMBS
32.32. CLASS NSFONTMBS

32.32.12  fontWeightName(fontName as string, fontSize as Double) as NSFontMBS

MBS MacBase Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a font object for the specified font name and font size.

**Example:**

```vba
dim n as NSFontMBS = NSFontMBS.fontWithName("Monaco", 12)
```

MsgBox n.description
// shows: "Monaco 12.00 pt. P [ ] (0x1805020) fobj=0x168114b0, spc=7.20"

**Notes:**
The fontName is a fully specified family-face name, such as Helvetica-BoldOblique or Times-Roman. The fontSize is equivalent to using a font matrix of [ fontSize 0 0 fontSize 0 0 ] . If you use a fontSize of 0.0, this method uses the default User Font size.

Fonts created with this method automatically flip themselves in flipped views. This method is the preferred means for creating fonts.

32.32.13  glyphWithName(name as string) as UInt32

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the named encoded glyph, or 1 if the receiver contains no such glyph.

**Notes:**
Returns 1 if the glyph named glyphName isn’t encoded.
Glyph names in fonts do not always accurately identify the glyph. If possible, look up the appropriate glyph on your own.

32.32.14  labelFontOfSize(size as Double) as NSFontMBS

MBS MacBase Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Aqua font used for standard interface labels in the specified size.

**Example:**

```vba
dim n as NSFontMBS = NSFontMBS.labelFontOfSize(12)
```

MsgBox n.description
// shows: "LucidaGrande 12.00 pt. P [ ] (0x1829350) fobj=0x18293f0, spc=3.80"
Notes: If fontSize is 0 or negative, returns the label font with the default size.

### 32.32.15 labelFontSize as Double

MBS MacBase Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the size of the standard label font.

**Example:**

```vbscript
MsgBox str(NSFontMBS.labelFontSize) // shows 10
```

### 32.32.16 menuBarFontSize(size as Double) as NSFontMBS

MBS MacBase Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the font used for menu bar items, in the specified size.

**Example:**

```vbscript
dim n as NSFontMBS = NSFontMBS.menuBarFontSize(12)
MsgBox n.description
// shows: "LucidaGrande 12.00 pt. P [ ] (0x17e00c00) fobj=0x17e00ca0, spc=3.80"
```

**Notes:**
If fontSize is 0 or negative, returns the menu bar font with the default size.
Available in Mac OS X v10.3 and later.

### 32.32.17 menuFontSize(size as Double) as NSFontMBS

MBS MacBase Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the font used for menu items, in the specified size.

**Example:**

```vbscript
dim n as NSFontMBS = NSFontMBS.menuFontSize(12)
MsgBox n.description
// shows: "LucidaGrande 12.00 pt. P [ ] (0x1da6d80) fobj=0x1da6e20, spc=3.80"
```

**Notes:** If fontSize is 0 or negative, returns the menu items font with the default size.
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32.32.18 messageFontOfSize(size as Double) as NSFontMBS

MBS MacBase Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the font used for standard interface items, such as button labels, menu items, and so on, in the specified size.

**Example:**

```vbscript
dim n as NSFontMBS = NSFontMBS.messageFontOfSize(12)

MsgBox n.description
// shows: "LucidaGrande 12.00 pt. P [ ] (0x1c11520) fobj=0x1c11790, spc=3.80"
```

**Notes:** If fontSize is 0 or negative, returns this font at the default size. This method is equivalent to `systemFontOfSize()`.

32.32.19 paletteFontOfSize(size as Double) as NSFontMBS

MBS MacBase Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the font used for palette window title bars, in the specified size.

**Example:**

```vbscript
dim n as NSFontMBS = NSFontMBS.paletteFontOfSize(12)

MsgBox n.description
// shows: "LucidaGrande 12.00 pt. P [ ] (0x18800c00) fobj=0x18800ca0, spc=3.80"
```

**Notes:** If fontSize is 0 or negative, returns the palette title font at the default size.

32.32.20 screenFontWithRenderingMode(renderingMode as Integer) as NSFontMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a bitmapped screen font, when sent to a font object representing a scalable PostScript font, with the specified rendering mode, matching the receiver in typeface and matrix (or size), or nil if such a font can’t be found.

**Notes:**
For valid rendering modes, see `NSFontRenderingMode`.
Screen fonts are for direct use with the window server only. Never use them with Application Kit objects, such as in `setFont:` methods. Internally, the Application Kit automatically uses the corresponding screen font for a font object as long as the view is not rotated or scaled.
Available in Mac OS X v10.4 and later.
32.32.21 **setUserFixedPitchFont(font as NSFontMBS)**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the font used by default for documents and other text under the user’s control, when that font should be fixed-pitch, to the specified font.
**Notes:** Specifying font as nil causes the default to be removed from the application domain.

32.32.22 **setUserFont(font as NSFontMBS)**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the font used by default for documents and other text under the user’s control to the specified font.
**Notes:** Specifying font as nil causes the default to be removed from the application domain.

32.32.23 **smallSystemFontSize as Double**

MBS MacBase Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the size of the standard small system font.
**Example:**

```plaintext
MsgBox str(NSFontMBS.smallSystemFontSize) // shows 11
```

32.32.24 **systemFontSize(size as Double) as NSFontMBS**

MBS MacBase Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Aqua system font used for standard interface items, such as button labels, menu items, and so on, in the specified size.
**Example:**

```plaintext
dim n as NSFontMBS = NSFontMBS.systemFontSize(12)
MsgBox n.description // shows: "LucidaGrande 12.00 pt. P [ ] (0x17e009d0) fobj=0x17e00ca0, spc=3.80"
```

**Notes:** If fontSize is 0 or negative, returns the system font at the default size.
**32.32. CLASS NSFONTMBS**

**32.32.25 systemFontSize as Double**

MBS MacBase Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the size of the standard system font.

**Example:**

MsgBox str(NSFontMBS.systemFontSize) // shows 13

**32.32.26 systemFontSizeForControlSize(controlSize as Integer) as Double**

MBS MacBase Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the font size used for the specified control size.

**Example:**

MsgBox str(NSFontMBS.systemFontSizeForControlSize(0)) // 13
MsgBox str(NSFontMBS.systemFontSizeForControlSize(1)) // 11

**Notes:**
If controlSize does not correspond to a valid NSControlSize, returns the size of the standard system font.
Available in Mac OS X v10.3 and later.

**32.32.27 titleBarFontSize(size as Double) as NSFontMBS**

MBS MacBase Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the font used for window title bars, in the specified size.

**Example:**

```vbnet
dim n as NSFontMBS = NSFontMBS.titleBarFontSize(12)
```

MsgBox n.description
// shows: "LucidaGrande 12.00 pt. P [ ] (0x1a31b20) fobj=0x1a31bc0, spc=3.80"

**Notes:** If fontSize is 0 or negative, returns the title bar font at the default size. This method is equivalent to boldSystemFontSize.
32.32.28  **toolTipsFontOFSize(size as Double) as NSFontMBS**

MBS MacBase Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the font used for tool tips labels, in the specified size.

**Example:**

```vbnet
dim n as NSFontMBS = NSFontMBS.toolTipsFontOFSize(12)
MsgBox n.description
```

// shows: "LucidaGrande 12.00 pt. P [ ] (0x1828db0) fobj=0x1828e50, spc=3.80"

**Notes:** If fontSize is 0 or negative, returns the tool tips font at the default size.

32.32.29  **userFixedPitchFontOFSize(size as Double) as NSFontMBS**

MBS MacBase Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the font used by default for documents and other text under the user’s control (that is, text whose font the user can normally change), when that font should be fixed-pitch, in the specified size.

**Example:**

```vbnet
dim n as NSFontMBS = NSFontMBS.userFixedPitchFontOFSize(12)
MsgBox n.description
```

// shows: "Monaco 12.00 pt. P [ ] (0x1ad13a0) fobj=0x1ac2bd0, spc=7.20"

**Notes:**

If fontSize is 0 or negative, returns the fixed-pitch font at the default size.

The system does not guarantee that all the glyphs in a fixed-pitch font are the same width. For example, certain Japanese fonts are dual-pitch, and other fonts may have nonspacing marks that can affect the display of other glyphs.

32.32.30  **userFontOFSize(size as Double) as NSFontMBS**

MBS MacBase Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the font used by default for documents and other text under the user’s control (that is, text whose font the user can normally change), in the specified size.

**Example:**
32.32. CLASS NSFONTMBS

```vbnet
dim n as NSFontMBS = NSFontMBS.userFontSize(12)

MsgBox n.description
// shows: "Helvetica 12.00 pt. P [ ] (0x19019b0) fobj=0x181fd00, spc=3.33"
```

**Notes:** If fontSize is 0 or negative, returns the user font at the default size.

### 32.32.31 Properties

#### 32.32.32 ascender as Double

MBS MacBase Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the top y-coordinate, offset from the baseline, of the receiver’s longest ascender. **Notes:** (Read only property)

#### 32.32.33 boundingRectForFont as NSRectMBS

MBS MacBase Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver’s bounding rectangle, scaled to the font’s size. **Notes:** The bounding rectangle is the union of the bounding rectangles of every glyph in the font. (Read only property)

#### 32.32.34 capHeight as Double

MBS MacBase Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver’s cap height. **Notes:** (Read only property)

#### 32.32.35 coveredCharacterSet as Variant

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an NSCharacterSet object containing all of the nominal characters renderable by the receiver, which is all of the entries mapped in the receiver’s cmap’ table. **Example:**

```vbnet
// get the Symbol font
dim n as NSFontMBS = NSFontMBS.fontWithName("Symbol",10)
```
// what characters are defined for this font?
dim c as NSCharacterSetMBS = n.coveredCharacterSet

// display a string with all the characters
MsgBox c.StringValue

Notes:
Value is a NSCharacterSetMBS object. Returned as Variant to reduce plugin dependencies.
The number of glyphs supported by a given font is often larger than the number of characters contained in
the character set returned by this method.
(Read only property)

32.32.36 descender as Double
MBS MacBase Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the bottom y coordinate, offset from the baseline, of the receiver’s longest descender.
Notes:
Thus, if the longest descender extends 2 points below the baseline, descender will return 2.
(Read only property)

32.32.37 description as string
MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The description of the font.
Example:
dim n as NSFontMBS = NSFontMBS.systemFontOfSize(12)
MsgBox n.description

Notes: (Read only property)

32.32.38 displayName as string
MBS MacBase Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The (localized) display name of the font.
Example:
32.32. **CLASS NSFONTMBS**

```vbnet
dim n as NSFontMBS = NSFontMBS.fontWithName("Monaco", 12)
MsgBox n.displayName // shows "Monaco"
```

**Notes:** (Read only property)

### 32.32.39 familyName as string

**MBS MacBase Plugin, Plugin Version:** 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The family name of the font.
**Example:**
```vbnet
dim n as NSFontMBS = NSFontMBS.fontWithName("Monaco", 12)
MsgBox n.familyName // shows "Monaco"
```

**Notes:** (Read only property)

### 32.32.40 fontName as string

**MBS MacBase Plugin, Plugin Version:** 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The name of the font.
**Example:**
```vbnet
dim n as NSFontMBS = NSFontMBS.fontWithName("Monaco", 12)
MsgBox n.fontName // shows "Monaco"
```

**Notes:** (Read only property)

### 32.32.41 Handle as Integer

**MBS MacBase Plugin, Plugin Version:** 11.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The internal reference to the NSFont object.
**Notes:** (Read and Write property)
32.32.42 isFixedPitch as boolean

MBS MacBase Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value indicating whether all glyphs in the receiver have the same advancement.  
**Notes:**
Returns true if all glyphs in the receiver have the same advancement; false if any advancements differ.

Some Japanese fonts encoded with the scheme "EUC12-NJE-CFEncoding” return that they have the same advancement, but actually encode glyphs with one of two advancements, for historical compatibility. You may need to handle such fonts specially for some applications.  
(Read only property)

32.32.43 italicAngle as Double

MBS MacBase Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver’s italic angle, the amount that the font is slanted in degrees counterclockwise from the vertical, as read from its AFM file.  
**Notes:**
Because the slant is measured counterclockwise, English italic fonts typically return a negative value.  
(Read only property)

32.32.44 leading as Double

MBS MacBase Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver’s leading.  
**Notes:**
Available in Mac OS X v10.4 and later.  
(Read only property)

32.32.45 maximumAdvancement as NSSizeMBS

MBS MacBase Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the greatest advancement of any of the receiver’s glyphs.  
**Notes:**
This advancement is always either strictly horizontal or strictly vertical.  
(Read only property)
CLASS NSFONTMBS

32.32.46 mostCompatibleStringEncoding as Integer

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the string encoding that works best with the receiver, where there are the fewest possible unmatched characters in the string encoding and glyphs in the font.

**Notes:**

You can use NSStrings dataUsingEncoding method to convert the string to this encoding.

If this method returns NSASCIIStringEncoding, it could not determine the correct encoding and assumed that the font can render only ASCII characters.

This method works heuristically using well-known font encodings, so for nonstandard encodings it may not in fact return the optimal string encoding.

(Read only property)

32.32.47 numberOfGlyphs as Integer

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the number of glyphs in the receiver.

**Example:**

```dim n as NSFontMBS = NSFontMBS.fontWithName("Monaco", 12)
MsgBox str(n.numberOfLines) // 1678```

**Notes:**

Glyphs are numbered starting at 0.

(Read only property)

32.32.48 pointSize as Double

MBS MacBase Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver’s point size, or the effective vertical point size for a font with a nonstandard matrix.

**Notes:** (Read only property)

32.32.49 printerFont as NSFontMBS

MBS MacBase Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the scalable PostScript font corresponding to itself.

**Notes:**

When sent to a font object representing a scalable PostScript font, returns self. When sent to a font object
representing a bitmapped screen font, returns its corresponding scalable PostScript font. (Read only property)

### 32.32.50 `renderingMode` as Integer

MBS MacBase Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the rendering mode of the receiver.  
**Notes:**  
Available in Mac OS X v10.4 and later. (Read only property)

### 32.32.51 `screenFont` as `NSFontMBS`

MBS MacBase Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the bitmapped screen font corresponding to itself.  
**Notes:**  
When sent to a font object representing a scalable PostScript font, returns a bitmapped screen font matching the receiver in typeface and matrix (or size), or nil if such a font can’t be found. When sent to a font object representing a bitmapped screen font, returns nil.  
Screen fonts are for direct use with the window server only. Never use them with Application Kit objects, such as in `setFont:` methods. Internally, the Application Kit automatically uses the corresponding screen font for a font object as long as the view is not rotated or scaled. (Read only property)

### 32.32.52 `textTransform` as Variant

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the current transformation matrix for the receiver.  
**Notes:**  
Available in Mac OS X v10.4 and later.  
Returns `NSAffineTransformMBS`. Returned as Variant to reduce plugin dependencies. (Read only property)
32.32. CLASS NSFONTMBS

32.32.53 underlinePosition as Double

MBS MacBase Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the baseline offset that should be used when drawing underlines with the receiver, as determined by the font’s AFM file. **Notes:** This value is usually negative, which must be considered when drawing in a flipped coordinate system. (Read only property)

32.32.54 underlineThickness as Double

MBS MacBase Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the thickness that should be used when drawing underlines with the receiver, as determined by the font’s AFM file. **Notes:** (Read only property)

32.32.55 xHeight as Double

MBS MacBase Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the x-height of the font. **Notes:** (Read only property)

32.32.56 Constants

32.32.57 NSControlGlyph=& hFFFFFF

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants define reserved glyph codes. **Notes:** NSGlyphGenerator generates NSControlGlyph for all characters in the Unicode General Category C* and U200B (ZERO WIDTH SPACE).

32.32.58 NSFontAntialiasedIntegerAdvancementsRenderingMode=3

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants specify the font rendering mode. **Notes:** Specifies antialiased, integer advancements rendering mode. Available in Mac OS X v10.4 and later.
32.32.59  **NSFontAntialiasedRenderingMode=1**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants specify the font rendering mode.

**Notes:**

Specifies antialiased, floating-point advancements rendering mode (synonymous with printerFont).
Available in Mac OS X v10.4 and later.

32.32.60  **NSFontDefaultRenderingMode=0**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants specify the font rendering mode.

**Notes:**

Determines the actual mode based on the user preference settings.
Available in Mac OS X v10.4 and later.

32.32.61  **NSFontIntegerAdvancementsRenderingMode=2**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants specify the font rendering mode.

**Notes:**

Specifies integer advancements rendering mode.
Available in Mac OS X v10.4 and later.

32.32.62  **NSNativeShortGlyphPacking=5**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** A constant for glyph packing.

**Notes:**

The native format for Mac OS X.

Cocoa stores all text data as Unicode. The text system converts Unicode into glyph IDs and places them in 1-, 2-, or 4-byte storage depending on the context. To render text, you must convert the storage into a format the text engine understands. The following constants describe the glyph packing schemes the text rendering engine can use. They are used to extract glyphs from a font for making a multibyte (or single-byte) array of glyphs for passing to an interpreter, such as the window server, which expects a big-endian multibyte stream (that is, "packed glyphs") instead of a pure NSGlyph stream. They’re used by glyphPacking. With Quartz, the engine always expects the format to be in 2-byte short array, so NSNativeShortGlyphPacking is the only format currently in use.
MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants define reserved glyph codes. **Notes:** A null glyph.
### 32.33 class NSFontPanelMBS

#### 32.33.1 class NSFontPanelMBS

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The NSFontPanel class implements the Font panel user interface object that displays a list of available fonts, letting the user preview them and change the font used to display text. 

**Example:**

NSFontPanelMBS.sharedFontPanel.Show

**Notes:**

The actual changes are made through conversion messages sent to the shared NSFontManager instance. There’s only one Font panel for each application. 

Subclass of the NSPanelMBS class.

#### 32.33.2 Methods

#### 32.33.3 Constructor

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Constructor.

#### 32.33.4 convertAttributes(old as dictionary) as dictionary

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Converts attributes in response to an object initiating an attribute change, typically the Font panel. 

**Notes:** Call this function only in the changeAttributes event.

#### 32.33.5 convertFont(oldFont as NSFontMBS) as NSFontMBS

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Converts the given font according to the object that initiated a font change, typically the Font panel. 

**Notes:** Call this function only in the ChangeFont event.
32.33. CLASS NSFONTPANELMBS

32.33.6 Destructor

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The destructor.

32.33.7 panelConvertFont(font as NSFontMBS) as NSFontMBS

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Converts the specified font using the settings in the receiver, with the aid of the shared NSFontManager if necessary. **Notes:** Font: The font to be converted. Returns the converted font, or aFont itself if it can't be converted.

For example, if aFont is Helvetica Oblique 12.0 point and the user has selected the Times font family (and nothing else) in the Font panel, the font returned is Times Italic 12.0 point.

32.33.8 reloadDefaultFontFamilies

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Triggers a reload to the default state, so that the delegate is called. **Notes:** This reloading provides the delegate opportunity to scrutinize the default list of fonts to be displayed in the panel.

32.33.9 setPanelFont(font as NSFontMBS, isMultiple as boolean)

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the selected font in the receiver to the specified font. **Notes:** Font: The font to be selected. flag: If false, selects the specified font; otherwise selects no font and displays a message in the preview area indicating that multiple fonts are selected.

You normally don't use this method directly; instead, you send setSelectedFont to the shared NSFontManager, which in turn invokes this method.
32.33.10  sharedFontPanel as NSFontPanelMBS

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the single NSFontPanel instance for the application, creating it if necessary. **Example:**

NSFontPanelMBS.sharedFontPanel.Show

32.33.11  sharedFontPanelExists as boolean

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if the shared Font panel has been created, false if it hasn’t.

32.33.12  worksWhenModal as boolean

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates whether the receiver allows fonts to be changed in modal windows and panels.

32.33.13  Properties

32.33.14  accessoryView as NSViewMBS

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The accessory view. **Notes:**

Establishes the specified view as the receiver’s accessory view, allowing you to add custom controls to your application’s Font panel without having to create a subclass.

(Read and Write computed property)

32.33.15  Enabled as boolean

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the receiver’s Set button is enabled. **Notes:**

The receiver continues to reflect the font of the selection for cooperating text objects regardless of this setting.

(Read and Write computed property)
32.33.16 Events

32.33.17 changeAttributes

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event called whenever attributes in the font panel changed. **Notes:** Use convertAttributes to know what changed.

32.33.18 changeFont

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event called whenever the font in the font panel changed. **Notes:** Use ConvertFont to know what changed.

32.33.19 validModesForFontPanel as Integer

MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the mode mask corresponding to the expected font panel mode. **Notes:** The mode masks are defined in constants. By default the plugin returns NSFontPanelAllModesMask.

32.33.20 Constants

32.33.21 NSFontPanelAllEffectsModeMask = & hFFF00

MBS MacCocoa Plugin, Plugin Version: 12.5. **Function:** One of the constants to define what is available in NSFontPanel. **Notes:** Display all the effects user interface items.

32.33.22 NSFontPanelAllModesMask = & hFFFFFFFF

MBS MacCocoa Plugin, Plugin Version: 12.5. **Function:** One of the constants to define what is available in NSFontPanel. **Notes:** Display all the available adornments.
32.33.23  \text{NSFontPanelCollectionModeMask} = 4

MBS MacCocoa Plugin, Plugin Version: 12.5. \textbf{Function}: One of the constants to define what is available in NSFontPanel. 
\textbf{Notes}: Display the font collections column.

32.33.24  \text{NSFontPanelDocumentColorEffectModeMask} = 2048

MBS MacCocoa Plugin, Plugin Version: 12.5. \textbf{Function}: One of the constants to define what is available in NSFontPanel. 
\textbf{Notes}: Display the document color button.

32.33.25  \text{NSFontPanelFaceModeMask} = 1

MBS MacCocoa Plugin, Plugin Version: 12.5. \textbf{Function}: One of the constants to define what is available in NSFontPanel. 
\textbf{Notes}: Display the typeface column.

32.33.26  \text{NSFontPanelShadowEffectModeMask} = 4096

MBS MacCocoa Plugin, Plugin Version: 12.5. \textbf{Function}: One of the constants to define what is available in NSFontPanel. 
\textbf{Notes}: Display the shadow effects button.

32.33.27  \text{NSFontPanelSizeModeMask} = 2

MBS MacCocoa Plugin, Plugin Version: 12.5. \textbf{Function}: One of the constants to define what is available in NSFontPanel. 
\textbf{Notes}: Display the font size column.

32.33.28  \text{NSFontPanelStandardModesMask} = \& \text{hFFFF}

MBS MacCocoa Plugin, Plugin Version: 12.5. \textbf{Function}: One of the constants to define what is available in NSFontPanel. 
\textbf{Notes}: Display the standard default font panel that is, including the collections, typeface, and size columns.
32.33. CLASS NSFONTPANELMBS

32.33.29 NSFontPanelStrikethroughEffectModeMask = 512

MBS MacCocoa Plugin, Plugin Version: 12.5. **Function:** One of the constants to define what is available in NSFontPanel.
**Notes:** Display the strike-through popup menu.

32.33.30 NSFontPanelTextColorEffectModeMask = 1024

MBS MacCocoa Plugin, Plugin Version: 12.5. **Function:** One of the constants to define what is available in NSFontPanel.
**Notes:** Display the text color button.

32.33.31 NSFontPanelUnderlineEffectModeMask = 256

MBS MacCocoa Plugin, Plugin Version: 12.5. **Function:** One of the constants to define what is available in NSFontPanel.
**Notes:** Display the underline popup menu.
class NSHelpManagerMBS

32.34.1 class NSHelpManagerMBS

MBS MacCocoa Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The NSHelpManager class provides an approach to displaying online help. **Notes:** An application contains one NSHelpManager object.

32.34.2 Methods

32.34.3 Constructor

MBS MacCocoa Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an NSHelpManagerMBS object in Real Studio which points to the shared NSHelpManager object.

32.34.4 eventWindow as NSWindowMBS

MBS MacCocoa Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal reference to the event window. **Notes:** Can be nil in future Mac OS X versions.

32.34.5 findString(query as string, book as string)

MBS MacCocoa Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Performs a search for the specified string in the specified book. **Notes:**

query: String to search for.
book: Localized help book to search. When "", all installed help books are searched.

32.34.6 helpWindow as NSWindowMBS

MBS MacCocoa Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal reference to the help window. **Notes:**

Can be nil in future Mac OS X versions.
Maybe be useful to reposition help window.
32.34.7  **isContextHelpModeActive as boolean**


**Function:** Indicates whether context-sensitive help mode is active.

**Notes:**
Returns true when the application is in context-sensitive help mode, false otherwise.

In context-sensitive help mode, when a user clicks a user interface item, help for that item is displayed in a small window just below the cursor.

32.34.8  **NSContextHelpModeDidActivateNotification as string**


**Function:** One of the notification names to be used with NSNotificationObserverMBS class.

**Notes:**
Posted when the application enters context-sensitive help mode. This typically happens when the user holds down the Help key.
The notification object is the help manager. This notification does not contain a userInfo dictionary.

32.34.9  **NSContextHelpModeDidDeactivateNotification as string**


**Function:** One of the notification names to be used with NSNotificationObserverMBS class.

**Notes:**
Posted when the application exits context-sensitive help mode. This happens when the user clicks the mouse button while the cursor is anywhere on the screen after displaying a context-sensitive help topic.
The notification object is the help manager. This notification does not contain a userInfo dictionary.

32.34.10  **openHelpAnchor(anchor as string, book as string)**


**Function:** Finds and displays the text at the given anchor location in the given book.

**Notes:**
anchor: Location of the desired text.
book: Help book containing the anchor. When "", all installed help books are searched.
32.34.11 registerBooksInBundle(bundle as NSBundleMBS) as boolean

**Function:** Registers one or more help books in the given bundle.  
**Notes:**  
bundle: The bundle for additional help books. Books in the main bundle are automatically registered.  

Returns true if registration is successful, false if if the bundle doesn’t contain any help books or if registration fails.  

You use registerBooksInBundle to register help books in, for example, a plug-in bundle. The Info.plist in the bundle should contain a help book directory path, which specifies one or more folders containing help books.  

The main bundle is automatically registered by openHelpAnchor and findString.  

32.34.12 setContextHelpModeActive(active as boolean)

**Function:** Specifies whether context-sensitive help mode is active.  
**Notes:**  
active: True turns on context-sensitive help, false turns it off.  

You never send this message directly; instead, the NSApplication method activateContextHelpMode activates context-sensitive help mode, and the first mouse click after displaying the context-sensitive help window deactivates it.  

When the application enters context-sensitive help mode, the help manager posts an NSContextHelpMode-DidActivateNotification to the default notification center. When the application returns to normal operation, the help manager posts an NSContextHelpModeDidDeactivateNotification.  

32.34.13 shadowWindow as NSWindowMBS

**Function:** The internal reference to the shadow window.  
**Notes:** Can be nil in future Mac OS X versions.
32.34.14 Properties

32.34.15 Handle as Integer

MBS MacCocoa Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference to the NSHelpManager object. **Notes:** (Read and Write property)
32.35 class NSIndexSetMBS

32.35.1 class NSIndexSetMBS

MBS MacCocoa Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The NSIndexSet class represents an immutable collection of unique unsigned integers, known as indexes because of the way they are used.
Example:

```pascal
dim n as new NSIndexSetMBS(5,6) // 5, 6, 7, 8, 9, 10
MsgBox str(n.firstIndex)+" "+str(n.lastIndex)
```

Notes:

This collection is referred to as a index set.

You use index sets in your code to store indexes into some other data structure. For example, given an array, you could use an index set to identify a subset of objects in that array.

Each index value can appear only once in the index set. This is an important concept to understand and is why you would not use index sets to store an arbitrary collection of integer values. To illustrate how this works, if you created an NSIndexSet object with the values 4, 5, 2, and 5, the resulting set would only have the values 4, 5, and 2 in it. Because index values are always maintained in sorted order, the actual order of the values when you created the set would be 2, 4, and then 5.

In most cases, using an index set is more efficient than storing a collection of individual integers. Internally, the NSIndexSet class represents indexes using ranges. For maximum performance and efficiency, overlapping ranges in an index set are automatically coalesced that is, ranges merge rather than overlap. Thus, the more contiguous the indexes in the set, the fewer ranges are required to specify those indexes.

You must not subclass the NSIndexSet class.

The mutable subclass of NSIndexSet is NS MUTABLE INDEX SET.

32.35.2 Methods

32.35.3 Constructor

Example:
32.35. CLASS NSINDEXSETMBS

dim x as new NSIndexSetMBS

See also:

- 32.35.4 Constructor(index as Integer)
- 32.35.5 Constructor(indexes as NSIndexSetMBS)
- 32.35.6 Constructor(StartIndex as Integer, Length as Integer)

32.35.4 Constructor(index as Integer)


Example:

dim n as new NSIndexSetMBS(5)
MsgBox str(n.firstIndex)+" "+str(n.lastIndex)

See also:

- 32.35.3 Constructor
- 32.35.5 Constructor(indexes as NSIndexSetMBS)
- 32.35.6 Constructor(StartIndex as Integer, Length as Integer)

32.35.5 Constructor(indexes as NSIndexSetMBS)


Example:

dim n as new NSIndexSetMBS(5)
dim x as new NSIndexSetMBS(n)
MsgBox str(x.firstIndex)

See also:

- 32.35.3 Constructor
- 32.35.4 Constructor(index as Integer)
- 32.35.6 Constructor(StartIndex as Integer, Length as Integer)
32.35.6 Constructor(StartIndex as Integer, Length as Integer)

MBS MacCocoa Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes an allocated NSIndexSet object with an index range. **Example:**

```vba
Dim n as New NSIndexSetMBS(5,6) // 5, 6, 7, 8, 9, 10
```

**Notes:** This method raises an NSRangeException when indexRange would add an index that exceeds the maximum allowed value for unsigned integers. See also:

- 32.35.3 Constructor
- 32.35.4 Constructor(index as Integer)
- 32.35.5 Constructor(indexes as NSIndexSetMBS)

32.35.7 containsIndex(index as Integer) as boolean

MBS MacCocoa Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates whether the receiver contains a specific index. **Example:**

```vba
Dim n as new NSIndexSetMBS(5,6) // 5, 6, 7, 8, 9, 10

If n.ContainsIndex(6) then
    MsgBox "OK"
Else
    MsgBox "Error."
End If

If n.ContainsIndex(11) then
    MsgBox "Error."
Else
    MsgBox "OK"
End If
```

**Notes:** Returns true when the receiver contains index, false otherwise.
32.35.8  containsIndexes(indexes as NSIndexSetMBS) as boolean

MBS MacCocoa Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Indicates whether the receiver contains a superset of the indexes in another index set. Example:

```vba
dim n as new NSIndexSetMBS(5,6) // 5, 6, 7, 8, 9, 10
dim m as new NSIndexSetMBS(6,2)
if n.containsIndexes(m) then
    MsgBox "OK"
else
    MsgBox "Error."
end if
```

Notes: True when the receiver contains a superset of the indexes in indexSet, false otherwise.

32.35.9  containsIndexesInRange(StartIndex as Integer, Length as Integer) as boolean

MBS MacCocoa Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Indicates whether the receiver contains the indexes represented by an index range. Example:

```vba
dim n as new NSIndexSetMBS(5,6) // 5, 6, 7, 8, 9, 10
if n.containsIndexesInRange(6,2) then
    MsgBox "OK"
else
    MsgBox "Error."
end if
```

Notes: Returns true when the receiver contains the indexes in indexRange, false otherwise.

32.35.10  copy as NSIndexSetMBS

32.35.11  count as Integer

MBS MacCocoa Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the number of indexes in the receiver.

**Example:**

```vba
Dim n As New NSIndexSetMBS(5, 6) ' 5, 6, 7, 8, 9, 10
MsgBox Str(n.count) ' shows 6
```

32.35.12  countOfIndexesInRange(StartIndex as Integer, Length as Integer) as Integer

MBS MacCocoa Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the number of indexes in the receiver that are members of a given range.

**Example:**

```vba
Dim n As New NSIndexSetMBS(5, 6) ' 5, 6, 7, 8, 9, 10
MsgBox Str(n.countOfIndexesInRange(1, 8)) ' shows 4
```

**Notes:** Available in Mac OS X v10.5 and later.

32.35.13  firstIndex as Integer

MBS MacCocoa Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns either the first index in the receiver or the not-found indicator.

**Example:**

```vba
Dim n As New NSIndexSetMBS(5, 6) ' 5, 6, 7, 8, 9, 10
MsgBox Str(n.firstIndex) + " " + Str(n.lastIndex)
```

**Notes:** First index in the receiver or NSNotFound (& h7fffffff) when the receiver is empty.

32.35.14  indexGreaterThanIndex(index as Integer) as Integer

MBS MacCocoa Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns either the closest index in the receiver that is greater than a specific index or the not-found indicator.

**Example:**
32.35. **CLASS NSINDEXSETMBS**

```basic
Dim n As New NSIndexSetMBS(5,6) // 5, 6, 7, 8, 9, 10
MsgBox Str(n.indexGreaterThanIndex(1)) // shows(5)
```

**Notes**: Returns the lowest index in the receiver greater than index; NSNotFound (F7FFFFFFF) when the receiver contains no qualifying index.

### 32.35.15 indexGreaterThanOrEqualToIndex(index as Integer) as Integer

MBS MacCocoa Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Returns either the closest index in the receiver that is greater than or equal to a specific index or the not-found indicator.  
**Example:**

```basic
Dim n As New NSIndexSetMBS(5,6) // 5, 6, 7, 8, 9, 10
MsgBox Str(n.indexGreaterThanOrEqualToIndex(1)) // shows(5)
```

**Notes**: Returns closest index in the receiver greater than or equal to index; NSNotFound (F7FFFFFFF) when the receiver contains no qualifying index.

### 32.35.16 indexLessThanIndex(index as Integer) as Integer

MBS MacCocoa Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Returns either the closest index in the receiver that is less than a specific index or the not-found indicator.  
**Example:**

```basic
Dim n As New NSIndexSetMBS(5,6) // 5, 6, 7, 8, 9, 10
MsgBox Str(n.indexLessThanIndex(20)) // shows 10
MsgBox Str(n.indexLessThanIndex(1)) // shows 2147483647 for not found
```

**Notes**: Returns closest index in the receiver less than index; NSNotFound (F7FFFFFFF) when the receiver contains no qualifying index.

### 32.35.17 indexLessThanOrEqualToIndex(index as Integer) as Integer

MBS MacCocoa Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Returns either the closest index in the receiver that is less than or equal to a specific index or the
not-found indicator.

**Example:**

```dim n as new NSIndexSetMBS(5,6) // 5, 6, 7, 8, 9, 10
MsgBox str(n.indexLessThanOrEqualToIndex(20)) // shows 10```

**Notes:** Returns closest index in the receiver less than or equal to index; NSNotFound (& h7FFFFFFF) when the receiver contains no qualifying index.

### 32.35.18 indexSet as NSIndexSetMBS

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an empty index set.

**Example:**

```dim n as NSIndexSetMBS = NSIndexSetMBS.indexSet
MsgBox str(n.count) // 0 -> empty```

**Notes:** Available in Mac OS X v10.3 and later.

### 32.35.19 indexSetWithIndex(index as Integer) as NSIndexSetMBS

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an index set with an index.

**Example:**

```dim n as NSIndexSetMBS = NSIndexSetMBS.indexSetWithIndex(3)
MsgBox str(n.count) // 1```

**Notes:** Available in Mac OS X v10.3 and later.

### 32.35.20 indexSetWithIndexesInRange(StartIndex as Integer, Length as Integer) as NSIndexSetMBS

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an index set with an index range.

**Example:**

```
32.35. **CLASS NSINDEXSETMBS**

```vbnet
dim n as NSIndexSetMBS = NSIndexSetMBS.indexSetWithIndexesInRange(3,2)
MsgBox str(n.count) // 2 and contains 3,4
```

**Notes:** Available in Mac OS X v10.3 and later.

### 32.35.21 intersectsIndexesInRange(StartIndex as Integer, Length as Integer) as boolean

MBS MacCocoa Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates whether the receiver contains any of the indexes in a range.

**Example:**

```vbnet
dim n as new NSIndexSetMBS(5,6) // 5, 6, 7, 8, 9, 10
if n.intersectsIndexesInRange(1,4) then
    MsgBox "Error"
else
    MsgBox "OK"
end if
if n.intersectsIndexesInRange(1,6) then
    MsgBox "OK"
else
    MsgBox "Error"
end if
```

### 32.35.22 isEqualToIndexSet(other as NSIndexSetMBS) as boolean

MBS MacCocoa Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates whether the indexes in the receiver are the same indexes contained in another index set.

**Example:**

```vbnet
dim n as new NSIndexSetMBS(5,6) // 5, 6, 7, 8, 9, 10
dim m as NSIndexSetMBS = n.mutableCopy
if m.isEqualToIndexSet(n) then
    MsgBox "OK"
else
    MsgBox "Failed."
end if
```
### 32.35.23 lastIndex as Integer

MBS MacCocoa Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns either the last index in the receiver or the not-found indicator.

**Example:**

```delphi
dim n as new NSIndexSetMBS(5,6) // 5, 6, 7, 8, 9, 10
MsgBox str(n.firstIndex)+" "+str(n.lastIndex)
```

**Notes:** Returns Last index in the receiver or NSNotFound (& hFFFFFFF) when the receiver is empty.

### 32.35.24 mutableCopy as NSMutableIndexSetMBS

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an editable copy of the indexset.

**Example:**

```delphi
dim n as new NSIndexSetMBS(5,6) // 5, 6, 7, 8, 9, 10
dim m as NSMutableIndexSetMBS = n.mutableCopy
m.addIndex 20
MsgBox str(n.lastIndex)+" "+str(m.lastIndex)
```

### 32.35.25 Operator_Convert as string

MBS MacCocoa Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Converts an indexset to string for display.

**Example:**

```delphi
dim n as NSIndexSetMBS = NSIndexSetMBS.indexSetWithIndexesInRange(10,40)
MsgBox n
```

**Notes:**

This is for having str() function and msgbox work with NSIndexSetMBS class.
If more than 20 values, you get only 20 values followed with dots and last value on the end.
32.35. CLASS NSINDEXSETMBS

32.35.26 Values as Integer()

Function: Returns all values in array.
Example:

```vbnet
dim n1 as NSIndexSetMBS = NSIndexSetMBS.indexSetWithIndexesInRange(10,10)
dim n2 as NSIndexSetMBS = NSIndexSetMBS.indexSetWithIndexesInRange(30,5)
dim n3 as new NSMutableIndexSetMBS
n3.addIndexes n1
n3.addIndexes n2
dim count1 as Integer = n1.count // 10
dim count2 as Integer = n2.count // 5
dim count3 as Integer = n3.count // 15
dim values1() as Integer = n1.Values
dim values2() as Integer = n2.Values
dim values3() as Integer = n3.Values
break // look in debugger
```

32.35.27 Properties

32.35.28 Handle as Integer

Notes: (Read and Write property)
32.36 class NSInputStreamMBS

32.36.1 class NSInputStreamMBS

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A stream that provides read-only stream functionality. **Notes:** Subclass of the NSStreamMBS class.

32.36.2 Methods

32.36.3 Constructor(filePath as string)

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns an NSInputStream object that reads data from the file at a given path. **Notes:** The stream must be opened before it can be used.

32.36.4 inputStreamWithData(data as Memoryblock) as NSInputStreamMBS

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an initialized NSInputStream object for reading from a given NSData object. **Notes:** data: The data object from which to read. The contents of data are copied.

Returns an initialized NSInputStream object for reading from data. If data is not an NSData object, this method returns nil.

The stream must be opened before it can be used.

32.36.5 inputStreamWithPath(path as string) as NSInputStreamMBS

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns an NSInputStream object that reads data from the file at a given path. **Notes:** path: The path to the file.

Returns an initialized NSInputStream object that reads data from the file at path.
The stream must be opened before it can be used.

**32.36.6 inputStreamWithURL(URL as string) as NSInputStreamMBS**


**Function:** Creates and returns an initialized NSInputStream object that reads data from the file at a given URL.

**Notes:**

url: The URL to the file.

Returns an initialized NSInputStream object that reads data from the URL at url.

The stream must be opened before it can be used.

**32.36.7 LookAHead as MemoryBlock**


**Function:** Returns copy of read buffer.

**Notes:** Allows looking into data before reading it.

**32.36.8 Read(maxLength as Integer) as MemoryBlock**


**Function:** Reads up to a given number of bytes into a given buffer.

**32.36.9 Properties**

**32.36.10 hasBytesAvailable as Boolean**


**Function:** A Boolean value that indicates whether the receiver has bytes available to read.

**Notes:**

True if the receiver has bytes available to read, otherwise false. May also return true if a read must be attempted in order to determine the availability of bytes.

(Read only property)
32.37 class NSKeyedArchiverMBS

32.37.1 class NSKeyedArchiverMBS


Example:

```plaintext
// make archiver
dim a as new NSKeyedArchiverMBS

// add a string
a.encodeString "Hello World", "Greeting"

// finish
a.finishEncoding

// query data
dim m as MemoryBlock = a.archiverData

// start unarchiver
dim u as new NSKeyedUnarchiverMBS(m)

// query and display a value
dim s as string = u.decodeString( "Greeting")
MsgBox s
```

Notes:

NSKeyedArchiver, a concrete subclass of NSCoder, provides a way to encode objects (and scalar values) into an architecture-independent format that can be stored in a file. When you archive a set of objects, the class information and instance variables for each object are written to the archive. NSKeyedArchiver's companion class, NSKeyedUnarchiver, decodes the data in an archive and creates a set of objects equivalent to the original set.

A keyed archive differs from a non-keyed archive in that all the objects and values encoded into the archive are given names, or keys. When decoding a non-keyed archive, values have to be decoded in the same order in which they were encoded. When decoding a keyed archive, because values are requested by name, values can be decoded out of sequence or not at all. Keyed archives, therefore, provide better support for forward and backward compatibility.

The keys given to encoded values must be unique only within the scope of the current object being encoded. A keyed archive is hierarchical, so the keys used by object A to encode its instance variables do not conflict with the keys used by object B, even if A and B are instances of the same class. Within a single object, however, the keys used by a subclass can conflict with keys used in its superclasses.
32.37. CLASS NSKEYEDARCHIVERMBS

Subclass of the NSCoderMBS class.

32.37.2   Methods

32.37.3   archiverData as memoryblock

**Function:** Returns the archived data.

32.37.4   Constructor

**Function:** Returns the receiver, initialized for encoding an archive.

32.37.5   finishEncoding

**Function:** Instructs the receiver to construct the final data stream.  
**Notes:** No more values can be encoded after this method is called. You must call this method when finished.

32.37.6   Properties

32.37.7   outputFormat as Integer

**Function:** Sets or queries the format in which the receiver encodes its data.  
**Example:**

```ruby
// make archiver
dim a as new NSKeyedArchiverMBS
a.outputFormat = a.kCFPropertyListXMLFormat_v1_0

// add a string
a.encodeString "Hello World", "Greeting"

// finish
a.finishEncoding

// query data and show
```
dim m as MemoryBlock = a.archiverData
dim s as string = DefineEncoding(m, encodings.UTF8)
MsgBox s

Notes: (Read and Write computed property)

32.37.8 Constants

32.37.9 kCFPropertyListBinaryFormat_v1_0 = 200

MBS MacBase Plugin, Plugin Version: 13.2. Function: One of the possible formats. Notes: Specifies the binary property list format.

32.37.10 kCFPropertyListXMLFormat_v1_0 = 100

MBS MacBase Plugin, Plugin Version: 13.2. Function: One of the possible formats. Notes: Specifies the XML property list format.
32.38.1  class NSKeyedUnarchiverMBS

MBS MacBase Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The plugin class for unarchiving objects.

**Example:**

```vba
// make archiver
dim a as new NSKeyedArchiverMBS

// add a string
a.encodeString "Hello World", "Greeting"

// finish
a.finishEncoding

// query data
dim m as MemoryBlock = a.archiverData

// start unarchiver
dim u as new NSKeyedUnarchiverMBS(m)

// query and display a value
dim s as string = u.decodeString("Greeting")
MsgBox s
```

**Notes:**

NSKeyedUnarchiver, a concrete subclass of NSCoder, defines methods for decoding a set of named objects (and scalar values) from a keyed archive. Such archives are produced by instances of the NSKeyedArchiver class.

A keyed archive is encoded as a hierarchy of objects. Each object in the hierarchy serves as a namespace into which other objects are encoded. The objects available for decoding are restricted to those that were encoded within the immediate scope of a particular object. Objects encoded elsewhere in the hierarchy, whether higher than, lower than, or parallel to this particular object, are not accessible. In this way, the keys used by a particular object to encode its instance variables need to be unique only within the scope of that object.

If you invoke one of the decode... methods of this class using a key that does not exist in the archive, a non-positive value is returned. This value varies by decoded type. For example, if a key does not exist in an archive, decodeBoolForKey returns false, decodeIntForKey returns 0, and decodeObjectForKey returns nil.
NSKeyedUnarchiver supports limited type coercion. A value encoded as any type of integer, whether a standard int or an explicit 32-bit or 64-bit integer, can be decoded using any of the integer decode methods. Likewise, a value encoded as a float or double can be decoded as either a float or a double value. If an encoded value is too large to fit within the coerced type, the decoding method raises an NSRangeException. Further, when trying to coerce a value to an incompatible type, for example decoding an int as a float, the decoding method raises an NSInvalidUnarchiveOperationException.

Subclass of the NSCoderMBS class.

### 32.38.2 Methods

### 32.38.3 Constructor(data as memoryblock)

MBS MacBase Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes the receiver for decoding an archive previously encoded by NSKeyedArchiverMBS. **Notes:**

When you finish decoding data, you should invoke finishDecoding. This method raises an NSExceptionMBS if data is not a valid archive.

### 32.38.4 finishDecoding

MBS MacBase Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Tells the receiver that you are finished decoding objects. **Notes:** Invoking this method allows the receiver to notify its delegate and to perform any final operations on the archive. Once this method is invoked, the receiver cannot decode any further values.
32.39. **CLASS NSKEYVALUEOBSERVERMBS**

### 32.39 class NSKeyValueObserverMBS

**MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:** The Plugin class to use a key value observer.

**Notes:**

The NSKeyValueObserving (KVO) informal protocol defines a mechanism that allows objects to be notified of changes to the specified properties of other objects.

You can observe any object properties including simple attributes, to-one relationships, and to-many relationships. Observers of to-many relationships are informed of the type of change made as well as which objects are involved in the change.

NSObject provides an implementation of the NSKeyValueObserving protocol that provides an automatic observing capability for all objects. You can further refine notifications by disabling automatic observer notifications and implementing manual notifications using the methods in this protocol.

This class implements an observer with event for use in Real Studio.

### 32.39.2 Methods

#### 32.39.3 addObserver(keyPath as string, options as Integer = 5, context as Variant = nil)

**Function:** Registers observer to receive KVO notifications for the specified key-path relative to the receiver.

**Notes:**

- **keyPath:** The key path, relative to the receiver, of the property to observe. This value must not be nil.
- **options:** A combination of the option constants that specifies what is included in observation notifications.
- **context:** Arbitrary data that is passed to anObserver in observeValueForPath.

This class holds a strong references to context and a weak reference to target.

Available in OS X v10.3 and later.

### 32.39.4 Constructor(TargetHandle as Integer)

**Function:** The constructor.
Notes:
Please pass the handle of the target Cocoa object.
Like NSWindowMBS.handle or CALayerMBS.

32.39.5 Destructor

32.39.6 NSKeyValueChangeIndexesKey as string
MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the keys for the dictionary passed to observedValueForKeyPathChanged event.
Notes:
If the value of the NSKeyValueChangeKindKey entry is NSKeyValueChangeInsertion, NSKeyValueChangeRemoval, or NSKeyValueChangeReplacement, the value of this key is an NSIndexSetMBS object that contains the indexes of the inserted, removed, or replaced objects.
Available in OS X v10.3 and later.

32.39.7 NSKeyValueChangeKindKey as string
MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the keys for the dictionary passed to observedValueForKeyPathChanged event.

32.39.8 NSKeyValueChangeNewKey as string
MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the keys for the dictionary passed to observedValueForKeyPathChanged event.
Notes:
If the value of the NSKeyValueChangeKindKey entry is NSKeyValueChangeSetting, and NSKeyValueObservingOptionNew was specified when the observer was registered, the value of this key is the new value for the attribute.
For NSKeyValueChangeInsertion or NSKeyValueChangeReplacement, if NSKeyValueObservingOptionNew was specified when the observer was registered, the value for this key is an NSArray instance that contains the objects that have been inserted or replaced other objects, respectively.
Available in OS X v10.3 and later.
32.39. **CLASS NSKeyValueObserverMBS**

### 32.39.9 NSKeyValueChangeNotificationIsPriorKey as string

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the dictionary passed to observedValueForKeyPathChanged event. **Notes:**

If the option NSKeyValueObservingOptionPrior was specified when the observer was registered this notification is sent prior to a change.
The change dictionary contains an NSKeyValueChangeNotificationIsPriorKey entry whose value is a boolean. Available in OS X v10.5 and later.

### 32.39.10 NSKeyValueChangeOldKey as string

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the dictionary passed to observedValueForKeyPathChanged event. **Notes:**

If the value of the NSKeyValueChangeKindKey entry is NSKeyValueChangeSetting, and NSKeyValueObservingOptionOld was specified when the observer was registered, the value of this key is the value before the attribute was changed.
For NSKeyValueChangeRemoval or NSKeyValueChangeReplacement, if NSKeyValueObservingOptionOld was specified when the observer was registered, the value is an NSArray instance that contains the objects that have been removed or have been replaced by other objects, respectively. Available in OS X v10.3 and later.

### 32.39.11 removeObserver(keyPath as string, context as Variant = nil)

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Stops a given object from receiving change notifications for the property specified by a given key-path relative to the receiver and a context. **Notes:**

keyPath: A key-path, relative to the receiver, for which observer is registered to receive KVO change notifications.
context: Arbitrary data that more specifically identifies the observer to be removed.

Examining the value in context you are able to determine precisely which addObserver method was used to create the observation relationship. When the same observer is registered for the same key-path multiple times, but with different context pointers, an application can determine specifically which object to stop observing.

The context object is only used in OS X v10.7 and later.
32.39.12 Properties

32.39.13 Handle as Integer


32.39.14 Events

32.39.15 observedValueForKeyPathChanged(keyPath as string, target as Variant, change as dictionary, context as Variant, ChangeNSDictionaryRef as Integer) as boolean

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: This event is called when the value at the specified key path relative to the given object has changed. Notes:

keyPath: The key path, relative to object, to the value that has changed.
oobject: The source object of the key path keyPath.
change: A dictionary that describes the changes that have been made to the value of the property at the key path keyPath relative to object. Entries are described in Keys used by the change dictionary.
context: The value that was provided when the receiver was registered to receive key-value observation notifications.

The receiver must be registered as an observer for the specified keyPath and object. ChangeNSDictionaryRef provides for debugging the reference to the original NSDictionary object.

32.39.16 Constants

32.39.17 kChangeInsertion = 2

MBS MacBase Plugin, Plugin Version: 13.1. Function: One of the kind constants used with NSKeyValueChangeKindKey. Notes: Indicates that an object has been inserted into the to-many relationship that is being observed.

32.39.18 kChangeRemoval = 3

MBS MacBase Plugin, Plugin Version: 13.1. Function: One of the kind constants used with NSKeyValueChangeKindKey.
32.39.  CLASS NSKEYVALUEOBSERVERMBS

Notes: Indicates that an object has been removed from the to-many relationship that is being observed.

32.39.19  kChangeReplacement = 4

MBS MacBase Plugin, Plugin Version: 13.1.  Function: One of the kind constants used with NSKeyValueChangeKindKey.
Notes: Indicates that an object has been replaced in the to-many relationship that is being observed.

32.39.20  kChangeSetting = 1

MBS MacBase Plugin, Plugin Version: 13.1.  Function: One of the kind constants used with NSKeyValueChangeKindKey.
Notes: Indicates that the value of the observed key path was set to a new value. This change can occur when observing an attribute of an object, as well as properties that specify to-one and to-many relationships.

32.39.21  kOptionInitial = 4

MBS MacBase Plugin, Plugin Version: 13.1.  Function: One of the constants to be passed to addObserver and determine the values that are returned as part of the change dictionary passed to observedValueForKeyPathChanged.
Notes:
If specified, a notification should be sent to the observer immediately, before the observer registration method even returns.
The change dictionary in the notification will always contain an NSKeyValueChangeNewKey entry if kOptionNew is also specified but will never contain an NSKeyValueChangeOldKey entry. (In an initial notification the current value of the observed property may be old, but it’s new to the observer.) You can use this option instead of explicitly invoking, at the same time, code that is also invoked by the observer’s observedValueForKeyPathChanged method. When this option is used with addObserver a notification will be sent for each indexed object to which the observer is being added.
Available in OS X v10.5 and later.

32.39.22  kOptionNew = 1

MBS MacBase Plugin, Plugin Version: 13.1.  Function: One of the constants to be passed to addObserver and determine the values that are returned as part of the change dictionary passed to observedValueForKeyPathChanged.
Notes:
Indicates that the change dictionary should provide the new attribute value, if applicable.
Available in OS X v10.3 and later.

**32.39.23 kOptionOld = 2**

MBS MacBase Plugin, Plugin Version: 13.1. **Function:** One of the constants to be passed to addObserver and determine the values that are returned as part of the change dictionary passed to observedValueForKeyPathChanged.

**Notes:**
Indicates that the change dictionary should contain the old attribute value, if applicable.
Available in OS X v10.3 and later.

**32.39.24 kOptionPrior = 8**

MBS MacBase Plugin, Plugin Version: 13.1. **Function:** One of the constants to be passed to addObserver and determine the values that are returned as part of the change dictionary passed to observedValueForKeyPathChanged.

**Notes:**
Whether separate notifications should be sent to the observer before and after each change, instead of a single notification after the change.
The change dictionary in a notification sent before a change always contains an NSKeyValueChangeNotificationIsPriorKey entry whose value is true, but never contains an NSKeyValueChangeNewKey entry. When this option is specified the change dictionary in a notification sent after a change contains the same entries that it would contain if this option were not specified. You can use this option when the observer’s own key-value observing-compliance requires it to invoke one of the -willChange... methods for one of its own properties, and the value of that property depends on the value of the observed object’s property. (In that situation it’s too late to easily invoke -willChange... properly in response to receiving an observedValueForKeyPathChanged message after the change.)
Available in OS X v10.5 and later.
32.40. **CLASS NSLAYOUTMANAGERMBS**

32.40  **class NSLayoutManagerMBS**

32.40.1  **class NSLayoutManagerMBS**


**Function:** An NSLayoutManager object coordinates the layout and display of characters held in an NSTextStorage object.

**Notes:**

It maps Unicode character codes to glyphs, sets the glyphs in a series of NSTextContainer objects, and displays them in a series of NSTextView objects. In addition to its core function of laying out text, an NSLayoutManager object coordinates its NSTextView objects, provides services to those text views to support NSRulerView instances for editing paragraph styles, and handles the layout and display of text attributes not inherent in glyphs (such as underline or strikethrough). You can create a subclass of NSLayoutManager to handle additional text attributes, whether inherent or not.

**Text Antialiasing**

NSLayoutManager provides the threshold for text antialiasing. It looks at the AppleAntiAliasingThreshold default value. If the font size is smaller than or equal to this threshold size, the text is rendered aliased by NSLayoutManager. You can change the threshold value from the Appearance pane of System Preferences.

**Thread Safety of NSLayoutManager**

Generally speaking, a given layout manager (and associated objects) should not be used in more than one block, operation, or thread at a time. Most layout managers are used on the main thread, since it is the main thread on which their text views are displayed, and since background layout occurs on the main thread. If it is intended that a layout manager should be used on a background thread, first make sure that text views associated with that layout manager (if any) are not displayed while the layout manager is being used on the background thread, and, second, turn off background layout for that layout manager while it is being used on the background thread.

**Noncontiguous Layout**

Noncontiguous layout is an optional layout manager behavior new in Mac OS X v10.5. Previously, both glyph generation and layout were always performed, in order, from the beginning to the end of the document. When noncontiguous layout is turned on, however, the layout manager gains the option of performing glyph generation or layout for one portion of the document without having done so for previous sections. This can provide significant performance improvements for large documents.

Noncontiguous layout is not turned on automatically because direct clients of NSLayoutManager typically have relied on the previous behavior for example, by forcing layout for a given glyph range, and then assuming that previous glyphs would therefore be laid out. Clients who use NSLayoutManager only indirectly for example, those who use NSTextView without directly calling the underlying layout manager can usually turn on noncontiguous layout without difficulty. Clients using NSLayoutManager directly need to examine their usage before turning on noncontiguous layout.
To turn on noncontiguous layout, use AllowsNonContiguousLayout. In addition, see the other methods in "Managing Noncontiguous Layout," many of which enable you to ensure that glyph generation and layout are performed for specified portions of the text. The behavior of a number of other layout manager methods is affected by the state of noncontiguous layout, as noted in the discussion sections of those method descriptions.

So far the plugin implements a small subset of the functions in NSLayoutManager. If you miss a function, please email us and we can check whether we can add it for you.

### 32.40.2 Methods

#### 32.40.3 addTextContainer(container as NSTextContainerMBS)


**Function:** Apps the given text container to the series of text containers where the receiver arranges text.

**Notes:**
- container: The text container to append.

Invalidates glyphs and layout as needed, but doesn’t perform glyph generation or layout.

#### 32.40.4 characterIndexForPoint(point as NSPointMBS, container as NSTextContainerMBS, byref partialFraction as Double) as Integer


**Function:** Returns the index of the character falling under the given point, expressed in the given container’s coordinate system.

**Notes:**
- point: The point to test.
- container: The text container within which the point is tested.
- partialFraction: A fraction of the distance from the insertion point, logically before the given character to the next one.

Returns the index of the character falling under point.

Analogous to glyphIndexForPoint:inTextContainer, but expressed in character index terms. The method returns the index of the character falling under point, expressed in coordinate system of container; if no character is under the point, the nearest character is returned, where nearest is defined according to the requirements of selection by mouse. However, this is not simply equivalent to taking the result of the corresponding glyph index method and converting it to a character index, because in some cases a single glyph represents more than one selectable character, for example an fi ligature glyph. In that case, there is an
insertion point within the glyph, and this method returns one character or the other, depending on whether the specified point lies to the left or the right of that insertion point.

In general, this method returns only character indexes for which there is an insertion point. The partial-Fraction is a fraction of the distance from the insertion point, logically before the given character to the next one, which may be either to the right or to the left depending on directionality.

Available in OS X v10.6 and later.

### 32.40.5 Constructor

MBS MacCocoa Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates new NSLayoutManager object.

### 32.40.6 glyphIndexForPoint(point as NSPointMBS, container as NSTextContainerMBS) as Integer

MBS MacCocoa Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This method is a primitive for glyphIndexForPoint. You should always call the main method, not the primitives.

See also:

- 32.40.7 glyphIndexForPoint(point as NSPointMBS, container as NSTextContainerMBS, byref partial-Fraction as Double) as Integer

### 32.40.7 glyphIndexForPoint(point as NSPointMBS, container as NSTextContainerMBS, byref partialFraction as Double) as Integer

MBS MacCocoa Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the index of the glyph falling under the given point, expressed in the given container’s coordinate system.

**Notes:**

point: The point for which to return the glyph, in coordinates of container.
container: The container in which the returned glyph is laid out.
partialFraction: On output, the fraction of the distance between the location of the glyph returned and the location of the next glyph.

Returns the index of the glyph falling under the given point, expressed in the given container’s coordinate system.
If no glyph is under point, the nearest glyph is returned, where nearest is defined according to the requirements of selection by mouse. Clients who wish to determine whether the the point actually lies within the bounds of the glyph returned should follow this with a call to boundingRectForGlyphRange and test whether the point falls in the rectangle returned by that method. If partialFraction is non-NULL, it returns by reference the fraction of the distance between the location of the glyph returned and the location of the next glyph.

For purposes such as dragging out a selection or placing the insertion point, a partial percentage less than or equal to 0.5 indicates that point should be considered as falling before the glyph index returned; a partial percentage greater than 0.5 indicates that it should be considered as falling after the glyph index returned. If the nearest glyph doesn’t lie under point at all (for example, if point is beyond the beginning or end of a line), this ratio is 0 or 1.

If the glyph stream contains the glyphs ”A” and ”b”, with the width of ”A” being 13 points, and the user clicks at a location 8 points into ”A”, partialFraction is 8/13, or 0.615. In this case, the point given should be considered as falling between ”A” and ”b” for purposes such as dragging out a selection or placing the insertion point.

Performs glyph generation and layout if needed.

As part of its implementation, this method calls fractionOfDistanceThroughGlyphForPoint and glyphIndexForPoint. To change this method’s behavior, override those two methods instead of this one.

See also:

- 32.40.6 glyphIndexForPoint(point as NSPointMBS, container as NSTextContainerMBS) as Integer 5769

32.40.8 glyphRangeForTextContainer(container as NSTextContainerMBS) as NSRangeMBS


Function: Returns the range of glyphs laid out within the given text container.

Notes:

This is a less efficient method than the similar textContainerForGlyphAtIndex.

Performs glyph generation and layout if needed.

32.40.9 lineFragmentRectForGlyphAtIndex(glyphIndex as Integer, byref effectiveRange as NSRangeMBS) as NSRectMBS


Function: Returns the rectangle for the line fragment in which the given glyph is laid out and (optionally), by reference, the whole range of glyphs that are in that fragment.

Notes:
glyphIndex: The glyph for which to return the line fragment rectangle.
effectiveGlyphRange: On output, the range for all glyphs in the line fragment.

Returns the line fragment in which the given glyph is laid out.

This method causes glyph generation and layout for the line fragment containing the specified glyph, or if noncontiguous layout is not enabled, for all of the text up to and including that line fragment.

Line fragment rectangles are always in container coordinates.

Overriding this method is not recommended. If the the line fragment rectangle needs to be modified, that should be done at the typesetter level or by calling setLineFragmentRect:forGlyphRange.

See also:

- 32.40.10 lineFragmentRectForGlyphAtIndex(glyphIndex as Integer, byref effectiveRange as NSRangeMBS, withoutAdditionalLayout as boolean) as NSRectMBS

32.40.10 lineFragmentRectForGlyphAtIndex(glyphIndex as Integer, byref effectiveRange as NSRangeMBS, withoutAdditionalLayout as boolean) as NSRectMBS


Function: Returns the line fragment rectangle containing the glyph at the given glyph index.

Notes:

glyphIndex: The glyph for which to return the line fragment rectangle.
effectiveGlyphRange: On output, the range for all glyphs in the line fragment.
withoutAdditionalLayout: If true, glyph generation and layout are not performed, so this option should not be used unless layout is known to be complete for the range in question, or unless noncontiguous layout is enabled; if false, both are performed as needed.

Returns the line fragment in which the given glyph is laid out.

This method is primarily for use from within NSTypesetter, after layout is complete for the range in question, but before the layout manager’s call to NSTypesetter has returned. In that case glyph and layout holes have not yet been recalculated, so the layout manager does not yet know that layout is complete for that range, and this variant must be used.

Overriding this method is not recommended. If the the line fragment rectangle needs to be modified, that should be done at the typesetter level or by calling setLineFragmentRect.

See also:

- 32.40.9 lineFragmentRectForGlyphAtIndex(glyphIndex as Integer, byref effectiveRange as NSRangeMBS)
32.40.11 lineFragmentUsedRectForGlyphAtIndex(glyphIndex as Integer, byref effectiveRange as NSRangeMBS) as NSRectMBS


Function: Returns the usage rectangle for the line fragment in which the given glyph is laid and (optionally) by reference the whole range of glyphs that are in that fragment.

Notes:

glyphIndex: The glyph for which to return the line fragment used rectangle.
effectiveGlyphRange: On output, the range for all glyphs in the line fragment.

Returns the used rectangle for the line fragment in which the given glyph is laid out.

This method causes glyph generation and layout for the line fragment containing the specified glyph, or if noncontiguous layout is not enabled, up to and including that line fragment.

Line fragment used rectangles are always in container coordinates.

Overriding this method is not recommended. If the the line fragment used rectangle needs to be modified, that should be done at the typesetter level or by calling setLineFragmentRect.

See also:

• 32.40.12 lineFragmentUsedRectForGlyphAtIndex(glyphIndex as Integer, byref effectiveRange as NSRangeMBS, withoutAdditionalLayout as boolean) as NSRectMBS

32.40.12 lineFragmentUsedRectForGlyphAtIndex(glyphIndex as Integer, byref effectiveRange as NSRangeMBS, withoutAdditionalLayout as boolean) as NSRectMBS


Function: Returns the usage rectangle for the line fragment in which the given glyph is laid and (optionally) by reference the whole range of glyphs that are in that fragment.

Notes:

glyphIndex: The glyph for which to return the line fragment used rectangle.
effectiveGlyphRange: On output, the range for all glyphs in the line fragment.
withoutAdditionalLayout: If true, glyph generation and layout are not performed, so this option should not be used unless layout is known to be complete for the range in question, or unless noncontiguous layout is enabled; if false, both are performed as needed.

Returns the used rectangle for the line fragment in which the given glyph is laid out.
This method causes glyph generation and layout for the line fragment containing the specified glyph, or if noncontiguous layout is not enabled, up to and including that line fragment.

Line fragment used rectangles are always in container coordinates.

Overriding this method is not recommended. If the line fragment used rectangle needs to be modified, that should be done at the typesetter level or by calling setLineFragmentRect.

See also:

- 32.40.11 lineFragmentUsedRectForGlyphAtIndex(glyphIndex as Integer, byref effectiveRange as NSRangeMBS) as NSRectMBS

### 32.40.13 locationForGlyphAtIndex(glyphIndex as Integer) as NSPointMBS


**Function:** Returns the location for the given glyph within its line fragment.

**Notes:**

glyphIndex: The glyph whose location is returned.

Returns the location of the given glyph.

If the given glyph does not have an explicit location set for it (for example, if it is part of (but not first in) a sequence of nominally spaced characters), the location is calculated by glyph advancements from the location of the most recent preceding glyph with a location set.

Glyph locations are relative to their line fragment rectangle’s origin. The line fragment rectangle in turn is defined in the coordinate system of the text container where it resides.

This method causes glyph generation and layout for the line fragment containing the specified glyph, or if noncontiguous layout is not enabled, up to and including that line fragment.

### 32.40.14 rangeOfNominallySpacedGlyphsContainingIndex(glyphIndex as Integer) as NSRangeMBS


**Function:** Returns the range for the glyphs around the given glyph that can be displayed using only their advancements from the font, without pairwise kerning or other adjustments to spacing.

**Notes:**
glyphIndex: Index of the glyph to test.

Returns the range of nominally spaced glyphs.

The range returned begins with the first glyph, counting back from glyphIndex, that has a location set, and it continues up to, but does not include, the next glyph that has a location set.

Performs glyph generation and layout if needed.

### 32.40.15 rectArrayForCharacterRange(charRange as NSRangeMBS, selCharRange as NSRangeMBS, container as NSTextContainerMBS, byref rectCount as Integer) as NSRectMBS()


**Function:** Returns an array of rectangles and, by reference, the number of such rectangles, that define the region in the given container enclosing the given character range.

**Notes:**

charRange: The character range for which to return rectangles.

selCharRange: Selected characters within charRange, which can affect the size of the rectangles; it must be equal to or contain charRange. If the caller is interested in this more from an enclosing point of view rather than a selection point of view, pass `{ NSNotFound, 0 }` as the selected range.

container: The text container in which the text is laid out.

rectCount: The number of rectangles returned.

Returns the array of rectangles enclosing the given range.

These rectangles can be used to draw the text background or highlight for the given range of characters. If a selected range is given in selCharRange, the rectangles returned are correct for drawing the selection. Selection rectangles are generally more complicated than enclosing rectangles and supplying a selected range is the clue this method uses to determine whether to go to the trouble of doing this special work.

The number of rectangles returned isn’t necessarily the number of lines enclosing the specified range. Contiguous lines can share an enclosing rectangle, and lines broken into several fragments have a separate enclosing rectangle for each fragment.

These rectangles don’t necessarily enclose glyphs that draw outside their line fragment rectangles; use boundingRectForGlyphRange to determine the area that contains all drawing performed for a range of glyphs.

Performs glyph generation and layout if needed.
32.40.16 rectArrayForGlyphRange(glyphRange as NSRangeMBS, selGlyphRange as NSRangeMBS, container as NSTextContainerMBS, byref rectCount as Integer) as NSRectMBS()

Function: Returns an array of rectangles and, by reference, the number of such rectangles, that define the region in the given container enclosing the given glyph range.
Notes:
glyphRange: The glyph range for which to return rectangles.
selGlyphRange: Selected glyphs within glyphRange, which can affect the size of the rectangles; it must be equal to or contain glyphRange. If the caller is interested in this more from an enclosing point of view rather than a selection point of view, pass \{NSNotFound, 0\} as the selected range.
container: The text container in which the text is laid out.
rectCount: The number of rectangles returned.

Returns the array of rectangles enclosing the given range.

These rectangles can be used to draw the text background or highlight for the given range of characters. If a selected range is given in selGlyphRange, the rectangles returned are correct for drawing the selection. Selection rectangles are generally more complicated than enclosing rectangles and supplying a selected range is the clue this method uses to determine whether to go to the trouble of doing this special work.

The number of rectangles returned isn’t necessarily the number of lines enclosing the specified range. Contiguous lines can share an enclosing rectangle, and lines broken into several fragments have a separate enclosing rectangle for each fragment.

The purpose of this method is to calculate line rectangles for drawing the text background and highlighting. These rectangles don’t necessarily enclose glyphs that draw outside their line fragment rectangles; use boundingRectForGlyphRange to determine the area that contains all drawing performed for a range of glyphs.

Performs glyph generation and layout if needed.

32.40.17 removeTextContainerAtIndex(index as Integer)

Function: Removes the text container at the given index and invalidates the layout as needed.
Notes:
index: The index of the text container to remove.

This method invalidates glyph information as needed.
32.40.18 replaceGlyphAtIndex(glyphIndex as Integer, newGlyph as Integer)

**Function:** Replaces the glyph at the given index with a new glyph.  
**Notes:**  
glyphIndex: Index of the glyph to replace.  
newGlyph: The new glyph.  

Doesn’t alter the glyph-to-character mapping or invalidate layout information. The character index of the glyph is assumed to remain the same (although it can, of course, be set explicitly if needed).  

This method is for use by the glyph-generation mechanism and doesn’t perform any invalidation or generation of the glyphs or layout. This method should be invoked only during glyph generation and typesetting, in almost all cases only by the glyph generator or typesetter. For example, a custom glyph generator or typesetter might invoke it.

32.40.19 replaceTextStorage(newTextStorage as NSTextStorageMBS)

**Function:** Replaces the NSTextStorage object for the group of text-system objects containing the receiver with the given text storage object.  
**Notes:** All NSLayoutManager objects sharing the original NSTextStorage object then share the new one. This method makes all the adjustments necessary to keep these relationships intact, unlike setting textStorage property.  

32.40.20 setCharacterIndex(charIndex as Integer, glyphIndex as Integer)

**Function:** Sets the index of the character corresponding to the glyph at the given glyph index.  
**Notes:**  
charIndex: The index to set.  
glyphIndex: The glyph corresponding to the character whose index is set. The glyph must already be present.  

This method is for use by the glyph-generation mechanism and doesn’t perform any invalidation or generation of the glyphs or layout. This method should be invoked only during glyph generation and typesetting, in almost all cases only by the glyph generator or typesetter. For example, a custom glyph generator or typesetter might invoke it.
32.40.21  setExtraLineFragmentRect(fragmentRect as NSRectMBS, usedRect as NSRectMBS, TextContainer as NSTextContainerMBS)


**Function:** Sets the bounds and container for the extra line fragment.

**Notes:**

fragmentRect: The rectangle to set.
usedRect: Indicates where the insertion point is drawn.
TextContainer: The text container where the rectangle is to be laid out.

The extra line fragment is used when the text backing ends with a hard line break or when the text backing is totally empty, to define the extra line which needs to be displayed at the end of the text. If the text backing is not empty and does not end with a hard line break, this should be set to NSRectMBS.Zero and nil.

Line fragment rectangles and line fragment used rectangles are always in container coordinates.

This method is used by the layout mechanism and should be invoked only during typesetting, in almost all cases only by the typesetter. For example, a custom typesetter might invoke it.

32.40.22  setLineFragmentRect(fragmentRect as NSRectMBS, glyphRange as NSRangeMBS, usedRect as NSRectMBS)


**Function:** Associates the given line fragment bounds with the given range of glyphs.

**Notes:**

fragmentRect: The rectangle of the line fragment.
glyphRange: The range of glyphs to be associated with fragmentRect.
usedRect: The portion of fragmentRect that actually contains glyphs or other marks that are drawn (including the text containers line fragment padding. Must be equal to or contained within fragmentRect.

The typesetter must specify the text container first with setTextContainer, and it sets the exact positions of the glyphs afterwards with setLocation.

In the course of layout, all glyphs should end up being included in a range passed to this method, but only glyphs that start a new line fragment should be at the start of such ranges.

Line fragment rectangles and line fragment used rectangles are always in container coordinates.

This method is used by the layout mechanism and should be invoked only during typesetting, in almost all cases only by the typesetter. For example, a custom typesetter might invoke it.
32.40.23 `usedRectForTextContainer(container as NSTextContainerMBS) as NSRectMBS`


**Function:** Returns the bounding rectangle for the glyphs laid out in the given text container.

**Notes:**
Returns the text container’s currently used area, which determines the size that the view would need to be in order to display all the glyphs that are currently laid out in the container. This causes neither glyph generation nor layout.

Used rectangles are always in container coordinates.

32.40.24 **Properties**

32.40.25 `allowsNonContiguousLayout as boolean`


**Function:** Whether noncontiguous layout is enabled.

**Notes:**
Setting to true allows but does not require the layout manager to use noncontiguous layout, and the layout manager may in fact not do so, depending on its configuration.

(Read and Write property)

32.40.26 `attributedString as NSAttributedStringMBS`


**Function:** Returns the text storage object from which the NSGlyphGenerator object procures characters for glyph generation.

**Notes:**
This method is part of the NSGlyphStorage protocol, for use by the glyph generator. For NSLayoutManager the attributed string is equivalent to the text storage.

Available in Mac OS X v10.5 and later.

(Read only property)

32.40.27 `backgroundLayoutEnabled as boolean`


**Function:** Whether the receiver generates glyphs and lays them out when the application’s run loop is idle.

**Notes:**
If true, background layout is enabled; if false, the receiver performs glyph generation and layout only when necessary. (Read and Write property)

### 32.40.28 font as NSFontMBS

MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The font for the invisible character drawing. **Notes:** Use nil font for using the font of the current text. This method is only available if the NSLayoutManagerMBS object has been created with new NSLayoutManagerMBS, so the plugin can use the special NSLayoutManager subclass with support for invisible character drawing. (Read and Write property)

### 32.40.29 Handle as Integer

MBS MacCocoa Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference. **Notes:** (Read and Write property)

### 32.40.30 hasNonContiguousLayout as boolean

MBS MacCocoa Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the layout manager currently has any areas of noncontiguous layout. **Notes:** There may be times at which there is no noncontiguous layout, such as when layout is complete; this method enables the layout manager to report that to clients. (Read only property)

### 32.40.31 hyphenationFactor as Double

MBS MacCocoa Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The threshold controlling when hyphenation is done. **Notes:** factor: The hyphenation factor, ranging from 0.0 to 1.0. By default, the value is 0.0, meaning hyphenation is off. A factor of 1.0 causes hyphenation to be attempted always.
Whenever (width of the real contents of the line) / (the line fragment width) is below factor, hyphenation is attempted when laying out the line. Hyphenation slows down text layout and increases memory usage, so it should be used sparingly.

May be overridden on a per-paragraph basis by the NSParagraphStyle method hyphenationFactor. (Read and Write property)

### 32.40.32 showInvisibleCharacters as boolean


**Function:** Whether to show invisible characters.

**Notes:**
This method is only available if the NSLayoutManagerMBS object has been created with new NSLayoutManagerMBS, so the plugin can use the special NSLayoutManager subclass with support for invisible character drawing. (from MBS Plugin)
(Read and Write property)

### 32.40.33 showsControlCharacters as boolean


**Function:** Whether to substitute visible glyphs for control characters in layout.

**Example:**

```plaintext
if TargetCocoa then
    dim t as NSTextViewMBS = TextArea1.NSTextViewMBS
    dim l as NSLayoutManagerMBS = t.layoutManager
    l.showsControlCharacters = true
else
   // not supported
   break
end if
```

**Notes:**
If true, the receiver substitutes visible glyphs for control characters if the font and script support it; if false, it doesn’t. The default is false.
(Read and Write property)
32.40. showsInvisibleCharacters as boolean

Function: Whether to substitute visible glyphs for whitespace and other typically invisible characters in
layout.
Example:

if TargetCocoa then

dim t as NSTextViewMBS = TextArea1.NSTextViewMBS
dim l as NSLayoutManagerMBS = t.layoutManager

l.showsInvisibleCharacters = true

else
  // not supported
  break
end if

Notes:
If true, the receiver substitutes visible glyphs for invisible characters if the font and script support it; if false,
it doesn’t. The default is false. (from Apple framework)
(Read and Write property)

32.40.35 textColor as NSColorMBS

Function: The text color for drawing invisible characters.
Notes:
This method is only available if the NSLayoutManagerMBS object has been created with new NSLayoutMan-
gerMBS, so the plugin can use the special NSLayoutManager subclass with support for invisible character
drawing.
(Read and Write property)

32.40.36 textStorage as NSTextStorageMBS

Notes: (Read and Write property)
32.40.37  usesFontLeading as Boolean

MBS MacCocoa Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates whether the receiver uses the leading provided in the font. **Notes:** (Read and Write property)

32.40.38  usesScreenFonts as boolean

MBS MacCocoa Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether screen fonts to calculate layout and display text. **Notes:**

If true, the receiver uses screen fonts; if false, it doesn’t. (Read and Write property)

32.40.39  InvisibleCharMapping(character as Integer) as string

MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets/gets character mapping for invisible character. **Example:**

```dim l as new NSLayoutManagerMBS
// ...
// set tab to map to plus sign
l.InvisibleCharMapping(9) = "+"
// set space to map to star sign
l.InvisibleCharMapping(asc(" ")) = "*"
```

**Notes:**

By default characters are set for endofline, tab and spaces. Set showInvisibleCharacters to true and put here all the characters you need. (Read and Write computed property)
32.41. CLASS NSLEVELINDICATORMBS

32.41 class NSLevelIndicatorMBS

32.41.1 class NSLevelIndicatorMBS


Function: NSLevelIndicatorMBS is a subclass of NSControlMBS that displays a value on a linear scale.

Notes:

Level indicators provide a visual representation of a level or amount of something, using discrete values. While similar to NSSlider, it provides a more customized visual feedback to the user. Level indicators do not have a "knob" indicating the current setting or allowing the user to adjust settings. The supported indicator styles include:

- A capacity style level indicator. The continuous mode for this style is often used to indicate conditions such as how much data is on hard disk. The discrete mode is similar to audio level indicators in audio playback applications. You can specify both a warning value and a critical value that provides additional visual feedback to the user.
- A ranking style level indicator. This is similar to the star ranking displays provided in iTunes and iPhoto. You can also specify your own ranking image.
- A relevancy style level indicator. This style is used to display the relevancy of a search result, for example in Mail.

NSLevelIndicator uses an NSLevelIndicatorCell to implement much of the control's functionality. NSLevelIndicator provides cover methods for most of NSLevelIndicatorCell’s methods, which invoke the corresponding cell method.

Subclass of the NSControlMBS class.

32.41.2 Methods

32.41.3 Constructor


Function: Creates a new level indicator with size 100/100 and position 0/0

Example:

```
dim t as new NSLevelIndicatorMBS
```

Notes: On success the handle property is not zero.

See also:

- 32.41.4 Constructor(Handle as Integer) 5784
- 32.41.5 Constructor(left as Double, top as Double, width as Double, height as Double) 5784
32.41.4 Constructor(Handle as Integer)

Function: Creates an object based on the given NSLevelIndicator handle.
Example:

```vbnet
dim t as new NSLevelIndicatorMBS(0, 0, 100, 100)
dim v as new NSLevelIndicatorMBS(t.handle)
```

MsgBox str(v.Bounds.Width)+” x ”+str(v.Bounds.Height)

Notes: The handle is casted to a NSLevelIndicator and the plugin retains this handle.
See also:

- 32.41.3 Constructor

- 32.41.5 Constructor(left as Double, top as Double, width as Double, height as Double)

32.41.5 Constructor(left as Double, top as Double, width as Double, height as Double)

Function: Creates a new level indicator with the given size and position.
Example:

```vbnet
dim x as new NSLevelIndicatorMBS(0, 0, 100, 100)
```

Notes: On success the handle property is not zero.
See also:

- 32.41.3 Constructor

- 32.41.4 Constructor(Handle as Integer)

32.41.6 rectOfTickMarkAtIndex(index as Integer) as NSRectMBS

Function: Returns the bounding rectangle of the tick mark identified by index (the minimum-value tick mark is at index 0).
Notes: If no tick mark is associated with index, the method raises a NSExceptionMBS.
32.41.7  tickMarkValueAtIndex(index as Integer) as Double

Function: Returns the receiver’s value represented by the tick mark at index (the minimum-value tick
mark has an index of 0).

32.41.8  Properties

32.41.9  criticalValue as Double

Function: The critical value.
Notes: (Read and Write computed property)

32.41.10  levelIndicatorStyle as Integer

Function: Set style of the indicator.
Notes: (Read and Write computed property)

32.41.11  maxValue as Double

Function: The maximum value the level indicator can represent.
Notes: (Read and Write computed property)

32.41.12  minValue as Double

Function: The minimum value.
Notes: (Read and Write computed property)

32.41.13  numberOfMajorTickMarks as Integer

Function: The number of major tick marks displayed.
Notes:
CHAPTER 32. COCOA

The count must be less than or equal to the number of tick marks returned by numberOfTickMarks. For example, if the number of tick marks is 11 and you specify 3 major tick marks, the resulting level indicator will display 3 major tickmarks alternating with 8 minor tick marks. (Read and Write computed property)

32.41.14 numberOfTickMarks as Integer

MBS MacControls Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The number of tick marks displayed by the receiver (which include those assigned to the minimum and maximum values) to count.
Notes: By default, this value is 0, and no tick marks appear. The number of tick marks assigned to a slider, along with the slider’s minimum and maximum values, determines the values associated with the tick marks. (Read and Write computed property)

32.41.15 tickMarkPosition as Integer

Notes: This method has no effect if no tick marks have been assigned (that is, numberOfTickMarks returns 0). (Read and Write computed property)

32.41.16 warningValue as Double

Notes: (Read and Write computed property)

32.41.17 Constants

32.41.18 NSContinuousCapacityLevelIndicatorStyle = 1

MBS MacControls Plugin, Plugin Version: 12.2. Function: One of the style constants. Notes: A style that is often used to indicate conditions such as how much data is on a hard disk.
32.41. CLASS NSLEVELINDICATORMBS

32.41.19 NSDiscreteCapacityLevelIndicatorStyle = 2

MBS MacControls Plugin, Plugin Version: 12.2. **Function:** One of the style constants. **Notes:** A style similar to audio level indicators in iTunes.

32.41.20 NSRatingLevelIndicatorStyle = 3

MBS MacControls Plugin, Plugin Version: 12.2. **Function:** One of the style constants. **Notes:** A style similar to the star ranking displays provided in iTunes and iPhoto.

32.41.21 NSRelevancyLevelIndicatorStyle = 0

MBS MacControls Plugin, Plugin Version: 12.2. **Function:** One of the style constants. **Notes:** A style similar to the rank column displayed when searching in Mail.app.

32.41.22 NSTickMarkAbove = 1

MBS MacControls Plugin, Plugin Version: 12.2. **Function:** One of the tick mark constants. **Notes:** Tick marks above (for horizontal sliders).

32.41.23 NSTickMarkBelow = 0

MBS MacControls Plugin, Plugin Version: 12.2. **Function:** One of the tick mark constants. **Notes:** Tick marks below (for horizontal sliders); the default for horizontal sliders.

32.41.24 NSTickMarkLeft = 0

MBS MacControls Plugin, Plugin Version: 12.2. **Function:** One of the tick mark constants. **Notes:** Tick marks to the left (for vertical sliders); the default for vertical sliders.

32.41.25 NSTickMarkRight = 1

MBS MacControls Plugin, Plugin Version: 12.2. **Function:** One of the tick mark constants. **Notes:** Tick marks to the right (for vertical sliders).
32.42 class NSMutableAttributedStringMBS

32.42.1 class NSMutableAttributedStringMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
NSMutableAttributedString declares the programmatic interface to objects that manage mutable attributed strings.
**Notes:**
You can add and remove characters (raw strings) and attributes separately or together as attributed strings.
See the class description for NSAttributedString for more information about attributed strings.
Subclass of the NSAttributedStringMBS class.

32.42.2 Methods

32.42.3 addAttribute(name as string, value as Variant, range as NSRangeMBS)

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds an attribute with the given name and value to the characters in the specified range.
**Example:**

```swift
// create Hello World in red
dim a as NSAttributedStringMBS = NSAttributedStringMBS.attributedStringWithString(“Hello World”)  
dim m as NSMutableAttributedStringMBS = a.mutableCopy
m.addAttribute(a.NSForegroundColorAttributeName, NSColorMBS.redColor, new NSRangeMBS(0, m.length))

// put it in a textarea
TextArea1.NSTextViewMBS.textStorage.setAttributedString m
```

**Notes:**
name: A string specifying the attribute name. Attribute keys can be supplied by another framework or can be custom ones you define. For information about where to find the system-supplied attribute keys, see the overview section in NSAttributedString Class Reference.
value: The attribute value associated with name.
Range: The range of characters to which the specified attribute/value pair applies.

You may assign any name/value pair you wish to a range of characters, in addition to the standard attributes described in the "Constants" section of NSAttributedString Additions. Raises an NSInvalidArgumentException if name or value is nil and an NSRangeException if any part of range lies beyond the end of the receiver’s characters.
Plugin version 16.0 or newer ignores calls here with value = nil or empty name to avoid exceptions.

32.42.4  addAttributes(attrs as Dictionary, range as NSRangeMBS)

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Adds the given collection of attributes to the characters in the specified range.

**Notes:**

attributes: A dictionary containing the attributes to add. Attribute keys can be supplied by another framework or can be custom ones you define. For information about where to find the system-supplied attribute keys, see the overview section in NSAttributedString Class Reference.

Range: The range of characters to which the specified attributes apply.

You may assign any name/value pair you wish to a range of characters, in addition to the standard attributes described in the "Constants" section of NSAttributedString Additions. Raises an NSInvalidArgument Exception if attributes is nil and an NSRangeException if any part of range lies beyond the end of the receiver’s characters.

32.42.5  appendAttributedString(attrString as NSAttributedStringMBS)

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Adds the characters and attributes of a given attributed string to the end of the receiver.

**Example:**

```
const NSWritingDirectionNatural = -1  // Determines direction using the Unicode Bidi Algorithm rules P2 and P3
const NSWritingDirectionLeftToRight = 0  // Left to right writing direction
const NSWritingDirectionRightToLeft = 1  // Right to left writing direction

const NSTextWritingDirectionEmbedding = 0
const NSTextWritingDirectionOverride = 2

dim t as NSTextStorageMBS = TextArea1.NSTextViewMBS.textStorage

// get hello in arabic
dim a as NSAttributedStringMBS = NSAttributedStringMBS.attributedStringWithString("")
dim m as NSMutableAttributedStringMBS = a.mutableCopy

// now set attributes for right to left
m.addAttribute t.NSWritingDirectionAttributeName, array(NSWritingDirectionRightToLeft+NSTextWritingDirectionOverride), new NSRangeMBS(0,m.Length)

// and add to textarea
t.appendAttributedString m
```
Notes: attributedString: The string whose characters and attributes are added.

32.42.6 appendString(attrString as String)


32.42.7 applyFontTraits(FontTraitMask as Integer, offset as Integer, length as Integer)

MBS MacBase Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Applies the font attributes specified by mask to the characters in a range. Notes: See the NSFontManager class specification for a description of the font traits available. Raises an NSRangeException if any part of aRange lies beyond the end of the receivers characters.

32.42.8 AsCFMutableAttributedString as Variant


// make NS version
dim n as new NSAttributedStringMBS
if n.initWithString("Hello World") then

dim m as NSMutableAttributedStringMBS = n.mutableCopy

// convert
dim c as CFMutableAttributedStringMBS = m.AsCFMutableAttributedString

// and check content
MsgBox c.String
end if

Notes: For passing to functions which need a CFMutableAttributedStringMBS.
32.42.9  \textbf{beginEditing}

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. \textbf{Function:} Overridden by subclasses to buffer or optimize a series of changes to the receiver’s characters or attributes, until it receives a matching endEditing message, upon which it can consolidate changes and notify any observers that it has changed.

\textbf{Notes:} You can nest pairs of beginEditing and endEditing messages.

32.42.10  \textbf{containsAttachmentsInRange}(offset as Integer, length as Integer) as Boolean

MBS MacBase Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. \textbf{Function:} Returns true if the receiver contains a property configured (NSAttachmentAttributeName with NSAttachmentCharacter) in range.

32.42.11  \textbf{deleteCharactersInRange}(range as NSRangeMBS)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. \textbf{Function:} Deletes the characters in the given range along with their associated attributes.

\textbf{Notes:} Raises an NSRangeException if any part of aRange lies beyond the end of the receiver’s characters.

32.42.12  \textbf{endEditing}

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. \textbf{Function:} Overridden by subclasses to consolidate changes made since a previous beginEditing message and to notify any observers of the changes.

\textbf{Notes:} The NSMutableAttributedString implementation does nothing. NSTextStorage, for example, overrides this method to invoke fixAttributesInRange and to inform its NSLayoutManager objects that they need to re-lay the text.

32.42.13  \textbf{fixAttachmentAttributeInRange}(offset as Integer, length as Integer)

MBS MacBase Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. \textbf{Function:} Cleans up attachment attributes in a range, removing all attachment attributes assigned to characters other than NSAttachmentCharacter.

\textbf{Notes:} Raises an NSRangeException if any part of aRange lies beyond the end of the receivers characters.
32.42.14 fixAttributesInRange(offset as Integer, length as Integer)

MBS MacBase Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Invokes the other fix... methods, allowing you to clean up an attributed string with a single message. **Notes:** Raises an NSRangeException if any part of aRange lies beyond the end of the receivers characters.

NSTextStorage subclasses that return YES from the fixesAttributesLazily method should avoid directly calling fixAttributesInRange: or else bracket such calls with beginEditing and endEditing messages.

32.42.15 fixFontAttributeInRange(offset as Integer, length as Integer)

MBS MacBase Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Fixes the font attribute in aRange, assigning default fonts to characters with illegal fonts for their scripts and otherwise correcting font attribute assignments. **Notes:** For example, Kanji characters assigned a Latin font are reassigned an appropriate Kanji font. Raises an NSRangeException if any part of aRange lies beyond the end of the receivers characters.

32.42.16 fixParagraphStyleAttributeInRange(offset as Integer, length as Integer)

MBS MacBase Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Fixes the paragraph style attributes in a range, assigning the first paragraph style attribute value in each paragraph to all characters of the paragraph. **Notes:** This method extends the range as needed to cover the last paragraph partially contained. A paragraph is delimited by any of these characters, the longest possible sequence being preferred to any shorter:

- U+000D (\r or CR)
- U+000A (\n or LF)
- U+2029 (Unicode paragraph separator) \r\n, in that order (also known as CRLF)

 Raises an NSRangeException if any part of aRange lies beyond the end of the receivers characters.
### 32.42.17 fontAttributesInRange(offset as Integer, length as Integer) as Dictionary

MBS MacBase Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Attributes which should be copied/pasted with ”copy font”.

### 32.42.18 insertAttributedString(attrString as NSAttributedStringMBS, location as UInt64)

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Inserts the characters and attributes of the given attributed string into the receiver at the given index. **Notes**: 

attributedString: The string whose characters and attributes are inserted. 
index: The index at which the characters and attributes are inserted. 

The new characters and attributes begin at the given index and the existing characters and attributes from the index to the end of the receiver are shifted by the length of the attributed string. Raises an NSRangeException if index lies beyond the end of the receiver’s characters.

### 32.42.19 insertString(attrString as String, location as UInt64)

MBS MacBase Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Inserts the text into the receiver at the given index.

### 32.42.20 removeAttribute(name as string, range as NSRangeMBS)

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Removes the named attribute from the characters in the specified range. **Notes**: 

name: A string specifying the attribute name to remove. Attribute keys can be supplied by another framework or can be custom ones you define. For information about where to find the system-supplied attribute keys, see the overview section in NSAttributedString Class Reference. 
Range: The range of characters from which the specified attribute is removed. 

Raises an NSRangeException if any part of range lies beyond the end of the receiver’s characters.
32.42.21 replaceCharactersInRange(range as NSRangeMBS, attrString as NSAttributedStringMBS)

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Replaces the characters and attributes in a given range with the characters and attributes of the given attributed string.

**Notes:**
- Range: The range of characters and attributes replaced.
- attrString: The attributed string whose characters and attributes replace those in the specified range.

Raises an NSRangeException if any part of range lies beyond the end of the receiver’s characters.

See also:
- 32.42.22 replaceCharactersInRange(range as NSRangeMBS, text as string)

32.42.22 replaceCharactersInRange(range as NSRangeMBS, text as string)

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Replaces the characters in the given range with the characters of the given string.

**Notes:**
- Range: A range specifying the characters to replace.
- text: A string specifying the characters to replace those in range.

The new characters inherit the attributes of the first replaced character from range. Where the length of range is 0, the new characters inherit the attributes of the character preceding range if it has any, otherwise of the character following range.

Raises an NSRangeException if any part of range lies beyond the end of the receiver’s characters.

See also:
- 32.42.21 replaceCharactersInRange(range as NSRangeMBS, attrString as NSAttributedStringMBS)

32.42.23 rulerAttributesInRange(offset as Integer, length as Integer) as Dictionary

MBS MacBase Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Attributes which should be copied/pasted with "copy ruler".
32.42.24  setAlignment(alignment as Integer, offset as Integer, length as Integer)

MBS MacBase Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the alignment characteristic of the paragraph style attribute for the characters in aRange to alignment. **Notes:** When attribute fixing takes place, this change will affect only paragraphs whose first character was included in aRange. Raises an NSRangeException if any part of a range lies beyond the end of the receivers characters.

32.42.25  setAttributedString(attrString as NSAttributedStringMBS)

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Replaces the receiver’s entire contents with the characters and attributes of the given attributed string. **Example:**

```// create Hello World in red
  dim a as NSAttributedStringMBS = NSAttributedStringMBS.attributedStringWithString("Hello World")
  dim m as NSMutableAttributedStringMBS = a.mutableCopy
  m.addAttribute(a.NSForegroundColorAttributeName, NSColorMBS.redColor, new NSRangeMBS(0, m.length))

  // put it in a text area
  TextArea1.NSTextViewMBS.textStorage.setAttributedString m
```

**Notes:** attributedString: The attributed string whose characters and attributes replace those in the receiver.

32.42.26  setAttributes(attrs as Dictionary, range as NSRangeMBS)

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the attributes for the characters in the specified range to the specified attributes.

**Notes:**

attributes: A dictionary containing the attributes to set. Attribute keys can be supplied by another framework or can be custom ones you define. For information about where to find the system-supplied attribute keys, see the overview section in NSAttributedString Class Reference. **Range:** The range of characters whose attributes are set.

These new attributes replace any attributes previously associated with the characters in range. Raises an NSRangeException if any part of range lies beyond the end of the receiver’s characters.

To set attributes for a zero-length NSMutableAttributedString displayed in a text view, use the NSTextView
method setTypingAttributes.

### 32.42.27 setBaseWritingDirection(writingDirection as Integer, offset as Integer, length as Integer)

MBS MacBase Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the base writing direction for the characters in range to writingDirection.

### 32.42.28 setString(attrString as String)

MBS MacBase Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Replaces the receiver’s entire contents with the given string.

### 32.42.29 subscriptRange(offset as Integer, length as Integer)

MBS MacBase Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Decrements the value of the superscript attribute for characters in a range by 1. **Example:**

```
textarea1.text = "Hello World"
```

```dim n as NSTextViewMBS = textarea1.NSTextViewMBS
dim s as NSTextStorageMBS = n.textStorage
s.subscriptRange(6, 5)```

### 32.42.30 superscriptRange(offset as Integer, length as Integer)

MBS MacBase Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Increments the value of the superscript attribute for characters in a range by 1.

### 32.42.31 unscriptRange(offset as Integer, length as Integer)

MBS MacBase Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes the superscript attribute from the characters in a range.
updateAttachmentsFromPath(file as folderitem)

MBS MacBase Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Updates all attachments based on files contained in the RTFD file package at path.

See also:

- 32.42.33 updateAttachmentsFromPath(path as string)

updateAttachmentsFromPath(path as string)

MBS MacBase Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Updates all attachments based on files contained in the RTFD file package at path.

See also:

- 32.42.32 updateAttachmentsFromPath(file as folderitem)
32.43 class NSMutableCharacterSetMBS

32.43.1 class NSMutableCharacterSetMBS

NSMutableCharacterSetMBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The NSMutableCharacterSet class declares the programmatic interface to objects that manage a modifiable set of Unicode characters.

**Notes:**
You can add or remove characters from a mutable character set as numeric values in NSRange structures or as character values in strings, combine character sets by union or intersection, and invert a character set.

Mutable character sets are less efficient to use than immutable character sets. If you don’t need to change a character set after creating it, create an immutable copy with copy and use that.

NSMutableCharacterSet defines no primitive methods. Subclasses must implement all methods declared by this class in addition to the primitives of NSCharacterSet. They must also implement mutableCopy. Subclass of the NSCharacterSetMBS class.

32.43.2 Methods

32.43.3 addCharactersInRange(aRange as NSRangeMBS)

NSMutableCharacterSetMBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds to the receiver the characters whose Unicode values are in a given range.

**Example:**
```
dim m as new NSMutableCharacterSetMBS
dim r as new NSRangeMBS(65,3)
m.addCharactersInRange r
MsgBox m // shows "ABC"
```

**Notes:**
aRange: The range of characters to add.

aRange.location is the value of the first character to add; aRange.location + aRange.length 1 is the value of the last. If aRange.length is 0, this method has no effect.
32.43. CLASS NSMUTABLECHARACTERSETMBS

32.43.4 addCharactersInString(aString as string)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds to the receiver the characters in a given string.

**Example:**

```plaintext
dim m as new NSMutableCharacterSetMBS
m.addCharactersInString "Hello"
MsgBox m // shows "Helo"
```

**Notes:** This method has no effect if aString is empty.

32.43.5 Constructor

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an empty mutable character set.

32.43.6 formIntersectionWithCharacterSet(otherset as NSMutableCharacterSetMBS)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Modifies the receiver so it contains only characters that exist in both the receiver and otherSet.

32.43.7 formUnionWithCharacterSet(otherset as NSMutableCharacterSetMBS)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Modifies the receiver so it contains all characters that exist in either the receiver or otherSet.

32.43.8 invert

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Replaces all the characters in the receiver with all the characters it didn’t previously contain.

**Notes:** Inverting a mutable character set, whether by invert or by invertedSet, is much less efficient than inverting an immutable character set with invertedSet.
**32.43.9 removeCharactersInRange(aRange as NSRangeMBS)**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes from the receiver the characters whose Unicode values are in a given range.

**Example:**

```swift
dim m as new NSMutableCharacterSetMBS
dim r as new NSRangeMBS(65,3)
m.addCharactersInRange new NSRangeMBS(65,6)
m.removeCharactersInRange r
MsgBox m // shows "DEF"
```

**Notes:**

aRange: The range of characters to remove.

aRange.location is the value of the first character to remove; aRange.location + aRange.length + 1 is the value of the last. If aRange.length is 0, this method has no effect.

**32.43.10 removeCharactersInString(aString as string)**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes from the receiver the characters in a given string.

**Example:**

```swift
dim m as new NSMutableCharacterSetMBS
m.addCharactersInString "Hello"
m.removeCharactersInString "World"
MsgBox m // shows "He"
```

**Notes:** This method has no effect if aString is empty.
32.44. CLASS NSMUTABLEINDEXSETMBS

32.44 class NSMutableIndexSetMBS

32.44.1 class NSMutableIndexSetMBS

MBS MacCocoa Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The NSMappableIndexSet class represents a mutable collection of unique unsigned integers, known as indexes because of the way they are used.

Example:
```
dim n as new NSMutableIndexSetMBS(5,6) // 5, 6, 7, 8, 9, 10
MsgBox str(n.firstIndex)+" "+str(n.lastIndex)
```

Notes:
This collection is referred to as a mutable index set.

The values in a mutable index set are always sorted, so the order in which values are added is irrelevant.

You must not subclass the NSMutableIndexSet class.
Subclass of the NSIndexSetMBS class.

32.44.2 Methods

32.44.3 addIndex(index as Integer)


Example:
```
dim n as new NSMutableIndexSetMBS(5,6) // 5, 6, 7, 8, 9, 10
n.addIndex 12
MsgBox str(n.count)
```

32.44.4 addIndexes(indexes as NSIndexSetMBS)


Example:
```
dim n as new NSMutableIndexSetMBS(5,6) // 5, 6, 7, 8, 9, 10
dim x as new NSIndexSetMBS(12,5)
```
32.44.5  addIndexesInRange(StartIndex as Integer, Length as Integer)

MBS MacCocoa Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds the indexes in an index range to the receiver.

**Example:**

```plaintext
dim n as new NSIndexSetMBS(5,6) // 5, 6, 7, 8, 9, 10
n.addIndexesInRange 12,5
MsgBox str(n.count)
```

**Notes:**

Index range to add. Must include only indexes representable as unsigned integers.

This method raises an NSRangeException when indexRange would add an index that exceeds the maximum allowed value for unsigned integers.

32.44.6  Constructor

MBS MacCocoa Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes an allocated NSIndexSet object.

**Example:**

```plaintext
dim x as new NSIndexSetMBS
```

See also:

- 32.44.7 Constructor(index as Integer) 5802
- 32.44.8 Constructor(indexes as NSIndexSetMBS) 5803
- 32.44.9 Constructor(StartIndex as Integer, Length as Integer) 5803

32.44.7  Constructor(index as Integer)

MBS MacCocoa Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes an allocated NSIndexSet object with an index.
32.44. **CLASS NSMUTABLEINDEXSETMBS**

**Example:**

```plaintext
dim n as new NSMutableIndexSetMBS(5)
MsgBox str(n.firstIndex)+" "+str(n.lastIndex)
```

See also:

- 32.44.6 Constructor
- 32.44.8 Constructor(indexes as NSIndexSetMBS)
- 32.44.9 Constructor(StartIndex as Integer, Length as Integer)

### 32.44.8 Constructor(indexes as NSIndexSetMBS)

MBS MacCocoa Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes an allocated NSIndexSet object with an index set.

**Example:**

```plaintext
dim n as new NSMutableIndexSetMBS(5)
dim x as new NSMutableIndexSetMBS(n)
MsgBox str(x.firstIndex)
```

See also:

- 32.44.6 Constructor
- 32.44.7 Constructor(index as Integer)
- 32.44.9 Constructor(StartIndex as Integer, Length as Integer)

### 32.44.9 Constructor(StartIndex as Integer, Length as Integer)

MBS MacCocoa Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes an allocated NSIndexSet object with an index range.

**Example:**

```plaintext
dim n as new NSMutableIndexSetMBS(5,6) // 5, 6, 7, 8, 9, 10
```

**Notes:** This method raises an NSRangeException when indexRange would add an index that exceeds the maximum allowed value for unsigned integers.

See also:

- 32.44.6 Constructor
32.44.10  removeAllIndexes

MBS MacCocoa Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes the receiver’s indexes.

**Example:**

```plaintext
dim n as new NSMutableIndexSetMBS(5,6) // 5, 6, 7, 8, 9, 10
n.removeAllIndexes
MsgBox str(n.count)
```

32.44.11  removeIndex(index as Integer)

MBS MacCocoa Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes an index from the receiver.

**Example:**

```plaintext
dim n as new NSMutableIndexSetMBS(5,6) // 5, 6, 7, 8, 9, 10
MsgBox str(n.count)
n.removeIndex 8
MsgBox str(n.count)
```

32.44.12  removeIndexes(indexes as NSIndexSetMBS)

MBS MacCocoa Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes the indexes in an index set from the receiver.

**Example:**

```plaintext
dim n as new NSMutableIndexSetMBS(5,6) // 5, 6, 7, 8, 9, 10
dim x as new NSIndexSetMBS(5,2)
n.removeIndexes x
MsgBox str(n.firstIndex)+” “+str(n.lastIndex)
```

32.44.13  removeIndexesInRange(StartIndex as Integer, Length as Integer)

MBS MacCocoa Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes the indexes in an index range from the receiver.
32.44. **CLASS NSMUTABLEINDEXSETMBS**

Example:

```javascript
dim n as new NSMutableIndexSetMBS(5,6) // 5, 6, 7, 8, 9, 10
n.removeIndexesInRange 5,2
MsgBox str(n.firstIndex)+" " +str(n.lastIndex)
```

32.44.14 **shiftIndexes(StartingAtIndex as Integer, delta as Integer)**

MBS MacCocoa Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Shifts a group of indexes to the left or the right within the receiver.

Example:

```javascript
dim n as new NSMutableIndexSetMBS(5,6) // 5, 6, 7, 8, 9, 10
n.shiftIndexes 7,3
MsgBox str(n.firstIndex)+" " +str(n.lastIndex)
```

Notes:

startIndex: Head of the group of indexes to shift.

delta: Amount and direction of the shift. Positive integers shift the indexes to the right. Negative integers shift the indexes to the left.

The group of indexes shifted is made up by startIndex and the indexes that follow it in the receiver.

A left shift deletes the indexes in the range (startIndex-delta,delta) from the receiver.

A right shift inserts empty space in the range (indexStart,delta) in the receiver.
### 32.45 class NSMutableParagraphStyleMBS

#### 32.45.1 class NSMutableParagraphStyleMBS


**Function:** NSMutableParagraphStyle adds methods to its superclass, NSParagraphStyle, for changing the values of the subattributes in a paragraph style attribute.

**Example:**

```vba
' Example code snippet
' ...
```

**Notes:**

See the NSParagraphStyle and NSAttributedString specifications for more information.

Important: A paragraph style object should not be mutated after adding it to an attributed string; doing so can cause your program to crash.

Subclass of the NSParagraphStyleMBS class.

#### 32.45.2 Methods

#### 32.45.3 addTabStop(tabstop as NSTextTabMBS)


**Function:** Adds tabStop to the receiver.

#### 32.45.4 Constructor


**Function:** The constructor.
32.45.5 removeTabStop(tabstop as NSTextTabMBS)

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes the first text tab whose location and type are equal to those of tabStop.

32.45.6 setAlignment(alignment as Integer)

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the alignment of the receiver to alignment.

**Example:**
```vbs
dim n as NSParagraphStyleMBS = NSParagraphStyleMBS.defaultParagraphStyle
MsgBox str(n.alignment) // 4 = natural

dim m as NSMutableParagraphStyleMBS = n.mutableCopy
m.setAlignment NSParagraphStyleMBS.NSCenterTextAlignment
MsgBox str(m.alignment) // 2 = center
```

**Notes:**
alignment may be one of:

NSLeftTextAlignment
NSRightTextAlignment
NSCenterTextAlignment
NSJustifiedTextAlignment
NSNaturalTextAlignment

32.45.7 setBaseWritingDirection(writingDirection as Integer)

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the base writing direction for the receiver.

**Notes:** It can be NSWritingDirectionNaturalDirection, NSWritingDirectionLeftToRight, or NSWritingDirectionRightToLeft. If you specify NSWritingDirectionNaturalDirection, the receiver resolves the writing direction to either NSWritingDirectionLeftToRight or NSWritingDirectionRightToLeft, depending on the direction for the user’s language preference setting.
32.45.8  setDefaultTabInterval(value as Double)

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the default tab interval for the receiver.

**Notes:** Tabs after the last specified in tabStops are placed at integral multiples of this distance. This value must be nonnegative.

32.45.9  setFirstLineHeadIndent(value as Double)

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the distance in points from the leading margin of a text container to the beginning of the paragraph’s first line to value.

**Notes:** This value must be nonnegative.

32.45.10  setHeaderLevel(level as Integer)

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Specifies whether the paragraph is to be treated as a header for purposes of HTML generation.

**Notes:** Should be set to 0 (the default value) if the paragraph is not a header, or from 1 through 6 if the paragraph is to be treated as a header.

32.45.11  setHeadIndent(value as Double)

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the distance in points from the leading margin of a text container to the beginning of lines other than the first to value.

**Notes:** This value must be nonnegative.

32.45.12  setHyphenationFactor(value as Double)

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Specifies the threshold for hyphenation.

**Notes:** Valid values lie between 0.0 and 1.0 inclusive. The default value is 0.0. Hyphenation is attempted when the ratio of the text width (as broken without hyphenation) to the width of the line fragment is less than the hyphenation factor. When the paragraph’s hyphenation factor is 0.0, the layout manager’s hyphenation factor is used instead. When both are 0.0, hyphenation is disabled.
32.45.13 setLineBreakMode(mode as Integer)

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the mode used to break lines in a layout container to mode. **Notes:**

The mode parameter may be one of:

- NSLineBreakByWordWrapping
- NSLineBreakByCharWrapping
- NSLineBreakByClipping
- NSLineBreakByTruncatingHead
- NSLineBreakByTruncatingTail
- NSLineBreakByTruncatingMiddle

See the description of lineBreakMode in the NSParagraphStyle class specification for descriptions of these values.

32.45.14 setLineHeightMultiple(value as Double)

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the line height multiple for the receiver. **Notes:** The natural line height of the receiver is multiplied by this factor before being constrained by minimum and maximum line height. This value must be nonnegative.

32.45.15 setLineSpacing(value as Double)

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the space in points added between lines within the paragraph to value. **Example:**

```plaintext
// works for Labels, TextArea and TextFields

// control is either a textfield or a textview
dim n as NSTextFieldMBS = me.NSTextFieldMBS
dim v as NSTextViewMBS = me.NSTextViewMBS

// get text with attributes
dim a as NSAttributedStringMBS

if n<>Nil then
    a = n.attributedStringValue
else if v<>nil then
    a = v.textStorage
end if
```
// get style
dim p as NSParagraphStyleMBS

try
p = a.attributeAtIndex(a.NSParagraphStyleAttributeName, 0)
catch ex as NSExceptionMBS
// we have none, so make one
p = new NSParagraphStyleMBS
end try

// modify it
dim m as NSMutableParagraphStyleMBS = p.mutableCopy
m.setLineSpacing 5

// add back to styled text
dim s as NSAttributedStringMBS = a.mutableCopy
s.addAttribute(a.NSParagraphStyleAttributeName, m, new NSRangeMBS(0, s.length))

// and apply to control
if n<>Nil then
n.attributedStringValue = s
elseif v<>nil then
v.textStorage.setAttributedString s
end if


Notes: This value must be nonnegative.


32.45.16 setMaximumLineHeight(value as Double)


Function: Sets the maximum height that any line in the paragraph style will occupy, regardless of the font size or size of any attached graphic, to value.

Notes:
Glyphs and graphics exceeding this height will overlap neighboring lines; however, a maximum height of 0 implies no line height limit. This value must be nonnegative.

Although this limit applies to the line itself, line spacing adds extra space between adjacent lines.
32.45.17 setMinimumLineHeight(value as Double)

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the minimum height that any line in the paragraph style will occupy, regardless of the font size or size of any attached graphic, to value.

**Notes:** This value must be nonnegative.

32.45.18 setParagraphSpacing(value as Double)

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the space added at the end of the paragraph to separate it from the following paragraph to value.

**Notes:** This value must be nonnegative.

32.45.19 setParagraphSpacingBefore(value as Double)

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the distance between the paragraph’s top and the beginning of its text content.

**Notes:** This value must be nonnegative.

32.45.20 setParagraphStyle(ParagraphStyle as NSParagraphStyleMBS)

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Replaces the subattributes of the receiver with those in ParagraphStyle.

32.45.21 setTabStops(tabStops() as NSTextTabMBS)

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Replaces the tab stops in the receiver with tabStops.

32.45.22 setTailIndent(value as Double)

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the distance in points from the margin of a text container to the end of lines to value.

**Notes:**

If positive, this is the distance from the leading margin (for example, the left margin in left-to-right text). That is, it’s the absolute line width. If 0 or negative, it’s the distance from the trailing margin the value is
added to the line width.

For example, to create a paragraph style that fits exactly in a 2-inch wide container, set its head indent to 0.0 and its tail indent to 0.0. To create a paragraph style with quarter-inch margins, set its head indent to 0.25 and its tail indent to 0.25.

32.45.23  setTextLists(TextLists() as NSTextListMBS)

MBS MacCocoa Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the text lists containing the paragraph.

32.45.24  setTighteningFactorForTruncation(value as Double)

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Specifies the threshold for using tightening as an alternative to truncation. **Notes:** When the line break mode specifies truncation, the text system attempts to tighten intercharacter spacing as an alternative to truncation, provided that the ratio of the text width to the line fragment width does not exceed \(1.0 + \text{the value returned by tighteningFactorForTruncation}\). Otherwise the text is truncated at a location determined by the line break mode. The default value is 0.05. This method accepts positive and negative values. Values less than or equal to 0.0 result in not tightening.
32.46 class NSMutableURLRequestMBS

32.46.1 class NSMutableURLRequestMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Cocoa class for a mutable URL Request.

**Notes:**
NSMutableURLRequest is a subclass of NSURLRequest provided to aid developers who may find it more
convenient to mutate a single request object for a series of URL load requests instead of creating an im-
mutable NSURLRequest for each load.

This programming model is supported by the following contract between NSMutableURLRequest and
NSURLConnection: NSURLConnection makes a deep copy of each NSMutableURLRequest object passed
to one of its initializers.

Subclass of the NSURLRequestMBS class.

32.46.2 Methods

32.46.3 addValue(value as string, field as string)

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds an HTTP header to the receiver’s HTTP header dictionary.

**Example:**

```dim m as new NSMutableURLRequestMBS("http://test.test")
m.addValue "Hello", "test"
m.addValue "World", "test"
MsgBox m.valueForHTTPHeaderField("test")```

**Notes:**

value: The value for the header field.
field: The name of the header field. In keeping with the HTTP RFC, HTTP header field names are case-
insensitive

This method provides the ability to add values to header fields incrementally. If a value was previously
set for the specified field, the supplied value is appended to the existing value using the appropriate field
delimiter. In the case of HTTP, this is a comma.
32.46.4 Constructor(url as string)

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an NSURLRequest with the given URL.

**Example:**

```pascal
dim m as new NSMutableURLRequestMBS("http://test.test")
```

**Notes:**

Default values are used for cache policy (NSURLRequestUseProtocolCachePolicy) and timeout interval (60 seconds).

On success, handle property is not zero.

**See also:**

- 32.46.5 Constructor(url as string, cachePolicy as Integer, timeoutInterval as Double)

32.46.5 Constructor(url as string, cachePolicy as Integer, timeoutInterval as Double)

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an NSURLRequest with the given URL.

**See also:**

- 32.46.4 Constructor(url as string)

32.46.6 setAllHTTPHeaderFields(headerFields as Dictionary)

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Replaces the receiver’s header fields with the passed values.

**Notes:** headerFields: A dictionary with the new header fields. HTTP header fields must be string values; therefore, each object and key in the headerFields dictionary must be a String. If either the key or value for a key-value pair is not a string, the key-value pair is skipped.

32.46.7 setCachePolicy(policy as Integer)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the cache policy of the receiver.

**Notes:**
policy: The new cache policy.

Available in Mac OS X v10.2 with Safari 1.0 installed.
Available in Mac OS X v10.2.7 and later.

These constants are used to specify interaction with the cached responses.
- NSURLRequestUseProtocolCachePolicy = 0,
- NSURLRequestReloadIgnoringLocalCacheData = 1,
- NSURLRequestReloadIgnoringLocalAndRemoteCacheData = 4,
- NSURLRequestReturnCacheDataElseLoad = 2,
- NSURLRequestReturnCacheDataDontLoad = 3,
- NSURLRequestReloadRevalidatingCacheData = 5

### 32.46.8 setHTTPBody(data as MemoryBlock)

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the request body of the receiver to the specified data.  
**Notes:** data: The new request body for the receiver. This is sent as the message body of the request, as in an HTTP POST request.

### 32.46.9 setHTTPMethod(HTTPMethod as string)

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the receiver’s HTTP request method.  
**Example:**

```dim m as new NSMutableURLRequestMBS("http://test.test")m.setHTTPMethod "PUT"MsgBox m.HTTPMethod```

**Notes:** HTTPMethod: The new HTTP request method. The default HTTP method is "GET".

### 32.46.10 setHTTPShouldHandleCookies(should as boolean)

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets whether the receiver should use the default cookie handling for the request.  
**Example:**

```dim r as NSURLRequestMBS = NSURLRequestMBS.requestWithURL("http://www.apple.de")Dim m as NSMutableURLRequestMBS = r.mutableCopy```
m.setHTTPShouldHandleCookies(false)
HTMLViewer1.LoadRequest m

**Notes:** handleCookies: True if the receiver should use the default cookie handling for the request, false otherwise. The default is true.

### 32.46.11 setHTTPShouldUsePipelining(shouldUsePipelining as boolean)

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets whether the request should not wait for the previous response before transmitting.  
**Notes:**  
True if the receiver should transmit before the previous response is received. False to wait for the previous response before transmitting.

Calling this method with a true value does not guarantee HTTP pipelining behavior. HTTP 1.1 allows the client to send multiple requests to the server without waiting for a response. Though HTTP 1.1 requires support for pipelining, some servers report themselves as being HTTP 1.1 but do not support pipelining. To maintain compatibility with these servers, requests may have to wait for the previous response before transmitting.

Available on Mac OS X 10.7 or newer.

### 32.46.12 setMainDocumentURL(url as string)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the main document URL for the receiver.  
**Example:**

```none
dim m as new NSMutableURLRequestMBS("http://test.test/test.jpg")
m.setMainDocumentURL "http://test.test/"
MsgBox m.mainDocumentURL
```

**Notes:**  
url: The new main document URL. Can be nil.

The caller should set the main document URL to an appropriate main document, if known. For example, when loading a web page the URL of the HTML document for the top-level frame would be appropriate. This URL will be used for the "only from same domain as main document" cookie accept policy.
32.46. **CLASS NSMUTABLEURLREQUESTMBS**

Available in Mac OS X v10.2 with Safari 1.0 installed.
Available in Mac OS X v10.2.7 and later.

### 32.46.13 **setNetworkServiceType**(networkServiceType as Integer)

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the NSURLRequestNetworkServiceType to associate with this request.
**Notes:**

networkServiceType: The service type to associate with the request.
This method is used to provide the network layers with a hint as to the purpose of the request. Most clients should not need to use this method. See NSURLNetworkServiceType* constants.
Available in Mac OS X 10.7 or newer.

### 32.46.14 **setTimeoutInterval**(seconds as Double)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the receiver’s timeout interval, in seconds.
**Notes:**

seconds: The timeout interval, in seconds. If during a connection attempt the request remains idle for longer than the timeout interval, the request is considered to have timed out. The default timeout interval is 60 seconds.

Available in Mac OS X v10.2 with Safari 1.0 installed.
Available in Mac OS X v10.2.7 and later.

### 32.46.15 **setURL**(url as string)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the URL of the receiver.
**Notes:**

Available in Mac OS X v10.2 with Safari 1.0 installed.
Available in Mac OS X v10.2.7 and later.

### 32.46.16 **setValue**(value as string, field as string)

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the specified HTTP header field.
Example:

```swift
dim m as new NSMutableURLRequestMBS("http://test.test")
m.setValue("just a test", "test")
MsgBox m.valueForHTTPHeaderField("test")
```

Notes:

value: The new value for the header field. Any existing value for the field is replaced by the new value.
field: The name of the header field to set. In keeping with the HTTP RFC, HTTP header field names are case-insensitive.
32.47. CLASS NSOUTPUTSTREAMMBS

32.47 class NSOutputStreamMBS

32.47.1 class NSOutputStreamMBS


32.47.2 Methods

32.47.3 Constructor

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creates and returns an initialized output stream that will write stream data to memory. Notes: Returns an initialized output stream that will write stream data to memory. The stream must be opened before it can be used.

You retrieve the contents of the memory stream by OutputData property. See also:

- 32.47.4 Constructor(filePath as string, append as boolean)

32.47.4 Constructor(filePath as string, append as boolean)

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creates and returns an initialized output stream for writing to a specified file. Notes: path: The path to the file the output stream will write to. append: True if newly written data should be appended to any existing file contents, otherwise false.

Returns an initialized output stream that can write to path. The stream must be opened before it can be used. See also:

- 32.47.3 Constructor
32.47.5 OutputData as MemoryBlock

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The output of the memory stream.

32.47.6 outputStreamToFileAtPath(filePath as string, append as boolean) as NSOutputStreamMBS

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an initialized output stream for writing to a specified file. **Notes:**
- path: The path to the file the output stream will write to.
- append: True if newly written data should be appended to any existing file contents, otherwise false.

Returns an initialized output stream that can write to path.

The stream must be opened before it can be used.

32.47.7 outputStreamToMemory as NSOutputStreamMBS

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an initialized output stream that will write stream data to memory. **Notes:**

Returns an initialized output stream that will write stream data to memory.

The stream must be opened before it can be used.

You retrieve the contents of the memory stream by OutputData property.

32.47.8 outputStreamWithURL(fileURL as string, append as boolean) as NSOutputStreamMBS

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an initialized output stream for writing to a specified URL. **Notes:**
- fileURL: The URL to the file the output stream will write to.
- append: True if newly written data should be appended to any existing file contents, otherwise false.
Returns an initialized output stream that can write to url.

The stream must be opened before it can be used.

32.47.9  write(data as MemoryBlock) as Integer

Function: Writes the contents of a provided data buffer to the receiver.
Notes:
Returns a number indicating the outcome of the operation:
A positive number indicates the number of bytes written.
0 indicates that a fixed-length stream and has reached its capacity.
-1 means that the operation failed; more information about the error can be obtained with streamError.

32.47.10  Properties

32.47.11  hasSpaceAvailable as Boolean

Function: A boolean value that indicates whether the receiver can be written to.
Notes:
True if the receiver can be written to or if a write must be attempted in order to determine if space is available, false otherwise.
(Read only property)
32.48 class NSPanelMBS

32.48.1 class NSPanelMBS

MBS MacBase Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The NSPanel class implements a special kind of window (known as a panel), typically performing an auxiliary function.
**Example:**
```
static n as NSPanelMBS

dim style as Integer = NSPanelMBS.NSClosableWindowMask + NSPanelMBS.NSTitledWindowMask +
NSPanelMBS.NSUtilityWindowMask + NSPanelMBS.NSHUDWindowMask + NSPanelMBS.NSResizableWindowMask

n = new NSPanelMBS(100,100,200,200, style, NSPanelMBS.NSWindowBackingLocationDefault, false)

n.Title = "Hello World"
n.Show
```

**Notes:** Subclass of the NSWindowMBS class.

32.48.2 Methods

32.48.3 Constructor(x as Double, y as Double, w as Double, h as Double, styleMask as Integer, BackingStoreType as Integer, deferCreation as boolean)

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor to create a new Cocoa Windows.
**Example:**
```
static n as NSPanelMBS

dim style as Integer = NSPanelMBS.NSClosableWindowMask + NSPanelMBS.NSTitledWindowMask +
NSPanelMBS.NSUtilityWindowMask + NSPanelMBS.NSHUDWindowMask + NSPanelMBS.NSResizableWindowMask

n = new NSPanelMBS(100,100,200,200, style, NSPanelMBS.NSWindowBackingLocationDefault, false)

n.Title = "Hello World"
n.Show
```
32.48. CLASS NSPANELMBS

Notes:

x,y,w,h:
Location and size of the window’s content area in screen coordinates. Note that the window server limits window position coordinates to 16,000 and sizes to 10,000.

styleMask:
The window’s style. Either it can be NSBorderlessWindowMask, or it can contain any of the options described in the constants, combined using the bitwiseOR function. Borderless windows display none of the usual peripheral elements and are generally useful only for display or caching purposes; you should normally not need to create them. Also, note that a window’s style mask should include NSTitledWindowMask if it includes any of the others.

bufferingType:
Specifies how the drawing done in the window is buffered by the window device, and possible values are described in "Constants."

deferCreation:
Specifies whether the window server creates a window device for the window immediately. When true, the window server defers creating the window device until the window is moved onscreen. All display messages sent to the window or its views are postponed until the window is created, just before it’s moved onscreen.

Initialized NSWindow object.

This method is the designated initializer for the NSWindow class.

Deferring the creation of the window improves launch time and minimizes the virtual memory load on the window server.

The new window creates a view to be its default content view. You can replace it with your own object by using the ContentView property.

32.48.4 RunAlertPanel(title as string, message as string, defaultButton as string, alternateButton as string, otherButton as string) as Integer

32.48.5  RunAlertPanelRelativeToWindow(title as string, message as string, defaultButton as string, alternateButton as string, otherButton as string, docWindow as NSWindowMBS) as Integer

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Run an alert panel.
See also:

- 32.48.6 RunAlertPanelRelativeToWindow(title as string, message as string, defaultButton as string, alternateButton as string, otherButton as string, docWindow as window) as Integer

32.48.6  RunAlertPanelRelativeToWindow(title as string, message as string, defaultButton as string, alternateButton as string, otherButton as string, docWindow as window) as Integer

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Run an alert panel.
See also:

- 32.48.5 RunAlertPanelRelativeToWindow(title as string, message as string, defaultButton as string, alternateButton as string, otherButton as string, docWindow as NSWindowMBS) as Integer

32.48.7  RunCriticalAlertPanel(title as string, message as string, defaultButton as string, alternateButton as string, otherButton as string) as Integer

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Runs a critical alert panel.

32.48.8  RunCriticalAlertPanelRelativeToWindow(title as string, message as string, defaultButton as string, alternateButton as string, otherButton as string, docWindow as NSWindowMBS) as Integer

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Runs a critical alert panel.
See also:

- 32.48.9 RunCriticalAlertPanelRelativeToWindow(title as string, message as string, defaultButton as string, alternateButton as string, otherButton as string, docWindow as window) as Integer
32.48.9 RunCriticalAlertPanelRelativeToWindow(title as string, message as string, defaultButton as string, alternateButton as string, otherButton as string, docWindow as window) as Integer

See also:
• 32.48.8 RunCriticalAlertPanelRelativeToWindow(title as string, message as string, defaultButton as string, alternateButton as string, otherButton as string, docWindow as NSWindowMBS) as Integer 5824

32.48.10 RunInformationalAlertPanel(title as string, message as string, defaultButton as string, alternateButton as string, otherButton as string) as Integer


32.48.11 RunInformationalAlertPanelRelativeToWindow(title as string, message as string, defaultButton as string, alternateButton as string, otherButton as string, docWindow as NSWindowMBS) as Integer

See also:
• 32.48.12 RunInformationalAlertPanelRelativeToWindow(title as string, message as string, defaultButton as string, alternateButton as string, otherButton as string, docWindow as window) as Integer 5825

32.48.12 RunInformationalAlertPanelRelativeToWindow(title as string, message as string, defaultButton as string, alternateButton as string, otherButton as string, docWindow as window) as Integer

See also:
• 32.48.11 RunInformationalAlertPanelRelativeToWindow(title as string, message as string, defaultButton as string, alternateButton as string, otherButton as string, docWindow as NSWindowMBS) as Integer 5825
32.48.13 Properties

32.48.14 becomesKeyOnlyIfNeeded as boolean

MBS MacBase Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: whether the panel becomes the key window only when needed. Notes: By default, this attribute is set to false, indicating that the panel becomes key as other windows do. (Read and Write computed property)

32.48.15 isFloatingPanel as boolean

MBS MacBase Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether the panel is a floating panel. Notes: True when the receiver is a floating panel, false otherwise.

By default, panels do not float above other windows. It’s appropriate for an panel to float above other windows only if all of the following conditions are true:

- It is small enough not to obscure whatever is behind it.
- It is oriented more to the mouse than to the keyboard that is, if it doesn’t become the key window or becomes so only when needed.
- It needs to remain visible while the user works in the application’s normal windows for example, if the user must frequently move the cursor back and forth between a normal window and the panel (such as a tool palette), or if the panel gives information relevant to the user’s actions in a normal window.
- It hides when the application is deactivated (the default behavior for panels).

(Read and Write computed property)

32.48.16 worksWhenModal as boolean

MBS MacBase Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether the receiver receives keyboard and mouse events even when some other window is being run modally. Notes: True when the receiver receives keyboard and mouse events even when some other window is being run modally, false otherwise.
By default, this attribute is set to false, indicating a panel’s ineligibility for events during a modal loop or session.
(Read and Write computed property)

32.48.17 Constants

32.48.18 NSAlertAlternateReturn=0

MBS MacBase Plugin, Plugin Version: 8.4. Function: One of the possible return values for the alert panels. Notes: The user pressed the alternate button.

32.48.19 NSAlertDefaultReturn=1

MBS MacBase Plugin, Plugin Version: 8.4. Function: One of the possible return values for the alert panels. Notes: The user pressed the default button.

32.48.20 NSAlertErrorReturn=-2

MBS MacBase Plugin, Plugin Version: 8.4. Function: One of the possible return values for the alert panels. Notes: The alert cannot identify the reason it was closed; it may have been closed by an external source or by a button other than those listed above.

32.48.21 NSAlertOtherReturn=-1

MBS MacBase Plugin, Plugin Version: 8.4. Function: One of the possible return values for the alert panels. Notes: The user pressed a second alternate button.

32.48.22 NSCancelButton=0

MBS MacBase Plugin, Plugin Version: 8.4. Function: One of the constants for the modal panel return values. Notes: The Cancel button.
32.48.23  NSDocModalWindowMask=64

MBS MacBase Plugin, Plugin Version: 8.4. **Function**: One of the constants you can use to specify the style when creating a window.
**Notes**: The panel is created as a modal sheet.

32.48.24  NSHUDWindowMask=8192

MBS MacBase Plugin, Plugin Version: 8.4. **Function**: One of the constants you can use to specify the style when creating a window.

32.48.25  NSNonactivatingPanelMask=128

MBS MacBase Plugin, Plugin Version: 8.4. **Function**: One of the constants you can use to specify the style when creating a window.
**Notes**: The panel can receive keyboard input without activating the owning application.

32.48.26  NSOKButton=1

MBS MacBase Plugin, Plugin Version: 8.4. **Function**: One of the constants for the modal panel return values.
**Notes**: The OK button.

32.48.27  NSUtilityWindowMask=16

MBS MacBase Plugin, Plugin Version: 8.4. **Function**: One of the constants you can use to specify the style when creating a window.
**Notes**: The panel is created as a floating window.
32.49 class NSParagraphStyleMBS

32.49.1 class NSParagraphStyleMBS

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** NSParagraphStyle and its subclass NSMutableParagraphStyle encapsulate the paragraph or ruler attributes used by the NSAttributedString classes. **Example:**

```vbnet
dim n as NSParagraphStyleMBS = NSParagraphStyleMBS.defaultParagraphStyle
MsgBox str(n.alignment) // 4 = natural
```

**Notes:**
Instances of these classes are often referred to as paragraph style objects or, when no confusion will result, paragraph styles.
The mutable subclass of NSParagraphStyle is NSMutableParagraphStyle.

32.49.2 Methods

32.49.3 Constructor

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

32.49.4 copy as NSParagraphStyleMBS

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy of the paragraph style.

32.49.5 defaultParagraphStyle as NSParagraphStyleMBS

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the default paragraph style. **Example:**

```vbnet
dim n as NSParagraphStyleMBS = NSParagraphStyleMBS.defaultParagraphStyle
MsgBox str(n.alignment) // 4 = natural
```
Notes:
The default paragraph style has the following default values:

<table>
<thead>
<tr>
<th>Subattribute</th>
<th>Default Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alignment</td>
<td>NSNaturalTextAlignment</td>
</tr>
<tr>
<td>Tab stops</td>
<td>12 left-aligned tabs, spaced by 28.0 points</td>
</tr>
<tr>
<td>Line break mode</td>
<td>NSLineBreakByWordWrapping</td>
</tr>
<tr>
<td>All others</td>
<td>0.0</td>
</tr>
</tbody>
</table>

32.49.6 defaultWritingDirectionForLanguage(languageName as string) as Integer

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the default writing direction for the specified language. **Notes:** languageName: The language specified in ISO language region format. Can be nil to return a default writing direction derived from the user’s defaults database.

32.49.7 mutableCopy as NSMutableParagraphStyleMBS

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a mutable copy of the paragraph style.

32.49.8 tabStops as NSTextTabMBS()

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver’s tab stops. **Notes:** The NSTextTab objects, sorted by location, that define the tab stops for the paragraph style.

32.49.9 textLists as NSTextListMBS()

MBS MacCocoa Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array specifying the text lists containing the paragraph.
32.49.10 Properties

32.49.11 alignment as Integer

Function: Returns the text alignment of the receiver.
Example:

```vbnet
dim n as NSParagraphStyleMBS = NSParagraphStyleMBS.defaultParagraphStyle
MsgBox str(n.alignment) // 4 = natural

dim m as NSMutableParagraphStyleMBS = n.mutableCopy
m.setAlignment NSParagraphStyleMBS.NSCenterTextAlignment
MsgBox str(m.alignment) // 2 = center
```

Notes:
Natural text alignment is realized as left or right alignment depending on the line sweep direction of the first script contained in the paragraph.
(Read only property)

32.49.12 baseWritingDirection as Integer

Function: Returns the base writing direction for the receiver.
Notes: (Read only property)

32.49.13 defaultTabInterval as Double

Function: Returns the document-wide default tab interval.
Notes:
The default tab interval in points. Tabs after the last specified in tabStops are placed at integer multiples of this distance (if positive). Default return value is 0.0.
(Read only property)

32.49.14 firstLineHeadIndent as Double

Function: Returns the indentation of the first line of the receiver.
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Notes:
The distance in points from the leading margin of a text container to the beginning of the paragraph’s first line. This value is always nonnegative.
(Read only property)

32.49.15  firstTabStop as NSTextTabMBS

Function: The first tab stop entry.
Notes:
For debugging.
(Read only property)

32.49.16  firstTextList as NSTextListMBS

Function: The first text list entry.
Notes:
For debugging.
(Read only property)

32.49.17  Handle as Integer

Notes: (Read and Write property)

32.49.18  headerLevel as Integer

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Specifies whether the paragraph is to be treated as a header for purposes of HTML generation.
Notes:
Returns 0 (the default value), if the paragraph is not a header, or from 1 through 6 if the paragraph is to be treated as a header.
(Read only property)
32.49.19  headIndent as Double

Function: Returns the indentation of the receiver’s lines other than the first.
Notes:
The distance in points from the leading margin of a text container to the beginning of lines other than the first. This value is always nonnegative.
(Read only property)

32.49.20  hyphenationFactor as Double

Function: Returns the paragraph’s threshold for hyphenation.
Notes:
A value between 0.0 and 1.0 inclusive. The default value is 0.0.

Hyphenation is attempted when the ratio of the text width (as broken without hyphenation) to the width of the line fragment is less than the hyphenation factor. When the paragraph’s hyphenation factor is 0.0, the layout manager’s hyphenation factor is used instead. When both are 0.0, hyphenation is disabled.
(Read only property)

32.49.21  lineBreakMode as Integer

Function: Returns the mode that should be used to break lines in the receiver.
Notes:
The line break mode to be used laying out the paragraph’s text.
(Read only property)

32.49.22  lineHeightMultiple as Double

Function: Returns the line height multiple.
Notes:
The line height multiple. The natural line height of the receiver is multiplied by this factor (if positive) before being constrained by minimum and maximum line height. Default return value is 0.0.
(Read only property)
### 32.49.23 lineSpacing as Double

**Function:** Returns the space between lines in the receiver (commonly known as leading).

**Notes:**
The space in points added between lines within the paragraph. This value is always nonnegative.
(Read only property)

### 32.49.24 maximumLineHeight as Double

**Function:** Returns the receiver’s maximum line height.

**Notes:**
The maximum height in points that any line in the receiver will occupy, regardless of the font size or size of any attached graphic. This value is always nonnegative. The default value is 0.

Glyphs and graphics exceeding this height will overlap neighboring lines; however, a maximum height of 0 implies no line height limit. Although this limit applies to the line itself, line spacing adds extra space between adjacent lines.
(Read only property)

### 32.49.25 minimumLineHeight as Double

**Function:** Returns the receiver’s minimum height.

**Notes:**
The minimum height in points that any line in the receiver will occupy, regardless of the font size or size of any attached graphic. This value is always nonnegative.
(Read only property)

### 32.49.26 paragraphSpacing as Double

**Function:** Returns the space after the end of the paragraph.

**Notes:**
The space in points added at the end of the paragraph to separate it from the following paragraph. This value is always nonnegative.
This value is determined by adding the previous paragraph’s paragraphSpacing and the current paragraph’s paragraphSpacingBefore.
(Read only property)

### 32.49.27 paragraphSpacingBefore as Double

**Function:** Returns the distance between the paragraph’s top and the beginning of its text content.
**Notes:**
The distance in points between the paragraph’s top and the beginning of its text content. Default return value is 0.0.
(Read only property)

### 32.49.28 tailIndent as Double

**Function:** Returns the trailing indentation of the receiver.
**Notes:**
The distance in points from the margin of a text container to the end of lines.

If positive, this value is the distance from the leading margin (for example, the left margin in left-to-right text). If 0 or negative, it’s the distance from the trailing margin.

For example, a paragraph style designed to fit exactly in a 2-inch wide container has a head indent of 0.0 and a tail indent of 0.0. One designed to fit with a quarter-inch margin has a head indent of 0.25 and a tail indent of 0.25.
(Read only property)

### 32.49.29 tighteningFactorForTruncation as Double

**Function:** Returns the threshold for using tightening as an alternative to truncation.
**Notes:**
The tightening threshold value. The default value is 0.05.

When the line break mode specifies truncation, the text system attempts to tighten intercharacter spacing as an alternative to truncation, provided that the ratio of the text width to the line fragment width does not exceed 1.0 + the tightening factor returned by this method. Otherwise the text is truncated at a location
determined by the line break mode.
(Read only property)

32.49.30 Constants

32.49.31 NSCenterTextAlignment=2

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the text alignment constants for the alignment property.
**Notes:** Visually centered

32.49.32 NSJustifiedTextAlignment=3

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the text alignment constants for the alignment property.
**Notes:** Fully-justified. The last line in a paragraph is natural-aligned.

32.49.33 NSLeftTextAlignment=0

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the text alignment constants for the alignment property.
**Notes:** Visually left aligned

32.49.34 NSLineBreakByCharWrapping = 1

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the constants to specify what happens when a line is too long for its container.
**Notes:** Wrapping occurs before the first character that doesn’t fit.

32.49.35 NSLineBreakByClipping = 2

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the constants to specify what happens when a line is too long for its container.
**Notes:** Lines are simply not drawn past the edge of the text container.
32.49.36  **NSLineBreakByTruncatingHead = 3**

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the constants to specify what happens when a line is too long for its container.  
**Notes:** Each line is displayed so that the end fits in the container and the missing text is indicated by some kind of ellipsis glyph.

32.49.37  **NSLineBreakByTruncatingMiddle = 5**

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the constants to specify what happens when a line is too long for its container.  
**Notes:** Each line is displayed so that the beginning and end fit in the container and the missing text is indicated by some kind of ellipsis glyph in the middle.

32.49.38  **NSLineBreakByTruncatingTail = 4**

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the constants to specify what happens when a line is too long for its container.  
**Notes:** Each line is displayed so that the beginning fits in the container and the missing text is indicated by some kind of ellipsis glyph.

32.49.39  **NSLineBreakByWordWrapping = 0**

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the constants to specify what happens when a line is too long for its container.  
**Notes:** Wrapping occurs at word boundaries, unless the word itself doesn’t fit on a single line.

32.49.40  **NSNaturalTextAlignment=4**

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the text alignment constants for the alignment property.  
**Notes:** Indicates the default alignment for script.

32.49.41  **NSRightTextAlignment=1**

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the text alignment constants for the alignment property.
32.49.42  **NSWritingDirectionLeftToRight=0**

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the constants to specify the writing directions.

**Notes:**

The writing direction is left to right.

Available in Mac OS X v10.2 and later.

32.49.43  **NSWritingDirectionNatural=-1**

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the constants to specify the writing directions.

**Notes:**

The writing direction is determined using the Unicode Bidi Algorithm rules P2 and P3. Default.

Available in Mac OS X v10.4 and later.

32.49.44  **NSWritingDirectionRightToLeft=1**

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the constants to specify the writing directions.

**Notes:**

The writing direction is right to left.

Available in Mac OS X v10.2 and later.
32.50  class NSPointMBS

32.50.1  class NSPointMBS

MBS Main Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A REALbasic class for the point structure in Cocoa.

**Example:**

```realbasic
dim n as NSPointMBS = NSMakePointMBS(500,600)
MsgBox n.String
```

32.50.2  Methods

32.50.3  Constructor

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an empty point.

**Example:**

```realbasic
dim p as new NSPointMBS
MsgBox p // shows { 0, 0 }
```

See also:

- 32.50.4 Constructor(p as Ptr)
- 32.50.5 Constructor(s as string)
- 32.50.6 Constructor(x as Double, y as Double)

32.50.4  Constructor(p as Ptr)

MBS Main Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new instance using data at the pointer.

**Notes:** Make sure the pointer is valid and has the right data and size.

See also:

- 32.50.3 Constructor
- 32.50.5 Constructor(s as string)
- 32.50.6 Constructor(x as Double, y as Double)
32.50.5 Constructor(s as string)

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new NSPoint object using the given string.

**Example:**

```vba
dim p as new NSPointMBS("{3,4}")
MsgBox p // shows {3,4}
```

See also:
- 32.50.3 Constructor 5839
- 32.50.4 Constructor(p as Ptr) 5839
- 32.50.6 Constructor(x as Double, y as Double) 5840

32.50.6 Constructor(x as Double, y as Double)

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new NSPoint object using the given values.

See also:
- 32.50.3 Constructor 5839
- 32.50.4 Constructor(p as Ptr) 5839
- 32.50.5 Constructor(s as string) 5840

32.50.7 Equal(other as NSPointMBS) as boolean

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether two points are equal.

32.50.8 Operator_Convert as String

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Converts the object to string.

**Example:**

```vba
dim p as new NSPointMBS(1,2)
MsgBox p // shows {1,2}
```
32.50.9  String as String

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the string representation of this point.
**Example:**

```vbnet
dim p as new NSPointMBS(1,2)
MsgBox p.String // shows { 1,2 }
```

32.50.10  Zero as NSPointMBS

MBS Main Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns a point with all values being zero.

32.50.11  Properties

32.50.12  Handle as Ptr

MBS Main Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The pointer to the internal data structure.
**Notes:**
May be useful for passing to declares requiring a NSPoint*.
Size of structure is 8 bytes for 32-bit (two singles) and 16 bytes for 64-bit (two doubles).
(Read only property)

32.50.13  X as Double

MBS Main Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The horizontal coordinate.
**Notes:** (Read and Write property)

32.50.14  Y as Double

MBS Main Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The vertical coordinate.
**Notes:** (Read and Write property)
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32.51 class NSPopoverMBS

32.51.1 class NSPopoverMBS

Function: The Real Studio class for a pop-over.
Notes:
A popover is a unit of content that is positioned relative to some other content on the screen. An anchor
is used to express the relation between these two units of content. Each popover has an appearance that
specifies its visual characteristics, as well as a behavior that determines which user interactions will cause
the popover to close. A transient popover is closed in response to most user interactions, whereas a semi-
transient popovers is closed when the user interacts with the window containing the popover’s positioning
view. Popovers with application-defined behavior are not usually closed on the developer’s behalf. AppKit
automatically positions each popover relative to its positioning view and moves the popover whenever its
positioning view moves. A positioning rectangle within the positioning view can be specified for additional
granularity. Popovers can be detached to become a separate window when they are dragged by implementing
the appropriate delegate method.

Please also check the documentation from Apple for the NSPopover class.
Available in Mac OS X v10.7 and later.

32.51.2 Methods

32.51.3 available as boolean

Function: Whether pop-overs are available.
Example:
msgbox "NSPopover available: " + str(NSPopoverMBS.available)

Notes: Returns true on Mac OS X 10.7.

32.51.4 Close

Function: Forces the popover to close without calling events.
Notes: Any popovers nested within the popovers will also receive a close message. When a window is closed
in response to the close message being sent, all of its popovers will be closed. The popover will animate out
when closed (unless the animates property is set to false).
32.51.5  Constructor

Function: Creates a new popover.

32.51.6  Destructor

Function: The destructor.

32.51.7  isShown as boolean

Function: Whether popover is visible.
Notes: True if the popover is being shown, false otherwise. The popover is considered to be shown from
the point when showRelativeToRect is invoked until the popover is closed in response to an invocation of
either close or performClose.

32.51.8  NSPopoverCloseReasonDetachToWindow as string

Function: One of the constant for the close reason.
Notes: Specifies that the popover has been closed because it is being detached to a window; a possible value
for NSPopoverCloseReasonKey.

32.51.9  NSpopoverCloseReasonKey as string

Function: One of the constants for the close notification parameter dictionary.
Notes: Specifies the close reason. Currently used only as the userInfo key for the NSPopoverWillCloseNo-
tification.
32.51.10 NSPopoverCloseReasonStandard as string

Function: One of the constant for the close reason.
Notes: Specifies that the popover is being closed in a standard way; a possible value for NSPopoverCloseReasonKey.

32.51.11 NSPopoverDidCloseNotification as string

Function: One of the notification names you can use with NSNotificationObserverMBS class.
Notes: Sent after the popover has finished animating offscreen. This notification has the same user info keys as NSPopoverWillCloseNotification.

32.51.12 NSPopoverDidShowNotification as string

Function: One of the notification names you can use with NSNotificationObserverMBS class.
Notes: Sent after the popover has finished animating onscreen.

32.51.13 NSPopoverWillCloseNotification as string

Function: One of the notification names you can use with NSNotificationObserverMBS class.
Notes: Sent before the popover is closed. The userInfo key NSPopoverCloseReasonKey specifies the reason for closing. It can currently be either NSPopoverCloseReasonStandard or NSPopoverCloseReasonDetachToWindow, although more reasons for closing may be added in the future.

32.51.14 NSPopoverWillShowNotification as string

Function: One of the notification names you can use with NSNotificationObserverMBS class.
Notes: Sent before the popover is shown.

32.51.15 performClose

Function: Attempts to close the popover.
**Notes:** The popover will not be closed if popoverShouldClose event returns false. The operation will fail if it is displaying a nested popover, or if it has a child window. A window will attempt to close its popovers when it receives a performClose message. The popover will animate out when closed (unless the animates property is set to false).

### 32.51.16 `showRelativeToRect(positioningRect as NSRectMBS, view as NSViewMBS, edge as Integer)`

**MBS MacControls Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Shows the popover positioned relative to positioningRect of positioningView (see the description of positioningRect).

**Notes:** The common case is to pass positioningView.bounds for positioningRect, in which case the popover will be placed adjacent to the positioningView and there is no need to update positioningRect (AppKit will detect the bounds of the positioning view was specified and automatically update the positioningView). preferredEdge is a hint to AppKit about the desired placement of the anchor of the popover towards the positioningRect, and is with respect to the isFlipped state of the positioningView. Also, if positioningRect is an empty rect, the view.bounds will automatically be used. The current (but not guaranteed) behavior is that AppKit will place the anchor towards the preferredEdge of the positioningRect unless such a placement would cause the popover to not fit on the screen of positioningView. If the anchor cannot be placed towards the preferredEdge, AppKit will (in the current implementation) attempt to place the anchor on the opposite side of the positioningRect. If that cannot be done, AppKit will attempt to place the anchor on a remaining sides of the popover, and failing that will center the popover on the screen, causing it to (at least temporarily) lose its anchor. The popover will animate onscreen and eventually animate offscreen when it is closed (unless the property animates is set to false). This method will throw a NSInvalidArgumentException if view is nil or if view is not in a window, or if the popover’s behavior is NSPopoverBehaviorSemitransient and the popover’s positioningView is in a popover or child window. It will throw a NSInternalInconsistencyException if the popover’s content view controller (or the view controller’s view) is nil. If the popover is already being shown, this method will update to be associated with the new view and positioningRect passed. If the positioning view is not visible, this method does nothing.

### 32.51.17 Properties

### 32.51.18 Handle as Integer

**MBS MacControls Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** The internal reference to the NSPopover object.

**Notes:** (Read and Write property)
32.51.19   Tag as Variant

Function: The tag.
Notes:
You can use this property for whatever you like.
e.g. to keep the reference to the NSViewControllerMBS object.
(Read and Write property)

32.51.20   animates as boolean

Function: Should the popover be animated when it shows, closes, or appears to transition to a detachable
window.
Notes:
This property also controls whether the popover animates when the content view or content size changes.
AppKit does not guarantee which behaviors will be animated or that this property will be respected; it is
regarded as a hint. The default value is true.
(Read and Write computed property)

32.51.21   appearance as Integer

Function: The appearance of the popover.
Notes:
The default appearance is NSPopoverAppearanceMinimal. See the declaration of NSPopoverAppearance*
constants for more information about appearances.
(Read and Write computed property)

32.51.22   behavior as Integer

Function: The behavior of the popover.
Notes:
The default behavior is NSPopoverBehaviorApplicationDefined. See the declaration of NSPopoverBehavior*
constants for more information about popover behaviors.
(Read and Write computed property)
32.51.23  **contentSize** as NSSizeMBS

**Function:** The content size of the popover.
**Notes:**
The popover’s content size is set to match the size of the content view when the content view controller is set. Changes to the content size of the popover will animate while the popover is shown (provided animates is true).
(Read and Write computed property)

32.51.24  **contentViewController** as NSViewControllerMBS

**Function:** The view controller that manages the content of the popover.
**Notes:**
Please use with NSViewControllerMBS class.
The default value is nil. You must set the content view controller of the popover to a non-nil value before the popover is shown. Changes to the popover’s content view controller while the popover is shown will animate (provided animates is true).
(Read and Write computed property)

32.51.25  **positioningRect** as NSRectMBS

**Function:** The positioning rectangle.
**Notes:**
Popovers are positioned relative a positioning view and are automatically moved when the location or size of the positioning view changes. Sometimes it is desirable to position popovers relative to a rectangle within the positioning view. In this case, you must update the positioningRect binding whenever this rectangle changes, or use the positioningRect binding so AppKit can re-position the popover when appropriate.
(Read and Write computed property)

32.51.26  **Events**

32.51.27  **detachableWindowForPopover** as NSWindowMBS

**Function:** Detaches the popover creating a window containing the content.
**Notes:**
You return a window instance to which the popover should be detached.

You should not remove the popover's content view as part of your implementation of this method.

The popover and the detachable window may be shown at the same time and therefore cannot share a content view (or a content view controller).

If the popover and the detachable window should have the same content, you should define the content with a separate view and use a view controller to instantiate separate copies of the content for the popover and the detachable window.

The popover will animate to appear as though it morphs into the detachable window (unless the popover animates property is set to false. The exact animation used is not guaranteed.

If you do not implement this event or it returns nil, the default behavior is that the popup is not detached.

### 32.51.28 popoverDidClose(notification as NSNotificationMBS)


**Function:** Invoked when the popover did close.

**Notes:** Invoked on the delegate when the NSPopoverDidCloseNotification notification is sent.

### 32.51.29 popoverDidShow(notification as NSNotificationMBS)


**Function:** Invoked when the popover has been shown.

**Notes:** Invoked on the delegate when the NSPopoverDidShowNotification notification is sent.

### 32.51.30 popoverShouldClose as boolean


**Function:** Allows a delegate to override a close request.

**Notes:**

Return true if the popover should close, false otherwise.

The popover invokes this method on its delegate whenever it is about to close. This gives you a chance to override the close.
If you do not implement this method the default behavior is that the popover will close.

32.51.31  popoverWillClose(notification as NSNotificationMBS)

Function: Invoked when the popover is about to close.
Notes: Invoked on the delegate when the NSPopoverWillCloseNotification notification is sent.

32.51.32  popoverWillShow(notification as NSNotificationMBS)

Function: Invoked when the popover will show.
Notes: Invoked on the delegate when the NSPopoverWillShowNotification notification is sent.

32.51.33  Constants

32.51.34  MaxXEdge = 2

MBS MacControls Plugin, Plugin Version: 11.2. Function: One of the edge constants.
Notes: right

32.51.35  MaxYEdge = 3

MBS MacControls Plugin, Plugin Version: 11.2. Function: One of the edge constants.
Notes: top
(Cocoa coordinates have 0 on bottom of screen)

32.51.36  MinXEdge = 0

MBS MacControls Plugin, Plugin Version: 11.2. Function: One of the edge constants.
Notes: left
32.51.37 MinYEdge = 1

MBS MacControls Plugin, Plugin Version: 11.2. **Function:** One of the edge constants.
**Notes:**
bottom
(Cocoa coordinates have 0 on bottom of screen)

32.51.38 NSPopoverAppearanceHUD = 1

MBS MacControls Plugin, Plugin Version: 11.2. **Function:** One of the appearance mode constants.
**Notes:** The popover will draw with a HUD appearance.

32.51.39 NSPopoverAppearanceMinimal = 0

MBS MacControls Plugin, Plugin Version: 11.2. **Function:** One of the appearance mode constants.
**Notes:** The popover will use a minimal appearance, currently a solid color border and a solid color fill (although this may change in the future). This is the default appearance.

32.51.40 NSPopoverBehaviorApplicationDefined = 0

MBS MacControls Plugin, Plugin Version: 11.2. **Function:** One of the behavior modes.
**Notes:** Your application assumes responsibility for closing the popover. AppKit will still close the popover in a limited number of circumstances. For instance, AppKit will attempt to close the popover when the window of its positioningView is closed. The exact interactions in which AppKit will close the popover are not guaranteed. You may consider implementing `-cancel:` to close the popover when the escape key is pressed.

32.51.41 NSPopoverBehaviorSemitransient = 2

MBS MacControls Plugin, Plugin Version: 11.2. **Function:** One of the behavior modes.
**Notes:** AppKit will close the popover when the user interacts with user interface elements in the window containing the popover's positioning view. Semi-transient popovers cannot be shown relative to views in other popovers, nor can they be shown relative to views in child windows. The exact interactions that cause semi-transient popovers to close are not specified.
32.51.42 NSPopoverBehaviorTransient = 1

MBS MacControls Plugin, Plugin Version: 11.2. **Function:** One of the behavior modes. **Notes:** AppKit will close the popover when the user interacts with a user interface element outside the popover. Note that interacting with menus or panels that become key only when needed will not cause a transient popover to close. The exact interactions that will cause transient popovers to close are not specified.
32.52 class NSRangeMBS

32.52.1 class NSRangeMBS

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This is the Cocoa class for a Range.

32.52.2 Methods

32.52.3 Constructor

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an empty range.  
**Example:**

```vbnet
dim r as new NSRangeMBS
MsgBox r // { 0, 0 }
```

See also:

- 32.52.4 Constructor(Location as UInt32, Length as UInt32) 5852
- 32.52.5 Constructor(p as Ptr) 5852
- 32.52.6 Constructor(s as string) 5853

32.52.4 Constructor(Location as UInt32, Length as UInt32)

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new range with the given values.  
See also:

- 32.52.3 Constructor 5852
- 32.52.5 Constructor(p as Ptr) 5852
- 32.52.6 Constructor(s as string) 5853

32.52.5 Constructor(p as Ptr)

MBS Main Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new instance using data at the pointer.
32.52. CLASS NSRANGEMBS

Notes: Make sure the pointer is valid and has the right data and size.
See also:

- 32.52.3 Constructor
- 32.52.4 Constructor(Location as UInt32, Length as UInt32)
- 32.52.6 Constructor(s as string)

32.52.6 Constructor(s as string)

Example:

dim r as new NSRangeMBS(" \{ 3, 4 \ }")
MsgBox r // \{ 3, 4 \}

See also:

- 32.52.3 Constructor
- 32.52.4 Constructor(Location as UInt32, Length as UInt32)
- 32.52.5 Constructor(p as Ptr)

32.52.7 Equal(other as NSRangeMBS) as boolean

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether two ranges are equal.

32.52.8 Intersection(other as NSRangeMBS) as NSRangeMBS

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the intersection of the two ranges.

32.52.9 LocationInRange(location as UInt32) as boolean

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether the location is in the range.
32.52.10 Operator Convert as String

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Converts the object to string.
Example:

```dim r as new NSRangeMBS("\{ 3, 4 \} ")
MsgBox r // \{ 3, 4 \}
```

32.52.11 String as String

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns the string representation of this range.
Example:

```dim r as new NSRangeMBS("\{ 3, 4 \} ")
MsgBox r.String // \{ 3, 4 \}
```

32.52.12 Union(other as NSRangeMBS) as NSRangeMBS

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Creates the union of two ranges.

32.52.13 Properties

32.52.14 Handle as Ptr

MBS Main Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The pointer to the internal data structure.
Notes:
May be useful for passing to declares requiring a NSRange*.
(Read only property)

32.52.15 Length as UInt32

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The length of the range.
Example:
32.52. CLASS NSRANGEMBS

```vbnet
dim r as new NSRangeMBS("{ 3, 4 }")
MsgBox str(R.Length) ' // 4
```

**Notes:** (Read and Write property)

### 32.52.16 Location as UInt32

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The position of the range.  
**Notes:** (Read and Write property)

### 32.52.17 MaxRange as UInt32

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The maximum value of the range.  
**Notes:**  
Same as location+length.  
(Read only property)
32.53  class NSRectMBS

32.53.1  class NSRectMBS

MBS Main Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A REALbasic class for the rect structure in Cocoa.

**Example:**

```REALbasic
dim n as NSRectMBS = NSMakeRectMBS(100, 200, 500, 600)
MsgBox n.String
```

32.53.2  Methods

32.53.3  Constructor

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an empty rectangle.

**Example:**

```REALbasic
dim p as new NSRectMBS
MsgBox p // shows { { 0, 0 }, { 0, 0 } }
```

See also:

- 32.53.4 Constructor(p as Ptr) 5856
- 32.53.5 Constructor(s as string) 5857
- 32.53.6 Constructor(X as Double, Y as Double, W as Double, H as Double) 5857

32.53.4  Constructor(p as Ptr)

MBS Main Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new instance using data at the pointer.

**Notes:** Make sure the pointer is valid and has the right data and size.

See also:

- 32.53.3 Constructor 5856
- 32.53.5 Constructor(s as string) 5857
- 32.53.6 Constructor(X as Double, Y as Double, W as Double, H as Double) 5857
32.53. CLASS NSRECTMBS

32.53.5 Constructor(s as string)

Example:

dim p as new NSRectMBS(" { { 1,2 }, { 3,4 } } ")
MsgBox p // shows { { 1, 2 }, { 3, 4 } }

See also:

- 32.53.3 Constructor
- 32.53.4 Constructor(p as Ptr)
- 32.53.6 Constructor(X as Double, Y as Double, W as Double, H as Double)

32.53.6 Constructor(X as Double, Y as Double, W as Double, H as Double)

See also:

- 32.53.3 Constructor
- 32.53.4 Constructor(p as Ptr)
- 32.53.5 Constructor(s as string)

32.53.7 Contains(other as NSPointMBS) as boolean

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether the rectangle contains the given point.
See also:

- 32.53.8 Contains(other as NSRectMBS) as boolean

32.53.8 Contains(other as NSRectMBS) as boolean

See also:

- 32.53.7 Contains(other as NSPointMBS) as boolean
32.53.9  Equal(other as NSRectMBS) as boolean

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Whether two rectangles are equal.

32.53.10  Inset(dx as Double, dy as Double) as NSRectMBS

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Insets the rectangle by the given delta.
**Example:**
```plaintext
dim p as new NSRectMBS(1.1,2.2,3.3,4.4)
dim r as NSRectMBS = p.Inset(2,3)
MsgBox r.String // shows { { 3.1, 5.2 }, { -0.7, -1.6 } }
```

32.53.11  Integral as NSRectMBS

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the integral of the rectangle.
**Example:**
```plaintext
dim p as new NSRectMBS(1.1,2.2,3.3,4.4)
dim r as NSRectMBS = p.Integral
MsgBox r.String // shows { { 1, 2 }, { 4, 5 } }
```

32.53.12  Intersection(other as NSRectMBS) as NSRectMBS

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the intersection of two rectangles.

32.53.13  Intersects(other as NSRectMBS) as boolean

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the intersection of the rectangle with the other rectangle.
32.53.14 Operator Convert as String

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Converts the object to string.
**Example:**
```
dim p as new NSRectMBS(1,2,3,4)
MsgBox p // shows { { 1, 2 }, { 3, 4 } }
```

32.53.15 String as String

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the string representation of this point.
**Example:**
```
dim p as new NSRectMBS(1,2,3,4)
MsgBox p.String // shows { { 1, 2 }, { 3, 4 } }
```

32.53.16 Union(other as NSRectMBS) as NSRectMBS

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the union of two rectangles.

32.53.17 Zero as NSRectMBS

MBS Main Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a rect with all values being zero.

32.53.18 Properties

32.53.19 Handle as Ptr

MBS Main Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The pointer to the internal data structure.
**Notes:**
- May be useful for passing to declares requiring a NSRect*.
- Size of structure is 16 bytes for 32-bit (four singles) and 32 bytes for 64-bit (four doubles).
32.53.20 Height as Double

MBS Main Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The height of this rectangle. **Notes:** (Read and Write property)

32.53.21 IsEmpty as boolean

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the rectangle is empty. **Notes:** (Read only property)

32.53.22 MaxX as Double

MBS Main Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns maximum x coordinate. **Notes:**

return x + width.

(Read only property)

32.53.23 MaxY as Double

MBS Main Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns maximum y coordinate. **Notes:**

return y + height.

(Read only property)

32.53.24 MidX as Double

MBS Main Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns center x coordinate. **Notes:** (Read only property)
32.53. CLASS NSRECTMBS

32.53.25 MidY as Double

MBS Main Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns center y coordinate.
**Notes:** (Read only property)

32.53.26 MinX as Double

MBS Main Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns x coordinate.
**Notes:** (Read only property)

32.53.27 MinY as Double

MBS Main Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns y coordinate.
**Notes:** (Read only property)

32.53.28 Origin as NSPointMBS

MBS Main Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The origin of the rectangle.
**Notes:** (Read and Write property)

32.53.29 Size as NSSizeMBS

MBS Main Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The size of the rectangle.
**Notes:** (Read and Write property)

32.53.30 Width as Double

MBS Main Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The width of this rectangle.
**Notes:** (Read and Write property)
32.53.31 X as Double

MBS Main Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The horizontal coordinate. **Notes:** (Read and Write property)

32.53.32 Y as Double

MBS Main Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The vertical coordinate. **Notes:** (Read and Write property)
32.54. **class NSResponderMBS**

32.54.1 **class NSResponderMBS**

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** NSResponder is an abstract class that forms the basis of event and command processing in the Application Kit.

**Notes:**

See the Cocoa documentation for more details.

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

32.54.2 **Methods**

32.54.3 **beginGestureWithEvent(e as NSEventMBS)**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Informs the receiver that the user has begun a touch gesture.

**Notes:**

The event will be sent to the view under the touch in the key window.

Available in Mac OS X v10.6 and later.

32.54.4 **cancelOperation**

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to cancel the current operation.

**Notes:**

This method is bound to the Escape and Command-. (period) keys. The key window first searches the view hierarchy for a view whose key equivalent is Escape or Command-. , whichever was entered. If none of these views handles the key equivalent, the window sends a default action message of cancelOperation: to the first responder and from there the message travels up the responder chain.

If no responder in the responder chain implements cancelOperation:, the key window searches the view hierarchy for a view whose key equivalent is Escape (note that this may be redundant if the original key equivalent was Escape). If no such responder is found, then a cancel: action message is sent to the first responder in the responder chain that implements it.

NSResponder declares but does not implement this method.
### 32.54.5 capitalizeWord

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to capitalize the word or words surrounding the insertion point or selection, expanding the selection if necessary. **Notes:** If either end of the selection partially covers a word, that entire word is made lowercase. The sender argument is typically the object that invoked this method. NSResponder declares but doesn’t implement this method.

### 32.54.6 centerSelectionInVisibleArea

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to scroll the selection, whatever it is, inside its visible area. **Notes:** NSResponder declares but doesn’t implement this method.

### 32.54.7 changeCaseOfLetter

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to change the case of a letter or letters in the selection, perhaps by opening a panel with capitalization options or by cycling through possible case combinations. **Notes:** NSResponder declares but doesn’t implement this method.

### 32.54.8 complete

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to complete an operation in progress or a partially constructed element. **Notes:** This method can be interpreted, for example, as a request to attempt expansion of a partial word, such as for expanding a glossary shortcut, or to close a graphics item being drawn. NSResponder declares but doesn’t implement this method.

### 32.54.9 Constructor

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.
32.54.10  cursorUpdate(e as NSEventMBS)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Informs the receiver that the mouse cursor has moved into a cursor rectangle.

**Notes:**

Override this method to set the cursor image. The default implementation uses cursor rectangles, if cursor rectangles are currently valid. If they are not, it calls super to send the message up the responder chain.

If the responder implements this method, but decides not to handle a particular event, it should invoke the superclass implementation of this method.

Available in Mac OS X v10.5 and later.

32.54.11  deleteBackward

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to delete the selection, if there is one, or a single element backward from the insertion point (a letter or character in text, for example).

**Notes:** NSResponder declares but doesn’t implement this method.

32.54.12  deleteBackwardByDecomposingPreviousCharacter

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to delete the selection, if there is one, or a single character backward from the insertion point.

**Notes:** If the previous character is canonically decomposable, this method should try to delete only the last character in the grapheme cluster (for example, deleting “a”+”’” results in “a”). NSResponder declares but does not implement this method.

32.54.13  deleteForward

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to delete the selection, if there is one, or a single element forward from the insertion point (a letter or character in text, for example).

**Notes:** NSResponder declares but doesn’t implement this method.
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32.54.14 deleteToBeginningOfLine

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to delete the selection, if there is one, or all text from the insertion point to the beginning of a line (typically of text).

**Notes:** Also places the deleted text into the kill buffer. NSResponder declares but doesn’t implement this method.

32.54.15 deleteToBeginningOfParagraph

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to delete the selection, if there is one, or all text from the insertion point to the beginning of a paragraph of text.

**Notes:** Also places the deleted text into the kill buffer. NSResponder declares but doesn’t implement this method.

32.54.16 deleteToEndOfLine

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to delete the selection, if there is one, or all text from the insertion point to the end of a line (typically of text).

**Notes:** Also places the deleted text into the kill buffer. NSResponder declares but doesn’t implement this method.

32.54.17 deleteToEndOfParagraph

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to delete the selection, if there is one, or all text from the insertion point to the end of a paragraph of text.

**Notes:** Also places the deleted text into the kill buffer. NSResponder declares but doesn’t implement this method.

32.54.18 deleteToMark

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to delete the selection, if there is one, or all items from the insertion point to a previously placed mark, including the selection itself if not empty.

**Notes:** Also places the deleted text into the kill buffer. NSResponder declares but doesn’t implement this method.
32.54. **CLASS NSRESPONDERMBS**

32.54.19 **deleteWordBackward**

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to delete the selection, if there is one, or a single word backward from the insertion point. **Notes:** NSResponder declares but doesn’t implement this method.

32.54.20 **deleteWordForward**

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to delete the selection, if there is one, or a single word forward from the insertion point. **Notes:** NSResponder declares but doesn’t implement this method.

32.54.21 **endGestureWithEvent(e as NSEventMBS)**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Informs the receiver that the user has ended a touch gesture. **Notes:** Available in Mac OS X v10.6 and later.

32.54.22 **flagsChanged(e as NSEventMBS)**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Informs the receiver that the user has pressed or released a modifier key (Shift, Control, and so on). **Notes:** The default implementation simply passes this message to the next responder.

32.54.23 **flushBufferedKeyEvents**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Overridden by subclasses to clear any unprocessed key events.

32.54.24 **helpRequested(e as NSEventMBS)**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Displays context-sensitive help for the receiver if such exists; otherwise passes this message to the next responder. **Notes:** NSWindow invokes this method automatically when the user clicks for help while processing the Event.
Subclasses need not override this method, and application code shouldn’t directly invoke it.

### 32.54.25 indent

**MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**  
**Function:** Implemented by subclasses to indent the selection or the insertion point if there is no selection.  
**Notes:** NSResponder declares but doesn’t implement this method.

### 32.54.26 insertBacktab

**MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**  
**Function:** Implemented by subclasses to handle a backward tab.  
**Notes:** A field editor might respond to this method by selecting the field before it, while a regular text object either doesn’t respond to or ignores such a message. NSResponder declares but doesn’t implement this method.

### 32.54.27 insertContainerBreak

**MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**  
**Function:** Implemented by subclasses to insert a container break (typically a page break) at the insertion point or selection, deleting the selection if there is one.  
**Notes:** NSResponder declares but doesn’t implement this method. NSTextView implements it to insert an NSFormFeedCharacter character (0x000c).

### 32.54.28 insertDoubleQuoteIgnoringSubstitution

**MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**  
**Function:** Implemented by subclasses to insert a double quote character at the insertion point without interference by automatic quote correction.  
**Notes:** NSResponder declares but doesn’t implement this method. Available in Mac OS X v10.6 and later.

### 32.54.29 insertLineBreak

**MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**  
**Function:** Implemented by subclasses to insert a line break (as distinguished from a paragraph break) at the insertion
point or selection, deleting the selection if there is one.

**Notes:** NSResponder declares but doesn’t implement this method. NSTextView implements it to insert an NSLineSeparatorCharacter character (0x2028).

### 32.54.30 insertNewline

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to insert a newline character at the insertion point or selection, deleting the selection if there is one, or to end editing if the receiver is a text field or other field editor.  
**Notes:** NSResponder declares but doesn’t implement this method.

### 32.54.31 insertNewlineIgnoringFieldEditor

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to insert a line-break character at the insertion point or selection, deleting the selection if there is one.  
**Notes:** Unlike insertNewline:, this method always inserts a line-break character and doesn’t cause the receiver to end editing. NSResponder declares but doesn’t implement this method.

### 32.54.32 insertParagraphSeparator

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to insert a paragraph separator at the insertion point or selection, deleting the selection if there is one.  
**Notes:** NSResponder declares but doesn’t implement this method.

### 32.54.33 insertSingleQuoteIgnoringSubstitution

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to insert a single quote character at the insertion point without interference by automatic quote correction.  
**Notes:** NSResponder declares but doesn’t implement this method.  
Available in Mac OS X v10.6 and later.
32.54.34 insertTab

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to insert a tab character at the insertion point or selection, deleting the selection if there is one, or to end editing if the receiver is a text field or other field editor. **Notes:** NSResponder declares but doesn’t implement this method.

32.54.35 insertTabIgnoringFieldEditor

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to insert a tab character at the insertion point or selection, deleting the selection if there is one. **Notes:** Unlike insertTab:, this method always inserts a tab character and doesn’t cause the receiver to end editing. NSResponder declares but doesn’t implement this method.

32.54.36 keyDown(e as NSEventMBS)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Informs the receiver that the user has pressed a key. **Notes:** The receiver can interpret theEvent itself, or pass it to the system input manager using interpretKeyEvents. The default implementation simply passes this message to the next responder.

32.54.37 keyUp(e as NSEventMBS)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Informs the receiver that the user has released a key. **Notes:** The default implementation simply passes this message to the next responder.

32.54.38 lowercaseWord

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to make lowercase every letter in the word or words surrounding the insertion point or selection, expanding the selection if necessary. **Notes:** If either end of the selection partially covers a word, that entire word is made lowercase. NSResponder declares, but doesn’t implement this method.
32.54. Class NsResponderMBS

32.54.39 magnifyWithEvent(e as NSEventMBS)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Informs the receiver that the user has begun a pinch gesture.
**Notes:**
The event will be sent to the view under the touch in the key window.
Available in Mac OS X v10.6 and later.

32.54.40 makeBaseWritingDirectionLeftToRight

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Sets the paragraph base writing direction to be left to right.
**Notes:**
Sets the NSAttributedString key NSWritingDirectionAttributeName to NSWritingDirectionLeftToRight.

This action method is intended to be used both as the target of a menu item and for key bindings. The
base writing direction methods should be the target of three menu items in a submenu, under the Edit menu.

Default key bindings will also be provided for this method but will only be enabled for users of Hebrew or
Arabic, or those who have otherwise enabled a suitable preference.

Available in Mac OS X v10.6 and later.

32.54.41 makeBaseWritingDirectionNatural

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Sets the paragraph base writing direction to be natural.
**Notes:**
Natural directionality is determined from the text in accordance with the Unicode bi-di algorithm. For more
information see NSParagraphStyle.

Sets the NSAttributedString key NSWritingDirectionAttributeName to NSTextWritingDirectionEmbedding.

This action method is intended to be used both as the target of a menu item and for key bindings. The
base writing direction methods should be the target of three menu items in a submenu, under the Edit menu.

Default key bindings will also be provided for this method but will only be enabled for users of Hebrew or
Arabic, or those who have otherwise enabled a suitable preference.
Available in Mac OS X v10.6 and later.

32.54.42 makeBaseWritingDirectionRightToLeft

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** 
Sets the paragraph base writing direction to be right to left. **Notes:** 
Sets the NSAttributedString key NSWritingDirectionAttributeName to NSWritingDirectionRightToLeft. 

This action method is intended to be used both as the target of a menu item and for key bindings. The base writing direction methods should be the target of three menu items in a submenu, under the Edit menu. 

Default key bindings will also be provided for this method but will only be enabled for users of Hebrew or Arabic, or those who have otherwise enabled a suitable preference. 

Available in Mac OS X v10.6 and later.

32.54.43 makeTextWritingDirectionLeftToRight

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** 
Sets the character level attributed string direction attribute for left to right text. **Notes:** 
Sets the NSAttributedString NSWritingDirectionAttributeName to NSWritingDirectionLeftToRight. 

This action method is intended to be used both as the target of a menu item and for key bindings. The text writing directions should be the target of three similar menu items in a submenu under the Edit menu. 

Default key bindings will also be provided for this method but will only be enabled for users of Hebrew or Arabic, or those who have otherwise enabled a suitable preference. 

Available in Mac OS X v10.6 and later.
32.54. CLASS NSRESPONDERMBS

32.54.44 makeTextWritingDirectionNatural

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes the character-level writing direction attribute.

**Notes:**
Removes the NSWritingDirectionAttributeName from an NSAttributedString.

This action method is intended to be used both as the target of a menu item and for key bindings. The text writing directions should be the target of three similar menu items in a submenu under the Edit menu.

Default key bindings will also be provided for this method but will only be enabled for users of Hebrew or Arabic, or those who have otherwise enabled a suitable preference.

Available in Mac OS X v10.6 and later.

32.54.45 makeTextWritingDirectionRightToLeft

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the character-level writing direction attribute to a single right-to-left embedding.

**Notes:**
Sets the NSAttributedString key NSWritingDirectionAttributeName to NSWritingDirectionRightToLeft.

This action method is intended to be used both as the target of a menu item and for key bindings. The text writing directions should be the target of three similar menu items in a submenu under the Edit menu.

Default key bindings will also be provided for this method but will only be enabled for users of Hebrew or Arabic, or those who have otherwise enabled a suitable preference.

Available in Mac OS X v10.6 and later.

32.54.46 mouseDown(e as NSEventMBS)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Informs the receiver that the user has pressed the left mouse button.

**Notes:** The default implementation simply passes this message to the next responder.
### 32.54.47 mouseDragged(e as NSEventMBS)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Informs the receiver that the user has moved the mouse with the left button pressed.
**Notes:** The default implementation simply passes this message to the next responder.

### 32.54.48 mouseEntered(e as NSEventMBS)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Informs the receiver that the cursor has entered a tracking rectangle.
**Notes:**
The default implementation simply passes this message to the next responder.
Available in Mac OS X v10.0 and later.

### 32.54.49 mouseExited(e as NSEventMBS)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Informs the receiver that the cursor has exited a tracking rectangle.
**Notes:** The default implementation simply passes this message to the next responder.

### 32.54.50 mouseMoved(e as NSEventMBS)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Informs the receiver that the mouse has moved.
**Notes:** The default implementation simply passes this message to the next responder.

### 32.54.51 mouseUp(e as NSEventMBS)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Informs the receiver that the user has released the left mouse button.
**Notes:** The default implementation simply passes this message to the next responder.

### 32.54.52 moveBackward

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Implemented by subclasses to move the selection or insertion point one element or character backward.
**Notes:** In text, if there is a selection it should be deselected, and the insertion point should be placed at
32.54. CLASS NSRESPONDERMBS

the beginning of the former selection. NSResponder declares but doesn’t implement this method.

32.54.53 moveBackwardAndModifySelection

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to expand or reduce either end of the selection backward by one element or character.

**Notes:**

If the end being modified is the backward end, this method expands the selection; if the end being modified is the forward end, it reduces the selection. The first moveBackwardAndModifySelection: or moveForwardAndModifySelection: method in a series determines the end being modified by always expanding. Hence, this method results in the backward end becoming the mobile one if invoked first. By default, moveLeftAndModifySelection: is bound to the left arrow key.

NSResponder declares but doesn’t implement this method.

32.54.54 moveDown

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to move the selection or insertion point one element or character down.

**Notes:** In text, if there is a selection it should be deselected, and the insertion point should be placed below the beginning of the former selection. NSResponder declares but doesn’t implement this method.

32.54.55 moveDownAndModifySelection

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to expand or reduce the top or bottom end of the selection downward by one element, character, or line (whichever is appropriate for text direction).

**Notes:**

If the end being modified is the bottom, this method expands the selection; if the end being modified is the top, it reduces the selection. The first moveDownAndModifySelection: or moveUpAndModifySelection: method in a series determines the end being modified by always expanding. Hence, this method results in the bottom end becoming the mobile one if invoked first.

NSResponder declares but doesn’t implement this method.
32.54.56 moveForward

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to move the selection or insertion point one element or character forward. **Notes:** In text, if there is a selection it should be deselected, and the insertion point should be placed at the end of the former selection. NSResponder declares but doesn’t implement this method.

32.54.57 moveForwardAndModifySelection

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to expand or reduce either end of the selection forward by one element or character. **Notes:** If the end being modified is the backward end, this method reduces the selection; if the end being modified is the forward end, it expands the selection. The first moveBackwardAndModifySelection: or moveForwardAndModifySelection: method in a series determines the end being modified by always expanding. Hence, this method results in the forward end becoming the mobile one if invoked first. By default, moveRightAndModifySelection: is bound to the right arrow key. NSResponder declares but doesn’t implement this method.

32.54.58 moveLeft

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to move the selection or insertion point one element or character to the left. **Notes:** In text, if there is a selection it should be deselected, and the insertion point should be placed at the left end of the former selection. NSResponder declares but doesn’t implement this method.

32.54.59 moveLeftAndModifySelection

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to expand or reduce either end of the selection to the left (display order) by one element or character. **Notes:** If the end being modified is the left end, this method expands the selection; if the end being modified is the right end, it reduces the selection. The first moveLeftAndModifySelection: or moveRightAndModifySelection: method in a series determines the end being modified by always expanding. Hence, this method results in the left end becoming the mobile one if invoked first. By default, this method is bound to the left arrow key.
NSResponder declares but doesn’t implement this method.

The essential difference between this method and the corresponding moveBackwardAndModifySelection: is that the latter method moves in logical order, which can differ in bidirectional text, whereas this method moves in display order.

### 32.54.60 moveParagraphBackwardAndModifySelection

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to move the selection or insertion point to the beginning of the previous paragraph, expanding or reducing the current selection.  
**Notes:**  
If the cursor is already at the beginning of a paragraph, the selection moves backward to the beginning of the previous paragraph.  
NSResponder declares but doesn’t implement this method.  
Available in Mac OS X v10.6 and later.

### 32.54.61 moveParagraphForwardAndModifySelection

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to move the selection or insertion point to the beginning of the next paragraph, expanding or reducing the current selection.  
**Notes:**  
If the cursor is already at the end of a paragraph, the selection moves forward to the end of the next paragraph.  
NSResponder declares but doesn’t implement this method.  
Available in Mac OS X v10.6 and later.

### 32.54.62 moveRight

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to move the selection or insertion point one element or character to the right.  
**Notes:** In text, if there is a selection it should be deselected, and the insertion point should be placed at the right end of the former selection. NSResponder declares but doesn’t implement this method.
**32.54.63 moveRightAndModifySelection**

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to expand or reduce either end of the selection to the right (display order) by one element or character.

**Notes:**

If the end being modified is the left end, this method reduces the selection; if the end being modified is the right end, it expands the selection. The first moveLeftAndModifySelection: or moveRightAndModifySelection: method in a series determines the end being modified by always expanding. Hence, this method results in the right end becoming the mobile one if invoked first. By default, this method is bound to the right arrow key.

NSResponder declares but doesn’t implement this method.

The essential difference between this method and the corresponding moveForwardAndModifySelection: is that the latter method moves in logical order, which can differ in bidirectional text, whereas this method moves in display order.

**32.54.64 moveToBeginningOfDocument**

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to move the selection to the first element of the document or the insertion point to the beginning.

**Notes:** NSResponder declares but doesn’t implement this method.

**32.54.65 moveToBeginningOfDocumentAndModifySelection**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to move the selection or insertion point to the beginning of the document, expanding or reducing the current selection.

**Notes:** Available in Mac OS X v10.6 and later.

**32.54.66 moveToBeginningOfLine**

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to move the selection to the first element of the selected line or the insertion point to the beginning of the line.

**Notes:** NSResponder declares but doesn’t implement this method.
32.54. **moveToBeginningOfLineAndModifySelection**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to move the selection or insertion point to the beginning of the line, expanding or reducing the current selection. **Notes:** NSResponder declares but doesn’t implement this method. Available in Mac OS X v10.6 and later.

32.54. **moveToBeginningOfParagraph**

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to move the insertion point to the beginning of the selected paragraph. **Notes:** NSResponder declares but doesn’t implement this method.

32.54. **moveToBeginningOfParagraphAndModifySelection**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to move the selection or insertion point to the beginning of the current paragraph, expanding or reducing the current selection. **Notes:** NSResponder declares but doesn’t implement this method. Available in Mac OS X v10.6 and later.

32.54. **moveToEndOfDocument**

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to move the selection to the last element of the document or the insertion point to the end. **Notes:** NSResponder declares but doesn’t implement this method.

32.54. **moveToEndOfDocumentAndModifySelection**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to move the selection or insertion point to the end of the document, expanding or reducing the current selection. **Notes:** Available in Mac OS X v10.6 and later.
32.54.72  moveToEndOfLine

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to move the selection to the last element of the selected line or the insertion point to the end of the line. **Notes:** NSResponder declares but doesn’t implement this method.

32.54.73  moveToEndOfLineAndModifySelection

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to move the selection to the last element of the selected line or the insertion point to the end of the line. **Notes:** NSResponder declares but doesn’t implement this method. Available in Mac OS X v10.0 and later.

32.54.74  moveToEndOfParagraph

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to move the insertion point to the end of the selected paragraph. **Notes:** NSResponder declares but doesn’t implement this method.

32.54.75  moveToEndOfParagraphAndModifySelection

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to move the selection or insertion point to the end of the line, expanding or reducing the current selection. **Notes:** NSResponder declares but doesn’t implement this method. Available in Mac OS X v10.6 and later.

32.54.76  moveToLeftEndOfLine

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to move the selection or insertion point to the left end of the line. **Notes:** In text, if there is a selection it should be deselected, and the insertion point should be placed at left end of the line. NSResponder declares but doesn’t implement this method.
32.54. CLASS NSRESPONDERMBS

Available in Mac OS X v10.6 and later.

32.54.77 moveToLeftEndOfLineAndModifySelection

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to move the selection or insertion point to the left end of the line, expanding or contracting the selection as required.
**Notes:** Available in Mac OS X v10.6 and later.

32.54.78 moveToRightEndOfLine

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to move the selection or insertion point to the right end of the line.
**Notes:** Available in Mac OS X v10.6 and later.

32.54.79 moveToRightEndOfLineAndModifySelection

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to move the selection or insertion point to the right end of the line, expanding or contracting the selection as required.
**Notes:** Available in Mac OS X v10.6 and later.

32.54.80 moveUp

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to move the selection or insertion point one element or character up.
**Notes:** In text, if there is a selection it should be deselected, and the insertion point should be placed above the beginning of the former selection. NSResponder declares but doesn’t implement this method.

32.54.81 moveUpAndModifySelection

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to expand or reduce the top or bottom end of the selection upward by one element, character, or line (whichever is appropriate for text direction).
**Notes:** If the end being modified is the bottom, this method reduces the selection; if the end being modified is the top, it expands the selection. The first moveDownAndModifySelection: or moveUpAndModifySelection:
method in a series determines the end being modified by always expanding. Hence, this method results in
the top end becoming the mobile one if invoked first.

NSResponder declares but doesn’t implement this method.

### 32.54.82 moveWordBackward

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Implemented by subclasses to move the selection or insertion point one word backward.
**Notes:** If there is a selection it should be deselected, and the insertion point should be placed at the end of
the first word preceding the former selection. NSResponder declares but doesn’t implement this method.

### 32.54.83 moveWordBackwardAndModifySelection

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Implemented by subclasses to expand or reduce either end of the selection backward by one whole word.
**Notes:**
If the end being modified is the backward end, this method expands the selection; if the end being modified is
the forward end, it reduces the selection. The first moveWordBackwardAndModifySelection: or moveWord-
ForwardAndModifySelection: method in a series determines the end being modified by always expanding.
Hence, this method results in the backward end becoming the mobile one if invoked first.

NSResponder declares but doesn’t implement this method.

### 32.54.84 moveWordForward

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Implemented by subclasses to move the selection or insertion point one word forward, in logical order.
**Notes:** If there is a selection it should be deselected, and the insertion point should be placed at the be-
ginning of the first word following the former selection. NSResponder declares but doesn’t implement this
method.

### 32.54.85 moveWordForwardAndModifySelection

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Implemented by subclasses to expand or reduce either end of the selection forward by one whole word.
**Notes:** If the end being modified is the backward end, this method reduces the selection; if the end being
modified is the forward end, it expands the selection. The first moveWordBackwardAndModifySelection:
or moveWordForwardAndModifySelection: method in a series determines the end being modified by always expanding. Hence, this method results in the forward end becoming the mobile one if invoked first. NSResponder declares but doesn’t implement this method.

32.54.86 moveWordLeft

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to move the selection or insertion point one word to the left, in display order. **Notes:**

If there is a selection it should be deselected, and the insertion point should be placed at the end of the first word to the left of the former selection. NSResponder declares but doesn’t implement this method.

The main difference between this method and the corresponding moveWordBackward: method is that the latter moves in logical order, which is important in bidirectional text, whereas this method moves in display order.

32.54.87 moveWordLeftAndModifySelection

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to expand or reduce either end of the selection left by one whole word in display order. **Notes:**

If the end being modified is the left end, this method expands the selection; if the end being modified is the right end, it reduces the selection. The first moveWordLeftAndModifySelection: or moveWordRightAndModifySelection: method in a series determines the end being modified by always expanding. Hence, this method results in the left end becoming the mobile one if invoked first.

NSResponder declares but doesn’t implement this method.

The main difference between this method and the corresponding moveWordBackwardAndModifySelection: method is that the latter moves in logical order, which is important in bidirectional text, whereas this method moves in display order.

32.54.88 moveWordRight

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to move the selection or insertion point one word right. **Notes:**
If there is a selection it should be deselected, and the insertion point should be placed at the beginning of the first word to the right of the former selection. NSResponder declares but doesn’t implement this method.

The main difference between this method and the corresponding moveWordForward: method is that the latter moves in logical order, which is important in bidirectional text, whereas this method moves in display order.

32.54.89  moveWordRightAndModifySelection

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to expand or reduce either end of the selection to the right by one whole word. **Notes:**

If the end being modified is the backward end, this method reduces the selection; if the end being modified is the forward end, it expands the selection. The first moveWordBackwardAndModifySelection: or moveWordForwardAndModifySelection: method in a series determines the end being modified by always expanding. Hence, this method results in the forward end becoming the mobile one if invoked first. NSResponder declares but doesn’t implement this method.

The main difference between this method and the corresponding moveWordForwardAndModifySelection: method is that the latter moves in logical order, which is important in bidirectional text, whereas this method moves in display order.

32.54.90  otherMouseDown(e as NSEventMBS)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Informs the receiver that the user has pressed a mouse button other than the left or right one. **Notes:**

The default implementation simply passes this message to the next responder. Available in Mac OS X v10.1 and later.

32.54.91  otherMouseDragged(e as NSEventMBS)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Informs the receiver that the user has moved the mouse with a button other than the left or right button pressed. **Notes:**

The default implementation simply passes this message to the next responder. Available in Mac OS X v10.1 and later.
32.54.92 otherMouseUp(e as NSEventMBS)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Informs the receiver that the user has released a mouse button other than the left or right button. **Notes:** The default implementation simply passes this message to the next responder.

32.54.93 pageDown

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to scroll the receiver down (or back) one page in its scroll view, also moving the insertion point to the top of the newly displayed page. **Notes:** NSResponder declares but doesn’t implement this method.

32.54.94 pageDownAndModifySelection

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to scroll the receiver down (or back) one page in its scroll view, also moving the insertion point to the top of the newly displayed page. The selection is expanded or contracted as required. **Notes:**
NSResponder declares but doesn’t implement this method. Available in Mac OS X v10.6 and later.

32.54.95 pageUp

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to scroll the receiver up (or forward) one page in its scroll view, also moving the insertion point to the top of the newly displayed page. **Notes:** NSResponder declares but doesn’t implement this method.

32.54.96 pageUpAndModifySelection

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to scroll the receiver up (or forward) one page in its scroll view, also moving the insertion point to the top of the newly displayed page. The selection is expanded or contracted as necessary. **Notes:**
NSResponder declares but doesn’t implement this method. Available in Mac OS X v10.6 and later.
32.54.97  `performMnemonic(theString as string) as boolean`

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Overridden by subclasses to handle a mnemonic.

**Notes:** If the character code or codes in theString match the receiver’s mnemonic, the receiver should perform the mnemonic and return true. The default implementation does nothing and returns false. Mnemonics are not supported in Mac OS X.

32.54.98  `presentError(e as NSErrorMBS) as boolean`

MBS MacBase Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Presents an error alert to the user as an application-modal dialog.

**Notes:**

e: An object containing information about an error.

The alert displays information found in the NSError object e; this information can include error description, recovery suggestion, failure reason, and button titles (all localized). The method returns true if error recovery succeeded and false otherwise. For error recovery to be attempted, an recovery-attempter object (that is, an object conforming to the NSErrorRecoveryAttempting informal protocol) must be associated with e.

The default implementation of this method sends willPresentError to self. By doing this, NSResponder gives subclasses an opportunity to customize error presentation. It then forwards the message, passing any customized error object, to the next responder; if there is no next responder, it passes the error object to NSApp, which displays a document-modal error alert. When the user dismisses the alert, any recovery attempter associated with the error object is given a chance to recover from the error. See the class description for the precise route up the responder chain (plus document and controller objects) this message might travel.

Available in OS X v10.4 and later.

32.54.99  `rightMouseDown(e as NSEventMBS)`

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Informs the receiver that the user has pressed the right mouse button.

**Notes:** The default implementation simply passes this message to the next responder.

32.54.100  `rightMouseDragged(e as NSEventMBS)`

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Informs the receiver that the user has moved the mouse with the right button pressed.
Notes: The default implementation simply passes this message to the next responder.

32.54.101 rightMouseUp(e as NSEventMBS)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Informs the receiver that the user has released the right mouse button.
**Notes:** The default implementation simply passes this message to the next responder.

32.54.102 rotateWithEvent(e as NSEventMBS)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Informs the receiver that the user has begun a rotation gesture.
**Notes:**
The event will be sent to the view under the touch in the key window. Available in Mac OS X v10.6 and later.
32.54.103 scrollLineDown

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Implemented by subclasses to scroll the receiver one line down in its scroll view, without changing the selection. Notes: NSResponder declares but doesn’t implement this method.

32.54.104 scrollLineUp

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Implemented by subclasses to scroll the receiver one line up in its scroll view, without changing the selection. Notes: NSResponder declares but doesn’t implement this method.

32.54.105 scrollPageDown

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Implemented by subclasses to scroll the receiver one page down in its scroll view, without changing the selection. Notes: NSResponder declares but doesn’t implement this method.

32.54.106 scrollPageUp

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Implemented by subclasses to scroll the receiver one page up in its scroll view, without changing the selection. Notes: NSResponder declares but doesn’t implement this method.

32.54.107 scrollToBeginningOfDocument

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Implemented by subclasses to scroll the receiver to the beginning of the document, without changing the selection. Notes: NSResponder declares but doesn’t implement this method. Available in Mac OS X v10.6 and later.
32.54. CLASS NSRESPONDERMBS

32.54.108 scrollToEndOfDocument

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to scroll the receiver to the end of the document, without changing the selection. **Notes:**

NSResponder declares but doesn’t implement this method.

Available in Mac OS X v10.6 and later.

32.54.109 scrollWheel(e as NSEventMBS)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Informs the receiver that the mouse’s scroll wheel has moved. **Notes:**

The default implementation simply passes this message to the next responder. Available in Mac OS X v10.0 and later.

32.54.110 selectAll

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to select all selectable elements. **Notes:**

NSResponder declares but doesn’t implement this method.

32.54.111 selectLine

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to select all elements in the line or lines containing the selection or insertion point. **Notes:**

NSResponder declares but doesn’t implement this method.

32.54.112 selectParagraph

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to select all paragraphs containing the selection or insertion point. **Notes:**

NSResponder declares but doesn’t implement this method.
32.54.113 selectToMark

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to select all items from the insertion point or selection to a previously placed mark, including the selection itself if not empty. **Notes:** NSResponder declares but doesn’t implement this method.

32.54.114 selectWord

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to extend the selection to the nearest word boundaries outside it (up to, but not including, word delimiters). **Notes:** NSResponder declares but doesn’t implement this method.

32.54.115 setMark

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to set a mark at the insertion point or selection, which is used by deleteToMark and selectToMark. **Notes:** NSResponder declares but doesn’t implement this method.

32.54.116 showContextHelp

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to invoke the help system, displaying information relevant to the receiver and its current state.

32.54.117 swapWithMark

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Swaps the mark and the selection or insertion point, so that what was marked is now the selection or insertion point, and what was the insertion point or selection is now the mark. **Notes:** NSResponder declares but doesn’t implement this method.

32.54.118 swipeWithEvent(e as NSEventMBS)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Informs the receiver that the user has begun a rotation gesture.
Notes:
The event will be sent to the view under the touch in the key window.
Available in Mac OS X v10.6 and later.

### 32.54.119 tabletPoint(e as NSEventMBS)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Informs the receiver that a tablet-point event has occurred.

**Notes:**
Tablet events are represented by NSEvent objects of type NSTabletPoint. They describe the current state of a transducer (that is, a pointing device) that is in proximity to its tablet, reflecting changes such as location, pressure, tilt, and rotation. See the NSEvent reference for the methods that allow you to extract this and other information from theEvent. The default implementation of NSResponder passes the message to the next responder.
Available in Mac OS X v10.4 or later.

### 32.54.120 tabletProximity(e as NSEventMBS)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Informs the receiver that a tablet-proximity event has occurred.

**Notes:**
Tablet events are represented by NSEvent objects of type NSTabletProximity. Tablet devices generate proximity events when the transducer (pointing device) nears a tablet and when it moves away from a tablet. From an event object of this type you can extract information about the kind of device and its capabilities, as well as the relation of this tablet-proximity event to various tablet-point events; see the NSEvent reference for details. The default implementation passes the message to the next responder.
Available in Mac OS X v10.4 or later.

### 32.54.121 transpose

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Transposes the characters to either side of the insertion point and advances the insertion point past both of them. Does nothing to a selected range of text.

**Notes:** NSResponder declares but doesn’t implement this method.
32.54.122 transposeWords

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Transposes the words to either side of the insertion point and advances the insertion point past both of them. Does nothing to a selected range of text. **Notes:** NSResponder declares but doesn’t implement this method.

32.54.123 undoManager as NSUndoManagerMBS

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The undo manager for this item. **Notes:** Subclasses may implement this property.

32.54.124 uppercaseWord

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implemented by subclasses to make uppercase every letter in the word or words surrounding the insertion point or selection, expanding the selection if necessary. **Notes:** If either end of the selection partially covers a word, that entire word is made uppercase. NSResponder declares but doesn’t implement this method.

32.54.125 yank

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Replaces the insertion point or selection with text from the kill buffer. **Notes:** If invoked sequentially, cycles through the kill buffer in reverse order. See ”Standard Action Methods for Selecting and Editing” for more information on the kill buffer. NSResponder declares but doesn’t implement this method.

32.54.126 Properties

32.54.127 Handle as Integer

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal handle of this Responder. **Notes:** (Read and Write property)
32.54.128 menu as NSMenuMBS

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The receiver’s menu.
**Notes:**
(On useful for NSApplication class on Mac)
(Read and Write computed property)

32.54.129 nextResponder as NSResponderMBS

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The next responder in the responder chain.
**Notes:** (Read and Write computed property)
CHAPTER 32. COCOA

32.55 class NSRunLoopMBS

32.55.1 class NSRunLoopMBS


Function: The NSRunLoop class declares the programmatic interface to objects that manage input sources.

Notes:

An NSRunLoop object processes input for sources such as mouse and keyboard events from the window system, NSPort objects, and NSConnection objects. An NSRunLoop object also processes NSTimer events.

Your application cannot either create or explicitly manage NSRunLoop objects. Each NSThread object, including the application’s main thread, has an NSRunLoop object automatically created for it as needed. If you need to access the current thread’s run loop, you do so with the class method currentRunLoop.

Note that from the perspective of NSRunLoop, NSTimer objects are not "input"they are a special type, and one of the things that means is that they do not cause the run loop to return when they fire.

Warning:
The NSRunLoop class is generally not considered to be thread-safe and its methods should only be called within the context of the current thread. You should never try to call the methods of an NSRunLoop object running in a different thread, as doing so might cause unexpected results.

32.55.2 Methods

32.55.3 AddDummyPort


Function: Adds a dummy port as event source.

Notes: Run loops don’t loop unless there is an event source, so you can add a dummy one here.

32.55.4 allModes as string()


Function: Returns array with all mode strings.
32.55. **CLASS NSRUNLOOPMBS**

### 32.55.5 Constructor

**MBS MacCocoa Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Creates a new object using current run loop.

### 32.55.6 currentRunLoop as NSRunLoopMBS

**MBS MacCocoa Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Returns the NSRunLoop object for the current thread.

**Notes:** If a run loop does not yet exist for the thread, one is created and returned.

### 32.55.7 mainRunLoop as NSRunLoopMBS

**MBS MacCocoa Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Returns the run loop of the main thread.

**Notes:**

An object representing the main thread’s run loop.
Available in OS X v10.5.

### 32.55.8 NSDefaultRunLoopMode as string

**MBS MacCocoa Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** One of the runloop mode.

**Notes:**

The mode to deal with input sources other than NSConnection objects.
This is the most commonly used run-loop mode.

### 32.55.9 NSRunLoopCommonModes as string

**MBS MacCocoa Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** One of the runloop mode.

**Notes:**

Objects added to a run loop using this value as the mode are monitored by all run loop modes that have been declared as a member of the set of "common" modes; see the description of CFRunLoopAddCommonMode for details.
Available in OS X v10.5 and later.
32.55.10 run

Function: Puts the receiver into a permanent loop, during which time it processes data from all attached input sources.
Notes:
If no input sources or timers are attached to the run loop, this method exits immediately; otherwise, it runs the receiver in the NSDefaultRunLoopMode by repeatedly invoking runMode:beforeDate:. In other words, this method effectively begins an infinite loop that processes data from the run loop’s input sources and timers.

Manually removing all known input sources and timers from the run loop is not a guarantee that the run loop will exit. OS X can install and remove additional input sources as needed to process requests targeted at the receiver’s thread. Those sources could therefore prevent the run loop from exiting.

If you want the run loop to terminate, you shouldn’t use this method. Instead, use one of the other run methods and also check other arbitrary conditions of your own, in a loop.
See also:
- 32.55.11 run(Seconds as Double)

32.55.11 run(Seconds as Double)

Function: Runs the runloop for the given number of seconds.
See also:
- 32.55.10 run

32.55.12 runMode(Mode as string, Seconds as Double) as boolean

Function: Runs the runloop for the given number of seconds in the given mode.

32.55.13 runModeUntilDate(Mode as string, limitDate as date) as boolean

Function: Runs the loop once, blocking for input in the specified mode until a given date.
Notes:
mode: The mode in which to run. You may specify custom modes or use one of the modes listed in "Run Loop Modes."
limitDate: The date until which to block.

Returns true if the run loop ran and processed an input source or if the specified timeout value was reached; otherwise, false if the run loop could not be started.

If no input sources or timers are attached to the run loop, this method exits immediately and returns false; otherwise, it returns after either the first input source is processed or limitDate is reached. Manually removing all known input sources and timers from the run loop does not guarantee that the run loop will exit immediately. OS X may install and remove additional input sources as needed to process requests targeted at the receiver’s thread. Those sources could therefore prevent the run loop from exiting.

Note: A timer is not considered an input source and may fire multiple times while waiting for this method to return.

### 32.55.14 runUntilDate(limitDate as date)

**MBS MacCocoa Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Runs the loop until the specified date, during which time it processes data from all attached input sources.

**Notes:**

limitDate: The date up until which to run.

If no input sources or timers are attached to the run loop, this method exits immediately; otherwise, it runs the receiver in the NSDefaultRunLoopMode by repeatedly invoking runMode until the specified expiration date.

Manually removing all known input sources and timers from the run loop is not a guarantee that the run loop will exit. OS X can install and remove additional input sources as needed to process requests targeted at the receiver’s thread. Those sources could therefore prevent the run loop from exiting.

### 32.55.15 Properties

### 32.55.16 currentMode as String

**MBS MacCocoa Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Returns the receiver’s current input mode.

**Notes:**

The receiver’s current input mode. This method returns the current input mode only while the receiver is running; otherwise, it returns nil.
32.55.17 Handle as Integer

MBS MacCocoa Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object handle.  
**Notes:** (Read and Write property)
32.56. class NSScreenMBS

32.56.1 class NSScreenMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An NSScreen object describes the attributes of a computer’s monitor, or screen. **Notes:**

An application may use an NSScreen object to retrieve information about a screen and use this information to decide what to display upon that screen. For example, an application may use the deepestScreen method to find out which of the available screens can best represent color and then may choose to display all of its windows on that screen.

The application object should be created before you use the methods in this class, so that the application object can make the necessary connection to the window system. You can make sure the application object exists by invoking the sharedApplication method of NSApplication. If you created your application with Xcode, the application object is automatically created for you during initialization.

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

32.56.2 Methods

32.56.3 backingAlignedRect(r as NSRectMBS, options as UInt64) as NSRectMBS

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Converts a rectangle in global screen coordinates to a pixel aligned rectangle. **Notes:**

r: The input rectangle in global screen coordinates.
options: Specifies the alignment options. See NSAlignmentOptions for possible values.
Returns a a pixel aligned rectangle on the target screen from the given input rectangle in global screen coordinates.

This method uses NSIntegralRectWithOptions() to produce the pixel aligned rectangle.
Available in Mac OS X v10.7 and later.

32.56.4 backingScaleFactor as Double

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the backing store pixel scale factor for the screen. **Notes:**

Returns the scale factor representing the number of backing store pixels corresponding to each linear unit in screen space on this NSScreen.
This method is provided for rare cases when the explicit scale factor is needed. Please use the NSView class’s convert backing methods whenever possible.
Available in Mac OS X v10.7 and later.

For apps which are not enabled for retina support, the function returns 1. So you only see 2 here if app is Cocoa, display is retina and info.plist has the NSHighResolutionCapable key.

### 32.56.5 colorSpace as Variant

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the colorSpace of the screen.

**Example:**
```
dim s as NSScreenMBS = NSScreenMBS.mainScreen
dim c as NSColorSpaceMBS = s.colorSpace
MsgBox c.localizedDescription
```

**Notes:**
Available in Mac OS X v10.6 and later.

Value is a NSColorSpaceMBS but declared as Variant to reduce plugin interdependencies.

### 32.56.6 Constructor

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.

### 32.56.7 convertRectFromBacking(r as NSRectMBS) as NSRectMBS

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Converts the rectangle from the device pixel aligned coordinates system of a screen.

**Notes:**
r: The rectangle.

Returns the rectangle converted from the device pixel aligned coordinates system of the screen. Available in Mac OS X v10.7 and later.
32.56. **CLASS NSSCREENMBS**

32.56.8 **convertRectToBacking(r as NSRectMBS) as NSRectMBS**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Converts the rectangle to the device pixel aligned coordinates system of a screen.
**Notes:**

r: The rectangle.

Returns the rectangle converted to the device pixel aligned coordinates system of the screen. Available in Mac OS X v10.7 and later.

32.56.9 **deepestScreen as NSScreenMBS**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an NSScreen object representing the screen that can best represent color.
**Notes:** This method always returns an object, even if there is only one screen and it is not a color screen.

32.56.10 **depth as Integer**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver’s current bit depth and colorspace information.
**Notes:** Returns the window depth information. This value cannot be used directly. You must pass it to a function such as NSBitsPerPixelFromDepth or NSColorSpaceFromDepth to obtain a concrete value for the desired information.

32.56.11 **deviceDescription as dictionary**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the device dictionary for the screen.
**Notes:** A dictionary containing the attributes of the receiver’s screen.

32.56.12 **firstScreen as NSScreenMBS**

MBS MacBase Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the NSScreen object for the first screen.
**Notes:** Returns nil if no display is present.
32.56.13 frame as NSRectMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the dimensions and location of the receiver.
**Notes:** The full screen rectangle at the current resolution. This rectangle includes any space currently occupied by the menu bar and dock.

32.56.14 mainScreen as NSScreenMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the NSScreen object containing the window with the keyboard focus.
**Notes:**
The main screen is not necessarily the same screen that contains the menu bar or has its origin at (0, 0). The main screen refers to the screen containing the window that is currently receiving keyboard events. It is the main screen because it is the one with which the user is most likely interacting.

The screen containing the menu bar is always the first object (index 0) in the array returned by the screens method.

32.56.15 NSScreenColorSpaceDidChangeNotification as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The notification name for the notification sent when the screen colorspace changed.
**Notes:**
The notification object is the NSScreen whose colorSpace has changed. This notification does not contain a userInfo dictionary. Use this constant with NSNotificationCenter class to get an event when such a notification is sent. Available in Mac OS X v10.6 and later.

32.56.16 screens as NSScreenMBS()

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns an array of NSScreen objects representing all of the screens available on the system.
**Notes:**
Returns an array of the NSScreen objects available on the current system or nil if the screen information could not be obtained from the window system.

The screen at index 0 in the returned array corresponds to the primary screen of the user’s system. This is the screen that contains the menu bar and whose origin is at the point (0, 0). In the case of mirroring,
first screen is the largest drawable display; if all screens are the same size, it is the screen with the highest pixel depth. This primary screen may not be the same as the one returned by the mainScreen method, which returns the screen with the active window.

The array should not be cached. Screens can be added, removed, or dynamically reconfigured at any time. When the display configuration is changed, the default notification center sends a NSApplicationDidChange-ScreenParametersNotification notification.

32.56.17 secondScreen as NSScreenMBS

MBS MacBase Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the NSScreen object for the second screen. Notes: Returns nil if no second display is present.

32.56.18 supportedWindowDepths as Integer()

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a zero-terminated array of the window depths supported by the receiver.

32.56.19 userSpaceScaleFactor as Double

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the scaling factor from user space to device space on the screen represented by the receiver. Notes: Returns the scaling factor, measured in pixels per point, where a point is always equal to 1/72 of an inch. For example, a scaling factor of 2.0 indicates the display has a resolution 2 pixels per point or 144 pixels-per-inch. Available in Mac OS X v10.4 and later.

32.56.20 visibleFrame as NSRectMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the current location and dimensions of the visible screen. Notes: The returned rectangle is always based on the current user-interface settings and does not include the area currently occupied by the dock and menu bar. Because it is based on the current user -interface settings,
the returned rectangle can change between calls and should not be cached.

Note: Even when dock hiding is enabled, the rectangle returned by this method may be smaller than the full screen. The system uses a small boundary area to determine when it should display the dock.

32.56.21 Properties

32.56.22 Handle as Integer

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal reference to the NSScreen object.

**Notes:** (Read and Write property)
32.57 .  CLASS NNSERVICEPROVIDERMBS

32.57 class NSServiceProviderMBS

32.57.1 class NSServiceProviderMBS

Function: The class to do service handlers in Cocoa applications.  
Notes:  
This class must be subclassed to implement services.  
Use ServiceInvoked as the name of the selector when declaring service (NSMessage parameter).  
Use NSUserData parameter to distinguish between all the services you offer.  
This class implements NSServiceProvider for Xojo and Real Studio for Cocoa applications. For Carbon, please use CarbonApplicationEventsMBS events.

see also:  

32.57.2 Methods

32.57.3 Constructor


32.57.4 Destructor


32.57.5 Properties

32.57.6 Handle as Integer

Notes: (Read and Write property)
32.57.7 Events

32.57.8 ServiceInvoked(pboard as NSPasteboardMBS, userData as string, byref error as string)

Function: This event is called when a service should perform.
Notes:

Use ServiceInvoked as the name of the selector when declaring service (NSMessage parameter).
Use NSUserData parameter to distinguish between all the services you offer.
32.58. class NSShadowMBS

32.58.1 class NSShadowMBS

MBS MacBase Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An NSShadow object encapsulates the attributes used to create a drop shadow during drawing operations. **Notes:**

Shadows are always drawn in the default user coordinate space, regardless of any transformations applied to that space. This means that rotations, translations and other transformations of the current transformation matrix (the CTM) do not affect the resulting shadow. Another way to think about this is that changes to the CTM do not move or change the apparent position of the shadows light source.

There are two positional parameters for a shadow: an x-offset and a y-offset. These values are expressed using a single size data type (CGSize on iOS, NSSize on OS X) and using the units of the default user coordinate space. Positive values for these offsets extend up and to the right.

In addition to its positional parameters, a shadow also contains a blur radius, which specifies how much a drawn object’s image mask is blurred before it is composited onto the destination. A value of 0 means there is no blur. Larger values give correspondingly larger amounts of blurring.

An NSShadow object may be used in one of two ways. First, it may be set, like a color or a font, in which case its attributes are applied to all content drawn thereafter or at least until another shadow is applied or a previous graphics state is restored. Second, it may be used as the value for the NSShadowAttributeName text attribute, in which case it is applied to the glyphs corresponding to the characters bearing this attribute.

32.58.2 Methods

32.58.3 Constructor

MBS MacBase Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor. **Notes:** Initialized with 0 as its offset, 0 as its blur radius, and the default color as its color.

32.58.4 copy as NSShadowMBS

MBS MacBase Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy of the shadow object.
32.58.5 set

MBS MacBase Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the shadow of subsequent drawing operations to the shadow represented by the receiver. **Notes:** The shadow attributes of the receiver are used until another shadow is set or until the graphics state is restored.

32.58.6 Properties

32.58.7 Handle as Integer

MBS MacBase Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference. **Notes:** (Read and Write property)

32.58.8 shadowBlurRadius as Double

MBS MacBase Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The blur radius of the shadow. **Notes:** This property contains the blur radius, as measured in the default user coordinate space. A value of 0 indicates no blur, while larger values produce correspondingly larger blurring. The default value is 0. (Read and Write property)

32.58.9 shadowColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The color of the shadow. **Notes:** The default shadow color is black with an alpha of 1/3. If you set this property to nil, the shadow is not drawn. (Read and Write property)

32.58.10 shadowOffset as NSSizeMBS

MBS MacBase Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The offset values of the shadow. **Notes:**
This property contains the horizontal and vertical offset values, specified using the width and height fields of the NSSize data type. These offsets are measured using the default user coordinate space and are not affected by custom transformations. This means that positive values always extend down and to the right from the user’s perspective.

(Read and Write property)
32.59 class NSSizeMBS

32.59.1 class NSSizeMBS

MBS Main Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A REALbasic class for the size structure in Cocoa.

**Example:**

```realbasic
dim n as NSSizeMBS = NSMakeSizeMBS(500,600)
MsgBox n.String
```

32.59.2 Methods

32.59.3 Constructor

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an empty size.

**Example:**

```realbasic
dim p as new NSSizeMBS
MsgBox p // shows { 0, 0 }
```

See also:

- 32.59.4 Constructor(p as Ptr)
- 32.59.5 Constructor(s as string)
- 32.59.6 Constructor(Width as Double, Height as Double)

32.59.4 Constructor(p as Ptr)

MBS Main Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new instance using data at the pointer.

**Notes:** Make sure the pointer is valid and has the right data and size.

See also:

- 32.59.3 Constructor
- 32.59.5 Constructor(s as string)
- 32.59.6 Constructor(Width as Double, Height as Double)
32.59. CLASS NSSIZEMBS

32.59.5 Constructor(s as string)

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new NSSize object using the given string.

**Example:**

```vba
dim p as new NSSizeMBS("{1,2}")
MsgBox p // shows {1, 2}
```

See also:

- 32.59.3 Constructor
- 32.59.4 Constructor(p as Ptr)
- 32.59.6 Constructor(Width as Double, Height as Double)

32.59.6 Constructor(Width as Double, Height as Double)

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new NSSize object using the given values.

See also:

- 32.59.3 Constructor
- 32.59.4 Constructor(p as Ptr)
- 32.59.5 Constructor(s as string)

32.59.7 Equal(other as NSSizeMBS) as boolean

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether two sizes are equal.

32.59.8 Operator.Convert as String

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Converts the object to string.

**Example:**

```vba
dim p as new NSSizeMBS(1,2)
MsgBox p // shows { 1, 2 }
```
### 32.59.9 String as String

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the string representation of this size object.  
**Example:**
```vba
dim p as new NSSizeMBS(1,2)
MsgBox p.String // shows { 1, 2 }
```

### 32.59.10 Zero as NSSizeMBS

MBS Main Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a size with all values being zero.

### 32.59.11 Properties

#### 32.59.12 Handle as Ptr

MBS Main Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The pointer to the internal data structure.  
**Notes:**  
May be useful for passing to declares requiring a NSSize*.  
Size of structure is 8 bytes for 32-bit (two singles) and 16 bytes for 64-bit (two doubles).  
(Read only property)

#### 32.59.13 Height as Double

MBS Main Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The height of this size.  
**Notes:** (Read and Write property)

#### 32.59.14 Width as Double

MBS Main Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The width of this size.  
**Notes:** (Read and Write property)
32.60. class NSSoundDelegateMBS

32.60.1 class NSSoundDelegateMBS

MBS MacCocoa Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for the delegate to receive events from NSSoundMBS objects.

32.60.2 Events

32.60.3 SoundFinished(s as NSSoundMBS, didFinishPlaying as boolean)

MBS MacCocoa Plugin, Plugin Version: 9.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** This delegate method is called when an NSSoundMBS instance has completed playback of its sound data.

**Notes:**

s: The NSSound that has completed playback of its sound data.

didFinishPlaying: True when playback was successful; false otherwise.

The parameter s is not the NSSoundMBS object you used before but a new one. But it has the same handle value as the one where you called play, so you can still compare which one was affected.
32.61 class NSSoundMBS

32.61.1 class NSSoundMBS

MBS MacCocoa Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The NSSound class provides a simple interface for loading and playing audio files.

**Notes:**

This class supports the same audio encodings and file formats that are supported by Core Audio and QuickTime.

To use this class, initialize a new instance with the desired file or audio data. You can configure assorted aspects of the audio playback, including the volume and whether the sound loops before you play it. Depending on the type of the audio data, this class may use either Core Audio or QuickTime to handle the actual playback. (Typically, it uses Core Audio to play files in the AIFF, WAVE, NeXT, SD2, AU, and MP3 formats and may use it for other formats in the future as well.) Playback occurs asynchronously so that your application can continue doing work.

You should retain NSSound objects before initiating playback or make sure you have a strong reference to them in a garbage-collected environment. Upon deallocation, a sound object stops playback of the sound (as needed) so that it can free up the corresponding audio resources. If you want to deallocate a sound object immediately after playback, assign a delegate and use the sound:didFinishPlaying: method to deallocate it.

If you want to play the system beep sound, use the NSBeep function.

32.61.2 Methods

32.61.3 availableSounds as string()


**Example:**

```
dim sounds(-1) as string = NSSoundMBs.availableSounds

// play first sound
dim n as NSSoundMBS = NSSoundMBS.soundNamed(sounds(0))

call n.play

// show list of sounds
MsgBox Join(sounds,EndOfLine)
```
32.61. **CLASS NSSOUNDMBS**

**Notes:** You can use the names in this array for the soundNamed function.

### 32.61.4 canInitWithPasteboard as boolean

MBS MacCocoa Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates whether the receiver can create an instance of itself from the data in a pasteboard.

**Notes:**
true when the receiver can handle the data represented by pasteboard; false otherwise.

The soundUnfilteredPasteboardTypes method is used to find out whether the class can handle the data in the pasteboard.

### 32.61.5 channelMapping as Integer()

MBS MacCocoa Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Provides the receivers channel map.

**Notes:**
A channel map correlates a sounds channels to the the output-devices channels. For example, a two-channel sound being played on a five-channel device should have a channel map to optimize the sound-playing experience. The default map, correlates the first sound channel to the first output channel, the second sound channel to the second output channel, and so on.

Available in OS X v10.5 and later. Deprecated in OS X v10.9.

### 32.61.6 Constructor

MBS MacCocoa Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes the receiver with data from a pasteboard.

**Notes:** NSSound expects the data to have a proper magic number, sound header, and data for the formats it supports.

See also:

- 32.61.7 Constructor(data as MemoryBlock)
- 32.61.8 Constructor(file as folderitem, ByReference as boolean)
- 32.61.9 Constructor(url as string, ByReference as boolean)
32.61.7 Constructor(data as MemoryBlock)

MBS MacCocoa Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes the receiver with a given audio data. **Notes:** data: Audio data with which the receiver is to be initialized. The data must have a proper magic number, sound header, and data for the formats the NSSound class supports. See also:

- 32.61.6 Constructor
- 32.61.8 Constructor(file as folderitem, ByReference as boolean)
- 32.61.9 Constructor(url as string, ByReference as boolean)

32.61.8 Constructor(file as folderitem, ByReference as boolean)

MBS MacCocoa Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes the receiver with the audio data located at a given file. **Example:**

```plaintext
dim s as NSSoundMBS
dim f as FolderItem

f=SpecialFolder.Desktop.Child("test.mp3")

s=new NSSoundMBS(f,true)

call s.play
```

**Notes:**

file: Path to the sound file.
ByReference: When true only the name of the sound is stored with the NSSound instance when archived using encodeWithCoder:, otherwise the audio data is archived along with the instance. (not used in REALbasic) See also:

- 32.61.6 Constructor
- 32.61.7 Constructor(data as MemoryBlock)
- 32.61.9 Constructor(url as string, ByReference as boolean)

32.61.9 Constructor(url as string, ByReference as boolean)

MBS MacCocoa Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes the receiver with the audio data located at a given URL. **Notes:**
url: URL to the sound file with which the receiver is to be initialized.
ByReference: When true only the name of the sound is stored with the NSSound instance when archived using encodeWithCoder; otherwise the audio data is archived along with the instance. (not used in REALbasic)
See also:

- 32.61.6 Constructor
- 32.61.7 Constructor(data as MemoryBlock)
- 32.61.8 Constructor(file as folderitem, ByReference as boolean)

### 32.61.10 duration as Double

MBS MacCocoa Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Provides the duration of the receiver in seconds.
**Notes:** Available in Mac OS X v10.5 and later.

### 32.61.11 isPlaying as boolean

MBS MacCocoa Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates whether the receiver is playing its audio data.
**Notes:** True when the receiver is playing its audio data, false otherwise.

### 32.61.12 name as string

MBS MacCocoa Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the name assigned to the receiver.
**Notes:** Name assigned to the receiver; "" when no name has been assigned.

### 32.61.13 NSSoundPboardType as string

MBS MacCocoa Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The NSSound class defines this common pasteboard data type.

### 32.61.14 pause as boolean

**Notes:** True when playback is paused successfully, false when playback is already paused or when an error
32.61.15  play as boolean

Notes: True when playback is initiated, false when playback is already in progress or when an error occurred.

This method initiates playback asynchronously and returns control to your application. Therefore, your application can continue doing work while the audio is playing.

32.61.16  resume as boolean

Notes: True when playback is resumed, false when playback is in progress or when an error occurred.

Assumes the receiver has been previously paused by sending it pause.

32.61.17  setChannelMapping(mapping() as Integer)

Notes: Mapping: Audio-channeltodevicechannel mappings for the receiver.

Available in OS X v10.5 and later. Deprecated in OS X v10.9.

32.61.18  setDelegate(delegate as NSSoundDelegateMBS)

Notes:
You can assign one delegate to several sounds. But the delegate object is not referenced, so keep it alive with your own reference, so RB won’t destroy it too early.

### 32.61.19 setName(name as string) as boolean

MBS MacCocoa Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Registers the receiver under a given name.

**Notes:**

Returns True when successful; false otherwise.

If the receiver is already registered under another name, this method first unregisters the prior name.

### 32.61.20 soundNamed(name as string) as NSSoundMBS

MBS MacCocoa Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the NSSound instance associated with a given name.

**Example:**

```plaintext
dim s as NSSoundMBS

s=NSSoundMBS.soundNamed("Submarine")
call s.play
```

**Notes:**

NSSound instance initialized with the sound data identified by soundName.

The returned object can be one of the following:

One that’s been assigned a name with setName.

One of the named system sounds provided by the Application Kit framework If there’s no known NSSound object with soundName, this method tries to create one by searching for sound files in the application’s main bundle (see NSBundle for a description of how the bundle’s contents are searched). If no sound file can be located in the application main bundle, the following directories are searched in order: textasciitilde /Library/Sounds, /Library/Sounds, /Network/Library/Sounds or /System/Library/Sounds.
If no data can be found for soundName, no object is created, and nil is returned.

The preferred way to locate a sound is to pass a name without the file extension. See the class description for a list of the supported sound file extensions.

### 32.61.21 soundUnfilteredFileTypes as string()


**Function:** Provides the list of file types the NSSound class understands.

**Notes:**

Returns array of strings representing the file types the NSSound class understands.
The returned array may be passed directly to the runModalForTypes method of the NSOpenPanel class.
Available in OS X v10.0 and later. Deprecated in OS X v10.5.

### 32.61.22 soundUnfilteredPasteboardTypes as string()


**Function:** Provides a list of the pasteboard types that the NSSound class can accept.

**Notes:**

Array of pasteboard types that the NSSound class can accept.
Available in OS X v10.0 and later. Deprecated in OS X v10.5.

### 32.61.23 soundUnfilteredTypes as string()


**Function:** Provides the file types the NSSound class understands.

**Notes:**

Returns array of UTIs identifying the file types the NSSound class understands.

Available in OS X v10.5 and later.

### 32.61.24 soundWithContentsOfFile(file as folderitem, ByValReference as boolean) as NSSoundMBS


**Function:** Initializes a NSSound object with the audio data located at a given file.

**Example:**
dim s as NSSoundMBS
dim f as FolderItem

f=SpecialFolder.Desktop.Child(”test.mp3”)
s=NSSoundMBS.soundWithContentsOfFile(f,true)
call s.play

// sound continues to play even after NSSoundMBS object is destroyed.

Notes:

file: Path to the sound file.
ByReference: When true only the name of the sound is stored with the NSSound instance when archived using encodeWithCoder; otherwise the audio data is archived along with the instance. (not used in REAL-basic)

32.61.25 soundWithContentsOfURL(url as string, ByReference as boolean) as NSSoundMBS

MBS MacCocoa Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Initializes a NSSoundMBS object with the audio data located at a given URL.
Notes:

url: URL to the sound file with which the receiver is to be initialized.
ByReference: When true only the name of the sound is stored with the NSSound instance when archived using encodeWithCoder; otherwise the audio data is archived along with the instance. (not used in REAL-basic)

32.61.26 soundWithData(data as MemoryBlock) as NSSoundMBS

Notes: data: Audio data with which the receiver is to be initialized. The data must have a proper magic number, sound header, and data for the formats the NSSound class supports.

32.61.27 soundWithPasteboard as NSSoundMBS

Notes: NSSound expects the data to have a proper magic number, sound header, and data for the formats it supports.

### 32.61.28 stop as boolean

**Notes:** True when playback is concluded successfully or if it’s paused, false otherwise.

### 32.61.29 writeToPasteboard

MBS MacCocoa Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Writes the receiver’s data to a pasteboard.

### 32.61.30 Properties

### 32.61.31 Handle as Integer

MBS MacCocoa Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal reference to the NSSound object.  
**Notes:** (Read and Write property)

### 32.61.32 currentTime as Double

MBS MacCocoa Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Provides the receiver’s playback progress in seconds.  
**Notes:**  
Receiver’s playback progress in seconds.  
Sounds start with currentTime == 0 and end with currentTime == ( sound.duration ) - 1).  
Available in Mac OS X v10.5 and later.  
This property is not archived, copied, or stored on the pasteboard.  
(Read and Write computed property)
32.61.33 loops as boolean

MBS MacCocoa Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates whether the receiver restarts playback when it reaches the end of its content.

**Notes:**
True when the receiver restarts playback when it finishes, false otherwise.
Default: false

Available in Mac OS X v10.5 and later.

When loops is true, the delegate does not call the SoundFinished event on the end of its content and restarts playback.
(Read and Write computed property)

32.61.34 playbackDeviceIdentifier as string

MBS MacCocoa Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Identifies the receiver’s output device.

**Notes:**
Returns an unique identifier of a sound output device.
Available in Mac OS X v10.5 and later.
(Read and Write computed property)

32.61.35 volume as Double

MBS MacCocoa Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Provides the volume of the receiver.

**Notes:**
This method does not affect the systemwide volume.
Available in Mac OS X v10.5 and later.

0.0 is not sound and 1.0 is full sound.
(Read and Write computed property)
32.62 class NSStreamMBS

32.62.1 class NSStreamMBS

**Function:** An abstract class representing a stream.  
**Notes:**  
This class’s interface is common to all Cocoa stream classes, including its concrete subclasses NSInputStream and NSOutputStream.  
NSStream objects provide an easy way to read and write data to and from a variety of media in a device-independent way. You can create stream objects for data located in memory, in a file, or on a network (using sockets), and you can use stream objects without loading all of the data into memory at once.  
By default, NSStream instances that are not file-based are non-seekable, one-way streams (although custom seekable subclasses are possible). Once the data has been provided or consumed, the data cannot be retrieved from the stream.  
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

32.62.2 Methods

32.62.3 Close

**Function:** Closes the receiver.  
**Notes:** Closing the stream terminates the flow of bytes and releases system resources that were reserved for the stream when it was opened. If the stream has been scheduled on a run loop, closing the stream implicitly removes the stream from the run loop. A stream that is closed can still be queried for its properties.

32.62.4 Constructor

**Function:** The private constructor.

32.62.5 Open

**Function:** Opens the receiving stream.  
**Notes:** A stream must be created before it can be opened. Once opened, a stream cannot be closed and reopened.
32.62.6  SetPosition(pos as Int64) as boolean

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets position in a stream.  
**Notes:** Returns true on success or false on failure.

32.62.7  Properties

32.62.8  Error as NSErrorMBS

**Function:** Returns an NSError object representing the stream error.  
**Notes:**  
An NSError object representing the stream error, or nil if no error has been encountered.  
(Read only property)

32.62.9  Handle as Integer

**Function:** The internal object reference.  
**Notes:** (Read and Write property)

32.62.10  position as Int64

**Function:** Queries position in file stream.  
**Notes:** (Read only property)

32.62.11  Status as Integer

**Function:** Returns the receivers status.  
**Notes:**  
See kStatus* constants.  
(Read only property)
32.62.12 Constants

32.62.13 kStatusAtEnd = 5

MBS Bluetooth Plugin, Plugin Version: 18.1. Function: One of the status constants. Notes: There is no more data to read, or no more data can be written to the stream. When this status is returned, the stream is in a non-blocking mode and no data are available.

32.62.14 kStatusClosed = 6

MBS Bluetooth Plugin, Plugin Version: 18.1. Function: One of the status constants. Notes: The stream is closed (close has been called on it).

32.62.15 kStatusError = 7

MBS Bluetooth Plugin, Plugin Version: 18.1. Function: One of the status constants. Notes: The remote end of the connection can not be contacted, or the connection has been severed for some other reason.

32.62.16 kStatusNotOpen = 0

MBS Bluetooth Plugin, Plugin Version: 18.1. Function: One of the status constants. Notes: The stream is not open for reading or writing. This status is returned before the underlying call to open a stream but after its been created.

32.62.17 kStatusOpen = 2

MBS Bluetooth Plugin, Plugin Version: 18.1. Function: One of the status constants. Notes: The stream is open, but no reading or writing is occurring.

32.62.18 kStatusOpening = 1

MBS Bluetooth Plugin, Plugin Version: 18.1. Function: One of the status constants. Notes: The stream is in the process of being opened for reading or for writing. For network streams, this status might include the time after the stream was opened, but while network DNS resolution is happening.
32.62.19  kStatusReading = 3

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the status constants.

**Notes:**

Data is being read from the stream. This status would be returned if code on another thread were to call Status on the stream while a read() was in progress.

32.62.20  kStatusWriting = 4

MBS Bluetooth Plugin, Plugin Version: 18.1. **Function:** One of the status constants.

**Notes:**

Data is being written to the stream. This status would be returned if code on another thread were to call Status on the stream while a write() was in progress.
32.63 class NSTextAttachmentMBS

32.63.1 class NSTextAttachmentMBS

MBS MacBase Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: An attachment to a text.

Notes:

NSTextAttachment objects are used by the NSAttributedString class cluster as the values for attachment attributes (stored in the attributed string under the key named NSAttachmentAttributeName). The objects you create with this class are referred to as text attachment objects, or when no confusion will result, as text attachments or merely attachments.

A text attachment object contains an NSFileWrapper in NSFileWrapper Class Reference object, which in turn holds the contents of the attached file. It also uses a cell object conforming to the NSTextAttachmentCell in NSTextAttachmentCell Protocol Reference protocol to draw and handle mouse events. Most of the behavior of a text attachment is relegated to the file wrapper and the attachment cell. See the corresponding class and protocol specifications for more information.

See the NSAttributedString in NSAttributedString Class Reference and NSTextView in NSTextView Class Reference class specifications for general information on text attachments.

see also

32.63.2 Methods

32.63.3 attributedStringWithAttachment(attachment as NSTextAttachmentMBS) as NSAttributedStringMBS


Example:

```plaintext
dim content as MemoryBlock = "Hello World"
dim f as NSFileWrapperMBS = NSFileWrapperMBS.initRegularFileWithContents(content)
f.filename = "HelloWorld.txt"

dim a as new NSTextAttachmentMBS(f)
dim s as NSAttributedStringMBS = NSTextAttachmentMBS.attributedStringWithAttachment(a)
```
**Notes:** This is a convenience method for creating an attributed string containing an attachment using \NSAttachmentCharacter as the base character.

### 32.63.4 Constructor(fileWrapper as NSFileWrapperMBS)

MBS MacBase Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes a newly allocated NSTextAttachment object to contain the given file wrapper.

**Example:**

```vba
dim content as MemoryBlock = "Hello World"
dim f as NSFileWrapperMBS = NSFileWrapperMBS.initRegularFileWithContents(content)
f.filename = "HelloWorld.txt"

dim a as new NSTextAttachmentMBS(f)

Break // inspect in debugger
```

**Notes:** If fileWrapper contains an image file that the receiver can interpret as an NSImage object, sets the attachment cells image to the NSImage rather than to the icon of fileWrapper.

See also:

- 32.63.5 Constructor(image as NSImageMBS)

### 32.63.5 Constructor(image as NSImageMBS)

MBS MacBase Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes a newly allocated NSTextAttachment object with a cell and given image.

See also:

- 32.63.4 Constructor(fileWrapper as NSFileWrapperMBS)

### 32.63.6 Properties

#### 32.63.7 attachmentCell as Variant

MBS MacBase Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attachment cell.

**Notes:**

As our plugin currently has no NSTextAttachmentCell class, we just give you a NSCell object. This allows accessing most of the properties.

Value is a NSCellMBS declared as Variant to reduce plugin dependencies.
32.63.8 fileWrapper as NSFileWrapperMBS

MBS MacBase Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The file wrapper.  
**Notes:**  
The file wrapper holds the contents of the attached file.  
(Read and Write property)

32.63.9 Handle as Integer

MBS MacBase Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference.  
**Notes:**  
Must not be 0 to have the object being valid.  
(Read and Write property)

32.63.10 Constants

32.63.11 NSAttachmentCharacter = & hFFFC

MBS MacBase Plugin, Plugin Version: 15.0. **Function:** This character is used to denote an attachment.  
**Example:**  
```
dim s as string = encodings.UTF16.Chr(NSTextAttachmentMBS.NSAttachmentCharacter)
```
32.64 class NSTextContainerMBS

32.64.1 class NSTextContainerMBS

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The NSTextContainer class defines a region where text is laid out. Notes: An NSLayoutManager uses NSTextContainer to determine where to break lines, lay out portions of text, and so on. NSTextContainer defines rectangular regions, but you can create subclasses that define regions of other shapes, such as circular regions, regions with holes in them, or regions that flow alongside graphics.

32.64.2 Methods

32.64.3 Constructor(size as NSSizeMBS)


The new text container must be added to an NSLayoutManager object before it can be used. The text container must also have an NSTextView object set for text to be displayed. This method is the designated initializer for the NSTextContainer class.

32.64.4 containsPoint(p as NSPointMBS) as boolean

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Overridden by subclasses to return whether a point lies within the receiver's region or on the region’s edgenot simply within its bounding rectangle. Notes: True if aPoint lies within the receiver's region or on the region’s edgenot simply within its bounding rectangle - false otherwise.

For example, if the receiver defines a donut shape and aPoint lies in the hole, this method returns false. This method can be used for hit testing of mouse events.

The default NSTextContainer implementation merely checks that aPoint lies within its bounding rectangle.
32.64.5  isSimpleRectangularTextContainer as boolean

**Function:** Overridden by subclasses to return whether the receiver’s region is a rectangle with no holes or gaps and whose edges are parallel to the text view’s coordinate system axes.  
**Notes:**  
True if the receiver’s region is a rectangle with no holes or gaps and whose edges are parallel to the text view’s coordinate system axes, false otherwise.  

A text container whose shape changes can return true if its region is currently a simple rectangle, but when its shape does change it must send textContainerChangedGeometry to its layout manager so the layout can be recalculated.  

The default NSTextContainer implementation of this method returns true.

32.64.6  replaceLayoutManager(l as NSLayoutManagerMBS)

**Function:** Replaces the layout manager for the group of text system objects containing the receiver.  
**Notes:** All text containers and text views sharing the original layout manager share the new layout manager. This method makes all the adjustments necessary to keep these relationships intact, unlike setLayoutManager.

32.64.7  Properties

32.64.8  Handle as Integer

**Function:** The internal object reference.  
**Notes:** (Read and Write property)

32.64.9  containerSize as NSSizeMBS

**Function:** The size of the receiver’s bounding rectangle.  
**Notes:**
32.64. **CLASS NSTEXTCONTAINERMBS**

size: The new size of the text container's bounding rectangle.
This method also sends textContainerChangedGeometry to the text container's layout manager.
(Read and Write computed property)

32.64.10 **heightTracksTextView as boolean**

**Function:** Controls whether the receiver adjusts the height of its bounding rectangle when its text view is resized.
**Notes:**
value: True if the receiver should follow changes to the height of its text view, false otherwise.
(Read and Write computed property)

32.64.11 **layoutManager as NSLayoutManagerMBS**

**Function:** The layout manager.
**Notes:**
This method is invoked automatically when you add a text container to a layout manager; you should never
need to invoke it directly, but might want to override it. If you want to replace the layout manager for an
established group of text system objects, use replaceLayoutManager.
(Read and Write computed property)

32.64.12 **lineFragmentPadding as Double**

**Function:** The amount by which text is inset within line fragment rectangles.
**Notes:**
Value: The amount by which text is inset within line fragment rectangles, in points.

This method also sends textContainerChangedGeometry to the text container's layout manager.

Line fragment padding is not designed to express text margins. Instead, use the NSTextView method set-
TextContainerInset, paragraph margin attributes, or the position of the text view within a superview.
(Read and Write computed property)
32.64.13 **textView as NSTextViewMBS**

**Function:** The text view.  
**Notes:**  
This method sends setTextContainer to aTextView to complete the association of the text container and text view.  

Because you usually specify a text container when you create a text view, you should rarely need to invoke this method. A text container doesn’t need a text view to calculate line fragment rectangles, but must have one to display text.  

You can use this method to disconnect a text view from a group of text system objects by sending this message to its text container and passing nil as aTextView.  
(Read and Write computed property)

32.64.14 **widthTracksTextView as boolean**

**Function:** Controls whether the receiver adjusts the width of its bounding rectangle when its text view is resized.  
**Notes:**  
Returns true if the receiver adjusts the width of its bounding rectangle when its text view is resized, false otherwise.  

If the receiver does track the text view width, its width is adjusted to the width of the text view minus twice the inset width (as given by NSTextView’s textContainerInset method).  
(Read and Write computed property)

32.64.15 **Constants**

32.64.16 **NSLineDoesntMove = 0**

MBS MacCocoa Plugin, Plugin Version: 12.4.  
**Function:** One of the line movement constants.  
**Notes:** Line has no movement.
32.64.17  NSLineMovesDown = 3

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the line movement constants.
**Notes:** Lines move from top to bottom.

32.64.18  NSLineMovesLeft = 1

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the line movement constants.
**Notes:** Lines move from right to left.

32.64.19  NSLineMovesRight = 2

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the line movement constants.
**Notes:** Lines move from left to right.

32.64.20  NSLineMovesUp = 4

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the line movement constants.
**Notes:** Lines move from bottom to top.

32.64.21  NSLineSweepDown = 2

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the line sweep direction constants.
**Notes:** Characters move from top to bottom.

32.64.22  NSLineSweepLeft = 0

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the line sweep direction constants.
**Notes:** Characters move from right to left.

32.64.23  NSLineSweepRight = 1

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the line sweep direction constants.
**Notes:** Characters move from left to right.
32.64.24  **NSLineSweepUp = 3**

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the line sweep direction constants.  
**Notes:** Characters move from bottom to top.
32.65. `CLASS NSTEXTLISTMBS`

32.65 class NSTextListMBS

32.65.1 class NSTextListMBS

MBS MacBase Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A section of text that forms a single list.  
**Notes:**

The visible elements of the list, including list markers, appear in the text as they do for lists created by hand. The list object, however, allows the list to be recognized as such by the text system. This enables automatic creation of markers and spacing. Text lists are used in HTML import and export.

Text lists appear as attributes on paragraphs, as part of the paragraph style. An NSParagraphStyle may have an array of text lists, representing the nested lists containing the paragraph, in order from outermost to innermost. For example, if list1 contains four paragraphs, the middle two of which are also in the inner list2, then the text lists array for the first and fourth paragraphs is (list1), while the text lists array for the second and third paragraphs is (list1, list2). The methods implementing this are textLists on NSParagraphStyle, and textLists on NSMutableParagraphStyle.

In addition, NSAttributedString has convenience methods for lists, such as rangeOfTextList, which determines the range covered by a list, and itemNumberInTextList, which determines the ordinal position within a list of a particular item.

32.65.2 Methods

32.65.3 Constructor(format as String, OptionsMask as Integer = 0)

MBS MacBase Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an initialized text list.  
**Notes:**

format: The marker format for the text list.  
mask: The marker options for the text list. Values for mask are listed in Constants.

Returns an initialized text list.

The marker format is specified as a constant string, except for a numbering specifier, which takes the form `{ keyword }`. The currently supported values for keyword include:

- box
- check
• circle
• diamond
• disc
• hyphen
• square
• lower-hexadecimal
• upper-hexadecimal
• octal
• lower-alpha or lower-latin
• upper-alpha or upper-latin
• lower-roman
• upper-roman
• decimal

Thus, for example, "( { decimal } )" would specify the format for a list numbered (1), (2), (3), and so on, and "@" { upper-roman } " would specify the format for a list numbered I, II, III, IV, and so on. (All of these keywords are included in the Cascading Style Sheets level 3 specification.)

32.65.4 copy as NSTextListMBS

MBS MacBase Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy of the text list.

32.65.5 markerForItemNumber(ItemNum as Integer) as String

MBS MacBase Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the computed value for a specific ordinal position in the list.

**Notes:**

itemNum: The ordinal position in the list whose computed marker value is desired.

Returns the computed maker value for itemNum.
32.65. **NSTextListMarkerBox as String**

MBS MacBase Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the format texts. **Notes:** Available on MacOS 10.13 or newer.

32.65.7 **NSTextListMarkerCheck as String**

MBS MacBase Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the format texts. **Notes:** Available on MacOS 10.13 or newer.

32.65.8 **NSTextListMarkerCircle as String**

MBS MacBase Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the format texts. **Notes:** Available on MacOS 10.13 or newer.

32.65.9 **NSTextListMarkerDecimal as String**

MBS MacBase Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the format texts. **Notes:** Available on MacOS 10.13 or newer.

32.65.10 **NSTextListMarkerDiamond as String**

MBS MacBase Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the format texts. **Notes:** Available on MacOS 10.13 or newer.

32.65.11 **NSTextListMarkerDisc as String**

MBS MacBase Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the format texts. **Notes:** Available on MacOS 10.13 or newer.
32.65.12  NSTextListMarkerHyphen as String

MBS MacBase Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the format texts.  **Notes:** Available on MacOS 10.13 or newer.

32.65.13  NSTextListMarkerLowerCaseAlpha as String

MBS MacBase Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the format texts.  **Notes:** Available on MacOS 10.13 or newer.

32.65.14  NSTextListMarkerLowerCaseHexadecimal as String

MBS MacBase Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the format texts.  **Notes:** Available on MacOS 10.13 or newer.

32.65.15  NSTextListMarkerLowerCaseLatin as String

MBS MacBase Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the format texts.  **Notes:** Available on MacOS 10.13 or newer.

32.65.16  NSTextListMarkerLowerCaseRoman as String

MBS MacBase Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the format texts.  **Notes:** Available on MacOS 10.13 or newer.

32.65.17  NSTextListMarkerOctal as String

MBS MacBase Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the format texts.  **Notes:** Available on MacOS 10.13 or newer.
32.65.18  NSTextListMarkerSquare as String

Notes: Available on MacOS 10.13 or newer.

32.65.19  NSTextListMarkerUppercaseAlpha as String

Notes: Available on MacOS 10.13 or newer.

32.65.20  NSTextListMarkerUppercaseHexadecimal as String

Notes: Available on MacOS 10.13 or newer.

32.65.21  NSTextListMarkerUppercaseLatin as String

Notes: Available on MacOS 10.13 or newer.

32.65.22  NSTextListMarkerUppercaseRoman as String

Notes: Available on MacOS 10.13 or newer.

32.65.23  Properties

32.65.24  Handle as Integer

32.65.25  listOptions as Integer

MBS MacBase Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the list options mask value of the receiver.

**Notes:**
Can be NSTextListPrependEnclosingMarker.
(Read only property)

32.65.26  markerFormat as String

MBS MacBase Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the marker format string used by the receiver.

**Notes:** (Read only property)

32.65.27  startingItemNumber as Integer

MBS MacBase Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the starting item number for the text list.

**Notes:**
The default value is 1. This value will be used only for ordered lists, and ignored in other cases.
(Read and Write property)

32.65.28  Constants

32.65.29  NSTextListPrependEnclosingMarker = 1

MBS MacBase Plugin, Plugin Version: 18.1. **Function:** One of the constants for options.
**Notes:** Specifies that a nested list should include the marker for its enclosing superlist before its own marker.
32.66. CLASS NSTEXTMBS

32.66.1 class NSTextMBS

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Cocoa class for text controls.

**Notes:**

You may prefer to use the NSTextViewMBS class which is a subclass from NSTextMBS.

You can embed this view in a CustomNSViewMBS to get more events for mouse and keyboard. Subclass of the NSViewMBS class.

32.66.2 Methods

32.66.3 alignCenter

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This action method applies center alignment to selected paragraphs (or all text if the receiver is a plain text object).

32.66.4 alignLeft

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This action method applies left alignment to selected paragraphs (or all text if the receiver is a plain text object).

32.66.5 alignRight

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This action method applies right alignment to selected paragraphs (or all text if the receiver is a plain text object).

32.66.6 changeFont

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This action method changes the font of the selection for a rich text object, or of all text for a plain text object.

**Notes:**
If the receiver doesn’t use the Font panel, this method does nothing.

This method changes the font by sending a convertFont message to the shared NSFontManager and applying each NSFont returned to the appropriate text. See the NSFontManager class specification for more information on font conversion.

### 32.66.7 checkSpelling

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This action method searches for a misspelled word in the receiver’s text. **Notes:** The search starts at the end of the selection and continues until it reaches a word suspected of being misspelled or the end of the text. If a word isn’t recognized by the spelling server, a showGuessPanel message then opens the Guess panel and allows the user to make a correction or add the word to the local dictionary.

### 32.66.8 Constructor

MBS MacCocoa Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new text with size 100/100 and position 0/0

**Example:**

```plaintext
dim t as new NSTextMBS
```

**Notes:** On success the handle property is not zero.

See also:

- 32.66.9 Constructor(Handle as Integer) 5944
- 32.66.10 Constructor(left as Double, top as Double, width as Double, height as Double) 5945

### 32.66.9 Constructor(Handle as Integer)

MBS MacCocoa Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an object based on the given NSText handle.

**Example:**

```plaintext
dim t as new NSTextMBS(0, 0, 100, 100)
dim v as new NSTextMBS(t.handle)
```

`MsgBox str(v.Bounds.Width)+” x “+str(v.Bounds.Height)`
32.66. CLASS NSTEXTMBS

Notes: The handle is casted to a NSText and the plugin retains this handle.
See also:

- 32.66.8 Constructor
- 32.66.10 Constructor(left as Double, top as Double, width as Double, height as Double)

32.66.10 Constructor(left as Double, top as Double, width as Double, height as Double)

Example:

```
dim x as new NSTextMBS(0, 0, 100, 100)
```

Notes: On success the handle property is not zero.
See also:

- 32.66.8 Constructor
- 32.66.9 Constructor(Handle as Integer)

32.66.11 copy

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: This action method copies the selected text onto the general pasteboard, in as many formats as the receiver supports.

32.66.12 copyFont

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: This action method copies the font information for the first character of the selection (or for the insertion point) onto the font pasteboard, as NSFontPboardType.

32.66.13 copyRuler

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: This action method copies the paragraph style information for first selected paragraph onto the ruler pasteboard, as NSRulerPboardType, and expands the selection to paragraph boundaries.
32.66.14 cut
MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This action method deletes the selected text and places it onto the general pasteboard, in as many formats as the receiver supports.

32.66.15 delete
MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This action method deletes the selected text.

32.66.16 isRulerVisible as boolean
MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value that indicates whether the receiver’s enclosing scroll view shows its ruler.

32.66.17 maxSizeHeight as Double
MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver’s maximum height.

32.66.18 maxSizeWidth as Double
MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver’s maximum width.

32.66.19 minSizeHeight as Double
MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver’s minimum height.

32.66.20 minSizeWidth as Double
MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver’s maximum width.
32.66.21 paste

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This action method pastes text from the general pasteboard at the insertion point or over the selection.

32.66.22 pasteFont

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This action method pastes font information from the font pasteboard onto the selected text or insertion point of a rich text object, or over all text of a plain text object.

32.66.23 pasteRuler

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This action method pastes paragraph style information from the ruler pasteboard onto the selected paragraphs of a rich text object.

32.66.24 readRTFDFromFile(file as folderitem) as boolean

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Attempts to read the RTFD file, returning true if successful and false if not. **Notes:** file should be the path for an .rtf file or an .rtfd file wrapper, not for the RTF file within an .rtfd file wrapper.

32.66.25 replaceCharactersInRangeWithRTF(start as Integer, length as Integer, rtfData as MemoryBlock)

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Replaces the characters in the given range with RTF text interpreted from the given RTF data. **Notes:**

This method applies only to rich text objects.

This method does not include undo support by default. Clients must invoke shouldChangeTextInRange to include this method in an undoable action.

This method is designed for transferring text from out-of-process sources such as the pasteboard. In most cases, programmatic modification of the text is best done by operating on the text storage directly, using
CHAPTER 32. COCOA

the general methods of NSMutableAttributedString.

32.66.26 replaceCharactersInRangeWithRTFD(start as Integer, length as Integer, rtfdData as MemoryBlock)

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Replaces the characters in the given range with RTFD text interpreted from the given RTFD data. Notes:

This method applies only to rich text objects.

This method does not include undo support by default. Clients must invoke shouldChangeTextInRange to include this method in an undoable action.

This method is designed for transferring text from out-of-process sources such as the pasteboard. In most cases, programmatic modification of the text is best done by operating on the text storage directly, using the general methods of NSMutableAttributedString.

32.66.27 replaceCharactersInRangeWithString(start as Integer, length as Integer, text as string)

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Replaces the characters in the given range with those in the given string. Notes:

For a rich text object, the text is assigned the formatting attributes of the first character of the text it replaces, or of the character immediately before aRange if the range’s length is 0. If the range’s location is 0, the formatting attributes of the first character in the receiver are used.

This method does not include undo support by default. Clients must invoke shouldChangeTextInRange to include this method in an undoable action.

In most cases, programmatic modification of the text is best done by operating on the text storage directly, using the general methods of NSMutableAttributedString.

32.66.28 RTFDInRange(start as Integer, length as Integer) as MemoryBlock

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a string that contains an RTFD stream corresponding to the characters and attributes within
aRange.

Notes:

Raises an NSRangeException if any part of aRange lies beyond the end of the receiver’s characters.

When writing data to the pasteboard, you can use the memoryblock object as the first argument to NSPasteboard’s setDataForType method, with a second argument of NSRTFPboardType.

32.66.29 RTFFromRange(start as Integer, length as Integer) as MemoryBlock

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a string object that contains an RTF stream corresponding to the characters and attributes within aRange, omitting any attachment characters and attributes.

Notes:

Raises an NSRangeException if any part of aRange lies beyond the end of the receiver’s characters.

When writing data to the pasteboard, you can use the memoryblock as the first argument to NSPasteboard’s setDataForType method, with a second argument of NSRTFPboardType.

32.66.30 scrollRangeToVisible(start as Integer, length as Integer)

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Scrolls the receiver in its enclosing scroll view so the first characters of aRange are visible.

32.66.31 selectAll

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: This action method selects all of the receiver’s text.

32.66.32 setFontForRange(font as NSFontMBS, start as Integer, length as Integer)

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Sets the font of characters within the given range to font.

Notes:

This method applies only to a rich text object.
This method does not include undo support by default. Clients must invoke shouldChangeTextInRange to include this method in an undoable action.

### 32.66.33 setMaxSize(width as Double, height as Double)

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the receiver’s maximum size.

### 32.66.34 setMinSize(width as Double, height as Double)

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the receiver’s minimum size.

### 32.66.35 setTextColorForRange(colorValue as NSColorMBS, start as Integer, length as Integer)

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the text color of characters within the given range to colorValue. **Notes:** Removes the text color attribute if colorValue is nil. This method applies only to rich text objects. This method does not include undo support by default. Clients must invoke shouldChangeTextInRange to include this method in an undoable action.

### 32.66.36 showGuessPanel

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This action method opens the Spelling panel, allowing the user to make a correction during spell checking.

### 32.66.37 sizeToFit

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Resizes the receiver to fit its text. **Notes:** The text view will not be sized any smaller than its minimum size, however.
32.66.38 subscript

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This action method applies a subscript attribute to selected text (or all text if the receiver is a plain text object), lowering its baseline offset by a predefined amount.

32.66.39 superscript

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This action method applies a superscript attribute to selected text (or all text if the receiver is a plain text object), raising its baseline offset by a predefined amount.

32.66.40 textLength as Integer

MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the length of the text in unicode chars.

32.66.41 toggleRuler

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This action method shows or hides the ruler, if the receiver is enclosed in a scroll view.

32.66.42 underline

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds the underline attribute to the selected text attributes if absent; removes the attribute if present. **Notes:**

If there is a selection and the first character of the selected range has any form of underline on it, or if there is no selection and the typing attributes have any form of underline, then underline is removed; otherwise a single simple underline is added.

Operates on the selected range if the receiver contains rich text. For plain text the range is the entire contents of the receiver.
32.66.43  unscript

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This action method removes any superscripting or subscripting from selected text (or all text if the receiver is a plain text object).

32.66.44  writeRTFDToFile(file as folderitem, atomically as boolean) as boolean

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Writes the receiver’s text as RTF with attachments to a file or directory at file. **Notes:** Returns true on success and false on failure. If atomically is true, attempts to write the file safely so that an existing file at path is not overwritten, nor does a new file at path actually get created, unless the write is successful.

32.66.45  Properties

32.66.46  alignment as Integer

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The text alignment. **Notes:** (Read and Write computed property)

32.66.47  backgroundColor as NSColorMBS

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The background color. **Notes:** (Read and Write computed property)

32.66.48  baseWritingDirection as Integer

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The initial writing direction used to determine the actual writing direction for text. **Notes:**

The Text system uses this value as a hint for calculating the actual direction for displaying Unicode characters. You should not need to call this method directly. If no writing direction is set, returns NSWritingDirection-Natural.
Available in Mac OS X v10.4 and later.

(Read and Write computed property)

32.66.49 **drawsBackground as boolean**

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value that indicates whether the scrollview draws its background. **Notes:** (Read and Write computed property)

32.66.50 **Enabled as boolean**

MBS MacCocoa Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Enables/disables the control. **Notes:**

If enabled, text is in default text color. if disabled, you can’t edit or select and the text color is gray. **(Read and Write computed property)**

32.66.51 **font as NSFontMBS**

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The font of the first character in the receiver’s text, or of the insertion point if there’s no text. **Notes:** (Read and Write computed property)

32.66.52 **importsGraphics as boolean**

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the receiver allows the user to import files by dragging. **Notes:** (Read and Write computed property)

32.66.53 **isEditable as boolean**

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value that indicates whether the receiver allows the user to edit text, false if it doesn’t. **Notes:**

You can change the receiver’s text programmatically regardless of this setting.
32.66.54  isFieldEditor as boolean

**Function:**  A Boolean value that indicates whether the receiver interprets Tab, Shift-Tab, and Return (Enter) as 
cues to end editing and possibly to change the first responder.  
**Notes:**  True if the receiver interprets Tab, Shift-Tab, and Return (Enter) as cues to end editing and possibly to 
change the first responder; false if it accepts them as text input.  
See the NSWindow class specification for more information on field editors.  By default, NSText objects 
don’t behave as field editors.  
(Read and Write computed property)

32.66.55  isHorizontallyResizable as boolean

**Function:**  True if the receiver automatically changes its width to accommodate the width of its text, false if it 
doesn’t.  
**Notes:**  By default, an NSText object is not horizontally resizable.  
(Read and Write computed property)

32.66.56  isRichText as boolean

**Function:**  A Boolean value that indicates whether the NSText allows the user to apply attributes to specific 
ranges of the text.  
**Notes:**  (Read and Write computed property)

32.66.57  isSelectable as boolean

**Function:**  A Boolean value that indicates whether the text allows the user to select text, false if it doesn’t.  
**Notes:**  (Read and Write computed property)
32.66. **CLASS NSTEXTMBS**

### 32.66.58 isVerticallyResizable as boolean

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** True if the receiver automatically changes its height to accommodate the height of its text, false if it doesn’t.  
**Notes:**  
By default, an NSText object is vertically resizable.  
(Read and Write computed property)

### 32.66.59 selectedRange as NSRangeMBS

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The range of selected characters.  
**Example:**
```vbnet
dim t as NSTextViewMBS = TextArea1.NSTextViewMBS  
dim s as NSTextStorageMBS = t.textStorage

const NSUnderlineStyleSingle = 1

dim r as NSRangeMBS = t.selectedRange  
s.addAttribute NSAttributedStringMBS.NSStrikethroughStyleAttributeName, NSUnderlineStyleSingle, r
```

**Notes:** (Read and Write computed property)

### 32.66.60 text as string

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The characters of the text.  
**Notes:**  
For performance reasons, this method returns the current backing store of the text object. If you want to maintain a snapshot of this as you manipulate the text storage, you should make a copy of the appropriate substring.  
(Read and Write computed property)

### 32.66.61 textColor as NSColorMBS

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The text color.
32.66.62 usesFontPanel as boolean

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value that indicates whether the receiver uses the Font panel. **Notes:** (Read and Write computed property)

32.66.63 Events

32.66.64 textDidBeginEditing

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Informs you that the text object has begun editing (that the user has begun changing it).

32.66.65 textDidChange

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Informs you that the text object has changed its characters or formatting attributes.

32.66.66 textDidEndEditing

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Informs you that the text object has finished editing (that it has resigned first responder status).

32.66.67 textShouldBeginEditing as boolean

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Invoked when a text object begins to change its text, this method requests permission to begin editing. **Notes:** If the delegate returns false, the text object proceeds to make changes. If the delegate returns true, the text object abandons the editing operation. This method is also invoked when the user drags and drops a file onto the text object.
32.66.68  `textShouldEndEditing` as boolean

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Invoked from a text object’s implementation of resignFirstResponder, this method requests permission to end editing. **Notes:** If the delegate returns false, the text object proceeds to finish editing and resign first responder status. If the delegate returns true, the text object selects all of its text and remains the first responder.

32.66.69  Constants

32.66.70  `NSBackspaceCharacter` = 8

MBS MacCocoa Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify commonly used Unicode characters.

32.66.71  `NSBackTabCharacter` = \&h19

MBS MacCocoa Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify commonly used Unicode characters.

32.66.72  `NSBacktabTextMovement` = \&h12

MBS MacCocoa Plugin, Plugin Version: 8.4. **Function:** One of the constants used to specify the reason for a change of editing focus among text fields, in essence answering the question "why am I leaving the field?" **Notes:** The Backtab (Shift-Tab) key was pressed.

32.66.73  `NSCancelTextMovement` = \&h17

MBS MacCocoa Plugin, Plugin Version: 8.4. **Function:** One of the constants used to specify the reason for a change of editing focus among text fields, in essence answering the question "why am I leaving the field?" **Notes:**
The user cancelled the completion.
Available in Mac OS X v10.3 and later.
32.66.74 NSCarriageReturnCharacter=13

MBS MacCocoa Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify commonly used Unicode characters.

32.66.75 NSCenterTextAlignment=2

MBS MacCocoa Plugin, Plugin Version: 8.4. **Function:** One of the text alignment constants for the alignment property.
**Notes:** Visually centered

32.66.76 NSDeleteCharacter=\& h7F

MBS MacCocoa Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify commonly used Unicode characters.

32.66.77 NSDownTextMovement=\& h16

MBS MacCocoa Plugin, Plugin Version: 8.4. **Function:** One of the constants used to specify the reason for a change of editing focus among text fields, in essence answering the question “why am I leaving the field?”
**Notes:** The down arrow key was pressed.

32.66.78 NSEnterCharacter=3

MBS MacCocoa Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify commonly used Unicode characters.

32.66.79 NSFormFeedCharacter=12

MBS MacCocoa Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify commonly used Unicode characters.

32.66.80 NSIllegalTextMovement=0

MBS MacCocoa Plugin, Plugin Version: 8.4. **Function:** One of the constants used to specify the reason for a change of editing focus among text fields, in essence answering the question “why am I leaving the field?”
32.66.81  **NSJustifiedTextAlignment=3**

MBS MacCocoa Plugin, Plugin Version: 8.4. **Function:** One of the text alignment constants for the alignment property.
**Notes:** Fully-justified. The last line in a paragraph is natural-aligned.

32.66.82  **NSLeftTextAlignment=0**

MBS MacCocoa Plugin, Plugin Version: 8.4. **Function:** One of the text alignment constants for the alignment property.
**Notes:** Visually left aligned

32.66.83  **NSLeftTextMovement=&h13**

MBS MacCocoa Plugin, Plugin Version: 8.4. **Function:** One of the constants used to specify the reason for a change of editing focus among text fields, in essence answering the question "why am I leaving the field?"
**Notes:** The left arrow key was pressed.

32.66.84  **NSLineSeparatorCharacter=&h2028**

MBS MacCocoa Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify commonly used Unicode characters.

32.66.85  **NSNaturalTextAlignment=4**

MBS MacCocoa Plugin, Plugin Version: 8.4. **Function:** One of the text alignment constants for the alignment property.
**Notes:** Indicates the default alignment for script.

32.66.86  **NSNewlineCharacter=10**

MBS MacCocoa Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify commonly used Unicode characters.
32.66.87 NSOtherTextMovement=0

MBS MacCocoa Plugin, Plugin Version: 8.4. Function: One of the constants used to specify the reason for a change of editing focus among text fields, in essence answering the question "why am I leaving the field?"
Notes: The user performed some undefined action.
Available in Mac OS X v10.3 and later.

32.66.88 NSParagraphSeparatorCharacter=&h2029

MBS MacCocoa Plugin, Plugin Version: 8.4. Function: One of the constants to specify commonly used Unicode characters.

32.66.89 NSReturnTextMovement=&h10

MBS MacCocoa Plugin, Plugin Version: 8.4. Function: One of the constants used to specify the reason for a change of editing focus among text fields, in essence answering the question "why am I leaving the field?"
Notes: The Return key was pressed.

32.66.90 NSRightTextAlignment=1

MBS MacCocoa Plugin, Plugin Version: 8.4. Function: One of the text alignment constants for the alignment property.
Notes: Visually right aligned

32.66.91 NSRightTextMovement=&h14

MBS MacCocoa Plugin, Plugin Version: 8.4. Function: One of the constants used to specify the reason for a change of editing focus among text fields, in essence answering the question "why am I leaving the field?"
Notes: The right arrow key was pressed.

32.66.92 NSTabCharacter=9

MBS MacCocoa Plugin, Plugin Version: 8.4. Function: One of the constants to specify commonly used Unicode characters.
32.66.93 NSTabTextMovement=& h11

MBS MacCocoa Plugin, Plugin Version: 8.4. **Function:** One of the constants used to specify the reason for a change of editing focus among text fields, in essence answering the question "why am I leaving the field?"

**Notes:** The Tab key was pressed.

32.66.94 NSTextWritingDirectionEmbedding=0

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** An additional constant to specify the writing direction.

**Notes:**
- Direction is embedded.
- Available in Mac OS X v10.6 and later.

32.66.95 NSTextWritingDirectionOverride=1

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** An additional constant to specify the writing direction.

**Notes:**
- Direction override
- Available in Mac OS X v10.6 and later.

32.66.96 NSUpTextMovement=& h15

MBS MacCocoa Plugin, Plugin Version: 8.4. **Function:** One of the constants used to specify the reason for a change of editing focus among text fields, in essence answering the question "why am I leaving the field?"

**Notes:** The up arrow key was pressed.

32.66.97 NSWritingDirectionLeftToRight=0

MBS MacCocoa Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify the writing directions.

**Notes:**
- The writing direction is left to right.
CHAPTER 32. COCOA

Available in Mac OS X v10.2 and later.

### 32.66.98 `NSWritingDirectionNatural=−1`

MBS MacCocoa Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify the writing directions.

**Notes:**

The writing direction is determined using the Unicode Bidi Algorithm rules P2 and P3. Default.

Available in Mac OS X v10.4 and later.

### 32.66.99 `NSWritingDirectionRightToLeft=1`

MBS MacCocoa Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify the writing directions.

**Example:**

```objc
const NSWritingDirectionNatural = -1 // Determines direction using the Unicode Bidi Algorithm rules P2 and P3
const NSWritingDirectionLeftToRight = 0 // Left to right writing direction
const NSWritingDirectionRightToLeft = 1 // Right to left writing direction

const NSTextWritingDirectionEmbedding = 0
const NSTextWritingDirectionOverride = 2

dim t as NSTextStorageMBS = TextArea1.NSTextViewMBS.textStorage

// get hello in arabic
dim a as NSAttributedStringMBS = NSAttributedStringMBS.attributedStringWithString("")
dim m as NSMutableAttributedStringMBS = a.mutableCopy

// now set attributes for right to left
m.addAttribute t.NSWritingDirectionAttributeName, array(NSWritingDirectionRightToLeft+NSTextWritingDirectionOverride), new NSRangeMBS(0,m.Length)

// and add to textarea
t.appendAttributedString m
```

**Notes:**

The writing direction is right to left.
32.66. **CLASS NSTEXTMBS**

Available in Mac OS X v10.2 and later.
32.67.1 class NSTextStorageMBS

NSTextStorage is a semiconcrete subclass of NSMutableAttributedString that manages a set of client NSLayoutManager objects, notifying them of any changes to its characters or attributes so that they can relay and redisplay the text as needed. NSTextStorage defines the fundamental storage mechanism of the Application Kit’s extended text-handling system.

NSTextStorage also defines a set of methods, listed under “Getting and setting scriptable properties” in the Method Types section, useful for getting and setting scriptable properties of NSTextStorage objects. Unless you are dealing with scriptability, you do not normally need to invoke these methods directly. In particular, using the characters, words or paragraphs methods or their corresponding setter methods is an inefficient way to manipulate the text storage, since these methods create and return many objects. Instead, use the text access methods defined by NSMutableAttributedString, NSAttributedString, NSMutableString, and NSString to perform character-level manipulation.

Subclass of the NSMutableAttributedStringMBS class.

32.67.2 Methods

32.67.3 addLayoutManager(l as NSLayoutManagerMBS)


Notes: l: The layout manager to add.

32.67.4 changeInLength as Integer

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the difference between the current length of the edited range and its length before editing began.

Notes:

Returns the difference between the current length of the edited range and its length before editing began. That is, before the receiver was sent the first beginEditing message or a single edited:range:changeInLength: message.

This difference is accumulated with each invocation of edited:range:changeInLength:, until a final message
processes the changes.

The receiver’s delegate and layout managers can use this information to determine the nature of edits in their respective notification methods.

### 32.67.5 Constructor

MBS MacCocoa Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor to create a new empty text storage object.

### 32.67.6 editedMask as Integer

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the kinds of edits pending for the receiver. **Notes:** Returns a mask describing the kinds of edits pending for the receiver.

### 32.67.7 editedRange as NSRangeMBS

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the range of the receiver to which pending changes have been made, whether of characters or of attributes. **Notes:** The receiver’s delegate and layout managers can use this information to determine the nature of edits in their respective notification methods.

### 32.67.8 ensureAttributesAreFixedInRange(Range as NSRangeMBS)

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Ensures that attributes are fixed in the given range. **Notes:** range: The range of characters whose attributes might be examined.

An NSTextStorage object using lazy attribute fixing is required to call this method before accessing any attributes within range. This method gives attribute fixing a chance to occur if necessary. NSTextStorage subclasses wishing to support laziness must call this method from all attribute accessors they implement.
32.67.9  \texttt{fixesAttributesLazily} as \texttt{boolean}

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  \textbf{Function:} Returns whether the receiver fixes attributes lazily.
\textbf{Notes:} By default, custom NSTextStorage subclasses are not lazy, but the provided concrete subclass is lazy by default.

32.67.10  \texttt{invalidateAttributesInRange} (\texttt{Range} as \texttt{NSRangeMBS})

\textbf{Notes:} range: The range of characters whose attributes should be invalidated.

Called from processEditing to invalidate attributes when the text storage changes. If the receiver is not lazy, this method simply calls fixAttributesInRange. If lazy attribute fixing is in effect, this method instead records the range needing fixing.

32.67.11  processEditing

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  \textbf{Function:} Cleans up changes made to the receiver and notifies its delegate and layout managers of changes.

32.67.12  \texttt{removeLayoutManager} (\texttt{l} as \texttt{NSLayoutManagerMBS})

\textbf{Notes:} \texttt{l}: The layout manager to remove.

32.67.13  Constants

32.67.14  \texttt{NSTextStorageEditedAttributes} = \texttt{1}

MBS MacCocoa Plugin, Plugin Version: 8.6.  \textbf{Function:} The constants for text messages.
\textbf{Notes:} Attributes were added, removed, or changed.
MBS MacCocoa Plugin, Plugin Version: 8.6. **Function:** The constants for text messages. **Notes:** Characters were added, removed, or replaced.
32.68 class NSTextTabMBS

32.68.1 class NSTextTabMBS


Function: An NSTextTab object represents a tab in an NSParagraphStyle object, storing an alignment type and location.

Notes: NSTextTab objects are most frequently used with the Application Kit’s text system and with NSRulerView and NSRulerMarker objects. See the appropriate class specifications for more information on these uses.

The text system supports four alignment types: left, center, right, and decimal (based on the decimal separator character of the locale in effect). These alignment types are absolute, not based on the line sweep direction of text. For example, tabbed text is always positioned to the left of a right-aligned tab, whether the line sweep direction is left to right or right to left. A tab’s location, on the other hand, is relative to the back margin. A tab set at 1.5”, for example, is at 1.5” from the right in right to left text.

32.68.2 Methods

32.68.3 Constructor


Function: The default constructor.

See also:

- 32.68.4 Constructor(alignment as Integer, location as Double, options as dictionary) 5968
- 32.68.5 Constructor(type as Integer, location as Double) 5969

32.68.4 Constructor(alignment as Integer, location as Double, options as dictionary)


Function: Initializes a text tab with the text alignment, location, and options.

Notes: The text alignment is used to determine the position of text inside the tab column. See NSTextTabType for a mapping between alignments and tab stop types.

See also:

- 32.68.3 Constructor 5968
- 32.68.5 Constructor(type as Integer, location as Double) 5969
32.68. CLASS NSTEXTTABMBS

32.68.5 Constructor(type as Integer, location as Double)

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes a newly allocated NSTextTab with an alignment of type at location on the paragraph. **Notes:** The location is relative to the back margin, based on the line sweep direction of the paragraph. type can be any of the values described in NSTextTabType. See also:

- 32.68.3 Constructor
- 32.68.4 Constructor(alignment as Integer, location as Double, options as dictionary)

32.68.6 copy as NSTextTabMBS

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy of the text tab.

32.68.7 Properties

32.68.8 alignment as Integer

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the text alignment of the receiver. **Notes:** (Read only property)

32.68.9 Handle as Integer

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference. **Notes:** (Read and Write property)

32.68.10 location as Double

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver’s ruler location relative to the back margin. **Notes:** (Read only property)
32.68.11  options as Dictionary

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the dictionary of attributes associated with the receiver. **Notes:** (Read only property)

32.68.12  tabStopType as Integer

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver’s tab stop type. **Notes:** (Read only property)

32.68.13  Constants

32.68.14  NSCenterTabStopType = 2

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the type constants for tab stops. **Notes:** A center-aligned tab stop.

32.68.15  NSDecimalTabStopType = 3

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the type constants for tab stops. **Notes:** Aligns columns of numbers by the decimal point.

32.68.16  NSLeftTabStopType = 0

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the type constants for tab stops. **Notes:** A left-aligned tab stop.

32.68.17  NSRightTabStopType = 1

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the type constants for tab stops. **Notes:** A right-aligned tab stop.
32.69. CLASS NSTIMERMBS

32.69 class NSTimerMBS

32.69.1 class NSTimerMBS


Function: The cocoa timer class.

Example:

dim n as new NSTimerMBS(5, true)

Notes:

You use the NSTimer class to create timer objects or, more simply, timers. A timer waits until a certain
time interval has elapsed and then fires, calling the action event. For example, you could create an NSTimer
object that calls the action event, telling it to update itself after a certain time interval.

A timer is not a real-time mechanism; it fires only when one of the run loop modes to which the timer has
been added is running and able to check if the timer’s firing time has passed. Because of the various input
sources a typical run loop manages, the effective resolution of the time interval for a timer is limited to on
the order of 50-100 milliseconds. If a timer’s firing time occurs during a long callout or while the run loop is
in a mode that is not monitoring the timer, the timer does not fire until the next time the run loop checks
the timer. Therefore, the actual time at which the timer fires potentially can be a significant period of time
after the scheduled firing time.

Repeating Versus Non-Repeating Timers

You specify whether a timer is repeating or non-repeating at creation time. A non-repeating timer fires
once and then invalidates itself automatically, thereby preventing the timer from firing again. By contrast,
a repeating timer fires and then reschedules itself on the same run loop.

A repeating timer always schedules itself based on the scheduled firing time, as opposed to the actual firing
time. For example, if a timer is scheduled to fire at a particular time and every 5 seconds after that, the
scheduled firing time will always fall on the original 5 second time intervals, even if the actual firing time
gets delayed. If the firing time is delayed so far that it passes one or more of the scheduled firing times, the
timer is fired only once for that time period; the timer is then rescheduled, after firing, for the next scheduled
firing time in the future.

Scheduling Timers in Run Loops

A timer object can be registered in only one run loop at a time, although it can be added to multiple run
loop modes within that run loop. There are three ways to create a timer:

Use the Constructor to create the timer and schedule it on the current run loop in the default mode.

Once scheduled, the timer fires at the specified interval until it is invalidated. A non-repeating timer invali-
dates itself immediately after it fires. However, for a repeating timer, you must invalidate the timer object yourself by calling its invalidate method. Calling this method requests the removal of the timer from the current run loop; as a result, you should always call the invalidate method from the same thread on which the timer was installed. Invalidating the timer immediately disables it so that it no longer affects the run loop. The run loop then removes and releases the timer, either just before the invalidate method returns or at some later point. Once invalidated, timer objects cannot be reused.

### 32.69.2 Methods

#### 32.69.3 Constructor(fireDate as date, timeInterval as Double, repeats as boolean)


**Function:** Initializes a new NSTimer.

**Example:**

```plaintext
dim d as new date
d.hour = d.hour + 1 // start in one hour

dim n as new NSTimerMBS(d, 5, true)
```

**Notes:**

- **fireDate:** The time at which the timer should first fire.
- **timeInterval:** For a repeating timer, this parameter contains the number of seconds between firings of the timer. If seconds is less than or equal to 0.0, this method chooses the nonnegative value of 0.1 milliseconds instead.
- **repeats:** If true, the timer will repeatedly reschedule itself until invalidated. If false, the timer will be invalidated after it fires.

The time is initialized such that, when added to a run loop, it will fire at date and then, if repeats is true, every seconds after that.

See also:

- 32.69.4 Constructor(fireDate as date, timeInterval as Double, repeats as boolean, runloop as NSRunLoopMBS, runloopMode as string)

- 32.69.5 Constructor(timeInterval as Double, repeats as boolean)
32.69.4 Constructor(fireDate as date, timeInterval as Double, repeats as boolean, runloop as NSRunLoopMBS, runloopMode as string)

Function: Initializes a new NSTimer.
Notes:

fireDate: The time at which the timer should first fire.

timeInterval: For a repeating timer, this parameter contains the number of seconds between firings of the timer. If seconds is less than or equal to 0.0, this method chooses the nonnegative value of 0.1 milliseconds instead.
repeats: If true, the timer will repeatedly reschedule itself until invalidated. If false, the timer will be invalidated after it fires.

The time is initialized such that, when added to a run loop, it will fire at date and then, if repeats is true, every seconds after that.

Schedules the timer to run on the given runloop in the given mode.
See also:

- 32.69.3 Constructor(fireDate as date, timeInterval as Double, repeats as boolean) 5972
- 32.69.5 Constructor(timeInterval as Double, repeats as boolean) 5973

32.69.5 Constructor(timeInterval as Double, repeats as boolean)

Function: Creates and returns a new NSTimer object and schedules it on the current run loop in the default mode.
Example:

dim n as new NSTimerMBS(5, true)
MsgBox str(n.timeInterval)

Notes:

timeInterval: The number of seconds between firings of the timer. If seconds is less than or equal to 0.0, this method chooses the nonnegative value of 0.1 milliseconds instead.
repeats: If true, the timer will repeatedly reschedule itself until invalidated. If false, the timer will be invalidated after it fires.

After seconds seconds have elapsed, the timer fires, calling the Action event.
See also:
32.69.3 Constructor(fireDate as date, timeInterval as Double, repeats as boolean)

32.69.4 Constructor(fireDate as date, timeInterval as Double, repeats as boolean, runloop as NSRunLoopMBS, runloopMode as string)

32.69.6 fire

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Causes the receiver’s message to be sent to its target. **Notes:** You can use this method to fire a repeating timer without interrupting its regular firing schedule. If the timer is non-repeating, it is automatically invalidated after firing, even if its scheduled fire date has not arrived.

32.69.7 invalidate

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Stops the receiver from ever firing again and requests its removal from its run loop. **Example:**

```plaintext
dim n as new NSTimerMBS(5, true)
// later
n.invalidate
```

**Notes:**
The destructor calls invalidate automatically for you.

This method is the only way to remove a timer from an NSRunLoop object. The NSRunLoop object removes and releases the timer, either just before the invalidate method returns or at some later point.

You must send this message from the thread on which the timer was installed. If you send this message from another thread, the input source associated with the timer may not be removed from its run loop, which could prevent the thread from exiting properly.

32.69.8 isValid as boolean

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value that indicates whether the receiver is currently valid. **Example:**
dim n as new NSTimerMBS(5, true)
MsgBox str(n.isValid)

Notes: True if the receiver is still capable of firing or false if the timer has been invalidated and is no longer capable of firing.

32.69.9 `timeInterval as Double`

Function: The receiver’s time interval.
Example:
`dim n as new NSTimerMBS(5, true)
MsgBox str(n.timeInterval)`

Notes: The receiver’s time interval. If the receiver is a non-repeating timer, returns 0 (even if a time interval was set).

32.69.10 `Timer(t as timer) as NSTimerMBS`

Function: Creates a NSTimerMBS object referencing the given timer object.
Example:
`dim n as NSTimerMBS = NSTimerMBS.timer(timer1)
n.tolerance = 0.1`

Notes:
Only for Cocoa 32bit currently.
Works fine in Real Studio 2012 and Xojo 2014r1 in Cocoa target.

32.69.11 Properties

32.69.12 Handle as Integer

Function: The internal reference to the NSTimer object.
Example:

```vba
dim n as new NSTimerMBS(5, true)
MsgBox str(n.Handle)
```

Notes: (Read and Write property)

### 32.69.13 fireDate as date


**Function:** The date at which the receiver will fire.

**Example:**

```vba
dim d as new date
d.hour = d.hour + 1 // start in one hour

dim n as new NSTimerMBS(d, 5, true)
MsgBox n.fireDate.ShortDate+" "+n.fireDate.ShortTime
```

Notes:

The date at which the receiver will fire. If the timer is no longer valid, this method returns the last date at which the timer fired.

Use the isValid method to verify that the timer is valid.

You typically use this method to adjust the firing time of a repeating timer. Although resetting a timer’s next firing time is a relatively expensive operation, it may be more efficient in some situations. For example, you could use it in situations where you want to repeat an action multiple times in the future, but at irregular time intervals. Adjusting the firing time of a single timer would likely incur less expense than creating multiple timer objects, scheduling each one on a run loop, and then destroying them.

You should not call this method on a timer that has been invalidated, which includes non-repeating timers that have already fired. You could potentially call this method on a non-repeating timer that had not yet fired, although you should always do so from the thread to which the timer is attached to avoid potential race conditions.

(Read and Write computed property)
32.69.14  tag as Variant

Function: A value you can use in your app however you like.
Example:

dim n as new NSTimerMBS(5, true)
n.tag = window1 // some value you may later use

Notes: (Read and Write computed property)

32.69.15  tolerance as Double

Function: The tolerance for this timer.
Notes:
Requires Mac OS X 10.9.

Setting a tolerance for a timer allows it to fire later than the scheduled fire date, improving the ability of
the system to optimize for increased power savings and responsiveness. The timer may fire at any time
between its scheduled fire date and the scheduled fire date plus the tolerance. The timer will not fire before
the scheduled fire date. For repeating timers, the next fire date is calculated from the original fire date
regardless of tolerance applied at individual fire times, to avoid drift. The default value is zero, which means
no additional tolerance is applied. The system reserves the right to apply a small amount of tolerance to
certain timers regardless of the value of this property.

As the user of the timer, you will have the best idea of what an appropriate tolerance for a timer may be.
A general rule of thumb, though, is to set the tolerance to at least 10% of the interval, for a repeating
timer. Even a small amount of tolerance will have a significant positive impact on the power usage of your
application. The system may put a maximum value of the tolerance.
(Read and Write computed property)

32.69.16  Events

32.69.17  Action

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The event called when the timer fires.
32.70 class NSTimeZoneMBS

32.70.1 class NSTimeZoneMBS

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: NSTimeZone is an abstract class that defines the behavior of time zone objects.

Notes:
Time zone objects represent geopolitical regions. Consequently, these objects have names for these regions. Time zone objects also represent a temporal offset, either plus or minus, from Greenwich Mean Time (GMT) and an abbreviation (such as PST for Pacific Standard Time).

NSTimeZone provides several class methods to get time zone objects: timeZoneWithName, timeZoneWithAbbreviation, and timeZoneForSecondsFromGMT. The class also permits you to set the default time zone within your application (setDefaultTimeZone). You can access this default time zone at any time with the defaultTimeZone class method, and with the localTimeZone class method, you can get a relative time zone object that decodes itself to become the default time zone for any locale in which it finds itself.

Cocoa does not provide any API to change the time zone of the computer, or of other applications.

Some NSCalendarDate methods return date objects that are automatically bound to time zone objects. These date objects use the functionality of NSTimeZone to adjust dates for the proper locale. Unless you specify otherwise, objects returned from NSCalendarDate are bound to the default time zone for the current locale.

Note that, strictly, time zone database entries such as "America/Los_Angeles" are IDs not names. An example of a time zone name is "Pacific Daylight Time". Although many NSTimeZone method names include the word "name", they refer to IDs.

32.70.2 Methods

32.70.3 abbreviationDictionary as Dictionary

MBS MacBase Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a dictionary holding the mappings of time zone abbreviations to time zone names.

Notes:
Note that more than one time zone may have the same abbreviation for example, US/Pacific and Canada/Pacific both use the abbreviation "PST." In these cases, abbreviationDictionary chooses a single name to map the abbreviation to.
(Read and Write computed property)
32.70. **CLASS NSTIMEZONEMBS**

32.70.4 **Constructor**


See also:

- 32.70.5 Constructor(name as string)

32.70.5 **Constructor(name as string)**

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a time zone initialized with a given ID.

**Example:**

```dim t as NSTimeZoneMBS = new NSTimeZoneMBS("Europe/Berlin") MsgBox t.name```

**Notes:**

If name is a known ID, this method calls initWithName:data: with the appropriate data object.

In Mac OS X v10.4 and earlier providing nil for the parameter would have caused a crash. In Mac OS X v10.5 and later, this now raises an invalid argument exception.

See also:

- 32.70.4 Constructor

32.70.6 **copy as NSTimeZoneMBS**

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy of the timezone object.

**Example:**

```dim t as NSTimeZoneMBS = NSTimeZoneMBS.systemTimeZone
dim c as NSTimeZoneMBS = t.copy```

MsgBox c.name

32.70.7 **defaultTimeZone as NSTimeZoneMBS**

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the default time zone for the current application.
Example:
MsgBox NSTimeZoneMBS.defaultTimeZone.name

Notes:
The default time zone for the current application. If no default time zone has been set, this method invokes systemTimeZone and returns the system time zone.

Discussion
The default time zone is the one that the application is running with, which you can change (so you can make the application run as if it were in a different time zone).

If you get the default time zone and hold onto the returned object, it does not change if a subsequent invocation of setDefaultTimeZone changes the default time zone you still have the specific time zone you originally got. Contrast this behavior with the object returned by localTimeZone.

32.70.8 isEqualToTimeZone(timeZone as NSTimeZoneMBS) as boolean

MBS MacBase Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a Boolean value that indicates whether the receiver has the same name and data as another given time zone.
Example:
if NSTimeZoneMBS.systemTimeZone isEqualToTimeZone(NSTimeZoneMBS.localTimeZone) then
    MsgBox "equal"
else
    MsgBox "not equal"
end if

Notes:
TimeZone: The time zone to compare with the receiver.
Returns true if TimeZone and the receiver have the same name and data, otherwise false.

32.70.9 knownTimeZoneNames as string()

MBS MacBase Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns an array of strings listing the IDs of all the time zones known to the system.
Example:
32.70. **localTimeZone as NSTimeZoneMBS**

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an object that forwards all messages to the default time zone for the current application.  
**Example:**

_msgsBox NSTimeZoneMBS.localTimeZone.name_

**Notes:**  
An object that forwards all messages to the default time zone for the current application.

**Discussion**

The local time zone represents the current state of the default time zone at all times. If you get the default time zone (using defaultTimeZone) and hold onto the returned object, it does not change if a subsequent invocation of setDefaultTimeZone changes the default time zone; you still have the specific time zone you originally got. The local time zone adds a level of indirection, it acts as if it were the current default time zone whenever you invoke a method on it.

32.70.11 **Print**

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Writes the time zone to debug output.  
**Example:**

_NSTimeZoneMBS.localTimeZone.print_

**Notes:** This may help for debugging and you see output in console app.

32.70.12 **systemTimeZone as NSTimeZoneMBS**

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the time zone currently used by the system.  
**Example:**

_MsgBox NSTimeZoneMBS.systemTimeZone.name_
Notes:
The time zone currently used by the system. If the current time zone cannot be determined, returns the GMT time zone.

Special Considerations
If you get the system time zone, it is cached by the application and does not change if the user subsequently changes the system time zone. The next time you invoke systemTimeZone, you get back the same time zone you originally got. You have to invoke resetSystemTimeZone to clear the cached object.

32.70.13  timeZoneForSecondsFromGMT(seconds as Integer) as NSTimeZoneMBS

MBS MacBase Plugin, Plugin Version: 17.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creates time zone object based on a delta from GMT.
Notes: Time zones created with this never have daylight savings and the offset is constant no matter the date; the name and abbreviation do NOT follow the POSIX convention (of minutes-west).

32.70.14  timeZoneWithName(name as string) as NSTimeZoneMBS

MBS MacBase Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the time zone object identified by a given ID.
Example:

```dim t as NSTimeZoneMBS = NSTimeZoneMBS.timeZoneWithName("Europe/Berlin")
MsgBox t.name
```

Notes:
Name: The ID for the time zone.

Returns the time zone in the information directory with a name matching name.
Returns nil if there is no match for the name.
32.70. **CLASS NSTIMEZONEMBS**

### 32.70.15 Properties

#### 32.70.16 abbreviation as string

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the abbreviation for the receiver.  
**Example:**

MsgBox NSTimeZoneMBS.localTimeZone.Abbreviation

**Notes:**

The abbreviation for the receiver, such as "EDT" (Eastern Daylight Time). Invokes abbreviationForDate with the current date as the argument.  
(Read only property)

#### 32.70.17 DaylightSavingTimeOffset as Double

MBS MacBase Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the current daylight saving time offset of the receiver.  
**Example:**

MsgBox str(NSTimeZoneMBS.localTimeZone.DaylightSavingTimeOffset)

**Notes:**

Available in OS X v10.5 and later.  
(Read only property)

#### 32.70.18 description as string

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the description of the receiver.  
**Example:**

MsgBox NSTimeZoneMBS.localTimeZone.Description

**Notes:**

The description of the receiver, including the name, abbreviation, offset from GMT, and whether or not daylight savings time is currently in effect.
32.70.19 Handle as Integer

**Notes:** (Read only property)

32.70.20 isDaylightSavingTime as Boolean

MBS MacBase Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value that indicates whether the receiver is currently using daylight saving time.  
**Example:**

```
MsgBox str(NSTimeZoneMBS.localTimeZone.isDaylightSavingTime)
```

**Notes:**

Returns true if the receiver is currently using daylight savings time, otherwise false.  
(Read only property)

32.70.21 name as string

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the geopolitical region ID that identifies the receiver.  
**Example:**

```
MsgBox NSTimeZoneMBS.localTimeZone.Name
```

**Notes:** (Read only property)

32.70.22 SecondsFromGMT as Double

MBS MacBase Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the current difference in seconds between the receiver and Greenwich Mean Time.  
**Example:**
32.70. CLASS NSTIMEZONEMBS

MsgBox str(NSTimeZoneMBS.localTimeZone.SecondsFromGMT)

Notes:
The current difference in seconds between the receiver and Greenwich Mean Time.
(Read only property)
CHAPTER 32. COCOA

32.71 class NSTokenFieldMBS

32.71.1 class NSTokenFieldMBS


Function: NSTokenField is a subclass of NSTextField that provides tokenized editing similar to the address field in the Mail application.

Notes:
NSTokenField uses an NSTokenFieldCell to implement much of the control’s functionality. NSTokenField provides cover methods for most methods of NSTokenFieldCell, which invoke the corresponding cell method.

In MBS Plugin the objects must be strings or numbers. With plugin version 12.5, you can also use normal Real Studio objects.

In OS X v10.4, NSTokenField trims whitespace around tokens but it does not trim whitespace in OS X versions 10.5.0 and 10.5.1. In OS X v10.5.2, you get whitespace-trimming behavior by either linking against the v10.4 binary or linking against the v10.5 binary and not implementing the representedObjectForEditingString event. If you do not want the whitespace-trimming behavior, link against the v10.5 binary and implement this method, returning the editing string if you have no represented object.

Please note: Due to the way the plugin is implemented the Action, textShouldEndEditing and textShouldBeginEditing events do nothing, so please use tokenFieldAction, tokenFieldTextShouldEndEditing and tokenFieldTextShouldBeginEditing.

Subclass of the NSTextFieldMBS class.

32.71.2 Methods

32.71.3 Constructor


Function: Creates a new control with size 100/100 and position 0/0

Example:

```dim t as new NSTokenFieldMBS```

Notes: On success the handle property is not zero.
See also:

- 32.71.4 Constructor(Handle as Integer) 5987
- 32.71.5 Constructor(left as Double, top as Double, width as Double, height as Double) 5987
32.71. CLASS NSTOKENFIELDMBS

32.71.4 Constructor(Handle as Integer)


Function: Creates an object based on the given NSControl handle.

Example:

```vbnet
dim t as new NSTokenFieldMBS(0, 0, 100, 100)
dim v as new NSTokenFieldMBS(t.handle)
MsgBox str(v.Bounds.Width)+” x ”+str(v.Bounds.Height)
```

Notes: The handle is casted to a NSControl and the plugin retains this handle.
See also:

- 32.71.3 Constructor 5986

- 32.71.5 Constructor(left as Double, top as Double, width as Double, height as Double) 5987

32.71.5 Constructor(left as Double, top as Double, width as Double, height as Double)


Function: Creates a new control with the given size and position.

Example:

```vbnet
dim x as new NSTokenFieldMBS(0, 0, 100, 20)
```

Notes: On success the handle property is not zero.
See also:

- 32.71.3 Constructor 5986

- 32.71.4 Constructor(Handle as Integer) 5987

32.71.6 defaultCompletionDelay as Double


Function: Returns the default completion delay.

Notes: The default completion delay is 0.
32.71.7  defaultTokenizingCharacterSet as NSCharacterSetMBS

Function: Returns the default tokenizing character set.
Notes: The default tokenizing character set is ",".

32.71.8  objects as Variant()

Function: Queries list of represented objects.

32.71.9  setObjects(objects() as Variant)

Function: Sets current objects.

32.71.10  Properties

32.71.11  completionDelay as Double

Function: The completion delay.
Notes: (Read and Write computed property)

32.71.12  tokenizingCharacterSet as NSCharacterSetMBS

Function: The tokenizing character set.
Notes: (Read and Write computed property)

32.71.13  tokenStyle as Integer

Function: The token style.
Notes: (Read and Write computed property)
32.71. CLASS NSTOKENFIELDMBS

32.71.14 Events

32.71.15 completionsForSubstring(substring as string, tokenIndex as Integer, 
byref selectedIndex as Integer) as Variant()

Function: Allows the delegate to provide an array of appropriate completions for the contents of the 
receiver.
Notes:
substring: The partial string that is to be completed.
tokenIndex: The index of the token being edited.
selectedIndex: Optionally, you can return by-reference an index into the returned array that specifies which 
of the completions should be initially selected. If none are to be selected, return by reference -1.

Returns an array of strings that are possible completions.
If the delegate does not implement this method, no completions are provided.

32.71.16 displayStringForRepresentedObject(representedObject as Variant) as 
string

Function: Allows the delegate to provide a string to be displayed as a proxy for the given represented 
object.
Notes:
representedObject: A represented object of the token field.

Returns the string to be used as a proxy for representedObject. If you return nil or do not implement this 
method, then representedObject is displayed as the string.

32.71.17 editingStringForRepresentedObject(representedObject as Variant) as 
string

Function: Allows the delegate to provide a string to be edited as a proxy for a represented object.
Notes:
representedObject: A represented object of the token field.

Returns a string that’s an editable proxy of the represented object, or nil if the token should not be editable.
CHAPTER 32. COCOA

32.71.18 hasMenuForRepresentedObject(representedObject as Variant) as boolean

Function: Allows the delegate to specify whether the given represented object provides a menu.
Notes:

representedObject: A represented object of the token field.

Returns true if the represented object has a menu, false otherwise.
By default tokens in a token field have no menus.

32.71.19 menuForRepresentedObject(representedObject as Variant) as NSMenuMBS

Function: Allows the delegate to provide a menu for the specified represented object.
Notes:

representedObject: A represented object of the token field.

Returns the menu associated with the represented object.
By default tokens in a token field do not return menus.

32.71.20 readFromPasteboard(pboard as NSPasteboardMBS) as Variant()

Function: Allows the delegate to return an array of objects representing the data read from the specified pasteboard.
Notes:

pboard: The pasteboard from which to read the represented objects.

Returns an array of represented objects created from the pasteboard data.

32.71.21 representedObjectForEditingString(editingString as string) as Variant

Function: Allows the delegate to provide a represented object for the given editing string.
Notes:

editingString: The edited string representation of a represented object.
Returns a represented object that is displayed rather than the editing string.

Note: In OS X v10.4, NSTokenField trims whitespace around tokens but it does not trim whitespace in OS X versions 10.5.0 and 10.5.1. In OS X v10.5.2, you get whitespace-trimming behavior by either linking against the v10.4 binary or linking against the v10.5 binary and not implementing the this method. If you do not want the whitespace-trimming behavior, link against the v10.5 binary and implement this method, returning the editing string if you have no represented object.

### 32.71.22 shouldAddObjects(tokens() as Variant, index as Integer) as Variant()

**Function:** Allows to validate the tokens to be added to the receiver at a particular location.  
**Notes:**

- tokens: An array of tokens to be inserted in the receiver at index.  
- index: The index of the receiver in which the array of tokens to be validated (tokens) will be inserted.

Returns an array of validated tokens.

The event can return the array unchanged or return a modified array of tokens. To reject the add completely, return an empty array. Returning nil causes an error.

### 32.71.23 styleForRepresentedObject(representedObject as Variant) as Integer

**Function:** Allows the delegate to return the token style for editing the specified represented object.  
**Notes:**

- representedObject: A represented object of the token field.

Returns the style that should be used to display the representedObject. Possible values are shown in NSTokenStyle Values.

If the event implements this method and returns an NSTokenStyle that differs from the style set by setTokenStyle:, the value the event returns is preferred.

If you don’t implement this method, the token field’s tokenStyle is used.
32.71.24  **tokenFieldAction**

**Function:** The control’s action was triggered.
**Notes:** For a button if it was pressed.

32.71.25  **tokenFieldTextShouldBeginEditing(fieldEditor as NSTextMBS) as boolean**

**Function:** The event called to decide whether text editing should be allowed.
**Notes:** Return true to allow text editing.

32.71.26  **tokenFieldTextShouldEndEditing(fieldEditor as NSTextMBS) as boolean**

**Function:** The event called to decide whether ending text editing should be allowed.
**Notes:** Return true to allow text editing.

32.71.27  **writeRepresentedObjects(objects() as Variant, pboard as NSPasteboardMBS) as boolean**

**Function:** Sent so the delegate can write represented objects to the pasteboard corresponding to a given array of display strings.
**Notes:**
- objects: An array of represented objects associated with the token field.
- pboard: The pasteboard to which to write the represented objects.

Return true if you writes the represented objects to the pasteboard, false otherwise. If false, the token field writes the display strings to the NSStringPboardType pasteboard.

32.71.28  **Constants**

32.71.29  **NSUserDefaultsTokenStyle = 0**

MBS MacControls Plugin, Plugin Version: 12.5. **Function:** One of the token styles.
**Notes:**
Style best used for keyword type tokens. Available in OS X v10.4 and later.

32.71.30  **NSPlainTextTokenType** = 1

MBS MacControls Plugin, Plugin Version: 12.5. **Function:** One of the token styles. **Notes:**
Style to use for data you want represented as plain-text and without any token background. Available in OS X v10.4 and later.

32.71.31  **NSRoundedTokenType** = 2

MBS MacControls Plugin, Plugin Version: 12.5. **Function:** One of the token styles. **Notes:**
Style best used for address type tokens. Available in OS X v10.4 and later.
CHAPTER 32. COCOA

32.72 class NSToolbarItemGroupMBS

32.72.1 class NSToolbarItemGroupMBS

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: NSToolbarItemGroup is a subclass of NSToolbarItem which contains subitems.
Notes:
The views and labels of the subitems are used, but the parent’s attributes take precedence.
Subclass of the NSToolbarItemMBS class.

32.72.2 Methods

32.72.3 Constructor(itemIdentifier as string)

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The constructor.
Notes:
itemIdentifier: The identifier for the receiver. itemIdentifier is never seen by users and should not be localized.
The identifier is used by the toolbar and its delegate to identify the kind of the toolbar item.

32.72.4 SetSubItems(items() as NSToolbarItemMBS)

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Sets the subitems for the receiver.
Notes:
subitems: An array of instances of NSToolbarItem objects that form the subitems for the receiver.
You should call this method to set the subitems before returning the item to the toolbar. NSToolbarItemGroup objects cannot contain other NSToolbarItemGroup objects as subitems.

32.72.5 subitems as NSToolbarItemMBS()

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Returns the subitems for the receiver.
Notes: By default, an NSToolbarItemGroup instance has an empty array of subitems.
class NSToolbarItemMBS

32.73.1 class NSToolbarItemMBS

**Function:** The class for Cocoa toolbar items.
**Notes:** Each item in an NSToolbar is an instance of NSToolbarItem.

32.73.2 Methods

32.73.3 Constructor(itemIdentifier as string)

**Function:** The constructor.
**Notes:**
- `itemIdentifier`: The identifier for the receiver. `itemIdentifier` is never seen by users and should not be localized.

The identifier is used by the toolbar and its delegate to identify the kind of the toolbar item.

32.73.4 NSToolbarCustomizeToolbarItemIdentifier as string

**Function:** One of the standard toolbar item identifiers.
**Notes:**
The Customize item. Shows the customization palette.

Deprecated. In OS X v10.7 and later the customization icon has been removed from the toolbar and customization palettes. This constant is ignored.

32.73.5 NSToolbarFlexibleSpaceItemIdentifier as string

**Function:** One of the standard toolbar item identifiers.
**Notes:** The Flexible Space item.
32.73.6 NSToolbarPrintItemIdentifier as string

**Function:** One of the standard toolbar item identifiers.  
**Notes:** The Print item. Sends printDocument to firstResponder, but you can change this in toolbarWillAddItem if you need to do so.

32.73.7 NSToolbarSeparatorItemIdentifier as string

**Function:** One of the standard toolbar item identifiers.  
**Notes:** The Separator item.

32.73.8 NSToolbarShowColorsItemIdentifier as string

**Function:** One of the standard toolbar item identifiers.  
**Notes:** The Colors item. Shows the color panel.

32.73.9 NSToolbarShowFontsItemIdentifier as string

**Function:** One of the standard toolbar item identifiers.  
**Notes:** The Fonts item. Shows the font panel.

32.73.10 NSToolbarSpaceItemIdentifier as string

**Function:** One of the standard toolbar item identifiers.  
**Notes:** The Space item.

32.73.11 validate

**Function:** This method is called by the receiver’s toolbar during validation.  
**Notes:** You may invoke this method directly if you have disabled automatic validation for an item typically you do this for performance reasons if your validation code is slow.
32.73.12 Properties

32.73.13 allowsDuplicatesInToolbar as boolean


**Function:** Returns a Boolean value that indicates whether the receiver can be represented in the toolbar at more than one position.

**Notes:**

Returns true to allow dragging the receiver into the toolbar at more than one position, otherwise false.

You use this method by overriding it in a subclass to always return true; typically, you wouldn’t call it. By default, if an item with the same identifier is already in the toolbar, dragging it in again will effectively move it to the new position.

(Read only property)

32.73.14 autovalidates as boolean


**Function:** Whether this item auto validates.

**Notes:**

By default NSToolbar automatically invokes the receiver’s validate method on a regular basis. If your validate method is time consuming, you can disable auto validation on a per toolbar item basis.

(Read and Write property)

32.73.15 ClassName as String

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** The name of this NSWindow class.

**Notes:** (Read only property)

32.73.16 ClassPath as String

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** The path of this NSView class.

**Notes:** Useful for debugging to know what super classes the window has.

(Read only property)
### 32.73.17 Enabled as boolean

**Function:** A Boolean value that indicates whether the receiver is enabled.
**Notes:**
For a view item, this method calls isEnabled/setEnabled on the view if it responds and returns the result.
(Read and Write property)

### 32.73.18 Handle as Integer

**Function:** The internal reference to the NSToolbarItem object.
**Notes:** (Read and Write property)

### 32.73.19 image as NSImageMBS

**Function:** The image for this toolbar item.
**Notes:**
For a custom view item (one whose view has already been set), this method calls setImage on the view if it responds. If image contains multiple representations, NSToolbarItem chooses the most appropriately sized representation when displaying.
(Read and Write property)

### 32.73.20 itemIdentifier as string

**Function:** The receiver’s identifier.
**Notes:**
Returns the receiver’s identifier, which was provided in the initializer.
(Read only property)

### 32.73.21 label as string

**Function:** The label, which normally appears in the toolbar and in the overflow menu.
**Notes:**
32.73. **CLASS NSTOOLBARTITEMMBS**

The length of the label should be appropriate and not too long. The label may be empty.
(Read and Write property)

### 32.73.22 MaxSize as NSSizeMBS


**Function:** The maximum size.

**Notes:** (Read and Write property)

### 32.73.23 menuFormRepresentation as NSMenuItemMBS


**Function:** The menu form representation.

**Notes:**
By default, this method returns nil, even though there is a default menu form representation.
(Read and Write property)

### 32.73.24 MinSize as NSSizeMBS


**Function:** The minimum size.

**Notes:** (Read and Write property)

### 32.73.25 paletteLabel as string


**Function:** The label that appears when the receiver is in the customization palette.

**Notes:**
An item must have a palette label if the customization palette is to be used, and for most items it is reasonable to set paletteLabel to be the same value as label. One reason for paletteLabel to be different from label would be if it's more descriptive; another might be if there is no label.
(Read and Write property)

### 32.73.26 tag as Integer


**Function:** The tag value.
Notes:
You can use the tag for your own custom purpose.
(Read and Write property)

32.73.27 toolbar as NSToolbarMBS

Function: Returns the toolbar that is using the receiver.
Notes: (Read only property)

32.73.28 toolTip as string

Function: The tooltip to be used when the receiver is displayed in the toolbar.
Notes: (Read and Write property)

32.73.29 view as NSViewMBS

Function: The custom view for this item.
Notes:
view: The view for the receiver. The view and all of its contents must conform to the NSCoding protocol if
the toolbar supports customization.

Note that many of the set/get methods are implemented by calls forwarded to view, if it responds to it.
(Read and Write property)

32.73.30 visibilityPriority as Integer

Function: The visibility priority.
Notes: (Read and Write property)
32.73. Constants

32.73.32  **NSToolbarItemVisibilityPriorityHigh** = 1000

MBS MacControls Plugin, Plugin Version: 11.3. **Function:** One of the visibility priority constants.  
**Notes:**
When a toolbar does not have enough space to fit all its items, it must push some items into the overflow menu. These values allow you to suggest a priority for a toolbar item.

Items with this priority are less inclined to be pushed to the overflow menu.

32.73.33  **NSToolbarItemVisibilityPriorityLow** = -1000

MBS MacControls Plugin, Plugin Version: 11.3. **Function:** One of the visibility priority constants.  
**Notes:**
When a toolbar does not have enough space to fit all its items, it must push some items into the overflow menu. These values allow you to suggest a priority for a toolbar item.

Items with this priority will be the first items to be pushed to the overflow menu.

32.73.34  **NSToolbarItemVisibilityPriorityStandard** = 0

MBS MacControls Plugin, Plugin Version: 11.3. **Function:** One of the visibility priority constants.  
**Notes:**
When a toolbar does not have enough space to fit all its items, it must push some items into the overflow menu. These values allow you to suggest a priority for a toolbar item.

The default visibility priority.

32.73.35  **NSToolbarItemVisibilityPriorityUser** = 2000

MBS MacControls Plugin, Plugin Version: 11.3. **Function:** One of the visibility priority constants.  
**Notes:**
When a toolbar does not have enough space to fit all its items, it must push some items into the overflow menu. These values allow you to suggest a priority for a toolbar item.
Items with this priority are the last to be pushed to the overflow menu. Only the user should set items to this priority.
32.74. CLASS NSTOOLBARMBS

32.74 class NSToolbarMBS

32.74.1 class NSToolbarMBS

Function: NSToolbar and NSToolbarItem provide the mechanism for a titled window to display a toolbar just below its title bar.

32.74.2 Methods

32.74.3 Constructor(Identifier as string)

Function: The constructor.
Notes:
Initializes a newly allocated toolbar with the specified identifier.
identifier is never seen by users and should not be localized.

32.74.4 insertItemWithItemIdentifier(identifier as string, atIndex as Integer)

Function: Inserts the specified item at the specified index.
Notes:
Identifier: The identifier of the item to insert.
index: The index at which to insert the item.
If the toolbar needs a new instance, it will get it from itemForItemIdentifier. Typically, you should not call this method; you should let the user reconfigure the toolbar.

32.74.5 items as NSToolbarItemMBS()

Function: Returns the receiver’s current items, in order.
32.74.6 NSToolbarDidRemoveItemNotification as string

Function: One of the notification identifiers.
Notes: Posted after an item is removed from a toolbar. The notification item is the NSToolbar object that had an item removed from it. The userInfo dictionary contains the following information: item: The NSToolbarItem object that was removed.

32.74.7 NSToolbarWillAddItemNotification as string

Function: One of the notification identifiers.
Notes: Posted before a new item is added to the toolbar. The notification item is the NSToolbar object having an item added to it. The userInfo dictionary contains the following information: item: The NSToolbarItem object being added.

32.74.8 removeItemAtIndex(index as Integer)

Function: Removes the specified item.
Notes:
Typically, you should not call this method; you should let the user reconfigure the toolbar.

Index is zero based.

32.74.9 runCustomizationPalette

Function: Runs the receiver’s customization palette.

32.74.10 validateVisibleItems

Function: Called on window updates to validate the visible items.
Notes:
You typically use this method by overriding it in a subclass. The default implementation of this method iterates through the list of visible items, sending each a validate message. Override it and call super if you...
want to know when this method is called.

In Mac OS X v 10.6 and later toolbars no longer automatically validate for some events, including: NSLeft-
MouseDragged, NSRightMouseDragged, NSOtherMouseDragged, NSMouseEntered, NSMouseExited, NSS-
crollWheel, NSCursorUpdate, NSKeyDown. In addition, validation for NSKeyUp and NSFlagsChanged
events is deferred with the timer restarting for every new deferrable event. So a sequence of key events will
not trigger any validation at all, until either a pause of .85 seconds, or an event other than NSKeyUp or
NSFlagsChanged is processed. This change was made as an optimization.

To trigger validation for a single toolbar manually, send the toolbar a validateVisibleItems message. To
trigger validation for all toolbars, invoke NSApplication’s setWindowsNeedUpdate passing true.

32.74.11 visibleItems as NSToolbarItemMBS()

Function: Returns the receiver’s currently visible items.
Notes: Items in the overflow menu are not considered visible.

32.74.12 Properties

32.74.13 allowsUserCustomization as boolean

Function: A Boolean value that indicates whether users are allowed to modify the toolbar.
Notes: True if users are allowed to modify the toolbar, false otherwise. The default is false.

If the value is false, then the Customize Toolbar menu item is disabled and other modification is disabled.
This attribute does not affect the user’s ability to show or hide the toolbar.
(Read and Write property)

32.74.14 autosavesConfiguration as boolean

Function: A Boolean value that indicates whether the receiver autosaves its configuration.
Notes: True if the receiver autosaves its configuration, otherwise false. The default is false.
When autosaving is enabled, the receiver will automatically write the toolbar settings to user defaults if the toolbar configuration changes. The toolbar’s configuration is identified in user defaults by the toolbar identifier. If there are multiple toolbars active with the same identifier, they all share the same configuration. (Read and Write property)

32.74.15 configurationDictionary as dictionary

Function: The receiver’s configuration as a dictionary.
Notes:
Set/get a dictionary containing configuration information for the toolbar.
Contains displayMode, isVisible, and a list of the item identifiers currently in the toolbar.
Do not depend on any details of the normal contents of a configuration dictionary.
(Read and Write property)

32.74.16 configurationDictionaryData as Memoryblock

Function: The receiver’s configuration as a memoryblock.
Notes:
Set/get a memoryblock containing configuration information for the toolbar.
Contains displayMode, isVisible, and a list of the item identifiers currently in the toolbar.
Do not depend on any details of the normal contents of a configuration dictionary.
you can read/write the data to preferences.
(Read and Write property)

32.74.17 customizationPaletteIsRunning as boolean

Function: Returns a Boolean value that indicates whether the receiver’s customization palette is running (in use).
Notes:
True if the receiver’s customization palette is running, otherwise false.
(Read only property)
### 32.74.18 `displayMode` as Integer

**Function:** The receiver’s display mode.  
**Notes:** (Read and Write property)

### 32.74.19 `fullScreenAccessoryView` as `NSViewMBS`

**Function:** The fullscreen mode accessory view.  
**Notes:**  
Requires Mac OS X 10.7.  
(Read and Write property)

### 32.74.20 `fullScreenAccessoryViewMaxHeight` as Double

**Function:** The fullscreen mode accessory view's maximum height.  
**Notes:**  
Requires Mac OS X 10.7.  
(Read and Write property)

### 32.74.21 `fullScreenAccessoryViewMinHeight` as Double

**Function:** The fullscreen mode accessory view’s minimum height.  
**Notes:**  
Requires Mac OS X 10.7.  
(Read and Write property)

### 32.74.22 `Handle` as Integer

**Function:** The internal reference for this object.  
**Notes:** (Read and Write property)
32.74.23 identifier as string

**Function:** Returns the receiver’s identifier.
**Notes:**
Returns the receiver’s identifier, a string used by the class to identify the kind of toolbar.

Within the application all toolbars with the same identifier are synchronized to maintain the same state, including for example, the display mode and item order. The identifier is used as the autosave name for toolbars that save their configuration.
(Read only property)

32.74.24 selectedItemIdentifier as string

**Function:** The selected item to the specified toolbar item.
**Notes:**
Typically, a toolbar will manage the selection of items automatically. This method can be used to select identifiers of custom view items, or to force a selection change. See toolbarSelectableItemIdentifiers for more details. If itemIdentifier is not recognized by the receiver, the current selected item identifier does not change.
(Read and Write property)

32.74.25 showsBaselineSeparator as boolean

**Function:** A Boolean value that indicates whether the toolbar shows the separator between the toolbar and the main window contents.
**Notes:**
True if the toolbar shows the separator between the toolbar and the main window contents, otherwise false. The default is true.
(Read and Write property)

32.74.26 sizeMode as Integer

**Function:** The size mode.
**Notes:**
If there is no icon of the given size for a toolbar item, the toolbar item creates one by scaling an icon of another size.
32.74.27 toolbarView as NSViewMBS

Function: The internal NSView used for displaying the toolbar.
Notes: Useful to query values like the bounds of the toolbar.

Works for 64-bit with 17.5 version, but returns nil in older versions.
(Read only property)

32.74.28 visible as boolean

Function: Whether the receiver is visible or hidden.
Notes: True to indicate the receiver should be made visible, false to indicate it should be hidden.
(Read and Write property)

32.74.29 Constants

32.74.30 NSToolbarDisplayModeDefault = 0

MBS MacControls Plugin, Plugin Version: 11.3. Function: One of the constants for displayMode property.
Notes: The default display mode.

32.74.31 NSToolbarDisplayModeIconAndLabel = 1

MBS MacControls Plugin, Plugin Version: 11.3. Function: One of the constants for displayMode property.
Notes: The toolbar will display icons and labels.

32.74.32 NSToolbarDisplayModeIconOnly = 2

MBS MacControls Plugin, Plugin Version: 11.3. Function: One of the constants for displayMode property.
Notes: The toolbar will display only icons.
32.74.33 NSToolbarDisplayModeLabelOnly = 3

MBS MacControls Plugin, Plugin Version: 11.3. Function: One of the constants for displayMode property. Notes: The toolbar will display only labels.

32.74.34 NSToolbarSizeModeDefault = 0

MBS MacControls Plugin, Plugin Version: 11.3. Function: One of the constants for the sizeMode property. Notes: The toolbar uses the system-defined default size, which is NSToolbarSizeModeRegular.

32.74.35 NSToolbarSizeModeRegular = 1

MBS MacControls Plugin, Plugin Version: 11.3. Function: One of the constants for the sizeMode property. Notes: The toolbar uses regular-sized controls and 32 by 32 pixel icons.

32.74.36 NSToolbarSizeModeSmall = 2

MBS MacControls Plugin, Plugin Version: 11.3. Function: One of the constants for the sizeMode property. Notes: The toolbar uses small-sized controls and 24 by 24 pixel icons.
32.75. CLASS NSUNDOMANAGERMBS

32.75. class NSUndoManagerMBS

32.75.1. class NSUndoManagerMBS

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
NSUndoManager is a general-purpose recorder of operations for undo and redo.

**Notes:**
You register an undo operation by specifying the object that’s changing (or the owner of that object), along with a method to invoke to revert its state, and the arguments for that method. When performing undo an NSUndoManager saves the operations reverted so that you can redo the undos. If used in a Cocoa Application Kit-based application, NSUndoManager groups all operations within a single cycle of the run loop, so that performing an undo reverts all changes that occurred during the cycle.

NSUndoManager is implemented as a class of the Foundation framework because executables other than applications might want to revert changes to their states. For example, you might have an interactive command-line tool with undo and redo commands, or there could be distributed object implementations that can revert operations "over the wire." However, users typically see undo and redo as application features. The Application Kit implements undo and redo in its NSTextView object and makes it easy to implement it in objects along the responder chain. This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

32.75.2. Methods

32.75.3. beginUndoGrouping

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Marks the beginning of an undo group.

**Notes:** All individual undo operations before a subsequent endUndoGrouping message are grouped together and reversed by a later undo message. By default undo groups are begun automatically at the start of the event loop, but you can begin your own undo groups with this method, and nest them within other groups.

32.75.4. canRedo as boolean

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a Boolean value that indicates whether the receiver has any actions to redo.

32.75.5. canUndo as boolean

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a Boolean value that indicates whether the receiver has any actions to undo.
Notes: The return value does not mean you can safely invoke undo or undoNestedGroupyou may have to close open undo groups first.

### 32.75.6 Constructor

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.

### 32.75.7 disableUndoRegistration

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Disables the recording of undo operations.

**Notes:** This method can be invoked multiple times by multiple clients. The enableUndoRegistration method must be invoked an equal number of times to re-enable undo registration.

### 32.75.8 enableUndoRegistration

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Enables the recording of undo operations.

**Notes:** Because undo registration is enabled by default, it is often used to balance a prior disableUndoRegistration message. Undo registration isn’t actually re-enabled until an enable message balances the last disable message in effect. Raises an NSInternalInconsistencyException if invoked while no disableUndoRegistration message is in effect.

### 32.75.9 endUndoGrouping

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Marks the end of an undo group.

**Notes:** All individual undo operations back to the matching beginUndoGrouping message are grouped together and reversed by a later undo or undoNestedGroup message. Undo groups can be nested, thus providing functionality similar to nested transactions. Raises an NSInternalInconsistencyException if there’s no beginUndoGrouping message in effect.

### 32.75.10 groupingLevel as Integer

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the number of nested undo groups (or redo groups, if Redo was invoked last) in the current event loop.
32.75. **CLASS NSUNDO MANAGER MBS**

**Notes:** An integer indicating the number of nested groups. If 0 is returned, there is no open undo or redo group.

### 32.75.11 isRedoing as boolean

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value that indicates whether the receiver is in the process of performing its redo method. **Notes:** True if the method is being performed, otherwise false.

### 32.75.12 isUndoing as boolean

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value that indicates whether the receiver is in the process of performing its undo or undoNestedGroup method. **Notes:** True if the method is being performed, otherwise false.

### 32.75.13 isUndoRegistrationEnabled as boolean

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value that indicates whether the recording of undo operations is enabled. **Notes:** True if registration is enabled; otherwise, false. Undo registration is enabled by default.

### 32.75.14 redo

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Performs the operations in the last group on the redo stack, if there are any, recording them on the undo stack as a single group. **Notes:** Raises an NSInternalInconsistencyException if the method is invoked during an undo operation.

### 32.75.15 redoActionName as string

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the name identifying the redo action. **Notes:**
The redo action name. Returns an empty string if no action name has been assigned or if there is nothing to redo.

For example, if the menu title is "Redo Delete," the string returned is "Delete."

### 32.75.16 redoMenuItemTitle as string

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the complete title of the Redo menu command, for example, "Redo Paste." **Notes:** Returns "Redo" if no action name has been assigned or an empty string if there is nothing to redo.

### 32.75.17 redoMenuTitleForUndoActionName(actionName as string) as string

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the complete, localized title of the Redo menu command for the action identified by the given name. **Notes:** Override this method if you want to customize the localization behavior. This method is invoked by redoMenuItemTitle.

Available in Mac OS X v10.0 and later.

### 32.75.18 removeAllActions

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Clears the undo and redo stacks and re-enables the receiver.

### 32.75.19 setActionName(actionName as string)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the name of the action associated with the Undo or Redo command. **Notes:** If actionName is an empty string, the action name currently associated with the menu command is removed. There is no effect if actionName is ".".
32.75. **undo**

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Closes the top-level undo group if necessary and invokes undoNestedGroup.

**Notes:** This method also invokes endUndoGrouping if the nesting level is 1. Raises an NSInternalInconsistencyException if more than one undo group is open (that is, if the last group isn’t at the top level).

32.75.21 **undoActionName as string**

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the name identifying the undo action.

**Notes:**

The undo action name. Returns an empty string if no action name has been assigned or if there is nothing to undo.

For example, if the menu title is "Undo Delete," the string returned is "Delete."

32.75.22 **undoMenuItemTitle as string**

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the complete title of the Undo menu command, for example, "Undo Paste."

**Notes:** Returns "Undo" if no action name has been assigned or "" if there is nothing to undo.

32.75.23 **undoMenuTitleForUndoActionName(actionName as string) as string**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the complete, localized title of the Undo menu command for the action identified by the given name.

**Notes:** Override this method if you want to customize the localization behavior. This method is invoked by undoMenuItemTitle.

32.75.24 **undoNestedGroup**

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Performs the undo operations in the last undo group (whether top-level or nested), recording the operations on the redo stack as a single group.

**Notes:** Raises an NSInternalInconsistencyException if any undo operations have been registered since the last enableUndoRegistration message.
32.75.25 Properties

32.75.26 Handle as Integer

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal uses reference to the NSUndoManager object.
**Notes:** (Read and Write property)

32.75.27 groupsByEvent as boolean

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value that indicates whether the receiver automatically creates undo groups around each pass of the run loop.
**Notes:**
True if the receiver automatically creates undo groups around each pass of the run loop, otherwise false. (Read and Write computed property)

32.75.28 levelsOfUndo as Integer

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the maximum number of top-level undo groups the receiver holds.
**Notes:**
An integer specifying the number of undo groups. A limit of 0 indicates no limit, so old undo groups are never dropped.

When ending an undo group results in the number of groups exceeding this limit, the oldest groups are dropped from the stack. The default is 0. (Read and Write computed property)
32.76. CLASS NSUSERDEFAULTSMBS

32.76 class NSUserDefaultsMBS

32.76.1 class NSUserDefaultsMBS

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Cocoa class to handle preferences.

**Example:**

```vbnet
dim u as NSUserDefaultsMBS = NSUserDefaultsMBS.standardUserDefaults
u.setStringValue "test", "Hello World"
MsgBox u.stringForKey("test")
```

**Notes:**

The NSUserDefaults class provides a programmatic interface for interacting with the defaults system. The defaults system allows an application to customize its behavior to match a user’s preferences. For example, you can allow users to determine what units of measurement your application displays or how often documents are automatically saved. Applications record such preferences by assigning values to a set of parameters in a user’s defaults database. The parameters are referred to as defaults since they’re commonly used to determine an application’s default state at startup or the way it acts by default.

At runtime, you use an NSUserDefaults object to read the defaults that your application uses from a user’s defaults database. NSUserDefaults caches the information to avoid having to open the user’s defaults database each time you need a default value. The synchronize method, which is automatically invoked at periodic intervals, keeps the in-memory cache in sync with a user’s defaults database.

The NSUserDefaults class provides convenience methods for accessing common types such as floats, doubles, integers, Booleans, and URLs. A default object must be a property list, that is, an instance of (or for collections a combination of instances of): NSData, NSString, NSNumber, NSDate, NSArray, or NSDictionary. If you want to store any other type of object, you should typically archive it to create an instance of NSData.

Values returned from NSUserDefaults are immutable, even if you set a mutable object as the value. For example, if you set a mutable string as the value for "MyStringDefault", the string you later retrieve using stringForKey will be immutable.

A defaults database is created automatically for each user. The NSUserDefaults class does not currently support per-host preferences. To do this, you must use the CFPrefeferencesMBS class. However, NSUserDefaults correctly reads per-host preferences, so you can safely mix CFPrefeferencesMBS code with NSUserDefaultsMBS code.

If your application supports managed environments, you can use an NSUserDefaults object to determine which preferences are managed by an administrator for the benefit of the user. Managed environments correspond to computer labs or classrooms where an administrator or teacher may want to configure the
systems in a particular way. In these situations, the teacher can establish a set of default preferences and force those preferences on users. If a preference is managed in this manner, applications should prevent users from editing that preference by disabling any appropriate controls.

TheNSUserDefaults class is thread-safe.

### 32.76.2 Methods

#### 32.76.3 `addSuiteNamed(suiteName as string)`

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Inserts the specified domain name into the receiver’s search list.  
**Example:**

```vba
dim u as NSUserDefaultsMBS = NSUserDefaultsMBS.standardUserDefaults
u.addSuiteNamed "testsuite"
```

**Notes:**

suiteName: The domain name to insert. This domain is inserted after the application domain.

The suiteName domain is similar to a bundle identifier string, but is not tied to a particular application or bundle. A suite can be used to hold preferences that are shared between multiple applications.

#### 32.76.4 `arrayForKey(key as string) as Variant()`

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the array associated with the specified key.  
**Example:**

```vba
dim u as NSUserDefaultsMBS = NSUserDefaultsMBS.standardUserDefaults
dim t(-1) as Variant
  t.Append "Hello"
  t.Append "World"

  u.setArrayValue "test", t

  dim a(-1) as Variant = u.ArrayForKey("test")

  for each v as Variant in a
    MsgBox v
  next
```
**Notes:** The array associated with the specified key, or an empty array if the key does not exist or its value is not an array.

### 32.76.5 Constructor

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new user defaults object initialized with the defaults for the current user account.

**Example:**

```vbs
dim u as new NSUserDefaultsMBS
u.setURLValue "test", "http://www.apple.de/"
MsgBox u.URLForKey("test")
```

**Notes:** This method does not put anything in the search list.

See also:

- 32.76.6 Constructor(username as string)

### 32.76.6 Constructor(username as string)

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an NSUserDefaultsMBS object initialized with the defaults for the specified user account.

**Notes:**

- username: The name of the user account.

Returns an initialized NSUserDefaultsMBS object whose argument and registration domains are already set up. If the current user does not have access to the specified user account, the object is invalid.

This method does not put anything in the search list. Invoke it only if you’ve allocated your own NSUserDefaults instance instead of using the shared one.

You do not normally use this method to initialize an instance of NSUserDefaults. Applications used by a superuser might use this method to update the defaults databases for a number of users. The user who started the application must have appropriate access (read, write, or both) to the defaults database of the new user, or this method returns nil.

See also:

- 32.76.5 Constructor
32.76.7  dictionaryRepresentation as dictionary

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a dictionary that contains a union of all key-value pairs in the domains in the search list. **Example:**

```java
dim u as NSUserDefaultsMBS = NSUserDefaultsMBS.standardUserDefaults
dim d as Dictionary = u.dictionaryRepresentation

break // "Look here in the dictionary in the debugger."
```

**Notes:**

Returns a dictionary containing the keys. The keys are names of defaults and the value corresponding to each key is a property list object as Variant.

As with variantForKey, key-value pairs in domains that are earlier in the search list take precedence. The combined result does not preserve information about which domain each entry came from.

32.76.8  NSArgumentDomain as string

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants to specify the domain. **Notes:** The domain consisting of defaults parsed from the application’s arguments. These are one or more pairs of the form -default value included in the command-line invocation of the application.

32.76.9  NSGlobalDomain as string

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants to specify the domain. **Notes:** The domain consisting of defaults meant to be seen by all applications.

32.76.10  NSRegistrationDomain as string

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants to specify the domain. **Notes:** The domain consisting of a set of temporary defaults whose values can be set by the application to ensure that searches will always be successful.
32.76. **CLASS NSUSERDEFAULTSMBS**

32.76.11  **NSUserDefaultsDidChangeNotification as string**

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The notification name for a did change notification. **Notes:** Use with the NSNotification* objects.

32.76.12  **objectIsForcedForKey(key as string) as boolean**

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value indicating whether the specified key is managed by an administrator. **Example:**

```vba
dim u as NSUserDefaultsMBS = NSUserDefaultsMBS.standardUserDefaults
MsgBox str(u.objectIsForcedForKey("test"))
```

**Notes:**

key: The key whose status you want to check.

Returns true if the value of the specified key is managed by an administrator, otherwise false.

This method assumes that the key is a preference associated with the current user and application. For managed keys, the application should disable any user interface that allows the user to modify the value of key.

Available in Mac OS X v10.2 and later. **See also:**

- 32.76.13 objectIsForcedForKey(key as string, domain as string) as boolean

32.76.13  **objectIsForcedForKey(key as string, domain as string) as boolean**

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value indicating whether the key in the specified domain is managed by an administrator. **Example:**

```vba
dim u as NSUserDefaultsMBS = NSUserDefaultsMBS.standardUserDefaults
MsgBox str(u.objectIsForcedForKey("test", u.NSGlobalDomain))
```

**Notes:**
key: The key whose status you want to check.
domain: The domain of the key.

Returns true if the key is managed by an administrator in the specified domain, otherwise false.

This method assumes that the key is a preference associated with the current user. For managed keys, the application should disable any user interface that allows the user to modify the value of key.

Available in Mac OS X v10.2 and later.

See also:

- 32.76.12 objectIsForcedForKey(key as string) as boolean

32.76.14 persistentDomainForName(domainName as string) as dictionary

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a dictionary containing the keys and values in the specified persistent domain.
Notes: Returns a dictionary containing the keys. The keys are names of defaults and the value corresponding to each key is a property list object (NSData, NSString, NSNumber, NSDate, NSArray, or NSDictionary).

32.76.15 persistentDomainNames as string()

Notes: You can get the keys and values for each domain by passing the returned domain names to the persistentDomainForName method.

32.76.16 registerDefaults(dic as dictionary)

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Adds the contents the specified dictionary to the registration domain.
Notes:
dic: The dictionary of keys and values you want to register.

If there is no registration domain, one is created using the specified dictionary, and NSRegistrationDomain is added to the end of the search list.

The contents of the registration domain are not written to disk; you need to call this method each time your application starts. You can place a plist file in the application’s Resources directory and call registerDefaults
with the contents that you read in from that file.

32.76.17 **removeObjectForKey**(defaultName as string)

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes the value of the specified default key in the standard application domain.

**Example:**

```vba
dim u as NSUserDefaultsMBS = NSUserDefaultsMBS.standardUserDefaults
u.setBoolValue("test", true)
u.removeObjectForKey "test"
MsgBox str(u.boolForKey("test")) // shows false as key does not exist
```

**Notes:**

defaultName: The key whose value you want to remove.

Removing a default has no effect on the value returned by the variantForKey method if the same key exists in a domain that precedes the standard application domain in the search list.

32.76.18 **removePersistentDomainForName**(domainName as string)

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes the contents of the specified persistent domain from the user’s defaults.

**Notes:**

domainName: The domain whose keys and values you want. This value should be equal to your application’s bundle identifier.

When a persistent domain is changed, an NSUserDefaultsDidChangeNotification is posted.

32.76.19 **removeSuiteNamed**(suiteName as string)

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes the specified domain name from the receiver’s search list.

**Example:**

```vba
dim u as NSUserDefaultsMBS = NSUserDefaultsMBS.standardUserDefaults
u.removeSuiteNamed "testsuite"
```
**Notes:** suiteName: The domain name to remove.

### 32.76.20  `removeVolatileDomainForName(domainName as string)`

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes the specified volatile domain from the user’s defaults.  
**Notes:** domainName: The volatile domain you want to remove.

### 32.76.21  `resetStandardUserDefaults`

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Synchronizes any changes made to the shared user defaults object and releases it from memory.  
**Example:**
```
NSUserDefaultsMBS.resetStandardUserDefaults
```

**Notes:** A subsequent invocation of standardUserDefaults creates a new shared user defaults object with the standard search list.

### 32.76.22  `setArrayValue(key as string, values() as Variant)`

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the value of the specified default key to the specified array.  
**Example:**
```
dim u as NSUserDefaultsMBS = NSUserDefaultsMBS.standardUserDefaults
dim t(-1) as Variant
t.Append "Hello"
t.Append "World"

u.setArrayValue "test", t

dim a(-1) as Variant = u.ArrayForKey("test")

for each v as Variant in a
    MsgBox v
next
```
32.76.23  setBoolValue(key as string, value as boolean)

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the value of the specified default key to the specified Boolean value.

**Example:**

```vba
dim u as NSUserDefaultsMBS = NSUserDefaultsMBS.standardUserDefaults
u.SetBoolValue("test", true)
MsgBox str(u.boolForKey("test"))
```

32.76.24  setDataValue(key as string, value as memoryblock)

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the value of the specified default key to the specified binary string.

**Example:**

```vba
dim u as NSUserDefaultsMBS = NSUserDefaultsMBS.standardUserDefaults
u.setDataValue("test", "Hello ")
MsgBox u.dataForKey("test") // shows no umlauts as encoding is away in binary string
```

**Notes:** setStringValue is for text with encoding and setDataValue is for strings containing binary data.

32.76.25  setDictionaryValue(key as string, value as dictionary)

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the value of the specified default key to the specified dictionary.

**Example:**

```vba
dim u as new NSUserDefaultsMBS
dim d as new Dictionary

d.Value("First")="Hello"
d.Value("Second")=1234.5678
u.setDictionaryValue "test", d

dim e as Dictionary = u.dictionaryForKey("test")
for each key as Variant in e.keys
    dim value as Variant = e.Value(key)
    MsgBox key+": "+value
next
```
32.76.26  
**setDoubleValue(key as string, value as Double)**

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the value of the specified default key to the double value.  
**Example:**

```vba
dim u as NSUserDefaultsMBS = NSUserDefaultsMBS.standardUserDefaults
u.setDoubleValue("test", 5)
MsgBox str(u.DoubleForKey("test"))
```

**Notes:** Available in Mac OS X v10.5 and later. On Mac OS X 10.4 the plugin will call setFloatValue for you to avoid an exception.

32.76.27  
**setFileValue(key as string, value as folderitem)**

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the value of the specified default key to the specified URL.  
**Example:**

```vba
dim u as NSUserDefaultsMBS = NSUserDefaultsMBS.standardUserDefaults
dim f as FolderItem = SpecialFolder.Desktop

// write
u.isFileValue "test", f

// read
MsgBox u.fileForKey("test").AbsolutePath
```

**Notes:** Available in Mac OS X v10.6 and later.

32.76.28  
**setFloatValue(key as string, value as single)**

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the value of the specified default key to the specified floating-point value.  
**Example:**

```vba
dim u as NSUserDefaultsMBS = NSUserDefaultsMBS.standardUserDefaults
u.setFloatValue("test", 5)
```
32.76. CLASS NSUSERDEFAULTSMBS

MsgBox str(u.FloatForKey("test"))

32.76.29 setIntegerValue(key as string, value as Integer)

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the value of the specified default key to the specified integer value.

**Example:**

```vba
dim u as NSUserDefaultsMBS = NSUserDefaultsMBS.standardUserDefaults
u.setIntegerValue("test", 5)
MsgBox str(u.integerForKey("test"))
```

32.76.30 setPersistentDomain(domain as dictionary, domainName as string)

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the dictionary for the specified persistent domain.

**Notes:**

- **domain:** The dictionary of keys and values you want to assign to the domain.
- **domainName:** The domain whose keys and values you want to set. This value should be equal to your application’s bundle identifier.

When a persistent domain is changed, an NSUserDefaultsDidChangeNotification is posted.

32.76.31 setStringArrayValue(key as string, values() as string)

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the value of the specified default key to the specified string array.

**Example:**

```vba
dim u as NSUserDefaultsMBS = NSUserDefaultsMBS.standardUserDefaults
dim t(-1) as string = array("Hello","World")
```

```vba
u.setStringArrayValue "test", t
```

```vba
dim a(-1) as string = u.stringArrayForKey("test")
```

```vba
MsgBox Join(a) // shows "Hello World"
```
32.76.32  setStringValue(key as string, value as string)

Example:

```
dim u as NSUserDefaultsMBS = NSUserDefaultsMBS.standardUserDefaults
u.setStringValue "test", "Hello "
MsgBox u.stringForKey("test")
```

Notes: setStringValue is for text with encoding and setDataValue is for strings containing binary data.

32.76.33  setURLValue(key as string, value as string)

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  Function: Sets the value of the specified default key to the specified URL.
Example:

```
dim u as NSUserDefaultsMBS = NSUserDefaultsMBS.standardUserDefaults
u.setURLValue "test", "http://www.apple.de/"
MsgBox u.URLForKey("test")
```

Notes: Available in Mac OS X v10.6 and later.

32.76.34  setVariantValue(key as string, value as Variant)

Example:

```
dim u as new NSUserDefaultsMBS
u.setVariantValue "test", "Hello World"
MsgBox u.variantForKey("test")
```

Notes:

The value parameter can be only property list objects: String, Number, Date, an Array of variant, or Dictionary. For Arrays and Dictionaries, their contents must be property list objects.
Setting a default has no effect on the value returned by the objectForKey: method if the same key exists in a domain that precedes the application domain in the search list.

### 32.76.35 setVolatileDomain(domain as dictionary, domainName as string)

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the dictionary for the specified volatile domain.  
**Notes:**

- **domain:** The dictionary of keys and values you want to assign to the domain.
- **domainName:** The domain whose keys and values you want to set.

This method raises an NSInvalidArgumentException if a volatile domain with the specified name already exists.

### 32.76.36 standardUserDefaults as NSUserDefaultsMBS

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the shared defaults object.  
**Example:**

```python
dim u as NSUserDefaultsMBS = NSUserDefaultsMBS.standardUserDefaults
```

**Notes:**

If the shared defaults object does not exist yet, it is created with a search list containing the names of the following domains, in this order:

- **NSArgumentDomain,** consisting of defaults parsed from the application’s arguments. A domain identified by the application’s bundle identifier
- **NSGlobalDomain,** consisting of defaults meant to be seen by all applications. Separate domains for each of the user’s preferred languages
- **NSRegistrationDomain,** a set of temporary defaults whose values can be set by the application to ensure that searches will always be successful

The defaults are initialized for the current user. Subsequent modifications to the standard search list remain in effect even when this method is invoked again; the search list is guaranteed to be standard only the first time this method is invoked. The shared instance is provided as a convenience; you can create custom instances using the Constructor.
**32.76.37** stringArrayForKey(key as string) as string()

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the array of strings associated with the specified key. **Example:**

```vba
dim u as NSUserDefaultsMBS = NSUserDefaultsMBS.standardUserDefaults
dim t(-1) as string = array("Hello","World")

u.setStringArrayValue "test", t

dim a(-1) as string = u.stringArrayForKey("test")

MsgBox Join(a) // shows "Hello World"
```

**Notes:** Returns an array with strings. The array is empty if the value for the key is not an array.

---

**32.76.38** synchronize as boolean

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Writes any modifications to the persistent domains to disk and updates all unmodified persistent domains to what is on disk. **Example:**

```vba
dim u as NSUserDefaultsMBS = NSUserDefaultsMBS.standardUserDefaults

// do something

if u.synchronize then
    MsgBox "Saved preferences."
else
    MsgBox "Failed to save preferences."
end if
```

**Notes:**

Returns true if the data was saved successfully to disk, otherwise false.

Because this method is automatically invoked at periodic intervals, use this method only if you cannot wait for the automatic synchronization (for example, if your application is about to exit) or if you want to update the user defaults to what is on disk even though you have not made any changes.
32.76.39  volatileDomainForName(domainName as string) as dictionary

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the dictionary for the specified volatile domain.

**Notes:** Returns the dictionary of keys and values belonging to the domain. The keys in the dictionary are names of defaults, and the value corresponding to each key is a property list object (String, Number, Date, Array, or Dictionary).

32.76.40  volatileDomainNames as string()

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of the current volatile domain names.

**Notes:** You can get the contents of each domain by passing the returned domain names to the volatileDomainForName method.

32.76.41  Properties

32.76.42  boolForKey(key as string) as boolean

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Boolean value associated with the specified key.

**Example:**

```dim u as NSUserDefaultsMBS = NSUserDefaultsMBS.standardUserDefaults
u.boolForKey(“test”) = true
MsgBox str(u.boolForKey(“test”))
```

**Notes:**

If a boolean value is associated with defaultName in the user defaults, that value is returned. Otherwise, false is returned.
(Read and Write computed property)

32.76.43  dataForKey(key as string) as memoryblock

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The data string associated with the specified key.

**Example:**

```dim u as NSUserDefaultsMBS = NSUserDefaultsMBS.standardUserDefaults
```
u.dataForKey("test")="Hello \\

MsgBox u.dataForKey("test") // shows no umlauts as encoding is away in binary string

 Notes:
Returns the memoryblock or nil if there is no value for this key.

dataForKey is for any string and does not store encoding. stringForKey does store encoding and works only
for text strings.  
(Read and Write computed property)

32.76.44 dictionaryForKey(key as string) as dictionary

**Function:** The dictionary object associated with the specified key.  
**Example:**

dim u as new NSUserDefaultsMBS  
dim d as new Dictionary  
d.Value("First")="Hello"  
d.Value("Second")=1234.5678  
u.setDictionaryValue "test", d  

dim e as Dictionary = u.dictionaryForKey("test")  
for each key as Variant in e.keys  
dim value as Variant = e.Value(key)  
MsgBox key+: ""+value  
next  

Notes:
Returns dictionary object associated with the specified key, or nil if the key does not exist or its value is not
an dictionary.  
(Read and Write computed property)

32.76.45 doubleForKey(key as string) as Double

**Function:** The double value associated with the specified key.
Example:

dim u as NSUserDefaultsMBS =NSUserDefaultsMBS.standardUserDefaults
u.doubleForKey("test") = 5
MsgBox str(u.doubleForKey("test"))

Notes:

Returns the double value associated with the specified key. If the key does not exist, this method returns 0.
Available in Mac OS X v10.5 and later. On Mac OS X 10.4 the plugin will call floatForKey for you to avoid an exception.
(Read and Write computed property)

32.76.46  fileForKey(key as string) as folderitem

Example:

dim u as NSUserDefaultsMBS =NSUserDefaultsMBS.standardUserDefaults
dim f as FolderItem = SpecialFolder.Desktop

// write
u.fileForKey("test")=f

// read
MsgBox u.fileForKey("test").AbsolutePath

Notes:

Available in Mac OS X v10.6 and later.
(Read and Write computed property)

32.76.47  floatForKey(key as string) as single

Example:

dim u as NSUserDefaultsMBS =NSUserDefaultsMBS.standardUserDefaults
u.floatForKey("test") = 5
MsgBox str(u.floatForKey("test"))
Notes:
Returns the floating-point value associated with the specified key. If the key does not exist, this method returns 0. (Read and Write computed property)

32.76.48 integerForKey(key as string) as Integer

Example:

```vba
dim u as NSUserDefaultsMBS = NSUserDefaultsMBS.standardUserDefaults
u.integerForKey("test") = 5
MsgBox str(u.integerForKey("test"))
```

Notes:
The integer value associated with the specified key. If the specified key does not exist, this method returns 0. (Read and Write computed property)

32.76.49 stringForKey(key as string) as string

Example:

```vba
dim u as NSUserDefaultsMBS = NSUserDefaultsMBS.standardUserDefaults
u.setStringValue "test", "Hello "
MsgBox u.stringForKey("test")
```

Notes:
Returns the string or "" if there is no value for this key.

dataForKey is for any string and does not store encoding. stringForKey does store encoding and works only
for text strings.
(Read and Write computed property)

### 32.76.50 URLForKey(key as string) as string

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The NSURL instance associated with the specified key.

**Example:**
```vba
dim u as NSUserDefaultsMBS = NSUserDefaultsMBS.standardUserDefaults
u.setURLValue "test", "http://www.apple.de/
MsgBox u.URLForKey("test")
```

**Notes:**
Available in Mac OS X v10.6 and later.
(Read and Write computed property)

### 32.76.51 variantForKey(key as string) as Variant

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The object associated with the first occurrence of the specified default.

**Example:**
```vba
dim u as new NSUserDefaultsMBS
u.setVariantValue "test", "Hello World"
MsgBox u.variantForKey("test")
```

**Notes:**
This method searches the domains included in the search list in the order they are listed.
(Read and Write computed property)
32.77 class NSUUIDMBS

32.77.1 class NSUUIDMBS


**Function:** An object representing a universally unique value that bridges to UUID; use NSUUID when you need reference semantics or other Foundation-specific behavior.

**Notes:**

UUIDs (Universally Unique Identifiers), also known as GUIDs (Globally Unique Identifiers) or IIDs (Interface Identifiers), are 128-bit values. UUIDs created by NSUUID conform to RFC 4122 version 4 and are created with random bytes.

The standard format for UUIDs represented in ASCII is a string punctuated by hyphens, for example 68753A44-4D6F-1226-9C60-0050E4C00067. The hex representation looks, as you might expect, like a list of numerical values preceded by 0x. For example, 0xD7, 0x36, 0x95, 0x0A, 0x4D, 0x6E, 0x12, 0x26, 0x80, 0x3A, 0x00, 0x50, 0xE4, 0xC0, 0x00, 0x67. Because a UUID is expressed simply as an array of bytes, there are no endianness considerations for different platforms.

32.77.2 Methods

32.77.3 Available as boolean


**Function:** Whether this class is available.

**Notes:** Returns true on macOS 10.8 or newer.

32.77.4 Constructor


**Function:** Initializes a new UUID with RFC 4122 version 4 random bytes.

See also:

- 32.77.5 Constructor(UUID as MemoryBlock)
- 32.77.6 Constructor(UUID as String)

32.77.5 Constructor(UUID as MemoryBlock)


**Function:** Initializes a new UUID with the given bytes.

See also:

- 32.77.4 Constructor
32.77. CLASS NSUUIDMBS

- 32.77.6 Constructor (UUID as String)

32.77.6 Constructor (UUID as String)


**Function:** Initializes a new UUID with the formatted string.

See also:

- 32.77.4 Constructor
- 32.77.5 Constructor (UUID as MemoryBlock)

32.77.7 copy as NSUUIDMBS


**Function:** Copies the UUID.

32.77.8 isEqual (other as NSUUIDMBS) as boolean


**Function:** Compares two UUIDs.

**Example:**

```plaintext
dim u1 as new NSUUIDMBS
dim s1 as string = u1.UUIDString

// make new object with same UUID
dim u2 as NSUUIDMBS = new NSUUIDMBS(s1)
dim s2 as string = u2.UUIDString

// other uuid
dim o as new NSUUIDMBS
dim so as string = o.UUIDString

dim e1 as Boolean = u1.isEqual(u2)
dim e2 as Boolean = u1.isEqual(o)

Break
```

**Notes:** Returns true if both are equal.
32.77.9  Operator_Compare(other as NSUUIDMBS) as Integer

**Function:** Compares two UUIDs.
**Example:**

```vbnet
dim u1 as new NSUUIDMBS
dim s1 as string = u1.UUIDString

// make new object with same UUID
dim u2 as NSUUIDMBS = new NSUUIDMBS(s1)
dim s2 as string = u2.UUIDString

// other uuid
dim o as new NSUUIDMBS
dim so as string = o.UUIDString

if u1 = u2 then
    MsgBox "u1 and u2 are equal."
else
    MsgBox "u1 and u2 are not equal. Problem?"
end if

if u1 = o then
    MsgBox "u1 and o are equal. Problem?"
else
    MsgBox "u1 and o are not equal."
end if
```

32.77.10  UUID as NSUUIDMBS

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create and returns a new UUID with RFC 4122 version 4 random bytes.

32.77.11  Properties

32.77.12  data as MemoryBlock

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries copy of the bytes as memory block.
**Notes:** (Read only property)
32.77. CLASS NSUUIDMBS

32.77.13 Handle as Integer


32.77.14 UUIDString as String

MBS Bluetooth Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The UUID as a string. Notes: (Read only property)
32.78  class NSViewControllerMBS

32.78.1  class NSViewControllerMBS


32.78.2  Methods

32.78.3  available as boolean

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether this class is available. Example:

MsgBox str(NSViewControllerMBS.available)

Notes: Returns true on Mac OS X 10.5 or newer.

32.78.4  Constructor


32.78.5  Properties

32.78.6  className as string

MBS MacBase Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The name of this NSViewController class. Notes: (Read only property)
32.78.7 classPath as string

MBS MacBase Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The path of this NSViewController class.
**Notes:**
Useful for debugging to know what super classes the view controller has.
(Read only property)

32.78.8 Title as string

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The localized title of the receiver’s view.
**Notes:**
NSViewController does not use the title property directly. This property is here because so many anticipated uses of this class will involve letting the user choose among multiple named views using a pulldown menu or some other user interface.
(Read and Write property)

32.78.9 view as NSViewMBS

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The view belonging to this view controller.
**Notes:** (Read and Write property)

32.78.10 viewLoaded as Boolean

MBS MacBase Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether view is already loaded.
**Notes:** (Read only property)
32.79 class NSViewMBS

32.79.1 class NSViewMBS

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Cocoa class for a view.

**Notes:**
To draw into a NSView, use either CustomNSViewMBS class with drawRect event or NSGraphicsMBS class. Subclass of the NSResponderMBS class.

32.79.2 Methods

32.79.3 addSubview(subview as NSViewMBS)

MBS MacBase Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds a view to the subviews so it’s displayed above its siblings.

**Example:**
```javascript
// create a button
dim n as new NSButtonMBS(100, 100, 50, 24)
n.bezelStyle = n.NSRoundedBezelStyle
n.Title = "Test"

// add directly to window’s content view
window1.NSWindowMBS.contentView.addSubview n
```

See also:
- 32.79.4 addSubview(subview as NSViewMBS, positioned as Integer, relativeToView as NSViewMBS)

32.79.4 addSubview(subview as NSViewMBS, positioned as Integer, relativeToView as NSViewMBS)

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Inserts a view among the receiver’s subviews so it’s displayed immediately above or below another view.

**Example:**
```javascript
// create a button
dim n as new NSButtonMBS(100, 100, 50, 24)
```
n.bezelStyle = n.NSRoundedBezelStyle
n.Title = "Test"

// add directly to window’s super view, below the content view
// so it is behind all RB controls
window1.NSWindowMBS.contentView.superview.addSubview n, NSWindowMBS.NSWindowBelow, window1.NSWindowMBS.contentView

Notes:

subView: The view object to add to the receiver as a subview.
positioned: A constant specifying the position of the aView relative to otherView. Valid values are NSWindowAbove or NSWindowBelow.
relativeToView: The other view subView is to be positioned relative to. If relativeToView is nil (or isn’t a subview of the receiver), subView is added above or below all of its new siblings.

This method also sets the receiver as the next responder of aView.
See also:

- 32.79.3 addSubview(subview as NSViewMBS)

32.79.5 addToolTipRect(rect as NSRectMBS, tooltip as NSViewTooltipMBS)

MBS MacBase Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creates a tooltip for a defined area the view and returns a tag that identifies the tooltip rectangle.
Notes:

Rect: A rectangle defining the region of the view to associate the tooltip with.
tooltip: The object to provide text.

Please keep reference of tooltip object as the tooltip is removed by it’s destructor.

32.79.6 ancestorSharedWithView(view as NSViewMBS) as NSViewMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The closest ancestor shared by the receiver and a given view.
Notes: The closest ancestor or nil if there’s no such object. Returns self if aView is identical to the receiver.
32.79.7 animator as NSViewMBS

MBS MacBase Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the proxy object for this view which animates.
Example:

```dim v as NSViewMBS // your NSViewMBS object
v.alphaValue = 0.5 // switch alpha directly
v.animator.alphaValue = 0.5 // switch alpha animated```

32.79.8 beginDraggingSessionWithItems(items() as Variant, e as NSEventMBS, source as NSViewMBS) as Variant

Notes:

- items: The dragging items (array of variant containing NSDraggingItemMBS objects). The frame property of each NSDraggingItem must be in the view’s coordinate system.
- event: The mouse-down event object from which to initiate the drag operation. In particular, its mouse location is used for the offset of the icon being dragged.
- source: An object that serves as the controller of the dragging operation. It must conform to the NSDraggingSource informal protocol and is typically the receiver itself or its NSWindow object.

Returns the dragging session for the drag (NSDraggingSessionMBS object). Returned as Variant to reduce plugin dependencies.

A basic drag starts by calling beginDraggingSessionWithItems.

The caller can take the returned NSDraggingSession and continue to modify its properties such as slidesBackOnCancelOrFail. When the drag actually starts, the source is sent a draggingSessionWillBeginAtPoint message followed by multiple draggingSessionMovedToPoint messages as the user drags.

Once the drag is ended or cancelled, the source receives a draggingSessionEndedAtPoint:operation and the drag is complete.

Available in OS X v10.7 and later.
32.79. **CLASS NSVIEWMBS**

### 32.79.9 Constructor

MBS MacBase Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new control with size 100/100 and position 0/0

**Notes:** On success the handle property is not zero.

See also:

- 32.79.10 Constructor(Handle as Integer)
- 32.79.11 Constructor(left as Double, top as Double, width as Double, height as Double)

### 32.79.10 Constructor(Handle as Integer)

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an object based on the given NSView handle.

**Example:**

```vbnet
dim t as new NSTextViewMBS(0, 0, 100, 100)
dim v as new NSTextViewMBS(t.handle)
MsgBox str(v.Bounds.Width)+" x "+str(v.Bounds.Height)
```

**Notes:** The handle is casted to a NSView and the plugin retains this handle.

See also:

- 32.79.9 Constructor
- 32.79.11 Constructor(left as Double, top as Double, width as Double, height as Double)

### 32.79.11 Constructor(left as Double, top as Double, width as Double, height as Double)

MBS MacBase Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor to create a new NSView.

**Notes:**

On success handle is set.

For a toolbar, please get the view directly: self.NSToolbarMBS.toolbarView.

See also:

- 32.79.9 Constructor
- 32.79.10 Constructor(Handle as Integer)
32.79.12 convertPointFromView(point as NSPointMBS, View as NSViewMBS) as NSPointMBS

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Converts a point from the coordinate system of a given view to that of the receiver.
Notes:
point: A point specifying a location in the coordinate system of aView.
View: The view with aPoint in its coordinate system. If View is nil, this method instead converts from window base coordinates. Otherwise, both View and the receiver must belong to the same NSWindow object.

Returns the point converted to the coordinate system of the receiver.

32.79.13 convertPointToView(point as NSPointMBS, View as NSViewMBS) as NSPointMBS

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Converts a point from the receiver’s coordinate system to that of a given view.
Notes:
point: A point specifying a location in the coordinate system of the receiver.
View: The view into whose coordinate system point is to be converted. If View is nil, this method instead converts to window base coordinates. Otherwise, both View and the receiver must belong to the same NSWindow object.

Returns the point converted to the coordinate system of View.

32.79.14 convertRectFromView(rect as NSRectMBS, View as NSViewMBS) as NSRectMBS

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Converts a rectangle from the coordinate system of another view to that of the receiver.
Notes:
rect: The rectangle in aView’s coordinate system.
view: The view with aRect in its coordinate system. If view is nil, this method instead converts from window base coordinates. Otherwise, both view and the receiver must belong to the same NSWindow object.

Returns the converted rectangle.
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32.79.15 convertRectToView(rect as NSRectMBS, View as NSViewMBS) as NSRectMBS

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Converts a rectangle from the receiver’s coordinate system to that of another view. **Notes:**

rect: A rectangle in the receiver’s coordinate system.
View: The view that is the target of the conversion operation. If View is nil, this method instead converts from window base coordinates. Otherwise, both View and the receiver must belong to the same NSWindow object.

Returns the converted rectangle.

32.79.16 convertSizeFromView(Size as NSSizeMBS, View as NSViewMBS) as NSSizeMBS

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Converts a size from another view’s coordinate system to that of the receiver. **Notes:**

Size: The size (width and height) in aView’s coordinate system.
View: The view with Size in its coordinate system. If View is nil, this method instead converts from window base coordinates. Otherwise, both View and the receiver must belong to the same NSWindow object.

Returns the converted size, as an NSSize structure.

32.79.17 convertSizeToView(Size as NSSizeMBS, View as NSViewMBS) as NSSizeMBS

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Converts a size from the receiver’s coordinate system to that of another view. **Notes:**

Size: The size (width and height) in the receiver’s coordinate system.
View: The view that is the target of the conversion operation. If View is nil, this method instead converts from window base coordinates. Otherwise, both View and the receiver must belong to the same NSWindow object.

Returns the converted size, as an NSSize structure.
32.79.18  dataWithEPSInsideRect(left as Double, top as Double, width as Double, height as Double) as Memoryblock

MBS MacBase Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns EPS data that draws the region of the receiver within a specified rectangle. **Example:**

```dim n as new NSProgressIndicatorMBS
n.sizeToFit

dim data as string = n.dataWithEPSInsideRect(0, 0, n.frameWidth, n.frameHeight)
dim f as FolderItem = SpecialFolder.Desktop.Child("test.ps")
dim b as BinaryStream = f.CreateBinaryFile(""")

b.Write data
f.Launch```

See also:

- 32.79.20 dataWithPDFInsideRect(r as NSRectMBS) as Memoryblock

32.79.19  dataWithPDFInsideRect(left as Double, top as Double, width as Double, height as Double) as Memoryblock

MBS MacBase Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns PDF data that draws the region of the receiver within a specified rectangle. **Example:**

```dim n as new NSProgressIndicatorMBS
n.sizeToFit

dim data as string = n.dataWithPDFInsideRect(0, 0, n.frameWidth, n.frameHeight)
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim b as BinaryStream = f.CreateBinaryFile(""")

b.Write data
f.Launch```

See also:

- 32.79.20 dataWithPDFInsideRect(r as NSRectMBS) as Memoryblock

32.79.20  dataWithPDFInsideRect(r as NSRectMBS) as Memoryblock

MBS MacBase Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns PDF data that draws the region of the receiver within a specified rectangle. **See also:**
### 32.79.21 dragImage

**image as NSImageMBS, viewLocation as NSPointMBS, offset as NSSizeMBS, NSEvent as NSEventMBS, pboard as NSPasteboardMBS, source as NSViewMBS, slideFlag as boolean**

**MBS MacBase Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:** Initiates a dragging operation from the receiver, allowing the user to drag arbitrary data with a specified icon into any application that has window or view objects that accept dragged data.

**Notes:**

- **Image:** The NSImage object to be dragged.
- **viewLocation:** The location of the image’s lower-left corner, in the receiver’s coordinate system. It determines the placement of the dragged image under the cursor. When determining the image location you should use the mouse down coordinate, provided in theEvent, rather than the current mouse location.
- **offset:** This parameter is ignored.
- **NSEvent:** The left mouse-down event that triggered the dragging operation (see discussion below).
- **pboard:** The pasteboard that holds the data to be transferred to the destination (see discussion below).
- **source:** An object that serves as the controller of the dragging operation. It must conform to the NSDraggingSource protocol and is typically the receiver itself or its NSWindow object.
- **slideBack:** A Boolean that determines whether the drag image should slide back if it’s rejected. The image slides back to imageLoc if slideBack is true and the image isn’t accepted by the dragging destination. If false the image doesn’t slide back.

This method must be invoked only within an implementation of the mouseDown or mouseDragged methods. Before invoking this method, you must place the data to be transferred on pboard. To do this, get the drag pasteboard object (NSDragPboard), declare the types of the data, and then put the data on the pasteboard.

### 32.79.22 drawFocusRingMask

**MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:** Draws the focus ring mask for the view.

**Notes:**

This method provides the shape of the focus ring mask by drawing the focus ring mask. An implementation of this method should draw in the view’s interior (bounds) coordinate space, that the focus ring style has been set (it will be set it to NSFocusRingOnly to capture the focus ring itself), and that the fill and stroke colors have been set to an arbitrary fully opaque color.

Subclasses that find the default behavior insufficient should only draw the focus ring shape.

The NSView implementation of this method simply fills self.bounds.
32.79.23 enclosingMenuItem as Variant

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the menu item containing the receiver or any of its superviews in the view hierarchy. Notes:

Returns the menu item containing the receiver or any of its superviews in the view hierarchy, or nil if the receiver’s view hierarchy is not in a menu item.

Available in Mac OS X v10.5 and later.

Declared as a variant to reduce plugin dependencies. Please assign to a NSScrollViewMBS variable.

32.79.24 enclosingScrollView as Variant

MBS MacBase Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the nearest ancestor NSScrollView object containing the receiver (not including the receiver itself); otherwise returns nil. Notes:

Declared as a variant to reduce plugin dependencies. Please assign to a NSScrollViewMBS variable.

32.79.25 focusRingMaskBounds as NSRectMBS

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the focus ring mask bounds. Notes:

Returns a rectangle containing the mask in the view's interior (bounds) coordinate space.

The mask bounds allows the focus ring’s overall size and position to be determined before it is drawn. Subclasses must override this method if they require the display of a focus ring. The NSView implementation of this method simply returns NSRectMBS.Zero.

Note: The information provided by focusRingMaskBounds will enable Accessibility to identify selected subelements for zoom tracking, so it is important that this method provide a reasonably tight bounding box.
32.79. **CLASS NSVIEWMBS**

and that `noteFocusRingMaskChanged` is invoked as described.

### 32.79.26 isDescendantOf(view as NSViewMBS) as boolean

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** True if the receiver is a subview of a given view or if it’s identical to that view; otherwise, it returns false.

### 32.79.27 makeBackingLayer as Variant

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates the view’s backing layer. **Notes:** Value is a CALayerMBS object. Available in OS X v10.6 and later.

### 32.79.28 nextValidKeyView as NSViewMBS

MBS MacBase Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the closest view object in the key view loop that follows the receiver and accepts first responder status. **Notes:** This method ignores hidden views when it determines the next valid key view. Returns nil on any error.

### 32.79.29 noteFocusRingMaskChanged

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Invoked to notify the view that the focus ring mask requires updating. **Notes:** It is important to note that it is only necessary for developers to invoke this method when some internal state change of their application, that the Application Kit can’t determine, affects the shape of the focus ring mask.

It is assumed that if the view is marked as needing display, or is resized, its focus ring shape is likely to have changed, and there is no need for clients to explicitly send this message in such cases, they are handled automatically.
If, however, a view is showing a focus ring around some part of its content (an NSImage, perhaps), and that content changes, the client must provide notification by invoking this method so that focusRingMaskBounds and drawFocusRingMask will be invoked to redraw the focus ring. Available in Mac OS X v10.7 and later.

### 32.79.30 NSViewBoundsDidChangeNotification as string

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification names to use with the NSView class. **Notes:**

Posted whenever the NSView’s bounds rectangle changes independently of the frame rectangle, if the NSView is configured using setPostsBoundsChangedNotifications to post such notifications.

The notification object is the NSView object whose bounds rectangle has changed. This notification does not contain a userInfo dictionary.

The following methods can result in notification posting

- setBounds
- setBoundsOrigin
- setBoundsRotation
- setBoundsSize
- translateOriginToPoint
- scaleUnitSquareToSize
- rotateByAngle

Note that the bounds rectangle resizes automatically to track the frame rectangle. Because the primary change is that of the frame rectangle, however, setFrame and setFrameSize don’t result in a bounds-changed notification.

### 32.79.31 NSViewDidUpdateTrackingAreasNotification as string

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification names to use with the NSView class. **Notes:**
Posted whenever an NSView object recalculates its tracking areas. It is sent after the view receives update-TrackingAreas.

Available in Mac OS X v10.5 and later.

32.79.32 **NSViewFocusDidChangeNotification as string**

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification names to use with the NSView class. **Notes:** Sent when focus changed. Object for this notification is the view.

32.79.33 **NSViewFrameDidChangeNotification as string**

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification names to use with the NSView class. **Notes:**

Posted whenever the view’s frame rectangle changes, if the view is configured using setPostsFrameChanged-Notifications to post such notifications.

The notification object is the NSView object whose frame rectangle has changed. This notification does not contain a userInfo dictionary.

The following methods can result in notification posting:

- setFrame
- setFrameOrigin
- setFrameRotation
- setFrameSize

32.79.34 **NSViewGlobalFrameDidChangeNotification as string**

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification names to use with the NSView class. **Notes:**

Posted whenever an NSView object that has attached surfaces (that is, NSOpenGLContext objects) moves to a different screen, or other cases where the NSOpenGLContext object needs to be updated. The notification object is the surface’s view. This notification does not contain a userInfo dictionary.
32.79.35  pageFooter as NSAttributedStringMBS

MBS MacBase Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a default footer string that includes the current page number and page count. **Notes:**

A printable view class can override this method to substitute its own content in place of the default value. You should not need to call this method directly. The printing system calls it once per page during printing.

Footers are generated only if the user defaults contain the key NSPrintHeaderAndFooter with the value true.

32.79.36  pageHeader as NSAttributedStringMBS

MBS MacBase Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a default header string that includes the print job title and date. **Notes:**

Typically, the print job title is the same as the window title. A printable view class can override this method to substitute its own content in place of the default value. You should not need to call this method directly. The printing system calls it once per page during printing.

Headers are generated only if the user defaults contain the key NSPrintHeaderAndFooter with the value true.

32.79.37  previousKeyView as NSViewMBS

MBS MacBase Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the view object preceding the receiver in the key view loop. **Notes:**

This view should, if possible, be made first responder when the user navigates backward from the receiver using keyboard interface control. Returns nil on any error.

32.79.38  previousValidKeyView as NSViewMBS

MBS MacBase Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the closest view object in the key view loop that precedes the receiver and accepts first responder status. **Notes:**

This method ignores hidden views when it determines the previous valid key view. Returns nil on any error.
32.79.39  print

MBS MacBase Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: This action method opens the Print panel, and if the user chooses an option other than canceling, prints the receiver and all its subviews to the device specified in the Print panel.

32.79.40  registeredDraggedTypes as string()

MBS MacBase Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the array of pasteboard drag types that the view can accept

Example:

// we register some types
Listbox1.AcceptPictureDrop
Listbox1.AcceptTextDrop

// and query them:
MsgBox Join(Listbox1.NSViewMBS.registeredDraggedTypes, EndOfLine)

' shows:
'NeXT TIFF v4.0 pasteboard type
'com.apple.traditional-mac-plain-text
'NSStringPboardType

Notes: This method returns the types registered by calling registerForDraggedTypes:. Each element of the array is a uniform type identifier. The returned elements are in no particular order, but the array is guaranteed not to contain duplicate entries.

32.79.41  registerForDraggedTypes(Types() as string)

MBS MacBase Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Registers the pasteboard types that the receiver will accept as the destination of an image-dragging session.

Notes:

Types: An array of uniform type identifiers. See Types for Standard Data (Mac OS X 10.6 and later) for descriptions of the pasteboard type identifiers.

Registering an NSView object for dragged types automatically makes it a candidate destination object for a
dragging session. As such, it must properly implement some or all of the NSDraggingDestination protocol methods. As a convenience, NSView provides default implementations of these methods. See the NSDraggingDestination protocol specification for details.

Real Studio with Cocoa target implements the methods listed above. So this method is useful to change the allowed types for the case the framework has a bug.

### 32.79.42 removeAllToolTips

MBS MacBase Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes all tool tips assigned to the receiver.

### 32.79.43 removeFromSuperview

MBS MacBase Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Unlinks the view from its superview and its window, removes it from the responder chain, and invalidates its cursor rectangles.

### 32.79.44 removeFromSuperviewWithoutNeedingDisplay

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Unlinks the receiver from its superview and its window and removes it from the responder chain, but does not invalidate its cursor rectangles to cause redrawing.  
**Notes:**
The receiver is also released; if you plan to reuse it, be sure to retain it before sending this message and to release it as appropriate when adding it as a subview of another view.

Unlike its counterpart, removeFromSuperview, this method can be safely invoked during display.

### 32.79.45 RenderImage(subviews as boolean=false) as Variant

MBS MacBase Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Renders a picture of the view.  
**Example:**
```plaintext
dim n as new NSProgressIndicatorMBS  
n.sizeToFit
```
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```pascal
dim image as NSImageMBS = n.RenderImage
dim pic as Picture = image.CopyPicture

Backdrop = pic
```

**Notes:**

May return nil on any error.
The value of this variant must be an object of class NSImageMBS.

---

### 32.79.46 replaceSubview(oldView as NSViewMBS, newView as NSViewMBS)


**Function:** Replaces one of the receiver’s subviews with another view.

**Notes:**

- `oldView`: The view to be replaced by `newView`. May not be nil.
- `newView`: The view to replace `oldView`. May not be nil.

This method does nothing if `oldView` is not a subview of the receiver.
Neither `oldView` nor `newView` may be nil, and the behavior is undefined if either of these parameters is nil.

---

### 32.79.47 rotateByAngle(angle as Double)


**Function:** Rotates the receiver’s bounds rectangle by a specified degree value around the origin of the coordinate system, (0.0, 0.0).

**Notes:**

- `angle`: A float value specifying the angle of rotation, in degrees.

See the BoundsRotation property description for more information. This method neither redisplaysthe receiver nor marks it as needing display. You must do this yourself with display or NeedsDisplay.

This method posts an NSViewBoundsDidChangeNotification to the default notification center if the receiver is configured to do so.
32.79.48 scaleUnitSquareToSize(size as NSSizeMBS)

MBS MacBase Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Scales the receiver’s coordinate system so that the unit square scales to the specified dimensions. **Notes:**

For example, a newUnitSize of (0.5, 1.0) causes the receiver’s horizontal coordinates to be halved, in turn doubling the width of its bounds rectangle. Note that scaling is performed from the origin of the coordinate system, (0.0, 0.0), not the origin of the bounds rectangle; as a result, both the origin and size of the bounds rectangle are changed. The frame rectangle remains unchanged.

This method neither redisplay the receiver nor marks it as needing display. You must do this yourself with display or setNeedsDisplay.

This method posts an NSViewBoundsDidChangeNotification to the default notification center if the receiver is configured to do so.

32.79.49 setBoundsOrigin(origin as NSPointMBS)

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the bounds origin. **See also:**

- 32.79.50 setBoundsOrigin(x as Double, y as Double)

32.79.50 setBoundsOrigin(x as Double, y as Double)

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the bounds origin. **See also:**

- 32.79.49 setBoundsOrigin(origin as NSPointMBS)

32.79.51 setBoundsSize(size as NSSizeMBS)

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the bounds size of the nsview. **See also:**

- 32.79.52 setBoundsSize(width as Double, height as Double)
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32.79.52  **setBoundsSize(width as Double, height as Double)**

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the bounds size of the nsview.
See also:
- 32.79.51 setBoundsSize(size as NSSizeMBS)

32.79.53  **setFocus**

MBS MacBase Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Convenience function to set the focus to this view.
**Notes:** Calls internally makeFirstResponder on NSWindow.

32.79.54  **setFrameOrigin(origin as NSPointMBS)**

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the frame origin.
See also:
- 32.79.55 setFrameOrigin(x as Double, y as Double)

32.79.55  **setFrameOrigin(x as Double, y as Double)**

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the frame origin.
See also:
- 32.79.54 setFrameOrigin(origin as NSPointMBS)

32.79.56  **setFrameSize(size as NSSizeMBS)**

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the frame size.
See also:
- 32.79.57 setFrameSize(width as Double, height as Double)

32.79.57  **setFrameSize(width as Double, height as Double)**

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the frame size.
32.79.58  subviews(recursive as boolean = false) as NSViewMBS()

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The immediate subviews.
**Notes:**
The order of the subviews may be considered as being back-to-front, but this does not imply invalidation and drawing behavior. The order is based on the order of the receiver's subviews as specified in the nib file from which they were unarchived or the programmatic interface for modifying the receiver's subview list. This ordering is also the reverse of the order in which hit-testing is done.

If recursive is true, we include all subviews of all subviews. (new in 14.2)

32.79.59  unregisterDraggedTypes

MBS MacBase Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Unregisters the receiver as a possible destination in a dragging session.

32.79.60  Properties

32.79.61  acceptsTouchEvents as boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the view will accept touch events.
**Notes:**
Available in Mac OS X v10.6 and later.
(Read and Write property)

32.79.62  allowsVibrancy as Boolean

MBS MacBase Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** allowsVibrancy is queried when a vibrant appearance is used on a view hierarchy.
**Notes:**
When allowsVibrancy returns YES, the view will have an appropriate measure taken to ensure it is vibrant on top of its given material.
Specific subclasses, such as NSControl, will answer this question based on the artwork they draw for a given appearance.
(Read only property)

32.79.63 alphaValue as Double

Example:

// makes a checkbox half transparent on Cocoa target:
Checkbox1.NSViewMBS.alphaValue = 0.5

Notes:
This method returns the value of the opacity property of the view’s layer. Possible values are between 0.0 (transparent) and 1.0 (opaque). The default is 1.0.

Sending this message to a view that is not managing a Core Animation layer causes an exception.
(Read and Write property)

32.79.64 autoresizesSubviews as boolean

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: True if the receiver automatically resizes its subviews using resizeSubviewsWithOldSize whenever its frame size changes, false otherwise.
Notes: (Read and Write property)

32.79.65 autoresizingMask as Integer

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The receiver’s autoresizing mask, which determines how it’s resized by the resizeWithOldSuperviewSize method.
Notes:
If the autoresizing mask is equal to NSViewNotSizable (that is, if none of the options are set), then the receiver doesn’t resize at all in resizeWithOldSuperviewSize.

(Read and Write property)
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NSViewNotSizable = 0 The receiver cannot be resized.
NSViewMinXMargin = 1 The left margin between the receiver and its superview is flexible.
NSViewWidthSizable = 2 The receiver’s width is flexible.
NSViewMaxXMargin = 4 The right margin between the receiver and its superview is flexible.
NSViewMinYMargin = 8 The bottom margin between the receiver and its superview is flexible.
NSViewHeightSizable = 16 The receiver’s height is flexible.
NSViewMaxYMargin = 32 The top margin between the receiver and its superview is flexible.

32.79.66 bounds as NSRectMBS

MBS MacBase Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the receiver’s bounds rectangle, which expresses its location and size in its own coordinate system. Example:

```dim n as new NSProgressIndicatorMBS
n.sizeToFit
MsgBox n.bounds.String```

Notes:
The bounds rectangle may be rotated; use the boundsRotation method to check this.
(Read and Write property)

32.79.67 boundsRotation as Double

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The angle, in degrees, of the view’s bounds rectangle relative to its frame rectangle. Notes: (Read and Write property)

32.79.68 canBecomeKeyView as boolean

MBS MacBase Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns whether the receiver can become key view. Notes:

Returns true if the receiver can become key view, false otherwise.
(Read only property)
### 32.79.69 canDraw as boolean

**MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:**
Returns true if drawing commands will produce any result, false otherwise.

**Notes:**
Use this method when invoking a draw method directly along with lockFocus and unlockFocus, bypassing the display... methods (which test drawing ability and perform locking for you). If this method returns false, you shouldn’t invoke lockFocus or perform any drawing.

A view object can draw on-screen if it is not hidden, it is attached to a view hierarchy in a window (NSWindow), and the window has a corresponding window device. A view object can draw during printing if it is a descendant of the view being printed.

To draw into a NSView, use either CustomNSViewMBS class with drawRect event or NSGraphicsMBS class. (Read only property)

### 32.79.70 canDrawConcurrently as boolean

**MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:**
Whether the view’s drawRect: method can be invoked on a background thread.

**Notes:**
Available in Mac OS X v10.6 and later. (Read and Write property)

### 32.79.71 className as string

**MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:**
The name of this NSView class.

**Example:**
```
// shows RBNSButton
MsgBox checkbox1.NSViewMBS.className
```

**Notes:** (Read only property)
32.79.72 classPath as string

MBS MacBase Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The path of this NSView class.  
**Example:**

MsgBox TextArea1.NSViewMBS.classPath  
// shows "RBNSScrollView:NSScrollView:NSView:NSResponder:NSObject"

**Notes:**

Useful for debugging to know what super classes the view has.  
(Read only property)

32.79.73 focusRingType as Integer

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The type of focus ring to be drawn around the receiver.  
**Notes:**

This method only sets the desired focus ring type and does not cause the view to draw the actual focus ring.  
You are responsible for drawing the focus ring in your view’s drawRect method whenever your view is made the first responder.

possible values:

- NSFocusRingTypeDefault 0
- NSFocusRingTypeNone 1
- NSFocusRingTypeExterior 2

(Read and Write property)

32.79.74 frame as NSRectMBS

MBS MacBase Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the frame size and position of the view.  
**Example:**

dim n as new NSProgressIndicatorMBS  
n.sizeToFit
32.79.75  frameCenterRotation as Double

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The receiver’s rotation about the layer’s position.
**Notes:**
If the application has altered the layer’s anchorPoint property, the behavior is undefined. Sending this mes-
sage to a view that is not managing a Core Animation layer causes an exception.

Available in Mac OS X v10.5 and later.
(Read and Write property)

32.79.76  frameHeight as Double

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The height of the view frame.
**Example:**
```
dim n as new NSProgressIndicatorMBS
MsgBox str(n.frameHeight)
```

**Notes:**
This is a convenience property which calls the frame function to get the current rectangle, changes the value
and sets the frame to the new rectangle.
(Read and Write property)

32.79.77  frameLeft as Double

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The left position of the view frame.
**Example:**
```
dim n as new NSProgressIndicatorMBS
MsgBox str(n.frameLeft)
```
Notes:
This is a convenience property which calls the frame function to get the current rectangle, changes the value and sets the frame to the new rectangle.
(Read and Write property)

32.79.78 frameRotation as Double

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The angle, in degrees, of the view’s frame relative to its superview’s coordinate system.
Notes:
dim n as new NSProgressIndicatorMBS
n.frameRotation=10
MsgBox str(n.frameRotation)
(Read and Write property)

32.79.79 frameTop as Double

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The top position of the view frame.
Example:
dim n as new NSProgressIndicatorMBS
MsgBox str(n.frameTop)

Notes:
This is a convenience property which calls the frame function to get the current rectangle, changes the value and sets the frame to the new rectangle.
(Read and Write property)

32.79.80 frameWidth as Double

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The width of the view frame.
Example:
dim n as new NSProgressIndicatorMBS
MsgBox str(n.frameWidth)
Notes:
This is a convenience property which calls the frame function to get the current rectangle, changes the value and sets the frame to the new rectangle.
(Read and Write property)

32.79.81 identifier as string

MBS MacBase Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A string that identifies this user interface item.
**Notes:**
It should be set to a unique value on NSViews when they are intended to be used inside a view-basedNSTableView. Identifiers should be unique per-window. For programmatically created user interface items, you would typically set this value in code after creating a control but before adding it to a window. You may also want to set an identifier on a window, after creating it programmatically, to identify the window easily when it is reopened. You should not change the identifier after a control is added to a window. Identifiers beginning with an underscore are reserved for the system. In framework classes that implement this protocol, the accessor methods are not intended to be overridden.

To help avoid collision of identifiers, it is recommended that identifiers use the same prefix as is used for the framework or application. For example, identifiers for standard AppKit interface items, such as the open panel, will begin with "NS".

The slash '/', backslash '\', and colon ': ' characters are reserved and should not be used in identifiers.
(Read and Write property)

32.79.82 isFlipped as Boolean

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** True if the nsview uses flipped drawing coordinates or false if it uses native coordinates.
**Notes:** (Read only property)

32.79.83 isHidden as Boolean

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the receiver is marked as hidden.
**Notes:** (Read and Write property)
32.79.84  isHiddenOrHasHiddenAncestor as Boolean

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
True if the nsview is marked as hidden or has an ancestor in the view hierarchy that is marked as hidden;
returns false otherwise.
**Notes:** (Read only property)

32.79.85  isOpaque as Boolean

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
Overridden by subclasses to return true if the view is opaque, false otherwise.
**Notes:** (Read only property)

32.79.86  isRotatedFromBase as Boolean

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
True if the nsview or any of its ancestors has ever set a FrameRotation or BoundsRotation properties;
otherwise returns false.
**Notes:** (Read only property)

32.79.87  isRotatedOrScaledFromBase as Boolean

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
True if the nsview or any of its ancestors has ever had a nonzero frame or bounds rotation, or has been
scaled from the window’s base coordinate system; otherwise returns false.
**Notes:**
The intent of this information is to optimize drawing and coordinate calculation, not necessarily to reflect
the exact state of the receiver’s coordinate system, so it may not reflect the actual rotation or scaling. For
example, if an NSView object is rotated to 45 degrees and later back to 0, this method still returns true.
(Read only property)

32.79.88  layer as Variant

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
Returns or sets the Core Animation layer that the receiver uses as its backing store.
**Notes:**
Value is a CALayerMBS object.
Available in OS X v10.5 and later.
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(Read and Write property)

32.79.89 needsDisplay as Boolean

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
whether the view needs to be displayed.
**Notes:** (Read and Write property)

32.79.90 nextKeyView as NSViewMBS

MBS MacBase Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The view object following the receiver in the key view loop.
**Notes:**
Returns the view object following the receiver in the key view loop, or nil if there is none.
On setting inserts a specified view object after the receiver in the key view loop of the receiver’s window.
This view should, if possible, be made first responder when the user navigates forward from the receiver
using keyboard interface control.
Returns nil on any error.
(Read and Write property)

32.79.91 opaqueAncestor as NSViewMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the receiver’s closest opaque ancestor (including the receiver itself).
**Notes:** (Read only property)

32.79.92 RetainCount as Integer

MBS MacBase Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The retain count for the NSView object.
**Notes:**
Useful for debugging. Should always be >0.
(Read only property)
32.79.93 superview as NSViewMBS

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver’s superview, or nil if it has none. **Notes:** (Read only property)

32.79.94 toolTip as string

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The tooltip text for this view. **Example:**

```plaintext
dim n as new NSProgressIndicatorMBS
n.toolTip = "Hello"
MsgBox n.toolTip
```

**Notes:** (Read and Write property)

32.79.95 visibleRect as NSRectMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the portion of the receiver not clipped by its superviews. **Notes:**

Visibility for this method is defined quite simply and doesn’t account for whether other NSView objects (or windows) overlap the receiver or whether the receiver has a window at all. This method returns an empty rectangle if the receiver is effectively hidden.

During a printing operation the visible rectangle is further clipped to the page being imaged. **(Read only property)**

32.79.96 wantsDefaultClipping as boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns whether the Application Kit’s default clipping provided to drawRect implementations is in effect. **Notes:**

Subclasses may override this method to return false if they want to suppress the default clipping. They may want to do this in situations where drawing performance is critical to avoid the cost of setting up, enforcing, and cleaning up the clip path.
A view that overrides this method to refuse the default clipping must either set up whatever clipping it requires or constrain its drawing exactly to the list of rectangles returned by getRectsBeingDrawn. Failing to do so could result in corruption of other drawing in the view’s window.

(Read only property)

32.79.97  wantsLayer as Boolean

MBS MacBase Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Whether the receiver and its subviews use a Core Animation layer as a backing store.

**Notes:**
True if the view and its subviews should use a Core Animation layer as its backing store, otherwise false.

Requires Mac OS X 10.5.
(Read and Write property)

32.79.98  wantsRestingTouches as boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Whether the view wants resting touches.

**Notes:**
A resting touch occurs when a user rests their thumb on a device (for example, the glass trackpad of a MacBook).

By default, these touches are not delivered and are not included in the event’s set of touches. Touches may transition in and out of resting at any time. Unless the view wants restingTouches, began / ended events are simulated as touches transition from resting to active and vice versa.

In general resting touches should be ignored.

Available in Mac OS X v10.6 and later.
(Read and Write property)

32.79.99  window as NSWindowMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the receiver’s window object, or nil if it has none.

**Notes:** (Read only property)
32.79.100  Constants

32.79.101  NSBezelBorder = 2

MBS MacBase Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify the type of a view’s border.  
**Notes:** A concave border that makes the view look sunken.

32.79.102  NSFocusRingTypeDefault = 0

MBS MacBase Plugin, Plugin Version: 8.4. **Function:** One of the constants for the focusringtype property.  
**Notes:** The default focus ring type for NSView or NSCell.

32.79.103  NSFocusRingTypeExterior = 2

MBS MacBase Plugin, Plugin Version: 8.4. **Function:** One of the constants for the focusringtype property.  
**Notes:** The standard Aqua focus ring.

32.79.104  NSFocusRingTypeNone = 1

MBS MacBase Plugin, Plugin Version: 8.4. **Function:** One of the constants for the focusringtype property.  
**Notes:** No focus ring. If you set the focus ring type to this value, NSView and NSCell will not draw any focus ring.
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32.79.105 NSGrooveBorder = 3

MBS MacBase Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify the type of a view’s border.
**Notes:** A thin border that looks etched around the image.

32.79.106 NSLineBorder = 1

MBS MacBase Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify the type of a view’s border.
**Notes:** A black line border around the view.

32.79.107 NSNoBorder = 0

MBS MacBase Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify the type of a view’s border.
**Notes:** No border.

32.79.108 NSViewHeightSizable = 16

MBS MacBase Plugin, Plugin Version: 8.4. **Function:** One of the constants for the autoresizingMask prop-
erty.
**Notes:** The receiver’s height is flexible.

32.79.109 NSViewLayerContentsRedrawBeforeViewResize = 3

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the view layer content redraw policy constants.

32.79.110 NSViewLayerContentsRedrawDuringViewResize = 2

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the view layer content redraw policy constants.

32.79.111 NSViewLayerContentsRedrawNever = 0

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the view layer content redraw policy constants.
32.79.112  **NSViewLayerContentsRedrawOnSetNeedsDisplay** = 1

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the view layer content redraw policy constants.

32.79.113  **NSViewMaxXMargin** = 4

MBS MacBase Plugin, Plugin Version: 8.4. **Function:** One of the constants for the autoresizingMask property.  
**Notes:** The right margin between the receiver and its superview is flexible.

32.79.114  **NSViewMaxYMargin** = 32

MBS MacBase Plugin, Plugin Version: 8.4. **Function:** One of the constants for the autoresizingMask property.  
**Notes:** The top margin between the receiver and its superview is flexible.

32.79.115  **NSViewMinXMargin** = 1

MBS MacBase Plugin, Plugin Version: 8.4. **Function:** One of the constants for the autoresizingMask property.  
**Notes:** The left margin between the receiver and its superview is flexible.

32.79.116  **NSViewMinYMargin** = 8

MBS MacBase Plugin, Plugin Version: 8.4. **Function:** One of the constants for the autoresizingMask property.  
**Notes:** The bottom margin between the receiver and its superview is flexible.

32.79.117  **NSViewNotSizable** = 0

MBS MacBase Plugin, Plugin Version: 8.4. **Function:** One of the constants for the autoresizingMask property.  
**Notes:** The receiver cannot be resized.
32.79. CLASS NSVIEWMBS

32.79.118  NSViewWidthSizable = 2

MBS MacBase Plugin, Plugin Version: 8.4. **Function:** One of the constants for the autosizingMask property.
**Notes:** The receiver’s width is flexible.

32.79.119  NSWindowAbove = 1

MBS MacBase Plugin, Plugin Version: 12.0. **Function:** One of the window order constants to specify how a window is ordered relative to another window.
**Notes:** Moves the window above the indicated window.

32.79.120  NSWindowBelow = -1

MBS MacBase Plugin, Plugin Version: 12.0. **Function:** One of the window order constants to specify how a window is ordered relative to another window.
**Notes:** Moves the window below the indicated window.

32.79.121  NSWindowOut = 0

MBS MacBase Plugin, Plugin Version: 12.0. **Function:** One of the window order constants to specify how a window is ordered relative to another window.
**Notes:** Moves the window off the screen.
32.80 class NSViewTooltipMBS

32.80.1 class NSViewTooltipMBS

Notes: Can be used for customized helptags with event to return current text.

32.80.2 Methods

32.80.3 Constructor


32.80.4 Properties

32.80.5 Text as String

Notes: If event is not implemented, we use this default text.
(Read and Write property)

32.80.6 Events

32.80.7 stringForToolTip(point as NSPointMBS) as string

Notes: The point allows you to customize the tooltip for the location.
Please return the text to display.
32.81. CLASS NSVISUALEFFECTVIEWMBS

32.81  class NSVisualEffectViewMBS

32.81.1  class NSVisualEffectViewMBS

**Function:** The class to use visual effect view.  
**Notes:**

The NSVisualEffectView is the basis for all visual effects, including "vibrant" appearances. You can optionally set the appearance to NSAppearanceMBS.appearanceNamed(NSAppearanceNameVibrantDark) (or Light) to get the desired light or dark appearance. Combine this with an appropriate light or dark material to get the desired vibrant look. Combining NSAppearanceNameVibrantDark with a light material will look bad, and should not be done.

Requires Mac OS X 10.10 or newer.

Please review Apple’s documentation on this for details.

Subclass of the NSViewMBS class.

32.81.2  Methods

32.81.3  Available as boolean

**Function:** Whether this class is available.  
**Notes:** Only available on Mac OS X 10.10 or later.

32.81.4  Constructor

**Function:** The constructor for a new NSVisualEffectViewMBS object.  
See also:

- 32.81.5 Constructor(Handle as Integer)
- 32.81.6 Constructor(left as Double, top as Double, width as Double, height as Double)

32.81.5  Constructor(Handle as Integer)

**Function:** Creates an object based on the given NSVisualEffectView handle.  
**Example:**


dim t as new NSVisualEffectViewMBS(0, 0, 100, 100)
dim v as new NSVisualEffectViewMBS(t.handle)
MsgBox str(v.Bounds.Width)+” x “+str(v.Bounds.Height)

**Notes:** The handle is casted to a NSVisualEffectView and the plugin retains this handle. See also:

- 32.81.4 Constructor 6077
- 32.81.6 Constructor(left as Double, top as Double, width as Double, height as Double) 6078

### 32.81.6 Constructor(left as Double, top as Double, width as Double, height as Double)

**Function:** The constructor for a new NSVisualEffectViewMBS object. See also:

- 32.81.4 Constructor 6077
- 32.81.5 Constructor(Handle as Integer) 6077

### 32.81.7 Properties

#### 32.81.8 blendingMode as Integer

**Function:** How this backdrop view blurs its contents.
**Notes:**

It can either blend with the contents behind the window (NSVisualEffectBlendingModeBehindWindow – the default), or within the current window (NSVisualEffectBlendingModeWithinWindow). The blending mode for the material NSVisualEffectMaterialTitlebar can only be NSVisualEffectBlendingModeWithinWindow.

The blendingMode NSVisualEffectBlendingModeWithinWindow requires WantsLayer = true to be done on the parent view that you desire to blend with.
(Read and Write property)

### 32.81.9 interiorBackgroundStyle as Integer

**Function:** The interior background style.
Notes:
Returns "Light" or "Dark" depending on the material selected.
(Read only property)

32.81.10  maskImage as NSImageMBS

Notes: (Read and Write property)

32.81.11  material as Integer

Notes: The default value is NSVisualEffectMaterialAppearanceBased; the material is updated to be the correct material based on the appearance set on this view.
(Read and Write property)

32.81.12  state as Integer

Notes: The state defaults to NSVisualEffectStateFollowsWindowActiveState.
(Read and Write property)

32.81.13  Constants

32.81.14  NSBackgroundStyleDark = 1

MBS MacExtras Plugin, Plugin Version: 14.3. Function: One of the background style constants.
Notes: Dark
32.81.15 NSBackgroundStyleLight = 0

MBS MacExtras Plugin, Plugin Version: 14.3. **Function:** One of the background style constants.  
**Notes:** Light

32.81.16 NSVisualEffectBlendingModeBehindWindow = 0

MBS MacExtras Plugin, Plugin Version: 14.3. **Function:** One of the blending modes.  
**Notes:** Blends and blurs with the contents behind the window (such as the desktop or other windows). These can overlap, and the view lower in the hierarchy will "win".

32.81.17 NSVisualEffectBlendingModeWithinWindow = 1

MBS MacExtras Plugin, Plugin Version: 14.3. **Function:** One of the blending modes.  
**Notes:** Blends and blurs with contents behind the view in the current window only. For now, these cannot overlap each other. This mode REQUIRES layer-backing with view.wantsLayer = true.

32.81.18 NSVisualEffectMaterialAppearanceBased = 0

MBS MacExtras Plugin, Plugin Version: 14.3. **Function:** One of the material constants.  
**Notes:** When NSVisualEffectMaterialAppearanceBased is set, the material color is determined by the current effectiveAppearance that is on the view.

32.81.19 NSVisualEffectMaterialDark = 2

MBS MacExtras Plugin, Plugin Version: 14.3. **Function:** One of the material constants.  
**Notes:** Dark

32.81.20 NSVisualEffectMaterialLight = 1

MBS MacExtras Plugin, Plugin Version: 14.3. **Function:** One of the material constants.  
**Notes:** Light
32.81.1  CLASS NSVISUALEFFECTVIEWMBS

32.81.21  NSVisualEffectMaterialTitlebar = 3

MBS MacExtras Plugin, Plugin Version: 14.3. **Function:** One of the material constants. **Notes:** Title bar

32.81.22  NSVisualEffectStateActive = 1

MBS MacExtras Plugin, Plugin Version: 14.3. **Function:** The state constants. **Notes:** The backdrop is explicitly active, always.

32.81.23  NSVisualEffectStateFollowsWindowActiveState = 0

MBS MacExtras Plugin, Plugin Version: 14.3. **Function:** The state constants. **Notes:** The backdrop automatically appears active when the window is active, and inactive when it is not active.

32.81.24  NSVisualEffectStateInactive = 2

MBS MacExtras Plugin, Plugin Version: 14.3. **Function:** The state constants. **Notes:** The backdrop is explicitly inactive.
32.82 class NSWindowControllerMBS

32.82.1 class NSWindowControllerMBS

MBS MacBase Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An NSWindowController object manages a window, usually a window stored in a nib file. **Notes:**

Please read Apple's documentation for details:

Subclass of the NSResponderMBS class.

32.82.2 Methods

32.82.3 close

MBS MacBase Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Closes the window if it was loaded. **Notes:** Because this method closes the window without asking the user for confirmation, you usually do not invoke it when the Close menu command is chosen. Instead invoke NSWindow's performClose on the receiver's window.

32.82.4 Constructor(win as NSWindowMBS)

MBS MacBase Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a window controller initialized with a given window. **Notes:**

window: The window object to manage; can be nil.
Returns a newly initialized window controller.
This method is the designated initializer for NSWindowController.

This initializer is useful when a window has been loaded but no window controller is assigned. The default initialization turns on cascading, sets the shouldCloseDocument flag to NO, and sets the window frame autosave name to an empty string. As a side effect, the created window controller is added as an observer of the NSWindowWillCloseNotifications posted by that window object (which is handled by a private method). If you make the window controller a delegate of the window, you can implement NSWindow’s windowShouldClose delegate method.

See also:

- 32.82.5 Constructor(windowNibName as string)
32.82. CLASS NSWindowControllerMBS

32.82.5 Constructor(windowNibName as string)

**Notes:**

windowNibName: The name of the nib file (minus the ".nib" extension) that archives the receiver’s window; cannot be empty.

Sets the owner of the nib file to the receiver. The default initialization turns on cascading, sets the shouldCloseDocument flag to false, and sets the autosave name for the window’s frame to an empty string.  
See also:

- 32.82.4 Constructor(win as NSWindowMBS)

32.82.6 showWindow

MBS MacBase Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Displays the window associated with the receiver.  
**Notes:** If the window is an NSPanel object and has its becomesKeyOnlyIfNeeded flag set to true, the window is displayed in front of all other windows but is not made key; otherwise it is displayed in front and is made key. This method is useful for menu actions.

32.82.7 synchronizeWindowTitleWithDocumentName

MBS MacBase Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Synchronizes the displayed window title and the represented filename with the information in the associated document.  
**Notes:** Does nothing if the window controller has no associated document or loaded window. This method queries the window controller’s document to get the document’s display name and full filename path, then calls windowTitleForDocumentDirectoryName to get the display name to show in the window title.

32.82.8 Properties

32.82.9 className as string

MBS MacBase Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of this NSWindowController class.  
**Notes:** (Read only property)
32.82.10 **classPath as string**

MBS MacBase Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The path of this NSWindowController class.

**Notes:**
Useful for debugging to know what super classes the window controller has.
(Read only property)

32.82.11 **shouldCascadeWindows as boolean**

MBS MacBase Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the receiver should necessarily close the associated document when the window it manages is closed.

**Notes:**
True if the receiver necessarily closes the associated document when the window it manages is closed, false otherwise.
If false, the document is closed only when the last remaining window of the document is closed.
The default is false.
(Read and Write property)

32.82.12 **shouldCloseDocument as boolean**

MBS MacBase Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the receiver should necessarily close the associated document when the window it manages is closed.

**Notes:**
True if the receiver necessarily closes the associated document when the window it manages is closed, false otherwise.
If false, the document is closed only when the last remaining window of the document is closed.
The default is false.
(Read and Write property)

32.82.13 **window as NSWindowMBS**

MBS MacBase Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The window owned by the controller.

**Notes:**
If the window has not yet been loaded, this method attempts to load the window’s nib file using loadWindow. Before it loads the window, it invokes windowWillLoad, and if the window controller has a document, it
invokes the document’s corresponding method windowControllerWillLoadNib (if implemented). After loading the window, this method invokes windowDidLoad and, if there is a document, the NSDocument method windowControllerDidLoadNib (if implemented).

(Read and Write property)

### 32.82.14 windowFrameAutosaveName as string

MBS MacBase Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name under which the frame rectangle of the window owned by the receiver is stored in the defaults database.

**Notes:**

By default, name is an empty string, causing no information to be stored in the defaults database.

(Read and Write property)

### 32.82.15 windowNibName as string

MBS MacBase Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the name of the nib file that stores the window associated with the receiver.

**Notes:** (Read only property)

### 32.82.16 windowNibPath as string

MBS MacBase Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the full path of the nib file that stores the window associated with the receiver.

**Notes:**

The full path of the nib file that stores the window associated with the receiver; ”” if it cannot be located.

(Read only property)
32.83 class NSWindowDelegateMBS

32.83.1 class NSWindowDelegateMBS


Function: A Real Studio class for a cocoa windows delegate.

Notes:
The NSWindowDelegate protocol defines the methods that a delegate of NSWindow should implement. All methods in this protocol are optional.

By implementing these methods, the delegate may respond to window resizing, moving, exposing, minimizing, and a number of other window events.

32.83.2 Methods

32.83.3 Constructor(win as NSWindowMBS)


Function: Initializes the delegate class pointing to the Cocoa window.

Notes: The original delegate on the window is preserved and all messages are forwarded to it. Also when this object is destroyed, the old delegate is restored.

See also:
- 32.83.4 Constructor(win as window)

32.83.4 Constructor(win as window)


Function: Initializes the delegate class pointing to the Real Studio window.

Notes: This class does not keep a reference to the window, so you can keep this delegate as a property of the window without a memory leak.

The original delegate from Real Studio is preserved and all messages are forwarded to it. Also when this object is destroyed, the old delegate is restored.

See also:
- 32.83.3 Constructor(win as NSWindowMBS)
32.83. CLASS NSWINDOWDELEGATEMBS

32.83.5 InstallRestoreEvents

MBS MacCocoa Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Activates plugin code to catch events restoreStateWithCoder and encodeRestorableStateWithCoder.

32.83.6 Events

32.83.7 concludeDragOperation(sender as NSDraggingInfoMBS)

MBS MacCocoa Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Invoked when the dragging operation is complete, signaling the receiver to perform any necessary clean-up.

**Notes:**

sender: The object sending the message; use it to get details about the dragging operation.

For this method to be invoked, the previous performDragOperation must have returned true.

The destination implements this method to perform any tidying up that it needs to do, such as updating its visual representation now that it has incorporated the dragged data. This message is the last message sent from sender to the destination during a dragging session.

If the sender object’s animatesToDestination property was set to true in prepareForDragOperation, then the drag image is still visible. At this point you should draw the final visual representation in the view. When this method returns, the drag image is removed form the screen. If your final visual representation matches the visual representation in the drag, this is a seamless transition.

32.83.8 customWindowsToEnterFullScreenForWindow(win as NSWindowMBS) as NSWindowMBS()

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Invoked when the window is about to enter full screen mode.

**Notes:**

win: The window to enter to full screen mode.

Return an array of windows involved in the animation to fullscreen for window; otherwise nil.

This method lets a window delegate to customize the animation by providing a custom window or windows containing layers or other effects. If you do not want to perform custom animation, you can omit the implementation of this method, or it can return nil.
Available in Mac OS X v10.7 and later.

### 32.83.9 `customWindowsToExitFullScreenForWindow(win as NSWindowMBS) as NSWindowMBS()`


**Function:** The system has started its animation out of fullscreen, including transitioning back to the desktop space.

**Notes:**

- `win`: The window to exit fullscreen.

Return true if the window wants to run a custom animation; otherwise false if the default NSWindow animation should be used.

This method lets the window delegate customize the animation when the window is about to exit fullscreen. If you do not want to perform custom animation, you can omit the implementation of this method, or it can return nil.

Available in Mac OS X v10.7 and later.

### 32.83.10 `didDecodeRestorableState(win as NSWindowMBS, state as NSCoderMBS)`


**Function:** Tells the delegate the window is has extracted its restorable state from a given archiver.

**Notes:**

- `win`: The window extracting its restorable state from an archive.
- `state`: The coder extracting the archive.

This method is invoked during the window’s `restoreStateWithCoder` method.

Available in Mac OS X v10.7 and later.
32.83.11 draggingEnded(sender as NSDraggingInfoMBS)


Function: Implement this event to be notified when a drag operation ends in some other destination.

Notes:

sender: The object sending the message; use it to get details about the dragging operation.

This method might be used by a destination doing auto-expansion in order to collapse any auto-expands.

32.83.12 draggingEntered(sender as NSDraggingInfoMBS) as Integer


Function: Invoked when the dragged image enters destination bounds or frame; delegate returns dragging operation to perform.

Notes:

sender: The object sending the message; use it to get details about the dragging operation.

Return one (and only one) of the dragging operation constants described in NSDragOperation in the NS-DraggingInfo reference. The default return value (if this method is not implemented by the destination) is the value returned by the previous draggingEntered message.

Invoked when a dragged image enters the destination but only if the destination has registered for the pasteboard data type involved in the drag operation. Specifically, this method is invoked when the mouse pointer enters the destination’s bounds rectangle (if it is a view object) or its frame rectangle (if it is a window object).

This method must return a value that indicates which dragging operation the destination will perform when the image is released. In deciding which dragging operation to return, the method should evaluate the overlap between both the dragging operations allowed by the source (obtained from sender with the draggingSourceOperationMask method) and the dragging operations and pasteboard data types the destination itself supports.

If none of the operations is appropriate, this method should return NSDragOperationNone (this is the default response if the method is not implemented by the destination). A destination will still receive draggingUpdated and draggingExited even if NSDragOperationNone is returned by this method.

32.83.13 draggingExited(sender as NSDraggingInfoMBS)


Function: Invoked when the dragged image exits the destination’s bounds rectangle (in the case of a view object)
or its frame rectangle (in the case of a window object).
Notes: sender: The object sending the message; use it to get details about the dragging operation.

32.83.14 draggingUpdated(sender as NSDraggingInfoMBS) as Integer

Function: Invoked periodically as the image is held within the destination area, allowing modification of
the dragging operation or mouse-pointer position.
Notes:
sender: The object sending the message; use it to get details about the dragging operation.

Return one (and only one) of the dragging operation constants described in NSDragOperation in the NS-
DraggingInfo reference. The default return value (if this method is not implemented by the destination) is
the value returned by the previous draggingEntered message.

For this to be invoked, the destination must have registered for the pasteboard data type involved in the
drag operation. The messages continue until the image is either released or dragged out of the window or view.

This method provides the destination with an opportunity to modify the dragging operation depending on
the position of the mouse pointer inside of the destination view or window object. For example, you may have
several graphics or areas of text contained within the same view and wish to tailor the dragging operation,
or to ignore the drag event completely, depending upon which object is underneath the mouse pointer at the
time when the user releases the dragged image and the performDragOperation method is invoked.

You typically examine the contents of the pasteboard in the draggingEntered method, where this examina-
tion is performed only once, rather than in the draggingUpdated method, which is invoked multiple times.

Only one destination at a time receives a sequence of draggingUpdated messages. If the mouse pointer is
within the bounds of two overlapping views that are both valid destinations, the uppermost view receives
these messages until the image is either released or dragged out.

32.83.15 encodeRestorableStateWithCoder(win as NSWindowMBS, coder as
NSCoderMBS)

Function: Method called to save the restorable state.
Notes:
The receiver is passed an NSCoderMBS that supports keyed encoding (but not decoding), and should encode
its restorable state. If you override this method, you should call through to super. You should not otherwise
invoke this method. If you encode an object that implements the NSUserInterfaceItemIdentification protocol, the object itself is not archived; only its identifier is stored. Thus, for example, a window may efficiently store its firstResponder as restorable state.

Called only if you called InstallRestoreEvents at least ones.

**32.83.16 performDragOperation(sender as NSDraggingInfoMBS) as boolean**


**Function:** Invoked after the released image has been removed from the screen, signaling the receiver to import the pasteboard data.

**Notes:**

sender: The object sending the message; use it to get details about the dragging operation.

Return if the destination accepts the data, it returns true; otherwise it returns false. The default is to return false.

For this method to be invoked, the previous prepareForDragOperation message must have returned true. The destination should implement this method to do the real work of importing the pasteboard data represented by the image.

If the sender object's animatesToDestination was set to true in prepareForDragOperation, then setup any animation to arrange space for the drag items to animate to. Also at this time, enumerate through the dragging items to set their destination frames and destination images.

**32.83.17 prepareForDragOperation(sender as NSDraggingInfoMBS) as boolean**


**Function:** Invoked when the image is released, allowing the receiver to agree to or refuse drag operation.

**Notes:**

sender: The object sending the message; use it to get details about the dragging operation.

Returns true if the receiver agrees to perform the drag operation and false if not.

This method is invoked only if the most recent draggingEntered or draggingUpdated message returned an acceptable drag-operation value.

If you want the drag items to animate from their current location on screen to their final location in your view, set the sender object’s animatesToDestination property to true in your implementation of this method.
32.83.18  **restoreStateWithCoder**(win as NSWindowMBS, coder as NSCoderMBS)

**Function:** Method called to restore state.
**Notes:**
The receiver is passed an NSCoder that supports keyed decoding (but not encoding). The receiver should decode any previously stored state. If you override this method, you should call through to super. You should not otherwise invoke this method.
Called only if you called InstallRestoreEvents at least ones.

32.83.19  **shouldDragDocumentWithEvent**(win as NSWindowMBS, evnt as NSEventMBS, dragImageLocation as NSPointMBS, pasteboard as Variant) as boolean

**Function:** Asks the delegate whether a user can drag the document icon from the window’s title bar.
**Notes:**
win: The window containing the document icon the user wants to drag.
evnt: The left-mouse down event that triggered the dragging operation.
dragImageLocation: The location at which the user started the dragging operation.
pasteboard: The pasteboard containing the contents of the document, which the delegate can modify. This is a NSPasteboardMBS object.

Return true to allow the drag to proceed; false to prevent it. Before turning no the delegate can implement its own dragging behavior as described below.

Implementing this method allows an application to customize the process of dragging the window’s document icon. Implement its own dragging process, the delegate can perform the dragging operation and return false.

The delegate can prohibit the drag by returning false. Before returning false, the delegate may implement its own dragging behavior.

Available in Mac OS X v10.5 and later.

32.83.20  **shouldPopUpDocumentPathMenu**(win as NSWindowMBS, menu as NSMenuMBS) as boolean

**Function:** Asks the delegate whether the window displays the title pop-up menu in response to a Command-click or Control-click on its title.
32.83. **CLASS NSWINDOWDELEGATEMBS**

**Notes:**

win: The window whose title the user Command-clicked or Control-clicked.

menu: The menu the window will display, if allowed. By default, its items are the path components of the file represented by window.

Returns true to allow the display of the title pop-up menu; false to prevent it.

Available in Mac OS X v10.5 and later.

### 32.83.21 startCustomAnimationToEnterFullScreenWithDuration(win as NSWindowMBS, duration as Double)


**Function:** Invoked when the window is about to enter fullscreen mode.

**Notes:**

win: The window to enter to full screen mode.

duration: The duration of the presentation change.

This method is called to start the window animation into fullscreen, including transitioning to a new space. You can implement this method to perform custom animation with the given duration to be in sync with the system animation.

**Special Considerations**

This method is called only if customWindowsToEnterFullScreenForWindow returned non-nil.

Available in Mac OS X v10.7 and later.

### 32.83.22 startCustomAnimationToExitFullScreenWithDuration(win as NSWindowMBS, duration as Double)


**Function:** Informs the delegate that the window is about to enter fullscreen mode.

**Notes:**

win: The window to exit to fullscreen.

duration: The duration of the presentation change.

**Special Considerations**

This method is called only if customWindowsToExitFullScreenForWindow returned non-nil.
Available in Mac OS X v10.7 and later.

32.83.23 updateDraggingItemsForDrag(sender as NSDraggingInfoMBS)


**Function:** Invoked when the dragging images should be changed.

**Notes:**

sender: The object sending the message; use this object to get details about the dragging operation.

While a destination may change the dragging images at any time, it is recommended to wait until this method is called before updating the dragging images.

This allows the system to delay changing the dragging images until it is likely that the user will drop on this destination. Otherwise, the dragging images will change too often during the drag which would be distracting to the user.

32.83.24 wantsPeriodicDraggingUpdates as boolean


**Function:** Asks the destination object whether it wants to receive periodic draggingUpdated messages.

**Notes:**

Return true if the destination wants to receive periodic draggingUpdated messages, false otherwise.

If the destination returns false, these messages are sent only when the mouse moves or a modifier flag changes. Otherwise the destination gets the default behavior, where it receives periodic dragging-updated messages even if nothing changes.

32.83.25 willEncodeRestorableState(win as NSWindowMBS, state as NSCoderMBS)


**Function:** Tells the delegate the window is about to add its restorable state to a given archiver.

**Notes:**

win: The window adding its restorable state to an archive.
state: The coder creating the archive.
This method is invoked during the window’s encodeRestorableStateWithCoder method.

Available in Mac OS X v10.7 and later.

### 32.83.26 willPositionSheet

```objc
willPositionSheet(win as NSWindowMBS, sheet as NSWindowMBS,
rect as NSRectMBS) as NSRectMBS
```


**Function:** Tells the delegate that the window is about to show a sheet at the specified location, giving it the opportunity to return a custom location for the attachment of the sheet to the window.

**Notes:**

- **win:** The window containing the sheet to be animated.
- **sheet:** The sheet to be shown.
- **rect:** The default sheet location, just under the title bar of the window, aligned with the left and right edges of the window.

Return the custom location specified.

This method is also invoked whenever the user resizes window while sheet is attached.

This method is useful in many situations. If your window has a toolbar, for example, you can specify a location for the sheet that is just below it. If you want the sheet associated with a certain control or view, you could position the sheet so that it appears to originate from the object (through animation) or is positioned next to it.

Neither the rect parameter nor the returned NSRect value define the boundary of the sheet. They indicate where the top-left edge of the sheet is attached to the window. The origin is expressed in window coordinates; the default origin.y value is the height of the content view and the default origin.x value is 0. The size.width value indicates the width and behavior of the initial animation; if size.width is narrower than the sheet, the sheet genies out from the specified location, and if size.width is wider than the sheet, the sheet slides out. You cannot affect the size of the sheet through the size.width and size.height fields. It is recommended that you specify zero for the size.height value as this field may have additional meaning in a future release.

Available in Mac OS X v10.3 and later.
32.83.27 willResizeForVersionBrowser(win as NSWindowMBS, maxPreferredFrameSize as NSSizeMBS, maxAllowedFrameSize as NSSizeMBS) as NSSizeMBS

Function: Tells the delegate the the window will resize for presentation during version browsing.
Notes:
win: The window being presented in a version browser.
maxPreferredSize: The maximum size the version browser would prefer the window to be.
maxAllowedSize: The maximum allowed size for the window (the full screen frame minus the margins required to ensure the Versions controls are still visible).

Returns the size that the window should be.

Windows entering the version browser will be resized to the size returned by this method. If either dimension of the returned size is larger than the maxPreferredFrameSize, the window will also be scaled down to ensure it fits properly in the version browser.

If this method is not implemented, the version browser will use windowWillUseStandardFrame to determine the resulting window frame size.

Available in Mac OS X v10.7 and later.

32.83.28 willUseFullScreenContentSize(win as NSWindowMBS, proposedSize as NSSizeMBS) as NSSizeMBS

Function: Invoked to allow the delegate to modify the fullscreen content size.
Notes:
win: The window to enter to full screen mode.
proposedSize: The proposed window size.

Returns the window size to actually use when displaying content size.

Available in Mac OS X v10.7 and later.
32.83.29 willUseFullScreenPresentationOptions(win as NSWindowMBS, proposedOptions as Integer) as Integer


**Function:** Returns the presentation options the window will use when transitioning to fullscreen.

**Notes:**

win: The window to enter to full screen mode.
proposedOptions: The proposed options. See NSApplicationPresentationOptions for the possible values.

Return the options the window should use when transitioning to fullscreen. These may be the same as the proposedOptions or may be modified.

Available in Mac OS X v10.7 and later.

32.83.30 windowDid BecomeKey(notification as NSNotificationMBS)


**Function:** Informs the delegate that the window has become the key window.

**Notes:**

notification: A notification named NSWindowDidBecomeKeyNotification.

You can retrieve the window object in question by sending object to notification.

Available in Mac OS X v10.0 and later.

32.83.31 windowDidBecomeMain(notification as NSNotificationMBS)


**Function:** Informs the delegate that the window has become main.

**Notes:**

notification: A notification named NSWindowDidBecomeMainNotification.

You can retrieve the window object in question by sending object to notification.

Available in Mac OS X v10.0 and later.
32.83.32 windowDidChangeScreen(notification as NSNotificationMBS)

Function: Tells the delegate that the window has changed screens.
Notes:
notification: A notification named NSWindowDidChangeScreenNotification.

You can retrieve the NSWindow object in question by sending object to notification.

Available in Mac OS X v10.0 and later.

32.83.33 windowDidChangeScreenProfile(notification as NSNotificationMBS)

Function: Tells the delegate that the window has changed screen display profiles.
Notes:
notification: A notification named NSWindowDidChangeScreenProfileNotification.

You can retrieve the NSWindow object in question by sending object to notification.

Available in Mac OS X v10.4 and later.

32.83.34 windowDidDeminiaturize(notification as NSNotificationMBS)

Function: Tells the delegate that the window has been deminimized.
Notes:
notification: A notification named NSWindowDidDeminiaturizeNotification

You can retrieve the NSWindow object in question by sending object to notification.

Available in Mac OS X v10.0 and later.
32.83.35  windowDidEndLiveResize(notification as NSNotificationMBS)

Function: Informs the delegate that a live resize operation on the window has ended.
Notes:
notification: A notification named NSWindowDidEndLiveResizeNotification.

You can retrieve the window object in question by sending object to notification.
Available in Mac OS X v10.6 and later.

32.83.36  windowDidEndSheet(notification as NSNotificationMBS)

Function: Tells the delegate that the window has closed a sheet.
Notes:
notification: A notification named NSWindowDidEndSheetNotification.

You can retrieve the window object in question by sending object to notification.
Available in Mac OS X v10.1 and later.

32.83.37  windowDidEnterFullScreen(notification as NSNotificationMBS)

Function: The window just entered fullscreen mode.
Notes:
notification: A notification named NSWindowDidEnterFullScreenNotification.
Available in Mac OS X v10.7 and later.

32.83.38  windowDidEnterVersionBrowser(notification as NSNotificationMBS)

Function: Tells the delegate the the window just entered version browsing.
Notes:
notification: An NSWindowDidEnterVersionBrowserNotification notification.

Available in Mac OS X v10.7 and later.
32.83.39 windowDidExitFullScreen(notification as NSNotificationMBS)

Function: The window is about to enter fullscreen mode.
Notes:
notification: A notification named NSWindowDidExitFullScreenNotification.
Available in Mac OS X v10.7 and later.

32.83.40 windowDidExitVersionBrowser(notification as NSNotificationMBS)

Function: Tells the delegate the the window is about to leave version browsing.
Notes:
notification: An NSWindowDidExitVersionBrowserNotification notification.
Available in Mac OS X v10.7 and later.

32.83.41 windowDidExpose(notification as NSNotificationMBS)

Function: Tells the delegate that the window has been exposed.
Notes:
notification: A notification named NSWindowDidExposeNotification.
You can retrieve the window object in question by sending object to notification.
Available in Mac OS X v10.0 and later.

32.83.42 windowDidFailToEnterFullScreen(win as NSWindowMBS)

Function: Invoked if the window failed to enter fullscreen.
Notes:
win: The window that failed to enter to full screen mode.

In some cases, the transition to enter fullscreen will fail, due to being in the midst of handling some other animation or user gesture. This method indicates that there was an error, and you should clean up any work you may have done to prepare to enter fullscreen.

This message is sent whether or not the delegate indicated a custom animation by returning non-nil from customWindowsToEnterFullScreenForWindow.
### 32.83.43 `windowDidFailToExitFullScreen(win as NSWindowMBS)`

**MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No.**  
**Function:** Invoked if the window failed to exit fullscreen.  
**Notes:**  
- `win`: The window that failed to exit to fullscreen.  

In some cases, the transition to exit fullscreen will fail, due to being in the midst of handling some other animation or user gesture. This method indicates that there was an error, and you should clean up any work you may have done to prepare to enter fullscreen.

This message is sent whether or not the delegate indicated a custom animation by returning non-nil from `customWindowsToExitFullScreenForWindow`.

Available in Mac OS X v10.7 and later.

### 32.83.44 `windowDidMiniaturize(notification as NSNotificationMBS)`

**MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No.**  
**Function:** Tells the delegate that the window has been minimized.  
**Notes:**  
- `notification`: A notification named `NSWindowDidMiniaturizeNotification`.

You can retrieve the `NSWindow` object in question by sending `object` to `notification`.

Available in Mac OS X v10.0 and later.

### 32.83.45 `windowDidMove(notification as NSNotificationMBS)`

**MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No.**  
**Function:** Tells the delegate that the window has moved.  
**Notes:**  
- `notification`: A notification named `NSWindowDidMoveNotification`.
You can retrieve the NSWindow object in question by sending object to notification.
Available in Mac OS X v10.0 and later.

32.83.46  windowDidResignKey(notification as NSNotificationMBS)

Function: Informs the delegate that the window has resigned key window status.
Notes:
notification: A notification named NSWindowDidResignKeyNotification.

You can retrieve the window object in question by sending object to notification.
Available in Mac OS X v10.0 and later.

32.83.47  windowDidResignMain(notification as NSNotificationMBS)

Function: Informs the delegate that the window has resigned main window status.
Notes:
notification: A notification named NSWindowDidResignMainNotification.

You can retrieve the window object in question by sending object to notification.
Available in Mac OS X v10.0 and later.

32.83.48  windowDidChange(notification as NSNotificationMBS)

Function: Informs the delegate that the window has been resized.
Notes:
notification: A notification named NSWindowDidChangeNotification.

You can retrieve the window object in question by sending object to notification.
Available in Mac OS X v10.0 and later.
32.83.49 windowDidUpdate(notification as NSNotificationMBS)

Function: Tells the delegate that the window received an update message.
Notes:
notification: A notification named NSWindowDidUpdateNotification

You can retrieve the window object in question by sending object to notification.
Available in Mac OS X v10.0 and later.

32.83.50 windowShouldClose as boolean

Function: Tells the delegate that the user has attempted to close a window or the window has received a performClose message.
Notes:
Return true to allow sender to be closed; otherwise, false.

This method may not always be called during window closing. Specifically, this method is not called when a user quits an application.

Available in Mac OS X v10.0 and later.

32.83.51 windowShouldZoom(win as NSWindowMBS, newFrame as NSRectMBS) as boolean

Function: Asks the delegate whether the specified window should zoom to the specified frame.
Notes:
win: The window being zoomed.
newFrame: The rectangle to which the specified window is being zoomed.

Return true to allow window’s frame to become newFrame; otherwise, false.

Available in Mac OS X v10.0 and later.
32.83.52  windowWillBeginSheet(notification as NSNotificationMBS)

Function: Notifies the delegate that the window is about to open a sheet.
Notes: notification: A notification named NSWindowWillBeginSheetNotification.
You can retrieve the window object in question by sending object to notification. Available in Mac OS X v10.1 and later.

32.83.53  windowWillClose(notification as NSNotificationMBS)

Function: Tells the delegate that the window is about to close.
Notes: notification: A notification named NSWindowWillCloseNotification.
You can retrieve the NSWindow object in question by sending object to notification. Available in Mac OS X v10.0 and later.

32.83.54  windowWillEnterFullScreen(notification as NSNotificationMBS)

Function: The window is about to enter fullscreen mode.
Notes: notification: A notification named NSWindowWillEnterFullScreenNotification.
Available in Mac OS X v10.7 and later.

32.83.55  windowWillEnterVersionBrowser(notification as NSNotificationMBS)

Function: Tells the delegate the the window is about to enter version browsing.
Notes: notification: An NSWindowWillEnterVersionBrowserNotification notification. Available in Mac OS X v10.7 and later.
32.83.56 windowWillExitFullScreen(notification as NSNotificationMBS)

Function: The window is about to exit fullscreen mode.
Notes:
notification: A notification named NSWindowWillExitFullScreenNotification.
Available in Mac OS X v10.7 and later.

32.83.57 windowWillExitVersionBrowser(notification as NSNotificationMBS)

Function: Tells the delegate the the window just left version browsing.
Notes:
notification: An NSWindowWillExitVersionBrowserNotification notification.
Available in Mac OS X v10.7 and later.

32.83.58 windowWillMiniaturize(notification as NSNotificationMBS)

Function: Tells the delegate that the window is about to be minimized.
Notes:
notification: A notification named NSWindowWillMiniaturizeNotification.
You can retrieve the NSWindow object in question by sending object to notification.
Available in Mac OS X v10.0 and later.

32.83.59 windowWillMove(notification as NSNotificationMBS)

Function: Tells the delegate that the window is about to move.
Notes:
notification: A notification named NSWindowWillMoveNotification.
You can retrieve the NSWindow object in question by sending object to notification.
Available in Mac OS X v10.0 and later.
32.83.60  windowWillResize(win as NSWindowMBS, newFrameSize as NSSizeMBS, newSize as NSSizeMBS) as NSSizeMBS

Function: Tells the delegate that the window is being resized (whether by the user or through one of the setFrame... methods other than setFrame:display:).
Notes: The plugin first passes the event to Real Studio runtime. In the newSize parameter you get the result from the runtime. Now you can decide. If you return nil, the newSize value is used.

win: The window being resized.
frameSize: The size to which the specified window is being resized.
newSize: The size Real Studio wants to use.

Return a custom size to which the specified window will be resized.

The frameSize contains the size (in screen coordinates) sender will be resized to. To resize to a different size, simply return the desired size from this method; to avoid resizing, return the current size. sender’s minimum and maximum size constraints have already been applied when this method is invoked.

While the user is resizing a window, the delegate is sent a series of windowWillResize messages as the window’s outline is dragged. The window’s outline is displayed at the constrained size as set by this method.

Available in Mac OS X v10.0 and later.

32.83.61  windowWillReturnUndoManager(win as NSWindowMBS) as NSUndoManagerMBS

Function: Tells the delegate that the window’s undo manager has been requested. Returns the appropriate undo manager for the window.
Notes: win: The window whose undo manager is being requested.

Return the appropriate undo manager for the specified window.

If this method is not implemented by the delegate, the window creates an NSUndoManager for window.

Available in Mac OS X v10.0 and later.
## 32.83.62 windowWillStartLiveResize(notification as NSNotificationMBS)


**Function:** Informs the delegate that the window is about to be live resized.

**Notes:**

notification: A notification named NSWindowWillStartLiveResizeNotification.

You can retrieve the window object in question by sending object to notification.

Available in Mac OS X v10.6 and later.

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## 32.83.63 windowWillUseStandardFrame(win as NSWindowMBS, newFrame as NSRectMBS) as NSRectMBS


**Function:** Invoked by NSWindow’s zoom: method while determining the frame a window may be zoomed to.

**Notes:**

win: The window whose frame size is being determined.

newFrame: The size of the current screen, which is the screen containing the largest part of the window’s current frame, possibly reduced on the top, bottom, left, or right, depending on the current interface style. The frame is reduced on the top to leave room for the menu bar.

Return the specified window's standard frame.

The standard frame for a window should supply the size and location that are "best" for the type of information shown in the window, taking into account the available display or displays. For example, the best width for a window that displays a word-processing document is the width of a page or the width of the display, whichever is smaller. The best height can be determined similarly. On return from this method, the zoom: method modifies the returned standard frame, if necessary, to fit on the current screen.

Available in Mac OS X v10.0 and later.
32.84 class NSWindowMBS

32.84.1 class NSWindowMBS

MBS MacBase Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Cocoa class for a window.
**Notes:** Subclass of the NSResponderMBS class.

32.84.2 Methods

32.84.3 addChildWindow(win as NSWindowMBS, order as Integer)

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds a given window as a child window of the window.
**Notes:**
- win: The child window to order.
- order: Either NSWindowAbove: childWindow is ordered immediately in front of the window, or NSWindowBelow: childWindow is ordered immediately behind the window.

After the childWindow is added as a child of the window, it is maintained in relative position indicated by order mode for subsequent ordering operations involving either window. While this attachment is active, moving childWindow will not cause the window to move (as in sliding a drawer in or out), but moving the window will cause childWindow to move.

Note that you should not create cycles between parent and child windows. For example, you should not add window B as child of window A, then add window A as a child of window B.

See also:
- 32.84.4 addChildWindow(win as window, order as Integer)

32.84.4 addChildWindow(win as window, order as Integer)

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Adds a given window as a child window of the window.
**Notes:**
- win: The child window to order.
- order: Either NSWindowAbove: childWindow is ordered immediately in front of the window, or NSWindowBelow: childWindow is ordered immediately behind the window.

After the childWindow is added as a child of the window, it is maintained in relative position indicated by order mode for subsequent ordering operations involving either window. While this attachment is active,
moving childWindow will not cause the window to move (as in sliding a drawer in or out), but moving the window will cause childWindow to move.

Note that you should not create cycles between parent and child windows. For example, you should not add window B as child of window A, then add window A as a child of window B.

See also:

- 32.84.3 addChildWindow(win as NSWindowMBS, order as Integer)

32.84.5 addTabbedWindow(win as NSWindowMBS, ordered as Integer)

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Allows creating a group of tabbed windows, or adding a new window to an existing tabbed window group.

**Example:**

dim n as NSWindowMBS = window1.NSWindowMBS
n.addTabbedWindow(Window2, n.NSWindowAbove)

**Notes:**

The ‘window’ will be added to the receiver’s tabbed window group, or create a group if needed. The tabbingIdentifier for the entire group should be the same for all the windows, otherwise an exception will be thrown. Use the ordered parameter with "NSWindowAbove" and "NSWindowBelow" to place the new window before or after the receiver’s tab. Passing "NSWindowOut" will thrown an exception. Currently this method is not animatable, but that may change in the future.

Raises an exception when used on OS X 10.11 and older.

32.84.6 animator as NSWindowMBS

MBS MacBase Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the proxy object for this window which animates.

**Example:**

dim v as NSWindowMBS // your NSWindowMBS object
v.alphaValue = 0.5 // switch alpha directly
v.animator.alphaValue = 0.5 // switch alpha animated
32.84.7 areCursorRectsEnabled as boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the window's cursor rectangles are enabled. **Notes:** Available in Mac OS X v10.0 and later.

32.84.8 attachedSheet as NSWindowMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the sheet attached to the window. **Notes:** The sheet attached to the window; nil when the window doesn’t have a sheet attached. Available in Mac OS X v10.1 and later.

32.84.9 autorecalculatesContentBorderThicknessForEdge(edge as Integer) as boolean

MBS MacBase Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates whether the window calculates the thickness of a given border automatically. **Notes:**

- **edge:** Border whose thickness autorecalculation status to set:
  - NSMaxYEdge: Top border.
  - NSMinYEdge: Bottom border.

Returns true when the window auto-recalculates the given border’s thickness; otherwise, false. Requires Mac OS X 10.5.

32.84.10 becomeKeyWindow

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Invoked automatically to inform the window that it has become the key window; never invoke this method directly. **Notes:** This method reestablishes the window’s first responder, sends the becomeKeyWindow message to that object if it responds, and posts an NSWindowDidBecomeKeyNotification to the default notification center.
32.84. CLASS NSWINDOWMBS

32.84.11 becomeMainWindow

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Invoked automatically to inform the window that it has become the main window; never invoke this method directly.

32.84.12 cacheImageInRect(r as NSRectMBS)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Stores the window’s raster image from a given rectangle expressed in the window’s base coordinate system.
**Notes:**
This method allows the window to perform temporary drawing, such as a band around the selection as the user drags the mouse, and to quickly restore the previous image by invoking restoreCachedImage and flushWindowIfNeeded. The next time the window displays, it discards its cached image rectangles. You can also explicitly use discardCachedImage to free the memory occupied by cached image rectangles. aRect is made integral before caching the image to avoid antialiasing artifacts.

Only the last cached rectangle is remembered and can be restored.

32.84.13 Center

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Sets the window’s location to the center of the screen.
**Notes:**
The window is placed exactly in the center horizontally and somewhat above center vertically. Such a placement carries a certain visual immediacy and importance. This method doesn’t put the receiver onscreen, however; use makeKeyAndOrderFront (show) to do that.

You typically use this method to place a windowmost likely an alert dialogwhere the user can’t miss it. This method is invoked automatically when a panel is placed on the screen by the runModalForWindow method of the NSApplication class.

32.84.14 childWindows as NSWindowMBS()

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns an array of the window’s attached child windows.
32.84.15 ClearFocus

MBS MacBase Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Clears the focus.
**Notes:** Moves the focus back to the window.

32.84.16 Close

MBS MacBase Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Closes the window.

32.84.17 Constructor(w as window)

MBS MacBase Plugin, Plugin Version: 9.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a NSWindow for the given REALbasic window.
**Example:**

```realbasic
dim w as new NSWindowMBS(window1)
MsgBox w.Title
```

**Notes:**
In plugin version 9.4 and newer this works only with Cocoa windows.
In plugin version 9.7 and newer you can use it also for Carbon windows.
See also:
- 32.84.18 Constructor(x as Double, y as Double, w as Double, h as Double, styleMask as Integer, BackingStoreType as Integer = 0, deferCreation as boolean = false, canBecomeKeyWindow as boolean = false)

32.84.18 Constructor(x as Double, y as Double, w as Double, h as Double, styleMask as Integer, BackingStoreType as Integer = 0, deferCreation as boolean = false, canBecomeKeyWindow as boolean = false)

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor to create a new Cocoa Windows.
**Notes:**
x, y, w, h:
Location and size of the window’s content area in screen coordinates. Note that the window server limits
window position coordinates to 16,000 and sizes to 10,000.

styleMask:
The window’s style. Either it can be NSBorderlessWindowMask, or it can contain any of the options described in the constants, combined using the bitwiseOR function. Borderless windows display none of the usual peripheral elements and are generally useful only for display or caching purposes; you should normally not need to create them. Also, note that a window’s style mask should include NSTitledWindowMask if it includes any of the others.

bufferingType:
Specifies how the drawing done in the window is buffered by the window device, and possible values are described in “Constants.”

deferCreation:
Specifies whether the window server creates a window device for the window immediately. When true, the window server defers creating the window device until the window is moved onscreen. All display messages sent to the window or its views are postponed until the window is created, just before it’s moved onscreen.

Initialized NSWindow object.

This method is the designated initializer for the NSWindow class.

Deferring the creation of the window improves launch time and minimizes the virtual memory load on the window server.

The new window creates a view to be its default content view. You can replace it with your own object by using the ContentView property.

Parameter canBecomeKeyWindow (in 11.3 plugin) controls whether we use a special NSWindow subclass which returns true for the canBecomeKeyWindow function. This way you can create windows which can take key focus.

See also:

- 32.84.17 Constructor(w as window)

32.84.19  contentBorderThicknessForEdge(edge as Integer) as Double


Notes:

dedge: The border whose thickness to get:
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NSMaxYEdge: Top border.
NSMinYEdge: Bottom border.

Requires Mac OS X 10.5.

32.84.20 contentRectForFrameRect(windowFrame as NSRectMBS) as NSRectMBS

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the window’s content rectangle with a given frame rectangle.

**Example:**

dim w as NSWindowMBS = window1.NSWindowMBS
dim fr as NSRectMBS = w.frame
dim cr as NSRectMBS = w.contentRectForFrameRect(fr)

MsgBox "Title height: " +str(fr.Height-cr.Height)

**Notes:**

windowFrame: The frame rectangle for the window expressed in screen coordinates.

Returns the window’s content rectangle, expressed in screen coordinates, with windowFrame.

The window uses its current style mask in computing the content rectangle. See Window Style Mask constants for a list of style mask values. The main advantage of this instance-method counterpart to contentRectForFrameRect (With styleMask) is that it allows you to take toolbars into account when converting between content and frame rectangles. (The toolbar is not included in the content rectangle.)

See also:

- 32.84.21 contentRectForFrameRect(windowFrame as NSRectMBS, styleMask as UInt32) as NSRectMBS

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32.84.21 contentRectForFrameRect(windowFrame as NSRectMBS, styleMask as UInt32) as NSRectMBS

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the content rectangle used by a window with a given frame rectangle and window style.

**Notes:**

windowFrame: The frame rectangle for the window expressed in screen coordinates.

windowStyle: The window style for the window. See constants for a list of style mask values.
Returns the content rectangle, expressed in screen coordinates, used by the window with windowFrame and windowStyle.
When a NSWindowMBS instance is available, you should use contentRectForFrameRect instead of this method.
See also:

- 32.84.20 contentRectForFrameRect(windowFrame as NSRectMBS) as NSRectMBS

32.84.22 convertBaseToScreen(p as NSPointMBS) as NSPointMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Converts a given point from the window’s base coordinate system to the screen coordinate system.

32.84.23 convertScreenToBase(p as NSPointMBS) as NSPointMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Converts a given point from the screen coordinate system to the window’s base coordinate system.

32.84.24 dataWithEPSInsideRect(r as NSRectMBS) as Memoryblock

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns EPS data that draws the region of the window within a given rectangle.
**Notes:** This data can be placed on a pasteboard, written to a file, or used to create an NSImage object.

32.84.25 dataWithPDFInsideRect(r as NSRectMBS) as Memoryblock

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns PDF data that draws the region of the window within a given rectangle.
**Notes:** This data can be placed on a pasteboard, written to a file, or used to create an NSImage object.

32.84.26 deminiaturize

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This action method deminimizes the receiver.
**Notes:** Invoke this method to programmatically deminimize a minimized window in the Dock.
32.84.27 disableCursorRects

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Disables all cursor rectangle management within the window. **Notes:** Use this method when you need to do some special cursor manipulation and you don’t want the Application Kit interfering.

32.84.28 disableFlushWindow

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Disables the flushWindow method for the window. **Notes:**

If the window is buffered, disabling flushWindow prevents drawing from being automatically flushed by the NSView display... methods from the window’s backing store to the screen. This method permits several views to be drawn before the results are shown to the user.

Flushing should be disabled only temporarily, while the window’s display is being updated. Each disableFlushWindow message must be paired with a subsequent enableFlushWindow message. Invocations of these methods can be nested; flushing isn’t reenabled until the last (unnested) enableFlushWindow message is sent.

32.84.29 disableScreenUpdatesUntilFlush

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Disables the window’s screen updates until the window is flushed. **Notes:**

This method can be invoked to synchronize hardware surface flushes with the window’s flushes. The window immediately disables screen updates using the NSDisableScreenUpdates function and reenables screen updates when the window flushes. Sending this message multiple times during a window update cycle has no effect.

Available in Mac OS X v10.4 and later.

32.84.30 disableSnapshotRestoration

MBS MacBase Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Disable snapshot restoration. **Notes:**

While snapshot restoration is disabled, the window will not be snapshotted for restorable state. Available in OS X v10.7 and later.
32.84.31 discardCachedImage

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Discards all of the window’s cached image rectangles. **Notes:** An NSWindow object automatically discards its cached image rectangles when it displays.

32.84.32 discardCursorRects

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Invalidates all cursor rectangles in the window. **Notes:** This method is invoked by resetCursorRects to clear out existing cursor rectangles before resetting them. You shouldn’t invoke it in the code you write, but you might want to override it to change its behavior.

32.84.33 display

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Passes a display message down the window’s view hierarchy, thus redrawing all views within the window, including the frame view that draws the border, title bar, and other peripheral elements. **Notes:** You rarely need to invoke this method. NSWindow objects normally record which of their views need display and display them automatically on each pass through the event loop.

32.84.34 displayIfNeeded

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Passes a displayIfNeeded message down the window’s view hierarchy, thus redrawing all views that need to be displayed, including the frame view that draws the border, title bar, and other peripheral elements. **Notes:** This method is useful when you want to modify some number of views and then display only the ones that were modified. You rarely need to invoke this method. NSWindow objects normally record which of their views need display and display them automatically on each pass through the event loop.
32.84.35 dockTile as Variant

MBS MacBase Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Provides the application’s Dock tile. **Notes:** Available in Mac OS X v10.5 and later.

32.84.36 dragImage(image as NSImageMBS, viewLocation as NSPointMBS, offset as NSSizeMBS, NSEvent as NSEventMBS, pboard as NSPasteboardMBS, source as NSViewMBS, slideFlag as boolean)

MBS MacBase Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Begins a dragging session. **Notes:**

- image: The object to be dragged.
- imageLocation: Location of the image’s bottom-left corner in the window’s coordinate system. It determines the placement of the dragged image under the pointer.
- offset: The pointer’s location relative to the mouse-down location. Not used in OS X v10.4 and later.
- NSEvent: The left-mouse down event that triggered the dragging operation.
- pasteboard: The pasteboard that holds the data to be transferred to the destination.
- source: The object serving as the controller of the dragging operation. It must conform to the NSDragging-Source protocol.
- slideBack: Specifies whether the drag image should slide back to imageLocation if it’s rejected by the drag destination. Pass true to specify slide back behavior or false to specify that it should not.

This method should be invoked only from within a view’s implementation of the mouseDown or mouseDragged methods (which overrides the version defined in NSResponder class). Essentially the same as the NSView method of the same name, except that imageLocation is given in the NSWindow object’s base coordinate system.

32.84.37 enableCursorRects

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Reenables cursor rectangle management within the window after a disableCursorRects message.

32.84.38 enableFlushWindow

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Reenables the flushWindow method for the window after it was disabled through a previous disableFlushWindow message.
32.84.39  enableSnapshotRestoration

MBS MacBase Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Enable snapshot restoration.  **Notes:**

While snapshot restoration is enabled, the window will be snapshotted for restorable state.
Available in OS X v10.7 and later.

32.84.40  endEditingFor(anObject as object = nil)

MBS MacBase Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Forces the field editor to give up its first responder status and prepares it for its next assignment.  **Notes:**

anObject: The object that is using the window’s field editor.

If the field editor is the first responder, it’s made to resign that status even if its resignFirstResponder method returns false. This registration forces the field editor to send a textDidEndEditing message to its delegate. The field editor is then removed from the view hierarchy, its delegate is set to nil, and it’s emptied of any text it may contain.

This method is typically invoked by the object using the field editor when it’s finished. Other objects normally change the first responder by simply using makeFirstResponder, which allows a field editor or other object to retain its first responder status if, for example, the user has entered an invalid value. The endEditingFor: method should be used only as a last resort if the field editor refuses to resign first responder status. Even in this case, you should always allow the field editor a chance to validate its text and take whatever other action it needs first. You can do this by first trying to make the NSWindow object the first responder.

32.84.41  fieldEditor(createFlag as boolean = True, forObject as object = nil) as Variant

MBS MacBase Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the window’s field editor, creating it if requested.  **Notes:**

Returns NSTextMBS object. Returned as Variant to reduce plugin dependencies.

createWhenNeeded: If true, creates a field editor if one doesn’t exist; if false, does not create a field editor. A freshly created NSWindow object doesn’t have a field editor. After a field editor has been created for a window, the createWhenNeeded argument is ignored. By passing false for createWhenNeeded and testing the return value, however, you can predicate an action on the existence of the field editor.

forObject: A text-displaying object for which the delegate (in windowWillReturnFieldEditor) assigns a cus-
tom field editor. Pass nil to get the default field editor, which can be the NSWindow field editor or a custom field editor returned by the delegate.

Returns the field editor for the designated object (anObject) or, if anObject is nil, the default field editor. Returns nil if createFlag is false and if the field editor doesn’t exist.

The field editor is a single NSTextView object that is shared among all the controls in a window for light text-editing needs. It is automatically instantiated when needed, and it can be used however your application sees fit. Typically, the field editor is used by simple text-bearing objects for example, an NSTextField object uses its window’s field editor to display and manipulate text. The field editor can be shared by any number of objects, and so its state may be constantly changing. Therefore, it shouldn’t be used to display text that demands sophisticated layout (for this you should create a dedicated NSTextView object).

The field editor may be in use by some view object, so be sure to properly dissociate it from that object before actually using it yourself (the appropriate way to do this is illustrated in the description of endEditingFor:). Once you retrieve the field editor, you can insert it in the view hierarchy, set a delegate to interpret text events, and have it perform whatever editing is needed. Then, when it sends a textDidEndEditing message to the delegate, you can get its text to display or store and remove the field editor using endEditingFor.

The window’s delegate can substitute a custom field editor in place of the window’s field editor by implementing windowWillReturnFieldEditor. The custom field editor can become the default editor (common to all text-displaying objects) or specific to a particular text-displaying object (anObject). The window sends this message to its delegate with itself and anObject as the arguments; if the delegate returns a non-nil value, the window returns that object instead of its field editor in fieldEditor. However, note the following:

If the window’s delegate is identical to anObject, windowWillReturnFieldEditor isn’t sent to the delegate. The object returned by the delegate method, though it may become first responder, does not become the window’s default field editor. Other objects continue to use the window’s default field editor.

32.84.42 firstResponder as NSResponderMBS


Notes:
The first responder is usually the first object in a responder chain to receive an event or action message. In most cases, the first responder is a view object in that the user selects or activates with the mouse or keyboard.

You can use the firstResponder method in custom subclasses of responder classes (NSWindow, NSApplication, NSView, and subclasses) to determine if an instance of the subclass is currently the first responder. You can also use it to help locate a text field that currently has first-responder status. For more on this subject, see Event Handling Basics (on developer.apple.com).
32.84.43 flushWindow

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Flushes the window’s offscreen buffer to the screen if the window is buffered and flushing is enabled. **Notes:** Does nothing for other display devices, such as a printer. This method is automatically invoked by the NSWindow display and displayIfNeeded methods and the corresponding NSView display and display-IfNeeded methods.

32.84.44 flushWindowIfNeeded

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Flushes the window’s offscreen buffer to the screen if flushing is enabled and if the last flushWindow message had no effect because flushing was disabled. **Notes:** To avoid unnecessary flushing, use this method rather than flushWindow to flush an NSWindow object after flushing has been reenabled.

32.84.45 frame as NSRectMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The window’s frame rectangle.

32.84.46 frameRectForContentRect(windowContent as NSRectMBS) as NSRectMBS

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the window’s frame rectangle with a given content rectangle. **Notes:**

- windowContent: The content rectangle for the window expressed in screen coordinates.

  Returns the window’s frame rectangle, expressed in screen coordinates, with windowContent.

  The window uses its current style mask in computing the frame rectangle. See "Window Style Masks" for a list of style mask values. The major advantage of this instance-method counterpart to frameRectForContentRect (with styleMask) is that it allows you to take toolbars into account when converting between content and frame rectangles. (The toolbar is included in the frame rectangle but not the content rectangle.) See also:

  • 32.84.47 frameRectForContentRect(windowContentRect as NSRectMBS, styleMask as UInt32) as NSRectMBS
32.84.47  frameRectForContentRect(windowContentRect as NSRectMBS, style-Mask as UInt32) as NSRectMBS

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the frame rectangle used by a window with a given content rectangle and window style. **Notes:**

windowContentRect: The content rectangle for a window expressed in screen coordinates. windowStyle: The window style for the window. See Window Style Mask constants for a list of style mask values.

Returns the frame rectangle, expressed in screen coordinates, used by the window with windowContentRect and windowStyle. When a NSWindowMBS instance is available, you should use frameRectForContentRect instead of this method. See also:

- 32.84.46 frameRectForContentRect(windowContent as NSRectMBS) as NSRectMBS

32.84.48  GetFrame(byref left as Double, byref top as Double, byref width as Double, byref height as Double)

MBS MacBase Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Asks for the current window dimensions. **Notes:** The point 0/0 is on the left bottom position.

32.84.49  gState as Integer

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the window’s graphics state object. **Notes:** This graphics state is used by default for all NSView objects in the window’s view hierarchy, but individual views can be made to use their own with the NSView method allocateGState.

32.84.50  Hide

MBS MacBase Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Hides the window.
**32.84.51  inLiveResize as boolean**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates whether the window is being resized by the user. **Notes:** Available in Mac OS X v10.6 and later.

**32.84.52  invalidateCursorRectsForView(View as NSViewMBS)**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Marks as invalid the cursor rectangles of a given NSView object in the window’s view hierarchy, so they’ll be set up again when the window becomes key (or immediately if the window is key).

**32.84.53  invalidateRestorableState**

MBS MacBase Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Method that you may call to indicate that the restorable state is invalid. **Notes:** At some point in the future, encodeRestorableStateWithCoder: will be called to encode the restorable state. You should not override this method.

**32.84.54  invalidateShadow**

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Invalidates the window shadow so that it is recomputed based on the current window shape.

**32.84.55  keyDown(e as NSEventMBS)**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Handles a given keyboard event that may need to be interpreted as changing the key view or triggering a keyboard equivalent. **Notes:** event: The keyboard event to process.

**32.84.56  makeFirstResponder(r as NSResponderMBS) as boolean**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Attempts to make a given responder the first responder for the window. **Example:**
dim MySearchField as NSViewMBS // your control to move focus to
dim w as new NSWindowMBS(window1)
call w.makeFirstResponder(MySearchField)

Notes:

responder: The responder to set as the window’s first responder. nil makes the window its first responder.

Returns true when the operation is successful; otherwise, false.

If responder isn’t already the first responder, this method first sends a resignFirstResponder message to the object that is the first responder. If that object refuses to resign, it remains the first responder, and this method immediately returns false. If the current first responder resigns, this method sends a becomeFirstResponder message to responder. If responder does not accept first responder status, the NSWindow object becomes first responder; in this case, the method returns true even if responder refuses first responder status.

If responder is nil, this method still sends resignFirstResponder to the current first responder. If the current first responder refuses to resign, it remains the first responder and this method immediately returns false. If the current first responder returns true from resignFirstResponder, the window is made its own first responder and this method returns true.

The Application Kit framework uses this method to alter the first responder in response to mouse-down events; you can also use it to explicitly set the first responder from within your program. The responder object is typically an NSView object in the window’s view hierarchy. If this method is called explicitly, first send acceptsFirstResponder to responder, and do not call makeFirstResponder if acceptsFirstResponder returns false.

Use setInitialFirstResponder to the set the first responder to be used when the window is brought onscreen for the first time.

32.84.57  makeKeyAndOrderFront

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Moves the window to the front of the screen list, within its level, and makes it the key window; that is, it shows the window.
Notes: More or less the same as Real Studio’s show command on the window class.
32.84.58  makeKeyWindow

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Makes the window the key window.

32.84.59  makeMainWindow

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Makes the window the main window.

32.84.60  mergeAllWindows

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Merges all windows into one window.

**Example:**

```vbnet
dim n as NSWindowMBS = window1.NSWindowMBS
n.mergeAllWindows
```

**Notes:** Raises an exception when used on OS X 10.11 and older.

32.84.61  minFrameWidthWithTitle(WindowTitle as string, styleMask as UInt32) as Double

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the minimum width a window’s frame rectangle must have for it to display a title, with a given window style.

**Example:**

```vbnet
// shows 84.77588
MsgBox str(NSWindowMBS.minFrameWidthWithTitle(“Hello World”, 0))
```

**Notes:**

- `WindowTitle`: The title for the window.
- `windowStyle`: The window style for the window. See Window Style Mask constants for a list of style mask values.
The minimum width of the window’s frame, using windowStyle, in order to display windowTitle.

**32.84.62 miniaturize**

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
This action method removes the receiver from the screen list and displays the minimized window in the Dock.

**32.84.63 moveTabToNewWindow**

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Moves current tab to a new window.

**Example:**

```plaintext
dim n as NSWindowMBS = window1.NSWindowMBS
n.moveTabToNewWindow
```

**Notes:** Raises an exception when used on OS X 10.11 and older.

**32.84.64 NSDockWindowLevel as Integer**

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the standard window levels in Mac OS X.

**Notes:** The level for the doc. (Deprecated. There is no replacement.)

**32.84.65 NSFloatingWindowLevel as Integer**

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the standard window levels in Mac OS X.

**Notes:** Useful for floating palettes.

**32.84.66 NSMainMenuWindowLevel as Integer**

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the standard window levels in Mac OS X.

**Notes:** Reserved for the application’s main menu.
32.84.67 NSModalPanelWindowLevel as Integer

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the standard window levels in Mac OS X. **Notes:** The level for a modal panel.

32.84.68 NSNormalWindowLevel as Integer

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the standard window levels in Mac OS X. **Notes:** The default level for NSWindow objects.

32.84.69 NSPopUpMenuWindowLevel as Integer

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the standard window levels in Mac OS X. **Notes:** The level for a pop-up menu.

32.84.70 NSScreenSaverWindowLevel as Integer

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the standard window levels in Mac OS X. **Notes:** The level for a screen saver.

32.84.71 NSStatusWindowLevel as Integer

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the standard window levels in Mac OS X. **Notes:** The level for a status window.

32.84.72 NSSubmenuWindowLevel as Integer

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the standard window levels in Mac OS X. **Notes:** Reserved for submenus. Synonymous with NSTornOffMenuWindowLevel, which is preferred.
32.84.73 NSTornOffMenuWindowLevel as Integer

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the standard window levels in Mac OS X. **Notes:** The level for a torn-off menu. Synonymous with NSSubmenuWindowLevel.

32.84.74 NSWindowDidBecomeKeyNotification as string

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification strings you can use with the NSNotification* classes. **Notes:** Posted whenever an NSWindow object becomes the key window.

The notification object is the NSWindow object that has become key. This notification does not contain a userInfo dictionary.

32.84.75 NSWindowDidBecomeMainNotification as string

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification strings you can use with the NSNotification* classes. **Notes:** Posted whenever an NSWindow object becomes the main window.

The notification object is the NSWindow object that has become main. This notification does not contain a userInfo dictionary.

32.84.76 NSWindowDidChangeScreenNotification as string

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification strings you can use with the NSNotification* classes. **Notes:** Posted whenever a portion of an NSWindow object’s frame moves onto or off of a screen.

The notification object is the NSWindow object that has changed screens. This notification does not contain a userInfo dictionary.

This notification is not sent in Mac OS X versions earlier than 10.4.
32.84.77  NSWindowDidChangeScreenProfileNotification as string

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** One of the notification strings you can use with the NSNotification* classes.

**Notes:**

Posted whenever the display profile for the screen containing the window changes.

This notification is sent only if the window returns true from displaysWhenScreenProfileChanges. This notification may be sent when a majority of the window is moved to a different screen (whose profile is also different from the previous screen) or when the ColorSync profile for the current screen changes.

The notification object is the NSWindow object whose profile changed. This notification does not contain a userInfo dictionary.

Available in Mac OS X v10.4 and later.

32.84.78  NSWindowDidDeminiaturizeNotification as string

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** One of the notification strings you can use with the NSNotification* classes.

**Notes:**

Posted whenever an NSWindow object is deminimized.

The notification object is the NSWindow object that has been deminimized. This notification does not contain a userInfo dictionary.

32.84.79  NSWindowDidEndLiveResizeNotification as string

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** One of the notification strings you can use with the NSNotification* classes.

**Notes:**

Posted after the user resizes a window.

This notification is sent only once for a series of window resize operations.
The notification object is the NSWindow object that was resized. This notification does not contain a userInfo dictionary.

Available in Mac OS X v10.6 and later.

32.84.80 NSWindowDidEndSheetNotification as string

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the notification strings you can use with the NSNotification* classes. Notes: Posted whenever an NSWindow object closes an attached sheet.

The notification object is the NSWindow object that contained the sheet. This notification does not contain a userInfo dictionary.

32.84.81 NSWindowDidEnterFullScreenNotification as string

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the notification strings you can use with the NSNotification* classes. Notes: Posted when the window entered full screen mode.

The notification object is the NSWindow object entered full screen mode. This notification does not contain a userInfo dictionary.

Available in Mac OS X v10.7 and later.

32.84.82 NSWindowDidEnterVersionBrowserNotification as string

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the notification strings you can use with the NSNotification* classes. Notes: Posted when the window will exit full screen mode.

The notification object is the NSWindow object that will exit full screen mode. This notification does not contain a userInfo dictionary.

Available in Mac OS X v10.7 and later.
32.84.83  NSWindowDidExitFullScreenNotification as string

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the notification strings you can use with the NSNotification* classes.

Notes:
Posted when the window will exit full screen mode.
The notification object is the NSWindow object that will exit full screen mode. This notification does not contain a userInfo dictionary.

Available in Mac OS X v10.7 and later.

32.84.84  NSWindowDidExitVersionBrowserNotification as string

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the notification strings you can use with the NSNotification* classes.

Notes:
Posted when the window did exit version browser mode.
The notification object is the NSWindow object that did exit version browser mode. This notification does not contain a userInfo dictionary.

Available in Mac OS X v10.7 and later.

32.84.85  NSWindowDidExposeNotification as string

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the notification strings you can use with the NSNotification* classes.

Notes:
Posted whenever a portion of a nonretained NSWindow object is exposed, whether by being ordered in front of other windows or by other windows being removed from in front of it.

The notification object is the NSWindow object that has been exposed. The userInfo dictionary contains the following information:

<table>
<thead>
<tr>
<th>Key</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSExposedRect</td>
<td>The rectangle that has been exposed (NSRect).</td>
</tr>
</tbody>
</table>
32.84.86  **NSWindowDidMiniaturizeNotification as string**

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification strings you can use with the NSNotification* classes.

**Notes:**

Posted whenever an NSWindow object is minimized.

The notification object is the NSWindow object that has been minimized. This notification does not contain a userInfo dictionary.

32.84.87  **NSWindowDidMoveNotification as string**

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification strings you can use with the NSNotification* classes.

**Notes:**

Posted whenever an NSWindow object is moved.

The notification object is the NSWindow object that has moved. This notification does not contain a userInfo dictionary.

Note: This notification is sent when the window that moved didn’t also change size. See NSWindowDidResizeNotification for more information.

32.84.88  **NSWindowDidResignKeyNotification as string**

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification strings you can use with the NSNotification* classes.

**Notes:**

Posted whenever an NSWindow object resigns its status as key window.

The notification object is the NSWindow object that has resigned its key window status. This notification does not contain a userInfo dictionary.

32.84.89  **NSWindowDidResignMainNotification as string**

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification strings you can use with the NSNotification* classes.
Notes:
Posted whenever an NSWindow object resigns its status as main window.

The notification object is the NSWindow object that has resigned its main window status. This notification does not contain a userInfo dictionary.

32.84.90  **NSWindowDidResizeNotification as string**

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification strings you can use with the NSNotification* classes.

Notes:
Posted whenever an NSWindow object’s size changes.

The notification object is the NSWindow object whose size has changed. This notification does not contain a userInfo dictionary.

32.84.91  **NSWindowDidUpdateNotification as string**

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification strings you can use with the NSNotification* classes.

Notes:
Posted whenever an NSWindow object receives an update message.

The notification object is the NSWindow object that received the update message. This notification does not contain a userInfo dictionary.

32.84.92  **NSWindowWillBeginSheetNotification as string**

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification strings you can use with the NSNotification* classes.

Notes:
Posted whenever an NSWindow object is about to open a sheet.

The notification object is the NSWindow object that is about to open the sheet. This notification does not contain a userInfo dictionary.
32.84.93  NSWindowWillCloseNotification as string

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** One of the notification strings you can use with the NSNotification* classes.  
**Notes:** 
Posted whenever an NSWindow object is about to close.

The notification object is the NSWindow object that is about to close. This notification does not contain a userInfo dictionary.

32.84.94  NSWindowWillEnterFullScreenNotification as string

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** One of the notification strings you can use with the NSNotification* classes.  
**Notes:** 
Posted when the window will enter full screen mode.  
The notification object is the NSWindow object will enter full screen mode. This notification does not contain a userInfo dictionary.

Available in Mac OS X v10.7 and later.

32.84.95  NSWindowWillEnterVersionBrowserNotification as string

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** One of the notification strings you can use with the NSNotification* classes.  
**Notes:** 
Posted when the window will enter version browser mode.  
The notification object is the NSWindow object that will enter version browser mode. This notification does not contain a userInfo dictionary.  
Available in Mac OS X v10.7 and later.

32.84.96  NSWindowWillExitFullScreenNotification as string

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** One of the notification strings you can use with the NSNotification* classes.  
**Notes:** 
Posted when the window will exit full screen mode.  
The notification object is the NSWindow object that will exit full screen mode. This notification does not
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contain a userInfo dictionary.

Available in Mac OS X v10.7 and later.

32.84.97 NSWindowWillExitVersionBrowserNotification as string

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification strings you can use with the NSNotification* classes. **Notes:**

Posted when the window will exit version browser mode.
The notification object is the NSWindow object that will exit version browser mode. This notification does not contain a userInfo dictionary.

Available in Mac OS X v10.7 and later.

32.84.98 NSWindowWillMiniaturizeNotification as string

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification strings you can use with the NSNotification* classes. **Notes:**

Posted whenever an NSWindow object is about to be minimized.

The notification object is the NSWindow object that is about to be minimized. This notification does not contain a userInfo dictionary.

32.84.99 NSWindowWillMoveNotification as string

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification strings you can use with the NSNotification* classes. **Notes:**

Posted whenever an NSWindow object is about to move.

The notification object is the NSWindow object that is about to move. This notification does not contain a userInfo dictionary.
32.84.100  **NSWindowWillStartLiveResizeNotification as string**

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification strings you can use with the NSNotification* classes. **Notes:**

Posted before the user resizes a window.
This notification is sent only once for a series of window resize operations.
The notification object is the NSWindow object that is about to be live resized. This notification does not contain a userInfo dictionary.
Available in Mac OS X v10.6 and later.

32.84.101  **orderBack**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Moves the window to the back of its level in the screen list, without changing either the key window or the main window.

32.84.102  **orderFront**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Moves the window to the front of its level in the screen list, without changing either the key window or the main window.
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32.84.103 orderFrontRegardless

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Moves the window to the front of its level, even if its application isn’t active, without changing either the key window or the main window.

**Notes:**

Normally an NSWindow object can’t be moved in front of the key window unless it and the key window are in the same application. You should rarely need to invoke this method; it’s designed to be used when applications are cooperating in such a way that an active application (with the key window) is using another application to display data.

Available in Mac OS X v10.0 and later.

32.84.104 orderOut

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes the window from the screen list, which hides the window.

**Notes:**

More or less the same as Real Studio’s hide command on the window class.

If the window is the key or main window, the NSWindow object immediately behind it is made key or main in its place. Calling the orderOut method causes the window to be removed from the screen, but does not cause it to be released. See the close method for information on when a window is released.

The default animation based on the window type will be used when the window is ordered out unless it has been modified by the setAnimationBehavior method.

32.84.105 PerformClose

MBS MacBase Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This action method simulates the user clicking the close button by momentarily highlighting the button and then closing the window.

**Notes:**

Same as if the user clicks the close button.

So if the button is disabled or closing is not permitted by the window, it will do nothing.
32.84.106 performMiniaturize

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This action method simulates the user clicking the minimize button by momentarily highlighting the button, then minimizing the window. **Notes:** If the receiver doesn’t have a minimize button or can’t be minimized for some reason, the system emits the alert sound.

32.84.107 performZoom

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This action method simulates the user clicking the zoom box by momentarily highlighting the button and then zooming the window. **Notes:** If the receiver doesn’t have a zoom box or can’t be zoomed for some reason, the computer beeps.

32.84.108 print

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This action method runs the Print panel, and if the user chooses an option other than canceling, prints the window (its frame view and all subviews).

32.84.109 registerForDraggedTypes(Types() as string)

MBS MacBase Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Registers a give set of pasteboard types as the pasteboard types the window will accept as the destination of an image-dragging session. **Notes:**

Types: An array of the pasteboard types the window will accept as the destination of an image-dragging session.

Registering an NSWindow object for dragged types automatically makes it a candidate destination object for a dragging session. NSWindow has a default implementation for many of the methods in the NSDraggingDestination informal protocol. The default implementation forwards each message to the delegate if the delegate responds to the selector of the message. The messages forwarded this way are draggingEntered:, draggingUpdated:, draggingExited:, prepareForDragOperation:, performDragOperation:, and concludeDragOperation:.

Real Studio with Cocoa target implements the methods listed above. So this method is useful to change the allowed types for the case the framework has a bug.
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### 32.84.110 removeChildWindow(win as NSWindowMBS)

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Detaches a given child window from the window.  
**Notes:** win: The child window to detach.  
See also:
- 32.84.111 removeChildWindow(win as window)

### 32.84.111 removeChildWindow(win as window)

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Detaches a given child window from the window.  
**Notes:** win: The child window to detach.  
See also:
- 32.84.110 removeChildWindow(win as NSWindowMBS)

### 32.84.112 removeFrameUsingName(name as string)

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes the frame data stored under a given name from the application's user defaults.

### 32.84.113 resetCursorRects

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Clears the window's cursor rectangles and the cursor rectangles of the NSView objects in its view hierarchy.  
**Notes:**  
Invokes discardCursorRects to clear the window’s cursor rectangles, then sends resetCursorRects to every NSView object in the window’s view hierarchy.  
This method is typically invoked by the NSApplication object when it detects that the key window’s cursor rectangles are invalid. In program code, it’s more efficient to invoke invalidateCursorRectsForView.

### 32.84.114 resignKeyWindow

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Invoked automatically when the window resigns key window status; never invoke this method directly.  
**Notes:** This method sends resignKeyWindow to the window’s first responder, sends windowDidResignKey
to the window’s delegate, and posts an NSWindowDidResignKeyNotification to the default notification center.

### 32.84.115 resignMainWindow

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Invoked automatically when the window resigns main window status; never invoke this method directly. **Notes:** This method sends windowDidResignMain to the window’s delegate and posts an NSWindow-DidResignMainNotification to the default notification center.

### 32.84.116 resizeFlags as Integer

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the flags field of the event record for the mouse-down event that initiated the resizing session. **Notes:** A mask indicating which of the modifier keys was held down when the mouse-down event occurred. The flags are listed in NSEvent object’s modifierFlags method description.

This method is valid only while the window is being resized.

You can use this method to constrain the direction or amount of resizing. Because of its limited validity, this method should only be invoked from within an implementation of the delegate method windowWillResize.

### 32.84.117 restoreCachedImage

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Splices the window’s cached image rectangles, if any, back into its raster image (and buffer if it has one), undoing the effect of any drawing performed within those areas since they were established using cacheImageInRect. **Notes:** You must invoke flushWindow after this method to guarantee proper redisplay. An NSWindow object automatically discards its cached image rectangles when it displays.

### 32.84.118 runToolbarCustomizationPalette

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The action method for the ”Customize Toolbar...” menu item.
32.84.119  saveFrameUsingName(s as String)

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Saves the window’s frame rectangle in the user defaults system under a given name. **Notes:** With the companion method setFrameUsingName, you can save and reset an NSWindow object’s frame over various launches of an application. The default is owned by the application and stored under the name ”NSWindow Frame frameName”. See NSUserDefaults for more information.

32.84.120  selectKeyViewFollowingView(view as NSViewMBS)

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Makes key the view that follows the given view. **Notes:** Sends the nextValidKeyView message to referenceView and, if that message returns an NSView object, invokes makeFirstResponder with the returned object.

32.84.121  selectKeyViewPrecedingView(view as NSViewMBS)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Makes key the view that follows the given view. **Notes:** Sends the nextValidKeyView message to referenceView and, if that message returns an NSView object, invokes makeFirstResponder with the returned object.

32.84.122  selectNextKeyView

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This action method searches for a candidate next key view and, if it finds one, invokes makeFirstResponder to establish it as the first responder. **Notes:**

The candidate is one of the following (searched for in this order):

- The current first responder’s next valid key view, as returned by the nextValidKeyView method of NSView
- The object designated as the window’s initial first responder (using setInitialFirstResponder) if it returns true to an acceptsFirstResponder message
- Otherwise, the initial first responder’s next valid key view, which may end up being nil
32.84.123  selectNextTab

**Example:**

```plaintext
dim n as NSWindowMBS = window1.NSWindowMBS  
n.selectNextTab
```

**Notes:** Raises an exception when used on OS X 10.11 and older.

32.84.124  selectPreviousKeyView

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This action method searches for a candidate previous key view and, if it finds one, invokes makeFirstResponder to establish it as the first responder.  
**Notes:**

The candidate is one of the following (searched for in this order):

- The current first responder’s previous valid key view, as returned by the previousValidKeyView method of NSView
- The object designated as the window’s initial first responder (using setInitialFirstResponder) if it returns true to an acceptsFirstResponder message
- Otherwise, the initial first responder’s previous valid key view, which may end up being nil

32.84.125  selectPreviousTab

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Selects previous tab.  
**Example:**

```plaintext
dim n as NSWindowMBS = window1.NSWindowMBS  
n.selectPreviousTab
```

**Notes:** Raises an exception when used on OS X 10.11 and older.
### 32.84.126 sendEvent(e as NSEventMBS)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
This action method dispatches mouse and keyboard events sent to the window by the NSApplication object.
**Notes:** Never invoke this method directly. A right mouse-down event in a window of an inactive application is not delivered to the corresponding NSWindow object. It is instead delivered to the NSApplication object through a sendEvent: message with a window number of 0.

### 32.84.127 setAutorecalculatesContentBorderThickness(flag as boolean, edge as Integer)

MBS MacBase Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Specifies whether the window calculates the thickness of a given border automatically.
**Notes:**
flag: If true, the window calculates the thickness of the edge automatically; if false, it does not.

edge: The border whose thickness auto-recalculation status to set:
- NSMaxYEdge: Top border.
- NSMinYEdge: Bottom border.

**Special Considerations**
Turning off a border’s auto-recalculation status sets its border thickness to 0.0.

In a non-textured window calling setAutorecalculatesContentBorderThickness passing NSMaxYEdge will raise an exception. It is only valid to set the content border thickness of the top edge in a textured window.

Requires Mac OS X 10.5.

### 32.84.128 setBottomCornerRounded(flag as boolean)

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the bottom corner to be round.
**Notes:** This is an undocumented function in the NSWindow class.
32.84.129  setContentBorderThickness(thickness as Double, edge as Integer)

MBS MacBase Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Specifies the thickness of a given border of the window.  
**Example:**

```lisp
dim w as NSWindowMBS = window1.NSWindowMBS
w.setContentBorderThickness(30, w.NSMinYEdge)  // bottom 30 pixel
w.setContentBorderThickness(20, w.NSMaxYEdge)  // top 30 pixel. Window must be metal for this
```

**Notes:**

- **thickness:** The thickness for edge, in points.
- **edge:** The border whose thickness to set:
  - NSMaxYEdge: Top border.
  - NSMinYEdge: Bottom border.

In a non-textured window calling setContentBorderThickness passing NSMaxYEdge will raise an exception. It is only valid to set the content border thickness of the top edge in a textured window.

The contentBorder does not include the titlebar or toolbar, so a textured window that just wants the gradient in the titlebar and toolbar should have a contentBorderThickness of 0 for NSMaxYEdge.

Requires Mac OS X 10.5.

32.84.130  setContentSize(size as NSSizeMBS)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the size of the window’s content view to a given size, which is expressed in the window’s base coordinate system.  
**Notes:** This size in turn alters the size of the NSWindow object itself. Note that the window server limits window sizes to 10,000; if necessary, be sure to limit aSize relative to the frame rectangle.

32.84.131  setFrame(frameRect as NSRectMBS)

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the origin and size of the window’s frame rectangle according to a given frame rectangle, thereby setting its position and size onscreen.
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Notes:

frameRect: The frame rectangle for the window, including the title bar.

Note that the window server limits window position coordinates to 16,000 and sizes to 10,000.

See also:

- 32.84.132 setFrame(frameRect as NSRectMBS, display as boolean) 6145
- 32.84.133 setFrame(frameRect as NSRectMBS, display as boolean, animated as boolean) 6145
- 32.84.134 SetFrame(left as Double, top as Double, width as Double, height as Double) 6146

### 32.84.132  setFrame(frameRect as NSRectMBS, display as boolean)

MBS MacBase Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Sets the origin and size of the window’s frame rectangle according to a given frame rectangle, thereby setting its position and size onscreen.

**Notes:**

The point 0/0 is on the bottom left position of the main screen.

display: Specifies whether the window redraws the views that need to be displayed. When true the window sends a displayIfNeeded message down its view hierarchy, thus redrawing all views.

See also:

- 32.84.131 setFrame(frameRect as NSRectMBS) 6144
- 32.84.133 setFrame(frameRect as NSRectMBS, display as boolean, animated as boolean) 6145
- 32.84.134 SetFrame(left as Double, top as Double, width as Double, height as Double) 6146

### 32.84.133  setFrame(frameRect as NSRectMBS, display as boolean, animated as boolean)

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Sets the origin and size of the window’s frame rectangle, with optional animation, according to a given frame rectangle, thereby setting its position and size onscreen.

**Notes:**

The point 0/0 is on the bottom left position of the main screen.

If animated is true, the change is animated.

See also:

- 32.84.131 setFrame(frameRect as NSRectMBS) 6144
- 32.84.132 setFrame(frameRect as NSRectMBS, display as boolean) 6145
- 32.84.134 SetFrame(left as Double, top as Double, width as Double, height as Double) 6146
32.84.134  **SetFrame(left as Double, top as Double, width as Double, height as Double)**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the origin and size of the window’s frame rectangle according to a given frame rectangle, thereby setting its position and size onscreen.  
**Notes:** The point 0/0 is on the bottom left position of the main screen.  
See also:

- 32.84.131 setFrame(frameRect as NSRectMBS)  
- 32.84.132 setFrame(frameRect as NSRectMBS, display as boolean)  
- 32.84.133 setFrame(frameRect as NSRectMBS, display as boolean, animated as boolean)

32.84.135  **setFrameAutosaveName(name as String) as boolean**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the name used to automatically save the window’s frame rectangle in the defaults system to a given name.  
**Notes:**

Returns true when the frame name is set successfully; false when frameName is being used as an autosave name by another NSWindow object in the application (in which case the window’s old name remains in effect).

If frameName isn’t the empty string (""), the window’s frame is saved as a user default (as described in saveFrameUsingName) each time the frame changes.

When the window has an autosave name, its frame data is written whenever the frame rectangle changes.

If there is a frame rectangle previously stored for frameName in the user defaults, the window’s frame is set to this frame rectangle. That is, when you call this method with a previously used frameName, the window picks up the previously saved setting. For example, if you call setFrameAutosaveName for a window that is already onscreen, this method could cause the window to move to a different screen location. For this reason, it is generally better to call this method before the window is visible on screen.

Keep in mind that a window controller may change the window’s position when it displays it if window cascading is turned on. To preclude the window controller from changing a window’s position from the one saved in the defaults system, you must send setShouldCascadeWindows(false) to the window controller.
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32.84.136 setFrameFromString(s as String)

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the window’s frame rectangle from a given string representation. **Notes:** If the window is not resizable, this method will not resize the window. The frame is constrained according to the window’s minimum and maximum size settings. This method can cause a windowWillResize event.

32.84.137 setFrameOrigin(point as NSPointMBS)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Positions the bottom-left corner of the window’s frame rectangle at a given point in screen coordinates. **Notes:** Note that the window server limits window position coordinates to 16,000.

32.84.138 setFrameTopLeftPoint(point as NSPointMBS)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Positions the top-left corner of the window’s frame rectangle at a given point in screen coordinates. **Notes:** Note that the window server limits window position coordinates to 16,000; if necessary, adjust aPoint relative to the window’s lower-left corner to account for this limit.

32.84.139 setFrameUsingName(name as String, force as boolean = false) as boolean

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the window’s frame rectangle by reading the rectangle data stored under a given name from the defaults system. **Notes:** Returns true when frameName is read and the frame is set successfully; otherwise, false. The frame is constrained according to the window’s minimum and maximum size settings. This method causes a windowWillResize event.

32.84.140 setRestorationClass

MBS MacBase Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Specifies the class to use to acquire a matching window object during subsequent launches. **Notes:**
The plugin provides a class to restore windows. See NSWindowRestoreHandlerMBS class.

The restoration class of a window is responsible for recreating not just the window but any other objects needed to manage the window. Therefore, the restoration class must be able to create (or find existing instances of) all of these objects at launch time in your application.

If you mark your windows as restorable, you must associate a restoration class with them. Available in OS X v10.7 and later.

### 32.84.141 `setTitleWithRepresentedFile(filename as folderitem)`

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets a given path as the window’s title, formatting it as a file-system path, and records this path as the window’s associated filename using setRepresentedFilename.

### 32.84.142 `setTitleWithRepresentedFilename(filename as string)`

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets a given path as the window’s title, formatting it as a file-system path, and records this path as the window’s associated filename using setRepresentedFilename.

### 32.84.143 `Show`

MBS MacBase Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Shows the window.

### 32.84.144 `standardWindowButton(button as Integer) as Variant`

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the window button of a given window button kind in the window’s view hierarchy.

**Example:**

```vbnet
// another way to disable close button on Cocoa
dim n as NSButtonMBS = window1.NSWindowMBS.standardWindowButton(NSWindowMBS.NSWindowCloseButton)
n.isEnabled = false

// or move to to the right
dim r as NSRectMBS = n.frame
```

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n.frame = NSMakeRectMBS(r.x+100, r.y, r.Width, r.Height)

Notes:

button: The kind of standard window button to return.

Returns Window button in the window’s view hierarchy of the kind identified by windowButtonKind; nil when such button is not in the window’s view hierarchy.

Declared as Variant for reduced plugin dependencies.

Button constants: NSWindowCloseButton, NSWindowDocumentIconButton, NSWindowMiniaturizeButton, NSWindowToolBarButton and NSWindowZoomButton.

See also:

• 32.84.145 standardWindowButton(button as Integer, StyleMask as Integer) as Variant

32.84.145 standardWindowButton(button as Integer, StyleMask as Integer) as Variant


Notes:

button: The kind of standard window button to return.

StyleMask: The window style for which windowButtonKind is to be sized. See "Window Style Masks" for the list of allowable values.

Returns the new window button of the kind identified by windowButtonKind; nil when no such button kind exists.

The caller is responsible for adding the button to the view hierarchy and for setting the target to be the window.

Declared as Variant for reduced plugin dependencies.

Button constants: NSWindowCloseButton, NSWindowDocumentIconButton, NSWindowMiniaturizeButton, NSWindowToolBarButton and NSWindowZoomButton.

See also:

• 32.84.144 standardWindowButton(button as Integer) as Variant
**32.84.146 stringWithSavedFrame as String**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a string representation of the window’s frame rectangle. **Notes:** A string representation of the window’s frame rectangle in a format that can be used with a later setFrameFromString method.

**32.84.147 tabbedWindows as NSWindowMBS()**

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the entire group (stack) of windows that are all visually shown together in one virtual tabbed window and associated with this particular window. **Example:**

```plaintext
dim n as NSWindowMBS = window1.NSWindowMBS
dim windows() as NSWindowMBS = n.tabbedWindows
break // check in debugger
```

**Notes:**

Operations can then be done on each window, as necessary. For instance, iterating over each window in the group and calling performClose: will close the entire stack. The result will be nil when the window is not tabbed at all (not showing a tab bar), and non-nil with at least one object when the tab bar is shown. The order of items in the array is the same order as the tabs visually shown (leading to trailing). Raises an exception when used on OS X 10.11 and older.

**32.84.148 toggleFullScreen**

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Toggles fullscreen mode for this window. **Example:**

```plaintext
dim w as new NSWindowMBS(window1)
// set window to have fullscreen
w.collectionBehavior = BitwiseOr(w.collectionBehavior, NSWindowMBS.NSWindowCollectionBehaviorFullScreen-Primary)

// and switch to fullscreen
w.toggleFullScreen
```

**Notes:**
Available on Mac OS X 10.7 or later. If an application supports fullscreen, it should add a menu item to the View menu with toggleFullScreen as the action. This method does not much if you don’t mark a window to be the primary fullscreen window.

### 32.84.149 toggleTabBar

**MBS** MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Toggles tab bar.  
**Example:**
```vbs
dim n as NSWindowMBS = window1.NSWindowMBS
n.toggleTabBar
```

**Notes:** Raises an exception when used on OS X 10.11 and older.

### 32.84.150 toggleToolbarShown

**MBS** MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The action method for the ”Hide Toolbar” menu item (which alternates with ”Show Toolbar”).

### 32.84.151 toolbarview as NSViewMBS

**MBS** MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Convenience function to find the toolbar view on the window.  
**Example:**
```vbs
dim v as NSViewMBS = window1.NSWindowMBS.toolbarview
dim m as NSMenuMBS = v.Menu
dim i as NSMenuItemMBS = m.Item(0)
MsgBox i.title
```

**Notes:** Returns nil if there is no toolbar view.
32.84.152 unregisterDraggedTypes

MBS MacBase Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Unregisters the window as a possible destination for dragging operations.

32.84.153 update

MBS MacBase Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Updates the window.
**Notes:**
The NSWindow implementation of this method does nothing more than post an NSWindowDidChangeUpdateNotification notification to the default notification center. A subclass can override this method to perform specialized operations, but it should send an update message to super just before returning. For example, the NSMenu class implements this method to disable and enable menu commands.

An NSWindow object is automatically sent an update message on every pass through the event loop and before it’s displayed onscreen. You can manually cause an update message to be sent to all visible NSWindow objects through the NSApplication updateWindows method.

32.84.154 useOptimizedDrawing(value as boolean)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Specifies whether the window is to optimize focusing and drawing when displaying its views.
**Notes:**
value: If true, the window will optimize focusing and drawing for its views; if false, it will not, in which case, the window does not preserve the Z-ordering of overlapping views when an object explicitly sends lockFocus to a view and draws directly to it, instead of using the AppKit standard display mechanism.

The optimizations may prevent sibling subviews from being displayed in the correct order which matters only if the subviews overlap. You should always set optimizedDrawing to true when there are no overlapping subviews within the window. The default is false.

32.84.155 WindowHandle as Integer

MBS MacBase Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Window handle.
**Notes:**
Can be used with the CarbonWindowsEventsMBS class.
(for events like open and close)
32.84.156  windowNumberAtPoint(x as Double, y as Double, belowWindowWithWindowNumber as Integer = 0) as Integer

MBS MacBase Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the number of the frontmost window that would be hit by a mouseDown at the screen location point.

**Notes:**
belowWindowWithWindowNumber can be specified to exclude a given window along with all windows above it, and may belong to any application. If no windows are to be excluded, specify 0 for belowWindowWithWindowNumber. The windowNumber returned may correspond to a window in another application. Requires Mac OS X 10.6 or newer.

32.84.157  windowNumbersWithOptions(options as Integer = 0) as Integer()

MBS MacBase Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of integers containing windowNumbers for all visible windows satisfying options.

**Example:**
```plaintext
dim windowNumbers1() as Integer
dim windowNumbers2() as Integer
dim windowNumbers3() as Integer

// To get an array of windowNumbers visible on the current space and belonging to the calling application:
windowNumbers1 = NSWindowMBS.windowNumbersWithOptions(0)
// To get an array of windowNumbers visible on any space and belonging to any application:
windowNumbers2 = NSWindowMBS.windowNumbersWithOptions(NSWindowMBS.NSWindowNumberListAllApplications+NSWindowMBS.NSWindowNumberListAllSpaces)
// To get an array of windowNumbers visible on any space and belonging to the calling application:
windowNumbers3 = NSWindowMBS.windowNumbersWithOptions(NSWindowMBS.NSWindowNumberListAllSpaces)
```

**Notes:** In no options are specified, only visible windows belonging to the calling application and on the active space are included. If options include NSWindowNumberListAllApplications, visible windows belonging to all applications are included. If options include NSWindowNumberListAllSpaces, visible windows on all spaces are included.
32.84.158 zoom

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This action method toggles the size and location of the window between its standard state (provided by the application as the "best" size to display the window’s data) and its user state (a new size and location the user may have set by moving or resizing the window).

32.84.159 Properties

32.84.160 acceptsMouseMovedEvents as boolean

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the receiver is to accept mouse-moved events.
**Notes:**
True to have the receiver accept mouse-moved events (and to distribute them to its responders); false to not accept such events.
(Read and Write property)

32.84.161 allowsAutomaticWindowTabbing as Boolean

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Allows automatic window tabbing when the value is true.
**Example:**
```
// disable automatic tabbing
NSWindowMBS.allowsAutomaticWindowTabbing = false
```

**Notes:**
By default, this will be set to true, but applications can explicitly opt out of all automatic tabbing by setting it to false, and can still adopt explicit window tabbing, if desired.
Raises an exception when used on OS X 10.11 and older.
(Read and Write property)

32.84.162 allows.ConcurrentViewDrawing as boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether threading of view drawing is enabled for this window.
**Notes:**
Whether threading of view drawing should be enabled for this window. Defaults to true. When this is set to true, AppKit’s view system is allowed to perform drawRect activity for the window’s views on threads other than the main thread, for views that have canDrawConcurrently = true. When this is set to false, the window’s views will be drawn serially as on 10.5 and earlier, even though some of the views may have canDrawConcurrently = true.

Available on Mac OS X 10.6.
(Read and Write property)

### 32.84.163 allowsToolTipsWhenApplicationIsInactive as boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this window displays tooltips even when the application is in the background. **Notes:** Default is false. Set to true to allow a window to display tooltips even when the application is in the background. Note that, enabling tooltips in an inactive application will cause the app to do work any time the mouse passes over the window. This can degrade system performance. (Read and Write property)

### 32.84.164 alphaValue as Double

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The receiver’s alpha value. **Example:**

```vbnet
if TargetCocoa then
dim w as new NSWindowMBS(window1)
w.alphaValue=0.5
else
MsgBox "this sample requires REALbasic Cocoa Target"
end if
```

**Notes:** (Read and Write property)

### 32.84.165 animationBehavior as Integer

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Provides for per-window control over automatic orderFront/orderOut animation behaviors added in 10.7.
Example:

```plaintext
dim w as new NSWindowMBS(window1)

w.animationBehavior = NSWindowMBS.NSWindowAnimationBehaviorDocumentWindow

Title = str(W.animationBehavior)
```

Notes:
Can be set to NSWindowAnimationBehaviorNone to disable Appkit’s automatic animations for a given
window, or to one of the other non-Default NSWindowAnimationBehavior values to override AppKit’s au-
tomatic inference of appropriate animation behavior based on the window’s apparent type.
Available on Mac OS X 10.7 or later.
(Read and Write property)

32.84.166 aspectRatio as NSSizeMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The window’s aspect ratio, which constrains the size of its frame rectangle to integral multiples of this ratio
when the user resizes it.
Notes: (Read and Write property)

32.84.167 Autodisplay as boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Whether the window automatically displays views that need to be displayed.
Notes:
Automatic display typically occurs on each pass through the event loop.

Available in Mac OS X v10.0 and later.
(Read and Write property)

32.84.168 backgroundColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The window background color.
Notes: (Read and Write property)
32.84.169 backingLocation as Integer

Indicates the window’s backing store location.

The location of the window’s backing store. See "Constants" for possible values. Available in Mac OS X v10.5 and later.

(Read only property)

32.84.170 backingScaleFactor as Double

Returns the backing scale factor.

Returns 2.0 for high resolution scaled display modes, and 1.0 for all other cases.

There are some scenarios where an application that is resolution-aware may want to reason on its own about the display environment it is running in.

It is important to note that this number returned by this method does not represent anything concrete, such as pixel density or physical size, since it can vary based on the configured display mode. For example, the display may be in a mirrored configuration that is still high resolution scaled, resulting in pixel geometry that may not match the native resolution of the display device.

Note: For almost all common cases, developers should avoid using the backingScaleFactor as an input to layout or drawing calculations. Developers should instead use the backing coordinate space conversion methods instead, as the resulting code will more likely work consistently and correctly under both low and high resolution operation.

For apps which are not enabled for retina support, the function returns 1. So you only see 2 here if app is Cocoa, display is retina and info.plist has the NSHighResolutionCapable key.

(Read only property)

32.84.171 backingType as Integer

The window’s backing store type.

Use constants like this:
**NSBackingStoreRetained** = 0  The window uses a buffer, but draws directly to the screen where possible and to the buffer for obscured portions. You should not use this mode. It combines the limitations of NSBackingStoreNonretained with the memory use of NSBackingStoreBuffered. The original NeXTSTEP implementation was an interesting compromise that worked well with fast memory mapped framebuffers on the CPU bus something that hasn’t been in general use since around 1994. These tend to have performance problems. In Mac OS X 10.5 and later, requests for retained windows will result in the window system creating a buffered window, as that better matches actual use. Available in Mac OS X v10.0 and later.

**NSBackingStoreNonretained** = 1  The window draws directly to the screen without using any buffer. You should not use this mode. It exists primarily for use in the original Classic Blue Box. It does not support Quartz drawing, alpha blending, or opacity. Moreover, it does not support hardware acceleration, and interferes with system-wide display acceleration. If you use this mode, your application must manage visibility region clipping itself, and manage repainting on visibility changes. Available in Mac OS X v10.0 and later.

**NSBackingStoreBuffered** = 2  The window renders all drawing into a display buffer and then flushes it to the screen. You should use this mode. It supports hardware acceleration, Quartz drawing, and takes advantage of the GPU when possible. It also supports alpha channel drawing, opacity controls, using the compositor. Available in Mac OS X v10.0 and later.

(Read and Write property)

### 32.84.172  canBecomeKeyWindow as boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates whether the window can become the key window. **Notes:** Attempts to make the window the key window are abandoned if this method returns false. The NSWindow implementation returns true if the window has a title bar or a resize bar, or false otherwise. (Read only property)

### 32.84.173  canBecomeMainWindow as boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates whether the window can become the application’s main window. **Notes:** Attempts to make the window the main window are abandoned if this method returns false. The NSWindow implementation returns true if the window is visible, is not an NSPanel object, and has a title bar or a resize mechanism. Otherwise it returns false.
32.84.174 canBecomeVisibleWithoutLogin as boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates whether the window can be displayed at the login window.

**Notes:**
Default: false.
Available in Mac OS X v10.5 and later.
(Read and Write property)

32.84.175 canHide as boolean

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Specifies whether the window can be hidden when its application becomes hidden (during execution of the NSApplication hide method).

**Notes:** (Read and Write property)

32.84.176 canStoreColor as boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates whether the window has a depth limit that allows it to store color values.

**Notes:** (Read only property)

32.84.177 className as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of this NSWindow class.

**Notes:** (Read only property)

32.84.178 classPath as string

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The path of this NSView class.

**Notes:**
Useful for debugging to know what super classes the window has.
(Read only property)

### 32.84.179 collectionBehavior as Integer

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Identifies the window’s behavior in window collections.

**Notes:**
Available in Mac OS X v10.5 and later.
(Read and Write property)

### 32.84.180 colorSpace as NSColorSpaceMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The window’s color space.

**Notes:**
Available in Mac OS X v10.6 and later.
(Read and Write property)

### 32.84.181 contentAspectRatio as NSSizeMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The aspect ratio (height in relation to width) of the window’s content view, constraining the dimensions of its content rectangle to integral multiples of that ratio when the user resizes it.

**Notes:**
Available in Mac OS X v10.3 and later
(Read and Write property)

### 32.84.182 contentMaxSize as NSSizeMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The maximum size of the window’s content view.

**Notes:**
Available in Mac OS X v10.3 and later.
(Read and Write property)
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32.84.183  contentMinSize as NSSizeMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The minimum size of the window’s content view. **Notes:** Available in Mac OS X v10.3 and later. (Read and Write property)

32.84.184  contentResizeIncrements as NSSizeMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The window’s content-view resizing increments. **Notes:** Available in Mac OS X v10.3 and later. (Read and Write property)

32.84.185  contentView as NSViewMBS

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The receiver’s content view, the highest accessible NSView object in the receiver’s view hierarchy. **Notes:** (Read and Write property)

32.84.186  currentEvent as NSEventMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the event currently being processed by the application, by invoking NSApplication’s currentEvent method. **Notes:** Returns the event being processed by the application. (Read only property)

32.84.187  deepestScreen as NSScreenMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the deepest screen the window is on (it may be split over several screens). **Notes:** The deepest screen the window is on; nil when the window is offscreen.
(Read only property)

### 32.84.188 depthLimit as Integer

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the depth limit of the window.  
**Notes:**  
The value returned can be examined with the Application Kit functions NSPlanarFromDepth, NSColorSpaceFromDepth, NSBitsPerSampleFromDepth, and NSBitsPerPixelFromDepth.  
(Read and Write property)

### 32.84.189 displaysWhenScreenProfileChanges as boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates whether the window context should be updated when the screen profile changes or when the window moves to a different screen.  
**Notes:**  
Returns true when the window context should be updated when the screen profile changes or when the window moves to a different screen; otherwise, false.  

The default value is false.  

Available in Mac OS X v10.4 and later.  
(Read and Write property)

### 32.84.190 hasDynamicDepthLimit as boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates whether the window’s depth limit can change to match the depth of the screen it’s on.  
**Notes:**  
True when the window has a dynamic depth limit; otherwise, false.  
(Read and Write property)

### 32.84.191 hasShadow as boolean

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the receiver has a shadow.
Notes:
True when the receiver has a shadow, false when it doesn’t.
(Read and Write property)

32.84.192 Height as Double

Notes: (Read and Write property)

32.84.193 hidesOnDeactivate as boolean

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether the receiver is removed from the screen when its application becomes inactive.
Notes:
True when the receiver is removed from the screen when its application is deactivated; false if it remains onscreen.
The default for NSWindow is false; the default for NSPanel is true.
(Read and Write property)

32.84.194 identifier as string

Example:
```
    dim w as new NSWindowMBS(window1)

    w.identifier = "window1"
    MsgBox w.identifier
```
Notes:
It should be set to a unique value on NSViews when they are intended to be used inside a view-based NSTableView. Identifiers should be unique per-window. For programmatically created user interface items, you would typically set this value in code after creating a control but before adding it to a window. You may also want to set an identifier on a window, after creating it programmatically, to identify the window easily when it is reopened. You should not change the identifier after a control is added to a window. Identifiers
beginning with an underscore are reserved for the system. In framework classes that implement this protocol, the accessor methods are not intended to be overridden.

To help avoid collision of identifiers, it is recommended that identifiers use the same prefix as is used for the framework or application. For example, identifiers for standard AppKit interface items, such as the open panel, will begin with "NS".

The slash '/', backslash '\', and colon ':' characters are reserved and should not be used in identifiers.

(Read and Write property)

### 32.84.195 ignoresMouseEvents as boolean

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates whether the receiver is transparent to mouse events. **Notes:** True when the receiver is transparent to mouse events, otherwise false. (Read and Write property)

### 32.84.196 initialFirstResponder as NSViewMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The view that’s made first responder the first time the window is placed onscreen. **Notes:** (Read and Write property)

### 32.84.197 isDocumentEdited as boolean

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates whether the receiver’s document has been edited. **Notes:** True when the receiver’s document has been edited; false otherwise. Initially, by default, NSWindow objects are in the "not edited" state. (Read and Write property)

### 32.84.198 isExcludedFromWindowsMenu as boolean

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the receiver’s title is omitted from the application’s Windows menu.
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Notes:

True to specify that the receiver is to be omitted from the application’s Windows menu; false to specify otherwise.  
(Read and Write property)

32.84.199  isFlushWindowDisabled as boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Indicates whether the window’s flushing ability is disabled.  
**Notes:** (Read only property)

32.84.200  isKeyWindow as boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Indicates whether the window is the key window for the application.  
**Notes:** (Read only property)

32.84.201  isMainWindow as boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Indicates whether the window is the application’s main window.  
**Notes:** (Read only property)

32.84.202  isMiniaturized as boolean

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Whether the receiver is minimized.  
**Notes:**  
A minimized window is removed from the screen and replaced by a image, icon, or button that represents it, called the counterpart.  
(Read only property)

32.84.203  isMovableByWindowBackground as boolean

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** A Boolean value that indicates whether the receiver is movable by clicking and dragging anywhere in its
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background.

Notes:

True when the window is movable by clicking and dragging anywhere in its background, otherwise false.

A window with a style mask of NSTexturedBackgroundWindowMask is movable by background by default. Sheets and drawers cannot be movable by window background.

Available in Mac OS X v10.2 and later.
Works in Real Studio 2011r3, but not in 2011r4.
(Read and Write property)

32.84.204  isOnActiveSpace as boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Indicates whether the window is on the currently active space.
Notes:
For visible windows, this method indicates whether the window is currently visible on the active space. For offscreen windows, it indicates whether ordering the window onscreen would cause it to be on the active space.
Available in Mac OS X v10.6 and later.
(Read only property)

32.84.205  isOneShot as boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Indicates whether the window device the window manages is freed when it’s removed from the screen list.
Notes: (Read and Write property)

32.84.206  isOpaque as boolean

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Whether the receiver is opaque.
Notes:
True when the receiver is opaque; false otherwise.
(Read and Write property)
32.84.207  isSheet as boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates whether the window has ever run as a modal sheet.
**Notes:**
Sheets are created using the NSPanel subclass.
Available in Mac OS X v10.1 and later.
(Read only property)

32.84.208  isZoomed as boolean

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value that indicates whether the receiver is in a zoomed state.
**Notes:** (Read only property)

32.84.209  Left as Double

MBS MacBase Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The horizontal position of the color panel in pixel.
**Notes:** (Read and Write property)

32.84.210  Level as Integer

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The window level of the receiver.
**Example:**
```ruby
dim n as NSWindowMBS = window1.NSWindowMBS
n.Level = n.NSFloatingWindowLevel
```
**Notes:** (Read and Write property)

32.84.211  maxSize as NSSizeMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The maximum size to which the window's frame (including its title bar) can be sized.
**Notes:**
The maximum size to which the window’s frame (including its title bar) can be sized either by the user or by the setFrame... methods other than setFrame.
(Read and Write property)

32.84.212 miniwindowImage as Variant

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The custom miniaturized window image of the receiver.
**Notes:**
The miniaturized window image is the image displayed in the Dock when the window is minimized. If you did not assign a custom image to the window, this method returns nil.

Value is declares as Variant to minimize plugin dependencies, but should be NSImageMBS.
(Read and Write property)

32.84.213 miniwindowTitle as String

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The title displayed in the receiver’s minimized window.
**Notes:** (Read and Write property)

32.84.214 minSize as NSSizeMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The minimum size to which the window’s frame (including its title bar) can be sized.
**Notes:**
The minimum size to which the window’s frame (including its title bar) can be sized either by the user or by the setFrame... methods other than setFrame.
(Read and Write property)

32.84.215 Movable as boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Whether the window can be moved by clicking in its title bar or background.
**Notes:**
setMovableByWindowBackground, called with the argument true, is ignored by a window that returns false from isMovable. If a window returns false, that means it can only be dragged between spaces in F8 mode,
and its relative screen position is always preserved. Note that a resizable window may still be resized, and
the window frame may be changed programmatically. A non-movable window will not be moved or resized
by the system in response to a display reconfiguration. Applications may choose to enable application-
controlled window dragging after disabling user-initiating dragging by handling the mouseDown/mouse-
Dragged/mouseUp sequence in sendEvent in an NSWindow subclass.
Available in Mac OS X v10.6 and later.
(Read and Write property)

32.84.216 parentWindow as NSWindowMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The parent window to which the window is attached as a child.
**Notes:**
Available in Mac OS X v10.2 and later.
(Read and Write property)

32.84.217 preferredBackingLocation as Integer

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The preferred location for the window's backing store.
**Notes:**
Available in Mac OS X v10.5 and later.
(Read and Write property)

32.84.218 preservesContentDuringLiveResize as boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Whether the window tries to optimize user-initiated resize operations by preserving the content of views that
have not changed.
**Notes:**
Returns true if the window tries to optimize live resize operations by preserving the content of views that
have not moved; otherwise, false.

Discussion
When live-resize optimization is active, the window redraws only those views that moved (or do not support
this optimization) during a live resize operation.

See preservesContentDuringLiveResize in NSView for additional information on how to support this opti-
mization.
Available in Mac OS X v10.4 and later.
(Read and Write property)

### 32.84.219  `preventsApplicationTerminationWhenModal` as boolean

**MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Whether the window prevents application termination when modal.

**Notes:**
Available in Mac OS X v10.6 and later.
(Read and Write property)

### 32.84.220  `representedFile` as `folderitem`

**MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** The pathname of the file the window represents.

**Notes:**  (Read and Write property)

### 32.84.221  `representedFilename` as string

**MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** The pathname of the file the window represents.

**Notes:**  (Read and Write property)

### 32.84.222  `representedURL` as string

**MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** The URL of the file the window represents.

**Example:**

```vba
dim f as FolderItem = SpecialFolder.Desktop.Child("test.rtf")
dim n as new NSWindowMBS(window1)
n.representedURL = f.URLPath
MsgBox n.representedURL
```

**Notes:**
The URL for the file the window represents.

When the URL specifies a path, the window shows an icon in its title bar, as described in Table 1.

### Title bar document icon display:

<table>
<thead>
<tr>
<th>Filepath</th>
<th>Document icon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empty</td>
<td>None.</td>
</tr>
<tr>
<td>Specifies a nonexistent file</td>
<td>Generic.</td>
</tr>
<tr>
<td>Specifies an existent file</td>
<td>Specific for the file’s type.</td>
</tr>
</tbody>
</table>

You can customize the file icon in the tile bar with the following code:

```objective-c
window.standardWindowButton(NSWindowDocumentIconButton).Image = theImage
```

When the URL identifies an existing file, the window’s title offers a pop-up menu showing the path components of the URL. (The user displays this menu by Command-clicking the title.) The behavior and contents of this menu can be controlled with `shouldPopUpDocumentPathMenu`.

Available in Mac OS X v10.5 and later.

(Read and Write property)

### 32.84.223 `resizeIncrements` as NSSizeMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The window’s resizing increments. **Notes:** (Read and Write property)

### 32.84.224 `Restorable` as boolean

MBS MacBase Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Specifies whether the window configuration is preserved between application launches. **Notes:**

*value:* Specify true if you want the window to be preserved or false if you do not want it preserved.

Windows should be preserved between launch cycles to maintain interface continuity for the user. During subsequent launch cycles, the system tries to recreate the window and restore its configuration to the preserved state. Configuration data is updated as needed and saved automatically by the system.
If you enable preservation for a given window, you should also specify a restoration class for the window using the setRestorationClass method.
Available in OS X v10.7 and later.
(Read and Write property)

32.84.225  screen as NSScreenMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the screen the window is on.
Notes:
The screen where most of the window is on; nil when the window is offscreen.
When the window is partly on one screen and partly on another, the screen where most of it lies is returned.
(Read only property)

32.84.226  sharingType as Integer

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The level of access other processes have to the window’s content.
Notes:
Available in Mac OS X v10.5 and later.
(Read and Write property)

32.84.227  showsResizeIndicator as boolean

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether the receiver’s resize indicator is visible
Notes:
True to show it, false to hide it.
This method does not affect whether the receiver is resizable.
(Read and Write property)

32.84.228  showsToolbarButton as boolean

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether the receiver shows the toolbar control button.
Notes:
True to display the toolbar control button; false to hide the button.

If the window does not have a toolbar, this method has no effect.
(Read and Write property)

### 32.84.229 styleMask as Integer

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The receiver’s style mask, indicating what kinds of control items it displays.

**Example:**
```plaintext
dim p as new IKPictureTakerMBS
p.styleMask = BitwiseAnd(p.styleMask, & hFD) // disable close button
```

**Notes:**
See the information about the style mask in constants below. An NSWindow object’s style is set when the object is initialized. Once set, it can’t be changed.

**constants:**

- **NSBorderlessWindowMask = 0**
  The window displays none of the usual peripheral elements. Useful only for display or caching purposes.

- **NSTitledWindowMask = 1**
  The window displays a title bar.

- **NSClosableWindowMask = 2**
  The window displays a close button.

- **NSMiniaturizableWindowMask = 4**
  The window displays a minimize button.

- **NSResizableWindowMask = 8**
  The window displays a resize control.

- **NSTexturedBackgroundWindowMask = 256**
  The window displays with a metal-textured background. Additionally, the window may be moved by clicking and dragging anywhere in the window background. A bordered window with this mask gets rounded bottom corners.

(Read and Write property)

### 32.84.230 tabbingIdentifier as String

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Windows with the same tabbingIdentifier will have the ability to be tabbed together when a window is being shown.

**Example:**
dim n as NSWindowMBS = window1.NSWindowMBS
n.tabbingIdentifier = "test"
MsgBox n.tabbingIdentifier

Notes:
This allows aggregation of similar windows. By default, the tabbingIdentifier will be generated based on
inherit window properties, such as the window class name, the delegate class name, the window controller
class name, and some additional state. Windows can be explicitly made to group together by using the same
tabbingIdentifier.
Raises an exception when used on OS X 10.11 and older.
(Read and Write property)

32.84.231 tabbingMode as Integer

Example:

dim n as NSWindowMBS = window1.NSWindowMBS
n.tabbingMode = n.NSWindowTabbingModeDisallowed
MsgBox str(n.tabbingMode) // shows 2

Notes:
This should be set before a window is shown. The default value is NSWindowTabbingModeAutomatic. When the value is NSWindowTabbingModeAutomatic, the system will look at the userTabbingPreference and automatically tab windows together based on the tabbingIdentifier, when it is appropriate to do so. Raises an exception when used on OS X 10.11 and older.
(Read and Write property)

32.84.232 Title as String

Example:

if TargetCocoa then
dim w as new NSWindowMBS(window1)

MsgBox w.title
else
MsgBox "this sample requires REALbasic Cocoa Target"
end if

Notes: (Read and Write property)

32.84.233 titlebarAppearsTransparent as Boolean

MBS MacBase Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether titlebar appears transparent.
**Notes:**
When True, the titlebar doesn’t draw its background, allowing all buttons to show through, and "click through" to happen. In general, this is only useful when NSFullSizeContentViewWindowMask is set.

Available on Mac OS X 10.10 and newer.
(Read and Write property)

32.84.234 titleVisibility as Integer

**Notes:**
Can be NSWindowTitleVisible, NSWindowTitleHidden or NSWindowTitleHiddenWhenActive.
Available on Mac OS X 10.10 and newer.
(Read and Write property)

32.84.235 toolbar as Variant

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The window’s toolbar.
**Notes:**
Value is a NSToolbarMBS object.
Returned as Variant to reduce plugin dependencies.
(Read and Write property)
32.84.236  Top as Double

MBS MacBase Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The vertical position of the color panel in pixel.
**Notes:**
In the Cocoa world this is the distance from the bottom of the screen.
(Read and Write property)

32.84.237  userTabbingPreference as Integer

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the user's tabbing preference as set in System Preferences.
**Example:**
MsgBox str(NSWindowMBS.userTabbingPreference)

**Notes:**
This value should be queried anytime a new window is made to see if the user wants to automatically show it in tabs.
Can be NSWindowUserTabbingPreferenceManual, NSWindowUserTabbingPreferenceAlways or NSWindowUserTabbingPreferenceInFullScreen.
Raises an exception when used on OS X 10.11 and older.
(Read only property)

32.84.238  viewsNeedDisplay as boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Indicates whether any of the window's views need to be displayed.
**Notes:** (Read and Write property)

32.84.239  Visible as boolean

MBS MacBase Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Whether the color panel is currently visible.
**Notes:**
Setting to false calls Hide and setting to true calls show.
(Read only property)
32.84.240  **Width as Double**

MBS MacBase Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The width of the color panel in pixel.  
**Notes:** (Read and Write property)

32.84.241  **windowController as NSWindowControllerMBS**

MBS MacBase Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The window’s window controller.  
**Notes:** (Read and Write property)

32.84.242  **windowNumber as Integer**

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Provides the window number of the receiver’s window device.  
**Example:**

```
if TargetCocoa then
    dim w as new NSWindowMBS(window1)
    MsgBox str(w.windowNumber)
else
    MsgBox "this sample requires REALbasic Cocoa Target"
end if
```

**Notes:** (Read only property)

32.84.243  **worksWhenModal as boolean**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates whether the window is able to receive keyboard and mouse events even when some other window is being run modally.  
**Notes:**

True if the window is able to receive keyboard and mouse events even when some other window is being run modally; otherwise, false.
The NSWindow implementation of this method returns false. Only subclasses of NSPanel should override this default.
(Read only property)

**32.84.244  frameAutosaveName as string**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name used to automatically save the window’s frame rectangle data in the defaults system. **Notes:** (Read and Write computed property)

**32.84.245  Constants**

**32.84.246  NSBorderlessWindowMask=0**

MBS MacBase Plugin, Plugin Version: 8.4. **Function:** One of the constants you can use to specify the style when creating a window. **Notes:** The window displays none of the usual peripheral elements. Useful only for display or caching purposes.

**32.84.247  NSClosableWindowMask=2**

MBS MacBase Plugin, Plugin Version: 8.4. **Function:** One of the constants you can use to specify the style when creating a window. **Notes:** The window displays a close button.

**32.84.248  NSDirectSelection=0**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants specify the direction a window is currently using to change the key view using keyViewSelectionDirection. **Notes:** The window isn’t traversing the key view loop.

**32.84.249  NSFullScreenWindowMask = 16384**

MBS MacBase Plugin, Plugin Version: 15.1. **Function:** One of the constants you can use to specify the style when creating a window.
Notes: When set, the window will appear full screen. This mask is automatically toggled when toggleFullScreen: is called.

32.84.250  **NSFullScreenContentViewWindowMask = 32768**

MBS MacBase Plugin, Plugin Version: 15.1. **Function:** One of the constants you can use to specify the style when creating a window.

**Notes:**
- If set, the contentView will consume the full size of the window; it can be combined with other window style masks, but is only respected for windows with a titlebar.
- Utilizing this mask opts-in to layer-backing. Utilize the contentLayoutRect or auto-layout contentLayoutGuide to layout views underneath the titlebar/toolbar area.

32.84.251  **NSMaxXEdge = 2**

MBS MacBase Plugin, Plugin Version: 11.1. **Function:** One of the Cocoa edge constants.
**Notes:** the maximum X edge. Typically right side.

32.84.252  **NSMaxYEdge = 3**

MBS MacBase Plugin, Plugin Version: 11.1. **Function:** One of the Cocoa edge constants.
**Notes:** The maximum Y edge. Topically the top edge of a window.

32.84.253  **NSMiniaturizableWindowMask=4**

MBS MacBase Plugin, Plugin Version: 8.4. **Function:** One of the constants you can use to specify the style when creating a window.
**Notes:** The window displays a minimize button.

32.84.254  **NSMinXEdge = 0**

MBS MacBase Plugin, Plugin Version: 11.1. **Function:** One of the Cocoa edge constants.
**Notes:** the minimum X edge. Typically left side.
32.84.255  NSMinYEdge = 1

MBS MacBase Plugin, Plugin Version: 11.1. **Function:** One of the Cocoa edge constants.  
**Notes:** Minimum Y. As coordinates are upside down in the Cocoa world, this is the bottom edge of a window.

32.84.256  NSResizableWindowMask=8

MBS MacBase Plugin, Plugin Version: 8.4. **Function:** One of the constants you can use to specify the style when creating a window.  
**Notes:** The window displays a resize control.

32.84.257  NSSelectingNext=1

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants specify the direction a window is currently using to change the key view using keyViewSelectionDirection.  
**Notes:** The window is proceeding to the next valid key view.

32.84.258  NSSelectingPrevious=2

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants specify the direction a window is currently using to change the key view using keyViewSelectionDirection.  
**Notes:** The window is proceeding to the previous valid key view.

32.84.259  NSTexturedBackgroundWindowMask=256

MBS MacBase Plugin, Plugin Version: 8.4. **Function:** One of the constants you can use to specify the style when creating a window.  
**Notes:** The window displays with a metal-textured background. Additionally, the window may be moved by clicking and dragging anywhere in the window background. A bordered window with this mask gets rounded bottom corners.

32.84.260  NSTitledWindowMask=1

MBS MacBase Plugin, Plugin Version: 8.4. **Function:** One of the constants you can use to specify the style when creating a window.  
**Notes:** The window displays a title bar.
32.84.261  NSUnifiedTitleAndToolbarWindowMask=4096

MBS MacBase Plugin, Plugin Version: 8.4. **Function:** One of the constants you can use to specify the style when creating a window.

32.84.262  NSUnscaledWindowMask=2048

MBS MacBase Plugin, Plugin Version: 8.4. **Function:** One of the constants you can use to specify the style when creating a window.

32.84.263  NSWindowAbove=1

MBS MacBase Plugin, Plugin Version: 11.2. **Function:** One of the window order constants to specify how a window is ordered relative to another window.  
**Notes:** Moves the window above the indicated window.

32.84.264  NSWindowAnimationBehaviorAlertPanel = 5

MBS MacBase Plugin, Plugin Version: 11.2. **Function:** One of the AnimationBehavior constants.  
**Notes:** Default behavior for alert window.

32.84.265  NSWindowAnimationBehaviorDefault = 0

MBS MacBase Plugin, Plugin Version: 11.2. **Function:** One of the AnimationBehavior constants.  
**Notes:** let AppKit infer animation behavior for this window

32.84.266  NSWindowAnimationBehaviorDocumentWindow = 3

MBS MacBase Plugin, Plugin Version: 11.2. **Function:** One of the AnimationBehavior constants.  
**Notes:** Default behavior for document window.

32.84.267  NSWindowAnimationBehaviorNone = 2

MBS MacBase Plugin, Plugin Version: 11.2. **Function:** One of the AnimationBehavior constants.  
**Notes:** suppress inferred animations (don’t animate)
32.84.268  **NSWindowAnimationBehaviorUtilityWindow = 4**

MBS MacBase Plugin, Plugin Version: 11.2. **Function:** One of the AnimationBehavior constants.  
**Notes:** Default behavior for utility window.

32.84.269  **NSWindowBackingLocationDefault=0**

MBS MacBase Plugin, Plugin Version: 8.4. **Function:** One of the constant to specify the window backing store location.  
**Notes:**  
Determined by the operating system.  
Available in Mac OS X v10.5 and later.

32.84.270  **NSWindowBackingLocationMainMemory=2**

MBS MacBase Plugin, Plugin Version: 8.4. **Function:** One of the constant to specify the window backing store location.  
**Notes:**  
Physical memory.  
Available in Mac OS X v10.5 and later.

32.84.271  **NSWindowBackingLocationVideoMemory=1**

MBS MacBase Plugin, Plugin Version: 8.4. **Function:** One of the constant to specify the window backing store location.  
**Notes:**  
Video memory.  
Available in Mac OS X v10.5 and later.

32.84.272  **NSWindowBelow=-1**

MBS MacBase Plugin, Plugin Version: 11.2. **Function:** One of the window order constants to specify how a window is ordered relative to another window.  
**Notes:** Moves the window below the indicated window.
32.84.273  **NSWindowCloseButton=0**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One constants providing a way to access standard title bar buttons.
**Notes:** The close button.

32.84.274  **NSWindowCollectionBehaviorCanJoinAllSpaces=1**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for window collection behaviors related to Expos and Spaces.
**Notes:**
The window appears in all spaces. The menu bar behaves this way.
Available in Mac OS X v10.5 and later.

32.84.275  **NSWindowCollectionBehaviorDefault=0**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for window collection behaviors related to Expos and Spaces.
**Notes:**
The window can be associated to one space at a time.
Available in Mac OS X v10.5 and later.

32.84.276  **NSWindowCollectionBehaviorFullScreenAuxiliary = 256**

MBS MacBase Plugin, Plugin Version: 11.2. **Function:** One of the constants for window collection behaviors.
**Notes:** Windows with this collection behavior can be shown with the fullscreen window.

32.84.277  **NSWindowCollectionBehaviorFullScreenPrimary = 128**

MBS MacBase Plugin, Plugin Version: 11.2. **Function:** One of the constants for window collection behaviors.
**Notes:** The frontmost window with this collection behavior will be the fullscreen window.
32.84.278   **NSWindowCollectionBehaviorIgnoresCycle=64**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for window collection behaviors related to Expos and Spaces.

**Notes:**
The window is not part of the window cycle for use with the Cycle Through Windows Window menu item. Available in Mac OS X v10.6 and later.

32.84.279   **NSWindowCollectionBehaviorManaged=4**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for window collection behaviors related to Expos and Spaces.

**Notes:**
The window participates in Spaces and Expos. This is the default behavior if windowLevel is equal to NSNormalWindowLevel.
Available in Mac OS X v10.6 and later.

32.84.280   **NSWindowCollectionBehaviorMoveToActiveSpace=2**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for window collection behaviors related to Expos and Spaces.

**Notes:**
Making the window active does not cause a space switch; the window switches to the active space.
Available in Mac OS X v10.5 and later.

32.84.281   **NSWindowCollectionBehaviorParticipatesInCycle=32**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for window collection behaviors related to Expos and Spaces.

**Notes:**
The window participates in the window cycle for use with the Cycle Through Windows Window menu item.
Available in Mac OS X v10.6 and later.

32.84.282   **NSWindowCollectionBehaviorStationary=16**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for window collection behaviors related to Expos and Spaces.
Notes:
The window is unaffected by Expos; it stays visible and stationary, like the desktop window. Available in Mac OS X v10.6 and later.

32.84.283  NSWindowCollectionBehaviorTransient=8

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants for window collection behaviors related to Expos and Spaces.
**Notes:**
The window floats in Spaces and is hidden by Expos. This is the default behavior if windowLevel is not equal to NSNormalWindowLevel. Available in Mac OS X v10.6 and later.

32.84.284  NSWindowDocumentIconButton=4

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One constants providing a way to access standard title bar buttons.
**Notes:** The document icon button.

32.84.285  NSWindowDocumentVersionsButton = 6

MBS MacBase Plugin, Plugin Version: 11.2. **Function:** One constants providing a way to access standard title bar buttons.

32.84.286  NSWindowFullScreenButton = 7

MBS MacBase Plugin, Plugin Version: 11.2. **Function:** One constants providing a way to access standard title bar buttons.

32.84.287  NSWindowMiniaturizeButton=1

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One constants providing a way to access standard title bar buttons.
**Notes:** The minimize button.
32.84.288  **NSWindowNumberListAllApplications=1**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants used for options that may be passed to the windowNumbersWithOptions: method.

**Notes:**
The window numbers of windows visible on any space and belonging to any application.
Available in Mac OS X v10.6 and later.

If the value 0 is passed instead, then the list returned from the method contains window numbers for visible windows on the active space belonging to the calling application.

32.84.289  **NSWindowNumberListAllSpaces=16**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants used for options that may be passed to the windowNumbersWithOptions: method.

**Notes:**
The window numbers of windows visible on any space and belonging to the calling application.
Available in Mac OS X v10.6 and later.

If the value 0 is passed instead, then the list returned from the method contains window numbers for visible windows on the active space belonging to the calling application.

32.84.290  **NSWindowOut=0**

MBS MacBase Plugin, Plugin Version: 11.2. **Function:** One of the window order constants to specify how a window is ordered relative to another window.

**Notes:** Moves the window off the screen.

32.84.291  **NSWindowSharingNone=0**

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the following constants and the related data type represent the access levels other processes can have to a window’s content.

**Notes:**
The window’s contents cannot be read by another process.
Available in Mac OS X v10.5 and later.
32.84. CLASS NSWINDOWMBS

32.84.292 NSWindowSharingReadOnly = 1

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the following constants and the related data type represent the access levels other processes can have to a window’s content.

**Notes:**
The window’s contents can be read but not modified by another process.
Available in Mac OS X v10.5 and later.

32.84.293 NSWindowSharingReadWrite = 2

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the following constants and the related data type represent the access levels other processes can have to a window’s content.

**Notes:**
The window’s contents can be read and modified by another process.
Available in Mac OS X v10.5 and later.

32.84.294 NSWindowTitleHidden = 1

MBS MacBase Plugin, Plugin Version: 14.3. **Function:** One of the title visibility constants.

**Notes:** The always hidden mode hides the title and moves the toolbar up into the area previously occupied.
by the title.

32.84.298 NSWindowTitleHiddenWhenActive = 2

MBS MacBase Plugin, Plugin Version: 14.3. Function: One of the title visibility constants. Notes: This mode hides the title when the window is active, and shows it when inactive. It does not adjust toolbars.

32.84.299 NSWindowTitleVisible = 0

MBS MacBase Plugin, Plugin Version: 14.3. Function: One of the title visibility constants. Notes: The default mode has a normal window title and titlebar buttons.

32.84.300 NSWindowToolbarButton=3

MBS MacBase Plugin, Plugin Version: 9.6. Function: One constants providing a way to access standard title bar buttons. Notes: The toolbar button.

32.84.301 NSWindowUserTabbingPreferenceAlways = 1

MBS MacBase Plugin, Plugin Version: 16.5. Function: One of the tabbing preferences values.

32.84.302 NSWindowUserTabbingPreferenceInFullScreen = 2

MBS MacBase Plugin, Plugin Version: 16.5. Function: One of the tabbing preferences values.

32.84.303 NSWindowUserTabbingPreferenceManual = 0

MBS MacBase Plugin, Plugin Version: 16.5. Function: One of the tabbing preferences values.
32.84.304  NSWindowZoomButton=2

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One constants providing a way to access standard title bar buttons.
**Notes:** The zoom button.
32.85 class NSWindowRestoreHandlerMBS

32.85.1 class NSWindowRestoreHandlerMBS

MBS MacBase Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The class implementing the event to be called for window restoration.

32.85.2 Methods

32.85.3 Constructor


32.85.4 Destructor


32.85.5 SetLastError(error as NSErrorMBS)


32.85.6 SetRestoredWindow(win as NSWindowMBS)


See also:

- 32.85.7 SetRestoredWindow(win as window)

32.85.7 SetRestoredWindow(win as window)


See also:
32.85.8 Events

32.85.9 RestoreWindow(identifier as string, state as NSCoderMBS)

MBS MacBase Plugin, Plugin Version: 13.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The following event is sent to request that a window be restored.

**Notes:**

If the receiver knows how to restore the identified window, it should invoke the completion handler with the window, possibly creating it. It is acceptable to invoke the completion handler with a pre-existing window, though you should not pass the same window to more than one completion handler. If the receiver cannot restore the identified window (for example, the window referenced a document that has been deleted), it should invoke the completion handler with a nil window. In Mac OS X 10.7, the error parameter is ignored.

The receiver is passed the identifier of the window, which allows the receiver to quickly check for known windows. For example, you might give your preferences window an identifier of “preferences” in the nib, and then check for that identifier in your implementation. The receiver is also passed the NSCoder containing the combined restorable state of the window, its delegate, the window controller, and any document. The receiver may decode information previously stored in the coder to determine what window to restore.

Please call SetRestoredWindow or SetError to pass back status to system. It is not necessary or recommended for implementations of this method to order restored windows onscreen (for example, the window may have been minimized, in which case it will not be ordered onscreen).

Please call SetError and SetRestoredWindow to provide result to system.
32.86 class NSWorkspaceMBS

32.86.1 class NSWorkspaceMBS

MBS MacCocoa Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: An NSWorkspace object responds to application requests to perform a variety of services. Example:

```objective-c
// get icon image
dim n as NSImageMBS = NSWorkspaceMBS.iconForFile(SpecialFolder.desktop)
// set the size we want
n.setSize 512,512
// make a copy as picture
Backdrop = n.CopyPictureWithMask
```

Notes:

- Opening, manipulating, and obtaining information about files and devices
- Tracking changes to the file system, devices, and the user database
- Launching applications

32.86.2 Methods

32.86.3 absolutePathForAppBundleWithIdentifier(bundleIdentifier as string) as string

MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the absolute file-system path of an application bundle. Notes:

- bundleIdentifier: The bundle identifier string. This value corresponds to the value in the CFBundleIdentifier key of the application’s Info.plist file. For example, the bundle identifier of the TextEdit application is com.apple.TextEdit.

Returns the file system path to the application bundle identified by bundleIdentifier, or "" if the bundle cannot be found.

32.86.4 activateFileViewerSelectingFiles(Files() as folderitem)

MBS MacCocoa Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Activates the Finder, and opens one or more windows selecting the specified files.
32.86. **CLASS NSWORKSPACEMBS**

**Example:**

```vba
dim file as FolderItem = SpecialFolder.Pictures.Child("mbs.jpg") // some file

dim w as new NSWorkspaceMBS
dim files() as FolderItem

files.Append file

// show in Finder
w.activateFileViewerSelectingFiles(files)
```

**Notes:** Available in Mac OS X v10.6 and later.

### 32.86.5 `activateFileViewerSelectingURLs(URLs() as string)`

MBS MacCocoa Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Activates the Finder, and opens one or more windows selecting the specified files. **Notes:** Available in Mac OS X v10.6 and later.

### 32.86.6 `desktopImageOptionsForScreen(screen as NSScreenMBS) as dictionary`

MBS MacCocoa Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the desktop image options for the given screen. **Example:**

```vba
dim w as new NSWorkspaceMBS
dim m as NSScreenMBS = NSScreenMBS.mainScreen
dim dic as Dictionary = w.desktopImageOptionsForScreen(m)

break // check in debugger
```

**Notes:**

- `screen`: The screen for which to get the desktop image options.

Returns a dictionary containing key-value pairs. Keys can be `NSWorkspaceDesktopImageScalingKey`, `NSWorkspaceDesktopImageAllowClippingKey` or `NSWorkspaceDesktopImageFillColorKey`. Available in Mac OS X v10.6 and later.
32.86.7  desktopImageURLForScreen(screen as NSScreenMBS) as folderitem

Function: Returns the folderitem for the desktop image for the given screen.
Example:

```vBasic
dim w as new NSWorkspaceMBS
dim m as NSScreenMBS = NSScreenMBS.mainScreen
dim file as FolderItem = w.desktopImageURLForScreen(m)

MsgBox file.AbsolutePath
```

Notes:

- screen: The screen for which to get the desktop image.
- Returns the desktop image.
- Available in Mac OS X v10.6 and later.

32.86.8  fileLabelColors as NSColorMBS()

Function: Returns the corresponding array of file label colors for the file labels.
Example:

```vBasic
dim w as new NSWorkspaceMBS
dim labels() as string = w.fileLabels
dim colors() as NSColorMBS = w.fileLabelColors
dim lines() as string

dim u as Integer = UBound(Colors)
for i as Integer = 0 to u
    dim co as NSColorMBS = colors(i)
    lines.Append labels(i)+":"+str(co.colorValue)
next

MsgBox Join(lines,EndOfLine)
```

Notes:

- This array has the same number of elements as fileLabels, and the color at a given index corresponds to the label at the same index.
You can listen for notifications named NSWorkspaceDidChangeFileLabelsNotification to be notified when file labels change which may result in changes to the order of the fileLabelColors.

Available in Mac OS X v10.6 and later.

### 32.86.9 `fileLabels as string()`

MBS MacCocoa Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the array of file labels as strings.

**Example:**

```vbnet
dim w as new NSWorkspaceMBS
dim labels() as string = w.fileLabels

MsgBox Join(labels, EndOfLine)
```

**Notes:**

You can listen for notifications named NSWorkspaceDidChangeFileLabelsNotification to be notified when file labels change.

Available in Mac OS X v10.6 and later.

### 32.86.10 `findApplications`

MBS MacCocoa Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Examines all applications and updates the records of registered services and file types.

**Example:**

```vbnet
NSWorkspaceMBS.findApplications
```

### 32.86.11 `frontmostApplication as NSRunningApplicationMBS`

MBS MacCocoa Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Gets the frontmost application, which is the application that will receive key events.

**Example:**

```vbnet
dim w as new NSWorkspaceMBS
dim n as NSRunningApplicationMBS = w.frontmostApplication

MsgBox n.localizedNome
```
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Notes: Requires Mac OS X 10.7.

32.86.12 fullPathForApplication(appname as string) as folderitem

Example:

MsgBox NSWorkspaceMBS.fullPathForApplication("textedit").ShellPath
// shows /Applications/TextEdit.app

Notes: The full path for the application, or nil if the specified application was not found.

32.86.13 hideOtherApplications

MBS MacCocoa Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Hides all applications other than the sender.
Example:

NSWorkspaceMBS.hideOtherApplications

Notes: The user can hide all applications except the current one by Command-Option-clicking on an application’s Dock icon.

32.86.14 iconForFile(file as folderitem) as NSImageMBS

Example:

    dim f as FolderItem
    f=SpecialFolder.Desktop.Child("test.txt")

    dim n as NSImageMBS = NSWorkspaceMBS.iconForFile(f)
    n.size = new NSSizeMBS(512,512)
    Backdrop=n.CopyPictureWithMask
Notes:
The returned image has an initial size of 32 pixels by 32 pixels.
Returns nil on any error.

32.86.15 iconForFiles(files() as folderitem) as NSImageMBS

Function: Returns an image containing the icon for the specified files.
Example:

    dim w as new NSWorkspaceMBS
    dim files() as FolderItem

    dim folder as FolderItem = SpecialFolder.Pictures

    // one file
    files.Append folder.TrueItem(2)
    canvas1.Backdrop = w.iconForFiles(files).CopyPictureWithMask

    // two files
    files.Append folder.TrueItem(3)
    canvas2.Backdrop = w.iconForFiles(files).CopyPictureWithMask

    // three files
    files.Append folder.TrueItem(4)
    canvas3.Backdrop = w.iconForFiles(files).CopyPictureWithMask

Notes:
files: An array of folderitems, each of which contains the full path to a file.

Returns the icon associated with the group of files.

If fullPaths specifies one file, that file’s icon is returned. If fullPaths specifies more than one file, an icon representing the multiple selection is returned.

32.86.16 iconForFileType(filetype as string) as NSImageMBS

Function: Returns an image containing the icon for files of the specified type.
Example:
Backdrop=NSWorkspaceMBS.iconForFileType("txt").CopyPictureWithMask

Notes:
filetype: The file type, which may be either a filename extension or an encoded HFS file type.

The returned image has an initial size of 32 pixels by 32 pixels.
Returns nil on any error.

Running this in a thread can lead to crashes.

32.86.17  isFilePackageAtPath(item as folderitem) as boolean

Function: Determines whether the specified path is a file package.
Example:

dim w as new NSWorkspaceMBS
dim file as FolderItem = SpecialFolder.Applications.Child("iTunes.app")

// shows true for iTunes
MsgBox str(w.isFilePackageAtPath(file))

Notes: Returns true if the path identifies a file package; otherwise, false if the path does not exist, is not a
directory, or is not a file package.

32.86.18  launchApplication(appname as string) as boolean

Function: Launches the specified application.
Example:

if NSWorkspaceMBS.launchApplication("Textedit") then
MsgBox "Ok"
else
MsgBox "failed"
end if
32.86. CLASS NSWORKSPACEMBS

Notes:
Returns true if the application was successfully launched or was already running; otherwise, false.

The appName parameter need not be specified with a full path and, in the case of an application wrapper, may be specified with or without the .app extension, as described in "Use of .app Extension".

See also:
• 32.86.19 launchApplication(appname as string, showicon as boolean, autolaunch as boolean) as boolean

32.86.19 launchApplication(appname as string, showicon as boolean, autolaunch as boolean) as boolean


Example:
if NSWorkspaceMBS.launchApplication("Textedit",false,false) then
    MsgBox "Ok"
else
    MsgBox "failed"
end if

Notes:
appName: The name of the application to open.
showIcon: If false, the application’s icon is not placed on the screen. (The icon still exists, though.)
autolaunch: If true, the autolaunch default is set as though the specified application were autolaunched at startup.

This method is provided to enable daemon-like applications that lack a normal user interface. Its use is not generally encouraged.
Returns true if the application is successfully launched or already running, and false if it can’t be launched.
See also:
• 32.86.18 launchApplication(appname as string) as boolean

32.86.20 launchApplicationAtFile(file as folderitem, options as UInt32 = 0, configuration as dictionary = nil) as NSRunningApplicationMBS


Notes:
file: The application folder item.
options: Options to use when launching the application. see NSWorkspaceLaunch* constants.
configuration: A dictionary containing the configuration options. Possible key-value pairs are described
NSWorkspaceLaunchConfiguration* functions.
error: The error is returned here.

Returns reference to newly started application.

Available in Mac OS X v10.6 and later.
See also:

• 32.86.21 launchApplicationAtFile(file as folder item, options as UInt32, configuration as dictionary,
byref error as NSErrorMBS) as NSRunningApplicationMBS

32.86.21 launchApplicationAtFile(file as folder item, options as UInt32, configuration as dictionary, byref error as NSErrorMBS) as NSRunningApplicationMBS

Function: Launches the app at the specified file location.
Example:

dim w as new NSWorkspaceMBS
dim file as FolderItem = SpecialFolder.Applications.Child("Address Book.app")

dim error as NSErrorMBS
dim configuration as new Dictionary
dim options as Integer

// today we start 32 bit version
configuration.Value(w.NSWorkspaceLaunchConfigurationArchitecture) = w.NSBundleExecutableArchitectureI386

// and hide all others
options = w.NSWorkspaceLaunchAndHideOthers

dim r as NSRunningApplicationMBS = w.launchApplicationAtFile(file, options, configuration, error)

if r = nil then
MsgBox "Error: " +error.localizedDescription
else
MsgBox "Started: " +r.localizedName
end if
32.86. CLASS NSWORKSPACEMBS

Notes:

file: The application folder item.
options: Options to use when launching the application. see NSWorkspaceLaunch* constants.
configuration: A dictionary containing the configuration options. Possible key-value pairs are described
NSWorkspaceLaunchConfiguration* functions.
error: The error is returned here.

Returns reference to newly started application.

Available in Mac OS X v10.6 and later.

See also:

- 32.86.20 launchApplicationAtFile(file as folder item, options as UInt32 = 0, configuration as dictionary = nil) as NSRunningApplicationMBS

32.86.22 launchApplicationAtURL(URL as string, options as UInt32 = 0, configuration as dictionary = nil) as NSRunningApplicationMBS


Function: Launches the app at the specified URL.

Notes:

url: The application URL.
options: Options to use when launching the application. see NSWorkspaceLaunch* constants.
configuration: A dictionary containing the configuration options. Possible key-value pairs are described
NSWorkspaceLaunchConfiguration* functions.
error: The error is returned here.

Returns reference to newly started application.

Available in Mac OS X v10.6 and later.

See also:

- 32.86.23 launchApplicationAtURL(URL as string, options as UInt32, configuration as dictionary, byref error as NSErrorMBS) as NSRunningApplicationMBS

32.86.23 launchApplicationAtURL(URL as string, options as UInt32, configuration as dictionary, byref error as NSErrorMBS) as NSRunningApplicationMBS


Function: Launches the app at the specified URL.

Notes:
url: The application URL.
options: Options to use when launching the application. See NSWorkspaceLaunch* constants.
configuration: A dictionary containing the configuration options. Possible key-value pairs are described
NSWorkspaceLaunchConfiguration* functions.
error: The error is returned here.

Returns reference to newly started application.

Available in Mac OS X v10.6 and later.
See also:

- 32.86.22 launchApplicationAtURL(URL as string, options as UInt32 = 0, configuration as dictionary
  = nil) as NSRunningApplicationMBS 6201

32.86.24 launchAppWithBundleIdentifier(bundleIdentifier as string, options as
  Integer = & h00030000, AppleEventDescriptor as Variant = nil) as
  Boolean

Function: Launches the application corresponding to the specified bundleIdentifier.
Notes:

- bundleIdentifier: A bundle identifier string. This value corresponds to the value in the CFBundleIdentifier
  key of the application’s Info.plist file. For example, the bundle identifier of the TextEdit application is
- options: Options to use when launching the application. Values for this parameter are described in constants.
- descriptor: Additional options specified in an AppleEvent-style descriptor. For example, you could use this
  parameter to specify additional documents to open when the application is launched.

Returns true if the application was found and launched; otherwise, false.

32.86.25 localizedDescriptionForType(typeName as string) as string

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns the localized description for the specified Uniform Type Identifier.
Example:

MsgBox NSWorkspaceMBS.localizedDescriptionForType("public.jpeg")
// "JPEG-Bild" in German

Notes:
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The localized description is suitable for displaying to the user.
Available in Mac OS X v10.5 and later.

### 32.86.26 `menuBarOwningApplication` as `NSRunningApplicationMBS`

**Function:** Gets the menu bar owning application, which is the application that currently owns and draws the menu bar.
**Example:**

```vbnet
dim w as new NSWorkspaceMBS
dim n as NSRunningApplicationMBS = w.menuBarOwningApplication
MsgBox n.localizedDescription
```

**Notes:** Requires Mac OS X 10.7.

### 32.86.27 `mountedLocalVolumePaths` as `string()`

**Function:** Returns the mount points of all local volumes, not just the removable ones returned by `mountedRemovableMedia`.
**Example:**

```vbnet
dim w as new NSWorkspaceMBS
dim paths() as string = w.mountedLocalVolumePaths
MsgBox Join(paths, EndOfLine)
```

**Notes:** Returns an array of strings, each of which contains the full pathname of the mount point for any local volumes.

### 32.86.28 `mountedRemovableMedia` as `string()`

**Function:** Returns the full pathnames of all currently mounted removable disks.
**Example:**

```vbnet
dim w as new NSWorkspaceMBS
dim paths() as string = w.mountedRemovableMedia
```
MsgBox Join(paths, EndOfLine)

**Notes:**
Returns an array of strings, each of which contains the full pathname of a mounted removable disk.

If the computer provides an interrupt or other notification when the user inserts a disk into a drive, the Finder will mount the disk immediately. However, if no notification is given, the Finder won’t be aware that a disk needs to be mounted. On such systems, an application should invoke either mountNewRemovableMedia or checkForRemovableMedia before invoking mountedRemovableMedia. Either of these methods cause the Finder to poll the drives to see if a disk is present. If a disk has been inserted but not yet mounted, these methods will cause the Finder to mount it.

The Disk button in an Open or Save panel invokes mountedRemovableMedia and mountNewRemovableMedia as part of its operation, so most applications won’t need to invoke these methods directly.

### 32.86.29 noteFileSystemChanged

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Informs the NSWorkspace object that the file system has changed. **Notes:**
The NSWorkspace object then gets the status of all the files and directories it is interested in and updates itself appropriately. This method is used by many objects that write or delete files.

The NSDocument and NSSavePanel objects use this method when saving a file. If you create a file directly, you should call noteFileSystemChanged so that the Finder can update the folder if it is open.

Available in Mac OS X v10.0 and later. Deprecated in Mac OS X v10.6. **See also:**

- 32.86.30 noteFileSystemChanged(path as folderitem)

### 32.86.30 noteFileSystemChanged(path as folderitem)

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Informs the NSWorkspace object that the file system changed at the specified path. **Notes:**
The NSWorkspace object then gets the status of all the files and directories it is interested in and updates itself appropriately. This method is used by many objects that write or delete files. **See also:**
32.86.31 notificationCenter as NSNotificationCenterMBS


32.86.32 NSWorkspaceActiveSpaceDidChangeNotification as string

MBS MacCocoa Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification names. **Notes:**

Posted when a Spaces change has occurred. The notification object is the shared NSWorkspace instance. The notification does not contain a userInfo dictionary. Available in Mac OS X v10.6 and later.

32.86.33 NSWorkspaceApplicationKey as string

MBS MacCocoa Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This constant is supplied in the userInfo dictionary of various notifications. **Notes:**

The value corresponding to this key is an instance of NSRunningApplication that reflects the affected application. Available in Mac OS X v10.6 and later.

32.86.34 NSWorkspaceCompressOperation as string

MBS MacCocoa Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file operation modes. **Notes:** Compress file. This operation always returns an error.

32.86.35 NSWorkspaceCopyOperation as string

MBS MacCocoa Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file operation modes. **Example:**
dim f as FolderItem = SpecialFolder.Desktop.Child("test")
dim tag as Integer
dim files(-1) as string
dim b as Boolean
dim source, dest as FolderItem

// copies a file from one folder to another folder

source = f.Parent
files.Append f.name
dest = SpecialFolder.Pictures

b = NSWorkspaceMBS.performFileOperation(NSWorkspaceMBS.NSWorkspaceCopyOperation, source, dest, files, tag)

if b then
    MsgBox "OK"
else
    MsgBox "Failed"
end if

Notes: Copy file to destination.

32.86.36  NSWorkspaceDecompressOperation as string


32.86.37  NSWorkspaceDecryptOperation as string


32.86.38  NSWorkspaceDesktopImageAllowClippingKey as string

MBS MacCocoa Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the keys for the options dictionary used with SetDesktopImageURL. Notes:
The value is a boolean, which affects the interpretation of Proportional scaling types. A false value will make the image fully visible, but there may be empty space on the sides or top and bottom. A true value will cause the image to fill the entire screen, but the image may be clipped. If this is not specified, false is assumed. Non-proportional scaling types ignore this value.
Available in Mac OS X v10.6 and later.

**32.86.39 NSWorkspaceDesktopImageFillColorKey as string**

**Function:** One of the keys for the options dictionary used with SetDesktopImageURL.
**Notes:**
The value is an NSColor, which is used to fill any empty space around the image. If not specified, a default value is used. Currently, only colors that use or can be converted to use NSCalibratedRGBColorSpace are supported, and any alpha value is ignored.
Available in Mac OS X v10.6 and later.

**32.86.40 NSWorkspaceDesktopImageScalingKey as string**

**Function:** One of the keys for the options dictionary used with SetDesktopImageURL.
**Notes:**
The value is an Number containing an NSImageScaling constant as declared in NSCell. If this is not specified, NSImageScaleProportionallyUpOrDown=3 is used. NSImageScaleProportionallyDown=0 is not currently supported.
Available in Mac OS X v10.6 and later.

**32.86.41 NSWorkspaceDestroyOperation as string**

**Function:** One of the file operation modes.
**Notes:** Destroy file.

**32.86.42 NSWorkspaceDidActivateApplicationNotification as string**

**Function:** One of the notification names.
**Notes:**
Posted when the Finder is about to activate an application. The notification object is the shared NSWorkspace instance. In Mac OS X v10.6 and later the userInfo dictionary contains the NSWorkspaceApplicationKey key with a corresponding instance of NSRunningApplication that represents the affected application. Available in Mac OS X v10.6 and later.

### 32.86.43 NSWorkspaceDidChangeFileLabelsNotification as string

MBS MacCocoa Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification names. **Notes:** Posted when the Finder file labels or colors change. The notification object is the shared NSWorkspace instance. The notification does not contain a userInfo dictionary. Available in Mac OS X v10.6 and later.

### 32.86.44 NSWorkspaceDidDeactivateApplicationNotification as string

MBS MacCocoa Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification names. **Notes:** Posted when the Finder deactivated an application. The notification object is the shared NSWorkspace instance. In Mac OS X v10.6 and later the userInfo dictionary contains the NSWorkspaceApplicationKey key with a corresponding instance of NSRunningApplication that represents the affected application. Available in Mac OS X v10.6 and later.

### 32.86.45 NSWorkspaceDidHideApplicationNotification as string

MBS MacCocoa Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification names. **Notes:** Posted when the Finder hid an application. The notification object is the shared NSWorkspace instance. In Mac OS X v10.6 and later the userInfo dictionary contains the NSWorkspaceApplicationKey key with a corresponding instance of NSRunningApplication that represents the affected application. Available in Mac OS X v10.6 and later.
**32.86.46** NSWorkspaceDidLaunchApplicationNotification as string


**Function:** One of the notification names.

**Notes:**

Posted when a new application has started up.

The notification object is the shared NSWorkspace instance. In Mac OS X v10.6 and later the userInfo dictionary contains the NSWorkspaceApplicationKey key with a corresponding instance of NSRunningApplication that represents the affected application.

**32.86.47** NSWorkspaceDidMountNotification as string


**Function:** One of the notification names.

**Notes:**

Posted when a new device has been mounted.

The notification object is the shared NSWorkspace instance.

In Mac OS X v10.5 and earlier the userInfo dictionary contains a key @"NSDevicePath" that returns the path where the device was mounted, as a string.

Available in Mac OS X v10.0 and later.

**32.86.48** NSWorkspaceDidPerformFileOperationNotification as string


**Function:** One of the notification names.

**Notes:**

Posted when a file operation has been performed in the receiving application.

The notification object is the shared NSWorkspace instance. The userInfo dictionary contains a key "NSOperationNumber" with a number containing an integer indicating the type of file operation.

Available in Mac OS X v10.0 and later.

**32.86.49** NSWorkspaceDidRenameVolumeNotification as string


**Function:** One of the notification names.

**Notes:**

Posted when a volume changes its name and/or mount path. These typically change simultaneously, in which case only one notification is posted.
The notification object is the shared NSWorkspace instance. Available in Mac OS X v10.0 and later.

### 32.86.50 NSWorkspaceDidTerminateApplicationNotification as string


**Function:** One of the notification names.

**Notes:**

Posted when an application finishes executing. The notification object is the shared NSWorkspace instance. In Mac OS X v10.6 and later the userInfo dictionary contains the NSWorkspaceApplicationKey key with a corresponding instance of NSRunningApplication that represents the affected application.

Available in Mac OS X v10.0 and later.

### 32.86.51 NSWorkspaceDidUnhideApplicationNotification as string


**Function:** One of the notification names.

**Notes:**

Posted when the Finder unhid an application. The notification object is the shared NSWorkspace instance. In Mac OS X v10.6 and later the userInfo dictionary contains the NSWorkspaceApplicationKey key with a corresponding instance of NSRunningApplication that represents the affected application.

Available in Mac OS X v10.6 and later.

### 32.86.52 NSWorkspaceDidUnmountNotification as string


**Function:** One of the notification names.

**Notes:**

Posted when the Finder did unmount a device. This notification is delivered even if a volume was forcibly and immediately made unavailable, such as when a drive is simply unplugged.

The notification object is the shared NSWorkspace instance. The userInfo dictionary contains a key "NSDevicePath" that returns the path where the device was mounted, as a string.

Available in Mac OS X v10.0 and later.
32.86.53 NSWorkspaceDidWakeNotification as string

Function: One of the notification names.
Notes:
Posted when the machine wakes from sleep.
The notification object is the shared NSWorkspace instance. The notification does not contain a userInfo
dictionary.
Available in Mac OS X v10.3 and later.

32.86.54 NSWorkspaceDuplicateOperation as string

Function: One of the file operation modes.
Notes: Duplicate file in source directory.

32.86.55 NSWorkspaceEncryptOperation as string

Function: One of the file operation modes.
Notes: Encrypt file. This operation always returns an error.

32.86.56 NSWorkspaceLaunchConfigurationAppleEvent as string

Function: One of the keys for the configuration dictionary for launchApplication* methods.
Notes:
The value is the first NSAppleEventDescriptor to send to the new application. If an instance of the appli-
cation is already running, this is sent to that application.
Available in Mac OS X v10.6 and later.

32.86.57 NSWorkspaceLaunchConfigurationArchitecture as string

Function: One of the keys for the configuration dictionary for launchApplication* methods.
Notes:
The value is a number containing an Mach-O Architecture constant. Ignored if a new instance of the appli-
cation is not launched.
Available in Mac OS X v10.6 and later.  
See NSBundleExecutableArchitecture* constants.

32.86.58  **NSWorkspaceLaunchConfigurationArguments as string**

**Function:** One of the keys for the configuration dictionary for launchApplication* methods.  
**Notes:**  
The value is an NSArray of NSStrings, passed to the new application in the argv parameter. Ignored if a new instance of the application is not launched.  
Available in Mac OS X v10.6 and later.

32.86.59  **NSWorkspaceLaunchConfigurationEnvironment as string**

**Function:** One of the keys for the configuration dictionary for launchApplication* methods.  
**Notes:**  
The value is an dictionary, mapping Strings to Strings, containing environment variables to set for the new app. Ignored if a new instance of the application is not launched.  
Available in Mac OS X v10.6 and later.

32.86.60  **NSWorkspaceLinkOperation as string**

**Function:** One of the file operation modes.  
**Example:**
```
      dim f as FolderItem = SpecialFolder.Desktop.Child("test")
    dim tag as Integer
    dim files(-1) as string
    dim b as Boolean
    dim source,dest as FolderItem

    // creates a hard link to a file in a folder
    source=f.Parent
    files.Append f.name
    dest=SpecialFolder.Pictures

    b=NSWorkspaceMBS.performFileOperation(NSWorkspaceMBS.NSWorkspaceLinkOperation, source, dest, files, tag)
```
if b then
MsgBox "OK"
else
MsgBox "Failed"
end if

Notes: Create hard link to file in destination.

32.86.61 NSWorkspaceMoveOperation as string

Function: One of the file operation modes.
Example:

dim f as FolderItem = SpecialFolder.Desktop.Child("test")
dim tag as Integer
dim files(-1) as string
dim b as Boolean
dim source, dest as FolderItem

// moves a file from one folder to another folder

source = f.Parent
files.Append f.name
dest = SpecialFolder.Pictures

b = NSWorkspaceMBS.performFileOperation(NSWorkspaceMBS.NSWorkspaceMoveOperation, source, dest, files, tag)

if b then
MsgBox "OK"
else
MsgBox "Failed"
end if

Notes: Move file to destination.
32.86.62  NSWorkspaceRecycleOperation as string


**Function:** One of the file operation modes.

**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test")
dim tag as Integer
dim files(-1) as string
dim b as Boolean
dim source, dest as FolderItem

source = f.Parent

files.Append f.name

b = NSWorkspaceMBS.performFileOperation(NSWorkspaceMBS NSWorkspaceRecycleOperation, source, dest, files, tag)

if b then
    MsgBox "OK"
else
    MsgBox "Failed"
end if
```

**Notes:** Move file to trash. The file is moved to the trash folder on the volume containing the file using the same semantics as NSWorkspaceMoveOperation. If a file with the same name currently exists in the trash folder, the new file is renamed. If no trash folder exists on the volume containing the file, the operation fails.

32.86.63  NSWorkspaceScreensDidSleepNotification as string


**Function:** One of the notification names.

**Notes:**

Posted when the machine’s screen goes to sleep. The notification object is the shared NSWorkspace instance. The notification does not contain a userInfo dictionary.

Few applications are likely to be interested in this notification, but they may be useful for certain hardware-based drawing decisions, for example when using OpenGL.

Available in Mac OS X v10.6 and later.
32.86.64 NSWorkspaceScreensDidWakeNotification as string


Function: One of the notification names.

Notes:
Posted when the machine’s screens wake.
The notification object is the shared NSWorkspace instance. The notification does not contain a userInfo dictionary.

Few applications are likely to be interested in this notification, but they may be useful for certain hardware-based drawing decisions, for example when using OpenGL.

Available in Mac OS X v10.6 and later.

32.86.65 NSWorkspaceSessionDidBecomeActiveNotification as string


Function: One of the notification names.

Notes:
Posted after a user session is switched in. This allows an application to re-enable some processing when a switched out session gets switched back in, for example.
The notification object is the shared NSWorkspace instance. The notification does not contain a userInfo dictionary.

Available in Mac OS X v10.3 and later.

32.86.66 NSWorkspaceSessionDidResignActiveNotification as string


Function: One of the notification names.

Notes:
Posted before a user session is switched out. This allows an application to disable some processing when its user session is switched out, and re-enable when that session gets switched back in, for example.
The notification object is the shared NSWorkspace instance. The notification does not contain a userInfo dictionary.

If an application is launched in an inactive session, NSWorkspaceSessionDidResignActiveNotification is sent after NSApplicationWillFinishLaunchingNotification and before sending NSApplicationDidFinishLaunchingNotification.
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Available in Mac OS X v10.3 and later.

### 32.86.67 NSWorkspaceVolumeLocalizedNameKey as string

**Function:** One of the keys for the userinfo dictionary for the NSWorkspaceDidRenameVolumeNotification notification.
**Notes:**
String containing the user-visible name of the volume.
Available in Mac OS X v10.6 and later.

### 32.86.68 NSWorkspaceVolumeOldLocalizedNameKey as string

**Function:** One of the keys for the userinfo dictionary for the NSWorkspaceDidRenameVolumeNotification notification.
**Notes:**
String containing the old user-visible name of the volume
Available in Mac OS X v10.6 and later.

### 32.86.69 NSWorkspaceVolumeOldURLKey as string

**Function:** One of the keys for the userinfo dictionary for the NSWorkspaceDidRenameVolumeNotification notification.
**Notes:**
URL containing the old mount path of the volume
Available in Mac OS X v10.6 and later.

### 32.86.70 NSWorkspaceVolumeURLKey as string

**Function:** One of the keys for the userinfo dictionary for the NSWorkspaceDidRenameVolumeNotification notification.
**Notes:**
URL containing the mount path of the volume.
Available in Mac OS X v10.6 and later.

**32.86.71 NSWorkspaceWillLaunchApplicationNotification as string**

**Function:** One of the notification names.
**Notes:**
Posted when the Finder is about to launch an application.
The notification object is the shared NSWorkspace instance. In Mac OS X v10.6 and later the userInfo
dictionary contains the NSWorkspaceApplicationKey key with a corresponding instance of NSRunningAp-
plication that represents the affected application.

Available in Mac OS X v10.0 and later.

**32.86.72 NSWorkspaceWillPowerOffNotification as string**

**Function:** One of the notification names.
**Notes:**
Posted when the user has requested a logout or that the machine be powered off.
The notification object is the shared NSWorkspace instance. This notification does not contain a userInfo
dictionary.
Available in Mac OS X v10.0 and later.

**32.86.73 NSWorkspaceWillSleepNotification as string**

**Function:** One of the notification names.
**Notes:**
Posted before the machine goes to sleep. An observer of this message can delay sleep for up to 30 seconds
while handling this notification.
The notification object is the shared NSWorkspace instance. The notification does not contain a userInfo
dictionary.

Available in Mac OS X v10.3 and later.
### 32.86.74 NSWorkspaceWillUnmountNotification as string


**Function:** One of the notification names.

**Notes:**

Posted when the Finder is about to unmount a device.

This notification will not be delivered if a volume was forcibly and immediately made unavailable, such as when a FireWire drive is simply unplugged, because there is no chance to deliver it before the volume becomes unavailable.

The notification object is the shared NSWorkspace instance. The userInfo dictionary contains a key "NS-DevicePath" that returns the path where the device was mounted, as a string.

Available in Mac OS X v10.0 and later.

### 32.86.75 openFile(file as folderitem) as boolean


**Function:** Opens the specified file specified using the default application associated with its type.

**Example:**

```pascal
dim f as FolderItem

f=SpecialFolder.Desktop.Child("test.txt")

if NSWorkspaceMBS.openFile(f) then
    MsgBox "Ok"
else
    MsgBox "failed"
end if
```

**Notes:**

Returns true if the file was successfully opened; otherwise, false.

The sending application is deactivated before the request is sent.

See also:

- 32.86.76 openFile(file as folderitem, appname as string) as boolean
- 32.86.77 openFile(file as folderitem, appname as string, Deactivate as boolean) as boolean
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32.86.76 openFile(file as folderitem, appname as string) as boolean

MBS MacCocoa Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Opens a file using the specified application.

**Example:**
```
dim f as FolderItem
f=SpecialFolder.Desktop.Child("test.txt")

if NSWorkspaceMBS.openFile(f,"BBEdit") then
    MsgBox "Ok"
else
    MsgBox "failed"
end if
```

**Notes:**
Returns true if the file was successfully opened; otherwise, false.

The appName parameter need not be specified with a full path and, in the case of an application wrapper, may be specified with or without the .app extension, as described in "Use of .app Extension". The sending application is deactivated before the request is sent.

See also:
- 32.86.75 openFile(file as folderitem) as boolean
- 32.86.77 openFile(file as folderitem, appname as string, Deactivate as boolean) as boolean

32.86.77 openFile(file as folderitem, appname as string, Deactivate as boolean) as boolean

MBS MacCocoa Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Opens the specified file and optionally deactivates the sending application.

**Example:**
```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.file")

if NSWorkspaceMBS.openFile(f,"BBEdit",true) then
    MsgBox "Ok"
else
    MsgBox "failed"
end if
```

**Notes:**
appName: The name of the application to use when opening the file.

flag: If true, the sending application is deactivated before the request is sent, allowing the opening application to become the active application.

Returns true if the file was successfully opened; otherwise, false.

The appName parameter need not be specified with a full path and, in the case of an application wrapper, may be specified with or without the .app extension, as described in "Use of .app Extension". If appName is nil, the default application for the file’s type is used.

See also:

- 32.86.75 openFile(file as folderitem) as boolean
- 32.86.76 openFile(file as folderitem, appname as string) as boolean

32.86.78 openURL(url as string) as boolean

MBS MacCocoa Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Opens the location at the specified URL.

Example:

```swift
if NSWorkspaceMBS.openURL("http://www.apple.com") then
    MsgBox "Ok"
else
    MsgBox "failed"
end if
```

Notes: Returns true if the location was successfully opened; otherwise, false.

See also:

- 32.86.79 openURL(url as string, bundleIdentifier as string, options as Integer = & h00030000, AppleEventDescriptor as Variant = nil) as Boolean

32.86.79 openURL(url as string, bundleIdentifier as string, options as Integer = & h00030000, AppleEventDescriptor as Variant = nil) as Boolean

MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Opens one or more files from an array of URLs.

Notes:

url: A URL for the application to open.
bundleIdentifier: A bundle identifier string or "" to use the default system bindings. This value corresponds
to the value in the CFBundleIdentifier key of the application’s Info.plist file. For example, the bundle identifier of the TextEdit application is com.apple.TextEdit.

options: Options to use when launching the application. Values for this parameter are described in constants.

descriptor: Additional options specified in an AppleEvent-style descriptor. For example, you could use this parameter to specify additional documents to open when the application is launched.

Returns true if the application was found and launched; otherwise, false.

See also:

- 32.86.78 openURL(url as string) as boolean

32.86.80 performFileOperation(operation as string, source as folderitem, destination as folderitem, files() as string, byref tag as Integer) as boolean


Notes:

operation: The file operation to perform. The possible values for this parameter are described in "Constants."

source: The full path to the directory containing the files on which to operate.

destination: The full path to the destination directory of the operation.

files: An array of folderitems specifying the names of the files and directories to be manipulated. Each string must not contain any path information other than the name of the file or directory. In other words, all of the files and directories must be located in the source directory and not in one if its subdirectories.

tag: On input, a integer variable; on return, this variable contains a negative integer if the operation fails, 0 if the operation was performed synchronously and succeeded, or a positive integer if the operation was performed asynchronously. If the value is a positive integer, the value is a tag that identifies the requested file operation.

Return Value: True if the operation succeeded; otherwise, false.

Discussion:
Some operations such as moving, copying, and linking files require a destination directory to be specified. If not, destination should be the empty string (""). Before this method returns, it posts an NSWorkspaceDidPerformFileOperationNotification to the NSWorkspace object’s notification center.
32.86.81 preferredFilenameExtensionForType(typeName as string) as string

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the preferred filename extension for the specified Uniform Type Identifier. **Example:**

MsgBox NSWorkspaceMBS.preferredFilenameExtensionForType("public.jpeg")
// "jpeg" in German

**Notes:** The appropriate filename extension for typeName, or "" if no extension could be determined.

32.86.82 selectFile(file as folderitem) as boolean

MBS MacCocoa Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Selects the file in the Finder. **Example:**

dim f as FolderItem

f=SpecialFolder.Desktop.Child("test.txt")

if NSWorkspaceMBS.selectFile(f) then
MsgBox "Ok"
else
MsgBox "failed"
end if

**Notes:**
Returns true on success.

For Windows, please use WinOpenFolderAndSelectItemsMBS function.

32.86.83 setDesktopImageURL(file as folderitem, screen as NSScreenMBS, options as dictionary, byref error as NSErrorMBS) as boolean

MBS MacCocoa Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the desktop image for the given screen to the image at the specified URL. **Notes:**

file: The image file. The file must not be nil.
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screen: The screen to set the desktop image on.

options: The options dictionary may contain any of the Desktop Image Dictionary Keys (NSWorkspaceDesktopImageScalingKey, NSWorkspaceDesktopImageAllowClippingKey or NSWorkspaceDesktopImageFillColorKey), which control how the image is scaled on the screen.

error: A error that is returned by-reference if setting the image fails.

Returns true if the image was set as the desktop, otherwise false. If false is returned, the error parameter provides additional information.

You should not present a user interface for picking the options. Instead, choose appropriate defaults and allow the user to adjust them in the System Preference Pane.

Available in Mac OS X v10.6 and later.

32.86.84 **setIcon(image as NSImageMBS, file as folderitem, flags as Integer) as boolean**

MBS MacCocoa Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the icon for the file or directory at the specified path.

**Example:**

```plaintext
dim f as FolderItem
dim p as Picture
dim img as NSImageMBS

f=SpecialFolder.Desktop.Child("test.txt")

p=newPicture(128,128,32)
p.Graphics.ForeColor=rgb(0,128,0)
p.Graphics.fillrect 0,0,128,128
p.Graphics.ForeColor=rgb(255,0,0)
p.Graphics.filloval 0,0,128,128

img=new NSImageMBS(p)

if NSWorkspaceMBS.setIcon(img,f,0) then
  MsgBox "Ok. Icon may not be visible directly. Maybe you make a copy of the file to see it directly?"
else
  MsgBox "failed"
end if
```

**Notes:**
image: The image to use as the icon for the file or directory.
file: The full path of the file or directory.
flags: The icon representations to generate from the image. You specify this value by combining the appropriate NSWorkspaceIconCreationOptions constants, listed in Constants, using the C bitwise OR operator. Specify 0 if you want to generate icons in all available icon representation formats.

Returns true if the icon was set; otherwise, false.

The image can be an arbitrary image, with or without transparency. This image is automatically scaled (as needed) to generate the icon representations. The file or folder must exist and be writable by the user.

It is recommended that applications include the NSExclude10_4ElementsIconCreationOption option for compatibility with pre-Mac OS X v10.3 Finder. Icons that include the high resolution elements prevent custom icons from being displayed on earlier systems.

Before setting icon, make sure you close all Binarystream, Textoutputstream or other classes which may have the file open.
See also:

- 32.86.85 setIcon(image as NSImageMBS, path as string, flags as Integer) as boolean

32.86.85 setIcon(image as NSImageMBS, path as string, flags as Integer) as boolean

MBS MacCocoa Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the icon for the file or directory at the specified path.

**Notes:**

image: The image to use as the icon for the file or directory.
path: The full path of the file or directory.
flags: The icon representations to generate from the image. You specify this value by combining the appropriate NSWorkspaceIconCreationOptions constants, listed in Constants, using the C bitwise OR operator. Specify 0 if you want to generate icons in all available icon representation formats.

Returns true if the icon was set; otherwise, false.

The image can be an arbitrary image, with or without transparency. This image is automatically scaled (as needed) to generate the icon representations. The file or folder must exist and be writable by the user.

It is recommended that applications include the NSExclude10_4ElementsIconCreationOption option for compatibility with pre-Mac OS X v10.3 Finder. Icons that include the high resolution elements prevent custom icons from being displayed on earlier systems.
Before setting icon, make sure you close all BinaryStream, Textoutputstream or other classes which may have the file open.

See also:

- 32.86.84 setIcon(image as NSImageMBS, file as folderitem, flags as Integer) as boolean

32.86.86 showSearchResultsForQueryString(queryString as string) as boolean

Function: Displays a Spotlight search results window in Finder for the specified query string.

Notes:
Returns true if the communication with Finder was successful, otherwise false.

Finder becomes the active application, if possible. The user can further refine the search via the Finder user interface.

Available in Mac OS X v10.6 and later.

32.86.87 typeOfFile(File as folderitem, byref error as NSErrorMBS) as string

Function: Returns the uniform type identifier of the specified file, if it can be determined.

Notes:
file: The absolute path of the file.
Error: If the Uniform Type Identifier of the file at absolutePath can’t be determined, outError contains an NSError object that describes why.

Returns a string containing the uniform type identifier of the file at absoluteFilePath. If no UTI can be determined the return value is "".

If the file at the specified path is a symbolic link, the type of the symbolic link is returned.
See also:

- 32.86.88 typeOfFile(Path as string, byref error as NSErrorMBS) as string

32.86.88 typeOfFile(Path as string, byref error as NSErrorMBS) as string

Function: Returns the uniform type identifier of the specified file, if it can be determined.

Notes:
file: The absolute path of the file.
Error: If the Uniform Type Identifier of the file at absolutePath can’t be determined, outError contains an
NSError object that describes why.

Returns a string containing the uniform type identifier of the file at absoluteFilePath. If no UTI can be
determined the return value is "".

If the file at the specified path is a symbolic link, the type of the symbolic link is returned.
See also:

- 32.86.87 typeOfFile(File as folderitem, byref error as NSErrorMBS) as string

32.86.89 unmountAndEjectDevice(item as folderitem, byref e as NSErrorMBS) as boolean

**Function:** Unmounts and ejects the device at the specified path.
**Example:**

```plaintext
dim w as new NSWorkspaceMBS
dim disk as FolderItem = Volume(VolumeCount-1)
MsgBox disk.Name

dim e as NSErrorMBS
if w.unmountAndEjectDevice(disk, e) then
    MsgBox "OK"
else
    MsgBox "Error: " + e.localizedDescription
end if
```

**Notes:**

Returns true if the volume was unmounted and ejected successfully, otherwise false, for example, if the
volume is not ejectable.
error: If the operation fails, this error contains more information about the failure.

32.86.90 URLForApplicationToOpenURL(url as string) as string

**Function:** Returns the URL to the default application that would be used to open the given URL.
**Notes:**
url: The URL of the file to open.

Returns the URL of the default application that would open the specified url. Returns "" if no application is able to open the url, or if the file url does not exist.

This is the programmatic equivalent of double clicking a document in the Finder.

### 32.86.91 URLForApplicationWithBundleIdentifier(bundleIdentifier as string) as string

MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the URL for the application with the specified identifier. **Notes:**

bundleIdentifier: A bundle identifier specifying an application.

Returns the URL of the application, or nil if no application has the bundle identifier.

This uses various (currently unspecified) heuristics in case multiple apps have the same bundle ID.

### 32.86.92 Constants

#### 32.86.93 NSBundleExecutableArchitectureI386 = & h00000007

MBS MacCocoa Plugin, Plugin Version: 11.3. **Function:** One of the CPU Architecture constants. **Notes:** Intel 32 bit.

#### 32.86.94 NSBundleExecutableArchitecturePPC = & h00000012

MBS MacCocoa Plugin, Plugin Version: 11.3. **Function:** One of the CPU Architecture constants. **Notes:** PPC 32 bit.

#### 32.86.95 NSBundleExecutableArchitecturePPC64 = & h01000012

MBS MacCocoa Plugin, Plugin Version: 11.3. **Function:** One of the CPU Architecture constants. **Notes:** PPC 64 bit.
32.86.96  **NSBundleExecutableArchitectureX86_64 = & h01000007**

MBS MacCocoa Plugin, Plugin Version: 11.3. **Function:** One of the CPU Architecture constants.  
**Notes:** Intel 64 bit.

32.86.97  **NSExclude10_4ElementsIconCreationOption = 4**

MBS MacCocoa Plugin, Plugin Version: 8.1. **Function:** One of the possible constants you can use with SetIcon.

32.86.98  **NSExcludeQuickDrawElementsIconCreationOption = 2**

MBS MacCocoa Plugin, Plugin Version: 8.1. **Function:** One of the possible constants you can use with SetIcon.

32.86.99  **NSWorkspaceLaunchAllowingClassicStartup = & h00020000**

MBS MacCocoa Plugin, Plugin Version: 8.1. **Function:** One of the constants for the launch functions.

32.86.100  **NSWorkspaceLaunchAndHide = & h00100000**

MBS MacCocoa Plugin, Plugin Version: 8.1. **Function:** One of the constants for the launch functions.

32.86.101  **NSWorkspaceLaunchAndHideOthers = & h00200000**

MBS MacCocoa Plugin, Plugin Version: 8.1. **Function:** One of the constants for the launch functions.

32.86.102  **NSWorkspaceLaunchAndPrint = 2**

MBS MacCocoa Plugin, Plugin Version: 8.1. **Function:** One of the constants for the launch functions.
32.86.103  NSWorkspaceLaunchAsync = & h00010000

MBS MacCocoa Plugin, Plugin Version: 8.1. **Function:** One of the constants for the launch functions.
32.86.104   **NSWorkspaceLaunchDefault = \& h00030000**

MBS MacCocoa Plugin, Plugin Version: 8.1. **Function:** One of the constants for the launch functions.

32.86.105   **NSWorkspaceLaunchInhibitingBackgroundOnly = \& h00000080**

MBS MacCocoa Plugin, Plugin Version: 8.1. **Function:** One of the constants for the launch functions.

32.86.106   **NSWorkspaceLaunchNewInstance = \& h00080000**

MBS MacCocoa Plugin, Plugin Version: 8.1. **Function:** One of the constants for the launch functions.

32.86.107   **NSWorkspaceLaunchPreferringClassic = \& h00040000**

MBS MacCocoa Plugin, Plugin Version: 8.1. **Function:** One of the constants for the launch functions.

32.86.108   **NSWorkspaceLaunchWithoutActivation = \& h00000200**

MBS MacCocoa Plugin, Plugin Version: 8.1. **Function:** One of the constants for the launch functions.

32.86.109   **NSWorkspaceLaunchWithoutAddingToRecents = \& h00000100**

MBS MacCocoa Plugin, Plugin Version: 8.1. **Function:** One of the constants for the launch functions.
32.87.1 control WebViewControlMBS


Function: The control for a webview.

Notes: Requires the window being composite for Carbon targets which is currently not available for modal windows in Real Studio.

32.87.2 Properties

32.87.3 Available as Boolean


Function: Whether this control can work.

Notes:
Returns true on Mac OS X 10.5 (or newer) and false on any other OS.
(Read only property)

32.87.4 View as WebViewMBS


Function: The view used with this control.

Example:

```plaintext
dim w as WebViewMBS = WebViewControlMBS1.View
w.LoadURL "http://www.apple.com"
```

Notes:

The view object is created for you in the constructor.
In version 9.6 it is a WebViewMBS object.
If you have a version declared as NSViewMBS, you need to cast to WebViewMBS yourself.
(Read only property)

32.87.5 WantsFocus as Boolean


Function: Whether this control wants to have focus.
Notes:
By default this is true.
(Read and Write property)

32.87.6 Events

32.87.7 EnableMenuItems

**Function:** The event where you can enable menu items.

32.87.8 MenuAction(HitItem as MenuItem) As Boolean

**Function:** Called when a menuitem is choosen.
**Notes:** This allows the control to react on its relevant menu items. Please return true if you handled it or false to give others a chance.

32.87.9 MouseDown(x as Integer, y as Integer, Modifiers as Integer) As Boolean

**Function:** The mouse button was pressed inside the controls region at the location passed in to x, y.
**Notes:**
The coordinates x and y are local to the control, i.e. they represent the position of the mouse click relative to the upper-left corner or the Control.
Return True if you are going to handle the MouseDown. In such a case:

- The Action event, if any, will not execute and the state of the object will not change.
- You will receive the MouseDrag and MouseUp events.

If you return False, the system handles the MouseDown so the above event handlers do not get called.

32.87.10 MouseDrag(x as Integer, y as Integer)

**Function:** This event fires continuously after the mouse button was pressed inside the Control.
**Notes:**
Mouse location is local to the control passed in to \( x, y \). As this event is fired continuously (hundreds of time per second), it is your responsibility to determine if the mouse has really moved.

**32.87.11 MouseUp(\( x \) as Integer, \( y \) as Integer)**

**Function:** The mouse button was released.  
**Notes:** Use the \( x \) and \( y \) parameters to determine if the mouse button was released within the control’s boundaries.

**32.87.12 ScaleFactorChanged(\( \text{NewFactor} \) as Double)**

**Function:** The backing store scale factor has changed.  
**Notes:** Please invalidate any cached bitmaps or other relevant state.
Chapter 33

Cocoa Controls

33.1 class CanvasGesturesMBS

33.1.1 class CanvasGesturesMBS

Function: The class to catch canvas gesture events.
Notes: Please use one global instance of this class to catch the events for all canvases you track.

33.1.2 Methods

33.1.3 AddCanvas(c as Canvas)

Function: Adds a canvas to the list of canvases to track.
Notes: Please add canvas controls in Window.Open event.

33.1.4 Constructor

Function: The constructor.
33.1.5 Destructor

Function: The destructor.

33.1.6 RemoveCanvas(c as Canvas)

Function: Removes a canvas from the list.
Notes:
Please remove canvas controls in Window.Close event.
The plugin tries to remove all when a window closes automatically.

33.1.7 Properties

33.1.8 CanvasCount as Integer

Function: Number of Canvas controls registered.
Notes: (Read only property)

33.1.9 Events

33.1.10 beginGestureWithEvent(can as Canvas, e as NSEventMBS) as boolean

Function: Informs the receiver that the user has begun a touch gesture.
Notes:
e: An event object representing the gesture beginning.
The event will be sent to the view under the touch in the key window.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.

33.1.11 endGestureWithEvent(can as Canvas, e as NSEventMBS) as boolean

Function: Informs the receiver that the user has ended a touch gesture.
Notes:
33.1. CLASS CANVASGESTURES

33.1.12 magnifyWithEvent(can as Canvas, e as NSEventMBS) as boolean

Function: Informs the receiver that the user has begun a pinch gesture.
Notes:
e: An event object representing the magnify gesture.
The event will be sent to the view under the touch in the key window.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.

33.1.13 rotateWithEvent(can as Canvas, e as NSEventMBS) as boolean

Function: Informs the receiver that the user has begun a rotation gesture.
Notes:
e: An event object representing the rotate gesture.
The event will be sent to the view under the touch in the key window.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.

33.1.14 swipeWithEvent(can as Canvas, e as NSEventMBS) as boolean

Function: Informs the receiver that the user has begun a swipe gesture.
Notes:
e: An event object representing the swipe gesture.
The event will be sent to the view under the touch in the key window.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.
CHAPTER 33. COCOA CONTROLS

33.2 class ComboBox

33.2.1 class ComboBox

Plugin Version: 10.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The built in ComboBox class in REALbasic.

33.2.2 Methods

33.2.3 NSComboBoxMBS as NSComboBoxMBS

MBS MacControls Plugin, Plugin Version: 10.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a NSComboBoxMBS object for the given control. **Notes:** This way you can manipulate Cocoa controls directly.
33.3. CLASS CONTROL

33.3 class Control

33.3.1 class Control

Plugin Version: 9.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The built in Control class in REALbasic.

33.3.2 Methods

33.3.3 CALayerMBS as CALayerMBS

MBS AVFoundation Plugin, Plugin Version: 13.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Core Animation layer that the receiver uses as its backing store. **Notes:** Works only in Cocoa target. Also sets wantsLayer to true for the view to make sure it has a layer.

33.3.4 NSControlMBS as NSControlMBS

MBS MacCocoa Plugin, Plugin Version: 12.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a NSControlMBS object for the given control. **Example:**

`BevelButton1.NSControlMBS.StringValue = "Hello"`

**Notes:** This way you can manipulate Cocoa controls directly.

33.3.5 NSViewMBS as NSViewMBS

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a NSViewMBS object for the given control. **Example:**

`MsgBox PushButton1.NSViewMBS.className`

**Notes:**

This way you can manipulate Cocoa controls directly.
For a pushbutton you may want to cast the NSViewMBS to NSButtonMBS to have more options.

### 33.3.6 WinClassNameMBS as string

MBS Win Plugin, Plugin Version: 14.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Returns internal control class name for a Windows control.
33.4 class CustomNSScrollerMBS

Function: The class for a custom scroller.
Notes: Subclass of the NSScrollerMBS class.

33.4.2 Methods

33.4.3 Constructor

Function: The constructor for a new custom NSScroller object.
See also:

- 33.4.4 Constructor(Handle as Integer) 6241
- 33.4.5 Constructor(left as Double, top as Double, width as Double, height as Double) 6241

33.4.4 Constructor(Handle as Integer)

Function: The constructor.
See also:

- 33.4.3 Constructor 6241
- 33.4.5 Constructor(left as Double, top as Double, width as Double, height as Double) 6241

33.4.5 Constructor(left as Double, top as Double, width as Double, height as Double)

Function: The constructor for a new custom NSScroller object.
See also:

- 33.4.3 Constructor 6241
- 33.4.4 Constructor(Handle as Integer) 6241
33.4.6 Destructor

**Function:** The destructor.

33.4.7 Events

33.4.8 acceptsFirstMouse(e as NSEventMBS) as boolean

**Function:** Overridden by subclasses to return true if the receiver should be sent a mouseDown event for an initial mouse-down event, false if not.  
**Notes:**  
The receiver can either return a value unconditionally or use the location of event e to determine whether or not it wants the event. The default implementation ignores the event and returns false.  
Implement this event in a subclass to allow instances to respond to click-through. This allows the user to click on a view in an inactive window, activating the view with one click, instead of clicking first to make the window active and then clicking the view. Most view objects refuse a click-through attempt, so the event simply activates the window. Many control objects, however, such as instances of NSButton and NSSlider, do accept them, so the user can immediately manipulate the control without having to release the mouse button.

33.4.9 acceptsFirstResponder as boolean

**Function:** Whether to accept first responder.  
**Notes:** Return true if your control can have the focus and false if not.

33.4.10 becomeFirstResponder as boolean

**Function:** Called when the object gets focus.  
**Notes:** Return true to accept.

33.4.11 beginGestureWithEvent(e as NSEventMBS) as boolean

**Function:** Informs the receiver that the user has begun a touch gesture.
Notes:

e: An event object representing the gesture beginning.
The event will be sent to the view under the touch in the key window.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.

33.4.12 canBecomeKeyView as boolean

**Function:** Returns whether the receiver can become key view.
**Notes:** Returns true if the receiver can become key view, false otherwise.

33.4.13 Close

**Function:** The event called when the custom view is destroyed.

33.4.14 concludeDragOperation(sender as NSDraggingInfoMBS)

**Function:** Invoked when the dragging operation is complete, signaling the receiver to perform any necessary
clean-up.
**Notes:**

sender: The object sending the message; use it to get details about the dragging operation.

For this method to be invoked, the previous performDragOperation must have returned true.

The destination implements this method to perform any tidying up that it needs to do, such as updating its
visual representation now that it has incorporated the dragged data. This message is the last message sent
from sender to the destination during a dragging session.

If the sender object’s animatesToDestination property was set to true in prepareForDragOperation, then the
drag image is still visible. At this point you should draw the final visual representation in the view. When
this method returns, the drag image is removed form the screen. If your final visual representation matches
the visual representation in the drag, this is a seamless transition.
### 33.4.15 draggingEnded(sender as NSDraggingInfoMBS)

**Function:** Implement this event to be notified when a drag operation ends in some other destination.
**Notes:**
- sender: The object sending the message; use it to get details about the dragging operation.

This method might be used by a destination doing auto-expansion in order to collapse any auto-expands.

### 33.4.16 draggingEntered(sender as NSDraggingInfoMBS) as Integer

**Function:** Invoked when the dragged image enters destination bounds or frame; delegate returns dragging operation to perform.
**Notes:**
- sender: The object sending the message; use it to get details about the dragging operation.

Return one (and only one) of the dragging operation constants described in NSDragOperation in the NSDraggingInfo reference. The default return value (if this method is not implemented by the destination) is the value returned by the previous draggingEntered message.

Invoked when a dragged image enters the destination but only if the destination has registered for the pasteboard data type involved in the drag operation. Specifically, this method is invoked when the mouse pointer enters the destination’s bounds rectangle (if it is a view object) or its frame rectangle (if it is a window object).

This method must return a value that indicates which dragging operation the destination will perform when the image is released. In deciding which dragging operation to return, the method should evaluate the overlap between both the dragging operations allowed by the source (obtained from sender with the draggingSourceOperationMask method) and the dragging operations and pasteboard data types the destination itself supports.

If none of the operations is appropriate, this method should return NSDragOperationNone (this is the default response if the method is not implemented by the destination). A destination will still receive draggingUpdated and draggingExited even if NSDragOperationNone is returned by this method.

### 33.4.17 draggingExited(sender as NSDraggingInfoMBS)

**Function:** Invoked when the dragged image exits the destination’s bounds rectangle (in the case of a view
33.4. CLASS CUSTOMNSSCROLLERMB

object) or its frame rectangle (in the case of a window object).

Notes: sender: The object sending the message; use it to get details about the dragging operation.

33.4.18 draggingSessionEndedAtPoint(session as NSDraggingSessionMBS, screenPoint as NSPointMBS, operation as Integer)


Function: Invoked when the dragging session has completed.

Notes:

session: The dragging session.
screenPoint: The point where the drag ended, in screen coordinates.
operation: The drag operation. See constants for drag operation types.

Available in OS X v10.7 and later.

33.4.19 draggingSessionMovedToPoint(session as NSDraggingSessionMBS, screenPoint as NSPointMBS)


Function: Invoked when the drag moves on the screen.

Notes:

session: The dragging session.
screenPoint: The point where the drag moved to, in screen coordinates.

Available in OS X v10.7 and later.

33.4.20 draggingSessionSourceOperationMaskForDraggingContext(session as NSDraggingSessionMBS, context as Integer) as Integer


Function: Declares the types of operations the source allows to be performed. (required)

Notes:

session: The dragging session.
context: The dragging context. See NSDraggingContext constants for the supported values.

Return the appropriate dragging operation as defined in constants.
In the future Apple may provide more specific "within" values in the future. To account for this, for unrecognized localities, return the operation mask for the most specific context that you are concerned with.

### 33.4.21 draggingSessionWillBeginAtPoint(session as NSDraggingSessionMBS, screenPoint as NSPointMBS)

**Function:** Invoked when the drag will begin.  
**Notes:**  
- session: The dragging session.  
- screenPoint: The point where the drag will begin, in screen coordinates.  

Available in OS X v10.7 and later.

### 33.4.22 draggingSourceOperationMaskForLocal(flag as boolean) as Integer

**Function:** Returns an integer bit mask indicating the types of dragging operations the source object will allow to be performed on the dragged image’s data.  
**Notes:**  
- (Deprecated in OS X v10.7. This method is informally deprecated. It is only called if the source does not implement the NSDraggingSource protocol methods. This method will be formally deprecated in a future OS release.)
- isLocal: True indicates that the candidate destination object (the window or view over which the dragged image is currently poised) is in the same application as the source, while a false value indicates that the destination object is in a different application.

A mask, created by combining the dragging operations listed in the NSDragOperation section of NSDraggingInfo protocol reference using the C bitwise OR operator. If the source does not permit any dragging operations, it should return NSDragOperationNone.

If not implemented, the default value is NSDragOperationCopy | NSDragOperationLink | NSDragOperationGeneric | NSDragOperationPrivate.

Available in OS X v10.0 and later. Deprecated in OS X v10.7.
33.4.23   draggingUpdated(sender as NSDraggingInfoMBS) as Integer

**Function:** Invoked periodically as the image is held within the destination area, allowing modification of
the dragging operation or mouse-pointer position.
**Notes:**

sender: The object sending the message; use it to get details about the dragging operation.

Return one (and only one) of the dragging operation constants described in NSDragOperation in the NS-
DraggingInfo reference. The default return value (if this method is not implemented by the destination) is
the value returned by the previous draggingEntered message.

For this to be invoked, the destination must have registered for the pasteboard data type involved in the
drag operation. The messages continue until the image is either released or dragged out of the window or view.

This method provides the destination with an opportunity to modify the dragging operation depending on
the position of the mouse pointer inside of the destination view or window object. For example, you may have
several graphics or areas of text contained within the same view and wish to tailor the dragging operation,
or to ignore the drag event completely, depending upon which object is underneath the mouse pointer at the
time when the user releases the dragged image and the performDragOperation method is invoked.

You typically examine the contents of the pasteboard in the draggingEntered method, where this examina-
tion is performed only once, rather than in the draggingUpdated method, which is invoked multiple times.

Only one destination at a time receives a sequence of draggingUpdated messages. If the mouse pointer is
within the bounds of two overlapping views that are both valid destinations, the uppermost view receives
these messages until the image is either released or dragged out.

33.4.24   drawArrow(g as NSGraphicsMBS, Arrow as Integer, highlight as boolean)

**Function:** Called when arrow need to be drawn.
**Notes:**

Draw the scroll button indicated by arrow, which is either NSScrollerIncrementArrow (the down or right
scroll button) or NSScrollerDecrementArrow (up or left).
If flag is true, the button is drawn highlighted; otherwise it’s drawn normally. You should never need to
invoke this method directly, but may wish to override it to customize the appearance of scroll buttons.
33.4.25  drawKnob(g as NSGraphicsMBS)

Function: Draw the knob.

33.4.26  drawKnobSlotInRect(g as NSGraphicsMBS, slotRect as NSRectMBS, highlight as boolean)

Function: Draw the knob slow in the rectangle.

33.4.27  drawParts(g as NSGraphicsMBS)

Function: Called when parts need to be drawn.

33.4.28  endGestureWithEvent(e as NSEventMBS) as boolean

Function: Informs the receiver that the user has ended a touch gesture.
Notes:
e: An event object representing the gesture end.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.

33.4.29  ignoreModifierKeysForDraggingSession(session as NSDraggingSessionMBS) as boolean

Function: Returns whether the modifier keys will be ignored for this dragging session.
Notes:
session: The dragging session.

Return true if the modifier keys will be ignored, false otherwise.
Available in OS X v10.7 and later.
33.4. CLASS CUSTOMNSSCROLLERMBS

33.4.30 isOpaque as boolean

Function: Whether this view is opaque.

33.4.31 keyDown(e as NSEventMBS) as boolean

Function: One of the key events.
Notes: Return true if you handled this event.

33.4.32 keyUp(e as NSEventMBS) as boolean

Function: One of the key events.
Notes: Return true if you handled this event.

33.4.33 magnifyWithEvent(e as NSEventMBS) as boolean

Function: Informs the receiver that the user has begun a pinch gesture.
Notes:
e: An event object representing the magnify gesture.
The event will be sent to the view under the touch in the key window.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.

33.4.34 menuForEvent(e as NSEventMBS, defaultMenu as NSMenuMBS) as NSMenuMBS

Function: Overridden by subclasses to return a context-sensitive pop-up menu for a given mouse-down event.
Notes:
theEvent: An object representing a mouse-down event.
defaultMenu: The menu as constructed by super class.
The receiver can use information in the mouse event, such as its location over a particular element of the receiver, to determine what kind of menu to return. For example, a text object might display a text-editing menu when the cursor lies over text and a menu for changing graphics attributes when the cursor lies over an embedded image.

The default implementation returns the default menu.

### 33.4.35 mouseDown(e as NSEventMBS, x as Double, y as Double) as boolean

**Function:** One of the mouse events.
**Notes:** Return true if you handled this event.

### 33.4.36 mouseDownCanMoveWindow as boolean

**Function:** This event is called so you can decide what happens with mouse down.
**Notes:** Return true if you do not need to handle a mouse down and it can pass through to superviews; False if you need to handle the mouse down.

This allows iApp-type applications to determine the region by which a window can be moved. By default, this method returns false if the view is opaque; otherwise, it returns true. Subclasses can override this method to return a different value.

### 33.4.37 mouseDragged(e as NSEventMBS, x as Double, y as Double) as boolean

**Function:** One of the mouse events.
**Notes:** Return true if you handled this event.

### 33.4.38 mouseEntered(e as NSEventMBS, x as Double, y as Double) as boolean

**Function:** One of the mouse events.
**Notes:** Return true if you handled this event.
### 33.4. CLASS CUSTOMNSSCROLLERMB

#### 33.4.39 mouseExited(e as NSEventMBS, x as Double, y as Double) as boolean

**Function:** One of the mouse events.  
**Notes:** Return true if you handled this event.

#### 33.4.40 mouseMoved(e as NSEventMBS, x as Double, y as Double) as boolean

**Function:** One of the mouse events.  
**Notes:** Return true if you handled this event.

#### 33.4.41 mouseUp(e as NSEventMBS, x as Double, y as Double) as boolean

**Function:** One of the mouse events.  
**Notes:** Return true if you handled this event.

#### 33.4.42 Open

**Function:** The event called when the custom NSView is created.

#### 33.4.43 otherMouseDown(e as NSEventMBS, x as Double, y as Double) as boolean

**Function:** One of the mouse events.  
**Notes:** Return true if you handled this event.  
Third mouse button.

#### 33.4.44 otherMouseDragged(e as NSEventMBS, x as Double, y as Double) as boolean

**Function:** One of the mouse events.
33.4.45 otherMouseUp(e as NSEventMBS, x as Double, y as Double) as boolean

Notes:
Return true if you handled this event.
Third mouse button.

33.4.46 performDragOperation(sender as NSDraggingInfoMBS) as boolean

Function: Invoked after the released image has been removed from the screen, signaling the receiver to import the pasteboard data.
Notes:
sender: The object sending the message; use it to get details about the dragging operation.
Return if the destination accepts the data, it returns true; otherwise it returns false. The default is to return false.
For this method to be invoked, the previous prepareForDragOperation message must have returned true. The destination should implement this method to do the real work of importing the pasteboard data represented by the image.
If the sender object's animatesToDestination was set to true in prepareForDragOperation, then setup any animation to arrange space for the drag items to animate to. Also at this time, enumerate through the dragging items to set their destination frames and destination images.

33.4.47 prepareForDragOperation(sender as NSDraggingInfoMBS) as boolean

Function: Invoked when the image is released, allowing the receiver to agree to or refuse drag operation.
Notes:
sender: The object sending the message; use it to get details about the dragging operation.
Returns true if the receiver agrees to perform the drag operation and false if not.
This method is invoked only if the most recent draggingEntered or draggingUpdated message returned an acceptable drag-operation value.
If you want the drag items to animate from their current location on screen to their final location in your view, set the sender object’s animatesToDestination property to true in your implementation of this method.

33.4.48 pressureChange(e as NSEventMBS) as boolean

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes.
Function: Informs the current object that a pressure change occurred on a system that supports pressure sensitivity.
Notes: This method is invoked automatically in response to user actions. event is the event that initiated the change in pressure.
Available in OS X v10.10.3 and later.

33.4.49 resignFirstResponder as boolean

Function: Focus is going away.
Notes: Return true to accept.

33.4.50 rightMouseDown(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes: Return true if you handled this event.

33.4.51 rightMouseDragged(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes: Return true if you handled this event.
33.4.52  `rightMouseUp(e as NSEventMBS, x as Double, y as Double) as boolean`

Function: One of the mouse events.
Notes: Return true if you handled this event.

33.4.53  `rotateWithEvent(e as NSEventMBS) as boolean`

Function: Informs the receiver that the user has begun a rotation gesture.
Notes:
e: An event object representing the rotate gesture.
The event will be sent to the view under the touch in the key window.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.

33.4.54  `scrollWheel(e as NSEventMBS) as boolean`

Function: Informs the subclass that the mouse’s scroll wheel has moved.
Notes:
e: An object encapsulating information about the wheel-scrolling event.
The default implementation simply passes this message to the next responder.
Return true to not pass the event.

33.4.55  `swipeWithEvent(e as NSEventMBS) as boolean`

Function: Informs the receiver that the user has begun a swipe gesture.
Notes:
e: An event object representing the swipe gesture.
The event will be sent to the view under the touch in the key window.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.
33.4.56  updateDraggingItemsForDrag(sender as NSDraggingInfoMBS)

Function: Invoked when the dragging images should be changed.
Notes:

sender: The object sending the message; use this object to get details about the dragging operation.

While a destination may change the dragging images at any time, it is recommended to wait until this method is called before updating the dragging images.

This allows the system to delay changing the dragging images until it is likely that the user will drop on this destination. Otherwise, the dragging images will change too often during the drag which would be distracting to the user.

33.4.57  viewDidMoveToWindow

Function: Informs the receiver that it has been added to a new view hierarchy.
Notes:

The default implementation does nothing; subclasses can implement this event to perform whatever actions are necessary.

window may return nil when this method is invoked, indicating that the receiver does not currently reside in any window. This occurs when the receiver has just been removed from its superview or when the receiver has just been added to a superview that does not itself have a window. Overrides of this method may choose to ignore such cases if they are not of interest.

33.4.58  wantsPeriodicDraggingUpdates as boolean

Function: Asks the destination object whether it wants to receive periodic draggingUpdated messages.
Notes:

Return true if the destination wants to receive periodic draggingUpdated messages, false otherwise.

If the destination returns false, these messages are sent only when the mouse moves or a modifier flag changes. Otherwise the destination gets the default behavior, where it receives periodic dragging-updated messages even if nothing changes.
33.5 class CustomNSSearchFieldMBS

33.5.1 class CustomNSSearchFieldMBS

Function: The class for a custom searchfield.
Notes:
Some events will not fire as Searchfield eats them itself.
Subclass of the NSSearchFieldMBS class.

33.5.2 Methods

33.5.3 Constructor

Function: The dummy constructor doing nothing.
See also:

- 33.5.4 Constructor(Handle as Integer) 6256
- 33.5.5 Constructor(left as Double, top as Double, width as Double, height as Double) 6256

33.5.4 Constructor(Handle as Integer)

Function: The constructor.
See also:

- 33.5.3 Constructor 6256
- 33.5.5 Constructor(left as Double, top as Double, width as Double, height as Double) 6256

33.5.5 Constructor(left as Double, top as Double, width as Double, height as Double)

Function: The constructor for a new custom NSView object.
See also:

- 33.5.3 Constructor 6256
- 33.5.4 Constructor(Handle as Integer) 6256
33.5. Destructor

Function: The destructor.

33.5.7 Events

33.5.8 acceptsFirstMouse(e as NSEventMBS) as boolean

Function: Overridden by subclasses to return true if the receiver should be sent a mouseDown event for an initial mouse-down event, false if not.
Notes: The receiver can either return a value unconditionally or use the location of event e to determine whether or not it wants the event. The default implementation ignores the event and returns false.

Implement this event in a subclass to allow instances to respond to click-through. This allows the user to click on a view in an inactive window, activating the view with one click, instead of clicking first to make the window active and then clicking the view. Most view objects refuse a click-through attempt, so the event simply activates the window. Many control objects, however, such as instances of NSButton and NSSlider, do accept them, so the user can immediately manipulate the control without having to release the mouse button.

33.5.9 acceptsFirstResponder as boolean

Function: Whether to accept first responder.
Notes: Return true if your control can have the focus and false if not.

33.5.10 becomeFirstResponder as boolean

Function: Called when the object gets focus.
Notes: Return true to accept.

33.5.11 beginGestureWithEvent(e as NSEventMBS) as boolean

Function: Informs the receiver that the user has begun a touch gesture.
Notes:

e: An event object representing the gesture beginning.
The event will be sent to the view under the touch in the key window.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.

33.5.12 canBecomeKeyView as boolean

Function: Returns whether the receiver can become key view.
Notes: Returns true if the receiver can become key view, false otherwise.

33.5.13 Close

Function: The event called when the custom view is destroyed.

33.5.14 concludeDragOperation(sender as NSDraggingInfoMBS)

Function: Invoked when the dragging operation is complete, signaling the receiver to perform any necessary
Notes: clean-up.
sender: The object sending the message; use it to get details about the dragging operation.

For this method to be invoked, the previous performDragOperation must have returned true.

The destination implements this method to perform any tidying up that it needs to do, such as updating its
visual representation now that it has incorporated the dragged data. This message is the last message sent
from sender to the destination during a dragging session.

If the sender object’s animatesToDestination property was set to true in prepareForDragOperation, then the
drag image is still visible. At this point you should draw the final visual representation in the view. When
this method returns, the drag image is removed from the screen. If your final visual representation matches
the visual representation in the drag, this is a seamless transition.
33.5. **CLASS CUSTOMNSSEARCHFIELDMBS**

### 33.5.15 draggingEnded(sender as NSDraggingInfoMBS)


**Function:** Implement this event to be notified when a drag operation ends in some other destination.

**Notes:**

sender: The object sending the message; use it to get details about the dragging operation.

This method might be used by a destination doing auto-expansion in order to collapse any auto-expands.

### 33.5.16 draggingEntered(sender as NSDraggingInfoMBS) as Integer


**Function:** Invoked when the dragged image enters destination bounds or frame; delegate returns dragging operation to perform.

**Notes:**

sender: The object sending the message; use it to get details about the dragging operation.

Return one (and only one) of the dragging operation constants described in NSDragOperation in the NSDraggingInfo reference. The default return value (if this method is not implemented by the destination) is the value returned by the previous draggingEntered message.

Invoked when a dragged image enters the destination but only if the destination has registered for the pasteboard data type involved in the drag operation. Specifically, this method is invoked when the mouse pointer enters the destination’s bounds rectangle (if it is a view object) or its frame rectangle (if it is a window object).

This method must return a value that indicates which dragging operation the destination will perform when the image is released. In deciding which dragging operation to return, the method should evaluate the overlap between both the dragging operations allowed by the source (obtained from sender with the draggingSourceOperationMask method) and the dragging operations and pasteboard data types the destination itself supports.

If none of the operations is appropriate, this method should return NSDragOperationNone (this is the default response if the method is not implemented by the destination). A destination will still receive draggingUpdated and draggingExited even if NSDragOperationNone is returned by this method.

### 33.5.17 draggingExited(sender as NSDraggingInfoMBS)


**Function:** Invoked when the dragged image exits the destination’s bounds rectangle (in the case of a view
33.5.18  draggingSessionEndedAtPoint(session as NSDraggingSessionMBS, screenPoint as NSPointMBS, operation as Integer)

Function: Invoked when the dragging session has completed.
Notes:
  session: The dragging session.
  screenPoint: The point where the drag ended, in screen coordinates.
  operation: The drag operation. See constants for drag operation types.

Available in OS X v10.7 and later.

33.5.19  draggingSessionMovedToPoint(session as NSDraggingSessionMBS, screenPoint as NSPointMBS)

Function: Invoked when the drag moves on the screen.
Notes:
  session: The dragging session.
  screenPoint: The point where the drag moved to, in screen coordinates.

Available in OS X v10.7 and later.

33.5.20  draggingSessionSourceOperationMaskForDraggingContext(session as NSDraggingSessionMBS, context as Integer) as Integer

Function: Declares the types of operations the source allows to be performed. (required)
Notes:
  session: The dragging session.
  context: The dragging context. See NSDraggingContext constants for the supported values.

Return the appropriate dragging operation as defined in constants.
In the future Apple may provide more specific "within" values in the future. To account for this, for unrecognized localities, return the operation mask for the most specific context that you are concerned with.

### 33.5.21 `draggingSessionWillBeginAtPoint` (session as NSDraggingSessionMBS, screenPoint as NSPointMBS)


**Function:** Invoked when the drag will begin.

**Notes:**
- session: The dragging session.
- screenPoint: The point where the drag will begin, in screen coordinates.

Available in OS X v10.7 and later.

### 33.5.22 `draggingSourceOperationMaskForLocal` (flag as boolean) as Integer


**Function:** Returns an integer bit mask indicating the types of dragging operations the source object will allow to be performed on the dragged image’s data.

**Notes:**
- (Deprecated in OS X v10.7. This method is informally deprecated. It is only called if the source does not implement the NSDraggingSource protocol methods. This method will be formally deprecated in a future OS release.)

isLocal: True indicates that the candidate destination object (the window or view over which the dragged image is currently poised) is in the same application as the source, while a false value indicates that the destination object is in a different application.

A mask, created by combining the dragging operations listed in the NSDragOperation section of NSDraggingInfo protocol reference using the C bitwise OR operator. If the source does not permit any dragging operations, it should return NSDragOperationNone.

If not implemented, the default value is NSDragOperationCopy | NSDragOperationLink | NSDragOperationGeneric | NSDragOperationPrivate.

Available in OS X v10.0 and later. Deprecated in OS X v10.7.
33.5.23 draggingUpdated(sender as NSDraggingInfoMBS) as Integer


**Function:** Invoked periodically as the image is held within the destination area, allowing modification of the dragging operation or mouse-pointer position.

**Notes:**

sender: The object sending the message; use it to get details about the dragging operation.

Return one (and only one) of the dragging operation constants described in NSDragOperation in the NS-DraggingInfo reference. The default return value (if this method is not implemented by the destination) is the value returned by the previous draggingEntered message.

For this to be invoked, the destination must have registered for the pasteboard data type involved in the drag operation. The messages continue until the image is either released or dragged out of the window or view.

This method provides the destination with an opportunity to modify the dragging operation depending on the position of the mouse pointer inside of the destination view or window object. For example, you may have several graphics or areas of text contained within the same view and wish to tailor the dragging operation, or to ignore the drag event completely, depending upon which object is underneath the mouse pointer at the time when the user releases the dragged image and the performDragOperation method is invoked.

You typically examine the contents of the pasteboard in the draggingEntered method, where this examination is performed only once, rather than in the draggingUpdated method, which is invoked multiple times.

Only one destination at a time receives a sequence of draggingUpdated messages. If the mouse pointer is within the bounds of two overlapping views that are both valid destinations, the uppermost view receives these messages until the image is either released or dragged out.

33.5.24 endGestureWithEvent(e as NSEventMBS) as boolean


**Function:** Informs the receiver that the user has ended a touch gesture.

**Notes:**

e: An event object representing the gesture end.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.
33.5.25 ignoreModifierKeysForDraggingSession(session as NSDraggingSession-MBS) as boolean

Function: Returns whether the modifier keys will be ignored for this dragging session.
Notes:

session: The dragging session.

Return true if the modifier keys will be ignored, false otherwise.
Available in OS X v10.7 and later.

33.5.26 isOpaque as boolean

Function: Whether this view is opaque.

33.5.27 keyDown(e as NSEventMBS) as boolean

Function: One of the key events.
Notes:

Return true if you handled this event.
Please return true in becomeFirstResponder and acceptsFirstResponder, so your nsview can become first responder and receive key events.

33.5.28 keyUp(e as NSEventMBS) as boolean

Function: One of the key events.
Notes:

Return true if you handled this event.
Please return true in becomeFirstResponder and acceptsFirstResponder, so your nsview can become first responder and receive key events.
33.5.29 magnifyWithEvent(e as NSEventMBS) as boolean

Function: Informs the receiver that the user has begun a pinch gesture.
Notes:
e: An event object representing the magnify gesture.
The event will be sent to the view under the touch in the key window.
available in Mac OS X v10.6 and later.
Return true if you handled this event.

33.5.30 menuForEvent(e as NSEventMBS, defaultMenu as NSMenuMBS) as NSMenuMBS

Function: Overridden by subclasses to return a context-sensitive pop-up menu for a given mouse-down event.
Notes:
theEvent: An object representing a mouse-down event.
defaultMenu: The menu as constructed by super class.
The receiver can use information in the mouse event, such as its location over a particular element of the receiver, to determine what kind of menu to return. For example, a text object might display a text-editing menu when the cursor lies over text and a menu for changing graphics attributes when the cursor lies over an embedded image.
The default implementation returns the default menu.

33.5.31 mouseDown(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes: Return true if you handled this event.

33.5.32 mouseDownCanMoveWindow as boolean

Function: This event is called so you can decide what happens with mouse down.
Notes:
Return true if you do not need to handle a mouse down and it can pass through to superviews; False if you need to handle the mouse down.

This allows iApp-type applications to determine the region by which a window can be moved. By default, this method returns false if the view is opaque; otherwise, it returns true. Subclasses can override this method to return a different value.

33.5.33  mouseDragged(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes: Return true if you handled this event.

33.5.34  mouseEntered(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes: Return true if you handled this event.

33.5.35  mouseExited(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes: Return true if you handled this event.

33.5.36  mouseMoved(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes: Return true if you handled this event.

33.5.37  mouseUp(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes: Return true if you handled this event.
33.5.38 **Open**

**Function:** The event called when the custom NSSearchField is created.

33.5.39 **otherMouseDown(e as NSEventMBS, x as Double, y as Double) as boolean**

**Function:** One of the mouse events.
**Notes:**
Return true if you handled this event.
Third mouse button.

33.5.40 **otherMouseDragged(e as NSEventMBS, x as Double, y as Double) as boolean**

**Function:** One of the mouse events.
**Notes:**
Return true if you handled this event.
Third mouse button.

33.5.41 **otherMouseUp(e as NSEventMBS, x as Double, y as Double) as boolean**

**Function:** One of the mouse events.
**Notes:**
Return true if you handled this event.
Third mouse button.

33.5.42 **performDragOperation(sender as NSDraggingInfoMBS) as boolean**

**Function:** Invoked after the released image has been removed from the screen, signaling the receiver to import the pasteboard data.
**Notes:**
sender: The object sending the message; use it to get details about the dragging operation.

Return if the destination accepts the data, it returns true; otherwise it returns false. The default is to return false.

For this method to be invoked, the previous prepareForDragOperation message must have returned true. The destination should implement this method to do the real work of importing the pasteboard data represented by the image.

If the sender object’s animatesToDestination was set to true in prepareForDragOperation, then setup any animation to arrange space for the drag items to animate to. Also at this time, enumerate through the dragging items to set their destination frames and destination images.

### 33.5.43 prepareForDragOperation(sender as NSDraggingInfoMBS) as boolean


**Function:** Invoked when the image is released, allowing the receiver to agree to or refuse drag operation.

**Notes:**

sender: The object sending the message; use it to get details about the dragging operation.

Returns true if the receiver agrees to perform the drag operation and false if not.

This method is invoked only if the most recent draggingEntered or draggingUpdated message returned an acceptable drag-operation value.

If you want the drag items to animate from their current location on screen to their final location in your view, set the sender object’s animatesToDestination property to true in your implementation of this method.

### 33.5.44 pressureChange(e as NSEventMBS) as boolean

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Informs the current object that a pressure change occurred on a system that supports pressure sensitivity.

**Notes:**

This method is invoked automatically in response to user actions. event is the event that initiated the change in pressure.

Available in OS X v10.10.3 and later.

### 33.5.45 resignFirstResponder as boolean


**Function:** Focus is going away.
CHAPTER 33. COCOA CONTROLS

Notes: Return true to accept.

33.5.46 rightMouseDown(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes: Return true if you handled this event.

33.5.47 rightMouseDragged(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes: Return true if you handled this event.

33.5.48 rightMouseUp(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes: Return true if you handled this event.

33.5.49 rotateWithEvent(e as NSEventMBS) as boolean

Function: Informs the receiver that the user has begun a rotation gesture.
Notes:
e: An event object representing the rotate gesture.
The event will be sent to the view under the touch in the key window.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.

33.5.50 scrollWheel(e as NSEventMBS) as boolean

Function: Informs the subclass that the mouse’s scroll wheel has moved.
Notes:
33.5. CLASS CUSTOMNSSEARCHFIELDMBS

33.5.51 swipeWithEvent(e as NSEventMBS) as boolean

Function: Informs the receiver that the user has begun a swipe gesture.
Notes:
e: An event object representing the swipe gesture.
The event will be sent to the view under the touch in the key window.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.

33.5.52 updateDraggingItemsForDrag(sender as NSDraggingInfoMBS)

Function: Invoked when the dragging images should be changed.
Notes:
sender: The object sending the message; use this object to get details about the dragging operation.
While a destination may change the dragging images at any time, it is recommended to wait until this
method is called before updating the dragging images.
This allows the system to delay changing the dragging images until it is likely that the user will drop on
this destination. Otherwise, the dragging images will change too often during the drag which would be
distracting to the user.

33.5.53 viewDidMoveToWindow

Function: Informs the receiver that it has been added to a new view hierarchy.
Notes:
The default implementation does nothing; subclasses can implement this event to perform whatever actions
are necessary.
window may return nil when this method is invoked, indicating that the receiver does not currently reside in any window. This occurs when the receiver has just been removed from its superview or when the receiver has just been added to a superview that does not itself have a window. Overrides of this method may choose to ignore such cases if they are not of interest.

33.5.54  wantsPeriodicDraggingUpdates as boolean

Function:  Asks the destination object whether it wants to receive periodic draggingUpdated messages.
Notes:  Return true if the destination wants to receive periodic draggingUpdated messages, false otherwise.

If the destination returns false, these messages are sent only when the mouse moves or a modifier flag changes. Otherwise the destination gets the default behavior, where it receives periodic dragging-updated messages even if nothing changes.
33.6. **CLASS CUSTOMNSTEXTFIELDCELLMBS**

33.6  **class CustomNSTextFieldCellMBS**

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class to customize cells.  
**Notes:** Subclass of the NSTextFieldCellMBS class.

33.6.2  **Methods**

33.6.3  **Constructor**

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

33.6.4  **superDrawWithFrame(frame as NSRectMBS, view as NSViewMBS)**

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Calls drawWithFrame on super class.  
**Notes:** This is for calling in DrawWithFrame event.

33.6.5  **Events**

33.6.6  **cellSize(size as NSSizeMBS) as NSSizeMBS**

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Return a custom cell size.  
**Notes:**  
If not implemented, we call through to super.cellSize.  
We provide super.cellSize in size parameter.

33.6.7  **Clone(clonedCell as NSTextFieldCellMBS) as CustomNSTextFieldCellMBS**

MBS MacCocoa Plugin, Plugin Version: 17.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Requests a clone of the object.  
**Notes:**
This event is called when the system needs a clone of the object. Please create a new object, keep a reference and return it.

SuperClone provides the cloned object, which we use together with the xojo object you return.

### 33.6.8 didDrawWithFrame(cellFrame as NSRectMBS, controlView as NSViewMBS)

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Event called after drawWithFrame run.

### 33.6.9 drawWithFrame(cellFrame as NSRectMBS, controlView as NSViewMBS) as boolean

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Event to replace drawWithFrame. **Notes:** If false is returned or not implemented, we call super.drawWithFrame.

### 33.6.10 fieldEditorForView(controlView as NSViewMBS) as NSTextViewMBS

MBS MacCocoa Plugin, Plugin Version: 17.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns a custom field editor for editing in the view. **Notes:** ControlView: The view containing cells that require a custom field editor.

Returns a custom field editor. The field editor must have fieldEditor set to true.

This is an override point for NSCell subclasses designed to use their own custom field editors. This message is sent to the selected cell of ControlView using the NSWindow method in fieldEditor.

Returning non-nil from this method indicates skipping the standard field editor querying processes including windowWillReturnFieldEditor delegation.

The default implementation returns nil.

### 33.6.11 imageRectForBounds(rect as NSRectMBS) as NSRectMBS

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event for imageRectForBounds method.
33.6.12 selectWithFrame(rect as NSRectMBS, controlView as NSViewMBS, text as NSTextMBS, theDelegate as Variant, selStart as Integer, selLength as Integer) as boolean


33.6.13 setUpFieldEditorAttributes(textObj as NSTextMBS, superFieldEditor as NSTextMBS) as NSTextMBS

MBS MacCocoa Plugin, Plugin Version: 17.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Sets up the field editor. You never invoke this method directly; by overriding it, however, you can customize the field editor. Notes: When you override this method, you should generally invoke the implementation of super and return the textObj argument. For information on field editors, see Using the Windows Field Editor.

33.6.14 titleRectForBounds(rect as NSRectMBS) as NSRectMBS

33.7  class CustomNSTextFieldMBS

33.7.1  class CustomNSTextFieldMBS

Function: The class for a custom text field.
Notes:
Some events will not fire as text field eats them itself.
Subclass of the NSTextFieldMBS class.

33.7.2  Methods

33.7.3  Constructor

Function: The dummy constructor doing nothing.
See also:

- 33.7.4 Constructor(Handle as Integer) 6274
- 33.7.5 Constructor(left as Double, top as Double, width as Double, height as Double) 6274

33.7.4  Constructor(Handle as Integer)

Function: The constructor.
See also:

- 33.7.3 Constructor 6274
- 33.7.5 Constructor(left as Double, top as Double, width as Double, height as Double) 6274

33.7.5  Constructor(left as Double, top as Double, width as Double, height as Double)

Function: The constructor for a new custom NSView object.
See also:

- 33.7.3 Constructor 6274
- 33.7.4 Constructor(Handle as Integer) 6274
33.7. CLASS CUSTOMNSTEXTFIELDMBS

33.7.6 Destructor

Function: The destructor.

33.7.7 Events

33.7.8 acceptsFirstMouse(e as NSEventMBS) as boolean

Function: Overridden by subclasses to return true if the receiver should be sent a mouseDown event for an initial mouse-down event, false if not.
Notes: The receiver can either return a value unconditionally or use the location of event e to determine whether or not it wants the event. The default implementation ignores the event and returns false.

Implement this event in a subclass to allow instances to respond to click-through. This allows the user to click on a view in an inactive window, activating the view with one click, instead of clicking first to make the window active and then clicking the view. Most view objects refuse a click-through attempt, so the event simply activates the window. Many control objects, however, such as instances of NSButton and NSSlider, do accept them, so the user can immediately manipulate the control without having to release the mouse button.

33.7.9 acceptsFirstResponder as boolean

Function: Whether to accept first responder.
Notes: Return true if your control can have the focus and false if not.

33.7.10 becomeFirstResponder as boolean

Function: Called when the object gets focus.
Notes: Return true to accept.

33.7.11 beginGestureWithEvent(e as NSEventMBS) as boolean

Function: Informs the receiver that the user has begun a touch gesture.
Notes:

e: An event object representing the gesture beginning. The event will be sent to the view under the touch in the key window. Available in Mac OS X v10.6 and later. Return true if you handled this event.

### 33.7.12 canBecomeKeyView as boolean


**Function:** Returns whether the receiver can become key view.

**Notes:** Returns true if the receiver can become key view, false otherwise.

### 33.7.13 Close


**Function:** The event called when the custom view is destroyed.

### 33.7.14 concludeDragOperation(sender as NSDraggingInfoMBS)


**Function:** Invoked when the dragging operation is complete, signaling the receiver to perform any necessary clean-up.

**Notes:**

sender: The object sending the message; use it to get details about the dragging operation.

For this method to be invoked, the previous performDragOperation must have returned true.

The destination implements this method to perform any tidying up that it needs to do, such as updating its visual representation now that it has incorporated the dragged data. This message is the last message sent from sender to the destination during a dragging session.

If the sender object’s animatesToDestination property was set to true in prepareForDragOperation, then the drag image is still visible. At this point you should draw the final visual representation in the view. When this method returns, the drag image is removed from the screen. If your final visual representation matches the visual representation in the drag, this is a seamless transition.
33.7.15  draggingEnded (sender as NSDraggingInfoMBS)

Function: Implement this event to be notified when a drag operation ends in some other destination.
Notes:
sender: The object sending the message; use it to get details about the dragging operation.

This method might be used by a destination doing auto-expansion in order to collapse any auto-expands.

33.7.16  draggingEntered (sender as NSDraggingInfoMBS) as Integer

Function: Invoked when the dragged image enters destination bounds or frame; delegate returns dragging operation to perform.
Notes:
sender: The object sending the message; use it to get details about the dragging operation.

Return one (and only one) of the dragging operation constants described in NSDragOperation in the NS-DraggingInfo reference. The default return value (if this method is not implemented by the destination) is the value returned by the previous draggingEntered message.

Invoked when a dragged image enters the destination but only if the destination has registered for the pasteboard data type involved in the drag operation. Specifically, this method is invoked when the mouse pointer enters the destination’s bounds rectangle (if it is a view object) or its frame rectangle (if it is a window object).

This method must return a value that indicates which dragging operation the destination will perform when the image is released. In deciding which dragging operation to return, the method should evaluate the overlap between both the dragging operations allowed by the source (obtained from sender with the draggingSourceOperationMask method) and the dragging operations and pasteboard data types the destination itself supports.

If none of the operations is appropriate, this method should return NSDragOperationNone (this is the default response if the method is not implemented by the destination). A destination will still receive draggingUpdated and draggingExited even if NSDragOperationNone is returned by this method.

33.7.17  draggingExited (sender as NSDraggingInfoMBS)

Function: Invoked when the dragged image exits the destination’s bounds rectangle (in the case of a view object) or its frame rectangle (in the case of a window object).
CHAPTER 33. COCOA CONTROLS

object) or its frame rectangle (in the case of a window object).

Notes: sender: The object sending the message; use it to get details about the dragging operation.

33.7.18 draggingSessionEndedAtPoint(session as NSDraggingSessionMBS, screenPoint as NSPointMBS, operation as Integer)

Function: Invoked when the dragging session has completed.
Notes:

session: The dragging session.
screenPoint: The point where the drag ended, in screen coordinates.
operation: The drag operation. See constants for drag operation types.

Available in OS X v10.7 and later.

33.7.19 draggingSessionMovedToPoint(session as NSDraggingSessionMBS, screenPoint as NSPointMBS)

Function: Invoked when the drag moves on the screen.
Notes:

session: The dragging session.
screenPoint: The point where the drag moved to, in screen coordinates.

Available in OS X v10.7 and later.

33.7.20 draggingSessionSourceOperationMaskForDraggingContext(session as NSDraggingSessionMBS, context as Integer) as Integer

Function: Declares the types of operations the source allows to be performed. (required)
Notes:

session: The dragging session.
context: The dragging context. See NSDraggingContext constants for the supported values.

Return the appropriate dragging operation as defined in constants.
In the future Apple may provide more specific "within" values in the future. To account for this, for unrecognized localities, return the operation mask for the most specific context that you are concerned with.

### 33.7.21 draggingSessionWillBeginAtPoint

```plaintext
session as NSDraggingSessionMBS, screenPoint as NSPointMBS)
```


**Function:** Invoked when the drag will begin.

**Notes:**

- **session:** The dragging session.
- **screenPoint:** The point where the drag will begin, in screen coordinates.

Available in OS X v10.7 and later.

### 33.7.22 draggingSourceOperationMaskForLocal

```plaintext
(flag as boolean) as Integer
```


**Function:** Returns an integer bit mask indicating the types of dragging operations the source object will allow to be performed on the dragged image’s data.

**Notes:**

(Deprecated in OS X v10.7. This method is informally deprecated. It is only called if the source does not implement the NSDraggingSource protocol methods. This method will be formally deprecated in a future OS release.)

- **isLocal:** True indicates that the candidate destination object (the window or view over which the dragged image is currently poised) is in the same application as the source, while a false value indicates that the destination object is in a different application.

A mask, created by combining the dragging operations listed in the NSDragOperation section of NSDraggingInfo protocol reference using the C bitwise OR operator. If the source does not permit any dragging operations, it should return NSDragOperationNone.

If not implemented, the default value is NSDragOperationCopy | NSDragOperationLink | NSDragOperationGeneric | NSDragOperationPrivate.

Available in OS X v10.0 and later. Deprecated in OS X v10.7.
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33.7.23 draggingUpdated(sender as NSDraggingInfoMBS) as Integer

Function: Invoked periodically as the image is held within the destination area, allowing modification of the dragging operation or mouse-pointer position.
Notes:

sender: The object sending the message; use it to get details about the dragging operation.

Return one (and only one) of the dragging operation constants described in NSDragOperation in the NS-DraggingInfo reference. The default return value (if this method is not implemented by the destination) is the value returned by the previous draggingEntered message.

For this to be invoked, the destination must have registered for the pasteboard data type involved in the drag operation. The messages continue until the image is either released or dragged out of the window or view.

This method provides the destination with an opportunity to modify the dragging operation depending on the position of the mouse pointer inside of the destination view or window object. For example, you may have several graphics or areas of text contained within the same view and wish to tailor the dragging operation, or to ignore the drag event completely, depending upon which object is underneath the mouse pointer at the time when the user releases the dragged image and the performDragOperation method is invoked.

You typically examine the contents of the pasteboard in the draggingEntered method, where this examination is performed only once, rather than in the draggingUpdated method, which is invoked multiple times.

Only one destination at a time receives a sequence of draggingUpdated messages. If the mouse pointer is within the bounds of two overlapping views that are both valid destinations, the uppermost view receives these messages until the image is either released or dragged out.

33.7.24 endGestureWithEvent(e as NSEventMBS) as boolean

Function: Informs the receiver that the user has ended a touch gesture.
Notes:

e: An event object representing the gesture end.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.
### 33.7.25 `ignoreModifierKeysForDraggingSession(session as NSDraggingSessionMBS) as boolean`


**Function:** Returns whether the modifier keys will be ignored for this dragging session.

**Notes:**

- session: The dragging session.

Return true if the modifier keys will be ignored, false otherwise.
Available in OS X v10.7 and later.

### 33.7.26 `isOpaque as boolean`


**Function:** Whether this view is opaque.

### 33.7.27 `keyDown(e as NSEventMBS) as boolean`


**Function:** One of the key events.

**Notes:**

- Return true if you handled this event.
- Please return true in becomeFirstResponder and acceptsFirstResponder, so your nsview can become first responder and receive key events.

### 33.7.28 `keyUp(e as NSEventMBS) as boolean`


**Function:** One of the key events.

**Notes:**

- Return true if you handled this event.
- Please return true in becomeFirstResponder and acceptsFirstResponder, so your nsview can become first responder and receive key events.
33.7.29  `magnifyWithEvent(e as NSEventMBS) as boolean`

**Function:** Informs the receiver that the user has begun a pinch gesture.
**Notes:**
e: An event object representing the magnify gesture.
The event will be sent to the view under the touch in the key window.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.

33.7.30  `menuForEvent(e as NSEventMBS, defaultMenu as NSMenuMBS) as NSMenuMBS`

**Function:** Overridden by subclasses to return a context-sensitive pop-up menu for a given mouse-down event.
**Notes:**
theEvent: An object representing a mouse-down event.
defaultMenu: The menu as constructed by super class.

The receiver can use information in the mouse event, such as its location over a particular element of the receiver, to determine what kind of menu to return. For example, a text object might display a text-editing menu when the cursor lies over text and a menu for changing graphics attributes when the cursor lies over an embedded image.

The default implementation returns the default menu.

33.7.31  `mouseDown(e as NSEventMBS, x as Double, y as Double) as boolean`

**Function:** One of the mouse events.
**Notes:** Return true if you handled this event.

33.7.32  `mouseDownCanMoveWindow as boolean`

**Function:** This event is called so you can decide what happens with mouse down.
**Notes:**
Return true if you do not need to handle a mouse down and it can pass through to superviews; False if you need to handle the mouse down.

This allows iApp-type applications to determine the region by which a window can be moved. By default, this method returns false if the view is opaque; otherwise, it returns true. Subclasses can override this method to return a different value.

### 33.7.33 mouseDragged(e as NSEventMBS, x as Double, y as Double) as boolean

**Function:** One of the mouse events.  
**Notes:** Return true if you handled this event.

### 33.7.34 mouseEntered(e as NSEventMBS, x as Double, y as Double) as boolean

**Function:** One of the mouse events.  
**Notes:** Return true if you handled this event.

### 33.7.35 mouseExited(e as NSEventMBS, x as Double, y as Double) as boolean

**Function:** One of the mouse events.  
**Notes:** Return true if you handled this event.

### 33.7.36 mouseMoved(e as NSEventMBS, x as Double, y as Double) as boolean

**Function:** One of the mouse events.  
**Notes:** Return true if you handled this event.

### 33.7.37 mouseUp(e as NSEventMBS, x as Double, y as Double) as boolean

**Function:** One of the mouse events.  
**Notes:** Return true if you handled this event.
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33.7.38 Open

Function: The event called when the custom NSSearchField is created.

33.7.39 otherMouseDown(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes:
Return true if you handled this event.
Third mouse button.

33.7.40 otherMouseDragged(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes:
Return true if you handled this event.
Third mouse button.

33.7.41 otherMouseUp(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes:
Return true if you handled this event.
Third mouse button.

33.7.42 performDragOperation(sender as NSDraggingInfoMBS) as boolean

Function: Invoked after the released image has been removed from the screen, signaling the receiver to import the pasteboard data.
Notes:
sender: The object sending the message; use it to get details about the dragging operation.

Return if the destination accepts the data, it returns true; otherwise it returns false. The default is to return false.

For this method to be invoked, the previous prepareForDragOperation message must have returned true. The destination should implement this method to do the real work of importing the pasteboard data represented by the image.

If the sender object’s animatesToDestination was set to true in prepareForDragOperation, then setup any animation to arrange space for the drag items to animate to. Also at this time, enumerate through the dragging items to set their destination frames and destination images.

33.7.43 prepareForDragOperation(sender as NSDraggingInfoMBS) as boolean

Function: Invoked when the image is released, allowing the receiver to agree to or refuse drag operation.
Notes:
sender: The object sending the message; use it to get details about the dragging operation.
Returns true if the receiver agrees to perform the drag operation and false if not.
This method is invoked only if the most recent draggingEntered or draggingUpdated message returned an acceptable drag-operation value.
If you want the drag items to animate from their current location on screen to their final location in your view, set the sender object’s animatesToDestination property to true in your implementation of this method.

33.7.44 pressureChange(e as NSEventMBS) as boolean

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes.
Function: Informs the current object that a pressure change occurred on a system that supports pressure sensitivity.
Notes:
This method is invoked automatically in response to user actions. event is the event that initiated the change in pressure.
Available in OS X v10.10.3 and later.

33.7.45 resignFirstResponder as boolean

Function: Focus is going away.
Notes: Return true to accept.

33.7.46  rightMouseDown(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events. 
Notes: Return true if you handled this event.

33.7.47  rightMouseDragged(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events. 
Notes: Return true if you handled this event.

33.7.48  rightMouseUp(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events. 
Notes: Return true if you handled this event.

33.7.49  rotateWithEvent(e as NSEventMBS) as boolean

Function: Informs the receiver that the user has begun a rotation gesture. 
Notes:
e: An event object representing the rotate gesture. 
The event will be sent to the view under the touch in the key window. 
available in Mac OS X v10.6 and later. 
Return true if you handled this event.

33.7.50  scrollWheel(e as NSEventMBS) as boolean

Function: Informs the subclass that the mouse’s scroll wheel has moved. 
Notes:
33.7. **CLASS CUSTOMNSTEXTFIELDMBS**

e: An object encapsulating information about the wheel-scrolling event.

The default implementation simply passes this message to the next responder. Return true to not pass the event.

33.7.51 **swipeWithEvent(e as NSEventMBS) as boolean**


**Function:** Informs the receiver that the user has begun a swipe gesture.

**Notes:**

e: An event object representing the swipe gesture. The event will be sent to the view under the touch in the key window. Available in Mac OS X v10.6 and later. Return true if you handled this event.

33.7.52 **updateDraggingItemsForDrag(sender as NSDraggingInfoMBS)**


**Function:** Invoked when the dragging images should be changed.

**Notes:**

sender: The object sending the message; use this object to get details about the dragging operation.

While a destination may change the dragging images at any time, it is recommended to wait until this method is called before updating the dragging images.

This allows the system to delay changing the dragging images until it is likely that the user will drop on this destination. Otherwise, the dragging images will change too often during the drag which would be distracting to the user.

33.7.53 **viewDidMoveToWindow**


**Function:** Informs the receiver that it has been added to a new view hierarchy.

**Notes:**

The default implementation does nothing; subclasses can implement this event to perform whatever actions are necessary.
window may return nil when this method is invoked, indicating that the receiver does not currently reside in any window. This occurs when the receiver has just been removed from its superview or when the receiver has just been added to a superview that does not itself have a window. Overrides of this method may choose to ignore such cases if they are not of interest.

33.7.54  

`wantsPeriodicDraggingUpdates` as boolean

Function: Asks the destination object whether it wants to receive periodic draggingUpdated messages.  
Notes:  
Return true if the destination wants to receive periodic draggingUpdated messages, false otherwise.  

If the destination returns false, these messages are sent only when the mouse moves or a modifier flag changes. Otherwise the destination gets the default behavior, where it receives periodic dragging-updated messages even if nothing changes.
33.8. *CLASS CUSTOMNSTEXTVIEWMBS*

33.8  class CustomNSTextViewMBS

33.8.1  class CustomNSTextViewMBS


**Function:** The class for a custom text view.

**Notes:**
Some events will not fire as text view eats them itself.
Subclass of the NSTextViewMBS class.

33.8.2  Methods

33.8.3  Constructor


**Function:** The dummy constructor doing nothing.

See also:

- 33.8.4 Constructor(Handle as Integer) 6289
- 33.8.5 Constructor(left as Double, top as Double, width as Double, height as Double) 6289

33.8.4  Constructor(Handle as Integer)


**Function:** The constructor.

See also:

- 33.8.3 Constructor 6289
- 33.8.5 Constructor(left as Double, top as Double, width as Double, height as Double) 6289

33.8.5  Constructor(left as Double, top as Double, width as Double, height as Double)


**Function:** The constructor for a new custom NSView object.

See also:

- 33.8.3 Constructor 6289
- 33.8.4 Constructor(Handle as Integer) 6289
33.8.6 Destructor

Function: The destructor.

33.8.7 Events

33.8.8 acceptsFirstMouse(e as NSEventMBS) as boolean

Function: Overridden by subclasses to return true if the receiver should be sent a mouseDown event for an initial mouse-down event, false if not.
Notes: The receiver can either return a value unconditionally or use the location of event e to determine whether or not it wants the event. The default implementation ignores the event and returns false.

Implement this event in a subclass to allow instances to respond to click-through. This allows the user to click on a view in an inactive window, activating the view with one click, instead of clicking first to make the window active and then clicking the view. Most view objects refuse a click-through attempt, so the event simply activates the window. Many control objects, however, such as instances of NSButton and NSSlider, do accept them, so the user can immediately manipulate the control without having to release the mouse button.

33.8.9 acceptsFirstResponder as boolean

Function: Whether to accept first responder.
Notes: Return true if your control can have the focus and false if not.

33.8.10 becomeFirstResponder as boolean

Function: Called when the object gets focus.
Notes: Return true to accept.

33.8.11 beginGestureWithEvent(e as NSEventMBS) as boolean

Function: Informs the receiver that the user has begun a touch gesture.
33.8. CLASS CUSTOMNSTEXTVIEWMBS

Notes:

e: An event object representing the gesture beginning.
The event will be sent to the view under the touch in the key window.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.

33.8.12 canBecomeKeyView as boolean

Function: Returns whether the receiver can become key view.
Notes: Returns true if the receiver can become key view, false otherwise.

33.8.13 Close

Function: The event called when the custom view is destroyed.

33.8.14 concludeDragOperation(sender as NSDraggingInfoMBS)

Function: Invoked when the dragging operation is complete, signaling the receiver to perform any necessary
     clean-up.
Notes:
sender: The object sending the message; use it to get details about the dragging operation.

For this method to be invoked, the previous performDragOperation must have returned true.

The destination implements this method to perform any tidying up that it needs to do, such as updating its
visual representation now that it has incorporated the dragged data. This message is the last message sent
from sender to the destination during a dragging session.

If the sender object’s animatesToDestination property was set to true in prepareForDragOperation, then the
drag image is still visible. At this point you should draw the final visual representation in the view. When
this method returns, the drag image is removed from the screen. If your final visual representation matches
the visual representation in the drag, this is a seamless transition.
33.8.15 draggingEnded(sender as NSDraggingInfoMBS)

Function: Implement this event to be notified when a drag operation ends in some other destination.
Notes:
sender: The object sending the message; use it to get details about the dragging operation.

This method might be used by a destination doing auto-expansion in order to collapse any auto-expands.

33.8.16 draggingEntered(sender as NSDraggingInfoMBS) as Integer

Function: Invoked when the dragged image enters destination bounds or frame; delegate returns dragging operation to perform.
Notes:
sender: The object sending the message; use it to get details about the dragging operation.

Return one (and only one) of the dragging operation constants described in NSDragOperation in the NSDraggingInfo reference. The default return value (if this method is not implemented by the destination) is the value returned by the previous draggingEntered message.

Invoked when a dragged image enters the destination but only if the destination has registered for the pasteboard data type involved in the drag operation. Specifically, this method is invoked when the mouse pointer enters the destination’s bounds rectangle (if it is a view object) or its frame rectangle (if it is a window object).

This method must return a value that indicates which dragging operation the destination will perform when the image is released. In deciding which dragging operation to return, the method should evaluate the overlap between both the dragging operations allowed by the source (obtained from sender with the draggingSourceOperationMask method) and the dragging operations and pasteboard data types the destination itself supports.

If none of the operations is appropriate, this method should return NSDragOperationNone (this is the default response if the method is not implemented by the destination). A destination will still receive draggingUpdated and draggingExited even if NSDragOperationNone is returned by this method.

33.8.17 draggingExited(sender as NSDraggingInfoMBS)

Function: Invoked when the dragged image exits the destination’s bounds rectangle (in the case of a view
object) or its frame rectangle (in the case of a window object).
Notes: sender: The object sending the message; use it to get details about the dragging operation.

### 33.8.18 draggingSessionEndedAtPoint(session as NSDraggingSessionMBS, screen-
Point as NSPointMBS, operation as Integer)

**Function:** Invoked when the dragging session has completed.
**Notes:**
- session: The dragging session.
- screenPoint: The point where the drag ended, in screen coordinates.
- operation: The drag operation. See constants for drag operation types.

Available in OS X v10.7 and later.

### 33.8.19 draggingSessionMovedToPoint(session as NSDraggingSessionMBS, screen-
Point as NSPointMBS)

**Function:** Invoked when the drag moves on the screen.
**Notes:**
- session: The dragging session.
- screenPoint: The point where the drag moved to, in screen coordinates.

Available in OS X v10.7 and later.

### 33.8.20 draggingSessionSourceOperationMaskForDraggingContext(session as NS-
DraggingSessionMBS, context as Integer) as Integer

**Function:** Declares the types of operations the source allows to be performed. (required)
**Notes:**
- session: The dragging session.
- context: The dragging context. See NSDraggingContext constants for the supported values.

Return the appropriate dragging operation as defined in constants.
In the future Apple may provide more specific "within" values in the future. To account for this, for unrecognized localities, return the operation mask for the most specific context that you are concerned with.

33.8.21 `draggingSessionWillBeginAtPoint(session as NSDraggingSessionMBS, screenPoint as NSPointMBS)`


**Function:** Invoked when the drag will begin.

**Notes:**
- session: The dragging session.
- screenPoint: The point where the drag will begin, in screen coordinates.

Available in OS X v10.7 and later.

33.8.22 `draggingSourceOperationMaskForLocal(flag as boolean) as Integer`


**Function:** Returns an integer bit mask indicating the types of dragging operations the source object will allow to be performed on the dragged image’s data.

**Notes:**
- (Deprecated in OS X v10.7. This method is informally deprecated. It is only called if the source does not implement the NSDraggingSource protocol methods. This method will be formally deprecated in a future OS release.)

- isLocal: True indicates that the candidate destination object (the window or view over which the dragged image is currently poised) is in the same application as the source, while a false value indicates that the destination object is in a different application.

- A mask, created by combining the dragging operations listed in the NSDragOperation section of NSDraggingInfo protocol reference using the C bitwise OR operator. If the source does not permit any dragging operations, it should return NSDragOperationNone.

- If not implemented, the default value is NSDragOperationCopy | NSDragOperationLink | NSDragOperationGeneric | NSDragOperationPrivate.

Available in OS X v10.0 and later. Deprecated in OS X v10.7.
### 33.8.23 draggingUpdated(sender as NSDraggingInfoMBS) as Integer

**Function:** Invoked periodically as the image is held within the destination area, allowing modification of the dragging operation or mouse-pointer position.

**Notes:**

sender: The object sending the message; use it to get details about the dragging operation.

Return one (and only one) of the dragging operation constants described in NSDragOperation in the NSDraggingInfo reference. The default return value (if this method is not implemented by the destination) is the value returned by the previous draggingEntered message.

For this to be invoked, the destination must have registered for the pasteboard data type involved in the drag operation. The messages continue until the image is either released or dragged out of the window or view.

This method provides the destination with an opportunity to modify the dragging operation depending on the position of the mouse pointer inside of the destination view or window object. For example, you may have several graphics or areas of text contained within the same view and wish to tailor the dragging operation, or to ignore the drag event completely, depending upon which object is underneath the mouse pointer at the time when the user releases the dragged image and the performDragOperation method is invoked.

You typically examine the contents of the pasteboard in the draggingEntered method, where this examination is performed only once, rather than in the draggingUpdated method, which is invoked multiple times.

Only one destination at a time receives a sequence of draggingUpdated messages. If the mouse pointer is within the bounds of two overlapping views that are both valid destinations, the uppermost view receives these messages until the image is either released or dragged out.

### 33.8.24 endGestureWithEvent(e as NSEventMBS) as boolean

**Function:** Informs the receiver that the user has ended a touch gesture.

**Notes:**

e: An event object representing the gesture end.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.
33.8.25  

**ignoreModifierKeysForDraggingSession**

(session as NSDraggingSession-MBS) as boolean


**Function:** Returns whether the modifier keys will be ignored for this dragging session.

**Notes:**

session: The dragging session.

Return true if the modifier keys will be ignored, false otherwise.
Available in OS X v10.7 and later.

33.8.26  

**isOpaque as boolean**


**Function:** Whether this view is opaque.

33.8.27  

**keyDown**

e as NSEventMBS) as boolean


**Function:** One of the key events.

**Notes:**

Return true if you handled this event.
Please return true in becomeFirstResponder and acceptsFirstResponder, so your nsview can become first responder and receive key events.

33.8.28  

**keyUp**

e as NSEventMBS) as boolean


**Function:** One of the key events.

**Notes:**

Return true if you handled this event.
Please return true in becomeFirstResponder and acceptsFirstResponder, so your nsview can become first responder and receive key events.
33.8.29  magnifyWithEvent(e as NSEventMBS) as boolean

**Function:** Informs the receiver that the user has begun a pinch gesture.
**Notes:**
e: An event object representing the magnify gesture.
The event will be sent to the view under the touch in the key window.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.

33.8.30  menuForEvent(e as NSEventMBS, defaultMenu as NSMenuMBS) as NSMenuMBS

**Function:** Overridden by subclasses to return a context-sensitive pop-up menu for a given mouse-down event.
**Notes:**
theEvent: An object representing a mouse-down event.
defaultMenu: The menu as constructed by super class.
The receiver can use information in the mouse event, such as its location over a particular element of the receiver, to determine what kind of menu to return. For example, a text object might display a text-editing menu when the cursor lies over text and a menu for changing graphics attributes when the cursor lies over an embedded image.
The default implementation returns the default menu.

33.8.31  mouseDown(e as NSEventMBS, x as Double, y as Double) as boolean

**Function:** One of the mouse events.
**Notes:** Return true if you handled this event.

33.8.32  mouseDownCanMoveWindow as boolean

**Function:** This event is called so you can decide what happens with mouse down.
**Notes:**
Return true if you do not need to handle a mouse down and it can pass through to superviews; False if you need to handle the mouse down.

This allows iApp-type applications to determine the region by which a window can be moved. By default, this method returns false if the view is opaque; otherwise, it returns true. Subclasses can override this method to return a different value.

**33.8.33 mouseDragged(e as NSEventMBS, x as Double, y as Double) as boolean**

Function: One of the mouse events.
Notes: Return true if you handled this event.

**33.8.34 mouseEntered(e as NSEventMBS, x as Double, y as Double) as boolean**

Function: One of the mouse events.
Notes: Return true if you handled this event.

**33.8.35 mouseExited(e as NSEventMBS, x as Double, y as Double) as boolean**

Function: One of the mouse events.
Notes: Return true if you handled this event.

**33.8.36 mouseMoved(e as NSEventMBS, x as Double, y as Double) as boolean**

Function: One of the mouse events.
Notes: Return true if you handled this event.

**33.8.37 mouseUp(e as NSEventMBS, x as Double, y as Double) as boolean**

Function: One of the mouse events.
Notes: Return true if you handled this event.
33.8.38  Open

Function: The event called when the custom NSSearchField is created.

33.8.39  otherMouseDown(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes:
Return true if you handled this event.
Third mouse button.

33.8.40  otherMouseDragged(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes:
Return true if you handled this event.
Third mouse button.

33.8.41  otherMouseUp(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes:
Return true if you handled this event.
Third mouse button.

33.8.42  performDragOperation(sender as NSDraggingInfoMBS) as boolean

Function: Invoked after the released image has been removed from the screen, signaling the receiver to import the pasteboard data.
Notes:
sender: The object sending the message; use it to get details about the dragging operation.

Return if the destination accepts the data, it returns true; otherwise it returns false. The default is to return false.

For this method to be invoked, the previous prepareForDragOperation message must have returned true. The destination should implement this method to do the real work of importing the pasteboard data represented by the image.

If the sender object’s animatesToDestination was set to true in prepareForDragOperation, then setup any animation to arrange space for the drag items to animate to. Also at this time, enumerate through the dragging items to set their destination frames and destination images.

33.8.43 prepareForDragOperation(sender as NSDraggingInfoMBS) as boolean

MBS MacControls Plugin, Plugin Version: 17.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Invoked when the image is released, allowing the receiver to agree to or refuse drag operation.
Notes:

sender: The object sending the message; use it to get details about the dragging operation.
Returns true if the receiver agrees to perform the drag operation and false if not.
This method is invoked only if the most recent draggingEntered or draggingUpdated message returned an acceptable drag-operation value.
If you want the drag items to animate from their current location on screen to their final location in your view, set the sender object’s animatesToDestination property to true in your implementation of this method.

33.8.44 pressureChange(e as NSEventMBS) as boolean

MBS MacControls Plugin, Plugin Version: 17.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: Informs the current object that a pressure change occurred on a system that supports pressure sensitivity.
Notes:

This method is invoked automatically in response to user actions. event is the event that initiated the change in pressure.
Available in OS X v10.10.3 and later.

33.8.45 resignFirstResponder as boolean

33.8.46  rightMouseDown(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes: Return true if you handled this event.

33.8.47  rightMouseDragged(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes: Return true if you handled this event.

33.8.48  rightMouseUp(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes: Return true if you handled this event.

33.8.49  rotateWithEvent(e as NSEventMBS) as boolean

Function: Informs the receiver that the user has begun a rotation gesture.
Notes:
e: An event object representing the rotate gesture.
The event will be sent to the view under the touch in the key window.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.

33.8.50  scrollWheel(e as NSEventMBS) as boolean

Function: Informs the subclass that the mouse’s scroll wheel has moved.
Notes:
e: An object encapsulating information about the wheel-scrolling event.

The default implementation simply passes this message to the next responder. Return true to not pass the event.

### 33.8.51 swipeWithEvent(e as NSEventMBS) as boolean

**Function:** Informs the receiver that the user has begun a swipe gesture.

**Notes:**
- e: An event object representing the swipe gesture.
- The event will be sent to the view under the touch in the key window.
- Available in Mac OS X v10.6 and later.
- Return true if you handled this event.

### 33.8.52 updateDraggingItemsForDrag(sender as NSDraggingInfoMBS)

**Function:** Invoked when the dragging images should be changed.

**Notes:**
- sender: The object sending the message; use this object to get details about the dragging operation.

While a destination may change the dragging images at any time, it is recommended to wait until this method is called before updating the dragging images.

This allows the system to delay changing the dragging images until it is likely that the user will drop on this destination. Otherwise, the dragging images will change too often during the drag which would be distracting to the user.

### 33.8.53 viewDidMoveToWindow

**Function:** Informs the receiver that it has been added to a new view hierarchy.

**Notes:**
- The default implementation does nothing; subclasses can implement this event to perform whatever actions are necessary.
window may return nil when this method is invoked, indicating that the receiver does not currently reside in any window. This occurs when the receiver has just been removed from its superview or when the receiver has just been added to a superview that does not itself have a window. Overrides of this method may choose to ignore such cases if they are not of interest.

### 33.8.54  wantsPeriodicDraggingUpdates as boolean


**Function:** Asks the destination object whether it wants to receive periodic draggingUpdated messages.

**Notes:**

Return true if the destination wants to receive periodic draggingUpdated messages, false otherwise.

If the destination returns false, these messages are sent only when the mouse moves or a modifier flag changes. Otherwise the destination gets the default behavior, where it receives periodic dragging-updated messages even if nothing changes.
33.9 class CustomNSTokenFieldMBS

33.9.1 class CustomNSTokenFieldMBS

Function: The class for a custom NSTokenField.
Notes: Subclass of the NSTokenFieldMBS class.

33.9.2 Methods

33.9.3 Constructor

Function: The dummy constructor doing nothing.
See also:

- 33.9.4 Constructor(Handle as Integer) 6304
- 33.9.5 Constructor(left as Double, top as Double, width as Double, height as Double) 6304

33.9.4 Constructor(Handle as Integer)

Function: The constructor.
See also:

- 33.9.3 Constructor 6304
- 33.9.5 Constructor(left as Double, top as Double, width as Double, height as Double) 6304

33.9.5 Constructor(left as Double, top as Double, width as Double, height as Double)

Function: The constructor for a new custom NSTokenField object.
See also:

- 33.9.3 Constructor 6304
- 33.9.4 Constructor(Handle as Integer) 6304
33.9. Destructor

Function: The destructor.

33.9.7 Events

33.9.8 acceptsFirstMouse(e as NSEventMBS) as boolean

Function: Overridden by subclasses to return true if the receiver should be sent a mouseDown event for an initial mouse-down event, false if not.
Notes: The receiver can either return a value unconditionally or use the location of event e to determine whether or not it wants the event. The default implementation ignores the event and returns false.
Implement this event in a subclass to allow instances to respond to click-through. This allows the user to click on a view in an inactive window, activating the view with one click, instead of clicking first to make the window active and then clicking the view. Most view objects refuse a click-through attempt, so the event simply activates the window. Many control objects, however, such as instances of NSButton and NSSlider, do accept them, so the user can immediately manipulate the control without having to release the mouse button.

33.9.9 acceptsFirstResponder as boolean

Function: Whether to accept first responder.
Notes: Return true if your control can have the focus and false if not.

33.9.10 becomeFirstResponder as boolean

Function: Called when the object gets focus.
Notes: Return true to accept.

33.9.11 beginGestureWithEvent(e as NSEventMBS) as boolean

Function: Informs the receiver that the user has begun a touch gesture.
Notes:

e: An event object representing the gesture beginning.
The event will be sent to the view under the touch in the key window.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.

33.9.12 canBecomeKeyView as boolean

Function: Returns whether the receiver can become key view.
Notes: Returns true if the receiver can become key view, false otherwise.

33.9.13 Close

Function: The event called when the custom view is destroyed.

33.9.14 concludeDragOperation(sender as NSDraggingInfoMBS)

Function: Invoked when the dragging operation is complete, signaling the receiver to perform any necessary
clean-up.
Notes:

sender: The object sending the message; use it to get details about the dragging operation.

For this method to be invoked, the previous performDragOperation must have returned true.

The destination implements this method to perform any tidying up that it needs to do, such as updating its
visual representation now that it has incorporated the dragged data. This message is the last message sent
from sender to the destination during a dragging session.

If the sender object’s animatesToDestination property was set to true in prepareForDragOperation, then the
drag image is still visible. At this point you should draw the final visual representation in the view. When
this method returns, the drag image is removed from the screen. If your final visual representation matches
the visual representation in the drag, this is a seamless transition.
33.9. **CLASS CUSTOMNSTOKENFIELDMBS**

### 33.9.15 draggingEnded(sender as NSDraggingInfoMBS)


**Function:** Implement this event to be notified when a drag operation ends in some other destination.

**Notes:**

sender: The object sending the message; use it to get details about the dragging operation.

This method might be used by a destination doing auto-expansion in order to collapse any auto-expands.

### 33.9.16 draggingEntered(sender as NSDraggingInfoMBS) as Integer


**Function:** Invoked when the dragged image enters destination bounds or frame; delegate returns dragging operation to perform.

**Notes:**

sender: The object sending the message; use it to get details about the dragging operation.

Return one (and only one) of the dragging operation constants described in NSDragOperation in the NS-DraggingInfo reference. The default return value (if this method is not implemented by the destination) is the value returned by the previous draggingEntered message.

Invoked when a dragged image enters the destination but only if the destination has registered for the pasteboard data type involved in the drag operation. Specifically, this method is invoked when the mouse pointer enters the destination’s bounds rectangle (if it is a view object) or its frame rectangle (if it is a window object).

This method must return a value that indicates which dragging operation the destination will perform when the image is released. In deciding which dragging operation to return, the method should evaluate the overlap between both the dragging operations allowed by the source (obtained from sender with the draggingSourceOperationMask method) and the dragging operations and pasteboard data types the destination itself supports.

If none of the operations is appropriate, this method should return NSDragOperationNone (this is the default response if the method is not implemented by the destination). A destination will still receive draggingUpdated and draggingExited even if NSDragOperationNone is returned by this method.

### 33.9.17 draggingExited(sender as NSDraggingInfoMBS)


**Function:** Invoked when the dragged image exits the destination’s bounds rectangle (in the case of a view
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object) or its frame rectangle (in the case of a window object).

Notes: sender: The object sending the message; use it to get details about the dragging operation.

33.9.18 draggingSessionEndedAtPoint(session as NSDraggingSessionMBS, screenPoint as NSPointMBS, operation as Integer)


Function: Invoked when the dragging session has completed.

Notes:

session: The dragging session.
screenPoint: The point where the drag ended, in screen coordinates.
operation: The drag operation. See constants for drag operation types.

Available in OS X v10.7 and later.

33.9.19 draggingSessionMovedToPoint(session as NSDraggingSessionMBS, screenPoint as NSPointMBS)


Function: Invoked when the drag moves on the screen.

Notes:

session: The dragging session.
screenPoint: The point where the drag moved to, in screen coordinates.

Available in OS X v10.7 and later.

33.9.20 draggingSessionSourceOperationMaskForDraggingContext(session as NSDraggingSessionMBS, context as Integer) as Integer


Function: Declares the types of operations the source allows to be performed. (required)

Notes:

session: The dragging session.
context: The dragging context. See NSDraggingContext constants for the supported values.

Return the appropriate dragging operation as defined in constants.
In the future Apple may provide more specific "within" values in the future. To account for this, for unrecognized localities, return the operation mask for the most specific context that you are concerned with.

### 33.9.21 draggingSessionWillBeginAtPoint(session as NSDraggingSessionMBS, screenPoint as NSPointMBS)

**Function:** Invoked when the drag will begin.  
**Notes:**

- **session:** The dragging session.  
- **screenPoint:** The point where the drag will begin, in screen coordinates.

Available in OS X v10.7 and later.

### 33.9.22 draggingSourceOperationMaskForLocal(flag as boolean) as Integer

**Function:** Returns an integer bit mask indicating the types of dragging operations the source object will allow to be performed on the dragged image’s data.  
**Notes:**

(Deprecated in OS X v10.7. This method is informally deprecated. It is only called if the source does not implement the NSDraggingSource protocol methods. This method will be formally deprecated in a future OS release.)

- **isLocal:** True indicates that the candidate destination object (the window or view over which the dragged image is currently poised) is in the same application as the source, while a false value indicates that the destination object is in a different application.

A mask, created by combining the dragging operations listed in the NSDragOperation section of NSDraggingInfo protocol reference using the C bitwise OR operator. If the source does not permit any dragging operations, it should return NSDragOperationNone.

If not implemented, the default value is NSDragOperationCopy | NSDragOperationLink | NSDragOperationGeneric | NSDragOperationPrivate.

Available in OS X v10.0 and later. Deprecated in OS X v10.7.
33.9.23 draggingUpdated(sender as NSDraggingInfoMBS) as Integer


**Function:** Invoked periodically as the image is held within the destination area, allowing modification of the dragging operation or mouse-pointer position.

**Notes:**

sender: The object sending the message; use it to get details about the dragging operation.

Return one (and only one) of the dragging operation constants described in NSDragOperation in the NS-DraggingInfo reference. The default return value (if this method is not implemented by the destination) is the value returned by the previous draggingEntered message.

For this to be invoked, the destination must have registered for the pasteboard data type involved in the drag operation. The messages continue until the image is either released or dragged out of the window or view.

This method provides the destination with an opportunity to modify the dragging operation depending on the position of the mouse pointer inside of the destination view or window object. For example, you may have several graphics or areas of text contained within the same view and wish to tailor the dragging operation, or to ignore the drag event completely, depending upon which object is underneath the mouse pointer at the time when the user releases the dragged image and the performDragOperation method is invoked.

You typically examine the contents of the pasteboard in the draggingEntered method, where this examination is performed only once, rather than in the draggingUpdated method, which is invoked multiple times.

Only one destination at a time receives a sequence of draggingUpdated messages. If the mouse pointer is within the bounds of two overlapping views that are both valid destinations, the uppermost view receives these messages until the image is either released or dragged out.

33.9.24 endGestureWithEvent(e as NSEventMBS) as boolean


**Function:** Informs the receiver that the user has ended a touch gesture.

**Notes:**

e: An event object representing the gesture end.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.
33.9.25  ignoreModifierKeysForDraggingSession(session as NSDraggingSession-MBS) as boolean

**Function:** Returns whether the modifier keys will be ignored for this dragging session.
**Notes:**
session: The dragging session.

Return true if the modifier keys will be ignored, false otherwise.
Available in OS X v10.7 and later.

33.9.26  isOpaque as boolean

**Function:** Whether this view is opaque.

33.9.27  keyDown(e as NSEventMBS) as boolean

**Function:** One of the key events.
**Notes:**
Return true if you handled this event.
Please return true in becomeFirstResponder and acceptsFirstResponder, so your nsview can become first responder and receive key events.

33.9.28  keyUp(e as NSEventMBS) as boolean

**Function:** One of the key events.
**Notes:**
Return true if you handled this event.
Please return true in becomeFirstResponder and acceptsFirstResponder, so your nsview can become first responder and receive key events.
33.9.29 magnifyWithEvent(e as NSEventMBS) as boolean

Function: Informs the receiver that the user has begun a pinch gesture.
Notes:
e: An event object representing the magnify gesture.
The event will be sent to the view under the touch in the key window.
available in Mac OS X v10.6 and later.
Return true if you handled this event.

33.9.30 menuForEvent(e as NSEventMBS, defaultMenu as NSMenuMBS) as NSMenuMBS

Function: Overridden by subclasses to return a context-sensitive pop-up menu for a given mouse-down event.
Notes:
theEvent: An object representing a mouse-down event.
defaultMenu: The menu as constructed by super class.
The receiver can use information in the mouse event, such as its location over a particular element of the receiver, to determine what kind of menu to return. For example, a text object might display a text-editing menu when the cursor lies over text and a menu for changing graphics attributes when the cursor lies over an embedded image.
The default implementation returns the default menu.

33.9.31 mouseDown(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes: Return true if you handled this event.

33.9.32 mouseDownCanMoveWindow as boolean

Function: This event is called so you can decide what happens with mouse down.
Notes:
Return true if you do not need to handle a mouse down and it can pass through to superviews; False if you need to handle the mouse down.

This allows iApp-type applications to determine the region by which a window can be moved. By default, this method returns false if the view is opaque; otherwise, it returns true. Subclasses can override this method to return a different value.

### 33.9.33 mouseDragged(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes: Return true if you handled this event.

### 33.9.34 mouseEntered(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes: Return true if you handled this event.

### 33.9.35 mouseExited(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes: Return true if you handled this event.

### 33.9.36 mouseMoved(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes: Return true if you handled this event.

### 33.9.37 mouseUp(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes: Return true if you handled this event.
33.9.38 Open

**Function:** The event called when the custom NSView is created.

33.9.39 otherMouseDown(e as NSEventMBS, x as Double, y as Double) as boolean

**Function:** One of the mouse events.
**Notes:**
Return true if you handled this event.
Third mouse button.

33.9.40 otherMouseDragged(e as NSEventMBS, x as Double, y as Double) as boolean

**Function:** One of the mouse events.
**Notes:**
Return true if you handled this event.
Third mouse button.

33.9.41 otherMouseUp(e as NSEventMBS, x as Double, y as Double) as boolean

**Function:** One of the mouse events.
**Notes:**
Return true if you handled this event.
Third mouse button.

33.9.42 performDragOperation(sender as NSDraggingInfoMBS) as boolean

**Function:** Invoked after the released image has been removed from the screen, signaling the receiver to import the pasteboard data.
**Notes:**
sender: The object sending the message; use it to get details about the dragging operation.

Return if the destination accepts the data, it returns true; otherwise it returns false. The default is to return false.

For this method to be invoked, the previous prepareForDragOperation message must have returned true. The destination should implement this method to do the real work of importing the pasteboard data represented by the image.

If the sender object’s animatesToDestination was set to true in prepareForDragOperation, then setup any animation to arrange space for the drag items to animate to. Also at this time, enumerate through the dragging items to set their destination frames and destination images.

33.9.43 prepareForDragOperation(sender as NSDraggingInfoMBS) as boolean

Function: Invoked when the image is released, allowing the receiver to agree to or refuse drag operation.
Notes:
sender: The object sending the message; use it to get details about the dragging operation.
Returns true if the receiver agrees to perform the drag operation and false if not.
This method is invoked only if the most recent draggingEntered or draggingUpdated message returned an acceptable drag-operation value.
If you want the drag items to animate from their current location on screen to their final location in your view, set the sender object’s animatesToDestination property to true in your implementation of this method.

33.9.44 pressureChange(e as NSEventMBS) as boolean

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes.
Function: Informs the current object that a pressure change occurred on a system that supports pressure sensitivity.
Notes:
This method is invoked automatically in response to user actions. event is the event that initiated the change in pressure.
Available in OS X v10.10.3 and later.

33.9.45 resignFirstResponder as boolean

Function: Focus is going away.
Notes: Return true to accept.

33.9.46  rightMouseDown(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes: Return true if you handled this event.

33.9.47  rightMouseDragged(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes: Return true if you handled this event.

33.9.48  rightMouseUp(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes: Return true if you handled this event.

33.9.49  rotateWithEvent(e as NSEventMBS) as boolean

Function: Informs the receiver that the user has begun a rotation gesture.
Notes:
e: An event object representing the rotate gesture.
The event will be sent to the view under the touch in the key window.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.

33.9.50  scrollWheel(e as NSEventMBS) as boolean

Function: Informs the subclass that the mouse’s scroll wheel has moved.
Notes:
e: An object encapsulating information about the wheel-scrolling event.

The default implementation simply passes this message to the next responder. Return true to not pass the event.

### 33.9.51 swipeWithEvent(e as NSEventMBS) as boolean


**Function:** Informs the receiver that the user has begun a swipe gesture.

**Notes:**

e: An event object representing the receiver that the user has begun a swipe gesture.
The event will be sent to the view under the touch in the key window.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.

### 33.9.52 updateDraggingItemsForDrag(sender as NSDraggingInfoMBS)


**Function:** Invoked when the dragging images should be changed.

**Notes:**

sender: The object sending the message; use this object to get details about the dragging operation.

While a destination may change the dragging images at any time, it is recommended to wait until this
method is called before updating the dragging images.

This allows the system to delay changing the dragging images until it is likely that the user will drop on
this destination. Otherwise, the dragging images will change too often during the drag which would be
distracting to the user.

### 33.9.53 viewDidMoveToWindow


**Function:** Informs the receiver that it has been added to a new view hierarchy.

**Notes:**

The default implementation does nothing; subclasses can implement this event to perform whatever actions
are necessary.
window may return nil when this method is invoked, indicating that the receiver does not currently reside in any window. This occurs when the receiver has just been removed from its superview or when the receiver has just been added to a superview that does not itself have a window. Overrides of this method may choose to ignore such cases if they are not of interest.

33.9.54  wantsPeriodicDraggingUpdates as boolean

Function: Asks the destination object whether it wants to receive periodic draggingUpdated messages.
Notes:
Return true if the destination wants to receive periodic draggingUpdated messages, false otherwise.

If the destination returns false, these messages are sent only when the mouse moves or a modifier flag changes. Otherwise the destination gets the default behavior, where it receives periodic dragging-updated messages even if nothing changes.
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33.10  class CustomNSViewMBS

33.10.1  class CustomNSViewMBS

Function: The class for a custom NSView.
Notes: Subclass of the NSViewMBS class.

33.10.2  Methods

33.10.3  Constructor

Function: The dummy constructor doing nothing.
See also:

- 33.10.4 Constructor(Handle as Integer) 6319
- 33.10.5 Constructor(left as Double, top as Double, width as Double, height as Double) 6319

33.10.4  Constructor(Handle as Integer)

Function: Creates an object based on the given CustomNSView handle.
Notes: The handle is casted to a CustomNSView and the plugin retains this handle.
See also:

- 33.10.3 Constructor 6319
- 33.10.5 Constructor(left as Double, top as Double, width as Double, height as Double) 6319

33.10.5  Constructor(left as Double, top as Double, width as Double, height as Double)

Function: The constructor for a new custom NSView object.
See also:

- 33.10.3 Constructor 6319
- 33.10.4 Constructor(Handle as Integer) 6319
33.10.6 Destructor

Function: The destructor.

33.10.7 Events

33.10.8 acceptsFirstMouse(e as NSEventMBS) as boolean

Function: Overridden by subclasses to return true if the receiver should be sent a mouseDown event for an  
initial mouse-down event, false if not.  
Notes:  
The receiver can either return a value unconditionally or use the location of event e to determine whether  
or not it wants the event. The default implementation ignores the event and returns false.  
Implement this event in a subclass to allow instances to respond to click-through. This allows the user to  
click on a view in an inactive window, activating the view with one click, instead of clicking first to make the  
window active and then clicking the view. Most view objects refuse a click-through attempt, so the event  
simply activates the window. Many control objects, however, such as instances of NSButton and NSSlider, do  
accept them, so the user can immediately manipulate the control without having to release the mouse button.

33.10.9 acceptsFirstResponder as boolean

Function: Whether to accept first responder.  
Notes: Return true if your control can have the focus and false if not.

33.10.10 becomeFirstResponder as boolean

Function: Called when the object gets focus.  
Notes: Return true to accept.

33.10.11 beginGestureWithEvent(e as NSEventMBS) as boolean

Function: Informs the receiver that the user has begun a touch gesture.
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**Notes:**

e: An event object representing the gesture beginning.  
The event will be sent to the view under the touch in the key window.  
Available in Mac OS X v10.6 and later.  
Return true if you handled this event.

### 33.10.12 `canBecomeKeyView as boolean`

**Function:** Returns whether the receiver can become key view.  
**Notes:** Returns true if the receiver can become key view, false otherwise.

### 33.10.13 `Close`

**Function:** The event called when the custom view is destroyed.

### 33.10.14 `concludeDragOperation(sender as NSDraggingInfoMBS)`

**Function:** Invoked when the dragging operation is complete, signaling the receiver to perform any necessary clean-up.  
**Notes:**

sender: The object sending the message; use it to get details about the dragging operation.

For this method to be invoked, the previous `performDragOperation` must have returned true.

The destination implements this method to perform any tidying up that it needs to do, such as updating its visual representation now that it has incorporated the dragged data. This message is the last message sent from sender to the destination during a dragging session.

If the sender object’s `animatesToDestination` property was set to true in `prepareForDragOperation`, then the drag image is still visible. At this point you should draw the final visual representation in the view. When this method returns, the drag image is removed from the screen. If your final visual representation matches the visual representation in the drag, this is a seamless transition.
33.10.15  **draggingEnded(sender as NSDraggingInfoMBS)**

**Function:** Implement this event to be notified when a drag operation ends in some other destination.
**Notes:**

sender: The object sending the message; use it to get details about the dragging operation.

This method might be used by a destination doing auto-expansion in order to collapse any auto-expands.

33.10.16  **draggingEntered(sender as NSDraggingInfoMBS) as Integer**

**Function:** Invoked when the dragged image enters destination bounds or frame; delegate returns dragging operation to perform.
**Notes:**

sender: The object sending the message; use it to get details about the dragging operation.

Return one (and only one) of the dragging operation constants described in NSDragOperation in the NS-DraggingInfo reference. The default return value (if this method is not implemented by the destination) is the value returned by the previous draggingEntered message.

Invoked when a dragged image enters the destination but only if the destination has registered for the pasteboard data type involved in the drag operation. Specifically, this method is invoked when the mouse pointer enters the destination’s bounds rectangle (if it is a view object) or its frame rectangle (if it is a window object).

This method must return a value that indicates which dragging operation the destination will perform when the image is released. In deciding which dragging operation to return, the method should evaluate the overlap between both the dragging operations allowed by the source (obtained from sender with the draggingSourceOperationMask method) and the dragging operations and pasteboard data types the destination itself supports.

If none of the operations is appropriate, this method should return NSDragOperationNone (this is the default response if the method is not implemented by the destination). A destination will still receive draggingUpdated and draggingExited even if NSDragOperationNone is returned by this method.

33.10.17  **draggingExited(sender as NSDraggingInfoMBS)**

**Function:** Invoked when the dragged image exits the destination’s bounds rectangle (in the case of a view
object) or its frame rectangle (in the case of a window object).

Notes: sender: The object sending the message; use it to get details about the dragging operation.

### 33.10.18 draggingSessionEndedAtPoint

`draggingSessionEndedAtPoint(session as NSDraggingSessionMBS, screenPoint as NSPointMBS, operation as Integer)`


**Function:** Invoked when the dragging session has completed.

**Notes:**

- session: The dragging session.
- screenPoint: The point where the drag ended, in screen coordinates.
- operation: The drag operation. See constants for drag operation types.

Available in OS X v10.7 and later.

### 33.10.19 draggingSessionMovedToPoint

`draggingSessionMovedToPoint(session as NSDraggingSessionMBS, screenPoint as NSPointMBS)`


**Function:** Invoked when the drag moves on the screen.

**Notes:**

- session: The dragging session.
- screenPoint: The point where the drag moved to, in screen coordinates.

Available in OS X v10.7 and later.

### 33.10.20 draggingSessionSourceOperationMaskForDraggingContext

`draggingSessionSourceOperationMaskForDraggingContext(session as NSDraggingSessionMBS, context as Integer) as Integer`


**Function:** Declares the types of operations the source allows to be performed. (required)

**Notes:**

- session: The dragging session.
- context: The dragging context. See NSDraggingContext constants for the supported values.

Return the appropriate dragging operation as defined in constants.
In the future Apple may provide more specific "within" values in the future. To account for this, for unrecognized localities, return the operation mask for the most specific context that you are concerned with.

### 33.10.21 `draggingSessionWillBeginAtPoint(session as NSDraggingSessionMBS, screenPoint as NSPointMBS)`

**Function:** Invoked when the drag will begin.  
**Notes:**  
- `session`: The dragging session.  
- `screenPoint`: The point where the drag will begin, in screen coordinates.

Available in OS X v10.7 and later.

### 33.10.22 `draggingSourceOperationMaskForLocal(flag as boolean) as Integer`

**Function:** Returns an integer bit mask indicating the types of dragging operations the source object will allow to be performed on the dragged image’s data.  
**Notes:**  
- `(Deprecated in OS X v10.7. This method is informally deprecated. It is only called if the source does not implement the NSDraggingSource protocol methods. This method will be formally deprecated in a future OS release.)`
  
isLocal: True indicates that the candidate destination object (the window or view over which the dragged image is currently poised) is in the same application as the source, while a false value indicates that the destination object is in a different application.

A mask, created by combining the dragging operations listed in the NSDragOperation section of NSDraggingInfo protocol reference using the C bitwise OR operator. If the source does not permit any dragging operations, it should return NSDragOperationNone.

If not implemented, the default value is NSDragOperationCopy | NSDragOperationLink | NSDragOperationGeneric | NSDragOperationPrivate.

Available in OS X v10.0 and later. Deprecated in OS X v10.7.
33.10.23 draggingUpdated(sender as NSDraggingInfoMBS) as Integer


**Function:** Invoked periodically as the image is held within the destination area, allowing modification of the dragging operation or mouse-pointer position.

**Notes:**

sender: The object sending the message; use it to get details about the dragging operation.

Return one (and only one) of the dragging operation constants described in NSDragOperation in the NSDraggingInfo reference. The default return value (if this method is not implemented by the destination) is the value returned by the previous draggingEntered message.

For this to be invoked, the destination must have registered for the pasteboard data type involved in the drag operation. The messages continue until the image is either released or dragged out of the window or view.

This method provides the destination with an opportunity to modify the dragging operation depending on the position of the mouse pointer inside of the destination view or window object. For example, you may have several graphics or areas of text contained within the same view and wish to tailor the dragging operation, or to ignore the drag event completely, depending upon which object is underneath the mouse pointer at the time when the user releases the dragged image and the performDragOperation method is invoked.

You typically examine the contents of the pasteboard in the draggingEntered method, where this examination is performed only once, rather than in the draggingUpdated method, which is invoked multiple times.

Only one destination at a time receives a sequence of draggingUpdated messages. If the mouse pointer is within the bounds of two overlapping views that are both valid destinations, the uppermost view receives these messages until the image is either released or dragged out.

33.10.24 drawFocusRingMask(g as NSGraphicsMBS) as boolean


**Function:** Draw the focus ring mask for the view.

**Notes:**

If false is returned, the default method from NSView class runs.

This method provides the shape of the focus ring mask by drawing the focus ring mask. An implementation of this method should draw in the view’s interior (bounds) coordinate space, that the focus ring style has been set (it will be set it to NSFocusRingOnly to capture the focus ring itself), and that the fill and stroke colors have been set to an arbitrary fully opaque color.
Subclasses that find the default behavior insufficient should only draw the focus ring shape.

The NSView default implementation of this method simply fills self.bounds. Available in Mac OS X v10.7 and later.

Please use NSGraphicsMBS class for drawing.

33.10.25 DrawRect(g as NSGraphicsMBS, left as Double, top as Double, width as Double, height as Double)

MBS MacControls Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The paint event with the rectangle which needs to be redrawn.

33.10.26 endGestureWithEvent(e as NSEventMBS) as boolean

MBS MacControls Plugin, Plugin Version: 10.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Informs the receiver that the user has ended a touch gesture. Notes: e: An event object representing the gesture end. Available in Mac OS X v10.6 and later. Return true if you handled this event.

33.10.27 focusRingMaskBounds as NSRectMBS

MBS MacControls Plugin, Plugin Version: 12.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Returns the focus ring mask bounds. Notes: Return nil to run default NSView method. Return a rectangle containing the mask in the view’s interior (bounds) coordinate space. The mask bounds allows the focus ring’s overall size and position to be determined before it is drawn. Subclasses must override this method if they require the display of a focus ring. The NSView default implementation of this method simply returns NSRectMBS.Zero. Note: The information provided by focusRingMaskBounds will enable Accessibility to identify selected subelements for zoom tracking, so it is important that this method provide a reasonably tight bounding box.
and that noteFocusRingMaskChanged is invoked as described.

33.10.28  **ignoreModifierKeysForDraggingSession**(session as NSDraggingSession-MBS) as boolean

**Function:** Returns whether the modifier keys will be ignored for this dragging session.  
**Notes:**  
session: The dragging session.

Return true if the modifier keys will be ignored, false otherwise.  
Available in OS X v10.7 and later.

33.10.29  **isFlipped** as Boolean

**Function:** The event to return a boolean value indicating whether the view uses a flipped coordinate system.  
**Notes:**  
The default value of this property is false, which results in a non-flipped coordinate system. In a non-flipped coordinate system, the origin is in the lower-left corner of the view and positive y-values extend upward. In a flipped coordinate system, the origin is in the upper-left corner of the view and y-values extend downward. X-values always extend to the right.

If you want your view to use a flipped coordinate system, override this property and return true.

33.10.30  **isOpaque** as boolean

**Function:** Whether this view is opaque.

33.10.31  **keyDown**(e as NSEventMBS) as boolean

**Function:** One of the key events.  
**Notes:**
Return true if you handled this event.
Please return true in becomeFirstResponder and acceptsFirstResponder, so your nsview can become first responder and receive key events.

33.10.32 keyUp(e as NSEventMBS) as boolean

Function: One of the key events.
Notes:
Return true if you handled this event.
Please return true in becomeFirstResponder and acceptsFirstResponder, so your nsview can become first responder and receive key events.

33.10.33 magnifyWithEvent(e as NSEventMBS) as boolean

Function: Informs the receiver that the user has begun a pinch gesture.
Notes:
e: An event object representing the magnify gesture.
The event will be sent to the view under the touch in the key window.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.

33.10.34 menuForEvent(e as NSEventMBS, defaultMenu as NSMenuMBS) as NSMenuMBS

Function: Overridden by subclasses to return a context-sensitive pop-up menu for a given mouse-down event.
Notes:
theEvent: An object representing a mouse-down event.
defaultMenu: The menu as constructed by super class.
The receiver can use information in the mouse event, such as its location over a particular element of the receiver, to determine what kind of menu to return. For example, a text object might display a text-editing menu when the cursor lies over text and a menu for changing graphics attributes when the cursor lies over an embedded image.
The default implementation returns the default menu.

### 33.10.35 mouseDown(e as NSEventMBS, x as Double, y as Double) as boolean

MBS MacControls Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the mouse events. **Notes:** Return true if you handled this event.

### 33.10.36 mouseDownCanMoveWindow as boolean

MBS MacControls Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** This event is called so you can decide what happens with mouse down. **Notes:** Return true if you do not need to handle a mouse down and it can pass through to superviews; False if you need to handle the mouse down.

This allows iApp-type applications to determine the region by which a window can be moved. By default, this method returns false if the view is opaque; otherwise, it returns true. Subclasses can override this method to return a different value.

### 33.10.37 mouseDragged(e as NSEventMBS, x as Double, y as Double) as boolean

MBS MacControls Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the mouse events. **Notes:** Return true if you handled this event.

### 33.10.38 mouseEntered(e as NSEventMBS, x as Double, y as Double) as boolean

MBS MacControls Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the mouse events. **Notes:** Return true if you handled this event.

### 33.10.39 mouseExited(e as NSEventMBS, x as Double, y as Double) as boolean

MBS MacControls Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the mouse events.
CHAPTER 33. COCOA CONTROLS

Notes: Return true if you handled this event.

33.10.40 mouseMoved(e as NSEventMBS, x as Double, y as Double) as boolean

MBS MacControls Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the mouse events.
**Notes:** Return true if you handled this event.

33.10.41 mouseUp(e as NSEventMBS, x as Double, y as Double) as boolean

MBS MacControls Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the mouse events.
**Notes:** Return true if you handled this event.

33.10.42 Open

MBS MacControls Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event called when the custom NSView is created.

33.10.43 otherMouseDown(e as NSEventMBS, x as Double, y as Double) as boolean

MBS MacControls Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the mouse events.
**Notes:**
Return true if you handled this event.
Third mouse button.

33.10.44 otherMouseDragged(e as NSEventMBS, x as Double, y as Double) as boolean

MBS MacControls Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the mouse events.
**Notes:**
Return true if you handled this event.
Third mouse button.
33.10.45  otherMouseDown(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes:
Return true if you handled this event.
Third mouse button.

33.10.46  performDragOperation(sender as NSDraggingInfoMBS) as boolean

Function: Invoked after the released image has been removed from the screen, signaling the receiver to import the pasteboard data.
Notes:
sender: The object sending the message; use it to get details about the dragging operation.
Return if the destination accepts the data, it returns true; otherwise it returns false. The default is to return false.
For this method to be invoked, the previous prepareForDragOperation message must have returned true. The destination should implement this method to do the real work of importing the pasteboard data represented by the image.
If the sender object’s animatesToDestination was set to true in prepareForDragOperation, then setup any animation to arrange space for the drag items to animate to. Also at this time, enumerate through the dragging items to set their destination frames and destination images.

33.10.47  prepareForDragOperation(sender as NSDraggingInfoMBS) as boolean

Function: Invoked when the image is released, allowing the receiver to agree to or refuse drag operation.
Notes:
sender: The object sending the message; use it to get details about the dragging operation.
Returns true if the receiver agrees to perform the drag operation and false if not.
This method is invoked only if the most recent draggingEntered or draggingUpdated message returned an acceptable drag-operation value.
If you want the drag items to animate from their current location on screen to their final location in your
view, set the sender object’s animatesToDestination property to true in your implementation of this method.

### 33.10.48 pressureChange(e as NSEventMBS) as boolean

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Informs the current object that a pressure change occurred on a system that supports pressure sensitivity. **Notes:** This method is invoked automatically in response to user actions. event is the event that initiated the change in pressure. Available in OS X v10.10.3 and later.

### 33.10.49 resignFirstResponder as boolean

MBS MacControls Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Focus is going away. **Notes:** Return true to accept.

### 33.10.50 rightMouseDown(e as NSEventMBS, x as Double, y as Double) as boolean

MBS MacControls Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the mouse events. **Notes:** Return true if you handled this event.

### 33.10.51 rightMouseDragged(e as NSEventMBS, x as Double, y as Double) as boolean

MBS MacControls Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the mouse events. **Notes:** Return true if you handled this event.

### 33.10.52 rightMouseUp(e as NSEventMBS, x as Double, y as Double) as boolean

MBS MacControls Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the mouse events.
33.10.53  rotateWithEvent(e as NSEventMBS) as boolean

Function: Informs the receiver that the user has begun a rotation gesture.
Notes:
e: An event object representing the rotate gesture.
The event will be sent to the view under the touch in the key window.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.

33.10.54  scrollWheel(e as NSEventMBS) as boolean

Function: Informs the subclass that the mouse’s scroll wheel has moved.
Notes:
e: An object encapsulating information about the wheel-scrolling event.
The default implementation simply passes this message to the next responder.
Return true to not pass the event.

33.10.55  swipeWithEvent(e as NSEventMBS) as boolean

Function: Informs the receiver that the user has begun a swipe gesture.
Notes:
e: An event object representing the swipe gesture.
The event will be sent to the view under the touch in the key window.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.

33.10.56  updateDraggingItemsForDrag(sender as NSDraggingInfoMBS)

Function: Invoked when the dragging images should be changed.
Notes:
sender: The object sending the message; use this object to get details about the dragging operation.

While a destination may change the dragging images at any time, it is recommended to wait until this method is called before updating the dragging images.

This allows the system to delay changing the dragging images until it is likely that the user will drop on this destination. Otherwise, the dragging images will change too often during the drag which would be distracting to the user.

33.10.57 viewDidMoveToWindow

Function: Informs the receiver that it has been added to a new view hierarchy.
Notes: The default implementation does nothing; subclasses can implement this event to perform whatever actions are necessary.

window may return nil when this method is invoked, indicating that the receiver does not currently reside in any window. This occurs when the receiver has just been removed from its superview or when the receiver has just been added to a superview that does not itself have a window. Overrides of this method may choose to ignore such cases if they are not of interest.

33.10.58 wantsPeriodicDraggingUpdates as boolean

Function: Asks the destination object whether it wants to receive periodic draggingUpdated messages.
Notes: Return true if the destination wants to receive periodic draggingUpdated messages, false otherwise.

If the destination returns false, these messages are sent only when the mouse moves or a modifier flag changes. Otherwise the destination gets the default behavior, where it receives periodic dragging-updated messages even if nothing changes.
33.11. CLASS DISCLOSURETRIANGLE

33.11 class DisclosureTriangle

33.11.1 class DisclosureTriangle

Plugin Version: 9.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The built in DisclosureTriangle class in REALbasic.

33.11.2 Methods

33.11.3 NSButtonMBS as NSButtonMBS

MBS MacControls Plugin, Plugin Version: 9.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a NSButtonMBS object for the given control. **Example:**

MsgBox DisclosureTriangle1.NSButtonMBS.className

**Notes:** This way you can manipulate Cocoa controls directly.
33.12 class Groupbox

33.12.1 class Groupbox

Plugin Version: 10.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The built in Groupbox class in REALbasic.

33.12.2 Methods

33.12.3 NSBoxMBS as NSBoxMBS

MBS MacControls Plugin, Plugin Version: 10.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a NSBoxMBS object for the given control. **Notes:** This way you can manipulate Cocoa controls directly.
33.13.1 class ImageWell

Plugin Version: 10.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The built in ImageWell class in REALbasic.

33.13.2 Methods

33.13.3 NSImageViewMBS as NSImageViewMBS

MBS MacControls Plugin, Plugin Version: 10.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a NSImageViewMBS object for the given control. **Notes:** This way you can manipulate Cocoa controls directly.
33.14 class KeyValueCodingMBS

33.14.1 class KeyValueCodingMBS

Function: The class for key value coding and using NSSortDescriptor class.
Notes: Events are only raised if called on main thread to avoid threading trouble.

33.14.2 Methods

33.14.3 Constructor

Function: The constructor.

33.14.4 sortedArrayUsingDescriptor(values() as KeyValueCodingMBS, sortDescriptor as NSSortDescriptorMBS) as KeyValueCodingMBS()

Function: Returns a copy of the receiving array sorted as specified by a given a sort descriptor.
Notes:
sortDescriptor: The NSSortDescriptor objects.

Returns a copy of the receiving array sorted as specified by sortDescriptor.

33.14.5 sortedArrayUsingDescriptors(values() as KeyValueCodingMBS, sortDescriptor() as NSSortDescriptorMBS) as KeyValueCodingMBS()

Function: Returns a copy of the receiving array sorted as specified by a given array of sort descriptors.
Notes:
sortDescriptors: An array of NSSortDescriptor objects.

Returns a copy of the receiving array sorted as specified by sortDescriptors.

The first descriptor specifies the primary key path to be used in sorting the receiving arrays contents. Any subsequent descriptors are used to further refine sorting of objects with duplicate values. See NSSortDe-
33.14.6 Properties

33.14.7 Description as String

**Function:** The description text property.
**Notes:** (Read only property)
See also:
- 33.14.12 Description as String

33.14.8 Handle as Integer

**Function:** The internal object handle.
**Notes:** (Read and Write property)

33.14.9 Tag as Variant

**Function:** The tag value.
**Notes:**
Store anything you need, e.g. a dictionary.
(Read and Write property)

33.14.10 valueForKey(key as String) as Variant

**Function:** Get/set the value for the property identified by a given key.
**Notes:**
key: The name of one of the receiver’s properties.
(Read and Write computed property)
See also:
- 33.14.15 valueForKey(key as string) as Variant
33.14.11 Events

33.14.12 Description as String

Function: The event when system queries description for object.
See also:

- 33.14.7 Description as String

33.14.13 setValueForKey(key as string, value as Variant)

Function: Sets the property of the receiver specified by a given key to a given value.
Notes:

value: The value for the property identified by key.
key: The name of one of the receiver’s properties.

If key identifies a to-one relationship, relate the object specified by value to the receiver, unrelating the previously related object if there was one. Given a collection object and a key that identifies a to-many relationship, relate the objects contained in the collection to the receiver, unrelating previously related objects if there were any.
The search pattern that setValueForKey uses is described in Accessor Search Patterns in Key-Value Coding Programming Guide.
In a reference-counted environment, if the instance variable is accessed directly, value is retained.

33.14.14 setValueForUndefinedKey(key as string, value as Variant)

Function: Invoked by setValueForKey when it finds no property for a given key.
Notes:

value: The value for the key identified by key.
key: A string that is not equal to the name of any of the receiver’s properties.

Subclasses can override this method to handle the request in some other way. The default implementation raises an NSUndefinedKeyException.
33.14. CLASS KEYVALUECODINGMBS

33.14.15 valueForKey(key as string) as Variant

**Function:** Return the value for the property identified by a given key.
**Notes:**
key: The name of one of the receiver’s properties.

Returns the value for the property identified by key.

If `event` is not implemented, the search pattern that `valueForKey` uses to find the correct value to return is described in Accessor Search Patterns in Key-Value Coding Programming Guide.
See also:

- 33.14.10 `valueForKey(key as String) as Variant`

33.14.16 valueForUndefinedKey(key as string) as Variant

**Function:** Invoked by `valueForKey` when it finds no property corresponding to a given key.
**Notes:**
key: A string that is not equal to the name of any of the receiver’s properties.

Subclasses can override this method to return an alternate value for undefined keys. The default implementation raises an `NSUndefinedKeyException`. 
33.15 class NSActionCellMBS

33.15.1 class NSActionCellMBS

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: An NSActionCell defines an active area inside a control (an instance of NSControl or one of its subclasses).

Notes:
As an NSControl’s active area, an NSActionCell does three things: it usually performs display of text or an icon; it provides the NSControl with a target and an action; and it handles mouse (cursor) tracking by properly highlighting its area and sending action messages to its target based on cursor movement.

Subclass of the NSCellMBS class.

33.15.2 Methods

33.15.3 Constructor(image as NSImageMBS)


Example:

dim pic as Picture = LogoMBS(500)
dim n as NSImageMBS = new NSImageMBS(pic)
dim c as new NSActionCellMBS(n)

Backdrop = c.image.CopyPictureWithMask
Title = c.classPath

See also:

• 33.15.4 Constructor(text as string)

33.15.4 Constructor(text as string)


Example:

dim c as new NSActionCellMBS("Hello")
MsgBox c.StringValue
33.15. CLASS NSACTIONCELLMBS

See also:

- 33.15.3 Constructor(image as NSImageMBS)
33.16  class NSBoxMBS

33.16.1  class NSBoxMBS

Function: The NSBox class implements simple views that can title themselves and draw a border around
their content.
Notes:
These objects are known as boxes. You can use box to group, visually, some number of other views.

You can embed this view in a CustomNSViewMBS to get more events for mouse and keyboard.
Subclass of the NSViewMBS class.

33.16.2  Methods

33.16.3  borderRect as NSRectMBS

Function: Returns the rectangle in which the receiver’s border is drawn.
Notes: The rectangle in which the border of the NSBox is drawn.

33.16.4  Constructor

Function: Creates a new box view with size 100/100 and position 0/0
Example:

```dim x as new NSBoxMBS```

Notes: On success the handle property is not zero.
See also:

- 33.16.5 Constructor(Handle as Integer) 6344
- 33.16.6 Constructor(left as Double, top as Double, width as Double, height as Double) 6345

33.16.5  Constructor(Handle as Integer)

Function: Creates an object based on the given NSView handle.
33.16. CLASS NSBOXMBS

Example:

dim t as new NSBoxMBS(0, 0, 100, 100)
dim v as new NSBoxMBS(t.handle)

MsgBox str(v.Bounds.Width)+" x "+str(v.Bounds.Height)

Notes: The handle is casted to a NSBox and the plugin retains this handle.
See also:

• 33.16.4 Constructor

• 33.16.6 Constructor(left as Double, top as Double, width as Double, height as Double)

33.16.6 Constructor(left as Double, top as Double, width as Double, height as Double)

Function: Creates a new control with the given size and position.
Example:

dim left,top,width,height as Integer
// define rectangle
dim x as new NSBoxMBS(left, top, width, height)

Notes: On success the handle property is not zero.
See also:

• 33.16.4 Constructor

• 33.16.5 Constructor(Handle as Integer)

33.16.7 setFrameFromContentFrame(contentFrame as NSRectMBS)

Function: Places the receiver so its content view lies on the specified frame.
Notes: contentFrame: The rectangle specifying the frame of the box’s content view, reckoned in the coordinate system of the box’s superview. The box is marked for redisplay.
33.16.8 **setTitleWithMnemonic**(stringWithAmpersand as string)


**Function:** Sets the title of the receiver with a character denoted as an access key.

**Notes:**

Mnemonics are not supported in Mac OS X.

By default, a box’s title is "Title." The content view is not automatically resized, and the box is not marked for redisplay.

33.16.9 **sizeToFit**


**Function:** Resizes and moves the receiver’s content view so it just encloses its subviews.

**Example:**

```lisp
DIM n AS NEW NSProgressIndicatorMBS
n.sizeToFit

MsgBox n.frame.String
```

**Notes:**

The receiver is then moved and resized to wrap around the content view. The receiver’s width is constrained so its title will be fully displayed.

You should invoke this method after:

- Adding a subview (to the content view)
- Altering the size or location of such a subview
- Setting the margins around the content view

The mechanism by which the content view is moved and resized depends on whether the object responds to its own sizeToFit message: If it does respond, then that message is sent, and the content view is expected to be so modified. If the content view doesn’t respond, the box moves and resizes the content view itself.
33.16. **CLASS NSBOXMBS**

### 33.16.10 titleCell as NSCellMBS

**Function:** Returns the cell used to display the receiver's title.

### 33.16.11 titleRect as NSRectMBS

**Function:** Returns the rectangle in which the receiver's title is drawn.  
**Notes:** The rectangle in which the title is drawn.

### 33.16.12 Properties

### 33.16.13 borderColor as NSColorMBS

**Function:** Returns the color of the receiver's border when the receiver is a custom box with a simple line border.  
**Notes:** The receiver's border color. It must be a custom box that is, it has a type of NSBoxCustom and it must have a border style of NSLineBorder.  
Available in Mac OS X v10.5 and later.  
(Read and Write computed property)

### 33.16.14 borderType as Integer

**Function:** The border type to aType, which must be a valid border type.  
**Notes:**  
A constant describing the type of border. Border types are defined in NSView.h. Currently, the following border types are defined: NSNoBorder, NSLineBorder, NSBezelBorder, NSGrooveBorder.  
If the size of the new border is different from that of the old border, the content view is resized to absorb the difference, and the box is marked for redisplay.  
(Read and Write computed property)
33.16.15 borderWidth as Double

Function: The border width.
Notes:
Functional only when the receiver’s box type (boxType) is NSBoxCustom and its border type (borderType) is NSLineBorder.

Available in Mac OS X v10.5 and later.
(Read and Write computed property)

33.16.16 boxType as Integer

Function: The box type.
Notes:
Use the NSBox* constants.
(Read and Write computed property)

33.16.17 contentView as NSViewMBS

Function: The receiver’s content view.
Notes:
On settings the NSView object is resized to fit within the box’s current content area and the box is marked for redisplay.
(Read and Write computed property)

33.16.18 contentViewMargins as NSSizeMBS

Function: The horizontal and vertical distance between the border of the receiver and its content view.
Notes:
Value: The width and height of the offset between the box’s border and content view. The horizontal value is applied (reckoned in the box’s coordinate system) fully and equally to the left and right sides of the box. The vertical value is similarly applied to the top and bottom.

Unlike changing a box’s other attributes, such as its title position or border type, changing the offsets
doesn’t automatically resize the content view. In general, you should send a sizeToFit message to the box after changing the size of its offsets. This message causes the content view to remain unchanged while the box is sized to fit around it.

(Read and Write computed property)

33.16.19  cornerRadius as Double


Function: The corner radius for the box.

Notes:

Functional only when the receiver’s box type (boxType) is NSBoxCustom and its border type (borderType) is NSLineBorder.

(Read and Write computed property)

33.16.20  fillColor as NSColorMBS


Function: The color of the receiver’s background when the receiver is a custom box with a simple line border.

Notes:

The receiver’s fill color. It must be a custom box that is, it has a type of NSBoxCustom and it must have a border style of NSLineBorder.

Available in Mac OS X v10.5 and later.

(Read and Write computed property)

33.16.21  title as string


Function: The title for the box.

Notes:

By default, a box’s title is "Title."

(Read and Write computed property)

33.16.22  titleFont as NSFontMBS


Function: The font object used to draw the receiver’s title.

Notes:
By default, the title is drawn using the small system font (obtained using smallSystemFontSize as the parameter of systemFontOfSize, both NSFont class methods). If the size of the new font is different from that of the old font, the content view is resized to absorb the difference.

(Read and Write computed property)

### 33.16.23 titlePosition as Integer


**Function:** The position of the box’s title.

**Notes:**

If the new title position changes the size of the box’s border area, the content view is resized to absorb the difference, and the box is marked as needing redisplay.

Use this constants: NSNoTitle, NSAboveTop, NSAtTop, NSBelowTop, NSAboveBottom, NSAtBottom and NSBelowBottom.

(Read and Write computed property)

### 33.16.24 Transparent as Boolean


**Function:** Whether the receiver is transparent.

**Notes:**

True makes the receiver transparent.

False makes the receiver opaque.

(Read and Write computed property)

### 33.16.25 Constants

#### 33.16.26 NSAboveBottom = 4

MBS MacControls Plugin, Plugin Version: 10.0. **Function:** One of the constants for the title position.

**Notes:** Title positioned above the box’s bottom border.

#### 33.16.27 NSAboveTop = 1

MBS MacControls Plugin, Plugin Version: 10.0. **Function:** One of the constants for the title position.

**Notes:** Title positioned above the box’s top border.
33.16.28  **NSAtBottom = 5**

MBS MacControls Plugin, Plugin Version: 10.0. **Function:** One of the constants for the title position. **Notes:** Title positioned within the box’s bottom border.

33.16.29  **NSAtTop = 2**

MBS MacControls Plugin, Plugin Version: 10.0. **Function:** One of the constants for the title position. **Notes:** Title positioned within the box’s top border.

33.16.30  **NSBelowBottom = 6**

MBS MacControls Plugin, Plugin Version: 10.0. **Function:** One of the constants for the title position. **Notes:** Title positioned below the box’s bottom border.

33.16.31  **NSBelowTop = 3**

MBS MacControls Plugin, Plugin Version: 10.0. **Function:** One of the constants for the title position. **Notes:** Title positioned below the box’s top border.

33.16.32  **NSBoxCustom = 4**

MBS MacControls Plugin, Plugin Version: 10.0. **Function:** One of the constants and data type identifies box types, which, in conjunction with a box’s border type, define the appearance of the box. **Notes:** Specifies that the appearance of the box is determined entirely by the by box-configuration methods, without automatically applying Apple human interface guidelines.

33.16.33  **NSBoxOldStyle = 3**

MBS MacControls Plugin, Plugin Version: 10.0. **Function:** One of the constants and data type identifies box types, which, in conjunction with a box’s border type, define the appearance of the box. **Notes:** Specifies that the box is a Mac OS X v10.2style box.
33.16.34 NSBoxPrimary = 0

MBS MacControls Plugin, Plugin Version: 10.0. **Function:** One of the constants and data type identifies box types, which, in conjunction with a box’s border type, define the appearance of the box. **Notes:** Specifies the primary box appearance. This is the default box type.

33.16.35 NSBoxSecondary = 1

MBS MacControls Plugin, Plugin Version: 10.0. **Function:** One of the constants and data type identifies box types, which, in conjunction with a box’s border type, define the appearance of the box. **Notes:** Specifies the secondary box appearance.

33.16.36 NSBoxSeparator = 2

MBS MacControls Plugin, Plugin Version: 10.0. **Function:** One of the constants and data type identifies box types, which, in conjunction with a box’s border type, define the appearance of the box. **Notes:** Specifies the secondary box appearance.

33.16.37 NSNoTitle = 0

MBS MacControls Plugin, Plugin Version: 10.0. **Function:** One of the constants for the title position. **Notes:** The box has no title.
33.17. CLASS NSBUTTONCELLMBS

33.17 class NSButtonCellMBS

33.17.1 class NSButtonCellMBS

Function: The NSButtonCell class is a subclass of NSActionCell used to implement the user interfaces of
push buttons, checkboxes (switches), and radio buttons.
Notes:
It can also be used for any other region of a view that’s designed to send a message to a target when clicked.
The NSButton subclass of NSControl uses a single NSButtonCell.

The NSButtonCell class implements the user interface of NSButton.

Setting the integer, float, double, or object value of an NSButtonCell object results in a call to setState with
the value converted to integer. In the case of setObjectValue, nil is equivalent to 0, and a non-nil object
that doesn’t respond to intValue sets the state to 1. Otherwise, the state is set to the object’s intValue.
Similarly, querying the integer, float, double, or object value of an NSButtonCell returns the current state in
the requested representation. In the case of objectValue, this is an NSNumber containing true for on, false
for off, and integer value -1 for the mixed state.

For more information on the behavior of NSButtonCell, see the NSButton and NSMatrix class specifications,
and Button Programming Topics.
Subclass of the NSActionCellMBS class.

33.17.2 Methods

33.17.3 Constructor(image as NSImageMBS)

Function: Creates a new Cell object with an image.
Example:

    dim pic as Picture = LogoMBS(500)
dim n as NSImageMBS = new NSImageMBS(pic)
dim c as new NSButtonCellMBS(n)

Backdrop = c.image.CopyPictureWithMask
Title = c.classPath

See also:
33.17.4 Constructor(text as string)


Function: Creates a new Cell object with a text.

Example:

```vbscript
dim c as new NSButtonCellMBS("Hello")
MsgBox c.StringValue
```

See also:

- 33.17.3 Constructor(image as NSImageMBS)

33.17.5 Properties

33.17.6 alternateImage as NSImageMBS


Function: The image the button displays in its alternate state and, if necessary, redraws its contents.

Notes:

Note that some button types don’t display an alternate image.

(Read and Write property)

33.17.7 alternateTitle as String


Function: The title the button displays when it’s in its alternate state.

Notes:

Note that some button types don’t display an alternate title.

(Read and Write property)

33.17.8 attributedAlternateTitle as NSAttributedStringMBS


Function: The string the button displays when it’s in its alternate state to the given attributed string.

Notes:
Note that some button types don’t display an alternate title.

Graphics attributes that are set on the cell (backgroundColor, alignment, font, etc.) are overridden when corresponding properties are set for the attributed string.
(Read and Write property)

33.17.9 attributedTitle as NSAttributedStringMBS

Function: The string the button displays when it’s in its normal state to the given attributed string and redraws the button.
Notes:
The title is always shown on buttons that don’t use their alternate contents when highlighting or displaying their alternate state.

Graphics attributes configured for the cell (backgroundColor, alignment, font, etc.) are overridden when corresponding properties are set for the attributed string.
(Read and Write property)

33.17.10 backgroundColor as NSColorMBS

Function: The background color for the button.
Notes: (Read and Write property)

33.17.11 imageDimsWhenDisabled as Boolean

Function: Whether to dim image when button is disabled.
Notes:
When disabled, the image and text of an NSButtonCell are normally dimmed with gray. Radio buttons and switches use (imageDimsWhenDisabled = false) so only their text is dimmed.
(Read and Write property)
33.17.12 imagePosition as Integer

Notes: (Read and Write property)

33.17.13 imageScaling as Integer

Notes: Available in OS X v10.5 and later.
(Read and Write property)

33.17.14 showsBorderOnlyWhileMouseInside as Boolean

Notes: (Read and Write property)

33.17.15 sound as Variant

MBS MacCocoa Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The sound that’s played when the user presses the receiver.
Notes: The sound is played during a mouse-down event, such as NSLeftMouseDown.
Value is a NSSoundMBS object.
(Read and Write property)
33.18. CONTROL NSBUTTONCONTROLMBS

33.18 control NSButtonControlMBS

33.18.1 control NSButtonControlMBS

Function: The Xojo control for a NSButton.
Notes:

This control embeds a special NSButton subclass.
Designed for Xojo 2013r1 and newer. May work on Real Studio 2012, but not perfectly.
Please use view property to access the underlaying object and set properties.

33.18.2 Properties

33.18.3 AlternateTitle as String

Function: The title that the button displays when it’s in its alternate state.
Notes: (Read and Write property)

33.18.4 BezelStyle as Integer

Function: The appearance of the border, if the view has one.
Notes:

Use this constants:

NSRoundedBezelStyle = 1
NSRegularSquareBezelStyle = 2
NSThickSquareBezelStyle = 3
NSThickerSquareBezelStyle = 4
NSDisclosureBezelStyle = 5
NSShadowlessSquareBezelStyle = 6
NSCircularBezelStyle = 7
NSTexturedSquareBezelStyle = 8
NSHelpButtonBezelStyle = 9
NSSmallSquareBezelStyle = 10
NSTexturedRoundedBezelStyle = 11
NSRoundRectBezelStyle = 12
NSRecessedBezelStyle = 13
NSRoundedDisclosureBezelStyle = 14
33.18.5 ButtonType as Integer

Function: The button type.
Notes: See also NSButtonMBS.ButtonType and the constants there like NSPushOnPushOffButton.
(Read and Write property)

33.18.6 Title as String

Function: The title displayed on the button when it’s in its normal state.
Notes: (Read and Write property)

33.18.7 View as NSButtonMBS

Function: The view used in the control.
Notes: Use this object to set more options on the control.
(Read only property)

33.18.8 Events

33.18.9 Action

Function: The action event.

33.18.10 BoundsChanged

Function: The event called when the bounds, but not the frame, changed.
33.18. CONTROL NSBUTTONCONTROLMBS

33.18.11 EnableMenuItems

Function: The event where you can enable menu items.

33.18.12 FrameChanged

Function: The event called when the frame changed.

33.18.13 GotFocus

Function: The control itself got focus.
Notes: This only fires if the control itself got focus and not a sub control.

33.18.14 LostFocus

Function: The control lost focus.
Notes: This only fires if the control itself lost focus and not a sub control.

33.18.15 MenuAction(HitItem as MenuItem) As Boolean

Function: Called when a menuitem is choosen.
Notes: This allows the control to react on its relevant menu items. Please return true if you handled it or false to give others a chance.

33.18.16 MouseDown(x as Integer, y as Integer, Modifiers as Integer) As Boolean

Function: The mouse button was pressed inside the controls region at the location passed in to x, y.
Notes: The coordinates x and y are local to the control, i.e. they represent the position of the mouse click relative to the upper-left corner or the Control.
CHAPTER 33. COCOA CONTROLS

Return True if you are going to handle the MouseDown. In such a case:

- The Action event, if any, will not execute and the state of the object will not change.
- You will receive the MouseDrag and MouseUp events.

If you return False, the system handles the MouseDown so the above event handlers do not get called.

33.18.17 MouseDrag(x as Integer, y as Integer)

**Function:** This event fires continuously after the mouse button was pressed inside the Control.
**Notes:**
Mouse location is local to the control passed in to x, y.
As this event is fired continuously (hundreds of time per second), it is your responsibility to determine if the mouse has really moved.

33.18.18 MouseUp(x as Integer, y as Integer)

**Function:** The mouse button was released.
**Notes:** Use the x and y parameters to determine if the mouse button was released within the control’s boundaries.

33.18.19 ScaleFactorChanged(NewFactor as Double)

**Function:** The backing store scale factor has changed.
**Notes:** Please invalidate any cached bitmaps or other relevant state.
33.19. CLASS NSBUTTONMBS

33.19.1 class NSButtonMBS

**Function:** The Cocoa class for a button control.
**Notes:** Subclass of the NSControlMBS class.

33.19.2 Methods

33.19.3 Constructor

**Function:** Creates a new button with size 100/100 and position 0/0
**Example:**
```vba
dim t as new NSButtonMBS
```

**Notes:** On success the handle property is not zero.
See also:

- 33.19.4 Constructor(Handle as Integer)
- 33.19.5 Constructor(left as Double, top as Double, width as Double, height as Double)
- 33.19.6 Constructor(Title as String, Image as NSImageMBS = nil, Type as Integer = 0)

33.19.4 Constructor(Handle as Integer)

**Function:** Creates an object based on the given NSButton handle.
**Example:**
```vba
dim t as new NSButtonMBS(0, 0, 100, 100)
dim v as new NSButtonMBS(t.handle)
MsgBox str(v.Bounds.Width)+" x "+str(v.Bounds.Height)
```

**Notes:** The handle is casted to a NSButton and the plugin retains this handle.
See also:

- 33.19.3 Constructor
33.19.5 Constructor(left as Double, top as Double, width as Double, height as Double)

Function: Creates a new button with the given size and position.
Example:
```
dim x as new NSButtonMBS(0, 0, 100, 100)
```

Notes: On success the handle property is not zero.
See also:

- 33.19.3 Constructor 6361
- 33.19.4 Constructor(Handle as Integer) 6361
- 33.19.6 Constructor(Title as String, Image as NSImageMBS = nil, Type as Integer = 0) 6362

33.19.6 Constructor(Title as String, Image as NSImageMBS = nil, Type as Integer = 0)

Function: Creates a new button with default settings.
Notes:
For macOS 10.12, we use the convenience functions from Apple.
For older systems, we use our own code.
Title is the title to use. Can be empty.
Image is the image to use. Can be nil.
Type is the type, e.g. NSMomentaryLightButton.
See also:

- 33.19.3 Constructor 6361
- 33.19.4 Constructor(Handle as Integer) 6361
- 33.19.5 Constructor(left as Double, top as Double, width as Double, height as Double) 6362

33.19.7 setButtonType(buttonType as Integer)

Function: Sets how the button highlights while pressed and how it shows its state.
Use this constants:

NSMomentaryLightButton = 0
NSPushOnPushOffButton = 1
NSToggleButton = 2
NSSwitchButton = 3
NSRadioButton = 4
NSMomentaryChangeButton = 5
NSOnOffButton = 6
NSMomentaryPushInButton = 7

33.19.8 setNextState

**Function:** Sets the view to its next state.
**Notes:** If the button has three states, it cycles through them in this order: on, off, mixed, on, and so forth. If the button has two states, it toggles between them.

33.19.9 Properties

33.19.10 allowsMixedState as boolean

**Function:** A Boolean value indicating whether the button allows a mixed state.
**Notes:** (Read and Write property)

33.19.11 alternateImage as NSImageMBS

**Function:** The image that appears on the button when it’s in its alternate state.
**Notes:**
The image displayed by the button when it’s in its alternate state, or nil if there is no alternate image. Note that some button types don’t display an alternate image. Buttons don’t display images by default.
(Read and Write property)
33.19.12 alternateTitle as string

Function: The title that the button displays when it’s in its alternate state.
Notes: (Read and Write property)

33.19.13 attributedAlternateTitle as NSAttributedStringMBS

Function: The title that appears on the button when it’s in its alternate state to the given attributed string.
Notes: (Read and Write property)

33.19.14 attributedTitle as NSAttributedStringMBS

Function: The title that the button displays in its normal state as an attributed string.
Notes: (Read and Write property)

33.19.15 backgroundColor as NSColorMBS

Function: The background color.
Notes: The background color is used only when drawing borderless buttons.
(Read and Write property)

33.19.16 bezelColor as NSColorMBS

Function: The color of the button’s bezel, in appearances that support it.
Notes: (Read and Write property)

33.19.17 bezelStyle as Integer

Function: The appearance of the border, if the view has one.
Notes:
33.19. **CLASS NSBUTTONMBS**

Use this constants:

- `NSRoundedBezelStyle` = 1
- `NSRegularSquareBezelStyle` = 2
- `NSThickSquareBezelStyle` = 3
- `NSThickerSquareBezelStyle` = 4
- `NSDisclosureBezelStyle` = 5
- `NSShadowlessSquareBezelStyle` = 6
- `NCircularBezelStyle` = 7
- `NSTexturedSquareBezelStyle` = 8
- `NSHelpButtonBezelStyle` = 9
- `NSSmallSquareBezelStyle` = 10
- `NSTexturedRoundedBezelStyle` = 11
- `NSRoundRectBezelStyle` = 12
- `NSRecessedBezelStyle` = 13
- `NSRoundedDisclosureBezelStyle` = 14

(Read and Write property)

### 33.19.18 image as NSImageMBS


**Function:** The view’s image.

**Notes:**

A button’s image is displayed when the button is in its normal state, or all the time for a button that doesn’t change its contents when highlighting or displaying its alternate state.

(Read and Write property)

### 33.19.19 imageDimsWhenDisabled as Boolean


**Function:** Whether the receiver’s image appears ”dim” when the button cell is disabled.

**Notes:**

True to indicate that the button’s image should dim when the button is disabled.

By default, all button types except NSSwitchButton and NSRadioButton do dim when disabled. When NSSwitchButtons and NSRadioButtons are disabled, only the associated text dims. The default setting for this condition is reasserted whenever you set ButtonType, so be sure to specify the button cells type before you set ImageDimsWhenDisabled.

(Read and Write property)
33.19.20  imageHugsTitle as Boolean

Function: Whether image hugs title.
Notes:
Available in macOS 10.12 and newer.
(Read and Write property)

33.19.21  imagePosition as Integer

Function: The position of the button’s image relative to its title.
Notes:
Value can be:

- NSNoImage 0 The cell doesn't display an image.
- NSImageOnly 1 The cell displays an image, but not a title.
- NSImageLeft 2 The image is to the left of the title.
- NSImageRight 3 The image is to the right of the title.
- NSImageBelow 4 The image is below the title.
- NSImageAbove 5 The image is above the title.
- NSImageOverlaps 6 The image overlaps the title.

(Read and Write property)

33.19.22  imageScaling as Integer

Function: The scale factor for the receiver's image.
Notes:
These constants specify a cell's image scaling behavior.

- NSImageScaleProportionallyDown 0 If it is too large for the destination, scale the image down while preserving the aspect ratio.
- NSImageScaleAxesIndependently 1 Scale each dimension to exactly fit destination. This setting does not preserve the aspect ratio of the image.
- NSImageScaleNone 2 Do not scale the image.
- NSImageScaleProportionallyUpOrDown 3 Scale the image to its maximum possible dimensions while both staying within the destination area and preserving its aspect ratio.
33.19. CLASS NSBUTTONMBS

Available in OS X v10.5 and later.
(Read and Write property)

33.19.23 isBordered as boolean

Function: A Boolean value indicating whether the button has a border.
Notes: (Read and Write property)

33.19.24 isTransparent as boolean

Function: A Boolean value indicating whether the button is transparent.
Notes: (Read and Write property)

33.19.25 keyEquivalent as string

Function: The key-equivalent character of the view.
Notes: (Read and Write property)

33.19.26 keyEquivalentModifierMask as Integer

Function: the controls’s keyboard equivalent modifier mask.
Example:

```dim d as NSButtonMBS // your button
d.KeyEquivalent="A"
d.KeyEquivalentModifierMask= NSShiftKeyMask+ NSCommandKeyMask+ NSAlternateKeyMask // command-option-shift```

Notes:
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Constants for the mask:

NSAlphaShiftKeyMask = 65536
Set if Caps Lock key is pressed.
Available in Mac OS X v10.0 and later.

NSShiftKeyMask = 131072
Set if Shift key is pressed.
Available in Mac OS X v10.0 and later.

NSControlKeyMask = 262144
Set if Control key is pressed.
Available in Mac OS X v10.0 and later.

NSAlternateKeyMask = 524288
Set if Option or Alternate key is pressed.
Available in Mac OS X v10.0 and later.

NSCommandKeyMask = 1048576
Set if Command key is pressed.
Available in Mac OS X v10.0 and later.

NSNumericPadKeyMask = 2097152
Set if any key in the numeric keypad is pressed. The numeric keypad is generally on the right side of the keyboard. This is also set if any of the arrow keys are pressed (NSUpArrowFunctionKey, NSDownArrowFunctionKey, NSLeftArrowFunctionKey, and NSRightArrowFunctionKey).
Available in Mac OS X v10.0 and later.

NSHelpKeyMask = 4194304
Set if the Help key is pressed.
Available in Mac OS X v10.0 and later.

NSFunctionKeyMask = 8388608
Set if any function key is pressed. The function keys include the F keys at the top of most keyboards (F1, F2, and so on) and the navigation keys in the center of most keyboards (Help, Forward Delete, Home, End, Page Up, Page Down, and the arrow keys).
Available in Mac OS X v10.0 and later.

NSDeviceIndependentModifierFlagsMask = 16777216
Used to retrieve only the device-independent modifier flags, allowing applications to mask off the device-dependent modifier flags, including event coalescing information.
Available in Mac OS X v10.4.
33.19.27 \textbf{maxAcceleratorLevel as Integer}

\textbf{Function:} Configures the maximum allowed level for an NSMultiLevelAcceleratorButton, allowed values range from \([1,5]\).
\textbf{Notes:}
Defaults to 2.
Available on Mac OS X 10.10.3.
(Read and Write property)

33.19.28 \textbf{showsBorderOnlyWhileMouseInside as boolean}

\textbf{Function:} Whether the view’s border is displayed only when the cursor is over the button.
\textbf{Notes:}
If isBordered returns false, the border is never displayed, regardless of what this method returns.
(Read and Write property)

33.19.29 \textbf{sound as Variant}

\textbf{Function:} The sound played when the user presses the button.
\textbf{Notes:}
The sound that should be played when the user presses the button. The sound is played during a mouse-down event, such as NSLeftMouseDown.
Value is NSSoundMBS object.
(Read and Write property)

33.19.30 \textbf{SpringLoaded as Boolean}

\textbf{Function:} Sends action on deep-press or extended hover while dragging.
\textbf{Notes:}
Defaults to false.
Available on Mac OS X 10.10.3.
CHAPTER 33. COCOA CONTROLS

(Read and Write property)

33.19.31 state as Integer

Function: The state of the button.
Notes:
This can be NSOnState (1), NSOffState (0), NSMixedState (-1).
(Read and Write property)

33.19.32 title as string

Function: The title displayed on the button when it’s in its normal state.
Notes: (Read and Write property)

33.19.33 Constants

33.19.34 NSCircularBezelStyle=7

MBS MacControls Plugin, Plugin Version: 7.8. Function: One of the button styles that can be specified using bezelStyle.
Notes:
A round button with room for a small icon or a single character.

This style has both regular and small variants, but the large variant is available only in gray at this time.

33.19.35 NSDisclosureBezelStyle=5

MBS MacControls Plugin, Plugin Version: 7.8. Function: One of the button styles that can be specified using bezelStyle.
Notes:
A bezel style for use with a disclosure triangle.

To create the disclosure triangle, set the button bezel style to NSDisclosureBezelStyle and the button type to NSOnOffButton.
33.19.36  **NSHelpButtonBezelStyle=9**

MBS MacControls Plugin, Plugin Version: 7.8. **Function:** One of the button styles that can be specified using bezelStyle.  
**Notes:** A round button with a question mark providing the standard help button look.

33.19.37  **NSInlineBezelStyle=15**

MBS MacControls Plugin, Plugin Version: 14.3. **Function:** One of the button styles that can be specified using bezelStyle.  
**Notes:** Inline Style.

33.19.38  **NSMomentaryChangeButton=5**

MBS MacControls Plugin, Plugin Version: 7.8. **Function:** One of the button types that can be specified using ButtonType.  
**Notes:** While the button is held down, the alternate image and alternate title are displayed.  
The normal image and title are displayed when the button isn’t pressed. This option is called "Momentary Change" in Interface Builder’s Button Inspector.

33.19.39  **NSMomentaryLightButton=0**

MBS MacControls Plugin, Plugin Version: 7.8. **Function:** One of the button types that can be specified using ButtonType.  
**Notes:** While the button is held down it’s shown as ”lit,” and also ”pushed in” to the screen if the button is bordered.  
This type of button is best for simply triggering actions, as it doesn’t show its state; it always displays its normal image or title. This option is called "Momentary Light" in Interface Builder’s Button Inspector.

33.19.40  **NSMomentaryPushInButton=7**

MBS MacControls Plugin, Plugin Version: 7.8. **Function:** One of the button types that can be specified using ButtonType.  
**Notes:**
While the button is held down it’s shown as "lit."

This type of button is best for simply triggering actions, as it doesn’t show its state; it always displays its normal image or title. This option is called "Momentary Push In" in Interface Builder’s Button Inspector.

33.19.41 NSOnOffButton=6

MBS MacControls Plugin, Plugin Version: 7.8. **Function:** One of the button types that can be specified using ButtonType. 
**Notes:** The first click highlights the button; a second click returns it to the normal (unhighlighted) state.

33.19.42 NSPushOnPushOffButton=1

MBS MacControls Plugin, Plugin Version: 7.8. **Function:** One of the button types that can be specified using ButtonType. 
**Notes:** The first click both highlights and causes the button to be "pushed in" if the button is bordered; a second click returns it to its normal state.

33.19.43 NSRadioButton=4

MBS MacControls Plugin, Plugin Version: 7.8. **Function:** One of the button types that can be specified using ButtonType. 
**Notes:** This style is similar to NSSwitchButton, but it used to constrain a selection to a single element from several.

33.19.44 NSRecessedBezelStyle=13

MBS MacControls Plugin, Plugin Version: 7.8. **Function:** One of the button styles that can be specified using bezelStyle. 
**Notes:** A bezel style that matches the recessed buttons in Mail, Finder and Safari.

33.19.45 NSRegularSquareBezelStyle=2

MBS MacControls Plugin, Plugin Version: 7.8. **Function:** One of the button styles that can be specified using bezelStyle. 
**Notes:** A rectangular button with a 2 point border, designed for icons.
33.19. NSBUTTONMBS

33.19.46 NSRoundedBezelStyle=1

MBS MacControls Plugin, Plugin Version: 7.8. **Function:** One of the button styles that can be specified using bezelStyle.  
**Notes:** A rounded rectangle button, designed for text.

33.19.47 NSRoundedDisclosureBezelStyle=14

MBS MacControls Plugin, Plugin Version: 7.8. **Function:** One of the button styles that can be specified using bezelStyle.  
**Notes:** A bezel style that matches the disclosure style used in the standard Save panel.

33.19.48 NSRoundRectBezelStyle=12

MBS MacControls Plugin, Plugin Version: 7.8. **Function:** One of the button styles that can be specified using bezelStyle.  
**Notes:** A bezel style that matches the search buttons in Finder and Mail.

33.19.49 NSShadowlessSquareBezelStyle=6

MBS MacControls Plugin, Plugin Version: 7.8. **Function:** One of the button styles that can be specified using bezelStyle.  
**Notes:**  
Similar to NSRegularSquareBezelStyle, but has no shadow so you can abut the cells without overlapping shadows.  

This style would be used in a tool palette, for example.

33.19.50 NSSmallSquareBezelStyle=10

MBS MacControls Plugin, Plugin Version: 7.8. **Function:** One of the button styles that can be specified using bezelStyle.  
**Notes:** A simple square bezel style. Buttons using this style can be scaled to any size.
33.19.51 NSSwitchButton=3

MBS MacControls Plugin, Plugin Version: 7.8. **Function:** One of the button types that can be specified using ButtonType.
**Notes:** This style is a variant of NSToggleButton that has no border and is used to represent a checkbox.

33.19.52 NSTexturedRoundedBezelStyle=11

MBS MacControls Plugin, Plugin Version: 7.8. **Function:** One of the button styles that can be specified using bezelStyle.
**Notes:** A textured (metal) bezel style similar in appearance to the Finder’s action (gear) button.

33.19.53 NSTexturedSquareBezelStyle=8

MBS MacControls Plugin, Plugin Version: 7.8. **Function:** One of the button styles that can be specified using bezelStyle.
**Notes:** A bezel style appropriate for use with textured (metal) windows.

33.19.54 NSThickerSquareBezelStyle=4

MBS MacControls Plugin, Plugin Version: 7.8. **Function:** One of the button styles that can be specified using bezelStyle.
**Notes:** A rectangular button with a 4 point border, designed for icons.

33.19.55 NSThickSquareBezelStyle=3

MBS MacControls Plugin, Plugin Version: 7.8. **Function:** One of the button styles that can be specified using bezelStyle.
**Notes:** A rectangular button with a 3 point border, designed for icons.

33.19.56 NSToggleButton=2

MBS MacControls Plugin, Plugin Version: 7.8. **Function:** One of the button types that can be specified using ButtonType.
**Notes:** After the first click, the button displays its alternate image or title; a second click returns the button to its normal state.
33.20. CLASS NSCELLMBS

33.20 class NSCellMBS

33.20.1 class NSCellMBS

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The NSCell class provides a mechanism for displaying text or images in an NSView object without the overhead of a full NSView subclass. Notes: It's used heavily by most of the NSControl classes to implement their internal workings.

33.20.2 Methods

33.20.3 acceptsFirstResponder as boolean

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a Boolean value that indicates whether the receiver accepts first responder status. Notes: The default value is true if the receiver is enabled. Subclasses may override this method to return a different value.

33.20.4 calcDrawInfo(theRect as NSRectMBS)

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Recalculates the cell geometry. Notes: Objects (such as controls) that manage NSCell objects generally maintain a flag that informs them if any of their cells have been modified in such a way that the location or size of the cell should be recomputed. If so, calcSize method of NSControl is automatically invoked prior to the display of the cell, and that method invokes the calcDrawInfo method of the cell. The default implementation of this method does nothing.

33.20.5 cellSize as NSSizeMBS

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the minimum size needed to display the receiver. Notes: Returns the size of the cell, or the size (10000, 10000) if the receiver is not a text or image cell. If the cell is an image cell but no image has been set, returns NSZeroSize. This method takes into account of the size of the image or text within a certain offset determined by the border type of the cell.
33.20.6 `cellSizeForBounds(theRect as NSRectMBS) as NSSizeMBS`

Function: Returns the minimum size needed to display the receiver, constraining it to the specified rectangle.

Notes:

- `aRect`: The size of the cell, or the size of the `aRect` parameter if the cell is not a text or image cell. If the cell is an image cell but no image has been set, returns an empty size.

This method takes into account of the size of the image or text within a certain offset determined by the border type of the cell. If the receiver is of text type, the text is resized to fit within `aRect` (as much as `aRect` is within the bounds of the cell).

33.20.7 `compare(otherCell as NSCellMBS) as Integer`

Function: Compares the string values of the receiver another cell, disregarding case.

Notes:

- `otherCell`: The cell to compare against the receiver. This parameter must be of type `NSCell`; if it is not, this method raises `NSBadComparisonException`.

This value must not be nil. If the value is nil, the behavior is undefined and may change in future versions of Mac OS X.

Returns `NSOrderedAscending` if the string value of the receiver precedes the string value of `otherCell` in lexical ordering, `NSOrderedSame` if the string values are equivalent in lexical value, and `NSOrderedDescending` if the string value of the receiver follows the string value of `otherCell` in lexical ordering.

33.20.8 `Constructor(image as NSImageMBS)`

Function: Creates a new Cell object with an image.

Example:

```
dim pic as Picture = LogoMBS(500)
dim n as NSImageMBS = new NSImageMBS(pic)
dim c as new NSCellMBS(n)
```

Backdrop = c.image.CopyPictureWithMask
Title = c.classPath
33.20. CLASS NSCELLMBS

See also:

- 33.20.9 Constructor(text as string)

33.20.9 Constructor(text as string)

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new Cell object with a text. **Example:**

```dim c as new NSCellMBS("Hello")
MsgBox c.StringValue```

See also:

- 33.20.8 Constructor(image as NSImageMBS)

33.20.10 defaultFocusRingType as Integer

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the default type of focus ring for the receiver. **Notes:**

Use this constants:

- `NSFocusRingTypeDefault` = 0  The default focus ring type for NSView or NSCell.
- `NSFocusRingTypeNone` = 1  No focus ring. If you set the focus ring type to this value, NSView and NSCell will not draw any focus ring.
- `NSFocusRingTypeExterior` = 2  The standard Aqua focus ring.

33.20.11 defaultMenu as NSMenuMBS

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the default menu for instances of the receiver. **Notes:**

Returns the default menu. The NSCell implementation of this method returns nil.

33.20.12 drawingRectForBounds(theRect as NSRectMBS) as NSRectMBS

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the rectangle within which the receiver draws itself. **Notes:**
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theRect: The bounding rectangle of the receiver.
Returns the rectangle in which the receiver draws itself. This rectangle is slightly inset from the one in theRect.

33.20.13 highlightColorWithFrame(theRect as NSRectMBS, controlView as NSViewMBS) as NSColorMBS

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Redraws the receiver with the specified highlight setting.
Notes:
theRect: The bounding rectangle of the receiver.
controlView: The control that manages the cell.
Returns the color the receiver uses when drawing the selection highlight.
You should not assume that a cell would necessarily want to draw itself with the value returned from selectedControlColor. A cell may wish to draw with different a selection highlight color depending on such things as the key state of its controlView.

33.20.14 imageRectForBounds(theRect as NSRectMBS) as NSRectMBS

Notes:
theRect: The bounding rectangle of the receiver.
The rectangle in which the receiver draws its image. This rectangle is slightly offset from the one in theRect.

33.20.15 isEntryAcceptable(aString as string) as boolean

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns whether a string representing a numeric or date value is formatted in a suitable way for the cell’s entry type.
Notes: This method is being deprecated in favor of a new class of formatter objects. For more information, see NSFormatter. This documentation is provided only for developers who need to modify older applications
33.20.16 mnemonic as string

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the character in the receiver’s title that appears underlined for use as a mnemonic. **Notes:** A string containing the mnemonic character, or an empty string if no mnemonic character is set.

33.20.17 nextState as Integer

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The receiver’s next state. **Notes:** If the receiver has three states, it cycles through them in this order: on, off, mixed, on, and so forth. If the receiver has two states, it toggles between them.

33.20.18 performClick

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Simulates a single mouse click on the receiver. **Notes:** This method performs the receiver’s action on its target. The receiver must be enabled to perform the action. If the receiver’s control view is valid, that view is used as the sender; otherwise, the value in sender is used.

The receiver of this message must be a cell of type NSActionCell. This method raises an exception if the action message cannot be successfully sent.

33.20.19 prefersTrackingUntilMouseUp as boolean

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value that indicates whether tracking stops when the cursor leaves the cell. **Notes:** The default implementation returns false. Subclasses may override this method to return a different value.

33.20.20 sendActionOn(mask as Integer) as Integer

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the conditions on which the receiver sends action messages to its target. **Notes:** mask: A bit mask containing the conditions for sending the action. The only conditions that are actually checked are associated with the NSLeftMouseDownMask, NSLeftMouseUpMask, NSLeftMouseDragged-
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Mask, and NSPeriodicMask bits.

Returns a bit mask containing the previous settings. This bit mask uses the same values as specified in the mask parameter.

You use this method during mouse tracking when the mouse button changes state, the mouse moves, or if the cell is marked to send its action continuously while tracking. Because of this, the only bits checked in mask are NSLeftMouseDownMask, NSLeftMouseUpMask, NSLeftMouseDraggedMask, and NSPeriodicMask, which are declared in the NSEvent class reference.

You can use the setContinuous method to turn on the flag corresponding to NSPeriodicMask or NSLeftMouseDraggedMask, whichever is appropriate to the given subclass of NSCell.

33.20.21 setNextState

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Changes the state of the receiver to its next state. Notes: If the receiver has three states, it cycles through them in this order: on, off, mixed, on, and so forth. If the receiver has two states, it toggles between them.

33.20.22 setTitleWithMnemonic(stringWithAmpersand as string)

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Sets the title of the receiver with one character in the string denoted as an access key. Notes: stringWithAmpersand: The new title of the cell. One character in the string should be preceded by an ampersand (&) character. The character that follows becomes the mnemonic character for the title. Mnemonics are not supported in Mac OS X.

33.20.23 titleRectForBounds(theRect as NSRectMBS) as NSRectMBS

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the rectangle in which the receiver draws its title text. Notes: If the receiver is a text-type cell, this method resizes the drawing rectangle for the title (theRect) inward by a small offset to accommodate the cell border. If the receiver is not a text-type cell, the method does nothing.
33.20. **CLASS NSCELLMBS**

### 33.20.24 `wantsNotificationForMarkedText` as boolean

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value that indicates whether the field editor initiated by the receiver should post text change notifications. **Notes:** Returns true if the field editor initiated by the receiver should post text change notifications (NSNotificationTextDidChange) while editing marked text; otherwise, they are delayed until the marked text confirmation.

### 33.20.25 Properties

#### 33.20.26 `alignment` as Integer

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The alignment of text in the receiver. **Notes:** The alignment of text in the receiver (one of the following constants: NSLeftTextAlignment, NSRightTextAlignment, NSCenterTextAlignment, NSJustifiedTextAlignment, NSNaturalTextAlignment). The default value is NSNaturalTextAlignment. (Read and Write property)

#### 33.20.27 `allowsEditingTextAttributes` as boolean

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value that indicates whether the receiver allows user editing of textual attributes. **Notes:** (Read and Write property)

#### 33.20.28 `allowsMixedState` as boolean

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value that indicates whether the receiver supports three states. **Notes:** Value is true if the receiver supports all three states (on, off, and mixed), otherwise false (the receiver supports only the on and off states). (Read and Write property)
33.20.29 allowsUndo as boolean

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value that indicates whether the receiver assumes responsibility for undo operations. **Notes:**

By default, the NSTextFieldCell class uses this feature to handle undo operations for edited text. Other controls set a value that is appropriate for their implementation.

Available in Mac OS X v10.4 and later.

(Read and Write property)

33.20.30 attributedStringValue as NSAttributedStringMBS

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The value of the receiver’s cell as an attributed string using the receiver’s formatter object (if one exists). **Notes:**

The textual attributes are the default paragraph style, the receiver’s font and alignment, and whether the receiver is enabled and scrollable.

For Mac OS X v10.3 and later: If you use a class that responds to the selector attributedStringValue for the object value of a cell, then the cell will use that method to fetch the string to draw rather than using stringValue.

(Read and Write property)

33.20.31 backgroundStyle as Integer

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the background style for the receiver. **Notes:**

The background describes the surface the cell is drawn onto in drawWithFrame A control typically sets this before it asks the cell to draw. A cell may draw differently based on background characteristics. For example, a tableview drawing a cell in a selected row might set cell.backgroundStyle=NSBackgroundStyleDark. A text cell might decide to render its text white as a result. A rating-style level indicator might draw its stars white instead of gray.

Available in Mac OS X v10.5 and later.

(Read and Write property)
33.20.32 baseWritingDirection as Integer

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The initial writing direction used to determine the actual writing direction for text.
**Notes:**
The default value is NSWritingDirectionNatural.
The Text system uses this value as a hint for calculating the actual direction for displaying Unicode characters. You should not need to call this method directly.
(Read and Write property)

33.20.33 Bezeled as boolean

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value that indicates whether the receiver has a bezeled border.
**Notes:** (Read and Write property)

33.20.34 Bordered as boolean

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value that indicates whether the receiver has a plain border.
**Notes:** (Read and Write property)

33.20.35 className as string

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of this NSCell class.
**Example:**
```dim c as new NSActionCellMBS("Hello")
MsgBox c.className // shows "NSActionCell"
```
**Notes:** (Read only property)

33.20.36 classPath as string

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The path of this NSCell class.
**Example:**
dim c as new NSActionCellMBS("Hello")
MsgBox c.classPath // shows "NSActionCell:NSCell:NSObject"

Notes:
Useful for debugging to know what super classes the view has.
(Read only property)

33.20.37  Continuous as boolean

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A Boolean value that indicates whether the receiver’s cell sends its action message continuously to its target during mouse tracking.
Notes: (Read and Write property)

33.20.38  controlSize as Integer

Notes:
Can be NSRegularControlSize, NSMiniControlSize or NSSmallControlSize.
(Read and Write property)

33.20.39  controlTint as Integer

Notes:
Can be NSGraphiteControlTint, NSBlueControlTint, NSClearControlTint or NSDefaultControlTint.
(Read and Write property)

33.20.40  controlView as NSViewMBS

Notes:
The control view represents the control currently being rendered by the cell.
(Read and Write property)

33.20.41 doubleValue as Double

Notes: The value of the cell interpreted as a double-precision floating-point number. If the receiver is not a text-type cell or the cell value is not scannable, returns 0.
(Read and Write property)

33.20.42 Editable as boolean

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A Boolean value that indicates whether the receiver is editable.
Notes: (Read and Write property)

33.20.43 Enabled as boolean

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A Boolean value that indicates whether the receiver is enabled or disabled.
Notes: (Read and Write property)

33.20.44 floatValue as Double

Notes: Returns the value of the cell interpreted as a single-precision floating-point number. If the receiver is not a text-type cell or the cell value is not scannable, returns 0.
(Read and Write property)

33.20.45 font as NSFontMBS

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The font used to display text in the receiver.
Notes:
The receiver's current font, or nil if the receiver is not a text-type cell.
(Read and Write property)

33.20.46 Handle as Integer

Notes: (Read and Write property)

33.20.47 hasValidObjectValue as boolean

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a Boolean value that indicates whether the receiver has a valid object value.
Notes: A valid object value is one that the receiver's formatter can "understand." Objects are always assumed to be valid unless they are rejected by the formatter.
(Read only property)

33.20.48 Highlighted as boolean

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A Boolean value that indicates whether the receiver is highlighted.
Notes: (Read and Write property)

33.20.49 image as NSImageMBS

Notes: The image displayed by the receiver, or nil if the receiver is not an image-type cell.
(Read and Write property)
33.20. CLASS NSCELLMBS

33.20.50 importsGraphics as boolean

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value that indicates whether the text of the receiver can contain imported graphics. **Notes:**

true if the receiver’s text is in the RTFD format and supports imported graphics, otherwise false. (Read and Write property)

33.20.51 interiorBackgroundStyle as Integer

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the interior background style for the receiver. **Notes:**

The interior background style describes the surface drawn onto in drawInteriorWithFrame:inView:. This is often the same as the backgroundStyle, but a button that draws a bezel would have a different interiorBackgroundStyle.
This is both an override point and a useful method to call. In a custom button with a custom bezel you can override this method to describe that surface. A cell that has custom interior drawing might query this method to help pick an image that looks good on the cell. Calling this method gives you some independence from changes in framework art style.
Available in Mac OS X v10.5 and later. (Read only property)

33.20.52 intValue as Integer

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The receiver’s value as an integer. **Notes:**

The value of the cell interpreted as an integer. If the receiver is not a text-type cell or the cell value is not scannable, returns 0.
On Mac OS X v10.5 and later, you should use integerValue instead. (Read and Write property)

33.20.53 isOpaque as boolean

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value that indicates whether the receiver is opaque (nontransparent). **Notes:** (Read only property)
33.20.54 keyEquivalent as string

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the key equivalent to clicking the cell.

**Notes:**

Subclasses can override this method to return a string with a valid character for the key equivalent. (Read only property)

33.20.55 lineBreakMode as Integer

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The line break mode currently used when drawing text.

**Notes:**

The line break mode the receiver currently uses when drawing text (one of the following constants: NSLineBreakByWordWrapping, NSLineBreakByCharWrapping, NSLineBreakByClipping, NSLineBreakByTruncatingHead, NSLineBreakByTruncatingTail, or NSLineBreakByTruncatingMiddle). Available in Mac OS X v10.4 and later. (Read and Write property)

33.20.56 menu as NSMenuMBS

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The receiver’s contextual menu.

**Notes:**

The receiver’s contextual menu, or nil if no menu is assigned. (Read and Write property)

33.20.57 mnemonicLocation as Integer

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The position of the underlined mnemonic character in the receiver’s title.

**Notes:**

A zero-based index into the receiver’s title string indicating the position of the character. If there is no mnemonic character, this method returns NSNotFound. Mnemonics are not supported in Mac OS X. (Read and Write property)
33.20. **CLASS NSCELLMBS**

33.20.58 **refusesFirstResponder as boolean**

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value that indicates whether the receiver should not become the first responder. **Notes:** To find out whether the receiver can become first responder at this time, use the method acceptsFirstResponder. (Read and Write property)

33.20.59 **Scrollable as boolean**

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value that indicates whether the receiver scrolls excess text past the cell's bounds. **Notes:** (Read and Write property)

33.20.60 **Selectable as boolean**

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value that indicates whether the text of the receiver can be selected. **Notes:** (Read and Write property)

33.20.61 **sendsActionOnEndEditing as boolean**

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value that indicates whether the receiver's NSControl object sends its action message whenever the user finishes editing the cell's text. **Notes:** If this method returns true, the receiver's NSControl object sends its action message when the user does one of the following:

- Presses the Return key
- Presses the Tab key to move out of the field
- Clicks another text field

If it returns false, the cell's NSControl object sends its action message only when the user presses the Return key. (Read and Write property)
33.20.62  showsFirstResponder as boolean

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value that indicates whether the receiver should draw some indication of its first responder status.

**Notes:**

The NSCell class itself does not draw a first-responder indicator. Subclasses may use the returned value to determine whether or not they should draw one, however.

(Read and Write property)

---

33.20.63  state as Integer

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The receiver’s state.

**Notes:**

Cells can have two or three states. If the receiver has two states, it returns either NSOffState (the normal or unpressed state) or NSOnState (the alternate or pressed state). If it has three, it may also return NS-MixedState, indicating the feature is in effect somewhere.

To check whether the receiver uses the mixed state, use the method allowsMixedState.

Note that the value state returns may not be the same value you passed into setState.

(Read and Write property)

---

33.20.64  stringValue as string

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The value of the receiver’s cell as a string.

**Notes:**

If no formatter exists and the cell’s value is a string, this method returns the value as a plain, attributed, or localized formatted string. If the value is not a string or cannot be converted to one, this method returns an empty string.

For Mac OS X v10.3 and later: If you use a class that responds to the selector attributedStringValue for the object value of a cell, the cell uses that method to fetch the string to draw rather than the stringValue method.

(Read and Write property)
33.20. CLASS NSCELLMBS

33.20.65 tag as Integer

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The tag identifying the receiver.

**Notes:**

The tag value. The NSCell implementation of this method returns 1. Tags allow you to identify particular cells. Tag values are not used internally; they are only changed by external invocations of setTag:. You typically set tag values in Interface Builder and use them at runtime in your application. When you set the tag of a control with a single cell in Interface Builder, it sets the tags of both the control and the cell to the same value as a convenience.

(Read and Write property)

33.20.66 title as string

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The receiver’s title.

**Notes:**

Subclasses (such as NSButtonCell) may override this method to return a different value.

(Read and Write property)

33.20.67 truncatesLastVisibleLine as boolean

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value indicating whether the receiver truncates and adds the ellipsis character to the last visible line if the text doesn’t fit into the cell bounds.

**Notes:**

The line break mode must be either NSLineBreakByWordWrapping or NSLineBreakByCharWrapping. Otherwise, this setting is ignored.

Available in Mac OS X v10.5 and later.

(Read and Write property)

33.20.68 type as Integer

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The type of the cell, changing it to a text cell, image cell, or null cell.

**Notes:**

If the cell is already the same type as the one specified in the aType parameter, this method does nothing. If aType is NSTextCellType, this method converts the receiver to a cell of that type, giving it a default title and setting the font to the system font at the default size. If aType is NSImageCellType, the cell type is
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not changed until you set a new non-nil image.
(Read and Write property)

33.20.69 userInterfaceLayoutDirection as Integer

Function: The layout direction of the user interface.
Notes:
This property specifies the general user interface layout flow directions. For subclasses that have multiple vi-
sual components in a single cell instance, this property should specify the directionality or flow of components.

NSUserInterfaceLayoutDirectionLeftToRight = 0
NSUserInterfaceLayoutDirectionRightToLeft = 1

Available in OS X v10.6 and later.
(Read and Write property)

33.20.70 usesSingleLineMode as boolean

Notes:
If true, the cell ignores the return value from wraps, interprets NSKLineBreakByWordWrapping and NSKLine-
BreakByCharWrapping returned by lineBreakMode as NSKLineBreakByClipping, and configures the field
editor to ignore key binding commands that insert paragraph and line separators.
The field editor bound to a single line cell filters paragraph and line separator insertion from user actions.
Cells in the single line mode use the fixed baseline layout. The text baseline position is determined solely
by the control size regardless of content font style or size.
(Read and Write property)

33.20.71 wraps as boolean

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether text in the receiver wraps when its length exceeds the frame of the cell.
Notes:
If the text of the receiver is an attributed string value you must explicitly set the paragraph style line break
mode. Calling this method with the value true is equivalent to calling the setLineBreakMode: method with
the value NSLineBreakByWordWrapping.
(Read and Write property)

### 33.20.72 cellAttribute(aParameter as Integer) as Integer

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The value for the specified cell attribute.
**Notes:**

aParameter: The cell attribute whose value you want to get. Attributes include the receiver’s current state and whether it is disabled, editable, or highlighted.

Returns the value for the cell attribute specified by aParameter.
(Read and Write computed property)

### 33.20.73 focusRingType as Integer

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The type of focus ring currently set for the receiver.
**Notes:**

You can disable a view’s focus ring drawing by overriding this method so it always returns NSFocusRingTypeNone, or by calling setFocusRingType: with NSFocusRingTypeNone. You should only disable a view from drawing its focus ring if you want to draw your own focus ring, or if there isn’t sufficient space to display a focus ring in the default location.
Available in Mac OS X v10.3 and later.
(Read and Write computed property)

### 33.20.74 Constants

#### 33.20.75 NSAnyType = 0

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify how a cell formats numeric data.
**Notes:**

Any value is allowed.
Deprecated in Mac OS X v10.4 and later.
**33.20.76  NSBackgroundStyleDark = 1**

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants for background styles.  
**Notes:**

The background is a dark color.  
Light content contrasts well with this background.  
Available in Mac OS X v10.5 and later.

**33.20.77  NSBackgroundStyleLight = 0**

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants for background styles.  
**Notes:**

The background is a light color.  
Dark content contrasts well with this background.  
Available in Mac OS X v10.5 and later.

**33.20.78  NSBackgroundStyleLowered = 3**

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants for background styles.  
**Notes:**

The background is intended to appear lower than the content drawn on it.  
Content might need to be embossed.  
Available in Mac OS X v10.5 and later.

**33.20.79  NSBackgroundStyleRaised = 2**

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants for background styles.  
**Example:**

```
// ask for the textfield behind the label
dim n as NSTextFieldMBS = NSTextFieldMBS(label1.NSViewMBS)

// query cell
dim c as NSTextFieldCellMBS = n.cell

// and set background style
C.backgroundStyle = NSTextFieldCellMBS.NSBackgroundStyleRaised
```

**Notes:**
33.20. **CLASS NSCELLMBS**

The background is intended to appear higher than the content drawn on it.
Content might need to be inset.
Available in Mac OS X v10.5 and later.

33.20.80 **NSBlueControlTint = 1**

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify a cell’s tint.
**Notes:**
Aqua control tint
Available in Mac OS X v10.3 and later.

33.20.81 **NSCellAllowsMixedState = 16**

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify how a button behaves when pressed and how it displays its state.
**Notes:** Lets the cell’s state be NSMixedState, as well as NSOffState and NSOnState.

33.20.82 **NSCellChangesContents = 14**

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify how a button behaves when pressed and how it displays its state.
**Notes:** If the cell’s state is NSMixedState or NSOnState, displays the cell’s alternate image.

33.20.83 **NSCellDisabled = 0**

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify how a button behaves when pressed and how it displays its state.
**Notes:** Does not let the user manipulate the cell.

33.20.84 **NSCellEditable = 3**

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify how a button behaves when pressed and how it displays its state.
**Notes:** Lets the user edit the cell’s contents.
33.20.85  

**NSCellHasImageHorizontal = 12**

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify how a button behaves when pressed and how it displays its state.  

**Notes:**

Controls the position of the cell’s image: places the image on the right of any text in the cell. Together, NSCellHasImageOnLeftOrBottom, NSCellHasImageHorizontal, and NSCellHasOverlappingImage control the position of the cell’s image and text. To place the image above, set none of them. To place the image below, set NSCellHasImageOnLeftOrBottom. To place the image to the right, set NSCellHasImageHorizontal. To place the image to the left, set NSCellHasImageHorizontal and NSCellHasImageOnLeftOrBottom. To place the image directly over, set NSCellHasOverlappingImage.

33.20.86  

**NSCellHasImageOnLeftOrBottom = 13**

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify how a button behaves when pressed and how it displays its state.  

**Notes:**

Controls the position of the cell’s image: places the image on the left of or below any text in the cell. See NSCellHasImageHorizontal for more details.

33.20.87  

**NSCellHasOverlappingImage = 11**

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify how a button behaves when pressed and how it displays its state.  

**Notes:**

Controls the position of the cell’s image: places the image over any text in the cell. See NSCellHasImageHorizontal for more details.

33.20.88  

**NSCellHighlighted = 5**

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify how a button behaves when pressed and how it displays its state.  

**Notes:** Draws the cell with a highlighted appearance. (Deprecated. Use Highlighted instead.)

33.20.89  

**NSCellHitContentArea = 1**

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants are used by hitTestForEvent to determine the effect of an event.
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Notes:
A content area in the cell.
Available in Mac OS X v10.5 and later.

33.20.90 NSCellHitEditableTextArea = 2

MBS MacCocoa Plugin, Plugin Version: 9.6. Function: One of the constants are used by hitTestForEvent
to determine the effect of an event.
Notes:
An editable text area of the cell.
Available in Mac OS X v10.5 and later.

33.20.91 NSCellHitNone = 0

MBS MacCocoa Plugin, Plugin Version: 9.6. Function: One of the constants are used by hitTestForEvent
to determine the effect of an event.
Notes:
An empty area, or did not hit in the cell.
Available in Mac OS X v10.5 and later.

33.20.92 NSCellHitTrackableArea = 4

MBS MacCocoa Plugin, Plugin Version: 9.6. Function: One of the constants are used by hitTestForEvent
to determine the effect of an event.
Notes:
A trackable area in the cell.
Available in Mac OS X v10.5 and later.

33.20.93 NSCellIsBordered = 10

MBS MacCocoa Plugin, Plugin Version: 9.6. Function: One of the constants specify how a button behaves
when pressed and how it displays its state.
Notes: Draws a border around the cell.
33.20.94 **NSCellIsInsetButton = 15**

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify how a button behaves when pressed and how it displays its state.

**Notes:**
Insets the cell’s contents from the border.
By default, the cell’s contents are inset by 2 points. This constant is ignored if the cell is unbordered.

33.20.95 **NSCellLightsByBackground = 9**

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify how a button behaves when pressed and how it displays its state.

**Notes:** If the cell is pushed in, changes the cell’s background color from gray to white.

33.20.96 **NSCellLightsByContents = 6**

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify how a button behaves when pressed and how it displays its state.

**Notes:** If the cell is pushed in, displays the cell’s alternate image.

33.20.97 **NSCellLightsByGray = 7**

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify how a button behaves when pressed and how it displays its state.

**Notes:** If the cell is pushed in, displays the cell’s image as darkened.

33.20.98 **NSCellState = 1**

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify how a button behaves when pressed and how it displays its state.

**Notes:** The cell’s state can be NSMixedState, NSOffState, or NSOnState.

33.20.99 **NSChangeBackgroundCell = 8**

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify how a button behaves when pressed and how it displays its state.

**Notes:** If the cell’s state is NSMixedState or NSOnState, changes the cell’s background color from gray to
white.

33.20.100 NSChangeBackgroundCellMask = 8

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify what happens when a button is pressed or is displaying its alternate state. **Notes:** Same as NSChangeGrayCellMask, but only background pixels are changed.

33.20.101 NSChangeGrayCell = 4

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify how a button behaves when pressed and how it displays its state. **Notes:** If the cell’s state is NSMixedState or NSOnState, displays the cell’s image as darkened.

33.20.102 NSChangeGrayCellMask = 4

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify what happens when a button is pressed or is displaying its alternate state. **Notes:** The button cell swaps the "control color" (the controlColor method of NSColor) and white pixels on its background and icon.

33.20.103 NSClearControlTint = 7

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify a cell’s tint. **Notes:**

Clear control tint
Available in Mac OS X v10.0 and later.

33.20.104(contentsCellMask = 1

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify what happens when a button is pressed or is displaying its alternate state. **Notes:** The button cell displays its alternate icon and/or title.
33.20.105 NSDefaultControlTint = 0

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify a cell’s tint.

**Notes:**
The current default tint setting.
Available in Mac OS X v10.0 and later.

33.20.106 NSDoubleType = 6

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify how a cell formats numeric data.

**Notes:**
Must be between FLT_MAX and FLT_MAX.
Deprecated in Mac OS X v10.4 and later.

33.20.107 NSFloatType = 3

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify how a cell formats numeric data.

**Notes:**
Must be between FLT_MAX and FLT_MAX.
Deprecated in Mac OS X v10.4 and later.

33.20.108 NSGraphiteControlTint = 6

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify a cell’s tint.

**Notes:**
Graphite control tint
Available in Mac OS X v10.3 and later.

33.20.109 NSImageAbove = 5

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify the position of a button’s image relative to its title.

**Notes:** The image is above the title.
### 33.20.110 NSImageBelow = 4

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify the position of a button’s image relative to its title.  
**Notes:** The image is below the title.

### 33.20.111 NSImageCellType = 2

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify how a cell represents its data (as text or as an image).  
**Notes:** Cell displays images.

### 33.20.112 NSImageLeft = 2

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify the position of a button’s image relative to its title.  
**Notes:** The image is to the left of the title.

### 33.20.113 NSImageOnly = 1

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify the position of a button’s image relative to its title.  
**Notes:** The cell displays an image, but not a title.

### 33.20.114 NSImageOverlaps = 6

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify the position of a button’s image relative to its title.  
**Notes:** The image overlaps the title.

### 33.20.115 NSImageRight = 3

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify the position of a button’s image relative to its title.  
**Notes:** The image is to the right of the title.
33.20.116  NSImageScaleAxesIndependently = 1

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify a cell’s image scaling behavior.

**Notes:**

Scale each dimension to exactly fit destination.
This setting does not preserve the aspect ratio of the image.
Available in Mac OS X v10.5 and later.

33.20.117  NSImageScaleNone = 2

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify a cell’s image scaling behavior.

**Notes:**

Do not scale the image.
Available in Mac OS X v10.5 and later.

33.20.118  NSImageScaleProportionallyDown = 0

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify a cell’s image scaling behavior.

**Notes:**

If it is too large for the destination, scale the image down while preserving the aspect ratio.
Available in Mac OS X v10.5 and later.

33.20.119  NSImageScaleProportionallyUpOrDown = 3

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify a cell’s image scaling behavior.

**Notes:**

Scale the image to its maximum possible dimensions while both staying within the destination area and preserving its aspect ratio.
Available in Mac OS X v10.5 and later.
33.20. **CLASS NSCELLMBS**

### 33.20.120 **NSIntType = 1**

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify how a cell formats numeric data.

**Notes:**
- Must be between INT_MIN and INT_MAX.
- Deprecated in Mac OS X v10.4 and later.

### 33.20.121 **NSMiniControlSize = 2**

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** These constants specify a cell’s size.

**Notes:** The control has a smaller size than NSSmallControlSize.

### 33.20.122 **NSMixedState = -1**

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify a cell’s state and are used mostly for buttons.

**Notes:** The corresponding feature is in effect somewhere.

### 33.20.123 **NSNoCellMask = 0**

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify what happens when a button is pressed or is displaying its alternate state.

**Notes:** The button cell doesn’t change.

### 33.20.124 **NSNoImage = 0**

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify the position of a button’s image relative to its title.

**Notes:** The cell doesn’t display an image.

### 33.20.125 **NSNullCellType = 0**

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify how a cell represents its data (as text or as an image).

**Notes:** Cell displays nothing.
33.20.126 NSOffState = 0

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify a cell’s state and are used mostly for buttons.
**Notes:** The corresponding feature is in effect nowhere.

33.20.127 NSOnState = 1

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify a cell’s state and are used mostly for buttons.
**Notes:** The corresponding feature is in effect everywhere.

33.20.128 NSPositiveDoubleType = 7

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify how a cell formats numeric data.
**Notes:**
Must be between FLT_MIN and FLT_MAX.
Deprecated in Mac OS X v10.4 and later.

33.20.129 NSPositiveFloatType = 4

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify how a cell formats numeric data.
**Notes:**
Must be between FLT_MIN and FLT_MAX.
Deprecated in Mac OS X v10.4 and later.

33.20.130 NSPositiveIntType = 2

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify how a cell formats numeric data.
**Notes:**
Must be between 1 and INT_MAX.
Deprecated in Mac OS X v10.4 and later.
33.20. CLASS NSCELLMBS

33.20.131 NSPushInCell = 2

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify how a button behaves when pressed and how it displays its state.  
**Notes:** Determines whether the cell’s image and text appear to be shifted down and to the right.

33.20.132 NSPushInCellMask = 2

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify what happens when a button is pressed or is displaying its alternate state.  
**Notes:** The button cell "pushes in" if it has a border.

33.20.133 NSRegularControlSize = 0

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** These constants specify a cell’s size.  
**Notes:** The control is sized as regular.

33.20.134 NSSmallControlSize = 1

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** These constants specify a cell’s size.  
**Notes:**  
The control has a smaller size.  
This constant is for controls that cannot be resized in one direction, such as push buttons, radio buttons, checkboxes, sliders, scroll bars, pop-up buttons, tabs, and progress indicators. You should use a small system font with a small control.

33.20.135 NSTextCellType = 1

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants specify how a cell represents its data (as text or as an image).  
**Notes:** Cell displays text.
CHAPTER 33. COCOA CONTROLS

33.21  class NSClipViewMBS

33.21.1  class NSClipViewMBS


Function: An NSClipView contains and scrolls the document view displayed by an NSScrollView.

Notes: You normally don’t need to program with NSClipViews, as NSScrollView handles most of the details of their operation.

An NSClipView holds the document view of an NSScrollView, clipping the document view to its frame, handling the details of scrolling in an efficient manner, and updating the NSScrollView when the document view’s size or position changes. You don’t normally use the NSClipView class directly; it’s provided primarily as the scrolling machinery for the NSScrollView class. However, you might use the NSClipView class to implement a class similar to NSScrollView.

Interaction With NSScrollView
When using an NSClipView within an NSScrollView (the usual configuration), you should issue messages that control background drawing state to the NSScrollView, rather than messaging the NSClipView directly. This recommendation applies to the following methods:

- backgroundColor
- drawsBackground

The NSClipView methods are intended for when the NSClipView is used independently of a containing NSScrollView. In the usual case, NSScrollView should be allowed to manage the background-drawing properties of its associated NSClipView.

There is only one background-drawing state per NSScrollView/NSClipView pair. The two objects do not maintain independent and distinct drawsBackground and backgroundColor properties; rather, NSScrollView’s accessors for these properties largely defer to the associated NSClipView and allow the NSClipView to maintain the state. In Mac OS X v10.2 and earlier system versions, NSScrollView maintained a cache of the last state it set for its NSClipView. If the NSClipView was sent a setDrawsBackground message directly, the cache might not reflect the state accurately. This caching of state has been removed in Mac OS X v10.3.

It is also important to note that sending a setDrawsBackground message with a parameter of false to an NSScrollView has the added effect of sending the NSClipView a setCopiesOnScroll message with a parameter of false. The side effect of sending the setDrawsBackground message directly to the NSClipView is the appearance of “trails” (vestiges of previous drawing) in the document view as it is scrolled.

You can embed this view in a CustomNSViewMBS to get more events for mouse and keyboard.
33.21. **CLASS NSCLIPVIEWMBS**

Subclass of the NSViewMBS class.

### 33.21.2 Methods

#### 33.21.3 autoscroll(theEvent as NSEventMBS) as boolean


**Function:** Scrolls the receiver proportionally to theEvent’s distance outside of it.

**Notes:**

theEvent’s location should be expressed in the window’s base coordinate system (which it normally is), not the receiving NSClipView’s. Returns true if any scrolling is performed; otherwise returns false.

Never invoke this method directly; instead, the NSClipView’s document view should repeatedly send itself autoscroll: messages when the cursor is dragged outside the NSClipView’s frame during a modal event loop initiated by a mouse-down event. The NSView class implements autoscroll to forward the message to the receiver’s superview; thus the message is ultimately forwarded to the NSClipView.

#### 33.21.4 constrainScrollPoint(newOrigin as NSPointMBS) as NSPointMBS


**Function:** Returns a scroll point adjusted from proposedNewOrigin, if necessary, to guarantee the receiver will still lie within its document view.

**Notes:** For example, if proposedNewOrigin’s y coordinate lies to the left of the document view’s origin, then the y coordinate returned is set to that of the document view’s origin.

#### 33.21.5 Constructor


**Function:** Creates a new clipview with the given size and position.

**Example:**

```plaintext
dim x as new NSClipViewMBS(0, 0, 100, 100)
```

**Notes:** On success the handle property is not zero.

See also:

- 33.21.6 Constructor(Handle as Integer) 6408
- 33.21.7 Constructor(left as Double, top as Double, width as Double, height as Double) 6408
33.21.6 Constructor(Handle as Integer)

**Function:** Creates an object based on the given NSClipView handle.  
**Example:**  
```vbnet
dim t as new NSClipViewMBS(0, 0, 100, 100)
dim v as new NSClipViewMBS(t.handle)
```

**Notes:** The handle is casted to a NSClipView and the plugin retains this handle.  
See also:

- 33.21.5 Constructor  
- 33.21.7 Constructor(left as Double, top as Double, width as Double, height as Double)

33.21.7 Constructor(left as Double, top as Double, width as Double, height as Double)

**Function:** Creates a new NSClipView with the given size and position.  
**Example:**  
```vbnet
dim x as new NSClipViewMBS(0, 0, 100, 100)
```

**Notes:** On success the handle property is not zero.  
See also:

- 33.21.5 Constructor  
- 33.21.6 Constructor(Handle as Integer)

33.21.8 documentRect as NSRectMBS

**Function:** Returns the rectangle defining the document view’s frame, adjusted to the size of the receiver if the document view is smaller.  
**Notes:**  
In other words, this rectangle is always at least as large as the receiver itself.
The document rectangle is used in conjunction with an NSClipView’s bounds rectangle to determine values for the indicators of relative position and size between the NSClipView and its document view. For example, NSScrollView uses these rectangles to set the size and position of the knobs in its scrollers. When the document view is much larger than the NSClipView, the knob is small; when the document view is near the same size, the knob is large; and when the document view is the same size or smaller, there is no knob.

### 33.21.9 `documentVisibleRect as NSRectMBS`

**Function:** Returns the exposed rectangle of the receiver’s document view, in the document view’s own coordinate system.  
**Notes:** Note that this rectangle doesn’t reflect the effects of any clipping that may occur above the NSClipView itself. To get the portion of the document view that’s guaranteed to be visible, send it a visibleRect message.

### 33.21.10 `reflectScrolledClipView(clipView as NSClipViewMBS)`

**Function:** Adjusts the receiver’s scrollers to reflect the size and positioning of its content view.

### 33.21.11 `scrollClipView(clipview as NSClipViewMBS, toPoint as NSPointMBS)`

**Function:** Notifies the superview of a clip view that the clip view needs to reset the origin of its bounds rectangle.

### 33.21.12 `scrollToPoint(newOrigin as NSPointMBS)`

**Function:** Changes the origin of the receiver’s bounds rectangle to newOrigin.

### 33.21.13 `viewBoundsChanged(notification as NSNotificationMBS)`

**Function:** Handles an NSViewBoundsDidChangeNotification, passed in the aNotification argument, by updating a containing NSScrollView based on the new bounds.
CHAPTER 33. COCOA CONTROLS

33.21.14 viewFrameChanged(notification as NSNotificationMBS)

Function: Handles an NSViewFrameDidChangeNotification, passed in the aNotification argument, by updating a containing NSScrollView based on the new frame.

33.21.15 Properties

33.21.16 backgroundColor as NSColorMBS

Function: The color of the receiver’s background.
Notes: (Read and Write computed property)

33.21.17 copiesOnScroll as boolean

Function: Whether the receiver copies rendered images while scrolling.
Notes:
If true, the receiver copies the existing rendered image to its new location while scrolling and only draws exposed portions of its document view. If false, the receiver always forces its document view to draw itself on scrolling.
(Read and Write computed property)

33.21.18 documentCursor as NSCursorMBS

Function: The cursor object used over the receiver.
Notes: (Read and Write computed property)

33.21.19 documentView as NSViewMBS

Function: The document view.
Notes:
Gets or sets the receiver’s document view. On set removes any previous document view, and sets the origin of the receiver’s bounds rectangle to the origin of the new view’s frame rectangle.
If the receiver is contained in an NSScrollView, you should set the NSScrollView DocumentView instead, so it can perform whatever updating it needs.

In the process of setting the document view, this method registers the receiver for the notifications NSViewFrameDidChangeNotification and NSViewBoundsDidChangeNotification, adjusts the key view loop to include the new document view, and updates a parent NSScrollView’s display if needed using reflectScrolledClipView.

(Read and Write computed property)

### 33.21.20 `drawsBackground` as boolean


**Function:** Whether the receiver draws its background color.

**Notes:**
If your NSClipView is enclosed in an NSScrollView, you should set the DrawsBackground on the NSScrollView.

(Read and Write computed property)

### 33.21.21 Constants

#### 33.21.22 `NSClipViewFindBarPositionAboveContent = 1`

MBS MacControls Plugin, Plugin Version: 11.3.

**Function:** One of the constants to define the position of the find bar in relation to the scroll view.

**Notes:**
The find bar is displayed above the scroll view content.
Available in Mac OS X v10.7 and later.

#### 33.21.23 `NSClipViewFindBarPositionAboveHorizontalRuler = 0`

MBS MacControls Plugin, Plugin Version: 11.3.

**Function:** One of the constants to define the position of the find bar in relation to the scroll view.

**Notes:**
The find bar is displayed above the horizontal ruler, if visible.
Available in Mac OS X v10.7 and later.
33.21.24 **NSClipViewFindBarPositionBelowContent = 2**

MBS MacControls Plugin, Plugin Version: 11.3. **Function:** One of the constants to define the position of the find bar in relation to the scroll view.

**Notes:**
The find bar is displayed below the scroll view content. Available in Mac OS X v10.7 and later.

33.21.25 **NSScrollElasticityAllowed = 2**

MBS MacControls Plugin, Plugin Version: 11.3. **Function:** One of the constants to determine the elasticity behavior for an axis of the scrollview.

**Notes:**
Allow content to be scrolled past its bounds on this axis in an elastic fashion. Available in Mac OS X v10.7 and later.

33.21.26 **NSScrollElasticityAutomatic = 0**

MBS MacControls Plugin, Plugin Version: 11.3. **Function:** One of the constants to determine the elasticity behavior for an axis of the scrollview.

**Notes:**
Automatically determine whether to allow elasticity on this axis. Available in Mac OS X v10.7 and later.

33.21.27 **NSScrollElasticityNone = 1**

MBS MacControls Plugin, Plugin Version: 11.3. **Function:** One of the constants to determine the elasticity behavior for an axis of the scrollview.

**Notes:**
Disallow scrolling beyond document bounds on this axis. Available in Mac OS X v10.7 and later.
33.22. CLASS NSCOMBOBOXMBS

33.22 class NSComboBoxMBS

33.22.1 class NSComboBoxMBS

Function: The ComboBox control from Cocoa.
Notes:
An NSComboBox is a kind of NSControl that allows you to either enter text directly (as you would with
an NSTextField) or click the attached arrow at the right of the combo box and select from a displayed
(“pop-up”) list of items.
Subclass of the NSTextFieldMBS class.

33.22.2 Methods

33.22.3 addItemWithObjectValue(value as Variant)

Function: Adds an object to the end of the receiver’s internal item list.
Notes:
anObject: The object to add to the internal item list.
This method logs a warning if usesDataSource returns true.

33.22.4 Constructor

Function: Creates a new button with size 100/100 and position 0/0
Example:

dim t as new NSComboBoxMBS(0, 0, 100, 20)

Notes: On success the handle property is not zero.
See also:

- 33.22.5 Constructor(Handle as Integer) 6414
- 33.22.6 Constructor(left as Double, top as Double, width as Double, height as Double) 6414
33.22.5 Constructor(Handle as Integer)

Function: Creates an object based on the given NSComboBox handle.
Example:

```vba
dim t as new NSComboBoxMBS(0, 0, 100, 100)
dim v as new NSComboBoxMBS(t.handle)
MsgBox str(v.Bounds.Width)\" x \" + str(v.Bounds.Height)
```

Notes: The handle is casted to a NSComboBox and the plugin retains this handle.
See also:
- 33.22.4 Constructor
- 33.22.6 Constructor (left as Double, top as Double, width as Double, height as Double)

33.22.6 Constructor(left as Double, top as Double, width as Double, height as Double)

Function: Creates a new combo box with the given size and position.
Example:

```vba
dim left,top,width,height as Integer
// define rectangle
dim x as new NSComboBoxMBS(left, top, width, height)
```

Notes: On success the handle property is not zero.
See also:
- 33.22.4 Constructor
- 33.22.5 Constructor(Handle as Integer)

33.22.7 deselectItemAtIndex(index as Integer)

Function: Deselects the pop-up list item at the specified index if it’s selected.
Notes:

index: The index of the item to deselect.
If the selection does in fact change, this method posts an NSComboBoxSelectionDidChangeNotification to the default notification center.

### 33.22.8 indexOfItemWithObjectValue(value as Variant) as Integer


**Function:** Searches the receiver’s internal item list for the specified object and returns the lowest matching index.

**Notes:**
- **anObject:** The object for which to return the index.

Returns the lowest index in the internal item list whose corresponding value is equal to that of the specified object. Objects are considered equal if they have the same id or if isEqual returns true.

If none of the objects in the receiver’s internal item list are equal to anObject, indexOfItemWithObjectValue returns NSNotFound (-1).

This method logs a warning if usesDataSource returns true.

### 33.22.9 indexOfSelectedItem as Integer


**Function:** Returns the index of the last item selected from the pop-up list.

**Notes:**
- Returns the index of the last item selected from the receiver’s pop-up list or -1 if no item is selected.

Note that nothing is initially selected in a newly initialized combo box.

### 33.22.10 noteNumberOfItemsChanged


**Function:** Informs the receiver that the number of items in its data source has changed.

**Notes:**
- This method allows the receiver to update the scrollers in its displayed pop-up list without actually reloading data into the receiver. It is particularly useful for a data source that continually receives data in the background over a period of time, in which case the NSComboBox can remain responsive to the user while the data is received.
33.22.11  **numberOfItems as Integer**

**Function:** Returns the total number of items in the pop-up list.

33.22.12  **reloadData**

**Function:** Marks the receiver as needing redisplay, so that it will reload the data for visible pop-up items and draw the new values.

33.22.13  **removeAllItems**

**Function:** Removes all items from the receiver’s internal item list.  
**Notes:** This method logs a warning if usesDataSource returns true.

33.22.14  **removeItemAtIndex(index as Integer)**

**Function:** Removes the object at the specified location from the receiver’s internal item list.  
**Notes:**

index: The index of the object to remove. All items beyond index are moved up one slot to fill the gap.

The removed object receives a release message. This method raises an NSRangeException if index is beyond the end of the list and logs a warning if usesDataSource returns true.

33.22.15  **removeItemWithValue(value as Variant)**

**Function:** Removes all occurrences of the given object from the receiver’s internal item list.  
**Notes:**
anObject: The object to remove from the internal item list. Objects are considered equal if they have the same id or if isEqual: returns true.

This method logs a warning if usesDataSource returns true.

33.22.16 scrollItemAtIndexPathToTop(index as Integer)

Function: Scrolls the receiver’s pop-up list vertically so that the item at the specified index is as close to the top as possible.
Notes:
index: The index of the item to scroll to the top.

The pop-up list need not be displayed at the time this method is invoked.

33.22.17 scrollItemAtIndexPathToVisible(index as Integer)

Function: Scrolls the receiver’s pop-up list vertically so that the item at the specified index is visible.
Notes:
index: The index of the item to make visible.

The pop-up list need not be displayed at the time this method is invoked.

33.22.18 selectItemAtIndexPath(index as Integer)

Function: Selects the pop-up list row at the given index.
Notes:
index: The index of the item to select in the pop-up list.

Posts an NSComboBoxSelectionDidChangeNotification to the default notification center if the selection does in fact change. Note that this method does not alter the contents of the combo box’s text field see Setting the Combo Box’s Value for more information.
CHAPTER 33. COCOA CONTROLS

33.22.19 selectItemWithObjectValue (value as Variant)


Function: Selects the first pop-up list item that corresponds to the given object.

Notes:

anObject: The object to select in the pop-up list. Objects are considered equal if they have the same id or
if isEqual: returns true.

This method logs a warning if usesDataSource returns true. Posts an NSComboBoxSelectionDidChangeNotification to the default notification center if the selection does in fact change. Note that this method doesn’t alter the contents of the combo box’s text field; see Setting the Combo Box’s Value for more information.

33.22.20 Properties

33.22.21 completes as boolean


Function: Returns a Boolean value indicating whether the receiver tries to complete what the user types
in the text field.

Notes:

Returns true if the receiver tries to complete what the user types in the text field; otherwise false.
(Read and Write computed property)

33.22.22 hasVerticalScroller as boolean


Function: Returns a Boolean value indicating whether the receiver will display a vertical scroller.

Notes:

Returns true if the receiver will display a vertical scroller; otherwise false.

Note that the scroller will be displayed even if the pop-up list contains fewer items than will fit in the area
specified for display.
(Read and Write computed property)

33.22.23 intercellSpacing as NSSizeMBS


Function: Returns the horizontal and vertical spacing between cells in the receiver’s pop-up list.
Notes:
Returns the space between cells in the pop-up list. The default spacing is (3.0, 2.0).
(Read and Write computed property)

33.22.24 isButtonBordered as boolean

Function: Whether the combo box button is set to display a border.
Notes:
True if the button has a border; otherwise false.
Available in Mac OS X v10.3 and later
(Read and Write computed property)

33.22.25 itemHeight as Double

Function: Returns the height of each item in the receiver’s pop-up list.
Notes:
The default item height is 16.0.
(Read and Write computed property)

33.22.26 numberOfVisibleItems as Integer

Function: Returns the maximum number of items visible in the pop-up list.
Notes:
The maximum number of items visible at any one time in the pop-up list.
(Read and Write computed property)

33.22.27 usesDataSource as boolean

Function: A Boolean value indicating whether the receiver uses an external data source to populate its pop-up list.
Notes:
True if the receiver uses an external data source to populate the receiver’s pop-up list, false if it uses an internal item list.
(Read and Write computed property)
33.23   CLASS NSCONTROLMBS

33.23   class NSControlMBS

33.23.1   class NSControlMBS

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Cocoa class for a NSControl.
**Notes:**
You can embed this view in a CustomNSViewMBS to get more events for mouse and keyboard. Subclass of the NSViewMBS class.

33.23.2   Methods

33.23.3   calcSize

MBS MacCocoa Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Recomputes any internal sizing information for the receiver, if necessary.
**Notes:** This method uses the calcDrawInfo method of its cell to perform the calculations. Most controls maintain a flag that informs them if any of their cells have been modified in such a way that the location or size of the cell should be recomputed. If such a modification happens, this method is automatically invoked before the control is displayed. You should never need to invoke it yourself.

33.23.4   ConnectActionEvent

MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Connects the action event.
**Notes:** If you want to use addhandler with this class and the action event, you need to call ConnectActionEvent after addhandler to actually have the plugin put things in place for handling the event.

33.23.5   Constructor

MBS MacCocoa Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new control with size 100/100 and position 0/0
**Example:**
```dim t as new NSControlMBS```

**Notes:** On success the handle property is not zero.
See also:
• 33.23.6 Constructor(Handle as Integer) 6422

• 33.23.7 Constructor(left as Double, top as Double, width as Double, height as Double) 6422

### 33.23.6 Constructor(Handle as Integer)


**Function:** Creates an object based on the given NSControl handle.

**Example:**

```vba
dim t as new NSControlMBS(0, 0, 100, 100)
dim v as new NSControlMBS(t.handle)
```

**Notes:** The handle is casted to a NSControl and the plugin retains this handle.

See also:

• 33.23.5 Constructor 6421

• 33.23.7 Constructor(left as Double, top as Double, width as Double, height as Double) 6422

### 33.23.7 Constructor(left as Double, top as Double, width as Double, height as Double)


**Function:** Creates a new control with the given size and position.

**Example:**

```vba
dim x as new NSControlMBS(0, 0, 100, 20)
```

**Notes:** On success the handle property is not zero.

See also:

• 33.23.5 Constructor 6421

• 33.23.6 Constructor(Handle as Integer) 6422

### 33.23.8 currentEditor as NSTextMBS


**Function:** Returns the current field editor for the control.

**Notes:**
Returns the field editor for the current control, or nil if the receiver does not have a field editor.

When the receiver is a control displaying editable text (for example, a text field) and it is the first responder, it has a field editor, which is returned by this method. The field editor is a single NSTextView object that is shared among all the controls in a window for light text-editing needs. It is automatically instantiated when needed.

### 33.23.9 Destructor

MBS MacCocoa Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The destructor.

### 33.23.10 EnableEvents

MBS MacCocoa Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Enables events after you assigned methods to them with AddHandler.

### 33.23.11 performClick

MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Simulates a single mouse click on the receiver. **Notes:** This method calls the performClick method of the receiver’s cell. This method raises an exception if the action message cannot be successfully sent.

### 33.23.12 selectCell(Cell as NSCellMBS)

MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Selects the specified cell and redraws the control as needed. **Notes:** Cell: The cell to select. The cell must belong to the receiver. If the cell is already selected (or does not belong to the receiver), this method does nothing. If the cell belongs to the receiver and is not selected, this method changes its state to NSOnState and redraws the cell.
33.23.13 selectedCell as NSCellMBS

MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver’s selected cell. **Notes:** The default implementation of this method simply returns the control’s associated cell (or nil if no cell has been set). Subclasses of NSControl that manage multiple cells (such as NSMatrix and NSForm) must override this method to return the cell selected by the user.

33.23.14 selectedTag as Integer

MBS MacCocoa Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The tag of the view’s selected cell.

33.23.15 setNeedsDisplay

MBS MacCocoa Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Marks the receiver as needing redisplay (assuming automatic display is enabled). **Notes:** This method also recalculates the dimensions of the control as needed.

33.23.16 sizeToFit

MBS MacCocoa Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Resizes the receiver’s frame so that it is the minimum size needed to contain its cell. **Notes:** If you want a multiple-cell custom subclass of NSControl to size itself to fit its cells, you must override this method. This method neither redispays the receiver nor marks it as needing display. You must do this yourself with either the display or setNeedsDisplay method.

33.23.17 validateEditing

MBS MacCocoa Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Validates changes to any user-typed text. **Notes:** Validation sets the object value of the cell to the current contents of the cell’s editor (the NSText object used for editing), storing it as a simple string or an attributed string object based on the attributes of the editor.
### 33.23.18 Properties

#### 33.23.19 ActionSelector as String

MBS MacCocoa Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of the selector.

**Notes:**

The new action-message selector to associate with the receiver’s cell. Specify NULL to prevent action messages from being sent to the receiver’s target. (Read and Write computed property)

#### 33.23.20 alignment as Integer

MBS MacCocoa Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The alignment mode of the text in the view’s cell.

**Example:**

```plaintext
dim n as NSControlMBS // your control
n.alignment=3
```

**Notes:**

One of the following constants: NSLeftTextAlignment, NSRightTextAlignment, NSCenterTextAlignment, NSJustifiedTextAlignment, or NSNaturalTextAlignment. The default value is NSNaturalTextAlignment.

**Constants:**

- **NSLeftTextAlignment** = 0
  
  Text is visually left aligned.

- **NSRightTextAlignment** = 1
  
  Text is visually right aligned.

- **NSCenterTextAlignment** = 2
  
  Text is visually center aligned.

- **NSJustifiedTextAlignment** = 3
  
  Text is justified.

- **NSNaturalTextAlignment** = 4
(Read and Write computed property)

33.23.21 attributedStringValue as NSAttributedStringMBS

MBS MacCocoa Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The value of the view’s cell as an attributed string.

**Notes:**
The value of the cell interpreted as an attributed string, or an empty attributed string if the receiver has no cell.

If the control contains many cells (for example, NSMatrix), then the value of the currently selected cell is returned. If the control is in the process of editing the affected cell, then it invokes the validateEditing method before extracting and returning the value.

(Read and Write computed property)

33.23.22 baseWritingDirection as Integer

MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The initial writing direction used to determine the actual writing direction for text.

**Notes:**
One of the following values: NSWritingDirectionNatural, NSWritingDirectionLeftToRight, or NSWritingDirectionRightToLeft. The default value is NSWritingDirectionNatural.

The Text system uses this value as a hint for calculating the actual direction for displaying Unicode characters. You should not need to call this method directly.

(Read and Write computed property)

33.23.23 cell as Variant

MBS MacCocoa Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The receiver’s cell object.

**Notes:**
Cocoa controls often have a frame control and inside a Cell which implements the raw functionality. This way you can for example have a table which embeds such cell controls inside the table cells.

Use this method with great care as it can irrevocably damage the affected control; specifically, you should only use this method in initializers for subclasses of NSControl.
33.23.24 doubleValue as Double

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The double value of the control.
**Notes:** (Read and Write computed property)

33.23.25 font as NSFontMBS

MBS MacCocoa Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The font used to draw text in the receiver’s cell.
**Notes:**
If the cell is being edited, the text in the cell is redrawn in the new font, and the cell’s editor (the NSText object used globally for editing) is updated with the new font object.
(Read and Write computed property)

33.23.26 ignoresMultiClick as boolean

MBS MacCocoa Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value indicating whether the receiver ignores multiple clicks made in rapid succession.
**Example:**
```python
dim n as NSControlMBS // your control
n.ignoresMultiClick=True
```

**Notes:**
True if the view ignores multiple clicks; otherwise, false.
(Read and Write computed property)

33.23.27 integerValue as Integer

MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The value of the receiver’s cell as an Integer value.
**Notes:**
If the control contains many cells (for example, NSMatrix), then the value of the currently selected cell is returned. If the control is in the process of editing the affected cell, then it invokes the validateEditing
method before extracting and returning the value.

Available in OS X v10.5 and later.
(Read and Write computed property)

### 33.23.28 intValue as Integer

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The integer value of the control.  
**Example:**
```
dim n as new nsbuttonMBS(0,0,100,100)

n.intValue=1
MsgBox str(n.intValue) // shows 1
n.intValue=0
MsgBox str(n.intValue) // shows 0
```

**Notes:** (Read and Write computed property)

### 33.23.29 isContinuous as boolean

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the receiver’s cell sends its action message continuously to its target during mouse tracking.  
**Notes:**
True if the action message should be sent continuously; otherwise, false.  
(Read and Write computed property)

### 33.23.30 isEnabled as boolean

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the receiver reacts to mouse events.  
**Notes:**
True if the view responds to mouse events; otherwise, false.  
(Read and Write computed property)
33.23. CLASS NSCONTROLMBS

33.23.31 refusesFirstResponder as boolean

**Function:** Whether the receiver refuses the first responder role.  
**Notes:**  
By default, the user can advance the focus of keyboard events between controls by pressing the Tab key; when this focusor first responder status is indicated for a control (by the insertion point or, for nontext controls, a faint rectangle), the user can activate the control by pressing the Space bar.  
(Read and Write computed property)

33.23.32 stringValue as string

**Function:** The string value of the control.  
**Notes:** (Read and Write computed property)

33.23.33 tag as Integer

**Function:** The tag identifying the object.  
**Notes:**  
You can set this property to the value you need.  
(Read and Write computed property)

33.23.34 Events

33.23.35 Action

**Function:** The control’s action was triggered.  
**Notes:** For a button if it was pressed.

33.23.36 TextDidBeginEditing(fieldEditor as NSTextMBS, notification as NSNotificationMBS)

**Function:** Sent when a control with editable text begins an editing session.  
**Notes:**
CHAPTER 33. COCOA CONTROLS

Notification: The notification object. The name of the notification is always NSControlTextDidBeginEditingNotification.

This event is invoked when the user begins editing text in a control such as a text field or a form field. The control posts a NSControlTextDidBeginEditingNotification notification, and if the control’s subclass implements this event, it is automatically registered to receive the notification. The field editor is also delivered for inspection.

See TextDidEndEditing for an explanation of why you may not always get one invocation of TextDidBeginEditing for each invocation of TextDidEndEditing.

33.23.37 TextDidChange(fieldEditor as NSTextMBS, notification as NSNotificationMBS)


Function: Sent when the text in the receiving control changes.

Notes:

Notification: The notification object. The name of the notification is always NSControlTextDidChangeNotification.

This event is invoked when text in a control such as a text field or form changes. The control posts a NSControlTextDidChangeNotification notification, and if the control’s subclass implements this event, it is automatically registered to receive the notification. The field editor is provided as parameter for inspection.

33.23.38 TextDidEndEditing(fieldEditor as NSTextMBS, notification as NSNotificationMBS)


Function: Sent when a control with editable text ends an editing session.

Notes:

Notification: The notification object. The name of the notification is always NSControlTextDidEndEditingNotification.

This event is invoked when the user stops editing text in a control such as a text field or form. The control posts a NSControlTextDidEndEditingNotification notification, and if the control’s subclass implements this event, it is automatically registered to receive the notification. The field editor is also provided for inspection.

Warning: In some cases, such as when editing within an instance of NSOutlineView, this method may be invoked without a previous invocation of TextDidBeginEditing. You will only get the TextDidBeginEditing:
notification if the user actually types something, but you can get the TextDidEndEditing notification if the user just double-clicks the field and then clicks outside the field, without typing.

### 33.23.39 textShouldBeginEditing(fieldEditor as NSTextField) as boolean

MBS MacCocoa Plugin, Plugin Version: 8.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event called to decide whether text editing should be allowed.

**Notes:**
Return true to allow text editing or false to deny.
Be aware that an event in Xojo without return will cause false to be returned.

### 33.23.40 textShouldEndEditing(fieldEditor as NSTextField) as boolean

MBS MacCocoa Plugin, Plugin Version: 8.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event called to decide whether ending text editing should be allowed.

**Notes:**
Return true to allow end of text editing or false to deny.
Be aware that an event in Xojo without return will cause false to be returned.
33.24 control NSDatePickerControllerMBS

33.24.1 control NSDatePickerControllerMBS

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The control to put a Mac OS X date picker on a Xojo window.
Notes: This control embeds a special NSDatePicker subclass.
Designed for Xojo 2013r1 and newer. May work on Real Studio 2012, but not perfectly.
Please use view property to access the underlying object and set properties.

33.24.2 Properties

33.24.3 View as NSDatePickerControllerMBS

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The reference to the underlying NSDatePicker.
Notes: (Read only property)

33.24.4 Events

33.24.5 Action

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: This event is called when user clicks on a date/time and changes something.

33.24.6 BoundsChanged

Function: The event called when the bounds, but not the frame, changed.

33.24.7 EnableMenuItems

Function: The event where you can enable menu items.
33.24.8 FrameChanged

*Function:* The event called when the frame changed.

33.24.9 GotFocus

*Function:* The control itself got focus.
*Notes:* This only fires if the control itself got focus and not a sub control.

33.24.10 LostFocus

*Function:* The control lost focus.
*Notes:* This only fires if the control itself lost focus and not a sub control.

33.24.11 MenuAction(HitItem as MenuItem) As Boolean

*Function:* Called when a menuitem is choosen.
*Notes:* This allows the control to react on its relevant menu items. Please return true if you handled it or false to give others a chance.

33.24.12 MouseDown(x as Integer, y as Integer, Modifiers as Integer) As Boolean

*Function:* The mouse button was pressed inside the controls region at the location passed in to x, y.
*Notes:*

The coordinates x and y are local to the control, i.e. they represent the position of the mouse click relative to the upper-left corner or the Control.

Return True if you are going to handle the MouseDown. In such a case:

- The Action event, if any, will not execute and the state of the object will not change.
- You will receive the MouseDrag and MouseUp events.

If you return False, the system handles the MouseDown so the above event handlers do not get called.
33.24.13 MouseDrag(x as Integer, y as Integer)

Function: This event fires continuously after the mouse button was pressed inside the Control.
Notes:
Mouse location is local to the control passed in to x, y.
As this event is fired continuously (hundreds of time per second), it is your responsibility to determine if the
mouse has really moved.

33.24.14 MouseUp(x as Integer, y as Integer)

Function: The mouse button was released.
Notes: Use the x and y parameters to determine if the mouse button was released within the control's
boundaries.

33.24.15 ScaleFactorChanged(NewFactor as Double)

Function: The backing store scale factor has changed.
Notes: Please invalidate any cached bitmaps or other relevant state.
33.25 class NSDatePickerMBS

Function: The plugin class for a Cocoa date picker.
Notes:
NSDatePicker is a subclass of NSControl that provides a user interface for displaying and editing an NSDate object.
Subclass of the NSControlMBS class.

33.25.2 Methods

33.25.3 Constructor

Function: Creates a new date picker with size 100/100 and position 0/0
Example:
```
dim t as new NSDatePickerMBS
```

Notes: On success the handle property is not zero.

See also:
- 33.25.4 Constructor(Handle as Integer)
- 33.25.5 Constructor(left as Double, top as Double, width as Double, height as Double)

33.25.4 Constructor(Handle as Integer)

Function: Creates an object based on the given NSDatePicker handle.
Example:
```
dim t as new NSDatePickerMBS(0, 0, 100, 100)
dim v as new NSDatePickerMBS(t.handle)
MsgBox str(v.Bounds.Width) + ” x ” + str(v.Bounds.Height)
```

Notes: The handle is casted to a NSDatePicker and the plugin retains this handle.
See also:
33.25.5 Constructor(left as Double, top as Double, width as Double, height as Double)

Function: Creates a new date picker with the given size and position.
Example:
```vba
dim x as new NSDatePickerMBS(0, 0, 100, 100)
```

Notes: On success the handle property is not zero.
See also:
- 33.25.3 Constructor
- 33.25.4 Constructor(Handle as Integer)

33.25.6 Properties

33.25.7 backgroundColor as NSColorMBS

Function: The background color.
Notes:
See also drawsBackground property.
(Read and Write computed property)

33.25.8 Bezeled as Boolean

Function: Whether the receiver has a bezeled border.
Notes:
True if the receiver has a bezeled border, false otherwise.
(Read and Write computed property)
33.25.9 Bordered as Boolean

**Function:** Whether the receiver has a plain border.
**Notes:**
True if the receiver has a plain border, false otherwise.
(Read and Write computed property)

33.25.10 calendar as NSCalendarMBS

**Function:** The calendar.
**Notes:** (Read and Write computed property)

33.25.11 datePickerElements as Integer

**Function:** A bitmask that indicates which visual elements of the date picker are currently shown, and which won’t be usable because they are hidden.
**Notes:** (Read and Write computed property)

33.25.12 datePickerMode as Integer

**Function:** The date picker mode.
**Notes:** (Read and Write computed property)

33.25.13 datePickerStyle as Integer

**Function:** The date picker style.
**Notes:** (Read and Write computed property)

33.25.14 dateValue as date

**Function:** The current date value.
CHAPTER 33. COCOA CONTROLS

Notes: (Read and Write computed property)

33.25.15 drawsBackground as Boolean

Function: Whether the receiver draws the background.
Notes:
True if the receiver draws the background, false otherwise.
(Read and Write computed property)

33.25.16 locale as NSLocaleMBS

Function: The locale.
Notes: (Read and Write computed property)

33.25.17 maxDate as date

Function: The maximum date.
Notes:
nil indicates no maximum date.
(Read and Write computed property)

33.25.18 minDate as date

Function: The minimum date.
Notes:
nil indicates no minimum date.
(Read and Write computed property)

33.25.19 textColor as NSColorMBS

Function: The text color.
33.25. **CLASS NSDATEPICKERMBS**

Notes: (Read and Write computed property)

### 33.25.20 timeInterval as Double


**Function:** The time interval that represents the date range.

**Notes:**
The time interval that represents the receiver’s date range. The date range begins at the date returned by dateValue. This method returns 0 when the receiver is not in the NSRangeDateMode mode.

(Read and Write computed property)

### 33.25.21 timeZone as NSTimeZoneMBS


**Function:** The time zone.

**Notes:** (Read and Write computed property)

### 33.25.22 Constants

### 33.25.23 NSClockAndCalendarDatePickerStyle = 1

MBS MacControls Plugin, Plugin Version: 12.2. **Function:** A constants for a date picker style.

**Notes:** Provide a visual clock and calendar style interface.

### 33.25.24 NSEraDatePickerElementFlag = & h100

MBS MacControls Plugin, Plugin Version: 12.2. **Function:** One of the constants which allows you to specify the date and time elements.

**Notes:**
Display and allow editing of the era of the date, if applicable.
This flag has been declared for possible future use, and does not yet have any effect.

### 33.25.25 NSHourMinuteDatePickerElementFlag = & hC

MBS MacControls Plugin, Plugin Version: 12.2. **Function:** One of the constants which allows you to specify the date and time elements.
CHAPTER 33. COCOA CONTROLS

Notes: Display and allow editing of the hour and minute elements of the date.

33.25.26 **NSHourMinuteSecondDatePickerElementFlag = & hE**

MBS MacControls Plugin, Plugin Version: 12.2. **Function:** One of the constants which allows you to specify the date and time elements.

Notes: Display and allow editing of the hour, minute and second elements of the date.

33.25.27 **NSRangeDateMode = 1**

MBS MacControls Plugin, Plugin Version: 12.2. **Function:** One of the constants to define whether the control provides a single date, or a range of dates.

Notes: Allow selection of a range of dates. (First implemented in Mac OS X v 10.5.)

33.25.28 **NSSingleDateMode = 0**

MBS MacControls Plugin, Plugin Version: 12.2. **Function:** One of the constants to define whether the control provides a single date, or a range of dates.

Notes: Allow selection of a single date.

33.25.29 **NSTextFieldAndStepperDatePickerStyle = 0**

MBS MacControls Plugin, Plugin Version: 12.2. **Function:** A constants for a date picker style.

Notes: Provide a text field and stepper style interface.

33.25.30 **NSTextFieldDatePickerStyle = 2**

MBS MacControls Plugin, Plugin Version: 12.2. **Function:** A constants for a date picker style.

Notes: Provide a text field interface.

33.25.31 **NSTimeZoneDatePickerElementFlag = & h10**

MBS MacControls Plugin, Plugin Version: 12.2. **Function:** One of the constants which allows you to specify the date and time elements.

Notes:
Display and allow editing of the time zone.
This flag has been declared for possible future use, and does not yet have any effect.

### 33.25.32 NSYearMonthDatePickerElementFlag = & hC0

MBS MacControls Plugin, Plugin Version: 12.2. **Function:** One of the constants which allows you to specify the date and time elements.
**Notes:** Display and allow editing of the year and month elements of the date.

### 33.25.33 NSYearMonthDayDatePickerElementFlag = & hE0

MBS MacControls Plugin, Plugin Version: 12.2. **Function:** One of the constants which allows you to specify the date and time elements.
**Notes:** Display and allow editing of the year, month and day elements of the date.
33.26 class NSImageCellMBS

33.26.1 class NSImageCellMBS


**Function:** An NSImageCell object displays a single image (encapsulated in an NSImage object) in a frame.

**Notes:**
This class provides methods for choosing the frame and for aligning and scaling the image to fit the frame.

The object value of an NSImageCell object must be an NSImage object, so if you use the setObjectValue: method of NSCell, be sure to supply an NSImage object as an argument. Because an NSImage object does not need to be converted for display, do not use the NSCell methods relating to formatters.

An NSImageCell object is usually associated with some kind of control object an NSImageView, an NSMatrix, or an NSTableView.

Subclass of the NSCellMBS class.

33.26.2 Methods

33.26.3 Constructor(image as NSImageMBS)


**Function:** Creates a new Cell object with an image.

**Example:**
```
Dim pic As Picture = LogoMBS(500)
Dim n As NSImageMBS = New NSImageMBS(pic)
Dim c As New NSImageCellMBS(n)
```

Backdrop = c.image.CopyPictureWithMask
Title = c.classPath

See also:
- 33.26.4 Constructor(text as string)

33.26.4 Constructor(text as string)


**Function:** Creates a new Cell object with a text.

**Example:**
33.26. **CLASS NSIMAGECELLMBS**

```ruby
dim c as new NSImageCellMBS("Hello")
MsgBox c.StringValue
```

See also:

- 33.26.3 Constructor(image as NSImageMBS)

33.26.5 Properties

33.26.6 `imageAlignment` as Integer

**Function:** The alignment of the receiver’s image relative to its frame.
**Notes:**
For a list of possible values, see NSImageAlign* constants. The default value is NSImageAlignCenter.
(Read and Write property)

33.26.7 `imageFrameStyle` as Integer

**Function:** The style of the frame that borders the image.
**Notes:**
Value is one of the frame style constants. For a list of frame styles, see NSImageFrame* constants.
(Read and Write property)

33.26.8 `imageScaling` as Integer

**Function:** The scaling mode used to fit the receiver’s image into the frame.
**Notes:**
Value is one of the image scaling constants. For a list of possible values, see NSScale* constants.
(Read and Write property)
33.26.9 Constants

33.26.10 NSImageAlignBottom = 5

MBS MacCocoa Plugin, Plugin Version: 10.0. **Function:** One of the constants to specify the location of the image in the frame using the imageAlignment property.
**Notes:** Align the image with the bottom edge of the cell.

33.26.11 NSImageAlignBottomLeft = 6

MBS MacCocoa Plugin, Plugin Version: 10.0. **Function:** One of the constants to specify the location of the image in the frame using the imageAlignment property.
**Notes:** Align the image with the bottom and left edges of the cell.

33.26.12 NSImageAlignBottomRight = 7

MBS MacCocoa Plugin, Plugin Version: 10.0. **Function:** One of the constants to specify the location of the image in the frame using the imageAlignment property.
**Notes:** Align the image with the bottom and right edges of the cell.

33.26.13 NSImageAlignCenter = 0

MBS MacCocoa Plugin, Plugin Version: 10.0. **Function:** One of the constants to specify the location of the image in the frame using the imageAlignment property.
**Notes:** Center the image in the cell.

33.26.14 NSImageAlignLeft = 4

MBS MacCocoa Plugin, Plugin Version: 10.0. **Function:** One of the constants to specify the location of the image in the frame using the imageAlignment property.
**Notes:** Align the image with the left edge of the cell.

33.26.15 NSImageAlignRight = 8

MBS MacCocoa Plugin, Plugin Version: 10.0. **Function:** One of the constants to specify the location of the image in the frame using the imageAlignment property.
33.26. CLASS NSIMAGECELLMBS

Notes: Position the image along the right edge of the cell.

33.26.16  NSImageAlignTop = 1

MBS MacCocoa Plugin, Plugin Version: 10.0. Function: One of the constants to specify the location of the image in the frame using the imageAlignment property.
Notes: Position the image along the top edge of the cell.

33.26.17  NSImageAlignTopLeft = 2

MBS MacCocoa Plugin, Plugin Version: 10.0. Function: One of the constants to specify the location of the image in the frame using the imageAlignment property.
Notes: Align the image with the top and left edges of the cell.

33.26.18  NSImageAlignTopRight = 3

MBS MacCocoa Plugin, Plugin Version: 10.0. Function: One of the constants to specify the location of the image in the frame using the imageAlignment property.
Notes: Align the image with the top and right edges of the cell.

33.26.19  NSImageFrameButton = 4

MBS MacCocoa Plugin, Plugin Version: 10.0. Function: One of the frame constants for the image-FrameStyle property.
Notes: A convex bezel that makes the image stand out in relief, like a button.

33.26.20  NSImageFrameGrayBezel = 2

MBS MacCocoa Plugin, Plugin Version: 10.0. Function: One of the frame constants for the image-FrameStyle property.
Notes: A gray, concave bezel that makes the image look sunken.

33.26.21  NSImageFrameGroove = 3

MBS MacCocoa Plugin, Plugin Version: 10.0. Function: One of the frame constants for the image-FrameStyle property.
Notes: A thin groove that looks etched around the image

33.26.22  **NSImageFrameNone = 0**

MBS MacCocoa Plugin, Plugin Version: 10.0. **Function:** One of the frame constants for the image-FrameStyle property.
**Notes:** An invisible frame

33.26.23  **NSImageFramePhoto = 1**

MBS MacCocoa Plugin, Plugin Version: 10.0. **Function:** One of the frame constants for the image-FrameStyle property.
**Notes:** A thin black outline and a dropped shadow

33.26.24  **NSScaleNone = 2**

MBS MacCocoa Plugin, Plugin Version: 10.0. **Function:** One of the scale constants.

33.26.25  **NSScaleProportionally = 0**

MBS MacCocoa Plugin, Plugin Version: 10.0. **Function:** One of the scale constants.

33.26.26  **NSScaleToFit = 1**

MBS MacCocoa Plugin, Plugin Version: 10.0. **Function:** One of the scale constants.
33.27. CLASS NSIMAGEVIEWMBS

33.27  class NSImageViewMBS

33.27.1  class NSImageViewMBS


**Function:** An NSImageView object displays a single image from an NSImage object in a frame and can optionally allow a user to drag an image to it.

**Example:**

```
ImageWell1.NSImageViewMBS.alphaValue = 0.5
```

**Notes:**

You can embed this view in a CustomNSViewMBS to get more events for mouse and keyboard. Subclass of the NSControlMBS class.

33.27.2  Methods

33.27.3  Constructor


**Function:** Creates a new imageview with size 100/100 and position 0/0

**Example:**

```
dim t as new NSImageViewMBS
```

**Notes:** On success the handle property is not zero.

See also:

- 33.27.4 Constructor(Handle as Integer)
- 33.27.5 Constructor(left as Double, top as Double, width as Double, height as Double)

33.27.4  Constructor(Handle as Integer)


**Function:** Creates an object based on the given NSImageView handle.

**Example:**

```
dim t as new NSImageViewMBS(0, 0, 100, 100)
dim v as new NSImageViewMBS(t.handle)
```
CHAPTER 33. COCOA CONTROLS

MsgBox str(v.Bounds.Width)+” x ”+str(v.Bounds.Height)

Notes: The handle is casted to a NSImageView and the plugin retains this handle. See also:

- 33.27.3 Constructor
- 33.27.5 Constructor(left as Double, top as Double, width as Double, height as Double)

33.27.5 Constructor(left as Double, top as Double, width as Double, height as Double)

Function: Creates a new image view with the given size and position.
Example:

dim x as new NSImageViewMBS(0, 0, 100, 100)

Notes: On success the handle property is not zero. See also:

- 33.27.3 Constructor
- 33.27.4 Constructor(Handle as Integer)

33.27.6 Properties

33.27.7 allowsCutCopyPaste as Boolean

Function: Whether the receiver allows the user to cut, copy and paste the image contents.
Notes:

True if the user can cut, copy, and paste the image contents; otherwise, false to prevent the use of pasteboard operations.
(Read and Write computed property)

33.27.8 animates as Boolean

Function: A Boolean value indicating whether the receiver automatically plays animated images.
Notes:
33.27. CLASS NSIMAGEVIEWMBS

True if the receiver automatically plays animated images; otherwise, false. The default value is true for NSImageView objects you create programmatically. For NSImageView objects loaded from a nib file, the control takes the value set in Interface Builder.

The timing and looping characteristics of the animation are taken from the image data. If this method returns false, the receiver displays the first frame of the animation only.
(Read and Write computed property)

33.27.9 image as NSImageMBS

Function: Returns the NSImage object displayed by the receiver.
Notes: (Read and Write computed property)

33.27.10 imageAlignment as Integer

Function: The alignment of the receiver’s image relative to its frame.
Notes:
For a list of possible values, see NSImageAlign* constants. The default value is NSImageAlignCenter.
(Read and Write computed property)

33.27.11 imageFrameStyle as Integer

Function: The style of the frame that borders the image.
Example:
ImageWell1.NSImageViewMBS.imageFrameStyle = NSImageViewMBS.NSImageFramePhoto

Notes:
Value is one of the frame style constants. For a list of frame styles, see NSImageFrame* constants.
(Read and Write computed property)
33.27.12 imageScaling as Integer

Function: The scaling mode used to fit the receiver’s image into the frame.
Example:
ImageWell1.NSImageViewMBS.imageScaling = NSImageViewMBS.NSScaleNone

Notes:
Value is one of the image scaling constants. For a list of possible values, see NSScale* constants.
(Read and Write computed property)

33.27.13 isEditable as Boolean

Function: Whether the user can drag a new image into the frame.
Notes:
True if the user can drag an image into the receiver’s frame; otherwise, false.
(Read and Write computed property)

33.27.14 Constants

33.27.15 NSImageAlignBottom = 5

MBS MacControls Plugin, Plugin Version: 10.0. Function: One of the constants to specify the location of the image in the frame using the imageAlignment property.
Notes: Align the image with the bottom edge of the cell.

33.27.16 NSImageAlignBottomLeft = 6

MBS MacControls Plugin, Plugin Version: 10.0. Function: One of the constants to specify the location of the image in the frame using the imageAlignment property.
Notes: Align the image with the bottom and left edges of the cell.
33.27.17 NSImageAlignBottomRight = 7

MBS MacControls Plugin, Plugin Version: 10.0. **Function:** One of the constants to specify the location of the image in the frame using the imageAlignment property.  
**Notes:** Align the image with the bottom and right edges of the cell.

33.27.18 NSImageAlignCenter = 0

MBS MacControls Plugin, Plugin Version: 10.0. **Function:** One of the constants to specify the location of the image in the frame using the imageAlignment property.  
**Notes:** Center the image in the cell.

33.27.19 NSImageAlignLeft = 4

MBS MacControls Plugin, Plugin Version: 10.0. **Function:** One of the constants to specify the location of the image in the frame using the imageAlignment property.  
**Notes:** Align the image with the left edge of the cell.

33.27.20 NSImageAlignRight = 8

MBS MacControls Plugin, Plugin Version: 10.0. **Function:** One of the constants to specify the location of the image in the frame using the imageAlignment property.  
**Notes:** Position the image along the right edge of the cell.

33.27.21 NSImageAlignTop = 1

MBS MacControls Plugin, Plugin Version: 10.0. **Function:** One of the constants to specify the location of the image in the frame using the imageAlignment property.  
**Notes:** Position the image along the top edge of the cell.

33.27.22 NSImageAlignTopLeft = 2

MBS MacControls Plugin, Plugin Version: 10.0. **Function:** One of the constants to specify the location of the image in the frame using the imageAlignment property.  
**Notes:** Align the image with the top and left edges of the cell.
33.27.23 NSImageAlignTopRight = 3

MBS MacControls Plugin, Plugin Version: 10.0. **Function:** One of the constants to specify the location of the image in the frame using the imageAlignment property. **Notes:** Align the image with the top and right edges of the cell.

33.27.24 NSImageFrameButton = 4

MBS MacControls Plugin, Plugin Version: 10.0. **Function:** One of the frame constants for the imageFrameStyle property. **Notes:** A convex bezel that makes the image stand out in relief, like a button

33.27.25 NSImageFrameGrayBezel = 2

MBS MacControls Plugin, Plugin Version: 10.0. **Function:** One of the frame constants for the imageFrameStyle property. **Notes:** A gray, concave bezel that makes the image look sunken

33.27.26 NSImageFrameGroove = 3

MBS MacControls Plugin, Plugin Version: 10.0. **Function:** One of the frame constants for the imageFrameStyle property. **Example:**

ImageWell1.NSImageViewMBS.imageFrameStyle = NSImageViewMBS.NSImageFrameGroove

**Notes:** A thin groove that looks etched around the image

33.27.27 NSImageFrameNone = 0

MBS MacControls Plugin, Plugin Version: 10.0. **Function:** One of the frame constants for the imageFrameStyle property. **Notes:** An invisible frame
33.27.28  NSImageFramePhoto = 1

MBS MacControls Plugin, Plugin Version: 10.0. **Function:** One of the frame constants for the image-FrameStyle property.
**Notes:** A thin black outline and a dropped shadow

33.27.29  NSScaleNone = 2

MBS MacControls Plugin, Plugin Version: 10.0. **Function:** One of the scale constants.

33.27.30  NSScaleProportionally = 0

MBS MacControls Plugin, Plugin Version: 10.0. **Function:** One of the scale constants.

33.27.31  NSScaleToFit = 1

MBS MacControls Plugin, Plugin Version: 10.0. **Function:** One of the scale constants.
33.28 class NSMenuItemCellMBS

33.28.1 class NSMenuItemCellMBS

Function: NSMenuItemCell is a class that handles the measurement and display of a single menu item in its encompassing frame.
Notes:
Instances of NSMenuItemCell work in conjunction with an NSMenuView object to control the overall appearance of the menu.
Subclass of the NSButtonCellMBS class.

33.28.2 Methods

33.28.3 calcSize

Function: Calculates the minimum required width and height of the receivers menu item.
Notes:
The calculated values are cached for future use. This method also calculates the sizes of individual components of the cells menu item and caches those values.
This method is invoked automatically when necessary. You should not need to invoke it directly.

33.28.4 Constructor(image as NSImageMBS)

Function: The private constructor.
Notes: Don’t use it.
See also:
- 33.28.5 Constructor(text as string) 6454

33.28.5 Constructor(text as string)

Function: The constructor.
See also:
- 33.28.4 Constructor(image as NSImageMBS) 6454
33.28. **CLASS NSMENUITEMCELLMBS**

### 33.28.6 Properties

#### 33.28.7 menuItem as NSMenuItemMBS

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** The menu item object associated with the cell.  
**Notes:** (Read and Write property)

#### 33.28.8 needsDisplay as Boolean

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** A Boolean value indicating whether the menu item needs to be displayed.  
**Notes:**  
Set this property to true when you want the menu item to be drawn.  
(Read and Write property)

#### 33.28.9 needsSizing as Boolean

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** A Boolean value indicating whether the size of the menu needs to be calculated.  
**Notes:**  
When the value of this property is true, the next attempt to obtain size information about the menu cause the calcSize method to be called. When the value of the property is false, the size information is obtained from the currently cached values.  
Subclasses that drastically change the way a menu item is drawn can change the value of this property to update the menu item information. Other parts of your application should not need to change this property directly. The cell checks this value of this property as necessary when the content of its menu item changes.  
(Read and Write property)

#### 33.28.10 tag as Integer

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** The integer tag of the selected menu item.  
**Notes:**  
If no item is selected, the value in this property is 0.  
(Read and Write property)
33.29 control NSOutlineControlMBS

33.29.1 control NSOutlineControlMBS

Function: The control for a NSOutlineView.
Notes: Please use NSOutlineControlMBS for hierarchical lists and NSTableControlMBS for normal lists.

33.29.2 Properties

33.29.3 AcceptTabs as Boolean

Function: Whether the control should accept tab keys.
Notes: If true, the plugin will not forward the tab keydown/keyup events to Xojo, because Xojo would do switch to next control.
(Read and Write property)

33.29.4 allowsColumnReordering as Boolean

Function: A Boolean value indicating whether the table view allows the user to rearrange columns by dragging their headers.
Notes: The default value of this property is true, which allows the user to rearrange the table views columns. You can rearrange columns programmatically regardless of this setting.
(Read and Write property)

33.29.5 allowsColumnResizing as Boolean

Function: A Boolean value indicating whether the table view allows the user to resize columns by dragging between their headers.
Notes: The default of this property is true, which allows the user to resize the table views columns. You can resize columns programmatically regardless of this setting.
(Read and Write property)
33.29. CONTROL NSOUTLINECONTROLMBS

33.29.6 allowsColumnSelection as Boolean

Function: A Boolean value indicating whether the table view allows the user to select columns by clicking their headers.
Notes:
The default is false, which prevents the user from selecting columns (if you create the table view in Interface Builder, the default value is true). You can select columns programmatically regardless of this setting.
(Read and Write property)

33.29.7 allowsEmptySelection as Boolean

Function: A Boolean value indicating whether the table view allows the user to select zero columns or rows.
Notes:
The default is true, which allows the user to select zero columns or rows.
(Read and Write property)

33.29.8 allowsMultipleSelection as Boolean

Function: A Boolean value indicating whether the table view allows the user to select more than one column or row at a time.
Notes:
The default is false, which allows the user to select only one column or row at a time. You can select multiple columns or rows programmatically regardless of this setting.
(Read and Write property)

33.29.9 autohidesScrollers as Boolean

Function: A Boolean that indicates whether the scroll view automatically hides its scroll bars when they are not needed.
Notes:
The horizontal and vertical scroll bars are hidden independently of each other. When the value of this property is YES and the content of the scroll view doesn’t extend beyond the size of the clip view on a given axis, the scroller on that axis is removed to leave more room for the content.
33.29.10 hasHorizontalScroller as Boolean

Function: A Boolean that indicates whether the scroll view has a horizontal scroller.
Notes: When the value of this property is true, the scroll view allocates and displays a horizontal scroller as needed. The default value of this property is false.
(Read and Write property)

33.29.11 hasVerticalScroller as Boolean

Function: A Boolean that indicates whether the scroll view has a vertical scroller.
Notes: When the value of this property is true, the scroll view allocates and displays a vertical scroller as needed. The default value of this property is false.
(Read and Write property)

33.29.12 ScrollView as NSScrollViewMBS

Function: The scroll view used in this control.
Notes: (Read only property)

33.29.13 View as NSOutlineViewMBS

Function: The outline view used in this control.
Notes: (Read only property)
See also:

- 33.29.90 view(tableColumn as NSTableColumnMBS, item as NSOutlineViewItemMBS) as NSViewMBS 6482
33.29.14 Events

33.29.15 acceptDrop(info as NSDraggingInfoMBS, item as NSOutlineViewItemMBS, index as Integer) as Boolean

Function: Returns a Boolean value that indicates whether a drop operation was successful.
Notes:
info: An object that contains more information about this dragging operation.
item: The parent of the item over which the cursor was placed when the mouse button was released.
index: The index of the child of item over which the cursor was placed when the mouse button was released.

Return true if the drop operation was successful, otherwise false.

The data source should incorporate the data from the dragging pasteboard in the implementation of this method. You can get the data for the drop operation from info using the draggingPasteboard method. The return value indicates success or failure of the drag operation to the system.

33.29.16 BoundsChanged

Function: The event called when the bounds, but not the frame, changed.

33.29.17 childOfItem(index as Integer, item as NSOutlineViewItemMBS) as NSOutlineViewItemMBS

Function: Returns the child item at the specified index of a given item.
Notes:
index: The index of the child item from item to return.
item: An item in the data source.

Return the child item at index of item. If item is nil, returns the appropriate child item of the root object.

Children of a given parent item are accessed sequentially. In order for the collapsed state of the outline view to remain consistent when it is reloaded you must always return the same object for a specified child and item.

Do not call reloadData from this method.
This event is called very frequently, so it must be efficient.

### 33.29.18 ColumnDidMove(notification as NSNotificationMBS, OldColumn as Integer, NewColumn as Integer)

**Function:** Invoked whenever the user moves a column in the outline view.

### 33.29.19 ColumnDidResize(notification as NSNotificationMBS, tableColumn as NSTableColumnMBS, OldWidth as Double)

**Function:** Invoked whenever the user resizes a column in the outline view.

### 33.29.20 concludeDragOperation(info as NSDraggingInfoMBS)

**Function:** Invoked when the dragging operation is complete, signaling the receiver to perform any necessary clean-up.  
**Notes:**

sender: The object sending the message; use it to get details about the dragging operation.

For this method to be invoked, the previous performDragOperation must have returned true.

The destination implements this method to perform any tidying up that it needs to do, such as updating its visual representation now that it has incorporated the dragged data. This message is the last message sent from sender to the destination during a dragging session.

If the sender object’s animatesToDestination property was set to true in prepareForDragOperation, then the drag image is still visible. At this point you should draw the final visual representation in the view. When this method returns, the drag image is removed from the screen. If your final visual representation matches the visual representation in the drag, this is a seamless transition.
33.29. CONTROL NSOUTLINECONTROLMBS

33.29.21  dataCell(tableColumn as NSTableColumnMBS, item as NSOutlineViewItemMBS) as NSCellMBS

Function: Returns the cell to use in a given column for a given item.
Notes:
tableColumn: The table column for which the cell is required. This value may be nil.
item: The item for which the cell is required.

Return the cell to use in column tableColumn for item item, or nil. The cell must properly implement copyWithZone (since it may be copied by by the outline view).

You can return a different data cell for any particular combination of table column and item, or a cell that will be used for the entire row (a full-width cell). If tableColumn is non-nil, you should return a cell. Typically, you should default to returning the result from [tableColumn dataCellForRow:row].
When each row (identified by the item) is being drawn, this method is first called with a nil value for tableColumn. At this time, you can return a cell that is used to draw the entire row, acting like a group. If you do return a cell for the nil table column, your implementations of the other corresponding data source and delegate methods must be prepared to be invoked with a nil value for tableColumn. If do not return a cell for the nil table column, the method is called once for each column in the outline view, as usual.

33.29.22  didAddRowView(rowView as NSTableRowViewMBS, row as Integer)

Function: Implemented to know when a new row view is added to the table.
Notes:
rowView: The new row view.
row: The row to which the view was added.

This event is for NSView-based outline views. At this point, you can choose to add in extra views or modify any properties on rowView.

33.29.23  didClickTableColumn(tableColumn as NSTableColumnMBS)

Function: Sent at the time the mouse button subsequently goes up in outlineView and tableColumn has been clicked without having been dragged anywhere.
33.29.24 **didDragTableColumn**(tableColumn as NSTableColumnMBS)


**Function:** Sent at the time the mouse button goes up in outlineView and tableColumn has been dragged during the time the mouse button was down.

33.29.25 **didRemoveRowView**(rowView as NSTableRowViewMBS, row as Integer)


**Function:** Implemented to know when a row view is removed from the table

**Notes:**
- rowView: The row view that was removed.
- row: The number of the row that was removed due to being moved offscreen, or -1 if the row was removed from the table so it is no longer valid.

The removed rowView may be reused by the table, so any additionally inserted views should be removed at this point.

33.29.26 **didTile**


**Function:** The tableview did tile.

**Notes:** The internal tile function properly sizes the table view and its header view and marks it as needing display.

33.29.27 **DoubleClick**


**Function:** The mouse made a double click.

33.29.28 **draggingEnded**(info as NSDraggingInfoMBS)


**Function:** Implement this event to be notified when a drag operation ends in some other destination.

**Notes:**
- sender: The object sending the message; use it to get details about the dragging operation.
- This method might be used by a destination doing auto-expansion in order to collapse any auto-expands.
33.29.29 draggingExited(info as NSDraggingInfoMBS)


**Function:** Invoked when the dragged image enters destination bounds or frame; delegate returns dragging operation to perform.

**Notes:**

sender: The object sending the message; use it to get details about the dragging operation.

Return one (and only one) of the dragging operation constants described in NSDragOperation in the NS-DraggingInfo reference. The default return value (if this method is not implemented by the destination) is the value returned by the previous draggingEntered message.

Invoked when a dragged image enters the destination but only if the destination has registered for the pasteboard data type involved in the drag operation. Specifically, this method is invoked when the mouse pointer enters the destination’s bounds rectangle (if it is a view object) or its frame rectangle (if it is a window object).

This method must return a value that indicates which dragging operation the destination will perform when the image is released. In deciding which dragging operation to return, the method should evaluate the overlap between both the dragging operations allowed by the source (obtained from sender with the draggingSourceOperationMask method) and the dragging operations and pasteboard data types the destination itself supports.

If none of the operations is appropriate, this method should return NSDragOperationNone (this is the default response if the method is not implemented by the destination). A destination will still receive draggingUpdated and draggingExited even if NSDragOperationNone is returned by this method.

33.29.30 draggingSessionEnded(session as NSDraggingSessionMBS, screenPoint as NSPointMBS, operation as Integer)


**Function:** Implement this method to know when the given dragging session has ended.

**Notes:**

session: The dragging session that ended.

screenPoint: The point onscreen at which the drag ended.

operation: A mask specifying the types of drag operations permitted by the dragging source.

You can implement this optional delegate method to know when the dragging source operation ended at a specific location, such as the trash (by checking for an operation of NSDragOperationDelete).
33.29.31  draggingSessionWillBegin(session as NSDraggingSessionMBS, screenPoint as NSPointMBS, draggedItems() as NSOutlineViewItemMBS)

Function: Implement this method know when the given dragging session is about to begin and potentially modify the dragging session.
Notes:
session: The dragging session that is about to begin.
screenPoint: The point onscreen at which the drag is to begin.
draggedItems: A array of items to be dragged, excluding items for which pasteboardWriterForItem returns nil.

The draggedItems array directly matches the pasteboard writer array used to begin the dragging session with the NSView method beginDraggingSessionWithItems. Hence, the order is deterministic, and can be used in acceptDrop when enumerating the NSDraggingInfo protocol’s pasteboard classes.

33.29.32  EnableMenuItems

Function: The event where you can enable menu items.

33.29.33  FrameChanged

Function: The event called when the frame changed.

33.29.34  GotFocus

Function: The control itself got focus.
Notes: This only fires if the control itself got focus and not a sub control.
### 33.29.35 heightOfRowByItem(item as NSOutlineViewItemMBS) as Double


**Function:** Returns the height in points of the row containing item.

**Notes:**
- item: The row item.

Return the height of the row.

Values returned by this method should not include intercell spacing and must be greater than 0. Implement this event to support an outline view with varying row heights.

For large tables in particular, you should make sure that this method is efficient. NSOutlineView may cache the values this method returns, so if you would like to change a row’s height make sure to invalidate the row height by calling `noteHeightOfRowsWithIndexesChanged`. NSOutlineView automatically invalidates its entire row height cache in `reloadData` and `noteNumberOfRowsChanged`.

If you call `viewAtColumn` or `rowViewAtRow` within your implementation of this method, an exception is thrown.

To avoid the possibility of a hang due to unexpected recursion, don’t call geometry-calculating methods such as `bounds`, `rectOfColumn`, or any `NSTableView` method that calls `tile` within your implementation of this method.

### 33.29.36 isGroupItem(item as NSOutlineViewItemMBS) as Boolean


**Function:** Returns a Boolean that indicates whether a given row should be drawn in the group row style.

**Notes:**
- item: An item in the outline view.

Return true to indicate a particular row should have the ”group row” style drawn for that row, otherwise false.

If the cell in that row is an instance of `NSTextFieldCell` and contains only a string value, the group row style attributes are automatically applied for that cell.
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33.29.37 isItemExpandable(item as NSOutlineViewItemMBS) as Boolean

Function: Returns a Boolean value that indicates whether the a given item is expandable.
Notes:
item: An item in the data source.

Returns true if item can be expanded to display its children, otherwise NO.

This method may be called quite often, so it must be efficient.

Do not call reloadData from this method.

33.29.38 ItemDidCollapse(notification as NSNotificationMBS, item as NSOutlineViewItemMBS)

Function: Invoked when the did collapse notification is posted that is, whenever the user collapses an item in the outline view.

33.29.39 ItemDidExpand(notification as NSNotificationMBS, item as NSOutlineViewItemMBS)

Function: Invoked when notification is posted that is, whenever the user expands an item in the outline view.

33.29.40 itemForPersistentObject(PersistentObject as Variant) as NSOutlineViewItemMBS

Function: Invoked by outlineView to return the item for the archived object.
Notes:
object: An archived representation of an item in outlineView’s data source.

Return the unarchived item corresponding to object. If the item is an archived object, this method may return the object.
When the outline view is restoring the saved expanded items, this method is called for each expanded item, to translate the archived object to an outline view item.

You must implement this method if you are automatically saving expanded items (that is, if autosaveExpandedItems returns true).

### 33.29.41 ItemWillCollapse(notification as NSNotificationMBS, item as NSOutlineViewItemMBS)


**Function:** Invoked when notification is posted that is, whenever the user is about to collapse an item in the outline view.

### 33.29.42 ItemWillExpand(notification as NSNotificationMBS, item as NSOutlineViewItemMBS)


**Function:** Invoked when notification is posted that is, whenever the user is about to expand an item in the outline view.

### 33.29.43 LeftMouseDown(e as NSEventMBS) as Boolean


**Function:** Informs the receiver that the user has pressed the left mouse button.

**Notes:** This event is called before the normal event processing from Xojo happens. So return true to hide event from Xojo runtime.

### 33.29.44 LeftMouseDragged(e as NSEventMBS) as Boolean


**Function:** Informs the receiver that the user has moved the mouse with the left button pressed.

**Notes:** This event is called before the normal event processing from Xojo happens. So return true to hide event from Xojo runtime.
33.29.45 **LeftMouseUp(e as NSEventMBS) as Boolean**


**Function:** Informs the receiver that the user has released the left mouse button.

**Notes:** This event is called before the normal event processing from Xojo happens. So return true to hide event from Xojo runtime.

33.29.46 **LostFocus**


**Function:** The control lost focus.

**Notes:** This only fires if the control itself lost focus and not a sub control.

33.29.47 **MenuAction(HitItem as MenuItem) as Boolean**


**Function:** Called when a menuitem is choosen.

**Notes:** This allows the control to react on its relevant menu items. Please return true if you handled it or false to give others a chance.

33.29.48 **MouseDown(x as Integer, y as Integer, Modifiers as Integer) as Boolean**


**Function:** The mouse button was pressed inside the controls region at the location passed in to x, y.

**Notes:**

The coordinates x and y are local to the control, i.e. they represent the position of the mouse click relative to the upper-left corner or the Control.

Return True if you are going to handle the MouseDown. In such a case:

- The Action event, if any, will not execute and the state of the object will not change.
- You will receive the MouseDrag and MouseUp events.

If you return False, the system handles the MouseDown so the above event handlers do not get called.
33.29.49  `mouseDownInHeaderOfTableColumn(tableColumn as NSTableColumnMBS)`

**Function:** Event sent whenever the mouse button is clicked in outlineView while the cursor is in a column header tableColumn.

33.29.50  `MouseDrag(x as Integer, y as Integer)`

**Function:** This event fires continuously after the mouse button was pressed inside the Control.
**Notes:**
Mouse location is local to the control passed in to x, y.
As this event is fired continuously (hundreds of time per second), it is your responsibility to determine if the mouse has really moved.

33.29.51  `MouseUp(x as Integer, y as Integer)`

**Function:** The mouse button was released.
**Notes:** Use the x and y parameters to determine if the mouse button was released within the control's boundaries.

33.29.52  `namesOfPromisedFilesDroppedAtDestination(dropDestination as folderItem, DraggedItems() as NSOutlineViewItemMBS) as string()`

**Function:** Returns an array of filenames for the created files that the receiver promises to create.
**Notes:**
dropDestination: The drop location where the files are created.
items: The items being dragged.

Returns an array of filenames (not full paths) for the created files that the receiver promises to create.

For more information on file promise dragging, see documentation on the NSDraggingSource protocol and `namesOfPromisedFilesDroppedAtDestination`. 
CHAPTER 33. COCOA CONTROLS

33.29.53  nextTypeSelectMatchFromItem(startItem as NSOutlineViewItemMBS, endItem as NSOutlineViewItemMBS, searchString as String) as NSOutlineViewItemMBS

Function: Returns the first item that matches the searchString from within the range of startItem to endItem.
Notes:

startItem: The first item to search.
endItem: The item before which to stop searching. It is possible for endItem to be less than startItem if the search will wrap.
searchString: The string for which to search.

Returns the first item from within the range of startItem to endItem that matches the searchString, or nil if there is no match.

Implement this method if you want to control how type selection works. You should include startItem as a possible match, but do not include endItem.
It is not necessary to implement this event in order to support type select.

33.29.54  numberOfChildrenOfItem(item as NSOutlineViewItemMBS) as Integer

Function: Returns the number of child items encompassed by a given item.
Notes:

item: An item in the data source.

Returns the number of child items encompassed by item. If item is nil, this method should return the number of children for the top-level item.

The numberOfChildrenOfItem method is called very frequently, so it must be efficient.

Do not call reloadData from this method.
33.29. CONTROL NSOUTLINECONTROLMBS

33.29.55 objectValue(tableColumn as NSTableColumnMBS, item as NSOutlineViewItemMBS) as Variant

Function: Invoked by outlineView to return the data object associated with the specified item.
Notes:

tableColumn: A column in outlineView.
item: An item in the data source in the specified tableColumn of the view.

Returns the item is located in the specified tableColumn of the view.

Do not call reloadData from this method.

33.29.56 OtherMouseDown(e as NSEventMBS) as Boolean

Function: Informs the receiver that the user has pressed a mouse button other than the left or right one.
Notes: This event is called before the normal event processing from Xojo happens. So return true to hide event from Xojo runtime.

33.29.57 OtherMouseDragged(e as NSEventMBS) as Boolean

Function: Informs the receiver that the user has moved the mouse with a button other than the left or right button pressed.
Notes: This event is called before the normal event processing from Xojo happens. So return true to hide event from Xojo runtime.

33.29.58 OtherMouseUp(e as NSEventMBS) as Boolean

Function: Informs the receiver that the user has released a mouse button other than the left or right button.
Notes: This event is called before the normal event processing from Xojo happens. So return true to hide event from Xojo runtime.
CHAPTER 33. COCOA CONTROLS

33.29.59 pasteboardWriterForItem(item as NSOutlineViewItemMBS) as NSPasteboardItemMBS

**Function:** Implement this method to enable the table to be an NSDraggingSource that supports dragging multiple items.
**Notes:**

item: The item for which to return a pasteboard writer.

Returns a NSPasteboardItem object.

If this method is implemented, then writeItems is not called.

33.29.60 persistentObjectForItem(item as NSOutlineViewItemMBS) as Variant

**Function:** Invoked by outlineView to return an archived object for item.
**Notes:**

item: The item for which to return an archived object.

Returns an archived representation of item. If the item is an archived object, this method may return the item.

When the outline view is saving the expanded items, this method is called for each expanded item, to translate the outline view item to an archived object.

You must implement this method if you are automatically saving expanded items (that is, if autosaveExpandedItems returns true).

33.29.61 RightMouseDown(e as NSEventMBS) as Boolean

**Function:** Informs the view that the user has pressed the right mouse button.
**Notes:** This event is called before the normal event processing from Xojo happens. So return true to hide event from Xojo runtime.
33.29. **CONTROL NSOUTLINECONTROLMBS**

33.29.62 **RightMouseDragged(e as NSEventMBS) as Boolean**

**Function:** Informs the receiver that the user has moved the mouse with the right button pressed.
**Notes:** This event is called before the normal event processing from Xojo happens. So return true to hide event from Xojo runtime.

33.29.63 **RightMouseUp(e as NSEventMBS) as Boolean**

**Function:** Informs the receiver that the user has released the right mouse button.
**Notes:** This event is called before the normal event processing from Xojo happens. So return true to hide event from Xojo runtime.

33.29.64 **rowViewForItem(item as NSOutlineViewItemMBS) as NSTableRowViewMBS**

**Function:** Implement this method to return a custom NSTableRowView for a particular item.
**Notes:**
item: The item displayed by the returned table row view.

Return an instance or subclass of NSTableRowView. If nil is returned, a NSTableRowView instance is created and used.

This method, if implemented, is only invoked for NSView-based outline views.

33.29.65 **ScaleFactorChanged(NewFactor as Double)**

**Function:** The backing store scale factor has changed.
**Notes:** Please invalidate any cached bitmaps or other relevant state.

33.29.66 **SelectionDidChange(notification as NSNotificationMBS)**

**Function:** Invoked when the selection did change notification is posted (that is, immediately after the outline views selection has changed).
### 33.29.67 selectionIndexesForProposedSelection

**MBS MacControls Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.**

**Function:** Invoked to allow the delegate to modify the proposed selection.

**Notes:**

- `proposedSelectionIndexes`: An index set containing the indexes of the proposed selection.
- Return an `NSIndexSet` instance containing the indexes of the new selection. Return `proposedSelectionIndexes` if the proposed selection is acceptable, or the value of the table views existing selection to avoid changing the selection.

This method may be called multiple times with one new index added to the existing selection to find out if a particular index can be selected when the user is extending the selection with the keyboard or mouse.

Implementation of this method is optional. If implemented, this method will be called instead of `willDisplayOutlineCell`.

If not implemented or returns `nil`, the plugin will return `proposedSelectionIndexes`.

### 33.29.68 SelectionIsChanging

**MBS MacControls Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.**

**Function:** Invoked when notification is posted—that is, whenever the outline views selection changes.

### 33.29.69 selectionShouldChangeInOutlineView as Boolean

**MBS MacControls Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.**

**Function:** Returns a Boolean value that indicates whether the outline view should change its selection.

**Notes:**

- Return `true` to permit outlineView to change its selection (typically a row being edited), `false` to deny permission.

For example, if the user is editing a cell and enters an improper value, the delegate can prevent the user from selecting or editing any other cells until a proper value has been entered into the original cell. You can implement this method for complex validation of edited rows based on the values of any of their cells.
33.29.70  setObjectValue(tableColumn as NSTableColumnMBS, item as NSOutlineViewItemMBS, value as Variant)

**Function:** Set the data object for a given item in a given column.
**Notes:**
- object: The new value for the item.
- tableColumn: A column in outlineView.
- item: An item in the data source in the specified tableColumn of the view.

The item is located in the specified tableColumn of the view.

Do not call reloadData from this method.

33.29.71  shouldCollapseAutoExpandedItemsForDeposited(deposited as Boolean, superResult as Boolean) as Boolean

**Function:** Returns a Boolean value that indicates whether auto-expanded items should return to their original collapsed state.
**Notes:**
- deposited: If true, the drop terminated successfully; if false the drop failed.

Return true if auto-expanded items should return to their original collapsed state; otherwise false.

Implement this event to provide custom behavior. If the target of a drop is not auto-expanded (by hovering long enough) the drop target still gets expanded after a successful drop unless this method returns true. The default implementation returns false after a successful drop.
This method is called in a variety of situations. For example, it is called shortly after the acceptDrop method is called and also if the drag exits the outline view (exiting the view is treated the same as a failed drop). The return value of the acceptDrop method determines the incoming value of the deposited parameter.

33.29.72  shouldCollapseItem(item as NSOutlineViewItemMBS) as Boolean

**Function:** Returns a Boolean value that indicates whether the outline view should collapse a given item.
**Notes:**
- item: The item that should collapse.
Return true to permit outlineView to collapse item, false to deny permission.

You can implement this method to disallow collapsing of specific items. For example, if the first row of your outline view should not be collapsed, your delegate method could contain this line of code:

```
return rowForItem(item) <> 0
```

### 33.29.73 shouldEdit(tableColumn as NSTableColumnMBS, item as NSOutlineViewItemMBS) as Boolean


**Function:** Returns a Boolean value that indicates whether the outline view should allow editing of a given item in a given table column.

**Notes:**
- `tableColumn`: The table column.
- `item`: The item.

Returns true to permit outlineView to edit the cell specified by `tableColumn` and `item`, false to deny permission.

If this method returns true, the cell may still not be editable for example, if you have set up a custom NSTextFieldCell as a data cell, it must return true for `isEditable` to allow editing.

You can implement this method to disallow editing of specific cells.

### 33.29.74 shouldExpandItem(item as NSOutlineViewItemMBS) as Boolean


**Function:** Returns a Boolean value that indicates whether the outline view should expand a given item.

**Notes:**
- `item`: The item that should expand.

Returns true to permit outlineView to expand item, false to deny permission.

You can implement this method to disallow expanding of specific items.
33.29.75 shouldReorderColumn(columnIndex as Integer, newColumnIndex as Integer) as Boolean

**Function:** Sent to the delegate to allow or prohibit the specified column to be dragged to a new location.
**Notes:**
- columnIndex: The index of the column being dragged.
- newColumnIndex: The proposed target index of the column.

Returns true if the column reordering should be allowed, otherwise false.

When a column is initially dragged by the user, the delegate is first called with a newColumnIndex value of -1. Returning false will disallow that column from being reordered at all. Returning true allows it to be reordered, and the delegate will be called again when the column reaches a new location.

The actual NSTableColumn instance can be retrieved from the tableColumns array.
If this method is not implemented, all columns are considered reorderable.

33.29.76 shouldSelectItem(item as NSOutlineViewItemMBS) as Boolean

**Function:** Returns a Boolean value that indicates whether the outline view should select a given item.
**Notes:**
- item: The item.

Return true to permit outlineView to select item, false to deny permission.

You implement this event to disallow selection of particular items.
For better performance and finer grain control over the selection, use dataCell.

33.29.77 shouldSelectTableColumn(tableColumn as NSTableColumnMBS) as Boolean

**Function:** Returns a Boolean value that indicates whether the outline view should select a given table column.
**Notes:**
- tableColumn: The table column.
Return true to permit outlineView to select tableColumn, false to deny permission.

You can implement this method to disallow selection of specific columns.

33.29.78  shouldShowCellExpansion(tableColumn as NSTableColumnMBS, item as NSOutlineViewItemMBS) as Boolean

Function: Invoked to allow the delegate to control cell expansion for a specific column and item.
Notes:

tableColumn: A table column in the outline view.
item: An item in the outline view.

Returns true to allow an expansion tooltip to appear in the column tableColumn for item item, otherwise false.

Cell expansion can occur when the mouse hovers over the specified cell and the cell contents are unable to be fully displayed within the cell. If this method returns true, the full cell contents will be shown in a special floating tool tip view, otherwise the content is truncated.

33.29.79  shouldShowOutlineCellForItem(item as NSOutlineViewItemMBS) as Boolean

Function: Returns whether the specified item should display the outline cell (the disclosure triangle).
Notes:

item: An item in the outline view.

Returns true if the outline cell should be displayed, otherwise false.

Returning false causes frameOfOutlineCellAtRow to return NSZeroRect, hiding the cell. In addition, the row will not be collapsible by keyboard shortcuts. This method is called only for expandable rows.
33.29. **CONTROL NSOUTLINECONTROLMBS**

### 33.29.80 shouldTrackCell(cell as NSCellMBS, tableColumn as NSTableColumnMBS, item as NSOutlineViewItemMBS) as Boolean


**Function**: Returns a Boolean value that indicates whether a given cell should be tracked.

**Notes**:
- cell: The cell used to display item in column tableColumn
- tableColumn: A table column in the outline view.
- item: An item in the outline view.

Returns true if the cell should be tracked for the item in column tableColumn, otherwise false.

Normally, only selectable or selected cells can be tracked. If you implement this method, cells which are not selectable or selected can be tracked (and vice-versa). For example, this allows you to have a button cell in a table which does not change the selection, but can still be clicked on and tracked.

### 33.29.81 shouldTypeSelectForEvent(e as NSEventMBS, searchString as String) as Boolean


**Function**: Returns a Boolean value that indicates whether type select should proceed for a given event and search string.

**Notes**:
- e: The event that caused the message to be sent.
- searchString: The string for which searching is to proceed. The search string is nil if no type select has begun.

Return true if type select should proceed, otherwise false.

Generally, this method will be called from keyDown and the event will be a key event.

### 33.29.82 sizeToFitWidthOfColumn(Column as Integer) as Double


**Function**: Invoked to allow the delegate to provide custom sizing behavior when a columns resize divider is double clicked.

**Notes**:
- column: The index of the column.

Returns the width of the specified column.
By default, NSOutlineView iterates every row in the table, accesses a cell via preparedCellAtColumn, and requests the cellSize to find the appropriate largest width to use.
For accurate results and performance, it is recommended that this method is implemented when using large tables. By default, large tables use a monte carlo simulation instead of iterating every row.

33.29.83 sortDescriptorsDidChange(oldDescriptors() as NSSortDescriptorMBS)

Function: Invoked by an outline view to notify the data source that the descriptors changed and the data may need to be resorted.
Notes:
oldDescriptors: An array that contains the previous descriptors.
The data source typically sorts and reloads the data, and adjusts the selections accordingly. If you need to know the current sort descriptors and the data source does not itself manage them, you can get outlineView’s current sort descriptors by sending it a sortDescriptors message.

33.29.84 textShouldBeginEditing(control as NSControlMBS, fieldEditor as NSTextFieldMBS) as Boolean

Function: The event called to decide whether text editing should be allowed.
Notes: Return true to allow.

33.29.85 textShouldEndEditing(control as NSControlMBS, fieldEditor as NSTextFieldMBS) as Boolean

Function: The event called to decide whether ending text editing should be allowed.
Notes: Return true to allow.
33.29. CONTROL NSOUTLINECONTROLMBS

33.29.86 toolTipForCell(cell as NSCellMBS, byref rect as NSRectMBS, tableColumn as NSTableColumnMBS, item as NSOutlineViewItemMBS, mouseLocation as NSPointMBS) as String


Function: When the cursor pauses over a given cell, the value returned from this method is displayed in a tooltip.

Notes:

- cell: The cell for which to generate a tooltip.
- rect: The proposed active area of the tooltip. To control the default active area, you can modify the rect parameter. By default, rect is computed as cell.drawingRectForBounds(cellFrame).
- tc: The table column that contains cell.
- item: The item for which to display a tooltip.
- mouseLocation: The current mouse location in view coordinates.

If you don't want a tooltip at that location, return nil or the empty string.

33.29.87 typeSelectString(tableColumn as NSTableColumnMBS, item as NSOutlineViewItemMBS) as String


Function: Returns the string that is used for type selection for a given column and item.

Notes:

- tableColumn: A table column in the outline view.
- item: An item in the outline view.

Return the string that is used for type selection. You may want to change what is searched for based on what is displayed, or simply return nil for that row and/or column to not be searched.

Implement this method if you want to control the string that is used for type selection. You may want to change what is searched for based on what is displayed, or simply return nil to specify that the given row and/or column should not be searched. By default, all cells with text in them are searched.

The default value when this delegate method is not implemented is:
outlineView.preparedCellAtColumn(tableColumn, outlineView.rowForItem(item)).stringValue
and you can return this value from the event if you wish.
33.29.88 updateDraggingItemsForDrag(draggingInfo as NSDraggingInfoMBS)

Function: Implement this method to enable the table to update dragging items as they are dragged over the view.
Notes: draggingInfo: The dragging info object.

33.29.89 validateDrop(info as NSDraggingInfoMBS, proposedItem as NSOutlineViewItemMBS, proposedChildIndex as Integer) as Integer

Function: Used by an outline view to determine a valid drop target.
Notes:
info: An object that contains more information about this dragging operation.
item: The proposed parent.
index: The proposed child location.

Returns a value that indicates which dragging operation the data source will perform.

Based on the mouse position, the outline view will suggest a proposed drop location. The data source may retarget a drop if desired by calling setDropItem and returning something other than NSDragOperationNone. You may choose to retarget for various reasons (for example, for better visual feedback when inserting into a sorted position). Implementation of this method is optional.

33.29.90 view(tableColumn as NSTableColumnMBS, item as NSOutlineViewItemMBS) as NSViewMBS

Function: Implemented to return the view used to display the specified item and column.
Notes:
tableColumn: The table column, or nil if the row is a group row.
item: The item displayed by the returned view.

Return the view to display the specified column and row. Returning nil is acceptable, in which case a view is not shown at that location.

This method is required if you wish to use NSView objects instead of NSCell objects for the cells within an outline view. Cells and views cannot be mixed within the same outline view. It is recommended that the implementation of this method first call the NSTableView method make-
ViewWithIdentifier passing, respectively, the tableColumn parameters identifier and self as the owner to attempt to reuse a view that is no longer visible. The frame of the view returned by this method is not important, and is automatically set by the outline view.

The view’s properties should be properly set up before returning the result.

When using Cocoa bindings, this method is optional if at least one identifier has been associated with the table view at design time. If this method is not implemented, the outline view automatically calls makeViewWithIdentifier with the tableColumn parameters identifier and the outline views delegate as parameters, to attempt to reuse a previous view or automatically unarchive a prototype associated with the table view.

The autoresizingMask of the returned view is automatically set to NSViewHeightSizable to resize properly on row height changes.

See also:

- 33.29.13 View as NSOutlineViewMBS

### 33.29.91 willDisplayCell(cell as NSCellMBS, tableColumn as NSTableColumnMBS, item as NSOutlineViewItemMBS)


**Function:** Informs the delegate that the cell specified by the column and item will be displayed.

**Notes:**

cell: The cell.
tableColumn: The table column.
item: The item.

You can implement this method to modify cell to provide further setup for the cell in tableColumn and item. It is not safe to do drawing inside this method you should only set up state for cell.

### 33.29.92 willDisplayOutlineCell(cell as NSCellMBS, tableColumn as NSTableColumnMBS, item as NSOutlineViewItemMBS)


**Function:** Informs the delegate that an outline view is about to display a cell used to draw the expansion symbol.

**Notes:**

cell: The cell.
tableColumn: The table column.
item: The item.

Informs the event that outlineView is about to display cell an expandable cell (a cell that has the expansion symbol) for the column and item specified by tableColumn and item. The delegate can modify cell to alter its display attributes.

This method is not invoked when outlineView is about to display a non-expandable cell.
**33.29.93   willTile**


**Function:** The tableview will tile.

**Notes:** The internal tile function properly sizes the table view and its header view and marks it as needing display.

---

**33.29.94   writeItems(items() as NSOutlineViewItemMBS, pasteboard as NSPasteboardMBS) as Boolean**


**Function:** Returns a Boolean value that indicates whether a drag operation is allowed.

**Notes:**

items: An array of the items participating in the drag.
pasteboard: The pasteboard to which to write the drag data.

Returns true if the drag operation is allowed, otherwise false.

Invoked by outlineView after it has been determined that a drag should begin, but before the drag has been started.

To refuse the drag, return false. To start a drag, return true and place the drag data onto the pboard (data, owner, and so on). The drag image and other drag-related information will be set up and provided by the outline view once this call returns with true.
33.30. CLASS NSOUTLINEVIEWITEMMBS

33.30 class NSOutlineViewItemMBS

33.30.1 class NSOutlineViewItemMBS

Function: The class to subclass for your items.

33.30.2 Methods

33.30.3 Constructor

Function: The constructor.

33.30.4 sortedArrayUsingDescriptor(values() as NSOutlineViewItemMBS, sort-Descriptor as NSSortDescriptorMBS) as NSOutlineViewItemMBS()

Function: Returns a copy of the receiving array sorted as specified by a given a sort descriptor.  
Notes: sortDescriptor: The NSSortDescriptor objects.  
Returns a copy of the receiving array sorted as specified by sortDescriptor.

33.30.5 sortedArrayUsingDescriptors(values() as NSOutlineViewItemMBS, sort-Descriptor() as NSSortDescriptorMBS) as NSOutlineViewItemMBS()

Function: Returns a copy of the receiving array sorted as specified by a given array of sort descriptors.  
Notes: sortDescriptors: An array of NSSortDescriptor objects.  
Returns a copy of the receiving array sorted as specified by sortDescriptors.

The first descriptor specifies the primary key path to be used in sorting the receiving arrays contents. Any subsequent descriptors are used to further refine sorting of objects with duplicate values. See NSSortDescriptor for additional information.
33.30.6 Properties

33.30.7 Description as String

Function: The description text property.
Notes: (Read only property)
See also:
• 33.30.11 Description as String

33.30.8 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

33.30.9 valueForKey(key as String) as Variant

Function: Get/set the value for the property identified by a given key.
Notes:
key: The name of one of the receiver’s properties.
(Read and Write computed property)
See also:
• 33.30.14 valueForKey(key as string) as Variant

33.30.10 Events

33.30.11 Description as String

Function: The event when system queries description for object.
See also:
• 33.30.7 Description as String
33.30. **CLASS NSOUTLINEVIEWITEMMBS**

### 33.30.12 `setValueForKey(key as string, value as Variant)`


**Function:** Sets the property of the receiver specified by a given key to a given value.

**Notes:**

- **value:** The value for the property identified by key.
- **key:** The name of one of the receiver's properties.

If key identifies a to-one relationship, relate the object specified by value to the receiver, unrelating the previously related object if there was one. Given a collection object and a key that identifies a to-many relationship, relate the objects contained in the collection to the receiver, unrelating previously related objects if there were any.

The search pattern that `setValueForKey` uses is described in Accessor Search Patterns in Key-Value Coding Programming Guide.

In a reference-counted environment, if the instance variable is accessed directly, value is retained.

### 33.30.13 `setValueForUndefinedKey(key as string, value as Variant)`


**Function:** Invoked by `setValueForKey` when it finds no property for a given key.

**Notes:**

- **value:** The value for the key identified by key.
- **key:** A string that is not equal to the name of any of the receiver's properties.

Subclasses can override this method to handle the request in some other way. The default implementation raises an `NSUndefinedKeyException`.

### 33.30.14 `valueForKey(key as string) as Variant`


**Function:** Return the value for the property identified by a given key.

**Notes:**

- **key:** The name of one of the receiver's properties.

Returns the value for the property identified by key.

If event is not implemented, the search pattern that `valueForKey` uses to find the correct value to return is described in Accessor Search Patterns in Key-Value Coding Programming Guide.

See also:
33.30.15 `valueForKey(key as String) as Variant`


**Function:** Invoked by valueForKey when it finds no property corresponding to a given key.

**Notes:**
- key: A string that is not equal to the name of any of the receiver’s properties.

Subclasses can override this method to return an alternate value for undefined keys. The default implementation raises an NSUndefinedKeyException.
33.31 class NSOutlineViewMBS

33.31.1 class NSOutlineViewMBS


**Function:** The class for a hierarchical list.

**Notes:**

NSOutlineView is a subclass of NSTableView that uses a row-and-column format to display hierarchical data that can be expanded and collapsed, such as directories and files in a file system. A user can expand and collapse rows, edit values, and resize and rearrange columns.

Like a table view, an outline view does not store its own data, instead it retrieves data values as needed from a data source to which it has a weak reference.

MBS Plugin provides all events in NSOutlineControlMBS control.

An outline view has the following features:

- A user can expand and collapse rows.
- Each item in the outline view must be unique. In order for the collapsed state to remain consistent between reloads the item’s pointer must remain the same and the item must maintain isEqual: sameness.
- The view gets data from a data source (see NSOutlineControlMBS).
- The view retrieves only the data that needs to be displayed.

Subclass of the NSTableViewMBS class.

33.31.2 Methods

33.31.3 child(index as Integer, toItem as NSOutlineViewItemMBS) as NSOutlineViewItemMBS


**Function:** Returns the specified child of an item.

**Notes:**

index: The index of the child item in the parent.

item: The parent item whose child item you want to retrieve.
Returns the child item or nil if the item could not be found.

You can call this method on an outline view with either a static or dynamic data source. For an outline view whose contents are dynamic, this method may call out to the child event of the associated data source.

### 33.31.4 childIndexForItem(item as NSOutlineViewItemMBS) as Integer

**MBS MacControls Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Returns the child index of the specified item within its parent.

**Notes:** The performance of this method is O(1) at best and O(n) at worst.

### 33.31.5 collapseItem(item as NSOutlineViewItemMBS)

**MBS MacControls Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Collapses a given item.

**Notes:**
- If item is not expanded or not expandable, does nothing
- If collapsing takes place, posts item collapse notification.

See also:

- 33.31.6 collapseItem(item as NSOutlineViewItemMBS, collapseChildren as Boolean)

### 33.31.6 collapseItem(item as NSOutlineViewItemMBS, collapseChildren as Boolean)

**MBS MacControls Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Collapses a given item and, optionally, its children.

**Notes:**
- item: An item in the receiver.
- Starting in OS X version 10.5, passing 'nil' will collapse each item under the root in the outline view.
- collapseChildren: If true, recursively collapses item and its children. If NO, collapses item only (identical to collapseItem:).

For example, this method is invoked with the collapseChildren parameter set to true when a user Option-clicks the disclosure triangle for an item in the outline view (to collapse the item and all its contained items). For each item collapsed, posts an item collapsed notification.

See also:

- 33.31.5 collapseItem(item as NSOutlineViewItemMBS)
33.31. **CLASS NSOUTLINEVIEWMBS**   

### 33.31.7 Constructor

**Function:** Creates a new outline view with size 100/100 and position 0/0  
**Example:**

```vba
dim t as new NSOutlineViewMBS
```

**Notes:** On success the handle property is not zero.  
See also:

- 33.31.8 Constructor(Handle as Integer)  
- 33.31.9 Constructor(left as Double, top as Double, width as Double, height as Double)

### 33.31.8 Constructor(Handle as Integer)

**Function:** Creates an object based on the given NSOutlineView handle.  
**Example:**

```vba
dim t as new NSOutlineViewMBS(0, 0, 100, 100)
dim v as new NSOutlineViewMBS(t.handle)
MsgBox str(v.Bounds.Width)+" x "+str(v.Bounds.Height)
```

**Notes:** The handle is casted to a NSOutlineViewMBS and the plugin retains this handle.  
See also:

- 33.31.7 Constructor  
- 33.31.9 Constructor(left as Double, top as Double, width as Double, height as Double)

### 33.31.9 Constructor(left as Double, top as Double, width as Double, height as Double)

**Function:** Creates a new outline view with the given size and position.  
**Example:**

```vba
dim x as new NSOutlineViewMBS(0, 0, 100, 100)
```
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Notes: On success the handle property is not zero.
See also:

- 33.31.7 Constructor

- 33.31.8 Constructor(Handle as Integer)

33.31.10 expandItem(item as NSOutlineViewItemMBS)

Function: Expands a given item.
Notes:
If item is not expandable or is already expanded, does nothing.
If expanding takes place, posts an item expanded notification.
See also:

- 33.31.11 expandItem(item as NSOutlineViewItemMBS, expandChildren as Boolean)

33.31.11 expandItem(item as NSOutlineViewItemMBS, expandChildren as Boolean)

Function: Expands a specified item and, optionally, its children.
Notes:
item: An item in the receiver.
Starting in OS X version 10.5, passing 'nil' will expand each item under the root in the outline view.

expandChildren: If true, recursively expands item and its children. If false, expands item only (identical to expandItem).

For example, this method is invoked with the expandChildren parameter set to YES when a user Option-clicks the disclosure triangle for an item in the outline view (to expand the item and all its contained items). For each item expanded, posts an item expanded notification.
See also:

- 33.31.10 expandItem(item as NSOutlineViewItemMBS)

33.31.12 frameOfOutlineCellAtRow(row as Integer) as NSRectMBS

Function: Returns the frame of the outline cell for a given row.
Notes:
33.31. CLASS NSOUTLINEVIEWMBS

row: The index of the row for which to return the frame.

Returns the frame of the outline cell for the row at index row, considering the current indentation and the value in the indentationMarkerFollowsCell property. If the row at index row is not an expandable row, returns NSZeroRect.

You can override this method in a subclass to return a custom frame for the outline button cell. If your override returns an empty rect, no outline cell is drawn for that row. You might do that, for example, so that the disclosure triangle will not be shown for a row that should never be expanded.

33.31.13 insertItemsAtIndexes(indexes as NSIndexSetMBS, Parent as NSOutlineViewItemMBS, animationOptions as Integer)

Function: Inserts new items at the given indexes in the given parent with the specified optional animations. 
Notes: 
indexes: Indexes at which to insert items. 
pARENT: The parent for the items, or nil if the parent is the root. 
animationOptions: Animated slide effects used when inserting items. 

This method parallels the insertRowsAtIndexes method of NSTableView and is used in a way similar to the insertObjects method of NSMutableArray. The method does nothing if parent is not expanded. The actual item values are determined by the data sources child event (which is called only after endUpdates to ensure data source integrity).

NSCell-based outline views must first call beginUpdates before calling this method.

You can call this method multiple times within the same beginUpdates/endUpdates block; new insertions move previously inserted new items, just like modifying an array. Inserting an index beyond what is available throws an exception.

33.31.14 insertRowsAtIndexes(indexes as NSIndexSetMBS, animationOptions as Integer)

Function: Private method to block you from calling this method in NSTableViewMBS.
CHAPTER 33. COCOA CONTROLS

33.31.15 isExpandable(item as NSOutlineViewItemMBS) as Boolean

Function: Returns a Boolean value that indicates whether a given item is expandable.
Notes: True if item is expandable that is, item can contain other items, otherwise false.

33.31.16 isItemExpanded(item as NSOutlineViewItemMBS) as Boolean

Function: Returns a Boolean value that indicates whether a given item is expanded.
Notes: True if item is expanded, otherwise false.

33.31.17 itemAtRow(row as Integer) as NSOutlineViewItemMBS

Function: Returns the item associated with a given row.
Notes: row: The index of a row in the receiver.
Returns the item associated with row.

33.31.18 levelForItem(item as NSOutlineViewItemMBS) as Integer

Function: Returns the indentation level for a given item.
Notes: The indentation level for item. If item is nil (which is the root item), returns -1.
The levels are zero-based that is, the first level of displayed items is level 0.

33.31.19 levelForRow(row as Integer) as Integer

Function: Returns the indentation level for a given row.
Notes: The indentation level for row. For an invalid row, returns -1.
The levels are zero-based that is, the first level of displayed items is level 0.
33.31.20  moveItemAtIndex(oldIndex as Integer, oldParent as NSOutlineViewItemMBS, newIndex as Integer, newParent as NSOutlineViewItemMBS)

Function: Moves an item at a given index in the given parent to a new index in a new parent.
Notes:
fromIndex: Index of the item to be moved.
oldParent: The parent of the item to be moved.
toIndex: Index in the new parent to which the item is moved.
newParent: The parent of the item after it is moved.

This method parallels the moveRowAtIndex method of NSTableView. The newParent can be the same as oldParent to reorder an item within the same parent.

NSCell-based outline views must first call beginUpdates before calling this method.

You can call this method multiple times within the same beginUpdates/endUpdates block. Moving from an invalid index, or to an invalid index, throws an exception.

33.31.21  moveRowAtIndex(oldIndex as Integer, newIndex as Integer)

Function: Private method to block you from calling this method in NSTableViewMBS.

33.31.22  NSOutlineViewColumnDidMoveNotification as String

Function: Posted whenever a column is moved by user action in an NSOutlineView object.
Notes:
The notification object is the NSOutlineView object in which a column moved. The userInfo dictionary contains the following information:

NSOldColumn: An NSNumber object containing the integer value of the columns original index
NSNewColumn: An NSNumber object containing the integer value of the columns present index
33.31.23 **NSOutlineViewColumnDidResizeNotification as String**

**Function:** Posted whenever a column is resized in an NSOutlineView object.  
**Notes:**  
The notification object is the NSOutlineView object in which a column was resized. The userInfo dictionary contains the following information:

NSTableColumn: The column that was resized.  
NSOldWidth: An NSNumber object containing the columns original width

33.31.24 **NSOutlineViewDisclosureButtonKey as String**

**Function:** These key is used by the outline view to create disclosure buttons that collapse and expand items.  
**Notes:** The normal triangle disclosure button.

33.31.25 **NSOutlineViewItemDidCollapseNotification as String**

**Function:** Posted whenever an item is collapsed in an NSOutlineView object.  
**Notes:**  
The notification object is the NSOutlineView object in which an item was collapsed. A collapsed items children lose their status as being selected. The userInfo dictionary contains the following information:

NSObject: The item that was collapsed (an id)

33.31.26 **NSOutlineViewItemDidExpandNotification as String**

**Function:** Posted whenever an item is expanded in an NSOutlineView object.  
**Notes:**  
The notification object is the NSOutlineView object in which an item was expanded. The userInfo dictionary contains the following information:

NSObject: The item that was expanded (an id)
33.31. **CLASS NSOUTLINEVIEWMBS**

33.31.27  **NSOutlineViewItemWillCollapseNotification as String**


**Function:** Posted before an item is collapsed (after the user clicks the arrow but before the item is collapsed).

**Notes:**

The notification object is the NSOutlineView object that contains the item about to be collapsed. A collapsed items children will lose their status as being selected. The userInfo dictionary contains the following information:

NSObject: The item about to be collapsed (an id)

33.31.28  **NSOutlineViewItemWillExpandNotification as String**


**Function:** Posted before an item is expanded (after the user clicks the arrow but before the item is collapsed).

**Notes:**

The notification object is the outline view that contains an item about to be expanded. The userInfo dictionary contains the following information:

NSObject: The item that is to be expanded (an id)

33.31.29  **NSOutlineViewSelectionDidChangeNotification as String**


**Function:** Posted after the outline view's selection changes.

**Notes:** The notification object is the outline view whose selection changed. This notification does not contain a userInfo dictionary.

33.31.30  **NSOutlineViewSelectionIsChangingNotification as String**


**Function:** Posted as the outline views selection changes (while the mouse button is still down).

**Notes:** The notification object is the outline view whose selection is changing. This notification does not contain a userInfo dictionary.
33.31.31  **NSOutlineViewShowHideButtonKey as String**

**Function:** These key is used by the outline view to create disclosure buttons that collapse and expand items.
**Notes:** The Show/Hide button.

33.31.32  **numberOfChildrenOfItem(item as NSOutlineViewItemMBS) as Integer**

**Function:** Returns the number of children for the specified parent item.
**Notes:**
*item:* The parent item.

Returns the number of children associated with the parent.

You can call this method on an outline view with either a static or dynamic data source. For an outline view whose contents are dynamic, this method may call out to the numberOfChildrenOfItem event of the associated data source.

33.31.33  **parentForItem(item as NSOutlineViewItemMBS) as NSOutlineViewItemMBS**

**Function:** Returns the parent for a given item.
**Notes:**
*item:* The item for which to return the parent.

Returns the parent for item, or nil if the parent is the root.

33.31.34  **reloadItem(item as NSOutlineViewItemMBS)**

**Function:** Reloads and redispalyes the data for the given item.
**Notes:**
Reloading the cell views associated with item occurs only in apps that link against macOS 10.12 and later. This method may cause the outline view to change its selection without calling the SelectionDidChange...
33.31.  CLASS NSOUTLINEVIEWMBS

event.
See also:

- 33.31.35 reloadItem(item as NSOutlineViewItemMBS, reloadChildren as Boolean)

33.31.35  reloadItem(item as NSOutlineViewItemMBS, reloadChildren as Boolean)

Function: Reloads a given item and, optionally, its children.
Notes:

item: An item in the receiver. Starting in OS X version 10.5, passing 'nil' will reload everything under the root in the outline view.

reloadChildren: If true, recursively reloads item and its children. If false, reloads item only (identical to reloadItem).

It is not necessary, or efficient, to reload children if the item is not expanded.
See also:

- 33.31.34 reloadItem(item as NSOutlineViewItemMBS)

33.31.36  removeItemsAtIndexes(indexes as NSIndexSetMBS, Parent as NSOutlineViewItemMBS, animationOptions as Integer)

Function: Removes items at the given indexes in the given parent with the specified optional animations.
Notes:

indexes: Indexes of the items to be removed.
parent: The parent of the items to be removed.
animationOptions: Animated slide effects used when removing items.

This method parallels the removeRowsAtIndexes method of NSTableView and is used in a way similar to the removeObjectsAtIndexes method of NSMutableArray. The method does nothing if parent is not expanded. If any of the child items is expanded, then all of its child rows are also be removed.

NSCell-based outline views must first call beginUpdates before calling this method.

You can call this method multiple times within the same beginUpdates/endUpdates block; changes work just like modifying an array. Removing an item at an index beyond what is available throws an exception.
33.31.37 **removeRowsAtIndexes(indexes as NSIndexSetMBS, animationOptions as Integer)**

**Function:** Private method to block you from calling this method in NSTableViewMBS.

33.31.38 **rowForItem(item as NSOutlineViewItemMBS) as Integer**

**Function:** Returns the row associated with a given item.
**Notes:** The row associated with item, or -1 if item is nil or cannot be found.

33.31.39 **setDropItem(item as NSOutlineViewItemMBS, dropChildIndex as Integer)**

**Function:** Used to retarget a proposed drop.
**Notes:**
item: The target item.
index: The drop index.

For example, to specify a drop on someOutlineItem, you specify item as someOutlineItem and index as NSOutlineViewDropOnItemIndex. To specify a drop between child 2 and 3 of someOutlineItem, you specify item as someOutlineItem and index as 3 (children are a zero-based index). To specify a drop on an un-expandable someOutlineItem, you specify item as someOutlineItem and index as NSOutlineViewDropOnItemIndex.

33.31.40 **Properties**

33.31.41 **autoresizesOutlineColumn as Boolean**

**Function:** A Boolean value that indicates whether the outline view resizes its outline column when the user expands or collapses items.
**Notes:**
The outline column contains the cells with the expansion symbols and is generally the first column. The default value of this property is true, which causes the outline column to be resized.
The outline column is resized based on how many indentation levels are exposed or hidden. For example, if expanding a row exposes a single indentation level, the outline column width is increased by one indenta-
33.31.42 autoseaveExpandedItems as Boolean

Function: A Boolean value indicating whether the expanded items are automatically saved across launches of the app.
Notes:
When the value of this property is true, the outline view saves the state of its expanded items and restores that state the next time the user launches the app. (If the outline views autoseaveName property is nil, or if you have not implemented the itemForPersistentObject and persistentObjectForItem events, this setting is ignored and outline information is not saved.) The configuration data is saved separately for each user and for each app. The default value of this property is NO.
You can have separate settings for the autoseaveExpandedItems and autoseaveTableColumns properties, so you could, for example, save expanded item information, but not table column positions.
(Read and Write property)

33.31.43 indentationMarkerFollowsCell as Boolean

Function: A Boolean value indicating whether the indentation marker symbol displayed in the outline column should be indented along with the cell contents.
Notes:
When the value of this property is true, the indentation marker is indented along with the cell contents. When the value is false, the marker is always displayed left-justified in the column. The default value of this property is true.
(Read and Write property)

33.31.44 indentationPerLevel as Double

Function: The per-level indentation, measured in points.
Notes: (Read and Write property)

33.31.45 outlinetableColumn as NSTableColumnMBS

Function: The table column in which hierarchical data is displayed.
Notes:
Each level of hierarchical data is indented by the amount specified by the indentationPerLevel property (the
default is 16.0), and decorated with the indentation marker (disclosure triangle) on rows that are expandable.
Outline table column data is archived with the rest of the outline views state information.
Attempts to set the value of this property to nil are silently ignored.
(Read and Write property)

33.31.46  **stronglyReferencesItems as Boolean**

**Function:** A Boolean value that indicates whether the outline view retains and releases the objects returned
from its data source.
**Notes:**
For Xojo applications we highly recommend to keep all items in arrays in Xojo, so they are not released by
Xojo too early!

When the value of this property is true, the outline view retains and releases the objects returned to it from
dataSource. When the value is NO, the outline view treats the objects as opaque items and assumes that
the client has a retain on them. The default value is YES for applications linked on macOS 10.12 and later,
and false for applications linked on earlier versions of macOS. If you require the legacy behavior and your
app links in macOS 10.12 or later, the value of this property must be explicitly set to NO in code, because
it is not encoded in the nib. In general, this is required if the items themselves create a retain cycle.
(Read and Write property)

33.31.47  **userInterfaceLayoutDirection as Integer**

**Function:** The user interface layout direction.
**Notes:**
When set to NSUserInterfaceLayoutDirectionRightToLeft, the outline view displays the disclosure triangle
to the right of the cell instead of the left. The default value is NSUserInterfaceLayoutDirectionLeftToRight.
(Read and Write property)

33.31.48  **Constants**

33.31.49  **NSOutlineViewDropOnItemIndex = -1**

MBS MacControls Plugin, Plugin Version: 17.1. **Function:** May be used as a valid child index of a drop
target item.
Notes: In this case, the drop will happen directly on the target item.
33.32 class NSPathComponentCellMBS

33.32.1 class NSPathComponentCellMBS

Function: The NSPathComponentCell class displays a component of a path.
Notes: An NSPathCell object manages a collection of NSPathComponentCell objects, in conjunction with an NSPathControl object, to represent a path. Subclass of the NSTextFieldCellMBS class.

33.32.2 Methods

33.32.3 Constructor(text as string)


33.32.4 Properties

33.32.5 File as folderitem

MBS MacCocoa Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The value of the portion of the path from the root through the component represented by the receiver. Notes: (Read and Write computed property)

33.32.6 Image as NSImageMBS

MBS MacCocoa Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The image displayed for this component cell. Notes: Generally, a 16-by-16point image fits best when the path style is NSPathStyleStandard or NSPathStylePopUp, and a 14-by-14point image is best when the path style is NSPathStyleNavigationBar. Available in Mac OS X v10.5 and later. (Read and Write computed property)
33.32. URL as string

MBS MacCocoa Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The value of the portion of the path from the root through the component represented by the receiver. **Notes:** (Read and Write computed property)
33.33 class NSPathControlMBS

33.33.1 class NSPathControlMBS

Function: NSPathControl is a subclass of NSControl that represents a file system path or virtual path.
Notes:

The NSPathControl class uses NSPathCell to implement its user interface. NSPathControl provides cover methods for most NSPathCell methods; the cover method simply invokes the corresponding cell method. See also NSPathComponentCell, which represents individual components of the path, and two associated protocols: NSPathCellDelegate and NSPathControlDelegate.

NSPathControl has three styles represented by the NSPathStyle enumeration constants NSPathStyleStandard, NSPathStyleNavigationBar, and NSPathStylePopUp. The represented path can be a file system path or any other type of path leading through a sequence of nodes or components, as defined by the programmer.

NSPathControl automatically supports drag and drop, which can be further customized via delegate methods. To accept drag and drop, NSPathControl calls registerForDraggedTypes: with NSFilenamesPboardType and NSURLPboardType. When the URL value in the NSPathControl object changes because of an automatic drag and drop operation or the user selecting a new path via the open panel, the action is sent. On Mac OS X v10.5 the value returned by clickedPathComponentCell is nil, on Mac OS X v10.6 and later, clickedPathComponentCell returns the clicked cell.

Subclass of the NSControlMBS class.

33.33.2 Methods

33.33.3 clickedPathComponentCell as NSPathComponentCellMBS

Function: Returns component cell that was clicked.
Notes:

The value returned is generally valid only when the action or double action is being sent.
Note: In Mac OS X 10.5 and earlier the returned value was nil if no cell had been clicked. In Mac OS X 10.6, the folder of the cell that the user selected is returned instead.

33.33.4 Constructor

Function: Creates a new path control with size 100/100 and position 0/0
Example:
33.33. CLASS NSPATHCONTROLMBS 6507

dim t as new NSPathControlMBS

Notes: On success the handle property is not zero.
See also:

- 33.33.5 Constructor(Handle as Integer) 6507
- 33.33.6 Constructor(left as Double, top as Double, width as Double, height as Double) 6507

33.33.5 Constructor(Handle as Integer)

Function: Creates an object based on the given NSPathControl handle.
Example:

dim t as new NSPathControlMBS(0, 0, 100, 100)
dim v as new NSPathControlMBS(t.handle)


Notes: The handle is casted to a NSPathControl and the plugin retains this handle.
See also:

- 33.33.4 Constructor 6506
- 33.33.6 Constructor(left as Double, top as Double, width as Double, height as Double) 6507

33.33.6 Constructor(left as Double, top as Double, width as Double, height as Double)

Function: Creates a new path control with the given size and position.
Example:

dim x as new NSPathControlMBS(0, 0, 100, 100)

Notes: On success the handle property is not zero.
See also:

- 33.33.4 Constructor 6506
- 33.33.5 Constructor(Handle as Integer) 6507
33.33.7  pathComponentCells as NSPathComponentCellMBS()

MBS MacCocoa Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of the NSPathComponentCell objects currently being displayed. **Notes:** Available in Mac OS X v10.5 and later.

33.33.8  setDraggingSourceOperationMask(mask as Integer, local as boolean)

MBS MacCocoa Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Configures the default value returned from draggingSourceOperationMaskForLocal. **Notes:**

mask: The types of drag operations allowed.
isLocal: If true, mask applies when the drag destination object is in the same application as the receiver; if false, mask applies when the destination object is outside the receiver’s application.

By default, draggingSourceOperationMaskForLocal returns NSDragOperationEvery when isLocal is true and NSDragOperationNone when isLocal is false.

Available in Mac OS X v10.5 and later.

33.33.9  setPathComponentCells(cells() as NSPathComponentCellMBS)

MBS MacCocoa Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the array of NSPathComponentCell objects currently being displayed. **Notes:**

cells: An array of NSPathComponentCell objects.

Each item in the array must be an instance of NSPathComponentCell or a subclass thereof. You cannot set this value to nil, but you can set it to an empty array.

Available in Mac OS X v10.5 and later.

33.33.10  Properties

33.33.11  backgroundColor as NSColorMBS

MBS MacCocoa Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The background color.
33.33. Notes:

By default, the background is set to a light blue color for NSPathStyleStandard and nil for the other styles. You can use NSColorMBS.clearColor to make the background transparent. Available in Mac OS X v10.5 and later.

(Read and Write computed property)

33.33.12  File as folderitem


Function: The path property.

Notes:

When setting, an array of NSPathComponentCell objects is automatically set based on the path in url. If url is a file URL (returns true from isFileURL), the images are automatically filled with file icons, if the path exists. The URL value itself is stored in the objectValue property of the cell.

See also URL property.

(Read and Write computed property)

33.33.13  menu as NSMenuMBS


Function: The menu used for the path control’s cells.

Notes:

Available in Mac OS X v10.6 and later.

(Read and Write computed property)

33.33.14  pathStyle as Integer


Function: The path style.

Notes:

Either NSPathStyleStandard or NSPathStylePopUp.

(Read and Write computed property)
33.33.15 **URL as string**

**Function:** The path property. 
**Notes:**
When setting, an array of NSPathComponentCell objects is automatically set based on the path in url. If url is a file URL (returns true from isFileURL), the images are automatically filled with file icons, if the path exists. The URL value itself is stored in the objectValue property of the cell.

See also File property. 
(Read and Write computed property)

33.33.16 **Events**

33.33.17 **DoubleClick**

**Function:** Called on a double click.

33.33.18 **Constants**

33.33.19 **NSPathStyleNavigationBar = 1**

MBS MacCocoa Plugin, Plugin Version: 12.0. 
**Function:** One of the path style constants. 
**Notes:**
The navigation bar display style and behavior. Similar to the NSPathStyleStandard with the navigation bar drawing style. Also known as the breadcrumb style. 
Available in Mac OS X v10.5 and later.

33.33.20 **NSPathStylePopUp = 2**

MBS MacCocoa Plugin, Plugin Version: 12.0. 
**Function:** One of the path style constants. 
**Notes:**
The pop-up display style and behavior. Only the last path component is displayed with an icon image and component name. The full path is shown when the user clicks on the cell. If the cell is editable, a Choose item is included to enable selecting a different path. 
Available in Mac OS X v10.5 and later.
33.33.21  NSPathStyleStandard = 0

MBS MacCocoa Plugin, Plugin Version: 12.0. **Function:** One of the path style constants.

**Notes:**

The standard display style and behavior. All path component cells are displayed with an icon image and component name. If the path can not fully be displayed, the middle parts are truncated as required. Available in Mac OS X v10.5 and later.
33.34 class NSPopUpButtonCellMBS

33.34.1 class NSPopUpButtonCellMBS


**Function:** The NSPopUpButtonCell class defines the visual appearance of pop-up buttons that display pop-up or pull-down menus.

**Notes:**

Pop-up menus present the user with a set of choices, much the way radio buttons do, but using much less space. Pull-down menus also provide a set of choices but present the information in a slightly different way, usually to provide a set of commands from which the user can choose.

The NSPopUpButtonCellMBS class implements the user interface for the NSPopUpButtonMBS class. Changes made to a menu (such as adding, removing, or changing the items) are not apparent while the menu is being displayed or interacted with.

Subclass of the NSMenuItemCellMBS class.

33.34.2 Methods

33.34.3 addItemsWithTitles(itemTitles() as string)


**Function:** Adds multiple items to the end of the menu.

**Notes:**

itemTitles: An array of strings containing the titles of the items you want to add. Each string in the array should be unique. If an item with the same title already exists in the menu, the existing item is removed and the new one is added.

The new menu items use the pop-up buttons default action and target, but you can change these using the.setAction: and setTarget: methods of the corresponding NSMenuItem object.

If you want to move an item, its better to invoke removeItemWithTitle: explicitly and then call this method. After adding the items, this method uses the synchronizeTitleAndSelectedItem method to make sure the item being displayed matches the currently selected item.

Because this method searches for duplicate items, it should not be used if you are adding items to an already populated menu with more than a few hundred items. In a situation like this, add items directly to the receiver’s menu instead.
### 33.34.4 addItemWithTitle(title as string)


**Function:** Adds an item with the specified title to the end of the menu.

**Notes:**

- title: The title of the new menu item. If an item with the same title already exists in the menu, the existing item is removed and the new one is added.

The menu item uses the pop-up buttons default action and target, but you can change these using the `setAction:` and `setTarget:` methods of the corresponding `NSMenuItemMBS` object. Because this method searches for duplicate items, it should not be used if you are adding an item to an already populated menu with more than a few hundred items. In a situation like this, add items directly to the button’s menu instead.

### 33.34.5 Constructor(image as NSImageMBS)


**Function:** The private constructor.

See also:

- 33.34.6 Constructor(text as string, pullsDown as boolean)

### 33.34.6 Constructor(text as string, pullsDown as boolean)


**Function:** Returns an `NSPopUpButtonCell` object initialized with the specified title.

See also:

- 33.34.5 Constructor(image as NSImageMBS)

### 33.34.7 dismissPopUp


**Function:** Dismisses the pop-up buttons menu by ordering its window out.

**Notes:**

If the pop-up button was not displaying its menu, this method does nothing.

You normally do not call this method explicitly. It is called by the Application Kit automatically to dismiss the menu for the pop-up button.
33.34.8  indexOfItem(item as NSMenuItemMBS) as Integer

Function: Returns the index of the specified menu item.
Notes:

item: The menu item whose index you want.

Returns the index of the item or -1 if no such item was found.

33.34.9  indexOfItemWithTag(tag as Integer) as Integer

Function: Returns the index of the menu item with the specified tag.
Notes:

tag: The tag of the menu item you want.

Returns the index of the item or -1 if no item with the specified tag was found.

Tags are values your application assigns to an object to identify it. You can assign tags to menu items using the tag property of NSMenuItemMBS.

33.34.10  indexOfItemWithTitle(title as String) as Integer

Function: Returns the index of the item with the specified title.
Notes:

title: The title of the item you want. You must not pass nil for this parameter.

Returns the index of the item or -1 if no item with the specified title was found.

33.34.11  insertItemWithTitle(title as string, atIndex as Integer)

Function: Inserts an item at the specified position in the menu.
Notes:

title: The title of the new item. If an item with the same title already exists in the menu, the existing item is removed and the new one is added
33.34. **CLASS NSPOPUPBUTTONCELLMBS**

index: The zero-based index at which to insert the item. Specifying 0 inserts the item at the top of the menu. The value in index must represent a valid position in the array. The menu item at index and all those that follow it are shifted down one slot to make room for the new menu item. This method assigns the pop-up buttons default action and target to the new menu item. This triggers the action event of the NSActionCellMBS.

Because this method searches for duplicate items, it should not be used if you are adding an item to an already populated menu with more than a few hundred items. In a situation like this, add items directly to the button’s menu instead.

### 33.34.12 `itemArray as NSMenuItemMBS()`

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An array of NSMenuItemMBS objects that represent the items in the menu.

### 33.34.13 `itemAtIndex(Index as Integer) as NSMenuItemMBS`  

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the menu item at the specified index. **Notes:** index: The index of the item you want. The specified index must refer to an existing menu item. Returns the menu item, or nil if no item exists at the specified index.

### 33.34.14 `itemTitleAtIndex(Index as Integer) as String`  

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the title of the item at the specified index. **Notes:** index: The index of the item you want. Returns the title of the item, or an empty string if no item exists at the specified index.
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33.34.15 itemTitles as String()

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An array of strings containing the titles of every item in the menu. **Notes:** The titles appear in the order in which the items appear in the menu. If the menu contains separator items, the array contains an empty string (""") for each separator item.

33.34.16 itemWithTitle(title as String) as NSMenuItemMBS

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the menu item with the specified title. **Notes:**
title: The title of the menu item you want.

Returns the menu item, or nil if no item with the specified title exists in the menu.

33.34.17 removeAllItems

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes all items in the receivers item menu.

33.34.18 removeItemAtIndex(Index as Integer)

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes the item at the specified index. **Notes:**

index: The zero-based index indicating which item to remove. Specifying 0 removes the item at the top of the menu. The index must be valid and non-negative.

33.34.19 removeItemWithTitle(title as string)

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes the item with the specified title from the menu. **Notes:**
title: The title of the item you want to remove. If no menu item exists with the specified title, this method triggers an assertion.
33.34.20 `selectItem(item as NSMenuItemMBS)`


**Function:** Selects the specified menu item.

**Notes:**

item: The menu item to select, or nil if you want to deselect all menu items.

By default, selecting or deselecting a menu item from a pop-up menu changes its state. Selecting a menu item from a pull-down menu does not automatically alter the state of the item. To disassociate the current selection from the state of menu items, set the `altersStateOfSelectedItem` property to NO.

33.34.21 `selectItemAtIndex(Index as Integer)`


**Function:** Selects the item in the menu at the specified index.

**Notes:**

index: The index of the item you want to select, or -1 if you want to deselect all menu items.

By default, selecting or deselecting a menu item from a pop-up menu changes its state. Selecting a menu item from a pull-down menu does not automatically alter the state of the item. To disassociate the current selection from the state of menu items, set the `altersStateOfSelectedItem` property to false.

Subclassers can override this method to catch all select calls.

33.34.22 `selectItemWithTag(tag as Integer) as boolean`


**Function:** Selects the menu item with the specified tag.

**Notes:**

tag: The tag of the item you want to select.

Returns true if the item was successfully selected; otherwise, false.

If no item with the specified tag is found, this method returns false and leaves the menu state unchanged. You typically assign tags to menu items from Interface Builder, but you can also assign them programmatically using the tag property of `NSMenuItemMBS`.
33.34.23 selectItemWithTitle(title as string)

**Function:** Selects the item with the specified title.
**Notes:**
- title: The title of the item to select. If you specify nil, an empty string, or a string that does not match the title of a menu item, this method deselects the currently selected item.

By default, selecting or deselecting a menu item changes its state. To disassociate the current selection from the state of menu items, set the altersStateOfSelectedItem property to false.

33.34.24 setTitle(title as string)

**Function:** Sets the string displayed in the receiver when the user isn’t pressing the mouse button.
**Notes:**
- title: The string to display.

For pull-down menus that get their titles from a menu item, this method simply sets the pop-up button cells menu item to the first item in the menu. For pop-up menus, if a menu item whose title matches aString exists, this method makes that menu item the current selection; otherwise, it creates a new menu item with the title aString, adds it to the pop-up menu, and selects it.

33.34.25 synchronizeTitleAndSelectedItem

**Function:** Synchronizes the the pop-up buttons displayed item with the currently selected menu item.
**Notes:**
- If no item is currently selected, this method synchronizes the pop-up buttons displayed item with the first menu item. If the pop-up button cell does not get its displayed item from a menu item, this method does nothing.
- For pull-down menus, this method sets the displayed item to the title first menu item.
- If the pop-up buttons menu does not contain any menu items, this method sets the pop-up buttons displayed item to nil, resulting in nothing being displayed in the control.
33.34.26 Properties

33.34.27 altersStateOfSelectedItem as Boolean

**Function:** A Boolean value that indicates if the pop-up button links the state of the selected menu item to the current selection.  
**Notes:**  
When the value of this property is true (which is the default value), the state of the selected item is set to NSOnState. When the value of this property is false, the items in the menu are left alone. When you change the value of this property, the state of the currently selected item is updated appropriately.  
Note that this property affects only pop-up buttons (it is ignored for pull-down menus).  
(Read and Write property)

33.34.28 arrowPosition as Integer

**Function:** The position of the arrow displayed on the button.  
**Notes:**  
When the value of this property is NSPopUpNoArrow, the control displays no arrow. NSPopUpArrowAtCenter displays the arrow centered horizontally within the cell and NSPopUpArrowAtBottom displays the arrow at the edge of the cell. This property is used with preferredEdge to determine the exact location and orientation of the arrow.  
This property applies to only bezel style and borderless pop-up buttons.  
(Read and Write property)

33.34.29 autoenablesItems as Boolean

**Function:** A Boolean value that indicates if the button automatically enables and disables its items every time a user event occurs.  
**Notes:**  
When the value of this property is true, the button automatically enables and disables items. The default value is true. For more information about enabling and disabling menu items, see NSMenuValidation.  
(Read and Write property)

33.34.30 indexOfSelectedItem as Integer

**Function:** The index of the item last selected by the user.
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Notes:
The value of this property is the index of the selected item, or -1 if no item is selected.
(Read only property)

33.34.31 lastItem as NSMenuItemMBS

Notes: (Read only property)

33.34.32 menu as NSMenuMBS

Notes: (Read and Write property)

33.34.33 numberOfItems as Integer

Notes: (Read only property)

33.34.34 preferredEdge as Integer

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The edge of the cell from which the menu should pop out when screen conditions are restrictive.
Notes:
At display time, if attaching the menu to the preferred edge would cause part of the menu to be obscured, the pop-up button may use a different edge. If no preferred edge is set, the pop-up button uses the bottom edge by default, which is NSMaxYEdge for flipped views or NSMinYEdge for unflipped views. Additional values for this property include NSMinXEdge and NSMaxXEdge.
The exact location of the arrow is determined by examining the value of this property and arrowPosition.

If the arrow position is NSPopUpArrowAtCenter, the arrow stays in the center of the button and the value of this property determines which edge the arrow points to: NSMinXEdge points to the left, NSMaxYEdge points to the top, NSMaxXEdge points to the right, and NSMinYEdge points to the bottom.
If the arrow position is NSPopUpArrowAtBottom, the value of this property determines which edge at which the arrow is placed: NSMinXEdge places the arrow at the center of the left side, pointing to the left, NSMinYEdge places the arrow at bottom right corner, pointing up, NSMaxXEdge places the arrow at the center of the right side, pointing to the right, and NSMaxYEdge places the arrow at the bottom right corner, pointing down.

(Read and Write property)

### 33.34.35 pullsDown as Boolean


**Function:** A Boolean value that indicates the behavior of the buttons menu.

**Notes:**
When the value of this property is true, the menu behaves like a pull-down menu; when the value is false, it behaves like a pop-up menu. If you use this property to change the menu type from a pop-up menu to a pull-down menu, and the cell alters the state of its selected items, the state of the currently selected item is set to NSOffState before the menu type is changed.

(Read and Write property)

### 33.34.36 selectedItem as NSMenuItemMBS


**Function:** The menu item last selected by the user.

**Notes:**
The value of this property is the menu item that is currently selected, or nil if no item is selected. The last selected menu item is the one that was highlighted when the user released the mouse button. It is possible for a pull-down menus selected item to be its first item.

(Read only property)

### 33.34.37 titleOfSelectedltem as String


**Function:** The title of the item last selected by the user.

**Notes:**
The value of this property is the title of the selected menu item, or an empty string if no item is selected.

(Read only property)
33.34.38 usesItemFromMenu as Boolean

**Function:** A Boolean value that indicates if the control uses an item from the menu for its own title.  
**Notes:**
When the value of this property is true, a pull-down menu uses the title of the first menu item, and a pop-up menu uses the title of the currently selected menu (if no menu item is selected, the pop-up button displays no item and is drawn empty). When the value is false, the menu item set with menuItem (NSMenuItemMBS) is always displayed. The default value is true.  
(Read and Write property)

33.34.39 Constants

33.34.40 NSPopUpArrowAtBottom = 2

**Function:** One of the arrowPosition constants.  
**Notes:** Arrow is drawn at the edge of the button, pointing toward the preferredEdge.

33.34.41 NSPopUpArrowAtCenter = 1

**Function:** One of the arrowPosition constants.  
**Notes:** Arrow is centered vertically, pointing toward the preferredEdge.

33.34.42 NSPopUpNoArrow = 0

**Function:** One of the arrowPosition constants.  
**Notes:** Does not display any arrow in the control.
33.35. CONTROL NSPOPUPBUTTONCONTROLMBS

33.35 control NSPopUpButtonControlMBS

33.35.1 control NSPopUpButtonControlMBS

Function: The Xojo control for a NSPopUpButtonControl.
Notes:
This control embeds a special NSPopUpButtonControl subclass.
Designed for Xojo 2013r1 and newer. May work on Real Studio 2012, but not perfectly.

33.35.2 Properties

33.35.3 View as NSPopUpButtonMBS

Function: The view used in the control.
Notes:
Use this object to set more options on the control.
(Read only property)

33.35.4 Events

33.35.5 Action

Function: The action event.

33.35.6 BoundsChanged

Function: The event called when the bounds, but not the frame, changed.

33.35.7 EnableMenuItems

Function: The event where you can enable menu items.
33.35.8 FrameChanged

Function: The event called when the frame changed.

33.35.9 GotFocus

Function: The control itself got focus.
Notes: This only fires if the control itself got focus and not a sub control.

33.35.10 LostFocus

Function: The control lost focus.
Notes: This only fires if the control itself lost focus and not a sub control.

33.35.11 MenuAction(HitItem as MenuItem) As Boolean

Function: Called when a menuitem is choosen.
Notes: This allows the control to react on its relevant menu items. Please return true if you handled it or false to give others a chance.

33.35.12 MouseDown(x as Integer, y as Integer, Modifiers as Integer) As Boolean

Function: The mouse button was pressed inside the controls region at the location passed in to x, y.
Notes:
The coordinates x and y are local to the control, i.e. they represent the position of the mouse click relative to the upper-left corner or the Control.
Return True if you are going to handle the MouseDown. In such a case:

- The Action event, if any, will not execute and the state of the object will not change.
- You will receive the MouseDrag and MouseUp events.

If you return False, the system handles the MouseDown so the above event handlers do not get called.
33.35.13 MouseDrag(x as Integer, y as Integer)

Function: This event fires continuously after the mouse button was pressed inside the Control.
Notes: Mouse location is local to the control passed in to x, y.
As this event is fired continuously (hundreds of time per second), it is your responsibility to determine if the mouse has really moved.

33.35.14 MouseUp(x as Integer, y as Integer)

Function: The mouse button was released.
Notes: Use the x and y parameters to determine if the mouse button was released within the control's boundaries.

33.35.15 ScaleFactorChanged(NewFactor as Double)

Function: The backing store scale factor has changed.
Notes: Please invalidate any cached bitmaps or other relevant state.
class NSPopUpButtonMBS

33.36.1 class NSPopUpButtonMBS


**Function:** An NSPopUpButton object controls a pop-up menu or a pull-down menu from which a user can select an item.

**Example:**

```vbnet
' get cocoa view for the popupmenu
dim p as NSPopUpButtonMBS = PopupMenu1.NSPopUpButtonMBS

' find a menu entry
dim it as NSMenuItemMBS = p.itemAtIndex(0)

' get a picture
dim pic as Picture = LogoMBS(500)
dim img as New NSImageMBS(pic)
img.setSize 16,16

' and assign icon
it.image = img
```

**Notes:**

The NSPopUpButton class defines objects that implement the pop-up and pull-down menus of the graphical user interface.

An NSPopUpButton object uses an NSPopUpButtonCell object to implement its user interface.

Note that while a menu is tracking, adding, removing, or changing items on the menu is not reflected.
Subclass of the NSButtonMBS class.

33.36.2 Methods

33.36.3 addItemsWithTitles(titles() as string)


**Function:** Adds multiple items to the end of the menu.

**Notes:**

temTitles: An array of strings containing the titles of the items you want to add. Each string in the array should be unique. If an item with the same title already exists in the menu, the existing item is removed.
33.36. CLASS NSPOPUPBUTTONMBS

and the new one is added.

If you want to move an item, it’s better to invoke removeItemWithTitle: explicitly and then send this method. After adding the items, this method uses the synchronizeTitleAndSelected method to make sure the item being displayed matches the currently selected item.

Since this method searches for duplicate items, it should not be used if you are adding items to an already populated menu with more than a few hundred items. Add items directly to the receiver’s menu instead.

33.36.4 addItemWithTitle(title as string)

Function: Adds an item with the specified title to the end of the menu.
Notes:
title: The title of the menu-item entry. If an item with the same title already exists in the menu, the existing item is removed and the new one is added.

If you want to move an item, it’s better to invoke removeItemWithTitle explicitly and then send this method. After adding the item, this method calls the synchronizeTitleAndSelected method to make sure the item being displayed matches the currently selected item.

Since this method searches for duplicate items, it should not be used if you are adding an item to an already populated menu with more than a few hundred items. Add items directly to the receiver’s menu instead.

33.36.5 Constructor

Function: Creates a new button with size 100/100 and position 0/0
Example:

\[
\text{dim t as new NSPopUpButtonMBS}
\]

Notes: On success the handle property is not zero.
See also:

- 33.36.6 Constructor(Handle as Integer) 6528
- 33.36.7 Constructor(left as Double, top as Double, width as Double, height as Double) 6528
- 33.36.8 Constructor(left as Double, top as Double, width as Double, height as Double, pullsDown as boolean) 6528
33.36.6 Constructor(Handle as Integer)

**Function:** Creates an object based on the given NSPopUpButton handle.  
**Example:**

```vba
Dim t As New NSPopUpButtonMBS(0, 0, 100, 100)  
Dim v As New NSPopUpButtonMBS(t.handle)
```

**MsgBox** `str(v.Bounds.Width)+" x "+str(v.Bounds.Height)`

**Notes:** The handle is casted to a NSPopUpButton and the plugin retains this handle.  
See also:

- 33.36.5 Constructor 6527
- 33.36.7 Constructor(left as Double, top as Double, width as Double, height as Double) 6528
- 33.36.8 Constructor(left as Double, top as Double, width as Double, height as Double, pullsDown as boolean) 6528

33.36.7 Constructor(left as Double, top as Double, width as Double, height as Double)

**Function:** Creates a new popup button with the given size and position.  
**Example:**

```vba
Dim x As New NSPopUpButtonMBS(0, 0, 100, 100)
```

**Notes:** On success the handle property is not zero.  
See also:

- 33.36.5 Constructor 6527
- 33.36.6 Constructor(Handle as Integer) 6528
- 33.36.8 Constructor(left as Double, top as Double, width as Double, height as Double, pullsDown as boolean) 6528

33.36.8 Constructor(left as Double, top as Double, width as Double, height as Double, pullsDown as boolean)

**Function:** Creates an NSPopUpButton object initialized to the specified dimensions.
33.36. CLASS NSPOPUPBUTTONMBS

Notes:

left, top, width, height: The frame rectangle for the button, specified in the parent view’s coordinate system.

pullsDown: true if you want the receiver to display a pull-down menu; otherwise, false if you want it to display a pop-up menu.

See also:

- 33.36.5 Constructor
- 33.36.6 Constructor(Handle as Integer)
- 33.36.7 Constructor(left as Double, top as Double, width as Double, height as Double)

33.36.9 indexOfItem(item as NSMenuItemMBS) as Integer


Function: Returns the index of the specified menu item.

Notes:

item: The menu item whose index you want.

Returns the index of the item or -1 if no such item was found.
This method invokes the method of the same name of its NSPopUpButtonCell object.

33.36.10 indexOfItemWithTag(tag as Integer) as Integer


Function: Returns the index of the menu item with the specified tag.

Notes:

tag: The tag of the menu item you want.

Returns the index of the item or -1 if no item with the specified tag was found.

This method invokes the method of the same name of its NSPopUpButtonCell object.

33.36.11 indexOfItemWithTitle(title as string) as Integer


Function: Returns the index of the item with the specified title.

Notes:
title: The title of the item you want.

Returns the index of the item or -1 if no item with the specified title was found.

### 33.36.12 `indexOfSelectedItem` as Integer

**Function:** Returns the index of the item last selected by the user.
**Notes:** The index of the selected item, or -1 if no item is selected.

### 33.36.13 `insertWithTitle(title as string, atIndex as Integer)`

**Function:** Inserts an item at the specified position in the menu.
**Notes:**
- **title:** The title of the new item. If an item with the same title already exists in the menu, the existing item is removed and the new one is added.
- **index:** The zero-based index at which to insert the item. Specifying 0 inserts the item at the top of the menu.

If you want to move an item, it’s better to invoke `removeWithTitle` explicitly and then send this method. After adding the item, this method uses the `synchronizeTitleAndSelectedItem` method to make sure the item displayed matches the currently selected item.

Since this method searches for duplicate items, it should not be used if you are adding an item to an already populated menu with more than a few hundred items. Add items directly to the receiver’s menu instead.

### 33.36.14 `itemAtIndex(index as Integer)` as NSMenuItemMBS

**Function:** Returns the menu item at the specified index.
**Notes:**
- **index:** The index of the item you want.

Returns the menu item, or nil if no item exists at the specified index.
33.36. **CLASS NSPOPUPBUTTONMBS**

33.36.15  **itemWithTitle(title as string) as NSMenuItemMBS**

**Function:** Returns the menu item with the specified title.
**Notes:**

- title: The title of the menu item you want.

The menu item, or nil if no item with the specified title exists in the menu.

33.36.16  **lastItem as NSMenuItemMBS**

**Function:** Returns the last item in the menu.

33.36.17  **removeAllItems**

**Function:** Removes all items in the receiver’s item menu.
**Notes:** After removing the items, this method uses the synchronizeTitleAndSelectedItem method to refresh the menu.

33.36.18  **removeItemAtIndex(index as Integer)**

**Function:** Removes the item at the specified index.
**Notes:**

- index: The zero-based index indicating which item to remove. Specifying 0 removes the item at the top of the menu.

After removing the item, this method uses the synchronizeTitleAndSelectedItem method to make sure the title displayed matches the currently selected item.

33.36.19  **removeItemWithTitle(title as string)**

**Function:** Removes the item with the specified title from the menu.
**Notes:**
title: The title of the item you want to remove. If no menu item exists with the specified title, this method triggers an assertion.

This method removes the first item it finds with the specified name. This method then uses synchronizeTitleAndSelectedItem to refresh the menu.

### 33.36.20 `selectItem(item as NSMenuItemMBS)`

**Function:** Selects the specified menu item.
**Notes:** item: The menu item to select, or nil if you want to deselect all menu items.

### 33.36.21 `selectItemAtIndex(index as Integer)`

**Function:** Selects the item in the menu at the specified index.
**Notes:** index: The index of the item you want to select, or -1 you want to deselect all menu items.

### 33.36.22 `selectWithTag(tag as Integer) as boolean`

**Function:** Selects the menu item with the specified tag.
**Notes:**

tag: The tag of the item you want to select.

Returns true if the item was successfully selected; otherwise, false.

If no item with the specified tag is found, this method returns false and leaves the menu state unchanged.

You typically assign tags to menu items from Interface Builder, but you can also assign them programmatically using the setTag: method of NSMenuItem.

Available in Mac OS X v10.4 and later.
33.36. **CLASS NSPOPUPBUTTONMBS**

33.36.23  **selectItemWithTitle(title as string)**


**Function:** Selects the item with the specified title.

**Notes:** title: The title of the item to select. If you specify an empty string, or a string that does not match the title of a menu item, this method deselects the currently selected item.

33.36.24  **setTitle(title as string)**


**Function:** Sets the string displayed in the receiver when the user isn’t pressing the mouse button.

**Notes:** If the receiver displays a pop-up menu, this method changes the current item to be the item with the specified title, adding a new item by that name if one does not already exist. If the receiver displays a pull-down list, this method sets its title to the specified string.

33.36.25  **synchronizeTitleAndSelectedItem**


**Function:** Ensures that the item being displayed by the receiver agrees with the selected item.

**Notes:** If there’s no selected item, this method selects the first item in the item menu and sets the receiver’s item to match. For pull-down menus, this method makes sure that the first item is being displayed (the NSPopUpButtonCell object must be set to use the selected menu item, which happens by default).

33.36.26  **titleOfSelectedItem as string**


**Function:** Returns the title of the item last selected by the user.

**Notes:** Returns the title of the selected menu item, or an empty string if no item is selected.

33.36.27  **Properties**

33.36.28  **arrowPosition as Integer**


**Function:** The position of the arrow displayed.

**Notes:**

If you specify NSPopUpNoArrow, the receiver displays no arrow. NSPopUpArrowAtCenter displays the arrow centered horizontally within the cell. NSPopUpArrowAtBottom displays the arrow at the edge of the cell. This method works with setPreferredEdge: to determine the exact location and orientation of the
arrow. For more information, see setPreferredEdge:

This method is ignored unless the receiver is a pull-down list with a beveled border.
(Read and Write property)

### 33.36.29 autoenablesItems as boolean

**Function:** Whether the receiver automatically enables and disables its items every time a user event occurs.
**Notes:**
true if the receiver automatically enables and disables items; otherwise, false. The default value is true.
(Read and Write property)

### 33.36.30 menu as NSMenuMBS

**Function:** Returns the pop-up button’s associated menu.
**Notes:** (Read and Write property)

### 33.36.31 numberOfItems as Integer

**Function:** Returns the number of items in the menu.
**Notes:** (Read only property)

### 33.36.32 pullsDown as boolean

**Function:** A Boolean value indicating the behavior of the control’s menu.
**Notes:**
True if the menu behaves like a pull-down menu; otherwise, false if it behaves like a pop-up menu.
(Read and Write property)
33.36. **CLASS NSPOPUPBUTTONMBS**

### 33.36.33 `selectedItem as NSMenuItemMBS`


**Function:** Returns the menu item last selected by the user.

**Notes:**

Returns the menu item that is currently selected, or nil if no item is selected.

The last selected menu item is the one that was highlighted when the user released the mouse button. It is possible for a pull-down menu's selected item to be its first item.  
(Read and Write computed property)

### 33.36.34 Constants

#### 33.36.35 `NSPopUpArrowAtBottom = 2`

MBS MacControls Plugin, Plugin Version: 14.3. **Function:** One of the constants for the arrow positions.  
**Notes:** Arrow is drawn at the edge of the button, pointing toward the preferredEdge.

#### 33.36.36 `NSPopUpArrowAtCenter = 1`

MBS MacControls Plugin, Plugin Version: 14.3. **Function:** One of the constants for the arrow positions.  
**Notes:** Arrow is centered vertically, pointing toward the preferredEdge.

#### 33.36.37 `NSPopUpNoArrow = 0`

MBS MacControls Plugin, Plugin Version: 14.3. **Function:** One of the constants for the arrow positions.  
**Notes:** Does not display any arrow in the receiver.
33.37 class NSProgressIndicatorMBS

33.37.1 class NSProgressIndicatorMBS


**Function:** The NSProgressIndicator class lets an application display a progress indicator to show that a lengthy task is under way.

**Notes:**

Some progress indicators are indeterminate and do nothing more than spin to show that the application is busy. Others are determinate and show the percentage of the task that has been completed.

This also eliminates the hung appearance if you move the window or open a menu. Unlike the RB progress controls that pause when you do these things, the Cocoa version continues to update.

You can embed this view in a CustomNSViewMBS to get more events for mouse and keyboard. Subclass of the NSViewMBS class.

33.37.2 Methods

33.37.3 Constructor


**Function:** Creates a new progress indicator with size 100/100 and position 0/0

**Example:**

```vba
dim t as new NSProgressIndicatorMBS
```

**Notes:** On success the handle property is not zero.

See also:

- 33.37.4 Constructor(Handle as Integer) 6536
- 33.37.5 Constructor(left as Double, top as Double, width as Double, height as Double) 6537

33.37.4 Constructor(Handle as Integer)


**Function:** Creates an object based on the given NSProgressIndicator handle.

**Example:**

```vba
dim t as new NSProgressIndicatorMBS(0, 0, 100, 100)
dim v as new NSProgressIndicatorMBS(t.handle)
```
33.37. CLASS NSPROGRESSINDICATORMBS

MsgBox str(v.Bounds.Width)+" x "+str(v.Bounds.Height)

Notes: The handle is cast to a NSProgressIndicator and the plugin retains this handle.
See also:

• 33.37.3 Constructor 6536
• 33.37.5 Constructor(left as Double, top as Double, width as Double, height as Double) 6537

33.37.5 Constructor(left as Double, top as Double, width as Double, height as Double)

Function: Creates a new progress indicator with the given size and position.
Example:

dim x as new NSProgressIndicatorMBS(0, 0, 100, 100)

Notes: On success the handle property is not zero.
See also:

• 33.37.3 Constructor 6536
• 33.37.4 Constructor(Handle as Integer) 6536

33.37.6 incrementBy(delta as Double)

Function: Advances the progress bar of a determinate progress indicator by the specified amount.
Notes: The amount by which to increment the progress bar. For example, if you want to advance a progress bar from 0.0 to 100.0 in 20 steps, you would invoke incrementBy 20 times with a delta value of 5.0.

33.37.7 sizeToFit

Function: This action method resizes the receiver to an appropriate size depending on what style returns.
Notes: Use this after you set style to re-size the receiver.
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33.37.8 startAnimation

Function: Starts the animation of an indeterminate progress indicator.
Notes: Does nothing for a determinate progress indicator.

33.37.9 stopAnimation

Function: Stops the animation of an indeterminate progress indicator.
Notes: Does nothing for a determinate progress indicator.

33.37.10 Properties

33.37.11 controlSize as Integer

Function: The size of the receiver.
Notes: (Read and Write computed property)

33.37.12 controlTint as Integer

Function: The receiver’s control tint.
Notes: (Read and Write computed property)

33.37.13 doubleValue as Double

Function: A value that indicates the current extent of the progress bar of a determinate progress indicator.
Notes:
The value representing the current extent of a determinate progress bar. For example, a determinate progress indicator goes from 0.0 to 100.0 by default. If the progress bar has advanced halfway across the view, the value returned by doubleValue would be 50.0. An indeterminate progress indicator does not use this value.
(Read and Write computed property)
33.37. **CLASS NSPROGRESSINDICATORMBS**

33.37.14 *isBezeled* as boolean


**Function:** A Boolean value indicating whether the receiver’s frame has a bezel.

**Notes:**
True if the receiver’s frame has a three-dimensional bezel; otherwise, false.
(Read and Write computed property)

33.37.15 *isDisplayedWhenStopped* as boolean


**Function:** A Boolean value indicating whether the receiver shows itself even when it’s not animating.

**Notes:**
True if the progress indicator shows itself even when it’s not animating. By default, this returns true if style is NSProgressIndicatorBarStyle and false if style isNSProgressIndicatorSpinningStyle.
(Read and Write computed property)

33.37.16 *isIndeterminate* as boolean


**Function:** Whether the receiver is indeterminate.

**Notes:**
This method only has an effect if style returns NSProgressIndicatorBarStyle. If style returns NSProgressIndicatorSpinningStyle, the indicator is always indeterminate, regardless of what you pass to this method.
(Read and Write computed property)

33.37.17 *maxValue* as Double


**Function:** The maximum value for the receiver.

**Notes:**
The maximum value of the progress indicator. An indeterminate progress indicator does not use this value.
(Read and Write computed property)
33.37.18 minValue as Double


Function: The minimum value for the receiver.

Notes:
An indeterminate progress indicator does not use this value.
(Read and Write computed property)

33.37.19 style as Integer


Function: The style of the progress indicator (bar or spinning).

Notes:
Either NSProgressIndicatorBarStyle or NSProgressIndicatorSpinningStyle.
(Read and Write computed property)

33.37.20 usesThreadedAnimation as boolean


Function: A hint as to whether the receiver should implement animation of the progress indicator in a separate thread.

Notes:
Value is true to indicate that animation of the progress indicator should occur in a separate thread; otherwise, false. This value is only a hint and may be ignored.

If the application becomes multithreaded as a result of an invocation of this method, the application’s performance could become noticeably slower.
(Read and Write computed property)

33.37.21 Constants

33.37.22 NSBlueControlTint=1

MBS MacControls Plugin, Plugin Version: 8.4. Function: One of the constants to specify a the control tint.

Notes: Aqua control tint
33.37.23  **NSClearControlTint=7**

MBS MacControls Plugin, Plugin Version: 8.4. **Function**: One of the constants to specify a the control tint.
**Notes**: Clear control tint

33.37.24  **NSDefaultControlTint=0**

MBS MacControls Plugin, Plugin Version: 8.4. **Function**: One of the constants to specify a the control tint.
**Notes**: The current default tint setting

33.37.25  **NSGraphiteControlTint=6**

MBS MacControls Plugin, Plugin Version: 8.4. **Function**: One of the constants to specify a the control tint.
**Notes**: Graphite control tint

33.37.26  **NSMiniControlSize=2**

MBS MacControls Plugin, Plugin Version: 8.4. **Function**: One of the values for the ControlSize property.
**Notes**: The control has a smaller size than NSSmallControlSize.

33.37.27  **NSProgressIndicatorBarStyle=0**

MBS MacControls Plugin, Plugin Version: 8.4. **Function**: One of the constants for the style property. 
**Notes**: A rectangular indicator that can be determinate or indeterminate.

33.37.28  **NSProgressIndicatorPreferredAquaThickness=12**

MBS MacControls Plugin, Plugin Version: 8.4. **Function**: One of the constants to specify the height of a progress indicator.
33.37.29  **NSProgressIndicatorPreferredLargeThickness=18**

MBS MacControls Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify the height of a progress indicator.

33.37.30  **NSProgressIndicatorPreferredSmallThickness=10**

MBS MacControls Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify the height of a progress indicator.

33.37.31  **NSProgressIndicatorPreferredThickness=14**

MBS MacControls Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify the height of a progress indicator.

33.37.32  **NSProgressIndicatorSpinningStyle=1**

MBS MacControls Plugin, Plugin Version: 8.4. **Function:** One of the constants for the style property. **Notes:** A small square indicator that can be indeterminate only.

33.37.33  **NSRegularControlSize=0**

MBS MacControls Plugin, Plugin Version: 8.4. **Function:** One of the values for the ControlSize property. **Notes:** The control is sized as regular.

33.37.34  **NSSmallControlSize=1**

MBS MacControls Plugin, Plugin Version: 8.4. **Function:** One of the values for the ControlSize property. **Notes:** This constant is for controls that cannot be resized in one direction, such as push buttons, radio buttons, checkboxes, sliders, scroll bars, pop-up buttons, tabs, and progress indicators. You should use a small system font with a small control.
33.38. **CLASS NSSCROLLERMBS**

33.38  **class NSScrollerMBS**

33.38.1  **class NSScrollerMBS**


**Function:** An NSScroller object controls scrolling of a document view within an NSScrollView’s clip view (or potentially another kind of container view).

**Notes:**

It typically displays a pair of buttons that the user can click to scroll by a small amount (called a line increment or decrement) and Alt-click to scroll by a large amount (called a page increment or decrement), plus a slot containing a knob that the user can drag directly to the desired location. The knob indicates both the position within the document view and, by varying in size within the slot, the amount visible relative to the size of the document view. You can configure whether an NSScroller object uses scroll buttons, but it always draws the knob when there’s room for it.

Don’t use an NSScroller when an NSSlider would be better. A slider represents a range of values for something in the application and lets the user choose a setting. A scroller represents the relative position of the visible portion of a view and lets the user choose which portion to view.

You can embed this view in a CustomNSViewMBS to get more events for mouse and keyboard. Subclass of the NSControlMBS class.

33.38.2  **Methods**

33.38.3  **checkSpaceForParts**


**Function:** Checks to see if there is enough room in the receiver to display the knob and buttons.

**Notes:** usableParts returns the state calculated by this method. You should never need to invoke this method; it’s invoked automatically whenever the NSScroller’s size changes.

33.38.4  **Constructor**


**Function:** Creates a new scroller with size 100/100 and position 0/0

**Example:**

```
dim t as new NSScrollerMBS
```

**Notes:** On success the handle property is not zero.
33.38.5 Constructor(Handle as Integer)

Function: Creates an object based on the given NSScroller handle.
Example:
```pascal
    dim t as new NSScrollerMBS(0, 0, 100, 100)
    dim v as new NSScrollerMBS(t.handle)
    MsgBox str(v.Bounds.Width)+" x "+str(v.Bounds.Height)
```

Notes: The handle is casted to a NSScroller and the plugin retains this handle.
See also:
- 33.38.4 Constructor
- 33.38.6 Constructor(left as Double, top as Double, width as Double, height as Double)

33.38.6 Constructor(left as Double, top as Double, width as Double, height as Double)

Function: Creates a new scroller with the given size and position.
Example:
```pascal
    dim x as new NSScrollerMBS(0, 0, 100, 100)
```

Notes: On success the handle property is not zero.
See also:
- 33.38.4 Constructor
- 33.38.5 Constructor(Handle as Integer)

33.38.7 drawArrow(Arrow as Integer, highlight as boolean)

Function: Draws the scroll button indicated by arrow, which is either NSScrollerIncrementArrow (the
33.38. **CLASS NSSCROLLERMBS**

down or right scroll button) or NSScrollerDecrementArrow (up or left).

**Notes:**

If flag is true, the button is drawn highlighted; otherwise it’s drawn normally. You should never need to invoke this method directly, but may wish to override it to customize the appearance of scroll buttons. Calling this method on CustomNSScrollerMBS objects does not trigger the drawArrow event.

### 33.38.8 drawKnob


**Function:** Draws the knob.

**Notes:**

You should never need to invoke this method directly, but may wish to override it to customize the appearance of the knob. Calling this method on CustomNSScrollerMBS objects does not trigger the drawKnob event.

### 33.38.9 drawKnobSlotInRect(slotRect as NSRectMBS, highlight as boolean)


**Function:** Draws the knob slow in the rectangle.

**Notes:** Calling this method on CustomNSScrollerMBS objects does not trigger the drawKnobSlotInRect event.

### 33.38.10 drawParts


**Function:** Caches images for the scroll buttons and knob.

**Notes:**

It’s invoked only once when the NSScroller is created. You may want to override this method if you alter the look of the NSScroller, but you should never invoke it directly.

Calling this method on CustomNSScrollerMBS objects does not trigger the drawParts event.

### 33.38.11 highlight(flag as boolean)


**Function:** Highlights or unhighlights the scroll button the user clicked.

**Notes:** The receiver invokes this method while tracking the mouse; you should not invoke it directly. If flag
is true, the appropriate part is drawn highlighted; otherwise it’s drawn normally.

### 33.38.12 hitPart as Integer


**Function:** Returns a part code indicating the manner in which the scrolling should be performed.

**Notes:** This method is typically invoked by an NSScrollView to determine how to scroll its document view when it receives an action message from the NSScroller.

### 33.38.13 isCompatibleWithOverlayScrollers as boolean


**Function:** Returns a Boolean value that indicates whether the class is compatible with overlay scroller style and behavior.

**Notes:**

Returns true if the class is compatible with overlay scroller style and behavior, otherwise false. The plugin implements this so you can query the value.

### 33.38.14 NSPreferredScrollerStyleDidChangeNotification as string


**Function:** A notification name.

**Notes:**

Posted if the preferred scroller style changes.
Available in Mac OS X v10.7 and later.

### 33.38.15 preferredScrollerStyle as Integer


**Function:** Returns the style of scrollers that applications should use wherever possible.

**Notes:**

The preferred scroller style is determined by the Appearance preference panel’s ”Show scroll bars” setting for the current user, and when the user’s preference is set to ”Automatically based on input device” by the set of built-in and connected pointing devices and the user’s scroll capability preference settings for them. The preferred scroller style may therefore change over time, and applications should be prepared to adapt their user interfaces to the new scroller style if needed.
In most cases, updating to a new scroller style is automatic: When the preferred scroller style changes, AppKit notifies all NSScrollView instances, sending setScrollerStyle to each with the new style, which causes each scroll view to automatically re-tile (update its layout) to adapt to the new scroller style. Some NSScrollView instances may refuse the new scroller style setting if they cannot accommodate it for compatibility reasons (the presence of accessory views or legacy scroller subclasses prevent use of overlay scrollers), but most instances will switch to the specified new preferred scroller style.

If you need to be notified of changes to the preferred scroller style, you can register to receive NSPreferredScrollerStyleDidChangeNotification notifications.

Available in Mac OS X v10.7 and later.

### 33.38.16 rectForPart(part as Integer) as NSRectMBS


**Function:** Returns the rectangle occupied by aPart, which for this method is interpreted literally rather than as an indicator of scrolling direction.

**Notes:**

Note the interpretations of NSScrollerDecrementPage and NSScrollerIncrementPage. The actual part of an NSScroller that causes page-by-page scrolling varies, so as a convenience these part codes refer to useful parts different from the scroll buttons.

Returns NSRectMBS.Zero if the part requested isn’t present on the receiver.

### 33.38.17 scrollerWidth as Double


**Function:** Returns the width of "normal-sized" instances.

**Notes:** NSScrollView uses this value to lay out its components. Subclasses that use a different width should override this method.

### 33.38.18 scrollerWidthForControlSize(controlsize as Integer) as Double


**Function:** Returns the width of the scroller based on controlSize.
**33.38.19 setFloatValue(aFloat as Double, proportion as Double)**


**Function:** Sets the position of the knob to aFloat, which is a value from 0.0 (indicating the top or left end) to 1.0 (the bottom or right end).

**Notes:**

Also sets the proportion of the knob slot filled by the knob to knobProp, also a value from 0.0 (minimal size) to 1.0 (fills the slot).

Available in Mac OS X v10.0 and later.
Depreciated in Mac OS X v10.5.

**33.38.20 testPart(p as NSPointMBS) as Integer**


**Function:** Returns the part that would be hit by a mouse-down event at p (expressed in the window’s coordinate system).

**Notes:** Note the interpretations of NSScrollerDecrementPage and NSScrollerIncrementPage. The actual part of an NSScroller that causes page-by-page scrolling varies, so as a convenience these part codes refer to useful parts different from the scroll buttons.

**33.38.21 trackKnob(theEvent as NSEventMBS)**


**Function:** Tracks the knob and sends action messages to the receiver’s target.

**Notes:** This method is invoked automatically when the receiver receives theEvent mouse-down event in the knob; you should not invoke it directly.

**33.38.22 trackScrollButtons(theEvent as NSEventMBS)**


**Function:** Tracks the scroll buttons and sends action messages to the receiver’s target.

**Notes:** This method is invoked automatically when the receiver receives theEvent mouse-down event in a scroll button; you should not invoke this method directly.
33.38. **CLASS NSSCROLLERMB**

33.38.23 **usableParts** as Integer

**Function:** Returns a value indicating which parts of the receiver are displayed and usable.

33.38.24 **Properties**

33.38.25 **arrowsPosition** as Integer

**Function:** The location of the scroll buttons within the receiver.
**Notes:**
Can be NSScrollerArrowsMaxEnd, NSScrollerArrowsMinEnd, NSScrollerArrowsDefaultSetting or NSScrollerArrowsNone.
(Read and Write computed property)

33.38.26 **controlSize** as Integer

**Function:** The size of the receiver.
**Notes:**
Can be NSRegularControlSize, NSMiniControlSize or NSSmallControlSize.
(Read and Write computed property)

33.38.27 **controlTint** as Integer

**Function:** The receiver’s control tint.
**Notes:**
Can be NSGraphiteControlTint, NSBlueControlTint, NSClearControlTint or NSDefaultControlTint.
(Read and Write computed property)

33.38.28 **knobProportion** as Double

**Function:** The portion of the knob slot the knob should fill, as a floating-point value from 0.0 (minimal size) to 1.0 (fills the slot).
**Notes:**
Can be set on Mac OS X 10.5 directly.
(Read and Write computed property)

### 33.38.29 knobStyle as Integer

**Function:** The knob style.
**Notes:**
The value of this property does not affect legacy scrollers. NSScrollerKnobStyleDefault is appropriate for a wide range of content, but in some cases choosing an alternative knob style may enhance visibility of the scroller knob atop some kinds of content.

Available in Mac OS X v10.7 and later.

use constants: NSScrollerKnobStyleDefault, NSScrollerKnobStyleDark or NSScrollerKnobStyleLight.
(Read and Write computed property)

### 33.38.30 scrollerStyle as Integer

**Function:** The scroller style.
**Notes:**
or a scroller that’s managed by an NSScrollView object, the setter is automatically invoked by the scroll view with the appropriate setting, according to the user’s Appearance preference settings and possibly what pointing device(s) are present (see preferredScrollerStyle).

Available in Mac OS X v10.7 and later.
(Read and Write computed property)

### 33.38.31 Constants

#### 33.38.32 NSAllScrollerParts = 2

MBS MacControls Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify which parts of the scroller are visible.
**Notes:** Scroller has at least a knob, possibly also scroll buttons.
33.38. **CLASS NSSCROLLERMBS**

33.38.33 **NSBlueControlTint = 1**

MBS MacControls Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify a the control tint.
**Notes:** Aqua control tint

33.38.34 **NSClearControlTint = 7**

MBS MacControls Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify a the control tint.
**Notes:** Clear control tint

33.38.35 **NSDefaultControlTint = 0**

MBS MacControls Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify a the control tint.
**Notes:** The current default tint setting

33.38.36 **NSGraphiteControlTint = 6**

MBS MacControls Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify a the control tint.
**Notes:** Graphite control tint

33.38.37 **NSMiniControlSize = 2**

MBS MacControls Plugin, Plugin Version: 8.4. **Function:** One of the values for the ControlSize property.
**Notes:** The control has a smaller size than NSSmallControlSize.

33.38.38 **NSNoScrollerParts = 0**

MBS MacControls Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify which parts of the scroller are visible.
**Notes:** Scroller has neither a knob nor scroll buttons, only the knob slot.
33.38.39 NSOnlyScrollerArrows = 1

MBS MacControls Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify which parts of the scroller are visible.  
**Notes:** Scroller has only scroll buttons, no knob.

33.38.40 NSRegularControlSize = 0

MBS MacControls Plugin, Plugin Version: 8.4. **Function:** One of the values for the ControlSize property.  
**Notes:** The control is sized as regular.

33.38.41 NSScrollerArrowsDefaultSetting = 0

MBS MacControls Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify where the scroller’s buttons appear with the arrowsPosition property.  
**Notes:** Contains the information from the AppleScrollBarVariant default value.

33.38.42 NSScrollerArrowsMaxEnd = 0

MBS MacControls Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify where the scroller’s buttons appear with the arrowsPosition property.  
**Notes:** Buttons at bottom or right. This constant has been deprecated.

33.38.43 NSScrollerArrowsMinEnd = 1

MBS MacControls Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify where the scroller’s buttons appear with the arrowsPosition property.  
**Notes:** Buttons at top or left. This has been deprecated.

33.38.44 NSScrollerArrowsNone = 2

MBS MacControls Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify where the scroller’s buttons appear with the arrowsPosition property.  
**Notes:** No buttons.
33.38.45  **NSScrollerDecrementArrow = 1**

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the constants describe the two scroller buttons and are used by drawArrow.  
**Notes:** The down or right scroll button.

33.38.46  **NSScrollerDecrementLine = 4**

MBS MacControls Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify the different parts of the scroller.  
**Notes:** Up or left by a small amount.

33.38.47  **NSScrollerDecrementPage = 1**

MBS MacControls Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify the different parts of the scroller.  
**Notes:** Up or left by a large amount.

33.38.48  **NSScrollerIncrementArrow = 0**

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the constants describe the two scroller buttons and are used by drawArrow.  
**Notes:** The up or left scroll button.

33.38.49  **NSScrollerIncrementLine = 5**

MBS MacControls Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify the different parts of the scroller.  
**Notes:** Down or right by a small amount.

33.38.50  **NSScrollerIncrementPage = 3**

MBS MacControls Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify the different parts of the scroller.  
**Notes:** Down or right by a large amount.
33.38.51 NSScrollerKnob = 2

MBS MacControls Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify the different parts of the scroller.  
**Notes:** Directly to the NSScroller’s value, as given by floatValue.

33.38.52 NSScrollerKnobSlot = 6

MBS MacControls Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify the different parts of the scroller.  
**Notes:** Directly to the NSScroller’s value, as given by floatValue.

33.38.53 NSScrollerKnobStyleDark = 1

MBS MacControls Plugin, Plugin Version: 11.3. **Function:** One of the knob style constants.  
**Notes:**
- Specifies a dark knob.
- This style is particularly good against a light background.
- Available in Mac OS X v10.7 and later.

33.38.54 NSScrollerKnobStyleDefault = 0

MBS MacControls Plugin, Plugin Version: 11.3. **Function:** One of the knob style constants.  
**Notes:**
- Specifies a dark knob with a light border.
- This is the default style; it is good against any background.
- Available in Mac OS X v10.7 and later.

33.38.55 NSScrollerKnobStyleLight = 2

MBS MacControls Plugin, Plugin Version: 11.3. **Function:** One of the knob style constants.  
**Notes:**
- Specifies a light knob.
- This style is particularly good against a dark background.
- Available in Mac OS X v10.7 and later.
33.38. **CLASS NSSCROLLERMBS**

33.38.56 **NSScrollerNoPart = 0**

MBS MacControls Plugin, Plugin Version: 8.4. **Function:** One of the constants to specify the different parts of the scroller.
**Notes:** Don’t scroll at all.

33.38.57 **NSScrollerStyleLegacy = 0**

MBS MacControls Plugin, Plugin Version: 11.3. **Function:** One of the constants to specify the scroller style.
**Notes:**
Specifies legacy-style scrollers as prior to Mac OS X v10.7.
Available in Mac OS X v10.7 and later.

33.38.58 **NSScrollerStyleOverlay = 1**

MBS MacControls Plugin, Plugin Version: 11.3. **Function:** One of the constants to specify the scroller style.
**Notes:**
Specifies overlay-style scrollers in Mac OS X v10.7 and later.
Available in Mac OS X v10.7 and later.

33.38.59 **NSSmallControlSize = 1**

MBS MacControls Plugin, Plugin Version: 8.4. **Function:** One of the values for the ControlSize property.
**Notes:** This constant is for controls that cannot be resized in one direction, such as push buttons, radio buttons, checkboxes, sliders, scroll bars, pop-up buttons, tabs, and progress indicators. You should use a small system font with a small control.
33.39  class NSScrollViewMBS

33.39.1  class NSScrollViewMBS

Function: The Cocoa class for a view which has scrollbars.
Notes:
Embed another view inside it to add scrolling.

You can embed this view in a CustomNSViewMBS to get more events for mouse and keyboard. Subclass of the NSViewMBS class.

33.39.2  Methods

33.39.3  Constructor

Function: Creates a new scrollview with size 100/100 and position 0/0
Example:
```vba
dim t as new NSScrollViewMBS
```

Notes: On success the handle property is not zero.
See also:
- 33.39.4 Constructor(Handle as Integer) 6556
- 33.39.5 Constructor(left as Double, top as Double, width as Double, height as Double) 6557

33.39.4  Constructor(Handle as Integer)

Function: Creates an object based on the given NSScrollView handle.
Example:
```vba
dim t as new NSScrollViewMBS(0, 0, 100, 100)
dim v as new NSScrollViewMBS(t.handle)
MsgBox str(v.Bounds.Width)+" x "+str(v.Bounds.Height)
```
33.39. **CLASS NSSCROLLVIEWMBS**

**Notes:** The handle is casted to a NSScrollView and the plugin retains this handle.

See also:

- 33.39.3 Constructor
- 33.39.5 Constructor(left as Double, top as Double, width as Double, height as Double)

### 33.39.5 Constructor(left as Double, top as Double, width as Double, height as Double)


**Function:** Creates a new scrollview with the given size and position.

**Example:**

```dim x as new NSScrollViewMBS(0, 0, 100, 100)```

**Notes:** On success the handle property is not zero.

See also:

- 33.39.3 Constructor
- 33.39.4 Constructor(Handle as Integer)

### 33.39.6 flashScrollers


**Function:** Flash the overlay scroll bars.

**Notes:**

This method is only to scroll views that use overlay scrollers.

This method can be invoked to cause the overlay scroller knobs to be momentarily shown. This may be desirable when changing a document view’s size or swapping new content into the view, or to give the user a sense of the current position within the scrollable range at each step of an incremental search or similar operation.

Available in Mac OS X v10.7 and later.

### 33.39.7 reflectScrolledClipView(clipView as NSClipViewMBS)


**Function:** Adjusts the receiver’s scrollers to reflect the size and positioning of its content view.

**Notes:**
ClipView: The clip view being adjusted to. If aClipView is any view object other than the receiver’s content view, the method does nothing.

This method is invoked automatically during scrolling and when an NSClipView object’s relationship to its document view changes; you should rarely need to invoke it yourself, but may wish to override it for custom updating or other behavior. If you override this method, be sure to call the superclass implementation. If you do not, other controls (such as the current scrollers) may not be updated properly.

Available in Mac OS X v10.0 and later.

33.39.8 tile

Function: Lays out the components of the receiver: the content view, the scrollers, and the ruler views.
Notes: You rarely need to invoke this method, but subclasses may override it to manage additional components.

33.39.9 Properties

33.39.10 autohidesScrollers as boolean

Function: True when autohiding is set for scroll bars in the scrollview.
Notes: (Read and Write property)

33.39.11 backgroundColor as NSColorMBS

Function: The background color.
Notes: (Read and Write property)

33.39.12 borderType as Integer

Function: The border type.
Notes:
Specifies the appearance of the style of the scroll view’s border. See NSBorderType for a list of possible values.
Use constants NSNoBorder = 0, NSLineBorder = 1, NSBezelBorder = 2 or NSGrooveBorder = 3.
(Read and Write property)

### 33.39.13 `contentSize` as NSSizeMBS

**Function:** Returns the size of the receiver’s content view.
**Notes:** (Read only property)

### 33.39.14 `contentView` as NSClipViewMBS

**Function:** The content view.
**Notes:**
If view has a document view, this method also sets the receiver’s document view to be the document view of view. The original content view retains its document view.
(Read and Write property)

### 33.39.15 `documentCursor` as NSCursorMBS

**Function:** The cursor used when the cursor is over the content view.
**Notes:** (Read and Write property)

### 33.39.16 `documentView` as NSViewMBS

**Function:** The view the receiver scrolls within its content view.
**Notes:** (Read and Write property)

### 33.39.17 `documentVisibleRect` as NSRectMBS

**Function:** Returns the portion of the document view, in its own coordinate system, visible through the receiver’s content view.
**Notes:** (Read only property)
33.39.18  drawsBackground as boolean

**Function:** A Boolean value that indicates whether the scrollview draws its background.
**Notes:** (Read and Write property)

33.39.19  hasHorizontalRuler as boolean

**Function:** True if the receiver maintains a horizontal ruler view, false if it doesn’t.
**Notes:** (Read and Write property)

33.39.20  hasHorizontalScroller as boolean

**Function:** Whether the receiver keeps a horizontal scroller
**Notes:** (Read and Write property)

33.39.21  hasVerticalRuler as boolean

**Function:** Determines whether the scrollview keeps a vertical ruler object.
**Notes:** (Read and Write property)

33.39.22  hasVerticalScroller as boolean

**Function:** True if the scrollview displays a vertical scroller, false if it doesn’t.
**Notes:** (Read and Write property)

33.39.23  horizontalLineScroll as Double

**Function:** The amount by which the receiver scrolls itself horizontally when scrolling line by line to aFloat, expressed in the content view’s coordinate system.
**Notes:**
This amount is the amount used when the user clicks the scroll arrows on the horizontal scroll bar without holding down a modifier key. When displaying text in an NSScrollView, for example, you might set this amount to the height of a single line of text in the default font.
(Read and Write property)

33.39.24  **horizontalPageScroll** as Double

**Function:** The amount of the document view kept visible when scrolling horizontally page by page, expressed in the content view’s coordinate system.
**Notes:**
This amount is used when the user clicks the scroll arrows on the horizontal scroll bar while holding down the Option key.

This amount expresses the context that remains when the receiver scrolls by one page, allowing the user to orient to the new display. It differs from the line scroll amount, which indicates how far the document view moves. The page scroll amount is the amount common to the content view before and after the document view is scrolled by one page.
(Read and Write property)

33.39.25  **horizontalScrollElasticity** as Integer

**Function:** The scroll view’s horizontal elasticity mode.
**Notes:**
A scroll view can scroll its contents past its bounds to achieve an elastic effect.

When set to NSScrollElasticityAutomatic, scrolling the horizontal axis beyond its document bounds only occurs if the document width is greater than the view width or, the vertical scroller is hidden and the horizontal scroller is visible.

The default value is NSScrollElasticityAutomatic.

Available in Mac OS X v10.7 and later.
(Read and Write property)
33.39.26  horizontalScroller as NSScrollerMBS

Function: The receiver’s horizontal scroller, regardless of whether the receiver is currently displaying it, or
nil if the receiver has none.
Notes: (Read and Write property)

33.39.27  lineScroll as Double

Function: The horizontal and vertical line scroll amounts to aFloat.
Notes:
The line scroll is the amount by which the receiver scrolls itself when scrolling line by line, expressed in the
content view’s coordinate system. It’s used when the user clicks the scroll arrows without holding down a
modifier key. When displaying text in an NSScrollView, for example, you might set this value to the height
of a single line of text in the default font.

As part of its implementation, this method sets VerticalLineScroll and HorizontalLineScroll.
(Read and Write property)

33.39.28  pageScroll as Double

Function: The vertical page scroll amount: the amount of the document view kept visible when scrolling
vertically page by page, expressed in the content view’s coordinate system.
Notes:
This amount is used when the user clicks the scroll arrows on the vertical scroll bar while holding down the
Option key. As part of its implementation, this method calls verticalPageScroll.

This amount expresses the context that remains when the receiver scrolls by one page, allowing the user to
orient to the new display. It differs from the line scroll amount, which indicates how far the document view
moves. The page scroll amount is the amount common to the content view before and after the document
view is scrolled by one page.

Note that a scroll view can have two different page scroll amounts: verticalPageScroll and horizontalPage-
Scroll. Use this method only if you can be sure they’re both the same.
(Read and Write property)
33.39. CLASS NSSCROLLVIEWMBS

33.39.29 rulersVisible as boolean

Function: Whether rulers should be visible.
Notes: (Read and Write property)

33.39.30 scrollerKnobStyle as Integer

Function: The knob style of scroll views that use the overlay scroller style.
Notes:
Applicable only to scroll views that use overlay scrollers.
Available in Mac OS X v10.7 and later.
(Read and Write property)

33.39.31 scrollerStyle as Integer

Function: The scroller style used by the scroll view.
Notes:
This setting is automatically set at runtime, based on the user’s preference setting and, if relevant, the set of connected pointing devices and their configured scroll capabilities, as determined by the NSScroller method preferredScrollerStyle.

Setting an scroll view’s scroller style sets the style of both the horizontal and vertical scrollers. If the scroll view subsequently creates or is assigned a new horizontal or vertical scroller, they will be assigned the same scroller style that was assigned to the scroll view.

Available in Mac OS X v10.7 and later.
(Read and Write property)

33.39.32 scrollsDynamically as boolean

Function: True if the scrollview redraws its document view while tracking the knob, false if it redraws only when the scrollern knob is released.
Notes:
NSScrollView scrolls dynamically by default.
(Read and Write property)
33.39.33  usesPredominantAxisScrolling as boolean

Function: Whether the scroll view uses a predominant scrolling axis for content.
Notes:
Whether the scroll view supports a predominant scrolling direction. true if there is a predominant scrolling
direction; otherwise false.

Some content is scrollable in both the horizontal and vertical axes, but is predominantly scrolled one axis at
a time. Other content (such as a drawing canvas) should scroll freely in both axes.

Traditionally this is not an issue with scroll wheels since they can only scroll in one direction at a time.
With scroll balls and touch surfaces, it becomes more difficult to determine the user’s intention.

This property helps a scroll view determine the user’s intention by specifying if there is a predominant
scrolling axis for content.

The default value is true.

Available in Mac OS X v10.7 and later.
(Read and Write property)

33.39.34  verticalLineScroll as Double

Function: The amount by which the view scrolls itself vertically when scrolling line by line to aFloat,
expressed in the content view’s coordinate system.
Notes:
This value is the amount used when the user clicks the scroll arrows on the vertical scroll bar without holding
down a modifier key. When displaying text in an NSScrollView, for example, you might set this value to the
height of a single line of text in the default font.
(Read and Write property)

33.39.35  verticalPageScroll as Double

Function: The amount of the document view kept visible when scrolling vertically page by page to aFloat,
expressed in the content view’s coordinate system.

**Notes:**

This amount is used when the user clicks the scroll arrows on the vertical scroll bar while holding down the Option key.

This amount expresses the context that remains when the receiver scrolls by one page, allowing the user to orient to the new display. It differs from the line scroll amount, which indicates how far the document view moves. The page scroll amount is the amount common to the content view before and after the document view is scrolled by one page. Thus, setting the page scroll amount to 0.0 implies that the entire visible portion of the document view is replaced when a page scroll occurs.

(Read and Write property)

### 33.39.36 verticalScrollElasticity as Integer


**Function:** The scroll view’s vertical elasticity mode.

**Notes:**

A scroll view can scroll its contents past its bounds to achieve an elastic effect.

When set to NSScrollElasticityAutomatic, scrolling the vertical axis beyond its document bounds occurs if any of the following are true: the vertical scroller is visible, the content height is greater than view height, or the horizontal scroller hidden.

Available in Mac OS X v10.7 and later.

(Read and Write property)

### 33.39.37 verticalScroller as NSScrollerMBS


**Function:** The receiver’s vertical scroller, regardless of whether the receiver is currently displaying it, or nil if the receiver has none.

**Notes:** (Read and Write property)

### 33.39.38 Constants

### 33.39.39 NSScrollElasticityAllowed = 2

MBS MacControls Plugin, Plugin Version: 11.3. **Function:** One of the constants used to determine the elasticity behavior for an axis of the scrollview.
Notes:
Allow content to be scrolled past its bounds on this axis in an elastic fashion.
Available in Mac OS X v10.7 and later.

33.39.40 NSScrollElasticityAutomatic = 0

MBS MacControls Plugin, Plugin Version: 11.3. Function: One of the constants used to determine the elasticity behavior for an axis of the scrollview.
Notes:
Automatically determine whether to allow elasticity on this axis.
Available in Mac OS X v10.7 and later.

33.39.41 NSScrollElasticityNone = 1

MBS MacControls Plugin, Plugin Version: 11.3. Function: One of the constants used to determine the elasticity behavior for an axis of the scrollview.
Notes:
Disallow scrolling beyond document bounds on this axis.
Available in Mac OS X v10.7 and later.

33.39.42 NSScrollViewFindBarPositionAboveContent = 1

MBS MacControls Plugin, Plugin Version: 11.3. Function: One of the constants used to define the position of the find bar in relation to the scroll view.
Notes:
The find bar is displayed above the scroll view content.
Available in Mac OS X v10.7 and later.

33.39.43 NSScrollViewFindBarPositionAboveHorizontalRuler = 0

MBS MacControls Plugin, Plugin Version: 11.3. Function: One of the constants used to define the position of the find bar in relation to the scroll view.
Notes:
The find bar is displayed above the horizontal ruler, if visible.
Available in Mac OS X v10.7 and later.
NSScrollViewFindBarPositionBelowContent = 2

MBS MacControls Plugin, Plugin Version: 11.3. **Function:** One of the constants used to define the position of the find bar in relation to the scroll view.

**Notes:**

The find bar is displayed below the scroll view content.
Available in Mac OS X v10.7 and later.
33.40 control NSSearchFieldControlMBS

33.40.1 control NSSearchFieldControlMBS


**Function:** The Xojo control for a NSSearchField.

**Notes:**

This control embeds a special NSSearchField subclass.
Designed for Xojo 2013r1 and newer. May work on Real Studio 2012, but not perfectly.
Please use view property to access the underlying object and set properties.

33.40.2 Properties

33.40.3 View as NSSearchFieldMBS


**Function:** The view used in the control.

**Notes:**

Use this object to set more options on the control.
(Read only property)

33.40.4 Events

33.40.5 Action


**Function:** The Xojo control for a NSSearchField.

**Notes:**

This control embeds a special NSSearchField subclass.
Designed for Xojo 2013r1 and newer. May work on Real Studio 2012, but not perfectly.
Please use view property to access the underlying object and set properties.

33.40.6 BoundsChanged


**Function:** The event called when the bounds, but not the frame, changed.
33.40. **CONTROL NSSEARCHFIELDCONTROLMBS**

33.40.7 **EnableMenuItems**

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event where you can enable menu items.

33.40.8 **FrameChanged**

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event called when the frame changed.

33.40.9 **GotFocus**

MBS MacCocoa Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The control itself got focus. **Notes:** This only fires if the control itself got focus and not a sub control.

33.40.10 **LostFocus**

MBS MacCocoa Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The control lost focus. **Notes:** This only fires if the control itself lost focus and not a sub control.

33.40.11 **MenuAction(HitItem as MenuItem) As Boolean**

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called when a menuitem is choosen. **Notes:** This allows the control to react on its relevant menu items. Please return true if you handled it or false to give others a chance.

33.40.12 **MouseDown(x as Integer, y as Integer, Modifiers as Integer) As Boolean**

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The mouse button was pressed inside the controls region at the location passed in to x, y. **Notes:** The coordinates x and y are local to the control, i.e. they represent the position of the mouse click relative to the upper-left corner or the Control.
Return True if you are going to handle the MouseDown. In such a case:

- The Action event, if any, will not execute and the state of the object will not change.
- You will receive the MouseDrag and MouseUp events.

If you return False, the system handles the MouseDown so the above event handlers do not get called.

### 33.40.13 MouseDrag(x as Integer, y as Integer)


**Function:** This event fires continuously after the mouse button was pressed inside the Control.

**Notes:**
- Mouse location is local to the control passed in to x, y.
- As this event is fired continuously (hundreds of time per second), it is your responsibility to determine if the mouse has really moved.

### 33.40.14 MouseUp(x as Integer, y as Integer)


**Function:** The mouse button was released.

**Notes:** Use the x and y parameters to determine if the mouse button was released within the control's boundaries.

### 33.40.15 ScaleFactorChanged(NewFactor as Double)


**Function:** The backing store scale factor has changed.

**Notes:** Please invalidate any cached bitmaps or other relevant state.

### 33.40.16 TextDidBeginEditing(fieldEditor as NSTextMBS, notification as NSNotificationMBS)


**Function:** Sent when a control with editable text begins an editing session.

**Notes:**
33.40. CONTROL NSSEARCHFIELDCONTROLMBS

Notification: The notification object. The name of the notification is always NSControlTextDidBeginEditingNotification.

This event is invoked when the user begins editing text in a control such as a text field or a form field. The control posts a NSControlTextDidBeginEditingNotification notification, and if the control’s subclass implements this event, it is automatically registered to receive the notification. The field editor is also delivered for inspection.

33.40.17 TextDidChange(fieldEditor as NSTextMBS, notification as NSNotificationMBS)

Function: Sent when the text in the receiving control changes.
Notes:
Notification: The notification object. The name of the notification is always NSControlTextDidChangeNotification.

This event is invoked when text in a control such as a text field or form changes. The control posts a NSControlTextDidChangeNotification notification, and if the control’s subclass implements this event, it is automatically registered to receive the notification. The field editor is provided as parameter for inspection.

33.40.18 TextDidEndEditing(fieldEditor as NSTextMBS, notification as NSNotificationMBS)

Function: Sent when a control with editable text ends an editing session.
Notes:
Notification: The notification object. The name of the notification is always NSControlTextDidEndEditingNotification.

This event is invoked when the user stops editing text in a control such as a text field or form. The control posts a NSControlTextDidEndEditingNotification notification, and if the control’s subclass implements this event, it is automatically registered to receive the notification. The field editor is also provided for inspection.

33.40.19 textShouldBeginEditing(fieldEditor as NSTextMBS) as boolean

Function: The event called to decide whether text editing should be allowed.
CHAPTER 33. COCOA CONTROLS

Notes:

Return true to allow text editing or false to deny.
Be aware that an event in Xojo without return will cause false to be returned.

33.40.20 textShouldEndEditing(fieldEditor as NSTextMBS) as boolean

Function: The event called to decide whether ending text editing should be allowed.
Notes:

Return true to allow end of text editing or false to deny.
Be aware that an event in Xojo without return will cause false to be returned.
33.41.  CLASS NSSEARCHFIELDMBS

33.41  class NSSearchFieldMBS

33.41.1  class NSSearchFieldMBS


**Function:** An NSSearchField object implements a text field control that is optimized for performing text-based searches.

**Example:**

```lisp
// create searchfield
dim n as new NSSearchFieldMBS(0,0,100,20)

// set placeholder
dim x as NSTextFieldCellMBS = n.cell
x.placeholderString = "Test"
```

**Notes:**

The control provides a customized text field for entering search data, a search button, a cancel button, and a pop-up icon menu for listing recent search strings and custom search categories.

An NSSearchField object wraps an NSSearchFieldCell object. Access to most search field attributes occurs through the cell, which provides a more comprehensive programmatic interface for manipulating the search field. You can use an NSSearchField object though to manipulate some aspects of the search field. For additional information about search fields and how to manipulate them, see the NSSearchFieldCell class.

You can embed this view in a CustomNSViewMBS to get more events for mouse and keyboard. Subclass of the NSTextFieldMBS class.

33.41.2  Methods

33.41.3  Constructor


**Function:** Creates a new search field with size 100/100 and position 0/0

**Example:**

```lisp
dim t as new NSSearchFieldMBS
```

**Notes:** On success the handle property is not zero.

See also:
33.41.4 Constructor(Handle as Integer)

**Function:** Creates an object based on the given NSSearchField handle.  
**Example:**

```vbnet
dim t as new NSSearchFieldMBS(0, 0, 100, 100)
dim v as new NSSearchFieldMBS(t.handle)
```

**Notes:** The handle is casted to a NSSearchField and the plugin retains this handle.  
See also:

- 33.41.3 Constructor  
- 33.41.5 Constructor(left as Double, top as Double, width as Double, height as Double)

33.41.5 Constructor(left as Double, top as Double, width as Double, height as Double)

**Function:** Creates a new search field with the given size and position.  
**Example:**

```vbnet
dim x as new NSSearchFieldMBS(0, 0, 100, 100)
```

**Notes:** On success the handle property is not zero.  
See also:

- 33.41.3 Constructor  
- 33.41.4 Constructor(Handle as Integer)

33.41.6 recentSearches as string()

**Function:** Returns the list of recent search strings for the control.  
**Notes:** An array of strings, each of which contains a search string either displayed in the search menu or
from a recent autosave archive. If there have been no recent searches and no prior searches saved under an autosave name, this array may be empty.

### 33.41.7 `setRecentSearches(values() as string)`

MBS MacCocoa Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the list of recent search strings to list in the pop-up icon menu of the receiver. **Notes:** You might use this method to set the recent list of searches from an archived copy.

### 33.41.8 Properties

#### 33.41.9 `maximumRecents as Integer`

MBS MacCocoa Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The maximum number of search strings that can appear in the search menu. **Notes:**

The maximum number of search strings that can appear in the menu. This value can be between 0 and 254. Specifying a value less than 0 sets the value to the default, which is 10. Specifying a value greater than 254 sets the maximum to 254.

When the limit is exceeded, the oldest search string on the menu is dropped.  
(Read and Write computed property)

#### 33.41.10 `recentsAutosaveName as string`

MBS MacCocoa Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The key under which the prior list of recent search strings has been archived. **Notes:**

The autosave name, which is used as a key in the standard user defaults to save the recent searches. The default value is "", which causes searches not to be autosaved.  
(Read and Write computed property)

#### 33.41.11 `searchMenuTemplate as NSMenuMBS`

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The menu template object used to dynamically construct the search pop-up icon menu. **Notes:**
The receiver looks for the tag constants described in Menu tags to determine how to populate the menu with items related to recent searches. (See constants)

To modify the actual menu shown, please use NSMenuItemMBS.validateMenuItem event. There you can for example set the state of the menu item shown. The SearchField makes a copy of the NSMenuItem, so the menuitem where the event is called, is not the one shown. It’s the one passes as parameter.
(Read and Write computed property)

### 33.41.12 sendsSearchStringImmediately as boolean

**Function:** Whether the cell sends its action message to the target immediately upon notification of any changes to the search field text or after a brief pause.  
**Notes:**
True to send the cell’s action immediately upon notification of any changes to the search field; otherwise, false if you want the cell to pause briefly before sending its action message. Pausing gives the user the opportunity to type more text into the search field before initiating the search.
(Read and Write computed property)

### 33.41.13 sendsWholeSearchString as boolean

**Function:** Whether the receiver sends the search action message when the user clicks the search button (or presses return) or after each keystroke.  
**Notes:**
True to send the action message all at once when the user clicks the search button or presses return; otherwise, False to send the search string after each keystroke.
(Read and Write computed property)

### 33.41.14 Constants

#### 33.41.15 NSSearchFieldClearRecentsMenuItemTag = 1002

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the tag values for the search menu template.  
**Notes:**  
Identifies the menu item for clearing the current set of recent string searches in the menu. This item is hidden if there are no recent strings.
33.41.16  **NSSearchFieldNoRecentsMenuItemTag = 1003**

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the tag values for the search menu template.  
**Notes:**
Identifies the menu item that describes a lack of recent search strings (for example, "No recent searches"). This item is hidden if there have been recent searches.

33.41.17  **NSSearchFieldRecentsMenuItemTag = 1001**

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the tag values for the search menu template.  
**Notes:** Identifies where recent search strings should appear in the "recents" menu group.

33.41.18  **NSSearchFieldRecentsTitleMenuItemTag = 1000**

MBS MacCocoa Plugin, Plugin Version: 11.2. **Function:** One of the tag values for the search menu template.  
**Notes:**
Identifies the menu item that is the title of the menu group for recent search strings.  
This item is hidden if there are no recent strings.  
You may use this tagged item for separator characters that also do not appear if there are no recent strings to display.
33.42 control NSSecureTextFieldControlMBS

33.42.1 control NSSecureTextFieldControlMBS

MBS MacCocoa Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The Xojo control for a NSSecureTextField.
Notes:
This control embeds a special NSSecureTextField subclass.
Designed for Xojo 2013r1 and newer. May work on Real Studio 2012, but not perfectly.
Please use view property to access the underlaying object and set properties.

33.42.2 Properties

33.42.3 echosBullets as Boolean

MBS MacCocoa Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Whether the receiver echoes a bullet character rather than each character typed.
Example:
```
dim t as NSSecureTextFieldControlMBS // your textfield
t.echosBullets = true
```

Notes:
If true, bullets are echoed. If false, the cursor is moved for each character typed, but nothing is displayed.
(Read and Write property)

33.42.4 View as NSSecureTextFieldMBS

MBS MacCocoa Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The view used in the control.
Notes:
Use this object to set more options on the control.
(Read only property)
33.42.5 Events

33.42.6 Action

MBS MacCocoa Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The control’s action was triggered.  
**Notes:** The text changed.

33.42.7 BoundsChanged

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event called when the bounds, but not the frame, changed.

33.42.8 EnableMenuItems

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event where you can enable menu items.

33.42.9 FrameChanged

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event called when the frame changed.

33.42.10 GotFocus

MBS MacCocoa Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The control itself got focus.  
**Notes:** This only fires if the control itself got focus and not a sub control.

33.42.11 LostFocus

MBS MacCocoa Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The control lost focus.  
**Notes:** This only fires if the control itself lost focus and not a sub control.
**33.42.12 MenuAction(HitItem as MenuItem) As Boolean**

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called when a menuitem is choosen. **Notes:** This allows the control to react on its relevant menu items. Please return true if you handled it or false to give others a chance.

---

**33.42.13 MouseDown(x as Integer, y as Integer, Modifiers as Integer) As Boolean**

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The mouse button was pressed inside the controls region at the location passed in to x, y. **Notes:**
The coordinates x and y are local to the control, i.e. they represent the position of the mouse click relative to the upper-left corner or the Control. Return True if you are going to handle the MouseDown. In such a case:

- The Action event, if any, will not execute and the state of the object will not change.
- You will receive the MouseDrag and MouseUp events.

If you return False, the system handles the MouseDown so the above event handlers do not get called.

---

**33.42.14 MouseDrag(x as Integer, y as Integer)**

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** This event fires continuously after the mouse button was pressed inside the Control. **Notes:**
Mouse location is local to the control passed in to x, y. As this event is fired continuously (hundreds of time per second), it is your responsibility to determine if the mouse has really moved.

---

**33.42.15 MouseUp(x as Integer, y as Integer)**

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The mouse button was released. **Notes:** Use the x and y parameters to determine if the mouse button was released within the control's boundaries.
33.42. **SCALEFACTORCHANGED**

**33.42.16 ScaleFactorChanged(NewFactor as Double)**

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The backing store scale factor has changed. 
**Notes:** Please invalidate any cached bitmaps or other relevant state.

**33.42.17 TextDidBeginEditing(fieldEditor as NSTextMBS, notification as NSNotificationCenter)**

MBS MacCocoa Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sent when a control with editable text begins an editing session. 
**Notes:** 
Notification: The notification object. The name of the notification is always NSControlTextDidBeginEditingNotification. 
This event is invoked when the user begins editing text in a control such as a text field or a form field. The control posts a NSControlTextDidBeginEditingNotification notification, and if the control’s subclass implements this event, it is automatically registered to receive the notification. The field editor is also delivered for inspection.

**33.42.18 TextDidChange(fieldEditor as NSTextMBS, notification as NSNotificationCenter)**

MBS MacCocoa Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sent when the text in the receiving control changes. 
**Notes:** 
Notification: The notification object. The name of the notification is always NSControlTextDidChangeNotification. 
This event is invoked when text in a control such as a text field or form changes. The control posts a NSControlTextDidChangeNotification notification, and if the control’s subclass implements this event, it is automatically registered to receive the notification. The field editor is provided as parameter for inspection.

**33.42.19 TextDidEndEditing(fieldEditor as NSTextMBS, notification as NSNotificationCenter)**

MBS MacCocoa Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sent when a control with editable text ends an editing session. 
**Notes:**
Notification: The notification object. The name of the notification is always NSControlTextDidEndEditingNotification.

This event is invoked when the user stops editing text in a control such as a text field or form. The control posts a NSControlTextDidEndEditingNotification notification, and if the control's subclass implements this event, it is automatically registered to receive the notification. The field editor is also provided for inspection.

33.42.20 textShouldBeginEditing(fieldEditor as NSTextMBS) as boolean

MBS MacCocoa Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The event called to decide whether text editing should be allowed.
Notes:
Return true to allow text editing or false to deny.
Be aware that an event in Xojo without return will cause false to be returned.

33.42.21 textShouldEndEditing(fieldEditor as NSTextMBS) as boolean

MBS MacCocoa Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The event called to decide whether ending text editing should be allowed.
Notes:
Return true to allow end of text editing or false to deny.
Be aware that an event in Xojo without return will cause false to be returned.
33.43. CLASS NSSECURETEXTFIELDMBS

33.43 class NSSecureTextFieldMBS

33.43.1 class NSSecureTextFieldMBS


Function: NSSecureTextFieldMBS is a subclass of NSTextField that hides its text from display or other access via the user interface.

Notes:
It’s suitable for use as a password-entry object or for any item in which a secure value must be kept.

NSSecureTextField uses NSSecureTextFieldCell to implement its user interface.
Subclass of the NSTextFieldMBS class.

33.43.2 Methods

33.43.3 Constructor


Function: Creates a new secure text field with size 100/100 and position 0/0

Example:

```vbs
dim t as new NSSecureTextFieldMBS
```

Notes: On success the handle property is not zero.

See also:

- 33.43.4 Constructor(Handle as Integer)
- 33.43.5 Constructor(left as Double, top as Double, width as Double, height as Double)

33.43.4 Constructor(Handle as Integer)


Function: Creates an object based on the given NSSecureTextField handle.

Example:

```vbs
dim t as new NSSecureTextFieldMBS(0, 0, 100, 100)
dim v as new NSSecureTextFieldMBS(t.handle)
MsgBox str(v.Bounds.Width)+” x “+str(v.Bounds.Height)
```
Notes: The handle is casted to a NSSecureTextField and the plugin retains this handle. See also:

- 33.43.3 Constructor
- 33.43.5 Constructor(left as Double, top as Double, width as Double, height as Double)

### 33.43.5 Constructor(left as Double, top as Double, width as Double, height as Double)

**Function:** Creates a new secure text field with the given size and position.
**Example:**
```plaintext
dim x as new NSSecureTextFieldMBS(0, 0, 100, 100)
```

Notes: On success the handle property is not zero. See also:

- 33.43.3 Constructor
- 33.43.4 Constructor(Handle as Integer)

### 33.43.6 Properties

#### 33.43.7 echosBullets as boolean

**Function:** Whether the receiver echoes a bullet character rather than each character typed.
**Example:**
```plaintext
dim t as NSSecureTextFieldMBS // your textfield
t.echosBullets = true
```

Notes:
If true, bullets are echoed. If false, the cursor is moved for each character typed, but nothing is displayed. (Read and Write computed property)
class NSSegmentedControlMBS


Function: The plugin class for a Cocoa NSSegmentedControl.

Notes:

An NSSegmentedControl object implements a horizontal button made of multiple segments.

The NSSegmentedControl class uses an NSSegmentedCell class to implement much of the control’s functionality. Most methods in NSSegmentedControl are simply "cover methods" that call the corresponding method in NSSegmentedCell. The methods of NSSegmentedCell that do not have covers relate to accessing and setting values for tags and tool tips; programatically setting the key segment; and establishing the mode of the control.

The features of a segmented control include:

- Each segment can have an image, text (label), menu, tooltip, and tag
- Either the whole control or individual segments can be enabled or disabled
- There are three tracking modes for segments: select one mode (also known as radio button mode and illustrated by Finder’s view mode selection control), momentary mode (as illustrated by Safari’s toolbar buttons), or select any mode (where any combination of buttons may be on or off)
- Each segment can be either a fixed width or autosized to fit the contents
- If a segment has text and is marked as autosizing, then the text may be truncated so that the control completely fits
- If an image is too large to fit in a segment, it is clipped
- Full keyboard control of the user interface

Subclass of the NSControlMBS class.

33.44.2 Methods

33.44.3 Constructor


Function: Creates a new path control with size 100/100 and position 0/0

Example:
dim t as new NSSegmentedControlMBS

Notes: On success the handle property is not zero.
See also:

- 33.44.4 Constructor(Handle as Integer) 6586
- 33.44.5 Constructor(left as Double, top as Double, width as Double, height as Double) 6586

33.44.4 Constructor(Handle as Integer)

Function: Creates an object based on the given NSPathControl handle.
Example:

dim t as new NSSegmentedControlMBS(0, 0, 100, 100)
dim v as new NSSegmentedControlMBS(t.handle)

MsgBox str(v.Bounds.Width)+" x " +str(v.Bounds.Height)

Notes: The handle is casted to a NSSegmentedControl and the plugin retains this handle.
See also:

- 33.44.3 Constructor 6585
- 33.44.5 Constructor(left as Double, top as Double, width as Double, height as Double) 6586

33.44.5 Constructor(left as Double, top as Double, width as Double, height as Double)

Function: Creates a new path control with the given size and position.
Example:

dim x as new NSSegmentedControlMBS(0, 0, 100, 100)

Notes: On success the handle property is not zero.
See also:

- 33.44.3 Constructor 6585
- 33.44.4 Constructor(Handle as Integer) 6586
33.44.6 makeNextSegmentKey

MBS MacCocoa Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Selects the next segment.  
**Notes:** The next segment is the one to the right of the currently selected segment. For the last segment, the selection wraps back to the beginning of the control.

33.44.7 makePreviousSegmentKey

MBS MacCocoa Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Selects the previous segment.  
**Notes:** The previous segment is the one to the left of the currently selected segment. For the first segment, the selection wraps around to the last segment of the control.

33.44.8 selectSegmentWithTag(Tag as Integer) as Boolean

MBS MacCocoa Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Selects the segment with the specified tag.  
**Notes:**

- tag: The tag associated with the desired segment.  
- True if the segment was selected successfully; otherwise, false.

Typically, you use Interface Builder to specify the tag for each segment. You may also set this value programmatically using the setTag:forSegment: method of NSSegmentedCell.

33.44.9 Properties

33.44.10 cellTrackingMode as Integer

MBS MacCocoa Plugin, Plugin Version: 15.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The tracking mode used for the segments of the receiver.  
**Notes:**

- Possible values for trackingMode are described in NSSegmentSwitchTracking. The default value is NSSegmentSwitchTrackingSelectOne.

This property was named only trackingMode in 15.1 and older plugins.  
(Read and Write property)
**33.44.11 doubleValueForSelectedSegment as Double**

**Function:** Query the double value for selected segment.  
**Notes:**
This message is valid only for trackingMode = NSSegmentSwitchTrackingMomentaryAccelerator and provides the double value for the selected segment.  
Available on Mac OS X 10.10.3.  
(Read only property)

**33.44.12 segmentCount as Integer**

**Function:** Returns the number of segments in the receiver.  
**Notes:** (Read and Write property)

**33.44.13 segmentStyle as Integer**

**Function:** The visual style used to display the receiver.  
**Notes:**
See style constants.  
Available in Mac OS X v10.5 and later.  
(Read and Write property)

**33.44.14 selectedSegment as Integer**

**Function:** The index of the selected segment of the receiver.  
**Notes:**
The index of the currently selected segment or -1 if no segment is selected. If the receiver allows multiple selections, this method returns the most recently selected segment.  
(Read and Write property)

**33.44.15 springLoaded as Boolean**

**Function:** Sends action on deep-press or extended hover while dragging.
33.44.16  trackingMode as Integer

Function: The type of tracking behavior the control exhibits.
Notes: An NSSegmentSwitchTracking value specifies how the control responds when the user presses a keyboard key or clicks, force clicks (applies pressure in a pressure-sensitive system), releases pressure, and so on.

see NSSegmentSwitchTracking* constants.
Available on Mac OS X 10.10.3 and newer.
(Read and Write property)

33.44.17  imageForSegment(segment as Integer) as NSImageMBS

Function: The image for the specified segment.
Notes: image: The image to apply to the segment or nil if you want to clear the existing image. Images are not scaled to fit inside a segment. If the image is larger than the available space, it is clipped.
segment: The index of the segment whose image you want to set. This method raises an NSRangeException if the index is out of bounds.
(Read and Write computed property)

33.44.18  imageScalingForSegment(segment as Integer) as Integer

Function: The scaling mode used to display the specified segment’s image.
Notes: scaling: One of the image scaling constants. For a list of possible values, see constants.
segment: The index of the segment whose enabled state you want to get. This method raises an NSRangeException if the index is out of bounds.
Available in Mac OS X v10.5 and later.
(Read and Write computed property)
33.44.19  isEnabledForSegment(segment as Integer) as Boolean


Function: The enabled state of the specified segment.

Notes:
True to enable the segment; otherwise, false to disable it.
segment: The index of the segment you want to enable or disable. This method raises an NSRangeException if the index is out of bounds.
(Read and Write computed property)

33.44.20  isSelectedForSegment(segment as Integer) as Boolean


Function: The selection state of the specified segment.

Notes:
True if you want to select the segment; otherwise, false.
segment: The index of the segment whose selection state you want to set. This method raises an NSRangeException if the index is out of bounds.
If the receiver allows only a single selection, this method deselects any other selected segments.
(Read and Write computed property)

33.44.21  labelForSegment(segment as Integer) as string


Function: The label for the specified segment.

Notes:
label: The label you want to display in the segment. If the width of the string is greater than the width of the segment, the string’s text is truncated during drawing.
segment: The index of the segment whose label you want to set. This method raises an NSRangeException if the index is out of bounds.
(Read and Write computed property)

33.44.22  menuForSegment(segment as Integer) as NSMenuMBS


Function: The menu for the specified segment.

Notes:
menu: The menu you want to add to the segment or nil to clear the current menu. This menu is displayed when the user clicks and holds the mouse button while the mouse is over the segment.

segment: The index of the segment whose menu you want to set. This method raises an NSRangeException if the index is out of bounds.

Adding a menu to a segment allows that segment to be used as a pop-up button.
(Read and Write computed property)

### 33.44.23 tagForSegment(segment as Integer) as Integer


**Function:** The tag value for the segment.

**Notes:**

segment: The index of the segment whose width you want to get. This method raises an NSRangeException if the index is out of bounds.

The tag is an integer you define to identify your items.
(Read and Write computed property)

### 33.44.24 ToolTipForSegment(segment as Integer) as string


**Function:** The tool tip for the specified segment.

**Notes:**

segment: The index of the segment whose tool tip you want to set. This method raises an NSRangeException if the index is out of bounds.

Tool tips are currently not displayed. Apple may change that in the future.
(Read and Write computed property)

### 33.44.25 widthForSegment(segment as Integer) as Double


**Function:** The width of the specified segment.

**Notes:**

width: The width of the segment, measured in points. Specify the value 0 if you want the segment to be sized to fit the available space automatically.

segment: The index of the segment whose width you want to set. This method raises an NSRangeException
if the index is out of bounds.
(Read and Write computed property)

33.44.26 Constants

33.44.27 NSImageScaleAxesIndependently = 1

MBS MacCocoa Plugin, Plugin Version: 12.1. **Function:** One of the constants specify a cell’s image scaling behavior.

**Notes:**

Scale each dimension to exactly fit destination.
This setting does not preserve the aspect ratio of the image.
Available in Mac OS X v10.5 and later.

33.44.28 NSImageScaleNone = 2

MBS MacCocoa Plugin, Plugin Version: 12.1. **Function:** One of the constants specify a cell’s image scaling behavior.

**Notes:**

Do not scale the image.
Available in Mac OS X v10.5 and later.

33.44.29 NSImageScaleProportionallyDown = 0

MBS MacCocoa Plugin, Plugin Version: 12.1. **Function:** One of the constants specify a cell’s image scaling behavior.

**Notes:**

If it is too large for the destination, scale the image down while preserving the aspect ratio.
Available in Mac OS X v10.5 and later.

33.44.30 NSImageScaleProportionallyUpOrDown = 3

MBS MacCocoa Plugin, Plugin Version: 12.1. **Function:** One of the constants specify a cell’s image scaling behavior.

**Notes:**

Scale the image to its maximum possible dimensions while both staying within the destination area and preserving its aspect ratio.
33.44. CLASS NSSEGMENTEDCONTROLMBS

Available in Mac OS X v10.5 and later.

33.44.31 NSSegmentStyleAutomatic = 0

MBS MacCocoa Plugin, Plugin Version: 12.1. Function: One of the constants to specify the visual style used to display the segmented control.
Notes:
The appearance of the segmented control is automatically determined based on the type of window in which the control is displayed and the position within the window.
Available in Mac OS X v10.5 and later.

33.44.32 NSSegmentStyleRounded = 1

MBS MacCocoa Plugin, Plugin Version: 12.1. Function: One of the constants to specify the visual style used to display the segmented control.
Notes:
The control is displayed using the rounded style.
Available in Mac OS X v10.5 and later.

33.44.33 NSSegmentStyleRoundRect = 2

MBS MacCocoa Plugin, Plugin Version: 12.1. Function: One of the constants to specify the visual style used to display the segmented control.
Notes:
The control is displayed using the round rect style.
Available in Mac OS X v10.5 and later.

33.44.34 NSSegmentStyleSmallSquare = 6

MBS MacCocoa Plugin, Plugin Version: 12.1. Function: One of the constants to specify the visual style used to display the segmented control.
Notes:
The control is displayed using the small square style.
Available in Mac OS X v10.5 and later.
33.44.35 NSSegmentStyleTexturedSquare = 4

MBS MacCocoa Plugin, Plugin Version: 12.1. **Function:** One of the constants to specify the visual style used to display the segmented control.
**Notes:**
The control is displayed using the textured square style.
Available in Mac OS X v10.5 and later.

33.44.36 NSSegmentSwitchTrackingMomentary = 2

MBS MacCocoa Plugin, Plugin Version: 12.1. **Function:** One of the constants for switch tracking.
**Notes:** A segment is selected only when tracking.

33.44.37 NSSegmentSwitchTrackingMomentaryAccelerator = 3

MBS MacCocoa Plugin, Plugin Version: 15.2. **Function:** One of the constants for switch tracking.
**Notes:** accelerator behavior, only selected while tracking.

33.44.38 NSSegmentSwitchTrackingSelectAny = 1

MBS MacCocoa Plugin, Plugin Version: 12.1. **Function:** One of the constants for switch tracking.
**Notes:** Any segment can be selected.

33.44.39 NSSegmentSwitchTrackingSelectOne = 0

MBS MacCocoa Plugin, Plugin Version: 12.1. **Function:** One of the constants for switch tracking.
**Notes:** Only one segment may be selected.
### 33.45. CLASS NSSLIDERMBS

#### 33.45 class NSSliderMBS


**Function:** An NSSlider object displays a range of values for something in the application.

**Notes:**

Sliders can be vertical or horizontal bars or circular dials. An indicator, or knob, notes the current setting. The user can move the knob in the slider’s bar or rotate the knob in a circular slider to change the setting.

The NSSlider class uses the NSSliderCell class to implement its user interface.

Subclass of the NSControlMBS class.

#### 33.45.2 Methods

#### 33.45.3 acceptsFirstMouse(event as NSEventMBS) as boolean


**Function:** Overridden by subclasses to return true if the receiver should be sent a mouseDown event for an initial mouse-down event, false if not.

**Notes:**

The receiver can either return a value unconditionally or use the location of event e to determine whether or not it wants the event. The default implementation ignores the event and returns false.

Implement this event in a subclass to allow instances to respond to click-through. This allows the user to click on a view in an inactive window, activating the view with one click, instead of clicking first to make the window active and then clicking the view. Most view objects refuse a click-through attempt, so the event simply activates the window. Many control objects, however, such as instances of NSButton and NSSlider, do accept them, so the user can immediately manipulate the control without having to release the mouse button.

#### 33.45.4 closestTickMarkValueToValue(value as Double) as Double


**Function:** Returns the value of the tick mark closest to the specified value.
### 33.45.5 Constructor


**Function:** Creates a new slider with size 100/100 and position 0/0

**Example:**

```vbnet
dim t as new NSSliderMBS
```

**Notes:** On success the handle property is not zero.

See also:

- 33.45.6 Constructor(Handle as Integer) 6596
- 33.45.7 Constructor(left as Double, top as Double, width as Double, height as Double) 6596

### 33.45.6 Constructor(Handle as Integer)


**Function:** Creates an object based on the given NSSlider handle.

**Example:**

```vbnet
dim t as new NSSliderMBS(0, 0, 100, 100)
dim v as new NSSliderMBS(t.handle)
MsgBox str(v.Bounds.Width)+" x "+str(v.Bounds.Height)
```

**Notes:** The handle is casted to a NSSlider and the plugin retains this handle.

See also:

- 33.45.5 Constructor 6596
- 33.45.7 Constructor(left as Double, top as Double, width as Double, height as Double) 6596

### 33.45.7 Constructor(left as Double, top as Double, width as Double, height as Double)


**Function:** Creates a new slider with the given size and position.

**Example:**

```vbnet
dim x as new NSSliderMBS(0, 0, 100, 100)
```
33.45. CLASS NSSLIDERMBS

Notes: On success the handle property is not zero.
See also:

- 33.45.5 Constructor
- 33.45.6 Constructor(Handle as Integer)

33.45.8 indexOfTickMarkAtPoint(p as NSPointMBS) as Integer

Function: Returns the index of the tick mark closest to the location of the receiver represented by the given point.
Notes:
Returns the index of the tick mark closest to the location specified by point. If point is not within the bounding rectangle (plus an extra pixel of space) of any tick mark, the method returns NSNotFound.
In its implementation of this method, the receiving NSSlider instance simply invokes the method of the same name of its NSSliderCell instance. This method invokes rectOfTickMarkAtIndex: for each tick mark on the slider until it finds a tick mark containing the point.
See also:

- 33.45.9 indexOfTickMarkAtPoint(x as Double, y as Double) as Integer

33.45.9 indexOfTickMarkAtPoint(x as Double, y as Double) as Integer

Function: Returns the index of the tick mark closest to the location of the receiver represented by the given point.
Notes: The index of the tick mark closest to the location specified by point. If point is not within the bounding rectangle (plus an extra pixel of space) of any tick mark, the method returns NSNotFound (& h7fffffff).
See also:

- 33.45.8 indexOfTickMarkAtPoint(p as NSPointMBS) as Integer

33.45.10 isVertical as Integer

Function: Returns an integer indicating the orientation (horizontal or vertical) of the slider.
Notes: 1 if the receiver is vertical, 0 if it’s horizontal, and 1 if the orientation can’t be determined (for example, if the slider hasn’t been displayed yet). A slider is defined as vertical if its height is greater than its width.
33.45.11  *rectOfTickMarkAtIndex(index as Integer) as NSRectMBS*

**Function:** Returns the bounding rectangle of the tick mark at the given index.
**Notes:** If no tick mark is associated with index, the method raises NSRangeException.

33.45.12  *tickMarkValueAtIndex(index as Integer) as Double*

**Function:** Returns the receiver's value represented by the tick mark at the specified index.

33.45.13  Properties

33.45.14  *allowsTickMarkValuesOnly as boolean*

**Function:** A Boolean value indicating whether the receiver fixes its values to those values represented by its tick marks.
**Notes:**
True if the slider fixes its values to the values represented by its tick marks; otherwise, false.
(Read and Write computed property)

33.45.15  *altIncrementValue as Double*

**Function:** The amount by which the receiver changes its value when the user Optiondrags the slider knob.
**Notes:**
The amount by which the value changes when the user drags the slider knob with the Option key held down. Unless you assign a value to AltIncrementValue, altIncrementValue returns 1.0, and the receiver behaves no differently with the Option key down than with it up.
(Read and Write computed property)

33.45.16  *image as NSImageMBS*

**Function:** This method has been deprecated. Returns nil.
**Notes:**
The slider may scale and distort barImage to fit inside the bar.

The knob may cover part of the image. If you want the image to be visible all the time, you’re better off placing it near the slider.

This method has been deprecated by Apple.
(Read and Write computed property)

### 33.45.17 knobThickness as Double

**Function:** The knob’s thickness, in pixels.
**Notes:**
The thickness of the slider knob. The thickness is defined to be the extent of the knob along the long dimension of the bar. In a vertical slider, then, a knob’s thickness is its height; in a horizontal slider, a knob’s thickness is its width.
(Read and Write computed property)

### 33.45.18 maxValue as Double

**Function:** The maximum value the receiver can send to its target.
**Notes:**
The slider’s maximum value. A horizontal slider sends its maximum value when the knob is at the right end of the bar; a vertical slider sends it when the knob is at the top.
(Read and Write computed property)

### 33.45.19 minValue as Double

**Function:** the minimum value the receiver can send to its target.
**Notes:**
The slider’s minimum value. A vertical slider sends its minimum value when its knob is at the bottom; a horizontal slider, when its knob is all the way to the left.
(Read and Write computed property)
CHAPTER 33. COCOA CONTROLS

33.45.20  **numberOfTickMarks as Integer**

**Function:** The number of tick marks associated with the receiver.
**Notes:**
The number of the slider’s tick marks. The tick marks assigned to the minimum and maximum values are included.
(Read and Write computed property)

33.45.21  **sliderType as Integer**

**Function:** The slider type.
**Notes:**
Either NSLinearSlider or NSCircularSlider.
(Read and Write computed property)

33.45.22  **tickMarkPosition as Integer**

**Function:** How the receiver’s tick marks are aligned with it.
**Notes:**
A constant indicating the position of the tick marks. Possible values are NSTickMarkBelow, NSTickMarkAbove, NSTickMarkLeft, and NSTickMarkRight (the last two are for vertical sliders). The default alignments are NSTickMarkBelow and NSTickMarkLeft.
(Read and Write computed property)

33.45.23  **title as string**

**Function:** The receiver’s title.
**Notes:**
The default title is the empty string.
(Read and Write computed property)
33.45.24  titleCell as NSCellMBS

Function: Sets the cell used to draw the receiver’s title.
Notes:
You only need to invoke this method if the default title cell, NSTextFieldCell, doesn’t suit your needs that is, you want to display the title in a manner that NSTextFieldCell doesn’t permit. When you do choose to override the default, titleCell should be an instance of a subclass of NSTextFieldCell.

This method has been deprecated by Apple.
(Read and Write computed property)

33.45.25  titleColor as NSColorMBS

Function: Sets the color used to draw the receiver’s title.
Notes:
This method has been deprecated by Apple.
(Read and Write computed property)

33.45.26  titleFont as NSFontMBS

Function: Sets the font used to draw the receiver’s title.
Notes:
This method has been deprecated by Apple.
(Read and Write computed property)

33.45.27  Constants

33.45.28  NSCircularSlider = 1

MBS MacControls Plugin, Plugin Version: 8.4. Function: One of the slider type constants.
Notes: A circular slider; that is, a dial.
33.45.29  **NSLinearSlider=0**

MBS MacControls Plugin, Plugin Version: 8.4. **Function:** One of the slider type constants.  
**Notes:** A bar-shaped slider.

33.45.30  **NSTickMarkAbove=1**

MBS MacControls Plugin, Plugin Version: 8.4. **Function:** One of the values for the tickMarkPosition property.  
**Notes:** Tick marks above (for horizontal sliders).

33.45.31  **NSTickMarkBelow=0**

MBS MacControls Plugin, Plugin Version: 8.4. **Function:** One of the values for the tickMarkPosition property.  
**Notes:** Tick marks below (for horizontal sliders); the default for horizontal sliders.

33.45.32  **NSTickMarkLeft=1**

MBS MacControls Plugin, Plugin Version: 8.4. **Function:** One of the values for the tickMarkPosition property.  
**Notes:** Tick marks to the left (for vertical sliders); the default for vertical sliders.

33.45.33  **NSTickMarkRight=0**

MBS MacControls Plugin, Plugin Version: 8.4. **Function:** One of the values for the tickMarkPosition property.  
**Notes:** Tick marks to the right (for vertical sliders).
33.46. class NSStepperMBS

33.46.1. class NSStepperMBS

Function: A stepper consists of two small arrows that can increment and decrement a value that appears beside it, such as a date or time.
Notes: The illustration below shows a stepper to the right of a text field, which would show the stepper’s value. Subclass of the NSControlMBS class.

33.46.2. Methods

33.46.3. Constructor

Function: Creates a new stepper with size 100/100 and position 0/0
Example:

```vbnet
dim t as new NSStepperMBS
```

Notes: On success the handle property is not zero.
See also:

- 33.46.4 Constructor(Handle as Integer) 6603
- 33.46.5 Constructor(left as Double, top as Double, width as Double, height as Double) 6604

33.46.4. Constructor(Handle as Integer)

Function: Creates an object based on the given NSStepper handle.
Example:

```vbnet
dim t as new NSStepperMBS(0, 0, 100, 100)
dim v as new NSStepperMBS(t.handle)
MsgBox str(v.Bounds.Width)+" x "+str(v.Bounds.Height)
```

Notes: The handle is casted to a NSStepper and the plugin retains this handle.
See also:
33.46.5 Constructor(left as Double, top as Double, width as Double, height as Double)

Function: Creates a new stepper with the given size and position.
Example:

```
dim x as new NSStepperMBS(0, 0, 100, 100)
```

Notes: On success the handle property is not zero.
See also:

- 33.46.3 Constructor
- 33.46.4 Constructor(Handle as Integer)

33.46.6 Properties

33.46.7 autorepeat as boolean

Function: A Boolean value indicating how the receiver responds to mouse events.
Notes:
True if the first mouse down does one increment (or decrement) and, after a delay of 0.5 seconds, increments (or decrements) at a rate of ten times per second. False if the receiver does one increment (decrement) on a mouse up. The default is true.
(Read and Write computed property)

33.46.8 increment as Double

Function: The amount by which the receiver will change per increment (decrement).
Notes: (Read and Write computed property)
33.46.9  maxValue as Double

Function: The maximum value.
Notes: (Read and Write computed property)

33.46.10  minValue as Double

Function: The minimum value.
Notes: (Read and Write computed property)

33.46.11  valueWraps as boolean

Function: Whether the receiver wraps around the minimum and maximum values.
Notes:
If true, then when incrementing or decrementing, the value wraps around to the minimum or maximum. If valueWraps is false, the value stays pinned at the minimum or maximum.

For example for an angle where 359 increases to 0.
(Read and Write computed property)
33.47 class NSTableColumnMBS

33.47.1 class NSTableColumnMBS


Function: An NSTableColumn stores the display characteristics and attribute identifier for a column in an NSTableView.

Notes: The NSTableColumn determines the width and width limits, resizability, and editability of its column in the NSTableView. It also stores two NSCell objects: the header cell, which is used to draw the column header, and the data cell, used to draw the values for each row. You can control the display of the column by setting the subclasses of NSCell used and by setting the font and other display characteristics for these NSCells. For example, you can use the default NSTextFieldCell for displaying string values or substitute an NSImageCell to display pictures.

33.47.2 Methods

33.47.3 Constructor(identifier as string)


Function: Initializes a NSTableColumn with identifier as its identifier and with an NSTextFieldCell as its data cell.

33.47.4 dataCellForRow(row as Integer) as NSCellMBS


Function: Returns the NSCell object used by the NSTableView to draw values for the receiver.

Notes: NSTableView always calls this method. By default, this method just calls dataCell. Subclassers can override if they need to potentially use different cells for different rows. Subclasses should expect this method to be invoked with row equal to 1 in cases where no actual row is involved but the table view needs to get some generic cell info.

33.47.5 sizeToFit


Function: Resizes the receiver to fit the width of its header cell.

Notes: If the maximum width is less than the width of the header, the maximum is increased to the header's width. Similarly, if the minimum width is greater than the width of the header, the minimum is reduced to the header's width. Marks the NSTableView as needing display if the width actually changes.
33.47. CLASS NSTABLECOLUMNMBS

33.47.6 Properties

33.47.7 dataCell as NSCellMBS

Function: The NSCell object used by the NSTableView to draw values for the receiver.
Notes:
You can use this property to control the font, alignment, and other text attributes for an NSTableColumn. You can also assign a cell to display things other than text for example, an NSImageCell to display images.
(Read and Write property)

33.47.8 Editable as boolean

Function: Controls whether the user can edit cells in the receiver by double-clicking them.
Notes:
If value is true a double click initiates editing; if flag is false it merely sends the double-click event to the NSTableView. You can initiate editing programmatically regardless of this setting with NSTableView’s editColumn() method.
(Read and Write property)

33.47.9 headerCell as NSTableHeaderCellMBS

Function: The NSCell used to draw the receiver’s header to a cell.
Notes: (Read and Write property)

33.47.10 headerToolTip as string

Function: The tooltip string that is displayed when the cursor pauses over the header cell of the receiver.
Notes: (Read and Write property)

33.47.11 Hidden as boolean

Function: Whether the column is hidden.
33.47.12 **identifier as string**

MBS MacControls Plugin, Plugin Version: 9.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The object used by the data source to identify the attribute corresponding to the receiver. **Notes:** (Read and Write property)

33.47.13 **maxWidth as Double**

MBS MacControls Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The maximum width. **Notes:** Setting this value will also adjusting the current width if it’s greater than this value. (Read and Write property)

33.47.14 **minWidth as Double**

MBS MacControls Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The minimum width. **Notes:** Setting this value will also adjusting the current width if it’s less than this value. (Read and Write property)

33.47.15 **Resizable as boolean**

MBS MacControls Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether this column can be resized. **Notes:** (Read and Write property)

33.47.16 **resizingMask as Integer**

MBS MacControls Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Defines the resizing mode for this column. **Notes:**
33.47. CLASS NSTABLECOLUMNMBS

Use kNoResizing, kAutoresizingMask and kUserResizingMask constants.
(Read and Write property)

33.47.17 sortDescriptorPrototype as NSSortDescriptorMBS

Function: The table columns sort descriptor prototype.
Notes: A table column is considered sortable if it has a sort descriptor that specifies the sorting direction, a key to sort by, and a selector that defines how to sort.
(Read and Write property)

33.47.18 tableView as NSTableViewMBS

Function: The owner tableview.
Notes: (Read and Write property)

33.47.19 title as String

Function: The title of the table columns header.
Notes: (Read and Write property)

33.47.20 width as Double

Function: The width of the column.
Notes: (Read and Write property)

33.47.21 Constants

33.47.22 NSTableColumnAutoresizingMask=1

MBS MacControls Plugin, Plugin Version: 9.6. Function: One of the constants specify the resizing modes available for the table column.
Notes:
Allows the table column to resize automatically in response to resizing the tableview. Enabling this option is the same as enabling the "Live Resizable" option in Interface Builder. The resizing behavior for the table view is set using the NSTableView method setColumnAutoresizingStyle:. Available in Mac OS X v10.4 and later.

### 33.47.23 NSTableColumnNoResizing=0

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the constants specify the resizing modes available for the table column.  
**Notes:**  
Prevents the table column from resizing.  
Available in Mac OS X v10.4 and later.

### 33.47.24 NSTableColumnUserResizingMask=2

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the constants specify the resizing modes available for the table column.  
**Notes:**  
Allows the table column to be resized explicitly by the user. Enabling this option is the same as enabling the "User Resizable" option in Interface Builder.  
Available in Mac OS X v10.4 and later.
33.48. CONTROL NSTABLECONTROLMBS

33.48 control NSTableControlMBS

33.48.1 control NSTableControlMBS

Function: The control for a NSTableView.
Notes: Please use NSOutlineControlMBS for hierarchical lists and NSTableControlMBS for normal lists.

33.48.2 Properties

33.48.3 AcceptTabs as Boolean

Function: Whether the control should accept tab keys.
Notes:
If true, the plugin will not forward the tab keydown/keyup events to Xojo, because Xojo would do switch
to next control.
(Read and Write property)

33.48.4 allowsColumnReordering as Boolean

Function: A Boolean value indicating whether the table view allows the user to rearrange columns by
dragging their headers.
Notes:
The default value of this property is true, which allows the user to rearrange the table views columns. You
can rearrange columns programmatically regardless of this setting.
(Read and Write property)

33.48.5 allowsColumnResizing as Boolean

Function: A Boolean value indicating whether the table view allows the user to resize columns by dragging
between their headers.
Notes:
The default of this property is true, which allows the user to resize the table views columns. You can resize
columns programmatically regardless of this setting.
(Read and Write property)
33.48.6 allowsColumnSelection as Boolean


**Function:** A Boolean value indicating whether the table view allows the user to select columns by clicking their headers.

**Notes:**
The default is false, which prevents the user from selecting columns (if you create the table view in Interface Builder, the default value is true). You can select columns programmatically regardless of this setting.

(Read and Write property)

33.48.7 allowsEmptySelection as Boolean


**Function:** A Boolean value indicating whether the table view allows the user to select zero columns or rows.

**Notes:**
The default is true, which allows the user to select zero columns or rows.

(Read and Write property)

33.48.8 allowsMultipleSelection as Boolean


**Function:** A Boolean value indicating whether the table view allows the user to select more than one column or row at a time.

**Notes:**
The default is false, which allows the user to select only one column or row at a time. You can select multiple columns or rows programmatically regardless of this setting.

(Read and Write property)

33.48.9 autohidesScrollers as Boolean


**Function:** A Boolean that indicates whether the scroll view automatically hides its scroll bars when they are not needed.

**Notes:**
The horizontal and vertical scroll bars are hidden independently of each other. When the value of this property is YES and the content of the scroll view doesn’t extend beyond the size of the clip view on a given axis, the scroller on that axis is removed to leave more room for the content.
33.48.10  disableCellEvents as Boolean

Function: Whether to disable cell based events.
Notes:
The table view can work with cell modes and use NSCell to disable cells.
Or since OS X 10.7 it can work with NSView to display cells or rows.
This property lets you explicitly disable cells and use only views.
(Read and Write property)

33.48.11  disableViewEvents as Boolean

Function: Whether to disable view based events.
Notes:
The table view can work with cell modes and use NSCell to disable cells.
Or since OS X 10.7 it can work with NSView to display cells or rows.
This property lets you explicitly disable views and use only cells.
(Read and Write property)

33.48.12  hasHorizontalScroller as Boolean

Function: A Boolean that indicates whether the scroll view has a horizontal scroller.
Notes:
When the value of this property is true, the scroll view allocates and displays a horizontal scroller as needed.
The default value of this property is false.
(Read and Write property)

33.48.13  hasVerticalScroller as Boolean

Function: A Boolean that indicates whether the scroll view has a vertical scroller.
Notes:
When the value of this property is true, the scroll view allocates and displays a vertical scroller as needed.
CHAPTER 33. COCOA CONTROLS

The default value of this property is false. (Read and Write property)

33.48.14 ScrollView as NSScrollViewMBS

Function: The scroll view used in this control.
Notes: (Read only property)

33.48.15 View as NSTableViewMBS

Function: The table view used in this control.
Notes: (Read only property)
See also:
• 33.48.78 view(tableColumn as NSTableColumnMBS, row as Integer) as NSViewMBS

33.48.16 Events

33.48.17 acceptDrop(info as NSDraggingInfoMBS, row as Integer, dropOperation as Integer) as boolean

Function: Called by TableView when the mouse button is released over a table view that previously
decided to allow a drop.
Notes:
info: An object that contains more information about this dragging operation.
row: The index of the proposed target row.
operation: The type of dragging operation.

Returns true if the drop operation was successful, otherwise false.

The data source should incorporate the data from the dragging pasteboard in the implementation of this
method. You can use the draggingPasteboard method to get the data for the drop operation from info.
To accept a drop on the second row, row would be 2 and operation would be NSTableViewDropOn. To
accept a drop below the last row, row would be TableView.numberOfRows and operation would be NSTa-
bleViewDropAbove.
33.48.18  BoundsChanged

Function: The event called when the bounds, but not the frame, changed.

33.48.19  ColumnDidMove(notification as NSNotificationMBS, oldColumn as Integer, newColumn as Integer)

Function: This event informs the delegate that a column was moved by user action in the table view.

33.48.20  ColumnDidResize(notification as NSNotificationMBS, tableColumn as NSTableColumnMBS, OldWidth as Double)

Function: This event informs you that a column was resized in the table view.

33.48.21  dataCell(tableColumn as NSTableColumnMBS, row as Int64) as NSCellMBS

Function: Optional return a different cells for each row.
Notes:
A different data cell can be returned for any particular tableColumn and row, or a cell that will be used for the entire row (a full width cell). The returned cell should properly implement copyWithZone:, since the cell may be copied by NSTableView. If the tableColumn is non-nil, and nil is returned, then the table will use the default cell from tableColumn.dataCellForRow(Row).

When each row is being drawn, this method will first be called with a nil tableColumn. At this time, you can return a cell that will be used to draw the entire row, acting like a group. If you do return a cell for the 'nil' tableColumn, be prepared to have the other corresponding datasource and delegate methods to be called with a 'nil' tableColumn value. If don’t return a cell, the method will be called once for each tableColumn in the tableView, as usual.

33.48.22  didAddRowView(rowView as NSTableRowViewMBS, row as Integer)

Function: Tells the delegate that a row view was added at the specified row.
Notes:
rowView: The row view.
row: The index of the row.

At this point, the delegate can add extra views, or modify the properties of rowView.

This method is only valid for NSView-based table views.

33.48.23 didClickTableColumn(tableColumn as NSTableColumnMBS)

Function: Called if a table column was clicked on.

33.48.24 didDragTableColumn(tableColumn as NSTableColumnMBS)

Function: Sent at the time the mouse button goes up in tableView and tableColumn has been dragged
during the time the mouse button was down.
Notes:
tableColumn: The table column.

The behavior of this method on Mac OS X v10.5 is different from prior versions. On Mac OS X v 10.5 the
dragged column is sent to the subclass. In earlier versions the table column that is currently located at the
dragged column’s original index is sent.

33.48.25 didRemoveRowView(rowView as NSTableRowViewMBS, row as Integer)

Function: Tells the delegate that a row view was removed from the table at the specified row.
Notes:
rowView: The row view.
row: The index of the row.

If row equals -1, the row is being deleted from the table and is no longer a valid row; otherwise row is a valid
row that is being removed by being moved off screen.

This method is only valid for NSView-based table views.
33.48.26 didTile

Function: The tableview did tile.
Notes: The internal tile function properly sizes the table view and its header view and marks it as needing display.

33.48.27 DoubleClick

Function: The mouse made a double click.

33.48.28 draggingSessionEnded(session as NSDraggingSessionMBS, screenPoint as NSPointMBS, operation as Integer)

Function: Implement this method to determine when a dragging session has ended.
Notes:
  session: The dragging session.
  screenPoint: The ending drag location in screen coordinates.
  operation: The drag operation. See NSDragOperation for supported values.

This delegate method can be used to determine when the dragging source operation ended at a specific location, such as the trash, by checking for an operation of NSDragOperationDelete.

33.48.29 draggingSessionWillBegin(session as NSDraggingSessionMBS, screenPoint as NSPointMBS, rowIndexes as NSIndexSetMBS)

Function: Implement this method to determine when a dragging session will begin.
Notes:
  session: The dragging session.
  screenPoint: The initial drag location in screen coordinates.
  rowIndexes: The indexes of the rows to be dragged, excluding rows that were not dragged due to pasteboardItemForRow returning nil.
Implement this method to know when the dragging session is about to begin and to potentially modify the
dragging session.
The dragged item order will directly match the pasteboard writer array used to begin the dragging session
with the NSView method beginDraggingSessionWithItems. Hence, the order is deterministic, and can be
used in acceptDrop when enumerating the NSDraggingInfo pasteboard classes.

33.48.30 EnableMenuItems

Function: The event where you can enable menu items.

33.48.31 FrameChanged

Function: The event called when the frame changed.

33.48.32 GotFocus

Function: The control itself got focus.
Notes: This only fires if the control itself got focus and not a sub control.

33.48.33 heightOfRow(row as Int64) as Double

Function: Implement this event to support a table with varying row heights.
Notes: The height returned by this method should not include intercell spacing and must be greater than
zero. Performance Considerations: For large tables in particular, you should make sure that this method is
efficient. NSTableView may cache the values this method returns, but this should NOT be depended on, as all
values may not be cached. To signal a row height change, call noteHeightOfRowsWithIndexesChanged. For
a given row, the same row height should always be returned until noteHeightOfRowsWithIndexesChanged
is called, otherwise unpredictable results will happen. NSTableView automatically invalidates its entire row
height cache in reloadData, and noteNumberOfRowsChanged.

33.48.34 isGroupRow(row as Int64) as boolean

Function: Invoked to allow the delegate to indicate that a specified row is a group row.
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Notes:
row: The row index.

Return true if the specified row should have the group row style drawn, false otherwise.

If the cell in row is an NSTextFieldCell and contains only a string, the group row style attributes will automatically be applied to the cell.

Group rows in view-based table views can be made to visually float’ by setting the tableview method setFloatsGroupRows to true.

Note: When configured as a source list style table view, rows identified as group rows draw with a specific style unique for source lists.
Available in Mac OS X v10.5 and later.

33.48.35 LeftMouseDown(e as NSEventMBS) as boolean

Function: Informs the receiver that the user has pressed the left mouse button.
Notes: This event is called before the normal event processing from Xojo happens. So return true to hide event from Xojo runtime.

33.48.36 LeftMouseDragged(e as NSEventMBS) as boolean

Function: Informs the receiver that the user has moved the mouse with the left button pressed.
Notes: This event is called before the normal event processing from Xojo happens. So return true to hide event from Xojo runtime.

33.48.37 LeftMouseUp(e as NSEventMBS) as boolean

Function: Informs the receiver that the user has released the left mouse button.
Notes: This event is called before the normal event processing from Xojo happens. So return true to hide event from Xojo runtime.
33.48.38  LostFocus

Function: The control lost focus.
Notes: This only fires if the control itself lost focus and not a sub control.

33.48.39  MenuAction(HitItem as MenuItem) As Boolean

Function: Called when a menuitem is choosen.
Notes: This allows the control to react on its relevant menu items. Please return true if you handled it or
false to give others a chance.

33.48.40  MouseDown(x as Integer, y as Integer, Modifiers as Integer) As Boolean

Function: The mouse button was pressed inside the controls region at the location passed in to x, y.
Notes:
The coordinates x and y are local to the control, i.e. they represent the position of the mouse click relative
to the upper-left corner or the Control.
Return True if you are going to handle the MouseDown. In such a case:

- The Action event, if any, will not execute and the state of the object will not change.
- You will receive the MouseDrag and MouseUp events.

If you return False, the system handles the MouseDown so the above event handlers do not get called.

33.48.41  mouseDownInTheHeaderOfTableColumn(tableColumn as NSTableColumnMBS)

Function: Sent to the subclass whenever the mouse button is clicked in the table view’s header column.
Notes: tableColumn: The table column.

33.48.42  MouseDrag(x as Integer, y as Integer)

Function: This event fires continuously after the mouse button was pressed inside the Control.
Notes:
Mouse location is local to the control passed in to x, y.
As this event is fired continuously (hundreds of time per second), it is your responsibility to determine if the mouse has really moved.

33.48.43 MouseUp(x as Integer, y as Integer)

Function: The mouse button was released.
Notes: Use the x and y parameters to determine if the mouse button was released within the control's boundaries.

33.48.44 namesOfPromisedFilesDroppedAtDestination(dropDestination as folderItem, DraggedRowsWithIndexes as NSIndexSetMBS) as string()

Function: Returns an array of filenames that represent the indexSet rows for a drag to dropDestination.
Notes:
dropDestination: The drop location where the files are created.
indexSet: The indexes of the items being dragged.

Returns an array of filenames (not full paths) for the created files that the receiver promises to create.

This method is called when a destination has accepted a promise drag.
For more information on file promise dragging, see documentation on the NSDraggingSource protocol and namesOfPromisedFilesDroppedAtDestination:.

33.48.45 nextTypeSelectMatchFromRow(startRow as Int64, endRow as Int64, searchString as string) as Int64

Function: Invoked to allow the subclass to modify how type selection works.
Notes:
startRow: The starting row of the search range.
endRow: The ending row of the search range.
searchString: A string containing the typed selection.

Return the first row in the range of startRow through endRow (excluding endRow itself) that matches se-
lectionString. Return -1 if no match is found.

It is possible for endRow to be less than startRow if the search will wrap.
Available in Mac OS X v10.5 and later.

### 33.48.46 numberOfRowsInTableView as Integer

**Function:** Called when the table view needs to know the number of rows.
**Notes:** numberOfRowsInTableView is called very frequently, so it must be efficient.

### 33.48.47 objectValue(column as NSTableColumnMBS, row as Integer) as Variant

**Function:** Called when a value is required for a given cell.
**Notes:** Please implement your own arrays to store values.

### 33.48.48 OtherMouseDown(e as NSEventMBS) as boolean

**Function:** Informs the receiver that the user has pressed a mouse button other than the left or right one.
**Notes:** This event is called before the normal event processing from Xojo happens. So return true to hide event from Xojo runtime.

### 33.48.49 OtherMouseDragged(e as NSEventMBS) as boolean

**Function:** Informs the receiver that the user has moved the mouse with a button other than the left or right button pressed.
**Notes:** This event is called before the normal event processing from Xojo happens. So return true to hide event from Xojo runtime.

### 33.48.50 OtherMouseUp(e as NSEventMBS) as boolean

**Function:** Informs the receiver that the user has released a mouse button other than the left or right but-
33.48. CONTROL NSTABLECONTROLMBS

Notes: This event is called before the normal event processing from Xojo happens. So return true to hide event from Xojo runtime.

33.48.51 pasteboardItemForRow(row as Integer) as NSPasteboardItemMBS

Function: Called to allow the table to support multiple item dragging.
Notes:
row: The row.

Returns an instance of NSPasteboardItem. Returning nil excludes the row from being dragged.

This method is required for multi-image dragging.
If this method is implemented, then writeRowsWithIndexes will not be called.

33.48.52 RightMouseDown(e as NSEventMBS) as boolean

Function: Informs the view that the user has pressed the right mouse button.
Notes: This event is called before the normal event processing from Xojo happens. So return true to hide event from Xojo runtime.

33.48.53 RightMouseDragged(e as NSEventMBS) as boolean

Function: Informs the receiver that the user has moved the mouse with the right button pressed.
Notes: This event is called before the normal event processing from Xojo happens. So return true to hide event from Xojo runtime.

33.48.54 RightMouseUp(e as NSEventMBS) as boolean

Function: Informs the receiver that the user has released the right mouse button.
Notes: This event is called before the normal event processing from Xojo happens. So return true to hide event from Xojo runtime.
33.48.55  rowActionsForRow(row as Integer, edge as Integer) as NSTableViewRowActionMBS()

**Function:** Asks the control to provide an array of row actions to be attached to the specified edge of a table row and displayed when the user swipes horizontally across the row.
**Notes:**
- row: The index of the target row.
- edge: The edge (NSTableRowActionEdgeLeading or NSTableRowActionEdgeTrailing) for which row actions are requested. This is based on the direction in which the user swiped on the row. Swiping to the right results in an edge value of leading. Swiping to the left results in an edge value of trailing.

Returns an array of row actions (of class NSTableViewRowActionMBS) to be enabled on the specified edge of the table row.

Implement this method if your table row supports actions that are displayed when the user swipes horizontally across the row. For example, your table view could use this method to implement a swipe left to delete function in your table rows. When called, this method receives the table view, the index of the row the user swiped, and an edge of type NSTableRowActionEdge. The method should return an array of any row actions of class NSTableViewRowAction that are supported for the specified edge. If no row actions are available, an empty array should be returned.

If this method isn't implemented, then the table row displays no actions when the user swipes horizontally away from the specified edge.

33.48.56  rowViewForRow(row as Integer) as NSTableRowViewMBS

**Function:** Asks the delegate for a view to display the specified row.
**Notes:**
- row: The row index.

Return an instance or subclass of NSTableRowView. If nil is returned, an NSTableRowView instance will be created and used.

You can implement this event to return a custom NSTableRowView for row.
The reuse queue can be used in the same way as documented in tableView:view:row:. The returned view will have attributes properly set to it before its added to the tableView.

This method is only valid for NSView-based table views.
33.48. CONTROL NSTABLECONTROLMBS

33.48.57  ScaleFactorChanged(NewFactor as Double)

Function: The backing store scale factor has changed.
Notes: Please invalidate any cached bitmaps or other relevant state.

33.48.58  SelectionDidChange(notification as NSNotificationMBS)

Function: This event informs you that the table view’s selection has changed.

33.48.59  selectionIndexesForProposedSelection(proposedSelectionIndexes as NSIndexSetMBS) as NSIndexSetMBS

Function: Invoked to allow the delegate to modify the proposed selection.
Notes:

proposedSelectionIndexes: An index set containing the indexes of the proposed selection.

Return an NSIndexSet instance containing the indexes of the new selection. Return proposedSelectionIndexes if the proposed selection is acceptable, or the value of the table view’s existing selection to avoid changing the selection.

This method may be called multiple times with one new index added to the existing selection to find out if a particular index can be selected when the user is extending the selection with the keyboard or mouse.

Implementation of this method is optional. If implemented, this method will be called instead of shouldSelectRow.
Available in Mac OS X v10.5 and later.

33.48.60  SelectionIsChanging(notification as NSNotificationMBS)

Function: This event informs you that the table view’s selection is in the process of changing (typically because the user is dragging the mouse across a number of rows).
### 33.48.61 selectionShouldChangeInTableView as boolean


**Function:** Returns whether the selection should change.

**Notes:**

Return true to allow the table view to change its selection (typically a row being edited), false to deny selection change.

The user can select and edit different cells within the same row, but can’t select another row unless the delegate approves. The subclass can implement this method for complex validation of edited rows based on the values of any of their cells.

### 33.48.62 setObjectValue(value as Variant, column as NSTableColumnMBS, row as Integer)


**Function:** Called when a cell value is saved to the datasource.

### 33.48.63 shouldEditTableColumn(tableColumn as NSTableColumnMBS, row as Int64) as boolean


**Function:** Returns whether the cell at the specified row and column can be edited.

**Notes:**

TableColumn: The table column.
rowIndex: The row index.

Return true to allow editing the cell, false to deny editing.

The subclass can implement this method to disallow editing of specific cells.

Note: This method is only valid for cell-based table views.

### 33.48.64 shouldReorderColumn(columnIndex as Int64, newColumnIndex as Int64) as boolean


**Function:** Sent to the subclass to allow or prohibit the specified column to be dragged to a new location.

**Notes:**

columnIndex: The index of the column being dragged.
newColumnIndex: The proposed target index of the column.

Return true if the column reordering should be allowed, otherwise false.

When a column is initially dragged by the user, the delegate is first called with a newColumnIndex value of -1. Returning false will disallow that column from being reordered at all. Returning true allows it to be reordered, and the delegate will be called again when the column reaches a new location.

The actual NSTableColumn instance can be retrieved from the tableColumns array.

If this method is not implemented, all columns are considered reorderable. Available in Mac OS X v10.6 and later.

33.48.65 shouldSelectRow(row as Int64) as boolean

Function: Returns whether the table view should allow selection of the specified row.
Notes:

rowIndex: The row index.

Return true to permit selection of the row, false to deny selection.

The delegate can implement this method to disallow selection of particular rows. For better performance and finer-grain control over the selection, use selectionIndexesForProposedSelection.

33.48.66 shouldSelectTableColumn(tableColumn as NSTableColumnMBS) as boolean

Function: Returns whether the specified table column can be selected.
Notes:

TableColumn: The table column.

Return true to permit selection, otherwise false.

The subclass can implement this event to disallow selection of particular columns.
33.48.67 shouldShowCellExpansion(tableColumn as NSTableColumnMBS, row as Int64) as Boolean


Function: Invoked to allow the subclass to control cell expansion for a specific row and column.

Notes:
TableColumn: The table column.
row: The row index.

Return true if the tooltip cell should expand, false otherwise.

Cell expansion can occur when the mouse hovers over the specified cell and the cell contents are unable to be fully displayed within the cell. If this method returns true, the full cell contents will be shown in a special floating tool tip view, otherwise the content is truncated.

Note: This method is only valid for cell-based table views.

Available in Mac OS X v10.5 and later.

33.48.68 shouldTrackCell(cell as NSCellMBS, tableColumn as NSTableColumnMBS, row as Int64) as Boolean


Function: Invoked to allow the subclass to control the tracking behavior for a specific cell.

Notes:
cell: The cell to track.
tableColumn: The table column.
row: A row in tableView.

Returns true if the cell should track, false otherwise.

Normally, only selectable or selected cells can be tracked. If you implement this method, cells which are not selectable or selected can be tracked, and vice-versa.

For example, this allows you to have an NSButtonCell in a table which does not change the selection, but can still be clicked on and tracked.

Note: This method is only valid for cell-based table views.
33.48.69  `shouldTypeSelectForEvent(e as NSEventMBS, searchString as string)` as Boolean


**Function:** Invoked to allow the subclass to control type select for a specific event.

**Notes:**

- `event`: The event.
- `searchString`: The search string or nil if no type select has began.

Return true to allow type select for event, false otherwise.

Typically, this is called from the table view keyDown implementation and the event will be a key event. Available in Mac OS X v10.5 and later.

33.48.70  `sizeToFitWidthOfColumn(column as Int64)` as Double


**Function:** Invoked to allow the subclass to provide custom sizing behavior when a column’s resize divider is double clicked.

**Notes:**

- `column`: The index of the column.

Returns the width of the specified column.

By default, NSTableView iterates every row in the table, accesses a cell via preparedCellAtColumn, and requests the cellSize to find the appropriate largest width to use.

For accurate results and performance, it is recommended that this method is implemented when using large tables. By default, large tables use a monte carlo simulation instead of iterating every row.

Available in Mac OS X v10.6 and later.
33.48.71  sortDescriptorsDidChange(oldDescriptors() as NSSortDescriptorMBS)

Function: Called by TableView to indicate that sorting may need to be done.
Notes: The data source typically sorts and reloads the data, and adjusts the selections accordingly. If you need to know the current sort descriptors and the data source doesn’t manage them itself, you can get the current sort descriptors by calling TableView.sortDescriptors function.

33.48.72  textShouldBeginEditing(control as NSControlMBS, fieldEditor as NSTextFieldMBS) as boolean

Function: The event called to decide whether text editing should be allowed.
Notes: Return true to allow.

33.48.73  textShouldEndEditing(control as NSControlMBS, fieldEditor as NSTextFieldMBS) as boolean

Function: The event called to decide whether ending text editing should be allowed.
Notes: Return true to allow.

33.48.74  toolTipForCell(cell as NSCellMBS, r as NSRectMBS, tableColumn as NSTableColumnMBS, row as Int64, mouseLocation as NSPointMBS) as string

Function: Returns a string that is displayed as a tooltip for the specified cell in the column and row.
Notes:
Cell: The cell.
r: The proposed active area of the tooltip. You can modify rect to provide an alternative active area.
TableColumn: The table column.
row: The row index.
mouseLocation: The mouse location.

Return a string containing the tooltip. Return empty string if no tooltip is desired.

By default, rect is computed as cell.drawingRectForBounds(cellFrame).
Available in Mac OS X v10.4 and later.
**33.48.75 typeSelectString**(tableColumn as NSTableColumnMBS, row as Int64) as string


**Function:** Invoked to allow the subclass to provide an alternate text value used for type selection for a specified row and column.

**Notes:**
- tableColumn: The table column.
- row: The row index.

Returns a string that is used in type select comparison for row and tableColumn. Return "" if the row or tableColumn should not be searched.

Implement this method to change the string value that is searched for based on what is displayed. By default, all cells with text in them are searched.

If this event is not implemented the string value is the cell string value.

Implementation of this event is optional.

Available in Mac OS X v10.5 and later.

---

**33.48.76 updateDraggingItemsForDrag**(draggingInfo as NSDraggingInfoMBS)


**Function:** Implement this method to allow the table to update dragging items as they are dragged over a view.

**Notes:**
- The dragging information.

Required for multi-image dragging. Typically this will involve invoking enumerateDraggingItemsWithOptions on the draggingInfo parameter value and setting the draggingItem objects imageComponentsProvider to a proper image based on the content.

For view-based table views, you can use the NSTableCellView method draggingImageComponents. For cell-based tables, use the NSCell method draggingImageComponentsWithFrame.
33.48.77 validateDrop(info as NSDraggingInfoMBS, proposedRow as Integer, dropOperation as Integer) as Integer


Function: Used by aTableView to determine a valid drop target.

Notes:

info: An object that contains more information about this dragging operation.
row: The index of the proposed target row.
operation: The type of dragging operation proposed.

Returns the dragging operation the data source will perform.

The data source may retarget a drop by calling setDropRow and returning something other than NSDrag-OperationNone. A data source might retarget for various reasons, such as to provide better visual feedback when inserting into a sorted position.

To propose a drop on the second row, row would be 2 and operation would be NSTableViewDropOn. To propose a drop below the last row, row would be TableView.numberOfRows and operation would be NSTa-bleViewDropAbove.

33.48.78 view(tableColumn as NSTableColumnMBS, row as Integer) as NSViewMBS


Function: Asks the delegate for a view to display the specified row and column.

Notes:

see also

See also:
• 33.48.15 View as NSTableViewMBS

33.48.79 willDisplayCell(cell as NSCellMBS, tableColumn as NSTableColumnMBS, row as Int64)


Function: Informs you that the tableview will display the specified cell at the row in the column.

Notes:

Cell: The cell to be displayed.
TableColumn: The table column.
row: The row index.
The event can modify the display attributes of cell to alter the appearance of the cell.

Because cell is reused for every row in tableColumn, the event must set the display attributes both when drawing special cells and when drawing normal cells.

Note: The implementation of this method must not draw portions of the cell. It should only alter the state of the passed in cell.

33.48.80 willTile

Function: The tableview will tile.
Notes: The internal tile function properly sizes the table view and its header view and marks it as needing display.

33.48.81 writeRowsWithIndexes(rowIndexes as NSIndexSetMBS, pboard as NSPasteboardMBS) as boolean

Function: Returns a Boolean value that indicates whether a drag operation is allowed.
Notes:
rowIndexes: An index set of row numbers that will be participating in the drag.
pboard: The pasteboard to which to write the drag data.

Returns true if the drag operation is allowed, false otherwise.

Called by TableView after it has been determined that a drag should begin, but before the drag has been started.
To refuse the drag, return false. To start a drag, return true and place the drag data onto pboard (data, owner, and so on). The drag image and other drag-related information will be set up and provided by the table view once this call returns with true.
33.49 class NSTableDataSourceMBS

33.49.1 class NSTableDataSourceMBS

**Function:** The class for a data source of a NSTableView.

**Notes:**
A listbox stores the data itself, but the NSTableView is just a view.
so you need to handle the storage of the table view yourself by subclassing this class and filling the events.

33.49.2 Events

33.49.3 Close

**Function:** The event is called when the datasource is destroyed.

33.49.4 numberOfRowsInTableView as Integer

**Function:** Called when the table view needs to know the number of rows.
**Notes:** numberOfRowsInTableView is called very frequently, so it must be efficient.

33.49.5 objectValue(column as NSTableColumnMBS, row as Integer) as Variant

**Function:** Called when a value is required for a given cell.
**Notes:** Please implement your own arrays to store values.

33.49.6 setObjectValue(value as Variant, column as NSTableColumnMBS, row as Integer)

**Function:** Called when a cell value is saved to the datasource.
33.49.7 sortDescriptorsDidChange(oldDescriptors() as NSSortDescriptorMBS)

Function: Called by TableView to indicate that sorting may need to be done.
Notes: The data source typically sorts and reloads the data, and adjusts the selections accordingly. If you need to know the current sort descriptors and the data source doesn't manage them itself, you can get the current sort descriptors by calling TableView.sortDescriptors function.
CHAPTER 33. COCOA CONTROLS

33.50 class NSTableHeaderViewMBS

33.50.1 class NSTableHeaderViewMBS

Function: An NSTableHeaderView is used by an NSTableHeaderView to draw its column headers.  
Notes:  
See the NSTableViewMBS class specification for more information on how it’s used.

Subclasses of NSTableHeaderView can override drawInteriorWithFrame, editWithFrame, and highlightWithFrame to change the way headers appear. See the NSCell class specification, and the following description, for information on these methods. (This works in Cocoa, but does not yet work in the plugin. If you need, send in a feature request.)

Subclass of the NSTextFieldCellMBS class.

33.50.2 Methods

33.50.3 drawSortIndicatorWithFrame(cellFrame as NSRectMBS, inView as NSViewMBS, ascending as boolean, priority as Integer)

Function: Draws a sorting indicator given a cellFrame contained inside controlView.  
Notes:  
If priority is 0, this is the primary sort indicator. If ascending is true, a "ˆ" indicator will be drawn. Override this method to customize the sorting user interface.  
Available in Mac OS X v10.3 and later.

33.50.4 sortIndicatorRectForBounds(r as NSRectMBS) as NSRectMBS

Function: Returns the location to display the sorting indicator given rectangle.  
Notes: Available in Mac OS X v10.3 and later.
33.51. CLASS NSTABLEHEADERVIEWMBS

33.51 class NSTableHeaderViewMBS

33.51.1 class NSTableHeaderViewMBS


**Function:** An NSTableHeaderView is used by an NSTableView to draw headers over its columns and to handle mouse events in those headers.

**Notes:**

NSTableHeaderView uses NSTableHeaderCell to implement its user interface.

You can embed this view in a CustomNSViewMBS to get more events for mouse and keyboard. Subclass of the NSViewMBS class.

33.51.2 Methods

33.51.3 columnAtPoint(point as NSPointMBS) as Integer


**Function:** Returns the index of the column whose header lies under aPoint in the receiver, or 1 if no such column is found.

**Notes:** point: is expressed in the receiver’s coordinate system.

33.51.4 Constructor


**Function:** Creates a new table header view with size 100/100 and position 0/0

**Example:**

```dim t as new NSTableHeaderViewMBS```

**Notes:** On success the handle property is not zero.

See also:

- 33.51.5 Constructor(Handle as Integer)
- 33.51.6 Constructor(left as Double, top as Double, width as Double, height as Double)
33.51.5 Constructor(Handle as Integer)

**Function:** Creates an object based on the given NSTableHeaderView handle.
**Example:**
```vbnet
dim t as new NSTableHeaderViewMBS(0, 0, 100, 100)
dim v as new NSTableHeaderViewMBS(t.handle)
MsgBox str(v.Bounds.Width)+” x “+str(v.Bounds.Height)
```

**Notes:** The handle is casted to a NSTableHeaderView and the plugin retains this handle.
See also:
- 33.51.4 Constructor 6637
- 33.51.6 Constructor(left as Double, top as Double, width as Double, height as Double) 6638

33.51.6 Constructor(left as Double, top as Double, width as Double, height as Double)

**Function:** Creates a new table header view with the given size and position.
**Example:**
```vbnet
dim x as new NSTableHeaderViewMBS(0, 0, 100, 100)
```

**Notes:** On success the handle property is not zero.
See also:
- 33.51.4 Constructor 6637
- 33.51.5 Constructor(Handle as Integer) 6638

33.51.7 draggedColumn as Integer

**Function:** If the user is dragging a column in the receiver, returns the index of that column.
**Notes:** Otherwise returns 1.
33.51.8  draggedDistance as Double

Function: If the user is dragging a column in the receiver, returns the column’s horizontal distance from its original position.
Notes: Otherwise the return value is meaningless.

33.51.9  headerRectOfColumn(Column as Integer) as NSRectMBS

Function: Returns the rectangle containing the header tile for the column at columnIndex.
Notes: Raises an NSInternalInconsistencyException if columnIndex is out of bounds.

33.51.10 resizedColumn as Integer

Function: If the user is resizing a column in the receiver, returns the index of that column.
Notes: Otherwise returns 1.

33.51.11 Properties

33.51.12 tableView as NSTableViewMBS

Function: The owner tableview.
Notes: (Read and Write computed property)
33.52 class NSTableViewRowViewMBS

33.52.1 class NSTableViewRowViewMBS


Function: The NSTableViewRowView class is the view shown for a row in an NSTableView.

Notes:
It is responsible for displaying attributes associated with the row, including the selection highlight, and group row look.
Subclass of the NSViewMBS class.

33.52.2 Methods

33.52.3 Constructor


Function: The constructor.

33.52.4 Properties

33.52.5 backgroundColor as NSColorMBS


Function: The background color of the row.

Notes:
The property defaults to the table views backgroundColor, unless usesAlternatingRowBackgroundColors is set to true. In that case, the colors alternate, and are automatically updated as required by insertions and deletions.
The value of the background color can be customized in the NSTableViewMBS.didAddRowView event. The property is animatable.
(Read and Write property)

33.52.6 emphasized as Boolean


Function: Determines whether the row will draw with the alternate or secondary color (unless overridden).

Notes:
When emphasized is true, the view will draw with the alternateSelectedControlColor defined by NSColor.
When false it will use the secondarySelectedControlColor defined by NSColor.
33.52.7 Floating as Boolean


Function: Specifies whether the row is drawn using the floating style.

Notes:
Floating is a temporary attribute that is set when a particular group row is actually floating above other rows. The state may change dynamically based on the position of the group row. Drawing may be different for rows that are currently 'floating'.

(Read and Write property)

33.52.8 groupRowStyle as Boolean


Function: Specifies whether this row view is a group row.

Notes:
When true this row is a group row and will draw appropriately.

(Read and Write property)

33.52.9 NextRowSelected as Boolean


Function: Whether next row is selected.

Notes: (Read and Write property)

33.52.10 PreviousRowSelected as Boolean


Function: Whether the previous row is selected.

Notes: (Read and Write property)

33.52.11 selected as Boolean


Function: Determines whether the row is selected.

Notes:
True if selected, otherwise false.
(Read and Write property)

### 33.52.12 `selectionHighlightStyle` as Integer


**Function:** Specifies the selection highlight style.

**Notes:**
The possible values are specified in `NSTableViewSelectionHighlightStyle` in `NSTableView`.
(Read and Write property)
33.53. CLASS NSTABLEVIEWMBS

33.53 class NSTableViewMBS

33.53.1 class NSTableViewMBS

Function: An NSTableView object displays record-oriented data in a table and allows the user to edit
values and resize and rearrange columns.
Notes:
You can embed this view in a CustomNSViewMBS to get more events for mouse and keyboard.
Subclass of the NSViewMBS class.

33.53.2 Methods

33.53.3 addTableColumn(column as NSTableColumnMBS)

Function: Adds a given column as the last column of the receiver.

33.53.4 beginUpdates

Function: Begins a group of updates for the table view.
Notes:
For NSView-based table views, multiple row changesthat is, insertions, deletions, and movesare animated
simultaneously by surrounding calls to those method calls with beginUpdates and endUpdates. These meth-
ods are nestable.
The selected rows are maintained during the series of insertions, deletions, moves, and scrolling. If a selected
row is deleted, a selection changed notification occurs after removeRowsAtIndexes is called.
It is not necessary to call beginUpdates and endUpdates if only one insertion, deletion, or move is occurring
and the table view is an NSView-based table view. When using an NSCell-based table view, you must
surround any insertion, deletion, or move in an update block for animations to occur.
The main reason for doing a batch update of changes to a table view is to avoid having the table animate
unnecessarily.
Note that these methods should be called to reflect changes in your model; they do not make any underlying
model changes.

For NSCell-based table views, it is required to call beginUpdates if you want to animate the insertRowsAtIn-
dexes, removeRowsAtIndexes, and moveRowAtIndex.
**33.53.5 canDragRowsWithIndexes(rowIndexes as NSIndexSetMBS, mouseDownPoint as NSPointMBS) as Boolean**

Function: Returns a Boolean value indicating whether the table view allows dragging the rows at with the drag initiated at the specified point.  
Notes:  
rowIndexes: The row indexes to drag.  
mouseDownPoint: The location where the drag was initiated.

Returns no to disallow the drag.

**33.53.6 columnAtPoint(p as NSPointMBS) as Integer**

Function: Returns the index of the column a given point lies in.  
Notes: Returns the index of the column aPoint lies in, or 1 if aPoint lies outside the receiver’s bounds.  
See also:  
• 33.53.7 columnAtPoint(x as Double, y as Double) as Integer

**33.53.7 columnAtPoint(x as Double, y as Double) as Integer**

Function: Returns the index of the column a given point lies in.  
Notes: Returns the index of the column aPoint lies in, or 1 if aPoint lies outside the receiver’s bounds.  
See also:  
• 43.2.33 columnAtPoint(p as NSPointMBS) as Integer

**33.53.8 columnForView(view as NSViewMBS) as Integer**

Function: Returns the column index for the specified view.  
Notes:  
view: The view for which to retrieve the column.

Returns the index of the column containing view in the tableColumns array. This method returns -1 if the view is not in the table view. This method may also return -1 if the row containing the view is being animated away, such as during the deletion of a row.
This method is typically called in the action method of an NSButton (or NSControl) to find out what row (and column) the action should be performed on. The implementation is O(n) where n is the number of visible rows, so this method should generally not be called within a loop.

### 33.53.9 columnIndexesInRect(rect as NSRectMBS) as NSIndexSetMBS

MBS MacControls Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the indexes of the receiver’s columns that intersect the specified rectangle. **Notes:** Available in Mac OS X v10.5 and later.

### 33.53.10 columnWithIdentifier(identifier as string) as Integer

MBS MacControls Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the index of the first column in the receiver whose identifier is equal to a given identifier. **Notes:** Returns the index of the first column in the receiver whose identifier is equal to anObject (when compared using isEqual:) or 1 if no columns are found with the specified identifier.

### 33.53.11 Constructor

MBS MacControls Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new table view with size 100/100 and position 0/0 **Example:**
```
dim t as new NSTableViewMBS
```

**Notes:** On success the handle property is not zero. See also:
- 33.53.12 Constructor(Handle as Integer) 6645
- 33.53.13 Constructor(left as Double, top as Double, width as Double, height as Double) 6646

### 33.53.12 Constructor(Handle as Integer)

MBS MacControls Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an object based on the given NSTableView handle. **Example:**
```
```
dim t as new NSTableViewMBS(0, 0, 100, 100)
dim v as new NSTableViewMBS(t.handle)

MsgBox str(v.Bounds.Width)+” x ”+str(v.Bounds.Height)

Notes: The handle is casted to a NTableView and the plugin retains this handle.
See also:

• 33.53.11 Constructor 6645
• 33.53.13 Constructor(left as Double, top as Double, width as Double, height as Double) 6646

33.53.13 Constructor(left as Double, top as Double, width as Double, height as Double)

Function: Creates a new table view with the given size and position.
Example:

dim x as new NSTableViewMBS(0, 0, 100, 100)

Notes: On success the handle property is not zero.
See also:

• 33.53.11 Constructor 6645
• 33.53.12 Constructor(Handle as Integer) 6645

33.53.14 deselectAll

Function: Deselects all selected rows or columns if empty selection is allowed; otherwise does nothing.

33.53.15 deselectColumn(column as Integer)

Function: Deselects the column at a given index if it’s selected.
Notes: Column is from 0 to numberOfColumns-1.
33.53.16  deselectRow(row as Integer)

Function: Deselects the row at a given index if it’s selected.
Notes: Deselects the row at rowIndex if it’s selected, regardless of whether empty selection is allowed.

33.53.17  Destructor

Function: The destructor.
Notes: REALbasic calls this destructor automatically.

33.53.18  dragImageForRowsWithIndexes(dragRows as NSIndexSetMBS, tableColumns() as NSTableColumnMBS, theEvent as NSEventMBS, byref dragImageOffset as NSPointMBS) as NSImageMBS

Function: Computes and returns an image to use for dragging.
Notes:
dragRows: An index set containing the row indexes that should be in the image.
tableColumns: An array of table columns that should be in the image.
theEvent: The event that initiated the drag.
dragImageOffset: An in/out parameter specifying the offset of the cursor in the image, the default value is NSZeroPoint. Returning NSZeroPoint causes the cursor to be centered.

Returns an NSImage containing a custom image for the specified rows and columns participating in the drag.

33.53.19  edit(column as Integer, row as Integer, selectit as boolean)

Function: Edits the cell at columnIndex and rowIndex, selecting its entire contents if flag is true.
Notes:
This method is invoked automatically in response to user actions; you should rarely need to invoke it directly.

This method scrolls the receiver so that the cell is visible, sets up the field editor, and sends selectWithFrame() and editWithFrame() to the field editor’s NSCell object with the NSTableView as the text delegate.

The row at rowIndex must be selected prior to calling editColumn:row:withEvent:select:, or an exception
will be raised.

33.53.20  **endUpdates**

**Function:** Ends the group of updates for the table view.
**Notes:** Ends the group of updates for the table view. This method, like beginUpdates, is nestable. See beginUpdates for details.

33.53.21  **frameOfCellAtColumnRow(column as Integer, row as Integer) as NSRectMBS**

**Function:** Returns a rectangle locating the cell that lies at the intersection of the specified column and row.
**Notes:**

- `column`: The index in the tableColumns array of the column containing the cell whose rectangle you want.
- `row`: The index of the row containing the cell whose rectangle you want.

Returns a rectangle locating the cell that lies at the intersection of `columnIndex` and `rowIndex`. This method returns NSRectMBS.Zero if `columnIndex` or `rowIndex` is greater than the number of columns or rows in the table view.

You can use this method to update a single cell more efficiently than sending the table view a reloadData message using reloadData function. The result of this method is used in a drawWithFrame:inView: message to the table column’s data cell. You can subclass and override this method to customize the frame of a particular cell. However, never return a frame larger than the default implementation returns. The default frame is computed to have a height equal to the rectOfRow: for `rowIndex`, minus the half intercellSpacing height on the top and half on the bottom. The width of frame is equal to the with of the table column minus half the intercellSpacing width on the left, and half on the right.

33.53.22  **hiddenRowIndexes as NSIndexSetMBS**

**Function:** The indexes of all hidden table rows.
**Notes:** The value of this property is an index set containing the indexes of any hidden table rows. Table rows may be hidden by invoking the hideRowsAtIndexes method. Some drag-and-drop operations also result in hidden rows.
33.53.23  hideRowsAtIndexes(indexes as NSIndexSetMBS, animationOptions as Integer)

Function: Hides the specified table rows.
Notes:
indexes: An index set containing indexes of the rows to be hidden.
rowAnimation: An animation effect to be applied when the rows are hidden.

Use this method when you no longer want the data to be visible to the user, but you dont want to permanently remove the data. Hidden table rows have a height of zero and cannot be selected by the user. However, if a selected table row is hidden, it will remain selected. Hiding a table row causes the didRemoveRowView delegate method to be invoked.

33.53.24  insertRowsAtIndexes(indexes as NSIndexSetMBS, animationOptions as Integer)

Function: Inserts the rows using the specified animation.
Notes:
indexes: The final positions of the new rows to be inserted.
animationOptions: The animation displayed during the insert. See NSTableViewAnimationOptions for the possible values that can be combined using the bitwise OR operator.

The numberOfRows in the table view is automatically increased by the count of indexes. Calling this method multiple times within the same beginUpdates and endUpdates block is allowed, and changes are processed incrementally.

NSCell-based table views must first call beginUpdates before calling this method.

33.53.25  isColumnSelected(column as Integer) as boolean

Function: Returns a Boolean value that indicates whether the column at a given index is selected.
Notes: column is from 0 to to numberOfRowsColumns.
33.53.26  **isRowSelected(row as Integer) as boolean**

**Function:** Returns a Boolean value that indicates whether the row at a given index is selected.
**Notes:** row is from 0 to numberOfRows.

33.53.27  **moveColumn(column as Integer, toIndex as Integer)**

**Function:** Moves the column and heading at a given index to a new given index.
**Notes:**
- columnIndex: The current index of the column to move.
- newIndex: The new index for the moved column.

This method raises the ColumnDidMove event.

33.53.28  **moveRowAtIndex(oldIndex as Integer, newIndex as Integer)**

**Function:** Moves the specified row to the new row location using animation.
**Notes:**
- oldIndex: Initial row index.
- newIndex: New row index.

This is similar to removing a row at oldIndex and inserting it at newIndex, except the same view is used and simply has its position updated to the new location. Changes happen incrementally as they are sent to the table, so as soon as this method is called the row can be considered moved. However the underlying view is not moved until endUpdates has been called. This method can be called multiple times within the same beginUpdates and endUpdates block.

NSCell-based table views must first call beginUpdates before calling this method.

33.53.29  **noteHeightOfRowsWithIndexesChanged(indexSet as NSIndexSetMBS)**

**Function:** Informs the table view that the rows specified in indexSet have changed height.
**Notes:**
indexSet: Index set of rows that have changed their height.

If you implement heightForRow event this method immediately retiles the table view using the row heights the event provides.

For NSView-based tables, this method will animate. To turn off the animation, create an NSAnimationContext grouping and set the duration to 0. Then call this method and end the grouping.

For NSCell-based tables, this method normally doesn’t animate. However, it will animate if you call it inside a beginUpdates/endUpdates block.

33.53.30 noteNumberOfRowsChanged

Informs the receiver that the number of records in its data source has changed.

This method allows the receiver to update the scrollers in its scroll view without actually reloading data into the receiver. It’s useful for a data source that continually receives data in the background over a period of time, in which case the table view can remain responsive to the user while the data is received.

33.53.31 rectOfColumn(column as Integer) as NSRectMBS

Returns the rectangle containing the column at at a given index.

The rectangle containing the column at columnIndex. Returns NSRectMBS.Zero (an empty rectangle) if columnIndex lies outside the range of valid column indices for the receiver.

You can use this method to update a single column more efficiently than sending the table view a reloadData message.

aTableView.setNeedsDisplayInRect(aTableView.rectOfColumn(column))

33.53.32 rectOfRow(row as Integer) as NSRectMBS

Returns the rectangle containing the row at rowIndex. Returns NSRectMBS.Zero (an empty rectangle) if rowIndex lies outside the range of valid row indices for the receiver.
33.53.33 reloadData

**Function:** Marks the receiver as needing redisplay, so it will reload the data for visible cells and draw the new values.
**Notes:** This method forces redraw of all the visible cells in the receiver. If you want to update the value in a single cell, column, or row, it is more efficient to use frameOfCellAtColumn(), rectOfColumn(), or rectOfRow() in conjunction with setNeedsDisplayInRect(). If you just want to update the scroller, use noteNumberOfRowsChanged; if the height of a set of rows changes, use noteHeightOfRowsWithIndexesChanged().
See also:
- 33.53.34 reloadData(rowIndexes as NSIndexSetMBS, columnIndexes as NSIndexSetMBS)

33.53.34 reloadData(rowIndexes as NSIndexSetMBS, columnIndexes as NSIndexSetMBS)

**Function:** Reloads the data for only the specified rows and columns.
**Notes:**
rowIndexes: The indexes of the rows to update.
columnIndexes: The indexes of the columns to update.
For cells that are visible, the appropriate dataSource and delegate methods are called and the cells are redrawn.
For tables that support variable row heights, the row height is not re-queried from the delegate; it is your responsibility to invoke noteHeightOfRowsWithIndexesChanged if a row height change is required.
For NSView-based table views, this method drops the view-cells in the table row, but not the NSTableRowView instances.
See also:
- 33.53.33 reloadData

33.53.35 removeRowsAtIndexes(indexes as NSIndexSetMBS, animationOptions as Integer)

**Function:** Removes the rows using the specified animation.
**Notes:**
indexes: An index set containing the rows to remove.
animationOptions: The animation displayed during the insert. See NSTableViewAnimationOptions for the possible values that can be combined using the bitwise OR operator.

This method deletes from the table the rows represented at indexes and automatically decreases numberOfRows by the count of indexes.
The row indexes should be with respect to the current state displayed in the table view, and not the final state, because the specified rows do not exist in the final state.
Calling this method multiple times within the same beginUpdates and endUpdates block is allowed, and changes are processed incrementally.
Changes are processed incrementally as the insertRowsAtIndexes, removeRowsAtIndexes, and the moveRowAtIndex methods are called. It is acceptable to delete row 0 multiple times, as long as there is still a row available.

NSCell-based table views must first call beginUpdates before calling this method.

33.53.36 removeTableColumn(column as NSTableColumnMBS)
Function: Removes a given column from the receiver.

33.53.37 rowAtPoint(p as NSPointMBS) as Integer
Function: Returns the index of the row a given point lies in.
Notes: Returns the index of the row aPoint lies in, or 1 if aPoint lies outside the receiver’s bounds.
See also:

• 33.53.38 rowAtPoint(x as Double, y as Double) as Integer

33.53.38 rowAtPoint(x as Double, y as Double) as Integer
Function: Returns the index of the row a given point lies in.
Notes: Returns the index of the row aPoint lies in, or 1 if aPoint lies outside the receiver’s bounds.
See also:

• 33.53.37 rowAtPoint(p as NSPointMBS) as Integer
**33.53.39 rowForView(view as NSViewMBS) as Integer**


**Function:** Returns the index of the row for the specified view.

**Notes:**

view: The view for which to retrieve the row.

Returns the index of the row containing to view. This method returns -1 if the view is not in the table view. This method may also return -1 if the row containing the view is being animated away, such as during the deletion of a row.

This method is typically called in the action method for an NSButton (or NSControl) to find out what row (and column) the action should be performed on.

The implementation is O(n) where n is the number of visible rows, so this method should generally not be called within a loop.

---

**33.53.40 rowsInRect(rect as NSRectMBS) as NSRangeMBS**


**Function:** Returns a range of indexes for the rows that lie wholly or partially within the vertical boundaries of the specified rectangle.

**Notes:**

Rect: A rectangle in the coordinate system of the table view.

Returns a range of indexes for the table views rows that lie wholly or partially within the horizontal boundaries of aRect. If the width or height of aRect is 0, this method returns an NSRange whose length is 0.

The location of the range is the index of the first row in the rectangle, and the length is the number of rows that lie in the rectangle.

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**33.53.41 rowViewAtRow(row as Integer, makeIfNecessary as Boolean) as NSViewMBS**


**Function:** Returns a row view at the specified index, creating one if necessary.

**Notes:**

row: The row index.
makeIfNecessary: True if a view is required, NO if you want to update properties on a view, if one is available.

Returns an instance, or subclass, of NSTableRowView. Returning nil is also valid if makeIfNecessary is false.
and the view did not exist.

This method first attempts to return a currently displayed view in the visible area. If there is no visible view, and makeIfNecessary is true, a prepared temporary view is returned. If makeIfNecessary is false, and the view is not visible, nil is returned.

In general, makeIfNecessary should be true if you require a resulting view, and false if you want to update properties on a view only if it is available (generally this means it is visible).

An exception is thrown if row falls outside of the number of rows in the table (numberOfRows). The returned result should generally not be held onto for longer than the current run loop cycle. Its better to call rowViewAtRow whenever a view is required.

### 33.53.42 scrollColumnToVisible(column as Integer)

MBS MacControls Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Scrolls the receiver and header view horizontally in an enclosing NSClipView so the column specified by columnIndex is visible.

### 33.53.43 scrollRowToVisible(row as Integer)

MBS MacControls Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Scrolls the receiver vertically in an enclosing NSClipView so the row specified by rowIndex is visible.

### 33.53.44 ScrollToLine(Line as Integer, Animated as Boolean)

MBS MacControls Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Scrolls to line.

**Notes:**
- If animated is true, the scroll is animated.
- The line is centered in the middle of the viewable area if possible.

### 33.53.45 selectAll

MBS MacControls Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Selects all rows or all columns, according to whether rows or columns were most recently selected.

**Notes:** If the table allows multiple selection, this action method selects all rows or all columns, according to whether rows or columns were most recently selected. If nothing has been recently selected, this method selects all rows. If this table doesn’t allow multiple selection, this method does nothing.
33.53.46  **selectColumnIndexes(indexes as NSIndexSetMBS, extend as boolean)**

**Function:** Sets the column selection using indexes.
**Notes:** If the extend flag is false the selected columns are specified by indexes. If extend is true, the columns indicated by indexes are added to the collection of already selected columns, providing multiple selection.

33.53.47  **selectedColumnIndexes as NSIndexSetMBS**

**Function:** Returns an index set containing the indexes of the selected columns.
**Notes:** Returns an index set containing the indexes of the selected columns.

33.53.48  **selectedRowIndexes as NSIndexSetMBS**

**Function:** Returns an index set containing the indexes of the selected rows.
**Notes:** Available in Mac OS X v10.3 and later.

33.53.49  **selectRowIndexes(indexes as NSIndexSetMBS, extend as boolean)**

**Function:** Sets the row selection using indexes.
**Notes:**
If the extend flag is false the selected rows are specified by indexes. If extend is true, the rows indicated by indexes are added to the collection of already selected rows, providing multiple selection.

Available in Mac OS X v10.3 and later.

33.53.50  **setDraggingSourceOperationMask(mask as Integer, isLocal as Boolean)**

**Function:** Sets the default operation mask returned by draggingSourceOperationMaskForLocal to mask.
**Notes:**
mask: The drag operation mask. See NSDragOperation for the supported values.
isLocal: True if the destination is the same application, otherwise false. In either case the specified mask value is archived and used.
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### 33.53.51 setDropRow(row as Integer, dropOperation as Integer)


**Function:** Retargets the proposed drop operation.

**Notes:**

- **row:** The target row index.
- **dropOperation:** The drop operation. Supported values are specified by NSTableViewDropOperation.

For example, to specify a drop on the second row, specify row as 1, and operation as NSTableViewDropOn. To specify a drop below the last row, specify row as `[self numberOfRows]` and operation as NSTableViewDropAbove. Passing a value of 1 for row and NSTableViewDropOn as the operation causes the entire table view to be highlighted rather than a specific row. This is useful if the data displayed by the table view does not allow the user to drop items at a specific row location.

### 33.53.52 setSortDescriptor(sortDescriptor as NSSortDescriptorMBS)


**Function:** Sets the receiver’s sort descriptors.

**Notes:**

A table column is considered sortable if it has a sort descriptor that specifies the sorting direction, a key to sort by, and a selector defining how to sort.

The array of sort descriptors is archived. Sort descriptors persist along with other column information if an autosave name is set.

Calling setSortDescriptors may have the side effect of invoking the data source method tableViewSortDescriptorsDidChange.

### 33.53.53 setSortDescriptors(sortDescriptors() as NSSortDescriptorMBS)


**Function:** Sets the receiver’s sort descriptors.

**Notes:**

A table column is considered sortable if it has a sort descriptor that specifies the sorting direction, a key to sort by, and a selector defining how to sort.

The array of sort descriptors is archived. Sort descriptors persist along with other column information if an autosave name is set.
Calling `setSortDescriptors` may have the side effect of invoking the data source method `tableViewSortDescriptorsDidChange`.

33.53.54  `sizeLastColumnToFit`

**Function:** Resizes the last column if there's room so the receiver fits exactly within its enclosing clip view.

33.53.55  `sizeToFit`

**Function:** Changes the width of columns in the receiver so all columns are visible.
**Notes:** All columns are resized to the same size, up to a column’s maximum size. This method then invokes `tile`.

33.53.56  `sortDescriptors` as `NSSortDescriptorMBS()`

**Function:** Returns the receiver’s sort descriptors.

33.53.57  `tableColumns` as `NSTableColumnMBS()`

**Function:** Returns an array containing the NSTableColumn objects in the receiver.
**Notes:** The array returned by `tableColumns` contains all receiver’s columns, including those that are hidden.

33.53.58  `tableColumnWithIdentifier(identifier as string)` as `NSTableColumnMBS`

**Function:** Returns the NSTableColumn object for the first column whose identifier is equal to a given object.
**Notes:** Returns the NSTableColumn object for the first column whose identifier is equal to anObject, as compared using `isEqual:`, or nil if no columns are found with the specified identifier.
33.53.59 tile

**Function:** Properly sizes the receiver and its header view and marks it as needing display.
**Notes:** Also resets cursor rectangles for the header view and line scroll amounts for the NSScrollView object.

33.53.60 unhideRowsAtIndexes(indexes as NSIndexSetMBS, animationOptions as Integer)

**Function:** Unhides the specified table rows.
**Notes:**
indexes: An index set containing indexes of the hidden rows to be shown again.
rowAnimation: An animation effect to be applied when the rows are hidden.

Unhiding a table row causes the didAddRowView event to be invoked.

33.53.61 viewAtColumn(column as Integer, row as Integer, makeIfNecessary as Boolean) as NSViewMBS

**Function:** Returns a view at the specified row and column indexes, creating one if necessary.
**Notes:**
column: The index of the column in the tableColumns array.
row: The row index.
makeIfNecessary: true if a view is required, false if you want to update properties on a view, if one is available.

Returns an instance of NSView.

This method first attempts to return an available view, which is generally in the visible area. If there is no available view, and makeIfNecessary is true, a prepared temporary view is returned. If makeIfNecessary is false, and the view is not available, nil will be returned.
In general, makeIfNecessary should be true if you require a resulting view, and false if you only want to update properties on a view only if it is available (generally this means it is visible).
An exception will be thrown if row is not within the numberOfRows. The returned result should generally not be held onto for longer than the current run loop cycle. Instead they should re-query the table view for the row view.
33.53.62 Properties

33.53.63 allowsColumnReordering as boolean

Function: Controls whether the user can drag column headers to reorder columns. 
Notes: 
The default is true. You can rearrange columns programmatically regardless of this setting. 
(Read and Write property)

33.53.64 allowsColumnResizing as boolean

MBS MacControls Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: A Boolean value that indicates whether the receiver allows the user to resize columns by dragging between their headers. 
Notes: (Read and Write property)

33.53.65 allowsColumnSelection as boolean

Function: Controls whether the user can select an entire column by clicking its header. 
Notes: 
The default is false. You can select columns programmatically regardless of this setting. 
(Read and Write property)

33.53.66 allowsEmptySelection as boolean

Function: Controls whether the receiver allows zero rows or columns to be selected. 
Notes: 
Unlike with the other settings that affect selection behavior, you cannot set an empty selection programmatically if empty selection is disallowed. 
(Read and Write property)

33.53.67 allowsMultipleSelection as boolean

Function: Controls whether the user can select more than one row or column at a time.
Notes:
The default is false. You can select multiple columns or rows programmatically regardless of this setting. (Read and Write property)

### 33.53.68 `allowsTypeSelect` as boolean

**Function:** Whether the receiver allows the user to type characters to select rows.
**Notes:**
Available in Mac OS X v10.5 and later. (Read and Write property)

### 33.53.69 `autosaveName` as string

**Function:** The name under which table information is automatically saved.
**Notes:**
The table information is saved separately for each user and for each application that user uses.

Note that even when a table view has an autosave name, it may not be saving table information automatically. (Read and Write property)

### 33.53.70 `autosaveTableColumns` as boolean

**Function:** Whether the order and width of this table view’s columns are automatically saved.
**Notes:**
If flag is different from the current value, this method also reads in the saved information and sets the table options to match.

The table information is saved separately for each user and for each application that user uses. Note that if autosaveName returns nil, this setting is ignored and table information isn’t saved. (Read and Write property)
33.53.71  **backgroundColor as NSColorMBS**

**Function:** The color used to draw the background of the receiver.
**Notes:**
The default background color is light gray.
(Read and Write property)

33.53.72  **clickedColumn as Integer**

**Function:** Returns the index of the column the user clicked to trigger an action message.
**Notes:**
The index of the column the user clicked to trigger an action message. Returns 1 if the user clicked in an area of the table view not occupied by columns.
Index is zero based.
(Read only property)

33.53.73  **clickedRow as Integer**

**Function:** Returns the index of the row the user clicked to trigger an action message.
**Notes:**
The index of the row the user clicked to trigger an action message. Returns 1 if the user clicked in an area of the table view not occupied by table rows.
Index is zero based.
(Read only property)

33.53.74  **columnAutoresizingStyle as Integer**

**Function:** The table’s column autoresizing style.
**Notes:**
Use the following constants:
NSTableViewMBS.kFirstColumnOnlyAutoresizingStyle
NSTableViewMBS.kUniformColumnAutoresizingStyle
NSTableViewMBS.kSequentialColumnAutoresizingStyle
NSTableViewMBS.kReverseSequentialColumnAutoresizingStyle
NSTableViewMBS.kNoColumnAutoresizing
NSTableViewMBS.kLastColumnOnlyAutoresizingStyle

Available in Mac OS X v10.4 and later.
(Read and Write property)

33.53.75 cornerView as NSViewMBS

Function: The view used to draw the area to the right of the column headers and above the vertical scroller of the enclosing scroll view.
Notes: This is by default a simple view that merely fills in its frame, but you can replace it with a custom view using this property.
(Read and Write property)

33.53.76 dataSource as NSTableDataSourceMBS

Function: The object that provides the data displayed in the table view.
Notes: (Read and Write property)

33.53.77 draggingDestinationFeedbackStyle as Integer

Function: The feedback style displayed when the user drags over the table view.
Notes: Available in Mac OS X v10.6 and later.
(Read and Write property)

33.53.78 editedColumn as Integer

Function: Returns the index of the column being edited.
Notes:
First column has index zero.
If sent during editColumn(), the index of the row being edited; otherwise 1.
(Read only property)

33.53.79 editedRow as Integer

Function: Returns the index of the row being edited.
Notes:
The first row index is zero.
If sent during editColumn(), the index of the row being edited; otherwise 1.
(Read only property)

33.53.80 effectiveRowSizeStyle as Integer

Function: Returns the effective row size style for the table.
Notes:
If the rowSizeStyle is NSTableViewRowSizeStyleDefault, then this method returns the default size for this table.
The default size is currently set in the System Preferences by the users.
Available in OS X v10.7 and later.
(Read only property)

33.53.81 floatsGroupRows as Boolean

Function: A Boolean value indicating whether the table view draws grouped rows as if they are floating.
Notes:
Group rows are rows for which the table view delegates isGroupRow method returns true. These rows can be displayed as if they are floating in a view-based table view.
The default value of this property is true.
(Read and Write property)
33.53.82 focusedColumn as Integer

Function: The currently focused column.
Notes:
Returns the index of the column, or -1 if there is no focused column.
The focus interaction will always be on the selectedRow of the table. If the selectedRow is a full width cell, then focusedColumn will return 1 when focused.
Available in Mac OS X v10.6 and later.
(Read and Write property)

33.53.83 gridColor as NSColorMBS

Function: The color used to draw grid lines.
Notes:
The default color is gray.
(Read and Write property)

33.53.84 gridStyleMask as Integer

Function: The receiver’s grid style mask.
Notes:
use the constants:

kGridNone = 0,
kSolidVerticalGridLineMask = 1
kSolidHorizontalGridLineMask = 2

(Read and Write property)

33.53.85 headerView as NSTableHeaderViewMBS

Function: The NSTableHeaderView object used to draw headers over columns.
Notes:
The NSTableHeaderView object used to draw headers over columns, or nil if the receiver has no header view (Read and Write property)

33.53.86  **highlightedtableColumn as NSTableColumnMBS**

**Function:** The table column highlighted in the receiver.
**Notes:**
A highlightable column header can be used in conjunction with row selection to highlight a particular column of the table. An example of this is how the Mail application indicates the currently sorted column. (Read and Write property)

33.53.87  **intercellSpacing as NSSizeMBS**

**Function:** The horizontal and vertical spacing between cells.
**Notes:**
The default spacing is (3.0, 2.0). (Read and Write property)

33.53.88  **numberOfColumns as Integer**

**Function:** Returns the number of columns in the receiver.
**Notes:**
The value returned includes table columns that are currently hidden. (Read only property)

33.53.89  **numberOfRows as Integer**

**Function:** Returns the number of rows in the receiver.
**Notes:**
Typically you should not ask the table view how many rows it has; instead you should interrogate the table view’s data source. (Read only property)
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33.53.90  numberOfSelectedColumns as Integer

MBS MacControls Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the number of selected columns.  
**Notes:** (Read only property)

33.53.91  numberOfSelectedRows as Integer

MBS MacControls Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the number of selected rows.  
**Notes:** (Read only property)

33.53.92  rowActionsVisible as Boolean

MBS MacControls Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value indicating whether a table rows actions are visible.  
**Notes:**  
This property contains a Boolean value indicating whether a table rows actions are visible or not the user has swiped the row to reveal the row actions. Set the value of this property to false to hide any visible row actions. Setting the value of this property to true is not supported, and will result in an exception.  
(Read and Write property)

33.53.93  rowHeight as Double

MBS MacControls Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the height of each row in the receiver.  
**Notes:**  
The default row height is 16.0.  
(Read and Write property)

33.53.94  rowSizeStyle as Integer

MBS MacControls Plugin, Plugin Version: 13.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The row size used by the tableview: small, medium, large, or on a custom row by row basis.  
**Notes:**  
The row size style can be modified on a row by row basis by invoking the event heightOfRow, if implemented.
The `rowSizeStyle` defaults to `NSTableViewRowSizeStyleCustom`. `NSTableViewRowSizeStyleCustom` indicates to use the `rowHeight` of the table, instead of the pre-determined system values.

Generally, `rowSizeStyle` should always be `NSTableViewRowSizeStyleCustom` except for "source lists". To implement variable row heights, set the value to `NSTableViewRowSizeStyleCustom` and implement `tableView:heightOfRow:` in the delegate.

Available in OS X v10.7 and later.
(Read and Write property)

### 33.53.95 `selectedColumn` as Integer

**Function:** Returns the index of the last column selected or added to the selection.
**Notes:**
Returns the index of the last column selected or added to the selection, or 1 if no column is selected.
(Read only property)

### 33.53.96 `selectedIndex` as Integer

**Function:** Returns the index of the last row selected or added to the selection.
**Notes:**
Returns the index of the last row selected or added to the selection, or 1 if no row is selected.
(Read only property)

### 33.53.97 `selectionHighlightStyle` as Integer

**Function:** The selection highlight style used by the receiver to indicate row and column selection.
**Notes:**
Available in Mac OS X v10.5 and later.
(Read and Write property)
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33.53.98  usesAlternatingRowBackgroundColors as boolean

Function: A Boolean value that indicates whether the receiver uses the standard alternating row colors for
its background.
Notes:
Available in Mac OS X v10.3 and later.
(Read and Write property)

33.53.99  usesStaticContents as Boolean

Function: A Boolean value indicating whether the table uses static data.
Notes:
A static table does not rely on a data source to provide the number of rows. A static table views contents
are set at design time and can be changed programmatically as needed. Typically, you do not change the
contents of a static table view after setting them.
In Xcode, any rows you add to a static table are saved in the corresponding nib or storyboard file and
loaded with the rest of the table at runtime. You can add table rows programmatically to a static table
view using the insertRowsAtIndexes method. When adding rows programmatically, your table view delegate
must implement the view method to provide the corresponding view for any new rows. You can also remove
rows at any time using the removeRowsAtIndexes method.

A table with static contents must be an NSView-based table view.

Available in macOS 10.10 or later.
(Read and Write property)

33.53.100  verticalMotionCanBeginDrag as boolean

Function: Whether vertical motion is treated as a drag or selection change to flag.
Notes:
If flag is false then vertical motion will not start a drag. The default is true.

Note that horizontal motion is always a valid motion to begin a drag. Most often, you would want to disable
vertical dragging when it’s expected that horizontal dragging is the natural motion.
(Read and Write property)
33.53.101  indicatorImageInTableColumn(column as NSTableColumnMBS) as NSImageMBS

Function: The indicator image of a given table column.
Notes:
An indicator image is an arbitrary (small) image that is rendered on the right side of the column header. An example of its use is in Mail to indicate the sorting direction of the currently sorted column in a mailbox.
(Read and Write computed property)

33.53.102  Events

33.53.103  ColumnDidMove(notification as NSNotificationMBS, oldColumn as Integer, newColumn as Integer)

MBS MacControls Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: This event informs the delegate that a column was moved by user action in the table view.

33.53.104  ColumnDidResize(notification as NSNotificationMBS, column as NSTableColumnMBS, index as Integer)

MBS MacControls Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: This event informs you that a column was resized in the table view.
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**33.53.105 dataCell(tableColumn as NSTableColumnMBS, row as Int64) as NSCellMBS**


**Function:** Optional return a different cells for each row.

**Notes:**

A different data cell can be returned for any particular tableColumn and row, or a cell that will be used for the entire row (a full width cell). The returned cell should properly implement copyWithZone:, since the cell may be copied by NSTableView. If the tableColumn is non-nil, and nil is returned, then the table will use the default cell from tableColumn.dataCellForRow(Row).

When each row is being drawn, this method will first be called with a nil tableColumn. At this time, you can return a cell that will be used to draw the entire row, acting like a group. If you do return a cell for the 'nil' tableColumn, be prepared to have the other corresponding datasource and delegate methods to be called with a 'nil' tableColumn value. If don’t return a cell, the method will be called once for each tableColumn in the tableView, as usual.

**33.53.106 didAddRowView(rowView as NSTableRowViewMBS, row as Integer)**


**Function:** Tells the delegate that a row view was added at the specified row.

**Notes:**

rowView: The row view.
row: The index of the row.

At this point, the delegate can add extra views, or modify the properties of rowView.

This method is only valid for NSView-based table views.

**33.53.107 didClickTableColumn(tableColumn as NSTableColumnMBS)**


**Function:** Called if a table column was clicked on.

**33.53.108 didDragTableColumn(tableColumn as NSTableColumnMBS)**


**Function:** Sent at the time the mouse button goes up in tableView and tableColumn has been dragged
during the time the mouse button was down.

**Notes:**

tableColumn: The table column.

The behavior of this method on Mac OS X v10.5 is different from prior versions. On Mac OS X v 10.5 the dragged column is sent to the subclass. In earlier versions the table column that is currently located at the dragged column’s original index is sent.

### 33.53.109 didRemoveRowView(rowView as NSTableRowViewMBS, row as Integer)


**Function:** Tells the delegate that a row view was removed from the table at the specified row.

**Notes:**

rowView: The row view.
row: The index of the row.

If row equals -1, the row is being deleted from the table and is no longer a valid row; otherwise row is a valid row that is being removed by being moved off screen.

This method is only valid for NSView-based table views.

### 33.53.110 DoubleClick


**Function:** A double click was recognized.

### 33.53.111 heightOfRow(row as Int64) as Double


**Function:** Implement this event to support a table with varying row heights.

**Notes:** The height returned by this method should not include intercell spacing and must be greater than zero. Performance Considerations: For large tables in particular, you should make sure that this method is efficient. NSTableView may cache the values this method returns, but this should NOT be depended on, as all values may not be cached. To signal a row height change, call noteHeightOfRowsWithIndexesChanged. For a given row, the same row height should always be returned until noteHeightOfRowsWithIndexesChanged is called, otherwise unpredictable results will happen. NSTableView automatically invalidates its entire row height cache in reloadData, and noteNumberOfRowsChanged.
### 33.53.112 isGroupRow(row as Int64) as boolean


**Function:** Invoked to allow the delegate to indicate that a specified row is a group row.

**Notes:**
- **row:** The row index.

Return true if the specified row should have the group row style drawn, false otherwise.

If the cell in row is an NSTextFieldCell and contains only a string, the group row style attributes will automatically be applied to the cell.

Group rows in view-based table views can be made to visually float’ by setting the tableview method setFloatsGroupRows to true.

Note: When configured as a source list style table view, rows identified as group rows draw with a specific style unique for source lists.
Available in Mac OS X v10.5 and later.

### 33.53.113 mouseDownInHeaderOfTableColumn(tableColumn as NSTableColumnNMBS)


**Function:** Sent to the subclass whenever the mouse button is clicked in the table view’s header column.

**Notes:**
- **tableColumn:** The table column.

### 33.53.114 nextTypeSelectMatchFromRow(startRow as Int64, endRow as Int64, searchString as string) as Int64


**Function:** Invoked to allow the subclass to modify how type selection works.

**Notes:**
- **startRow:** The starting row of the search range.
- **endRow:** The ending row of the search range.
- **searchString:** A string containing the typed selection.

Return the first row in the range of startRow through endRow (excluding endRow itself) that matches searchString. Return -1 if no match is found.
It is possible for endRow to be less than startRow if the search will wrap.
Available in Mac OS X v10.5 and later.

33.53.115 rowViewForRow(row as Integer) as NSTableRowViewMBS

Function: Asks the delegate for a view to display the specified row.
Notes:
row: The row index.

Return an instance or subclass of NSTableRowView. If nil is returned, an NSTableRowView instance will be created and used.

You can implement this event to return a custom NSTableRowView for row.
The reuse queue can be used in the same way as documented in tableView:view:row:. The returned view will have attributes properly set to it before its added to the tableView.

This method is only valid for NSView-based table views.

33.53.116 SelectionDidChange(notification as NSNotificationMBS)

Function: This event informs you that the table view’s selection has changed.

33.53.117 selectionIndexesForProposedSelection(proposedSelectionIndexes as NSIndexSetMBS) as NSIndexSetMBS

Function: Invoked to allow the delegate to modify the proposed selection.
Notes:
proposedSelectionIndexes: An index set containing the indexes of the proposed selection.

Return an NSIndexSet instance containing the indexes of the new selection. Return proposedSelectionIndexes if the proposed selection is acceptable, or the value of the table view’s existing selection to avoid changing the selection.

This method may be called multiple times with one new index added to the existing selection to find out if
a particular index can be selected when the user is extending the selection with the keyboard or mouse.

Implementation of this method is optional. If implemented, this method will be called instead of shouldSelectRow.
Available in Mac OS X v10.5 and later.

### 33.53.118 SelectionIsChanging(notification as NSNotificationMBS)

MBS MacControls Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: This event informs you that the table view’s selection is in the process of changing (typically because the user is dragging the mouse across a number of rows).

### 33.53.119 selectionShouldChangeInTableView as boolean

Notes:
Return true to allow the table view to change its selection (typically a row being edited), false to deny selection change.

The user can select and edit different cells within the same row, but can’t select another row unless the delegate approves. The subclass can implement this method for complex validation of edited rows based on the values of any of their cells.

### 33.53.120 shouldEditTableColumn(tableColumn as NSTableColumnMBS, row as Int64) as boolean

MBS MacControls Plugin, Plugin Version: 12.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Returns whether the cell at the specified row and column can be edited.
Notes:
TableColumn: The table column.
rowIndex: The row index.
Return true to allow editing the cell, false to deny editing.

The subclass can implement this method to disallow editing of specific cells.
Note: This method is only valid for cell-based table views.
33.53.121 shouldReorderColumn(columnIndex as Int64, newColumnIndex as Int64) as boolean

Function: Sent to the subclass to allow or prohibit the specified column to be dragged to a new location.
Notes:
columnIndex: The index of the column being dragged.
newColumnIndex: The proposed target index of the column.

Return true if the column reordering should be allowed, otherwise false.

When a column is initially dragged by the user, the delegate is first called with a newColumnIndex value of -1. Returning false will disallow that column from being reordered at all. Returning true allows it to be reordered, and the delegate will be called again when the column reaches a new location.

The actual NSTableColumn instance can be retrieved from the tableColumns array.

If this method is not implemented, all columns are considered reorderable.
Available in Mac OS X v10.6 and later.

33.53.122 shouldSelectRow(row as Int64) as boolean

Function: Returns whether the table view should allow selection of the specified row.
Notes:
rowIndex: The row index.

Return true to permit selection of the row, false to deny selection.

The delegate can implement this method to disallow selection of particular rows.
For better performance and finer-grain control over the selection, use selectionIndexesForProposedSelection.

33.53.123 shouldSelectTableColumn(tableColumn as NSTableColumnMBS) as boolean

Function: Returns whether the specified table column can be selected.
Notes:
33.53. CLASS NSTABLEVIEWMBS

TableColumn: The table column.

Return true to permit selection, otherwise false.

The subclass can implement this event to disallow selection of particular columns.

33.53.124 shouldShowCellExpansion(tableColumn as NSTableColumnMBS, row as Int64) as Boolean

Function: Invoked to allow the subclass to control cell expansion for a specific row and column.
Notes:
TableColumn: The table column.
row: The row index.

Return true if the tooltip cell should expand, false otherwise.

Cell expansion can occur when the mouse hovers over the specified cell and the cell contents are unable to be fully displayed within the cell. If this method returns true, the full cell contents will be shown in a special floating tool tip view, otherwise the content is truncated.

Note: This method is only valid for cell-based table views.

Available in Mac OS X v10.5 and later.

33.53.125 shouldTrackCell(cell as NSCellMBS, tableColumn as NSTableColumnMBS, row as Int64) as Boolean

Function: Invoked to allow the subclass to control the tracking behavior for a specific cell.
Notes:
cell: The cell to track.
tableColumn: The table column.
row: A row in tableView.

Returns true if the cell should track, false otherwise.
Normally, only selectable or selected cells can be tracked. If you implement this method, cells which are not selectable or selected can be tracked, and vice-versa.

For example, this allows you to have an NSButtonCell in a table which does not change the selection, but can still be clicked on and tracked.

Note: This method is only valid for cell-based table views.

Available in Mac OS X v10.5 and later.

**33.53.126 shouldTypeSelectForEvent(e asNSEventMBS, searchString as string) as Boolean**


**Function:** Invoked to allow the subclass to control type select for a specific event.

**Notes:**
- event: The event.
- searchString: The search string or nil if no type select has began.

Return true to allow type select for event, false otherwise.

Typically, this is called from the table view keyDown implementation and the event will be a key event.

Available in Mac OS X v10.5 and later.

**33.53.127 sizeToFitWidthOfColumn(column as Int64) as Double**


**Function:** Invoked to allow the subclass to provide custom sizing behavior when a column’s resize divider is double clicked.

**Notes:**
- column: The index of the column.

Returns the width of the specified column.

By default, NSTableView iterates every row in the table, accesses a cell via preparedCellAtColumn, and requests the cellSize to find the appropriate largest width to use.

For accurate results and performance, it is recommended that this method is implemented when using large
tables. By default, large tables use a monte carlo simulation instead of iterating every row.

Available in Mac OS X v10.6 and later.

### 33.53.128 textShouldBeginEditing

```
control as NSControlMBS, fieldEditor as NSTextFieldMBS) as boolean
```


**Function:** The event called to decide whether text editing should be allowed.

**Notes:** Return true to allow.

### 33.53.129 textShouldEndEditing

```
control as NSControlMBS, fieldEditor as NSTextFieldMBS) as boolean
```


**Function:** The event called to decide whether ending text editing should be allowed.

**Notes:** Return true to allow.

### 33.53.130 toolTipForCell

```
cell as NSCellMBS, r as NSRectMBS, tableColumn as NSTableColumnMBS, row as Int64, mouseLocation as NSPointMBS) as string
```


**Function:** Returns a string that is displayed as a tooltip for the specified cell in the column and row.

**Notes:**

- Cell: The cell.
- r: The proposed active area of the tooltip. You can modify rect to provide an alternative active area.
- TableColumn: The table column.
- row: The row index.
- mouseLocation: The mouse location.

Return a string containing the tooltip. Return empty string if no tooltip is desired.

By default, rect is computed as cell.drawingRectForBounds(cellFrame).

Available in Mac OS X v10.4 and later.
33.53.131  typeSelectString(tableColumn as NSTableColumnMBS, row as Int64) as string

Function: Invoked to allow the subclass to provide an alternate text value used for type selection for a specified row and column.
Notes:

tableColumn: The table column.
row: The row index.

Returns a string that is used in type select comparison for row and tableColumn. Return "" if the row or tableColumn should not be searched.

Implement this method to change the string value that is searched for based on what is displayed. By default, all cells with text in them are searched.

If this event is not implemented the string value is the cell string value. Implementation of this event is optional.

Available in Mac OS X v10.5 and later.

33.53.132  view(tableColumn as NSTableColumnMBS, row as Integer) as NSViewMBS

Function: Asks the delegate for a view to display the specified row and column.
Notes:

see also

33.53.133  willDisplayCell(cell as NSCellMBS, tableColumn as NSTableColumnMBS, row as Int64)

Function: Informs you that the tableview will display the specified cell at the row in the column.
Notes:

Cell: The cell to be displayed.
TableColumn: The table column.
row: The row index.
The event can modify the display attributes of cell to alter the appearance of the cell.

Because cell is reused for every row in tableColumn, the event must set the display attributes both when drawing special cells and when drawing normal cells.

Note: The implementation of this method must not draw portions of the cell. It should only alter the state of the passed in cell.

### Constants

**33.53.135 NSTableViewRowActionEdgeLeading = 0**

MBS MacControls Plugin, Plugin Version: 17.1. **Function:** One of the constants to define table row edges on which row actions are attached. **Notes:** Denotes the leading, or left, edge of an table row view.

**33.53.136 NSTableViewRowActionEdgeTrailing = 1**

MBS MacControls Plugin, Plugin Version: 17.1. **Function:** One of the constants to define table row edges on which row actions are attached. **Notes:** Denotes the trailing, or right, edge of an table row view.

**33.53.137 NSTableViewAnimationEffectFade = 1**

MBS MacControls Plugin, Plugin Version: 17.1. **Function:** Specifies the animation effects to apply when inserting or removing rows. **Notes:** Use a fade for row or column removal. The effect can be combined with any of the slide constants.

**33.53.138 NSTableViewAnimationEffectGap = 2**

MBS MacControls Plugin, Plugin Version: 17.1. **Function:** Specifies the animation effects to apply when inserting or removing rows. **Notes:** Creates a gap for newly inserted rows. This is useful for drag and drop animations that animate to a newly opened gap and should be used in the acceptDrop event.
33.53.139  `NSTableViewAnimationEffectNone = 0`

MBS MacControls Plugin, Plugin Version: 17.1. **Function:** Specifies the animation effects to apply when inserting or removing rows.
**Notes:** Use no animation effects.

33.53.140  `NSTableViewAnimationSlideDown = & h20`

MBS MacControls Plugin, Plugin Version: 17.1. **Function:** Specifies the animation effects to apply when inserting or removing rows.
**Notes:** Animates a row insertion or removal by sliding downward.

33.53.141  `NSTableViewAnimationSlideLeft = & h30`

MBS MacControls Plugin, Plugin Version: 17.1. **Function:** Specifies the animation effects to apply when inserting or removing rows.
**Notes:** Animates a row insertion by sliding from the left. Animates a row removal by sliding towards the left.

33.53.142  `NSTableViewAnimationSlideRight = & h40`

MBS MacControls Plugin, Plugin Version: 17.1. **Function:** Specifies the animation effects to apply when inserting or removing rows.
**Notes:** Animates a row insertion by sliding from the right. Animates a row removal by sliding towards the right.

33.53.143  `NSTableViewAnimationSlideUp = & h10`

MBS MacControls Plugin, Plugin Version: 17.1. **Function:** Specifies the animation effects to apply when inserting or removing rows.
**Notes:** Animates a row insertion or removal by sliding upward.

33.53.144  `NSTableViewDashedHorizontalGridLineMask=8`

MBS MacControls Plugin, Plugin Version: 17.1. **Function:** One of the constants to specify grid styles.
**Notes:** Specifies that the horizontal grid lines should be drawn dashed.
33.53.145 NSTableViewDraggingDestinationFeedbackStyleGap=2

MBS MacControls Plugin, Plugin Version: 17.1. **Function:** One of the dragging styles. **Notes:** Provides a gap insertion when dragging over the table. Note that this style is only officially supported for View Based TableViews, but may partially work in Cell Based TableViews. The decision to use the gap style (compared to another style) can be made in draggingSessionWillBeginAtPoint, or it can dynamically be changed.

33.53.146 NSTableViewDraggingDestinationFeedbackStyleNone=-1

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the constants to specify the drag styles displayed by the table view. **Notes:** Provides no feedback when the user drags over the table view. This option exists to allow subclasses to implement their dragging destination highlighting, or to make it not show anything all.

Available in Mac OS X v10.6 and later.

33.53.147 NSTableViewDraggingDestinationFeedbackStyleRegular=0

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the constants to specify the drag styles displayed by the table view. **Notes:** Draws a solid round-rect background on drop target rows, and an insertion marker between rows. This style should be used in most cases.

Available in Mac OS X v10.6 and later.

33.53.148 NSTableViewDraggingDestinationFeedbackStyleSourceList=1

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the constants to specify the drag styles displayed by the table view. **Notes:** Draws an outline on drop target rows, and an insertion marker between rows. This style will automatically be set for source lists when the table’s setSelectionHighlightStyle: is set to NSTableViewSelectionHighlightStyleSourceList. This is the standard look for Source Lists, but may be used in other areas as needed.
33.53.149 NSTableViewDropAbove=1

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the constants to specify drop operations. **Notes:**

Specifies that the drop should occur above the specified row.

For example, given a table with n rows (numbered with row 0 at the top visually), a row of n1 and operation of NSTableViewDropOn would specify a drop on the last row. To specify a drop below the last row, you use a row of n and NSTableViewDropAbove for the operation.

33.53.150 NSTableViewDropOn=0

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the constants to specify drop operations. **Notes:**

Specifies that the drop should occur on the specified row.

For example, given a table with n rows (numbered with row 0 at the top visually), a row of n1 and operation of NSTableViewDropOn would specify a drop on the last row. To specify a drop below the last row, you use a row of n and NSTableViewDropAbove for the operation.

33.53.151 NSTableViewFirstColumnOnlyAutoresizingStyle=5

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the constants to specify the autoresizing style. **Notes:**

Autoresize only the first table column.

When that table column can no longer be resized, stop autoresizing. Normally you should use one of the sequential autoresizing modes instead.

Available in Mac OS X v10.4 and later.
33.53.152 NSTableViewGridNone=0

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the constants for the grid styles. **Notes:** Specifies that no grid lines should be displayed.

33.53.153 NSTableViewLastColumnOnlyAutoresizingStyle=4

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the constants to specify the autoresizing style. **Notes:** Autoresize only the last table column.

When that table column can no longer be resized, stop autoresizing. Normally you should use one of the sequential autoresizing modes instead.

Available in Mac OS X v10.4 and later.

33.53.154 NSTableViewNoColumnAutoresizing=0

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the constants to specify the autoresizing style. **Notes:** Disable table column autoresizing. Available in Mac OS X v10.4 and later.

33.53.155 NSTableViewReverseSequentialColumnAutoSizeingStyle=3

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the constants to specify the autoresizing style. **Notes:** Autoresize each table column sequentially, from the first auto-resizable column to the last auto-resizable column; proceed to the next column when the current column has reached its minimum or maximum size.

Available in Mac OS X v10.4 and later.
33.53.156 NSTableViewRowSizeStyleCustom = 0

MBS MacControls Plugin, Plugin Version: 13.4. **Function:** One of the row size style constants.

**Notes:**

The table will use the rowHeight or invoke the delegate method tableView:heightOfRow:, if implemented. The cell layout is not changed.
Available in OS X v10.7 and later.
The row size style constants define the size of the rows in the table view. They are used by the effectiveRow-SizeStyle and rowSizeStyle methods. You can also query the row size in the NSTableCellView class’ property rowSizeStyle.

33.53.157 NSTableViewRowSizeStyleDefault = -1

MBS MacControls Plugin, Plugin Version: 13.4. **Function:** One of the row size style constants.

**Notes:**

The table will use the system default layout size: small, medium or large.
Available in OS X v10.7 and later.
The row size style constants define the size of the rows in the table view. They are used by the effectiveRow-SizeStyle and rowSizeStyle methods. You can also query the row size in the NSTableCellView class’ property rowSizeStyle.

33.53.158 NSTableViewRowSizeStyleLarge = 3

MBS MacControls Plugin, Plugin Version: 13.4. **Function:** One of the row size style constants.

**Notes:**

The table will use a row height specified for a small table. It is required that the size be fully tested and supported if NSTableViewRowSizeStyleCustom is not used.
Available in OS X v10.7 and later.
The row size style constants define the size of the rows in the table view. They are used by the effectiveRow-SizeStyle and rowSizeStyle methods. You can also query the row size in the NSTableCellView class’ property rowSizeStyle.

33.53.159 NSTableViewRowSizeStyleMedium = 2

MBS MacControls Plugin, Plugin Version: 13.4. **Function:** One of the row size style constants.

**Notes:**

The table will use a row height specified for a medium table. It is required that the size be fully tested and supported if NSTableViewRowSizeStyleCustom is not used.
Available in OS X v10.7 and later.
The row size style constants define the size of the rows in the table view. They are used by the effectiveRowSizeStyle and rowSizeStyle methods. You can also query the row size in the NSTableCellView class' property rowSizeStyle.

### 33.53.160 NSTableViewRowSizeStyleSmall = 1

MBS MacControls Plugin, Plugin Version: 13.4. **Function:** One of the row size style constants.  
**Notes:**
The table will use a row height specified for a small table. It is required that the size be fully tested and supported if NSTableViewRowSizeStyleCustom is not used. 
Available in OS X v10.7 and later. 
The row size style constants define the size of the rows in the table view. They are used by the effectiveRowSizeStyle and rowSizeStyle methods. You can also query the row size in the NSTableCellView class' property rowSizeStyle.

### 33.53.161 NSTableViewSelectionHighlightStyleNone=-1

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the constants to specify the selection highlight styles.  
**Notes:**
Displays no highlight style at all. 
Available in Mac OS X v10.6 and later.

### 33.53.162 NSTableViewSelectionHighlightStyleRegular=0

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the constants for the selectionHighlightStyle property.  
**Notes:**
The regular highlight style of NSTableView. On Mac OS X v10.5 a light blue (returned by sending NSColor a alternateSelectedControlColor message) or light gray color (returned by sending NSColor a secondarySelectedControlColor message).

Available in Mac OS X v10.5 and later.
33.53.163 NSTableViewSelectionHighlightStyleSourceList=1

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the constants for the selectionHighlightStyle property.
**Notes:**

The source list style of NSTableView. On 10.5, a light blue gradient is used to highlight selected rows.

Note: When using this style, cell subclasses that implement drawsBackground must set the value to false. Otherwise, the cells will draw over the tableview’s highlighting.

33.53.164 NSTableViewSequentialColumnAutoresizingStyle=2

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the constants to specify the autoresizing style.
**Notes:**

Autoresize each table column sequentially, from the last auto-resizable column to the first auto-resizable column; proceed to the next column when the current column has reached its minimum or maximum size.

Available in Mac OS X v10.4 and later.

33.53.165 NSTableViewSolidHorizontalGridLineMask=2

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the constants to specify grid styles.
**Notes:**

Specifies that horizontal grid lines should be displayed.

Available in Mac OS X v10.3 and later.

You can combine NSTableViewSolidVerticalGridLineMask and NSTableViewSolidHorizontalGridLineMask with bitwiseor.

33.53.166 NSTableViewSolidVerticalGridLineMask=1

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the constants to specify grid styles.
**Notes:**

Specifies that vertical grid lines should be displayed.
You can combine NSTableViewSolidVerticalGridLineMask and NSTableViewSolidHorizontalGridLineMask with bitwise or.

### 33.53.167 NSTableViewUniformColumnAutoresizingStyle=1

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the constants to specify the autoresizing style.  
**Notes:**  
Autoresize all columns by distributing space equally, simultaneously.  
Available in Mac OS X v10.4 and later.
33.54 class NSTableViewRowActionMBS

33.54.1 class NSTableViewRowActionMBS


Function: An NSTableViewRowAction object defines a single action to present when the user swipes horizontally on a table row.

Notes: In an editable table, performing a horizontal swipe on a row reveals a button to delete the row by default. This class lets you define one or more custom actions to display for a given row in your table. Each instance of this class represents a single action to perform and includes the text, formatting information, and behavior for the corresponding button.

To add custom actions to your table views rows, implement the rowActionsForRow event in your table views delegate object. In that method, create and return an array of actions for the specified row. The table handles the remaining work of displaying the action buttons and executing the appropriate handler block when the user clicks the button.

33.54.2 Methods

33.54.3 available as boolean


Function: Check whether this class is available.

Notes: Returns true on macOS 10.11.

33.54.4 Constructor(Style as Integer, Title as String)


Function: Creates and returns a new table view row action object.

Notes: style: The style characteristics to apply to the button. Use this value to apply default appearance characteristics to the button. These characteristics visually communicate, such as by color, information about what the button does. For example, specify a style of NSTableViewRowActionStyleDestructive to indicate an action is destructive to the underlying data. For a list of possible style values, see NSTableViewRowActionStyle.

title: The string to display in the button. Specify a string localized for the users current language.

Returns a new table row action object that you can return from your table views event.
The style you specify cannot be changed later. You can change the title of the action button. You can also configure other appearance-related properties of the button using the properties of this class.
You can assign the same row action object to multiple rows of your table.

### 33.54.5 Properties

#### 33.54.6 BackgroundColor as NSColorMBS

**Function:** The background color of the action button.
**Notes:**
Use this property to specify the background color for your button. If you do not specify a value for this property, AppKit assigns a default color based on the value in the style property. Generally, this color is red for destructive actions and blue for nondestructive actions.
(Read and Write property)

#### 33.54.7 Handle as Integer

**Function:** The internal object reference.
**Notes:** (Read and Write property)

#### 33.54.8 Image as NSImageMBS

**Function:** The image.
**Notes:** Available in macOS 10.12 or later.
(Read and Write property)

#### 33.54.9 Style as Integer

**Function:** The style applied to the action button.
**Notes:** The value of this property is set at creation time and cannot be changed later.
(Read only property)
33.54.10 Title as String

Function: The title of the action button.
Notes: (Read and Write property)

33.54.11 Events

33.54.12 Action(row as Integer)

Function: Called when action is invoked.
Notes: The event to execute when the user clicks the button associated with this action. When the user selects the action represented by this object, AppKit executes your event on the apps main thread.

33.54.13 Constants

33.54.14 NSTableViewRowActionStyleDestructive = 1

Notes: Apply a style that indicates that the action might change or delete data. This style changes the value of the backgroundColor property to an appropriate value to reflect the destructive action. After creating the action object, you can change the background color as needed. Destructive actions require a longer swipe to activate, and trigger an animation when a table row is deleted.

33.54.15 NSTableViewRowActionStyleRegular = 0

Notes: Apply the default style to the button. This style does not apply any special coloring to the button.
33.55. **CLASS NSTABVIEWITEMMBS**

### 33.55 class NSTabViewItemMBS

#### 33.55.1 class NSTabViewItemMBS

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Cocoa class for items on the tabview.

**Notes:** An NSTabViewItem is a convenient way for presenting information in multiple pages. A tab view is usually distinguished by a row of tabs that give the visual appearance of folder tabs. When the user clicks a tab, the tab view displays a view page provided by your application. A tab view keeps a zero-based array of NSTabViewItems, one for each tab in the view.

#### 33.55.2 Methods

#### 33.55.3 Constructor(identifier as Variant)

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new tabview item with the identifier.

#### 33.55.4 Properties

#### 33.55.5 color as NSColorMBS

MBS MacCocoa Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The color of the tab view item.

**Notes:**

May not be used by the control.

(Read and Write property)

#### 33.55.6 Enabled as Boolean

MBS MacCocoa Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The enabled state of the tab view item.

**Example:**

```vbnet
dim n as NSTabViewMBS = TabPanel1.NSTabViewMBS
dim t as NSTabViewItemMBS = n.tabViewItemAtIndex(0)
t.Enabled = false
```
33.55.7 Handle as Integer

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The internal reference to the NSTabViewItem object. Notes: (Read and Write property)

33.55.8 identifier as Variant

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The identifier for this item. Notes: (Read and Write property)

33.55.9 image as NSImageMBS

MBS MacCocoa Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The image for the tab panel item. Notes: Available in Mac OS X 10.10. (Read and Write property)

33.55.10 initialFirstResponder as NSViewMBS

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The initial first responder for the view associated with the receiver. Notes: Sets the initial first responder for the view associated with the receiver (the view that is displayed when a user clicks on the tab) to view. (Read and Write property)

33.55.11 label as string

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The label text for the receiver. Notes: (Read and Write property)
33.55.12 tabState as Integer

**Function:** Returns the current display state of the tab associated with the receiver.  
**Notes:**  
The possible values are NSSelectedTab, NSBackgroundTab, or NSPressedTab. Your application does not directly set the tab state.  
(Read only property)

33.55.13 tabView as NSTabViewMBS

**Function:** Returns the parent tab view for the receiver.  
**Notes:**  
Note that this is the tab view itself, not the view displayed when a user clicks the tab.

A tab view item normally learns about its parent tab view when it is inserted into the view’s array of items. The NSTabView methods addTabViewItem and insertTabViewItem set the tab view for the added or inserted item.  
(Read only property)

33.55.14 toolTip as string

**Function:** The tooltip displayed for the tab view item.  
**Notes:** (Read and Write property)

33.55.15 view as NSViewMBS

**Function:** The view associated with the receiver to view.  
**Notes:**  
This is the view displayed when a user clicks the tab. When you set a new view, the old view is released.  
(Read and Write property)
33.55.16 Constants

33.55.17 NSBackgroundTab = 1

MBS MacCocoa Plugin, Plugin Version: 10.0. Function: One of the constants describing the current display state of a tab.
Notes: A tab that’s not being displayed.

33.55.18 NSPressedTab = 2

MBS MacCocoa Plugin, Plugin Version: 10.0. Function: One of the constants describing the current display state of a tab.
Notes: A tab that the user is in the process of clicking. That is, the user has pressed the mouse button while the cursor is over the tab but has not released the mouse button.

33.55.19 NSSelectedTab = 0

MBS MacCocoa Plugin, Plugin Version: 10.0. Function: One of the constants describing the current display state of a tab.
Notes: The tab that’s being displayed.
33.56. class NSTabViewMBS

33.56.1 class NSTabViewMBS

Function: The Cocoa tabpanel control.
Notes:

AnNSTabViewobject provides a convenient way to present information in multiple pages. The view contains a row of tabs that give the appearance of folder tabs, as shown in the following figure. The user selects the desired page by clicking the appropriate tab or using the arrow keys to move between pages. Each page displays a view hierarchy provided by your application.

You can embed this view in a CustomNSViewMBS to get more events for mouse and keyboard. Subclass of the NSViewMBS class.

33.56.2 Methods

33.56.3 addTabViewItem(tabViewItem as NSTabViewItemMBS)

Function: Adds the tab item specified by tabViewItem.
Notes:

tabViewItem: The tab view item to be added.

The item is added at the end of the array of tab items, so the new tab appears on the right side of the view.

33.56.4 Constructor

Function: Creates a new tab view with size 100/100 and position 0/0
Example:

dim t as new NSTabViewMBS

Notes: On success the handle property is not zero.
See also:

- 33.56.5 Constructor(Handle as Integer) 6698
- 33.56.6 Constructor(left as Double, top as Double, width as Double, height as Double) 6698
33.56.5 Constructor(Handle as Integer)

Function: Creates an object based on the given NSTabView handle.
Example:

```vbscript
dim t as new NSTabViewMBS(0, 0, 100, 100)
dim v as new NSTabViewMBS(t.handle)
MsgBox str(v.Bounds.Width)+” x ”+str(v.Bounds.Height)
```

Notes: The handle is casted to a NSTabView and the plugin retains this handle. See also:
- 33.56.4 Constructor
- 33.56.6 Constructor(left as Double, top as Double, width as Double, height as Double)

33.56.6 Constructor(left as Double, top as Double, width as Double, height as Double)

Function: Creates a new tab view with the given size and position.
Example:

```vbscript
dim x as new NSTabViewMBS(0, 0, 100, 100)
```

Notes: On success the handle property is not zero. See also:
- 33.56.4 Constructor
- 33.56.5 Constructor(Handle as Integer)

33.56.7 contentRect as NSRectMBS

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the rectangle describing the content area of the receiver.
Notes: This area does not include the space required for the receiver’s tabs or borders (if any).
### 33.56.8 indexOfTabViewItem(tabViewItem as NSTabViewItemMBS) as Integer

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the index of the specified item in the tab view.  
**Notes:** The zero-based index of tabViewItem, or [NSNotFound] if the item is not found.

### 33.56.9 indexOfTabViewItemWithIdentifier(identifier as Variant) as Integer

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the index of the item that matches the specified identifier. identifier, or NSNotFound (-1) if the item is not found.  
**Notes:** Returns nil on any error.

### 33.56.10 insertTabViewItem(tabViewItem as NSTabViewItemMBS, atIndex as Integer)

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Inserts tabViewItem into the receiver’s array of tab view items at index.  
**Notes:**  
- tabViewItem: The tab view item to be added.  
- index: The index at which to insert the tab view item. The index parameter is zero-based.

### 33.56.11 minimumSize as NSSizeMBS

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the minimum size necessary for the receiver to display tabs in a useful way.  
**Notes:** You can use the value returned by this method to limit how much a user can resize a tab view.

### 33.56.12 numberOfTabViewItems as Integer

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the number of items in the receiver’s array of tab view items.
33.56.13 removeTabViewItem(tabViewItem as NSTabViewItemMBS)

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes the item specified by tabViewItem from the receiver’s array of tab view items.

33.56.14 selectedTabViewItem as NSTabViewItemMBS

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Selects the specified tab view item.

33.56.15 selectFirstTabViewItem

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This action method selects the first tab view item.

33.56.16 selectLastTabViewItem

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This action method selects the last tab view item.

33.56.17 selectNextTabViewItem

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This action method selects the next tab view item in the sequence. **Notes:** If the currently visible item is the last item in the sequence, this method does nothing, and the last page remains displayed.

33.56.18 selectPreviousTabViewItem

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This action method selects the previous tab view item in the sequence. **Notes:** If the currently visible item is the first item in the sequence, this method does nothing, and the first page remains displayed.
33.56.19  selectTabViewItem(tabViewItem as NSTabViewItemMBS)

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the tab view item for the currently selected tab. Notes: Returns the currently selected tab view item, or nil if no item is selected.

33.56.20  selectTabViewItemAtIndex(index as Integer)

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Selects the tab view item specified by index. Notes: The index parameter is base 0.

33.56.21  selectTabViewItemWithIdentifier(identifier as Variant)


33.56.22  tabViewItemAtIndex(index as Integer) as NSTabViewItemMBS

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the tab view item at index in the tab view’s array of items. Notes: index: The index at which to insert the tab view item. The index parameter is zero-based.

Returns the tab view item at the specified index.

33.56.23  tabViewItemAtPoint(x as Double, y as Double) as NSTabViewItemMBS

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the tab view item at the specified point. Notes: Returns the tab view item under the hit point, or nil if no tab view item is under that location. You can use this method to find a tab view item based on a user’s mouse click.
33.56.24  **tabViewItems** as NSTabViewItemMBS()

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver’s array of tab view items. **Notes:** A tab view keeps an array containing one tab view item for each tab in the view.

33.56.25  **Properties**

33.56.26  **allowsTruncatedLabels** as boolean

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether if the receiver allows truncating for labels that don’t fit on a tab. **Notes:** Value is true if the receiver allows truncating for labels that don’t fit on a tab, otherwise false.

The default is true.
When truncating is allowed, the tab view inserts an ellipsis, if necessary, to fit a label in the tab.
(Read and Write computed property)

33.56.27  **controlSize** as Integer

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The size of the receiver. **Notes:** Use NSRegularControlSize, NSSmallControlSize or NSMiniControlSize.
(Read and Write computed property)

33.56.28  **controlTint** as Integer

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The tab view’s control tint. **Notes:** Use NSDefaultControlTint, NSBlueControlTint, NSGraphiteControlTint or NSClearControlTint.
(Read and Write computed property)
33.56. **drawsBackground as boolean**

**Function:** Whether if the receiver draws a background color when the tab view type is NSNoTabsNoBorder.  
**Notes:**  
True if the receiver draws a background color when the tab view type is NSNoTabsNoBorder, otherwise false.  
If the receiver uses bezeled edges or a line border, the appropriate background color for that border is used.  
(Read and Write computed property)

33.56.30 **font as NSFontMBS**

**Function:** The font for tab label text.  
**Notes:**  
Tab height is adjusted automatically to accommodate a new font size. If the view allows truncating, tab labels are truncated as needed.  
(Read and Write computed property)

33.56.31 **tabViewType as Integer**

**Function:** The tab type for the receiver.  
**Notes:**  
Use constants: NSTopTabsBezelBorder, NSLeftTabsBezelBorder, NSBottomTabsBezelBorder, NSRightTabsBezelBorder, NSNoTabsBezelBorder, NSNoTabsLineBorder or NSNoTabsNoBorder.  
(Read and Write computed property)

33.56.32 **Constants**

33.56.33 **NSBlueControlTint=1**

MBS MacCocoa Plugin, Plugin Version: 10.0. **Function:** One of the constants to specify a the control tint.  
**Notes:** Aqua control tint
33.56.34 **NSBottomTabsBezelBorder = 2**

MBS MacCocoa Plugin, Plugin Version: 10.0. **Function:** One of the constants to specify the tab view’s type as used by tabViewType.
**Notes:** Tabs are on the bottom of the view with a bezeled border.

33.56.35 **NSClearControlTint=7**

MBS MacCocoa Plugin, Plugin Version: 10.0. **Function:** One of the constants to specify a the control tint.
**Notes:** Clear control tint

33.56.36 **NSDefaultControlTint=0**

MBS MacCocoa Plugin, Plugin Version: 10.0. **Function:** One of the constants to specify a the control tint.
**Notes:** The current default tint setting

33.56.37 **NSGraphiteControlTint=6**

MBS MacCocoa Plugin, Plugin Version: 10.0. **Function:** One of the constants to specify a the control tint.
**Notes:** Graphite control tint

33.56.38 **NSLeftTabsBezelBorder = 1**

MBS MacCocoa Plugin, Plugin Version: 10.0. **Function:** One of the constants to specify the tab view’s type as used by tabViewType.
**Notes:** Tabs are on the left of the view with a bezeled border.

33.56.39 **NSMiniControlSize=2**

MBS MacCocoa Plugin, Plugin Version: 10.0. **Function:** One of the values for the ControlSize property.
**Notes:** The control has a smaller size than NSSmallControlSize.

33.56.40 **NSNoTabsBezelBorder = 4**

MBS MacCocoa Plugin, Plugin Version: 10.0. **Function:** One of the constants to specify the tab view’s type as used by tabViewType.
Notes: The view does not include tabs and has a bezeled border.

33.56.41  **NSNoTabsLineBorder = 5**

MBS MacCocoa Plugin, Plugin Version: 10.0. **Function:** One of the constants to specify the tab view's type as used by tabViewType. **Notes:** The view does not include tabs and has a lined border.

33.56.42  **NSNoTabsNoBorder = 6**

MBS MacCocoa Plugin, Plugin Version: 10.0. **Function:** One of the constants to specify the tab view's type as used by tabViewType. **Notes:** The view does not include tabs and has no border.

33.56.43  **NSRegularControlSize=0**

MBS MacCocoa Plugin, Plugin Version: 10.0. **Function:** One of the values for the ControlSize property. **Notes:** The control is sized as regular.

33.56.44  **NSRightTabsBezelBorder = 3**

MBS MacCocoa Plugin, Plugin Version: 10.0. **Function:** One of the constants to specify the tab view's type as used by tabViewType. **Notes:** Tabs are on the right of the view with a bezeled border.

33.56.45  **NSSmallControlSize=1**

MBS MacCocoa Plugin, Plugin Version: 10.0. **Function:** One of the values for the ControlSize property. **Notes:** This constant is for controls that cannot be resized in one direction, such as push buttons, radio buttons, checkboxes, sliders, scroll bars, pop-up buttons, tabs, and progress indicators. You should use a small system font with a small control.

33.56.46  **NSTopTabsBezelBorder = 0**

MBS MacCocoa Plugin, Plugin Version: 10.0. **Function:** One of the constants to specify the tab view's type as used by tabViewType.
Notes: The view includes tabs on the top of the view and has a bezeled border (the default).
33.57. CLASS NSTextFieldCellMBS

33.57 class NSTextFieldCellMBS

33.57.1 class NSTextFieldCellMBS

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The text field class for using as NSCell.

**Example:**

```swift
// ask for the textfield behind the label
dim n as NSTextFieldMBS = NSTextFieldMBS(label1.NSViewMBS)

// query cell
dim c as NSTextFieldCellMBS = n.cell

// and set background style
c.backgroundStyle = NSTextFieldCellMBS.NSBackgroundStyleRaised
```

**Notes:**

The NSTextFieldCell class adds to the text display capabilities of the NSCell class by allowing you to set the color of both the text and its background. You can also specify whether the cell draws its background at all.

All of the methods declared by this class are also declared by the NSTextField class, which uses NSTextField-Cell objects to draw and edit text. These NSTextField cover methods call the corresponding NSTextFieldCell methods.

Placeholder strings, set using PlaceholderString or PlaceholderAttributedString, now appear in the text field cell if the actual string is "". They are drawn in grey on the cell.

Subclass of the NSActionCellMBS class.

33.57.2 Methods

33.57.3 allowedInputSourceLocales as string()

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of locale identifiers representing input sources that are allowed to be enabled when the receiver has the keyboard focus.

**Notes:** Available in Mac OS X v10.5 and later.
33.57.4 Constructor(text as string)

MBS MacCocoa Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new Cell object with a text. **Example:**

```dim c as new NSTextFieldCellMBS("Hello")
MsgBox c.StringValue```

33.57.5 setAllowedInputSourceLocales(Identifiers() as string)

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets an array of locale identifiers representing input sources that are allowed to be enabled when the receiver has the keyboard focus. **Notes:**

You can use the meta-locale identifier, NSAllRomanInputSourcesLocaleIdentifier, to specify input sources that are limited for Roman script editing.

Available in Mac OS X v10.5 and later.

33.57.6 setUpFieldEditorAttributes(textobj as NSTextMBS) as NSTextMBS

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets up the field editor. You never invoke this method directly; by overriding it, however, you can customize the field editor.

33.57.7 setWantsNotificationForMarkedText(value as boolean)

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Directs the cell’s associated field editor to post text change notifications. **Notes:**

If true, the field editor posts text change notifications (NSTextDidChangeNotification) while editing marked text; if false, notifications are delayed until the marked text confirmation.

Available in Mac OS X v10.5 and later.
33.57.8 Properties

33.57.9 backgroundColor as NSColorMBS

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The color of the background the receiver draws behind the text. Notes: (Read and Write property)

33.57.10 bezelStyle as Integer

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The receiver’s bezel style. Notes: To set the bezel style, you must have already set Bezeled to true. (Read and Write property)

33.57.11 drawsBackground as boolean

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A Boolean value that indicates whether the receiver draws its background color. Notes: In order to prevent inconsistent rendering, background color rendering is disabled for rounded-bezel text fields. (Read and Write property)

33.57.12 placeholderAttributedString as NSAttributedStringMBS

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The placeholder of the cell as an attributed string. Notes: Note that invoking this successfully will clear out any plain text string set by PlaceholderString.

Available in Mac OS X v10.3 and later. (Read and Write property)
33.57.13 **placeholderString as string**

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The placeholder of the cell as a plain text string. **Notes:**

Note that invoking this successfully will clear out any attributed string set by setPlaceholderAttributedString.

(Read and Write property)

33.57.14 **textColor as NSColorMBS**

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The color used to draw the receiver’s text. **Notes:** (Read and Write property)

33.57.15 **Constants**

33.57.16 **NSTextFieldRoundedBezel=1**

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants to specify the bezel style of the text field cell. **Notes:**

Corners are rounded.
Available in Mac OS X v10.2 and later.

33.57.17 **NSTextFieldSquareBezel=0**

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants to specify the bezel style of the text field cell. **Notes:**

Corners are square.
Available in Mac OS X v10.2 and later.
33.58.1 control NSTextFieldControlMBS

Function: The Xojo control for a NSTextField.
Notes:
This control embeds a special NSTextField subclass.
Designed for Xojo 2013r1 and newer. May work on Real Studio 2012, but not perfectly.
Please use view property to access the underlaying object and set properties.

33.58.2 Properties

33.58.3 View as NSTextFieldMBS

Function: The view used in the control.
Notes:
Use this object to set more options on the control.
(Read only property)

33.58.4 Events

33.58.5 Action

MBS MacCocoa Plugin, Plugin Version: 13.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The control’s action was triggered.
Notes: The text changed.

33.58.6 BoundsChanged

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The event called when the bounds, but not the frame, changed.
33.58.7 EnableMenuItems

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event where you can enable menu items.

33.58.8 FrameChanged

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event called when the frame changed.

33.58.9 GotFocus

MBS MacCocoa Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The control itself got focus. **Notes:** This only fires if the control itself got focus and not a sub control.

33.58.10 LostFocus

MBS MacCocoa Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The control lost focus. **Notes:** This only fires if the control itself lost focus and not a sub control.

33.58.11 MenuAction(HitItem as MenuItem) As Boolean

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called when a menuitem is choosen. **Notes:** This allows the control to react on its relevant menu items. Please return true if you handled it or false to give others a chance.

33.58.12 MouseDown(x as Integer, y as Integer, Modifiers as Integer) As Boolean

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The mouse button was pressed inside the controls region at the location passed in to x, y. **Notes:** The coordinates x and y are local to the control, i.e. they represent the position of the mouse click relative to the upper-left corner or the Control.
Return True if you are going to handle the MouseDown. In such a case:

- The Action event, if any, will not execute and the state of the object will not change.
- You will receive the MouseDrag and MouseUp events.

If you return False, the system handles the MouseDown so the above event handlers do not get called.

33.58.13 MouseDrag(x as Integer, y as Integer)

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: This event fires continuously after the mouse button was pressed inside the Control. Notes: Mouse location is local to the control passed in to x, y. As this event is fired continuously (hundreds of time per second), it is your responsibility to determine if the mouse has really moved.

33.58.14 MouseUp(x as Integer, y as Integer)

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The mouse button was released. Notes: Use the x and y parameters to determine if the mouse button was released within the control's boundaries.

33.58.15 ScaleFactorChanged(NewFactor as Double)

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The backing store scale factor has changed. Notes: Please invalidate any cached bitmaps or other relevant state.

33.58.16 TextDidBeginEditing(fieldEditor as NSTextFieldMBS, notification as NSNotificationCenterMBS)

MBS MacCocoa Plugin, Plugin Version: 14.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: Sent when a control with editable text begins an editing session. Notes:
CHAPTER 33. COCOA CONTROLS

Notification: The notification object. The name of the notification is always NSControlTextDidBeginEditingNotification.

This event is invoked when the user begins editing text in a control such as a text field or a form field. The control posts a NSControlTextDidBeginEditingNotification notification, and if the control’s subclass implements this event, it is automatically registered to receive the notification. The field editor is also delivered for inspection.

### 33.58.17 TextDidChange(fieldEditor as NSTextMBS, notification as NSNotificationMBS)


**Function:** Sent when the text in the receiving control changes.

**Notes:**
Notification: The notification object. The name of the notification is always NSControlTextDidChangeNotification.

This event is invoked when text in a control such as a text field or form changes. The control posts a NSControlTextDidChangeNotification notification, and if the control’s subclass implements this event, it is automatically registered to receive the notification. The field editor is provided as parameter for inspection.

### 33.58.18 TextDidEndEditing(fieldEditor as NSTextMBS, notification as NSNotificationMBS)


**Function:** Sent when a control with editable text ends an editing session.

**Notes:**
Notification: The notification object. The name of the notification is always NSControlTextDidEndEditingNotification.

This event is invoked when the user stops editing text in a control such as a text field or form. The control posts a NSControlTextDidEndEditingNotification notification, and if the control’s subclass implements this event, it is automatically registered to receive the notification. The field editor is also provided for inspection.

### 33.58.19 textShouldBeginEditing(fieldEditor as NSTextMBS) as boolean


**Function:** The event called to decide whether text editing should be allowed.
33.58. CONTROL NSTEXTFIELDCONTROLMBS

Notes:
Return true to allow text editing or false to deny.
Be aware that an event in Xojo without return will cause false to be returned.

33.58.20 textShouldEndEditing(fieldEditor as NSTextMBS) as boolean

Function: The event called to decide whether ending text editing should be allowed.
Notes:
Return true to allow end of text editing or false to deny.
Be aware that an event in Xojo without return will cause false to be returned.
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33.59  class NSTextFieldMBS

33.59.1  class NSTextFieldMBS

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An NSTextField object is a kind of NSControl that displays text that the user can select or edit and that sends its action message to its target when the user presses the Return key while editing. **Notes:** Subclass of the NSControlMBS class.

33.59.2  Methods

33.59.3  Constructor

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new text field with size 100/100 and position 0/0 **Example:**

```
dim t as new NSTextFieldMBS
```

**Notes:** On success the handle property is not zero. See also:

- 33.59.4 Constructor(Handle as Integer) 6716
- 33.59.5 Constructor(left as Double, top as Double, width as Double, height as Double) 6717

33.59.4  Constructor(Handle as Integer)

MBS MacCocoa Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an object based on the given NSTextField handle. **Example:**

```
dim t as new NSTextFieldMBS(0, 0, 100, 100)
dim v as new NSTextFieldMBS(t.handle)
MsgBox str(v.Bounds.Width)+” x ”+str(v.Bounds.Height)
```

**Notes:** The handle is casted to a NSTextField and the plugin retains this handle. See also:

- 33.59.3 Constructor 6716
- 33.59.5 Constructor(left as Double, top as Double, width as Double, height as Double) 6717
33.59. CLASS NSTEXTFIELDMBS

33.59.5 Constructor(left as Double, top as Double, width as Double, height as Double)

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new text field with the given size and position. **Example:**

```ruby
dim x as new NSTextFieldMBS(0, 0, 100, 100)
```

**Notes:** On success the handle property is not zero. See also:

- 33.59.3 Constructor
- 33.59.4 Constructor(Handle as Integer)

33.59.6 selectText

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Ends editing and selects the entire contents of the receiver if it’s selectable. **Notes:** If the receiver isn’t in some window’s view hierarchy, this method has no effect.

33.59.7 Properties

33.59.8 AllowsCharacterPickerTouchBarItem as Boolean

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether to allow character picker in touch bar. **Notes:** Available in macOS 10.12.2. (Read and Write property)

33.59.9 allowsEditingTextAttributes as boolean

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the receiver allows the user to change font attributes of the receiver’s text. **Notes:** If true, the user is permitted to change font attributes of the receiver’s text; if flag is false, the user isn’t so permitted. You can change text attributes programmatically regardless of this setting.
33.59.10  AutomaticTextCompletionEnabled as Boolean


33.59.11  backgroundColor as NSColorMBS

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The color of the background that the receiver’s cell draws behind the text. Notes: (Read and Write property)

33.59.12  Bezeled as boolean

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A Boolean value indicating whether the receiver draws a bezeled frame. Notes: (Read and Write property)

33.59.13  bezelStyle as Integer

MBS MacCocoa Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The receiver’s bezel style. Notes: You must have already sent the receiver Bezeled with true to make this property take affect. (Read and Write property)

33.59.14  Bordered as boolean

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A Boolean value indicating whether the receiver draws a black border around its contents. Notes:
33.59. CLASS NSTEXTFIELDMBS

True if the receiver draws a solid black border around its contents; otherwise false.  
(Read and Write property)

### 33.59.15 drawsBackground as boolean

**Function:** Controls whether the receiver’s cell draws its background color behind its text.  
**Notes:**  
In order to prevent inconsistent rendering, background color rendering is disabled for rounded-bezel text fields.  
To really make the background go away, also set bordered=false.  
(Read and Write property)

### 33.59.16 Editable as boolean

**Function:** Whether the user can edit the receiver’s text.  
**Notes:**  
If true, then the user is allowed to both select and edit text. If flag is false, then the user isn’t permitted to edit text, and the receiver’s selectability is restored to its previous value.  
For example, if an NSTextField object is selectable but not editable, then made editable for a time, then made not editable, it remains selectable. To guarantee that text is neither editable nor selectable, simply use setSelectable to turn off selectability.  
(Read and Write property)

### 33.59.17 importsGraphics as boolean

**Function:** Controls whether the receiver allows the user to drag image files into it.  
**Notes:**  
If true, the receiver accepts dragged images; if false, it doesn’t. You can add images programmatically regardless of this setting.  
(Read and Write property)
33.59.18 placeholderAttributedString as NSAttributedStringMBS

MBS MacCocoa Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attributed placeholder string. **Notes:** (Read and Write property)

33.59.19 placeholderString as String

MBS MacCocoa Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The plain text placeholder string. **Notes:** (Read and Write property)

33.59.20 Selectable as boolean

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the receiver is selectable (but not editable). **Notes:**

If true, the receiver is made selectable but not editable (use Editable to make text both selectable and editable). If false, the text is neither editable nor selectable. (Read and Write property)

33.59.21 textColor as NSColorMBS

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The color used to draw the receiver’s text. **Notes:** (Read and Write property)

33.59.22 Constants

33.59.23 NSTextFieldRoundedBezel = 1

MBS MacCocoa Plugin, Plugin Version: 10.4. **Function:** One of the constants for the bezelStyle property. **Notes:** Corners are rounded.
33.59.24 NSTextFieldSquareBezel = 0

MBS MacCocoa Plugin, Plugin Version: 10.4. **Function:** One of the constants for the bezelStyle property. **Notes:** Corners are square.
33.60  control NSTextViewControlMBS

33.60.1  control NSTextViewControlMBS

Function: The Xojo control for a NSTextView.
Notes: This control embeds a special NSTextView subclass.
Designed for Xojo 2013r1 and newer. May work on Real Studio 2012, but not perfectly.
Please use view property to access the underlaying object and set properties.

33.60.2  Properties

33.60.3  AcceptTabs as Boolean

MBS MacCocoa Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Whether the control should accept tab keys.
Notes: If true, the plugin will not forward the tab keydown/keyup events to Xojo, because Xojo would do switch
to next control.
(Read and Write property)

33.60.4  ScrollView as Variant

Function: The scrollview for this textview.
Notes: (Read only property)

33.60.5  View as NSTextViewMBS

Function: The view used in the control.
Notes: Use this object to set more options on the control.
(Read only property)
33.60. **CONTROL NSTEXTVIEWCONTROLMBS**

33.60.6 **Events**

33.60.7 **BoundsChanged**

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event called when the bounds, but not the frame, changed.

33.60.8 **EnableMenuItems**

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event where you can enable menu items.

33.60.9 **FrameChanged**

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event called when the frame changed.

33.60.10 **GotFocus**

MBS MacCocoa Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The control itself got focus. **Notes:** This only fires if the control itself got focus and not a sub control.

33.60.11 **LostFocus**

MBS MacCocoa Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The control lost focus. **Notes:** This only fires if the control itself lost focus and not a sub control.

33.60.12 **MenuAction(HitItem as MenuItem) As Boolean**

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called when a menuitem is choosen. **Notes:** This allows the control to react on its relevant menu items. Please return true if you handled it or false to give others a chance.
33.60.13 **MouseDown(x as Integer, y as Integer, Modifiers as Integer) As Boolean**

**Function:** The mouse button was pressed inside the controls region at the location passed in to x, y.  
**Notes:**  
The coordinates x and y are local to the control, i.e. they represent the position of the mouse click relative to the upper-left corner or the Control.  
Return True if you are going to handle the MouseDown. In such a case:

- The Action event, if any, will not execute and the state of the object will not change.  
- You will receive the MouseDrag and MouseUp events.

If you return False, the system handles the MouseDown so the above event handlers do not get called.

33.60.14 **MouseDrag(x as Integer, y as Integer)**

**Function:** This event fires continuously after the mouse button was pressed inside the Control.  
**Notes:**  
Mouse location is local to the control passed in to x, y.  
As this event is fired continuously (hundreds of time per second), it is your responsibility to determine if the mouse has really moved.

33.60.15 **MouseUp(x as Integer, y as Integer)**

**Function:** The mouse button was released.  
**Notes:** Use the x and y parameters to determine if the mouse button was released within the control’s boundaries.

33.60.16 **ScaleFactorChanged(NewFactor as Double)**

**Function:** The backing store scale factor has changed.  
**Notes:** Please invalidate any cached bitmaps or other relevant state.
**33.60.17 shouldChangeTextInRange**

**Function:** Sent when a text view needs to determine if text in a specified range should be changed.

**Notes:**
- `affectedCharRange`: The range of characters to be replaced.
- `replacementString`: The characters that will replace the characters in `affectedCharRange`; nil if only text attributes are being changed.

Return true to allow the replacement, or false to reject the change.

**33.60.18 textDidBeginEditing**

**Function:** Informs you that the text object has begun editing (that the user has begun changing it).

**33.60.19 textDidChange**

**Function:** Informs you that the text object has changed its characters or formatting attributes.

**33.60.20 textDidEndEditing**

**Function:** Informs you that the text object has finished editing (that it has resigned first responder status).

**33.60.21 textShouldBeginEditing as boolean**

**Function:** Invoked when a text object begins to change its text, this method requests permission to begin editing.

**Notes:** If the delegate returns false, the text object proceeds to make changes. If the delegate returns true, the text object abandons the editing operation. This method is also invoked when the user drags and drops a file onto the text object.
33.60.22  **textShouldEndEditing as boolean**

MBS MacCocoa Plugin, Plugin Version: 13.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Invoked from a text object’s implementation of resignFirstResponder, this method requests permission to end editing.  
**Notes:** If the delegate returns false, the text object proceeds to finish editing and resign first responder status. If the delegate returns true, the text object selects all of its text and remains the first responder.

33.60.23  **textViewDidChangeSelection**

MBS MacCocoa Plugin, Plugin Version: 13.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sent when the selection changes in the text view.
33.61. CLASS NSTEXTVIEWMBS

33.61  class NSTextViewMBS

33.61.1  class NSTextViewMBS

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The cocoa text view class. Notes:

Like the editfield in Realbasic.
Should be placed in a scrollview.

You can embed this view in a CustomNSViewMBS to get more events for mouse and keyboard. Subclass of the NSTextMBS class.

33.61.2  Methods

33.61.3  alignJustified

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Applies full justification to selected paragraphs (or all text, if the receiver is a plain text object).

33.61.4  breakUndoCoalescing

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Informs the receiver that it should begin coalescing successive typing operations in a new undo grouping. Notes: This method should be invoked when saving the receiver’s contents to preserve proper tracking of unsaved changes and the document’s dirty state.

33.61.5  changeAttributes

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Changes the attributes of the current selection. Notes:

This method changes the attributes by invoking convertAttributes: on sender and applying the returned attributes to the appropriate text. See the NSFontManager class reference for more information on attribute conversion.

Available in Mac OS X v10.3 and later.
33.61.6 changeColor

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the color of the selected text.

33.61.7 changeDocumentBackgroundColor

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An action method used to set the background color.
**Notes:**
This method gets the new color by sending a color message to sender.
This will only set the background color if allowsDocumentBackgroundColorChangereturns true.

33.61.8 checkTextInDocument

**Notes:** Available in Mac OS X v10.6 and later.

33.61.9 checkTextInSelection

**Notes:** Available in Mac OS X v10.6 and later.

33.61.10 complete

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Invokes completion in a text view.
**Notes:** By default invoked using the Escape key, this method provides users with a choice of completions for the word currently being typed. May be invoked programmatically if autocompletion is desired by a client of the text system. You can change the key invoking this method using the text system’s key bindings mechanism; see ”Text System Defaults and Key Bindings” for an explanation of the procedure (on Apple website).
33.61. CLASS NSTEXTVIEWMBS

33.61.11 Constructor

MBS MacCocoa Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new text view with size 100/100 and position 0/0

**Example:**

dim t as new NSTextViewMBS

**Notes:** On success the handle property is not zero.

See also:

- 33.61.12 Constructor(Handle as Integer)
- 33.61.13 Constructor(left as Double, top as Double, width as Double, height as Double)

33.61.12 Constructor(Handle as Integer)

MBS MacCocoa Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an object based on the given NSTextView handle.

**Example:**

dim t as new NSTextViewMBS(0, 0, 100, 100)
dim v as new NSTextViewMBS(t.handle)

MsgBox str(v.Bounds.Width)+" x "+str(v.Bounds.Height)

**Notes:** The handle is casted to a NSTextView and the plugin retains this handle.

See also:

- 33.61.11 Constructor
- 33.61.13 Constructor(left as Double, top as Double, width as Double, height as Double)

33.61.13 Constructor(left as Double, top as Double, width as Double, height as Double)

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new text view with the given size and position.

**Example:**

dim x as new NSTextViewMBS(0, 0, 100, 100)
Notes: On success the handle property is not zero.
See also:

- 33.61.11 Constructor
- 33.61.12 Constructor(Handle as Integer)

### 33.61.14 `didChangeText`

**Function:** Sends out necessary notifications when a text change completes.
**Notes:**
Invoked automatically at the end of a series of changes, this method posts an `NSTextDidChangeNotification` to the default notification center, which also results in the delegate receiving an `NSText` delegate `textDidChange` message.

Subclasses implementing methods that change their text should invoke this method at the end of those methods. See Subclassing `NSTextView` for more information.

### 33.61.15 `insertText(attributedString as NSAttributedStringMBS)`

**Function:** Inserts text into the receiver’s text at the insertion point if there is one, otherwise replacing the selection.
**Example:**

```dim textView as NSTextViewMBS // your view
dim a as new NSMutableAttributedStringMBS
if a.initWithString( "Hello World. This is just a little test." ) then
    Dim NSFont as NSFontMBS = NSFontMBS.fontWithName("Arial", 24.0)
    Dim NSColor as NSColorMBS = NSColorMBS.blueColor
    Dim NSRange as NSRangeMBS = NSMakeRangeMBS( 0, 20)
    Dim NSAttributes as New Dictionary
    NSAttributes.value(NSAtrributedStringMBS.NSFontAttributeName) = NSFont
    NSAttributes.value(NSAtrributedStringMBS.NSForegroundColorAttributeName) = NSColor
    a.addAttributeNSAttributes( NSRange)

textView.insertText a
// replace text with new one:
```
33.61. CLASS NSTEXTVIEWMBS

```
'textView.textStorage.setAttributedString a
end if
```

Notes:

text: The string to insert. Can be either an string or an NSAttributedStringMBS object.

The inserted text is assigned the current typing attributes.

This method is the means by which text typed by the user enters an NSTextView. See the NSInputManager class and NSTextInput protocol specifications for more information.

This method is the entry point for inserting text typed by the user and is generally not suitable for other purposes. Programmatic modification of the text is best done by operating on the text storage directly. Because this method pertains to the actions of the user, the text view must be editable for the insertion to work.

See also:

- 33.61.16 insertText(text as string)

33.61.16 insertText(text as string)


Function: Inserts text into the receiver’s text at the insertion point if there is one, otherwise replacing the selection.

Notes:

text: The string to insert. Can be either an string or an NSAttributedStringMBS object.

The inserted text is assigned the current typing attributes.

This method is the means by which text typed by the user enters an NSTextView. See the NSInputManager class and NSTextInput protocol specifications for more information.

This method is the entry point for inserting text typed by the user and is generally not suitable for other purposes. Programmatic modification of the text is best done by operating on the text storage directly. Because this method pertains to the actions of the user, the text view must be editable for the insertion to work.

See also:

- 33.61.15 insertText(attributedString as NSAttributedStringMBS)
33.61.17 invalidateTextContainerOrigin

MBS MacCocoa Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Invalidates the calculated origin of the text container. 
**Notes:** This method is invoked automatically; you should never need to invoke it directly. Usually called because the text view has been resized or the contents of the text container have changed.

33.61.18 loosenKerning

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Increases the space between glyphs in the receiver’s selection, or in all text if the receiver is a plain text view. 
**Notes:** Kerning values are determined by the point size of the fonts in the selection.

33.61.19 lowerBaseline

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Lowers the baseline offset of selected text by 1 point, or of all text if the receiver is a plain text view. 
**Notes:** As such, this method defines a more primitive operation than subscripting.

33.61.20 orderFrontLinkPanel

MBS MacCocoa Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Brings forward a panel allowing the user to manipulate links in the text view. 
**Notes:** Available in Mac OS X v10.4 and later.

33.61.21 orderFrontListPanel

MBS MacCocoa Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Brings forward a panel allowing the user to manipulate text lists in the text view. 
**Notes:** Available in Mac OS X v10.4 and later.

33.61.22 orderFrontSpacingPanel

MBS MacCocoa Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Brings forward a panel allowing the user to manipulate text line heights, interline spacing, and paragraph spacing, in the text view.
33.61. CLASS NSTEXTVIEWMBS

Notes: Available in Mac OS X v10.4 and later.

33.61.23 orderFrontSubstitutionsPanel


33.61.24 orderFrontTablePanel

MBS MacCocoa Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Brings forward a panel allowing the user to manipulate text tables in the text view.

33.61.25 outline

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Adds the outline attribute to the selected text attributes if absent; removes the attribute if present. Notes:

If there is a selection and the first character of the selected range has a non-zero stroke width, or if there is no selection and the typing attributes have a non-zero stroke width, then the stroke width is removed; otherwise the value of NSStrokeWidthAttributeName is set to the default value for outline (3.0).

Operates on the selected range if the receiver contains rich text. For plain text the range is the entire contents of the receiver.

33.61.26 pasteAsPlainText

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Inserts the contents of the pasteboard into the receiver’s text as plain text. Notes: This method behaves analogously to insertText.

33.61.27 pasteAsRichText

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: This action method inserts the contents of the pasteboard into the receiver’s text as rich text, maintaining its attributes.
33.61.28 performFindPanelAction(FindAction as Integer)
Example:
const NSFindPanelActionShowFindPanel = 1

dim n as NSTextViewMBS = TextArea1.NSTextViewMBS
n.usesFindPanel = true
n.performFindPanelAction(NSFindPanelActionShowFindPanel)

Notes:
This is the generic action method for the find menu and find panel, and can be overridden to implement a custom find panel.

Possible values:
NSFindPanelActionShowFindPanel = 1
NSFindPanelActionNext = 2
NSFindPanelActionPrevious = 3
NSFindPanelActionReplaceAll = 4
NSFindPanelActionReplace = 5
NSFindPanelActionReplaceAndFind = 6
NSFindPanelActionSetFindString = 7
NSFindPanelActionReplaceAllInSelection = 8
NSFindPanelActionSelectAll = 9
NSFindPanelActionSelectAllInSelection = 10
See also:

• 33.61.29 performFindPanelAction(sender as object)

33.61.29 performFindPanelAction(sender as object)
Notes:
This is the generic action method for the find menu and find panel, and can be overridden to implement a custom find panel.
Sender could be a NSMenuItem or maybe also a NSView.
See also:
33.61. **CLASS NSTEXTVIEWMBS**
- 33.61.28 performFindPanelAction(FindAction as Integer)

### 33.61.30 raiseBaseline

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Raises the baseline offset of selected text by 1 point, or of all text if the receiver is a plain text view. **Notes:** As such, this method defines a more primitive operation than superscripting.

### 33.61.31 replaceTextContainer(textContainer as NSTextContainerMBS)

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Replaces the text container for the group of text system objects containing the receiver, keeping the association between the receiver and its layout manager intact. **Notes:** textContainer: The new text container. This method raises NSInvalidArgumentException if TextContainer is nil.

### 33.61.32 shouldChangeTextInRange(affectedCharRange as NSRangeMBS, replacementString as string = "") as Boolean

MBS MacCocoa Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initiates a series of delegate messages (and general notifications) to determine whether modifications can be made to the characters and attributes of the receivers text. **Notes:**
- affectedCharRange: The range of characters affected by the proposed change.
- replacementString: The characters that will replace those in affectedCharRange. If only text attributes are being changed, replacementString is "".

Returns true to allow the change, false to prohibit it.

This method checks with the delegate as needed using textShouldBeginEditing and shouldChangeTextInRange.
This method must be invoked at the start of any sequence of user-initiated editing changes. If your subclass of NSTextView implements methods that modify the text, make sure to invoke this method to determine whether the change should be made. If the change is allowed, complete the change by invoking the didChangeText method.

If the receiver is not editable, this method automatically returns false. This result prevents instances in which a text view could be changed by user actions even though it had been set to be non-editable.
In macOS 10.4 and later, if there are multiple selections, this method acts on the first selected subrange. See also:
33.61.96 shouldChangeTextInRange(affectedCharRange as NSRangeMBS, replacementString as string) as boolean

33.61.33 showFindIndicatorForRange(charRange as NSRangeMBS)

**Function:** Causes a temporary highlighting effect to appear around the visible portion (or portions) of the specified range.
**Notes:**
- charRange: The character range around which indicators appear.

This method supports lozenge-style indication of find results. The indicators automatically disappear after a certain period of time, or when the method is called again, or when any of a number of changes occur to the view (such as changes to text, view size, or view position).

This method does not itself scroll the specified range to be visible; any desired scrolling should be done before this method is called, first, because the method acts only on the visible portion of the specified range, and, second, because scrolling causes the indicators to disappear. Calling this method with a zero-length range always removes any existing indicators.

Available in OS X v10.5 and later.

33.61.34 startSpeaking

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Speaks the selected text, or all text if no selection.

33.61.35 stopSpeaking

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Stops the speaking of text.

33.61.36 tightenKerning

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Decreases the space between glyphs in the receiver’s selection, or for all glyphs if the receiver is a plain text view.
33.61.37  **toggleAutomaticDashSubstitution**

**Notes:** Available on Mac OS X 10.6 or newer.

33.61.38  **toggleAutomaticDataDetection**

**Notes:** Available on Mac OS X 10.6 or newer.

33.61.39  **toggleAutomaticLinkDetection**

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Changes the state of automatic link detection from enabled to disabled and vice versa.  
**Notes:**
Automatic link detection causes strings representing URLs typed in the view to be automatically made into links to those URLs.

Available in Mac OS X v10.5 and later.

33.61.40  **toggleAutomaticQuoteSubstitution**

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Changes the state of automatic quotation mark substitution from enabled to disabled and vice versa.  
**Notes:**
Automatic quote substitution causes ASCII quotation marks and apostrophes to be automatically replaced, on a context-dependent basis, with more typographically accurate symbols.

Available in Mac OS X v10.5 and later.
33.61.41  **toggleAutomaticSpellingCorrection**

MBS MacCocoa Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Toggles automatic spelling correction. **Notes:** Available on Mac OS X 10.6 or newer.

33.61.42  **toggleAutomaticTextReplacement**

MBS MacCocoa Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Toggles automatic text replacements. **Notes:** Available on Mac OS X 10.6 or newer.

33.61.43  **toggleBold**

MBS MacCocoa Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Toggles the use of a bold/non-bold font. **Example:**
```
// some textview
dim textview as NSTextView = TextArea1.NSTextViewMBS

// switch between bold and non bold
textview.toggleBold
```

**Notes:**
You can set this to continue typing with/without bold or change current selection. Can only provide bold if the font supports it.

33.61.44  **toggleContinuousSpellChecking**

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Toggles whether continuous spell checking is enabled for the receiver.

33.61.45  **toggleGrammarChecking**

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Changes the state of grammar checking from enabled to disabled and vice versa.
33.61.46 toggleItalic

**Function:** Toggles the use of an italic/non-italic font. 
**Example:**

```swift
// some textview
dim textview as NSTextView = TextArea1.NSTextViewMBS

// switch between italic and non italic
textview.toggleItalic
```

**Notes:**

You can set this to continue typing with/without bold or change current selection. 
Can only provide italic if the font supports it.

33.61.47 toggleSmartInsertDelete

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 
**Function:** Changes the state of smart insert and delete from enabled to disabled and vice versa. 
**Notes:**

Controls whether the receiver inserts or deletes space around selected words so as to preserve proper spacing and punctuation. 

Available in Mac OS X v10.5 and later.

33.61.48 toggleTraditionalCharacterShape

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 
**Function:** Toggles the NSCharacterShapeAttributeName attribute at the current selection.

33.61.49 turnOffKerning

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 
**Function:** Sets the receiver to use nominal glyph spacing for the glyphs in its selection, or for all glyphs if the
receiver is a plain text view.

### 33.61.50 turnOffLigatures

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the receiver to use only required ligatures when setting text, for the glyphs in the selection if the receiver is a rich text view, or for all glyphs if it’s a plain text view.

### 33.61.51 updateDragTypeRegistration

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Updates the acceptable drag types of all text views associated with the receiver’s layout manager. **Notes:**

If the receiver is editable and is a rich text view, causes all text views associated with the receiver’s layout manager to register their acceptable drag types. If the text view isn’t editable or isn’t rich text, causes those text views to unregister their dragged types.

Subclasses can override this method to change the conditions for registering and unregistering drag types, whether as a group or individually based on the current state of the text view. They should invoke this method when that state changes to perform the necessary update.

### 33.61.52 updateFontPanel

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Updates the Font panel to contain the font attributes of the selection. **Notes:** Does nothing if the receiver doesn’t use the Font panel. You should never need to invoke this method directly, but you can override it if needed to handle additional font attributes.

### 33.61.53 updateRuler

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Updates the ruler view in the receiver’s enclosing scroll view to reflect the selection’s paragraph and marker attributes. **Notes:** Does nothing if the ruler isn’t visible or if the receiver doesn’t use the ruler. You should never need to invoke this method directly, but you can override this method if needed to handle additional ruler attributes.
### 33.61.54 useAllLigatures

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the receiver to use all ligatures available for the fonts and languages used when setting text, for the glyphs in the selection if the receiver is a rich text view, or for all glyphs if it’s a plain text view.

### 33.61.55 useStandardKerning

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Set the receiver to use pair kerning data for the glyphs in its selection, or for all glyphs if the receiver is a plain text view.

### 33.61.56 useStandardLigatures

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the receiver to use the standard ligatures available for the fonts and languages used when setting text, for the glyphs in the selection if the receiver is a rich text view, or for all glyphs if it’s a plain text view.

### 33.61.57 Properties

#### 33.61.58 acceptsGlyphInfo as boolean

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the receiver accepts the glyph info attribute. **Notes:** True if the receiver should accept the NSGlyphInfoAttributeName attribute from text input sources such as input methods and the pasteboard, false otherwise. (Read and Write property)

#### 33.61.59 allowsDocumentBackgroundColorChange as boolean

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets whether the receiver allows its background color to change. **Notes:** This corresponds to the background color of the entirety of the text view, not just to a selected range of text. (Read and Write property)
33.61.60  allowsImageEditing as boolean

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether image attachments should permit editing of their images.
**Notes:**
True if image editing is allowed; otherwise, false.

For image editing to be allowed, the text view must be editable and the text attachment cell must support image editing.

Available in Mac OS X v10.5 and later.
(Read and Write property)

33.61.61  allowsUndo as boolean

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether undo support is enabled.
**Notes:** (Read and Write property)

33.61.62  AutomaticDashSubstitutionEnabled as boolean

MBS MacCocoa Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether automatic dash substitution is enabled.
**Notes:**
Turning on automatic dash substitution enables automatic conversion of sequences of ASCII hyphen (-) characters to typographic dashes.
Available in Mac OS X v10.6 and later.
(Read and Write property)

33.61.63  AutomaticDataDetectionEnabled as boolean

MBS MacCocoa Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether automatic data detection is enabled.
**Notes:**
Automatic data detection enables detection of dates, addresses, and phone numbers.
Available in Mac OS X v10.6 and later.
(Read and Write property)
33.61.64  AutomaticLinkDetectionEnabled as boolean

Notes:
If true, automatic link detection is enabled; if false, it is disabled.
Automatic link detection causes strings representing URLs typed in the view to be automatically made into links to those URLs.
Available in Mac OS X v10.5 and later.
(Read and Write property)

33.61.65  AutomaticQuoteSubstitutionEnabled as boolean

Notes:
True if automatic quotation mark substitution is enabled; otherwise, false.
Automatic quote substitution causes ASCII quotation marks and apostrophes to be automatically replaced, on a context-dependent basis, with more typographically accurate symbols.
Available in Mac OS X v10.5 and later.
(Read and Write property)

33.61.66  AutomaticSpellingCorrectionEnabled as boolean

Notes:
Available in Mac OS X v10.6 and later.
(Read and Write property)
33.61.67 AutomaticTextReplacementEnabled as boolean

**Function:** Whether automatic text replacement is enabled. 
**Notes:**  
Turning on automatic text replacement enables automatic substitution of a variety of static text items based on user preferences. 
Available in Mac OS X v10.6 and later.  
(Read and Write property)

33.61.68 backgroundColor as NSColorMBS

**Function:** The background color.  
**Notes:** (Read and Write property)

33.61.69 Bold as Boolean

**Function:** Whether the current typing uses a bold font.  
**Example:**
```
// some textview
dim textview as NSTextView = TextArea1.NSTextViewMBS

// switch to bold font
textview.Bold = true
```

**Notes:**  
You can set this to continue typing with/without bold or change current selection.  
Can only provide bold if the font supports it.  
(Read and Write property)

33.61.70 ContinuousSpellCheckingEnabled as boolean

**Function:** Whether the receiver has continuous spell checking enabled.  
**Notes:**
True if the receiver has continuous spell checking enabled, otherwise, false.

(Read and Write property)

### 33.61.71 defaultParagraphStyle as Variant

**Function:** Gets or sets the receiver’s default paragraph style.
**Notes:**
Use with NSParagraphStyleMBS class.
(Read and Write property)

### 33.61.72 displaysLinkToolTips as boolean

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the text view automatically supplies the destination of a link as a tooltip for text that has a link attribute.
**Notes:**
True if link tooltips are automatically displayed; otherwise, false.

The default value for this feature is true; clients who do not wish tooltips to be displayed automatically must explicitly disable it.

Available in Mac OS X v10.5 and later.
(Read and Write property)

### 33.61.73 enabledTextCheckingTypes as Int64

MBS MacCocoa Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The default text checking types.
**Notes:**
Available in Mac OS X v10.6 and later.

Can be NSTextCheckingAllSystemTypes (& hffffffff) or NSTextCheckingAllCustomTypes (& hffffffff00000000) or NSTextCheckingAllTypes (& hfffffffffffff).
(Read and Write property)
33.61.74 GrammarCheckingEnabled as boolean

**Function:** Whether or not grammar checking is enabled.
**Notes:**
Available on Mac OS X 10.5 or newer.
If grammar checking is enabled, then it is performed alongside spell checking, whenever the text view checks spelling, whether continuously or manually.
(Read and Write property)

33.61.75 insertionPointColor as NSColorMBS

**Function:** The color used to draw the insertion point.
**Notes:** (Read and Write property)

33.61.76 isCoalescingUndo as boolean

**Function:** Returns whether undo coalescing is in progress.
**Notes:**
True if undo coalescing is in progress, otherwise false.
Available in OS X v10.6 and later.
(Read only property)

33.61.77 Italic as Boolean

**Function:** Whether the current typing uses a italic font.
**Example:**
```/Objective-C
// some textview
dim textview as NSTextView = TextArea1.NSTextViewMBS

// switch to italic font
textview.Italic = true
```
**Notes:**
You can set this to continue typing with/without italic or change current selection.
Can only provide italic if the font supports it.
(Read and Write property)

33.61.78  layoutManager as NSLayoutManagerMBS

Function: Returns the layout manager that lays out text for the receiver’s text container.
Notes:
The layout manager that lays out text for the receiver’s text container, or nil if there’s no such object, such
as when a text view isn’t linked into a group of text objects.
(Read only property)

33.61.79  linkTextAttributes as dictionary

Function: Gets and sets the attributes used to draw the onscreen presentation of link text.
Notes:
A dictionary of attributes corresponding to the onscreen presentation of link text.
Link text attributes are applied as temporary attributes to any text with a link attribute. Candidates include
those attributes that do not affect layout.
In applications created prior to OS X v10.3, the default value is an empty dictionary. In applications created
with OS X v10.3 or greater, the default attributes specify blue text with a single underline and the pointing
hand cursor.
(Read and Write property)

33.61.80  markedTextAttributes as dictionary

Function: Gets or sets the attributes used to draw marked text.
Notes:
A dictionary of attributes used to draw marked text. Text color, background color, and underline are the
only supported attributes for marked text.
(Read and Write property)
33.61.81 RTFData as Memoryblock

Function: Get or set the textview content as RTF data.
Notes:
Works only for Cocoa and uses RTF parser/generator from Apple.
(Read and Write property)

33.61.82 RulerVisible as boolean

Function: Whether the scroll view enclosing the text views sharing the receiver’s layout manager shows its ruler.
Notes:
True if the scroll view enclosing the text views sharing the receiver’s layout manager shows its ruler, false otherwise. The default is false.
(Read and Write property)

33.61.83 selectedTextAttributes as dictionary

Function: Gets or sets the attributes used to indicate the selection.
Example:

```plaintext
// underline selected text in TextArea1

dim t as NSTextViewMBS = TextArea1.NSTextViewMBS
dim s as NSTextStorageMBS = t.textStorage

dim d as Dictionary = t.selectedTextAttributes
d.Value(NSAttributedStringMBS.NSStrikethroughStyleAttributeName) = s.NSUnderlineStyleSingle

t.selectedTextAttributes = d
```

Notes:
A dictionary of attributes used to indicate the selection. Text color, background color, and underline are the only supported attributes for selected text.
(Read and Write property)
33.61. **CLASS NSTEXTVIEWMBS**

### 33.61.84 smartInsertDeleteEnabled as boolean

MBS MacCocoa Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the view inserts or deletes space around selected words so as to preserve proper spacing and punctuation. **Notes:** (Read and Write property)

### 33.61.85 spellCheckerDocumentTag as Integer

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a tag identifying the text view’s text as a document for the spell checker server. **Notes:** The document tag is obtained by sending a uniqueSpellDocumentTag message to the spell server the first time this method is invoked for a particular group of text views. See the NSSpellChecker and NSSpellServer class specifications for more information on how this tag is used. (Read only property)

### 33.61.86 textContainer as NSTextContainerMBS

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The text container. **Notes:** The receiver uses the layout manager and text storage of aTextContainer. **Special Considerations** This method is invoked automatically when you create a text view; you should never invoke it directly, but might want to override it. To change the text view for an established group of text system objects, use TextView setter on the text container. To replace the text container for a text view and maintain the view’s association with the existing layout manager and text storage, use replaceTextContainer. (Read and Write property)

### 33.61.87 textContainerInset as NSSizeMBS

MBS MacCocoa Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The empty space the receiver leaves around its text container. **Example:**

```
dim n as NSTextViewMBS = TextArea1.NSTextViewMBS
n.textContainerInset = NSMakeSizeMBS(-3,0)
```
Notes:
It is possible to set the text container and view sizes and resizing behavior so that the inset cannot be maintained exactly, although the text system tries to maintain the inset wherever possible. In any case, the textContainerOrigin and size of the text container are authoritative as to the location of the text container within the view.

The text itself can have an additional inset, inside the text container, specified by the setLineFragmentPadding method of NSTextContainer.
(Read and Write property)

33.61.88 textContainerOrigin as NSPointMBS

Function: Returns the origin of the receiver’s text container.
Notes:
The origin of the receiver’s text container, which is calculated from the receiver’s bounds rectangle, container inset, and the container’s used rect.
(Read only property)

33.61.89 textStorage as NSTextStorageMBS

Function: Returns the receiver’s text storage object.
Example:
// load rtfd file into textarea
dim file as FolderItem = SpecialFolder.Desktop.Child("test.rtfd")
dim n as NSAttributedStringMBS = NSAttributedStringMBS.attributedStringWithPath(file)
dim t as NSTextViewMBS = TextArea1.NSTextViewMBS
  t.textStorage.setAttributedString(n)

Notes: (Read only property)
33.61.90 typingAttributes as dictionary

**Function:** Get or set typing attributes.  
**Notes:**  
Typing attributes are reset automatically whenever the selection changes. However, if you add any user actions that change text attributes, the action should use this method to apply those attributes afterwards. User actions that change attributes should always set the typing attributes because there might not be a subsequent change in selection before the next typing.  
(Read and Write property)

33.61.91 usesFindPanel as boolean

**Function:** Whether the receiver allows for a find panel.  
**Notes:** (Read and Write property)

33.61.92 usesFontPanel as boolean

**Function:** Controls whether the text views sharing the receiver’s layout manager use the Font panel and Font menu.  
**Notes:** (Read and Write property)

33.61.93 usesInspectorBar as Boolean

**Function:** Whether this text view uses the inspector bar.  
**Example:**

```vbnet
dim t as NSTextViewMBS = textarea1.NSTextViewMBS  
t.usesInspectorBar = true
```

**Notes:**  
Available in OS X v10.7 and later.  
(Read and Write property)
33.61.94 usesRuler as boolean

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the text views sharing the receiver’s layout manager use a ruler.

**Notes:**

True to cause text views sharing the receiver’s layout manager to respond to NSRulerView client messages and to paragraph-related menu actions, and update the ruler (when visible) as the selection changes with its paragraph and tab attributes, otherwise false.

Text views must use a ruler to respond to Format menu commands. If a set of text views don’t use the ruler, the ruler is hidden, and the text views disallow paragraph attribute changes. By default, text view objects use the ruler.

(Read and Write property)

33.61.95 Events

33.61.96 shouldChangeTextInRange(affectedCharRange as NSRangeMBS, replacementString as string) as boolean

MBS MacCocoa Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sent when a text view needs to determine if text in a specified range should be changed.

**Notes:**

affectedCharRange: The range of characters to be replaced.
replacementString: The characters that will replace the characters in affectedCharRange; nil if only text attributes are being changed.

Return true to allow the replacement, or false to reject the change.

See also:

• 33.61.32 shouldChangeTextInRange(affectedCharRange as NSRangeMBS, replacementString as string = "") as Boolean

33.61.97 textViewDidChangeSelection

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sent when the selection changes in the text view.
33.61. CLASS NSTEXTVIEWMBS

33.61.98 Constants

33.61.99 NSFindPanelSubstringMatchTypeContains=0

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants to specify the type of substring matching used by the Find panel.

**Notes:**
Finds a word containing the search string.
Available in Mac OS X v10.5 and later.

33.61.100 NSFindPanelSubstringMatchTypeEndsWith=3

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants to specify the type of substring matching used by the Find panel.

**Notes:**
Finds a word ending with the search string.
Available in Mac OS X v10.5 and later.

33.61.101 NSFindPanelSubstringMatchTypeFullWord=2

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants to specify the type of substring matching used by the Find panel.

**Notes:**
Finds a word exactly matching the search string.
Available in Mac OS X v10.5 and later.

33.61.102 NSFindPanelSubstringMatchTypeStartsWith=1

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants to specify the type of substring matching used by the Find panel.

**Notes:**
Finds a word starting with the search string.
Available in Mac OS X v10.5 and later.
33.61.103  **NSSelectByCharacter=0**

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants to specify how much the text view extends the selection when the user drags the mouse.  
**Notes:** Extends the selection character by character.

33.61.104  **NSSelectByParagraph=2**

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants to specify how much the text view extends the selection when the user drags the mouse.  
**Notes:** Extends the selection paragraph by paragraph.

33.61.105  **NSSelectByWord=1**

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants to specify how much the text view extends the selection when the user drags the mouse.  
**Notes:** Extends the selection word by word.
33.61. NSSelectionAffinityDownstream=1

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants to specify the preferred direction of selection.
**Notes:** The selection is moving toward the bottom of the document.

33.61.107 NSSelectionAffinityUpstream=0

MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the constants to specify the preferred direction of selection.
**Notes:** The selection is moving toward the top of the document.
33.62 control NSTokenFieldControlMBS

33.62.1 control NSTokenFieldControlMBS

MBS MacControls Plugin, Plugin Version: 15.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The control to host a NSTokenField.

33.62.2 Properties

33.62.3 View as NSTokenFieldMBS

MBS MacControls Plugin, Plugin Version: 15.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The view used for the control.
Notes: (Read only property)

33.62.4 Events

33.62.5 BoundsChanged

Function: The event called when the bounds, but not the frame, changed.

33.62.6 completionsForSubstring(substring as string, tokenIndex as Integer, byref selectedIndex as Integer) as Variant()

MBS MacControls Plugin, Plugin Version: 15.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Allows the delegate to provide an array of appropriate completions for the contents of the receiver.
Notes:
substring: The partial string that is to be completed.
tokenIndex: The index of the token being edited.
selectedIndex: Optionally, you can return by-reference an index into the returned array that specifies which of the completions should be initially selected. If none are to be selected, return by reference -1.

Returns an array of strings that are possible completions.

If the delegate does not implement this method, no completions are provided.
Available in OS X v10.4 and later.
33.62.7  **displayStringForRepresentedObject(representedObject as Variant) as string**

MBS MacControls Plugin, Plugin Version: 15.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.  
**Function:** Allows the delegate to provide a string to be displayed as a proxy for the given represented object.  
**Notes:**

representedObject: A represented object of the token field.

Returns the string to be used as a proxy for representedObject. If you return nil or do not implement this method, then representedObject is displayed as the string.

33.62.8  **editingStringForRepresentedObject(representedObject as Variant) as string**

MBS MacControls Plugin, Plugin Version: 15.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.  
**Function:** Allows the delegate to provide a string to be edited as a proxy for a represented object.  
**Notes:**

representedObject: A represented object of the token field.

Returns a string that’s an editable proxy of the represented object, or nil if the token should not be editable.

33.62.9  **EnableMenuItems**

**Function:** The event where you can enable menu items.

33.62.10  **FrameChanged**

**Function:** The event called when the frame changed.

33.62.11  **GotFocus**

**Function:** The control itself got focus.
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Notes: This only fires if the control itself got focus and not a sub control.

33.62.12 hasMenuForRepresentedObject(representedObject as Variant) as boolean

MBS MacControls Plugin, Plugin Version: 15.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Allows the delegate to specify whether the given represented object provides a menu.
Notes:

representedObject: A represented object of the token field.

Returns true if the represented object has a menu, false otherwise.
By default tokens in a token field have no menus.

33.62.13 LostFocus

Function: The control lost focus.
Notes: This only fires if the control itself lost focus and not a sub control.

33.62.14 MenuAction(HitItem as MenuItem) As Boolean

Function: Called when a menuitem is choosen.
Notes: This allows the control to react on its relevant menu items. Please return true if you handled it or false to give others a chance.

33.62.15 menuForRepresentedObject(representedObject as Variant) as NSMenuMBS

MBS MacControls Plugin, Plugin Version: 15.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Allows the delegate to provide a menu for the specified represented object.
Notes:

representedObject: A represented object of the token field.

Returns the menu associated with the represented object.
By default tokens in a token field do not return menus.
33.62.16 MouseDown(x as Integer, y as Integer, Modifiers as Integer) As Boolean

Function: The mouse button was pressed inside the controls region at the location passed in to x, y.
Notes:
The coordinates x and y are local to the control, i.e. they represent the position of the mouse click relative to the upper-left corner or the Control.
Return True if you are going to handle the MouseDown. In such a case:

• The Action event, if any, will not execute and the state of the object will not change.
• You will receive the MouseDrag and MouseUp events.

If you return False, the system handles the MouseDown so the above event handlers do not get called.

33.62.17 MouseDrag(x as Integer, y as Integer)

Function: This event fires continuously after the mouse button was pressed inside the Control.
Notes:
Mouse location is local to the control passed in to x, y.
As this event is fired continuously (hundreds of time per second), it is your responsibility to determine if the mouse has really moved.

33.62.18 MouseUp(x as Integer, y as Integer)

Function: The mouse button was released.
Notes: Use the x and y parameters to determine if the mouse button was released within the control's boundaries.

33.62.19 readFromPasteboard(pboard as NSPasteboardMBS) as Variant()

MBS MacControls Plugin, Plugin Version: 15.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Allows the delegate to return an array of objects representing the data read from the specified pasteboard.
Notes:
pboard: The pasteboard from which to read the represented objects.
Returns an array of represented objects created from the pasteboard data.

**33.62.20**  
representedObjectForEditingString(editingString as string) as Variant

MBS MacControls Plugin, Plugin Version: 15.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.  
**Function:** Allows the delegate to provide a represented object for the given editing string.  
**Notes:**  
editingString: The edited string representation of a represented object.  
Returns a represented object that is displayed rather than the editing string.  

Note: In OS X v10.4, NSTokenField trims whitespace around tokens but it does not trim whitespace in OS X versions 10.5.0 and 10.5.1. In OS X v10.5.2, you get whitespace-trimming behavior by either linking against the v10.4 binary or linking against the v10.5 binary and not implementing this method. If you do not want the whitespace-trimming behavior, link against the v10.5 binary and implement this method, returning the editing string if you have no represented object.

**33.62.21**  
ScaleFactorChanged(NewFactor as Double)

**Function:** The backing store scale factor has changed.  
**Notes:** Please invalidate any cached bitmaps or other relevant state.

**33.62.22**  
shouldAddObjects(tokens() as Variant, index as Integer) as Variant()

MBS MacControls Plugin, Plugin Version: 15.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.  
**Function:** Allows to validate the tokens to be added to the receiver at a particular location.  
**Notes:**  
tokens: An array of tokens to be inserted in the receiver at index.  
index: The index of the receiver in which the array of tokens to be validated (tokens) will be inserted.  
Returns an array of validated tokens.  

The event can return the array unchanged or return a modified array of tokens. To reject the add completely, return an empty array. Returning nil causes an error.
### 33.62.23 `styleForRepresentedObject(representedObject as Variant) as Integer`

MBS MacControls Plugin, Plugin Version: 15.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.

**Function:** Allows the delegate to return the token style for editing the specified represented object.

**Notes:**
- `representedObject`: A represented object of the token field.

Returns the style that should be used to display the `representedObject`. Possible values are shown in `NSTokenStyle` Values.

If the event implements this method and returns an `NSTokenStyle` that differs from the style set by `setTokenStyle:`, the value the event returns is preferred.

If you don’t implement this method, the token field’s `tokenStyle` is used.

### 33.62.24 `TextDidBeginEditing(fieldEditor as NSTextMBS, notification asNSNotificationMBS)`

MBS MacControls Plugin, Plugin Version: 15.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.

**Function:** Sent when a control with editable text begins an editing session.

**Notes:**
- `Notification`: The notification object. The name of the notification is always `NSControlTextDidBeginEditingNotification`.

This event is invoked when the user begins editing text in a control such as a text field or a form field. The control posts a `NSControlTextDidBeginEditingNotification` notification, and if the control’s subclass implements this event, it is automatically registered to receive the notification. The field editor is also delivered for inspection.

See `TextDidEndEditing` for an explanation of why you may not always get one invocation of `TextDidBeginEditing` for each invocation of `TextDidEndEditing`.

### 33.62.25 `TextDidChange(fieldEditor as NSTextMBS, notification as NotificationMBS)`

MBS MacControls Plugin, Plugin Version: 15.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.

**Function:** Sent when the text in the receiving control changes.

**Notes:**
- `Notification`: The notification object. The name of the notification is always `NSControlTextDidChangeNotification`.

This event is invoked when the user edits text in a control such as a text field or a form field. The control posts a `NSControlTextDidChangeNotification` notification, and if the control’s subclass implements this event, it is automatically registered to receive the notification. The field editor is also delivered for inspection.
This event is invoked when text in a control such as a text field or form changes. The control posts a NSControlTextDidChangeNotification notification, and if the control’s subclass implements this event, it is automatically registered to receive the notification. The field editor is provided as parameter for inspection.

33.62.26 TextDidEndEditing(fieldEditor as NSTextMBS, notification as NSNotificationMBS)

MBS MacControls Plugin, Plugin Version: 15.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Sent when a control with editable text ends an editing session.
Notes:
Notification: The notification object. The name of the notification is always NSControlTextDidEndEditing-Notification.

This event is invoked when the user stops editing text in a control such as a text field or form. The control posts a NSControlTextDidEndEditingNotification notification, and if the control’s subclass implements this event, it is automatically registered to receive the notification. The field editor is also provided for inspection.

Warning: In some cases, such as when editing within an instance of NSOutlineView, this method may be invoked without a previous invocation of TextDidBeginEditing. You will only get the TextDidBeginEditing: notification if the user actually types something, but you can get the TextDidEndEditing notification if the user just double-clicks the field and then clicks outside the field, without typing.

33.62.27 textShouldBeginEditing(fieldEditor as NSTextMBS) as boolean

MBS MacControls Plugin, Plugin Version: 15.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The event called to decide whether text editing should be allowed.
Notes:
Return true to allow text editing or false to deny.
Be aware that an event in Xojo without return will cause false to be returned.

33.62.28 textShouldEndEditing(fieldEditor as NSTextMBS) as boolean

MBS MacControls Plugin, Plugin Version: 15.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The event called to decide whether ending text editing should be allowed.
Notes:
Return true to allow end of text editing or false to deny.
Be aware that an event in Xojo without return will cause false to be returned.

### 33.62.29 tokenFieldAction

MBS MacControls Plugin, Plugin Version: 15.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.

**Function:** The control’s action was triggered.

**Notes:** For a button if it was pressed.

### 33.62.30 tokenFieldTextShouldBeginEditing(fieldEditor as NSTextMBS) as boolean

MBS MacControls Plugin, Plugin Version: 15.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.

**Function:** The event called to decide whether text editing should be allowed.

**Notes:** Return true to allow text editing.

### 33.62.31 tokenFieldTextShouldEndEditing(fieldEditor as NSTextMBS) as boolean

MBS MacControls Plugin, Plugin Version: 15.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.

**Function:** The event called to decide whether ending text editing should be allowed.

**Notes:** Return true to allow text editing.

### 33.62.32 writeRepresentedObjects(objects() as Variant, pboard as NSPasteboardMBS) as boolean

MBS MacControls Plugin, Plugin Version: 15.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.

**Function:** Sent so the delegate can write represented objects to the pasteboard corresponding to a given array of display strings.

**Notes:**

- **objects:** An array of represented objects associated with the token field.
- **pboard:** The pasteboard to which to write the represented objects.

Return true if you writes the represented objects to the pasteboard, false otherwise. If false, the token field writes the display strings to the NSStringPboardType pasteboard.
33.63 control NSViewControlMBS

33.63.1 control NSViewControlMBS

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The control to host a generic NSView.

33.63.2 Properties

33.63.3 View as NSViewMBS

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The view used in the control.
Notes:
Use this object to set more options on the control.
(Read only property)

33.63.4 Events

33.63.5 acceptsFirstMouse(e as NSEventMBS) as boolean

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Overridden by subclasses to return true if the receiver should be sent a mouseDown event for an
initial mouse-down event, false if not.
Notes:
The receiver can either return a value unconditionally or use the location of event e to determine whether
or not it wants the event. The default implementation ignores the event and returns false.

Implement this event in a subclass to allow instances to respond to click-through. This allows the user to
click on a view in an inactive window, activating the view with one click, instead of clicking first to make the
window active and then clicking the view. Most view objects refuse a click-through attempt, so the event
simply activates the window. Many control objects, however, such as instances of NSButton and NSSlider, do
accept them, so the user can immediately manipulate the control without having to release the mouse button.

33.63.6 acceptsFirstResponder as boolean

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Whether to accept first responder.
33.63. CONTROL NSVIEWCONTROLMBS

Notes: Return true if your control can have the focus and false if not.

33.63.7 becomeFirstResponder as boolean

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Called when the object gets focus.
Notes: Return true to accept.

33.63.8 beginGestureWithEvent(e as NSEventMBS) as boolean

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Informs the receiver that the user has begun a touch gesture.
Notes:
e: An event object representing the gesture beginning.
The event will be sent to the view under the touch in the key window.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.

33.63.9 canBecomeKeyView as boolean

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Returns whether the receiver can become key view.
Notes: Returns true if the receiver can become key view, false otherwise.

33.63.10 Close

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The event called when the custom view is destroyed.

33.63.11 concludeDragOperation(sender as NSDraggingInfoMBS)

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Invoked when the dragging operation is complete, signaling the receiver to perform any necessary clean-up.
Notes:
sender: The object sending the message; use it to get details about the dragging operation.
For this method to be invoked, the previous `performDragOperation` must have returned `true`.

The destination implements this method to perform any tidying up that it needs to do, such as updating its visual representation now that it has incorporated the dragged data. This message is the last message sent from sender to the destination during a dragging session.

If the sender object’s `animatesToDestination` property was set to `true` in `prepareForDragOperation`, then the drag image is still visible. At this point you should draw the final visual representation in the view. When this method returns, the drag image is removed from the screen. If your final visual representation matches the visual representation in the drag, this is a seamless transition.

### 33.63.12 `draggingEnded(sender as NSDraggingInfoMBS)`

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.

**Function:** Implement this event to be notified when a drag operation ends in some other destination.

**Notes:**

sender: The object sending the message; use it to get details about the dragging operation.

This method might be used by a destination doing auto-expansion in order to collapse any auto-expands.

### 33.63.13 `draggingEntered(sender as NSDraggingInfoMBS) as Integer`

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.

**Function:** Invoked when the dragged image enters destination bounds or frame; delegate returns dragging operation to perform.

**Notes:**

sender: The object sending the message; use it to get details about the dragging operation.

Return one (and only one) of the dragging operation constants described in `NSDragOperation` in the `NSDraggingInfo` reference. The default return value (if this method is not implemented by the destination) is the value returned by the previous `draggingEntered` message.

Invoked when a dragged image enters the destination but only if the destination has registered for the pasteboard data type involved in the drag operation. Specifically, this method is invoked when the mouse pointer enters the destination’s bounds rectangle (if it is a view object) or its frame rectangle (if it is a window object).

This method must return a value that indicates which dragging operation the destination will perform when the image is released. In deciding which dragging operation to return, the method should evaluate the overlap between both the dragging operations allowed by the source (obtained from sender with the drag-
gingSourceOperationMask method) and the dragging operations and pasteboard data types the destination itself supports.

If none of the operations is appropriate, this method should return NSDragOperationNone (this is the default response if the method is not implemented by the destination). A destination will still receive draggingUpdated and draggingExited even if NSDragOperationNone is returned by this method.

33.63.14 draggingExited(sender as NSDraggingInfoMBS)

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Invoked when the dragged image exits the destination's bounds rectangle (in the case of a view object) or its frame rectangle (in the case of a window object).
Notes: sender: The object sending the message; use it to get details about the dragging operation.

33.63.15 draggingSessionEndedAtPoint(session as NSDraggingSessionMBS, screenPoint as NSPointMBS, operation as Integer)

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Invoked when the dragging session has completed.
Notes:
session: The dragging session.
screenPoint: The point where the drag ended, in screen coordinates.
operation: The drag operation. See constants for drag operation types.

Available in OS X v10.7 and later.

33.63.16 draggingSessionMovedToPoint(session as NSDraggingSessionMBS, screenPoint as NSPointMBS)

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Invoked when the drag moves on the screen.
Notes:
session: The dragging session.
screenPoint: The point where the drag moved to, in screen coordinates.

Available in OS X v10.7 and later.
33.63.17  draggingSessionSourceOperationMaskForDraggingContext(session as NSDraggingSessionMBS, context as Integer) as Integer

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.  
**Function:** Declares the types of operations the source allows to be performed. (required)  
**Notes:**  
session: The dragging session.  
context: The dragging context. See NSDraggingContext constants for the supported values.  

Return the appropriate dragging operation as defined in constants.  

In the future Apple may provide more specific "within" values in the future. To account for this, for unrecognized localities, return the operation mask for the most specific context that you are concerned with.

33.63.18  draggingSessionWillBeginAtPoint(session as NSDraggingSessionMBS, screenPoint as NSPointMBS)

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.  
**Function:** Invoked when the drag will begin.  
**Notes:**  
session: The dragging session.  
screenPoint: The point where the drag will begin, in screen coordinates.  

Available in OS X v10.7 and later.

33.63.19  draggingSourceOperationMaskForLocal(flag as boolean) as Integer

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.  
**Function:** Returns an integer bit mask indicating the types of dragging operations the source object will allow to be performed on the dragged image’s data.  
**Notes:**  
(flag as boolean) as Integer  
(isLocal: True indicates that the candidate destination object (the window or view over which the dragged image is currently poised) is in the same application as the source, while a false value indicates that the destination object is in a different application.  

( Deprecated in OS X v10.7. This method is informally deprecated. It is only called if the source does not implement the NSDraggingSource protocol methods. This method will be formally deprecated in a future OS release.)
A mask, created by combining the dragging operations listed in the NSDragOperation section of NSDraggingInfo protocol reference using the C bitwise OR operator. If the source does not permit any dragging operations, it should return NSDragOperationNone.

If not implemented, the default value is NSDragOperationCopy | NSDragOperationLink | NSDragOperationGeneric | NSDragOperationPrivate.

Available in OS X v10.0 and later. Deprecated in OS X v10.7.

**33.63.20 draggingUpdated(sender as NSDraggingInfoMBS) as Integer**

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.

Function: Invoked periodically as the image is held within the destination area, allowing modification of the dragging operation or mouse-pointer position.

Notes:

sender: The object sending the message; use it to get details about the dragging operation.

Return one (and only one) of the dragging operation constants described in NSDragOperation in the NSDraggingInfo reference. The default return value (if this method is not implemented by the destination) is the value returned by the previous draggingEntered message.

For this to be invoked, the destination must have registered for the pasteboard data type involved in the drag operation. The messages continue until the image is either released or dragged out of the window or view.

This method provides the destination with an opportunity to modify the dragging operation depending on the position of the mouse pointer inside of the destination view or window object. For example, you may have several graphics or areas of text contained within the same view and wish to tailor the dragging operation, or to ignore the drag event completely, depending upon which object is underneath the mouse pointer at the time when the user releases the dragged image and the performDragOperation method is invoked.

You typically examine the contents of the pasteboard in the draggingEntered method, where this examination is performed only once, rather than in the draggingUpdated method, which is invoked multiple times.

Only one destination at a time receives a sequence of draggingUpdated messages. If the mouse pointer is within the bounds of two overlapping views that are both valid destinations, the uppermost view receives these messages until the image is either released or dragged out.
33.63.21 drawFocusRingMask(g as NSGraphicsMBS) as boolean

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Draw the focus ring mask for the view.
Notes:
If false is returned, the default method from NSView class runs.

This method provides the shape of the focus ring mask by drawing the focus ring mask. An implementation of this method should draw in the view's interior (bounds) coordinate space, that the focus ring style has been set (it will be set it to NSFocusRingOnly to capture the focus ring itself), and that the fill and stroke colors have been set to an arbitrary fully opaque color.

Subclasses that find the default behavior insufficient should only draw the focus ring shape.

The NSView default implementation of this method simply fills self.bounds.
Available in Mac OS X v10.7 and later.

Please use NSGraphicsMBS class for drawing.

33.63.22 DrawRect(g as NSGraphicsMBS, left as Double, top as Double, width as Double, height as Double)

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The paint event with the rectangle which needs to be redrawn.

33.63.23 EnableMenuItems

Function: The event where you can enable menu items.

33.63.24 endGestureWithEvent(e as NSEventMBS) as boolean

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Informs the receiver that the user has ended a touch gesture.
Notes:
e: An event object representing the gesture end.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.

### 33.63.25 focusRingMaskBounds as NSRectMBS

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.

**Function:** Returns the focus ring mask bounds.

**Notes:**

Return nil to run default NSView method.

Return a rectangle containing the mask in the view’s interior (bounds) coordinate space.

The mask bounds allows the focus ring’s overall size and position to be determined before it is drawn. Subclasses must override this method if they require the display of a focus ring. The NSView default implementation of this method simply returns NSRectMBS.Zero.

Note: The information provided by focusRingMaskBounds will enable Accessibility to identify selected subelements for zoom tracking, so it is important that this method provide a reasonably tight bounding box and that noteFocusRingMaskChanged is invoked as described.

### 33.63.26 ignoreModifierKeysForDraggingSession(session as NSDraggingSessionMBS) as boolean

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.

**Function:** Returns whether the modifier keys will be ignored for this dragging session.

**Notes:**

session: The dragging session.

Return true if the modifier keys will be ignored, false otherwise. Available in OS X v10.7 and later.

### 33.63.27 isOpaque as boolean

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.

**Function:** Whether this view is opaque.
### 33.63.28 keyDown(e as NSEventMBS) as boolean

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
**Function:** One of the key events.
**Notes:**
Return true if you handled this event.
Please return true in becomeFirstResponder and acceptsFirstResponder, so your nsview can become first responder and receive key events.

### 33.63.29 keyUp(e as NSEventMBS) as boolean

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
**Function:** One of the key events.
**Notes:**
Return true if you handled this event.
Please return true in becomeFirstResponder and acceptsFirstResponder, so your nsview can become first responder and receive key events.

### 33.63.30 magnifyWithEvent(e as NSEventMBS) as boolean

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
**Function:** Informs the receiver that the user has begun a pinch gesture.
**Notes:**
e: An event object representing the magnify gesture.
The event will be sent to the view under the touch in the key window.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.

### 33.63.31 MenuAction(HitItem as MenuItem) As Boolean

**Function:** Called when a menuitem is choosen.
**Notes:** This allows the control to react on its relevant menu items. Please return true if you handled it or false to give others a chance.
33.63.32  menuForEvent(e as NSEventMBS, defaultMenu as NSMenuMBS) as NSMenuMBS

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Overridden by subclasses to return a context-sensitive pop-up menu for a given mouse-down event.
Notes: theEvent: An object representing a mouse-down event.
defaultMenu: The menu as constructed by super class.

The receiver can use information in the mouse event, such as its location over a particular element of the receiver, to determine what kind of menu to return. For example, a text object might display a text-editing menu when the cursor lies over text and a menu for changing graphics attributes when the cursor lies over an embedded image.

The default implementation returns the default menu.

33.63.33  mouseDown(e as NSEventMBS, x as Double, y as Double) as boolean

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: One of the mouse events.
Notes: Return true if you handled this event.

33.63.34  mouseDownCanMoveWindow as boolean

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: This event is called so you can decide what happens with mouse down.
Notes: Return true if you do not need to handle a mouse down and it can pass through to superviews; False if you need to handle the mouse down.

This allows iApp-type applications to determine the region by which a window can be moved. By default, this method returns false if the view is opaque; otherwise, it returns true. Subclasses can override this method to return a different value.

33.63.35  mouseDragged(e as NSEventMBS, x as Double, y as Double) as boolean

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: One of the mouse events.
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Notes: Return true if you handled this event.

33.63.36  mouseEntered(e as NSEventMBS, x as Double, y as Double) as boolean

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: One of the mouse events.
Notes: Return true if you handled this event.

33.63.37  mouseExited(e as NSEventMBS, x as Double, y as Double) as boolean

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: One of the mouse events.
Notes: Return true if you handled this event.

33.63.38  mouseMoved(e as NSEventMBS, x as Double, y as Double) as boolean

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: One of the mouse events.
Notes: Return true if you handled this event.

33.63.39  mouseUp(e as NSEventMBS, x as Double, y as Double) as boolean

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: One of the mouse events.
Notes: Return true if you handled this event.

33.63.40  Open

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The event called when the custom NSView is created.

33.63.41  otherMouseDown(e as NSEventMBS, x as Double, y as Double) as boolean

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: One of the mouse events.
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Notes:

Return true if you handled this event.
Third mouse button.

33.63.42 otherMouseDragged(e as NSEventMBS, x as Double, y as Double) as boolean

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: One of the mouse events.
Notes:

Return true if you handled this event.
Third mouse button.

33.63.43 otherMouseUp(e as NSEventMBS, x as Double, y as Double) as boolean

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: One of the mouse events.
Notes:

Return true if you handled this event.
Third mouse button.

33.63.44 performDragOperation(sender as NSDraggingInfoMBS) as boolean

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Invoked after the released image has been removed from the screen, signaling the receiver to import the pasteboard data.
Notes:

sender: The object sending the message; use it to get details about the dragging operation.

Return if the destination accepts the data, it returns true; otherwise it returns false. The default is to return false.

For this method to be invoked, the previous prepareForDragOperation message must have returned true. The destination should implement this method to do the real work of importing the pasteboard data represented by the image.

If the sender object’s animatesToDestination was set to true in prepareForDragOperation, then setup any
animation to arrange space for the drag items to animate to. Also at this time, enumerate through the
dragging items to set their destination frames and destination images.

### 33.63.45 `prepareForDragOperation(sender as NSDraggingInfoMBS) as boolean`

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
**Function:** Invoked when the image is released, allowing the receiver to agree to or refuse drag operation.
**Notes:**
- `sender`: The object sending the message; use it to get details about the dragging operation.
- Returns true if the receiver agrees to perform the drag operation and false if not.
- This method is invoked only if the most recent draggingEntered or draggingUpdated message returned an
acceptable drag-operation value.
- If you want the drag items to animate from their current location on screen to their final location in your
view, set the sender object's animatesToDestination property to true in your implementation of this method.

### 33.63.46 `pressureChange(e as NSEventMBS) as boolean`

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Informs the current object that a pressure change occurred on a system that supports pressure
sensitivity.
**Notes:**
- This method is invoked automatically in response to user actions. `event` is the event that initiated the change
in pressure.
- Available in OS X v10.10.3 and later.

### 33.63.47 `resignFirstResponder as boolean`

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
**Function:** Focus is going away.
**Notes:** Return true to accept.

### 33.63.48 `rightMouseDown(e as NSEventMBS, x as Double, y as Double) as boolean`

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
**Function:** One of the mouse events.
**Notes:** Return true if you handled this event.
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33.63.49  **rightMouseDragged(e as NSEventMBS, x as Double, y as Double) as boolean**

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
**Function**: One of the mouse events.
**Notes**: Return true if you handled this event.

33.63.50  **rightMouseUp(e as NSEventMBS, x as Double, y as Double) as boolean**

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
**Function**: One of the mouse events.
**Notes**: Return true if you handled this event.

33.63.51  **rotateWithEvent(e as NSEventMBS) as boolean**

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
**Function**: Informs the receiver that the user has begun a rotation gesture.
**Notes**: 
- e: An event object representing the rotate gesture.
- The event will be sent to the view under the touch in the key window.
- Available in Mac OS X v10.6 and later.
- Return true if you handled this event.

33.63.52  **ScaleFactorChanged(NewFactor as Double)**

**Function**: The backing store scale factor has changed.
**Notes**: Please invalidate any cached bitmaps or other relevant state.

33.63.53  **scrollWheel(e as NSEventMBS) as boolean**

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
**Function**: Informs the subclass that the mouse’s scroll wheel has moved.
**Notes**: 
- e: An object encapsulating information about the wheel-scrolling event.

The default implementation simply passes this message to the next responder.
Return true to not pass the event.
33.63.54  swipeWithEvent(e as NSEventMBS) as boolean

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Informs the receiver that the user has begun a swipe gesture.
Notes:
e: An event object representing the swipe gesture.
The event will be sent to the view under the touch in the key window.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.

33.63.55  updateDraggingItemsForDrag(sender as NSDraggingInfoMBS)

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Invoked when the dragging images should be changed.
Notes:
sender: The object sending the message; use this object to get details about the dragging operation.

While a destination may change the dragging images at any time, it is recommended to wait until this
method is called before updating the dragging images.

This allows the system to delay changing the dragging images until it is likely that the user will drop on
this destination. Otherwise, the dragging images will change too often during the drag which would be
distracting to the user.

33.63.56  viewDidMoveToWindow

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Informs the receiver that it has been added to a new view hierarchy.
Notes:
The default implementation does nothing; subclasses can implement this event to perform whatever actions
are necessary.

window may return nil when this method is invoked, indicating that the receiver does not currently reside in
any window. This occurs when the receiver has just been removed from its superview or when the receiver
has just been added to a superview that does not itself have a window. Overrides of this method may choose
to ignore such cases if they are not of interest.
33.63.57  wantsPeriodicDraggingUpdates as boolean

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.

Function: Asks the destination object whether it wants to receive periodic draggingUpdated messages.

Notes:

Return true if the destination wants to receive periodic draggingUpdated messages, false otherwise.

If the destination returns false, these messages are sent only when the mouse moves or a modifier flag changes. Otherwise the destination gets the default behavior, where it receives periodic dragging-updated messages even if nothing changes.
33.64 class ProgressBar

33.64.1 class ProgressBar

Plugin Version: 9.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The built in progress-bar class in REALbasic.

33.64.2 Methods

33.64.3 NSProgressIndicatorMBS as NSProgressIndicatorMBS

MBS MacControls Plugin, Plugin Version: 9.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a NSProgressIndicatorMBS object for the given control.

**Example:**

MsgBox ProgressBar1.NSProgressIndicatorMBS.className

**Notes:** This way you can manipulate Cocoa controls directly.

33.64.4 SetMaximumThreadSafeMBS(maximum as Integer)

MBS Util Plugin, Plugin Version: 13.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets maximum property on main thread.

**Notes:**

This method is to allow you to set the maximum property of a progressbar in a thread without a problem.

If called on main thread, the plugin will simply set maximum property directly.
If called on other threads the plugin will schedule to set the property a short time later on the main thread.

It may be better to call an update method you created on your window with CallDelegatesMBS.CallDelegateOnMainThreadMBS instead to do several update steps on one.

33.64.5 SetMinimumThreadSafeMBS(minimum as Integer)

MBS Util Plugin, Plugin Version: 13.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets minimum property on main thread.

**Notes:**
This method is to allow you to set the minimum property of a progressbar in a thread without a problem.

If called on main thread, the plugin will simply set minimum property directly.
If called on other threads the plugin will schedule to set the property a short time later on the main thread.

It may be better to call an update method you created on your window with CallDelegatesMBS.CallDelegateOnMainThreadMBS instead to do several update steps on one.

**33.64.6 SetValueThreadSafeMBS(value as Integer)**

MBS Util Plugin, Plugin Version: 13.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets value property on main thread.
**Notes:**
This method is to allow you to set the value property of a progressbar in a thread without a problem.

If called on main thread, the plugin will simply set value property directly.
If called on other threads the plugin will schedule to set the property a short time later on the main thread.

It may be better to call an update method you created on your window with CallDelegatesMBS.CallDelegateOnMainThreadMBS instead to do several update steps on one.
33.65  class ProgressWheel

33.65.1  class ProgressWheel

Plugin Version: 10.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The built in ProgressWheel class in REALbasic.

33.65.2  Methods

33.65.3  NSProgressIndicatorMBS as NSProgressIndicatorMBS

MBS MacControls Plugin, Plugin Version: 10.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a NSProgressIndicatorMBS object for the given control. 
**Notes:** This way you can manipulate Cocoa controls directly.
33.66 class PushButton

33.66.1 class PushButton

Plugin Version: 9.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The built in pushbutton class in REALbasic.

33.66.2 Methods

33.66.3 NSButtonMBS as NSButtonMBS

MBS MacControls Plugin, Plugin Version: 9.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a NSButtonMBS object for the given control.

**Example:**

```plaintext
MsgBox PushButton1.NSButtonMBS.className
```

**Notes:** This way you can manipulate Cocoa controls directly.
33.67 class ScrollBar

33.67.1 class ScrollBar


33.67.2 Methods

33.67.3 NSScrollerMBS as NSScrollerMBS

MBS MacControls Plugin, Plugin Version: 9.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Creates a NSScrollerMBS object for the given control. Example:

MsgBox ScrollBar1.NSScrollerMBS.className

Notes: This way you can manipulate Cocoa controls directly.
33.68.  **CLASS SEGMENTEDCONTROL**

### 33.68  class SegmentedControl

#### 33.68.1  class SegmentedControl

Plugin Version: 12.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Build in Segmented Control class in Real Studio.

#### 33.68.2  Methods

##### 33.68.3  NSSegmentedControlMBS as NSSegmentedControlMBS

MBS MacCocoa Plugin, Plugin Version: 12.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a NSSegmentedControlMBS object for the given control.

**Example:**

```ruby
SegmentedControl1.NSSegmentedControlMBS.selectedSegment = 0
```

**Notes:** This way you can manipulate Cocoa controls directly.
33.69 class Separator

33.69.1 class Separator

Plugin Version: 10.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The built in Separator class in REALbasic.

33.69.2 Methods

33.69.3 NSBoxMBS as NSBoxMBS

MBS MacControls Plugin, Plugin Version: 10.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a NSBoxMBS object for the given control. **Notes:** This way you can manipulate Cocoa controls directly.
33.70.  CLASS SLIDER

33.70  class Slider

33.70.1  class Slider

Plugin Version: 9.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The built in slider class in REALbasic.

33.70.2  Methods

33.70.3  NSSliderMBS as NSSliderMBS

MBS MacControls Plugin, Plugin Version: 9.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a NSSliderMBS object for the given control.

**Example:**

MsgBox Slider1.NSSliderMBS.className

**Notes:** This way you can manipulate Cocoa controls directly.
33.71 class SpinningProgressIndicatorMBS

33.71.1 class SpinningProgressIndicatorMBS

Function: A resizable, recolorable clone of the spinning NSProgressIndicator.
Notes:
Based on YRKSpinningProgressIndicator from Kelan Champagne.
See also https://github.com/kelan/yrk-spinning-progress-indicator
Subclass of the NSViewMBS class.

33.71.2 Methods

33.71.3 Constructor

Function: Creates a new progress indicator with size 100/100 and position 0/0
Example:
```vbnet
dim t as new SpinningProgressIndicatorMBS
```

Notes: On success the handle property is not zero.
See also:
- 33.71.4 Constructor(Handle as Integer) 6788
- 33.71.5 Constructor(left as Double, top as Double, width as Double, height as Double) 6789

33.71.4 Constructor(Handle as Integer)

Function: Creates an object based on the given SpinningProgressIndicator handle.
Example:
```vbnet
dim t as new SpinningProgressIndicatorMBS(0, 0, 100, 100)
dim v as new SpinningProgressIndicatorMBS(t.handle)
MsgBox str(v.Bounds.Width)+" x "+str(v.Bounds.Height)
```

Notes: The handle is casted to a SpinningProgressIndicator and the plugin retains this handle.
See also:
33.71. CLASS SPINNINGPROGRESSINDICATORMBS

- 33.71.3 Constructor
- 33.71.5 Constructor(left as Double, top as Double, width as Double, height as Double)

33.71.5 Constructor(left as Double, top as Double, width as Double, height as Double)

**Function:** Creates a new progress indicator with the given size and position.
**Example:**
```
Dim x As New SpinningProgressIndicatorMBS(0, 0, 100, 100)
```

**Notes:** On success the handle property is not zero.
See also:
- 33.71.3 Constructor
- 33.71.4 Constructor(Handle as Integer)

33.71.6 startAnimation

**Function:** Starts animation.
**Notes:** If you see no animation, you can maybe add a timer with short period (50ms) and set needsDisplay to true.

33.71.7 stopAnimation

**Function:** Stops the animation.

33.71.8 Properties

33.71.9 backgroundColor as NSColorMBS

**Function:** The background color.
**Notes:**
Default color is NSColorMBS.clearColor.
(Read and Write computed property)

### 33.71.10 colorValue as NSColorMBS

**Function:** The color for drawing.
**Notes:**
Default color is NSColorMBS.blackColor.
(Read and Write computed property)

### 33.71.11 doubleValue as Double

**Function:** The current value.
**Notes:**
Default is 0.0.
(Read and Write computed property)

### 33.71.12 drawsBackground as boolean

**Function:** Whether to draw background.
**Notes:**
Default is false.
(Read and Write computed property)

### 33.71.13 isDisplayedWhenStopped as boolean

**Function:** Whether this control is visible without animation turned on.
**Notes:**
Default is true.
(Read and Write computed property)
### 33.71.14 `isIndeterminate` as boolean

**MBS MacExtras Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Whether progress is indeterminate.

**Notes:**

Default is true.

(Read and Write computed property)

### 33.71.15 `maxValue` as Double

**MBS MacExtras Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** The maximum value.

**Notes:**

Default is 100.0.

(Read and Write computed property)

### 33.71.16 `usesThreadedAnimation` as boolean

**MBS MacExtras Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Whether to use a thread for the animation.

**Notes:**

Default is true.

(Read and Write computed property)
33.72  class Statictext

33.72.1  class Statictext

Plugin Version: 10.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The built in Statictext class in REALbasic.

33.72.2  Methods

33.72.3  NSTextFieldMBS as NSTextFieldMBS

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a NSTextFieldMBS object for the given control. **Notes:** This way you can manipulate Cocoa controls directly.
33.73. CLASS TEXTAREA

33.73  class TextArea

33.73.1  class TextArea

Plugin Version: 9.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The built in textarea class in REALbasic.

**Example:**

```REALbasic
// make a PDF from a textarea in Cocoa REALbasic target:

// find view
dim n as NSViewMBS = TextArea1.NSViewMBS
if n = nil then
    MsgBox "Only in Cocoa!"
    Return
end if

// make pdf data
dim s as string = n.dataWithPDFInsideRect(0,0,n.frame.Width, n.frame.Height)

// save
dim f as FolderItem = GetSaveFolderItem("", "test.pdf")
if f <> Nil then
    dim b as BinaryStream = BinaryStream.Create(f, true)
    b.Write s
end if
```

**Notes:** Requires RB 2009r4 or newer.

33.73.2  Methods

33.73.3  NSScrollViewMBS as NSScrollViewMBS

MBS MacControls Plugin, Plugin Version: 9.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a NSScrollViewMBS object for the given control.

**Example:**

```REALbasic
MsgBox TextArea1.NSScrollViewMBS.className
```
CHAPTER 33. COCOA CONTROLS

Notes: This way you can manipulate Cocoa controls directly.

### 33.73.4 NSTextFieldMBS as NSTextFieldMBS


**Function:** Creates a NSTextFieldMBS object for the given control.

**Notes:**
This way you can manipulate Cocoa controls directly.
Real Studio 2012 uses a NSTextField for text areas without style and without multiline.

### 33.73.5 NSTextViewMBS as NSTextViewMBS


**Function:** Creates a NSTextViewMBS object for the given control.

**Example:**

```plaintext
// load rtf file into textarea
dim file as FolderItem = SpecialFolder.Desktop.Child(“test.rtf”)
dim n as NSAttributedStringMBS = NSAttributedStringMBS.attributedStringWithPath(file)
dim t as NSTextViewMBS = TextArea1.NSTextViewMBS
t.textStorage.setAttributedString(n)
```

**Notes:** This way you can manipulate Cocoa controls directly.

### 33.73.6 SetTextThreadSafeMBS(text as string)


**Function:** Sets text property on main thread.

**Notes:**
This method is to allow you to set the text property of a label in a thread without a problem.

If called on main thread, the plugin will simply set text property directly.
If called on other threads the plugin will schedule to set the property a short time later on the main thread.

It may be better to call an update method you created on your window with CallDelegatesMBS.CallDelegateOnMainThreadMBS instead to do several update steps on one.
33.73.7 WinInsertImageMBS(data as string, Width as Integer, Height as Integer)


**Notes:**
- Specify size in pixels and image data.
- Image data works with JPEG and other data types.
- Requires Windows 8 or newer.

33.73.8 Properties

33.73.9 RTFDataMBS as Memoryblock

MBS MacCocoa Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Get or set the textview content as RTF data.

**Example:**
```
dim rtf as MemoryBlock = TextArea1.RTFDataMBS
TextArea2.RTFDataMBS = rtf
```

**Notes:**
- Works only for Cocoa and uses RTF parser/generator from Apple.
- (Read and Write computed property)

33.73.10 WinRTFDataMBS(SelectionOnly as boolean = false) as string

MBS Win Plugin, Plugin Version: 14.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Get or set the RTF data for the text area.

**Notes:**
- Including images and probably faster as StyledText.RTFData.
- (Read and Write computed property)

33.73.11 WinSelStrikeThroughMBS as Boolean

MBS Win Plugin, Plugin Version: 17.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Get or set StrikeThrough text style.

**Notes:**
See example project for how to do this for both Mac and Windows.
(Read and Write computed property)

### 33.73.12 WinSelSubScriptMBS as Boolean

MBS Win Plugin, Plugin Version: 17.0, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Get or set subscript text style.

**Notes:**
Subscript text has a lower base line and is smaller.
See example project for how to do this for both Mac and Windows.
(Read and Write computed property)

### 33.73.13 WinSelSuperScriptMBS as Boolean

MBS Win Plugin, Plugin Version: 17.0, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Get or set superscript text style.

**Notes:**
Superscript text has a higher base line and is smaller.
See example project for how to do this for both Mac and Windows.
(Read and Write computed property)

### 33.73.14 WinSpellcheckingMBS as Boolean


**Notes:**
Only for Windows 8 and newer.
Uses current language from user.

See [AutomaticSpellingCorrectionEnabled](#) and [ContinuousSpellCheckingEnabled](#) properties in NSTextViewMBS for MacOS.
(Read and Write computed property)
33.74  class TextField

33.74.1  class TextField


33.74.2  Methods

33.74.3  NSTextFieldMBS as NSTextFieldMBS

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Creates a NSTextFieldMBS object for the given control. Notes: This way you can manipulate Cocoa controls directly. Seems like RS 2011r1 uses a NSTextField, so this method should return an object on Cocoa targets.

33.74.4  NSTextViewMBS as NSTextViewMBS

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Creates a NSTextViewMBS object for the given control. Notes: This way you can manipulate Cocoa controls directly. Seems like RS 2011r1 uses a NSTextField, so this method should return nil on Cocoa targets. Please use NSTextFieldMBS method in this case.

33.74.5  SetTextThreadSafeMBS(text as string)

MBS Util Plugin, Plugin Version: 13.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: Sets text property on main thread. Notes: This method is to allow you to set the text property of a label in a thread without a problem.

If called on main thread, the plugin will simply set text property directly. If called on other threads the plugin will schedule to set the property a short time later on the main thread.

It may be better to call an update method you created on your window with CallDelegatesMBS.CallDelegateOnMainThreadMBS instead to do several update steps on one.
class UpDownArrows

Plugin Version: 10.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The build in control class in REALbasic.

Methods

**NSStepperMBS as NSStepperMBS**

MBS MacControls Plugin, Plugin Version: 10.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a NSStepperMBS object for the given control. **Notes:** This way you can manipulate Cocoa controls directly.
Chapter 34

Cocoa Drawing

34.1 class NSBezierPathMBS

34.1.1 class NSBezierPathMBS


Notes:

An NSBezierPath object allows you to create paths using PostScript-style commands. Paths consist of straight and curved line segments joined together. Paths can form recognizable shapes such as rectangles, ovals, arcs, and glyphs; they can also form complex polygons using either straight or curved line segments. A single path can be closed by connecting its two endpoints, or it can be left open.

An NSBezierPath object can contain multiple disconnected paths, whether they are closed or open. Each of these paths is referred to as a subpath. The subpaths of an NSBezierPath object must be manipulated as a group. The only way to manipulate subpaths individually is to create separate NSBezierPath objects for each.

For a given NSBezierPath object, you can stroke the path’s outline or fill the region occupied by the path. You can also use the path as a clipping region for views or other regions. Using methods of NSBezierPath, you can also perform hit detection on the filled or stroked path. Hit detection is needed to implement interactive graphics, as in rubberbanding and dragging operations.

The current graphics context is automatically saved and restored for all drawing operations involving NSBezierPath objects, so your application does not need to worry about the graphics settings changing across invocations.
34.1.2 Methods

34.1.3 appendBezierPath(path as NSBezierPathMBS)

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Appends the contents of the specified path object to the receiver’s path.

**Notes:**

Path: The path to add to the receiver.

This method adds the commands used to create aPath to the end of the receiver’s path. This method does not explicitly try to connect the subpaths in the two objects, although the operations in Path may still cause that effect.

34.1.4 appendBezierPathWithArc(center as NSPointMBS, radius as Double, startAngle as Double, endAngle as Double)

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Appends an arc of a circle to the receiver’s path.

**Notes:**

center: Specifies the center point of the circle used to define the arc.
radius: Specifies the radius of the circle used to define the arc.
startAngle: Specifies the starting angle of the arc, measured in degrees counterclockwise from the x-axis.
endAngle: Specifies the end angle of the arc, measured in degrees counterclockwise from the x-axis.

The created arc lies on the perimeter of the circle, between the angles specified by the startAngle and endAngle parameters. The arc is drawn in a counterclockwise direction. If the receiver’s path is empty, this method sets the current point to the beginning of the arc before adding the arc segment. If the receiver’s path is not empty, a line is drawn from the current point to the starting point of the arc.

Depending on the length of the arc, this method may add multiple connected curve segments to the path. See also:

- 34.1.5 appendBezierPathWithArc(center as NSPointMBS, radius as Double, startAngle as Double, endAngle as Double, clockwise as boolean)

- 34.1.6 appendBezierPathWithArc(point1 as NSPointMBS, point2 as NSPointMBS, radius as Double)
34.1. CLASS NSBEZIERPATHMBS

34.1.5 appendBezierPathWithArc(center as NSPointMBS, radius as Double, startAngle as Double, endAngle as Double, clockwise as boolean)

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Appends an arc of a circle to the receiver’s path.

**Notes:**
- center: Specifies the center point of the circle used to define the arc.
- radius: Specifies the radius of the circle used to define the arc.
- startAngle: Specifies the starting angle of the arc, measured in degrees counterclockwise from the x-axis.
- endAngle: Specifies the end angle of the arc, measured in degrees counterclockwise from the x-axis.
- clockwise: true if you want the arc to be drawn in a clockwise direction; otherwise false to draw the arc in a counterclockwise direction.

The created arc lies on the perimeter of the circle, between the angles specified by the startAngle and endAngle parameters. The arc is drawn in the direction indicated by the clockwise parameter. If the receiver’s path is empty, this method sets the current point to the beginning of the arc before adding the arc segment. If the receiver’s path is not empty, a line is drawn from the current point to the starting point of the arc.

Depending on the length of the arc, this method may add multiple connected curve segments to the path. See also:

- 34.1.4 appendBezierPathWithArc(center as NSPointMBS, radius as Double, startAngle as Double, endAngle as Double)
- 34.1.6 appendBezierPathWithArc(point1 as NSPointMBS, point2 as NSPointMBS, radius as Double)

34.1.6 appendBezierPathWithArc(point1 as NSPointMBS, point2 as NSPointMBS, radius as Double)

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Appends an arc to the receiver’s path.

**Notes:**
- point1: The middle point of the angle.
- point2: The end point of the angle.
- radius: The radius of the circle inscribed in the angle.

The created arc is defined by a circle inscribed inside the angle specified by three points: the current point, the fromPoint parameter, and the toPoint parameter (in that order). The arc itself lies on the perimeter of the circle, whose radius is specified by the radius parameter. The arc is drawn between the two points of the circle that are tangent to the two legs of the angle.

The arc usually does not contain the points in the fromPoint and toPoint parameters. If the starting point
of the arc does not coincide with the current point, a line is drawn between the two points. The starting point of the arc lies on the line defined by the current point and the fromPoint parameter.

You must set the path’s current point (using the moveToPoint method or through the creation of a preceding line or curve segment) before you invoke this method. If the path is empty, this method raises an NSGenericException exception.

Depending on the length of the arc, this method may add multiple connected curve segments to the path. See also:

- 34.1.4 `appendBezierPathWithArc(center as NSPointMBS, radius as Double, startAngle as Double, endAngle as Double)` 6802
- 34.1.5 `appendBezierPathWithArc(center as NSPointMBS, radius as Double, startAngle as Double, endAngle as Double, clockwise as boolean)` 6803

### 34.1.7 `appendBezierPathWithGlyph(glyph as Integer, font as NSFontMBS)`


Notes:

Glyph: The glyph to add to the path.
font: The font in which the glyph is encoded.

If the glyph is not encoded in the font specified by the font parameter that is, the font does not have an entry for the specified glyph then no path is appended to the receiver.

You must set the path’s current point (using the moveToPoint method or through the creation of a preceding line or curve segment) before you invoke this method. If the path is empty, this method raises an NSGenericException exception.

### 34.1.8 `appendBezierPathWithGlyphs(glyphs() as Integer, font as NSFontMBS)`

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Appends the outlines of the specified glyphs to the receiver’s path.

Notes:

glyphs: An array of glyphs to add to the path.
count: The number of glyphs in the glyphs parameter.
font: The font in which the glyphs are encoded.

If the glyphs are not encoded in the font specified by the font parameter that is, the font does not have an
entry for one of the specified glyphs; then no path is appended to the receiver.

You must set the path’s current point (using the moveToPoint method or through the creation of a preceding line or curve segment) before you invoke this method. If the path is empty, this method raises an NSGenericException exception.

### 34.1.9 appendBezierPathWithOvalInRect(rect as NSRectMBS)

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Appends an oval path to the receiver, inscribing the oval in the specified rectangle.

**Notes:**

rect: The rectangle in which to inscribe the oval.

Before adding the oval, this method moves the current point, which implicitly closes the current subpath. If the aRect parameter specifies a square, the inscribed path is a circle. The path is constructed by starting in the lower-right quadrant of the rectangle and adding arc segments counterclockwise to complete the oval.

### 34.1.10 appendBezierPathWithPoints(points() as NSPointMBS)

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Appends a series of line segments to the receiver’s path.

**Notes:**

points: An array of NSPoint data types, each of which contains the end point of the next line segment.

count: The number of points in the points parameter.

This method interprets the points as a set of connected line segments. If the current path contains an open subpath, a line is created from the last point in that subpath to the first point in the points array. If the current path is empty, the first point in the points array is used to set the starting point of the line segments. Subsequent line segments are added using the remaining points in the array.

This method does not close the path that is created. If you wish to create a closed path, you must do so by explicitly invoking the receiver’s closePath method.

### 34.1.11 appendBezierPathWithRect(rect as NSRectMBS)

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Appends a rectangular path to the receiver’s path.

**Notes:**
rect: The rectangle describing the path to create.

Before adding the rectangle, this method moves the current point to the origin of the rectangle, which implicitly closes the current subpath (if any). The path is constructed by starting at the origin of aRect and adding line segments in a counterclockwise direction. The final segment is added using a closePath message.

34.1.12 appendBezierPathWithRoundedRect(rect as NSRectMBS, xRadius as Double, yRadius as Double)

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Appends a rounded rectangular path to the receiver’s path.
**Notes:**
rect: The rectangle that defines the basic shape of the path.

xRadius: The radius of each corner oval along the x-axis. Values larger than half the rectangle’s width are clamped to half the width.

yRadius: The radius of each corner oval along the y-axis. Values larger than half the rectangle’s height are clamped to half the height.

The path is constructed in a counter-clockwise direction, starting at the top-left corner of the rectangle. If either one of the radius parameters contains the value 0.0, the returned path is a plain rectangle without rounded corners.

34.1.13 bezierPath as NSBezierPathMBS

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns a new NSBezierPath object.

34.1.14 bezierPathByFlatteningPath as NSBezierPathMBS

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns a “flattened” copy of the receiver.
**Notes:**

Returns a new path object whose contents are a flattened version of the receiver’s path.

Flattening a path converts all curved line segments into straight line approximations. The granularity of the approximations is controlled by the path’s current flatness value, which is set using the DefaultFlatness property.
34.1.15 **bezierPathByReversingPath** as **NSBezierPathMBS**

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns a new NSBezierPath object with the reversed contents of the receiver’s path. **Notes:**

Returns a new path object whose contents are a reversed version of the receiver’s path.

Reversing a path does not necessarily change the appearance of the path when rendered. Instead, it changes the direction in which path segments are drawn. For example, reversing the path of a rectangle (whose line segments are normally drawn starting at the origin and proceeding in a counterclockwise direction) causes its line segments to be drawn in a clockwise direction instead. Drawing a reversed path could affect the appearance of a filled pattern, depending on the pattern and the fill rule in use.

This method reverses each whole or partial subpath in the path object individually.

34.1.16 **bezierPathWithOvalInRect(r as NSRectMBS)** as **NSBezierPathMBS**

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns a new NSBezierPath object initialized with an oval path inscribed in the specified rectangle. **Notes:**

r: The rectangle in which to inscribe an oval.

Returns an NSBezierPath new path object with the oval path.

If the rect parameter specifies a square, the inscribed path is a circle. The path is constructed by starting in the lower-right quadrant of the rectangle and adding arc segments counterclockwise to complete the oval.

34.1.17 **bezierPathWithRect(r as NSRectMBS)** as **NSBezierPathMBS**

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns a new NSBezierPath object initialized with a rectangular path. **Notes:**

r: The rectangle describing the path to create.

Returns a new path object with the rectangular path. The path is constructed by starting at the origin of aRect and adding line segments in a counterclockwise direction.
34.1.18  bezierPathWithRoundedRect(r as NSRectMBS, xRadius as Double, yRadius as Double) as NSBezierPathMBS

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns a new NSBezierPath object initialized with a rounded rectangular path. **Notes:**
- **r:** The rectangle that defines the basic shape of the path.
- **xRadius:** The radius of each corner oval along the x-axis. Values larger than half the rectangle’s width are clamped to half the width.
- **yRadius:** The radius of each corner oval along the y-axis. Values larger than half the rectangle’s height are clamped to half the height.

Returns a new path object with the rounded rectangular path.

The path is constructed in a counter-clockwise direction, starting at the top-left corner of the rectangle. If either one of the radius parameters contains the value 0.0, the returned path is a plain rectangle without rounded corners.

34.1.19  closePath

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Closes the most recently added subpath. **Notes:** This method closes the current subpath by creating a line segment between the first and last points in the subpath. This method subsequently updates the current point to the end of the newly created line segment, which is also the first point in the now closed subpath.

34.1.20  Constructor

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes a new empty NSBezierPath object.

34.1.21  containsPoint(p as NSPointMBS) as boolean

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value indicating whether the receiver contains the specified point. **Example:**

```dim r as new NSRectMBS(10, 10, 50, 50)
dim b as NSBezierPathMBS = NSBezierPathMBS.bezierPathWithRect(r)
dim p as new NSPointMBS(20,20)```
MsgBox str(b.containsPoint(p))

Notes:

p: The point to test against the path, specified in the path object’s coordinate system.

Returns true if the path’s enclosed area contains the specified point; otherwise, false.

This method checks the point against the path itself and the area it encloses. When determining hits in the enclosed area, this method uses the non-zero winding rule (NSNonZeroWindingRule). It does not take into account the line width used to stroke the path.

34.1.22 copy as NSBezierPathMBS


34.1.23 curveToPoint(endPoint as NSPointMBS, controlPoint1 as NSPointMBS, controlPoint2 as NSPointMBS)


Notes:

endPoint: The destination point of the curve segment, specified in the current coordinate system
controlPoint1: The point that determines the shape of the curve near the current point.
controlPoint2: The point that determines the shape of the curve near the destination point.

You must set the path’s current point (using the moveToPoint method or through the creation of a preceding line or curve segment) before you invoke this method. If the path is empty, this method raises an NSGenericException exception.

34.1.24 elementAtIndex(index as Integer) as Integer

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the type of path element at the specified index.

Notes:
index: The index of the desired path element.

Returns the type of the path element.
Path elements describe the commands used to define a path and include basic commands such as moving to a specific point, creating a line segment, creating a curve, or closing the path. The elements are stored in the order of their execution.

See also:

- 34.1.25 elementAtIndex(index as Integer, byref associatedPoints() as NSPointMBS) as Integer

### 34.1.25 elementAtIndex(index as Integer, byref associatedPoints() as NSPointMBS) as Integer

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Gets the element type and (and optionally) the associated points for the path element at the specified index.

**Notes:**

index: The index of the desired path element.
associatedPoints: On output, the data points associated with the specified path element.

Returns the type of the path element.

For curve operations, the order of the points is controlPoint1 (associatedPoints(0)), controlPoint2 (associatedPoints(1)), endPoint (associatedPoints(2)).

See also:

- 34.1.24 elementAtIndex(index as Integer) as Integer

### 34.1.26 elementCount as Integer

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the total number of path elements in the receiver’s path.

**Example:**

```dim b as NSBezierPathMBS = NSBezierPathMBS.bezierPath

b.moveToPoint NSMakePointMBS(10, 10)
b.lineToPoint NSMakePointMBS(290, 290)
MsgBox str(b.elementCount) // 2

b.removeAllPoints
MsgBox str(b.elementCount) // 0```

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Notes: Each element type corresponds to one of the operations described in constants.

34.1.27 getLineDash(byref pattern() as Double, byref count as Integer, byref phase as Double)


Notes:

pattern: On output, this array contains the lengths (measured in points) of the line segments and gaps in the pattern. The values in the array alternate, starting with the first line segment length, followed by the first gap length, followed by the second line segment length, and so on.

count: On output, the number of entries written to pattern.

phase: On output, this value contains the offset at which to start drawing the pattern, measured in points along the dashed-line pattern. For example, a phase of 6 in the pattern 5-2-3-2 would cause drawing to begin in the middle of the first gap.

34.1.28 isEmpty as boolean

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a Boolean value indicating whether the receiver is empty.

Example:

dim b as NSBezierPathMBS = NSBezierPathMBS.bezierPath
MsgBox "isEmpty: " +str(b.isEmpty)

Notes: True if the receiver contains no path elements; otherwise, false.

34.1.29 lineToPoint(p as NSPointMBS)

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Appends a straight line to the receiver’s path.

Notes:

p: The destination point of the line segment, specified in the current coordinate system.

This method creates a straight line segment starting at the current point and ending at the point specified by the aPoint parameter. The current point is the last point in the receiver’s most recently added segment.

You must set the path’s current point (using the moveToPoint method or through the creation of a pre-
ceding line or curve segment) before you invoke this method. If the path is empty, this method raises an
NSGenericException exception.

34.1.30  moveToPoint(p as NSPointMBS)

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Moves the receiver’s current point to the specified location.
**Notes:**

p: A point in the current coordinate system.

This method implicitly closes the current subpath (if any) and sets the current point to the value in p. When
closing the previous subpath, this method does not cause a line to be created from the first and last points
in the subpath.

For many path operations, you must invoke this method before issuing any commands that cause a line or
curve segment to be drawn.

34.1.31  relativeCurveToPoint(endPoint as NSPointMBS, controlPoint1 as NS-
PointMBS, controlPoint2 as NSPointMBS)

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds a Bezier cubic curve to the receiver’s path from the current point to a new location, which is
specified as a relative distance from the current point.
**Notes:**

endPoint: The destination point of the curve segment, interpreted as a relative offset from the current point.
controlPoint1: The point that determines the shape of the curve near the current point, interpreted as a
relative offset from the current point.
controlPoint2: The point that determines the shape of the curve near the destination point, interpreted as
a relative offset from the current point.

You must set the path’s current point (using the moveToPoint method or through the creation of a pre-
ceding line or curve segment) before you invoke this method. If the path is empty, this method raises an
NSGenericException exception.

34.1.32  relativeLineToPoint(p as NSPointMBS)

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Appends a straight line segment to the receiver’s path starting at the current point and moving towards
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the specified point, relative to the current location.

Notes:

p: A point whose coordinates are interpreted as a relative offset from the current point.

The destination point is relative to the current point. For example, if the current point is (1, 1) and aPoint contains the value (1, 2), a line segment is created between the points (1, 1) and (2, 3).

You must set the path’s current point (using the moveToPoint method or through the creation of a preceding line or curve segment) before you invoke this method. If the path is empty, this method raises an NSGenericException exception.

34.1.33 relativeMoveToPoint(p as NSPointMBS)

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Moves the receiver’s current point to a new point whose location is the specified distance from the current point. Notes:

p: A point whose coordinates are interpreted as a relative offset from the current point.

This method implicitly closes the current subpath (if any) and updates the location of the current point. For example, if the current point is (1, 1) and aPoint contains the value (1, 2), the previous subpath would be closed and the current point would become (2, 3). When closing the previous subpath, this method does not cause a line to be created from the first and last points in the subpath.

You must set the path’s current point (using the moveToPoint method or through the creation of a preceding line or curve segment) before you invoke this method. If the path is empty, this method raises an NSGenericException exception.

34.1.34 removeAllPoints

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Removes all path elements from the receiver, effectively clearing the path.

Example:

```vba
dim b as NSBezierPathMBS = NSBezierPathMBS.bezierPath
b.moveToPoint NSMakePointMBS(10, 10)
b.lineToPoint NSMakePointMBS(290, 290)
MsgBox str(b.elementCount) // 2
b.removeAllPoints
```
34.1.35  setAssociatedPoints(points() as NSPointMBS, index as Integer)

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Changes the points associated with the specified path element.

Notes:

points: An array containing up to three NSPointMBS data types. This parameter must contain the correct number of points for the path element at the specified index. Move, close path, and line segment commands require one point. Curve operations require three points.
index: The index of the path element you want to modify.

You can use this method to change the points associated with a path quickly and without recreating the path. You cannot use this method to change the type of the path element.

The following example shows you how you would modify the point associated with a line path element. The path created by this example results in a path with two elements. The first path element specifies a move to point (0, 0) while the second creates a line to point (100, 100). It then changes the line to go only to the point (50,50) using this method:

Note: If you specify too few points for a path element of type NSCurveToBeziersPathElement, the behavior of this method is undefined.

34.1.36  setLineDash(pattern() as Double, phase as Double)


Example:

dim n as new NSImageMBS(300, 300)
dim g as new NSGraphicsMBS(n)

g.setFillColor NSColorMBS.redColor

dim r as NSRectMBS = NSMakeRectMBS(50, 50, 100, 100)
dim b as NSBezierPathMBS = NSBezierPathMBS.bezierPath

b.moveToPoint NSMakePointMBS(10, 10)
b.lineToPoint NSMakePointMBS(290, 290)

dim pattern() as Double
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pattern.Append 5
pattern.Append 2
b.setLineDashPattern, 6

g.stroke(b)
g = nil

window1Backdrop = n.CopyPicture // red line with dash pattern

Notes:

pattern: An array of floating point values that contains the lengths (measured in points) of the line segments and gaps in the pattern. The values in the array alternate, starting with the first line segment length, followed by the first gap length, followed by the second line segment length, and so on.
count: The number of values in pattern.
phase: The offset at which to start drawing the pattern, measured in points along the dashed-line pattern. For example, a phase of 6 in the pattern 5-2-3-2 would cause drawing to begin in the middle of the first gap.

34.1.37 transformUsingAffineTransform(transform as Variant)

Example:

dim bezierPath as NSBezierPathMBS = NSBezierPathMBS.bezierPath
dim transform as NSAffineTransformMBS = NSAffineTransformMBS.transform

bezierPath.moveToPoint NSMakePointMBS(0.0, 0.0)
bezierPath.lineToPoint NSMakePointMBS(100.0, 100.0)
transform.translate(10,10)
bezierPath.transformUsingAffineTransform(transform)

Break // bezierPath.bounds starts now at 10/10

Notes:

Transform: The transform to apply to the path.

This method applies the transform to the path’s points immediately. The following code translates a line from 0.0 to 100,100 to a line from 10,10 to 110,110.
transform must be a NSAffineTransformMBS object.

34.1.38 Properties

34.1.39 Bounds as NSRectMBS

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the bounding box of the receiver’s path.

**Example:**

```dim r as new NSRectMBS(10, 10, 50, 50)
dim b as NSBezierPathMBS = NSBezierPathMBS.bezierPathWithRect(r)
dim rr as NSRectMBS = b.Bounds
MsgBox rr.String```

**Notes:**

The rectangle that encloses the path of the receiver. If the path contains curve segments, the bounding box encloses the curve but may not enclose the control points used to calculate the curve.

(Read only property)

34.1.40 ControlPointBounds as NSRectMBS

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the bounding box of the receiver’s path, including any control points.

**Notes:**

The rectangle that encloses the receiver’s path. If the path contains curve segments, the bounding box encloses the control points of the curves as well as the curves themselves.

(Read only property)

34.1.41 CurrentPoint as NSPointMBS

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver’s current point (the trailing point or ending point in the most recently added segment).

**Example:**

```dim b as NSBezierPathMBS = NSBezierPathMBS.bezierPath
b.moveToPoint NSMakePointMBS(10,10)```
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MsgBox b.CurrentPoint.String

**Notes:**
The point from which the next drawn line or curve segment begins.
If the receiver is empty, this method raises NSGenericException.
(Read only property)

### 34.1.42 defaultFlatness as Double

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The default flatness value for all paths.

**Notes:**
The flatness value specifies the accuracy (or smoothness) with which curves are rendered. It is also the maximum error tolerance (measured in pixels) for rendering curves, where smaller numbers give smoother curves at the expense of more computation. The exact interpretation may vary slightly on different rendering devices.

The default flatness value is 0.6, which yields smooth curves.
(Read and Write property)

### 34.1.43 defaultLineCapStyle as Integer

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The default line cap style for all paths.

**Notes:**
The default line cap style or NSButtLineCapStyle if no other style has been set. For a list of values, see Constants.

The default line cap style can be overridden for individual paths by setting a custom style for that path using the LineCapStyle property.
(Read and Write property)

### 34.1.44 defaultLineJoinStyle as Integer

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The default line join style for all paths.

**Notes:**
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The default line join style or NSMiterLineJoinStyle if no other value has been set. For a list of values, see Constants.
(Read and Write property)

34.1.45  defaultLineWidth as Double

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the default line width for the all paths.
Notes:
The line width defines the thickness of stroked paths. A width of 0 is interpreted as the thinnest line that can be rendered on a particular device. The actual rendered line width may vary from the specified width by as much as 2 device pixels, depending on the position of the line with respect to the pixel grid and the current anti-aliasing settings. The width of the line may also be affected by scaling factors specified in the current transformation matrix of the active graphics context.
(Read and Write property)

34.1.46  defaultMiterLimit as Double

Notes:
The miter limit helps you avoid spikes at the junction of two line segments connected by a miter join (NSMiterLineJoinStyle). If the ratio of the miter lengththe diagonal length of the miter jointo the line thickness exceeds the miter limit, the joint is converted to a bevel join. The default miter limit value is 10, which converts miters whose angle at the joint is less than 11 degrees.
(Read and Write property)

34.1.47  defaultWindingRule as Integer

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the default winding rule used to fill all paths.
Notes:
The current default winding rule or NSNonZeroWindingRule if no default rule has been set. This value may be either NSNonZeroWindingRule or NSEvenOddWindingRule.
Winding rules determine how to paint (or fill) the region enclosed by a path. You use this method to set the default rule that is applied to paths that do not have a custom winding rule assigned.
(Read and Write property)
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34.1.48 Handle as Integer

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference.  
**Notes:** (Read and Write property)

34.1.49 flatness as Double

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The flatness value of the path.  
**Notes:**  
If no value is set, this method returns the default flatness value.  
(Read and Write computed property)

34.1.50 lineCapStyle as Integer

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The line cap style for the receiver’s path.  
**Notes:**  
If this value is not set for the receiver, the default line cap style is returned.  
(Read and Write computed property)

34.1.51 lineJoinStyle as Integer

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The receiver’s line join style.  
**Notes:**  
If this value is not set for the receiver, the default line join style is returned.  
(Read and Write computed property)

34.1.52 lineWidth as Double

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The line width of the receiver’s path.  
**Example:**

```plaintext
dim n as new NSImageMBS(300, 300)
dim g as new NSGraphicsMBS(n)
```
g.setFillColor(NSColorMBS.redColor)

dim r as NSRectMBS = NSMakeRectMBS(50, 50, 100, 100)
dim b as NSBezierPathMBS = NSBezierPathMBS.bezierPath

b.moveToPoint(NSMakePointMBS(10, 10))
b.lineToPoint(NSMakePointMBS(290, 290))

dim pattern() as Double
pattern.Append(10)
pattern.Append(4)

b.lineWidth = 5
b.setLineDash(pattern, 12)

g.stroke(b)

g = nil

window1.Backdrop = n.CopyPicture // red line with dash pattern

Notes:
The line width of the receiver, measured in points in the user coordinate space.
If no value was set explicitly for the receiver, this method returns the default line width.
(Read and Write computed property)

34.1.53 miterLimit as Double


Notes:
If no value is set, this method returns the default miter limit.
(Read and Write computed property)

34.1.54 windingRule as Integer

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the winding rule used to fill the receiver’s path.

Notes:
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Returns the winding rule for the path. This value may be either NSNonZeroWindingRule or NSEvenOddWindingRule.

This value overrides the default value returned by defaultWindingRule.
For more information on how winding rules affect the appearance of filled paths, see Constants.
(Read and Write computed property)

34.1.55 Constants

34.1.56 NSBevelLineJoinStyle = 2

MBS MacBase Plugin, Plugin Version: 12.5. Function: One of the constants to specify the shape of the joints between connected segments of a stroked path.
Notes:
Specifies a bevel line shape of the joints between connected segments of a stroked path.
See the setDefaultLineJoinStyle method for an example of the appearance.

34.1.57 NS ButtLineCapStyle = 0

MBS MacBase Plugin, Plugin Version: 12.5. Function: One of the constants to specify the shape of endpoints for an open path when stroked.
Notes:
Specifies a butt line cap style for endpoints for an open path when stroked.
See the setDefaultLineCapStyle method for an example of the appearance.

34.1.58 NS ClosePathBezierPathElement = 3

MBS MacBase Plugin, Plugin Version: 12.5. Function: Basic path element command constants.
Notes:
Marks the end of the current subpath at the specified point.
Note that the point specified for the Close Path element is essentially the same as the current point.

34.1.59 NS CurveToBezierPathElement = 2

MBS MacBase Plugin, Plugin Version: 12.5. Function: Basic path element command constants.
Notes:
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Creates a curved line segment from the current point to the specified endpoint using two control points to define the curve. The points are stored in the following order: controlPoint1, controlPoint2, endPoint. Ovals, arcs, and Bezier curves all use curve elements to specify their geometry. Contains 3 points.

34.1.60  NSEvenOddWindingRule = 1

MBS MacBase Plugin, Plugin Version: 12.5. **Function:** One of the constants used to specify the winding rule a Bezier path should use. **Notes:**

Specifies the even-odd winding rule. Count the total number of path crossings. If the number of crossings is even, the point is outside the path. If the number of crossings is odd, the point is inside the path and the region containing it should be filled.

34.1.61  NSLineToBezierPathElement = 1

MBS MacBase Plugin, Plugin Version: 12.5. **Function:** Basic path element command constants. **Notes:**

Creates a straight line from the current drawing point to the specified point. Lines and rectangles are specified using this path element. Contains 1 point.

34.1.62  NSMiterLineJoinStyle = 0

MBS MacBase Plugin, Plugin Version: 12.5. **Function:** One of the constants to specify the shape of the joints between connected segments of a stroked path. **Notes:**

Specifies a miter line shape of the joints between connected segments of a stroked path. See the setDefaultLineJoinStyle method for an example of the appearance.

34.1.63  NSMoveToBezierPathElement = 0

MBS MacBase Plugin, Plugin Version: 12.5. **Function:** Basic path element command constants. **Notes:**

Moves the path object’s current drawing point to the specified point. This path element does not result in any drawing. Using this command in the middle of a path results in a
**34.1.64 NSNonZeroWindingRule = 0**

MBS MacBase Plugin, Plugin Version: 12.5. **Function:** One of the constants used to specify the winding rule a Bezier path should use.

**Notes:**

Specifies the non-zero winding rule. Count each left-to-right path as +1 and each right-to-left path as -1. If the sum of all crossings is 0, the point is outside the path. If the sum is nonzero, the point is inside the path and the region containing it is filled. This is the default winding rule.

**34.1.65 NSRoundLineCapStyle = 1**

MBS MacBase Plugin, Plugin Version: 12.5. **Function:** One of the constants to specify the shape of endpoints for an open path when stroked.

**Notes:**

Specifies a round line cap style for endpoints for an open path when stroked. See the setDefaultLineCapStyle method for an example of the appearance.

**34.1.66 NSRoundLineJoinStyle = 1**

MBS MacBase Plugin, Plugin Version: 12.5. **Function:** One of the constants to specify the shape of the joints between connected segments of a stroked path.

**Notes:**

Specifies a round line shape of the joints between connected segments of a stroked path. See the setDefaultLineJoinStyle method for an example of the appearance.

**34.1.67 NSSquareLineCapStyle = 2**

MBS MacBase Plugin, Plugin Version: 12.5. **Function:** One of the constants to specify the shape of endpoints for an open path when stroked.

**Notes:**

Specifies a square line cap style for endpoints for an open path when stroked. See the setDefaultLineCapStyle method for an example of the appearance.
34.2 class NSBitmapImageRepMBS

34.2.1 class NSBitmapImageRepMBS

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The NSBitmapImageRep class renders an image from bitmap data. Notes: Bitmap data formats supported include GIF, JPEG, TIFF, PNG, and various permutations of raw bitmap data.

Alpha Premultiplication

If a coverage (alpha) plane exists, a bitmap’s color components are premultiplied with it. If you modify the contents of the bitmap, you are therefore responsible for premultiplying the data. For this reason, though, if you want to manipulate the actual data, an NSBitmapImageRep object is not recommended for storage. If you need to work with data that is not premultiplied, you should use Quartz, specifically CGImageCreate with kCGImageAlphaLast.

Note that premultiplying does not affect the output quality. Given source bitmap pixel \( s \), destination pixel \( d \), and alpha value \( a \), a blend is basically

\[
d' = a \times s + (1 - a) \times d
\]

All premultiplication does is precalculate \( a \times s \).

Subclass of the NSImageRepMBS class.

34.2.2 Methods

34.2.3 bitmapImageRepByConvertingToColorSpace(colorSpace as NSColorSpaceMBS, renderingIntent as Integer) as NSBitmapImageRepMBS

MBS MacBase Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Converts the image rep to the specified colorspace. Notes: targetSpace: The new colorSpace renderingIntent: The rendering intent specifies how to handle colors that are not located within the target color space. The supported values are NSColorRenderingIntent.

An NSBitmapImageRep, or nil, if the conversion fails. If the original NSBitmapImageRep already uses that colorSpace, it is returned as is.
34.2. CLASS NSBITMAPIMAGEREPMBS

<table>
<thead>
<tr>
<th>Constant</th>
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<tr>
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<tr>
<td>AbsoluteColorimetric</td>
<td>1</td>
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<td>Perceptual</td>
<td>3</td>
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<tr>
<td>Saturation</td>
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</tbody>
</table>

34.2.4 bitmapImageRepByRetaggingWithColorSpace(newSpace as NSColorSpaceMBS) as NSBitmapImageRepMBS

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Changes the colorSpace tag of the receiver. **Notes:**

newSpace: The desired colorSpace.

Returns an NSBitmapImageRep, or nil, if the conversion fails. If the original NSBitmapImageRep already uses that colorSpace, it is returned as is.

This method will definitely fail if you pass a colorSpace that has a different color space model than the receiver. That is, if your original image is sRGB, you can only retag with some other RGB colorspace. Available in Mac OS X v10.6 and later.

34.2.5 BMPRepresentation(properties as dictionary = nil) as Memoryblock

MBS MacBase Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the bitmap as bmp data.

34.2.6 canBeCompressedUsing(compression as Integer) as Boolean

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Tests whether the receiver can be compressed by the specified compression scheme. **Notes:**

Returns true if the receiver’s data matches compression with this type, false if the data doesn’t match compression or if compression is unsupported.

Legal values for compression can be found in NSBitmapImageRep.h and are described in TIFF Compression
in NSBitmapImageReps. This method returns true if the receiver’s data matches compression; for example, if compression is NSTIFFCompressionCCITTFA3, then the data must be 1 bit per sample and 1 sample per pixel.

### 34.2.7 Constructor(data as Memoryblock)

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes a newly allocated NSBitmapImageRep from the provided data.

**Notes:**

- data: A data object containing image data. The contents of bitmapData can be any supported bitmap format. For TIFF data, the NSBitmapImageRep is initialized from the first header and image data found in bitmapData.

On success the handle property is not zero.

See also:

- 34.2.8 Constructor(pic as Picture)
- 34.2.9 Constructor(pixelsWide as Integer, pixelsHigh as Integer, bitsPerSample as Integer, samplesPerPixel as Integer, hasAlpha as boolean, colorSpaceName as string, bytesPerRow as Integer, bitsPerPixel as Integer)

### 34.2.8 Constructor(pic as Picture)

MBS MacBase Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an NSBitmapImageRep object created from a Core Graphics image object.

**Notes:**

- pic: A Core Graphics image object (an opaque type) from which to create the receiver. This opaque type is retained.

An NSBitmapImageRep object initialized from the contents of the Core Graphics image or nil if the NSBitmapImageRep couldn’t be created.

If you use this method, you should treat the resulting bitmap NSBitmapImageRep object as read only. Because it only retains the value in the cgImage parameter, rather than unpacking the data, accessing the pixel data requires the creation of a copy of that data in memory. Changes to that data are not saved back to the Core Graphics image.

Available in OS X v10.5 and later.

See also:

- 34.2.7 Constructor(data as Memoryblock)
34.2. Constructor(pixelsWide as Integer, pixelsHigh as Integer, bitsPerSample as Integer, samplesPerPixel as Integer, hasAlpha as boolean, colorSpaceName as string, bytesPerRow as Integer, bitsPerPixel as Integer)

34.2.9 Constructor(pixelsWide as Integer, pixelsHigh as Integer, bitsPerSample as Integer, samplesPerPixel as Integer, hasAlpha as boolean, colorSpaceName as string, bytesPerRow as Integer, bitsPerPixel as Integer)


Example:

```pascal
dim n as new NSImageMBS(300,300)
dim r as new NSBitmapImageRepMBS(300, 300, 8, 4, true, NSColorSpaceMBS.NSCalibratedRGBColorSpace, 4*300, 32)

dim g as new NSGraphicsMBS(r)
g.setColorRGB 1.0,0,0,0.5
g.fillRect 0, 0, 100, 100
```

g = nil // flush
n.addRepresentation r

Backdrop = n.CopyPictureWithMask

Notes:

The image bitmap data is allocated for you.

pixelsWide: The width of the image in pixels. This value must be greater than 0.
pixelsHigh: The height of the image in pixels. This value must be greater than 0.
bitsPerSample: The number of bits used to specify one pixel in a single component of the data. All components are assumed to have the same bits per sample. bps should be one of these values: 1, 2, 4, 8, 12, or 16.
samplesPerPixel: The number of data components, or samples per pixel. This value includes both color components and the coverage component (alpha), if present. Meaningful values range from 1 through 5. An image with cyan, magenta, yellow, and black (CMYK) color components plus a coverage component would have an spp of 5; a grayscale image that lacks a coverage component would have an spp of 1.
hasAlpha: True if one of the components counted in the number of samples per pixel (spp) is a coverage (alpha) component, and false if there is no coverage component. If true, the color components in the bitmap data must be premultiplied with their coverage component.
colorSpaceName: A string constant that indicates how data values are to be interpreted. It should be one of the following values: NSCalibratedWhiteColorSpace, NSCalibratedBlackColorSpace, NSCalibratedRGBColorSpace, NSDeviceWhiteColorSpace, NSDeviceBlackColorSpace, NSDeviceRGBColorSpace, NSDeviceCMYKColorSpace, NSNamedColorSpace or NSCustomColorSpace. (see NSColorSpaceMBS)

If bps is 12, you cannot specify the monochrome color space.
CHAPTER 34. COCOA DRAWING

bytesPerRow: The number of bytes that are allocated for each scan line in each plane of data. A scan line is a single row of pixels spanning the width of the image. Normally, rowBytes can be figured from the width of the image, the number of bits per pixel in each sample (bps), and, if the data is in a meshed configuration, the number of samples per pixel (spp). However, if the data for each row is aligned on word or other boundaries, it may have been necessary to allocate more memory for each row than there is data to fill it. rowBytes lets the object know whether that’s the case. If you pass in a rowBytes value of 0, the bitmap data allocated may be padded to fall on long word or larger boundaries for performance. If your code wants to advance row by row, use bytesPerRow and do not assume the data is packed. Passing in a non-zero value allows you to specify exact row advances.

bitsPerPixel: This integer value informs NSBitmapImageRep how many bits are actually allocated per pixel in each plane of data. If the data is in planar configuration, this normally equals bps (bits per sample). If the data is in meshed configuration, it normally equals bps times spp (samples per pixel). However, it’s possible for a pixel specification to be followed by some meaningless bits (empty space), as may happen, for example, if pixel data is aligned on byte boundaries. NSBitmapImageRep supports only a limited number of pixelBits values (other than the default): for RGB images with 4 bps, pixelBits may be 16; for RGB images with 8 bps, pixelBits may be 32. The legal values for pixelBits are system dependent. If you specify 0 for this parameter, the object interprets the number of bits per pixel using the values in the bps and spp parameters, as described in the preceding paragraph, without any meaningless bits.

On success the handle property is not zero.

You can add several NSBitmapImageRepMBS to NSImage to make a multi page tiff file. To make a 300 dpi image, the size of the NSImage must be smaller than the size of the bitmap inside by factor 72/300.

See also:
- 34.2.7 Constructor(data as Memoryblock)
- 34.2.8 Constructor(pic as Picture)

34.2.10 GIFRepresentation(properties as dictionary = nil) as Memoryblock

MBS MacBase Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the bitmap as gif data.

34.2.11 imageRepWithCGImage(CGImage as Variant) as NSBitmapImageRepMBS

MBS MacBase Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an NSBitmapImageRep object created from a Core Graphics image object. **Notes:**
cgimage: A Core Graphics image object (an opaque type) from which to create the receiver. This opaque type is retained.
34.2. **CLASS NSBITMAPIMAGEREPMBS**

An NSBitmapImageRep object initialized from the contents of the Core Graphics image or nil if the NSBitmapImageRep couldn’t be created.

If you use this method, you should treat the resulting bitmap NSBitmapImageRep object as read only. Because it only retains the value in the cgImage parameter, rather than unpacking the data, accessing the pixel data requires the creation of a copy of that data in memory. Changes to that data are not saved back to the Core Graphics image.

Available in OS X v10.5 and later.

### 34.2.12 `imageRepWithCGImageRef(CGImageHandle as Integer) as NSBitmapImageRepMBS`

MBS MacBase Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an NSBitmapImageRep object created from a Core Graphics image reference. **Notes:**

CGImageHandle: A Core Graphics image object (an opaque type) from which to create the receiver. This opaque type is retained.

An NSBitmapImageRep object initialized from the contents of the Core Graphics image or nil if the NSBitmapImageRep couldn’t be created.

If you use this method, you should treat the resulting bitmap NSBitmapImageRep object as read only. Because it only retains the value in the cgImage parameter, rather than unpacking the data, accessing the pixel data requires the creation of a copy of that data in memory. Changes to that data are not saved back to the Core Graphics image.

Available in OS X v10.5 and later.

### 34.2.13 `imageRepWithCIImage(CIImage as variant) as NSBitmapImageRepMBS`

MBS MacBase Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an NSBitmapImageRep object created from a CoreImage object. **Notes:**

CIImage: A Core Graphics image object (an opaque type) from which to create the receiver. This opaque type is retained.

An NSBitmapImageRep object initialized from the contents of the Core Graphics image or nil if the NSBitmapImageRep couldn’t be created.
If you use this method, you should treat the resulting bitmap NSBitmapImageRep object as read only. Because it only retains the value in the CIImage parameter, rather than unpacking the data, accessing the pixel data requires the creation of a copy of that data in memory. Changes to that data are not saved back to the Core Graphics image.

Available in OS X v10.5 and later.

34.2.14 imageRepWithCIImageRef(CIImageHandle as Integer) as NSBitmapImageRepMBS


Notes:
CIImageHandle: A Core Graphics image object (an opaque type) from which to create the receiver. This opaque type is retained.

An NSBitmapImageRep object initialized from the contents of the Core Graphics image or nil if the NSBitmapImageRep couldn’t be created.

If you use this method, you should treat the resulting bitmap NSBitmapImageRep object as read only. Because it only retains the value in the CIImage parameter, rather than unpacking the data, accessing the pixel data requires the creation of a copy of that data in memory. Changes to that data are not saved back to the Core Graphics image.

Available in OS X v10.5 and later.

34.2.15 imageRepWithData(data as Memoryblock) as NSBitmapImageRepMBS

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creates and returns an NSBitmapImageRep object initialized with the first image in the supplied data.

Notes:

data: A data object containing one or more bitmapped images. The bitmapData parameter can contain data in any supported bitmap format.

Returns an NSBitmapImageRep instance or nil if the class is unable to create an image representation.
34.2. CLASS NSBITMAPIMAGEREPMBS

34.2.16 JPEGRepresentation(properties as dictionary = nil) as Memoryblock

MBS MacBase Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the bitmap as jpeg data.

34.2.17 NSImageColorSyncProfileData as string

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys.

**Notes:**
Identifies a memoryblock containing the ColorSync profile data.
It can be used for TIFF, JPEG, GIF, and PNG files. This value is set when reading in and used when writing out image data. You can get the profile data for a particular color space from the corresponding NSColorSpace object or from the ColorSync Manager.

34.2.18 NSImageCompressionFactor as string

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys.

**Notes:**
Identifies a number containing the compression factor of the image.
Used only for JPEG files. JPEG compression in TIFF files is not supported, and the factor is ignored. The value is a float between 0.0 and 1.0, with 1.0 resulting in no compression and 0.0 resulting in the maximum compression possible. It’s set when reading in and used when writing out the image.

34.2.19 NSImageCompressionMethod as string

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys.

**Notes:**
Identifies a number identifying the compression method of the image.
Used only for TIFF files. The value corresponds to one of the NSTIFFCompression constants, described below. It’s set when reading in and used when writing out.

34.2.20 NSImageCurrentFrame as string

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys.
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Notes:
Identifies a number containing the current frame for an animated GIF file.
The first frame is 0.

34.2.21 NSImageCurrentFrameDuration as string

Notes:
Identifies a number containing the duration (in seconds) of the current frame for an animated GIF image. The frame duration can be a floating-point value. It is used when reading in, but not when writing out.

34.2.22 NSImageDitherTransparency as string

Notes:
Identifies a number containing a boolean that indicates whether the image is dithered. Used only when writing GIF files.

34.2.23 NSImageEXIFData as string

Notes:
Identifies an dictionary containing the EXIF data for the image. This property is used only when reading or writing JPEG files. The dictionary contains the EXIF keys and values. Th standard dictionary keys (that is, those that are not specific to camera vendors) are identical to those for kCGImagePropertyExifDictionary declared in the CGImageSource API. See kCGImagePropertyExifDictionary Keys for details.

34.2.24 NSImageFallbackBackgroundColor as string

Notes:
34.2. CLASS NSBITMAPIMAGEREPMBS

Specifies the background color to use when writing to an image format (such as JPEG) that doesn’t support alpha. The color’s alpha value is ignored. The default background color, when this property is not specified, is white. The value of the property should be an NSColorMBS object. This constant corresponds to the kCGImageDestinationBackgroundColor constant in Quartz.
Available in Mac OS X v10.5 and later.

34.2.25 NSImageFrameCount as string

Notes:
Identifies a number containing the number of frames in an animated GIF file. This value is used when reading in data.

34.2.26 NSImageGamma as string

Notes:
Identifies a number containing the gamma value for the image. Used only for PNG files. The gamma values is a floating-point number between 0.0 and 1.0, with 0.0 being black and 1.0 being the maximum color. It’s set when reading in and used when writing out.

34.2.27 NSImageInterlaced as string

Notes:
Identifies a number containing a Boolean value that indicates whether the image is interlaced. Used only when writing out PNG files.

34.2.28 NSImageLoopCount as string

Notes:
Identifies a number containing the number of loops to make when animating a GIF image.
A value of 0 indicates the animation should loop indefinitely. Values should be specified as Integer numbers. It is used when reading in but not when writing out the image.

### 34.2.29 NSImageProgressive as string

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys.

**Notes:**
Identifies a number containing a boolean that indicates whether the image uses progressive encoding. Used only for JPEG files. It’s set when reading in and used when writing out.

### 34.2.30 NSImageRGBColorTable as string

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys.

**Notes:**
Identifies an Memoryblock containing the RGB color table. Used only for GIF files. It’s stored as packed RGB. It’s set when reading in and used when writing out.

### 34.2.31 PNGRepresentation(properties as dictionary = nil) as Memoryblock

MBS MacBase Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the bitmap as PNG data.

### 34.2.32 TIFFRepresentation as Memoryblock

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a TIFF representation of the receiver.

**Notes:**
This method invokes TIFFRepresentationUsingCompression using the stored compression type and factor retrieved from the initial image data or changed using setCompression. If the stored compression type isn’t supported for writing TIFF data (for example, NSTIFFCompressionNEXT), the stored compression is changed to NSTIFFCompressionNone before invoking TIFFRepresentationUsingCompression. receiver, using the compression that’s returned by getCompression (if applicable).

If a problem is encountered during generation of the TIFF, TIFFRepresentation raises an NSTIFFException or an NSBadBitmapParametersException.
34.2. CLASS NSBITMAPIMAGEREPMBS

See also:

- 34.2.33 TIFFRepresentation(properties as dictionary = nil) as Memoryblock

34.2.33 TIFFRepresentation(properties as dictionary = nil) as Memoryblock

MBS MacBase Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the bitmap as tiff data.

See also:

- 34.2.32 TIFFRepresentation as Memoryblock 6834

34.2.34 Properties

34.2.35 bitmapData as Ptr

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a pointer to the bitmap data.

**Notes:**

If the data is planar, returns a pointer to the first plane.
(Read only property)

34.2.36 bitmapFormat as Integer

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the bitmap format of the receiver.

**Notes:**

Returns 0 by default. The return value can indicate several different attributes, which are described in Constants.
(Read only property)

34.2.37 bitsPerPixel as Integer

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the number of bits allocated for each pixel in each plane of data.

**Notes:**

This number is normally equal to the number of bits per sample or, if the data is in meshed configuration, the number of bits per sample times the number of samples per pixel. It can be explicitly set to another value (in initWithBitmapDataPlanes) in case extra memory is allocated for each pixel. This may be the
case, for example, if pixel data is aligned on byte boundaries.
(Read only property)

34.2.38 bytesPerPlane as Integer

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the number of bytes in each plane or channel of data.
Notes:
This number is calculated from the number of bytes per row and the height of the image.
(Read only property)

34.2.39 bytesPerRow as Integer

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the minimum number of bytes required to specify a scan line (a single row of pixels spanning the width of the image) in each data plane.
Notes:
If not explicitly set to another value (in initWithBitmapDataPlanes), this number will be figured from the width of the image, the number of bits per sample, and, if the data is in a meshed configuration, the number of samples per pixel. It can be set to another value to indicate that each row of data is aligned on word or other boundaries.
(Read only property)

34.2.40 CGImage as Variant

Notes:
If the image was created using a CGImage, you can get it back. Else a new CGImage may be created for you.
(Read only property)

34.2.41 colorSpace as NSColorSpaceMBS

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the image rep's colorSpace
Notes:
34.2. CLASS NSBITMAPIMAGEREPMBSE

Available in Mac OS X v10.6 and later.
(Read only property)

34.2.42 isPlanar as Boolean

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if image data is a planar configuration and false if its in a meshed configuration. **Notes:**
In a planar configuration, the image data is segregated into a separate plane for each color and coverage component. In a meshed configuration, the data is integrated into a single plane.  
(Read only property)

34.2.43 numberOfPlanes as Integer

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the number of separate planes image data is organized into. **Notes:**
This number is the number of samples per pixel if the data has a separate plane for each component (isPlanar returns true) and 1 if the data is meshed (isPlanar returns false).  
(Read only property)

34.2.44 samplesPerPixel as Integer

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the number of components in the data. **Notes:**
The returned value includes both color components and the coverage component, if present.  
(Read only property)

34.2.45 valueForProperty(key as string) as Variant

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The value for the specified property. **Notes:**
Value can be nil.  
(Read and Write computed property)
34.2.46 Constants

34.2.47 NSAlphaFirstBitmapFormat = 1

MBS MacBase Plugin, Plugin Version: 12.0. **Function:** One of the bitmap format constants.

**Notes:**
If 0, alpha values are the last component.
For example, CMYKA and RGBA.
Available in Mac OS X v10.4 and later.

34.2.48 NSAlphaNonpremultipliedBitmapFormat = 2

MBS MacBase Plugin, Plugin Version: 12.0. **Function:** One of the bitmap format constants.

**Notes:**
If 0, alpha values are premultiplied.
Available in Mac OS X v10.4 and later.

34.2.49 NSBMPFileType = 1

MBS MacBase Plugin, Plugin Version: 12.0. **Function:** One of the Image format file type constants.

**Notes:** Windows bitmap image (BMP) format

34.2.50 NSFloatingPointSamplesBitmapFormat = 4

MBS MacBase Plugin, Plugin Version: 12.0. **Function:** One of the bitmap format constants.

**Notes:**
If 0, samples are integer values.
Available in Mac OS X v10.4 and later.

34.2.51 NSGIFFileType = 2

MBS MacBase Plugin, Plugin Version: 12.0. **Function:** One of the Image format file type constants.

**Notes:** Graphics Image Format (GIF), originally created by CompuServe for online downloads
34.2.52  **NSImageRepLoadStatusCompleted = -6**

MBS MacBase Plugin, Plugin Version: 12.0. **Function:** One of the image loading state constants. 
**Notes:** Enough data has been provided to successfully decompress the image (regardless of the complete flag).

34.2.53  **NSImageRepLoadStatusInvalidData = -4**

MBS MacBase Plugin, Plugin Version: 12.0. **Function:** One of the image loading state constants. 
**Notes:** An error occurred during image decompression. The image contains the portions of the data that have already been successfully decompressed, if any.

34.2.54  **NSImageRepLoadStatusReadingHeader = -2**

MBS MacBase Plugin, Plugin Version: 12.0. **Function:** One of the image loading state constants. 
**Notes:** The image format is known, but not enough data has been read to determine the size, depth, etc., of the image. You should continue to provide more data.

34.2.55  **NSImageRepLoadStatusUnexpectedEOF = -5**

MBS MacBase Plugin, Plugin Version: 12.0. **Function:** One of the image loading state constants. 
**Notes:** incrementalLoadFromData was called with true, but not enough data was available for decompression. The image contains the portions of the data that have already been successfully decompressed, if any.

34.2.56  **NSImageRepLoadStatusUnknownType = -1**

MBS MacBase Plugin, Plugin Version: 12.0. **Function:** One of the image loading state constants. 
**Notes:** Not enough data to determine image format. You should continue to provide more data.

34.2.57  **NSImageRepLoadStatusWillNeedAllData = -3**

MBS MacBase Plugin, Plugin Version: 12.0. **Function:** One of the image loading state constants. 
**Notes:** Incremental loading cannot be supported. Until you call incrementalLoadFromData with true, this status will be returned. You can continue to call the method but no decompression will take place. Once you do call the method with true, then the image will be decompressed and one of the final three status messages will be returned.
34.2.58  **NSJPEG2000FileType = 5**

MBS MacBase Plugin, Plugin Version: 12.0. **Function:** One of the Image format file type constants. 
**Notes:** JPEG 2000 file format.

34.2.59  **NSJPEGFileType = 3**

MBS MacBase Plugin, Plugin Version: 12.0. **Function:** One of the Image format file type constants. 
**Notes:** JPEG format.

34.2.60  **NSPNGFileType = 4**

MBS MacBase Plugin, Plugin Version: 12.0. **Function:** One of the Image format file type constants. 
**Notes:** Portable Network Graphics (PNG) format.

34.2.61  **NSTIFFCompressionCCITTFAX3 = 3**

MBS MacBase Plugin, Plugin Version: 12.0. **Function:** One of the Tiff Compression constants 
**Notes:**
CCITT Fax Group 3 compression. 
Used for 1-bit fax images sent over telephone lines.

34.2.62  **NSTIFFCompressionCCITTFAX4 = 4**

MBS MacBase Plugin, Plugin Version: 12.0. **Function:** One of the Tiff Compression constants 
**Notes:**
CCITT Fax Group 4 compression. 
Used for 1-bit fax images sent over ISDN lines.

34.2.63  **NSTIFFCompressionJPEG = 6**

MBS MacBase Plugin, Plugin Version: 12.0. **Function:** One of the Tiff Compression constants 
**Notes:** JPEG compression. No longer supported for input or output.
34.2. CLASS NSBITMAPIMAGEREPMBS

34.2.64 NSTIFFCompressionLZW = 5

MBS MacBase Plugin, Plugin Version: 12.0. **Function:** One of the Tiff Compression constants  
**Notes:** LZW compression.

34.2.65 NSTIFFCompressionNEXT = 32766

MBS MacBase Plugin, Plugin Version: 12.0. **Function:** One of the Tiff Compression constants  
**Notes:** NeXT compressed. Supported for input only.

34.2.66 NSTIFFCompressionNone = 1

MBS MacBase Plugin, Plugin Version: 12.0. **Function:** One of the Tiff Compression constants  
**Notes:** No compression.

34.2.67 NSTIFFCompressionOldJPEG = 32865

MBS MacBase Plugin, Plugin Version: 12.0. **Function:** One of the Tiff Compression constants  
**Notes:** Old JPEG compression. No longer supported for input or output.

34.2.68 NSTIFFCompressionPackBits = 32773

MBS MacBase Plugin, Plugin Version: 12.0. **Function:** One of the Tiff Compression constants  
**Notes:** PackBits compression.

34.2.69 NSTIFFFileType = 0

MBS MacBase Plugin, Plugin Version: 12.0. **Function:** One of the Image format file type constants.  
**Notes:** Tagged Image File Format (TIFF)
34.3 class NSColorListMBS

34.3.1 class NSColorListMBS


34.3.2 Methods

34.3.3 colorWithKey(key as string) as NSColorMBS


34.3.4 Create(name as string) as boolean

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creates a color list; specify "" if you don’t want a name. Notes: Note that this does not add the color list to availableColorLists until the color list is saved into the user’s path with writeToFile("").
See also:
- 34.3.5 Create(name as string, path as string) as boolean

34.3.5 Create(name as string, path as string) as boolean

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creates a color list; specify "" if you don’t want a name. Notes: Note that this does not add the color list to availableColorLists until the color list is saved into the user’s path with writeToFile("").
See also:
- 34.3.4 Create(name as string) as boolean

34.3.6 insertColor(theColor as NSColorMBS, key as string, index as Integer)

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Inserts color at the specified location. Notes: If a color by the same key is already in the list but at a different location it is removed from there.
34.3.7 isEditable as Boolean

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this color list is editable.
**Notes:** True if it is editable.

34.3.8 Load(name as string) as boolean

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Loads the named color list from availableColorLists.
**Notes:** Returns true on success.

34.3.9 name as string

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Name of the color list.

34.3.10 removeColorWithKey(key as string)

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes the color with the given key.
**Notes:** Does nothing if the key does not exist.

34.3.11 removeFile

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** If the color list is in the user’s path, removes the corresponding file in user’s colorlists directory.
**Notes:** Also removes the color list from availableColorLists. If there are no outstanding references to the color list this might deallocate the object as well.

34.3.12 setColor(theColor as NSColorMBS, key as string)

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** If key already exists, sets the corresponding color; otherwise inserts the color at the end.
34.3.13  writeToFile(path as string) as boolean

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Writes the color list to the given path.
**Notes:**
Use "" to save to the user’s private colorlists directory. If the color list is named, this method will also insert
the color list into availableColorLists.
Returns true for success.
34.4. CLASS NSCOLORMBS

34.4 class NSColorMBS

34.4.1 class NSColorMBS

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The class for a Cocoa color.
**Example:**
```vba
dim c as NSColorMBS = NSColorMBS.blueColor
MsgBox str(c.blueComponent)
```

34.4.2 Methods

34.4.3 alternateSelectedControlColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the system color used for the face of a selected control.
**Example:**
```vba
dim c as NSColorMBS = NSColorMBS.alternateSelectedControlColor
window1.Title=c.description
window1.HasBackColor=true
window1.backcolor=c.colorValue
```

**Notes:** The system color used for the face of a selected controla control being clicked or dragged. This color can be used where iApp-like highlighting is desired.

34.4.4 alternateSelectedControlTextColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the system color used for text in a selected control.
**Example:**
```vba
dim c as NSColorMBS = NSColorMBS.alternateSelectedControlTextColor
window1.Title=c.description
window1.HasBackColor=true
window1.backcolor=c.colorValue
```
Notes: The system color used for text in a selected controla control being clicked or dragged. This color can be used where iApp-like highlighting is desired.

### 34.4.5 blackColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an NSColor object whose grayscale value is 0.0 and whose alpha value is 1.0.  
**Example:**

```pascal
Dim c As NSColorMBS = NSColorMBS.blackColor

Window1.Title = c.Description
Window1.HasBackColor = True
Window1.BackColor = c.ColorValue
```

### 34.4.6 blendedColorWithFraction(alpha as Double, c as NSColorMBS) as NSColorMBS

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an NSColor object whose component values are a weighted sum of the receiver’s and the specified color object’s.  
**Example:**

```pascal
Dim b As NSColorMBS = NSColorMBS.blueColor
Dim r As NSColorMBS = NSColorMBS.redColor
Dim c As NSColorMBS = b.blendedColorWithFraction(0.5, r)

MsgBox c.Description
```

**Notes:**

fraction: The amount of the color to blend with the receiver’s color. The method converts color and a copy of the receiver to RGB, and then sets each component of the returned color to fraction of color’s value plus 1 fraction of the receiver’s.  
color: The color to blend with the receiver’s color.

The resulting color object or nil if the colors can’t be converted.
34.4. Class NSColorMBS

34.4.7  blueColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an NSColor object whose RGB value is 0.0, 0.0, 1.0 and whose alpha value is 1.0.

**Example:**
```vbscript
dim c as NSColorMBS = NSColorMBS.blueColor
window1.Title = c.description
window1.HasBackColor = true
window1.backcolor = c.colorValue
```

34.4.8  brownColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an NSColor object whose RGB value is 0.6, 0.4, 0.2 and whose alpha value is 1.0.

**Notes:**
```vbscript
dim c as NSColorMBS = NSColorMBS.brownColor
```
```vbscript
window1.Title = c.description
window1.HasBackColor = true
window1.backcolor = c.colorValue
```

34.4.9  CGColorHandle as Integer

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Converts NSColor to CGColor.

**Notes:**
Return value may be an approximation in some cases, so there isn’t guaranteed round-trip fidelity. Available on Mac OS X 10.8.

34.4.10  clearColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an NSColor object whose grayscale and alpha values are both 0.0.

**Example:**
```vbscript
dim c as NSColorMBS = NSColorMBS.clearColor
window1.Title = c.description
```

34.4.11 colorFromPasteboard as NSColorMBS

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Returns the NSColor currently on the given pasteboard.

**Notes:** The color currently on the pasteboard or nil if pasteBoard doesn’t contain color data.

34.4.12 colorSpace as NSColorSpaceMBS

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Returns an object representing the color space of the receiver.

**Example:**

```vba
dim b as NSColorMBS = NSColorMBS.blueColor
MsgBox b.colorSpace.localizedDescriptionedName
```

**Notes:**

An object representing a color space. The returned NSColorSpace object may represent a custom color space.

Calling this method raises an exception if the receiver is not based on a color space represented by an NSColorSpace object specifically, colors designated by NSNamedColorSpace and NSPatternColorSpace. If you are unsure about a color object, convert it to an equivalent NSColorSpace-based object before calling this method. Color objects created with color-space names NSCalibratedWhiteColorSpace, NSCalibratedBlackColorSpace, NSCalibratedRGBColorSpace, NSDeviceWhiteColorSpace, NSDeviceBlackColorSpace, NSDeviceRGBColorSpace, NSDeviceCMYKColorSpace, or NSCustomColorSpace with the NSColorSpace class methods corresponding to these names are safe to use with this method. See "About Color Spaces" in Color Programming Topics for Cocoa for a list of these corresponding methods.

34.4.13 colorUsingColorSpace(colorSpace as NSColorSpaceMBS) as NSColorMBS

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Returns a new color object representing the color of the receiver in the specified color space.

**Example:**

```vba
dim b as NSColorMBS = NSColorMBS.blueColor
dim c as NSColorMBS = b.colorUsingColorSpace(NSColorSpaceMBS.deviceRGBColorSpace)
```
34.4. CLASS NSCOLORMBS

MsgBox b.description

Notes:

space: The color space of the new NSColor object.

Returns the new NSColor object. This method converts the receiver’s color to an equivalent one in the new color space. Although the new color might have different component values, it looks the same as the original. Returns nil if conversion is not possible.

If the receiver’s color space is the same as that specified in space, this method returns the same NSColor object.

34.4.14 colorUsingColorSpaceName(colorSpace as string) as NSColorMBS

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creates and returns an NSColor whose color is the same as the receiver’s, except that the new NSColor is in the specified color space.

Notes:

colorSpace: The name of the color space containing the new NSColor object. If colorSpace is “”, the most appropriate color space is used.

The new NSColor object or nil if the specified conversion cannot be done.

34.4.15 colorWithAlphaComponent(alpha as Double) as NSColorMBS

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creates and returns an NSColor object that has the same color space and component values as the receiver, but the specified alpha component.

Example:

dim b as NSColorMBS = NSColorMBS.blueColor.colorWithAlphaComponent(0.5)
MsgBox b.description // shows ”NSCalibratedRGBColorSpace 0 0 1 0.5”

Notes:

alpha: The opacity value of the new NSColor object.
Returns a new NSColor object. If the receiver’s color space doesn’t include an alpha component, the receiver is returned.

A subclass with explicit opacity components should override this method to return a color with the specified alpha.

34.4.16  colorWithCalibratedHSV(hue as Double, saturation as Double, brightness as Double, alpha as Double=1.0) as NSColorMBS

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creates and returns an NSColor object using the given opacity and HSB color space components.

Example:

```dim b as NSColorMBS = NSColorMBS.colorWithCalibratedHSV(1.0, 0.5, 0.2, 1.0)MsgBox b.description // shows "NSCalibratedRGBColorSpace 0.2 0.1 0.1 1"
```

Notes:

hue: The hue component of the color object in the HSB color space.
saturation: The saturation component of the color object in the HSB color space.
brightness: The brightness (or value) component of the color object in the HSB color space.
alpha: The opacity value of the color object,

Values below 0.0 are interpreted as 0.0, and values above 1.0 are interpreted as 1.0.

34.4.17  colorWithCalibratedRGB(red as Double, green as Double, blue as Double, alpha as Double=1.0) as NSColorMBS


Example:

```dim b as NSColorMBS = NSColorMBS.colorWithCalibratedRGB(1.0, 0.5, 0.2, 1.0)MsgBox b.description // shows "NSCalibratedRGBColorSpace 1 0.5 0.2 1"
```

Notes:

red: The red component of the color object.
green: The green component of the color object.
blue: The blue component of the color object.
alpha: The opacity value of the color object.
Values below 0.0 are interpreted as 0.0, and values above 1.0 are interpreted as 1.0.

### 34.4.18 colorWithCalibratedWhite(white as Double, alpha as Double=1.0) as NSColorMBS

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an NSColor object using the given opacity and grayscale value.

**Example:**

```lisp
dim b as NSColorMBS = NSColorMBS.colorWithCalibratedWhite(1.0, 1.0)
MsgBox b.description // shows "NSCalibratedWhiteColorSpace 1 1"
```

**Notes:**
- white: The grayscale value of the color object.
- alpha: The opacity value of the color object.

Values below 0.0 are interpreted as 0.0, and values above 1.0 are interpreted as 1.0.

### 34.4.19 colorWithCGColor(CGColorHandle as Integer) as NSColorMBS

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Converts CGColor to NSColor.

**Notes:**
- Return value may be an approximation in some cases, so there isn’t guaranteed round-trip fidelity.
- Available on Mac OS X 10.8.

### 34.4.20 colorWithColorSpace(ColorSpace as NSColorSpaceMBS, components() as Double) as NSColorMBS

MBS MacBase Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an NSColor object created from the specified components of the given color space.

**Example:**

```lisp
dim n as NSColorSpaceMBS = NSColorSpaceMBS.genericRGBColorSpace
MsgBox n.localizedName

dim co as NSColorMBS = NSColorMBS.colorWithColorSpace(n, 1.0, 0, 0, 1.0)
```
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MsgBox co.description

Notes:

space: An NSColorSpace object representing a color space. The method raises an exception if this is nil.
components: An array of the components in the specified color space to use to create the NSColor object.
The order of these components is determined by the color-space profile, with the alpha component always last. (If you want the created color to be opaque, specify 1.0 for the alpha component.)

Returns the color object. If space represents a color space that cannot be used with NSColor objects (for example, a "pattern" color space) the method returns nil. Raises anNSExceptionMBS if the number of components does not match.

See also:

- 34.4.21 colorWithColorSpace(ColorSpace as NSColorSpaceMBS, paramarray components as Double) as NSColorMBS

34.4.21 colorWithColorSpace(ColorSpace as NSColorSpaceMBS, paramarray components as Double) as NSColorMBS

MBS MacBase Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns an NSColor object created from the specified components of the given color space.

Example:

dim n as NSColorSpaceMBS = NSColorSpaceMBS.genericRGBColorSpace
MsgBox n.localizedDescription

dim co as NSColorMBS = NSColorMBS.colorWithColorSpace(n, 1.0, 0, 0, 1.0)
MsgBox co.localizedDescription

Notes:

space: An NSColorSpace object representing a color space. The method raises an exception if this is nil.
components: An array of the components in the specified color space to use to create the NSColor object.
The order of these components is determined by the color-space profile, with the alpha component always last. (If you want the created color to be opaque, specify 1.0 for the alpha component.)

Returns the color object. If space represents a color space that cannot be used with NSColor objects (for example, a "pattern" color space) the method returns nil. Raises anNSExceptionMBS if the number of components does not match.

See also:

- 34.4.20 colorWithColorSpace(ColorSpace as NSColorSpaceMBS, components() as Double) as NSColorMBS
34.4. CLASS NSCOLORMBS

34.4.22 colorWithColorSpaceHSV(ColorSpace as NSColorSpaceMBS, hue as Double, saturation as Double, brightness as Double, alpha as Double=1.0) as NSColorMBS

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an NSColor object with the specified color space, hue, saturation, brightness, and alpha channel values.

**Notes:**

ColorSpace: An NSColorSpace object representing a color space. An exception is raised if the color model of the provided color space is not RGB.

hue: The hue (color) component, expressed as a floating-point value in the range 0.0 to 1.0.

saturation: The color saturation component, expressed as a floating-point value in the range 0.0 to 1.0.

brightness: The brightness component, expressed as a floating-point value in the range 0.0 to 1.0.

alpha: The alpha (opacity), expressed as a floating-point value in the range 0.0 (transparent) to 1.0 (opaque).

Returns the color object.

34.4.23 colorWithDeviceCMYK(cyan as Double, magenta as Double, yellow as Double, black as Double, alpha as Double=1.0) as NSColorMBS

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an NSColor object using the given opacity value and CMYK components.

**Example:**

```plaintext
dim b as NSColorMBS = NSColorMBS.colorWithDeviceCMYK(0.5, 1.0, 0.5, 0.2, 1.0)
MsgBox b.description // shows "NSDeviceCMYKColorSpace 0.5 1 0.5 0.2 1"
```

**Notes:**

cyan: The cyan component of the color object.

magenta: The magenta component of the color object.

yellow: The yellow component of the color object.

black: The black component of the color object.

alpha: The opacity value of the color object.

Values below 0.0 are interpreted as 0.0, and values above 1.0 are interpreted as 1.0. In PostScript, this color space corresponds directly to the device-dependent operator setcmykcolor.
34.4.24 colorWithDeviceHSV(hue as Double, saturation as Double, brightness as Double, alpha as Double=1.0) as NSColorMBS

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an NSColor object using the given opacity value and HSB color space components.

**Example:**
```dim b as NSColorMBS = NSColorMBS.colorWithDeviceHSV(1.0, 0.5, 0.2, 1.0)
MsgBox b.description // shows "NSDeviceRGBColorSpace 0.2 0.1 0.1 1"
```

**Notes:**
- hue: The hue component of the color object.
- saturation: The saturation component of the color object.
- brightness: The brightness component of the color object.
- alpha: The opacity value of the color object.

Values below 0.0 are interpreted as 0.0, and values above 1.0 are interpreted as 1.0. In PostScript, this color space corresponds directly to the device-dependent operator setrgbcolor.

34.4.25 colorWithDeviceRGB(red as Double, green as Double, blue as Double, alpha as Double=1.0) as NSColorMBS

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an NSColor object using the given opacity value and RGB components.

**Example:**
```dim b as NSColorMBS = NSColorMBS.colorWithDeviceRGB(1.0, 0.5, 0.2, 1.0)
MsgBox b.description // shows "NSDeviceRGBColorSpace 1 0.5 0.2 1"
```

**Notes:**
- red: The red component of the color object.
- green: The green component of the color object.
- blue: The blue component of the color object.
- alpha: The opacity value of the color object.

Values below 0.0 are interpreted as 0.0, and values above 1.0 are interpreted as 1.0. In PostScript, this color space corresponds directly to the device-dependent operator setrgbcolor.
34.4. **CLASS NSCOLORMBS**

34.4.26 **colorWithDeviceWhite(white as Double, alpha as Double=1.0) as NSColorMBS**

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an NSColor object using the given opacity and grayscale values. **Example:**

```vbnet
dim b as NSColorMBS = NSColorMBS.colorWithDeviceWhite(1.0, 1.0)
MsgBox b.description // shows "NSDeviceWhiteColorSpace 1 1"
```

**Notes:**

- `white`: The grayscale value of the color object.
- `alpha`: The opacity value of the color object.

Values below 0.0 are interpreted as 0.0, and values above 1.0 are interpreted as 1.0. In PostScript, this color space corresponds directly to the device-dependent operator setgray.

34.4.27 **colorWithDisplayP3(red as Double, green as Double, blue as Double, alpha as Double=1.0) as NSColorMBS**

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a color created from the specified components in the Display P3 colorspace. **Notes:**

- `red`: The red component of the color object.
- `green`: The green component of the color object.
- `blue`: The blue component of the color object.
- `alpha`: The opacity value of the color object.

Values below 0.0 are interpreted as 0.0, and values above 1.0 are interpreted as 1.0.

34.4.28 **colorWithGenericGamma22White(white as Double, alpha as Double=1.0) as NSColorMBS**

MBS MacBase Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an color created with the specified white and alpha values in the GenericGamma22 colorspace. **Notes:**

- `white`: The white value of the color object.
- `alpha`: The opacity value of the color object.
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Values below 0.0 are interpreted as 0.0, and values above 1.0 are interpreted as 1.0.
Available in OS X v10.7 and later.

34.4.29  colorWithPatternImage(image as Variant) as NSColorMBS

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Creates and returns an NSColor object that uses the specified image pattern.

Example:

dim p as Picture = LogoMBS(100)
dim n as new NSImageMBS(p)
dim c as NSColorMBS = NSColorMBS.colorWithPatternImage(n)
dim x as NSImageMBS = c.patternImage
Backdrop=x.CopyPictureWithMask

Notes:
The image is tiled starting at the bottom of the window. The image is not scaled.

Parameter is a NSImageMBS object. We declare it as a variant to reduce plugin dependencies.

34.4.30  colorWithSRGB(red as Double, green as Double, blue as Double, alpha as Double=1.0) as NSColorMBS

MBS MacBase Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns a color created from the specified components in the sRGB colorspace.

Notes:
red: The red component of the color object.
green: The green component of the color object.
blue: The blue component of the color object.
alpha: The opacity value of the color object.

Values below 0.0 are interpreted as 0.0, and values above 1.0 are interpreted as 1.0.
Available in OS X v10.7 and later.
34.4. CLASS NSCOLORMBS

34.4.31 Components as Double()

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Returns the components of the receiver as an array.

**Example:**

```vba
dim b as NSColorMBS = NSColorMBS.blueColor
dim c(-1) as Double = b.Components
dim lines(-1) as string

for each d as Double in c
    lines.Append str(d)
next

MsgBox Join(lines) // shows 0 0 1 1
```

**Notes:** You can invoke this method on NSColor objects created from custom color spaces to get the individual floating point components, including alpha. Raises an exception if the receiver doesn’t have floating-point components. To find out how many components are in the components array, send the receiver a numberOfComponents message.

34.4.32 Constructor(c as color)

MBS MacBase Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Initializes the color with generic colorspace.

**Example:**

```vba
dim r as NSColorMBS = NSColorMBS.redColor
dim c as color = & c FF0000
dim n as new NSColorMBS(c)

Break // check debugger
```

See also:

- 34.4.33 Constructor(red as Double, green as Double, blue as Double, alpha as Double = 1.0)

34.4.33 Constructor(red as Double, green as Double, blue as Double, alpha as Double = 1.0)

MBS MacBase Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Initializes the color with generic colorspace.
Notes: Pass values in range from 0.0 to 1.0.
See also:

- 34.4.32 Constructor(c as color)

34.4.34 controlBackgroundColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the system color used for the background of large controls.
**Example:**
dim c as NSColorMBS = NSColorMBS.controlBackgroundColor

window1.Title = c.description
window1.HasBackColor = true
window1.backcolor = c.colorValue

Notes: The system color used for the background of large controls such as browsers, table views, and clip views.

34.4.35 controlColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the system color used for the flat surfaces of a control.
**Example:**
dim c as NSColorMBS = NSColorMBS.controlColor

window1.Title = c.description
window1.HasBackColor = true
window1.backcolor = c.colorValue

Notes: The system color used for the flat surfaces of a control. By default, the control color is a pattern color that will draw the ruled lines for the window background, which is the same as returned by windowBackgroundColor.

If you use controlColor assuming that it is a solid, you may have an incorrect appearance. You should use lightGrayColor in its place.
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### 34.4.36 controlDarkShadowColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the system color used for the dark edge of the shadow dropped from controls.

**Example:**

```vba
dim c as NSColorMBS = NSColorMBS.controlDarkShadowColor

window1.Title=c.description
window1.HasBackColor=true
window1.backcolor=c.colorValue
```

**Notes:** Of the two dark borders that run along the bottom and right of controls, representing shadows, the color of the outer, darker border.

### 34.4.37 controlHighlightColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the system color used for the highlighted bezels of controls.

**Example:**

```vba
dim c as NSColorMBS = NSColorMBS.controlHighlightColor

window1.Title=c.description
window1.HasBackColor=true
window1.backcolor=c.colorValue
```

**Notes:** Of the two light borders that run along the top and left of controls, representing reflections from a light source in the upper left, the color of the inner, duller border.

### 34.4.38 controlLightHighlightColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the system color used for light highlights in controls.

**Example:**

```vba
dim c as NSColorMBS = NSColorMBS.controlLightHighlightColor

window1.Title=c.description
window1.HasBackColor=true
window1.backcolor=c.colorValue
```
Notes: Of the two light borders that run along the top and left of controls, representing reflections from a light source in the upper left, the color of the outer, brighter border.

34.4.39  controlShadowColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the system color used for the shadows dropped from controls.

Example:

```vba
dim c as NSColorMBS = NSColorMBS.controlShadowColor

window1.Title = c.description
window1.HasBackColor = true
window1.backcolor = c.colorValue
```

Notes: Of the two dark borders that run along the bottom and right of controls, representing shadows, the color of the inner, lighter border.

34.4.40  controlTextColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the system color used for text on controls that aren’t disabled.

Example:

```vba
dim c as NSColorMBS = NSColorMBS.controlTextColor

window1.Title = c.description
window1.HasBackColor = true
window1.backcolor = c.colorValue
```

34.4.41  cyanColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns an NSColor object whose RGB value is 0.0, 1.0, 1.0 and whose alpha value is 1.0.

Example:

```vba
dim c as NSColorMBS = NSColorMBS.cyanColor
```
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window1.Title=c.description
window1.HasBackColor=true
window1.backcolor=c.colorValue

### 34.4.42 darkGrayColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an NSColor object whose grayscale value is 1/3 and whose alpha value is 1.0.

**Example:**

```没人
dim c as NSColorMBS = NSColorMBS.darkGrayColor
window1.Title=c.description
window1.HasBackColor=true
window1.backcolor=c.colorValue
```

### 34.4.43 disabledControlTextColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the system color used for text on disabled controls.

**Example:**

```没人
dim c as NSColorMBS = NSColorMBS.disabledControlTextColor
window1.Title=c.description
window1.HasBackColor=true
window1.backcolor=c.colorValue
```

### 34.4.44 getCMYK(byref cyan as Double, byref magenta as Double, byref yellow as Double, byref black as Double)

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver’s CMYK and opacity values.

**Example:**

```没人
dim co as NSColorMBS = NSColorMBS.colorWithDeviceCMYK(1.0, 0.5, 1.0, 0.8)
dim c,m,y,k as Double
co.getCMYK(c,m,y,k)
```
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MsgBox str(c) + “ ” + str(m) + “ ” + str(y) + “ ” + str(k)

Notes:

cyan: Upon return, contains the cyan component of the color object.
magenta: Upon return, contains the magenta component of the color object.
yellow: Upon return, contains the yellow component of the color object.
black: Upon return, contains the black component of the color object.
alpha: Upon return, contains opacity value of the color object. (optionally)

This method works only with objects representing colors in the NSDeviceCMYKColorSpace. Sending it to other objects raises an exception.
See also:

• 34.4.45 getCMYK(byref cyan as Double, byref magenta as Double, byref yellow as Double, byref black as Double, byref alpha as Double)

34.4.45  getCMYK(byref cyan as Double, byref magenta as Double, byref yellow as Double, byref black as Double, byref alpha as Double)

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Returns the receiver’s CMYK and opacity values.

**Example:**

dim co as NSColorMBS = NSColorMBS.colorWithDeviceCMYK(1.0, 0.5, 1.0, 0.8, 0.4)
dim c,m,y,k,a as Double

c.getCMYK(c,m,y,k,a)

MsgBox str(c) + “ ” + str(m) + “ ” + str(y) + “ ” + str(k) + “ ” + str(a)

Notes:

cyan: Upon return, contains the cyan component of the color object.
magenta: Upon return, contains the magenta component of the color object.
yellow: Upon return, contains the yellow component of the color object.
black: Upon return, contains the black component of the color object.
alpha: Upon return, contains opacity value of the color object. (optionally)

This method works only with objects representing colors in the NSDeviceCMYKColorSpace. Sending it to other objects raises an exception.
See also:

• 34.4.44 getCMYK(byref cyan as Double, byref magenta as Double, byref yellow as Double, byref black
34.4.46 getHSV(byref hue as Double, byref saturation as Double, byref brightness as Double)

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the receiver’s HSB component and opacity values in the respective arguments.

Example:

dim c as NSColorMBS = NSColorMBS.colorWithCalibratedHSV(1.0, 0.5, 1.0, 0.4)
dim h,s,v,a as Double

c.getHSV(h,s,v,a)

MsgBox str(h) + ” ” + str(s) + ” ” + str(v) + ” ” + str(a)

Notes:

hue: Upon return, contains the hue component of the color object.
saturation: Upon return, contains the saturation component of the color object.
brightness: Upon return, contains the brightness component of the color object.
a: Upon return, contains the opacity value of the color object. (optionally)

This method works only with objects representing colors in the NSCalibratedRGBColorSpace or NSDeviceRGBColorSpace color space. Sending it to other objects raises an exception.

See also:

• 34.4.47 getHSV(byref hue as Double, byref saturation as Double, byref brightness as Double, byref a as Double)

34.4.47 getHSV(byref hue as Double, byref saturation as Double, byref brightness as Double, byref a as Double)

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the receiver’s HSB component and opacity values in the respective arguments.

Notes:

hue: Upon return, contains the hue component of the color object.
saturation: Upon return, contains the saturation component of the color object.
brightness: Upon return, contains the brightness component of the color object.
a: Upon return, contains the opacity value of the color object. (optionally)

This method works only with objects representing colors in the NSCalibratedRGBColorSpace or NSDeviceRGBColorSpace color space. Sending it to other objects raises an exception.
See also:

- 34.4.46 getHSV(byref hue as Double, byref saturation as Double, byref brightness as Double)

34.4.48 getRGB(byref red as Double, byref green as Double, byref blue as Double)

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the receiver’s RGB component and opacity values in the respective arguments.

**Example:**
```vba
dim c as NSColorMBS = NSColorMBS.blueColor
dim r,g,b as Double
c.getRGB(r,g,b)
MsgBox str(r)+" "+str(g)+" "+str(b) // shows "0 0 1"
```

**Notes:**
red: Upon return, contains the red component of the color object.
green: Upon return, contains the green component of the color object.
blue: Upon return, contains the blue component of the color object.
alpha: Upon return, contains the opacity value of the color object. (optionally)

This method works only with objects representing colors in the NSCalibratedRGBColorSpace or NSDeviceRGBColorSpace color space. Sending it to other objects raises an exception.

Plugin converts color to calibrated RGB if needed.

See also:

- 34.4.49 getRGB(byref red as Double, byref green as Double, byref blue as Double, byref alpha as Double)
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c.getRGB(r, g, b, a)

MsgBox str(r) + " " + str(g) + " " + str(b) + " " + str(a) // shows "0 0 1 1"

Notes:
red: Upon return, contains the red component of the color object.
green: Upon return, contains the green component of the color object.
blue: Upon return, contains the blue component of the color object.
alpha: Upon return, contains the opacity value of the color object. (optionally)

This method works only with objects representing colors in the NSCalibratedRGBColorSpace or NSDeviceRGBColorSpace color space. Sending it to other objects raises an exception.

Plugin converts color to calibrated RGB if needed.
See also:
• 34.4.48 getRGB(byref red as Double, byref green as Double, byref blue as Double)

34.4.50 getWhite(byref white as Double)

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver’s grayscale value and alpha values.

**Example:**

dim c as NSColorMBS = NSColorMBS.colorWithDeviceWhite(1.0, 1.0)
dim w as Double

c.getWhite(w)

MsgBox str(w)

Notes:
white: Upon return, contains the grayscale value of the color object.
alpha: Upon return, contains the opacity value of the color object. (optionally)

This method works only with objects representing colors in the NSCalibratedWhiteColorSpace, NSCalibratedBlackColorSpace, NSDeviceBlackColorSpace, or NSDeviceWhiteColorSpace color space. Sending it to other objects raises an exception.
See also:
• 34.4.51 getWhite(byref white as Double, byref alpha as Double)
34.4.51  **getWhite(byref white as Double, byref alpha as Double)**

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver’s grayscale value and alpha values.

**Example:**

```vbs
dim c as NSColorMBS = NSColorMBS.colorWithDeviceWhite(1.0, 1.0)
dim w,a as Double
c.getWhite(w,a)
MsgBox str(w)+” ”+str(a)
```

**Notes:**

- **white:** Upon return, contains the grayscale value of the color object.
- **alpha:** Upon return, contains the opacity value of the color object. (optionally)

This method works only with objects representing colors in the NSCalibratedWhiteColorSpace, NSCalibratedBlackColorSpace, NSDeviceBlackColorSpace, or NSDeviceWhiteColorSpace color space. Sending it to other objects raises an exception.

**See also:**

- 34.4.50 getWhite(byref white as Double)

34.4.52  **grayColor as NSColorMBS**

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an NSColor object whose grayscale value is 0.5 and whose alpha value is 1.0.

**Example:**

```vbs
dim c as NSColorMBS = NSColorMBS.grayColor
window1.Title=c.description
window1.HasBackColor=true
window1.backcolor=c.colorValue
```

34.4.53  **greenColor as NSColorMBS**

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an NSColor object whose RGB value is 0.0, 1.0, 0.0 and whose alpha value is 1.0.

**Example:**
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```vba
Dim c As NSColorMBS = NSColorMBS.greenColor

Window1.Title = c.Description
Window1.HasBackColor = True
Window1.BackgroundColor = c.ColorValue
```

34.4.54 gridColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the system color used for the optional gridlines in, for example, a table view.

**Example:**

```vba
Dim c As NSColorMBS = NSColorMBS.gridColor

Window1.Title = c.Description
Window1.HasBackColor = True
Window1.BackgroundColor = c.ColorValue
```

34.4.55 headerColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the system color used as the background color for header cells in table views and outline views.

**Example:**

```vba
Dim c As NSColorMBS = NSColorMBS.headerColor

Window1.Title = c.Description
Window1.HasBackColor = True
Window1.BackgroundColor = c.ColorValue
```

**Notes:** The system color used as the background for header cells in table and outline views.

34.4.56 headerTextColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the system color used for text in header cells in table views and outline views.

**Example:**
dim c as NSColorMBS = NSColorMBS.headerTextColor

window1.Title = c.description
window1.HasBackColor = true
window1.backcolor = c.colorValue

### 34.4.57 `highlightColor` as `NSColorMBS`

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the system color that represents the virtual light source on the screen.

**Example:**

```vb
dim c as NSColorMBS = NSColorMBS.highlightColor

window1.Title = c.description
window1.HasBackColor = true
window1.backcolor = c.colorValue
```

### 34.4.58 `highlightWithLevel(level as Double)` as `NSColorMBS`

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an NSColor object that represents a blend between the receiver and the highlight color returned by `highlightColor`.

**Example:**

```vb
dim c as NSColorMBS = NSColorMBS.blueColor
dim h as NSColorMBS = c.highlightWithLevel(0.5)
MsgBox h.description
```

**Notes:**

level: The amount of the highlight color that is blended with the receiver’s color. This should be a number from 0.0 through 1.0. A highlightLevel below 0.0 is interpreted as 0.0; a highlightLevel above 1.0 is interpreted as 1.0.

Returns the new NSColor object. Returns nil if the colors can’t be converted.

Invoke this method when you want to brighten the receiving NSColor for use in highlights.
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34.4.59 keyboardFocusIndicatorColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the system color that represents the keyboard focus ring around controls.

**Example:**
```
dim c as NSColorMBS = NSColorMBS.keyboardFocusIndicatorColor
window1.Title=c.description
window1.HasBackColor=true
window1.backcolor=c.colorValue
```

34.4.60 knobColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the system color used for the flat surface of a slider knob that hasn’t been selected.

**Example:**
```
dim c as NSColorMBS = NSColorMBS.knobColor
window1.Title=c.description
window1.HasBackColor=true
window1.backcolor=c.colorValue
```

**Notes:** The knob’s beveled edges, which set it in relief, are drawn in highlighted and shadowed versions of the face color. When a knob is selected, its color changes to selectedKnobColor.

34.4.61 lightGrayColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an NSColor object whose grayscale value is 2/3 and whose alpha value is 1.0.

**Example:**
```
dim c as NSColorMBS = NSColorMBS.lightGrayColor
window1.Title=c.description
window1.HasBackColor=true
window1.backcolor=c.colorValue
```
34.4.62  magentaColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an NSColor object whose RGB value is 1.0, 0.0, 1.0 and whose alpha value is 1.0.

**Example:**

```
dim c as NSColorMBS = NSColorMBS.magentaColor

window1.Title = c.description
window1.HasBackColor = true
window1.backcolor = c.colorValue
```

34.4.63  orangeColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an NSColor object whose RGB value is 1.0, 0.5, 0.0 and whose alpha value is 1.0.

**Example:**

```
dim c as NSColorMBS = NSColorMBS.orangeColor

window1.Title = c.description
window1.HasBackColor = true
window1.backcolor = c.colorValue
```

34.4.64  patternImage as Variant

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the image that the receiver is using as a pattern.

**Example:**

```
dim p as Picture = LogoMBS(100)
dim n as new NSImageMBS(p)
dim c as NSColorMBS = NSColorMBS.colorWithPatternImage(n)
dim x as NSImageMBS = c.patternImage

Backdrop = x.CopyPictureWithMask
```

**Notes:**

The image used by the color object. If the receiver doesn’t have an image, this method raises an exception.
Declared a variant instead of NSImageMBS to reduce plugin dependencies.

### 34.4.65 purpleColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an NSColor object whose RGB value is 0.5, 0.0, 0.5 and whose alpha value is 1.0. **Example:**

```vba
dim c as NSColorMBS = NSColorMBS.purpleColor
window1.Title=c.description
window1.HasBackColor=true
window1.backcolor=c.colorValue
```

### 34.4.66 redColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an NSColor object whose RGB value is 1.0, 0.0, 0.0 and whose alpha value is 1.0. **Example:**

```vba
dim c as NSColorMBS = NSColorMBS.redColor
window1.Title=c.description
window1.HasBackColor=true
window1.backcolor=c.colorValue
```

### 34.4.67 scrollBarColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the system color used for scroll "bars" that is, for the groove in which a scroller’s knob moves. **Example:**

```vba
dim c as NSColorMBS = NSColorMBS.scrollBarColor
window1.Title=c.description
window1.HasBackColor=true
window1.backcolor=c.colorValue
```

**Notes:** The system color used for scroll bars.
34.4.68  **scrubberTexturedBackgroundColor** as NSColorMBS

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The scrubber texture background color.

34.4.69  **secondarySelectedControlColor** as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the system color used in non-key views.

**Example:**
```vbnet
dim c as NSColorMBS = NSColorMBS.secondarySelectedControlColor
window1.Title=c.description
window1.HasBackColor=true
window1.backcolor=c.colorValue
```

34.4.70  **selectedControlColor** as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the system color used for the face of a selected control.

**Example:**
```vbnet
dim c as NSColorMBS = NSColorMBS.selectedControlColor
window1.Title=c.description
window1.HasBackColor=true
window1.backcolor=c.colorValue
```

**Notes:** The system color used for the face of a selected control for a control being dragged or clicked.

34.4.71  **selectedControlTextColor** as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the system color used for text in a selected control for a control being clicked or dragged.

**Example:**
```vbnet
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```plaintext
dim c as NSColorMBS = NSColorMBS.selectedControlTextColor
Title=c.description
window1.HasBackColor=true
window1.backcolor=c.colorValue
```

### 34.4.72 selectedKnobColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the system color used for the slider knob when it is selected.  
**Example:**

```plaintext
dim c as NSColorMBS = NSColorMBS.selectedKnobColor
Title=c.description
window1.HasBackColor=true
window1.backcolor=c.colorValue
```

**Notes:** The system color used for a slider knob that is selected that is, dragged.

### 34.4.73 selectedMenuItemColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the system color used for the face of selected menu items.  
**Example:**

```plaintext
dim c as NSColorMBS = NSColorMBS.selectedMenuItemColor
Title=c.description
window1.HasBackColor=true
window1.backcolor=c.colorValue
```

**Notes:** The system color used for selected menu items.
34.4.74 selectedMenuItemTextColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the system color used for the text in menu items.  
**Example:**

```vbs
dim c as NSColorMBS = NSColorMBS.selectedMenuItemTextColor
Title=c.description
window1.HasBackColor=true
window1.backcolor=c.colorValue
```

**Notes:** The system color used for text in selected menu items.

--

34.4.75 selectedTextBackgroundColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the system color used for the background of selected text.  
**Example:**

```vbs
dim c as NSColorMBS = NSColorMBS.selectedTextBackgroundColor
Title=c.description
window1.HasBackColor=true
window1.backcolor=c.colorValue
```

--

34.4.76 selectedTextColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the system color used for selected text.  
**Example:**

```vbs
dim c as NSColorMBS = NSColorMBS.selectedTextColor
Title=c.description
window1.HasBackColor=true
window1.backcolor=c.colorValue
```
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### 34.4.77 shadowColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the system color that represents the virtual shadows cast by raised objects on the screen. **Example:**

```vbnet
dim c as NSColorMBS = NSColorMBS.shadowColor
Title=c.description
window1.HasBackColor=true
window1.backcolor=c.colorValue
```

### 34.4.78 shadowWithLevel(level as Double) as NSColorMBS

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an NSColor object that represents a blend between the receiver and the shadow color returned by shadowColor. **Example:**

```vbnet
dim c as NSColorMBS = NSColorMBS.blueColor
dim h as NSColorMBS = c.shadowWithLevel(0.5)
MsgBox h.description
```

**Notes:**

- **level:** The amount of the shadow color used for the blend. This should be a number from 0.0 through 1.0. A shadowLevel below 0.0 is interpreted as 0.0; a shadowLevel above 1.0 is interpreted as 1.0.

Returns the new NSColor object. Returns nil if the colors can’t be converted.

Invoke this method when you want to darken the receiving NSColor for use in shadows.

### 34.4.79 textBackgroundColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the system color used for the text background. **Example:**

```vbnet
dim c as NSColorMBS = NSColorMBS.textBackgroundColor
```
34.4.80  **textColor as NSColorMBS**

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the system color used for text.  
**Example:**

```
dim c as NSColorMBS = NSColorMBS.textColor
```

**Notes:** The system color used for text. When text is selected, its color changes to the return value of selectedTextColor.

34.4.81  **whiteColor as NSColorMBS**

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns an NSColor object whose grayscale and alpha values are both 1.0.  
**Example:**

```
dim c as NSColorMBS = NSColorMBS.whiteColor
```

**Notes:** The system color used for text. When text is selected, its color changes to the return value of selectedTextColor.
34.4. CLASS NSCOLORMBS

34.4.82  windowBackgroundColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a pattern color that will draw the ruled lines for the window background.

**Example:**

```vba
Dim c As NSColorMBS = NSColorMBS.windowBackgroundColor
Title = c.description

window1.HasBackColor = true
window1.backcolor = c.colorValue
```

34.4.83  windowFrameColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the system color used for window frames, except for their text.

**Example:**

```vba
Dim c As NSColorMBS = NSColorMBS.windowFrameColor
Title = c.description

window1.HasBackColor = true
window1.backcolor = c.colorValue
```

34.4.84  windowFrameTextColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the system color used for the text in window frames.

**Example:**

```vba
Dim c As NSColorMBS = NSColorMBS.windowFrameTextColor

// convert to Calibrated RGB ColorSpace
c = c.colorUsingColorSpaceName("NSCalibratedRGBColorSpace")

Title = c.description

window1.HasBackColor = true
window1.backcolor = c.colorValue
```
34.4.85  **writeToPasteboard**

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Writes the receiver’s data to the specified pasteboard.

34.4.86  **yellowColor as NSColorMBS**

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an NSColor object whose RGB value is 1.0, 1.0, 0.0 and whose alpha value is 1.0. **Example:**

```vbnet
dim c as NSColorMBS = NSColorMBS.yellowColor
Title=c.description

window1.HasBackColor=true
window1.backcolor=c.colorValue
```

34.4.87  **Properties**

34.4.88  **alphaComponent as Double**

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The alpha value of the color. **Example:**

```vbnet
dim c as NSColorMBS = NSColorMBS.blueColor
MsgBox str(c.alphaComponent)
```

**Notes:**

Value is from 0.0 to 1.0. (Read only property)

34.4.89  **blackComponent as Double**

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The color value from a CMYK color. **Example:**
34.4. CLASS NSCOLORMBS

dim c as NSColorMBS = NSColorMBS.colorWithDeviceCMYK(0.1, 0.2, 0.3, 0.4)
MsgBox str(c.blackComponent)

Notes:
Value is from 0.0 to 1.0.
(Read only property)

34.4.90 blueComponent as Double

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The color value from a RGB color.

**Example:**
dim c as NSColorMBS = NSColorMBS.blueColor
MsgBox str(c.blueComponent)

Notes:
Value is from 0.0 to 1.0.
(Read only property)

34.4.91 brightnessComponent as Double

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The color value from a HSV color.

**Example:**
dim c as NSColorMBS = NSColorMBS.colorWithDeviceHSV(0.1, 0.2, 0.3)
MsgBox str(c.brightnessComponent)

Notes:
Value is from 0.0 to 1.0.
(Read only property)
34.4.92  catalogNameComponent as string

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the name of the catalog containing the receiver’s name.
**Notes:**
This method raises an exception if the receiver’s color space isn’t NSNamedColorSpace.
(Read only property)

34.4.93  colorNameComponent as string

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the receiver’s name.
**Notes:**
This method raises an exception if the receiver’s color space isn’t NSNamedColorSpace.
(Read only property)

34.4.94  colorSpaceName as string

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Get the color space of the color.
**Example:**
```dim c as NSColorMBS = NSColorMBS.colorWithDeviceHSV(0.1, 0.2, 0.3)```
MsgBox c.colorSpaceName

**Notes:** (Read only property)

34.4.95  colorValue as color

MBS MacBase Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the color value of this color (ignoring color space).
**Notes:**
The alphaComponent is ignored.
Returns RGB(RedComponent*255, GreenComponent*255, BlueComponent*255).
Plugin converts color to calibrated RGB if needed.
(Read only property)
34.4.96 cyanComponent as Double

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The color value from a CMYK color.

**Example:**

```vbnet
dim c as NSColorMBS = NSColorMBS.colorWithDeviceCMYK(0.1, 0.2, 0.3, 0.4)
MsgBox str(c.cyanComponent)
```

**Notes:**

Value is from 0.0 to 1.0.
(Read only property)

34.4.97 description as string

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The description of the color object.

**Example:**

```vbnet
dim n as NSColorMBS = NSColorMBS.blueColor
MsgBox n.description // shows "NSCalibratedRGBColorSpace 0 0 1 1"
```

**Notes:** (Read only property)

34.4.98 greenComponent as Double

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The color value from a RGB color.

**Example:**

```vbnet
dim c as NSColorMBS = NSColorMBS.blueColor
MsgBox str(c.greenComponent)
```

**Notes:**

Value is from 0.0 to 1.0.
34.4.99  Handle as Integer

MBS MacBase Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference.  
**Notes:**  
Useful for declares. Value is a NSColor pointer.  
(Read and Write property)

34.4.100  hueComponent as Double

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The color value from a HSV color.  
**Example:**
```
dim c as NSColorMBS = NSColorMBS.colorWithDeviceHSV(0.1, 0.2, 0.3)
MsgBox str(c.hueComponent)
```

**Notes:**  
Value is from 0.0 to 1.0.  
(Read only property)

34.4.101  localizedCatalogNameComponent as string

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the name of the catalog containing the receiver’s name as a localized string.  
**Notes:**  
This string may be displayed in user interface items like color pickers.  
(Read only property)

34.4.102  localizedColorNameComponent as string

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the name of the receiver as a localized string.  
**Notes:**
The name of color object as a localized string. This string may be displayed in user interface items like color pickers.
(Read only property)

34.4.103 magentaComponent as Double

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The color value from a CMYK color.
**Example:**
```vba
dim c as NSColorMBS = NSColorMBS.colorWithDeviceCMYK(0.1, 0.2, 0.3, 0.4)
MsgBox str(c.magentaComponent)
```

**Notes:**
Value is from 0.0 to 1.0.
(Read only property)
34.4.104   numberOfComponents as Integer

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
Returns the number of components in the receiver.
**Example:**

```csharp
dim n as NSColorMBS = NSColorMBS.blueColor
MsgBox str(n.numberOfComponents) // shows 4
```

**Notes:**
The number of components in the color object. The floating-point components counted include alpha. This method raises an exception if the receiver doesn’t have floating-point components.

Available in Mac OS X v10.4 and later.
(Read only property)

34.4.105   redComponent as Double

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
The color value from a RGB color.
**Example:**

```csharp
dim c as NSColorMBS = NSColorMBS.blueColor
MsgBox str(c.redComponent)
```

**Notes:**
Value is from 0.0 to 1.0.
(Read only property)

34.4.106   saturationComponent as Double

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
The color value from a HSV color.
**Example:**

```csharp
dim c as NSColorMBS = NSColorMBS.colorWithDeviceHSV(0.1, 0.2, 0.3)
MsgBox str(c.saturationComponent)
```
34.4. CLASS NSCOLORMBS

Notes:
Value is from 0.0 to 1.0.
(Read only property)

34.4.107 whiteComponent as Double

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The color value from a Gray color.
**Example:**
```vba
dim c as NSColorMBS = NSColorMBS.colorWithDeviceWhite(0.1)
MsgBox str(c.whiteComponent)
```

Notes:
Value is from 0.0 to 1.0.
(Read only property)

34.4.108 yellowComponent as Double

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The color value from a CMYK color.
**Example:**
```vba
dim c as NSColorMBS = NSColorMBS.colorWithDeviceCMYK(0.1, 0.2, 0.3, 0.4)
MsgBox str(c.yellowComponent)
```

Notes:
Value is from 0.0 to 1.0.
(Read only property)
34.5 class NSColorPanelMBS

34.5.1 class NSColorPanelMBS

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class to control a Color Panel (floating window).
**Notes:**
If you use SelectColor in your application, this color panel will be converted in a dialog which makes this class useless.

You should only have one instance of this class in your application.

If you compile for Cocoa, a TextField/TextArea automatically registers for color panel. So in order to avoid them updating text color with color panel selection, clear the focus by calling window.clearfocus method.

This class does only work on desktop computers, not in a webbrowser. Subclass of the NSPanelMBS class.

34.5.2 Methods

34.5.3 attachColorList(list as NSColorListMBS)

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Attaches the given color list to the panel.
**Notes:** An application should use this method to add an NSColorList saved with a document in its file package or in a directory other than NSColorList’s standard search directories.

34.5.4 Constructor

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor to create a new color panel.

34.5.5 detachColorList(list as NSColorListMBS)

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Detaches the color list from the panel.
34.5. **CLASS NSCOLORPANELMBS**

34.5.6 **GetColor(byref red as single, byref green as single, byref blue as single, byref alpha as single) as boolean**

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The current color in the RGB color model.  
**Notes:**  
Values from 0.0 to 1.0.  
Returns true if the values are valid.  
See also:  
- 34.5.21 getColor as NSColorMBS

34.5.7 **GetColorFromDrag as color**

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns color values from the drag.  
**Notes:**  
If you receive a drag flavor which can’t be handled, it may be a NSColor.  
In this case only this method will be successfull.  
See also:  
- 34.5.8 GetColorFromDrag(byref red as single, byref green as single, byref blue as single, byref alpha as single) as boolean

34.5.8 **GetColorFromDrag(byref red as single, byref green as single, byref blue as single, byref alpha as single) as boolean**

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns color values from the drag.  
**Notes:**  
If you receive a drag flavor which can’t be handled, it may be a NSColor.  
In this case only this method will be successfull.  
See also:  
- 34.5.7 GetColorFromDrag as color

34.5.9 **orderFrontColorPanel**

MBS MacCocoa Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Brings up the color panel, an instance of NSColorPanel.  
**Notes:** If the NSColorPanel object does not exist yet, this method creates one. This method is typically invoked when the user chooses Colors from a menu.
### 34.5.10 SetColor(red as single, green as single, blue as single, alpha as single)

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the color.  
**Notes:** Values from 0.0 to 1.0.  
See also:

- 34.5.11 setColor(value as NSColorMBS)

### 34.5.11 setColor(value as NSColorMBS)

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the color.  
See also:

- 34.5.10 SetColor(red as single, green as single, blue as single, alpha as single)

### 34.5.12 setContinuous(value as boolean)

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether you want to receive Changed events while the user chooses the color.  
**Notes:** Set value to true to have the receiver calls the Changed event continuously as the color of the NSColorPanel is set by the user; otherwise false.

### 34.5.13 setMode(value as Integer)

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the mode of the panel the mode is one of the modes allowed by the color mask.  
**Notes:**

Constants:

- `const NSGrayModeColorPanel = 0`
- `const NSRGBModeColorPanel = 1`
- `const NSCMYKModeColorPanel = 2`
- `const NSHSBModeColorPanel = 3`
- `const NSCustomPaletteModeColorPanel = 4`
- `const NSColorListmodeColorPanel = 5`
- `const NSWheelModeColorPanel = 6`
- `const NSCrayonModeColorPanel = 7`
34.5.14  SetPickerMode(value as Integer)

*Notes:* 

**Constants:**

- `NSColorPanelGrayModeMask` = &h00000001
- `NSColorPanelRGBModeMask` = &h00000002
- `NSColorPanelCMYKModeMask` = &h00000004
- `NSColorPanelHSBModeMask` = &h00000008
- `NSColorPanelCustomPaletteModeMask` = &h00000010
- `NSColorPanelColorListModeMask` = &h00000020
- `NSColorPanelWheelModeMask` = &h00000040
- `NSColorPanelCrayonModeMask` = &h00000080
- `NSColorPanelAllModesMask` = &h00000fff

34.5.15  setShowsAlpha(value as boolean)

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. *Function:* Tells the panel whether or not to show alpha values and an opacity slider.
*Notes:* Note that calling the NSColor method setIgnoresAlpha with a value of true overrides any value set with this method.

34.5.16  SharedColorPanelExists as boolean

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. *Function:* Returns a Boolean value indicating whether the NSColorPanel has been created already.
*Notes:* True if the NSColorPanel has been created already; otherwise false.

34.5.17  Properties

34.5.18  accessoryView as NSViewMBS

*Notes:* 

The accessory view can be any custom view you want to display with NSColorPanel, such as a view offering color blends in a drawing program. The accessory view is displayed below the color picker and above the color swatches in the NSColorPanel. The NSColorPanel automatically resizes to accommodate the accessory view.
34.5.19  alpha as Double

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver’s current alpha value based on its opacity slider.

**Notes:**
Value is in the range between 0.0 and 1.0.
This is 1.0 (opaque) if the panel has no opacity slider.
(Read only property)

34.5.20  ColorValue as Color

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The current color as a Realbasic color in the RGB model.

**Notes:** (Read and Write property)

34.5.21  getColor as NSColorMBS


**Notes:**
The color returned can be RGB or something else.
(Read and Write property)
See also:
- 34.5.6 GetColor(byref red as single, byref green as single, byref blue as single, byref alpha as single) as boolean

34.5.22  getColorAsRGB as NSColorMBS


**Notes:**
Returned NSColorMBS object is in RGB color mode.
(Read only property)
34.5. **CLASS NSCOLORPANELMBS**

### 34.5.23 isContinuous as boolean

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value indicating whether the class continuously calls the Changed event. **Notes:**

Returns true if the receiver continuously calls the Changed event as the user manipulates the color picker; otherwise false. (Read and Write property)

### 34.5.24 mode as Integer

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the color picker mode. **Notes:**

**Constants:**

```plaintext
const NSGrayModeColorPanel = 0
const NSRGBModeColorPanel = 1
const NSCMYKModeColorPanel = 2
const NSHSBModeColorPanel = 3
const NSCustomPaletteModeColorPanel = 4
const NSColorListModeColorPanel = 5
const NSWheelModeColorPanel = 6
const NSCrayonModeColorPanel = 7
```

(Read and Write property)

### 34.5.25 showsAlpha as boolean

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value indicating whether or not the panel shows alpha values and an opacity slider. **Notes:**

Note that calling the NSColor method setIgnoresAlpha with a value of true overrides any value set with setShowsAlpha. (Read and Write property)
34.5.26  Events

34.5.27  Changed

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The color changed.  
**Notes:** May not fire in the RB IDE.

34.5.28  DidMove

MBS MacCocoa Plugin, Plugin Version: 14.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The color panel did move.

34.5.29  GotFocus

MBS MacCocoa Plugin, Plugin Version: 14.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The color panel got focus.

34.5.30  Hidden

MBS MacCocoa Plugin, Plugin Version: 14.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The color panel is hidden.

34.5.31  LostFocus

MBS MacCocoa Plugin, Plugin Version: 14.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The color panel lost focus.

34.5.32  Shown

MBS MacCocoa Plugin, Plugin Version: 14.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The color panel shows.
34.5. CLASS NSCOLORPANELMBS

34.5.33 WillClose


34.5.34 Constants

34.5.35 NSCMYKModeColorPanel = 2

MBS MacCocoa Plugin, Plugin Version: 14.2. Function: On of the modes to specify the active color mode used when NSColorPanel is masked for more than one color mode.
Notes: Cyan-yellow-magenta-black

34.5.36 NSColorListModeColorPanel = 5

MBS MacCocoa Plugin, Plugin Version: 14.2. Function: On of the modes to specify the active color mode used when NSColorPanel is masked for more than one color mode.
Notes: Custom color list

34.5.37 NSColorPanelAllModesMask = & h0000ffff

MBS MacCocoa Plugin, Plugin Version: 14.2. Function: On of the masks to specify the which modes the panel allows.
Notes: All of the above.

34.5.38 NSColorPanelCMYKModeMask = & h00000004

MBS MacCocoa Plugin, Plugin Version: 14.2. Function: On of the masks to specify the which modes the panel allows.
Notes: Cyan-yellow-magenta-black.

34.5.39 NSColorPanelColorListModeMask = & h00000020

MBS MacCocoa Plugin, Plugin Version: 14.2. Function: On of the masks to specify the which modes the panel allows.
Notes: Custom color list.
34.5.40 NSColorPanelCrayonModeMask = & h00000080

MBS MacCocoa Plugin, Plugin Version: 14.2. **Function:** On of the masks to specify the which modes the panel allows.  
**Notes:** Crayons.

34.5.41 NSColorPanelCustomPaletteModeMask = & h00000010

MBS MacCocoa Plugin, Plugin Version: 14.2. **Function:** On of the masks to specify the which modes the panel allows.  
**Notes:** Custom palette.

34.5.42 NSColorPanelGrayModeMask = & h00000001

MBS MacCocoa Plugin, Plugin Version: 14.2. **Function:** On of the masks to specify the which modes the panel allows.  
**Notes:** Grayscale-alpha.

34.5.43 NSColorPanelHSBModeMask = & h00000008

MBS MacCocoa Plugin, Plugin Version: 14.2. **Function:** On of the masks to specify the which modes the panel allows.  
**Notes:** Hue-saturation-brightness.

34.5.44 NSColorPanelRGBModeMask = & h00000002

MBS MacCocoa Plugin, Plugin Version: 14.2. **Function:** On of the masks to specify the which modes the panel allows.  
**Notes:** Red-green-blue.

34.5.45 NSColorPanelWheelModeMask = & h00000040

MBS MacCocoa Plugin, Plugin Version: 14.2. **Function:** On of the masks to specify the which modes the panel allows.  
**Notes:** Color wheel.
34.5. **CLASS NSCOLORPANELMBS**

### 34.5.46 NSCrayonModeColorPanel = 7

MBS MacCocoa Plugin, Plugin Version: 14.2. **Function:** On of the modes to specify the active color mode used when NSColorPanel is masked for more than one color mode.

**Notes:** Crayons.

### 34.5.47 NSCustomPaletteModeColorPanel = 4

MBS MacCocoa Plugin, Plugin Version: 14.2. **Function:** On of the modes to specify the active color mode used when NSColorPanel is masked for more than one color mode.

**Notes:** Custom palette

### 34.5.48 NSGrayModeColorPanel = 0

MBS MacCocoa Plugin, Plugin Version: 14.2. **Function:** On of the modes to specify the active color mode used when NSColorPanel is masked for more than one color mode.

**Notes:** Grayscale-alpha

### 34.5.49 NSHSBModeColorPanel = 3

MBS MacCocoa Plugin, Plugin Version: 14.2. **Function:** On of the modes to specify the active color mode used when NSColorPanel is masked for more than one color mode.

**Notes:** Hue-saturation-brightness

### 34.5.50 NSNoModeColorPanel = -1

MBS MacCocoa Plugin, Plugin Version: 14.2. **Function:** On of the modes to specify the active color mode used when NSColorPanel is masked for more than one color mode.

**Notes:**
Indicates no color panel mode.
Available in OS X version 10.5 and later.

### 34.5.51 NSRGBModeColorPanel = 1

MBS MacCocoa Plugin, Plugin Version: 14.2. **Function:** On of the modes to specify the active color mode used when NSColorPanel is masked for more than one color mode.
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Notes: Red-green-blue

34.5.52 NSWheelModeColorPanel = 6

MBS MacCocoa Plugin, Plugin Version: 14.2. Function: One of the modes to specify the active color mode used when NSColorPanel is masked for more than one color mode.
Notes: Color wheel
34.5. CLASS NSCOLORPANELMBS

34.5.53 Screenshots

34.5.54 NSColorPanel.jpg

Function: The NSColorPanel running in a REALbasic application.
34.6. **CLASS NSCOLORSPACEMBS**

### 34.6 class NSColorSpaceMBS

#### 34.6.1 class NSColorSpaceMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The NSColorSpace class enables the creation of objects representing custom color spaces. **Notes:** You can make custom color spaces from ColorSync profiles or from ICC profiles. NSColorSpace also has factory methods that return objects representing the system color spaces.

#### 34.6.2 Methods

##### 34.6.3 adobeRGB1998ColorSpace as NSColorSpaceMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an NSColorSpace object representing an Adobe RGB (1998) color space. **Example:**

```vbnet
dim n as NSColorSpaceMBS = NSColorSpaceMBS.adobeRGB1998ColorSpace
MsgBox n.localizedDescription
```

**Notes:**

The NSColorSpace object. This color-additive color space has red, green, blue, and alpha components.

The Adobe RGB (1998) color space was designed to encompass most of the colors achievable on CMYK color printers, but by using RGB primary colors on a device such as the computer display. For more information on this color space, go to this website:

http://www.adobe.com/digitalimag/adobergb.html

##### 34.6.4 availableColorSpacesWithModel(Model as Integer) as NSColorSpaceMBS()

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the list of color spaces available on the system that are displayed in the color panel, in the order they are displayed in the color panel. **Example:**

```vbnet
dim a(-1) as NSColorSpaceMBS
dim m as Integer = NSColorSpaceMBS.NSRGBColorSpaceModel
a = NSColorSpaceMBS.availableColorSpacesWithModel(m)
```
dim names(-1) As string

for each c as NSColorSpaceMBS in a
names.Append c.localizedNome
next

MsgBox Join(names,EndOfLine)

Notes:
This method doesn’t return color spaces created on the fly or spaces without user-displayable names. Pass
NSUnknownColorSpaceModel as model to get all available color spaces.

Available in Mac OS X v10.6 and later.

34.6.5 CGColorSpaceHandle as Integer

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns a Core Graphics color-space object that represents a color space equivalent to the receiver’s.
Example:
dim n as NSColorSpaceMBS = NSColorSpaceMBS.sRGBColorSpace
MsgBox hex(n.CGColorSpaceHandle)

Notes:
A reference to an Core Graphics color-space object (CGColorSpaceRef) or 0if the type of color space repre-
sented by the receiver cannot be represented by a CGColorSpace object.

Available in Mac OS X version 10.5.

34.6.6 colorSpaceForColorSpaceName(name as string) as NSColorSpaceMBS

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The colorspace for this color space name.
Example:
dim n as NSColorSpaceMBS = NSColorSpaceMBS.colorSpaceForColorSpaceName(NSColorSpaceMBS.NS-
DeviceWhiteColorSpace)
MsgBox n.localizedDescriptionedNome
34.6. **CLASS NSCOLORSPACEMBS**

Notes:
This plugin function uses an undocumented method from Apple's AppKit framework. Seems like they use it only internally.

Works well on Mac OS X 10.6.

### 34.6.7 ColorSpaceWithCGColorSpace(CGColorSpaceHandle as Integer) as NSColorSpaceMBS

MBS MacBase Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns an NSColorSpace object initialized from a Core Graphics color-space object. **Notes:**
The initialized NSColorSpace object or nil if initialization was not successful, which might happen if the color space represented by the CGColorSpace object is not supported by NSColorSpace.

Because NSColorSpace might retain or copy the CGColorSpace object depending on circumstances, you should not assume pointer equality of the provided object with that returned by CGColorSpace. And even if the pointer equality is preserved during runtime, it may not be after the NSColorSpace object is archived and unarchived.

Available in Mac OS X version 10.5 and later.

### 34.6.8 ColorSpaceWithColorSyncProfile(ColorSyncProfileHandle as Integer) as NSColorSpaceMBS

MBS MacBase Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns an NSColorSpace object given a ColorSync profile. **Notes:**
The initialized NSColorSpace object or nil if initialization was not successful.

Available in Mac OS X v10.4 and later.
34.6.9 ColorSpaceWithICCProfileData(File as FolderItem) as NSColorSpaceMBS

MBS MacBase Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns an NSColorSpace object given an ICC profile.

**Notes:**

file: The path to the ICC profile to use when initializing the NSColorSpace object. For information on ICC profiles, see the latest ICC specification at the International Color Consortium website.

Returns the initialized NSColorSpace object or nil if initialization was not successful.
Available in Mac OS X v10.4 and later.
See also:

- 34.6.10 ColorSpaceWithICCProfileData(ICCProfileData as Memoryblock) as NSColorSpaceMBS

34.6.10 ColorSpaceWithICCProfileData(ICCProfileData as Memoryblock) as NSColorSpaceMBS

MBS MacBase Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns an NSColorSpace object given an ICC profile.

**Notes:**

ICCProfileData:
The ICC profile to use when initializing the NSColorSpace object. For information on ICC profiles, see the latest ICC specification at the International Color Consortium website.

Returns the initialized NSColorSpace object or nil if initialization was not successful.
Available in Mac OS X v10.4 and later.
See also:

- 34.6.9 ColorSpaceWithICCProfileData(File as FolderItem) as NSColorSpaceMBS

34.6.11 colorSyncProfileHandle as Integer

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the ColorSync profile from which the receiver was created.

**Example:**

```haskell
dim n as NSColorSpaceMBS = NSColorSpaceMBS.sRGBColorSpace
MsgBox hex(n.colorSyncProfileHandle)
```

**Notes:**
The ColorSync profile on which the receiver is based. You need to cast this value to an object of opaque type.
34.6. CLASS NSCOLORSPACEMBS

CMProfileRef. Returns NULL if the receiver was created from a ICC-profile data instead. See ColorSync Manager Reference for further information on CMProfileRef.

Available in Mac OS X v10.4 and later.

34.6.12 Constructor(ICCProfileData as Memoryblock)

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns an NSColorSpace object given an ICC profile.

**Notes:**

ICCProfileData:
The ICC profile to use when initializing the NSColorSpace object. For information on ICC profiles, see the latest ICC specification at the International Color Consortium website.

The initialized NSColorSpace object or nil if initialization was not successful.

Available in Mac OS X v10.4 and later.

34.6.13 deviceCMYKColorSpace as NSColorSpaceMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an NSColorSpace object representing a calibrated or device-dependent CMYK color space.

**Example:**

```dim n as NSColorSpaceMBS = NSColorSpaceMBS.deviceCMYKColorSpace
MsgBox n.localizedDescription```

**Notes:**
The NSColorSpace object. This color space has cyan, magenta, yellow, black, and alpha components. Typical devices that use the color-subtractive CMYK color space are color printers. This object corresponds to the Cocoa color space name NSDeviceCMYKColorSpace.

Available in Mac OS X v10.4 and later.
34.6.14 deviceGrayColorSpace as NSColorSpaceMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an NSColorSpace object representing a calibrated or device-dependent gray color space.

**Example:**

```plaintext
dim n as NSColorSpaceMBS = NSColorSpaceMBS.deviceGrayColorSpace
MsgBox n.localizedDescription
```

**Notes:**
The NSColorSpace object. The color space also includes an alpha component. Typical devices that use this color space are grayscale printers and displays. This object corresponds to the Cocoa color space name NSDeviceWhiteColorSpace.

Available in Mac OS X v10.4 and later.

34.6.15 deviceRGBColorSpace as NSColorSpaceMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an NSColorSpace object representing a calibrated or device-dependent RGB color space.

**Example:**

```plaintext
dim n as NSColorSpaceMBS = NSColorSpaceMBS.deviceRGBColorSpace
MsgBox n.localizedDescription
```

**Notes:** The NSColorSpace object. This color space has red, green, blue, and alpha components. Typical devices that use the color-additive RGB color space are displays and scanners. This object corresponds to the Cocoa color space name NSDeviceRGBColorSpace.

34.6.16 genericCMYKColorSpace as NSColorSpaceMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an NSColorSpace object representing a device-independent CMYK color space.

**Example:**

```plaintext
dim n as NSColorSpaceMBS = NSColorSpaceMBS.genericCMYKColorSpace
MsgBox n.localizedDescription
```

**Notes:** The NSColorSpace object. This color space has red, green, blue, and alpha components. Typical devices that use the color-additive RGB color space are displays and scanners. This object corresponds to the Cocoa color space name NSDeviceRGBColorSpace.
The NSColorSpace object. This color space has cyan, magenta, yellow, black and alpha component. Available in Mac OS X v10.4 and later.

### 34.6.17 genericGamma22GrayColorSpace as NSColorSpaceMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an NSColorSpace object representing a gray color space with a gamma value of 2.2. **Example:**

```vbnet
dim n as NSColorSpaceMBS = NSColorSpaceMBS.genericGamma22GrayColorSpace
MsgBox n.localizedDescription
```

**Notes:** Available in Mac OS X v10.6 and later.

### 34.6.18 genericGrayColorSpace as NSColorSpaceMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an NSColorSpace object representing a device-independent gray color space. **Example:**

```vbnet
dim n as NSColorSpaceMBS = NSColorSpaceMBS.genericGrayColorSpace
MsgBox n.localizedDescription
```

**Notes:**
The NSColorSpace object. The color space also includes an alpha component. This object corresponds to the Cocoa color space name NSCalibratedWhiteColorSpace. Available in Mac OS X v10.4 and later.

### 34.6.19 genericRGBColorSpace as NSColorSpaceMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an NSColorSpace object representing a device-independent RGB color space. **Example:**

```vbnet
dim n as NSColorSpaceMBS = NSColorSpaceMBS.genericRGBColorSpace
MsgBox n.localizedDescription
```
Notes:
The NSColorSpace object. This color-additive color space has red, green, blue, and alpha components. This object corresponds to the Cocoa color space name NSCalibratedRGBColorSpace.

Available in Mac OS X v10.4 and later.

34.6.20 ICCProfileData as Memoryblock

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the ICC profile data from which the receiver was created.

**Notes:**
The ICC profile from which the receiver was created. This method attempts to compute the profile data from a CMProfileRef object and returns nil if it is unable to.

For information on ICC profiles, see the latest ICC specification at the International Color Consortium website.

Available in Mac OS X v10.4 and later.

34.6.21 initWithCGColorSpace(CGColorSpaceHandle as Integer)

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Initializes and returns an NSColorSpace object initialized from a Core Graphics color-space object.

**Notes:**
The initialized NSColorSpace object or nil if initialization was not successful, which might happen if the color space represented by the CGColorSpace object is not supported by NSColorSpace.

Because NSColorSpace might retain or copy the CGColorSpace object depending on circumstances, you should not assume pointer equality of the provided object with that returned by CGColorSpace. And even if the pointer equality is preserved during runtime, it may not be after the NSColorSpace object is archived and unarchived.

Available in Mac OS X version 10.5 and later.
34.6. CLASS NSCOLORSPACEMBS

34.6.22 initWithColorSyncProfile(ColorSyncProfileHandle as Integer)

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns an NSColorSpace object given a ColorSync profile.

**Notes:**
The initialized NSColorSpace object or nil if initialization was not successful.

Available in Mac OS X v10.4 and later.

34.6.23 sRGBColorSpace as NSColorSpaceMBS

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an NSColorSpace object representing an sRGB color space.

**Example:**
```
dim n as NSColorSpaceMBS = NSColorSpaceMBS.sRGBColorSpace
MsgBox n.localizedIdentifier
```

**Notes:**
The NSColorSpace object. This color-additive color space has red, green, blue, and alpha components.

The sRGB color space is a standard color space for use on monitors, printers, and the Internet. For further information on sRGB, see this website:

http://www.color.org/srgb.html

Available in Mac OS X version 10.5.

34.6.24 Properties

34.6.25 colorSpaceModel as Integer

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the model on which the color space of the receiver is based.

**Example:**
```
dim n as NSColorSpaceMBS = NSColorSpaceMBS.sRGBColorSpace
MsgBox str(n.colorSpaceModel)
```
Notes:
Available in Mac OS X v10.4 and later.
(Read only property)

34.6.26 colorSpaceName as string

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The name of the colorspace.
**Example:**
```vb
dim n as NSColorSpaceMBS = NSColorSpaceMBS.genericRGBColorSpace
MsgBox n.colorSpaceName
```

Notes:
This plugin function uses an undocumented method from Apple's AppKit framework. Seems like they use it only internally.
Works well on Mac OS X 10.6.
Returns an empty string for some color spaces.
(Read only property)

34.6.27 description as string

MBS MacBase Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the description of the color space.
**Notes:** (Read only property)

34.6.28 Handle as Integer

MBS MacBase Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The internal object reference.
**Notes:** (Read and Write property)
34.6. CLASS NSCOLORSPACEMBS

34.6.29 localizedName as string

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the localized name of the receiver.

**Example:**
```
dim n as NSColorSpaceMBS = NSColorSpaceMBS.sRGBColorSpace
MsgBox n.localizedDescription
```

**Notes:**
The name of the color space as a localized string or nil if no localized name exists.

Available in Mac OS X v10.4 and later.
(Read only property)

34.6.30 numberOfColorComponents as Integer

MBS MacBase Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the number of components supported by the receiver.

**Example:**
```
dim n as NSColorSpaceMBS = NSColorSpaceMBS.sRGBColorSpace
MsgBox str(n.numberOfColorComponents) // shows 3
```

**Notes:**
The number of components (excluding alpha) the receiver supports or zero if the receiver is not based on float components.

Available in Mac OS X v10.4 and later.
(Read only property)

34.6.31 Constants

34.6.32 NSCalibratedBlackColorSpace = ”NSCalibratedBlackColorSpace”

MBS MacBase Plugin, Plugin Version: 9.8. **Function:** Calibrated color space with black and alpha components (pure black is 1.0)

**Example:**
CHAPTER 34. COCOA DRAWING

```
dim n as NSColorSpaceMBS = NSColorSpaceMBS.colorSpaceForColorSpaceName(NSColorSpaceMBS.NSCalibratedBlackColorSpace)
MsgBox n.localizedDescription
```

**Notes:** Deprecated in Mac OS X v10.6.

### 34.6.33 NSCalibratedRGBColorSpace = "NSCalibratedRGBColorSpace"

MBS MacBase Plugin, Plugin Version: 9.8. **Function:** Calibrated color space with red, green, blue, and alpha components.

**Example:**
```
dim n as NSColorSpaceMBS = NSColorSpaceMBS.colorSpaceForColorSpaceName(NSColorSpaceMBS.NSCalibratedRGBColorSpace)
MsgBox n.localizedDescription
```

**Notes:** You can also create a color with HSB (hue, saturation, brightness) and alpha components and can extract these components.

### 34.6.34 NSCalibratedWhiteColorSpace = "NSCalibratedWhiteColorSpace"

MBS MacBase Plugin, Plugin Version: 9.8. **Function:** Calibrated color space with white and alpha components (pure white is 1.0)

**Example:**
```
dim n as NSColorSpaceMBS = NSColorSpaceMBS.colorSpaceForColorSpaceName(NSColorSpaceMBS.NSCalibratedWhiteColorSpace)
MsgBox n.localizedDescription
```

### 34.6.35 NSCMYKColorSpaceModel=2

MBS MacBase Plugin, Plugin Version: 8.6. **Function:** The CYMK (cyan, yellow, magenta, black) color-space model.

**Example:**
```
dim a(-1) as NSColorSpaceMBS
dim m as Integer = NSColorSpaceMBS.NSCMYKColorSpaceModel
a = NSColorSpaceMBS.availableColorSpacesWithModel(m)
```
34.6. CLASS NSCOLORSPACEMBS

```vbnet
dim names(-1) As string

for each c as NSColorSpaceMBS in a
    names.Append c.localized_name
next
MsgBox Join(names, EndOfLine)
```

Notes:
Can refer to both device-dependent and generic color space variants.
Available in Mac OS X v10.4 and later.

34.6.36 NSCustomColorSpace = ”NSCustomColorSpace”

MBS MacBase Plugin, Plugin Version: 9.8. **Function:** Custom NSColorSpace object and floating-point components describing a color in that space.
**Notes:** A custom color-space object represents a color space that is not necessarily predefined by the Application Kit. See ”Working With Color Spaces” for information on creating custom color-space objects.

34.6.37 NSDeviceBlackColorSpace = ”NSDeviceBlackColorSpace”

MBS MacBase Plugin, Plugin Version: 9.8. **Function:** Device-dependent color space with black and alpha components (pure black is 1.0)
**Example:**
```vbnet
dim n as NSColorSpaceMBS = NSColorSpaceMBS.colorSpaceForColorSpaceName(NSColorSpaceMBS.NSDeviceBlackColorSpace)
MsgBox n.localized_name
```

34.6.38 NSDeviceCMYKColorSpace = ”NSDeviceCMYKColorSpace”

MBS MacBase Plugin, Plugin Version: 9.8. **Function:** Device-dependent color space with cyan, magenta, yellow, black, and alpha components.
**Example:**
```vbnet
dim n as NSColorSpaceMBS = NSColorSpaceMBS.colorSpaceForColorSpaceName(NSColorSpaceMBS.NSDeviceCMYKColorSpace)
MsgBox n.localized_name
```
34.6.39  **NSDeviceNColorSpaceModel=4**

MBS MacBase Plugin, Plugin Version: 8.6. **Function:** DeviceN is a color-space model from Adobe Systems, Inc. used in PostScript and PDF color specification. 

**Example:**

```vba
dim a(-1) as NSColorSpaceMBS
dim m as Integer = NSColorSpaceMBS.NSDeviceNColorSpaceModel
a = NSColorSpaceMBS.availableColorSpacesWithModel(m)

dim names(-1) As string

for each c as NSColorSpaceMBS in a
    names.Append c.localizedDescription
next

MsgBox Join(names, vbCrLf)
```

**Notes:** Available in Mac OS X v10.4 and later.

34.6.40  **NSDeviceRGBColorSpace = "NSDeviceRGBColorSpace"**

MBS MacBase Plugin, Plugin Version: 9.8. **Function:** Device-dependent color space with red, green, blue, and alpha components.

**Example:**

```vba
dim n as NSColorSpaceMBS = NSColorSpaceMBS.colorSpaceForColorSpaceName(NSColorSpaceMBS.NSDeviceRGBColorSpace)
MsgBox n.localizedDescription
```

**Notes:** You can also create a color with HSB (hue, saturation, brightness) and alpha components and can extract these components.
34.6.41  NSDeviceWhiteColorSpace = ”NSDeviceWhiteColorSpace”

MBS MacBase Plugin, Plugin Version: 9.8. **Function:** Device-dependent color space with white and alpha components (pure white is 1.0)
**Example:**
```vba
dim n as NSColorSpaceMBS = NSColorSpaceMBS.colorSpaceForColorSpaceName(NSColorSpaceMBS.NSDeviceWhiteColorSpace)
MsgBox n.localizedDescription
```

34.6.42  NSGrayColorSpaceModel=0

MBS MacBase Plugin, Plugin Version: 8.6. **Function:** The grayscale color-space model. Can refer to both device-dependent and generic color space variants.
**Example:**
```vba
dim a(-1) as NSColorSpaceMBS
dim m as Integer = NSColorSpaceMBS.NSGrayColorSpaceModel

a = NSColorSpaceMBS.availableColorSpacesWithModel(m)

dim names(-1) As string

for each c as NSColorSpaceMBS in a
    names.Append c.localizedDescription
next

MsgBox Join(names,EndOfLine)
```

**Notes:** Available in Mac OS X v10.4 and later.

34.6.43  NSIndexedColorSpaceModel=5

MBS MacBase Plugin, Plugin Version: 8.6. **Function:** An indexed color space, which identifies specified discrete colors in a color list by index number.
**Example:**
```vba
dim a(-1) as NSColorSpaceMBS
dim m as Integer = NSColorSpaceMBS.NSIndexedColorSpaceModel

a = NSColorSpaceMBS.availableColorSpacesWithModel(m)
```
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       dim names(-1) As string

       for each c as NSColorSpaceMBS in a
           names.Append c.localized Name
       next

       MsgBox Join(names,EndOfLine)

   Notes:
   An indexed color value (a color specification in indexed color space) consists of an index value that refers to
   a color in a color list.

   Available in Mac OS X version 10.5 and later.

34.6.44  NSLABColorSpaceModel=3

   MBS MacBase Plugin, Plugin Version: 8.6. Function: The L*a*b* device-independent color-space model,
   which represents colors relative to a reference white point.
   Example:
     dim a(-1) as NSColorSpaceMBS
     dim m as Integer = NSColorSpaceMBS.NSLABColorSpaceModel
     a = NSColorSpaceMBS.availableColorSpacesWithModel(m)

     dim names(-1) As string

     for each c as NSColorSpaceMBS in a
         names.Append c.localized Name
     next

     MsgBox Join(names,EndOfLine)

   Notes: Available in Mac OS X v10.4 and later.

34.6.45  NSNamedColorSpace = “NSNamedColorSpace”

   Notes: The components of this color space are indexes into lists or catalogs of prepared colors. The catalogs
   of named colors come with lookup tables that are able to generate the correct color on a given device.
34.6.46 **NSPatternColorSpace = ”NSPatternColorSpace”**

MBS MacBase Plugin, Plugin Version: 9.8. **Function:** Pattern image (tiled)
**Notes:** Identifies a pattern color space, which is simply an image that is repeated over and over again in a tiled pattern.

34.6.47 **NSPatternColorSpaceModel=6**

MBS MacBase Plugin, Plugin Version: 8.6. **Function:** Identifies a pattern color space, which is simply an image that is repeated over and over again in a tiled pattern.
**Example:**
```vba
Dim a(-1) As NSColorSpaceMBS
Dim m As Integer = NSColorSpaceMBS.NSPatternColorSpaceModel
a = NSColorSpaceMBS.availableColorSpacesWithModel(m)
Dim names(-1) As String
For Each c As NSColorSpaceMBS In a
    names.Append c.localizedName
Next
MsgBox Join(names, vbCrLf)
```

**Notes:** Available in Mac OS X version 10.5 and later.

34.6.48 **NSRGBColorSpaceModel=1**

MBS MacBase Plugin, Plugin Version: 8.6. **Function:** The RGB (red green blue) color-space model.
**Example:**
```vba
Dim a(-1) As NSColorSpaceMBS
Dim m As Integer = NSColorSpaceMBS.NSRGBColorSpaceModel
a = NSColorSpaceMBS.availableColorSpacesWithModel(m)
Dim names(-1) As String
For Each c As NSColorSpaceMBS In a
    names.Append c.localizedName
Next
MsgBox Join(names, vbCrLf)
```
names.Append c.localizedName
next

MsgBox Join(names, EndOfLine)

Notes:
Can refer to both device-dependent and generic color space variants. Available in Mac OS X v10.4 and later.

34.6.49 NSUnknownColorSpaceModel=-1

MBS MacBase Plugin, Plugin Version: 8.6. Function: This model is not known to NSColorSpace. Notes: Available in Mac OS X v10.4 and later.
34.7. CLASS NSEPSIMAGEREPMBS

34.7 class NSEPSImageRepMBS

34.7.1 class NSEPSImageRepMBS


34.7.2 Methods

34.7.3 boundingBox as NSRectMBS

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the rectangle that bounds the receiver. Notes: This rectangle is obtained from the "% % BoundingBox:" comment in the EPS header when the NSEPSImageRep object is initialized.

34.7.4 Constructor(data as Memoryblock)

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Initializes an NSEPSImageRep object initialized with the specified EPS data. Notes: The size of the receiver is set using the bounding box information specified in the EPS header comments. On success the handle property is not zero.

34.7.5 EPSRepresentation as Memoryblock


34.7.6 imageRepWithData(data as Memoryblock) as NSEPSImageRepMBS

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creates and returns an NSEPSImageRep object initialized with the specified EPS data. Notes: Returns a new, initialized NSEPSImageRep object or nil if the object could not be initialized. The size of the receiver is set using the bounding box information specified in the EPS header comments.
34.7.7  prepareGState

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Implemented by subclasses to configure the graphics state prior to drawing. **Notes**: The draw method of NSEPSImageRep sends this message to itself just before rendering the EPS code. The default implementation of this method does nothing. You can override it in your subclass to prepare the graphics state as needed.

34.7.8  Properties

34.7.9  pdfImage as NSPDFImageRepMBS

MBS MacBase Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: The PDF representation of the image. **Example**:

```plaintext
// read in as image
dim f as FolderItem = SpecialFolder.Desktop.Child("logo_new.eps")

// read in as image
dim image as new nsimageMBS(f)

// get representations
dim reps() as NSImageRepMBS = image.representations

// get EPS representation
dim rep as NSEPSImageRepMBS = NSEPSImageRepMBS(Reps(0))

// get PDF representation
dim pdf as NSPDFImageRepMBS = rep.pdfImage

Break
```

**Notes**: When you load an EPS file, a PDF file is automatically created. (Read only property)
34.8. CLASS NSGRAPHICSMBS

34.8 class NSGraphicsMBS

34.8.1 class NSGraphicsMBS


**Example:**

```plaintext
// make new image
dim myImage as new NSImageMBS(500,500)
dim myGraphics as new NSGraphicsMBS(myImage)

// make logo image
dim myPicture as Picture = LogoMBS(500)
dim anotherImage as new NSImageMBS(myPicture)

// draw logo image to new image
myGraphics.drawInRect(anotherImage, 0, 0, myImage.width, myImage.height, 0, 0, anotherImage.width, anotherImage.height, myGraphics.NSCompositeSourceOver, 1.0)
myGraphics = nil // flush drawing

// save to file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim b as BinaryStream = BinaryStream.Create(f, True)
if b<>nil then
b.Write myImage.JPEGRepresentation
b.Close
end if
```

**Notes:**

The plugin often provides in events such objects for drawing. In that case please only use the object in the event and don’t store it for later use. It is only valid with in a draw event.

Internally this is a NSGraphicsContext object.

If you create objects on your own, make sure you only use the methods while the object is valid.
34.8.2 Methods

34.8.3 addClip(path as NSBezierPathMBS)

MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Intersects the area enclosed by the receiver’s path with the clipping path of the current graphics context and makes the resulting shape the current clipping path. **Notes:** This method uses the current winding rule to determine the clipping shape of the receiver. This method does not affect the receiver’s path.

34.8.4 boundingRectWithSize(text as NSAttributedStringMBS, size as NSSizeMBS, options as Integer = 0) as NSRectMBS

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Calculates and returns bounding rectangle for the receiver drawn using the options specified, within the given rectangle in the current graphics context. **Example:**

```plaintext
// create Hello World in red
dim a as NSAttributedStringMBS = NSAttributedStringMBS.attributedStringWithString("Hello World")
dim m as NSMutableAttributedStringMBS = a.mutableCopy
m.addAttribute(a.NSForegroundColorAttributeName, NSColorMBS.redColor, new NSRangeMBS(0, m.length))

// query size
dim g as new NSGraphicsMBS(Canvas1.NSViewMBS)
dim r as NSRectMBS = g.boundingRectWithSize(m, new NSSizeMBS(canvas1.Width, canvas1.Height), g.NSStringDrawingUsesLineFragmentOrigin)

MsgBox r.String
```

**Notes:**

- size: The size of the rectangle to draw in.
- options: The string drawing options.

Returns the bounding rectangle in the current graphics context.
The origin of the rectangle returned from this method is the first glyph origin. **See also:**

- 34.8.5 boundingRectWithSize(text as string, size as NSSizeMBS, options as Integer = 0, DictAttributes as dictionary = nil) as NSRectMBS
34.8. CLASS NSGRAPHICSMBS

34.8.5 boundingRectWithSize(text as string, size as NSSizeMBS, options as Integer = 0, DicAttributes as dictionary = nil) as NSRectMBS


**Function:** Calculates and returns the bounding rect for the text drawn using the given options and display characteristics, within the specified rectangle in the current graphics context.

**Example:**

```vbnet
Dim NSGraphics as New NSGraphicsMBS()
dim size as NSSizeMBS = new NSSizeMBS(100,100)
dim text as string = "Hello World. How are you? I'm fine. This is just a test string."
dim options as Integer = NSGraphics.NSStringDrawingUsesLineFragmentOrigin
Dim rect as NSRectMBS = NSGraphics.boundingRectWithSize(text, size, options)
MsgBox str(Rect.Width)+" "+str(Rect.Height)
```

**Notes:**

text: the text to use for calculation.
size: The size of the rectangle to draw in.
options: String drawing options.
attributes: A dictionary of text attributes to be applied to the string. These are the same attributes that can be applied to an NSAttributedString object, but in the case of Strings, the attributes apply to the entire string, rather than ranges within the string.

Returns the bounding rect for the receiver drawn using the given options and display characteristics. The rect origin returned from this method is the first glyph origin.

Available in Mac OS X v10.4 and later.

See NSStringDrawing* constants. Use NSStringDrawingUsesLineFragmentOrigin to switch to multiline mode.

See also:

- 34.8.4 boundingRectWithSize(text as NSAttributedStringMBS, size as NSSizeMBS, options as Integer = 0) as NSRectMBS

34.8.6 clipRect(r as NSRectMBS)


**Function:** Intersects the specified rectangle with the clipping path of the current graphics context and makes the resulting shape the current clipping path

**Notes:** r: The rectangle to intersect with the current clipping path.
34.8.7 concat(transform as NSAffineTransformMBS)

MBS MacCocoa Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Concats this transform to the current transform of the graphics environment.

34.8.8 ConcatTransform(NSAffineTransform as Variant)

MBS MacCocoa Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Appends the receiver’s matrix to the current transformation matrix stored in the current graphics context, replacing the current transformation matrix with the result. 

**Notes:**
Please use saveGraphicsState so you can restore the state before applying matrix for other drawings.

Concatenation is performed by matrix multiplication.

If this method is invoked from within an NSView drawRect method, then the current transformation matrix is an accumulation of the screen, window, and any superview’s transformation matrices. Invoking this method defines a new user coordinate system whose coordinates are mapped into the former coordinate system according to the receiver’s transformation matrix. To undo the concatenation, you must invert the receiver’s matrix and invoke this method again.

NSAffineTransform must be a NSAffineTransformMBS object.

34.8.9 Constructor

MBS MacCocoa Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes the current graphics context of the current thread. 

See also:

- 34.8.10 Constructor(targetImage as NSBitmapImageRepMBS)
- 34.8.11 Constructor(targetImage as NSImageMBS)
- 34.8.12 Constructor(targetView as NSViewMBS)
- 34.8.13 Constructor(targetWindow as NSWindowMBS)
- 34.8.14 Constructor(targetWindow as window)
34.8. CLASS NSGRAPHICS

34.8.10 Constructor(targetImage as NSBitmapImageRepMBS)


Function: Creates a new graphics context for drawing into a bitmap image representation.

Example:

```plaintext
dim n as new NSImageMBS(300,300)
dim r as new NSBitmapImageRepMBS(300, 300, 8, 4, true, NSColorSpaceMBS.NSCalibratedRGBColorSpace, 4*300, 32)

dim g as new NSGraphicsMBS(r)
g.SetColorRGB 1.0,0,0,0.5
g.fillRect 0, 0, 100, 100
g = nil // flush
n.addRepresentation r

Backdrop = n.CopyPictureWithMask
```

Notes:

Please make sure the graphics object is destroyed (Set to nil) so the drawings flush to the image.

Returns nil on any error.

See also:

- 34.8.9 Constructor
- 34.8.11 Constructor(targetImage as NSImageMBS)
- 34.8.12 Constructor(targetView as NSViewMBS)
- 34.8.13 Constructor(targetWindow as NSWindowMBS)
- 34.8.14 Constructor(targetWindow as window)

34.8.11 Constructor(targetImage as NSImageMBS)


Function: Creates a new graphics context for drawing into an image.

Example:

```plaintext
// make new image
dim myImage as new NSImageMBS(500,500)
dim myGraphics as new NSGraphicsMBS(myImage)

// make logo image
dim myPicture as Picture = LogoMBS(500)
dim anotherImage as new NSImageMBS(myPicture)
```
// draw logo image to new image
myGraphics.drawInRect(anotherImage, 0, 0, myImage.width, myImage.height, 0, 0, anotherImage.width, anotherImage.height, myGraphics.NSCompositeSourceOver, 1.0)
myGraphics = nil // flush drawing

// save to file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim b as BinaryStream = BinaryStream.Create(f, True)
if b<>nil then
    b.Write myImage.JPEGRepresentation
    b.Close
end if

Notes: Please make sure the graphics object is destroyed (Set to nil) so the drawings flush to the image. See also:

- 34.8.9 Constructor 6922
- 34.8.10 Constructor(targetImage as NSBitmapImageRepMBS) 6923
- 34.8.12 Constructor(targetView as NSViewMBS) 6924
- 34.8.13 Constructor(targetWindow as NSWindowMBS) 6924
- 34.8.14 Constructor(targetWindow as window) 6925

34.8.12 Constructor(targetView as NSViewMBS)

Function: Creates a new graphics context for drawing into a Cocoa view.
Notes: Please make sure the graphics object is destroyed (Set to nil) so the drawings flush to the window. See also:

- 34.8.9 Constructor 6922
- 34.8.10 Constructor(targetImage as NSBitmapImageRepMBS) 6923
- 34.8.11 Constructor(targetImage as NSImageMBS) 6923
- 34.8.13 Constructor(targetWindow as NSWindowMBS) 6924
- 34.8.14 Constructor(targetWindow as window) 6925

34.8.13 Constructor(targetWindow as NSWindowMBS)

Function: Creates a new graphics context for drawing into a window.
See also:
34.8. **CLASS NSGRAPHICSMBS**

- 34.8.9 Constructor
- 34.8.10 Constructor(targetImage as NSBitmapImageRepMBS)
- 34.8.11 Constructor(targetImage as NSImageMBS)
- 34.8.12 Constructor(targetView as NSViewMBS)
- 34.8.14 Constructor(targetWindow as window)

### 34.8.14 Constructor(targetWindow as window)

MBS MacCocoa Plugin, Plugin Version: 10.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new graphics context for drawing into a window. **See also:**

- 34.8.9 Constructor
- 34.8.10 Constructor(targetImage as NSBitmapImageRepMBS)
- 34.8.11 Constructor(targetImage as NSImageMBS)
- 34.8.12 Constructor(targetView as NSViewMBS)

### 34.8.15 drawAtPoint(image as NSImageMBS, x as Double, y as Double, sx as Double, sy as Double, sw as Double, sh as Double, Operation as Integer, fraction as Double)

MBS MacCocoa Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Draws all or part of the image at the specified point in the current coordinate system. **Notes:**

- x/y: The location in the current coordinate system at which to draw the image.
- sx/sy/sw/sh: The source rectangle specifying the portion of the image you want to draw. The coordinates of this rectangle are specified in the image’s own coordinate system. If you pass in zeros, the entire image is drawn.
- operation: The compositing operation to use when drawing the image. See the NSCompositingOperation constants.
- fraction: The opacity of the image, specified as a value from 0.0 to 1.0. Specifying a value of 0.0 draws the image as fully transparent while a value of 1.0 draws the image as fully opaque. Values greater than 1.0 are interpreted as 1.0.

The image content is drawn at its current resolution and is not scaled unless the CTM of the current coordinate system itself contains a scaling factor. The image is otherwise positioned and oriented using the current coordinate system.
For Operation you use the Composite constants in this class.
In the Cocoa world the y axis is reversed. y=0 is on the bottom.
See also:

- 34.8.16 drawAtPoint(text as NSAttributedStringMBS, point as NSPointMBS) 6926
- 34.8.17 drawAtPoint(text as string, point as NSPointMBS, DicAttributes as dictionary = nil) 6927

### 34.8.16 drawAtPoint(text as NSAttributedStringMBS, point as NSPointMBS)

**Function:** Draws the receiver with its font and other display attributes at the given point in the currently focused view.
**Example:**
```plaintext
// create Hello World in red
dim a as NSAttributedStringMBS = NSAttributedStringMBS.attributedStringWithString("Hello World")
dim m as NSMutableAttributedStringMBS = a.mutableCopy
m.addAttribute(a.NSForegroundColorAttributeName, NSColorMBS.redColor, new NSRangeMBS(0, m.length))
// put it in a textarea
TextArea1.NSTextViewMBS.textStorage.setAttributedString m

// draw in Canvas
dim g as new NSGraphicsMBS(Canvas1.NSViewMBS)
g.drawAtPoint m, new NSPointMBS(20,20)
```

**Notes:**
point: The point in the current view to draw the text.

The width (height for vertical layout) of the rendering area is unlimited, unlike drawInRect, which uses a bounding rectangle. As a result, this method renders the text in a single line.

Don’t invoke this method when no NSView is focused.
See also:

- 34.8.15 drawAtPoint(image as NSImageMBS, x as Double, y as Double, sx as Double, sy as Double, sw as Double, sh as Double, Operation as Integer, fraction as Double) 6925
- 34.8.17 drawAtPoint(text as string, point as NSPointMBS, DicAttributes as dictionary = nil) 6927
34.8.17 drawAtPoint(text as string, point as NSPointMBS, DicAttributes as dictionary = nil)

**Function:** Draws the text with the font and other display characteristics of the given attributes, at the specified point in the currently focused view.

**Notes:**
- **Point:** The origin for the bounding box for drawing the string. If the focused view is flipped, the origin is the upper-left corner of the drawing bounding box; otherwise, the origin is the lower-left corner.
- **attributes:** A dictionary of text attributes to be applied to the string. These are the same attributes that can be applied to an NSAttributedString object, but in the case of strings, the attributes apply to the entire string, rather than ranges within the string.

The width (height for vertical layout) of the rendering area is unlimited, unlike drawInRect, which uses a bounding rectangle. As a result, this method renders the text in a single line.

You should only invoke this method when an NSView object has focus.

See also:
- 34.8.15 drawAtPoint(image as NSImageMBS, x as Double, y as Double, sx as Double, sy as Double, sw as Double, sh as Double, Operation as Integer, fraction as Double) 6925
- 34.8.16 drawAtPoint(text as NSAttributedStringMBS, point as NSPointMBS) 6926

34.8.18 drawInRect(image as NSImageMBS, x as Double, y as Double, w as Double, h as Double, sx as Double, sy as Double, sw as Double, sh as Double, Operation as Integer, fraction as Double)

MBS MacCocoa Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** draws the image into the given rectangle with the given source rectangle and the given mode.

**Example:**
```javascript
// make new image
dim myImage as new NSImageMBS(500,500)
dim myGraphics as new NSGraphicsMBS(myImage)

// make logo image
dim myPicture as Picture = LogoMBS(500)
dim anotherImage as new NSImageMBS(myPicture)

// draw logo image to new image
myGraphics.drawInRect(anotherImage, 0, 0, myImage.width, myImage.height, 0, 0, anotherImage.width, anotherImage.height, myGraphics.NSCompositeSourceOver, 1.0)
myGraphics = nil // flush
```
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// save to file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim b as BinaryStream = BinaryStream.Create(f, True)
if b<>nil then
    b.Write myImage.JPEGRepresentation
    b.Close
end if

Notes:
For Operation you use the Composite constants in this class.
In the Cocoa world the y axis is reversed. y=0 is on the bottom.
See also:
- 34.8.19 drawInRect(text as NSAttributedStringMBS, rect as NSRectMBS) 6928
- 34.8.20 drawInRect(text as string, rect as NSRectMBS, DicAttributes as dictionary = nil) 6929

34.8.19  drawInRect(text as NSAttributedStringMBS, rect as NSRectMBS)

Function: Draws the attributed string within the given rectangle in the currently view, clipping the text layout to this rectangle.
Example:
// create Hello World in red
dim a as NSAttributedStringMBS = NSAttributedStringMBS.attributedStringWithString("Hello World")
dim m as NSMutableAttributedStringMBS = a.mutableCopy
m.addAttribute(a.NSForegroundColorAttributeName, NSColorMBS.redColor, new NSRangeMBS(0, m.length))

// put it in a textarea
TextArea1.NSTextViewMBS.textStorage.setAttributedString m

// draw in Canvas
dim g as new NSGraphicsMBS(Canvas1.NSViewMBS)
g.drawRect m, new NSRectMBS(20,20, 100, 100)

Notes:
rect: The rectangle in which to draw.

Text is drawn within rect according to its line sweep direction; for example, Arabic text will begin at the right edge and potentially be clipped on the left.
The rect parameter determines how many glyphs are typeset within the width of a line, but it’s possible for a portion of a glyph to appear outside the area of rect if the image bounding box of the particular glyph exceeds its typographic bounding box.

If the focus view is flipped, the text origin is set at the upper-left corner of the drawing bounding box; otherwise the origin is set at the lower-left corner. For text rendering, whether the view coordinates are flipped or not doesn’t affect the flow of line layout, which goes from top to bottom. However, it affects the interpretation of the text origin. So, for example, if the rect argument is `{ 0.0, 0.0, 100.0, 100.0 }`, the text origin is `{ 0.0, 0.0 }` when the view coordinates are flipped and `{ 0.0, 100.0 }` when not.

Don’t invoke this method when no NSView is focused.

See also:

- 34.8.18 drawInRect(image as NSImageMBS, x as Double, y as Double, w as Double, h as Double, sx as Double, sy as Double, sw as Double, sh as Double, Operation as Integer, fraction as Double) 6927
- 34.8.20 drawInRect(text as string, rect as NSRectMBS, DicAttributes as dictionary = nil) 6929

34.8.20 drawInRect(text as string, rect as NSRectMBS, DicAttributes as dictionary = nil)


Function: Draws the text with the font and other display characteristics of the given attributes, within the specified rectangle in the currently focused NSView.

Notes:

text: The text to draw.

Rect: The rectangle in which to draw the string.

attributes: A dictionary of text attributes to be applied to the string. These are the same attributes that can be applied to an NSAttributedString object, but in the case of strings, the attributes apply to the entire string, rather than ranges within the string.

The rendering area is bounded by rect, unlike drawAtPoint, which has an unlimited width. As a result, this method renders the text in multiple lines.

You should only invoke this method when an NSView has focus.

See also:

- 34.8.18 drawInRect(image as NSImageMBS, x as Double, y as Double, w as Double, h as Double, sx as Double, sy as Double, sw as Double, sh as Double, Operation as Integer, fraction as Double) 6927
- 34.8.19 drawInRect(text as NSAttributedStringMBS, rect as NSRectMBS) 6928
34.8.21 drawPicture(image as Picture, x as Double, y as Double, w as Double, h as Double, sx as Double, sy as Double, sw as Double, sh as Double, Operation as Integer, fraction as Double)

MBS MacCocoa Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Draws a picture. **Notes:** Same as drawInRect with NSImageMBS, but using picture.

34.8.22 drawRect(x as Double, y as Double, w as Double, h as Double)

MBS MacCocoa Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Draws a rectangle with the current color. **Notes:** In the Cocoa world the y axis is reversed. y=0 is on the bottom.

34.8.23 DrawWindowBackground(x as Double, y as Double, w as Double, h as Double)

MBS MacCocoa Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Draws the window’s default background pattern into the specified rectangle of the currently focused view. **Notes:** Pass the rectangle (in the current coordinate system) in which to draw the window’s background pattern.

34.8.24 drawWithRect(text as NSAttributedStringMBS, rect as NSRectMBS, options as Integer)

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Draws the receiver with the specified options, within the given rectangle in the current graphics context. **Example:**

```plaintext
// create Hello World in red
dim a as NSAttributedStringMBS = NSAttributedStringMBS.attributedStringWithString("Hello World")
dim m as NSMutableAttributedStringMBS = a.mutableCopy

m.addAttribute(a.NSForegroundColorAttributeName, NSColorMBS.redColor, new NSRangeMBS(0, m.length))

// put it in a textarea
TextArea1.NSTextViewMBS.textStorage.setAttributedString m

// draw in Canvas
```
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```
dim g as new NSGraphicsMBS(Canvas1.NSViewMBS)
g.drawRect m, new NSRectMBS(20,20, 100, 100), g.NSStringDrawingUsesLineFragmentOrigin
```

**Notes:**
- rect: The rectangle specifies the rendering origin in the current graphics context.
- options: The string drawing options. See NSStringDrawingOptions for the available options.

The rect argument's origin field specifies the rendering origin. The point is interpreted as the baseline origin by default. With NSStringDrawingUsesLineFragmentOrigin, it is interpreted as the upper left corner of the line fragment rect. The size field specifies the text container size. The width part of the size field specifies the maximum line fragment width if larger than 0.0. The height defines the maximum size that can be occupied with text if larger than 0.0 and NSStringDrawingUsesLineFragmentOrigin is specified. If NSStringDrawingUsesLineFragmentOrigin is not specified, height is ignored and considered to be single-line rendering (NSLineBreakByWordWrapping and NSLineBreakByCharWrapping are treated as NSLineBreakByClipping).

You should only invoke this method when there is a current graphics context. Available in OS X v10.4 and later.

**34.8.25 eraseRect(x as Double, y as Double, w as Double, h as Double)**

MBS MacCocoa Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Erases a rectangle with the current color. **Notes:** In the Cocoa world the y axis is reversed. y=0 is on the bottom.

**34.8.26 fill(path as NSBezierPathMBS)**

MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Paints the region enclosed by the receiver's path. **Example:**

```
dim n as new NSImageMBS(300, 300)
dim g as new NSGraphicsMBS(n)
g.fillColor NSColorMBS.redColor

dim r as NSRectMBS = NSMakeRectMBS(50, 50, 100, 100)
dim b as NSBezierPathMBS = NSBezierPathMBS.bezierPathWithRect(r)
g.fill(b)
```
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6932

g = nil

window1.Backdrop = n.CopyPicture // black image with red color rect

Notes:
This method fills the path using the current fill color and the receiver’s current winding rule. If the path contains any open subpaths, this method implicitly closes them before painting the fill region.

The painted region includes the pixels right up to, but not including, the path line itself. For paths with large line widths, this can result in overlap between the fill region and the stroked path (which is itself centered on the path line).

34.8.27 fillRect(r as NSRectMBS)

Function: Fills the specified rectangular path with the current fill color.
Example:

dim n as new NSImageMBS(300, 300)
dim g as new NSGraphicsMBS(n)

g.setFillColor NSColorMBS.redColor


dim r as new NSRectMBS(10,10,200,200)
g.fillRectMBS(r)

g = nil

window1.Backdrop = n.CopyPicture // black image with red color rectangle

Notes:

r: A rectangle in the current coordinate system.

This method fills the specified region immediately. This method uses the compositing operation returned by the compositingOperation method of NSGraphicsContext.
See also:

• 34.8.28 fillRect(x as Double, y as Double, w as Double, h as Double) 6933

• 34.8.29 fillRect(x as Double, y as Double, w as Double, h as Double, operation as Integer) 6933
34.8. **CLASS NSGRAPHICSMBS**

### 34.8.28 fillRect(x as Double, y as Double, w as Double, h as Double)

MBS MacCocoa Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Fills a rectangle with the current color. **Notes:** In the Cocoa world the y axis is reversed. y=0 is on the bottom. See also:

- 34.8.27 fillRect(r as NSRectMBS)
- 34.8.29 fillRect(x as Double, y as Double, w as Double, h as Double, operation as Integer)

### 34.8.29 fillRect(x as Double, y as Double, w as Double, h as Double, operation as Integer)

MBS MacCocoa Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Fills a rectangle using the current fill color and the specified compositing operation. **Notes:** See NSComposite* constants. See also:

- 34.8.27 fillRect(r as NSRectMBS)
- 34.8.28 fillRect(x as Double, y as Double, w as Double, h as Double)

### 34.8.30 flushGraphics

MBS MacCocoa Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Forces any buffered operations or data to be sent to the receiver’s destination. **Notes:** Graphics contexts use buffers to queue pending operations but for efficiency reasons may not always empty those buffers immediately. This method forces the buffers to be emptied.

### 34.8.31 graphicsContext as NSGraphicsMBS

MBS MacCocoa Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a NSGraphicsMBS object with the current graphics context of the current thread. **Example:**

```vba
Sub Paint(g As Graphics)
    // Canvas Paint event in a Mac Cocoa application
    dim ng as NSGraphicsMBS = NSGraphicsMBS.graphicsContext
    ng.drawAtPoint "Hello World", new NSPointMBS(30, 30)
End Sub
```
Notes: Returns nil on any error.

34.8.32 graphicsContextWithCGContext(targetCGContext as Variant, initialFlipped-State as boolean = false) as NSGraphicsMBS

Function: Creates a new graphics context pointing to the given CGContextMBS object.
Example:

Sub Paint(g As Graphics)
    // get current context
dim cg as CGContextMBS = GetCurrentCGContextMBS

    // get graphics context
dim ng as NSGraphicsMBS = NSGraphicsMBS.graphicsContextWithCGContext(cg)

    // and draw inside
ng.drawAtPoint "Hello World", new NSPointMBS(30, 30)
End Sub

Notes: Returns nil on any error.

34.8.33 graphicsContextWithCGContextHandle(targetCGContextRef as Integer, initialFlippedState as boolean = false) as NSGraphicsMBS

MBS MacCocoa Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Creates a new graphics context pointing to the given CGContext reference.
Example:

Sub Paint(g As Graphics)
    // get current context
    dim cg as CGContextMBS = GetCurrentCGContextMBS

    // get graphics context
    dim ng as NSGraphicsMBS = NSGraphicsMBS.graphicsContextWithCGContextHandle(cg.Handle)

    // and draw inside
    ng.drawAtPoint "Hello World", new NSPointMBS(30, 30)
End Sub

Notes: Returns nil on any error.
34.8.34  graphicsContextWithNSBitmapImageRep(targetImage as NSBitmapImageRepMBS) as NSGraphicsMBS

Function: Creates a new graphics context for drawing into a bitmap image representation.
Example:

    dim n as new NSImageMBS(300,300)
    dim r as new NSBitmapImageRepMBS(300, 300, 8, 4, true, NSColorSpaceMBS.NSCalibratedRGBColorSpace, 4*300, 32)
    dim g as NSGraphicsMBS = NSGraphicsMBS.graphicsContextWithNSBitmapImageRep(r)
    g.SetColorRGB 1.0,0,0,0.5
    g.fillRect 0, 0, 100, 100
    g = nil // flush
    n.addRepresentation r

Backdrop = n.CopyPictureWithMask

Notes:
Please make sure the graphics object is destroyed (Set to nil) so the drawings flush to the image.
Returns nil on any error.

34.8.35  graphicsContextWithNSImage(targetImage as NSImageMBS) as NSGraphicsMBS

Function: Creates a new graphics context for drawing into an image.
Example:

    // make new image
    dim myImage as new NSImageMBS(500,500)
    dim myGraphics as NSGraphicsMBS = NSGraphicsMBS.graphicsContextWithNSImage(myImage)

    // make logo image
    dim myPicture as Picture = LogoMBS(500)
    dim anotherImage as new NSImageMBS(myPicture)

    // draw logo image to new image
    myGraphics.drawInRect(anotherImage, 0, 0, myImage.width, myImage.height, 0, 0, anotherImage.width, anotherImage.height, myGraphics.NSCompositeSourceOver, 1.0)
myGraphics = nil // flush drawing

// save to file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim b as BinaryStream = BinaryStream.Create(f, True)
if b<>nil then
  b.Write myImage.JPEGRepresentation
  b.Close
end if

Notes:
Please make sure the graphics object is destroyed (Set to nil) so the drawings flush to the image.
Returns nil on any error.

34.8.36 graphicsContextWithNSView(targetView as NSViewMBS) as NSGraphicsMBS

Function: Creates a new graphics context for drawing into a Cocoa view.
Example:
// draws in a Cocoa view
dim gg as NSGraphicsMBS = NSGraphicsMBS.graphicsContextWithNSView(canvas1.NSViewMBS)
  gg.SetColorRGB 1.0,0,0,0.5
  gg.fillRect 0, 0, 100, 100
  gg = nil // flush

Notes:
Please make sure the graphics object is destroyed (Set to nil) so the drawings flush to the window.
Returns nil on any error.

34.8.37 graphicsContextWithNSWindow(targetNSWindow as NSWindowMBS) as NSGraphicsMBS

Function: Creates a new graphics context for drawing into a window.
Example:
// draw in a Cocoa window
dim g as NSGraphicsMBS = NSGraphicsMBS.graphicsContextWithNSWindow(window1.NSWindowMBS)
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```plaintext
g.SetColorRGB 1.0,0,0,0.5
g.fillRect 0, 0, 100, 100
g = nil // flush
```

**Notes**: Returns nil on any error.

### 34.8.38 `graphicsContextWithWindow(targetWindow as window) as NSGraphicsMBS`


**Function**: Creates a new graphics context for drawing into a window.

**Example**:

```plaintext
// draws in a Cocoa window
dim g as NSGraphicsMBS = NSGraphicsMBS.graphicsContextWithWindow(window1)
g.SetColorRGB 1.0,0,0,0.5
g.fillRect 0, 0, 100, 100
g = nil // flush
```

**Notes**: Returns nil on any error.

### 34.8.39 `graphicsPort as Variant`


**Function**: Returns the low-level, platform-specific graphics context represented by the receiver.

**Notes**: In Mac OS X, this is the Core Graphics context, a CGContextMBS object.

### 34.8.40 `highlightRect(x as Double, y as Double, w as Double, h as Double)`


**Function**: Highlights the rectangle.

**Notes**: In the Cocoa world the y axis is reversed. y=0 is on the bottom.

### 34.8.41 `invalidate`


**Function**: Invalidates the graphics object.
34.8.42 isDrawingToScreen as boolean

Function: Returns a Boolean value that indicates whether the drawing destination is the screen.
Notes: True if the drawing destination is the screen, otherwise false.

A return value of false may mean that the drawing destination is a printer, but the destination may also be a PDF or EPS file. If this method returns false, you can call attributes to see if additional information is available about the drawing destination.

34.8.43 isFlipped as boolean

Function: Returns a Boolean value that indicates the receiver’s flipped state.
Notes: True if the receiver is flipped, otherwise false.

The state is determined by sending isFlipped to the receiver’s view that has focus. If no view has focus, returns false unless the receiver is instantiated using graphicsContextWithGraphicsPort:flipped: specifying true as the flipped parameter.

Available in Mac OS X v10.4 and later.

34.8.44 restoreGraphicsState

Function: Removes the receiver’s graphics state from the top of the graphics state stack and makes the next graphics state the current graphics state.
Notes: This method must have been preceded with a saveGraphicsState message to add the graphics state to the stack. Invocations of saveGraphicsState and restoreGraphicsState methods may be nested.

Restoring the graphics state restores such attributes as the current drawing style, transformation matrix, color, and font of the original graphics state.
34.8. **CLASS NSGRAPHICSMBS**

### 34.8.45 **saveGraphicsState**

MBS MacCocoa Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Saves the graphics state of the current graphics context.  
**Notes:** This method pushes the context onto the per-thread stack.

### 34.8.46 **ScaleCoordinates(x as Double, y as Double)**

MBS MacCocoa Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Scales coordinate system so the next drawing commands will use different scaling.  
**Notes:** Use saveGraphicsState and restoreGraphicsState so you can restore the old state.

### 34.8.47 **set(transform as NSAffineTransformMBS)**

MBS MacCocoa Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the current transform of the graphics environment.

### 34.8.48 **setClip(path as NSBezierPathMBS)**

MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Replaces the clipping path of the current graphics context with the area inside the receiver’s path.  
**Notes:** You should avoid using this method as a way of adjusting the clipping path, as it may expand the clipping path beyond the bounds set by the enclosing view. If you do use this method, be sure to save the graphics state prior to modifying the clipping path and restore the graphics state when you are done.  

This method uses the current winding rule to determine the clipping shape of the receiver. This method does not affect the receiver’s path.

### 34.8.49 **setColor(c as NSColorMBS)**

MBS MacCocoa Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the color of subsequent drawing to the color that the receiver represents.
34.8.50 **SetColorBW(white as Double, alpha as Double = 1.0)**

MBS MacCocoa Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the color to a BW color.

**Notes:**
Values range is from 0.0 to 1.0.
Alpha 0.0 is invisible and alpha 1.0 is visible.

34.8.51 **SetColorCMYK(cyan as Double, magenta as Double, yellow as Double, black as Double, alpha as Double = 1.0)**

MBS MacCocoa Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the color to a CMYK color.

**Notes:**
Values range is from 0.0 to 1.0.
Alpha 0.0 is invisible and alpha 1.0 is visible.

34.8.52 **SetColorHSV(hue as Double, saturation as Double, brightness as Double, alpha as Double = 1.0)**

MBS MacCocoa Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the color to an HSV color.

**Notes:** Values range is from 0.0 to 1.0.

34.8.53 **SetColorRGB(red as Double, green as Double, blue as Double, alpha as Double = 1.0)**

MBS MacCocoa Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the color to a RGB color.

**Notes:**
Values range is from 0.0 to 1.0.
Alpha 0.0 is invisible and alpha 1.0 is visible.

34.8.54 **setCurrentContext**

MBS MacCocoa Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets this context to be the current.
34.8.55  setFillColor(c as NSColorMBS)


34.8.56  setStrokeColor(c as NSColorMBS)


34.8.57  SetTransform(NSAffineTransform as Variant)


Notes:
Please use saveGraphicsState so you can restore the state before applying matrix for other drawings.

The current transformation is stored in the current graphics context and is applied to subsequent drawing operations. You should use this method sparingly because it removes the existing transformation matrix, which is an accumulation of transformation matrices for the screen, window, and any superviews. Instead use the concat method to add this transformation matrix to the current transformation matrix.

NSAffineTransform must be a NSAffineTransformMBS object.

34.8.58  sizeWithAttributes(text as string, DicAttributes as dictionary = nil) as NSSizeMBS

MBS MacCocoa Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the bounding box size the text occupies when drawn with the given attributes.

Example:
Dim NSGraphics as New NSGraphicsMBS()
Dim NSStringWidth as Double = NSGraphics.sizeWithAttributes("Hello World").Width

MsgBox("StringWidth from NSGraphicsMBS: " + Str(NSStringWidth))

Dim REALGraphics as Graphics = window1.Graphics
Dim REALStringWidth as Double = REALGraphics.StringWidth("Hello World")
MsgBox("StringWidth from REAL Graphics: ") + Str(REALStringWidth)

Notes:
attributes: A dictionary of text attributes to be applied to the string. These are the same attributes that can be applied to an NSAttributedString object, but in the case of strings, the attributes apply to the entire string, rather than ranges within the string.

Returns the bounding box size the receiver occupies when drawn with attributes.

34.8.59 stroke(path as NSBezierPathMBS)

Function: Draws a line along the receiver’s path using the current stroke color and drawing attributes.
Example:
  dim n as new NSImageMBS(300, 300)
  dim g as new NSGraphicsMBS(n)
  g.setStrokeColor NSColorMBS.redColor
  dim r as NSRectMBS = NSMakeRectMBS(50, 50, 100, 100)
  dim b as NSBezierPathMBS = NSBezierPathMBS.bezierPathWithRect(r)
  b.lineWidth = 5
  g.stroke(b)
  g = nil
  window1.Backdrop = n.CopyPicture // black image with red color rect

Notes: The drawn line is centered on the path with its sides parallel to the path segment. This method uses the current drawing attributes associated with the receiver. If a particular attribute is not set for the receiver, this method uses the corresponding default attribute.

34.8.60 strokeLine(point1 as NSPointMBS, point2 as NSPointMBS)

Function: Strokes a line between two points using the current stroke color and the default drawing attributes.
Example:
34.8. **CLASS NSGRAPHICS**

```plaintext
dim n as new NSImageMBS(300, 300)
dim g as new NSGraphicsMBS(n)

g.setStrokeColor NSColorMBS.redColor

dim p1 as new NSPointMBS(10,10)
dim p2 as new NSPointMBS(50,50)
g.strokeLine(p1,p2)

g = nil

window1.Backdrop = n.CopyPicture // black image with red color line
```

**Notes:**

- **point1**: The starting point of the line.
- **point2**: The ending point of the line.

This method strokes the specified path immediately.

See also:

- 34.8.61 strokeLine(x1 as Double, y1 as Double, x2 as Double, y2 as Double)

### 34.8.61 `strokeLine(x1 as Double, y1 as Double, x2 as Double, y2 as Double)`

**MBS MacCocoa Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function**: Strokes a line.

See also:

- 34.8.60 strokeLine(point1 as NSPointMBS, point2 as NSPointMBS)

### 34.8.62 `strokeRect(r as NSRectMBS)`

**MBS MacCocoa Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function**: Strokes the path of the specified rectangle using the current stroke color and the default drawing attributes.

**Example:**

```plaintext
dim n as new NSImageMBS(300, 300)
dim g as new NSGraphicsMBS(n)

g.setStrokeColor NSColorMBS.redColor

dim r as NSRectMBS = NSMakeRectMBS(50, 50, 100, 100)
```
g.strokeRect(r)

g = nil

window1.Backdrop = n.CopyPicture  // black image with red color rect

Notes:

r: A rectangle in the current coordinate system.

The path is drawn beginning at the rectangle’s origin and proceeding in a counterclockwise direction. This method strokes the specified path immediately.

34.8.63 TranslateCoordinates(x as Double, y as Double)

MBS MacCocoa Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Moves coordinate system so the next drawing commands will use different starting point. Notes: Use saveGraphicsState and restoreGraphicsState so you can restore the old state.

34.8.64 Properties

34.8.65 Handle as Integer


Reference to NSGraphicsContext object.
(Read and Write property)

34.8.66 Owner as Variant


When you have a graphics object based on a window, view or image, this property points to the original object to keep it alive while drawing.
(Read and Write property)
34.8. CLASS NSGRAPHICS

34.8.67 Valid as Boolean

MBS MacCocoa Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Wheter this graphics object is still valid.

**Notes:**
Set to true when the plugin creates an object and false when the object is no longer needed.
(Read and Write property)

34.8.68 imageInterpolation as Integer

MBS MacCocoa Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The interpolation behavior.

**Notes:**
Note that this value is not part of the graphics state, so it cannot be reset using restoreGraphicsState.
(Read and Write computed property)

34.8.69 shouldAntialias as boolean

MBS MacCocoa Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the receiver should use antialiasing.

**Notes:**
This value is part of the graphics state and is restored by restoreGraphicsState.
(Read and Write computed property)

34.8.70 Constants

34.8.71 NSCompositeClear=0

MBS MacCocoa Plugin, Plugin Version: 7.7. **Function:** Transparent. (R = 0)

34.8.72 NSCompositeCopy=1

MBS MacCocoa Plugin, Plugin Version: 7.7. **Function:** Source image. (R = S)
**34.8.73 NSCompositeDestinationAtop=9**

MBS MacCocoa Plugin, Plugin Version: 7.7. **Function:** Destination image wherever both images are opaque, source image wherever source image is opaque but destination image is transparent, and transparent elsewhere. \( R = S^*(1 - Da) + D^*Sa \)

**34.8.74 NSCompositeDestinationIn=7**

MBS MacCocoa Plugin, Plugin Version: 7.7. **Function:** Destination image wherever both images are opaque, and transparent elsewhere. \( R = D^*Sa \)

**34.8.75 NSCompositeDestinationOut=8**

MBS MacCocoa Plugin, Plugin Version: 7.7. **Function:** Destination image wherever destination image is opaque but source image is transparent, and transparent elsewhere. \( R = D^*(1 - Sa) \)

**34.8.76 NSCompositeDestinationOver=6**

MBS MacCocoa Plugin, Plugin Version: 7.7. **Function:** Destination image wherever destination image is opaque, and source image elsewhere. \( R = S^*(1 - Da) + D \)

**34.8.77 NSCompositeHighlight=12**

MBS MacCocoa Plugin, Plugin Version: 7.7. **Function:** Source image wherever source image is opaque, and destination image elsewhere. (Deprecated. Mapped to NSCompositeSourceOver.)

**34.8.78 NSCompositePlusDarker=11**

MBS MacCocoa Plugin, Plugin Version: 7.7. **Function:** Sum of source and destination images, with color values approaching 0 as a limit. \( R = \text{MAX}(0, (1 - D) + (1 - S)) \)

**34.8.79 NSCompositePlusLighter=13**

MBS MacCocoa Plugin, Plugin Version: 7.7. **Function:** Sum of source and destination images, with color values approaching 1 as a limit. \( R = \text{MIN}(1, S + D) \)
34.8. CLASS NSGRAPHICSMBS

34.8.80 NSCompositeSourceAtop=5

MBS MacCocoa Plugin, Plugin Version: 7.7. **Function:** Source image wherever both images are opaque, destination image wherever destination image is opaque but source image is transparent, and transparent elsewhere. \( R = S^*Da + D^*(1 - Sa) \)

34.8.81 NSCompositeSourceIn=3

MBS MacCocoa Plugin, Plugin Version: 7.7. **Function:** Source image wherever both images are opaque, and transparent elsewhere. \( R = S^*Da \)

34.8.82 NSCompositeSourceOut=4

MBS MacCocoa Plugin, Plugin Version: 7.7. **Function:** Source image wherever source image is opaque but destination image is transparent, and transparent elsewhere. \( R = S^*(1 - Da) \)

34.8.83 NSCompositeSourceOver=2

MBS MacCocoa Plugin, Plugin Version: 7.7. **Function:** Source image wherever source image is opaque, and destination image elsewhere. \( R = S + D^*(1 - Sa) \)

34.8.84 NSCompositeXOR=10

MBS MacCocoa Plugin, Plugin Version: 7.7. **Function:** Exclusive OR of source and destination images. \( R = S^*(1 - Da) + D^*(1 - Sa) \)
**Notes:** Works only with black and white images and is not recommended for color contexts.

34.8.85 NSImageInterpolationDefault=0

MBS MacCocoa Plugin, Plugin Version: 10.3. **Function:** One of the interpolation contants. **Notes:** Use the context’s default interpolation.

34.8.86 NSImageInterpolationHigh=3

MBS MacCocoa Plugin, Plugin Version: 10.3. **Function:** One of the interpolation contants. **Notes:** Slower, higher-quality interpolation.
34.8.87  **NSImageInterpolationLow=2**

MBS MacCocoa Plugin, Plugin Version: 10.3. **Function:** One of the interpolation constants.  
**Notes:** Fast, low-quality interpolation.

34.8.88  **NSImageInterpolationMedium=4**

MBS MacCocoa Plugin, Plugin Version: 10.3. **Function:** One of the interpolation constants.  
**Notes:**  
Medium quality, slower than NSImageInterpolationLow.  
Available in Mac OS X v10.6 and later.

34.8.89  **NSImageInterpolationNone=1**

MBS MacCocoa Plugin, Plugin Version: 10.3. **Function:** One of the interpolation constants.  
**Notes:** No interpolation.

34.8.90  **NSStringDrawingDisableScreenFontSubstitution = 4**

MBS MacCocoa Plugin, Plugin Version: 11.3. **Function:** One of the drawing option constants.  
**Notes:** Disable screen font substitution (equivalent to NSLayoutManager.setUsesScreenFonts(false)).

34.8.91  **NSStringDrawingOneShot = 16**

MBS MacCocoa Plugin, Plugin Version: 11.3. **Function:** One of the drawing option constants.  
**Notes:** Suppresses caching layout information.

34.8.92  **NSStringDrawingTruncatesLastVisibleLine = 32**

MBS MacCocoa Plugin, Plugin Version: 11.3. **Function:** One of the drawing option constants.  
**Notes:**  
Truncates and adds the ellipsis character to the last visible line if the text doesn’t fit into the bounds specified.
This option is ignored if NSStringDrawingUsesLineFragmentOrigin is not also set. In addition, the line break mode must be either NSLineBreakByWordWrapping or NSLineBreakByCharWrapping for this option to take effect. The line break mode can be specified in a paragraph style passed in the attributes dictionary argument of the drawing methods. Available in Mac OS X v10.5 and later.

### 34.8.93 NSStringDrawingUsesDeviceMetrics = 8

MBS MacCocoa Plugin, Plugin Version: 11.3. **Function:** One of the drawing option constants. **Notes:** Uses image glyph bounds instead of typographic bounds.

### 34.8.94 NSStringDrawingUsesFontLeading = 2

MBS MacCocoa Plugin, Plugin Version: 11.3. **Function:** One of the drawing option constants. **Notes:** Uses the font leading for calculating line heights.

### 34.8.95 NSStringDrawingUsesLineFragmentOrigin = 1

MBS MacCocoa Plugin, Plugin Version: 11.3. **Function:** One of the drawing option constants. **Example:**

```plaintext
// create Hello World in red
dim a as NSAttributedStringMBS = NSAttributedStringMBS.attributedStringWithString("Hello World")
dim m as NSMutableAttributedStringMBS = a.mutableCopy

m.addAttribute(a.NSForegroundColorAttributeName, NSColorMBS.redColor, new NSRangeMBS(0, m.length))

// put it in a textarea
TextArea1.NSTextViewMBS.textStorage.setAttributedString m

// draw in Canvas
dim g as new NSGraphicsMBS(Canvas1.NSViewMBS)

g.drawWithRect m, new NSRectMBS(20, 20, 100, 100), g.NSStringDrawingUsesLineFragmentOrigin
```

**Notes:** The specified origin is the line fragment origin, not the baseline origin.
34.9 class NSImageMBS

34.9.1 class NSImageMBS

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
An NSImage object is a high-level class for manipulating image data.
**Notes:**
You use this class to load existing images or create new ones and composite them into a view or other image. This class works in conjunction with one or more image representation objects (subclasses of NSImageRep), which manage the actual image data.

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

34.9.2 Methods

34.9.3 addRepresentation(img as NSImageRepMBS)

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Adds the specified image representation object to to the receiver.
**Notes:**
After invoking this method, you may need to explicitly set features of the new image representation, such as the size, number of colors, and so on. This is true particularly when the NSImage object has multiple image representations to choose from. See NSImageRep and its subclasses for the methods you use to complete initialization.

Any representation added by this method is retained by the receiver. Image representations cannot be shared among multiple NSImage objects.

34.9.4 BMPRepresentation as Memoryblock

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The image as the binary data in a BMP file.
**Example:**
```pascal
dim img as NSImageMBS  
dim p as Picture  
dim f as FolderItem  
dim b as BinaryStream
```
34.9. CLASS NSIMagemBS

```plaintext
p=NewPicture(100,100,32)
p.Graphics.ForeColor=& cFF0000
p.Graphics.FillOval 0,0,100,100
Backdrop=p
img=new NSImageMBS(p,p.Mask)

f=SpecialFolder.Desktop.Child("test.bmp")
b=f.CreateBinaryFile("")
b.Write img.BMPRepresentation
b.Close
f.Launch
```

Notes: BMP does not support masks.

34.9.5 BMPRepresentationMT as Memoryblock

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The image as the binary data in a BMP file. **Notes:** BMP does not support masks. Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.

34.9.6 cancelIncrementalLoad

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Cancels the current download operation immediately, if the image is being incrementally loaded. **Notes:** This call has no effect if the image is not loading.

34.9.7 canInitWithPasteboard as boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Tests whether the receiver can create an instance of itself using pasteboard data. **Notes:** This method uses the NSImageRep class method imageUnfilteredPasteboardTypes to find a class that can handle the data in the specified pasteboard. If you create your own NSImageRep subclasses, override the imageUnfilteredPasteboardTypes method to notify NSImage of the pasteboard types your class supports.
34.9.8 Constructor

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The default constructor creating a dummy NSImage object.

See also:

- 34.9.9 Constructor(data as Memoryblock)
- 34.9.10 Constructor(file as folderitem)
- 34.9.11 Constructor(image as Picture, mask as picture = nil)
- 34.9.12 Constructor(width as Double, height as Double)

34.9.9 Constructor(data as Memoryblock)

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The data constructor calling initWithData internally.

**Notes:**

Calls initWithData.
On success the image is valid and the handle is not zero.

See also:

- 34.9.8 Constructor
- 34.9.10 Constructor(file as folderitem)
- 34.9.11 Constructor(image as Picture, mask as picture = nil)
- 34.9.12 Constructor(width as Double, height as Double)

34.9.10 Constructor(file as folderitem)

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The file constructor calling initWithContentsOfURL(file) internally.

**Notes:**

Calls initWithContentsOfURL.
On success the image is valid and the handle is not zero.

See also:

- 34.9.8 Constructor
- 34.9.9 Constructor(data as Memoryblock)
- 34.9.11 Constructor(image as Picture, mask as picture = nil)
- 34.9.12 Constructor(width as Double, height as Double)
34.9. CLASS NSIMAGEMBS

34.9.11 Constructor(image as Picture, mask as picture = nil)

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new NSImageMBS object based on the image data in a Realbasic picture.

**Example:**

```realbasic
dim img as new NSImageMBS(pict)
```

**Notes:**

Optional you can pass a picture with the mask. It is valid to use the mask property of the image for the second parameter.

With 11.3 plugins we are deprecating to pass a mask. The plugin prefers to simply take the mask or alpha channel of the picture itself.

On success the image is valid and the handle is not zero.

Calls initWithPicture.

See also:

- 34.9.8 Constructor
- 34.9.9 Constructor(data as Memoryblock)
- 34.9.10 Constructor(file as folderitem)
- 34.9.12 Constructor(width as Double, height as Double)

34.9.12 Constructor(width as Double, height as Double)

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The size constructor calling initWithSize internally.

**Notes:**

Calls initWithSize.

On success the image is valid and the handle is not zero.

See also:

- 34.9.8 Constructor
- 34.9.9 Constructor(data as Memoryblock)
- 34.9.10 Constructor(file as folderitem)
- 34.9.11 Constructor(image as Picture, mask as picture = nil)
34.9.13 CopyMask as picture

MBS MacBase Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Copies the content of the NSImage in current size.  
**Example:**

```vba
dim f as FolderItem
dim n as NSImageMBS
f=SpecialFolder.Desktop.Child("test.png")
n=new NSImageMBS(f)
Backdrop=n.CopyMask
```

**Notes:**
Copies only the alpha channel as mask.

A convenience function instead of using CGPictureContextMBS with DrawIntoCGContextAtRect.

Returns nil on any error.

34.9.14 CopyPicture(CGColorSpace as Variant = nil, BackgroundColor as NSColorMBS = nil) as picture

MBS MacBase Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Copies the content of the NSImage in current size.  
**Example:**

```vba
dim f as FolderItem
dim n as NSImageMBS
f=SpecialFolder.Desktop.Child("test.png")
n=new NSImageMBS(f)
Backdrop=n.CopyPicture // background is black
```

**Notes:**
A convenience function instead of using CGPictureContextMBS with DrawIntoCGContextAtRect.

Returns nil on any error.

With Colorspace parameter you can pass a RGB CGColorsace to define which colorspace is used. Default
is DeviceRGB, but you could also pass generic RGB or other.

If BackgroundColor is not nil, the image is filled in background with this color and NSImage rendered on top of it.

### 34.9.15 CopyPictureRect

MBS MacBase Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Copies the content of the NSImage from the given rectangle.

**Example:**

```vbnet
dim f as FolderItem
dim n as NSImageMBS

f=SpecialFolder.Desktop.Child("test.png")
n=new NSImageMBS(f)
Backdrop=n.CopyPicture // background is black
```

**Notes:**

A convenience function instead of using CGPictureContextMBS with DrawIntoCGContextAtRect.

Returns nil on any error.

With Colorspace parameter you can pass a RGB CGColorspace to define which colorspace is used. Default is DeviceRGB, but you could also pass generic RGB or other.

If BackgroundColor is not nil, the image is filled in background with this color and NSImage rendered on top of it.

### 34.9.16 CopyPictureWithAlpha

MBS MacBase Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Copies the content of the NSImage in current size.

**Notes:**

This is a function for Cocoa target which returns picture with alpha channel.

Returns nil on any error.
34.9.17 CopyPictureWithAlphaRect(x as Integer, y as Integer, w as Integer, h as Integer) as picture

MBS MacBase Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Copies the content of the NSImage in given rectangle. **Notes:**
This is a function for Cocoa target which returns picture with alpha channel. Returns nil on any error.

34.9.18 CopyPictureWithMask(CGColorSpace as Variant = nil) as picture

MBS MacBase Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Copies the content of the NSImage in current size. **Example:**
```vba
dim f as FolderItem
dim n as NSImageMBS
f=SpecialFolder.Desktop.Child("test.png")
n=new NSImageMBS(f)
Backdrop=n.CopyPictureWithMask
```

**Notes:**
Copies the picture and its mask. This function is faster than CopyPicture and CopyMask combined as the picture is only copied one time to an internal buffer.

A convenience function instead of using CGPictureContextMBS with DrawIntoCGContextAtRect.

Returns nil on any error.

With Colorspace parameter you can pass a RGB CGColorSpace to define which colorspace is used. Default is DeviceRGB, but you could also pass generic RGB or other.
34.9. DRAWINTOCGCHEXTATPOINT(cgcontext as Integer, x as Double, y as Double, sx as Double, sy as Double, SourceW as Double, SourceH as Double, operation as Integer, fraction as Double) as boolean

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Draws the image.
**Notes:** Same as DrawIntoCGContextAtRect, but with a point instead of a rectangle.

34.9.20 DrawIntoCGContextAtRect(cgcontext as Integer, x as Double, y as Double, w as Double, h as Double, SourceX as Double, SourceY as Double, SourceW as Double, SourceH as Double, operation as Integer, fraction as Double) as boolean

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Draws the image.

**Example:**

```vbnet
Function OpenAsNSImage(extends file as folderitem) As picture
    dim width as Integer
    dim height as Integer
    dim c as NSImageMBS
    dim g as CGPictureContextMBS

    // load image from file
    c=new NSImageMBS

    // is that image valid?
    if c.initWithContentsOfURL(file) then
        Width=c.Width
        height=c.Height
    end if

    // create a drawing buffer to draw inside
    g=new CGPictureContextMBS(width,height)

    if g.Handle<>0 then // valid?
        // now draw the image inside.
        // you could scale or even apply transparency...
        if c.DrawIntoCGContextAtRect(g.Handle, 0, 0, width, height, 0,0,width,height,2,1.0) then
            // make a RB Picture from it
            Return g.CopyPicture
        end if
    end if
End Function
```
Notes:
Draws the image into a CGContext. You need to specify first the destination rectangle followed by the source rectangle.

fraction:
The opacity of the image, specified as a value from 0.0 to 1.0. Specifying a value of 0.0 draws the image as fully transparent while a value of 1.0 draws the image as fully opaque. Values greater than 1.0 are interpreted as 1.0.

operation codes:

<table>
<thead>
<tr>
<th>Operation Code</th>
<th>Value</th>
<th>Description</th>
</tr>
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<tr>
<td>NSCompositeClear</td>
<td>0</td>
<td>Transparent.</td>
</tr>
<tr>
<td>NSCompositeCopy</td>
<td>1</td>
<td>Source image.</td>
</tr>
<tr>
<td>NSCompositeSourceOver</td>
<td>2</td>
<td>Source image wherever source image is opaque, and destination image elsewhere.</td>
</tr>
<tr>
<td>NSCompositeSourceIn</td>
<td>3</td>
<td>Source image wherever both images are opaque, and transparent elsewhere.</td>
</tr>
<tr>
<td>NSCompositeSourceOut</td>
<td>4</td>
<td>Source image wherever source image is opaque but destination image is transparent, and transparent elsewhere.</td>
</tr>
<tr>
<td>NSCompositeSourceAtop</td>
<td>5</td>
<td>Source image wherever both images are opaque, destination image wherever destination image is opaque but source image is transparent, and transparent elsewhere.</td>
</tr>
<tr>
<td>NSCompositeDestinationOver</td>
<td>6</td>
<td>Destination image wherever destination image is opaque, and source image elsewhere.</td>
</tr>
<tr>
<td>NSCompositeDestinationIn</td>
<td>7</td>
<td>Destination image wherever both images are opaque, and transparent elsewhere.</td>
</tr>
<tr>
<td>NSCompositeDestinationOut</td>
<td>8</td>
<td>Destination image wherever destination image is opaque but source image is transparent, and transparent elsewhere.</td>
</tr>
<tr>
<td>NSCompositeDestinationAtop</td>
<td>9</td>
<td>Destination image wherever both images are opaque, source image wherever source image is opaque but destination image is transparent, and transparent elsewhere.</td>
</tr>
<tr>
<td>NSCompositeXOR</td>
<td>10</td>
<td>Exclusive OR of source and destination images.</td>
</tr>
<tr>
<td>NSCompositePlusDarker</td>
<td>11</td>
<td>Sum of source and destination images, with color values approaching 0 as a limit.</td>
</tr>
<tr>
<td>NSCompositeHighlight</td>
<td>12</td>
<td>Source image wherever source image is opaque, and destination image elsewhere.</td>
</tr>
<tr>
<td>NSCompositePlusLighter</td>
<td>13</td>
<td>Sum of source and destination images, with color values approaching 1 as a limit.</td>
</tr>
</tbody>
</table>

Returns true on success and false on failure.
34.9.21 GIFRepresentation as Memoryblock

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The image as the binary data in a GIF file.
**Example:**
```vba
dim img as NSImageMBS
dim p as Picture
dim f as FolderItem
dim b as BinaryStream

p=NewPicture(100,100,32)
p.Graphics.ForeColor=& cFF0000
p.Graphics.FillOval 0,0,100,100
Backdrop=p
img=new NSImageMBS(p,p.Mask)

f=SpecialFolder.Desktop.Child("test.gif")
b=f.CreateBinaryFile(""")
b.Write img.GIFRepresentation
b.Close

f.Launch
```

**Notes:** GIF does support masks in a limited way.

34.9.22 GIFRepresentationMT as Memoryblock

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The image as the binary data in a GIF file.
**Notes:**
GIF does support masks in a limited way.
Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.

34.9.23 imageByFadingToFraction(fraction as Double) as NSImageMBS

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns an image with a mask faded to the given percentage
**Example:**
dim img as NSImageMBS
dim p as Picture
dim f as FolderItem
dim b as BinaryStream

p=NewPicture(100,100,32)
p.Graphics.ForeColor=& cFF0000
p.Graphics.FillOval 0,0,100,100
Backdrop=p
img=new NSImageMBS(p)

img=img.imageByFadingToFraction(0.1)

f=SpecialFolder.Desktop.Child("test.png")
b=f.CreateBinaryFile(""")
b.Write img.PNGRepresentation
b.Close

f.Launch

Notes: Returns nil on failure.

34.9.24 imageByScalingToSize(width as Double, height as Double) as NSImageMBS

Example:

dim img as NSImageMBS
dim p as Picture
dim f as FolderItem
dim b as BinaryStream

p=NewPicture(100,100,32)
p.Graphics.ForeColor=& cFF0000
p.Graphics.FillOval 0,0,100,100
Backdrop=p
img=new NSImageMBS(p)

img=img.imageByScalingToSize(200,200)

f=SpecialFolder.Desktop.Child("test.png")
b=f.CreateBinaryFile(""")
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b. Write img.PNGRepresentation
b. Close

f. Launch

Notes:

Returns nil on failure.
Internally creates a copy of the image.
See also:

• 34.9.25 imageByScalingToSize(width as Double, height as Double, fraction as Double) as NSImageMBS
• 34.9.26 imageByScalingToSize(width as Double, height as Double, fraction as Double, flip as boolean, proportionally as boolean) as NSImageMBS

34.9.25 imageByScalingToSize(width as Double, height as Double, fraction as Double) as NSImageMBS

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Scales image to the new size with given fading.
Example:

```vbnet
dim img as NSImageMBS
dim p as Picture
dim f as FolderItem
dim b as BinaryStream

p=NewPicture(100,100,32)
p.Graphics.ForeColor=& cFF0000
p.Graphics.FillOval 0,0,100,100
Backdrop=p
img=new NSImageMBS(p)

img=img.imageByScalingToSize(200,200,0.5)

f=SpecialFolder.Desktop.Child("test.png")
b=f.CreateBinaryFile"

b.Write img.PNGRepresentation
b.Close

f.Launch
```

Notes:
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Returns nil on failure.

Internally creates a copy of the image.

See also:

- 34.9.24 imageByScalingToSize(width as Double, height as Double) as NSImageMBS
- 34.9.26 imageByScalingToSize(width as Double, height as Double, fraction as Double, flip as boolean, proportionally as boolean) as NSImageMBS

34.9.26 imageByScalingToSize(width as Double, height as Double, fraction as Double, flip as boolean, proportionally as boolean) as NSImageMBS

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Scales image to the new size with given fading fraction.

**Example:**

```plaintext
dim img as NSImageMBS
dim p as Picture
dim f as FolderItem
dim b as BinaryStream

p=NewPicture(100,100,32)
p.Graphics.ForeColor=&cFF0000
p.Graphics.FillOval 0,0,100,100
Backdrop=p
img=new NSImageMBS(p)

img=img.imageByScalingToSize(200,200)

f=SpecialFolder.Desktop.Child("test.png")
b=f.CreateBinaryFile(""
'b.Write img.PNGRepresentation
'b.Close

f.Launch
```

**Notes:**

Returns nil on failure.

The image can be flipped vertically with the flip property.

Internally creates a copy of the image.

See also:

- 34.9.24 imageByScalingToSize(width as Double, height as Double) as NSImageMBS
- 34.9.25 imageByScalingToSize(width as Double, height as Double, fraction as Double) as NSImageMBS
- 34.9.26 imageByScalingToSize(width as Double, height as Double, fraction as Double, flip as boolean, proportionally as boolean) as NSImageMBS
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34.9.27  **imageFileTypes as string()**

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of strings identifying the image types supported by the registered NSImageRep objects.

**Example:**
```dim types() as string = NSImageMBS.imageFileTypes
MsgBox Join(types, EndOfLine)```

**Notes:**
An array of strings, each of which identifies a single supported file type. The array can include encoded HFS file types as well as filename extensions.

This list includes all file types supported by registered subclasses of NSImageRep plus those that can be converted to a supported type by a user-installed filter service. You can pass the array returned by this method directly to NSOpenPanelMBS.

When creating a subclass of NSImageRep, do not override this method. Instead, override the imageUnfilteredFileTypes method to notify NSImage of the file types your class supports directly.

34.9.28  **imageName(name as string) as NSImageMBS**

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the NSImage instance associated with the specified name.

**Notes:**
This method searches for named images in several places, returning the first image it finds matching the given name. The order of the search is as follows:

1. Search for an object whose name was set explicitly using the setName: method and currently resides in the image cache.
2. Search the application’s main bundle for a file whose name matches the specified string. (For information on how the bundle is searched, see "Searching for Bundle Resources" in Bundle Programming Guide.)
3. Search the Application Kit framework for a shared image with the specified name.

When looking for files in the application bundle, it is better (but not required) to include the filename extension in the name parameter. When naming an image with the setName method, it is also convention not to include filename extensions in the names you specify. That way, you can easily distinguish between images you have named explicitly and those you want to load from the application’s bundle.
One particularly useful image you can retrieve is your application’s icon. This image is set by Cocoa automatically and referenced by the string "NSApplicationIcon". Icons for other applications can be obtained through the use of methods declared in the NSWorkspace class. You can also retrieve some standard system images using Cocoa defined constants; for more information, see the Constants section of this class.

If an application is linked in Mac OS X v10.5 or later, images requested using this method and whose name ends in the word "Template" are automatically marked as template images.

The NSImage class keeps a reference to any named images in a table until the image name is cleared. Consequently you do not need to retain the returned image object unless its name could be cleared. You can clear an image object from the table by passing nil to the setName: method of the corresponding NSImage object.

Here is a good list of identifiers you can use:
http://hetima.github.io/fucking_nsimage_syntax/

### 34.9.29 imagePasteboardTypes as string()

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of strings identifying the pasteboard types supported directly by the registered NSImageRep objects.

**Example:**

```plaintext
dim types() as string = NSImageMBS.imagePasteboardTypes
MsgBox Join(types, EndOfLine)
```

**Notes:**

Returns an array of strings, each of which identifies a single supported pasteboard type. By default, this list contains the NSPDFPboardType, NSPICTPboardType, NSPostScriptPboardType, and NSTIFFPboardType types.

This list includes all pasteboard types supported by registered subclasses of NSImageRep plus those that can be converted to a supported type by a user-installed filter service.

When creating a subclass of NSImageRep, do not override this method. Instead, override the imageUnfilteredPasteboardTypes method to notify NSImage of the pasteboard types your class supports.
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### 34.9.30 imageTypes as string()

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of UTI strings identifying the image types supported by the registered NSImageRep objects, either directly or through a user-installed filter service. **Example:**

```vba
dim types() as string = NSImageMBS.imageTypes
MsgBox Join(types, EndOfLine)
```

**Notes:**

Returns an array of strings, each of which contains a UTI identifying a supported image type. Some sample image-related UTI strings include "public.image", "public.jpeg", and "public.tiff". For a list of supported types, see UTCoreTypes.h.

The returned list includes UTIs all file types supported by registered subclasses of NSImageRep plus those that can be converted to a supported type by a user-installed filter service. You can use the returned UTI strings with any method that supports UTIs.

You should not override this method directly. Instead, you should override the imageTypes method of NSImageRep.

Available in Mac OS X v10.5 and later.

### 34.9.31 imageUnfilteredFileTypes as string()

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of strings identifying the file types supported directly by the registered NSImageRep objects. **Example:**

```vba
dim types() as string = NSImageMBS.imageUnfilteredFileTypes
MsgBox Join(types, EndOfLine)
```

**Notes:**

An array of strings, each of which identifies a single supported file type. File types are identified by file extension and HFS file types. The returned list does not contain pasteboard types that are available only through a user-installed filter service.
34.9.32  imageUnfilteredPasteboardTypes as string()


**Function:** Returns an array of strings identifying the pasteboard types supported directly by the registered NSImageRep objects.  

**Example:**

```vbnet
dim types() as string = NSImageMBS.imageUnfilteredPasteboardTypes
MsgBox Join(types, EndOfLine)
```

**Notes:**

An array of strings, each of which identifies a single supported pasteboard type.  
The returned list does not contain pasteboard types that are supported only through a user-installed filter service.

---

34.9.33  imageUnfilteredTypes as string()


**Function:** Returns an array of UTI strings identifying the image types supported directly by the registered NSImageRep objects.  

**Example:**

```vbnet
dim types() as string = NSImageMBS.imageUnfilteredTypes
MsgBox Join(types, EndOfLine)
```

**Notes:**

Returns an array of strings, each of which contains a UTI identifying a supported image type. Some sample image-related UTI strings include "public.image", "public.jpeg", and "public.tiff". For a list of supported types, see UTCoreTypes.h.

The returned list includes UTI strings only for those file types that are supported directly by registered subclasses of NSImageRep. It does not include types that are supported through user-installed filter services. You can use the returned UTI strings with any method that supports UTIs.

You should not override this method directly. Instead, you should override the imageUnfilteredTypes method of NSImageRep.
34.9.34  imageWithCGImage(CGImage as Variant, width as Double = 0, height as Double = 0) as NSImageMBS

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Initializes and returns an NSImage instance with the contents of the CGImage. Example:

```vbnet
dim logo as Picture = LogoMBS(500)
dim cgimage as CGImageMBS = CGCreateImageMBS(logo)
dim nsimage as NSImageMBS = NSImageMBS.imageWithCGImage(cgimage)
dim pic as Picture = nsimage.CopyPictureWithMask
Backdrop = pic
```

Notes:
If width is zero, we take the width from the CGImage.
If height is zero, we take the height from the CGImage.

cgImage: The source CGImageMBS object.
width & height: The size of the new image.

Returns an initialized NSImage instance, or nil if the new instance cannot be initialized.

You should not assume anything about the image, other than that drawing it is equivalent to drawing the CGImage.
Available in OS X v10.6 and later.

34.9.35  imageWithContentsOfFile(file as folderitem) as NSImageMBS

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Initializes and returns an NSImage instance with the contents of the specified file. Example:

```vbnet
dim file as FolderItem = SpecialFolder.Desktop.Child("mbs.jpg")
dim image as NSImageMBS = NSImageMBS.imageWithContentsOfFile(file)
Backdrop = image.CopyPictureWithMask
```

Notes:
File: The file to open.

Returns an initialized NSImage instance, or nil if the method cannot create an image representation from
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the contents of the specified file.

34.9.36  imageWithContentsOfFileMT(file as folderitem) as NSImageMBS

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Initializes and returns an NSImage instance with the contents of the specified file. Example:

```pascal
dim file as FolderItem = SpecialFolder.Desktop.Child(“mbs.jpg”)
dim image as NSImageMBS = NSImageMBS.imageWithContentsOfFileMT(file)
Backdrop = image.CopyPictureWithMask
```

Notes:
File: The file to open.

Returns an initialized NSImage instance, or nil if the method cannot create an image representation from the contents of the specified file.

Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.

34.9.37  imageWithContentsOfFile(path as string) as NSImageMBS

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Initializes and returns an NSImage instance with the contents of the specified file. Example:

```pascal
dim file as FolderItem = SpecialFolder.Desktop.Child(“mbs.jpg”)
dim path as string = file.UnixpathMBS
dim image as NSImageMBS = NSImageMBS.imageWithContentsOfFile(path)
Backdrop = image.CopyPictureWithMask
```

Notes:
path: A full or relative path name specifying the file with the desired image data. Relative paths must be relative to the current working directory.

Returns an initialized NSImage instance, or nil if the method cannot create an image representation from the contents of the specified file.
The filename parameter should include the file extension that identifies the type of the image data. This method looks for an NSImageRep subclass that handles that data type from among those registered with NSImage.

### 34.9.38 `imageWithContentsOfPathMT(path as string) as NSImageMBS`

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns an NSImage instance with the contents of the specified file.

**Example:**
```
    dim file as FolderItem = SpecialFolder.Desktop.Child("mbs.jpg")
    dim path as string = file.UnixpathMBS
    dim image as NSImageMBS = NSImageMBS.imageWithContentsOfPathMT(path)
    Backdrop = image.CopyPictureWithMask
```

**Notes:**
- **path:** A full or relative path name specifying the file with the desired image data. Relative paths must be relative to the current working directory.

Returns an initialized NSImage instance, or nil if the method cannot create an image representation from the contents of the specified file.

The filename parameter should include the file extension that identifies the type of the image data. This method looks for an NSImageRep subclass that handles that data type from among those registered with NSImage.

Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.

### 34.9.39 `imageWithContentsOfURL(URL as string) as NSImageMBS`

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns an NSImage instance with the contents of the specified URL.

**Example:**
```
    dim url as string = "http://www.monkeybreadsoftware.de/images/MBSLogo.jpg"
    dim img as NSImageMBS = NSImageMBS.imageWithContentsOfURL(url)
    Backdrop = img.CopyPictureWithMask
```
Notes: Returns an initialized NSImage instance, or nil if the method cannot create an image representation from the contents of the specified URL.

34.9.40 `imageWithContentsOfURLMT(URL as string) as NSImageMBS`

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns an NSImage instance with the contents of the specified URL.

**Example:**

```vba
dim url as string = "http://www.monkeybreadsoftware.de/images/MBSLogo.jpg"
dim img as NSImageMBS = NSImageMBS.imageWithContentsOfURLMT(url)
Backdrop = img.CopyPictureWithMask
```

Notes:

Returns an initialized NSImage instance, or nil if the method cannot create an image representation from the contents of the specified URL.
Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.

34.9.41 `imageWithData(data as memoryblock) as NSImageMBS`

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns an NSImage instance with the contents of the specified memoryblock.

**Example:**

```vba
dim logo as Picture = LogoMBS(500)
dim jpeg as string = PictureToJPEGStringMBS(logo, 75)
dim nsimage as NSImageMBS = NSImageMBS.imageWithData(jpeg)
dim pic as Picture = nsimage.CopyPictureWithMask
Backdrop = pic
```

Notes: Returns an initialized NSImage instance, or nil if the method cannot create an image representation from the contents of the specified data object.
See also:

- 34.9.42 `imageWithData(data as string) as NSImageMBS`
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34.9.42 imageWithData(data as string) as NSImageMBS

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns an NSImage instance with the contents of the specified string.

**Example:**

```plaintext
dim logo as Picture = LogoMBS(500)
dim jpeg as string = PictureToJPEGStringMBS(logo, 75)
dim nsimage as NSImageMBS = NSImageMBS.imageWithData(jpeg)
dim pic as Picture = nsimage.CopyPictureWithMask
Backdrop = pic
```

**Notes:** Returns an initialized NSImage instance, or nil if the method cannot create an image representation from the contents of the specified data object.

See also:

- 34.9.41 imageWithData(data as memoryblock) as NSImageMBS

34.9.43 imageWithDataMT(data as memoryblock) as NSImageMBS

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns an NSImage instance with the contents of the specified memoryblock.

**Example:**

```plaintext
dim logo as Picture = LogoMBS(500)
dim jpeg as string = PictureToJPEGStringMBS(logo, 75)
dim nsimage as NSImageMBS = NSImageMBS.imageWithDataMT(jpeg)
dim pic as Picture = nsimage.CopyPictureWithMask
Backdrop = pic
```

**Notes:**

Returns an initialized NSImage instance, or nil if the method cannot create an image representation from the contents of the specified data object.

Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.

See also:

- 34.9.44 imageWithDataMT(data as string) as NSImageMBS

34.9.44 imageWithDataMT(data as string) as NSImageMBS

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns an NSImage instance with the contents of the specified string.
Example:

```vbnet
dim logo as Picture = LogoMBS(500)
dim jpeg as string = PictureToJPEGStringMBS(logo, 75)
dim nsimage as NSImageMBS = NSImageMBS.imageWithDataMT(jpeg)
dim pic as Picture = nsimage.CopyPictureWithMask
Backdrop = pic
```

Notes:

Returns an initialized NSImage instance, or nil if the method cannot create an image representation from the contents of the specified data object.
Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.
See also:

- 34.9.43 imageWithDataMT(data as memoryblock) as NSImageMBS

### 34.9.45 imageWithHandle(Handle as Integer) as NSImageMBS

MBS MacBase Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new picture for a NSImage handle.

### 34.9.46 initWithContentsOfURL(file as folderitem) as boolean

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns an NSImage instance with the contents of the specified folderitem.
**Notes:** Returns true on success and false on failure.
See also:

- 34.9.47 initWithContentsOfURL(url as string) as boolean

### 34.9.47 initWithContentsOfURL(url as string) as boolean

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns an NSImage instance with the contents of the specified URL.
**Notes:** Returns true on success and false on failure.
See also:

- 34.9.46 initWithContentsOfURL(file as folderitem) as boolean
34.9.48 initWithData(data as Memoryblock) as boolean

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and with the contents of the specified data in the string. **Notes:** Returns true on success and false on failure.

34.9.49 initWithDataIgnoringOrientation(data as Memoryblock) as boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes and returns an NSImage instance with the contents of the specified memoryblock, ignoring the EXIF orientation tags. **Notes:** An initialized NSImage instance, or nil if the method cannot create an image representation from the contents of the specified data object. Available in Mac OS X v10.6 and later.

34.9.50 initWithIconRef(IconHandle as Integer) as boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes the image object with a Carbon-style icon resource. **Notes:** IconHandle: A reference to a Carbon icon resource (IconRef). Creates one or more bitmap image representations, one for each size icon contained in the IconRef data structure. This initialization method automatically retains the data in the iconRef parameter and loads the bitmaps from that data file lazily. Available in Mac OS X v10.5 and later.

34.9.51 initWithPasteboard as boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes an NSImage instance with data from the pasteboard. **Notes:** The specified pasteboard should contain a type supported by one of the registered NSImageRep subclasses. Table 1 lists the default pasteboard types and file extensions for several NSImageRep subclasses.
34.9.52 initWithPicture(img as picture, mask as picture = nil) as boolean

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes the image object with image data from the Realbasic pictures.

**Example:**

```plaintext
dim img as new NSImageMBS
if img.initWithPicture(pict, pict.mask) then
    MsgBox "OK"
end if
```

**Notes:**
Optional you can pass a picture with the mask. It is valid to use the mask property of the image for the second parameter.

With 11.3 plugins we are deprecating to pass a mask. The plugin prefers to simply take the mask or alpha channel of the picture itself.

On success the image is valid and the handle is not zero.

34.9.53 initWithSize(width as Double, height as Double) as boolean

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes an empty image object with the given size.

**Notes:** Returns true on success and false on failure.

34.9.54 JPEGRepresentation as Memoryblock

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The image as the binary data in a JPEG file.

**Example:**

```plaintext
dim img as NSImageMBS
dim p as Picture
dim f as FolderItem
dim b as BinaryStream

p=NewPicture(100,100,32)
p.Graphics.ForeColor=& cFF0000
p.Graphics.FillOval 0,0,100,100
Backdrop=p
```
34.9. **CLASS NSIMAGEMBS**

```plaintext
img=new NSImageMBS(p)

f=SpecialFolder.Desktop.Child("test.jpeg")
b=f.CreateBinaryFile"
"b.Write img.JPEGRepresentation
b.Close

f.Launch
```

**Notes:** JPEG does not support masks. Uses 80% for the quality.

---

### 34.9.55 JPEGRepresentationMT as Memoryblock

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The image as the binary data in a JPEG file.

**Example:**

```plaintext
// take some Picture
dim logo as Picture = LogoMBS(500)

// make a NSImageMBS from it
dim nsimage as new NSImageMBS(logo)

// use thread friendly compress function
dim jpeg as MemoryBlock = nsimage.JPEGRepresentationMT

// decode to see if it worked
dim test as Picture = JPEGStringToPictureMBS(jpeg)

// and display
Backdrop = test
```

**Notes:**

JPEG does not support masks. Uses 80% for the quality.

Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.
34.9.56 JPEGRepresentationWithCompressionFactor(factor as Double) as Memoryblock

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The image as the binary data in a JPEG file. 

**Example:**

```vba
dim img as NSImageMBS
dim p as Picture
dim f as FolderItem
dim b as BinaryStream

p=NewPicture(100,100,32)
p.Graphics.ForeColor=& cFF0000
p.Graphics.FillOval 0,0,100,100
Backdrop=p
img=new NSImageMBS(p)

f=SpecialFolder.Desktop.Child("test.jpeg")
b=f.CreateBinaryFile("")
b.Write img.JPEGRepresentationWithCompressionFactor(0.01)
b.Close

f.Launch
```

**Notes:**

Factor for compression goes from 0.0 to 1.0.
JPEG does not support masks.

34.9.57 JPEGRepresentationWithCompressionFactorMT(factor as Double) as Memoryblock

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The image as the binary data in a JPEG file. 

**Example:**

```vba
// take some Picture
dim logo as Picture = LogoMBS(500)

// make a NSImageMBS from it
dim nsimage as new NSImageMBS(logo)

// use thread friendly compress function
dim jpeg as MemoryBlock = nsimage.JPEGRepresentationWithCompressionFactorMT(1.0)
```
// decode to see if it worked
Dim test As Picture = JPEGStringToPictureMBS(jpeg)

// and display
Backdrop = test

Notes:
Factor for compression goes from 0.0 to 1.0.
JPEG does not support masks.
Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.

### 34.9.58 NSImageHintUserInterfaceLayoutDirection as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the dictionary keys used in the hints dictionary. **Notes:** value is a number with NSUserInterfaceLayoutDirection enum value

### 34.9.59 NSImageNameActionTemplate as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images representing standard artwork and icons that you can use in your applications. **Notes:** To access this image, pass the specified constant to the imageNamed method.
An action menu template image.
Available in Mac OS X v10.5 and later.

### 34.9.60 NSImageNameAddTemplate as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images representing standard artwork and icons that you can use in your applications. **Notes:** An add item template image.
Available in Mac OS X v10.5 and later.
To access this image, pass the specified constant to the imageNamed method.
34.9.61 NSImageNameAdvanced as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images that you can use in application toolbars.

**Notes:**

To access this image, pass the specified constant to the imageNamed method.

Advanced preferences toolbar icon. Use in a preferences window only.

Available in Mac OS X v10.5 and later.

34.9.62 NSImageNameApplicationIcon as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images that you can use in application toolbars.

**Notes:**

To access this image, pass the specified constant to the imageNamed method.

The application’s icon.

On versions of Mac OS X prior to v10.6, you can use the string ”NSApplicationIcon”.

Available in Mac OS X v10.6 and later.

34.9.63 NSImageNameBluetoothTemplate as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images representing standard artwork and icons that you can use in your applications.

**Notes:**

To access this image, pass the specified constant to the imageNamed method.

A Bluetooth template image.

Available in Mac OS X v10.5 and later.

34.9.64 NSImageNameBonjour as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images representing Finder items.

**Notes:**

To access this image, pass the specified constant to the imageNamed method.

A Bonjour icon.

Available in Mac OS X v10.5 and later.
34.9.65 NSImageNameBookmarksTemplate as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images that you can use in application toolbars.

**Notes:**

To access this image, pass the specified constant to the imageNamed method.

Bookmarks image suitable for a template.

Available in Mac OS X v10.6 and later.

34.9.66 NSImageNameCaution as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images that you can use in application toolbars.

**Notes:**

To access this image, pass the specified constant to the imageNamed method.

Caution Image.

Available in Mac OS X v10.6 and later.

34.9.67 NSImageNameColorPanel as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images that you can use in application toolbars.

**Notes:**

To access this image, pass the specified constant to the imageNamed method.

A color panel toolbar icon.

Available in Mac OS X v10.5 and later.

34.9.68 NSImageNameColumnViewTemplate as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images used in segmented controls to switch the current view type.

**Notes:**

To access this image, pass the specified constant to the imageNamed method.

A column view mode template image.

Available in Mac OS X v10.5 and later.
### 34.9.69 NSImageNameComputer as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images representing Finder items.

**Example:**

```plaintext
dim n as NSImageMBS = NSImageMBS.imageNamed(NSImageMBS.NSImageNameComputer)

// set to size you need
n.size = NSMakeSizeMBS(512,512)

// and make picture
Backdrop = n.CopyPictureWithMask
```

**Notes:**

To access this image, pass the specified constant to the imageNamed method.

A computer icon.

Available in Mac OS X v10.5 and later.

---

### 34.9.70 NSImageNameDotMac as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images representing Finder items.

**Notes:**

To access this image, pass the specified constant to the imageNamed method.

A Dot Mac icon.

Available in Mac OS X v10.5 and later.

---

### 34.9.71 NSImageNameEnterFullScreenTemplate as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images representing standard artwork and icons that you can use in your applications.

**Notes:**

An enter full-screen mode template image.

Available in Mac OS X v10.5 and later.

To access this image, pass the specified constant to the imageNamed method.
34.9.72  NSImageNameEveryone as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images representing sharing permission icons that you can use in your applications. **Notes:**
To access this image, pass the specified constant to the imageNamed method. Permissions for all users. Available in Mac OS X v10.5 and later.

34.9.73  NSImageNameExitFullScreenTemplate as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images representing standard artwork and icons that you can use in your applications. **Notes:**
An exit full-screen mode template image. Available in Mac OS X v10.5 and later.
To access this image, pass the specified constant to the imageNamed method.

34.9.74  NSImageNameFlowViewTemplate as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images used in segmented controls to switch the current view type. **Notes:**
To access this image, pass the specified constant to the imageNamed method. A cover flow view mode template image. Available in Mac OS X v10.5 and later.

34.9.75  NSImageNameFolder as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images that you can use in application toolbars. **Notes:**
To access this image, pass the specified constant to the imageNamed method. A folder image. Available in Mac OS X v10.6 and later.
34.9.76  **NSImageNameFolderBurnable as string**

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** One of the images representing Finder items.  
**Notes:**  
To access this image, pass the specified constant to the imageNamed method.  
A burnable folder icon.  
Available in Mac OS X v10.5 and later.

34.9.77  **NSImageNameFolderSmart as string**

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** One of the images representing Finder items.  
**Notes:**  
A smart folder icon.  
Available in Mac OS X v10.5 and later.  
To access this image, pass the specified constant to the imageNamed method.

34.9.78  **NSImageNameFollowLinkFreestandingTemplate as string**

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** One of the images representing standard artwork and icons that you can use in your applications.  
**Notes:**  
A link template image. You can use this image to implement a borderless button.  
Available in Mac OS X v10.5 and later.  
To access this image, pass the specified constant to the imageNamed method.

34.9.79  **NSImageNameFontPanel as string**

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** One of the images that you can use in application toolbars.  
**Notes:**  
To access this image, pass the specified constant to the imageNamed method.  
A font panel toolbar icon.  
Available in Mac OS X v10.5 and later.
34.9.80  **NSImageNameGoBackTemplate as string**

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** The template name for the go back image.

**Notes:**

Use these images for "go forward" or "go back" functions, as seen in Safari's toolbar. These images will automatically mirror when the user interface layout direction is right to left.

Available in macOS 10.12 and newer.

34.9.81  **NSImageNameGoForwardTemplate as string**

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** The template name for the go forward image.

**Notes:**

Use these images for "go forward" or "go back" functions, as seen in Safari's toolbar. These images will automatically mirror when the user interface layout direction is right to left.

Available in macOS 10.12 and newer.

34.9.82  **NSImageNameGoLeftTemplate as string**

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** One of the images representing standard artwork and icons that you can use in your applications.

**Notes:**

To access this image, pass the specified constant to the imageNamed method.

A "go back" template image.

Available in Mac OS X v10.5 and later.

34.9.83  **NSImageNameGoRightTemplate as string**

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** One of the images representing standard artwork and icons that you can use in your applications.

**Notes:**

To access this image, pass the specified constant to the imageNamed method.

A "go forward" template image.

Available in Mac OS X v10.5 and later.
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34.9.84 NSImageNameHomeTemplate as string


Notes:
To access this image, pass the specified constant to the imageNamed method.
Home image suitable for a template.
Available in Mac OS X v10.6 and later.

34.9.85 NSImageNameIChatTheaterTemplate as string


Notes:
To access this image, pass the specified constant to the imageNamed method.
An iChat Theater template image.
Available in Mac OS X v10.5 and later.

34.9.86 NSImageNameIconViewTemplate as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the images used in segmented controls to switch the current view type.

Notes:
To access this image, pass the specified constant to the imageNamed method.
An icon view mode template image.
Available in Mac OS X v10.5 and later.

34.9.87 NSImageNameInfo as string


Notes:
To access this image, pass the specified constant to the imageNamed method.
An information toolbar icon.
Available in Mac OS X v10.5 and later.
34.9. NSImageNameInvalidDataFreestandingTemplate as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images representing standard artwork and icons that you can use in your applications. **Notes:**

To access this image, pass the specified constant to the imageNamed method.
An invalid data template image. Place this icon to the right of any fields containing invalid data. You can use this image to implement a borderless button.
Available in Mac OS X v10.5 and later.

34.9.89 NSImageNameLeftFacingTriangleTemplate as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images representing standard artwork and icons that you can use in your applications. **Notes:**

To access this image, pass the specified constant to the imageNamed method.
A generic left-facing triangle template image.
Available in Mac OS X v10.5 and later.

34.9.90 NSImageNameListViewTemplate as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images used in segmented controls to switch the current view type. **Notes:**

To access this image, pass the specified constant to the imageNamed method.
A list view mode template image.
Available in Mac OS X v10.5 and later.

34.9.91 NSImageNameLockLockedTemplate as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images representing standard artwork and icons that you can use in your applications. **Notes:**

To access this image, pass the specified constant to the imageNamed method.
A locked lock template image. Use to indicate locked content.
Available in Mac OS X v10.5 and later.
34.9.92 **NSImageNameLockUnlockedTemplate as string**

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images representing standard artwork and icons that you can use in your applications. **Notes:**

To access this image, pass the specified constant to the imageNamed method.

An unlocked lock template image. Use to indicate modifiable content that can be locked.

Available in Mac OS X v10.5 and later.

34.9.93 **NSImageNameMenuMixedStateTemplate as string**

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images that you can use in application toolbars. **Notes:**

To access this image, pass the specified constant to the imageNamed method.

A horizontal dash. Drawing these outside of menus is discouraged.

Available in Mac OS X v10.6 and later.

34.9.94 **NSImageNameMenuOnStateTemplate as string**

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images that you can use in application toolbars. **Notes:**

To access this image, pass the specified constant to the imageNamed method.

A check mark. Drawing these outside of menus is discouraged.

Available in Mac OS X v10.6 and later.

34.9.95 **NSImageNameMobileMe as string**

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images that you can use in application toolbars. **Notes:**

To access this image, pass the specified constant to the imageNamed method.

MobileMe logo. Note that this is preferred to using the NSImageNameDotMac image, although that image is not expected to be deprecated.

Available in Mac OS X v10.6 and later.
34.9. **CLASS NSIMAGEMBS**

34.9.96 **NSImageNameMultipleDocuments as string**

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Drag image you can use in your applications. **Notes:**

A drag image for multiple items.
Available in Mac OS X v10.5 and later.
To access this image, pass the specified constant to the imageNamed method.

34.9.97 **NSImageNameNetwork as string**

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images representing Finder items. **Notes:**

A network icon.
Available in Mac OS X v10.5 and later.
To access this image, pass the specified constant to the imageNamed method.

34.9.98 **NSImageNamePathTemplate as string**

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images representing standard artwork and icons that you can use in your applications. **Notes:**

To access this image, pass the specified constant to the imageNamed method.
A path button template image.
Available in Mac OS X v10.5 and later.

34.9.99 **NSImageNamePreferencesGeneral as string**

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images that you can use in application toolbars. **Notes:**

To access this image, pass the specified constant to the imageNamed method.
General preferences toolbar icon. Use in a preferences window only.
Available in Mac OS X v10.5 and later.
34.9.100 **NSImageNameQuickLookTemplate** as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images representing standard artwork and icons that you can use in your applications. **Notes:**

To access this image, pass the specified constant to the imageNamed method.
A Quick Look template image.
Available in Mac OS X v10.5 and later.

34.9.101 **NSImageNameRefreshFreestandingTemplate** as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images representing standard artwork and icons that you can use in your applications. **Notes:**

A refresh template image. You can use this image to implement a borderless button.
Available in Mac OS X v10.5 and later.
To access this image, pass the specified constant to the imageNamed method.

34.9.102 **NSImageNameRefreshTemplate** as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images representing standard artwork and icons that you can use in your applications. **Notes:**

A refresh template image.
Available in Mac OS X v10.5 and later.
To access this image, pass the specified constant to the imageNamed method.
34.9.103 NSImageNameRemoveTemplate as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images representing standard artwork and icons that you can use in your applications. **Notes:**

A remove item template image.
Available in Mac OS X v10.5 and later.
To access this image, pass the specified constant to the imageNamed method.

34.9.104 NSImageNameRevealFreestandingTemplate as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images representing standard artwork and icons that you can use in your applications. **Notes:**

A reveal contents template image. You can use this image to implement a borderless button.
Available in Mac OS X v10.5 and later.
To access this image, pass the specified constant to the imageNamed method.

34.9.105 NSImageNameRightFacingTriangleTemplate as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images representing standard artwork and icons that you can use in your applications. **Notes:**

To access this image, pass the specified constant to the imageNamed method.
A generic right-facing triangle template image.
Available in Mac OS X v10.5 and later.

34.9.106 NSImageNameShareTemplate as string

MBS MacBase Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images used in segmented controls to switch the current view type. **Notes:**

A share view template image.
Available in OS X v10.8 and later.
34.9.107 NSImageNameSlideshowTemplate as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images representing standard artwork and icons that you can use in your applications. **Notes:**

To access this image, pass the specified constant to the imageNamed method.
A slideshow template image.
Available in Mac OS X v10.5 and later.

34.9.108 NSImageNameSmartBadgeTemplate as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images representing standard artwork and icons that you can use in your applications. **Notes:**

A badge for a "smart" item.
Available in Mac OS X v10.5 and later.
To access this image, pass the specified constant to the imageNamed method.

34.9.109 NSImageNameStatusAvailable as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images that you can use in application toolbars. **Notes:**

To access this image, pass the specified constant to the imageNamed method.
Small green indicator, similar to iChat’s available image.
Available in Mac OS X v10.6 and later.

34.9.110 NSImageNameStatusNone as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images that you can use in application toolbars. **Notes:**

To access this image, pass the specified constant to the imageNamed method.
Small clear indicator.
Available in Mac OS X v10.6 and later.
34.9.111 NSImageNameStatusPartiallyAvailable as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images that you can use in application toolbars.

**Notes:**
To access this image, pass the specified constant to the imageNamed method.
Small yellow indicator, similar to iChat’s idle image.
Available in Mac OS X v10.6 and later.

34.9.112 NSImageNameStatusUnavailable as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images that you can use in application toolbars.

**Notes:**
To access this image, pass the specified constant to the imageNamed method.
Small red indicator, similar to iChat’s unavailable image.
Available in Mac OS X v10.6 and later.

34.9.113 NSImageNameStopProgressFreestandingTemplate as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images representing standard artwork and icons that you can use in your applications.

**Notes:**
To access this image, pass the specified constant to the imageNamed method.
A stop progress template image. You can use this image to implement a borderless button.
Available in Mac OS X v10.5 and later.

34.9.114 NSImageNameStopProgressTemplate as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images representing standard artwork and icons that you can use in your applications.

**Notes:**
A stop progress button template image.
Available in Mac OS X v10.5 and later.
To access this image, pass the specified constant to the imageNamed method.
34.9.115  **NSImageNameTouchBarAddDetailTemplate as string**

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates.

**Example:**

```plaintext
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarAddDetailTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

34.9.116  **NSImageNameTouchBarAddTemplate as string**

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates.

**Example:**

```plaintext
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarAddTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

34.9.117  **NSImageNameTouchBarAlarmTemplate as string**

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates.

**Example:**

```plaintext
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarAlarmTemplate
```

**Notes:** Available in macOS 10.12 and newer.
34.9. **CLASS NSIMAGEMBS**

```plaintext
img = NSImageMBS.imageNamed(n)
Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

### 34.9.118 NSImageNameTouchBarAudioInputMuteTemplate as string

*Example:*

```plaintext
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarAudioInputMuteTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

### 34.9.119 NSImageNameTouchBarAudioInputTemplate as string

*Example:*

```plaintext
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarAudioInputTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.
### 34.9.120 **NSImageNameTouchBarAudioOutputMuteTemplate as string**

**Example:**

```plaintext
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarAudioOutputMuteTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes**: Available in macOS 10.12 and newer.

### 34.9.121 **NSImageNameTouchBarAudioOutputVolumeHighTemplate as string**

**Example:**

```plaintext
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarAudioOutputVolumeHighTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes**: Available in macOS 10.12 and newer.

### 34.9.122 **NSImageNameTouchBarAudioOutputVolumeLowTemplate as string**

**Example:**

```plaintext
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarAudioOutputVolumeLowTemplate
```
34.9. **CLASS NSIMAGEMBS**

```plaintext
img = NSImageMBS:imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

### 34.9.123 NSImageNameTouchBarAudioOutputVolumeMediumTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates. **Example:**

```plaintext
dim name as string
dim img as NSImageMBS

ame = NSImageMBS:NSImageNameTouchBarAudioOutputVolumeMediumTemplate
img = NSImageMBS:imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

### 34.9.124 NSImageNameTouchBarAudioOutputVolumeOffTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates. **Example:**

```plaintext
dim name as string
dim img as NSImageMBS

ame = NSImageMBS:NSImageNameTouchBarAudioOutputVolumeOffTemplate
img = NSImageMBS:imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.
34.9.125 NSImageNameTouchBarBookmarksTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates.

**Example:**

```plaintext
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarBookmarksTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

34.9.126 NSImageNameTouchBarColorPickerFill as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates.

**Example:**

```plaintext
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarColorPickerFill
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

34.9.127 NSImageNameTouchBarColorPickerFont as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates.

**Example:**

```plaintext
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarColorPickerFont
```
34.9. CLASS NSIMAGEMBS

```objc
img = NSImageMBS.imageNamed(n)
Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

### 34.9.128 NSImageNameTouchBarColorPickerStroke as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates. **Example:**

```objc
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarColorPickerStroke
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

### 34.9.129 NSImageNameTouchBarCommunicationAudioTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates. **Example:**

```objc
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarCommunicationAudioTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.
34.9.130  **NSImageNameTouchBarCommunicationVideoTemplate as string**

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates.

**Example:**

```vbnet
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarCommunicationVideoTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

34.9.131  **NSImageNameTouchBarComposeTemplate as string**

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates.

**Example:**

```vbnet
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarComposeTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

34.9.132  **NSImageNameTouchBarDeleteTemplate as string**

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates.

**Example:**

```vbnet
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarDeleteTemplate
```

```
34.9. **CLASS NSIMAGEMBS**

```plaintext
img = NSImageMBS.imageNamed(n)
Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

### 34.9.133 **NSImageNameTouchBarDownloadTemplate as string**

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates. **Example:**

```plaintext
dim name as string
dim img as NSImageMBS
name = NSImageMBS.NSImageNameTouchBarDownloadTemplate
img = NSImageMBS.imageNamed(n)
Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

### 34.9.134 **NSImageNameTouchBarEnterFullScreenTemplate as string**

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates. **Example:**

```plaintext
dim name as string
dim img as NSImageMBS
name = NSImageMBS.NSImageNameTouchBarEnterFullScreenTemplate
img = NSImageMBS.imageNamed(n)
Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.
34.9.135  *NSImageNameTouchBarExitFullScreenTemplate as string*

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates.  
**Example:**

```dim name as string
dim img as NSImageMBS
name = NSImageMBS.NSImageNameTouchBarExitFullScreenTemplate
img = NSImageMBS.imageNamed(n)
Backdrop = img.CopyPictureWithAlpha```

**Notes:** Available in macOS 10.12 and newer.

34.9.136  *NSImageNameTouchBarFastForwardTemplate as string*

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates.  
**Example:**

```dim name as string
dim img as NSImageMBS
name = NSImageMBS.NSImageNameTouchBarFastForwardTemplate
img = NSImageMBS.imageNamed(n)
Backdrop = img.CopyPictureWithAlpha```

**Notes:** Available in macOS 10.12 and newer.

34.9.137  *NSImageNameTouchBarFolderCopyToTemplate as string*

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates.  
**Example:**

```dim name as string
dim img as NSImageMBS
name = NSImageMBS.NSImageNameTouchBarFolderCopyToTemplate```
34.9. **CLASS NSIMAGEMBS**

```plaintext
img = NSImageMBS.imageNamed(n)
```

Backdrop = img.CopyPictureWithAlpha

**Notes:** Available in macOS 10.12 and newer.

### 34.9.138 NSImageNameTouchBarFolderMoveToTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates. **Example:**

```plaintext
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarFolderMoveToTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

### 34.9.139 NSImageNameTouchBarFolderTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates. **Example:**

```plaintext
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarFolderTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.
34.9.140 NSImageNameTouchBarGetInfoTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates.

**Example:**
```
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarGetInfoTemplate
img = NSImageMBS.imageNamed(name)
Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

34.9.141 NSImageNameTouchBarGoBackTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates.

**Example:**
```
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarGoBackTemplate
img = NSImageMBS.imageNamed(name)
Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

34.9.142 NSImageNameTouchBarGoDownTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates.

**Example:**
```
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarGoDownTemplate
```
34.9. **CLASS NSIMAGEMBS**

```pascal
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

### 34.9.143 NSImageNameTouchBarGoForwardTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates. **Example:**

```pascal
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarGoForwardTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

### 34.9.144 NSImageNameTouchBarGoUpTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates. **Example:**

```pascal
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarGoUpTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.
34.9.145  NSImageNameTouchBarHistoryTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates. **Example:**

```java
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarHistoryTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

34.9.146  NSImageNameTouchBarIconViewTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates. **Example:**

```java
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarIconViewTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

34.9.147  NSImageNameTouchBarListViewTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates. **Example:**

```java
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarListViewTemplate
```

**Notes:**
34.9. **CLASS NSIMAGEMBS**

```tcl
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

### 34.9.148 NSImageNameTouchBarMailTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates. **Example:**

```tcl
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarMailTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

### 34.9.149 NSImageNameTouchBarNewFolderTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates. **Example:**

```tcl
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarNewFolderTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.
34.9.150  NSImageNameTouchBarNewMessageTemplate as string

Example:

```dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarNewMessageTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha```

Notes: Available in macOS 10.12 and newer.

34.9.151  NSImageNameTouchBarOpenInBrowserTemplate as string

Example:

```dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarOpenInBrowserTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha```

Notes: Available in macOS 10.12 and newer.

34.9.152  NSImageNameTouchBarPauseTemplate as string

Example:

```dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarPauseTemplate```
34.9. **CLASS NSIMAGEMBS**

```plaintext
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

---

**34.9.153 NSImageNameTouchBarPlayheadTemplate as string**

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates.  
**Example:**
```plaintext
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarPlayheadTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

---

**34.9.154 NSImageNameTouchBarPlayPauseTemplate as string**

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates.  
**Example:**
```plaintext
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarPlayPauseTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.
34.9.155 NSImageNameTouchBarPlayTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the touchbar image templates. Example:

```dim name as string
dim img as NSImageMBS
name = NSImageMBS.NSImageNameTouchBarPlayTemplate
img = NSImageMBS.imageNamed(n)
Backdrop = img.CopyPictureWithAlpha```

Notes: Available in macOS 10.12 and newer.

34.9.156 NSImageNameTouchBarQuickLookTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the touchbar image templates. Example:

```dim name as string
dim img as NSImageMBS
name = NSImageMBS.NSImageNameTouchBarQuickLookTemplate
img = NSImageMBS.imageNamed(n)
Backdrop = img.CopyPictureWithAlpha```

Notes: Available in macOS 10.12 and newer.

34.9.157 NSImageNameTouchBarRecordStartTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the touchbar image templates. Example:

```dim name as string
dim img as NSImageMBS
name = NSImageMBS.NSImageNameTouchBarRecordStartTemplate```
34.9. CLASS NSIMAGEMBS

\texttt{img = NSImageMBS.imageNamed(n)}

Backdrop = img.CopyPictureWithAlpha

\textbf{Notes:} Available in macOS 10.12 and newer.

34.9.158 NSImageNameTouchBarRecordStopTemplate as string


\textbf{Example:}

\begin{verbatim}
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarRecordStopTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
\end{verbatim}

\textbf{Notes:} Available in macOS 10.12 and newer.

34.9.159 NSImageNameTouchBarRefreshTemplate as string


\textbf{Example:}

\begin{verbatim}
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarRefreshTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
\end{verbatim}

\textbf{Notes:} Available in macOS 10.12 and newer.
34.9.160 NSImageNameTouchBarRewindTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates.

**Example:**

```売り
Dim name As String
Dim img As NSImageMBS
name = NSImageMBS.NSImageNameTouchBarRewindTemplate
img = NSImageMBS.imageNamed(n)
Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

34.9.161 NSImageNameTouchBarRotateLeftTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates.

**Example:**

```売り
Dim name As String
Dim img As NSImageMBS
name = NSImageMBS.NSImageNameTouchBarRotateLeftTemplate
img = NSImageMBS.imageNamed(n)
Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

34.9.162 NSImageNameTouchBarRotateRightTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates.

**Example:**

```売り
Dim name As String
Dim img As NSImageMBS
name = NSImageMBS.NSImageNameTouchBarRotateRightTemplate
```
34.9. **CLASS NSIMAGEMBS**

```plaintext
img = NSImageMBS.imageNamed(n)
Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

### 34.9.163 **NSImageNameTouchBarSearchTemplate as string**

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates. **Example:**

```plaintext
dim name as string
dim img as NSImageMBS
name = NSImageMBS.NSImageNameTouchBarSearchTemplate
img = NSImageMBS.imageNamed(n)
Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

### 34.9.164 **NSImageNameTouchBarShareTemplate as string**

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates. **Example:**

```plaintext
dim name as string
dim img as NSImageMBS
name = NSImageMBS.NSImageNameTouchBarShareTemplate
img = NSImageMBS.imageNamed(n)
Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.
34.9.165  **NSImageNameTouchBarSidebarTemplate as string**

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates.  
**Example:**

```clojure
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarSidebarTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

34.9.166  **NSImageNameTouchBarSkipAhead15SecondsTemplate as string**

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates.  
**Example:**

```clojure
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarSkipAhead15SecondsTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

34.9.167  **NSImageNameTouchBarSkipAhead30SecondsTemplate as string**

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates.  
**Example:**

```clojure
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarSkipAhead30SecondsTemplate
```
34.9. **CLASS NSIMAGEMBS**

```python
img = NSImageMBS.imageNamed(n)
Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

---

### 34.9.168 NSImageNameTouchBarSkipAheadTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates. **Example:**

```python
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarSkipAheadTemplate
img = NSImageMBS.imageNamed(n)
Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

---

### 34.9.169 NSImageNameTouchBarSkipBack15SecondsTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates. **Example:**

```python
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarSkipBack15SecondsTemplate
img = NSImageMBS.imageNamed(n)
Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.
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34.9.170 NSImageNameTouchBarSkipBack30SecondsTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates. **Example:**

```lisp
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarSkipBack30SecondsTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

34.9.171 NSImageNameTouchBarSkipBackTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates. **Example:**

```lisp
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarSkipBackTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

34.9.172 NSImageNameTouchBarSkipToEndTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates. **Example:**

```lisp
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarSkipToEndTemplate
```
NSImageMBS

34.9. CLASS NSImageMBS

```plaintext
img = NSImageMBS.imageNamed(n)
Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

34.9.173 NSImageNameTouchBarSkipToStartTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates. **Example:**

```plaintext
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarSkipToStartTemplate
img = NSImageMBS.imageNamed(n)
Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

34.9.174 NSImageNameTouchBarSlideshowTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates. **Example:**

```plaintext
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarSlideshowTemplate
img = NSImageMBS.imageNamed(n)
Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.
34.9.175  **NSImageNameTouchBarTagIconTemplate as string**

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates.  
**Example:**

```vbnet
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarTagIconTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

34.9.176  **NSImageNameTouchBarTextBoldTemplate as string**

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates.  
**Example:**

```vbnet
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarTextBoldTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

34.9.177  **NSImageNameTouchBarTextBoxTemplate as string**

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates.  
**Example:**

```vbnet
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarTextBoxTemplate
```
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha

Notes: Available in macOS 10.12 and newer.

**34.9.178 NSImageNameTouchBarTextCenterAlignTemplate as string**


Example:

```vba
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarTextCenterAlignTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

Notes: Available in macOS 10.12 and newer.

**34.9.179 NSImageNameTouchBarTextItalicTemplate as string**


Example:

```vba
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarTextItalicTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

Notes: Available in macOS 10.12 and newer.
34.9.180  **NSImageNameTouchBarTextJustifiedAlignTemplate as string**

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** One of the touchbar image templates.  **Example:**

```dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarTextJustifiedAlignTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha```

**Notes:** Available in macOS 10.12 and newer.

34.9.181  **NSImageNameTouchBarTextLeftAlignTemplate as string**

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** One of the touchbar image templates.  **Example:**

```dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarTextLeftAlignTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha```

**Notes:** Available in macOS 10.12 and newer.

34.9.182  **NSImageNameTouchBarTextListTemplate as string**

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** One of the touchbar image templates.  **Example:**

```dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarTextListTemplate```
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```plaintext
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

### 34.9.183 NSImageNameTouchBarTextRightAlignTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates. **Example:**

```plaintext
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarTextRightAlignTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

### 34.9.184 NSImageNameTouchBarTextStrikethroughTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates. **Example:**

```plaintext
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarTextStrikethroughTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.
**34.9.185  NSImageNameTouchBarTextUnderlineTemplate as string**

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates. **Example:**

```plaintext
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarTextUnderlineTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

---

**34.9.186  NSImageNameTouchBarUserAddTemplate as string**

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates. **Example:**

```plaintext
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarUserAddTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

---

**34.9.187  NSImageNameTouchBarUserGroupTemplate as string**

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates. **Example:**

```plaintext
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarUserGroupTemplate
```
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```plaintext
img = NSImageMBS.imageNamed(n)
Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

### 34.9.188 NSImageNameTouchBarUserTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates. **Example:**

```plaintext
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarUserTemplate
img = NSImageMBS.imageNamed(n)
Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

### 34.9.189 NSImageNameTouchBarVolumeDownTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates. **Example:**

```plaintext
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarVolumeDownTemplate
img = NSImageMBS.imageNamed(n)
Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.
34.9.190 NSImageNameTouchBarVolumeUpTemplate as string

MBS MacBase Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the touchbar image templates.  
**Example:**

```python
dim name as string
dim img as NSImageMBS

name = NSImageMBS.NSImageNameTouchBarVolumeUpTemplate
img = NSImageMBS.imageNamed(n)

Backdrop = img.CopyPictureWithAlpha
```

**Notes:** Available in macOS 10.12 and newer.

34.9.191 NSImageNameTrashEmpty as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images that you can use in application toolbars.  
**Notes:**

To access this image, pass the specified constant to the imageNamed method.  
An image of the empty trash can.  
Available in Mac OS X v10.6 and later.

34.9.192 NSImageNameTrashFull as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images that you can use in application toolbars.  
**Notes:**

To access this image, pass the specified constant to the imageNamed method.  
An image of the full trash can.  
Available in Mac OS X v10.6 and later.

34.9.193 NSImageNameUser as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the images representing sharing permission icons that you can use in your applications.  
**Notes:**
To access this image, pass the specified constant to the imageNamed method.
Permissions for a single user.
Available in Mac OS X v10.5 and later.

34.9.194  NSImageNameUserAccounts as string

Function: One of the images that you can use in application toolbars.
Notes:  
To access this image, pass the specified constant to the imageNamed method.
User account toolbar icon. Use in a preferences window only.
Available in Mac OS X v10.5 and later.

34.9.195  NSImageNameUserGroup as string

Function: One of the images representing sharing permission icons that you can use in your applications.
Notes:  
To access this image, pass the specified constant to the imageNamed method.
Permissions for a group of users.
Available in Mac OS X v10.5 and later.

34.9.196  NSImageNameUserGuest as string

Function: One of the images that you can use in application toolbars.
Notes:  
To access this image, pass the specified constant to the imageNamed method.
Shaded user figure.
Available in Mac OS X v10.6 and later.

34.9.197  PNGRepresentation as Memoryblock

Function: The image as the binary data in a PNG file.
Example:
dim img as NSImageMBS
dim p as Picture
dim f as FolderItem
dim b as BinaryStream

p=NewPicture(100,100,32)
p.Graphics.ForeColor=& cFF0000
p.Graphics.FillOval 0,0,100,100
Backdrop=p
img=new NSImageMBS(p,p.Mask)

f=SpecialFolder.Desktop.Child(”test.png”)
b=f.CreateBinaryFile(””)
b.Write img.PNGRepresentation
b.Close

f.Launch

Notes: PNG does support masks.

34.9.198 PNGRepresentationMT as Memoryblock


Example:

// take some Picture
dim logo as Picture = LogoMBS(500)

// make a NSImageMBS from it
dim nsimage as new NSImageMBS(logo)

// use thread friendly compress function
dim jpeg as MemoryBlock = nsimage.PNGRepresentationMT

// decode to see if it worked
dim test as Picture = PNGStringToPictureMBS(jpeg)

// and display
Backdrop = test

Notes:
PNG does supports masks.
Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.

### 34.9.199 recache

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Invalidates and frees the offscreen caches of all image representations.

**Notes:**
If you modify an image representation, you must send a recache message to the corresponding image object to force the changes to be recached. The next time any image representation is drawn, it is asked to recreate its cached image. If you do not send this message, the image representation may use the old cache data. This method simply clears the cached image data; it does not delete the NSCachedImageRep objects associated with any image representations.
If you do not plan to use an image again right away, you can free its caches to reduce the amount of memory consumed by your program.

### 34.9.200 removeRepresentation(img as NSImageRepMBS)

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Removes the specified image representation from the receiver and releases it.

### 34.9.201 RepresentationHeight(index as Integer) as Integer

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Height of the representation with the given index in pixel.

**Notes:**
Index from 0 to RepesentationCount-1.
Returns 0 on invalid index.

### 34.9.202 representations as NSImageRepMBS()

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns an array containing all of the receiver’s image representations.

**Notes:**
An array containing zero or more NSImageRep objects.
Returns nil on any error.
34.9.203 **RepresentationWidth(index as Integer) as Integer**

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Width of the representation with the given index in pixel.  
**Notes:**  
Index from 0 to RepresentationCount-1.  
Returns 0 on invalid index.

34.9.204 **setName(value as String) as Boolean**

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Registers the image under the specified name.  
**Notes:**  
Returns true if the receiver was successfully registered with the given name; otherwise, false.  

Discussion  
If the receiver is already registered under a different name, this method unregisters the other name. If a different image is registered under the name specified in aString, this method does nothing and returns false.

When naming an image using this method, it is convention not to include filename extensions in the names you specify. That way, you can easily distinguish between images you have named explicitly and those you want to load from the application’s bundle. For information about the rules used to search for images, see the imageNamed method.

34.9.205 **setSize(width as Double, height as Double)**

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the width and height of the image.  
**Notes:**  
Pass the new size of the image, measured in points.  

Discussion:  
The size of an NSImage object must be set before it can be used. If the size of the image hasn’t already been set when an image representation is added, the size is taken from the image representation’s data. For EPS images, the size is taken from the image’s bounding box. For TIFF images, the size is taken from the ImageLength and ImageWidth attributes.

Changing the size of an NSImage after it has been used effectively resizes the image. Changing the size invalidates all its caches and frees them. When the image is next composited, the selected representation
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will draw itself in an offscreen window to recreate the cache.

### 34.9.206 TIFFRepresentation as Memoryblock

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Returns a string containing TIFF data for all of the image representations in the receiver.

**Notes:**

A string containing the TIFF data, or nil if the TIFF data could not be created.

**Discussion:**

You can use the returned data object to write the TIFF data to a file. For each image representation, this method uses the TIFF compression option associated with that representation or NSTIFFCompressionNone, if no option is set.

If one of the receiver’s image representations does not support the creation of TIFF data natively (PDF and EPS images, for example), this method creates the TIFF data from that representation’s cached content.

### 34.9.207 TIFFRepresentationMT as Memoryblock

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Returns a string containing TIFF data for all of the image representations in the receiver.

**Example:**

```plaintext
// take some Picture
dim logo as Picture = LogoMBS(500)

// make a NSImageMBS from it
dim nsimage as new NSImageMBS(logo)

// use thread friendly compress function
dim data as MemoryBlock = nsimage.TIFFRepresentationMT

// decode to see if it worked
dim test as Picture = TIFFStringToPictureMBS(data)

// and display
Backdrop = test
```

**Notes:**

A string containing the TIFF data, or nil if the TIFF data could not be created.
Discussion:
You can use the returned data object to write the TIFF data to a file. For each image representation, this method uses the TIFF compression option associated with that representation or NSTIFFCompressionNone, if no option is set.

If one of the receiver’s image representations does not support the creation of TIFF data natively (PDF and EPS images, for example), this method creates the TIFF data from that representation’s cached content.

Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.

34.9.208 TIFFRepresentationUsingCompression(comp as Integer, factor as Double) as Memoryblock

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a string containing TIFF data for all of the image representations in the receiver.

**Notes:**

comp: The type of compression to use. For a list of values, see the constants in NSBitmapImageRep.

aFloat: Provides a hint for compression types that implement variable compression ratios. Currently, only JPEG compression uses a compression factor.

Returns a string containing the TIFF data, or nil if the TIFF data could not be created.

Discussion:
You can use the returned data object to write the TIFF data to a file. If the specified compression isn’t applicable, no compression is used. If a problem is encountered during generation of the TIFF data, this method may raise an exception.

If one of the receiver’s image representations does not support the creation of TIFF data natively (PDF and EPS images, for example), this method creates the TIFF data from that representation’s cached content.

34.9.209 TIFFRepresentationUsingCompressionMT(comp as Integer, factor as Double) as Memoryblock

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a string containing TIFF data for all of the image representations in the receiver.

**Notes:**
comp: The type of compression to use. For a list of values, see the constants in NSBitmapImageRep.

aFloat: Provides a hint for compression types that implement variable compression ratios. Currently, only JPEG compression uses a compression factor.

Returns a string containing the TIFF data, or nil if the TIFF data could not be created.

Discussion:
You can use the returned data object to write the TIFF data to a file. If the specified compression isn’t applicable, no compression is used. If a problem is encountered during generation of the TIFF data, this method may raise an exception.

If one of the receiver’s image representations does not support the creation of TIFF data natively (PDF and EPS images, for example), this method creates the TIFF data from that representation’s cached content.

Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.

### 34.9.210 Properties

#### 34.9.211 accessibilityDescription as string

MBS MacBase Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The image’s accessibility description. **Notes:** A short localized string that does not include the name of the interface element.

This description will be used automatically by interface elements that display images. Like all accessibility descriptions, the string should be a short localized string that does not include the name of the interface element. For instance, ”delete” rather than ”delete button”.

(Read and Write property)

#### 34.9.212 backgroundColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The background color of image. **Notes:** The background color of the image. The default color is transparent, as returned by the clearColor method of NSColor.
The background color is visible only if the drawn image representation does not completely cover all of the pixels available for the image’s current size.

The value of this variant must be an object of class NSColorMBS.
(Read and Write property)

**34.9.213 cacheDepthMatchesImageDepth as Boolean**

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value indicating whether an image’s offscreen window caches use the same bit depth as the image data itself.
**Notes:**
Returns true if the offscreen window caches use the same bit depth as the image data; otherwise, false. The default value is false.
(Read and Write property)

**34.9.214 cacheMode as Integer**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The receiver’s caching mode.
**Notes:**
The caching mode determines when the receiver’s image representations use offscreen caches. Offscreen caches speed up rendering time but do so by using extra memory. In the default caching mode (NSImageCacheDefault), each image representation chooses the caching technique that produces the fastest drawing times. For example, in the default mode, the NSPDFImageRep and NSEPSImageRep classes use the NSImageCacheAlways mode but the NSBitmapImageRep class uses the NSImageCacheBySize mode.
(Read and Write property)

**34.9.215 EXIFData as Dictionary**

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a dictionary with exif data.
**Notes:** (Read only property)

**34.9.216 Handle as Integer**

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle to the internally used NSImage object.
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Notes: (Read and Write property)

34.9.217 height as Double

Notes:
If no size has been set and the size cannot be determined from any of the receiver’s image representations. (Read only property)

34.9.218 isCachedSeparately as Boolean

Notes:
Returns true if the image representations cache their content in separate offscreen windows; otherwise, false. The default value is false.
Discussion:
If this method returns false, it means that the image may be cached in a shared window but is not required to be. Images are cached in a shared window if they have the same general attributes, such as color space, resolution, and bit depth. (Read and Write property)

34.9.219 isDataRetained as Boolean

Notes:
Returns true if the image retains its source data; otherwise, false. The default value is false with some exceptions, which are covered in the discussion. (Read and Write property)
34.9.220 isFlipped as Boolean

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value indicating whether the image uses a flipped coordinate system.

**Notes:**
Returns true if the image’s coordinate system is flipped; otherwise, false. The default is false.
(Read and Write property)

34.9.221 isTemplate as Boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value indicating whether the image is a template image.

**Notes:**
Value is true if the image is a template image; otherwise, false.
Template images consist of black and clear colors (and an alpha channel). Template images are not intended to be used as standalone images and are usually mixed with other content to create the desired final appearance.
Available in Mac OS X v10.5 and later.
Assigning value to istemplate, will internally call setTemplate.
(Read and Write property)

34.9.222 isValid as Boolean

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value indicating whether the image can be drawn.

**Notes:**
Return value: true if the receiver can be drawn; otherwise, false.
If the object is initialized with an existing image file, but the corresponding image data is not yet loaded into memory, this method loads the data and expands it as needed. If the object contains no image representations and no associated image file, this method creates a valid cached image representation and initializes it to the default bit depth. This method returns false in cases where the file or URL from which it was initialized is nonexistent or when the data in an existing file is invalid.
(Read only property)

34.9.223 matchesOnMultipleResolution as Boolean

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value indicating whether image representations whose resolution is an integral multiple
of the device resolution are considered a match.

**Notes:**

Returns true if image representations whose resolution is an integral multiple of the device resolution are considered a match; otherwise, false.

**Discussion:**

When this method returns false, only image representations whose resolution is exactly the same as the device resolution are considered matches. If this method returns true and multiple image representations fit this criteria, the one whose resolution is closest to the device resolution is chosen.

The default value is true.

(Read and Write property)

---

### 34.9.224 MaximumPixelHeight as Integer

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

From all the image representation the height of the heighest one.

**Notes:**

Value is returned in pixels. Returns 0 on any error.

(Read only property)

---

### 34.9.225 MaximumPixelWidth as Integer

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

From all the image representation the width of the widest one.

**Notes:**

Value is returned in pixels. Returns 0 on any error.

(Read only property)

---

### 34.9.226 MinimumPixelHeight as Integer

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

From all the image representation the width of the smallest one.

**Notes:**

Value is returned in pixels. Returns 0 on any error.

(Read only property)
34.9.227 MinimumPixelWidth as Integer

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** From all the image representation the width of the smallest one.

**Notes:**
Value is returned in pixels. Returns 0 on any error.
(Read only property)

34.9.228 name as String

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the name associated with the receiver, if any.

**Notes:** (Read only property)

34.9.229 prefersColorMatch as Boolean

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value indicating whether the image prefers to choose image representations using color matching or resolution matching.

**Notes:**
Discussion:
Both color matching and resolution matching may influence the choice of an image representation. This method simply indicates which technique is used first during the selection process. The default value is true.
(Read and Write property)

34.9.230 RepresentationsCount as Integer

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Number of representations this image has.

**Notes:**
Same as Representations.Count
(Read only property)

34.9.231 scalesWhenResized as Boolean

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value indicating whether image representations are scaled to fit the receiver’s size.

**Notes:**
Returns true if image representations are scaled to fit the receiver; otherwise, false. The default value is false.

Images are not resized during drawing if this method returns true. They are only resized when you change the size by sending the receiver a setSize message.

(Read and Write property)

34.9.232 size as NSSizeMBS


Notes:
The size of the receiver or (0.0, 0.0) if no size has been set and the size cannot be determined from any of the receiver’s image representations.

The size of an NSImage object must be set before it can be used. If the size of the image hasn’t already been set when an image representation is added, the size is taken from the image representation’s data. For EPS images, the size is taken from the image’s bounding box. For TIFF images, the size is taken from the ImageLength and ImageWidth attributes.

Changing the size of an NSImage after it has been used effectively resizes the image. Changing the size invalidates all its caches and frees them. When the image is next composited, the selected representation will draw itself in an offscreen window to recreate the cache.

(Read and Write property)

34.9.233 usesEPSOnResolutionMismatch as Boolean

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether EPS image representations are preferred when no other representations match the resolution of the device.

Notes: (Read and Write property)

34.9.234 width as Double


Notes:
If no size has been set and the size cannot be determined from any of the receiver’s image representations.

(Read only property)
34.9.235  Constants

34.9.236  NSImageCacheAlways=1

MBS MacBase Plugin, Plugin Version: 11.2. **Function:** One of the image cache mode constants.  
**Notes:** Always generate a cache when drawing.

34.9.237  NSImageCacheBySize=2

MBS MacBase Plugin, Plugin Version: 11.2. **Function:** One of the image cache mode constants.  
**Notes:** Cache if cache size is smaller than the original data.

34.9.238  NSImageCacheDefault=0

MBS MacBase Plugin, Plugin Version: 11.2. **Function:** One of the image cache mode constants.  
**Notes:** Caching is unspecified.  
Use the image rep’s default.

34.9.239  NSImageCacheNever=3

MBS MacBase Plugin, Plugin Version: 11.2. **Function:** One of the image cache mode constants.  
**Notes:** Never cache; always draw direct.

34.9.240  NSImageLoadStatusCancelled=1

MBS MacBase Plugin, Plugin Version: 11.2. **Function:** One of the image load status constants.  
**Notes:** Image loading was canceled.  
The image contains the portions of the data that have already been successfully decompressed, if any.

34.9.241  NSImageLoadStatusCompleted=0

MBS MacBase Plugin, Plugin Version: 11.2. **Function:** One of the image load status constants.  
**Notes:** Enough data has been provided to completely decompress the image.
34.9.  CLASS NSIMAGEMBS

34.9.242  NSImageLoadStatusInvalidData=2

MBS MacBase Plugin, Plugin Version: 11.2. **Function:** One of the image load status constants.
**Notes:**
An error occurred during image decompression.
The image data is probably corrupt. The image contains the portions of the data that have already been successfully decompressed, if any.

34.9.243  NSImageLoadStatusReadError=4

MBS MacBase Plugin, Plugin Version: 11.2. **Function:** One of the image load status constants.
**Notes:**
Not enough data was available for full decompression of the image.
The image contains the portions of the data that have already been successfully decompressed, if any.

34.9.244  NSImageLoadStatusUnexpectedEOF=3

MBS MacBase Plugin, Plugin Version: 11.2. **Function:** One of the image load status constants.
**Notes:**
Not enough data was available for full decompression of the image.
The image contains the portions of the data that have already been successfully decompressed, if any.
34.10 class NSImageRepMBS

34.10.1 class NSImageRepMBS

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The NSImageRep class is a semiabstract superclass ("semi" because it has some instance variables and implementation of its own).

**Notes:**

Each of its subclasses knows how to draw an image from a particular kind of source data. While an NSImageRep subclass can be used directly, it is typically through an NSImage object. An NSImage object manages a group of image representations, choosing the best one for the current output device.

Subclasses are not implemented in the plugin currently.

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

34.10.2 Methods

34.10.3 canInitWithData(data as memoryblock) as Boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value indicating whether the receiver can initialize itself from the specified data.

**Notes:**

Returns true if the receiver understands the format of the specified data and can use it to initialize itself; otherwise, false.

This method should be overridden by subclasses. Note that this method does not need to do a comprehensive check of the image data; it should return false only if it knows it cannot initialize itself from the data.

34.10.4 Constructor

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.
34.10. CLASS NSIMAGEREPMB5

34.10.5  setSize(width as Double, height as Double)

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Sets the size of the image representation to the specified value.

**Notes:**
This method determines the size of the image when it’s rendered. It is not necessarily the same as the width and height of the image in pixels as specified by the image data, nor must it be equal to the size set for the NSImage object that wraps this image representation. You must set the image size before you can render it.

The size of an image representation combined with the physical dimensions of the image data determine the resolution of the image.

34.10.6  Properties

34.10.7  bitsPerSample as Integer

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the number of bits per sample in the receiver.

**Notes:** (Read and Write property)

34.10.8  colorSpaceName as String

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The name of the receiver’s color space.

**Notes:**
The colorspace name, or NSCalibratedRGBColorSpace if no name has been assigned.

By default, an NSImageRep object’s color space name is NSCalibratedRGBColorSpace. Color space names are defined as part of the NSColor class, in NSGraphics.h. The following are valid color space names:

- NSCalibratedWhiteColorSpace
- NSCalibratedBlackColorSpace
- NSCalibratedRGBColorSpace
- NSDeviceWhiteColorSpace
- NSDeviceBlackColorSpace
- NSDeviceRGBColorSpace
- NSDeviceCMYKColorSpace
- NSNamedColorSpace
- NSCustomColorSpace

(Read and Write property)
34.10.9 Handle as Integer

**Notes:** (Read and Write property)

34.10.10 hasAlpha as Boolean

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the receiver has an alpha channel.  
**Notes:**  
Returns true if the receiver has a known alpha channel; otherwise, false. Subclasses should call this method when loading image data to notify the parent class whether that data contains an alpha component. Passing in a value of true does not add an alpha channel to the image data itself; it merely records the fact that the data has an alpha channel.  
(Read and Write property)

34.10.11 height as Double

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Height of image in points.  
**Notes:**  
0 on any error.  
(Read only property)

34.10.12 isOpaque as Boolean

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value indicating whether the receiver is opaque.  
**Notes:**  
Use this method to test whether an image representation completely covers the area within the rectangle returned by the size method.  

The returned value does not indicate whether the image has an alpha channel or if there is partial or complete transparency when drawing the image rep. Use the hasAlpha method to determine if the image has
an alpha channel.  
(Read and Write property)

### 34.10.13 pixelsHigh as Integer

**MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**  
**Function:** Returns the height of the image, measured in pixels.  
**Notes:**

Return Value:  
The height of the image, measured in the units of the device coordinate space. This value is usually derived from the image data itself.  
(Read and Write property)

### 34.10.14 pixelsWide as Integer

**MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**  
**Function:** Returns the width of the image, measured in pixels.  
**Notes:**

Return Value:  
The width of the image, measured in the units of the device coordinate space. This value is usually derived from the image data itself.  
(Read and Write property)

### 34.10.15 size as NSMBS

**MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**  
**Function:** The size of the image representation.  
**Notes:**

This size is the size of the image representation when it’s rendered. It is not necessarily the same as the width and height of the image in pixels as specified by the image data, nor must it be equal to the size set for the NSImage object that wraps this image representation.

The size of an image representation combined with the physical dimensions of the image data determine the resolution of the image.  
(Read and Write property)
34.10.16 width as Double

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Width of image in points.  
**Notes:**  
0 on any error.  
(Read only property)

34.10.17 Constants

34.10.18 NSImageRepMatchesDevice = 0

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants used by NSImageRep to denote an attribute whose value changes to match the display device.  
**Notes:**  
Indicates that the value of certain attributes, such as the number of colors or bits per sample, will change to match the display device.  
This value can be passed in (or received back) as the value of bitsPerSample, pixelsWide, and pixelsHigh.
34.11.1 class NSPDFImageRepMBS


34.11.2 Methods

34.11.3 Constructor(data as Memoryblock)

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns an NSPDFImageRep object initialized with the specified PDF data. Notes: Initialized NSPDFImageRep object. Initialization may fail if the PDF data does not conform to the PDF file format. On success handle property is not zero.

34.11.4 imageRepWithData(data as Memoryblock) as NSPDFImageRepMBS

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creates and returns an NSPDFImageRep object initialized with the specified PDF data. Notes: Returns an initialized NSPDFImageRep object or nil if the object could not be initialized. Initialization may fail if the PDF data does not conform to the PDF file format.

34.11.5 PDFRepresentation as Memoryblock

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the PDF representation of the receiver’s image.

34.11.6 Properties

34.11.7 bounds as NSRectMBS

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the receiver’s bounding rectangle. Notes:
This value is equivalent to the crop box specified by the PDF data.
(Read only property)

### 34.11.8 currentPage as Integer

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The page currently displayed by the image representation.

**Notes:**
A zero-based index indicating the page being displayed.
(Read and Write property)

### 34.11.9 pageCount as Integer

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the number of pages in the receiver.

**Notes:** (Read only property)
34.12. CLASS NSPICTIMAGEREPMBS

34.12 class NSPICTImageRepMBS

34.12.1 class NSPICTImageRepMBS

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An NSPICTImageRep object renders an image from a PICT format data stream as described in the Carbon QuickDraw Manager documentation.

**Notes:**
This class can render PICT format version 1, version 2, and extended version 2 pictures.
Subclass of the NSImageRepMBS class.

34.12.2 Methods

34.12.3 Constructor(data as Memoryblock)

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an NSPICTImageRep object initialized with the specified data.

**Notes:**
data: A data object containing the PICT data.

Initialization may fail if the data does not conform to the PICT file format.
On success the handle property is not zero.

If the PICT data is obtained directly from a PICT file or document, this method ignores most of the 512-byte header that occurs before the start of the actual picture data. It may retrieve some relevant meta information from the header.

34.12.4 imageRepWithData(data as Memoryblock) as NSPICTImageRepMBS

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an NSPICTImageRep object initialized with the specified data.

**Notes:**
Initialization may fail if the data does not conform to the PICT file format.
On failure the handle property is nil.
34.12.5 PICTRepresentation as Memoryblock

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver’s PICT data.  
**Notes:** A data object containing the PICT data. The returned data does not include the 512-byte header, if it was present in the original data. If you want to write the returned data to a file, you must precede it with a 512-byte header (containing all zeros) if you want to conform to the PICT document format.

34.12.6 Properties

34.12.7 boundingBox as NSRectMBS

MBS MacBase Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the rectangle that bounds the receiver.  
**Notes:**  
The rectangle bounding the receiver. This rectangle is obtained from the the picFrame field in the picture header. See the Carbon QuickDraw Manager documentation for information on the picture header. *(Read only property)*
Chapter 35

Cocoa Menus

35.1 class NSMenuItemMBS

35.1.1 class NSMenuItemMBS

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class to represent a menuitem from the Cocoa world. **Notes:** All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

35.1.2 Methods

35.1.3 ActionSelector as String

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the name of the objective-c method called for this menu event. **Notes:** You can use this to find menu items by their selector. Which is often more save than by index or title.

35.1.4 Constructor(Handle as Integer)

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Constructor for creating an instanced based on an existing handle. **Example:**

```dim m as MenuItem = EditCopy
dim h as Integer = m.Handle(MenuItem.HandleType.CocoaNSMenuItem)```
dim i as new NSMenuItemMBS(h)
i.Title = "Hello"

Notes:
Useful if you get a NSMenuItem reference from a declare.
The object is retained.
See also:

- 35.1.5 Constructor(title as string="", keyEquivalent as string="")

35.1.5 Constructor(title as string="", keyEquivalent as string="")

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new menu items.
**Notes:**
Handle is not 0 after this call if it was successful.
name and charcode are optional and can be "".
Charcode is the initial keyEquivalent for this menu item.
You can set the KeyEquivalentModifierMask to get different modifier keys.
See also:

- 35.1.4 Constructor(Handle as Integer)

35.1.6 CreateMenuItem(title as string="", keyEquivalent as string="")

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new menu items.
**Notes:**
Handle is not 0 after this call if it was successful.
name and charcode are optional and can be "".
Charcode is the initial keyEquivalent for this menu item.
You can set the KeyEquivalentModifierMask to get different modifier keys.

Deprecated, please use the Constructor instead.

35.1.7 CreateSeparator

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a Separator menu item.
35.1.8 hasSubmenu as boolean

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if the menuitem has a submenu, false if it doesn’t.

35.1.9 isHiddenOrHasHiddenAncestor as boolean

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value that indicates whether the menuitem or any of its superitems is hidden. **Notes:**

Mac OS X 10.5 only.
Returns true if the receiver or any of its superitems is hidden, otherwise false.

35.1.10 isHighlighted as boolean

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value that indicates whether the receiver should be drawn highlighted. **Notes:**

Returns true if the receiver should be drawn highlighted, otherwise false.
Mac OS X 10.5 only.

35.1.11 isSeparatorItem as boolean

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns whether the receiver is a separator item (that is, a menu item used to visually segregate related menu items).

35.1.12 menu as NSMenuMBS

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The menu where this menu item is inside. **Notes:** nil if no menu belongs to this menuitem.
35.1.13 parentItem as NSMenuItemMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the menu item whose submenu contains the receiver.
**Notes:**
Returns the parent menu item, or nil if the receiver does not have a parent item.
Available in Mac OS X v10.6 and later.

35.1.14 separatorItem as NSMenuItemMBS

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new separator menu item.

35.1.15 setTitleWithMnemonic(title as String)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the title of a menu item with a character denoting an access key.
**Notes:**
Use an ampersand character to mark the character (the one following the ampersand) to be designated.
Deprecated by Apple.

35.1.16 userKeyEquivalent as String

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The user-assigned key equivalent for the menu item.

35.1.17 usesUserKeyEquivalents as boolean

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether menu items conform to user preferences for key equivalents.
**Notes:**
If true, menu items conform to user preferences for key equivalents; if false, the key equivalents originally assigned to the menu items are used.
(Read and Write computed property)
35.1. CLASS NSMENUITEMMBS

35.1.18 Properties

35.1.19 Handle as Integer

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The reference to the NSMenuItem object used internally.
**Notes:** (Read and Write property)

35.1.20 Alternate as boolean

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Whether this menu item is an alternate to the previous menu item.
**Notes:**
Available in Mac OS X v10.3 and later.
(Read and Write computed property)

35.1.21 attributedTitle as NSAttributedStringMBS

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Specifies a custom string for a menu item.
**Notes:**
You can use this method to add styled text and embedded images to menu item strings. If you do not set a text color for the attributed string, it is black when not selected, white when selected, and gray when disabled. Colored text remains unchanged when selected.

When you call this method to set the menu title to an attributed string, the setTitle: method is also called to set the menu title with a plain string. If you clear the attributed title, the plain title remains unchanged.
(Read and Write computed property)

35.1.22 Enabled as boolean

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Whether this menu item is enabled.
**Notes:** (Read and Write computed property)
35.1.23  image as NSImageMBS

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The image displayed by the menuitem, or nil if it displays no image. **Notes:** (Read and Write computed property)

35.1.24  indentationLevel as Integer

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The menu item indentation level for the menu item. **Notes:** The value will be from 0 to 15. The default indentation level is 0. Available in Mac OS X v10.3 and later. (Read and Write computed property)

35.1.25  isHidden as boolean

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value that indicates whether the menuitem is hidden. **Notes:** Mac OS X 10.5 only. Returns true if the receiver is hidden, otherwise false. This value can be set to hide or show a menuitem. (Read and Write computed property)

35.1.26  keyEquivalent as String

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The receiver's unmodified keyboard equivalent, or the empty string if one hasn't been defined. **Example:**

```pascal
dim m as new NSMenuItemMBS
m.CreateMenuItem "Hello"
m.keyEquivalent = "a" // A
m.keyEquivalent = "A" // shift-A
```

**Notes:** Use keyEquivalentModifierMask to determine the modifier mask for the key equivalent. In the current implementation "A" can be interpreted as Shift-A by the system even without the shift in the mask.
35.1. CLASS NSMENUITEMMBS

(Read and Write computed property)

35.1.27  keyEquivalentModifierMask as Integer

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
the menu item’s keyboard equivalent modifier mask.

**Example:**

```plaintext
const NSShiftKeyMask=131072
const NSControlKeyMask=262144
const NSAlternateKeyMask=524288
const NSCommandKeyMask=1048576

dim d as new NSMenuItemMBS
d.CreateMenuItem "Last menu entry",""
d.Enabled=true
d.KeyEquivalent="A"
d.KeyEquivalentModifierMask=NSShiftKeyMask+NSCommandKeyMask+NSAlternateKeyMask // command-option-shift
```

**Notes:**

Constants for the mask:

- **NSAlphaShiftKeyMask = 65536**
  Set if Caps Lock key is pressed.
  Available in Mac OS X v10.0 and later.

- **NSShiftKeyMask = 131072**
  Set if Shift key is pressed.
  Available in Mac OS X v10.0 and later.

- **NSControlKeyMask = 262144**
  Set if Control key is pressed.
  Available in Mac OS X v10.0 and later.

- **NSAlternateKeyMask = 524288**
  Set if Option or Alternate key is pressed.
  Available in Mac OS X v10.0 and later.

- **NSCommandKeyMask = 1048576**
  Set if Command key is pressed.
Available in Mac OS X v10.0 and later.

NSNumericPadKeyMask = 2097152
Set if any key in the numeric keypad is pressed. The numeric keypad is generally on the right side of the keyboard. This is also set if any of the arrow keys are pressed (NSUpArrowFunctionKey, NSDownArrowFunctionKey, NSLeftArrowFunctionKey, and NSRightArrowFunctionKey).
Available in Mac OS X v10.0 and later.

NSHelpKeyMask = 4194304
Set if the Help key is pressed.
Available in Mac OS X v10.0 and later.

NSFunctionKeyMask = 8388608
Set if any function key is pressed. The function keys include the F keys at the top of most keyboards (F1, F2, and so on) and the navigation keys in the center of most keyboards (Help, Forward Delete, Home, End, Page Up, Page Down, and the arrow keys).
Available in Mac OS X v10.0 and later.

NSDeviceIndependentModifierFlagsMask = 16777216
Used to retrieve only the device-independent modifier flags, allowing applications to mask off the device-dependent modifier flags, including event coalescing information.
Available in Mac OS X v10.4.
(Read and Write computed property)

### 35.1.28 mixedStateImage as NSImageMBS

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The image used to depict a "mixed state."

**Notes:**
A mixed state is useful for indicating "off" and "on" attribute values in a group of selected objects, such as a selection of text containing bold and plain (nonbolded) words.
(Read and Write computed property)

### 35.1.29 offStateImage as NSImageMBS

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The image used to depict the receiver’s "off" state, or nil if the image has not been set.

**Notes:**
By default, there is no off state image.
(Read and Write computed property)
35.1.30  onStateImage as NSImageMBS

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The image of the receiver that indicates an "on" state.
**Notes:**
The Image object to use for the "on" state of the menu item. If itemImage is nil, any current on-state image is removed.
(Read and Write computed property)

35.1.31  state as Integer

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The state of the menuitem.
**Notes:**
An integer constant representing a state; it should be one of NSOffState, NSOnState, or NSMixedState.
Same as Checked property on Real Studio’s menu items.

Constants:

- NSMixedState = -1  The corresponding feature is in effect somewhere.
- NSOffState = 0  The corresponding feature is in effect nowhere.
- NSOnState = 1  The corresponding feature is in effect everywhere.

(Read and Write computed property)

35.1.32  submenu as NSMenuMBS

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The submenu attached to this menuitem.
**Notes:**
nil if there is no submenu.
(Read and Write computed property)
35.1.33  **tag as Integer**

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The menu item tag value.
**Notes:**
You can use this value as you like.

If you need to store more custom data than just an integer, you should subclass the NSMenuItemMBS class and add properties as needed.
(Read and Write computed property)

35.1.34  **Title as String**

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The title of the menu item.
**Notes:** (Read and Write computed property)

35.1.35  **toolTip as String**

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The help tag for a menu item.
**Notes:** (Read and Write computed property)

35.1.36  **view as NSViewMBS**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The view to be used for this menu item.
**Notes:**
Using a view you can draw whatever you like in the menu item.
You can set it to nil to remove the view.
Requires Mac OS X 10.5.
(Read and Write computed property)
35.1. CLASS NSMENUITEMMBS

35.1.37 Events

35.1.38 Action

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The action event called when the user clicks on the statusitem.

**Notes:**

This event is coming from the Cocoa event system. What you can do is a bit limited when using GUI functions from Realbasic. To avoid some redraw errors, you may want to start a timer and let your Realbasic code run a millisecond after the menu code has finished.

Depending on what you do, you can see the menu not redrawing properly (staying highlighted) and crashes if the Realbasic code modifies some global Cocoa states.

35.1.39 validateMenuItem(menuItem as NSMenuItemMBS) as boolean

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Implemented to override the default action of enabling or disabling a specific menu item.

**Notes:**

Return true to enable menuItem, false to disable it.

This is needed to modify the menuitem for a menu attached to a NSSearchFieldMBS. Menuitem parameter is often the same as self, but for a searchfield menu, self is the template and menuitem parameter the actual menu item.

35.1.40 Constants

35.1.41 NSMixedState=-1

MBS MacBase Plugin, Plugin Version: 9.2. **Function:** One of the constants for the state property. **Notes:** The corresponding feature is in effect somewhere.

35.1.42 NSOffState=0

MBS MacBase Plugin, Plugin Version: 9.2. **Function:** One of the constants for the state property. **Notes:** The corresponding feature is in effect nowhere.
35.1.43 NSOnState=1

MBS MacBase Plugin, Plugin Version: 9.2. **Function:** One of the constants for the state property. **Notes:** The corresponding feature is in effect everywhere.
35.2. CLASS NSMENU MBS

35.2. class NSMenuMBS

35.2.1 class NSMenuMBS

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class to represent a menu in the Cocoa world.
**Notes:** All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

35.2.2 Methods

35.2.3 addItem(m as NSMenuItemMBS)

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Adds a menu item to the end.
**Notes:**
If the menu item is nil, nothing happens.
The menu item can only be in one menu.

The menu doesn’t references to the RB classes behind, so it’s up to you to keep those references if you want to get the events and avoid crashes.
The StatusItem example keeps an array with all those menu item objects it needs so RB will not destroy them.

35.2.4 cancelTracking

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Dismisses the menu and ends all menu tracking.
**Notes:** Available in Mac OS X v10.5 and later.

35.2.5 cancelTrackingWithoutAnimation

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Dismisses the menu and ends all menu tracking without displaying the associated animation.
**Notes:** Available in Mac OS X v10.6 and later.
35.2.6  **CarbonMenuRef as Integer**

MBS MacBase Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries the Carbon Menu Reference for this Cocoa menu.

**Notes:**
This is an undocumented API from Apple.
You only get a handle if the menu has been added to the menubar or popaped up.
Returns zero on failure. Returns always zero on 64 bit target.

35.2.7  **Constructor(Handle as Integer)**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Constructor for creating an instanced based on an existing handle.

**Notes:**
Useful if you get a NSMenu reference from a declare.
The object is retained.
See also:

- 35.2.8 Constructor(title as string="")

35.2.8  **Constructor(title as string=”)**

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Constructor for a new nsmenu.

**Example:**

```dim m as NSMenuMBS
m=new NSMenuMBS("Hello World")
msgbox m.title // shows "Hello World"
```

**Notes:** Title is optional.
See also:

- 35.2.7 Constructor(Handle as Integer)

35.2.9  **helpMenu as NSMenuMBS**

MBS MacBase Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the help menu if one is registered.
35.2. CLASS NSMENU MBS

35.2.10 indexOfItem(item as NSMenuItemMBS) as Integer

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the index identifying the location of a specified menu item in the receiver.
**Notes:** Returns the integer index of the menu item or, if no such menu item is in the menu, 1.

35.2.11 indexOfItemWithSelector(selector as string) as Integer

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Searches menu items for one with the given selector.
**Notes:**
Returns -1 if not found.
You can use this to find menu items by their selector. Which is often more save than by index or title.

35.2.12 indexOfItemWithSubmenu(item as NSMenuMBS) as Integer

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the index of the menu item in the receiver with the given submenu.
**Notes:**
item: A menu object that is a menu item of the receiver (that is, a submenu).
The integer index of the menu item or, if no such menu item is in the menu, 1.

35.2.13 indexOfItemWithTitle(title as string) as Integer

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the index of the first menu item in the receiver that has a specified title.
**Notes:** Returns the integer index of the menu item or, if no such menu item is in the menu, 1.

35.2.14 indexOfItemWithTag(tag as Integer) as Integer

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the index of the first menu item in the receiver identified by a tag.
**Notes:** Returns the integer index of the menu item or, if no such menu item is in the menu, 1.
35.2.15  insertItem(m as NSMenuItemMBS, index as Integer)

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Inserts a menu item into the menu at a specific location.

**Notes:**
If the menuitem is nil, nothing happens. A menuitem can only be part of one menu.

index: An integer index identifying the location of the menu item in the menu. Zero based.

35.2.16  Item(index as Integer) as NSMenuItemMBS

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns the item with the given index.

**Notes:**
Index is from 0 to numberOfItems-1.
Remember: The objects returned are not the same Realbasic objects used with additem or insertitem.

35.2.17  itemWithSelector(selector as string) as NSMenuItemMBS

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Searches menu items for one with the given selector.

**Notes:** You can use this to find menu items by their selector. Which is often more safe than by index or title.

35.2.18  mainMenu as NSMenuMBS

MBS MacBase Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:** Returns the main menu.

35.2.19  menuBarVisible as boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns a Boolean value that indicates whether the menu bar is visible.

**Notes:**
Available in Mac OS X v10.2 and later.
Returns true if the menu bar is visible, otherwise false.
35.2.20  **NSMenuDidAddItemNotification as string**

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the notifications sent for menus.  
**Notes:**  
Use this constant with NSNotificationObserverMBS class to get an event when such a notification is sent.  

Posted after a menu item is added to the menu. The notification object is the instance of NSMenuMBS that just added the new menu item.  
This is very useful to customize the menu in Real Studio. The runtime rebuilds menu bar often, so you can catch it and edit menu.  

The userInfo dictionary contains the following information:  
NSMenuMBS: The instance of NSMenuMBS with the menu item that was added.

35.2.21  **NSMenuDidBeginTrackingNotification as string**

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the notifications sent for menus.  
**Notes:**  
Posted when menu tracking begins. The notification object is the main menu bar (NSApplicationMBS mainMenu) or the root menu of a popup button. This notification does not contain a userInfo dictionary.  

Use this constant with NSNotificationObserverMBS class to get an event when such a notification is sent.

35.2.22  **NSMenuDidChangeItemNotification as string**

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the notifications sent for menus.  
**Notes:**  
Use this constant with NSNotificationObserverMBS class to get an event when such a notification is sent.  

Posted after a menu item in the menu changes appearance. Changes include enabling/disabling, changes in state, and changes to title. The notification object is the instance of NSMenuMBS with the menu item that changed. The userInfo dictionary contains the following information:
CHAPTER 35. COCOA MENUS

Key Value
NSMenuItemIndex  An integer index of the menu item that changed.

35.2.23 NSMenuDidEndTrackingNotification as string

Notes: Use this constant with NSNotificationObserverMBS class to get an event when such a notification is sent.

Posted when menu tracking ends, even if no action is sent. The notification object is the main menu bar (NSApplicationMBS mainMenu) or the root menu of a popup button. This notification does not contain a userInfo

35.2.24 NSMenuDidRemoveItemNotification as string

Notes: Use this constant with NSNotificationObserverMBS class to get an event when such a notification is sent.

Posted after a menu item is removed from the menu. The notification object is the instance of NSMenu that just removed the menu item. The userInfo dictionary contains the following information:

NSMenuItemIndex: An integer index of the menu item that was removed. Note that this index may no longer be valid and in any event no longer points to the menu item that was removed.

35.2.25 NSMenuDidSendActionNotification as string

Notes: Use this constant with NSNotificationObserverMBS class to get an event when such a notification is sent.

Posted just after the application dispatches a menu item’s action method to the menu item’s target. The notification object is the instance of NSMenuMBS containing the chosen menu item. The userInfo dictionary contains the following information:
35.2. CLASS NSMENUMBS

Key Value
MenuItem The menu item that was chosen.

35.2.26 NSMenuWillSendActionNotification as string

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the notifications sent for menus. **Notes:**

Use this constant with NSNotificationObserverMBS class to get an event when such a notification is sent.

Posted just before the application dispatches a menu item’s action method to the menu item’s target. The notification object is the instance of NSMenuMBS containing the chosen menu item. The userInfo dictionary contains the following information:

Key Value
MenuItem The menu item that was chosen.

35.2.27 performActionForItemAtIndex(index as Integer)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Causes the application to send the action message of a specified menu item to its target. **Notes:**

If a target is not specified, the message is sent to the first responder. As a side effect, this method posts NSMenuWillSendActionNotification and NSMenuDidSendActionNotification.

In Mac OS X v10.6 and later the performActionForItemAtIndex no longer triggers menu validation. This is because validation is typically done during menu tracking or key equivalent matching, so the subsequent performActionForItemAtIndex validation was redundant. To trigger validation explicitly, use invoke the update method.

In Mac OS X v10.6 performActionForItemAtIndex, when called, now triggers highlighting in the menu bar. It also sends out appropriate accessibility notifications indicating the item was selected.
35.2.28 popUpContextMenu(menu as NSMenuMBS, theEvent as NSEventMBS, view as NSViewMBS, font as NSFontMBS = nil)

MBS MacBase Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Displays a contextual menu over a view for an event using a specified font.

**Notes:**

- **menu:** The menu object to use for the contextual menu.
- **event:** An NSEvent object representing the event.
- **view:** The view object over which to display the contextual menu.
- **font:** An NSFont object representing the font for the contextual menu. If you pass in nil for the font, the method uses the default font for menu.

Specifying a font using the font parameter is discouraged. Instead set the menus font using the setFont: method and pass nil for the font parameter.

35.2.29 popUpMenuPositioningItem(item as NSMenuItemMBS, location as NSPointMBS, view as NSViewMBS = nil) as boolean

MBS MacBase Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Pops up the menu at the specified location.

**Example:**

```markdown
// create menu
dim m as new NSMenuMBS
m.autoenablesItems = false

// add some items
dim it as new NSMenuItemMBS
it.CreateMenuItem "Hello"
it.Enabled = true
m.addItem it

it = new NSMenuItemMBS
it.CreateMenuItem "World"
it.Enabled = true
m.addItem it

// show relative to this view
dim v as NSViewMBS = window1.PushButton1.NSViewMBS

dim r as Boolean
r = m.popUpMenuPositioningItem(nil, nil, v)

// you need to use NSMenuItemMBS subclasses with action event to get an event for which item was selected...
```
35.2. CLASS NSMENUMBS

Notes:

item: The menu item to be positioned at the specified location in the view.
location: The location in the view coordinate system to display the menu item.
view: The view to display the menu item over.

Returns true if menu tracking ended because an item was selected, and false if menu tracking was cancelled for any reason.

Pops up the receiver as a popup menu. The top left corner of the specified item (if specified, item must be present in the receiver) is positioned at the specified location in the specified view, interpreted in the view’s own coordinate system.

If item is nil, the menu is positioned such that the top left of the menu content frame is at the given location. If view is nil, the location is interpreted in the screen coordinate system. This allows you to pop up a menu disconnected from any window.

Available in OS X v10.6 and later.

35.2.30 removeAllItems

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes all the menu items in the receiver.

**Example:**

```mbs
dim n as NSMenuMBS // your menu

// for Mac OS X 10.6
n.removeAllItems

// for any Mac OS X version
for i as Integer = n.numberOfItems-1 DownTo 0
    n.removeItemAtIndex i
next
```

Notes:

This method is more efficient than removing menu items individually.
Unlike the other remove methods, this method does not post NSMenuDidChangeItemNotification notifications.
Available in Mac OS X v10.6 and later.
CHAPTER 35. COCOA MENUS

35.2.31 removeItem(m as NSMenuItemMBS)

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes the menuitem.
**Notes:**

Does nothing if menuitem is nil.

The Realbasic object used to add the menuitem must not be the same as the one you use here, but the values for the menuitems handle property must match.

35.2.32 removeItemAtIndex(index as Integer)

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes the menu item with the given index.
**Example:**

```plaintext
dim n as NSMenuMBS // your menu

// for Mac OS X 10.6
n.removeAllItems

// for any Mac OS X version
for i as Integer = n.numberOfItems-1 DownTo 0
n.removeItemAtIndex i
next
```

**Notes:** Index is from 0 to NumberOfItems-1.

35.2.33 setMenuBarVisible(value as boolean)

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets whether the menu bar is visible and selectable by the user.
**Notes:**

value: true if menu bar is to be visible, otherwise false.
Available in Mac OS X v10.2 and later.
35.2.34 update

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Enables or disables the receiver’s menu items based on the NSMenuValidation informal protocol and sizes the menu to fit its current menu items if necessary.

35.2.35 windowsMenu as NSMenuMBS

MBS MacBase Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the window menu if one is registered.

35.2.36 Properties

35.2.37 allowsContextMenuPlugIns as boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the popup menu allows appending of contextual menu plugin items. **Notes:** Value is true if the popup menu allows appending of contextual menu plugin items, otherwise false. Available in Mac OS X v10.6 and later. (Read and Write property)

35.2.38 autoenablesItems as Boolean

MBS MacBase Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether menu items are automatically enabled and disabled. **Notes:** Mac OS X 10.5 only. (Read and Write property)

35.2.39 Font as NSFontMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The font used to display the menu and its submenus. **Notes:** This font will be used to display the menu and any submenus that have not had their font set explicitly. Available in Mac OS X v10.6 and later.
35.2.40 Handle as Integer

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal reference to the NSMenu object. **Notes:** (Read and Write property)

35.2.41 highlightedItem as NSMenuItemMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the highlighted item in the receiver. **Notes:** Returns the highlighted item in the receiver, or nil if no item in the menu is highlighted. Available in Mac OS X v10.5 and later. (Read only property)

35.2.42 menuBarHeight as Double

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the menu bar height for the current application’s main menu. **Notes:** Returns the receiver’s main menu bar height or 0.0 if the receiver is some other menu. This method supersedes the menuBarHeight class method of the NSMenuView class. Available in Mac OS X v10.4 and later. (Read only property)

35.2.43 minimumWidth as Double

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The minimum width of the menu. **Notes:** The menu will not draw smaller than its minimum width, but may draw larger if it needs more space. The default value is 0. Available in Mac OS X v10.6 and later. (Read and Write property)
35.2. **CLASS NSMENU**

35.2.44 **numberOfItems** as Integer

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The number of menu items in this menu.
**Notes:** (Read only property)

35.2.45 **showsStateColumn** as boolean

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a Boolean value that indicates whether the receiver displays the state column.
**Notes:**
Available in Mac OS X v10.5 and later.
Returns true if the receiver displays the state column, otherwise false.

The state column is the area in the menu items, where state of menu items are shown like a checkmark.
(Read and Write property)

35.2.46 **size** as NSSizeMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the size of the menu.
**Notes:**
Returns the size of the menu in screen coordinates.
The menu may draw at a smaller size when shown, depending on its positioning and display configuration.
Available in Mac OS X v10.6 and later.
(Read only property)

35.2.47 **supermenu** as NSMenuMBS

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The parent menu of this menu.
**Notes:** (Read only property)

35.2.48 **Title** as String

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The title of the menu.
**35.2.49** userInterfaceLayoutDirection as Integer

MBS MacBase Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Configures the layout direction of menu items in the menu.

**Notes:**
This property configures the layout direction (a value of type NSUserInterfaceLayoutDirection) of menu items in the menu. If no layout direction is explicitly set for a menu, then the menu defaults to the layout direction specified for the application object. See userInterfaceLayoutDirection in NSApplication Class Reference.

NSUserInterfaceLayoutDirectionLeftToRight = 0
NSUserInterfaceLayoutDirectionRightToLeft = 1

Available in OS X v10.11 and later.
(Read and Write property)

**35.2.50** Events

**35.2.51** DidClose

MBS MacBase Plugin, Plugin Version: 14.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Invoked after a menu closed.

**Notes:** Don’t modify the structure of the menu or the menu items during this method.

**35.2.52** EnableMenuItems

MBS MacBase Plugin, Plugin Version: 8.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** This event is called before the menu opens so you can edit the menu.

**35.2.53** willHighlightItem(item as NSMenuItemMBS)

MBS MacBase Plugin, Plugin Version: 14.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Invoked to indicate that a menu is about to highlight a given item.

**Notes:**
item: The item about to be highlighted.
Only one item per menu can be highlighted at a time. If item is nil, it means that all items in the menu are about to be unhighlighted.

### 35.2.54 WillOpen

MBS MacBase Plugin, Plugin Version: 14.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Invoked when a menu is about to open. **Notes:** Don't modify the structure of the menu or the menu items during this method.
Chapter 36

Cocoa Networking

36.1 class NSHTTPCookieMBS

36.1.1 class NSHTTPCookieMBS


Function: An NSHTTPCookie object represents an HTTP cookie.

Example:

// query list of all cookies in shared storage
dim cookies(-1) as NSHTTPCookieMBS = NSHTTPCookieStorageMBS.sharedHTTPCookieStorage.cookies

// we collect domain names
dim domains(-1) as string
for each cookie as NSHTTPCookieMBS in cookies
    if domains.IndexOf(cookie.domain) < 0 then
domains.Append cookie.domain
end if
next

// and display them
MsgBox "You have cookies from these domains: " + Join(domains, ", " )

Notes:
It’s an immutable object initialized from a dictionary containing the cookie attributes.

Two versions of cookies are supported:
Version 0: This version refers to "traditional" or "old-style" cookies, the original cookie format defined by Netscape. The majority of cookies encountered are in this format.
Version 1: This version refers to cookies as defined in RFC 2965, HTTP State Management Mechanism.

### 36.1.2 Methods

#### 36.1.3 comment as string

*Function:* Returns the receiver's comment string.
*Example:*

```vbnet
// query list of all cookies in shared storage
dim cookies(-1) as NSHTTPCookieMBS = NSHTTPCookieStorageMBS.sharedHTTPCookieStorage.cookies

// pick first one
dim cookie as NSHTTPCookieMBS = cookies(0)

// display comment
MsgBox "Comment: " + Cookie.comment
```

*Notes:* The receiver's comment string or "" if the cookie has no comment. This string is suitable for presentation to the user, explaining the contents and purpose of this cookie.

#### 36.1.4 commentURL as string

*Function:* Returns the receiver's comment URL.
*Example:*

```vbnet
// query list of all cookies in shared storage
dim cookies(-1) as NSHTTPCookieMBS = NSHTTPCookieStorageMBS.sharedHTTPCookieStorage.cookies

// pick first one
dim cookie as NSHTTPCookieMBS = cookies(0)

// display comment URL
MsgBox "commentURL: " + Cookie.commentURL
```

*Notes:* The receiver's comment URL or "" if the cookie has none. This value specifies a URL which is suitable for presentation to the user as a link for further information about this cookie.
36.1.5 Constructor(properties as dictionary)


**Function:** Creates an initialized NSHTTPCookie object using the provided properties.

**Example:**

```vbs
// create dictionary with properties:
dim prop as new Dictionary
dim d as new date
d.Year = d.Year + 1

prop.Value(NSHTTPCookieMBS.NSHTTPCookieVersion)="0"
prop.Value(NSHTTPCookieMBS.NSHTTPCookieName)="test"
prop.Value(NSHTTPCookieMBS.NSHTTPCookieValue)="some value"
prop.Value(NSHTTPCookieMBS.NSHTTPCookieOriginURL)="http://www.mbsplugins.de/"
prop.Value(NSHTTPCookieMBS.NSHTTPCookieDomain)="www.mbsplugins.de"
prop.Value(NSHTTPCookieMBS.NSHTTPCookiePath)="/"
prop.Value(NSHTTPCookieMBS.NSHTTPCookieExpires)=d

// create cookie from properties
dim cookie as new NSHTTPCookieMBS(prop)

// and display properties
dim dic as Dictionary = cookie.properties
dim list(-1) as string

for each key as Variant in dic.keys
next

MsgBox Join(list,EndOfLine)
```

**Notes:**

properties: The properties for the new cookie object, expressed as key value pairs.

Handle is non zero on success.
36.1.6 cookiesWithResponseHeaderFields(headerFields as dictionary, URL as string) as NSHTTPCookieMBS()


Function: Returns an array of NSHTTPCookie objects corresponding to the provided response header fields for the provided URL.

Notes:

headerFields: The header fields used to create the NSHTTPCookie objects.
URL: The URL associated with the created cookies.

Returns the array of created cookies.

This method ignores irrelevant header fields in headerFields, allowing dictionaries to contain additional data.

If headerFields does not specify a domain for a given cookie, the cookie is created with a default domain value of theURL.

If headerFields does not specify a path for a given cookie, the cookie is created with a default path value of "/".

36.1.7 cookieWithProperties(dic as dictionary) as NSHTTPCookieMBS


Function: Creates and initializes an NSHTTPCookie object using the provided properties.

Example:

// create dictionary with properties:
  dim prop as new Dictionary
  dim d as new date
  d.Year = d.Year + 1

  prop.Value(NSHTTPCookieMBS.NSHTTPCookieVersion)="0"
  prop.Value(NSHTTPCookieMBS.NSHTTPCookieName)="test"
  prop.Value(NSHTTPCookieMBS.NSHTTPCookieValue)="some value"
  prop.Value(NSHTTPCookieMBS.NSHTTPCookieOriginURL)="http://www.mbsplugins.de/"
  prop.Value(NSHTTPCookieMBS.NSHTTPCookieDomain)="www.mbsplugins.de"
  prop.Value(NSHTTPCookieMBS.NSHTTPCookiePath)="/
  prop.Value(NSHTTPCookieMBS.NSHTTPCookieExpires)=d

// create cookie from properties
  dim cookie as NSHTTPCookieMBS = NSHTTPCookieMBS.cookieWithProperties(prop)

// and display properties
36.1. **CLASS NSHTTPCOOKIEMBS**

```vbnet
dim dic as Dictionary = cookie.properties
dim list(-1) as string

for each key as Variant in dic.keys
next

MsgBox Join(list, EndOfLine)
```

**Notes:**

dic: The properties for the new cookie object, expressed as key value pairs.

Returns the newly created cookie object. Returns nil if the provided properties are invalid.

See NSHTTPCookie* shared method for more information on the available header field constants and the constraints imposed on the values in the dictionary.

---

### 36.1.8 domain as string

**MBS MacControls Plugin, Plugin Version:** 11.1, **Console & Web:** Yes, **Mac:** Yes, **Win:** No, **Linux:** No.  

**Function:** Returns the domain of the receiver's cookie.  

**Example:**

```vbnet
// query list of all cookies in shared storage
dim cookies(-1) as NSHTTPCookieMBS = NSHTTPCookieStorageMBS.sharedHTTPCookieStorage.cookies

// pick first one
dim cookie as NSHTTPCookieMBS = cookies(0)

// display domain:
MsgBox "Domain: " + Cookie.Domain
```

**Notes:** If the domain does not start with a dot, then the cookie is only sent to the exact host specified by the domain. If the domain does start with a dot, then the cookie is sent to other hosts in that domain as well, subject to certain restrictions. See RFC 2965 for more detail.
36.1.9 expiresDate as date

Function: Returns the receiver's expiration date.
Example:

// query list of all cookies in shared storage
dim cookies(-1) as NSHTTPCookieMBS = NSHTTPCookieStorageMBS.sharedHTTPCookieStorage.cookies

// pick first one
dim cookie as NSHTTPCookieMBS = cookies(0)

// display date:
MsgBox "Domain: " + Cookie.expiresDate.ShortTime+" " + Cookie.expiresDate.LongTime

Notes: The receiver's expiration date, or nil if there is no specific expiration date such as in the case of "session-only" cookies. The expiration date is the date when the cookie should be deleted.

36.1.10 isHTTPOnly as boolean

Function: Returns whether the receiver should only be sent to HTTP servers per RFC 2965.
Example:

// query list of all cookies in shared storage
dim cookies(-1) as NSHTTPCookieMBS = NSHTTPCookieStorageMBS.sharedHTTPCookieStorage.cookies

// pick first one
dim cookie as NSHTTPCookieMBS = cookies(0)

// display isHTTPOnly value:
MsgBox "isHTTPOnly: "+str(Cookie.isHTTPOnly)

Notes: Returns true if this cookie should only be sent via HTTP headers, false otherwise.

Cookies may be marked as HTTP only by a server (or by a javascript). Cookies marked as such must only be sent via HTTP Headers in HTTP requests for URL's that match both the path and domain of the respective cookies.

Important: Cookies specified as HTTP only should not be delivered to any javascript applications to prevent
36.1. CLASS NSHTTPCOOKIEMBS

cross-site scripting vulnerabilities.

36.1.11  isSecure as boolean

**Function:** Returns whether his cookie should only be sent over secure channels. 
**Example:**

```vba
// query list of all cookies in shared storage
Dim cookies(-1) As NSHTTPCookieMBS = NSHTTPCookieStorageMBS.sharedHTTPCookieStorage.cookies

// pick first one
Dim cookie As NSHTTPCookieMBS = cookies(0)

// display isSecure value:
MsgBox "isSecure: "+str(cookie.isSecure)
```

**Notes:** True if this cookie should only be sent over secure channels, otherwise false.

36.1.12  isSessionOnly as boolean

**Function:** Returns whether the receiver should be discarded at the end of the session (regardless of expiration date). 
**Example:**

```vba
// query list of all cookies in shared storage
Dim cookies(-1) As NSHTTPCookieMBS = NSHTTPCookieStorageMBS.sharedHTTPCookieStorage.cookies

// pick first one
Dim cookie As NSHTTPCookieMBS = cookies(0)

// display isSessionOnly value:
MsgBox "isSessionOnly: "+str(cookie.isSessionOnly)
```

**Notes:** True if the receiver should be discarded at the end of the session (regardless of expiration date), otherwise false.
**36.1.13 name as string**

**Function:** Returns the receiver’s name.  
**Example:**

```plaintext
// query list of all cookies in shared storage
dim cookies(-1) as NSHTTPCookieMBS = NSHTTPCookieStorageMBS.sharedHTTPCookieStorage.cookies

// pick first one
dim cookie as NSHTTPCookieMBS = cookies(0)

// display name:
MsgBox "name: " + Cookie.name
```

**36.1.14 NSHTTPCookieComment as string**

**Function:** One of the dictionary constants for cookies.  
**Notes:**
An String containing the comment for the cookie.  
Only valid for Version 1 cookies and later. This header field is optional.

**36.1.15 NSHTTPCookieCommentURL as string**

**Function:** One of the dictionary constants for cookies.  
**Notes:**
An String containing the comment URL for the cookie.  
Only valid for Version 1 cookies or later. This header field is optional.

**36.1.16 NSHTTPCookieDiscard as string**

**Function:** One of the dictionary constants for cookies.  
**Notes:**
An String stating whether the cookie should be discarded at the end of the session.  
String value must be either "TRUE" or "FALSE". This header field is optional. Default is "FALSE", unless this is cookie is version 1 or greater and a value for NSHTTPCookieMaximumAge is not specified, in which
36.1. CLASS NSHTTPCOOKIEMBS

case it is assumed "TRUE".

36.1.17 NSHTTPCookieDomain as string

Function: One of the dictionary constants for cookies.
Notes:
An String containing the domain for the cookie.
A value must be specified for either NSHTTPCookieDomain or NSHTTPCookieOriginURL. If this header field is missing the domain is inferred from the value for NSHTTPCookieOriginURL.

36.1.18 NSHTTPCookieExpires as string

Function: One of the dictionary constants for cookies.
Notes:
An Date object or String specifying the expiration date for the cookie.
This header field is only used for Version 0 cookies. This header field is optional.

36.1.19 NSHTTPCookieMaximumAge as string

Function: One of the dictionary constants for cookies.
Notes:
An String containing an integer value stating how long in seconds the cookie should be kept, at most.
Only valid for Version 1 cookies and later. Default is "0". This field is optional.

36.1.20 NSHTTPCookieName as string

Function: One of the dictionary constants for cookies.
Notes: An String object containing the name of the cookie. This field is required.
36.1.21 NSHTTPCookieOriginURL as string

Function: One of the dictionary constants for cookies.
Notes:
An String containing the URL that set this cookie. A value must be specified for either NSHTTPCookieDomain or NSHTTPCookieOriginURL.

36.1.22 NSHTTPCookiePath as string

Function: One of the dictionary constants for cookies.
Notes:
An String containing the path for the cookie. This field is required if you are using the NSHTTPCookieDomain key instead of the NSHTTPCookieOriginURL key. If you are using the NSHTTPCookieOriginURL key, the path is inferred if it is not provided. The default value is "/".

36.1.23 NSHTTPCookiePort as string

Function: One of the dictionary constants for cookies.
Notes:
An String containing comma-separated integer values specifying the ports for the cookie. Only valid for Version 1 cookies or later. The default value is an empty string (""). This header field is optional.

36.1.24 NSHTTPCookieSecure as string

Function: One of the dictionary constants for cookies.
Notes:
An String indicating that the cookie should be transmitted only over secure channels. Providing any value for this key indicates that the cookie should remain secure.
36.1.25 NSHTTPCookieValue as string

Function: One of the dictionary constants for cookies.
Notes: An String containing the value of the cookie. This header field is required.

36.1.26 NSHTTPCookieVersion as string

Function: One of the dictionary constants for cookies.
Notes: An String that specifies the version of the cookie. Must be either "0" or "1". The default is "0". This header field is optional.

36.1.27 path as string

Function: Returns the receiver’s path.
Example:

// query list of all cookies in shared storage
Dim cookies(-1) As NSHTTPCookieMBS = NSHTTPCookieStorageMBS.sharedHTTPCookieStorage.cookies

// pick first one
Dim cookie As NSHTTPCookieMBS = cookies(0)

// display path:
MsgBox "path: " + Cookie.path

Notes: The cookie will be sent with requests for this path in the cookie’s domain, and all paths that have this prefix. A path of "/" means the cookie will be sent for all URLs in the domain.

36.1.28 portList as Integer()
// query list of all cookies in shared storage
dim cookies(-1) as NSHTTPCookieMBS = NSHTTPCookieStorageMBS.sharedHTTPCookieStorage.cookies

// pick first one
dim cookie as NSHTTPCookieMBS = cookies(0)

// display port list

dim PortList(-1) as Integer = cookie.portList
if UBound(PortList)=-1 then
    MsgBox "Port List: all ports."
else
    dim list(-1) as string
    for each port as Integer in PortList
        List.Append str(port)
    next
    MsgBox "Port List: " + Join(list, ", ")
end if

Notes: The list of ports for the cookie, returned as an array of integers. If the cookie has no port list this method returns nil and the cookie will be sent to any port. Otherwise, the cookie is only sent to ports specified in the port list.

36.1.29 properties as dictionary


Example:

// query list of all cookies in shared storage
dim cookies(-1) as NSHTTPCookieMBS = NSHTTPCookieStorageMBS.sharedHTTPCookieStorage.cookies

// pick first one
dim cookie as NSHTTPCookieMBS = cookies(0)

// display properties

dim dic as Dictionary = cookie.properties
dim list(-1) as string

for each key as Variant in dic.keys
    List.Append key.StringValue+": " + dic.Value(key).StringValue
next
36.1. CLASS NSHTTPCOOKIEMBS

MsgBox Join(list,EndOfLine)

Notes:

Returns dictionary representation of the receiver’s cookie properties.
This dictionary can be used with Constructor or cookieWithProperties to create an equivalent NSHTTP-Cookie object.

36.1.30 requestHeaderFieldsWithCookies(cookies() as NSHTTPCookieMBS) as dictionary

Function: Returns a dictionary of header fields corresponding to a provided array of cookies.
Example:

// create dictionary with properties:
dim prop as new Dictionary
dim d as new date
d.Year = d.Year + 1

prop.Value(NSHTTPCookieMBS.NSHTTPCookieVersion)="0"
prop.Value(NSHTTPCookieMBS.NSHTTPCookieName)="test"
prop.Value(NSHTTPCookieMBS.NSHTTPCookieValue)="some value"
prop.Value(NSHTTPCookieMBS.NSHTTPCookieOriginURL)="http://www.mbsplugins.de/"
prop.Value(NSHTTPCookieMBS.NSHTTPCookieDomain)="www.mbsplugins.de"
prop.Value(NSHTTPCookieMBS.NSHTTPCookiePath)="/"
prop.Value(NSHTTPCookieMBS.NSHTTPCookieExpires)=d

// create cookie from properties
dim cookie as new NSHTTPCookieMBS(prop)
dim cookies(-1) as NSHTTPCookieMBS
cookies.Append cookie

// get request headers
dim dic as Dictionary = NSHTTPCookieMBS.requestHeaderFieldsWithCookies(cookies)

// and show them:
dim list(-1) as string

for each key as Variant in dic.keys
    List.Append key.StringValue+:"="+dic.Value(key).StringValue
next

MsgBox Join(list,EndOfLine)
Notes:

cookies: The cookies from which the header fields are created.

Returns the dictionary of header fields created from the provided cookies. This dictionary can be used to add cookies to a request.

### 36.1.31 value as string


**Function:** Returns the receiver’s value.

**Example:**

```ruby
// query list of all cookies in shared storage
dim cookies(-1) as NSHTTPCookieMBS = NSHTTPCookieStorageMBS.sharedHTTPCookieStorage.cookies

// pick first one
dim cookie as NSHTTPCookieMBS = cookies(0)

// display value
MsgBox "Value: " +Cookie.value
```

### 36.1.32 version as Integer


**Function:** Returns the receiver’s version.

**Example:**

```ruby
// query list of all cookies in shared storage
dim cookies(-1) as NSHTTPCookieMBS = NSHTTPCookieStorageMBS.sharedHTTPCookieStorage.cookies

// pick first one
dim cookie as NSHTTPCookieMBS = cookies(0)

// display version value:
MsgBox "Version: " +str(Cookie.Version)
```

**Notes:** Returns the receiver’s version. Version 0 maps to "old-style" Netscape cookies. Version 1 maps to RFC 2965 cookies.
36.1.33 Properties

36.1.34 Handle as Integer

**Function:** The internal object reference.
**Notes:** (Read and Write property)
36.2 class NSHTTPCookieStorageMBS

36.2.1 class NSHTTPCookieStorageMBS


**Function:** NSHTTPCookieStorage implements a singleton object (shared instance) that manages the shared cookie storage.

**Example:**

```vba
// query list of all cookies in shared storage
dim cookies(-1) as NSHTTPCookieMBS = NSHTTPCookieStorageMBS.sharedHTTPCookieStorage.cookies

// we collect values
dim list(-1) as string
for each cookie as NSHTTPCookieMBS in cookies
List.Append cookie.name+": " +cookie.value
next

// and display them
MsgBox join(list, EndOfLine)
```

**Notes:**

These cookies are shared among all applications and are kept in sync cross-process.

Note: Changes made to the cookie accept policy affect all currently running applications using the cookie storage.

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

36.2.2 Methods

36.2.3 Constructor


**Function:** The private constructor.

36.2.4 cookies as NSHTTPCookieMBS()


**Function:** Returns the cookie storage’s cookies.

**Example:**
36.2. CLASS NSHTTPCOOKIESMBS

// query list of all cookies in shared storage
dim cookies(-1) as NSHTTPCookieMBS = NSHTTPCookieStorageMBS.sharedHTTPCookieStorage.cookies

// we collect values
dim list(-1) as string
for each cookie as NSHTTPCookieMBS in cookies
    List.Append cookie.name+": "+cookie.value
next

// and display them
MsgBox join(list, EndOfLine)

Notes: Returns an array containing all of the cookie storage’s cookies.

36.2.5 cookiesForURL(URL as string) as NSHTTPCookieMBS()

Function: Returns all the cookie storage’s cookies that are sent to a specified URL.
Example:

// query list of all cookies in shared storage
dim cookies(-1) as NSHTTPCookieMBS = NSHTTPCookieStorageMBS.sharedHTTPCookieStorage.cookiesForURL("http://www.apple.com/")

// we collect values for apple.com:
    dim list(-1) as string
    for each cookie as NSHTTPCookieMBS in cookies
        List.Append cookie.name+": "+cookie.value
next

// and display them
MsgBox join(list, EndOfLine)

Notes: An application can use NSHTTPCookie method requestHeaderFieldsWithCookies to turn this array into a set of header fields to add to an NSMutableURLRequest object.

36.2.6 cookiesToArray(cookies() as NSHTTPCookieMBS) as Integer

Function: Puts the cookie storage’s cookies in the given array.
Example:
 CHAPTER 36. COCOA NETWORKING

```ruby
// get storage
dim s as NSHTTPCookieStorageMBS = NSHTTPCookieStorageMBS.sharedHTTPCookieStorage

// predim an array with a lot of space
dim cookies(5000) as NSHTTPCookieMBS

// now ask plugin to put cookies inside
dim c as Integer = s.cookiesToArray(cookies)

// show count
MsgBox str(c)+" cookies"

// pick first and show name
dim cookie as NSHTTPCookieMBS = cookies(0)
MsgBox cookie.name
```

Notes:

Returns total number of cookies.
This is for REALbasic 2007 where the cookies function doesn’t work.
For Real Studio and Xojo you can use cookies function.

### 36.2.7 deleteCookie(cookie as NSHTTPCookieMBS)

**Function:** Deletes the specified cookie from the cookie storage.

### 36.2.8 NSHTTPCookieManagerAcceptPolicyChangedNotification as string

**Function:** One of the notification names you can register with the NSNotificationObserverMBS class.
**Notes:**
This notification is posted when the acceptance policy of the NSHTTPCookieStorage instance has changed.
In Mac OS X, cookies are shared among applications, meaning this notification can be sent in response to another application’s actions. Cookies are not shared among applications in iOS.

The notification object is the NSHTTPCookieStorage instance. This notification does not contain a userInfo dictionary.
36.2.9 NSHTTPCookieManagerCookiesChangedNotification as string

Function: One of the notification names you can register with the NSNotificationObserverMBS class.
Notes:
This notification is posted when the cookies stored in the NSHTTPCookieStorage instance have changed.
In Mac OS X, cookies are shared among applications, meaning this notification can be sent in response to
another application’s actions. Cookies are not shared among applications in iOS.

The notification object is the NSHTTPCookieStorage instance. This notification does not contain a userInfo
dictionary.

36.2.10 removeCookiesSinceDate(d as date)

Function: Delete all cookies from the cookie storage since the provided date.
Notes: Available on macOS 10.10 or newer.

36.2.11 setCookie(cookie as NSHTTPCookieMBS)

Function: Stores a specified cookie in the cookie storage if the cookie accept policy permits.
Notes: The cookie replaces an existing cookie with the same name, domain, and path, if one exists in
the cookie storage. This method accepts the cookie only if the receiver’s cookie accept policy is NSHTTP-
CookieAcceptPolicyAlways or NSHTTPCookieAcceptPolicyOnlyFromMainDocumentDomain. The cookie
is ignored if the receiver’s cookie accept policy is NSHTTPCookieAcceptPolicyNever.

36.2.12 setCookies(cookies() as NSHTTPCookieMBS, URL as string, main-
DocumentURL as string)

Function: Adds an array of cookies to the receiver if the receiver’s cookie acceptance policy permits.
Notes:
cookies: The cookies to add.
URL: The URL associated with the added cookies.
mainDocumentURL: The URL of the main HTML document for the top-level frame, if known. Can be "". This URL
is used to determine if the cookie should be accepted if the cookie accept policy is NSHTTPCookieAcceptPolicyOnlyFromMainDocumentDomain.
The cookies will replace existing cookies with the same name, domain, and path, if one exists in the cookie storage. The cookie will be ignored if the receiver’s cookie accept policy is NSHTTPCookieAcceptPolicyNever.

To store cookies from a set of response headers, an application can use cookiesWithResponseHeaderFields passing a header field dictionary and then use this method to store the resulting cookies in accordance with the receiver’s cookie acceptance policy.

### 36.2.13 sharedHTTPCookieStorage as NSHTTPCookieStorageMBS

**Function:** Returns the shared cookie storage instance.
**Example:**
```
Dim s As NSHTTPCookieStorageMBS = NSHTTPCookieStorageMBS.sharedHTTPCookieStorage
Dim cookies() As NSHTTPCookieMBS = s.cookies
MsgBox str(UBound(cookies)+1)+" cookies"
```

### 36.2.14 Properties

#### 36.2.15 Handle as Integer

**Function:** The internal reference to the NSHTTPCookieStorage object.
**Notes:** (Read and Write property)

#### 36.2.16 cookieAcceptPolicy as Integer

**Function:** The cookie storage’s cookie accept policy.
**Example:**
```
Select case NSHTTPCookieStorageMBS.sharedHTTPCookieStorage.cookieAcceptPolicy
  Case NSHTTPCookieStorageMBS.NSHTTPCookieAcceptPolicyOnlyFromMainDocumentDomain
    MsgBox "Cookies: only from main document domain"
  Case NSHTTPCookieStorageMBS.NSHTTPCookieAcceptPolicyNever
    MsgBox "Cookies: never"
  Case NSHTTPCookieStorageMBS.NSHTTPCookieAcceptPolicyAlways
    MsgBox "Cookies: always"
  Else
    MsgBox "Cookies: unknown setting"
End Select
```
36.2. CLASS NSHTTPCOOKIESTORAGEMBS

end Select

Notes:
The default cookie accept policy is NSHTTPCookieAcceptPolicyAlways.
Changing the cookie policy affects all currently running applications using the cookie storage.
(Read and Write computed property)

36.2.17 Constants

36.2.18 NSHTTPCookieAcceptPolicyAlways = 0

MBS MacControls Plugin, Plugin Version: 11.1. Function: One of the cookie accept policy constants.
Notes: Accept all cookies. This is the default cookie accept policy.

36.2.19 NSHTTPCookieAcceptPolicyNever = 1

MBS MacControls Plugin, Plugin Version: 11.1. Function: One of the cookie accept policy constants.
Notes: Reject all cookies.

36.2.20 NSHTTPCookieAcceptPolicyOnlyFromMainDocumentDomain = 2

MBS MacControls Plugin, Plugin Version: 11.1. Function: One of the cookie accept policy constants.
Notes: Accept cookies only from the main document domain.
36.3 class NSURLAuthenticationChallengeMBS

36.3.1 class NSURLAuthenticationChallengeMBS

MBS MacBase Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A class for an authentication challenge. Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

36.3.2 Methods

36.3.3 cancelAuthenticationChallenge

MBS MacBase Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Tells the system to cancel this challenge.

36.3.4 Constructor


36.3.5 continueWithoutCredentialForAuthenticationChallenge

MBS MacBase Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Tells the system to continue this challenge without a password.

36.3.6 error as NSErrorMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the NSError object representing the last authentication failure. Notes: This method returns nil if the protocol doesn’t use errors to indicate an authentication failure.

Available in Mac OS X v10.2 with Safari 1.0 installed. Available in Mac OS X v10.2.7 and later.
36.3. CLASS NSURLAUTHENTICATIONCHALLENGEMBS

36.3.7 failureResponse as NSURLResponseMBS

MBS MacBase Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Get the response representing authentication failure. **Notes:** If there was a previous authentication failure, and this protocol uses responses to indicate authentication failure, then this method will return the response. Otherwise it will return nil.

36.3.8 previousFailureCount as Integer

MBS MacBase Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Get count of previous failed authentication attempts.

36.3.9 proposedCredential as NSURLCredentialMBS

MBS MacBase Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Get the proposed credential for this challenge. **Notes:** proposedCredential may be nil, if there is no default credential to use for this challenge (either stored or in the URL). If the credential is not nil and returns true for hasPassword, this means the NSURL-Connection thinks the credential is ready to use as-is. If it returns false for hasPassword, then the credential is not ready to use as-is, but provides a default username the client could use when prompting.

36.3.10 protectionSpace as NSURLProtectionSpaceMBS

MBS MacBase Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Get a description of the protection space that requires authentication. **Notes:** Returns the protection space that needs authentication.

36.3.11 useCredential(credential as NSURLCredentialMBS)

MBS MacBase Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Tells the system to use a certain credential for this challenge.
36.3.12 Properties

36.3.13 Handle as Integer

MBS MacBase Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The internal used handle for this challenge.
**Notes:** (Read and Write property)
36.4. CLASS NSURLCACHEMBS

36.4 class NSURLCacheMBS

36.4.1 class NSURLCacheMBS


Notes:

NSURLCache implements the caching of responses to URL load requests by mapping NSURLRequest objects to NSCachedURLResponse objects. It is a composite of an in-memory and an on-disk cache. Methods are provided to manipulate the sizes of each of these caches as well as to control the path on disk to use for persistent storage of cache data.

36.4.2 Methods

36.4.3 Constructor(memoryCapacity as UInt64, diskCapacity as UInt64, diskPath as folderitem)


Notes:

memoryCapacity: The memory capacity of the cache, in bytes.
diskCapacity: The disk capacity of the cache, in bytes.
diskPath: The location at which to store the on-disk cache.

The returned NSURLCache is backed by disk, so developers can be more liberal with space when choosing the capacity for this kind of cache. A disk cache measured in the tens of megabytes should be acceptable in most cases.

36.4.4 currentDiskUsage as UInt64


36.4.5 currentMemoryUsage as UInt64

36.4.6 removeAllCachedResponses

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Clears the receiver’s cache, removing all stored cached URL responses.

36.4.7 removeCachedResponseForRequest(request as NSURLRequestMBS)

**Notes:** request: The URL request whose cached URL response should be removed. If there is no corresponding cached URL response, no action is taken.

36.4.8 setSharedURLCache(cache as NSURLCacheMBS)

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the shared NSURLCache instance to a specified cache object.
**Notes:** Applications that have special caching requirements or constraints should use this method to specify an NSURLCache instance with customized cache settings.

36.4.9 sharedURLCache as NSURLCacheMBS

**Notes:**
The disk path is set to: `<user_home_directory>/Library/Caches/<current_process_name>`. The user’s home directory is determined by calling NSHomeDirectory and the current process name is determined using NSProcessInfoMBS.processName.

Applications that do not have special caching requirements or constraints should find the default shared cache instance acceptable. Applications with more specific needs can create a custom NSURLCache object and set it as the shared cache instance using setSharedURLCache.

36.4.10 Properties

36.4.11 Handle as Integer

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal handle to the NSURLCache object.
36.4. CLASS NSURLCACHEMBS

Notes: (Read and Write property)

36.4.12  diskCapacity as UInt64

Notes: (Read and Write computed property)

36.4.13  memoryCapacity as UInt64

Notes: (Read and Write computed property)

36.4.14  Constants

36.4.15  NSURLCacheStorageAllowed = 0

MBS MacCocoa Plugin, Plugin Version: 9.7. Function: One of the constants for the cache strategy.
Notes: Specifies that storage in an NSURLCache is allowed without restriction.

36.4.16  NSURLCacheStorageAllowedInMemoryOnly = 1

MBS MacCocoa Plugin, Plugin Version: 9.7. Function: One of the constants for the cache strategy.
Notes: Specifies that storage in an NSURLCache is allowed; however storage should be done in memory only, no disk storage should be done.

36.4.17  NSURLCacheStorageNotAllowed = 2

MBS MacCocoa Plugin, Plugin Version: 9.7. Function: One of the constants for the cache strategy.
Notes: Specifies that storage in an NSURLCache is not allowed in any fashion, either in memory or on disk.
36.5 class NSURLConnectionFilterMBS

36.5.1 class NSURLConnectionFilterMBS

MBS MacCocoa Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class to filter URL connections. **Notes:** This class is designed to allow you to intercept your application creating NSURLConnection objects and change the NSURLRequest used. This can be useful to change timeouts on Xojo.Net.HTTPSocket class.

36.5.2 Properties

36.5.3 Enabled as Boolean

MBS MacCocoa Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the event is enabled. **Notes:** Default is true. *(Read and Write property)*

36.5.4 Events

36.5.5 FilterConnection(request as NSURLRequestMBS) as NSURLRequestMBS

MBS MacCocoa Plugin, Plugin Version: 18.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event called when a new connection is made. **Example:**

```csharp
Function FilterConnection(request as NSURLRequestMBS) Handles FilterConnection as NSURLRequestMBS	system.debuglog CurrentMethodName
system.debuglog ”URL: ”+request.URL
	dim newRequest as NSMutableURLRequestMBS = request.mutableCopy

// change to 10 minutes
newRequest.setTimeoutInterval 600

return newRequest
End Function
```

**Notes:**
You get the current request and you can return a new request. If you return nil, we pass through the existing one. Only requests on main thread trigger the event.
36.6 class NSURLConnectionMBS

36.6.1 class NSURLConnectionMBS

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An NSURLConnection object provides support to perform the loading of a URL request. **Notes:**

The interface for NSURLConnection is sparse, providing only the controls to start and cancel asynchronous loads of a URL request.

NSURLConnection’s events allow an object to receive informational callbacks about the asynchronous load of a URL request. Other events provide facilities that allow the subclass to customize the process of performing an asynchronous URL load. These events are called on the thread that started the asynchronous load operation for the associated NSURLConnection object.

NSURLConnection also has a convenience class method, sendSynchronousRequest, to load a URL request synchronously.

The following contract governs the events defined in this class:

- Zero or more willSendRequest events are called before any further event is called if it is determined that the download must redirect to a new location. The delegate can allow the redirect, modify the destination, or deny the redirect.
- Zero or more willSendRequestForAuthenticationChallenge events are called before a request for an authentication challenge is sent. The delegate can call the appropriate NSURLAuthenticationChallengeMBS method and perform any other required task related to credentials.
- Zero or more didReceiveAuthenticationChallenge vents are called if it is necessary to authenticate in order to download the request and the connection does not already have authenticated credentials.
- Zero or more didCancelAuthenticationChallenge vents are called if the connection cancels the authentication challenge due to the protocol implementation encountering an error.
- Zero or more didReceiveResponse events are called before receiving a didReceiveData message. The only case where didReceiveResponse is not sent to a delegate is when the protocol implementation encounters an error before a response can be created.
- Zero or more didReceiveData events are called before any of the following messages are sent to the delegate: willCacheResponse, DidFinishLoading, didFailWithError.
- Zero or one willCacheResponse events are called to the delegate after didReceiveData is sent but before a DidFinishLoading message is sent.

Unless an NSURLConnection object receives a cancel message, the subclasses receives one and only one of DidFinishLoading, or didFailWithError message, but never both. In addition, once either of these messages
36.6. CLASS NSURLCONNECTIONMBS

is sent, the delegate receives no further messages for the connection.

36.6.2 Methods

36.6.3 cancel

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Cancels an asynchronous load of a request. **Notes:** After this method is called, the connection’s delegate no longer receives any messages for the connection. If you want to reattempt the connection, you should create a new connection object.

36.6.4 canHandleRequest(request as NSURLRequestMBS) as boolean

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns whether a request can be handled based on a preflight evaluation. **Notes:**
request: The request to evaluate.

Returns true if a preflight operation determines that a connection with request can be created and the associated I/O can be started, false otherwise.

The result of this method is valid as long as no NSURLProtocol classes are registered or unregistered, and request remains unchanged. Applications should be prepared to handle failures even if they have performed request preflighting by calling this method.

36.6.5 Constructor(request as NSURLRequestMBS)

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates URL connection and begins to load the data for the URL request. **Notes:**
request: The URL request to load. The request object is deep-copied as part of the initialization process. Changes made to request after this method returns do not affect the request that is used for the loading process.

On success handle property is not zero.

This is equivalent to calling Constructor and passing true for optional startImmediately.
See also:
36.6.6 Constructor(request as NSURLRequestMBS, startImmediately as boolean)

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates URL connection and begins to load the data for the URL request, if specified. **Notes:**

- request: The URL request to load. The request object is deep-copied as part of the initialization process.
- Changes made to request after this method returns do not affect the request that is used for the loading process.
- startImmediately: True if the connection should being loading data immediately, otherwise false.

On success the handle property is not zero.

Available in Mac OS X v10.5 and later.

See also:

- 36.6.5 Constructor(request as NSURLRequestMBS)

36.6.7 data as MemoryBlock

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The data downloaded so far. **Notes:** The plugin adds the new data it gets in the didReceiveData event to a big memory block and gives you access to it using this event.

36.6.8 sendSynchronousRequest(request as NSURLRequestMBS, byref response as NSURLResponseMBS, byref error as NSErrorMBS) as Memoryblock

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Performs a synchronous load of the specified URL request. **Example:**

```swift
dim request as new NSURLRequestMBS(“http://www.monkeybreadsoftware.de/images/MBSLogo.jpg”)
dim error as NSErrorMBS
dim response as NSURLResponseMBS
dim d as MemoryBlock = NSURLConnectionMBS.sendSynchronousRequest(request, response, error)
if d<>nil then
dim pic as Picture = JPEGStringToPictureMBS(d, true)
window1.Backdrop = pic
end if
```
if error<>Nil then
    MsgBox "Error: " + error.description
end if

Notes:

request: The URL request to load. The request object is deep-copied as part of the initialization process. Changes made to request after this method returns do not affect the request that is used for the loading process.
response: Out parameter for the URL response returned by the server.
error: Out parameter used if an error occurs while processing the request.

Returns the downloaded data for the URL request. Returns nil if a connection could not be created or if the download fails.

A synchronous load is built on top of the asynchronous loading code made available by the class. The calling thread is blocked while the asynchronous loading system performs the URL load on a thread spawned specifically for this load request. No special threading or run loop configuration is necessary in the calling thread in order to perform a synchronous load.

Important: Because this call can potentially take several minutes to fail (particularly when using a cellular network in iOS), you should never call this function from the main thread of a GUI application.

If authentication is required in order to download the request, the required credentials must be specified as part of the URL. If authentication fails, or credentials are missing, the connection will attempt to continue without credentials.

36.6.9 start

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Causes the connection to begin loading data, if it has not already.

Notes:

Calling this method is necessary only if you create a connection with the Constructor method and provide false for the startImmediately parameter.

Available in Mac OS X v10.5 and later.
36.6.10 Properties

36.6.11 Handle as Integer


36.6.12 Events

36.6.13 canAuthenticateAgainstProtectionSpace(protectionSpace as NSURLProtectionSpaceMBS) as boolean

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Sent to determine whether the delegate is able to respond to a protection space’s form of authentication. Notes: protectionSpace: The protection space that generates an authentication challenge. Return true if you are able to respond to a protection space’s form of authentication, otherwise false.

This method is called before didReceiveAuthenticationChallenge, allowing the class to inspect a protection space before attempting to authenticate against it. By returning true, the event indicates that it can handle the form of authentication, which it does in the subsequent call to didReceiveAuthenticationChallenge. If the event returns false, the system attempts to use the user’s keychain to authenticate. If your delegate does not implement this method and the protection space uses client certificate authentication or server trust authentication, the system behaves as if you returned false. The system behaves as if you returned true for all other authentication methods.

Available in Mac OS X v10.6 and later.

36.6.14 didCancelAuthenticationChallenge(challenge asNSURLAuthenticationChallengeMBS)

36.6.15  didFailWithError(error as NSErrorMBS)

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Sent when a connection fails to load its request successfully.

**Notes:**

error: An error object containing details of why the connection failed to load the request successfully.

Once the delegate receives this message, it will receive no further messages for connection.

36.6.16  didFinishLoading

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Sent when a connection has finished loading successfully.

36.6.17  didReceiveAuthenticationChallenge(challenge as NSURLAuthenticationChallengeMBS)

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Sent when a connection must authenticate a challenge in order to download its request.

**Notes:**

challenge: The challenge that connection must authenticate in order to download its request.

This method gives the class the opportunity to determine the course of action taken for the challenge provide credentials, continue without providing credentials, or cancel the authentication challenge and the download.

The delegate can determine the number of previous authentication challenges by sending the message previousFailureCount to challenge.

If the previous failure count is 0 and the value returned by proposedCredential is nil, the delegate can create a new NSURLCredential object, providing information specific to the type of credential, and send a useCredential:forAuthenticationChallenge: message to [challenge sender], passing the credential and challenge as parameters. If proposedCredential is not nil, the value is a credential from the URL or the shared credential storage that can be provided to the user as feedback.

The delegate may decide to abandon further attempts at authentication at any time by sending [challenge sender] a continueWithoutCredentialForAuthenticationChallenge: or a cancelAuthenticationChallenge: message. The specific action is implementation dependent.

If the delegate implements this method, the download will suspend until [challenge sender] is sent one of
the following messages: useCredential:forAuthenticationChallenge:, continueWithoutCredentialForAuthenticationChallenge: or cancelAuthenticationChallenge:.

If the delegate does not implement this method the default implementation is used. If a valid credential for the request is provided as part of the URL, or is available from the NSURLCredentialStorage the [challenge sender] is sent a useCredential:forAuthenticationChallenge: with the credential. If the challenge has no credential or the credentials fail to authorize access, then continueWithoutCredentialForAuthenticationChallenge: is sent to [challenge sender] instead.

36.6.18 didReceiveData(newData as Memoryblock)

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sent as a connection loads data incrementally. **Notes:**

newdata: The newly available data.

The data property is updated before this event is called and gives you a way to see all data received so far.

36.6.19 didReceiveResponse(response as NSURLResponseMBS)

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sent when the connection has received sufficient data to construct the URL response for its request. **Notes:**

response: The URL response for the connection’s request. This object is immutable and will not be modified by the URL loading system once it is presented to the delegate.

In rare cases, for example in the case of an HTTP load where the content type of the load data is multipart/x-mixed-replace, the delegate will receive more than one didReceiveResponse message. In the event this occurs, delegates should discard all data previously delivered by didReceiveData, and should be prepared to handle the, potentially different, MIME type reported by the newly reported URL response.

The only case where this message is not sent to the delegate is when the protocol implementation encounters an error before a response could be created.
36.6. **CLASS NSURLCONNECTIONMBS**

### 36.6.20 `didSendBodyData(bytesWritten as Int64, totalBytesWritten as Int64, totalBytesExpectedToWrite as Int64)`

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sent as the body (message data) of a request is transmitted (such as in an http POST request).

**Notes:**
- `bytesWritten`: The number of bytes written in the latest write.
- `totalBytesWritten`: The total number of bytes written for this connection.
- `totalBytesExpectedToWrite`: The number of bytes the connection expects to write.

This method provides an estimate of the progress of a URL upload. The value of `totalBytesExpectedToWrite` may change during the upload if the request needs to be retransmitted due to a lost connection or an authentication challenge from the server.
Available in Mac OS X v10.6 and later.

### 36.6.21 `shouldUseCredentialStorage as boolean`

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sent to determine whether the URL loader should consult the credential storage for authenticating the connection.

**Notes:**
- This method is called before any attempt to authenticate is made. By returning false, the delegate tells the connection not to consult the credential storage and makes itself responsible for providing credentials for any authentication challenges. Not implementing this method is the same as returning true. The delegate is free to consult the credential storage itself when it receives a `didReceiveAuthenticationChallenge` event.

Available in Mac OS X v10.6 and later.

### 36.6.22 `willSendRequest(request as NSURLRequestMBS, redirectResponse as NSURLResponseMBS) as NSURLRequestMBS`

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sent when the connection determines that it must change URLs in order to continue loading a request.

**Notes:**
- `request`: The proposed redirected request. You should inspect the redirected request to verify that it meets its needs, and create a copy with new attributes to return to the connection if necessary.
- `redirectResponse`: The URL response that caused the redirect. May be nil in cases where this method is not being sent as a result of involving the delegate in redirect processing.

The actual URL request to use in light of the redirection response. The event may return request unmodified.
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to allow the redirect, return a new request, or return nil to reject the redirect and continue processing the connection.

If you wish to cancel the redirect connection, it should call the connection object’s cancel method. Alternatively, the delegate method can return nil to cancel the redirect connection, and the original connection will continue to process. This has special relevance in the case where redirectResponse is not nil. In this case, any data that is loaded for the connection will be sent to the delegate, and the delegate will receive a connectionDidFinishLoading or didFailLoadingWithError message, as appropriate.

Note: Prior to Mac OS X version 10.5, returning nil in this method sometimes would cancel the connection but other times would cause the connection to use the given request unmodified. In addition, prior to version 10.5, NSURLConnection would often modify the incoming NSURLRequest object before transmission without notifying the delegate. In version 10.5 and later, it always notifies the delegate via willSendRequest, and thus the delegate might receive this message before the connection has even properly begun, prior to transmitting the request to the remote server. The delegate can receive this message as a result of modifying a request before it is sent, for example to transform the request’s URL to its canonical form. To detect this case, examine redirectResponse; if it is nil, the message was not sent due to a redirect.

The delegate should be prepared to receive this message multiple times.

36.6.23 willSendRequestForAuthenticationChallenge(challenge as NSURLAuthenticationChallengeMBS)

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Tells the delegate that the connection will send a request for an authentication challenge. **Notes:**

challenge: The authentication challenge for which a request is being sent.

This method allows the delegate to make an informed decision about connection authentication at once. If the delegate implements this method, it has no need to implement canAuthenticateAgainstProtectionSpace, didReceiveAuthenticationChallenge, shouldUseCredentialStorage. In fact, these other methods are not invoked.

In this method, you must invoke one of the challenge-responder methods (NSURLAuthenticationChallenge-SenderMBS):

- useCredential
- continueWithoutCredentialForAuthenticationChallenge
- cancelAuthenticationChallenge
- performDefaultHandlingForAuthenticationChallenge
You might also want to analyze challenge for the authentication scheme and the proposed credential before calling a NSURLAuthenticationChallengeSenderMBS method. You should never assume that a proposed credential is present. You can either create your own credential and respond with that, or you can send the proposed credential back. (Because this object is immutable, if you want to change it you must copy it and then modify the copy.)
36.7 class NSURLCredentialMBS

MBS MacBase Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a stored password.

**Notes:**

dim u as NSURLCredentialMBS

dim p as Integer = NSURLCredentialMBS.NSURLCredentialPersistenceForSession

u = NSURLCredentialMBS.credential("Christian", "teddy123", p)

MsgBox u.user+EndOfLine+u.password+EndOfLine+str(u.persistence)

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

36.7.2 Methods

36.7.3 Constructor

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.

36.7.4 copy as NSURLCredentialMBS

MBS MacBase Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy of the credential object.

36.7.5 credential(User as string, password as string, persistence as Integer = 0) as NSURLCredentialMBS

MBS MacBase Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create a new NSURLCredential with a user and password.

**Example:**

dim u as NSURLCredentialMBS

dim p as Integer = NSURLCredentialMBS.NSURLCredentialPersistenceForSession

u = NSURLCredentialMBS.credential("Christian", "teddy123", p)

MsgBox u.user+EndOfLine+u.password+EndOfLine+str(u.persistence)
Notes:
user: the username
password: the password
persistence: Integer that says to store per session, permanently or not at all.
Can be NSURLCredentialPersistenceForSession, NSURLCredentialPersistenceNone or NSURLCredentialPersistencePermanent.

36.7.6 hasPassword as Boolean

MBS MacBase Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Find out if this credential has a password, without trying to get it.
**Notes:**
Returns true if this credential has a password, otherwise false.

If this credential’s password is actually kept in an external store, the password method may return "" even if this method returns true, since getting the password may fail, or the user may refuse access.

36.7.7 password as string

MBS MacBase Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Get the password.
**Notes:** This method might actually attempt to retrieve the password from an external store, possible resulting in prompting, so do not call it unless needed.

36.7.8 persistence as Integer

MBS MacBase Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Determine whether this credential is or should be stored persistently.
**Notes:**
Use the constants:
NSURLCredentialPersistenceNone
NSURLCredentialPersistenceForSession
NSURLCredentialPersistencePermanent
36.7.9 user as string

MBS MacBase Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Get the username.

36.7.10 Properties

36.7.11 Handle as Integer

MBS MacBase Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal used handle for this class.

**Notes:** (Read and Write property)

36.7.12 Constants

36.7.13 NSURLCredentialPersistenceForSession = 1

MBS MacBase Plugin, Plugin Version: 7.5. **Function:** This credential will only be stored for this session.

36.7.14 NSURLCredentialPersistenceNone = 0

MBS MacBase Plugin, Plugin Version: 7.5. **Function:** This credential won’t be saved.

36.7.15 NSURLCredentialPersistencePermanent = 2

MBS MacBase Plugin, Plugin Version: 7.5. **Function:** This credential will be stored permanently and shared with other applications.
36.8. CLASS NSURLCredentialStorageMBS

36.8 class NSURLCredentialStorageMBS

36.8.1 class NSURLCredentialStorageMBS

MBS MacBase Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** NSURLCredentialStorage implements a singleton object (shared instance) which manages the shared credentials cache. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

36.8.2 Methods

36.8.3 Constructor

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.

36.8.4 defaultCredentialForProtectionSpace(space as NSURLProtectionSpaceMBS) as NSURLCredentialMBS

MBS MacBase Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Get the default credential for the specified protection space.

36.8.5 sharedCredentialStorage as NSURLCredentialStorageMBS

MBS MacBase Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Get the shared singleton authentication storage.

36.8.6 Properties

36.8.7 Handle as Integer

MBS MacBase Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal used handle for this class. **Notes:** (Read and Write property)
36.9 class NSURLDownloadMBS

36.9.1 class NSURLDownloadMBS

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The NSURL Download class which handles downloads for Webkit.

**Notes:**

NSURLDownload downloads a request asynchronously and saves the data to a file. The interface for NSURLDownload is sparse, providing methods to initialize a download, set the destination path and cancel loading the request.

NSURLDownload’s delegate methods defined by the NSURLDownloadDelegate allow an object to receive informational callbacks about the asynchronous load of the URL request. Other delegate methods provide facilities that allow the delegate to customize the process of performing an asynchronous URL load.

Note that these delegate methods are called on the thread that started the asynchronous load operation for the associated NSURLDownload object.

The MBS Plugins currently only implement a part of this class for use with WebDownloadDelegateMBS. So please contact us if you need more.

36.9.2 Methods

36.9.3 cancel

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Cancels the receiver’s download and deletes the downloaded file.

36.9.4 canResumeDownloadDecodedWithEncodingMimeType(MimeType as string) as boolean

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns whether a URL download object can resume a download that was decoded with the specified MIME type.

**Notes:**

MimeType: The MIME type the caller wants to know about.
Returns true if the URL download object can resume a download that was decoded with the specified MIME type, false otherwise.
NSURLDownload cannot resume a download that was partially decoded in the gzip format.
36.9. CLASS NSURLDOWNLOADMBS

36.9.5 Constructor(request as NSURLRequestMBS)

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an initialized URL download for a URL request and begins to download the data for the request.

**Notes:**

request: The URL request to download. The request object is deep-copied as part of the initialization process. Changes made to request after this method returns do not affect the request that is used for the loading process.

On success the handle property is not zero.

See also:

- 36.9.6 Constructor(resumeData as Memoryblock, path as folderitem)
- 36.9.7 Constructor(resumeData as Memoryblock, path as string)

36.9.6 Constructor(resumeData as Memoryblock, path as folderitem)

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an initialized NSURLDownload object that will resume downloading the specified data to the specified file and begins the download.

**Notes:**

resumeData: Specifies the data to resume downloading.
path: The location for the downloaded data.

On success the handle property is not zero.

See also:

- 36.9.5 Constructor(request as NSURLRequestMBS)
- 36.9.7 Constructor(resumeData as Memoryblock, path as string)

36.9.7 Constructor(resumeData as Memoryblock, path as string)

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an initialized NSURLDownload object that will resume downloading the specified data to the specified file and begins the download.

**Notes:**

resumeData: Specifies the data to resume downloading.
path: The location for the downloaded data.
On success the handle property is not zero.

See also:

- 36.9.5 Constructor(request as NSURLRequestMBS)
- 36.9.6 Constructor(resumeData as Memoryblock, path as folderitem)

36.9.8 request as NSURLRequestMBS

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the request that initiated the receiver’s download.

36.9.9 resumeData as Memoryblock

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the resume data for a download that is not yet complete.

Notes:

The resume data for a download that is not yet complete. This data represents the necessary state information that an NSURLDownload object needs to resume a download. The resume data can later be used when initializing a download with Constructor. Returns nil if the download is not able to be resumed.

Resume data will only be returned if the protocol of the download as well as the server support resuming. In order to later resume a download you must call setDeletesFileUponFailure passing false so the partially downloaded data is not deleted when the initial connection is lost or canceled.

36.9.10 setDestination(path as folderitem, allowOverwrite as boolean)


Notes:

path: The path for the downloaded file.
allowOverwrite: true if an existing file at path can be replaced, false otherwise.

If allowOverwrite is false and a file already exists at path, a unique filename will be created for the downloaded file by appending a number to the filename. The delegate can implement didCreateDestination to determine the filename used when the file is written to disk.

An NSURLDownload instance ignores multiple calls to this method.

See also:
36.9.11 setDestination(path as string, allowOverwrite as boolean)


Notes:

path: The path for the downloaded file.
allowOverwrite: true if an existing file at path can be replaced, false otherwise.

If allowOverwrite is false and a file already exists at path, a unique filename will be created for the downloaded file by appending a number to the filename. The delegate can implement didCreateDestination to determine the filename used when the file is written to disk.

An NSURLDownload instance ignores multiple calls to this method.
See also:

• 36.9.10 setDestination(path as folderitem, allowOverwrite as boolean)

36.9.12 Properties

36.9.13 Handle as Integer


Notes: (Read and Write property)

36.9.14 deletesFileUponFailure as boolean


Notes:

True if partially downloaded files should be deleted when a download stops prematurely, false otherwise. The default is true.
(Read and Write computed property)
36.9.15 Events

36.9.16 canAuthenticateAgainstProtectionSpace(protectio

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36.9.15 Events

36.9.16 canAuthenticateAgainstProtectionSpace(protectionSpace as NSURL-ProtectionSpaceMBS) as boolean

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Sent to determine whether the delegate is able to respond to a protection space’s form of authentication. (required)
**Notes:**
protectionSpace: The protection space that generates an authentication challenge.

This method is called before didReceiveAuthenticationChallenge, allowing the delegate to inspect a protection space before attempting to authenticate against it. By returning true, the delegate indicates that it can handle the form of authentication, which it does in the subsequent call to didReceiveAuthenticationChallenge. Not implementing this method is the same as returning false, in which case default authentication handling is used.

Available in Mac OS X v10.6 and later.

36.9.17 decideDestinationWithSuggestedFilename(filename as string)

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The delegate receives this message when download has determined a suggested filename for the downloaded file. (required)
**Notes:**
filename: The suggested filename for the download.

The suggested filename is either derived from the last path component of the URL and the MIME type or, if the download was encoded, from the encoding. If the delegate wishes to modify the path, it should send setDestination to download.

The delegate will not receive this message if setDestination has already been called for the download.

Available in Mac OS X v10.2 and later.

36.9.18 DidBegin

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sent immediately after a download object begins a download. (required)
36.9. CLASS NSURLDOWNLOADMBS

Notes: Available in Mac OS X v10.2 and later.

36.9.19 didCancelAuthenticationChallenge(challenge as NSURLAuthenticationChallengeMBS)

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
Sent if an authentication challenge is canceled due to the protocol implementation encountering an error.
(Required)
Notes:
challenge: The authentication challenge that caused the download object to cancel the download.

If the delegate receives this message the download will fail and the delegate will receive a didFailWithError message.

Available in Mac OS X v10.2 and later.

36.9.20 didCreateDestination(path as string, file as folderitem)

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
Sent when the destination file is created. (Required)
Notes:
path: The path to the destination file.
file: The path to the destination file as folderitem.

Available in Mac OS X v10.2 and later.

36.9.21 didFailWithError(error as NSErrorMBS)

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
Sent if the download fails or if an I/O error occurs when the file is written to disk. (Required)
Notes:
error: The error that caused the failure of the download.

Any partially downloaded file will be deleted.

Once the delegate receives this message, it will receive no further messages for download.
Available in Mac OS X v10.2 and later.
36.9.22 DidFinish

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sent when a download object has completed downloading successfully and has written its results to disk. (required)

**Notes:**
The delegate will receive no further messages for download.
Available in Mac OS X v10.2 and later.

36.9.23 didReceiveAuthenticationChallenge(challenge as NSURLAuthenticationChallengeMBS)

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sent when the URL download must authenticate a challenge in order to download the request. (required)

**Notes:**
challenge: The URL authentication challenge that must be authenticated in order to download the request.

This method gives the delegate the opportunity to determine the course of action taken for the challenge: provide credentials, continue without providing credentials or cancel the authentication challenge and the download.

The delegate can determine the number of previous authentication challenges by sending the message previousFailureCount to challenge.

If the previous failure count is 0 and the value returned by proposedCredential is nil, the delegate can create a new NSURLCredential object, providing information specific to the type of credential, and send a useCredential message to challenge, passing the credential and challenge as parameters. If proposedCredential is not nil, the value is a credential from the URL or the shared credential storage that can be provided to the user as feedback.

The delegate may decide to abandon further attempts at authentication at any time by sending challenge a continueWithoutCredentialForAuthenticationChallenge or a cancelAuthenticationChallenge message. The specific action is implementation dependent.

If the delegate implements this method, the download will suspend until [ challenge sender ] is sent one of the following messages: useCredential, continueWithoutCredentialForAuthenticationChallenge or cancelAuthenticationChallenge.
If the delegate does not implement this method the default implementation is used. If a valid credential for
the request is provided as part of the URL, or is available from the NSURLCredentialStorage the challenge
is sent a useCredential:forAuthenticationChallenge with the credential. If the challenge has no credential or
the credentials fail to authorize access, then continueWithoutCredentialForAuthenticationChallenge is sent
to challenge sender instead.

Available in Mac OS X v10.2 and later.

**36.9.24 didReceiveDataOfLength(length as UInt64)**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Sent as a download object receives data incrementally. (required)
**Notes:**
length: The amount of data received in this increment of the download, measured in bytes.

Available in Mac OS X v10.2 and later.

**36.9.25 didReceiveResponse(response as NSURLResponseMBS)**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Sent when a download object has received sufficient load data to construct the NSURLResponse object for
the download. (required)
**Notes:**
response: The URL response object received as part of the download. response is immutable and will not
be modified after this method is called.

In some rare cases, multiple responses may be received for a single download. In this case, the client should
assume that each new response resets the download progress to 0 and should check the new response for the
expected content length.
Available in Mac OS X v10.2 and later.

**36.9.26 shouldDecodeSourceDataOfMIMEType(encodingType as string) as boolean**

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Sent when a download object determines that the downloaded file is encoded to inquire whether the file should
be automatically decoded. (required)
**Notes:**
encodingType: The type of encoding used by the downloaded file. The supported encoding formats are
MacBinary ("application/macbinary"), Binhex ("application/mac-binhex40") and gzip ("application/gzip").

Return true to decode the file, false otherwise.

The delegate may receive this message more than once if the file has been encoded multiple times. This method is not called if the downloaded file is not encoded.
Available in Mac OS X v10.2 and later.

### 36.9.27 shouldUseCredentialStorage as boolean

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Sent to determine whether the URL loader should consult the credential storage to authenticate the download.
(required)
**Notes:**
This method is called before any attempt to authenticate is made. By returning false, the delegate tells the download not to consult the credential storage and makes itself responsible for providing credentials for any authentication challenges. Not implementing this method is the same as returning true. The delegate is free to consult the credential storage itself when it receives a didReceiveAuthenticationChallenge message.

Available in Mac OS X v10.6 and later.

### 36.9.28 willResumeWithResponse(response as NSURLResponseMBS, startingByte as Int64)

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Sent when a download object has received a response from the server after attempting to resume a download.
(required)
**Notes:**
response: The URL response received from the server in response to an attempt to resume a download.
The location of the start of the resumed data, in bytes.
Available in Mac OS X v10.4 and later.

### 36.9.29 willSendRequest(request as NSURLRequestMBS, redirectResponse as NSURLResponseMBS) as NSURLRequestMBS

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Sent when the download object determines that it must change URLs in order to continue loading a request.
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(requested)

**Notes:**

request: The proposed redirected request. The delegate should inspect the redirected request to verify that it meets its needs, and create a copy with new attributes to return to the connection if necessary.

redirectResponse: The URL response that caused the redirect. May be nil in cases where this method is not being sent as a result of involving the delegate in redirect processing.

Return the actual URL request to use in light of the redirection response. The delegate may copy and modify request as necessary to change its attributes, return request unmodified, or return nil.

If the delegate wishes to cancel the redirect, it should call the download object’s cancel method. Alternatively, the delegate method can return nil to cancel the redirect, and the download will continue to process. This has special relevance in the case where redirectResponse is not nil. In this case, any data that is loaded for the download will be sent to the delegate, and the delegate will receive a downloadDidFinish: or download:didFailWithError: message, as appropriate.

The delegate can receive this message as a result of transforming a request’s URL to its canonical form, or for protocol-specific reasons, such as an HTTP redirect. The delegate implementation should be prepared to receive this message multiple times.

Available in Mac OS X v10.2 and later.
36.10 class NSURLConnection

36.10.1 class NSURLConnection

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for URL.

**Notes:**

An NSURL object represents a URL that can potentially contain the location of a resource on a remote server, the path of a local file on disk, or even an arbitrary piece of encoded data.

Please also review Apple’s documentation on this class:

MBS Plugin only includes a part of the original class. EMail us if you miss something.

36.10.2 Methods

36.10.3 checkResourceIsReachableAndReturnError as NSError

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns whether the URL’s resource exists and is reachable.

**Notes:** This method synchronously checks if the resource’s backing store is reachable. Checking reachability is appropriate when making decisions that do not require other immediate operations on the resource, e.g. periodic maintenance of UI state that depends on the existence of a specific document. When performing operations such as opening a file or copying resource properties, it is more efficient to simply try the operation and handle failures. If this method returns false, the optional error is populated. This method is currently applicable only to URLs for file system resources. For other URL types, NO is returned. Symbol is present in iOS 4, but performs no operation.

36.10.4 Constructor(item as folderItem)

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an URL based on folderItem.

See also:

- 36.10.5 Constructor(scheme as string, host as string, path as string) 7129
- 36.10.6 Constructor(url as string) 7129
- 36.10.7 Constructor(url as string, baseURL as NSURL) 7129
### 36.10.5 Constructor(scheme as string, host as string, path as string)


**Function:** Initializes a newly created NSURL with a specified scheme, host, and path.

**Notes:**
- **scheme:** The scheme for the NSURL object. For example, in the URL http://www.example.com/index.html, the scheme is http.
- **host:** The host for the NSURL object (for example, www.example.com). May be the empty string.
- **path:** The path for the NSURL object (for example, /index.html). If the path begins with a tilde, you must first expand it by calling stringByExpandingTildeInPath.

**See also:**
- 36.10.4 Constructor(item as folderitem)
- 36.10.6 Constructor(url as string)
- 36.10.7 Constructor(url as string, baseURL as NSURLMBS)

### 36.10.6 Constructor(url as string)


**Function:** Creates and returns an NSURL object initialized with a provided URL string.

**See also:**
- 36.10.4 Constructor(item as folderitem)
- 36.10.5 Constructor(scheme as string, host as string, path as string)
- 36.10.7 Constructor(url as string, baseURL as NSURLMBS)

### 36.10.7 Constructor(url as string, baseURL as NSURLMBS)


**Function:** Creates and returns an NSURL object initialized with a base URL and a relative string.

**Notes:**
This method allows you to create a URL relative to a base path or URL. For example, if you have the URL for a folder on disk and the name of a file within that folder, you can construct a URL for the file by providing the folders URL as the base path (with a trailing slash) and the filename as the string part.

This method expects URLString to contain only characters that are allowed in a properly formed URL. All other characters must be properly percent escaped. Any percent-escaped characters are interpreted using UTF-8 encoding.

**See also:**
- 36.10.4 Constructor(item as folderitem)
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- 36.10.5 Constructor(scheme as string, host as string, path as string) 7129
- 36.10.6 Constructor(url as string) 7129

36.10.8 copy as NSURLMBS


36.10.9 fileURLWithFileSystemRepresentation(path as string, isDirectory as boolean, relativeToURL as NSURLMBS) as NSURLMBS

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Initializes a newly created URL referencing the local file or directory at the file system representation of the path. Notes: File system representation is a string with canonical UTF-8 encoding.

36.10.10 fileURLWithPath(path as string) as NSURLMBS

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Builds a file URL with given file path. Notes: Better to use fileURLWithPath with directory parameter if you know if the path is a directory vs non-directory, as it saves an i/o. See also:

- 36.10.11 fileURLWithPath(path as string, isDirectory as boolean) as NSURLMBS 7130

36.10.11 fileURLWithPath(path as string, isDirectory as boolean) as NSURLMBS

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Builds a file URL based on a given file path. See also:

- 36.10.10 fileURLWithPath(path as string) as NSURLMBS 7130

36.10.12 fileURLWithPathComponents(components() as string) as NSURLMBS

36.10. CLASS NSURLMBS

36.10.13 getResourceValue(byref value as Variant, key as string, byref error as NSErrorMBS) as boolean


Function: Returns the value of the resource property for the specified key.

Notes:
value: The location where the value for the resource property identified by key should be stored.
key: The name of one of the URLs resource properties.
error: The error that occurred if the resource value could not be retrieved.

Returns true if value is successfully populated; otherwise, false.

This method first checks if the URL object already caches the resource value. If so, it returns the cached resource value to the caller. If not, then this method synchronously obtains the resource value from the backing store, adds the resource value to the URL object’s cache, and returns the resource value to the caller.

The type of the returned resource value varies by resource property; for details, see the documentation for the key you want to access.

If this method returns true and the value is populated with nil, it means that the resource property is not available for the specified resource, and that no errors occurred when determining that the resource property was unavailable.

If this method returns false, an error occurred. The object pointer referenced by error is populated with additional information.

This method applies only to URLs that represent file system resources.

Available in OS X v10.6 and later.

Automatic type translation applies (See FAQ about NSDictionary).
e.g. NSNumber can be converted to Integer or Boolean depending on content.

36.10.14 isEqual(other as NSURLMBS) as boolean


Function: Tests if two NSURLs are equal.

Notes: Returns a Boolean value that indicates whether the receiver and a given object have identical URL strings and base URLs.
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36.10.15 **Items**(byref error as NSErrorMBS, VisibleItemsOnly as boolean = false) as NSURLMBS()

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries list of items in the directory the URL points to on disk.
**Notes:** Error is optional.
See also:
- 36.10.16 **Items**(VisibleItemsOnly as boolean = false) as NSURLMBS()

36.10.16 **Items**(VisibleItemsOnly as boolean = false) as NSURLMBS()

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries list of items in the directory the URL points to on disk.
See also:
- 36.10.15 **Items**(byref error as NSErrorMBS, VisibleItemsOnly as boolean = false) as NSURLMBS()

36.10.17 **mountedVolumeURLs**(SkipHidden as boolean = true) as NSURLMBS()

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries array of all NSURLs for mounted volumes.
**Notes:**
if SkipHidden is true, hidden volumes are skipped.
Returns nil in case of error.

36.10.18 **NSThumbnail1024x1024SizeKey** as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the possible keys for the NSURLThumbnailDictionaryKey dictionary.
**Notes:**
A 1024 x 1024 pixel thumbnail as an NSImage on OS X.
Available in OS X v10.10 and later.

36.10.19 **NSURLAddedToDirectoryDateKey** as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys.
**Notes:**
The time at which the resources was created or renamed into or within its parent directory, returned as an date. Inconsistent behavior may be observed when this attribute is requested on hard-linked items. This property is not supported by all volumes. (read-only)

Available in OS X v10.10.

### 36.10.20 NSURLAttributeModificationDateKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys. **Notes:**
The time at which the resources attributes were most recently modified, returned as an NSDate object if the volume supports attribute modification dates, or nil if attribute modification dates are unsupported (read-write).

Available in OS X v10.6 and later.

### 36.10.21 NSURLContentAccessDateKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys. **Notes:**
The time at which the resource was most recently accessed, returned as a date object if the volume supports access dates, or nil if access dates are unsupported (read-only).

Available in OS X v10.6 and later.

### 36.10.22 NSURLContentModificationDateKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys. **Notes:**
The time at which the resource was most recently modified, returned as a date object if the volume supports modification dates, or nil if modification dates are unsupported (read-write).

Available in OS X v10.6 and later.
36.10.23 NSURLCreationDateKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys. **Notes:**
The resources creation date, returned as an NSDate object if the volume supports creation dates, or nil if creation dates are unsupported (read-write).

Available in OS X v10.6 and later.

36.10.24 NSURLCustomIconKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys. **Notes:**
The icon stored with the resource, returned as an NSImage object, or nil if the resource has no custom icon. Available in OS X v10.6 and later.

36.10.25 NSURLDocumentIdentifierKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys. **Notes:**
The document identifier returned as a number (read-only).

The document identifier is a value assigned by the kernel to a file or directory. This value is used to identify the document regardless of where it is moved on a volume. The identifier persists across system restarts. It is not transferred when the file is copied, but it survives "safe save" operations. For example, it remains on the path to which it was assigned, even after calling the replaceItemAtURL:withItemAtURL:backupItemName:options:resultingItemAtURL:error: method. Document identifiers are only unique within a single volume. This property is not supported by all volumes.

Available in OS X v10.10 and iOS 8.0.

36.10.26 NSURLEffectiveIconKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys.
36.10. CLASS NSURLMBS

Notes:
The resources normal icon, returned as an NSImage object (read-only).

Available in OS X v10.6 and later.

36.10.27 NSURLFileAllocatedSizeKey as string


Notes:
Key for the total size allocated on disk for the file, returned as an NSNumber object (read-only).

Available in OS X v10.6 and later.

36.10.28 NSURLFileResourceIdentifierKey as string


Notes:
The resources unique identifier, returned as an id (read-only).

This identifier can be used to determine equality between file system resources with the isEqual: method. Two resources are equal if they have the same file-system path or if their paths link to the same inode on the same file system.

The value of this identifier is not persistent across system restarts.

Available in OS X v10.7 and later.

36.10.29 NSURLFileResourceTypeBlockSpecial as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the possible values for the NSURLFileResourceTypeKey key.

Notes:
The resource is a block special file.
Available in OS X v10.7 and later.
36.10.30 NSURLFileResourceTypeCharacterSpecial as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the possible values for the NSURLFileResourceTypeKey key.

**Notes:**
- The resource is a character special file.
- Available in OS X v10.7 and later.

36.10.31 NSURLFileResourceTypeDirectory as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the possible values for the NSURLFileResourceTypeKey key.

**Notes:**
- The resource is a directory.
- Available in OS X v10.7 and later.

36.10.32 NSURLFileResourceTypeKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys.

**Notes:**
- The resources object type, returned as an NSString object. See File Resource Types for possible values.
- Available in OS X v10.7 and later.

36.10.33 NSURLFileResourceTypeNamedPipe as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the possible values for the NSURLFileResourceTypeKey key.

**Notes:**
- The resource is a named pipe.
- Available in OS X v10.7 and later.
36.10.34 NSURLFileResourceTypeRegular as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the possible values for the NSURLFileResourceTypeKey key. **Notes:**

The resource is a regular file.
Available in OS X v10.7 and later.

36.10.35 NSURLFileResourceTypeSocket as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the possible values for the NSURLFileResourceTypeKey key. **Notes:**

The resource is a socket.
Available in OS X v10.7 and later.

36.10.36 NSURLFileResourceTypeSymbolicLink as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the possible values for the NSURLFileResourceTypeKey key. **Notes:**

The resource is a symbolic link.
Available in OS X v10.7 and later.

36.10.37 NSURLFileResourceTypeUnknown as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the possible values for the NSURLFileResourceTypeKey key. **Notes:**

The resource type is unknown.
Available in OS X v10.7 and later.

36.10.38 NSURLFileScheme as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** These schemes are the ones that NSURL can parse.
Notes: Identifies a URL that points to a file on a mounted volume.

36.10.39 NSURLFileSecurityKey as string


Notes:
The resources security information, returned as an NSFileSecurity object (read-write).
Available in OS X v10.7 and later.

36.10.40 NSURLFileSizeKey as string


Notes:
Key for the files size in bytes, returned as an NSNumber object (read-only).
Available in OS X v10.6 and later.

36.10.41 NSURLGenerationIdentifierKey as string


Notes:
An opaque generation identifier, returned as an id (read-only)

The generation identifier can be compared using isEqual to determine if the data in a document has been modified. For URLs which refer to the same file inode, the generation identifier changes when the data in the file's data fork is changed. Changes to extended attributes or other file system metadata do not change the identifier. For URLs which refer to the same directory inode, the generation identifier changes when direct children of that directory are added, removed or renamed. Changes to the data of the direct children of that directory does not change the generation identifier. The identifier persists across system restarts. It is tied to a specific document on a specific volume and is not transferred when the document is copied to another volume. This property is not supported by all volumes.

Available in OS X v10.10 and iOS 8.0.
### 36.10.42 NSURLHasHiddenExtensionKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys. **Notes:** Key for determining whether the resources extension is normally removed from its localized name, returned as a Boolean (read-write).

### 36.10.43 NSURLIsAliasFileKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys that apply to properties of files. **Notes:** Key for determining whether the file is an alias, returned as a Boolean NSNumber object (read-only).

Available in OS X v10.6 and later.

### 36.10.44 NSURLIsDirectoryKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys. **Notes:** Key for determining whether the resource is a directory, returned as a Boolean- (read-only). Available in OS X v10.6 and later.

### 36.10.45 NSURLIsExcludedFromBackupKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys. **Notes:** Key for determining whether the resource is excluded from all backups of app data, returned as a Boolean NSNumber object (read-write).

You can use this property to exclude cache and other app support files which are not needed in a backup. Some operations commonly made to user documents cause this property to be reset to false; consequently, do not use this property on user documents.

Available in OS X v10.8 and later.
36.10.46 **NSURLIsExecutableKey as string**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys. **Notes:**

Key for determining whether the current process (as determined by the EUID) can execute the resource (if it is a file) or search the resource (if it is a directory), returned as a Boolean (read-only).

Available in OS X v10.7 and later.

36.10.47 **NSURLIsHiddenKey as string**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys. **Notes:**

Key for determining whether the resource is normally not displayed to users, returned as a Boolean NSNumber object (read-write).

If the resource is hidden because its name begins with a period, setting this value has no effect. Available in OS X v10.6 and later.

36.10.48 **NSURLIsMountTriggerKey as string**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys. **Notes:**

Key for determining whether the URL is a file system trigger directory, returned as a Boolean NSNumber object (read-only). Traversing or opening a file system trigger directory causes an attempt to mount a file system on the directory.

Available in OS X v10.7 and later.

36.10.49 **NSURLIsPackageKey as string**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys. **Notes:**
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Key for determining whether the resource is a file package, returned as a BooleanNSNumber object (read-write in OS X v10.8 and later, read-only in previous versions). A true value means that the resource is a file package.

If you attempt to set or clear this key's value on a file instead of a directory, the system ignores your attempt. If the directory is defined as a package by way of its filename extension or other reason apart from this key, setting this key's value to false has no effect.

Available in OS X v10.6 and later.

### 36.10.50 **NSURLIsReadableKey as string**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys. **Notes:**

Key for determining whether the current process (as determined by the EUID) can read the resource, returned as a Boolean (read-only).

Available in OS X v10.7 and later.

### 36.10.51**NSURLIsRegularFileKey as string**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys. **Notes:**

Key for determining whether the resource is a regular file, as opposed to a directory or a symbolic link. Returned as a Boolean NSNumber object (read-only).

Available in OS X v10.6 and later.

### 36.10.52 **NSURLIsSymbolicLinkKey as string**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys. **Notes:**

Key for determining whether the resource is a symbolic link, returned as a Boolean NSNumber object (read-only).
36.10.53 **NSURLIsSystemImmutableKey as string**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys. **Notes:**

Key for determining whether the resource’s system immutable bit is set, returned as a Boolean NSNumber object (read-write).

Available in OS X v10.6 and later.

36.10.54 **NSURLIsUbiquitousItemKey as string**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for files. **Notes:**

A boolean that contains true if this item is in iCloud storage, false if it is a local item (read-only).

Available in OS X v10.7 and later.

36.10.55 **NSURLIsUserImmutableKey as string**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys. **Notes:**

Key for determining whether the resource’s user immutable bit is set, returned as a Boolean NSNumber object (read-write).

Available in OS X v10.6 and later.

36.10.56 **NSURLIsVolumeKey as string**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys. **Notes:**

Key for determining whether the resource is the root directory of a volume, returned as a Boolean NSNumber.
36.10. **CLASS NSURLMBS**

object (read-only).

Available in OS X v10.6 and later.

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### 36.10.57 **NSURLIsWritableKey as string**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys.

**Notes:**

Key for determining whether the current process (as determined by the EUID) can write to the resource, returned as a Boolean NSNumber object (read-only).

Available in OS X v10.7 and later.

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### 36.10.58 **NSURLKeysOfUnsetValueKey as string**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key for the resource properties that have not been set after setResourceValues returns an error, returned as an array of of strings.

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### 36.10.59 **NSURLLabelColorKey as string**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys.

**Notes:**

The resources label color, returned as an NSColor object, or nil if the resource has no label color (read-only).

Available in OS X v10.6 and later.

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### 36.10.60 **NSURLLabelNumberKey as string**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys.

**Notes:**

The resources label number, returned as an NSNumber object (read-write).
 Available in OS X v10.6 and later.

### 36.10.61 NSURLLinkCountKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys. **Notes:**

The number of hard links to the resource, returned as an NSNumber object (read-only).
Available in OS X v10.6 and later.

### 36.10.62 NSURLLocalizedLabelKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys. **Notes:**

The resources localized label text, returned as an NSString object, or nil if the resource has no localized label text (read-only).
Available in OS X v10.6 and later.

### 36.10.63 NSURLLocalizedizedNameKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys. **Notes:**

The resources localized or extension-hidden name, returned as an NSString object (read-only).
Available in OS X v10.6 and later.

### 36.10.64 NSURLLocalizedTypeDescriptionKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys. **Notes:**

The resources localized type description, returned as an NSString object (read-only).
Available in OS X v10.6 and later.
**36.10.65 NSURLNameKey as string**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys. **Notes:**
The resources name in the file system, returned as an NSString object (read-write). Available in OS X v10.6 and later.

**36.10.66 NSURLParentDirectoryURLKey as string**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys. **Notes:**
The parent directory of the resource, returned as an NSURL object, or nil if the resource is the root directory of its volume (read-only). Available in OS X v10.6 and later.

**36.10.67 NSURLPathKey as string**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys. **Notes:**
The file system path for the URL, returned as an NSSstring object (read-only). Available in OS X v10.8 and later.

**36.10.68 NSURLPreferredIOBlockSizeKey as string**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys. **Notes:**
The optimal block size to use when reading or writing this file's data, returned as an NSNumber object, or nil if the preferred size is not available (read-only). Available in OS X v10.7 and later.
36.10.69 NSURLQuarantinePropertiesKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A key for quarantine properties.  
**Notes:**  
The quarantine properties as defined in LSQuarantine.h. To remove quarantine information from a file, pass NSNull as the value when setting this property. (Read-write, value type dictionary)  
Available on Mac OS X 10.10 and later.

36.10.70 NSURLTagNamesKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys.  
**Notes:**  
The names of tags attached to the resource, returned as an array of String values (read-write).  
Available in OS X v10.9 and later.

36.10.71 NSURLThumbnailDictionaryKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys.  
**Notes:**  
A dictionary of NSImage objects keyed by size (read-write).  
See Thumbnail Property Keys for a list of possible keys.  
Available in OS X v10.10.

36.10.72 NSURLThumbnailKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys.  
**Notes:**  
All thumbnails as a single NSImage (read-write).  
Available in OS X v10.10.
36.10.73 **NSURLTotalFileAllocatedSizeKey as string**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys that apply to properties of files. **Notes:**

Key for the total allocated size of the file in bytes, returned as an NSNumber object (read-only). This includes the size of any file metadata.

Available in OS X v10.7 and later.

36.10.74 **NSURLTotalFileSizeKey as string**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys that apply to properties of files. **Notes:**

Key for the total displayable size of the file in bytes, returned as an NSNumber object (read-only). This includes the size of any file metadata.

Available in OS X v10.7 and later.

36.10.75 **NSURLTypeIdentifierKey as string**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys. **Notes:**

The resources uniform type identifier (UTI), returned as a string (read-only).

Available in OS X v10.6 and later.

36.10.76 **NSURLUbiquitousItemContainerDisplayNameKey as string**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys that describe the iCloud storage state of a file. **Notes:**

A string containing the name of the items container, as it is displayed to the user.

Available in OS X v10.10 and later.
36.10.77 NSURLUbiquitousItemDownloadingErrorKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys that describe the iCloud storage state of a file.  
**Notes:**  
An error object that indicates why downloading the item from iCloud failed.  

Available in OS X v10.9 and later.

36.10.78 NSURLUbiquitousItemDownloadingStatusCurrent as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Values that describe the iCloud storage state of a file.  
**Notes:**  
A local copy of this item exists and is the most up-to-date version known to the device.  

Available in OS X v10.9 and later.

36.10.79 NSURLUbiquitousItemDownloadingStatusDownloaded as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Values that describe the iCloud storage state of a file.  
**Notes:**  
A local copy of this item exists, but it is stale. The most recent version will be downloaded as soon as possible.  

Available in OS X v10.9 and later.

36.10.80 NSURLUbiquitousItemDownloadingStatusKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys that describe the iCloud storage state of a file.  
**Notes:**  
The current download state for the item, indicating whether a local copy exists and whether that copy is the most current version of the item. The possible values for this key are described in Ubiquitous Item Downloading Status Constants.
36.10. CLASS NSURLMBS

Available in OS X v10.9 and later.

36.10.81  NSURLUbiquitousItemDownloadingStatusNotDownloaded as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Values that describe the iCloud storage state of a file. **Notes:**

This item has not been downloaded yet. Use startDownloadingUbiquitousItemAtURL to download it.

Available in OS X v10.9 and later.

36.10.82  NSURLUbiquitousItemDownloadRequestedKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys that describe the iCloud storage state of a file. **Notes:**

A Boolean indicating whether a call to startDownloadingUbiquitousItemAtURL has already been made to download the item. The value of this key is read-only.

Available in OS X v10.10 and later.

36.10.83  NSURLUbiquitousItemHasUnresolvedConflictsKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys that describe the iCloud storage state of a file. **Notes:**

A boolean NSNumber that contains true if this item has conflicts outstanding, false otherwise (read-only). Available in OS X v10.7 and later.

36.10.84  NSURLUbiquitousItemIsDownloadedKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys that describe the iCloud storage state of a file. **Notes:**

A boolean NSNumber that contains true if this item's data has been downloaded to a ubiquity container, false otherwise (read-only).
Available in OS X v10.7 and later.  
Deprecated in OS X v10.9.

### 36.10.85 NSURLUbiquitousItemIsDownloadingKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys that describe the iCloud storage state of a file.  
**Notes:** A boolean NSNumber that contains true if this item is being downloaded from iCloud, false otherwise (read-only).

Available in OS X v10.7 and later.

### 36.10.86 NSURLUbiquitousItemIsUploadedKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys that describe the iCloud storage state of a file.  
**Notes:** A boolean NSNumber that contains true if this items data has been uploaded to iCloud storage, false otherwise (read-only).

When waiting for an upload to complete, do not poll this key from within a block passed to coordinateReadingItemAtURL, because the coordinated read required to obtain this value cannot be performed until that block completes and returns. Instead, use NSMetadataQuery or an NSFilePresenter delegate to asynchronously notify your app when the status changes.

Available in OS X v10.7 and later.

### 36.10.87 NSURLUbiquitousItemIsUploadingKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys that describe the iCloud storage state of a file.  
**Notes:** A boolean NSNumber that contains true if this item is being uploaded to iCloud, false otherwise (read-only).

Available in OS X v10.7 and later.
36.10.88 NSURLUbiquitousItemPercentDownloadedKey as string

**Function:** Keys that describe the iCloud storage state of a file.  
**Notes:**
An NSNumber in the range 0100 that indicates the percentage of the data that has been downloaded (read-only).

Use the NSMetadataQuery class to search for NSMetadataItem objects that have the NSMetadataUbiquitousItemPercentDownloadedKey attribute instead.

Available in OS X v10.7 and later.  
Deprecated in OS X v10.8.

36.10.89 NSURLUbiquitousItemPercentUploadedKey as string

**Function:** Keys that describe the iCloud storage state of a file.  
**Notes:**
An NSNumber in the range 0100 that indicates the percentage of the data that has been uploaded (read-only).

Use the NSMetadataQuery class to search for NSMetadataItem objects that have the NSMetadataUbiquitousItemPercentUploadedKey attribute instead.

Available in OS X v10.7 and later.  
Deprecated in OS X v10.8.

36.10.90 NSURLUbiquitousItemUploadingErrorKey as string

**Function:** Keys that describe the iCloud storage state of a file.  
**Notes:**
An error object that indicates why uploading the item to iCloud failed.

Available in OS X v10.9 and later.
36.10.91 **NSURLVolumeAvailableCapacityKey as string**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for volumes. **Notes:**

Key for the volumes available capacity in bytes, returned as an Int64 (read-only).
Available in OS X v10.6 and later.

36.10.92 **NSURLVolumeCreationDateKey as string**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for volumes. **Notes:**

Key for the volumes creation date, returned as a date, or nil if it cannot be determined (read-only).
Available in OS X v10.7 and later.

36.10.93 **NSURLVolumeIdentifierKey as string**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file system URL resource keys. **Notes:**

The unique identifier of the resources volume, returned as an id (read-only).
This identifier can be used with the isEqual method to determine whether two file system resources are on the same volume.
The value of this identifier is not persistent across system restarts.
Available in OS X v10.7 and later.

36.10.94 **NSURLVolumeIsAutomountedKey as string**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for volumes. **Notes:**

Key for determining whether the volume is automounted, returned as a Boolean (read-only).
Available in OS X v10.7 and later.
36.10.95  NSURLVolumeIsBrowsableKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for volumes.  
**Notes:**  
Key for determining whether the volume is visible in GUI-based file-browsing environments, such as the Desktop or the Finder application, returned as a Boolean (read-only).  

Available in OS X v10.7 and later.

36.10.96  NSURLVolumeIsEjectableKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for volumes.  
**Notes:**  
Key for determining whether the volume is ejectable from the drive mechanism under software control, returned as a Boolean (read-only).  

Available in OS X v10.7 and later.

36.10.97  NSURLVolumeIsInternalKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for volumes.  
**Notes:**  
Key for determining whether the volume is connected to an internal bus, returned as a Boolean, or nil if it cannot be determined (read-only).  

Available in OS X v10.7 and later.

36.10.98  NSURLVolumeIsJournalingKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for volumes.  
**Notes:**  
Key for determining whether the volume is currently journaling, returned as a Boolean.  
Available in OS X v10.6 and later.
36.10.99  NSURLVolumeIsLocalKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for volumes.

**Example:**

```vbnet
dim f as FolderItem = GetFolderItem("/Volumes/Ablage1", FolderItem.PathTypeNative)

dim n as NSURLMBS = NSURLMBSWithURLWithItem(f)
dim value as Variant
dim error as NSErrorMBS

dim Local as Boolean

// network volumes are not local
if n.getResourceValue(value, n.NSURLVolumeIsLocalKey, error) then
    MsgBox "Local: " + value.StringValue
    Local = value[BooleanValue
else
    MsgBox error.localizedDescription
end if

// network volumes have an URL
if n.getResourceValue(value, n.NSURLVolumeURLForRemountingKey, error) then
    MsgBox "URLForRemounting: " + value.StringValue
else
    MsgBox error.localizedDescription
end if
```

**Notes:**

Key for determining whether the volume is stored on a local device, returned as a Boolean (read-only). Available in OS X v10.7 and later.

36.10.100  NSURLVolumeIsReadOnlyKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for volumes.

**Notes:**

Key for determining whether the volume is read-only, returned as a Boolean (read-only). Available in OS X v10.7 and later.
36.10.101 NSURLConnectionIsRemovableKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for volumes.

**Example:**

```vbs
dim f as FolderItem = GetFolderItem( "/Volumes/Test", FolderItem.PathTypeNative)

dim n as NSURLConnection = NSURLURLConnectionWithURLItem(f)
dim value as Variant
dim error as NSErrorMBS

if n.getResourceValue(value, n.NSURLConnectionIsRemovableKey, error) then
    MsgBox "Removable: " + value.StringValue
else
    MsgBox error.LocalizedDescription
end if
```

**Notes:**

Key for determining whether the volume is removable from the drive mechanism, returned as a Boolean (read-only).

Available in OS X v10.7 and later.

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36.10.102 NSURLConnectionLocalizedFormatDescriptionKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for volumes.

**Notes:**

Key for the volumes descriptive format name, returned as a string (read-only).

Available in OS X v10.6 and later.
36.10.103 **NSURLVolumeLocalizedKeyName** as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for volumes. **Notes:**
The name of the volume as it should be displayed in the user interface, returned as a string (read-only). Available in OS X v10.7 and later.

36.10.104 **NSURLVolumeMaximumFileSizeKey** as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for volumes. **Notes:**
Key for the largest file size supported by the volume in bytes, returned as a Boolean, or nil if it cannot be determined (read-only).

Available in OS X v10.7 and later.

36.10.105 **NSURLVolumeNameKey** as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for volumes. **Notes:**
The name of the volume, returned as an NSString object (read-write). Settable only if NSURLVolumeSupportsRenamingKey is true.

Available in OS X v10.7 and later.

36.10.106 **NSURLVolumeResourceCountKey** as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for volumes. **Notes:**
Key for the total number of resources on the volume, returned as an integer (read-only). Available in OS X v10.6 and later.
36.10.107  NSURLVolumeSupportsAdvisoryFileLockingKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for volumes.

**Notes:**

Key for determining whether the volume implements whole-file advisory locks in the style of flock, along with the O_EXLOCK and O_SHLOCK flags of the open function, returned as a Boolean NSNumber object (read-only).

Available in OS X v10.7 and later.

36.10.108  NSURLVolumeSupportsCasePreservedNamesKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for volumes.

**Example:**

```vbc
    Dim f As FolderItem = Volume(0)
    Dim n As New NSURLMBS(f)

    Dim v As Variant
    Dim e As NSErrorMBS
    If n.getResourceValue(v, n.NSURLVolumeSupportsCasePreservedNamesKey, e) Then
        MsgBox "VolumeSupportsCasePreservedNames: " + v.BooleanValue
    Else
        MsgBox "Failed to query: " + e.LocalizedDescription
    End If
```

**Notes:**

Key for determining whether the volume supports case-preserved names, returned as a Boolean (read-only). Available in OS X v10.6 and later.

36.10.109  NSURLVolumeSupportsCaseSensitiveNamesKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for volumes.

**Example:**

```vbc
    Dim f As FolderItem = Volume(0)
    Dim n As New NSURLMBS(f)
```
dim v as Variant
dim e as NSErrorMBS
if n.getResourceValue(v, n.NSURLVolumeSupportsCaseSensitiveNamesKey, e) then
    MsgBox "VolumeSupportsCaseSensitiveNames: " + str(v[BooleanValue])
else
    MsgBox "Failed to query: " + e.LocalizedDescription
end if

Notes:
Key for determining whether the volume supports case-sensitive names, returned as a Boolean (read-only). Available in OS X v10.6 and later.

### 36.10.110 NSURLVolumeSupportsExtendedSecurityKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for volumes. **Notes:**

Key for determining whether the volume supports extended security (access control lists), returned as a Boolean (read-only) (read-only).

Available in OS X v10.7 and later.

### 36.10.111 NSURLVolumeSupportsHardLinksKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for volumes. **Notes:**

Key for determining whether the volume supports hard links, returned as a Boolean. Available in OS X v10.6 and later.

### 36.10.112 NSURLVolumeSupportsJournalingKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for volumes. **Notes:**

Key for determining whether the volume supports journaling, returned as a Boolean. Available in OS X v10.6 and later.
36.10.113  NSURLVolumeSupportsPersistentIDsKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for volumes.

**Notes:**
Key for determining whether the volume supports persistent IDs, returned as a Boolean (read-only).
Available in OS X v10.6 and later.

36.10.114  NSURLVolumeSupportsRenamingKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for volumes.

**Notes:**
Key for determining whether the volume can be renamed, returned as a Boolean (read-only).
Available in OS X v10.7 and later.

36.10.115  NSURLVolumeSupportsRootDirectoryDatesKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for volumes.

**Notes:**
Key for determining whether the volume supports reliable storage of times for the root directory, returned as a Boolean (read-only).
Available in OS X v10.7 and later.

36.10.116  NSURLVolumeSupportsSparseFilesKey as string

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for volumes.

**Notes:**
Key for determining whether the volume supports sparse files, returned as a Boolean.
Available in OS X v10.6 and later.
36.10.117 NSURLVolumeSupportsSymbolicLinksKey as string

Notes:
Key for determining whether the volume supports symbolic links, returned as a Boolean. Available in OS X v10.6 and later.

36.10.118 NSURLVolumeSupportsVolumeSizesKey as string

Notes:
Key for determining whether the volume supports returning volume size information, returned as a Boolean (read-only). If true, volume size information is available as values of the NSURLVolumeTotalCapacityKey and NSURLVolumeAvailableCapacityKey keys.
Available in OS X v10.7 and later.

36.10.119 NSURLVolumeSupportsZeroRunsKey as string

Notes:
Key for determining whether the volume supports zero runs, returned as a Boolean. (read-only). Available in OS X v10.6 and later.

36.10.120 NSURLVolumeTotalCapacityKey as string

Notes:
Key for the volumes capacity in bytes, returned as an Int64 (read-only).
Available in OS X v10.6 and later.
36.10.121 NSURLVolumeURLForRemountingKey as string

Notes:
Key for the URL needed to remount the network volume, returned as an NSURL object, or nil if a URL is not available (read-only).

Available in OS X v10.7 and later.

36.10.122 NSURLVolumeURLKey as string

Notes:
The root directory of the resources volume, returned as an NSURL object (read-only).
Available in OS X v10.6 and later.

36.10.123 NSURLVolumeUUIDStringKey as string

Notes:
Key for the volumes persistent UUID, returned as an NSString object, or nil if a persistent UUID is not available (read-only).

Available in OS X v10.7 and later.

36.10.124 pathComponents as string()

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: An array containing the path components. (read-only)
Notes: This property contains an array containing the individual path components of the URL. For example, in the URL file:///directory/directory2/file, the path components array would be "/", "directory", "directory2", "file".
36.10.125 removeAllCachedResourceValues

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes all cached resource values and temporary resource values from the URL object. **Notes:**

This method is applicable only to URLs that represent file system resources. Available in OS X v10.9 and later.

36.10.126 removeCachedResourceValueForKey(key as string)

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes the cached resource value identified by a given key from the URL object. **Notes:**

key: The resource value key whose cached values you want to remove.

Removing a cached resource value may remove other cached resource values because some resource values are cached as a set of values, and because some resource values depend on other resource values. (Temporary resource values have no dependencies.)

This method is currently applicable only to URLs for file system resources.

Available in OS X v10.9 and later.

36.10.127 resourceValuesForKeys(keys() as string, byref error as NSErrorMBS) as Dictionary

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the resource values for the properties identified by specified array of keys. **Notes:**

Returns a dictionary of resource values indexed by key.

This method first checks if the URL object already caches the specified resource values. If so, it returns the cached resource values to the caller. If not, then this method synchronously obtains the resource values from the backing store, adds the resource values to the URL object’s cache, and returns the resource values to the caller.

The type of the returned resource value varies by resource property; for details, see the documentation for the key you want to access.
If the result dictionary does not contain a resource value for one or more of the requested resource keys, it means those resource properties are not available for the URL, and no errors occurred when determining those resource properties were not available.

If an error occurs, this method returns nil and populates the object pointer referenced by error with additional information.

This method applies only to URLs that represent file system resources.
Available in OS X v10.6 and later.
See also:

- 36.10.128 resourceValuesForKeys(keys() as string, targetDelegate as ResourceValuesForKeysDelegateMBS, tag as Variant = nil, PrecacheIcons as boolean = false)

36.10.128 resourceValuesForKeys(keys() as string, targetDelegate as ResourceValuesForKeysDelegateMBS, tag as Variant = nil, PrecacheIcons as boolean = false)

Notes:
The plugin will query values on a different preemptive thread and call your delegate on main thread with results as soon as possible. This way you can keep app responsive while system e.g. loads icons.
For icons, you can set PrecacheIcons to true. In that case plugin will draw icon on the preemptive thread, so icon data is really loaded from disk. When you than draw on main thread, it’s really quick.

The delegate has this parameters:
ResourceValuesForKeysDelegateMBS(URL as NSURLMBS, keys() as String, Values as Dictionary, Error as NSErrorMBS, tag as Variant)
See also:

- 36.10.127 resourceValuesForKeys(keys() as string, byref error as NSErrorMBS) as Dictionary

36.10.129 setResourceValue(value as Variant, key as string, byref error as NSErrorMBS) as boolean

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Sets the URLs resource property for a given key to a given value.
Notes:
value: The value for the resource property defined by key.
key: The name of one of the URLs resource properties.
error: The error that occurred if the resource value could not be set.

Returns true if the resource property named key is successfully set to value; otherwise, false.

This method synchronously writes the new resource value out to disk. Attempts to set a read-only resource property or to set a resource property that is not supported by the resource are ignored and are not considered errors.

If an error occurs, this method returns NO and populates the object pointer referenced by error with additional information.

This method applies only to URLs for file system resources.
Available in OS X v10.6 and later.

Automatic type translation applies (See FAQ about NSDictionary).

36.10.130 setResourceValues(keyedValues as Dictionary, byref error as NSErrorMBS) as boolean

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Sets the URLs resource properties for a given set of keys to a given set of values.
Notes:
keyedValues: A dictionary of resource values to be set.
error: The error that occurred if one or more resource values could not be set.

Returns true if all resource values in keyedValues are successfully set; otherwise, false.

This method synchronously writes the new resource value out to disk. If an error occurs after some resource properties have been successfully changed, the userInfo dictionary in the returned error object contains a kCFURLKeysOfUnsetValuesKey key whose value is an array of the resource values that were not successfully set.

Attempts to set a read-only resource property or to set a resource property that is not supported by the resource are ignored and are not considered errors.

The order in which the resource values are set is not defined. If you need to guarantee the order in which resource values are set, you should make multiple requests to this method or setResourceValue:forKey:error:.

This method applies only to URLs for file system resources.
Available in OS X v10.6 and later.

Automatic type translation applies (See FAQ about NSDictionary).

36.10.131 setTemporaryResourceValue(value as Variant, key as string)

Notes:
value: The value to store.
key: The key where the value should be stored. This key must be unique and must not conflict with any system-defined keys. Reverse-domain-name notation is recommended.

Your app can use a temporary resource value to temporarily store a value for an app-defined resource value key in memory without modifying the actual resource that the URL represents. Once set, you can copy the temporary resource value from the URL object just as you would copy system-defined keys by calling getResourceValue or resourceValuesForKeys.

Your app can remove a temporary resource value from the URL object by calling removeCachedResourceValueForKey or removeAllCachedResourceValues (to remove all temporary values).

This method is applicable only to URLs for file system resources. Available in OS X v10.9 and later.

36.10.132 startAccessingSecurityScopedResource as boolean

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Starts accessing a security scoped bookmark URL.
Notes: Given a NSURL created by resolving a bookmark data created with security scope, make the resource referenced by the url accessible to the process. When access to this resource is no longer needed the client must call stopAccessingSecurityScopedResource. Each call to startAccessingSecurityScopedResource must be balanced with a call to stopAccessingSecurityScopedResource (Note: this is not reference counted).

36.10.133 stopAccessingSecurityScopedResource

36.10.134  TagNames as string()

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** The names of tags attached to the resource, returned as an array of String values.  **Notes:** Available in OS X v10.9 and later.

36.10.135  URLByAppendingPathComponent(pathComponent as string) as NSURLMBS

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns a new URL made by appending a path component to the original URL.  **Notes:**

pathComponent: The path component to add to the URL, in its original form (not URL encoded).

Returns a new URL with pathComponent appended.

If the original URL does not end with a forward slash and pathComponent does not begin with a forward slash, a forward slash is inserted between the two parts of the returned URL, unless the original URL is the empty string.

Available in OS X v10.6 and later.

See also:

- 36.10.136 URLByAppendingPathComponent(pathComponent as string, isDirectory as boolean) as NSURLMBS

36.10.136  URLByAppendingPathComponent(pathComponent as string, isDirectory as boolean) as NSURLMBS

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns a new URL made by appending a path component to the original URL, along with a trailing slash if the component is designated a directory.  **Notes:**

pathComponent: The path component to add to the URL.

isDirectory: If true, a trailing slash is appended after pathComponent.

Returns a new URL with pathComponent appended.

If the original URL does not end with a forward slash and pathComponent does not begin with a forward slash, a forward slash is inserted between the two parts of the returned URL, unless the original URL is the empty string.
Available in OS X v10.7 and later.
On Mac OS X 10.6 the plugin falls back
See also:

- 36.10.135 URLByAppendingPathComponent(pathComponent as string) as NSURLMBS

36.10.137 URLByAppendingPathExtension(PathExtension as string) as NSURLMBS

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a new URL made by appending a path extension to the original URL.

**Notes:**

pathExtension: The path extension to add to the URL.

Returns a new URL with pathExtension appended.

If the original URL ends with one or more forward slashes, these are removed from the returned URL. A period is inserted between the two parts of the new URL.
Available in OS X v10.6 and later.

36.10.138 URLByDeletingLastPathComponent as NSURLMBS

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A URL created by taking the receiver and removing the last path component.

**Notes:**

If the receivers URL represents the root path, this property contains a copy of the original URL. Otherwise, if the original URL has only one path component, this property contains the empty string.

Available in OS X v10.6 and later.

36.10.139 URLByDeletingPathExtension as NSURLMBS

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A URL created by taking the receiver and removing the path extension, if any.

**Notes:**

If the receiver represents the root path, this property contains a copy of the original URL. If the URL has multiple path extensions, only the last one is removed.
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Available in OS X v10.6 and later.

36.10.140 URLByResolvingSymlinksInPath as NSURLMBS

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A URL that points to the same resource as the receiver and includes no symbolic links.
Notes:
If the receiver has no symbolic links, this property contains a copy of the original URL.
If some symbolic links cannot be resolved, this property contains those broken symbolic links.
If the name of the receiving path begins with /private, this property strips off the /private designator, provided the result is the name of an existing file.
This property only works on URLs with the file: path scheme. For all other URLs, it contains a copy of the receiver.
Available in OS X v10.6 and later.

36.10.141 URLByStandardizingPath as NSURLMBS

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A URL that points to the same resource as the original URL using an absolute path.
Notes:
This property only works on URLs with the file: path scheme. For all other URLs, it returns a copy of the original URL.
Like stringByStandardizingPath, this property can make the following changes in the provided URL:

- Expand an initial tilde expression using stringByExpandingTildeInPath.
- Reduce empty components and references to the current directory (that is, the sequences "/" and "/./") to single path separators.
- In absolute paths only, resolve references to the parent directory (that is, the component "/..") to the real parent directory if possible using stringByResolvingSymlinksInPath, which consults the file system to resolve each potential symbolic link.
- In relative paths, because symbolic links can't be resolved, references to the parent directory are left in place.
• Remove an initial component of "private" from the path if the result still indicates an existing file or directory (checked by consulting the file system).

Note that the path contained by this property may still have symbolic link components in it. Note also that this property only works with file paths (not, for example, string representations of URLs).

Available in OS X v10.6 and later.

36.10.142 URLsResourceValuesForKeys(URLs() as NSURLMBS, keys() as string, targetDelegate as URLsResourceValuesForKeysDelegateMBS, tag as Variant = nil, PrecacheIcons as boolean = false)

Notes:
Similar to resourceValuesForKeys, this method will start a preemptive thread and query values for all URLs on all keys in background. Once done it calls the delegate on main thread.

For icons, you can set PrecacheIcons to true. In that case plugin will draw icon on the preemptive thread, so icon data is really loaded from disk. When you than draw on main thread, it’s really quick.

the delegate is declared like this:
URLsResourceValuesForKeysDelegateMBS(URLs() as NSURLMBS, keys() as String, Values() as Dictionary, Errors() as NSErrorMBS, tag as Variant)

36.10.143 URLWithHandle(Handle as Integer) as NSURLMBS

Notes: Will retain the reference.

36.10.144 URLWithItem(Item as FolderItem) as NSURLMBS

Example:
dim f as FolderItem = GetFolderItem("/Volumes/Ablage1", FolderItem.PathTypeNative)
dim n as NSURLMBS = NSURLMBS.URLWithItem(f)
MsgBox n.absoluteString
36.10.145 **NSURLWithString(URL as string) as NSURLMBS**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an NSURL object initialized with a provided URL string.

See also:

- 36.10.146 **NSURLWithString(URL as string, baseURL as NSURLMBS) as NSURLMBS**

36.10.146 **NSURLWithString(URL as string, baseURL as NSURLMBS) as NSURLMBS**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an NSURL object initialized with a base URL and a relative string.

**Notes:**

This method allows you to create a URL relative to a base path or URL. For example, if you have the URL for a folder on disk and the name of a file within that folder, you can construct a URL for the file by providing the folders URL as the base path (with a trailing slash) and the filename as the string part.

This method expects URLString to contain only characters that are allowed in a properly formed URL. All other characters must be properly percent escaped. Any percent-escaped characters are interpreted using UTF-8 encoding.

See also:

- 36.10.145 **NSURLWithString(URL as string) as NSURLMBS**

36.10.147 **Properties**

36.10.148 **absoluteString as String**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The URL string for the receiver as an absolute URL.

**Notes:**

This property's value is calculated by resolving the receivers string against its base according to the algorithm given in RFC 1808.

(Read only property)
36.10. CLASS NSURLMBS

36.10.149  absoluteURL as NSURLMBS

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An absolute URL that refers to the same resource as the receiver. **Notes:**

If the URL is already absolute, this property contains a copy of the receiver. Resolution is performed per RFC 1808. (Read only property)

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36.10.150  AddedToDirectoryDate as Date

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The time at which the resources was created or renamed into or within its parent directory, returned as an date. **Notes:**

Inconsistent behavior may be observed when this attribute is requested on hard-linked items. This property is not supported by all volumes. (read-only)

Available in OS X v10.10. (Read only property)

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36.10.151  AttributeModificationDate as Date

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Modification date. **Notes:**

The time at which the resources attributes were most recently modified, returned as an NSDate object if the volume supports attribute modification dates, or nil if attribute modification dates are unsupported.

Available in OS X v10.6 and later. (Read only property)

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36.10.152  baseURL as NSURLMBS

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The base URL. **Notes:**

This property contains the base URL. If the receiver is an absolute URL, this property contains nil.
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(Read only property)

36.10.153 ContentAccessDate as Date

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The time at which the resource was most recently accessed.

**Notes:**
Returned as date object if the volume supports access dates, or nil if access dates are unsupported.
Available in OS X v10.6 and later.
(Read only property)

36.10.154 ContentModificationDate as Date

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The modification date.

**Notes:**
The time at which the resource was most recently modified, returned as a date object if the volume supports modification dates, or nil if modification dates are unsupported.

Available in OS X v10.6 and later.
(Read only property)

36.10.155 CreationDate as Date

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The creation date.

**Notes:**
The resources creation date, returned as an NSDate object if the volume supports creation dates, or nil if creation dates are unsupported.
Available in OS X v10.6 and later.
(Read only property)

36.10.156 DocumentIdentifier as String

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The document identifier returned as a number.

**Notes:**
The document identifier is a value assigned by the kernel to a file or directory. This value is used to identify the document regardless of where it is moved on a volume. The identifier persists across system restarts. It is not transferred when the file is copied, but it survives "safe save" operations. Document identifiers are only unique within a single volume. This property is not supported by all volumes.

Available in OS X v10.10 and iOS 8.0.
(Read only property)

**36.10.157 EffectiveIcon as NSImageMBS**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The resources normal icon, returned as an NSImage object. **Notes:**
Available in OS X v10.6 and later.
(Read only property)

**36.10.158 filePathURL as NSURLMBS**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A file path URL that points to the same resource as the URL object. **Notes:**
If the receiver is a file reference URL, this property contains a copy of the URL converted to a file path URL. If the receivers URL is a file path URL, this property contains the original URL. If the original URL is not a file URL, or if the resource is not reachable or no longer exists, this property contains nil.

Available in OS X v10.6 and later.
(Read only property)

**36.10.159 fileReferenceURL as NSURLMBS**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a new file reference URL that points to the same resource as the receiver. **Notes:**
File reference URLs use a URL path syntax that identifies a file system object by reference, not by path. This form of file URL remains valid when the file system path of the URLs underlying resource changes.

If the original URL is a file path URL, this property contains a copy of the URL converted into a file reference URL. If the original URL is a file reference URL, this property contains the original. If the original URL is
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not a file URL, this property contains nil.

File reference URLs cannot be created to file system objects which do not exist or are not reachable. This property contains nil instead.

In some areas of the file system hierarchy, file reference URLs cannot be generated to the leaf node of the URL path.

A file reference URL’s path should never be persistently stored, because it is not valid across system restarts or remounts of volumes. If you need to store a persistent reference to a file system object, use a bookmark instead. You can create a bookmark by calling bookmarkDataWithOptions.

Available in OS X v10.6 and later.
(Read only property)

36.10.160 FileResourceIdentifier as String

Notes: This identifier can be used to determine equality between file system resources with the isEqual: method. Two resources are equal if they have the same file-system path or if their paths link to the same inode on the same file system.

The value of this identifier is not persistent across system restarts.

Available in OS X v10.7 and later.
(Read only property)

36.10.161 FileResourceType as String

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The resources object type, returned as an NSString object.
Notes: See File Resource Types for possible values.
Available in OS X v10.7 and later.
(Read only property)
36.10. CLASS NSURLMBS

36.10.162 fileSystemRepresentation as String

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A string containing the URLs file system path.
Notes: (Read only property)

36.10.163 fragment as String

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The fragment identifier, conforming to RFC 1808. (read-only)
Notes: This property contains the URLs fragment. If the receiver does not conform to RFC 1808, this property contains nil. For example, in the URL http://www.example.com/index.html# jumpLocation, the fragment identifier is jumpLocation.
(Read only property)

36.10.164 GenerationIdentifier as String

Notes: The generation identifier can be compared using isEqual to determine if the data in a document has been modified. For URLs which refer to the same file inode, the generation identifier changes when the data in the file’s data fork is changed. Changes to extended attributes or other file system metadata do not change the identifier. For URLs which refer to the same directory inode, the generation identifier changes when direct children of that directory are added, removed or renamed. Changes to the data of the direct children of that directory does not change the generation identifier. The identifier persists across system restarts. It is tied to a specific document on a specific volume and is not transferred when the document is copied to another volume. This property is not supported by all volumes.

Available in OS X v10.10 and iOS 8.0.
(Read only property)

36.10.165 Handle as Integer

Notes: Can be used as NSURL* or CFURLRef for declares.
36.10.166 HasHiddenExtension as Boolean

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the resources extension is normally removed from its localized name. **Notes:**

Returned as a Boolean (read-write).

(Read only property)

36.10.167 host as String

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The host, conforming to RFC 1808. (read-only) **Notes:**

This property contains the host. For example, in the URL http://www.example.com/index.html, the host is www.example.com.

If the receiver does not conform to RFC 1808, this property contains nil. The litmus test for conformance to RFC 1808 is as recommended in RFC 1808 specifically, whether the first two characters of resourceSpecifier are slashes (//). (Read only property)

36.10.168 IsDirectory as Boolean

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the resource is a directory. **Notes:**

Available in OS X v10.6 and later.

(Read only property)

36.10.169 IsExcludedFromBackup as Boolean

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the resource is excluded from all backups of app data. **Notes:**
You can use this property to exclude cache and other app support files which are not needed in a backup. Some operations commonly made to user documents cause this property to be reset to false; consequently, do not use this property on user documents.

Available in OS X v10.8 and later.
(Read only property)

### 36.10.170 IsExecutable as Boolean

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key for determining whether the current process (as determined by the EUID) can execute the resource (if it is a file) or search the resource (if it is a directory), returned as a Boolean.

**Notes:**
Available in OS X v10.7 and later.
(Read only property)

### 36.10.171 isFileReferenceURL as Boolean

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns whether the URL is a file reference URL. S

**Notes:** (Read only property)

### 36.10.172 isFileURL as Boolean

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the scheme is file.

**Notes:**
if myURL.isFileURL is true, then myURL.path is suitable for input into NSFileManager or NSPathUtilities.
(Read only property)

### 36.10.173 IsHidden as Boolean

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the resource is normally not displayed to users.

**Notes:**
If the resource is hidden because its name begins with a period, setting this value has no effect.
Available in OS X v10.6 and later.
36.10.174 IsMountTrigger as Boolean

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether the URL is a file system trigger directory, returned as a Boolean.
Notes:
Traversing or opening a file system trigger directory causes an attempt to mount a file system on the directory.
Available in OS X v10.7 and later.
(Read only property)

36.10.175 IsPackage as Boolean

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether the resource is a file package
Notes:
A true value means that the resource is a file package.
Available in OS X v10.6 and later.
(Read only property)

36.10.176 IsReadable as Boolean

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether the current process (as determined by the EUID) can read the resource.
Notes:
Available in OS X v10.7 and later.
(Read only property)

36.10.177 IsRegularFile as Boolean

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Determining whether the resource is a regular file, as opposed to a directory or a symbolic link.
Notes:
Available in OS X v10.6 and later.
(Read only property)
36.10.178  **IsSymbolicLink as Boolean**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the resource is a symbolic link.
**Notes:**
Available in OS X v10.6 and later.
(Read only property)

36.10.179  **IsSystemImmutable as Boolean**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the resource’s system immutable bit is set.
**Notes:**
Available in OS X v10.6 and later.
(Read only property)

36.10.180  **IsUserImmutable as Boolean**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the resource’s user immutable bit is set.
**Notes:**
Available in OS X v10.6 and later.
(Read only property)

36.10.181  **IsVolume as Boolean**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the resource is the root directory of a volume.
**Notes:**
Available in OS X v10.6 and later.
(Read only property)

36.10.182  **IsWritable as Boolean**

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the current process (as determined by the EUID) can write to the resource.
**Notes:**
36.10.183 Item as FolderItem

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: For the file URLs the corresponding folderitem. Notes: (Read only property)

36.10.184 LabelColor as NSColorMBS

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The resources label color, returned as an NSColor object, or nil if the resource has no label color. Notes: Available in OS X v10.6 and later. (Read only property)

36.10.185 LabelNumber as Integer

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The resources label number. Notes: Available in OS X v10.6 and later. (Read only property)

36.10.186 lastPathComponent as String

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The last path component. (read-only) Notes: This property contains the last path component. For example, in the URL file:///path/to/file, the last path component is file. Available in OS X v10.6 and later. (Read only property)
36.10.187 LinkCount as Integer

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of hard links to the resource.
**Notes:**
Available in OS X v10.6 and later.
(Read only property)

36.10.188 LocalizedLabel as String

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The resources localized label text, returned as a string, or empty if the resource has no localized label text.
**Notes:**
Available in OS X v10.6 and later.
(Read only property)

36.10.189 LocalizedName as String

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The resources localized or extension-hidden name, returned as a string.
**Notes:**
Available in OS X v10.6 and later.
(Read only property)

36.10.190 LocalizedTypeDescription as String

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The resources localized type description, returned as a string.
**Notes:**
Available in OS X v10.6 and later.
(Read only property)

36.10.191 Name as String

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The resources name in the file system, returned as a string.
Notes:
Available in OS X v10.6 and later.
(Read only property)

36.10.192  parameterString as String

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The parameter string conforming to RFC 1808. (read-only)
Notes:
This property contains the parameter string. If the receiver does not conform to RFC 1808, this property contains nil. For example, in the URL file:///path/to/file;foo, the parameter string is foo.
This property should not be confused with the query property, which also often contains a string of parameters.
(Read only property)

36.10.193  ParentDirectoryURL as NSURLMBS

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The parent directory of the resource, returned as an NSURLMBS object, or nil if the resource is the root directory of its volume.
Notes:
Available in OS X v10.6 and later.
(Read only property)

36.10.194  password as String

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The password conforming to RFC 1808. (read-only)
Notes:
This property contains the password. If the receiver does not conform to RFC 1808, it contains nil. For example, in the URL http://username:password@www.example.com/index.html, the password is password.
(Read only property)
36.10.195 path as String

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The path, conforming to RFC 1808. (read-only)

**Notes:**
This property contains the path, unescaped with the stringByReplacingPercentEscapesUsingEncoding: method. If the receiver does not conform to RFC 1808, this property contains nil.

If the receiver contains a file or file reference URL (as determined with isFileURL), this property's value is suitable for input into methods of NSFileManager or NSPathUtilities. If the path has a trailing slash, it is stripped.

If the receiver contains a file reference URL, this property's value provides the current path for the referenced resource, which may be nil if the resource no longer exists.

If the parameterString property contains a non-nil value, the path may be incomplete. If the receiver contains an unencoded semicolon, the path property ends at the character before the semicolon. The remainder of the URL is provided in the parameterString property.

To obtain the complete path, if parameterString contains a non-nil value, append a semicolon, followed by the parameter string.

Per RFC 3986, the leading slash after the authority (host name and port) portion is treated as part of the path. For example, in the URL http://www.example.com/index.html, the path is /index.html.

Available in OS X v10.8 and later.
(Read only property)

36.10.196 pathExtension as String

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The path extension. (read-only)

**Notes:**
This property contains the path extension. For example, in the URL file:///path/to/file.txt, the path extension is txt.
Available in OS X v10.6 and later.
(Read only property)
36.10.197  port as Integer

**Function:** The port, conforming to RFC 1808. (read-only)  
**Notes:**
This property contains the port number. For example, in the URL http://www.example.com:8080/index.php, the port number is 8080.

If the receiver does not conform to RFC 1808, this property contains nil. The litmus test for conformance to RFC 1808 is as recommended in RFC 1808 specifically, whether the first two characters of resourceSpecifier are slashes (/).  
(Read only property)

36.10.198  PreferredIOBlockSize as Integer

**Function:** The preferred block size.  
**Notes:**
The optimal block size to use when reading or writing this file’s data, returned as an integer, or zero if the preferred size is not available (read-only).  
Available in OS X v10.7 and later.  
(Read only property)

36.10.199  QuarantineProperties as Dictionary

**Function:** The quarantine properties as defined in LSQuarantine.h.  
**Notes:**
Available on Mac OS X 10.10 and later.  
(Read only property)

36.10.200  query as String

**Function:** The query string, conforming to RFC 1808. (read-only)  
**Notes:**
This property contains the query string. If the receiver does not conform to RFC 1808, this property contains nil. For example, in the URL http://www.example.com/index.php?key1=value1& key2=value2, the query string is key1=value1& key2=value2.
36.10. CLASS NSURLMBS

(Read only property)

36.10.201  relativePath as String

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The relative path, conforming to RFC 1808. (read-only)
Notes:
This property contains the relative path of the receivers URL without resolving against its base URL. If the path has a trailing slash it is stripped. If the receiver is an absolute URL, this property contains the same value as path. If the receiver does not conform to RFC 1808, it contains nil.
(Read only property)

36.10.202  relativeString as String

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A string representation of the relative portion of the URL. (read-only)
Notes:
This property contains a string representation of the relative portion of the URL. If the receiver is an absolute URL this method returns the same value as absoluteString.
(Read only property)

36.10.203  resourceSpecifier as String

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The resource specifier. (read-only)
Notes:
This property contains the resource specifier. For example, in the URL http://www.example.com/index.html?key1=value1#jumplink, the resource specifier is //www.example.com/index.html?key1=value1#jumplink (everything after the colon).
(Read only property)

36.10.204  scheme as String

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The scheme. (read-only)
Notes:
This property contains the scheme. For example, in the URL http://www.example.com/index.html, the
scheme is http.

The full URL is the concatenation of the scheme, a colon (:), and the value of resourceSpecifier.

The term "protocol" is also sometimes used when talking about network-based URL schemes. However, not all URL schemes are networking protocols, data:// URLs, for example.

(Read only property)

36.10.205  standardizedURL as NSURLMBS

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A copy of the URL with any instances of "." or "." removed from its path. (read-only) **Notes:**

This property contains a new NSURL object, initialized using the receivers path with any instances of "." or "." removed.

If the URL conforms to RFC 1808 (the most common form of URL), this property contains the specified URL component; otherwise it contains nil. The litmus test for conformance to RFC 1808 is as recommended in RFC 1808 specifically, whether the first two characters of resourceSpecifier are slashes (/\/).

(Read only property)

36.10.206  TypeIdentifier as String

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The resources uniform type identifier (UTI), returned as a string.

**Notes:**

Available in OS X v10.6 and later.

(Read only property)

36.10.207  user as String

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The user name, conforming to RFC 1808. (read-only) **Notes:**

This property contains the user name. For example, in the URL ftp://username@www.example.com/, the user name is username.
If the receiver's URL does not conform to RFC 1808, this property returns nil. The litmus test for conformance to RFC 1808 is as recommended in RFC 1808 specifically, whether the first two characters of resourceSpecifier are slashes (//).

(Read only property)

### 36.10.208 VolumeIdentifier as String

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The unique identifier of the resources volume, returned as an id.

**Notes:**

The unique identifier of the resources volume, returned as an id (read-only).
This identifier can be used with the isEqual method to determine whether two file system resources are on the same volume.
The value of this identifier is not persistent across system restarts.
Available in OS X v10.7 and later.
(Read only property)

### 36.10.209 VolumeURL as NSURLMBS

MBS MacBase Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The root directory of the resources volume, returned as an NSURL object.

**Notes:**

Available in OS X v10.6 and later.
(Read only property)
36.11 class NSURLProtectionSpaceMBS

36.11.1 class NSURLProtectionSpaceMBS

MBS MacBase Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for the Cocoa URL protection space class. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

36.11.2 Methods

36.11.3 authenticationMethod as string

MBS MacBase Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Get the authentication method to be used for this protection space

36.11.4 Constructor

MBS MacBase Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.

36.11.5 host as string

MBS MacBase Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Get the proxy host if this is a proxy authentication, or the host from the URL. **Notes:** Returns the host for this protection space.

36.11.6 isProxy as boolean

MBS MacBase Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Determine if this authenticating protection space is a proxy server **Notes:** Returns true if a proxy, false otherwise.

36.11.7 port as Integer

MBS MacBase Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Get the proxy port if this is a proxy authentication, or the port from the URL.
36.11. CLASS NSURLPROTECTIONSPACEMBS

Notes: Returns the port for this protection space, or 0 if not set.

36.11.8 protocol as string

MBS MacBase Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Get the protocol of this protection space, if not a proxy.
Notes: Returns the type string, or "" if a proxy.

36.11.9 proxyType as string

MBS MacBase Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Get the type of this protection space, if a proxy.
Notes: Returns the type string, or "" if not a proxy.

36.11.10 realm as string

MBS MacBase Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Get the authentication realm for which the protection space that needs authentication
Notes: This is generally only available for http authentication, and may be "" otherwise.

36.11.11 receivesCredentialSecurely as boolean

MBS MacBase Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Determine if the password for this protection space can be sent securely
Notes: True if a secure authentication method or protocol will be used, false otherwise.

36.11.12 Properties

36.11.13 Handle as Integer

MBS MacBase Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The internal used handle for this class.
Notes: (Read and Write property)
36.12 class NSURLRequestCertificateFilterMBS

36.12.1 class NSURLRequestCertificateFilterMBS

MBS MacCocoa Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class to filter certificate requests. **Notes:** This is the only way to fix the problem with the webview that certificates which are not valid can still be used.

36.12.2 Events

36.12.3 allowsAnyHTTPSCertificateForHost(host as string) as boolean

MBS MacCocoa Plugin, Plugin Version: 7.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** An event being called for each host which may have a https certificate. **Notes:**

This event is called very often, so make it very fast.
Also this event is often called with the same host value as it is called for each request.

Return true to allow this host to run without a valid https certificate.
# 36.13. class NSURLRequestMBS

## 36.13.1 class NSURLRequestMBS

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An NSURLRequest object represents a URL load request in a manner independent of protocol and URL scheme.  
**Example:**

```markdown
msgbox HTMLViewer1.mainFrameMBS.DataSource.Request.url
```

**Notes:**

NSURLRequest encapsulates two basic data elements about a URL load request:

The URL to load.  
The policy to use when consulting the URL content cache made available by the implementation.

## 36.13.2 Methods

### 36.13.3 allHTTPHeaderFields as Dictionary

MBS MacBase Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a dictionary of the HTTP header fields associated with the receiver.

### 36.13.4 cachePolicy as Integer

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the cache policy of the request.  
**Example:**

```markdown
dim r as NSURLRequestMBS
r=new NSURLRequestMBS("http://www.apple.com",0,5.0)
MsgBox str(r.cachePolicy)
```

**Notes:** Value is one of the constants in this class.
36.13.5 Constructor(url as string)

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an NSURLRequest with the given URL.

**Example:**

```vbnet
dim r as NSURLConnection
r=new NSURLConnection("http://www.apple.com")
```

**Notes:**
Default values are used for cache policy (NSURLRequestUseProtocolCachePolicy) and timeout interval (60 seconds).
On success, handle property is not zero.

See also:
- 36.13.6 Constructor(url as string, cachePolicy as Integer, timeoutInterval as Double)

36.13.6 Constructor(url as string, cachePolicy as Integer, timeoutInterval as Double)

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an NSURLRequest with the given URL.

**Example:**

```vbnet
dim r as NSURLConnection
r=new NSURLConnection("http://www.apple.com",NSURLRequestMBS.NSURLRequestReturnCacheDataElseLoad,5.0)
```

**Notes:** On success, handle property is not zero.

See also:
- 36.13.5 Constructor(url as string)

36.13.7 copy as NSURLRequestMBS

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy of the request.

**Example:**

```vbnet
// create PUT request
dim m as new NSMutableURLRequestMBS("http://test.test")
m.setHTTPMethod "PUT"

// make a copy
```
dim r as NSURLRequestMBS = m.copy

// change first request to POST
m.setHTTPMethod "POST"

// and check values
MsgBox m.HTTPMethod+ " " + r.HTTPMethod

36.13.8 HTTPBody as memoryblock

MBS MacBase Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the body of the request.  
**Notes:** This is the data sent in a POST request.

36.13.9 HTTPMethod as string

MBS MacBase Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the HTTP method associated with the receiver.  
**Example:**

```cpp
dim m as new NSMutableURLRequestMBS("http://test.test")
m.setHTTPMethod "PUT"
MsgBox m.HTTPMethod
```

36.13.10 HTTPShouldHandleCookies as boolean

MBS MacBase Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a flag indicating whether this request should use standard cookie handling (sending of cookies with the request and storing any cookies returned in the response.

36.13.11 HTTPShouldUsePipelining as boolean

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Reports whether the receiver is not expected to wait for the previous response before transmitting.  
**Notes:**

Returns true if the receiver should transmit before the previous response is received. False if the receiver should wait for the previous response before transmitting.
Available in Mac OS X 10.7 or newer.

### 36.13.12 `isHTTPRequest` as boolean

MBS MacBase Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this is an HTTP request. **Notes:** If true, the `allHTTPHeaderFields`, `HTTPShouldHandleCookies`, `HTTPMethod` and `HTTPBody` methods do work.

### 36.13.13 `mainDocumentURL` as string

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The main document URL associated with this load. **Example:**

```perl
dim m as new NSURLConnectionMBS("http://test.test/test.jpg")
m.setMainDocumentURL "http://test.test/"
MsgBox m.mainDocumentURL
```

**Notes:**
This URL is used for the cookie "same domain as main document" policy. There may also be other future uses.

**NOTE:** In the current implementation, this value is unused by the webkit framework. A fully functional version of this method will be available in the future.

### 36.13.14 `mutableCopy` as `NSMutableURLRequestMBS`

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an editable copy of the request. **Example:**

```perl
// create PUT request
dim m as new NSURLConnectionMBS("http://test.test")
m.setHTTPMethod "PUT"

// make a copy
dim r as NSMutableURLRequestMBS = m.mutableCopy

// change request to POST
```

r.setHTTPMethod "POST"

// and check values
MsgBox m.HTTPMethod+ " " +r.HTTPMethod

36.13.15 networkServiceType as Integer

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the service type associated with this request. Notes: This will return NSURLNetworkServiceTypeDefault for requests that have not explicitly set a networkServiceType (using the setNetworkServiceType method). See NSURLNetworkServiceType* constants.

Available in Mac OS X 10.7 or newer.

36.13.16 requestWithHandle(Handle as Integer) as NSURLRequestMBS


36.13.17 requestWithURL(url as string) as NSURLRequestMBS

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creates an NSURLRequest with the given URL. Example:

dim r as NSURLRequestMBS

r=r.requestWithURL("http://www.apple.com",0,5.0)

Notes: Default values are used for cache policy (NSURLRequestUseProtocolCachePolicy) and timeout interval (60 seconds). See also:

• 36.13.18 requestWithURL(url as string, cachePolicy as Integer, timeoutInterval as Double) as NSURLRequestMBS
36.13.18 requestWithURL(url as string, cachePolicy as Integer, timeoutInterval as Double) as NSURLRequestMBS

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an NSURLRequest with the given URL.

**Example:**

```vba
dim r as NSURLRequestMBS

r=r.requestWithURL("http://www.apple.com", NSURLRequestMBS.NSURLRequestUseProtocolCachePolicy, 5.0)
```

See also:

- 36.13.17 requestWithURL(url as string) as NSURLRequestMBS

36.13.19 timeoutInterval as Double

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the timeout interval of the request.

**Example:**

```vba
dim r as NSURLRequestMBS

r=new NSURLRequestMBS("http://www.apple.com",0,5.0)

MsgBox str(r.timeoutInterval)
```

**Notes:** The timeout interval specifies the limit on the idle interval allotted to a request in the process of loading. The "idle interval" is defined as the period of time that has passed since the last instance of load activity occurred for a request that is in the process of loading. Hence, when an instance of load activity occurs (e.g. bytes are received from the network for a request), the idle interval for a request is reset to 0. If the idle interval ever becomes greater than or equal to the timeout interval, the request is considered to have timed out. This timeout interval is measured in seconds.

36.13.20 URL as string

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the URL of the request.

**Example:**

```vba
dim r as NSURLRequestMBS
```
r=new NSURLRequestMBS("http://www.apple.com")

MsgBox r.URL

36.13.21 `valueForHTTPHeaderField(field as string) as string`

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the value of the specified HTTP header field.

**Example:**

dim m as new NSMutableURLRequestMBS("http://test.test")
m.setValue("just a test", "test")
MsgBox m.valueForHTTPHeaderField("test")

**Notes:**

- field: The name of the header field whose value is to be returned. In keeping with the HTTP RFC, HTTP header field names are case-insensitive.

- Returns the value associated with the header field field, or "" if there is no corresponding header field.

36.13.22 **Properties**

36.13.23 **Handle as Integer**

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The reference to the internal used NSURLRequest object.

**Notes:** (Read and Write property)

36.13.24 **Constants**

36.13.25 `NSURLNetworkServiceTypeBackground = 3`

MBS MacBase Plugin, Plugin Version: 11.3. **Function:** One of the constants that can be used to specify the service type to associate with this request.

**Notes:**

- Specifies that the request is for background traffic (such as a file download).
- The service type is used to provide the networking layers a hint of the purpose of the request.
36.13.26 NSURLNetworkServiceTypeDefault = 0

MBS MacBase Plugin, Plugin Version: 11.3. **Function:** One of the constants that can be used to specify the service type to associate with this request.

**Notes:**

Is the default value for an NSURLRequest when created. This value should be left unchanged for the vast majority of requests.
The service type is used to provide the networking layers a hint of the purpose of the request.

36.13.27 NSURLNetworkServiceTypeVideo = 2

MBS MacBase Plugin, Plugin Version: 11.3. **Function:** One of the constants that can be used to specify the service type to associate with this request.

**Notes:**

Specifies that the request is for video traffic.
The service type is used to provide the networking layers a hint of the purpose of the request.

36.13.28 NSURLNetworkServiceTypeVoice = 4

MBS MacBase Plugin, Plugin Version: 11.3. **Function:** One of the constants that can be used to specify the service type to associate with this request.

**Notes:**

Specifies that the request is for voice data.
The service type is used to provide the networking layers a hint of the purpose of the request.

36.13.29 NSURLNetworkServiceTypeVoIP = 1

MBS MacBase Plugin, Plugin Version: 11.3. **Function:** One of the constants that can be used to specify the service type to associate with this request.

**Notes:**

Specifies that the request is for voice over IP control traffic.
The service type is used to provide the networking layers a hint of the purpose of the request.
### 36.13.30 `NSURLRequestReloadIgnoringCacheData = 1`

MBS MacBase Plugin, Plugin Version: 7.2. **Function:** A constant that can be used to specify the type of interactions that take place with the caching system when the URL loading system processes a request. **Notes:**

Specifically, these constants cover interactions that have to do with whether already-existing cache data is returned to satisfy a URL load request.

`NSURLRequestReloadIgnoringCacheData` Specifies that the data for the URL load should be loaded from the origin source. No existing cache data, regardless of its freshness or validity, should be used to satisfy a URL load request.

### 36.13.31 `NSURLRequestReloadIgnoringLocalAndRemoteCacheData = 4`

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** A constant that can be used to specify the type of interactions that take place with the caching system when the URL loading system processes a request. **Notes:**

Specifies that not only should the local cache data be ignored, but that proxies and other intermediates should be instructed to disregard their caches so far as the protocol allows.

Available in Mac OS X v10.5 and later.

### 36.13.32 `NSURLRequestReloadRevalidatingCacheData = 5`

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** A constant that can be used to specify the type of interactions that take place with the caching system when the URL loading system processes a request. **Notes:**

Specifies that the existing cache data may be used provided the origin source confirms its validity, otherwise the URL is loaded from the origin source.

Available in Mac OS X v10.5 and later.

### 36.13.33 `NSURLRequestReturnCacheDataDontLoad = 3`

MBS MacBase Plugin, Plugin Version: 7.2. **Function:** A constant that can be used to specify the type of interactions that take place with the caching system when the URL loading system processes a request. **Notes:**
Specifically, these constants cover interactions that have to do with whether already-existing cache data is returned to satisfy a URL load request.

NSURLRequestReturnCacheDataDontLoad Specifies that the existing cache data should be used to satisfy a URL load request, regardless of its age or expiration date. However, if there is no existing data in the cache corresponding to a URL load request, no attempt is made to load the URL from the origin source, and the load is considered to have failed. This constant specifies a behavior that is similar to an "offline" mode.

36.13.34 NSURLRequestReturnCacheDataElseLoad = 2

MBS MacBase Plugin, Plugin Version: 7.2. **Function:** A constant that can be used to specify the type of interactions that take place with the caching system when the URL loading system processes a request. **Notes:**

Specifically, these constants cover interactions that have to do with whether already-existing cache data is returned to satisfy a URL load request.

NSURLRequestReturnCacheDataElseLoad Specifies that the existing cache data should be used to satisfy a URL load request, regardless of its age or expiration date. However, if there is no existing data in the cache corresponding to a URL load request, the URL is loaded from the origin source.

36.13.35 NSURLRequestUseProtocolCachePolicy = 0

MBS MacBase Plugin, Plugin Version: 7.2. **Function:** A constant that can be used to specify the type of interactions that take place with the caching system when the URL loading system processes a request. **Notes:**

Specifically, these constants cover interactions that have to do with whether already-existing cache data is returned to satisfy a URL load request.

NSURLRequestUseProtocolCachePolicy Specifies that the caching logic defined in the protocol implementation, if any, is used for a particular URL load request. This is the default policy for URL load requests.
36.14. class NSURLResponseMBS

36.14.1 class NSURLResponseMBS

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
An NSURLResponse object represents a URL load response in a manner independent of protocol and URL scheme.

**Notes:**
NSURLResponse encapsulates the metadata associated with a URL load. Note that NSURLResponse objects do not contain the actual bytes representing the content of a URL.

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

36.14.2 Methods

36.14.3 allHeaderFields as Dictionary

MBS MacBase Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns all the HTTP header fields of the receiver.

**Notes:** A dictionary containing all the HTTP header fields of the receiver. By examining this dictionary clients can see the "raw" header information returned by the HTTP server.

36.14.4 Constructor(URL as string, MimeType as string, expectedContentLength as Integer, textEncodingName as string)

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Initialize an NSURLResponse with the provided values.

**Notes:**
URL: the URL
MIMETYPE: the MIME content type of the response
expectedContentLength: the expected content length of the associated data
textEncodingName: the name of the text encoding for the associated data, if applicable, else "."

Use -1 for an unknown length.
See also FileExtensionToMimeTypeMBS function.
36.14.5  **copy as NSURLResponseMBS**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
Creates a copy of the object.
**Notes:** Makes a copy of the RB object and the NSURLResponse object behind.

36.14.6  **expectedContentLength as int64**

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
Returns the expected content length of the response.
**Notes:**
Some protocol implementations report a content length as part of delivering load metadata, but not all protocols guarantee the amount of data that will be delivered in actuality.
Hence, this method returns an expected amount. Clients should use this value as an advisory, and should be prepared to deal with either more or less data.

Returns the expected content length of the receiver, or -1 if there is no expectation that can be arrived at regarding expected content length.

36.14.7  **isHTTPRequest as boolean**

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
Whether this response is a http response.
**Notes:** the StatusCode property can only be used on HTTP Responses.

36.14.8  **localizedStringForStatusCode(statusCode as Integer) as string**

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
Convenience method which returns a localized string corresponding to the status code for this response.
**Notes:**
statusCode: the status code to use to produce a localized string.
Returns a localized string corresponding to the given status code or an empty string.

36.14.9  **MIMEType as string**

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
Returns the MIME type of the response.
**Example:**
Notes:
The MIME type is based on the information provided from an origin source. However, that value may be changed or corrected by a protocol implementation if it can be determined that the origin server or source reported the information incorrectly or imprecisely. An attempt to guess the MIME type may be made if the origin source did not report any such information.
See also FileExtensionToMimeTypeMBS function.

36.14.10 statusCode as Integer

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the HTTP status code of the response.
**Notes:**
Returns -1 if no statuscode is available (e.g. in case this is no ta http response)
See also: localizedStringForStatusCode

36.14.11 suggestedFilename as string

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a suggested filename if the resource were saved to disk.
**Notes:**
The method first checks if the server has specified a filename using the content disposition header. If no valid filename is specified using that mechanism, this method checks the last path component of the URL. If no valid filename can be obtained using the last path component, this method uses the URL’s host as the filename.
If the URL’s host can’t be converted to a valid filename, the filename "unknown" is used. In mose cases, this method appends the proper file extension based on the MIME type. This method always returns a valid filename.

36.14.12 textEncodingName as string

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the name of the text encoding of the response.
**Notes:**
This name will be the actual string reported by the origin source during the course of performing a protocol-specific URL load. Clients can inspect this string and convert it to a TextEncoding using the methods and
functions made available in the appropriate framework.

Returns the name of the text encoding of the response, or an empty string if no text encoding was specified.

### 36.14.13 URL as string

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the URL of the response.

**Example:**

```
msgbox HTMLViewer1.mainFrameMBS.DataSource.response.URL
```

### 36.14.14 Properties

#### 36.14.15 Handle as Integer

MBS MacBase Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal used reference to the NSURLResponse object.

**Notes:** (Read and Write property)

### 36.14.16 Constants

#### 36.14.17 NSURLResponseUnknownLength=-1

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** The constant for use with expectedContentLength for an unknown length.
Chapter 37

Cocoa Printing

37.1  class NSPageLayoutMBS

37.1.1  class NSPageLayoutMBS

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** NSPageLayout is a panel that queries the user for information such as paper type and orientation. **Notes:** It is normally displayed in response to the user selecting the Page Setup menu item. You obtain an instance with the pageLayout class method. The pane can then be run as a sheet using beginSheetWithPrintInfo or modally using runModal or runModalWithPrintInfo.

37.1.2  Methods

37.1.3  beginSheetWithPrintInfo(printInfo as NSPrintInfoMBS, win as NSWindowMBS)

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Presents a page setup sheet for the given NSPrintInfo object, document-modal relative to the given window. **Notes:** printInfo: The NSPrintInfo object to use. win: The window to which the sheet is attached.

This method calls the printPanelDidEnd event later passing returnCode which is either NSCancelButton (0) or NSOKButton (1). See also:

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- 37.1.4 beginSheetWithPrintInfo(printInfo as NSPrintInfoMBS, win as window)

37.1.4 beginSheetWithPrintInfo(printInfo as NSPrintInfoMBS, win as window)

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Presents a page setup sheet for the given NSPrintInfo object, document-modal relative to the given window.

**Notes:**

printInfo: The NSPrintInfo object to use.
win: The window to which the sheet is attached.

This method calls the printPanelDidEnd event later passing returnCode which is either NSCancelButton (0) or NSOKButton (1).

See also:

- 37.1.3 beginSheetWithPrintInfo(printInfo as NSPrintInfoMBS, win as NSWindowMBS)

37.1.5 Constructor

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes a new page layout object.

37.1.6 pageLayout as NSPageLayoutMBS

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a newly created NSPageLayout object.

37.1.7 printInfo as NSPrintInfoMBS

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the NSPrintInfo object used when the receiver is run.

**Notes:** The NSPrintInfo object is set using the beginSheetWithPrintInfo or runModalWithPrintInfo method. The shared NSPrintInfo object is used if the receiver is run using runModal.

37.1.8 runModal as Integer

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Displays the receiver and begins the modal loop using the shared NSPrintInfo object.

**Example:**
37.1. CLASS NSPAGELAYOUTMBS

```vbnet
dim p as new NSPageLayoutMBS
MsgBox str(p.runModal)
```

**Notes:**

Returns NSCancelButton (0) if the user clicks the Cancel button; otherwise, NSOKButton (1).
The receiver's values are recorded in the shared NSPrintInfo object.

### 37.1.9 runModalWithPrintInfo(printInfo as NSPrintInfoMBS) as Integer


**Function:** Displays the receiver and begins the modal loop using the given NSPrintInfo object.

**Notes:**

`printInfo`: The NSPrintInfo object to use.

Returns NSCancelButton if the user clicks the Cancel button; otherwise, NSOKButton.
The receiver's values are recorded in `printInfo`.

### 37.1.10 runPageLayout


**Function:** Displays the app's page layout panel, an instance of NSPageLayout.

**Example:**

```vbnet
NSPageLayoutMBS.runPageLayout
```

**Notes:** If the NSPageLayout instance does not exist, this method creates one. This method is typically
invoked when the user chooses Page Setup from the application's File menu.

### 37.1.11 Properties

#### 37.1.12 Handle as Integer


**Function:** The internal object reference.

**Notes:** (Read and Write property)
37.1.13 Events

37.1.14 printPanelDidEnd(returnCode as Integer)

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called when the sheet is dismissed.
37.2. CLASS NSPRINTERMBS

37.2 class NSPrinterMBS

37.2.1 class NSPrinterMBS


Function: An NSPrinter object describes a printer’s capabilities as defined in its PPD file.

Example:

```vba
Dim p As NSPrinterMBS = NSPrinterMBS.defaultPrinter
MsgBox p.name + vbCrLf + p.type
```

Notes: An NSPrinter object can be constructed by specifying either the printer name or the make and model of an available printer. You use a printer object to get information about printers, not to modify printer attributes or control a printing job.

37.2.2 Methods

37.2.3 booleanForKey(key as string, table as string) as boolean


Function: Returns the Boolean value associated with the specified key.

Notes:

- key: The key whose value you want.
- table: The name of a table from the printer’s PPD file.

Returns the Boolean value associated with the key. Returns false if the key is not in the table or the receiver lacks a PPD file.

37.2.4 Constructor(name as string = "")


Function: Initializes a printer object.

Notes:

- On success the handle property is not zero.
- Name can be empty to pick default printer. Else pass name of printer.
37.2.5 copy as NSPrinterMBS

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a clone of the printer object.

37.2.6 defaultPrinter as NSPrinterMBS

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the default printer.

**Example:**

```lisp
dim p as NSPrinterMBS = NSPrinterMBS.defaultPrinter
MsgBox p.name
```

37.2.7 deviceDescription as Dictionary

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a dictionary of keys and values describing the device.

**Notes:** A dictionary of the device properties. See NSGraphics.h for possible keys. The only key guaranteed to exist is NSDeviceIsPrinter.

37.2.8 floatForKey(key as string, table as string) as Double

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the floating-point value associated with the specified key.

**Notes:**

key: The key whose value you want.
table: The name of a table from the printer’s PPD file.

Returns the floating-point value. Returns 0.0 if the key is not in the table or the receiver lacks a PPD file.

37.2.9 intForKey(key as string, table as string) as Integer

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the integer value associated with the specified key.

**Notes:**

key: The key whose value you want.
37.2. CLASS NSPRINTERMBS

**table**: The name of a table from the printer’s PPD file.

Returns the integer value. Returns 0 if the key is not in the table or the receiver lacks a PPD file.

### 37.2.10 isKey(key as string, table as string) as boolean

**Function**: Returns a Boolean value indicating whether the specified key is in the specified table.

**Notes**:
- **key**: The key whose value you want.
- **table**: The name of a table from the printer’s PPD file.
- Returns true if the key is in the table; otherwise, false.

### 37.2.11 languageLevel as Integer

**Function**: Returns the PostScript language level recognized by the printer.

**Example**:
```pascal
dim p as NSPrinterMBS = NSPrinterMBS.defaultPrinter
MsgBox "languageLevel: " + str(p.languageLevel)
```

**Notes**: Returns the PostScript language level. The value is 0 if the receiver is not a PostScript printer.

### 37.2.12 name as string

**Function**: Returns the printer’s name.

**Example**:
```pascal
dim p as NSPrinterMBS = NSPrinterMBS.defaultPrinter
MsgBox p.name
```

### 37.2.13 pageSizeForPaper(paperName as string) as NSSizeMBS

**Function**: Returns the size of the page for the specified paper type.
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Notes:

paperName: Possible values are printer-dependent and are contained in the printer's PPD file. Typical values are "Letter" and "Legal".

Returns the size of the page, measured in points in the user coordinate space. The returned size is zero if the specified paper name is not recognized or its entry in the PPD file cannot be parsed.

37.2.14 printerNames as string()

Example:
MsgBox Join(NSPrinterMBS.printerNames, EndOfLine)

Notes:

An array of strings, each of which contains the name of an available printer.
The user constructs the list of available printers using the Print Center application.

37.2.15 printerTypes as string()

Notes: An array of strings, each of which contains the make and model information for a supported printer.

37.2.16 printerWithName(name as string) as NSPrinterMBS

Notes:
name: The name of the printer.

Returns an initialized NSPrinter object, or nil if the specified printer was not available.
37.2. CLASS NSPRINTERMBS

37.2.17 printerWithType(type as string) as NSPrinterMBS

Function: Creates and returns an NSPrinter object initialized to the first available printer with the specified
make and model information.
Notes:
type: A string describing the make and model information. You can get this string using the printerTypes
method.

Returns an initialized NSPrinter object, or nil if the specified printer was not available.

37.2.18 rectForKey(key as string, table as string) as NSRectMBS

Function: Returns the rectangle associated with the specified key.
Notes:
key: The key whose value you want.
table: The name of a table from the printer’s PPD file.

Returns the rectangle value. Returns NSRectMBS.Zero if the key is not in the table or the receiver lacks a
PPD file.

37.2.19 sizeForKey(key as string, table as string) as NSSizeMBS

Function: Returns the size data type associated with the specified key.
Notes:
key: The key whose value you want.
table: The name of a table from the printer’s PPD file.

Returns the size value. Returns NSZeroSize if the key is not in the table or the receiver lacks a PPD file.

37.2.20 statusForTable(paperName as string) as Integer

Function: Returns the status of the specified table.
Notes:
table: The name of a table from the printer’s PPD file.

Returns one of the return values described in Constants.

### 37.2.21 stringForKey(key as string, table as string) as string

**Function:** Returns the first occurrence of a value associated with specified key.
**Notes:**
- key: The key whose value you want.
- table: The name of a table from the printer’s PPD file.

Returns the value for the specified key, or nil if the key is not in the table. The returned string may also be empty.

If key is a main keyword only, and if that keyword has options in the PPD file, this method returns an empty string. Use stringListForKey to retrieve the values for all occurrences of a main keyword.

### 37.2.22 stringListForKey(key as string, table as string) as string()

**Function:** Returns an array of strings, one for each occurrence, associated with specified key.
**Notes:**
- key: The key whose value you want.
- table: The name of a table from the printer’s PPD file.

Returns an array of strings, each containing a value associated with the specified key. Returns nil if the key is not in the table.

### 37.2.23 type as string

**Function:** Returns a description of the printer’s make and model.
**Example:**

```
dim p as NSPrinterMBS = NSPrinterMBS.defaultPrinter
MsgBox p.type
```
37.2. CLASS NSPRINTERMBS

37.2.24 Properties

37.2.25 Handle as Integer

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference.  
**Notes:** (Read and Write property)

37.2.26 Constants

37.2.27 NSPrinterTableError = 2

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the state constants for printer information table.  
**Notes:** Printer table is not valid.

37.2.28 NSPrinterTableNotFound = 1

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the state constants for printer information table.  
**Notes:** Printer table was not found.

37.2.29 NSPrinterTableOK = 0

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the state constants for printer information table.  
**Notes:** Printer table was found and is valid.
37.3 class NSPrintInfoMBS

37.3.1 class NSPrintInfoMBS


Function: An NSPrintInfo object stores information that’s used to generate printed output.

Example:

```dim p as new PrinterSetup```
```dim n as new NSPrintInfoMBS```
```n.SetupString = p.SetupString```
```dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")```
```n.SetSaveDestination(f)```
```p.SetupString = n.SetupString```
```dim g as Graphics = OpenPrinter(p)```
```g.DrawString "Hello World", 20, 20```

Notes:

- A shared NSPrintInfo object is automatically created for an application and is used by default for all printing jobs for that application.

- The printing information in an NSPrintInfo object is stored in a dictionary. To access the standard attributes in the dictionary directly, this class defines a set of keys and provides the dictionary method. You can also initialize an instance of this class using the Constructor method.

- You can use this dictionary to store custom information associated with a print job. Any non-object values should be stored as NSNumber or NSValue objects in the dictionary. See NSNumber Class Reference for a list of types which should be stored as numbers. For other non-object values, use the NSValue class.

- Beginning with OS X v10.5, to store custom information that belongs in printing presets you should use the dictionary returned by the printSettings method.
37.3. CLASS NSPRINTINFOMBS

37.3.2 Methods

37.3.3 Constructor

Function: Initializes the print info with a new instance.
Example:

```vbs
// get Xojo printer setup
dim p as new PrinterSetup

// now put it into NSPrintInfo to manipulate
dim n as new NSPrintInfoMBS
n.SetupString = p.SetupString

// change destination to file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
n.SetSaveDestination(f)

// move back
p.SetupString = n.SetupString

// and print as usual
dim g as Graphics = OpenPrinter(p)
g.DrawString "Hello World", 20, 20
```

See also:

- 37.3.4 Constructor(attributes as Dictionary) 7217
- 37.3.5 Constructor(Data as Memoryblock) 7218

37.3.4 Constructor(attributes as Dictionary)

Function: Initialize the print info with the parameters in the specified dictionary.
See also:

- 37.3.3 Constructor 7217
- 37.3.5 Constructor(Data as Memoryblock) 7218
37.3.5 Constructor (Data as Memoryblock)

MBS MacCocoa Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initialize the print info with serialized dictionary or NSPrintInfo.

**Example:**

```vbscript
dim p as new PrinterSetup
dim info as new NSPrintInfoMBS(p.SetupString)
MsgBox info.paperName
```

See also:

- 37.3.3 Constructor
- 37.3.4 Constructor (attributes as Dictionary)

37.3.6 copy as NSPrintInfoMBS

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy of the object.

37.3.7 defaultPrinter as NSPrinterMBS

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the default printer.

37.3.8 NSPrintAllPages as string

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for print job attributes that are recognized by NSPrintInfo.

**Notes:** A boolean.

37.3.9 NSPrintBottomMargin as string

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the dictionary keys to access pagination attributes.

**Notes:** Number, containing a floating-point value that specifies the bottom margin, in points.
37.3. **CLASS NSPRINTINFOMBS**

### 37.3.10 NSPrintCancelJob as string

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the possible job disposition values. **Notes:** Cancel print job.

### 37.3.11 NSPrintCopies as string

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for print job attributes that are recognized by NSPrintInfo. **Notes:** a number containing the number of copies of the print job to be printed

### 37.3.12 NSPrintDetailedErrorReporting as string

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for print job attributes that are recognized by NSPrintInfo. **Notes:** A boolean.

### 37.3.13 NSPrintFaxNumber as string

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for print job attributes that are recognized by NSPrintInfo. **Notes:** A string containing a fax number.

### 37.3.14 NSPrintFirstPage as string

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for print job attributes that are recognized by NSPrintInfo. **Notes:** A number containing the one-based index of the first job in the page to print.

### 37.3.15 NSPrintHeaderAndFooter as string

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for print job attributes that are recognized by NSPrintInfo. **Notes:** A boolean for whether the results of NSView pageHeader and NSView pageFooter should be drawn on pages
37.3.16  **NSPrintHorizontallyCentered as string**

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** One of the dictionary keys to access pagination attributes.  **Notes:** Number, containing a Boolean value that is true if pages are centered horizontally.

37.3.17  **NSPrintHorizontalPagination as string**

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** One of the dictionary keys to access pagination attributes.  **Notes:** Number, containing a NSPrintingPaginationMode value. NSAutoPagination, NSFitPagination, or NSClipPagination. See HorizontalPagination for details.

37.3.18  **NSPrintJobDisposition as string**

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** One of the dictionary keys to access pagination attributes.  **Notes:** A string equal to NSPrintSpoolJob, NSPrintPreviewJob, NSPrintSaveJob, or NSPrintCancelJob.

37.3.19  **NSPrintJobSavingFileNameExtensionHidden as string**

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** One of the dictionary keys to access pagination attributes.  **Notes:** A boolean for whether the job file’s name extension should be hidden, for NSPrintSaveJob.  Available on Mac OS X 10.6.

37.3.20  **NSPrintJobSavingURL as string**

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** One of the dictionary keys to access pagination attributes.  **Notes:** An URL containing the location to which the job file will be saved, for NSPrintSaveJob.  Available on Mac OS X 10.6.
37.3. CLASS NSPRINTINFOMBS

37.3.21 NSPrintLastPage as string

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for print job attributes that are recognized by NSPrintInfo.  
**Notes:** An number containing the one-based index of the last job in the page to print.

37.3.22 NSPrintLeftMargin as string

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the dictionary keys to access pagination attributes.  
**Notes:** Number, containing a floating-point value that specifies the left margin, in points.

37.3.23 NSPrintMustCollate as string

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for print job attributes that are recognized by NSPrintInfo.  
**Notes:** A boolean value.

37.3.24 NSPrintOrientation as string

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the dictionary keys to access page format attributes.  
**Notes:** A number containing an NSPrintingOrientation.  
NSPortraitOrientation or NSLandscapeOrientation

37.3.25 NSPrintPagesAcross as string

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for print job attributes that are recognized by NSPrintInfo.  
**Notes:** A number containing the number of logical pages to be placed across a physical sheet.

37.3.26 NSPrintPagesDown as string

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for print job attributes that are recognized by NSPrintInfo.
Notes: A number containing the number of logical pages to be placed down a physical sheet.

**37.3.27 NSPrintPaperName as string**

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the dictionary keys to access page format attributes. **Notes:** A string containing the paper name.

**37.3.28 NSPrintPaperSize as string**

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the dictionary keys to access page format attributes. **Notes:** A size value specifying the height and width of paper in points.

**37.3.29 NSPrintPreviewJob as string**

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the possible job disposition values. **Notes:** Send to Preview application.

**37.3.30 NSPrintPrinter as string**

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for print job attributes that are recognized by NSPrintInfo. **Notes:** Value in dictionary is a NSPrinterMBS.

**37.3.31 NSPrintPrinterName as string**

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for print job attributes that are recognized by NSPrintInfo. **Notes:** A string containing the name of a printer.

**37.3.32 NSPrintReversePageOrder as string**

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for print job attributes that are recognized by NSPrintInfo.
37.3. **CLASS NSPRINTINFO**

**Notes:** Value for this key is a boolean value.

### 37.3.33 NSPrintRightMargin as string

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the dictionary keys to access pagination attributes. **Notes:** Number, containing a floating-point value that specifies the right margin, in points.

### 37.3.34 NSPrintSaveJob as string

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the possible job disposition values. **Notes:** Save to a file.

### 37.3.35 NSPrintScalingFactor as string

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the dictionary keys to access page format attributes. **Notes:** Scale factor percentage before pagination.

### 37.3.36 NSPrintSelectionOnly as string

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for print job attributes that are recognized by NSPrintInfo. **Notes:** A boolean value. Available on Mac OS X 10.6 or newer.

### 37.3.37 NSPrintSpoolJob as string

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the possible job disposition values. **Notes:** Normal print job.
37.3.38  **NSPrintTime as string**

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for print job attributes that are recognized by NSPrintInfo. 
**Notes:** An NSDate containing the time at which printing should begin.

37.3.39  **NSPrintTopMargin as string**

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the dictionary keys to access pagination attributes. 
**Notes:** Number, containing a floating-point value that specifies the top margin, in points.

37.3.40  **NSPrintVerticallyCentered as string**

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the dictionary keys to access pagination attributes. 
**Notes:** Number, containing a Boolean value that is true if pages are centered vertically.

37.3.41  **NSPrintVerticalPagination as string**

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the dictionary keys to access pagination attributes. 
**Notes:**
Number, containing a NSPrintingPaginationMode value.  
NSAutoPagination, NSFitPagination, or NSClipPagination. See VerticalPagination for details.

37.3.42  **SetSaveDestination(file as folderitem)**

MBS MacCocoa Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the print job to go to a PDF file. 
**Example:**
```cocoa
// print to PDF in Xojo Cocoa app

// change print info to go to
dim s as NSPrintInfoMBS = NSPrintInfoMBS.sharedPrintInfo
dim d as MemoryBlock = s.data // save old
s.SetSaveDestination SpecialFolder.Desktop.Child("test.pdf")
```
37.3. CLASS NSPRINTINFOMBS

// now print something
dim g as Graphics = OpenPrinter
if g<>Nil then
g.DrawString "Hello World PDF", 20, 20
end if

s.data = d // restore original settings

// now print something to regular printer
g = OpenPrinter
if g<>Nil then
g.DrawString "Hello World Printer", 20, 20
end if

37.3.43 setSharedPrintInfo(printInfo as NSPrintInfoMBS)

Function: Sets the shared NSPrintInfo object to the specified object.
Notes:
printInfo: The new shared printer information. This value must not be nil.
The shared NSPrintInfo object defines the settings for the NSPageLayout panel and print operations that
will be used if no NSPrintInfo object is specified for those operations.

37.3.44 setUpPrintOperationDefaultValues

Notes: Invoked when the print operation is about to start. Subclasses may override this method to set
default values for any attributes that are not set.

37.3.45 sharedPrintInfo as NSPrintInfoMBS

37.3.46 Properties

37.3.47 bottomMargin as Double

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The bottom margin, measured in points in the user coordinate space. **Notes:** (Read and Write property)

37.3.48 data as Memoryblock

MBS MacCocoa Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Query or set the current settings as data. **Example:**

```vbnet
// print to PDF in Xojo Cocoa app
// change print info to go to
dim s as NSPrintInfoMBS = NSPrintInfoMBS.sharedPrintInfo
dim d as MemoryBlock = s.data // save old
s.SetSaveDestination SpecialFolder.Desktop.Child("test.pdf")

// now print something
dim g as Graphics = OpenPrinter
if g<>Nil then
g.DrawString "Hello World PDF", 20, 20
end if

s.data = d // restore original settings

// now print something to regular printer
g = OpenPrinter
if g<>Nil then
g.DrawString "Hello World Printer", 20, 20
end if
```

**Notes:**
The plugin archives the current settings and you can later assign them back. (Read and Write property)
37.3. **CLASS NSPRINTINFOMBS**

### 37.3.49 dictionary as dictionary

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver’s dictionary that contains the printing attributes. **Notes:**
The key-value pairs contained in the dictionary are described in Constants. Modifying the returned dictionary changes the receiver’s attributes.
This dictionary is key-value observing compliant.
(Read and Write property)

### 37.3.50 Handle as Integer

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference. **Notes:**
(Read and Write property)

### 37.3.51 HorizontallyCentered as boolean

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the image is centered horizontally. **Notes:**
True if you want the image to be centered horizontally; otherwise, false.
(Read and Write property)

### 37.3.52 horizontalPagination as Integer

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The horizontal pagination to the specified mode. **Notes:**
One of the pagination modes described in constants.
(Read and Write property)

### 37.3.53 imageablePageBounds as NSRectMBS

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the imageable area of a sheet of paper specified by the receiver.
Notes:

Return the imageable area, measured in points in the user coordinate space.

This method takes into account the current printer, paper size, and orientation settings, but not scaling factors. Imageable area is the maximum area that can possibly be marked on by the printer hardware, not the area defined by the current margin settings.

The origin (0, 0) of the returned rectangle is in the lower-left corner of the oriented sheet. The imageable bounds may extend past the edges of the sheet when, for example, a printer driver specifies it so that borderless printing can be done reliably.

(Read only property)

### 37.3.54 `jobDisposition` as string


**Function:** The action specified for the job.

**Notes:**

One of the following value:

- **NSPrintSpoolJob** is a normal print job.
- **NSPrintPreviewJob** sends the print job to the Preview application.
- **NSPrintSaveJob** saves the print job to a file.
- **NSPrintCancelJob** aborts the print job.

(Read and Write property)

### 37.3.55 `leftMargin` as Double


**Function:** The left margin to the specified size.

**Notes:**

The size for the left margin, measured in points in the user coordinate space.

(Read and Write property)
37.3. **CLASS NSPRINTINFOMBS**

37.3.56  **localizedPaperName as string**


**Function:** Returns the human-readable name of the currently selected paper size, suitable for presentation in user interfaces.

**Notes:**
This is typically different from the name returned by paperName, which is almost never suitable for presentation to the user.
(Read only property)

37.3.57  **orientation as Integer**


**Function:** The page orientation to the specified value.

**Notes:**
This printing orientation. See constants for possible values.
For consistency, this method may change either the paper name or the paper size.
(Read and Write property)

37.3.58  **paperName as string**


**Function:** The paper name to the specified value.

**Notes:**
The name for the paper size. The string contains a value such as Letter or Legal. Paper names are implementation specific.
For consistency, this method may change either the paper size or the page orientation.
(Read and Write property)

37.3.59  **paperSize as NSSizeMBS**


**Function:** The width and height of the paper to the specified size.

**Notes:**
The new size of the paper, measured in points in the user coordinate space.
For consistency, this method may change either the paper name or the page orientation.
(Read and Write property)
37.3.60  printer as NSPrinterMBS

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The printer object used for subsequent printing jobs.  
**Notes:**  
This method iterates through the receiver’s dictionary. If a feature in the dictionary is not supported by the new printer (as determined by a query to the PPD file), that feature is removed from the dictionary.  
(Read and Write property)

37.3.61  printerName as String

MBS MacCocoa Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The printer name of printer used for subsequent printing jobs.  
**Notes:** (Read only property)

37.3.62  printSettings as dictionary

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a mutable dictionary containing the print settings from Core Printing.  
**Notes:**  
A mutable dictionary containing the printing system's current settings.  
You can use this method to get and set values from the system print settings. The keys in the returned dictionary represent the values returned by the Core Printing function PMPrintSettingsGetValue. They correspond to the settings currently in the print panel and include everything from custom values set by your accessory panels to values provided by the printer driver’s print dialog extension.  
(Read only property)

37.3.63  rightMargin as Double

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The right margin to the specified size.  
**Notes:**  
The size for the right margin, measured in points in the user coordinate space.  
(Read and Write property)
37.3. CLASS NSPRINTINFOMBS

37.3.64 scalingFactor as Double

Function: The print info’s scaling factor.
Notes:
Default is 1.0.
Using smaller value increases paper size.
(Read and Write property)

37.3.65 SelectionOnly as boolean

Function: Whether only the current selection should be printed.
Notes:
True if only the current selection should be printed, otherwise false.
(Read and Write property)

37.3.66 SetupString as Memoryblock

Function: Query or set the current settings as data.
Example:

```
// start with a printer setup
dim p as new PrinterSetup

// clone to NSPrintInfo
dim info as new NSPrintInfoMBS(p.SetupString)

// find out what name second printer has
dim printers() as string = NSPrinterMBS.printerNames
dim printer as NSPrinterMBS = NSPrinterMBS.printerWithName(printers(1))
System.DebugLog printers(1)

// now set a new paper size and this printer
info.paperSize = new NSSizeMBS(72*5, 72*6) // 5 by 6 inch
info.printer = printer

// and clone back
p.SetupString = info.SetupString

// now print to this printer with this paper
dim g as Graphics = OpenPrinter(p)
```
g.DrawString "Hello", 10, 10

Notes:
While data property encodes the dictionary, this property encodes the NSPrintInfo which is same format as PrinterSetup.SetupString in Xojo.
(Read and Write property)

37.3.67 topMargin as Double

Function: The top margin, measured in points in the user coordinate space.
Notes: The size for the top margin, measured in points in the user coordinate space.
(Read and Write property)

37.3.68 VerticallyCentered as boolean

Function: Whether the image is centered vertically.
Notes: True if you want the image to be centered vertically; otherwise, false.
(Read and Write property)

37.3.69 verticalPagination as Integer

Function: The vertical pagination mode.
Notes: One of the pagination modes described in constants.
(Read and Write property)
37.3. CLASS NSPRINTINFOMBS

37.3.70 Constants

37.3.71 NSAutoPagination = 0

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the pagination mode constants. **Notes:** The image is divided into equal-sized rectangles and placed in one column of pages.

37.3.72 NSClipPagination = 2

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the pagination mode constants. **Notes:** The image is clipped to produce one column or row of pages.

37.3.73 NSFitPagination = 1

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the pagination mode constants. **Notes:** The image is scaled to produce one column or one row of pages.

37.3.74 NSLandscapeOrientation = 1

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the page orientation constants. **Notes:** Orientation is portrait (page is taller than it is wide).

37.3.75 NSPortraitOrientation = 0

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the page orientation constants. **Notes:** Orientation is landscape (page is wider than it is tall).
37.4 class NSPrintOperationMBS

37.4.1 class NSPrintOperationMBS


Function: An NSPrintOperation object controls operations that generate Encapsulated PostScript (EPS) code, Portable Document Format (PDF) code, or print jobs.

Notes: An NSPrintOperation object works in conjunction with two other objects: an NSPrintInfo object, which specifies how the code should be generated, and an NSView object, which generates the actual code.

It is important to note that the majority of methods in NSPrintOperation copy the instance of NSPrintInfo passed into them. Future changes to that print info are not reflected in the print info retained by the current NSPrintOperation object. All changes should be made to the print info before passing to the methods of this class.

37.4.2 Methods

37.4.3 Constructor


Function: Initialize the object the current print operation for this thread.

Notes: On success the handle property is not zero.

See also:

- 37.4.4 Constructor(other as NSPrintOperationMBS) 7234
- 37.4.5 Constructor(view as HTMLViewer, printInfo as NSPrintInfoMBS = nil) 7235
- 37.4.6 Constructor(view as NSViewMBS) 7235
- 37.4.7 Constructor(view as NSViewMBS, printInfo as NSPrintInfoMBS) 7236

37.4.4 Constructor(other as NSPrintOperationMBS)


Function: Special constructor to create new NSPrintOperationMBS for existing NSPrintOperationMBS object.

Notes: If you have a NSPrintOperationMBS and you want to use printOperationDidRun event, you can initialize a subclass of NSPrintOperationMBS with your existing object to get the event there.

See also:

- 113.2.65 Constructor 16489
37.4. CLASS NSPRINTOPERATIONMBS

- 37.4.5 Constructor(view as HTMLViewer, printInfo as NSPrintInfoMBS = nil)
- 37.4.6 Constructor(view as NSViewMBS)
- 37.4.7 Constructor(view as NSViewMBS, printInfo as NSPrintInfoMBS)

37.4.5 Constructor(view as HTMLViewer, printInfo as NSPrintInfoMBS = nil)


**Function:** Creates and returns an NSPrintOperation object ready to control the printing of the specified view using custom print settings.

**Example:**

```vbnet
// print a HTMLViewer
dim n as new NSPrintOperationMBS(HTMLViewer1)

n.showsPrintPanel = true
n.showsProgressPanel = true
n.runOperationModalForWindow(self)
```

**Notes:**

View: The view whose contents you want to print.

PrintInfo: The print settings to use when printing the view.

Returns the new NSPrintOperation object. You must run the operation to print the view.

This method raises an NSPrintOperationExistsException if there is already a print operation in progress; otherwise the returned object is made the current print operation for this thread.

See also:

- 113.2.65 Constructor
- 37.4.4 Constructor(other as NSPrintOperationMBS)
- 37.4.6 Constructor(view as NSViewMBS)
- 37.4.7 Constructor(view as NSViewMBS, printInfo as NSPrintInfoMBS)

37.4.6 Constructor(view as NSViewMBS)


**Function:** Creates and returns an NSPrintOperation object ready to control the printing of the specified view.

**Notes:**
CHAPTER 37. COCOA PRINTING

View: The view whose contents you want to print.

Returns the new NSPrintOperation object. You must run the operation to print the view.

The new NSPrintOperation object uses the settings stored in the shared NSPrintInfo object. This method raises an NSPrintOperationExistsException if there is already a print operation in progress; otherwise the returned object is made the current print operation for this thread.

See also:
- 113.2.65 Constructor
- 37.4.4 Constructor(other as NSPrintOperationMBS)
- 37.4.5 Constructor(view as HTMLViewer, printInfo as NSPrintInfoMBS = nil)
- 37.4.7 Constructor(view as NSViewMBS, printInfo as NSPrintInfoMBS)

37.4.7 Constructor(view as NSViewMBS, printInfo as NSPrintInfoMBS)


Function: Creates and returns an NSPrintOperation object ready to control the printing of the specified view using custom print settings.

Notes:
View: The view whose contents you want to print.
PrintInfo: The print settings to use when printing the view.

Returns the new NSPrintOperation object. You must run the operation to print the view.

This method raises an NSPrintOperationExistsException if there is already a print operation in progress; otherwise the returned object is made the current print operation for this thread.

See also:
- 113.2.65 Constructor
- 37.4.4 Constructor(other as NSPrintOperationMBS)
- 37.4.5 Constructor(view as HTMLViewer, printInfo as NSPrintInfoMBS = nil)
- 37.4.6 Constructor(view as NSViewMBS)

37.4.8 context as NSGraphicsMBS


Function: Returns the graphics context object used for generating output.
37.4.9 currentOperation as NSPrintOperationMBS

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the current print operation for this thread. **Notes:** The print operation object, or nil if there is no current operation.

37.4.10 currentPage as Integer

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the current page number being printed.

37.4.11 data as Memoryblock

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the data in PDF/EPS after the operation finished.

37.4.12 Destructor

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The destructor.

37.4.13 EPSOperationWithView(view as NSViewMBS, rect as NSRectMBS) as NSPrintOperationMBS

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns a new NSPrintOperation object ready to control the copying of EPS graphics from the specified view. **Notes:** View: The view containing the data to be turned into EPS data. rect: The portion of the view (specified in points in the view’s coordinate space) to be rendered as EPS data. After the job is run, use the Data function to get the EPS data. Returns the new NSPrintOperation object. You must run the operation to generate the EPS data. The new NSPrintOperation object uses the default NSPrintInfo object. This method raises an NSPrintOperationExistsException if there is already a print operation in progress; otherwise the returned object is made the current print operation for this thread. See also:
37.4.14  EPSOperationWithView(view as NSViewMBS, rect as NSRectMBS, printInfo as NSPrintInfoMBS) as NSPrintOperationMBS


Function: Creates and returns a new NSPrintOperation object ready to control the copying of EPS graphics from the specified view using the specified print settings.

Notes:

View: The view containing the data to be turned into EPS data.
rect: The portion of the view (specified in points in the view’s coordinate space) to be rendered as EPS data.
PrintInfo: The print settings to use when generating the EPS data.

After the job is run, use the Data function to get the EPS data.
Returns the new NSPrintOperation object. You must run the operation to generate the EPS data.

This method raises an NSPrintOperationExistsException if there is already a print operation in progress; otherwise the returned object is made the current print operation for this thread.

See also:

37.4.13 EPSOperationWithView(view as NSViewMBS, rect as NSRectMBS) as NSPrintOperationMBS

37.4.15  EPSOperationWithView(view as NSViewMBS, rect as NSRectMBS, printInfo as NSPrintInfoMBS, file as folderitem) as NSPrintOperationMBS


Function: Creates and returns a new NSPrintOperation object ready to control the copying of EPS graphics from the specified view and write the resulting data to the specified file.

Notes:
37.4. CLASS NSPRINTOPERATIONMBS

View: The view containing the data to be turned into EPS data.
rect: The portion of the view (specified in points in the view’s coordinate space) to be rendered as EPS data.
path: The path to a file. After the job is run, this file contains the EPS data.
PrintInfo: The print settings to use when generating the EPS data.

Returns the new NSPrintOperation object. You must run the operation to generate the EPS data. This method raises an NSPrintOperationExistsException if there is already a print operation in progress; otherwise the returned object is made the current print operation for this thread.

See also:

- 37.4.13 EPSOperationWithView(view as NSViewMBS, rect as NSRectMBS) as NSPrintOperationMBS
- 7237

- 37.4.14 EPSOperationWithView(view as NSViewMBS, rect as NSRectMBS, printInfo as NSPrintInfoMBS) as NSPrintOperationMBS
- 7238

- 37.4.16 EPSOperationWithView(view as NSViewMBS, rect as NSRectMBS, printInfo as NSPrintInfoMBS, path as string) as NSPrintOperationMBS
- 7239

37.4.16 EPSOperationWithView(view as NSViewMBS, rect as NSRectMBS, printInfo as NSPrintInfoMBS, path as string) as NSPrintOperationMBS

Function: Creates and returns a new NSPrintOperation object ready to control the copying of EPS graphics from the specified view and write the resulting data to the specified file.
Notes:

View: The view containing the data to be turned into EPS data.
rect: The portion of the view (specified in points in the view’s coordinate space) to be rendered as EPS data.
path: The path to a file. After the job is run, this file contains the EPS data.
PrintInfo: The print settings to use when generating the EPS data.

Returns the new NSPrintOperation object. You must run the operation to generate the EPS data. This method raises an NSPrintOperationExistsException if there is already a print operation in progress; otherwise the returned object is made the current print operation for this thread.

See also:

- 37.4.13 EPSOperationWithView(view as NSViewMBS, rect as NSRectMBS) as NSPrintOperationMBS
- 7237

- 37.4.14 EPSOperationWithView(view as NSViewMBS, rect as NSRectMBS, printInfo as NSPrintInfoMBS) as NSPrintOperationMBS
- 7238

- 37.4.15 EPSOperationWithView(view as NSViewMBS, rect as NSRectMBS, printInfo as NSPrintInfoMBS, file as folderitem) as NSPrintOperationMBS
- 7238
37.4.17 isCopyingOperation as boolean

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value indicating whether the receiver is an EPS or PDF copy operation. **Notes:** True if the receiver is an EPS or PDF copy operation; otherwise, false.

37.4.18 NSPrintOperationExistsException as string

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of an exception raised when there is already a print operation in process. **Notes:** The methods that raise the NSExceptionMBS exception are the EPSOperation... and printOperation....

37.4.19 pageRange as NSRangeMBS

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the print order for the pages. **Notes:** The print order. For a list of possible values, see Constants.

37.4.20 PDFOperationWithView(view as NSViewMBS, rect as NSRectMBS) as NSPrintOperationMBS

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns a new NSPrintOperation object ready to control the copying of PDF graphics from the specified view. **Notes:**

View: The view containing the data to be turned into PDF data.
rect: The portion of the view (specified in points in the view’s coordinate space) to be rendered as PDF data.

After the job is run, the data function gives you the PDF data.

Returns the new NSPrintOperation object. You must run the operation to generate the PDF data.

The new NSPrintOperation object uses the default NSPrintInfo object. This method raises an NSPrintOperationExistsException if there is already a print operation in progress; otherwise the returned object is made the current print operation for this thread. **See also:**

- 37.4.21 PDFOperationWithView(view as NSViewMBS, rect as NSRectMBS, printInfo as NSPrintIn-
37.4. **CLASS NSPRINTOPERATIONMBS**

- 37.4.22 PDFOperationWithView(view as NSViewMBS, rect as NSRectMBS, printInfo as NSPrintInfoMBS, file as folderitem) as NSPrintOperationMBS

- 37.4.23 PDFOperationWithView(view as NSViewMBS, rect as NSRectMBS, printInfo as NSPrintInfoMBS, path as string) as NSPrintOperationMBS

### 37.4.21 PDFOperationWithView(view as NSViewMBS, rect as NSRectMBS, printInfo as NSPrintInfoMBS) as NSPrintOperationMBS


**Function:** Creates and returns a new NSPrintOperation object ready to control the copying of PDF graphics from the specified view using the specified print settings.

**Notes:**
- **View:** The view containing the data to be turned into PDF data.
- **rect:** The portion of the view (specified in points in the view's coordinate space) to be rendered as PDF data.
- **PrintInfo:** The print settings to use when generating the PDF data.

After the job is run, the data function returns the PDF data.

Returns the new NSPrintOperation object. You must run the operation to generate the PDF data. This method raises an NSPrintOperationExistsException if there is already a print operation in progress; otherwise the returned object is made the current print operation for this thread.

See also:

- 37.4.20 PDFOperationWithView(view as NSViewMBS, rect as NSRectMBS) as NSPrintOperationMBS

- 37.4.22 PDFOperationWithView(view as NSViewMBS, rect as NSRectMBS, printInfo as NSPrintInfoMBS, file as folderitem) as NSPrintOperationMBS

- 37.4.23 PDFOperationWithView(view as NSViewMBS, rect as NSRectMBS, printInfo as NSPrintInfoMBS, path as string) as NSPrintOperationMBS

### 37.4.22 PDFOperationWithView(view as NSViewMBS, rect as NSRectMBS, printInfo as NSPrintInfoMBS, file as folderitem) as NSPrintOperationMBS


**Function:** Creates and returns a new NSPrintOperation object ready to control the copying of PDF graphics from the specified view and write the resulting data to the specified file.

**Notes:**
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View: The view containing the data to be turned into PDF data.
rect: The portion of the view (specified in points in the view's coordinate space) to be rendered as PDF data.
path: The path to a file. After the job is run, this file contains the PDF data.
PrintInfo: The print settings to use when generating the PDF data.

Returns the new NSPrintOperation object. You must run the operation to generate the PDF data.

This method raises an NSPrintOperationExistsException if there is already a print operation in progress; otherwise the returned object is made the current print operation for this thread.

See also:

- 37.4.20 PDFOperationWithView(view as NSViewMBS, rect as NSRectMBS) as NSPrintOperationMBS
- 37.4.21 PDFOperationWithView(view as NSViewMBS, rect as NSRectMBS, printInfo as NSPrintInfoMBS) as NSPrintOperationMBS
- 37.4.23 PDFOperationWithView(view as NSViewMBS, rect as NSRectMBS, printInfo as NSPrintInfoMBS, path as string) as NSPrintOperationMBS

37.4.23 PDFOperationWithView(view as NSViewMBS, rect as NSRectMBS, printInfo as NSPrintInfoMBS, path as string) as NSPrintOperationMBS


Function: Creates and returns a new NSPrintOperation object ready to control the copying of PDF graphics from the specified view and write the resulting data to the specified file.

Notes:

View: The view containing the data to be turned into PDF data.
rect: The portion of the view (specified in points in the view's coordinate space) to be rendered as PDF data.
path: The path to a file. After the job is run, this file contains the PDF data.
PrintInfo: The print settings to use when generating the PDF data.

Returns the new NSPrintOperation object. You must run the operation to generate the PDF data.

This method raises an NSPrintOperationExistsException if there is already a print operation in progress; otherwise the returned object is made the current print operation for this thread.

See also:

- 37.4.20 PDFOperationWithView(view as NSViewMBS, rect as NSRectMBS) as NSPrintOperationMBS
37.4.24 preferredRenderingQuality as Integer


**Function:** Returns the printing quality.

**Notes:**
The preferred printing quality. See constants for the possible values.

If the print sheet is unresponsive or sluggish due to the time is takes to fully render a page, you can check this method in drawRect: and other printing methods such as beginDocument and knowsPageRange: to determine if the print operation prefers speed over fidelity. Most applications render each page fast enough and do not need to call this method. Only use this method after establishing that best quality rendering does indeed make the user interface unresponsive.

37.4.25 printOperationWithView(view as HTMLViewer, printInfo as NSPrintInfoMBS = nil) as NSPrintOperationMBS


**Function:** Creates and returns an NSPrintOperation object ready to control the printing of the specified view using custom print settings.

**Example:**

```// print a HTMLViewer
dim n as NSPrintOperationMBS = NSPrintOperationMBS.printOperationWithView(HTMLViewer1)

n.showsPrintPanel = true
n.showsProgressPanel = true
n.runOperationModalForWindow(self)
```

**Notes:**

View: The view whose contents you want to print.
PrintInfo: The print settings to use when printing the view.

Returns the new NSPrintOperation object. You must run the operation to print the view.

This method raises an NSPrintOperationExistsException if there is already a print operation in progress;
otherwise the returned object is made the current print operation for this thread.
See also:

- 37.4.26 printOperationWithView(view as NSViewMBS) as NSPrintOperationMBS
- 37.4.27 printOperationWithView(view as NSViewMBS, printInfo as NSPrintInfoMBS) as NSPrintOperationMBS

### 37.4.26 printOperationWithView(view as NSViewMBS) as NSPrintOperationMBS

**Function:** Creates and returns an NSPrintOperation object ready to control the printing of the specified view.
**Example:**

```vbscript
// print a text area
dim textView as NSTextViewMBS = TextArea1.NSTextViewMBS
dim o as NSPrintOperationMBS = NSPrintOperationMBS.printOperationWithView(textView)
o.showsPrintPanel = true
o.runOperationModalForWindow(Window1)
o = nil
```

**Notes:**

View: The view whose contents you want to print.

Returns the new NSPrintOperation object. You must run the operation to print the view.

The new NSPrintOperation object uses the settings stored in the shared NSPrintInfo object. This method raises an NSPrintOperationExistsException if there is already a print operation in progress; otherwise the returned object is made the current print operation for this thread.
See also:

- 37.4.25 printOperationWithView(view as HTMLViewer, printInfo as NSPrintInfoMBS = nil) as NSPrintOperationMBS
- 37.4.27 printOperationWithView(view as NSViewMBS, printInfo as NSPrintInfoMBS) as NSPrintOperationMBS
37.4. CLASS NSPRINTOPERATIONMBS

37.4.27 printOperationWithView(view as NSViewMBS, printInfo as NSPrintInfoMBS) as NSPrintOperationMBS

Function: Creates and returns an NSPrintOperation object ready to control the printing of the specified view using custom print settings.

Notes:
View: The view whose contents you want to print.
PrintInfo: The print settings to use when printing the view.

Returns the new NSPrintOperation object. You must run the operation to print the view.

This method raises an NSPrintOperationExistsException if there is already a print operation in progress; otherwise the returned object is made the current print operation for this thread.

See also:
- 37.4.25 printOperationWithView(view as HTMLViewer, printInfo as NSPrintInfoMBS = nil) as NSPrintOperationMBS
- 37.4.26 printOperationWithView(view as NSViewMBS) as NSPrintOperationMBS

37.4.28 runOperation as boolean

Function: Runs the print operation on the current thread.

Notes:
Returns true if the operation was successful; otherwise, false.

The operation runs to completion in the current thread, blocking the application. A separate thread is not spawned, even if canSpawnSeparateThread is true. Use runOperationModalForWindow to use document-modal sheets and to allow a separate thread to perform the operation.

37.4.29 runOperationModalForWindow(win as NSWindowMBS)

Function: Runs the print operation, calling your custom delegate method upon completion.

Notes:
win: The document window to receive a print progress sheet.

Calls the printOperationDidRun event.

See also:
37.4.30 runOperationModalForWindow(win as window)

Function: Runs the print operation, calling your custom delegate method upon completion.
Notes:
win: The document window to receive a print progress sheet.

Calls the printOperationDidRun event.
See also:
• 37.4.29 runOperationModalForWindow(win as NSWindowMBS)

37.4.31 setCurrentOperation(operation as NSPrintOperationMBS)

Function: Sets the current print operation for this thread.
Notes: operation: The print operation to make current. You may specify nil to clear the current print operation.

37.4.32 view as NSViewMBS

Function: Returns the view object that generates the actual data for the print operation.

37.4.33 Properties

37.4.34 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

37.4.35 canSpawnSeparateThread as boolean

Function: Whether the receiver is allowed to spawn a separate printing thread.
37.4. **CLASS NSPRINTOPERATIONMBS**

**Notes:**

canSpawnSeparateThread: True if the receiver is allowed to spawn a separate thread; otherwise, false.

If canSpawnSeparateThread is true, an NSThread object is detached when the print panel is dismissed (or immediately, if the panel is not to be displayed). The new thread performs the print operation, so that control can return to your application. A thread is detached only if the print operation is run using the runOperationModalForWindow:delegate:didRunSelector:contextInfo: method. If canSpawnSeparateThread is false, the operation runs on the current thread, blocking the application until the operation completes.

If you send setCanSpawnSeparateThread: to an NSPrintOperation object with an argument of true, then the delegate specified in a subsequent invocation of runOperationModalForWindow may be messaged in that spawned, non-main thread.

(Read and Write computed property)

**37.4.36  jobTitle as string**

**Function:** The title of the print job.
**Notes:**

A string containing the print job title. If set, this value overrides the title returned by the printing view. Available in OS X v10.5 and later.

(Read and Write computed property)

**37.4.37  pageOrder as Integer**

**Function:** Returns the print order for the pages.
**Notes:**

The print order. For a list of possible values, see Constants.

(Read and Write computed property)

**37.4.38  printInfo as NSPrintInfoMBS**

**Function:** Returns the receiver’s NSPrintInfo object.
**Notes:** (Read and Write computed property)
37.4.39 printPanel as NSPrintPanelMBS

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the NSPrintPanel object used when running the operation. **Notes:** (Read and Write computed property)

37.4.40 showsPrintPanel as boolean

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** boolean value indicating whether a print panel is displayed during the operation. **Notes:**

True if the operation displays a print panel; otherwise, false. Operations that generate EPS or PDF data do no display a print panel (instance of NSPrintPanel), regardless of the value returned by this method. (Read and Write computed property)

37.4.41 showsProgressPanel as boolean

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the receiver displays a progress panel for this operation. **Notes:**

True if you want to display a progress panel; otherwise, false. This method does not affect the display of a print panel; that operation is controlled by the ShowsPrintPanel method. Operations that generate EPS or PDF data do no display a progress panel, regardless of the value in the flag parameter. (Read and Write computed property)

37.4.42 Events

37.4.43 printOperationDidRun(success as boolean)

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event called when the print operation ends.
37.4.44 Constants

37.4.45 NSAscendingPageOrder = 1

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the page order constants. **Notes:** Ascending (back to front) page order.

37.4.46 NSDescendingPageOrder = -1

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the page order constants. **Notes:** Descending (front to back) page order.

37.4.47 NSPrintRenderingQualityBest = 0

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the print quality constants. **Notes:** Renders the printing at the best possible quality, regardless of speed. Available in OS X v10.7 and later.

37.4.48 NSPrintRenderingQualityResponsive = 1

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the print quality constants. **Notes:** Sacrifices the least possible amount of rendering quality for speed to maintain a responsive user interface. This option should be used only after establishing that best quality rendering does indeed make the user interface unresponsive. Available in OS X v10.7 and later.

37.4.49 NSSpecialPageOrder = 0

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the page order constants. **Notes:** The spooler does not rearrange pages; they are printed in the order received by the spooler.
37.4.50  NSUnknownPageOrder = 2

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the page order constants.  **Notes:** No page order specified.
37.5.  CLASS NSPRINTPANELMBS

37.5  class NSPrintPanelMBS

37.5.1  class NSPrintPanelMBS


Function:  An NSPrintPanel object creates the Print panel used to query the user for information about a print job.

Notes:

This panel may let the user select the range of pages to print and the number of copies before executing the Print command.

Print panels can display a simplified interface when printing certain types of data. For example, the panel can display a list of print-setting presets, which lets the user enable print settings in groups as opposed to individually. The JobStyleHint property activates the simplified interface and identifies which presets to display.

37.5.2  Methods

37.5.3  beginSheetWithPrintInfo(printInfo as NSPrintInfoMBS, win as NSWindowMBS)


Function:  Displays a Print panel sheet and runs it modally for the specified window.

Notes:

printInfo:  The printing information for the current job.
win:  The window on which to display the sheet.

When the modal session ends, if printPanelDidEnd event is invoked on the object.
See also:

- 37.5.4 beginSheetWithPrintInfo(printInfo as NSPrintInfoMBS, win as window)

37.5.4  beginSheetWithPrintInfo(printInfo as NSPrintInfoMBS, win as window)


Function:  Displays a Print panel sheet and runs it modally for the specified window.

Notes:

printInfo:  The printing information for the current job.
win:  The window on which to display the sheet.
When the modal session ends, if printPanelDidEnd event is invoked on the object.
See also:

- 37.5.3 beginSheetWithPrintInfo(printInfo as NSPrintInfoMBS, win as NSWindowMBS)

## 37.5.5 Constructor

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes a new print panel.

## 37.5.6 NSPrintAllPresetsJobStyleHint as string

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the values can be passed to the jobStyleHint property to activate the simplified Print panel interface and specify which presets to display.
**Notes:**
Output appropriate to all graphics types. Equivalent to Core Printing's kPMPresetGraphicsTypeAll. Available in OS X v10.6 and later.

## 37.5.7 NSPrintNoPresetsJobStyleHint as string

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the values can be passed to the jobStyleHint property to activate the simplified Print panel interface and specify which presets to display.
**Notes:**
Output excludes all graphics printing. Equivalent to Core Printing’s kPMPresetGraphicsTypeNone. Available in OS X v10.6 and later.

## 37.5.8 NSPrintPhotoJobStyleHint as string

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the values can be passed to the jobStyleHint property to activate the simplified Print panel interface and specify which presets to display.
**Notes:** Output contains photographic data.
37.5. CLASS NSPRINTPANELMBS

37.5.9 printInfo as NSPrintInfoMBS

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the printing information associated with the running Print panel.  
**Notes:** The current printing information. May return nil if the Print panel is not currently running. This method is a convenience method that your delegate can use to get the printing information while the Print Panel is visible. Available in OS X v10.5 and later.

37.5.10 printPanel as NSPrintPanelMBS


37.5.11 runModal as Integer

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Displays the receiver’s Print panel and begins the modal loop.  
**Notes:** NSCancelButton (0) if the user clicks the Cancel button; otherwise NSOKButton (1). This method uses the printing information associated with the current printing operation.

37.5.12 runModalWithPrintInfo(printInfo as NSPrintInfoMBS) as Integer

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Displays the receiver’s Print panel and runs the modal loop using the specified printing information.  
**Notes:** printInfo: The printing information to use while displaying the Print panel. Returns NSCancelButton (0) if the user clicks the Cancel button; otherwise NSOKButton (1).
37.5.13 Properties

37.5.14 Handle as Integer

Notes: (Read and Write property)

37.5.15 defaultButtonTitle as string

Notes: defaultButtonTitle: The string to use for the button title.

You can use this method to change the default button title from "Print" to something more appropriate for your usage of the panel. For example, if you are using the Print panel to save a representation of the document to a file, you might change the title to "Save".
Available in OS X v10.5 and later.
(Read and Write computed property)

37.5.16 helpAnchor as string

Notes: helpAnchor: The anchor name in your Apple Help file. This parameter should contain just the name portion of the HTML anchor element.

For information on how to insert anchors into your Apple Help files, see Authoring User Help in Apple Help Programming Guide.
Available in OS X v10.5 and later.
(Read and Write computed property)

37.5.17 jobStyleHint as string

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The type of content the Print panel is representing.
Notes:
hint: For a list of supported job style hints, see Job Style Hints functions. Pass nil to this method to deactivate the simplified Print panel interface and use the standard interface instead (the equivalent of Core Printing’s kPMPresetGraphicsTypeGeneral).

This method controls the set of items that appear in the Presets menu of the simplified Print panel interface. (Read and Write computed property)

### 37.5.18 options as Integer


**Function:** The configuration options for the Print panel.

**Notes:**

The configuration options, which you specify by adding together the appropriate constant values.
Available in OS X v10.5 and later.
(Read and Write computed property)

### 37.5.19 Events

### 37.5.20 printPanelDidEnd(returnCode as Integer)


**Function:** The event called when the sheet ends.

**Notes:** The value passed as returnCode is either NSCancelButton or NSOKButton. The value NSOKButton is returned even if the user clicked the Preview button.

### 37.5.21 Constants

### 37.5.22 NSPrintPanelShowsCopies = 1

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the print panel option constants.

**Notes:**

The Print panel includes a field for manipulating the number of copies being printed. This field is separate from any accessory views.
Available in OS X v10.5 and later.
37.5.23  **NSPrintPanelShowsOrientation = 8**

MBS MacCocoa Plugin, Plugin Version: 12.4.  **Function:** One of the print panel option constants.
**Notes:**
The Print panel includes a control for manipulating the page orientation. This control is separate from any accessory views.
Available in OS X v10.5 and later.

37.5.24  **NSPrintPanelShowsPageRange = 2**

MBS MacCocoa Plugin, Plugin Version: 12.4.  **Function:** One of the print panel option constants.
**Notes:**
The Print panel includes a set of fields for manipulating the range of pages being printed. These fields are separate from any accessory views.
Available in OS X v10.5 and later.

37.5.25  **NSPrintPanelShowsPageSetupAccessory = 256**

MBS MacCocoa Plugin, Plugin Version: 12.4.  **Function:** One of the print panel option constants.
**Notes:**
The Print panel includes a separate accessory view for manipulating the paper size, orientation, and scaling attributes. Page setup fields that are already configured for display on the main portion of the Print panel appear there and not on this accessory panel.
Available in OS X v10.5 and later.

37.5.26  **NSPrintPanelShowsPaperSize = 4**

MBS MacCocoa Plugin, Plugin Version: 12.4.  **Function:** One of the print panel option constants.
**Notes:**
The Print panel includes a control for manipulating the paper size of the printer. This control is separate from any accessory views.
Available in OS X v10.5 and later.

37.5.27  **NSPrintPanelShowsPreview = 131072**

MBS MacCocoa Plugin, Plugin Version: 12.4.  **Function:** One of the print panel option constants.
**Notes:**
The Print panel displays a built-in preview of the document contents. This option is only appropriate when the Print panel is used in conjunction with an NSPrintOperation object to print a document. Available in OS X v10.5 and later.

37.5.28  **NSPrintPanelShowsPrintSelection = 32**

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the print panel option constants. **Notes:**
The Print panel includes an additional selection option for paper range. This control is separate from any accessory views. Available in OS X v10.6 and later.

37.5.29  **NSPrintPanelShowsScaling = 16**

MBS MacCocoa Plugin, Plugin Version: 12.4. **Function:** One of the print panel option constants. **Notes:**
The Print panel includes a control for scaling the printed output. This control is separate from any accessory views. Available in OS X v10.5 and later.
Chapter 38

Cocoa Tasks

38.1 class NSFileHandleMBS

38.1.1 class NSFileHandleMBS

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** NSFileHandle objects provide an object-oriented wrapper for accessing open files or communications channels.

**Example:**

```vbscript
// file must exist for this sample:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.txt")
dim n as NSFileHandleMBS = NSFileHandleMBS.fileHandleForReadingAtFile(f)

if n<>Nil then
    MsgBox n.readDataToEndOfFile
end if
```

**Notes:**

Please call closeFile on the end if you want to close the file.

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.
CHAPTER 38. COCOA TASKS

38.1.2 Methods

38.1.3 acceptConnectionInBackgroundAndNotify

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Accepts a socket connection (for stream-type sockets only) in the background and creates a file handle for the "near" (client) end of the communications channel.

**Notes:**

This method is asynchronous. In a separate "safe" thread it accepts a connection, creates a file handle for the other end of the connection, and returns that object to the client by posting an NSFileHandleConnectionAcceptedNotification in the run loop of the client. The notification includes as data a userInfo dictionary containing the created NSFileHandle object; access this object using the NSFileHandleNotificationFileHandleItem key.

The receiver must be created by an fileHandleWithFileDescriptor message that takes as an argument a stream-type socket created by the appropriate system routine. The object that will write data to the returned file handle must add itself as an observer of NSFileHandleConnectionAcceptedNotification.

Note that this method does not continue to listen for connection requests after it posts NSFileHandleConnectionAcceptedNotification. If you want to keep getting notified, you need to call acceptConnectionInBackgroundAndNotify again in your observer method.

38.1.4 AvailableBytes as Integer

MBS MacCocoa Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries number of available bytes.

**Notes:**

Returns -1 if query failed.

You can use this value with readDataOfLength function to have it not block.

38.1.5 availableData as MemoryBlock

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the data available through the receiver.

**Notes:** If the receiver is a file, returns the data obtained by reading the file from the file pointer to the end of the file. If the receiver is a communications channel, reads up to a buffer of data and returns it; if no data is available, the method blocks. Returns an empty data object if the end of file is reached. Raises NSFileHandleOperationException if attempts to determine file-handle type fail or if attempts to read from the file or channel fail.
38.1.6 closeFile

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Disallows further access to the represented file or communications channel and signals end of file on communications channels that permit writing.

**Example:**

```vbscript
// file must exist for this sample:

dim f as FolderItem = SpecialFolder.Desktop.Child(“test.txt”)  
dim e as NSErrorMBS  
dim n as NSFileHandleMBS = NSFileHandleMBS.fileHandleForReadingFromFile(f,e)

if e<>Nil then  
    MsgBox e.localizedDescription  
end if

if n<>Nil then  
    MsgBox n.readDataOfSize(5)  
n.closeFile  
end if
```

**Notes:**

The file or communications channel is available for other uses after the file handle represented by the receiver is closed. Further read and write messages sent to a file handle to which closeFile has been sent raises an exception. Sending closeFile to a file handle does not cause its deallocation. The deallocation of an NSFileHandle object deletes its descriptor and closes the represented file or channel unless the NSFileHandle object was created with fileHandleWithFileDescriptor with false as the parameter argument.

38.1.7 Constructor


38.1.8 fileDescriptor as Integer

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the file descriptor associated with the receiver.

**Notes:**

Returns the POSIX file descriptor associated with the receiver.
You can send this message to file handles originating from both file descriptors and file handles and receive a valid file descriptor so long as the file handle is open. If the file handle has been closed by sending it closeFile, this method raises an exception.

### 38.1.9 `fileHandleForReadingAtFile(path as folderitem) as NSFileHandleMBS`  


**Function:** Returns a file handle initialized for reading the file, device, or named socket at the specified path.  

**Example:**  
```mbs
def f as FolderItem = SpecialFolder.Desktop.Child("test.txt")
def n as NSFileHandleMBS = NSFileHandleMBS.fileHandleForReadingAtFile(f)
if n<>Nil then
    MsgBox n.readDataToEndOfFile
end if
```

**Notes:**  
- **path:** The path to the file, device, or named socket to access.

Returns the initialized file handle, or nil if no file exists at path.

The file pointer is set to the beginning of the file. The returned object responds only to NSFileHandle read... messages.

### 38.1.10 `fileHandleForReadingAtPath(path as string) as NSFileHandleMBS`  


**Function:** Returns a file handle initialized for reading the file, device, or named socket at the specified path.  

**Notes:**  
- **path:** The path to the file, device, or named socket to access.

Returns the initialized file handle, or nil if no file exists at path.

The file pointer is set to the beginning of the file. The returned object responds only to NSFileHandle read... messages.
38.1. CLASS NSFILEHANDLEMBS

messages.

38.1.11 fileHandleForReadingFromFile(URL as folderitem, byref error as NSErrorMBS) as NSFileHandleMBS

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a file handle initialized for reading the file, device, or named socket at the specified URL. **Example:**

```vbnet
// file must exist for this sample:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.txt")
dim e as NSErrorMBS
dim n as NSFileHandleMBS = NSFileHandleMBS.fileHandleForReadingFromFile(f, e)

if e<>Nil then
    MsgBox e.localizedDescription
end if

if n<>Nil then
    MsgBox n.readDataOfLength(5)
    MsgBox str(n.offsetInFile) // shows 5
end if
```

**Notes:**

- **url:** The URL of the file, device, or named socket to access.
- **error:** If an error occurs, upon return contains an NSError object that describes the problem.

Returns the initialized file handle, or nil if no file exists at url.

The file pointer is set to the beginning of the file. The returned object responds only to NSFileHandler read...

38.1.12 fileHandleForReadingFromURL(URL as string, byref error as NSErrorMBS) as NSFileHandleMBS

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a file handle initialized for reading the file, device, or named socket at the specified URL. **Notes:**

- **url:** The URL of the file, device, or named socket to access.
error: If an error occurs, upon return contains an NSError object that describes the problem.

Returns the initialized file handle, or nil if no file exists at url.

The file pointer is set to the beginning of the file. The returned object responds only to NSFileHandle read...

38.1.13 fileHandleForUpdatingAtFile(path as folderitem) as NSFileHandleMBS

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a file handle initialized for reading and writing to the file, device, or named socket at the specified path.

Notes:
path: The path to the file, device, or named socket to access.

Returns the initialized file handle, or nil if no file exists at path.

The file pointer is set to the beginning of the file. The returned object responds to both NSFileHandle read...

38.1.14 fileHandleForUpdatingAtPath(path as string) as NSFileHandleMBS

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a file handle initialized for reading and writing to the file, device, or named socket at the specified path.

Notes:
path: The path to the file, device, or named socket to access.

Returns the initialized file handle, or nil if no file exists at path.

The file pointer is set to the beginning of the file. The returned object responds to both NSFileHandle read...

38.1.15  fileHandleForUpdatingFile(URL as folderitem, byref error as NSErrorMBS) as NSFileHandleMBS

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a file handle initialized for reading and writing to the file, device, or named socket at the specified URL.

**Notes:**

url: The URL of the file, device, or named socket to access.
error: If an error occurs, upon return contains an NSError object that describes the problem.

The initialized file handle, or nil if no file exists at url.

The file pointer is set to the beginning of the file. The returned object responds to both NSFileHandleRead... messages and writeData.

38.1.16  fileHandleForUpdatingURL(URL as string, byref error as NSErrorMBS) as NSFileHandleMBS

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a file handle initialized for reading and writing to the file, device, or named socket at the specified URL.

**Notes:**

url: The URL of the file, device, or named socket to access.
error: If an error occurs, upon return contains an NSError object that describes the problem.

The initialized file handle, or nil if no file exists at url.

The file pointer is set to the beginning of the file. The returned object responds to both NSFileHandleRead... messages and writeData.

38.1.17  fileHandleForWritingAtFile(path as folderitem) as NSFileHandleMBS

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a file handle initialized for writing to the file, device, or named socket at the specified path.

**Example:**

// file must exist for this sample:

```cpp
dim f as FolderItem = SpecialFolder.Desktop.Child("test.txt")
dim n as NSFileHandleMBS = NSFileHandleMBS.fileHandleForWritingAtFile(f)
```
if n<>Nil then
n.writeData "Hello World"
n.closeFile
end if

Notes:

path: The path to the file, device, or named socket to access.

Returns the initialized file handle, or nil if no file exists at path.

The file pointer is set to the beginning of the file. The returned object responds only to writeData.

38.1.18 fileHandleForWritingAtPath(path as string) as NSFileHandleMBS


Notes:

path: The path to the file, device, or named socket to access.

Returns the initialized file handle, or nil if no file exists at path.

The file pointer is set to the beginning of the file. The returned object responds only to writeData.

38.1.19 fileHandleForWritingToFile(URL as folderitem, byref error as NSErrorMBS) as NSFileHandleMBS

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a file handle initialized for writing to the file, device, or named socket at the specified URL.

Example:

// file must exist for this sample:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.txt")
dim e as NSErrorMBS
dim n as NSFileHandleMBS = NSFileHandleMBS.fileHandleForWritingToFile(f, e)

if e<>Nil then
MsgBox e.localizedDescription
else
n.writeData "Hello World"
n.closeFile
end if

Notes:
url: The URL of the file, device, or named socket to access.
error: If an error occurs, upon return contains an NSError object that describes the problem.

Returns the initialized file handle, or nil if no file exists at url.

The file pointer is set to the beginning of the file. The returned object responds only to writeData.

38.1.20 fileHandleForWritingToURL(URL as string, byref error as NSErrorMBS) as NSFileHandleMBS

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a file handle initialized for writing to the file, device, or named socket at the specified URL.

Notes:
url: The URL of the file, device, or named socket to access.
error: If an error occurs, upon return contains an NSError object that describes the problem.

Returns the initialized file handle, or nil if no file exists at url.

The file pointer is set to the beginning of the file. The returned object responds only to writeData.

38.1.21 fileHandleWithFileDescriptor(fd as Integer) as NSFileHandleMBS


Notes:
You can create a file handle for a socket by using the result of a socket call as fileDescriptor. The object creating a file handle using this method owns fileDescriptor and is responsible for its disposition. See also:

- 38.1.22 fileHandleWithFileDescriptor(fd as Integer, closeOnDealloc as boolean) as NSFileHandleMBS
38.1.22  `fileHandleWithFileDescriptor(fd as Integer, closeOnDealloc as boolean)` as NSFileHandleMBS

**Notes:**
You can create a file handle for a socket by using the result of a socket call as fileDescriptor. The object creating a file handle using this method owns fileDescriptor and is responsible for its disposition.

closeOnDealloc: True if the file descriptor should be closed when the receiver is deallocated, otherwise false.

See also:
- 38.1.21 `fileHandleWithFileDescriptor(fd as Integer)` as NSFileHandleMBS

38.1.23  `fileHandleWithNullDevice as NSFileHandleMBS`

**Notes:** You can use null-device file handles as ”placeholders” for standard-device file handles or in collection objects to avoid exceptions and other errors resulting from messages being sent to invalid file handles. Read messages sent to a null-device file handle return an end-of-file indicator (an empty NSData object) rather than raise an exception. Write messages are no-ops, whereas fileDescriptor returns an illegal value. Other methods are no-ops or return ”sensible” values.

38.1.24  `fileHandleWithStandardError as NSFileHandleMBS`

**Example:**

```markdown
// for GUI apps this ends on the console: (see console.app)

dim n as NSFileHandleMBS = NSFileHandleMBS.fileHandleWithStandardError

n.writeData "Hello World"
```

**Notes:** Conventionally this is a terminal device to which error messages are sent. There is one standard error file handle per process; it is a shared instance.
38.1. CLASS NSFILEHANDLEMBS

38.1.25 fileHandleWithStandardInput as NSFileHandleMBS

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the file handle associated with the standard input file. **Notes:** Conventionally this is a terminal device on which the user enters a stream of data. There is one standard input file handle per process; it is a shared instance.

38.1.26 fileHandleWithStandardOutput as NSFileHandleMBS

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the file handle associated with the standard output file. **Example:**

```// for GUI apps this ends on the console: (see console.app)
dim n as NSFileHandleMBS = NSFileHandleMBS.fileHandleWithStandardOutput
n.writeData "Hello World"
```

**Notes:** Conventionally this is a terminal device that receives a stream of data from a program. There is one standard output file handle per process; it is a shared instance.

38.1.27 NSFileHandleConnectionAcceptedNotification as string

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This notification is posted when an NSFileHandle object establishes a socket connection between two processes, creates an NSFileHandle object for one end of the connection, and makes this object available to observers by putting it in the userInf0 dictionary. **Notes:**

To cause the posting of this notification, you must send either acceptConnectionInBackgroundAndNotify to an NSFileHandle object representing a server stream-type socket. The notification object is the NSFileHandle object that sent the notification. The userInfo dictionary contains the following information:

- **NSFileHandleNotificationFileHandleItem** The NSFileHandle object representing the "near" end of a socket connection
- **NSFileHandleError** An integer representing the UNIX-type error which occurred
38.1.28  **NSFileHandleDataAvailableNotification as string**

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This notification is posted when the background thread determines that data is currently available for reading in a file or at a communications channel.

**Notes:**

The observers can then issue the appropriate messages to begin reading the data. To cause the posting of this notification, you must send either waitForDataInBackgroundAndNotify or waitForDataInBackgroundAndNotifyForModes: to an appropriate NSFileHandle object.

The notification object is the NSFileHandle object that sent the notification. This notification does not contain a userInfo dictionary.

38.1.29  **NSFileHandleNotificationDataItem as string**

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A key in the userinfo dictionary in a NSFileHandleReadCompletionNotification and NSFileHandleReadToEndTimeOfFileCompletionNotification.

**Notes:** The corresponding value is an memoryblock containing the available data read from a socket connection.

38.1.30  **NSFileHandleNotificationFileHandleItem as string**

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A key in the userinfo dictionary in a NSFileHandleConnectionAcceptedNotification notification.

**Notes:** The corresponding value is the NSFileHandle object handle representing the "near" end of a socket connection.

38.1.31  **NSFileHandleNotificationMonitorModes as string**


38.1.32  **NSFileHandleOperationException as string**

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Constant that defines the name of a file operation exception.

**Notes:** Raised by NSFileHandle if attempts to determine file-handle type fail or if attempts to read from a file or channel fail.
38.1. CLASS NSFILEHANDLEMBS

38.1.33 NSFileHandleReadCompletionNotification as string

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification strings for the file handle class.

**Notes:**

This notification is posted when the background thread reads the data currently available in a file or at a communications channel. It makes the data available to observers by putting it in the userInfo dictionary. To cause the posting of this notification, you must send either readInBackgroundAndNotify to an appropriate NSFileHandle object.

The notification object is the NSFileHandle object that sent the notification. The userInfo dictionary contains the following information:

- **NSFileHandleNotificationDataItem**: An string containing the available data read from a socket connection
- **NSFileHandleError**: An integer representing the UNIX-type error which occurred

38.1.34 NSFileHandleReadToEndOfFileCompletionNotification as string

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This notification is posted when the background thread reads all data in the file or, if a communications channel, until the other process signals the end of data.

**Notes:**

It makes the data available to observers by putting it in the userInfo dictionary. To cause the posting of this notification, you must send either readToEndOfFileInBackgroundAndNotify to an appropriate NSFileHandle object.

The notification object is the NSFileHandle object that sent the notification. The userInfo dictionary contains the following information:

- **NSFileHandleNotificationDataItem**: A string containing the available data read from a socket connection
- **NSFileHandleError**: An integer representing the UNIX-type error which occurred

38.1.35 readDataOfLength(length as Integer) as MemoryBlock

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Reads data up to a specified number of bytes from the receiver.

**Example:**

```// file must exist for this sample:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.txt")```
dim n as NSFileHandleMBS = NSFileHandleMBS.fileHandleForReadingAtFile(f)
if n<>Nil then
    MsgBox n.readDataOfLength(5)
end if

Notes:
length: The number of bytes to read from the receiver.

Returns the data available through the receiver up to a maximum of length bytes.

If the receiver is a file, returns the data obtained by reading from the file pointer to length or to the end of the file, whichever comes first. If the receiver is a communications channel, the method reads data from the channel up to length. Returns an empty memoryblock if the file is positioned at the end of the file or if an end-of-file indicator is returned on a communications channel. Raises NSFileHandleOperationException if attempts to determine file-handle type fail or if attempts to read from the file or channel fail.

38.1.36  readDataToEndOfFile as MemoryBlock

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the data available through the receiver up to the end of file or maximum number of bytes. Example:

// file must exist for this sample:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.txt")
dim n as NSFileHandleMBS = NSFileHandleMBS.fileHandleForReadingAtFile(f)
if n<>Nil then
    MsgBox n.readDataToEndOfFile
end if

Notes:
Returns the data available through the receiver up to UINT_MAX bytes (the maximum value for unsigned integers) or, if a communications channel, until an end-of-file indicator is returned.

This method invokes readDataOfLength as part of its implementation.
38.1. CLASS NSFILEHANDLEMBS

38.1.37  readInBackgroundAndNotify

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Reads from the file or communications channel in the background and posts a notification when finished.

**Notes:**

This method performs an asynchronous availableData operation on a file or communications channel and posts an NSFileHandleReadCompletionNotification to the client process’s run loop.

The length of the data is limited to the buffer size of the underlying operating system. The notification includes a userInfo dictionary that contains the data read; access this object using the NSFileHandleNotificationDataItem key.

Any object interested in receiving this data asynchronously must add itself as an observer of NSFileHandleReadCompletionNotification. In communication via stream-type sockets, the receiver is often the object returned in the userInfo dictionary of NSFileHandleConnectionAcceptedNotification.

Note that this method does not cause a continuous stream of notifications to be sent. If you wish to keep getting notified, you’ll also need to call readInBackgroundAndNotify in your observer method.

38.1.38  readToEndOfFileInBackgroundAndNotify

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Reads to the end of file from the file or communications channel in the background and posts a notification when finished.

**Example:**

```vbs
dim path as string = "\tmp/NSFileHandle async reading.txt"
dim f as FolderItem = GetFolderItem(path, FolderItem.PathTypeShell)
dim n as NSFileHandleMBS = NSFileHandleMBS.fileHandleForReadingAtFile(f)
n.readToEndOfFileInBackgroundAndNotify
```

**Notes:**

This method performs an asynchronous readToEndOfFile operation on a file or communications channel and posts an NSFileHandleReadToEndOfFileCompletionNotification to the client process’s run loop.

The notification includes a userInfo dictionary that contains the data read; access this object using the NSFileHandleNotificationDataItem key.

Any object interested in receiving this data asynchronously must add itself as an observer of NSFileHandleReadToEndOfFileCompletionNotification. In communication via stream-type sockets, the receiver is often the object returned in the userInfo dictionary of NSFileHandleConnectionAcceptedNotification.
38.1.39 seekToEndOfFile as UInt64

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Puts the file pointer at the end of the file referenced by the receiver and returns the new file offset. **Notes:**

Returns the file offset with the file pointer at the end of the file. This is therefore equal to the size of the file.

Raises an exception if the message is sent to an NSFileHandle object representing a pipe or socket or if the file descriptor is closed.

38.1.40 seekToFileOffset(offset as UInt64)

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Moves the file pointer to the specified offset within the file represented by the receiver. **Notes:** Raises an exception if the message is sent to an NSFileHandle object representing a pipe or socket, if the file descriptor is closed, or if any other error occurs in seeking.

38.1.41 synchronizeFile

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Causes all in-memory data and attributes of the file represented by the receiver to be written to permanent storage. **Notes:** This method should be invoked by programs that require the file to always be in a known state. An invocation of this method does not return until memory is flushed.

38.1.42 truncateFileAtOffset(offset as UInt64)

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Truncates or extends the file represented by the receiver to a specified offset within the file and puts the file pointer at that position. **Notes:**

offset: The offset within the file that will mark the new end of the file.

If the file is extended (if offset is beyond the current end of file), the added characters are null bytes.
### 38.1.43 waitForDataInBackgroundAndNotify

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Checks to see if data is available in a background thread.  
**Notes:** When the data becomes available, the thread notifies all observers with NSFileHandleDataAvailableNotification. After the notification has been posted, the thread is terminated.

### 38.1.44 writeData(data as MemoryBlock)

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Synchronously writes data to the file, device, pipe, or socket represented by the receiver.  
**Example:**

```plaintext
// file must exist for this sample:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.txt")
dim n as NSFileHandleMBS = NSFileHandleMBS.fileHandleForWritingAtFile(f)

if n<>Nil then
    n.writeData "Hello World"
    n.closeFile
end if
```

**Notes:** If the receiver is a file, writing takes place at the file pointer’s current position. After it writes the data, the method advances the file pointer by the number of bytes written. Raises an exception if the file descriptor is closed or is not valid, if the receiver represents an unconnected pipe or socket endpoint, if no free space is left on the file system, or if any other writing error occurs.

### 38.1.45 Properties

#### 38.1.46 Handle as Integer

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal handle to the NSFileHandle object.  
**Notes:** (Read and Write property)

#### 38.1.47 offsetInFile as UInt64

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the position of the file pointer within the file represented by the receiver.
Example:

// file must exist for this sample:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.txt")
dim e as NSErrorMBS
dim n as NSFileHandleMBS = NSFileHandleMBS.fileHandleForReadingFromFile(f,e)

if e<>Nil then
    MsgBox e.localizedDescription
end if

if n<>Nil then
    MsgBox n.readDataOfLength(5)
    MsgBox str(n.offsetInFile) // shows 5
end if

Notes:

The position of the file pointer within the file represented by the receiver.

Raises an exception if the message is sent to a file handle representing a pipe or socket or if the file descriptor
is closed.
(Read and Write computed property)
38.2  CLASS NSPIPEMBS

38.2  class NSPipeMBS

38.2.1  class NSPipeMBS

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: NSPipe objects provide an object-oriented interface for accessing pipes. Notes: An NSPipe object represents both ends of a pipe and enables communication through the pipe. A pipe is a one-way communications channel between related processes; one process writes data, while the other process reads that data. The data that passes through the pipe is buffered; the size of the buffer is determined by the underlying operating system. NSPipe is an abstract class, the public interface of a class cluster.

38.2.2  Methods

38.2.3  Constructor


38.2.4  fileHandleForReading as NSFileHandleMBS

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the receiver’s read file handle. Notes: You use the returned file handle to read from the pipe using NSFileHandle’s read methods availableData, readDataToEndOfFile, and readDataOfLength. You don’t need to send closeFile to this object or explicitly release the object after you have finished using it.

38.2.5  fileHandleForWriting as NSFileHandleMBS

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the receiver’s write file handle. Notes: You use the returned file handle to write to the pipe using NSFileHandle’s writeData: method. When you are finished writing data to this object, send it a closeFile message to delete the descriptor. Deleting the descriptor causes the reading process to receive an end-of-data signal (an empty memoryblock).
38.2.6 pipe as NSPipeMBS

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an initialized NSPipe object. **Notes:** Returns nil if the method encounters errors while attempting to create the pipe or the NSFileHandle objects that serve as endpoints of the pipe.

38.2.7 Properties

38.2.8 Handle as Integer

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal reference to the NSPipe object. **Notes:** (Read and Write property)
38.3.1 class NSTaskMBS

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Using the NSTask class, your program can run another program as a subprocess and can monitor that program’s execution.

**Example:**

```vbnet
// Launch "ls -l -a -t" in the current directory, and then read the result into a string:

dim task as new NSTaskMBS

task.launchPath = "/bin/ls"

dim arguments(-1) as string = array("-l", "-a", "-t")

task.setArguments arguments

dim pipe as new NSPipeMBS

task.setStandardOutput pipe

dim file as NSFileHandleMBS = pipe.fileHandleForReading

task.launch

dim data as string = file.readDataToEndOfFile

dim text as string = DefineEncoding(data, encodings.UTF8)

MsgBox text
```

**Notes:**

An NSTask object creates a separate executable entity; it differs from NSThread in that it does not share memory space with the process that creates it.

A task operates within an environment defined by the current values for several items: the current directory, standard input, standard output, standard error, and the values of any environment variables. By default, an NSTask object inherits its environment from the process that launches it. If there are any values that should be different for the task, for example, if the current directory should change, you must change the value before you launch the task. A task’s environment cannot be changed while it is running. An NSTask object can only be run once. Subsequent attempts to run the task raise an error.

This class is comparable to the shell class built into REALbasic.
### 38.3.2 Methods

#### 38.3.3 arguments as string()

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The command arguments that should be used to launch the executable.

#### 38.3.4 Constructor

**Notes:** On success the handle value is not zero.

#### 38.3.5 Destructor

MBS MacCocoa Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The destructor.

#### 38.3.6 interrupt

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sends an interrupt signal to the receiver and all of its subtasks.  
**Notes:**  
If the task terminates as a result, which is the default behavior, an NSTaskDidTerminateNotification gets sent to the default notification center. This method has no effect if the receiver was already launched and has already finished executing. If the receiver has not been launched yet, this method raises an NSInvalidArgumentException.  
It is not always possible to interrupt the receiver because it might be ignoring the interrupt signal. interrupt sends SIGINT.

#### 38.3.7 launch

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Launches the task represented by the receiver.  
**Example:**  
```cpp
// Launch "ls -l -a -t" in the current directory, and then read the result into a string:

dim task as new NSTaskMBS
```
task.launchPath = "/bin/ls"

dim arguments(-1) as string = array("-l", "-a", "-t")

task.setArguments arguments

dim pipe as new NSPipeMBS

task.setStandardOutput pipe

dim file as NSFileHandleMBS = pipe.fileHandleForReading

task.launch

dim data as string = file.readDataToEndOfFile

dim text as string = DefineEncoding(data, encodings.UTF8)

MsgBox text

Notes:

Raises an NSInvalidArgumentException if the launch path has not been set or is invalid or if it fails to create a process.

If you get an exception with posix.spawn and error 13, that’s a permission denied.

38.3.8 launchedTaskWithLaunchPath(path as string, arguments() as string) as NSTaskMBS


Example:

dim args(-1) as string

dim task as NSTaskMBS = NSTaskMBS.launchedTaskWithLaunchPath("/bin/ls", args)

Notes:

path: The path to the executable.
arguments: An array of strings that supplies the arguments to the task.

The task inherits its environment from the process that invokes this method.
The NSTask object converts both path and the strings in arguments to appropriate C-style strings (using
fileSystemRepresentation) before passing them to the task via argv [] . The strings in arguments do not undergo shell expansion, so you do not need to do special quoting, and shell variables, such as $PWD, are not resolved.

### 38.3.9 NSTaskDidTerminateNotification as string

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The notification name used to notify you that the task terminated. **Notes:**

Posted when the task has stopped execution. This notification can be posted either when the task has exited normally or as a result of terminate being sent to the NSTask object. If the NSTask object gets released, however, this notification will not get sent, as the port the message would have been sent on was released as part of the task release. The observer method can use terminationStatus to determine why the task died. See "Ending an NSTask" for an example.

The notification object is the NSTask object that was terminated. This notification does not contain a userInfo dictionary.

### 38.3.10 resume as boolean

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Resumes execution of the receiver task that had previously been suspended with a suspend message. **Notes:** If multiple suspend messages were sent to the receiver, an equal number of resume messages must be sent before the task resumes execution.

### 38.3.11 setArguments(arguments() as string)

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the command arguments that should be used to launch the executable. **Example:**

```swift
// Performing complex pipelines.
// You can create multiple NSTasks and a bunch of NSPipes and hook them together,
// or you can use the "sh -c" trick to feed a shell a command, and let it parse
// it and set up all the IPC. This pipeline cats /usr/share/dict/words, finds
// all the words with 'ham' in them, reverses them, and shows you the last 5.

dim task as new NSTaskMBS

task.LaunchPath="/bin/sh"
```
38.3. CLASS NSTASKMBS

dim arguments(-1) as string

arguments.Append "-c"
arguments.Append "cat /usr/share/dict/words | grep -i ham | rev | tail -5"

task.setArguments arguments

38.3.12 setStandardError(p as NSFileHandleMBS)


Notes:
This method can be used with NSPipeMBS or NSFileHandleMBS object.

If file is an NSPipe object, launching the receiver automatically closes the write end of the pipe in the current task. Don’t create a handle for the pipe and pass that as the argument, or the write end of the pipe won’t be closed automatically.
If this method isn’t used, the standard error is inherited from the process that created the receiver. This method raises an NSInvalidArgumentException if the receiver has already been launched.

See also:
- 38.3.13 setStandardError(p as NSPipeMBS)

38.3.13 setStandardError(p as NSPipeMBS)


Notes:
This method can be used with NSPipeMBS or NSFileHandleMBS object.

If file is an NSPipe object, launching the receiver automatically closes the write end of the pipe in the current task. Don’t create a handle for the pipe and pass that as the argument, or the write end of the pipe won’t be closed automatically.
If this method isn’t used, the standard error is inherited from the process that created the receiver. This method raises an NSInvalidArgumentException if the receiver has already been launched.

See also:
- 38.3.12 setStandardError(p as NSFileHandleMBS)
38.3.14 setStandardInput(p as NSFileHandleMBS)

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the standard input for the receiver.

**Notes:**
file: The standard input for the receiver, which can be either an NSFileHandle or an NSPipe object.

If file is an NSPipe object, launching the receiver automatically closes the read end of the pipe in the current task. Don’t create a handle for the pipe and pass that as the argument, or the read end of the pipe won’t be closed automatically.

If this method isn’t used, the standard input is inherited from the process that created the receiver. This method raises an NSInvalidArgumentException if the receiver has already been launched.

See also:
- 38.3.15 setStandardInput(p as NSPipeMBS)

38.3.15 setStandardInput(p as NSPipeMBS)

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the standard input for the receiver.

**Notes:**
file: The standard input for the receiver, which can be either an NSFileHandle or an NSPipe object.

If file is an NSPipe object, launching the receiver automatically closes the read end of the pipe in the current task. Don’t create a handle for the pipe and pass that as the argument, or the read end of the pipe won’t be closed automatically.

If this method isn’t used, the standard input is inherited from the process that created the receiver. This method raises an NSInvalidArgumentException if the receiver has already been launched.

See also:
- 38.3.14 setStandardInput(p as NSFileHandleMBS)

38.3.16 setStandardOutput(p as NSFileHandleMBS)

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the standard output for the receiver.

**Notes:**
file: The standard output for the receiver, which can be either an NSFileHandle or an NSPipe object.

If file is an NSPipe object, launching the receiver automatically closes the write end of the pipe in the current task. Don’t create a handle for the pipe and pass that as the argument, or the write end of the pipe won’t be closed automatically.
If this method isn’t used, the standard output is inherited from the process that created the receiver. This method raises an NSInvalidArgumentException if the receiver has already been launched.

See also:

- 38.3.17 setStandardOutput(p as NSPipeMBS)

### 38.3.17 setStandardOutput(p as NSPipeMBS)

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the standard output for the receiver.

**Notes:**

file: The standard output for the receiver, which can be either an NSFileHandle or an NSPipe object.

If file is an NSPipe object, launching the receiver automatically closes the write end of the pipe in the current task. Don’t create a handle for the pipe and pass that as the argument, or the write end of the pipe won’t be closed automatically.

If this method isn’t used, the standard output is inherited from the process that created the receiver. This method raises an NSInvalidArgumentException if the receiver has already been launched.

See also:

- 38.3.16 setStandardOutput(p as NSFileHandleMBS)

### 38.3.18 standardError as Variant

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the standard error file used by the receiver.

**Notes:**

The standard error file used by the receiver.

Standard error is where all diagnostic messages are sent. The object returned is either an NSFileHandle or an NSPipe instance, depending on what type of object was passed to setStandardError.

### 38.3.19 standardInput as Variant

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the standard input file used by the receiver.

**Notes:**

The standard input file used by the receiver.
Standard input is where the receiver takes its input from unless otherwise specified. The object returned is either an NSFileHandle or an NSPipe instance, depending on what type of object was passed to the setStandardInput method.

### 38.3.20 standardOutput as Variant

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the standard output file used by the receiver. **Notes:** Standard output is where the receiver displays its output. The object returned is either an NSFileHandle or an NSPipe instance, depending on what type of object was passed to the setStandardOutput method.

### 38.3.21 suspend as boolean

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Suspends execution of the receiver task. **Notes:** Returns true if the receiver was successfully suspended, false otherwise.

Multiple suspend messages can be sent, but they must be balanced with an equal number of resume messages before the task resumes execution.

### 38.3.22 terminate

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sends a terminate signal to the receiver and all of its subtasks. **Notes:** If the task terminates as a result, which is the default behavior, an NSTaskDidTerminateNotification gets sent to the default notification center. This method has no effect if the receiver was already launched and has already finished executing. If the receiver has not been launched yet, this method raises an NSInvalidArgumentException.

It is not always possible to terminate the receiver because it might be ignoring the terminate signal. terminate sends SIGTERM.

### 38.3.23 waitUntilExit

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Block until the receiver is finished.
Example:

```vbnet
dim args(-1) as string
dim task as NSTaskMBS = NSTaskMBS.launchedTaskWithLaunchPath("/bin/ls", args)

  task.waitUntilExit

  MsgBox "done"
```

**Notes:** This method first checks to see if the receiver is still running using isRunning. Then it polls the current run loop using NSDefaultRunLoopMode until the task completes.

### 38.3.24 Properties

#### 38.3.25 currentDirectoryPath as string

**Notes:** (Read and Write property)

#### 38.3.26 Handle as Integer

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal reference to the NSTask object.  
**Notes:** (Read and Write property)

#### 38.3.27 isRunning as boolean

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns whether the receiver is still running.  
**Notes:** (Read only property)

#### 38.3.28 launchPath as string

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The path of the receiver’s executable.  
**Notes:** (Read and Write property)
CHAPTER 38. COCOA TASKS

38.3.29 processIdentifier as Integer

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver’s process identifier.

**Example:**

```vbscript
dim args(-1) as string
dim task as NSTaskMBS = NSTaskMBS.launchedTaskWithLaunchPath(”/bin/ls”, args)
MsgBox ”PID: ”+str(task.processIdentifier)
```

**Notes:** (Read only property)

38.3.30 qualityOfService as Integer

MBS MacCocoa Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The quality of service setting for this application.

**Notes:**

read-only after the task is launched.
(Read and Write property)

38.3.31 terminationReason as Integer

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the reason the task was terminated.

**Example:**

```vbscript
// Launch ”ls -l -a -t” in the current directory, and then read the result into a string:

dim args(-1) as string
dim task as NSTaskMBS = NSTaskMBS.launchedTaskWithLaunchPath(”/bin/ls”, args)
if not task.isRunning then
dim status as Integer = Task.terminationReason
MsgBox ”Task termination reason is: ”+str(status)
end if
```

**Notes:**

Available in Mac OS X v10.6 and later.
see this constants:

<table>
<thead>
<tr>
<th>NSTaskTerminationReasonExit</th>
<th>= 1</th>
<th>The task exited normally.</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSTaskTerminationReasonUncaughtSignal</td>
<td>= 2</td>
<td>The task exited due to an uncaught signal.</td>
</tr>
</tbody>
</table>

(Read only property)

### 38.3.32 terminationStatus as Integer

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the exit status returned by the receiver’s executable.

**Example:**

```vbscript
// Launch "ls -l -a -t" in the current directory, and then read the result into a string:

dim args(-1) as string

dim task as NSTaskMBS = NSTaskMBS.launchedTaskWithLaunchPath("/bin/ls", args)

if not task.isRunning then

dim status as Integer = Task.terminationStatus

MsgBox "Task return value is: " +str(status)
end if
```

**Notes:**

The exit status returned by the receiver’s executable.

Each task defines and documents how its return value should be interpreted. For example, many commands return 0 if they complete successfully or an error code if they don’t. You’ll need to look at the documentation for that task to learn what values it returns under what circumstances.

This method raises an NSInvalidArgumentException if the receiver is still running. Verify that the receiver is not running before you use it.

(Read only property)

### 38.3.33 environment as dictionary

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A dictionary of variables for the environment from which the receiver was launched.

**Notes:**
The dictionary keys are the environment variable names.
(Read and Write computed property)

### 38.3.34 Events

#### 38.3.35 Terminated

MBS MacCocoa Plugin, Plugin Version: 15.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Event called when task terminated.

### 38.3.36 Constants

#### 38.3.37 NSQualityOfServiceBackground = & h09

MBS MacCocoa Plugin, Plugin Version: 15.3. **Function:** One of the quality of service constants. **Notes:** Background QoS is used for work that is not user initiated or visible. In general, a user is unaware that this work is even happening and it will run in the most efficient manner while giving the most deference to higher QoS work. For example, pre-fetching content, search indexing, backups, and syncing of data with external systems.

#### 38.3.38 NSQualityOfServiceDefault = -1

MBS MacCocoa Plugin, Plugin Version: 15.3. **Function:** One of the quality of service constants. **Notes:** Default QoS indicates the absence of QoS information. Whenever possible QoS information will be inferred from other sources. If such inference is not possible, a QoS between UserInitiated and Utility will be used.

#### 38.3.39 NSQualityOfServiceUserInitiated = & h19

MBS MacCocoa Plugin, Plugin Version: 15.3. **Function:** One of the quality of service constants. **Notes:** UserInitiated QoS is used for performing work that has been explicitly requested by the user and for which results must be immediately presented in order to allow for further user interaction. For example, loading an email after a user has selected it in a message list.
38.3.40  **NSQualityOfServiceUserInteractive = & h21**

MBS MacCocoa Plugin, Plugin Version: 15.3. **Function:** One of the quality of service constants.  
**Notes:** UserInteractive QoS is used for work directly involved in providing an interactive UI such as processing events or drawing to the screen.

38.3.41  **NSQualityOfServiceUtility = & h11**

MBS MacCocoa Plugin, Plugin Version: 15.3. **Function:** One of the quality of service constants.  
**Notes:** Utility QoS is used for performing work which the user is unlikely to be immediately waiting for the results. This work may have been requested by the user or initiated automatically, does not prevent the user from further interaction, often operates at user-visible timescales and may have its progress indicated to the user by a non-modal progress indicator. This work will run in an energy-efficient manner, in deference to higher QoS work when resources are constrained. For example, periodic content updates or bulk file operations such as media import.

38.3.42  **NSTaskTerminationReasonExit = 1**

MBS MacCocoa Plugin, Plugin Version: 9.7. **Function:** One of the constants used to specify the values that are returned by terminationReason.  
**Notes:** The task exited normally.

38.3.43  **NSTaskTerminationReasonUncaughtSignal = 2**

MBS MacCocoa Plugin, Plugin Version: 9.7. **Function:** One of the constants used to specify the values that are returned by terminationReason.  
**Notes:** The task exited due to an uncaught signal.
38.4 class NSUserAppleScriptTaskMBS

38.4.1 class NSUserAppleScriptTaskMBS

Function: The class to run an AppleScript script.
Example:

```dim file as FolderItem = SpecialFolder.Desktop.Child("Hello.scpt")
dim e as NSErrorMBS
dim n as new NSUserAppleScriptTaskMBS(file, e)
if e <> nil then
    MsgBox e.localizedDescription
end if
n.execute
exception u as UnsupportedOperationException
if e <> nil then
    MsgBox e.localizedDescription
end if```

Notes:
These classes are intended to execute user-supplied scripts, and will execute them outside of the application’s sandbox, if any. (They are *not* intended to execute scripts built into an application; for that, use NSTaskMBS, NSAppleScript classes, or AMWorkflow classes.) If the application is sandboxed, then the script must be in the "application scripts" folder, which you can get using ScriptFolder function. A sandboxed application may read from, but not write to, this folder.

If you simply need to execute scripts without regard to input or output, use NSUserScriptTaskMBS, which can execute any of the specific types. If you need specific control over the input to or output from the script, use one of the sub-classes, which have more detailed "execute" methods.
Subclass of the NSUserScriptTaskMBS class.
38.4.2 Methods

38.4.3 Constructor(file as folderitem, byref error as NSErrorMBS)

Function: Initialize given a folderitem for a script file.
Notes: The returned object will be of one of the specific sub-classes, or raises exception if the file does not appear to match any of the known types. (If used from a sub-class, the result will be of that class, or raises exception.)
See also:

- 38.4.4 Constructor(URL as String, byref error as NSErrorMBS)

38.4.4 Constructor(URL as String, byref error as NSErrorMBS)

Function: Initialize given a URL for a script file.
Notes: The returned object will be of one of the specific sub-classes, or raises exception if the file does not appear to match any of the known types. (If used from a sub-class, the result will be of that class, or raises exception.)
See also:

- 38.4.3 Constructor(file as folderitem, byref error as NSErrorMBS)

38.4.5 executeWithAppleEvent(eventDesc as NSAppleEventDescriptorMBS, tag as Variant = nil)

Function: Execute the AppleScript script by sending it the given Apple event.
Notes:
Pass nil for eventDesc to execute the script’s default "run" handler.
Calls later ExecuteFinished event.
The tag value is passed to the executeFinished event.
38.5 class NSUserAutomatorTaskMBS

38.5.1 class NSUserAutomatorTaskMBS

Function: The class to run an Automator workflow.
Notes:
These classes are intended to execute user-supplied scripts, and will execute them outside of the application’s sandbox, if any. (They are *not* intended to execute scripts built into an application; for that, use NSTaskMBS, NSAppleScript classes, or AMWorkflow classes.) If the application is sandboxed, then the script must be in the ”application scripts” folder, which you can get using ScriptFolder function. A sandboxed application may read from, but not write to, this folder.

If you simply need to execute scripts without regard to input or output, use NSUserScriptTaskMBS, which can execute any of the specific types. If you need specific control over the input to or output from the script, use one of the sub-classes, which have more detailed ”execute” methods.

Subclass of the NSUserScriptTaskMBS class.

38.5.2 Methods

38.5.3 Constructor(file as folderitem, byref error as NSErrorMBS)

Function: Initialize given a URL for a script file.
Notes: The returned object will be, or raises exception if the file does not appear to match any of the known types.
See also:

- 38.5.4 Constructor(URL as String, byref error as NSErrorMBS)

38.5.4 Constructor(URL as String, byref error as NSErrorMBS)

Function: Initialize given a URL for a script file.
Notes: The returned object will be, or raises exception if the file does not appear to match any of the known types.
See also:

- 38.5.3 Constructor(file as folderitem, byref error as NSErrorMBS)
38.5.5 executeWithInput(input as Variant, tag as Variant = nil)

Function: Execute the Automator workflow, passing it the given input.
Notes:
Calls later ExecuteFinished event.
The tag value is passed to the executeFinished event.

38.5.6 Properties

38.5.7 Variables as Dictionary

Function: Workflow variables.
Notes:
If you want to change, query the current dictionary, change it and assign it back to the variables property.
(Read and Write property)
38.6 class NSUserScriptTaskMBS

38.6.1 class NSUserScriptTaskMBS

MBS Mac Extras Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class to run a script. **Notes:** These classes are intended to execute user-supplied scripts, and will execute them outside of the application’s sandbox, if any. (They are *not* intended to execute scripts built into an application; for that, use NSTaskMBS, NSAppleScript classes, or AMWorkflow classes.) If the application is sandboxed, then the script must be in the "application scripts" folder, which you can get using ScriptFolder function. A sandboxed application may read from, but not write to, this folder.

If you simply need to execute scripts without regard to input or output, use NSUserScriptTaskMBS, which can execute any of the specific types. If you need specific control over the input to or output from the script, use one of the sub-classes, which have more detailed "execute" methods.

38.6.2 Methods

38.6.3 Available as Boolean

MBS Mac Extras Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the class is available. **Notes:** Should return true on OS X 10.8 and newer.

38.6.4 Constructor(file as folderitem, byref error as NSErrorMBS)

MBS Mac Extras Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initialize given a URL for a script file. **Notes:** The returned object will be, or raises exception if the file does not appear to match any of the known types. See also:

- 38.6.5 Constructor(URL as String, byref error as NSErrorMBS)

38.6.5 Constructor(URL as String, byref error as NSErrorMBS)

MBS Mac Extras Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initialize given a URL for a script file. **Notes:** The returned object will be, or raises exception if the file does not appear to match any of the known types.
38.6. **CLASS NSUSERSCRIPTTASKMBS**

types.
See also:

- 38.6.4 Constructor(file as folderitem, byref error as NSErrorMBS)

### 38.6.6 execute(tag as Variant = nil)

MBS MacExtras Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Execute the script with no input and ignoring any result.

**Example:**

```vba
dim file as FolderItem = SpecialFolder.Desktop.Child("Hello.scpt")
dim e as NSErrorMBS
dim n as new NSUserScriptTaskMBS(file, e)

n.execute
```

**Notes:**
This and the other "execute" methods may be called at most once on any given instance. If the script completed normally, the ExecuteFinished event’s "error" parameter will be nil.

Calls later ExecuteFinished event.
The tag value is passed to the executeFinished event.

### 38.6.7 ScriptFolder as FolderItem

MBS MacExtras Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The script folder for the application.

### 38.6.8 Properties

### 38.6.9 Handle as Integer


**Notes:** (Read and Write property)
38.6.10 scriptURL as String

MBS MacExtras Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The script URL used for initialization. **Notes:** (Read only property)

38.6.11 Events

38.6.12 executeFinished(error as NSErrorMBS, tag as Variant, result as Variant, input as Variant)

MBS MacExtras Plugin, Plugin Version: 16.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event called when execution is finished. **Notes:**

For AppleEvent call the result and input are NSAppleEventDescriptorMBS objects.
For Automator scripts the result and input are set to the values.
For all other scripts, they are nil.

While a script executes the plugin keeps a reference to the tag and itself, so the script object is not released too early.
38.7  class NSUserUnixTaskMBS

38.7.1  class NSUserUnixTaskMBS

Function: The class to run a Unix executable file, typically a shell script.
Notes:
These classes are intended to execute user-supplied scripts, and will execute them outside of the application’s sandbox, if any. (They are *not* intended to execute scripts built into an application: for that, use NSTaskMBS, NSAppleScript classes, or AMWorkflow classes.) If the application is sandboxed, then the script must be in the ”application scripts” folder, which you can get using ScriptFolder function. A sandboxed application may read from, but not write to, this folder.

If you simply need to execute scripts without regard to input or output, use NSUserScriptTaskMBS, which can execute any of the specific types. If you need specific control over the input to or output from the script, use one of the sub-classes, which have more detailed ”execute” methods.
Subclass of the NSUserScriptTaskMBS class.

38.7.2  Methods

38.7.3  Constructor(file as folderitem, byref error as NSErrorMBS)

Function: Initialize given a URL for a script file.
Notes: The returned object will be, or raises exception if the file does not appear to match any of the known types.
See also:
- 38.7.4 Constructor(URL as String, byref error as NSErrorMBS)

38.7.4  Constructor(URL as String, byref error as NSErrorMBS)

Function: Initialize given a URL for a script file.
Notes: The returned object will be, or raises exception if the file does not appear to match any of the known types.
See also:
- 38.7.3 Constructor(file as folderitem, byref error as NSErrorMBS)
38.7.5  `executeWithArguments(arguments() as string, tag as Variant = nil)`

**Function:** Execute the file with the given arguments.
**Notes:**
The arguments do not undergo shell expansion, so you do not need to do special quoting, and shell variables are not resolved.
Calls later `executeFinished` event.
The tag value is passed to the `executeFinished` event.

38.7.6  Properties

38.7.7  `standardError as NSFileHandleMBS`

**Function:** Standard I/O stream for error.
**Notes:**
Setting this to nil (the default) will bind it to `/dev/null`.
(Read and Write property)

38.7.8  `standardInput as NSFileHandleMBS`

**Function:** Standard I/O stream for input.
**Notes:**
Setting this to nil (the default) will bind it to `/dev/null`.
(Read and Write property)

38.7.9  `standardOutput as NSFileHandleMBS`

**Function:** Standard I/O stream for output.
**Notes:**
Setting this to nil (the default) will bind it to `/dev/null`.
(Read and Write property)
Chapter 39

Cocoa Threading

39.1 class NSOperationMBS

39.1.1 class NSOperationMBS


Function: The class to do operations in Cocoa.

Notes:

Requires Mac OS X 10.5.

The NSOperation class manages the execution of a single encapsulated task. Operations are typically scheduled by adding them to an operation queue object (an instance of the NSOperationQueue class), although you can also execute them directly by explicitly invoking their start method.

Operation objects are single-shot objects, that is, they perform their task once. You cannot reuse the same NSOperation object to perform a task (or a slight variant of the task) multiple times in succession. Attempting to execute an operation that has already finished results in an exception.

When manually executing operations, you are responsible for making sure the object is ready to execute. Starting an operation that is not in the ready state generally results in an exception being thrown. If you use an operation queue to manage the execution, the NSOperationQueue object ensures that the operation is executed only when it is ready.
39.1.2 Methods

39.1.3 addDependency(op as NSOperationMBS)

Function: Makes the receiver dependent on the completion of the specified operation.
Notes:

op: The operation on which the operation is dependent. The same dependency should not be added more than once to the operation, and the results of doing so are undefined.

The dependent is not considered ready to execute until all of its dependent operations finish executing. If the receiver is already executing its task, adding dependencies is unlikely to have any practical effect. This method may change the isReady and dependencies properties of the dependent.

It is a programmer error to create any circular dependencies among a set of operations. Doing so can cause a deadlock among the operations and may freeze your program.

Please setup dependencies before you add the operation to a queue. Once the operation is in the queue it may be executed directly.

39.1.4 cancel

Function: Advises the operation object that it should stop executing its task.
Notes:

This method does not force your operation code to stop. The code for your operation must invoke the isCancelled method periodically to determine whether the operation should be stopped. Once cancelled, an operation cannot be restarted.

If the operation is already finished executing, this method has no effect. Canceling an operation that is currently in an operation queue, but not yet executing, causes it to be removed from the queue (although not necessarily right away).

39.1.5 Constructor

Function: The constructor.
See also:

- 39.1.6 Constructor(Handle as Integer)
39.1. CLASS NSOPERATIONMBS

39.1.6 Constructor(Handle as Integer)

Function: The constructor.
Notes: You can pass in handle to NSOperation object.
See also:
• 39.1.5 Constructor

39.1.7 dependencies as NSOperationMBS()

Function: the operations on which the operation is dependent.
Notes: The receiver is not considered ready to execute until all of its dependent operations finish executing.

39.1.8 dependenciesCount as Integer

Function: The number of the dependencies.

39.1.9 dependency(index as Integer) as NSOperationMBS

Function: Returns the dependency at the given index.
Notes: The receiver is not considered ready to execute until all of its dependent operations finish executing.

Operations are not removed from this dependency list as they finish executing. You can therefore use this list to track all dependent operations, including those that have already finished executing. The only way to remove an operation from this list is to use the removeDependency method.

Available in Mac OS X v10.5 and later.

39.1.10 isCancelled as boolean

Function: Returns a Boolean value indicating whether the operation has been cancelled.
Notes:
True if the operation was explicitly cancelled by an invocation of the operation’s cancel method; otherwise, false. This method may return true even if the operation is currently executing.

Discussion
Canceling an operation does not actively stop the operation’s code from executing. An operation object is responsible for calling this method periodically and stopping itself if the method returns true.

39.1.11 isConcurrent as boolean

Function: Returns a Boolean value indicating whether the operation runs asynchronously.
Notes: True if the operation is asynchronous; otherwise, false if the operation runs synchronously on whatever thread started it. This method returns false by default.

39.1.12 isExecuting as boolean

Function: Returns a Boolean value indicating whether the operation is currently executing.
Notes: True if the operation is executing; otherwise, false if the operation has not been started or is already finished.

39.1.13 isFinished as boolean

Function: A Boolean value indicating whether the operation is done executing.
Notes: True if the operation is no longer executing; otherwise, false.

39.1.14 isReady as boolean

Function: Returns a Boolean value indicating whether the operation can be performed now.
Notes: True if the operation can be performed now; otherwise, false.

Operations may not be ready due to dependencies on other operations or because of external conditions that might prevent needed data from being ready. The NSOperation class manages dependencies on other operations and reports the readiness of the receiver based on those dependencies.
Note: If the operation is cancelled before it starts, operations that are dependent on the completion of the receiver will never become ready.

### 39.1.15 Lock

**MBS MacFrameworks Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Locks the semaphore.

**Example:**

```vbs
dim o as NSOperationMBS // your operation
dim myarray(-1) as window

o.lock
myarray.append window1
o.unlock
```

**Notes:**

You need to pair all calls to REALbasic runtime into lock and unlock to make sure you don’t crash. REALbasic is not reentrant safe, so you need to lock.

Be aware that locking costs performance. You should do locks often, so in the time between two locks another thread can get a lock. Also you should group locks nearby so you don’t waste too much time waiting for the lock. Finally you need your main application thread to run nice so it doesn’t lock too much, too.

### 39.1.16 main

**MBS MacFrameworks Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Performs the operation’s non-concurrent task.

**Notes:** This will just call to the work event.

### 39.1.17 removeDependency(op as NSOperationMBS)

**MBS MacFrameworks Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Removes the operation’s dependence on the specified operation.

**Notes:** This method may change the isReady and dependencies properties of the operation.
39.1.18 start

**Function:** Begins the execution of the operation.
**Notes:** The default implementation of this method configures the execution environment for a non-concurrent operation and invokes the operation's main method. As part of the default configuration, this method performs several checks to ensure that the non-concurrent operation can actually run and generates appropriate KVO notifications for each change in the operation's state. If the operation’s operation has already been performed, was cancelled, or is not yet ready to run, this method throws an NSInvalidArgumentException exception. If the operation is to be performed on a separate thread, this method may return before the operation itself completes on the other thread.

39.1.19 Unlock

**Function:** Unlocks the semaphore.
**Example:**
```
    dim o as NSOperationMBS // your operation
    dim myarray(-1) as window

    o.lock
    myarray.append window1
    o.unlock
```

**Notes:**
You need to pair all calls to REALbasic runtime into lock and unlock to make sure you don't crash. REALbasic is not reentrant safe, so you need to lock.

Be aware that locking costs performance. You should do locks often, so in the time between two locks another thread can get a lock. Also you should group locks nearby so you don’t waste too much time waiting for the lock. Finally you need your main application thread to run nice so it doesn’t lock too much, too.

39.1.20 waitUntilFinished

**Function:** Spend time waiting for the operation to finish.
39.1. CLASS NSOPERATIONMBS

39.1.21 Properties

39.1.22 Handle as Integer

Function: The handle to the internal used NSOperation reference.
Notes: (Read and Write property)

39.1.23 queuePriority as Integer

Function: The priority of the operation in an operation queue.
Notes: The relative priority of the operation. The returned value always corresponds to one of the predefined constants. If no priority is explicitly set, this method returns NSOperationQueuePriorityNormal.

You should use priority values only as needed to classify the relative priority of non-dependent operations. Priority values should not be used to implement dependency management among different operation objects. If you need to establish dependencies between operations, use the addDependency method instead.

If you attempt to specify a priority value that does not match one of the defined constants, this method automatically adjusts the value you specify towards the NSOperationQueuePriorityNormal priority, stopping at the first valid constant value. For example, if you specified the value -10, this method would adjust that value to match the NSOperationQueuePriorityVeryLow constant. Similarly, if you specified +10, this method would adjust the value to match the NSOperationQueuePriorityVeryHigh constant.
(Read and Write computed property)

39.1.24 threadPriority as Double

Function: The thread priority to use when executing the operation.
Notes: A floating-point number in the range 0.0 to 1.0, where 1.0 is the highest priority. The default thread priority is 0.5.

Available in Mac OS X v10.6 and later.
(Read and Write computed property)
CHAPTER 39. COCOA THREADING

39.1.25 Events

39.1.26 Close

MBS MacFrameworks Plugin, Plugin Version: 8.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The event called just before the operation object is destroyed.

39.1.27 Finished

MBS MacFrameworks Plugin, Plugin Version: 8.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The event called after work has finished.
Notes: This event is called on the main thread, so you can do GUI stuff here to show the result.

39.1.28 Open

MBS MacFrameworks Plugin, Plugin Version: 8.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The event called when the object is created.
Notes: Called on the main thread.

39.1.29 Work

MBS MacFrameworks Plugin, Plugin Version: 8.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The event called for an operation to do the work.
Notes: You should test isCancelled regularly to see whether operation was cancelled.

Please read on the ThreadMBS.Work event for more details.
(NSOperationMBS is a Mac OS X feature, but the ThreadMBS class, does nearly the same on all platforms)

39.1.30 Constants

39.1.31 NSOperationQueuePriorityHigh=4

MBS MacFrameworks Plugin, Plugin Version: 8.0. Function: One of the constants for the priority property.
Notes: Operations receive high priority for execution.
39.1.32  **NSOperationQueuePriorityLow**=-4

MBS MacFrameworks Plugin, Plugin Version: 8.0. **Function:** One of the constants for the priority property. **Notes:** Operations receive low priority for execution.

39.1.33  **NSOperationQueuePriorityNormal**=0

MBS MacFrameworks Plugin, Plugin Version: 8.0. **Function:** One of the constants for the priority property. **Notes:** Operations receive the normal priority for execution.

39.1.34  **NSOperationQueuePriorityVeryHigh**=8

MBS MacFrameworks Plugin, Plugin Version: 8.0. **Function:** One of the constants for the priority property. **Notes:** Operations receive very high priority for execution.

39.1.35  **NSOperationQueuePriorityVeryLow**=-8

MBS MacFrameworks Plugin, Plugin Version: 8.0. **Function:** One of the constants for the priority property. **Notes:** Operations receive very low priority for execution.
CHAPTER 39. COCOA THREADING

39.2 class NSOperationQueueMBS

39.2.1 class NSOperationQueueMBS


Function: Queues NSOperations for later execution.

Notes:

Available in Mac OS X v10.5 and later.

The NSOperationQueue class manages a set of NSOperation objects in a priority queue and regulates their execution. Operations remain in the queue until they are explicitly cancelled or finish executing. An application may create multiple operation queues, with each queue running up to its designated maximum number of operations.

A specific NSOperation object can be in only one operation queue at a time. Operations within a single queue coordinate their execution order using both priority levels and inter-operation object dependencies. Operation objects in different queues can coordinate their execution order using dependencies, which are not queue-specific.

Inter-operation dependencies provide an absolute execution order for operations. An operation object is not considered ready to execute until all of its dependent operations have finished executing. For operations that are ready to execute, the operation queue always executes the one with the highest priority relative to the other ready operations. For details on how to set priority levels and dependencies, see NSOperation Class Reference.

You should never manually start an operation while it is sitting in an operation queue. Once added, an operation stays in its queue until it finishes executing or is cancelled.

39.2.2 Methods

39.2.3 addOperation(op as NSOperationMBS)


Function: Adds the specified operation object to the operation queue.

Notes:

An operation object can be in at most one operation queue at a time and cannot be added if it is currently executing or finished. This method throws an NSInvalidArgumentException exception if any of these conditions is true.

Once added, the specified operation remains in the queue until it is executed or cancelled.
39.2. **CLASS NSOPERATIONQUEUEMBS**

Please setup dependencies before you add the operation to a queue. Once the operation is in the queue it may be executed directly.

### 39.2.4 **addOperations(ops() as NSOperationMBS, wait as boolean)**


**Function:** Adds the specified array of operations to the queue.

**Notes:**
- **ops:** The array of NSOperation objects that you want to add to the receiver.
- **wait:** If true, the current thread is blocked until all of the specified operations finish executing. If false, the operations are added to the queue and control returns immediately to the caller.

An operation object can be in at most one operation queue at a time and cannot be added if it is currently executing or finished. This method throws an NSInvalidArgumentException exception if any of those error conditions are true for any of the operations in the ops parameter.

Once added, the specified operation remains in the queue until it its isFinished method returns true.

Available in Mac OS X v10.6 and later.

### 39.2.5 **areAllOperationsFinished as boolean**


**Function:** Returns whether all operations have been finished.

**Notes:** True if all operations have finished.

### 39.2.6 **cancelAllOperations**


**Function:** Cancels all queued and executing operations.

**Notes:** This method sends a cancel message to all operations currently in the queue or executing. Queued operations are cancelled before they begin executing. If an operation is already executing, it is up to that operation to recognize the cancellation and stop what it is doing.
39.2.7 Constructor

**Function:** The constructor creating a new operation queue.
**Notes:** On success the handle property is not 0.

39.2.8 currentQueue as NSOperationQueueMBS

**Function:** Returns the operation queue that launched the current operation.
**Notes:**
Returns the operation queue that started the operation or nil if the queue could not be determined.

You can use this method from within a running operation object to get a reference to the operation queue that started it. Calling this method from outside the context of a running operation typically results in nil being returned.

Available in Mac OS X v10.6 and later.

39.2.9 isOneOperationExecuting as boolean

**Function:** Whether at least one operation is still executing.
**Notes:**
True if one of the operations is executing.
False if no operation is executing.

39.2.10 mainQueue as NSOperationQueueMBS

**Function:** Returns the operation queue associated with the main thread.
**Notes:**
The returned queue executes operations serially on the main thread. The main thread's run loop controls the execution times of these operations.
Available in Mac OS X v10.6 and later.
39.2. CLASS NSOPERATIONQUEUEMBS

39.2.11 operation(index as UInt32) as NSOperationMBS

**Function:** Returns a noperations currently in the queue at the given index.  
**Notes:**
You can use this method to access the operations queued at any given moment. Operations remain queued until they finish their task. Therefore, the returned array may contain operations that are either executing or waiting to be executed.

Available in Mac OS X v10.5 and later.

39.2.12 operationCount as Integer

**Function:** Returns the number of operations currently in the queue.  
**Notes:**
The value returned by this method reflects the instantaneous number of objects in the queue and changes as operations are completed. As a result, by the time you use the returned value, the actual number of operations may be different. You should therefore use this value only for approximate guidance and should not rely on it for object enumerations or other precise calculations.

Available in Mac OS X v10.6 and later.

39.2.13 operations as NSOperationMBS()

**Function:** The operations currently in the queue.

39.2.14 waitUntilAllOperationsAreFinished

**Function:** Blocks the current thread until all of the receiver’s queued and executing operations finish executing.  
**Notes:** When called, this method blocks the current thread and waits for the receiver’s current and pending operations to finish executing. While the thread is blocked, the receiver continues to launch already queued operations and monitor those that are executing. During this time, the current thread cannot add operations to the queue, but other threads may. Once all of the pending operations are finished, this method returns.
CHAPTER 39. COCOA THREADING

39.2.15 Properties

39.2.16 Handle as Integer

Function: The handle to the internal used NSOperationQueue reference.
Notes: (Read and Write property)

39.2.17 isSuspended as boolean

Function: A Boolean value indicating whether the receiver is scheduling queued operations for execution.
Notes:
True if operations are being scheduled for execution; otherwise, false.
(Read and Write computed property)

39.2.18 maxConcurrentOperationCount as Integer

Function: The maximum number of concurrent operations that the queue can execute.
Notes: (Read and Write computed property)

39.2.19 name as string

Function: The name of this queue.
Notes:
The default value of this string is "NSOperationQueue <id>", where <id> is the memory address of the operation queue. If you want to know when a queue's name changes, configure a KVO observer to observe the name key path of the operation queue.
Available in Mac OS X v10.6 and later.
(Read and Write computed property)
39.2.21  NSOperationQueueDefaultMaxConcurrentOperationCount==-1

MBS MacFrameworks Plugin, Plugin Version: 8.0.  **Function:** One of the constants to be used with the maxConcurrentOperationCount property.

**Notes:** The default maximum number of operations is determined dynamically by the NSOperationQueue object based on current system conditions.
Chapter 40

Collaboration

40.1 class CBGroupIdentityMBS

40.1.1 class CBGroupIdentityMBS


**Function:** An object of the CBGroupIdentity class represents a group identity and is used for viewing the attributes of group identities from an identity authority.

**Example:**

```vbs
// get staff group
dim a as CBIdentityAuthorityMBS = CBIdentityAuthorityMBS.localIdentityAuthority
dim i as CBGroupIdentityMBS = CBGroupIdentityMBS.groupIdentityWithPosixGID(20,a)
MsgBox i.fullName
```

**Notes:**

The principal attributes of a CBGroupIdentity object are a POSIX group identifier (GID) and a list of members.
Available in OS X v10.5 and later.
Subclass of the CBIdentityMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.
40.1.2 Methods

40.1.3 Constructor

Function: The private constructor.

40.1.4 copy as CBGroupIdentityMBS

Function: Creates a copy of the object.

40.1.5 groupIdentityWithPosixGID(groupID as Integer, authority as CBIdentityAuthorityMBS) as CBGroupIdentityMBS

Function: Returns the group identity with the given POSIX GID in the specified identity authority. 
Example: 

// get staff group
dim a as CBIdentityAuthorityMBS = CBIdentityAuthorityMBS.localIdentityAuthority
dim i as CBGroupIdentityMBS = CBGroupIdentityMBS.groupIdentityWithPosixGID(20,a)

MsgBox i.fullName

Notes:

- groupID: The GID of the group identity you are searching for.
- authority: An identity authority in which to search for the group identity.

Returns the group identity object with the given GID in the specified identity authority, or nil if no identity exists with the specified GID.

40.1.6 members as CBIdentityMBS()

Function: An array of CBIdentity objects each representing a member of the group identity. 
Example:
// get staff group
dim a as CBIdentityAuthorityMBS = CBIdentityAuthorityMBS.localIdentityAuthority
dim i as CBGroupIdentityMBS = CBGroupIdentityMBS.groupIdentityWithPosixGID(20,a)

MsgBox i.fullName

dim members() as CBIdentityMBS = i.members
for each m as CBIdentityMBS in members
  MsgBox m.fullName
next

Notes: This method only returns direct members of a group, it does not return members of members. Both user and group identities can be members of a group, but a group cannot be a member of itself. You also cannot have "circular" membership, i.e. a group be a member of another group that is a member of the first group.

40.1.7 posixGID as Integer

Function: Returns the POSIX GID of the identity.
Notes: The POSIX GID is an integer that can identify a group within an identity authority. GIDs are not guaranteed to be unique within an identity authority.
40.2 class CBIdentityAuthorityMBS

40.2.1 class CBIdentityAuthorityMBS

Function: An identity authority is a database that stores information about identities.
Notes:
The CBIdentityAuthority class defines one or more identity authorities. This database can be searched for
identities in conjunction with the CBIdentity class factory methods.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

40.2.2 Methods

40.2.3 Available as Boolean

Function: Whether this class is available.
Example:
if CBIdentityAuthorityMBS.Available then
    MsgBox "CBIdentityAuthorityMBS class is available"
else
    MsgBox "CBIdentityAuthorityMBS class is not available"
end if

Notes: Returns true on Mac OS X 10.5 and newer.

40.2.4 Constructor

Function: The private constructor.

40.2.5 CSIdentityAuthority as Variant

Function: Returns an identity authority for use with the Core Services Identity API.
Notes:
Returns CSIdentityAuthorityMBS object.
40.2. CLASS CBIDENTITYAUTHORITYMBS

This method, along with identityAuthorityWithCSIdentityAuthority:, is used for interoperability with the Core Services Identity API.
Available in OS X v10.5 and later.

40.2.6 defaultIdentityAuthority as CBIdentityAuthorityMBS

**Function:** Returns an identity authority that contains the identities in both the local and the network-bound authorities.
**Example:**
MsgBox CBIdentityAuthorityMBS.defaultIdentityAuthority.localizedDescriptionName

**Notes:** The default identity authority is the logical union of the identities in the local and managed authori-
ties.

40.2.7 identityAuthorityWithCSIdentityAuthority(CSIdentityAuthority as Vari-
ant) as CBIdentityMBS

**Function:** Returns an identity authority specified by a given Core Services Identity authority object.
**Notes:**
CSIdentityAuthority: The Core Services Identity opaque object. Must be a CSIdentityAuthorityMBS.
Returns the identity authority object for use with the Collaboration framework.
This method, along with CSIdentityAuthority, is used for interoperability with the Core Services Identity API.
Available in OS X v10.5 and later.

40.2.8 localIdentityAuthority as CBIdentityAuthorityMBS

**Function:** Returns the identity authority on the local system.
**Example:**
MsgBox CBIdentityAuthorityMBS.localIdentityAuthority.localizedDescriptionName

**Notes:** Any identities stored on the local system are contained within this identity authority.
40.2.9  localizedName as string

Function: Returns the localized name of the identity authority.
Notes: The computer’s name if the authority is local, or Managed Network Directory if the authority is managed.

40.2.10  managedIdentityAuthority as CBIIdentityAuthorityMBS

Function: Returns the identity authority that contains all the identities in bound network directory servers.
Example:
MsgBox CBIIdentityAuthorityMBS.managedIdentityAuthority.localizedDescriptionedName

Notes: If you are bound to a network directory server (such as an LDAP server) that has an identity authority, use this method to search those authorities.

40.2.11  Properties

40.2.12  Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)
40.3. **CLASS CBIDENTITYMBS**

### 40.3 class CBIdentityMBS

**40.3.1 class CBIdentityMBS**


**Function:** A CBIdentity object is used for accessing the attributes of an identity stored in an identity authority.

**Notes:**

You can use an identity object for finding identities, and storing them in an access control list (ACL). If you need to edit these attributes, take advantage of the CSIIdentity class in Core Services.

You can obtain a CBIdentity object from one of the following class factory methods: identityWithName, identityWithUUIDString, identityWithPersistentReference, or identityWithCSIIdentity.

There are two subclasses of CBIdentity: CBGroupIdentity and CBUserIdentity. If you are working specifically with a group identity, use CBGroupIdentityMBS. Similarly, if you are working with a user identity, use CBUserIdentityMBS.

**see also**


This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

### 40.3.2 Methods

#### 40.3.3 aliases as string()

**Function:** Returns an array of aliases (alternate names) for the identity.

**Notes:**

Returns an array of strings containing the alternate names for the identity.

An identity can have zero or more aliases. Like the full and short names, two identities cannot share an alias.

#### 40.3.4 authority as CBIdentityAuthorityMBS

**Function:** Returns the identity authority where the identity is stored.
40.3.5 Available as Boolean

Function: Whether this class is available.
Notes: Returns true on Mac OS X 10.5 and newer.

40.3.6 Constructor

Function: The private constructor.

40.3.7 copy as CBIdentityMBS

Function: Creates a copy of the object.

40.3.8 CSIdentity as Variant

Function: Returns an opaque object for use with the Core Services Identity API.
Notes: This method, along with identityWithCSIdentity, is used for interoperability with the Core Services Identity API.
Available in OS X v10.5 and later.

40.3.9 emailAddress as string

Function: Returns the email address of an identity.
Notes: The email address of an identity or "" if none exists.

40.3.10 fullName as string

Function: Returns the full name of the identity.
40.3.11 identityWithCSIIdentity(CSIdentity as Variant) as CBIdentityMBS

Function: Returns an identity object created from the specified Core Services Identity opaque object.
Notes:

CSIdentity: The Core Services Identity opaque object. Must be a CSIdentityMBS object.

Returns the identity object for use with the Collaboration framework.
This method is used for interoperability with the Core Services Identity API.

Available in OS X v10.5 and later.

40.3.12 identityWithName(name as string, authority as CBIdentityAuthorityMBS) as CBUserIdentityMBS

Function: Returns the identity object with the given name from the specified identity authority.
Example:

```basic
Dim name As String = "cs" ' put your name here
Dim a As CBIdentityAuthorityMBS = CBIdentityAuthorityMBS.LocalIdentityAuthority
Dim i As CBIdentityMBS = CBIdentityMBS.identityWithName(name, a)
MsgBox i.FullName + " : " + Join(i.Aliases, ", ")
```

Notes:

name: The name of the identity.
authority: The identity authority to search.

Returns the identity object, or nil if no identity is found with the specified name.
The name is compared against all valid identity names, including full names, short names, email addresses, and aliases.

40.3.13 identityWithPersistentReference(ref as Memoryblock) as CBUserIdentityMBS

Function: Returns the identity object matching the persistent reference data.
Notes:
CHAPTER 40. COLLABORATION

ref: The persistent data object that refers to an identity.

Returns the identity object matching the persistent data object, or nil if the identity is not found.
A persistent reference is an opaque data object suitable for persistent storage.

40.3.14 identityWithUUIDString(uuid as string, authority as CBIdentityAuthorityMBS) as CBUserIdentityMBS

Function: Returns the identity object with the given UUID from the specified identity authority.
Notes:

uuid: The UUID of the identity you are searching for.
authority: The identity authority to search.

Returns the identity object, or nil if no identity is found with the matching criteria.

40.3.15 image as NSImageMBS

Function: Returns the image associated with an identity.
Notes: The image associated with an identity, or nil if none exists.

40.3.16 isHidden as boolean

Function: Returns a Boolean value indicating the state of the identity's hidden property.
Notes:

A hidden identity does not show up in the Identity Picker. A hidden identity refers to system identities such as root, www, and wheel.
True if the identity is hidden; false if it is not.

40.3.17 isMemberOfGroup(g as CBGroupIdentityMBS) as boolean

Function: Returns a Boolean value indicating whether the identity is a member of the specified group.
Notes:
40.3. CLASS CBIDENTITYMBS

The group to check for membership.

Returns true if the identity is a member of the group; false if it is not.

40.3.18 persistentReference as MemoryBlock

Function: Returns a persistent reference to store a reference to an identity.
Notes:
Returns a memoryblock that uniquely references an identity.

A persistent reference data object is an object generated from an identity. Persistent data objects can be written to and read from a file, making them extremely useful for storing identities in an ACL.

40.3.19 posixName as string

Function: Returns the POSIX name of the identity.
Notes: The POSIX name is also referred to as the "short name" for an identity. It can only contain the characters A-Z, a-z, 0-9, -, _, ., and @.

40.3.20 UUIDString as string

Function: Returns the UUID of the identity as a string.
Notes: The UUID string is generated so it is unique across all identity authorities. When storing ACLs, one method is to store the UUID of each identity. However, it is recommended that you use a persistent data object instead (see persistentReference).

40.3.21 Properties

40.3.22 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)
40.4  class CBIdentityPickerMBS

40.4.1  class CBIdentityPickerMBS

**Function:** A CBIdentityPicker object allows a user to select identities for example, user or group objects that it wants one or more services or shared resources to have access to.

**Example:**

```vba
dim c as new CBIdentityPickerMBS
    c.Title = "Please choose your identity"

dim n as Integer = c.runModal
    if n = c.NSOKButton then
        for each i as CBIdentityMBS in c.identities
            MsgBox i.fullName
        next
    end if
```

**Notes:** An identity picker can be displayed either as an application-modal dialog or as a sheet attached to a document window. An identity picker returns the selected records to be added to access control lists using Collaboration. If a selected record is not a user or group identity, then an identity picker prompts the end user for additional informations such as a password to promote that record to a sharing account.

40.4.2  Methods

40.4.3  Available as Boolean

**Function:** Whether this class is available.
**Notes:** Returns true on Mac OS X 10.5 and newer.

40.4.4  Constructor

**Function:** The constructor.
40.4. CLASS CBIDENTITYPICKERMBS

40.4.5 identities as CBIdentityMBS()

Function: Returns an array of the identities selected using the identity picker.

40.4.6 runModal as Integer

Function: Runs the receiver as an application-modal dialog.
Notes:
NSOKButton if the user selected OK; otherwise, NSCancelButton.
The receiver may create identities for selected records if necessary.

40.4.7 runModalForWindow(win as window)

Function: Runs the receiver modally as a sheet attached to a specified window.
Notes:
window: The parent window for the sheet.
Calls identityPickerDidEnd event later.

40.4.8 Properties

40.4.9 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

40.4.10 allowsMultipleSelection as boolean

Function: Allows a user to make select multiple identities.
Notes:
By default, you cannot select multiple records.
Set to true if you can select multiple records; otherwise, false.
40.4.11  title as string

Function: The title of the identity picker.
Example:

    dim c as new CBIdentityPickerMBS
    c.Title = "Please choose your identity"

Notes: (Read and Write computed property)

40.4.12  Events

40.4.13  identityPickerDidEnd(returnCode as Integer)

Function: The event called when runModalForWindow finished.
Notes: ReturnCode is NSOKButton if the user selected OK; otherwise, NSCancelButton.

40.4.14  Constants

40.4.15  NSCancelButton = 0

MBS MacFrameworks Plugin, Plugin Version: 12.3. Function: One of the result codes you may need with this class.

40.4.16  NSOKButton = 1

MBS MacFrameworks Plugin, Plugin Version: 12.3. Function: One of the result codes you may need with this class.
40.5. **CLASS CBUSERIDENTITYMBS**

40.5.1 **class CBUserIdentityMBS**


**Function:** An object of the CBUserIdentity class represents a user identity and is used for accessing the attributes of a user identity from an identity authority.

**Notes:**

The principal attributes of CBUserIdentity are a POSIX user identifier (UID), password, and certificate.

Subclass of the CBIdentityMBS class.

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

40.5.2 **Methods**

40.5.3 **authenticateWithPassword(password as string) as boolean**


**Function:** Returns a Boolean value indicating whether the given password is correct for the identity.

**Notes:** Returns true if the password is correct; otherwise, false.

40.5.4 **Constructor**


**Function:** The private constructor.

40.5.5 **copy as CBUserIdentityMBS**


**Function:** Creates a copy of the object.

40.5.6 **isEnabled as boolean**


**Function:** Returns a Boolean value indicating whether the identity is allowed to authenticate.

**Notes:**

If the identity does not have authentication credentials (a password or certificate), it is not able to log in. However, an identity with authentication credentials does not ensure that it is enabled. Any identity can be
Returns true if the identity can authenticate; otherwise, false.

40.5.7   posixUID as Integer

Function: Returns the POSIX UID of the identity.
Notes: The POSIX UID is a integer that can identify a user within an identity authority. UIDs are not
guaranteed to be unique within an identity authority.

40.5.8   userIdentityWithPosixUID(userID as Integer, authority as CBIdentityAuthorityMBS) as CBUserIdentityMBS

Function: Returns the user identity with the given POSIX UID in the specified identity authority.
Example:
// get first user
dim a as CBIdentityAuthorityMBS = CBIdentityAuthorityMBS.localIdentityAuthority
dim i as CBUserIdentityMBS = CBUserIdentityMBS.userIdentityWithPosixUID(501,a)
MsgBox i.fullName

Notes:
uid: The UID of the identity you are searching for.
authority: The identity authority to search.

Retruns the user identity with the given UID in the specified identity authority, or nil if no identity exists
with the specified UID.
Available in OS X v10.5 and later.
40.6. Class CSIdentityAuthorityMBS

40.6.1. Class CSIdentityAuthorityMBS


**Function:** A CSIdentityAuthority object represents an identity authority.

**Example:**

```vba
dim a as CSIdentityAuthorityMBS = CSIdentityAuthorityMBS.localIdentityAuthority
MsgBox a.localizedName
```

**Notes:**

An identity authority is a logical repository of user and group information, such as the users and groups database on a local system or on a directory server.

The local authority contains all users and groups defined on the local system. The managed authority contains all users and groups defined in directory servers to which the system is bound (LDAP, ActiveDirectory, etc.). The Default authority is a union of the local and managed authorities and is used to locate user/group info from both sources in one query.

Use one of the class factory methods to return a CSIdentityAuthority object, which can be used to search for an identity with an CSIdentityQuery object.

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

40.6.2. Methods

40.6.3. Available as Boolean


**Function:** Whether the CSIdentityAuthority functions are available.

**Example:**

```vba
if not CSIdentityAuthorityMBS.Available then
MsgBox "not supported."
end if
```
40.6.4 Constructor

Function: The private constructor.

40.6.5 defaultIdentityAuthority as CSIdentityAuthorityMBS

Function: Returns the system’s default identity authority.
Example:
```vba
dim a as CSIdentityAuthorityMBS = CSIdentityAuthorityMBS.defaultIdentityAuthority
MsgBox a.localizedName
```

Notes: The default identity authority is a pseudo-authority representing the union of the local identity authority and the managed identity authority. The function CSIdentityMBS.Authority will never return the default authority instance.

40.6.6 localIdentityAuthority as CSIdentityAuthorityMBS

Function: Returns the identity authority for identities defined on the local host.
Example:
```vba
dim a as CSIdentityAuthorityMBS = CSIdentityAuthorityMBS.localIdentityAuthority
MsgBox a.localizedName
```

40.6.7 localizedName as string

Function: Returns the localized name of an identity authority.
Example:
```vba
dim a as CSIdentityAuthorityMBS = CSIdentityAuthorityMBS.localIdentityAuthority
MsgBox a.localizedName
```
40.6.8 managedIdentityAuthority as CSIdentityAuthorityMBS

**Function:** Returns the identity authority for identities defined in the system’s managed directory server(s).
**Example:**
```
dim a as CSIdentityAuthorityMBS = CSIdentityAuthorityMBS.managedIdentityAuthority
MsgBox a.localizedName
```

**Notes:** There is always a valid managed identity authority instance, but if the system is not bound to any managed directory servers, the managed identity authority will contain no identities.

40.6.9 Properties

40.6.10 Handle as Integer

**Function:** The internal object reference.
**Notes:** (Read and Write property)
40.7  class CSIdentityMBS

40.7.1  class CSIdentityMBS


**Function:** A CSIdentity object represents a user or group entity known to the system.

**Notes:**

An identity object has the following required attributes: a class (user or group), a unique identifier (UUID), a full name, a Posix ID (UID or GID), and a Posix name (a.k.a. "short" name). There are also a number of optional attributes such as email address, image data, etc.

Group identities have a membership which may include both users as well as other groups. An identity can be tested for membership in a specific group.

A CSIdentity object is a private copy of the identity information. It can be modified in memory, but requires authorization to commit changes back to the identity authority database. On OS X version 10.5, only local identities can be created, modified or deleted, and only by users with Administrator credentials.

Changes may be committed synchronously or asynchronously. All data validation occurs at commit time. Two identities are equal if they have the same class and UUID.

40.7.2  Methods

40.7.3  AddAlias(alias as string)


**Function:** Add a name alias to an identity.

**Example:**

```text
dim c as CSIdentityMBS = CSIdentityMBS.CurrentUser
c.AddAlias "Hello"
MsgBox join(c.Aliases, EndOfLine)
```

**Notes:** This change must be committed.

40.7.4  AddMember(user as CSIdentityMBS)


**Function:** Add an identity to a group.
40.7. **CLASS CSIDENTITYMBS**

**Notes:**

User: The identity to add to the group. Can be a user or group identity.

Please call only on group identities. This change to the group must be committed.

### 40.7.5 Aliases as string()


**Function:** Retrieve the aliases of an identity.

**Example:**

```vba
Dim c As CSIdentityMBS = CSIdentityMBS.CurrentUser
MsgBox Join(c.Aliases, EndOfLine)
```

**Notes:**

Returns an array containing the identity's name aliases as strings. The array may be empty.

Aliases are alternate names for identities. As with all identity names, aliases must be unique within the entire namespace of the identity authority.

### 40.7.6 AuthenticateUsingPassword(password as string) as Boolean


**Function:** Attempt to authenticate a password for a user identity.

**Notes:**

password: The password to authenticate
Returns true if the password is correct for the specified user.
Please call only on user identity.

### 40.7.7 Authority as CSIdentityAuthorityMBS


**Function:** Returns the identity authority of an identity.

**Example:**

```vba
Dim u As CSIdentityMBS = CSIdentityMBS.CurrentUser
MsgBox u.Authority.localizedDescription
```
40.7.8 Available as Boolean

Function: Whether the CSIdentity functions are available.
Example:
if not CSIdentityMBS.Available then
MsgBox "not supported."
end if

40.7.9 Commit as Boolean

Function: Synchronously commit all pending changes to the identity authority database.
Notes:
error: Optional variant for CFErrorMBS which will be set if this function returns false. When this occurs, the caller is responsible for releasing the error.
Returns true if successful, false if an error occurred.
See also:

- 40.7.10 Commit(byref error as Variant) as Boolean

40.7.10 Commit(byref error as Variant) as Boolean

Function: Synchronously commit all pending changes to the identity authority database.
Notes:
error: Optional variant for CFErrorMBS which will be set if this function returns false. When this occurs, the caller is responsible for releasing the error.
Returns true if successful, false if an error occurred.
See also:

- 40.7.9 Commit as Boolean
40.7. **CLASS CSIDENTITYMBS**

### 40.7.11 Constructor

(identityClass as Integer, fullName as string, posixName as string, flags as Integer, authority as CSIdentityAuthorityMBS)


**Function:** Creates a new identity.

**Example:**

```vbs
    dim a as CSIdentityAuthorityMBS = CSIdentityAuthorityMBS.localIdentityAuthority
    dim c as new CSIdentityMBS(CSIdentityMBS.kCSIdentityClassUser, "Test User", "TestUser", 0, a)

    dim e as CFErroMBS
    dim v as Variant
    if c.Commit(v) then
        MsgBox "OK"
    else
        e = v
        if e<>Nil then
            MsgBox "Failed" + EndOfLine + e.Description
        else
            MsgBox "Failed"
        end if
    end if
```

**Notes:**

- identityClass: The type of identity to be created. Specifying kCSIdentityClassUser creates a user, while kCSIdentityClassGroup creates a group.
- fullName: The primary name of the new identity.
- posixName: The POSIX name of the new identity. Specify kCSIdentityGeneratePosixName to have a name generated automatically from the full name.
- flags: Attributes of the new identity
- authority: The identity authority to host the identity. Caller must have write access to the identity authority or commit will fail. Currently, only local identities may be created, so callers must specify the local identity authority for this argument.

On success the handle property is not zero.

The new identity is allocated but is not committed to the identity authority’s database. It will become persistent and available to other clients after being committed using Commit or CommitAsynchronously.

### 40.7.12 copy as CSIdentityMBS


**Function:** Creates a copy of an identity.
Example:

```vbnet
dim u as CSIdentityMBS = CSIdentityMBS.CurrentUser
dim v as CSIdentityMBS = u.copy
v.SetFullName "Hello World" ' modify the copy only
MsgBox u.fullName + " " + v.fullName
```

### 40.7.13 CurrentUser as CSIdentityMBS


**Function:** Queries current user identity.

**Example:**

```vbnet
dim u as CSIdentityMBS = CSIdentityMBS.CurrentUser
MsgBox u.fullName
```

### 40.7.14 Delete


**Function:** Permanently delete an identity from the identity database.

**Notes:** Sets an identity to deleted state. This change must be committed.

### 40.7.15 GroupMembershipQuery as CSIdentityQueryMBS


**Function:** Creates a query to find a group’s members.

**Notes:**

Please call on the group identity whose members are to be queried

Returns the CSIdentityQueryMBS of the newly created object. The query is ready to be executed.

Using a query to lookup group membership allows the caller to execute the query synchronously or asynchronously.

### 40.7.16 IdentityClass as Integer


**Function:** Returns an identity’s class.

**Example:**
40.7. CLASS CSIDENTITYMBS

```vbs
dim u as CSIdentityMBS = CSIdentityMBS.CurrentUser
MsgBox str(u.IdentityClass) // shows 1 for user
```

40.7.17 ImageData as memoryblock

**Function:** Retrieve the image associated with a user identity.
**Example:**
```vbs
dim c as CSIdentityMBS = CSIdentityMBS.CurrentUser
dim data as MemoryBlock = c.ImageData
dim pic as Picture = JPEGStringToPictureMBS(data)
Backdrop = pic
```

**Notes:** Returns the identity’s image data as a memoryblock or nil if there is no image data.

40.7.18 ImageDataType as string

**Function:** Retrieve the uniform type identifier (UTI) of an identity’s image.
**Example:**
```vbs
dim c as CSIdentityMBS = CSIdentityMBS.CurrentUser
MsgBox c.ImageDataType
```

**Notes:** Returns a UTI as a string for this identity’s image data or "" if there is no image data. The identity object may release its reference to the return value when the identity is modified.

40.7.19 IsCommitting as Boolean

**Function:** Determine if a commit operation is in progress.
**Notes:** Returns true if a commit operation is in progress.
40.7.20 IsGroup as Boolean

Function: Checks if identity class is group.
Example:

```vbnet
dim c as CSIdentityMBS = CSIdentityMBS.CurrentUser
MsgBox str(c.IsUser)+" "+str(c.IsGroup)
```

40.7.21 IsHidden as Boolean

Function: Determine if a identity's hidden attribute is enabled.
Example:

```vbnet
dim u as CSIdentityMBS = CSIdentityMBS.CurrentUser
MsgBox str(u.IsHidden)
```

Notes: Returns true if the identity was created with the hidden attribute

40.7.22 IsMemberOfGroup(group as CSIdentityMBS) as Boolean

Function: Check if an identity is a memeber of a group.
Notes:
Please call only on a group identity.
group: The group identity whose membership is to be checked
Returns true if the identity is a member (directly or indirectly) of the specified group

40.7.23 IsUser as Boolean

Function: Checks if identity class is user.
Example:

```vbnet
dim c as CSIdentityMBS = CSIdentityMBS.CurrentUser
MsgBox str(c.IsUser)+" "+str(c.IsGroup)
```
40.7.24 kCSIIdentityGeneratePosixName as string

Function: A special string for posix names to use to auto generate the posix name.

40.7.25 PersistentReference as memoryblock

Function: Create an opaque, persistent data reference to an identity.
Example:

```vbscript
// get a reference
dim u as CSIdentityMBS = CSIdentityMBS.CurrentUser
dim p as MemoryBlock = u.PersistentReference
u = nil

// and search back later:
dim q as CSIdentityQueryMBS = CSIdentityQueryMBS.CreateForPersistentReference(p)
if q.Execute then
dim r() as CSIdentityMBS = q.Results
MsgBox r(0).fullName
end if
```

Notes:

Returns a new persistent reference for the identity.
A persistent identity reference is an opaque data object from which an identity object may queried the future (see CreateForPersistentReference). A persistent reference is suitable for storage in an external data store, for example, as an entry in an application-specific access control list associated with a shared resource. Use of a persistent identity reference is preferred over a pure UUID-based identity reference because the persistent reference contains additional information needed to optimize the identity query and to improve the user experience when working in a distributed identity environment (LDAP, Active Directory, etc.).

40.7.26 PosixID as Integer

Function: Retrieve POSIX ID of an identity.
Example:

```vbscript
dim c as CSIdentityMBS = CSIdentityMBS.CurrentUser
MsgBox str(c.PosixID)
```
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Notes: Returns an identity’s POSIX identifier (a UID or GID).

40.7.27 PosixName as string

Function: Retrieve the POSIX name (short name) of an identity.
Example:

```vba
dim c as CSIdentityMBS = CSIdentityMBS.CurrentUser
MsgBox c.PosixName
```

Notes:
Returns an identity’s POSIX name. This attribute is always non-empty. The POSIX name cannot be changed after an identity has been created.

40.7.28 RemoveAlias(alias as string)

Function: Remove an alias name from an identity.
Example:

```vba
dim c as CSIdentityMBS = CSIdentityMBS.CurrentUser
c.AddAlias "Hello"
MsgBox join(c.Aliases, EndOfLine)
c.RemoveAlias "Hello"
MsgBox join(c.Aliases, EndOfLine)
```

Notes:
alias: The alias name to remove
This change must be committed.

40.7.29 RemoveClient

Function: Invalidate an identity’s client structure to stop client events.
Notes: After returning, this function guarantees that client event will never be invoked again. Use this function when releasing an identity which may have an outstanding asynchronous request. This function does not cancel an outstanding commit operation because a commit cannot be interrupted.
40.7.30 RemoveMember(user as CSIdentityMBS)

**Function:** Remove a member from a group.

**Notes:**
Please call only on group identities.
member: The member identity to remove
This change to the group must be committed.

40.7.31 SetEmailAddress(email as string = ””)

**Function:** Set an identity’s email address.

**Example:**
```vba
dim u as CSIdentityMBS = CSIdentityMBS.CurrentUser

u.SetEmailAddress(”test@test.test”)
MsgBox u.emailAddress
```

**Notes:**
emailAddress: The user’s new email address value. Pass ”” to remove an email address.
This change must be committed.

40.7.32 SetFullName(name as string)

**Function:** Sets an identity’s full name.

**Example:**
```vba
dim u as CSIdentityMBS = CSIdentityMBS.CurrentUser

// get old name
dim o as string = u.fullName

// change
u.SetFullName(”Hello World”)

// and report
```
CHAPTER 40. COLLABORATION

MsgBox o+” -”+u.fullName

Notes:

fullName: The new full name of the identity
This change must be committed.

40.7.33 SetImageData(data as memoryblock = nil, datatype as string = ”public.jpeg”)

Function: Set the internally-stored image data and data type for an identity.
Notes:

imageData: The image data. Pass nil to remove image data.
imageDataType: The uniform type identifier (UTI) of the image data. Currently, kUTTypeJPEG (”public.jpeg”) is the only type supported.
This change must be committed.

40.7.34 SetImageURL(URL as string)

Function: Set the URL of an identity’s external image storage.
Notes:

url: The URL file of the image. For local identities, this must be a file URL. Pass ”” to remove the image URL from the identity.
This change must be committed.

40.7.35 SetIsEnabled(value as boolean)

Function: Enable or disable a user.
Example:

dim u as CSIdentityMBS = CSIdentityMBS.CurrentUser

u.SetIsEnabled(true)
MsgBox str(u.isEnabled)
Notes:

isEnabled: The new value of the isEnabled attribute
A disabled user account cannot authenticate. Credentials (password and certificate) are not affected. This change must be committed.

40.7.36 SetPassword(password as string)

Function: Set a user password.
Notes:
Please call only on user identities.
password: The new password, or "" to remove the current password and disable password-based authentication.
Setting the password to "" removes the current password and disables password authentication for the user.
Setting the password to a zero-length string allows authentication with a blank password. This change must be committed.

40.7.37 UUID as string

Function: Returns an identity's UUID as string.
Example:
```vba
dim c as CSIdentityMBS = CSIdentityMBS.CurrentUser
MsgBox c.UUID
```

40.7.38 Properties

40.7.39 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

40.7.40 EmailAddress as string

Function: Retrieve the email address of a user identity.
Example:

```vba
dim c as CSIdentityMBS = CSIdentityMBS.CurrentUser
MsgBox c.emailAddress
```

Notes:

Returns the email address of the identity or "" if there is no email address.
(Read and Write computed property)

### 40.7.41 FullName as string

Function: Retrieve the full name of an identity.
Example:

```vba
dim i as CSIdentityMBS = CSIdentityMBS.CurrentUser
MsgBox i.fullName
```

Notes:

The full name is the name that is displayed in the user interface.
(Read and Write computed property)

### 40.7.42 ImageURL as string

Function: Retrieve the URL to an identity’s image file.
Example:

```vba
dim c as CSIdentityMBS = CSIdentityMBS.CurrentUser
MsgBox c.ImageURL
```

Notes:

Returns a URL that contains the location of the user’s image file, or niol if there is no image URL.
(Read and Write computed property)
40.7. **CLASS CSIDENTITYMBS**

### 40.7.43 IsEnabled as Boolean


**Function:** Determine if a user is enabled.

**Example:**

```vbnet
dim c as CSIdentityMBS = CSIdentityMBS.CurrentUser
MsgBox str(c.IsEnabled)
```

**Notes:**

Returns true if the user is enabled. A user that is not enabled cannot authenticate.

A user that is not enabled cannot authenticate. This setting may be used to temporarily allow a user’s access to all services and resources.

(Read and Write computed property)

---

### 40.7.44 Constants

#### 40.7.45 kCSIdentityClassGroup = 2

MBS MacFrameworks Plugin, Plugin Version: 13.0. **Function:** One of the class constants.

**Notes:** The class value for group identities.

---

#### 40.7.46 kCSIdentityClassUser = 1

MBS MacFrameworks Plugin, Plugin Version: 13.0. **Function:** One of the class constants.

**Notes:** The class value for user identities.

---

#### 40.7.47 kCSIdentityFlagHidden = -1

MBS MacFrameworks Plugin, Plugin Version: 13.0. **Function:** One of the flags for identity creation.

**Notes:** This flag causes the identity to be “hidden,” that is, excluded from most user-visible identity lists. Hidden identities include administrative users and groups such as root, www, and mysql. System service access control groups should be created with the hidden flag.

---

#### 40.7.48 kCSIdentityFlagNone = 0

MBS MacFrameworks Plugin, Plugin Version: 13.0. **Function:** One of the flags for identity creation.

**Notes:** Use this flag to set no optional attributes for a new identity.
40.8. class CSIdentityQueryMBS

40.8.1 class CSIdentityQueryMBS

MBS MacFrameworks Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A CSIdentityQuery object provides synchronous or asynchronous access to a collection of identities managed by an identity authority.

**Notes:**

Clients call one of the CSIdentityQueryCreate* functions to define the query criteria. A query can be executed exactly once, in either synchronous or asynchronous mode.

For synchronous execution, the client calls CSIdentityQueryExecute. This function will return when all identities matching the criteria have been found. The results are accessed as an array via Results(). No live updates to the results array are provided in synchronous mode.

To execute in asynchronous mode, the client calls ExecuteAsynchronously, specifying a client object to receive callbacks and a runloop/mode on which callbacks are scheduled.

ExecuteAsynchronously returns immediately, and events will be reported to the callback function as results are added by the query. The client may request live updates to the query which will track changes to the results as changes are made to the identity authority by other processes. Currently, only changes to the local identity authority are monitored.

Asynchronous clients must call Stop when done processing query results to prevent the client callbacks from being called again.

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

40.8.2 Methods

40.8.3 Available as Boolean

MBS MacFrameworks Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the CSIdentityQuery functions are available.

**Example:**

```plaintext
if not CSIdentityQueryMBS.Available then
  MsgBox "not supported."
end if
```
40.8.4 Constructor


Function: The private constructor.

40.8.5 Create(identityClass as Integer, authority as CSIdentityAuthorityMBS) as CSIdentityQueryMBS


Function: Creates an identity query object for all identities in the specified authority.

Example:

```vba
dim c as CSIdentityQueryMBS = CSIdentityQueryMBS.Create(CSIdentityMBS.kCSIdentityClassUser, CSIdentityAuthorityMBS.localIdentityAuthority)

if c.Execute then
    dim a() as CSIdentityMBS = c.Results

    dim names() as string
    for each p as CSIdentityMBS in a
        names.append p.fullName
    next

    MsgBox join(names,EndOfLine)
end if
```

Notes:

identityClass: The class of identity to find

authority: The identity authority to query

Returns a new CSIdentityQuery object.

The results of this query include all of the identities in the specified authority’s database.

40.8.6 CreateCurrentUser as CSIdentityQueryMBS


Function: Creates a query for the current session user’s identity.

Example:
dim q as CSIdentityQueryMBS = CSIdentityQueryMBS.CreateForCurrentUser

if q.Execute then
    dim r() as CSIdentityMBS = q.Results
    if UBound(r) = 0 then
        dim i as CSIdentityMBS = r(0)
        MsgBox i.fullName
    end if
end if

40.8.7 CreateForName(name as string, comparisonMethod as Integer, identityClass as Integer, authority as CSIdentityAuthorityMBS) as CSIdentityQueryMBS


Function: Creates an identity query object based on a name.

Example:

    // search for short name and show full name
    dim name as string = SystemInformationMBS.ShortUsername
    dim a as CSIdentityAuthorityMBS = CSIdentityAuthorityMBS.defaultIdentityAuthority
    dim f as Integer = CSIdentityQueryMBS.kCSIdentityQueryStringEquals
    dim q as CSIdentityQueryMBS = CSIdentityQueryMBS.CreateForName(name, f, CSIdentityMBS.kCSIdentityClassUser, a)

    if q.Execute then
        dim r() as CSIdentityMBS = q.Results
        MsgBox r(0).fullName
    end if

Notes:

name: The name criteria for the query.
comparisonMethod: The comparison function (equal or begins with)
identityClass: The class of identity to find
authority: The identity authority to query

Returns a new CSIdentityQuery object
The query finds identities by name. It searches the full names, posix names and aliases for matches.
40.8.8  CreateForPersistentReference(data as memoryblock) as CSIdentityQueryMBS

Function: Creates an identity query object based on an identity reference data object.

Example:

```vbnet
// get a reference
dim u as CSIdentityMBS = CSIdentityMBS.CurrentUser
dim p as MemoryBlock = u.PersistentReference
u = nil

// and search back later:
dim q as CSIdentityQueryMBS = CSIdentityQueryMBS.CreateForPersistentReference(p)
if q.Execute then
dim r() as CSIdentityMBS = q.Results
MsgBox r(0).fullName
end if
```

Notes:

- referenceData: The reference data that fully describes an identity
- Returns a new CSIdentityQuery object.
- Finds an identity by reference data obtained from ReferenceData.

40.8.9  CreateForPosixID(posixID as Integer, identityClass as Integer, authority as CSIdentityAuthorityMBS) as CSIdentityQueryMBS

Function: Creates an identity query object based on a POSIX ID.

Example:

```vbnet
// search for short name and show full name
dim a as CSIdentityAuthorityMBS = CSIdentityAuthorityMBS.defaultIdentityAuthority
dim f as Integer = CSIdentityQueryMBS.kCSIdentityQueryStringEquals

dim q as CSIdentityQueryMBS = CSIdentityQueryMBS.CreateForPosixID(501, CSIdentityMBS.kCSIdentityClassUser, a)

if q.Execute then
dim r() as CSIdentityMBS = q.Results
MsgBox r(0).fullName
end if
```

Notes:
40.8. **CLASS CSIDENTITYQUERYMBS**

posixID: The UID or GID of the identity to find
identityClass: The class of identity to find
authority: The identity authority to query

Returns a new CSIdentityQuery object
Finds an identity by its UID or GID

40.8.10  **CreateForUUID(uuid as string, authority as CSIdentityAuthorityMBS) as CSIdentityQueryMBS**

**Function:** Creates an identity query object based on a UUID.
**Notes:**

uuid: The UUID of the identity to find
authority: The identity authority to query
Returns a new CSIdentityQuery object
Finds an identity by its UUID.

40.8.11  **Execute(flags as Integer = 0) as Boolean**

**Function:** Execute an identity query synchronously.
**Notes:**

flags: Execution options.
error: Optional pointer to a variant which is filled with CFErrorMBS object if function returns false.
Returns true if the query executed successfully, false if an error occurred.
See also:

- 40.8.12 Execute(flags as Integer, byref error as Variant) as Boolean

40.8.12  **Execute(flags as Integer, byref error as Variant) as Boolean**

**Function:** Execute an identity query synchronously.
**Notes:**

flags: Execution options.
error: Optional pointer to a variant which is filled with CFErrorMBS object if function returns false.
Returns true if the query executed successfully, false if an error occurred.
See also:
40.8.11 Execute(flags as Integer = 0) as Boolean

40.8.13 Results as CSIdentityMBS()

**Function:** Retrieve the results of executing an identity query.

40.8.14 Stop

**Function:** Invalidate an identity query client.
**Notes:** Invalidate a query client so that its callback will never be called in the future. Clients should call Stop when an query will no longer be used, prior to releasing the final query reference.

40.8.15 Properties

40.8.16 Handle as Integer

**Function:** The internal object reference.
**Notes:** (Read and Write property)

40.8.17 Constants

40.8.18 kCSIdentityQueryGenerateUpdateEvents = 1

MBS MacFrameworks Plugin, Plugin Version: 13.0. **Function:** Execution options for an identity query.
**Notes:** After the initial query phase is complete, monitor the result set for live updates.

40.8.19 kCSIdentityQueryIncludeHiddenIdentities = 2

MBS MacFrameworks Plugin, Plugin Version: 13.0. **Function:** Execution options for an identity query.
**Notes:** Include all matching identities in the result set, including hidden "system" users and groups (root, www, etc.).
40.8.20  kCSIdentityQueryStringBeginsWith = 2

MBS MacFrameworks Plugin, Plugin Version: 13.0. **Function:** Options for querying the database by name. **Notes:**
The identity name must begin with the search string.
When searching for identities by name, this value specifies the string comparison function.

40.8.21  kCSIdentityQueryStringEquals = 1

MBS MacFrameworks Plugin, Plugin Version: 13.0. **Function:** Options for querying the database by name. **Notes:**
The identity name must equal the search string.
When searching for identities by name, this value specifies the string comparison function.
Chapter 41  

ColorSync  

41.1  Globals  

41.1.1  ColorsyncAvailableMBS as boolean  

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Function:** Returns true if ColorSync is installed on this computer.  

41.1.2  CountColorSyncCMMInfoMBS as Integer  

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Function:** Returns how many CMMs were found.  
**Notes:**  
Will return 0 if you don’t call LoadColorsyncProfiles before.  
Requires ColorSync 2.6 or newer.  

41.1.3  CountColorSyncProfileInfoMBS as Integer  

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Function:** Returns how many Profiles were found in the folder "Colorsync profiles".  
**Notes:** Will return 0 if you don’t call LoadColorsyncProfiles before.
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41.1.4 CreateColorSyncBitmapMBS(p as picture,dontcopy as boolean) as ColorSyncBitmapMBS

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a bitmap matching the picture.

**Notes:**

If the parameter dontcopy is true the ColorSyncBitmapMBS refers to the original data from the picture and any change of them is seen in the picture. Inside the ColorSyncBitmapMBS object a reference to this picture is kept, so it is not destroyed by Realbasic if you don’t need it anymore. The memoryblock of the data property is pointing to the original data of the picture.

If dontcopy is false then the pixels are copied into a new memoryblock which is later stored in the data property of the bitmap object.

This function was designed to test the MatchBitmap functions.

The PixelSize property of the bitmap is set to 32 as a good guess.

Does not support Cocoa. In Cocoa, please use CGBitmapContext and CGColorSpace classes for ColorSync.

41.1.5 GetColorSyncCMMInfoMBS(index as Integer) as ColorSyncCMMInfoMBS

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns details about the CMM with the specified index.

**Notes:**

Index is 0 based.
Will return nil if you don’t call LoadColorsyncProfiles before.
Requires ColorSync 2.6 or newer.

41.1.6 GetColorSyncProfileInfoMBS(index as Integer) as ColorSyncProfileInfoMBS

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns details about the profiles in the folder ”Colorsync profiles”.

**Notes:**

Index is 0 based.
Will return nil if you don’t call LoadColorsyncProfiles before.
41.1. GLOBALS

41.1.7 GetDisplayColorSyncProfileMBS(index as UInt32) as ColorSyncProfileMBS

MBS MacClassic Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Returns the system colorsync profile.
Example:

```pascal
dim p as colorSyncProfileMBS

p=GetDisplayColorSyncProfileMBS(0)

msgBox p.Name
```

Notes:
Index is zero based.
Returns nil on any error.
Deprecated by Apple in OS X 10.6. Please move to use NSScreenMBS and NSColorSpaceMBS.

41.1.8 GetSystemColorSyncProfileMBS as ColorSyncProfileMBS

Function: Returns the system colorsync profile.
Example:

```pascal
dim p as colorSyncProfileMBS

p=getsystemColorSyncProfileMBS

msgBox p.Name
```

Notes:
Returns nil on any error.
Deprecated by Apple in OS X 10.6. Please move to use NSScreenMBS and NSColorSpaceMBS.

41.1.9 LaunchColorsyncControlPanelMBS

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Launches the control panel for ColorSync.
41.1.10  LoadColorsyncProfilesMBS

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Call this to load the information about the colorsync profiles.

**Notes:**
You can call this function at any time to update.
If you have ColorSync 2.6 or newer the list of CMMs is also loaded.

41.1.11  OpenColorSyncProfileMBS(data as string) as ColorSyncProfileMBS

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Opens a color sync profile which is in memory inside a string.

**Example:**

```vba
// create some profile
dim p as LCMS2ProfileMBS = LCMS2ProfileMBS.CreateSRGBProfile

// save to string in memory
dim s as string = p.SaveProfileToString

// and open with colorsync
dim c as ColorSyncProfileMBS = OpenColorSyncProfileMBS(s)

// show name
MsgBox c.Name
```

41.2  class ColorSyncBitmapMBS

41.2.1  class ColorSyncBitmapMBS

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for the bitmaps for ColorSync.

**Notes:**
If you can use a Realbasic picture, but if you can’t (e.g. if you use CMYK data) you can use this class and set all properties as you like. They are not checked by the plugin so listen to the error codes of MatchBitmap. See the ColorSpaceType for the Color space constants.
41.2. CLASS COLORSYNCBITMAPMBS

41.2.2 Properties

41.2.3 ColorSpaceType as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The color space in which the colors of the bitmap image are specified.

**Notes:**

The constants for the ColorSpace:

```plaintext
cmNoSpace & h0000
cmRGBSpace & h0001
cmCMYKSpace & h0002
cmHSVSpace & h0003
cmHLSSpace & h0004
cmYXYSpace & h0005
cmXYZSpace & h0006
cmLUVSpace & h0007
cmLABSpace & h0008
cmReservedSpace1 & h0009
cmGraySpace & h000A
cmReservedSpace2 & h000B
cmGamutResultSpace & h000C
cmNamedIndexedSpace & h0010
cmMCFiveSpace & h0011
cmMCSixSpace & h0012
cmMCSevenSpace & h0013
cmMCEightSpace & h0014
cmAlphaPmulSpace & h0040
cmAlphaSpace & h0080
cmRGBASpace cmRGBSpace + cmAlphaSpace
cmGrayASpace cmGraySpace + cmAlphaSpace
cmRGBAPmulSpace cmRGBASpace + cmAlphaPmulSpace
cmGrayAPmulSpace cmGrayASpace + cmAlphaPmulSpace
```

**Discussion**

This enumeration defines constants for color spaces which can specify color values for a bitmap image. As a rule, these constants include a packing format, defined in "Color Packing for Color Spaces". You can use these constants to set the space field of the CMBitmapMBS type definition identifies the color space in which the colors of the bitmap image are specified, as described in "Abstract Color Space Constants".

**Color Packing for Color Spaces:**
41.2.4 Data as memoryblock

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A memoryblock with the bitmap’s binary data.  **Notes:** (Read and Write property)

41.2.5 height as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The height of the bit image, that is, the number of rows in the image.  **Notes:** (Read and Write property)

41.2.6 PixelSize as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of bits per pixel.  **Notes:**
The pixel size should correspond to the packing size specified in the space field. This requirement is not enforced as of ColorSync version 2.5, but it may be enforced in future versions.  **(Read and Write property)**

41.2.7 PixmapHandle as Integer

MBS MacClassic Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal handle of the picture bitmap.  **Notes:**
Only when the bitmap is linked to a REALbasic picture.  **(Read only property)**

41.2.8 RowBytes as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The bytes of one row of pixels of the bitmap.  **Notes:**
41.2. **CLASS COLORSYNCRGBBITMAPMBS**

If you have a 32bit RGB bitmap with 200 pixels width you get 200*32/8 or 800 bytes per row. (Read and Write property)

41.2.9 **width as Integer**

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The width of the bit image, that is, the number of pixels in a row. **Notes:** (Read and Write property)
A luminance color space with a single 16-bit component, gray.

A luminance color space with two components, a gray component followed by an alpha channel component. Each component value is 16 bits.

An RGB color space composed of red, green, and blue components whose values are packed with 5 bits of storage per component. The storage size for a color value expressed in this color space is 16 bits, with the high-order bit not used.

An RGB color space composed of red, green, and blue components whose values are packed with 8 bits of storage per component. The storage size for a color value expressed in this color space is 24 bits.

An RGB color space composed of red, green, and blue components whose values are packed with 8 bits of storage per component. The storage size for a color value expressed in this color space is 32 bits, with bits 24-31 not used.

An RGB color space composed of red, green, and blue components whose values are packed with 16 bits of storage per component. The storage size for a color value expressed in this color space is 48 bits.

An RGB color space composed of red, green, and blue color value components preceded by an alpha channel component whose values are packed with 8 bits of storage per component. The storage size for a color value expressed in this color space is 32 bits.

An RGB color space composed of red, green, and blue color value components, followed by an alpha channel component. Values are packed with 8 bits of storage per component. The storage size for a color value expressed in this color space is 32 bits.

A CMYK color space composed of cyan, magenta, yellow, and black components whose values are packed with 8 bits of storage per component. The storage size for a color value expressed in this color space is 32 bits.

A CMYK color space composed of cyan, magenta, yellow, and black components whose values are packed with 16 bits of storage per component. The storage size for a color value expressed in this color space is 64 bits.

An HSV color space composed of hue, saturation, and value components whose values are packed with 10 bits of storage per component. The storage size for a color value expressed in this color space is 32 bits, with the high-order 2 bits not used.

An HLS color space composed of hue, lightness, and saturation components whose values are packed with 10 bits of storage per component. The storage size for a color value expressed in this color space is 32 bits, with the high-order 2 bits not used.

A Yxy color space composed of Y, x, and y components whose values are packed with 10 bits of storage per component. The storage size for a color value expressed in this color space is 32 bits, with the high-order 2 bits not used.

An XYZ color space composed of X, Y, and Z components whose values are packed with 10 bits per component. The storage size for a color value expressed...
41.2. CLASS COLORSYNCBITMAPMBS

This constant is not used for ColorSync bitmaps.

This constant is used in conjunction with the ColorMapIndex
constant to indicate whether the channel bitmap is bleed
or opaque. This constant is defined in the ColorSyncBitmap
function (page 3-123); the bitmap must be only 1 bit deep.

The constant is defined as follows:

- ColorPacking & h0000: The bitmap is not used for ColorSync bitmaps.
- ColorPacking & h0080: The alpha channel component is not used for ColorSync bitmaps.
- ColorPacking & h0000: The alpha channel component is used for ColorSync bitmaps.
- ColorPacking & h0080: The alpha channel component is not used for ColorSync bitmaps.
- ColorPacking & h0000: The alpha channel component is used for ColorSync bitmaps.
- ColorPacking & h0080: The alpha channel component is not used for ColorSync bitmaps.
- ColorPacking & h0000: The alpha channel component is used for ColorSync bitmaps.
- ColorPacking & h0080: The alpha channel component is not used for ColorSync bitmaps.
- ColorPacking & h0000: The alpha channel component is used for ColorSync bitmaps.

The constant is defined as follows:

- ColorPacking & h2100: The color values for three 8-bit color channels are stored in consecutive bytes, for a total of 24 bits.
- ColorPacking & h0800: The color values for four 8-bit color channels are stored in consecutive bytes, for a total of 32 bits.
- ColorPacking & h2200: The color values for five 8-bit color channels are stored in consecutive bytes, for a total of 40 bits.
- ColorPacking & h2300: The color values for six 8-bit color channels are stored in consecutive bytes, for a total of 48 bits.
- ColorPacking & h2400: The color values for seven 8-bit color channels are stored in consecutive bytes, for a total of 56 bits.
- ColorPacking & h2500: The color values for eight 8-bit color channels are stored in consecutive bytes, for a total of 64 bits.
- ColorPacking & h2600: The color values for two 16-bit color channels are stored in a 32-bit word.
- ColorPacking & h2700: The color values for a 32-bit color channel are stored in a 32-bit word.
41.3 class ColorSyncCMMInfoMBS

41.3.1 class ColorSyncCMMInfoMBS

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A class for informations about a CMM known to the operation system.
Notes: Requires ColorSync 2.6 or newer.

41.3.2 Properties

41.3.3 Description as String

Notes:
If DescriptionUnicode is not "", it's returned, else DescriptionASCII.
Requires ColorSync 2.6 or newer.
(Read only property)

41.3.4 DescriptionASCII as string

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The description string for this CMM as ASCII string.
Notes:
Requires ColorSync 2.6 or newer.
(Read only property)

41.3.5 DescriptionUnicode as string

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The description string for this CMM as an Unicode string.
Notes:
 Only useful on REALbasic 4.5 or later.
Requires ColorSync 2.6 or newer.
(Read only property)
41.3.6 **Name as String**

MBS MacClassic Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name string for this CMM as a string.

**Notes:**
If NameUnicode is not "", it’s returned, else NameASCII.
Requires ColorSync 2.6 or newer.
(Read only property)

41.3.7 **NameASCII as string**

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name string for this CMM as ASCII string.

**Notes:**
Requires ColorSync 2.6 or newer.
(Read only property)

41.3.8 **NameUnicode as string**

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name string for this CMM as Unicode string.

**Notes:**
Only useful on REALbasic 4.5 or later.
Requires ColorSync 2.6 or newer.
(Read only property)

41.3.9 **Type as string**

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Type Code for this CMM.

**Notes:**
Requires ColorSync 2.6 or newer.
(Read only property)
41.3.10 Vendor as string

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Vendor Code for this CMM.
**Notes:**
Requires ColorSync 2.6 or newer.
(Read only property)

41.3.11 Version as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Version Code for this CMM.
**Notes:**
Requires ColorSync 2.6 or newer.
(Read only property)
41.4. class ColorSyncProfileInfoMBS

41.4.1 class ColorSyncProfileInfoMBS

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for informations about a profile file known to the operation system. **Deprecated:** This item is deprecated and should no longer be used.

41.4.2 Methods

41.4.3 OpenProfile as ColorSyncProfileMBS

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Opens this profile.

41.4.4 Properties

41.4.5 className as string

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class of the profile’s device. **Notes:** Possible values:

- "scnr" An input device profile defined for a scanner.
- "mntr" A display device profile defined for a monitor.
- "prtr" An output device profile defined for a printer.
- "link" A device link profile.
- "abst" An abstract profile.
- "spac" A color space profile.
- "nmcl" A named color space profile.

Renamed in Plugin version 3.3 to "classname" instead of "class". (Read only property)
41.4.6 DataColorSpace as string

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The color space signature of the profile's device.

**Notes:**

Possible values:

- "XYZ" The XYZ data color space.
- "Lab" The L*a*b* data color space.
- "Luv" The L*u*v* data color space.
- "Yxy" The Yxy data color space.
- "RGB" The RGB data color space.
- "sRGB" The RGB data color space.
- "GRAY" The Gray data color space.
- "HSV" The HSV data color space.
- "HLS" The HLS data color space.
- "CMYK" The CMYK data color space.
- "CMY" The CMY data color space.
- "MCH5" The five-channel multichannel (HiFi) data color space.
- "MCH6" The six-channel multichannel (HiFi) data color space.
- "MCH7" The seven-channel multichannel (HiFi) data color space.
- "MCH8" The eight-channel multichannel (HiFi) data color space.

Other values without a definition from Apple:

- "3CLR", "4CLR", "5CLR", "6CLR", "7CLR", "8CLR", "NAME", "9CLR", "ACLR", "BCLR", "CCLR", "DCLR", "ECLR", "FCLR".

(Read only property)

41.4.7 Location as ColorSyncProfileLocationMBS

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The location of the profile as a ColorSyncProfileLocationMBS object.

**Notes:** (Read only property)

41.4.8 ManufacturerDate as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A code for the date where the manufacturer made this profile.
41.4. CLASS COLORSYNCPROFILEINFOMBS

Notes: (Read only property)

41.4.9 ManufacturerID as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The ID of the manufacturer.

Notes: (Read only property)

41.4.10 ManufacturerModel as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The model code of the manufacturer.

Notes: (Read only property)

41.4.11 ManufacturerSerialNumber as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The serial number from the manufacturer for this device.

Notes: (Read only property)

41.4.12 name as string

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of the profile.

Notes: (Read only property)

41.4.13 Platform as string

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The signature of the platform for this profile.

Notes:

(Read only property)
"APPL" Apple.
"MSFT" Microsoft
"SUNW" Sun.
"SGI" Silicon graphics.
"TGNT" Taligent

41.4.14  PreferredCMM as string

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The code for the preferred ColorMatchingModule of this profile.
**Notes:**
Most times you'll get "appl" for Apple.
(Read only property)

41.4.15  ScriptCode as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The scriptcode for the name of the string.
**Notes:** (Read only property)

41.4.16  Version as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The version of the profile format.
**Notes:**
The first 8 bits indicate the major version number, followed by 8 bits indicating the minor version number. The following 2 bytes are reserved.

The profile version number is not tied to the version of the ColorSync Manager. Profile formats and their versions are defined by the ICC. For example, a major version change may indicate the addition of new required tags to the profile format; a minor version change may indicate the addition of new optional tags. (Read only property)
41.5. class ColorSyncProfileLocationMBS

41.5.1 class ColorSyncProfileLocationMBS


41.5.2 Properties

41.5.3 Data as MemoryBlock

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The memory-block for this location if it is memory-based.

Notes:
This memory is generated as a wrapper to the original data in memory. So if you have created the profile using a memory block this is not your original block, but a copy of it pointing to the same data in memory.
(Read and Write property)

41.5.4 FilePath as String


Notes:
Only valid with type=5.
(Read and Write property)

41.5.5 isFile as Boolean

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Is the profile read from a file?

Notes: (Read and Write property)

41.5.6 isMemory as Boolean

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Is the profile read from a memory block?

Notes: (Read and Write property)
41.5.7 Path as folderitem

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The folderitem for this location if it is disk-based. **Notes:** (Read and Write property)

41.5.8 Type as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The type of location where the profile is from. **Notes:**

Possible values:

0  profile is temporary
1  profile is disk-based
2  profile in relocatable memory
3  profile in nonrelocatable memory
4  profile is accessed by procedure
5  profile is path-based
6  profile is buffer-based

(Read and Write property)
41.6. CLASS COLORSYNCPROFILEMBS

41.6 class ColorSyncProfileMBS

41.6.1 class ColorSyncProfileMBS

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for an opened profile. 
**Deprecated:** This item is deprecated and should no longer be used. **Notes:** For newer apps, better use CSProfileMBS or LCMS2ProfileMBS classes instead.

41.6.2 Methods

41.6.3 Copy(target as folderitem) as ColorSyncProfileMBS

MBS MacClassic Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy of the profile at the given file specification. **Notes:** Target uses FSSpec so it’s limited to 31 characters for the filename, but you can of course rename the file after creating it.

Requires ColorSync 2.0 or newer.

41.6.4 CountElements as UInt32

MBS MacClassic Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Counts the elements in the profile. **Example:**

```vba
dim fi as FolderItem = GetFolderItem("/system/Library/ColorSync/Profiles/Generic RGB Profile.icc", folderitem.PathType-Shell)
dim ip as ColorSyncProfileMBS = fi.OpenAsColorSyncProfileMBS
MsgBox str(ip.CountElements) // shows 11
```

**Notes:** Lasterror is set.
41.6.5 Description as string


**Function:** The localized description of the profile.

**Example:**

```vba
Dim fi As FolderItem = GetFolderItem("/system/Library/ColorSync/Profiles/Generic RGB Profile.icc", folderitem.PathType-Shell)
Dim ip As ColorSyncProfileMBS = fi.OpenAsColorSyncProfileMBS

MsgBox ip.Description
```

**Notes:** `LastError` is set.

41.6.6 ICCData as string


**Function:** Returns the ICC Data of the profile.

**Example:**

```vba
Dim fi As FolderItem = GetFolderItem("/system/Library/ColorSync/Profiles/Generic RGB Profile.icc", folderitem.PathType-Shell)
Dim ip As ColorSyncProfileMBS = fi.OpenAsColorSyncProfileMBS

MsgBox str(lenb(ip.ICCData)) // shows len in bytes
```

**Notes:**

You can use this data and write it into an *.ICC file or embed it in a picture file.

Requires Mac OS X 10.4.

41.6.7 MD5 as string


**Function:** The MD5 checksum of this profile.

**Example:**

```vba
Dim fi As FolderItem = GetFolderItem("/system/Library/ColorSync/Profiles/Generic RGB Profile.icc", folderitem.PathType-Shell)
Dim ip As ColorSyncProfileMBS = fi.OpenAsColorSyncProfileMBS

MsgBox EncodingToHexMBS(ip.MD5)
```
41.6. CLASS COLORSYNCPROFILEMBS

Notes:
Returns a binary string. To get the hex number for displaying, use EncodingToHexMBS. Lasterror is set.

41.6.8 Modified as boolean

Function: Whether the profile has been modified.
Example:

```vba
dim fi as FolderItem = GetFolderItem(“/system/Library/ColorSync/Profiles/Generic RGB Profile.icc”, folderitem.PathType-Shell)
dim ip as ColorSyncProfileMBS = fi.OpenAsColorSyncProfileMBS
MsgBox str(ip.Modified) // shows false
```

Notes: Lasterror is set.

41.6.9 Name as String

Function: Returns the name of the profile.
Notes:
Returns the first name property which is not "" in this order:
1. unicode encoded name
2. MacRoman encoded name
3. ASCII encoded name

41.6.10 ProfileElementMemory(tag as string) as Memoryblock

Function: Returns the profile element with the given tag.
Notes:
Tag must be a 4 letter string.
Returns nil on any error.
e.g. cmMediaBlackPointTag = "bkpt" and cmMediaWhitePointTag = "wtpt".

### 41.6.11 ProfileElementString(tag as string) as string

**MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Returns the profile element with the given tag.

**Notes:**
- Tag must be a 4 letter string.
- Returns "" on any error.

### 41.6.12 RefCount as Integer

**MBS MacClassic Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** The reference count for this profile.

**Example:**

```vba
    dim fi as FolderItem = GetFolderItem("/system/Library/ColorSync/Profiles/Generic RGB Profile.icc", folderitem.PathType-Shell)
    dim ip as ColorSyncProfileMBS = fi.OpenAsColorSyncProfileMBS
    MsgBox str(ipRefCount) // shows 1
```

**Notes:**
- While the ColorSyncProfileMBS object has a reference count, the ProfileRef handle has a reference count, too.
- So if RefCount is 1, your ColorSyncProfileMBS object is the only owner and can modify the profile without disturbing other application parts.
- Lasterror is set.

### 41.6.13 Save as boolean

**MBS MacClassic Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Saves the profile back to disc.

**Notes:** Requires ColorSync 2.6 or newer.
41.6. **CLASS COLORSYNCPROFILEMBS**

### 41.6.14 Validate as boolean

MBS MacClassic Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Validates whether the profile works with the installed CMMs. 
**Notes:** Requires ColorSync 2.6 or newer.

### 41.6.15 Properties

#### 41.6.16 Handle as Integer

**Function:** The handle of the profile. 
**Notes:** May be useful for declares. 
(Read only property)

#### 41.6.17 Lasterror as Integer

**Function:** The last error code. 
**Notes:** Zero is for no error. -1 is a plugin error, normally with wrong parameters, no handle or not supported. 
(Read only property)

#### 41.6.18 Location as ColorSyncProfileLocationMBS

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The location of the profile as a ColorSyncProfileLocationMBS object. 
**Notes:** (Read only property)

#### 41.6.19 NameASCII as string

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of the profile as an ASCII string (7bit). 
**Notes:** Requires ColorSync 2.6 or newer. 
(Read only property)
41.6.20 NameMac as string

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of the profile as a Mac string.

**Notes:**

Requires ColorSync 2.6 or newer.
(Read only property)

41.6.21 NameUnicode as string

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of the profile as a Unicode string.

**Notes:**

Only useful on REALbasic 4.5 or later.
Requires ColorSync 2.6 or newer.
(Read only property)
41.7. class ColorSyncProfileSetItemMBS

41.7.1. class ColorSyncProfileSetItemMBS

MBS MacClassic Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: This class is used for the ColorSyncWorldMBS constructor to create a color transformation with specifying rendering intents and the CMM engine.

41.7.2. Properties

41.7.3. profile as ColorSyncProfileMBS

MBS MacClassic Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The profile you want to use. Notes: (Read and Write property)

41.7.4. renderingIntent as Integer


41.7.5. transformTag as Integer


41.7.6. Constants

41.7.7. cmAbsoluteColorimetric = 3

MBS MacClassic Plugin, Plugin Version: 10.5. Function: One of the rendering intent constants. Notes: Absolute Colorimetric
41.7.8  \texttt{cmPerceptual} = 0

MBS MacClassic Plugin, Plugin Version: 10.5. \textbf{Function:} One of the rendering intent constants. \textbf{Notes:} Perceptual

41.7.9  \texttt{cmRelativeColorimetric} = 1

MBS MacClassic Plugin, Plugin Version: 10.5. \textbf{Function:} One of the rendering intent constants. \textbf{Notes:} Relative Colorimetric

41.7.10 \texttt{cmSaturation} = 2

MBS MacClassic Plugin, Plugin Version: 10.5. \textbf{Function:} One of the rendering intent constants. \textbf{Notes:} Saturation

41.7.11 \texttt{kDeviceToPCS} = 1

MBS MacClassic Plugin, Plugin Version: 10.5. \textbf{Function:} One of the transform constants.

41.7.12 \texttt{kNoTransform} = 0

MBS MacClassic Plugin, Plugin Version: 10.5. \textbf{Function:} One of the transform constants.

41.7.13 \texttt{kPCSToDevice} = 2

MBS MacClassic Plugin, Plugin Version: 10.5. \textbf{Function:} One of the transform constants.

41.7.14 \texttt{kPCSToPCS} = 3

MBS MacClassic Plugin, Plugin Version: 10.5. \textbf{Function:} One of the transform constants.
41.7.15  kUseAtoB = 1

MBS MacClassic Plugin, Plugin Version: 10.5. **Function:** One of the transform constants.

41.7.16  kUseBtoA = 2

MBS MacClassic Plugin, Plugin Version: 10.5. **Function:** One of the transform constants.

41.7.17  kUseBtoB = 3

MBS MacClassic Plugin, Plugin Version: 10.5. **Function:** One of the transform constants.

41.7.18  kUseProfileIntent = -1

MBS MacClassic Plugin, Plugin Version: 10.5. **Function:** One of the rendering intent constants.
41.8  class ColorSyncWorldMBS

41.8.1  class ColorSyncWorldMBS

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a Colorsync world. **Deprecated:** This item is deprecated and should no longer be used. **Notes:**

A ColorSyncWorldMBS is an object which holds two profiles to match pictures between.

Possible error codes from Colorsync:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>noErr</td>
<td>No error</td>
</tr>
<tr>
<td>cmProfileError</td>
<td>-170  There is something wrong with the content of the profile</td>
</tr>
<tr>
<td>cmMethodError</td>
<td>-171  An error occurred during the CMM arbitration process that determines the CMM to use</td>
</tr>
<tr>
<td>cmMethodNotFound</td>
<td>-175  CMM not present</td>
</tr>
<tr>
<td>cmProfileNotFound</td>
<td>-176  Responder error</td>
</tr>
<tr>
<td>cmProfilesIdentical</td>
<td>-177  Profiles are the same</td>
</tr>
<tr>
<td>cmCantConcatenateError</td>
<td>-178  Profiles can’t be concatenated</td>
</tr>
<tr>
<td>cmCantXYZ</td>
<td>-179  CMM does not handle XYZ color space</td>
</tr>
<tr>
<td>cmCantDeleteProfile</td>
<td>-180  Responder error</td>
</tr>
<tr>
<td>cmUnsupportedDataType</td>
<td>-181  Responder error</td>
</tr>
<tr>
<td>cmNoCurrentProfile</td>
<td>-182  Responder error</td>
</tr>
<tr>
<td>cmElementTagNotFound</td>
<td>-4200  The tag you specified is not in the specified profile</td>
</tr>
<tr>
<td>cmIndexRangeErr</td>
<td>-4201  Tag index out of range</td>
</tr>
<tr>
<td>cmFatalProfileErr</td>
<td>-4203  Returned from File Manager while updating a profile file in response to CMUpdateProfile; profile content may be corrupted.</td>
</tr>
<tr>
<td>cmInvalidProfileLocation</td>
<td>-4205  Operation not supported for this profile location</td>
</tr>
<tr>
<td>cmInvalidSearch</td>
<td>-4206  Bad search handle</td>
</tr>
<tr>
<td>cmSearchError</td>
<td>-4207  Internal error occurred during profile search</td>
</tr>
<tr>
<td>cmInvalidColorSpace</td>
<td>-4209  Profile color space does not match bitmap type</td>
</tr>
<tr>
<td>cmInvalidSrcMap</td>
<td>-4210  Source pixel map or bitmap was invalid</td>
</tr>
<tr>
<td>cmInvalidDstMap</td>
<td>-4211  Destination pix/bit map was invalid</td>
</tr>
<tr>
<td>cmNoGDevicesError</td>
<td>-4212  Begin matching or end matching - no graphics devices available</td>
</tr>
<tr>
<td>cmInvalidProfileComment</td>
<td>-4213  Bad profile comment during drawpicture</td>
</tr>
<tr>
<td>cmRangeoverFlow</td>
<td>-4214  One or more output color value overflows in color conversion; all input color values will be converted and the overflow will be clipped</td>
</tr>
<tr>
<td>cmCantCopyModifiedV1Profile</td>
<td>-4215  It is illegal to copy version 1.0 profiles that have been modified</td>
</tr>
<tr>
<td>cmNamedColorNotFound</td>
<td>-4216  The specified named color was not found in the specified profile</td>
</tr>
<tr>
<td>cmCantGamutCheckError</td>
<td>-4217  Gamut checking not supported by this color world - that is, the color world does not contain a gamut table because it was built with gamut checking turned off</td>
</tr>
</tbody>
</table>
41.8. CLASS COLORSYNCWORLDMBS

41.8.2 Methods

41.8.3 Constructor(CMM as Integer, flags as Integer, flagsMask as Integer, profiles() as ColorSyncProfileSetItemMBS)

Function: Creates a new ColorSync World from the given profile list.
Example:

dim fi as FolderItem = GetFolderItem("/system/Library/ColorSync/Profiles/Generic RGB Profile.icc", folderitem.PathType-Shell)
dim fo as FolderItem = GetFolderItem("/system/Library/ColorSync/Profiles/Generic CMYK Profile.icc", folderitem.PathTypeShell)

dim ip as ColorSyncProfileMBS = fi.OpenAsColorSyncProfileMBS
dim op as ColorSyncProfileMBS = fo.OpenAsColorSyncProfileMBS

dim si as new ColorSyncProfileSetItemMBS
si.profile = ip
si.renderingIntent = si.cmPerceptual
si.transformTag = si.kDeviceToPCS

dim so as new ColorSyncProfileSetItemMBS
so.profile = op
so.renderingIntent = si.cmPerceptual
so.transformTag = si.kPCSToDevice

dim a(-1) as ColorSyncProfileSetItemMBS
a.Append si
a.Append so

dim cw as new ColorSyncWorldMBS(ColorSyncWorldMBS.kDefaultCMMSignature, 0, 0, a)

if cw.Handle = 0 then
MsgBox "Failed to setup color world."
else
MsgBox "Success."
end if

Notes: Lasterror is set.

See also:
• 41.8.4 Constructor(profiles() as ColorSyncProfileMBS)
• 41.8.5 Constructor(source as ColorSyncProfileMBS, destination as ColorSyncProfileMBS)
41.8.4 Constructor(profiles() as ColorSyncProfileMBS)

Function: Creates a new ColorSync World from an array of profiles.
Notes:
Requires Colorsync 3.0 or newer.
Lasterror is set.
See also:
- 41.8.3 Constructor(CMM as Integer, flags as Integer, flagsMask as Integer, profiles() as ColorSyncProfileSetItemMBS) 7387
- 41.8.5 Constructor(source as ColorSyncProfileMBS, destination as ColorSyncProfileMBS) 7388

41.8.5 Constructor(source as ColorSyncProfileMBS, destination as ColorSyncProfileMBS)

Function: Creates a new ColorSync World from two profiles.
Notes: Lasterror is set.
See also:
- 41.8.3 Constructor(CMM as Integer, flags as Integer, flagsMask as Integer, profiles() as ColorSyncProfileSetItemMBS) 7387
- 41.8.4 Constructor(profiles() as ColorSyncProfileMBS) 7388

41.8.6 GetCMMSignature as UInt32

Function: Queries the CMM signature for this colorsync setup.
Example:
```vbnet
dim fi as FolderItem = GetFolderItem("/system/Library/ColorSync/Profiles/Generic RGB Profile.icc", folderItem.PathTypeShell)
dim fo as FolderItem = GetFolderItem("/system/Library/ColorSync/Profiles/Generic CMYK Profile.icc", folderItem.PathTypeShell)

dim ip as ColorSyncProfileMBS = fi.OpenAsColorSyncProfileMBS
dim op as ColorSyncProfileMBS = fo.OpenAsColorSyncProfileMBS

dim cw as new ColorSyncWorldMBS(ip,op)
MsgBox StringFromOSTypeMBS(cw.GetCMMSignature) // shows appl for Apple's ColorSync
```
41.8. CLASS COLORSYNCWORLDMBS

41.8.7 MatchBitmap(source as ColorSyncBitmapMBS, dest as ColorSyncBitmapMBS)

Function: Convert this bitmap between profiles.
Notes:
See the Class notes for possible error codes returned.
If source and destination are the same, only pass one of them.
LastError is set.
See also:
- 41.8.8 MatchBitmap(sourcedest as ColorSyncBitmapMBS)

41.8.8 MatchBitmap(sourcedest as ColorSyncBitmapMBS)

Function: Convert this bitmap between profiles.
Notes:
Short version of MatchBitmap where source and destination are only one bitmap.
LastError is set.
See also:
- 41.8.7 MatchBitmap(source as ColorSyncBitmapMBS, dest as ColorSyncBitmapMBS)

41.8.9 MatchPicture(p as picture)

Function: Convert this picture between profiles.
Notes:
Not supported for Cocoa target.
See the Class notes for possible error codes returned.
LastError is set.

41.8.10 Properties

41.8.11 Handle as Integer

Function: The handle of the colorsync world.
Notes:
May be useful for declares.
(Read only property)
### 41.8.12 Lasterror as Integer

MBS MacClassic Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last error code. **Notes:** (Read only property)

### 41.8.13 Constants

#### 41.8.14 cmBestMode = & h00020000

MBS MacClassic Plugin, Plugin Version: 10.5. **Function:** One of the constants for the quality options. **Notes:** Best Mode.

#### 41.8.15 cmBlackPointCompensation = 4

MBS MacClassic Plugin, Plugin Version: 10.5. **Function:** One of the constants for the flags. **Notes:** 0 do not apply Black Point Compensation, 4 apply.

#### 41.8.16 cmBlackPointCompensationMask = 4

MBS MacClassic Plugin, Plugin Version: 10.5. **Function:** One of the constants for the flags. **Notes:** If bit 2 is 1 then CMM will enable Black Point Compensation if applicable.

#### 41.8.17 cmCMSReservedFlagsMask = & hFFFF0000

MBS MacClassic Plugin, Plugin Version: 10.5. **Function:** One of the constants for the flags. **Notes:** These bits of the flags field are defined and reserved by CMS vendor.

#### 41.8.18 cmDraftMode = & h00010000

MBS MacClassic Plugin, Plugin Version: 10.5. **Function:** One of the constants for the quality options. **Notes:** Draft Mode.
41.8. **CLASS COLORSYNCWORLDMBS**

### 41.8.19 cmEmbeddedMask = 1

MBS MacClassic Plugin, Plugin Version: 10.5. **Function:** One of the constants for the flags.  
**Example:**

```vbnet
dim flags as Integer ' your flags  
if bitwiseand(flags, ColorSyncWorldMBS.cmEmbeddedMask) = 1 then  
    MsgBox "set"  
end if
```

**Notes:** Whether to use embedded profile or not.

### 41.8.20 cmEmbeddedProfile = 0

MBS MacClassic Plugin, Plugin Version: 10.5. **Function:** One of the constants for the flags.

### 41.8.21 cmEmbeddedUse = 2

MBS MacClassic Plugin, Plugin Version: 10.5. **Function:** One of the constants for the flags.  
**Example:**

```vbnet
dim flags as Integer ' your flags  
if bitwiseand(flags, ColorSyncWorldMBS.cmEmbeddedUseMask) = ColorSyncWorldMBS.cmEmbeddedUse  
then  
    MsgBox "set"  
end if
```

### 41.8.22 cmEmbeddedUseMask = 2

MBS MacClassic Plugin, Plugin Version: 10.5. **Function:** One of the constants for the flags.  
**Example:**

```vbnet
dim flags as Integer ' your flags  
if bitwiseand(flags, ColorSyncWorldMBS.cmEmbeddedUseMask) = ColorSyncWorldMBS.cmEmbeddedUse  
then  
    MsgBox "set"  
end if
```
Notes: Whether to allow embedded profile or not.

41.8.23 cmGamutCheckingMask = & h00080000

MBS MacClassic Plugin, Plugin Version: 10.5. **Function:** One of the constants for the flags.  
**Notes:** If bit 19 is 0 then create gamut checking info, if 1 then no gamut checking info.

41.8.24 cmICCReservedFlagsMask = & h0000FFFF

MBS MacClassic Plugin, Plugin Version: 10.5. **Function:** One of the constants for the flags.  
**Notes:** These bits of the flags field are defined and reserved by ICC

41.8.25 cmInterpolationMask = & h00040000

MBS MacClassic Plugin, Plugin Version: 10.5. **Function:** One of the constants for the flags.  
**Notes:** if bit 18 is 0 then interpolation, if 1 then lookup only.

41.8.26 cmNormalMode = & h00000000

MBS MacClassic Plugin, Plugin Version: 10.5. **Function:** One of the constants for the quality options.  
**Notes:** Normal Mode.

41.8.27 cmQualityMask = & h00030000

MBS MacClassic Plugin, Plugin Version: 10.5. **Function:** One of the constants for the flags.  
**Example:**

```pascal
dim flags as Integer // your flags
if bitwiseand(flags, ColorSyncWorldMBS.cmQualityMask) = ColorSyncWorldMBS.cmBestMode then
MsgBox "Best Mode."
end if
```

**Notes:** if bits 16-17 is 0 then normal, if 1 then draft, if 2 then best.
41.8.28  kAdobeCMMSignature = & h41444245

MBS MacClassic Plugin, Plugin Version: 10.5. **Function:** One of the signature constants. **Notes:** Use Adobe’s CMM. Works only if Adobe CMM is installed.

41.8.29  kAppleCMMSignature = & h6170706C

MBS MacClassic Plugin, Plugin Version: 10.5. **Function:** One of the signature constants. **Notes:** Use Apple’s CMM.

41.8.30  kDefaultCMMSignature = & h6170706C

MBS MacClassic Plugin, Plugin Version: 10.5. **Function:** One of the signature constants. **Notes:** The default = Apple.
41.9  module CSDeviceMBS

41.9.1  module CSDeviceMBS

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A module for device related Colorsync methods.

41.9.2  Methods

41.9.3  DeviceInfo(deviceClass as string, deviceID as CFUUIDMBS) as dictionary

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries information on the device. **Notes:**

Returns a dictionary with the following keys and values resolved for the current host and current user.

- kColorSyncDeviceClass: camera, display, printer, scanner
- kColorSyncDeviceID: CFUUIDRef registered with ColorSync
- kColorSyncDeviceDescription: localized device description
- kColorSyncDeviceUserScope: kCFPreferencesAnyUser or kCFPreferencesCurrentUser
- kColorSyncDeviceHostScope: kCFPreferencesAnyHost or kCFPreferencesCurrentHost
- kColorSyncFactoryProfiles: dictionary with ProfileID and kColorSyncCustomProfiles keys.
- kColorSyncCustomProfiles: dictionary with keys ProfileID and values CFURLMBS or nil.

ProfileID is a dictionary with the following keys:

- kColorSyncDeviceProfileURL: CFURLMBS or kCFNull
- kColorSyncDeviceModeDescription: localized mode description

41.9.4  DeviceProfiles as dictionary()

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries the device profiles. **Notes:**

The dictionaries contain the following keys:
41.9. kColorSyncDeviceClass as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A constant for a possible value for the device class.

41.9.6 kColorSyncCustomProfiles as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the key constants for the info/options dictionaries.
**Notes:** Dictionary containing custom profile info.

41.9.7 kColorSyncDeviceClass as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the key constants for the info/options dictionaries.

41.9.8 kColorSyncDeviceDefaultProfileID as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the key constants for the info/options dictionaries.

41.9.9 kColorSyncDeviceDescription as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the key constants for the info/options dictionaries.
**Notes:** String with a name in current locale.
41.9.10 kColorSyncDeviceDescriptions as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the key constants for the info/options dictionaries. **Notes:** Dictionary with localized names.

41.9.11 kColorSyncDeviceHostScope as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the key constants for the info/options dictionaries.

41.9.12 kColorSyncDeviceID as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the key constants for the info/options dictionaries. **Notes:** Value is a CFUUIDMBS for this key.

41.9.13 kColorSyncDeviceModeDescription as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the key constants for the info/options dictionaries. **Notes:** String, e.g. Glossy, Best Quality.

41.9.14 kColorSyncDeviceModeDescriptions as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the key constants for the info/options dictionaries. **Notes:** Dictionary with localized mode names.

41.9.15 kColorSyncDeviceProfileID as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the key constants for the info/options dictionaries.
41.9.16  kColorSyncDeviceProfileIsCurrent as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the key constants for the info/options dictionaries.

41.9.17  kColorSyncDeviceProfileIsDefault as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the key constants for the info/options dictionaries.

41.9.18  kColorSyncDeviceProfileIsFactory as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the key constants for the info/options dictionaries.

41.9.19  kColorSyncDeviceProfilesNotification as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the key constants for the info/options dictionaries.

41.9.20  kColorSyncDeviceProfileURL as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the key constants for the info/options dictionaries.

41.9.21  kColorSyncDeviceRegisteredNotification as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the key constants for the info/options dictionaries.

41.9.22  kColorSyncDeviceUnregisteredNotification as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the key constants for the info/options dictionaries.
41.9.23  kColorSyncDeviceUserScope as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the key constants for the info/options dictionaries.

41.9.24  kColorSyncDisplayDeviceClass as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A constant for a possible value for the device class.

41.9.25  kColorSyncDisplayDeviceProfilesNotification as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the key constants for the info/options dictionaries.

41.9.26  kColorSyncFactoryProfiles as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the key constants for the info/options dictionaries.
**Notes:** Dictionary containing factory profile info.

41.9.27  kColorSyncPrinterDeviceClass as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A constant for a possible value for the device class.

41.9.28  kColorSyncProfileHostScope as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the key constants for the info/options dictionaries.

41.9.29  kColorSyncProfileUserScope as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the key constants for the info/options dictionaries.
## 41.9.30 kColorSyncScannerDeviceClass as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A constant for a possible value for the device class.

## 41.9.31 RegisterDevice(deviceClass as string, deviceID as CFUUIDMBS, deviceInfo as dictionary) as boolean

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Registers a device.

**Notes:**

deviceInfo: A dictionary containing information needed to register a device.

**Required keys:**

- kColorSyncDeviceDescriptions: Dictionary with localized names of the device. Localization keys must be five character strings containing language code and region code in the lc:RG format and it must contain (at least) the "en_US" locale.
- kColorSyncFactoryProfiles: Dictionary with factory profile info. Dictionaries The keys are the profile IDs and the values are the profile info dictionaries.

**Optional keys:**

- kColorSyncDeviceHostScope: host scope of the device; one of kCFPreferences { Current,Any } Host; if unspecified kCFPreferencesCurrentHost is assumed.
- kColorSyncDeviceUserScope: user scope of the device; one of kCFPreferences { Current,Any } User; if unspecified kCFPreferencesCurrentUser is assumed.

**factory profiles dictionary - value for the key kColorSyncFactoryProfiles in deviceInfo**

**Required keys and values:**

Each profile is identified by a ProfileID (of String type) which used as the key. Value associated with the key is a profile info dictionary that describes an individual device profile.

- kColorSyncDeviceDefaultProfileID: the associated value must be one of the ProfileID present in the dictionary. Presence of this key is not required if there is only one factory profile.

**profile info Dictionary**
Required keys:

kColorSyncDeviceProfileURL: CFURLMBS of the profile to be registered
kColorSyncDeviceModeDescriptions: Dictionary with localized device mode names for the profile. Localization keys must be five character strings containing language code and region code in the lc_RG format and it must contain (at least) the "en_US" locale. E.g. "en_US" "Glossy Paper with best quality"

Example of deviceInfo dictionary:

kColorSyncDeviceDescriptions:
en_US My Little Printer
de_DE Mein Kleiner Drucker
fr_FR Mon petit imprimante
...

colorSyncFactoryProfiles: "Profile 1"
kColorSyncDeviceProfileURL: CFURLMBS
colorSyncDeviceModeDescriptions:
en_US Glossy Paper
de_DE Glanzpapier
fr_FR Papier glace
...

colorSyncDeviceDefaultProfileID: "Profile 1"
kColorSyncDeviceUserScope: kCFPreferencesAnyUser
colorSyncDeviceHostScope: kCFPreferencesCurrentHost

Notes:
1. Scope for factory profiles is exactly the same as the device scope.
2. Pass CFNullRef in lieu of the profile URL or no URL key/value pair at all if factory profile is not available. This will enable setting custom profile.
3. For the reasons of compatibility with legacy API, it is recommended that the profile keys are created as CFStrings from uint32 numbers as follows: key = encodings.UTF32.chr(value)

Returns true on success and false in case of failure

41.9.32 SetCustomProfiles(deviceClass as string, deviceID as CFUUIDMBS, profileInfo as dictionary) as boolean

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Sets a custom profile:
Notes:

profileInfo is a CFDictionary containing the information about custom profiles to be set in lieu of factory profiles.

Required keys:

ProfileIDs which must be the subset of the ProfileIDs that device was registered with or kColorSyncDeviceDefaultProfileID for setting custom default profile.

Required values:

CFURLMBS (folderitem) of the profile to be set as a custom profile.

Optional keys:

kColorSyncProfileHostScope: host scope of the profile; one of kCFPreferences { Current, Any } Host; if unspecified kCFPreferencesCurrentHost is assumed.

kColorSyncProfileUserScope: user scope of the profile; one of kCFPreferences { Current, Any } User; if unspecified kCFPreferencesCurrentUser is assumed.

Notes:
1. Profile scope for custom profiles cannot exceed scope of the factory profiles.
2. There is only one host scope and user scope per dictionary (i.e. per call)
3. Pass CFNullRef in lieu of the profile URL to unset the custom profile and reset the current profile to the factory profile.

Returns true on success and false in case of failure.

41.9.33 UnregisterDevice(deviceClass as string, deviceID as CFUUIDMBS) as boolean


Notes: Returns true on success and false in case of failure.
41.10 class CSManagementModuleMBS

41.10.1 class CSManagementModuleMBS

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The class for a Color Management Module module.

**Notes:**
Color conversions are performed by a Color Management Module (CMM) which is a plugin to ColorSync. ColorSync contains Apple CMM, which is not replaceable, but third parties can install their own CMMs. ColorSync provides access to installed CMMs as well as those that can be part of the application bundle. CMM can be selected and specified as a preferred CMM per color transform created by the application. If the third party CMM fails to perform a task, Apple CMM will take it over.
Subclass of the CFObjectMBS class.

41.10.2 Methods

41.10.3 Bundle as CFBundleMBS

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The bundle of the Color Management Module.

**Notes:** Nil for built-in Apple CMM.

41.10.4 CMMIdentifier as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The internal identifier for this Color Management Module.

**Example:**
```vbk
dim a(-1) as CSManagementModuleMBS = CSManagementModuleMBS.InstalledCMMs
for each m as CSManagementModuleMBS in a
    MsgBox m.CMMIdentifier
next
```

41.10.5 Constructor(Bundle as CFBundleMBS)

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a Color Management Module object from a given CF Bundle.

**Example:**
41.10. CLASS CSMANAGEMENTMODULEMBS

```
dim f as FolderItem = GetFolderItem("/Library/ColorSync/CMMs/AdobeCMM.cmm", FolderItem.PathType-Shell)
dim b as CFBundleMBS = CreateBundleMBS(F)
dim m as new CSManagementModuleMBS(b)

' MsgBox stR(m.Handle) // must be non zero

MsgBox m.LocalizedName
MsgBox m.CMMIdentifier
```

### 41.10.6 InstalledCMMs as CSManagementModuleMBS()

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The list of installed Color Management Modules.

**Example:**
```
dim a(-1) as CSManagementModuleMBS = CSManagementModuleMBS.InstalledCMMs
for each m as CSManagementModuleMBS in a
    dim path as string
    dim bundle as CFBundleMBS = m.Bundle
    if bundle<>nil then
        dim ExecutableFileURL as CFURLMBS = bundle.URL
        if ExecutableFileURL<>nil then
            dim s as CFStringMBS = ExecutableFileURL.Str
            if s<>nil then
                path = s.str
            end if
        end if
    end if
end if
MsgBox m.CMMIdentifier+EndOfLine+EndOfLine+m.LocalizedName+EndOfLine+path
next
```

**Notes:** Returns an empty array on failure.

### 41.10.7 LocalizedName as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The localized name of this Color Management Module.

**Example:**
```
dim a(-1) as CSManagementModuleMBS = CSManagementModuleMBS.InstalledCMMs

for each m as CSManagementModuleMBS in a
    MsgBox m.LocalizedName
next
41.11. CLASS CSMUTABLEPROFILEMBS

41.11 class CSMutableProfileMBS

41.11.1 class CSMutableProfileMBS

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The class for a mutable colorsync profile.
**Notes:** Subclass of the CSProfileMBS class.

41.11.2 Methods

41.11.3 Constructor

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new empty mutable profile.
See also:

- 41.11.4 Constructor(profile as CSProfileMBS)

41.11.4 Constructor(profile as CSProfileMBS)

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a mutable copy of the given profile.
See also:

- 41.11.3 Constructor

41.11.5 RemoveTag(signature as string)

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Removes the tag with the signature.

41.11.6 SetHeader(data as string)

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Sets the raw header data.
41.11.7 SetRawTag(signature as string, data as string)

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Sets a tag with the raw data in a string.
41.12  class CSProfileMBS

41.12.1  class CSProfileMBS

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The class for a Colorsync profile.
**Notes:** Subclass of the CFObjectMBS class.

41.12.2  Methods

41.12.3  Constructor(data as string, byref error as CFErrorMBS)

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a profile with the data in the given string.
**Example:**
```vbs
    dim file as FolderItem = GetFolderItem("/System/Library/ColorSync/Profiles/Generic Gray Profile.icc",
    FolderItem.PathTypeShell)
    dim stream as BinaryStream = file.OpenAsBinaryFile(False) // BinaryStream.Open(f, false)
    dim data as string = stream.read(stream.length)
    dim e as CFErrorMBS
    dim p as new CSProfileMBS(data, e)
    MsgBox p.Description
```

**Notes:** On success the handle property is not zero.
See also:

- 41.12.4 Constructor(DisplayID as Integer) 7407
- 41.12.5 Constructor(file as folderitem) 7408
- 41.12.6 Constructor(file as folderitem, byref error as CFErrorMBS) 7408
- 41.12.7 Constructor(name as string) 7409
- 41.12.8 Constructor(profileSequence() as dictionary, options as dictionary) 7409

41.12.4  Constructor(DisplayID as Integer)

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new profile with the given display.
**Notes:**
displayID: system-wide unique display ID (defined by IOKIt); pass 0 for main display.

On success the handle property is not zero.

See also:

- 41.12.3 Constructor(data as string, byref error as CFErrorMBS)
- 41.12.5 Constructor(file as folderitem)
- 41.12.6 Constructor(file as folderitem, byref error as CFErrorMBS)
- 41.12.7 Constructor(name as string)
- 41.12.8 Constructor(profileSequence() as dictionary, options as dictionary)

41.12.5 Constructor(file as folderitem)

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new profile based on the given file.

**Example:**

```vbnet
dim file as FolderItem = GetFolderItem("/System/Library/ColorSync/Profiles/Generic XYZ Profile.icc", FolderItem.PathTypeShell)
dim p as new CSProfileMBS(file)
MsgBox p.Description
```

**Notes:** On success the handle property is not zero.

See also:

- 41.12.3 Constructor(data as string, byref error as CFErrorMBS)
- 41.12.4 Constructor(DisplayID as Integer)
- 41.12.6 Constructor(file as folderitem, byref error as CFErrorMBS)
- 41.12.7 Constructor(name as string)
- 41.12.8 Constructor(profileSequence() as dictionary, options as dictionary)

41.12.6 Constructor(file as folderitem, byref error as CFErrorMBS)

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new profile based on the given file.

**Example:**
41.12. CLASS CSPROFILEMBS

```vba
    dim file as FolderItem = GetFolderItem("/System/Library/ColorSync/Profiles/Generic XYZ Profile.icc", FolderItem.PathTypeShell)
dim e as CFErrorMBS
dim p as new CSProfileMBS(file, e)
```

MsgBox p.Description

Notes: On success the handle property is not zero.
See also:

- 41.12.3 Constructor(data as string, byref error as CFErrorMBS)
- 41.12.4 Constructor(DisplayID as Integer)
- 41.12.5 Constructor(file as folderitem)
- 41.12.7 Constructor(name as string)
- 41.12.8 Constructor(profileSequence() as dictionary, options as dictionary)

41.12.7 Constructor(name as string)

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a profile with the given predefined name.
**Example:**
```vba
    dim c as new CSProfileMBS(CSProfileMBS.kColorSyncGenericXYZProfile)
    MsgBox c.Description
```

Notes: On success the handle property is not zero.
See also:

- 41.12.3 Constructor(data as string, byref error as CFErrorMBS)
- 41.12.4 Constructor(DisplayID as Integer)
- 41.12.5 Constructor(file as folderitem)
- 41.12.6 Constructor(file as folderitem, byref error as CFErrorMBS)
- 41.12.8 Constructor(profileSequence() as dictionary, options as dictionary)

41.12.8 Constructor(profileSequence() as dictionary, options as dictionary)

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a link profile.
**Notes:**
profileSequence: An array of dictionaries, each one containing a profile object and the information on the usage of the profile in the transform.

Required keys:

- kColorSyncProfile: CSProfileMBS
- kColorSyncRenderingIntent: String defining rendering intent
- kColorSyncTransformTag: String defining which tags to use

Optional key:

- kColorSyncBlackPointCompensation: Boolean to enable/disable BPC

options: dictionary with additional public global options (e.g. preferred CMM, quality, etc... It can also contain custom options that are CMM specific.

On success the handle property is not zero.

See also:

- 41.12.3 Constructor(data as string, byref error as CFErrorMBS) 7407
- 41.12.4 Constructor(DisplayID as Integer) 7407
- 41.12.5 Constructor(file as folderitem) 7408
- 41.12.6 Constructor(file as folderitem, byref error as CFErrorMBS) 7408
- 41.12.7 Constructor(name as string) 7409

41.12.9 ContainsTag(signature as string) as boolean

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether the tag is contained in the profile.

41.12.10 CreateDeviceProfile(deviceClass as string, deviceID as CFUUIDMBS, profileID as Variant) as CSProfileMBS


Notes:

deviceClass: ColorSync device class
deviceID: deviceID registered with ColorSync
profilename: profileID registered with ColorSync; pass kColorSyncDeviceDefaultProfileID to get the default profile.

See CSDeviceMBS for more info on deviceClass, deviceID and profileID

Returns nil on failure and Profile object on success.

41.12.11 CreateLink(profileSequence() as dictionary, options as dictionary) as CSProfileMBS

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a link profile.  
**Notes:** 
profileSequence: An array of dictionaries, each one containing a profile object and the information on the usage of the profile in the transform.

Required keys:

kColorSyncProfile: CSProfileMBS  
kColorSyncRenderingIntent: String defining rendering intent  
kColorSyncTransformTag: String defining which tags to use

Optional key:

kColorSyncBlackPointCompensation: Boolean to enable/disable BPC

options: dictionary with additional public global options (e.g. preferred CMM, quality, etc... It can also contain custom options that are CMM specific.

Returns nil on failure and Profile object on success.

41.12.12 CreateWithData(data as string) as CSProfileMBS

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a profile with the data in the given string.  
**Notes:** Returns nil on failure and Profile object on success.  
See also:
41.12.13 CreateWithData(data as string, byref error as CFErrorMBS) as CSProfileMBS

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a profile with the data in the given string. **Notes:** Returns nil on failure and Profile object on success. **See also:**

- 41.12.12 CreateWithData(data as string) as CSProfileMBS

41.12.14 CreateWithDisplayID(DisplayID as Integer) as CSProfileMBS

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new profile with the given display. **Notes:**

- displayID: system-wide unique display ID (defined by IOKIt); pass 0 for main display.

Returns nil on failure and Profile object on success.

41.12.15 CreateWithFile(file as folderitem) as CSProfileMBS

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new profile based on the given file. **Notes:** Returns nil on failure and Profile object on success. **See also:**

- 41.12.16 CreateWithFile(file as folderitem, byref error as CFErrorMBS) as CSProfileMBS

41.12.16 CreateWithFile(file as folderitem, byref error as CFErrorMBS) as CSProfileMBS

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new profile based on the given file. **Example:**

```plaintext
dim file as FolderItem = GetFolderItem("/System/Library/ColorSync/Profiles/Generic XYZ Profile.icc", FolderItem.PathTypeShell)
dim e as CFErrorMBS
dim p as new CSProfileMBS(file, e)
```
MsgBox p.Description

Notes: Returns nil on failure and Profile object on success.
See also:

- 41.12.15 CreateWithFile(file as folderitem) as CSProfileMBS 7412

41.12.17 CreateWithName(name as string) as CSProfileMBS

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a profile with the given name.
**Example:**
```vba
    dim s as string = CSProfileMBS.kColorSyncGenericXYZProfile
dim c as CSProfileMBS = CSProfileMBS.CreateWithName(s)
MsgBox c.Description
```

Notes: Returns nil on failure and Profile object on success.

41.12.18 CreateWithURL(url as string) as CSProfileMBS

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new profile based on the file at the given URL.
**Notes:** Returns nil on failure and Profile object on success.
See also:

- 41.12.19 CreateWithURL(url as string, byref error as CFErrorMBS) as CSProfileMBS 7413

41.12.19 CreateWithURL(url as string, byref error as CFErrorMBS) as CSProfileMBS

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new profile based on the file at the given URL.
**Notes:** Returns nil on failure and Profile object on success.
See also:

- 41.12.18 CreateWithURL(url as string) as CSProfileMBS 7413
## 41.12.20 Data as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Returns a string with the raw data of the profile.

## 41.12.21 Edit as CSMutableProfileMBS

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Creates an editable copy of the profile.

**Notes:** Returns nil on any error.

## 41.12.22 EstimateGamma as Double

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Calculates the estimated gamma for this profile.

**Example:**

```
    dim file as FolderItem = GetFolderItem(“/System/Library/ColorSync/Profiles/Generic Gray Profile.icc”, FolderItem.PathTypeShell)
    dim p as new CSProfileMBS(file)
    MsgBox str(p.EstimateGamma) ' 1.8
```

**Notes:** Returns non-zero value if success or 0.0 in case of error.

See also:

- 41.12.23 EstimateGamma(byref error as CFErrorMBS) as Double

## 41.12.23 EstimateGamma(byref error as CFErrorMBS) as Double

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Calculates the estimated gamma for this profile.

**Notes:** Returns non-zero value if success or 0.0 in case of error.

See also:

- 41.12.22 EstimateGamma as Double

## 41.12.24 EstimateGammaWithDisplayID(displayID as Integer) as Double

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Calculates the estimated gamma value for the given display.
41.12. **CLASS CSPROFILEMBS**

**Notes:** displayID: system-wide unique display ID.
See also:

- 41.12.25 EstimateGammaWithDisplayID(displayID as Integer, byref error as CFErrorMBS) as Double

### 41.12.25 EstimateGammaWithDisplayID(displayID as Integer, byref error as CFErrorMBS) as Double

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Calculates the estimated gamma value for the given display.
**Notes:** displayID: system-wide unique display ID.
See also:

- 41.12.24 EstimateGammaWithDisplayID(displayID as Integer) as Double

### 41.12.26 File as folderitem

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The file reference for this profile.
See also:

- 41.12.27 File(byref error as CFErrorMBS) as folderitem

### 41.12.27 File(byref error as CFErrorMBS) as folderitem

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The file reference for this profile.
See also:

- 41.12.26 File as folderitem

### 41.12.28 Header as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a string with the raw header content.

### 41.12.29 InstalledProfiles as dictionary()

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries the list of installed profiles.
**Example:**
dim a(-1) as Dictionary = CSProfileMBS.InstalledProfiles
dim lines(-1) as string

for each d as Dictionary in a
    lines.Append d.Value(CSProfileMBS.kColorSyncProfileDescription)
next

MsgBox Join(lines, EndOfLine)

Notes: Returns an empty array on any error.

41.12.30  kColorSyncAdobeRGB1998Profile as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the predefined profile names.

41.12.31  kColorSyncGenericCMYKProfile as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the predefined profile names.

41.12.32  kColorSyncGenericGrayGamma22Profile as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the predefined profile names.

41.12.33  kColorSyncGenericGrayProfile as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the predefined profile names.

41.12.34  kColorSyncGenericLabProfile as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the predefined profile names.
41.12.35 kColorSyncGenericRGBProfile as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the predefined profile names.

41.12.36 kColorSyncGenericXYZProfile as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the predefined profile names.

41.12.37 kColorSyncProfileClass as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the tag signature constants.
**Notes:** Can be used with the dictionary returned by the InstalledProfiles method.

41.12.38 kColorSyncProfileColorSpace as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the tag signature constants.
**Notes:** Can be used with the dictionary returned by the InstalledProfiles method.

41.12.39 kColorSyncProfileDescription as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the tag signature constants.
**Notes:** Can be used with the dictionary returned by the InstalledProfiles method.

41.12.40 kColorSyncProfileHeader as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the tag signature constants.
**Notes:** Can be used with the dictionary returned by the InstalledProfiles method.
41.12.41  kColorSyncProfileMD5Digest as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
One of the tag signature constants.
**Notes:** Can be used with the dictionary returned by the InstalledProfiles method.

41.12.42  kColorSyncProfilePCS as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
One of the tag signature constants.
**Notes:** Can be used with the dictionary returned by the InstalledProfiles method.

41.12.43  kColorSyncProfileURL as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
One of the tag signature constants.
**Notes:** Can be used with the dictionary returned by the InstalledProfiles method.

41.12.44  kColorSyncSRGBProfile as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
One of the tag signature constants.
**Notes:** Can be used with the dictionary returned by the InstalledProfiles method.

41.12.45  MD5 as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
MD5 digest for the profile calculated as defined by ICC specification.
**Notes:**
Returns a 16 byte string with the raw bytes of the signature.
Returns an empty string on any error.

41.12.46  RawTag(signature as string) as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
Returns the raw tag value as string.
41.12. CLASS CSPROFILEMBS

41.12.47 TagSignatures as string()

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of the tag signatures.

41.12.48 URL as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The URL reference for this profile.

**Example:**

```vba
dim file as FolderItem = GetFolderItem("/System/Library/ColorSync/Profiles/Generic XYZ Profile.icc", FolderItem.PathTypeShell)
dim p as new CSProfileMBS(file)
MsgBox p.URL
```

See also:

- 41.12.49 URL(byref error as CFErrorMBS) as string

41.12.49 URL(byref error as CFErrorMBS) as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The URL reference for this profile.

See also:

- 41.12.48 URL as string

41.12.50 Verify(byref errors as CFErrorMBS, byref warnings as CFErrorMBS) as boolean

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Verifies the profile.

**Notes:**

errors: returns error strings in case problems are found which would prevent use of the profile.

warnings: returns warning strings indicating problems due to lack of conformance with the ICC specification, but not preventing use of the profile.

Returns true if profile can be used or false otherwise.
41.12.51 Properties

41.12.52 Description as string


Example:

```vba
dim file as FolderItem = GetFolderItem("/System/Library/ColorSync/Profiles/Generic XYZ Profile.icc", FolderItem.PathTypeShell)
dim p as new CSProfileMBS(file)
MsgBox p.Description
```

Notes: (Read only property)

41.12.53 MD5String as String


Example:

```vba
dim file as FolderItem = GetFolderItem("/System/Library/ColorSync/Profiles/Generic XYZ Profile.icc", FolderItem.PathTypeShell)
dim p as new CSProfileMBS(file)
MsgBox p.MD5String
```

Notes:

Returns a 32 byte human readable hexstring with the bytes of the signature.
Returns an empty string on any error.
(Read only property)
41.13 class CSTransformMBS

41.13.1 class CSTransformMBS

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for a ColorSync transformation.

**Notes:**
This class uses newer APIs than those in the older ColorSyncWorldMBS class.
Subclass of the CFObjectMBS class.

41.13.2 Methods

41.13.3 Constructor(profileSequence() as dictionary, options as dictionary)

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new transformation.

**Notes:**
profileSequence: Array of dictionaries, each one containing a profile object and the information on the usage of the profile in the transform.

Required keys:

kColorSyncProfile: CSProfileMBS
kColorSyncRenderingIntent: String defining rendering intent
kColorSyncTransformTag: String defining which tags to use

Optional key:

kColorSyncBlackPointCompensation: Boolean to enable/disable BPC

options: dictionary with additional public global options (e.g. preferred CMM, quality, etc... It can also contain custom options that are CMM specific.

On success the handle property is not zero.
41.13.4  Convert(dest as picture, src as memoryblock, srcDepth as Integer, srcLayout as Integer, srcBytesPerRow as Integer, options as dictionary) as boolean

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the convert methods to transform data.

**Notes:**

dest: Destination picture.

source: Source picture.

src: A memoryblock to the data to be converted.

srcDepth: Describes the bit depth and type of the source color components.

srcFormat: Describes the format and byte packing of the source pixels.

srcBytesPerRow: Number of bytes in the row of data.

returns true if conversion was successful or false otherwise.

See also:

- 41.13.5 Convert(dest as picture, src as picture, options as dictionary) as boolean
- 41.13.6 Convert(dst as memoryblock, dstDepth as Integer, dstLayout as Integer, dstBytesPerRow as Integer, src as picture, options as dictionary) as boolean
- 41.13.7 Convert(width as Integer, height as Integer, dst as memoryblock, dstDepth as Integer, dstLayout as Integer, dstBytesPerRow as Integer, src as picture, options as dictionary) as boolean

41.13.5  Convert(dest as picture, src as picture, options as dictionary) as boolean

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the convert methods to transform data.

**Notes:**

dest: Destination picture.

source: Source picture.

Should only be used with RGB for source/dest profile.

returns true if conversion was successful or false otherwise.

See also:

- 41.13.4 Convert(dest as picture, src as memoryblock, srcDepth as Integer, srcLayout as Integer, srcBytesPerRow as Integer, options as dictionary) as boolean
- 41.13.6 Convert(dst as memoryblock, dstDepth as Integer, dstLayout as Integer, dstBytesPerRow as Integer, src as picture, options as dictionary) as boolean
41.13. CLASS CSTRANSFORMMBS

- 41.13.7 Convert(width as Integer, height as Integer, dst as memoryblock, dstDepth as Integer, dstLayout as Integer, dstBytesPerRow as Integer, src as memoryblock, srcDepth as Integer, srcLayout as Integer, srcBytesPerRow as Integer, options as dictionary) as boolean

41.13.6 Convert(dst as memoryblock, dstDepth as Integer, dstLayout as Integer, dstBytesPerRow as Integer, src as picture, options as dictionary) as boolean


Notes:

dest: Destination picture.
dst: A memoryblock to the destination where the results will be written.
dstDepth: Describes the bit depth and type of the destination color components
dstFormat: Describes the format and byte packing of the destination pixels
dstBytesPerRow: number of bytes in the row of data
source: Source picture.

returns true if conversion was successful or false otherwise

See also:

- 41.13.4 Convert(dest as picture, src as memoryblock, srcDepth as Integer, srcLayout as Integer, srcBytesPerRow as Integer, options as dictionary) as boolean
- 41.13.5 Convert(dest as picture, src as picture, options as dictionary) as boolean
- 41.13.7 Convert(width as Integer, height as Integer, dst as memoryblock, dstDepth as Integer, dstLayout as Integer, dstBytesPerRow as Integer, src as memoryblock, srcDepth as Integer, srcLayout as Integer, srcBytesPerRow as Integer, options as dictionary) as boolean

41.13.7 Convert(width as Integer, height as Integer, dst as memoryblock, dstDepth as Integer, dstLayout as Integer, dstBytesPerRow as Integer, src as memoryblock, srcDepth as Integer, srcLayout as Integer, srcBytesPerRow as Integer, options as dictionary) as boolean


Notes:

width: Width of the image in pixels. (or taken from picture object)
height: Height of the image in pixels. (or taken from picture object)
dst: A memoryblock to the destination where the results will be written.
dstDepth: Describes the bit depth and type of the destination color components
dstFormat: Describes the format and byte packing of the destination pixels
dstBytesPerRow: number of bytes in the row of data
src: A memory block to the data to be converted.
srcDepth: Describes the bit depth and type of the source color components
srcFormat: Describes the format and byte packing of the source pixels
srcBytesPerRow: Number of bytes in the row of data

returns true if conversion was successful or false otherwise
See also:

- 41.13.4 Convert(dest as picture, src as memoryblock, srcDepth as Integer, srcLayout as Integer, srcBytesPerRow as Integer, options as dictionary) as boolean
- 41.13.5 Convert(dest as picture, src as picture, options as dictionary) as boolean
- 41.13.6 Convert(dst as memoryblock, dstDepth as Integer, dstLayout as Integer, dstBytesPerRow as Integer, src as picture, options as dictionary) as boolean

41.13.8 GetProperty(key as Variant) as Variant
Notes: Returns nil if the value is nil or we had an error.

41.13.9 kColorSyncBestQuality as string
MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the value constants for use with the kColorSyncConvertQuality key.
Notes: do not coalesce profile transforms (default)

41.13.10 kColorSyncBlackPointCompensation as string

41.13.11 kColorSyncConversion1DLut as string
Notes: For more information lookup details in Apples headers/documentation.
41.13. CLASS CTRANSFORMMBS

41.13.12  kColorSyncConversion3DLut as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the option keys.
**Notes:** For more information lookup details in Apples headers/documentation.

41.13.13  kColorSyncConversionBPC as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the option keys.
**Notes:** For more information lookup details in Apples headers/documentation.

41.13.14  kColorSyncConversionChannelID as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the option keys.
**Notes:** For more information lookup details in Apples headers/documentation.

41.13.15  kColorSyncConversionGridPoints as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the option keys.
**Notes:** For more information lookup details in Apples headers/documentation.

41.13.16  kColorSyncConversionInpChan as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the option keys.
**Notes:** For more information lookup details in Apples headers/documentation.

41.13.17  kColorSyncConversionMatrix as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the option keys.
**Notes:** For more information lookup details in Apples headers/documentation.
41.13.18  kColorSyncConversionOutChan as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the option keys.
**Notes:** For more information lookup details in Apples headers/documentation.

41.13.19  kColorSyncConversionParamCurve0 as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the option keys.
**Notes:** For more information lookup details in Apples headers/documentation.

41.13.20  kColorSyncConversionParamCurve1 as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the option keys.
**Notes:** For more information lookup details in Apples headers/documentation.

41.13.21  kColorSyncConversionParamCurve2 as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the option keys.
**Notes:** For more information lookup details in Apples headers/documentation.

41.13.22  kColorSyncConversionParamCurve3 as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the option keys.
**Notes:** For more information lookup details in Apples headers/documentation.

41.13.23  kColorSyncConversionParamCurve4 as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the option keys.
**Notes:** For more information lookup details in Apples headers/documentation.
41.13. CLASS CTRANSFORMMBS

41.13.24  kColorSyncConvertQuality as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the transform options keys.

41.13.25  kColorSyncConvertThreadCount as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the conversion option keys. **Notes:** Applies to large amounts of data; 0 for number of CPUs.

41.13.26  kColorSyncDraftQuality as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the value constants for use with the kColorSyncConvertQuality key. **Notes:** coalesce all transforms, do not interpolate

41.13.27  kColorSyncNormalQuality as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the value constants for use with the kColorSyncConvertQuality key. **Notes:** coalesce all transforms

41.13.28  kColorSyncPreferredCMM as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the transform options keys. **Notes:** Value is a CSManagementModuleMBS object.

41.13.29  kColorSyncProfile as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys used for profile info and options.
41.13.30 kColorSyncRenderingIntent as string
MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys used for profile info and options.

41.13.31 kColorSyncRenderingIntentAbsolute as string
MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the value constants for use with the kColorSyncRenderingIntent key.

41.13.32 kColorSyncRenderingIntentPerceptual as string
MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the value constants for use with the kColorSyncRenderingIntent key.

41.13.33 kColorSyncRenderingIntentRelative as string
MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the value constants for use with the kColorSyncRenderingIntent key.

41.13.34 kColorSyncRenderingIntentSaturation as string
MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the value constants for use with the kColorSyncRenderingIntent key.

41.13.35 kColorSyncRenderingIntentUseProfileHeader as string
MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the value constants for use with the kColorSyncRenderingIntent key.

41.13.36 kColorSyncTranformInfo as string
MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for copying transform properties.
**Notes:** dictionary.
41.13.37  kColorSyncTransformCreator as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the value constants for use with the dictionary used with the kColorSyncTransformInfo keys. **Notes:** name of the CMM that created the transform.

41.13.38  kColorSyncTransformDeviceToDevice as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the value constants for use with the kColorSyncTransformTag key.

41.13.39  kColorSyncTransformDeviceToPCS as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the value constants for use with the kColorSyncTransformTag key.

41.13.40  kColorSyncTransformDstSpace as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the value constants for use with the dictionary used with the kColorSyncTransformInfo keys.

41.13.41  kColorSyncTransformFullConversionData as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the option keys. **Notes:** For more information lookup details in Apples headers/documentation.

41.13.42  kColorSyncTransformGamutCheck as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the value constants for use with the kColorSyncTransformTag key.

41.13.43  kColorSyncTransformParametricConversionData as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the option keys.
CHAPTER 41. COLORSYNCE

Notes: For more information lookup details in Apples headers/documentation.

41.13.44  kColorSyncTransformPCSToDevice as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the value constants for use with the kColorSyncTransformTag key.

41.13.45  kColorSyncTransformPCSToPCS as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the value constants for use with the kColorSyncTransformTag key.

41.13.46  kColorSyncTransformSimplifiedConversionData as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the option keys.
Notes: For more information lookup details in Apples headers/documentation.

41.13.47  kColorSyncTransformSrcSpace as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the value constants for use with the dictionary used with the kColorSyncTransfromInfo keys.

41.13.48  kColorSyncTransformTag as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys used for profile info and options.

41.13.49  PrintClasses

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Writes the declarations of the plugin classes to the console.
Notes: Call in console applications.
41.13. \textit{CLASS CTRANSFORMMBS}

41.13.50 \textbf{SetProperty(key as Variant, value as Variant)}


41.13.51 \textbf{Constants}

41.13.52 \textbf{kColorSync16BitFloat = 4}

MBS MacCF Plugin, Plugin Version: 10.5. \textbf{Function:} One of the possible data depth values constants. \textbf{Notes:} 16 bit floats.

41.13.53 \textbf{kColorSync16BitInteger = 3}

MBS MacCF Plugin, Plugin Version: 10.5. \textbf{Function:} One of the possible data depth values constants. \textbf{Notes:} 16 bit integers (short)

41.13.54 \textbf{kColorSync1BitGamut = 1}

MBS MacCF Plugin, Plugin Version: 10.5. \textbf{Function:} One of the possible data depth values constants. \textbf{Notes:} 1 bit graphics.

41.13.55 \textbf{kColorSync32BitFloat = 7}

MBS MacCF Plugin, Plugin Version: 10.5. \textbf{Function:} One of the possible data depth values constants. \textbf{Notes:} 32 bit float (single in Real Studio)

41.13.56 \textbf{kColorSync32BitInteger = 5}

MBS MacCF Plugin, Plugin Version: 10.5. \textbf{Function:} One of the possible data depth values constants. \textbf{Notes:} 32 bit integer
41.13.57 kColorSync32BitNamedColorIndex = 6

MBS MacCF Plugin, Plugin Version: 10.5. **Function:** One of the possible data depth values constants. **Notes:** 32 bit integers with index of named color.

41.13.58 kColorSync8BitInteger = 2

MBS MacCF Plugin, Plugin Version: 10.5. **Function:** One of the possible data depth values constants. **Notes:** 8 bit graphics (this is used in Real Studio Picture objects)

41.13.59 kColorSyncAlphaFirst = 4

MBS MacCF Plugin, Plugin Version: 10.5. **Function:** One of the alpha constants. **Notes:** For example, non-premultiplied ARGB

41.13.60 kColorSyncAlphaInfoMask = & h1F

MBS MacCF Plugin, Plugin Version: 10.5. **Function:** One of the alpha constants. **Notes:** The bitmask for bitwise.BitAnd to extract the alpha value.

41.13.61 kColorSyncAlphaLast = 3

MBS MacCF Plugin, Plugin Version: 10.5. **Function:** One of the alpha constants. **Notes:** For example, non-premultiplied RGBA

41.13.62 kColorSyncAlphaNone = 0

MBS MacCF Plugin, Plugin Version: 10.5. **Function:** One of the alpha constants. **Notes:** For example, RGB.

41.13.63 kColorSyncAlphaNoneSkipFirst = 6

MBS MacCF Plugin, Plugin Version: 10.5. **Function:** One of the alpha constants. **Notes:** For example, XRGB.
41.13. CLASS CSTRANFORMMBS

41.13.64 kColorSyncAlphaNoneSkipLast = 5

MBS MacCF Plugin, Plugin Version: 10.5. **Function:** One of the alpha constants. **Notes:** For example, RBGX.

41.13.65 kColorSyncAlphaPremultipliedFirst = 2

MBS MacCF Plugin, Plugin Version: 10.5. **Function:** One of the alpha constants. **Notes:** For example, premultiplied ARGB

41.13.66 kColorSyncAlphaPremultipliedLast = 1

MBS MacCF Plugin, Plugin Version: 10.5. **Function:** One of the alpha constants. **Notes:** For example, premultiplied RGBA

41.13.67 kColorSyncByteOrder16Big = 12288

MBS MacCF Plugin, Plugin Version: 10.5. **Function:** One of the byte order constants. **Notes:** 16 bit, big endian.

41.13.68 kColorSyncByteOrder16Little = 4096

MBS MacCF Plugin, Plugin Version: 10.5. **Function:** One of the byte order constants. **Notes:** 16 bit, little endian.

41.13.69 kColorSyncByteOrder32Big = 16384

MBS MacCF Plugin, Plugin Version: 10.5. **Function:** One of the byte order constants. **Notes:** 32 bit, big endian.

41.13.70 kColorSyncByteOrder32Little = 8192

MBS MacCF Plugin, Plugin Version: 10.5. **Function:** One of the byte order constants. **Notes:** 32 bit, little endian.
41.13.71  \texttt{kColorSyncByteOrderDefault} = 0

MBS MacCF Plugin, Plugin Version: 10.5. \textbf{Function}: One of the byte order constants.

41.13.72  \texttt{kColorSyncByteOrderMask} = \& h7000

MBS MacCF Plugin, Plugin Version: 10.5. \textbf{Function}: One of the byte order constants.
Chapter 42

Common Types

42.1 Globals

42.1.1 GetAvailableWindowPositioningBoundsMBS as IntegerRectMBS

MBS Util Plugin, Plugin Version: 2.9, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns the available window positioning bounds on the main screen (i.e., the screen rect minus the MenuBar
and Dock if located on that screen).
Example:
Dim rec as IntegerRectMBS
rec=GetAvailableWindowPositioningBoundsMBS
if rec<>Nil then
msgBox str(rec.Left)
else
msgBox "NIL"
end if

Notes: Return nil on any error.

42.1.2 MacZoomRectMBS(fromRect as IntegerRectMBS, toRect as IntegerRectMBS, steps as Integer, ZoomAcceleration as Integer) as Integer

MBS Util Plugin, Plugin Version: 2.9, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
Animates a rectangle into a second rectangle.
Example:
CHAPTER 42. COMMON TYPES

```vba
dim fromrect as IntegerRectMBS

dim torect as IntegerRectMBS

if MacZoomRectMBS(fromrect, torect, 25, 0)<>0 then
  'Windows?
end if
```

**Notes:**

The `ZoomRects` function animates a movement between two rectangles on the screen. It does this by drawing gray dithered rectangles incrementally toward the destination rectangle.

Steps is a number from 4 to 25.

Values for the acceleration

- `kZoomNoAcceleration 0` Use linear interpolation for each frame of animation between the source and destination.
- `kZoomAccelerate 1` Increment the step size for each frame of animation between the source and destination. This option produces the visual appearance of the animation speeding up as it approaches the destination.
- `kZoomDecelerate 2` Decrement the step size for each frame of animation between the source and destination. This option produces the visual appearance of the animation slowing down as it approaches the destination.

Requires Mac OS 8.1 or newer.

Returns an error code. -1 if not supported, 0 if successful or a Mac OS error code.

---

**42.1.3 MakeDoublePointMBS(x as Double, y as Double) as DoublePointMBS**

MBS Util Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Creates a new double point.

**Notes:** Returns nil on low memory.

---

**42.1.4 MakeDoubleRectMBS(left as Double, top as Double, width as Double, height as Double) as DoubleRectMBS**

MBS Util Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Creates a new double rectangle.
42.2.  **CLASS DOUBLEPOINTMBS**  

Notes: Returns nil on low memory.

### 42.1.5  **MakeIntegerPointMBS(x as Integer, y as Integer) as IntegerPointMBS**

MBS Util Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new integer point.  
**Notes:** Returns nil on low memory.

### 42.1.6  **MakeIntegerRectMBS(left as Integer, top as Integer, width as Integer, height as Integer) as IntegerRectMBS**

MBS Util Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new integer rectangle.  
**Notes:** Returns nil on low memory.

42.2  **class DoublePointMBS**

#### 42.2.1  **class DoublePointMBS**

MBS Util Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class for a double point.

#### 42.2.2  **Methods**

#### 42.2.3  **Move(deltax as Double, deltay as Double)**

MBS Util Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Moves the point.

#### 42.2.4  **Properties**

#### 42.2.5  **x as Double**

MBS Util Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The X property of the point.
42.2.6 y as Double

MBS Util Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The Y property of the point.
**Notes:** (Read and Write property)
42.3.  CLASS DOUBLERECTMBS

42.3  class DoubleRectMBS

42.3.1  class DoubleRectMBS

MBS Util Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class for a double rectangle.

42.3.2  Methods

42.3.3  Intersection(other as DoubleRectMBS) as DoubleRectMBS

MBS Util Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The intersection area of two rectangles. **Notes:** Returns nil if no intersection was found.

42.3.4  Intersects(other as DoubleRectMBS) as boolean

MBS Util Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether two rectangle intersect. **Notes:** Returns true if yes and no on false.

42.3.5  Move(deltax as Double, deltay as Double)

MBS Util Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Moves the rectangle.

42.3.6  Properties

42.3.7  Bottom as Double

MBS Util Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The bottom property of the rectangle. **Notes:** (Read and Write property)
42.3.8  **height as Double**

MBS Util Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The height property of the rectangle. 
**Notes:** Setting this property changes the right property. (Read and Write property)

42.3.9  **left as Double**

MBS Util Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The left property of the rectangle.
**Notes:** (Read and Write property)

42.3.10  **right as Double**

MBS Util Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The right property of the rectangle.
**Notes:** (Read and Write property)

42.3.11  **Size as Double**

MBS Util Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The size of this rectangle. 
**Notes:** (Read only property)

42.3.12  **top as Double**

MBS Util Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The top property of the rectangle. 
**Notes:** (Read and Write property)

42.3.13  **width as Double**

MBS Util Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The width property of the rectangle. 
**Notes:**
42.3. CLASS DOUBLERECTMBS

Setting this property changes the bottom property.
(Read and Write property)
CHAPTER 42. COMMON TYPES

42.4 class IntegerPointMBS

42.4.1 class IntegerPointMBS

MBS Util Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A class for an integer point.

42.4.2 Methods

42.4.3 Move(deltax as Integer, deltay as Integer)

MBS Util Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Moves the point.

42.4.4 Properties

42.4.5 x as Integer

MBS Util Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The X property of the point.
**Notes:** (Read and Write property)

42.4.6 y as Integer

MBS Util Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The Y property of the point.
**Notes:** (Read and Write property)
42.5. CLASS INTEGERRECTMBS

42.5 class IntegerRectMBS

42.5.1 class IntegerRectMBS

MBS Util Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A class for an integer rectangle.

42.5.2 Methods

42.5.3 Intersection(other as IntegerRectMBS) as IntegerRectMBS

MBS Util Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The intersection area of two rectangles.
**Notes:** Returns nil if no intersection was found.

42.5.4 Intersects(other as IntegerRectMBS) as boolean

MBS Util Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether two rectangle intersect.
**Notes:** Returns true if yes and no on false.

42.5.5 Move(deltax as Integer, deltay as Integer)

MBS Util Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Moves the rectangle.

42.5.6 Properties

42.5.7 bottom as Integer

MBS Util Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The bottom property of the rectangle.
**Notes:** (Read and Write property)
42.5.8 height as Integer

MBS Util Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The height property of the rectangle.
**Notes:**
Setting this property changes the right property.
(Read and Write property)

42.5.9 left as Integer

MBS Util Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The left property of the rectangle.
**Notes:** (Read and Write property)

42.5.10 right as Integer

MBS Util Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The right property of the rectangle.
**Notes:** (Read and Write property)

42.5.11 Size as Integer

MBS Util Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The size of this rectangle.
**Notes:** (Read only property)

42.5.12 top as Integer

MBS Util Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The top property of the rectangle.
**Notes:** (Read and Write property)

42.5.13 width as Integer

MBS Util Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The width property of the rectangle.
**Notes:**
42.5. *CLASS INTEGERRECTMBS*

Setting this property changes the right property.
(Read and Write property)
Chapter 43

Compression

43.1 Globals

43.1.1  CompressBZip2MBS(buf as string, level as Integer) as string

Function: Compresses the data and returns it as string.
Example:

    dim s as string = "Hello World"
    s = CompressBZip2MBS(s, 9)

Notes: Compression level is going from 0 to 9, where 0 is no compression and 9 is best compression.

43.1.2  DecompressBZip2MBS(buf as string, size as Integer) as string

Function: Decompresses the data and returns it as string.
Example:

    dim s as string = "Hello World"
    s = CompressBZip2MBS(s, 9)
    s = DecompressBZip2MBS(s, 10000)

    MsgBox s

Notes: As DecompressZLibMBS can’t know the size of the decompressed data you should give it a hint.
Best is to save the size of the decompressed data on compression. Else you must guess the size which can be 10 times the size of the compressed data.

### 43.1.3 CompressZLibMBS(buf as string, level as Integer) as string

MBS Compression Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Compresses the data and returns it as string.

**Example:**

```vbs
    dim s as string = "Hello World"
    dim l as Integer = lenb(s)

    dim c as string = CompressZLibMBS(s, 9)
    dim d as string = DecompressZLibMBS(c, l)
```

**Notes:**

Compression level is going from 0 to 9, where 0 is no compression and 9 is best compression. Error: Optional parameter to receive the error code. (see error codes in ZLibCompressMBS)

For result and temp memory this function needs maximum something like 110% of lenb(buf). See also:

- 43.1.4 CompressZLibMBS(buf as string, level as Integer, byref error as Integer) as string

### 43.1.4 CompressZLibMBS(buf as string, level as Integer, byref error as Integer) as string

MBS Compression Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Compresses the data and returns it as string.

**Notes:**

Compression level is going from 0 to 9, where 0 is no compression and 9 is best compression. Error: Optional parameter to receive the error code. (see error codes in ZLibCompressMBS)

For result and temp memory this function needs maximum something like 110% of lenb(buf). See also:

- 43.1.3 CompressZLibMBS(buf as string, level as Integer) as string
43.1.5 DecompressZLibMBS(buf as string, size as Integer) as string

MBS Compression Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Decompresses the data and returns it as string.

**Example:**

```vba
dim s as string = "Hello World"
s=CompressZLibMBS(s,9)
s=DecompressZLibMBS(s,10000)
MsgBox s
```

**Notes:**
As DecompressZLibMBS can’t know the size of the decompressed data you should give it a hint. Best is to save the size of the decompressed data on compression. Else you must guess the size which can be 10 times the size of the compressed data.

Error: Optional parameter to receive the error code. (see error codes in ZLibCompressMBS)

See also:

- 43.1.6 DecompressZLibMBS(buf as string, size as Integer, byref error as Integer) as string

43.1.6 DecompressZLibMBS(buf as string, size as Integer, byref error as Integer) as string

MBS Compression Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Decompresses the data and returns it as string.

**Notes:**
As DecompressZLibMBS can’t know the size of the decompressed data you should give it a hint. Best is to save the size of the decompressed data on compression. Else you must guess the size which can be 10 times the size of the compressed data.

Error: Optional parameter to receive the error code. (see error codes in ZLibCompressMBS)

Returned data is a string without known encoding.

See also:

- 43.1.5 DecompressZLibMBS(buf as string, size as Integer) as string

43.1.7 CompressLZWMBS(buf as string) as string


**Example:**
dim s as string
dim b as BinaryStream
dim f as FolderItem
dim l as Integer

f=SpecialFolder.Desktop.Child("output.tiff")
b=f.OpenAsBinaryFile(false)
s=b.Read(b.Length)
b.Close

l=lenb(s)
s=CompressLZWMBS(s)

f=SpecialFolder.Desktop.Child("output.compressed.tiff")
b=f.CreateBinaryFile("text")
b.Write s
b.Close

s=DecompressLZWMBS(s,l)

f=SpecialFolder.Desktop.Child("output.uncompressed.tiff")
b=f.CreateBinaryFile("text")
b.Write s
b.Close

Notes:
Please remember that the LZW algorithm can be implemented quite different. This one is byte based, uses 12bit offsets and a 4096 entry table.

Returns "" on low memory or Stack Overflow or Output buffer overflow.
(buffer and stack size may be increased on request for future plugin versions)

43.1.8 DecompressLZWMBS(buf as string, size as Integer) as string

Function: Decompresses string using LZW algorithm.
Notes:
Please remember that the LZW algorithm can be implemented quite different. This one is byte based, uses 12bit offsets and a 4096 entry table.

Returns "" on low memory or Stack Overflow or Output buffer overflow.
(buffer and stack size may be increased on request for future plugin versions)
43.2. CLASS BZIP2COMPRESSMBS

Size of the uncompressed length is only a guess for how big the output buffer needs to be. Actual string returned will often be smaller.

43.2 class BZip2CompressMBS

43.2.1 class BZip2CompressMBS

Function: A class for bzip2 compression.

43.2.2 Methods

43.2.3 Close

Function: The destructor.
Notes:
There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

43.2.4 Constructor(BufferSize as Integer=20000)

Function: The constructor.
Notes:
The buffer size you specify is the output buffer size.
If this size is small, you need to flush with ProcessZip.

43.2.5 EndZip

Function: Finalizes the current compression stream.
Notes:
CHAPTER 43. COMPRESSION

You may check the Output property after this.
Error is set.

43.2.6  GetOutput as string

Function: Returns the content of the output buffer.
Notes: The buffer is cleared after this function returns.

43.2.7  InitZip(level as Integer)

Function: Initializes the stream.
Notes:
Level is from 0 to 9.
Error is set.

43.2.8  InputAvail as Integer

Function: Returns the number of bytes available in the input buffer.

43.2.9  OutputSize as Integer

Function: The size of bytes available in the output buffer.

43.2.10 ProcessZip(Flush as boolean=false)

Function: Does zip compression.
Notes:
Reduces the size of the input buffer and writes new data to the output buffer.
If the input buffer is not empty after this call, you need to call it again, but empty the output buffer before.
Error is set.
43.2. CLASS BZIP2COMPRESSMBS

If flush is true, the data is flushed to output. Using flush=true all the the time will slow down compression, so use it only on the end to clear the output buffers.

### 43.2.11 SetInput(data as Memoryblock) as boolean

*Function:* Fills the input buffer.
*Notes:*
- Returns true if successful.
- The current plugin uses a 128 K input buffer.

See also:

- 43.2.12 SetInput(data as string) as boolean

### 43.2.12 SetInput(data as string) as boolean

*Function:* Fills the input buffer.
*Notes:*
- Returns true if successful.
- The current plugin uses a 128 K input buffer.

See also:

- 43.2.11 SetInput(data as Memoryblock) as boolean

### 43.2.13 Properties

### 43.2.14 Error as Integer

*Function:* The last error code.
*Notes:* (Read and Write property)

### 43.2.15 OutputBufferSize as Integer

*Function:* The output buffer size used in the constructor.
*Notes:* (Read only property)
43.2.16 TotalInput as Uint64

Function: The number of bytes processed so far.
Notes: (Read and Write property)

43.2.17 TotalOutput as Uint64

Function: The number of bytes processed so far.
Notes: (Read and Write property)

43.2.18 Version as String

Function: The version string of the used zlib library.
Notes: (Read only property)

43.2.19 Constants

43.2.20 kCONFIG_ERROR = -9

MBS Compression Plugin, Plugin Version: 9.7. Function: One of the error constants.
Notes:
Indicates that the library has been improperly compiled on your platform – a major configuration error. Specifically, it means that sizeof(char), sizeof(short) and sizeof(int) are not 1, 2 and 4 respectively, as they should be. Note that the library should still work properly on 64-bit platforms which follow the LP64 programming model – that is, where sizeof(long) and sizeof(void*) are 8. Under LP64, sizeof(int) is still 4, so libbzip2, which doesn’t use the long type, is OK.

This should never happen with the plugin.

43.2.21 kDATA_ERROR = -4

MBS Compression Plugin, Plugin Version: 9.7. Function: One of the error constants.
Notes: Returned when a data integrity error is detected during decompression. Most importantly, this means when stored and computed CRCs for the data do not match. This value is also returned upon detec-
43.2. **CLASS BZIP2COMPRESSMBS**

...tion of any other anomaly in the compressed data.

### 43.2.22 kDATA_ERROR_MAGIC = -5

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the error constants.  
**Notes:** As a special case of kDATA_ERROR, it is sometimes useful to know when the compressed stream does not start with the correct magic bytes (‘B’ ’Z’ ’h’).

### 43.2.23 kFINISH = 2

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the command constants for bzip.

### 43.2.24 kFINISH_OK = 3

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the error constants.  
**Notes:** In Compress, the requested flush/finish/nothing-special action was completed successfully.

### 43.2.25 kFLUSH = 1

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the command constants for bzip.

### 43.2.26 kFLUSH_OK = 2

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the error constants.  
**Notes:** In Compress, the requested flush/finish/nothing-special action was completed successfully.

### 43.2.27 kIO_ERROR = -6

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the error constants.  
**Notes:** Returned by Read and Write when there is an error reading or writing in the compressed file, and by ReadOpen and WriteOpen for attempts to use a file for which the error indicator (viz, ferror(f)) is set. On receipt of kIO_ERROR, the caller should consult errno and/or perror to acquire operating-system specific information about the problem.
43.2.28 \texttt{kMEM\_ERROR = -3}

MBS Compression Plugin, Plugin Version: 9.7. \textbf{Function}: One of the error constants. 
\textbf{Notes}: Returned when a request to allocate memory failed. Note that the quantity of memory needed to decompress a stream cannot be determined until the stream’s header has been read. So Decompress and Read may return \texttt{kMEM\_ERROR} even though some of the compressed data has been read. The same is not true for compression; once CompressInit or WriteOpen have successfully completed, \texttt{kMEM\_ERROR} cannot occur.

43.2.29 \texttt{kOK = 0}

MBS Compression Plugin, Plugin Version: 9.7. \textbf{Function}: One of the error constants. 
\textbf{Notes}: The requested action was completed successfully.

43.2.30 \texttt{kOUTBUFF\_FULL = -8}

MBS Compression Plugin, Plugin Version: 9.7. \textbf{Function}: One of the error constants. 
\textbf{Notes}: Returned by BuffToBuffCompress and BuffToBuffDecompress to indicate that the output data will not fit into the output buffer provided.

43.2.31 \texttt{kPARAM\_ERROR = -2}

MBS Compression Plugin, Plugin Version: 9.7. \textbf{Function}: One of the error constants. 
\textbf{Notes}: Returned when a parameter to a function call is out of range or otherwise manifestly incorrect. As with \texttt{kSEQUENCE\_ERROR}, this denotes a bug in the client code. The distinction between \texttt{kPARAM\_ERROR} and \texttt{kSEQUENCE\_ERROR} is a bit hazy, but still worth making.

43.2.32 \texttt{kRUN = 0}

MBS Compression Plugin, Plugin Version: 9.7. \textbf{Function}: One of the command constants for bzip.

43.2.33 \texttt{kRUN\_OK = 1}

MBS Compression Plugin, Plugin Version: 9.7. \textbf{Function}: One of the error constants. 
\textbf{Notes}: In Compress, the requested flush/finish/nothing-special action was completed successfully.
43.2.34 kSEQUENCE\_ERROR = -1

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the error constants.  
**Notes:** When using the library, it is important to call the functions in the correct sequence and with data structures (buffers etc) in the correct states. libbz2 checks as much as it can to ensure this is happening, and returns kSEQUENCE\_ERROR if not. Code which complies precisely with the function semantics, as detailed below, should never receive this value; such an event denotes buggy code which you should investigate.

43.2.35 kSTREAM\_END = 4

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the error constants.  
**Notes:** Compression of data was completed, or the logical stream end was detected during decompression.

43.2.36 kUNEXPECTED\_EOF = -7

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the error constants.  
**Notes:** Returned by Read when the compressed file finishes before the logical end of stream is detected.
43.3 class BZip2DecompressMBS

43.3.1 class BZip2DecompressMBS

Function: A class for bzip2 decompression.

43.3.2 Methods

43.3.3 Close

Function: The destructor.
Notes:
There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

43.3.4 Constructor(BufferSize as Integer=20000)

Function: The constructor.
Notes:
The buffer size you specify is the output buffer size.
If this size is small, you need to flush with ProcessZip.

43.3.5 EndZip

Function: Finalizes the current decompression stream.
Notes:
You may check the Output property after this.
Error is set.
43.3. CLASS BZIP2DECOMPRESSMBS

43.3.6  GetOutput as string

**Function:** Returns the content of the output buffer.
**Notes:** The buffer is cleared after this function returns.

43.3.7  InitZip

**Function:** Initializes the stream.
**Notes:** Error is set.

43.3.8  InputAvail as Integer

**Function:** Returns the number of bytes available in the input buffer.

43.3.9  OutputSize as Integer

**Function:** The size of bytes available in the output buffer.

43.3.10  ProcessZip

**Function:** Does zip compression.
**Notes:**
Reduces the size of the input buffer and writes new data to the output buffer.
If the input buffer is not "" after this call, you need to call it again, but empty the output buffer before.
Error is set.

43.3.11  SetInput(data as Memoryblock) as boolean

**Function:** Fills the input buffer.
**Notes:**
Returns true if successful.
The current plugin uses a 128 K input buffer.
See also:

- 43.3.12 SetInput(data as string) as boolean

### 43.3.12 SetInput(data as string) as boolean

**Function:** Fills the input buffer.
**Notes:**
Returns true if successful.
The current plugin uses a 128 K input buffer.
See also:

- 43.3.11 SetInput(data as Memoryblock) as boolean

### 43.3.13 Properties

#### 43.3.14 Error as Integer

**Function:** The last error code.
**Notes:** (Read and Write property)

#### 43.3.15 OutputBufferSize as Integer

**Function:** The output buffer size used in the constructor.
**Notes:** (Read only property)

#### 43.3.16 TotalInput as UInt64

**Function:** The number of bytes processed so far.
**Notes:** (Read and Write property)
43.3. CLASS BZIP2DECOMPRESSMBS

43.3.17 TotalOutput as Uint64

Function: The number of bytes processed so far.
Notes: (Read and Write property)

43.3.18 Version as String

Function: The version string of the used zlib library.
Notes: (Read only property)

43.3.19 Constants

43.3.20 kCONFIG_ERROR = -9

MBS Compression Plugin, Plugin Version: 9.7. Function: One of the error constants.
Notes: Indicates that the library has been improperly compiled on your platform – a major configuration error. Specifically, it means that sizeof(char), sizeof(short) and sizeof(int) are not 1, 2 and 4 respectively, as they should be. Note that the library should still work properly on 64-bit platforms which follow the LP64 programming model – that is, where sizeof(long) and sizeof(void*) are 8. Under LP64, sizeof(int) is still 4, so libbzip2, which doesn’t use the long type, is OK.

This should never happen with the plugin.

43.3.21 kDATA_ERROR = -4

MBS Compression Plugin, Plugin Version: 9.7. Function: One of the error constants.
Notes: Returned when a data integrity error is detected during decompression. Most importantly, this means when stored and computed CRCs for the data do not match. This value is also returned upon detection of any other anomaly in the compressed data.

43.3.22 kDATA_ERROR_MAGIC = -5

MBS Compression Plugin, Plugin Version: 9.7. Function: One of the error constants.
Notes: As a special case of kDATA_ERROR, it is sometimes useful to know when the compressed stream
does not start with the correct magic bytes ('B' 'Z' 'h').

43.3.23 \( k\text{FINISH} = 2 \)

MBS Compression Plugin, Plugin Version: 9.7. **Function**: One of the command constants for bzip.

43.3.24 \( k\text{FINISH}_{\text{OK}} = 3 \)

MBS Compression Plugin, Plugin Version: 9.7. **Function**: One of the error constants. **Notes**: In Compress, the requested flush/finish/nothing-special action was completed successfully.

43.3.25 \( k\text{FLUSH} = 1 \)

MBS Compression Plugin, Plugin Version: 9.7. **Function**: One of the command constants for bzip.

43.3.26 \( k\text{FLUSH}_{\text{OK}} = 2 \)

MBS Compression Plugin, Plugin Version: 9.7. **Function**: One of the error constants. **Notes**: In Compress, the requested flush/finish/nothing-special action was completed successfully.

43.3.27 \( k\text{IO\_ERROR} = -6 \)

MBS Compression Plugin, Plugin Version: 9.7. **Function**: One of the error constants. **Notes**: Returned by Read and Write when there is an error reading or writing in the compressed file, and by ReadOpen and WriteOpen for attempts to use a file for which the error indicator (viz, ferror(f)) is set. On receipt of \( k\text{IO\_ERROR} \), the caller should consult errno and/or perror to acquire operating-system specific information about the problem.

43.3.28 \( k\text{MEM\_ERROR} = -3 \)

MBS Compression Plugin, Plugin Version: 9.7. **Function**: One of the error constants. **Notes**: Returned when a request to allocate memory failed. Note that the quantity of memory needed to decompress a stream cannot be determined until the stream’s header has been read. So Decompress and Read may return \( k\text{MEM\_ERROR} \) even though some of the compressed data has been read. The same is not true for compression; once CompressInit or WriteOpen have successfully completed, \( k\text{MEM\_ERROR} \) cannot
43.3.29  kOK = 0

MBS Compression Plugin, Plugin Version: 9.7. Function: One of the error constants. Notes: The requested action was completed successfully.

43.3.30  kOUTBUFF_FULL = -8

MBS Compression Plugin, Plugin Version: 9.7. Function: One of the error constants. Notes: Returned by BuffToBuffCompress and BuffToBuffDecompress to indicate that the output data will not fit into the output buffer provided.

43.3.31  kPARAM_ERROR = -2

MBS Compression Plugin, Plugin Version: 9.7. Function: One of the error constants. Notes: Returned when a parameter to a function call is out of range or otherwise manifestly incorrect. As with kSEQUENCE_ERROR, this denotes a bug in the client code. The distinction between kPARAM_ERROR and kSEQUENCE_ERROR is a bit hazy, but still worth making.

43.3.32  kRUN = 0

MBS Compression Plugin, Plugin Version: 9.7. Function: One of the command constants for bzip.

43.3.33  kRUN_OK = 1

MBS Compression Plugin, Plugin Version: 9.7. Function: One of the error constants. Notes: In Compress, the requested flush/finish/nothing-special action was completed successfully.

43.3.34  kSEQUENCE_ERROR = -1

MBS Compression Plugin, Plugin Version: 9.7. Function: One of the error constants. Notes: When using the library, it is important to call the functions in the correct sequence and with data structures (buffers etc) in the correct states. libbzip2 checks as much as it can to ensure this is happening,
and returns kSEQUENCE_ERROR if not. Code which complies precisely with the function semantics, as detailed below, should never receive this value; such an event denotes buggy code which you should investigate.

43.3.35  kSTREAM_END = 4

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the error constants.  
**Notes:** Compression of data was completed, or the logical stream end was detected during decompression.

43.3.36  kUNEXPECTED_EOF = -7

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the error constants.  
**Notes:** Returned by Read when the compressed file finishes before the logical end of stream is detected.
43.4. CLASS BZIP2FILEMBS

43.4 class BZip2FileMBS

43.4.1 class BZip2FileMBS

Function: A class to read and write bzip2 byte streams.
Notes: A .bz2 file is just the content of the original file compressed. No header.

43.4.2 Methods

43.4.3 Close

Function: The destructor.
Notes: There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

43.4.4 Flush

Function: Flushes all pending output into the compressed file.

43.4.5 Open(file as folderitem, mode as string) as boolean

Function: Opens a .bz2 file for reading or writing, using the given file path.
Notes: Returns false on failure.
Mode can be "r" for reading and "w" for writing. Or other values fopen accepts.

43.4.6 OpenString(data as string) as boolean

Function: Opens a bzip compressed file from the given string.
Notes: Returns true on success and false on failure.
43.4.7 Read(data as Integer) as string

Function: Reads data form a compressed file.

43.4.8 Write(data as string)

Function: Writes data to the file and compresses it.

43.4.9 Properties

43.4.10 ErrorCode as Integer

Function: The last error code.
Notes: (Read only property)

43.4.11 ErrorMessage as String

Function: The last error message.
Notes: (Read only property)

43.4.12 Handle as Integer

Function: The current bzip file handle.
Notes: (Read and Write property)

43.4.13 Lasterror as Integer

Function: The last error value.
Notes: (Read and Write property)
43.4.14 Version as String

MBS Compression Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a string indicating the library version. **Notes:** (Read only property)
43.5 class GZipFileMBS

43.5.1 class GZipFileMBS

Function: A class to read and write gzip byte streams.
Notes: A .gz file is just the content of the original file compressed. No header.

43.5.2 Methods

43.5.3 Adler32(start as UInt32, data as string) as UInt32

Function: Calculates a 32bit Adler Checksum about a given string.
Notes:
Set start to 0 for the first call.
Later you can pass the result as the new start value to add data to your checksum.

This function is part of the zlib library and given as a free utility function to this class.

43.5.4 Close

Function: The destructor.
Notes: There is no need to call this method except you want to free all resources of this object now without
waiting for Realbasic to do it for you.

43.5.5 CloseForString as string

Function: Closes the file and returns the string.
Example:

Function GZIPStringWriteMBS(data as string) As string
    dim g as new GZipFileMBS
    if g.CreateForString then
        g.Write data
    Return g.CloseForString
}
43.5. CLASS GZIPFILEMBS

end if
End Function

Notes:

Only for use with CreateForString function.
Returns empty string on any error.

43.5.6 CRC32(start as UInt32, data as string) as UInt32

Function: Calculates a 32bit Checksum about a given string.
Notes:

Set start to 0 for the first call.
Later you can pass the result as the new start value to add data to your checksum.

This function is part of the zlib library and given as a free utility function to this class.

43.5.7 CreateForString as boolean

Function: Creates a new gzip file in memory.
Example:

Function GZIPStringWriteMBS(data as string) As string
dim g as new GZipFileMBS

if g.CreateForString then
g.Write data

Return g.CloseForString
end if
End Function

Notes:

Use with the CloseForString method to compress data in memory.
Returns false on any error and true on success.
43.5.8 Flush(flush as Integer)

Function: Flushes all pending output into the compressed file.
Notes:
The parameter flush is as in the zlib deflate() function.
LastError is set.
Flush should be called only when strictly necessary because it can degrade compression.

43.5.9 Open(file as folderitem, mode as string) as boolean

Function: Opens a gzip (.gz) file for reading or writing.
Notes:
The mode parameter is as in fopen ("rb" read binary or "wb" for write binary) but can also include a compression level ("wb9") or a strategy: 'F' for filtered data as in "wb6f", 'h' for Huffman only compression as in "wb1h".

Open can be used to read a file which is not in gzip format; in this case Read will directly read from the file without decompression.

Open returns NULL if the file could not be opened or if there was insufficient memory to allocate the (de)compression state; errno can be checked to distinguish the two cases (if errno is zero, the zlib error is Z_MEM_ERROR).

Returns false on any error and true on success.

43.5.10 OpenString(data as string) as boolean

Function: Opens a gzip (.gz) file for reading from a file.
Example:
Function GZipStringReadMBS(compressedData as string) As string
    dim g as new GZipFileMBS
    const BlockSize=1000000
    if g.OpenString(compressedData) then
        dim parts(-1) as string
        "Code block here"
while not g.eof
    dim s as string=g.Read(BlockSize)
    parts.Append s
wend

Return Join(parts,"")
end if
End Function

Notes: Same as Open, but reading from the given string.

43.5.11 Read(ByteCount as Int64) as string

Function: Reads the given number of bytes into a string.
Notes:
Returns "" on any error.
May return less bytes than requested.
Lasterror is set.

43.5.12 ReadByte as Integer

Function: Reads one byte from the file.

43.5.13 ReadData(ByteCount as Int64) as Memoryblock

MBS Compression Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Reads the given number of bytes into a memoryblock.
Notes:
Returns nil on any error.
May return less bytes than requested.
Lasterror is set.
43.5.14 **Rewind**

**Function:** Moves the file position for reading files to the file start.
**Notes:** Equal to: position=0

43.5.15 **SetParameter(level as Integer, strategy as Integer)**

**Function:** Dynamically update the compression level or strategy.
**Notes:**
Lasterror is set.

Possible values:

- FILTERED 1
- HUFFMAN_ONLY 2
- DEFAULT_STRATEGY 0

43.5.16 **Write(data as Memoryblock)**

MBS Compression Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Writes a Memoryblock to a file.
**Notes:** Lasterror is set.
See also:
- 43.5.17 Write(data as string)

43.5.17 **Write(data as string)**

**Function:** Writes a string to a file.
**Notes:**
Note that encoding can make trouble as the raw bytes from the string are written.
Lasterror is set.
See also:
- 43.5.16 Write(data as Memoryblock)
43.5. CLASS GZIPFILEMBS

43.5.18 WriteByte(data as Integer)

Function: Writes one byte to the file.

43.5.19 Properties

43.5.20 Direct as Boolean

Function: Returns true if file is being copied directly while reading, or false if file is a gzip stream being decompressed.
Notes:
If the input file is empty, Direct will return true, since the input does not contain a gzip stream.
(Read only property)

43.5.21 EOF as Boolean

Function: Returns true if reading is on the end of the file.
Notes:
Returns true on any error.
(Read only property)

43.5.22 ErrorCode as Integer

Function: Returns the last zlib error number.
Notes:
If an error occurred in the file system and not in the compression library, errnum is set to Z_ERRNO and the application may consult errno to get the exact error code. (errno is currently not available in Realbasic)

Error codes:

(Read only property)
43.5.23 ErrorMessage as String


Function: Returns the error message for the last error which occurred on the given compressed file.
Notes: (Read only property)

43.5.24 Handle as Integer


Function: The current zlib file handle.
Notes: (Read and Write property)

43.5.25 Lasterror as Integer


Function: The last error code reported.
Notes:
0 for success.
-1 for failure.
(Read and Write property)

43.5.26 Position as Integer


Function: The current file position.
Notes:
Not all positions are available.
e.g. on writing you can not move back.
Moving forward will add bytes with value 0 to the file.
Lasterror is set.
(Read and Write property)

43.5.27  Version as String

**Function:** The version string of the used zlib library.
**Notes:** (Read only property)
43.6 module PackbitsMBS

43.6.1 module PackbitsMBS
MBS Compression Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: A module with functions for packbits compression/decompression.
Notes:
see wikipedia:  
http://en.wikipedia.org/wiki/PackBits

43.6.2 Methods

43.6.3 Compress(data as MemoryBlock) as MemoryBlock
MBS Compression Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Compresses data in a memoryblock.
Notes: Can raise out of memory exception if running low on memory.
See also:

- 43.6.4 Compress(data as string) as string
- 43.6.5 Compress(InputFile as FolderItem, OutputFile as Folderitem) as boolean

43.6.4 Compress(data as string) as string
MBS Compression Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Compresses data in a string.
Notes:
Can raise out of memory exception if running low on memory.
Returned data is a string without known encoding. If you plan to store it in a file, use binarystream class,  
not textoutputstream. If you plan to store it in a database, please use BLOB field. For storing in a text  
field, you may need to use Base64 encoding.
See also:

- 43.6.3 Compress(data as MemoryBlock) as MemoryBlock
- 43.6.5 Compress(InputFile as FolderItem, OutputFile as Folderitem) as boolean

43.6.5 Compress(InputFile as FolderItem, OutputFile as Folderitem) as boolean
MBS Compression Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Compresses data in a file.
43.6. MODULE PACKBITSMBS

Notes: Returns true on success.
See also:

- 43.6.3 Compress(data as MemoryBlock) as MemoryBlock
- 43.6.4 Compress(data as string) as string

43.6.6 Decompress(data as MemoryBlock) as MemoryBlock

MBS Compression Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Decompresses data in a memoryblock.
Notes: Can raise out of memory exception if running low on memory.
See also:

- 43.6.7 Decompress(data as string) as string
- 43.6.8 Decompress(InputFile as FolderItem, OutputFile as Folderitem) as boolean

43.6.7 Decompress(data as string) as string

MBS Compression Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Decompresses data in a string.
Notes: Can raise out of memory exception if running low on memory.
Returned data is a string without known encoding.
See also:

- 43.6.6 Decompress(data as MemoryBlock) as MemoryBlock
- 43.6.8 Decompress(InputFile as FolderItem, OutputFile as Folderitem) as boolean

43.6.8 Decompress(InputFile as FolderItem, OutputFile as Folderitem) as boolean

MBS Compression Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Decompresses data in a file.
Notes: Returns true on success.
See also:

- 43.6.6 Decompress(data as MemoryBlock) as MemoryBlock
- 43.6.7 Decompress(data as string) as string
43.7 class UnZipFileInfoMBS

43.7.1 class UnZipFileInfoMBS

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** This class keeps the metadata for a zip file.

43.7.2 Properties

43.7.3 CompressedSize as UInt64

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The compressed file size.
**Notes:** (Read and Write property)

43.7.4 CompressionMethod as UInt32

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The compression method.
**Notes:** (Read and Write property)

43.7.5 CRC as UInt32

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The 32bit file checksum.
**Notes:** (Read and Write property)

43.7.6 Date as Date

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The date as a REALbasic date object.
**Notes:** (Read and Write property)

43.7.7 Day as Integer

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The file time.
43.7. CLASS UNZIPFILEINFOMBS

Notes:

day of the month - [ 1,31 ]
(Read and Write property)

43.7.8 DiskNumStart as UInt32

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Disk number start.
Notes: (Read and Write property)

43.7.9 DosDate as UInt32

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Last mod file date in DOS format.
Notes: (Read and Write property)

43.7.10 ExternalFileAttributes as UInt32

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: External file attributes.
Notes: (Read and Write property)

43.7.11 Flag as UInt32

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: general purpose bit flag.
Notes:

A 16 bit value.

The flag is a bit field with various values.
Last bit of the flag is encryption state: value is 1 (odd) for encrypted and 0 (even) for unencrypted value.
The bit values 2 and 4 define compression level between 0 to 9.

(Read and Write property)
Flag Value | Encryption | Compression Level
---|---|---
0 | no | 6
1 | yes | 6
2 | no | 9
3 | yes | 9
4 | no | 2
5 | yes | 2
6 | no | 1
7 | yes | 1

### 43.7.12 Hour as Integer

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The file time.
**Notes:**
hours since midnight - [0, 23]
(Read and Write property)

### 43.7.13 InternalFileAttributes as UInt32

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Internal file attributes.
**Notes:** (Read and Write property)

### 43.7.14 Minute as Integer

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The file time.
**Notes:**
minutes after the hour - [0, 59]
(Read and Write property)

### 43.7.15 Month as Integer

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The file time.
**Notes:**
months since January - [0, 11]
43.7. CLASS UNZIPFILEINFOMBS
(Read and Write property)

43.7.16  Second as Integer

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The file time.
Notes:
seconds after the minute - [0, 59]
(Read and Write property)

43.7.17  SizeFileComment as UInt32

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: file comment length.
Notes: (Read and Write property)

43.7.18  SizeFileExtra as UInt32

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: extra field length.
Notes: (Read and Write property)

43.7.19  SizeFilename as UInt32

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: filename length.
Notes: (Read and Write property)

43.7.20  UncompressedSize as UInt64

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The uncompressed file size.
Notes: (Read and Write property)
43.7.21 Version as UInt32

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The version used to make the archive.
Notes: (Read and Write property)

43.7.22 VersionNeeded as UInt32

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The version needed to extract.
Notes: (Read and Write property)

43.7.23 Year as Integer

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The file time.
Notes: years - [1980..2044]
(Read and Write property)
43.8.  class UnZipFilePositionMBS

43.8.1  class UnZipFilePositionMBS

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: This class contains information about a file in the zipfile.

43.8.2  Properties

43.8.3  NumberOfFile as UInt64

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The index of the file.
Notes: (Read and Write property)

43.8.4  PositionInZipDirectory as UInt64

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Offset in zip file directory.
Notes: (Read and Write property)
CHAPTER 43. COMPRESSION

43.9 class UnZipMBS

43.9.1 class UnZipMBS

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: A class to decompress a zip archive.

Example:

```vba
// open zip archive
Dim f As FolderItem = SpecialFolder.Desktop.Child("test.zip")
Dim z As New UnZipMBS(f)

// let's start
z.GoToFirstFile
Do

// get details on this file:
Dim info As UnZipFileInfoMBS = z.FileInfo
Dim name As String = z.FileName
If Left(name, 8) <> "MACOSX" Then // ignore Mac special files for metadata
    z.OpenCurrentFile
    If z.Lasterror = 0 Then
        // create output file (if you want to support folders, this needs to be changed. See other examples)
        Dim outfile As FolderItem = GetFolderItem(Name)
        Dim b As BinaryStream = BinaryStream.Create(outfile, True)
        Dim s As String

        // now read 100 KB chunks and write them to new file
        Do
            s = z.ReadCurrentFile(100000)
            b.Write s
        Loop Until Lenb(s) = 0

        // cleanup
        b.Close
        z.CloseCurrentFile
    End If
End If

// move to next file until we reach the end
z.GoToNextFile
Loop Until z.Lasterror <> 0
```

```
43.9. **CLASS UNZIPMBS**

**Notes:**
This is a simple class which uses zlib and has some limitations:

- only deflate as compression method
- only one date per file is preserved
- no resource forks on Mac OS
- no text encoding handling
- no Apple or Microsoft extensions for special file flags or permissions.

43.9.2 **Methods**

43.9.3 **Close**

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Close a ZipFile.
**Notes:**
Use CloseCurrentFile to close any open file before using Close.
Lasterror is UnZipOK on success.

43.9.4 **CloseCurrentFile**

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Close the file in the zip archive opened with OpenCurrentFile.
**Notes:** Lasterror is set to UnzipCRCError if all the file was read but the CRC was not correct.

43.9.5 **Comment as string**

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Get the global comment string of the ZipFile.

43.9.6 **CommentSize as UInt32**

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Size of the global comment of the zipfile.
43.9.7 CompareFileNames(filename1 as string, filename2 as string, CaseSensitive as Integer) as Integer

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Compare two filename (fileName1,fileName2).

Notes:
If iCaseSensitivity = 1, comparison is case sensitivity (like strcmp)
If iCaseSensitivity = 2, comparison is not case sensitivity (like strcmpi or strcasecmp)
If iCaseSensitivity = 0, case sensitivity is default of your operating system (like 1 on Unix, 2 on Windows)

43.9.8 Constructor(data as memoryblock)


Function: Open a Zip file from data in the memoryblock.

Notes:
The Handle property is zero on failure and not zero on success.
The memory block must have a known size.
See also:

- 43.9.9 Constructor(data as string) 7486
- 43.9.10 Constructor(file as folderitem) 7486
- 43.9.11 Constructor(file as folderitem, Offset as Integer) 7487

43.9.9 Constructor(data as string)


Function: Open a Zip file from data in the string.

Notes: The Handle property is zero on failure and not zero on success.
See also:

- 43.9.8 Constructor(data as memoryblock) 7486
- 43.9.10 Constructor(file as folderitem) 7486
- 43.9.11 Constructor(file as folderitem, Offset as Integer) 7487

43.9.10 Constructor(file as folderitem)

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Open a Zip file from a file.

Notes:
43.9. **CLASS UNZIPMBS**

The Handle property is zero on failure and not zero on success.

If you run this class in a thread, please make sure your thread has a big stack (1 MB or more). Else it will crash.

See also:

- 43.9.8 Constructor(data as memoryblock)
- 43.9.9 Constructor(data as string)
- 43.9.11 Constructor(file as folderitem, Offset as Integer)

### 43.9.11 Constructor(file as folderitem, Offset as Integer)


**Function:** Open a Zip file from a file starting at the offset.

**Notes:** The Handle property is zero on failure and not zero on success.

See also:

- 43.9.8 Constructor(data as memoryblock)
- 43.9.9 Constructor(data as string)
- 43.9.10 Constructor(file as folderitem)

### 43.9.12 Count as UInt64

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Total number of entries in the zip archive.

**Notes:** This value is stored in the zip archive as 16 bit integer, so maximum value is 65535. The plugin can extract more files than that number.

### 43.9.13 EOF as Integer

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Returns 1 if you are on the end of a file.

**Notes:** This is not to test whether you are on the end of the zip archive.
43.9.14 **ExtractFiles(DestFolder as FolderItem, ExtractWithoutPath as boolean = false, Overwrite as Boolean = false, Password as String = ””, byref ErrorMessage as String) as boolean**

**Function:** Simple function to extract all files from archive into folder. 
**Example:**
```
    dim f as FolderItem = SpecialFolder.Desktop.Child("test.zip")
    dim folder as FolderItem = SpecialFolder.Desktop.Child("test")
    folder.CreateAsFolder
    dim u as new UnZipMBS(f)
    dim error as string
    if u.ExtractFiles(folder, error) then
        MsgBox "OK"
    else
        MsgBox "Error: " + error
    end if
```

**Notes:**
- DestFolder: Destination folder.
- ExtractWithoutPath: If true, all files are put in one folder.
- Overwrite: Whether to allow overwriting files.
- Password: The password to decrypt files.
- ErrorMessage: An english error message.

Returns true on success or false on failure. 
This function does not restore file permissions or other metadata. 
And it may not work with non ASCII characters.

If you need more control over files being extracted, stored or error checking, please use example projects coming with plugin.

43.9.15 **FileInfo as UnZipFileInfoMBS**

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Queries file information for the current file. 
**Notes:** Returns nil on any error.
43.9.16  **FileName as string**

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The filename of the current open file.

**Notes:**
This name has no text encoding defined, as the plugin has no idea what text encoding was used. You may need to define the text encoding as being ASCII, Windows, MacRoman or whatever, when you work with this file name.
This name may include path components for folders.

43.9.17  **GetLocalExtrafield as string**

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Read extra field from the current file (opened by unzOpenCurrentFile)

**Notes:** This is the local-header version of the extra field (sometimes, there is more info in the local-header version than in the central-header)

43.9.18  **GoToFirstFile**

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Set the current file of the zipfile to the first file.

**Notes:** Lasterror is UnzipOk on success.

43.9.19  **GoToNextFile**

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Set the current file of the zipfile to the next file.

**Notes:** Lasterror is UnzipOk if there is no problem and UnzipEndOfListError if the actual file was the latest.

43.9.20  **LocateFile(filename as string, CaseSensitive as Integer)**

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Try locate the file filename in the zipfile.

**Example:**

```vbscript
// open zip archive
dim f as FolderItem=SpecialFolder.Desktop.Child("test.zip")
dim z as new UnZipMBS(f)
```
// let's search the file
z.LocateFile "test.rtf",2

if z.Lasterror = z.UnzipOk then
dim info as UnZipFileInfoMBS = z.FileInfo
MsgBox "OK: " +str(info.UncompressedSize)+” bytes”
else
MsgBox "Failed."
end if

Notes:

For the CaseSensitivity signification, see CompareFileNames. Text encoding must match the text encoding of the files.

Lasterror is UnzipOk if the file is found. It becomes the current file, UnzipEndOfListError if the file is not found.

43.9.21 OpenCurrentFile

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
Function: Open for reading data the current file in the zipfile.

See also:

- 43.9.22 OpenCurrentFile(byref method as Integer, byref level as Integer, raw as boolean) 7490
- 43.9.23 OpenCurrentFile(byref method as Integer, byref level as Integer, raw as boolean, password as string) 7491
- 43.9.24 OpenCurrentFile(password as string) 7491

43.9.22 OpenCurrentFile(byref method as Integer, byref level as Integer, raw as boolean)

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
Function: Same than OpenCurrentFile, but opens file for reading raw data (not uncompressed).

Notes:

if raw=true the file data is returned uncompressed. If raw is false, it is decompressed for you.
Method will receive the method of compression.
level will receive the level of compression.
See also:

- 43.9.21 OpenCurrentFile 7490
43.9. **CLASS UNZIPMBS**

- 43.9.23 **OpenCurrentFile(byref method as Integer, byref level as Integer, raw as boolean, password as string)**
- 43.9.24 **OpenCurrentFile(password as string)**

### 43.9.23 OpenCurrentFile(byref method as Integer, byref level as Integer, raw as boolean, password as string)

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Same than OpenCurrentFile, but opens file for reading raw data (not uncompressed) and with a password.

**Notes:**
- If raw=true the file data is returned uncompressed. If raw is false, it is decompressed for you.
- Method will receive the method of compression.
- Level will receive the level of compression.

See also:

- 43.9.21 OpenCurrentFile
- 43.9.22 OpenCurrentFile(byref method as Integer, byref level as Integer, raw as boolean)
- 43.9.24 OpenCurrentFile(password as string)

### 43.9.24 OpenCurrentFile(password as string)

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Open for reading data the current file in the zipfile.

**Notes:** password is a crypting password.

See also:

- 43.9.21 OpenCurrentFile
- 43.9.22 OpenCurrentFile(byref method as Integer, byref level as Integer, raw as boolean)
- 43.9.23 OpenCurrentFile(byref method as Integer, byref level as Integer, raw as boolean, password as string)

### 43.9.25 Position as UInt64

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Returns the current position in uncompressed data.
43.9.26 Position2 as UInt64

**Function:** Returns the current position in compressed data.
**Notes:** This property is useful to show progressbar with progress over reading the original zip file.

43.9.27 ReadCurrentFile(size as Integer) as string

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Read bytes from the current file (opened by OpenCurrentFile).
**Notes:** Returns "" on any error or on file end.

43.9.28 Properties

43.9.29 Handle as Integer

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The internal handle for the unzip object.
**Notes:** (Read and Write property)

43.9.30 Lasterror as Integer

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The last error code.
**Notes:** (Read and Write property)

43.9.31 FilePosition as UnZipFilePositionMBS

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The current file position.
**Notes:**
You can read or set the current file you edit.
(Read and Write computed property)
43.9. **CLASS UNZIPMBS**

### 43.9.32 Offset as UInt64

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Get or set the current index of the file in the zip directory.  
**Notes:**  
If you set this value, you basically move to another file.  
(Read and Write computed property)

### 43.9.33 Constants

#### 43.9.34 CompressionBestCompression=9

MBS Compression Plugin, Plugin Version: 8.6. **Function:** One of the compression level constants.

#### 43.9.35 CompressionBestSpeed=1

MBS Compression Plugin, Plugin Version: 8.6. **Function:** One of the compression level constants.

#### 43.9.36 CompressionDefault=-1

MBS Compression Plugin, Plugin Version: 8.6. **Function:** One of the compression level constants.

#### 43.9.37 CompressionNo=0

MBS Compression Plugin, Plugin Version: 8.6. **Function:** One of the compression level constants.

#### 43.9.38 MethodDeflated=8

MBS Compression Plugin, Plugin Version: 8.6. **Function:** One of the compression methods.

#### 43.9.39 MethodNone=0

MBS Compression Plugin, Plugin Version: 8.6. **Function:** One of the compression methods.
43.9.40  **StrategyDefault=0**

MBS Compression Plugin, Plugin Version: 8.6. **Function:** One of the strategy constants.

43.9.41  **StrategyFiltered=1**

MBS Compression Plugin, Plugin Version: 8.6. **Function:** One of the strategy constants.

43.9.42  **StrategyFixed=4**

MBS Compression Plugin, Plugin Version: 8.6. **Function:** One of the strategy constants.

43.9.43  **StrategyHuffmanOnly=2**

MBS Compression Plugin, Plugin Version: 8.6. **Function:** One of the strategy constants.

43.9.44  **StrategyRLE=3**

MBS Compression Plugin, Plugin Version: 8.6. **Function:** One of the strategy constants.

43.9.45  **UnzipBadUnZipFile=-103**

MBS Compression Plugin, Plugin Version: 8.6. **Function:** One of the error constants.

43.9.46  **UnzipCRCError=-105**

MBS Compression Plugin, Plugin Version: 8.6. **Function:** One of the error constants.

43.9.47  **UnzipEndOfListError=-100**

MBS Compression Plugin, Plugin Version: 8.6. **Function:** One of the error constants.
43.9. **CLASS UNZIPMBS**

**43.9.48 UnzipInternalError=-104**

MBS Compression Plugin, Plugin Version: 8.6. **Function:** One of the error constants.

**43.9.49 UnzipOk=0**

MBS Compression Plugin, Plugin Version: 8.6. **Function:** One of the error constants.

**43.9.50 UnzipParameterError=-102**

MBS Compression Plugin, Plugin Version: 8.6. **Function:** One of the error constants.
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43.10 class ZipFileInfoMBS

43.10.1 class ZipFileInfoMBS

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: This class keeps the metadata for a zip file.

43.10.2 Methods

43.10.3 SetDate(d as date)

Function: Sets the date with a REALbasic date object.
Notes: A convenience function to make your life easier.

43.10.4 Properties

43.10.5 Day as Integer

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The file time.
Notes:

day of the month - [ 1,31 ]
(Read and Write property)

43.10.6 DosDate as UInt32

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The date in the 32bit DOS format.
Notes:

If dos_date = 0, the plugin will calculate it from the day, month, year, hour, minute and second properties.
(Read and Write property)

43.10.7 ExternalFileAttributes as UInt32

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: external file attributes.
43.10. CLASS ZIPFILEINFOMBS

Notes:
A 32 bit value.
(Read and Write property)

43.10.8 Hour as Integer

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The file time.
Notes:
hours since midnight - [ 0,23 ]
(Read and Write property)

43.10.9 InternalFileAttributes as UInt32

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Internal file attributes.
Notes:
A 16 bit value.
(Read and Write property)

43.10.10 Minute as Integer

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The file time.
Notes:
minutes after the hour - [ 0,59 ]
(Read and Write property)

43.10.11 Month as Integer

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The file time.
Notes:
months since January - [ 0,11 ]
(Read and Write property)
43.10.12 Second as Integer

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The file time.
**Notes:**
seconds after the minute - [0,59]
(Read and Write property)

43.10.13 Year as Integer

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The file time.
**Notes:**
years - [1980..2044]
(Read and Write property)
43.11. Class ZipMBS

43.11.1 Class ZipMBS

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: The class for writing to a zip file.

Notes:

This is a simple class which uses zlib and has some limitations:

- only deflate as compression method
- only one date per file is preserved
- no resource forks on Mac OS
- no encoding handling
- no Apple or Microsoft extensions for special file flags or permissions.

But it works nice to provide a zip file to clients. For example a download of JPEG files in an archive with one download from Web Edition.

Be aware that you can’t compress Mac applications with this class, as the we don’t preserve permissions, so the decompressed file has not the right flags set to make it executable.

43.11.2 Methods

43.11.3 Close(GlobalComment as string="")

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Close the zipfile.

43.11.4 CloseFile

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Close the current file in the zipfile.
7500

43.11.5

CHAPTER 43. COMPRESSION

CloseFileRaw(UncompressedSize as Integer, CRC32 as Integer)

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Close the current file in the zipfile.
Notes:
For files opened with parameter raw=true in CreateFile
UncompressedSize and crc32 are value for the uncompressed size,

43.11.6

CompressFiles(ZipFile as FolderItem, SourceFolder as FolderItem, files()
as string, Overwrite as Integer = 0, Password as string = ””, CompressionLevel as Integer = 9, byref ErrorMessage as string) as Integer

Function: Simple implementation of a batch file compression method.
Example:
dim f as FolderItem = SpecialFolder.Desktop.Child(”test.zip”)
dim folder as FolderItem = SpecialFolder.Pictures // some folder with images
dim files() As string
dim c as Integer = folder.count
for i as Integer = 1 to c
dim file as FolderItem = folder.TrueItem(i)
if file.Directory then
// we go here for this example only one level deep
dim subfolder as FolderItem = file
dim cc as Integer = subfolder.count
for ii as Integer = 1 to cc
dim subfile as FolderItem = subfolder.TrueItem(ii)
if subfile.name.Right(4) = ”.jpg” then
// here we pass a relative path
files.Append subfolder.name+”/”+subfile.name
end if
next
else
if file.name.Right(4) = ”.jpg” then
// just padd a file name for files directly in source folder
files.Append file.name
end if
end if
next


**43.11. CLASS ZIPMBS**

```vbnet
dim ErrorMessage as string
Dim e as Integer = ZipMBS.CompressFiles(f, folder, files, errorMessage)

MsgBox "Error: " + str(e)
```

**Notes:**

ZipFile: The destination zip file.
SourceFolder: The source folder for the files.
files: relative file paths to source folder.
Overwrite: pass 1 to overwrite zip archive, 2 to append or 0 to not overwrite.
Password: the password for encryption.
CompressionLevel: The compression level to use from 0 (no compression) to 9 (maximum).
ErrorMessage: An english error message.

Returns 0 on success or error code on failure.

This is a simple function to compress a couple of files.
It does not preserve file permissions on Mac/Linux or other metadata.
And it may not work with non ASCII characters.

If you need more control over files being added, compression or error checking, please use example projects coming with plugin.

**43.11.7 Constructor(file as folderitem, append as Integer = 0)**

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Create a zipfile.
Notes:

If the file exist and append is AppendStatusCreateAfter, the zip will be created at the end of the file.
(useful if the file contain a self extractor code)
If the file exist and append is AppendStatusAddInZip, we will add files in existing zip (be sure you don’t add file that doesn’t exist)
If the zipfile cannot be opened, the handle value will be zero.

AppendStatusCreateAfter seems not to be working currently.

If you run this class in a thread, please make sure your thread has a big stack (1 MB or more). Else it will crash.
43.11.8  CreateFile(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string = "", ExtraGlobal as string = "", Comment as String = "", CompressionMethod as Integer = 8, Level as Integer = 9, Zip64 as boolean = false)

Function: Open a file in the ZIP for writing.
Notes:
filename: the filename in zip. This can include path information with slash as delimiter. e.g. "folder-name/file.txt"
FileInfo: the file date.
ExtraLocal: contains the extrafield data the the local header.
ExtraGlobal: contains the extrafield data the the local header.
Comment: comment contain the comment string
CompressionMethod: contain the compression method (see Method* constants)
Level: contain the level of compression (a value from -1 to 9. see Compression* constants)
Zip64: If you want to have the zip file support more than 2 GB of data, set this to true to create a 64 bit file.
See also:

- 43.11.9 CreateFile(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string, ExtraGlobal as string, Comment as String, CompressionMethod as Integer, Level as Integer, Zip64 as boolean, Raw as boolean) 7502

- 43.11.10 CreateFile(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string, ExtraGlobal as string, Comment as String, CompressionMethod as Integer, Level as Integer, Zip64 as boolean, Raw as boolean, WindowBits as Integer, MemLevel as Integer, Strategy as Integer, Password as string, crcForCtypting as UInt32) 7503

- 43.11.11 CreateFile(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string, ExtraGlobal as string, Comment as String, CompressionMethod as Integer, Level as Integer, Zip64 as boolean, Raw as boolean, WindowBits as Integer, MemLevel as Integer, Strategy as Integer, Password as string, crcForCtypting as UInt32, versionMadeBy as UInt32, flagBase as UInt32) 7505

43.11.9  CreateFile(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string, ExtraGlobal as string, Comment as String, CompressionMethod as Integer, Level as Integer, Zip64 as boolean, Raw as boolean)

Function: Open a file in the ZIP for writing with the possibility to write raw files.
Notes:
filename: the filename in zip. This can include path information with slash as delimiter. e.g. "folder-name/file.txt"
FileInfo: the file date.
ExtraLocal: contains the extrafield data the the local header.
43.11. CLASS ZIPMBS

ExtraGlobal: contains the extrafield data the the local header.
Comment: comment contain the comment string
CompressionMethod: contain the compression method (see Method* constants)
Level: contain the level of compression (a value from -1 to 9. see Compression* constants)
Zip64: If you want to have the zip file support more than 2 GB of data, set this to true to create a 64 bit file.
Raw: If true you read the file raw (the data will not be compressed).
See also:

- 43.11.8 CreateFile(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string = "", ExtraGlobal as string = "", Comment as String = "", CompressionMethod as Integer = 8, Level as Integer = 9, Zip64 as boolean = false) 7502
- 43.11.10 CreateFile(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string, ExtraGlobal as string, Comment as String, CompressionMethod as Integer, Level as Integer, Zip64 as boolean, Raw as boolean, WindowBits as Integer, MemLevel as Integer, Strategy as Integer, Password as string, crcForCtypting as UInt32) 7503
- 43.11.11 CreateFile(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string, ExtraGlobal as string, Comment as String, CompressionMethod as Integer, Level as Integer, Zip64 as boolean, Raw as boolean, WindowBits as Integer, MemLevel as Integer, Strategy as Integer, Password as string, crcForCtypting as UInt32, versionMadeBy as UInt32, flagBase as UInt32) 7505

43.11.10 CreateFile(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string, ExtraGlobal as string, Comment as String, CompressionMethod as Integer, Level as Integer, Zip64 as boolean, Raw as boolean, WindowBits as Integer, MemLevel as Integer, Strategy as Integer, Password as string, crcForCtypting as UInt32)

Function: Open a file in the ZIP for writing with the possibility to write raw files, change the compression and add a password.
Notes:
filename: the filename in zip. This can include path information with slash as delimiter. e.g. "folder-name/file.txt"
FileInfo: the file date.
ExtraLocal: contains the extrafield data the the local header.
ExtraGlobal: contains the extrafield data the the local header.
Comment: comment contain the comment string
CompressionMethod: contain the compression method (see Method* constants)
Level: contain the level of compression (a value from -1 to 9. see Compression* constants)
Zip64: If you want to have the zip file support more than 2 GB of data, set this to true to create a 64 bit file.
Raw: If true you read the file raw (the data will not be compressed).
WindowBits: Parameters for zlib compression. (for example -15)
MemLevel: Parameters for zlib compression. (for example 8 or 9)
Strategy: Parameters for zlib compression. (See Strategy* constants)
Password: The password to use.
crcForCtypting: the CRC value of the input file.

The windowBits parameter is the base two logarithm of the window size (the size of the history buffer). It should be in the range 8..15 for this version of the library. Larger values of this parameter result in better compression at the expense of memory usage. The default value is 15.

windowBits can also be -8..-15 for raw deflate. In this case, -windowBits determines the window size.

The memLevel parameter specifies how much memory should be allocated for the internal compression state. memLevel=1 uses minimum memory but is slow and reduces compression ratio; memLevel=9 uses maximum memory for optimal speed. The default value is 8. See zconf.h for total memory usage as a function of windowBits and memLevel.

The strategy parameter is used to tune the compression algorithm. Use the value StrategyDefault for normal data, StrategyFiltered for data produced by a filter (or predictor), StrategyHuffmanOnly to force Huffman encoding only (no string match), or StrategyRLE to limit match distances to one (run-length encoding). Filtered data consists mostly of small values with a somewhat random distribution. In this case, the compression algorithm is tuned to compress them better. The effect of StrategyFiltered is to force more Huffman coding and less string matching; it is somewhat intermediate between StrategyDefault and StrategyHuffmanOnly. StrategyRLE is designed to be almost as fast as StrategyHuffmanOnly, but give better compression for PNG image data. The strategy parameter only affects the compression ratio but not the correctness of the compressed output even if it is not set appropriately. StrategyFixed prevents the use of dynamic Huffman codes, allowing for a simpler decoder for special applications.

See also:

- 43.11.8 CreateFile(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string = "", ExtraGlobal as string = "", Comment as String = "", CompressionMethod as Integer = 8, Level as Integer = 9, Zip64 as boolean = false) 7502

- 43.11.9 CreateFile(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string, ExtraGlobal as string, Comment as String, CompressionMethod as Integer, Level as Integer, Zip64 as boolean, Raw as boolean) 7502

- 43.11.11 CreateFile(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string, ExtraGlobal as string, Comment as String, CompressionMethod as Integer, Level as Integer, Zip64 as boolean, Raw as boolean, WindowBits as Integer, MemLevel as Integer, Strategy as Integer, Password as string, crcForCtypting as UInt32, versionMadeBy as UInt32, flagBase as UInt32) 7505
CLASS ZIPMBS

43.11 CreateFile(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string, ExtraGlobal as string, Comment as string, CompressionMethod as Integer, Level as Integer, Zip64 as boolean, Raw as boolean, WindowBits as Integer, MemLevel as Integer, Strategy as Integer, Password as string, crcForCtypting as UInt32, versionMadeBy as UInt32, flagBase as UInt32)


Function: Open a file in the ZIP for writing with the possibility to write raw files, change the compression and add a password.

Notes:

filename: the filename in zip. This can include path information with slash as delimiter. e.g. "folder-name/file.txt"
FileInfo: the file date.
ExtraLocal: contains the extrafield data the the local header.
ExtraGlobal: contains the extrafield data the the local header.
Comment: comment contain the comment string
CompressionMethod: contain the compression method (see Method* constants)
Level: contain the level of compression (a value from -1 to 9. see Compression* constants)
Zip64: If you want to have the zip file support more than 2 GB of data, set this to true to create a 64 bit file.
Raw: If true you read the file raw (the data will not be compressed).
windowBits: Parameters for zlib compression. (for example -15)
memLevel: Parameters for zlib compression. (for example 8 or 9)
Strategy: Parameters for zlib compression. (See Strategy* constants)
Password: The password to use.
crcForCtypting: the CRC value of the input file.
versionMadeBy: value for Version made by field
flagBase: value for flag field (compression level info will be added)

The windowBits parameter is the base two logarithm of the window size (the size of the history buffer). It should be in the range 8..15 for this version of the library. Larger values of this parameter result in better compression at the expense of memory usage. The default value is 15.

windowBits can also be -8..-15 for raw deflate. In this case, -windowBits determines the window size.

The memLevel parameter specifies how much memory should be allocated for the internal compression state. memLevel=1 uses minimum memory but is slow and reduces compression ratio; memLevel=9 uses maximum memory for optimal speed. The default value is 8. See zconf.h for total memory usage as a function of windowBits and memLevel.

The strategy parameter is used to tune the compression algorithm. Use the value StrategyDefault for normal data, StrategyFiltered for data produced by a filter (or predictor), StrategyHuffmanOnly to force Huffman encoding only (no string match), or StrategyRLE to limit match distances to one (run-length
Encoded data consists mostly of small values with a somewhat random distribution. In this case, the compression algorithm is tuned to compress them better. The effect of StrategyFiltered is to force more Huffman coding and less string matching; it is somewhat intermediate between StrategyDefault and StrategyHuffmanOnly. StrategyRLE is designed to be almost as fast as StrategyHuffmanOnly, but give better compression for PNG image data. The strategy parameter only affects the compression ratio but not the correctness of the compressed output even if it is not set appropriately. StrategyFixed prevents the use of dynamic Huffman codes, allowing for a simpler decoder for special applications.

See also:

- 43.11.8 CreateFile(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string = "", ExtraGlobal as string = "", Comment as String = "", CompressionMethod as Integer = 8, Level as Integer = 9, Zip64 as boolean = false)
- 43.11.9 CreateFile(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string, ExtraGlobal as string, Comment as String, CompressionMethod as Integer, Level as Integer, Zip64 as boolean, Raw as boolean)
- 43.11.10 CreateFile(Filename as string, FileInfo as ZipFileInfoMBS, ExtraLocal as string, ExtraGlobal as string, Comment as String, CompressionMethod as Integer, Level as Integer, Zip64 as boolean, Raw as boolean, WindowBits as Integer, MemLevel as Integer, Strategy as Integer, Password as string, crcForCtypting as UInt32)

43.11.12 Write(data as string)

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Write data in the zipfile.

**Notes:** A file in the zip archive must have been created.

43.11.13 Properties

43.11.14 Handle as Integer

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The internal handle for the open zip archive.

**Notes:**

If 0 the construct failed to create the file.

(Read and Write property)

43.11.15 Lasterror as Integer

MBS Compression Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The last error code.
43.11. **CLASS ZIPMBS**

Notes: (Read and Write property)

---

**43.11.16 ZipFileVersion32 as Integer**

**Function:** The version number to put in Zip file header for 32bit zip archives.  
**Notes:**  
Default is 20 for version 4.5. Apple Finder seems to prefer 10 for 1.0.  
(Read and Write property)

---

**43.11.17 ZipFileVersion64 as Integer**

**Function:** The version number to put in Zip file header for 32bit zip archives.  
**Notes:**  
Default is 45 for version 4.5. Apple Finder seems to prefer 10 for 1.0.  
(Read and Write property)

---

**43.11.18 Constants**

**43.11.19 AppendStatusAddInZip=2**

MBS Compression Plugin, Plugin Version: 8.6.  
**Function:** One of the values for the constructor.

---

**43.11.20 AppendStatusCreate=0**

MBS Compression Plugin, Plugin Version: 8.6.  
**Function:** One of the values for the constructor.

---

**43.11.21 AppendStatusCreateAfter=1**

MBS Compression Plugin, Plugin Version: 8.6.  
**Function:** One of the values for the constructor.
43.11.22  **CompressionBestCompression=9**

MBS Compression Plugin, Plugin Version: 8.6. **Function:** One of the compression level constants.

43.11.23  **CompressionBestSpeed=1**

MBS Compression Plugin, Plugin Version: 8.6. **Function:** One of the compression level constants.

43.11.24  **CompressionDefault=-1**

MBS Compression Plugin, Plugin Version: 8.6. **Function:** One of the compression level constants.

43.11.25  **CompressionNo=0**

MBS Compression Plugin, Plugin Version: 8.6. **Function:** One of the compression level constants.

43.11.26  **MethodDeflated=8**

MBS Compression Plugin, Plugin Version: 8.6. **Function:** One of the compression method constants.

43.11.27  **MethodNone=0**

MBS Compression Plugin, Plugin Version: 8.6. **Function:** One of the compression method constants. **Notes:** Use this value for no compression.

43.11.28  **StrategyDefault=0**

MBS Compression Plugin, Plugin Version: 8.6. **Function:** One of the strategy modes.

43.11.29  **StrategyFiltered=1**

MBS Compression Plugin, Plugin Version: 8.6. **Function:** One of the strategy modes.
43.11. CLASS ZIPMBS

43.11.30  StrategyFixed=4

MBS Compression Plugin, Plugin Version: 8.6. **Function:** One of the strategy modes.

43.11.31  StrategyHuffmanOnly=2

MBS Compression Plugin, Plugin Version: 8.6. **Function:** One of the strategy modes.

43.11.32  StrategyRLE=3

MBS Compression Plugin, Plugin Version: 8.6. **Function:** One of the strategy modes.

43.11.33  ZipBadZipFile=-103

MBS Compression Plugin, Plugin Version: 8.6. **Function:** One of the error constants.

43.11.34  ZipInternalError=-104

MBS Compression Plugin, Plugin Version: 8.6. **Function:** One of the error constants.

43.11.35  ZipOk=0

MBS Compression Plugin, Plugin Version: 8.6. **Function:** One of the error constants.

43.11.36  ZipParameterError=-102

MBS Compression Plugin, Plugin Version: 8.6. **Function:** One of the error constants.
43.12  class ZLibCompressMBS

43.12.1  class ZLibCompressMBS

Function: A class for zlib compression.

43.12.2  Methods

43.12.3  Adler32(start as UInt32, data as string) as UInt32

Function: Calculates a 32bit Adler Checksum about a given string.
Notes:
Set start to 0 for the first call.
Later you can pass the result as the new start value to add data to your checksum.

This function is part of the zlib library and given as a free utility function to this class.

43.12.4  close

MBS Compression Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The destructor.
Notes:
There is no need to call this method except you want to free all resources of this object now without waiting
for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

43.12.5  Constructor(BufferSize as Integer=20000)

Function: The constructor.
Notes:
The buffer size you specify is the output buffer size.
If this size is small, you need to flush with ProcessZip.
43.12. CLASS ZLIBCOMPRESSMBS

43.12.6  CRC32(start as UInt32, data as string) as UInt32

Function: Calculates a 32bit Checksum about a given string.
Notes:
Set start to 0 for the first call.
Later you can pass the result as the new start value to add data to your checksum.

This function is part of the zlib library and given as a free utility function to this class.

43.12.7  EndZip

Function: Finalizes the current compression stream.
Notes:
You may check the Output buffer after this.
Error is set.

43.12.8  GetOutput as string

Function: Returns the contents of the output buffer.
Notes: The buffer is cleared after this function returns.

43.12.9  InitZip(level as Integer)

Function: Initializes the stream.
Notes:
Level is from 0 to 9.
Error is set.

43.12.10  InputAvail as Integer

Function: Returns the number of bytes available in the input buffer.
43.12.11 OutputSize as Integer

**Function:** The size of bytes available in the output buffer.

43.12.12 ProcessFinish

**Function:** Same as process, but for finishing.
**Notes:**
If error is zero after this function, please call it again. Error is 1 if stream is at end, so you can call EndZip to finish.

43.12.13 ProcessZip(Flush as boolean=false)

**Function:** Does zip compression.
**Notes:**
Reduces the size of the input buffer and writes new data to the output buffer.
If the input buffer is not empty after this call, you need to call it again, but empty the output buffer before. Error is set.

If flush is true, the data is flushed to output. Using flush=true all the the time will slow down compression, so use it only on the end to clear the output buffers.

43.12.14 SetInput(data as MemoryBlock) as boolean

**Function:** Fills the input buffer.
**Notes:**
Returns true if successful.
The current input buffer size is 128 K, so you may use something smaller.
See also:

- 43.12.15 SetInput(data as string) as boolean
43.12. CLASS ZLIBCOMPRESSMBS

43.12.15 SetInput(data as string) as boolean


Function: Fills the input buffer.

Notes:
Returns true if successful.
The current input buffer size is 128 K, so you may use something smaller.
See also:

- 43.12.14 SetInput(data as MemoryBlock) as boolean

43.12.16 Properties

43.12.17 CRC as UInt32


Function: The Adler32 CRC value of the uncompressed data.

Notes: (Read only property)

43.12.18 Error as Integer


Function: The last error code.

Notes:

Values:

- Z_OK 0 (no error)
- Z_STREAM_END 1 (Should be handled by the plugin inside)
- Z_NEED_DICT 2
- Z_ERRNO -1
- Z_STREAM_END -2
- Z_DATA_ERROR -3
- Z_MEM_ERROR -4
- Z_BUF_ERROR -5
- Z_VERSION_ERROR -6

(Read and Write property)
43.12.19  ErrorMessage as String

**Function:** The error message for the last error.
**Notes:** (Read only property)

43.12.20  OutputBufferSize as Integer

**Function:** The output buffer size used in the constructor.
**Notes:** (Read only property)

43.12.21  TotalInput as Integer

**Function:** The number of bytes processed so far.
**Notes:** (Read and Write property)

43.12.22  TotalOutput as Integer

**Function:** The number of bytes processed so far.
**Notes:** (Read and Write property)

43.12.23  Version as String

**Function:** The version string of the used zlib library.
**Notes:** (Read only property)

43.12.24  Constants

43.12.25  kASCII = 1

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the data type constants.
43.12. CLASS ZLIBCOMPRESSMBS

43.12.26  kBEST_COMPRESSION = 9

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the compression level constants.

43.12.27  kBEST_SPEED = 1

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the compression level constants.

43.12.28  kBINARY = 0

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the data type constants.

43.12.29  kBLOCK = 5

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the flush constants.

43.12.30  kBUF_ERROR = -5

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the return codes for the compression/de-
compression functions.
**Notes:** Negative values are errors, positive values are used for special but normal events.

43.12.31  kDATA_ERROR = -3

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the return codes for the compression/de-
compression functions.
**Notes:** Negative values are errors, positive values are used for special but normal events.

43.12.32  kDEFAULT_COMPRESSION = -1

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the compression level constants.
43.12.33 kDEFAULT_STRATEGY = 0

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the compression strategy constants.

43.12.34 kDEFLATED = 8

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the compression method constants. **Notes:** The deflate compression method (the only one supported in this version)

43.12.35 kERRNO = -1

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the return codes for the compression/de-compression functions. **Notes:** Negative values are errors, positive values are used for special but normal events.

43.12.36 kFILTERED = 1

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the compression strategy constants.

43.12.37 kFINISH = 4

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the flush constants.

43.12.38 kFIXED = 4

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the compression strategy constants.

43.12.39 kFULL_FLUSH = 3

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the flush constants.
43.12. CLASS ZLIBCOMPRESSMBS

43.12.40  \texttt{kHUFFMAN\_ONLY} = 2

MBS Compression Plugin, Plugin Version: 9.7. \textbf{Function}: One of the compression strategy constants.

43.12.41  \texttt{kMEM\_ERROR} = -4

MBS Compression Plugin, Plugin Version: 9.7. \textbf{Function}: One of the return codes for the compression/de-compression functions.
\textbf{Notes}: Negative values are errors, positive values are used for special but normal events.

43.12.42  \texttt{kNEED\_DICT} = 2

MBS Compression Plugin, Plugin Version: 9.7. \textbf{Function}: One of the return codes for the compression/de-compression functions.
\textbf{Notes}: Negative values are errors, positive values are used for special but normal events.

43.12.43  \texttt{kNO\_COMPRESS}ION = 0

MBS Compression Plugin, Plugin Version: 9.7. \textbf{Function}: One of the compression level constants.

43.12.44  \texttt{kNO\_FLUSH} = 0

MBS Compression Plugin, Plugin Version: 9.7. \textbf{Function}: One of the flush constants.

43.12.45  \texttt{kNULL} = 0

MBS Compression Plugin, Plugin Version: 9.7. \textbf{Function}: The null value.

43.12.46  \texttt{kOK} = 0

MBS Compression Plugin, Plugin Version: 9.7. \textbf{Function}: One of the return codes for the compression/de-compression functions.
\textbf{Notes}: Negative values are errors, positive values are used for special but normal events.
43.12.47  kPARTIAL_FLUSH = 1

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the flush constants.

43.12.48  kRLE = 3

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the compression strategy constants.

43.12.49  kSTREAM_END = 1

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the return codes for the compression/de-compression functions.

**Notes:** Negative values are errors, positive values are used for special but normal events.

43.12.50  kSTREAM_ERROR = -2

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the return codes for the compression/de-compression functions.

**Notes:** Negative values are errors, positive values are used for special but normal events.

43.12.51  kSYNC_FLUSH = 2

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the flush constants.

43.12.52  kTEXT = 1

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the data type constants.

43.12.53  kUNKNOWN = 2

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the data type constants.
43.12.54  kVERSION_ERROR = -6

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the return codes for the compression/decompression functions.  
**Notes:** Negative values are errors, positive values are used for special but normal events.
43.13  class ZLibDecompressMBS

43.13.1  class ZLibDecompressMBS

Function: A class for zlib decompression.

43.13.2  Methods

43.13.3  Adler32(start as UInt32, data as string) as UInt32

Function: Calculates a 32bit Adler Checksum about a given string.
Notes: Set start to 0 for the first call.
Later you can pass the result as the new start value to add data to your checksum.
This function is part of the zlib library and given as a free utility function to this class.

43.13.4  close

MBS Compression Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The destructor.
Notes: There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

43.13.5  Constructor(BufferSize as Integer=20000)

Function: The constructor.
Notes: The buffer size you specify is the output buffer size.
If this size is small, you need to flush with ProcessZip.
43.13. **CLASS ZLIBDECOMPRESSMBS**

### 43.13.6 **CRC32(start as UInt32, data as string) as UInt32**

**Function:** Calculates a 32bit Checksum about a given string.
**Notes:**
Set start to 0 for the first call.
Later you can pass the result as the new start value to add data to your checksum.
This function is part of the zlib library and given as a free utility function to this class.

### 43.13.7 **EndZip**

**Function:** Finalizes the current decompression stream.
**Notes:**
You may check the Output property after this.
Error is set.

### 43.13.8 **GetOutput as string**

**Function:** Returns the content of the output buffer.
**Notes:** The buffer is cleared after this function returns.

### 43.13.9 **InitZip**

**Function:** Initializes the stream.
**Notes:** Error is set.

### 43.13.10 **InputAvail as Integer**

**Function:** The number of bytes available in the input buffer.
43.13.11 OutputSize as Integer

**Function:** The number of bytes available in the output buffer.

43.13.12 ProcessZip(Flush as boolean=false)

**Function:** Does zip compression.
**Notes:**
Reduces the size of the input buffer and writes new data to the output buffer.
If the input buffer is not "" after this call, you need to call it again, but empty the output buffer before.
Error is set.

If flush is true, the data is flushed to output. Using flush=true all the time will slow down compression,
so use it only on the end to clear the output buffers.

43.13.13 SetInput(data as Memoryblock) as boolean

**Function:** Fills the input buffer.
**Notes:**
Returns true if successful.
The current plugin uses a 128 K input buffer.
See also:

- 43.13.14 SetInput(data as string) as boolean

43.13.14 SetInput(data as string) as boolean

**Function:** Fills the input buffer.
**Notes:**
Returns true if successful.
The current plugin uses a 128 K input buffer.
See also:

- 43.13.13 SetInput(data as Memoryblock) as boolean
43.13.15 Properties

43.13.16 CRC as UInt32

Function: The CRC checksum.
Notes: (Read only property)

43.13.17 Error as Integer

Function: The last error code.
Notes:
Values:

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z_OK</td>
<td>0 (no error)</td>
</tr>
<tr>
<td>Z_STREAM_END</td>
<td>1 (Should be handled by the plugin inside)</td>
</tr>
<tr>
<td>Z_NEED_DICT</td>
<td>2</td>
</tr>
<tr>
<td>Z_ERRNO</td>
<td>-1</td>
</tr>
<tr>
<td>Z_STREAM_ERROR</td>
<td>-2</td>
</tr>
<tr>
<td>Z_DATA_ERROR</td>
<td>-3</td>
</tr>
<tr>
<td>Z_MEM_ERROR</td>
<td>-4</td>
</tr>
<tr>
<td>Z_BUF_ERROR</td>
<td>-5</td>
</tr>
<tr>
<td>Z_VERSION_ERROR</td>
<td>-6</td>
</tr>
</tbody>
</table>

(Read and Write property)

43.13.18 ErrorMessage as String

Function: The error message for the last error.
Notes: (Read only property)

43.13.19 OutputBufferSize as Integer

Function: The output buffer size used in the constructor.
Notes: (Read only property)
43.13.20  TotalInput as Integer

Function: The number of bytes processed so far.
Notes: (Read and Write property)

43.13.21  TotalOutput as Integer

Function: The number of bytes processed so far.
Notes: (Read and Write property)

43.13.22  Version as String

Function: The version string of the used zlib library.
Notes: (Read only property)

43.13.23  Constants

43.13.24  kASCII = 1

MBS Compression Plugin, Plugin Version: 9.7. Function: One of the data type constants.

43.13.25  kBEST_COMPRESSION = 9


43.13.26  kBEST_SPEED = 1

43.13. CLASS ZLIBDECOMPRESSMBS

43.13.27  kBINARY = 0

MBS Compression Plugin, Plugin Version: 9.7. Function: One of the data type constants.

43.13.28  kBLOCK = 5


43.13.29  kBUF_ERROR = -5

MBS Compression Plugin, Plugin Version: 9.7. Function: One of the return codes for the compression/de-compression functions.
Notes: Negative values are errors, positive values are used for special but normal events.

43.13.30  kDATA_ERROR = -3

MBS Compression Plugin, Plugin Version: 9.7. Function: One of the return codes for the compression/de-compression functions.
Notes: Negative values are errors, positive values are used for special but normal events.

43.13.31  kDEFAULT_COMPRESSION = -1


43.13.32  kDEFAULT_STRATEGY = 0

MBS Compression Plugin, Plugin Version: 9.7. Function: One of the compression strategy constants.

43.13.33  kDEFLATED = 8

Notes: The deflate compression method (the only one supported in this version)
43.13.34  **kERRNO = -1**

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the return codes for the compression/decompression functions.
**Notes:** Negative values are errors, positive values are used for special but normal events.

43.13.35  **kFILTERED = 1**

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the compression strategy constants.

43.13.36  **kFINISH = 4**

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the flush constants.

43.13.37  **kFIXED = 4**

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the compression strategy constants.

43.13.38  **kFULL_FLUSH = 3**

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the flush constants.

43.13.39  **kHUFFMAN_ONLY = 2**

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the compression strategy constants.

43.13.40  **kMEM_ERROR = -4**

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the return codes for the compression/decompression functions.
**Notes:** Negative values are errors, positive values are used for special but normal events.
43.13. **CLASS ZLIBDECOMPRESSMBS**

43.13.41  **kNEED_DICT = 2**

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the return codes for the compression/de-compression functions.
**Notes:** Negative values are errors, positive values are used for special but normal events.

43.13.42  **kNO_COMPRESSION = 0**

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the compression level constants.

43.13.43  **kNO_FLUSH = 0**

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the flush constants.

43.13.44  **kNULL = 0**

MBS Compression Plugin, Plugin Version: 9.7. **Function:** The null value.

43.13.45  **kOK = 0**

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the return codes for the compression/de-compression functions.
**Notes:** Negative values are errors, positive values are used for special but normal events.

43.13.46  **kPARTIAL_FLUSH = 1**

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the flush constants.

43.13.47  **kRLE = 3**

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the compression strategy constants.
43.13.48 kSTREAM_END = 1

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the return codes for the compression/de-compression functions.  
**Notes:** Negative values are errors, positive values are used for special but normal events.

43.13.49 kSTREAM_ERROR = -2

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the return codes for the compression/de-compression functions.  
**Notes:** Negative values are errors, positive values are used for special but normal events.

43.13.50 kSYNC_FLUSH = 2

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the flush constants.

43.13.51 kTEXT = 1

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the data type constants.

43.13.52 kUNKNOWN = 2

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the data type constants.

43.13.53 kVERSION_ERROR = -6

MBS Compression Plugin, Plugin Version: 9.7. **Function:** One of the return codes for the compression/de-compression functions.  
**Notes:** Negative values are errors, positive values are used for special but normal events.
Chapter 44

Contacts

44.1 class CNContactFetchRequestMBS

44.1.1 class CNContactFetchRequestMBS

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A contact fetch request. Notes: The CNContactFetchRequest class defines fetching options to use while fetching contacts. It is required to have contact property key(s) to fetch a contacts properties. Use this class with the enumerateContactsWithFetchRequest method to execute the contact fetch request.

44.1.2 Methods

44.1.3 available as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether this class is available. Notes: Should return true in a 64-bit Mac app on Mac OS X 10.11 or newer.

44.1.4 Constructor(keysToFetch() as CNKeyDescriptorMBS)

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The designated initializer for a fetch request that uses the specified keys. Notes: keysToFetch: An array of contact property keys and/or key descriptors from contacts objects to be fetched in the returned contacts.
44.1.5 **keysToFetch as CNKeyDescriptorMBS()**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The properties to fetch in the returned contacts. **Notes:** An array of contact property keys or key descriptors from contact objects to be fetched in the returned contacts. For example, CNContactEmailAddressesKey, CNContactPhoneNumbersKey, CNContactFormatterStyleFullName fetches the contacts email addresses, phone numbers, and contacts full name with the contact formatter.

44.1.6 **setKeysToFetch(keysToFetch() as CNKeyDescriptorMBS)**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the properties to fetch in the returned contacts.

44.1.7 **Properties**

44.1.8 **Handle as Integer**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference. **Notes:** Value is a pointer to a CNContactFetchRequest object. (Read and Write property)

44.1.9 **mutableObjects as Boolean**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value that indicates whether to return mutable contacts. **Notes:** When the value of this property is true, the fetch returns CNMutableContact objects; otherwise it returns CNContact objects. The default value of this property is false. (Read and Write property)

44.1.10 **predicate as NSPredicateMBS**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The predicate to match contacts against. **Notes:**
Set the value of this property to nil to match all contacts or use the predicates defined in CNContact Predicates. Compound predicates are not supported.
(Read and Write property)

### 44.1.11 SortOrder as Integer


**Function:** The sort order for contacts.

**Notes:**
The default sort order is CNContactSortOrderNone.
(Read and Write property)

### 44.1.12 unifyResults as Boolean


**Function:** A Boolean value that indicates whether to return linked contacts as unified contacts.

**Notes:**
A unified contact is an aggregation of properties from a set of linked individual contacts. When the value of this property is true, the fetch returns unified contacts; otherwise, it returns individual contacts. The default value of this property is true.
(Read and Write property)
44.2 class CNContactFormatterMBS

44.2.1 class CNContactFormatterMBS


Function: The CNContactFormatter class defines the different formatting styles for contacts.

Example:

```vbnet
dim m as new CNMutableContactMBS
m.givenName = "Bob"
m.familyName = "Miller"

dim f as new CNContactFormatterMBS
dim style as Integer = CNContactFormatterMBS.CNContactFormatterStyleFullName
MsgBox CNContactFormatterMBS.stringFromContact(m, style)
```

Notes: This class handles international ordering and delimiting for the contact name components. When formatting many contacts, create an instance of this class and use the instance methods; otherwise use the class methods.

44.2.2 Methods

44.2.3 attributedStringFromContact(contact as CNContactMBS, DefaultAttributes as Dictionary = nil) as NSAttributedStringMBS


Function: Formats the contact name as an attributed string.

Notes:

contact: The contact whose name is to be formatted.

attributes: The default attributes to use. For more information, see NSFormatter.

Returns the formatted contact name as an attributed string.

This method behaves similarly to stringFromContact, except that it returns an attributed string. It includes the attribute key CNContactPropertyAttribute whose attribute values are contact property keys, such as CNContactGivenNameKey. This identifies the name components in the formatted contact name.

See also:

- 44.2.4 attributedStringFromContact(contact as CNContactMBS, Style as Integer, DefaultAttributes as Dictionary = nil) as NSAttributedStringMBS
44.2.4 attributedStringFromContact(contact as CNContactMBS, Style as Integer, DefaultAttributes as Dictionary = nil) as NSAttributedStringMBS

Function: Formats the contact name as an attributed string.

Notes:
contact: The contact whose name is to be formatted.
styless: The formatting style to be used for the contact name.
attributes: The default attributes to use. For more information, see NSFormatter.

Returns the formatted contact name as an attributed string.

This method behaves similarly to stringFromContact, except that it returns an attributed string. It includes the attribute key CNContactPropertyAttribute, whose attribute values are contact property keys, such as CNContactGivenNameKey. This identifies the name components in the formatted contact name.

See also:
• 44.2.3 attributedStringFromContact(contact as CNContactMBS, DefaultAttributes as Dictionary = nil) as NSAttributedStringMBS

44.2.5 available as Boolean

Function: Whether this class is available.

Notes: Should return true in a 64-bit Mac app on Mac OS X 10.11 or newer.

44.2.6 CNContactPropertyAttribute as String

Function: One of the attributes in the attribute dictionary.

Notes: If the attributes include the key CNContactPropertyAttribute whose attribute values are contact property keys, such as CNContactGivenNameKey. This identifies the name components in the formatted contact name.

44.2.7 Constructor

Function: The constructor.
44.2.8 delimiterForContact(contact as CNContactMBS) as String

Function:
Returns the delimiter to use between name components.

Notes:
- contact: The contact whose name is to be formatted.

Returns the delimiter to use between name components.

If contact is nil, or if it has no first name, middle name, or last name, this method returns an empty string.

44.2.9 descriptorForRequiredKeysForStyle(Style as Integer) as CNKeyDescriptorMBS

Function:
Returns the required key descriptor for the specified formatting style of the contact.

Notes:
- style: The formatting style to be used for contact name.

Returns the contact key descriptor for the formatting style.

Include this method with the keys to fetch when fetching contacts. To format multiple styles, you can include multiple key descriptors with the keys to fetch.

44.2.10 nameOrderForContact(contact as CNContactMBS) as Integer

Function:
Returns the display name order.

Notes:
- contact: The contact whose name is to be formatted.

Returns the display order to use when combining the given name and family name components.

For more information about display name orders, see CNContactDisplayNameOrder.
44.2. CLASS CNCONTACTFORMATTERMBS

44.2.11 stringFromContact(contact as CNContactMBS) as String

Function: Formats the contact name.
See also:

- 44.2.12 stringFromContact(contact as CNContactMBS, Style as Integer) as String

44.2.12 stringFromContact(contact as CNContactMBS, Style as Integer) as String

Function: Returns the contact name, formatted with the specified formatter.
Notes:
contact: The contact whose name is to be formatted.
style: The formatting style to be used for the contact name.
See also:

- 44.2.11 stringFromContact(contact as CNContactMBS) as String

44.2.13 Properties

44.2.14 Handle as Integer

Function: The internal object reference.
Notes:
Value is a pointer to a CNContactFormatter object.
(Read and Write property)

44.2.15 Style as Integer

Function: The formatting style for the contact name.
Notes:
The style for a contact formatter instance. The default value for this property is CNContactFormatterStyle-FullName. For more information on formatting styles, see CNContactFormatterStyle.
(Read and Write property)
44.2.16 Constants

44.2.17 CNContactDisplayNameOrderFamilyNameFirst = 2

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the formatting orders for contact names component.
**Notes:** Display name order by family name first.

44.2.18 CNContactDisplayNameOrderGivenNameFirst = 1

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the formatting orders for contact names component.
**Notes:** Display name order by given name first.

44.2.19 CNContactDisplayNameOrderUserDefault = 0

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the formatting orders for contact names component.
**Notes:** Display name order by user default.

44.2.20 CNContactFormatterStyleFullName = 0

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the formatting styles for contact names.
**Notes:** Combines the contact name components into a full name.

44.2.21 CNContactFormatterStylePhoneticFullName = 1

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the formatting styles for contact names.
**Notes:** Combines the contact phonetic name components into a phonetic full name.
44.3. CLASS CNCONTACTMBS

44.3 class CNContactMBS

44.3.1 class CNContactMBS

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for a contact.  
**Notes:** The CNContact is a thread-safe class that represents an immutable value object for contact properties, such as the first name and phone numbers of a contact. CNContact is similar to a complex Foundation collection, in that it has a mutable subclass (CNMutableContact). Neither the CNContact nor CNMutableContact class maintain a reference to their data store. Every contact has a unique ID, which you obtain using the identifier property.

44.3.2 Methods

44.3.3 areKeysAvailable(keyDescriptors() as CNKeyDescriptorMBS) as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Determines whether all contact property values for the specified keys are fetched. 
**Notes:** The isKeyAvailable or areKeysAvailable methods are used where you are not certain of the keys that when fetched. If this method returns false, refetch the contact using the contact identifier and the keys you want to fetch. Accessing a property that was not fetched will throw an CNContactPropertyNotFetchedExceptionName exception.

44.3.4 available as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this class is available. 
**Notes:** Should return true in a 64-bit Mac app on Mac OS X 10.11 or newer.

44.3.5 CNContactBirthdayKey as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for contact properties. 
**Notes:** Birthday.

44.3.6 CNContactDatesKey as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for contact properties.
Notes: Contact dates.

44.3.7  **CNContactDepartmentNameKey as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for contact properties. **Notes:** Department name.

44.3.8  **CNContactEmailAddressesKey as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for contact properties. **Notes:** Email address.

44.3.9  **CNContactFamilyNameKey as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for contact properties. **Notes:** Family name.

44.3.10  **CNContactGivenNameKey as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for contact properties. **Notes:** Given name.

44.3.11  **CNContactIdentifierKey as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for contact properties. **Notes:** The identifier.

44.3.12  **CNContactImageDataAvailableKey as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for contact properties.
44.3. CLass CNContactMBS

Notes:

Image data availability.
Available in OS X 10.12 or newer.

44.3.13 CNContactImageDataKey as String


44.3.14 CNContactInstantMessageAddressesKey as String


44.3.15 CNContactJobTitleKey as String


44.3.16 CNContactMiddleNameKey as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the keys for contact properties. Notes: Middle name.

44.3.17 CNContactNamePrefixKey as String

44.3.18  **CNContactNameSuffixKey as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for contact properties. **Notes:** Name suffix.

44.3.19  **CNContactNicknameKey as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for contact properties. **Notes:** Nickname.

44.3.20  **CNContactNonGregorianBirthdayKey as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for contact properties. **Notes:** Non-Gregorian birthday.

44.3.21  **CNContactNoteKey as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for contact properties. **Notes:** Note.

44.3.22  **CNContactOrganizationNameKey as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for contact properties. **Notes:** Organization name.

44.3.23  **CNContactPhoneNumbersKey as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for contact properties. **Notes:** Phone number.
44.3.24  **CNContactPhoneticFamilyNameKey as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for contact properties. **Notes:** Phonetic family name.

44.3.25  **CNContactPhoneticGivenNameKey as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for contact properties. **Notes:** Phonetic given name.

44.3.26  **CNContactPhoneticMiddleNameKey as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for contact properties. **Notes:** Phonetic middle name.

44.3.27  **CNContactPostalAddressesKey as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for contact properties. **Notes:** Postal address.

44.3.28  **CNContactPreviousFamilyNameKey as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for contact properties. **Notes:** Previous family name.

44.3.29  **CNContactPropertyNotFetchedExceptionName as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Exception thrown when an accessed property was not fetched. **Notes:** The plugin throws a NSExceptionMBS where the name is this value in case a property is not available.
44.3.30  **CNContactRelationsKey as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for contact properties.  
**Notes:** Contact relations.

44.3.31  **CNContactSocialProfilesKey as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for contact properties.  
**Notes:** Social profile.

44.3.32  **CNContactThumbnailImageDataKey as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for contact properties.  
**Notes:** Thumbnail data.

44.3.33  **CNContactTypeKey as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for contact properties.  
**Notes:** Contact type.

44.3.34  **CNContactUrlAddressesKey as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for contact properties.  
**Notes:** URL Address.

44.3.35  **Constructor**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.
44.3.36  **contactRelations as CNLabeledValueMBS()**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An array of labeled relations for the contact. **Notes:** This property is an array of CNLabeledValue objects, each of which has a label and a CNContactRelation value. This property was previously known as related names.

44.3.37  **copy as CNContactMBS**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create a copy of the contact object.

44.3.38  **dates as CNLabeledValueMBS()**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An array containing labeled Gregorian dates. **Notes:** This property is an array of CNLabeledValue objects, each of which has an NSString label and NSDateComponents value. You can use this property to store Gregorian dates such as anniversaries. Day and month components are required and year is optional. The calendar component can be nil or NSCalendarIdentifierGregorian. All other date components are invalid and including them results in an NSError object that includes the key paths of the invalid components and the error code CNErrorCodeValidationConfigurationError.

44.3.39  **descriptorForAllComparatorKeys as CNKeyDescriptorMBS**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Fetches all the keys required for the contact sort comparator. **Notes:** This method implements the CNKeyDescriptor protocol and can be used as an array element when fetching keys for contacts.

44.3.40  **emailAddresses as CNLabeledValueMBS()**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An array of labeled email addresses for the contact. **Notes:** This property is an array of CNLabeledValue objects, each of which has a label and an NSString that contains the email address.
44.3.41 instantMessageAddresses as CNLabeledValueMBS()

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An array of labeled IM addresses for the contact.  
**Notes:** This property is an array of CNLabeledValue objects, each of which has a label and a CNInstantMessageAddress value.

44.3.42 isKeyAvailable(key as String) as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Determines whether the contact property value for the specified key is fetched.  
**Notes:** The isKeyAvailable or areKeysAvailable methods are used when you are not certain of the keys that were fetched. If this method returns false, refetch the contact using the contact identifier and the keys you want to fetch. Accessing a property that was not fetched will throw CNContactPropertyNotFetchedExceptionName.

44.3.43 isUnifiedWithContactWithIdentifier(contactIdentifier as String) as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if the receiver was fetched as a unified contact and includes the contact having contactIdentifier in its unification.

44.3.44 localizedStringForKey(key as String) as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a string containing the localized contact property name.  
**Notes:**

- key: A string containing the contact property key.

Returns a localized string containing the contact property name.

This method returns a localized string for a contact property key. For example, the value of a Canadian CNContactPostalAddressesKey field would be Postal Code, while the value of a French one would be Code Postal.
44.3. CLASS CNCONTACTMBS

44.3.45 mutableCopy as CNMutableContactMBS

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a mutable copy of this contact.

44.3.46 phoneNumbers as CNLabeledValueMBS()

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An array of labeled phone numbers for a contact. **Notes:** This property is an array of CNLabeledValue objects, each of which has a label and a CNPhoneNumber value.

44.3.47 postalAddresses as CNLabeledValueMBS()

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An array of labeled postal addresses for a contact. **Notes:** This property is an array of CNLabeledValue objects, each of which has a label and a CNPostalAddress value.

44.3.48 predicateForContactsInContainerWithIdentifier(containerIdentifier as String) as NSPredicateMBS

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a predicate to find the contacts in the specified container. **Notes:** Returns a predicate that can be used to fetch contacts from CNContactStore.

44.3.49 predicateForContactsInGroupWithIdentifier(groupIdentifier as String) as NSPredicateMBS

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a predicate to find the contacts that are members in the specified group. **Notes:** Returns a predicate that can be used to fetch contacts from CNContactStore.

44.3.50 predicateForContactsMatchingName(name as String) as NSPredicateMBS

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a predicate to find the contacts matching the specified name.
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Notes:

The name can contain any number of words.
Returns a predicate that can be used to fetch contacts from CNContactStore.

44.3.51 predicateForContactsWithIdentifiers(Identifiers() as String) as NSPredicateMBS

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a predicate to find the contacts matching the specified identifiers.
Notes: Returns a predicate that can be used to fetch contacts from CNContactStore.

44.3.52 socialProfiles as CNLabeledValueMBS()

Notes: This property is an array of CNLabeledValue objects, each of which has a label and a CNSocialProfile value.

44.3.53 urlAddresses as CNLabeledValueMBS()

Notes: This property is an array of CNLabeledValue objects, each of which has a label and an NSString value that contains the URL.

44.3.54 valueForKey(key as String) as Variant

Example:

// your contact
dim c as CNContactMBS

dim value as Variant = c.valueForKey(c.CNContactPreviousFamilyNameKey)
if value = nil then
  // empty
else
  MsgBox value.StringValue

Notes: Normally you use the properties, but if you loop over a list of keys, you can use this function to query value for key.

### 44.3.55 Properties

#### 44.3.56 birthday as NSDateComponentsMBS

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A date component for the Gregorian birthday of the contact. **Notes:** Birthdays are represented by this property, whose values are the relevant properties of an NSDateComponents object. Day and month components are required for this property, and year is optional. The calendar component can be nil or NSCalendarIdentifierGregorian. All other date components are invalid and including them results in an NSError object that includes the key paths of the invalid components and the error code CNErrorCodeValidationConfigurationError. (Read only property)

#### 44.3.57 contactType as Integer

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An enum identifying the contact type. **Notes:** Can be CNContactMBS.CNContactTypeOrganization or CNContactMBS.CNContactTypePerson. (Read only property)

#### 44.3.58 departmentName as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of the department associated with the contact. **Notes:** (Read only property)

#### 44.3.59 familyName as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The family name of the contact.
44.3.60  **givenName as String**

**Function:** The given name of the contact.
**Notes:**
The given name is often known as the first name of the contact.
(Read only property)

44.3.61  **Handle as Integer**

**Function:** The internal object reference.
**Notes:**
Value is a pointer to a CNContact object.
(Read and Write property)

44.3.62  **identifier as String**

**Function:** A value that uniquely identifies a contact on the device.
**Notes:**
It is recommended that you use the identifier when re-fetching the contact. An identifier can be persisted between the app launches. Note that this identifier only uniquely identifies the contact on the current device.
(Read only property)

44.3.63  **imageData as MemoryBlock**

**Function:** The profile picture of a contact.
**Notes:**
It is recommended that you fetch this property only when you need to access its value, such as when you need to display the contacts profile picture.
(Read only property)
44.3.64  imageDataAvailable as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Indicates whether a contact has a profile picture.
Notes: (Read only property)

44.3.65  jobTitle as String

Notes: (Read only property)

44.3.66  middleName as String

Notes: (Read only property)

44.3.67  namePrefix as String

Notes: (Read only property)

44.3.68  nameSuffix as String

Notes: (Read only property)

44.3.69  nickname as String

Notes: (Read only property)
44.3.70  **nonGregorianBirthday as NSCalendarDateComponents**

**Function:** A date component for the non-Gregorian birthday of the contact.  
**Notes:**  
Non-Gregorian birthdays can be displayed using this property, whose values are the relevant properties of an NSCalendar object. Day and month components are required; year and leap month are optional. The calendar component is also required and must be an NSCalendar object with an identifier other than NSCalendarIdentifierGregorian. For example, some supported calendars are Chinese, Hebrew, and Islamic. All other date components are invalid and including them results in an NSError object that includes the key paths of the invalid components and the error code CNErrorCodeValidationConfigurationError.  
(Read only property)

44.3.71  **note as String**

**Function:** A string containing notes for the contact.  
**Notes:**  
(Read only property)

44.3.72  **organizationName as String**

**Function:** The name of the organization associated with the contact.  
**Notes:**  
(Read only property)

44.3.73  **phoneticFamilyName as String**

**Function:** A string for the phonetic family name of the contact.  
**Notes:**  
This property contains a string that specifies the pronunciation of the contact’s family (or last) name.  
(Read only property)

44.3.74  **phoneticGivenName as String**

**Function:** The phonetic given name of the contact.  
**Notes:**
This property contains a string that specifies the pronunciation of the contacts given (or first) name. (Read only property)

44.3.75  phoneticMiddleName as String

Function: The phonetic middle name of the contact.
Notes: This property contains a string that specifies the pronunciation of the contacts middle name. (Read only property)

44.3.76  previousFamilyName as String

Function: A string for the previous family name of the contact.
Notes: The previous family name is often known as the maiden name of the contact. (Read only property)

44.3.77  thumbnailImageData as MemoryBlock

Function: The thumbnail version of the contacts profile picture.
Notes: The thumbnailImageData property is derived from the imageData property, including cropping information from vCards or edits from contact viewing. It is recommended that you fetch this property only when you need to access its value, such as when you need to display the contacts profile thumbnail picture. (Read only property)

44.3.78  Constants

44.3.79  CNContactSortOrderFamilyName = 3

MBS Mac64bit Plugin, Plugin Version: 16.3. Function: One of the sort order constants.
Notes: Order by Family Name.
44.3.80  **CNContactSortOrderGivenName = 2**

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the sort order constants.  
**Notes:** Order by Given Name.

44.3.81  **CNContactSortOrderNone = 0**

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the sort order constants.  
**Notes:** Order by no order.

44.3.82  **CNContactSortOrderUserDefault = 1**

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the sort order constants.  
**Notes:** Order by user preference.

44.3.83  **CNContactTypeOrganization = 1**

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the contact types.  
**Notes:** The contact is an Organization.

44.3.84  **CNContactTypePerson = 0**

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the contact types.  
**Notes:** The contact is a person.
44.4. CLASS CNCONTACTPICKERMBS

44.4  class CNContactPickerMBS

44.4.1  class CNContactPickerMBS

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The CNContactPicker object displays the popover-based system interface for selecting a contact. **Notes:** The methods and properties of this class help you choose a contact or a contact’s value, such as a phone number or email address, of a contact.

44.4.2  Methods

44.4.3  available as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this class is available. **Notes:** Should return true in a 64-bit Mac app on Mac OS X 10.11 or newer.

44.4.4  close

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Closes the popover.

44.4.5  Constructor

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

44.4.6  Destructor

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The destructor.

44.4.7  displayedKeys as String()

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The keys to be displayed when a contact is expanded. **Notes:** If no keys are provided, the picker selects contacts instead of values. For a list of possible keys, see
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Metadata Keys in CNContact.

44.4.8 setDisplayedKeys(keys() as String)

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Set the keys to be displayed when a contact is expanded. Notes: If no keys are provided, the picker selects contacts instead of values. For a list of possible keys, see Metadata Keys in CNContact.

44.4.9 showRelativeToRect(positioningRect as NSRectMBS, view as NSViewMBS, edge as Integer)

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Shows the picker popover anchored to the specified view. Notes:

positioningRect: The content size of the popover.
positioningView: The view to which the popover should be positioned.
pREFERREDge: The edge to which the popover should be anchored to. Can be MinYEdge, MinXEdge, MaxYEdge or MaxXEdge.

44.4.10 Properties

44.4.11 Handle as Integer


Value is a pointer to a CNContactPicker object. (Read and Write property)

44.4.12 Events

44.4.13 DidClose

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Called when the contact pickers popover has closed.
44.4.14  didSelectContact(contact as CNContactMBS)

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called after a contact has been selected by the user.

44.4.15  didSelectContactProperty(contactProperty as CNContactPropertyMBS)

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event called when a contact property was selected.

44.4.16  WillClose

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called when the contact pickers popover is about to close.

44.4.17  Constants

44.4.18  MaxXEdge = 2

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the edge constants.

44.4.19  MaxYEdge = 3

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the edge constants.

44.4.20  MinXEdge = 0

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the edge constants.

44.4.21  MinYEdge = 1

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the edge constants.
44.5 class CNContactPropertyMBS

44.5.1 class CNContactPropertyMBS

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The CNContactProperty is a convenience class and returns a tuple or quadruple to a contacts property. Notes: A property contains related information for a specific contact. A contact (an instance of CNContact) has properties, such as firstName, phoneNumber, and jobTitle. Each property is represented by an instance of CNContactProperty, which provides a tuple that can contain three or five values, depending on whether the property is a member of an array of labeled values. For example, the phoneNumbers property is a member of an array of labeled values, so the CNContactProperty tuple contains the contact, key, value, identifier, and label. For the givenName property, which is not contained in a labeled array, CNContactProperty returns a tuple that contains the contact, key, and value. The CNContactProperty class is used by the CNContactPicker to return the user’s selected property.

44.5.2 Methods

44.5.3 available as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether this class is available. Notes: Should return true in a 64-bit Mac app on Mac OS X 10.11 or newer.

44.5.4 Constructor


44.5.5 copy as CNContactPropertyMBS

44.5.6 Properties

44.5.7 Contact as CNContactMBS

*Function:* CNContact property of the selected contact.
*Notes:* This property is used for properties that may or may not be in labeled arrays.
(Read only property)

44.5.8 Handle as Integer

*Function:* The internal object reference.
*Notes:* Value is a pointer to a CNContactProperty object.
(Read and Write property)

44.5.9 Identifier as String

*Function:* The identifier of the labeled value in the array of labeled.
*Notes:* Identifier is used only for properties in labeled arrays. If the property is not an array of labeled values, the value of the identifier is "".
(Read only property)

44.5.10 Key as String

*Function:* The key of the contact property.
*Notes:* This property is used for properties that may or may not be in labeled arrays.
(Read only property)
44.5.11 Label as String

**Function:** The label of the labeled value of the property array.
**Notes:**
Labeled property is used only for properties that are in labeled arrays. If the property is not an array of labeled values, the value of the label is "".
(Read only property)

44.5.12 Value as Variant

**Function:** The value of the property.
**Notes:**
This property is used for properties that may or may not be in labeled arrays.
(Read only property)
44.6. CLASS CNCONTACTRELATIONMBS

44.6  class CNContactRelationMBS

44.6.1  class CNContactRelationMBS

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The CNContactRelation class defines an immutable value object representing a contact related to another.
**Notes:** This is a thread-safe class.

44.6.2  Methods

44.6.3  available as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this class is available.
**Notes:** Should return true in a 64-bit Mac app on Mac OS X 10.11 or newer.

44.6.4  CNLabelContactRelationAssistant as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the relation values.
**Notes:** Assistant.

44.6.5  CNLabelContactRelationBrother as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the relation values.
**Notes:** Brother

44.6.6  CNLabelContactRelationChild as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the relation values.
**Notes:** Child
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44.6.7 CNLabelContactRelationDaughter as String

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 
Function: One of the relation values. 
Notes: 
Daughter 
for macOS 10.13 or newer.

44.6.8 CNLabelContactRelationFather as String

Notes: Father

44.6.9 CNLabelContactRelationFriend as String

Notes: Friend

44.6.10 CNLabelContactRelationManager as String

Notes: Manager

44.6.11 CNLabelContactRelationMother as String

Notes: Mother

44.6.12 CNLabelContactRelationParent as String

Notes: Parent

44.6.13 CNLabelContactRelationPartner as String

Notes: Partner

44.6.14 CNLabelContactRelationSister as String

Notes: Sister

44.6.15 CNLabelContactRelationSon as String

Notes:
Son
for macOS 10.13 or newer.

44.6.16 CNLabelContactRelationSpouse as String

Notes: Spouse

44.6.17 Constructor(name as String)

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Initialize a class instance with the name of the related contact.
44.6.18  **contactRelationWithName(name as string)** as CNContactRelationMBS

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Creates a new contact relation with a name.

44.6.19  **copy** as CNContactRelationMBS

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Create a copy of the contact relation object.

44.6.20  **Properties**

44.6.21  **Handle as Integer**


**Notes:**
Value is a pointer to a CNContactRelation object.
(Read and Write property)

44.6.22  **Name as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** The name of the related contact.

**Notes:** (Read only property)
44.7 class CNContactStoreMBS

44.7.1 class CNContactStoreMBS


Function: The CNContactStore class is a thread-safe class that can fetch and save contacts, groups, and containers.

Notes:
The CNContactStore class provides ways to execute fetch and save requests. There are a few recommended ways you can implement these requests in your app to load contacts:

- Fetch only the contact properties that will be used.
- When fetching all contacts and caching the results, first fetch all contacts identifiers, then fetch batches of detailed contacts by identifiers as required.
- To aggregate several contacts fetches, first collect a set of unique identifiers from the fetches. Then fetch batches of detailed contacts by those unique identifiers.
- If you cache the fetched contacts, groups, or containers, you need to refetch these objects (and release the old cached objects) when CNContactStoreDidChangeNotification is posted.

Because CNContactStore fetch methods perform I/O, it’s recommended that you avoid using the main thread to execute fetches.

Your app must be code signed to see contacts.

44.7.2 Methods

44.7.3 authorizationStatusForEntityType(entityType as Integer = 0) as Integer


Function: Returns the current authorization status to access the contact data.

Notes:
entityType: Set to CNEntityType, e.g. CNEntityTypeContacts.

Returns the current authorization status to access the contact data.

Based on the authorization status, your application might display or hide its UI elements that access any Contacts API. This method is thread-safe and will not block your application. To see different authorization status, see CNAuthorizationStatus.
44.7.4 available as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this class is available. **Notes:** Should return true in a 64-bit Mac app on Mac OS X 10.11 or newer.

44.7.5 CNContactStoreDidChangeNotification as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The notification posted when changes occur in another CNContactStore.

44.7.6 CNErrorDomain as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The error domain for NSErrorMBS.

44.7.7 CNErrorUserInfoAffectedRecordIdentifiersKey as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A key for the NSError userInfo dictionary. **Notes:** When available an array of one or more NSString objects for which the error code applies.

44.7.8 CNErrorUserInfoAffectedRecordsKey as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A key for the NSError userInfo dictionary. **Notes:** When available an array of one or more CNContact, CNGroup or CNContainer objects for which the error code applies.

44.7.9 CNErrorUserInfoKeyPathsKey as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A key for the NSError userInfo dictionary. **Notes:** An array of key paths associated with a given error. For validation errors this will contain key paths to specific object properties.
44.7. CLASS CNCONTACTSTOREMBS

44.7.10 CNErroUserInfoValidationErrorsKey as String


44.7.11 Constructor


44.7.12 ContactsWithFetchRequest(fetchRequest as CNContactFetchRequestMBS, byref error as NSErrorMBS) as CNContactMBS()

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns all contacts matching a contact fetch request. Notes:

fetchRequest: The contact fetch request that specifies the search criteria. error: Error information, if an error occurred.

This method waits until the enumeration is finished. If there are no results, the method returns an empty array. This can be used to fetch all contacts without keeping all of them at once in memory because this is expensive.

Your app must be code signed to see contacts.

44.7.13 containersMatchingPredicate(predicate as NSPredicateMBS, byref error as NSErrorMBS) as CNContainerMBS()

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Fetches all containers matching the specified predicate. Notes:

predicate: The predicate to use to fetch matching containers. Set this property to nil to match all containers. error: Error information, if an error occurred.

Returns an array of CNContainer objects that match the predicate.

A container holds a collection of contacts, a contact (each contact can be in only one container). CardDAV
accounts usually have only one container of contacts. Exchange accounts may have multiple containers, where each container represents an Exchange folder.

This method returns an empty array when no matching container is found. In case of an error this method returns nil. You should use only the predicates defined CNContainer class. Compound predicates are not supported.

### 44.7.14 defaultContainerIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the identifier of the default container. **Notes:** This identifier can be used to fetch a default container. A default container is where the user wants new contacts to be added implicitly.

### 44.7.15 Destructor

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The destructor.

### 44.7.16 enumerateContactsWithFetchRequest(fetchRequest as CNContactFetchRequestMBS, byref error as NSErrorMBS, tag as Variant = nil) as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value that indicates whether the enumeration of all contacts matching a contact fetch request executed successfully. **Notes:**

- fetchRequest: The contact fetch request that specifies the search criteria.
- error: Error information, if an error occurred.

Calls enumerateContactsWithFetchRequest event for each contact found.

Returns true if enumeration of all contacts matching a contact fetch request executes successfully; otherwise, false.

This method waits until the enumeration is finished. If there are no results, the event is not called and the method returns true.

This can be used to fetch all contacts without keeping all of them at once in memory because this is expensive.
44.7. CLASS CNCONTACTSTOREMBS

See also:

- 44.7.27 enumerateContactsWithFetchRequest(contact as CNContactMBS, byref stop as boolean, tag as Variant)

44.7.17 executeSaveRequest(saveRequest as CNSaveRequestMBS, byref Error as NSErrorMBS) as Boolean

Function: Executes a save request and returns success or failure.  
Notes:  
saveRequest: The save request to execute.  
error: Error information, if an error occurred.  

Returns true if the save request executes successfully; otherwise, false.  

It is recommended that you do not access objects in the save request from other threads when it is in the process of being executed, because it may modify the contacts in the process. A save request only applies the changes to the objects. If there are overlapping changes with multiple or concurrent CNSaveRequest then the last saved change wins.

44.7.18 groupsMatchingPredicate(predicate as NSPredicateMBS, byref error as NSErrorMBS) as CNGroupMBS()

Function: Fetches all groups matching the specified predicate.  
Notes:  
predicate: The predicate to use to fetch the matching groups. Set predicate to nil to match all groups.  
error: Error information, if an error occurred.  

Returns an array of CNGroup objects that match the predicate.  

This method returns an empty array when no matching groups are found. If an error occurs, this method returns nil. You should use only the predicates defined in CNGroup class predicates. Compound predicates are not supported. Contacts may be members of one or more groups, depending upon the account they come from.
CHAPTER 44. CONTACTS

44.7.19  requestAccessForEntityType(entityType as Integer = 0, tag as Variant = nil)


**Function:** Requests access to the user’s contacts.

**Notes:**

entityType: Set to CNEntityTypeContacts.

Users are able to grant or deny access to contact data on a per-application basis. Request access to contact data by calling requestAccessForEntityType method. This will not block your application while the user is being asked for permission. The user will only be prompted the first time access is requested; any subsequent CNContactStore calls will use the existing permissions. The requestAccessForEntityType event is later called. This method is optional when CNContactStore is used in the background thread. If this method is not used, CNContactStore may block your application while the user is asked for access permission.

Your app must be code signed to see contacts.

See also:

- 44.7.28 requestAccessForEntityType(granted as boolean, error as NSErrorMBS, tag as Variant) 7570

44.7.20  unifiedContactsMatchingPredicate(predicate as NSPredicateMBS, keysToFetch() as CNKeyDescriptorMBS, byref error as NSErrorMBS) as CNContactMBS()


**Function:** Fetches all unified contacts matching the specified predicate.

**Notes:**

predicate: The predicate to match against.

keys: The properties to fetch in the returned CNContact objects. You should fetch only the properties that you plan to use. Note that you can combine contact keys and contact key descriptors.

error: Error information, if an error occurred.

Returns an array of CNContact objects matching the predicate.

If no matches are found, this method returns an empty array (or nil in case of error). Use only the predicates from the CNContact class predicates. Compound predicates are not supported by this method. Due to unification, the returned contacts may have different identifiers than you specify. To fetch all contacts, use enumerateContactsWithFetchRequest.
44.7.21 unifiedContactWithIdentifier(identifier as string, keys() as CNKeyDescriptorMBS, byref error as NSErrorMBS) as CNContactMBS

**Function:** Fetches a unified contact for the specified contact identifier.  
**Notes:**
- identifier: The identifier of the contact to fetch.  
- keys: The properties to fetch in the returned CNContact object.  
- error: Error information, if an error occurred.

Returns an unified contact matching or linked to the identifier.

Due to unification, the returned contact may have a different identifier, than you specify. To fetch a batch of contacts by identifiers use predicateForContactsWithIdentifiers with unifiedContactsMatchingPredicate.  
It is recommended to fetch only the properties that will be used. You can combine contact keys and contact key descriptors together.

44.7.22 unifiedMeContactWithKeysToFetch(keys() as CNKeyDescriptorMBS, byref error as NSErrorMBS) as CNContactMBS

**Function:** Queries an unified contact for the user.

44.7.23 Properties

44.7.24 Handle as Integer

**Function:** The internal object reference.  
**Notes:**
- Value is a pointer to a CNContactStore object.  
  (Read and Write property)
44.7.25 Events

44.7.26 DidChange

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event posted when changes occur in another CNContactStore.

44.7.27 enumerateContactsWithFetchRequest(contact as CNContactMBS, byref stop as boolean, tag as Variant)

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event called by enumerateContactsWithFetchRequest for each new contact found.

See also:

- 44.7.16 enumerateContactsWithFetchRequest(fetchRequest as CNContactFetchRequestMBS, byref error as NSErrorMBS, tag as Variant = nil) as Boolean

44.7.28 requestAccessForEntityType(granted as boolean, error as NSErrorMBS, tag as Variant)

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The request for access completed.

**Notes:** Set granted to true if the user allows access and error is nil.

See also:

- 44.7.19 requestAccessForEntityType(entityType as Integer = 0, tag as Variant = nil)

44.7.29 Constants

44.7.30 CNAuthorizationStatusAuthorized = 3

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the authorization status values the user can grant for an app to access the specified entity type.

**Notes:** The application is authorized to access contact data.

44.7.31 CNAuthorizationStatusDenied = 2

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the authorization status values the user can grant for an app to access the specified entity type.

**Notes:** The user explicitly denied access to contact data for the application.
44.7.32  CNAuthorizationStatusNotDetermined = 0

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the authorization status values the user can grant for an app to access the specified entity type.
**Notes:** The user has not yet made a choice regarding whether the application may access contact data.

44.7.33  CNAuthorizationStatusRestricted = 1

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the authorization status values the user can grant for an app to access the specified entity type.
**Notes:** The application is not authorized to access contact data. The user cannot change this applications status, possibly due to active restrictions such as parental controls being in place.

44.7.34  CNEntityTypeContacts = 0

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the contact types.
**Notes:** Contacts

44.7.35  CNErrorCodeAuthorizationDenied = 100

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the error codes that may be returned when calling Contacts methods.
**Notes:** Authentication denied error.

44.7.36  CNErrorCodeCommunicationError = 1

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the error codes that may be returned when calling Contacts methods.
**Notes:** Communication error.

44.7.37  CNErrorCodeContainmentCycle = 202

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the error codes that may be returned when calling Contacts methods.
**Notes:** Code containment cycle error.
44.7.38  CNErrorCodeContainmentScope = 203

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the error codes that may be returned when calling Contacts methods.
**Notes:** Code containment scope error.

44.7.39  CNErrorCodeDataAccessError = 2

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the error codes that may be returned when calling Contacts methods.
**Notes:** Data access error.

44.7.40  CNErrorCodeInsertedRecordAlreadyExists = 201

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the error codes that may be returned when calling Contacts methods.
**Notes:** Record already exists.

44.7.41  CNErrorCodeParentRecordDoesNotExist = 204

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the error codes that may be returned when calling Contacts methods.
**Notes:** The contact does not exist error.

44.7.42  CNErrorCodePolicyViolation = 500

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the error codes that may be returned when calling Contacts methods.
**Notes:** Policy validation error.

44.7.43  CNErrorCodePredicateInvalid = 400

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the error codes that may be returned when calling Contacts methods.
**Notes:** Invalid predicate error.
44.7.44  **CNErrorCodeRecordDoesNotExist = 200**

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the error codes that may be returned when calling Contacts methods.  
**Notes:** Record not found.

44.7.45  **CNErrorCodeValidationConfigurationError = 302**

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the error codes that may be returned when calling Contacts methods.  
**Notes:** Configuration validation error.

44.7.46  **CNErrorCodeValidationMultipleErrors = 300**

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the error codes that may be returned when calling Contacts methods.  
**Notes:** Multiple validation error.

44.7.47  **CNErrorCodeValidationTypeMismatch = 301**

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the error codes that may be returned when calling Contacts methods.  
**Notes:** Type mismatch validation error.
44.8 class CNContactsUserDefaultsMBS

44.8.1 class CNContactsUserDefaultsMBS

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The CNContactsUserDefaults class defines properties used to access the user defaults for a contact.

44.8.2 Methods

44.8.3 available as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this class is available.  
**Notes:** Should return true in a 64-bit Mac app on Mac OS X 10.11 or newer.

44.8.4 Constructor

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

44.8.5 sharedDefaults as CNContactsUserDefaultsMBS

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The singleton instance of the CNContactsUserDefaults class.

44.8.6 Properties

44.8.7 countryCode as String

**Notes:**  
ISO is the default country code for phone numbers. This is determined by the devices SIM card or the operating systems configured language.  
(Read only property)
44.8. **CLASS CNCONTACTSUSERDEFAULTSMBS**

44.8.8 **Handle as Integer**


**Function:** The internal object reference.

**Notes:**
Value is a pointer to a CNContactsUserDefaults object.
(Read and Write property)

44.8.9 **sortOrder as Integer**


**Function:** Default sorting order by name.

**Notes:**
Sort order is determined by the operating systems configured language or overridden by the user.
(Read only property)
44.9 class CNContactVCardSerializationMBS

44.9.1 class CNContactVCardSerializationMBS

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The CNContactVCardSerialization supports vCard representation for the given set of contacts. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

44.9.2 Methods

44.9.3 available as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this class is available. **Notes:** Should return true in a 64-bit Mac app on Mac OS X 10.11 or newer.

44.9.4 Constructor

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.

44.9.5 contactsWithData(Data as MemoryBlock, byref error as NSErrorMBS) as CNContactMBS()

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the contacts from the vCard data.

44.9.6 dataWithContacts(Contacts() as CNContactMBS, byref error as NSErrorMBS) as MemoryBlock

44.9.7 descriptorForRequiredKeys as CNKeyDescriptorMBS

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Use to fetch all contact keys required to create vCard data from a contact. **Notes:** A key descriptor to be used in the keysToFetch array when fetching the contacts.
CHAPTER 44. CONTACTS

44.10 class CNContactViewControllerMBS

44.10.1 class CNContactViewControllerMBS


Function: The CNContactViewController class implements the view to display a contact.

Notes:

CNContactViewController can display a new contact, unknown contact, or existing contact.
Subclass of the NSViewControllerMBS class.

44.10.2 Methods

44.10.3 available as Boolean


Function: Whether this class is available.

Notes: Should return true in a 64-bit Mac app on Mac OS X 10.11 or newer.

44.10.4 Constructor


Function: The constructor.

44.10.5 descriptorForRequiredKeys as CNKeyDescriptorMBS


Function: Descriptor for all keys that must be fetched on a contact before setting it on the view controller.

Notes: Pass this descriptor to the keysToFetch of the CNContactFetchRequest if you want to display the contact in a CNContactViewController.

44.10.6 Properties

44.10.7 Contact as CNContactMBS


Function: A contact to display.

Notes:
When contact is nil, displays an empty selection state.
(Read and Write property)
44.11  class CNContainerMBS

44.11.1  class CNContainerMBS

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The CNContainer class is a thread-safe class that defines an immutable object that represents a container.

**Notes:** A container has a collection of contacts. A contact can be in only one container. CardDAV accounts usually have only one container whereas Exchange accounts may have multiple containers, where each container represents an Exchange folder.

44.11.2  Methods

44.11.3  available as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this class is available.

**Notes:** Should return true in a 64-bit Mac app on Mac OS X 10.11 or newer.

44.11.4  CNContainerIdentifierKey as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined keys representing container properties that can be used with key value coding on CNContainer objects.

**Notes:**

Identifier key. This key represents the container identifier property for KVC/KVO usage. This property is always fetched.

44.11.5  CNContainerNameKey as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined keys representing container properties that can be used with key value coding on CNContainer objects.

**Notes:**

Name key. This key represents the container identifier property for KVC/KVO usage. This property is always fetched.
44.11.6 CNContainerTypeKey as String

**Function:** One of the predefined keys representing container properties that can be used with key value coding on CNContainer objects.  
**Notes:**  
Type key.  
This key represents the container identifier property for KVC/KVO usage. This property is always fetched.

44.11.7 Constructor

**Function:** The private container.

44.11.8 copy as CNContainerMBS

**Function:** Create a copy of the container object.

44.11.9 predicateForContainerOfContactWithIdentifier(contactIdentifier as String) as NSPredicateMBS

**Function:** Returns a predicate to find the container of the specified contact.  
**Notes:** If the identifier is for a unified contact then this method returns an empty array. To fetch the containers of a unified contact, first fetch the linked contacts and then fetch the container of each linked contact.

44.11.10 predicateForContainerOfGroupWithIdentifier(groupIdentifier as String) as NSPredicateMBS

**Function:** Returns a predicate to find the container of the specified group.
44.11.11 predicateForContainersWithIdentifiers(Identifiers() as String) as NSPredicate

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a predicate to find the containers with the specified identifiers.

44.11.12 Properties

44.11.13 Handle as Integer

Notes:
Value is a pointer to a CNContainer object.
(Read and Write property)

44.11.14 Identifier as String

Notes:
It is recommended that you use the identifier when re-fetching the container. The identifier can be persisted between app launches.
(Read only property)

44.11.15 Name as String

Notes: (Read only property)

44.11.16 Type as Integer

Notes:
can be CNContainerTypeUnassigned, CNContainerTypeLocal, CNContainerTypeExchange or CNContainerTypeCardDAV.
(Read only property)

### 44.11.17 Constants

#### 44.11.18 CNContainerTypeCardDAV = 3

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the container type constants.  
**Notes:** A container for contacts stored in an CardDAV server, such as iCloud.

#### 44.11.19 CNContainerTypeExchange = 2

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the container type constants.  
**Notes:** A container for contacts stored in an Exchange folder from an Exchange server.

#### 44.11.20 CNContainerTypeLocal = 1

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the container type constants.  
**Notes:** A container for contacts only stored locally on the device. There is only one local container for a device.

#### 44.11.21 CNContainerTypeUnassigned = 0

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the container type constants.
44.12 class CNGroupMBS

44.12.1 class CNGroupMBS

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The CNGroup is a thread-safe class that defines an immutable object that represents a group. **Notes:** Contacts may be members of one or more groups, depending upon their accounts.

44.12.2 Methods

44.12.3 available as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this class is available. **Notes:** Should return true in a 64-bit Mac app on Mac OS X 10.11 or newer.

44.12.4 CNGroupIdentifierKey as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined keys representing group properties that can be used with key value coding on CNGroup objects. **Notes:** Group identifier. This key takes a string value.

44.12.5 CNGroupNameKey as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined keys representing group properties that can be used with key value coding on CNGroup objects. **Notes:** Group name. This key takes a string value.

44.12.6 Constructor

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.
44.12.7 copy as CNGroupMBS

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create a copy of the group object.

44.12.8 mutableCopy as CNMutableGroupMBS

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a mutable copy of this group.

44.12.9 predicateForGroupsInContainerWithIdentifier(groupIdentifier as String) as NSPredicateMBS

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a predicate to find groups in the specified container.

**Notes:**

containerIdentifier: The container identifier to be matched.

Returns a predicate that can be used to fetch groups from CNContactStore.

44.12.10 predicateForGroupsWithIdentifiers(Identifiers() as String) as NSPredicateMBS

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a predicate to find groups with the specified identifiers.

**Notes:**

identifiers: The group identifiers to be matched.

Returns a predicate that can be used to fetch groups from CNContactStore.
44.12.11  predicateForSubgroupsInGroupWithIdentifier(contactIdentifier as String) as NSPredicateMBS


44.12.12  valueForKey(key as String) as Variant


44.12.13  Properties

44.12.14  Handle as Integer

Notes: Value is a pointer to a CNGroup object.
(Read and Write property)

44.12.15  Identifier as String

Notes: It is recommended that you use the identifier when re-fetching the group. The identifier can be persisted between app launches.
(Read only property)

44.12.16  Name as String

Notes: (Read only property)
44.13 class CNInstantMessageAddressMBS

44.13.1 class CNInstantMessageAddressMBS

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The CNInstantMessageAddress class is a thread-safe class that defines an immutable value object representing an instant message address. **Notes:** Use the methods and properties of this class to identify instant messaging address. Some instant message services, such as Facebook and Skype are predefined in this class. You can also specify your own instant message service using Constructor.

44.13.2 Methods

44.13.3 available as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this class is available. **Notes:** Should return true in a 64-bit Mac app on Mac OS X 10.11 or newer.

44.13.4 CNInstantMessageAddressServiceKey as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Instant message address service key. **Notes:** This key takes a string value.

44.13.5 CNInstantMessageAddressUsernameKey as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Instant message address user name key. **Notes:** This key takes a string value.

44.13.6 CNInstantMessageServiceAIM as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the service types. **Notes:** Instant message service for AIM. This key takes a string value.
44.13.7  CNInstantMessageServiceFacebook as String

Function: One of the service types.
Notes:
Instant message service for Facebook.
This key takes a string value.

44.13.8  CNInstantMessageServiceGaduGadu as String

Function: One of the service types.
Notes:
Instant message service for Gadu Gadu.
This key takes a string value.

44.13.9  CNInstantMessageServiceGoogleTalk as String

Function: One of the service types.
Notes:
Instant message service for Google Talk.
This key takes a string value.

44.13.10  CNInstantMessageServiceICQ as String

Function: One of the service types.
Notes:
Instant message service for ICQ.
This key takes a string value.
44.13. **CLASS CNINSTANCMESAGEADDRESSMBS**

### 44.13.11 CNInstantMessageServiceJabber as String


**Function:** One of the service types.

**Notes:**
Instant message service for Jabber.
This key takes a string value.

### 44.13.12 CNInstantMessageServiceMSN as String


**Function:** One of the service types.

**Notes:**
Instant message service for MSN.
This key takes a string value.

### 44.13.13 CNInstantMessageServiceQQ as String


**Function:** One of the service types.

**Notes:**
Instant message service for QQ.
This key takes a string value.

### 44.13.14 CNInstantMessageServiceSkype as String


**Function:** One of the service types.

**Notes:**
Instant message service for Skype.
This key takes a string value.

### 44.13.15 CNInstantMessageServiceYahoo as String


**Function:** One of the service types.

**Notes:**
44.13.16 Constructor(username as String, Service as String)


**Function:** Returns a CNInstantMessageAddress object initialized with the specified user name and service.

**Notes:**

username: The user name with which to initialize the CNInstantMessageAddress object.

service: The service with which to Initialize the CNInstantMessageAddress object.

Returns the initialized CNInstantMessageAddress object with the specified user name and service. User name and service are required to initialize CNInstantMessageAddress object.

44.13.17 copy as CNInstantMessageAddressMBS


**Function:** Create a copy of the instant message address object.

44.13.18 localizedStringForKey(key as String) as String


**Function:** Returns a string containing the localized property name.

44.13.19 localizedStringForService(key as String) as String


**Function:** Returns a string containing the localized name of the specified service.

44.13.20 Properties

44.13.21 Handle as Integer


**Function:** The internal object reference.

**Notes:**
44.13. CLASS CNINSTANTMESSAGEADDRESSMBS

Value is a pointer to a CNInstantMessageAddress object.  
(Read and Write property)

44.13.22  service as String

Function: Instant message address service.  
Notes: (Read only property)

44.13.23  username as String

Function: The user name for instant message service address.  
Notes: (Read only property)
44.14 class CNKeyDescriptorMBS

44.14.1 class CNKeyDescriptorMBS

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for key descriptors.

44.14.2 Methods

44.14.3 Constructor(Key as String)

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a key descriptor from a string value.

44.14.4 copy as CNKeyDescriptorMBS

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create a copy of the key descriptor object.

44.14.5 Operator_Convert as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Converts key to string value. **Notes:** Same as using StringValue property, but automatic. See also:

- 44.14.6 Operator_Convert(Key as String)

44.14.6 Operator_Convert(Key as String)

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a key descriptor from a string value. **Example:**

```vbnet
dim k as CNKeyDescriptorMBS = CNContactMBS.CNContactJobTitleKey
```

**Notes:** Same as constructor, but automatic. See also:
44.14. CLASS CNKEYDESCRIPTORMBS

- 44.14.5 Operator_Convert as String

44.14.7 Properties

44.14.8 Handle as Integer

**Function:** The internal object reference.
**Notes:**
Value is a pointer to a CNKeyDescriptor object.
(Read and Write property)

44.14.9 StringValue as String

**Function:** Queries string value of the key descriptor.
**Notes:** (Read only property)
44.15 class CNLabeledValueMBS

44.15.1 class CNLabeledValueMBS
MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for labeled values. **Notes:** The CNLabeledValue class is a thread-safe class that defines an immutable value object that combines a contact property value with a label. For example, a contact phone number could have a label of Home, Work, iPhone, etc.

44.15.2 Methods

44.15.3 available as Boolean
MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this class is available. **Notes:** Should return true in a 64-bit Mac app on Mac OS X 10.11 or newer.

44.15.4 CNLabelDateAnniversary as String
MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This constant is a predefined label that can be used in a CNLabeledValue object having an NSDateComponents value.

44.15.5 CNLabelEmailiCloud as String
MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This constant is a predefined label that can be used in a CNLabeledValue object having an email address string value. **Notes:** Email.

This label takes a string value.

44.15.6 CNLabelHome as String
MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined labels that can be used in a CNLabeledValue object having any value.
44.15. CLASS CNLABELEDVALUEMBS

Notes:
Home label.
This label takes a string value.

44.15.7  CNLabelOther as String

Function: One of the predefined labels that can be used in a CNLabeledValue object having any value.
Notes:
Other label.
This label takes a string value.

44.15.8  CNLabelURLAddressHomePage as String

Function: This constant is a predefined label that can be used in a CNLabeledValue object having a URL address string value.
Notes:
Identifier for the URL property.
This label takes a string value.

44.15.9  CNLabelWork as String

Function: One of the predefined labels that can be used in a CNLabeledValue object having any value.
Notes:
Work label.
This label takes a string value.

44.15.10 Constructor(label as string, value as Variant)

Function: Returns a new labeled value identifier initialized with the specified label and value.
Notes:
label: A string value for the label of the labeled value object, or nil if the value doesn't have a label.
value: A value for the labeled value object. For valid values, see CNContact properties that are arrays of
labeled value objects.

Returns a new labeled value object initialized with the specified identifier.

44.15.11 copy as CNLabeledValueMBS

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create a copy of the labeled value object.

44.15.12 labeledValueBySettingLabel(label as string) as CNLabeledValueMBS

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a labeled value object with an existing value and identifier. **Notes:** label: The label of the copied labeled value object, or nil if the contact property value doesn’t have a label.

Returns a labeled value object with an existing value and identifier. See also:

- 44.15.13 labeledValueBySettingLabel(label as string, value as Variant) as CNLabeledValueMBS

44.15.13 labeledValueBySettingLabel(label as string, value as Variant) as CNLabeledValueMBS

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a labeled value object with the specified label and value with the existing identifier. **Notes:** label: The label of the copied labeled value object, or “” if the contact property value doesn’t have a label. value: The copied labeled value object. For valid values, see CNContact properties that are arrays of labeled value objects.

Returns a labeled value object with the existing identifier. See also:

- 44.15.12 labeledValueBySettingLabel(label as string) as CNLabeledValueMBS
44.15.14 labeledValueBySettingValue(value as Variant) as CNLabeledValueMBS

Function: Returns a new value for an existing label and identifier.
Notes:
value: A new value for the copied labeled value object. For valid values, see CNContact properties that are arrays of labeled value objects.

Returns the CNLabeledValue object with an existing label and identifier.

44.15.15 labeledValueWithLabel(label as string, value as Variant) as CNLabeledValueMBS

Function: Returns a new labeled value identifier object with the specified label and value.
Notes:
label: A string value for the label of the labeled value object, or nil if the value doesnt have a label.
value: A value for the labeled value object. For valid values, see CNContact properties that are arrays of labeled value objects.

Returns a new CNLabeledValue object with a new identifier.

44.15.16 localizedStringForLabel(label as string) as string

Function: Returns a localized string for the specified label.
Notes:
label: The label to be localized.

Returns a localized string for the label.

All predefined label constants are localized and this method returns their localized strings. A custom label will be returned as is, so this method can be used to convert all labels for display.
**44.15.17 Properties**

**44.15.18 Handle as Integer**

*Function*: The internal object reference.
*Notes*: 
Value is a pointer to a CNLabeledValue object.
(Read and Write property)

**44.15.19 Identifier as String**

*Function*: A unique identifier for the labeled value object.
*Notes*: 
It is recommended that you use the identifier when searching for a previously known labeled value object in a re-fetched contact. The identifier can be persisted between the app launches.
(Read only property)

**44.15.20 Label as String**

*Function*: The label for a contact property value.
*Notes*: 
A contact property can have a label, such as Home, Work, iPhone, etc. For some predefined label constants, see CNPhoneNumber, and CNContactRelation. Custom labels can also be used. Labels are not used for CNSocialProfile and CNInstantMessageAddress properties.
(Read only property)

**44.15.21 Value as Variant**

*Function*: A contact property value.
*Notes*: 
A contact property value, such as CNPhoneNumberMBS for a phone number, String for an email address, and so on. For valid values, see CNContact properties that are arrays of labeled value objects.
(Read only property)
44.16. CLASS CNMUTABLECONTACTMBS

44.16 class CNMutableContactMBS

44.16.1 class CNMutableContactMBS


**Function:** The CNMutableContact class represents a mutable value object for the contact properties, such as the first name and the phone number of a contact.

**Notes:**
The CNMutableContact is not a thread-safe class. When CNMutableContact object is a mutable copy of a CNContact object, if you access a CNMutableContact property value that was not fetched for the CNContact object, it throws an CNContactPropertyNotFetchedExceptionName exception. When needed, you can remove contact properties by setting string and array properties to empty, and all other properties to nil. Available in OS X v10.11 and later. Subclass of the CNContactMBS class.

44.16.2 Methods

44.16.3 Constructor


**Function:** The constructor.

44.16.4 setContactRelations(contactRelations() as CNLabeledValueMBS)


**Function:** Sets the array of labeled contact relations for the contact.

**Notes:** This property is an array of CNLabeledValue objects, each of which has a label and a CNContactRelationMBS value.

44.16.5 setDates(dates() as CNLabeledValueMBS)


**Function:** Sets the array containing labeled Gregorian dates.

**Notes:** This property is an array of CNLabeledValue objects, each of which has an String label and NSDateComponentsMBS value. You can use this property to store Gregorian dates such as anniversaries. Day and month are required and year is optional. Calendar is nil or Gregorian. All other date components are invalid.
44.16.6 setEmailAddresses(emailAddresses() as CNLabeledValueMBS)

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the array of labeled email addresses for the contact. **Notes:** This property is an array of CNLabeledValue objects, each of which has a label and a String value.

44.16.7 setInstantMessageAddresses(instantMessageAddresses() as CNLabeledValueMBS)

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the array of labeled IM addresses for the contact. **Notes:** This property is an array of CNLabeledValue objects, each of which has a label and a CNInstantMessageAddressMBS value.

44.16.8 setPhoneNumbers(phoneNumbers() as CNLabeledValueMBS)

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the array of labeled phone numbers for a contact. **Notes:** This property is an array of CNLabeledValue objects, each of which has a label and a CNPhoneNumberMBS value.

44.16.9 setPostalAddresses(postalAddresses() as CNLabeledValueMBS)

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the array of labeled postal addresses for a contact. **Notes:** This property is an array of CNLabeledValue objects, each of which has a label and a CNPostalAddressMBS value.

44.16.10 setSocialProfiles(socialProfiles() as CNLabeledValueMBS)

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the array of labeled social profiles for a contact. **Notes:** This property is an array of CNLabeledValue objects, each of which has a label and a CNSocialProfileMBS value.
44.16.11 setURLAddresses(urlAddresses() as CNLabeledValueMBS)

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the array of labeled URL addresses for a contact. **Notes:** This property is an array of CNLabeledValue objects, each of which has a label and a string value that contains the URL.

44.16.12 Properties

44.16.13 birthday as NSDateComponentsMBS

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A date component for the Gregorian birthday of the contact. **Notes:**

A Gregorian birthday can be displayed using this property, whose values are the relevant properties of an NSDateComponents object. Day and month are required for this property, and year is optional. Calendar can be nil or Gregorian. All other date components are invalid. (Read and Write property)

44.16.14 contactType as Integer

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An enum identifying the contact type. **Notes:**

Can be CNContactMBS.CNContactTypeOrganization or CNContactMBS.CNContactTypePerson. (Read and Write property)

44.16.15 departmentName as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of the department associated with the contact. **Notes:** (Read and Write property)

44.16.16 familyName as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The family name of the contact. **Example:**
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```
dim m as new CNMutableContactMBS
m.familyName = "Miller"
msgbox "name: " + m.familyName
```

Notes:
The family name is often known as the last name of the contact.
(Read and Write property)

#### 44.16.17 givenName as String

**Function:** The given name of the contact.
**Notes:**
The given name is often known as the first name of the contact.
(Read and Write property)

#### 44.16.18 imageData as MemoryBlock

**Function:** The profile picture of a contact.
**Notes:**
It is recommended that you fetch this property only when you need to access its value, such as when you need to display the contacts profile picture.
(Read and Write property)

#### 44.16.19 jobTitle as String

**Function:** The contacts job title.
**Notes:** (Read and Write property)

#### 44.16.20 middleName as String

**Function:** The middle name of the contact.
44.16. CLASS CNMUTABLECONTACTMBS

Notes: (Read and Write property)

44.16.21 namePrefix as String

Notes: (Read and Write property)

44.16.22 nameSuffix as String

Notes: (Read and Write property)

44.16.23 nickname as String

Notes: (Read and Write property)

44.16.24 nonGregorianBirthday as NSDateComponentsMBS

Notes: A non-Gregorian birthday such as Lunisolar birthdays can be displayed using this property, whose values are the relevant properties of an NSDateComponents object. Day and month are required; year and leapMonth are optional. The calendar property is also required and must be non-Gregorian. Some supported calendars are Buddhist, Chinese, and Islamic. All other date components are invalid.
(Read and Write property)

44.16.25 note as String

Notes: (Read and Write property)
**44.16.26** organizationName as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of the organization associated with the contact. **Notes:** (Read and Write property)

**44.16.27** phoneticFamilyName as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The phonetic family name of the contact. **Notes:**

This property contains a string that specifies the pronunciation of the contact's family (or last) name. (Read and Write property)

**44.16.28** phoneticGivenName as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The phonetic given name of the contact. **Notes:**

This property contains a string that specifies the pronunciation of the contact's given (or first) name. (Read and Write property)

**44.16.29** phoneticMiddleName as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The phonetic middle name of the contact. **Notes:**

This property contains a string that specifies the pronunciation of the contact’s middle name. (Read and Write property)

**44.16.30** previousFamilyName as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The previous family name of the contact. **Notes:**

The previous family name is often known as the maiden name of the contact. (Read and Write property)
44.16.31  `valueForKey(key as String) as Variant`

MBS Mac64bit Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries or sets value for a given key. **Notes:** (Read and Write computed property)
44.17 class CNMutableGroupMBS

44.17.1 class CNMutableGroupMBS

**Function:** The CNMutableGroup class defines a mutable value object representing a group for a contact.  
**Notes:**  
Contacts may be members of one or more groups, depending upon the accounts they come from. The CNMutableGroup is not a thread-safe class.  
Subclass of the CNGroupMBS class.

44.17.2 Methods

44.17.3 Constructor

**Function:** The constructor.

44.17.4 Properties

44.17.5 Name as String

**Function:** Name of the group.  
**Example:**

```vbnet
dim m as new CNMutableGroupMBS  
m.Name = "Hello"
```

**Notes:** (Read and Write property)

44.17.6 valueForKey(key as String) as Variant

**Function:** Queries or sets value for a given key.  
**Notes:** (Read and Write computed property)
44.18  class CNMutablePostalAddressMBS

44.18.1  class CNMutablePostalAddressMBS

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The CNMutablePostalAddress class defines a mutable value object representing the postal address for a contact.

**Notes:**

It is not a thread-safe class. To remove properties when saving a mutable postal address, set string properties to empty values.

Subclass of the CNPostalAddressMBS class.

44.18.2  Methods

44.18.3  Constructor

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

44.18.4  Properties

44.18.5  City as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The city name.

**Example:**

```vbnet
dim m as new CNMutablePostalAddressMBS
m.City = "New York"
MsgBox m.city
```

**Notes:** (Read and Write property)

44.18.6  Country as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The country name.

**Notes:** (Read and Write property)
44.18.7 ISOCountryCode as String

Notes: (Read and Write property)

44.18.8 PostalCode as String

Notes: (Read and Write property)

44.18.9 State as String

Notes: (Read and Write property)

44.18.10 Street as String

Notes:
A multiline address is delimited with carriage returns (that is, \n).
(Read and Write property)
44.19. **CLASS CNPHONENUMBERMBS**

44.19  **class CNPhoneNumberMBS**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The CNPhoneNumber class defines an immutable value object representing a phone number for a contact.  
**Notes:** It is a thread-safe class.

44.19.2  **Methods**

44.19.3  **available as Boolean**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this class is available.  
**Notes:** Should return true in a 64-bit Mac app on Mac OS X 10.11 or newer.

44.19.4  **CNLabelPhoneNumberHomeFax as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Home fax number.  
**Notes:** This label takes a string value.

44.19.5  **CNLabelPhoneNumberiPhone as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** iPhone number.  
**Notes:** This label takes a string value.

44.19.6  **CNLabelPhoneNumberMain as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Main phone number.  
**Notes:** This label takes a string value.
44.19.7  CNLabelPhoneNumberMobile as String

Notes: This label takes a string value.

44.19.8  CNLabelPhoneNumberOtherFax as String

Notes: This label takes a string value.

44.19.9  CNLabelPhoneNumberPager as String

Notes: This label takes a string value.

44.19.10  CNLabelPhoneNumberWorkFax as String

Notes: This label takes a string value.

44.19.11  Constructor(value as string)

Notes: You should initialize this with a phone number string. This method fails when the value of string is empty.

44.19.12  copy as CNPhoneNumberMBS

44.19. CLASS CNPHONENUMBERMBS

44.19.13 phoneNumberWithStringValue(p as string) as CNPhoneNumberMBS

Function: Returns a new phone number object initialized with the specified phone number string.
Notes:
This is a convenience class method that provides the same functionality as Constructor.
This method fails when the value of stringValue is "."

44.19.14 Properties

44.19.15 Handle as Integer

Function: The internal object reference.
Notes:
Value is a pointer to a CNPhoneNumber object.
(Read and Write property)

44.19.16 stringValue as String

Function: The string value of the phone number.
Notes: (Read only property)
44.20 class CNPostalAddressFormatterMBS

44.20.1 class CNPostalAddressFormatterMBS

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The CNPostalAddressFormatter class formats the postal address in a contact.
Notes: This class handles international formatting of postal addresses. It is recommended that you create an instance of this class when formatting many postal addresses, and use the instance methods; otherwise use the class methods.

44.20.2 Methods

44.20.3 attributedStringFromPostalAddress(postalAddress as CNPostalAddressMBS, DefaultAttributes as Dictionary = nil) as NSAttributedStringMBS

Notes:
postalAddress: The postal address to format.
DefaultAttributes: The default attributes to use. To learn more, see NSFormatter.

Returns the formatted postal address as an attributed string.

This method behaves similarly to stringFromPostalAddress, except that it returns an attributed string. It includes the attribute key CNPostalAddressPropertyAttribute, whose attribute values are postal address property keys, such as CNPostalAddressStreetKey. This identifies the postal address components in the formatted postal address. Also includes the attribute key CNPostalAddressLocalizedPropertyNameAttribute whose attribute values are the localized strings for the postal address property keys.
See also:
• 44.20.4 attributedStringFromPostalAddress(postalAddress as CNPostalAddressMBS, style as Integer, DefaultAttributes as Dictionary = nil) as NSAttributedStringMBS

44.20.4 attributedStringFromPostalAddress(postalAddress as CNPostalAddressMBS, style as Integer, DefaultAttributes as Dictionary = nil) as NSAttributedStringMBS

Notes:
postalAddress: The postal address to format.
DefaultAttributes: The default attributes to use. To learn more, see NSFormatter.

Returns the formatted postal address as an attributed string.

This method behaves similarly to stringFromPostalAddress, except that it returns an attributed string. It includes the attribute key CNPostalAddressPropertyAttribute, whose attribute values are postal address property keys, such as CNPostalAddressStreetKey. This identifies the postal address components in the formatted postal address. Also includes the attribute key CNPostalAddressLocalizedPropertyAttributeNameAttribute whose attribute values are the localized strings for the postal address property keys.

See also:
- 44.20.3 attributedStringFromPostalAddress(postalAddress as CNPostalAddressMBS, DefaultAttributes as Dictionary = nil) as NSAttributedStringMBS

44.20.5 available as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether this class is available.
Notes: Should return true in a 64-bit Mac app on Mac OS X 10.11 or newer.

44.20.6 CNPostalAddressLocalizedPropertyAttributeNameAttribute as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: This constant is a key in the attributed string whose value is a localized version of the CNPostalAddress property key.
Notes: This label takes a string value.

44.20.7 CNPostalAddressPropertyAttribute as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: This constant is a key in the attributed string whose value is a CNPostalAddress property key.
Notes: This key takes a string value.

44.20.8 Constructor

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44.20.9  stringFromPostalAddress(postalAddress as CNPostalAddressMBS) as String

Function: Returns a formatted postal address.
See also:

- 44.20.10 stringFromPostalAddress(postalAddress as CNPostalAddressMBS, style as Integer) as String

44.20.10  stringFromPostalAddress(postalAddress as CNPostalAddressMBS, style as Integer) as String

Function: Returns a formatted postal address.
Notes: Style can currently only be CNPostalAddressFormatterStyleMailingAddress.
See also:

- 44.20.9 stringFromPostalAddress(postalAddress as CNPostalAddressMBS) as String

44.20.11  Properties

44.20.12  Handle as Integer

Function: The internal object reference.
Notes:
Value is a pointer to a CNPostalAddressFormatter object.
(Read and Write property)

44.20.13  Style as Integer

Function: The style to use.
Notes:
Style can currently only be CNPostalAddressFormatterStyleMailingAddress.
(Read and Write property)
44.20.14 Constants

44.20.15 CNPostalAddressFormatterStyleMailingAddress = 0

MBS Mac64bit Plugin, Plugin Version: 16.3. **Function:** One of the style constants.
44.21 class CNPostalAddressMBS

44.21.1 class CNPostalAddressMBS

Function: The CNPostalAddress class defines an immutable object that represents the postal address for a contact.
Notes:
This is a thread-safe class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

44.21.2 Methods

44.21.3 available as Boolean

Function: Whether this class is available.
Notes: Should return true in a 64-bit Mac app on Mac OS X 10.11 or newer.

44.21.4 CNPostalAddressCityKey as String

Function: One of the keys for properties to fetch.
Notes:
City.
This key takes a string value.

44.21.5 CNPostalAddressCountryKey as String

Function: One of the keys for properties to fetch.
Notes:
Country.
This key takes a string value.
44.21.6  **CNPostalAddressISOCountryCodeKey as String**

**Function:** One of the keys for properties to fetch.
**Notes:**
ISO country code.
This key takes a string value.

44.21.7  **CNPostalAddressPostalCodeKey as String**

**Function:** One of the keys for properties to fetch.
**Notes:**
Postal code.
This key takes a string value.

44.21.8  **CNPostalAddressStateKey as String**

**Function:** One of the keys for properties to fetch.
**Notes:**
State.
This key takes a string value.

44.21.9  **CNPostalAddressStreetKey as String**

**Function:** One of the keys for properties to fetch.
**Notes:**
Street.
This key takes a string value.

44.21.10  **Constructor**

**Function:** The constructor.
44.21.11 copy as CNPostalAddressMBS


44.21.12 localizedStringForKey(key as String) as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the localized name for the property associated with the specified key. Example:

MsgBox CNPostalAddressMBS.localizedDescriptionedStringForKey(CNPostalAddressMBS.CNPostalAddressStreetKey)

44.21.13 mutableCopy as CNMutablePostalAddressMBS


44.21.14 Properties

44.21.15 City as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The city name in a postal address. Notes: (Read only property)

44.21.16 Country as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The country name in a postal address. Notes: (Read only property)

44.21.17 Handle as Integer

44.21. **CLASS CNPOSTALADDRESSMBS**

Value is a pointer to a CNPostalAddress object.
(Read and Write property)

---

44.21.18 **ISOCountryCode as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The ISO country code for the country in a postal address.
**Notes:** (Read only property)

---

44.21.19 **PostalCode as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The postal code in a postal address.
**Notes:** (Read only property)

---

44.21.20 **State as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The state name in a postal address.
**Notes:** (Read only property)

---

44.21.21 **Street as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The street name in a postal address.
**Notes:**

Multiline addresses are delimited by carriage returns (that is, \n).
(Read only property)
**44.22** class CNSaveRequestMBS

**44.22.1** class CNSaveRequestMBS

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The CNSaveRequest class defines a save request operation for contacts. **Notes:** The CNSaveRequest class creates a new save request for each save operation on the contact store. You can batch multiple changes into one save request (note that these changes only apply to objects). In the case of overlapping changes in multiple or concurrent save requests, the last change wins. If you try to add an object (that is, a contact, or a group,) that already exists in the contact store, the CNErrorCodeInsertedRecordAlreadyExists error occurs and the CNErrorUserInfoAffectedRecordsKey array is updated to contain the object you tried to add. If you try to update or delete an object that is not present in the contact store, the save request does not perform the update or deletion, the CNErrorCodeRecordDoesNotExist error occurs, and the CNErrorUserInfoAffectedRecordsKey array is updated to contain the object you tried to update or delete. Do not access objects in the save request while a save request is executing.

**44.22.2** Methods

**44.22.3** addContact(contact as CNMutableContactMBS, ContainerIdentifier as String)

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds the specified contact to the contact store. **Notes:**

- contact: The new contact to add.
- identifier: The identifier of the container to add the new contact. To add the new contact to the default container set identifier to ""

This method overrides any previously made deletion requests for the contact. The new contact may be modified by executing the save request.

**44.22.4** addGroup(group as CNMutableGroupMBS, identifier as String)

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds a group to the contact store. **Notes:**

- group: The group to add.
- identifier: The identifier of the container to add the new group. To add the new group to the default container, set identifier to ""
This method overrides any previously made delete request for the group.

### 44.22.5 addMember(contact as CNContactMBS, group as CNGroupMBS)

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds a contact as a member of a group.  
**Notes:**
- contact: The contact to add to the group membership.
- group: The group to add the contact to its membership.

This method overrides any previously made remove membership request on the contact from the group.

### 44.22.6 addSubgroup(subgroup as CNGroupMBS, group as CNGroupMBS)

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds a subgroup to a group.

### 44.22.7 available as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this class is available.  
**Notes:** Should return true in a 64-bit Mac app on Mac OS X 10.11 or newer.

### 44.22.8 Constructor

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

### 44.22.9 deleteContact(contact as CNMutableContactMBS)

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Deletes a contact from the contact store.  
**Notes:** contact: Contact to be delete.
44.22.10  deleteGroup(contact as CNMutableGroupMBS)

Function: Deletes a group from the contact store.
Notes:

group: The group to delete.

This method overrides any previously made add request on the group. The group to be deleted must already exist in the contact store. If it does not, the delete request fails, the CNErrorCodeRecordDoesNotExist error is thrown, and the CNErrorUserInfoAffectedRecordsKey array is updated to contain that object.

44.22.11  removeMember(contact as CNContactMBS, group as CNGroupMBS)

Function: Removes a contact as a member of a group.
Notes:

contact: The contact to remove from the group membership.
group: The group to remove the contact from its membership.

This method removes the contact from the group, but does not delete it from the contact store. This method overrides any previously made add membership request on the contact to the group.

44.22.12  removeSubgroup(subgroup as CNGroupMBS, group as CNGroupMBS)


44.22.13  updateContact(contact as CNMutableContactMBS)

Function: Updates an existing contact in the contact store.
Notes:

contact: The contact to update.

The contact to be updated must already exist in the contact store. If it does not, the update request fails, the CNErrorCodeRecordDoesNotExist error occurs, and the CNErrorUserInfoAffectedRecordsKey array is updated to contain the object. Note that the contact may be modified when the save request is executing.
44.22. **CLASS CNSAVEREQUESTMBS**

### 44.22.14 updateGroup(contact as CNMutableGroupMBS)


**Function:** Updates an existing group in the contact store.

**Notes:**

- `group`: The group to update.

The group to be updated must already exist in the contact store. If it does not, the update request fails, the CNErrordCodeRecordDoesNotExist error is thrown, and the CNErrordUserInfoAffectedRecordsKey array is updated to contain that object.

### 44.22.15 Properties

#### 44.22.16 Handle as Integer


**Function:** The internal object reference.

**Notes:**

- Value is a pointer to a CNSaveRequest object.
  - (Read and Write property)
44.23  class CNSocialProfileMBS

44.23.1  class CNSocialProfileMBS

**Function:** The CNSocialProfile class defines an immutable object representing a social profile.

**Example:**
```vba
dim ContactStore as new CNContactStoreMBS
dim c as new CNMutableContactMBS

c.givenName = "Bob"

dim sr as new CNSaveRequestMBS

dim ContainerIdentifier as string = ContactStore.defaultContainerIdentifier
sr.addContact c, ContainerIdentifier

dim e as NSErrorMBS
if ContactStore.executeSaveRequest(sr, e) then
    MsgBox "Saved"
else
    MsgBox "Failed to save contact" + vbCrLf + e.localizedDescription
end if
```

**Notes:** This is a thread-safe class. Some social profile services, such as Facebook and Twitter are predefined in this class. You can also specify your own social profile service with Constructor.

---

44.23.2  Methods

44.23.3  available as Boolean

**Function:** Whether this class is available.

**Notes:** Should return true in a 64-bit Mac app on Mac OS X 10.11 or newer.

---

44.23.4  CNSocialProfileServiceFacebook as String

**Function:** One of the possible service keys.

**Notes:** Facebook
44.23. **CLASS CNSOCIALPROFILEMBS**

44.23.5 **CNSocialProfileServiceFlickr as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: One of the possible service keys. **Notes**: Flickr

44.23.6 **CNSocialProfileServiceGameCenter as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: One of the possible service keys. **Notes**: Game Center

44.23.7 **CNSocialProfileServiceKey as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: One of the keys for properties. **Notes**: The social profile service. This key takes a string value.

44.23.8 **CNSocialProfileServiceLinkedIn as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: One of the possible service keys. **Notes**: LinkedIn

44.23.9 **CNSocialProfileServiceMySpace as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: One of the possible service keys. **Notes**: MySpace

44.23.10 **CNSocialProfileServiceSinaWeibo as String**

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: One of the possible service keys.
CHAPTER 44. CONTACTS

Notes: Sina Weibo

44.23.11 CNSocialProfileServiceTencentWeibo as String

Notes: Tencent Weibo

44.23.12 CNSocialProfileServiceTwitter as String

Notes: Twitter

44.23.13 CNSocialProfileServiceYelp as String

Notes: Yelp

44.23.14 CNSocialProfileURLStringKey as String

Notes: The URL of the service.

44.23.15 CNSocialProfileUserIdentifierKey as String

Notes:
The social profile user identifier.
This key takes a string value.
44.23. CLASS CNSOCIALPROFILEMBS

44.23.16 CNSocialProfileUsernameKey as String

Function: One of the keys for properties.
Notes:
The social profile user name.
This key takes a string value.

44.23.17 Constructor(URLString as String, UserName as String, Identifier as String, Service as String)

Function: Initializes a new social profile object with the specified URL.
Notes:
urlString: The URL for the social profile.
username: The user name for the social profile.
userIdentifier: The services user identifier for the social profile.
service: The service name of the social profile.

44.23.18 copy as CNSocialProfileMBS

Function: Create a copy of the social profile object.

44.23.19 localizedStringForKey(key as String) as String

Function: Returns the localized name of the property for the specified key.
Example:
MsgBox CNSocialProfileMBS.localizedDescriptionForService(CNSocialProfileServiceGameCenter)

Notes: key: Key for which to get the localized property name.
### 44.23.20 localizedStringForService(service as String) as String

**Function:** Returns the localized name of the specified service.
**Example:**

MsgBox CNSocialProfileMBS.localizedStringForKey(CNSocialProfileUsernameKey)

**Notes:** service: The service name for which to get the localized name.

### 44.23.21 Properties

#### 44.23.22 Handle as Integer

**Function:** The internal object reference.
**Notes:**

Value is a pointer to a CNSocialProfile object.
(Read and Write property)

#### 44.23.23 service as String

**Function:** The social profiles service name.
**Notes:** (Read only property)

#### 44.23.24 urlString as String

**Function:** The URL associated with the social profile.
**Notes:** (Read only property)

#### 44.23.25 userIdentifier as String

**Function:** The services user identifier associated with the social profile.
**Notes:** (Read only property)
44.23. CLASS CNSOCIALPROFILEMBS

44.23.26 username as String

MBS Mac64bit Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The user name for the social profile. **Notes:** (Read only property)
Chapter 45

Controls

45.1 class Bevelbutton

45.1.1 class Bevelbutton

Plugin Version: 3.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** An extension of Realbasic’s internal control.

**Notes:**

The clock functions are hacks to REALbasic which uses undocumented functions.

This function does currently not work with the Mac Cocoa target of REALbasic. If you need it, please send in a feature request.

45.1.2 Methods

45.1.3 NSButtonMBS as NSButtonMBS

MBS MacControls Plugin, Plugin Version: 9.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a NSButtonMBS object for the given control.

**Example:**

MsgBox BevelButton1.NSButtonMBS.className

**Notes:** This way you can manipulate Cocoa controls directly.
45.2 control ButtonMBS

45.2.1 control ButtonMBS

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A control to have a custom button in REALbasic. **Deprecated:** This item is deprecated and should no longer be used. **Notes:**

You provide the images for the button and the control will do the rest.

There are possibilities that this control shows thru pagepanels from a hidden panel.

45.2.2 Properties

45.2.3 ImageDisabled as Picture

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The image used if the button is disabled. **Notes:** (Read and Write property)

45.2.4 ImageMouseOver as Picture

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The image used for the unpressed button if the mouse is over the button. **Notes:** (Read and Write property)

45.2.5 ImageNormal as Picture

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The image for the normal state. **Notes:** (Read and Write property)

45.2.6 ImagePressed as Picture

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The image used for the pressed button. **Notes:** (Read and Write property)
45.2. CONTROL BUTTONMBS

45.2.7  ImagePressedDisabled as Picture

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The image used when the button is pressed and the button is disabled.
**Notes:**
If this image is nil, the ImagePressed picture is used.
(Read and Write property)

45.2.8  ImagePressedMouseOver as Picture

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The image used when the button is pressed and the mouse is over the button.
**Notes:**
If this image is nil, the ImagePressed picture is used.
(Read and Write property)

45.2.9  Sticky as Boolean

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether the button is sticky.
**Notes:**
Normally the value is set to false when you release the mouse button.
If Sticky is true, the button is not unpressed.
(Read and Write property)

45.2.10  TestEnabled as Boolean

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This property can be used to see in the window editor how the button looks like when the button is enabled.
**Notes:**
This property is only for designing, not for runtime.
(Read and Write property)

45.2.11  TestMouseOver as Boolean

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This property can be used to see in the window editor how the button looks like if the mouse is over the
45.2.12 TestPressed as Boolean

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This property can be used to see in the window editor how the button looks like when the button is pressed. **Notes:** This property is only for designing, not for runtime. (Read and Write property)

45.2.13 Toggle as Boolean

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the button should toggle. **Notes:** If pressed the button switches the value property.

Set Sticky to true if use set Toggle to true. (Read and Write property)

45.2.14 Value as Boolean

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the button is currently pressed. **Notes:** True if the button is pressed. (Read and Write property)

45.2.15 Events

45.2.16 Action(x as Integer, y as Integer)

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event called when the mouse button is clicked in the control.
45.2. CONTROL BUTTONMBS

Notes: Currently called after each MouseUp event.

45.2.17 EnableMenuItems


45.2.18 MenuAction(HitItem as MenuItem) As Boolean

MBS Overlay Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: Called when a menu item is chosen. Notes: This allows the control to react on its relevant menu items. Please return true if you handled it or false to give others a chance.

45.2.19 MouseDown(x as Integer, y as Integer, Modifiers as Integer) As Boolean

MBS Overlay Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: The mouse button was pressed inside the controls region at the location passed in to x, y. Notes: The coordinates x and y are local to the control, i.e. they represent the position of the mouse click relative to the upper-left corner or the Control. Return True if you are going to handle the MouseDown. In such a case:

- The Action event, if any, will not execute and the state of the object will not change.
- You will receive the MouseDrag and MouseUp events.

If you return False, the system handles the MouseDown so the above event handlers do not get called.

45.2.20 MouseDrag(x as Integer, y as Integer)

45.2.21 MouseUp(x as Integer, y as Integer)

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event called when the mouse button is released.

45.2.22 ScaleFactorChanged(NewFactor as Double)

MBS Overlay Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The backing store scale factor has changed. **Notes:** Please invalidate any cached bitmaps or other relevant state.
45.3. **CLASS CHECKBOX**

45.3 class Checkbox

45.3.1 class Checkbox

Plugin Version: 2.9, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** An extension of Realbasic’s internal control.

45.3.2 Methods

45.3.3 NSButtonMBS as NSButtonMBS

MBS MacControls Plugin, Plugin Version: 9.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a NSButtonMBS object for the given control.

**Example:**

MsgBox CheckBox1.NSButtonMBS.className

**Notes:** This way you can manipulate Cocoa controls directly.
45.4  control CustomControlMBS

45.4.1  control CustomControlMBS

MBS Overlay Plugin, Plugin Version: 8.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A control where you can in the IDE define the paint event and see in the IDE what you see in the compiled application.
**Deprecated:** This item is deprecated and should no longer be used. You can use Oval instead.

45.4.2  Properties

45.4.3  Code as String

MBS Overlay Plugin, Plugin Version: 8.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The code for the paint event.
**Notes:**
Commands:
PenWidth n
PenHeight n
ForeColor n
FillRect x,y,w,h
DrawRect x,y,w,h
FillRoundRect x,y,w,h,X,Y
DrawRoundRect x,y,w,h,X,Y
FillOval x,y,w,h
DrawOval x,y,w,h
DrawPicture X,x,y,w,h - draws picture number X into the given rectangle
DrawLine x1,y1,x1,y1 - draws line

Variables:
width: width of control
height: height of control
left: left position of control
top: top position of control
ValueX: Value of the ValueX property (X from 1 to 4)
ColorX: Value of the Color1 property (X from 1 to 4)
(Read and Write property)

45.4.4  Color1 as Color

MBS Overlay Plugin, Plugin Version: 8.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
One of the color properties.
45.4. CONTROL CUSTOMCONTROLMBS

Notes: (Read and Write property)

45.4.5 Color2 as Color

MBS Overlay Plugin, Plugin Version: 8.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the color properties.
Notes: (Read and Write property)

45.4.6 Color3 as Color

MBS Overlay Plugin, Plugin Version: 8.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the color properties.
Notes: (Read and Write property)

45.4.7 Color4 as Color

MBS Overlay Plugin, Plugin Version: 8.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the color properties.
Notes: (Read and Write property)

45.4.8 Picture1 as Picture

MBS Overlay Plugin, Plugin Version: 8.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the picture properties you can use for the drawpicture command.
Notes: (Read and Write property)

45.4.9 Picture2 as Picture

MBS Overlay Plugin, Plugin Version: 8.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the picture properties you can use for the drawpicture command.
Notes: (Read and Write property)

45.4.10 Picture3 as Picture

MBS Overlay Plugin, Plugin Version: 8.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the picture properties you can use for the drawpicture command.
45.4.11 Picture4 as Picture

MBS Overlay Plugin, Plugin Version: 8.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
One of the picture properties you can use for the drawpicture command.
Notes: (Read and Write property)

45.4.12 Value1 as String

MBS Overlay Plugin, Plugin Version: 8.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
One of the value properties.
Notes: (Read and Write property)

45.4.13 Value2 as String

MBS Overlay Plugin, Plugin Version: 8.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
One of the value properties.
Notes: (Read and Write property)

45.4.14 Value3 as String

MBS Overlay Plugin, Plugin Version: 8.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
One of the value properties.
Notes: (Read and Write property)

45.4.15 Value4 as String

MBS Overlay Plugin, Plugin Version: 8.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
One of the value properties.
Notes: (Read and Write property)
45.4.16 Events

45.4.17 EnableMenuItems

MBS Overlay Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event where you can enable menu items.

45.4.18 MenuAction(HitItem as MenuItem) As Boolean

MBS Overlay Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Called when a menuitem is choosen. **Notes:** This allows the control to react on its relevant menu items. Please return true if you handled it or false to give others a chance.

45.4.19 MouseDown(x as Integer, y as Integer, Modifiers as Integer) as boolean

MBS Overlay Plugin, Plugin Version: 8.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event called when the user clicks with the mouse in the control area. **Notes:** Return true to handle the event and enable the MouseUp event.

This event exists because RB does not add a Mousedown event by default to the plugin control.

45.4.20 MouseDrag(x as Integer, y as Integer)

MBS Overlay Plugin, Plugin Version: 8.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The mouse drag event.

45.4.21 MouseUp(x as Integer, y as Integer)

MBS Overlay Plugin, Plugin Version: 8.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event called when the user releases the mouse button and you returned true on the MouseDown event.
45.4.22  ScaleFactorChanged(NewFactor as Double)

MBS Overlay Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The backing store scale factor has changed.  
**Notes:** Please invalidate any cached bitmaps or other relevant state.
45.5. CLASS HIVIEWMBS

45.5 class HIViewMBS

45.5.1 class HIViewMBS

Function: A class to represent a native Carbon control on a Realbasic window.
Deprecated: This item is deprecated and should no longer be used. You can use NSViewMBS instead.
Notes:
Only used for some interface hacks like moving the scrollbars of an editfield.
Not available on Cocoa targets.

45.5.2 Methods

45.5.3 AccessibilityActionDescription(action as string) as string

Function: Returns the action description string for a standard accessibility action.
Notes: This routine is useful if you are implementing an accessible object that implements a standard action and you want to make sure your object provides the same role action string that the a system-supplied object provides. This routine can provide action description strings for all actions that are used in the standard/system accessible objects on Mac OS X 10.4 and later. Once this routine is able to provide a description string for an action, it will continue to do so on subsequent system releases, even if the system no longer produces a standard accessible object that supports the action.

45.5.4 available as boolean

Function: Whether HIView is available.
Notes: Currently only true on Carbon target.

45.5.5 BoundsHeight as Double

Function: Height of the view bounds.
Notes: Returns the local bounds of a view. The local bounds are the coordinate system that is completely view-relative. A view’s top left coordinate starts out at 0, 0. Most operations are done in these local coordinates. Moving a view is done via the frame instead.
45.5.6 **BoundsLeft as Double**

MBS MacClassic Plugin, Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Left of the view bounds. **Notes:** Returns the local bounds of a view. The local bounds are the coordinate system that is completely view-relative. A view’s top left coordinate starts out at 0, 0. Most operations are done in these local coordinates. Moving a view is done via the frame instead.

45.5.7 **BoundsTop as Double**

MBS MacClassic Plugin, Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Top of the view bounds. **Notes:** Returns the local bounds of a view. The local bounds are the coordinate system that is completely view-relative. A view’s top left coordinate starts out at 0, 0. Most operations are done in these local coordinates. Moving a view is done via the frame instead.

45.5.8 **BoundsWidth as Double**

MBS MacClassic Plugin, Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Width of the view bounds. **Notes:** Returns the local bounds of a view. The local bounds are the coordinate system that is completely view-relative. A view’s top left coordinate starts out at 0, 0. Most operations are done in these local coordinates. Moving a view is done via the frame instead.

45.5.9 **CountSubviews as Integer**

MBS MacClassic Plugin, Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Counts the number of subviews embedded in a view. **Notes:** 0 on any error.

45.5.10 **CreateImage as picture**

MBS MacClassic Plugin, Plugin Version: 8.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a picture from the control. **Notes:** Returns nil on any error. See also:

- 45.5.11 CreateImage(byref x as Double, byref y as Double, byref width as Double, byref height as Double) as picture
45.5. **CLASS HVIEWMBS**

### 45.5.11 CreateImage(byref x as Double, byref y as Double, byref width as Double, byref height as Double) as picture


**Function:** Creates a picture from the control.

**Notes:**

Returns nil on any error.

In the double values, you will get the control rectangle within the picture returned.

See also:

- 45.5.10 CreateImage as picture

### 45.5.12 FirstSubview as HViewMBS


**Function:** Returns the first subview of a container.

**Notes:**

The first subview is the topmost subview in z-order.

Nil on any error.

### 45.5.13 FrameHeight as Double


**Function:** Height of frame of a view.

**Notes:** The frame is the bounds of a view relative to its parent’s local coordinate system.

### 45.5.14 FrameLeft as Double


**Function:** Left of frame of a view.

**Notes:** The frame is the bounds of a view relative to its parent’s local coordinate system.

### 45.5.15 FrameTop as Double


**Function:** Top of frame of a view.

**Notes:** The frame is the bounds of a view relative to its parent’s local coordinate system.
45.5.16  FrameWidth as Double

**Notes:** The frame is the bounds of a view relative to its parent’s local coordinate system.

45.5.17  IndexedSubview(index as Integer) as HIViewMBS

MBS MacClassic Plugin, Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Get the Nth subview of a view.  
**Example:**

```vbnet
Sub List(h as hiviewMBS, tab as string=””)
    dim i,c as Integer
    dim t as string
    dim s as HIViewMBS

    ListBox1.AddRow tab+h.Kind
    ListBox1.Cell(ListBox1.LastIndex,1)=h.Signature

    c=h.CountSubviews
    for i=1 to c
        s=h.IndexedSubview(i)
        list s,tab+” ”
    next
End Sub
```

**Notes:**

Instead of calling IndexedSubview repeatedly, it may be more efficient to iterate through the subviews of a view with calls FirstSubview and NextView.
Nil on any error.

Index is from 1 to count.

45.5.18  IsAccessibilityIgnored as Boolean

MBS MacClassic Plugin, Plugin Version: 10.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Reports whether or not the given HIObject is marked as ignored for accessibility.  
**Notes:** See the discussion of HIObjectSetAccessibilityIgnored for details on what it means to be accessibility ignored.
45.5. **CLASS HIVIEWMBS**

### 45.5.19 Kind as string

MBS MacClassic Plugin, Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Kind of this view.  
**Notes:** e.g. a scrollbar has "sbar", a slider has "sldr".

### 45.5.20 LastSubview as HIViewMBS

MBS MacClassic Plugin, Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the last subview of a container.  
**Notes:**  
The last subview is the bottommost subview in z-order.  
Nil on any error.

### 45.5.21 LatentlyVisible as Boolean

MBS MacClassic Plugin, Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns whether or not a view is latently visible.  
**Notes:** The view’s visibility is also affected by the visibility of its parents; if any parent view is invisible, this view is considered invisible as well. LatentlyVisible returns whether a view is latently visible, even if its parents are invisible.

### 45.5.22 MoveBy(dx as Double, dy as Double)

MBS MacClassic Plugin, Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Moves a view by a certain distance, relative to its current location.  
**Notes:** This affects a view’s frame, but not its bounds.

### 45.5.23 NextView as HIViewMBS

MBS MacClassic Plugin, Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the next view after the one given, in z-order.  
**Notes:** Nil on any error.
45.5.24 PreviousView as HIViewMBS

MBS MacClassic Plugin, Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the previous view before the one given, in z-order. **Notes:** Nil on any error.

45.5.25 SetAccessibilityIgnored(value as Boolean)

MBS MacClassic Plugin, Plugin Version: 10.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Marks an HIObject as ignored (or not) for the purposes of the accessibility APIs. **Notes:**

An HIObject that is ignored for accessibility will never be shown to an assistive application that uses the accessibility APIs to examine an interface. Your application’s accessibility implementation can (and should) still report an ignored HIObject as usual. Carbon’s accessibility engine will automatically prune any ignored HIObjects out of the data that is shown to an assistive application.

By default, an HIObject is *not* accessibility ignored.

45.5.26 SetAuxiliaryAccessibilityDescriptionAttribute(identifier as UInt64, value as string)

MBS MacClassic Plugin, Plugin Version: 10.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Associates an additional accessibility description attribute with a UIElement that is used to represent a given HIObject or a part thereof. **Notes:**

This routine lets your application provide the name of and data for an accessibility attribute that you want to add to the UIElement used to represent a given HIObject-identifier pair. Normally, accessibility attributes can only be supplied dynamically via Carbon Events, but this routine allows you to supply them statically.

When an accessibility attribute Carbon Event is handled by the HIObject with a given identifier, the toolbox automatically supplies the names and/or values of any auxiliary attributes associated with that HIObject-identifier pair.

This routine is particularly useful for supplying values for the kAXDescriptionAttribute, kAXTitleUIElementAttribute, AXServesAsTitleUIElementAttribute, kAXLinkedUIElementsAttribute and other attributes whose value is specific to the layout and usage of your application.

This routine only allows you to associate attributes whose values never change. If you need to supply attributes whose values are determined dynamically or whose values are settable, you must install the normal accessibility Carbon Event handlers.
45.5. **CLASS HIVIEWMBS**

The auxiliary attribute store is consulted during the HIOBJECT's default handling of the accessibility attribute Carbon Events. This means that any programmatic handling of a given accessibility attribute will have a chance to override or block the consultation of the store. The general rule is that if the toolbox or a Carbon Event handler can provide the attribute value some other way, the store will not be consulted.

**self**: The HIOBJECT part of the object-identifier pair to which the attribute data is associated. **Identifier**: The 64-bit identifier part of the object-identifier pair to which the attribute data is associated. When you want to associate the attribute data to the HIOBJECT as a whole – such as when you want to give a description attribute to a push button – you should pass zero in this parameter.

**Value**: The description text.

### 45.5.27 Signature as string

MBS MacClassic Plugin, Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function**: Signature of this view. **Notes**: Most times "appl" for Apple Inc.

### 45.5.28 Superview as HVIEWMBS


### 45.5.29 Properties

### 45.5.30 Handle as Integer

MBS MacClassic Plugin, Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function**: The handle of the hiview control. **Notes**: (Read and Write property)

### 45.5.31 DrawingEnabled as Boolean

MBS MacClassic Plugin, Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function**: Turns control drawing on or off. **Notes**: 
You can use this to ensure that no drawing events are sent to the control. Even Draw1Control will not draw! NeedsDisplay is also rendered useless when drawing is off.
(Read and Write computed property)

45.5.32 Maximum as Integer

Function: The maximum value of this control.
Notes:
Sliders and Scrollbars do use this property.
(Read and Write computed property)

45.5.33 Minimum as Integer

Function: The minimum value of this control.
Notes:
Sliders and Scrollbars do use this property.
(Read and Write computed property)

45.5.34 NeedsDisplay as Boolean

Function: Whether this control needs to be redrawn soon.
Notes:
Marks a view as needing to be completely redrawn, or completely valid. If the view is not visible, or is obscured completely by other views, no action is taken.
(Read and Write computed property)

45.5.35 Text as String

Function: The text of the view.
Notes:
The "text" of the view is the text that will be displayed when drawing the view.
(Read and Write computed property)
45.5. **CLASS HIVIEWMBS**

### 45.5.36 Value as Integer


**Function:** The value of the view.

**Example:**

```plaintext
dim s as HIViewMBS
'... fill s with hiview
slider1.Value=s.Value
```

**Notes:** (Read and Write computed property)

### 45.5.37 ViewSize as Integer


**Function:** View’s view size.

**Notes:**

The view size is the size of the content to which a view’s display is proportioned. Most commonly used to set the proportional size of a scroll bar’s thumb indicator.

(Read and Write computed property)

### 45.5.38 Visible as Boolean


**Function:** Whether this view is visible.

**Notes:**

Hides or shows a view. Marks the area the view will occupy or used to occupy as needing to be redrawn later.

Note that Visible returns a view’s effective visibility, which is determined both by the view’s own visibility and the visibility of its parent views. If a parent view is invisible, then this view is considered to be invisible also.

Latent visibility can be determined with LatentlyVisible.

(Read and Write computed property)
45.6 control ImageMBS

45.6.1 control ImageMBS

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: A control for REALbasic to draw an image into a window.
Deprecated: This item is deprecated and should no longer be used. You can use Oval instead. Notes: The image is scaled to the size of the control.

45.6.2 Properties

45.6.3 Backdrop as Picture

Notes: This image is scaled to the needed size.
(Read and Write property)

45.6.4 Events

45.6.5 EnableMenuItems


45.6.6 MenuAction(HitItem as MenuItem) As Boolean

Notes: This allows the control to react on its relevant menu items. Please return true if you handled it or false to give others a chance.

45.6.7 MouseDown(x as Integer, y as Integer, Modifiers as Integer) as boolean

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: The event called when the user clicks with the mouse in the control area.
Notes:
Return true to handle the event and enable the MouseUp event.

This event exists because RB does not add a Mousedown event by default to the plugin control.

**45.6.8 MouseDrag(x as Integer, y as Integer)**

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The mouse drag event.

**45.6.9 MouseUp(x as Integer, y as Integer)**

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The event called when the user releases the mouse button and you returned true on the MouseDown event.

**45.6.10 ScaleFactorChanged(NewFactor as Double)**

MBS Overlay Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The backing store scale factor has changed.
**Notes:** Please invalidate any cached bitmaps or other relevant state.
45.7 class Label

45.7.1 class Label

Plugin Version: 13.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An extension of Realbasic’s internal control.

45.7.2 Methods

45.7.3 NSTextFieldMBS as NSTextFieldMBS

MBS MacCocoa Plugin, Plugin Version: 13.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a NSTextFieldMBS object for the given control. **Notes:** This way you can manipulate Cocoa controls directly.

45.7.4 SetTextThreadSafeMBS(text as string)

MBS Util Plugin, Plugin Version: 13.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets text property on main thread. **Notes:**

This method is to allow you to set the text property of a label in a thread without a problem.

If called on main thread, the plugin will simply set text property directly.
If called on other threads the plugin will schedule to set the property a short time later on the main thread.

It may be better to call an update method you created on your window with CallDelegatesMBS.CallDelegateOnMainThreadMBS instead to do several update steps on one.
45.8. CONTROL LINEMBS

45.8  control LineMBS

45.8.1  control LineMBS

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A control for REALbasic to draw a line into a window.

**Deprecated:** This item is deprecated and should no longer be used. You can use Oval instead. **Notes:**
Basicly the same as the original Line control from REALbasic.

45.8.2  Properties

45.8.3  BorderWidth as Integer

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The width of the line.

**Notes:**
Set to 0 to disabled the border.
(Read and Write property)

45.8.4  LineColor as Color

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The color for drawing the line.

**Notes:**
There is a bug in REALbasic. If you enter the color as a hex value (e.g. ";& c123456"), the control will get black as color. If you use the color panel using the "..." buttons, the control will get the correct color.
(Read and Write property)

45.8.5  Mirror as Boolean

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether the line is mirrored.

**Notes:**
Normally the line is drawn from top left to bottom right.
If Mirror is true, the line is drawn from bottom left to top right.
(Read and Write property)
45.8.6 Events

45.8.7 EnableMenuItems

MBS Overlay Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event where you can enable menu items.

45.8.8 MenuAction(HitItem as MenuItem) As Boolean

MBS Overlay Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Called when a menuitem is choosen. **Notes:** This allows the control to react on its relevant menu items. Please return true if you handled it or false to give others a chance.

45.8.9 MouseDown(x as Integer, y as Integer, Modifiers as Integer) as boolean

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event called when the user clicks with the mouse in the control area. **Notes:** Return true to handle the event and enable the MouseUp event.

This event exists because RB does not add a Mousedown event by default to the plugin control.

45.8.10 MouseDrag(x as Integer, y as Integer)

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The mouse drag event.

45.8.11 MouseUp(x as Integer, y as Integer)

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event called when the user releases the mouse button and you returned true on the MouseDown event.
45.8.12 ScaleFactorChanged(NewFactor as Double)

MBS Overlay Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The backing store scale factor has changed. **Notes:** Please invalidate any cached bitmaps or other relevant state.
45.9 class Listbox

45.9.1 class Listbox

Plugin Version: 13.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The built in listbox class in REALbasic.

45.9.2 Methods

45.9.3 `HorizontalNSScrollerMBS as NSScrollerMBS`

MBS MacControls Plugin, Plugin Version: 13.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns horizontal scrollbar for a listbox.
**Notes:** Only for Cocoa target.

45.9.4 `InvalidateCellThreadSafeMBS(Row as Integer, Column as Integer)`

MBS Util Plugin, Plugin Version: 13.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calls invalidate cell on main thread.
**Notes:** This method is to allow you to invalidate a listbox cell in a thread without a problem.

If called on main thread, the plugin will simply call through directly.
If called on other threads the plugin will schedule to call the method a short time later on the main thread.

It may be better to call an update method you created on your window with CallDelegatesMBS.CallDelegateOnMainThreadMBS instead to do several update steps on one.

45.9.5 `VerticalNSScrollerMBS as NSScrollerMBS`

MBS MacControls Plugin, Plugin Version: 13.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns vertical scrollbar for a listbox.
**Notes:** Only for Cocoa target.
45.10  Globals

45.10.1  ShowModalThreadSafeMBS(extends theMessageDialog as MessageDialog)

MBS Util Plugin, Plugin Version: 13.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Call ShowModal method on main thread.
**Notes:**
This method is to allow you to call the ShowModal method of a MessageDialog in a thread without a problem.

If called on main thread, the plugin will simply call method directly.
If called on other threads the plugin will schedule to call the method a short time later on the main thread.

Of course as this is asynchronously, you do not get details on which button was pressed.
Deprecated. Behavior from Xojo changed, so this method does no longer work.

It may be better to call an update method you created on your window with CallDelegatesMBS.CallDelegateOnMainThreadMBS instead to do several update steps on one.

45.10.2  ShowModalWithinThreadSafeMBS(extends theMessageDialog as MessageDialog, parent as window)

MBS Util Plugin, Plugin Version: 13.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Call ShowModalWithin method on main thread.
**Notes:**
This method is to allow you to call the ShowModalWithin method of a MessageDialog in a thread without a problem.

If called on main thread, the plugin will simply call method directly.
If called on other threads the plugin will schedule to call the method a short time later on the main thread.

Of course as this is asynchronously, you do not get details on which button was pressed.
Deprecated. Behavior from Xojo changed, so this method does no longer work.

It may be better to call an update method you created on your window with CallDelegatesMBS.CallDelegateOnMainThreadMBS instead to do several update steps on one.
45.10.3 TabpanelCountMBS(‘theTabpanel as Tabpanel) as Integer

Function: Returns the number of pages on a tabpanel.
Example:

dim i,c as Integer

c=TabpanelCountMBS(TabPanel1)

for i=0 to c
TabpanelEnabledMBS TabPanel1,i,false
next

Notes:
This function does currently not work with the Mac Cocoa target of REALbasic. If you need it, please send in a feature request.

You can do the same with PanelCount property in newer Real Studio versions.

45.10.4 TabpanelEnabledMBS(‘theTabpanel as Tabpanel, index as Integer, value as boolean)

Function: Enables or disables a tabpanel.
Example:

dim i,c as Integer

c=TabpanelCountMBS(TabPanel1)

for i=0 to c
TabpanelEnabledMBS TabPanel1,i,false
next

Notes:
Index is from 1 to count.
Make sure the disabled tab panel is not used while you disable it.
You may need to call refresh to redraw the tabpanel.
PS: Can’t find a way to disable tabs on Windows. Any hint is welcome.
This function works only on Carbon targets.
For Cocoa, please use enabled property of NSTabViewItemMBS class.

45.11 control OvalMBS

45.11.1 control OvalMBS

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A control for REALbasic to draw an oval into a window. **Deprecated:** This item is deprecated and should no longer be used. You can use Oval instead. **Notes:** Basically the same as the original Oval control from REALbasic.

45.11.2 Properties

45.11.3 BorderColor as Color

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The color for drawing the border. **Notes:** There is a bug in REALbasic. If you enter the color as a hex value (e.g. "& c123456"), the control will get black as color. If you use the color panel using the "..." buttons, the control will get the correct color. (Read and Write property)

45.11.4 BorderWidth as Integer

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The width of the border line. **Notes:** Set to 0 to disabled the border. (Read and Write property)

45.11.5 FillColor as Color

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The color for filling the oval. **Notes:**
There is a bug in REALbasic. If you enter the color as a hex value (e.g. "& c123456"), the control will get black as color. If you use the color panel using the "..." buttons, the control will get the correct color. (Read and Write property)

45.11.6 Events

45.11.7 EnableMenuItems


45.11.8 MenuAction(HitItem as MenuItem) As Boolean

MBS Overlay Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: Called when a menuitem is choosen. Notes: This allows the control to react on its relevant menu items. Please return true if you handled it or false to give others a chance.

45.11.9 MouseDown(x as Integer, y as Integer, Modifiers as Integer) as boolean

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: The event called when the user clicks with the mouse in the control area. Notes: Return true to handle the event and enable the MouseUp event.

This event exists because RB does not add a Mousedown event by default to the plugin control.

45.11.10 MouseDrag(x as Integer, y as Integer)


45.11.11 MouseUp(x as Integer, y as Integer)

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: The event called when the user releases the mouse button and you returned true on the MouseDown event.
45.11.12 ScaleFactorChanged(NewFactor as Double)

MBS Overlay Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The backing store scale factor has changed. **Notes:** Please invalidate any cached bitmaps or other relevant state.
45.12  class Radiobutton

45.12.1  class Radiobutton

Plugin Version: 2.9, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An extension of Realbasic’s internal control.

45.12.2  Methods

45.12.3  NSButtonMBS as NSButtonMBS

MBS MacControls Plugin, Plugin Version: 9.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a NSButtonMBS object for the given control.

**Example:**

MsgBox RadioButton1.NSButtonMBS.className

**Notes:** This way you can manipulate Cocoa controls directly.
45.13 control RectangleMBS

45.13.1 control RectangleMBS

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A control for REALbasic to draw a rectangle into a window. **Deprecated:** This item is deprecated and should no longer be used. You can use Oval instead. **Notes:** Basically the same as the original Rectangle control from REALbasic.

45.13.2 Properties

45.13.3 BorderWidth as Integer

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The width of the border line. **Notes:** Set to 0 to disable the border. (Read and Write property)

45.13.4 BottomRightColor as Color

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The color for drawing the bottom and right border lines. **Notes:** There is a bug in REALbasic. If you enter the color as a hex value (e.g. "& c123456"), the control will get black as color. If you use the color panel using the "..." buttons, the control will get the correct color. (Read and Write property)

45.13.5 FillColor as Color

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The color for filling the rectangle. **Notes:** There is a bug in REALbasic. If you enter the color as a hex value (e.g. "& c123456"), the control will get black as color. If you use the color panel using the "..." buttons, the control will get the correct color. (Read and Write property)
45.13.6  TopLeftColor as Color

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The color for drawing the top and left border lines.

**Notes:**
There is a bug in REALbasic. If you enter the color as a hex value (e.g. "& c123456"), the control will get black as color. If you use the color panel using the "..." buttons, the control will get the correct color.
(Read and Write property)

45.13.7  Events

45.13.8  EnableMenuItems

45.13.9  MenuAction(HitItem as MenuItem) As Boolean

45.13.10  MouseDown(x as Integer, y as Integer, Modifiers as Integer) as boolean

45.13.11  MouseDrag(x as Integer, y as Integer)
45.13.12 **MouseUp(x as Integer, y as Integer)**

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event called when the user releases the mouse button and you returned true on the MouseDown event.

45.13.13 **ScaleFactorChanged(NewFactor as Double)**

MBS Overlay Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The backing store scale factor has changed. **Notes:** Please invalidate any cached bitmaps or other relevant state.
45.14 class RectControl

45.14.1 class RectControl

Plugin Version: 13.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An extension of Realbasic’s internal control.

45.14.2 Methods

45.14.3 InvalidateThreadSafeMBS(EraseBackground as boolean = true)

MBS Util Plugin, Plugin Version: 13.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Call invalidate method on main thread.

**Notes:**

This method is to allow you to call the invalidate method of a control in a thread without a problem.

If called on main thread, the plugin will simply call method directly.
If called on other threads the plugin will schedule to call the method a short time later on the main thread.

It may be better to call an update method you created on your window with CallDelegatesMBS.CallDelegateOnMainThreadMBS instead to do several update steps on one.

See also:

- 45.14.4 InvalidateThreadSafeMBS(X as Integer, Y as Integer, Width as Integer, Height as Integer, EraseBackground as boolean = true)

45.14.4 InvalidateThreadSafeMBS(X as Integer, Y as Integer, Width as Integer, Height as Integer, EraseBackground as boolean = true)

MBS Util Plugin, Plugin Version: 13.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Call invalidate method on main thread.

**Notes:**

This method is to allow you to call the invalidate method of a control in a thread without a problem.

If called on main thread, the plugin will simply call method directly.
If called on other threads the plugin will schedule to call the method a short time later on the main thread.

It may be better to call an update method you created on your window with CallDelegatesMBS.CallDelegateOnMainThreadMBS instead to do several update steps on one.

See also:
45.14. CLASS RECTCONTROL

- 45.14.3 InvalidateThreadSafeMBS(EraseBackground as boolean = true)

45.14.5 RefreshThreadSafeMBS(EraseBackground as boolean = true)


Notes:
This method is to allow you to call the refresh method of a control in a thread without a problem.

If called on main thread, the plugin will simply call method directly.
If called on other threads the plugin will schedule to call the method a short time later on the main thread.

It may be better to call an update method you created on your window with CallDelegatesMBS.CallDelegateOnMainThreadMBS instead to do several update steps on one.

45.14.6 SetEnabledThreadSafeMBS(value as boolean)


Notes:
This method is to allow you to set the enabled property of a control in a thread without a problem.

If called on main thread, the plugin will simply set enabled property directly.
If called on other threads the plugin will schedule to set the property a short time later on the main thread.

It may be better to call an update method you created on your window with CallDelegatesMBS.CallDelegateOnMainThreadMBS instead to do several update steps on one.

45.14.7 SetVisibleThreadSafeMBS(value as boolean)


Notes:
This method is to allow you to set the visible property of a control in a thread without a problem.

If called on main thread, the plugin will simply set visible property directly.
If called on other threads the plugin will schedule to set the property a short time later on the main thread.
It may be better to call an update method you created on your window with CallDelegatesMBS.CallDelegateOnMainThreadMBS instead to do several update steps on one.
45.15  control RoundRectangleMBS

45.15.1  control RoundRectangleMBS

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A control for REALbasic to draw a round rectangle into a window.
**Deprecated:** This item is deprecated and should no longer be used. You can use Oval instead. **Notes:**
Basically the same as the original round rectangle control from REALbasic.
For composite windows there is a non zero chance that you see redraw problems.

45.15.2  Properties

45.15.3  BorderColor as Color

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The color for drawing the border lines.
**Notes:**
There is a bug in REALbasic. If you enter the color as a hex value (e.g. "&c123456"), the control will get black as color. If you use the color panel using the "..." buttons, the control will get the correct color.
(Read and Write property)

45.15.4  BorderWidth as Integer

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The width of the border line.
**Notes:**
Set to 0 to disabled the border.
(Read and Write property)

45.15.5  FillColor as Color

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The color for filling the rectangle.
**Notes:**
There is a bug in REALbasic. If you enter the color as a hex value (e.g. "&c123456"), the control will get black as color. If you use the color panel using the "..." buttons, the control will get the correct color.
(Read and Write property)
45.15.6 OvalHeight as Integer

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The height of the rounded corners in pixels.
**Notes:** (Read and Write property)

45.15.7 OvalWidth as Integer

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The width of the rounded corners in pixels.
**Notes:** (Read and Write property)

45.15.8 Events

45.15.9 EnableMenuItems

45.15.10 MenuAction(HitItem as MenuItem) As Boolean

MBS Overlay Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The event where you can enable menu items.

45.15.11 MouseDown(x as Integer, y as Integer, Modifiers as Integer) as boolean

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The event called when the user clicks with the mouse in the control area.
**Notes:**
Return true to handle the event and enable the MouseUp event.

This event exists because RB does not add a Mousedown event by default to the plugin control.
45.15.12 MouseDrag(x as Integer, y as Integer)

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The mouse drag event.

45.15.13 MouseUp(x as Integer, y as Integer)

MBS Overlay Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The event called when the user releases the mouse button and you returned true on the MouseDown event.

45.15.14 ScaleFactorChanged(NewFactor as Double)

MBS Overlay Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The backing store scale factor has changed.
**Notes:** Please invalidate any cached bitmaps or other relevant state.
CHAPTER 45. CONTROLS

45.16  class TabPanel

45.16.1 class TabPanel

Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Extends the TabPanel control inside Realbasic.

45.16.2 Methods

45.16.3 NSTabViewMBS as NSTabViewMBS

MBS MacCocoa Plugin, Plugin Version: 10.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a NSTabViewMBS object for the given control.

**Example:**

MsgBox TabPanel1.NSTabViewMBS.className

**Notes:** This way you can manipulate Cocoa controls directly.
Chapter 46

CoreAnimation

46.1 class CALayerMBS

46.1.1 class CALayerMBS

Function: The plugin class for a CoreAnimation.  
Notes:  
The CALayer class manages image-based content and allows you to perform animations on that content. Layers are often used to provide the backing store for views but can also be used without a view to display content. A layer’s main job is to manage the visual content that you provide but the layer itself has visual attributes that can be set, such as a background color, border, and shadow. In addition to managing visual content, the layer also maintains information about the geometry of its content (such as its position, size, and transform) that is used to present that content onscreen. Modifying the properties of the layer is how you initiate animations on the layer’s content or geometry. A layer object encapsulates the duration and pacing of a layer and its animations by adopting the CAMediaTiming protocol, which defines the layer’s timing information.

If the layer object was created by a view, the view typically assigns itself as the layer’s delegate automatically, and you should not change that relationship. For layers you create yourself, you can assign a delegate object and use that object to provide the contents of the layer dynamically and perform other tasks. A layer may also have a layout manager object (assigned to the layoutManager property) to manage the layout of subviews separately.

Available in OS X v10.5 and later.
46.1.2 Methods

46.1.3 addSublayer(layer as CALayerMBS)

Function: Appends the layer to the layer’s list of sublayers.
Notes: If the array in the sublayers property is nil, calling this method creates an array for that property and adds the specified layer to it.

46.1.4 available as boolean

Function: Returns true if CALayer is available.
Notes: True on Mac and False on Windows/Linux.

46.1.5 Constructor

Function: Initializes the layer.
Notes: Available in OS X v10.5 and later.

46.1.6 display

Function: Reloads the content of this layer.
Notes: Do not call this method directly. The layer calls this method at appropriate times to update the layer’s content. If the layer has a delegate object, this method attempts to call the delegate’s Configuring the Layer’s Rendering Behavior method, which the delegate can use to update the layer’s contents. If the delegate does not implement the Configuring the Layer’s Rendering Behavior method, this method creates a backing store and calls the layer’s drawInContext: method to fill that backing store with content. The new backing store replaces the previous contents of the layer.

Subclasses can override this method and use it to set the layer’s contents property directly. You might do this if your custom layer subclass handles layer updates differently.
46.1.7  displayIfNeeded

**Function:** Initiates the update process for a layer if it is currently marked as needing an update.
**Notes:**
You can call this method as needed to force an update to your layer’s contents outside of the normal update cycle. Doing so is generally not needed, though. The preferred way to update a layer is to call setNeedsDisplay and let the system update the layer during the next cycle. Available in OS X v10.6 and later.

46.1.8  layer as CALayerMBS

**Function:** Creates and returns an instance of the layer object.
**Notes:**
Returns the initialized layer object or nil if initialization was not successful.
If you subclass CALayer, you may override this method and use it to provide an instance of your specific subclass.

46.1.9  layoutIfNeeded

**Function:** Recalculate the receiver’s layout, if required.
**Notes:** When this message is received, the layer’s super layers are traversed until a ancestor layer is found that does not require layout. Then layout is performed on the entire layer-tree beneath that ancestor.

46.1.10  layoutSublayers

**Function:** Tells the layer to update its layout.
**Notes:**
Subclasses can override this method and use it to implement their own layout algorithm. Your implementation must set the frame of each sublayer managed by the receiver.

The default implementation of this method calls the layoutSublayersOfLayer method of the layer’s delegate object. If there is no delegate object, or the delegate does not implement that method, this method calls the layoutSublayersOfLayer method of the object in the layoutManager property.
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46.1.11 removeAllAnimations

Function: Remove all animations attached to the layer.

46.1.12 removeFromSuperlayer

Function: Detaches the layer from its parent layer.
Notes:
You can use this method to remove a layer (and all of its sublayers) from a layer hierarchy. This method updates both the superlayer’s list of sublayers and sets this layer’s superlayer property to nil. Available in OS X v10.5 and later.

46.1.13 renderInContext(CGContextHandle as Integer) as boolean

Function: Renders content of CALayer into given CGContext.
Notes:
Renders the receiver and its sublayers into the specified context. This method renders directly from the layer tree, ignoring any animations added to the render tree. Renders in the coordinate space of the layer.

Returns true if plugin called render command, so layer can draw itself.
Not all layers support drawing into context.

46.1.14 renderInPicture(Pic as Picture) as boolean

Function: Renders content of CALayer into given Picture.
Notes:
Renders the receiver and its sublayers into the specified context. This method renders directly from the layer tree, ignoring any animations added to the render tree. Renders in the coordinate space of the layer.

Returns true if plugin called render command, so layer can draw itself.
Not all layers support drawing into context.
46.1.15  setNeedsDisplay

Function: Marks the layer’s contents as needing to be updated.
Notes:
Calling this method causes the layer to recache its content. This results in the layer potentially calling either the displayLayer or drawLayer:inContext method of its delegate. The existing content in the layer’s contents property is removed to make way for the new content.

Available in OS X v10.5 and later.

46.1.16  setNeedsDisplayInRect(r as CGRectMBS)

Function: Marks the region within the specified rectangle as needing to be updated.
Notes:
r: The rectangular region of the layer to mark as invalid. You must specify this rectangle in the layer’s own coordinate system.
Available in OS X v10.5 and later.

46.1.17  setNeedsLayout

Function: Invalidates the layer’s layout and marks it as needing an update.
Notes:
You can call this method to indicate that the layout of a layer’s sublayers has changed and must be updated. The system typically calls this method automatically when the layer’s bounds change or when sublayers are added or removed. In OS X, if your layer’s layoutManager property contains an object that implements the invalidateLayoutOfLayer method, that method is called too.

During the next update cycle, the system calls the layoutSublayers method of any layers requiring layout updates.
Available in OS X v10.5 and later.

46.1.18  sublayers as CALayerMBS()

Function: The array with sublayers.
46.1.19 Properties

46.1.20 affineTransform as CGAffineTransformMBS

Function: The affine version of the layer’s transform.
Notes: The affine transform structure that corresponds to the value in the layer’s transform property.
(Read and Write property)

46.1.21 anchorPoint as CGRectMBS

Function: Defines the anchor point of the layer’s bounds rectangle. Animatable.
Notes: You specify the value for this property using the unit coordinate space. The default value of this property
is (0.5, 0.5), which represents the center of the layer’s bounds rectangle. All geometric manipulations to the
view occur about the specified point. For example, applying a rotation transform to a layer with the default
anchor point causes the layer to rotate around its center. Changing the anchor point to a different location
would cause the layer to rotate around that new point.
For more information about the relationship between the frame, bounds, anchorPoint and position proper-
ties, see Core Animation Programming Guide.
Available in OS X v10.5 and later.
(Read and Write property)

46.1.22 anchorPointZ as Double

Function: The anchor point for the layer’s position along the z axis. Animatable.
Notes: This property specifies the anchor point on the z axis around which geometric manipulations occur. The
point is expressed as a distance (measured in points) along the z axis. The default value of this property is 0.
Available in OS X v10.6 and later.
(Read and Write property)
46.1.23  AutoresizingMask as Integer

**Function:** A bitmask defining how the layer is resized when the bounds of its superlayer changes.
**Notes:**
If your app does not use a layout manager or constraints to handle layout changes, you can assign a value to this property to adjust the layer’s size in response to changes in the superlayer’s bounds. For a list of possible values, see “Autoresizing Mask”.

The default value of this property is kCALayerNotSizable.
(Read and Write property)

46.1.24  backgroundColor as Variant

**Function:** The background color of the receiver. Animatable.
**Notes:**
Value must be a CGColorMBS.
The default value of this property is nil.

The value of this property is retained using the Core Foundation retain/release semantics. This behavior occurs despite the fact that the property declaration appears to use the default assign semantics for object retention.
(Read and Write property)

46.1.25  borderColor as Variant

**Function:** The color of the layer’s border. Animatable.
**Notes:**
Value must be a CGColorMBS.
The default value of this property is an opaque black color.

The value of this property is retained using the Core Foundation retain/release semantics. This behavior occurs despite the fact that the property declaration appears to use the default assign semantics for object retention.
(Read and Write property)
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46.1.26  borderWidth as Double

Function: The width of the layer’s border. Animatable.
Notes: When this value is greater than 0.0, the layer draws a border using the current borderColor value. The
border is drawn inset from the receiver’s bounds by the value specified in this property. It is composited
above the receiver’s contents and sublayers and includes the effects of the cornerRadius property.

The default value of this property is 0.0.
(Read and Write property)

46.1.27  bounds as CGRectMBS

Function: The layer’s bounds rectangle. Animatable.
Notes: The bounds rectangle is the origin and size of the layer in its own coordinate space. When you create a new
standalone layer, the default value for this property is an empty rectangle, which you must change before
using the layer. The values of each coordinate in the rectangle are measured in points.

For more information about the relationship between the frame, bounds, anchorPoint and position proper-
ties, see Core Animation Programming Guide.
(Read and Write property)

46.1.28  className as string

Function: The class name of the layer.
Notes: Useful for debugging.
(Read only property)

46.1.29  classPath as string

Function: The path of this layer class.
Notes:
46.1. **CLASS CALAYERMBS**

Useful for debugging to know what super classes the layer has.

(Read only property)

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46.1.30 **contents as Variant**

MBS AVFoundation Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** The contents of the layer.

**Notes:**

Currently only CGImageMBS is allowed.

(Read and Write property)

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46.1.31 **contentsCenter as CGRectMBS**


**Function:** The rectangle that defines how the layer contents are scaled during a resizing operation. Animatable.

**Notes:**

You can use this property to subdivide the layer’s content into a 3x3 grid. The value in this property specifies the location and size of the center rectangle in that grid. If the layer’s contentsGravity property is set to one of the resizing modes, resizing the layer causes scaling to occur differently in each rectangle of the grid. The center rectangle is stretched in both dimensions, the top-center and bottom-center rectangles are stretched only horizontally, the left-center and right-center rectangles are stretched only vertically, and the four corner rectangles are not stretched at all. Therefore, you can use this technique to implement stretchable backgrounds or images using a three-part or nine-part image.

The value in this property is set to the unit rectangle (0.0,0.0) (1.0,1.0) by default, which causes the entire image to scale in both dimensions. If you specify a rectangle that extends outside the unit rectangle, the result is undefined. The rectangle you specify is applied only after the contentsRect property has been applied to the image.

Note: If the width or height of the rectangle in this property is very small or 0, the value is implicitly changed to the width or height of a single source pixel centered at the specified location.

(Read and Write property)

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46.1.32 **contentsRect as CGRectMBS**


**Function:** The rectangle, in the unit coordinate space, that defines the portion of the layer’s contents that should be used. Animatable.
Notes:
Defaults to the unit rectangle (0.0, 0.0, 1.0, 1.0).
If pixels outside the unit rectangle are requested, the edge pixels of the contents image will be extended outwards.
If an empty rectangle is provided, the results are undefined.
(Read and Write property)

46.1.33 contentsScale as Double

Function: The scale factor applied to the layer.
Notes:
This value defines the mapping between the logical coordinate space of the layer (measured in points) and the physical coordinate space (measured in pixels). Higher scale factors indicate that each point in the layer is represented by more than one pixel at render time. For example, if the scale factor is 2.0 and the layer’s bounds are 50 x 50 points, the size of the bitmap used to present the layer’s content is 100 x 100 pixels.

The default value of this property is 1.0. For layers attached to a view, the view changes the scale factor automatically to a value that is appropriate for the current screen. For layers you create and manage yourself, you must set the value of this property yourself based on the resolution of the screen and the content you are providing. Core Animation uses the value you specify as a cue to determine how to render your content.

Available in OS X v10.7 and later.
(Read and Write property)

46.1.34 cornerRadius as Double

Function: The radius to use when drawing rounded corners for the layer’s background. Animatable.
Notes:
Setting the radius to a value greater than 0.0 causes the layer to begin drawing rounded corners on its background. By default, the corner radius does not apply to the image in the layer’s contents property; it applies only to the background color and border of the layer. However, setting the masksToBounds property to true causes the content to be clipped to the rounded corners.

The default value of this property is 0.0.
(Read and Write property)
46.1.35 DoubleSided as boolean

**Function:** A Boolean indicating whether the layer displays its content when facing away from the viewer. Animatable.

**Notes:**
When the value in this property is false, the layer hides its content when it faces away from the viewer. The default value of this property is true.
Available in OS X v10.5 and later.
(Read and Write property)

46.1.36 drawsAsynchronously as boolean

**Function:** A Boolean indicating whether drawing commands are deferred and processed asynchronously in a background thread.

**Notes:**
When this property is set to true, the graphics context used to draw the layer’s contents queues drawing commands and executes them on a background thread rather than executing them synchronously. Performing these commands asynchronously can improve performance in some apps. However, you should always measure the actual performance benefits before enabling this capability.

The default value for this property is false.
Available in OS X v10.8 and later.
(Read and Write property)

46.1.37 frame as CGRectMBS

**Function:** The layer’s frame rectangle.

**Notes:**
The frame rectangle is position and size of the layer specified in the superlayer’s coordinate space. For layers, the frame rectangle is a computed property that is derived from the values in the bounds, anchorPoint and position properties. When you assign a new value to this property, the layer changes its position and bounds properties to match the rectangle you specified. The values of each coordinate in the rectangle are measured in points.

For more information about the relationship between the frame, bounds, anchorPoint and position properties, see Core Animation Programming Guide.
Note: The frame property is not directly animatable. Instead you should animate the appropriate combination of the bounds, anchorPoint and position properties to achieve the desired result.
(Read and Write property)

46.1.38 Handle as Integer

Function: The internal reference to the layer.
Notes: (Read and Write property)

46.1.39 Hidden as boolean

Function: A Boolean indicating whether the layer is displayed. Animatable.
Notes: The default value of this property is false.
(Read and Write property)

46.1.40 mask as CALayerMBS

Function: The layer to be used as mask for this layer.
Notes: A layer whose alpha channel is used as a mask to select between the layer’s background and the result of compositing the layer’s contents with its filtered background. Defaults to nil. When used as a mask the layer’s ‘compositingFilter’ and ‘backgroundFilters’ properties are ignored. When setting the mask to a new layer, the new layer must have a nil superlayer, otherwise the behavior is undefined. Nested masks (mask layers with their own masks) are unsupported.
(Read and Write property)

46.1.41 masksToBounds as Boolean

Function: Whether to mask by bounds.
Notes: When true an implicit mask matching the layer bounds is applied to the layer (including the effects of the ‘cornerRadius’ property). If both ‘mask’ and ‘masksToBounds’ are non-nil the two masks are multiplied to get the actual mask values. Defaults to false. Animatable.
46.1. **minificationFilterBias as Double**


**Function:** The bias factor used by the minification filter to determine the levels of detail.

**Notes:**
- This value is used by the minificationFilter when it is set to kCAFilterTrilinear.
- The default value of this property is 0.0.
- Available in OS X v10.6 and later.

(Read and Write property)

46.1.43 **modelLayer as CALayerMBS**


**Function:** Returns the model layer object associated with the receiver, if any.

**Notes:**
- Calling this method on a layer in the presentation tree returns the corresponding layer object in the model tree. This method returns a value only when a transaction involving changes to the presentation layer is in progress. If no transaction is in progress, the results of calling this method are undefined.

Available in OS X v10.5 and later.

(Read only property)

46.1.44 **needsDisplay as boolean**


**Function:** Returns a Boolean indicating whether the layer has been marked as needing an update.

**Notes:**
- True if the layer needs to be updated.

Available in OS X v10.6 and later.

(Read only property)

46.1.45 **needsDisplayOnBoundsChange as boolean**


**Function:** A Boolean indicating whether the layer contents must be updated when its bounds rectangle
When this property is set to true, the layer automatically calls its `setNeedsDisplay` method whenever its bounds property changes. The default value of this property is false.

(Read and Write property)

### 46.1.46 needsLayout as boolean

**Function:** Returns a Boolean indicating whether the layer has been marked as needing a layout update.

**Notes:**
True if the layer has been marked as requiring a layout update.
Available in OS X v10.6 and later.
(Read only property)

### 46.1.47 opacity as Double

**Function:** The opacity of the receiver. Animatable.

**Notes:**
The value of this property must be in the range 0.0 (transparent) to 1.0 (opaque). Values outside that range are clamped to the minimum or maximum. The default value of this property is 1.0.
(Read and Write property)

### 46.1.48 Opaque as boolean

**Function:** A Boolean value indicating whether the layer contains completely opaque content.

**Notes:**
The default value of this property is false. If your app draws completely opaque content that fills the layer’s bounds, setting this property to true lets the system optimize the rendering behavior for the layer. Specifically, when the layer creates the backing store for your drawing commands, Core Animation omits the alpha channel of that backing store. Doing so can improve the performance of compositing operations. If you set the value of this property to true, you must fill the layer’s bounds with opaque content.

Setting this property affects only the backing store managed by Core Animation. If you assign an image with an alpha channel to the layer’s contents property, that image retains its alpha channel regardless of the value of this property.
46.1. **CLASS CALAYERMBS**

(Read and Write property)

### 46.1.49 position as CGRectMBS


**Function:** The layer’s position in its superlayer’s coordinate space. Animatable.

**Notes:**

The value of this property is specified in points and is always specified relative to the value in the anchorPoint property. For new standalone layers, the default position is set to (0.0, 0.0). Changing the frame property also updates the value in this property.

For more information about the relationship between the frame, bounds, anchorPoint and position properties, see Core Animation Programming Guide.

(Read and Write property)

### 46.1.50 preferredFrameSize as CGSizeMBS


**Function:** Returns the preferred size of the layer in the coordinate space of its superlayer.

**Notes:**

In OS X, the default implementation of this method calls the preferredSizeOfLayer method of its layout manager that is, the object in its layoutManager property. If that object does not exist or does not implement that method, this method returns the size of the layer’s current bounds rectangle mapped into the coordinate space of its superlayer.

(Read only property)

### 46.1.51 presentationLayer as CALayerMBS


**Function:** Returns a copy of the presentation layer object that represents the state of the layer as it currently appears onscreen.

**Notes:**

The layer object returned by this method provides a close approximation of the layer that is currently being displayed onscreen. While an animation is in progress, you can retrieve this object and use it to get the current values for those animations.

The sublayers, mask, and superlayer properties of the returned layer return the corresponding objects from the presentation tree (not the model tree). This pattern also applies to any read-only layer methods. For
example, the hitTest: method of the returned object queries the layer objects in the presentation tree.

Available in OS X v10.5 and later.
(Read only property)

#### 46.1.52 rasterizationScale as Double

**Function:** The scale at which the layer will be rasterized.
**Notes:**
(when the shouldRasterize property has been set to true) relative to the coordinate space of the layer. Defaults to one. Animatable.
(Read and Write property)

#### 46.1.53 shadowColor as Variant

MBS AVFoundation Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** The color of the layers shadow. Animatable.
**Notes:**
The default value of this property is an opaque black color.

The value of this property is retained using the Core Foundation retain/release semantics. This behavior occurs despite the fact that the property declaration appears to use the default assign semantics for object retention.

Value is a CGColorMBS object.
(Read and Write property)

#### 46.1.54 shadowOffset as CGSizeMBS

MBS AVFoundation Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** The offset (in points) of the layers shadow. Animatable.
**Notes:**
The default value of this property is (0.0, -3.0).
(Read and Write property)
46.1. Shadow opacity as Double

**Function:** The opacity of the layer's shadow. Animatable.  
**Notes:**  
The value in this property must be in the range 0.0 (transparent) to 1.0 (opaque). The default value of this property is 0.0.  
Available in OS X v10.5 and later.  
(Read and Write property)

46.1. Shadow path as Variant

MBS AVFoundation Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  
**Function:** The shadow path.  
**Notes:**  
Value is a CGPathMBS object.  
The default value of this property is nil, which causes the layer to use a standard shadow shape. If you specify a value for this property, the layer creates its shadow using the specified path instead of the layers composited alpha channel. The path you provide defines the outline of the shadow. It is filled using the non-zero winding rule and the current shadow color, opacity, and blur radius.  
Unlike most animatable properties, this property (as with all CGPathRef animatable properties) does not support implicit animation. However, the path object may be animated using any of the concrete subclasses of CAPROPERTYAnimation. Paths will interpolate as a linear blend of the "on-line" points; "off-line" points may be interpolated non-linearly (to preserve continuity of the curve’s derivative). If the two paths have a different number of control points or segments, the results are undefined. If the path extends outside the layer bounds it will not automatically be clipped to the layer, only if the normal layer masking rules cause that.  
Specifying an explicit path usually improves rendering performance.  
The value of this property is retained using the Core Foundation retain/release semantics. This behavior occurs despite the fact that the property declaration appears to use the default assign semantics for object retention.  
(Read and Write property)
46.1.57  shadowRadius as Double

MBS AVFoundation Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The blur radius (in points) used to render the layers shadow. Animatable.
Notes:
You specify the radius The default value of this property is 3.0.
(Read and Write property)

46.1.58  shouldRasterize as Boolean

Function: Whether view should raster.
Notes:
When true, the layer is rendered as a bitmap in its local coordinate space ("rasterized"), then the bitmap is
composited into the destination (with the minificationFilter and magnificationFilter properties of the layer
applied if the bitmap needs scaling). Rasterization occurs after the layer's filters and shadow effects are
applied, but before the opacity modulation. As an implementation detail the rendering engine may attempt
to cache and reuse the bitmap from one frame to the next. (Whether it does or not will have no affect on
the rendered output.) When false the layer is composited directly into the destination whenever possible
(however, certain features of the compositing model may force rasterization, e.g. adding filters). Defaults to
false. Animatable.
(Read and Write property)

46.1.59  superlayer as CALayerMBS

Function: The superlayer of the layer.
Notes:
The superlayer manages the layout of its sublayers.
Available in OS X v10.5 and later.
(Read only property)

46.1.60  zPosition as Double

Function: The layer's position on the z axis. Animatable.
Notes:
The default value of this property is 0. Changing the value of this property changes the the front-to-back
ordering of layers onscreen. This can affect the visibility of layers whose frame rectangles overlap.
The value of this property is measured in points.
Available in OS X v10.5 and later.
(Read and Write property)

46.1.61 Constants

46.1.62 kCALayerBottomEdge = 4

MBS AVFoundation Plugin, Plugin Version: 13.1. **Function:** Edge constants for edgeAntialiasingMask property.
**Notes:** Specifies that the bottom edge of the receiver’s content should be antialiased.

46.1.63 kCALayerHeightSizable = 16

MBS AVFoundation Plugin, Plugin Version: 13.1. **Function:** One of the constants for the autoresizingmask property.
**Notes:** The receiver’s height is flexible.

46.1.64 kCALayerLeftEdge = 1

MBS AVFoundation Plugin, Plugin Version: 13.1. **Function:** Edge constants for edgeAntialiasingMask property.
**Notes:** Specifies that the left edge of the receiver’s content should be antialiased.

46.1.65 kCALayerMaxXMargin = 4

MBS AVFoundation Plugin, Plugin Version: 13.1. **Function:** One of the constants for the autoresizingmask property.
**Notes:** The left margin between the receiver and its superview is flexible.

46.1.66 kCALayerMaxYMargin = 32

MBS AVFoundation Plugin, Plugin Version: 13.1. **Function:** One of the constants for the autoresizingmask property.
**Notes:** The top margin between the receiver and its superview is flexible.
**46.1.67**  \( \text{kCALayerMinXMargin} = 1 \)

MBS AVFoundation Plugin, Plugin Version: 13.1. **Function:** One of the constants for the autoresizingmask property.
**Notes:** The left margin between the receiver and its superview is flexible.

**46.1.68**  \( \text{kCALayerMinYMargin} = 8 \)

MBS AVFoundation Plugin, Plugin Version: 13.1. **Function:** One of the constants for the autoresizingmask property.
**Notes:** The top margin between the receiver and its superview is flexible.

**46.1.69**  \( \text{kCALayerNotSizable} = 0 \)

MBS AVFoundation Plugin, Plugin Version: 13.1. **Function:** One of the constants for the autoresizingmask property.
**Notes:** The receiver cannot be resized.

**46.1.70**  \( \text{kCALayerRightEdge} = 2 \)

MBS AVFoundation Plugin, Plugin Version: 13.1. **Function:** Edge constants for edgeAntialiasingMask property.
**Notes:** Specifies that the right edge of the receiver’s content should be antialiased.

**46.1.71**  \( \text{kCALayerTopEdge} = 8 \)

MBS AVFoundation Plugin, Plugin Version: 13.1. **Function:** Edge constants for edgeAntialiasingMask property.
**Notes:** Specifies that the top edge of the receiver’s content should be antialiased.

**46.1.72**  \( \text{kCALayerWidthSizable} = 2 \)

MBS AVFoundation Plugin, Plugin Version: 13.1. **Function:** One of the constants for the autoresizingmask property.
**Notes:** The receiver’s width is flexible.
46.2. class CATransactionMBS

46.2.1 class CATransactionMBS


Function: The plugin class for a CoreAnimation transaction.

Notes:

CATransaction is the Core Animation mechanism for batching multiple layer-tree operations into atomic updates to the render tree. Every modification to a layer tree must be part of a transaction. Nested transactions are supported.

Core Animation supports two types of transactions: implicit transactions and explicit transactions. Implicit transactions are created automatically when the layer tree is modified by a thread without an active transaction and are committed automatically when the thread’s run-loop next iterates. Explicit transactions occur when the application sends the CATransaction class a begin message before modifying the layer tree, and a commit message afterwards.

CATransaction allows you to override default animation properties that are set for animatable properties. You can customize duration, timing function, whether changes to properties trigger animations, and provide a handler that informs you when all animations from the transaction group are completed.

During a transaction you can temporarily acquire a recursive spin-lock for managing property atomicity. This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

46.2.2 Methods

46.2.3 animationDuration as Double


Function: Returns the animation duration used by all animations within this transaction group.

46.2.4 available as boolean


Function: Returns true if transaction class is available.

Notes: Returns true on Mac and false on Linux/Windows.
46.2.5  begin

Function: Begin a new transaction for the current thread.
Notes:
The transaction is nested within the thread’s current transaction, if there is one.
Available in OS X v10.5 and later.

46.2.6  commit

Function: Commit all changes made during the current transaction.
Notes:
Raises an exception if no current transaction exists.
Available in OS X v10.5 and later.

46.2.7  Constructor

Function: The private constructor.

46.2.8  flush

Function: Flushes any extant implicit transaction.
Notes:
Delays the commit until any nested explicit transactions have completed.
Flush is typically called automatically at the end of the current runloop, regardless of the runloop mode. If your application does not have a runloop, you must call this method explicitly.

However, you should attempt to avoid calling flush explicitly. By allowing flush to execute during the runloop your application will achieve better performance, atomic screen updates will be preserved, and transactions and animations that work from transaction to transaction will continue to function.

Available in OS X v10.5 and later.
46.2.9  kCATransactionAnimationDuration as string

Function: One of the keys for values of a transaction.
Notes:
Duration, in seconds, for animations triggered within the transaction group. The value for this key must be a number.
Available in OS X v10.5 and later.

46.2.10  kCATransactionDisableActions as string

Function: One of the keys for values of a transaction.
Notes:
If true, implicit actions for property changes made within the transaction group are suppressed. The value for this key must be a boolean.
Available in OS X v10.5 and later.

46.2.11  setAnimationDuration(value as Double)

Function: Sets the animation duration used by all animations within this transaction group.
Notes: Available in OS X v10.6 and later.

46.2.12  setValue(value as Variant, key as string)

Function: Sets the arbitrary keyed-data for the specified key.
Notes:
value: The value for the key identified by key.
key: The name of one of the receiver's properties.

Nested transactions have nested data scope; setting a key always sets it in the innermost scope.
Available in OS X v10.5 and later.
46.2.13 `valueForKey(key as string) as Variant`


**Function:** Returns the arbitrary keyed-data specified by the given key.

**Notes:**

`key`: The name of one of the receiver’s properties.

Returns the value for the data specified by the key.
Nested transactions have nested data scope. Requesting a value for a key first searches the innermost scope, then the enclosing transactions.
Available in OS X v10.5 and later.

### 46.2.14 Properties

#### 46.2.15 Handle as Integer


**Function:** The internal transaction handle.

**Notes:** (Read and Write property)
Chapter 47

CoreAudio

47.1 class AudioPlayThruMBS

47.1.1 class AudioPlayThruMBS


47.1.2 Methods

47.1.3 Constructor


    dim a as AudioPlayThruMBS
    a=new AudioPlayThruMBS

Notes:

Does nothing. Only useful if you want to create an object, set the buffersize and call Init after that. See also:

- 47.1.4 Constructor(InputDeviceID as Integer, OutputDeviceID as Integer, BufferSizeWish as Integer = 0)
47.1.4 Constructor(InputDeviceID as Integer, OutputDeviceID as Integer, BufferSizeWish as Integer = 0)

MBS MacOSX Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Example:**
```vba
dim InputDeviceID,OutputDeviceID as Integer
// get device IDs
dim a as AudioPlayThruMBS

a=new AudioPlayThruMBS(InputDeviceID, OutputDeviceID)
```

**Notes:**
Calls Init method behind scenes with default buffer size.
LastError is set.
Device IDs are the IDs you get in the CoreAudio classes.
BufferSizeWish is the buffer size you prefer to use. If value is too small the default value will be used.
See also:
- 47.1.3 Constructor

47.1.5 Init(InputDeviceID as Integer, OutputDeviceID as Integer, BufferSizeWish as Integer = 0)

MBS MacOSX Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Initializes the engine behind this class.
**Example:**
```vba
dim InputDeviceID as Integer
dim OutputDeviceID as Integer
// get device IDs

dim a as AudioPlayThruMBS
a=new AudioPlayThruMBS
a.Init(InputDeviceID, OutputDeviceID)
```

**Notes:**
LastError is set.
Device IDs are the IDs you get in the CoreAudio classes.
Can be used to set the buffersize before calling this method.
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47.1.6 IsRunning as boolean

MBS MacOSX Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether playthrough is active.

47.1.7 SetInputDeviceAsCurrent(DeviceID as Integer)

MBS MacOSX Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets input device.
**Notes:** Device IDs are the IDs you get in the CoreAudio classes.

47.1.8 SetOutputDeviceAsCurrent(DeviceID as Integer)

MBS MacOSX Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets output device.
**Notes:** Lasterror is set.
Device IDs are the IDs you get in the CoreAudio classes.

47.1.9 Start

MBS MacOSX Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Starts playing.
**Notes:** Lasterror is set.

47.1.10 Stop

MBS MacOSX Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Stops playing.
**Notes:** Lasterror is set.

47.1.11 Properties

**47.1.12 Lasterror as Integer**

MBS MacOSX Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last error code reported.
Notes:
0 for success. -1 in case function is not available.
(Read and Write property)

47.1.13 Volume as Double

MBS MacOSX Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Get or set the volume of the output audio unit.

Notes:
Lasterror is set.
Range is from 0.0 to 1.0.
(Read and Write computed property)
Chapter 48

CoreFoundation

48.1 Globals

48.1.1 NewCFStringMBS2(s as string) as CFStringMBS

MBS MacCF Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns a CFStringMBS object created using the given string.

**Example:**

```plaintext
dim s as CFStringMBS
s=NewCFStringMBS2("")
// s is not nil here
MsgBox str(s.Handle)
```

**Notes:**
The cfstring may be unicode.
See also NewCFStringMBS.

48.1.2 kCFCharacterSetMBSTypeID as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Type ID of a CFCharacterSetMBS object.

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48.1.3 NewCFObjectMBSFromXMLMT(data as string) as CFObjectMBS

MBS MacCF Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Parses the XML data and returns a CFObject.

**Notes:**
Same as NewCFObjectMBSFromXML, but with additional multithreading.
Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.

Note that the CFObject returned is in most times a CFDictionary or a CFArray.
This function takes text and binary plist file content.

See also:
- 48.1.4 NewCFObjectMBSFromXMLMT(file as folderitem) as CFObjectMBS
- 48.1.5 NewCFObjectMBSFromXMLMT(XMLdata as CFBinaryDataMBS) as CFObjectMBS

48.1.4 NewCFObjectMBSFromXMLMT(file as folderitem) as CFObjectMBS

MBS MacCF Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Parses the XML data and returns a CFObject.

**Example:**

```
  dim f as FolderItem = SpecialFolder.Desktop.Child("test.xml")
  dim o as CFObjectMBS = NewCFObjectMBSFromXMLMT(f)

  if o = nil then
    MsgBox "Error"
  else
    MsgBox "OK"
  end if
```

**Notes:**
Same as NewCFObjectMBSFromXML, but with additional multithreading.
Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.
Reading the file is done on the workthread.

Note that the CFObject returned is in most times a CFDictionary or a CFArray.
This function takes text and binary plist file content.

See also:
- 48.1.3 NewCFObjectMBSFromXMLMT(data as string) as CFObjectMBS
48.1.5 **NewCFObjectMBSFromXMLMT**(XMLdata as CFBinaryDataMBS) as CFObjectMBS

MBS MacCF Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Parses the XML data and returns a CFObject.

**Notes:**
Note that the CFObject returned is in most times a CFDictionary or a CFArray. This function takes text and binary plist file content.

See also:
- 48.1.3 **NewCFObjectMBSFromXMLMT**(data as string) as CFObjectMBS
- 48.1.4 **NewCFObjectMBSFromXMLMT**(file as folderitem) as CFObjectMBS

48.1.6 **kCFTreeMBSTypeID** as Integer

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the type ID for the CFTree class.

48.1.7 **NewCFTreeMBS** as CFTreeMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new CFTree object.

**Notes:** Returns nil on any error.

48.1.8 **kCFXMLNodeMBSTypeID** as Integer

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the type ID for the XMLNode class.

48.1.9 **kCFXMLParserMBSTypeID** as Integer

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the type ID for the XMLParser class.
48.1.10 UseMBSCFXMLPlugin

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Forces RB to include the CF XML Plugin in the compiled application.
**Notes:**
If a plugin is using the CF XML Plugin, but you don’t use it the application will crash on launching because of a missing plugin. To fix this, call this function somewhere in your application.
Realbasic 5.2 has this bug fixed.

48.1.11 CFShowCFStringMBS(cfstring as CFStringMBS)

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Prints the content of the given CFString to the console.

48.1.12 CFShowMBS(cfobject as CFObjectMBS)

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Prints the content of the given CFObject to the console.
**Notes:** Very useful for e.g. CFDictionarys.

48.1.13 CreateBundleMBS(file as folderitem) as CFBundleMBS

MBS MacCF Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a CFBundle object for the bundle folder on the given position.
**Example:**
// Find and show the main executable file of a bundled application

dim f as FolderItem
f=SpecialFolder.Applications.Child("Mail.app")
MsgBox f.AbsolutePath // shows app bundle path

dim b as CFBundleMBS
dim u as CFURLMBS
b=CreateBundleMBS(f)
if b<>nil then
u=b.ExecutableFile
if u<>nil then
MsgBox f.AbsolutePath // shows app executable path
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end if
end if

**Notes:** Returns nil on any error.

See also:

- 48.1.14 CreateBundleMBS(url as CFURLMBS) as CFBundleMBS

### 48.1.14 CreateBundleMBS(url as CFURLMBS) as CFBundleMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a CFBundle object for the bundle folder on the given position.

**Example:**

// Find and show the main executable file of a bundled application

dim f as FolderItem

f=SpecialFolder.Applications.Child("Mail.app")
MsgBox f.AbsolutePath // shows app bundle path

dim b as CFBundleMBS
dim u as CFURLMBS

u=NewCFURLMBSFile(f)
if u<>Nil then
b=CreateBundleMBS(u)
if b<>nil then
u=b.ExecutableFile
if u<>nil then
MsgBox f.AbsolutePath // shows app executable path
end if
end if
end if

**Notes:** Returns nil on any error.

See also:

- 48.1.13 CreateBundleMBS(file as folderitem) as CFBundleMBS
48.1.15 CreateBundlesFromDirectoryMBS(url as CFURLMBS, type as CFStringMBS) as CFArrayMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a list of all bundles in a folder.
**Notes:**

Returns nil on any error.

With the Type parameter you can limit the bundles to a certain type. The abstract type of the bundles you wish to locate and create. The type is expressed as a filename extension, such as bundle. Pass NULL to create CFBundle objects for bundles of any type.

48.1.16 CreateCFTimeZoneMBS(name as CFStringMBS, data as CFBinaryDataMBS) as CFTimeZoneMBS

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new timezone object with the given name and data.
**Notes:** Returns nil on any error.

48.1.17 CreateCFTimeZoneMBSWithName(name as CFStringMBS, TryAbbrev as boolean) as CFTimeZoneMBS

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new timezone object with the object from the system which matches the given name.
**Notes:**

If TryAbbrev is true the system also checks if the name matches the abbreviated name of the timezone object.
Returns nil on any error.

48.1.18 CreateCFTimeZoneMBSWithTimeIntervalFromGMT(time as CFTimeIntervalMBS) as CFTimeZoneMBS

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new timezone object with the given time interval.
**Notes:** Returns nil on any error.
48.1.19  CreateStringByAddingPercentEscapesMBS (original as CFStringMBS, charactersToLeaveEscaped as CFStringMBS, legalURLCharactersToBeEscaped as CFStringMBS, encoding as Integer) as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Adds percent escapes inside a string.
**Notes:** If charactersToLeaveEscaped=nil then no string is changed. If charactersToLeaveEscaped contains an empty string (""") all escapes are changed and if charactersToLeaveEscaped contains a string<>”” then these characters are not escaped.

48.1.20  CreateStringByReplacingPercentEscapesMBS (original as CFStringMBS, charactersToLeaveEscaped as CFStringMBS) as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Replaces percent escapes inside a string.
**Notes:** If charactersToLeaveEscaped=nil then no string is changed. If charactersToLeaveEscaped contains an empty string (""") all escapes are changed and if charactersToLeaveEscaped contains a string<>”” then these characters are not escaped.

48.1.21  CurrentCFAbsoluteTimeMBS as CFAbsoluteTimeMBS

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** The current time as an absolute time object.
**Example:**
```octave
// get current timezone
dim c as CFTimeZoneMBS = SystemCFTimeZoneMBS

// and current time
dim time as CFAbsoluteTimeMBS = CurrentCFAbsoluteTimeMBS

// Do we have daylight saving time?
MsgBox str(c.IsDaylightSavingTime(time))
```

**Notes:** Returns nil on any error.

48.1.22  GetAllBundlesMBS as CFArrayMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns a list of all known bundles on the system.
48.1.23 GetBundleWithIdentifierMBS(id as CFStringMBS) as CFBundleMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a CFBundle object for the bundle with the given ID.

**Notes:**

Returns nil on any error.

Returns only a bundle if that bundle has been loaded before.

For a bundle to be located using its identifier, the bundle object must have already been created. The principal intended purpose for locating bundles by identifier is so that code (in frameworks, plugins, etc.) can find its own bundle. If a bundle is created, then the bundle deleted from the filesystem and this function invoked afterwards, it will still return the original bundle.

48.1.24 GetDefaultCFTimeZoneMBS as CFTimeZoneMBS

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The default time zone.

**Example:**

```plaintext
msgBox str(GetDefaultCFTimeZoneMBS.SecondsFromGMT(nil).Value)
```

**Notes:** Returns nil on any error.

48.1.25 kCFArrayMBSTypeID as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Type ID of a CFArrayMBS object.

48.1.26 kCFBagMBSTypeID as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Type ID of a CFBagMBS object.
48.1.27  kCFBinaryDataMBSTypeID as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Type ID of a CFBinary object.

48.1.28  kCFBooleanMBSTypeID as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Type ID of a CFBooleanMBS object.

48.1.29  kCFBundleMBSTypeID as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Type ID of a CFBundle object.

**Notes:**

CFBundle objects may be supported in a future version of this plugin. Request if you need more than the app.bundle functions offer you.

48.1.30  kCFDateMBSTypeID as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Type ID of a CFDateMBS object.

48.1.31  kCFDictionaryMBSTypeID as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Type ID of a CFDictionaryMBS object.

48.1.32  kCFNumberMBSNaN as CFNumberMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a CFNumberMBS object for NaN (not a number).
48.1.33  kCFNumberMBSNegativeInfinity as CFNumberMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a CFNumberMBS object for negative infinity.

48.1.34  kCFNumberMBSPositiveInfinity as CFNumberMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a CFNumberMBS object for positive infinity.

48.1.35  kCFNumberMBSTypeID as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Type ID of a CFNumberMBS object.

48.1.36  kCFSetMBSTypeID as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Type ID of a CFSetMBS object.

48.1.37  kCFStringMBSTypeID as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Type ID of a CFStringMBS object.

48.1.38  kCFTimeZoneMBSTypeID as Integer

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Type ID of a CFTimeZone object.

48.1.39  kCFURLMBSTypeID as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Type ID of a CFURLMBS object.
48.1.40 KnownTimeZoneNamesAsCFArrayMBS as CFArrayMBS

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
An array of all known time zone names.
**Notes:** Returns nil on any error.

48.1.41 MacShowAboutBoxMBS(options as CFDictionaryMBS) as Integer

MBS MacCF Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Displays an HI-conformant about box.
**Example:**
```plaintext
dim kHIAboutBoxNameKey as CFStringMBS = NewCFStringMBS("HIAboutBoxName")
dim kHIAboutBoxVersionKey as CFStringMBS = NewCFStringMBS("HIAboutBoxVersion")
dim kHIAboutBoxCopyrightKey as CFStringMBS = NewCFStringMBS("HIAboutBoxCopyright")
dim kHIAboutBoxDescriptionKey as CFStringMBS = NewCFStringMBS("HIAboutBoxDescription")
dim kHIAboutBoxStringFileKey as CFStringMBS = NewCFStringMBS("HIAboutBoxStringFile")

dim d as CFMutableDictionaryMBS

d=NewCFMutableDictionaryMBS

// name, version and copyright are optional:
d.add(kHIAboutBoxNameKey, NewCFStringMBS("MyApp"))
d.add(kHIAboutBoxVersionKey, NewCFStringMBS("1.0"))
d.add(kHIAboutBoxCopyrightKey, NewCFStringMBS("2009 by Christian Schmitz"))

// description is needed
d.add(kHIAboutBoxDescriptionKey, NewCFStringMBS("The best application I ever made!"))

// optional
d.add(kHIAboutBoxStringFileKey, NewCFStringMBS("somefile"))

MsgBox Str(MacShowAboutBoxMBS(d))
```

**Notes:**
This about box is a generic about box that automatically can display your application name, version string, and copyright string. It peeks into either the Info.plist (for the CFBundleName, CFBundleVersion, and CFBundleGetInfoString keys) or your bundle resource (not recommended) to get the information by default. You can customize what it displays by passing in various options in the input dictionary. Note that currently the description string can only be specified in the options dictionary; this function does not check your Info.plist for a descriptions string.
There are three basic ways to call this function. First, you can pass nil for inOptions. As mentioned, default information will be displayed. Second, you can pass the actual values for the strings displayed by passing the strings in the inOptions dictionary using the keys provided, such as kHIAboutBoxNameKey. If a replacement string is not passed, the default behavior kicks in. For example, you could pass some variant of your application name in the dictionary, but not pass a replacement version or copyright strings. The Toolbox would display your replacement string, and fall back to looking in the Info.plist for the other strings. The third way to call this is to pass the name of a string file in the dictionary with the key kHIAboutBoxStringFileKey. We will automatically use that file to find the strings for the about box. The keys in the string file should be the same value as the keys you would use to pass into the inOptions dictionary. Again, if a string is not found in that file, we would fall back to looking for a string in the dictionary, and then finally the Info.plist. Certainly this is not the be-all-end-all of about boxes, but it does provide a simple no-work about box for your application. The standard Toolbox application handler now responds to the kHICommandAbout command ID by calling HIAboutBox for you. This means that any Carbon Event-based application will get this behavior for free right out of the box. If you wish for the window to respond to cmd-W in the menu bar, you should make sure that menu item has the kHICommandClose commandID.

Options: A dictionary of replacement strings, or the name of a string file to retrieve the strings from, or nil. See the discussion for how this is used.

Returns a Mac OS error code or -1 if function is not available.
Not supported on 64 bit targets.

48.1.42 NewCFAbsoluteTimeMBS(time as Double) as CFAbsoluteTimeMBS

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a new absolute time object with the given value.
Notes: Returns nil on any error.

48.1.43 NewCFBinaryDataMBSMem(mem as memoryblock,len as Integer) as CFBinaryDataMBS


48.1.44 NewCFBinaryDataMBSStr(s as string) as CFBinaryDataMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a CFBinary object for the given string.
Example:
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dim t as TextOutputStream
dim f as FolderItem
dim o as CFObjectMBS
dim s as string
dim i as TextInputStream

f=SpecialFolder.Desktop.Child("test")
o=NewCFStringMBS("Hello")

// write
s=o.XML.str
s=ConvertEncoding(s,Encodings.UTF8)

t=f.CreateTextFile
  t.Write s
  t.Close

// clear

o=nil

// now read back

i=f.OpenAsTextFile
  s=i.ReadAll(Encodings.UTF8)
  i.Close

  o=NewCFObj ectMBSFromXML(NewCFBinaryDataMBSStr(s))

  MsgBox CFStringMBS(o).str

48.1.45 NewCFBooleanMBS(value as boolean) as CFBooleanMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a CF-
BooleanMBS object created using the given boolean.

48.1.46 NewCFDateMBS as CFDateMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a new
empty CFDateMBS.
48.1.47  NewCFMutableArrayMBS as CFMutableArrayMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new empty mutable array.  
**Notes:** The array’s maximum capacity is unlimited (or rather, only limited by address space and available memory constraints).

48.1.48  NewCFMutableBagMBS as CFMutableBagMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a new empty CFMutableBagMBS.

48.1.49  NewCFMutableBinaryDataMBSMem(len as Integer) as CFMutableBinaryDataMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a CFMutableBinary object with the given size in bytes.

48.1.50  NewCFMutableDictionaryMBS as CFMutableDictionaryMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a new empty CFMutableDictionaryMBS.  
**Example:**

```c
    dim d as CFMutableDictionaryMBS
    d=NewCFMutableDictionaryMBS
    d.Add NewCFStringMBS("Key"),NewCFStringMBS("Value")
    MsgBox d.XML.str
```

48.1.51  NewCFMutableSetMBS as CFMutableSetMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a new empty CFMutableSetMBS.
48.1.52 NewCFNumberMBSDouble(doubleValue as Double) as CFNumberMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a CFNumberMBS object for the given double value.

48.1.53 NewCFNumberMBSInteger(integerValue as Integer) as CFNumberMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a CFNumberMBS object for the given integer value.

48.1.54 NewCFNumberMBSSingle(singleValue as single) as CFNumberMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a CFNumberMBS object for the given single value.

48.1.55 NewCFOBJECTMBS(handle as Integer) as CFOBJECTMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a CFOBJECTMBS object for the given handle.

**Example:**

```vb
Dim d as CFMutableDictionaryMBS
Dim s as CFStringMBS
Dim o as CFOBJECTMBS
Dim t as CFStringMBS

d=NewCFMutableDictionaryMBS
s=NewCFStringMBS(“Hello”)

d.Add s,s

o=d.Value(s) // uses NewCFOBJECTMBS internally

t=cfstringMBS(o) // Now you can cast here in v5.2!

MsgBox t.str
```

**Notes:**

Handle is just a CFTypeRef.
If release is true, the destructor of the CFOBJECTMBS will release the handle later.
In Version 5.2 this function can return objects which may be casted to CFURL, CFDictionary, CFString, CFNumber, CFCharacterSet, CFBag, CFArray, CFBoolean, CFBinaryData or CFSet.

48.1.56 NewCFObj ectMBSFromXML(XMLdata as CFBinaryDataMBS) as CFObj ectMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Parses the XML data and returns a CFObj ect.

Example:

```vbnet
dim f as FolderItem
dim t as TextInputStream
dim s as String
dim o as CFObj ectMBS
dim d as CFDictionaryMBS

// get file name
f=GetFolderItem("CF XML Test.txt")
// open file
f.OpenAsTextFile
// Read String
s=t.ReadAll

// Create back
o=NewCFObj ectMBSFromXML(NewCFBinaryDataMBSStr(s))

// now check if the dictionary we saved is there:
if o<>nil then
    if o isa CFDictionaryMBS then
        d=CFDictionaryMBS(o)
        MsgBox CFStringMBS(d.Value(NewCFStringMBS("Key"))).str
    end if
end if
```

Notes:

Same as NewCFObj ectMBSFromXML, but with additional multithreading.
Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.

Note that the CFObj ect returned is in most times a CFDictionary or a CFArray.
This function takes text and binary plist file content.
48.1.57  NewCFStringMBS(s as string) as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns a CFStringMBS object created using the given string.

**Notes:**
Returns nil if s is empty.
The cfstring may be unicode.

See also NewCFStringMBS2 if you want to get an empty CFString object for an empty string.

48.1.58  NewCFTimeIntervalMBS(time as Double) as CFTimeIntervalMBS

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns a new time interval object with the given value.

**Notes:** Returns nil on any error.

48.1.59  NewCFURLMBSCFStringMBS(cfstr as CFStringMBS, baseurl as CFURLMBS) as CFURLMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Creates a new CFURLMBS from the CFStringMBS.

48.1.60  NewCFURLMBSFile(f as folderitem) as CFURLMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Creates a new CFURLMBS from a file.

48.1.61  NewCFURLMBSHFSPath(cfstr as CFStringMBS, directory as boolean) as CFURLMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Creates a new CFURLMBS from the CFStringMBS which is interpreted as a HFS path.
48.1.62 NewCFURLMBSMem(mem as memoryblock, len as Integer, encoding as Integer, baseurl as CFURLMBS) as CFURLMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new CFURLMBS from the data inside the memoryblock.

**Notes:**
- Len is the len of the data inside the memoryblock.
- Encoding the ID of the text encoding.
- BaseURL is the base url. If baseurl=nil then the current application directory is used.

48.1.63 NewCFURLMBSPosixPath(cfstr as CFStringMBS, directory as boolean) as CFURLMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new CFURLMBS from the CFStringMBS which is interpreted as a Posix path.

48.1.64 NewCFURLMBSStr(str as string, baseurl as CFURLMBS) as CFURLMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new CFURLMBS from the string.

**Example:**

```vbscript
dim s as string
dim f as FolderItem
dim cu as CFURLMBS

s="file://localhost/Users/cs/Music/iTunes/iTunes%20Music"

cu=NewCFURLMBSStr(s,nil) // true=isdirectory
f= cu.file

MsgBox f.AbsolutePath
```

**Notes:** BaseURL is the base url. If baseurl=nil then the current application directory is used.
48.1.65  **NewCFURLMBSWindowsPath(cfstr as CFStringMBS, directory as boolean) as CFURLMBS**

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new CFURLMBS from the CFStringMBS which is interpreted as a Windows path.

48.1.66  **SetDefaultCFTimeZoneMBS(timezone as CFTimeZoneMBS)**

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The default time zone.  
**Example:**
```
msgBox str(GetDefaultCFTimeZoneMBS.SecondsFromGMT(nil).Value)
```

**Notes:** Returns nil on any error.

48.1.67  **SystemCFTimeZoneMBS as CFTimeZoneMBS**

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The current system time zone.  
**Example:**
```
dim s as CFTimeZoneMBS
s=SystemCFTimeZoneMBS
MsgBox s.Name.str
```

**Notes:** Returns nil on any error.

48.1.68  **TypeIDDescriptionMBS(TypeID as Integer) as CFStringMBS**

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a string with the name for the CoreFoundation data type.  
**Notes:** e.g. "CFStringMBS" for a CFStringMBS.
48.2 class CFAbsoluteTimeMBS

48.2.1 class CFAbsoluteTimeMBS

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for an absolute time value.

**Example:**

```
dim t as new CFAbsoluteTimeMBS
MsgBox str(T.Value)
```

**Notes:**

Basicly just a double property.
Subclass of the CFTimeIntervalMBS class.

48.2.2 Methods

48.2.3 AddGregorianUnits(timezone as CFTimeZoneMBS, units as CFGregorianUnitsMBS) as CFAbsoluteTimeMBS

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds gregorian time units to the given absolute time and returns the result.

**Notes:**

Returns nil on any error.
Timezone is optional and can be nil.

48.2.4 Constructor

MBS MacCF Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor to initialize the absolution time with the current time.

**Example:**

```
dim CFDateLocal as new CFAbsoluteTimeMBS
```

```
dim CFTimeZone as new CFTimeZoneMBS
```

```
dim MyDSTState as Boolean = CFTimeZone.IsDaylightSavingTime(CFDateLocal)
```

MsgBox str(MyDSTState)
48.2. CLASS CFABSOLUTETIMEMBS

See also:

- 48.2.5 Constructor(value as Double)

48.2.5 Constructor(value as Double)

MBS MacCF Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor to initialize the absolute time with the given value.

**Example:**
```plaintext
dim a as new CFAbsoluteTimeMBS(5)
MsgBox str(a.Value)
```

See also:

- 48.2.4 Constructor

48.2.6 DayOfWeek(timezone as CFTimeZoneMBS) as Integer

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns an integer representing the day of the week indicated by the specified date.

**Example:**
```plaintext
dim t as new CFAbsoluteTimeMBS
MsgBox str(t.DayOfWeek(nil))
```

48.2.7 DayOfYear(timezone as CFTimeZoneMBS) as Integer

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns an integer representing the day of the year indicated by the specified date.

**Example:**
```plaintext
dim t as new CFAbsoluteTimeMBS
MsgBox str(t.DayOfYear(nil))
```
GetDifferenceAsGregorianUnits

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Returns the difference of the two absolute times in gregorian units.

**Notes:**

Timezone is optional and may be nil.

For flags:

- `kCFGregorianUnitsYears` = 1
- `kCFGregorianUnitsMonths` = 2
- `kCFGregorianUnitsDays` = 4
- `kCFGregorianUnitsHours` = 8
- `kCFGregorianUnitsMinutes` = 16
- `kCFGregorianUnitsSeconds` = 32
- `kCFGregorianAllUnits` = & hFFFFFFF

GregorianDate

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Returns the gregorian date for the given absolute time.

**Example:**

```vbscript
dim t as new CFAbsoluteTimeMBS
dim g as CFGregorianDateMBS = t.GregorianDate(nil)
MsgBox str(g.Year)
```

**Notes:**

Timezone is optional and can be nil.

Returns nil on any error.

WeekOfYear

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Returns an integer representing the week of the year indicated by the specified date.

**Example:**

```vbscript
dim t as new CFAbsoluteTimeMBS
MsgBox str(t.WeekOfYear(nil))
```
48.2.11 Properties

48.2.12 Date as CFDateMBS

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The date object representing this absolute time value.

**Notes:**
Returns nil on any error.
(Read only property)
48.3. class CFArrayMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a core foundation Array.  

**Example:**

```plaintext
// copy names of recent items in Real Studio Preferences

dim names() as string
dim c as new CFPreferencesMBS

dim o as CFObj
```

```plaintext
    ectMBS = c.CopyAppValue(NewCFStringMBS("Recent Items Dict"), NewCFStringMBS("com.realsoftware.realstudio"))
```

```plaintext
if o isa CFArrayMBS then
    dim a as CFArrayMBS = CFArrayMBS(o)

    dim u as Integer = a.Count-1
    for i as Integer = 0 to u
        o = a.Item(i)

    if o isa CFDictionaryMBS then
        dim d as CFDictionaryMBS = CFDictionaryMBS(o)

        dim no as CFObj = d.Value(NewCFStringMBS("Name"))
        if no isa CFStringMBS then
            dim ns as CFStringMBS = CFStringMBS(no)

            names.Append ns.str
        end if
    end if
next
end if
```

MsgBox Join(names, EndOfLine)

**Notes:**

If the release property is true, the destructor of this class will release the array reference.

From CFArrayMBS.h:
48.3. CLASS CFARRAYMBS

CFArray implements an ordered, compact container of pointer-sized values. Values are accessed via integer keys (indices), from the range 0 to N-1, where N is the number of values in the array when an operation is performed. The array is said to be “compact” because deleted or inserted values do not leave a gap in the key space – the values with higher-numbered indices have their indices renumbered lower (or higher, in the case of insertion) so that the set of valid indices is always in the integer range \([0, N-1]\). Thus, the index to access a particular value in the array may change over time as other values are inserted into or deleted from the array.

Arrays come in two flavors, immutable, which cannot have values added to them or removed from them after the array is created, and mutable, to which you can add values or from which remove values. Mutable arrays have two subflavors, fixed-capacity, for which there is a maximum number set at creation time of values which can be put into the array, and variable capacity, which can have an unlimited number of values (or rather, limited only by constraints external to CFArray, like the amount of available memory). Fixed-capacity arrays can be somewhat higher performing, if you can put a definite upper limit on the number of values that might be put into the array.

As with all CoreFoundation collection types, arrays maintain hard references on the values you put in them, but the retaining and releasing functions are user-defined callbacks that can actually do whatever the user wants (for example, nothing).

Computational Complexity The access time for a value in the array is guaranteed to be at worst \(O(\lg N)\) for any implementation, current and future, but will often be \(O(1)\) (constant time). Linear search operations similarly have a worst case complexity of \(O(N\lg N)\), though typically the bounds will be tighter, and so on. Insertion or deletion operations will typically be linear in the number of values in the array, but may be \(O(N\lg N)\) clearly in the worst case in some implementations. There are no favored positions within the array for performance; that is, it is not necessarily faster access values with low indices, or to insert or delete values with high indices, or whatever.

This class works on Windows with QuickTime 7 installed. Subclass of the CFOBJECTMBS class.

48.3.2 Methods

48.3.3 arrayWithContentsOfFile(file as folderitem) as CFArrayMBS

MBS MacCF Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an array containing the contents of the file specified by a given path.

**Example:**

```plaintext
dim a as new CFMutableArrayMBS
a.Append NewCFStringRefMBS("Hello")
a.Append NewCFStringRefMBS("World")

dim f as FolderItem = SpecialFolder.Desktop.Child("test.xml")
```
if a.writeToFile(f, true) then
  MsgBox "OK"
else
  MsgBox "Failed"
end if

dim x as CFArrayMBS = CFArrayMBS.arrayWithContentsOfFile(f)
MsgBox x.XML.str

Notes:
file: The path to a file containing a string representation of an array produced by the writeToFile method.

Returns an array containing the contents of the file specified by aPath. Returns nil if the file can’t be opened or if the contents of the file can’t be parsed into an array.

The array representation in the file identified by aPath must contain only property list objects (NSString/CF-String, NSData/CFData, NSArray/CFArray, or NSDictionary/CFDictionary objects).

Returns nil on any error.

48.3.4 arrayWithContentsOfURL(URL as string) as CFArrayMBS

MBS MacCF Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Creates and returns an array containing the contents specified by a given URL.

Notes:
URL: The location of a file containing a string representation of an array produced by the writeToURL method.

Returns an array containing the contents specified by aURL. Returns nil if the location can’t be opened or if the contents of the location can’t be parsed into an array.

The array representation at the location identified by aURL must contain only property list objects (NSString/CF-String, NSData/CFData, NSArray/CFArray, or NSDictionary/CFDictionary objects).

Returns nil on any error.
48.3. CLASS CFARRAYMBS

48.3.5 arrayWithHandle(Handle as Integer) as CFArrayMBS

MBS MacCF Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new array object based on a handle value. **Notes:** Will retain the reference.

48.3.6 clone as CFArrayMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new immutable array with the values from the given array. **Notes:** The values itself are not duplicated, but retained.

48.3.7 Constructor

MBS MacCF Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Creates a new editable array object. **Example:**

```dim b as new CFMutableArrayMBS
b.Append(NewCFStringMBS("Hello"))
MsgBox str(b.Count)```

See also:

- 48.3.8 Constructor(values() as string)

48.3.8 Constructor(values() as string)

MBS MacCF Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Creates a new CFArrayMBS object with CFString objects created from the given string array. **Example:**

```dim values() as string = array("Hello", "World", "Just", "a", "Test")
dim a as new CFArrayMBS(values)
MsgBox str(a.Count)+" elements"
MsgBox a.XML.Str // show as xml```
48.3.9 **ContainsValue(value as CFObjectMBS) as boolean**

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Reports whether or not the value is in the array.

48.3.10 **CountOfValue(value as CFObjectMBS) as Integer**

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Counts the number of times the given value occurs in the array.

48.3.11 **Edit as CFMutableArrayMBS**

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new mutable array with the values from the current array.

48.3.12 **FirstIndexOfValue(value as CFObjectMBS) as Integer**

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Searches the array for the value.  
**Notes:**
- Result: The lowest index of the matching values, or -1 if no value matched.

48.3.13 **Item(index as Integer) as CFObjectMBS**

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the entry with the given index.  
**Notes:** Index from 0 to count-1.
48.3. **CLASS CFARRAYMBS**

### 48.3.14 `LastIndexOfValue(value as CFObjectMBS) as Integer`

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Searches the array for the value.

**Notes:**
Result:
The lowest highest of the matching values, or -1 if no value matched.

### 48.3.15 `writeToFile(file as folderitem, useAuxiliaryFile as boolean) as boolean`

MBS MacCF Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Writes the contents of the receiver to a file at a given path.

**Example:**
```plaintext
dim a as new CFMutableArrayMBS
a.Append NewCFStringMBS(“Hello”)
a.Append NewCFStringMBS(“World”)
dim f as FolderItem = SpecialFolder.Desktop.Child(“test.xml”)
if a.writeToFile(f, true) then
    MsgBox “OK”
else
    MsgBox “Failed”
end if

dim x as CFArrayMBS = CFArrayMBS.arrayWithContentsOfFile(f)
MsgBox x.XML.str
```

**Notes:**
file: The path at which to write the contents of the receiver.
useAuxiliaryFile: If true, the array is written to an auxiliary file, and then the auxiliary file is renamed to path. If false, the array is written directly to path. The true option guarantees that path, if it exists at all, won’t be corrupted even if the system should crash during writing.

Returns true if the file is written successfully, otherwise false.

If the receiver’s contents are all property list objects (NSString, NSData, NSArray, or NSDictionary objects), the file written by this method can be used to initialize a new array with the class method arrayWithContentsOfFile. This method recursively validates that all the contained objects are property list objects before writing out the file, and returns false if all the objects are not property list objects, since the resultant file
would not be a valid property list.

48.3.16  **writeToURL(url as string, atomically as boolean) as boolean**

MBS MacCF Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Writes the contents of the receiver to the location specified by a given URL. **Notes:**

URL: The location at which to write the receiver.
atomically: If true, the array is written to an auxiliary location, and then the auxiliary location is renamed to aURL. If false, the array is written directly to aURL. The true option guarantees that aURL, if it exists at all, won’t be corrupted even if the system should crash during writing.

Returns true if the location is written successfully, otherwise false.

If the receiver’s contents are all property list objects (NSString, NSData, NSArray, or NSDictionary objects), the location written by this method can be used to initialize a new array with the class method arrayWithContentsOfURL.

48.3.17  **Properties**

48.3.18  **count as Integer**

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the number of values currently in the array. **Example:**

```bash
dim x as new CFMutableDictionaryMBS
x.Add(NewCFStringMBS("Hello"), NewCFStringMBS("World"))
MsgBox str(x.Count)
```

**Notes:** (Read only property)
48.4.  CLASS CFATTRIBUTESTRINGMBS

48.4  class CFAttributedStringMBS

48.4.1  class CFAttributedStringMBS

MBS MacCF Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
This is the class for a CoreFoundation attributed string.
**Notes:** Subclass of the CFObjectMBS class.

48.4.2  Methods

48.4.3  AsNSAttributedString as Variant

MBS MacCF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
Returns a new NSAttributedStringMBS object pointing to same attributed string.
**Example:**

```
// make CF version
dim c as CFAttributedStringMBS = CFAttributedStringMBS.Create("Hello World", nil)
MsgBox c.String

// get NS Version
dim n as NSAttributedStringMBS = c.AsNSAttributedString
MsgBox n.text
```

**Notes:** For passing to functions which need a NSAttributedStringMBS.

48.4.4  AttributeAndLongestEffectiveRange(location as Integer, attrName as CFStringMBS, inRange as CFRangeMBS, byref effectiveRange as CFRangeMBS) as CFObjectMBS

MBS MacCF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
Returns the value of a given attribute of an attributed string at a specified location.
**Notes:**
location: The location in str at which to determine the attributes. It is a programming error for loc to specify a location outside the bounds of str.
attrName: The name of the attribute whose value you want to determine.
inRange: The range in str within which you want to find the longest effective range of the attributes at loc.
inRange must not exceed the bounds of str.
effectiveRange: upon return contains the maximal range within inRange over which the exact same set of attributes apply. The returned range is clipped to inRange.
Returns the attribute value of str at the specified location.

### 48.4.5 AttributesAndLongestEffectiveRange

(location as Integer, inRange as CFRangeMBS, byref effectiveRange as CFRangeMBS) as CFDictionaryMBS

MBS MacCF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Returns the attributes of an attributed string at a specified location.

**Notes:**

- **location:** The location in str at which to determine the attributes. loc must not exceed the bounds of str.
- **inRange:** The range in str within to find the longest effective range of the attributes at loc. inRange must not exceed the bounds of str.
- **effectiveRange:** upon return contains the maximal range within inRange over which the exact same set of attributes apply. The returned range is clipped to inRange.

### 48.4.6 AttributesDictionary

(location as Integer, byref effectiveRange as CFRangeMBS) as CFDictionaryMBS

MBS MacCF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Returns the attributes of an attributed string at a specified location.

**Notes:**

- **location:** The location in str at which to determine the attributes. loc must not exceed the bounds of str.
- **effectiveRange:** upon return contains a range including loc over which exactly the same set of attributes apply as at loc.

Returns a dictionary that contains the attributes of str at the specified location. Ownership follows the Get Rule.

For performance reasons, a range returned in effectiveRange is not necessarily the maximal range. If you need the maximum range, you should use AttributesAndLongestEffectiveRange.

Note that the returned attribute dictionary might change in unpredictable ways if the attributed string is edited after this call. If you want to preserve the state of the dictionary, you should make an actual copy of it rather than just retaining it. In addition, you should make no assumptions about the relationship of the actual dictionary returned by this call and the dictionary originally used to set the attributes, other than the fact that the values stored in the dictionaries will be identical (that is, \(==\)) to those originally specified.
48.4. **CLASS CFATTRIBUTEDSTRINGMBS**

### 48.4.7 AttributeValue(location as Integer, attrName as CFStringMBS, byref effectiveRange as CFRangeMBS) as CFObj ectMBS

MBS MacCF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Returns the value of a given attribute of an attributed string at a specified location.

**Notes:**

- location: The location in str at which to determine the attributes. loc must not exceed the bounds of str.
- attrName: The name of the attribute whose value you want to determine.
- effectiveRange: upon return contains a range including loc over which exactly the same set of attributes apply as at location.

Returns the value of the specified attribute at the specified location in str. Ownership follows the Get Rule.

For performance reasons, a range returned in effectiveRange is not necessarily the maximal range. If you need the maximum range, you should use AttributeAndLongestEffectiveRange.

### 48.4.8 Constructor(str as CFAttributedStringMBS, range as CFRangeMBS)

MBS MacCF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Creates a sub-attributed string from the specified range.

**Notes:**

- str: The attributed string to copy.
- range: The range of the attributed string to copy. range must not exceed the bounds of Str.

Returns a new attributed string whose string and attributes are copied from the specified range of the supplied attributed string. Raises OutOfMemory exception if there was a problem copying the object. Ownership follows the Create Rule.

See also:

- 48.4.9 Constructor(str as CFStringMBS, attributeDictionary as CFDictionaryMBS = nil)

### 48.4.9 Constructor(str as CFStringMBS, attributeDictionary as CFDictionaryMBS = nil)

MBS MacCF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Creates an attributed string with specified string and attributes.

**Notes:**

- str: A string that specifies the characters to use in the new attributed string. This value is copied.
- attributeDictionary: A dictionary that contains the attributes to apply to the new attributed string. This value is copied.
Returns an attributed string that contains the characters from str and the attributes specified by attributes. Raises OutOfMemory exception if there was a problem in creating the attributed string.

Note that both the string and the attributes dictionary are copied. The specified attributes are applied to the whole string. If you want to apply different attributes to different ranges of the string, you should use a mutable attributed string.

See also:

• 48.4.8 Constructor(str as CFAttributedStringMBS, range as CFRangeMBS)

48.4.10 Copy as CFAttributedStringMBS


48.4.11 Create(str as CFStringMBS, attributeDictionary as CFDictionaryMBS = nil) as CFAttributedStringMBS


Notes:

str: A string that specifies the characters to use in the new attributed string. This value is copied.
attributeDictionary: A dictionary that contains the attributes to apply to the new attributed string. This value is copied.

Returns an attributed string that contains the characters from str and the attributes specified by attributes. The result is nil if there was a problem in creating the attributed string.

Note that both the string and the attributes dictionary are copied. The specified attributes are applied to the whole string. If you want to apply different attributes to different ranges of the string, you should use a mutable attributed string.

48.4.12 CreateWithSubstring(str as CFAttributedStringMBS, range as CFRangeMBS) as CFAttributedStringMBS


Notes:

str: The attributed string to copy.
range: The range of the attributed string to copy. range must not exceed the bounds of Str.

Returns a new attributed string whose string and attributes are copied from the specified range of the supplied attributed string. Returns nil if there was a problem copying the object. Ownership follows the Create Rule.

48.4.13 GetLength as Integer

MBS MacCF Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries the length of the string. **Deprecated:** This item is deprecated and should no longer be used. **Notes:** Deprecated in favor of Length property.

48.4.14 GetString as CFStringMBS

MBS MacCF Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries the text of the attributed string. **Deprecated:** This item is deprecated and should no longer be used. **Notes:** Deprecated in favor of String function.

48.4.15 MutableCopy(maxLength as Integer = 0) as CFAttributedStringMBS

MBS MacCF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a mutable attributed string copy. **Notes:** maxLength, if not 0, is a hard bound on the length of the attributed string; exceeding this size limit during any editing operation is a programming error. If 0, there is no limit on the length.

48.4.16 String as CFStringMBS

MBS MacCF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the string for an attributed string. **Notes:** For performance reasons, the string returned will often be the backing store of the attributed string, and it might therefore change if the attributed string is edited. However, this is an implementation detail, and you should not rely on this behavior.
48.4.17 Properties

48.4.18 Length as Integer

MBS MacCF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the length of the attributed string in characters.
**Notes:** (Read only property)
48.5. **CLASS CFBAGLEISTMBS**

48.5  **class CFBagListMBS**

48.5.1  **class CFBagListMBS**

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for the items of a CFBag.

48.5.2  **Methods**

48.5.3  **Value(index as Integer) as CFObjectMBS**

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the value with the given index.

48.5.4  **Properties**

48.5.5  **Count as Integer**

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Counts the items in the set.  
**Notes:** (Read and Write property)
48.6 class CFBagMBS

48.6.1 class CFBagMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a core foundation bag.  
**Notes:**  
If the release property is true, the destructor of this class will release the set reference.  
Subclass of the CFOBJECTMBS class.

48.6.2 Methods

48.6.3 clone as CFBagMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Clones the set and all values.

48.6.4 Constructor

MBS MacCF Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor which creates a new editable bag.  
**Example:**  
```dim b as new CFMutableBagMBS```

48.6.5 ContainsValue(value as CFOBJECTMBS) as boolean

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Does the set contain this value?

48.6.6 CountValue(value as CFOBJECTMBS) as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Counts how often this value is inside the set.
48.6. **CLASS CFBAGMBS**

48.6.7  **edit as CFMutableBagMBS**

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** To edit a set, this method returns you a CFMutableBagMBS.

48.6.8  **List as CFBagListMBS**

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a list of all values.  
**Notes:** This list will be invalid whenever this set is destroyed.

48.6.9  **Value(value as CFObjectMBS) as CFObjectMBS**

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** If the value is found the value is returned.  
**Notes:** Returns nil if key is not found.

48.6.10  **Properties**

48.6.11  **Count as Integer**

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Counts all values.  
**Example:**

```plaintext
dim b as new CFMutableBagMBS
b.Add(NewCFStringMBS("Hello"))
MsgBox str(b.Count)
```

**Notes:** (Read only property)
48.7 class CFBinaryDataMBS

48.7.1 class CFBinaryDataMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for core foundation data.

**Notes:**

If the release property is true, the destructor of this class will release the data reference.

This class works on Windows with QuickTime 7 installed.

This wraps a CFDataRef from Apple. It was named CFBinaryDataMBS instead of CFDataMBS over 10 years ago.

Subclass of the CFObjectMBS class.

48.7.2 Methods

48.7.3 clone as CFBinaryDataMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Makes a deep copy of the CFBinaryDataMBS object.

48.7.4 Constructor(data as MemoryBlock)

MBS MacCF Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Creates a new data object with given content.

**Example:**

```plaintext
dim m as MemoryBlock = "Hello"
dim d as new CFBinaryDataMBS(m)
```

MsgBox d.Str

See also:

- 48.7.5 Constructor(data as string)
48.7. **CLASS CFBINARYDATAMBS**

### 48.7.5 Constructor(data as string)

MBS MacCF Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Creates a new data object with given content.

**Example:**

```vba
dim m as string = "Hello"
dim d as new CFBinaryDataMBS(m)

MsgBox d.Str
```

See also:

- 48.7.4 Constructor(data as MemoryBlock)

### 48.7.6 Edit as CFMutableBinaryDataMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Makes a copy of the CFBinaryDataMBS object for editing.

### 48.7.7 Mem as Memoryblock

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The binary data returned as a Realbasic memoryblocks.

See also:

- 48.7.8 Mem(pos as Integer,len as Integer) as Memoryblock

### 48.7.8 Mem(pos as Integer,len as Integer) as Memoryblock

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The binary data returned as a Realbasic memoryblocks.

See also:

- 48.7.7 Mem as Memoryblock

### 48.7.9 Str as String

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The binary data returned as a Realbasic string.

See also:
48.7.10 Str(pos as Integer, len as Integer) as String

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The binary data returned as a Realbasic string.

See also:

- 48.7.9 Str as String

48.7.11 Properties

48.7.12 len as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The length of this binary data in bytes.

**Example:**

```realbasic
dim b as CFBinaryDataMBS = NewCFBinaryDataMBSStr("Hello")
MsgBox str(b.Len) // shows 5
```

**Notes:** (Read only property)
48.8.  **CLASS CFBOOLEANMBS**

48.8  **class CFBooleanMBS**

48.8.1  **class CFBooleanMBS**

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a core foundation boolean.  
**Notes:**  
If the release property is true, the destructor of this class will release the boolean reference.  
This class works on Windows with QuickTime 7 installed.  
Subclass of the CFObjectMBS class.

48.8.2  **Methods**

48.8.3  **Constructor(value as Boolean)**

MBS MacCF Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The constructor.

48.8.4  **Operator_Convert as Boolean**

MBS MacCF Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** A helper method for auto conversion between boolean and CFBooleanMBS.  
See also:

- 48.8.5 **Operator_Convert(v As Boolean)**

48.8.5  **Operator_Convert(v As Boolean)**

MBS MacCF Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** A helper method for auto conversion between boolean and CFBooleanMBS.  
See also:

- 48.8.4 **Operator_Convert as Boolean**

48.8.6  **Properties**

48.8.7  **Value as boolean**

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The value of this CFBooleanMBS object.
Notes: (Read only property)
48.9. class CFBundleMBS

48.9.1 class CFBundleMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a core foundation bundle.

**Example:**

```vbnet
// get FolderItem
dim f as FolderItem = SpecialFolder.Applications.Child("Safari.app")

// make bundle
dim b as CFBundleMBS = CreateBundleMBS(f)

// make a key
dim k as CFStringMBS = NewCFStringMBS("CFBundleShortVersionString")

// lookup the value
dim i as CFObjectMBS = b.GetValueForInfoDictionaryKey(k)

// it's a string, so show it
dim s as CFStringMBS = CFStringMBS(i)
MsgBox s.str
```

**Notes:**

If the release property is true, the destructor of this class will release the boolean reference.

Subclass of the CFObjectMBS class.

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

48.9.2 Methods

48.9.3 BuiltInPlugInsDirectory as CFURLMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The built in plugins folder of the bundle.

**Notes:** Returns nil on any error.

48.9.4 Constructor

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.
48.9.5 DevelopmentRegion as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The development region of the bundle.  
**Notes:** Returns nil on any error.

48.9.6 ExecutableFile as CFURLMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The executable file of the bundle.  
**Example:**

```
// The following code does not have any check for nil, so it may crash at any point!

dim f as FolderItem
dim c as CFBundleMBS
dim url as CFURLMBS

// Get Path to Mail
f=ApplicationsFolderMBS(-32766).Child("mail.app")

// Make a CFURL from the file
url=NewCFURLMBSFile(f)
// Create a bundle object
c=CreateBundleMBS(url)

// show the path
MsgBox c.ExecutableFile.file.AbsolutePath
```

**Notes:** Returns nil on any error.

48.9.7 GetInfoDictionary as CFDictionaryMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The information dictionary for the bundle.  
**Notes:** Returns nil on any error.
48.9. **CLASS CFBUNDLEMBS**

### 48.9.8 GetLocalInfoDictionary as CFDictionaryMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The local information dictionary for the bundle.  
**Notes:** Returns nil on any error.

### 48.9.9 GetValueForInfoDictionaryKey(key as CFStringMBS) as CFOBJECTMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a value from the information dictionary for the given key.  
**Example:**

```plaintext
// lists the document types Mail.app can read

dim f as FolderItem
dim b as CFBundleMBS
dim u as CFURLMBS
dim s as string
dim a as CFArryMBS
dim i as Integer
dim c as Integer
dim o as CFOBJECTMBS
dim d as CFdictionaryMBS
dim t(-1) as string

f=ApplicationsFolderMBS(-32766).Child("Mail.app")
u=NewCFURLMBSFile(f)
b=CreateBundleMBS(u)
o=b.GetValueForInfoDictionaryKey(NewCFStringMBS("CFBundleDocumentTypes"))

if o isa CFArryMBS then
a=cfaarraymbs(o)

  c=a.Count-1
  for i=0 to c
    o=a.Item(i)
    if o isa CFDictionaryMBS then
      d=CFDictionaryMBS(o)
      o=d.Value(NewCFStringMBS("CFBundleTypeName"))
    if o isa CFStringMBS then
      s=CFStringMBS(o).str
      t.Append s
    end if
  end if
end if
next
end if
```
s=Join(t," ","")
MsgBox s

Notes: Returns nil on any error.

### 48.9.10 Identifier as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The identifier for the bundle.
Notes: Returns nil on any error.

### 48.9.11 kCFBundleDevelopmentRegionKey as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the dictionaries.
Notes: Returns nil on any error.

### 48.9.12 kCFBundleDisplayNameKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the dictionaries.
Notes: Display name of the bundle. Can be localized.
Returns nil on any error.

### 48.9.13 kCFBundleExecutableKey as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the dictionaries.
Notes: Returns nil on any error.

### 48.9.14 kCFBundleIdentifierKey as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the dictionaries.
Example:

```vba
// Find the bundle id for Mail.app

dim f as FolderItem
dim b as CFBundleMBS
dim u as CFURLMBS
dim s as string
dim o as CFObj ectMBS

f=ApplicationsFolderMBS(-32766).Child("Mail.app")
u=NewCFURLMBSFile(f)
b=CreateBundleMBS(u)
o=b.GetValueForInfoDictionaryKey(b.kCFBundleIdentifierKey)

if o isa CFStringMBS then
  s=cfstringmbs(o).str
end if

msgbox s
```

Notes: Returns nil on any error.

### 48.9.15 kCFBundleInfoDictionaryVersionKey as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the dictionaries.

**Notes:** Returns nil on any error.

### 48.9.16 kCFBundleNameKey as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the dictionaries.

**Notes:** Returns nil on any error.

### 48.9.17 kCFBundleVersionKey as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the dictionaries.
Notes: Returns nil on any error.

48.9.18 LocalizedString(key as CFStringMBS) as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Same as the other LocalizedString functions, but the default table and not value is always used.
See also:
- 48.9.19 LocalizedString(key as CFStringMBS, value as CFStringMBS) as CFStringMBS
- 48.9.20 LocalizedString(key as CFStringMBS, value as CFStringMBS, TableName as CFStringMBS) as CFStringMBS

48.9.19 LocalizedString(key as CFStringMBS, value as CFStringMBS) as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Same as the other LocalizedString functions, but the default table is always used.
See also:
- 48.9.18 LocalizedString(key as CFStringMBS) as CFStringMBS
- 48.9.20 LocalizedString(key as CFStringMBS, value as CFStringMBS, TableName as CFStringMBS) as CFStringMBS

48.9.20 LocalizedString(key as CFStringMBS, value as CFStringMBS, TableName as CFStringMBS) as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the localized string for the given key and table.
**Notes:**
The table parameter is optional to specify which ".strings"-file to use.
without table or table="" the "Localizable.strings" file is used by Mac OS X.

key: The key for the localized string you wish to retrieve. This key will be used to look up the localized string in the strings file. Typically the key is identical to the value of the localized string in the development language.

value: A comment which might assist the translator. As used by the localized string macros and the gens-strings tool, this value becomes an annotation in the generated strings file.
48.9.  CLASS CFBUNDLEMBS

tableName: The name of the strings file you wish to search. The name should not include the strings filename extension.

Returns "" (empty string) on Mac OS Classic or Windows.
See also:

- 48.9.18 LocalizedString(key as CFStringMBS) as CFStringMBS
- 48.9.19 LocalizedString(key as CFStringMBS, value as CFStringMBS) as CFStringMBS

48.9.21  MainBundle as CFBundleMBS

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a CFBundle for the main bundle (current app).
**Example:**

MsgBox CFBundleMBS.MainBundle.Identifier

48.9.22  PackageMacCreator as string

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Mac OS creator code for this bundle.
**Notes:** Returns "" on any error.

48.9.23  PackageMacType as string

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Mac OS file type code for this bundle.
**Notes:**

Returns "" on any error.
Should be "APPL" for applications.

48.9.24  PrivateFrameworksDirectory as CFURLMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private framework folder of the bundle.
**Notes:** Returns nil on any error.
48.9.25 ResourceDirectory as CFURLMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The resource folder of the bundle.  
**Notes:** Returns nil on any error.

48.9.26 ResourceURL(resourceName as CFStringMBS, resourceType as CFStringMBS, subDirName as CFStringMBS) as CFURLMBS

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Searches inside the application bundle for a file.  
**Example:**

```plaintext
dim b as CFBundleMBS
dim u as CFURLMBS
dim f as FolderItem

b=app.MainBundleMBS

u=b.ResourceURL(NewCFStringMBS("Photo"),NewCFStringMBS("tif"),nil)

f=u.file

MsgBox f.AbsolutePath
// e.g. "Content/Resources/Photo.tif" inside your bundle.
```

**Notes:**

- resourceName is the filename of the resource file.
- resourceType is the file extension.
- subDirName is the name of the directory.
- This function will take care for localization folders.

48.9.27 ResourceURLForLocalization(resourceName as CFStringMBS, resourceType as CFStringMBS, subDirName as CFStringMBS, localizationName as CFStringMBS) as CFURLMBS

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Searches inside the application bundle for a file with the given localization.  
**Notes:**

- resourceName is the filename of the resource file.
- resourceType is the file extension.
48.9. **CLASS CFBUNDLEMBS**

SubDirectory is the name of the directory.
localizationName is the name of the localization requested.
This function will take care for localization folders.

48.9.28 **ResourceURLsOfType**(resourceType as CFStringMBS, subDirName as CFStringMBS) as CFArrayMBS

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Searches inside the bundle like ResourceURL, but returns an array of all matching files.

48.9.29 **ResourceURLsOfTypeForLocalization**(resourceType as CFStringMBS, subDirName as CFStringMBS, localizationName as CFStringMBS) as CFArrayMBS

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Searches inside the bundle like ResourceURLForLocalization, but returns an array of all matching files.

48.9.30 **SharedFrameworksDirectory** as CFURLMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The shared framework folder of the bundle.
**Notes:** Returns nil on any error.

48.9.31 **SharedSupportURL** as CFURLMBS

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The shared support files folder of the bundle.
**Notes:** Returns nil on any error.

48.9.32 **SupportFilesDirectory** as CFURLMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The support files folder of the bundle.
**Notes:** Returns nil on any error.
48.9.33 URL as CFURLMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The URL for the given bundle.  
**Notes:** Returns nil on any error.

48.9.34 Version as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The version of the bundle.  
**Notes:** Returns nil on any error.
48.10. class CFCharacterSetMBS

48.10.1. class CFCharacterSetMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a core foundation character set.
**Notes:**
If the release property is true, the destructor of this class will release the set reference.
This class works on Windows with QuickTime 7 installed.
Subclass of the CFObjectMBS class.

48.10.2. Methods

48.10.3. Binary as CFBinaryDataMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This function returns the content of the CharacterSet as a CFBinaryData.
**Notes:** Returns nil on any error.

48.10.4. edit as CFMutableCharacterSetMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** To edit a character set, this method returns you a CFMutableCharacterSetMBS.

48.10.5. GetPredefinedCFCharacterSet(id as Integer) as CFCharacterSetMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a predefined Character set.

48.10.6. IsMember(charcode as Integer) as Boolean

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if the unicode character is part of this CharacterSet.
**Notes:** Works only for charcode from 0 to &hFFFF.
48.10.7  kCFCharacterSetAlphaNumeric as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the ID of the predefined character set for alpha numeric characters.

48.10.8  kCFCharacterSetControl as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the ID of the predefined character set for control characters.

48.10.9  kCFCharacterSetDecimalDigit as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the ID of the predefined character set for decimal digit characters.

48.10.10  kCFCharacterSetDecomposable as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the ID of the predefined character set for decomposable characters.

48.10.11  kCFCharacterSetIllegal as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the ID of the predefined character set for illegal characters.

48.10.12  kCFCharacterSetLetter as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the ID of the predefined character set for letter characters.

48.10.13  kCFCharacterSetLowercaseLetter as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the ID of the predefined character set for lowercase letter characters.
48.10. **CLASS CFCHARACTERSETMBS**

### 48.10.14 kCFCharacterSetNonBase as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the ID of the predefined character set for non base characters.

### 48.10.15 kCFCharacterSetPunctuation as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the ID of the predefined character set for punctuation characters.

### 48.10.16 kCFCharacterSetUppercaseLetter as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the ID of the predefined character set for uppercase letter characters.

### 48.10.17 kCFCharacterSetWhitespace as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the ID of the predefined character set for whitespace characters.

### 48.10.18 kCFCharacterSetWhitespaceAndNewline as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the ID of the predefined character set for whitespace characters and newline.

### 48.10.19 NewCFCharacterSet(str as CFBinaryDataMBS) as CFCharacterSetMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Character set with characters inside the CFBinary object.

See also:
- 48.10.20 NewCFCharacterSet(str as CFStringMBS) as CFCharacterSetMBS

### 48.10.20 NewCFCharacterSet(str as CFStringMBS) as CFCharacterSetMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Character set with characters inside the CFStringMBS object.
48.10.21 NewCFCharacterSetRange(min as Integer, length as Integer) as CFCharacterSetMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Character set with chars between min and max.

**Example:**

```vbnet
dim c as new CFCharacterSetMBS

c = CFCharacterSetMBS.NewCFCharacterSetRange(asc("A"), 26)

MsgBox str(c.IsMember(asc("C"))) // true
MsgBox str(c.IsMember(asc("1"))) // false
```

**Notes:** Use Unicode charcodes for min and max.
48.11. **CLASS CFDATEMBS**

48.11 **class CFDateMBS**

48.11.1 **class CFDateMBS**

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a core foundation date.

**Notes:**

If the release property is true, the destructor of this class will release the date reference. Subclass of the CFObjectMBS class.

48.11.2 **Methods**

48.11.3 **AbsoluteTime as CFAbsoluteTimeMBS**

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The absolute time value for this date.

**Notes:**

Returns nil on any error.

timezone is optional and may be nil.

48.11.4 **Compare(otherdate as CFDateMBS) as Integer**

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Compares two date objects.

**Notes:**

Result codes:
kCFCompareLessThan = -1
kCFCompareEqualTo = 0
kCFCompareGreaterThan = 1

On any error returns 0.

48.11.5 **TimeIntervalSinceDate(otherdate as CFDateMBS) as CFTimeIntervalMBS**

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

The difference between two dates as a time interval.

**Notes:** Returns nil on any error.
48.12 class CFDictionaryListMBS

48.12.1 class CFDictionaryListMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for the items of a CFDictionaryMBS.  
**Notes:** This class works on Windows with QuickTime 7 installed.

48.12.2 Methods

48.12.3 close

MBS MacCF Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The destructor.  
**Notes:** There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.  
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

48.12.4 Key(index as Integer) as CObjectMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the key with the given index.  
**Notes:** Index between 0 and count-1.

48.12.5 Value(index as Integer) as CObjectMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the value with the given index.  
**Notes:** Index between 0 and count-1.

48.12.6 Properties

48.12.7 count as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Counts the elements inside this list.
48.12. CLASS CF DICTIONARYLISTMBS

Notes: (Read and Write property)
48.13 class CFDictionaryMBS

48.13.1 class CFDictionaryMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a core foundation dictionary.

**Example:**

```vbs
dim c as new CFPreferencesMBS
dim o as CFObjectMBS = c.CopyAppValue(NewCFStringMBS("VisibleIdentifiers"), NewCFStringMBS("com.apple.speech.voice.prefs"))
Dim d as CFDictionaryMBS = CFDictionaryMBS(o)

break // see dictionary in debugger
```

**Notes:**

If the release property is true, the destructor of this class will release the dictionary reference.
This class works on Windows with QuickTime 7 installed.
Subclass of the CFObjectMBS class.

48.13.2 Methods

48.13.3 clone as CFDictionaryMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Clones the dictionary and all values.

48.13.4 Constructor

MBS MacCF Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new editable dictionary.

**Example:**

```vbs
Dim m as new CFMutableDictionaryMBS
m.Add(NewCFStringMBS("Key"), NewCFStringMBS("value"))
MsgBox str(m.Count)
```

See also:

• 48.13.5 Constructor(dic as dictionary)
48.13. **CLASS CFDICTIONARYMBS**

### 48.13.5 Constructor(dic as dictionary)

MBS MacCF Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new CFDictionary based on the REALbasic Dictionary.

**Example:**

```vbnet
// build a dictionary
dim d as new Dictionary

d.Value("Hello")=2
d.Value("test")="World"
d.Value("ddd")=5.6

// convert to CFDictionary
dim c as new CFDictionaryMBS(d)

// Display as XML
dim b as CFBinaryDataMBS = c.XML
MsgBox b.str

// now convert back
dim e as Dictionary = c.dictionary

// and display values
for each key as Variant in e.keys
    MsgBox key+" ->"+e.Value(key)
next
```

**Notes:**

Be aware that the Dictionary is converted as good as possible. Unsupported datatype will be missing.

See the FAQ for the supported type translation between CoreFoundation and REALbasic data types.

See also:

- 48.13.4 Constructor

### 48.13.6 ContainsKey(value as CFObjectMBS) as boolean

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Does the dictionary contain this key?

**Example:**

```vbnet
dim c as CFMutableDictionaryMBS = NewCFMutableDictionaryMBS

c.Add NewCFStringMBS("test"),NewCFStringMBS("Value")
```
MsgBox c.XML.Str

if c.ContainsKey(NewCFStringMBS("test")) then
    MsgBox "OK"
else
    MsgBox "Failed"
end if

if c.ContainsKey(NewCFStringMBS("missing")) then
    MsgBox "Failed"
else
    MsgBox "OK"
end if

### 48.13.7 ContainsValue(value as CFObjectMBS) as boolean

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Does the dictionary contain this value?

### 48.13.8 CountKey(value as CFObjectMBS) as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Counts how often this key is inside the dictionary.

### 48.13.9 CountValue(value as CFObjectMBS) as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Counts how often this value is inside the dictionary.

### 48.13.10 Dictionary as Dictionary

MBS MacCF Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a REALbasic Dictionary from this CFDictionary.

**Example:**

```realbasic
// build a dictionary
dim d as new Dictionary
```
48.13. CLASS CFDictionaryMBS

```vbnet
Dim d As New CFDictionaryMBS(new Dictionary
Dim f As FolderItem = SpecialFolder.Desktop.Child("test.plist")
Dim d As CFDictionaryMBS = CFDictionaryMBS.dictionaryWithContentsOfFile(f)
MsgBox d.XML.Str
```

Notes:

Be aware that the CFDictionary is converted as good as possible. Unsupported datatype will be missing.

See the FAQ for the supported type translation between CoreFoundation and REALbasic data types.

48.13.11 dictionaryWithContentsOfFile(file as folderitem) as CFDictionaryMBS

MBS MacCF Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Creates and returns a dictionary using the keys and values found in a file specified by a given path.

**Example:**

```vbnet
Dim f As FolderItem = SpecialFolder.Desktop.Child("test.plist")
Dim d As CFDictionaryMBS = CFDictionaryMBS.dictionaryWithContentsOfFile(f)
MsgBox d.XML.Str
```

Notes:

path: A full or relative pathname. The file identified by path must contain a string representation of a property list whose root object is a dictionary. The dictionary must contain only property list objects (instances of NSData, NSDate, NSNumber, NSString, NSArray, or NSDictionary).

Returns a new dictionary that contains the dictionary at path, or nil if there is a file error or if the contents
of the file are an invalid representation of a dictionary.

48.13.12 dictionaryWithContentsOfURL(URL as string) as CFDictionaryMBS

MBS MacCF Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns a dictionary using the keys and values found in a resource specified by a given URL. **Example:**

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.plist")
dim d as CFDictionaryMBS = CFDictionaryMBS.dictionaryWithContentsOfURL(f.URLPath)
MsgBox d.XML.Str
```

**Notes:**
URL: An URL that identifies a resource containing a string representation of a property list whose root object is a dictionary. The dictionary must contain only property list objects (instances of NSData, NSDate, NSNumber, NSString, NSArray, or NSDictionary).

Returns a new dictionary that contains the dictionary at aURL, or nil if there is an error or if the contents of the resource are an invalid representation of a dictionary.

48.13.13 dictionaryWithHandle(Handle as Integer) as CFDictionaryMBS

MBS MacCF Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new dictionary object based on a handle value. **Notes:** Will retain the reference.

48.13.14 edit as CFMutableDictionaryMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** To edit a dictionary, this method returns you a CFMutableDictionaryMBS.

48.13.15 list as CFDictionaryListMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a list of all values.
48.13. **CLASS CF DICTIONARY MBS**

**Notes:** This list will be invalid whenever this dictionary is destroyed.

### 48.13.16 Value(key as CFObjectMBS) as CFObjectMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** If the key is found the value for this key is returned. **Notes:** Returns nil if key is not found.

### 48.13.17 writeToFile(file as folderitem, useAuxiliaryFile as boolean) as boolean

MBS MacCF Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Writes a property list representation of the contents of the receiver to a given path. **Example:**

```plaintext
dim m as new CFMutableDictionaryMBS
m.Set(NewCFStringMBS(“key”), NewCFStringMBS(“value”))
dim f as FolderItem = SpecialFolder.Desktop.Child(“test.plist”)
if m.writeToFile(f, true) then
    MsgBox “OK”
else
    MsgBox “Failed”
end if
```

**Notes:**
- path: The path at which to write the file. Must be an absolute URL.
- useAuxiliaryFile: A flag that specifies whether the file should be written atomically.

If flag is true, the receiver is written to an auxiliary file, and then the auxiliary file is renamed to path. If flag is false, the dictionary is written directly to path. The true option guarantees that path, if it exists at all, won’t be corrupted even if the system should crash during writing.

Returns true if the file is written successfully, otherwise false.

This method recursively validates that all the contained objects are property list objects (instances of NSData, NSDate, NSNumber, NSString, NSArray, or NSDictionary) before writing out the file, and returns false if all the objects are not property list objects, since the resultant file would not be a valid property list.
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If the receiver’s contents are all property list objects, the file written by this method can be used to initialize a new dictionary with the class method dictionaryWithContentsOfFile or dictionaryWithContentsOfURL.

48.13.18  WRITE TO URL (url as string, atomically as boolean) as boolean

Function: Writes a property list representation of the contents of the receiver to a given URL.

Example:

```vba
dim m as new CFMutableDictionaryMBS
m.Set(NewCFStringMBS("key"), NewCFStringMBS("value"))
dim f as FolderItem = SpecialFolder.Desktop.Child("test.plist")
if m.writeTourl(f.URLPath, true) then
    MsgBox "OK"
else
    MsgBox "Failed"
end if
```

Notes:

url: The URL to which to write the receiver.
atomically: A flag that specifies whether the output should be written atomically.

If flag is YtrueES, the receiver is written to an auxiliary location, and then the auxiliary location is renamed to aURL. If flag is false, the dictionary is written directly to aURL. The true option guarantees that aURL, if it exists at all, won’t be corrupted even if the system should crash during writing. flag is ignored if aURL is of a type that cannot be written atomically.

Returns true if the location is written successfully, otherwise false.

This method recursively validates that all the contained objects are property list objects (instances of NSData, NSDate, NSNumber, NSString, NSArray, or NSDictionary) before writing out the file, and returns false if all the objects are not property list objects, since the resultant output would not be a valid property list.

If the receiver’s contents are all property list objects, the location written by this method can be used to initialize a new dictionary with the class method dictionaryWithContentsOfURL or dictionaryWithContentsOfFile.
For more information about property lists, see Property List Programming Guide.

### 48.13.19 Properties

#### 48.13.20 Count as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Counts all values.  
**Example:**

```vbnet
dim x as new CFMutableDictionaryMBS

x.Add(NewCFStringMBS("Hello"), NewCFStringMBS("World"))

MsgBox str(x.Count)
```

**Notes:** (Read only property)
48.14  class CFErrorMBS

48.14.1  class CFErrorMBS

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Core Foundation error class.

**Notes:**

A CFError object encapsulates rich and extensible error information than is possible using only an error code or error string. The core attributes of a CFError object are an error domain (represented by a string), a domain-specific error code and a user info dictionary containing application specific information. Errors are required to have a domain and an error code within that domain. The optional "userInfo" dictionary may provide additional information that might be useful for the interpretation and reporting of the error. This dictionary can even contain an "underlying" error, which is wrapped as an error bubbles up through various layers.

Several well-known domains are defined corresponding to Mach, POSIX, and OSStatus errors. In addition, CFError allows you to attach an arbitrary user info dictionary to an error object, and provides the means to return a human-readable description for the error.

In general, a method should signal an error condition by for example returning false or nil rather than by the simple presence of an error object. The method can then optionally return an CFError object by reference, in order to further describe the error.

CFError is toll-free bridged to NSError in the Foundation framework for more details on toll-free bridging, see Interchangeable Data Types. NSError has some additional guidelines which makes it easy to automatically report errors to users and even try to recover from them. See Error Handling Programming Guide for more information on NSError programming guidelines.

Requires Mac OS X 10.5 or newer.
Subclass of the CFObjectMBS class.

48.14.2  Methods

48.14.3  Code as Integer

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the error code for a given CFError.
48.14. Class CFERRORMBS

48.14.4 Description as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a human-presentable description for a given error.

48.14.5 Domain as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the error domain for a given CFError.

48.14.6 FailureReason as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a human-presentable failure reason for a given error.

48.14.7 kCFErrorDescriptionKey as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys in the userInfo dictionary.

**Notes:**
Key to identify the description in the userInfo dictionary.
When you create a CFError, you can provide a value for this key if you do not have localizable error strings.
The description should be a complete sentence if possible, and should not contain the domain name or error.

48.14.8 kCFErrorDomainCocoa as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants defining domains for CFError objects.

**Notes:** A constant that specified the Cocoa domain.

48.14.9 kCFErrorDomainMach as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants defining domains for CFError objects.

**Notes:** A constant that specified the Mach domain.
48.14.10 kCFErrorDomainOSStatus as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants defining domains for CFError objects. **Notes:** A constant that specified the OS domain.

48.14.11 kCFErrorDomainPOSIX as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants defining domains for CFError objects. **Notes:** A constant that specified the POSIX domain.

48.14.12 kCFErrorLocalizedStringDescriptionKey as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys in the userInfo dictionary. **Notes:** Key to identify the end user-presentable description in the userInfo dictionary.

48.14.13 kCFErrorLocalizedStringFailureReasonKey as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys in the userInfo dictionary. **Notes:** Key to identify the end user-presentable failure reason in the userInfo dictionary.

48.14.14 kCFErrorLocalizedStringRecoverySuggestionKey as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys in the userInfo dictionary. **Notes:** Key to identify the end user-presentable recovery suggestion in the userInfo dictionary.

48.14.15 kCFErrorUnderlyingErrorKey as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys in the userInfo dictionary. **Notes:** Key to identify the underlying error in the userInfo dictionary.
48.14.16  RecoverySuggestion as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a human presentable recovery suggestion for a given error.

48.14.17  UserInfo as dictionary

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the user info dictionary for a given CFError.
48.15 class CFGregorianDateMBS

48.15.1 class CFGregorianDateMBS

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a core foundation gregorian date value.

48.15.2 Methods

48.15.3 AbsoluteTime(timezone as CFTimeZoneMBS) as CFAbsoluteTimeMBS

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The absolute time value for this date. **Notes:** Returns nil on any error.

48.15.4 DateValid as boolean

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Are all those date properties in this object valid?

48.15.5 IsValid(flags as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if the requested parts of the date values are valid. **Notes:**

Flags can be a combination of the following values:

- kCFGregorianUnitsYears = 1
- kCFGregorianUnitsMonths = 2
- kCFGregorianUnitsDays = 4
- kCFGregorianUnitsHours = 8
- kCFGregorianUnitsMinutes = 16
- kCFGregorianUnitsSeconds = 32
- kCFGregorianAllUnits = & hFFFFFF

Combine using BitwiseOr.
48.15.6 TimeValid as boolean

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Are all those time properties in this object valid?

48.15.7 Valid as boolean

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Are all those properties in this object valid?

48.15.8 Properties

48.15.9 Day as Integer

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The day value.
**Notes:**
Setting this property does not run a test for validation like Realbasic’s date class does.
(Read and Write property)

48.15.10 Hour as Integer

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The hour value.
**Notes:**
Setting this property does not run a test for validation like Realbasic’s date class does.
(Read and Write property)

48.15.11 Minute as Integer

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The minute value.
**Notes:**
Setting this property does not run a test for validation like Realbasic’s date class does.
(Read and Write property)
48.15.12 Month as Integer

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The month value.
**Notes:** Setting this property does not run a test for validation like Realbasic’s date class does. (Read and Write property)

48.15.13 Second as Double

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The second value.
**Notes:** Setting this property does not run a test for validation like Realbasic’s date class does. (Read and Write property)

48.15.14 Year as Integer

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The year value.
**Notes:** Setting this property does not run a test for validation like Realbasic’s date class does. (Read and Write property)
48.16 class CFGregorianUnitsMBS

48.16.1 class CFGregorianUnitsMBS

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for gregorian time units.

48.16.2 Properties

48.16.3 Days as Integer

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The days.  
**Notes:** (Read and Write property)

48.16.4 Hours as Integer

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The hours.  
**Notes:** (Read and Write property)

48.16.5 Minutes as Integer

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The minutes.  
**Notes:** (Read and Write property)

48.16.6 Months as Integer

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The months.  
**Notes:** (Read and Write property)

48.16.7 Seconds as Double

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The seconds.
Notes: (Read and Write property)

48.16.8 Years as Integer

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The years.
Notes: (Read and Write property)
48.17. CLASS CFMUTABLEARRAYMBS

48.17 class CFMutableArrayMBS

48.17.1 class CFMutableArrayMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a core foundation Array.

**Notes:**
If the release property is true, the destructor of this class will release the array reference. This class works on Windows with QuickTime 7 installed. Subclass of the CFArrayMBS class.

48.17.2 Methods

48.17.3 Append(value as CFObjectMBS)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Appends an item to this array.

**Example:**

```vba
dim a as CFMutableArrayMBS

a=NewCFMutableArrayMBS

a.Append NewCFStringMBS("Hello")

MsgBox str(a.Count)

MsgBox CFStringMBS(a.Item(0)).str
```

48.17.4 AppendArray(sourcearray as CFArrayMBS)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds the values from an array to another array.

**Notes:** The whole array should be copied.

See also:

- 48.17.5 AppendArray(sourcearray as CFArrayMBS,min as Integer,max as Integer)
48.17.5 AppendArray(sourcearray as CFArrayMBS, min as Integer, max as Integer)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds the values from an array to another array.

**Notes:**
The whole array should be copied.
Min and Max are the range to be copied. Make sure they are correct indexes!
See also:

- 48.17.4 AppendArray(sourcearray as CFArrayMBS)

48.17.6 Exchange(index1 as Integer, index2 as Integer)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Exchanges the values at two indices of the array.

**Notes:** Make sure indexes are in range between 0 and count-1.

48.17.7 Insert(index as Integer, value as CFObjectMBS)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Inserts an item to this array.

**Notes:**
Make sure index is in range between 0 and count.
If Index=count then this function does like append.

48.17.8 Remove(index as Integer)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes the value with the given index from the array.

**Notes:** Make sure index is in range between 0 and count-1.

48.17.9 RemoveAll

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes all the values from the array, making it empty.
48.17. **CLASS CFMUTABLEARRAYMBS**

48.17.10 **SetValue(index as Integer, value as CFOBJECTMBS)**

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Changes the value with the given index in the array.
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48.18 class CFMutableAttributedStringMBS

48.18.1 class CFMutableAttributedStringMBS

MBS MacCF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The mutable version of an CoreFoundation attributed string.
**Notes:** Subclass of the CFAttributedStringMBS class.

48.18.2 Methods

48.18.3 AsNSMutableAttributedString as Variant

MBS MacCF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a new NSMutableAttributedStringMBS object pointing to same mutable attributed string.
**Notes:** For passing to functions which need a NSMutableAttributedStringMBS.

48.18.4 BeginEditing

MBS MacCF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Marks the beginning of a series of changes.
**Notes:** In cases where attributed string might do a bunch of work to assure self-consistency, BeginEditing/EndEditing allow disabling that to allow deferring and coalescing any work. It’s a good idea to call these around a set of related mutation calls which don’t require the string to be in consistent state in between. These calls can be nested.

48.18.5 Constructor(maxLength as Integer = 0)

MBS MacCF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a mutable empty attributed string.
**Notes:** maxLength, if not 0, is a hard bound on the length of the attributed string; exceeding this size limit during any editing operation is a programming error. If 0, there is no limit on the length.
See also:

- 48.18.6 Constructor(str as CFAttributedStringMBS, range as CFRangeMBS) 7785
- 48.18.7 Constructor(str as CFStringMBS, attributeDictionary as CFDictionaryMBS = nil) 7785
48.18.6 Constructor(str as CFAttributedStringMBS, range as CFRangeMBS)

MBS MacCF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a sub-attributed string from the specified range.

**Notes:**

str: The attributed string to copy.
range: The range of the attributed string to copy. range must not exceed the bounds of Str.

Returns a new attributed string whose string and attributes are copied from the specified range of the supplied attributed string. Raises OutOfMemory exception if there was a problem copying the object. Ownership follows the Create Rule.

See also:

- 48.18.5 Constructor(maxLength as Integer = 0)
- 48.18.7 Constructor(str as CFStringMBS, attributeDictionary as CFDictionaryMBS = nil)

48.18.7 Constructor(str as CFStringMBS, attributeDictionary as CFDictionaryMBS = nil)

MBS MacCF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an attributed string with specified string and attributes.

**Notes:**

str: A string that specifies the characters to use in the new attributed string. This value is copied.
attributeDictionary: A dictionary that contains the attributes to apply to the new attributed string. This value is copied.

Returns an attributed string that contains the characters from str and the attributes specified by attributes. Raises OutOfMemory exception if there was a problem in creating the attributed string.

Note that both the string and the attributes dictionary are copied. The specified attributes are applied to the whole string. If you want to apply different attributes to different ranges of the string, you should use a mutable attributed string.

See also:

- 48.18.5 Constructor(maxLength as Integer = 0)
- 48.18.6 Constructor(str as CFAttributedStringMBS, range as CFRangeMBS)

48.18.8 EndEditing

Notes: In cases where attributed string might do a bunch of work to assure self-consistency, BeginEditing/EndEditing allow disabling that to allow deferring and coalescing any work. It’s a good idea to call these around a set of related mutation calls which don’t require the string to be in consistent state in between. These calls can be nested.

48.18.9 MutableString as CFMutableStringMBS

MBS MacCF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Gets the string for the attributed string as a mutable string, allowing editing the character contents of the string as if it were an CFMutableString.

**Notes:**

Attributes corresponding to the edited range are appropriately modified. If, as a result of the edit, new characters are introduced into the string, they inherit the attributes of the first replaced character from range. If no existing characters are replaced by the edit, the new characters inherit the attributes of the character preceding range if it has any, otherwise of the character following range. If the initial string is empty, the attributes for the new characters are also empty.

(Note: This function is not yet implemented and will return NULL except for toll-free bridged instances.)

48.18.10 RemoveAttribute(Range as CFRangeMBS, attrName as CFStringMBS)

MBS MacCF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Removes the value of a single attribute over the specified range, which should be valid.

**Notes:** It’s OK for the attribute not the exist over the specified range.

48.18.11 ReplaceAttributedString(Range as CFRangeMBS, Replacement as CFStringMBS)

MBS MacCF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Replaces the attributed substring over the specified range with the attributed string specified in replacement.

**Notes:** range should be valid. To delete a range of the attributed string, call ReplaceString() with empty string and specified range.

48.18.12 ReplaceString(Range as CFRangeMBS, Replacement as CFStringMBS)

MBS MacCF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Modifies the string for the attributed string, much like CFString.Replace.
**48.18.** \textit{CLASS CFMUTABLEATTRIBUTEDSTRINGMBS}

\textbf{Notes:} It’s an error for range to specify characters outside the bounds of aStr.

\subsection*{48.18.13 SetAttribute(Range as CFRangeMBS, attrName as CFStringMBS, Value as CFObjectMBS)}

MBS MacCF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. \textbf{Function:} Sets the value of a single attribute over the specified range, which should be valid. \textbf{Notes:} value should not be nil.

\subsection*{48.18.14 SetAttributes(Range as CFRangeMBS, replacements as CFDictionaryMBS, clearOtherAttributes as boolean)}

MBS MacCF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. \textbf{Function:} Sets the value of multiple attributes over the specified range, which should be valid. \textbf{Notes:} If clearOtherAttributes is false, existing attributes (which aren’t being replaced) are left alone; otherwise they are cleared. The dictionary should be setup for ”usual” CF type usage — CFString keys, and arbitrary CFType values. Note that after this call, further mutations to the replacement dictionary argument by the caller will not affect the contents of the attributed string.
48.19 class CFMutableBagMBS

48.19.1 class CFMutableBagMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a core foundation mutable bag.

**Notes:**
If the release property is true, the destructor of this class will release the set reference.
Subclass of the CFBagMBS class.

48.19.2 Methods

48.19.3 Add(value as CFOBJECTMBS)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds an object to this bag.

48.19.4 Remove(value as CFOBJECTMBS)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes an object in this bag.

48.19.5 RemoveAll

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes all items from this bag.

48.19.6 Replace(value as CFOBJECTMBS)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Replaces an object in this bag.

48.19.7 Set(value as CFOBJECTMBS)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets an object in this bag.
48.20  class CFMutableBinaryDataMBS

48.20.1  class CFMutableBinaryDataMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for core foundation data.

**Notes:**
If the release property is true, the destructor of this class will release the data reference.
This class works on Windows with QuickTime 7 installed.
Subclass of the CFBinaryDataMBS class.

48.20.2  Methods

48.20.3  AppendCFBinaryDataMBS(m as CFBinaryDataMBS)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Appends the bytes from the given CFBinary object.

**Notes:** This method may fail on low memory, e.g. on Mac OS Classic running a Carbon application with a small application memory partition size.
See also:
- 48.20.4 AppendCFBinaryDataMBS(m as CFBinaryDataMBS,len as Integer) 7790

48.20.4  AppendCFBinaryDataMBS(m as CFBinaryDataMBS,len as Integer)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Appends the bytes from the given CFBinary object.

**Notes:** This method may fail on low memory, e.g. on Mac OS Classic running a Carbon application with a small application memory partition size.
See also:
- 48.20.3 AppendCFBinaryDataMBS(m as CFBinaryDataMBS) 7790

48.20.5  AppendMem(m as memoryblock)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Appends the bytes from the given memoryblock.

**Notes:** This method may fail on low memory, e.g. on Mac OS Classic running a Carbon application with a small application memory partition size.
See also:
- 48.20.6 AppendMem(m as memoryblock,len as Integer) 7791
48.20.  CLASS CFMUTABLEBINARYDATAMBS

48.20.6  AppendMem(m as memoryblock, len as Integer)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Appends the bytes from the given memoryblock.
**Notes:** This method may fail on low memory, e.g. on Mac OS Classic running a Carbon application with a small application memory partition size.
See also:

- 48.20.5 AppendMem(m as memoryblock)

48.20.7  AppendStr(s as string)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Appends the bytes from the given string.
**Notes:** This method may fail on low memory, e.g. on Mac OS Classic running a Carbon application with a small application memory partition size.
See also:

- 48.20.8 AppendStr(s as string, len as Integer)

48.20.8  AppendStr(s as string, len as Integer)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Appends the bytes from the given string.
**Notes:** This method may fail on low memory, e.g. on Mac OS Classic running a Carbon application with a small application memory partition size.
See also:

- 48.20.7 AppendStr(s as string)

48.20.9  Constructor(capacity as Integer)

MBS MacCF Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The constructor for creating a new mutable data object.
**Example:**
```plaintext
// creates empty data object
dim c as new CFMutableBinaryDataMBS(10)
MsgBox str(c.Len) + " length"
```

See also:

- 48.20.10 Constructor(data as MemoryBlock)
48.20.10 Constructor (data as MemoryBlock)

MBS MacCF Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Creates a new data object with given content.

**Example:**

```vbnet
dim m as MemoryBlock = "Hello"
dim d as new CFMutableBinaryDataMBS(m)
```

MsgBox d.Str

See also:

- 48.20.9 Constructor (capacity as Integer)
- 48.20.11 Constructor (data as string)

48.20.11 Constructor (data as string)

MBS MacCF Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Creates a new data object with given content.

**Example:**

```vbnet
dim m as string = "Hello"
dim d as new CFMutableBinaryDataMBS(m)
```

MsgBox d.Str

See also:

- 48.20.9 Constructor (capacity as Integer)
- 48.20.10 Constructor (data as MemoryBlock)

48.20.12 Delete (pos as Integer, len as Integer)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Deletes bytes from a binary data object.

**Notes:** This method may fail on low memory, e.g. on Mac OS Classic running a Carbon application with a small application memory partition size.
48.20. **CLASS CFMUTABLEBINARYDATAMBS**

### 48.20.13 IncreaseLength(extralen as Integer)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Resizes the binary data by extralen adding additional bytes.  
**Notes:** This method may fail on low memory, e.g. on Mac OS Classic running a Carbon application with a small application memory partition size.

### 48.20.14 ReplaceCFBinaryDataMBS(m as CFBinaryDataMBS,pos as Integer,len as Integer)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Replaces len bytes inside the binary data which start at position pos with the bytes from the given binary data.  
See also:

- 48.20.15 ReplaceCFBinaryDataMBS(m as CFBinaryDataMBS,pos as Integer,len as Integer,newlen as Integer) 7793

### 48.20.15 ReplaceCFBinaryDataMBS(m as CFBinaryDataMBS,pos as Integer,len as Integer,newlen as Integer)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Replaces len bytes inside the binary data which start at position pos with the bytes from the given binary data.  
See also:

- 48.20.14 ReplaceCFBinaryDataMBS(m as CFBinaryDataMBS,pos as Integer,len as Integer) 7793

### 48.20.16 ReplaceMem(m as memoryblock,pos as Integer,len as Integer)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Replaces len bytes inside the binary data which start at position pos with the bytes from the memoryblock.  
See also:

- 48.20.17 ReplaceMem(m as memoryblock,pos as Integer,len as Integer,newlen as Integer) 7793

### 48.20.17 ReplaceMem(m as memoryblock,pos as Integer,len as Integer,newlen as Integer)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Replaces len bytes inside the binary data which start at position pos with the bytes from the memoryblock.  
See also:

- 48.20.16 ReplaceMem(m as memoryblock,pos as Integer,len as Integer) 7793
48.20.18 ReplaceStr(s as string,pos as Integer,len as Integer)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Replaces len bytes inside the binary data which start at position pos with the bytes from the string. See also:

- 48.20.19 ReplaceStr(s as string,pos as Integer,len as Integer,newlen as Integer)

48.20.19 ReplaceStr(s as string,pos as Integer,len as Integer,newlen as Integer)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Replaces len bytes inside the binary data which start at position pos with the bytes from the string. See also:

- 48.20.18 ReplaceStr(s as string,pos as Integer,len as Integer)

48.20.20 SetLength(len as Integer)

MBS MacCF Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets length of the data.
48.21. CLASS CFMUTABLECHARACTERSETMBS

48.21 class CFMutableCharacterSetMBS

48.21.1 class CFMutableCharacterSetMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a core foundation character set.

**Notes:**

If the release property is true, the destructor of this class will release the set reference.
This class works on Windows with QuickTime 7 installed.
Subclass of the CFCharacterSetMBS class.

48.21.2 Methods

48.21.3 AddCFStringMBS(s as CFStringMBS)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds a range of characters from the CFStringMBS.

48.21.4 AddRange(min as Integer,max as Integer)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds a range of characters from min to max to the character set.

48.21.5 Intersect(value as CFCharacterSetMBS)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Makes a intersection between both CFCharacterSets.

48.21.6 Invert

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Inverts this character set.
48.21.7  RemoveCFStringMBS(s as CFStringMBS)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes a range of characters from the CFStringMBS.

48.21.8  RemoveRange(min as Integer, max as Integer)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes a range of characters from min to max to the character set.

48.21.9  Union(value as CFCharacterSetMBS)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Makes a Union between both CFCharacterSets.
48.22. CLASS CFMUTABLEDICTIONARYMBS

48.22 class CFMutableDictionaryMBS

48.22.1 class CFMutableDictionaryMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a core foundation dictionary.
**Notes:**
If the release property is true, the destructor of this class will release the dictionary reference.
This class works on Windows with QuickTime 7 installed.
Subclass of the CFDictionaryMBS class.

48.22.2 Methods

48.22.3 Add(key as CFOBJECTMBS, value as CFOBJECTMBS)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds a key value combination to the dictionary.
**Example:**
```pascal
dim d as CFMutableDictionaryMBS

d=NewCFMutableDictionaryMBS

d.Add NewCFSStringMBS("Key"), NewCFSStringMBS("Value")
MsgBox d.XML.str
```

48.22.4 Remove(key as CFOBJECTMBS)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes all entries with the given key.
**Notes:** Maybe no key is found.

48.22.5 RemoveAll

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes all entries.
48.22.6  Replace(key as CFObj ectMBS, value as CFObj ectMBS)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Replaces all entries with the given key to contain the given value.
**Notes:** Maybe no key is found.

48.22.7  Set(key as CFObj ectMBS, value as CFObj ectMBS)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the entry with the given key to the given value.
**Example:**

```vbnet
dim d as new CFMutableDictionaryMBS

d.Add NewCFStringMBS("Key"), NewCFStringMBS("Value")
d.Set NewCFStringMBS("Key"), NewCFStringMBS("Value2") // set changes value, add would not change it here

MsgBox d.XML.Str
```
48.23  class CFMutableSetMBS

48.23.1 class CFMutableSetMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a core foundation set.  
**Notes:**  
If the release property is true, the destructor of this class will release the set reference.  
Subclass of the CFSetMBS class.

48.23.2 Methods

48.23.3 Add(value as CFOBJECTMBS)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds an object to this set.

48.23.4 Remove(value as CFOBJECTMBS)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes an object in this set.

48.23.5 RemoveAll

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes all items from this set.

48.23.6 Replace(value as CFOBJECTMBS)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Replaces an object in this set.

48.23.7 Set(value as CFOBJECTMBS)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets an object in this set.
class CFMutableStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

Function: A class for a core foundation mutable string.

Notes:

If the release property is true, the destructor of this class will release the set reference.
This class works on Windows with QuickTime 7 installed.
Subclass of the CFStringMBS class.

Methods

AppendCFStringMBS(s as CFStringMBS)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

Function: Appends the given CFStringMBS.

AppendString(s as String)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

Function: Appends the given REALbasic String.

Capitalize

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

Function: Changes the first character represented by a CFStringMBS object to uppercase (if it is a lowercase alphabetical character).

Delete(pos as Integer,len as Integer)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

Function: Deletes a range of characters in a mutable CFStringMBS object.
48.24.7  **Insert(index as Integer,s as CFStringMBS)**

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Inserts a string at a specified location in the character buffer of a mutable CFStringMBS object.

48.24.8  **LocalizedCapitalize(LocaleIdentifier as String)**


**Notes:**
Locale identifier can be "de", "de_DE" or "German" style.
Raises RaiseUnsupportedOperationException if locale identifier is not known.

48.24.9  **LocalizedLowercase(LocaleIdentifier as String)**


**Notes:**
Locale identifier can be "de", "de_DE" or "German" style.
Raises RaiseUnsupportedOperationException if locale identifier is not known.

48.24.10 **LocalizedUppercase(LocaleIdentifier as String)**


**Example:**
```
dim m1 as new CFMutableStringMBS("i")
dim m2 as new CFMutableStringMBS("i")
```
```
m1.Uppercase
m2.LocalizedUppercase("Turkish")
```
```
MsgBox m1.Str+EndOfLine+m2.Str
// shows to variants of capital I
```

**Notes:**
Locale identifier can be "de", "de_DE" or "German" style.
Raises RaiseUnsupportedOperationException if locale identifier is not known.
48.24.11 Lowercase

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Changes all uppercase alphabetical characters in a mutable CFStringMBS to lowercase.

48.24.12 Normalize(NormalizationForm as Integer)

MBS MacCF Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Normalizes the string into the specified form as described in Unicode Technical Report # 15.

**Example:**

```plaintext
const kCFStringNormalizationFormD = 0 // Canonical Decomposition
const kCFStringNormalizationFormKD = 1 // Compatibility Decomposition
const kCFStringNormalizationFormC = 2 // Canonical Decomposition followed by Canonical Composition
const kCFStringNormalizationFormKC = 3 // Compatibility Decomposition followed by Canonical Composition

dim s as CFStringMBS
dim m as CFMutableStringMBS

s=NewCFStringMBS(“Hello ”)
m=s.Normalize(kCFStringNormalizationFormD)

MsgBox str(s.Len)+” ”+str(m.len)

// decomposed the length is one more.
```

**Notes:** Requires Mac OS X 10.2 or newer.

48.24.13 Pad(padstr as CFStringMBS,len as Integer,indexIntoPad as Integer)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Enlarges the string represented by a CFStringMBS object, padding it with specified characters, or truncates the string.

**Notes:**

The CFStringMBS.Pad function has two purposes. It either enlarges the character buffer of a mutable CFStringMBS object to a given length, padding the added length with a given character or characters, or it truncates the character buffer to a smaller size. The key parameter for this behavior is the length parameter; if it is greater than the current length of the represented string, padding takes place, and if it is less than that
length, truncation occurs.

For example, say you have a mutable CFStringMBS (aMutStr) containing the characters "abcdef". The call

CFStringMBS.Pad(newcfstring(". " ), 12, 1)

results in aMutStr containing "abcdef . . .". However, the following call

CFStringMBS.Pad( nil, 3, 0)

results in aMutStr containing "abc".

48.24.14 Replace(newstr as CFStringMBS)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Replaces the content of this CFMutableStringMBS with the one from newstr.

See also:

- 48.24.15 Replace(pos as Integer,len as Integer,newstr as CFStringMBS) 7804

48.24.15 Replace(pos as Integer,len as Integer,newstr as CFStringMBS)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Replaces the substring with the given range of this CFMutableStringMBS with the one from newstr.

See also:

- 48.24.14 Replace(newstr as CFStringMBS) 7804

48.24.16 Trim

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Trims whitespace from the beginning and end of the characters represented by a mutable CFStringMBS object.

See also:

- 48.24.17 Trim(trimchar as CFStringMBS) 7804

48.24.17 Trim(trimchar as CFStringMBS)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Trims a specified substring from the beginning and end of the character contents represented by a mutable CFStringMBS
48.24. **CLASS CFMUTABLESTRINGMBS**

object.

See also:

- 48.24.16 Trim

### 48.24.18 Truncate(len as Integer)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** If the string is longer than len, it is truncated to len.

### 48.24.19 Uppercase

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Changes all lowercase alphabetical characters in a mutable CFStringMBS object to uppercase.
48.25  class CFNumberMBS

48.25.1  class CFNumberMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a core foundation number.

**Example:**

```vb
dim n as CFNumberMBS = NewCFNumberMBSDouble(4.3)
MsgBox str(n.doubleValue)
```

**Notes:**

If the release property is true, the destructor of this class will release the number reference.
Subclass of the CFObjectMBS class.

48.25.2  Methods

48.25.3  Compare(other as CFNumberMBS) as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Compares two CFNumbers.

**Notes:**

Return values:

- Less Than    -1
- Equal To     0
- Greater Than 1

From CFNumberMBS.h:

Compares the two CFNumberMBS instances. If conversion of the types of the values is needed, the conversion and comparison follow human expectations and not C’s promotion and comparison rules. Negative zero compares less than positive zero.
Positive infinity compares greater than everything except itself, to which it compares equal. Negative infinity compares less than everything except itself, to which it compares equal. Unlike standard practice, if both numbers are NaN, then they compare equal; if only one of the numbers is NaN, then the NaN compares greater than the other number if it is negative, and smaller than the other number if it is positive.
48.25.4  **NewWithDouble(value as Double) as CFNumberMBS**

MBS MacCF Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new CFNumberMBS with a 64bit float value.

48.25.5  **NewWithInt16(value as Int16) as CFNumberMBS**

MBS MacCF Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new CFNumberMBS with a 16bit integer value.

48.25.6  **NewWithInt32(value as Int32) as CFNumberMBS**

MBS MacCF Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new CFNumberMBS with a 32bit integer value.

48.25.7  **NewWithInt64(value as Int64) as CFNumberMBS**

MBS MacCF Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new CFNumberMBS with a 64bit integer value.

**Example:**
```
dim c as CFNumberMBS = CFNumberMBS.NewWithInt64(123456789123456789)
// shows type. 4 is signed 64-bit integer
MsgBox str(c.NumberType)+": " +str(c.int64Value)
```

48.25.8  **NewWithInt8(value as Int8) as CFNumberMBS**

MBS MacCF Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new CFNumberMBS with a 8bit integer value.

48.25.9  **NewWithSingle(value as Single) as CFNumberMBS**

MBS MacCF Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new CFNumberMBS with a 32bit float value.
48.25.10 Properties

48.25.11 ByteSize as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the size in bytes of the type of the number.
**Notes:** (Read only property)

48.25.12 doubleValue as Double

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The value of this CFNumberMBS object.
**Notes:** (Read only property)

48.25.13 int16Value as Int16

MBS MacCF Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries value as 16bit integer.
**Notes:** (Read only property)

48.25.14 int32Value as Int32

MBS MacCF Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries value as 32bit integer.
**Notes:** (Read only property)

48.25.15 int64Value as Int64

MBS MacCF Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries value as 64bit integer.
**Example:**

```vba
dim c as CFNumberMBS = CFNumberMBS.NewWithInt64(123456789123456789)
// shows type. 4 is signed 64-bit integer
MsgBox str(c.NumberType)+"": ""+str(c.int64Value)
```
48.25. CLASS CFNUMBERMBS

Notes: (Read only property)

48.25.16 int8Value as Int8

MBS MacCF Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Queries value as 8bit integer. Notes: (Read only property)

48.25.17 integerValue as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The value of this CFNumberMBS object. Example:

dim n as CFNumberMBS
n=NewCFNumberMBSInteger(45)
MsgBox str(n.doubleValue)+” ”+str(n.integerValue)+” ”+str(n.singleValue)
n=NewCFNumberMBSSingle(45.67)
MsgBox str(n.doubleValue)+” ”+str(n.integerValue)+” ”+str(n.singleValue)
n=NewCFNumberMBSDouble(45.6789)
MsgBox str(n.doubleValue)+” ”+str(n.integerValue)+” ”+str(n.singleValue)

// in version 5.1 of the plugins:
// 45 45 45
// 45.67 0 45.67
// 45.6789 0 0
//
// in version 5.2 of the plugins: (after a fix)
// 45 45 45
// 45.67 45 45.67
// 45.6789 45 45.6789

Notes:
Returns a truncated value if the number is not storeable in an integer. (Read only property)
### 48.25.18 isFloat as boolean

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns TRUE if the type of the CFNumberMBS’s value is one of the defined floating point types. **Notes:** (Read only property)

### 48.25.19 NumberType as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the storage format of the CFNumberMBS’s value. **Notes:**

Possible values:

<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
<th>Realbasic Datatype</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIInt8</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>SIInt16</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>SIInt32</td>
<td>3</td>
<td>integer</td>
</tr>
<tr>
<td>SIInt64</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>Float32</td>
<td>5</td>
<td>single</td>
</tr>
<tr>
<td>Float64</td>
<td>6</td>
<td>double</td>
</tr>
<tr>
<td>Char</td>
<td>7</td>
<td>-</td>
</tr>
<tr>
<td>Short</td>
<td>8</td>
<td>-</td>
</tr>
<tr>
<td>Int</td>
<td>9</td>
<td>-</td>
</tr>
<tr>
<td>Long</td>
<td>10</td>
<td>integer</td>
</tr>
<tr>
<td>LongLong</td>
<td>11</td>
<td>-</td>
</tr>
<tr>
<td>Float</td>
<td>12</td>
<td>single</td>
</tr>
<tr>
<td>Double</td>
<td>13</td>
<td>double</td>
</tr>
<tr>
<td>CFIndex</td>
<td>14</td>
<td>integer</td>
</tr>
</tbody>
</table>

(Read only property)

### 48.25.20 singleValue as single

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The value of this CFNumberMBS object. **Example:**

```
dim n as CFNumberMBS

n=NewCFNumberMBSInteger(45)
```
MsgBox str(n.doubleValue) + " + str(n.integerValue) + " + str(n.singleValue)

n=NewCFNumberMBSSingle(45.67)
MsgBox str(n.doubleValue) + " + str(n.integerValue) + " + str(n.singleValue)

n=NewCFNumberMBSDouble(45.6789)
MsgBox str(n.doubleValue) + " + str(n.integerValue) + " + str(n.singleValue)

// in version 5.1 of the plugins:
// 45 45 45
// 45.67 0 45.67
// 45.6789 0 0

// in version 5.2 of the plugins: (after a fix)
// 45 45 45
// 45.67 45 45.67
// 45.6789 45 45.6789

Notes:

Returns a truncated value if the number is not storeable in a single.
(Read only property)
48.26  class CFObjectMBS

48.26.1  class CFObjectMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a core foundation object.

**Example:**

```realbasic
// is object is a CFStringMBS, return it a Realbasic string.
Function st(o as CFObjectMBS) As string
    if o isa CFStringMBS then
        return CFStringMBS(o).str
    end if
End Function
```

**Notes:** If the release property is true, the destructor of this class will release the object reference.

48.26.2  Methods

48.26.3  close

MBS MacCF Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The destructor.

**Notes:**

There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

48.26.4  DeepCopy as CFObjectMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a deep copy of the CFObject.

**Notes:** Copies all sub objects if the Object has sub objects (like the Dictionary).

48.26.5  EncodedData as MemoryBlock

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the content of the object and all subobjects as a binary encoded plist file content.

**Notes:**
Returns nil on any error. For example if you have CFDictionary with keys not being CFStringMBS objects. You can write this to a plist file.

48.26.6 Equal(o as CFObjectMBS) as boolean

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns true if both CFOObjects are equal in type and content.

48.26.7 NewCFObject(handle as Integer) as CFObjectMBS

Example:

```javascript
// make string
dim s as CFStringMBS = NewCFStringMBS("Hello World")

// get handle
dim h as Integer = s.Handle

// get back from handel to plugin object
dim o as CFObjectMBS = CFObjectMBS.NewCFObject(h)

// and see if plugin detected a string
if o isa CFStringMBS then
    dim t as CFStringMBS = CFStringMBS(o)
    MsgBox t.str
end if
```

48.26.8 ReleaseObject

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Decreases the retain count of this object.
Notes: If the retain count falls below 1, the object is destroyed.
48.26.9 RetainCount as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the reference counter of the object.

**Example:**

```vbs
Dim o As CFObjectMBS
Dim s As CFStringMBS
s = NewCFStringMBS("Hello")
MsgBox "s has "+Str(s.RetainCount)+" refs in CF"
o = s
MsgBox "o has "+Str(o.RetainCount)+" refs in CF"
o.RetainObject
MsgBox "o has "+Str(o.RetainCount)+" refs in CF"
o.ReleaseObject
MsgBox "o has "+Str(o.RetainCount)+" refs in CF"
o.Close
MsgBox "o has "+Str(o.RetainCount)+" refs in CF"
```

**Notes:** If the retain count falls below 1, the object is destroyed.

48.26.10 RetainObject

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Increases the retain count of this object.

**Example:**

```vbs
Function CFDateFromCFObject(o As cfobjectMBS) As cfdateMBS
Dim d As CFDateMBS
If o <> nil Then
  If o.Type = kCFDateMBSTypeID Then
    d = new CFDateMBS
    d.Handle = o.Handle
    d.RetainObject
  End If
End If
```
48.26. **CLASS CFOBJECTMBS**

end if

Exception
End Function

**Notes:** If the retain count falls below 1, the object is destroyed.

---

**48.26.11 XML as CFBinaryDataMBS**

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the content of the object and all subobjects as a XML file content. **Example:**

```plaintext
// Save a dictionary in a XML file:

dim d as CFMutableDictionaryMBS
dim f as FolderItem
dim t as TextOutputStream

// Create dictionary
d=NewCFMutableDictionaryMBS
// Fill dictionary
d.Add NewCFStringMBS("Key"),NewCFStringMBS("Value")

// get file name
f=GetFolderItem("CF XML Test.txt")

// create file
t=f.CreateTextFile
// Write XML
t.Write d.XML.Str
// close file
t.Close
```

**Notes:**
Returns nil on any error. For example if you have CFDictionary with keys not being CFStringMBS objects. You can write this to a plist file.
48.26.12 Properties

48.26.13 Handle as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The core foundation object references.  
**Notes:** (Read and Write property)

48.26.14 Hash as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a hash code for this object.  
**Notes:** (Read only property)

48.26.15 Lasterror as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last error code reported.  
**Notes:**  
Please check each function on whether it sets the lasterror property.  
(Read and Write property)

48.26.16 Type as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Type ID for this object.  
**Notes:** (Read only property)

48.26.17 TypeDescription as String

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the type description for this object.  
**Notes:**  
e.g. "CFString" or "CFNumber".  
(Read only property)
48.27.1 class CFPreferencesMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for the core foundation preferences services.

**Example:**

```vba
Sub Open()
    '// in a listbox on a window, list all preferences applications for the current user
    Dim c As CFArrayMBS
    Dim p As CFPreferencesMBS
    Dim i As Integer
    Dim count As Integer
    Dim o As CFObj ectMBS
    Dim s As CFStringMBS
    p = New CFPreferencesMBS
    c = p.CopyApplicationList(p.kCFPreferencesCurrentUser, p.kCFPreferencesAnyHost)
    count = c.Count - 1
    For i = 0 To count
        o = c.Item(i)
        If o isa CFStringMBS Then
            s = CFStringMBS(o)
            Window1.listbox1.AddRow s.str
        End If
    Next
    Title = str(ListBox1.ListBox) + " " + Title
End Sub
```

**Notes:** Search for Apple Developer documentation on CFPreferences for details on functionality these plugin functions provide.

48.27.2 Methods

48.27.3 AddSuitePreferencesToApp(ApplicationID as CFStringMBS, SuiteID as CFStringMBS)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds a new suite to the application preferences.
48.27.4 AppSynchronize(ApplicationID as CFStringMBS) as boolean

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Synchronizes the values in the RAM with the disk for the given application. **Notes:** Returns false on any error.

48.27.5 CopyAppBooleanValue(Key as CFStringMBS, ApplicationID as CFStringMBS) as boolean

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Copies the application preferences boolean value. **Notes:** On an error it returns false and KeyExistsAndHasValidFormat is set to false.

48.27.6 CopyAppIntegerValue(Key as CFStringMBS, ApplicationID as CFStringMBS) as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Copies the application preferences integer value. **Notes:** On an error it returns false and KeyExistsAndHasValidFormat is set to false.

48.27.7 CopyApplicationList(userName as CFStringMBS, hostName as CFStringMBS) as CFArrayMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a list of all applications which have preferences. **Example:**

```vba
Sub Open()
    // in a listbox on a window, list all preferences applications for the current user
    dim c as CFArrayMBS
    dim p as CFPreferencesMBS
    dim i as Integer
    dim count as Integer
    dim o as CFObjectMBS
    dim s as CFStringMBS

    p=new CFPreferencesMBS
    c=p.CopyApplicationList(p.kCFPreferencesCurrentUser, p.kCFPreferencesAnyHost)
    count=c.Count-1
    for i=0 to count
        o=c.Item(i)
```
if o isa CFStringMBS then
s=CFStringMBS(o)
ListBox1.AddRow s.str
end if
next

Title=str(ListBox1.ListCount)+" " +Title
End Sub

Notes: Returns false on any error.

48.27.8 CopyAppValue(Key as CFStringMBS, ApplicationID as CFStringMBS) as CFOBJECTMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Copies the application preferences value.

Example:

// copy names of recent items in Real Studio Preferences

dim names() as string
dim c as new CFPreferencesMBS

dim o as CFOBJECTMBS = c.CopyAppValue(NewCFStringMBS("Recent Items Dict"), NewCFStringMBS("com.realsoftware.realstudio"))

if o isa CFArrayMBS then
dim a as CFArrayMBS = CFArrayMBS(o)

dim u as Integer = a.Count-1
for i as Integer = 0 to u
o = a.Item(i)
if o isa CFDictionaryMBS then
dim d as CFDictionaryMBS = CFDictionaryMBS(o)

dim no as CFOBJECTMBS = d.Value(NewCFStringMBS("Name"))
if no isa CFStringMBS then
dim ns as CFStringMBS = CFStringMBS(no)
names.Append ns.str
end if
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end if
next
end if

MsgBox Join(names, EndOfLine)

Notes: Returns nil on any error.

48.27.9 CopyDictionary(ApplicationID as CFStringMBS, userName as CFStringMBS, hostName as CFStringMBS) as CFDictionaryMBS

Example:

dim p as new CFPREFERENCESMBS
p.SetValue(NewCFStringMBS("TestString"), NewCFStringMBS("Hello World"), p.kCFPreferencesCurrentApplication, p.kCFPreferencesCurrentUser, p.kCFPreferencesCurrentHost)
p.SetValue(NewCFStringMBS("TestIdDouble"), NewCFNumberMBSDouble(5.6), p.kCFPreferencesCurrentApplication, p.kCFPreferencesCurrentUser, p.kCFPreferencesCurrentHost)
p.SetValue(NewCFStringMBS("TestIdInteger"), NewCFNumberMBSInteger(3), p.kCFPreferencesCurrentApplication, p.kCFPreferencesCurrentUser, p.kCFPreferencesCurrentHost)

dim d as CFDICTIONARYMBS = p.CopyDictionary(p.kCFPreferencesCurrentApplication, p.kCFPreferencesCurrentUser, p.kCFPreferencesCurrentHost)
dim x as CFBinaryDataMBS = d.XML
dim s as string = x.Str

break
// check data in variable s with xml of all properties

Notes: Returns nil on any error.

48.27.10 CopyKeyList(ApplicationID as CFStringMBS, userName as CFStringMBS, hostName as CFStringMBS) as CFArrayMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a list of all preferences keys for the given application.
Notes: Returns false on any error.
48.27.11 CopyMultiple(Key as CFArrayMBS, ApplicationID as CFStringMBS, userName as CFStringMBS, hostName as CFStringMBS) as CFDictionaryMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Copies several preferences value.
**Notes:** Returns nil on any error.

48.27.12 CopyValue(Key as CFStringMBS, ApplicationID as CFStringMBS, userName as CFStringMBS, hostName as CFStringMBS) as CFObjectMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Copies a preferences value.
**Example:**

```plaintext
dim c as CFPREFERENCESMBS
dim o as CFOBJECTMBS
dim a as CFStringMBS // application
dim k as CFStringMBS // key

k=NewCFStringMBS("AvailableLanguages")
a=NewCFStringMBS("com.apple.systempreferences")
c=new CFPREFERENCESMBS

o=c.CopyValue(k,a,c.kCFPreferencesCurrentUser,c.kCFPreferencesAnyHost)

CFShowMBS o

// Shows in the console application something like this:
// <CFArray>
// 0 : <CFString>{ contents = "en" }
// 1 : <CFString>{ contents = "de" }
// </CFArray>
```

**Notes:** Returns nil on any error.
48.27.13 kCFPreferencesAnyApplication as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A constant for preferences functions of Mac OS X.

48.27.14 kCFPreferencesAnyHost as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A constant for preferences functions of Mac OS X.

48.27.15 kCFPreferencesAnyUser as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A constant for preferences functions of Mac OS X.

48.27.16 kCFPreferencesCurrentApplication as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A constant for preferences functions of Mac OS X.

48.27.17 kCFPreferencesCurrentHost as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A constant for preferences functions of Mac OS X.

48.27.18 kCFPreferencesCurrentUser as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A constant for preferences functions of Mac OS X.

48.27.19 RemoveSuitePreferencesFromApp(ApplicationID as CFStringMBS, SuiteID as CFStringMBS)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes a new suite to the application preferences.
48.27.20  
SetAppValue(Key as CFStringMBS, value as CFObjectMBS, ApplicationID as CFStringMBS)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets an application preferences value.  
**Notes:** Note that on saving all strings are internally converted to UTF-8.

48.27.21  
SetMultiple(KeysToSet as CFDictionaryMBS, KeysToRemove as CFArrayMBS, ApplicationID as CFStringMBS, userName as CFStringMBS, hostName as CFStringMBS)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets several preferences values.  
**Notes:** Note that on saving all strings are internally converted to UTF-8.

48.27.22  
SetValue(Key as CFStringMBS, Value as CFObjectMBS, ApplicationID as CFStringMBS, userName as CFStringMBS, hostName as CFStringMBS)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets a preferences value.  
**Notes:** Note that on saving all strings are internally converted to UTF-8.

48.27.23  
Synchronize(ApplicationID as CFStringMBS, userName as CFStringMBS, hostName as CFStringMBS) as boolean

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Synchronizes the values in the RAM with the disk for the given application.  
**Notes:** Returns false on any error.

48.27.24  
**Properties**

48.27.25  
**KeyExistsAndHasValidFormat as Boolean**

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Set by CopyAppStateBooleanValue and CopyAppStateIntegerValue.  
**Notes:** (Read and Write property)
48.28 class CFRangeMBS

48.28.1 class CFRangeMBS

**Notes:** A range of sequential items in a container, such as characters in a buffer or elements in a collection.

48.28.2 Methods

48.28.3 Constructor(location as Integer = 0, length as Integer = 0)

MBS MacCF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new range with given values.

48.28.4 Properties

48.28.5 length as Integer

MBS MacCF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An integer representing the number of items in the range.  
**Notes:** (Read and Write property)

48.28.6 location as Integer

MBS MacCF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An integer representing the starting location of the range.  
**Notes:** (Read and Write property)
48.29. **CLASS CFSETLISTMBS**

---

### 48.29 class CFSetListMBS

**48.29.1 class CFSetListMBS**

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for the items of a CFSetMBS.

**48.29.2 Methods**

#### 48.29.3 Value(index as Integer) as CFObjectMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the value with the given index.

**48.29.4 Properties**

#### 48.29.5 Count as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Counts the items in the set.  
**Notes:** (Read and Write property)
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48.30 class CFSetMBS

48.30.1 class CFSetMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a core foundation set.

**Notes:**

If the release property is true, the destructor of this class will release the set reference.

Subclass of the CFObjectMBS class.

48.30.2 Methods

48.30.3 clone as CFSetMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Clones the set and all values.

48.30.4 Constructor

MBS MacCF Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new editable set object.

**Example:**

```plaintext
dim e as new CFMutableSetMBS
e.Add(NewCFStringMBS("Hello"))
MsgBox str(e.Count)
```

48.30.5 ContainsValue(value as CFObjectMBS) as boolean

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Does the set contain this value?

48.30.6 CountValue(value as CFObjectMBS) as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Counts how often this value is inside the set.
48.30. CLASS CFSETMBS

48.30.7 edit as CFMutableSetMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: To edit a set, this method returns you a CFMutableSetMBS.

48.30.8 list as CFSetListMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a list of all values.
Notes: This list will be invalid whenever this set is destroyed.

48.30.9 Value(value as CFObjectMBS) as CFObjectMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: If the value is found the value is returned.
Notes: Returns nil if key is not found.

48.30.10 Properties

48.30.11 Count as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Counts all values.
Example:

Dim x As New CFMutableSetMBS
x.Set(New CFRingMBS("Hello"))
MsgBox str(x.Count)

Notes: (Read only property)
48.31 class CFStringMBS

48.31.1 class CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a core foundation string.

**Example:**

```vbnet
dim s as CFStringMBS
dim t as CFStringMBS
dim x as string
dim o as CFObjectMBS

s=NewCFStringMBS("hello")

// make XML as string
x=s.XML.str

// recreate object from XML
o=NewCFOBJECTMBSFromXML(NewCFBinaryDataMBSStr(x))

if o isa CFStringMBS then
t=CFStringMBS(o)

// show string content
MsgBox t.str
end if
```

**Notes:**

If the release property is true, the destructor of this class will release the string reference.

This class works on Windows with QuickTime 7 installed.

Subclass of the CFOBJECTMBS class.

48.31.2 Methods

48.31.3 Character(index as Integer) as string

**Function:** Returns the character from this string with the given index.

**Notes:** The returned REALbasic string contains a Unicode character.
48.31. **CLASS CFSTRINGMBS**

### 48.31.4 Characters(pos as Integer, len as Integer) as string

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the characters from this string in the given range.

**Notes:** The returned REALbasic string contains Unicode characters.

### 48.31.5 Compare(other as CFStringMBS) as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Compares two strings.

**Notes:**

Return values:

<table>
<thead>
<tr>
<th>Less Than</th>
<th>-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equal To</td>
<td>0</td>
</tr>
<tr>
<td>Greater Than</td>
<td>1</td>
</tr>
<tr>
<td>Function not available</td>
<td>-2</td>
</tr>
</tbody>
</table>

See also:

- 48.31.6 Compare(other as CFStringMBS, CaseInsensitive as boolean) as Integer
- 48.31.7 Compare(other as CFStringMBS, CaseInsensitive as boolean, Numerically as boolean) as Integer
- 48.31.8 Compare(other as CFStringMBS, Options as Integer) as Integer

### 48.31.6 Compare(other as CFStringMBS, CaseInsensitive as boolean) as Integer

MBS MacCF Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Compares two strings.

**Notes:**

Return values:

<table>
<thead>
<tr>
<th>Less Than</th>
<th>-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equal To</td>
<td>0</td>
</tr>
<tr>
<td>Greater Than</td>
<td>1</td>
</tr>
<tr>
<td>Function not available</td>
<td>-2</td>
</tr>
</tbody>
</table>

See also:
48.31.7 Compare(other as CFStringMBS, CaseInsensitive as boolean, Numerically as boolean) as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Compares two strings.

**Example:**

```vba
dim s as CFStringMBS
dim t as CFStringMBS
dim n1,n2 as Integer

s=NewCFStringMBS("Hello7.txt")
t=NewCFStringMBS("Hello10.txt")
n1=s.Compare(t,false)
n2=s.Compare(t,false,true)

MsgBox "Without numerical: "+str(n1)+", With numerical: "+str(n2)+".
```

**Notes:**

Numerically works only if Mac OS X 10.2 or newer is running.

**Return values:**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less Than</td>
<td>-1</td>
</tr>
<tr>
<td>Equal To</td>
<td>0</td>
</tr>
<tr>
<td>Greater Than</td>
<td>1</td>
</tr>
<tr>
<td>Function not available</td>
<td>-2</td>
</tr>
</tbody>
</table>

See also:

- 48.31.5 Compare(other as CFStringMBS) as Integer
- 48.31.6 Compare(other as CFStringMBS, CaseInsensitive as boolean) as Integer
- 48.31.8 Compare(other as CFStringMBS, Options as Integer) as Integer
48.31. **CLASS CFSTRINGMBS**

### 48.31.8 Compare(other as CFStringMBS, Options as Integer) as Integer

MBS MacCF Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Compares two strings.

**Example:**

// Just a quick and dirty test for this function:

```vba
dim s(10) as string
dim i as Integer
dim temp as string
dim isDirty as boolean
dim a,b as CFStringMBS

s(1)="Apfel"
s(2)="Strasse"
s(3)="Bum"
s(4)="Strae"
s(5)="Zaun"
s(6)="pfel"
s(7)="bum"
s(8)="Baum"
s(9)="pfel"
s(10)="Ende"

// if kCFCompareLocalized is used, the pfel come near Apfel.

const kCFCompareCaseInsensitive = 1
const kCFCompareBackwards = 4 // Starting from the end of the string */
const kCFCompareAnchored = 8 // Only at the specified starting point */
const kCFCompareNonliteral = 16 // If specified, loose equivalence is performed (o-umlaut == o, umlaut) */
const kCFCompareLocalized = 32 // User’s default locale is used for the comparisons */
const kCFCompareNumerically = 64 // Numeric comparison is used; that is, Foo2.txt < Foo7.txt < Foo25.txt */

'Sortieren
do
isDirty = false // we haven’t touched anything yet
for i = 1 to 10-1 // loop through all the numbers

a=NewCFStringMBS(s(i))
b=NewCFStringMBS(s(i+1))

if a.Compare(b,kCFCompareLocalized)>0 then
    temp = s(i+1)
s(i+1) = s(i)
s(i) = temp
```

isDirty = true // we touched the data so mark it as dirty
end
next
loop until isDirty = false // if we made it without touching the data then we are done

for i=1 to 10
    EditField1.text = EditField1.text + s(i) + chr(13)
next i

Notes:
Numerically works only if Mac OS X 10.2 or newer is running.

Return values:

<table>
<thead>
<tr>
<th>Condition</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less Than</td>
<td>-1</td>
</tr>
<tr>
<td>Equal To</td>
<td>0</td>
</tr>
<tr>
<td>Greater Than</td>
<td>1</td>
</tr>
<tr>
<td>Function not available</td>
<td>-2</td>
</tr>
</tbody>
</table>

See also:

- 48.31.5 Compare(other as CFStringMBS) as Integer 7829
- 48.31.6 Compare(other as CFStringMBS, CaseInsensitive as boolean) as Integer 7829
- 48.31.7 Compare(other as CFStringMBS, CaseInsensitive as boolean, Numerically as boolean) as Integer 7830

48.31.9 Constructor(text as string = "")

Example:

dim c as new CFStringMBS("Hello")
MsgBox c
48.31. CLASS CFSTRINGMBS

48.31.10 Edit as CFMutableStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a mutable string.

48.31.11 ExactFind(stringtofind as CFStringMBS) as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Finds the given string.
**Notes:** Exactly, so case sensitive.

48.31.12 Find(stringtofind as CFStringMBS) as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Finds the given string.

48.31.13 HasPrefix(s as CFStringMBS) as boolean

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Does this string start with s.

48.31.14 HasSuffix(s as CFStringMBS) as boolean

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Does this string end with s.

48.31.15 Mid(pos as Integer,len as Integer) as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a new CFStringMBS with a substring from the current CFStringMBS.
**Notes:** Compare to Mid in RB.

48.31.16 Normalize(NormalizationForm as Integer) as CFMutableStringMBS

MBS MacCF Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Normalizes the string into the specified form as described in Unicode Technical Report # 15.
Example:

```vbs
const kCFStringNormalizationFormD = 0 // Canonical Decomposition
const kCFStringNormalizationFormKD = 1 // Compatibility Decomposition
const kCFStringNormalizationFormC = 2 // Canonical Decomposition followed by Canonical Composition
const kCFStringNormalizationFormKC = 3 // Compatibility Decomposition followed by Canonical Composition

dim s as CFStringMBS
dim m as CFMutableStringMBS

s=NewCFStringMBS("Hello ")
m=s.Normalize(kCFStringNormalizationFormD)

MsgBox str(s.Len)+" "+str(m.len)

// decomposed the length is one more.
```

Notes:

Requires Mac OS X 10.2 or newer.
Returns nil on any error.

48.31.17 Operator_Convert as String

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An internal method for Realbasic 5.x.

**Example:**

```vbs
dim s as cfstringmbs
s=NewCFStringMBS("Hello")
msgbox s
```

**Notes:**

This method is used by Realbasic 5.x to allow you to directly create a Realbasic string based on a CoreFoundation string.
Realbasic may create a NilObjectException if the cfstring object is nil.
See also:

- 48.31.18 Operator_Convert(v As String)
48.31. **CLASS CFSTRINGMBS**

### 48.31.18 Operator_Convert(v As String)

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An internal method for Realbasic 5.x.

**Example:**

```vbnet
dim s as cfstringmbs
s="Hello"
// replaces: s=NewCFStringMBS("Hello")
```

**Notes:** This method is used by Realbasic 5.x to allow you to directly create a corefoundation string object based on a Realbasic string.

See also:

- 48.31.17 Operator_Convert as String

### 48.31.19 stringWithHandle(Handle as Integer) as CFStringMBS

MBS MacCF Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new string object based on a handle value.

**Notes:** Will retain the reference.

### 48.31.20 Properties

#### 48.31.21 DisplayString as String

MBS MacCF Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** For the debugger the string of this CFString reduced to maximum of 1000 characters.

**Notes:** (Read only property)

### 48.31.22 DoubleValue as Double

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the string interpreted as an double value.

**Example:**

```vbnet
dim d as CFStringMBS = NewCFStringMBS("3.4")
MsgBox str(d.DoubleValue)
```

**Notes:**
CHAPTER 48. COREFOUNDATION

Compare to val.
Skips whitespace; returns 0.0 on error.
(Read only property)

48.31.23  FastestEncoding as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Obtains the encoding for the characters in a CFString that requires the least conversion time.

**Notes:**
-1 on Windows.
(Read only property)

48.31.24  IntegerValue as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the string interpreted as an integer value.

**Example:**

dim d as CFStringMBS = NewCFStringMBS(”3.4”)
MsgBox str(d.IntegerValue) // shows 3

**Notes:**
Compare to val.
Skips whitespace; returns 0 on error, MAX or -MAX on overflow.
(Read only property)

48.31.25  Len as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the length in chars of the string.

**Notes:** (Read only property)

48.31.26  SmallestEncoding as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Obtains the smallest encoding on the current system for the character contents of a CFString object.

Notes:
48.31. CLASS CFSTRINGMBS

Value is -1 on Windows and Mac OS Classic.
(Read only property)

48.31.27 Str as String

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the string data as Realbasic string.

**Notes:**
Returns the string in a one byte encoding. If possible ASCII string, else if possible MacRoman encoded else UTF8.
(Read and Write computed property)

48.31.28 UStr as String

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the string data as Realbasic unicode string (16bit).

**Deprecated:** This item is deprecated and should no longer be used. You can use Str instead. **Notes:**
If the string can not be returned as an unicode string, this function returns it as a normal string in System script (e.g. MacRoman).
(Read and Write computed property)
48.32 class CFTimeIntervalMBS

48.32.1 class CFTimeIntervalMBS

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A class for a time interval value. Notes: The time interval is basically a double property inside the class.

48.32.2 Properties

48.32.3 Value as Double

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The value of the class. Notes: (Read and Write property)
48.33.1 class CFTimeZoneMBS

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a core foundation time zone.

**Example:**

```
dim t as new CFTimeZoneMBS
MsgBox t.Name.str
```

**Notes:** Subclass of the CFObjectMBS class.

### 48.33.2 Methods

#### 48.33.3 Abbreviation(atTime as CFAbsoluteTimeMBS) as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The abbreviation for the given timezone name.

**Example:**

```
dim t as new CFTimeZoneMBS
MsgBox t.Abbreviation(nil)
```

**Notes:**

Returns nil on any error.

As the name may change depending on whether it’s daylight saving time, you should give an absolute time value.

### 48.33.4 Constructor

MBS MacCF Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A constructor which fills the object with the system timezone.

**Example:**

```
dim CFDateLocal as new CFAbsoluteTimeMBS
dim CFTimeZone as new CFTimeZoneMBS

dim MyDSTState as Boolean = CFTimeZone.IsDaylightSavingTime(CFDateLocal)
```
48.33.5  Data as CFBinaryDataMBS

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The binary data for the timezone.

**Example:**

```pascal
dim t as new CFTimeZoneMBS
MsgBox t.Data.Str
```

48.33.6  IsDaylightSavingTime(atTime as CFAbsoluteTimeMBS) as boolean

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** whether it’s daylight saving time at the given absolute time.

**Example:**

```pascal
// get current timezone
dim c as CFTimeZoneMBS = SystemCFTimeZoneMBS

// and current time
dim time as CFAbsoluteTimeMBS = CurrentCFAbsoluteTimeMBS

// Do we have daylight saving time?
MsgBox str(c.IsDaylightSavingTime(time))
```

48.33.7  Name as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of the timezone.

**Example:**

```pascal
dim s as CFTimeZoneMBS
s=SystemCFTimeZoneMBS
MsgBox s.Name
```
48.33. **CLASS CFTIMEZONEMBS**

48.33.8 **SecondsFromGMT(atTime as CFAbsoluteTimeMBS) as CFTimeIntervalMBS**

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the time difference to GMT for the given time (for daylight saving).

**Example:**

```plaintext
dim s as cfTimeZoneMBS
s=SystemCFTimeZoneMBS
MsgBox str(s.SecondsFromGMT(nil).Value) // 3600 in Germany
```

**Notes:** Returns nil on any error.
**48.34 class CFTreeMBS**

### 48.34.1 class CFTreeMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for the CoreFoundation tree collection.  
**Notes:**

An CFXMLTree is simply a CFTree whose context data is known to be an CFXMLNode. As such, an CFXMLTree can be used to represent an entire XML document; the CFTree provides the tree structure of the document, while the CFXMLNodes identify and describe the nodes of the tree. An XML document can be parsed to a CFXMLTree, and a CFXMLTree can generate the data for the equivalent XML document. Subclass of the CFObjectMBS class.

### 48.34.2 Methods

#### 48.34.3 AppendChild(tree as CFTreeMBS)

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Appends a tree as a child.  
**Example:**

```plaintext
dim documentinfo as new CFXMLDocumentInfoMBS
dim docnode as new CFXMLNodeMBS
dim instructionNode as new CFXMLNodeMBS
dim xmldocument as new CFTreeMBS
dim rootInfo as new CFXMLElementInfoMBS
dim rootNode as new CFXMLNodeMBS
dim rootTree as new CFTreeMBS
dim nameInfo as new CFXMLElementInfoMBS
dim nameNode as new CFXMLNodeMBS
dim nameTree as new CFTreeMBS
dim nameNode as new CFXMLNodeMBS
dim nameTree as new CFTreeMBS
dim nameTextNode as new CFXMLNodeMBS
dim nameTextNode2 as new CFXMLNodeMBS
dim nameTextTree2 as new CFTreeMBS
dim root as CFStringMBS

const kCFStringEncodingUTF8=& h08000100

// create a document node
documentinfo.SourceURL=nil
documentinfo.CFStringEncoding=kCFStringEncodingUTF8

docnode.CreateDocument(documentinfo)
```


xmlDocument.CreateWithXmlNode docNode

// root element

rootInfo.XMLAttributes=nil
docNode.AttributeOrder=nil
docNode.IsEmpty=false

root=NewCFStringMBS("root")
rTourNode.CreateElement root, rootInfo
rootTree.CreateWithXmlNode rootNode

nameInfo.XMLAttributes=nil
docNode.AttributeOrder=nil
docNode.IsEmpty=false

nameNode.CreateElement NewCFStringMBS("FirstName"), nameInfo
tourTree.CreateWithXmlNode nameNode
rootTree.AppendChild nameTree

nameTextNode.CreateText NewCFStringMBS("Dean")
nameTextTree.CreateWithXmlNode nameTextNode
nameTree.AppendChild nameTextTree

nameInfo.XMLAttributes=nil
docNode.AttributeOrder=nil
docNode.IsEmpty=false

nameNode.CreateElement NewCFStringMBS("LastName"), nameInfo
tourTree.CreateWithXmlNode nameNode
rootTree.AppendChild nameTree

nameTextNode2.CreateText NewCFStringMBS("Davis")
nameTextTree2.CreateWithXmlNode nameTextNode2
nameTree.AppendChild nameTextTree2

CFShowMBS(xmlDocument)

xmlDocument.AppendChild rootTree

MsgBox xmlDocument.XMLData.str

// shows "<root><FirstName>Dean</FirstName><LastName>Davis</LastName></root>"
48.34.4 ChildAtIndex(index as Integer) as CFTreeMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the child with the given index.
**Notes:** nil on any error.

48.34.5 ChildCount as Integer

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the number of child nodes.
**Notes:** 0 on any error.

48.34.6 Children as CFTreeMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the child tree node.
**Notes:** nil on any error.

48.34.7 Create

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new empty tree and stores the handle in this object.
**Notes:** Handle is 0 on failure.

48.34.8 CreateFromXMLData(data as CFBinaryDataMBS, url as CFURLMBS, ParseOptions as Integer)

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new XMLTree from the given data.
**Notes:**
URL is needed to resolve external references.

These are the various options you can configure the parser with. These are chosen such that an option flag of 0 (kCFXMLParserNoOptions) leaves the XML as "intact" as possible (reports all structures; performs no replacements).
Hence, to make the parser do the most work, returning only the pure element tree, set the option flag to kCFXMLParserAllOptions:
# 48.34. **CLASS CFREETMBS**

<table>
<thead>
<tr>
<th>Function</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kCFXMLParserValidateDocument</td>
<td>1</td>
</tr>
<tr>
<td>kCFXMLParserSkipMetaData</td>
<td>2</td>
</tr>
<tr>
<td>kCFXMLParserReplacePhysicalEntities</td>
<td>4</td>
</tr>
<tr>
<td>kCFXMLParserResolveExternalEntities</td>
<td>16</td>
</tr>
<tr>
<td>kCFXMLParserAddImpliedAttributes</td>
<td>32</td>
</tr>
<tr>
<td>kCFXMLParserAllOptions</td>
<td>&amp; hFFFFFF</td>
</tr>
<tr>
<td>kCFXMLParserNoOptions</td>
<td>0</td>
</tr>
</tbody>
</table>

validate the document against its grammar from the DTD, reporting any errors. Currently not supported.

silently skip over metadata constructs (the DTD and comments)

replace declared entities like &lt; Note that other than the 5 predefined entities (lt, gt, quot, amp, apos), these must be defined in the DTD. Currently not supported.

skip over all whitespace that does not abut non-whitespace character data. In other words, given `<foo>`<bar>blah </bar>`</foo>`, the whitespace between foo’s open tag and bar’s open tag would be suppressed, but the whitespace around blah would be preserved.

where the DTD specifies implied attribute-value pairs for a particular element, add those pairs to any occurrences of the element in the element tree. Currently not supported.

| kCFXMLParserValidateDocument                  | 1     |
| kCFXMLParserSkipMetaData                      | 2     |
| kCFXMLParserReplacePhysicalEntities           | 4     |
| kCFXMLParserResolveExternalEntities           | 16    |
| kCFXMLParserAddImpliedAttributes              | 32    |
| kCFXMLParserAllOptions                        | & hFFFFFF |
| kCFXMLParserNoOptions                         | 0     |

# 48.34.9 **CreateWithXMLDataFromURL(URL as CFURLMBS, ParseOptions as Integer)**

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Creates a new XMLTree from the given data at the URL.

**Notes:**

The handle property is set if the function is successful.

These are the various options you can configure the parser with. These are chosen such that an option flag of 0 (kCFXMLParserNoOptions) leaves the XML as ”intact” as possible (reports all structures; performs no replacements).

Hence, to make the parser do the most work, returning only the pure element tree, set the option flag to kCFXMLParserAllOptions:
48.34.10 CreateWithXMLNode(node as CFXMLNodeMBS)

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a XML tree based on the given node.

48.34.11 FindRoot as CFTreeMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the tree root node.  
**Notes:** nil on any error.

48.34.12 FirstChild as CFTreeMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the first child node.  
**Notes:** nil on any error.

48.34.13 InsertSibling(tree as CFTreeMBS)

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Inserts a new tree as the sibling of this tree.

48.34.14 NextSibling as CFTreeMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the next sibling.  
**Notes:** nil on any error.

48.34.15 Parent as CFTreeMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the parent of the tree.  
**Notes:** nil on any error.
48.34. **CLASS CFTREEMBS**

48.34.16 **PrependChild**(tree as CFTreeMBS)

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Inserts a new tree as the first child.

48.34.17 **Remove**

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes this tree from its parent.

48.34.18 **RemoveAllChildren**

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes all child nodes.

48.34.19 **XMLData as CFBinaryDataMBS**

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates XML Data from the tree. **Notes:**
Generate the XMLData (ready to be written to whatever permanent storage is to be used) from an CFXML-Tree. Will NOT regenerate entity references (except those required for syntactic correctness) if they were replaced at the parse time; clients that wish this should walk the tree and re-insert any entity references that should appear in the final output file.

Returns nil on any error.

48.34.20 **XMLNode as CFXMLNodeMBS**

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the xml node for this tree node. **Notes:** nil on any error.
48.35  class CFURLMBS

48.35.1 class CFURLMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a core foundation boolean.

**Notes:**

If the release property is true, the destructor of this class will release the url reference.
This class works on Windows with QuickTime 7 installed.
Subclass of the CObjectMBS class.

48.35.2 Methods

48.35.3 AbsoluteURL as CFURLMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the absolute URL.

**Notes:** A URL contains normally a base and a relative part. This function creates one absolute URL from those parts.

48.35.4 AppendPathComponent(pathcomponent as CFStringMBS,isDirectory as boolean) as CFURLMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Appends a path component to this URL.

48.35.5 AppendPathExtension(extension as CFStringMBS) as CFURLMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Appends a path extension to this URL.

48.35.6 BaseURL as CFURLMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the base URL.

**Notes:** A URL contains normally a base and a relative part.
48.35. **CLASS CFURLMBS**

48.35.7 **CanBeDecomposed as boolean**

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Can this url be decomposed?

48.35.8 **Constructor(File as FolderItem)**

MBS MacCF Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates new CFURLMBS based on given folderitem.

**Notes:** Raises exception if not called on macOS or called with invalid URL.

See also:

- 48.35.9 Constructor(URL as string)

48.35.9 **Constructor(URL as string)**

MBS MacCF Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates new CFURLMBS based on given URL.

**Notes:** Raises exception if not called on macOS or called with invalid URL.

See also:

- 48.35.8 Constructor(File as FolderItem)

48.35.10 **Data(encoding as Integer, escapeWhitespace as boolean) as CFBinaryDataMBS**

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the URL as binary data using the given encoding.

48.35.11 **DeleteLastPathComponent as CFURLMBS**

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Deletes the last path component of this URL.

48.35.12 **DeletePathExtension as CFURLMBS**

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Deletes the path extension of this URL.
48.35.13 DisplayName as CFStringMBS

MBS MacCF Plugin, Plugin Version: 2.9, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the display name for the url. **Notes:** Returns "" on any error.

48.35.14 file as folderitem

MBS MacCF Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the URL as a folderitem. **Notes:** Works only on RB 4.5 or later and if the file exists.

48.35.15 Fragment(charactersToLeaveEscaped as CFStringMBS) as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Fragment part of this URL.

48.35.16 HasDirectoryPath as boolean

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Has this URL a directory path?

48.35.17 HFSFileSystemPath as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the URL as HFSFileSystemPath.

48.35.18 HostName as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the HostName part of this URL.

48.35.19 isAbsolutePath as boolean

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Is the path an absolute path?
48.35.20 kCFURLAddedToDirectoryDateKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys.
**Notes:**
The date the resource was created, or renamed into or within its parent directory. Note that inconsistent behavior may be observed when this attribute is requested on hard-linked items. This property is not supported by all volumes. (Read-only, value type CFDateMBS) for macOS 10.10 or later.

48.35.21 kCFURLApplicationIsScriptableKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys.
**Notes:**
True if the resource is scriptable. Only applies to applications. (Read-only, value type CFBooleanMBS) for macOS 10.11 or later.

48.35.22 kCFURLAttributeModificationDateKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys.
**Notes:**
The time the resource's attributes were last modified (Read-only, value type CFDateMBS)

48.35.23 kCFURLCanonicalPathKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys.
**Notes:**
the URL's path as a canonical absolute file system path (Read-only, value type CFStringMBS) for macOS 10.12 or later.
48.35.24 kCFURLContentAccessDateKey as CFStringMBS

**Function:** One of the resource keys.
**Notes:** The date the resource was last accessed (Read-only, value type CFDateMBS)

48.35.25 kCFURLContentModificationDateKey as CFStringMBS

**Function:** One of the resource keys.
**Notes:** The time the resource content was last modified (Read-write, value type CFDateMBS)

48.35.26 kCFURLCreationDateKey as CFStringMBS

**Function:** One of the resource keys.
**Notes:** The date the resource was created (Read-write, value type CFDateMBS)

48.35.27 kCFURLDocumentIdentifierKey as CFStringMBS

**Function:** One of the resource keys.
**Notes:**
The document identifier – a value assigned by the kernel to a document (which can be either a file or directory) and is used to identify the document regardless of where it gets moved on a volume. The document identifier survives "safe save operations; i.e it is sticky to the path it was assigned to (NSURL - replaceItemAtURL:withItemAtURL:backupItemName:options:resultingItemURL:error: is the preferred safe savesave API). The document identifier is persistent across system restarts. The document identifier is not transferred when the file is copied. Document identifiers are only unique within a single volume. This property is not supported by all volumes. (Read-only, value type CFNumberMBS) for macOS 10.10 or later.

48.35.28 kCFURLFileAllocatedSizeKey as CFStringMBS

**Function:** One of the resource keys.
**Notes:** Total size allocated on disk for the file in bytes (number of blocks times block size) (Read-only, value type CFNumberMBS)
48.35. **CLASS CFURLMBS**

### 48.35.29 kCFURLFileResourceIdentifierKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys.

**Notes:** An identifier which can be used to compare two file system objects for equality using CFObjectMBS.Equal (i.e., two object identifiers are equal if they have the same file system path or if the paths are linked to same inode on the same file system). This identifier is not persistent across system restarts. (Read-only, value type CFObjectMBS)

### 48.35.30 kCFURLFileResourceTypeBlockSpecial as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file resource type values.

**Notes:** Special block device.

### 48.35.31 kCFURLFileResourceTypeCharacterSpecial as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file resource type values.

**Notes:** Special charset device.

### 48.35.32 kCFURLFileResourceTypeDirectory as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the file resource type values.

**Notes:** A folder.

### 48.35.33 kCFURLFileResourceTypeKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys.

**Notes:**

Returns the file system object type. (Read-only, value type CFStringMBS) for macOS 10.7 or later.
48.35.34 kCFURLFileResourceTypeNamedPipe as CFStringRefMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the file resource type values.
**Notes:** A named pipe.

48.35.35 kCFURLFileResourceTypeRegular as CFStringRefMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the file resource type values.
**Notes:** Regular file.

48.35.36 kCFURLFileResourceTypeSocket as CFStringRefMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the file resource type values.
**Notes:** A network socket.

48.35.37 kCFURLFileResourceTypeSymbolicLink as CFStringRefMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the file resource type values.
**Notes:** An symbolic link.

48.35.38 kCFURLFileResourceTypeUnknown as CFStringRefMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the file resource type values.
**Notes:** Unknown.

48.35.39 kCFURLFileSecurityKey as CFStringRefMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the resource keys.
**Notes:** The file system object’s security information encapsulated in a CFFileSecurity object. (Read-write, value type CFFileSecurity)
48.35.40 kCFURLFileSizeKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the resource keys.
**Notes:** Total file size in bytes (Read-only, value type CFNumberMBS)

48.35.41 kCFURLGenerationIdentifierKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the resource keys.
**Notes:**
An opaque generation identifier which can be compared using CFObj ectMBS.Equal() to determine if the
data in a document has been modified. For URLs which refer to the same file inode, the generation identifier
will change when the data in the file’s data fork is changed (changes to extended attributes or other file
system metadata do not change the generation identifier). For URLs which refer to the same directory inode,
the generation identifier will change when direct children of that directory are added, removed or renamed
(changes to the data of the direct children of that directory will not change the generation identifier). The
generation identifier is persistent across system restarts. The generation identifier is tied to a specific doc-
ument on a specific volume and is not transferred when the document is copied to another volume. This
property is not supported by all volumes. (Read-only, value type CFObj ectMBS)
for macOS 10.10 or later.

48.35.42 kCFURLHasHiddenExtensionKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the resource keys.
**Notes:** True for resources whose filename extension is removed from the localized name property (Read-
write, value type CFBooleanMBS)

48.35.43 kCFURLIsAliasFileKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the resource keys.
**Notes:** true if the resource is a Finder alias file or a symlink, false otherwise (Read-only, value type CF-
BooleanMBS)
48.35.44  kCFURLIsApplicationKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys. **Notes:**

True if resource is an application (Read-only, value type CFBooleanMBS)
for macOS 10.11 or later.

48.35.45  kCFURLIsDirectoryKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys. **Notes:** True for directories (Read-only, CFBooleanMBS)

48.35.46  kCFURLIsExcludedFromBackupKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys. **Notes:**

true if resource should be excluded from backups, false otherwise (Read-write, value type CFBooleanMBS). This property is only useful for excluding cache and other application support files which are not needed in a backup. Some operations commonly made to user documents will cause this property to be reset to false and so this property should not be used on user documents.
for macOS 10.8 or later.

48.35.47  kCFURLIsExecutableKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys. **Notes:**

true if this process (as determined by EUID) can execute a file resource or search a directory resource. (Read-only, value type CFBooleanMBS)
for macOS 10.7 or later.

48.35.48  kCFURLIsHiddenKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys.
CLASS CFURLMBS

Notes:

True for resources normally not displayed to users (Read-write, value type CFBooleanMBS).

If the resource is a hidden because its name starts with a period, setting this property to false will not change the property.

48.35.49 kCFURLIsMountTriggerKey as CFStringMBS


Notes:

true if this URL is a file system trigger directory. Traversing or opening a file system trigger will cause an attempt to mount a file system on the trigger directory. (Read-only, value type CFBooleanMBS) for macOS 10.7 or later.

48.35.50 kCFURLIsPackageKey as CFStringMBS


Example:

dim f as FolderItem = SpecialFolder.Desktop.Child("test")
dim c as CFURLMBS = NewCFURLMBSFile(f)

dim v as Variant
dim e as CFErrorMBS

if c.ResourcePropertyForKey(c.kCFURLIsPackageKey, v1, e) then
    dim p as CFBooleanMBS = v

    MsgBox "IsPackage: " + str(p.Value)
else
    MsgBox "Error: " + e.Description
end if

Notes:

True for packaged directories (Read-only 10.6 and 10.7, read-write 10.8, value type CFBooleanMBS).

You can only set or clear this property on directories; if you try to set this property on non-directory objects, the property is ignored. If the directory is a package for some other reason (extension type, etc), setting this
property to false will have no effect.

48.35.51 kCFURLIsReadableKey as CFStringMBS

Notes: true if this process (as determined by EUID) can read the resource. (Read-only, value type CFBooleanMBS) for macOS 10.7 or later.

48.35.52 kCFURLIsRegularFileKey as CFStringMBS

Notes: True for regular files (Read-only, value type CFBooleanMBS)

48.35.53 kCFURLIsSymbolicLinkKey as CFStringMBS

Notes: True for symlinks (Read-only, value type CFBooleanMBS)

48.35.54 kCFURLIsSystemImmutableKey as CFStringMBS

Notes: True for system-immutable resources (Read-write, value type CFBooleanMBS)

48.35.55 kCFURLIsUbiquitousItemKey as CFStringMBS

Notes: true if this item is synced to the cloud, false if it is only a local file. (Read-only, value type CFBooleanMBS) for macOS 10.7 or newer.
48.35.56 kCFURLIsUserImmutableKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys. **Notes:** True for user-immutable resources (Read-write, value type CFBooleanMBS)

48.35.57 kCFURLIsVolumeKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys. **Notes:** True for the root directory of a volume (Read-only, value type CFBooleanMBS)

48.35.58 kCFURLIsWritableKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys. **Notes:** true if this process (as determined by EUID) can write to the resource. (Read-only, value type CFBooleanMBS) for mac OS 10.7 or later.

48.35.59 kCFURLLabelNumberKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys. **Notes:** The label number assigned to the resource (Read-write, value type CFNumberMBS)

48.35.60 kCFURLLinkCountKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys. **Notes:** Number of hard links to the resource (Read-only, value type CFNumberMBS)

48.35.61 kCFURLLocalizedLabelKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys.
Notes: The user-visible label text (Read-only, value type CFStringMBS)

48.35.62 kCFURLLocalizedNameKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the resource keys. Notes: Localized or extension-hidden name as displayed to users (Read-only, value type CFStringMBS)

48.35.63 kCFURLLocalizedTypeDescriptionKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the resource keys. Notes: User-visible type or "kind" description (Read-only, value type CFStringMBS)

48.35.64 kCFURLNameKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the resource keys. Notes: The resource name provided by the file system (Read-write, value type CFStringMBS)

48.35.65 kCFURLParentDirectoryURLKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the resource keys. Notes: The resource’s parent directory, if any (Read-only, value type CFURLMBS)

48.35.66 kCFURLPathKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the resource keys. Notes: the URL’s path as a file system path (Read-only, value type CFStringMBS) for macOS 10.8 or later.
48.35.67 kCFURLPreferredIOBlockSizeKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the resource keys.
**Notes:** The optimal block size when reading or writing this file's data, or NULL if not available. (Read-only, value type CFNumberMBS)

48.35.68 kCFURLQuarantinePropertiesKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the resource keys.
**Notes:**
The quarantine properties as defined in LSQuarantine.h. To remove quarantine information from a file, pass kCFNull as the value when setting this property. (Read-write, value type CFDictionaryMBS) for macOS 10.10 or later.

48.35.69 kCFURLTagNamesKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the resource keys.
**Notes:**
The array of Tag names (Read-write, value type CFArrayMBS of CFStringMBS) for macOS 10.9 or later.

48.35.70 kCFURLTotalFileAllocatedSizeKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the resource keys.
**Notes:** Total allocated size of the file in bytes (this may include space used by metadata), or nil if not available. This can be less than the value returned by kCFURLTotalFileSizeKey if the resource is compressed. (Read-only, value type CFNumberMBS)

48.35.71 kCFURLTotalFileSizeKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the resource keys.
**Notes:** Total displayable size of the file in bytes (this may include space used by metadata), or NULL if not
48.35.72 kCFURLTypeIdentifierKey as CFStringMBS

Notes: Uniform type identifier (UTI) for the resource (Read-only, value type CFStringMBS)

48.35.73 kCFURLUbiquitousItemDownloadingErrorKey as CFStringMBS

Notes: returns the error when downloading the item from iCloud failed. See the NSUbiquitousFile section in FoundationErrors.h. (Read-only, value type CFErrorMBS) for macOS 10.9 or later.

48.35.74 kCFURLUbiquitousItemDownloadingStatusCurrent as CFStringMBS

Notes: there is a local version of this item and it is the most up-to-date version known to this device. for macOS 10.9 or later.

48.35.75 kCFURLUbiquitousItemDownloadingStatusDownloaded as CFStringMBS

Notes: there is a local version of this item available. The most current version will get downloaded as soon as possible. for macOS 10.9 or later.
48.35. **CLASS CFURLMBS**

**48.35.76 kCFURLUbiquitousItemDownloadingStatusKey as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the resource keys.
**Notes:**
Returns the download status of this item. (Read-only, value type CFStringMBS).
for macOS 10.9 or later.

**48.35.77 kCFURLUbiquitousItemDownloadingStatusNotDownloaded as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the download status values.
**Notes:**
this item has not been downloaded yet. Use NSFileManager’s startDownloadingUbiquitousItemAtURL:erro-
error: to download it.
for macOS 10.9 or later.

**48.35.78 kCFURLUbiquitousItemHasUnresolvedConflictsKey as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the resource keys.
**Notes:** true if this item has conflicts outstanding. (Read-only, value type CFBooleanMBS)

**48.35.79 kCFURLUbiquitousItemIsDownloadedKey as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the resource keys.
**Notes:** Equivalent to NSURLUbiquitousItemDownloadingStatusKey = NSURLUbiquitousItemDownload-
ingStatusCurrent. Has never behaved as documented in earlier releases, hence deprecated. (Read-only, value
type CFBooleanMBS)

**48.35.80 kCFURLUbiquitousItemIsDownloadingKey as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the resource keys.
**Notes:** true if data is being downloaded for this item. (Read-only, value type CFBooleanMBS)
48.35.81  kCFURLUbiquitousItemIsUploadedKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
One of the resource keys.
**Notes:** true if there is data present in the cloud for this item. (Read-only, value type CFBooleanMBS)

48.35.82  kCFURLUbiquitousItemIsUploadingKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
One of the resource keys.
**Notes:** true if data is being uploaded for this item. (Read-only, value type CFBooleanMBS)

48.35.83  kCFURLUbiquitousItemPercentDownloadedKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
One of the resource keys.
**Notes:**
Percent downloaded.
Use NSMetadataQuery and NSMetadataUbiquitousItemPercentDownloadedKey on NSMetadataItem instead.

48.35.84  kCFURLUbiquitousItemPercentUploadedKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
One of the resource keys.
**Notes:**
Percent uploaded.
Use NSMetadataQuery and NSMetadataUbiquitousItemPercentUploadedKey on NSMetadataItem instead

48.35.85  kCFURLUbiquitousItemUploadingErrorKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
One of the resource keys.
**Notes:**
returns the error when uploading the item to iCloud failed. See the NSUbiquitousFile section in FoundationErrors.h. (Read-only, value type CFErrorMBS) for macOS 10.9 or later.
48.35. **CLASS CFURLMBS**

48.35.86 **kCFURLVolumeAvailableCapacityKey** as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the resource keys.
**Notes:** Total free space in bytes (Read-only, value type CFNumberMBS)

48.35.87 **kCFURLVolumeCreationDateKey** as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the resource keys.
**Notes:** The volume’s creation date, or nil if this cannot be determined. (Read-only, value type CFDateMBS)

48.35.88 **kCFURLVolumeIdentifierKey** as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the resource keys.
**Notes:** An identifier that can be used to identify the volume the file system object is on. Other objects on the same volume will have the same volume identifier and can be compared using for equality using CFObjectMBS.Equal. This identifier is not persistent across system restarts. (Read-only, value type CFObjec-tMBS)

48.35.89 **kCFURLVolumeIsAutomountedKey** as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the resource keys.
**Notes:** true if the volume is automounted. Note: do not mistake this with the functionality provided by kCFURLVolumeSupportsBrowsingKey. (Read-only, value type CFBooleanMBS)

48.35.90 **kCFURLVolumeIsBrowsableKey** as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the resource keys.
**Notes:** true if the volume should be visible via the GUI (i.e., appear on the Desktop as a separate volume). (Read-only, value type CFBooleanMBS)
48.35.91 kCFURLVolumeIsEjectableKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys.
**Notes:** true if the volume’s media is ejectable from the drive mechanism under software control. (Read-only, value type CFBooleanMBS)

48.35.92 kCFURLVolumeIsEncryptedKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys.
**Notes:**
true if the volume is encrypted. (Read-only, value type CFBooleanMBS)
for macOS 10.12 or later.

48.35.93 kCFURLVolumeIsInternalKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys.
**Notes:** true if the volume’s device is connected to an internal bus, false if connected to an external bus, or nil if not available. (Read-only, value type CFBooleanMBS)

48.35.94 kCFURLVolumeIsJournalingKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys.
**Notes:** true if the volume is currently using a journal for speedy recovery after an unplanned restart. (Read-only, value type CFBooleanMBS)

48.35.95 kCFURLVolumeIsLocalKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys.
**Notes:** true if the volume is stored on a local device. (Read-only, value type CFBooleanMBS)
48.35. CLASS CFURLMBS

48.35.96 kCFURLVolumeIsReadOnlyKey as CFStringMBS

Notes: true if the volume is read-only. (Read-only, value type CFBooleanMBS)

48.35.97 kCFURLVolumeIsRemovableKey as CFStringMBS

Notes: true if the volume’s media is removable from the drive mechanism. (Read-only, value type CFBooleanMBS)

48.35.98 kCFURLVolumeIsRootFileSystemKey as CFStringMBS

Notes: true if the volume is the root filesystem. (Read-only, value type CFBooleanMBS) for macOS 10.12 or later.

48.35.99 kCFURLVolumeLocalizedFormatDescriptionKey as CFStringMBS

Notes: The user-visible volume format (Read-only, value type CFStringMBS)

48.35.100 kCFURLVolumeLocalizedNameKey as CFStringMBS

Notes: The user-presentable name of the volume (Read-only, value type CFStringMBS)

48.35.101 kCFURLVolumeMaximumFileSizeKey as CFStringMBS

Notes: The largest file size (in bytes) supported by this file system, or nil if this cannot be determined. (Read-only, value type CFNumberMBS)

48.35.102  kCFURLVolumeNameKey as CFStringRefMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the resource keys. Notes: The name of the volume (Read-write, settable if kCFURLVolumeSupportsRenamingKey is true and permissions allow, value type CFStringRefMBS)
48.35.103  kCFURLVolumeResourceCountKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys.  
**Notes:** Total number of resources on the volume (Read-only, value type CFNumberMBS)

48.35.104  kCFURLVolumeSupportsAdvisoryFileLockingKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys.  
**Notes:** true if the volume implements whole-file flock(2) style advisory locks, and the O_EXLOCK and O_SHLOCK flags of the open(2) call. (Read-only, value type CFBooleanMBS)

48.35.105  kCFURLVolumeSupportsCasePreservedNamesKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys.  
**Notes:** true if the volume format preserves the case of file and directory names. Otherwise the volume may change the case of some characters (typically making them all upper or all lower case). (Read-only, value type CFBooleanMBS)

48.35.106  kCFURLVolumeSupportsCaseSensitiveNamesKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys.  
**Notes:** true if the volume format treats upper and lower case characters in file and directory names as different. Otherwise an upper case character is equivalent to a lower case character, and you can’t have two names that differ solely in the case of the characters. (Read-only, value type CFBooleanMBS)

48.35.107  kCFURLVolumeSupportsCompressionKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys.  
**Notes:** true if the volume supports transparent decompression of compressed files using decmpfs. (Read-only, value type CFBooleanMBS)  
for macOS 10.12.
48.35.108  kCFURLVolumeSupportsExclusiveRenamingKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the resource keys.
**Notes:**
true if the volume supports renamex_np(2)’s RENAME_EXCL option (Read-only, value type CFBooleanMBS)
for macOS 10.12 or later.

48.35.109  kCFURLVolumeSupportsExtendedSecurityKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the resource keys.
**Notes:** true if the volume implements extended security (ACLs). (Read-only, value type CFBooleanMBS)

48.35.110  kCFURLVolumeSupportsFileCloningKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the resource keys.
**Notes:**
true if the volume supports clonefile(2) (Read-only, value type CFBooleanMBS)
for macOS 10.12 or later.

48.35.111  kCFURLVolumeSupportsHardLinksKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the resource keys.
**Notes:** true if the volume format supports hard links (Read-only, value type CFBooleanMBS)

48.35.112  kCFURLVolumeSupportsJournalingKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the resource keys.
**Notes:** true if the volume format supports a journal used to speed recovery in case of unplanned restart
(such as a power outage or crash). This does not necessarily mean the volume is actively using a journal.
(Read-only, value type CFBooleanMBS)
48.35. **CLASS CFURLMBS**

48.35.113  **kCFURLVolumeSupportsPersistentIDsKey as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys.
**Notes:** true if the volume format supports persistent object identifiers and can look up file system objects by their IDs (Read-only, value type CFBooleanMBS)

48.35.114  **kCFURLVolumeSupportsRenamingKey as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys.
**Notes:** true if the volume can be renamed. (Read-only, value type CFBooleanMBS)

48.35.115  **kCFURLVolumeSupportsRootDirectoryDatesKey as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys.
**Notes:** true if the volume supports reliable storage of times for the root directory. (Read-only, value type CFBooleanMBS)
for macOS 10.7 or later.

48.35.116  **kCFURLVolumeSupportsSparseFilesKey as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys.
**Notes:** true if the volume format supports sparse files, that is, files which can have 'holes' that have never been written to, and thus do not consume space on disk. A sparse file may have an allocated size on disk that is less than its logical length. (Read-only, value type CFBooleanMBS)

48.35.117  **kCFURLVolumeSupportsSwapRenamingKey as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys.
**Notes:** true if the volume supports rename.x_up(2)’s RENAME_SWAP option (Read-only, value type CFBooleanMBS)
for macOS 10.12 or later.

48.35.118 kCFURLVolumeSupportsSymbolicLinksKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys. **Notes:** true if the volume format supports symbolic links (Read-only, value type CFBooleanMBS)

48.35.119 kCFURLVolumeSupportsVolumeSizesKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys. **Notes:** true if the volume supports returning volume size values (kCFURLVolumeTotalCapacityKey and kCFURLVolumeAvailableCapacityKey). (Read-only, value type CFBooleanMBS)

48.35.120 kCFURLVolumeSupportsZeroRunsKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys. **Notes:** For security reasons, parts of a file (runs) that have never been written to must appear to contain zeroes. true if the volume keeps track of allocated but unwritten runs of a file so that it can substitute zeroes without actually writing zeroes to the media. (Read-only, value type CFBooleanMBS)

48.35.121 kCFURLVolumeTotalCapacityKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys. **Notes:** Total volume capacity in bytes (Read-only, value type CFNumberMBS)

48.35.122 kCFURLVolumeURLForRemountingKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys. **Notes:** The CFURLMBS needed to remount a network volume, or nil if not available. (Read-only, value type CFURLMBS)
48.35. **CLASS CFURLMBS**

### 48.35.123 kCFURLVolumeURLKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys.  
**Notes:** URL of the volume on which the resource is stored (Read-only, value type CFURLMBS)

### 48.35.124 kCFURLVolumeUUIDStringKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the resource keys.  
**Notes:** The volume’s persistent UUID as a string, or nil if a persistent UUID is not available for the volume. (Read-only, value type CFStringMBS)

### 48.35.125 Kind as CFStringMBS

MBS MacCF Plugin, Plugin Version: 2.9, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the kind string for the file.

### 48.35.126 LastPathComponent as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the LastPathComponent part of this URL.

### 48.35.127 Launch as Integer

MBS MacCF Plugin, Plugin Version: 2.9, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Launches a file.  
**Notes:** Returns a Mac OS error string or -1 if the function is not available.

### 48.35.128 NetLocation as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the NetLocation part of this URL.
48.35.129 ParameterString(charactersToLeaveEscaped as CFStringMBS) as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the ParameterString part of this URL.

48.35.130 Password as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Password part of this URL.

48.35.131 Path as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Path part of this URL.
See also:

- 48.35.132 Path(resolveAgainstBase as boolean) as string

48.35.132 Path(resolveAgainstBase as boolean) as string

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the path of this URL.
See also:

- 48.35.131 Path as CFStringMBS

48.35.133 PathExtension as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the PathExtension part of this URL.

48.35.134 PortNumber as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the PortNumber part of this URL.
**Notes:** Returns -1 if no port specified and -2 on Windows and Mac OS Classic.
48.35. **CLASS CFURLMBS**

### 48.35.135 PosixFileSystemPath as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the URL as PosixFileSystemPath.

### 48.35.136 QueryString(charactersToLeaveEscaped as CFStringMBS) as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the QueryString part of this URL.

### 48.35.137 ResourcePropertyForKey(key as CFStringMBS, byref value as Variant, byref error as CFErrorMBS) as boolean

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the resource value identified by a given resource key.

**Example:**

```vba
dim f as FolderItem = SpecialFolder.Desktop.Child("test")
dim c as CFURLMBS = NewCFURLMBSFile(f)

dim v as Variant
dim e as CFErrorMBS

if c.ResourcePropertyForKey(c.kCFURLIsPackageKey, v1, e) then
    dim p as CFBooleanMBS = v
    MsgBox "IsPackage: " + str(p.Value)
else
    MsgBox "Error: " + e.Description
end if
```

**Notes:**

- **key:** The resource key that identifies the resource property.
- **Value:** On output when the result is true, the resource value or nil.
- **error:** On output when the result is false, the error that occurred.

Returns true if value is successfully populated; false if an error occurs.

ResourcePropertyForKey first checks if the URL object already caches the resource value. If so, it returns the cached resource value to the caller. If not, then ResourcePropertyForKey synchronously obtains the resource value from the backing store, adds the resource value to the URL object’s cache, and returns the
resource value to the caller. The type of the resource value varies by resource property (see resource key
definitions). If this function returns true and value is populated with nil, it means the resource property
is not available for the specified resource and no errors occurred when determining the resource property
was not available. If this function returns false, the optional error is populated. This function is currently
applicable only to URLs for file system resources.

48.35.138  ResourceSpecifier as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Re-
sourceSpecifier part of this URL.

48.35.139  Scheme as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the scheme
part of this URL.

48.35.140  SetResourcePropertyForKey(key as CFStringMBS, value as Variant,
byref error as CFErrorMBS) as boolean

MBS MacCF Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Sets the resource value identified by a given resource key.
**Example:**

Dim f As FolderItem = SpecialFolder.Desktop.Child("test")
Dim c As CFURLMBS = NewCFURLMBSFile(f)
Dim e As CFErrorMBS

If c.SetResourcePropertyForKey(c.kCFURLIsPackageKey, NewCFBooleanMBS(true), e) Then
MsgBox "OK"
Else
MsgBox "Error: " + e.Description
End If

**Notes:**
key: The resource key that identifies the resource property.
Value: The resource value.
error: On output when the result is false, the error that occurred.
48.35. **CLASS CFURLMBS**

Returns true if the attempt to set the resource value completed with no errors; otherwise, false.

CFURLSetResourcePropertyForKey writes the new resource value out to the backing store. Attempts to set a read-only resource property or to set a resource property not supported by the resource are ignored and are not considered errors. If this function returns false, the optional error is populated. This function is currently applicable only to URLs for file system resources.

### 48.35.141 Str as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the URL as binary data.

### 48.35.142 StrictPath as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Strict-Path part of this URL.

### 48.35.143 URLWithHandle(Handle as Integer) as CFURLMBS

MBS MacCF Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new URL object based on a handle value. **Notes:** Will retain the reference.

### 48.35.144 UserName as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the UserName part of this URL.

### 48.35.145 WindowsFileSystemPath as CFStringMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the URL as WindowsFileSystemPath.
48.35.146 Properties

48.35.147 AddedToDirectoryDate as CFDateMBS

MBS MacCF Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The date the resource was created, or renamed into or within its parent directory.
Example:

dim f as FolderItem = SpecialFolder.Desktop.Child("blog.html")
dim u as CFURLMBS = NewCFURLMBSFile(f)
dim d as CFDateMBS = u.AddedToDirectoryDate
dim t as CFTimeZoneMBS = SystemCFTimeZoneMBS
dim x as CFGregorianDateMBS = d.AbsoluteTime.GregorianDate(t)
dim y as new date(x.Year, x.Month, x.Day, x.Hour, x.Minute, x.Second)
MsgBox "AddedToDirectoryDate: " + y.SQLDateTime

Notes:
Note that inconsistent behavior may be observed when this attribute is requested on hard-linked items. This property is not supported by all volumes.
(Read only property)

48.35.148 AttributeModificationDate as CFDateMBS

MBS MacCF Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The time the resource’s attributes were last modified.
Example:

dim f as FolderItem = SpecialFolder.Desktop.Child("blog.html")
dim u as CFURLMBS = NewCFURLMBSFile(f)
dim d as CFDateMBS = u.AttributeModificationDate
dim t as CFTimeZoneMBS = SystemCFTimeZoneMBS
dim x as CFGregorianDateMBS = d.AbsoluteTime.GregorianDate(t)
dim y as new date(x.Year, x.Month, x.Day, x.Hour, x.Minute, x.Second)
MsgBox "AttributeModificationDate: " + y.SQLDateTime

Notes: (Read only property)
48.35. **CLASS CFURLMBS**

48.35.149 **ContentAccessDate as CFDateMBS**

MBS MacCF Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The date the resource was last accessed.

**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("blog.html")
dim u as CFURLMBS = NewCFURLMBSFile(f)
dim d as CFDateMBS = u.ContentAccessDate
dim t as CFTimeZoneMBS = SystemCFTimeZoneMBS
dim x as CFGregorianDateMBS = d.AbsoluteTime.GregorianDate(t)
dim y as new date(x.Year, x.Month, x.Day, x.Hour, x.Minute, x.Second)
MsgBox "ContentAccessDate: " + y.SQLDateTime
```

**Notes:** (Read only property)

48.35.150 **ContentModificationDate as CFDateMBS**

MBS MacCF Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The time the resource content was last modified.

**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("blog.html")
dim u as CFURLMBS = NewCFURLMBSFile(f)
dim d as CFDateMBS = u.ContentModificationDate
dim t as CFTimeZoneMBS = SystemCFTimeZoneMBS
dim x as CFGregorianDateMBS = d.AbsoluteTime.GregorianDate(t)
dim y as new date(x.Year, x.Month, x.Day, x.Hour, x.Minute, x.Second)
MsgBox "ContentModificationDate: " + y.SQLDateTime
```

**Notes:** (Read only property)

48.35.151 **CreationDate as CFDateMBS**

MBS MacCF Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The date the resource was created.

**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("blog.html")
dim u as CFURLMBS = NewCFURLMBSFile(f)
dim d as CFDateMBS = u.CreationDate
dim t as CFTimeZoneMBS = SystemCFTimeZoneMBS
```
dim x as CFGregorianDateMBS = d.AbsoluteTime.GregorianDate(t)
dim y as new date(x.Year, x.Month, x.Day, x.Hour, x.Minute, x.Second)
MsgBox "CreationDate: " + y.SQLDateTime

Notes: (Read only property)

48.35.152 HasHiddenExtension as CFBooleanMBS

MBS MacCF Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
True for resources whose filename extension is removed from the localized name property.
**Notes:** (Read only property)

48.35.153 IsApplication as CFBooleanMBS

MBS MacCF Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
True if resource is an application.
**Notes:** (Read only property)

48.35.154 IsDirectory as CFBooleanMBS

MBS MacCF Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
True for directories.
**Notes:** (Read only property)

48.35.155 IsHidden as CFBooleanMBS

MBS MacCF Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
True for resources normally not displayed to users.
**Example:**

dim f as FolderItem = SpecialFolder.Desktop.Child("blog.html")
dim u as CFURLMBS = NewCFURLMBSFile(f)
MsgBox "IsHidden: " + str(u.IsHidden.Value)

**Notes:**
If the resource is a hidden because its name starts with a period, setting this property to false will not change
the property.
(Read only property)

### 48.35.156  IsPackage as CFBooleanMBS

**Notes:**
Note: You can only set or clear this property on directories; if you try to set this property on non-directory objects, the property is ignored. If the directory is a package for some other reason (extension type, etc), setting this property to false will have no effect.
(Read only property)

### 48.35.157  IsRegularFile as CFBooleanMBS

MBS MacCF Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** True for regular files.
**Example:**
```vbs
dim f as FolderItem = SpecialFolder.Desktop.Child("blog.html")
dim u as CFURLMBS = NewCFURLMBSFile(f)
MsgBox "IsRegularFile: " +u.IsRegularFile.Value
```
**Notes:** (Read only property)

### 48.35.158  IsSymbolicLink as CFBooleanMBS

**Notes:** (Read only property)

### 48.35.159  IsSystemImmutable as CFBooleanMBS

MBS MacCF Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** True for system-immutable resources.
**Notes:** (Read only property)
48.35.160 .isUserImmutable as CFBooleanMBS

MBS MacCF Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
True for user-immutable resources.
**Notes:** (Read only property)

48.35.161  IsVolume as CFBooleanMBS

MBS MacCF Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
True for the root directory of a volume.
**Notes:** (Read only property)

48.35.162  LocalizedName as CFStringMBS

MBS MacCF Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Localized or extension-hidden name as displayed to users.
**Example:**
```
dim f as FolderItem = SpecialFolder.Desktop.Child("blog.html")
```
```
dim u as CFURLMBS = NewCFURLMBSFile(f)
```
```
MsgBox u.LocalizedName
```

**Notes:** (Read only property)

48.35.163  Name as CFStringMBS

MBS MacCF Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The resource name provided by the file system.
**Example:**
```
dim f as FolderItem = SpecialFolder.Desktop.Child("blog.html")
```
```
dim u as CFURLMBS = NewCFURLMBSFile(f)
```
```
MsgBox u.Name
```

**Notes:** (Read only property)
48.36. CLASS CFUUIDMBS

48.36.1 class CFUUIDMBS

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Core Foundation class for an unique identifier.

**Example:**

```
Dim u As New CFUUIDMBS
MsgBox u.StringValue
```

**Notes:**

CFUUID objects are used by plug-ins to uniquely identify types, interfaces, and factories. When creating a new type, host developers must generate UUIDs to identify the type as well as its interfaces and factories.

UUIDs (Universally Unique Identifiers), also known as GUIDs (Globally Unique Identifiers) or IID (Interface Identifiers), are 128-bit values guaranteed to be unique. A UUID is made unique over both space and time by combining a value unique to the computer on which it was generated (usually the Ethernet hardware address) and a value representing the number of 100-nanosecond intervals since October 15, 1582 at 00:00:00.

The standard format for UUIDs represented in ASCII is a string punctuated by hyphens, for example 68753A44-4D6F-1226-9C60-0050E4C00067. The hex representation looks, as you might expect, like a list of numerical values preceded by \& h. For example, \& hD7, \& h36, \& h95, \& h0A, \& h4D, \& h6E, \& h12, \& h26, \& h80, \& h3A, \& h00, \& h50, \& hE4, \& hC0, \& h00, \& h67. To use a UUID, you simply create it and then copy the resulting strings into your header and C language source files. Because a UUID is expressed simply as an array of bytes, there are no endianness considerations for different platforms.

You can create a CFUUID object, and thereby generate a UUID, using any one of the Constructors. Subclass of the CFObjectMBS class.

48.36.2 Methods

48.36.3 Bytes as Memoryblock

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the value of a UUID object as raw bytes.

**Example:**

```
// create new UUID
Dim u As New CFUUIDMBS
```
// get raw data

dim m as MemoryBlock = u.Bytes

// display

MsgBox EncodingToHexMBS(m)+EndOfLine+u.StringValue

**Notes:** Returns the value of uuid represented as raw bytes.

### 48.36.4 Constructor

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a Universally Unique Identifier (UUID) object.

**Example:**

```vba
dim u as new CFUUIDMBS
MsgBox u.StringValue
```

**Notes:** Returns a new CFUUID object or nil on any failure.
See also:

- 48.36.5 Constructor(Bytes as Memoryblock)  7884
- 48.36.6 Constructor(uuidStr as string)  7885

### 48.36.5 Constructor(Bytes as Memoryblock)

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a CFUUID object from raw UUID bytes.

**Example:**

```vba
// create new UUID

dim u as new CFUUIDMBS

// get raw data

dim m as MemoryBlock = u.Bytes

// create new UUID with this bytes

dim v as new CFUUIDMBS(m)
```
// display UUIDs:
MsgBox u.StringValue + EndOfLine + v.StringValue

if u.Equal(v) then
    MsgBox "equal"
else
    MsgBox "not equal"
end if

Notes:
bytes: Raw UUID bytes to use to create the CFUUID object.

Returns a new CFUUID object or nil on any error.
See also:

• 48.36.4 Constructor
• 48.36.6 Constructor(uuidStr as string)

48.36.6 Constructor(uuidStr as string)

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a CFUUID object for a specified string.

**Example:**

// create new UUID

dim u as new CFUUIDMBS

// get string

dim s as string = u.StringValue

// create new UUID with this string

dim v as new CFUUIDMBS(s)

// display UUIDs:

MsgBox u.StringValue + EndOfLine + v.StringValue

if u.Equal(v) then
    MsgBox "equal"
else
MsgBox "not equal"
end if

Notes:

uuidStr: A string containing a UUID. The standard format for UUIDs represented in ASCII is a string punctuated by hyphens, for example 68753A44-4D6F-1226-9C60-0050E4C00067.

Returns a new CFUUID object, or if a CFUUID object of the same value already exists, the existing instance with its reference count incremented. Returns nil on any error.

If you need to validate a GUID or UUID, please check the IsGUID function in our FAQ.
See also:

- 48.36.4 Constructor
- 48.36.5 Constructor(Bytes as Memoryblock)

48.36.7 StringValue as string

MBS MacCF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the string representation of a specified CFUUID object.

**Example:**

dim u as new CFUIDMBS
MsgBox u.StringValue
class CFXMLAttributeDeclarationInfoMBS

48.37.1 class CFXMLAttributeDeclarationInfoMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class with data for a XML attribute declaration.

48.37.2 Properties

48.37.3 AttributeName as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of the attribute. **Notes:** (Read and Write property)

48.37.4 DefaultString as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The default string for this attribute. **Notes:** (Read and Write property)

48.37.5 TypeString as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The type string for this attribute. **Notes:** (Read and Write property)
class CFXMLAttributeListDeclarationInfoMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
A class with data for a xml attribute list declaration.

Methods

Item(index as Integer) as CFXMLAttributeDeclarationInfoMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns the item with the given index.
Notes:
Index is from 0 to count-1.
Returns nil on any error.

Properties

Count as Integer

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The number of items in this list.
Notes: (Read and Write property)
48.39  CLASS CFXMLDOCUMENTINFOMBS

48.39  class CFXMLDocumentInfoMBS

48.39.1  class CFXMLDocumentInfoMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class for additional information about a xml document.

48.39.2  Properties

48.39.3  CFStringEncoding as Integer

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The encoding used for the xml source data string.

**Notes:**
Useful constants:

- kCFStringEncodingInvalidId & hFFFFFFFF Binary data
- kCFStringEncodingMacRoman 0 Mac OS Classic
- kCFStringEncodingWindowsLatin1 & h0500 ANSI codepage 1252
- kCFStringEncodingISOLatin1 & h0201 ISO 8859-1
- kCFStringEncodingNextStepLatin & h0B01 NextStep encoding
- kCFStringEncodingASCIIRaw & h0600 0..127
- kCFStringEncodingUnicode & h0100 kTextEncodingUnicodeDefault + kTextEncodingDefaultFormat (aka kUnicode16BitFormat)
- kCFStringEncodingUTF8 & h08000100 kTextEncodingUnicodeDefault + kUnicodeUTF8Format
- kCFStringEncodingNonLossyASCII & h0BFF 7bit Unicode variants used by YellowBox & Java

(same as RB’s internal encoding values)
(Read and Write property)

48.39.4  SourceURL as CFURLMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The source URL for this document.

**Notes:** (Read and Write property)
48.40 class CFXMLDocumentTypeInfoMBS

48.40.1 class CFXMLDocumentTypeInfoMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class for additional information for a xml document type.

48.40.2 Properties

48.40.3 ExternalID as CFXMLEXternalIDMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A reference to the document type.
**Notes:** (Read and Write property)
48.41. class CFXMLElementInfoMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
A class with additional xml element info.

48.41.2 Properties

48.41.3 AttributeOrder as CFArrayMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The order of the attributes.
Notes: (Read and Write property)

48.41.4 IsEmpty as Boolean

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Unkown.
Notes: (Read and Write property)

48.41.5 XMLAttributes as CFDictionaryMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attributes of this element.
Notes:
Renamed Attributes parameter to XMLAttributes in plugin version 8.2.
(Read and Write property)
48.42 class CFXMLElementTypeDeclarationInfoMBS

48.42.1 class CFXMLElementTypeDeclarationInfoMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class with additional information on a xml element type declaration.

48.42.2 Properties

48.42.3 ContentDescription as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The content description. **Notes:** (Read and Write property)
48.43.1 class CFXMLEntityInfoMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for additional information on a xml entity.

48.43.2 Properties

48.43.3 EntityID as CFXMLExternalIDMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An external reference. **Notes:** EntityID.systemID will be NULL if entityType is internal. (Read and Write property)

48.43.4 EntityType as Integer

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The type of entity. **Notes:** Useful constants:

- kCFXMLEntityTypeParameter 0 Implies parsed, internal
- kCFXMLEntityTypeParsedInternal 1
- kCFXMLEntityTypeParsedExternal 2
- kCFXMLEntityTypeUnparsed 3
- kCFXMLEntityTypeCharacter 4

(Read and Write property)

48.43.5 NotationName as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The notation name. **Notes:**
Nil if entityType is parsed.
(Read and Write property)

48.43.6 ReplacementText as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The replacement text.
**Notes:**
Nil if entityType is external or unparsed.
(Read and Write property)
48.44. CLASS CFXMLENTITYREFERENCEINFOMBS

48.44 class CFXMLEntityReferenceInfoMBS

48.44.1 class CFXMLEntityReferenceInfoMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for additional information on a xml entity reference.

48.44.2 Properties

48.44.3 EntityType as Integer

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The type of entity.

**Notes:**

Useful constants:

- kCFXMLEntityTypeParameter 0 Implies parsed, internal
- kCFXMLEntityTypeParsedInternal 1
- kCFXMLEntityTypeParsedExternal 2
- kCFXMLEntityTypeUnparsed 3
- kCFXMLEntityTypeCharacter 4

(Read and Write property)
48.45 class CFXMLExternalIDMBS

48.45.1 class CFXMLExternalIDMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class for an external xml ID.

48.45.2 Properties

48.45.3 PublicID as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The public ID.
**Notes:** (Read and Write property)

48.45.4 SystemID as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The system ID.
**Notes:** (Read and Write property)
class CFXMLNodeMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a xml node.

**Example:**

```plaintext
dim documentinfo as new CFXMLDocumentInfoMBS
dim docnode as new CFXMLNodeMBS
dim xmldocument as new CFTreeMBS
dim instructionNode as new CFXMLNodeMBS
dim instructionInfo as new CFXMLElementInfoMBS
dim personInfo as new CFXMLNodeMBS
dim personTree as new CFTreeMBS
dim nameInfo as new CFXMLNodeMBS
dim nameNode as new CFXMLNodeMBS
dim nameTree as new CFTreeMBS
dim nameTextNode as new CFXMLNodeMBS
dim nameTextTree as new CFTreeMBS
dim nameTextNode2 as new CFXMLNodeMBS
dim nameTextTree2 as new CFTreeMBS
dim person as CFStringMBS

const kCFStringEncodingUTF8=& h08000100

// create a document node
documentinfo.SourceURL=nil
documentinfo.CFStringEncoding=kCFStringEncodingUTF8
docnode.CreateDocument(documentinfo)
xmldocument.CreateWithXMLNode docNode

// Instruction Tag
instructionInfo.DataString=NewCFStringMBS("version=""1.0"" encoding=""utf-8"")
instructionNode.CreateProcessInstruction(NewCFStringMBS("xml"),instructionInfo)
instructionTree.CreateWithXMLNode(instructionNode)

// root element
personInfo.XMLAttributes=nil
personInfo.AttributeOrder=nil
personInfo.IsEmpty=false
```
person=NewCFStringMBS("person")
personNode.CreateElement person, personInfo
personTree.CreateWithXMLNode personNode

nameInfo.XMLAttributes=nil
nameInfo.AttributeOrder=nil
nameInfo.IsEmpty=false

namenode.CreateElement NewCFStringMBS("name"), nameInfo
nameTree.CreateWithXMLNode nameNode
personTree.AppendChild nameTree

nameTextNode.CreateText NewCFStringMBS("Apple")
nameTextTree.CreateWithXMLNode nameTextNode
nameTree.AppendChild nameTextTree

nameTextNode2.CreateText NewCFStringMBS("Orange")
nameTextTree2.CreateWithXMLNode nameTextNode2
nameTree.AppendChild nameTextTree2

CFShowMBS(xmldocument)

xmldocument.AppendChild instructionTree
xmldocument.AppendChild personTree

MsgBox xmldocument.XMLData.str

// shows "<?xml version="1.0" encoding="utf-8" ?>\n<person><name>AppleOrange</name></person>"

Notes:

An CFXMLNode describes an individual XML construct - like a tag, or a comment, or a string of character data. Each CFXMLNode contains 3 main pieces of information - the node’s type, the data string, and a pointer to an additional data structure. The node’s type ID is an enum value of type CFXMLNodeType-Code. The data string is always a CFStringRef; the meaning of the string is dependent on the node’s type ID. The format of the additional data is also dependent on the node’s type; in general, there is a custom structure for each type that requires additional data. See below for the mapping from type ID to meaning of the data string and structure of the additional data.

Type codes for the different possible XML nodes; this list may grow:

Subclass of the CFOBJECTMBS class.
### 48.46. CLASS CFXMLNODEMBS

<table>
<thead>
<tr>
<th>Constant name</th>
<th>value</th>
<th>Meaning of Data string</th>
<th>Additional information</th>
</tr>
</thead>
<tbody>
<tr>
<td>kCFXMLNodeTypeDocument</td>
<td>1</td>
<td>&lt;currently unused&gt;</td>
<td>CFXMLDocumentInfoMBS</td>
</tr>
<tr>
<td>kCFXMLNodeTypeElement</td>
<td>2</td>
<td>tag name</td>
<td>CFXMLElementInfoMBS</td>
</tr>
<tr>
<td>kCFXMLNodeTypeAttribute</td>
<td>3</td>
<td>&lt;currently unused&gt;</td>
<td>CFXMLElementInfoMBS</td>
</tr>
<tr>
<td>kCFXMLNodeTypeProcessingInstruction</td>
<td>4</td>
<td>name of the target</td>
<td>CFXMLProcessingInstructionInfoMBS</td>
</tr>
<tr>
<td>kCFXMLNodeTypeComment</td>
<td>5</td>
<td>text of the comment</td>
<td>nil</td>
</tr>
<tr>
<td>kCFXMLNodeTypeText</td>
<td>6</td>
<td>the text's contents</td>
<td>nil</td>
</tr>
<tr>
<td>kCFXMLNodeTypeCDATASection</td>
<td>7</td>
<td>text of the CDATA</td>
<td>nil</td>
</tr>
<tr>
<td>kCFXMLNodeTypeEntity</td>
<td>8</td>
<td>&lt;currently unused&gt;</td>
<td>&lt;currently unused&gt;</td>
</tr>
<tr>
<td>kCFXMLNodeTypeEntityReference</td>
<td>9</td>
<td>name of the entity</td>
<td>CFXMLEntityInfoMBS</td>
</tr>
<tr>
<td>kCFXMLNodeTypeDocumentFragment</td>
<td>10</td>
<td>name of the referenced entity</td>
<td>CFXMLEntityReferenceInfoMBS</td>
</tr>
<tr>
<td>kCFXMLNodeTypeWhitespace</td>
<td>11</td>
<td>name given as top-level element</td>
<td>CFXMLDocumentTypeInfoMBS</td>
</tr>
<tr>
<td>kCFXMLNodeTypeNotation</td>
<td>12</td>
<td>text of the whitespace</td>
<td>nil</td>
</tr>
<tr>
<td>kCFXMLNodeTypeElementTypeDeclaration</td>
<td>13</td>
<td>notation name</td>
<td>CFXMLEntityReferenceInfoMBS</td>
</tr>
<tr>
<td>kCFXMLNodeTypeAttributeListDeclaration</td>
<td>14</td>
<td>tag name</td>
<td>CFXMLElementTypeDeclarationInfoMBS</td>
</tr>
</tbody>
</table>

### 48.46.2 Methods

#### 48.46.3 Copy as CFXMLNodeMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy of the xml node and any data inside.

#### 48.46.4 CreateAttribute

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an attribute based on the given data.  
**Notes:** If this function is successfull, the handle is set to a non zero value.

#### 48.46.5 CreateAttributeListDeclaration(TagName as CFStringMBS, data as CFXMLAttributeListDeclarationInfoMBS)

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an attribute list declaration based on the given data.  
**Notes:** If this function is successfull, the handle is set to a non zero value.

#### 48.46.6 CreateCDATASection(text as CFStringMBS)

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a CData section based on the given data.  
**Notes:** If this function is successfull, the handle is set to a non zero value.
48.46.7 CreateComment(comment as CFStringMBS)

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a comment based on the given data. **Notes:** If this function is successful, the handle is set to a non-zero value.

48.46.8 CreateDocument(documentinfo as CFXMLODocumentInfoMBS)

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a document based on the given data. **Notes:** If this function is successful, the handle is set to a non-zero value.

48.46.9 CreateDocumentFragment

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a document fragment based on the given data. **Notes:** If this function is successful, the handle is set to a non-zero value.

48.46.10 CreateDocumentType(Name as CFStringMBS, data as CFXMLODocumentTypeInfoMBS)

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a document type based on the given data. **Notes:** If this function is successful, the handle is set to a non-zero value.

48.46.11 CreateElement(TagName as CFStringMBS, data as CFXMLElementInfoMBS)

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an element based on the given data. **Notes:** If this function is successful, the handle is set to a non-zero value.

48.46.12 CreateElementTypeDeclaration(TagName as CFStringMBS, data as CFXMLElementTypeDeclarationInfoMBS)

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an element type based on the given data.
48.46. **CLASS CFXMLNODEMBS**

**Notes:** If this function is successfull, the handle is set to a non zero value.

### 48.46.13 CreateEntity(EntityName as CFStringMBS, data as CFXMLEntityInfoMBS)

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an entity based on the given data.

**Notes:** If this function is successfull, the handle is set to a non zero value.

### 48.46.14 CreateEntityReference(EntityReferenceName as CFStringMBS, data as CFXMLEntityReferenceInfoMBS)

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an entity reference based on the given data.

**Notes:** If this function is successfull, the handle is set to a non zero value.

### 48.46.15 CreateNotation(NotationName as CFStringMBS, data as CFXMLNotationInfoMBS)

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a notation based on the given data.

**Notes:** If this function is successfull, the handle is set to a non zero value.

### 48.46.16 CreateProcessInstruction(Target as CFStringMBS, data as CFXMLProcessingInstructionInfoMBS)

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a process instruction based on the given data.

**Notes:** If this function is successfull, the handle is set to a non zero value.

### 48.46.17 CreateText(text as CFStringMBS)

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a text based on the given data.

**Notes:** If this function is successfull, the handle is set to a non zero value.
48.46.18  **CreateWhitespace(text as CFStringMBS)**

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates whitespace based on the given data.  
**Notes:** If this function is successful, the handle is set to a non-zero value.

48.46.19  **Data as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The node’s data string.

48.46.20  **GetCFXMLAttributeListDeclarationInfo as CFXMLAttributeListDeclarationInfoMBS**

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** If the node has this type of additional data, the function will return it.  
**Notes:** Returns nil on any error.

48.46.21  **GetCFXMLDocumentInfo as CFXMLDocumentInfoMBS**

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** If the node has this type of additional data, the function will return it.  
**Notes:** Returns nil on any error.

48.46.22  **GetCFXMLDocumentTypeInfo as CFXMLDocumentTypeInfoMBS**

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** If the node has this type of additional data, the function will return it.  
**Notes:** Returns nil on any error.

48.46.23  **GetCFXMLElementInfo as CFXMLElementInfoMBS**

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** If the node has this type of additional data, the function will return it.  
**Notes:** Returns nil on any error.
48.46.24 GetCFXMLElementTypeDeclarationInfo as CFXMLElementTypeDeclarationInfoMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

If the node has this type of additional data, the function will return it.

**Notes:** Returns nil on any error.

48.46.25 GetCFXMLEntityInfo as CFXMLEntityInfoMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

If the node has this type of additional data, the function will return it.

**Notes:** Returns nil on any error.

48.46.26 GetCFXMLEntityReferenceInfo as CFXMLEntityReferenceInfoMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

If the node has this type of additional data, the function will return it.

**Notes:** Returns nil on any error.

48.46.27 GetCFXMLNotationInfo as CFXMLNotationInfoMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

If the node has this type of additional data, the function will return it.

**Notes:** Returns nil on any error.

48.46.28 GetCFXMLProcessingInstructionInfo as CFXMLProcessingInstructionInfoMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

If the node has this type of additional data, the function will return it.

**Notes:** Returns nil on any error.

48.46.29 TypeCode as Integer

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

The type code of the XML node.
Notes: See the class description for a value list.
48.47. **CLASS CFXMLNOTATIONINFOMBS**

48.47  **class CFXMLNotationInfoMBS**

48.47.1  **class CFXMLNotationInfoMBS**

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for additional information on a xml notation.

48.47.2  **Properties**

48.47.3  **ExternalID as CFXMLExternalIDMBS**

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The external ID for this notation. **Notes:** (Read and Write property)
48.48 class CFXMLParserMBS

48.48.1 class CFXMLParserMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a CoreFoundation XML Parser. **Notes:** Subclass of the CFObjectMBS class.

48.48.2 Methods

48.48.3 Abort(ErrorCode as Integer, ErrorDescription as CFStringMBS)

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Stops parsing from inside an event. **Notes:** Cause any in-progress parse to abort with the given error code and description. errorCode must be positive, and errorDescription may not be nil. Cannot be called asynchronously (i.e. must be called from within a parser events).

48.48.4 Create(data as CFBinaryDataMBS, url as CFURLMBS, options as Integer)

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new data based parser. **Notes:** Creates a parser which will parse the given data with the given options. xmlData may not be nil. dataSource should be the URL from which the data came, and may be nil; it is used to resolve any relative references found in xmlData.

These are the various options you can configure the parser with. These are chosen such that an option flag of 0 (kCFXMLParserNoOptions) leaves the XML as ”intact” as possible (reports all structures; performs no replacements). Hence, to make the parser do the most work, returning only the pure element tree, set the option flag to kCFXMLParserAllOptions:

48.48.5 CreateWithURL(url as CFURLMBS, options as Integer)

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a parser which will parse the given data with the given options.
## 48.48. CLASS CFXMLPARSERMBS

<table>
<thead>
<tr>
<th>Option</th>
<th>Bit Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kCFXMLParserValidateDocument</td>
<td>1</td>
<td>Validate the document against its grammar from the DTD, reporting any errors. Currently not supported.</td>
</tr>
<tr>
<td>kCFXMLParserSkipMetaData</td>
<td>2</td>
<td>Silently skip over metadata constructs (the DTD and comments)</td>
</tr>
<tr>
<td>kCFXMLParserReplacePhysicalEntities</td>
<td>4</td>
<td>Replace declared entities like &lt;. Note that other than the 5 predefined entities (lt, gt, quot, amp, apos), these must be defined in the DTD. Currently not supported.</td>
</tr>
<tr>
<td>kCFXMLParserSkipWhitespace</td>
<td>8</td>
<td>Skip over all whitespace that does not abut non-whitespace character data. In other words, given <code>&lt;foo&gt;</code> <code>&lt;bar&gt;</code> <code>blah</code> <code>&lt;/bar&gt;</code> <code>&lt;/foo&gt;</code>, the whitespace between foo's open tag and bar's open tag would be suppressed, but the whitespace around blah would be preserved.</td>
</tr>
<tr>
<td>kCFXMLParserResolveExternalEntities</td>
<td>16</td>
<td>Where the DTD specifies implied attribute-value pairs for a particular element, add those pairs to any occurrences of the element in the element tree. Currently not supported.</td>
</tr>
<tr>
<td>kCFXMLParserAddImpliedAttributes</td>
<td>32</td>
<td>When the DTD specifies implied attribute-value pairs for a particular element, add those pairs to any occurrences of the element in the element tree. Currently not supported.</td>
</tr>
<tr>
<td>kCFXMLParserAllOptions</td>
<td>&amp; hFFFFFF</td>
<td>All options enabled.</td>
</tr>
<tr>
<td>kCFXMLParserNoOptions</td>
<td>0</td>
<td>No options enabled.</td>
</tr>
</tbody>
</table>

### Notes:

The data to be parsed is loaded directly from dataSource. dataSource may not be nil.

These are the various options you can configure the parser with. These are chosen such that an option flag of 0 (kCFXMLParserNoOptions) leaves the XML as "intact" as possible (reports all structures; performs no replacements).

Hence, to make the parser do the most work, returning only the pure element tree, set the option flag to kCFXMLParserAllOptions:

<table>
<thead>
<tr>
<th>Option</th>
<th>Bit Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kCFXMLParserValidateDocument</td>
<td>1</td>
<td>Validate the document against its grammar from the DTD, reporting any errors. Currently not supported.</td>
</tr>
<tr>
<td>kCFXMLParserSkipMetaData</td>
<td>2</td>
<td>Silently skip over metadata constructs (the DTD and comments)</td>
</tr>
<tr>
<td>kCFXMLParserReplacePhysicalEntities</td>
<td>4</td>
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</tr>
<tr>
<td>kCFXMLParserNoOptions</td>
<td>0</td>
<td>No options enabled.</td>
</tr>
</tbody>
</table>

### 48.48.6 Document as CFObjectMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the top-most object returned by the CreateXMLStructure event.

**Notes:** Returns nil on any error.
48.48.7  ErrorDescription as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an error description for the last error. **Notes:** Returns nil on any error.

48.48.8  LineNumber as Integer

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the line number of the current parse location.

48.48.9  Location as Integer

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the character index of the current parse location.

48.48.10  Parse as boolean

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Starts the parser. **Notes:** Starts a parse of the data the parser was created with; returns success (true) or failure (false). Upon success, use the Document function to get the product of the parse. Upon failure, use ErrorCode or ErrorDescription to get information about the error. It is an error to call Parse while a parse is already underway. Returns false on any error.

48.48.11  SourceURL as CFURLMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The currently used source url for this parser. **Notes:** Returns nil on any error.
48.48. CLASS CFXMLPARSERMBS

48.48.12 StatusCode as Integer

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last status code.

**Notes:**
Get the status code (or a user-readable description via ErrorDescription) of the last error that occurred in a parse.
If no error has occurred, a nil description string is returned by ErrorDescription.

- kCFXMLStatusParseNotBegun: -2
- kCFXMLStatusParseInProgress: -1
- kCFXMLStatusParseSuccessful: 0
- kCFXMLErrorUnexpectedEOF: 1
- kCFXMLErrorUnknownEncoding: 2
- kCFXMLErrorEncodingConversionFailure: 3
- kCFXMLErrorMalformedProcessingInstruction: 4
- kCFXMLErrorMalformedDTD: 5
- kCFXMLErrorMalformedName: 6
- kCFXMLErrorMalformedCDSSect: 7
- kCFXMLErrorMalformedCloseTag: 8
- kCFXMLErrorMalformedStartTag: 9
- kCFXMLErrorMalformedDocument: 10
- kCFXMLErrorElementlessDocument: 11
- kCFXMLErrorMalformedComment: 12
- kCFXMLErrorMalformedCharacterReference: 13
- kCFXMLErrorMalformedParsedCharacterData: 14
- kCFXMLErrorNoData: 15

48.48.13 Events

48.48.14 AddChild(parent as CFObjectMBS, child as CFObjectMBS)

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called as children are parsed and are ready to be added to the tree.

**Notes:** If CreateXMLStructure returns nil for a given structure, that structure is omitted entirely, and addChild will NOT be called for either a nil child or parent.

48.48.15 CreateXMLStructure(node as CFXMLNodeMBS) as CFObjectMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called as new XML structures are encountered by the parser.

**Notes:** May return nil to indicate that the given structure should be skipped; if nil is returned for a given structure, only minimal parsing is done for that structure (enough to correctly determine its end, and to extract any
data necessary for the remainder of the parse, such as Entity definitions).
CreateXMLStructure (or indeed, any of the tree-creation callbacks) will not be called for any children of the skipped structure. The only exception is that the top-most element will always be reported even if nil was returned for the document as a whole.
NOTE: for performance reasons, the node passed to createXMLStructure cannot be safely retained by the client; the node as a whole must be copied (via CFXMLNode.Copy), or its contents must be extracted and copied.

Whatever value you return, you get it back in the parameters of the addChild and the endXMLStructure event.

48.48.16 EndXMLStructure(xmlType as CFObjectMBS)
MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Called once a structure (and all its children) are completely parsed.
Notes: As elements are encountered, CreateXMLStructure is called for them first, then AddChild to add the new structure to its parent, then AddChild (potentially several times) to add the new structure’s children to it, then finally EndXMLStructure to show that the structure has been fully parsed.

48.48.17 HandleError(StatusCode as Integer) as boolean
MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Called as errors/warnings are encountered in the data stream.
Notes: The handleError function may always return FALSE to force the parser to stop; if handleError returns TRUE, the parser will attempt to recover (fatal errors will still cause the parse to abort immediately).
(Defualt for an empty event is true.)

48.48.18 ResolveExternalEntity(externalID as CFXMLEntityMBS) as CFBinaryDataMBS
MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Called when external entities are referenced (NOT when they are simply defined).
Notes: If the function returns nil, a place holder for the external entity is inserted into the tree.
48.49. class CFXMLProcessingInstructionInfoMBS

48.49.1 class CFXMLProcessingInstructionInfoMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class with additional information for the processing instructions.

48.49.2 Properties

48.49.3 DataString as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The additional data. **Notes:** (Read and Write property)
Chapter 49

CoreFoundation Network

49.1 class CFHostMBS

49.1.1 class CFHostMBS


Notes:
You can asynchronously resolve hostnames to IPs and back.
IPv6 compatible.
Subclass of the CFObjectMBS class.

49.1.2 Methods

49.1.3 LookupAddress(address as string) as boolean


Notes:
Address must be an IPv4 or IPv6 address.
Returns true on success or false on failure.

49.1.4 LookupName(hostname as CFStringMBS) as boolean

MBS MacCF Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Starts an asynchronous lookup process to find the IP addresses for the given domain name.
Notes: Returns true on success and false on failure.

49.1.5 Events

49.1.6 Error(ErrorDomain as Integer, ErrorCode as Integer)

MBS MacCF Plugin, Plugin Version: 5.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** An error occurred.

49.1.7 GotAddress(address as string, addressIndex as Integer, count as Integer)

MBS MacCF Plugin, Plugin Version: 5.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** An IP address was found. **Notes:** As plugins can’t create arrays, the plugin will call this event count times with addressIndex going from 0 to count-1. Name is the IP address, e.g. "12.34.56.78".

49.1.8 GotName(name as CFStringMBS, nameIndex as Integer, count as Integer)

MBS MacCF Plugin, Plugin Version: 5.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** A name was found. **Notes:** As plugins can’t create arrays, the plugin will call this event count times with nameIndex going from 0 to count-1. Name is the domain name, e.g. "apple.com".
49.2. **CLASS CFHTTPMESSAGEMBS**

49.2   **class CFHTTPMessageMBS**

49.2.1  **class CFHTTPMessageMBS**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a HTTP message. **Notes:** Subclass of the CFObjectMBS class.

49.2.2  **Methods**

49.2.3  **AddAuthentication(authenticationFailureResponse as CFHTTPMessageMBS, username as CFStringMBS, password as CFStringMBS, authentication-Scheme as CFStringMBS, forProxy as Boolean) as boolean**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds authentication details. **Notes:** Tries to modify request to contain the authentication information requested by authenticationFailureResponse (which presumably is a 401 or 407 response). Returns TRUE if successful; FALSE otherwise (leaving request unmodified). If authenticationScheme is NULL, the strongest supported scheme listed in failedResponse will be used.

49.2.4  **AppendBytes(s as string) as boolean**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds additional bytes to the message. **Notes:** The following function appends the given bytes to the message given (parsing out any control information if appropriate). Returns FALSE if a parsing error occurs while processing the new data.

49.2.5  **Copy as CFHTTPMessageMBS**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy of the HTTP message. **Notes:** Returns nil on any error.
CHAPTER 49. COREFOUNDATION NETWORK

49.2.6 HeaderFields as CFDictionaryMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
All header fields in one big CFDictionary.

49.2.7 IsHeaderComplete as boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Whether further header data is expected by the message.

49.2.8 IsRequest as boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Whether the message is a response or a request.

49.2.9 kCFHTTPAuthenticationSchemeBasic as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A possible value you can pass when creating a HTTPMessage.

49.2.10 kCFHTTPAuthenticationSchemeDigest as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A possible value you can pass when creating a HTTPMessage.

49.2.11 kCFHTTPVersion1_0 as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A possible value you can pass when creating a HTTPMessage.

49.2.12 kCFHTTPVersion1_1 as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A possible value you can pass when creating a HTTPMessage.
49.2. CLASS CFHTTPMESSAGEMBS

49.2.13  RequestMethod as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The request method.

49.2.14  RequestURL as CFURLMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The request URL.

49.2.15  ResponseStatusCode as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The response status code. **Notes:** See RFC 2616 for the codes.

49.2.16  ResponseStatusLine as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The response status line.

49.2.17  SerializedMessage as CFBinaryDataMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This message with all data stored in one CFBinaryData object to store in e.g. a file.

49.2.18  Version as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The HTTP version of the message.
49.2.19 Properties

49.2.20 Body as CFBinaryDataMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The body of this message.
**Notes:** (Read and Write computed property)

49.2.21 HeaderField(headerfield as CFStringMBS) as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Set or Get one of the header fields of the Message.
**Notes:** (Read and Write computed property)
49.3.1 **CFStreamCreatePairWithSocketMBS**(TheSocket as CFSocketMBS, readstream as CFReadStreamMBS, writestream as CFWriteStreamMBS)

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Creates two streams based on one socket.

**Notes:**

You need to pass in stream objects to get those objects filled.
If you forget one of this objects the stream will be readonly or writeonly.

49.3.2 **CFStreamCreatePairWithSocketToHostMBS**(host as CFStringMBS, port as Integer, readstream as CFReadStreamMBS, writestream as CFWriteStreamMBS)

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Creates a pair of streams based on a socket which connects to the given host.

49.3.3 **CFHTTPMessageCreateEmptyMBS**(isRequest as boolean) as CFHTTPMessageMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Creates a new empty http message.

**Notes:**

Returns nil on any error.

Creates an empty request or response, which you can then append bytes to via CFHTTPMessage.AppendBytes(). The HTTP header information will be parsed out as the bytes are appended.

49.3.4 **CFHTTPMessageCreateRequestMBS**(requestMethod as CFStringMBS, url as CFURLMBS, httpVersion as CFStringMBS) as CFHTTPMessageMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Creates a new HTTP message as a request.
49.3.5 CFHTTPMessageCreateResponseMBS(statusCode as Integer, statusDescription as CFStringMBS, httpVersion as CFStringMBS) as CFHTTPMessageMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new HTTP message as a response. **Notes:** Pass nil to use the standard description for the given status code, as found in RFC 2616.

49.3.6 kCFHostMBSGetTypeID as Integer

MBS MacCF Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Type ID of a CFHostMBS object.

49.3.7 kCFHTTPMessageMBSGetTypeID as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Type ID of a CFHTTPMessageMBS object.

49.3.8 kCFReadStreamMBSGetTypeID as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Type ID of a CFReadStreamMBS object.

49.3.9 kCFSocketMBSGetTypeID as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Type ID of a CFSocketMBS object.

49.3.10 kCFWriteStreamMBSGetTypeID as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Type ID of a CFWriteStreamMBS object.
49.4  CLASS CFPROXYMBS

49.4  class CFProxyMBS

49.4.1  class CFProxyMBS

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
The class for proxy queries.

**Notes:**
These APIs return arrays of dictionaries, where each dictionary describes a single proxy. The arrays represent the order in which the proxies should be tried - try to download the URL using the first entry in the array, and if that fails, try using the second entry, and so on.

The keys to the proxy dictionaries follow the function declarations; every proxy dictionary will have an entry for kCFProxyTypeKey. If the type is anything except kCFProxyTypeAutoConfigurationURL, the dictionary will also have entries for the proxy’s host and port (under kCFProxyHostKeyName and kCFProxyPortNumberKey respectively). If the type is kCFProxyTypeAutoConfigurationURL, it will have an entry for kCFProxyAutoConfigurationURLKey.

The keys for username and password are optional and will only be present if the username or password could be extracted from the information passed in (i.e. either the URL itself or the proxy dictionary supplied). These APIs do not consult any external credential stores (such as the Keychain).

All the class methods require Mac OS X 10.5 or newer.

49.4.2  Methods

49.4.3  ExecuteProxyAutoConfigurationScript(proxyAutoConfigurationScript as string, targetURL as string) as boolean

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
Begins the process of executing proxyAutoConfigurationScript to determine the correct proxy to use to retrieve targetURL.

**Notes:**
When the results are found, the event will be called on the main thread, passing a valid proxyList and nil error upon success, or a nil proxyList and valid error on failure.

proxyAutoConfigurationScript: A string containing the code of the script to be executed.
targetURL: The URL that should be passed to the autoconfiguration script.

Returns true if the request was started.
49.4.4 **ExecuteProxyAutoConfigurationURL** (proxyAutoConfigURL as string, targetURL as string) as boolean

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Executes the proxy auto configuration URL and returns which proxy to use. **Notes:** As ExecuteProxyAutoConfigurationScript(), except that ExecuteProxyAutoConfigurationURL will additionally download the contents of proxyAutoConfigURL, convert it to a JavaScript string, and then execute that script.

49.4.5 **kCFNetworkProxiesExceptionsList** as string

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key for the list of host name patterns that should bypass the proxy. **Notes:** Value is an array of strings.

49.4.6 **kCFNetworkProxiesExcludeSimpleHostnames** as string

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key whose value indicates if simple hostnames will be excluded. **Notes:** Value is a number. Simple hostnames will be excluded if the key is present and has a non-zero value.

49.4.7 **kCFNetworkProxiesFTPEnable** as string

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key for the enabled status of the ftp proxy. **Notes:** Value is a number. The proxy is enabled if the key is present and has a non-zero value.

49.4.8 **kCFNetworkProxiesFTPPassive** as string

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key for the state of passive mode for the ftp proxy. **Notes:** Value is a Number. A value of one indicates that passive mode is enabled, a value of zero indicates that passive mode is not
49.4.9  **kCFNetworkProxiesFTPPort as string**

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key for the port number associated with the ftp proxy. **Notes:** Value is a number which is the port number.

49.4.10 **kCFNetworkProxiesFTPProxy as string**

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key for the host name associated with the ftp proxy. **Notes:** Value is a string which is the proxy host name.

49.4.11 **kCFNetworkProxiesHTTPPort as string**

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key for the port number associated with the HTTP proxy. **Notes:** Value is a number which is the port number.

49.4.12 **kCFNetworkProxiesHTTPProxy as string**

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key for the host name associated with the HTTP proxy. **Notes:** Value is a string which is the proxy host name.

49.4.13 **kCFNetworkProxiesHTTPSEnable as string**

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key for the enabled status of the HTTPS proxy; value is a number. **Notes:** The proxy is enabled if the key is present and has a non-zero value.

49.4.14 **kCFNetworkProxiesHTTPSPort as string**

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key for the port number associated with the HTTPS proxy.
Notes: Value is a Number which is the port number.

### 49.4.15 kCFNetworkProxiesHTTPSProxy as string

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key for the host name associated with the HTTPS proxy. **Notes:** Value is a string which is the proxy host name.

### 49.4.16 kCFNetworkProxiesProxyAutoConfigEnable as string

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key for the enabled status ProxyAutoConfig (PAC). **Notes:** Value is a number. ProxyAutoConfig is enabled if the key is present and has a non-zero value.

### 49.4.17 kCFNetworkProxiesProxyAutoConfigURLString as string

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key for the url which indicates the location of the ProxyAutoConfig (PAC) file. **Notes:** Value is a string which is url for the PAC file.

### 49.4.18 kCFNetworkProxiesProxyAutoDiscoveryEnable as string

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key for the enabled status of proxy auto discovery. **Notes:** Value is a number. Proxy auto discovery is enabled if the key is present and has a non-zero value.

### 49.4.19 kCFNetworkProxiesRTSPEnable as string

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key for the enabled status of the RTSP proxy. **Notes:**
Value is a Number. The proxy is enabled if the key is present and has a non-zero value.

### 49.4.20 kCFNetworkProxiesRTSPPort as string

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key for the port number associated with the RTSP proxy. **Notes:** Value is a Number which is the port number.

### 49.4.21 kCFNetworkProxiesRTSPProxy as string

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key for the host name associated with the RTSP proxy. **Notes:** Value is a string which is the proxy host name.

### 49.4.22 kCFNetworkProxiesSOCKSEnable as string

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key for the enabled status of the SOCKS proxy. **Notes:** Value is a number. The proxy is enabled if the key is present and has a non-zero value.

### 49.4.23 kCFNetworkProxiesSOCKSPort as string

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key for the port number associated with the SOCKS proxy. **Notes:** Value is a Number which is the port number.

### 49.4.24 kCFNetworkProxiesSOCKSProxy as string

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key for the host name associated with the SOCKS proxy. **Notes:** Value is a String which is the proxy host name.
49.4.25 **kCFProxyAutoConfigurationJavaScriptKey as string**

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key for the proxy’s PAC script.  
**Notes:** The value is a String that contains the full JavaScript source text for the PAC file.

49.4.26 **kCFProxyAutoConfigurationURLKey as string**

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key for the proxy’s PAC file location.  
**Notes:** This key is only present if the proxy’s type is kCFProxyTypeAutoConfigurationURL. Value is a string with URL specifying the location of a proxy auto-configuration file.

49.4.27 **kCFProxyHostNameKey as string**

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key for the proxy’s hostname; value is a string.  
**Notes:** Note that this may be an IPv4 or IPv6 dotted-IP string.

49.4.28 **kCFProxyPasswordKey as string**

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key for the password to be used with the proxy.  
**Notes:** Value is a String. Note that this key will only be present if the username could be extracted from the information passed in. No external credential stores (like the Keychain) are consulted.

49.4.29 **kCFProxyPortNumberKey as string**

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key for the proxy’s port number.  
**Notes:** Value is a CFNumber specifying the port on which to contact the proxy.

49.4.30 **kCFProxyTypeAutoConfigurationJavaScript as string**

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the proxy types.  
**Notes:** The proxy is specified by a proxy autoconfiguration (PAC) file content.
49.4. CLASS CFPROXYMBS

49.4.31 kCFProxyTypeAutoConfigurationURL as string

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the proxy types. **Notes:** The proxy is specified by a proxy autoconfiguration (PAC) file.

49.4.32 kCFProxyTypeFTP as string

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the proxy types. **Notes:** The proxy is an FTP proxy.

49.4.33 kCFProxyTypeHTTP as string

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the proxy types. **Notes:** The proxy is an HTTP proxy.

49.4.34 kCFProxyTypeHTTPS as string

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the proxy types. **Notes:** The proxy is a tunneling proxy as used for HTTPS.

49.4.35 kCFProxyTypeKey as string

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key for the type of proxy being represented. **Notes:** value will be one of the kCFProxyType* constants listed below.

49.4.36 kCFProxyTypeNone as string

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the proxy types. **Notes:** No proxy should be used; contact the origin server directly.
49.4.37 kCFProxyTypeSOCKS as string

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the proxy types.
**Notes:** The proxy is a SOCKS proxy.

49.4.38 kCFProxyUsernameKey as string

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key for the username to be used with the proxy.
**Notes:** Value is a String. Note that this key will only be present if the username could be extracted from the information passed in. No external credential stores (like the Keychain) are consulted.

49.4.39 ProxiesForAutoConfigurationScript(proxyAutoConfigurationScript as string, URL as string, byref error as CFErrorMBS) as Dictionary()

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Synchronously executes the given proxy autoconfiguration script and returns a valid proxyList and nil error upon success or a nil proxyList and valid error on failure.
**Notes:**
proxyAutoConfigurationScript: A string containing the code of the script to be executed.
targetURL: The URL that should be input in to the autoconfiguration script.
error: A return argument that will contain a valid error in case of failure.

Returns an array of dictionaries describing the proxies returned by the script or nil on failure.

49.4.40 ProxiesForURL(URL as string, proxySettings as Dictionary = nil) as Dictionary()

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Given a URL and a proxy dictionary, determines the ordered list of proxies that should be used to download the given URL.
**Notes:**
url: The URL to be accessed
proxySettings: A dictionary describing the available proxy settings; the dictionary’s format should match the dictionary returned by SystemProxySettings described below. If you pass nil, the plugin queries SystemProxySettings functions for you.
49.4. CLASS CFPROXYMBS

Returns an array of dictionaries; each dictionary describes a single proxy. See the comment at the top of this file for how to interpret the returned dictionaries.

49.4.41 SystemProxySettings as Dictionary

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Dictionary containing the current system internet proxy settings.

**Example:**

```vba
dim d as Dictionary = CFProxyMBS.SystemProxySettings

dim k as string = CFProxyMBS.kCFProxyTypeKey
MsgBox "Type: " + d.lookup(k, "unknown")
```

**Notes:**

Returns a dictionary containing key-value pairs that represent the current internet proxy settings. Value is nil if no proxy settings have been defined or if an error was encountered.

49.4.42 Events

49.4.43 AutoConfigurationResult(error as CFErrorMBS, proxyList() as Dictionary)

MBS MacCF Plugin, Plugin Version: 14.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Event to be called when a PAC file computation has completed.

**Notes:**

Initiated by either ExecuteProxyAutoConfigurationScript or ExecuteProxyAutoConfigurationURL.

proxyList: Upon success, the list of proxies returned by the autoconfiguration script. The list has the same format as returned by ProxiesForURL, above, except that no entry may be of type kCFProxyTypeAutoConfigurationURL.

error: Upon failure, an error object explaining the failure.
49.5 class CFReadStreamMBS

49.5.1 class CFReadStreamMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a CoreFoundation write stream.
**Notes:**
You can read from a file, a memoryblock or using a socket over the network.
Subclass of the CFStreamMBS class.

49.5.2 Methods

49.5.3 close

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Closes the stream.
**Notes:** Terminates the flow of bytes; releases any system resources required by the stream. The stream may not fail to close.

49.5.4 CreateForHTTPRequest(request as CFHTTPMessageMBS) as boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new read stream based on the given HTTP request.
**Notes:**
Creates a read stream for the response to the given request; when the stream is opened, it will begin transmitting the request. The bytes returned are the pure body bytes; the response header has been parsed off. To retrieve the response header, ask for kCFStreamPropertyHTTPResponseHeader any time after the first bytes arrive on the stream (or when stream end is reported, if there are no data bytes).

Returns true if successful.

49.5.5 CreateWithFile(fileurl as CFURLMBS) as boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new file based readstream.
**Notes:** Returns true if successful.
49.5. CLASS CFREADSTREAMMBS

49.5.6 CreateWithMemoryBlock(mem as memoryblock, len as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new readstream based on the data of the given memoryblock. **Notes:** Returns true if successful.

49.5.7 CreateWithString(s as string) as boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new readstream based on the data of the given string. **Notes:** Returns true if successful.

49.5.8 ErrorCode as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last error code. **Notes:** Meaning depends on the ErrorDomain.

49.5.9 ErrorDomain as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The error domain of the last error code. **Notes:** Possible domains:

- kCFStreamErrorDomainCustom = -1 custom to the kind of stream in question
- kCFStreamErrorDomainPOSIX = 1 POSIX errno; interpret using <sys/errno.h>
- kCFStreamErrorDomainMacOSStatus = 2 OSStatus type from Carbon APIs; interpret using <MacTypes.h>

49.5.10 GetProperty(propertyName as CFStringMBS) as CFObjectMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a property of the stream. **Notes:** Returns nil on any error. Particular streams can name properties and assign meanings to them; you access these properties through the GetProperty and SetProperty calls. A property is any interesting information about the stream other than the data being transmitted itself. Examples include the headers from an HTTP transmission, or the
expected number of bytes, or permission information, etc. Properties that can be set configure the behavior of the stream, and may only be settable at particular times (like before the stream has been opened). See the documentation for particular properties to determine their get- and set-ability.

49.5.11 HasBytesAvailable as boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** True if you can read bytes. **Notes:** Whether there is data currently available for reading; Returns TRUE if it’s impossible to tell without trying.

49.5.12 InstallEvents

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Installs the event handler. **Notes:** You need to remove the event handler later to not leak memory! The event handler is needed to have the Callback event firing.

49.5.13 Open as boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Opens the stream. **Notes:** Returns success/failure. Opening a stream causes it to reserve all the system resources it requires. If the stream can open non-blocking, this will always return TRUE; listen to the Callback to find out when the open completes and whether it was successful, or poll using the Status property, waiting for a status of kCFStreamStatusOpen or kCFStreamStatusError.

49.5.14 ReadMemory(maxBytesToRead as Integer, mem as memoryblock) as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Reads some bytes from the stream. **Notes:** Returns the number of bytes read, or -1 if an error occurs preventing any bytes from being read, or 0 if the stream’s end was encountered. It is an error to try and read from a stream that hasn’t been opened first.
49.5. **CLASS CFREADSTREAMMBS**

This call will block until at least one byte is available; it will NOT block until the entire buffer can be filled. To avoid blocking, either poll using HasBytesAvailable or use the run loop and listen for the kCFStream-CanRead event for notification of data available.

### 49.5.15 **ReadString(maxBytesToRead as Integer) as string**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Reads some bytes from the stream.

**Notes:**
- Returns a string as long as the number of bytes read, or ”” if an error occurs preventing any bytes from being read or the stream’s end was encountered.
- It is an error to try and read from a stream that hasn’t been opened first.
- This call will block until at least one byte is available; it will NOT block until the entire buffer can be filled. To avoid blocking, either poll using HasBytesAvailable or use the run loop and listen for the kCFStream-CanRead event for notification of data available.

### 49.5.16 **RemoveEvents**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes the event handler.

**Notes:** You should remove this event handler after you finished with the stream.

### 49.5.17 **SetProperty(propertyName as CFStringMBS, propertyValue as CFObj-jectMBS) as Boolean**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets a property of the stream.

**Notes:** Returns true if successfull.

### 49.5.18 **Status as Integer**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The status of the stream.

**Notes:**
- Possible values:
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kCFStreamStatusNotOpen = 0
kCFStreamStatusOpening = 1 (open is in-progress)
kCFStreamStatusOpen = 2
kCFStreamStatusReading = 3
kCFStreamStatusWriting = 4
kCFStreamStatusAtEnd = 5 (no further bytes can be read/written)
kCFStreamStatusClosed = 6
kCFStreamStatusError = 7

49.5.19 Events

49.5.20 Callback(reason as Integer)

Notes:
Possible values for the reason:

kCFStreamEventNone = 0
kCFStreamEventOpenCompleted = 1
kCFStreamEventHasBytesAvailable = 2
kCFStreamEventCanAcceptBytes = 4
kCFStreamEventErrorOccurred = 8
kCFStreamEventEndEncountered = 16
49.6. class CFSocketMBS

49.6.1 class CFSocketMBS

A class for a CFSocket.

Notes:

A CFSocket contains a native socket within a structure that can be used to read from the socket in the background and make the data thus read available using a runloop source.

Addresses are stored as CFDatas containing a struct sockaddr appropriate for the protocol family; make sure that all fields are filled in properly when passing in an address.

Some error codes:

kCFSocketSuccess    = 0
kCFSocketError      = -1
kCFSocketTimeout    = -2

Subclass of the CFObjectMBS class.

49.6.2 Methods

49.6.3 ConnectToAddress(address as CFBinaryDataMBS, timeout as Double) as Integer

Connects the socket to the given address.

Notes:

Returns a socket error.

Some error codes:

kCFSocketSuccess    = 0
kCFSocketError      = -1
kCFSocketTimeout    = -2
49.6.4 Create as boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new socket.

**Notes:**

Some error codes:

- kCFSocketSuccess = 0,
- kCFSocketError = -1,
- kCFSocketTimeout = -2

49.6.5 Invalidate

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Invalidates the socket.

49.6.6 IsValid as boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Checks if the socket is valid.

49.6.7 NativeSocketHandle as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The native socket handle.

49.6.8 PeerAddress as CFBinaryDataMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The peer address of this socket.

**Notes:** Returns nil on any error.

49.6.9 SendData(data as CFBinaryDataMBS, timeout as Double) as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sends data over the socket with a given timeout.
Notes:

For convenience, a function is provided to send data using the socket with a timeout. The timeout will be used only if the specified value is positive.

Some error codes:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kCFSocketSuccess</td>
<td>0</td>
</tr>
<tr>
<td>kCFSocketError</td>
<td>-1</td>
</tr>
<tr>
<td>kCFSocketTimeout</td>
<td>-2</td>
</tr>
</tbody>
</table>

49.6.10 Properties

49.6.11 Address as CFBinaryDataMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The address of this socket.
**Notes:** (Read and Write computed property)

49.6.12 Events

49.6.13 Callback(reason as Integer, address as CFBinaryDataMBS, data as memoryblock)

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The callback event for this socket.
**Notes:**

Possible reasons:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kCFSocketNoCallBack</td>
<td>0</td>
</tr>
<tr>
<td>kCFSocketReadCallBack</td>
<td>1</td>
</tr>
<tr>
<td>kCFSocketAcceptCallBack</td>
<td>2</td>
</tr>
<tr>
<td>kCFSocketDataCallBack</td>
<td>3</td>
</tr>
<tr>
<td>kCFSocketConnectCallBack</td>
<td>4</td>
</tr>
<tr>
<td>kCFSocketWriteCallBack</td>
<td>8</td>
</tr>
</tbody>
</table>
CHAPTER 49. COREFOUNDATION NETWORK

49.7  class CFStreamMBS

49.7.1  class CFStreamMBS

Notes: (Only a place to store all those constants ;-)
Subclass of the CFObjectMBS class.

49.7.2  Methods

49.7.3  kCFHTTPAuthenticationSchemeBasic as CFStringMBS


49.7.4  kCFHTTPAuthenticationSchemeDigest as CFStringMBS


49.7.5  kCFHTTPVersion1_0 as CFStringMBS


49.7.6  kCFHTTPVersion1_1 as CFStringMBS


49.7.7  kCFStreamErrorDomainHTTP as Integer

Notes:
Possible error values:

- kCFStreamErrorHTTPParseFailure = -1
- kCFStreamErrorHTTPRedirectionLoop = -2
- kCFStreamErrorHTTPBadURL = -3

49.7.8 kCFStreamErrorDomainSOCKS as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** SOCKS proxy error domain.

49.7.9 kCFStreamErrorDomainSSL as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An error domain used with the socket based streams. **Notes:** Secure stream support.

49.7.10 kCFStreamPropertyAppendToFile as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether to append new bytes to an existing file. **Notes:** Property for file write streams; value should be a CFBoolean. Set to TRUE to append to a file, rather than to replace its contents. Requires Mac OS X 10.2

49.7.11 kCFStreamPropertyDataWritten as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A property name for use with the CFWriteStream class. **Example:**

dim writestream as CFWriteStreamMBS
dim c as CFObjectMBS
c=writestream.getproperty(writestream.kCFStreamPropertyDataWritten)
Notes: Value will be a CFData containing all bytes thusfar written; used to recover the data written to a memory write stream.

49.7.12 kCFStreamPropertyHTTPAttemptPersistentConnection as CFStringMBS

Notes: Value should be a CFBoolean. If this property is set to true, an HTTP stream will look for an appropriate extant persistent connection to use, and if it finds none, will try to create one.

49.7.13 kCFStreamPropertyHTTPFinalURL as CFStringMBS

Notes: Value is the CFURL from the final request; will only differ from the URL in the original request if an autoredirection has occurred.

49.7.14 kCFStreamPropertyHTTPProxy as CFStringMBS

Notes:
HTTP proxy information is set the same way as SOCKS proxies.
Call CFReadStream.SetProperty() passing an HTTP stream and the property kCFStreamPropertyHTTPProxy.
The value should be a CFDictionary that includes at least one Host/Port pair from the keys below.
The dictionary returned by SystemConfiguration.framework can also be passed directly as the value

Keys for the dictionary to use:
kCFStreamPropertyHTTPProxyHost
kCFStreamPropertyHTTPProxyPort
kCFStreamPropertyHTTPSProxyHost
kCFStreamPropertyHTTPSProxyPort

49.7.15 kCFStreamPropertyHTTPProxyHost as CFStringMBS

49.7.16 kCFStreamPropertyHTTPProxyPort as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the proxy CFDictionary for a socket based stream.

**Notes:**

49.7.17 kCFStreamPropertyHTTPResponseHeader as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for a socket based stream.

**Notes:** Value is a CFHTTPMessage with 0 bytes data.

49.7.18 kCFStreamPropertyHTTPShouldAutoredirect as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for a socket based stream.

**Notes:** Value should be a CFBoolean.

49.7.19 kCFStreamPropertyHTTPSProxyHost as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the proxy CFDictionary for a socket based stream.

49.7.20 kCFStreamPropertyHTTPSProxyPort as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the proxy CFDictionary for a socket based stream.

49.7.21 kCFStreamPropertyShouldCloseNativeSocket as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for a socket based stream.

**Notes:**

Set the value to kCFBooleanTrue if the stream should close and release the underlying native socket when the stream is released. Set the value to kCFBooleanFalse to keep the native socket from closing and releasing when the stream is released.
If the stream was created with a native socket, the default property setting on the stream is kCFBooleanFalse.

The kCFStreamPropertyShouldCloseNativeSocket can be set through CFReadStream SetProperty or CFWriteStream SetProperty. The property can be copied through CFReadStreamGetProperty or CFWriteStreamGetProperty.

49.7.22 kCFStreamPropertySocketNativeHandle as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for a socket based stream. **Notes:** Value will be a CFData containing the native handle.

49.7.23 kCFStreamPropertySocketRemoteHostName as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for a socket based stream. **Notes:** Value will be a CFString, or nil if unknown.

49.7.24 kCFStreamPropertySocketRemotePortNumber as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for a socket based stream. **Notes:** Value will be a CFNumber, or nil if unknown.

49.7.25 kCFStreamPropertySocketSecurityLevel as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for a socket based stream. **Notes:** You set this property to one of the following values:
- kCFStreamSocketSecurityLevelSSLv3
- kCFStreamSocketSecurityLevelSSLv2
- kCFStreamSocketSecurityLevelNone
- kCFStreamSocketSecurityLevelNegotiatedSSL
- kCFStreamSocketSecurityLevelTLSv1

(this 5 properties return CFStrings which you pass to SetProperty)
49.7. CLASS CFSTREAMMBS

49.7.26 kCFStreamPropertySOCKSPassword as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for a socket based stream.

49.7.27 kCFStreamPropertySOCKSProxy as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for a socket based stream.

**Notes:**
SOCKS Proxy usage
To set a stream to use a SOCKS proxy, call CFReadStream.SetProperty or CFWriteStream.SetProperty with the property name set to kCFStreamPropertySOCKSProxy and the value being a CFDictionary with at least the following two keys: kCFStreamPropertySOCKSProxyHost and kCFStreamPropertySOCKSProxyPort. The dictionary returned by SystemConfiguration for SOCKS proxies will work without alteration. The key kCFStreamPropertySOCKSProxyHost should contain a CFStringRef value representing the SOCKS proxy host. The key kCFStreamPropertySOCKSProxyPort should contain a CFNumberRef which itself is of type kCFNumberSInt32Type. This value should represent the port on which the proxy is listening.

By default, SOCKS5 will be used unless there is a kCFStreamPropertySOCKSVersion key in the CFDictionary. Its value must be kCFStreamSocketSOCKSVersion4 or kCFStreamSocketSOCKSVersion5 to set SOCKS4 or SOCKS5, respectively.

To set a user name and/or password, if required, the dictionary must contain the key(s) kCFStreamPropertySOCKSUser and/or kCFStreamPropertySOCKSPassword with the value being the user’s name as a CFString and/or the user’s password as a CFString, respectively.

kCFStreamPropertySOCKSProxy can be set through CFReadStream.SetProperty or CFWriteStream.SetProperty. The property can be copied through CFReadStream.GetProperty or CFWriteStream.GetProperty.

49.7.28 kCFStreamPropertySOCKSProxyHost as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for a socket based stream.

49.7.29 kCFStreamPropertySOCKSProxyPort as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for a socket based stream.
49.7.30  kCFStreamPropertySOCKSUser as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the property keys for a socket based stream.

49.7.31  kCFStreamPropertySOCKSVersion as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the property keys for a socket based stream.

49.7.32  kCFStreamSocketSecurityLevelNegotiatedSSL as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the property values for a socket based stream. **Notes:** TLS or SSL with fallback to lower versions; this is what HTTPS does, for instance.

49.7.33  kCFStreamSocketSecurityLevelNone as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the property values for a socket based stream.

49.7.34  kCFStreamSocketSecurityLevelSSLv2 as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the property values for a socket based stream.

49.7.35  kCFStreamSocketSecurityLevelSSLv3 as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the property values for a socket based stream.
49.7.36 kCFStreamSocketSecurityLevelTLSv1 as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property values for a socket based stream.

49.7.37 kCFStreamSocketSOCKSVersion4 as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the values used with the kCFStreamPropertySOCKSVersion property for a socket based stream.

49.7.38 kCFStreamSocketSOCKSVersion5 as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the values used with the kCFStreamPropertySOCKSVersion property for a socket based stream.
49.8 class CFWriteStreamMBS

49.8.1 class CFWriteStreamMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a CoreFoundation write stream.  
**Notes:**  
You can write to a file, a memoryblock or using a socket over the network. Subclass of the CFStreamMBS class.

49.8.2 Methods

49.8.3 CanAcceptBytes as boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the stream can now accept data to write.  
**Notes:**  
Whether the stream can currently be written to without blocking; Returns TRUE if it’s impossible to tell without trying.

49.8.4 close

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Closes the stream.  
**Notes:** Terminates the flow of bytes; releases any system resources required by the stream. The stream may not fail to close.

49.8.5 CreateWithFile(fileurl as CFURLMBS) as boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new WriteStream using the given file specification.  
**Notes:** Returns true if successfull.

49.8.6 CreateWithMemory as boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new memory based stream.
Notes: New buffers are allocated as bytes are written to the stream. At any point, you can recover the
bytes thusfar written by asking for the property kCFStreamPropertyDataWritten (using GetProperty).

49.8.7 CreateWithMemoryBlock(mem as memoryblock, len as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Creates a new WriteStream which writes the data into the given memoryblock.
Notes:
The stream writes into the memoryblock given; when bufferCapacity is exhausted, the stream is exhausted
(status becomes kCFStreamStatusAtEnd).
Returns nil on any error.

49.8.8 ErrorCode as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The last error code.
Notes: Meaning depends on the ErrorDomain.

49.8.9 ErrorDomain as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The error domain of the last error code.
Notes:
Possible domains:

- kCFStreamErrorDomainCustom = -1 custom to the kind of stream in question
- kCFStreamErrorDomainPOSIX = 1 POSIX errno; interpret using <sys/errno.h>
- kCFStreamErrorDomainMacOSStatus = 2 OSStatus type from Carbon APIs; interpret using <MacTypes.h>

49.8.10 GetProperty(propertyName as CFStringMBS) as CFObjectMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns a property of the stream.
Notes:
Returns nil on any error.
Particular streams can name properties and assign meanings to them; you access these properties through
the GetProperty and SetProperty calls. A property is any interesting information about the stream other
than the data being transmitted itself. Examples include the headers from an HTTP transmission, or the expected number of bytes, or permission information, etc. Properties that can be set configure the behavior of the stream, and may only be settable at particular times (like before the stream has been opened). See the documentation for particular properties to determine their get- and set-ability.

49.8.11 InstallEvents

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Installs the event handler.
**Notes:**
You need to remove the event handler later to not leak memory!
The event handler is needed to have the Callback event firing.

49.8.12 Open as boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Opens the stream.
**Notes:** Returns success/failure. Opening a stream causes it to reserve all the system resources it requires. If the stream can open non-blocking, this will always return TRUE; listen to the Callback to find out when the open completes and whether it was successful, or poll using the Status property, waiting for a status of kCFStreamStatusOpen or kCFStreamStatusError.

49.8.13 RemoveEvents

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes the event handler.
**Notes:** You should remove this event handler after you finished with the stream.

49.8.14 SetProperty(propertyName as CFStringMBS, propertyValue as CFObjectMBS) as boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets a property of the stream.
**Notes:** Returns true if successful.
49.8. CLASS CFWRITESTREAMMBS

49.8.15 Status as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The status of the stream. **Notes:** Possible values:

- kCFStreamStatusNotOpen = 0
- kCFStreamStatusOpening = 1 (open is in-progress)
- kCFStreamStatusOpen = 2
- kCFStreamStatusReading = 3
- kCFStreamStatusWriting = 4
- kCFStreamStatusAtEnd = 5 (no further bytes can be read/written)
- kCFStreamStatusClosed = 6
- kCFStreamStatusError = 7

49.8.16 WriteMemory(mem as memoryblock, len as Integer) as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Write the data from inside the memoryblock to the stream. **Notes:** Returns the number of bytes successfully written, -1 if an error has occurred, or 0 if the stream has been filled to capacity (for fixed-length streams). If the stream is not full, this call will block until at least one byte is written. To avoid blocking, either poll via CanAcceptBytes or use the run loop and listen for the kCFStreamCanWrite event.

49.8.17 WriteString(buf as string) as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Write the data from inside the string to the stream. **Notes:** Returns the number of bytes successfully written, -1 if an error has occurred, or 0 if the stream has been filled to capacity (for fixed-length streams). If the stream is not full, this call will block until at least one byte is written. To avoid blocking, either poll via CanAcceptBytes or use the run loop and listen for the kCFStreamCanWrite event.

49.8.18 Events

49.8.19 Callback(reason as Integer)

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called when something happens.
**Notes:**

Possible values for the reason:

<table>
<thead>
<tr>
<th>CFStream Event Reason</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kCFStreamEventNone</td>
<td>0</td>
</tr>
<tr>
<td>kCFStreamEventOpenCompleted</td>
<td>1</td>
</tr>
<tr>
<td>kCFStreamEventHasBytesAvailable</td>
<td>2</td>
</tr>
<tr>
<td>kCFStreamEventCanAcceptBytes</td>
<td>4</td>
</tr>
<tr>
<td>kCFStreamEventErrorOccurred</td>
<td>8</td>
</tr>
<tr>
<td>kCFStreamEventEndEncountered</td>
<td>16</td>
</tr>
</tbody>
</table>
Chapter 50

CoreGraphics

50.1  Globals

50.1.1  CGNewPDFDocumentMBS(file as folderitem, MediaBox as CGRectMBS, title as string, author as string, creator as string, subject as string, keywords as string, OwnerPassword as string, UserPassword as string, AllowsPrinting as boolean, AllowsCopy as boolean) as CGPDFContextMBS

MBS MacCG Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a PDF document.

**Notes:**

Title, Author, Creator, Subject and Keywords parameters can be empty.

If OwnerPassword and UserPassword are filled in the PDF is encrypted and AllowsPrinting/AllowsCopy define what the user can do after he entered his password.

The passwords must be a string which can be represented in ASCII encoding; only the first 32 bytes will be used for the password.

Requires Mac OS X to work.

See also:

- 50.1.2 CGNewPDFDocumentMBS(file as folderitem, MediaBox as CGRectMBS, title as string, author as string, creator as string, subject as string, keywords as string, OwnerPassword as string, UserPassword as string, AllowsPrinting as boolean, AllowsCopy as boolean, KeyLength as Integer) as CGPDFContextMBS
50.1.2 CGNewPDFDocumentMBS(file as folderitem, MediaBox as CGRectMBS, title as string, author as string, creator as string, subject as string, keywords as string, OwnerPassword as string, UserPassword as string, AllowsPrinting as boolean, AllowsCopy as boolean, KeyLength as Integer) as CGPDFContextMBS

MBS MacCG Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a PDF document.

**Notes:**
Title, Author, Creator, Subject and Keywords parameters can be empty.

If OwnerPassword and UserPassword are filled in the PDF is encrypted and AllowsPrinting/AllowsCopy define what the user can do after he entered his password. 

The passwords must be a string which can be represented in ASCII encoding; only the first 32 bytes will be used for the password.

Keylength must be a value between 48 bit and 128 bit in 8 bit steps. 0 uses default value.

Requires Mac OS X to work.
See also:

- 50.1.1 CGNewPDFDocumentMBS(file as folderitem, MediaBox as CGRectMBS, title as string, author as string, creator as string, subject as string, keywords as string, OwnerPassword as string, UserPassword as string, AllowsPrinting as boolean, AllowsCopy as boolean) as CGPDFContextMBS

50.1.3 GetCurrentCGContextMBS as CGContextMBS

MBS MacCG Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new CGContextMBS object for the current Cocoa graphics context.

**Notes:**
Requires Mac OS X to work.
Returns nil on any error.
50.1.4 CGBitmapContextCreateMBS(data as memoryblock, width as Integer, height as Integer, bitsPerComponent as Integer, bytesPerRow as Integer, colorspace as CGColorSpaceMBS, alphaInfo as Integer) as CGBitmapContextMBS

MBS MacCG Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create a bitmap context.

**Notes:**

The context draws into a bitmap which is ‘width’ pixels wide and ‘height’ pixels high. The number of components for each pixel is specified by ‘colorspace’, which also may specify a destination color profile. The number of bits for each component of a pixel is specified by ‘bitsPerComponent’, which must be 1, 2, 4, or 8. Each row of the bitmap consists of ‘bytesPerRow’ bytes, which must be at least ‘(width * bitsPerComponent * number of components + 7)/8’ bytes. ‘data’ points a block of memory at least ‘bytesPerRow * height’ bytes. ‘alphaInfo’ specifies whether the bitmap should contain an alpha channel, and how it’s to be generated.

Fails if data=nil or colorspace=nil.

The memoryblock is not referenced and not stored, so keep it alive while using the BitmapContext object.

Returns nil on any error.

**data**

A pointer to the destination in memory where the drawing is to be rendered. The size of this memoryblock should be at least ‘bytesPerRow*height’ bytes.

**width**

The width of the bitmap in pixels.

**height**

The height of the bitmap in pixels.

**bitsPerComponent**

The number of bits to use for each component of a pixel in memory. Allowable values are 4, 5, or 8. For example, for a 32-bit RGB(A) colorspace, you would specify a value of 8 bits per color component. In combination, the number of bits per component, the color space, and the alpha value determine which bitmap context formats Quartz supports.

**bytesPerRow**

The number of bytes of memory to use per row of the bitmap. This value must be at least the product of the width and bitsPerComponent parameters, times the number of components per pixel. The result should be divided by 8 and rounded up to the nearest whole number to obtain the number of bytes to use per row. That is, the value must be at least ‘((width)*(bits per component)*(number of components per pixel))+7)/8’ bytes. For a given row, Quartz stores bitmap data for the first width pixels and ignores any remaining bytes.
The colorspace value referenced by the colorspace parameter specifies the number of components for each pixel. 

**colorsace**
The color space to use for the bitmap context.

**alphaInfo**
A CGImageAlphaInfo constant specifying whether the bitmap should contain an alpha channel and how it is to be generated. The alpha value determines the opacity of a pixel when it is drawn.

### Supported pixel formats:

<table>
<thead>
<tr>
<th>Pixel format</th>
<th>Color space</th>
<th>Bits per pixel</th>
<th>Bits per component</th>
<th>Alpha option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gray_8</td>
<td>Grayscale</td>
<td>8</td>
<td>8</td>
<td>kCGImageAlphaNone</td>
</tr>
<tr>
<td>RGB55</td>
<td>RGB</td>
<td>16</td>
<td>5</td>
<td>kCGImageAlphaNoneSkipFirst</td>
</tr>
<tr>
<td>XRGB_32</td>
<td>RGB</td>
<td>32</td>
<td>8</td>
<td>kCGImageAlphaNoneSkipFirst</td>
</tr>
<tr>
<td>ARGB_32</td>
<td>RGB</td>
<td>32</td>
<td>8</td>
<td>kCGImageAlphaPremultipliedFirst</td>
</tr>
<tr>
<td>RGBX_32</td>
<td>RGB</td>
<td>32</td>
<td>8</td>
<td>kCGImageAlphaNoneSkipLast</td>
</tr>
<tr>
<td>RGBA_32</td>
<td>RGB</td>
<td>32</td>
<td>8</td>
<td>kCGImageAlphaPremultipliedLast</td>
</tr>
</tbody>
</table>

Quartz does not support the following formats in a bitmap context:

- 1-bit grayscale
- 24-bit RGB
- CMYK (any depth)

**CGImageAlphaInfo constants:**

- kCGImageAlphaNone 0
- kCGImageAlphaPremultipliedLast 1  For example, premultiplied RGBA
- kCGImageAlphaPremultipliedFirst 2  For example, premultiplied ARGB
- kCGImageAlphaLast 3  For example, non-premultiplied RGBA
- kCGImageAlphaFirst 4  For example, non-premultiplied ARGB
- kCGImageAlphaNoneSkipLast 5  Equivalent to kCGImageAlphaNone.
- kCGImageAlphaNoneSkipFirst 6

50.1.5 **CGOpenPDFDocumentMBS(dataprovider as CGDataProviderMBS) as CGPDFDocumentMBS**

MBS MacCG Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Opens a CG PDF Document from a data stream.

**Example:**
Sub Paint(g As Graphics)
    // window.paint event
    dim f as FolderItem
    dim b as BinaryStream
    dim s as string
    dim d as CGDataProviderMBS
    dim p as CGPDFDocumentMBS

    // get a folder item to a pdf file.
    f = SpecialFolder.Desktop.Child("notes.pdf")

    // load the content in a string variable
    b = f.OpenAsBinaryFile(false)
    s = b.Read(b.Length)
    b.Close

    // now make a CGDataProvider based on a string.
    d = CGDataProviderMBS.CreateWithData(s)

    // Open the PDF from the Data Provider
    p = CGOpenPDFDocumentMBS(d)

    // And play with it
    g.DrawCGPDFDocumentMBS p, p.MediaBox(1), 1

    Exception
    // trouble goes here.
End Sub

Notes: Returns nil on any error.

50.1.6 CGShadingCreateAxialMBS(colorspace as CGColorSpaceMBS, startPoint as CGPointMBS, endPoint as CGPointMBS, func as CGFunctionMBS, extendStart as boolean, extendEnd as boolean) as CGShadingMBS

MBS MacCG Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a Quartz axial shading. **Notes:**

Parameters:

colorspace: The color space in which color values are expressed. Quartz retains this object; upon return, you may safely release it.
startPoint: The starting point of the axis, in the shading’s target coordinate space.
endPoint: The ending point of the axis, in the shading’s target coordinate space.

function: A CGFunction object. This object refers to your function for creating an axial shading. Quartz retains this object; upon return, you may safely release it.

extendStart: A Boolean value that specifies whether to extend the shading beyond the starting point of the axis.

extendEnd: A Boolean value that specifies whether to extend the shading beyond the ending point of the axis.

Returns a new Quartz axial shading or nil on any error.

Discussion
An axial shading is a color blend that varies along a linear axis between two endpoints and extends indefinitely perpendicular to that axis. When you are ready to draw the shading, call the function CGContextMBS.DrawLineShading.

Available in Mac OS X version 10.2 and later.

50.1.7 CGShadingCreateRadialMBS(colorspace as CGColorSpaceMBS, startPoint as CGPointMBS, startRadius as Double, endPoint as CGPointMBS, endRadius as Double, func as CGFunctionMBS, extendStart as boolean, extendEnd as boolean) as CGShadingMBS


Notes:
Parameters
colorspace: The color space in which color values are expressed.
startPoint: The center of the starting circle, in the shading’s target coordinate space.
startRadius: The radius of the starting circle, in the shading’s target coordinate space.
endPoint: The center of the ending circle, in the shading’s target coordinate space.
endRadius: The radius of the ending circle, in the shading’s target coordinate space.
function: A CGFunction object. This object refers to your function for creating a radial shading.
extendStart: A Boolean value that specifies whether to extend the shading beyond the starting circle.
extendEnd: A Boolean value that specifies whether to extend the shading beyond the ending circle.

Returns a new Quartz radial shading or nil on any error.

A radial shading is a color blend that varies between two circles. To draw the shading, call the function CGContextDrawShading.

Available in Mac OS X version 10.2 and later.
50.1.8  CGCreateImageFromJPEGDataProviderMBS(dataprovider as Variant, decode as memoryblock, shouldInterpolate as boolean, intent as Integer) as CGImageMBS

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new CGImage with JPEG data.

**Example:**

```vba
// Shows moon.jpg from the desktop folder
// shows in the window title if i,p or u is nil.

Sub Mainwindow.Paint(g As Graphics)
    Dim f As FolderItem
    Dim p As CGDataProviderMBS
    Dim i As CGImageMBS
    
    f = SpecialFolder.Desktop.Child(”moon.jpg”)  
p = CGDataProviderMBS.CreateWithFile(f)  
    If p = nil Then  
        Title = “p=nil”  
    Else  
        i = CGCreateImageFromJPEGDataProviderMBS(p, nil, true, 0)  
    End If
    If i = nil Then  
        Title = ”i=nil”  
    Else  
        window1.CGContextMBS.DrawPicture i, CGMakeRectMBS(0, 0, i.Width, i.Height)  
    End If
End Sub
```

**Notes:**

Dataprovider must be a CGDataProviderMBS object.

**Parameters:**

dataprovider:  
A reference to a data provider supplying JPEG-encoded data.

decode:  
Pass the decode array for the image. In the decode array, for each color component in the source color space, you provide a pair of values denoting the upper and lower limits of a range. For example, the decode array for a source image in the RGB color space would contain six entries total, consisting of one pair each
for red, green, and blue. When the image is rendered, Quartz uses a linear transform to map the original component value into a relative number within your designated range that is appropriate for the destination color space. If you do not want to allow remapping of the image’s color values, pass nil for the decode array. The memoryblock for the array needs to be filled with double values.

shouldInterpolate:
Pass true if interpolation should occur; otherwise, pass false. The interpolation setting specifies whether Quartz should apply a pixel-smoothing algorithm to the image. If you pass false, the image may appear jagged or pixelated when drawn on an output device with higher resolution than the image data.

intent:
Pass a CGColorRenderingIntent value specifying how Quartz should display colors in the image that are not located within the current color space of the graphics context. The rendering intent determines the exact method used to map colors from one color space to another.

50.1.9 CGCreateImageFromPNGDataProviderMBS(dataprovider as Variant, decode as memoryblock, shouldInterpolate as boolean, intent as Integer) as CGImageMBS

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Creates a new CGImage with PNG data.
Notes:
Dataprovider must be a CGDataProviderMBS object.

Parameters:

dataprovider:
A reference to a data provider supplying JPEG-encoded data.

decode:
Pass the decode array for the image. In the decode array, for each color component in the source color space, you provide a pair of values denoting the upper and lower limits of a range. For example, the decode array for a source image in the RGB color space would contain six entries total, consisting of one pair each for red, green, and blue. When the image is rendered, Quartz uses a linear transform to map the original component value into a relative number within your designated range that is appropriate for the destination color space. If you do not want to allow remapping of the image’s color values, pass nil for the decode array. The memoryblock for the array needs to be filled with double values.

shouldInterpolate:
Pass true if interpolation should occur; otherwise, pass false. The interpolation setting specifies whether Quartz should apply a pixel-smoothing algorithm to the image. If you pass false, the image may appear
jagged or pixelated when drawn on an output device with higher resolution than the image data.

intent:
Pass a CGColorRenderingIntent value specifying how Quartz should display colors in the image that are not located within the current color space of the graphics context. The rendering intent determines the exact method used to map colors from one color space to another.

50.1.10 CGCreateImageMBS(pic as picture) as CGImageMBS

MBS MacCG Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new CGImageMBS from the given images.

**Example:**
```
dim c as CGImageMBS
dim pic, mask as Picture
// get picture and mask

C=CGCreateImageMBS(pic)
if c<>Nil then
   // go on
end if
```

**Notes:** If the image has a mask, it is used.

See also:

- 50.1.11 CGCreateImageMBS(pic as picture, mask as picture) as CGImageMBS

50.1.11 CGCreateImageMBS(pic as picture, mask as picture) as CGImageMBS

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new CGImageMBS from the given images.

**Example:**
```
dim c as CGImageMBS
dim pic, mask as Picture
// get picture and mask

C=CGCreateImageMBS(pic, mask)
if c<>Nil then
   // go on
end if
```
Notes:

The mask is taken from the second image. With 11.3 plugins we are deprecating to pass a mask. The plugin prefers to simply take the mask or alpha channel of the picture itself.

See also:

- 50.1.10 CGCreateImageMBS(pic as picture) as CGImageMBS

50.1.12 CGMakePointMBS(x as Double, y as Double) as CGPointMBS

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a new CGPointMBS object.

50.1.13 CGMakeRectMBS(left as Double, top as Double, width as Double, height as Double) as CGRectMBS

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a new CGRectMBS object with the given value.

50.1.14 CGMakeSizeMBS(width as Double, height as Double) as CGSizeMBS

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a new CGSizeMBS object.

50.1.15 CGNewPDFDocumentMBS(consumer as CGDataConsumerMBS, MediaBox as CGRectMBS, title as string, author as string, creator as string) as CGPDFContextMBS

MBS MacCG Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a PDF document.

**Notes:**

Title, author and creator are all optional.
Requires Mac OS X to work.
Keep yourself a reference to the consumer object so RB does not release it resulting in a crash.
50.1.16  CGNewPDFDocumentMBS(file as folderitem, MediaBox as CGRectMBS, title as string, author as string, creator as string) as CGPDFContextMBS

MBS MacCG Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a PDF document. **Notes:**
Title, author and creator are all optional.
Requires Mac OS X to work.

50.1.17  CGOpenPDFDocumentMBS(file as folderitem) as CGPDFDocumentMBS

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Opens a PDF document. **Notes:**
RB 4.5 should do this perfectly, but older RB versions may have problems with longer file names.
Requires Mac OS X to work.

50.1.18  CGSessionMBS as CGSessionMBS

MBS MacOSX Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A function to return the current CoreGraphics session information. **Example:**
```
dim c as CGSessionMBS

c=CGSessionMBS

MsgBox C.UserName+" "+str(c.Userid)
```

**Notes:**
Returns nil on any error.

Returns nil if the caller is not within a GUI session, as when the caller is a UNIX daemon, or if a system is configured to not run a Quartz GUI (window server disabled).
50.2 class CGAffineTransformMBS

50.2.1 class CGAffineTransformMBS

MBS MacCG Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for an affine transformation.

**Example:**

```vbscript
dim af as CGAffineTransformMBS = CGAffineTransformMBS.Identity
MsgBox str(af.A)+" " +str(af.b)+" " +str(af.c)+" " +str(af.d)+" " +str(af.tx)+" " +str(af.ty)
af = af.Scale( 1, -1 )
MsgBox str(af.A)+" " +str(af.b)+" " +str(af.c)+" " +str(af.d)+" " +str(af.tx)+" " +str(af.ty)
af = af.Translate( 0, 100 )
MsgBox str(af.A)+" " +str(af.b)+" " +str(af.c)+" " +str(af.d)+" " +str(af.tx)+" " +str(af.ty)
dim r1 as CGRectMBS
dim r2 as CGRectMBS
r1=CGMakeRectMBS(100,100,100,100)
r2=r1.ApplyAffineTransform(af)
MsgBox("" +str(r1.Left)+", " +str(r1.top)+", " +str(r1.width)+", " +str(r1.height)+") => ("" +str(r2.Left)+", " +str(r2.top)+", " +str(r2.width)+", " +str(r2.height)+")"
```

50.2.2 Methods

50.2.3 Binary as MemoryBlock

MBS MacCG Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the binary data of the object for toolbox calls.

50.2.4 Concat(t as CGAffineTransformMBS) as CGAffineTransformMBS

MBS MacCG Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Concatenate ‘t2’ to ‘t1’ and return the result: t’ = t1 * t2
50.2. CLASS CGAFFINETRANSFORMMBS

50.2.5 Constructor

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: This constructor creates the identity transform: \[ \begin{bmatrix} 1 & 0 & 0 & 1 & 0 & 0 \end{bmatrix} \]. See also:

- 50.2.6 Constructor(a as Double, b as Double, c as Double, d as Double, tx as Double, ty as Double)
- 50.2.7 Constructor(p as Ptr)

50.2.6 Constructor(a as Double, b as Double, c as Double, d as Double, tx as Double, ty as Double)

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creates the transformation with the given values. See also:

- 50.2.5 Constructor
- 50.2.7 Constructor(p as Ptr)

50.2.7 Constructor(p as Ptr)

MBS MacCG Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creates a new instance using data at the pointer. Notes: Make sure the pointer is valid and has the right data and size. See also:

- 50.2.5 Constructor
- 50.2.6 Constructor(a as Double, b as Double, c as Double, d as Double, tx as Double, ty as Double)

50.2.8 EqualToTransform(t as CGAffineTransformMBS) as boolean

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Checks whether two affine transforms are equal. Notes:

Returns true if t1 and t2 are equal, false otherwise. Available in Mac OS X v10.4 and later.
50.2.9 Identity as CGAffineTransformMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The identity transform: \[
\begin{bmatrix}
1 & 0 & 0 \\
0 & 1 & 0 \\
0 & 0 & 1
\end{bmatrix}
\].

50.2.10 Invert as CGAffineTransformMBS

MBS MacCG Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Invert 't' and return the result. If 't' has zero determinant, then 't' is returned unchanged.

50.2.11 IsIdentity as boolean

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Checks whether an affine transform is the identity transform.
**Notes:**
Returns true if t is the identity transform, false otherwise.
Available in Mac OS X v10.4 and later.

50.2.12 Make(a as Double, b as Double, c as Double, d as Double, tx as Double, ty as Double) as CGAffineTransformMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Return the transform \[
\begin{bmatrix}
a & b & c \\
b & d & 0 \\
c & d & 0
\end{bmatrix}
\].

50.2.13 MakeRotation(angle as Double) as CGAffineTransformMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Return a transform which rotates by 'angle' radians: \[
\begin{bmatrix}
\cos(\text{angle}) & \sin(\text{angle}) \\
-\sin(\text{angle}) & \cos(\text{angle})
\end{bmatrix}
\].

50.2.14 MakeScale(sx as Double, sy as Double) as CGAffineTransformMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Return a transform which scales by '(sx, sy)': \[
\begin{bmatrix}
sx & 0 & 0 \\
0 & sy & 0 \\
0 & 0 & 0
\end{bmatrix}
\].
50.2.15 MakeTranslation(tx as Double, ty as Double) as CGAffineTransformMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Return a transform which translates by ’(tx, ty)’: \( t' = \begin{bmatrix} 1 & 0 & 0 & 1 & tx & ty \end{bmatrix} \)

50.2.16 Rotate(angle as Double) as CGAffineTransformMBS

MBS MacCG Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Rotate ‘t’ by ‘angle’ radians and return the result: \( t' = \begin{bmatrix} \cos(\text{angle}) & \sin(\text{angle}) & -\sin(\text{angle}) & \cos(\text{angle}) & 0 & 0 \end{bmatrix} \ast t \)

50.2.17 Scale(sx as Double, sy as Double) as CGAffineTransformMBS

MBS MacCG Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Scale ‘t’ by ‘(sx, sy)’ and return the result: \( t' = \begin{bmatrix} sx & 0 & 0 & sy & 0 & 0 \end{bmatrix} \ast t \)

50.2.18 Translate(tx as Double, ty as Double) as CGAffineTransformMBS

MBS MacCG Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Translate ‘t’ by ‘(tx, ty)’ and return the result: \( t' = \begin{bmatrix} 1 & 0 & 0 & 1 & tx & ty \end{bmatrix} \ast t \)

**Example:**
```vba
dim t as new CGAffineTransformMBS(1,0,0,1,1,1)
t=t.Translate(2,3)
MsgBox str(T.A)+" "+str(t.B)+" "+str(t.C)+" "+str(t.D)+" "+str(t.TX)+" "+str(t.TY)

// shows 1 0 0 1 3 4
```

50.2.19 Properties

50.2.20 A as Double

MBS MacCG Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The A value.

**Notes:** (Read and Write property)
50.2.21  B as Double

MBS MacCG Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The B value.  
**Notes:** (Read and Write property)

50.2.22  C as Double

MBS MacCG Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The C value.  
**Notes:** (Read and Write property)

50.2.23  D as Double

MBS MacCG Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The D value.  
**Notes:** (Read and Write property)

50.2.24  TX as Double

MBS MacCG Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The TX value.  
**Notes:** (Read and Write property)

50.2.25  TY as Double

MBS MacCG Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The TY value.  
**Notes:** (Read and Write property)
50.3.  

50.3  class CGBitmapContextMBS

50.3.1  class CGBitmapContextMBS

MBS MacCG Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  

**Function:** A class to hold a CoreGraphics bitmap context.  

**Example:**

```vba
Sub Paint(g As Graphics)
    dim c as CGPictureContextMBS
    dim w as CGContextMBS ' of window
    dim p,m as Picture

    c=new CGPictureContextMBS(100,100)
    c.ClearRect CGMakeRectMBS(0,0,100,100)
    c.SetRGBFillColor 1,0,0,1
    c.FillRect CGMakeRectMBS(0,0,50,50)

    w=window1.CGContextMBS ' we are inside paint event!
    // Draw using CGImage
    w.DrawPicture c.CGImage(false,0),CGMakeRectMBS(0,0,c.BitmapWidth,c.BitmapHeight)
    w.Flush

    // Draw using RB picture, so we can see whether it looks equal.
    m=c.CopyPictureMask
    p=NewPicture(m.Width,m.Height,32)
    p.Graphics.DrawPicture c.CopyPicture,0,0
    p.Mask.Graphics.DrawPicture m,0,0
    g.DrawPicture p,0,0

End Sub
```

**Notes:**

If the RB graphics class is like a CGContext, the RB picture class (created using NewPicture) is something like a CGBitmapContext.  
Subclass of the CGContextMBS class.  
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.
### 50.3.2 Methods

#### 50.3.3 CGImage(shouldInterpolate as boolean = false, intent as Integer = 0) as CGImageMBS

MBS MacCG Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a CGImageMBS object referencing the CGBitmapContext object.

**Example:**

```plaintext
dim c as CGPictureContextMBS
dim w as CGContextMBS // of window

c=new CGPictureContextMBS(100,100)

c.SetRGBFillColor 1,0,0,1
c.FillRect CGMakeRectMBS(0,0,50,50)

w=window1.CGContextMBS // we are inside paint event!
w.DrawPicture c.CGImage(false,0),CGMakeRectMBS(0,0,c.BitmapWidth,c.BitmapHeight)
w.Flush
```

**Notes:**

You will crash your application if you use this Image after the CGBitmapContext object was destroyed. Changes made to the connected CGBitmapContext will be seen in the CGImage.

Returns nil on low memory.

Constants for intent:

- kCGRenderingIntentDefault 0
- kCGRenderingIntentAbsoluteColorimetric 1
- kCGRenderingIntentRelativeColorimetric 2
- kCGRenderingIntentPerceptual 3
- kCGRenderingIntentSaturation 4

Set shouldInterpolate to true if the image should use interpolation.

### 50.3.4 Constructor

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.
50.3.5 Create(data as memoryblock, width as Integer, height as Integer, bitsPerComponent as Integer, bytesPerRow as Integer, colorspace as CGColorSpaceMBS, alphaInfo as Integer) as CGBitmapContextMBS

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Create a bitmap context.

**Notes:**
The context draws into a bitmap which is 'width' pixels wide and 'height' pixels high. The number of components for each pixel is specified by 'colorspace', which also may specify a destination color profile. The number of bits for each component of a pixel is specified by 'bitsPerComponent', which must be 1, 2, 4, or 8. Each row of the bitmap consists of 'bytesPerRow' bytes, which must be at least \((\text{width} \times \text{bitsPerComponent} \times \text{number of components} + 7)/8\) bytes. 'data' points a block of memory at least 'bytesPerRow \times \text{height}' bytes. 'alphaInfo' specifies whether the bitmap should contain an alpha channel, and how it's to be generated.

Fails if data=nil or colorspace=nil.
The memoryblock is not referenced and not stored, so keep it alive while using the BitmapContext object.

Returns nil on any error.

data
A pointer to the destination in memory where the drawing is to be rendered. The size of this memoryblock should be at least(bytesPerRow*height) bytes.

width
The width of the bitmap in pixels.

height
The height of the bitmap in pixels.

bitsPerComponent
The number of bits to use for each component of a pixel in memory. Allowable values are 4, 5, or 8. For example, for a 32-bit RGB(A) colorspace, you would specify a value of 8 bits per color component. In combination, the number of bits per component, the color space, and the alpha value determine which bitmap context formats Quartz supports.

bytesPerRow
The number of bytes of memory to use per row of the bitmap. This value must be at least the product of the width and bitsPerComponent parameters, times the number of components per pixel. The result should be divided by 8 and rounded up to the nearest whole number to obtain the number of bytes to use per row. That is, the value must be at least \(((\text{width})^\times(\text{bits per component})\times(\text{number of components per pixel}))+7)/8\) bytes. For a given row, Quartz stores bitmap data for the first width pixels and ignores any remaining bytes. The colorspace value referenced by the colorspace parameter specifies the number of components for each pixel.
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colorspace
The color space to use for the bitmap context.

alphaInfo
A CGImageAlphaInfo constant specifying whether the bitmap should contain an alpha channel and how it is to be generated. The alpha value determines the opacity of a pixel when it is drawn.

Supported pixel formats:

<table>
<thead>
<tr>
<th>Pixel format</th>
<th>Color space</th>
<th>Bits per pixel</th>
<th>Bits per component</th>
<th>Alpha option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gray_8</td>
<td>Grayscale</td>
<td>8</td>
<td>8</td>
<td>kCGImageAlphaNone</td>
</tr>
<tr>
<td>RGB555</td>
<td>RGB</td>
<td>16</td>
<td>5</td>
<td>kCGImageAlphaNoneSkipFirst</td>
</tr>
<tr>
<td>XRGB,32</td>
<td>RGB</td>
<td>32</td>
<td>8</td>
<td>kCGImageAlphaNoneSkipFirst</td>
</tr>
<tr>
<td>ARGB,32</td>
<td>RGB</td>
<td>32</td>
<td>8</td>
<td>kCGImageAlphaPremultipliedFirst</td>
</tr>
<tr>
<td>RGBA,32</td>
<td>RGB</td>
<td>32</td>
<td>8</td>
<td>kCGImageAlphaPremultipliedLast</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Quartz does not support the following formats in a bitmap context:

- 1-bit grayscale
- 24-bit RGB
- CMYK (any depth)

CGImageAlphaInfo constants:

- kCGImageAlphaNone 0
- kCGImageAlphaPremultipliedLast 1 For example, premultiplied RGBA
- kCGImageAlphaPremultipliedFirst 2 For example, premultiplied ARGB
- kCGImageAlphaLast 3 For example, non-premultiplied RGBA
- kCGImageAlphaFirst 4 For example, non-premultiplied ARGB
- kCGImageAlphaNoneSkipLast 5 Equivalent to kCGImageAlphaNone.
- kCGImageAlphaNoneSkipFirst 6

See also:

- 50.3.6 Create(Other as CGBitmapContextMBS, NewColorspace as CGColorSpaceMBS) as CGBitmapContextMBS
50.3.6 Create(Other as CGBitmapContextMBS, NewColorspace as CGColorSpaceMBS) as CGBitmapContextMBS


**Example:**

```vbnet
dim pic as new Picture(100,100) // some picture
dim ICCProfileData as memoryblock // get a ICC Profile somewhere

dim colorspace as CGColorSpaceMBS = CGColorSpaceMBS.CreateWithICCProfile(ICCProfileData)
dim bitmap as CGBitmapContextMBS = CGBitmapContextMBS.CreateWithPicture(pic)
dim zweiteBitmap as CGBitmapContextMBS = bitmap.Create(bitmap, colorspace)
```

**Notes:** The new bitmap object uses same data as existing object, just accesses the pixels using the new color space.

See also:

- 50.3.5 Create(data as memoryblock, width as Integer, height as Integer, bitsPerComponent as Integer, bytesPerRow as Integer, colorspace as CGColorSpaceMBS, alphaInfo as Integer) as CGBitmapContextMBS

50.3.7 CreateImage as CGImageMBS

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return an image containing a snapshot of the bitmap context.

**Example:**

```vbnet
// a new picture in RB
dim pic as new Picture(500, 500)

// and create CGBitmapContextMBS pointing to it
dim b as CGBitmapContextMBS = CGBitmapContextMBS.CreateWithPicture(pic)

// color set to full red
b.SetRGBFillColor 1.0, 0.0, 0.0, 1.0

// draw ellipse
dim r as CGRectMBS = CGRectMBS.Make(0, 0, 500, 500)
b.FillEllipseInRect r

// flush drawings
b.Flush

// now try CGImage creation
dim cgimage as CGImageMBS = b.CreateImage
```
// and display by converting to a new picture
Backdrop = cgimage.Picture

Notes:
If context is not a bitmap context, or if the image cannot be created for any reason, this function returns
NULL. This is a "copy" operation subsequent changes to context will not affect the contents of the returned
image.

Note that in some cases the copy will actually follow "copy-on-write" semantics, so that the actual physical
copy of the bits will only occur if the underlying data in the bitmap context is modified. As a consequence,
you may wish to use the resulting image and release it before performing more drawing into the bitmap
context; in this way, the actual physical copy of the data may be avoided.

50.3.8 CreateRGB(data as memoryblock, width as Integer, height as Integer,
bytesPerRow as Integer, colorspace as CGColorSpaceMBS = nil) as CG-
BitmapContextMBS

MBS MacCG Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Convenience function to handle RGB data.
Notes:
Same as Create method, but for RGB data.
Converts data from 3 byte/pixel to 4 byte/pixel and than creates CGBitmapContextMBS.
Colorspace is optional and defaults to Generic RGB.
Returns nil on error, raises OutOfBounds exception for invalid parameters.

50.3.9 CreateWithPicture(Pic as Picture) as CGBitmapContextMBS

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Creates a CGBitmapContext referencing the given picture.
Example:
// a new picture in RB
dim pic as new Picture(500, 500)

// and create CGBitmapContextMBS pointing to it
dim b as CGBitmapContextMBS = CGBitmapContextMBS.CreateWithPicture(pic)

// color set to full red
b.SetRGBFillColor 1.0, 0.0, 0.0, 1.0
// draw ellipse
dim r as CGRectMBS = CGRectMBS.Make(0, 0, 500, 500)
b.FillEllipseInRect r

// flush drawings
b.Flush

// and show
Backdrop = pic

Notes:

Only for Cocoa target.
The plugin will do a clear cache on the picture in the destructor.

50.3.10 Properties

50.3.11 BitmapAlphaInfo as Integer

MBS MacCG Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the alpha info of the bitmap.

**Example:**

// a new picture in RB
dim pic as new Picture(500, 500)

// and create CGBitmapContextMBS pointing to it
dim b as CGBitmapContextMBS = CGBitmapContextMBS.CreateWithPicture(pic)

// shows 2 for kCGImageAlphaPremultipliedFirst
MsgBox str(b.BitmapAlphaInfo)

Notes:

Returns 0 on any error.

CGImageAlphaInfo constants:

(Read only property)
50.3.12 BitmapBitsPerComponent as Integer

MBS MacCG Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the bits per component of the bitmap. **Example:**

```vba
// a new picture in RB
dim pic as new Picture(500, 500)

// and create CGBitmapContextMBS pointing to it
dim b as CGBitmapContextMBS = CGBitmapContextMBS.CreateWithPicture(pic)

// shows 8
MsgBox str(b.BitmapBitsPerComponent)
```

**Notes:**

Returns 0 on any error.
(Read only property)

50.3.13 BitmapBitsPerPixel as Integer

MBS MacCG Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the bits per pixel of the bitmap. **Example:**

```vba
// a new picture in RB
dim pic as new Picture(500, 500)

// and create CGBitmapContextMBS pointing to it
dim b as CGBitmapContextMBS = CGBitmapContextMBS.CreateWithPicture(pic)

// shows 32
MsgBox str(b.BitmapBitsPerPixel)
```
50.3. **CLASS CGBITMAPCONTEXTMBS**

Notes:
Returns 0 on any error.
(Read only property)

50.3.14 **BitmapBytesPerRow as Integer**

MBS MacCG Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the bytes per row of the bitmap.

**Example:**
// a new picture in RB
dim pic as new Picture(500, 500)

// and create CGBitmapContextMBS pointing to it
dim b as CGBitmapContextMBS = CGBitmapContextMBS.CreateWithPicture(pic)

// shows 2000
MsgBox str(b.BitmapBytesPerRow)

Notes:
Returns 0 on any error.
(Read only property)

50.3.15 **BitmapColorSpace as CGColorSpaceMBS**

MBS MacCG Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the colorspace used for this bitmap.

**Notes:**
Returns nil on any error.
This is not the same RB object used when you created the bitmap, but it will contain the same handle.
(Read only property)

50.3.16 **BitmapData as MemoryBlock**

MBS MacCG Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a memoryblock for the data of the bitmap.

**Notes:**
Returns nil on any error.

This is not the same RB memoryblock object as you passed to the Create function, but it will point to the same bytes in memory. (Read only property)

### 50.3.17 BitmapHeight as Integer

MBS MacCG Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the height of the bitmap.

**Example:**

```vbnet
// a new picture in RB
dim pic as new Picture(500, 500)

// and create CGBitmapContextMBS pointing to it
dim b as CGBitmapContextMBS = CGBitmapContextMBS.CreateWithPicture(pic)

// shows 500
MsgBox str(b.BitmapHeight)
```

**Notes:**

Returns 0 on any error. (Read only property)

### 50.3.18 BitmapInfo as Integer

MBS MacCG Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Obtains the bitmap information associated with a bitmap graphics context.

**Example:**

```vbnet
// a new picture in RB
dim pic as new Picture(500, 500)

// and create CGBitmapContextMBS pointing to it
dim b as CGBitmapContextMBS = CGBitmapContextMBS.CreateWithPicture(pic)

// shows info: 2 for kCGImageAlphaPremultipliedFirst
MsgBox str(b.BitmapInfo)
```
The bitmap info of the bitmap graphics context or 0 if c is not a bitmap graphics context. See CGImage Reference for a description of the Image Bitmap Information constants that can be returned.

The CGBitmapInfo data returned by the function specifies whether the bitmap contains an alpha channel and how the alpha channel is generated, along with whether the components are floating-point or integer. (Read only property)

### 50.3.19 BitmapWidth as Integer

MBS MacCG Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the width of the bitmap.

**Example:**

```plaintext
// a new picture in RB
dim pic as new Picture(500, 500)

// and create CGBitmapContextMBS pointing to it
dim b as CGBitmapContextMBS = CGBitmapContextMBS.CreateWithPicture(pic)

// show info: 500
MsgBox str(b.BitmapWidth)
```

**Notes:**

Returns 0 on any error. (Read only property)
50.4 class CGColorMBS

50.4.1 class CGColorMBS

MBS MacCG Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class for a CoreGraphics color object.

50.4.2 Methods

50.4.3 Alpha as Double

MBS MacCG Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The alpha value of the color.

50.4.4 Black as CGColorMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The black color in the Generic gray color space.

50.4.6 ColorSpace as CGColorSpaceMBS

MBS MacCG Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The colorspace of this color.
**Notes:** May be nil if unknown.

50.4.7 Components as memoryblock

MBS MacCG Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The components of the color as a memoryblock.
**Notes:**
50.4. **CLASS CGCOLORMBS**

The memoryblock contains double properties.
m.double(0), m.double(4), etc.

50.4.8 **Copy as CGColorMBS**

MBS MacCG Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a copy of the color.
**Notes:** Returns nil on any error.

50.4.9 **CopyWithAlpha(alpha as Double) as CGColorMBS**

MBS MacCG Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Makes a new copy of the color with a different alpha value.
**Notes:** Returns nil on any error.

50.4.10 **Create(colorspace as CGColorSpaceMBS, components as memoryblock) as CGColorMBS**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new color with the given components.
**Example:**

```vbnet
dim c as color = & cFF0000
Dim m As MemoryBlock
m=NewMemoryBlock(16)
m.SingleValue(0)=c.Red/256
m.SingleValue(4)=c.Green/256
m.SingleValue(8)=c.Blue/256
m.SingleValue(12)=1.0

Dim colorspace as CGColorSpaceMBS
colorspace=CGColorSpaceMBS.CreateDeviceRGB
if colorspace=nil or colorspace.Handle=0 then
    MsgBox ”Failed to get RGB color space!”
    Return
end if

Dim col As CGColorMBS
```
col=CGColorMBS.Create(colorspace, m)

if col=nil or col.Handle=0 then
    MsgBox "Failed to create color."
    Return
end if

MsgBox str(Col.NumberOfComponents)

**Notes:** This method was called NewCGColorMBS in earlier MBS Plugins.
See also:

- 50.4.11 Create(colorspace as CGColorSpaceMBS, components() as Double) as CGColorMBS

**50.4.11 Create(colorspace as CGColorSpaceMBS, components() as Double) as CGColorMBS**

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new color with the given components.

**Notes:**
Supports up to 32 components.
Returns nil on any error.
See also:

- 50.4.10 Create(colorspace as CGColorSpaceMBS, components as memoryblock) as CGColorMBS

**50.4.12 CreateDeviceCMYK(cyan as Double, magenta as Double, yellow as Double, black as Double, alpha as Double = 1.0) as CGColorMBS**

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a color in the device CMYK color space.

**Notes:**
cyan: A cyan value (0.0 - 1.0).
magenta: A magenta value (0.0 - 1.0).
yellow: A yellow value (0.0 - 1.0).
black: A black value (0.0 - 1.0).
alpha: An alpha value (0.0 - 1.0).

Returns a color object.
50.4. CLASS CGCOLORMBS

50.4.13 CreateDeviceGray(gray as Double, alpha as Double = 1.0) as CGColorMBS

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a color in the device gray color space. 
**Notes:**
gray: A grayscale value (0.0 - 1.0).
alpha: An alpha value (0.0 - 1.0).

Returns a color object.

50.4.14 CreateDeviceRGB(red as Double, green as Double, blue as Double, alpha as Double = 1.0) as CGColorMBS

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a color in the device RGB color space. 
**Notes:**
red: A red component value (0.0 - 1.0).
green: A green component value (0.0 - 1.0).
blue: A blue component value (0.0 - 1.0).
alpha: An alpha value (0.0 - 1.0).

Returns a new color object.

50.4.15 CreateGenericCMYK(cyan as Double, magenta as Double, yellow as Double, black as Double, alpha as Double = 1.0) as CGColorMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a color in the Generic CMYK color space. 
**Notes:**
cyan: A cyan value (0.0 - 1.0).
magenta: A magenta value (0.0 - 1.0).
yellow: A yellow value (0.0 - 1.0).
black: A black value (0.0 - 1.0).
alpha: An alpha value (0.0 - 1.0).

Returns a color object. 
Available in Mac OS X v10.5 and later.
50.4.16  CreateGenericGray(gray as Double, alpha as Double = 1.0) as CGColorMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a color in the Generic gray color space.
**Notes:**
gray: A grayscale value (0.0 - 1.0).
alpha: An alpha value (0.0 - 1.0).

Returns a color object.
Available in Mac OS X v10.5 and later.

50.4.17  CreateGenericRGB(red as Double, green as Double, blue as Double, alpha as Double = 1.0) as CGColorMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a color in the Generic RGB color space.
**Notes:**
red: A red component value (0.0 - 1.0).
green: A green component value (0.0 - 1.0).
blue: A blue component value (0.0 - 1.0).
alpha: An alpha value (0.0 - 1.0).

Returns a new color object.
Available in Mac OS X v10.5 and later.

50.4.18  Equal(secondColor as CGColorMBS) as boolean

MBS MacCG Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
True if both colors have equal values.
**Notes:** False on any error.

50.4.19  NumberOfComponents as Integer

MBS MacCG Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The number of components.
**Notes:** Should be 3 for RGB and 4 for CMYK.
50.4. CLASS CGCOLORMBS

50.4.20 White as CGColorMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The white color in the Generic gray color space.

50.4.21 Properties

50.4.22 Handle as Integer

MBS MacCG Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The handle to the CGColorRef used internal.
**Notes:** (Read and Write property)
50.5 class CGColorSpaceMBS

50.5.1 class CGColorSpaceMBS


50.5.2 Methods

50.5.3 CreateCalibratedGray(whitePoint() as Double, blackPoint() as Double, gamma as Double) as CGColorSpaceMBS


Notes:
WhitePoint is an array of 3 numbers (type double) specifying the tristimulus value, in the CIE 1931 XYZ-space, of the diffuse white point.
BlackPoint is an array of 3 numbers (type double) specifying the tristimulus value, in CIE 1931 XYZ-space, of the diffuse black point.
Gamma defines the gamma for the gray component.
Returns nil on any error.

50.5.4 CreateCalibratedRGB(whitePoint() as Double, blackPoint() as Double, gamma() as Double, matrix() as Double) as CGColorSpaceMBS


Notes:
WhitePoint is an array of 3 numbers (type double) specifying the tristimulus value, in the CIE 1931 XYZ-space, of the diffuse white point.
BlackPoint is an array of 3 numbers (type double) specifying the tristimulus value, in CIE 1931 XYZ-space, of the diffuse black point.
Gamma is an array of 3 numbers (type double) specifying the gamma for the red, green, and blue components of the color space.
Matrix is an array of 9 numbers (type double) specifying the linear interpretation of the gamma-modified RGB values of the colorspace with respect to the final XYZ representation.
Returns nil on any error.
50.5.5 CreateDeviceCMYK as CGColorSpaceMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a DeviceCMYK colorspace.
**Notes:** Returns nil on any error.

50.5.6 CreateDeviceGray as CGColorSpaceMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a DeviceGray colorspace.
**Notes:** Returns nil on any error.

50.5.7 CreateDeviceRGB as CGColorSpaceMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a DeviceRGB colorspace.
**Notes:**
Returns nil on any error.

Old name: CGColorSpaceCreateDeviceRGBMBS

50.5.8 CreateLab(whitePoint() as Double, blackPoint() as Double, range() as Double) as CGColorSpaceMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates an L*a*b* colorspace.
**Notes:**
WhitePoint is an array of 3 numbers (type double) specifying the tristimulus value, in the CIE 1931 XYZ-space, of the diffuse white point.
BlackPoint is an array of 3 numbers (type double) specifying the tristimulus value, in CIE 1931 XYZ-space, of the diffuse black point.
Range is an array of four numbers (type double) specifying the range of valid values for the a* and b* components of the color space.
Returns nil on any error.
50.5.9 CreatePattern(baseSpace as CGColorSpaceMBS) as CGColorSpaceMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a pattern colorspace.

**Notes:**
BaseSpace is the underlying colorspace of the pattern colorspace. For colored patterns, baseSpace should be nil; for uncolored patterns, baseSpace specifies the colorspace of colors which will be painted through the pattern.

Returns nil on any error.

50.5.10 CreateWithHandle(Handle as Integer) as CGColorSpaceMBS

MBS MacCG Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a CGColorSpace for a handle.

**Example:**
```
dim n as NSColorSpaceMBS = NSColorSpaceMBS.genericCMYKColorSpace
dim c as CGColorSpaceMBS = CGColorSpaceMBS.CreateWithHandle(n.CGColorSpaceHandle)
MsgBox c.Name
```

**Notes:**
Sometimes you need to create CGColorSpaceMBS from NSColorSpaceMBS or some handle you got from an OS function and than you can use this function.
Returns nil on any error. Retains the handle.

50.5.11 CreateWithICCProfile(ICCProfileData as memoryblock) as CGColorSpaceMBS

MBS MacCG Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an ICC-based color space using the ICC profile contained in the specified data.

**Notes:**

- data: The data containing the ICC profile to set for the new color space.
- Returns a new color space based on the specified profile.
See also:

- 50.5.12 CreateWithICCProfile(ICCProfileData as string) as CGColorSpaceMBS
50.5.12  CreateWithICCProfile(ICCProfileData as string) as CGColorSpaceMBS

MBS MacCG Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an ICC-based color space using the ICC profile contained in the specified data. **Notes:**

data: The data containing the ICC profile to set for the new color space.
Returns a new color space based on the specified profile.
See also:

- 50.5.11 CreateWithICCProfile(ICCProfileData as memoryblock) as CGColorSpaceMBS

50.5.13  CreateWithName(name as string) as CGColorSpaceMBS

MBS MacCG Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create a color space using name as the identifier for the color space. **Notes:** Pass one of the kCGColorSpace* string constants.

50.5.14  CreateWithPlatformColorSpace(Handle as Integer) as CGColorSpaceMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a CGColorSpace using a Colorsync Profile Handle. **Notes:** Returns nil on any error.

50.5.15  ICCProfile as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a copy of the ICC profile of the provided color space. **Notes:**
The ICC profile or "" if the color space does not have an ICC profile.

Available in Mac OS X v10.5 and later.

50.5.16  kCGColorSpaceACESCGLinear as string

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for color spaces. **Notes:**
The name of the ACEScg color space. For more information, see ACEScg A Working Space for CGI Render and Compositing, Version 1.0.1, Academy of Motion Picture Arts and Sciences (http://www.oscars.org/science-technology/sci-tech-projects/aces).

Available in OS X v10.11 and later.

### 50.5.17 kCGColorSpaceAdobeRGB1998 as string

MBS MacCG Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for color spaces.  

### 50.5.18 kCGColorSpaceDCIP3 as string

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for color spaces.  
**Notes:** The name of the DCI P3 color space, created by Digital Cinema Initiatives, LLC. This color space is the digital cinema standard.

Available in OS X v10.11 and later.

### 50.5.19 kCGColorSpaceDisplayP3 as string

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for color spaces.  
**Notes:** The name of the Display P3 color space, created by Apple Inc. This color space uses the DCI P3 primaries, a D65 white point, and the same gamma curve as the sRGB color space.

Available in OS X v10.10 and later.

### 50.5.20 kCGColorSpaceGenericCMYK as string

MBS MacCG Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for color spaces.
50.5. **CLASS CGCOLORSPACEMBS**

**Notes:** The name of the "Generic" CMYK color space.

50.5.21 **kCGColorSpaceGenericGray** as string

MBS MacCG Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for color spaces. **Notes:** The name of the "Generic" gray color space.

50.5.22 **kCGColorSpaceGenericGrayGamma2.2** as string

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for color spaces. **Notes:** The name of the generic gray color space with a gamma value of 2.2.

Available in OS X v10.6 and later.

50.5.23 **kCGColorSpaceGenericRGB** as string

MBS MacCG Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for color spaces. **Notes:** The name of the "Generic" RGB color space.

50.5.24 **kCGColorSpaceGenericRGBLinear** as string

MBS MacCG Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for color spaces. **Notes:** The name of the "Generic" linear RGB color space. This is the same as kCGColorSpaceGenericRGB but with a 1.0 gamma.

50.5.25 **kCGColorSpaceGenericXYZ** as string

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for color spaces. **Notes:**
The name of the generic XYZ color space.

Available in OS X v10.11 and later.

50.5.26 kCGColorSpaceITUR_2020 as string


Notes:

Available in OS X v10.11 and later.

50.5.27 kCGColorSpaceITUR_709 as string


Notes:

Available in OS X v10.11 and later.

50.5.28 kCGColorSpaceROMMRGB as string


Notes:

Available in OS X v10.11 and later.
50.5. CLASS CGCOLORSPACEMBS

50.5.29 kCGColorSpaceSRGB as string

MBS MacCG Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the names for color spaces. **Notes:** The name of the sRGB color space. The capitalization in the name, while strictly inaccurate, avoids interpretational ambiguity. For more information, see IEC 61966-2-1 (1999-10): "Multimedia systems and equipment - Colour measurement and management - Part 2-1: Colour management - Default RGB colour space - sRGB”.

50.5.30 Properties

50.5.31 BaseColorSpace as CGColorSpaceMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the base color space of a pattern or indexed color space. **Notes:** The base color space if the space parameter is a pattern or indexed color space; otherwise, nil. Available in Mac OS X v10.5 and later. (Read only property)

50.5.32 ColorTableCount as Integer

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the number of entries in the color table of an indexed color space. **Notes:** The number of entries in the color table of the space parameter if the color space is an indexed color space; otherwise, returns 0. Available in Mac OS X v10.5 and later. (Read only property)

50.5.33 Description as String

MBS MacCG Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The description text. **Example:**

Example:
`dim c as CGColorSpaceMBS = window1.CGColorSpaceMBS
MsgBox c.description`  

**Notes:** (Read only property)

### 50.5.34 Handle as Integer

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle to the color space.

**Notes:**

(a CGColorSpaceRef)
(Read and Write property)

### 50.5.35 Model as Integer

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the color space model of the provided color space.

**Notes:**

Available in Mac OS X v10.5 and later.

Use this constants:
- CGColorSpaceMBS.kCGColorSpaceModelUnknown
- CGColorSpaceMBS.kCGColorSpaceModelCMYK
- CGColorSpaceMBS.kCGColorSpaceModelDeviceN
- CGColorSpaceMBS.kCGColorSpaceModelIndexed
- CGColorSpaceMBS.kCGColorSpaceModelLab
- CGColorSpaceMBS.kCGColorSpaceModelMonochrome
- CGColorSpaceMBS.kCGColorSpaceModelPattern
- CGColorSpaceMBS.kCGColorSpaceModelRGB
(Read only property)

### 50.5.36 ModelText as String

MBS MacCG Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The model as text.

**Notes:**

For viewing in debugger.
(Read only property)
50.5.37 Name as String

MBS MacCG Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries the name of the colorspace.

**Notes:**

Not all CGColorspace objects have names. Some have only ICC Profile and you can get name via Name property in LCMS2ProfileMBS if you open the profile with LCMS.

(Read only property)

50.5.38 NumberOfComponents as Integer

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the number of components.

**Notes:**

typical 1 for grayscale, 3 for RGB and 4 for CMYK.

(Read only property)

50.5.39 Constants

50.5.40 kCGColorSpaceModelCMYK=2

MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the colorspace model constants.

**Notes:**

A CMYK color space model.

Available in Mac OS X v10.5 and later.

50.5.41 kCGColorSpaceModelDeviceN=4

MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the colorspace model constants.

**Notes:**

A DeviceN color space model.

Available in Mac OS X v10.5 and later.
50.5.42 kCGColorSpaceModelIndexed=5

MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the colorspace model constants.  
**Notes:**
An indexed color space model.

Available in Mac OS X v10.5 and later.

50.5.43 kCGColorSpaceModelLab=3

MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the colorspace model constants.  
**Notes:**
A Lab color space model.

Available in Mac OS X v10.5 and later.

50.5.44 kCGColorSpaceModelMonochrome=0

MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the colorspace model constants.  
**Notes:**
A monochrome color space model.

Available in Mac OS X v10.5 and later.

50.5.45 kCGColorSpaceModelPattern=6

MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the colorspace model constants.  
**Notes:**
A pattern color space model.

Available in Mac OS X v10.5 and later.
50.5. **CLASS CGCOLORSPACEMBS**

50.5.46 **kCGColorSpaceModelRGB=1**

MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the colorspace model constants.  
**Notes:**  
An RGB color space model.

Available in Mac OS X v10.5 and later.

50.5.47 **kCGColorSpaceModelUnknown=-1**

MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the colorspace model constants.  
**Notes:**  
An unknown color space model.

Available in Mac OS X v10.5 and later.

50.5.48 **kCGRenderingIntentAbsoluteColorimetric=1**

MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the color rendering intents constants.  
**Notes:** Map colors outside of the gamut of the output device to the closest possible match inside the gamut of the output device. This can produce a clipping effect, where two different color values in the gamut of the graphics context are mapped to the same color value in the output device’s gamut. Unlike the relative colorimetric, absolute colorimetric does not modify colors inside the gamut of the output device.

50.5.49 **kCGRenderingIntentDefault=0**

MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the color rendering intents constants.  
**Notes:** The default rendering intent for the graphics context.

50.5.50 **kCGRenderingIntentPerceptual=3**

MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the color rendering intents constants.  
**Notes:** Preserve the visual relationship between colors by compressing the gamut of the graphics context to fit inside the gamut of the output device. Perceptual intent is good for photographs and other complex, detailed images.
50.5.51 kCGRenderingIntentRelativeColorimetric=2

MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the color rendering intents constants. **Notes:** Map colors outside of the gamut of the output device to the closest possible match inside the gamut of the output device. This can produce a clipping effect, where two different color values in the gamut of the graphics context are mapped to the same color value in the output device’s gamut. The relative colorimetric shifts all colors (including those within the gamut) to account for the difference between the white point of the graphics context and the white point of the output device.

50.5.52 kCGRenderingIntentSaturation=4

MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the color rendering intents constants. **Notes:** Preserve the relative saturation value of the colors when converting into the gamut of the output device. The result is an image with bright, saturated colors. Saturation intent is good for reproducing images with low detail, such as presentation charts and graphs.
50.6. CLASS CGCONTEXTMBS

50.6. class CGContextMBS

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a core graphics context.

**Notes:**
If the handle property has a non zero value, the destructor of this class will release the context reference.

If you create this in a method based on a window, please release it within that method. e.g. in a paint event, create it and let RB delete the last reference on the end of the method. Else you may see crashes as the context is still being around while the graphics port has been released.

50.6.2 Methods

50.6.3 AddArc(x as Double, y as Double, radius as Double, startangle as Double, endangle as Double, clockwise as boolean)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Add an arc to the current path.

**Example:**

```plaintext
const r=100.0
dim c as CGContextMBS
// draws a circle with radius r
c.BeginPath
c.SetLineWidth 5
c.SetGrayStrokeColor 0,1
c.AddArc 250,150,r,0,360,false
c.StrokePath
```

**Notes:** Add an arc of a circle to the context’s path, possibly preceded by a straight line segment. `(x, y)` is the center of the arc; 'radius' is its radius; 'startAngle' is the angle to the first endpoint of the arc; 'endAngle' is the angle to the second endpoint of the arc; and 'clockwise' is true if the arc is to be drawn clockwise, false otherwise. 'startAngle' and 'endAngle' are measured in radians.
50.6.4 *addArcToPath(x as Double, y as Double, w as Double, h as Double, startAngle as Integer, arcAngle as Integer)*

MBS MacCG Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds an arc to the current path.

50.6.5 *AddArcToPoint(x1 as Double, y1 as Double, x2 as Double, y2 as Double, radius as Double)*

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Add an arc to the current path. **Notes:** Add an arc of a circle to the context’s path, possibly preceded by a straight line segment. 'radius' is the radius of the arc. The arc is tangent to the line from the current point to '(x1, y1)', and the line from '(x1, y1)' to '(x2, y2)'.

50.6.6 *AddCurveToPoint(cp1x as Double, cp1y as Double, cp2x as Double, cp2y as Double, x as Double, y as Double)*

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Append a cubic Bezier curve from the current point to (x,y), with control points (cp1x, cp1y) and (cp2x, cp2y).

50.6.7 *AddEllipseInRect(r as CGRectMBS)*

MBS MacCG Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Add an ellipse inside rect to the current path of context. **Notes:** See the function CGPathMBS.AddEllipseInRect for more information on how the path for the ellipse is constructed. Requires Mac OS X 10.4.

50.6.8 *AddLines(p() as CGPointMBS)*

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Add a set of lines to the context’s path. **Notes:** Currently this function is not available to RB versions before 3.5. Note that the p parameter is an array of CGPointMBS and not just one.
50.6.9  AddLineToPoint(x as Double, y as Double)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Append a straight line segment from the current point to (x, y).

**Example:**

```vbnet
dim c as CGContextMBS

c=window1.CGContextMBS

c.SetRGBStrokeColor 1,0,0,1
c.BeginPath
c.MoveToPoint 0,0
c.AddLineToPoint 100,100
c.StrokePath
c.Flush
```

50.6.10  addOvalToPath(x as Double, y as Double, w as Double, h as Double)

MBS MacCG Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds an oval to the current path.

50.6.11  AddPath(path as CGPathMBS)

MBS MacCG Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Add path to the path of context.

**Notes:**

The points in path are transformed by the CTM of context before they are added.
Requires Mac OS X 10.2.

50.6.12  AddQuadCurveToPlane(cpx as Double, cpy as Double, x as Double, y as Double)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Append a quadratic curve from the current point to (x, y), with control point (cpx, cpy).
50.6.13 AddRect(r as CGRectMBS)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Add a double rect to the context’s path.

50.6.14 AddRects(r() as CGRectMBS)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Add a set of rects to the context’s path.

**Notes:**
Currently this function is not available to RB versions before 3.5.
Note that the r parameter is an array of CGRectMBS and not just one.

50.6.15 addRoundedRectToPath(x as Double, y as Double, w as Double, h as Double, arcWidth as Double, arcHeight as Double)

MBS MacCG Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds a round rectangle to the current path.

50.6.16 BeginPage(mediabox as CGRectMBS)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Begin a new page.

50.6.17 BeginPath

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Begin a new path. The old path is discarded.

**Example:**
```dim c as CGContextMBS = CGContextMBS.contextWithCGContext(g.Handle(g.HandleTypeCGContextRef))
c.SetGrayStrokeColor(0,1)
c.SetGrayFillColor(0,1)
c.BeginPath
c.SetLineWidth 0.5
c.MoveToPoint 50, 550
c.AddLineToPoint 100, 600```
50.6. **CLASS CGCONTEXTMBS**

```c
.c.StrokePath
.c.Flush
.c = nil
```

**Notes:** Note that a context has a double path in use at any time: a path is not part of the graphics state.

### 50.6.18 BeginTransparencyLayer(auxiliaryInfo as Dictionary = nil)

MBS MacCG Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Begin a transparency layer in context. **Notes:**

All subsequent drawing operations until a corresponding EndTransparencyLayer are composited into a fully transparent backdrop (which is treated as a separate destination buffer from the context). After the transparency layer is ended, the result is composited into the context using the global alpha and shadow state of the context. This operation respects the clipping region of the context. After a call to this function, all of the parameters in the graphics state remain unchanged with the exception of the following:

- The global alpha is set to 1.
- The shadow is turned off.
- The blend mode is set to 'kCGBlendModeNormal'.

Ending the transparency layer restores these parameters to the values they had before BeginTransparencyLayer was called. Transparency layers may be nested.

### 50.6.19 BeginTransparencyLayerWithRect(r as CGRectMBS, auxiliaryInfo as Dictionary = nil)

MBS MacCG Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Begin a transparency layer in context. **Notes:** This function is identical to BeginTransparencyLayer except that the content of the transparency layer will be bounded by rect (specified in user space).

### 50.6.20 clearRect(rect as CGRectMBS)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Clears the background. **Notes:** Remember that in CoreGraphics the position 0/0 is in the bottom left corner. In Realbasic 0/0 is in the top left corner.
50.6.21  **clip**

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Clips the current path.  
**Notes:** Intersect the context’s path with the current clip path and use the resulting path as the clip path for subsequent rendering operations. Use the winding-number fill rule for deciding what’s inside the path.

50.6.22  **ClipToMask(rect as CGRectMBS, mask as CGImageMBS)**

MBS MacCG Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Maps a mask into the specified rectangle and intersects it with the current clipping area of the graphics context.  
**Notes:**
- rect: The rectangle to map the mask parameter to.
- mask: An image or an image mask. If mask is an image, then it must be in the DeviceGray color space, may not have an alpha component, and may not be masked by an image mask or masking color.

If the mask parameter is an image mask, then Quartz clips in a manner identical to the behavior seen with the function `DrawImage` the mask indicates an area to be left unchanged when drawing. The source samples of the image mask determine which points of the clipping area are changed, acting as an "inverse alpha" value. If the value of a source sample in the image mask is S, then the corresponding point in the current clipping area is multiplied by an alpha value of (1S). For example, if S is 1 then the point in the clipping area becomes transparent. If S is 0, the point in the clipping area is unchanged.

If the mask parameter is an image, then mask acts like an alpha mask and is blended with the current clipping area. The source samples of mask determine which points of the clipping area are changed. If the value of the source sample in mask is S, then the corresponding point in the current clipping area is multiplied by an alpha of S. For example, if S is 0, then the point in the clipping area becomes transparent. If S is 1, the point in the clipping area is unchanged.

Available in Mac OS X v10.4 and later.

50.6.23  **clipToRect(rect as CGRectMBS)**

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Clips the current path.  
**Notes:** Intersect the current clipping path with 'rect'. Note that this function resets the context’s path to the empty path.
50.6.24  Close

MBS MacCG Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Closes the context.
**Notes:** Same as destructor later, but running now when you call method.

50.6.25  closePath

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Close the current subpath of the context’s path.

50.6.26  ConcatCTM(transform as CGAffineTransformMBS)

MBS MacCG Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Concatenate the current graphics state’s transformation matrix (the CTM) with the affine transform 'transform'.

50.6.27  Constructor(handle as Integer)

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new CGContextMBS object based on a CGContextRef.
**Notes:** The CGContext is retained.

50.6.28  contextWithCGContext(handle as Integer) as CGContextMBS

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new CGContextMBS object based on a CGContextRef.
**Example:**
```java
// load a picture
dim f as FolderItem = SpecialFolder.Desktop.Child("ColorSpin.jpg")
dim pic as Picture = picture.Open(f)

// open printer
dim g as Graphics = OpenPrinterDialog
if g = nil then Return
```
// draw
g.DrawPicture pic, 0, 0

// now load again
dim ImageSource as new CGImageSourceMBS(f)
dim img as CGImageMBS = ImageSource.CreateImageAtIndex(0)
dim cs as CGColorSpaceMBS = CGColorSpaceMBS.CreateDeviceRGB

// copy with replacing colorspace
img = img.CopyWithColorSpace(cs)

// and draw
dim c as CGContextMBS = CGContextMBS.contextWithCGContext(g.Handle(g.HandleTypeCGContextRef))
dim r as CGRectMBS = CGMakeRectMBS(0, 0, img.Width, img.Height)
c.DrawPicture(img, r)
c.Flush

Notes:
The CGContext is retained.
Returns nil on any error.

50.6.29  contextWithCGraf(handle as Integer) as CGContextMBS

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new CGContextMBS object based on a QuickDraw CGraf. **Notes:** The CGraf must be kept alive as long as the CGContextMBS object exists. And please free the CGContextMBS by setting variable to nil before the CGraf is destroyed. This function is not available on 64 bit targets. Returns nil on any error.

Deprecated and only for QuickDraw stuff from a time long ago.

50.6.30  CopyPath as CGPathMBS

MBS MacCG Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Quartz path object built from the current path information in a graphics context. **Notes:** Available in Mac OS X v10.6 and later.
50.6.31 DrawCGPDFDocument(pdf as Variant, rect as CGRectMBS, page as Integer)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Draw 'page' in 'document' in the rectangular area specified by 'rect'.

**Example:**

'get a print session

// print this PDF
dim pathPrinted as FolderItem=GetFolderItem("test.pdf")

dim thePrintSession as CPMPrintSessionMBS = NewCPMPrintSessionMBS
if thePrintSession = nil then Return

'get default page format and print settings and attach it to the print settings
dim thePageFormat as CPMPageFormatMBS = NewCPMPageFormatMBS
dim thePrintSettings as CPMPrintSettingsMBS = NewCPMPrintSettingsMBS
thePrintSession.DefaultPageFormat thePageFormat
thePrintSession.DefaultPrintSettings thePrintSettings

'show the print dialog
if not thePrintSession.PrintDialog(thePrintSettings,thePageFormat) then return

'open the file which will be printed
dim thePdfDocument as CGPDFDocumentMBS = pathPrinted.OpenAsCGPDFDocumentMBS

' limit page counts to the one we have
dim LastPage as Integer = thePdfDocument.PageCount
if thePrintSettings.LastPage<lastpage then
lastpage=thePrintSettings.LastPage
end if

' you get better progress bar if you tell how many pages will come
thePrintSettings.LastPage=lastpage

'begin the printing
thePrintSession.BeginDocument(thePrintSettings, thePageFormat)

'loop over the number of copies
for currentCopy as Integer = 1 to thePrintSettings.Copies

'loop over the pages
for currentPage as Integer = thePrintSettings.FirstPage to LastPage
`prepage the page`

```plaintext
dim PrintRect as CPMRectMBS = thePageFormat.AdjustedPageSize
dim CGRect as CGRectMBS = CGMakeRectMBS(PrintRect.left, PrintRect.top, PrintRect.Width, PrintRect.Height)
thePrintSession.BeginPage(thePageFormat, nil)
dim thePrintContext as CGContextMBS = thePrintSession.PageContext
if thePrintContext = Nil then return

`print the page`
thePrintContext.DrawCGPDFDocument thePdfDocument, CGRect, currentPage

`end the page`
thePrintContext = nil
thePrintSession.EndPage
next
```

`end the printing`
thePrintSession.EndDocument

**Notes:**
Pass a CGPDFDocumentMBS object for the pdf argument.
The media box of the page is scaled, if necessary, to fit into 'rect'.

### 50.6.32 DrawLayerAtPoint(Point as CGPointMBS, layer as CGLayerMBS)

MBS MacCG Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: Yes. **Function:** Draws the contents of a CGLayer object at the specified point.

**Notes:**
context: The graphics context associated with the layer.
point: The location, in current user space coordinates, to use as the origin for the drawing.
layer: The layer whose contents you want to draw.

Calling the function DrawLayerAtPoint is equivalent to calling the function DrawLayerInRect with a rectangle that has its origin at point and its size equal to the size of the layer.

Available in Mac OS X version 10.4 and later.
50.6.33 **DrawLayerInRect** (rect as CGRectMBS, layer as CGLayerMBS)

MBS MacCG Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: Yes. **Function:** Draws the contents of a CGLayer object into the specified rectangle.

**Notes:**
- context: The graphics context associated with the layer.
- rect: The rectangle, in current user space coordinates, to draw to.
- layer: The layer whose contents you want to draw.

The contents are scaled, if necessary, to fit into the rectangle.
Available in Mac OS X version 10.4 and later.

50.6.34 **DrawLinearGradient** (gradient as CGGradientMBS, startPoint as CGPointMBS, endPoint as CGPointMBS, options as Integer)

MBS MacCG Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Paints a gradient fill that varies along the line defined by the provided starting and ending points.

**Notes:**
- gradient: A CGGradient object.
- startPoint: The coordinate that defines the starting point of the gradient.
- endPoint: The coordinate that defines the ending point of the gradient.
- options: Option flags (kCGGradientDrawsBeforeStartLocation or kCGGradientDrawsAfterEndLocation) that control whether the fill is extended beyond the starting or ending point.

The color at location 0 in the CGGradient object is mapped to the starting point. The color at location 1 in the CGGradient object is mapped to the ending point. Colors are linearly interpolated between these two points based on the location values of the gradient. The option flags control whether the gradient is drawn before the start point or after the end point.

Available in Mac OS X v10.5 and later.

50.6.35 **DrawPath** (mode as Integer)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Draw the context’s path using drawing mode 'mode'.
50.6.36 DrawPicture(pic as CGImageMBS, rect as CGRectMBS)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Draws a CGImageMBS at the given position. **Example:**

```realbasic
// put inside window paint event

dim c as CGContextMBS
if TargetCocoa then
  c = GetCurrentCGContextMBS
else
  c = window1.CGContextMBS
end if

dim logo as Picture = logoMBS(500)
dim image as CGImageMBS = CGCreateImageMBS(logo)

dim r as CGRectMBS = CGMakeRectMBS(0,0,g.Width,g.Height)
c.DrawPicture image, r
```

**Notes:** Remember that in CoreGraphics the position 0/0 is in the bottom left corner. In Realbasic 0/0 is in the top left corner.

50.6.37 DrawRadialGradient(gradient as CGGradientMBS, startCenter as CGPointMBS, startRadius as Double, endCenter as CGPointMBS, endRadius as Double, options as Integer)

MBS MacCG Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Paints a gradient fill that varies along the area defined by the provided starting and ending circles. **Notes:**

- gradient: A CGGradient object.
- startCenter: The coordinate that defines the center of the starting circle.
- startRadius: The radius of the starting circle.
- endCenter: The coordinate that defines the center of the ending circle.
- endRadius: The radius of the ending circle.
- options: Option flags (kCGGradientDrawsBeforeStartLocation or kCGGradientDrawsAfterEndLocation) that control whether the gradient is drawn before the starting circle or after the ending circle.

The color at location 0 in the CGGradient object is mapped to the circle defined by startCenter and startRadius. The color at location 1 in the CGGradient object is mapped to the circle defined by endCenter and endRadius. Colors are linearly interpolated between the starting and ending circles based on the location
values of the gradient. The option flags control whether the gradient is drawn before the start point or after the end point.

Available in Mac OS X v10.5 and later.

50.6.38 DrawShading(shading as CGShadingMBS)

Notes:
shading: A Quartz shading. Quartz retains this object; upon return, you may safely release it.
Available in Mac OS X version 10.2 and later.

50.6.39 DrawTiledImage(pic as CGImageMBS, rect as CGRectMBS)

MBS MacCG Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Repeatedly draws an image, scaled to the provided rectangle, to fill the current clip region.
Example:
// put inside window paint event

dim c as CGContextMBS
if TargetCocoa then
c = GetCurrentCGContextMBS
else
c = window1.CGContextMBS
end if

dim logo as Picture = logoMBS(50)
dim image as CGImageMBS = CGCreateImageMBS(logo)
dim r as CGRectMBS = CGMakeRectMBS(0,0,50,50)
c.DrawTiledImage image, r

Notes:
rect: A rectangle that specifies the origin and size of the destination tile. Quartz scales the image disproportionately, if necessary to fit the bounds specified by the rect parameter.
image: The image to draw.
Quartz draws the scaled image starting at the origin of the rectangle in user space, then moves to a new point (horizontally by the width of the tile and/or vertically by the height of the tile), draws the scaled image, moves again, draws again, and so on, until the current clip region is tiled with copies of the image. Unlike patterns, the image is tiled in user space, so transformations applied to the CTM affect the final result.

Available in Mac OS X v10.5 and later.

**50.6.40  EndPage**

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
End the current page.

**50.6.41  EndTransparencyLayer**

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
End a transparency layer.

**50.6.42  EOClip**

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Clips the current path.
**Notes:** Intersect the context’s path with the current clip path and use the resulting path as the clip path for subsequent rendering operations. Use the even-odd fill rule for deciding what’s inside the path.

**50.6.43  EOFillPath**

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Fill the context’s path using the even-odd fill rule. Any open subpath of the path is implicitly closed.

**50.6.44  FillEllipseInRect(rect as CGRectMBS)**

MBS MacCG Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Fill an ellipse (an oval) inside rect.
**Example:**
50.6. CLASS CGCONTEXTMBS

// a new picture in RB
dim pic as new Picture(500, 500)

// and create CGBitmapContextMBS pointing to it
dim b as CGBitmapContextMBS = CGBitmapContextMBS.CreateWithPicture(pic)

// color set to full red
b.SetRGBFillColor 1.0, 0.0, 0.0, 1.0

// draw ellipse
dim r as CGRectMBS = CGRectMBS.Make(0, 0, 500, 500)
b.FillEllipseInRect r

// flush drawings
b.Flush

// and show
Backdrop = pic

Notes: Requires Mac OS X 10.4.

50.6.45 FillPath

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Fill the context’s path using the winding-number fill rule. Any open subpath of the path is implicitly closed.

50.6.46 FillRect(rect as CGRectMBS)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Fills the background with current fill color.
Example:
// put in window.paint event
dim c as CGContextMBS

        c=window1.CGContextMBS
        c.RotateCTM 0.1
        c.SetRGBFillColor 0.0,0.1,0.5
        c.FillRect CGMakeRectMBS(0,0,100,100)

        c.Flush
Notes: Remember that in CoreGraphics the position 0/0 is in the bottom left corner. In Realbasic 0/0 is in the top left corner.

50.6.47 fillRoundedRect(x as Double, y as Double, w as Double, h as Double, arcWidth as Double, arcHeight as Double)

Example:

```plaintext
dim c as CGContextMBS

c=window1.CGContextMBS

// fill in red
c.SetRGBFillColor 1,0,0,1
c.fillRoundedRect 100,100,100,100,20,20

// draw in green
c.SetRGBStrokeColor 0,1,0,1
c.strokeRoundedRect 100,100,100,100,20,20
```

50.6.48 Flush

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Updates the screen to show the current content.
Notes: Like UpdateNow in the RB window class.

50.6.49 frameArc(x as Double, y as Double, w as Double, h as Double, startAngle as Integer, arcAngle as Integer)

Example:

```plaintext
dim c as CGContextMBS

c=window1.CGContextMBS
```
50.6. CLASS CGCONTEXTMBS

// fill in red
c.SetRGBFillColor 1,0,0,1
c.paintArc 100,100,100,100,50,90

// draw in green
c.SetRGBStrokeColor 0,1,0,1
c.frameArc 100,100,100,100,50,90

Notes: angles are in degree.

50.6.50 frameOval(x as Double, y as Double, w as Double, h as Double)

Example:

dim c as CGContextMBS
c=window1.CGContextMBS

// fill in red
c.SetRGBFillColor 1,0,0,1
c.paintOval 100,100,100,100

// draw in green
c.SetRGBStrokeColor 0,1,0,1
c.frameOval 100,100,100,100

50.6.51 frameRect(x as Double, y as Double, w as Double, h as Double)

Example:

dim c as CGContextMBS
c=window1.CGContextMBS

// fill in red
c.SetRGBFillColor 1,0,0,1
c.paintRect 100,100,100,100
// draw in green
    c.SetRGBStrokeColor 0,1,0,1
    c.frameRect 100,100,100,100

50.6.52 GetClipBoundingBox as CGRectMBS

MBS MacCG Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the bounding box of a clipping path.  
**Notes:** Returns the bounding box of the clipping path, specified in user space.  
The bounding box is the smallest rectangle completely enclosing all points in the clipping path, including control points for any Bezier curves in the path.  
Available in Mac OS X v10.3 and later.

50.6.53 GetCTM as CGAffineTransformMBS

MBS MacCG Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return the current graphics state’s transformation matrix.  
**Notes:** Returns nil on any error.

50.6.54 GetPathBoundingBox as CGRectMBS

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return the bounding box of the context’s path.  
**Notes:** The bounding box is the smallest rectangle completely enclosing all points in the path, including control points for Bezier and quadratic curves.

50.6.55 GetPathCurrentPoint as CGPointMBS

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return the current point of the current subpath of the context’s path.
50.6.56  GetTextPosition as CGPointMBS

MBS MacCG Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Return the current user-space point at which text will be drawn to (x,y).
**Notes:** Returns nil on any problem.

50.6.57  IsPathEmpty as boolean

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns true if the context’s path contains no elements.

50.6.58  MoveToPoint(x as Double, y as Double)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Append a straight line segment from the current point to (x, y).

50.6.59  paintArc(x as Double, y as Double, w as Double, h as Double, startAngle as Integer, arcAngle as Integer)

MBS MacCG Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Fills an arc.
**Example:**

```pascal
dim c as CGContextMBS

c=window1.CGContextMBS

// fill in red
.c.SetRGBFillColor 1,0,0,1
.c.paintArc 100,100,100,100,50,90

// draw in green
.c.SetRGBStrokeColor 0,1,0,1
.c.frameArc 100,100,100,100,50,90
```

**Notes:** angles are in degree.
50.6.60  paintOval(x as Double, y as Double, w as Double, h as Double)

MBS MacCG Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Fills an oval.
**Example:**

dim c as CGContextMBS

c=window1.CGContextMBS

// fill in red
    c.SetRGBFillColor 1,0,0,1
c.paintOval 100,100,100,100

// draw in green
    c.SetRGBStrokeColor 0,1,0,1
c.frameOval 100,100,100,100

50.6.61  paintRect(x as Double, y as Double, w as Double, h as Double)

MBS MacCG Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Fills the rectangle.
**Example:**

dim c as CGContextMBS

c=window1.CGContextMBS

// fill in red
    c.SetRGBFillColor 1,0,0,1
c.paintRect 100,100,100,100

// draw in green
    c.SetRGBStrokeColor 0,1,0,1
c.frameRect 100,100,100,100

50.6.62  PathContainsPoint(point as CGPointMBS, mode as Integer) as boolean

MBS MacCG Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Return true if point is contained in the current path of context.
**Notes:**
A point is contained within a contexts path if it is inside the painted region when the path is stroked or
filled with opaque colors using the path drawing mode. point is specified is user space.

Requires Mac OS X 10.4.

### 50.6.63 ReplacePathWithStrokedPath

MBS MacCG Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Replace the path in context with the stroked version of the path, using the parameters of context to calculate the stroked path.

**Notes:**
The resulting path is created such that filling it with the appropriate color will produce the same results as stroking the original path. You can use this path in the same way you can use the path of any context; for example, you can clip to the stroked version of a path by calling this function followed by a call to "ClipPath".
Requires Mac OS X 10.4.

### 50.6.64 RestoreGState

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Restores the last saved graphics state.

### 50.6.65 RotateCTM(angle as Double)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Rotate the current graphics state’s transformation matrix (the CTM) by ‘angle’ radians.

**Example:**

```javascript
// Rotate a picture not on the edge of the context:

dim c as CGImageMBS
dim f as FolderItem
dim d as CGDataProviderMBS
dim cg as CGContextMBS
dim r as CGRectMBS

f=SpecialFolder.Desktop.Child("IMAG0001.JPG")

d=CGDataProviderMBS.CreateWithFile(f)
c=CGCreateImageFromJPEGDataProviderMBS(d,nil,true,0)
cg=window1.CGContextMBS
```
r=CGMakeRectMBS(-c.Width/2,-c.Height/2,c.Width,c.Height)
cg.TranslateCTM Width/2,Height/2
cg.RotateCTM Slider1.Value/180.0*3.14
cg.DrawPicture c,r
cg.Flush

50.6.66 SaveGState

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Saves the current graphics state.

50.6.67 ScaleCTM(sx as Double, sy as Double)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Scale the current graphics state’s transformation matrix (the CTM) by (sx, sy).

50.6.68 SelectFont(name as string, size as Double, fontencoding as Integer)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Attempts to find the font named ‘name’. If successful, scales it to ’size’ units in user space. **Notes:**

Name: string that contains the PostScript name of the font to set.

textEncoding’ specifies how to translate from bytes to glyphs.

<table>
<thead>
<tr>
<th>Encoding</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kCGEncodingFontSpecific</td>
<td>0</td>
</tr>
<tr>
<td>kCGEncodingMacRoman</td>
<td>1</td>
</tr>
</tbody>
</table>

As "Comic Sans MS" works, but not ""Comic Sans ms" this functions seems to be case sensitive.

Matthias Buercher notes that sometimes a font is not selected if the RGBFillColor was not set before.

You may need to reset the textmatrix with some code like c.TextMatrix = CGAffineTransformMBS.Identity. If the text matrix is different, your text may be rotated, skewed or resized.
50.6.69  SetAllowsAntialiasing(allowAntialiasing as boolean)

MBS MacCG Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether to allow antialiasing.

**Notes:**
Allow antialiasing in context if allowAntialiasing is true; don’t allow it otherwise. This parameter is not part of the graphics state. A context will perform antialiasing if both allowAntialiasing and the graphics state parameter shouldAntialias are true.
Requires Mac OS X 10.4 to work.

50.6.70  SetAlpha(alpha as Double)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Set the alpha value in the current graphics state to alpha.

50.6.71  SetBlendMode(BlendMode as Integer)

MBS MacCG Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Set the blend mode of context to mode.

**Notes:** Requires Mac OS X 10.4.

50.6.72  SetCharacterSpacing(spacing as Double)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Set the current character spacing to ‘spacing’.

**Notes:** The character spacing is added to the displacement between the origin of one character and the origin of the next.

50.6.73  SetCMYKFillColor(cyan as Double, magenta as Double, yellow as Double, black as Double, alpha as Double = 1.0)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the fill color to a CMYK color.

**Notes:** colors are from 0 to 1 and alpha is from 0 (transparent) to 1 (solid).
50.6.74  SetCMYKStrokeColor(cyan as Double, magenta as Double, yellow as Double, black as Double, alpha as Double = 1.0)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Sets the stroke color to a CMYK color.
**Notes:** colors are from 0 to 1 and alpha is from 0 (transparent) to 1 (solid).

50.6.75  SetFillColor(color as CGColorMBS)

MBS MacCG Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Sets the given color as fill color.

50.6.76  SetFillColorSpace(colorspace as CGColorSpaceMBS)

MBS MacCG Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Sets the colorspace used for the fill color of the graphics context.

50.6.77  SetFlatness(flatness as Double)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Set the path flatness parameter in the current graphics state to flatness.

50.6.78  SetFont(font as CGFontMBS)

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Sets the current font.

50.6.79  SetFontSize(size as Double)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Set the current font size to 'size'.

50.6.80  SetGrayFillColor(gray as Double, alpha as Double = 1.0)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Sets the fill color to a gray color.
50.6. CLASS CGCONTEXTMBS

**Notes:** gray is from 0 to 1 and alpha is from 0 (transparent) to 1 (solid).

### 50.6.81 SetGrayStrokeColor(gray as Double, alpha as Double = 1.0)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Sets the stroke color to a gray color.
**Notes:** gray is from 0 to 1 and alpha is from 0 (transparent) to 1 (solid).

### 50.6.82 SetLineCap(cap as Integer)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Set the line cap in the current graphics state to cap.

### 50.6.83 SetLineDash(phase as Double, lengths as memoryblock, count as Integer)

MBS MacCG Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Sets the pattern for dashed lines in a graphics context.
**Notes:**
- **phase:**
  A value that specifies how far into the dash pattern the line starts, in units of the user space. For example, passing a value of 3 means the line is drawn with the dash pattern starting at three units from its beginning. Passing a value of 0 draws a line starting with the beginning of a dash pattern.
- **lengths:**
  A memoryblock of float values that specify the lengths of the painted segments and unpainted segments, respectively, of the dash pattern or nil for no dash pattern.

For example, passing a memoryblock with the values [2.0, 3.0] sets a dash pattern that alternates between a 2-user-space-unit-long painted segment and a 3-user-space-unit-long unpainted segment. Passing the values [1.0, 3.0, 4.0, 2.0] sets the pattern to a 1-unit painted segment, a 3-unit unpainted segment, a 4-unit painted segment, and a 2-unit unpainted segment.

**count**
If the lengths parameter specifies a memoryblock, pass the number of elements in the memoryblock. Otherwise, pass 0.
50.6.84  SetLineJoin(join as Integer)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Set the line join in the current graphics state to join.

50.6.85  SetLineWidth(width as Double)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Set the line width in the current graphics state to width.

**Example:**
```plaintext
dim c as CGContextMBS = CGContextMBS.contextWithCGContext(g.Handle(g.HandleTypeCGContex-
tRef))
c.SetGrayStrokeColor(0,1)
c.SetGrayFillColor(0,1)
c.BeginPath
c.SetLineWidth 0.5
c.MoveToPoint 50, 550
c.AddLineToPoint 100, 600
c.StrokePath
c.Flush
c = nil
```

50.6.86  SetMiterLimit(limit as Double)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Set the miter limit in the current graphics state to limit.

50.6.87  SetRenderingIntent(intent as Integer)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Set the rendering intent in the graphics state to ‘intent’.

**Notes:**
Possible values for intent:
kCGRenderingIntentDefault   0
kCGRenderingIntentAbsoluteColorimetric   1
kCGRenderingIntentRelativeColorimetric   2
kCGRenderingIntentPerceptual   3
kCGRenderingIntentSaturation   4

50.6.88  SetRGBFillColor(red as Double, green as Double, blue as Double, alpha as Double = 1.0)
MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the fill color to a RGB color.
**Notes:** colors are from 0 to 1 and alpha is from 0 (transparent) to 1 (solid).

50.6.89  SetRGBStrokeColor(red as Double, green as Double, blue as Double, alpha as Double = 1.0)
MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the stroke color to a RGB color.
**Notes:** colors are from 0 to 1 and alpha is from 0 (transparent) to 1 (solid).

50.6.90  SetShadow(x as Double, y as Double, blur as Double)
MBS MacCG Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Enables shadowing in a graphics context.
**Example:**
```
Sub Paint(g As Graphics)
    dim c as CGContextMBS
    c=window1.CGContextMBS
    c.SetShadow 5,5,0.5
    c.SetRGBFillColor 1,0,0,1
    c.FillRect CGMakeRectMBS(100,100,100,100)
    c.Flush
End Sub
```
**Notes:**
x/y: Specifies a translation of the context’s coordinate system, to establish an offset for the shadow ( { 0,0 } specifies a light source immediately above the screen).
blur: A non-negative number specifying the amount of blur.

Shadow parameters are part of the graphics state in a context. After shadowing is set, all objects drawn are shadowed using a black color with 1/3 alpha (i.e., RGBA = \{ 0, 0, 0, 1.0/3.0 \}) in the DeviceRGB color space.

To turn off shadowing:

- Use the standard save/restore mechanism for the graphics state.
- Use CGContextSetShadowWithColor to set the shadow color to a fully transparent color (or pass nil as the color).

50.6.91 SetShadowWithColor(x as Double, y as Double, blur as Double, colorvalue as CGColorMBS)

Notes:
- x/y: Specifies a translation in base-space.
- blur: A non-negative number specifying the amount of blur.
- colorvalue: Specifies the color of the shadow, which may contain a non-opaque alpha value. If nil, then shadowing is disabled.

See also SetShadow.

50.6.92 SetShouldAntialias(shouldAntialias as boolean)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Turn off antialiasing if 'shouldAntialias' is zero; turn it on otherwise.
Notes: This parameter is part of the graphics state.

50.6.93 SetShouldSmoothFonts(shouldSmoothFonts as boolean)

Notes:
- Turn on font smoothing if shouldSmoothFonts is true; turn it off otherwise. This parameter is part of the graphics state. Note that this doesn't guarantee that font smoothing will occur: not all destination contexts support font smoothing.
50.6.94  **SetStrokeColor(color as CGColorMBS)**

MBS MacCG Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the given color as stroke color.

50.6.95  **SetStrokeColorSpace(colorspace as CGColorSpaceMBS)**

MBS MacCG Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the colorspace used for the stroke color of the graphics context.

50.6.96  **SetTextDrawingMode(mode as Integer)**

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Set the text drawing mode to 'mode'.

**Notes:**
Possible values:

- kCGTextFill 0
- kCGTextStroke 1
- kCGTextFillStroke 2
- kCGTextInvisible 3
- kCGTextFillClip 4
- kCGTextStrokeClip 5
- kCGTextFillStrokeClip 6
- kCGTextClip 7

50.6.97  **ShowText(text as string)**

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Draw 'string' at the point specified by the current text matrix.

**Notes:**
Each byte of the string is mapped through the encoding vector of the current font to obtain the glyph to display.
This function is more for quick and dirty text output, but not for serious drawing as it does not do most
unicode strings correctly. Use ATS for better drawing.

Some RB 5.x versions show a bug that the text is not displayed on a CGContext in while running the application in debug mode.

50.6.98  **ShowTextAtPoint**(text as string, x as Double, y as Double)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Draw 'string' at the point '(x, y)', specified in user space.

**Notes:**
Each byte of the string is mapped through the encoding vector of the current font to obtain the glyph to display.
This function is more for quick and dirty text output, but not for serious drawing as it does not do most unicode strings correctly. Use ATS for better drawing.

Some RB 5.x versions show a bug that the text is not displayed on a CGContext in while running the application in debug mode.

50.6.99  **StrokeEllipseInRect**(rect as CGRectMBS)

MBS MacCG Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Stroke an ellipse (an oval) inside rect.

**Notes:** Requires Mac OS X 10.4.

50.6.100  **StrokePath**

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Stroke the context’s path.

**Example:**
```
    dim c as CGContextMBS

    c=window1.CGContextMBS

    c.SetRGBStrokeColor 1,0,0,1
    c.BeginPath
    c.MoveToPoint 0,0
    c.AddLineToPoint 100,100
    c.StrokePath
    c.Flush
```
50.6.101 StrokeRect(rect as CGRectMBS)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Stroke ‘rect’ with the current stroke color and the current linewidth.

50.6.102 StrokeRectWithWidth(rect as CGRectMBS, width as Double)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Stroke ‘rect’ with the current stroke color, using ‘width’ as the line width.
50.6.103  strokeRoundedRect(x as Double, y as Double, w as Double, h as Double, arcWidth as Double, arcHeight as Double)

MBS MacCG Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Draws the frame for the round rectangle.
**Example:**

```vbscript
dim c as CGContextMBS

    c = window1.CGContextMBS

    // fill in red
    c.SetRGBFillColor 1,0,0,1
    c.fillRoundedRect 100,100,100,100,20,20

    // draw in green
    c.SetRGBStrokeColor 0,1,0,1
    c.strokeRoundedRect 100,100,100,100,20,20
```

50.6.104  Synchronize

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Synchronizes the context with the device.

50.6.105  TranslateCTM(tx as Double, ty as Double)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Translate the current graphics state's transformation matrix (the CTM) by (tx,ty).
**Example:**

```vbscript
// Rotate a PDF page

// our files
    dim sourcefile as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
    dim destfile as FolderItem = SpecialFolder.Desktop.Child("rotated.pdf")

// open PDF
    dim pdf as CGPDFDocumentMBS = sourcefile.OpenAsCGPDFDocumentMBS

// query media size of first page
    dim r as CGRectMBS = pdf.MediaBox(1)
```
50.6. **CLASS CGCONTEXTMBS**

```csharp
// create new PDF
dim c as CGContextMBS = destfile.NewCGPDFDocumentMBS(r,"title","Author","Creator")

// create rotated rectangle
dim nr as new CGRectMBS(0,0,r.Height,r.Width)

// create new page
c.BeginPage nr
c.SaveGState

const pi = 3.14159265

// rotate by 90
c.RotateCTM pi*1.5

// fix origin
c.TranslateCTM -r.width,0

// draw PDF
c.DrawCGPDFDocument pdf,r,1

// cleanup
c.RestoreGState
c.EndPage

c = nil

// show in PDF viewer
destfile.Launch
```

50.6.106 **Properties**

50.6.107 **handle as Integer**

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle for this context. **Notes:** Handle is a CGContextRef. (Read and Write property)
50.6.108 InterpolationQuality as Integer

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The interpolation quality for image rendering of this context.

**Notes:**
The interpolation quality is a gstate-parameter which controls the level of interpolation performed when an image is interpolated (for example, when scaling the image). Note that it is merely a hint to the context: not all contexts support all interpolation quality levels.

Possible values:

- `kCGInterpolationDefault` 0 Let the context decide.
- `kCGInterpolationNone` 1 Never interpolate.
- `kCGInterpolationLow` 2 Fast, low quality.
- `kCGInterpolationHigh` 3 Slow, high quality.

(Read and Write property)

50.6.109 RetainCount as Integer

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the reference counter of the object.

**Notes:**
If the retain count falls below 1, the object is destroyed.
(Read only property)

50.6.110 TextMatrix as CGAffineTransformMBS

MBS MacCG Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Return the text matrix.

**Notes:**
Returns nil on any error.
(Read and Write computed property)

50.6.111 TextPosition as CGPointMBS

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
User-space point at which text will be drawn to (x,y).
50.6. CLASS CGCONTEXTMBS

Notes: (Read and Write computed property)

50.6.112 Constants

50.6.113 kCGBlendModeClear=16

Notes:
R = 0
Available in Mac OS X v10.5 and later.

50.6.114 kCGBlendModeColor=14

MBS MacCG Plugin, Plugin Version: 8.0. Function: A constant for the Blend modes.

50.6.115 kCGBlendModeColorBurn=7

MBS MacCG Plugin, Plugin Version: 8.0. Function: A constant for the Blend modes.

50.6.116 kCGBlendModeColorDodge=6

MBS MacCG Plugin, Plugin Version: 8.0. Function: A constant for the Blend modes.

50.6.117 kCGBlendModeCopy=17

Notes:
R = S
Available in Mac OS X v10.5 and later.

50.6.118 kCGBlendModeDarken=4

MBS MacCG Plugin, Plugin Version: 8.0. Function: A constant for the Blend modes.
50.6.119  kCGBlendModeDestinationAtop=24

MBS MacCG Plugin, Plugin Version: 11.2. **Function:** A constant for the Blend modes.  
**Notes:**
R = S*(1 - Da) + D*Sa  
Available in Mac OS X v10.5 and later.

50.6.120  kCGBlendModeDestinationIn=22

MBS MacCG Plugin, Plugin Version: 11.2. **Function:** A constant for the Blend modes.  
**Notes:**
R = D*Sa  
Available in Mac OS X v10.5 and later.

50.6.121  kCGBlendModeDestinationOut=23

MBS MacCG Plugin, Plugin Version: 11.2. **Function:** A constant for the Blend modes.  
**Notes:**
R = D*(1 - Sa)  
Available in Mac OS X v10.5 and later.

50.6.122  kCGBlendModeDestinationOver=21

MBS MacCG Plugin, Plugin Version: 11.2. **Function:** A constant for the Blend modes.  
**Notes:**
R = S*(1 - Da) + D  
Available in Mac OS X v10.5 and later.

50.6.123  kCGBlendModeDifference=10

MBS MacCG Plugin, Plugin Version: 8.0. **Function:** A constant for the Blend modes.
50.6. CLASS CGCONTEXTMBS

50.6.124 kCGBlendModeExclusion=11
MBS MacCG Plugin, Plugin Version: 8.0. Function: A constant for the Blend modes.

50.6.125 kCGBlendModeHardLight=9
MBS MacCG Plugin, Plugin Version: 8.0. Function: A constant for the Blend modes.

50.6.126 kCGBlendModeHue=12
MBS MacCG Plugin, Plugin Version: 8.0. Function: A constant for the Blend modes.

50.6.127 kCGBlendModeLighten=5
MBS MacCG Plugin, Plugin Version: 8.0. Function: A constant for the Blend modes.

50.6.128 kCGBlendModeLuminosity=15
MBS MacCG Plugin, Plugin Version: 8.0. Function: A constant for the Blend modes.

50.6.129 kCGBlendModeMultiply=1
MBS MacCG Plugin, Plugin Version: 8.0. Function: A constant for the Blend modes.

50.6.130 kCGBlendModeNormal=0
MBS MacCG Plugin, Plugin Version: 8.0. Function: A constant for the Blend modes.

50.6.131 kCGBlendModeOverlay=3
MBS MacCG Plugin, Plugin Version: 8.0. Function: A constant for the Blend modes.
50.6.132 kCGBlendModePlusDarker=26

Notes:
R = MAX(0, (1 - D) + (1 - S))
Available in Mac OS X v10.5 and later.

50.6.133 kCGBlendModePlusLighter=27

Notes:
R = MIN(1, S + D)
Available in Mac OS X v10.5 and later.

50.6.134 kCGBlendModeSaturation=13

MBS MacCG Plugin, Plugin Version: 8.0. Function: A constant for the Blend modes.

50.6.135 kCGBlendModeScreen=2

MBS MacCG Plugin, Plugin Version: 8.0. Function: A constant for the Blend modes.

50.6.136 kCGBlendModeSoftLight=8

MBS MacCG Plugin, Plugin Version: 8.0. Function: A constant for the Blend modes.

50.6.137 kCGBlendModeSourceAtop=20

Notes:
R = S*Da + D*(1 - Sa)
Available in Mac OS X v10.5 and later.
50.6.138  kCGBlendModeSourceIn=18

MBS MacCG Plugin, Plugin Version: 11.2. **Function:** A constant for the Blend modes.
**Notes:**

\[ R = S \times D_a \]
Available in Mac OS X v10.5 and later.

50.6.139  kCGBlendModeSourceOut=19

MBS MacCG Plugin, Plugin Version: 11.2. **Function:** A constant for the Blend modes.
**Notes:**

\[ R = S \times (1 - D_a) \]
Available in Mac OS X v10.5 and later.

50.6.140  kCGBlendModeXOR=25

MBS MacCG Plugin, Plugin Version: 11.2. **Function:** A constant for the Blend modes.
**Notes:**

\[ R = S \times (1 - D_a) + D \times (1 - S_a). \] This XOR mode is only nominally related to the classical bitmap XOR operation, which is not supported by Quartz 2D.
Available in Mac OS X v10.5 and later.

50.6.141  kCGEncodingFontSpecific=0

MBS MacCG Plugin, Plugin Version: 8.0. **Function:** A constant for the Text encodings.

50.6.142  kCGEncodingMacRoman=1

MBS MacCG Plugin, Plugin Version: 8.0. **Function:** A constant for the Text encodings.

50.6.143  kCGInterpolationDefault=0

MBS MacCG Plugin, Plugin Version: 8.0. **Function:** A constant for the Interpolation quality.
**Notes:** Let the context decide.
50.6.144  kCGInterpolationHigh=3

MBS MacCG Plugin, Plugin Version: 8.0. **Function:** A constant for the Interpolation quality.  
**Notes:** Slower, higher quality.

50.6.145  kCGInterpolationLow=2

MBS MacCG Plugin, Plugin Version: 8.0. **Function:** A constant for the Interpolation quality.  
**Notes:** Faster, lower quality.

50.6.146  kCGInterpolationMedium=4

MBS MacCG Plugin, Plugin Version: 11.2. **Function:** A constant for the Interpolation quality.  
**Notes:** A medium level of interpolation quality. This setting is slower than the low setting but faster than the high setting. Available in Mac OS X v10.6 and later.

50.6.147  kCGInterpolationNone=1

MBS MacCG Plugin, Plugin Version: 8.0. **Function:** A constant for the Interpolation quality.  
**Notes:** Never interpolate.

50.6.148  kCGLineCapButt=0

MBS MacCG Plugin, Plugin Version: 8.0. **Function:** A constant for the Line cap styles.

50.6.149  kCGLineCapRound=1

MBS MacCG Plugin, Plugin Version: 8.0. **Function:** A constant for the Line cap styles.

50.6.150  kCGLineCapSquare=2

MBS MacCG Plugin, Plugin Version: 8.0. **Function:** A constant for the Line cap styles.
50.6. CLASS CGCONTEXTMBS

50.6.151 kCGLineJoinBevel=2

MBS MacCG Plugin, Plugin Version: 8.0. **Function:** A constant for the Line join styles.

50.6.152 kCGLineJoinMiter=0

MBS MacCG Plugin, Plugin Version: 8.0. **Function:** A constant for the Line join styles.

50.6.153 kCGLineJoinRound=1

MBS MacCG Plugin, Plugin Version: 8.0. **Function:** A constant for the Line join styles.

50.6.154 kCGPathEOFill=1

MBS MacCG Plugin, Plugin Version: 8.0. **Function:** A constant for the Drawing modes for paths.

50.6.155 kCGPathEOFillStroke=4

MBS MacCG Plugin, Plugin Version: 8.0. **Function:** A constant for the Drawing modes for paths.

50.6.156 kCGPathFill=0

MBS MacCG Plugin, Plugin Version: 8.0. **Function:** A constant for the Drawing modes for paths.

50.6.157 kCGPathFillStroke=3

MBS MacCG Plugin, Plugin Version: 8.0. **Function:** A constant for the Drawing modes for paths.

50.6.158 kCGPathStroke=2

MBS MacCG Plugin, Plugin Version: 8.0. **Function:** A constant for the Drawing modes for paths.
50.6.159 kCGTextClip=7
MBS MacCG Plugin, Plugin Version: 8.0. **Function:** A constant for the Drawing modes for text.

50.6.160 kCGTextFill=0
MBS MacCG Plugin, Plugin Version: 8.0. **Function:** A constant for the Drawing modes for text.

50.6.161 kCGTextFillClip=4
MBS MacCG Plugin, Plugin Version: 8.0. **Function:** A constant for the Drawing modes for text.

50.6.162 kCGTextFillStroke=2
MBS MacCG Plugin, Plugin Version: 8.0. **Function:** A constant for the Drawing modes for text.

50.6.163 kCGTextFillStrokeClip=6
MBS MacCG Plugin, Plugin Version: 8.0. **Function:** A constant for the Drawing modes for text.

50.6.164 kCGTextInvisible=3
MBS MacCG Plugin, Plugin Version: 8.0. **Function:** A constant for the Drawing modes for text.

50.6.165 kCGTextStroke=1
MBS MacCG Plugin, Plugin Version: 8.0. **Function:** A constant for the Drawing modes for text.

50.6.166 kCGTextStrokeClip=5
MBS MacCG Plugin, Plugin Version: 8.0. **Function:** A constant for the Drawing modes for text.
50.7. CLASS CGDATACONSUMERMBS

50.7  class CGDataConsumerMBS

50.7.1  class CGDataConsumerMBS

MBS MacCG Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class for CoreGraphics to write data.

50.7.2  Methods

50.7.3  Constructor

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new event based data consumer.
**Notes:** On failure the handle property is zero.
See also:

- 50.7.4 Constructor(file as folderitem)
- 50.7.5 Constructor(url as string)

50.7.4  Constructor(file as folderitem)

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new CGDataConsumer to write data to the given file.
**Notes:** On failure the handle property is zero.
See also:

- 50.7.3 Constructor
- 50.7.5 Constructor(url as string)

50.7.5  Constructor(url as string)

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new CGDataConsumer to write data to the given url.
**Notes:** On failure the handle property is zero.
See also:

- 50.7.3 Constructor
- 50.7.4 Constructor(file as folderitem)
50.7.6 CreateWithFile(file as folderitem) as CGDataConsumerMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new CGDataConsumer to write data to the given file. **Notes:** Returns nil on any error.

50.7.7 CreateWithURL(url as string) as CGDataConsumerMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new CGDataConsumer to write data to the given url. **Notes:** Returns nil on any error.

50.7.8 Properties

50.7.9 Handle as Integer

MBS MacCG Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle to the CGDataConsumer object. **Notes:** Data is a CGDataConsumerRef. (Read and Write property)

50.7.10 Events

50.7.11 CloseConsumer

MBS MacCG Plugin, Plugin Version: 4.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Event called when the consumer is no longer needed.

50.7.12 Put(data as string) as Integer

MBS MacCG Plugin, Plugin Version: 4.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Some data needs to be stored. **Notes:** Write the given data string into your backbuffer or file and return the number of bytes written. Return 0 if you can’t accept new input.
50.8. class CGDataProviderMBS

50.8.1 class CGDataProviderMBS

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class for a Coregraphics data provider.
**Notes:** Something like a textinputstream in RB, but for Coregraphics this stream provides binary data.

50.8.2 Methods

50.8.3 Constructor(data as string)

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new data provider reading data from the given string.
**Notes:**
On failure the handle property is zero.
Available in Mac OS X v10.4 and later.
See also:

- 50.8.4 Constructor(file as folderitem)

50.8.4 Constructor(file as folderitem)

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a data provider using a CFUrl.
**Notes:** On failure the handle property is zero.
See also:

- 50.8.3 Constructor(data as string)

50.8.5 CreateWithData(data as string) as CGDataProviderMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new data provider reading data from the given string.
**Notes:**
On failure the handle property is zero.
Available in Mac OS X v10.4 and later.
50.8.6 CreateWithFile(file as folderitem) as CGDataProviderMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a data provider using a file. **Notes:** Returns nil on any error.

50.8.7 CreateWithURL(url as string) as CGDataProviderMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a data provider using an URL. **Notes:** Returns nil on any error.

50.8.8 Data as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a copy of the provider’s data. **Notes:** Available in Mac OS X v10.5 and later.

50.8.9 Properties

50.8.10 Handle as Integer

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle to CGDataProvider object. **Notes:** (a CGDataProviderRef) (Read and Write property)
50.9. class CGDisplayConfigMBS

50.9.1 class CGDisplayConfigMBS

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for a display configuration.

**Notes:**
The display reconfiguration process:

- Make all desired changes for all displays.
- Commit the changes using Complete(), or cancel with Cancel().

The resulting layout will be adjusted to remove gaps or overlaps from the requested layout, if needed. */

50.9.2 Methods

50.9.3 Cancel

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Cancel a set of display configuration changes.

**Notes:** On return, the configuration is cancelled and is no longer valid.

50.9.4 Complete(options as Integer)

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Complete a set of display configuration changes.

**Notes:**
On return, the configuration is no longer valid.

A configuration change can apply for the life of an application, the life of a login session, or permanently. If a request is made to make a change permanent, and the change cannot be supported by Mac OS X user interface, then the configuration change lasts only for the current login session.

A permanent configuration change also becomes the current session’s configuration. When the system reverts configurations at app termination, the configuration reverts to the session or permanent configuration setting. When the system reverts configurations at session termination, the configuration reverts to the permanent configuration setting.
This operation may fail if an unsupported display mode is requested, or if another app is running in full-screen mode.

### 50.9.5 DisplayMode(display as CGDisplayMBS, mode as CGDisplayModeMBS)

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Configure the display mode of a display.

**Notes:**

A display mode is a set of properties such as width, height, pixel depth, and refresh rate, and options such as stretched LCD panel filling.

If you use this function to change the mode of a display in a mirroring set, Quartz may adjust the bounds, resolutions, and depth of the other displays in the set to a safe mode, with matching depth and the smallest enclosing size.

### 50.9.6 MirrorOfDisplay(display as CGDisplayMBS, master as CGDisplayMBS)

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Make a display a mirror of a master display.

**Notes:**

Pass nil for the master display to disable mirroring.
Pass MainDisplay for the master display to mirror the main display.

Display mirroring and display matte generation are implemented either in hardware (preferred) or software, at the discretion of the device driver.

- **Hardware mirroring**

With hardware mirroring enabled, all drawing is directed to the primary display — see PrimaryDisplay.

If the device driver selects hardware matte generation, the display bounds and rowbytes values are adjusted to reflect the active drawable area.

- **Software mirroring**

In this form of mirroring, identical content is drawn into each display in the mirroring set. Applications that use the window system need not be concerned about mirroring, as the window system takes care of all
flushing of window content to the appropriate displays.

Applications that draw directly to the display, as with display capture, must make sure to draw the same content to all mirrored displays in a software mirror set. When drawing to software mirrored displays using a full screen OpenGL context (not drawing through a window), you should create shared OpenGL contexts for each display and re-render for each display.

You can use the function GetActiveDisplayList to determine which displays are active, or drawable. This automatically gives your application the correct view of the current displays.

50.9.7 Mode(display as CGDisplayMBS, mode as Dictionary)

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the mode given the values in the dictionary.  
**Notes:** Deprecated with Mac OS X 10.6.

50.9.8 Origin(display as CGDisplayMBS, x as Integer, y as Integer)

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Configure the origin of a display in global display coordinates.  
**Notes:** The new origin of the display is placed as close as possible to the requested location, without overlapping or leaving a gap between displays.

Any display whose origin is not explicitly set in a reconfiguration will be repositioned to a location as close as possible to its current location without overlapping or leaving a gap between displays.

Note that setting the origin of a display which is mirroring another display will remove that display from any mirroring set.

50.9.9 RestorePermanentDisplayConfiguration

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Restore the permanent display configuration settings for the current user.
50.9.10 StereoOperation(display as CGDisplayMBS, stereo as Boolean, forceBlueLine as Boolean)

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Enable or disable stereo operation for a display.

**Notes:**

Note that the system normally detects the presence of a stereo window, and will automatically switch a display containing a stereo window to stereo operation. This function provides a mechanism to force a display to stereo operation, and to set options (such as blue line sync signal) when in stereo operation.

When in stereo operation, a display may need to generate a special stereo sync signal as part of the video output. The sync signal consists of a blue line which occupies the first 25% of the last scanline for the left eye view, and the first 75% of the last scanline for the right eye view. The remainder of the scanline is black. To force the display to generate this sync signal, pass true for forceBlueLine; otherwise, pass false.

Returns kCGErrorSuccess on success, or kCGErrorRangeCheck if the display does not support the stereo operation settings requested.

On success, the display resolution, mirroring mode, and available display modes may change due to hardware-specific capabilities and limitations. You should check these settings to verify that they are appropriate for your application.

50.9.11 Properties

50.9.12 Handle as Integer

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference.

**Notes:** (Read only property)

50.9.13 Lasterror as Integer

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last error value.

**Notes:** (Read only property)
50.9.14  Constants

50.9.15  kCGConfigureForAppOnly = 0

MBS MacCG Plugin, Plugin Version: 11.1. **Function:** One of the option constants for Complete method. **Notes:** For application only.

50.9.16  kCGConfigureForSession = 1

MBS MacCG Plugin, Plugin Version: 11.1. **Function:** One of the option constants for Complete method. **Notes:** For session only.

50.9.17  kCGConfigurePermanently = 2

MBS MacCG Plugin, Plugin Version: 11.1. **Function:** One of the option constants for Complete method. **Notes:** Permanently.
50.10 class CGDisplayMBS

50.10.1 class CGDisplayMBS

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a CoreGraphics Display object.  
**Example:**

```vbnet
dim c as new CGDisplayMBS
dim lines(-1) as string

dim DPIWidth as Double = c.PixelsWide/(c.ScreenSizeWidth/10.0/2.54)
dim DPIHeight as Double = c.PixelsHigh/(c.ScreenSizeHeight/10.0/2.54)

lines.append str(c.ScreenSizeWidth)+" x "+str(c.ScreenSizeHeight)+" Millimeter with"
lines.Append str(c.PixelsWide)+" x "+str(c.PixelsHigh)+" Pixel is"
lines.Append str(DPIWidth)+" x "+str(DPIHeight)+" DPI"

MsgBox Join(lines,EndOfLine)
```

50.10.2 Methods

50.10.3 AllDisplayModes as CGDisplayModeMBS()

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return an array of all modes for the specified display.  
**Example:**

```vbnet
dim d as CGDisplayMBS = CGDisplayMBS.MainDisplay
dim modes(-1) as string

for each mode as CGDisplayModeMBS in d.AllDisplayModes
    modes.append str(mode.Width)+" x "+str(mode.Height)
next
MsgBox Join(modes,EndOfLine)
```

**Notes:**  
Returns an empty array on any error.  
Requires Mac OS X 10.6
50.10.4 AvailableModes as Dictionary()

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array filled with dictionaries (one for each mode).

**Example:**

```plaintext
// Display all available graphic modes:
Listbox1.DeleteAllRows
Listbox1.ColumnCount = 4

dim d as CGDisplayMBS = CGDisplayMBS.MainDisplay

dim a(-1) as Dictionary = d.AvailableModes

for each di as Dictionary in a
    Listbox1.AddRow di.Value(d.kCGDisplayMode).stringValue
    Listbox1.cell(Listbox1.LastIndex,1) = di.Value(d.kCGDisplayWidth)+" "+di.Value(d.kCGDisplayHeight)
    Listbox1.cell(Listbox1.LastIndex,2) = di.Value(d.kCGDisplayRefreshRate)
    Listbox1.cell(Listbox1.LastIndex,3) = di.Value(d.kCGDisplayBitsPerPixel)
next
```

**Notes:** Returns empty error on any error.

50.10.5 BestModeForParameters(BitsPerPixel as Integer, Width as Integer, Height as Integer, byref ExactMatch as boolean) as Dictionary

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Dictionary with the best mode found for the given parameters.

**Notes:**

Returns nil on any error.

Try to find a display mode of specified depth with dimensions equal or greater than specified. If no depth match is found, try for the next larger depth with dimensions equal or greater than specified. If no luck, then just return the current mode.

exactmatch is set to 'true' if an exact match in width, height, and depth is found, and 'false' otherwise. Returns nil if display is invalid.
50.10.6  **BestModeForParametersAndRefreshRate** (BitsPerPixel as Integer, Width as Integer, Height as Integer, RefreshRate as Integer, byref ExactMatch as boolean) as Dictionary

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Dictionary with the best mode found for the given parameters.

**Notes:**

Returns nil on any error.

Try to find a display mode of specified depth with dimensions equal or greater than specified.
If no depth match is found, try for the next larger depth with dimensions equal or greater than specified. If no luck, then just return the current mode.

exactmatch is set to ‘true’ if an exact match in width, height, and depth is found, and ‘false’ otherwise. Returns nil if display is invalid.

50.10.7  **BestModeForParametersAndRefreshRateWithProperty** (BitsPerPixel as Integer, Width as Integer, Height as Integer, RefreshRate as Integer, propertyName as string, byref ExactMatch as boolean) as Dictionary

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Dictionary with the best mode found for the given parameters.

**Notes:**

Returns nil on any error.

Try to find a display mode of specified depth with dimensions equal or greater than specified.
If no depth match is found, try for the next larger depth with dimensions equal or greater than specified. If no luck, then just return the current mode.

exactmatch is set to ‘true’ if an exact match in width, height, and depth is found, and ‘false’ otherwise. Returns nil if display is invalid.

50.10.8  **Capture as Integer**

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Captures this display for your use.

**Example:**

```vbnet
dim d as CGDisplayMBS = CGDisplayMBS.MainDisplay
```
if d.Capture = 0 then

dim c as CGContextMBS = d.DrawingContext

// watch it drawing red
c.SetRGBFillColor 1.0, 0.0, 0.0, 1.0
c.FillRect CGMakeRectMBS(0,0,d.PixelsWide,d.PixelsHigh)

DelayMBS 3.0

call d.Release
else
MsgBox "Failed to capture displays."
end if

Notes:
Don’t forget to Release the display later.
Returns an error code.

50.10.9 CaptureAllDisplays as Integer

Example:

dim d as CGDisplayMBS = CGDisplayMBS.MainDisplay

if d.CaptureAllDisplays = 0 then

dim c as CGContextMBS = d.DrawingContext

// watch it drawing red
c.SetRGBFillColor 1.0, 0.0, 0.0, 1.0
c.FillRect CGMakeRectMBS(0,0,d.PixelsWide,d.PixelsHigh)

DelayMBS 3.0

call d.ReleaseAllDisplays
else
MsgBox "Failed to capture displays."
end if
Notes:
This has the nice effect of providing an immersive environment, and preventing other apps from trying to adjust themselves to display changes only needed by your app.

Returns an error code.

50.10.10 CaptureAllDisplaysWithOptions(options as Integer) as Integer

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Capture all displays.

**Example:**

```vba
dim d as CGDisplayMBS = CGDisplayMBS.MainDisplay

if d.CaptureAllDisplaysWithOptions(d.kCGCaptureNoOptions) = 0 then
    dim c as CGContextMBS = d.DrawingContext

    // watch it drawing red
    c.SetRGBFillColor 1.0, 0.0, 0.0, 1.0
    c.FillRect CGMakeRectMBS(0, 0, d.PixelsWide, d.PixelsHigh)

    DelayMBS 3.0

    call d.ReleaseAllDisplays
else
    MsgBox "Failed to capture displays."
end if
```

Notes:
This has the nice effect of providing an immersive environment, and preventing other apps from trying to adjust themselves to display changes only needed by your app.

Use kCGCaptureNoOptions and kCGCaptureNoFill for options parameter. Returns an error code.

50.10.11 CaptureWithOptions(options as Integer) as Integer

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Captures this display for your use.
Example:

dim d as CGDisplayMBS = CGDisplayMBS.MainDisplay

if d.CaptureWithOptions(d.kCGCaptureNoOptions) = 0 then

dim c as CGContextMBS = d.DrawingContext

    // watch it drawing red
    c.SetRGBFillColor 1.0, 0.0, 0.0, 1.0
    c.FillRect CGMakeRectMBS(0,0,d.PixelsWide,d.PixelsHigh)

DelayMBS 3.0

call d.Release
else
    MsgBox "Failed to capture displays."
end if

Notes:

Don’t forget to Release the display later.
Returns an error code.
Use kCGCaptureNoOptions and kCGCaptureNoFill for options parameter.

50.10.12 CreateImage as CGImageMBS

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Return an image containing the contents of the display.

**Example:**

dim d as CGDisplayMBS = CGDisplayMBS.MainDisplay
dim img as CGImageMBS = d.CreateImage

Backdrop = img.Picture

**Notes:** Requires Mac OS X 10.6.
50.10.13  CreateImageAsync(receiverDelegate as CreateImageAsyncDelegateMBS, jpegQuality as Double = 0.9, tag as Variant = nil)

MBS MacCG Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Asynchronously creates an image with screenshot. **Notes:**

- If jpeg is $\geq 0$, we use it as quality for the jpeg compression and provide the JPEG data as memoryblock in the delegate.
- Tag is passed through as is.

*Delegate declaration:*
CreateImageAsyncDelegateMBS(img as CGImageMBS, JPEGData as MemoryBlock, Tag as Variant)

50.10.14  CreateImageForRect(rect as CGRectMBS) as CGImageMBS

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return an image containing the contents of the rectangle rect, specified in display space, of the display identified by self. **Example:**

```vbnet
dim r as CGRectMBS = CGMakeRectMBS(100,100,500,500)
dim d as CGDisplayMBS = CGDisplayMBS.MainDisplay
dim img as CGImageMBS = d.CreateImageForRect(r)
Backdrop = img.Picture
```

**Notes:**

- The actual rectangle used is the rectangle returned from CGRectIntegral(rect).
- Requires Mac OS X 10.6.

50.10.15  DrawingContext as CGContextMBS

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return a CGContext suitable for drawing to the captured display, or nil if display has not been captured. **Example:**

```vbnet
dim d as CGDisplayMBS = CGDisplayMBS.MainDisplay
if d.Capture = 0 then
dim c as CGContextMBS = d.DrawingContext
```


50.10. CLASS CGDISPLAYMBS

// watch it drawing red
c.SetRGBFillColor 1.0, 0.0, 0.0, 1.0
c.FillRect CGMakeRectMBS(0,0,d.PixelsWide,d.PixelsHigh)

DelayMBS 3.0

call d.Release
else
MsgBox "Failed to capture displays."
end if

Notes:
The context is owned by the device and should not be released by the caller.

The context remains valid while the display is captured and while the display configuration is unchanged.
Releasing the captured display or reconfiguring the display invalidates the drawing context.

The determine when the display configuration is changing, use
CGDisplayReconfigurationEventMBS class.

50.10.16 GetActiveDisplayList as CGDisplayMBS()

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
Returns an array with the active displays.
Example:

// List all displays in a 2 column listbox:

Listbox1.DeleteAllRows

for each d as CGDisplayMBS in CGDisplayMBS.GetActiveDisplayList
Listbox1.AddRow hex(d.Handle)
Listbox1.cell(Listbox1.LastIndex,1)=str(d.PixelsWide)+” x ”+str(d.PixelsHigh)
next

Notes:
Returns an empty array on any error.
The first display returned in the list is the main display, the one with the menu bar. When mirroring, this will be the largest display, or if all are the same size, the one with the deepest pixel depth.

This function was named CGGetActiveDisplayListMBS in older plugin versions.

50.10.17 GetDisplaysWithOpenGLOpenGLDisplayMask(mask as Integer) as CGDisplayMBS()

Notes: Returns an empty array on any error.

50.10.18 GetDisplaysWithPoint(cgpoint as CGPointMBS) as CGDisplayMBS()

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Returns an array of CGDisplayMBS objects who are visible at the point on the virtual screen.
Example:
// List all displays in a 2 column listbox which match the point:
Listbox1.DeleteAllRows
dim p as CGPointMBS = CGMakePointMBS(100,100)
for each d as CGDisplayMBS in CGDisplayMBS.GetDisplaysWithPoint(p)
Listbox1.AddRow hex(d.Handle)
Listbox1.cell(Listbox1.LastIndex,1)=str(d.PixelsWide)+" x "+str(d.PixelsHigh)
next

Notes:
Returns an empty array on any error.

This function was called CGGetDisplaysWithPointMBS in older plugin versions.
See also:
- 50.10.19 GetDisplaysWithPoint(x as Double, y as Double) as CGDisplayMBS()
50.10. CLASS CGDISPLAYMBS

50.10.19 GetDisplaysWithPoint(x as Double, y as Double) as CGDisplayMBS()

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of CGDisplayMBS objects who are visible at the point on the virtual screen.

**Example:**

// List all displays in a 2 column listbox which match the point:  
Listbox1.DeleteAllRows  
for each d as CGDisplayMBS in CGDisplayMBS.GetDisplaysWithPoint(100,100)  
Listbox1.AddRow hex(d.Handle)  
Listbox1.cell(Listbox1.LastIndex,1)=str(d.PixelsWide)+" x "+str(d.PixelsHigh)  
next

**Notes:**  
Returns an empty array on any error.

This function was called CGGetDisplaysWithPointMBS in older plugin versions. See also:

- 50.10.18 GetDisplaysWithPoint(cgpoint as CGPointMBS) as CGDisplayMBS()  

50.10.20 GetDisplaysWithRect(cgrect as CGRectMBS) as CGDisplayMBS()

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of CGDisplayMBS objects who are visible within the rectangle on the virtual screen.

**Example:**

// List all displays in a 2 column listbox which match the rectangle:  
Listbox1.DeleteAllRows  
dim p as CGRectMBS = CGMakeRectMBS(100,100,100,100)  
for each d as CGDisplayMBS in CGDisplayMBS.GetDisplaysWithRect(p)  
Listbox1.AddRow hex(d.Handle)  
Listbox1.cell(Listbox1.LastIndex,1)=str(d.PixelsWide)+" x "+str(d.PixelsHigh)  
next
Notes:

Returns an empty array on any error.
This function was called CGGetDisplaysWithRectMBS in older plugin versions.
See also:

- 50.10.21 GetDisplaysWithRect(x as Double, y as Double, w as Double, h as Double) as CGDisplayMBS()

50.10.21 GetDisplaysWithRect(x as Double, y as Double, w as Double, h as Double) as CGDisplayMBS()

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Returns an array of CGDisplayMBS objects who are visible within the rectangle on the virtual screen.
**Example:**

```
// List all displays in a 2 column listbox which match the rectangle:
Listbox1.DeleteAllRows
for each d as CGDisplayMBS in CGDisplayMBS.GetDisplaysWithRect(100,100,100,100)
Listbox1.AddRow hex(d.Handle)
Listbox1.cell(Listbox1.LastIndex,1)=str(d.PixelsWide)+" x "+str(d.PixelsHigh)
next
```

Notes:

Returns an empty array on any error.
This function was called CGGetDisplaysWithRectMBS in older plugin versions.
See also:

- 50.10.20 GetDisplaysWithRect(cgrect as CGRectMBS) as CGDisplayMBS()

50.10.22 GetDisplayTransferByTable(capacity as Integer, red as memoryblock, green as memoryblock, blue as memoryblock, byref samplecount as Integer) as Integer

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Get transfer tables.
**Notes:**
Capacity should contain the number of samples each array can hold, and sampleCount is filled in with the number of samples actually copied in.
You must pass in Memoryblocks with the given size (capacity*4 Bytes).
Returns an error code.

50.10.23  GetDisplayTransferFormula(byref formula as CGDisplayTransferFormulaMBS) as Integer

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Queries the display for the current gamma formula.
Notes: Returns an error code.

50.10.24  GetLastMouseDelta(byref deltax as Integer, byref deltay as Integer)

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Report the mouse position change associated with the last mouse move event received by this application.

50.10.25  GetOnlineDisplayList as CGDisplayMBS()

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Returns an array with the online displays.
Example:
// List all online displays in a 2 column listbox:
Listbox1.DeleteAllRows
for each d as CGDisplayMBS in CGDisplayMBS.GetOnlineDisplayList
Listbox1.AddRow hex(d.Handle)
Listbox1.cell(Listbox1.LastIndex,1)=str(d.PixelsWide)+" x "+str(d.PixelsHigh)
next

Notes:
Returns an empty array on any error.

The first display returned in the list is the main display, the one with the menu bar.
When mirroring, this will be the largest display, or if all are the same size, the one with the deepest pixel
With hardware mirroring, a display may be on-line, but not necessarily active, or drawable. Programs which manipulate display settings such as the palette or gamma tables need access to all displays in use, including hardware mirrors which are not drawable.

This function was named CGGetOnlineDisplayListMBS in older plugin versions.

### 50.10.26 HideCursor as Integer

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Hides the mouse cursor.
**Notes:**
Returns an error code.
Decrements hide cursor count.

### 50.10.27 Info as Dictionary

MBS MacCG Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the information CFDictionary about the display.
**Example:**
```vbnet
dim c as CGDisplayMBS = CGDisplayMBS.MainDisplay
dim d as Dictionary = c.Info
MsgBox d.Value("DisplaySerialNumber")
```

**Notes:**
On any error the return value is nil.
This function leaks around 4 to 16 KB of memory on Mac OS X 10.4. Not in the versions 10.3 or 10.5.

### 50.10.28 InfoAsCFDictionary as Variant

MBS MacCG Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the information CFDictionary about the display.
**Notes:**
On any error the return value is nil.
Returns a CFDictionaryMBS object. Returned as Variant to reduce plugin dependencies.
50.10.29  **IsCaptured as boolean**

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if you captured this display.  
**Example:**

```vbnet
dim d as new CGDisplayMBS // pick main display
MsgBox str(d.IsCaptured)
```

50.10.30  **MainDisplay as CGDisplayMBS**

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Return the display object of the current main display.  
**Example:**

```vbnet
dim c as CGDisplayMBS = CGDisplayMBS.MainDisplay
MsgBox str(c.PixelsWide)+" x "+str(c.PixelsHigh)
```

50.10.31  **MoveCursorToPoint(x as Double, y as Double) as Integer**

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Move the cursor to the specified point relative to the display origin (the upper left corner of the display).  
**Example:**

```vbnet
Function KeyDown(Key As String) As Boolean
// in a window keydown event:
if asc(key)=32 then
    dim c as new CGDisplayMBS
    dim error as Integer = c.MoveCursorToPoint(200,200)
    Title=str(error) // zero on success
end if
End Function
```
Notes:
Returns CGDisplayNoErr (0) on success.
No events are generated as a result of this move.
Points that would lie outside the desktop are clipped to the desktop.

50.10.32 OpenGLDisplayMask as Integer

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Return the OpenGL display mask for display, or 0 is display is an invalid display.

50.10.33 Release as Integer

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Releases the display.
Example:

```vbscript
dim d as CGDisplayMBS = CGDisplayMBS.MainDisplay
if d.Capture = 0 then

dim c as CGContextMBS = d.DrawingContext

// watch it drawing red
c.SetRGBFillColor 1.0, 0.0, 0.0, 1.0
c.FillRect CGMakeRectMBS(0,0,d.PixelsWide,d.PixelsHigh)

DelayMBS 3.0

call d.Release
else
MsgBox "Failed to capture displays."
end if
```

Notes: Returns an error code.

50.10.34 ReleaseAllDisplays as Integer

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
Release all captured displays.
Example:
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```vbscript
dim d as CGDisplayMBS = CGDisplayMBS.MainDisplay

if d.CaptureAllDisplays = 0 then

dim c as CGContextMBS = d.DrawingContext

// watch it drawing red

c.SetRGBFillColor 1.0, 0.0, 0.0, 1.0

c.FillRect CGMakeRectMBS(0,0,d.PixelsWide,d.PixelsHigh)

DelayMBS 3.0

call d.ReleaseAllDisplays
else
MsgBox "Failed to capture displays."
end if
```

**Notes:** Release all captured displays, and restore the display modes to the user’s preferences. May be used in conjunction with Capture or CaptureAllDisplays.

### 50.10.35 RestoreColorSyncSettings

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Restore gamma tables of system displays to the user’s ColorSync specified values.

### 50.10.36 SetDisplayMode(mode as CGDisplayModeMBS) as Integer

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Switch the display mode to mode.

**Notes:**
The selected display mode persists for the life of the program, and automatically reverts to the permanent setting when the program terminates.

When changing display modes of displays in a mirroring set, other displays in the mirroring set will be set to a display mode capable of mirroring the bounds of the largest display being explicitly set.

Note that after switching, display parameters and addresses may change.
50.10.37  SetDisplayTransferByByteTable(count as Integer, red as memoryblock, green as memoryblock, blue as memoryblock) as Integer

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
Set a display gamma/transfer function using tables of data for each channel.
**Notes:**
As a convenience, allow setting of the gamma table by byte values.
Returns an error code.

50.10.38  SetDisplayTransferByTable(count as Integer, red as memoryblock, green as memoryblock, blue as memoryblock) as Integer

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
Set a display gamma/transfer function.
**Notes:**
Set a display gamma/transfer function using tables of data for each channel.
Values within each table should have values in the range of 0.0 through 1.0.
The same table may be passed in for red, green, and blue channels. 'count' indicates the number of entries
in each table.
The tables are interpolated as needed to generate the number of samples needed by hardware.
Returns an error code.

50.10.39  SetDisplayTransferFormula(formula as CGDisplayTransferFormulaMBS) as Integer

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
Set a display gamma/transfer function.
**Notes:**
Set a display gamma/transfer function from a formula specifying min and max values and a gamma for each channel.
Gamma values must be greater than 0.0.
To get an antigamma of 1.6, one would specify a value of (1.0 / 1.6)
Min values must be greater than or equal to 0.0 and less than 1.0.
Max values must be greater than 0.0 and less than or equal to 1.0.
Out of range values, or Max greater than or equal to Min result in a kCGSRangeCheck error.

Values are computed by sampling a function for a range of indices from 0 through 1: value = Min + ((Max
- Min) * pow(index, Gamma))
The resulting values are converted to a machine specific format and loaded into hardware.
Returns an error code.

50.10.40 SetRotation(angle as Integer) as Integer

MBS MacCG Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Rescans the bus of displays and changes the rotation of the display.
Example:

```vbnet
dim d as CGDisplayMBS = CGDisplayMBS.MainDisplay
dim e as Integer = d.SetRotation(90)
```

if e<>0 then
  MsgBox "Error: " + str(e)
end if

Notes:
Returns IOKit error code. Zero means success.
Lasterror is set.

50.10.41 SetStereoOperation(stereo as boolean, forceBlueLine as boolean, option as Integer) as Integer

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Immediately enable or disable stereo operation for a display.
Notes:
Note that the system normally detects the presence of a stereo window, and will automatically switch a display containing a stereo window to stereo operation. This function provides a mechanism to force a display to stereo operation, and to set options (such as blue line sync signal) when in stereo operation.

When in stereo operation, a display may need to generate a special stereo sync signal as part of the video output. The sync signal consists of a blue line which occupies the first 25% of the last scanline for the left eye view, and the first 75% of the last scanline for the right eye view. The remainder of the scanline is black. To force the display to generate this sync signal, pass true for forceBlueLine; otherwise, pass false.

Lasterror is set to kCGErrorSuccess on success, or kCGErrorRangeCheck if the display does not support the stereo operation settings requested.
On success, the display resolution, mirroring mode, and available display modes may change due to hardware-specific capabilities and limitations. You should check these settings to verify that they are appropriate for your application.

Lasterror is set.

50.10.42 ShieldingWindowID as UInt32

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns window ID of the shield window for the captured display, or 0 if the display is not shielded.

50.10.43 ShieldingWindowLevel as Int32

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the window level of the shield window for the captured display.

50.10.44 ShowCursor as Integer

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Shows the mouse cursor.

**Notes:**
- Returns an error code.
- Increments hide cursor count.

50.10.45 SwitchToMode(Mode as Dictionary) as Integer

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Switch display mode.

**Notes:**
- Note that after switching, display parameters and addresses may change.
- The selected display mode persists for the life of the program, and automatically reverts to the permanent setting made by Preferences when the program terminates.
- The mode dictionary passed in must be a dictionary vended by other CGDirectDisplay APIs such as BestModeForParameters() and AvailableModes().
- Returns an error code.
50.10.46 **WaitForBeamPositionOutsideLines** (upperScanLine as UInt32, lowerScanLine as UInt32) as Integer

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Wait until the beam position is outside the range specified.

**Notes:**
Wait until the beam position is outside the range specified by upperScanLine and lowerScanLine.
Note that if upperScanLine and lowerScanLine encompass the entire display height, the function returns an error.
lowerScanLine must be greater than or equal to upperScanLine.

Some display systems may not conventional video vertical and horizontal sweep in painting.
These displays report a kCGDisplayRefreshRate of 0 in the CFDictionaryRef returned by CurrentMode().
On such displays, this function returns at once.

Some drivers may not implement support for this mechanism.
On such displays, this function returns at once.

Returns CGDisplayNoErr on success, and an error if display or upperScanLine and lowerScanLine are invalid.

The app should set the values of upperScanLine and lowerScanLine to allow enough lead time for the drawing operation to complete. A common strategy is to wait for the beam to pass the bottom of the drawing area, allowing almost a full vertical sweep period to perform drawing.

To do this, set upperScanLine to 0, and set lowerScanLine to the bottom of the bounding box:
lowerScanLine = (CGBeamPosition)(cgrect.origin.y + cgrect.size.height);

IOKit may implement this as a spin-loop on the beam position call used for BeamPosition().
On such system the function is CPU bound, and subject to all the usual scheduling pre-emption.
In particular, attempting to wait for the beam to hit a specific scanline may be an exercise in frustration.

These functions are advisary in nature, and depend on IOKit and hardware specific drivers to implement support. If you need extremely precise timing, or access to vertical blanking interrupts, you should consider writing a device driver to tie into hardware-specific capabilities.

Returns an error code.
50.10.47 Properties

50.10.48 BeamPosition as UInt32

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the current beam position on the display.  
**Example:**

```bash
dim d as new CGDisplayMBS // pick main display
MsgBox str(d.BeamPosition)
```

**Notes:**
If display is invalid, or the display does not implement conventional video vertical and horizontal sweep in painting, or the driver does not implement this functionality, 0 is returned.  
(Read only property)

50.10.49 Bounds as CGRectMBS

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return screen size and origin in global coords.  
**Notes:**
Empty rect or nil if display is invalid.  
(Read only property)

50.10.50 Brightness as Double

MBS MacCG Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Get/Set brightness of display.  
**Notes:**
Returns -1 if not supported.  
Lasterror is set.  
(Read and Write property)

50.10.51 CanSetPalette as boolean

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if the current display mode supports palettes.
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Example:

dim d as new CGDisplayMBS // pick main display

MsgBox str(d.CanSetPalette)

Notes: (Read only property)

50.10.52 ColorSpace as CGColorSpaceMBS

MBS MacCG Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns the color space for a display.
Example:

dim d as new CGDisplayMBS // pick main display

MsgBox str(d.ColorSpace.Model) // typical 1 = CGColorSpaceMBS.kCGColorSpaceModelRGB

Notes:
This function returns a display-dependent ICC-based color space. You can use this function when rendering
content for a specific display in order to produce color-matched output for that display.

Available in Mac OS X v10.5 and later.
(Read only property)

50.10.53 CurrentMode as Dictionary

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Return a Dictionary describing the current display mode.
Example:

dim d as CGDisplayMBS = CGDisplayMBS.MainDisplay
dim dic as Dictionary = d.CurrentMode

MsgBox dic.Value(d.kCGDisplayWidth)+” x ”+dic.Value(d.kCGDisplayHeight)

Notes:
Returns nil on any error.
50.10.54 **DisplayMode as CGDisplayModeMBS**

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Return the current mode of the specified display.

**Example:**
```
dim d as CGDisplayMBS = CGDisplayMBS.MainDisplay
MsgBox str(d.DisplayMode.Width)+" x "+str(d.DisplayMode.Height)
```

**Notes:**
- Returns nil on any error.
- Requires Mac OS X 10.6

(Read only property)

50.10.55 **DisplayProductNames as Dictionary**

MBS MacCG Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Queries product names for display in all available languages.

**Example:**
```
dim display as CGDisplayMBS = CGDisplayMBS.MainDisplay
dim names as Dictionary = display.DisplayProductNames
MsgBox names.Lookup("en_US", ",?")
```

**Notes:** (Read only property)

50.10.56 **Handle as Integer**

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The handle to the current display.

**Notes:**
- Internally: The DisplayID.
- 0 is the main display (to keep it easier).

(Read only property)
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50.10.57 **IOServicePort as Integer**

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Return the IOKit service port of a display.
**Notes:** (Read only property)

50.10.58 **IsActive as boolean**

MBS MacCG Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a Boolean value indicating whether a display is active.
**Example:**
```vba
    dim d as new CGDisplayMBS // pick main display
    MsgBox str(d.IsActive)
```
**Notes:**
If true, the specified display is active; otherwise, false.
An active display is connected, awake, and available for drawing. In a hardware mirroring set, only the primary display is active.
(Read only property)

50.10.59 **IsAlwaysInMirrorSet as boolean**

MBS MacCG Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a Boolean value indicating whether a display is always in a mirroring set.
**Example:**
```vba
    dim d as new CGDisplayMBS // pick main display
    MsgBox str(d.IsAlwaysInMirrorSet)
```
**Notes:**
If true, the specified display is in a mirroring set and cannot be removed from this set.
Some hardware configurations support the connection of auxiliary displays that always mirror the main display, and therefore cannot be removed from the mirroring set to which they belong.
(Read only property)
50.10.60  IsAsleep as boolean

MBS MacCG Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value indicating whether a display is sleeping (and is therefore not drawable.)

**Example:**

```plaintext
dim d as new CGDisplayMBS // pick main display

MsgBox str(d.IsAsleep)
```

**Notes:**

If true, the specified display is in sleep mode; otherwise, false.

A display is sleeping when its frame buffer and the attached monitor are in reduced power mode. A sleeping display is still considered to be a part of global display (desktop) space, but it is not drawable.

(Read only property)

---

50.10.61  IsBuiltin as boolean

MBS MacCG Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value indicating whether a display is built-in, such as the internal display in portable systems.

**Example:**

```plaintext
dim d as new CGDisplayMBS // pick main display

MsgBox str(d.IsBuiltin)
```

**Notes:**

If true, the specified display is considered to be a built-in display; otherwise, false.

Portable systems typically identify the internal LCD panel as a built-in display.

Note that it is possible and reasonable for a system to have no displays marked as built-in. For example, a portable system running with the lid closed may report no built-in displays.

(Read only property)
50.10.62 IsInHWMirrorSet as boolean

MBS MacCG Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value indicating whether a display is in a hardware mirroring set.  
**Example:**
```vbs
dim d as new CGDisplayMBS // pick main display
MsgBox str(d.IsInHWMirrorSet)
```

**Notes:**
If true, the specified display is a member of a hardware mirroring set; otherwise, false.

When hardware mirroring is enabled, the contents of a double frame buffer are rendered in all displays in the hardware mirroring set.  
(Read only property)

50.10.63 IsInMirrorSet as boolean

MBS MacCG Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value indicating whether a display is in a mirroring set.  
**Example:**
```vbs
dim d as new CGDisplayMBS // pick main display
MsgBox str(d.IsInMirrorSet)
```

**Notes:** (Read only property)

50.10.64 IsMain as boolean

MBS MacCG Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value indicating whether a display is the main display.  
**Example:**
```vbs
dim d as new CGDisplayMBS // pick main display
MsgBox str(d.IsMain)
```
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Notes:
If true, the specified display is currently the main display; otherwise, false.
(Read only property)

50.10.65  IsOnline as boolean

MBS MacCG Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns a Boolean value indicating whether a display is connected or online.
Example:

```dim d as new CGDisplayMBS // pick main display
MsgBox str(d.IsOnline)
```

Notes:
Returns true if the specified display is connected; otherwise, false.

A display is considered connected or online when the frame buffer hardware is connected to a monitor.

You can use this function to determine if someone has hot-plugged a display to the system. Note that
hot-plugging is a hardware feature that may not be present on all displays.
(Read only property)

50.10.66  IsStereo as boolean

MBS MacCG Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns a Boolean value indicating whether a display is running in a stereo graphics mode.
Example:

```dim d as new CGDisplayMBS // pick main display
MsgBox str(d.IsStereo)
```

Notes:
If true, the specified display is running in a stereo graphics mode; otherwise, false.

Available in Mac OS X v10.4 and later.
(Read only property)
50.10.67  **LastError as Integer**

MBS MacCG Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
The last error code.
**Notes:**
Only set for a few properties like brightness where we do have an error code.
(Read only property)

50.10.68  **MirrorsDisplay as CGDisplayMBS**

MBS MacCG Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
For a secondary display in a mirroring set, returns the primary display.
**Notes:**
Returns the primary display in the mirroring set. Returns kCGNullDirectDisplay if the specified display is actually the primary display or is not in a mirroring set.
(Read only property)

50.10.69  **ModelNumber as Integer**

MBS MacCG Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
Returns the model number of a display monitor.
**Example:**
```dim d as new CGDisplayMBS  // pick main display```
```
MsgBox str(d.ModelNumber)
```
**Notes:**
A model number for the monitor associated with the specified display, or a constant to indicate an exceptionsee the discussion below.

This function uses I/O Kit to identify the monitor associated with the specified display. The return value depends on the following:

- If I/O Kit can identify the monitor, the product ID code for the monitor is returned.
- If I/O Kit can’t identify the monitor, kDisplayProductIDGeneric is returned.
- If no monitor is connected, a value of 0xFFFFFFFF is returned.
50.10.70  **PixelsHigh as Integer**

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Height of the display in pixels.

**Notes:**

```
dim d as new CGDisplayMBS // pick main display
MsgBox str(D.PixelsHigh)
```

50.10.71  **PixelsWide as Integer**

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Width of the display in pixels.

**Example:**

```
dim d as new CGDisplayMBS // pick main display
MsgBox str(D.PixelsWide)
```

**Notes:**  (Read only property)

50.10.72  **PrimaryDisplay as CGDisplayMBS**

MBS MacCG Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Returns the primary display in a hardware mirroring set.

**Notes:**

The primary display in the mirror set. If display is not hardware-mirrored, this function simply returns display.

In hardware mirroring, the contents of a double frame buffer are rendered in two or more displays simultaneously. The mirrored displays are said to be in a hardware mirroring set.

At the discretion of the device driver, one of the displays in a hardware mirroring set is designated as the primary display. The device driver binds the drawing engine, hardware accelerator, and 3D engine to the primary display, and directs all drawing operations to this display.
50.10.73  **RefreshRate as Integer**

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries refresh rate in Hz for this display.  
**Example:**

```vbnet
dim m as CGDisplayMBS = CGDisplayMBS.MainDisplay
MsgBox str(m.RefreshRate)+" Hz"
```

**Notes:**

Returns 60 for LCD displays.  
(Read only property)

50.10.74  **Rotation as Double**

MBS MacCG Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the rotation angle of a display in degrees.  
**Example:**

```vbnet
dim d as new CGDisplayMBS  // pick main display
MsgBox str(d.Rotation)
```

**Notes:**

The rotation angle of the display in degrees, or 0 if the display is not valid.

This function returns the rotation angle of a display in a clockwise direction. For example, if the specified display is rotated clockwise 90 degrees then this function returns 90.0. After a 90 degree clockwise rotation, the physical bottom of the display is on the left side and the physical top is on the right side.

Available in Mac OS X v10.5 and later.  
(Read only property)
50.10.75 ScreenSizeHeight as Double

MBS MacCG Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the height of a display in millimeters.

**Example:**

```vba
dim c as new CGDisplayMBS
dim lines(-1) as string

dim DPIWidth as Double = c.PixelsWide/(c.ScreenSizeWidth/10.0/2.54)
dim DPIHeight as Double = c.PixelsHigh/(c.ScreenSizeHeight/10.0/2.54)

lines.append str(c.ScreenSizeWidth)+" x "+str(c.ScreenSizeHeight)+" Millimeter with"
lines.Append str(c.PixelsWide)+" x "+str(c.PixelsHigh)+" Pixel is"
lines.Append str(DPIWidth)+" x "+str(DPIHeight)+" DPI"

MsgBox Join(lines,EndOfLine)
```

**Notes:**

If Extended Display Identification Data (EDID) for the display device is not available, the size is estimated based on the device width and height in pixels from CGDisplayBounds, with an assumed resolution of 2.835 pixels/mm or 72 DPI, a reasonable guess for displays predating EDID support. (Read only property)

50.10.76 ScreenSizeWidth as Double

MBS MacCG Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the width of a display in millimeters.

**Example:**

```vba
dim d as new CGDisplayMBS // pick main display

MsgBox str(d.ScreenSizeHeight) // for example 400 on a 30" Apple Display
MsgBox str(d.ScreenSizeWidth) // for example 640 on a 30" Apple Display
```

**Notes:**

If Extended Display Identification Data (EDID) for the display device is not available, the size is estimated based on the device width and height in pixels from CGDisplayBounds, with an assumed resolution of 2.835 pixels/mm or 72 DPI, a reasonable guess for displays predating EDID support. (Read only property)
50.10.77 SerialNumber as Integer

MBS MacCG Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the serial number of a display monitor.

**Example:**

```
    dim d as new CGDisplayMBS // pick main display
    MsgBox str(D.SerialNumber)
```

**Notes:**

Returns the serial number for the monitor associated with the specified display, or a constant to indicate an exceptionsee the discussion below.

This function uses I/O Kit to identify the monitor associated with the specified display.

If I/O Kit can identify the monitor:

If the manufacturer has encoded a serial number for the monitor, the number is returned.
If there is no encoded serial number, 0x00000000 is returned.

If I/O Kit cannot identify the monitor:

If a monitor is connected to the display, 0x00000000 is returned.
If no monitor is connected to the display hardware, a value of 0xFFFFFFFF is returned.

Note that a serial number is meaningful only in conjunction with a specific vendor and product or model. (Read only property)

50.10.78 UnitNumber as Integer

MBS MacCG Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the logical unit number of a display.

**Example:**

```
    dim d as new CGDisplayMBS // pick main display
    MsgBox str(D.UnitNumber)
```
Notes:

A logical unit number for the specified display.

The logical unit number represents a particular node in the I/O Kit device tree associated with the display’s frame buffer. For a particular hardware configuration, this value will not change when the attached monitor is changed.

The unit number will change if the I/O Kit device tree changes, as when hardware is reconfigured, drivers are replaced, or significant changes occur to I/O Kit, so it should not be assumed to be invariant across login sessions.

For more information about I/O Kit, see the Apple publication "I/O Kit Fundamentals".
(Read only property)

50.10.79 UsesOpenGLAcceleration as boolean

MBS MacCG Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a Boolean value indicating whether Quartz is using OpenGL-based window acceleration (Quartz Extreme) to render in a display.

**Example:**

```plaintext
dim d as new CGDisplayMBS // pick main display
MsgBox str(D.UsesOpenGLAcceleration)
```

**Notes:**

Return value: If true, Quartz Extreme is used to render in the specified display; otherwise, false.

Quartz Extreme is an OpenGL-based, hardware-accelerated window compositor available in Mac OS X version 10.2 and later. Quartz Extreme requires a minimum hardware configuration to operate.

The information this function provides is typically used to adjust the demands of drawing operations to the capabilities of the display hardware. For example, an application running on an unaccelerated system could disable live window-resizing.
(Read only property)
50.10. CLASS CGDISPLAYMBS

50.10.80 VendorNumber as Integer

MBS MacCG Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the vendor number of the specified display’s monitor.

**Example:**

```vbnet
dim d as new CGDisplayMBS // pick main display

MsgBox str(D.VendorNumber)
// 1552 seems to be Apple
```

**Notes:**

A vendor number for the monitor associated with the specified display, or a constant to indicate an exception—see the discussion below.

This function uses I/O Kit to identify the monitor associated with the specified display.

There are three cases:

If I/O Kit can identify the monitor, the vendor ID is returned.
If I/O Kit cannot identify the monitor, kDisplayVendorIDUnknown is returned.
If there is no monitor associated with the display, 0xFFFFFFFF is returned.
*(Read only property)*

50.10.81 Constants

50.10.82 kCGCaptureNoFill = 1

MBS MacCG Plugin, Plugin Version: 11.1. **Function:** One of the capture option flags.  
**Notes:** Disables fill with black on capture.

50.10.83 kCGCaptureNoOptions = 0

MBS MacCG Plugin, Plugin Version: 11.1. **Function:** One of the capture option flags.  
**Notes:** Default behavior.
50.10.84 kCGDisplayBitsPerPixel = ”BitsPerPixel”

MBS MacCG Plugin, Plugin Version: 11.1. **Function:** One of the keys for mode dictionary
**Notes:**
The number of bits per pixel.
The value for this key is a number inside the dictionary.

50.10.85 kCGDisplayBitsPerSample = ”BitsPerSample”

MBS MacCG Plugin, Plugin Version: 11.1. **Function:** One of the keys for mode dictionary
**Notes:**
The number of bits per sample.
The value for this key is a number inside the dictionary.

50.10.86 kCGDisplayBytesPerRow = ”kCGDisplayBytesPerRow”

MBS MacCG Plugin, Plugin Version: 11.1. **Function:** One of the keys for mode dictionary

50.10.87 kCGDisplayHeight = ”Height”

MBS MacCG Plugin, Plugin Version: 11.1. **Function:** One of the keys for mode dictionary
**Notes:**
The display height.
The value for this key is a number inside the dictionary.

50.10.88 kCGDisplayIOFlags = ”IOFlags”

MBS MacCG Plugin, Plugin Version: 11.1. **Function:** One of the keys for mode dictionary
**Notes:** The value for this key is a number inside the dictionary.

50.10.89 kCGDisplayMode = ”Mode”

MBS MacCG Plugin, Plugin Version: 11.1. **Function:** One of the keys for mode dictionary
**Notes:** The value for this key is a number inside the dictionary.
50.10. CLASS CGDISPLAYMBS

50.10.90 kCGDisplayModeIsInterlaced = "kCGDisplayModeIsInterlaced"

MBS MacCG Plugin, Plugin Version: 11.1. Function: One of the keys for mode dictionary
Notes: This key reflects interesting bits of the IOKit display mode flags.

50.10.91 kCGDisplayModeIsSafeForHardware = "kCGDisplayModeIsSafeForHardware"

MBS MacCG Plugin, Plugin Version: 11.1. Function: One of the keys for mode dictionary
Notes: Set if display mode doesn’t need a confirmation dialog to be set.

50.10.92 kCGDisplayModeIsStretched = "kCGDisplayModeIsStretched"

MBS MacCG Plugin, Plugin Version: 11.1. Function: One of the keys for mode dictionary
Notes: This key reflects interesting bits of the IOKit display mode flags.

50.10.93 kCGDisplayModeIsTelevisionOutput = "kCGDisplayModeIsTelevisionOutput"

MBS MacCG Plugin, Plugin Version: 11.1. Function: One of the keys for mode dictionary
Notes: This key reflects interesting bits of the IOKit display mode flags.

50.10.94 kCGDisplayModeUsableForDesktopGUI = "UsableForDesktopGUI"

MBS MacCG Plugin, Plugin Version: 11.1. Function: One of the keys for mode dictionary
Notes: Whether this display can be used for desktop GUI.
The value for this key is a boolean inside the dictionary.

50.10.95 kCGDisplayRefreshRate = "RefreshRate"

MBS MacCG Plugin, Plugin Version: 11.1. Function: One of the keys for mode dictionary
Notes: The refresh rate.
The value for this key is a number inside the dictionary.
50.10.96 kCGDisplaySamplesPerPixel = ”SamplesPerPixel”

MBS MacCG Plugin, Plugin Version: 11.1. **Function:** One of the keys for mode dictionary

**Notes:**
The number of samples per pixel.
The value for this key is a number inside the dictionary.

50.10.97 kCGDisplayWidth = ”Width”

MBS MacCG Plugin, Plugin Version: 11.1. **Function:** One of the keys for mode dictionary

**Notes:**
The width of the display.
The value for this key is a number inside the dictionary.

50.10.98 kCGIODisplayModeID = ”IODisplayModeID”

MBS MacCG Plugin, Plugin Version: 11.1. **Function:** One of the keys for mode dictionary
50.11 class CGDisplayModeMBS

50.11.1 class CGDisplayModeMBS

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for a display mode.

**Notes:**
Requires Mac OS X 10.6
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

50.11.2 Methods

50.11.3 Constructor

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.

50.11.4 Properties

50.11.5 Handle as Integer

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference.

**Notes:** (Read only property)

50.11.6 Height as Integer

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return the height in pixels of the specified display mode.

**Example:**
```vba
dim display as CGDisplayMBS = CGDisplayMBS.MainDisplay
dim mode as CGDisplayModeMBS = Display.DisplayMode
MsgBox str(mode.Height)+" Pixel"
```

**Notes:** (Read only property)
50.11.7  IODisplayModeID as Int32

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Return the IOKit display mode ID of the specified display mode.
**Notes:** (Read only property)

50.11.8  IOFlags as UInt32

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Return the IOKit flags of the specified display mode.
**Example:**
```dim display as CGDisplayMBS = CGDisplayMBS.MainDisplay
dim mode as CGDisplayModeMBS = Display.DisplayMode
```

**Notes:** (Read only property)

50.11.9  IsUsableForDesktopGUI as boolean

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Return true if the specified mode is usable for displaying the desktop GUI; false otherwise.
**Notes:**
Requires Mac OS X 10.6 or newer.
(Read only property)

50.11.10  PixelEncoding as string

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Return a string representing the pixel encoding of the specified display mode, expressed as a CFString containing an IOKit graphics mode.
**Example:**
```dim display as CGDisplayMBS = CGDisplayMBS.MainDisplay
dim mode as CGDisplayModeMBS = Display.DisplayMode
```

**Example:**
```
MsgBox mode.PixelEncoding // shows e.g. ——–RRRRRRGGGGGGGBBBBBBBB
```
50.11. **CLASS CGDISPLAYMODEMBS**

Notes: (Read only property)

### 50.11.11 PixelHeight as Integer

MBS MacCG Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return the height in pixels of the specified display mode.

Notes:
On older Mac OS X versions without retina display support returns width in points.
(Read only property)

### 50.11.12 PixelWidth as Integer

MBS MacCG Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return the width in pixels of the specified display mode.

Notes:
On older Mac OS X versions without retina display support returns height in points.
(Read only property)

### 50.11.13 RefreshRate as Double

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return the refresh rate of the specified display mode.

**Example:**
```vbnet
dim display as CGDisplayMBS = CGDisplayMBS.MainDisplay
dim mode as CGDisplayModeMBS = Display.DisplayMode
MsgBox str(mode.RefreshRate)
```

Notes: (Read only property)

### 50.11.14 Width as Integer

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return the width in pixels of the specified display mode.

**Example:**
dim display as CGDisplayMBS = CGDisplayMBS.MainDisplay
dim mode as CGDisplayModeMBS = Display.DisplayMode
MsgBox str(mode.Width) + "" Pixel"

Notes: (Read only property)
50.12 class CGDisplayReconfigurationEventMBS

50.12.1 class CGDisplayReconfigurationEventMBS

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class to listen for display configuration changes.

**Notes:**
In constructor the plugin registers for the event and in destructor unregisters. So keep the object reference alive to receive events.

Events are invoked when the app is listening for events, on the event processing thread, or from within the display reconfiguration function when in the program that is driving the reconfiguration.

Events should avoid changing display configurations, and should not raise exceptions or perform a non-local return such as calling longjmp.

Before display reconfiguration, a event fires to inform applications of a configuration change. The event runs once for each on-line display. The flag is set to kCGDisplayBeginConfigurationFlag. This event does not carry other per-display information, as details of how a reconfiguration affects a particular device rely on device-specific behaviors which may not be exposed by a device driver.

After display reconfiguration, at the time the event function is invoked, all display state reported by Core-Graphics, QuickDraw, and the Carbon Display Manager API will be up to date. This event runs after the Carbon Display Manager notification events. The event runs once for each added, removed, and currently on-line display. Note that in the case of removed displays, calls into the CoreGraphics API with the removed display ID will fail.

50.12.2 Events

50.12.3 DisplayReconfiguration(DisplayID as Integer, flags as Integer)

MBS MacCG Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** This event is invoked whenever the configuration of a local display is changed.
50.12.4 Constants

50.12.5 kCGDisplayAddFlag = 16

MBS MacCG Plugin, Plugin Version: 11.1. **Function:** One of the possible flag values.  
**Notes:** Display Added

50.12.6 kCGDisplayBeginConfigurationFlag = 1

MBS MacCG Plugin, Plugin Version: 11.1. **Function:** One of the possible flag values.  
**Notes:** Begin Configuration for display.

50.12.7 kCGDisplayDesktopShapeChangedFlag = 4096

MBS MacCG Plugin, Plugin Version: 11.1. **Function:** One of the possible flag values.  
**Notes:** Desktop Shape Changed.

50.12.8 kCGDisplayDisabledFlag = 512

MBS MacCG Plugin, Plugin Version: 11.1. **Function:** One of the possible flag values.  
**Notes:** Display disabled.

50.12.9 kCGDisplayEnabledFlag = 256

MBS MacCG Plugin, Plugin Version: 11.1. **Function:** One of the possible flag values.  
**Notes:** Display enabled.

50.12.10 kCGDisplayMirrorFlag = 1024

MBS MacCG Plugin, Plugin Version: 11.1. **Function:** One of the possible flag values.  
**Notes:** Mirror enabled
50.12.11  kCGDisplayMovedFlag = 2

MBS MacCG Plugin, Plugin Version: 11.1. **Function:** One of the possible flag values.  
**Notes:** Display Moved

50.12.12  kCGDisplayRemoveFlag = 32

MBS MacCG Plugin, Plugin Version: 11.1. **Function:** One of the possible flag values.  
**Notes:** Display Removed

50.12.13  kCGDisplaySetMainFlag = 4

MBS MacCG Plugin, Plugin Version: 11.1. **Function:** One of the possible flag values.  
**Notes:** Set Main

50.12.14  kCGDisplaySetModeFlag = 8

MBS MacCG Plugin, Plugin Version: 11.1. **Function:** One of the possible flag values.  
**Notes:** Set Mode

50.12.15  kCGDisplayUnMirrorFlag = 2048

MBS MacCG Plugin, Plugin Version: 11.1. **Function:** One of the possible flag values.  
**Notes:** Mirror disabled
CHAPTER 50. COREGRAPHICS

50.13 class CGDisplayStreamEventMBS

50.13.1 class CGDisplayStreamEventMBS

MBS MacCG Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
CGDisplayStreamEventMBS provides a streaming API for capturing display updates in a realtime manner.

**Notes:**
It can also provide scaling and color space conversion services, as well as allow capturing sub regions of the
display.
Requires OS X 10.8.

50.13.2 Methods

50.13.3 Constructor(DisplayHandle as Integer, outputWidth as Integer, outputHeight as Integer, pixelFormat as Integer = 0, properties as dictionary = nil)

MBS MacCG Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new CGDisplayStream.

**Notes:**
This function creates a new CGDisplayStream that is to be used to get a stream of frame updates from a
particular display.

DisplayHandle: The CGDirectDisplayID to use as the source for generated frames. (Handle from CGDisplayMBS class)
outputWidth: The output width (in pixels, not points) of the frames to be generated. Must not be zero.
outputHeight: The output height (in pixels, not points) of the frames to be generated. Must not be zero.
pixelFormat: The desired CoreVideo/CoreMedia-style pixel format of the output IOSurfaces. If 0 the plugin
will use RGBA.
properties: Any optional properties of the CGDisplayStream.

50.13.4 kCGDisplayStreamColorSpace as String

MBS MacCG Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for the properties dictionary.

**Notes:**
Set the desired CGColorSpace of the output frames.
By default the color space will be that of the display.
50.13.5  kCGDisplayStreamDestinationRect as String

MBS MacCG Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the properties dictionary.

**Notes:**
This may be used to request where within the destination buffer the display updates should be placed. Use CGRectCreateDictionaryRepresentation to convert from a CGRect to the value used here.
Note: The coordinate system for the destination rectangle is always specified in output pixels to match the fact that the output buffer size is also specified in terms of pixels.
Defaults to entire buffer

50.13.6  kCGDisplayStreamMinimumFrameTime as String

MBS MacCG Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the properties dictionary.

**Notes:**
Request that the delta between frame updates be at least as much specified by this value.
Number in seconds, defaults to zero.

50.13.7  kCGDisplayStreamPreserveAspectRatio as String

MBS MacCG Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the properties dictionary.

**Notes:**
Enable/disable the work the Window Server will do to preserve the display aspect ratio. By default the Window Server will assume that it should preserve the original aspect ratio of the source display rect. If the aspect ratio of the source display and the display stream destination rect are not the same, black borders will be inserted at the top/bottom or right/left sides of the destination in order to preserve the source aspect ratio.
Boolean - defaults to true

50.13.8  kCGDisplayStreamQueueDepth as String

MBS MacCG Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the properties dictionary.

**Notes:**
Controls how many frames deep the frame queue will be.
Defaults to 3.
50.13.9 kCGDisplayStreamShowCursor as String

MBS MacCG Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Controls whether the cursor is embedded within the provided buffers or not.

50.13.10 kCGDisplayStreamSourceRect as String

MBS MacCG Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for the properties dictionary.
**Notes:**
This may be used to request a subregion of the display to be provided as the source of the display stream. Use CGRectCreateDictionaryRepresentation to convert from a CGRect to the value used here.
Note: The coordinate system for the source rectangle is specified in display logical coordinates and not in pixels, in order to match the normal convention on HiDPI displays. Defaults to entire display.

50.13.11 kCGDisplayStreamYCbCrMatrix as String

MBS MacCG Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for the properties dictionary.
**Notes:**
When outputting frames in 420v or 420f format, this key may be used to control which YCbCr matrix is used.
The value should be one of the three kCGDisplayStreamYCbCrMatrix values specified below:
kCGDisplayStreamYCbCrMatrix_SMPTE_240M_1995
kCGDisplayStreamYCbCrMatrix_ITU_R_709_2
kCGDisplayStreamYCbCrMatrix_ITU_R_601_4

50.13.12 kCGDisplayStreamYCbCrMatrix_ITU_R_601_4 as String

MBS MacCG Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A possible value for kCGDisplayStreamYCbCrMatrix key.

50.13.13 kCGDisplayStreamYCbCrMatrix_ITU_R_709_2 as String

MBS MacCG Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A possible value for kCGDisplayStreamYCbCrMatrix key.
50.13.14 kCGDisplayStreamYCbCrMatrix_SMPTE_240M_1995 as String

MBS MacCG Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A possible value for kCGDisplayStreamYCbCrMatrix key.

50.13.15 Start

MBS MacCG Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Begin delivering frame updates to the event.

50.13.16 Stop

**Notes:**
After this call returns, the CGDisplayStream callback function will eventually be called with a status of StatusStopped. After that point it is safe to release the object.
It is safe to call this function from within the event, but the previous caveat still applies.

50.13.17 Properties

50.13.18 Handle as Integer

**Notes:** (Read only property)

50.13.19 Lasterror as Integer

MBS MacCG Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The lasterror code.
**Notes:** (Read only property)
50.13.20 Events

50.13.21 FrameAvailable(Status as Integer, displayTime as UInt64, frameSurfaceHandle as Integer, Update as CGDisplayStreamUpdateMBS)

MBS MacCG Plugin, Plugin Version: 16.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** A new frame is available.

**Notes:**
The event used for new frame delivery by CGDisplayStream objects

For each frame that is generated by the WindowServer for a particular display, the user provided event is invoked and provides the user with an IOSurface handle (inside update object), that contains the pixel data for the new frame, as well as a CGDisplayStreamUpdateMBS that contains all of the metadata associated with that IOSurface.

frameSurfaceHandle: The IOSurfaceRef for the current frame. May be zero/nil in some cases. The plugin retains it as part of Update object to keeps it alive.
displayTime: The mach absolute time of when the corresponding frame was to be displayed by the WindowServer
Update: The CGDisplayStreamUpdateMBS for the current frame. will be nil in cases when status is not kCGDisplayStreamFrameStatusFrameComplete.

50.13.22 Constants

50.13.23 StatusFrameBlank = 2

MBS MacCG Plugin, Plugin Version: 16.1. **Function:** One of the frame status constants.

**Notes:** As of displayTime, the display is has gone blank

50.13.24 StatusFrameComplete = 0

MBS MacCG Plugin, Plugin Version: 16.1. **Function:** One of the frame status constants.

**Notes:** A new frame has been generated by the Window Server for a particular display at time displayTime.

50.13.25 StatusFrameIdle = 1

MBS MacCG Plugin, Plugin Version: 16.1. **Function:** One of the frame status constants.

**Notes:** The Window Server did not generate a new frame for displayTime
50.13.26  StatusStopped = 3

MBS MacCG Plugin, Plugin Version: 16.1. **Function:** One of the frame status constants.
**Notes:** The display stream has stopped and no more calls will be made to the handler until the stream is started.
50.14 class CGDisplayStreamUpdateMBS

50.14.1 class CGDisplayStreamUpdateMBS

MBS MacCG Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A single frame’s extra metadata that describes useful frame delta information. **Notes:** A CGDisplayStreamUpdate encapsulates information about what portions of a frame have changed relative to a previously delivered frame. This includes regions that were changed in any way, which ones were actually redrawn, and which regions were merely copied from one place to another.

50.14.2 Methods

50.14.3 getRects(type as Integer) as CGRectMBS()

MBS MacCG Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of CGRectMBS that describe what parts of the frame have changed relative to the previously delivered frame. **Notes:** This rectangle list encapsulates both the update rectangles and movement rectangles.

50.14.4 Properties

50.14.5 CIIImage as Variant

MBS MacCG Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries the IOSurface with frame as CIIImageMBS. **Notes:** Returns CIIImageMBS. (Read only property)

50.14.6 DeltaX as Double

MBS MacCG Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The x component of the movement delta. **Notes:** (Read only property)
50.14.7  DeltaY as Double

MBS MacCG Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The y component of the movement delta.
**Notes:** (Read only property)

50.14.8  DropCount as Integer

MBS MacCG Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Return how many frames (if any) have been dropped since the last call to the event.
**Notes:**
This call is primarily useful for performance measurement to determine if the client is keeping up with all WindowServer updates.
(Read only property)

50.14.9  Handle as Integer

MBS MacCG Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The internal object reference.
**Notes:** (Read only property)

50.14.10  IOSurfaceHandle as Integer

MBS MacCG Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The internal object reference for the IOSurface.
**Notes:** (Read only property)

50.14.11  Constants

50.14.12  UpdateDirtyRects = 2

MBS MacCG Plugin, Plugin Version: 16.1. **Function:** One of the rectangle selector values for getRects function.
**Notes:** The union of both refreshed and moved rects.
50.14.13 UpdateMovedRects = 1

MBS MacCG Plugin, Plugin Version: 16.1. **Function:** One of the rectangle selector values for getRects function.
**Notes:** The rectangles that were simply moved from one part of the display to another

50.14.14 UpdateReducedDirtyRects = 3

MBS MacCG Plugin, Plugin Version: 16.1. **Function:** One of the rectangle selector values for getRects function.
**Notes:** A possibly simplified (but overstated) array of dirty rectangles.

50.14.15 UpdateRefreshedRects = 0

MBS MacCG Plugin, Plugin Version: 16.1. **Function:** One of the rectangle selector values for getRects function.
**Notes:** The rectangles that were refreshed on the display, not counting moved rectangles
50.15. **CLASS CGDISPLAYTRANSFERFORMULAMBS**

50.15 **class CGDisplayTransferFormulaMBS**

50.15.1 **class CGDisplayTransferFormulaMBS**

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a transfer formula.

50.15.2 **Properties**

50.15.3 **BlueGamma as Double**

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The blue gamma value.  
**Notes:** (Read and Write property)

50.15.4 **BlueMax as Double**

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The maximum blue value.  
**Notes:** (Read and Write property)

50.15.5 **BlueMin as Double**

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The minimum blue value.  
**Notes:** (Read and Write property)

50.15.6 **GreenGamma as Double**

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The green gamma value.  
**Notes:** (Read and Write property)

50.15.7 **GreenMax as Double**

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The maximum green value.
50.15.8 **GreenMin as Double**

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The minimum green value. **Notes:** (Read and Write property)

50.15.9 **RedGamma as Double**

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The red gamma value. **Notes:** (Read and Write property)

50.15.10 **RedMax as Double**

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The maximum red value. **Notes:** (Read and Write property)

50.15.11 **RedMin as Double**

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The minimum red value. **Notes:** (Read and Write property)
50.16  class CGFontMBS

50.16.1  class CGFontMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  Function:  
The CoreGraphics class for a font.  
Notes:  
The CGFontRef opaque type encapsulates font information. A font is a set of shapes or glyphs associated  
with a character set. A glyph can represent a single character (such as b), more than one character (such as  
the "" ligature), or a special character such as a space. Quartz retrieves the glyphs for the font from ATS  
(Apple Type Services) and paints the glyphs based on the relevant parameters of the current graphics state.  
Quartz provides a limited, low-level interface for drawing text. For information on text-drawing functions,  
see CGContext Reference. For full Unicode and text-layout support, use the services provided by Core Text  
or ATSUI).

50.16.2  Methods

50.16.3  CreateWithDataProvider(CGDataProvider as Variant) as CGFontMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  Function:  
Creates a font object from data supplied from a data provider.  
Notes:  
Dataprovider must be a CGDataProviderMBS object.  
Returns the font object or nil if the font can’t be created.  
Before drawing text in a Quartz context, you must set the font in the current graphics state by calling the  
function CGContextMBS.SetFontSize.

50.16.4  CreateWithFontName(name as string) as CGFontMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  Function:  
Creates a font object corresponding to the font specified by a PostScript or full name.  
Example:  
dim c as CGFontMBS = CGFontMBS.CreateWithFontName("Courier")  
MsgBox c.FullName  
Notes:
Returns the font object or nil if the font can’t be created.
Before drawing text in a Quartz context, you must set the font in the current graphics state by calling the function CGContextMBS.SetFont.

50.16.5 CreateWithPlatformFont(ATSFontHandle as Integer) as CGFontMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new font reference from an ATSFontRef.
**Notes:**
Create a CGFont using platformFontReference, a handle to a platform-specific font reference. For MacOS X, platformFontReference should be a handle to an ATSFontRef.

50.16.6 Properties

50.16.7 Ascent as Integer

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the ascent of a font.
**Example:**
```plaintext
dim c as CGFontMBS = CGFontMBS.CreateWithFontName("Times")
MsgBox str(c.Ascent)
```
**Notes:**
The ascent is the maximum distance above the baseline of glyphs in a font. The value is specified in glyph space units.
(Read only property)

50.16.8 CapHeight as Integer

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the cap height of a font.
**Example:**
```plaintext
dim c as CGFontMBS = CGFontMBS.CreateWithFontName("Times")
MsgBox str(c.CapHeight)
```
**Notes:**
The cap height is the distance above the baseline of the top of flat capital letters of glyphs in a font. The value is specified in glyph space units.
(Read only property)

## 50.16.9 Descent as Integer


**Example:**

```vbs
dim c as CGFontMBS = CGFontMBS.CreateWithFontName("Times")
MsgBox str(c.Descent)
```

**Notes:**
The descent is the maximum distance below the baseline of glyphs in a font. The value is specified in glyph space units.
(Read only property)

## 50.16.10 FontBBox as CGRectMBS


**Example:**

```vbs
dim c as CGFontMBS = CGFontMBS.CreateWithFontName("Times")
dim r as CGRectMBS = c.FontBBox
MsgBox str(r.Width)+" "+str(r.Height)
```

**Notes:**
The font bounding box is the union of all of the bounding boxes for all the glyphs in a font. The value is specified in glyph space units.
(Read only property)

## 50.16.11 FullName as String

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the full name associated with a font.

**Example:**
dim c as CGFontMBS = CGFontMBS.CreateWithFontName("Courier")
MsgBox c.FullName

**Notes:** (Read only property)

### 50.16.12 Handle as Integer

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The internal object reference.
**Notes:** (Read and Write property)

### 50.16.13 ItalicAngle as Double

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the italic angle of a font.
**Example:**
```vba
dim c as CGFontMBS = CGFontMBS.CreateWithFontName("Times")
MsgBox str(c.ItalicAngle)
```
**Notes:**
The italic angle of the font, measured in degrees counter-clockwise from the vertical.
(Read only property)

### 50.16.14 Leading as Integer

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the leading of a font.
**Example:**
```vba
dim c as CGFontMBS = CGFontMBS.CreateWithFontName("Times")
MsgBox str(c.Leading)
```
**Notes:**
The leading is the spacing between consecutive lines of text in a font. The value is specified in glyph space units.
50.16. **CLASS CGFONTMBS**

(Read only property)

50.16.15  **NumberOfGlyphs as UInt64**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the number of glyphs in a font.

**Example:**
```vba
    dim c as CGFontMBS = CGFontMBS.CreateWithFontName("Times")
    MsgBox str(c.NumberOfGlyphs)
```

**Notes:** (Read only property)

50.16.16  **PostScriptName as String**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Obtains the PostScript name of a font.

**Example:**
```vba
    dim c as CGFontMBS = CGFontMBS.CreateWithFontName("Courier")
    MsgBox c.PostScriptName
```

**Notes:** (Read only property)

50.16.17  **StemV as Double**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the thickness of the dominant vertical stems of glyphs in a font.

**Example:**
```vba
    dim c as CGFontMBS = CGFontMBS.CreateWithFontName("Times")
    MsgBox str(c.StemV)
```

**Notes:**
The thickness of the dominant vertical stems of glyphs in a font.
(Read only property)
50.16.18 UnitsPerEm as Integer

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the number of glyph space units per em for the provided font.

**Example:**
```vbscript
dim c as CGFontMBS = CGFontMBS.CreateWithFontName("Times")
MsgBox str(c.UnitsPerEm)
```

**Notes:**
The number of glyph space units per em for the provided font.
(Read only property)

50.16.19 XHeight as Integer

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the x-height of a font.

**Example:**
```vbscript
dim c as CGFontMBS = CGFontMBS.CreateWithFontName("Times")
MsgBox str(c.XHeight)
```

**Notes:**
The x-height is the distance above the baseline of the top of flat, non-ascending lowercase letters (such as x) of glyphs in a font. The value is specified in glyph space units.
(Read only property)

50.16.20 Constants

50.16.21 kCGFontIndexInvalid = 65535

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** An invalid font index (a value which never represents a valid glyph).

50.16.22 kCGFontIndexMax = 65534

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** The maximum allowed value for font index.
50.16.23  kCGFontPostScriptFormatType1 = 1

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the PostScript font subset formats.
**Notes:** This is documented in Adobe Type 1 Font Format, which is available from http://partners.adobe.com/.

50.16.24  kCGFontPostScriptFormatType3 = 3

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the PostScript font subset formats.
**Notes:** This is documented in PostScript Language Reference, 3rd edition, which is available from http://partners.adobe.com/.

50.16.25  kCGFontPostScriptFormatType42 = 42

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the PostScript font subset formats.
**Notes:** This is documented in Adobe Technical Note 5012, The Type 42 Font Format Specification, which is available from http://partners.adobe.com/.

50.16.26  kCGGlyphMax = 65534

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** The maximum value for a glyph.
50.17 class CGFunctionMBS

50.17.1 class CGFunctionMBS

MBS MacCG Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
CGFunction provides a general facility for defining and using callback functions that take an arbitrary number
of floating-point input values, and pass back an arbitrary number of floating-point output values.

50.17.2 Methods

50.17.3 Create(domainDimension as Integer, domain as memoryblock, rangeDimension as Integer, range as memoryblock)

MBS MacCG Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a Quartz function.

**Notes:**
Parameters

domainDimension: The number of inputs.
domain: An array of (2*domainDimension) floats used to specify the valid intervals of input values. For each k from 0 to (domainDimension - 1), domain [ 2*k ] must be less than or equal to domain [ 2*k+1 ] , and the kth input value will be clipped to lie in the interval domain [ 2*k ] input [ k ] domain [ 2*k+1 ] . If this parameter is nil, then the input values are not clipped.
rangeDimension: The number of outputs.
range: An array of (2*rangeDimension) floats that specifies the valid intervals of output values. For each k from 0 to (rangeDimension - 1), range [ 2*k ] must be less than or equal to range [ 2*k+1 ] , and the kth output value will be clipped to lie in the interval range [ 2*k ] output [ k ] range [ 2*k+1 ] . If this parameter is nil, then the output values are not clipped.

Returns the new Quartz function or nil on any error.

Available in Mac OS X version 10.2 and later.

50.17.4 Properties

50.17.5 Handle as Integer

MBS MacCG Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Handle to the CGFunctionRef.
50.17. CLASS CGFUNCTIONMBS

Notes: (Read and Write property)

50.17.6 Events

50.17.7 Evaluate(Input as memoryblock, Output as memoryblock)

MBS MacCG Plugin, Plugin Version: 6.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Asks the CGFunction to calculate the values. **Notes:** memoryblocks must be big enough.
50.18 class CGGradientMBS

50.18.1 class CGGradientMBS

MBS MacCG Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A gradient defines a smooth transition between colors across an area. **Notes:**

The CGGradientMBS class, and the functions that operate on it, make creating and using radial and axial gradient fills an easy task. A CGGradient object has a color space, two or more colors, and a location for each color. The color space cannot be a pattern or indexed color space, otherwise it can be any Quartz color space (CGColorSpaceMBS).

Colors can be provided as component values (such as red, green, blue) or as Quartz color objects (CGColorMBS). In Quartz, component can vary from 0.0 to 1.0, designating the proportion of the component present in the color.

A location is a normalized value. When it comes time to paint the gradient, Quartz maps the normalized location values to the points in coordinate space that you provide.

If you want more precise control over gradients, or if your application runs in versions of Mac OS X that are earlier than v10.5, see CGShadingMBS.

Requires Mac OS X 10.5.

50.18.2 Methods

50.18.3 CreateWithColorComponents(colorSpace as CGColorSpaceMBS, components() as Double) as CGGradientMBS

MBS MacCG Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a CGGradient object from a color space and the provided color components and locations. **Notes:**

space: The color space to use for the gradient. You cannot use a pattern or indexed color space.

components: The color components for each color that defines the gradient. The components should be in the color space specified by space. If you are unsure of the number of components, you can call the function CGColorSpaceMBS.NumberOfComponents.

The number of items in this array should be the product of count and the number of components in the color space. For example, if the color space is an RGBA color space and you want to use two colors in the gradient (one for a starting location and another for an ending location), then you need to provide 8 values.
in components: red, green, blue, and alpha values for the first color, followed by red, green, blue, and alpha values for the second color.

locations: Optional. The location for each color provided in components. Each location must be a CGFloat value in the range of 0 to 1, inclusive. If 0 and 1 are not in the locations array, Quartz uses the colors provided that are closest to 0 and 1 for those locations.

If locations is not passed, the first color in colors is assigned to location 0, the last color in colors is assigned to location 1, and intervening colors are assigned locations that are at equal intervals in between.

Available in Mac OS X v10.5 and later.

See also:

• 50.18.4 CreateWithColorComponents(colorSpace as CGColorSpaceMBS, components() as Double, locations() as Double) as CGGradientMBS

---

50.18.4  CreateWithColorComponents(colorSpace as CGColorSpaceMBS, components() as Double, locations() as Double) as CGGradientMBS

MBS MacCG Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creates a CGGradient object from a color space and the provided color components and locations.

Example:

// put into paint event of window
dim c as CGContextMBS
if TargetCocoa then
c = GetCurrentCGContextMBS
else
c = window1.CGContextMBS
end if

dim locations() as Double = array(0.0, 0.6, 1.0)
dim components() as Double = array(1.0, 0.0, 0.0, 0.35, 0.0, 1.0, 0.0, 0.2, 0.0, 0.0, 1.0, 0.06) // Start color and End color

dim rgbColorspace as CGColorSpaceMBS = CGColorSpaceMBS.CreateDeviceRGB
dim glossGradient as CGGradientMBS = CGGradientMBS.CreateWithColorComponents(rgbColorspace, components, locations)
dim currentBounds as CGRectMBS = CGMakeRectMBS(0,0,g.Width,g.Height)
dim topCenter as CGPointMBS = CGMakePointMBS(g.width/2, 0.0)
dim midCenter as CGPointMBS = CGMakePointMBS(g.width/2, g.height)
c.SaveGState

// fill white
c.SetRGBFillColor 1.0, 1.0, 1.0, 1.0
c.FillRect currentBounds

// draw gradient
c.AddRect(currentBounds)
c.Clip
c.DrawLinearGradient(glossGradient, topCenter, midCenter, 0)
c.RestoreGState
c.Flush

Notes:

space: The color space to use for the gradient. You cannot use a pattern or indexed color space.
components: The color components for each color that defines the gradient. The components should be in the color space specified by space. If you are unsure of the number of components, you can call the function CGColorSpaceMBS.NumberOfComponents.

The number of items in this array should be the product of count and the number of components in the color space. For example, if the color space is an RGBA color space and you want to use two colors in the gradient (one for a starting location and another for an ending location), then you need to provide 8 values in components: red, green, blue, and alpha values for the first color, followed by red, green, blue, and alpha values for the second color.

locations: Optional. The location for each color provided in components. Each location must be a CGFloat value in the range of 0 to 1, inclusive. If 0 and 1 are not in the locations array, Quartz uses the colors provided that are closest to 0 and 1 for those locations.

If locations is not passed, the first color in colors is assigned to location 0, the last color in colors is assigned to location 1, and intervening colors are assigned locations that are at equal intervals in between.

Available in Mac OS X v10.5 and later.
See also:

- 50.18.3 CreateWithColorComponents(colorSpace as CGColorSpaceMBS, components() as Double) as CGGradientMBS
50.18. CLASS CGGRADIENTMBS

50.18.5 CreateWithColors(colorSpace as CGColorSpaceMBS, colors() as CGColorMBS) as CGGradientMBS

MBS MacCG Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a CGGradient object from a color space and the provided color objects and locations.

**Example:**
```plaintext
// put into window paint event
dim c as CGContextMBS
if TargetCocoa then
c = GetCurrentCGContextMBS
else
c = window1.CGContextMBS
end if

dim colors(-1) as CGColorMBS

colors.Append CGColorMBS.CreateGenericRGB(1.0, 0.0, 0.0, 0.35)
colors.Append CGColorMBS.CreateGenericRGB(0.0, 1.0, 0.0, 0.2)
colors.Append CGColorMBS.CreateGenericRGB(0.0, 0.0, 1.0, 0.06)

dim glossGradient as CGGradientMBS = CGGradientMBS.CreateWithColors(nil, colors)

dim topCenter as CGPointMBS = CGMakePointMBS(g.width/2, 0.0)
dim midCenter as CGPointMBS = CGMakePointMBS(g.width/2, g.height)

// fill white
c.SetRGBFillColor 1.0, 1.0, 1.0, 1.0
c.FillRect CGMakeRectMBS(0,0,g.Width,g.Height)

// gradient
dim currentBounds as CGRectMBS = CGMakeRectMBS(0,0,g.Width,g.Height)
c.SaveGState
c.AddRect(currentBounds)
c.Clip
c.DrawLinearGradient(glossGradient, topCenter, midCenter, 0)
c.RestoreGState
c.Flush
```

**Notes:**
- **space:** The color space to use for the gradient. You cannot use a pattern or indexed color space. Can be nil.
- **colors:** A non-empty array of CGColorMBS objects that should be in the color space specified by space. If space is not nil, each color will be converted (if necessary) to that color space and the gradient will drawn in that color space. Otherwise, each color will be converted to and drawn in the GenericRGB color space.
- **locations:** Optional. The location for each color provided in colors; each location must be a CGFloat value.
in the range of 0 to 1, inclusive. If 0 and 1 are not in the locations array, Quartz uses the colors provided that are closest to 0 and 1 for those locations.

If locations is missing, the first color in colors is assigned to location 0, the last color in colors is assigned to location 1, and intervening colors are assigned locations that are at equal intervals in between. The locations array should contain the same number of items as the colors array.

Available in Mac OS X v10.5 and later.
See also:

- 50.18.6 CreateWithColors(colorSpace as CGColorSpaceMBS, colors() as CGColorMBS, locations() as Double) as CGGradientMBS

50.18.6 CreateWithColors(colorSpace as CGColorSpaceMBS, colors() as CGColorMBS, locations() as Double) as CGGradientMBS

MBS MacCG Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a CGGradient object from a color space and the provided color objects and locations.

**Example:**

```plaintext
// put into window paint event
dim c as CGContextMBS
if TargetCocoa then
c = GetCurrentCGContextMBS
else
c = window1.CGContextMBS
end if

dim locations() as Double = array(0.0, 0.8, 1.0)

dim colors(-1) as CGColorMBS

colors.Append CGColorMBS.CreateGenericRGB(1.0, 0.0, 0.0, 0.35)
colors.Append CGColorMBS.CreateGenericRGB(0.0, 1.0, 0.0, 0.2)
colors.Append CGColorMBS.CreateGenericRGB(0.0, 0.0, 1.0, 0.06)

dim glossGradient as CGGradientMBS = CGGradientMBS.CreateWithColors(nil, colors, locations)

dim topCenter as CGPointMBS = CGMakePointMBS(g.width/2, 0.0)
dim midCenter as CGPointMBS = CGMakePointMBS(g.width/2, g.height)

// fill white
c.SetRGBFillColor 1.0, 1.0, 1.0, 1.0
c.FillRect CGMakeRectMBS(0,0,g.Width,g.Height)

// gradient
```
dim currentBounds as CGRectMBS = CGMakeRectMBS(0,0,g.Width,g.Height)
c.SaveGState
c.AddRect(currentBounds)
c.Clip
c.DrawLinearGradient(glossGradient, topCenter, midCenter, 0)
c.RestoreGState

c.Flush

Notes:

space: The color space to use for the gradient. You cannot use a pattern or indexed color space. Can be nil.
colors: A non-empty array of CGColorMBS objects that should be in the color space specified by space. If space is not nil, each color will be converted (if necessary) to that color space and the gradient will be drawn in that color space. Otherwise, each color will be converted to and drawn in the GenericRGB color space.
locations: Optional. The location for each color provided in colors; each location must be a CGFloat value in the range of 0 to 1, inclusive. If 0 and 1 are not in the locations array, Quartz uses the colors provided that are closest to 0 and 1 for those locations.

If locations is missing, the first color in colors is assigned to location 0, the last color in colors is assigned to location 1, and intervening colors are assigned locations that are at equal intervals in between. The locations array should contain the same number of items as the colors array.

Available in Mac OS X v10.5 and later.
See also:

• 50.18.5 CreateWithColors(colorSpace as CGColorSpaceMBS, colors() as CGColorMBS) as CGGradientMBS

50.18.7 Properties

50.18.8 Handle as Integer

Notes: (Read and Write property)
50.18.9 Constants

50.18.10 kCGGradientDrawsAfterEndLocation = 2

Notes:
The fill should extend beyond the ending location. The color that extends beyond the ending point is the solid color defined by the CGGradient object to be at location 1.
Available in Mac OS X v10.5 and later.

50.18.11 kCGGradientDrawsBeforeStartLocation = 1

Notes:
The fill should extend beyond the starting location. The color that extends beyond the starting point is the solid color defined by the CGGradient object to be at location 0.
Available in Mac OS X v10.5 and later.
50.19. class CGImageDestinationMBS

50.19.1 class CGImageDestinationMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class to write CGImages.

**Example:**
```vba
dim logo as Picture = LogoMBS(500)
dim image as CGImageMBS = CGCreateImageMBS(logo)

dim dic as new Dictionary

// 10%
dic.Value(CGImageDestinationMBS.kCGImageDestinationLossyCompressionQuality)=0.1

// 100%
dic.Value(CGImageDestinationMBS.kCGImageDestinationLossyCompressionQuality)=1.0

dim file as FolderItem = SpecialFolder.Desktop.Child("logo.jpg")
dim d as new CGImageDestinationMBS(file, "public.jpeg", 1)

d.AddImage(image, dic)

if d.Finalize then
    MsgBox "Saved"
else
    MsgBox "Failed to save."
end if
```

**Notes:**
CGImageDestination objects, available in Mac OS X v10.4 or later, abstract the data-writing task. An image destination can represent a single image or multiple images. It can contain thumbnail images as well as properties for each image.

The functions described in this reference can write data to three kinds of destinations: a file, an URL and a string. After creating a CGImageDestination object for the appropriate destination, you can add image data and set image properties. When you are finished adding data, call the function Finalize to write the image data and properties.
50.19.3 AddImage(image as CGImageMBS, properties as dictionary=nil)

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Adds an image to an image destination.

**Example:**

```dim` inputfile as FolderItem = SpecialFolder.Desktop.Child("test.jpg")

// reading the picture
dim `c as new CGImageSourceMBS(inputfile)
dim `img as CGImageMBS = c.CreateImageAtIndex(0)
dim `propertiesGlobal as Dictionary = c.Properties
dim `propertiesImage as Dictionary = c.PropertiesAtIndex(0)

dim `outputFile as FolderItem = SpecialFolder.Desktop.Child("output.jpg")
dim `d as new CGImageDestinationMBS(outputFile, "public.jpeg", 1)

// writing the picture and include metadata
d.SetProperties(propertiesGlobal)
d.AddImage(img, propertiesImage)
if d.FinalizeMT then
  outputFile.Launch
else
  MsgBox "Failed to write jpeg."
end if
```

**Notes:**

- **image:** The image to add.
- **properties:** An optional dictionary that specifies the properties of the added image.

For properties you can use those in the CGImageSourceMBS class, kCGImageDestinationLossyCompressionQuality and kCGImageDestinationBackgroundColor.

The function logs an error if you add more images than what you specified when you created the image destination.
Available in Mac OS X version 10.4 and later.
50.19.4  AddImageCF(image as CGImageMBS, properties as Variant = nil)

MBS MacCG Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Adds an image to an image destination.

**Notes:**
- image: The image to add.
- properties: An optional dictionary or CFDictionaryMBS that specifies the properties of the added image.

For properties you can use those in the CGImageSourceMBS class, kCGImageDestinationLossyCompressionQuality and kCGImageDestinationBackgroundColor.

The function logs an error if you add more images than what you specified when you created the image destination.
Available in Mac OS X version 10.4 and later.

50.19.5  AddImageFromSource(source as CGImageSourceMBS, index as Integer, options as dictionary = nil)

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Adds an image from an image source to an image destination.

**Notes:**
- source: An image source.
- index: An index that specifies the location of the image in the image source. The index is zero-based.
- properties: A dictionary that specifies properties to overwrite or add to the source image properties.

Available in Mac OS X version 10.4 and later.

50.19.6  AddImageFromSourceCF(source as CGImageSourceMBS, index as Integer, options as Variant = nil)

MBS MacCG Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Adds an image from an image source to an image destination.

**Notes:**
- source: An image source.
- index: An index that specifies the location of the image in the image source. The index is zero-based.
- properties: A dictionary or CFDictionaryMBS that specifies properties to overwrite or add to the source image properties.

Available in Mac OS X version 10.4 and later.
50.19.7 Constructor(file as folderitem, type as string, count as Integer = 1)

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an image destination that writes to a location specified by a folderitem.

**Notes:**

- file: The file to write to. If the file already exists, the data at this location is overwritten.

- type: The UTI (uniform type identifier) of the resulting image file. See Uniform Type Identifiers Overview for a list of system-declared and third-party UTIs.

- count: The number of images (not including thumbnail images) that the image file will contain.

On success the handle value is not zero.

Available in Mac OS X version 10.4 and later. See also:

- 50.19.8 Constructor(type as string, count as Integer = 1)
- 50.19.9 Constructor(url as string, type as string, count as Integer = 1)

50.19.8 Constructor(type as string, count as Integer = 1)

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an image destination that writes to a string.

**Notes:**

- type: The uniform type identifier (UTI) of the resulting image file. See Uniform Type Identifiers Overview for a list of system-declared and third-party UTIs.

- count: The number of images (not including thumbnail images) that the image file will contain.

On success the handle is not zero.

Available in Mac OS X version 10.4 and later. See also:

- 50.19.7 Constructor(file as folderitem, type as string, count as Integer = 1)
- 50.19.9 Constructor(url as string, type as string, count as Integer = 1)
50.19.9 Constructor(url as string, type as string, count as Integer = 1)

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Creates an image destination that writes to a location specified by a URL.

**Notes:**

url: The URL to write to. If the URL already exists, the data at this location is overwritten.

type: The UTI (uniform type identifier) of the resulting image file. See Uniform Type Identifiers Overview for a list of system-declared and third-party UTIs.

count: The number of images (not including thumbnail images) that the image file will contain.

On success the handle value is not zero.

Available in Mac OS X version 10.4 and later.

See also:

- 50.19.7 Constructor(file as folderitem, type as string, count as Integer = 1)
- 50.19.8 Constructor(type as string, count as Integer = 1)

50.19.10 CreateWithData(type as string, count as Integer = 1) as CGImageDestinationMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Creates an image destination that writes to a string.

**Notes:**

type: The uniform type identifier (UTI) of the resulting image file. See Uniform Type Identifiers Overview for a list of system-declared and third-party UTIs.

count: The number of images (not including thumbnail images) that the image file will contain.

On error the function returns nil.

Available in Mac OS X version 10.4 and later.
### 50.19.11 CreateWithFile(file as folderitem, type as string, count as Integer = 1) as CGImageDestinationMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an image destination that writes to a location specified by a folderitem.  
**Notes:**  
file: The file to write to. If the file already exists, the data at this location is overwritten.  

type: The UTI (uniform type identifier) of the resulting image file. See Uniform Type Identifiers Overview for a list of system-declared and third-party UTIs.  

count: The number of images (not including thumbnail images) that the image file will contain.  

On failure the function returns nil.  

Available in Mac OS X version 10.4 and later.

### 50.19.12 CreateWithURL(url as string, type as string, count as Integer = 1) as CGImageDestinationMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an image destination that writes to a location specified by a URL.  
**Notes:**  
url: The URL to write to. If the URL already exists, the data at this location is overwritten.  

type: The UTI (uniform type identifier) of the resulting image file. See Uniform Type Identifiers Overview for a list of system-declared and third-party UTIs.  

count: The number of images (not including thumbnail images) that the image file will contain.  

On error nil is returned.  

Available in Mac OS X version 10.4 and later.
50.19.13 Data as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Makes a copy of the data.
**Notes:** The data is collected and after you called Finalize you can pick the data here.

50.19.14 Finalize as boolean

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Writes image data and properties to the data or URL associated with the image destination.
**Example:**
```vbscript
dim logo as Picture = LogoMBS(500)
dim image as CGImageMBS = CGCreateImageMBS(logo)

dim file as FolderItem = SpecialFolder.Desktop.Child("logo.png")
dim d as new CGImageDestinationMBS(file, "public.png", 1)

d.AddImage(image, nil)

if d.Finalize then
    MsgBox "Saved"
else
    MsgBox "Failed to save."
end if
```

**Notes:**
Returns true if the image is successfully written; false otherwise.
You must call this function or the output of the image destination will not be valid. After calling this function, no additional data can be added to the image destination.
Available in Mac OS X version 10.4 and later.

50.19.15 FinalizeMT as boolean

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Writes image data and properties to the data or URL associated with the image destination.
**Notes:**
Returns true if the image is successfully written; false otherwise.
You must call this function or the output of the image destination will not be valid. After calling this function, no additional data can be added to the image destination.

Available in Mac OS X version 10.4 and later.
Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.

**50.19.16 kCGImageDestinationBackgroundColor as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the constant for the image destination properties.

**Notes:**
The desired background color to composite against when writing an image that has an alpha component to a destination format that does not support alpha. If present, the value associated with this key must be a CGColorRef data type without an alpha component of its own. If not present, and if a background color is needed, a white color is used.

Available in Mac OS X v10.4 and later.

**50.19.17 kCGImageDestinationDateTime as string**

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Updates the DateTime parameters of the image metadata. Only values present in the original image will updated. If present, the value should be a String or a Date. If String, the value must be in Exif Date-Time or ISO 8601 DateTime format. This option is mutually exclusive with kCGImageDestinationMetadata.

**50.19.18 kCGImageDestinationLossyCompressionQuality as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the constant for the image destination properties.

**Notes:**
The desired compression quality to use when writing to an image destination. If present, the value associated with this key must be a double in the range 0.0 to 1.0. A value of 1.0 specifies to use lossless compression if destination format supports it. A value of 0.0 implies to use maximum compression.

Available in Mac OS X v10.4 and later.
50.19.19 kCGImageDestinationMergeMetadata as string

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function**: One of the constant for the image destination properties. **Example**:

```vbnet
// Change rotation in an image file

// files
dim dpath as folderitem = SpecialFolder.Desktop.Child("test.jpg")
dim opath as folderitem = dpath.parent.Child("output.jpg")

// open source
dim imageSource as new cgimagesourcembs(dpath)

// read image
dim img as cgimagembs = imageSource.createimageatindex(0)

// global properties
dim globalprop as dictionary = imageSource.properties

// per image properties
dim p as Dictionary = imageSource.PropertiesAtIndex(0)

dim imageDest as new CGImageDestinationMBS(opath,"public.jpeg",1)

'const orientation = 1 // top left
const orientation = 3 // bottom right

// set globals
imageDest.SetProperties(globalprop)

// now set new orientation
p.value(imageDest.kCGImageDestinationOrientation) = orientation
p.value(imageDest.kCGImageDestinationMergeMetadata) = true

// change tiff dictionary, if present
dim dTIFF as Dictionary = p.lookup(imageSource.kCGImagePropertyTIFFDictionary, nil)
if dTIFF <>nil then
dTIFF.value(imageSource.kCGImagePropertyTIFFOrientation) = orientation
end if

// change iptc dictionary, if present
dim dIPTC as Dictionary = p.lookup(imageSource.kCGImagePropertyIPTCDictionary, nil)
if dIPTC <>nil then
dIPTC.value(imageSource.kCGImagePropertyIPTCImageOrientation) = orientation
```
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end if

// write out image
imageDest.AddImage(img,p)
call imageDest.Finalize

Notes: If true, The metadata will be copied from the source and merged with the tags specified in kCGImageDestinationMetadata. If a tag does not exist in the source, it will be added. If the tag exists in the source, it will be updated. A metadata tag can be removed by setting the tag's value to nil. If present, the value of this key is a Boolean. The default is False.

50.19.20 kCGImageDestinationMetadata as string

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: One of the constant for the image destination properties. Notes: Set the metadata tags for the image destination. If present, the value of this key is a CGImageMetadata. By default, all EXIF, IPTC, and XMP tags will be replaced. Use kCGImageDestinationMergeMetadata to merge the tags with the existing tags in the image source.

50.19.21 kCGImageDestinationOrientation as string

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: One of the constant for the image destination properties. Example:

// Change rotation in an image file

// files
dim dpath as folderitem = SpecialFolder.Desktop.Child("test.jpg")
dim opath as folderitem = dpath.parent.Child("output.jpg")

// open source
dim imageSource as new cgimagesourcembs(dpath)

// read image
dim img as cgimagembs = imageSource.createimageatindex(0)

// global properties
dim globalprop as dictionary = imageSource.properties
// per image properties
dim p as Dictionary = imageSource.PropertiesAtIndex(0)

dim imageDest as new CGImageDestinationMBS(opath,"public.jpeg",1)
const orientation = 1 // top left
const orientation = 3 // bottom right

// set globals
imageDest.SetProperties(globalprop)

// now set new orientation
p.value(imageDest.kCGImageDestinationOrientation) = orientation
p.value(imageDest.kCGImageDestinationMergeMetadata) = true

// change tiff dictionary, if present
dim dTIFF as Dictionary = p.lookup(imageSource.kCGImagePropertyTIFFDictionary, nil)
if dTIFF <> nil then
dTIFF.value(imageSource.kCGImagePropertyTIFFOrientation) = orientation
end if

// change iptc dictionary, if present
dim dIPTC as Dictionary = p.lookup(imageSource.kCGImagePropertyIPTCDictionary, nil)
if dIPTC <> nil then
dIPTC.value(imageSource.kCGImagePropertyIPTCImageOrientation) = orientation
end if

// write out image
imageDest.AddImage(img, p)
call imageDest.Finalize

Notes: Updates the orientation in the image metadata. The image data itself will not be rotated. If present, the value should be a Integer from 1 to 8. This option is mutually exclusive with kCGImageDestination-Metadata.

50.19.22 kCGImageMetadataShouldExcludeXMP as string

Notes: XMP data will not be written to the destination. If used in conjunction with kCGImageDestinationMetadata, EXIF and/or IPTC tags will be preserved, but an XMP packet will not be written to the file. If present, the value for this key is a Boolean. The default is False.
50.19.23  SetProperties(options as dictionary = nil)

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Applies one or more properties to all images in an image destination.

**Example:**

```vba
dim inputFile as FolderItem = SpecialFolder.Desktop.Child("test.jpg")

// reading the picture
dim c as new CGImageSourceMBS(inputFile)
dim img as CGImageMBS = c.CreateImageAtIndex(0)
dim propertiesGlobal as Dictionary = c.Properties
dim propertiesImage as Dictionary = c.PropertiesAtIndex(0)

dim outputFile as FolderItem = SpecialFolder.Desktop.Child("output.jpg")
dim d as new CGImageDestinationMBS(outputFile, "public.jpeg", 1)

// writing the picture and include metadata
d.SetProperties(propertiesGlobal)
d.AddImage(img, propertiesImage)
if d.FinalizeMT then
    outputFile.Launch
else
    MsgBox "Failed to write jpeg."
end if
```

**Notes:** Available in Mac OS X version 10.4 and later.

50.19.24  SetPropertiesCF(options as Variant)

MBS MacCG Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Applies one or more properties to all images in an image destination.

**Notes:**

Available in Mac OS X version 10.4 and later.
Options can be a Dictionary or CFDictionaryMBS.

50.19.25  TypeIdentifiers as string()

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of the uniform type identifiers (UTIs) that are supported for image destinations.

**Example:**
50.19. CLASS CGIMAGEDESTINATIONMBS

```vbs
        dim s(-1) as string = CGImageDestinationMBS.TypeIdentifiers
        MsgBox Join(s,EndOfLine)
        // shows on Mac OS X 10.5:
        //
        // public.png
        // public.jpeg
        // com.compuserve.gif
        // public.jpeg-2000
        // public.tiff
        // com.adobe.photoshop-image
        // com.adobe.pdf
        // com.microsoft.bmp
        // com.apple.pict
        // com.truevision.tga-image
        // com.sgi.sgi-image
        // com.ilm.openexr-image
```

**Notes:**

Returns an array of the UTIs that are supported for image destinations. See Uniform Type Identifiers Overview for a list of system-declared and third-party UTIs that can be returned.

Available in Mac OS X version 10.4 and later.

50.19.26 Properties

50.19.27 Handle as Integer

**MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:**
The internal reference.

**Notes:** (Read and Write property)
50.20 class CGImageMBS

50.20.1 class CGImageMBS

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class for a core graphics image.

**Notes:**
If the release property is true, the destructor of this class will release the image reference.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

50.20.2 Methods

50.20.3 Constructor

MBS MacCG Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The private constructor.

50.20.4 Copy as CGImageMBS

MBS MacCG Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a copy of a bitmap image.

See also:

- 50.20.5 Copy(r as CGRectMBS) as CGImageMBS

50.20.5 Copy(r as CGRectMBS) as CGImageMBS

MBS MacCG Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a copy of a bitmap image.

See also:

- 50.20.4 Copy as CGImageMBS

50.20.6 CopyWithColorSpace(profile as CGColorSpaceMBS) as CGImageMBS

MBS MacCG Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a copy of the image with the new Colorspace included.

**Example:**

```javascript
// load a picture
dim f as FolderItem = SpecialFolder.Desktop.Child("ColorSpin.jpg")
```
50.20. CLASS CGIMAGEMBS

```vbscript
50.20. CLASS CGIMAGEMBS

```dim pic as Picture = picture.Open(f)
```// open printer
dim g as Graphics = OpenPrinterDialog
if g = nil then Return
```// draw
g.DrawPicture pic, 0, 0
```
```// now load again
dim ImageSource as new CGImageSourceMBS(f)
dim img as CGImageMBS = ImageSource.CreateImageAtIndex(0)
dim cs as CGColorSpaceMBS = CGColorSpaceMBS.CreateDeviceRGB
```
```// copy with replacing colorspace
img = img.CopyWithColorSpace(cs)
```
```// and draw
dim c as CGContextMBS = CGContextMBS.contextWithCGContext(g.Handle(g.HandleTypeCGContextRef))
dim r as CGRectMBS = CGMakeRectMBS(0, 0, img.Width, img.Height)
c.DrawPicture(img, r)
c.Flush
```

Notes:

profile must be a CGColorSpaceMBS.
Requires Mac OS X 10.3.

50.20.7 CopyWithMask(mask as CGImageMBS) as CGImageMBS

MBS MacCG Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
creates a bitmap image from an existing image and an image mask.

Notes:

Parameters:

self: The image to apply the mask parameter to. This image must not be an image mask and may not have an image mask or masking color associated with it.

mask: A mask. If the mask is an image, it must be in the DeviceGray color space, must not have an alpha component, and may not itself be masked by an image mask or a masking color. If the mask is not the same size as the image specified by the image parameter, then Quartz scales the mask to fit the image.
Return Value: An image created by masking image with mask. You are responsible for releasing this object by calling CGImageRelease.

The resulting image depends on whether the mask parameter is an image mask or an image. If the mask parameter is an image mask, then the source samples of the image mask act as an inverse alpha value. That is, if the value of a source sample in the image mask is \( S \), then the corresponding region in image is blended with the destination using an alpha value of \((1-S)\). For example, if \( S \) is 1, then the region is not painted, while if \( S \) is 0, the region is fully painted.

If the mask parameter is an image, then it serves as an alpha mask for blending the image onto the destination. The source samples of mask' act as an alpha value. If the value of the source sample in mask is \( S \), then the corresponding region in image is blended with the destination with an alpha of \( S \). For example, if \( S \) is 0, then the region is not painted, while if \( S \) is 1, the region is fully painted.

### 50.20.8 CreateImage(pic as picture) as CGImageMBS

MBS MacCG Plugin, Plugin Version: 13.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new CGImageMBS from the given images.

**Example:**

```plaintext
dim c as CGImageMBS
dim pic, mask as Picture
// get picture and mask

c = CGImageMBS.CreateImage(pic)
if c<>Nil then
  // go on
end if
```

**Notes:** If the image has a mask, it is used.

See also:

- 50.20.9 CreateImage(pic as picture, mask as picture) as CGImageMBS

### 50.20.9 CreateImage(pic as picture, mask as picture) as CGImageMBS

MBS MacCG Plugin, Plugin Version: 13.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new CGImageMBS from the given images.

**Example:**

```plaintext
50.20. CLASS CGIMAGEMBS

dim c as CGImageMBS
dim pic, mask as Picture
// get picture and mask

c = CGImageMBS.CreateImage(pic, mask)
if c<>Nil then
  // go on
end if

Notes:
The mask is taken from the second image.
With 11.3 plugins we are deprecating to pass a mask. The plugin prefers to simply take the mask or alpha channel of the picture itself.
See also:

• 50.20.8 CreateImage(pic as picture) as CGImageMBS

50.20.10 CreateImageFromJPEGDataProvider(dataprovider as Variant, decode as memoryblock, shouldInterpolate as boolean, intent as Integer) as CGImageMBS

MBS MacCG Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new CGImage with JPEG data.
**Example:**

// Shows moon.jpg from the desktop folder
// shows in the window title if i,p or u is nil.

Sub Mainwindow.Paint(g As Graphics)
dim f as FolderItem
dim p as CGDataProviderMBS
dim i as CGImageMBS

f=SpecialFolder.Desktop.Child("moon.jpg")
p=CGDataProviderMBS.CreateWithFile(f)
if p=nil then
  Title="p=nil"
else
  i = CGImageMBS.CreateImageFromJPEGDataProvider(p,nil,true,0)
  if i=nil then
    Title="i=nil"
  else
    window1.CGContextMBS.DrawPicture i,CGMakeRectMBS(0,0,i.Width,i.Height)
  end if
end if
Notes:
Parameters:

dataprovider:
A reference to a data provider supplying JPEG-encoded data.

decode:
Pass the decode array for the image. In the decode array, for each color component in the source color space, you provide a pair of values denoting the upper and lower limits of a range. For example, the decode array for a source image in the RGB color space would contain six entries total, consisting of one pair each for red, green, and blue. When the image is rendered, Quartz uses a linear transform to map the original component value into a relative number within your designated range that is appropriate for the destination color space. If you do not want to allow remapping of the image’s color values, pass nil for the decode array. The memoryblock for the array needs to be filled with double values.

shouldInterpolate:
Pass true if interpolation should occur; otherwise, pass false . The interpolation setting specifies whether Quartz should apply a pixel-smoothing algorithm to the image. If you pass false , the image may appear jagged or pixelated when drawn on an output device with higher resolution than the image data.

intent:
Pass a CGColorRenderingIntent value specifying how Quartz should display colors in the image that are not located within the current color space of the graphics context. The rendering intent determines the exact method used to map colors from one color space to another.

50.20.11 CreateImageFromPNGDataProvider(dataprovider as Variant, decode as memoryblock, shouldInterpolate as boolean, intent as Integer) as CGImageMBS

MBS MacCG Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Creates a new CGImage with PNG data.
Notes:
Parameters:

dataprovider:
A reference to a data provider supplying JPEG-encoded data.
decode:
Pass the decode array for the image. In the decode array, for each color component in the source color space, you provide a pair of values denoting the upper and lower limits of a range. For example, the decode array for a source image in the RGB color space would contain six entries total, consisting of one pair each for red, green, and blue. When the image is rendered, Quartz uses a linear transform to map the original component value into a relative number within your designated range that is appropriate for the destination color space. If you do not want to allow remapping of the image’s color values, pass nil for the decode array. The memoryblock for the array needs to be filled with double values.

shouldInterpolate:
Pass true if interpolation should occur; otherwise, pass false. The interpolation setting specifies whether Quartz should apply a pixel-smoothing algorithm to the image. If you pass false, the image may appear jagged or pixelated when drawn on an output device with higher resolution than the image data.

intent:
Pass a CGColorRenderingIntent value specifying how Quartz should display colors in the image that are not located within the current color space of the graphics context. The rendering intent determines the exact method used to map colors from one color space to another.

50.20.12 CreateImageWithFile(file as folderitem) as CGImageMBS
Notes: Returns nil on any error.

50.20.13 CreateImageWithHandle(handle as Integer) as CGImageMBS
Notes: Internally the CGImageMBS retains this reference and releases it in destructor.

50.20.14 DataProvider as Variant
Notes: Value is a CGDataProviderMBS object.
Returns nil on any error.
50.20.15DecodeArray as memoryblock

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The decode array used for the image.
**Notes:**
A memoryblock with an array of double variables.
Returns nil on any error.

50.20.16JPEGData(Compression as Integer = 90) as MemoryBlock

MBS MacCG Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns image compressed as JPEG file.
**Notes:**
Compression defines the compression level from 0 to 100.
Returns nil on any error.

50.20.17Picture(ColorSpace as CGColorSpaceMBS = nil) as Picture

MBS MacCG Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a copy of the CGImage as a picture.
**Example:**
```vbnet
// get CGImage
dim f as FolderItem = SpecialFolder.Desktop.Child("bild.jpg")
dim c as CGImageMBS = CGImageMBS.CreateInstanceWithFile(f)
// get picture
dim p as Picture = c.Picture
// save as jpeg
dim d as FolderItem = SpecialFolder.Desktop.Child("output.jpg")
p.Save(d, p.SaveAsJPEG, 80)
```

**Notes:**
Colorspace: the optional CoreGraphcis Colorspace to use for the bitmap conversion (CGColorSpaceMBS class).
Returns nil on any error.
50.20.18 PictureScaled(OutputWidth as Integer, OutputHeight as Integer, ColorSpace as CGColorSpaceMBS = nil) as Picture

MBS MacCG Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy of the CGImage as a picture scaled.

**Example:**

```plaintext
// get CGImage
dim f as FolderItem = SpecialFolder.Desktop.Child("bild.jpg")
dim c as CGImageMBS = CGImageMBS.CreateImageWithFile(f)

// get picture
dim p as Picture = c.PictureScaled(640,480)

// save as jpeg
dim d as FolderItem = SpecialFolder.Desktop.Child("output.jpg")
p.Save(d, p.SaveAsJPEG, 80)
```

**Notes:**

Colorsace: the optional CoreGraphcis Colorspace to use for the bitmap conversion (CGColorSpaceMBS class).

Returns nil on any error.

If output width and height are zero, we use the image sizes.

50.20.19 PNGData as MemoryBlock


**Notes:** Returns nil on any error.

50.20.20 ReleaseHandle


**Notes:**

Each retain must have a release. Too many releases and your app will crash, too many retains and it will leak memory.

Use only if you really know what you are doing.
50.20.21  RetainHandle


**Notes:**
Each retain must have a release. Too many releases and your app will crash, too many retains and it will leak memory. Use only if you really know what you are doing.

50.20.22  Properties

50.20.23  AlphaInfo as Integer

MBS MacCG Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the alpha channel information for a bitmap image.

**Notes:**
A CGImageAlphaInfo constant that specifies (1) whether the bitmap contains an alpha channel, (2) where the alpha bits are located in the image data, and (3) whether the alpha value is premultiplied. For possible values, see Constants. The function returns kCGImageAlphaNone if the image parameter refers to an image mask.
(Read only property)

50.20.24  BitmapInfo as Integer

MBS MacCG Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the bitmap information for a bitmap image.

**Notes:**
This function returns a constant that specifies:

The type of bitmap data floating point or integer. You use the constant kCGBitmapFloatComponents to extract this information.

Whether an alpha channel is in the data, and if so, how the alpha data is stored. You use the constant kCGBitmapAlphaInfoMask to extract the alpha information. Alpha information is specified as one of the constants listed in Alpha Information for Images.
(Read only property)
50.20.25 BitsPerComponent as Integer

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the number of bits/component of the image.
**Notes:** (Read only property)

50.20.26 BitsPerPixel as Integer

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the number of bits/pixel of image.
**Notes:** (Read only property)

50.20.27 BytesPerRow as Integer

MBS MacCG Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the number of bytes allocated for a double row of a bitmap image.
**Notes:** (Read only property)

50.20.28 ColorSpace as CGColorSpaceMBS

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The color space used for the image.
**Example:**
```plaintext
// get a picture file
dim file as FolderItem = SpecialFolder.Desktop.Child("sylwia.jpg")
// get image source
dim source as new CGImageSourceMBS(file)
// read image
dim image as CGImageMBS = source.CreateImageAtIndex(0)
// get Color space from image
dim profile as CGColorSpaceMBS = image.ColorSpace
// get ICC profile data
dim ICCProfile as string = profile.ICCProfile
// and parse it with LCMS and show name
dim LCMSProfile as LCMS2ProfileMBS = LCMS2ProfileMBS.OpenProfileFromString(ICCProfile)
MsgBox LCMSProfile.Name
```
**Notes:**
Value is a CGColorSpaceMBS.
Returns nil on any error.
(Read only property)

**50.20.29 handle as Integer**

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The handle for this image.
**Notes:**
Handle is a CGImageRef.
(Read and Write property)

**50.20.30 height as Integer**

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the image’s height.
**Notes:**
Returns 0 on error.
(Read only property)

**50.20.31 ImageIsMask as boolean**

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns true if the image is an image mask, false otherwise.
**Notes:** (Read only property)

**50.20.32 RenderingIntent as Integer**

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the rendering intent of the image.
**Notes:**
Constants:

- kCGRenderingIntentDefault 0
- kCGRenderingIntentAbsoluteColorimetric 1
- kCGRenderingIntentRelativeColorimetric 2
- kCGRenderingIntentPerceptual 3
- kCGRenderingIntentSaturation 4
50.20.33 RetainCount as Integer

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the retain count of the CGImageRef.
**Notes:**
This is useful for debugging.
The retain count is for the CGImageRef, not the CGImageMBS object.
(Read only property)

50.20.34 ShouldInterpolate as boolean

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the interpolation parameter of image.
**Notes:**
True if the image should use interpolation.
(Read only property)

50.20.35 width as Integer

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the image's width.
**Notes:**
Returns 0 on error.
(Read only property)

50.20.36 Constants

50.20.37 kCGBitmapAlphaInfoMask = & h1F

MBS MacCG Plugin, Plugin Version: 15.3. **Function:** One of the bitmap info values.
**Notes:** The alpha information mask. Use this to extract alpha information that specifies whether a bitmap contains an alpha channel and how the alpha channel is generated.
50.20.38  kCGBitmapByteOrder16Big = 12288
MBS MacCG Plugin, Plugin Version: 15.3. **Function:** One of the bitmap info values. **Notes:** 16-bit, big endian format.

50.20.39  kCGBitmapByteOrder16Little = 4096
MBS MacCG Plugin, Plugin Version: 15.3. **Function:** One of the bitmap info values. **Notes:** 16-bit, little endian format.

50.20.40  kCGBitmapByteOrder32Big = 16384
MBS MacCG Plugin, Plugin Version: 15.3. **Function:** One of the bitmap info values. **Notes:** 32-bit, big endian format.

50.20.41  kCGBitmapByteOrder32Little = 8192
MBS MacCG Plugin, Plugin Version: 15.3. **Function:** One of the bitmap info values. **Notes:** 32-bit, little endian format.

50.20.42  kCGBitmapByteOrderDefault = 0
MBS MacCG Plugin, Plugin Version: 15.3. **Function:** One of the bitmap info values. **Notes:** The default byte order.

50.20.43  kCGBitmapByteOrderMask = & h7000
MBS MacCG Plugin, Plugin Version: 15.3. **Function:** One of the bitmap info values. **Notes:** The byte ordering of pixel formats.

50.20.44  kCGBitmapFloatComponents = 256
MBS MacCG Plugin, Plugin Version: 15.3. **Function:** One of the bitmap info values. **Notes:** The components of a bitmap are floating-point values.
50.20. CLASS CGIMAGEMBS

50.20.45 kCGImageAlphaFirst = 4

MBS MacCG Plugin, Plugin Version: 15.3. **Function:** One of the alpha info values. 
**Notes:** The alpha component is stored in the most significant bits of each pixel. For example, non-premultiplied ARGB.

50.20.46 kCGImageAlphaLast = 3

MBS MacCG Plugin, Plugin Version: 15.3. **Function:** One of the alpha info values. 
**Notes:** The alpha component is stored in the least significant bits of each pixel. For example, non-premultiplied RGBA.

50.20.47 kCGImageAlphaNone = 0

MBS MacCG Plugin, Plugin Version: 15.3. **Function:** One of the alpha info values. 
**Notes:** There is no alpha channel. If the total size of the pixel is greater than the space required for the number of color components in the color space, the least significant bits are ignored. This value is equivalent to kCGImageAlphaNoneSkipLast.

50.20.48 kCGImageAlphaNoneSkipFirst = 6

MBS MacCG Plugin, Plugin Version: 15.3. **Function:** One of the alpha info values. 
**Notes:** There is no alpha channel. If the total size of the pixel is greater than the space required for the number of color components in the color space, the most significant bits are ignored.

50.20.49 kCGImageAlphaNoneSkipLast = 5

MBS MacCG Plugin, Plugin Version: 15.3. **Function:** One of the alpha info values. 
**Notes:** There is no alpha channel. If the total size of the pixel is greater than the space required for the number of color components in the color space, the least significant bits are ignored. This value is equivalent to kCGImageAlphaNone.

50.20.50 kCGImageAlphaOnly = 7

MBS MacCG Plugin, Plugin Version: 15.3. **Function:** One of the alpha info values. 
**Notes:** There is no color data, only an alpha channel.
50.20.51  kCGImageAlphaPremultipliedFirst = 2

MBS MacCG Plugin, Plugin Version: 15.3. **Function:** One of the alpha info values.  
**Notes:** The alpha component is stored in the most significant bits of each pixel and the color components have already been multiplied by this alpha value. For example, premultiplied ARGB.

50.20.52  kCGImageAlphaPremultipliedLast = 1

MBS MacCG Plugin, Plugin Version: 15.3. **Function:** One of the alpha info values.  
**Notes:** The alpha component is stored in the least significant bits of each pixel and the color components have already been multiplied by this alpha value. For example, premultiplied RGBA.
50.21. CLASS CGIMAGESOURCEMBS

50.21. class CGImageSourceMBS

50.21.1. class CGImageSourceMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The CoreGraphics class for image loading.  
**Example:**
```
    dim file as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
    dim c as new CGImageSourceMBS(file)
    dim img as CGImageMBS = c.CreateImageAtIndex(0)
```

Backdrop=img.Picture

**Notes:**
CGImageSource objects, available in Mac OS X v10.4 or later, abstract the data-reading task. An image source can read image data from a URL, a file or a string.

After creating a CGImageSource object for the appropriate source, you can obtain images, thumbnails, image properties, and other image information using CGImageSource functions.

50.21.2. Methods

50.21.3. Constructor(data as string, options as dictionary = nil)

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an image source that reads from a string.  
**Notes:**
data: The data string to read from.  
options: A dictionary that specifies additional creation options. For example kCGImageSourceTypeIdentifierHint.

On success the handle value is not zero.  
Available in Mac OS X version 10.4 and later.  
See also:

- 50.21.4 Constructor(file as folderitem, options as dictionary = nil)
- 50.21.5 Constructor(options as dictionary = nil)
50.21.4 Constructor(file as folderitem, options as dictionary = nil)

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates an image source that reads from a location specified by a file.

**Notes:**

- **url:** The URL to read from.

- **options:** A dictionary that specifies additional creation options. For example kCGImageSourceTypeIdenti-
  fierHint.

On success the handle value is not zero.

Available in Mac OS X version 10.4 and later.

See also:

- 50.21.3 Constructor(data as string, options as dictionary = nil) 8147
- 50.21.5 Constructor(options as dictionary = nil) 8148

50.21.5 Constructor(options as dictionary = nil)

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Create an incremental image source.

**Notes:**

- **options:** A dictionary that specifies additional creation options. For example kCGImageSourceTypeIdenti-
  fierHint.

Returns an image source object.

The constructor creates an empty image source container to which you can add data later by calling the
function UpdateData. You don’t provide data when you call this function.

An incremental image is an image that is created in chunks, similar to the way large images viewed over the
web are loaded piece by piece.

Available in Mac OS X version 10.4 and later.

See also:

- 50.21.3 Constructor(data as string, options as dictionary = nil) 8147
- 50.21.4 Constructor(file as folderitem, options as dictionary = nil) 8148
50.21.6 CreateImageAtIndex(index as Integer, options as dictionary = nil) as CGImageMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a CGImage object for the image data associated with the specified index in an image source. **Example:**

```
dim file as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim c as new CGImageSourceMBS(file)
dim img as CGImageMBS = c.CreateImageAtIndex(0)
```

Backdrop=img.Picture

**Notes:**

- **index:** The index that specifies the location of the image. The index is zero-based.
- **options:** A dictionary that specifies additional creation options.

Returns a CGImage object.

Available in Mac OS X version 10.4 and later.

50.21.7 CreateIncremental(options as dictionary=nil) as CGImageSourceMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create an incremental image source. **Notes:**

- **options:** A dictionary that specifies additional creation options. For example kCGImageSourceTypeIdentifierHint.

The function CreateIncremental creates an empty image source container to which you can add data later by calling the function UpdateData. You don’t provide data when you call this function.

An incremental image is an image that is created in chunks, similar to the way large images viewed over the web are loaded piece by piece.

Available in Mac OS X version 10.4 and later.
50.21.8  CreateThumbnailAtIndex(index as Integer, options as dictionary = nil) as CGImageMBS


Example:

```
dim file as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim c as new CGImageSourceMBS(file)

dim d as new Dictionary
  d.Value(c.kCGImageSourceThumbnailMaxPixelSize)=200
  d.Value(c.kCGImageSourceCreateThumbnailFromImageIfAbsent)=true

dim img as CGImageMBS = c.CreateThumbnailAtIndex(0,d)
```

Backdrop=img.Picture

Notes:

index: The index that specifies the location of the image. The index is zero-based.

options: A dictionary that specifies additional creation options.

Returns a CGImageMBS.

If the image source is a PDF, this function creates a 72 dpi image of the PDF page specified by the index that you pass. You must, however, pass an options dictionary that contains either the kCGImageSourceCreateThumbnailFromImageIfAbsent or kCGImageSourceCreateThumbnailFromImageAlways keys, with the value of the key set to TRUE.

Available in Mac OS X version 10.4 and later.

50.21.9  CreateWithData(data as string, options as dictionary=nil) as CGImageSourceMBS


Notes:

data: The data string to read from.

options: A dictionary that specifies additional creation options. For example kCGImageSourceTypeIdentifierHint.
50.21.10 CreateWithFile(file as folderitem, options as dictionary=nil) as CGImageSourceMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an image source that reads from a location specified by a file. **Example:**

```plaintext
// get a picture file
dim file as FolderItem = SpecialFolder.Desktop.Child(”sylwia.jpg”)  
// get image source
dim source as new CGImageSourceMBS(file)  
// read image
dim image as CGImageMBS = source.CreateImageAtIndex(0)  
// get Color space from image
dim profile as CGColorSpaceMBS = image.ColorSpace  
// get ICC profile data
dim ICCProfile as string = profile.ICCProfile  
// and parse it with LCMS and show name
dim LCMSProfile as LCMS2ProfileMBS = LCMS2ProfileMBS.OpenProfileFromString(ICCProfile)  
MsgBox LCMSProfile.Name
```

**Notes:**

- url: The URL to read from.
- options: A dictionary that specifies additional creation options. For example kCGImageSourceTypeIdentifierHint.

Returns an image source.

Available in Mac OS X version 10.4 and later.
50.21.11 CreateWithURL(url as string, options as dictionary=nil) as CGImageSourceMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an image source that reads from a location specified by a URL.

**Notes:**

url: The URL to read from.

options: A dictionary that specifies additional creation options. For example kCGImageSourceTypeIdentifierHint.

On success the handle value is not zero.

Available in Mac OS X version 10.4 and later.

---

50.21.12 kCGImageProperty8BIMDictionary as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the properties dictionary.

**Notes:** A dictionary of key-value pairs for an Adobe Photoshop image.

---

50.21.13 kCGImageProperty8BIMLayerNames as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the properties dictionary.

**Notes:** The layer names for an Adobe Photoshop file.

---

50.21.14 kCGImagePropertyCIFFCameraSerialNumber as string


**Notes:** The camera serial number.

---

50.21.15 kCGImagePropertyCIFFContinuousDrive as string

Notes: The continuous drive mode.

50.21.16 kCGImagePropertyCIFFDescription as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses Camera Image File Format (CIFF). **Notes:** The camera description.

50.21.17 kCGImagePropertyCIFFDictionary as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the properties dictionary. **Notes:** A dictionary of key-value pairs for an image that uses Camera Image File Format (CIFF).

Available in Mac OS X v10.5 and later.

50.21.18 kCGImagePropertyCIFFFirmware as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses Camera Image File Format (CIFF). **Notes:** The firmware version.

50.21.19 kCGImagePropertyCIFFFlashExposureComp as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses Camera Image File Format (CIFF). **Notes:** The flash exposure compensation.

50.21.20 kCGImagePropertyCIFFFocusMode as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses Camera Image File Format (CIFF). **Notes:** The focus mode.
50.21.21 kCGImagePropertyCIFFImageFileName as string


50.21.22 kCGImagePropertyCIFFImageName as string


50.21.23 kCGImagePropertyCIFFImageSerialNumber as string


50.21.24 kCGImagePropertyCIFFLensMaxMM as string


50.21.25 kCGImagePropertyCIFFLensMinMM as string


50.21.26 kCGImagePropertyCIFFLensModel as string

50.21.27  
*kCGImagePropertyCIFFMeasuredEV* as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that uses Camera Image File Format (CIFF).
**Notes:** The measured EV.

50.21.28  
*kCGImagePropertyCIFFMeteringMode* as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that uses Camera Image File Format (CIFF).
**Notes:** The metering mode.

50.21.29  
*kCGImagePropertyCIFFOwnerName* as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that uses Camera Image File Format (CIFF).
**Notes:** The owner name.

50.21.30  
*kCGImagePropertyCIFFRecordID* as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that uses Camera Image File Format (CIFF).
**Notes:** The record ID

50.21.31  
*kCGImagePropertyCIFFReleaseMethod* as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that uses Camera Image File Format (CIFF).
**Notes:** The release method.

50.21.32  
*kCGImagePropertyCIFFReleaseTiming* as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that uses Camera Image File Format (CIFF).
**Notes:** The release timing.
50.21.33 kCGImagePropertyCIFFSelfTimingTime as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that uses Camera Image File Format (CIFF).
**Notes:** The self timing time.

50.21.34 kCGImagePropertyCIFFShootingMode as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that uses Camera Image File Format (CIFF).
**Notes:** The shooting mode.

50.21.35 kCGImagePropertyCIFFWhiteBalanceIndex as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that uses Camera Image File Format (CIFF).
**Notes:** The white balance index.

50.21.36 kCGImagePropertyColorModel as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for the properties dictionary.
**Notes:**
The color model of the image such as, "RGB", "CMYK", "Gray", or "Lab". The value of this key is CFStringRef.

A color model describes how color values are represented mathematically. A color space is a color model combined with a definition of how to interpret values within the model.

50.21.37 kCGImagePropertyColorModelCMYK as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Values for the color model property.
**Notes:** A CMYK color model.
50.21.38  kCGImagePropertyColorModelGray as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Values for the color model property. **Notes:** A Gray color model.

50.21.39  kCGImagePropertyColorModelLab as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Values for the color model property. **Notes:** A Lab color model.

50.21.40  kCGImagePropertyColorModelRGB as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Values for the color model property. **Notes:** An RGB color model.

50.21.41  kCGImagePropertyDepth as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the properties dictionary. **Notes:** The number of bits in each color sample of each pixel. If present, this key is a CFNumber value.

50.21.42  kCGImagePropertyDNGBackwardVersion as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses the Digital Negative (DNG) archival format. **Notes:** The oldest version for which a file is compatible.

50.21.43  kCGImagePropertyDNGCameraSerialNumber as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses the DNG archival format. **Notes:** The camera serial number.
50.21.44 kCGImagePropertyDNGDictionary as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
One of the keys for the properties dictionary.
Notes: A dictionary of key-value pairs for an image that uses the Digital Negative (DNG) archival format.

50.21.45 kCGImagePropertyDNGLensInfo as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Keys for an image that uses the Digital Negative (DNG) archival format.
Notes: Information about the lens used for the image.

50.21.46 kCGImagePropertyDNGLocalizedCameraModel as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Keys for an image that uses the Digital Negative (DNG) archival format.
Notes: The localized camera model name.

50.21.47 kCGImagePropertyDNGUniqueCameraModel as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Keys for an image that uses the Digital Negative (DNG) archival format.
Notes: A unique, nonlocalized name for the camera mode.

50.21.48 kCGImagePropertyDNGVersion as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Keys for an image that uses the Digital Negative (DNG) archival format.
Notes: An encoding of the four-tier version number.

50.21.49 kCGImagePropertyDPIHeight as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
One of the keys for the properties dictionary.
Notes: The resolution, in dots per inch, in the x dimension. If present, this key is a CFNumber value.
50.21.50  kCGImagePropertyDPIWidth as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the properties dictionary. **Notes:** The resolution, in dots per inch, in the y dimension. If present, this key is a CFNumber value.

50.21.51  kCGImagePropertyExifApertureValue as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** The aperture value.

50.21.52  kCGImagePropertyExifAuxDictionary as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the properties dictionary. **Notes:** An auxiliary dictionary of key-value pairs for an image that uses Exchangeable Image File Format (EXIF).

50.21.53  kCGImagePropertyExifAuxFirmware as string


50.21.54  kCGImagePropertyExifAuxFlashCompensation as string


50.21.55  kCGImagePropertyExifAuxImageNumber as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the Exif Auxiliary dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** The image number.
**50.21.56 kCGImagePropertyExifAuxLensID as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the Exif Auxiliary dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** The lens ID.

**50.21.57 kCGImagePropertyExifAuxLensInfo as string**


**50.21.58 kCGImagePropertyExifAuxLensModel as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the Exif Auxiliary dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** The lens model.

**50.21.59 kCGImagePropertyExifAuxLensSerialNumber as string**


**50.21.60 kCGImagePropertyExifAuxOwnerName as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the Exif Auxiliary dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** The owner name.

**50.21.61 kCGImagePropertyExifAuxSerialNumber as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the Exif Auxiliary dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** The serial number.
50.21.62  kCGImagePropertyExifBrightnessValue as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** The brightness value.

50.21.63  kCGImagePropertyExifCFAPattern as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** The color filter array (CFA) pattern, which is the geometric pattern of the image sensor for a 1-chip color sensor area.

50.21.64  kCGImagePropertyExifColorSpace as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** The color space.

50.21.65  kCGImagePropertyExifComponentsConfiguration as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** The components configuration. For compressed data, specifies that the channels of each component are arranged in increasing numeric order (from first component to the fourth).

50.21.66  kCGImagePropertyExifCompressedBitsPerPixel as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** The compressed bits per pixel.

50.21.67  kCGImagePropertyExifContrast as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** The contrast applied to the image.
50.21.68  kCGImagePropertyExifCustomRendered as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** Special rendering performed on the image data.

50.21.69  kCGImagePropertyExifDateTimeDigitized as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** The digitized date and time.

50.21.70  kCGImagePropertyExifDateTimeOriginal as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** The original date and time.

50.21.71  kCGImagePropertyExifDeviceSettingDescription as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** For a particular camera mode, indicates the conditions for taking the picture.

50.21.72  kCGImagePropertyExifDictionary as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the properties dictionary. **Notes:** A dictionary of key-value pairs for an image that uses Exchangeable Image File Format (EXIF).

50.21.73  kCGImagePropertyExifDigitalZoomRatio as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** The digital zoom ratio.
50.21.74  kCGImagePropertyExifExposureBiasValue as string


50.21.75  kCGImagePropertyExifExposureIndex as string


50.21.76  kCGImagePropertyExifExposureMode as string


50.21.77  kCGImagePropertyExifExposureProgram as string


50.21.78  kCGImagePropertyExifExposureTime as string


50.21.79  kCGImagePropertyExifExifFileSource as string

50.21.80  kCGImagePropertyExifFlash as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** The flash status when the image was shot.

50.21.81  kCGImagePropertyExifFlashEnergy as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** The strobe energy when the image was captures, in beam candle power seconds.

50.21.82  kCGImagePropertyExifFlashPixVersion as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** The FlashPix version supported by an FPXR file. FlashPix is a format for multi-resolution, tiled images, that facilitates fast onscreen viewing.

50.21.83  kCGImagePropertyExifFNumber as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** The F number.

50.21.84  kCGImagePropertyExifFocalLength as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** The focal length.

50.21.85  kCGImagePropertyExifFocalLenIn35mmFilm as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** The equivalent focal length in 35 mm film.
50.21. **CLASS CGIMAGESOURCEMBS**

50.21.86  *kCGImagePropertyExifFocalPlaneResolutionUnit as string*

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** The unit of measurement for the focal plane x and y tags.

50.21.87  *kCGImagePropertyExifFocalPlaneXResolution as string*

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** The number of image-width pixels (x) per focal plane resolution unit.

50.21.88  *kCGImagePropertyExifFocalPlaneYResolution as string*

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** The number of image-height pixels (y) per focal plane resolution unit.

50.21.89  *kCGImagePropertyExifGainControl as string*

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** The gain adjustment applied to the image.

50.21.90  *kCGImagePropertyExifGamma as string*

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** The gamma setting.

50.21.91  *kCGImagePropertyExifImageUniqueID as string*

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** The unique ID of the image.
50.21.92 kCGImagePropertyExifISOSpeedRatings as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** ISO speed ratings.

50.21.93 kCGImagePropertyExifLightSource as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** The light source.

50.21.94 kCGImagePropertyExifMakerNote as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** A maker note.

50.21.95 kCGImagePropertyExifMaxApertureValue as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** The maximum aperture value.

50.21.96 kCGImagePropertyExifMeteringMode as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** The metering mode.

50.21.97 kCGImagePropertyExifOECF as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF). **Notes:** The opto-electrical conversion function (OECF), which defines the relationship between the optical input of the camera and the image values.
50.21.98  kCGImagePropertyExifPixelXDimension as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF).
**Notes:** The pixel x dimension.

50.21.99  kCGImagePropertyExifPixelYDimension as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF).
**Notes:** The pixel y dimension.

50.21.100  kCGImagePropertyExifRelatedSoundFile as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF).
**Notes:** A related sound file.

50.21.101  kCGImagePropertyExifSaturation as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF).
**Notes:** The saturation applied to the image.

50.21.102  kCGImagePropertyExifSceneCaptureType as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF).
**Notes:** The scene capture type (standard, landscape, portrait, night).
50.21.103  kCGImagePropertyExifSceneType as string

**Notes:** The scene type.

50.21.104  kCGImagePropertyExifSensingMethod as string

**Notes:** The sensor type of the camera or input device.

50.21.105  kCGImagePropertyExifSharpness as string

**Notes:** The sharpness applied to the image.

50.21.106  kCGImagePropertyExifShutterSpeedValue as string

**Notes:** The shutter speed value.

50.21.107  kCGImagePropertyExifSpatialFrequencyResponse as string

**Notes:** The spatial frequency table and spatial frequency response values in the direction of image width, image height, and diagonal directions. See ISO 12233.

50.21.108  kCGImagePropertyExifSpectralSensitivity as string

**Notes:** The spectral sensitivity of each channel.
50.21. **CLASS CGIMAGESOURCEMBS**

50.21.109  **kCGImagePropertyExifSubjectArea as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF).
**Notes:** The subject area.

50.21.110  **kCGImagePropertyExifSubjectDistance as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF).
**Notes:** The distance to the subject, in meters.

50.21.111  **kCGImagePropertyExifSubjectDistRange as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF).
**Notes:** The subject distance range.

50.21.112  **kCGImagePropertyExifSubjectLocation as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF).
**Notes:** The location of the scene’s primary subject.

50.21.113  **kCGImagePropertyExifSubsecTime as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF).
**Notes:** The fraction of seconds for the date and time tag.

50.21.114  **kCGImagePropertyExifSubsecTimeDigitized as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF).
**Notes:** The fraction of seconds for the digitized time tag.
50.21.115 kCGImagePropertyExifSubsecTimeOriginal as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF).
**Notes:** The fraction of seconds for the original date and time tag.

50.21.116 kCGImagePropertyExifUserComment as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF).
**Notes:** A user comment.

50.21.117 kCGImagePropertyExifVersion as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF).
**Notes:** The version.

50.21.118 kCGImagePropertyExifWhiteBalance as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for the (EXIF) dictionary for an image that uses Exchangeable Image File Format (EXIF).
**Notes:** The white balance mode.

50.21.119 kCGImagePropertyFileSize as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for the properties dictionary.
**Notes:**
The size of the image file in bytes, if known. If present, this key is a CFNumber value.
Available in Mac OS X v10.4 and later.

This key is used in the image source properties.
50.21.  CLASS CGIMAGESOURCEMBS

50.21.120  kCGImagePropertyGIFDelayTime as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that uses Graphics Interchange Format (GIF).
**Notes:** The delay time.

50.21.121  kCGImagePropertyGIFDictionary as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for the properties dictionary.
**Notes:** A dictionary of key-value pairs for an image that uses Graphics Interchange Format (GIF).

50.21.122  kCGImagePropertyGIFHasGlobalColorMap as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that uses Graphics Interchange Format (GIF).
**Notes:** Whether or not the GIF has a global color map.

50.21.123  kCGImagePropertyGIFImageColorMap as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that uses Graphics Interchange Format (GIF).
**Notes:** The image color map.

50.21.124  kCGImagePropertyGIFLoopCount as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that uses Graphics Interchange Format (GIF).
**Notes:** The loop count.

50.21.125  kCGImagePropertyGIFUnclampedDelayTime as string

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
One of the key names for the properties.
**Notes:**
The unclamped delay time.
Available in OS X v10.7 and later.
50.21.126  kCGImagePropertyGPSAltitude as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that has Global Positioning System (GPS) information.
**Notes:** The altitude.

50.21.127  kCGImagePropertyGPSAltitudeRef as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that has Global Positioning System (GPS) information.
**Notes:** The reference altitude.

50.21.128  kCGImagePropertyGPSAreaInformation as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that has Global Positioning System (GPS) information.
**Notes:** The name of the GPS area.

50.21.129  kCGImagePropertyGPSDateStamp as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that has Global Positioning System (GPS) information.
**Notes:** The data and time information relative to Coordinated Universal Time (UTC).

50.21.130  kCGImagePropertyGPSDestBearing as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that has Global Positioning System (GPS) information.
**Notes:** The bearing to the destination point.

50.21.131  kCGImagePropertyGPSDestBearingRef as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that has Global Positioning System (GPS) information.
Notes: The reference for giving the bearing to the destination point.

50.21.132  kCGImagePropertyGPSDestDistance as string


50.21.133  kCGImagePropertyGPSDestDistanceRef as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Keys for an image that has Global Positioning System (GPS) information. Notes: The units for expressing the distance to the destination point.

50.21.134  kCGImagePropertyGPSDestLatitude as string


50.21.135  kCGImagePropertyGPSDestLatitudeRef as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Keys for an image that has Global Positioning System (GPS) information. Notes: Whether the latitude of the destination point is northern or southern.

50.21.136  kCGImagePropertyGPSDestLongitude as string


50.21.137  kCGImagePropertyGPSDestLongitudeRef as string

Notes: Whether the longitude of the destination point is east or west.

50.21.138  kCGImagePropertyGPSDictionary as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for the properties dictionary.
**Notes:** A dictionary of key-value pairs for an image that has Global Positioning System (GPS) information.

50.21.139  kCGImagePropertyGPSDifferential as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that has Global Positioning System (GPS) information.
**Notes:** Whether differential correction is applied to the GPS receiver.

50.21.140  kCGImagePropertyGPSDOP as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that has Global Positioning System (GPS) information.
**Notes:** The data degree of precision (DOP).

50.21.141  kCGImagePropertyGPSImgDirection as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that has Global Positioning System (GPS) information.
**Notes:** The direction of the image.

50.21.142  kCGImagePropertyGPSImgDirectionRef as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that has Global Positioning System (GPS) information.
**Notes:** The reference for the direction of the image.

50.21.143  kCGImagePropertyGPSLatitude as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that has Global Positioning System (GPS) information.
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Notes: The latitude.

50.21.144 **kCGImagePropertyGPSLatitudeRef as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that has Global Positioning System (GPS) information. **Notes:** Whether the latitude is northern or southern.

50.21.145 **kCGImagePropertyGPSLongitude as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that has Global Positioning System (GPS) information. **Notes:** The longitude.

50.21.146 **kCGImagePropertyGPSLongitudeRef as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that has Global Positioning System (GPS) information. **Notes:** Whether the longitude is east or west.

50.21.147 **kCGImagePropertyGPSMapDatum as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that has Global Positioning System (GPS) information. **Notes:** The geodetic survey data used by the GPS receiver.

50.21.148 **kCGImagePropertyGPSMeasureMode as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that has Global Positioning System (GPS) information. **Notes:** The measurement mode.

50.21.149 **kCGImagePropertyGPSProcessingMethod as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that has Global Positioning System (GPS) information.
Notes: The name of the method used for finding a location.

50.21.150 kCGImagePropertyGPSSatellites as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Keys for an image that has Global Positioning System (GPS) information.
Notes: The satellites used for GPS measurements.

50.21.151 kCGImagePropertyGPSSpeed as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Keys for an image that has Global Positioning System (GPS) information.
Notes: The GPS receiver speed of movement.

50.21.152 kCGImagePropertyGPSSpeedRef as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Keys for an image that has Global Positioning System (GPS) information.
Notes: The unit for expressing the GPS receiver speed of movement.

50.21.153 kCGImagePropertyGPSStatus as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Keys for an image that has Global Positioning System (GPS) information.
Notes: The status of the GPS receiver.

50.21.154 kCGImagePropertyGPSTimeStamp as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Keys for an image that has Global Positioning System (GPS) information.
Notes: The time as UTC (Coordinated Universal Time).

50.21.155 kCGImagePropertyGPSTrack as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Keys for an image that has Global Positioning System (GPS) information.
50.21. **CLASS CGIMAGESOURCEMBS**

**Notes:** The direction of GPS receiver movement.

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### 50.21.156 kCGImagePropertyGPSTrackRef as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that has Global Positioning System (GPS) information. **Notes:** The reference for the direction of GPS receiver movement.

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### 50.21.157 kCGImagePropertyGPSVersion as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that has Global Positioning System (GPS) information. **Notes:** The version.

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### 50.21.158 kCGImagePropertyHasAlpha as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the properties dictionary. **Notes:** Whether or not the image has an alpha channel. The value of this key is kCFBooleanTrue if the image contains an alpha channel.

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### 50.21.159 kCGImagePropertyIPTCAActionAdvised as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata. **Notes:** The advised action.

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### 50.21.160 kCGImagePropertyIPTCBByline as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata. **Notes:** The byline.
50.21.161  kCGImagePropertyIPTCBylIneTitle as string


50.21.162  kCGImagePropertyIPTCCaptionAbstract as string


50.21.163  kCGImagePropertyIPTCCategory as string


50.21.164  kCGImagePropertyIPTCCity as string


50.21.165  kCGImagePropertyIPTCCContact as string


50.21.166  kCGImagePropertyIPTCCContactInfoAddress as string

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: One of the key names for the properties. Notes: The address portion of the contact information. Available in OS X v10.6 and later.
50.21.167 kCGImagePropertyIPTCContactInfoCity as string

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the key names for the properties. **Notes:** The city portion of the contact information. Available in OS X v10.6 and later.

50.21.168 kCGImagePropertyIPTCContactInfoCountry as string

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the key names for the properties. **Notes:** The country portion of the contact information. Available in OS X v10.6 and later.

50.21.169 kCGImagePropertyIPTCContactInfoEmails as string

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the key names for the properties. **Notes:** Email addresses for the contact. Available in OS X v10.6 and later.

50.21.170 kCGImagePropertyIPTCContactInfoPhones as string

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the key names for the properties. **Notes:** Phone numbers for the contact. Available in OS X v10.6 and later.
50.21.171 kCGImagePropertyIPTCContactInfoPostalCode as string

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the key names for the properties.  
**Notes:**  
The postal code portion of the contact information.  
Available in OS X v10.6 and later.

50.21.172 kCGImagePropertyIPTCContactInfoStateProvince as string

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the key names for the properties.  
**Notes:**  
The state or province for the contact.  
Available in OS X v10.6 and later.

50.21.173 kCGImagePropertyIPTCContactInfoWebURLs as string

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the key names for the properties.  
**Notes:**  
Web addresses for the contact.  
Available in OS X v10.6 and later.

50.21.174 kCGImagePropertyIPTCContentLocationCode as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata.  
**Notes:** The content location code.

50.21.175 kCGImagePropertyIPTCContentLocationName as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata.  
**Notes:** The content location name.
50.21. **kCGImagePropertyIPTCCopyrightNotice as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata. **Notes:** The copyright notice.

50.21. **kCGImagePropertyIPTCCountryPrimaryLocationCode as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata. **Notes:** The country primary location code.

50.21. **kCGImagePropertyIPTCCountryPrimaryLocationName as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata. **Notes:** The country primary location name.

50.21. **kCGImagePropertyIPTCCreatorContactInfo as string**

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the key names for the properties. **Notes:** The creator’s contact info. See "IPTC Creator Contact Info Dictionary Keys." Available in OS X v10.6 and later.

50.21. **kCGImagePropertyIPTCCredit as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata. **Notes:** Credit information.

50.21. **kCGImagePropertyIPTCDateCreated as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata. **Notes:**
50.21.182 kCGImagePropertyIPTCDictionary as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for the properties dictionary.

**Example:**

```vbnet
// Change rotation in an image file

// files
dim dpath as folderitem = SpecialFolder.Desktop.Child("test.jpg")
dim opath as folderitem = dpath.parent.Child("output.jpg")

// open source
dim imageSource as new cgimagesourcembs(dpath)

// read image
dim img as cgimagembs = imageSource.createimageatindex(0)

// global properties
dim globalprop as dictionary = imageSource.properties

// per image properties
dim p as Dictionary = imageSource.PropertiesAtIndex(0)

dim imageDest as new CGImageDestinationMBS(opath, "public.jpeg", 1)

const orientation = 1 // top left
const orientation = 3 // bottom right

// set globals
imageDest.SetProperties(globalprop)

// now set new orientation
p.value(imageDest.kCGImageDestinationOrientation) = orientation
p.value(imageDest.kCGImageDestinationMergeMetadata) = true

// change tiff dictionary, if present
dim dTIFF as Dictionary = p.lookup(imageSource.kCGImagePropertyTIFFDictionary, nil)
if dTIFF <> nil then
dTIFF.value(imageSource.kCGImagePropertyTIFFOrientation) = orientation
end if

// change iptc dictionary, if present
dim dIPTC as Dictionary = p.lookup(imageSource.kCGImagePropertyIPTCDictionary, nil)
if dIPTC <> nil then
```
diPTC.value(imageSource.kCGImagePropertyIPTCImageOrientation) = orientation
end if

// write out image
imageDest.AddImage(img,p)
call imageDest.Finalize

Notes:
A dictionary of key-value pairs for an image that uses International Press Telecommunications Council (IPTC) metadata.

IPTC constants are metadata elements of the Information Interchange Model (IIM) used to provide information about images. The IIM was developed by the Newspaper Association of America (NAA) and the International Press Telecommunications Council (IPTC).

50.21.183 kCGImagePropertyIPTCDigitalCreationDate as string
MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata. **Notes:** The digital creation date.

50.21.184 kCGImagePropertyIPTCDigitalCreationTime as string
MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata. **Notes:** The digital creation time.

50.21.185 kCGImagePropertyIPTCEditorialUpdate as string
MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata. **Notes:** An editorial update.

50.21.186 kCGImagePropertyIPTCEditStatus as string
MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata.
50.21.187 kCGImagePropertyIPTCExpirationDate as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that uses International Press Telecommunications Council (IPTC) metadata.
**Notes:** The expiration date.

50.21.188 kCGImagePropertyIPTCExpirationTime as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that uses International Press Telecommunications Council (IPTC) metadata.
**Notes:** The expiration time.

50.21.189 kCGImagePropertyIPTCFixtureIdentifier as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that uses International Press Telecommunications Council (IPTC) metadata.
**Notes:** A fixture identifier.

50.21.190 kCGImagePropertyIPTCHeadline as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that uses International Press Telecommunications Council (IPTC) metadata.
**Notes:** The headline.

50.21.191 kCGImagePropertyIPTCImageOrientation as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that uses International Press Telecommunications Council (IPTC) metadata.
**Notes:** The image orientation.

50.21.192 kCGImagePropertyIPTCImageType as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that uses International Press Telecommunications Council (IPTC) metadata.
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Notes: The image type.

50.21.193 kCGImagePropertyIPTCKeywords as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata. **Notes:** Keywords

50.21.194 kCGImagePropertyIPTCLanguageIdentifier as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata. **Notes:** The language identifier.

50.21.195 kCGImagePropertyIPTCOBJECTAttributeReference as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata. **Notes:** The object attribute.

50.21.196 kCGImagePropertyIPTCOBJECTCycle as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata. **Notes:** The object cycle.

50.21.197 kCGImagePropertyIPTCOBJECTName as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata. **Notes:** The object name.

50.21.198 kCGImagePropertyIPTCOBJECTTypeReference as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata.
50.21.199  

**kCGImagePropertyIPTCOriginalTransmissionReference as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata. **Notes:** The original transmission reference.

50.21.200  

**kCGImagePropertyIPTCOriginatingProgram as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata. **Notes:** The originating program.

50.21.201  

**kCGImagePropertyIPTCProgramVersion as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata. **Notes:** The program version.

50.21.202  

**kCGImagePropertyIPTCProvinceState as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata. **Notes:** The province or state.

50.21.203  

**kCGImagePropertyIPTCReferenceDate as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata. **Notes:** The reference date.

50.21.204  

**kCGImagePropertyIPTCReferenceNumber as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata.
50.21.205 kCGImagePropertyIPTCReferenceService as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata. **Notes:** The reference service.

50.21.206 kCGImagePropertyIPTCReleaseDate as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata. **Notes:** The release date.

50.21.207 kCGImagePropertyIPTCReleaseTime as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata. **Notes:** The release time.

50.21.208 kCGImagePropertyIPTCRightsUsageTerms as string

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the key names for the properties. **Notes:** The usage rights for the image. Available in OS X v10.6 and later.

50.21.209 kCGImagePropertyIPTCScene as string

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the key names for the properties. **Notes:** The scene codes for the image: a scene code is a six-digit string. Available in OS X v10.6 and later.
50.21.210  
**kCGImagePropertyIPTCSource as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata. 
**Notes:** The source.

50.21.211  
**kCGImagePropertyIPTCSpecialInstructions as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata. 
**Notes:** Special instructions.

50.21.212  
**kCGImagePropertyIPTCStarRating as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata. 
**Notes:** The star rating.

50.21.213  
**kCGImagePropertyIPTCSubjectReference as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata. 
**Notes:** The subject.

50.21.214  
**kCGImagePropertyIPTCSubLocation as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata. 
**Notes:** The sublocation.

50.21.215  
**kCGImagePropertyIPTCSupplementalCategory as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses International Press Telecommunications Council (IPTC) metadata. 
**Notes:** A supplemental category.
50.21.216  kCGImagePropertyIPTCTimeCreated as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that uses International Press Telecommunications Council (IPTC) metadata.
**Notes:** The time created.

50.21.217  kCGImagePropertyIPTCUrgency as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that uses International Press Telecommunications Council (IPTC) metadata.
**Notes:** The urgency level.

50.21.218  kCGImagePropertyIPTCWriterEditor as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that uses International Press Telecommunications Council (IPTC) metadata.
**Notes:** The writer or editor.

50.21.219  kCGImagePropertyIsFloat as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for the properties dictionary.
**Notes:** Whether or not the image contains floating-point pixel samples. The value of this key is kCF-
BooleanTrue if the image contains them.

50.21.220  kCGImagePropertyIsIndexed as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for the properties dictionary.
**Notes:** Whether or not the image contains indexed pixel samples (sometimes called paletted samples). The value of this key is kCFBooleanTrue if the image contains them.

50.21.221  kCGImagePropertyJFIFDensityUnit as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that uses JPEG File Interchange Format (JFIF).
**Notes:** The density unit.
50.21.222  kCGImagePropertyJFIFDictionary as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for the properties dictionary.
**Notes:** A dictionary of key-value pairs for an image that uses JPEG File Interchange Format (JFIF).

50.21.223  kCGImagePropertyJFIFIsProgressive as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that uses JPEG File Interchange Format (JFIF).
**Notes:** Whether or not the image is progressive.

50.21.224  kCGImagePropertyJFIFVersion as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that uses JPEG File Interchange Format (JFIF).
**Notes:** The version.

50.21.225  kCGImagePropertyJFIFXDensity as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that uses JPEG File Interchange Format (JFIF).
**Notes:** The x density.

50.21.226  kCGImagePropertyJFIFYDensity as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that uses JPEG File Interchange Format (JFIF).
**Notes:** The y density.

50.21.227  kCGImagePropertyMakerCanonAspectRatioInfo as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for the properties dictionary.
**Notes:** The image aspect ratio.
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50.21.228  **kCGImagePropertyMakerCanonCameraSerialNumber** as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the properties dictionary. **Notes:** The camera serial number.

50.21.229  **kCGImagePropertyMakerCanonContinuousDrive** as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the properties dictionary. **Notes:** The presence of a continuous drive.

50.21.230  **kCGImagePropertyMakerCanonDictionary** as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the properties dictionary. **Notes:** A dictionary of key-value pairs for an image from a Canon camera. Available in Mac OS X v10.5 and later.

50.21.231  **kCGImagePropertyMakerCanonFirmware** as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the properties dictionary. **Notes:** The firmware version.

50.21.232  **kCGImagePropertyMakerCanonFlashExposureComp** as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the properties dictionary. **Notes:** The flash exposure compensation.

50.21.233  **kCGImagePropertyMakerCanonImageSerialNumber** as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the properties dictionary.
Notes: The image serial number.

50.21.234 kCGImagePropertyMakerCanonLensModel as string


50.21.235 kCGImagePropertyMakerCanonOwnerName as string


50.21.236 kCGImagePropertyMakerFujiDictionary as string


50.21.237 kCGImagePropertyMakerMinoltaDictionary as string


50.21.238 kCGImagePropertyMakerNikonCameraSerialNumber as string

50.21.239  kCGImagePropertyMakerNikonColorMode as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image from a Nikon camera.
**Notes:** The color mode.

50.21.240  kCGImagePropertyMakerNikonDictionary as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for the properties dictionary.
**Notes:**
A dictionary of key-value pairs for an image from a Nikon camera.
Available in Mac OS X v10.5 and later.

50.21.241  kCGImagePropertyMakerNikonDigitalZoom as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image from a Nikon camera.
**Notes:** The digital zoom setting.

50.21.242  kCGImagePropertyMakerNikonFlashExposureComp as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image from a Nikon camera.
**Notes:** The flash exposure compensation.

50.21.243  kCGImagePropertyMakerNikonFlashSetting as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image from a Nikon camera.
**Notes:** The flash setting.

50.21.244  kCGImagePropertyMakerNikonFocusDistance as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image from a Nikon camera.
Notes: The focus distance.

50.21.245 kCGImagePropertyMakerNikonFocusMode as string
Notes: The focus mode.

50.21.246 kCGImagePropertyMakerNikonImageAdjustment as string
Notes: Image adjustment setting.

50.21.247 kCGImagePropertyMakerNikonISOSelection as string
Notes: The ISO selection.

50.21.248 kCGImagePropertyMakerNikonISOSetting as string
Notes: The ISO setting.

50.21.249 kCGImagePropertyMakerNikonLensAdapter as string
Notes: The lens adapter.

50.21.250 kCGImagePropertyMakerNikonLensInfo as string
50.21. **kCGImagePropertyMakerNikonLensType as string**

*Notes:* The lens type.

50.21.**252** kCGImagePropertyMakerNikonQuality as string

*Notes:* The quality setting.

50.21.**253** kCGImagePropertyMakerNikonSharpenMode as string

*Notes:* The sharpening mode.

50.21.**254** kCGImagePropertyMakerNikonShootingMode as string

*Notes:* The shooting mode.

50.21.**255** kCGImagePropertyMakerNikonShutterCount as string

*Notes:* The shutter count.

50.21.**256** kCGImagePropertyMakerNikonWhiteBalanceMode as string

Notes: The white balance mode.

50.21.257 kCGImagePropertyMakerOlympusDictionary as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for the properties dictionary.

Notes:
A dictionary of key-value pairs for an image from a Olympus camera.
Available in Mac OS X v10.5 and later.

50.21.258 kCGImagePropertyMakerPentaxDictionary as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for the properties dictionary.

Notes:
A dictionary of key-value pairs for an image from a Pentax camera.
Available in Mac OS X v10.5 and later.

50.21.259 kCGImagePropertyOrientation as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for the properties dictionary.

Notes:
The intended display orientation of the image. If present, this key is a CFNumber value with the same value
as defined by the TIFF and EXIF specifications. The value specifies where the origin (0,0) of the image is
locates, as shown in Table 1. If not present, a value of 1 is assumed.

<table>
<thead>
<tr>
<th>Value</th>
<th>Location of the origin of the image</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Top, left</td>
</tr>
<tr>
<td>2</td>
<td>Top, right</td>
</tr>
<tr>
<td>3</td>
<td>Bottom, right</td>
</tr>
<tr>
<td>4</td>
<td>Bottom, left</td>
</tr>
<tr>
<td>5</td>
<td>Left, top</td>
</tr>
<tr>
<td>6</td>
<td>Right, top</td>
</tr>
<tr>
<td>7</td>
<td>Right, bottom</td>
</tr>
<tr>
<td>8</td>
<td>Left, bottom</td>
</tr>
</tbody>
</table>
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50.21.260 kCGImagePropertyPixelHeight as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the properties dictionary.

**Example:**

```vbs
// open an image file
dim path as string = "/Library/Desktop Pictures/Galaxy.jpg"
dim f as FolderItem = GetFolderItem(path, FolderItem.PathTypeNative)
Dim c As New CGImageSourceMBS(f)

// properties for first image
dim p as Dictionary = c.PropertiesAtIndex(0)
dim w as Integer = p.Value(c.kCGImagePropertyPixelWidth)
dim h as Integer = p.Value(c.kCGImagePropertyPixelHeight)

// show size
MsgBox str(w) + " x " + str(h)
```

**Notes:** The number of pixels in the y dimension. If present, this key is a CFNumber value.

---

50.21.261 kCGImagePropertyPixelWidth as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the properties dictionary.

**Example:**

```vbs
// open an image file
dim path as string = "/Library/Desktop Pictures/Galaxy.jpg"
dim f as FolderItem = GetFolderItem(path, FolderItem.PathTypeNative)
Dim c As New CGImageSourceMBS(f)

// properties for first image
dim p as Dictionary = c.PropertiesAtIndex(0)
dim w as Integer = p.Value(c.kCGImagePropertyPixelWidth)
dim h as Integer = p.Value(c.kCGImagePropertyPixelHeight)

// show size
MsgBox str(w) + " x " + str(h)
```

**Notes:** The number of pixels in the x dimension. If present, this key is a CFNumber value.
50.21.262  kCGImagePropertyPNGAuthor as string

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the key names for the properties. **Notes:**
The content is a string that identifies the author of the image. Available in OS X v10.7 and later.

50.21.263  kCGImagePropertyPNGChromaticities as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses Portable Network Graphics (PNG) format. **Notes:** The chromaticities.

50.21.264  kCGImagePropertyPNGCopyright as string

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the key names for the properties. **Notes:**
The content is a string that identifies the copyright of the image. Available in OS X v10.7 and later.

50.21.265  kCGImagePropertyPNGCreationTime as string

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the key names for the properties. **Notes:**
The content is a string that identifies the date and time the image was created. Available in OS X v10.7 and later.

50.21.266  kCGImagePropertyPNGDescription as string

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the key names for the properties. **Notes:**
The content is a string that describes the image. Available in OS X v10.7 and later.
50.21.267  kCGImagePropertyPNGDictionary as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the properties dictionary. 
**Notes:** A dictionary of key-value pairs for an image that uses Portable Network Graphics (PNG) format.

50.21.268  kCGImagePropertyPNGGamma as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses Portable Network Graphics (PNG) format. 
**Notes:** The gamma value.

50.21.269  kCGImagePropertyPNGInterlaceType as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses Portable Network Graphics (PNG) format. 
**Notes:** The interlace type.

50.21.270  kCGImagePropertyPNGModificationTime as string

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the key names for the properties. 
**Notes:**
The content is a string that identifies the last date and time the image was modified. Available in OS X v10.7 and later.

50.21.271  kCGImagePropertyPNGSoftware as string

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the key names for the properties. 
**Notes:**
The content is a string that identifies the software used to create the image. Available in OS X v10.7 and later.
50.21.272 kCGImagePropertyPNGsRGBIntent as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses Portable Network Graphics (PNG) format. **Notes:** The sRGB intent.

50.21.273 kCGImagePropertyPNGTitle as string

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the key names for the properties. **Notes:** The content is a string that holds the image’s title. Available in OS X v10.7 and later.

50.21.274 kCGImagePropertyPNGXPixelsPerMeter as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses Portable Network Graphics (PNG) format. **Notes:** The number of x pixels per meter.

50.21.275 kCGImagePropertyPNGYPixelsPerMeter as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses Portable Network Graphics (PNG) format. **Notes:** The number of y pixels per meter.

50.21.276 kCGImagePropertyProfileName as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the properties dictionary. **Notes:** The name of the optional ICC profile embedded in the image, if known. If present, the value of this key is a CFStringRef.

50.21.277 kCGImagePropertyRawDictionary as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the properties dictionary.
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Notes: A dictionary of key-value pairs for an image that contains minimally processed, or raw, data.

50.21.278 kCGImagePropertyTIFFArtist as string

**Notes:** The artist.

50.21.279 kCGImagePropertyTIFFCompression as string

**Notes:** The compression scheme used on the image data.

50.21.280 kCGImagePropertyTIFFCopyright as string

**Notes:** Copyright information.

50.21.281 kCGImagePropertyTIFFDateTime as string

**Notes:** The date and time.

50.21.282 kCGImagePropertyTIFFDictionary as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the properties dictionary.
**Example:**
```
// Change rotation in an image file

// files
dim dpath as folderitem = SpecialFolder.Desktop.Child("test.jpg")
dim opath as folderitem = dpath.parent.Child("output.jpg")
```
// open source
dim imageSource as new cgimagesourcembs(dpath)

// read image
dim img as cgimagembs = imageSource.createimageatindex(0)

// global properties
dim globalprop as dictionary = imageSource.properties
// per image properties
dim p as Dictionary = imageSource.PropertiesAtIndex(0)

dim imageDest as new CGImageDestinationMBS(opath,"public.jpeg",1)

'const orientation = 1 // top left
const orientation = 3 // bottom right

// set globals
imageDest.SetProperties(globalprop)

// now set new orientation
p.value(imageDest.kCGImageDestinationOrientation) = orientation
p.value(imageDest.kCGImageDestinationMergeMetadata) = true

// change tiff dictionary, if present
dim dTIFF as Dictionary = p.lookup(imageSource.kCGImagePropertyTIFFDictionary, nil)
if dTIFF <>nil then
dTIFF.value(imageSource.kCGImagePropertyTIFFOrientation) = orientation
end if

// change iptc dictionary, if present
dim dIPTC as Dictionary = p.lookup(imageSource.kCGImagePropertyIPTCDictionary, nil)
if dIPTC <>nil then
dIPTC.value(imageSource.kCGImagePropertyIPTCImageOrientation) = orientation
end if

// write out image
imageDest.AddImage(img,p)
call imageDest.Finalize

Notes: A dictionary of key-value pairs for an image that uses Tagged Image File Format (TIFF).
50.21.283  kCGImagePropertyTIFFDocumentName as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses Tagged Image File Format (TIFF). **Notes:** The document name.

50.21.284  kCGImagePropertyTIFFFHostComputer as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses Tagged Image File Format (TIFF). **Notes:** The computer or operation system used when the image was created.

50.21.285  kCGImagePropertyTIFFImageDescription as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses Tagged Image File Format (TIFF). **Notes:** The image description.

50.21.286  kCGImagePropertyTIFFMake as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses Tagged Image File Format (TIFF). **Notes:** The camera or input device make.

50.21.287  kCGImagePropertyTIFFModel as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses Tagged Image File Format (TIFF). **Notes:** A camera or input device model.

50.21.288  kCGImagePropertyTIFFOrientation as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Keys for an image that uses Tagged Image File Format (TIFF). **Example:**

    // Change rotation in an image file
// files
dim dpath as folderitem = SpecialFolder.Desktop.Child("test.jpg")
dim opath as folderitem = dpath.parent.Child("output.jpg")

// open source
dim imageSource as new cgimagesourcembs(dpath)

// read image
dim img as cgimagembs = imageSource.createimageatindex(0)

// global properties
dim globalprop as dictionary = imageSource.properties
// per image properties
dim p as Dictionary = imageSource.PropertiesAtIndex(0)

dim imageDest as new CGImageDestinationMBS(opath,"public.jpeg",1)

'const orientation = 1 // top left
const orientation = 3 // bottom right

// set globals
imageDest.SetProperties(globalprop)

// now set new orientation
p.value(imageDest.kCGImageDestinationOrientation) = orientation
p.value(imageDest.kCGImageDestinationMergeMetadata) = true

// change tiff dictionary, if present
dim dTIFF as Dictionary = p.lookup(imageSource.kCGImagePropertyTIFFDictionary, nil)
if dTIFF <> nil then
dTIFF.value(imageSource.kCGImagePropertyTIFFOrientation) = orientation
end if

// change iptc dictionary, if present
dim dIPTC as Dictionary = p.lookup(imageSource.kCGImagePropertyIPTCDictionary, nil)
if dIPTC <> nil then
dIPTC.value(imageSource.kCGImagePropertyIPTCImageOrientation) = orientation
end if

// write out image
imageDest.AddImage(img,p)
call imageDest.Finalize

Notes: The image orientation.
50.21.289  
**kCGImagePropertyTIFFPhotometricInterpretation as string**

**Function:** Keys for an image that uses Tagged Image File Format (TIFF).  
**Notes:** The color space of the image data.

50.21.290  
**kCGImagePropertyTIFFPrimaryChromaticities as string**

**Function:** Keys for an image that uses Tagged Image File Format (TIFF).  
**Notes:** The chromaticities of the primaries of the image.

50.21.291  
**kCGImagePropertyTIFFResolutionUnit as string**

**Function:** Keys for an image that uses Tagged Image File Format (TIFF).  
**Notes:** The units of resolution.

50.21.292  
**kCGImagePropertyTIFFSoftware as string**

**Function:** Keys for an image that uses Tagged Image File Format (TIFF).  
**Notes:** The name and version of the software used for image creation.

50.21.293  
**kCGImagePropertyTIFFTransferFunction as string**

**Function:** Keys for an image that uses Tagged Image File Format (TIFF).  
**Notes:** The transfer function, in tabular format, used to map pixel components from a nonlinear form into a linear form.

50.21.294  
**kCGImagePropertyTIFFWhitePoint as string**

**Function:** Keys for an image that uses Tagged Image File Format (TIFF).  
**Notes:** The white point.
50.21.295  kCGImagePropertyTIFFXResolution as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that uses Tagged Image File Format (TIFF).
**Notes:** The number of pixels per resolution unit in the image width direction.

50.21.296  kCGImagePropertyTIFFYResolution as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Keys for an image that uses Tagged Image File Format (TIFF).
**Notes:** The number of pixels per resolution unit in the image height direction.

50.21.297  kCGImageSourceCreateThumbnailFromImageAlways as string

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
One of the key names for the properties.
**Notes:** Specifies whether a thumbnail should be created from the full image even if a thumbnail is present in the image source file. The thumbnail will be created from the full image, subject to the limit specified by kCGImageSourceThumbnailMaxPixelSize — if a maximum pixel size isn’t specified, then the thumbnail will be the size of the full image, which probably isn’t what you want. The value of this key must be a Boolean; the default value of this key is False.

50.21.298  kCGImageSourceCreateThumbnailFromImageIfAbsent as string

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
One of the key names for the properties.
**Notes:** Specifies whether a thumbnail should be automatically created for an image if a thumbnail isn’t present in the image source file. The thumbnail will be created from the full image, subject to the limit specified by kCGImageSourceThumbnailMaxPixelSize—if a maximum pixel size isn’t specified, then the thumbnail will be the size of the full image, which probably isn’t what you want. The value of this key must be a Boolean; the default value of this key is False.

50.21.299  kCGImageSourceCreateThumbnailWithTransform as string

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
One of the key names for the properties.
**Notes:** Specifies whether the thumbnail should be rotated and scaled according to the orientation and pixel aspect ratio of the full image. The value of this key must be a Boolean; the default value of this key is False.
50.21.300  kCGImageSourceShouldAllowFloat as string

Notes: Specifies whether the image should be returned as a floating point CGImage if supported by the file format. Extended range floating point CGImage may require additional processing to render pleasingly. The value of this key must be a Boolean; the default value is False.

50.21.301  kCGImageSourceShouldCache as string

Notes: Specifies whether the image should be cached in a decoded form. The value of this key must be a Boolean; the default value is False.

50.21.302  kCGImageSourceShouldCacheImmediately as string

Notes: Specifies whether image decoding and caching should happen at image creation time. The value of this key must be a boolean. The default value is kCFBooleanFalse (image decoding will happen at rendering time).

50.21.303  kCGImageSourceThumbnailMaxPixelSize as string

Notes: Specifies the maximum width and height in pixels of a thumbnail. If this this key is not specified, the width and height of a thumbnail is not limited and thumbnails may be as big as the image itself. If present, this value of this key must be an Integer.

50.21.304  kCGImageSourceTypeIdentifierHint as string

Notes: Specifies the "best guess" of the type identifier for the format of the image source file. If specified, the value of this key must be a String. For more information about type identifiers, see "UTType.h" in the
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Application Services framework.

50.21.305  Properties(options as dictionary = nil) as dictionary

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the properties of the image source.

**Example:**

```vbnet
dim inputFile as FolderItem = SpecialFolder.Desktop.Child("test.jpg")

// reading the picture
dim c as new CGImageSourceMBS(inputFile)
dim img as CGImageMBS = c.CreateImageAtIndex(0)
dim propertiesGlobal as Dictionary = c.Properties
dim propertiesImage as Dictionary = c.PropertiesAtIndex(0)

dim outputFile as FolderItem = SpecialFolder.Desktop.Child("output.jpg")
dim d as new CGImageDestinationMBS(outputFile, "public.jpeg", 1)

// writing the picture and include metadata
d.SetProperties(propertiesGlobal)
d.AddImage(img, propertiesImage)
if d.FinalizeMT then
    outputFile.Launch
else
    MsgBox "Failed to write jpeg."
end if
```

**Notes:**

- **options:** A dictionary you can use to request additional options.
- Returns a dictionary that contains the properties associated with the image source container.
- These properties apply to the container in general but not necessarily to any individual image contained in the image source.
- Available in Mac OS X version 10.4 and later.

50.21.306  PropertiesAtIndex(index as Integer, options as dictionary = nil) as dictionary

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the properties of the image at a specified location in an image source.

**Example:**

```vbnet
```
dim file as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim c as new CGImageSourceMBS(file)

dim e as Dictionary = c.PropertiesAtIndex(0)
dim d as Dictionary

e=d.Value(c.kCGImagePropertyExifDictionary)

if e<>Nil then
dim keys(-1) as Variant = e.Keys
dim lines(-1) as string

for each key as string in keys
lines.Append key+" : "+e.Value(key)
next

MsgBox "Exif: "+EndOfLine+EndOfLine+Join(lines,EndOfLine)
end if

e=d.Value(c.kCGImagePropertyGPSDictionary)

if e<>Nil then
dim keys(-1) as Variant = e.Keys
dim lines(-1) as string

for each key as string in keys
lines.Append key+" : "+e.Value(key)
next

MsgBox "GPS: "+EndOfLine+EndOfLine+Join(lines,EndOfLine)
end if

Notes:

index: The index of the image whose properties you want to obtain. The index is zero-based.
options: A dictionary you can use to request additional options.
Returns a dictionary that contains the properties associated with the image.
Available in Mac OS X version 10.4 and later.

50.21.307 PropertiesAtIndexCF(index as Integer, options as Variant = nil) as Variant

MBS MacCG Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns the properties of the image at a specified location in an image source.
Notes:

index: The index of the image whose properties you want to obtain. The index is zero-based.
options: A dictionary or CFDictionaryMBS you can use to request additional options.
Returns a CFDictionaryMBS that contains the properties associated with the image.
Available in Mac OS X version 10.4 and later.

50.21.308 PropertiesCF(options as Variant = nil) as Variant

MBS MacCG Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the properties of the image source.

Notes:
options: A dictionary or CFDictionaryMBS you can use to request additional options.
Returns a CFDictionaryMBS that contains the properties associated with the image source container.
These properties apply to the container in general but not necessarily to any individual image contained in
the image source.
Available in Mac OS X version 10.4 and later.

50.21.309 StatusAtIndex(index as Integer) as Integer

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the current status of an image that is at a specified location in an image source.

Notes:

index: The index of the image whose status you want to obtain. The index is zero-based.

Returns the current status of the image.

The status is particularly informative for incremental image sources, but may also be used by clients that
provide non-incremental data.

Available in Mac OS X version 10.4 and later.

50.21.310 TypeIdentifiers as string()

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns an array of uniform type identifiers (UTIs) that are supported for image sources.

**Example:**

```dim s(-1) as string = CGImageSourceMBS.TypeIdentifiers```
MsgBox Join(s,EndOfLine)

// shows:
//
// public.png
// public.jpeg
// com.compusrve.gif
// public.jpeg-2000
// com.adobe.raw-image
// com.leafamerica.raw-image
// com.hasselblad.fff-raw-image
// com.hasselblad.3fr-raw-image
// com.nikon.raw-image
// com.nikon.urw-raw-image
// com.pentax.raw-image
// com.sony.sr2-raw-image
// com.sony.arw-raw-image
// com.epson.raw-image
// com.kodak.raw-image
// public.tiff
// com.apple.icns
// com.canon.tif-raw-image
// com.canon.cr2-raw-image
// com.canon.crw-raw-image
// com.fuji.raw-image
// com.panasonic.raw-image
// com.panasonic.rw2-raw-image
// com.panasonic.rwl-raw-image
// com.leica.pwl-raw-image
// com.konicaminolta.raw-image
// com.olympus.raw-image
// com.olympus.raw-image
// com.sony.raw-image
// com.adobe.photoshop-image
// com.adobe.pdf
// com.adobe.illustrator.ai-image
// com.microsoft.ico
// com.microsoft.bmp
// public.xbitmap-image
// com.microsoft.cur
// com.apple.pict
// com.truevision.tga-image
// com.sgi.sgi-image
// com.apple.quicktime-image
// com.kodak.flashpix-image
// com.apple.macpaint-image
// com.ilm.openexr-image
// public.radiance
Notes:
Returns an array of the UTIs that are supported for image sources.

See Uniform Type Identifiers Overview for a list of system-declared and third-party UTIs.

Available in Mac OS X version 10.4 and later.

50.21.311  UpdateData(data as string, final as boolean)

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Updates an incremental image source with new data.

**Notes:**

data: The data to add to the image source. Each time you call the function UpdateData, the data parameter must contain all of the image file data accumulated so far.

final: A value that specifies whether the data is the final set. Pass true if it is, false otherwise.

Available in Mac OS X version 10.4 and later.

50.21.312  Properties

50.21.313  Count as Integer

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the number of images (not including thumbnails) in the image source.

**Example:**

dim file as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim c as new CGImageSourceMBS(file)

MsgBox str(c.Count)+" images in this file."

**Notes:**
The number of images. If the image source is a multilayered PSD file, the function returns 1.
This function does not extract the layers of a PSD file.

Available in Mac OS X version 10.4 and later.
(Read only property)

**50.21.314 Handle as Integer**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The internal reference.
**Notes:** (Read and Write property)

**50.21.315 Status as Integer**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Return the status of an image source.
**Notes:**
Returns the current status of the image source.

The status is particularly informative for incremental image sources, but may also be used by clients that provide non-incremental data.

Available in Mac OS X version 10.4 and later.
(Read only property)

**50.21.316 Type as string**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the uniform type identifier of the source container.
**Notes:**
The uniform type identifier of the image.

The uniform type identifier (UTI) of the source container can be different from the type of the images in the container. For example, the .icns format supports embedded JPEG2000. The type of the source container is "com.apple.icns" but type of the images is JPEG2000.

Available in Mac OS X version 10.4 and later.
(Read only property)
50.21.317 Constants

50.21.318 kCGImageStatusComplete = 0
MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the status constants. **Notes:** The operation is complete.

50.21.319 kCGImageStatusIncomplete = -1
MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the status constants. **Notes:** The operation is not complete.

50.21.320 kCGImageStatusInvalidData = -4
MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the status constants. **Notes:** The data is not valid.

50.21.321 kCGImageStatusReadingHeader = -2
MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the status constants. **Notes:** In the process of reading the header.

50.21.322 kCGImageStatusUnexpectedEOF = -5
MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the status constants. **Notes:** The end of the file was encountered unexpectedly.

50.21.323 kCGImageStatusUnknownType = -3
MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the status constants. **Notes:** The image is an unknown type.
50.22. CLASS CGLAYERMBS

50.22 class CGLayerMBS

50.22.1 class CGLayerMBS

MBS MacCG Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: Yes. **Function:** The CoreGraphics layer class, similar to a template.

**Notes:**

CGLayer objects are useful for offscreen drawing and can be used in much the same way that a bitmap context can be used. In fact, a CGLayer object is a much better representation than a bitmap context.

Using CGLayer objects can improve performance, particularly when you need to capture a piece of drawing that you stamp repeatedly (using the same scale factor and orientation). Quartz can cache CGLayer objects to the video card, making drawing a CGLayer to a destination much faster than rendering the equivalent image constructed from a bitmap context.

A CGLayer object is created relative to a graphics context. Although layer uses this graphics context as a reference for initialization, you are not restricted to drawing the layer to this graphics context. You can draw the layer to other graphics contexts, although any limitations of the original context are imposed. For example, if you create a CGLayer object using a bitmap context, the layer is rendered as a bitmap when drawn to any other graphics context.

You can use a CGLayer when you want to apply a shadow to a group of objects (such as a group of circles) rather than to individual objects.

Use these layers in your code whenever you can, especially when:

- You need to reuse a filled or stroked shape.

- You are building a scene and at least some of it can be reused. Put the reusable drawing in its own CGLayer.

Any CG object that you draw repeatedly—including CGPath, CGShading, and CGPDFPage—benefit from improved performance if you draw it to a CGLayer object.

see also

50.22.2 Methods

50.22.3 Constructor(context as CGContextMBS, size as CGSizeMBS, auxiliaryInfo as dictionary = nil)

MBS MacCG Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: Yes. **Function:** Creates a CGLayer object that is associated with a graphics context.

**Notes:**
context: The graphics context you want to create the layer relative to. The layer uses this graphics context as a reference for initialization.
size: The size, in default user space units, of the layer relative to the graphics context.
auxiliaryInfo: Reserved for future use. Pass nil.

On Success the handle property is not nil.

After you create a CGLayer object, you should reuse it whenever you can to facilitate the Quartz caching strategy. Quartz caches any objects that are reused, including CGLayer objects. Objects that are reused frequently remain in the cache. In contrast, objects that are used once in a while may be moved in and out of the cache according to their frequency of use. If you don’t reuse CGLayer objects, Quartz won’t cache them. This means that you lose an opportunity to improve the performance of your application.

Available in Mac OS X version 10.4 and later.

See also:
- 50.22.4 Constructor(context as CGContextMBS, width as Double, height as Double, auxiliaryInfo as dictionary = nil)

50.22.4 Constructor(context as CGContextMBS, width as Double, height as Double, auxiliaryInfo as dictionary = nil)

MBS MacCG Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: Yes. **Function:** Creates a CGLayer object that is associated with a graphics context.

**Notes:**
context: The graphics context you want to create the layer relative to. The layer uses this graphics context as a reference for initialization.
width/height: The size, in default user space units, of the layer relative to the graphics context.
auxiliaryInfo: Reserved for future use. Pass nil.

On Success the handle property is not nil.

After you create a CGLayer object, you should reuse it whenever you can to facilitate the Quartz caching strategy. Quartz caches any objects that are reused, including CGLayer objects. Objects that are reused
50.22. CLASS CGLAYERMBS

frequently remain in the cache. In contrast, objects that are used once in a while may be moved in and out of the cache according to their frequency of use. If you don’t reuse CGLayer objects, Quartz won’t cache them. This means that you lose an opportunity to improve the performance of your application.

Available in Mac OS X version 10.4 and later.
See also:

- 50.22.3 Constructor(context as CGContextMBS, size as CGSizeMBS, auxiliaryInfo as dictionary = nil)

50.22.5 Context as CGContextMBS

Notes: The context that’s returned is the context for the layer itself, not the context that you specified when you created the layer.

50.22.6 Size as CGSizeMBS


50.22.7 Properties

50.22.8 Handle as Integer

Notes: (Read and Write property)
50.23 class CGMutablePathMBS

50.23.1 class CGMutablePathMBS

MBS MacCG Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a CoreGraphics mutable path. **Notes:** Subclass of the CGPathMBS class.

50.23.2 Methods

50.23.3 AddArc(transform as CGAffineTransformMBS, x as Double, y as Double, radius as Double, startAngle as Double, endAngle as Double, clockwise as boolean)

MBS MacCG Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Add an arc of a circle to path, possibly preceded by a straight line segment. **Notes:** The arc is approximated by a sequence of cubic Bezier curves. \((x, y)\) is the center of the arc; radius is its radius; startAngle is the angle to the first endpoint of the arc; endAngle is the angle to the second endpoint of the arc; and clockwise is true if the arc is to be drawn clockwise, false otherwise. startAngle and endAngle are measured in radians. If \(m\) is not nil, then the constructed Bezier curves representing the arc will be transformed by the matrix before they are added to path.

50.23.4 AddArcToPoint(transform as CGAffineTransformMBS, x as Double, y as Double, x2 as Double, y2 as Double, radius as Double)

MBS MacCG Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Add an arc of a circle to path, possibly preceded by a straight line segment. **Notes:** The arc is approximated by a sequence of cubic Bezier curves. \((x, y)\) is the center of the arc; radius is its radius; startAngle is the angle to the first endpoint of the arc; endAngle is the angle to the second endpoint of the arc; and clockwise is true if the arc is to be drawn clockwise, false otherwise. startAngle and endAngle are measured in radians. If \(m\) is not nil, then the constructed Bezier curves representing the arc will be transformed by the matrix before they are added to path.

50.23.5 AddCurveToPoint(transform as CGAffineTransformMBS, cpx1 as Double, cpy1 as Double, cpx2 as Double, cpy2 as Double, x as Double, y as Double)

MBS MacCG Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Append a cubic Bezier curve from the current point to \((x, y)\) with control points \((cp1x, cp1y)\) and \((cp2x, cp2y)\) in path and move the current point to \((x, y)\).
50.23. **AddEllipseInRect** (transform as CGAffineTransformMBS, r as CGRectMBS)

MBS MacCG Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Add an ellipse (an oval) inside rect to path.
**Notes:** The ellipse is approximated by a sequence of Bezier curves. The center of the ellipse is the midpoint of rect. If rect is square, then the ellipse will be circular with radius equal to one-half the width (equivalently, one-half the height) of rect. If rect is rectangular, then the major- and minor-axes will be the width and height of rect. The ellipse forms a complete subpath of path — that is, it begins with a "move to" and ends with a "close subpath" — oriented in the clockwise direction. If transform is not nil, then the constructed Bezier curves representing the ellipse will be transformed by m before they are added to path.

50.23. **AddLineToPoint** (transform as CGAffineTransformMBS, x as Double, y as Double)

MBS MacCG Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Append a straight line segment from the current point to (x, y) in the path and move the current point to (x, y).
**Notes:** If transform is not nil, then transform (x, y) by the matrix first.

50.23. **AddPath** (transform as CGAffineTransformMBS, path as CGPathMBS)

MBS MacCG Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Add a path to the path.
**Notes:** If m is not nil, then the points in the new path will be transformed by the matrix before they are added to path1.

50.23. **AddQuadCurveTo��** (transform as CGAffineTransformMBS, cp as Double, cpx as Double, cpy as Double, x as Double, y as Double)

MBS MacCG Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Append a quadratic curve from the current point to (x, y) with control point (cpx, cpy) in path and move the current point to (x, y').
**Notes:** If transform is not nil, then transform all points by the matrix first.
**50.23.10 AddRect(transform as CGAffineTransformMBS, r as CGRectMBS)**

MBS MacCG Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Add rect to path.  
**Notes:** If transform is not nil, then transform the rectangle by the matrix first.

**50.23.11 CloseSubpath**

MBS MacCG Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Append a line from the current point to the starting point of the current subpath of path and end the subpath.

**50.23.12 Constructor**

MBS MacCG Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create a mutable path.

**50.23.13 ContainsPoint(transform as CGAffineTransformMBS, point as CGPointMBS, eoFill as boolean) as boolean**

MBS MacCG Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return true if point is contained in path; false otherwise.  
**Notes:** A point is contained in a path if it is inside the painted region when the path is filled; if eoFill is true, then the even-odd fill rule is used to evaluate the painted region of the path, otherwise, the winding-number fill rule is used. If m is not nil, then the point is transformed by m before determining whether the path contains it.

**50.23.14 MoveToPoint(transform as CGAffineTransformMBS, x as Double, y as Double)**

MBS MacCG Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Move the current point to (x, y) in path and begin a new subpath.  
**Notes:** If transform is not nil, then transform (x, y) by the matrix first.
50.24. class CGPathElementMBS

50.24.1. class CGPathElementMBS

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The class for CGPath elements.
**Example:**
```pascal
dim m as new CGMutablePathMBS
m.MoveToPoint nil, 10, 10
m.AddLineToPoint nil, 20, 30

dim e() as CGPathElementMBS = m.Elements
Break // see in debugger
```

50.24.2. Methods

50.24.3. Point(Index as Integer) as CGPointMBS

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns point with given index.

50.24.4. PointX(Index as Integer) as Double

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns point x with given index.

50.24.5. PointY(Index as Integer) as Double

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns point y with given index.
50.24.6 Properties

50.24.7 PointCount as Integer

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns number of points in this element. **Notes:** (Read and Write property)

50.24.8 Type as Integer

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The type of this element. **Notes:** (Read and Write property)

50.24.9 Constants

50.24.10 kTypeAddCurveToPoint = 3

MBS MacCG Plugin, Plugin Version: 15.1. **Function:** One of the type constants. **Notes:** The path element that adds a cubic curve from the current point to the specified point. The element holds two control points and a destination point.

50.24.11 kTypeAddLineToPoint = 1

MBS MacCG Plugin, Plugin Version: 15.1. **Function:** One of the type constants. **Notes:** The path element that adds a line from the current point to a new point. The element holds a single point for the destination.

50.24.12 kTypeAddQuadCurveToPoint = 2

MBS MacCG Plugin, Plugin Version: 15.1. **Function:** One of the type constants. **Notes:** The path element that adds a quadratic curve from the current point to the specified point. The element holds a control point and a destination point.
50.24.13 kTypeCloseSubpath = 4

MBS MacCG Plugin, Plugin Version: 15.1. **Function:** One of the type constants.  
**Notes:** The path element that closes and completes a subpath. The element does not contain any points.

50.24.14 kTypeMoveToPoint = 0

MBS MacCG Plugin, Plugin Version: 15.1. **Function:** One of the type constants.  
**Notes:** The path element that starts a new subpath. The element holds a single point for the destination.
50.25 class CGPathMBS

50.25.1 class CGPathMBS

MBS MacCG Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
A class for a CoreGraphics path.

50.25.2 Methods

50.25.3 BoundingBox as CGRectMBS

MBS MacCG Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Return the bounding box of path.
Notes: The bounding box is the smallest rectangle completely enclosing all points in the path, including
control points for Bezier and quadratic curves. If the path is empty, then return (0,0,0,0).

50.25.4 Copy as CGPathMBS

MBS MacCG Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Creates a copy of the path.
Notes: Returns nil on any error.

50.25.5 CurrentPoint as CGPointMBS

MBS MacCG Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Return the current point of the current subpath of path.
Notes: If there is no current point, then return (0,0).

50.25.6 Elements as CGPathElementMBS()

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Queries all the elements in a CGPath.
Example:

dim m as new CGMutablePathMBS
m.MoveToPoint nil, 10, 10
m.AddLineToPoint nil, 20, 30
50.25. **CLASS CGPATHMBS**

```vbnet
dim e() as CGPathElementMBS = m.Elements
Break // see in debugger
```

### 50.25.7 **EqualToPath(path as CGPathMBS) as boolean**

MBS MacCG Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return true if the path self is equal to path; false otherwise. **Notes:** Returns false if the path is nil.

### 50.25.8 **IsEmpty as boolean**

MBS MacCG Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return true if path contains no elements, false otherwise.

### 50.25.9 **IsRect(byref rect as CGRectMBS) as boolean**

MBS MacCG Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return true if path represents a rectangle, false otherwise.

### 50.25.10 **MutableCopy as CGMutablePathMBS**

MBS MacCG Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create a mutable copy of path. **Notes:** Returns nil on any error.

### 50.25.11 **Properties**

#### 50.25.12 **Handle as Integer**

MBS MacCG Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle to the internal used object. **Notes:** (Read and Write property)
50.26  class CGPDFArrayMBS

50.26.1  class CGPDFArrayMBS

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
A class for a pdf array.

50.26.2  Methods

50.26.3  ArrayValue(index as Integer, byref value as CGPDFArrayMBS) as boolean

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
If the object with the given index is a pdf array, this function will return it.
Notes: Returns true on success and false on failure.

50.26.4  BooleanValue(index as Integer, byref value as boolean) as boolean

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
If the object with the given index is a boolean value, this function will return it.
Notes: Returns true on success and false on failure.

50.26.5  Count as Integer

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns the count of items in this array.

50.26.6  DictionaryValue(index as Integer, byref value as CGPDFDictionaryMBS) as boolean

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
If the object with the given index is a pdf dictionary, this function will return it.
Notes: Returns true on success and false on failure.
50.26.7  **IntegerValue(index as Integer, byref value as Integer) as boolean**

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
If the object with the given index is an integer value, this function will return it.
**Notes:**
Returns true on success and false on failure.
Is function will return double and integer values. Conversion is done automatically.

50.26.8  **NameValue(index as Integer, byref value as string) as boolean**

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
If the object with the given index is a name string, this function will return it.
**Notes:** Returns true on success and false on failure.

50.26.9  **NullValue(index as Integer) as boolean**

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
If the object with the given index is a nil value, this function will return it.
**Notes:** Returns true on success and false on failure.

50.26.10 **ObjectValue(index as Integer, byref value as CGPDFObjectMBS) as boolean**

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
If the object with the given index is a pdf object, this function will return it.
**Notes:** Returns true on success and false on failure.

50.26.11 **SingleValue(index as Integer, byref value as Double) as boolean**

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
If the object with the given index is a floating point value, this function will return it.
**Notes:**
Returns true on success and false on failure.
Is function will return double and integer values. Conversion is done automatically.
50.26.12 StreamValue(index as Integer, byref value as CGPDFStreamMBS) as boolean

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** If the object with the given index is a pdf stream, this function will return it. **Notes:** Returns true on success and false on failure.

50.26.13 StringValue(index as Integer, byref value as CGPDFStringMBS) as boolean

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** If the object with the given index is a pdf string, this function will return it. **Notes:** Returns true on success and false on failure.

50.26.14 Properties

50.26.15 Document as CGPDFDocumentMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The document this PDF Array belongs to. **Notes:** (Read only property)

50.26.16 Handle as Integer

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle of the pdf array. **Notes:** (Read and Write property)
50.27.  **CLASS CGPDFCONTEXTMBS**

## 50.27  class CGPDFContextMBS

### 50.27.1  class CGPDFContextMBS

MBS MacCG Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
A CoreGraphics context for PDF specific functions.

**Example:**
```plaintext
// create pdf
dim file as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim r as new CGRectMBS(0,0,500,500)
dim c as CGContextMBS = file.NewCGPDFDocumentMBS(r, "My Title", "My Author", "My Creator")
if c<>Nil then
    // create page
    c.BeginPage r

    // draw something
    c.SetRGBFillColor(1.0, 0.0, 0.0, 1.0)
    c.FillRect CGMakeRectMBS( 100,100,100,100)

    // close page
    c.EndPage

    // flush and show in PDF viewer
    c = nil
    file.Launch
end if
```

**Notes:**
This class defines functions to create and get information about a Quartz PDF context. A CGPDFContext object is a type of CGContext that is used for drawing PDF content. The functions in this reference operate only on Quartz PDF graphics contexts created using the functions CGPDFContextCreate or CGPDFContextCreateWithURL.

When you draw to the PDF context using CGContext functions the drawing operations are recorded in PDF format. The PDF commands that represent the drawing are written to the destination specified when you create the PDF graphics context.

Subclass of the CGContextMBS class.
50.27.2 Methods

50.27.3 AddDestinationAtPoint(name as string, x as Double, y as Double)

MBS MacCG Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets a destination to jump to when a point in the current page of a PDF graphics context is clicked.

**Notes:**
- name: A destination name.
- x/y: A location in the current page of the PDF graphics context.
- Available in Mac OS X v10.4 and later.

50.27.4 BeginPage(pageInfo as dictionary)

MBS MacCG Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Begins a new page in a PDF graphics context.

**Notes:**
- pageInfo: A dictionary that contains key-value pairs that define the page properties.
- You must call the function EndPage to signal the end of the page.
- Available in Mac OS X v10.4 and later.

50.27.5 Close

MBS MacCG Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Closes a PDF document.

**Notes:**
- After closing the context, all pending data is written to the context destination, and the PDF file is completed. No additional data can be written to the destination context after the PDF document is closed.

50.27.6 EndPage

MBS MacCG Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Ends the current page in the PDF graphics context.

**Notes:**
- You can call EndPage only after you call the function BeginPage.

50.27.7 kCGPDFContextAllowsCopying as string

MBS MacCG Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the Keys that used to set up a PDF context.
Notes:
Whether the document allows copying when unlocked with the user password. The value of this key must be a Boolean object. The default value of this key is true. Available in Mac OS X v10.4 and later.

50.27.8 kCGPDFContextAllowsPrinting as string

MBS MacCG Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
One of the Keys that used to set up a PDF context.
Notes:
Whether the document allows printing when unlocked with the user password. The value of this key must be a boolean value. The default value of this key is true. Available in Mac OS X v10.4 and later.

50.27.9 kCGPDFContextArtBox as string

MBS MacCG Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
One of the Keys that specify various PDF boxes.
Notes:
The art box for the document or for a given page. This key is optional. If present, the value of this key must be a CGRectMBS. Available in Mac OS X v10.4 and later.

50.27.10 kCGPDFContextAuthor as string

MBS MacCG Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
One of the Keys that used to set up a PDF context.
Notes:
The corresponding value is a string that represents the name of the person who created the document. This key is optional. Available in Mac OS X v10.4 and later.

50.27.11 kCGPDFContextBleedBox as string

MBS MacCG Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
One of the Keys that specify various PDF boxes.
Notes:
The bleed box for the document or for a given page. This key is optional. If present, the value of this key must be a CGRectMBS object. Available in Mac OS X v10.4 and later.

50.27.12 kCGPDFContextCreator as string

MBS MacCG Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the Keys that used to set up a PDF context.  
**Notes:**  
The corresponding value is a string that represents the name of the application used to produce the document. This key is optional. Available in Mac OS X v10.4 and later.

50.27.13 kCGPDFContextCropBox as string

MBS MacCG Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the Keys that specify various PDF boxes.  
**Notes:**  
The crop box for the document or for a given page. This key is optional. If present, the value of this key must be a CGRect object. Available in Mac OS X v10.4 and later.

50.27.14 kCGPDFContextEncryptionKeyLength as string

MBS MacCG Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the Keys that used to set up a PDF context.  
**Notes:**  
The encryption key length in bits; see Table 3.18 "Entries common to all encryption dictionaries", PDF Reference: Adobe PDF version 1.5 (4th ed.) for more information. Optional; if present, the value of this key must be a number with value which is a multiple of 8 between 40 and 128, inclusive. If this key is absent or invalid, the encryption key length defaults to 40 bits. Available in Mac OS X v10.5 and later.

50.27.15 kCGPDFContextKeywords as string

MBS MacCG Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the Keys that used to set up a PDF context.  
**Notes:**
The keywords for this document. This key is optional. If the value of this key is a string, the /Keywords entry will be the specified string. If the value of this key is an array, then it must be an array of variants with strings. The /Keywords entry will, in this case, be the concatenation of the specified strings separated by commas (","). In addition, an entry with the key "/AAPL:Keywords" is stored in the document information dictionary; its value is an array consisting of each of the specified strings. The value of this key must be in one of the above forms; otherwise, this key is ignored.
Available in Mac OS X v10.5 and later.

50.27.16  kCGPDFContextMediaBox as string

MBS MacCG Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the Keys that specify various PDF boxes.
Notes:
The media box for the document or for a given page. This key is optional. If present, the value of this key must be a CGRectMBS object.
Available in Mac OS X v10.4 and later.

50.27.17  kCGPDFContextOutputIntent as string

MBS MacCG Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the Keys that used to set up a PDF context.
Notes:
The output intent PDF/X. This key is optional. If present, the value of this key must be a dictionary. The dictionary is added to the /OutputIntents entry in the PDF file document catalog. The keys and values contained in the dictionary must match those specified in section 9.10.4 of the PDF 1.4 specification, ISO/DIS 15930-3 document published by ISO/TC 130, and Adobe Technical Note # 5413.
Available in Mac OS X v10.4 and later.

50.27.18  kCGPDFContextOutputIntents as string

MBS MacCG Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the Keys that used to set up a PDF context.
Notes:
Output intent dictionaries. This key is optional. If present, the value must be an array of one or more kCGPDFContextOutputIntent dictionaries. The array is added to the PDF document in the /OutputIntents entry in the PDF file’s document catalog. Each dictionary in the array must be of form specified for the kCGPDFContextOutputIntent key, except that only the first dictionary in the array is required to contain the "S" key with a value of GTS_PDFX. If both the kCGPDFContextOutputIntent and kCGPDFContextOutputIntents keys are specified, the former is ignored.
Available in Mac OS X v10.4 and later.

50.27.19 kCGPDFContextOwnerPassword as string

MBS MacCG Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the Keys that used to set up a PDF context. **Notes:**
The owner password of the PDF document. If this key is specified, the document is encrypted using the value as the owner password; otherwise, the document will not be encrypted. The value of this key must be a string that can be represented in ASCII encoding. Only the first 32 bytes are used for the password. There is no default value for this key. If the value of this key cannot be represented in ASCII, the document is not created and the creation function returns nil. Available in Mac OS X v10.4 and later.

50.27.20 kCGPDFContextSubject as string

MBS MacCG Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the Keys that used to set up a PDF context. **Notes:**
The subject of a document. Optional; if present, the value of this key must be a string. Available in Mac OS X v10.5 and later.

50.27.21 kCGPDFContextTitle as string

MBS MacCG Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the Keys that used to set up a PDF context. **Notes:**
The corresponding value is a string that represents the title of the document. This key is optional. Available in Mac OS X v10.4 and later.

50.27.22 kCGPDFContextTrimBox as string

MBS MacCG Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the Keys that specify various PDF boxes. **Notes:**
The trim box for the document or for a given page. This key is optional. If present, the value of this key must be a memoryblock that contains a CGRect (stored by value, not by reference).
50.27. CLASS CGPDFCONTEXTMBS

Available in Mac OS X v10.4 and later.

50.27.23 kCGPDFContextUserPassword as string

MBS MacCG Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the Keys that used to set up a PDF context.

**Notes:**
The user password of the PDF document. If the document is encrypted, then the value of this key will be
the user password for the document. If not specified, the user password is the empty string. The value of
this key must be a string that can be represented in ASCII encoding; only the first 32 bytes will be used for
the password. If the value of this key cannot be represented in ASCII, the document is not created and the
creation function returns nil.
Available in Mac OS X v10.4 and later.

50.27.24 kCGPDFXDestinationOutputProfile as string

MBS MacCG Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the Output Intent Dictionary Keys.

**Notes:**
An ICC profile stream defining the transformation from the PDF document’s source colors to output device
colorants. This key is required if the value of kCGPDFXOutputConditionIdentifier does not specify a stan-
dard production condition. It is optional otherwise. If present, the value of this key must be an ICC-based
color space specified as a CGColorSpaceMBS object.
Available in Mac OS X v10.4 and later.

50.27.25 kCGPDFXInfo as string

MBS MacCG Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the Output Intent Dictionary Keys.

**Notes:**
A human-readable text string containing additional information or comments about the intended target de-
vice or production condition. This key is required if the value of kCGPDFXOutputConditionIdentifier does
not specify a standard production condition. It is optional otherwise. If present, the value of this key must
be a string.
Available in Mac OS X v10.4 and later.
50.27.26  kCGPDFXOutputCondition as string

Notes:
A text string identifying the intended output device or production condition in a human-readable form. This key is optional. If present, the value of this key must be a string.
Available in Mac OS X v10.4 and later.

50.27.27  kCGPDFXOutputConditionIdentifier as string

Notes:
A string identifying the intended output device or production condition in a human- or machine-readable form. This key is required. The value of this key must be a string. For best results, the string should be restricted to characters in the ASCII character set.
Available in Mac OS X v10.4 and later.

50.27.28  kCGPDFXOutputIntentSubtype as string


50.27.29  kCGPDFXRegistryName as string

Notes:
The output intent subtype. This key is required. The value of this key must be a String object equal to "GTS_PDFX"; otherwise, the dictionary is ignored.
Available in Mac OS X v10.4 and later.

50.27.30  SetDestinationForRect(name as string, x as Double, y as Double, w as Double, h as Double)

MBS MacCG Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Sets a destination to jump to when a rectangle in the current PDF page is clicked.
50.27. **CLASS CGPDFCONTEXTMBS**

**Notes:**

name: A destination name.
x,y,w,h: A rectangle that specifies an area of the current page of a PDF graphics context. The rectangle is specified in default user space (not device space).
Available in Mac OS X v10.4 and later.

50.27.31 **SetURLForRect(url as string, x as Double, y as Double, w as Double, h as Double)**

MBS MacCG Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Sets the URL associated with a rectangle in a PDF graphics context.

**Example:**

```pascal
dim c as CGPDFContextMBS // your pdf context
c.SetURLForRect("http://www.apple.com/", 100, 100, 100, 100)
```

**Notes:**

url: A string that specifies the destination of the contents associated with the rectangle.
rect: A rectangle specified in default user space (not device space).
Available in Mac OS X v10.4 and later.
50.28 class CGPDFDictionaryListMBS

50.28.1 class CGPDFDictionaryListMBS

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class for a pdf dictionary list.

50.28.2 Methods

50.28.3 Close

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The destructor.
**Notes:**
There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

50.28.4 Key(index as Integer) as string

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the key with the give index.
**Notes:** Returns "" on any error.

50.28.5 Value(index as Integer) as CGPDFObjectMBS

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The value with the given index.
**Notes:** Returns nil on any error.

50.28.6 Properties

50.28.7 Count as Integer

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the number of key& value pairs.
**Notes:**
50.28. **CLASS CGPDFDICTIONARYLISTMBS**

Returns 0 on any error.
(Read only property)

---

**50.28.8 Document as CGPDFF/documentMBS**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The document this PDF Dictionary belongs to.
**Notes:** (Read only property)
50.29 class CGPDFDictionaryMBS

50.29.1 class CGPDFDictionaryMBS

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
A class for a pdf dictionary.

50.29.2 Methods

50.29.3 ArrayValue(key as string, byref value as CGPDFArrayMBS) as boolean

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
If the object with the given key is a pdf array, this function will return it.
Notes: Returns true on success and false on failure.

50.29.4 BooleanValue(key as string, byref value as boolean) as boolean

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
If the object with the given key is a boolean value, this function will return it.
Notes: Returns true on success and false on failure.

50.29.5 Count as Integer

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The number of keys in this dictionary.

50.29.6 DictionaryValue(key as string, byref value as CGPDFDictionaryMBS) as boolean

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
If the object with the given key is a pdf dictionary, this function will return it.
Notes: Returns true on success and false on failure.

50.29.7 IntegerValue(key as string, byref value as Integer) as boolean

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
If the object with the given key is an integer value, this function will return it.
50.29. **CLASS CGPDFDICTIONARYMBS**

Notes:

Returns true on success and false on failure.
Is function will return double and integer values. Conversion is done automatically.

50.29.8 **List as CGPDFDictionaryListMBS**

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a list of all key& value pairs in the dictionary.
**Notes:** Returns nil on any error.

50.29.9 **NameValue(key as string, byref value as string) as boolean**

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
If the object with the given key is a name string, this function will return it.
**Notes:** Returns true on success and false on failure.

50.29.10 **ObjectValue(key as string, byref value as CGPDFObjectMBS) as boolean**

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
If the object with the given key is a pdf object, this function will return it.
**Notes:** Returns true on success and false on failure.

50.29.11 **SingleValue(key as string, byref value as Double) as boolean**

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
If the object with the given key is a floating point value, this function will return it.
**Notes:**
Returns true on success and false on failure.
Is function will return double and integer values. Conversion is done automatically.

50.29.12 **StreamValue(key as string, byref value as CGPDFStreamMBS) as boolean**

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
If the object with the given key is a pdf stream, this function will return it.
Notes: Returns true on success and false on failure.

50.29.13 StringValue(key as string, byref value as CGPDFStringMBS) as boolean

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: If the object with the given key is a pdf string, this function will return it.
Notes: Returns true on success and false on failure.

50.29.14 Properties

50.29.15 Document as CGPDFDocumentMBS

Notes: (Read only property)

50.29.16 Handle as Integer

Notes: (Read and Write property)
50.30  class CGPDFDocumentMBS

50.30.1  class CGPDFDocumentMBS

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class for a core graphics pdf document.

**Example:**

```vbscript
dim f as FolderItem
dim input as CGPDFDocumentMBS
dim output as CGContextMBS
dim r,c as CGRectMBS

f=SpecialFolder.Desktop.Child("test.pdf")
input=f.OpenAsCGPDFDocumentMBS

r=CGMakeRectMBS(0,0,200,200) // 200 by 200 Pixel page

f=SpecialFolder.Desktop.Child("output.pdf")
output=f.NewCGPDFDocumentMBS(r,"SomeTitle","SomeAuthor","SomeCreator")

// Create a new page
output.BeginPage r

// get size of input page one
c=input.CropBox(1)

// clip to a part of the new page leaving a border
r=CGMakeRectMBS(20,20,160,160)
output.ClipToRect r

// draw old pdf on a different position
c.top=-100
c.left=-100

// do the drawing of page one of input at new new output
output.DrawCGPDFDocument(input,c,1)

// cleanup
output.EndPage
output.Flush
```

**Notes:** If the release property is true, the destructor of this class will release the pdfdocument reference.
50.30.2 Methods

50.30.3 ArtBox(page as Integer) as CGRectMBS

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the ArtBox of this page.  
**Notes:**  
Returns nil on any error.  
This function is deprecated by Apple in favor of using the CGPDFPageMBS class.

50.30.4 BleedBox(page as Integer) as CGRectMBS

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the BleedBox of this page.  
**Notes:**  
Returns nil on any error.  
This function is deprecated by Apple in favor of using the CGPDFPageMBS class.

50.30.5 Catalog as CGPDFDictionaryMBS

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return the document catalog of 'document'.

50.30.6 Constructor(dataProvider as CGDataProviderMBS)

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a Quartz PDF document using a data provider.  
**Notes:** Distributing individual pages of a PDF document to separate threads is not supported. If you want to use threads, consider creating a separate document for each thread and operating on a block of pages per thread.  
See also:

- 50.30.7 Constructor(file as folderitem) 8245
- 50.30.8 Constructor(Handle as Integer) 8245
- 50.30.9 Constructor(url as string) 8245
50.30. **CLASS CGPDFDOCUMENTMBS**

### 50.30.7 Constructor(file as folderitem)

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a Quartz PDF document using data specified by a file. **Notes:** Distributing individual pages of a PDF document to separate threads is not supported. If you want to use threads, consider creating a separate document for each thread and operating on a block of pages per thread. See also:

- 50.30.6 Constructor(dataProvider as CGDataProviderMBS) 8244
- 50.30.8 Constructor(Handle as Integer) 8245
- 50.30.9 Constructor(url as string) 8245

### 50.30.8 Constructor(Handle as Integer)

MBS MacCG Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a Quartz PDF document object based on the given handle value. **Notes:** Handle must not be zero and should be a valid CGPDFDocumentRef casted to integer. See also:

- 50.30.6 Constructor(dataProvider as CGDataProviderMBS) 8244
- 50.30.7 Constructor(file as folderitem) 8245
- 50.30.9 Constructor(url as string) 8245

### 50.30.9 Constructor(url as string)

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a Quartz PDF document using data specified by a URL. **Notes:** Distributing individual pages of a PDF document to separate threads is not supported. If you want to use threads, consider creating a separate document for each thread and operating on a block of pages per thread. See also:

- 50.30.6 Constructor(dataProvider as CGDataProviderMBS) 8244
- 50.30.7 Constructor(file as folderitem) 8245
- 50.30.8 Constructor(Handle as Integer) 8245

### 50.30.10 CreateWithData(data as Memoryblock) as CGPDFDocumentMBS

Notes: Distributing individual pages of a PDF document to separate threads is not supported. If you want to use threads, consider creating a separate document for each thread and operating on a block of pages per thread.
See also:

- 50.30.11 CreateWithData(data as string) as CGPDFDocumentMBS

50.30.11 CreateWithData(data as string) as CGPDFDocumentMBS

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a Quartz PDF document using data.
Notes: Distributing individual pages of a PDF document to separate threads is not supported. If you want to use threads, consider creating a separate document for each thread and operating on a block of pages per thread.
See also:

- 50.30.10 CreateWithData(data as Memoryblock) as CGPDFDocumentMBS

50.30.12 CreateWithFile(file as folderitem) as CGPDFDocumentMBS

Notes: Distributing individual pages of a PDF document to separate threads is not supported. If you want to use threads, consider creating a separate document for each thread and operating on a block of pages per thread.

50.30.13 CreateWithProvider(dataProvider as CGDataProviderMBS) as CGPDFDocumentMBS

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a Quartz PDF document using a data provider.
Notes: Distributing individual pages of a PDF document to separate threads is not supported. If you want to use threads, consider creating a separate document for each thread and operating on a block of pages per thread.

50.30.14 CreateWithURL(url as string) as CGPDFDocumentMBS

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a Quartz PDF document using data specified by a URL.
Notes: Distributing individual pages of a PDF document to separate threads is not supported. If you want to use threads, consider creating a separate document for each thread and operating on a block of pages per
50.30.15 CropBox(page as Integer) as CGRectMBS

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the CropBox of this page.  
**Notes:**  
Returns nil on any error.  
This function is deprecated by Apple in favor of using the CGPDFPageMBS class.

50.30.16 GetID as CGPDFArrayMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Gets the file identifier for a PDF document.  
**Notes:**  
A PDF file identifier is defined in the PDF specification as an array of two strings, the first of which is a permanent identifier that doesn’t change even when the file is updated. The second string changes each time the file is updated. For more information, see PDF Reference: Version 1.3 (Second Edition), Adobe Systems Incorporated.  
Available in Mac OS X v10.4 and later.

50.30.17 GetInfo as CGPDFDictionaryMBS

MBS MacCG Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries the PDF info dictionary.  
**Example:**  
```
    dim f as FolderItem = SpecialFolder.Desktop.Child(“test.pdf”)  
    dim p as CGPDFDocumentMBS = f.Open As CGPDFDocumentMBS
    
    dim Co as CGPDFStringMBS  
    dim info as CGPDFDictionaryMBS = p.GetInfo  
    if info.StringValue(“Subject”, co) then  
        MsgBox co.Text  // shows subject  
    end if
```

**Notes:** Returns nil on any error.
50.30.18 MediaBox(page as Integer) as CGRectMBS

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the MediaBox of this page.
Notes: Returns nil on any error.
This function is deprecated by Apple in favor of using the CGPDFPageMBS class.

50.30.19 Page(index as Integer) as CGPDFPageMBS


50.30.20 RotationAngle(page as Integer) as Integer

Notes: Returns 0 on any error.

50.30.21 TrimBox(page as Integer) as CGRectMBS

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the TrimBox of this page.
Notes: Returns nil on any error.
This function is deprecated by Apple in favor of using the CGPDFPageMBS class.

50.30.22 UnlockWithPassword(name as string) as boolean

Notes: A document is unlocked if it isn’t encrypted, or if it is encrypted and a valid password was previously specified with CGPDFDocumentUnlockWithPassword.
50.30.23 Properties

50.30.24 AllowsCopying as Boolean

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return true if ’document’ allows copying; false otherwise.
**Notes:**
Typically, this function returns false only if the document is encrypted and the document’s current password doesn’t grant permission to perform copying.
(Read only property)

50.30.25 AllowsPrinting as Boolean

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return true if ’document’ allows printing; false otherwise.
**Notes:**
Typically, this function returns false only if the document is encrypted and the document’s current password doesn’t grant permission to perform printing.
(Read only property)

50.30.26 handle as Integer

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle for this pdfdocument.
**Notes:**
Handle is a CGPDFDocumentRef.
(Read and Write property)

50.30.27 IsEncrypted as Boolean

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return true if the PDF file associated with ’document’ is encrypted; false otherwise.
**Notes:**
If the PDF file is encrypted, then a password must be supplied before certain operations are enabled; different passwords may enable different operations.
(Read only property)
50.30.28  **IsUnlocked as Boolean**

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Return true if 'document' is unlocked; false otherwise.

**Notes:**
A document is unlocked if it isn’t encrypted, or if it is encrypted and a valid password was previously specified with CGPDFDocumentUnlockWithPassword.
(Read only property)

50.30.29  **MajorVersion as Integer**

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the major version of the pdf document.

**Notes:** (Read only property)

50.30.30  **MinorVersion as Integer**

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the minor version of the pdf document.

**Notes:** (Read only property)

50.30.31  **PageCount as Integer**

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Counts the pages inside the PDF document.

**Example:**
```dim f as FolderItem
dim d as CGPDFDocumentMBS
f=SpecialFolder.Desktop.Child("test.pdf")
d=f.OpenAsCGPDFDocumentMBS
MsgBox str(d.PageCount)
```

**Notes:**
Returns 0 on any error.
(Read only property)
50.31 class CGPDFObjectMBS

50.31.1 class CGPDFObjectMBS

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a pdf object.

50.31.2 Methods

50.31.3 ArrayValue(byref value as CGPDFArrayMBS) as boolean

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** If the object contains a pdf array, this function will return it. **Notes:** Returns true on success and false on failure.

50.31.4 BooleanValue(byref value as boolean) as boolean

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** If the object contains a boolean, this function will return it. **Notes:** Returns true on success and false on failure.

50.31.5 DictionaryValue(byref value as CGPDFDictionaryMBS) as boolean

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** If the object contains a pdf dictionary, this function will return it. **Notes:** Returns true on success and false on failure.

50.31.6 IntegerValue(byref value as Integer) as boolean

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** If the object contains an integer, this function will return it. **Notes:** Returns true on success and false on failure. Is function will return double and integer values. Conversion is done automatically.
**50.31.7 NameValue(byref value as string) as boolean**

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
If the object contains a name string, this function will return it.
**Notes:** Returns true on success and false on failure.

**50.31.8 SingleValue(byref value as Double) as boolean**

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
If the object contains a floating point number, this function will return it.
**Notes:**
Returns true on success and false on failure.
Is function will return double and integer values. Conversion is done automatically.

**50.31.9 StreamValue(byref value as CGPDFStreamMBS) as boolean**

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
If the object contains a pdf stream, this function will return it.
**Notes:** Returns true on success and false on failure.

**50.31.10 StringValue(byref value as CGPDFStringMBS) as boolean**

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
If the object contains a pdf string, this function will return it.
**Notes:** Returns true on success and false on failure.

**50.31.11 Type as Integer**

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the type of the object content.
**Notes:**
Some useful constants:

- kCGPDFObjectTypeNull = 1
- kCGPDFObjectTypeBoolean = 2
- kCGPDFObjectTypeInteger = 3
- kCGPDFObjectTypeReal = 4
- kCGPDFObjectTypeName = 5
50.31. CLASS CGPDFOBJECTMBS

kCGPDFObjectTypeString = 6
kCGPDFObjectTypeArray = 7
kCGPDFObjectTypeDictionary = 8
kCGPDFObjectTypeStream = 9

50.31.12 Properties

50.31.13 Document as CGPDFDocumentMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The document this PDF Object belongs to. **Notes:** (Read only property)

50.31.14 Handle as Integer

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle of the pdf object. **Notes:** (Read and Write property)

50.31.15 Constants

50.31.16 kCGPDFObjectTypeArray = 7

MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the type constants for a PDF object type. **Notes:** Type for a PDF array.

50.31.17 kCGPDFObjectTypeBoolean = 2

MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the type constants for a PDF object type. **Notes:** The type for a PDF Boolean.

50.31.18 kCGPDFObjectTypeDictionary = 8

MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the type constants for a PDF object type. **Notes:** The type for a PDF dictionary.
50.31.19  kCGPDFObjectTypeInteger = 3

MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the type constants for a PDF object type. **Notes:** The type for a PDF integer.

50.31.20  kCGPDFObjectTypeKeyName = 5

MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the type constants for a PDF object type. **Notes:** Type for a PDF name.

50.31.21  kCGPDFObjectTypeNull = 1

MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the type constants for a PDF object type. **Notes:** The type for a PDF null.

50.31.22  kCGPDFObjectTypeReal = 4

MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the type constants for a PDF object type. **Notes:** The type for a PDF real.

50.31.23  kCGPDFObjectTypeStream = 9

MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the type constants for a PDF object type. **Notes:** The type for a PDF stream.

50.31.24  kCGPDFObjectTypeString = 6

MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the type constants for a PDF object type. **Notes:** The type for a PDF string.
50.32. CLASS CGPDFPAGEMBS

50.32.1 class CGPDFPageMBS

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a pdf page.

50.32.2 Methods

50.32.3 ArtBox as CGRectMBS

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the ArtBox of this page.

**Notes:**

Returns nil on any error.
This is the value of the corresponding entry in the page’s dictionary.

50.32.4 BleedBox as CGRectMBS

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the BleedBox of this page.

**Notes:**

Returns nil on any error.
This is the value of the corresponding entry in the page’s dictionary.

50.32.5 CropBox as CGRectMBS

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the BleedBox of this page.

**Notes:**

Returns nil on any error.
This is the value of the corresponding entry in the page’s dictionary.

50.32.6 Dictionary as CGPDFDictionaryMBS

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The information dictionary of this page.
50.32.7 MediaBox as CGRectMBS

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the MediaBox of this page.

**Notes:**
Returns nil on any error.
This is the value of the corresponding entry in the page’s dictionary.

50.32.8 PageNumber as Integer

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The page number of this page.

50.32.9 RotationAngle as Integer

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the rotation of a page in degrees.

**Notes:** This is the value of the /Rotate entry in the page’s dictionary.

50.32.10 TrimBox as CGRectMBS

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the TrimBox of this page.

**Notes:**
Returns nil on any error.
This is the value of the corresponding entry in the page’s dictionary.

50.32.11 Properties

50.32.12 Document as CGPDFDocumentMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The document this PDF Page belongs to.
50.32. **CLASS CGPDFPAGEMBS**

**Notes:** (Read only property)

### 50.32.13 Handle as Integer

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The handle of the pdf page.
**Notes:** (Read and Write property)

### 50.32.14 Constants

#### 50.32.15 kCGPDFArtBox=4

MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the box types for a PDF page.
**Notes:**
The page art box a rectangle, expressed in default user space units, defining the extent of the page’s meaningful content (including potential white space) as intended by the page’s creator.

Available in Mac OS X v10.3 and later.

#### 50.32.16 kCGPDFBleedBox=2

MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the box types for a PDF page.
**Notes:**
The page bleed box a rectangle, expressed in default user space units, that defines the region to which the contents of the page should be clipped when output in a production environment

Available in Mac OS X v10.3 and later.

#### 50.32.17 kCGPDFCropBox=1

MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the box types for a PDF page.
**Notes:**
The page crop box a rectangle, expressed in default user space units, that defines the visible region of default user space. When the page is displayed or printed, its contents are to be clipped to this rectangle.
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Available in Mac OS X v10.3 and later.

50.32.18 kCGPDFMediaBox=0

MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the box types for a PDF page.  
**Notes:**

The page media box a rectangle, expressed in default user space units, that defines the boundaries of the physical medium on which the page is intended to be displayed or printed.

Available in Mac OS X v10.3 and later.

50.32.19 kCGPDFTrimBox=3

MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the box types for a PDF page.  
**Notes:**

The page trim box a rectangle, expressed in default user space units, that defines the intended dimensions of the finished page after trimming.

Available in Mac OS X v10.3 and later.
class CGPDFStreamMBS

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
A class for a pdf stream.

Methods

Data(byref format as Integer) as string

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The data of this pdf stream.
Notes:
Format is set to one of the following constants:

- CGPDFDataFormatRaw 0
- CGPDFDataFormatJPEGEncoded 1
- CGPDFDataFormatJPEG2000 2

Returns nil on any error.

Dictionary as CGPDFDictionaryMBS

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The information dictionary for this stream.
Notes: Returns nil on any error.

Properties

Document as CGPDFDocumentMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The document this PDF Stream belongs to.
Notes: (Read only property)
50.33.7 Handle as Integer

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle of the pdf stream. **Notes:** (Read and Write property)

50.33.8 Constants

50.33.9 CGPDFDataFormatJPEG2000=2

MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the data format constants.

50.33.10 CGPDFDataFormatJPEGEncoded=1

MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the data format constants.

50.33.11 CGPDFDataFormatRaw=0

MBS MacCG Plugin, Plugin Version: 9.5. **Function:** One of the data format constants.
50.34.1 class CGPDFStringMBS

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a pdf string.

50.34.2 Methods

50.34.3 Bytes as MemoryBlock

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The bytes of this pdf string. **Notes:** Returns nil on any error. This memoryblock is not encoding safe!

50.34.4 Length as Integer

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The length of the text.

50.34.5 Text as string

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The text of the pdf string as a string. **Notes:** In contrast to the bytes in the memoryblock, this String is encoding safe. Returns nil on any error.

50.34.6 Properties

50.34.7 Document as CGPDFDocumentMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The document this PDF String belongs to.
50.34.8 Handle as Integer

MBS MacCG Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The handle of the pdf string.
**Notes:** (Read and Write property)
50.35. CLASS CGPICTURECONTEXTMBS

50.35  class CGPictureContextMBS

50.35.1  class CGPictureContextMBS

MBS MacCG Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A subclass of the CGBitmapContextMBS class to draw into a picture.

**Notes:**
This class creates a picture bitmap which can be copied into a RB picture. Only for Carbon!

You need to call CGPictureContextMBS or fill background with some color as there may be random bytes in the picture memory.
The image is not cleared in the constructor for you (to increase performance where it’s not needed). You may need to call ClearRect.
Subclass of the CGBitmapContextMBS class.

50.35.2  Methods

50.35.3  Constructor(width as Integer, height as Integer)

MBS MacCG Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor: Creates a new picture.

**Notes:**
On success the handle property is not 0.

You need to call CGPictureContextMBS or fill background with some color as there may be random bytes in the picture memory.
For Cocoa apps, the picture will have a normal Xojo picture to draw inside and you get that picture back with CopyPicture. For 32-bit Carbon we use a GWorld which has Mask and picture part.
See also:

- 50.35.4 Constructor(width as Integer, height as Integer, ColorSpace as CGColorSpaceMBS)

50.35.4  Constructor(width as Integer, height as Integer, ColorSpace as CGColorSpaceMBS)

MBS MacCG Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor: Creates a new picture.

**Notes:**
On success the handle property is not 0.
You need to call CGPictureContextMBS or fill background with some color as there may be random bytes in the picture memory. For 64-bit Cocoa apps, the picture will have a normal Xojo picture to draw inside and you get that picture back with CopyPicture. For 32-bit we use a GWorld which has Mask and picture part. See also:

- 50.35.3 Constructor(width as Integer, height as Integer)

### 50.35.5 CopyPicture as picture

MBS MacCG Plugin, Plugin Version: 4.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns a copy of the picture as a Realbasic picture object. **Example:**

```basic
dim c as CGPictureContextMBS

c=new CGPictureContextMBS(100,100)

c.SetRGBFillColor 1,0,0,1

c.FillRect CGMakeRectMBS(0,0,50,50)

Backdrop=c.CopyPicture
```

**Notes:** Returns nil on any error.

### 50.35.6 CopyPictureMask as picture

MBS MacCG Plugin, Plugin Version: 4.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns a copy of the picture’s mask as a Realbasic picture object. **Example:**

```basic
dim c as CGPictureContextMBS

c=new CGPictureContextMBS(100,100)

c.SetRGBFillColor 1,0,0,0.5

c.FillRect CGMakeRectMBS(0,0,50,50)

Backdrop=c.CopyPictureMask
```

**Notes:** Returns nil on any error.
**50.35.7  CopyPictureWithMask as picture**

MBS MacCG Plugin, Plugin Version: 13.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**

Returns copy of the current context content as a picture with mask.

**Example:**

Function GetIcon(f as folderitem, w as Integer, h as Integer, WantAlphaPicture as Boolean = false) As picture

const DrawNormal=0
const DrawNoImage=2
const DrawNoMask=4
const DrawSelected=& h8000

// get icon
dim i as new iconmbs(f)

if i.Valid then

if TargetCocoa and WantAlphaPicture then
   // Cocoa only: Make Picture with alpha channel
   dim p as new Picture(w, h)
   dim c as CGBitmapContextMBS = CGBitmapContextMBS.CreateWithPicture(p)
   c.ClearRect CGMakeRectMBS(0,0,w,h)
   // draw icon
   i.DrawIconCGContext(c.Handle, 0,0,w,h,0,0,DrawNormal,& c 000000)
   c.Flush
   Return p
else
   // Cocoa or Carbon: Make Picture with mask
   // make bitmap context
   dim c as new CGPictureContextMBS(w,h)
   c.ClearRect CGMakeRectMBS(0,0,w,h)
   // draw icon
   i.DrawIconCGContext(c.Handle, 0,0,w,h,0,0,DrawNormal,& c000000)
   c.Flush
   // and copy to picture
   Return c.CopyPictureWithMask
end if
Notes: Returns nil on out of memory.

50.35.8  SetMask(mask as picture) as boolean

MBS MacCG Plugin, Plugin Version: 4.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
Draws the given picture in the mask of the CGPicture.
Notes:
The alpha value is taken from one of the color channels.
Use a greyscale image inside a 32bit bitmap picture for this.
Size of the mask picture and the CGPictureContext need not fit.
Returns true on success.

50.35.9  Properties

50.35.10  GWorldHandle as Integer

MBS MacCG Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The handle of the used GWorld.
Notes:
Only useful for Toolbox calls.
(Read and Write property)
50.36   class CGPointMBS

50.36.1   class CGPointMBS

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a core graphics point.

50.36.2   Methods

50.36.3   ApplyAffineTransform(p as CGAffineTransformMBS) as CGPointMBS

MBS MacCG Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Transform 'point' by 't' and return the result: p’ = p * t where p = \[ x \ y \ 1 \].

50.36.4   Binary as MemoryBlock

MBS MacCG Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the internal data of the object as a CGPoint for use on Toolbox calls. **Example:**

```plaintext
dim c as CGPointMBS
dim m as MemoryBlock
c=CGMakePointMBS(10,20)
m=c.Binary
MsgBox str(m.Size) // 8
MsgBox str(m.doubleValue( 0)) // 10
MsgBox str(m.doubleValue( 4)) // 20
```

50.36.5   Constructor

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new point object with the given values. **See also:**

- 50.36.6 Constructor(p as Ptr)
- 50.36.7 Constructor(source as CGPointMBS)
50.36.6 Constructor(p as Ptr)

MBS MacCG Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new instance using data at the pointer. **Notes:** Make sure the pointer is valid and has the right data and size. **See also:**
- 50.36.5 Constructor
- 50.36.7 Constructor(source as CGPointMBS)
- 50.36.8 Constructor(x as Double, y as Double)

50.36.7 Constructor(source as CGPointMBS)

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new point object with the given values. **See also:**
- 50.36.5 Constructor
- 50.36.6 Constructor(p as Ptr)
- 50.36.8 Constructor(x as Double, y as Double)

50.36.8 Constructor(x as Double, y as Double)

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new point object with the given values. **See also:**
- 50.36.5 Constructor
- 50.36.6 Constructor(p as Ptr)
- 50.36.7 Constructor(source as CGPointMBS)

50.36.9 Equal(p as CGPointMBS) as boolean

MBS MacCG Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if both points are equal.
50.36. **CLASS CGPOINTMBS**

50.36.10 **Make(x as Double, y as Double) as CGPointMBS**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a new CGPointMBS object.

50.36.11 **Zero as CGPointMBS**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the zero point.
**Notes:** The "zero" point – equivalent to CGMakePointMBS(0, 0).

50.36.12 **Properties**

50.36.13 **x as Double**

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The X property of the point.
**Notes:** (Read and Write property)

50.36.14 **y as Double**

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Y property of the point.
**Notes:** (Read and Write property)
50.37  class CGPSConverterMBS

50.37.1  class CGPSConverterMBS

MBS MacCG Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class in CoreGraphics to convert Postscript code to PDF data.
**Notes:** Requires Mac OS X 10.3.

50.37.2  Methods

50.37.3  Abort as boolean

MBS MacCG Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Tell the converter to abort conversion at the next possible opportunity.
**Notes:** Returns false on any error and true on success.

50.37.4  Constructor(options as Dictionary = nil)

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create a CGPSConverter.
**Notes:**
Currently you should pass nil for options. (Mac OS X 10.3)
On failure the handle property is zero.

50.37.5  Convert(provider as CGDataProviderMBS, consumer as CGDataConsumerMBS, options as Dictionary = nil) as boolean

MBS MacCG Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Converts PostScript data to PDF data.
**Notes:**
The PostScript data is supplied by provider; the resulting PDF is written to consumer. Returns true if the conversion succeeded; false otherwise.

50.37.6  IsConverting as boolean

MBS MacCG Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if the converter is currently converting data.
50.37. **CLASS CGPSCONVERTERMBS**

**Notes:** False on any error.

### 50.37.7 Properties

#### 50.37.8 Handle as Integer

MBS MacCG Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

The handle to the CGPSConverter object.

**Notes:**

Datatype is CGPSConverterRef.
(Read and Write property)

### 50.37.9 Events

#### 50.37.10 BeginDocument

MBS MacCG Plugin, Plugin Version: 4.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**

Is called at the beginning of the conversion of the PostScript document.

#### 50.37.11 BeginPage(PageNumber as Integer, PageInfo as Dictionary)

MBS MacCG Plugin, Plugin Version: 4.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**

Called at the start of the conversion of each page in the PostScript document.

#### 50.37.12 EndDocument(success as boolean)

MBS MacCG Plugin, Plugin Version: 4.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**

Called at the end of conversion of the PostScript document.

#### 50.37.13 EndPage(PageNumber as Integer, PageInfo as Dictionary)

MBS MacCG Plugin, Plugin Version: 4.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**

Called at the end of the conversion of each page in the PostScript document.
50.37.14 Finished

MBS MacCG Plugin, Plugin Version: 4.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called when the converter is no longer needed.

50.37.15 Message(message as string)

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called to pass any messages that might result during the conversion.

50.37.16 Progress

MBS MacCG Plugin, Plugin Version: 4.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called periodically during the conversion to indicate that conversion is proceeding.
50.38. **CLASS CGRectMBS**

50.38.1 **class CGRectMBS**

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a core graphics rectangle.

50.38.2 **Methods**

50.38.3 **ApplyAffineTransform(a as CGAffineTransformMBS) as CGRectMBS**

MBS MacCG Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Applies an affine transform to the rectangle and returns the result. **Example:**

```vbscript
Dim af As CGAffineTransformMBS = CGAffineTransformMBS.Identity
MsgBox str(af.A) + " " + str(af.b) + " " + str(af.c) + " " + str(af.d) + " " + str(af.tx) + " " + str(af.ty)
af = af.Scale( 1, -1 )
MsgBox str(af.A) + " " + str(af.b) + " " + str(af.c) + " " + str(af.d) + " " + str(af.tx) + " " + str(af.ty)
af = af.Translate( 0, 100 )
MsgBox str(af.A) + " " + str(af.b) + " " + str(af.c) + " " + str(af.d) + " " + str(af.tx) + " " + str(af.ty)
Dim r1 As CGRectMBS
Dim r2 As CGRectMBS
r1 = CGRectMBS.MakeRectMBS(100,100,100,100)
r2 = r1.ApplyAffineTransform(af)
MsgBox "(" + str(r1.Left) + ", " + str(r1.top) + ", " + str(r1.width) + ", " + str(r1.height) + ") -> (" + str(r2.Left) + ", " + str(r2.top) + ", " + str(r2.width) + ", " + str(r2.height) + ")"
```

**Notes:** Returns nil on any error.
50.38.4 Binary as MemoryBlock

MBS MacCG Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the internal data of the object as a CGRect for use on Toolbox calls.

**Example:**
```pascal
dim c as CGRectMBS
dim m as MemoryBlock
c=CGMakeRectMBS(10,20,30,40)
m=c.Binary
```

```pascal
MsgBox str(m.Size) // 16
MsgBox str(m.doubleValue( 0)) // 10
MsgBox str(m.doubleValue( 4)) // 20
MsgBox str(m.doubleValue( 8)) // 30
MsgBox str(m.doubleValue(12)) // 40
```

50.38.5 Constructor

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor to create a zero rectangle.

**See also:**
- 50.38.6 Constructor(p as Ptr)
- 50.38.7 Constructor(source as CGRectMBS)
- 50.38.8 Constructor(x as Double, y as Double, width as Double, height as Double)

50.38.6 Constructor(p as Ptr)

MBS MacCG Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new instance using data at the pointer.

**Notes:** Make sure the pointer is valid and has the right data and size.

**See also:**
- 50.38.5 Constructor
- 50.38.7 Constructor(source as CGRectMBS)
- 50.38.8 Constructor(x as Double, y as Double, width as Double, height as Double)
50.38. **CLASS CGRECTMBS**

### 50.38.7 Constructor(source as CGRectMBS)

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Creates a new CGRectMBS object by copying the values.

See also:

- 50.38.5 Constructor
- 50.38.6 Constructor(p as Ptr)
- 50.38.8 Constructor(x as Double, y as Double, width as Double, height as Double)

### 50.38.8 Constructor(x as Double, y as Double, width as Double, height as Double)

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Creates a new CGRectMBS object with the given values.

See also:

- 50.38.5 Constructor
- 50.38.6 Constructor(p as Ptr)
- 50.38.7 Constructor(source as CGRectMBS)

### 50.38.9 ContainsPoint(r as CGPointMBS) as boolean

MBS MacCG Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Return true if 'point' is contained in the rect, false otherwise.

### 50.38.10 ContainsRect(r as CGRectMBS) as boolean

MBS MacCG Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Return true if 'rect2' is contained in 'rect1', false otherwise.

**Notes:**

'rect2' is contained in 'rect1' if the union of 'rect1' and 'rect2' is equal to 'rect1'.
(rect1 is the current rect and rect2 the rect you pass to this function)

### 50.38.11 Divide(byref slice as CGRectMBS, byref remainder as CGRectMBS, amount as Double, edge as Integer)

MBS MacCG Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Divides the rectangle.
**Notes:** Make two new rectangles, 'slice' and 'remainder', by dividing the rect with a line that’s parallel to one of its sides, specified by 'edge' – either 'CGRectMinXEdge', 'CGRectMinYEdge', 'CGRectMaxXEdge', or 'CGRectMaxYEdge'. The size of 'slice' is determined by 'amount', which measures the distance from the specified edge.

### 50.38.12 Equal(r as CGRectMBS) as boolean

MBS MacCG Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if both rectangles are equal.

### 50.38.13 Infinite as CGRectMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A rectangle that has infinite extent. **Example:**
```dim r as CGRectMBS = CGRectMBS.Infinite
MsgBox str(r.Left)+" "+str(r.Top)+" "+str(r.Width)+" "+str(r.Height)```

**Notes:** Available in Mac OS X v10.4 and later.

### 50.38.14 Inset(dx as Double, dy as Double) as CGRectMBS

MBS MacCG Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Inset the rect by '(dx, dy)' – i.e., offset its origin by '(dx, dy)', and decrease its size by '(2*dx, 2*dy)'

### 50.38.15 Integral as CGRectMBS

MBS MacCG Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Expand the rect to the smallest rect containing it with integral origin and size.

### 50.38.16 Intersection(r as CGRectMBS) as CGRectMBS

MBS MacCG Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return the intersection of both rectangles. **Notes:** This may return a null rect.
50.38.17 **IntersectsRect(r as CGRectMBS) as boolean**

MBS MacCG Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return true if 'rect1' intersects 'rect2', false otherwise.
**Notes:** 'rect1' intersect 'rect2' if the intersection of 'rect1' and 'rect2' is not the null rect.

50.38.18 **IsEmpty as boolean**

MBS MacCG Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return true if the rect is empty – i.e., if it has zero width or height.
**Notes:** A null rect is defined to be empty.

50.38.19 **IsInfinite as boolean**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns whether a rectangle is infinite.
**Notes:** Returns true if the specified rectangle is infinite, false otherwise.

An infinite rectangle is one that has no defined bounds. Infinite rectangles can be created as output from a tiling filter. For example, the Core Image framework perspective tile filter creates an image whose extent is described by an infinite rectangle.

50.38.20 **IsNull as boolean**

MBS MacCG Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return true if the rect is null – e.g., the result of intersecting two disjoint rectangles is a null rect.

50.38.21 **Make(x as Double, y as Double, width as Double, height as Double) as CGRectMBS**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a new CGRectMBS object with the given values.
**Example:**

```dim r as CGRectMBS = CGRectMBS.Make(1,2,3,4)
MsgBox str(r.Left)+" "+str(R.Top)+" "+str(R.Width)+" "+str(r.Height)```
50.38.22 MaxX as Double

MBS MacCG Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return the rightmost x-value of the rect.

**Example:**

```vba
dim r as CGRectMBS = CGMakeRectMBS(10, 20, 30, 40)
MsgBox str(r.MaxX) // 40
```

50.38.23 MaxY as Double

MBS MacCG Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return the topmost y-value of the rect.

**Example:**

```vba
dim r as CGRectMBS = CGMakeRectMBS(10, 20, 30, 40)
MsgBox str(r.MaxY) // 60
```

50.38.24 MidX as Double

MBS MacCG Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return the midpoint x-value of the rect.

**Example:**

```vba
dim r as CGRectMBS = CGMakeRectMBS(10, 20, 30, 40)
MsgBox str(r.MidX) // 25
```

50.38.25 MidY as Double

MBS MacCG Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return the midpoint y-value of the rect.

**Example:**

```vba
dim r as CGRectMBS = CGMakeRectMBS(10, 20, 30, 40)
MsgBox str(r.MidY) // 40
```
50.38. **CLASS CGRECTMBS**

50.38.26 **MinX as Double**

MBS MacCG Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Return the leftmost x-value of the rect.
**Example:**
```vba
dim r as CGRectMBS = CGMakeRectMBS(10, 20, 30, 40)
MsgBox str(r.MinX) // 10
```

50.38.27 **MinY as Double**

MBS MacCG Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Return the bottommost y-value of the rect.
**Example:**
```vba
dim r as CGRectMBS = CGMakeRectMBS(10, 20, 30, 40)
MsgBox str(r.MinY) // 20
```

50.38.28 **Null as CGRectMBS**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the null rect.
**Example:**
```vba
dim r as CGRectMBS = CGRectMBS.Null
MsgBox str(r.Left)+" "+str(r.Top)+" "+str(r.Width)+" "+str(r.Height)
```

**Notes:**
The "empty" rect. This is the rectangle returned when, for example, we intersect two disjoint rectangles. Note that the null rect is not the same as the zero rect.

50.38.29 **Offset(dx as Double, dy as Double) as CGRectMBS**

MBS MacCG Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Offset the rect by '(dx, dy)'.
50.38.30 **Standardize as CGRectMBS**

MBS MacCG Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Standardize the rect – i.e., convert it to an equivalent rect which has positive width and height.

**Example:**

```vbscript
dim r as CGRectMBS = CGRectMBS.Make(5, 6, -3, -2)
MsgBox str(r.Left)+" "+str(r.Top)+" "+str(r.Width)+" "+str(r.Height)
r = r.Standardize
MsgBox str(r.Left)+" "+str(r.Top)+" "+str(r.Width)+" "+str(r.Height)
```

50.38.31 **Union(r as CGRectMBS) as CGRectMBS**

MBS MacCG Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return the union of both rectangles.

**Example:**

```vbscript
dim r as CGRectMBS = CGRectMBS.Infinite
MsgBox str(r.Left)+" "+str(r.Top)+" "+str(r.Width)+" "+str(r.Height)
```

50.38.32 **Zero as CGRectMBS**

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A rectangle constant with location (0,0), and width and height of 0.

**Example:**

```vbscript
dim r as CGRectMBS = CGRectMBS.Zero
MsgBox str(r.Left)+" "+str(r.Top)+" "+str(r.Width)+" "+str(r.Height)
```

**Notes:** The zero rectangle is equivalent to CGRectMBS.Make(0,0,0,0).

50.38.33 **Properties**

50.38.34 **height as Double**

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The height property of the rectangle.

**Example:**

```vbscript`
dim r as CGRectMBS = CGMakeRectMBS(10, 20, 30, 40)
MsgBox str(r.Left)+" " +str(r.Top)+" " +str(r.Width)+" " +str(r.Height)

Notes: (Read and Write property)

50.38.35  left as Double

Notes: (Read and Write property)

50.38.36  Origin as CGPointMBS

Example:

dim r as CGRectMBS = CGRectMBS.Make(5, 6, 3, 2)
dim s as CGPointMBS = r.Origin
MsgBox str(s.x)+" x " +str(s.y)

Notes: (Read and Write property)

50.38.37  Size as CGSizeMBS

Example:

dim r as CGRectMBS = CGRectMBS.Make(5, 6, 3, 2)
dim s as CGSizeMBS = r.Size
MsgBox str(s.Width)+" x " +str(s.Height)

Notes: (Read and Write property)
50.38.38  top as Double

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The top property of the rectangle.

**Example:**

```vba
dim r as CGRectMBS = CGMakeRectMBS(10, 20, 30, 40)
MsgBox str(r.Left) + " " + str(R.Top) + " " + str(R.Width) + " " + str(r.Height)
```

**Notes:** (Read and Write property)

---

50.38.39  width as Double

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The width property of the rectangle.

**Example:**

```vba
dim r as CGRectMBS = CGMakeRectMBS(10, 20, 30, 40)
MsgBox str(r.Left) + " " + str(R.Top) + " " + str(R.Width) + " " + str(r.Height)
```

**Notes:** (Read and Write property)
50.39. **CLASS CGSCONNECTIONMBS**

### 50.39 class CGSCConnectionMBS

#### 50.39.1 class CGSCConnectionMBS

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a connection to the CoreGraphics System.

**Example:**

```vba
Dim c As New CGSCConnectionMBS
Dim list As CGSCWindowListMBS = c.GetWindowList

Dim names() As String
Dim u As Integer = List.Count - 1
For i As Integer = 0 To u
    Dim w As CGSCWindowMBS = List.Item(i)
    names.Append w.Title
Next

MsgBox Str(List.Count) & " windows: " + Join(names, ", ")
```

**Notes:**

Requires Mac OS X 10.4.
All functions used by the CGS classes are private APIs, so Apple does not guarantee that they work in future Mac OS X versions.

#### 50.39.2 Methods

##### 50.39.3 CGSCWindow(w as window) as CGSCWindowMBS

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns a CGSCWindow reference to a normal RB window.

**Notes:** Can be used for the CGSTransitionRequestMBS.Win property.

##### 50.39.4 CGSCWindowbyHandle(windowhandle as Integer) as CGSCWindowMBS

MBS MacCG Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns a CGSCWindow reference to any window where you can have a handle.

**Notes:**
WindowHandle must be of C type WindowRef. Not a CGS Window Handle.
Can be used for the handle from an OverlayWindowMBS.
50.39.5 FlushAllWindows

MBS MacCG Plugin, Plugin Version: 8.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Flushes all windows.
**Notes:** Walks over the window list (of the current process) and does a flush on each window. Lasterror is set.

50.39.6 FlushAllWindowsForAllOtherProcesses

MBS MacCG Plugin, Plugin Version: 8.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Flushes all windows.
**Notes:** Walks over the list of processes asking each for its window list and doing a flush on each window. The own process is ignored. Lasterror is set.

50.39.7 FlushAllWindowsForAllProcesses

MBS MacCG Plugin, Plugin Version: 8.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Flushes all windows.
**Notes:** Walks over the list of processes asking each for its window list and doing a flush on each window. Lasterror is set.

50.39.8 GetOnScreenWindowList as CGSWindowListMBS

MBS MacCG Plugin, Plugin Version: 8.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the list of windows on screen for the current process.
**Notes:** Returns nil on any error.

50.39.9 GetOnScreenWindowListForProcess(PID as Integer) as CGSWindowListMBS

MBS MacCG Plugin, Plugin Version: 8.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the list of windows on screen for the process with the given Process ID.
50.39. **CLASS CGSCONNECTIONMBS**

Notes: Returns nil on any error.

50.39.10 **GetWindowList as CGSWindowListMBS**

MBS MacCG Plugin, Plugin Version: 8.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the list of windows for the current process. **Notes:** Returns nil on any error.

50.39.11 **GetWindowListForProcess(PID as Integer) as CGSWindowListMBS**

MBS MacCG Plugin, Plugin Version: 8.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the list of windows for the process with the given Process ID. **Notes:** Returns nil on any error.

50.39.12 **NewTransition(request as CGSTransitionRequestMBS) as CGSTransitionMBS**

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new transition. **Notes:**

Lasterror is set.
Request must be a valid object reference.
Transitions seem not to work in Carbon PEF builds. MachO works.

50.39.13 **RunTransition(request as CGSTransitionRequestMBS, duration as single)**

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A method to run a transition for the given request and given time. **Example:**

```plaintext
dim r as CGSTransitionRequestMBS
dim co as CGSConnecitonMBS // global property
dim cw as CGSWindowMBS

c=co=CSCConnectionMBS

cw=co.CGSWindow(window1)
```
8286

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```plaintext
r=new CGSTransitionRequestMBS
r.TransitionType=r.CGSFlip
r.TransitionOption=r.CGSLeft
r.HasBackGround=false
r.HasBackColor=false
r.Win=cw
co.RunTransition(r,2)
```

Notes:

Lasterror is set.
Transitions seem not to work in Carbon PEF builds. MachO works.

50.39.14 SetWorkspaceWithTransition(workspace as CGSWorkspaceMBS, transition as Integer, type as Integer, time as single)

MBS MacCG Plugin, Plugin Version: 8.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Performs a transition with a workspace specified by the workspace object.

**Notes:**
The values for the parameters are not documented on the web except that the transition and type property may use the same transition constants as for the other transitions.
Lasterror is set.
See also:

- 50.39.15 SetWorkspaceWithTransition(workspace as Integer, transition as Integer, type as Integer, time as single)

50.39.15 SetWorkspaceWithTransition(workspace as Integer, transition as Integer, type as Integer, time as single)

MBS MacCG Plugin, Plugin Version: 8.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Performs a transition with a workspace specified by the workspace number.

**Example:**
```plaintext
dim c as new CGSConnectionMBS
dim t as new CGSTransitionRequestMBS

// from space 1 to 2
c.SetWorkspaceWithTransition(2,t.CGSFade, t.CGSInOut, 5)

// but transition and time are ignored on testing Mac.
MsgBox str(c.Lasterror)
```
Notes:
The values for the parameters are not documented on the web except that the transition and type property may use the same transition constants as for the other transitions.
Lasterror is set.
See also:

- 50.39.14 SetWorkspaceWithTransition(workspace as CGSWorkspaceMBS, transition as Integer, type as Integer, time as single)

50.39.16 Properties

50.39.17 Handle as Integer

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The internal handle for this connection.
**Notes:** (Read and Write property)

50.39.18 Lasterror as Integer

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Last error code reported.
**Notes:**
The list of CoreGraphics error (from Mac OS X 10.4)
(Read and Write property)

50.39.19 Workspace as CGSWorkspaceMBS

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The workspace this connection is pointing to.
**Notes:** (Read and Write computed property)
<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kCGErrorSuccess</td>
<td>Success</td>
</tr>
<tr>
<td>kCGErrorFailure</td>
<td>Failure</td>
</tr>
<tr>
<td>kCGErrorIllegalArgument</td>
<td>Illegal Argument</td>
</tr>
<tr>
<td>kCGErrorInvalidConnection</td>
<td>Invalid Connection</td>
</tr>
<tr>
<td>kCGErrorInvalidContext</td>
<td>Invalid Context</td>
</tr>
<tr>
<td>kCGErrorCannotComplete</td>
<td>Cannot complete</td>
</tr>
<tr>
<td>kCGErrorNameTooLong</td>
<td>Name is too long</td>
</tr>
<tr>
<td>kCGErrorNotImplemented</td>
<td>Not implemented</td>
</tr>
<tr>
<td>kCGErrorRangeCheck</td>
<td>Out of bounds</td>
</tr>
<tr>
<td>kCGErrorTypeCheck</td>
<td>Type error</td>
</tr>
<tr>
<td>kCGErrorNoCurrentPoint</td>
<td>No current point</td>
</tr>
<tr>
<td>kCGErrorInvalidOperation</td>
<td>Invalid Operation</td>
</tr>
<tr>
<td>kCGErrorNoneAvailable</td>
<td>Internal errors have taken 1012, 1013, and 1014</td>
</tr>
<tr>
<td>kCGErrorApplicationRequiresNewerSystem</td>
<td>The application being launched says in its bundle info that it requires a newer version of the system than is currently running.</td>
</tr>
<tr>
<td>kCGErrorApplicationNotPermittedToExecute</td>
<td>Macintosh Manager is active and this application is not permitted to run.</td>
</tr>
<tr>
<td>kCGErrorApplicationIncorrectExecutableFormatFound</td>
<td>The application being launched does not have any executable code for the current system.</td>
</tr>
<tr>
<td>kCGErrorApplicationIsLaunching</td>
<td>The application is in the process of launching but hasn’t checked in yet. Any launch data provided will be given to the application when it does check in.</td>
</tr>
<tr>
<td>kCGErrorApplicationAlreadyRunning</td>
<td>The application being launched was already running (and had already checked in) and so any launch data provided can not be delivered to it by CPS.</td>
</tr>
<tr>
<td>kCGErrorApplicationCanOnlyBeRunInOneSessionAtATime</td>
<td>The application being launched is incompatible with multiple user sessions and is already running in another session by another user.</td>
</tr>
<tr>
<td>kCGErrorClassicApplicationsMustBeLaunchedByClassic</td>
<td>To avoid deadlock Classic can’t launch another Classic application by going thru CPS. This error gets returned in that case and it signals TrueBlueEnvironment that it must handle this launch on its own.</td>
</tr>
<tr>
<td>kCGErrorForkFailed</td>
<td>CPS was unable to fork a new process in order to launch an application.</td>
</tr>
</tbody>
</table>
50.40. class CGScreenRefreshEventMBS

50.40.1 class CGScreenRefreshEventMBS

MBS MacCG Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The class to receive events for screen updates.

50.40.2 Properties

50.40.3 Initialized as Boolean

MBS MacCG Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Whether object is initialized correctly.
**Notes:**
Should be true on OS X if initializing was done.
(Read only property)

50.40.4 Events

50.40.5 ScreenRefresh(rectCount as Integer, rects() as CGRectMBS)

MBS MacCG Plugin, Plugin Version: 16.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The event to inform you about a screen refresh.
**Notes:**
When an area of the display is modified or refreshed, this event function will be invoked with a count of
the number of rectangles in the refreshed areas, and a list of the refreshed rectangles. The rectangles are in
global coordinates.

Quartz invokes this event when operations such as drawing, window movement, scrolling, or display recon-
figuration occur on local displays.

Note that a single rectangle may occupy multiple displays, either by overlapping the displays or by residing
on coincident displays when mirroring is active. You can use the function CGDisplayMBS.GetDisplaysWith-
Rect to determine the displays a rectangle occupies.
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50.41 class CGScreenUpdateMoveEventMBS

50.41.1 class CGScreenUpdateMoveEventMBS

MBS MacCG Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The class to get event when something on screen changes.

50.41.2 Properties

50.41.3 Initialized as Boolean

MBS MacCG Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Whether object is initialized correctly.
**Notes:**
This should be true on Mac after calling constructor.
(Read only property)

50.41.4 Events

50.41.5 ScreenMove(deltaX as Integer, deltaY as Integer, rectCount as Integer, rects() as CGRectMBS)

MBS MacCG Plugin, Plugin Version: 16.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The event invoked when an area of the display is moved.
**Notes:**
When an area of the display is moved, your callback function will be invoked with a count of the number of rectangles in the moved area, and a list of the moved rectangles. The rectangles are in global coordinates, and describe the area prior to the move operation.

A single rectangle may occupy multiple displays, either by overlapping the displays or by residing on coincident displays when mirroring is active. Use CGDisplayMBS.GetDisplaysWithRect to determine the displays a rectangle occupies.

DeltaX/DeltaY: The distance a region on the screen moves in pixel units.

The fields deltaX and deltaY describe the direction of movement. Positive values of deltaX indicate movement to the right; negative values indicate movement to the left. Positive values of deltaY indicate movement downward; negative values indicate movement upward.
50.42. CLASS CGSESSIONMBS

50.42  class CGSessionMBS

50.42.1  class CGSessionMBS

MBS MacOSX Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class to hold some values about the current CoreGraphics session.

**Example:**

```vbs
dim c as CGSessionMBS = CGSessionMBS
MsgBox c.UserName
```

**Notes:** You need to call the CGSessionMBS global method to get a valid object of this class (with values).

50.42.2  Properties

50.42.3  ConsoleSet as Integer

MBS MacOSX Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Value is a 32 bit unsigned integer value representing a set of hardware composing a console.

**Example:**

```vbs
dim c as CGSessionMBS = CGSessionMBS
MsgBox str(c.ConsoleSet)
```

**Notes:** (Read and Write property)

50.42.4  LoginDone as Boolean

MBS MacOSX Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** True if login operation has been done, otherwise False.

**Example:**

```vbs
dim c as CGSessionMBS = CGSessionMBS
MsgBox str(c.LoginDone)
```

**Notes:** (Read and Write property)
50.42.5 OnConsole as Boolean

MBS MacOSX Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** True if the session is on a console, otherwise False.
**Example:**
```vba
dim c as CGSessionMBS = CGSessionMBS
MsgBox str(c.OnConsole)
```
**Notes:** (Read and Write property)

50.42.6 UserID as Integer

MBS MacOSX Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The user id for the session’s current user.
**Example:**
```vba
dim c as CGSessionMBS = CGSessionMBS
MsgBox str(c.UserID)
```
**Notes:** (Read and Write property)

50.42.7 UserName as String

MBS MacOSX Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The session’s short user name as set by loginwindow.
**Example:**
```vba
dim usr as CGSessionMBS
usr=CGSessionMBS
msgbox usr.UserName
```
**Notes:** (Read and Write property)
50.43  class CGShadingMBS

50.43.1  class CGShadingMBS

MBS MacCG Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** To shade means to fill using a smooth transition between colors across an area. Quartz shadings simplify several common shading operations. Quartz shadings currently support radial and axial gradient fills. **Notes:** To paint with a Quartz shading, you call CGContextMBS.DrawShading. This function fills the current clipping path using the specified color gradient, calling your parametric function repeatedly as it draws.

50.43.2  Properties

50.43.3  Handle as Integer

MBS MacCG Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Handle to the CGShadingRef. **Notes:** (Read and Write property)
50.44 class CGSizeMBS

50.44.1 class CGSizeMBS

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class for a core graphics size.

50.44.2 Methods

50.44.3 ApplyAffineTransform(p as CGAffineTransformMBS) as CGSizeMBS

MBS MacCG Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Transform 'size' by 't' and return the result: s' = s * t where s = [ width height 0 ] .

50.44.4 Binary as MemoryBlock

MBS MacCG Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the internal data of the object as a CGSize for use on Toolbox calls.
**Example:**
```pascal
dim c as CGSizeMBS
dim m as MemoryBlock

c=CGMakeSizeMBS(10,20)
m=c.Binary

MsgBox str(m.Size) // 8
MsgBox str(m.doubleValue(0)) // 10
MsgBox str(m.doubleValue(4)) // 20
```

50.44.5 Constructor

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates an zero size object.
See also:
- 50.44.6 Constructor(p as Ptr) 8295
- 50.44.7 Constructor(source as CGSizeMBS) 8295
50.44. CLASS CGSIZEMBS

- 50.44.8 Constructor(width as Double, height as Double)

50.44.6 Constructor(p as Ptr)

MBS MacCG Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new instance using data at the pointer. **Notes:** Make sure the pointer is valid and has the right data and size. See also:

- 50.44.5 Constructor
- 50.44.7 Constructor(source as CGSizeMBS)
- 50.44.8 Constructor(width as Double, height as Double)

50.44.7 Constructor(source as CGSizeMBS)

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor which copies the values from the other size object. See also:

- 50.44.5 Constructor
- 50.44.6 Constructor(p as Ptr)
- 50.44.8 Constructor(width as Double, height as Double)

50.44.8 Constructor(width as Double, height as Double)

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a size object with the given values. See also:

- 50.44.5 Constructor
- 50.44.6 Constructor(p as Ptr)
- 50.44.7 Constructor(source as CGSizeMBS)

50.44.9 Equal(p as CGSizeMBS) as boolean

MBS MacCG Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if two CGSize objects are equal.
50.44.10 Make(width as Double, height as Double) as CGSizeMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a new CGSizeMBS object with the given values.

50.44.11 Zero as CGSizeMBS

MBS MacCG Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the zero size. **Notes:** The "zero" size – equivalent to CGSizeMBS.Make(0, 0).

50.44.12 Properties

50.44.13 height as Double

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The height property of the point. **Notes:** (Read and Write property)

50.44.14 width as Double

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The width property of the point. **Notes:** (Read and Write property)
50.45. **CLASS CGSTRANSITIONMBS**

50.45  **class CGSTransitionMBS**

50.45.1  **class CGSTransitionMBS**

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a transition to the CoreGraphics System.  
**Notes:** 
Requires Mac OS X 10.4. 
All functions used by the CGS classes are private APIs, so Apple does not guarantee that they work in future Mac OS X versions.

50.45.2  **Methods**

50.45.3  **Invoke(duration as single)**

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Performs the transition.  
**Example:**
```
// cube transition for the whole screen
dim r as CGSTransitionRequestMBS
dim co as CGSConnectionMBS // global property
dim ct as CGSTransitionMBS // global property
co=new CGSConnectionMBS
r=new CGSTransitionRequestMBS
r.TransitionType=r.CGSCube
r.TransitionOption=r.CGSLLeft
r.HasBackGround=true
r.HasBackColor=false
ct=co.NewTransition(r)
if ct<>Nil then
    window1.refresh // draw new screen
    ct.invoke 5
    ct.wait 5
    ct.release
else
    MsgBox "Error creating the transition."
end if
```
Notes:

duration is the time in seconds the duration will need to complete.
Lasterror is set.

50.45.4 Release

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Releases the transaction.

**Example:**

```vbnet
dim r as CGSTransitionRequestMBS
dim co as CGSConnectionMBS // global property
dim ct as CGSTransitionMBS // global property
dim cw as CGSWindowMBS

c=CGSConnectionMBS()
cw=co.CGSWindow(window1)

r=CGSTransitionRequestMBS()
r.TransitionType=r.CGSCube
r.TransitionOption=r.CGSLft
r.HasBackGround=false
r.HasBackColor=false
r.Win=cw

c=co.NewTransition(r)
if c<>Nil then
    window1.refresh // draw new screen
    c.invoke 5
    c.wait 5
    c.release
else
    MsgBox "Error creating the transition."
end if
```

Notes:

Lasterror is set.
Must be called after performing a transition, but not before the transition is finished.
50.45.5 Run(duration as single)

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Runs a transition effect for the given duration.

**Example:**

```vba
dim r as CGSTransitionRequestMBS
dim co as CGSConnectionMBS // global property
dim ct as CGSTransitionMBS // global property
dim cw as CGSWindowMBS

cr=new CGSConnectionMBS

cw=co.CGSWindow(window1)

r=new CGSTransitionRequestMBS
r.TransitionType=r.CGSCube
r.TransitionOption=r.CGSLeft
r.HasBackGround=false
r.HasBackColor=false
r.Win=cw

cr=co.NewTransition(r)
if cr<>Nil then
window1.Refresh // draw new window

crrun(2)
else
MsgBox "Error creating the transition."
end if
```

**Notes:** Same as calling Invoke, Wait and Release.

50.45.6 Wait(duration as single)

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Waits the given time in second.

**Example:**

```vba
// instead of wait(5) you can do this to give time to other threads and timers of your application:

dim ct as CGSTransitionMBS
dim t as Integer

t=ticks+300 // 60th of a second * 300 = 5 seconds
```
while ticks<t
c.t.wait(0.1)
app.YieldToNextThread
wend

Notes: All the CPU time is given away to other applications to give maximum performance to the transition.

50.45.7 Properties

50.45.8 Connection as CGSConnectionMBS

Notes: Every CGS class has a reference to the connection so the connection object stays in memory as long as one of the depending objects is being used.
(Read only property)

50.45.9 ConnectionHandle as Integer

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The handle to the CGS connection being used.
Notes: Most of the functions need this value and it needs to be not zero.
(Read and Write property)

50.45.10 Handle as Integer

Notes: (Read and Write property)
Function: A cube transition running on the whole desktop with black background.
Function: A flip transition running on a window. (like Dashboard)
A wrap transition running on the window.

Function:
Function: A cube transition running on a window with black background.
Function: A cube transition running on the whole desktop with blue background.
**Function:** A cube transition running on the whole desktop.
50.46. **CLASS CGSTRANSITIONREQUESTMBS**

50.46 class CGSTransitionRequestMBS

50.46.1 class CGSTransitionRequestMBS

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a transition request to the CoreGraphics System. **Notes:** Requires Mac OS X 10.4. All functions used by the CGS classes are private APIs, so Apple does not guarantee that they work in future Mac OS X versions.

50.46.2 Methods

50.46.3 Run(duration as single) as boolean

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Runs a transition. **Example:**

```vba
dim r as CGSTransitionRequestMBS
dim co as CGSConnectionMBS ' global property
dim cw as CGSWindowMBS ' global property

c=co.new CGSConnectionMBS

cw=co.CGSWindow(window1)

r=new CGSTransitionRequestMBS
r.TransitionType=r.CGSCube
r.TransitionOption=r.CGSLeft
r.HasBackGround=false
r.HasBackColor=false
r.Win=cw

call r.run(5)
```

**Notes:**

LastError is set. Transitions seem not to work in Carbon PEF builds. MachO works.
50.46.4 Properties

50.46.5 Blue as Single

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Blue part of the backcolor.
Notes:
Range is from 0.0 (no color) to 1.0 (full color).
(Read and Write property)

50.46.6 Green as Single

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Green part of the backcolor.
Notes:
Range is from 0.0 (no color) to 1.0 (full color).
(Read and Write property)

50.46.7 HasBackColor as Boolean

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Whether the background on the transition has a color.
Example:

```pascal
dim r as CGSTransitionRequestMBS
dim co as CGSConnectionMBS // global property
dim ct as CGSTransitionMBS // global property

r=new CGSTransitionRequestMBS
r.TransitionType=r.CGSWarpSwitch
r.TransitionOption=r.CGSLeft
r.HasBackGround=true
r.HasBackColor=true
r.red=0 // all zero is black, all one is white
r.Blue=0
r.Green=0

ct=co.NewTransition(r)
if ct<>Nil then
    window1.Refresh
    ct.Invoke(2)
    ct.Wait(2)
    ct.Release
```
else
MsgBox "Error creating the transition."
end if

Notes: (Read and Write property)

50.46.8 HasBackGround as Boolean

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Whether you want to use the background or not.

**Example:**
dim r as new CGSTransitionRequestMBS
r.HasBackGround=false // best for a window in place transition

Notes:
If HasBackGround is true, a background is drawn behind the transition which may have a background color.
(Read and Write property)

50.46.9 Red as Single

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Red part of the backcolor.

**Notes:**
Range is from 0.0 (no color) to 1.0 (full color).
(Read and Write property)

50.46.10 TransitionOption as Integer

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The transition options to use.

**Example:**
dim r as CGSTransitionRequestMBS
r.TransitionOption=r.CGSLeft

Notes:
One of the constants:

- CGSDown = 0  Old desktop moves down.
- CGSLeft = 1  Old desktop moves left.
- CGSRight = 2  Old desktop moves right.
- CGSInRight = 3  CGSSwap: Old desktop moves into screen, new comes from right.
- CGSBottomLeft = 5  CGSSwap: Old desktop moves to bottom left, new comes from top right.
- CGSBottomRight = 6  Old desktop to bottom right, New from top left.
- CGSDownTopRight = 7  CGSSwap: Old desktop moves down, new from top right.
- CGSUp = 8  Old desktop moves up.
- CGSTopLeft = 9  Old desktop moves top left.
- CGSTopRight = 10  CGSSwap: old to top right, new from bottom left.
- CGSUpBottomRight = 11  CGSSwap: old desktop up, new from bottom right.
- CGSSwapBottom = 12  CGSSwap: old in, new from bottom.
- CGSLeftBottomRight = 13  CGSSwap: old one moves left, new from bottom right.
- CGSRightBottomLeft = 14  CGSSwap: old one moves right, new from bottom left.
- CGSSwapBottomRight = 15  CGSSwap: old one in, new from bottom right.
- CGSSwapOut = 16  CGSSwap: old in, new out.

(Read and Write property)

50.46.11 TransitionType as Integer

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The transition to use.

**Notes:**

One of the constants:

- CGSNone = 0  No transition effect.
- CGSFade = 1  Cross-fade.
- CGSSlide = 2  Zoom/fade towards us.
- CGSReveal = 3  Reveal new desktop under old.
- CGSSlide = 4  Slide old in and new out.
- CGSWarpFade = 5  Warp old and fade out revealing new.
- CGSSwap = 6  Swap desktops over graphically.
- CGSCube = 7  The well-known cube effect.
- CGSWarpSwitch = 8  Warp old, switch and un-warp.
- CGSFlip = 9  The flip effect known from Dashboard.

(Read and Write property)
50.46. CLASS CGSTRANSITIONREQUESTMBS

50.46.12 Win as CGSWINDOWMBS

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The window to use for the transition.
**Notes:**
Set to nil to do a full screen transition.
(Read and Write property)

50.46.13 Constants

50.46.14 CGSBottomLeft = 5

MBS MacCG Plugin, Plugin Version: 7.4. **Function:** CGSwap: Old desktop moves to bottom left, new comes from top right.

50.46.15 CGSBottomRight = 6

MBS MacCG Plugin, Plugin Version: 7.4. **Function:** Old desktop to bottom right, New from top left.

50.46.16 CGSCube = 7

MBS MacCG Plugin, Plugin Version: 7.4. **Function:** The well-known cube effect.

50.46.17 CGSDown = 0

MBS MacCG Plugin, Plugin Version: 7.4. **Function:** Old desktop moves down.

50.46.18 CGSDownTopRight = 7

MBS MacCG Plugin, Plugin Version: 7.4. **Function:** CGSwap: Old desktop moves down, new from top right.
50.46.19  CGSFade = 1

MBS MacCG Plugin, Plugin Version: 7.4. **Function:** Cross-fade effect.

50.46.20  CGSFlip = 9

MBS MacCG Plugin, Plugin Version: 7.4. **Function:** The flip transition effect. (like Dashboard)

**Example:**

```vbnet
dim r as CGSTransitionRequestMBS
dim co as CGSConnectionMBS // global property
dim ct as CGSTransitionMBS // global property
dim cw as CGSWindowMBS

go=new CGSConnectionMBS

cw=go.CGSWindow(window1)

r=new CGSTransitionRequestMBS
r.TransitionType=r.CGSFlip
r.TransitionOption=r.CGSLeft
r.HasBackGround=false
r.HasBackColor=false
r.Win=cw

c=go.NewTransition(r)
if c<>Nil then
    window1.Refresh
    c.Invoke(1)
    c.Wait(1)
    c.Release
else
    MsgBox "Error creating the transition."
end if
```

50.46.21  CGSInBottom = 12

MBS MacCG Plugin, Plugin Version: 7.4. **Function:** CGSSwap: old in, new from bottom.
50.46. **CLASS CGSTRANSITIONREQUESTMBS**

50.46.22 **CGSInBottomRight = 15**

MBS MacCG Plugin, Plugin Version: 7.4. **Function:** CGSSwap: old in, new from bottom right.

50.46.23 **CGSInOut = 16**

MBS MacCG Plugin, Plugin Version: 7.4. **Function:** CGSSwap: old in, new out.

50.46.24 **CGSInRight = 3**

MBS MacCG Plugin, Plugin Version: 7.4. **Function:** CGSSwap: Old desktop moves into screen, new comes from right.

50.46.25 **CGSLeft = 1**

MBS MacCG Plugin, Plugin Version: 7.4. **Function:** Old desktop moves left.

50.46.26 **CGSLeftBottomRight = 13**

MBS MacCG Plugin, Plugin Version: 7.4. **Function:** CGSSwap: old one moves left, new from bottom right.

50.46.27 **CGSNone = 0**

MBS MacCG Plugin, Plugin Version: 7.4. **Function:** No transition effect.

50.46.28 **CGSReveal = 3**

MBS MacCG Plugin, Plugin Version: 7.4. **Function:** Reveal new desktop under old.

50.46.29 **CGSRight = 2**

MBS MacCG Plugin, Plugin Version: 7.4. **Function:** Old desktop moves right.

**Example:**
// flip transition for the window
dim r as CGSTransitionRequestMBS
dim co as new CGSConnectionMBS
dim w as CGSWindowMBS = co.CGSWindow(window1)

r=new CGSTransitionRequestMBS
r.TransitionType=r.CGSSFlip
r.TransitionOption=r.CGSRight
r.HasBackGround=false
r.HasBackColor=false
r.Win=w

dim ct as CGSTransitionMBS = co.NewTransition(r)
if ct<>Nil then
  PagePanel1.Value = 0
  Refresh
ct.invoke 0.5
ct.wait 0.5
ct.release
end if

50.46.30  CGSRightBottomLeft = 14

MBS MacCG Plugin, Plugin Version: 7.4. **Function:** CGSSwap: old one moves right, new from bottom left.

50.46.31  CGSSlide = 4

MBS MacCG Plugin, Plugin Version: 7.4. **Function:** Slide old out and new in. **Example:**

dim r as CGSTransitionRequestMBS
dim co as CGSConnectionMBS  // global property
dim ct as CGSTransitionMBS  // global property
dim cw as CGSWindowMBS

c=nh new CGSConnectionMBS

cw=co.CGSWindow(window1)

r=new CGSTransitionRequestMBS
r.TransitionType=r.CGSSlide
r.TransitionOption=r.CGSLef
50.46. CLASS CGSTRANSITIONREQUESTMBS

r.win=cw

cr=co.NewTransition(r)
if cr<>Nil then
  window1.Refresh
cr.Run(2)
else
  MsgBox "Error creating the transition."
end if

50.46.32  CGSSwap = 6

MBS MacCG Plugin, Plugin Version: 7.4. **Function**: Swap desktops over graphically.

50.46.33  CGSTopLeft = 9

MBS MacCG Plugin, Plugin Version: 7.4. **Function**: Old desktop moves top left.

50.46.34  CGSTopRight = 10

MBS MacCG Plugin, Plugin Version: 7.4. **Function**: CGSSwap: old to top right. new from bottom left.

50.46.35  CGSUp = 8

MBS MacCG Plugin, Plugin Version: 7.4. **Function**: Old desktop moves up.

50.46.36  CGSUpBottomRight = 11

MBS MacCG Plugin, Plugin Version: 7.4. **Function**: CGSSwap: old desktop up, new from bottom right.

50.46.37  CGSWarpFade = 5

MBS MacCG Plugin, Plugin Version: 7.4. **Function**: Warp old and fade out revealing new.

Example:
dim r as CGSTransitionRequestMBS
dim co as CGSConnectionMBS // global property
dim ct as CGSTransitionMBS // global property
dim cw as CGSWindowMBS

c=co.new CGSConnectionMBS

cw=co.CGSWindow(window1)

r=new CGSTransitionRequestMBS
r.TransitionType=r.CGSWarpFade
r.TransitionOption=r.CGSLef	r.win=cw

c=co.NewTransition(r)
if c<>Nil then
window1.Refresh
c.Run(2)
else
MsgBox "Error creating the transition."
end if

50.46.38  CGSWarpSwitch = 8

MBS MacCG Plugin, Plugin Version: 7.4. **Function:** Warp old, switch and un-warp.

**Example:**

dim r as CGSTransitionRequestMBS
dim co as CGSConnectionMBS // global property
dim ct as CGSTransitionMBS // global property
dim cw as CGSWindowMBS

c=co.new CGSConnectionMBS

cw=co.CGSWindow(window1)

r=new CGSTransitionRequestMBS
r.TransitionType=r.CGSWarpSwitch
r.TransitionOption=r.CGSLef	r.HasBackGround=false
r.HasBackColor=false
r.Win=cw

c=co.NewTransition(r)
if c<>Nil then
window1.Refresh
c.Invoke(5)
c.Wait(5)
c.Release
else
MsgBox "Error creating the transition."
end if

50.46.39  CGSZoom = 2

MBS MacCG Plugin, Plugin Version: 7.4. **Function:** Zoom/fade towards us.
50.47 class CGSValueMBS

50.47.1 class CGSValueMBS

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a value to the CoreGraphics System.

**Notes:**

Requires Mac OS X 10.4.

All functions used by the CGS classes are private APIs, so Apple does not guarantee that they work in future Mac OS X versions.

50.47.2 Methods

50.47.3 IntegerValue as Integer

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The integer value of this object.

50.47.4 StringValue as string

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The string value of this object.

50.47.5 Properties

50.47.6 Connection as CGSConnectionMBS

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The reference to the connection used.

**Notes:**

Every CGS class has a reference to the connection so the connection object stays in memory as long as one of the depending objects is being used.

(Read only property)
50.47. **CLASS CGSVALUEMBS**

50.47.7 **ConnectionHandle as Integer**

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle to the CGS connection being used.  
**Notes:** Most of the functions need this value and it needs to be not zero.  
(Read and Write property)

50.47.8 **Handle as Integer**

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal used handle.  
**Notes:** (Read and Write property)
### 50.48.1 Class CGSWindowListMBS

**Function:**
An array of CGSWindowMBS objects.

**Example:**
```vba
dim c as new CGSConnectionMBS
dim list as CGSWindowListMBS = c.GetWindowList

dim names() as string
dim u as Integer = List.Count - 1
for i as Integer = 0 to u
    dim w as CGSWindowMBS = List.Item(i)
    names.append w.Title
next
MsgBox str(List.Count) + " windows: " + Join(names, ", ")
```

### 50.48.2 Methods

#### 50.48.3 Item(index as Integer) as CGSWindowMBS

**Function:**
Returns the window with the given index.

**Notes:**
Index is from 0 to count-1.

### 50.48.4 Properties

#### 50.48.5 Connection as CGSConnectionMBS

**Function:**
The reference to the connection used.

**Notes:**
Every CGS class has a reference to the connection so the connection object stays in memory as long as one of the depending objects is being used.
(Read only property)
50.48. CLASS CGSWINOWLISTMBS

50.48.6  ConnectionHandle as Integer

MBS MacCG Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The handle to the CGS connection being used.
**Notes:**
Most of the functions need this value and it needs to be not zero.
(Read and Write property)

50.48.7  Count as Integer

MBS MacCG Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The number of CGSWindow objects in that array.
**Notes:** (Read and Write property)

50.48.8  Handle as Integer

MBS MacCG Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The handle to the window list.
**Notes:** (Read and Write property)
50.49 class CGSWindowMBS

50.49.1 class CGSWindowMBS

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a window in the CoreGraphics System.

**Notes:**
Requires Mac OS X 10.4.
All functions used by the CGS classes are private APIs, so Apple does not guarantee that they work in future Mac OS X versions.

To find all processes on Mac, use the ProcessMBS class.
To find all windows on Windows, use the WindowsListMBS class.

Not official supported by Apple and some effects don’t work well on latest OS X versions!

50.49.2 Methods

50.49.3 Flush

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Flushes this window.

**Example:**
```vbnet
dim co as CGSConnectionMBS
dim cw as CGSWindowMBS
cw=co.CGSWindow(window1)
cw.Flush
```

**Notes:** Lasterror is set.

50.49.4 Height as Double

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The height of this window.

**Example:**
CLASS CGSWINDOWMBS

Dim co As CGSConnectionMBS
Dim cw As CGSWindowMBS

co = New CGSConnectionMBS
cw = co.CGSWindow(window1)

MsgBox str(cw.height)

50.49.5 Left as Double

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The left position of this window.
**Example:**

```vbnet
dim co as CGSConnectionMBS
dim cw as CGSWindowMBS

c0 = new CGSConnectionMBS
cw = co.CGSWindow(window1)

MsgBox str(cw.left)
```

50.49.6 Level as Integer

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The window level of this window.
**Notes:** See WindowGroupMBS.Level or OverlayWindow.Level for details.

50.49.7 Move(byref x as single, byref y as single)

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Moves the window.

50.49.8 Order(mode as Integer, relativeToWindow as CGSWindowMBS=nil)

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Reorders the window.
**Notes:**
Lasterror is set.
Mode must be kCGSOrderAbove, kCGSOrderBelow or kCGSOrderOut.

### 50.49.9 Title as string

MBS MacCG Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The window title.

### 50.49.10 Top as Double

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The top position of this window.
**Example:**
```vbs
Dim co As CGSConnectionMBS
Dim cw As CGSWindowMBS

Co = New CGSConnectionMBS
Cw = Co.CGSWindow(window1)
MsgBox Str(Cw.top)
```
**Notes:** In Pixel from the top of the screen.

### 50.49.11 Uncover

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Uncovers the window.
**Notes:** Lasterror is set.

### 50.49.12 Warp(w as Integer, h as Integer, value as memoryblock)

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Sets the wrap of a window.
**Example:**
```vbs
Dim w, h as Integer
Dim m as memoryblock
Dim localx, localy, gobalx, gobaly as Integer
```

50.49. CLASS CGSWINDOWMBS

```
dim offset as Integer

m=newmemoryblock(w*h*16)
// for each row
// for each point in row
m.SingleValue(offset)=localx
offset=offset+4
m.SingleValue(offset)=localy
offset=offset+4
m.SingleValue(offset)=globalx
offset=offset+4
m.SingleValue(offset)=globaly
offset=offset+4
```

Notes:

the memoryblock must be of size w*h*sizeof(single)*4.
a single is 4 bytes, so this is 16*w*h
w is the number of horizontal points you define.
h is the number of vertical points you define.

Basically you define for a local point in the window the point onscreen where it is moved to. See the example project for more details.

50.49.13 Width as Double

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The width of this window.

**Example:**
```
dim co as CGSConnectionMBS
dim cw as CGSWindowMBS

cw=co.CGSWindow(window1)
```

MsgBox str(cw.width)
50.49.14 **Workspace as CGSWorkspaceMBS**

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The workspace where this window is part of.

50.49.15 **Properties**

50.49.16 **Connection as CGSConnectionMBS**

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The reference to the connection used.
**Notes:**
Every CGS class has a reference to the connection so the connection object stays in memory as long as one of the depending objects is being used.
(Read only property)

50.49.17 **ConnectionHandle as Integer**

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The handle to the CGS connection being used.
**Notes:**
Most of the functions need this value and it needs to be not zero.
(Read and Write property)

50.49.18 **Handle as Integer**

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The window handle.
**Notes:**
This is not a WindowRef or a NSWindow pointer!
(Read and Write property)

50.49.19 **LastError as Integer**

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Last error code reported.
**Notes:**
The list of CoreGraphics error (from Mac OS X 10.4)

- kCGErrorSuccess = 0 Success
- kCGErrorFailure = 1000 Failure
- kCGErrorIllegalArgument = 1001 Illegal Argument
- kCGErrorInvalidConnection = 1002 Invalid Connection
- kCGErrorInvalidContext = 1003 Invalid Context
- kCGErrorCannotComplete = 1004 Cannot complete
- kCGErrorNameTooLong = 1005 Name is too long
- kCGErrorNotImplemented = 1006 Not implemented
- kCGErrorOutOfRange = 1007 Out of bounds
- kCGErrorTypeError = 1008 Type error
- kCGErrorNoCurrentPoint = 1009 No current point
- kCGErrorInvalidOperation = 1010 Invalid Operation
- kCGErrorNoneAvailable = 1011 Internal errors have taken place
- kCGErrorApplicationRequiresNewerSystem = 1015 The application being launched says in its bundle info that it requires a newer version of the system than is currently running.
- kCGErrorApplicationNotPermittedToExecute = 1016 Macintosh Manager is active and this application is not permitted to run
- kCGErrorApplicationIncorrectExecutableFormatFound = 1023 The application being launched does not have any executable code for the current system.
- kCGErrorApplicationIsLaunching = 1024 The application is in the process of launching but hasn’t checked in yet. Any launch data provided will be given to the application when it does check in.
- kCGErrorApplicationAlreadyRunning = 1025 The application being launched was already running (and had already checked in) and so any launch data provided can not be delivered to it by CPS
- kCGErrorApplicationCanOnlyBeRunInOneSessionAtATime = 1026 The application being launched is incompatible with multiple user sessions and is already running in another session by another user.
- kCGErrorApplicationNotAllowedByClassic = 1027 To avoid deadlock Classic can’t launch another Classic application by going thru CPS. This error gets returned in that case and it signals TruBlueEnvironment that it must handle this launch on its own.
- kCGErrorForkFailed = 1028 CPS was unable to fork a new process in order to launch an application.

(Read and Write property)

### 50.49.20 AffineTransform as CGAffineTransformMBS

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The transformation of this window.

**Example:**

```vba
// rotates the window.
dim a as CGAffineTransformMBS
a=CGAffineTransformMBS.MakeRotation(1)
a=a.Translate(-Width,-Height)
dim co as CGSConnectionMBS
dim cw as CGSWindowMBS
co=new CGSConnectionMBS
cw=co.CGSWindow(window1)
cw.AffineTransform=a
```
50.49.21 Alpha as single

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The alpha value for this window. **Example:**
```
    dim cw as CGSWindowMBS
    dim co as new CGSConnectionMBS

    cw=co.CGSWindow(window1)
    cw.Alpha=0.2

    // same as:

    // self.TransparencyMBS=0.2
```

**Notes:**
0 is invisible and 1.0 is visible.
You may prefer to use the window TransparencyMBS property instead as it uses documented APIs. (Read and Write computed property)

50.49.22 EventMask as Integer

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The event mask of this window. **Notes:** (Read and Write computed property)
50.49.23 Constants

50.49.24 kCGSOrderAbove = 1
MBS MacCG Plugin, Plugin Version: 7.4. **Function:** Window is ordered above target.

50.49.25 kCGSOrderBelow = -1
MBS MacCG Plugin, Plugin Version: 7.4. **Function:** Window is ordered below target.

50.49.26 kCGSOrderOut = 0
MBS MacCG Plugin, Plugin Version: 7.4. **Function:** Window is removed from the on-screen.
50.50 class CGSWorkspaceMBS

50.50.1 class CGSWorkspaceMBS

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a workspace to the CoreGraphics System.
**Notes:**
Requires Mac OS X 10.4.
All functions used by the CGS classes are private APIs, so Apple does not guarantee that they work in future Mac OS X versions.

Not official supported by Apple and some effects don’t work well on latest OS X versions!

50.50.2 Methods

50.50.3 GetWorkspaceWindowList as CGSWindowListMBS

MBS MacCG Plugin, Plugin Version: 8.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the list of windows for this workspace.
**Notes:** Returns nil on any error.

50.50.4 MoveWindows(target as CGSWorkspaceMBS)

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Moves all windows from one workspace to another.
**Notes:** Lasterror is set.

50.50.5 Properties

50.50.6 Connection as CGSConnectionMBS

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The reference to the connection used.
**Notes:**
Every CGS class has a reference to the connection so the connection object stays in memory as long as one of the depending objects is being used.
(Read only property)
50.50.7  ConnectionHandle as Integer

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The handle to the CGS connection being used.
**Notes:**
Most of the functions need this value and it needs to be not zero.
(Read and Write property)

50.50.8  Handle as Integer

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The internal used handle to the workspace.
**Notes:** (Read and Write property)

50.50.9  LastError as Integer

MBS MacCG Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Last error code reported.
**Notes:**
The list of CoreGraphics error (from Mac OS X 10.4)

\[
\begin{align*}
lCGErrorSuccess &= 0 \quad \text{Success} \\
lCGErrorFailure &= 1000 \quad \text{Failure} \\
lCGErrorIllegalArgument &= 1001 \quad \text{Illegal Argument} \\
lCGErrorInvalidConnection &= 1002 \quad \text{Invalid Connection} \\
lCGErrorInvalidContext &= 1003 \quad \text{Invalid Context} \\
lCGErrorCannotComplete &= 1004 \quad \text{Cannot complete} \\
lCGErrorNameTooLong &= 1005 \quad \text{Name is too long} \\
lCGErrorNotImplemented &= 1006 \quad \text{Not implemented} \\
lCGErrorOutOfRange &= 1007 \quad \text{Out of bounds} \\
lCGErrorTypeCheck &= 1008 \quad \text{Type error} \\
lCGErrorNoCurrentPoint &= 1009 \quad \text{No current point} \\
lCGErrorInvalidOperation &= 1010 \quad \text{Invalid Operation} \\
lCGErrorNoneAvailable &= 1011 \quad \text{Internal errors have taken 1012 1013 and 1014} \\
lCGErrorApplicationRequiresNewerSystem &= 1015 \quad \text{The application being launched says in it’s bundle info that it requires a newer version of the system than is currently running.} \\
lCGErrorApplicationNotPermittedToExecute &= 1016 \quad \text{Macintosh Manager is active and this application is not permitted to run} \\
lCGErrorApplicationIncorrectExecutableFormatFound &= 1023 \quad \text{The application being launched does not have any executable code for the current system.} \\
lCGErrorApplicationIsLaunching &= 1024 \quad \text{The application is in the process of launching but hasn’t checked in yet. Any launch data provided will be given to the application when it does check in.} \\
lCGErrorApplicationAlreadyRunning &= 1025 \quad \text{The application being launched was already running (and had already checked in) and so any launch data provided can not be delivered to in by CPS} \\
lCGErrorApplicationCanOnlyBeRunInOneSessionAtATime &= 1026 \quad \text{The application being launched is incompatible with multiple user sessions and is already running in another session by another user.} \\
lCGErrorClassicApplicationsMustBeLaunchedByClassic &= 1027 \quad \text{To avoid deadlock Classic can’t launch another Classic application by going thru CPS. This error gets returned in that case and it signals TruBlueEnvironment that it must handle this launch on its own.} \\
lCGErrorForkFailed &= 1028 \quad \text{CPS was unable to fork a new process in order to launch an application.}
\end{align*}
\]
(Read and Write property)
50.51. module CGWindowMBS

50.51.1. module CGWindowMBS


**Function:** This module contains CoreGraphics functions related to windows.

**Example:**

```plaintext
// screenshot of all windows on screens
Backdrop = CGWindowMBS.CreateWindowListImage(0, 0, 0, 0, 0, 0, 0)
```

50.51.2. Methods

50.51.3. CreateWindowList(windowOption as Integer, WindowID as Integer = 0) as UInt32()


**Function:** Returns the list of window IDs associated with the specified windows in the current user session.

**Example:**

```plaintext
dim a(-1) as UInt32 = CGWindowMBS.CreateWindowList(0,0)
MsgBox str(UBound(a)+1) + " windows"
```

**Notes:**

- windowOption: The options describing which window IDs to return. Typical options let you obtain IDs for all windows or for windows above or below the window specified in the relativeToWindow parameter.

- WindowID: The ID of the window to use as a reference point when determining which other windows to return. For options that do not require a reference window, this parameter can be kCGNullWindowID.

Returns an array of CGWindowID values corresponding to the desired windows. If there are no windows matching the desired criteria, the function returns an empty array. If you call this function from outside of a GUI security session or when no window server is running, this function returns nil.

Available in Mac OS X v10.5 and later.
50.51.4 CreateWindowListCGImage(left as Double, top as Double, width as Double, height as Double, windowOption as Integer, WindowID as Integer = 0, ImageOption as Integer = 0) as Variant


**Function:** Takes a screenshot from a list of windows.

**Notes:** Same as CreateWindowListImage, but returns a CGImageMBS. Declared as Variant to reduce plugin interdependencies.

50.51.5 CreateWindowListImage(left as Double, top as Double, width as Double, height as Double, windowOption as Integer, WindowID as Integer = 0, ImageOption as Integer = 0) as picture


**Function:** Takes a screenshot from a list of windows.

**Example:**
```
Dim p As Picture

‘ Screenshot of everything:
p = CGWindowMBS.CreateWindowListImage(0, 0, 0, 0, CGWindowMBS.kCGWindowListOptionAll, 0, CGWindowMBS.kCGWindowImageDefault)

‘ Screenshot of everything behind a window:
p = CGWindowMBS.CreateWindowListImage(0, 0, 0, 0, CGWindowMBS.kCGWindowListOptionOnScreenBelowWindow, CGWindowMBS.GetWindowID(window1), CGWindowMBS.kCGWindowImageDefault)

‘ Screenshot of everything in front of a window (dock and menubar):
p = CGWindowMBS.CreateWindowListImage(0, 0, 0, 0, CGWindowMBS.kCGWindowListOptionOnScreenAboveWindow, CGWindowMBS.GetWindowID(window1), CGWindowMBS.kCGWindowImageDefault)

‘ Screenshot of a window
p = CGWindowMBS.CreateWindowListImage(0, 0, 0, 0, CGWindowMBS.kCGWindowListOptionIncludingWindow, CGWindowMBS.GetWindowID(window1), CGWindowMBS.kCGWindowImageDefault)

‘ Only shadow of a window (will be in the mask)
p = CGWindowMBS.CreateWindowListImage(0, 0, 0, 0, CGWindowMBS.kCGWindowListOptionIncludingWindow, CGWindowMBS.GetWindowID(window1), CGWindowMBS.kCGWindowImageOnlyShadows)

‘ Desktop decoration is white
p = CGWindowMBS.CreateWindowListImage(0, 0, 0, 0, CGWindowMBS.kCGWindowListExcludeDesktopElements, CGWindowMBS.GetWindowID(window1), CGWindowMBS.kCGWindowImageShouldBeOpaque)
```

**Notes:**
Parameters:

- left: Left coordinate rectangle
- top: Top coordinate rectangle
- width: Width of rectangle
- height: Height of rectangle
- windowOption: A combination of kCGWindowListOption* flags
- WindowID: The window ID or 0.
- ImageOption: A combination of kCGWindowImage* flags

If you pass a rectangle with all values zero, you select the whole screen.
Returns the screenshot as picture or nil on any error.

Window Options:

- kCGWindowListOptionAll: 0 List all windows in this user session, including both on and off-screen windows. relativeToWindow should be kCGNullWindowID=0.
- kCGWindowListOptionOnScreenOnly: 1 List all on-screen windows in this user session, ordered from front to back. relativeToWindow should be kCGNullWindowID=0.
- kCGWindowListOptionOnScreenAboveWindow: 2 List all on-screen windows above the specified window ordered from front to back. relativeToWindow should be the window number.
- kCGWindowListOptionOnScreenBelowWindow: 4 List all on-screen windows below the specified window ordered from front to back. relativeToWindow should be the window number.
- kCGWindowListOptionIncludingWindow: 8 Include the named window in any list, effectively creating ‘at-or-above’ or ‘at-or-below’ lists. relativeToWindow should be the window number.
- kCGWindowListExcludeDesktopElements: 16 Exclude any windows from the list that are elements of the desktop, including the background picture and icons on the desktop.

Image Options:

- kCGWindowImageDefault: 0 Default behavior: If a rect of CGRectNull is used bounds computation includes the framing effects, such as a shadow.
- kCGWindowImageBoundsIgnoreFraming: 1 If a rect of CGRectNull is used, ignore framing effects for bounds computation
- kCGWindowImageShouldBeOpaque: 2 The captured image should be opaque. Empty areas are white
- kCGWindowImageOnlyShadows: 4 Capture only shadows.

50.51.6 GetWindowID(w as window) as Integer

Function: Queries the CoreGraphics Window ID for the given window.
Notes:
Returns 0 on any error.
This ID can be used for CreateWindowListImage.
50.51.7 GetWindowListInfo(windowOption as Integer, WindowID as Integer = 0) as dictionary()

Function: Generates and returns information about the selected windows in the current user session.

Example:

dim a(-1) as Dictionary = CGWindowMBS.GetWindowListInfo(0,0)

dim u as Integer = UBound(a)
if u > 10 then u = 10 // show only 10 times

dim lines(-1) as string
for i as Integer = 0 to u
    dim d as Dictionary = a(i)
    lines.Append d.Value(CGWindowMBS.kCGWindowName) + " of " + d.Value(CGWindowMBS.kCGWindowOwnerName)
next

// shows 11 windows with names. Not all windows have names.
MsgBox Join(lines, EndOfLine)

Notes:

option: The options describing which window dictionaries to return. Typical options let you return dictionaries for all windows or for windows above or below the window specified in the relativeToWindow parameter. For more information, see "Window List Option Constants."

WindowID: The ID of the window to use as a reference point when determining which other window dictionaries to return. For options that do not require a reference window, this parameter can be 0.

Returns an array of CFDictionaryRef types, each of which contains information about one of the windows in the current user session. If there are no windows matching the desired criteria, the function returns an empty array. If you call this function from outside of a GUI security session or when no window server is running, this function returns nil.

You can use this function to get detailed information about the configuration of one or more windows in the current user session. For example, you can use this function to get the bounds of the window, its window ID, and information about how it is managed by the window server. For the list of keys and values that may be present in the dictionary, see kCGWindow* constants.
Generating the dictionaries for system windows is a relatively expensive operation. As always, you should profile your code and adjust your usage of this function appropriately for your needs.

Available in Mac OS X v10.5 and later.

### 50.51.8 Constants

#### 50.51.9 kCGBackingStoreBuffered = 2

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the backing store constants.

#### 50.51.10 kCGBackingStoreNonretained = 1

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the backing store constants.

#### 50.51.11 kCGBackingStoreRetained = 0

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the backing store constants.

#### 50.51.12 kCGNullWindowID = 0

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** The number for an invalid window ID.

#### 50.51.13 kCGWindowAlpha = "kCGWindowAlpha"

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the possible keys in the window info dictionary.  
**Notes:** The alpha fade of the window. The value of this key is a floating-point value. The value 1.0 is normal (opaque); the value 0.0 is fully transparent (invisible).
50.51.14  \textit{kCGWindowBackingLocationVideoMemory} = "kCGWindowBackingLocationVideoMemory"

MBS MacFrameworks Plugin, Plugin Version: 11.2. \textbf{Function:} One of the possible keys in the window info dictionary.
\textbf{Notes:} Optional. If present, true if the window backing store is in video memory, false otherwise. If the key is not present, then the window backing store is in main memory. The value of this key is a Boolean.

50.51.15  \textit{kCGWindowBounds} = "kCGWindowBounds"

MBS MacFrameworks Plugin, Plugin Version: 11.2. \textbf{Function:} One of the possible keys in the window info dictionary.
\textbf{Example:}

```vba
dim a(-1) as Dictionary = CGWindowMBS.GetWindowListInfo(CGWindowMBS.kCGWindowListOptionOnScreenOnly,0)

//cycle thru window names and get window size
for each d as Dictionary in a
    dim winodname as string = d.Lookup(CGWindowMBS.kCGWindowName, "")
    if Instr(1, winodname, "Play") > 0 then
        dim bounds as Dictionary = d.Lookup(CGWindowMBS.kCGWindowBounds, nil)
        dim x as Integer = bounds.Lookup("X", 0)
        dim y as Integer = bounds.Lookup("Y", 0)
        dim w as Integer = bounds.Lookup("Width", 0)
        dim h as Integer = bounds.Lookup("Height", 0)
        MsgBox "Found window at "+str(x)+"/"+str(y)+" with size "+str(w)+"/"+str(h)
    end if
next
```

\textbf{Notes:} The bounds of the window in screen space, with the origin at the upper-left corner of the main display. The value of this key is a Dictionary.

50.51.16  \textit{kCGWindowImageBoundsIgnoreFraming} = 1

MBS MacFrameworks Plugin, Plugin Version: 11.2. \textbf{Function:} One of the image options constants.
\textbf{Notes:} If null rect is passed as the screen bounds, then then bounds computation excludes window frame ornamentation, such as a shadow.
50.51. **MODULE CGWINDOWMBS**

**50.51.17 kCGWindowImageDefault = 0**

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the image options constants. **Notes:** If null rectangle is passed as the screen bounds, then then bounds computation includes window frame ornamentation, such as a shadow.

**50.51.18 kCGWindowImageOnlyShadows = 4**

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the image options constants. **Notes:** Only draw the windows' shadows, not the windows themselves.

**50.51.19 kCGWindowImageShouldBeOpaque = 2**

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the image options constants. **Notes:** Force the created image to be opaque. Empty areas are white.

**50.51.20 kCGWindowIsOnscreen = ”kCGWindowIsOnscreen”**

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the possible keys in the window info dictionary. **Notes:** Optional. If present, true if the window is ordered on screen, false otherwise. If the key is not present, then the window is not ordered on screen. The value of this key is a boolean.

**50.51.21 kCGWindowLayer = ”kCGWindowLayer”**

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the possible keys in the window info dictionary. **Notes:** The window layer number of the window. The value of this key is a 32-bit signed integer value.

**50.51.22 kCGWindowListExcludeDesktopElements = 16**

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the window list option constants. **Notes:** Exclude any windows from the list that are elements of the desktop.
50.51.23  kCGWindowListOptionAll = 0

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the window list option constants. **Notes:** List all windows in this user session, including both on- and off-screen windows. The parameter WindowID should be kCGNullWindowID.

50.51.24  kCGWindowListOptionIncludingWindow = 8

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the window list option constants. **Notes:** Include the window specified by WindowID in any list, effectively creating 'at-or-above' or 'at-or-below' lists.

50.51.25  kCGWindowListOptionOnScreenAboveWindow = 2

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the window list option constants. **Notes:** List all on-screen windows above the window specified by WindowID, ordered from front to back.

50.51.26  kCGWindowListOptionOnScreenBelowWindow = 4

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the window list option constants. **Notes:** List all on-screen windows below the window specified by WindowID, ordered from front to back.

50.51.27  kCGWindowListOptionOnScreenOnly = 1

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the window list option constants. **Notes:** List all on-screen windows in this user session, ordered from front to back. The parameter WindowID should be kCGNullWindowID.

50.51.28  kCGWindowMemoryUsage = "kCGWindowMemoryUsage"

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the possible keys in the window info dictionary. **Notes:** An estimate of the memory in bytes currently used by the window and its supporting data structures. The value of this key is a 64-bit signed integer value.
50.51.29 **kCGWindowName = ”kCGWindowName”**

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the possible keys in the window info dictionary.

**Example:**

```vbnet
// find window with containing ”Play” in name.
dim a(-1) as Dictionary = CGWindowMBS.GetWindowListInfo(CGWindowMBS.kCGWindowListOptionOnScreenOnly, 0)
for each d as Dictionary in a
dim windowname as string = d.Lookup(CGWindowMBS.kCGWindowName, ””)
if Instr(1,windowname,"Play") >0 then
msgBox ”I found it and the ID is ”+d.Lookup(CGWindowMBS.kCGWindowNumber, ””)
end if
next
```

**Notes:** Optional. If present, the name of the window. The value of this key is a string.

---

50.51.30 **kCGWindowNumber = ”kCGWindowNumber”**

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the possible keys in the window info dictionary.

**Example:**

```vbnet
// find window with containing ”Play” in name.
dim a(-1) as Dictionary = CGWindowMBS.GetWindowListInfo(CGWindowMBS.kCGWindowListOptionOnScreenOnly, 0)
for each d as Dictionary in a
dim windowname as string = d.Lookup(CGWindowMBS.kCGWindowName, ””)
if Instr(1,windowname,"Play") >0 then
msgBox ”I found it and the ID is ”+d.Lookup(CGWindowMBS.kCGWindowNumber, ””)
end if
next
```

**Notes:** The window ID, a unique value within the user session representing the window. The value of this key is a 32-bit signed integer value.
**50.51.31 kCGWindowOwnerName = ”kCGWindowOwnerName”**

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the possible keys in the window info dictionary.  
**Notes:** Optional. If present, the name of the application process which owns the window. The value of this key is a string.

**50.51.32 kCGWindowOwnerPID = ”kCGWindowOwnerPID”**

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the possible keys in the window info dictionary.  
**Notes:** The process ID of the process that owns the window. The value of this key is a 32-bit signed integer value.

**50.51.33 kCGWindowSharingNone = 0**

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the sharing state constants.  
**Notes:** No sharing.

**50.51.34 kCGWindowSharingReadOnly = 1**

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the sharing state constants.  
**Notes:** Read only.

**50.51.35 kCGWindowSharingReadWrite = 2**

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the sharing state constants.  
**Notes:** Read and Write

**50.51.36 kCGWindowSharingState = ”kCGWindowSharingState”**

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the possible keys in the window info dictionary.  
**Notes:** The sharing state of the window, one of kCGWindowSharingNone, kCGWindowSharingReadOnly, or kCGWindowSharingReadWrite. The value of this key is a 32-bit signed integer value.
50.51.37 kCGWindowStoreType = ”kCGWindowStoreType"

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the possible keys in the window info dictionary.  
**Notes:** The backing store type of the window, one of kCGBackingStoreRetained, kCGBackingStoreNonretained, or kCGBackingStoreBuffered. The value of this key is a 32-bit signed integer value.

50.51.38 kCGWindowWorkspace = ”kCGWindowWorkspace"

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the possible keys in the window info dictionary.  
**Notes:** Optional. If present, the workspace ID of the workspace associated with the window. The value of this key is a 32-bit signed integer value.
50.52 class OverlayWindowMBS

50.52.1 class OverlayWindowMBS

MBS MacCG Plugin, Plugin Version: 2.9, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class for an overlay window.

**Notes:**
Please consider using OverlayMBS instead of OverlayWindowMBS. OverlayMBS is cross platform for Mac and Windows.
OverlayWindowMBS is not supported for 64 bit targets.

This window can be on top of all other windows or on some layer between. As it can be transparent you can use it to draw on it to draw on the screen.
(e.g. a ruler)

Some Realbasic versions block event handling on Realbasic windows which are behind the overlay window.
RB 2006r5 does fix that.

Only supported on Mac OS X with 32 bit. Please use OverlayMBS windows for all new projects.

50.52.2 Methods

50.52.3 AttachToWindow(TargetWindow as window, LiveResize as boolean)

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Attaches the overlay window to flow just over the target RB window.

**Notes:**
If LiveResize is true the BoundsChanged event will fire when the window is being resized or moved, not just after the user finished.
This connection can’t currently be removed unless you destroy the Overlay window.

Currently not supported on Cocoa.
See also:

- 50.52.4 AttachToWindow(TargetWindow as window, LiveResize as boolean, KeepEqualSize as boolean) 8345
- 50.52.5 AttachToWindow(TargetWindow as window, LiveResize as boolean, KeepEqualSize as boolean, OtherWindow as OverlayWindowMBS) 8345
50.52.4 AttachToWindow(TargetWindow as window, LiveResize as boolean, KeepEqualSize as boolean)

MBS MacCG Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Attaches the overlay window to flow just over the target RB window.

**Notes:**
Sames as the other AttachToWindow variation, but if KeepEqualSize, the window is not resized to the whole window and the window is not resized if the parent window resizes.

Currently not supported on Cocoa.

See also:

- 50.52.3 AttachToWindow(TargetWindow as window, LiveResize as boolean)
- 50.52.4 AttachToWindow(TargetWindow as window, LiveResize as boolean, KeepEqualSize as boolean)

50.52.5 AttachToWindow(TargetWindow as window, LiveResize as boolean, KeepEqualSize as boolean, OtherWindow as OverlayWindowMBS)

MBS MacCG Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Attaches the overlay window to flow just over the target RB window.

**Notes:**
Sames as the other AttachToWindow variation, but the new window will coexists with another Overlaywindow attached to the same parent window.
(this should work with more than 2 windows, if you just pass an already created window when attaching another one.)

Currently not supported on Cocoa.

See also:

- 50.52.3 AttachToWindow(TargetWindow as window, LiveResize as boolean)
- 50.52.4 AttachToWindow(TargetWindow as window, LiveResize as boolean, KeepEqualSize as boolean)

50.52.6 close

MBS MacCG Plugin, Plugin Version: 2.9, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Closes the window.
50.52.7 Context as CGContextMBS

MBS MacCG Plugin, Plugin Version: 2.9, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new context object to draw into the window.
**Notes:** Don’t forget to call flush of the context object to make the changes visible.

50.52.8 Create(left as Integer, top as Integer, width as Integer, height as Integer) as Integer

MBS MacCG Plugin, Plugin Version: 2.9, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new window.
**Example:**

```plaintext
// Doing the Dock’s poff animation
// No error checking in this code!

Sub poff(x as Integer, y as Integer)
    # pragma disableautowaitcursor
    dim f as FolderItem
    dim png as PNGpictureMBS
    dim o as OverlayWindowMBS
    dim p, m as Picture
    dim c as CGContextMBS
    dim cp as CGImageMBS
    dim r as CGRectMBS
    dim t, i as Integer

    // 128 is full size
    const targetwidth=128
    const targetheight=128

    f=CoreServicesFolderMBS(-32766)
    f=f.Child("Dock.app")
    f=f.Child("Contents")
    f=f.Child("Resources")
    f=f.Child("poof.png")
    png=f.OpenAsPNGMBS(0)
    o=new OverlayWindowMBS
```
if o.Create(x,y,targetwidth,targetheight)=0 then

o.Show

for i=0 to 4
    c=o.Context
    p=NewPicture(targetwidth,targetheight,32)
    p.Graphics.DrawPicture png.pict,0,(-128)*i

    m=NewPicture(targetwidth,targetheight,32)
    m.Graphics.DrawPicture png.mask,0,(-128)*i

    cp=CGCreateImageMBS(p,m)
    r=CGMakeRectMBS(0,0,targetwidth,targetheight)

    c.ClearRect r
    c.DrawPicture cp,r

    c.Flush

    t=ticks
    while abs(t-ticks)<5
    wend
    next

end if

End Sub

Notes:

Returns a Mac OS error code. 0 means successful. -1 means that the function is not available, e.g., on Windows. Any other value is a Mac OS error code and you can use the MacErrorString function to get what it means.

Only supported on Mac OS X with 32 bit. Please use OverlayMBS windows for all new projects.
50.52.9  Flush

MBS MacCG Plugin, Plugin Version: 2.9, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Flushes the window’s graphics.

50.52.10  Hide

MBS MacCG Plugin, Plugin Version: 2.9, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Hides the window.
**Notes:** Changes the state of the window to invisible.

50.52.11  InstallEventHandler

MBS MacCG Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Registers an event handler so Mac OS X informs us about the mouse events.

50.52.12  RemoveEventHandler

MBS MacCG Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Removes the event handler for the mouse events.

50.52.13  SetBounds(left as Integer, top as Integer, width as Integer, height as Integer)

MBS MacCG Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Changes the bounds of the overlay window in one run.
**Notes:** If you change left, top, width and height each after the other you may have several unneeded redraws.

50.52.14  Show

MBS MacCG Plugin, Plugin Version: 2.9, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Shows the window.
**Notes:** Changes the state of the window to visible.
50.52.15 TransitionOverlay(parent as OverlayWindowMBS, effect as Integer, action as Integer) as Integer

MBS MacCG Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Runs window transition. **Notes:** see other TransitionOverlay method for details. See also:

- 50.52.16 TransitionOverlay(parent as OverlayWindowMBS, effect as Integer, action as Integer, Async as boolean, duration as Double) as Integer
- 50.52.17 TransitionOverlay(parent as OverlayWindowMBS, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer
- 50.52.18 TransitionOverlay(parent as OverlayWindowMBS, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async as boolean, duration as Double) as Integer

50.52.16 TransitionOverlay(parent as OverlayWindowMBS, effect as Integer, action as Integer, Async as boolean, duration as Double) as Integer

MBS MacCG Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Runs window transition with additional parameters. **Notes:** see other TransitionOverlay method for details. See also:

- 50.52.15 TransitionOverlay(parent as OverlayWindowMBS, effect as Integer, action as Integer) as Integer
- 50.52.17 TransitionOverlay(parent as OverlayWindowMBS, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer
- 50.52.18 TransitionOverlay(parent as OverlayWindowMBS, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async as boolean, duration as Double) as Integer

50.52.17 TransitionOverlay(parent as OverlayWindowMBS, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer

MBS MacCG Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Runs window transition with additional rectangle. **Notes:** see other TransitionOverlay method for details. See also:

- 50.52.15 TransitionOverlay(parent as OverlayWindowMBS, effect as Integer, action as Integer) as Integer
50.52.18 TransitionOverlay(parent as OverlayWindowMBS, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async as boolean, duration as Double) as Integer

MBS MacCG Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Runs window transition with additional parameters and rectangle.  
**Notes:** Transitions a window from one state to another with appropriate animation and sound.

- **self:** The window that should be transitioned.  
- **parent:** For use with kWindowSheetTransitionEffect. This is the parent window of the sheet.  
- **effect:** The type of visual effect to use.  
- **action:** The action to take on the window.  
- **left:** The rectangle to be used.  
- **top:** The rectangle to be used.  
- **width:** The rectangle to be used.  
- **height:** The rectangle to be used.  
- **async:** Whether the transition should run synchronously or asynchronously. If Async is true, TransitionWindow will return immediately, and the transition will run using an event loop timer. You must run your event loop for the transition to occur. If Async is false, TransitionWindow will block until the transition is completed.  
- **duration:** The duration of the fade, in seconds. For use with the Sheet, Slide, Fade, and Genie transition effects; ignored for other effects. You may pass 0 to use the default duration. The effect is not guaranteed to last precisely this long, but should be a close approximation.

Returns Mac OS error code like 0 for success, -1 for parameter error in the plugin or -50 for parameter error.

Visual effects that are provided by TransitionWindow:

**Actions:** Modifications to window state that are provided by TransitionWindow
50.52. CLASS OVERLAYWINDOWMBS

<table>
<thead>
<tr>
<th>Effect Name</th>
<th>Action Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kWindowZoomTransitionEffect</td>
<td>Finder-like zoom rectangles. Use with TransitionWindow and Show or Hide transition actions</td>
</tr>
<tr>
<td>kWindowSheetTransitionEffect</td>
<td>Zoom in/out from parent. Use with TransitionWindowAndParent and Show or Hide transition actions. Available in Mac OS X, and in CarbonLib 1.5 and later.</td>
</tr>
<tr>
<td>kWindowSlideTransitionEffect</td>
<td>Slide the window into its new position. Use with TransitionWindow and Move or Resize transition actions. Available in Mac OS X, and in CarbonLib 1.5 and later.</td>
</tr>
<tr>
<td>kWindowFadeTransitionEffect</td>
<td>Fade the window into or out of visibility. Use with the Show or Hide transition actions. Available in Mac OS X 10.3 and later.</td>
</tr>
<tr>
<td>kWindowGenieTransitionEffect</td>
<td>Use the Genie effect that the Dock uses to minimize or maximize a window to show or hide the window. Use with the Show or Hide transition actions. Available in Mac OS X 10.3 and later.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Action Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kWindowShowTransitionAction</td>
<td>Shows the window. Use with the Zoom, Sheet, Fade, or Genie transition effects. For the Zoom, Sheet, and Genie effects, the rectangle parameter is the global coordinates from which to start the animation; rectangle is optional for the Zoom and Sheet effects, and in that case, the animation begins at the center of the window. The Genie effect requires a rectangle parameter. The Fade effect does not use the inRect parameter.</td>
</tr>
<tr>
<td>kWindowHideTransitionAction</td>
<td>Hides the window. Use with the Zoom, Sheet, Fade, or Genie transition effects. For the Zoom, Sheet, and Genie effects, the rectangle parameter is the global coordinates at which to end the animation; Recangle is optional for the Zoom and Sheet effects, and in that case, the animation ends at the center of the window. The Genie effect requires a rectangle. The Fade effect does not use the inRect parameter.</td>
</tr>
<tr>
<td>kWindowMoveTransitionAction</td>
<td>Moves the window. Use with the Slide transition effect. The rectangle parameter is the global coordinates of the window’s new structure bounds; Rectangle must be provided. Available in Mac OS X, and in CarbonLib 1.5 and later.</td>
</tr>
<tr>
<td>kWindowResizeTransitionAction</td>
<td>Resizes the window. Use with the Slide transition effect. The rectangle parameter is the global coordinates of the window’s new structure bounds; Rectangle must be provided. Available in Mac OS X, and in CarbonLib 1.5 and later.</td>
</tr>
</tbody>
</table>

See also:

- 50.52.15 TransitionOverlay(parent as OverlayWindowMBS, effect as Integer, action as Integer) as Integer
- 50.52.16 TransitionOverlay(parent as OverlayWindowMBS, effect as Integer, action as Integer, Async as boolean, duration as Double) as Integer
- 50.52.17 TransitionOverlay(parent as OverlayWindowMBS, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer

50.52.19 TransitionWindow(parent as window, effect as Integer, action as Integer) as Integer

Notes: see other TransitionWindow method for details.
See also:

- 50.52.20 TransitionWindow(parent as window, effect as Integer, action as Integer, Async as boolean, duration as Double) as Integer 8352
- 50.52.21 TransitionWindow(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer 8352
- 50.52.22 TransitionWindow(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async as boolean, duration as Double) as Integer 8353

50.52.20 TransitionWindow(parent as window, effect as Integer, action as Integer, Async as boolean, duration as Double) as Integer

Notes: see other TransitionWindow method for details.
See also:

- 50.52.19 TransitionWindow(parent as window, effect as Integer, action as Integer) as Integer 8351
- 50.52.21 TransitionWindow(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer 8352
- 50.52.22 TransitionWindow(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async as boolean, duration as Double) as Integer 8353

50.52.21 TransitionWindow(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer

Notes: see other TransitionWindow method for details.
See also:

- 50.52.19 TransitionWindow(parent as window, effect as Integer, action as Integer) as Integer 8351
- 50.52.20 TransitionWindow(parent as window, effect as Integer, action as Integer, Async as boolean, duration as Double) as Integer 8352
- 50.52.22 TransitionWindow(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async as boolean, duration as Double) as Integer 8353
50.52.22 TransitionWindow(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async as boolean, duration as Double) as Integer

MBS MacCG Plugin, Plugin Version: 8.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Runs window transition with additional parameters and rectangle.

**Notes:**
Transitions a window from one state to another with appropriate animation and sound.

- **self:** The window that should be transitioned.
- **parent:** For use with kWindowSheetTransitionEffect. This is the parent window of the sheet.
- **effect:** The type of visual effect to use.
- **action:** The action to take on the window.
- **left:** The rectangle to be used.
- **top:** The rectangle to be used.
- **width:** The rectangle to be used.
- **height:** The rectangle to be used.
- **async:** Whether the transition should run synchronously or asynchronously. If Async is true, TransitionWindow will return immediately, and the transition will run using an event loop timer. You must run your event loop for the transition to occur. If Async is false, TransitionWindow will block until the transition is completed.
- **duration:** The duration of the fade, in seconds. For use with the Sheet, Slide, Fade, and Genie transition effects; ignored for other effects. You may pass 0 to use the default duration. The effect is not guaranteed to last precisely this long, but should be a close approximation.

Returns Mac OS error code like 0 for success, -1 for parameter error in the plugin or -50 for parameter error.

**Visual effects that are provided by TransitionWindow:**

**Actions:** Modifications to window state that are provided by TransitionWindow

See also:

- 50.52.19 TransitionWindow(parent as window, effect as Integer, action as Integer) as Integer
- 50.52.20 TransitionWindow(parent as window, effect as Integer, action as Integer, Async as boolean, duration as Double) as Integer
kWindowZoomTransitionEffect 1 Finder-like zoom rectangles. Use with TransitionWindow and Show or Hide transition actions.

kWindowSheetTransitionEffect 2 Zoom in/out from parent. Use with TransitionWindowAndParent and Show or Hide transition actions. Available in Mac OS X, and in CarbonLib 1.5 and later.

kWindowSlideTransitionEffect 3 Slide the window into its new position. Use with TransitionWindow and Move or Resize transition actions. Available in Mac OS X, and in CarbonLib 1.5 and later.

kWindowFadeTransitionEffect 4 Fade the window into or out of visibility. Use with the Show or Hide transition actions. Available in Mac OS X 10.3 and later.

kWindowGenieTransitionEffect 5 Use the Genie effect that the Dock uses to minimize or maximize a window to show or hide the window. Use with the Show or Hide transition actions. Available in Mac OS X 10.3 and later.

kWindowShowTransitionAction 1 Shows the window. Use with the Zoom, Sheet, Fade, or Genie transition effects. For the Zoom, Sheet, and Genie effects, the rectangle parameter is the global coordinates from which to start the animation; rectangle is optional for the Zoom and Sheet effects, and in that case, the animation begins at the center of the window. The Genie effect requires a rectangle parameter. The Fade effect does not use the inRect parameter.

kWindowHideTransitionAction 2 Hides the window. Use with the Zoom, Sheet, Fade, or Genie transition effects. For the Zoom, Sheet, and Genie effects, the rectangle parameter is the global coordinates at which to end the animation; Recangle is optional for the Zoom and Sheet effects, and in that case, the animation ends at the center of the window. The Genie effect requires a rectangle. The Fade effect does not use the inRect parameter.

kWindowMoveTransitionAction 3 Moves the window. Use with the Slide transition effect. The rectangle parameter is the global coordinates of the window’s new structure bounds; Rectangle must be provided. Available in Mac OS X, and in CarbonLib 1.5 and later.

kWindowResizeTransitionAction 4 Resizes the window. Use with the Slide transition effect. The rectangle parameter is the global coordinates of the window’s new structure bounds; Rectangle must be provided. Available in Mac OS X, and in CarbonLib 1.5 and later.

• 50.52.21 TransitionWindow(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer

50.52.23 UnAttachToWindow

MBS MacCG Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Removes the link to the parent window.

50.52.24 WindowLevelForKey(key as Integer) as Integer

MBS MacCG Plugin, Plugin Version: 2.9, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A function to get the value for the window level out of a level key.

Example:
dim w as OverlayWindowMBS

// Call Create before setting level

w.level=w.WindowLevelForKey(2) // window between desktop picture and desktop icons

Notes:

Windows may be assigned to a particular level. When assigned to a level, the window is ordered relative to all other windows in that level. Windows with a higher level are sorted in front of windows with a lower level.

A common set of window levels is defined here for use within higher level frameworks. The levels are accessed via a key and function, so that levels may be changed or adjusted in future releases without breaking binary compatibility.

Some constants for the level keys

- kCGBaseWindowLevelKey 0
- kCGMinimumWindowLevelKey 1
- kCGDesktopWindowLevelKey 2
- kCGBackstopMenuLevelKey 3
- kCGNormalWindowLevelKey 4
- kCGFloatingWindowLevelKey 5
- kCGTornOffMenuWindowLevelKey 6
- kCGDockWindowLevelKey 7
- kCGMainMenuWindowLevelKey 8
- kCGStatusWindowLevelKey 9
- kCGModalPanelWindowLevelKey 10
- kCGPopUpMenuWindowLevelKey 11
- kCGDraggingWindowLevelKey 12
- kCGScreenSaverWindowLevelKey 13
- kCGMaximumWindowLevelKey 14
- kCGOverlayWindowLevelKey 15
- kCGHelpWindowLevelKey 16
- kCGUtilityWindowLevelKey 17
- kCGDesktopIconWindowLevelKey 18
- kCGNumberOfWindowLevelKeys 19

50.52.25 Properties

50.52.26 Handle as Integer

MBS MacCG Plugin, Plugin Version: 2.9, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The handle to the open window.

Notes:
The Value is of type WindowRef.
(Read and Write property)

50.52.27 Height as Integer

MBS MacCG Plugin, Plugin Version: 2.9, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The height of the window.
**Notes:**
Only valid if there is a window.
(Read and Write property)

50.52.28 Left as Integer

MBS MacCG Plugin, Plugin Version: 2.9, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The x coordinate of the window.
**Notes:**
Only valid if there is a window.
(Read and Write property)

50.52.29 Level as Integer

MBS MacCG Plugin, Plugin Version: 2.9, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The level of the window.
**Example:**
```vbs
dim w as OverlayWindowMBS
// Call Create before setting level
w.level=w.WindowLevelForKey(2) // window between desktop picture and desktop icons
```

**Notes:**
See the WindowLevelForKey function for details.
(Read and Write property)
50.52. **CLASS OVERLAYWINDOWMBS**

### 50.52.30 Release as boolean

MBS MacCG Plugin, Plugin Version: 2.9, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** whether the close method or the destructor will close the window. **Notes:** (Read and Write property)

### 50.52.31 Top as Integer

MBS MacCG Plugin, Plugin Version: 2.9, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The y coordinate of the window. **Notes:**

Only valid if there is a window. (Read and Write property)

### 50.52.32 Width as Integer

MBS MacCG Plugin, Plugin Version: 2.9, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The width of the window. **Notes:**

Only valid if there is a window. (Read and Write property)

### 50.52.33 WindowID as Integer

MBS MacCG Plugin, Plugin Version: 10.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Queries the CoreGraphics Window ID for the given window. **Notes:**

Returns 0 on any error. This ID can be used for CGWindowListCreateImageMBS. (Read only property)

### 50.52.34 HasNoShadow as Boolean

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** True if this window has no shadow. **Example:**
`dim thewindow as OverlayWindowMBS
thewindow.HasNoShadow=true `remove shadow`

**Notes:**
Works only after the window was created.
(Read and Write computed property)

### 50.52.35 HideOnFullScreen as Boolean

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The window will hide itself if full screen mode is entered by an application or another window.  
**Notes:**
Works only after the window was created.  
(Read and Write computed property)

### 50.52.36 HideOnSuspend as Boolean

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The window will hide itself if the application goes to background.  
**Notes:**
Works only after the window was created.  
(Read and Write computed property)

### 50.52.37 IgnoreClicks as Boolean

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Can be used to control whether mouse clicks are ignored for this window.  
**Notes:**
Works only after the window was created.  
(Read and Write computed property)

### 50.52.38 Transparency as Double

MBS MacCG Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The transparency of the window.  
**Notes:**
A value from 0 (invisible) to 1.0 (visible).
(Read and Write computed property)

50.52.39  Events

50.52.40  MouseDown(x as Double, y as Double, ModifierKeys as Integer, MouseButton as Integer, ClickCount as Integer) as boolean


50.52.41  MouseDragged(x as Double, y as Double, ModifierKeys as Integer, MouseDeltaX as Double, MouseDeltaY as Double, MouseButton as Integer) as boolean

MBS MacCG Plugin, Plugin Version: 3.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Called when you drag the mouse.
Notes: This event is called whether or not you return true in MouseDown.

50.52.42  MouseEnter(x as Double, y as Double, ModifierKeys as Integer) as boolean

MBS MacCG Plugin, Plugin Version: 9.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The mouse was moved into the screen area of the window.

50.52.43  MouseExit(x as Double, y as Double, ModifierKeys as Integer) as boolean

MBS MacCG Plugin, Plugin Version: 9.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The mouse was moved out of the screen area of the window.

50.52.44  MouseMoved(x as Double, y as Double, ModifierKeys as Integer, MouseDeltaX as Double, MouseDeltaY as Double) as boolean

MBS MacCG Plugin, Plugin Version: 3.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Called when the mouse moves.
50.52.45  MouseUp(x as Double, y as Double, ModifierKeys as Integer, Mouse-Button as Integer, ClickCount as Integer) as boolean

MBS MacCG Plugin, Plugin Version: 3.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Called when the mouse button is released.

50.52.46  MouseWheelMoved(x as Double, y as Double, ModifierKeys as Integer, axis as Integer, delta as Integer) as boolean

MBS MacCG Plugin, Plugin Version: 3.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Called when the mouse wheel moves.

50.52.47  WindowBoundsChanged


50.52.48  WindowClosed

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Called when the window is closed.

50.52.49  WindowHidden

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Called when the window is hidden.

50.52.50  WindowPaint

MBS MacCG Plugin, Plugin Version: 11.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: An event called whenever the system requests a paint of the window.
50.52. CLASS OVERLAYWINDOWMBS

50.52.51 WindowShown

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called when the window is shown.
50.53 class QDPictMBS

50.53.1 class QDPictMBS

MBS MacCG Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class to draw QuickDraw PICT data to a CoreGraphics context. **Deprecated:** This item is deprecated and should no longer be used. **Notes:**

Note: QuickDraw picture data typically comes in two forms: a PICT resource that begins the picture header data at the beginning of the resource and PICT files that begin with 512 bytes of arbitrary data, followed by the picture header data. For this reason, the routines that create a QTPict object attempt to find the picture header data beginning at either the first byte of the data provided or at byte 513 of the data provided.

Additionally the Picture Bounds must not be an empty rect.
This class has been deprecated by Apple.

50.53.2 Methods

50.53.3 Constructor(dataProvider as CGDataProviderMBS)

MBS MacCG Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new QTPictMBS object based on a data provider. **Notes:**

Create a QDPict object, using dataProvider to obtain the QDPict’s data. It is assumed that either the first byte or the 513th byte of data in the file referenced by the URL is the first byte of the picture header. If the URL does not begin PICT data at one of these places in the data fork then the handle property will be 0.
See also:

- 50.53.4 Constructor(file as folderitem) 8362
- 50.53.5 Constructor(url as string) 8363

50.53.4 Constructor(file as folderitem)

MBS MacCG Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new QTPictMBS object based on a file. **See also:**

- 50.53.3 Constructor(dataProvider as CGDataProviderMBS) 8362
- 50.53.5 Constructor(url as string) 8363
50.53.5 Constructor(url as string)

MBS MacCG Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new QTPictMBS object based on an url.

**Notes:**
Create a QDPict from an url.
It is assumed that either the first byte or the 513th byte of data in the file referenced by the URL is the first byte of the picture header. If the URL does not begin PICT data at one of these places in the data fork then the handle property will be 0.

See also:
- 50.53.3 Constructor(dataProvider as CGDataProviderMBS)
- 50.53.4 Constructor(file as folderitem)

50.53.6 DrawToCGContext(context as CGContextMBS, r as CGRectMBS)

MBS MacCG Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Draws the picture into the given context.

**Notes:**
You can increase the drawing resolution by passing a bigger rectangle.
Lasterror is set. -1 if context or rectangle are invalid.

Draw picture in the rectangular area specified by r. The PICT bounds of the page is scaled, if necessary, to fit into the rectangle. To get unscaled results, supply a rect the size of the rect returned by GetBounds.

50.53.7 GetBounds as CGRectMBS

MBS MacCG Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries the bounds of the picture.

**Notes:**
This are the bounds in pixel for 72 dpi.

Return the Picture Bounds of the QuickDraw picture represented by the picture. This rectangle is in the default user space with one unit = 1/72 inch.

50.53.8 GetResolution(byref xRes as single, byref yRes as single)

MBS MacCG Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries the resolution of the picture.
Notes:
Return the resolution of the QuickDraw picture represented by the picture. This data, together with the CGRect returned by GetBounds, can be used to compute the size of the picture in pixels, which is what QuickDraw really records into pictures.

50.53.9  Height as Double

Function: The height of the picture.
Notes: This value is using 72 dpi.

50.53.10  HorizontalResolution as Double

Function: The horizontal resolution.

50.53.11  VerticalResolution as Double

Function: The vertical resolution.

50.53.12  Width as Double

Function: The width of the picture.
Notes: This value is using 72 dpi.

50.53.13  Properties

50.53.14  Handle as Integer

Function: The internal handle.
Notes: (Read and Write property)
50.53. **CLASS QDPICTMBS**

### 50.53.15 LastError as Integer

MBS MacCG Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last error code.
**Notes:**
Set by DrawToCGContext.
(Read and Write property)
50.54 class QuartzFilterManagerMBS

50.54.1 class QuartzFilterManagerMBS

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The class to manage the quartz filters on the system.

50.54.2 Methods

50.54.3 filterPanel as NSPanelMBS

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Returns the panel where users can select a filter.
Example:

```dim m as QuartzFilterManagerMBS
dim p as NSPanelMBS
m=new QuartzFilterManagerMBS
p=m.filterPanel
p.Show```

Notes: Returns nil on any error.

50.54.4 filters as QuartzFilterMBS()

Function: Returns an array with all filters.
Example:

```dim q as new QuartzFilterManagerMBS
dim a() as QuartzFilterMBS
a=q.filters
MsgBox str(ubound(a)+1)+" filters found."
```
50.54.5 filtersInDomains(domains() as string) as QuartzFilterMBS()

Function: Returns an array with all filters in the given domains.
Example:

```vba
dim domains() as string = array(QuartzFilterManagerMBS.kQuartzFilterPrintingDomain)
dim a() as QuartzFilterMBS = QuartzFilterManagerMBS.filtersInDomains(domains)
MsgBox str(ubound(a)+1)+" filters found."
```

50.54.6 filterView as QuartzFilterViewMBS

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The view which you can use to select views.
Notes: You can use the panel as an extra window or add this view to one of your settings windows.

50.54.7 selectedFilter as QuartzFilterMBS

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The currently selected filter.

50.54.8 selectFilter(filter as QuartzFilterMBS) as boolean

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Selects a filter.
Notes: Returns true on success.

50.54.9 Properties

50.54.10 Handle as Integer

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The internal used handle to the filter manager.
Notes: (Read and Write property)
50.54.11 Events

50.54.12 `didAddFilter(filter as QuartzFilterMBS)`

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The given filter was added to the filter list.

50.54.13 `didModifyFilter(filter as QuartzFilterMBS)`

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The given filter was modified.

50.54.14 `didRemoveFilter(filter as QuartzFilterMBS)`

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The given filter was removed.

50.54.15 `didSelectFilter(filter as QuartzFilterMBS)`

MBS Mac Controls Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The selection changed to the new filter.

50.54.16 Constants

50.54.17 `kQuartzFilterApplicationDomain=”kQuartzFilterApplicationDomain”`

MBS MacControls Plugin, Plugin Version: 11.2. **Function:** One of the filter domain constants. **Example:**

```vba
dim domains() as string = array(QuartzFilterManagerMBS.kQuartzFilterApplicationDomain)
dim a() as QuartzFilterMBS = QuartzFilterManagerMBS.filtersInDomains(domains)
MsgBox str(ubound(a)+1)+” filters found.”
```
50.54.18 kQuartzFilterPDFWorkflowDomain="kQuartzFilterPDFWorkflowDomain"

MBS MacControls Plugin, Plugin Version: 11.2. **Function:** One of the filter domain constants. **Example:**

```vba
dim domains() as string = array(QuartzFilterManagerMBS.kQuartzFilterPDFWorkflowDomain)
dim a() as QuartzFilterMBS = QuartzFilterManagerMBS.filtersInDomains(domains)
MsgBox str(ubound(a)+1)+" filters found."
```

50.54.19 kQuartzFilterPrintingDomain="kQuartzFilterPrintingDomain"

MBS MacControls Plugin, Plugin Version: 11.2. **Function:** One of the filter domain constants. **Example:**

```vba
dim domains() as string = array(QuartzFilterManagerMBS.kQuartzFilterPrintingDomain)
dim a() as QuartzFilterMBS = QuartzFilterManagerMBS.filtersInDomains(domains)
MsgBox str(ubound(a)+1)+" filters found."
```
class QuartzFilterMBS

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

Function: The Quartz filter class.

Example:

// Create a couple of PDF files to test different Quartz filters

// get some picture
dim pic as Picture = LogoMBS(500)
dim image as new NSImageMBS(pic)

// create page with picture
dim page as new PDFPageMBS(image)

// create new document
dim doc as new PDFDocumentMBS

// add page
doc.insertPage(page,0)

// get filters
dim manager as new QuartzFilterManagerMBS
dim filters() as QuartzFilterMBS = Manager.filters

for each filter as QuartzFilterMBS in filters

// save PDF with this filter
dim file as FolderItem = SpecialFolder.Desktop.Child(filterlocalizedName+”.pdf”)
call doc.write(file, filter)

next

Notes:

This filters can be used to change PDFs on writing like to reduce the file size.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.
50.55. **CLASS QUARTZFILTERMBS**

50.55.2 **Methods**

50.55.3 **applyToContext(CGContextHandle as Integer) as boolean**

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  
**Function:** Applies a filter to a given context.  
**Example:**

```vba
dim c as CGContextMBS // your context
dim fi as QuartzFilterMBS

fi=QuartzFilterMBS.quartzFilterWithFile(SpecialFolder.Desktop.Child("Reduce File Size.qfilter"))

call fi.applyToContext(c.Handle)
```

**Notes:** Returns true on success.

50.55.4 **Constructor**

**Function:** The private constructor.

50.55.5 **localizedName as string**

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  
**Function:** The localized name of the filter.  
**Example:**

```vba
dim q as new QuartzFilterManagerMBS

dim s(-1) as string

dim a() as QuartzFilterMBS = q.filters

for each f as QuartzFilterMBS in a
    s.append f.localizedName
next

MsgBox Join(s,EndOfLine)
```
50.55.6 `quartzFilterWithFile(file as folderitem) as QuartzFilterMBS`

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** Loads a quartz filter from the given folderitem.
**Example:**
```
dim c as CGContextMBS // your context
dim fi as QuartzFilterMBS
dim file as folderitem

file=SpecialFolder.Desktop.Child("Reduce File Size.qfilter")
fi=QuartzFilterMBS.quartzFilterWithFile(file)

call fi.applyToContext(c.Handle)
```

**Notes:**
Returns nil on any error.
Requires Mac OS X 10.5.

50.55.7 `quartzFilterWithURL(url as string) as QuartzFilterMBS`

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** Loads the quartz filter from the given URL.
**Notes:**
Returns nil on any error.
Requires Mac OS X 10.5.

50.55.8 `removeFromContext(CGContextHandle as Integer)`

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** Removes a filter from a CGContext.
**Notes:** Pass CGContextMBS.handle and make sure it is not 0.

50.55.9 `url as string`

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** The URL where this filter is located.
**Example:**
```
50.55. CLASS QUARTZFILTERMBS

```vba
dim q as new QuartzFilterManagerMBS
dim s(-1) as string

dim a() as QuartzFilterMBS = q.filters

for each f as QuartzFilterMBS in a
    s.append f.url
next

MsgBox Join(s, EndOfLine)
```

50.55.10 Properties

50.55.11 Handle as Integer

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** The internal handle to the filter object.
**Notes:** (Read and Write property)
50.56  class QuartzFilterViewMBS

50.56.1  class QuartzFilterViewMBS

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The view to select quartz filters.
Notes:
You can embed this view in a CustomNSViewMBS to get more events for mouse and keyboard.
Subclass of the NSViewMBS class.

50.56.2  Methods

50.56.3  Constructor

Function: Creates a new Quartz Filter View with size 100/100 and position 0/0
Example:
    dim t as new QuartzFilterViewMBS

Notes: On success the handle property is not zero.
See also:

- 50.56.4 Constructor(Handle as Integer) 8374
- 50.56.5 Constructor(left as Double, top as Double, width as Double, height as Double) 8375

50.56.4  Constructor(Handle as Integer)

Function: Creates an object based on the given QuartzFilterViewMBS handle.
Example:
    dim t as new QuartzFilterViewMBS(0, 0, 100, 100)
dim v as new QuartzFilterViewMBS(t.handle)
    MsgBox str(v.Bounds.Width)+" x "+str(v.Bounds.Height)

Notes: The handle is casted to a QuartzFilterView and the plugin retains this handle.
See also:
50.56. **CLASS QUARTZFILTERVIEWMBS**

- 50.56.3 Constructor
- 50.56.5 Constructor(left as Double, top as Double, width as Double, height as Double)

50.56.5 **Constructor(left as Double, top as Double, width as Double, height as Double)**


**Function:** Creates a new Quartz Filter View with the given size and position.

**Example:**

```vbnet
dim x as new QuartzFilterViewMBS(0, 0, 100, 100)
```

**Notes:**

On success the handle property is not zero.
The new movie view object must be inserted into the view hierarchy of an NSWindow before it can be used.
This method is the designated initializer for the QuartzFilterView class.

See also:

- 50.56.3 Constructor
- 50.56.4 Constructor(Handle as Integer)

50.56.6 **sizeToFit**

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** Resizes the view to the best size.
Chapter 51

CoreGraphics Events

51.1 class CGEventMBS

51.1.1 class CGEventMBS

MBS MacCF Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for a CoreGraphics event.

**Notes:**
Subclass of the CFObjectMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

51.1.2 Methods

51.1.3 available as boolean

MBS MacCF Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this class is available.

**Notes:** Returns true on macOS 10.4 or newer.

51.1.4 Constructor

MBS MacCF Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.
51.1.5 Copy as CGEventMBS

MBS MacCF Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Return a copy of event.

51.1.6 Properties

51.1.7 Flags as Integer

MBS MacCF Plugin, Plugin Version: 17.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The event flags of an event.
**Notes:** (Read and Write property)

51.1.8 Timestamp as UInt64

MBS MacCF Plugin, Plugin Version: 17.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The timestamp of an event.
**Notes:** (Read and Write property)

51.1.9 Type as Integer

MBS MacCF Plugin, Plugin Version: 17.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The event type of an event (left mouse down, for example).
**Notes:**
See constants like kCGMouseButtonLeft.
(Read and Write property)

51.1.10 UnicodeString as String

MBS MacCF Plugin, Plugin Version: 17.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The Unicode string associated with a keyboard event.
**Notes:**
By default, the system translates the virtual key code in a keyboard event into a Unicode string based on the keyboard ID in the event source. This function allows you to manually override this string. Note that application frameworks may ignore the Unicode string in a keyboard event and do their own translation based on the virtual key code and perceived event state.
(Read and Write property)
51.1.11  **UnicodeStringLength as Integer**

MBS MacCF Plugin, Plugin Version: 17.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Return the length of the unicode string associated with a keyboard event. **Notes:** (Read only property)

51.1.12  **DoubleValueField(field as Integer) as Double**

MBS MacCF Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The floating-point value of a field in an event. **Notes:** Before setting a value, the event type must be set using a typed event creation function such as CGEventCreateMouseEvent, or by setting type property.

If you are creating a mouse event generated by a tablet, call this function and specify the field kCGMouseEventSubtype with a value of kCGEventMouseSubtypeTabletPoint or kCGEventMouseSubtypeTabletProximity before setting other parameters. (Read and Write computed property)

51.1.13  **IntegerValueField(field as Integer) as Int64**

MBS MacCF Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The integer value of a field in an event. **Notes:** Before calling this function, the event type must be set using a typed event creation function such as CGEventCreateMouseEvent, or by setting type property.

In cases where the field value is represented within the event by a fixed point number or an integer, the result is scaled to the appropriate range as part of creating the floating-point representation. (Read and Write computed property)

51.1.14  **Constants**

51.1.15  **kCGEventFlagsChanged = 12**

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event type constants. **Notes:** Key flags changed, e.g. modifier keys pressed.
51.1.16  kCGEventKeyDown = 10

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event type constants.  
**Notes:** Key Down

51.1.17  kCGEventKeyUp = 11

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event type constants.  
**Notes:** Key up.

51.1.18  kCGEventLeftMouseDown = 1

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event type constants.  
**Notes:** left mouse-down event

51.1.19  kCGEventLeftMouseDragged = 6

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event type constants.  
**Notes:** left mouse-dragged event

51.1.20  kCGEventLeftMouseUp = 2

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event type constants.  
**Notes:** left mouse-up event

51.1.21  kCGEventMouseMoved = 5

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event type constants.  
**Notes:** mouse-moved event

51.1.22  kCGEventNull = 0

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event type constants.  
**Notes:** The null event. (not defined)
51.1. CLASS CGEVENTMBS

51.1.23 kCGEventOtherMouseDown = 25

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event type constants.  
**Notes:** other mouse-down event

51.1.24 kCGEventOtherMouseDragged = 27

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event type constants.  
**Notes:** other mouse-dragged event

51.1.25 kCGEventOtherMouseUp = 26

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event type constants.  
**Notes:** other mouse-up event

51.1.26 kCGEventRightMouseDown = 3

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event type constants.  
**Notes:** right mouse-down event

51.1.27 kCGEventRightMouseDragged = 7

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event type constants.  
**Notes:** right mouse-dragged event

51.1.28 kCGEventRightMouseUp = 4

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event type constants.  
**Notes:** right mouse-up event

51.1.29 kCGEventScrollWheel = 22

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event type constants.  
**Notes:** Scroll Wheel event.
51.1.30  kCGEventTabletPointer = 23
MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event type constants.  
**Notes:** Tablet pointer event.

51.1.31  kCGEventTabletProximity = 24
MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event type constants.  
**Notes:** Tablet Proximity event.

51.1.32  kCGEventTapDisabledByTimeout = & hFFFFFFFE
MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event type constants.  
**Notes:** Out of band event types. These are delivered to the event tap callback to notify it of unusual conditions that disable the event tap.

51.1.33  kCGEventTapDisabledByUserInput = & hFFFFFFFF
MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event type constants.  
**Notes:** Out of band event types. These are delivered to the event tap callback to notify it of unusual conditions that disable the event tap.

51.1.34  kCGMouseButtonCenter = 2
MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the mouse button constants.  
**Notes:** Center

51.1.35  kCGMouseButtonLeft = 0
MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the mouse button constants.  
**Notes:** Left

51.1.36  kCGMouseButtonRight = 1
MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the mouse button constants.  
**Notes:** Right
51.1.37 kCGScrollEventUnitLine = 1

MBS MacCF Plugin, Plugin Version: 17.4. **Function**: One of the constants that specify the unit of measurement for a scrolling event.

**Notes**: Line

51.1.38 kCGScrollEventUnitPixel = 0

MBS MacCF Plugin, Plugin Version: 17.4. **Function**: One of the constants that specify the unit of measurement for a scrolling event.

**Notes**: Pixel
51.2 class CGEventTapMBS

51.2.1 class CGEventTapMBS

MBS MacCF Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for a Event taps. **Notes:**

Taps may be placed at the point where HIDSystem events enter the server, at the point where HIDSystem and remote control events enter a session, at the point where events have been annotated to flow to a specific application, or at the point where events are delivered to the application. Taps may be inserted at a specified point at the head of pre-existing filters, or appended after any pre-existing filters.

Taps may be passive event listeners, or active filters. An active filter may pass an event through unmodified, modify an event, or discard an event. When a tap is registered, it identifies the set of events to be observed with a mask, and indicates if it is a passive or active event filter. Multiple event type bitmasks may be ORed together.

Taps may only be placed at kCGHIDEventTap by a process running as the root user. An exception is raised for other users.

Taps placed at kCGHIDEventTap, kCGSessionEventTap, kCGAnnotatedSessionEventTap, or on a specific process may only receive key up and down events if access for assistive devices is enabled (Preferences Accessibility panel, Keyboard view) or the caller is enabled for assistive device access, as by AXMakeProcessTrusted. If the tap is not permitted to monitor these events when the tap is created, then the appropriate bits in the mask are cleared. If that results in an empty mask, then an exception is raised.

51.2.2 Methods

51.2.3 available as boolean

MBS MacCF Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Wether this class is available. **Notes:** Returns true for macOS 10.4 or newer.

51.2.4 Constructor(tapLocation as Integer, Place as Integer, Options as Integer, EventMask as Integer)

MBS MacCF Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an event tap.
51.2. CLASS CGEVENTTAPMBS

51.2.5 Properties

51.2.6 Enabled as Boolean

MBS MacCF Plugin, Plugin Version: 17.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Wether this tap is enabled.
**Notes:** (Read and Write property)

51.2.7 Events

51.2.8 GotEvent(Proxy as Ptr, type as Integer, e as CGEventMBS) as CGEventMBS

MBS MacCF Plugin, Plugin Version: 17.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The event called when you can process an event.
**Notes:** For an active tap, please return the event back.

51.2.9 Constants

51.2.10 kCGAnnotatedSessionEventTap = 2

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the constants that specify possible tapping points for events.
**Notes:** At the point where events have been annotated to flow to a specific application, or at the point where events are delivered to the application.

51.2.11 kCGEventMaskFlagsChanged = 4096

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event mask constants.
**Notes:** Key flags changed, e.g. modifier keys pressed.

51.2.12 kCGEventMaskForAllEvents = -1

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event mask constants.
**Notes:** Listen for all events.
51.2.13  kCGEventMaskKeyDown = 1024

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event mask constants.  
**Notes:** Key Down

51.2.14  kCGEventMaskKeyUp = 2048

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event mask constants.  
**Notes:** Key up.

51.2.15  kCGEventMaskLeftMouseDown = 2

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event mask constants.  
**Notes:** left mouse-down event

51.2.16  kCGEventMaskLeftMouseDragged = 64

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event mask constants.  
**Notes:** left mouse-dragged event

51.2.17  kCGEventMaskLeftMouseUp = 4

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event mask constants.  
**Notes:** left mouse-up event

51.2.18  kCGEventMaskMouseMoved = 32

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event mask constants.  
**Notes:** mouse-moved event

51.2.19  kCGEventMaskOtherMouseDown = & h2000000

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event mask constants.  
**Notes:** other mouse-down event
51.2.20  kCGEventMaskOtherMouseDownDragged = & h8000000

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event mask constants.  
**Notes:** other mouse-dragged event

51.2.21  kCGEventMaskOtherMouseUp = & h4000000

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event mask constants.  
**Notes:** other mouse-up event

51.2.22  kCGEventMaskRightMouseDown = 8

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event mask constants.  
**Notes:** right mouse-down event

51.2.23  kCGEventMaskRightMouseDownDragged = 128

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event mask constants.  
**Notes:** right mouse-dragged event

51.2.24  kCGEventMaskRightMouseUp = 16

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event mask constants.  
**Notes:** right mouse-up event

51.2.25  kCGEventMaskScrollWheel = & h400000

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event mask constants.  
**Notes:** Scroll Wheel event.

51.2.26  kCGEventMaskTabletPointer = & h800000

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event mask constants.  
**Notes:** Tablet pointer event.
51.2.27  kCGEventMaskTabletProximity = & h1000000

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the event mask constants.
**Notes:** Tablet Proximity event.

51.2.28  kCGEventTapOptionDefault = 0

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the constants that specify whether a new event tap is an active filter or a passive listener.
**Notes:** Default, active filter.

51.2.29  kCGEventTapOptionListenOnly = 1

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the constants that specify whether a new event tap is an active filter or a passive listener.
**Notes:** Listen only.

51.2.30  kCGHeadInsertEventTap = 0

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the constants that specify where a new event tap is inserted into the list of active event taps.
**Notes:** Insert in front.

51.2.31  kCGHIDEventTap = 0

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the constants that specify possible tapping points for events.
**Notes:** When HIDSystem events enter the server.

51.2.32  kCGSessionEventTap = 1

MBS MacCF Plugin, Plugin Version: 17.4. **Function:** One of the constants that specify possible tapping points for events.
**Notes:** At the point where HIDSystem and remote control events enter a session.
51.2.33  kCGTailAppendEventTap = 1

MBS MacCF Plugin, Plugin Version: 17.4. **Function**: One of the constants that specify where a new event tap is inserted into the list of active event taps.  
**Notes**: Append to the tail.
Chapter 52

CoreImage

52.1 class CIAttributeMBS

52.1.1 class CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for attributes of CoreImage Filters.

52.1.2 Properties

52.1.3 ClassName as string

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Class name of the filter.
**Notes:** (Read only property)

52.1.4 DefaultAffineTransform as NSAffineTransformMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The default value for this color.
**Notes:**
Only valid for affine transformations.
(Read only property)
52.1.5 DefaultColor as CIColorMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The default value for this color.
**Notes:**
Only valid for colors.
(Read only property)

52.1.6 DefaultNumber as Double

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The default value for this color.
**Notes:**
Only valid for numbers.
(Read only property)

52.1.7 DefaultValue as Variant

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The default value.
**Notes:** (Read only property)

52.1.8 DefaultVector as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The default value for this color.
**Notes:**
Only valid for vectors.
(Read only property)

52.1.9 description as string

MBS MacCG Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The description of this attribute.
**Notes:** (Read only property)
52.1. **CLASS CIATTRIBUTEMBS**

52.1.10 **DisplayName as string**

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The localized display name for the attribute.

**Notes:**
Not all attributes do have a localized name and not all do have a name at all. (e.g. outputImage normally has no display name)
(Read only property)

52.1.11 **HasMaxNumber as Boolean**

MBS MacCG Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this attribute has a defined maximum value.

**Notes:** (Read only property)

52.1.12 **HasMinNumber as Boolean**

MBS MacCG Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this attribute has a defined minimum value.

**Notes:** (Read only property)

52.1.13 **HasSliderMaxNumber as Boolean**

MBS MacCG Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this attribute has a defined slider maximum value.

**Notes:** (Read only property)

52.1.14 **HasSliderMinNumber as Boolean**

MBS MacCG Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this attribute has a defined slider minimum value.

**Notes:** (Read only property)

52.1.15 **IdentityAffineTransform as NSAffineTransformMBS**

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The value to be used to keep the filter doing nothing.
Notes:
Only valid for affine transformations.
(Read only property)

52.1.16 IdentityNumber as Double

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The value to be used to keep the filter doing nothing.
**Notes:**
Only valid for numbers.
(Read only property)

52.1.17 IdentityValue as Variant

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The identity value.
**Notes:** (Read only property)

52.1.18 IdentityVector as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The value to be used to keep the filter doing nothing.
**Notes:**
Only valid for vectors.
(Read only property)

52.1.19 LocalizedDescription as string

MBS MacCG Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Description of the filter intended for UI display (eg. localized)
**Notes:** (Read only property)

52.1.20 MaxNumber as Double

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Maximum value for the attribute.
52.1. Class CIATTRIBUTEMBS

Notes:
Only valid for numbers.
If no value is defined, this property is zero and HasMaxNumber returns false.
(Read only property)

52.1.21 MinNumber as Double


Notes:
Only valid for numbers.
If no value is defined, this property is zero and HasMinNumber returns false.
(Read only property)

52.1.22 Name as string

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of this attribute.

Notes: (Read only property)

52.1.23 SliderMaxNumber as Double

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Maximum value for the slider.

**Example:**
```vbs
   dim f as CIFilterEdgesMBS
   dim a as CIAttributeMBS

   f = new CIFilterEdgesMBS

   a = f.AttributeInputIntensity
   Title = str(a.SliderMinNumber) + " " + str(a.SliderMaxNumber)
   f.inputIntensity = a.SliderMaxNumber

   Backdrop = f.outputImage.RenderPicture
```

Notes:
Only valid for numbers.
If no value is defined, this property is zero and HasSliderMaxNumber returns false.
(Read only property)

52.1.24  SliderMinNumber as Double

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Minimum value for the slider.
**Notes:**
Only valid for numbers.
If no value is defined, this property is zero and HasSliderMinNumber returns false.
(Read only property)

52.1.25  Type as string

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The type of this attribute.
**Notes:**
Types for numbers:
kCIAttributeTypeDistance
kCIAttributeTypeBoolean
kCIAttributeTypeTime
kCIAttributeTypeAngle
kCIAttributeTypeScalar

Types for vectors:
kCIAttributeTypePosition (2 Dimensions)
kCIAttributeTypeOffset (2 Dimensions)
kCIAttributeTypePosition3 (3 Dimensions)
kCIAttributeTypeRectangle (4 Dimensions)

Types for colors:
kCIAttributeTypeOpaqueColor

Types for images:
kCIAttributeTypeGradient
(Read only property)
52.1.26 Values as Dictionary

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries all values as dictionary. **Notes:** (Read only property)
52.2 class CIAztecCodeDescriptorMBS

52.2.1 class CIAztecCodeDescriptorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: CIAztecCodeDescriptor is a concrete subclass of CIBarcodeDescriptor that defines an abstract representation of an Aztec Code symbol.
Notes:
CIAztecCodeDescriptor may not be instantiated directly.
Subclass of the CIBarcodeDescriptorMBS class.

52.2.2 Methods

52.2.3 Constructor(errorCorrectedPayload as MemoryBlock, isCompact as Boolean, layerCount as Integer, dataCodewordCount as Integer)

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Initializes a descriptor that can be used as input to CIBarcodeGenerator.

52.2.4 descriptorWithPayload(errorCorrectedPayload as MemoryBlock, isCompact as Boolean, layerCount as Integer, dataCodewordCount as Integer) as CIAztecCodeDescriptorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Construct a descriptor that can be used as input to CIBarcodeGenerator.

52.2.5 Properties

52.2.6 dataCodewordCount as Integer

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The number of non-error-correction codewords carried by the Aztec code symbol.
Notes:
Used to determine the level of error correction in conjunction with the number of data layers. Valid values are 1...2048. Compact symbols can have up to 64 message codewords.

Note that this value can exceed the number of message codewords allowed by the number of data layers in this symbol. In this case, the actual number of message codewords is 1024 fewer than this value and the message payload is to be interpreted in an application-defined manner.
52.2.7 errorCorrectedPayload as MemoryBlock

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The error-corrected codewords that comprise the Aztec code symbol.

**Notes:**

Aztec Codes are formally specified in ISO/IEC 24778:2008(E).

The error corrected payload consists of the 6-, 8-, 10-, or 12-bit message codewords produced at the end of the step described in section 7.3.1.2 "Formation of data codewords", which exists immediately prior to adding error correction. These codewords have dummy bits inserted to ensure that an entire codeword isn’t all 0’s or all 1’s. Clients will need to remove these extra bits as part of interpreting the payload.

(Read only property)

52.2.8 isCompact as Boolean

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A boolean indicating whether the symbol is compact.

**Notes:**

Compact Aztec symbols use one-fewer ring in the central finder pattern than full-range Aztec symbols of the same number of data layers.

(Read only property)

52.2.9 layerCount as Integer

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of data layers in the Aztec code symbol.

**Notes:**

Combined with the isCompact property, the number of data layers determines the number of modules in the Aztec Code symbol. Valid values range from 1 to 32. Compact symbols can have up to 4 data layers.

The number of data layers also determines the number of bits in each data codeword of the message carried by the Aztec Code symbol.

(Read only property)
52.3 class CIBarcodeDescriptorMBS

52.3.1 class CIBarcodeDescriptorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** CIBarcodeDescriptor is an abstract base class that defines an abstract representation of a machine readable code’s symbol attributes.

*Notes:* Each subclass is sufficient to recreate the symbol exactly as seen or to be used with a custom parser. Subclasses of CIBarcodeDescriptor are defined for each code type to contain the formal specification of each symbology. Available on macOS 10.13.

52.3.2 Methods

52.3.3 Constructor(Handle as Integer)

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor with passing in a handle to an existing object.

*Notes:* Handle must be of type CIBarcodeDescriptor and will be retained.

52.3.4 copy as CIBarcodeDescriptorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a copy of this barcode description.

52.3.5 Properties

52.3.6 description as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The description string to debug.

*Notes:* (Read only property)

52.3.7 Handle as Integer

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal object reference.
52.3.  \textit{CLASS CIBARCODEDESCRIPTORMBS} 8401

Notes: (Read only property)
52.4 class CIColorMBS

52.4.1 class CIColorMBS


52.4.2 Methods

52.4.3 blackColor as CIColorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns stock black color with sRGB color space.
**Notes:** Available in macOS 10.12 or newer.

52.4.4 blueColor as CIColorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns stock blue color with sRGB color space.
**Notes:** Available in macOS 10.12 or newer.

52.4.5 clearColor as CIColorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns stock clear color with sRGB color space.
**Notes:**
Transparent color.
Available in macOS 10.12 or newer.

52.4.6 colorWithCGColor(ColorValue as CGColorMBS) as CIColorMBS

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new color based on a CoreGraphics color.
52.4. CLASS CICOLORMBS

52.4.7 colorWithRGB(Red as Double, Green as Double, Blue as Double) as CIColorMBS

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a color object using the specified RGB color component values

**Notes:**

r: The value of the red component.
g: The value of the green component.
b: The value of the blue component.

Initializes Core Image color object that represents an RGB color in the color space specified by the Quartz 2D constant kCGColorSpaceGenericRGB.
See also:

- 52.4.8 colorWithRGB(Red as Double, Green as Double, Blue as Double, Alpha as Double) as CIColorMBS
- 52.4.9 colorWithRGB(Red as Double, Green as Double, Blue as Double, Alpha as Double, ColorSpace as CGColorSpaceMBS) as CIColorMBS
- 52.4.10 colorWithRGB(Red as Double, Green as Double, Blue as Double, ColorSpace as CGColorSpaceMBS) as CIColorMBS

52.4.8 colorWithRGB(Red as Double, Green as Double, Blue as Double, Alpha as Double) as CIColorMBS

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a color object using the specified RGBA color component values.

**Notes:**

r: The value of the red component.
g: The value of the green component.
b: The value of the blue component.
a: The value of the alpha component.

Initializes a Core Image color object that represents an RGB color in the color space specified by the Quartz 2D constant kCGColorSpaceGenericRGB and an alpha value.
See also:

- 52.4.7 colorWithRGB(Red as Double, Green as Double, Blue as Double) as CIColorMBS
- 52.4.9 colorWithRGB(Red as Double, Green as Double, Blue as Double, Alpha as Double, ColorSpace as CGColorSpaceMBS) as CIColorMBS
- 52.4.10 colorWithRGB(Red as Double, Green as Double, Blue as Double, ColorSpace as CGColorSpaceMBS) as CIColorMBS
**52.4.9** colorWithRGB(Red as Double, Green as Double, Blue as Double, Alpha as Double, ColorSpace as CGColorSpaceMBS) as CIColorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create a new color object in a given colorspace.  
**Notes:** 
Will return nil if the colorspace is not kCGColorSpaceModelRGB. Available in macOS 10.12 or newer.  
See also:

- 52.4.7 colorWithRGB(Red as Double, Green as Double, Blue as Double) as CIColorMBS
- 52.4.8 colorWithRGB(Red as Double, Green as Double, Blue as Double, Alpha as Double) as CIColorMBS
- 52.4.10 colorWithRGB(Red as Double, Green as Double, Blue as Double, ColorSpace as CGColorSpaceMBS) as CIColorMBS

**52.4.10** colorWithRGB(Red as Double, Green as Double, Blue as Double, ColorSpace as CGColorSpaceMBS) as CIColorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create a new color object in a given colorspace.  
**Notes:** 
Will return nil if the colorspace is not kCGColorSpaceModelRGB. Available in macOS 10.12 or newer.  
See also:

- 52.4.7 colorWithRGB(Red as Double, Green as Double, Blue as Double) as CIColorMBS
- 52.4.8 colorWithRGB(Red as Double, Green as Double, Blue as Double, Alpha as Double) as CIColorMBS
- 52.4.10 colorWithRGB(Red as Double, Green as Double, Blue as Double, ColorSpace as CGColorSpaceMBS) as CIColorMBS

**52.4.11** colorWithString(representation as String) as CIColorMBS

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a color from a color string representation.
52.4. CLASS CICOLORMBS

52.4.12 Component(index as UInt32) as Double

MBS MacCG Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The color component with the given index.
**Notes:** Index is from 0 to NumberOfComponents - 1.

52.4.13 Constructor(ColorValue as CGColorMBS)

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new CIColor based on the given CoreGraphics color.
**Notes:** On success, the handle is not zero.
See also:
- 52.4.14 Constructor(Handle as Integer)
- 52.4.15 Constructor(Red as Double, Green as Double, Blue as Double)
- 52.4.16 Constructor(Red as Double, Green as Double, Blue as Double, Alpha as Double)
- 52.4.17 Constructor(Red as double, Green as Double, Blue as double, Alpha as Double, ColorSpace as CGColorSpaceMBS)
- 52.4.18 Constructor(Red as double, Green as Double, Blue as double, ColorSpace as CGColorSpaceMBS)

52.4.14 Constructor(Handle as Integer)

MBS MacCG Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Initializes object with given object reference.
**Notes:**
ref should be a CIColor* and the object is retained.
Raises UnsupportedOperationException if object is not a CIColor.
See also:
- 52.4.13 Constructor(ColorValue as CGColorMBS)
- 52.4.15 Constructor(Red as Double, Green as Double, Blue as Double)
- 52.4.16 Constructor(Red as Double, Green as Double, Blue as Double, Alpha as Double)
- 52.4.17 Constructor(Red as double, Green as Double, Blue as double, Alpha as Double, ColorSpace as CGColorSpaceMBS)
- 52.4.18 Constructor(Red as double, Green as Double, Blue as double, ColorSpace as CGColorSpaceMBS)
52.4.15 Constructor(Red as Double, Green as Double, Blue as Double)

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a color object using the specified RGB color component values.  

**Notes:**

r: The value of the red component.
g: The value of the green component.
b: The value of the blue component.

Initializes Core Image color object that represents an RGB color in the color space specified by the Quartz 2D constant kCGColorSpaceGenericRGB.

See also:

- 52.4.13 Constructor(ColorValue as CGColorMBS) 8405
- 52.4.14 Constructor(Handle as Integer) 8405
- 52.4.16 Constructor(Red as Double, Green as Double, Blue as Double, Alpha as Double) 8406
- 52.4.17 Constructor(Red as double, Green as Double, Blue as double, Alpha as Double, ColorSpace as CGColorSpaceMBS) 8407
- 52.4.18 Constructor(Red as double, Green as Double, Blue as double, ColorSpace as CGColorSpaceMBS) 8407

52.4.16 Constructor(Red as Double, Green as Double, Blue as Double, Alpha as Double)

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a color object using the specified RGBA color component values.  

**Notes:**

r: The value of the red component.
g: The value of the green component.
b: The value of the blue component.
a: The value of the alpha component.

Initializes a Core Image color object that represents an RGB color in the color space specified by the Quartz 2D constant kCGColorSpaceGenericRGB and an alpha value.

See also:

- 52.4.13 Constructor(ColorValue as CGColorMBS) 8405
- 52.4.14 Constructor(Handle as Integer) 8405
- 52.4.15 Constructor(Red as Double, Green as Double, Blue as Double) 8406
52.4. **CLASS CICOLORMBS**

- 52.4.17 Constructor(Red as double, Green as Double, Blue as double, Alpha as Double, ColorSpace as CGColorSpaceMBS)
- 52.4.18 Constructor(Red as double, Green as Double, Blue as double, ColorSpace as CGColorSpaceMBS)

**52.4.17 Constructor(Red as double, Green as Double, Blue as double, Alpha as Double, ColorSpace as CGColorSpaceMBS)**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create a new color object in a given colorspace. **Notes:** Will fail if the colorspace is not kCGColorSpaceModelRGB. Available in macOS 10.12 or newer. See also:

- 52.4.13 Constructor(ColorValue as CGColorMBS)
- 52.4.14 Constructor(Handle as Integer)
- 52.4.15 Constructor(Red as Double, Green as Double, Blue as Double)
- 52.4.16 Constructor(Red as Double, Green as Double, Blue as Double, Alpha as Double)
- 52.4.17 Constructor(Red as double, Green as Double, Blue as double, Alpha as Double, ColorSpace as CGColorSpaceMBS)

**52.4.18 Constructor(Red as double, Green as Double, Blue as double, ColorSpace as CGColorSpaceMBS)**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create a new color object in a given colorspace. **Notes:** Will fail if the colorspace is not kCGColorSpaceModelRGB. Available in macOS 10.12 or newer. See also:

- 52.4.13 Constructor(ColorValue as CGColorMBS)
- 52.4.14 Constructor(Handle as Integer)
- 52.4.15 Constructor(Red as Double, Green as Double, Blue as Double)
- 52.4.16 Constructor(Red as Double, Green as Double, Blue as Double, Alpha as Double)
- 52.4.17 Constructor(Red as double, Green as Double, Blue as double, Alpha as Double, ColorSpace as CGColorSpaceMBS)
52.4.19  copy as CIColorMBS

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy of the color object.

52.4.20  cyanColor as CIColorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns stock cyan color with sRGB color space.
**Notes:** Available in macOS 10.12 or newer.

52.4.21  grayColor as CIColorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns stock gray color with sRGB color space.
**Notes:** Available in macOS 10.12 or newer.

52.4.22  greenColor as CIColorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns stock green color with sRGB color space.
**Notes:** Available in macOS 10.12 or newer.

52.4.23  magentaColor as CIColorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns stock magenta color with sRGB color space.
**Notes:** Available in macOS 10.12 or newer.

52.4.24  redColor as CIColorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns stock red color with sRGB color space.
**Notes:** Available in macOS 10.12 or newer.
52.4. CLASS CICOLORMBS

52.4.25 whiteColor as CIColorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns stock white color with sRGB color space. **Notes:** Available in macOS 10.12 or newer.

52.4.26 yellowColor as CIColorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns stock yellow color with sRGB color space. **Notes:** Available in macOS 10.12 or newer.

52.4.27 Properties

52.4.28 Alpha as Double

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The alpha value of the color. **Notes:** Values range between 0.0 to 1.0. (Read only property)

52.4.29 Blue as Double

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The (unpremultiplied) blue component of the color. **Notes:** Values range between 0.0 to 1.0. (Read only property)

52.4.30 ColorSpace as CGColorSpaceMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The color space object associated with the color. **Notes:** nil on any error. (Read only property)
52.4.31  **description as String**

MBS MacCG Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the textual description for this color. **Notes:** (Read only property)

52.4.32  **Green as Double**

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The (unpremultiplied) green component of the color. **Notes:** Values range between 0.0 to 1.0. (Read only property)

52.4.33  **Handle as Integer**

MBS MacCG Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle to the CIColor object used internally. **Notes:** (Read only property)

52.4.34  **NumberOfComponents as Integer**

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of color components (including alpha). **Notes:** (Read only property)

52.4.35  **Red as Double**

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The (unpremultiplied) red component of the color. **Notes:** Values range between 0.0 to 1.0. (Read only property)
52.4.36  StringRepresentation as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a formatted string with the components of the color.
**Example:**
```vbnet
dim c as CIColorMBS

c=NewCIColorMBS(1,0,0)

MsgBox c.stringRepresentation  // shows "1 0 0 1"
```

**Notes:**
Returns "" on any error.
(Read only property)
52.5 class CIContextMBS

52.5.1 class CIContextMBS


52.5.2 Methods

52.5.3 ClearCaches

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Frees any cached data (such as temporary images) associated with the context. **Notes:** This also runs the garbage collector.

52.5.4 Constructor

MBS MacCG Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new CIContext without a specific target. **Notes:** Great to create a context and render something inside. See also:

- 52.5.5 Constructor(cgcontext as CGContextMBS) 8412
- 52.5.6 Constructor(cgcontext as CGContextMBS, OutputColorSpace as CGColorSpaceMBS, WorkingColorSpace as CGColorSpaceMBS, UseSoftwareRenderer as Boolean) 8413
- 52.5.7 Constructor(Handle as Integer) 8413
- 52.5.8 Constructor(Pic as Picture) 8414

52.5.5 Constructor(cgcontext as CGContextMBS)

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create a new CoreImage context object, all output will be drawn into the CG context. **Notes:** On success, the handle is not zero. See also:

- 52.5.4 Constructor 8412
- 52.5.6 Constructor(cgcontext as CGContextMBS, OutputColorSpace as CGColorSpaceMBS, WorkingColorSpace as CGColorSpaceMBS, UseSoftwareRenderer as Boolean) 8413
52.5. **CLASS CICONTEXTMBS**

- 52.5.7 Constructor(Handle as Integer) 8413
- 52.5.8 Constructor(Pic as Picture) 8414

52.5.6 **Constructor(cgcontext as CGContextMBS, OutputColorSpace as CGColorSpaceMBS, WorkingColorSpace as CGColorSpaceMBS, UseSoftwareRenderer as Boolean)**

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create a new CoreImage context object with options, all output will be drawn into the CG context.

**Notes:**
- OutputColorSpace: A CGColorSpaceMBS object defining the color space in which all intermediate operations are performed.
- WorkingColorSpace: A CGColorSpaceRef object defining the color space that images are converted to before rendering into the context.
- UseSoftwareRenderer: Whether you want software renderer only.

On success, the handle is not zero.
See also:

- 52.5.4 Constructor 8412
- 52.5.5 Constructor(cgcontext as CGContextMBS) 8412
- 52.5.7 Constructor(Handle as Integer) 8413
- 52.5.8 Constructor(Pic as Picture) 8414

52.5.7 **Constructor(Handle as Integer)**

MBS MacCG Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes object with given object reference.

**Notes:**
- ref should be a CIContext* and the object is retained.
- Raises UnsupportedOperationException if object is not a CIContext.
See also:

- 52.5.4 Constructor 8412
- 52.5.5 Constructor(cgcontext as CGContextMBS) 8412
52.5.8 Constructor(Pic as Picture)

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a context targeting the picture.  
**Notes:** Works only on Cocoa target.  
See also:

- 52.5.4 Constructor  
- 52.5.5 Constructor(cgcontext as CGContextMBS)  
- 52.5.6 Constructor(cgcontext as CGContextMBS, OutputColorSpace as CGColorSpaceMBS, Working-ColorSpace as CGColorSpaceMBS, UseSoftwareRenderer as Boolean)  
- 52.5.7 Constructor(Handle as Integer)

52.5.9 CreateCGImage(image as CIImageMBS, r as CGRectMBS = nil) as CGImageMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new image with the content of the CIImage.  
**Notes:**  
Render the region 'r' of image 'im' into a temporary buffer using the context, then create and return a new CoreGraphics image with the results.  
If r is nil, the whole image extent is used.  
See also:

- 52.5.10 CreateCGImage(image as CIImageMBS, r as CGRectMBS, ColorSpace as CGColorSpaceMBS) as CGImageMBS

52.5.10 CreateCGImage(image as CIImageMBS, r as CGRectMBS as CGColorSpaceMBS) as CGImageMBS

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new image with the content of the CIImage.  
**Notes:**  
Render the region 'r' of image 'im' into a temporary buffer using the context, then create and return a new CoreGraphics image with the results.  
If r is nil, the whole image extent is used.  
See also:

- 52.5.9 CreateCGImage(image as CIImageMBS, r as CGRectMBS = nil) as CGImageMBS
52.5.11  `createCGLayer(size as CGSizeMBS, info as dictionary = nil) as CGLayerMBS`

MBS MacCG Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a CGLayer object from the provided parameters.  
**Notes:**
- `size`: The size, in default user space units, of the layer relative to the graphics context.  
- `info`: A dictionary, which is passed to CGLayerCreateWithContext as the auxiliaryInfo parameter. Pass nil because this parameter is reserved for future use.

Returns a CGLayer object.

After calling this method, Core Image draws content into the CGLayer object. Core Image creates a CGLayer object by calling the Quartz 2D function CGLayerCreateWithContext, whose prototype is:

```c
CGLayerRef CGLayerCreateWithContext (
    CGContextRef context,
    CGSize size,
    CFDictionaryRef auxiliaryInfo
);
```

Core Image passes the CIContext object as the context parameter, the size as the size parameter, and the dictionary as the auxiliaryInfo parameter. For more information on CGLayer objects, see Quartz 2D Programming Guide and CGLayer Reference.

Available in OS X v10.4 and later.

52.5.12  **Destructor**

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The destructor.

52.5.13  **DrawImage(ciImage as CIImageMBS)**

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Render the ciImage to the the context’s destination.  
**Notes:** Rendering the image will cause the calculations to be done so this call is quite expensive.
52.5.14 **DrawImagePoint**(ciImage as CIImageMBS, DestPoint as CGPointMBS, SourceRect as CGRectMBS = nil)

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Render the subregion 'SourceRect' of 'ciImage' to point 'DestPoint' in the context’s destination. **Deprecated:** This item is deprecated and should no longer be used. You can use DrawImageRect instead. **Notes:**

Rendering the image will cause the calculations to be done so this call is quite expensive. If SourceRect is nil, we use the extent from image.

52.5.15 **DrawImageRect**(ciImage as CIImageMBS, DestRect as CGRectMBS, SourceRect as CGRectMBS = nil)

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Render the rectangle 'SourceRect' of 'ciImage' to the rectangle 'DestRect' in the context’s destination. **Notes:**

Rendering the image will cause the calculations to be done so this call is quite expensive. If SourceRect is nil, we use the extent from image.

52.5.16 **Flush**

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Flushes drawings to CGContext and target picture (if any).

52.5.17 **JPEGRepresentationOfImage**(Image as CIImageMBS, colorSpace as CGColorSpaceMBS = nil, options as dictionary = nil) as MemoryBlock

MBS MacCG Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Render a CIImage to JPEG data. **Example:**

```plaintext
dim f as FolderItem = SpecialFolder.Desktop.Child("test.png")
dim i as new CIImageMBS(f)
dim c as new CIContextMBS

dim jpegData as MemoryBlock = c.JPEGRepresentationOfImage(i)

Break // see debugger
```
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Notes:
Image must have a finite non-empty extent.
The CGColorSpace must be kCGColorSpaceModelRGB or kCGColorSpaceModelMonochrome.
Supported options keys are kCGImageDestinationLossyCompressionQuality, kCIImageRepresentationAVDepthData, kCIImageRepresentationDepthImage, kCIImageRepresentationDisparityImage.
If colorspace is nil, we use generic RGB colorspace.
Available on macOS 10.12 or later.

52.5.18 kCIContextCacheIntermediates as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
One of the keys that may be passed in the dictionary while creating contexts.
**Notes:**
A boolean NSNumber controlling how intermediate buffers are cached.
If false, the context will empty intermediates during and after renders.
The default value is true.

52.5.19 kCIContextHighQualityDownsample as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
One of the option keys.
**Notes:**
A boolean controlling the quality of affine downsample operations.
True imply that more quality is desired.
On iOS the the default value is false.
On OSX the the default value is true.

52.5.20 kCIContextOutputColorSpace as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
A key for the color space to use for images before they are rendered to the context.
**Notes:**
By default, Core Image uses the GenericRGB color space, which leaves color matching to the system. You can specify a different output color space by providing a Quartz 2D CGColorSpace object (CGColorSpaceRef). (See Quartz 2D Programming Guide for information on creating and using CGColorSpace objects.)
To request that Core Image perform no color management, specify the NSNull object as the value for this key. Use this option for images that don’t contain color data (such as elevation maps, normal vector maps, and sampled function tables).

Available in OS X v10.6 and later.

**52.5.21 kCIContextOutputPremultiplied as String**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys that may be passed in the dictionary while creating contexts.

**Notes:**
A boolean controlling whether output renders produce alpha-premultiplied pixels. The default value is true.

**52.5.22 kCIContextPriorityRequestLow as String**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An number with a boolean value. When @YES the context will use low priority rendering on the GPU.

**52.5.23 kCIContextUseSoftwareRenderer as String**

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A key for enabling software renderer use. If the associated NSNumber object is true, then the software renderer is required.

**Notes:** Available in OS X v10.6 and later.

**52.5.24 kCIContextWorkingColorSpace as String**

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A key for the color space to use for image operations.

**Notes:**
By default, Core Image assumes that processing nodes are 128 bits-per-pixel, linear light, premultiplied RGBA floating-point values that use the GenericRGB color space. You can specify a different working color space by providing a Quartz 2D CGColorSpace object (CGColorSpaceRef). Note that the working color space must be RGB-based. If you have YUV data as input (or other data that is not RGB-based), you can use ColorSync functions to convert to the working color space. (See Quartz 2D Programming Guide for
52.5. CLASS CICONTEXTMBS

information on creating and using CGColorSpace objects.)

To request that Core Image perform no color management, specify the NSNull object as the value for this key. Use this option for images that don’t contain color data (such as elevation maps, normal vector maps, and sampled function tables).

Available in OS X v10.6 and later.

52.5.25 kCIContextWorkingFormat as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An option for the color format to use for intermediate results when rendering with the context. **Notes:** The value for this key is an NSNumber object containing a CIFormat value. The default working format is kCIFormatRGBA8 for CPU rendering and kCIFormatRGBAf for GPU rendering. GPU rendering also supports the kCIFormatRGBAh format for greater color precision, but this format requires twice as much memory and can be used only with color management enabled.

Available in OS X v10.4 and later.

52.5.26 kCIImageRepresentationAVDepthData as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the representation name. **Notes:** For the raw depth data.

52.5.27 kCIImageRepresentationDepthImage as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the representation name. **Notes:** For the depth image.

52.5.28 kCIImageRepresentationDisparityImage as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the representation name.
Notes: For the disparity image.

52.5.29 PNGRepresentationOfImage(Image as CIImageMBS, format as Integer = 24, colorSpace as CGColorSpaceMBS = nil, options as dictionary = nil) as MemoryBlock

MBS MacCG Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Render a CIImage to PNG data.

**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.png")
dim i as new CIImageMBS(f)
dim c as new CIContextMBS

dim pngData as MemoryBlock = c.PNGRepresentationOfImage(i)
```

Break // see debugger

**Notes:**
Image must have a finite non-empty extent.
The CGColorSpace must be kCGColorSpaceModelRGB or kCGColorSpaceModelMonochrome and must match the specified format.
No options keys are supported at this time.
If colorspace is nil, we use generic RGB colorspace.
Available on macOS 10.13 or later.

52.5.30 ReclaimResources

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Frees temporary memory.

**Notes:** Runs the context’s garbage collector to reclaim any resources that are no longer required (e.g. removes textures from the texture cache that reference deleted images.) This method is called automatically after every rendering operation.
52.5. CLASS CICONTEXTMBS

52.5.31 TIFFRepresentationOfImage(Image as CIImageMBS, format as Integer = 24, colorSpace as CGColorSpaceMBS = nil, options as dictionary = nil) as MemoryBlock


Example:
```javascript
    dim f as FolderItem = SpecialFolder.Desktop.Child("test.png")
    dim i as new CIImageMBS(f)
    dim c as new CIContextMBS

    dim tiffData as MemoryBlock = c.TIFFRepresentationOfImage(i)

    Break // see debugger
```

Notes:
Image must have a finite non-empty extent. The CGColorSpace must be kCGColorSpaceModelRGB or kCGColorSpaceModelMonochrome and must match the specified format. No options keys are supported at this time. If colorspace is nil, we use generic RGB colorspace. Available on macOS 10.12 or later.

52.5.32 writeJPEGRepresentationOfImage(Image as CIImageMBS, file as FolderItem, colorSpace as CGColorSpaceMBS = nil, options as dictionary = nil, byref error as NSErrorMBS) as Boolean


Example:
```javascript
    dim f as FolderItem = SpecialFolder.Desktop.Child("test.png")
    dim i as new CIImageMBS(f)
    dim c as new CIContextMBS
    dim d as FolderItem = SpecialFolder.Desktop.Child("output.jpg")
    dim e as NSErrorMBS
    dim b as Boolean = c.writeJPEGRepresentationOfImage(i, d, e)

    if b then
        MsgBox "OK"
    else
        MsgBox "Failed"+EndOfLine+e.localizedDescription
    end if
```
Notes:

Image must have a finite non-empty extent.
The CGColorSpace must be kCGColorSpaceModelRGB or kCGColorSpaceModelMonochrome.
Supported options keys are kCGImageDestinationLossyCompressionQuality, kCIImageRepresentationAVDepthData, kCIImageRepresentationDepthImage, kCIImageRepresentationDisparityImage.
If colorspace is nil, we use generic RGB colorspace.
Available on macOS 10.12 or later.

52.5.33 writePNGRepresentationOfImage(Image as CIImageMBS, file as FolderItem, format as Integer = 24, colorSpace as CGColorSpaceMBS = nil, options as dictionary = nil, byref error as NSErrorMBS) as Boolean

MBS MacCG Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Render a CIImage to PNG file.
**Example:**

```plaintext
dim f as FolderItem = SpecialFolder.Desktop.Child("test.png")
dim i as new CIImageMBS(f)
dim c as new CIContextMBS
dim d as FolderItem = SpecialFolder.Desktop.Child("output.png")

dim e as NSErrorMBS
dim b as Boolean = c.writePNGRepresentationOfImage(i, d, e)
if b then
    MsgBox "OK"
else
    MsgBox "Failed" + EndOfFile + e.LocalizedDescription
end if
```

Notes:

Image must have a finite non-empty extent.
The CGColorSpace must be kCGColorSpaceModelRGB or kCGColorSpaceModelMonochrome and must match the specified format.
No options keys are supported at this time.
If colorspace is nil, we use generic RGB colorspace.
Available on macOS 10.13 or later.
52.5.34  writeTIFFRepresentationOfImage(Image as CIImageMBS, file as FolderItem, format as Integer = 24, colorSpace as CGColorSpaceMBS = nil, options as dictionary = nil, byref error as NSErrorMBS) as Boolean

MBS MacCG Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Render a CIImage to TIFF file. **Example:**

```lisp
dim f as FolderItem = SpecialFolder.Desktop.Child("test.png")
dim i as new CIImageMBS(f)
dim c as new CIContextMBS
dim d as FolderItem = SpecialFolder.Desktop.Child("output.tif")

dim e as NSErrorMBS
dim b as Boolean = c.writeTIFFRepresentationOfImage(i, d, e)
if b then
    MsgBox "OK"
else
    MsgBox "Failed" + EndOfLine + e.localizedDescription
end if
```

**Notes:**

Image must have a finite non-empty extent.
The CGColorSpace must be kCGColorSpaceModelRGB or kCGColorSpaceModelMonochrome and must match the specified format.
No options keys are supported at this time.
If colorspace is nil, we use generic RGB colorspace.
Available on macOS 10.12 or later.

52.5.35  Properties

52.5.36  CGContext as CGContextMBS

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The CGContextMBS targeted by this CIContext.
**Notes:** (Read and Write property)

52.5.37  description as String

MBS MacCG Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the textual description for this context.
**52.5.38 Handle as Integer**

MBS MacCG Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle to the CIContext object used internally. 
**Notes:** (Read only property)

**52.5.39 Picture as Picture**

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The picture used in the constructor (if any). 
**Notes:** (Read and Write property)

**52.5.40 Constants**

**52.5.41 kCIFormatA16 = 4**

MBS MacCG Plugin, Plugin Version: 17.3. **Function:** One of the image format constants. 
**Notes:**

Alpha with 16-bit. 
Available in macOS 10.11 or newer.

**52.5.42 kCIFormatA8 = 3**

MBS MacCG Plugin, Plugin Version: 17.3. **Function:** One of the image format constants. 
**Notes:**

Alpha with 8-bit. 
Available in macOS 10.11 or newer.

**52.5.43 kCIFormatABGR8 = 46**

MBS MacCG Plugin, Plugin Version: 17.3. **Function:** One of the image format constants. 
**Notes:**
52.5. **CLASS CICONTEXTMBS**

ABGR with 8-bit.
Available in macOS 10.11 or newer.

### 52.5.44 kCIFormatAf = 6

MBS MacCG Plugin, Plugin Version: 17.3. **Function:** One of the image format constants.  
**Notes:**
Alpha with float values.
Available in macOS 10.11 or newer.

### 52.5.45 kCIFormatAh = 5

MBS MacCG Plugin, Plugin Version: 17.3. **Function:** One of the image format constants.  
**Notes:**
Alpha with half floating point.
Available in macOS 10.11 or newer.

### 52.5.46 kCIFormatARGB8 = 23

MBS MacCG Plugin, Plugin Version: 17.3. **Function:** One of the image format constants.  
**Notes:** ARGB with 8-bit.

### 52.5.47 kCIFormatBGRA8 = 22

MBS MacCG Plugin, Plugin Version: 17.3. **Function:** One of the image format constants.  
**Notes:** BGRA with 8-bit.

### 52.5.48 kCIFormatR16 = 37

MBS MacCG Plugin, Plugin Version: 17.3. **Function:** One of the image format constants.  
**Notes:**
Red with 16-bit.
Available in macOS 10.11 or newer.
52.5.49  \texttt{kCIFormatR8 = 36}  

MBS MacCG Plugin, Plugin Version: 17.3. \textbf{Function:} One of the image format constants. 
\textbf{Notes:}
Red with 8-bit. 
Available in macOS 10.11 or newer.

52.5.50  \texttt{kCIFormatRf = 39}  

MBS MacCG Plugin, Plugin Version: 17.3. \textbf{Function:} One of the image format constants. 
\textbf{Notes:}
Red with floating point. 
Available in macOS 10.11 or newer.

52.5.51  \texttt{kCIFormatRG16 = 41}  

MBS MacCG Plugin, Plugin Version: 17.3. \textbf{Function:} One of the image format constants. 
\textbf{Notes:}
Red and green with 16-bit. 
Available in macOS 10.11 or newer.

52.5.52  \texttt{kCIFormatRG8 = 40}  

MBS MacCG Plugin, Plugin Version: 17.3. \textbf{Function:} One of the image format constants. 
\textbf{Notes:}
Red and green with 8-bit. 
Available in macOS 10.11 or newer.

52.5.53  \texttt{kCIFormatRGBA16 = 27}  

MBS MacCG Plugin, Plugin Version: 17.3. \textbf{Function:} One of the image format constants. 
\textbf{Notes:} RGBA with 16-bit.
52.5.54 kCIFormatRGBA8 = 24

MBS MacCG Plugin, Plugin Version: 17.3. **Function:** One of the image format constants. **Notes:** RGBA with 8-bit.

52.5.55 kCIFormatRGBAf = 34

MBS MacCG Plugin, Plugin Version: 17.3. **Function:** One of the image format constants. **Notes:** RGBA with floating point.

52.5.56 kCIFormatRGBAh = 31

MBS MacCG Plugin, Plugin Version: 17.3. **Function:** One of the image format constants. **Notes:** RGBA values that are IEEE 754-2008 half float compliant.

52.5.57 kCIFormatRGf = 43

MBS MacCG Plugin, Plugin Version: 17.3. **Function:** One of the image format constants. **Notes:**

Red and green with floating point values.
Available in macOS 10.11 or newer.

52.5.58 kCIFormatRGh = 42

MBS MacCG Plugin, Plugin Version: 17.3. **Function:** One of the image format constants. **Notes:**

Red and green with half precision floating point values.
Available in macOS 10.11 or newer.

52.5.59 kCIFormatRh = 38

MBS MacCG Plugin, Plugin Version: 17.3. **Function:** One of the image format constants. **Notes:**

Red with half precision floating point.
Available in macOS 10.11 or newer.
52.6 class CIDataMatrixCodeDescriptorMBS

52.6.1 class CIDataMatrixCodeDescriptorMBS


52.6.2 Methods

52.6.3 Constructor(errorCorrectedPayload as MemoryBlock, rowCount as Integer, columnCount as Integer, eccVersion as integer)

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Initializes a descriptor that can be used as input to CIBarcodeGenerator.

52.6.4 descriptorWithPayload(errorCorrectedPayload as MemoryBlock, rowCount as Integer, columnCount as Integer, eccVersion as integer) as CIDataMatrixCodeDescriptorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Construct a descriptor that can be used as input to CIBarcodeGenerator.

52.6.5 Properties

52.6.6 columnCount as Integer

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The number of module columns. Notes: Refer to ISO/IEC 16022:2006(E) for valid module row and column count combinations. (Read only property)
### 52.6.7  **eccVersion as Integer**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The Data Matrix code ECC version.  
**Notes:**

Valid values are 000, 050, 080, 100, 140, and 200. Any symbol with an even number of rows and columns will be ECC 200.

ECC 000 - 140 symbols offer five levels of error correction using convolutional code error correction. Each successive level of error correction offers more protection for the message data and increases the size of the symbol required to carry a specific message. ECC 000 symbols offer no data protection. The other modes are described in ISO/IEC 16022:2006 and enumerated in this list only for completeness.

ECC 200 symbols utilize Reed-Solomon error correction. The error correction capacity for any given Data Matrix symbol is fixed by the size (in rows and columns) of the symbol. See Table 7 of ISO/IEC 16022:2006(E) for more details.  
(Read only property)

### 52.6.8  **errorCorrectedPayload as MemoryBlock**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The error corrected payload that comprise the Data Matrix code symbol.  
**Notes:**

DataMatrix symbols are specified in ISO/IEC 16022:2006(E). ECC 200-type symbols will always have an even number of rows and columns.

For ECC 200-type symbols, the phases of encoding data into a symbol are described in section 5.1 – Encode procedure overview. The error corrected payload comprises the de-interleaved bits of the message described at the end of Step 1: Data encodation.  
(Read only property)

### 52.6.9  **rowCount as Integer**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of module rows.  
**Notes:**

Refer to ISO/IEC 16022:2006(E) for valid module row and column count combinations.  
(Read only property)
52.6.10 Constants

52.6.11 ECCVersion000 = 0

MBS MacCG Plugin, Plugin Version: 17.4. **Function:** One of the constants indicating the Data Matrix code ECC version. 
**Notes:** Indicates error correction using convolutional code error correction with no data protection.

52.6.12 ECCVersion050 = 50

MBS MacCG Plugin, Plugin Version: 17.4. **Function:** One of the constants indicating the Data Matrix code ECC version. 
**Notes:** Indicates 1/4 of the symbol is dedicated to convolutional code error correction.

52.6.13 ECCVersion080 = 80

MBS MacCG Plugin, Plugin Version: 17.4. **Function:** One of the constants indicating the Data Matrix code ECC version. 
**Notes:** Indicates 1/3 of the symbol is dedicated to convolutional code error correction.

52.6.14 ECCVersion100 = 100

MBS MacCG Plugin, Plugin Version: 17.4. **Function:** One of the constants indicating the Data Matrix code ECC version. 
**Notes:** Indicates 1/2 of the symbol is dedicated to convolutional code error correction.

52.6.15 ECCVersion140 = 140

MBS MacCG Plugin, Plugin Version: 17.4. **Function:** One of the constants indicating the Data Matrix code ECC version. 
**Notes:** Indicates 3/4 of the symbol is dedicated to convolutional code error correction.

52.6.16 ECCVersion200 = 200

MBS MacCG Plugin, Plugin Version: 17.4. **Function:** One of the constants indicating the Data Matrix code ECC version. 
**Notes:** Indicates error correction using Reed-Solomon error correction. Data protection overhead varies
based on symbol size.
52.7 class CIDetectorMBS

52.7.1 class CIDetectorMBS

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Core Image class to detect features in images.
**Notes:** This class potentially holds onto a lot of state. Hence it may be beneficial from a performance perspective to re-use the same CIDetector instance. Specifying a CIContext when creating a detector may have an impact on performance since this context may be used when analyzing an image.

52.7.2 Methods

52.7.3 CIDetectorAccuracy as string

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The key in the options dictionary used to specify a accuracy / performance tradeoff to be used.

52.7.4 CIDetectorAccuracyHigh as string

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the values for use with the CIDetectorAccuracy key.
**Notes:** Lower performance, higher accuracy

52.7.5 CIDetectorAccuracyLow as string

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the values for use with the CIDetectorAccuracy key.
**Notes:** Lower accuracy, higher performance

52.7.6 CIDetectorAspectRatio as string

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys used in the options dictionary for featuresInImage.
**Notes:**
An option specifying the aspect ratio (width divided by height) of rectangles to search for.

The value of this key is an NSNumber object whose value is a positive floating-point number. Use this option with the CIDetectorTypeRectangle detector type to fine-tune the accuracy of the detector. For example, to
more accurately find a business card (3.5 x 2 inches) in an image, specify an aspect ratio of 1.75 (3.5 / 2).

52.7.7  **CIDetectorEyeBlink as string**

MBS MacCG Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An option for whether Core Image will perform additional processing to recognize closed eyes in detected faces.

**Notes:** Available in OS X v10.9 and later.

52.7.8  **CIDetectorFocalLength as string**

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys used in the options dictionary for featuresInImage.

**Notes:**

An option identifying the focal length used in capturing images to be processed by the detector.

The value of this key is an NSNumber object whose value is a floating-point number between -1.0 and 1.0. Use this option with the CIDetectorTypeRectangle detector type to fine-tune the accuracy of the detector.

52.7.9  **CIDetectorImageOrientation as string**

MBS MacCG Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An option for the display orientation of the image whose features you want to detect.

**Notes:**

The value of this key is an NSNumber object whose value is an integer between 1 and 8. The TIFF and EXIF specifications define these values to indicate where the pixel coordinate origin (0,0) of the image should appear when it is displayed. The default value is 1, indicating that the origin is in the top left corner of the image. For further details, see kCGImagePropertyOrientation.

Core Image only detects faces whose orientation matches that of the image. You should provide a value for this key if you want to detect faces in a different orientation.

Available in OS X v10.8 and later.

52.7.10  **CIDetectorMaxFeatureCount as string**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the options for featuresInImage.

**Notes:**
For rectangle detector, the value for this key is an integer number from 1 ... 256 that represents the maximum number of features to return.
valid value range: 1 <= CIDetectorMaxFeatureCount <= 256. The default value is 1.

### 52.7.11 CIDetectorMinFeatureSize as string

MBS MacCG Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A key used to specify the minimum size that the detector will recognize as a feature.
**Notes:**
The value for this key is an NSNumber object ranging from 0.0 through 1.0 that represents a fraction of the minor dimension of the image.
Available in OS X v10.8 and later.

### 52.7.12 CIDetectorNumberOfAngles as string

MBS MacCG Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the configuration keys.
**Notes:**
The number of perspectives to use for detecting a face in video input.
The value for this key is a number 1, 3, 5, 7, 9, or 11. At higher numbers of angles, face detection in video becomes more accurate, but at a higher computational cost.
Available in OS X 10.11 and later.

### 52.7.13 CIDetectorReturnSubFeatures as string

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the options for featuresInImage.
**Notes:** The value for this key is a bool. Controls whether the text detector should detect subfeatures or not. The default value is false. Requires 64-bit.

### 52.7.14 CIDetectorSmile as string

MBS MacCG Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
An option for whether Core Image will perform additional processing to recognize smiles in detected faces.
52.7. **CLASS CIDETECTORMBS**

**Notes:** Available in OS X v10.9 and later.

### 52.7.15 CIDetectorTracking as string

MBS MacCG Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A key used to enable or disable face tracking for the detector.  
**Notes:** Use this option when you want to track faces across frames in a video.  
Available in OS X v10.8 and later.

### 52.7.16 CIDetectorTypeFace as string

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Specifies a detector type for face recognition.

### 52.7.17 CIDetectorTypeQRCode as string

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the strings used to declare the detector for which you are interested.  
**Notes:** A detector that searches for Quick Response codes (a type of 2D barcode) in a still image or video, returning CIQRCodeFeature objects that provide information about detected barcodes.

### 52.7.18 CIDetectorTypeRectangle as string

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the strings used to declare the detector for which you are interested.  
**Notes:** A detector that searches for rectangular areas in a still image or video, returning CIRectangleFeature objects that provide information about detected regions.  
The rectangle detector finds areas that are likely to represent rectangular objects that appear in perspective in the image, such as papers or books seen on a desktop.
**52.7.19 CIDetectorTypeText as string**

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the strings used to declare the detector for which you are interested.

**Notes:**
A detector that searches for text in a still image or video, returning CITextFeature objects that provide information about detected regions.

The text detector finds areas that are likely to contain upright text, but does not perform optical character recognition.

**52.7.20 Constructor(Handle as Integer)**

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new CIDetectorMBS object for the given handle.

See also:
- 52.7.21 Constructor(type as string, context as CIContextMBS = nil, options as dictionary = nil) 8436

**52.7.21 Constructor(type as string, context as CIContextMBS = nil, options as dictionary = nil)**

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a new detector instance of the given type.

**Notes:**
The type is used to specify the usage intent.
The context argument specifies the CIContext to be used to operate on the image. May be nil.

If the input image to featuresInImage is the output of a CoreImage operation, it may improve performance to specify the same context that was used to operate on that image.

The detector may do image processing in this context and if the image is on the GPU and the specified context is a GPU context this may avoid additional upload to / download from the GPU. If the input image is on the CPU (or the output from a CPU based context) specifying a GPU based context (or vice versa) may reduce performance.

The options parameter lets you optionally specify a accuracy / performance tradeoff. Can be nil or an empty dictionary.

See also:
- 52.7.20 Constructor(Handle as Integer)
52.7. detectorOfType(type as string, context as CIContextMBS = nil, options as dictionary = nil) as CIDetectorMBS

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a new detector instance of the given type.
**Notes:**
The type is used to specify the usage intent.
The context argument specifies the CIContext to be used to operate on the image. May be nil.

If the input image to featuresInImage is the output of a CoreImage operation, it may improve performance to specify the same context that was used to operate on that image.

The detector may do image processing in this context and if the image is on the GPU and the specified context is a GPU context this may avoid additional upload to / download from the GPU. If the input image is on the CPU (or the output from a CPU based context) specifying a GPU based context (or vice versa) may reduce performance.

The options parameter lets you optionally specify a accuracy / performance tradeoff. Can be nil or an empty dictionary.

52.7.23 featuresInImage(image as CIImageMBS) as CIFeatureMBS()

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of CIFeature instances in the given image.
**Notes:** The array is sorted by confidence, highest confidence first.
See also:
- 52.7.24 featuresInImage(image as CIImageMBS, options as dictionary) as CIFeatureMBS() 8437

52.7.24 featuresInImage(image as CIImageMBS, options as dictionary) as CIFeatureMBS()

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of CIFeature instances in the given image.
**Notes:**
The array is sorted by confidence, highest confidence first.
The options dictionary can contain a CIDetectorImageOrientation key value.
See also:
- 52.7.23 featuresInImage(image as CIImageMBS) as CIFeatureMBS() 8437
52.7.25 Properties

52.7.26 Handle as Integer

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference.
**Notes:** (Read only property)
52.8. CLASS CIFACEFEATUREMBS

52.8.1 class CIFaceFeatureMBS

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A CIFaceFeature object describes a face detected in a picture.
**Notes:**
Its properties provide locations for the face’s eyes and mouth.
All positions are relative to the original image.
Subclass of the CIFeatureMBS class.

52.8.2 Methods

52.8.3 Constructor(Handle as Integer)

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new CIFaceFeature object from a handle value.

52.8.4 Properties

52.8.5 faceAngle as Double

MBS MacCG Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The rotation of the face. (read-only)
**Notes:**
Rotation is measured counterclockwise in radians, with zero indicating that a line drawn between the eyes is horizontal relative to the image orientation.
Available in OS X v10.9 and later.
(Read only property)

52.8.6 hasFaceAngle as boolean

MBS MacCG Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A Boolean value that indicates whether information about face rotation is available. (read-only)
**Notes:**
Available in OS X v10.9 and later.
(Read only property)
52.8.7 hasLeftEyePosition as boolean

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean that indicates whether the detector found the face’s left eye. (read-only) **Notes:** (Read only property)

52.8.8 hasMouthPosition as boolean

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean that indicates whether the detector found the face’s mouth. (read-only) **Notes:** (Read only property)

52.8.9 hasRightEyePosition as boolean

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean that indicates whether the detector found the face’s right eye. (read-only) **Notes:** (Read only property)

52.8.10 hasSmile as boolean

MBS MacCG Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value that indicates whether a smile is detected in the face. (read-only) **Notes:** Available in OS X v10.9 and later. For smiles to be detected, the key CIDetectorSmile must be present with a value of true in the dictionary passed to a detector’s featuresInImage method. (Read only property)

52.8.11 hasTrackingFrameCount as boolean

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether there is a tracking frame count. **Notes:** (Read only property)
52.8.12 **hasTrackingID** as boolean

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the tracking ID is set.  
**Notes:** (Read only property)

52.8.13 **leftEyeClosed** as boolean

MBS MacCG Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value that indicates whether the a closed left eye is detected in the face. (read-only)  
**Notes:**  
"Left" is relative to the original (non-mirrored) image orientation, not to the owner of the eye.

For closed eyes to be detected, the key CIDetectorEyeBlink must be present with a value of true in the dictionary passed to a detector’s featuresInImage method.  
Available in OS X v10.9 and later.  
(Read only property)

52.8.14 **leftEyePosition** as CGPointMBS

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The coordinates of the left eye, in image coordinates. (read-only)  
**Notes:** (Read only property)

52.8.15 **mouthPosition** as CGPointMBS

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The coordinates of the mouth eye, in image coordinates (read-only)  
**Notes:** (Read only property)

52.8.16 **rightEyeClosed** as boolean

MBS MacCG Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value that indicates whether the a closed left eye is detected in the face. (read-only)  
**Notes:**  
"Right" is relative to the original (non-mirrored) image orientation, not to the owner of the eye.
For closed eyes to be detected, the key CIDetectorEyeBlink must be present with a value of true in the dictionary passed to a detector’s featuresInImage method. Available in OS X v10.9 and later. (Read only property)

**52.8.17 rightEyePosition as CGPointMBS**

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The coordinates of the right eye, in image coordinates (read-only) **Notes:** (Read only property)

**52.8.18 trackingFrameCount as Integer**

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The tracking frame count. **Notes:** (Read only property)

**52.8.19 trackingID as Integer**

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The tracking ID. **Notes:** (Read only property)
52.9. **CLASS CIFEATUREMBS**

### 52.9.1 class CIFeatureMBS

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Generic feature found by a CIDetector.

### 52.9.2 Methods

#### 52.9.3 CIFeatureTypeFace as string

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys that define specific kinds of findable features.
**Notes:**
The discovered feature is a person's face.
Use the CIFaceFeatureMBS class to find more information about the detected feature.
Available in OS X v10.7 and later.

#### 52.9.4 CIFeatureTypeQRCode as string

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys that define specific kinds of findable features.
**Notes:**
The discovered feature is a Quick Response code (2D barcode).
Use the CIQRCodeFeature class to find more information about the detected feature.
Available in OS X v10.11 and later.

#### 52.9.5 CIFeatureTypeRectangle as string

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys that define specific kinds of findable features.
**Notes:**
The discovered feature is a rectangular object, though it might appear in perspective in the image.
Use the CIRectangleFeatureMBS class to find more information about the detected feature.
Available in OS X v10.10 and later.
52.9.6  CIFeatureTypeText as string

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys that define specific kinds of findable features.
**Notes:**
The discovered feature is a region likely to contain upright text.
Use the CITextFeature class to find more information about the detected feature.
Available in OS X v10.11 and later.

52.9.7  Constructor(Handle as Integer)

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new CIFeature object from a handle value.

52.9.8  Properties

52.9.9  bounds as CGRectMBS

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The bounds of the feature in the image it was detected in.
**Notes:** (Read only property)

52.9.10  Handle as Integer

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The internal object reference.
**Notes:** (Read only property)

52.9.11  type as string

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The type of the feature.
**Notes:** (Read only property)
52.10.1 class CIFilterAccordionFoldTransitionMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Accordion Fold Transition filter. **Notes:**

Details for this filter:

FilterName: CIF accordion Fold Transition
DisplayName English: Accordion Fold Transition
DisplayName German: Leporello-bergang
DisplayName French: Transition de type accordon
DisplayName Italian: Transizione foglio a fisarmonica
DisplayName Spanish: Transicion con pliegues a modo de acorden

Categories:

- CICategoryTransition: Transition
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

Input:

- inputImage: Image
- inputTargetImage: Target Image
- inputBottomHeight: BottomHeight
- inputNumberOfFolds: NumberOfFolds
- inputFoldShadowAmount: FoldShadowAmount
- inputTime: Time

Output:

- outputImage

Subclass of the CIFilterMBS class.
52.10.2 Methods

52.10.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.10.4 Properties

52.10.5 Attribute inputBottomHeight as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Accordion Fold Transition attribute.
**Notes:**
This attribute should have this content:

- Name: inputBottomHeight
- Class: double
- Type: CIAttributeTypeDistance
- DisplayName: BottomHeight
- DefaultNumber: 0
- IdentityNumber: 0

(Read only property)

52.10.6 Attribute inputFoldShadowAmount as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Accordion Fold Transition attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.10. CLASS CIFILTERACCORDIONFOLDTRANSITIONMBS

Name: inputFoldShadowAmount
Class: double
Type: CIAttributeTypeScalar
DisplayName: FoldShadowAmount
DefaultNumber: 0.1
IdentityNumber: 0
MaxNumber: 1
MinNumber: 0
SliderMaxNumber: 1
SliderMinNumber: 0

52.10.7 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Accordion Fold Transition attribute.
**Notes:**

This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.10.8 Attribute inputNumberOfFolds as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Accordion Fold Transition attribute.

**Notes:**

This attribute should have this content:

(Read only property)
Name: inputNumberOfFolds
Class: double
Type: CIAttributeTypeScalar
DisplayName: NumberOfFolds
DefaultNumber: 3
IdentityNumber: 0
MaxNumber: 50
MinNumber: 1
SliderMaxNumber: 10
SliderMinNumber: 1

52.10.9 Attribute inputTargetImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Details about the Accordion Fold Transition attribute.
Notes:
This attribute should have this content:

Name: inputTargetImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Target Image
DisplayName German: Zielbild
DisplayName French: Image cible
DisplayName Italian: Immagine target
DisplayName Spanish: Imagen de destino
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.10.10 Attribute inputTime as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Details about the Accordion Fold Transition attribute.
Notes:
This attribute should have this content:

(Read only property)
52.10. `CLASS CIFILTERACCORDIONFOLDTRANSITIONMBS` 8449

Name: inputTime
Class: double
Type: CIAttributeTypeTime
DisplayName English: Time
DisplayName German: Zeit
DisplayName French: Durée
DisplayName Italian: Tempo
DisplayName Spanish: Tiempo
DefaultNumber: 0
IdentityNumber: 0
MaxNumber: 1
MinNumber: 0
SliderMaxNumber: 1
SliderMinNumber: 0

52.10.11 `inputBottomHeight` as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute BottomHeight
**Notes:**

Name: inputBottomHeight
Class: double (NSNumber)
DisplayName English: BottomHeight
DisplayName German: BottomHeight
DisplayName French: BottomHeight
DisplayName Italian: BottomHeight
DisplayName Spanish: BottomHeight
Type: CIAttributeTypeDistance

See Attribute inputBottomHeight for more details.
(Read and Write property)

52.10.12 `inputFoldShadowAmount` as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute FoldShadowAmount
**Notes:**

See Attribute inputFoldShadowAmount for more details.
(Read and Write property)
52.10.13 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See AttributeinputImage for more details.
(Read and Write property)

52.10.14 inputNumberOfFolds as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute NumberOfFolds

**Notes:**

Name: inputNumberOfFolds
Class: double (NSNumber)
DisplayName English: NumberOfFolds
DisplayName German: NumberOfFolds
DisplayName French: NumberOfFolds
DisplayName Italian: NumberOfFolds
DisplayName Spanish: NumberOfFolds
Type: CIAttributeTypeScalar

See AttributeinputNumberOfFolds for more details.
52.10.15  **inputTargetImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Target Image  
**Notes:**
- Name: inputTargetImage
- Class: CIImageMBS (CIImage)
- DisplayName English: Target Image
- DisplayName German: Zielbild
- DisplayName French: Image cible
- DisplayName Italian: Immagine target
- DisplayName Spanish: Imagen de destino
- Type: CIAttributeTypeImage

See Attribute inputTargetImage for more details.  
(Read and Write property)

52.10.16  **inputTime as double**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Time  
**Notes:**
- Name: inputTime
- Class: double (NSNumber)
- DisplayName English: Time
- DisplayName German: Zeit
- DisplayName French: Dure
- DisplayName Italian: Tempo
- DisplayName Spanish: Tiempo
- Type: CIAttributeTypeTime

See Attribute inputTime for more details.  
(Read and Write property)
52.11  class CIFilterAdditionCompositingMBS

52.11.1  class CIFilterAdditionCompositingMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Addition filter.

**Notes:**

Details for this filter:

FilterName:  CIAdditionCompositing
DisplayName English:  Addition
DisplayName German:  Addition
DisplayName French:  Addition
DisplayName Italian:  Aggiunta
DisplayName Spanish:  Adicin

**Categories:**

- CICategoryCompositeOperation: Composite Operation
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryHighDynamicRange: High Dynamic Range
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputBackgroundImage: Background Image

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.11.2 Methods

52.11.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.11.4 Properties

52.11.5 Attribute inputBackgroundImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Addition attribute.
**Notes:**
This attribute should have this content:

- **Name:** inputBackgroundImage
- **Class:** CIImageMBS
- **Type:** CIAttributeTypeImage
- **DisplayName English:** Background Image
- **DisplayName German:** Hintergrundbild
- **DisplayName French:** Image derrière-plan
- **DisplayName Italian:** Immagine di sfondo
- **DisplayName Spanish:** Imagen de fondo
- **DefaultNumber:** 0
- **IdentityNumber:** 0

(Read only property)

52.11.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Addition attribute.
**Notes:**
This attribute should have this content:

(Read only property)
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Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

52.11.7  inputBackgroundImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Background Image

**Notes:**

Name: inputBackgroundImage
Class: CIImageMBS (CIImage)
DisplayName English: Background Image
DisplayName German: Hintergrundbild
DisplayName French: Image d'arrière-plan
DisplayName Italian: Immagine di sfondo
DisplayName Spanish: Imagen de fondo
Type: CIAttributeTypeImage

See Attribute inputBackgroundImage for more details.
(Read and Write property)

52.11.8  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**

See Attribute inputImage for more details.
(Read and Write property)
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage
52.12.1 class CIFilterAffineClampMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Affine Clamp filter.
**Notes:**
Details for this filter:

FilterName: CIAffineClamp
DisplayName English: Affine Clamp
DisplayName German: Rand erweitern
DisplayName French: Attache affine
DisplayName Italian: Distanza affine
DisplayName Spanish: Fijacin afn

Categories:

- CICategoryTileEffect: Tile Effect
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputTransform: Transform

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.12.2 Methods

52.12.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.12.4 Properties

52.12.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Affine Clamp attribute.
**Notes:**
This attribute should have this content:

- **Name:** inputImage
- **Class:** CIImageMBS
- **Type:** CIAttributeTypeImage
- **DisplayName English:** Image
- **DisplayName German:** Bild
- **DisplayName French:** Image
- **DisplayName Italian:** Immagine
- **DisplayName Spanish:** Imagen
- **DefaultNumber:** 0
- **IdentityNumber:** 0

(Read only property)

52.12.6 Attribute inputTransform as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Affine Clamp attribute.
**Notes:**
This attribute should have this content:

(Read only property)
CHAPTER 52. COREIMAGE

Name: inputTransform
Class: NSAffineTransformMBS
DisplayName English: Transform
DisplayName German: Transformation
DisplayName French: Transformer
DisplayName Italian: Trasforma
DisplayName Spanish: Transformación
DefaultAffineTransform: [ 0.4, 0, 0, 0.4, 0, 0 ]
IdentityAffineTransform: [ 1, 0, 0, 1, 0, 0 ]

52.12.7 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See AttributeinputImage for more details.
(Read and Write property)

52.12.8 inputTransform as NSAffineTransformMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Transform

**Notes:**

Name: inputTransform
Class: NSAffineTransformMBS (NSAffineTransform)
DisplayName English: Transform
DisplayName German: Transformation
DisplayName French: Transformer
DisplayName Italian: Trasforma
DisplayName Spanish: Transformación
Type:
52.12. CLASS CIFILTERAFFINECLAMPMBS

See Attribute\texttt{inputTransform} for more details.

(Read and Write property)
52.13 class CIFilterAffineTileMBS

52.13.1 class CIFilterAffineTileMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Affine Tile filter.

**Notes:**
Details for this filter:

- **FilterName:** CIAffineTile
- **DisplayName English:** Affine Tile
- **DisplayName German:** Affin kacheln
- **DisplayName French:** Mosaque affine
- **DisplayName Italian:** Mosaico affine
- **DisplayName Spanish:** Mosaico afln

**Categories:**

- CICategoryTileEffect: Tile Effect
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- **inputImage:** Image
- **inputTransform:** Transform

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
52.13.2 Methods

52.13.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.13.4 Properties

52.13.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Affine Tile attribute.
**Notes:**
This attribute should have this content:

- Name: inputImage
- Class: CIImageMBS
- Type: CIAttributeTypeImage
- DisplayName English: Image
- DisplayName German: Bild
- DisplayName French: Image
- DisplayName Italian: Immagine
- DisplayName Spanish: Imagen
- DefaultNumber: 0
- IdentityNumber: 0

(Read only property)

52.13.6 Attribute inputTransform as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Affine Tile attribute.
**Notes:**
This attribute should have this content:

(Read only property)
CHAPTER 52. COREIMAGE

52.13.7 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**

- **Name:** inputImage
- **Class:** CIImageMBS (CIImage)
- **DisplayName English:** Image
- **DisplayName German:** Bild
- **DisplayName French:** Image
- **DisplayName Italian:** Immagine
- **DisplayName Spanish:** Imagen
- **Type:** CIAttributeTypeImage

See Attribute inputImage for more details.

(Read and Write property)

52.13.8 inputTransform as NSAffineTransformMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Transform

**Notes:**

- **Name:** inputTransform
- **Class:** NSAffineTransformMBS (NSAffineTransform)
- **DisplayName English:** Transform
- **DisplayName German:** Transformation
- **DisplayName French:** Transformer
- **DisplayName Italian:** Trasforma
- **DisplayName Spanish:** Transformación
- **DefaultAffineTransform:** \[ 0.4, 0, 0, 0.4, 0, 0 \]
- **IdentityAffineTransform:** \[ 1, 0, 0, 1, 0, 0 \]
52.13. CLASS CIFILTERAFFINETILEMBS

See AttributeinputTransform for more details.
(Read and Write property)
52.14 class CIFilterAffineTransformMBS

52.14.1 class CIFilterAffineTransformMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Affine Transform filter.

**Example:**

// Rotate image with CoreImage

// load image
dim f as FolderItem = SpecialFolder.Desktop.Child("test.png")
dim image as new CIImageMBS(f)

// rotate 45 degree
dim n as new NSAffineTransformMBS
n.rotateByDegrees(45)
dim TransformFilter as new CIFilterAffineTransformMBS
TransformFilter.inputImage = image
TransformFilter.inputTransform = n

// get result
dim resultImage as CIImageMBS = TransformFilter.outputImage

// for saving to file
dim outputImage as NSImageMBS = resultImage.RenderNSImage(false)
f = SpecialFolder.Desktop.Child("output.png")
dim b as BinaryStream = BinaryStream.Create(f, true)
b.Write outputImage.PNGRepresentation

// as Real Studio picture object for display
dim pic as Picture = outputImage.CopyPictureWithMask
Backdrop = pic

**Notes:**

Details for this filter:

**Categories:**

- CICategoryGeometryAdjustment: Geometry Adjustment
52.14. CLASS CIFILTERAFFINETRANSFORMMBS

FilterName: CIAffineTransform
DisplayName English: Affine Transform
DisplayName German: Affin transformieren
DisplayName French: Affiner, transformer
DisplayName Italian: Trasformazione affine
DisplayName Spanish: Transformación afín

- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

Input:
- inputImage: Image
- inputTransform: Transform

Output:
- outputImage

Subclass of the CIFilterMBS class.

52.14.2 Methods

52.14.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.14.4 Properties

52.14.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Affine Transform attribute.
**Notes:**
This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

### 52.14.6 Attribute inputTransform as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Affine Transform attribute.

**Notes:**

This attribute should have this content:

Name: inputTransform
Class: NSAffineTransformMBS
Type: CIAttributeTypeTransform
DisplayName English: Transform
DisplayName German: Transformation
DisplayName French: Transformer
DisplayName Italian: Trasforma
DisplayName Spanish: Transformación
DefaultAffineTransform: [ 1, 0, 0, 1, 0, 0 ]
IdentityAffineTransform: [ 1, 0, 0, 1, 0, 0 ]

(Read only property)

### 52.14.7 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**
52.14. **CLASS CIFILTERAFFINETRANSFORMMBS**

Name: inputImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
Type: CIAttributeTypeImage

See Attribute inputImage for more details.  
(Read and Write property)

52.14.8 **inputTransform as NSAffineTransformMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**  
The attribute Transform  
**Example:**

```csharp
// Rotate image with CoreImage

// load image
dim f as FolderItem = SpecialFolder.Desktop.Child("test.png")
dim image as new CIImageMBS(f)

// rotate 45 degree
dim n as new NSAffineTransformMBS
n.rotateByDegrees(45)
dim TransformFilter as new CIFilterAffineTransformMBS
TransformFilter.inputImage = image
TransformFilter.inputTransform = n

// get result
dim resultImage as CIImageMBS = TransformFilter.outputImage

// for saving to file
dim outputImage as NSImageMBS = resultImage.RenderNSImage(false)
f = SpecialFolder.Desktop.Child("output.png")
dim b as BinaryStream = BinaryStream.Create(f, true)
b.Write(outputImage.PNGRepresentation)

// as Real Studio picture object for display
dim pic as Picture = outputImage.CopyPictureWithMask
```
BACKDROP = pic

Notes:

Name: inputTransform  
Class: NSAffineTransformMBS (NSAffineTransform)  
DisplayName English: Transform  
DisplayName German: Transformation  
DisplayName French: Transformer  
DisplayName Italian: Trasforma  
DisplayName Spanish: Transformacin  
Type: CIAttributeTypeTransform

See Attribute inputTransform for more details.  
(Read and Write property)
52.15. class CIFilterAreaAverageMBS

The Realbasic class for the CoreImage Area Average filter.

Notes:
Details for this filter:

FilterName: CIFilterAreaAverageMBS
DisplayName English: Area Average
DisplayName German: Bereichsdurchschnitt
DisplayName French: Moyenne de la zone
DisplayName Italian: Media area
DisplayName Spanish: Media del rea

Categories:

- CICategoryReduction: Reduction
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

Input:

- inputImage: Image
- inputExtent: Extent

Output:

- outputImage

Subclass of the CIFilterMBS class.
52.15.2 Methods

52.15.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

**Notes:** On success the handle property is not zero and the filter has the default values set.

52.15.4 Properties

52.15.5 Attribute inputExtent as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Area Average attribute.

**Notes:**

This attribute should have this content:

Name: inputExtent
Class: CIVectorMBS
Type: CIAttributeTypeRectangle
DisplayName English: Extent
DisplayName German: Betrag
DisplayName French: tendue
DisplayName Italian: Ampiezza
DisplayName Spanish: Amplitud
DefaultVector: [ 0 0 640 80 ]
IdentityVector: n/a

(Read only property)

52.15.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Area Average attribute.

**Notes:**

This attribute should have this content:

(Read only property)
52.15. CLASS CIFILTERAREAVERAGE MBS

Name: inputImage  
Class: CIImageMBS  
Type: CIAtributeTypeImage  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
DefaultNumber: 0  
IdentityNumber: 0

52.15.7 inputExtent as CIVectorMBS

Notes:  
Name: inputExtent  
Class: CIVectorMBS (CIVector)  
DisplayName English: Extent  
DisplayName German: Betrag  
DisplayName French: tendue  
DisplayName Italian: Ampiezza  
DisplayName Spanish: Amplitud  
Type: CIAtributeTypeRectangle

See AttributeinputExtent for more details.  
(Read and Write property)

52.15.8 inputImage as CIImageMBS

Notes:  
See AttributeinputImage for more details.  
(Read and Write property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type</td>
<td>CIAtributeTypeImage</td>
</tr>
</tbody>
</table>
52.16. class CIFilterAreaHistogramMBS

52.16.1.1 class CIFilterAreaHistogramMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Area Histogram filter.

**Notes:**

Details for this filter:

- **FilterName:** CIAreaHistogram
- **DisplayName English:** Area Histogram
- **DisplayName German:** Bereichs-Histogramm
- **DisplayName French:** Histogramme de la zone
- **DisplayName Italian:** Istogramma area
- **DisplayName Spanish:** Histograma del rea

**Categories:**

- **CICategoryReduction:** Reduction
- **CICategoryVideo:** Video
- **CICategoryStillImage:** Still Image
- **CICategoryBuiltIn:** Built-In

**Input:**

- **inputImage:** Image
- **inputExtent:** Extent
- **inputScale:** Scale
- **inputCount:** Count

**Output:**

- **outputData**
- **outputImage**

Subclass of the CIFilterMBS class.
52.16.2 Methods

52.16.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.16.4 Properties

52.16.5 Attribute inputCount as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Area Histogram attribute.
**Notes:**
This attribute should have this content:

- **Name:** inputCount
- **Class:** double
- **Type:** CIAttributeTypeScalar
- **DisplayName English:** Count
- **DisplayName German:** Anzahl
- **DisplayName French:** Compte
- **DisplayName Italian:** Conteggio
- **DisplayName Spanish:** Recuento
- **DefaultNumber:** 64
- **IdentityNumber:** 0
- **MaxNumber:** 2048
- **MinNumber:** 1
- **SliderMaxNumber:** 1000
- **SliderMinNumber:** 10

(Read only property)

52.16.6 Attribute inputExtent as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Area Histogram attribute.
**Notes:**
This attribute should have this content:

Name: inputExtent
Class: CIVectorMBS
Type: CIAttributeTypeRectangle
DisplayName English: Extent
DisplayName German: Betrag
DisplayName French: tendue
DisplayName Italian: Ampiezza
DisplayName Spanish: Amplitud
DefaultVector: [ 0 0 640 80 ]
IdentityVector: n/a

(Read only property)

52.16.7 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Area Histogram attribute.

**Notes:**
This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.16.8 Attribute inputScale as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Area Histogram attribute.

**Notes:**
This attribute should have this content:

Name:    inputScale
Class:   double
Type:    CIAttributeTypeScalar
DisplayName English:  Scale
DisplayName German:  Skalierung
DisplayName French:  chelle
DisplayName Italian: Scala
DisplayName Spanish: Escala
DefaultNumber: 1
IdentityNumber: 0
SliderMaxNumber: 1
SliderMinNumber: 0

(Read only property)

52.16.9  inputCount as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Count

**Notes:**

Name:    inputCount
Class:   double (NSNumber)
DisplayName English:  Count
DisplayName German:  Anzahl
DisplayName French:  Compte
DisplayName Italian: Conteggio
DisplayName Spanish: Recuento
Type:    CIAttributeTypeScalar

See AttributeinputCount for more details.
(Read and Write property)

52.16.10  inputExtent as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Extent

**Notes:**
52.16. **CLASS CIFILTERAREAHISTOGRAMMBS**

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputExtent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIVectorMBS (CIVector)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Extent</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Betrag</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>tendue</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Ampiezza</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Amplitud</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeRectangle</td>
</tr>
</tbody>
</table>

See Attribute inputExtent for more details.
(Read and Write property)

52.16.11 **inputImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>

See Attribute inputImage for more details.
(Read and Write property)

52.16.12 **inputScale as double**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Scale

**Notes:**

See Attribute inputScale for more details.
(Read and Write property)
Name: inputScale
Class: double (NSNumber)
DisplayName English: Scale
DisplayName German: Skalierung
DisplayName French: chelle
DisplayName Italian: Scala
DisplayName Spanish: Escala
Type: CIAttributeTypeScalar
52.17. class CIFilterAreaMaximumAlphaMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Area Maximum Alpha filter.

**Notes:**

Details for this filter:

- **FilterName:** CIAreaMaximumAlpha
- **DisplayName English:** Area Maximum Alpha
- **DisplayName German:** Bereichsmaximum im Alpha-Kanal
- **DisplayName French:** Alpha maximum de la zone
- **DisplayName Italian:** Alfa massimo area
- **DisplayName Spanish:** Alfa máximo del rea

**Categories:**

- CICategoryReduction: Reduction
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- `inputImage`: Image
- `inputExtent`: Extent

**Output:**

- `outputImage`

Subclass of the CIFilterMBS class.
52.17.2 Methods

52.17.3 Constructor

Notes: On success the handle property is not zero and the filter has the default values set.

52.17.4 Properties

52.17.5 AttributeinputExtent as CIAttributeMBS

Notes: This attribute should have this content:

Name: inputExtent
Class: CIVectorMBS
Type: CIAttributeTypeRectangle
DisplayName English: Extent
DisplayName German: Betrag
DisplayName French: tendue
DisplayName Italian: Ampiezza
DisplayName Spanish: Amplitud
DefaultVector: [ 0 0 640 80 ]
IdentityVector: n/a

(Read only property)

52.17.6 AttributeinputImage as CIAttributeMBS

Notes: This attribute should have this content:

(Read only property)
#### 52.17. CLASS CIFILTERAREAMAXIMUMALPHAMBS

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber:</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber:</td>
<td>0</td>
</tr>
</tbody>
</table>

#### 52.17.7 inputExtent as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Extent

**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputExtent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIVectorMBS (CIVector)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Extent</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Betrag</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>tendue</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Ampiezza</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Amplitud</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeRectangle</td>
</tr>
</tbody>
</table>

See AttributeinputExtent for more details.
(Read and Write property)

#### 52.17.8 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

See AttributeinputImage for more details.
(Read and Write property)
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage
52.18. class CIFilterAreaMaximumMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Area Maximum filter.

**Notes:**

Details for this filter:

FilterName: CIAreaMaximum  
DisplayName English: Area Maximum  
DisplayName German: Bereichsmaximum  
DisplayName French: Maximum de la zone  
DisplayName Italian: Massimo area  
DisplayName Spanish: Mximo del rea

**Categories:**

- CICategoryReduction: Reduction  
- CICategoryVideo: Video  
- CICategoryStillImage: Still Image  
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image  
- inputExtent: Extent

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.18.2 Methods

52.18.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.18.4 Properties

52.18.5 Attribute inputExtent as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Area Maximum attribute.
**Notes:**
This attribute should have this content:

```
Name:          inputExtent
Class:         CIVectorMBS
Type:          CIAttributeTypeRectangle
DisplayName English: Extent
DisplayName German: Betrag
DisplayName French: tendue
DisplayName Italian: Ampiezza
DisplayName Spanish: Amplitud
DefaultVector:  [ 0 0 640 80 ]
IdentityVector: n/a
```

(Read only property)

52.18.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Area Maximum attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.18. **CLASS CIFILTERAREAMAXIMUMMBS**

Name: inputImage  
Class: CIImageMBS  
Type: CIAttributeTypeImage  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
DefaultNumber: 0  
IdentityNumber: 0

---

52.18.7 **inputExtent as CIVectorMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Extent  
**Notes:**

Name: inputExtent  
Class: CIVectorMBS (CIVector)  
DisplayName English: Extent  
DisplayName German: Betrag  
DisplayName French: tendue  
DisplayName Italian: Ampiezza  
DisplayName Spanish: Amplitud  
Type: CIAttributeTypeRectangle

See AttributeinputExtent for more details.  
(Read and Write property)

---

52.18.8 **inputImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image  
**Notes:**

See AttributeinputImage for more details.  
(Read and Write property)
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage
52.19. class CIFilterAreaMinimumAlphaMBS

52.19.1 class CIFilterAreaMinimumAlphaMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Area Minimum Alpha filter.

**Notes:**
Details for this filter:

- **FilterName:** CIAreaMinimumAlpha
- **DisplayName English:** Area Minimum Alpha
- **DisplayName German:** Bereichsminimum im Alpha-Kanal
- **DisplayName French:** Alpha minimum de la zone
- **DisplayName Italian:** Alfa minimo area
- **DisplayName Spanish:** Alfa minimo del rea

**Categories:**

- CICategoryReduction: Reduction
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputExtent: Extent

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.19.2 Methods

52.19.3 Constructor

Notes: On success the handle property is not zero and the filter has the default values set.

52.19.4 Properties

52.19.5 Attribute inputExtent as CIAttributeMBS

Notes: This attribute should have this content:

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputExtent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIVectorMBS</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeRectangle</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Extent</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Betrag</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>tendue</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Ampiezza</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Amplitud</td>
</tr>
<tr>
<td>DefaultVector:</td>
<td>[ 0 0 640 80 ]</td>
</tr>
<tr>
<td>IdentityVector:</td>
<td>n/a</td>
</tr>
</tbody>
</table>

(Read only property)

52.19.6 Attribute inputImage as CIAttributeMBS

Notes: This attribute should have this content:

(Read only property)
52.19. **CLASS CIFILTERAREAMINIMUMALPHAMBS**

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

52.19.7 **inputExtent as CIVectorMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Extent

Notes:

Name: inputExtent
Class: CIVectorMBS (CIVector)
DisplayName English: Extent
DisplayName German: Betrag
DisplayName French: tendue
DisplayName Italian: Ampiezza
DisplayName Spanish: Amplitud
Type: CIAttributeTypeRectangle

See AttributeinputExtent for more details.
(Read and Write property)

52.19.8 **inputImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

Notes:

See AttributeinputImage for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name:</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>
52.20. class CIFilterAreaMinimumMBS

52.20.1 class CIFilterAreaMinimumMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Area Minimum filter.

**Notes:**
Details for this filter:

<table>
<thead>
<tr>
<th>FilterName:</th>
<th>CIAreaMinimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>DisplayName English:</td>
<td>Area Minimum</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Bereichsminimum</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Minimum de la zone</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Minimo area</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Minimo del rea</td>
</tr>
</tbody>
</table>

**Categories:**
- CICategoryReduction: Reduction
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**
- inputImage: Image
- inputExtent: Extent

**Output:**
- outputImage

Subclass of the CIFilterMBS class.
52.20.2 Methods

52.20.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.20.4 Properties

52.20.5 Attribute inputExtent as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Area Minimum attribute.
**Notes:**
This attribute should have this content:

Name: inputExtent
Class: CIVectorMBS
Type: CIAttributeTypeRectangle
DisplayName English: Extent
DisplayName German: Betrag
DisplayName French: tendue
DisplayName Italian: Ampiezza
DisplayName Spanish: Amplitud
DefaultVector: [ 0 0 640 80 ]
IdentityVector: n/a

(Read only property)

52.20.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Area Minimum attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.20. **CLASS CIFILTERAREAMINIMUMMBS**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName</td>
<td></td>
</tr>
<tr>
<td>English:</td>
<td>Image</td>
</tr>
<tr>
<td>German:</td>
<td>Bild</td>
</tr>
<tr>
<td>French:</td>
<td>Image</td>
</tr>
<tr>
<td>Italian:</td>
<td>Immagine</td>
</tr>
<tr>
<td>Spanish:</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

52.20.7 **inputExtent as CIVectorMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Extent

**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputExtent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIVectorMBS (CIVector)</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Extent</td>
</tr>
<tr>
<td>English:</td>
<td></td>
</tr>
<tr>
<td>German:</td>
<td>Betrag</td>
</tr>
<tr>
<td>French:</td>
<td>tendue</td>
</tr>
<tr>
<td>Italian:</td>
<td>Ampiezza</td>
</tr>
<tr>
<td>Spanish:</td>
<td>Amplitud</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeRectangle</td>
</tr>
</tbody>
</table>

See AttributeinputExtent for more details.
(Read and Write property)

52.20.8 **inputImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

See AttributeinputImage for more details.
(Read and Write property)
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage
52.21.  class CIFilterAreaMinMaxRedMBS

52.21.1  class CIFilterAreaMinMaxRedMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Area Min and Max Red filter.

**Notes:**
Details for this filter:

<table>
<thead>
<tr>
<th>FilterName: CIAreaMinMaxRed</th>
</tr>
</thead>
<tbody>
<tr>
<td>DisplayName English: Area Min and Max Red</td>
</tr>
<tr>
<td>DisplayName German: Flche fr Min. und Max. Rot</td>
</tr>
<tr>
<td>DisplayName French: Rouge min. et max. de la zone</td>
</tr>
<tr>
<td>DisplayName Italian: Minimo e massimo di rosso nellarea</td>
</tr>
<tr>
<td>DisplayName Spanish: Minimo y maximo de rojo en el rea</td>
</tr>
</tbody>
</table>

**Categories:**

- CICategoryReduction: Reduction
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputExtent: Extent

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.21.2 Methods

52.21.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.21.4 Properties

52.21.5 Attribute inputExtent as CIAtributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Area Min and Max Red attribute.
**Notes:**
This attribute should have this content:

```
Name:          inputExtent
Class:         CIVectorMBS
Type:          CIAttributeTypeRectangle
DisplayName English:  Extent
DisplayName German:  Betrag
DisplayName French:  tendue
DisplayName Italian:  Ampiezza
DisplayName Spanish:  Amplitud
Default Vector: [ 0 0 640 80 ]
Identity Vector: n/a
```

(Read only property)

52.21.6 Attribute inputImage as CIAtributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Area Min and Max Red attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.21. **CLASS CIFILTERAREAMINMAXREDMBS**

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

52.21.7 **inputExtent as CIVectorMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Extent

Notes:

Name: inputExtent
Class: CIVectorMBS (CIVector)
DisplayName English: Extent
DisplayName German: Betrag
DisplayName French: tendue
DisplayName Italian: Ampiezza
DisplayName Spanish: Amplitud
Type: CIAttributeTypeRectangle

See Attribute inputExtent for more details.
(Read and Write property)

52.21.8 **inputImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

Notes:

See Attribute inputImage for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type</td>
<td>CIAtributeTypeImage</td>
</tr>
</tbody>
</table>
52.22  class CIFilterAttributedTextImageGeneratorMBS

52.22.1  class CIFilterAttributedTextImageGeneratorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Attributed Text Image Generator filter. **Notes:**

Details for this filter:

- **FilterName:** CIAttributedTextImageGenerator
- **DisplayName English:** Attributed Text Image Generator
- **DisplayName German:** Attributtextbildgenerator
- **DisplayName French:** Génrateur d’image de texte attribué
- **DisplayName Italian:** Generatore immagine di testo attribuita
- **DisplayName Spanish:** Generador de imágenes con texto con atributos

**Categories:**

- **CICategoryGenerator:** Generator
- **CICategoryVideo:** Video
- **CICategoryStillImage:** Still Image
- **CICategoryBuiltIn:** Built-In

**Input:**

- **inputText:** Text
- **inputScaleFactor:** Scale Factor

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
52.22.2 Methods

52.22.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.22.4 Properties

52.22.5 Attribute `inputScaleFactor` as `CIAttributeMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Attributed Text Image Generator attribute.
**Notes:**
This attribute should have this content:

Name: `inputScaleFactor`
Class: `double`
Type: `CIAttributeTypeScalar`
DisplayName English: Scale Factor
DisplayName German: Skalierungsfaktor
DisplayName French: Facteur dchelle
DisplayName Italian: Fattore di scala
DisplayName Spanish: Factor de escala
DefaultNumber: 1
IdentityNumber: 0
SliderMaxNumber: 4
SliderMinNumber: 1

(Read only property)

52.22.6 Attribute `inputText` as `CIAttributeMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Attributed Text Image Generator attribute.
**Notes:**
This attribute should have this content:
52.22. **CLASS CIFILTERATTRIBUTEDTEXTIMAGEGENERATORMBS**

Name: inputText  
Class: NSAttributedStringMBS  
DisplayName: Text

(Read only property)

52.22.7 **inputScaleFactor as double**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Scale Factor  
**Notes:**

Name: inputScaleFactor  
Class: double (NSNumber)  
DisplayName English: Scale Factor  
DisplayName German: Skalierungsfaktor  
DisplayName French: Facteur d'echelle  
DisplayName Italian: Fattore di scala  
DisplayName Spanish: Factor de escala  
Type: CIAttributeTypeScalar

See Attribute inputScaleFactor for more details.  
(Read and Write property)

52.22.8 **inputText as Variant**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Text  
**Notes:**

Name: inputText  
Class: NSAttributedStringMBS (NSAttributedString)  
DisplayName English: Text  
DisplayName German: Text  
DisplayName French: Text  
DisplayName Italian: Text  
DisplayName Spanish: Text  
Type:

See Attribute inputText for more details.
(Read and Write property)
52.23. class CIFilterAztecCodeGeneratorMBS

52.23.1 class CIFilterAztecCodeGeneratorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Aztec Code Generator filter.

**Notes:**

Details for this filter:

- FilterName: CIAztecCodeGenerator
- DisplayName English: Aztec Code Generator
- DisplayName German: Aztec-Code-Generator
- DisplayName French: Générateur de code Aztec
- DisplayName Italian: Generatore codice Aztec
- DisplayName Spanish: Generador de código Aztec

**Categories:**

- CICategoryGenerator: Generator
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputMessage: Message
- inputCorrectionLevel: CorrectionLevel
- inputLayers: Layers
- inputCompactStyle: CompactStyle

**Output:**

- outputImage
- outputCGImage

Subclass of the CIFilterMBS class.
52.23.2 Methods

52.23.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor. **Notes:** On success the handle property is not zero and the filter has the default values set.

52.23.4 Properties

52.23.5 Attribute inputCompactStyle as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Aztec Code Generator attribute. **Notes:** This attribute should have this content:

- Name: inputCompactStyle
- Class: double
- DisplayName: CompactStyle
- DefaultNumber: 0
- IdentityNumber: 0
- MaxNumber: 1
- MinNumber: 0
- SliderMaxNumber: 1
- SliderMinNumber: 0

(Read only property)

52.23.6 Attribute inputCorrectionLevel as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Aztec Code Generator attribute. **Notes:** This attribute should have this content:

(Read only property)
Name: inputCorrectionLevel  
Class: double  
DisplayName: CorrectionLevel  
DefaultNumber: 23  
IdentityNumber: 0  
MaxNumber: 95  
MinNumber: 5  
SliderMaxNumber: 95  
SliderMinNumber: 5

52.23.7 Attribute inputLayers as CIAAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Aztec Code Generator attribute.  
**Notes:**  
This attribute should have this content:

Name: inputLayers  
Class: double  
DisplayName: Layers  
DefaultNumber: 0  
IdentityNumber: 0  
MaxNumber: 32  
MinNumber: 1  
SliderMaxNumber: 32  
SliderMinNumber: 1

(Read only property)

52.23.8 Attribute inputMessage as CIAAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Aztec Code Generator attribute.  
**Notes:**  
This attribute should have this content:

(Read only property)
Name: inputMessage
Class: Memoryblock
DisplayName: Message
DefaultNumber: 0
IdentityNumber: 0

52.23.9 inputCompactStyle as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute CompactStyle

**Notes:**

Name: inputCompactStyle
Class: double (NSNumber)
DisplayName English: CompactStyle
DisplayName German: CompactStyle
DisplayName French: CompactStyle
DisplayName Italian: CompactStyle
DisplayName Spanish: CompactStyle
Type:

See Attribute inputCompactStyle for more details.
(Read and Write property)

52.23.10 inputCorrectionLevel as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute CorrectionLevel

**Notes:**

Name: inputCorrectionLevel
Class: double (NSNumber)
DisplayName English: CorrectionLevel
DisplayName German: CorrectionLevel
DisplayName French: CorrectionLevel
DisplayName Italian: CorrectionLevel
DisplayName Spanish: CorrectionLevel
Type:

See Attribute inputCorrectionLevel for more details.
(Read and Write property)
52.23.11  inputLayers as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Layers

**Notes:**
- Name: inputLayers
- Class: double (NSNumber)
- DisplayName English: Layers
- DisplayName German: Layers
- DisplayName French: Layers
- DisplayName Italian: Layers
- DisplayName Spanish: Layers

See Attribute inputLayers for more details.
(Read and Write property)

52.23.12  inputMessage as Memoryblock

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Message

**Notes:**
- Name: inputMessage
- Class: Memoryblock (NSData)
- DisplayName English: Message
- DisplayName German: Message
- DisplayName French: Message
- DisplayName Italian: Message
- DisplayName Spanish: Message

See Attribute inputMessage for more details.
(Read and Write property)
52.24 class CIFilterBarcodeGeneratorMBS

52.24.1 class CIFilterBarcodeGeneratorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Barcode Generator filter.

**Notes:**
Details for this filter:

<table>
<thead>
<tr>
<th>FilterName:</th>
<th>CIBarcodeGenerator</th>
</tr>
</thead>
<tbody>
<tr>
<td>DisplayName English:</td>
<td>Barcode Generator</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Barcode-Generator</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Gnrateur de code-barres</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Generatore codice a barre</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Generador de cdigos de barras</td>
</tr>
</tbody>
</table>

**Categories:**
- CICategoryGenerator: Generator
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**
- inputBarcodeDescriptor: BarcodeDescriptor

**Output:**
- outputCGImageForQRCodeDescriptor
- outputCGImageForAztecCodeDescriptor
- outputCGImageForPDF417CodeDescriptor
- outputCGImageForDataMatrixCodeDescriptor
- outputCGImage
- outputImage

Subclass of the CIFilterMBS class.
52.24.2 Methods

52.24.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

**Notes:** On success the handle property is not zero and the filter has the default values set.

52.24.4 Properties

52.24.5 AttributeinputBarcodeDescriptor as CIAtributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Barcode Generator attribute.

**Notes:**

This attribute should have this content:

```plaintext
Name: inputBarcodeDescriptor
Class: CIBarcodeDescriptorMBS
DisplayName: BarcodeDescriptor
```

(Read only property)

52.24.6 inputBarcodeDescriptor as CIBarcodeDescriptorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute BarcodeDescriptor

**Notes:**

```plaintext
Name: inputBarcodeDescriptor
Class: CIBarcodeDescriptorMBS (CIBarcodeDescriptor)
DisplayName English: BarcodeDescriptor
DisplayName German: BarcodeDescriptor
DisplayName French: BarcodeDescriptor
DisplayName Italian: BarcodeDescriptor
DisplayName Spanish: BarcodeDescriptor
Type:
```

See AttributeinputBarcodeDescriptor for more details.
(Read and Write property)
52.25. class CIFilterBarsSwipeTransitionMBS

52.25.1 class CIFilterBarsSwipeTransitionMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Bars Swipe Transition filter.

**Notes:**

Details for this filter:

- **FilterName:** CIBarsSwipeTransition
- **DisplayName English:** Bars Swipe Transition
- **DisplayName German:** Balken-Swipe-bergang
- **DisplayName French:** Transition de type balayage
- **DisplayName Italian:** Transizione colpi a barre
- **DisplayName Spanish:** Transicion barras araadas

**Categories:**

- **CICategoryTransition:** Transition
- **CICategoryVideo:** Video
- **CICategoryStillImage:** Still Image
- **CICategoryBuiltIn:** Built-In

**Input:**

- **inputImage:** Image
- **inputTargetImage:** Target Image
- **inputAngle:** Angle
- **inputWidth:** Width
- **inputBarOffset:** Bar Offset
- **inputTime:** Time

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
52.25.2 Methods

52.25.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.25.4 Properties

52.25.5 Attribute inputAngle as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Bars Swipe Transition attribute.
**Notes:**
This attribute should have this content:

```
Name: inputAngle
Class: double
Type: CIAttributeTypeAngle
DisplayName English: Angle
DisplayName German: Winkel
DisplayName French: Angle
DisplayName Italian: Angolo
DisplayName Spanish: ngulo
DefaultNumber: 3.141593
IdentityNumber: 0
SliderMaxNumber: 6.283185
SliderMinNumber: 0
```
(Read only property)

52.25.6 Attribute inputBarOffset as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Bars Swipe Transition attribute.
**Notes:**
This attribute should have this content:
52.25. **CLASS CIFILTERBARSSWIPETRANSITIONMBS**

Name: inputBarOffset  
Class: double  
Type: CIAttributeTypeScalar  
DisplayName English: Bar Offset  
DisplayName German: Balkenversatz  
DisplayName French: Dcalage de la barre  
DisplayName Italian: Scarto della barra  
DisplayName Spanish: Desviacin barra  
DefaultNumber: 10  
IdentityNumber: 0  
MaxNumber: 0  
MinNumber: 1  
SliderMaxNumber: 100  
SliderMinNumber: 1

(Read only property)

52.25.7 **AttributeinputImage as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Bars Swipe Transition attribute.  
**Notes:**

This attribute should have this content:

Name: inputImage  
Class: CIImageMBS  
Type: CIAttributeTypeImage  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
DefaultNumber: 0  
IdentityNumber: 0

(Read only property)
52.25.8 AttributeinputTargetImage as CIAttributeMBS

Notes:
This attribute should have this content:

Name: inputTargetImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Target Image
DisplayName German: Zielbild
DisplayName French: Image cible
DisplayName Italian: Immagine target
DisplayName Spanish: Imagen de destino
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.25.9 AttributeinputTime as CIAttributeMBS

Notes:
This attribute should have this content:

(Read only property)

52.25.10 AttributeinputWidth as CIAttributeMBS

Notes:
This attribute should have this content:

(Read only property)
52.25. **CLASS CIFILTERBARSSWIPETRANSITIONMBS**

Name: inputTime
Class: double
Type: CIAttributeTypeTime
DisplayName English: Time
DisplayName German: Zeit
DisplayName French: Dure
DisplayName Italian: Tempo
DisplayName Spanish: Tiempo
DefaultNumber: 0
IdentityNumber: 0
MaxNumber: 1
MinNumber: 0
SliderMaxNumber: 1
SliderMinNumber: 0

Name: inputWidth
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Anchura
DefaultNumber: 30
IdentityNumber: 0
MaxNumber: 0
MinNumber: 2
SliderMaxNumber: 300
SliderMinNumber: 2

### 52.25.11 inputAngle as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Angle

**Notes:**
See Attribute inputAngle for more details.
(Read and Write property)

### 52.25.12 inputBarOffset as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Bar Offset
Name: inputAngle
Class: double (NSNumber)
DisplayName English: Angle
DisplayName German: Winkel
DisplayName French: Angle
DisplayName Italian: Angolo
DisplayName Spanish: ngulo
Type: CIAttributeTypeAngle

Notes:

Name: inputBarOffset
Class: double (NSNumber)
DisplayName English: Bar Offset
DisplayName German: Balkenversatz
DisplayName French: Dcalage de la barre
DisplayName Italian: Scarto della barra
DisplayName Spanish: Desviacin barra
Type: CIAttributeTypeScalar

See Attribute inputBarOffset for more details.
(Read and Write property)

52.25.13 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Image

Notes:

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)
52.25.14 inputTargetImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Target Image  
**Notes:**

Name: inputTargetImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Target Image  
DisplayName German: Zielbild  
DisplayName French: Image cible  
DisplayName Italian: Immagine target  
DisplayName Spanish: Imagen de destino  
Type: CIAttributeTypeImage

See Attribute inputTargetImage for more details.  
(Read and Write property)

52.25.15 inputTime as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Time  
**Notes:**

Name: inputTime  
Class: double (NSNumber)  
DisplayName English: Time  
DisplayName German: Zeit  
DisplayName French: Dure  
DisplayName Italian: Tempo  
DisplayName Spanish: Tiempo  
Type: CIAttributeTypeTime

See Attribute inputTime for more details.  
(Read and Write property)

52.25.16 inputWidth as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Width  
**Notes:**
Name: inputWidth
Class: double (NSNumber)
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Anchura
Type: CIAttributeTypeDistance

See Attribute inputWidth for more details.
(Read and Write property)
52.26. **CLASS CIFILTERBICUBICSCALETRANSFORMMBS**

52.26. **class CIFilterBicubicScaleTransformMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Bicubic Scale Transform filter.

**Notes:**

Details for this filter:

<table>
<thead>
<tr>
<th>FilterName:</th>
<th>CIBicubicScaleTransform</th>
</tr>
</thead>
<tbody>
<tr>
<td>DisplayName English:</td>
<td>Bicubic Scale Transform</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Bikubische Skalierungstransformation</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Transformation dchelle bicubique</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Trasforma scala bicubica</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Transformar mediante escala bicbica</td>
</tr>
</tbody>
</table>

Categories:

- CICategoryGeometryAdjustment: Geometry Adjustment
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputScale: Scale
- inputAspectRatio: Aspect Ratio
- inputB: B
- inputC: C

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.26.2 Methods

52.26.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.26.4 Properties

52.26.5 Attribute inputAspectRatio as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Bicubic Scale Transform attribute.
**Notes:**
This attribute should have this content:

Name: inputAspectRatio
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Aspect Ratio
DisplayName German: Seitenverhältnis
DisplayName French: Proportions
DisplayName Italian: Proporzioni
DisplayName Spanish: Proporciones
DefaultNumber: 1
IdentityNumber: 1
SliderMaxNumber: 2
SliderMinNumber: 0.5

(Read only property)

52.26.6 Attribute inputB as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Bicubic Scale Transform attribute.
**Notes:**
This attribute should have this content:
52.26. CLASS CIFILTERBICUBICSCALETRANSFORMMBS

Name: inputB
Class: double
Type: CIAttributeTypeScalar
DisplayName: B
DefaultNumber: 0
IdentityNumber: 0
MaxNumber: 1
MinNumber: 0
SliderMaxNumber: 1
SliderMinNumber: 0

(Read only property)

52.26.7 AttributeinputC as CIAttributeMBS

Notes:
This attribute should have this content:

Name: inputC
Class: double
Type: CIAttributeTypeScalar
DisplayName: C
DefaultNumber: 0.75
IdentityNumber: 0
MaxNumber: 1
MinNumber: 0
SliderMaxNumber: 1
SliderMinNumber: 0

(Read only property)

52.26.8 AttributeinputImage as CIAttributeMBS

Notes:
CHAPTER 52. COREIMAGE

This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.26.9 Attribute inputScale as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Bicubic Scale Transform attribute.

**Notes:**

This attribute should have this content:

Name: inputScale
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Scale
DisplayName German: Skalierung
DisplayName French: chelle
DisplayName Italian: Scala
DisplayName Spanish: Escala
DefaultNumber: 1
IdentityNumber: 1
SliderMaxNumber: 100
SliderMinNumber: 0.05

(Read only property)
52.26.10 inputAspectRatio as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Aspect Ratio

**Notes:**

- **Name:** inputAspectRatio
- **Class:** double (NSNumber)
- **DisplayName English:** Aspect Ratio
- **DisplayName German:** Seitenverhältnis
- **DisplayName French:** Proportions
- **DisplayName Italian:** Proporzioni
- **DisplayName Spanish:** Proporciones
- **Type:** CIAttributeTypeScalar

See Attribute inputAspectRatio for more details.
(Read and Write property)

52.26.11 inputB as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute B

**Notes:**

- **Name:** inputB
- **Class:** double (NSNumber)
- **DisplayName English:** B
- **DisplayName German:** B
- **DisplayName French:** B
- **DisplayName Italian:** B
- **DisplayName Spanish:** B
- **Type:** CIAttributeTypeScalar

See Attribute inputB for more details.
(Read and Write property)

52.26.12 inputC as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute C

**Notes:**
Name: inputC
Class: double (NSNumber)
DisplayName English: C
DisplayName German: C
DisplayName French: C
DisplayName Italian: C
DisplayName Spanish: C
Type: CIAttributeTypeScalar

See AttributeinputC for more details.
(Read and Write property)

52.26.13 inputImage as CIImageMBS

Notes:

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See AttributeinputImage for more details.
(Read and Write property)

52.26.14 inputScale as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The attribute Scale
Notes:

See AttributeinputScale for more details.
(Read and Write property)
Name: inputScale
Class: double (NSNumber)
DisplayName English: Scale
DisplayName German: Skalierung
DisplayName French: chelle
DisplayName Italian: Scala
DisplayName Spanish: Escala
Type: CIAttributeTypeScalar
52.27 class CIFilterBlendWithAlphaMaskMBS

52.27.1 class CIFilterBlendWithAlphaMaskMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Blend With Alpha Mask filter.

**Notes:**

Details for this filter:

- **FilterName:** CIFilterBlendWithAlphaMask
- **DisplayName English:** Blend With Alpha Mask
- **DisplayName German:** Mit Alpha-Maske berblenden
- **DisplayName French:** Fusion avec masque Alpha
- **DisplayName Italian:** Sfumatura con maschera alfa
- **DisplayName Spanish:** Fusionar con la mascara alfa

**Categories:**

- CICategoryStylize: Stylize
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputBackgroundImage: Background Image
- inputMaskImage: Mask Image

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.27.2 Methods

52.27.3 Constructor

Notes: On success the handle property is not zero and the filter has the default values set.

52.27.4 Properties

52.27.5 Attribute inputBackgroundImage as CIAttributeMBS

Notes: This attribute should have this content:

Name: inputBackgroundImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Background Image
DisplayName German: Hintergrundbild
DisplayName French: Image d'arrière-plan
DisplayName Italian: Immagine di sfondo
DisplayName Spanish: Imagen de fondo
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.27.6 Attribute inputImage as CIAttributeMBS

Notes: This attribute should have this content:

(Read only property)
### 52.27.7  Attribute `inputMaskImage` as `CIAttributeMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Blend With Alpha Mask attribute.

**Notes:**

This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputMaskImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Mask Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Maske</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image du masque</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine maschera</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen de mascara</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

### 52.27.8  `inputBackgroundImage` as `CIImageMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Background Image

**Notes:**

See Attribute `inputBackgroundImage` for more details.

(Read and Write property)
52.27. **CLASS CIFILTERBLENDWITHALPHAMASKMBS**

Name: `inputBackgroundImage`
Class: `CIImageMBS (CIImage)`
DisplayName English: Background Image
DisplayName German: Hintergrundbild
DisplayName French: Image derrière-plan
DisplayName Italian: Immagine di sfondo
DisplayName Spanish: Imagen de fondo
Type: `CIAttributeTypeImage`

52.27.9 **inputImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

Notes:

Name: `inputImage`
Class: `CIImageMBS (CIImage)`
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: `CIAttributeTypeImage`

See Attribute `inputImage` for more details.
(Read and Write property)

52.27.10 **inputMaskImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Mask Image

Notes:

Name: `inputMaskImage`
Class: `CIImageMBS (CIImage)`
DisplayName English: Mask Image
DisplayName German: Maske
DisplayName French: Image du masque
DisplayName Italian: Immagine maschera
DisplayName Spanish: Imagen de mascara
Type: `CIAttributeTypeImage`

See Attribute `inputMaskImage` for more details.
(Read and Write property)
52.28. class CIFilterBlendWithBlueMaskMBS

52.28.1 class CIFilterBlendWithBlueMaskMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Blend With Blue Mask filter.

**Notes:**
Details for this filter:

- **FilterName:** CIFBlendWithBlueMask
- **DisplayName English:** Blend With Blue Mask
- **DisplayName German:** Mit blauer Maske
- **DisplayName French:** Fusion avec masque bleu
- **DisplayName Italian:** Sfumatura con maschera blu
- **DisplayName Spanish:** Fusionar con la mascara azul

**Categories:**

- **CICategoryStylize:** Stylize
- **CICategoryVideo:** Video
- **CICategoryStillImage:** Still Image
- **CICategoryBuiltIn:** Built-In

**Input:**

- **inputImage:** Image
- **inputBackgroundImage:** Background Image
- **inputMaskImage:** Mask Image

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
52.28.2 Methods

52.28.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.28.4 Properties

52.28.5 Attribute inputBackgroundImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Blend With Blue Mask attribute.
**Notes:**
This attribute should have this content:

Name: inputBackgroundImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Background Image
DisplayName German: Hintergrundbild
DisplayName French: Image derrière-plan
DisplayName Italian: Immagine di sfondo
DisplayName Spanish: Imagen de fondo
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.28.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Blend With Blue Mask attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.28. **CLASS CIFILTERBLENDWITHBLUEMASKMBS**

Name: inputImage  
Class: CIImageMBS  
Type: CIAtributeTypeImage  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
DefaultNumber: 0  
IdentityNumber: 0

52.28.7 **Attribute inputMaskImage as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**  
Details about the Blend With Blue Mask attribute.  
**Notes:**  
This attribute should have this content:

Name: inputMaskImage  
Class: CIImageMBS  
Type: CIAtributeTypeImage  
DisplayName English: Mask Image  
DisplayName German: Maske  
DisplayName French: Image du masque  
DisplayName Italian: Immagine maschera  
DisplayName Spanish: Imagen de mascara  
DefaultNumber: 0  
IdentityNumber: 0

(Read only property)

52.28.8 **inputBackgroundImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**  
The attribute Background Image  
**Notes:**  
See Attribute inputBackgroundImage for more details.  
(Read and Write property)
Name: inputBackgroundImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Background Image  
DisplayName German: Hintergrundbild  
DisplayName French: Image derrière-plan  
DisplayName Italian: Immagine di sfondo  
DisplayName Spanish: Imagen de fondo  
Type: CIAttributeTypeImage

52.28.9  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**

Name: inputImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)

52.28.10  inputMaskImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Mask Image

**Notes:**

Name: inputMaskImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Mask Image  
DisplayName German: Maske  
DisplayName French: Image du masque  
DisplayName Italian: Immagine maschera  
DisplayName Spanish: Imagen de mascara  
Type: CIAttributeTypeImage

See Attribute inputMaskImage for more details.
52.28. **CLASS CIFILTERBLENDWITHBLUEMASKMBS**

(Read and Write property)
52.29 class CIFilterBlendWithMaskMBS

52.29.1 class CIFilterBlendWithMaskMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Blend With Mask filter.
**Notes:**
Details for this filter:

<table>
<thead>
<tr>
<th>FilterName</th>
<th>CIFilterBlendWithMask</th>
</tr>
</thead>
<tbody>
<tr>
<td>DisplayName English</td>
<td>Blend With Mask</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Mit Bild maskieren</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Fusion avec masque</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Sfumatura con maschera</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Fusionar con la mscara</td>
</tr>
</tbody>
</table>

**Categories:**

- CIStylize: Stylize
- CIVideo: Video
- CIStillImage: Still Image
- CIBuiltIn: Built-In

**Input:**

- `inputImage`: Image
- `inputBackgroundImage`: Background Image
- `inputMaskImage`: Mask Image

**Output:**

- `outputImage`

Subclass of the CIFilterMBS class.
52.29.2 Methods

52.29.3 Constructor

Notes: On success the handle property is not zero and the filter has the default values set.

52.29.4 Properties

52.29.5 Attribute inputBackgroundImage as CIAttributeMBS

Notes: This attribute should have this content:

Name: inputBackgroundImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Background Image
DisplayName German: Hintergrundbild
DisplayName French: Image arrière-plan
DisplayName Italian: Immagine di sfondo
DisplayName Spanish: Imagen de fondo
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.29.6 Attribute inputImage as CIAttributeMBS

Notes: This attribute should have this content:

(Read only property)
Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

52.29.7 Attribute inputMaskImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Blend With Mask attribute.

**Notes:**
This attribute should have this content:

Name: inputMaskImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Mask Image
DisplayName German: Maske
DisplayName French: Image du masque
DisplayName Italian: Immagine maschera
DisplayName Spanish: Imagen de mascara
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.29.8 inputBackgroundImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Background Image

**Notes:**
See Attribute inputBackgroundImage for more details.
(Read and Write property)
52.29. **CLASS CIFILTERBLENDWITHMASKMBS**

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputBackgroundImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Background Image</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Hintergrundbild</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Image darrire-plan</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Immagine di sfondo</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Imagen de fondo</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>

52.29.9 **inputImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>

See Attribute inputImage for more details.
(Read and Write property)

52.29.10 **inputMaskImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Mask Image

**Notes:**

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputMaskImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Mask Image</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Maske</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Image du masque</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Immagine maschera</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Imagen de mascara</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>

See Attribute inputMaskImage for more details.
(Read and Write property)
52.30. **CLASS CIFILTERBLENDWITHREDMASKMBS**

52.30  class CIFilterBlendWithRedMaskMBS

52.30.1  class CIFilterBlendWithRedMaskMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Blend With Red Mask filter.

**Notes:**

Details for this filter:

- **FilterName:** CIBlendWithRedMask
- **DisplayName English:** Blend With Red Mask
- **DisplayName German:** Mit roter Maske
- **DisplayName French:** Fusion avec masque rouge
- **DisplayName Italian:** Sfumatura con maschera rossa
- **DisplayName Spanish:** Fusionar con la mascara roja

**Categories:**

- CICategoryStylize: Stylize
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- **inputImage:** Image
- **inputBackgroundImage:** Background Image
- **inputMaskImage:** Mask Image

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
52.30.2 Methods

52.30.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor. **Notes:** On success the handle property is not zero and the filter has the default values set.

52.30.4 Properties

52.30.5 Attribute inputBackgroundImage as CIAttributMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Blend With Red Mask attribute. **Notes:** This attribute should have this content:

```
Name:         inputBackgroundImage
Class:        CIImageMBS
Type:         CIAttributeTypeImage
DisplayName English: Background Image
DisplayName German: Hintergrundbild
DisplayName French: Image darrrire-plan
DisplayName Italian: Immagine di sfondo
DisplayName Spanish: Imagen de fondo
DefaultNumber: 0
IdentityNumber: 0
```

(Read only property)

52.30.6 Attribute inputImage as CIAttributMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Blend With Red Mask attribute. **Notes:** This attribute should have this content:

(Read only property)
52.30. **CLASS CIFILTERBLENDWITHREDMASKMBS**

- **Name**: inputImage
- **Class**: CIImageMBS
- **Type**: CIAttributeTypeImage
- **DisplayName English**: Image
- **DisplayName German**: Bild
- **DisplayName French**: Image
- **DisplayName Italian**: Immagine
- **DisplayName Spanish**: Imagen
- **DefaultNumber**: 0
- **IdentityNumber**: 0

---

### 52.30.7 Attribute `inputMaskImage` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Blend With Red Mask attribute.

**Notes:**

This attribute should have this content:

- **Name**: inputMaskImage
- **Class**: CIImageMBS
- **Type**: CIAttributeTypeImage
- **DisplayName English**: Mask Image
- **DisplayName German**: Maske
- **DisplayName French**: Image du masque
- **DisplayName Italian**: Immagine maschera
- **DisplayName Spanish**: Imagen de mascara
- **DefaultNumber**: 0
- **IdentityNumber**: 0

(Read only property)

---

### 52.30.8 `inputBackgroundImage` as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Background Image

**Notes:**

See Attribute `inputBackgroundImage` for more details.

(Read and Write property)
52.30.9  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)

52.30.10  inputMaskImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Mask Image

**Notes:**

Name: inputMaskImage
Class: CIImageMBS (CIImage)
DisplayName English: Mask Image
DisplayName German: Maske
DisplayName French: Image du masque
DisplayName Italian: Immagine maschera
DisplayName Spanish: Imagen de mascara
Type: CIAttributeTypeImage

See Attribute inputMaskImage for more details.
52.30. CLASS CIFILTERBLENDWITHREDMASKMBS

(Read and Write property)
52.31 class CIFilterBloomMBS

52.31.1 class CIFilterBloomMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Bloom filter.  
**Notes:** Details for this filter:

FilterName: CIFlame  
DisplayName English: Bloom  
DisplayName German: berstrahlen  
DisplayName French: Floraison  
DisplayName Italian: Velatura  
DisplayName Spanish: Veladura

Categories:

- CICategoryStylize: Stylize  
- CICategoryVideo: Video  
- CICategoryStillImage: Still Image  
- CICategoryBuiltIn: Built-In

Input:

- inputImage: Image  
- inputRadius: Radius  
- inputIntensity: Intensity

Output:

- outputImage

Subclass of the CIFilterMBS class.
52.31. CLASS CIFILTERBLOOMMBS

52.31.2 Methods

52.31.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The constructor. Notes: On success the handle property is not zero and the filter has the default values set.

52.31.4 Properties

52.31.5 AttributeinputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Details about the Bloom attribute. Notes: This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.31.6 AttributeinputIntensity as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Details about the Bloom attribute. Notes: This attribute should have this content:

(Read only property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputIntensity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeScalar</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Intensity</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Intensit</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Intensit</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Intensit</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Intensidad</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>1</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
<tr>
<td>SliderMaxNumber</td>
<td>1</td>
</tr>
<tr>
<td>SliderMinNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

52.31.7 Attribute inputRadius as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Bloom attribute.

**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputRadius</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeDistance</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Radius</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Radius</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Rayon</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Raggio</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Radio</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>10</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
<tr>
<td>SliderMaxNumber</td>
<td>100</td>
</tr>
<tr>
<td>SliderMinNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.31.8  inputImage as ClImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**
See Attribute inputImage for more details.
52.31. **CLASS CIFILTERBLOOMMBS**

Name: inputImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
Type: CIAttributeTypeImage

(Read and Write property)

52.31.9 **inputIntensity as double**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Intensity  
**Notes:**

Name: inputIntensity  
Class: double (NSNumber)  
DisplayName English: Intensity  
DisplayName German: Intensität  
DisplayName French: Intensité  
DisplayName Italian: Intensità  
DisplayName Spanish: Intensidad  
Type: CIAttributeTypeScalar

See Attribute inputIntensity for more details.  
(Read and Write property)

52.31.10 **inputRadius as double**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Radius  
**Notes:**

See Attribute inputRadius for more details.  
(Read and Write property)
Name: inputRadius
Class: double (NSNumber)
DisplayName English: Radius
DisplayName German: Radius
DisplayName French: Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
Type: CIAttributeTypeDistance
52.32. CLASS CIFILTERBOKEHBLURMBS

52.32 class CIFilterBokehBlurMBS

52.32.1 class CIFilterBokehBlurMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Bokeh Blur filter. **Notes:**
Details for this filter:

<table>
<thead>
<tr>
<th>FilterName:</th>
<th>CIBokehBlur</th>
</tr>
</thead>
<tbody>
<tr>
<td>DisplayName English:</td>
<td>Bokeh Blur</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Bokeh unscharf</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Bokeh (flou)</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Sfocatura bokeh</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Desenfoque bokeh</td>
</tr>
</tbody>
</table>

**Categories:**

- CICategoryBlur: Blur
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputRadius: Radius
- inputRingAmount: Ring Amount
- inputRingSize: Ring Size
- inputSoftness: Softness

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.32.2 Methods

52.32.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.  
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.32.4 Properties

52.32.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Bokeh Blur attribute.  
**Notes:**  
This attribute should have this content:

Name: inputImage  
Class: CIImageMBS  
Type: CIAttributeTypeImage  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
DefaultNumber: 0  
IdentityNumber: 0  

(Read only property)

52.32.6 Attribute inputRadius as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Bokeh Blur attribute.  
**Notes:**  
This attribute should have this content:

(Read only property)
52.32. **CLASS CIFILTERBOKEHBLURMBS**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputRadius</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>double</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeDistance</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Radius</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Radius</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Rayon</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Raggio</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Radio</td>
</tr>
<tr>
<td>DefaultNumber:</td>
<td>20</td>
</tr>
<tr>
<td>IdentityNumber:</td>
<td>0</td>
</tr>
<tr>
<td>MaxNumber:</td>
<td>500</td>
</tr>
<tr>
<td>MinNumber:</td>
<td>0</td>
</tr>
<tr>
<td>SliderMaxNumber:</td>
<td>100</td>
</tr>
<tr>
<td>SliderMinNumber:</td>
<td>0</td>
</tr>
</tbody>
</table>

52.32.7 **Attribute inputRingAmount as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Bokeh Blur attribute.

**Notes:**

This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputRingAmount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>double</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeScalar</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Ring Amount</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Ringstrke</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Intensit de lanneau</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Intensit anello</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Número de anillos</td>
</tr>
<tr>
<td>DefaultNumber:</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber:</td>
<td>0</td>
</tr>
<tr>
<td>MaxNumber:</td>
<td>1</td>
</tr>
<tr>
<td>MinNumber:</td>
<td>0</td>
</tr>
<tr>
<td>SliderMaxNumber:</td>
<td>1</td>
</tr>
<tr>
<td>SliderMinNumber:</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)
52.32.8 Attribute inputRingSize as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Bokeh Blur attribute.

**Notes:**

This attribute should have this content:

- **Name:** inputRingSize
- **Class:** double
- **Type:** CIAttributeTypeScalar
- **DisplayName English:** Ring Size
- **DisplayName German:** Ringgröße
- **DisplayName French:** Taille de l’anneau
- **DisplayName Italian:** Dimensioni anello
- **DisplayName Spanish:** Tamaño del anillo
- **DefaultNumber:** 0.1
- **IdentityNumber:** 0
- **MaxNumber:** 0.2
- **MinNumber:** 0
- **SliderMaxNumber:** 0.2
- **SliderMinNumber:** 0

(Read only property)

52.32.9 Attribute inputSoftness as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Bokeh Blur attribute.

**Notes:**

This attribute should have this content:

(Read only property)

52.32.10 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**

See Attribute inputImage for more details.
52.32. CLASS CIFILTERBOKEHBLURMBS

Name: inputSoftness
Class: double
Type: CIAttributeTypeScalar
DisplayName: Softness
DefaultNumber: 1
IdentityNumber: 0
MaxNumber: 10
MinNumber: 0
SliderMaxNumber: 0.4
SliderMinNumber: 0.25

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

(Read and Write property)

52.32.11 inputRadius as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Radius
Notes:

Name: inputRadius
Class: double (NSNumber)
DisplayName English: Radius
DisplayName German: Radius
DisplayName French: Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
Type: CIAttributeTypeDistance

See Attribute inputRadius for more details.
(Read and Write property)
52.32.12 inputRingAmount as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Ring Amount

**Notes:**
- Name: inputRingAmount
- Class: double (NSNumber)
- DisplayName English: Ring Amount
- DisplayName German: Ringstrke
- DisplayName French: Intensit de lanneau
- DisplayName Italian: Intensit anello
- DisplayName Spanish: Nmero de anillos
- Type: CIAttributeTypeScalar

See Attribute inputRingAmount for more details.
(Read and Write property)

52.32.13 inputRingSize as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Ring Size

**Notes:**
- Name: inputRingSize
- Class: double (NSNumber)
- DisplayName English: Ring Size
- DisplayName German: Ringgre
- DisplayName French: Taille de lanneau
- DisplayName Italian: Dimensioni anello
- DisplayName Spanish: Tamao del anillo
- Type: CIAttributeTypeScalar

See Attribute inputRingSize for more details.
(Read and Write property)

52.32.14 inputSoftness as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Softness

**Notes:**
52.32. **CLASS CIFILTERBOKEHBLURMBS**

Name: inputSoftness
Class: double (NSNumber)
DisplayName English: Softness
DisplayName German: Softness
DisplayName French: Softness
DisplayName Italian: Softness
DisplayName Spanish: Softness
Type: CIAttributeTypeScalar

See Attribute inputSoftness for more details.
(Read and Write property)
52.33 class CIFilterBoxBlurMBS

52.33.1 class CIFilterBoxBlurMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Box Blur filter.

**Notes:**

Details for this filter:

- **FilterName:** CIBoxBlur
- **DisplayName English:** Box Blur
- **DisplayName German:** Quadratische Unscharfe
- **DisplayName French:** Flou (Box blur)
- **DisplayName Italian:** Sfocatura riquadro
- **DisplayName Spanish:** Caja difuminada

**Categories:**

- CICategoryBlur: Blur
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- **inputImage:** Image
- **inputRadius:** Radius

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
52.33. CLASS CIFILTERBOXBLURMBS

52.33.2 Methods

52.33.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.33.4 Properties

52.33.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Box Blur attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.33.6 Attribute inputRadius as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Box Blur attribute.
**Notes:**
This attribute should have this content:

(Read only property)
Name:          inputRadius
Class:         double
Type:          CIAttributeTypeDistance
DisplayName English:  Radius
DisplayName German: Radius
DisplayName French:  Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
DefaultNumber:  10
IdentityNumber: 0
MaxNumber:      0
MinNumber:      1
SliderMaxNumber: 100
SliderMinNumber: 1

52.33.7  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Image
Notes:

Name:          inputImage
Class:         CIImageMBS (CIImage)
DisplayName English:  Image
DisplayName German: Bild
DisplayName French:  Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type:          CIAttributeTypeImage

See AttributeinputImage for more details.
(Read and Write property)

52.33.8  inputRadius as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Radius
Notes:
See AttributeinputRadius for more details.
(Read and Write property)
Name: inputRadius
Class: double (NSNumber)
DisplayName English: Radius
DisplayName German: Radius
DisplayName French: Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
Type: CIAttributeTypeDistance
52.34 class CIFilterBumpDistortionLinearMBS

52.34.1 class CIFilterBumpDistortionLinearMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Bump Distortion Linear filter. **Notes:** Details for this filter:

- **FilterName:** CIBumpDistortionLinear
- **DisplayName** English: Bump Distortion Linear
- **DisplayName** German: Verzerrung Bump (Linear)
- **DisplayName** French: Dformation Bosse linaire
- **DisplayName** Italian: Lineare distorsione urto
- **DisplayName** Spanish: Distorsin linear suplementaria

**Categories:**

- CICategoryDistortionEffect: Distortion Effect
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- **inputImage:** Image
- **inputCenter:** Center
- **inputRadius:** Radius
- **inputAngle:** Angle
- **inputScale:** Scale

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
52.34.2 Methods

52.34.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

**Notes:** On success the handle property is not zero and the filter has the default values set.

52.34.4 Properties

52.34.5 Attribute inputAngle as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Bump Distortion Linear attribute.

**Notes:**

This attribute should have this content:

- **Name:** inputAngle
- **Class:** double
- **Type:** CIAttributeTypeAngle
- **DisplayName English:** Angle
- **DisplayName German:** Winkel
- **DisplayName French:** Angle
- **DisplayName Italian:** Angolo
- **DisplayName Spanish:** ngulo
- **DefaultNumber:** 0
- **IdentityNumber:** 0
- **SliderMaxNumber:** 6.283185
- **SliderMinNumber:** 0

*(Read only property)*

52.34.6 Attribute inputCenter as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Bump Distortion Linear attribute.

**Notes:**

This attribute should have this content:
CHAPTER 52. COREIMAGE

Name: inputCenter
Class: CIVectorMBS
Type: CIAttributeTypePosition
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
DefaultVector: [ 150 150 ]
IdentityVector: n/a

(Read only property)

52.34.7 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Details about the Bump Distortion Linear attribute.
Notes:

This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.34.8 Attribute inputRadius as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Details about the Bump Distortion Linear attribute.
Notes:

This attribute should have this content:
### 52.34. CLASS CIFILTERBUMPDISTORTIONLINEARMBS

**Name:** inputRadius  
**Class:** double  
**Type:** CIAttributeTypeDistance  
**DisplayName English:** Radius  
**DisplayName German:** Radius  
**DisplayName French:** Rayon  
**DisplayName Italian:** Raggio  
**DisplayName Spanish:** Radio  
**DefaultNumber:** 300  
**IdentityNumber:** 0  
**SliderMaxNumber:** 600  
**SliderMinNumber:** 0

(Read only property)

### 52.34.9 Attribute inputScale as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Bump Distortion Linear attribute.  
**Notes:**  
This attribute should have this content:

**Name:** inputScale  
**Class:** double  
**Type:** CIAttributeTypeScalar  
**DisplayName English:** Scale  
**DisplayName German:** Skalierung  
**DisplayName French:** chelle  
**DisplayName Italian:** Scala  
**DisplayName Spanish:** Escala  
**DefaultNumber:** 0.5  
**IdentityNumber:** 1  
**MaxNumber:** 0  
**MinNumber:** -1  
**SliderMaxNumber:** 1  
**SliderMinNumber:** 0

(Read only property)
52.34.10  inputAngle as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Angle

**Notes:**
- Name: inputAngle
- Class: double (NSNumber)
- DisplayName English: Angle
- DisplayName German: Winkel
- DisplayName French: Angle
- DisplayName Italian: Angolo
- DisplayName Spanish: ngulo
- Type: CIAttributeTypeAngle

See Attribute inputAngle for more details.
(Read and Write property)

52.34.11  inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Center

**Notes:**
- Name: inputCenter
- Class: CIVectorMBS (CIVector)
- DisplayName English: Center
- DisplayName German: Mitte
- DisplayName French: Centre
- DisplayName Italian: Centro
- DisplayName Spanish: Centro
- Type: CIAttributeTypePosition

See Attribute inputCenter for more details.
(Read and Write property)

52.34.12  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)

52.34.13 inputRadius as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Radius

**Notes:**

Name: inputRadius
Class: double (NSNumber)
DisplayName English: Radius
DisplayName German: Radius
DisplayName French: Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
Type: CIAttributeTypeDistance

See Attribute inputRadius for more details.
(Read and Write property)

52.34.14 inputScale as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Scale

**Notes:**

See Attribute inputScale for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name:</th>
<th>inputScale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Scale</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Skalierung</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>chelle</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Scala</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Escala</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeScalar</td>
</tr>
</tbody>
</table>
52.35.  class CIFilterBumpDistortionMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Bump Distortion filter.

**Notes:**
Details for this filter:

<table>
<thead>
<tr>
<th>FilterName:</th>
<th>CIFilterBumpDistortion</th>
</tr>
</thead>
<tbody>
<tr>
<td>DisplayName English:</td>
<td>Bump Distortion</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Verzerrung Bump</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Dformation Bosse</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Distorsione urto</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Distorsin suplementaria</td>
</tr>
</tbody>
</table>

**Categories:**

- CICategoryDistortionEffect: Distortion Effect
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputCenter: Center
- inputRadius: Radius
- inputScale: Scale

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.35.2 Methods

52.35.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor. **Notes:** On success the handle property is not zero and the filter has the default values set.

52.35.4 Properties

52.35.5 Attribute inputCenter as CIAtributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Bump Distortion attribute. **Notes:** This attribute should have this content:

Name: inputCenter  
Class: CIVectorMBS  
Type: CIAttributeTypePosition  
DisplayName English: Center  
DisplayName German: Mitte  
DisplayName French: Centre  
DisplayName Italian: Centro  
DisplayName Spanish: Centro  
DefaultVector: [ 150 150 ]  
IdentityVector: n/a

(Read only property)

52.35.6 Attribute inputImage as CIAtributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Bump Distortion attribute. **Notes:** This attribute should have this content:

(Read only property)
52.35. CLASS CIFILTERBUMPDISTORTIONMBS

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

52.35.7 Attribute inputRadius as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Bump Distortion attribute.

**Notes:**
This attribute should have this content:

Name: inputRadius
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Radius
DisplayName German: Radius
DisplayName French: Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
DefaultNumber: 300
IdentityNumber: 0
SliderMaxNumber: 600
SliderMinNumber: 0

(Read only property)

52.35.8 Attribute inputScale as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Bump Distortion attribute.

**Notes:**
This attribute should have this content:
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Name: inputScale
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Scale
DisplayName German: Skalierung
DisplayName French: chelle
DisplayName Italian: Scala
DisplayName Spanish: Escala
DefaultNumber: 0.5
IdentityNumber: 0
SliderMaxNumber: 1
SliderMinNumber: -1

(Read only property)

52.35.9  inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
The attribute Center

**Notes:**

Name: inputCenter
Class: CIVectorMBS (CIVector)
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
Type: CIAttributeTypePosition

See AttributeinputCenter for more details.
(Read and Write property)

52.35.10  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
The attribute Image

**Notes:**

See AttributeinputImage for more details.
(Read and Write property)
52.35. CLASS CIFILTERBUMPDISTORTIONMBS

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

52.35.11 inputRadius as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Radius

**Notes:**

Name: inputRadius
Class: double (NSNumber)
DisplayName English: Radius
DisplayName German: Radius
DisplayName French: Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
Type: CIAttributeTypeDistance

See Attribute inputRadius for more details.
(Read and Write property)

52.35.12 inputScale as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Scale

**Notes:**

Name: inputScale
Class: double (NSNumber)
DisplayName English: Scale
DisplayName German: Skalierung
DisplayName French: chelle
DisplayName Italian: Scala
DisplayName Spanish: Escala
Type: CIAttributeTypeScalar

See Attribute inputScale for more details.
(Read and Write property)
52.36. class CIFilterCheckerboardGeneratorMBS

52.36.1 class CIFilterCheckerboardGeneratorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Checkerboard filter.

**Notes:**
Details for this filter:

- FilterName: CICheckerboardGenerator
- DisplayName English: Checkerboard
- DisplayName German: Schachbrettmuster
- DisplayName French: Damier
- DisplayName Italian: Scacchiera
- DisplayName Spanish: Tablero

**Categories:**
- CICategoryGenerator: Generator
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**
- inputCenter: Center
- inputColor0: Color 1
- inputColor1: Color 2
- inputWidth: Width
- inputSharpness: Sharpness

**Output:**
- outputImage

Subclass of the CIFilterMBS class.
52.36.2 Methods

52.36.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.36.4 Properties

52.36.5 Attribute `inputCenter` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Checkerboard attribute.
**Notes:**
This attribute should have this content:

```
Name:           inputCenter
Class:          CIVectorMBS
Type:           CIAttributeTypePosition
DisplayName English:  Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
DefaultVector:   [ 150 150 ]
IdentityVector:  n/a
```

(Read only property)

52.36.6 Attribute `inputColor0` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Checkerboard attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.36. CLASS CIFILTERCHECKERBOARDGENERATORMBS

Name: inputColor0
Class: CIColorMBS
DisplayName English: Color 1
DisplayName German: Farbe 1
DisplayName French: Couleur 1
DisplayName Italian: Colore 1
DisplayName Spanish: Color 1
DefaultColor: Red = 1, Green = 1, Blue = 1, Alpha = 1
IdentityNumber: 0

52.36.7 Attribute inputColor1 as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Checkerboard attribute.

**Notes:**
This attribute should have this content:

Name: inputColor1
Class: CIColorMBS
DisplayName English: Color 2
DisplayName German: Farbe 2
DisplayName French: Couleur 2
DisplayName Italian: Colore 2
DisplayName Spanish: Color 2
DefaultColor: Red = 0, Green = 0, Blue = 0, Alpha = 1
IdentityNumber: 0

(Read only property)

52.36.8 Attribute inputSharpness as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Checkerboard attribute.

**Notes:**
This attribute should have this content:

(Read only property)
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Name: inputSharpness
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Sharpness
DisplayName German: Schärfe
DisplayName French: Nettet
DisplayName Italian: Nitidezza
DisplayName Spanish: Nitidez
DefaultNumber: 1
IdentityNumber: 0
MaxNumber: 1
MinNumber: 0
SliderMaxNumber: 1
SliderMinNumber: 0

52.36.9 Attribute inputWidth as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Details about the Checkerboard attribute.
Notes:
This attribute should have this content:

Name: inputWidth
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Anchura
DefaultNumber: 80
IdentityNumber: 0
SliderMaxNumber: 800
SliderMinNumber: 0

(Read only property)

52.36.10 inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Center
Notes:
52.36.  CLASS CIFILTERCHECKERBOARDGENERATORMBS

Name:   inputCenter
Class:   CIVectorMBS (CIVector)
DisplayName English:   Center
DisplayName German:   Mitte
DisplayName French:   Centre
DisplayName Italian:   Centro
DisplayName Spanish:   Centro
Type:   CIAttributeTypePosition

See Attribute inputCenter for more details.
(Read and Write property)

52.36.11  inputColor0 as CIColorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Color 1
Notes:

Name:   inputColor0
Class:   CIColorMBS (CIColor)
DisplayName English:   Color 1
DisplayName German:   Farbe 1
DisplayName French:   Couleur 1
DisplayName Italian:   Colore 1
DisplayName Spanish:   Color 1
Type:   

See Attribute inputColor0 for more details.
(Read and Write property)

52.36.12  inputColor1 as CIColorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Color 2
Notes:

See Attribute inputColor1 for more details.
(Read and Write property)
Name: inputColor1
Class: CIColorMBS (CIColor)
DisplayName English: Color 2
DisplayName German: Farbe 2
DisplayName French: Couleur 2
DisplayName Italian: Colore 2
DisplayName Spanish: Color 2
Type: 

52.36.13 inputSharpness as double

Notes: Name: inputSharpness
Class: double (NSNumber)
DisplayName English: Sharpness
DisplayName German: Schärfe
DisplayName French: Nettet
DisplayName Italian: Nitidezza
DisplayName Spanish: Nitidez
Type: CIAttributeTypeScalar

See Attribute inputSharpness for more details.
(Read and Write property)

52.36.14 inputWidth as double

Notes: Name: inputWidth
Class: double (NSNumber)
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Anchura
Type: CIAttributeTypeDistance

See Attribute inputWidth for more details.
52.36. CLASS CIFILTERCHECKERBOARDGENERATORMBS
(Read and Write property)
52.37 class CIFilterCircleSplashDistortionMBS

52.37.1 class CIFilterCircleSplashDistortionMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Circle Splash Distortion filter.

**Notes:**
Details for this filter:

- **FilterName:** CICircleSplashDistortion
- **DisplayName English:** Circle Splash Distortion
- **DisplayName German:** Verzerrung Kreisfmoiger Platscher
- **DisplayName French:** Dformation claboussure circulaire
- **DisplayName Italian:** Distorsione spruzzo circolare
- **DisplayName Spanish:** Distorsin a modo de salpicadura en circulo

**Categories:**
- CICategoryDistortionEffect: Distortion Effect
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**
- **inputImage:** Image
- **inputCenter:** Center
- **inputRadius:** Radius

**Output:**
- **outputImage**

Subclass of the CIFilterMBS class.
52.37. Methods

52.37.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.37.4 Properties

52.37.5 Attribute inputCenter as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Circle Splash Distortion attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputCenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIVectorMBS</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypePosition</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Center</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Mitte</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Centre</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Centro</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Centro</td>
</tr>
<tr>
<td>DefaultVector:</td>
<td>[ 150 150 ]</td>
</tr>
<tr>
<td>IdentityVector:</td>
<td>n/a</td>
</tr>
</tbody>
</table>

(Read only property)

52.37.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Circle Splash Distortion attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.37.7 Attribute inputRadius as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Circle Splash Distortion attribute.

**Notes:**
This attribute should have this content:

Name: inputRadius
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Radius
DisplayName German: Radius
DisplayName French: Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
DefaultNumber: 150
IdentityNumber: 0
SliderMaxNumber: 1000
SliderMinNumber: 0

(Read only property)

52.37.8 inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Center

**Notes:**
See Attribute inputCenter for more details.
(Read and Write property)
52.37. **CLASS CIFILTERCIRCLESPLASHDISTORTIONMBS**

Name: inputCenter  
Class: CIVectorMBS (CIVector)  
DisplayName English: Center  
DisplayName German: Mitte  
DisplayName French: Centre  
DisplayName Italian: Centro  
DisplayName Spanish: Centro  
Type: CIAttributeTypePosition

52.37.9 **inputImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image  
Notes:

Name: inputImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
Type: CIAttributeTypeImage

See Attribute inputImage for more details.  
(Read and Write property)

52.37.10 **inputRadius as double**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Radius  
Notes:

Name: inputRadius  
Class: double (NSNumber)  
DisplayName English: Radius  
DisplayName German: Radius  
DisplayName French: Rayon  
DisplayName Italian: Raggio  
DisplayName Spanish: Radio  
Type: CIAttributeTypeDistance

See Attribute inputRadius for more details.
(Read and Write property)
52.38.1  class CIFilterCircularScreenMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Circular Screen filter. **Notes:**

Details for this filter:

FilterName:  CI\text{CircularScreen}
DisplayName English:  Circular Screen
DisplayName German:  Konzentrisches Halbtonraster
DisplayName French:  cran circulaire
DisplayName Italian:  Schermo circolare
DisplayName Spanish:  Pantalla circular

Categories:

- CICategoryHalftoneEffect:  Halftone Effect
- CICategoryVideo:  Video
- CICategoryStillImage:  Still Image
- CICategoryBuiltIn:  Built-In

Input:

- inputImage:  Image
- inputCenter:  Center
- inputWidth:  Width
- inputSharpness:  Sharpness

Output:

- outputImage

Subclass of the CI\text{FilterMBS} class.
52.38.2 Methods

52.38.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.38.4 Properties

52.38.5 Attribute **inputCenter** as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Circular Screen attribute.
**Notes:**
This attribute should have this content:

Name: inputCenter  
Class: CIVectorMBS  
Type: CIAttributeTypePosition  
DisplayName English: Center  
DisplayName German: Mitte  
DisplayName French: Centre  
DisplayName Italian: Centro  
DisplayName Spanish: Centro  
DefaultVector: [ 150 150 ]  
IdentityVector: n/a

(Read only property)

52.38.6 Attribute **inputImage** as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Circular Screen attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.38. **CLASS CIFILTERCIRCULARSCREENMBS**

Name: inputImage  
Class: CIImageMBS  
Type: CIAttributeTypeImage  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
DefaultNumber: 0  
IdentityNumber: 0

52.38.7 **Attribute inputSharpness as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Circular Screen attribute.  
**Notes:**

This attribute should have this content:

Name: inputSharpness  
Class: double  
Type: CIAttributeTypeScalar  
DisplayName English: Sharpness  
DisplayName German: Schärfe  
DisplayName French: Nettet  
DisplayName Italian: Nitidezza  
DisplayName Spanish: Nitidez  
DefaultNumber: 0.7  
IdentityNumber: 0  
MaxNumber: 1  
MinNumber: 0  
SliderMaxNumber: 1  
SliderMinNumber: 0

(Read only property)

52.38.8 **Attribute inputWidth as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Circular Screen attribute.  
**Notes:**

This attribute should have this content:
Name: inputWidth
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Anchura
DefaultNumber: 6
IdentityNumber: 0
MaxNumber: 0
MinNumber: 1
SliderMaxNumber: 50
SliderMinNumber: 2

(Read only property)

52.38.9 inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Center
Notes:

Name: inputCenter
Class: CIVectorMBS (CIVector)
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
Type: CIAttributeTypePosition

See AttributeinputCenter for more details.
(Read and Write property)

52.38.10 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Image
Notes:
52.38. **CLASS CIFILTERCIRCULARSCREENMBS**

Name: inputImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
Type: CIAttributeTypeImage

See AttributeinputImage for more details.  
(Read and Write property)

### 52.38.11 inputSharpness as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**  
The attribute Sharpness

**Notes:**

Name: inputSharpness  
Class: double (NSNumber)  
DisplayName English: Sharpness  
DisplayName German: Schärfe  
DisplayName French: Nettet  
DisplayName Italian: Nitidezza  
DisplayName Spanish: Nitidez  
Type: CIAttributeTypeScalar

See AttributeinputSharpness for more details.  
(Read and Write property)

### 52.38.12 inputWidth as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**  
The attribute Width

**Notes:**

See AttributeinputWidth for more details.  
(Read and Write property)
Name: inputWidth
Class: double (NSNumber)
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Anchura
Type: CIAttributeTypeDistance
52.39. **CLASS CIFILTERCIRCULARWRAPMBS**

52.39  **class CIFilterCircularWrapMBS**

52.39.1  **class CIFilterCircularWrapMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
The Realbasic class for the CoreImage Circular Wrap Distortion filter.

**Example:**

```realbasic
dim p as Picture = LogoMBS(500)
dim data as string = PictureToPNGStringMBS(p,80)
dim i as new CIImageMBS(data)

dim c as new CIFilterCircularWrapMBS
c.inputImage = i

dim o as CIImageMBS = c.outputImage
Backdrop = o.RenderPicture
```

**Notes:**

**Details for this filter:**

- **FilterName:** CICircularWrap
- **DisplayName English:** Circular Wrap Distortion
- **DisplayName German:** Kreisförmig krummen
- **DisplayName French:** Dformation Bouclage circulaire
- **DisplayName Italian:** Distorsione involucro circolare
- **DisplayName Spanish:** Distorsión a modo de envoltura circular

**Categories:**

- **CICategoryDistortionEffect:** Distortion Effect
- **CICategoryVideo:** Video
- **CICategoryStillImage:** Still Image
- **CICategoryBuiltIn:** Built-In

**Input:**

- inputImage: Image
- inputCenter: Center
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- inputRadius: Radius
- inputAngle: Angle

Output:

- outputImage

Subclass of the CIFilterMBS class.

52.39.2 Methods

52.39.3 Constructor

Notes: On success the handle property is not zero and the filter has the default values set.

52.39.4 Properties

52.39.5 Attribute inputAngle as CIAttributeMBS

Notes: This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputAngle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeAngle</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Angle</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Winkel</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Angle</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Angolo</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>ngulo</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
<tr>
<td>SliderMaxNumber</td>
<td>3.141593</td>
</tr>
<tr>
<td>SliderMinNumber</td>
<td>-3.141593</td>
</tr>
</tbody>
</table>
52.39.6 Attribute inputCenter as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Details about the Circular Wrap Distortion attribute.
Notes:
This attribute should have this content:

Name: inputCenter
Class: CIVectorMBS
Type: CIAttributeTypePosition
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
DefaultVector: [ 150 150 ]
IdentityVector: n/a

(Read only property)

52.39.7 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Details about the Circular Wrap Distortion attribute.
Notes:
This attribute should have this content:

(Read only property)

52.39.8 Attribute inputRadius as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Details about the Circular Wrap Distortion attribute.
Notes:
This attribute should have this content:
### 52.39.9 inputAngle as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Angle

**Example:**

```vbnet
dim p as Picture = LogoMBS(500)
dim data as string = PictureToPNGStringMBS(p,80)
dim i as new CIImageMBS(data)

dim c as new CIFilterCircularWrapMBS
  c.inputImage = i
  c.inputAngle = 0.1

dim o as CIImageMBS = c.outputImage
Backdrop = o.RenderPicture
```
Notes:

Name: inputAngle
Class: double (NSNumber)
DisplayName English: Angle
DisplayName German: Winkel
DisplayName French: Angle
DisplayName Italian: Angolo
DisplayName Spanish: A
Type: CIAttributeTypeAngle

See Attribute inputAngle for more details.
(Read and Write property)

52.39.10 inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Center

Notes:

Name: inputCenter
Class: CIVectorMBS (CIVector)
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
Type: CIAttributeTypePosition

See Attribute inputCenter for more details.
(Read and Write property)

52.39.11 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Example:**
```
dim p as Picture = LogoMBS(500)
dim data as string = PictureToPNGStringMBS(p,80)
dim i as new CIImageMBS(data)
```
dim c as new CIFilterCircularWrapMBS
    c.inputImage = i

    dim o as CIImageMBS = c.outputImage
    Backdrop = o.RenderPicture

**Notes:**

Name: inputImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
Type: CIAttributeTypeImage

See AttributeinputImage for more details.  
(Read and Write property)

### 52.39.12 inputRadius as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**  
The attribute Radius  
**Notes:**

Name: inputRadius  
Class: double (NSNumber)  
DisplayName English: Radius  
DisplayName German: Radius  
DisplayName French: Rayon  
DisplayName Italian: Raggio  
DisplayName Spanish: Radio  
Type: CIAttributeTypeDistance

See AttributeinputRadius for more details.  
(Read and Write property)
52.40. class CIFilterClampMBS

52.40.1 class CIFilterClampMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Clamp filter.

**Notes:**
Details for this filter:

- **FilterName**: CIClamp
- **DisplayName English**: Clamp
- **DisplayName German**: Arretieren
- **DisplayName French**: Attacher
- **DisplayName Italian**: Morsetto
- **DisplayName Spanish**: Fijar

**Categories:**

- CICategoryTileEffect: Tile Effect
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputExtent: Extent

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.40.2 Methods

52.40.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.  
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.40.4 Properties

52.40.5 Attribute `inputExtent` as `CIAttributeMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Clamp attribute.  
**Notes:**  
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td><code>inputExtent</code></td>
</tr>
<tr>
<td>Class:</td>
<td><code>CIVectorMBS</code></td>
</tr>
<tr>
<td>Type:</td>
<td><code>CIAttributeTypeRectangle</code></td>
</tr>
<tr>
<td>DisplayName English:</td>
<td><code>Extent</code></td>
</tr>
<tr>
<td>DisplayName German:</td>
<td><code>Betrag</code></td>
</tr>
<tr>
<td>DisplayName French:</td>
<td><code>tendue</code></td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td><code>Ampiezza</code></td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td><code>Amplitud</code></td>
</tr>
<tr>
<td>Default Vector:</td>
<td><code>[0 0 640 80]</code></td>
</tr>
<tr>
<td>Identity Vector:</td>
<td>n/a</td>
</tr>
</tbody>
</table>

(Read only property)

52.40.6 Attribute `inputImage` as `CIAttributeMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Clamp attribute.  
**Notes:**  
This attribute should have this content:

(Read only property)
52.40. **CLASS CIFILTERCLAMPMBS**

Name: inputImage  
Class: CIImageMBS  
Type: CIAttributeTypeImage  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
DefaultNumber: 0  
IdentityNumber: 0

52.40.7 **inputExtent as CIVectorMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Extent  
**Notes:**

Name: inputExtent  
Class: CIVectorMBS (CIVector)  
DisplayName English: Extent  
DisplayName German: Betrag  
DisplayName French: tendue  
DisplayName Italian: Ampiezza  
DisplayName Spanish: Amplitud  
Type: CIAttributeTypeRectangle

See AttributeinputExtent for more details.  
(Read and Write property)

52.40.8 **inputImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image  
**Notes:**

See AttributeinputImage for more details.  
(Read and Write property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type</td>
<td>CIAtributeTypeImage</td>
</tr>
</tbody>
</table>
52.41 class CIFilterCMYKHalftoneMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage CMYK Halftone filter.

**Notes:**
Details for this filter:

- **FilterName:** CICMYKHalftone
- **DisplayName English:** CMYK Halftone
- **DisplayName German:** CMYK-Halbton
- **DisplayName French:** Demi-teinte CMJN
- **DisplayName Italian:** Mezzitoni CMYK
- **DisplayName Spanish:** Semitono CMYK

**Categories:**

- **CICategoryHalftoneEffect:** Halftone Effect
- **CICategoryVideo:** Video
- **CICategoryStillImage:** Still Image
- **CICategoryBuiltIn:** Built-In

**Input:**

- **inputImage:** Image
- **inputCenter:** Center
- **inputWidth:** Width
- **inputAngle:** Angle
- **inputSharpness:** Sharpness
- **inputGCR:** Gray Component Replacement
- **inputUCR:** Under Color Replacement

**Output:**
• outputImage

Subclass of the CIFilterMBS class.

52.41.2 Methods

52.41.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

**Notes:** On success the handle property is not zero and the filter has the default values set.

52.41.4 Properties

52.41.5 Attribute inputAngle as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the CMYK Halftone attribute.

**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputAngle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeAngle</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Angle</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Winkel</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Angle</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Angolo</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Angulo</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
<tr>
<td>SliderMaxNumber</td>
<td>3.141593</td>
</tr>
<tr>
<td>SliderMinNumber</td>
<td>-3.141593</td>
</tr>
</tbody>
</table>

(Read only property)
52.41.6 Attribute inputCenter as CIAtributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the CMYK Halftone attribute.

**Notes:**
This attribute should have this content:

Name: inputCenter  
Class: CIVectorMBS  
Type: CIAtributeTypePosition  
DisplayName English: Center  
DisplayName German: Mitte  
DisplayName French: Centre  
DisplayName Italian: Centro  
DisplayName Spanish: Centro  
DefaultVector: [150 150]  
IdentityVector: n/a

(Read only property)

52.41.7 Attribute inputGCR as CIAtributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the CMYK Halftone attribute.

**Notes:**
This attribute should have this content:

Name: inputGCR  
Class: double  
Type: CIAtributeTypeScalar  
DisplayName English: Gray Component Replacement  
DisplayName German: Graukomponente ersetzen  
DisplayName French: Remplacement de la composante grise  
DisplayName Italian: Sostituzione componente grigio  
DisplayName Spanish: Sustitución de componente gris  
DefaultNumber: 1  
IdentityNumber: 1  
SliderMaxNumber: 1  
SliderMinNumber: 0

(Read only property)
52.41.8 AttributeinputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the CMYK Halftone attribute.  
**Notes:**
This attribute should have this content:

- Name: inputImage
- Class: CIImageMBS
- Type: CIAttributeTypeImage
- DisplayName English: Image
- DisplayName German: Bild
- DisplayName French: Image
- DisplayName Italian: Immagine
- DisplayName Spanish: Imagen
- DefaultNumber: 0
- IdentityNumber: 0

(Read only property)

52.41.9 AttributeinputSharpness as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the CMYK Halftone attribute.  
**Notes:**
This attribute should have this content:

(Read only property)

52.41.10 AttributeinputUCR as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the CMYK Halftone attribute.  
**Notes:**
This attribute should have this content:
52.41. CLASS CIFILTERCMYKHALFTONEMBS

Name: inputSharpness
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Sharpness
DisplayName German: Schärfe
DisplayName French: Nettet
DisplayName Italian: Nitidezza
DisplayName Spanish: Nitidez
DefaultNumber: 0.7
IdentityNumber: 0
SliderMaxNumber: 1
SliderMinNumber: 0

Name: inputUCR
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Under Color Removal
DisplayName German: Unterfarben-Korrektur
DisplayName French: Elimination des sous-couleurs
DisplayName Italian: Rimozione colore inferiore
DisplayName Spanish: Bajo supresión de color
DefaultNumber: 0.5
IdentityNumber: 0.5
SliderMaxNumber: 1
SliderMinNumber: 0

(Read only property)

52.41.11 Attribute inputWidth as CIAttributeMBS


Notes:
This attribute should have this content:

(Read only property)
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Name: inputWidth
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Anchura
DefaultNumber: 6
IdentityNumber: 6
MaxNumber: 0
MinNumber: -2
SliderMaxNumber: 100
SliderMinNumber: 2

52.41.12 inputAngle as double

Notes:

Name: inputAngle
Class: double (NSNumber)
DisplayName English: Angle
DisplayName German: Winkel
DisplayName French: Angle
DisplayName Italian: Angolo
DisplayName Spanish: punto
Type: CIAttributeTypeAngle

See Attribute inputAngle for more details.
(Read and Write property)

52.41.13 inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The attribute Center
Notes:

See Attribute inputCenter for more details.
(Read and Write property)
52.41. **CLASS CIFILTERCMYKHALFTONEMBS**

Name: inputCenter
Class: CIVectorMBS (CIVector)
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
Type: CIAttributeTypePosition

52.41.14 **inputGCR as double**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Gray Component Replacement

**Notes:**
Name: inputGCR
Class: double (NSNumber)
DisplayName English: Gray Component Replacement
DisplayName German: Graukomponente ersetzen
DisplayName French: Remplacement de la composante grise
DisplayName Italian: Sostituzione componente grigio
DisplayName Spanish: Sustitución de componente gris
Type: CIAttributeTypeScalar

See Attribute inputGCR for more details.
(Read and Write property)

52.41.15 **inputImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
### 52.41.16 inputSharpness as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Sharpness

**Notes:**
- Name: inputSharpness
- Class: double (NSNumber)
- DisplayName English: Sharpness
- DisplayName German: Schärfe
- DisplayName French: Nettet
- DisplayName Italian: Nitidezza
- DisplayName Spanish: Nitidez
- Type: CIAttributeTypeDistance

See AttributeinputSharpness for more details.
(Read and Write property)

### 52.41.17 inputUCR as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Under Color Removal

**Notes:**
- Name: inputUCR
- Class: double (NSNumber)
- DisplayName English: Under Color Removal
- DisplayName German: Unterfarben-Korrektur
- DisplayName French: limination des sous-couleurs
- DisplayName Italian: Rimozione colore inferiore
- DisplayName Spanish: Bajo supresin de color
- Type: CIAttributeTypeScalar

See AttributeinputUCR for more details.
(Read and Write property)
52.41.18  inputWidth as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Width

**Notes:**

Name: inputWidth
Class: double (NSNumber)
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Anchura
Type: CIAttributeTypeDistance

See Attribute inputWidth for more details.
(Read and Write property)
52.42 class CIFilterCode128BarcodeGeneratorMBS

52.42.1 class CIFilterCode128BarcodeGeneratorMBS


**Notes:**
Details for this filter:

- **FilterName:** CICode128BarcodeGenerator
- **DisplayName English:** Code128 Barcode Generator
- **DisplayName German:** Code128 Barcode-Generator
- **DisplayName French:** Génrateur de code-barres Code128
- **DisplayName Italian:** Generatore codice a barre Code128
- **DisplayName Spanish:** Generador de códigos de barras Code128

**Categories:**

- CICategoryGenerator: Generator
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputMessage: Message
- inputQuietSpace: QuietSpace
- inputBarcodeHeight: BarcodeHeight

**Output:**

- outputImage
- outputCGImage

Subclass of the CIFilterMBS class.
52.42. Methods

52.42.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

**Notes:** On success the handle property is not zero and the filter has the default values set.

52.42.4 Properties

52.42.5 Attribute inputBarcodeHeight as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Code128 Barcode Generator attribute.

**Notes:**

This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputBarcodeHeight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeScalar</td>
</tr>
<tr>
<td>DisplayName</td>
<td>BarcodeHeight</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>32</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
<tr>
<td>MaxNumber</td>
<td>500</td>
</tr>
<tr>
<td>MinNumber</td>
<td>1</td>
</tr>
<tr>
<td>SliderMaxNumber</td>
<td>50</td>
</tr>
<tr>
<td>SliderMinNumber</td>
<td>1</td>
</tr>
</tbody>
</table>

(Read only property)

52.42.6 Attribute inputMessage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Code128 Barcode Generator attribute.

**Notes:**

This attribute should have this content:
52.42.7 Attribute inputQuietSpace as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Code128 Barcode Generator attribute.
**Notes:**
This attribute should have this content:

Name: inputQuietSpace
Class: double
Type: CIAttributeTypeScalar
DisplayName: QuietSpace
DefaultNumber: 7
IdentityNumber: 0
MaxNumber: 100
MinNumber: 0
SliderMaxNumber: 20
SliderMinNumber: 0

(Read only property)

52.42.8 inputBarcodeHeight as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute BarcodeHeight
**Notes:**
See Attribute inputBarcodeHeight for more details.
(Read and Write property)

52.42.9 inputMessage as Memoryblock

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Message
52.42. CLASS CIFILTERCODE128BARCODEGENERATORMBS

Name: inputBarcodeHeight
Class: double (NSNumber)
DisplayName English: BarcodeHeight
DisplayName German: BarcodeHeight
DisplayName French: BarcodeHeight
DisplayName Italian: BarcodeHeight
DisplayName Spanish: BarcodeHeight
Type: CIAttributeTypeScalar

Notes:

Name: inputMessage
Class: Memoryblock (NSData)
DisplayName English: Message
DisplayName German: Message
DisplayName French: Message
DisplayName Italian: Message
DisplayName Spanish: Message
Type:
See AttributeinputMessage for more details.
(Read and Write property)

52.42.10 inputQuietSpace as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute QuietSpace
Notes:

Name: inputQuietSpace
Class: double (NSNumber)
DisplayName English: QuietSpace
DisplayName German: QuietSpace
DisplayName French: QuietSpace
DisplayName Italian: QuietSpace
DisplayName Spanish: QuietSpace
Type: CIAttributeTypeScalar

See AttributeinputQuietSpace for more details.
(Read and Write property)
CHAPTER 52. COREIMAGE

52.43  class CIFilterColorBlendModeMBS

52.43.1  class CIFilterColorBlendModeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Color Blend Mode filter.

**Notes:**
Details for this filter:

- **FilterName:** CIColorBlendMode
- **DisplayName English:** Color Blend Mode
- **DisplayName German:** Mischmethode Farbe
- **DisplayName French:** Mode de fusion des couleurs
- **DisplayName Italian:** Modalit sfumatura colore
- **DisplayName Spanish:** Modo de mezcla de color

**Categories:**

- CICategoryCompositeOperation: Composite Operation
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputBackgroundImage: Background Image

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.43. CLASS CIFILTERCOLORBLENDMODEMBS

52.43.2 Methods

52.43.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.43.4 Properties

52.43.5 Attribute inputBackgroundImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Color Blend Mode attribute.
**Notes:**
This attribute should have this content:

- **Name:** inputBackgroundImage
- **Class:** CIImageMBS
- **Type:** CIAttributeTypeImage
- **DisplayName English:** Background Image
- **DisplayName German:** Hintergrundbild
- **DisplayName French:** Image darrriere-plan
- **DisplayName Italian:** Immagine di sfondo
- **DisplayName Spanish:** Imagen de fondo
- **DefaultNumber:** 0
- **IdentityNumber:** 0

*(Read only property)*

52.43.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Color Blend Mode attribute.
**Notes:**
This attribute should have this content:

*(Read only property)*
52.43.7 inputBackgroundImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Background Image

**Notes:**

See Attribute inputBackgroundImage for more details.
(Read and Write property)

52.43.8 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

See Attribute inputImage for more details.
(Read and Write property)
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage
CHAPTER 52. COREIMAGE

52.44 class CIFilterColorBurnBlendModeMBS

52.44.1 class CIFilterColorBurnBlendModeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Color Burn Blend Mode filter. **Notes:** Details for this filter:

FilterName: CIColorBurnBlendMode
DisplayName English: Color Burn Blend Mode
DisplayName German: Mischmethode Farbig nachbelichten
DisplayName French: Mode de fusion Densit couleur
DisplayName Italian: Modalit sfumatura colore bruciato
DisplayName Spanish: Modo de mezcla por sobreexposicion de color

Categories:

- CICategoryCompositeOperation: Composite Operation
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryBuiltIn: Built-In

Input:

- inputImage: Image
- inputBackgroundImage: Background Image

Output:

- outputImage

Subclass of the CIFilterMBS class.
52.44.2 Methods

52.44.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor. **Notes:** On success the handle property is not zero and the filter has the default values set.

52.44.4 Properties

52.44.5 Attribute `inputBackgroundImage` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Color Burn Blend Mode attribute. **Notes:** This attribute should have this content:

- **Name:** `inputBackgroundImage`
- **Class:** CIImageMBS
- **Type:** CIAttributeTypeImage
- **(DisplayName English):** Background Image
- **(DisplayName German):** Hintergrundbild
- **(DisplayName French):** Image darrriere-plan
- **(DisplayName Italian):** Immagine di sfondo
- **(DisplayName Spanish):** Imagen de fondo
- **DefaultNumber:** 0
- **IdentityNumber:** 0

(Read only property)

52.44.6 Attribute `inputImage` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Color Burn Blend Mode attribute. **Notes:** This attribute should have this content:

(Read only property)
Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

52.44.7 inputBackgroundImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Background Image
**Notes:**
Name: inputBackgroundImage
Class: CIImageMBS (CIImage)
DisplayName English: Background Image
DisplayName German: Hintergrundbild
DisplayName French: Image derrière-plan
DisplayName Italian: Immagine di sfondo
DisplayName Spanish: Imagen de fondo
Type: CIAttributeTypeImage

See AttributeinputBackgroundImage for more details.
(Read and Write property)

52.44.8 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image
**Notes:**
See AttributeinputImage for more details.
(Read and Write property)
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage
52.45  class CIColorClampMBS

52.45.1  class CIColorClampMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Color Clamp filter.
**Notes:**
Details for this filter:

FilterName:  CIColorClamp
DisplayName English:  Color Clamp
DisplayName German:  Color Clamp
DisplayName French:  Limitation de la couleur
DisplayName Italian:  Fissaggio colore
DisplayName Spanish:  Fijacin del color

Categories:

- CICategoryColorAdjustment:  Color Adjustment
- CICategoryVideo:  Video
- CICategoryInterlaced:  Interlaced
- CICategoryNonSquarePixels:  Non-Square Pixels
- CICategoryStillImage:  Still Image
- CICategoryBuiltIn:  Built-In

**Input:**

- inputImage:  Image
- inputMinComponents:  MinComponents
- inputMaxComponents:  MaxComponents

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.45.2 Methods

52.45.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

**Notes:** On success the handle property is not zero and the filter has the default values set.

52.45.4 Properties

52.45.5 Attribute `inputImage` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Color Clamp attribute.

**Notes:**

This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.45.6 Attribute `inputMaxComponents` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Color Clamp attribute.

**Notes:**

This attribute should have this content:

(Read only property)
Name: inputMaxComponents
Class: CIVectorMBS
DisplayName: MaxComponents
DefaultVector: [1 1 1 1]
IdentityVector: n/a

52.45.7 Attribute inputMinComponents as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Details about the Color Clamp attribute.
Notes:
This attribute should have this content:

Name: inputMinComponents
Class: CIVectorMBS
DisplayName: MinComponents
DefaultVector: [0 0 0 0]
IdentityVector: n/a

(Read only property)

52.45.8 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Image
Notes:

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)
52.45.9 inputMaxComponents as CIVectorMBS


Notes:

Name: inputMaxComponents
Class: CIVectorMBS (CIVector)
DisplayName English: MaxComponents
DisplayName German: MaxComponents
DisplayName French: MaxComponents
DisplayName Italian: MaxComponents
DisplayName Spanish: MaxComponents
Type:

See Attribute inputMaxComponents for more details.
(Read and Write property)

52.45.10 inputMinComponents as CIVectorMBS


Notes:

Name: inputMinComponents
Class: CIVectorMBS (CIVector)
DisplayName English: MinComponents
DisplayName German: MinComponents
DisplayName French: MinComponents
DisplayName Italian: MinComponents
DisplayName Spanish: MinComponents
Type:

See Attribute inputMinComponents for more details.
(Read and Write property)
52.46 class CIFilterColorControlsMBS

52.46.1 class CIFilterColorControlsMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Color Controls filter.
**Notes:**
Details for this filter:

<table>
<thead>
<tr>
<th>FilterName:</th>
<th>CIColorControls</th>
</tr>
</thead>
<tbody>
<tr>
<td>DisplayName English:</td>
<td>Color Controls</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Farbsteuerung</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Contrle des couleurs</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Controlli colore</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Controles de color</td>
</tr>
</tbody>
</table>

Categories:

- CICategoryColorAdjustment: Color Adjustment
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputSaturation: Saturation
- inputBrightness: Brightness
- inputContrast: Contrast

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.46.2 Methods

52.46.3 Constructor

Notes: On success the handle property is not zero and the filter has the default values set.

52.46.4 Properties

52.46.5 Attribute inputBrightness as CIAttributeMBS

Notes: This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputBrightness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeScalar</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Brightness</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Helligkeit</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Luminosit</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Luminosit</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Brillo</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
<tr>
<td>MaxNumber</td>
<td>0</td>
</tr>
<tr>
<td>MinNumber</td>
<td>-1</td>
</tr>
<tr>
<td>SliderMaxNumber</td>
<td>1</td>
</tr>
<tr>
<td>SliderMinNumber</td>
<td>-1</td>
</tr>
</tbody>
</table>

(Read only property)

52.46.6 Attribute inputContrast as CIAttributeMBS

Notes:
This attribute should have this content:

Name: inputContrast
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Contrast
DisplayName German: Kontrast
DisplayName French: Contraste
DisplayName Italian: Contrasto
DisplayName Spanish: Contraste
DefaultNumber: 1
IdentityNumber: 1
SliderMaxNumber: 4
SliderMinNumber: 0.25

(Read only property)

52.46.7 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Color Controls attribute.
**Notes:**
This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)
52.46.8 Attribute inputSaturation as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Color Controls attribute.

**Notes:**

This attribute should have this content:

- **Name:** inputSaturation
- **Class:** double
- **Type:** CIAttributeTypeScalar
- **DisplayName English:** Saturation
- **DisplayName German:** Sttigung
- **DisplayName French:** Saturation
- **DisplayName Italian:** Saturazione
- **DisplayName Spanish:** Saturacin
- **DefaultNumber:** 1
- **IdentityNumber:** 1
- **SliderMaxNumber:** 2
- **SliderMinNumber:** 0

(Read only property)

52.46.9 inputBrightness as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Brightness

**Notes:**

- **Name:** inputBrightness
- **Class:** double (NSNumber)
- **DisplayName English:** Brightness
- **DisplayName German:** Helligkeit
- **DisplayName French:** Luminosit
- **DisplayName Italian:** Luminosit
- **DisplayName Spanish:** Brillo
- **Type:** CIAttributeTypeScalar

See Attribute inputBrightness for more details.

(Read and Write property)
52.46.10  inputContrast as double


Notes:

Name: inputContrast
Class: double (NSNumber)
DisplayName English: Contrast
DisplayName German: Kontrast
DisplayName French: Contraste
DisplayName Italian: Contrasto
DisplayName Spanish: Contraste
Type: CIAttributeTypeScalar

See Attribute inputContrast for more details.
(Read and Write property)

52.46.11  inputImage as CIImageMBS


Notes:

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)

52.46.12  inputSaturation as double


Notes:
Name: inputSaturation
Class: double (NSNumber)
DisplayName English: Saturation
DisplayName German: Sttigung
DisplayName French: Saturation
DisplayName Italian: Saturazione
DisplayName Spanish: Saturacin
Type: CIAttributeTypeScalar

See AttributeinputSaturation for more details.
(Read and Write property)
52.47 class CIFilterColorCrossPolynomialMBS

52.47.1 class CIFilterColorCrossPolynomialMBS


Details for this filter:

- FilterName: CIColorCrossPolynomial
- DisplayName English: Color Cross Polynomial
- DisplayName German: Farbberblend-Polynom
- DisplayName French: Fonction polynomiale croise de couleur
- DisplayName Italian: Polinomio cromatico incrociato
- DisplayName Spanish: Polinomio cruzado cromtico

Categories:

- CICategoryColorEffect: Color Effect
- CICategoryVideo: Video
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

Input:

- inputImage: Image
- inputRedCoefficients: RedCoefficients
- inputGreenCoefficients: GreenCoefficients
- inputBlueCoefficients: BlueCoefficients

Output:

- outputImage

Subclass of the CIFilterMBS class.
52.47.2 Methods

52.47.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.47.4 Properties

52.47.5 Attribute inputBlueCoefficients as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Color Cross Polynomial attribute.
**Notes:**
This attribute should have this content:

Name: inputBlueCoefficients  
Class: CIVectorMBS  
DisplayName: BlueCoefficients  
DefaultVector: [ 0 0 1 0 0 0 0 0 0 0 ]  
IdentityVector: [ 0 0 1 0 0 0 0 0 0 0 ]

(Read only property)

52.47.6 Attribute inputGreenCoefficients as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Color Cross Polynomial attribute.
**Notes:**
This attribute should have this content:

Name: inputGreenCoefficients  
Class: CIVectorMBS  
DisplayName: GreenCoefficients  
DefaultVector: [ 0 1 0 0 0 0 0 0 0 0 ]  
IdentityVector: [ 0 1 0 0 0 0 0 0 0 0 ]
52.47.7 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Color Cross Polynomial attribute.

**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.47.8 Attribute inputRedCoefficients as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Color Cross Polynomial attribute.

**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputRedCoefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIVectorMBS</td>
</tr>
<tr>
<td>DisplayName</td>
<td>RedCoefficients</td>
</tr>
<tr>
<td>DefaultVector</td>
<td>[ 1 0 0 0 0 0 0 0 0 ]</td>
</tr>
<tr>
<td>IdentityVector</td>
<td>[ 1 0 0 0 0 0 0 0 0 ]</td>
</tr>
</tbody>
</table>

(Read only property)
52.47.9  inputBlueCoefficients as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
The attribute BlueCoefficients

**Notes:**

- **Name:** inputBlueCoefficients
- **Class:** CIVectorMBS (CIVector)
- **DisplayName English:** BlueCoefficients
- **DisplayName German:** BlueCoefficients
- **DisplayName French:** BlueCoefficients
- **DisplayName Italian:** BlueCoefficients
- **DisplayName Spanish:** BlueCoefficients

(Read and Write property)

---

52.47.10  inputGreenCoefficients as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
The attribute GreenCoefficients

**Notes:**

- **Name:** inputGreenCoefficients
- **Class:** CIVectorMBS (CIVector)
- **DisplayName English:** GreenCoefficients
- **DisplayName German:** GreenCoefficients
- **DisplayName French:** GreenCoefficients
- **DisplayName Italian:** GreenCoefficients
- **DisplayName Spanish:** GreenCoefficients

(Read and Write property)

---

52.47.11  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
The attribute Image

**Notes:**
CHAPTER 52. COREIMAGE

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)

52.47.12 inputRedCoefficients as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute RedCoefficients
Notes:

Name: inputRedCoefficients
Class: CIVectorMBS (CIVector)
DisplayName English: RedCoefficients
DisplayName German: RedCoefficients
DisplayName French: RedCoefficients
DisplayName Italian: RedCoefficients
DisplayName Spanish: RedCoefficients
Type:

See Attribute inputRedCoefficients for more details.
(Read and Write property)
52.48. **CLASS CIFILTERCOLORCUBEMBS**

52.48 **class CIFilterColorCubeMBS**

52.48.1 **class CIFilterColorCubeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Color Cube filter.

**Notes:**

Details for this filter:

- **FilterName:** CIColorCube
- **DisplayName English:** Color Cube
- **DisplayName German:** Farbwürfel
- **DisplayName French:** Cube de couleur
- **DisplayName Italian:** Cubo colore
- **DisplayName Spanish:** Cubo de color

**Categories:**

- CICategoryColorEffect: Color Effect
- CICategoryVideo: Video
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- **inputImage:** Image
- **inputCubeDimension:** Cube Dimension
- **inputCubeData:** Cube Data

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
52.48.2 Methods

52.48.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.48.4 Properties

52.48.5 Attribute inputCubeData as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Color Cube attribute.
**Notes:** This attribute should have this content:

- **Name:** inputCubeData
- **Class:** Memoryblock
- **DisplayName English:** Cube Data
- **DisplayName German:** Wrfeldaten
- **DisplayName French:** Donnes du cube
- **DisplayName Italian:** Dati cubo
- **DisplayName Spanish:** Datos del cubo
- **DefaultNumber:** 0
- **IdentityNumber:** 0

(Read only property)

52.48.6 Attribute inputCubeDimension as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Color Cube attribute.
**Notes:** This attribute should have this content:

(Read only property)
52.48. CLASS CIFILTERCOLORCUBEMBS

Name: inputCubeDimension
Class: double
Type: CIAttributeTypeCount
DisplayName English: Cube Dimension
DisplayName German: Würfelmaß
DisplayName French: Dimension du cube
DisplayName Italian: Dimensione cubo
DisplayName Spanish: Dimensión del cubo
DefaultNumber: 2
IdentityNumber: 2
MaxNumber: 128
MinNumber: 2

52.48.7 Attribute inputImage as CIAttributeMBS

Notes:
This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.48.8 inputCubeData as Memoryblock

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The attribute Cube Data
Notes:
See Attribute inputCubeData for more details.
(Read and Write property)
52.48.9 inputCubeDimension as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Cube Dimension

**Notes:**

Name: inputCubeDimension
Class: double (NSNumber)
DisplayName English: Cube Dimension
DisplayName German: Würfelmäe
DisplayName French: Dimension du cube
DisplayName Italian: Dimensione cubo
DisplayName Spanish: Dimensión del cubo
Type: CIAttributeTypeCount

See Attribute inputCubeDimension for more details.
(Read and Write property)

52.48.10 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
52.48. CLASS CIFILTERCOLORCUBEMBS 8643

(Read and Write property)
52.49.1 class CIFilterColorCubesMixedWithMaskMBS


**Function:**
The Realbasic class for the CoreImage Color Cubes Mixed With Mask filter.

**Notes:**
Details for this filter:

- **FilterName:** CIColorCubesMixedWithMask
- **DisplayName English:** Color Cubes Mixed With Mask
- **DisplayName German:** Mit Maske gemischte Farbwürfel
- **DisplayName French:** Cubes de couleur mélangés avec masque
- **DisplayName Italian:** Cubi di colori misti con maschera
- **DisplayName Spanish:** Cubos de color mezclados con la mascara

**Categories:**

- CICategoryColorEffect: Color Effect
- CICategoryVideo: Video
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputMaskImage: Mask Image
- inputCubeDimension: Cube Dimension
- inputCube0Data: Cube 0 Data
- inputCube1Data: Cube 1 Data
- inputColorSpace: ColorSpace

**Output:**
52.49. CLASS CIFILTERCOLORCUBESMIXEDWITHMASKMBS

- outputImage

Subclass of the CIFilterMBS class.

52.49.2 Methods

52.49.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.49.4 Properties

52.49.5 Attribute inputColorSpace as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Color Cubes Mixed With Mask attribute.
**Notes:**
This attribute should have this content:

- Name: inputColorSpace
- Class: CGColorSpaceMBS
- DisplayName: ColorSpace
- DefaultNumber: 0
- IdentityNumber: 0

(Read only property)

52.49.6 Attribute inputCube0Data as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Color Cubes Mixed With Mask attribute.
**Notes:**
This attribute should have this content:
CHAPTER 52. COREIMAGE

Name: inputCube0Data
Class: Memoryblock
DisplayName English: Cube 0 Data
DisplayName German: Daten Würfel 0
DisplayName French: Donnes du cube 0
DisplayName Italian: Dati 0 cubo
DisplayName Spanish: Datos del cubo 0
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.49.7 Attribute inputCube1Data as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Color Cubes Mixed With Mask attribute.
**Notes:**

This attribute should have this content:

Name: inputCube1Data
Class: Memoryblock
DisplayName English: Cube 1 Data
DisplayName German: Daten Würfel 1
DisplayName French: Donnes du cube 1
DisplayName Italian: Dati 1 cubo
DisplayName Spanish: Datos del cubo 1
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.49.8 Attribute inputCubeDimension as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Color Cubes Mixed With Mask attribute.
**Notes:**

This attribute should have this content:
52.49. **CLASS CIFILTERCOLORCUBESMIXEDWITHMASKMBS**

Name: inputCubeDimension  
Class: double  
Type: CIAttributeTypeCount  
DisplayName English: Cube Dimension  
DisplayName German: Würfelmaße  
DisplayName French: Dimension du cube  
DisplayName Italian: Dimensione cubo  
DisplayName Spanish: Dimensión del cubo  
DefaultNumber: 2  
IdentityNumber: 2  
MaxNumber: 128  
MinNumber: 2

(Read only property)

52.49.9 **Attribute inputImage as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Color Cubes Mixed With Mask attribute.  
**Notes:**

This attribute should have this content:

Name: inputImage  
Class: CIImageMBS  
Type: CIAttributeTypeImage  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
DefaultNumber: 0  
IdentityNumber: 0

(Read only property)

52.49.10 **Attribute inputMaskImage as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Color Cubes Mixed With Mask attribute.  
**Notes:**
This attribute should have this content:

Name: inputMaskImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Mask Image
DisplayName German: Maske
DisplayName French: Image du masque
DisplayName Italian: Immagine maschera
DisplayName Spanish: Imagen de mascara
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.49.11 inputColorSpace as CGColorSpaceMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute ColorSpace

**Notes:**

Name: inputColorSpace
Class: CGColorSpaceMBS (NSObject)
DisplayName English: ColorSpace
DisplayName German: ColorSpace
DisplayName French: ColorSpace
DisplayName Italian: ColorSpace
DisplayName Spanish: ColorSpace
Type:

See Attribute inputColorSpace for more details.
(Read and Write property)

52.49.12 inputCube0Data as Memoryblock

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Cube 0 Data

**Notes:**

See Attribute inputCube0Data for more details.
(Read and Write property)
52.49. CLASS CIFILTERCOLORCUBESMIXEDWITHMASKMBS

<table>
<thead>
<tr>
<th>Name</th>
<th>inputCube0Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>Memoryblock (NSData)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Cube 0 Data</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Daten Wrfel 0</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Donnes du cube0</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Dati 0 cubo</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Datos del cubo 0</td>
</tr>
<tr>
<td>Type</td>
<td></td>
</tr>
</tbody>
</table>

52.49.13 inputCube1Data as Memoryblock

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Cube 1 Data

**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputCube1Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>Memoryblock (NSData)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Cube 1 Data</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Daten Wrfel 1</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Donnes du cube1</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Dati 1 cubo</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Datos del cubo 1</td>
</tr>
<tr>
<td>Type</td>
<td></td>
</tr>
</tbody>
</table>

See Attribute inputCube1Data for more details.
(Read and Write property)

52.49.14 inputCubeDimension as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Cube Dimension

**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputCubeDimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Cube Dimension</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Wrfelmae</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Dimension du cube</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Dimensione cubo</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Dimensin del cubo</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeCount</td>
</tr>
</tbody>
</table>

See Attribute inputCubeDimension for more details.
52.49.15 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

Name: inputImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
Type: CIAttributeTypeImage

See AttributeinputImage for more details.  
(Read and Write property)

52.49.16 inputMaskImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Mask Image

**Notes:**

Name: inputMaskImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Mask Image  
DisplayName German: Maske  
DisplayName French: Image du masque  
DisplayName Italian: Immagine maschera  
DisplayName Spanish: Imagen de mascara  
Type: CIAttributeTypeImage

See AttributeinputMaskImage for more details.  
(Read and Write property)
52.50. class CIFilterColorCubeWithColorSpaceMBS

52.50.1 class CIFilterColorCubeWithColorSpaceMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Color Cube with ColorSpace filter.

**Notes:**
Details for this filter:

- **FilterName:** CIColorCubeWithColorSpace
- **DisplayName English:** Color Cube with ColorSpace
- **DisplayName German:** Farbwürfel mit ColorSpace
- **DisplayName French:** Cube de couleur avec ColorSpace
- **DisplayName Italian:** Cubo colore con spazio colore
- **DisplayName Spanish:** Cubo de color con espacio de color

**Categories:**

- CICategoryColorEffect: Color Effect
- CICategoryVideo: Video
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputCubeDimension: Cube Dimension
- inputCubeData: Cube Data
- inputColorSpace: ColorSpace

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
### 52.50.2 Methods

#### 52.50.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

### 52.50.4 Properties

#### 52.50.5 Attribute `inputColorSpace` as `CIAttributeMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Color Cube with ColorSpace attribute.
**Notes:**
This attribute should have this content:

Name: `inputColorSpace`
Class: `CGColorSpaceMBS`
DisplayName: `ColorSpace`
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

#### 52.50.6 Attribute `inputCubeData` as `CIAttributeMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Color Cube with ColorSpace attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.50. **CLASS CIFILTERCOLORCUBEWITHCOLORSPACEMBS**

Name: inputCubeData  
Class: Memoryblock  
DisplayName English: Cube Data  
DisplayName German: Wrfeldaten  
DisplayName French: Donnes du cube  
DisplayName Italian: Dati cubo  
DisplayName Spanish: Datos del cubo  
DefaultNumber: 0  
IdentityNumber: 0

52.50.7 **Attribute inputCubeDimension as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**  
Details about the Color Cube with ColorSpace attribute.  
**Notes:**  
This attribute should have this content:

Name: inputCubeDimension  
Class: double  
Type: CIAttributeTypeCount  
DisplayName English: Cube Dimension  
DisplayName German: Wrfelmae  
DisplayName French: Dimension du cube  
DisplayName Italian: Dimensione cubo  
DisplayName Spanish: Dimensin del cubo  
DefaultNumber: 2  
IdentityNumber: 2  
MaxNumber: 128  
MinNumber: 2

(Read only property)

52.50.8 **Attribute inputImage as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**  
Details about the Color Cube with ColorSpace attribute.  
**Notes:**  
This attribute should have this content:

(Read only property)
52.50.9  inputColorSpace as CGColorSpaceMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute ColorSpace

**Notes:**

See AttributeinputColorSpace for more details.
(Read and Write property)

52.50.10  inputCubeData as Memoryblock

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Cube Data

**Notes:**

See AttributeinputCubeData for more details.
(Read and Write property)
52.50. **CLASS CIFILTERCOLORCUBEWITHCOLORSPACEMBS**

Name: inputCubeData  
Class: Memoryblock (NSData)  
DisplayName English: Cube Data  
DisplayName German: Wrfeldaten  
DisplayName French: Donnes du cube  
DisplayName Italian: Dati cubo  
DisplayName Spanish: Datos del cubo  
Type:  

---

### 52.50.11 inputCubeDimension as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**  
The attribute Cube Dimension  
**Notes:**  
Name: inputCubeDimension  
Class: double (NSNumber)  
DisplayName English: Cube Dimension  
DisplayName German: Wrfelmae  
DisplayName French: Dimension du cube  
DisplayName Italian: Dimensione cubo  
DisplayName Spanish: Dimension del cubo  
Type: CIAttributeTypeCount  

See Attribute inputCubeDimension for more details.  
(Read and Write property)

---

### 52.50.12 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**  
The attribute Image  
**Notes:**  
Name: inputImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
Type: CIAttributeTypeImage  

See Attribute inputImage for more details.
(Read and Write property)
52.51. CLASS CIFILTERCOLORCURVESMBS

52.51 class CIFilterColorCurvesMBS

52.51.1 class CIFilterColorCurvesMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Color Curves filter. **Notes:**

Details for this filter:

<table>
<thead>
<tr>
<th>FilterName</th>
<th>DisplayName English</th>
<th>DisplayName German</th>
<th>DisplayName French</th>
<th>DisplayName Italian</th>
<th>DisplayName Spanish</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIColorCurves</td>
<td>Color Curves</td>
<td>Farbkurven</td>
<td>Courbes de couleur</td>
<td>Curve colore</td>
<td>Curvas de colores</td>
</tr>
</tbody>
</table>

Categories:

- CICategoryColorEffect: Color Effect
- CICategoryVideo: Video
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

Input:

- inputImage: Image
- inputCurvesData: CurvesData
- inputCurvesDomain: Curves Domain
- inputColorSpace: ColorSpace

Output:

- outputImage

Subclass of the CIFilterMBS class.
52.51.2 Methods

52.51.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

**Notes:** On success the handle property is not zero and the filter has the default values set.

52.51.4 Properties

52.51.5 Attribute inputColorSpace as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Color Curves attribute.

**Notes:**

This attribute should have this content:

```
Name:           inputColorSpace
Class:          CGColorSpaceMBS
DisplayName:    ColorSpace
DefaultNumber:  0
IdentityNumber: 0
```

(Read only property)

52.51.6 Attribute inputCurvesData as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Color Curves attribute.

**Notes:**

This attribute should have this content:

```
Name:           inputCurvesData
Class:          Memoryblock
DisplayName:    CurvesData
DefaultNumber:  0
IdentityNumber: 0
```
52.51. Attribute inputCurvesDomain as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Color Curves attribute.

**Notes:**
This attribute should have this content:

```
Name:               inputCurvesDomain
Class:              CIVectorMBS
DisplayName English: Curves Domain
DisplayName German:  Kurven-Domain
DisplayName French:  Domaine des courbes
DisplayName Italian:  Dominio curve
DisplayName Spanish:  Dominio de curvas
DefaultVector:      [ 0 1 ]
IdentityVector:     n/a
```

(Read only property)

52.51.8 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Color Curves attribute.

**Notes:**
This attribute should have this content:

```
Name:               inputImage
Class:              CIImageMBS
Type:               CIAttributeTypeImage
DisplayName English: Image
DisplayName German:  Bild
DisplayName French:  Image
DisplayName Italian:  Immagine
DisplayName Spanish:  Imagen
DefaultNumber:      0
IdentityNumber:     0
```
52.51.9  inputColorSpace as CGColorSpaceMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute ColorSpace

**Notes:**
Name: inputColorSpace
Class: CGColorSpaceMBS (NSObject)
DisplayName English: ColorSpace
DisplayName German: ColorSpace
DisplayName French: ColorSpace
DisplayName Italian: ColorSpace
DisplayName Spanish: ColorSpace
Type:

See AttributeinputColorSpace for more details.
(Read and Write property)

52.51.10  inputCurvesData as Memoryblock

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute CurvesData

**Notes:**
Name: inputCurvesData
Class: Memoryblock (NSData)
DisplayName English: CurvesData
DisplayName German: CurvesData
DisplayName French: CurvesData
DisplayName Italian: CurvesData
DisplayName Spanish: CurvesData
Type:

See AttributeinputCurvesData for more details.
(Read and Write property)
52.51.11  inputCurvesDomain as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Curves Domain

**Notes:**

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputCurvesDomain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIVectorMBS (CIVector)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Curves Domain</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Kurven-Domain</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Domaine des courbes</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Dominio curve</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Dominio de curvas</td>
</tr>
<tr>
<td>Type:</td>
<td></td>
</tr>
</tbody>
</table>

See Attribute inputCurvesDomain for more details.
(Read and Write property)

52.51.12  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>

See Attribute inputImage for more details.
(Read and Write property)
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52.52 class CIFilterColorDodgeBlendModeMBS

52.52.1 class CIFilterColorDodgeBlendModeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Color Dodge Blend Mode filter.

**Notes:**

Details for this filter:

FilterName: CIColorDodgeBlendMode
DisplayName English: Color Dodge Blend Mode
DisplayName German: Mischmethode Farbig abwedeln
DisplayName French: Mode de fusion Densit couleur negative
DisplayName Italian: Modalit sfumatura colore schermato
DisplayName Spanish: Modo de mezcla por evasin de color

Categories:

- CICategoryCompositeOperation: Composite Operation
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputBackgroundImage: Background Image

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.52.2 Methods

52.52.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor. **Notes:** On success the handle property is not zero and the filter has the default values set.

52.52.4 Properties

52.52.5 Attribute inputBackgroundImage as CIAtributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Color Dodge Blend Mode attribute. **Notes:**

This attribute should have this content:

- Name: inputBackgroundImage
- Class: CIImageMBS
- Type: CIAtributeTypeImage
- DisplayName English: Background Image
- DisplayName German: Hintergrundbild
- DisplayName French: Image darrrire-plan
- DisplayName Italian: Immagine di sfondo
- DisplayName Spanish: Imagen de fondo
- DefaultNumber: 0
- IdentityNumber: 0

(Read only property)

52.52.6 Attribute inputImage as CIAtributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Color Dodge Blend Mode attribute. **Notes:**

This attribute should have this content:

(Read only property)
52.52.7  inputBackgroundImage as CII mageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Background Image  
**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputBackgroundImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CII mageMBS (CII mage)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Background Image</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Hintergrundbild</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Image de rire-plan</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Immagine di sfondo</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Imagen de fondo</td>
</tr>
<tr>
<td>Type:</td>
<td>CII ttributeTypeImage</td>
</tr>
</tbody>
</table>

See AttributeinputBackgroundImage for more details. (Read and Write property)

52.52.8  inputImage as CII mageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image  
**Notes:**

See AttributeinputImage for more details. (Read and Write property)
<table>
<thead>
<tr>
<th>Name:</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>
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52.53 class CIFilterColorInvertMBS

52.53.1 class CIFilterColorInvertMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Color Invert filter.

**Notes:**
Details for this filter:

<table>
<thead>
<tr>
<th>FilterName:</th>
<th>CIColorInvert</th>
</tr>
</thead>
<tbody>
<tr>
<td>DisplayName English:</td>
<td>Color Invert</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Farbe umkehren</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Inversion de couleur</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Inversione colore</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Inversin de color</td>
</tr>
</tbody>
</table>

**Categories:**

- CICategoryColorEffect: Color Effect
- CICategoryVideo: Video
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.53.2 Methods

52.53.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.53.4 Properties

52.53.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Color Invert attribute.
**Notes:**
This attribute should have this content:

- Name: inputImage
- Class: CIImageMBS
- Type: CIAttributeTypeImage
- DisplayName English: Image
- DisplayName German: Bild
- DisplayName French: Image
- DisplayName Italian: Immagine
- DisplayName Spanish: Imagen
- DefaultNumber: 0
- IdentityNumber: 0

(Read only property)

52.53.6 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image
**Notes:**
See Attribute inputImage for more details.
(Read and Write property)
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAtributeTypeImage
52.54. class CIFilterColorMapMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Color Map filter.

**Notes:**

Details for this filter:

- **FilterName:** CIColorMap
- **DisplayName English:** Color Map
- **DisplayName German:** Farbkarte
- **DisplayName French:** Carte de couleurs
- **DisplayName Italian:** Mappa colore
- **DisplayName Spanish:** Mapa de color

**Categories:**

- CICategoryColorEffect: Color Effect
- CICategoryVideo: Video
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputGradientImage: Gradient Image

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.54.2 Methods

52.54.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.54.4 Properties

52.54.5 Attribute inputGradientImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Color Map attribute.
**Notes:**
This attribute should have this content:

```
Name: inputGradientImage
Class: CIImageMBS
Type: CIAttributeTypeGradient
DisplayName English: Gradient Image
DisplayName German: Bild für Verlauf
DisplayName French: Image du dgrad
DisplayName Italian: Immagine gradiente
DisplayName Spanish: Imagen degradada
DefaultNumber: 0
IdentityNumber: 0
```

(Read only property)

52.54.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Color Map attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.54. CLASS CIFILTERCOLORMAPMBS

Name: inputImage
Class: CIImageMBS
Type: CIAuto
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

52.54.7 inputGradientImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Gradient Image
Notes:
Name: inputGradientImage
Class: CIImageMBS (CIImage)
DisplayName English: Gradient Image
DisplayName German: Bild für Verlauf
DisplayName French: Image du dgrad
DisplayName Italian: Immagine gradiente
DisplayName Spanish: Imagen degradada
Type: CIAuto

See Attribute inputGradientImage for more details.
(Read and Write property)

52.54.8 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Image
Notes:
See Attribute inputImage for more details.
(Read and Write property)
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage
52.55. class CIFilterColorMatrixMBS

52.55.1 class CIFilterColorMatrixMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Color Matrix filter.

**Notes:**
Details for this filter:

<table>
<thead>
<tr>
<th>FilterName</th>
<th>CIColorMatrix</th>
</tr>
</thead>
<tbody>
<tr>
<td>DisplayName English</td>
<td>Color Matrix</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Farbmatrix</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Matrice de couleurs</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Matrice colore</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Matriz de color</td>
</tr>
</tbody>
</table>

**Categories:**

- CICategoryColorAdjustment: Color Adjustment
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputRVector: Red Vector
- inputGVector: Green Vector
- inputBVector: Blue Vector
- inputAVector: Alpha Vector
- inputBiasVector: Bias Vector

**Output:**
• outputImage

Subclass of the CIFilterMBS class.

## 52.55.2 Methods

## 52.55.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

## 52.55.4 Properties

### 52.55.5 Attribute `inputAVector` as `CIAttributeMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Color Matrix attribute.
**Notes:**
This attribute should have this content:

- **Name:** inputAVector
- **Class:** CIVectorMBS
- **DisplayName English:** Alpha Vector
- **DisplayName German:** Alpha-Vektor
- **DisplayName French:** Vecteur alpha
- **DisplayName Italian:** Vettore alfa
- **DisplayName Spanish:** Vector alfa
- **DefaultVector:** [0 0 0 1]
- **IdentityVector:** [0 0 0 1]

(Read only property)

### 52.55.6 Attribute `inputBiasVector` as `CIAttributeMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Color Matrix attribute.
**Notes:**
This attribute should have this content:

Name: inputBiasVector
Class: CIVectorMBS
DisplayName English: Bias Vector
DisplayName German: Bias-Vektor
DisplayName French: Vecteur de biais
DisplayName Italian: Vettore BIAS
DisplayName Spanish: Vector oblicuo
DefaultVector: [ 0 0 0 0 ]
IdentityVector: [ 0 0 0 0 ]

(Read only property)

52.55.7 Attribute inputBVector as CIAttributeMBS

Notes:
This attribute should have this content:

Name: inputBVector
Class: CIVectorMBS
DisplayName English: Blue Vector
DisplayName German: Blau-Vektor
DisplayName French: Vecteur bleu
DisplayName Italian: Vettore blu
DisplayName Spanish: Vector azul
DefaultVector: [ 0 0 1 0 ]
IdentityVector: [ 0 0 1 0 ]

(Read only property)

52.55.8 Attribute inputGVector as CIAttributeMBS

Notes:
This attribute should have this content:

Name: inputGVector
Class: CIVectorMBS
DisplayName English: Green Vector
DisplayName German: Grn-Vektor
DisplayName French: Vecteur vert
DisplayName Italian: Vettore verde
DisplayName Spanish: Vector verde
DefaultVector: [ 0 1 0 0 ]
IdentityVector: [ 0 1 0 0 ]

(Read only property)

52.55.9 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Color Matrix attribute.

**Notes:**

This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.55.10 Attribute inputRVector as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Color Matrix attribute.

**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputRVector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIVectorMBS</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Red Vector</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Rot-Vektor</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Vecteur rouge</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Vettore rosso</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Vector rojo</td>
</tr>
<tr>
<td>DefaultVector</td>
<td>[ 1 0 0 0 ]</td>
</tr>
<tr>
<td>IdentityVector</td>
<td>[ 1 0 0 0 ]</td>
</tr>
</tbody>
</table>

(Read only property)

52.55.11 inputAVector as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Alpha Vector

**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputAVector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIVectorMBS (CIVector)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Alpha Vector</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Alpha-Vektor</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Vecteur alpha</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Vettore alfa</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Vector alfa</td>
</tr>
</tbody>
</table>

See Attribute inputAVector for more details.
(Read and Write property)

52.55.12 inputBiasVector as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Bias Vector

**Notes:**

See Attribute inputBiasVector for more details.
(Read and Write property)
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Name: inputBiasVector
Class: CIVectorMBS (CIVector)
DisplayName English: Bias Vector
DisplayName German: Bias-Vektor
DisplayName French: Vecteur de biais
DisplayName Italian: Vettore BIAS
DisplayName Spanish: Vector oblicuo
Type:

52.55.13 inputBVector as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Blue Vector

**Notes:**

Name: inputBVector
Class: CIVectorMBS (CIVector)
DisplayName English: Blue Vector
DisplayName German: Blau-Vektor
DisplayName French: Vecteur bleu
DisplayName Italian: Vettore blu
DisplayName Spanish: Vector azul
Type:

See Attribute inputBVector for more details.
(Read and Write property)

52.55.14 inputGVector as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Green Vector

**Notes:**

Name: inputGVector
Class: CIVectorMBS (CIVector)
DisplayName English: Green Vector
DisplayName German: Grn-Vektor
DisplayName French: Vecteur vert
DisplayName Italian: Vettore verde
DisplayName Spanish: Vector verde
Type:

See Attribute inputGVector for more details.
52.55.15  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

Name: inputImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
Type: CIAttributeTypeImage

See AttributeinputImage for more details.  
(Read and Write property)

52.55.16  inputRVector as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Red Vector

**Notes:**

Name: inputRVector  
Class: CIVectorMBS (CIVector)  
DisplayName English: Red Vector  
DisplayName German: Rot-Vektor  
DisplayName French: Vecteur rouge  
DisplayName Italian: Vettore rosso  
DisplayName Spanish: Vector rojo  
Type: 

See AttributeinputRVector for more details.  
(Read and Write property)
52.56 class CIFilterColorMonochromeMBS

52.56.1 class CIFilterColorMonochromeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Color Monochrome filter.

**Notes:**
Details for this filter:

- **FilterName:** CIColorMonochrome
- **DisplayName English:** Color Monochrome
- **DisplayName German:** Einfarbig
- **DisplayName French:** Couleur monochrome
- **DisplayName Italian:** Colore monocromo
- **DisplayName Spanish:** Color monocromo

**Categories:**
- CICategoryColorEffect: Color Effect
- CICategoryVideo: Video
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**
- **inputImage:** Image
- **inputColor:** Color
- **inputIntensity:** Intensity

**Output:**
- **outputImage**

Subclass of the CIFilterMBS class.
52.56.2 Methods

52.56.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.56.4 Properties

52.56.5 Attribute inputColor as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Color Monochrome attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputColor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIColorMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeOpaqueColor</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Color</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Farbe</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Couleur</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Colore</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Color</td>
</tr>
<tr>
<td>DefaultColor</td>
<td>Red = 0.6, Green = 0.45, Blue = 0.3, Alpha = 1</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.56.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Color Monochrome attribute.
**Notes:**
This attribute should have this content:

(Read only property)
Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

52.56.7 Attribute inputIntensity as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Color Monochrome attribute.

**Notes:**

This attribute should have this content:

Name: inputIntensity
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Intensity
DisplayName German: Intensität
DisplayName French: Intensité
DisplayName Italian: Intensità
DisplayName Spanish: Intensidad
DefaultNumber: 1
IdentityNumber: 0
SliderMaxNumber: 1
SliderMinNumber: 0

(Read only property)

52.56.8 inputColor as CIColorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Color

**Notes:**

See Attribute inputColor for more details.

(Read and Write property)
52.56. **CLASS CIFILTERCOLORMONOCHROMEMBS**

Name: inputColor  
Class: CIColorMBS (CIColor)  
DisplayName English: Color  
DisplayName German: Farbe  
DisplayName French: Couleur  
DisplayName Italian: Colore  
DisplayName Spanish: Color  
Type: CIAttributeTypeOpaqueColor

52.56.9 **inputImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**  
The attribute Image

**Notes:**

Name: inputImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
Type: CIAttributeTypeImage

See Attribute inputImage for more details.  
(Read and Write property)

52.56.10 **inputIntensity as double**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**  
The attribute Intensity

**Notes:**

Name: inputIntensity  
Class: double (NSNumber)  
DisplayName English: Intensity  
DisplayName German: Intensität  
DisplayName French: Intensité  
DisplayName Italian: Intensità  
DisplayName Spanish: Intensidad  
Type: CIAttributeTypeScalar

See Attribute inputIntensity for more details.
(Read and Write property)
52.57. class CIFilterColorPolynomialMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Color Polynomial filter.

**Notes:**
Details for this filter:

FilterName: CIColorPolynomial
DisplayName English: Color Polynomial
DisplayName German: Farb-Polynom
DisplayName French: Fonction polynomiale de la couleur
DisplayName Italian: Polinomio cromatico
DisplayName Spanish: Polinomio cromtico

**Categories:**
- CICategoryColorAdjustment: Color Adjustment
- CICategoryVideo: Video
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**
- inputImage: Image
- inputRedCoefficients: RedCoefficients
- inputGreenCoefficients: GreenCoefficients
- inputBlueCoefficients: BlueCoefficients
- inputAlphaCoefficients: AlphaCoefficients

**Output:**
• outputImage

Subclass of the CIFilterMBS class.

### 52.57.2 Methods

### 52.57.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

**Notes:** On success the handle property is not zero and the filter has the default values set.

### 52.57.4 Properties

### 52.57.5 Attribute inputAlphaCoefficients as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Color Polynomial attribute.

**Notes:**

This attribute should have this content:

```
Name: inputAlphaCoefficients
Class: CIVectorMBS
DisplayName: AlphaCoefficients
DefaultVector: [0 1 0 0]
IdentityVector: [0 1 0 0]
```

(Read only property)

### 52.57.6 Attribute inputBlueCoefficients as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Color Polynomial attribute.

**Notes:**

This attribute should have this content:
52.57. **CLASS CIFILTERCOLORPOLYNOMIALMBS**

Name: inputBlueCoefficients  
Class: CIVectorMBS  
DisplayName: BlueCoefficients  
DefaultVector: \[ 0 \ 1 \ 0 \ 0 \]  
IdentityVector: \[ 0 \ 1 \ 0 \ 0 \]  

(Read only property)

52.57.7 **Attribute inputGreenCoefficients as CIAtributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Color Polynomial attribute.  
**Notes:**  
This attribute should have this content:

Name: inputGreenCoefficients  
Class: CIVectorMBS  
DisplayName: GreenCoefficients  
DefaultVector: \[ 0 \ 1 \ 0 \ 0 \]  
IdentityVector: \[ 0 \ 1 \ 0 \ 0 \]  

(Read only property)

52.57.8 **Attribute inputImage as CIAtributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Color Polynomial attribute.  
**Notes:**  
This attribute should have this content:

(Read only property)

52.57.9 **Attribute inputRedCoefficients as CIAtributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Color Polynomial attribute.
Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

Notes:
This attribute should have this content:

Name: inputRedCoefficients
Class: CIVectorMBS
DisplayName: RedCoefficients
DefaultVector: [ 0 1 0 0 ]
IdentityVector: [ 0 1 0 0 ]

(Read only property)

52.57.10 inputAlphaCoefficients as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute AlphaCoefficients
Notes:
Name: inputAlphaCoefficients
Class: CIVectorMBS (CIVector)
DisplayName English: AlphaCoefficients
DisplayName German: AlphaCoefficients
DisplayName French: AlphaCoefficients
DisplayName Italian: AlphaCoefficients
DisplayName Spanish: AlphaCoefficients
Type:

See Attribute inputAlphaCoefficients for more details.
(Read and Write property)
52.57.11 inputBlueCoefficients as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute BlueCoefficients

**Notes:**

Name: inputBlueCoefficients  
Class: CIVectorMBS (CIVector)  
DisplayName English: BlueCoefficients  
DisplayName German: BlueCoefficients  
DisplayName French: BlueCoefficients  
DisplayName Italian: BlueCoefficients  
DisplayName Spanish: BlueCoefficients  
Type:  

See Attribute inputBlueCoefficients for more details.  
(Read and Write property)

52.57.12 inputGreenCoefficients as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute GreenCoefficients

**Notes:**

Name: inputGreenCoefficients  
Class: CIVectorMBS (CIVector)  
DisplayName English: GreenCoefficients  
DisplayName German: GreenCoefficients  
DisplayName French: GreenCoefficients  
DisplayName Italian: GreenCoefficients  
DisplayName Spanish: GreenCoefficients  
Type:  

See Attribute inputGreenCoefficients for more details.  
(Read and Write property)

52.57.13 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)

52.57.14 inputRedCoefficients as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The attribute RedCoefficients
Notes:

Name: inputRedCoefficients
Class: CIVectorMBS (CIVector)
DisplayName English: RedCoefficients
DisplayName German: RedCoefficients
DisplayName French: RedCoefficients
DisplayName Italian: RedCoefficients
DisplayName Spanish: RedCoefficients
Type:

See Attribute inputRedCoefficients for more details.
(Read and Write property)
class CIColorFilterColorPosterizeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Color Posterize filter.

**Notes:**
Details for this filter:

- **FilterName:** CIColorPosterize
- **DisplayName English:** Color Posterize
- **DisplayName German:** Farbe auflösen
- **DisplayName French:** Posteriser la couleur
- **DisplayName Italian:** Posterizzazione colore
- **DisplayName Spanish:** Posterización de color

**Categories:**

- CICategoryColorEffect: Color Effect
- CICategoryVideo: Video
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputLevels: Levels

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.58.2 Methods

52.58.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.58.4 Properties

52.58.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Color Posterize attribute.
**Notes:**
This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.58.6 Attribute inputLevels as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Color Posterize attribute.
**Notes:**
This attribute should have this content:

(Read only property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputLevels</th>
<th>Class</th>
<th>double</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>CIAttributeTypeScalar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DisplayName</td>
<td>English: Levels</td>
<td>German: Werte</td>
<td>French: Niveaux</td>
</tr>
<tr>
<td></td>
<td>Italian: Livelli</td>
<td>Spanish: Niveles</td>
<td></td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>300</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MinNumber</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MaxNumber</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SliderMaxNumber</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SliderMinNumber</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 52.58.7 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image
**Notes:**
- Name: inputImage
- Class: CIImageMBS (CIImage)
- DisplayName English: Image
- DisplayName German: Bild
- DisplayName French: Image
- DisplayName Italian: Immagine
- DisplayName Spanish: Imagen
- Type: CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)

### 52.58.8 inputLevels as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Levels
**Notes:**
See Attribute inputLevels for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputLevels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Levels</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Werte</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Niveaux</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Livelli</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Niveles</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeScalar</td>
</tr>
</tbody>
</table>
52.59. class CIFilterColumnAverageMBS

52.59.1 class CIFilterColumnAverageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Column Average filter.

**Notes:**
Details for this filter:

<table>
<thead>
<tr>
<th>FilterName</th>
<th>CIColumnAverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>DisplayName English</td>
<td>Column Average</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Spaltendurchschnitt</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Moyenne des colonnes</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Media colonna</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Media de la columna</td>
</tr>
</tbody>
</table>

**Categories:**

- CICategoryReduction: Reduction
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputExtent: Extent

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.59.2 Methods

52.59.3 Constructor

Notes: On success the handle property is not zero and the filter has the default values set.

52.59.4 Properties

52.59.5 Attribute inputExtent as CIAttributeMBS

Notes: This attribute should have this content:

Name: inputExtent
Class: CIVectorMBS
Type: CIAttributeTypeRectangle
DisplayName English: Extent
DisplayName German: Betrag
DisplayName French: tendue
DisplayName Italian: Ampiezza
DisplayName Spanish: Amplitud
Default Vector: [ 0 0 640 80 ]
Identity Vector: n/a

(Read only property)

52.59.6 Attribute inputImage as CIAttributeMBS

Notes: This attribute should have this content:

(Read only property)
52.59. **CLASS CIFILTERCOLUMNNAVERAGEMBS**

Name: inputImage  
Class: CIImageMBS  
Type: CIAttributeTypeImage  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
DefaultNumber: 0  
IdentityNumber: 0

52.59.7 **inputExtent as CIVectorMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**  
The attribute Extent  
**Notes:**

Name: inputExtent  
Class: CIVectorMBS (CIVector)  
DisplayName English: Extent  
DisplayName German: Betrag  
DisplayName French: tondre  
DisplayName Italian: Ampiezza  
DisplayName Spanish: Amplitud  
Type: CIAttributeTypeRectangle

See AttributeinputExtent for more details.  
(Read and Write property)

52.59.8 **inputImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**  
The attribute Image  
**Notes:**

See AttributeinputImage for more details.  
(Read and Write property)
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage
52.60. 52.60. CLASS CIFILTERCOMICEFFECTMBS

52.60. class CIFilterComicEffectMBS

52.60.1. class CIFilterComicEffectMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Comic Effect filter.

**Notes:**
Details for this filter:

<table>
<thead>
<tr>
<th>FilterName:</th>
<th>CIComicEffect</th>
</tr>
</thead>
<tbody>
<tr>
<td>DisplayName English:</td>
<td>Comic Effect</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Comic-Effekt</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Effet comique</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Effetto fumetto</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Efecto cómico</td>
</tr>
</tbody>
</table>

**Categories:**

- CICategoryStylize: Stylize
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.60.2 Methods

52.60.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

**Notes:** On success the handle property is not zero and the filter has the default values set.

52.60.4 Properties

52.60.5 AttributeinputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Comic Effect attribute.

**Notes:**

This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.60.6 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**

See AttributeinputImage for more details.

(Read and Write property)
<table>
<thead>
<tr>
<th>Name:</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAtributeTypeImage</td>
</tr>
</tbody>
</table>
52.61 class CIFilterConstantColorGeneratorMBS

52.61.1 class CIFilterConstantColorGeneratorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
The Realbasic class for the CoreImage Constant Color filter.

**Notes:**
Details for this filter:

<table>
<thead>
<tr>
<th>FilterName:</th>
<th>CIConstantColorGenerator</th>
</tr>
</thead>
<tbody>
<tr>
<td>DisplayName English:</td>
<td>Constant Color</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Farbfläche</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Couleur constante</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Colore costante</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Color constante</td>
</tr>
</tbody>
</table>

**Categories:**

- CICategoryGenerator: Generator
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputColor: Color

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.61. Class CIFILTERCONSTANTCOLORGENERATORMBS

52.61.2 Methods

52.61.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.61.4 Properties

52.61.5 AttributeinputColor as CIATTRIBUTEMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Constant Color attribute.
**Notes:**
This attribute should have this content:

Name: inputColor  
Class: CIColorMBS  
Type: CIAttributeTypeColor  
DisplayName English: Color  
DisplayName German: Farbe  
DisplayName French: Couleur  
DisplayName Italian: Colore  
DisplayName Spanish: Color  
IdentityNumber: 0  
DefaultColor: Red = 1, Green = 0, Blue = 0, Alpha = 1

(Read only property)

52.61.6 inputColor as CIColorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Color
**Notes:**
See AttributeinputColor for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputColor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIColorMBS (CIColor)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Color</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Farbe</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Couleur</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Colore</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Color</td>
</tr>
<tr>
<td>Type</td>
<td>CIAtributeTypeColor</td>
</tr>
</tbody>
</table>
52.62 class CIFilterConvolution3X3MBS

52.62.1 class CIFilterConvolution3X3MBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage 3 by 3 convolution filter.

**Notes:**
Details for this filter:

- **FilterName:** CIConvolution3X3
- **DisplayName English:** 3 by 3 convolution
- **DisplayName German:** 3 x 3-Faltung
- **DisplayName French:** Convolution3 par3
- **DisplayName Italian:** Convoluzione 3 per 3
- **DisplayName Spanish:** Convolucin de 3x3

**Categories:**
- **CICategoryStylize:** Stylize
- **CICategoryVideo:** Video
- **CICategoryStillImage:** Still Image
- **CICategoryBuiltIn:** Built-In

**Input:**
- **inputImage:** Image
- **inputWeights:** Weights
- **inputBias:** Bias

**Output:**
- **outputImage**

Subclass of the CIFilterMBS class.
52.62.2 Methods

52.62.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The constructor. Notes: On success the handle property is not zero and the filter has the default values set.

52.62.4 Properties

52.62.5 Attribute inputBias as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Details about the 3 by 3 convolution attribute. Notes: This attribute should have this content:

Name: inputBias  
Class: double  
DisplayName: Bias  
DefaultNumber: 0  
IdentityNumber: 0

(Read only property)

52.62.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Details about the 3 by 3 convolution attribute. Notes: This attribute should have this content:

(Read only property)
52.62. **CLASS CIFILTERCONVOLUTION3X3MBS**

Name: inputImage  
Class: CIImageMBS  
Type: CIAtributeTypeImage  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
DefaultNumber: 0  
IdentityNumber: 0

52.62.7 **Attribute inputWeights as CIAtributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** 
Details about the 3 by 3 convolution attribute.  
**Notes:** 
This attribute should have this content:

- Name: inputWeights  
- Class: CIVectorMBS  
- DisplayName: Weights  
- DefaultVector: [0 0 0 1 0 0 0]  
- IdentityVector: [0 0 0 1 0 0 0]  
(Read only property)

52.62.8 **inputBias as double**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** 
The attribute Bias  
**Notes:**

- Name: inputBias  
- Class: double (NSNumber)  
- DisplayName English: Bias  
- DisplayName German: Bias  
- DisplayName French: Bias  
- DisplayName Italian: Bias  
- DisplayName Spanish: Bias  
- Type:
52.62.9 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**

- **Name:** inputImage
- **Class:** CIImageMBS (CIImage)
- **DisplayName English:** Image
- **DisplayName German:** Bild
- **DisplayName French:** Image
- **DisplayName Italian:** Immagine
- **DisplayName Spanish:** Imagen
- **Type:** CIAttributeTypeImage

See AttributeinputImage for more details.
(Read and Write property)

52.62.10 inputWeights as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Weights

**Notes:**

- **Name:** inputWeights
- **Class:** CIVectorMBS (CIVector)
- **DisplayName English:** Weights
- **DisplayName German:** Weights
- **DisplayName French:** Weights
- **DisplayName Italian:** Weights
- **DisplayName Spanish:** Weights
- **Type:**

See AttributeinputWeights for more details.
(Read and Write property)
52.63. class CIFilterConvolution5X5MBS

52.63.1 class CIFilterConvolution5X5MBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage 5 by 5 convolution filter.  
**Notes:**
Details for this filter:

<table>
<thead>
<tr>
<th>FilterName</th>
<th>CIConvolution5x5</th>
</tr>
</thead>
<tbody>
<tr>
<td>DisplayName English</td>
<td>5 by 5 convolution</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>5 x 5-Faltung</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Convolution5 par5</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Convoluzione 5 per 5</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Convolucin de 5x5</td>
</tr>
</tbody>
</table>

**Categories:**
- CICategoryStylize: Stylize
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**
- inputImage: Image
- inputWeights: Weights
- inputBias: Bias

**Output:**
- outputImage

Subclass of the CIFilterMBS class.
52.63.2 Methods

52.63.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.63.4 Properties

52.63.5 Attribute inputBias as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the 5 by 5 convolution attribute.
**Notes:** This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputBias</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Bias</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.63.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the 5 by 5 convolution attribute.
**Notes:** This attribute should have this content:

(Read only property)
52.63. **CLASS CIFILTERCONVOLUTION5X5MBS**

Name: inputImage  
Class: CIImageMBS  
Type: CIAAttributeTypeImage  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
DefaultNumber: 0  
IdentityNumber: 0

**52.63.7  Attribute inputWeights as CIAAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the 5 by 5 convolution attribute.  
**Notes:**  
This attribute should have this content:

Name: inputWeights  
Class: CIVectorMBS  
DisplayName: Weights  
DefaultVector: [ 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 ]  
IdentityVector: [ 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 ]

(Read only property)

**52.63.8  inputBias as double**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**  
The attribute Bias  
**Notes:**

Name: inputBias  
Class: double (NSNumber)  
DisplayName English: Bias  
DisplayName German: Bias  
DisplayName Italian: Bias  
DisplayName Spanish: Bias  
Type:
See Attribute inputBias for more details.
(Read and Write property)

### 52.63.9 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

- **Name:** inputImage
- **Class:** CIImageMBS (CIImage)
- **DisplayName English:** Image
- **DisplayName German:** Bild
- **DisplayName French:** Image
- **DisplayName Italian:** Immagine
- **DisplayName Spanish:** Imagen
- **Type:** CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)

### 52.63.10 inputWeights as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Weights

**Notes:**

- **Name:** inputWeights
- **Class:** CIVectorMBS (CIVector)
- **DisplayName English:** Weights
- **DisplayName German:** Gewichte
- **DisplayName French:** Poids
- **DisplayName Italian:** Pesi
- **DisplayName Spanish:** Peso
- **Type:**

See Attribute inputWeights for more details.
(Read and Write property)
52.64. **CLASS CIFILTERCONVOLUTION7X7MBS**

52.64 **class CIFilterConvolution7X7MBS**

52.64.1 **class CIFilterConvolution7X7MBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage 7 by 7 convolution filter.

**Notes:**
Details for this filter:

- **FilterName:** CIConvolution7X7
- **DisplayName English:** 7 by 7 convolution
- **DisplayName German:** 7 x 7-Faltung
- **DisplayName French:** Convolution7 par7
- **DisplayName Italian:** Convoluzione 7 per 7
- **DisplayName Spanish:** Convolucin de 7x7

**Categories:**
- CICategoryStylize: Stylize
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**
- **inputImage:** Image
- **inputWeights:** Weights
- **inputBias:** Bias

**Output:**
- **outputImage**

Subclass of the CIFilterMBS class.
52.64.2 Methods

52.64.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.64.4 Properties

52.64.5 Attribute inputBias as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the 7 by 7 convolution attribute.
**Notes:**
This attribute should have this content:

Name: inputBias
Class: double
DisplayName: Bias
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.64.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the 7 by 7 convolution attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.64. CLASS CIFILTERCONVOLUTION7X7MBS

Name:
Class:
Type:
DisplayName English:
DisplayName German:
DisplayName French:
DisplayName Italian:
DisplayName Spanish:
DefaultNumber:
IdentityNumber:

52.64.7

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inputImage
CIImageMBS
CIAttributeTypeImage
Image
Bild
Image
Immagine
Imagen
0
0

AttributeinputWeights as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Details about the 7 by 7 convolution attribute.
Notes:
This attribute should have this content:

Name:
Class:
DisplayName:
DefaultVector:
IdentityVector:

inputWeights
CIVectorMBS
Weights
[00000000000000000000000010000000000000000
00000000]
[00000000000000000000000010000000000000000
00000000]

(Read only property)

52.64.8

inputBias as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Bias
Notes:
See AttributeinputBias for more details.
(Read and Write property)


Name: inputBias
Class: double (NSNumber)
DisplayName English: Bias
DisplayName German: Bias
DisplayName French: Bias
DisplayName Italian: Bias
DisplayName Spanish: Bias
Type:

52.64.9  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image
**Notes:**
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)

52.64.10  inputWeights as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Weights
**Notes:**
Name: inputWeights
Class: CIVectorMBS (CIVector)
DisplayName English: Weights
DisplayName German: Weights
DisplayName French: Weights
DisplayName Italian: Weights
DisplayName Spanish: Weights
Type:

See Attribute inputWeights for more details.
52.64. **CLASS CIFILTERCONVOLUTION7X7MBS**

(Read and Write property)
52.65 class CIFilterConvolution9HorizontalMBS

52.65.1 class CIFilterConvolution9HorizontalMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Horizontal 9 Convolution filter.

**Notes:**

Details for this filter:

- **FilterName:** CIConvolution9Horizontal
- **DisplayName English:** Horizontal 9 Convolution
- **DisplayName German:** Horizontale 9-Faltung
- **DisplayName French:** Convolution9 horizontale
- **DisplayName Italian:** Convoluzione orizzontale 9
- **DisplayName Spanish:** Convolucin horizontal con 9 valores

**Categories:**

- CICategoryStylize: Stylize
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputWeights: Weights
- inputBias: Bias

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.65.2  Methods

52.65.3  Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.65.4  Properties

52.65.5  Attribute inputBias as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Horizontal 9 Convolution attribute.
**Notes:**
This attribute should have this content:

```
Name: inputBias
Class: double
DisplayName: Bias
DefaultNumber: 0
IdentityNumber: 0
```

(Read only property)

52.65.6  Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Horizontal 9 Convolution attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.65.7 Attribute inputWeights as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Horizontal 9 Convolution attribute.

**Notes:**
This attribute should have this content:

```
Name: inputWeights
Class: CIVectorMBS
DisplayName: Weights
DefaultVector: [ 0 0 0 1 0 0 0 ]
IdentityVector: [ 0 0 0 1 0 0 0 ]
```

(Read only property)

52.65.8 inputBias as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Bias

**Notes:**
```
Name: inputBias
Class: double (NSNumber)
DisplayName English: Bias
DisplayName German: Bias
DisplayName French: Bias
DisplayName Italian: Bias
DisplayName Spanish: Bias
Type: double
```
52.65. **CLASS CIFILTERCONVOLUTION9HORIZONTALMBS**

See Attribute `inputBias` for more details.
(Read and Write property)

### 52.65.9 `inputImage` as `CIImageMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute `Image`

**Notes:**

- **Name:** `inputImage`
- **Class:** `CIImageMBS` (CIImage)
- **DisplayName English:** Image
- **DisplayName German:** Bild
- **DisplayName French:** Image
- **DisplayName Italian:** Immagine
- **DisplayName Spanish:** Imagen
- **Type:** `CIAttributeTypeImage`

See Attribute `inputImage` for more details.
(Read and Write property)

### 52.65.10 `inputWeights` as `CIVectorMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute `Weights`

**Notes:**

- **Name:** `inputWeights`
- **Class:** `CIVectorMBS` (CIVector)
- **DisplayName English:** Weights
- **DisplayName German:**Weights
- **DisplayName French:**Weights
- **DisplayName Italian:**Weights
- **DisplayName Spanish:**Weights
- **Type:**

See Attribute `inputWeights` for more details.
(Read and Write property)
52.66  class CIFilterConvolution9VerticalMBS

52.66.1  class CIFilterConvolution9VerticalMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Vertical 9 Convolution filter.

**Notes:**
Details for this filter:

- **FilterName:** CIConvolution9Vertical
- **DisplayName English:** Vertical 9 Convolution
- **DisplayName German:** Vertikale 9-Faltung
- **DisplayName French:** Convolution9 verticale
- **DisplayName Italian:** Convoluzione verticale 9
- **DisplayName Spanish:** Convolución vertical con 9 valores

**Categories:**

- CICategoryStylize: Stylize
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputWeights: Weights
- inputBias: Bias

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.66.2 Methods

52.66.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.66.4 Properties

52.66.5 Attribute inputBias as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Vertical 9 Convolution attribute.
**Notes:**
This attribute should have this content:

```
Name: inputBias
Class: double
DisplayName: Bias
DefaultNumber: 0
IdentityNumber: 0
```

(Read only property)

52.66.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Vertical 9 Convolution attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.66.7  Attribute inputWeights as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Vertical 9 Convolution attribute.
**Notes:**
This attribute should have this content:

Name: inputWeights
Class: CIVectorMBS
DisplayName: Weights
DefaultVector: [0 0 0 0 1 0 0 0]
IdentityVector: [0 0 0 0 1 0 0 0]

(Read only property)

52.66.8  inputBias as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Bias
**Notes:**
Name: inputBias
Class: double (NSNumber)
DisplayName English: Bias
DisplayName German: Bias
DisplayName French: Bias
DisplayName Italian: Bias
DisplayName Spanish: Bias
Type:
See Attribute inputBias for more details.
(Read and Write property)

### 52.66.9 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

- **Name:** inputImage
- **Class:** CIImageMBS (CIImage)
- **DisplayName English:** Image
- **DisplayName German:** Bild
- **DisplayName French:** Image
- **DisplayName Italian:** Immagine
- **DisplayName Spanish:** Imagen
- **Type:** CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)

### 52.66.10 inputWeights as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Weights

**Notes:**

- **Name:** inputWeights
- **Class:** CIVectorMBS (CIVector)
- **DisplayName English:** Weights
- **DisplayName German:** Weights
- **DisplayName French:** Weights
- **DisplayName Italian:** Weights
- **DisplayName Spanish:** Weights
- **Type:**

See Attribute inputWeights for more details.
(Read and Write property)
52.67 class CIFilterCopyMachineTransitionMBS

52.67.1 class CIFilterCopyMachineTransitionMBS


**Notes**:

Details for this filter:

FilterName: CICopyMachineTransition
DisplayName English: Copy Machine
DisplayName German: Kopieren
DisplayName French: Photocopieur
DisplayName Italian: Fotocopiatrice
DisplayName Spanish: Copiar mquina

**Categories**:

- CICategoryTransition: Transition
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input**:

- inputImage: Image
- inputTargetImage: Target Image
- inputExtent: Extent
- inputColor: Color
- inputTime: Time
- inputAngle: Angle
- inputWidth: Width
- inputOpacity: Opacity

**Output**:
52.67. CLASS CIFILTERCOPYMACHINETRANSITIONMBS

- outputImage

Subclass of the CIFilterMBS class.

52.67.2 Methods

52.67.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

**Notes:** On success the handle property is not zero and the filter has the default values set.

52.67.4 Properties

52.67.5 Attribute inputAngle as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Copy Machine attribute.

**Notes:**

This attribute should have this content:

- **Name:** inputAngle
- **Class:** double
- **Type:** CIAttributeTypeAngle
- **DisplayName English:** Angle
- **DisplayName German:** Winkel
- **DisplayName French:** Angle
- **DisplayName Italian:** Angolo
- **DisplayName Spanish:** Ángulo
- **DefaultNumber:** 0
- **IdentityNumber:** 0
- **SliderMaxNumber:** 6.283185
- **SliderMinNumber:** 0

(Read only property)
52.67.6 Attribute inputColor as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Copy Machine attribute.
**Notes:**
This attribute should have this content:

- **Name:** inputColor
- **Class:** CIColorMBS
- **Type:** CIAttributeTypeOpaqueColor
- **DisplayName English:** Color
- **DisplayName German:** Farbe
- **DisplayName French:** Couleur
- **DisplayName Italian:** Colore
- **DisplayName Spanish:** Color
- **DefaultColor:** Red = 0.6, Green = 1, Blue = 0.8, Alpha = 1
- **IdentityNumber:** 0

(Read only property)

52.67.7 Attribute inputExtent as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Copy Machine attribute.
**Notes:**
This attribute should have this content:

- **Name:** inputExtent
- **Class:** CIVectorMBS
- **Type:** CIAttributeTypeRectangle
- **DisplayName English:** Extent
- **DisplayName German:** Betrag
- **DisplayName French:** tendue
- **DisplayName Italian:** Ampiezza
- **DisplayName Spanish:** Amplitud
- **DefaultVector:** [ 0 0 300 300 ]
- **IdentityVector:** n/a

(Read only property)
52.67.8 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Copy Machine attribute.

**Notes:**

This attribute should have this content:

Name: inputImage  
Class: CIImageMBS  
Type: CIAttributeTypeImage  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
DefaultNumber: 0  
IdentityNumber: 0

(Read only property)

52.67.9 Attribute inputOpacity as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Copy Machine attribute.

**Notes:**

This attribute should have this content:

Name: inputOpacity  
Class: double  
Type: CIAttributeTypeScalar  
DisplayName English: Opacity  
DisplayName German: Deckkraft  
DisplayName French: Opacité  
DisplayName Italian: Opacità  
DisplayName Spanish: Opacidad  
DefaultNumber: 1.3  
IdentityNumber: 1.3  
SliderMaxNumber: 3  
SliderMinNumber: 0

(Read only property)
52.67.10  Attribute inputTargetImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Copy Machine attribute.

**Notes:**

This attribute should have this content:

- **Name:** inputTargetImage
- **Class:** CIImageMBS
- **Type:** CIAttributeTypeImage
- **DisplayName English:** Target Image
- **DisplayName German:** Zielbild
- **DisplayName French:** Image cible
- **DisplayName Italian:** Immagine target
- **DisplayName Spanish:** Imagen de destino
- **DefaultNumber:** 0
- **IdentityNumber:** 0

(Read only property)

52.67.11  Attribute inputTime as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Copy Machine attribute.

**Notes:**

This attribute should have this content:

(Read only property)

52.67.12  Attribute inputWidth as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Copy Machine attribute.

**Notes:**

This attribute should have this content:
52.67. CLASS CIFILTERCOPYMACHINETRANSITIONMBS

Name: inputTime
Class: double
Type: CIAttributeTypeTime
DisplayName English: Time
DisplayName German: Zeit
DisplayName French: Durée
DisplayName Italian: Tempo
DisplayName Spanish: Tiempo
DefaultNumber: 0
IdentityNumber: 0
MaxNumber: 1
MinNumber: 0
SliderMaxNumber: 1
SliderMinNumber: 0

Name: inputWidth
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Anchura
DefaultNumber: 200
IdentityNumber: 200
MaxNumber: 0
MinNumber: 0.1
SliderMaxNumber: 500
SliderMinNumber: 0.1

(Read only property)

52.67.13 inputAngle as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Angle
Notes:
See Attribute inputAngle for more details.
(Read and Write property)
Name: inputAngle
Class: double (NSNumber)
DisplayName English: Angle
DisplayName German: Winkel
DisplayName French: Angle
DisplayName Italian: Angolo
DisplayName Spanish: ngulo
Type: CIAttributeTypeAngle

52.67.14 inputColor as CIColorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Color
Notes:
Name: inputColor
Class: CIColorMBS (CIColor)
DisplayName English: Color
DisplayName German: Farbe
DisplayName French: Couleur
DisplayName Italian: Colore
DisplayName Spanish: Color
Type: CIAttributeTypeOpaqueColor

See Attribute inputColor for more details.
(Read and Write property)

52.67.15 inputExtent as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Extent
Notes:
Name: inputExtent
Class: CIVectorMBS (CIVector)
DisplayName English: Extent
DisplayName German: Betrag
DisplayName French: tendue
DisplayName Italian: Ampiezza
DisplayName Spanish: Amplitud
Type: CIAttributeTypeRectangle

See Attribute inputExtent for more details.
52.67.16 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image
**Notes:**

Name: inputImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)

52.67.17 inputOpacity as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Opacity
**Notes:**

Name: inputOpacity  
Class: double (NSNumber)  
DisplayName English: Opacity  
DisplayName German: Deckkraft  
DisplayName French: Opacit  
DisplayName Italian: Opacit  
DisplayName Spanish: Opacidad  
Type: CIAttributeTypeScalar

See Attribute inputOpacity for more details.
(Read and Write property)
52.67.18 inputTargetImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Target Image

**Notes:**

Name: inputTargetImage
Class: CIImageMBS (CIImage)
DisplayName English: Target Image
DisplayName German: Zielbild
DisplayName French: Image cible
DisplayName Italian: Immagine target
DisplayName Spanish: Imagen de destino
Type: CIAttributeTypeImage

See Attribute inputTargetImage for more details.
(Read and Write property)

52.67.19 inputTime as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Time

**Notes:**

Name: inputTime
Class: double (NSNumber)
DisplayName English: Time
DisplayName German: Zeit
DisplayName French: Dure
DisplayName Italian: Tempo
DisplayName Spanish: Tiempo
Type: CIAttributeTypeTime

See Attribute inputTime for more details.
(Read and Write property)

52.67.20 inputWidth as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Width

**Notes:**
Name: inputWidth
Class: double (NSNumber)
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Anchura
Type: CIAttributeTypeDistance

See AttributeinputWidth for more details.
(Read and Write property)
52.68 class CIFilterCropMBS

52.68.1 class CIFilterCropMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Crop filter.

**Notes:**
Details for this filter:

- **FilterName:** CICrop
- **DisplayName English:** Crop
- **DisplayName German:** Freistellen
- **DisplayName French:** Recadrer
- **DisplayName Italian:** Ritaglia
- **DisplayName Spanish:** Recortar

**Categories:**

- CICategoryGeometryAdjustment: Geometry Adjustment
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputRectangle: Rectangle

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.68.2 Methods

52.68.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.68.4 Properties

52.68.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Crop attribute.
**Notes:**
This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.68.6 Attribute inputRectangle as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Crop attribute.
**Notes:**
This attribute should have this content:

(Read only property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputRectangle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIVectorMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeRectangle</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Rectangle</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Rechteck</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Rectangle</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Rettangolo</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Rectngulo</td>
</tr>
<tr>
<td>DefaultVector</td>
<td>[ 0 0 300 300 ]</td>
</tr>
<tr>
<td>IdentityVector</td>
<td>[ -1.70141e+38 -1.70141e+38 3.40282e+38 3.40282e+38 ]</td>
</tr>
</tbody>
</table>

52.68.7 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>

See AttributeinputImage for more details.
(Read and Write property)

52.68.8 inputRectangle as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Rectangle

**Notes:**

See AttributeinputRectangle for more details.
(Read and Write property)
Name: inputRectangle
Class: CIVectorMBS (CIVector)
DisplayName English: Rectangle
DisplayName German: Rechteck
DisplayName French: Rectangle
DisplayName Italian: Rettangolo
DisplayName Spanish: Rectngulo
Type: CIAttributeTypeRectangle
class CIFilterCrystallizeMBS

52.69.1 class CIFilterCrystallizeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Crystallize filter.

**Notes:**
Details for this filter:

- **FilterName:** CICrystallize
- **Display Name English:** Crystallize
- **Display Name German:** Kristallisieren
- **Display Name French:** Cristalliser
- **Display Name Italian:** Cristallizzazione
- **Display Name Spanish:** Cristalización

**Categories:**

- CICategoryStylize: Stylize
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputRadius: Radius
- inputCenter: Center

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.69.2 Methods

52.69.3 Constructor

Notes: On success the handle property is not zero and the filter has the default values set.

52.69.4 Properties

52.69.5 AttributeinputCenter as CIAttributeMBS

Notes:
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputCenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIVectorMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypePosition</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Center</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Mitte</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Centre</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Centro</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Centro</td>
</tr>
<tr>
<td>DefaultVector</td>
<td>[ 150 150 ]</td>
</tr>
<tr>
<td>IdentityVector</td>
<td>n/a</td>
</tr>
</tbody>
</table>

(Read only property)

52.69.6 AttributeinputImage as CIAttributeMBS

Notes:
This attribute should have this content:

(Read only property)
52.69.7  Attribute \texttt{inputRadius} as \texttt{CIAttributeMBS}

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. \textbf{Function:}
Details about the Crystallize attribute.
\textbf{Notes:}
This attribute should have this content:

Name: \texttt{inputRadius}
Class: \texttt{double}
Type: \texttt{CIAttributeTypeDistance}
DisplayName English: Radius
DisplayName German: Radius
DisplayName French: Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
DefaultNumber: 20
IdentityNumber: 1
MaxNumber: 0
MinNumber: 1
SliderMaxNumber: 100
SliderMinNumber: 1

(Read only property)

52.69.8  \texttt{inputCenter} as \texttt{CIVectorMBS}

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. \textbf{Function:}
The attribute Center
\textbf{Notes:}
See Attribute \texttt{inputCenter} for more details.
52.69. CLASS CIFILTERCRYSTALLIZEMBS

Name: inputCenter
Class: CIVectorMBS (CIVector)
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
Type: CIAttributeTypePosition

(Read and Write property)

52.69.9  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See AttributeinputImage for more details.
(Read and Write property)

52.69.10  inputRadius as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Radius

**Notes:**
See AttributeinputRadius for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputRadius</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Radius</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Radius</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Rayon</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Raggio</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Radio</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeDistance</td>
</tr>
</tbody>
</table>
class CIFilterDarkenBlendModeMBS

Details for this filter:

- FilterName: CIDarkenBlendMode
- DisplayName English: Darken Blend Mode
- DisplayName German: Mischmethode Abdunkeln
- DisplayName French: Mode de fusion Assombrir
- DisplayName Italian: Modalit sfumatura scura
- DisplayName Spanish: Oscurecer modo de mezcla

Categories:

- CICategoryCompositeOperation: Composite Operation
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryBuiltIn: Built-In

Input:

- inputImage: Image
- inputBackgroundImage: Background Image

Output:

- outputImage

Subclass of the CIFilterMBS class.
52.70.2 Methods

52.70.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.70.4 Properties

52.70.5 Attribute inputBackgroundImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Darken Blend Mode attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputBackgroundImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Background Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Hintergrundbild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image darrire-plan</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine di sfondo</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen de fondo</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.70.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Darken Blend Mode attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.70. CLASS CIFILTERDARKENBLENDMODEMBS

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

52.70.7 inputBackgroundImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Background Image

**Notes:**

Name: inputBackgroundImage
Class: CIImageMBS (CIImage)
DisplayName English: Background Image
DisplayName German: Hintergrundbild
DisplayName French: Image derrière-plan
DisplayName Italian: Immagine di sfondo
DisplayName Spanish: Imagen de fondo
Type: CIAttributeTypeImage

See Attribute inputBackgroundImage for more details.
(Read and Write property)

52.70.8 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**

See Attribute inputImage for more details.
(Read and Write property)
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage
52.71 class CIFilterDepthBlurEffectMBS

52.71.1 class CIFilterDepthBlurEffectMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Depth Blur Effect filter.
**Notes:**
Details for this filter:

<table>
<thead>
<tr>
<th>FilterName</th>
<th>CIDepthBlurEffect</th>
</tr>
</thead>
<tbody>
<tr>
<td>DisplayName English</td>
<td>Depth Blur Effect</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Tiefenweichzeichneneffekt</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Effet de flou de profondeur</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Effetto sfocatura profondi</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Efecto de profundidad desenfocado</td>
</tr>
</tbody>
</table>

Categories:

- CICategoryBlur: Blur
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputDisparityImage: DisparityImage
- inputAperture: Aperture
- inputLeftEyePositions: Left Eye Positions
- inputRightEyePositions: Right Eye Positions
- inputChinPositions: Chin Positions
- inputNosePositions: Nose Positions
- inputFocusRect: Focus Rectangle
- inputLumaNoiseScale: Luma Noise Scale
- inputScaleFactor: Scale Factor
• **inputCalibrationData**: `CalibrationData`
• **inputAuxDataMetadata**: `AuxDataMetadata`

Output:

• **outputImage**

Subclass of the CIFilterMBS class.

### 52.71.2 Methods

#### 52.71.3 Constructor

**MBS MacCG Plugin, Plugin Version**: 17.4, **Console & Web**: Yes, **Mac**: Yes, **Win**: No, **Linux**: No. **Function**: The constructor. **Notes**: On success the handle property is not zero and the filter has the default values set.

### 52.71.4 Properties

#### 52.71.5 **Attribute** `inputAperture` as `CIAttributeMBS`

**MBS MacCG Plugin, Plugin Version**: 17.4, **Console & Web**: Yes, **Mac**: Yes, **Win**: No, **Linux**: No. **Function**: Details about the Depth Blur Effect attribute. **Notes**: This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputAperture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double</td>
</tr>
<tr>
<td>Type</td>
<td><code>CIAttributeTypeScalar</code></td>
</tr>
<tr>
<td>DisplayName</td>
<td>Aperture</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
<tr>
<td>MaxNumber</td>
<td>22</td>
</tr>
<tr>
<td>MinNumber</td>
<td>0</td>
</tr>
<tr>
<td>SliderMaxNumber</td>
<td>22</td>
</tr>
<tr>
<td>SliderMinNumber</td>
<td>1</td>
</tr>
</tbody>
</table>

(Read only property)
52.71. **CLASS CIFILTERDEPTHBLOUREFFECTMBS**

### 52.71.6 Attribute `inputAuxDataMetadata` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Depth Blur Effect attribute.

**Notes:**

This attribute should have this content:

- **Name:** `inputAuxDataMetadata`
- **Class:** `Dictionary`
- **DisplayName:** `AuxDataMetadata`

(Read only property)

### 52.71.7 Attribute `inputCalibrationData` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Depth Blur Effect attribute.

**Notes:**

This attribute should have this content:

- **Name:** `inputCalibrationData`
- **Class:** `Variant`
- **DisplayName:** `CalibrationData`

(Read only property)

### 52.71.8 Attribute `inputChinPositions` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Depth Blur Effect attribute.

**Notes:**

This attribute should have this content:

(Read only property)
### 52.71.9 Attribute inputDisparityImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Depth Blur Effect attribute. **Notes:**

This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputDisparityImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>DisplayName</td>
<td>DisparityImage</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

### 52.71.10 Attribute inputFocusRect as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Depth Blur Effect attribute. **Notes:**

This attribute should have this content:

(Read only property)
52.71. CLASS CIFILTERDEPTHBLUREFFECTMBS

Name: inputFocusRect
Class: CIVectorMBS
Type: CIAttributeTypeRectangle
DisplayName English: Focus Rectangle
DisplayName German: Fokusrechteck
DisplayName French: Rectangle de mise au point
DisplayName Italian: Rettangolo di messa a fuoco
DisplayName Spanish: Rectngulo focal
DefaultVector: n/a
IdentityVector: [ -1.70141e+38 -1.70141e+38 3.40282e+38 3.40282e+38 ]

52.71.11 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Depth Blur Effect attribute.

**Notes:**
This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.71.12 Attribute inputLeftEyePositions as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Depth Blur Effect attribute.

**Notes:**
This attribute should have this content:

(Read only property)
Name: inputLeftEyePositions
Class: CIVectorMBS
Type: CIAttributeTypePosition
DisplayName English: Left Eye Positions
DisplayName German: Positionen der linken Augen
DisplayName French: Positions de lil gauche
DisplayName Italian: Posizioni occhio sinistro
DisplayName Spanish: Posiciones de ojo izquierdo
DefaultVector: n/a
IdentityVector: n/a

52.71.13 Attribute inputLumaNoiseScale as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Depth Blur Effect attribute.
**Notes:**
This attribute should have this content:

Name: inputLumaNoiseScale
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Luma Noise Scale
DisplayName German: Luma-Rauschen-Skalierung
DisplayName French: chelle de bruit de luminance
DisplayName Italian: Scala rumore di luminanza
DisplayName Spanish: Escala de ruido de luminancia
DefaultNumber: 0
IdentityNumber: 0
MaxNumber: 0.1
MinNumber: 0
SliderMaxNumber: 0.1
SliderMinNumber: 0

(Read only property)

52.71.14 Attribute inputNosePositions as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Depth Blur Effect attribute.
**Notes:**
This attribute should have this content:
52.71. **CLASS CIFILTERDEPTHBLUREFFECTMBS**

Name: inputNosePositions  
Class: CIVectorMBS  
Type: CIAttributeTypePosition  
DisplayName English: Nose Positions  
DisplayName German: Nasenpositionen  
DisplayName French: Positions du nez  
DisplayName Italian: Posizioni naso  
DisplayName Spanish: Posiciones de nariz  
DefaultVector: n/a  
IdentityVector: n/a

(Read only property)

52.71.15 **AttributeinputRightEyePositions as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Depth Blur Effect attribute.  
**Notes:**  
This attribute should have this content:

Name: inputRightEyePositions  
Class: CIVectorMBS  
Type: CIAttributeTypePosition  
DisplayName English: Right Eye Positions  
DisplayName German: Positionen der rechten Augen  
DisplayName French: Positions de l’œil droit  
DisplayName Italian: Posizioni occhio destro  
DisplayName Spanish: Posiciones de ojo derecho  
DefaultVector: n/a  
IdentityVector: n/a

(Read only property)

52.71.16 **AttributeinputScaleFactor as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Depth Blur Effect attribute.  
**Notes:**
This attribute should have this content:

Name: inputScaleFactor
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Scale Factor
DisplayName German: Skalierungsfaktor
DisplayName French: Facteur d'echelle
DisplayName Italian: Fattore di scala
DisplayName Spanish: Factor de escala
DefaultNumber: 1
IdentityNumber: 0
SliderMaxNumber: 1
SliderMinNumber: 0

(Read only property)

52.71.17 inputAperture as double


Notes:

Name: inputAperture
Class: double (NSNumber)
DisplayName English: Aperture
DisplayName German: Aperture
DisplayName French: Aperture
DisplayName Italian: Aperture
DisplayName Spanish: Aperture
Type: CIAttributeTypeScalar

See Attribute inputAperture for more details.
(Read and Write property)

52.71.18 inputAuxDataMetadata as Dictionary


Notes:
52.71. **CLASS CIFILTERDEPTHBLUREFFECTMBS**

Name: inputAuxDataMetadata
Class: Dictionary (NSDictionary)
DisplayName English: AuxDataMetadata
DisplayName German: AuxDataMetadata
DisplayName French: AuxDataMetadata
DisplayName Italian: AuxDataMetadata
DisplayName Spanish: AuxDataMetadata
Type:

See Attribute inputAuxDataMetadata for more details.
(Read and Write property)

---

52.71.19 **inputCalibrationData as Variant**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute CalibrationData
**Notes:**

Name: inputCalibrationData
Class: Variant (AVCameraCalibrationData)
DisplayName English: CalibrationData
DisplayName German: CalibrationData
DisplayName French: CalibrationData
DisplayName Italian: CalibrationData
DisplayName Spanish: CalibrationData
Type:

See Attribute inputCalibrationData for more details.
(Read and Write property)

---

52.71.20 **inputChinPositions as CIVectorMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Chin Positions
**Notes:**

See Attribute inputChinPositions for more details.
(Read and Write property)
52.71.21  inputDisparityImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute DisparityImage

**Notes:**

Name: inputDisparityImage  
Class: CIImageMBS (CIImage)  
DisplayName English: DisparityImage  
DisplayName German: DisparityImage  
DisplayName French: DisparityImage  
DisplayName Italian: DisparityImage  
DisplayName Spanish: DisparityImage  
Type: CIAttributeTypePosition

See Attribute inputDisparityImage for more details.  
(Read and Write property)

52.71.22  inputFocusRect as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Focus Rectangle

**Notes:**

Name: inputFocusRect  
Class: CIVectorMBS (CIVector)  
DisplayName English: Focus Rectangle  
DisplayName German: Fokusrechteck  
DisplayName French: Rectangle de mise au point  
DisplayName Italian: Rettangolo di messa a fuoco  
DisplayName Spanish: Rectngulo focal  
Type: CIAttributeTypeRectangle

See Attribute inputFocusRect for more details.
52.71. **CLASS CIFILTERDEPTHBLUREFFECTMBS**

(Read and Write property)

52.71.23  **inputImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>

See Attribute inputImage for more details.
(Read and Write property)

52.71.24  **inputLeftEyePositions as CIVectorMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Left Eye Positions

**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputLeftEyePositions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIVectorMBS (CIVector)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Left Eye Positions</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Positionen der linken Augen</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Positions de l'il gauche</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Posizioni occhio sinistro</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Posiciones de ojo izquierdo</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypePosition</td>
</tr>
</tbody>
</table>

See Attribute inputLeftEyePositions for more details.
(Read and Write property)
52.71.25  **inputLumaNoiseScale as double**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Luma Noise Scale

**Notes:**
- Name: inputLumaNoiseScale
- Class: double (NSNumber)
- DisplayName English: Luma Noise Scale
- DisplayName German: Luma-Rauschen-Skalierung
- DisplayName French: chelle de bruit de luminance
- DisplayName Italian: Scala rumore di luminanza
- DisplayName Spanish: Escala de ruido de luminancia
- Type: CIAttributeTypeScalar

See Attribute inputLumaNoiseScale for more details.
(Read and Write property)

52.71.26  **inputNosePositions as CIVectorMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Nose Positions

**Notes:**
- Name: inputNosePositions
- Class: CIVectorMBS (CIVector)
- DisplayName English: Nose Positions
- DisplayName German: Nasenpositionen
- DisplayName French: Positions du nez
- DisplayName Italian: Posizioni naso
- DisplayName Spanish: Posiciones de nariz
- Type: CIAttributeTypePosition

See Attribute inputNosePositions for more details.
(Read and Write property)

52.71.27  **inputRightEyePositions as CIVectorMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Right Eye Positions

**Notes:**
### 52.71. CLASS CIFILTERDEPTHBLUREFFECTMBS

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputRightEyePositions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIVectorMBS (CIVector)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Right Eye Positions</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Positionen der rechten Augen</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Positions de l’œil droit</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Posizioni occhio destro</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Posiciones de ojo derecho</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypePosition</td>
</tr>
</tbody>
</table>

See AttributeinputRightEyePositions for more details.
(Read and Write property)

### 52.71.28 inputScaleFactor as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Scale Factor

**Notes:**

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputScaleFactor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Scale Factor</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Skalierungsfaktor</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Facteur d’échelle</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Fattore di scala</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Factor de escala</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeScalar</td>
</tr>
</tbody>
</table>

See AttributeinputScaleFactor for more details.
(Read and Write property)
52.72  class CIFilterDepthOfFieldMBS

52.72.1  class CIFilterDepthOfFieldMBS


Notes:

Details for this filter:

FilterName:          CIDepthOfField
DisplayName English: Depth of Field
DisplayName German:  Schrfentiefe
DisplayName French:  Profondeur de champ
DisplayName Italian: Profondit di campo
DisplayName Spanish: Profundidad de campo

Categories:

- CICategoryStylize: Stylize
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

Input:

- inputImage: Image
- inputPoint0: Point 0
- inputPoint1: Point 1
- inputSaturation: Saturation
- inputUnsharpMaskRadius: Unsharp Mask Radius
- inputUnsharpMaskIntensity: Unsharp Mask Intensity
- inputRadius: Radius

Output:
Subclass of the CIFilterMBS class.

### 52.72.2 Methods

#### 52.72.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

### 52.72.4 Properties

#### 52.72.5 Attribute `inputImage` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Depth of Field attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

#### 52.72.6 Attribute `inputPoint0` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Depth of Field attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputPoint0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIVectorMBS</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypePosition</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Point 0</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Punkt 0</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Point 0</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Punto 0</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Punto 0</td>
</tr>
<tr>
<td>Default Vector:</td>
<td>[ 0 300 ]</td>
</tr>
<tr>
<td>Identity Vector:</td>
<td>n/a</td>
</tr>
</tbody>
</table>

(Read only property)

### 52.72.7 Attribute inputPoint1 as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Depth of Field attribute.

**Notes:**

This attribute should have this content:

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputPoint1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIVectorMBS</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypePosition</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Point 1</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Punkt 1</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Point 1</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Punto 1</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Punto 1</td>
</tr>
<tr>
<td>Default Vector:</td>
<td>[ 300 300 ]</td>
</tr>
<tr>
<td>Identity Vector:</td>
<td>n/a</td>
</tr>
</tbody>
</table>

(Read only property)

### 52.72.8 Attribute inputRadius as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Depth of Field attribute.

**Notes:**
52.72. **CLASS CIFILTERDEPTHOFFIELDMBS**

This attribute should have this content:

- **Name:** inputRadius
- **Class:** double
- **Type:** CIAttributeTypeScalar
- **DisplayName English:** Radius
- **DisplayName German:** Radius
- **DisplayName French:** Rayon
- **DisplayName Italian:** Raggio
- **DisplayName Spanish:** Radio
- **DefaultNumber:** 6
- **IdentityNumber:** 0
- **SliderMaxNumber:** 30
- **SliderMinNumber:** 0

(Read only property)

52.72.9 **Attribute inputSaturation as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Details about the Depth of Field attribute.

**Notes:**

This attribute should have this content:

- **Name:** inputSaturation
- **Class:** double
- **Type:** CIAttributeTypeScalar
- **DisplayName English:** Saturation
- **DisplayName German:** Sttigung
- **DisplayName French:** Saturation
- **DisplayName Italian:** Saturazione
- **DisplayName Spanish:** Saturacin
- **DefaultNumber:** 1.5
- **IdentityNumber:** 0
- **SliderMaxNumber:** 10
- **SliderMinNumber:** 0

(Read only property)
52.72.10  Attribute inputUnsharpMaskIntensity as CIAttributeMBS


Notes:
This attribute should have this content:

Name: inputUnsharpMaskIntensity
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Unsharp Mask Intensity
DisplayName German: Intensität von Unschärfe maskieren
DisplayName French: Intensité du masque flou
DisplayName Italian: Intensità maschera di contrasto
DisplayName Spanish: Intensidad de la mascara de desenfoque
DefaultNumber: 0.5
IdentityNumber: 0
SliderMaxNumber: 10
SliderMinNumber: 0

(Read only property)

52.72.11  Attribute inputUnsharpMaskRadius as CIAttributeMBS


Notes:
This attribute should have this content:

(Read only property)

52.72.12  inputImage as CIImageMBS


Notes:
See Attribute inputImage for more details.
(Read and Write property)
52.72. **CLASS CIFILTERDEPTHOFFIELDMBS**

Name: inputUnsharpMaskRadius
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Unsharp Mask Radius
DisplayName German: Radius von Unscharf maskieren
DisplayName French: Rayon du masque flou
DisplayName Italian: Raggio maschera di contrasto
DisplayName Spanish: Radio de la mscara de desenfoque
DefaultNumber: 2.5
IdentityNumber: 0
SliderMaxNumber: 10
SliderMinNumber: 0

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

### 52.72.13 inputPoint0 as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Point 0

**Notes:**

Name: inputPoint0
Class: CIVectorMBS (CIVector)
DisplayName English: Point 0
DisplayName German: Punkt 0
DisplayName French: Point0
DisplayName Italian: Punto 0
DisplayName Spanish: Punto 0
Type: CIAttributeTypePosition

See Attribute inputPoint0 for more details.
(Read and Write property)
52.72.14  inputPoint1 as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Point 1

**Notes:**

- Name: inputPoint1
- Class: CIVectorMBS (CIVector)
- DisplayName English: Point 1
- DisplayName German: Punkt 1
- DisplayName French: Point 1
- DisplayName Italian: Punto 1
- DisplayName Spanish: Punto 1
- Type: CIAttributeTypePosition

See Attribute inputPoint1 for more details.
(Read and Write property)

52.72.15  inputRadius as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Radius

**Notes:**

- Name: inputRadius
- Class: double (NSNumber)
- DisplayName English: Radius
- DisplayName German: Radius
- DisplayName French: Rayon
- DisplayName Italian: Raggio
- DisplayName Spanish: Radio
- Type: CIAttributeTypeScalar

See Attribute inputRadius for more details.
(Read and Write property)

52.72.16  inputSaturation as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Saturation

**Notes:**
Name: inputSaturation
Class: double (NSNumber)
DisplayName English: Saturation
DisplayName German: Sttigung
DisplayName French: Saturation
DisplayName Italian: Saturazione
DisplayName Spanish: Saturacin
Type: CIAttributeTypeScalar

See Attribute inputSaturation for more details.
(Read and Write property)

52.72.17 inputUnsharpMaskIntensity as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Unsharp Mask Intensity
**Notes:**
Name: inputUnsharpMaskIntensity
Class: double (NSNumber)
DisplayName English: Unsharp Mask Intensity
DisplayName German: Intensitt von Unscharf maskieren
DisplayName French: Intensit du masque flou
DisplayName Italian: Intensit maschera di contrasto
DisplayName Spanish: Intensidad de la mascara de desenfoque
Type: CIAttributeTypeScalar

See Attribute inputUnsharpMaskIntensity for more details.
(Read and Write property)

52.72.18 inputUnsharpMaskRadius as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Unsharp Mask Radius
**Notes:**
See Attribute inputUnsharpMaskRadius for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name:</th>
<th>inputUnsharpMaskRadius</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Unsharp Mask Radius</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Radius von Unscharf maskieren</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Rayon du masque flou</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Raggio maschera di contrasto</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Radio de la mascara de desenfoque</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeScalar</td>
</tr>
</tbody>
</table>
52.73. class CIFilterDepthToDisparityMBS

52.73.1 class CIFilterDepthToDisparityMBS


Notes:
Details for this filter:

FilterName: CIDepthToDisparity
DisplayName English: Depth To Disparity
DisplayName German: Tiefe zu Abweichung
DisplayName French: Profondeur en disparité
DisplayName Italian: Da profondità a disparità
DisplayName Spanish: De profundidad a disparidad

Categories:

- CICategoryColorAdjustment: Color Adjustment
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

Input:

- inputImage: Image

Output:

- outputImage

Subclass of the CIFilterMBS class.
52.73.2 Methods

52.73.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor. **Notes:** On success the handle property is not zero and the filter has the default values set.

52.73.4 Properties

52.73.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Depth To Disparity attribute. **Notes:** This attribute should have this content:

Name: inputImage  
Class: CIImageMBS  
Type: CIAttributeTypeImage  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
DefaultNumber: 0  
IdentityNumber: 0

(Read only property)

52.73.6 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image. **Notes:** See Attribute inputImage for more details. (Read and Write property)
<table>
<thead>
<tr>
<th>Name:</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>
52.74 class CIFilterDifferenceBlendModeMBS

52.74.1 class CIFilterDifferenceBlendModeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Difference Blend Mode filter.

**Notes:**
Details for this filter:

| FilterName: | CIDifferenceBlendMode |
| DisplayName English: | Difference Blend Mode |
| DisplayName German: | Mischmethode Differenz |
| DisplayName French: | Mode de fusion Diffrence |
| DisplayName Italian: | Modalit sfumatura differenza |
| DisplayName Spanish: | Diferenciar modo de mezcla |

**Categories:**
- CICategoryCompositeOperation: Composite Operation
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryBuiltIn: Built-In

**Input:**
- inputImage: Image
- inputBackgroundImage: Background Image

**Output:**
- outputImage

Subclass of the CIFilterMBS class.
52.74.2 Methods

52.74.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.74.4 Properties

52.74.5 Attribute inputBackgroundImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Difference Blend Mode attribute.
**Notes:**
This attribute should have this content:

- Name: inputBackgroundImage
- Class: CIImageMBS
- Type: CIAttributeTypeImage
- DisplayName English: Background Image
- DisplayName German: Hintergrundbild
- DisplayName French: Image d'arrière-plan
- DisplayName Italian: Immagine di sfondo
- DisplayName Spanish: Imagen de fondo
- DefaultNumber: 0
- IdentityNumber: 0

(Read only property)

52.74.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Difference Blend Mode attribute.
**Notes:**
This attribute should have this content:

(Read only property)
CHAPTER 52. COREIMAGE

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

52.74.7 inputBackgroundImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The attribute Background Image
Notes:

Name: inputBackgroundImage
Class: CIImageMBS (CIImage)
DisplayName English: Background Image
DisplayName German: Hintergrundbild
DisplayName French: Image derrière-plan
DisplayName Italian: Immagine di sfondo
DisplayName Spanish: Imagen de fondo
Type: CIAttributeTypeImage

See AttributeinputBackgroundImage for more details.
(Read and Write property)

52.74.8 inputImage as CIImageMBS

Notes:

See AttributeinputImage for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type</td>
<td>CIAtributeTypeImage</td>
</tr>
</tbody>
</table>
class CIFilterDiscBlurMBS

52.75.1 class CIFilterDiscBlurMBS


Notes:
Details for this filter:

- FilterName: CIDiscBlur
- DisplayName English: Disc Blur
- DisplayName German: Kreisförmige Unschärfe
- DisplayName French: Flou (Disc Blur)
- DisplayName Italian: Effetto disco
- DisplayName Spanish: Disco difuminado

Categories:
- CICategoryBlur: Blur
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

Input:

- inputImage: Image
- inputRadius: Radius

Output:

- outputImage

Subclass of the CIFilterMBS class.
52.75.2 Methods

52.75.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

**Notes:** On success the handle property is not zero and the filter has the default values set.

52.75.4 Properties

52.75.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Disc Blur attribute.

**Notes:**

This attribute should have this content:

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber:</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber:</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.75.6 Attribute inputRadius as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Disc Blur attribute.

**Notes:**

This attribute should have this content:

(Read only property)
52.75.7 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)

52.75.8 inputRadius as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Radius

**Notes:**

See Attribute inputRadius for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputRadius</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Radius</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Radius</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Rayon</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Raggio</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Radio</td>
</tr>
<tr>
<td>Type</td>
<td>CIAtributeTypeDistance</td>
</tr>
</tbody>
</table>
CHAPTER 52. COREIMAGE

52.76 class CIFilterDisintegrateWithMaskTransitionMBS

52.76.1 class CIFilterDisintegrateWithMaskTransitionMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Disintegrate With Mask filter.

**Notes:**

Details for this filter:

FilterName: CIDisintegrateWithMaskTransition

DisplayName English: Disintegrate With Mask

DisplayName German: bergang mit Maske

DisplayName French: Dsintgrer avec masque

DisplayName Italian: Disintegra con maschera

DisplayName Spanish: Desintegrar con mascara

Categories:

- CICategoryTransition: Transition
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

Input:

- inputImage: Image
- inputTargetImage: Target Image
- inputMaskImage: Mask Image
- inputTime: Time
- inputShadowRadius: Shadow Radius
- inputShadowDensity: Shadow Density
- inputShadowOffset: Shadow Offset

Output:
• outputImage

Subclass of the CIFilterMBS class.

### 52.76.2 Methods

### 52.76.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

### 52.76.4 Properties

### 52.76.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Disintegrate With Mask attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

### 52.76.6 Attribute inputMaskImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Disintegrate With Mask attribute.
**Notes:**
This attribute should have this content:

Name: inputMaskImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Mask Image
DisplayName German: Maske
DisplayName French: Image du masque
DisplayName Italian: Immagine maschera
DisplayName Spanish: Imagen de mascara
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.76.7 Attribute inputShadowDensity as CIAttributeMBS

Notes:
This attribute should have this content:

Name: inputShadowDensity
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Shadow Density
DisplayName German: Schattendichte
DisplayName French: Densité de l'ombre
DisplayName Italian: Densità ombra
DisplayName Spanish: Densidad del sombreado
DefaultNumber: 0.65
IdentityNumber: 0
MaxNumber: 1
MinNumber: 0
SliderMaxNumber: 1
SliderMinNumber: 0

(Read only property)
52.76.8 Attribute inputShadowOffset as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Disintegrate With Mask attribute. **Notes:**

This attribute should have this content:

Name: inputShadowOffset  
Class: CIVectorMBS  
Type: CIAttributeTypeOffset  
DisplayName English: Shadow Offset  
DisplayName German: Schattenabstand  
DisplayName French: Dcalage de lombre  
DisplayName Italian: Offset ombra  
DisplayName Spanish: Proyeccion del sombreado  
DefaultVector: [ 0 -10 ]  
IdentityVector: [ 0 0 ]

(Read only property)

52.76.9 Attribute inputShadowRadius as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Disintegrate With Mask attribute. **Notes:**

This attribute should have this content:

Name: inputShadowRadius  
Class: double  
Type: CIAttributeTypeDistance  
DisplayName English: Shadow Radius  
DisplayName German: Schattenradius  
DisplayName French: Rayon de lombre  
DisplayName Italian: Raggio dell’ombra  
DisplayName Spanish: Radio del sombreado  
DefaultNumber: 8  
IdentityNumber: 0  
SliderMaxNumber: 50  
SliderMinNumber: 0

(Read only property)
52.76.10  Attribute inputTargetImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Disintegrate With Mask attribute.

**Notes:**
This attribute should have this content:

Name: inputTargetImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Target Image
DisplayName German: Zielbild
DisplayName French: Image cible
DisplayName Italian: Immagine target
DisplayName Spanish: Imagen de destino
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.76.11  Attribute inputTime as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Disintegrate With Mask attribute.

**Notes:**
This attribute should have this content:

(Read only property)

52.76.12  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**
See Attribute inputImage for more details.
(Read and Write property)
52.76. CLASS CIFILTERDISINTEGRATEWITHMASKTRANSITIONMBS

Name: inputTime
Class: double
Type: CIAtributeTypeTime
DisplayName English: Time
DisplayName German: Zeit
DisplayName French: Dure
DisplayName Italian: Tempo
DisplayName Spanish: Tiempo
DefaultNumber: 0
IdentityNumber: 0
MaxNumber: 1
MinNumber: 0
SliderMaxNumber: 1
SliderMinNumber: 0

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAtributeTypeImage

52.76.13 inputMaskImage as CIImageMBS

Notes:

Name: inputMaskImage
Class: CIImageMBS (CIImage)
DisplayName English: Mask Image
DisplayName German: Maske
DisplayName French: Image du masque
DisplayName Italian: Immagine maschera
DisplayName Spanish: Imagen de mascara
Type: CIAtributeTypeImage

See Attribute inputMaskImage for more details.
(Read and Write property)
52.76.14  inputShadowDensity as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Shadow Density
**Notes:**
- Name: inputShadowDensity
- Class: double (NSNumber)
- DisplayName English: Shadow Density
- DisplayName German: Schattendichte
- DisplayName French: Densité de lombre
- DisplayName Italian: Densità ombra
- DisplayName Spanish: Densidad del sombreado
- Type: CIAttributeTypeScalar

See Attribute inputShadowDensity for more details.
(Read and Write property)

52.76.15  inputShadowOffset as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Shadow Offset
**Notes:**
- Name: inputShadowOffset
- Class: CIVectorMBS (CIVector)
- DisplayName English: Shadow Offset
- DisplayName German: Schattenabstand
- DisplayName French: Décalage de lombre
- DisplayName Italian: Offset ombra
- DisplayName Spanish: Proyección del sombreado
- Type: CIAttributeTypeOffset

See Attribute inputShadowOffset for more details.
(Read and Write property)

52.76.16  inputShadowRadius as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Shadow Radius
**Notes:**
52.76. **CLASS CIFILTERDISINTEGRATEWITHMASKTRANSITIONMBS**

Name: inputShadowRadius  
Class: double (NSNumber)  
DisplayName English: Shadow Radius  
DisplayName German: Schattenradius  
DisplayName French: Rayon de lombre  
DisplayName Italian: Raggio dell’ombra  
DisplayName Spanish: Radio del sombreado  
Type: CIAttributeTypeDistance

See Attribute inputShadowRadius for more details.  
(Read and Write property)

### 52.76.17 inputTargetImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Target Image  
Notes:

Name: inputTargetImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Target Image  
DisplayName German: Zielbild  
DisplayName French: Image cible  
DisplayName Italian: Immagine target  
DisplayName Spanish: Imagen de destino  
Type: CIAttributeTypeImage

See Attribute inputTargetImage for more details.  
(Read and Write property)

### 52.76.18 inputTime as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Time  
Notes:

See Attribute inputTime for more details.  
(Read and Write property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputTime</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Time</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Zeit</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Dure</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Tempo</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Tiempo</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeTime</td>
</tr>
</tbody>
</table>
52.77.  

**CLASS CIFILTERDISPARITYTODEPTHMBS**

### 52.77 class CIFilterDisparityToDepthMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Disparity To Depth filter.

**Notes:**

Details for this filter:

- **FilterName:** CIDisparityToDepth
- **DisplayName English:** Disparity To Depth
- **DisplayName German:** Abweichung zu Tiefe
- **DisplayName French:** Disparit en profondeur
- **DisplayName Italian:** Da disparit a profondit
- **DisplayName Spanish:** De disparidad a profundidad

**Categories:**

- CICategoryColorAdjustment: Color Adjustment
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.77.2 Methods

52.77.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.77.4 Properties

52.77.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Disparity To Depth attribute.
**Notes:**
This attribute should have this content:

- **Name:** inputImage
- **Class:** CIImageMBS
- **Type:** CIAttributeTypeImage
- **DisplayName English:** Image
- **DisplayName German:** Bild
- **DisplayName French:** Image
- **DisplayName Italian:** Immagine
- **DisplayName Spanish:** Imagen
- **DefaultNumber:** 0
- **IdentityNumber:** 0

(Read only property)

52.77.6 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image
**Notes:**
See Attribute inputImage for more details.
(Read and Write property)
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage
52.78 class CIFilterDisplacementDistortionMBS

52.78.1 class CIFilterDisplacementDistortionMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Displacement Distortion filter.

**Notes:**
Details for this filter:

- **FilterName:** CIDisplacementDistortion
- **DisplayName English:** Displacement Distortion
- **DisplayName German:** Verzerrung Verdrängung
- **DisplayName French:** Dformation Dplacement
- **DisplayName Italian:** Distorsione spostamento
- **DisplayName Spanish:** Distorsión de desplazamiento

**Categories:**
- **CICategoryDistortionEffect:** Distortion Effect
- **CICategoryVideo:** Video
- **CICategoryStillImage:** Still Image
- **CICategoryBuiltIn:** Built-In

**Input:**
- **inputImage:** Image
- **inputDisplacementImage:** Displacement Image
- **inputScale:** Scale

**Output:**
- **outputImage**

Subclass of the CIFilterMBS class.
52.78.2 Methods

52.78.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.78.4 Properties

52.78.5 Attribute `inputDisplacementImage` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Displacement Distortion attribute.
**Notes:**
This attribute should have this content:

- Name: `inputDisplacementImage`
- Class: CIImageMBS
- DisplayName English: Displacement Image
- DisplayName German: Bildverschiebung
- DisplayName French: Image du déplacement
- DisplayName Italian: Immagine spostamento
- DisplayName Spanish: Imagen de desplazamiento
- DefaultNumber: 0
- IdentityNumber: 0

(Read only property)

52.78.6 Attribute `inputImage` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Displacement Distortion attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.78.7  **Attribute inputScale as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Displacement Distortion attribute.

**Notes:**

This attribute should have this content:

Name:    inputScale  
Class:    double  
Type:    CIAttributeTypeDistance  
DisplayName English:    Scale  
DisplayName German:    Skalierung  
DisplayName French:    Chelle  
DisplayName Italian:    Scala  
DisplayName Spanish:    Escala  
DefaultNumber:    50  
IdentityNumber:    0  
SliderMaxNumber:    200  
SliderMinNumber:    0

(Read only property)

52.78.8  **inputDisplacementImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Displacement Image

**Notes:**

See Attribute inputDisplacementImage for more details.

(Read and Write property)
Name: inputDisplacementImage
Class: CIImageMBS (CIImage)
DisplayName English: Displacement Image
DisplayName German: Bildverschiebung
DisplayName French: Image du dplacement
DisplayName Italian: Immagine spostamento
DisplayName Spanish: Imagen de desplazamiento

52.78.9  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)

52.78.10  inputScale as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Scale

**Notes:**

Name: inputScale
Class: double (NSNumber)
DisplayName English: Scale
DisplayName German: Skalierung
DisplayName French: Chelle
DisplayName Italian: Scala
DisplayName Spanish: Escala
Type: CIAttributeTypeDistance

See Attribute inputScale for more details.
(Read and Write property)
52.79. class CIFilterDissolveTransitionMBS

52.79.1 class CIFilterDissolveTransitionMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Dissolve filter. **Notes:**

Details for this filter:

FilterName: CIDissolveTransition
DisplayName English: Dissolve
DisplayName German: berblenden
DisplayName French: Dissoudre
DisplayName Italian: Dissolvenza
DisplayName Spanish: Disolucin

Categories:

- CICategoryTransition: Transition
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryBuiltIn: Built-In

Input:

- inputImage: Image
- inputTargetImage: Target Image
- inputTime: Time

Output:

- outputImage

Subclass of the CIFilterMBS class.
52.79.2 Methods

52.79.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.79.4 Properties

52.79.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Dissolve attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.79.6 Attribute inputTargetImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Dissolve attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.79. **CLASS CIFILTERDISSOLVETRANSITIONMBS**

Name: inputTargetImage  
Class: CIImageMBS  
Type: CIAttributeTypeImage  
DisplayName English: Target Image  
DisplayName German: Zielbild  
DisplayName French: Image cible  
DisplayName Italian: Immagine target  
DisplayName Spanish: Imagen de destino  
DefaultNumber: 0  
IdentityNumber: 0

52.79.7 **Attribute inputTime as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Dissolve attribute.  
**Notes:** This attribute should have this content:

Name: inputTime  
Class: double  
Type: CIAttributeTypeTime  
DisplayName English: Time  
DisplayName German: Zeit  
DisplayName French: Dure  
DisplayName Italian: Tempo  
DisplayName Spanish: Tiempo  
DefaultNumber: 0  
IdentityNumber: 0  
MaxNumber: 1  
MinNumber: 0  
SliderMaxNumber: 1  
SliderMinNumber: 0

(Read only property)

52.79.8 **inputImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image  
**Notes:** See Attribute inputImage for more details.
52.79.9   inputTargetImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
The attribute Target Image

**Notes:**
See AttributeinputTargetImage for more details.
(Read and Write property)

52.79.10   inputTime as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
The attribute Time

**Notes:**
See AttributeinputTime for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputTime</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Time</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Zeit</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Dure</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Tempo</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Tiempo</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeTime</td>
</tr>
</tbody>
</table>
52.80  class CIFilterDivideBlendModeMBS

52.80.1  class CIFilterDivideBlendModeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Divide Blend Mode filter.

**Notes:**
Details for this filter:

- **FilterName:** CIDivideBlendMode
- **DisplayName English:** Divide Blend Mode
- **DisplayName German:** Mischmethode Teilen
- **DisplayName French:** Mode de fusion Diviser
- **DisplayName Italian:** Modalit sfumatura dissolvenza
- **DisplayName Spanish:** Dividir modo de mezcla

**Categories:**

- CICategoryCompositeOperation: Composite Operation
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputBackgroundImage: Background Image

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.80.2 Methods

52.80.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.80.4 Properties

52.80.5 Attribute inputBackgroundImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Divide Blend Mode attribute.
**Notes:**
This attribute should have this content:

```
Name: inputBackgroundImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Background Image
DisplayName German: Hintergrundbild
DisplayName French: Image derrière-plan
DisplayName Italian: Immagine di sfondo
DisplayName Spanish: Imagen de fondo
DefaultNumber: 0
IdentityNumber: 0
```

(Read only property)

52.80.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Divide Blend Mode attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.80.7 inputBackgroundImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Background Image

**Notes:**

Name: inputBackgroundImage
Class: CIImageMBS (CIImage)
DisplayName English: Background Image
DisplayName German: Hintergrundbild
DisplayName French: Image d’arrière-plan
DisplayName Italian: Immagine di sfondo
DisplayName Spanish: Imagen de fondo
Type: CIAttributeTypeImage

See Attribute inputBackgroundImage for more details.
(Read and Write property)

52.80.8 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

See Attribute inputImage for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name:</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAtributeTypeImage</td>
</tr>
</tbody>
</table>
52.81 class CIFilterDotScreenMBS

52.81.1 class CIFilterDotScreenMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Dot Screen filter.

**Notes:**

Details for this filter:

FilterName: CIDotScreen

DisplayName English: Dot Screen
DisplayName German: Punktfrmiges Halbtonraster
DisplayName French: cran en pointill
DisplayName Italian: Schermo a punti
DisplayName Spanish: Pantalla punteada

Categories:

- CICategoryHalftoneEffect: Halftone Effect
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputCenter: Center
- inputAngle: Angle
- inputWidth: Width
- inputSharpness: Sharpness

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.81.2 Methods

52.81.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.81.4 Properties

52.81.5 Attribute inputAngle as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Dot Screen attribute.
**Notes:**
This attribute should have this content:

- **Name:** inputAngle
- **Class:** double
- **Type:** CIAttributeTypeAngle
- **DisplayName English:** Angle
- **DisplayName German:** Winkel
- **DisplayName French:** Angle
- **DisplayName Italian:** Angolo
- **DisplayName Spanish:** angulo
- **DefaultNumber:** 0
- **IdentityNumber:** 0
- **SliderMaxNumber:** 3.141593
- **SliderMinNumber:** -3.141593

(Read only property)

52.81.6 Attribute inputCenter as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Dot Screen attribute.
**Notes:**
This attribute should have this content:
Name: inputCenter
Class: CIVectorMBS
Type: CIAttributeTypePosition
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
DefaultVector: [ 150 150 ]
IdentityVector: n/a

(Read only property)

52.81.7 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Dot Screen attribute.

**Notes:**
This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.81.8 Attribute inputSharpness as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Dot Screen attribute.

**Notes:**
This attribute should have this content:
52.81. CLASS CIFILTERDOTSCREENMBS

Name: inputSharpness
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Sharpness
DisplayName German: Schärfe
DisplayName French: Nettet
DisplayName Italian: Nitidezza
DisplayName Spanish: Nitidez
DefaultNumber: 0.7
IdentityNumber: 0
MaxNumber: 1
MinNumber: 0
SliderMaxNumber: 1
SliderMinNumber: 0

(Read only property)

52.81.9 Attribute inputWidth as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Dot Screen attribute.

**Notes:**
This attribute should have this content:

Name: inputWidth
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Anchura
DefaultNumber: 6
IdentityNumber: 0
MaxNumber: 0
MinNumber: 1
SliderMaxNumber: 50
SliderMinNumber: 2

(Read only property)
52.81.10 inputAngle as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Angle
**Notes:**

- **Name:** inputAngle
- **Class:** double (NSNumber)
- **DisplayName English:** Angle
- **DisplayName German:** Winkel
- **DisplayName French:** Angle
- **DisplayName Italian:** Angolo
- **DisplayName Spanish:** ngulo
- **Type:** CIAttributeTypeAngle

See Attribute inputAngle for more details.
(Read and Write property)

52.81.11 inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Center
**Notes:**

- **Name:** inputCenter
- **Class:** CIVectorMBS (CIVector)
- **DisplayName English:** Center
- **DisplayName German:** Mitte
- **DisplayName French:** Centre
- **DisplayName Italian:** Centro
- **DisplayName Spanish:** Centro
- **Type:** CIAttributeTypePosition

See Attribute inputCenter for more details.
(Read and Write property)

52.81.12 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image
**Notes:**
52.81. **CLASS CIFILTERDOTSCREENMBS**

Name: inputImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
Type: CIAttributeTypeImage

See AttributeinputImage for more details.  
(Read and Write property)

**52.81.13 inputSharpness as double**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Sharpness  
**Notes:**

Name: inputSharpness  
Class: double (NSNumber)  
DisplayName English: Sharpness  
DisplayName German: Schärfe  
DisplayName French: Nettet  
DisplayName Italian: Nitidezza  
DisplayName Spanish: Nitidez  
Type: CIAttributeTypeScalar

See AttributeinputSharpness for more details.  
(Read and Write property)

**52.81.14 inputWidth as double**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Width  
**Notes:**

See AttributeinputWidth for more details.  
(Read and Write property)
<table>
<thead>
<tr>
<th>Name:</th>
<th>inputWidth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Width</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Breite</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Largeur</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Larghezza</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Anchura</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeDistance</td>
</tr>
</tbody>
</table>
52.82.  **CLASS CIFILTERDROSTEMBS**

52.82  **class CIFilterDrosteMBS**

52.82.1  **class CIFilterDrosteMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Droste filter.

**Notes:**

Details for this filter:

<table>
<thead>
<tr>
<th>FilterName</th>
<th>CIDroste</th>
</tr>
</thead>
<tbody>
<tr>
<td>DisplayName English</td>
<td>Droste</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Droste</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Droste</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Droste</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Droste</td>
</tr>
</tbody>
</table>

Categories:

- CICategoryDistortionEffect: Distortion Effect
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputInsetPoint0: InsetPoint0
- inputInsetPoint1: InsetPoint1
- inputStrands: Strands
- inputPeriodicity: Periodicity
- inputRotation: Rotation
- inputZoom: Zoom

**Output:**
• outputImage

Subclass of the CIFilterMBS class.

## 52.82.2 Methods

### 52.82.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

## 52.82.4 Properties

### 52.82.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Droste attribute.
**Notes:**
This attribute should have this content:

- Name: inputImage
- Class: CIImageMBS
- Type: CIAttributeTypeErrorImage
- DisplayName English: Image
- DisplayName German: Bild
- DisplayName French: Image
- DisplayName Italian: Immagine
- DisplayName Spanish: Imagen
- DefaultNumber: 0
- IdentityNumber: 0

(Read only property)

### 52.82.6 Attribute inputInsetPoint0 as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Droste attribute.
**Notes:**
This attribute should have this content:

Name: inputInsetPoint0  
Class: CIVectorMBS  
Type: CIAttributeTypePosition  
DisplayName: InsetPoint0  
DefaultVector: [ 200 200 ]  
IdentityVector: n/a

(Read only property)

52.82.7 Attribute inputInsetPoint1 as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Droste attribute.  
**Notes:**  
This attribute should have this content:

Name: inputInsetPoint1  
Class: CIVectorMBS  
Type: CIAttributeTypePosition  
DisplayName: InsetPoint1  
DefaultVector: [ 400 400 ]  
IdentityVector: n/a

(Read only property)

52.82.8 Attribute inputPeriodicity as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Droste attribute.  
**Notes:**  
This attribute should have this content:

(Read only property)
**52.82.9 Attribute inputRotation as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Droste attribute.

**Notes:**
This attribute should have this content:

```plaintext
Name: inputRotation
Class: double
Type: CIAttributeTypeAngle
DisplayName: Rotation
DefaultNumber: 0
IdentityNumber: 0
SliderMaxNumber: 6.283185
SliderMinNumber: 0
```

(Read only property)

**52.82.10 Attribute inputStrands as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Droste attribute.

**Notes:**
This attribute should have this content:

(Read only property)
52.82. CLASS CIFILTERDROSTEMBS

Name: inputStrands
Class: double
Type: CIAttributeTypeScalar
DisplayName: Strands
DefaultNumber: 1
IdentityNumber: 0
MaxNumber: 10
MinNumber: -10
SliderMaxNumber: 2
SliderMinNumber: -2

52.82.11 Attribute inputZoom as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Droste attribute.

**Notes:**
This attribute should have this content:

Name: inputZoom
Class: double
Type: CIAttributeTypeScalar
DisplayName: Zoom
DefaultNumber: 1
IdentityNumber: 0
MaxNumber: 0
MinNumber: 0.01
SliderMaxNumber: 5
SliderMinNumber: 0.01

(Read only property)

52.82.12 inputImage as CIIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**
See Attribute inputImage for more details.
(Read and Write property)
CHAPTER 52. COREIMAGE

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

52.82.13 inputInsetPoint0 as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute InsetPoint0

**Notes:**

Name: inputInsetPoint0
Class: CIVectorMBS (CIVector)
DisplayName English: InsetPoint0
DisplayName German: InsetPoint0
DisplayName French: InsetPoint0
DisplayName Italian: InsetPoint0
DisplayName Spanish: InsetPoint0
Type: CIAttributeTypePosition

See Attribute inputInsetPoint0 for more details.
(Read and Write property)

52.82.14 inputInsetPoint1 as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute InsetPoint1

**Notes:**

Name: inputInsetPoint1
Class: CIVectorMBS (CIVector)
DisplayName English: InsetPoint1
DisplayName German: InsetPoint1
DisplayName French: InsetPoint1
DisplayName Italian: InsetPoint1
DisplayName Spanish: InsetPoint1
Type: CIAttributeTypePosition

See Attribute inputInsetPoint1 for more details.
### 52.82.15 inputPeriodicity as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Periodicity  
**Notes:**

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputPeriodicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Periodicity</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Periodicity</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Periodicity</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Periodicity</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Periodicity</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeScalar</td>
</tr>
</tbody>
</table>

See Attribute inputPeriodicity for more details.  
(Read and Write property)

### 52.82.16 inputRotation as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Rotation  
**Notes:**

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputRotation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Rotation</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Rotation</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Rotation</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Rotation</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Rotation</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeAngle</td>
</tr>
</tbody>
</table>

See Attribute inputRotation for more details.  
(Read and Write property)
52.82.17 inputStrands as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Strands  
**Notes:**

Name: inputStrands  
Class: double (NSNumber)  
DisplayName English: Strands  
DisplayName German: Strands  
DisplayName French: Strands  
DisplayName Italian: Strands  
DisplayName Spanish: Strands  
Type: CIAttributeTypeScalar

See Attribute inputStrands for more details.  
(Read and Write property)

52.82.18 inputZoom as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Zoom  
**Notes:**

Name: inputZoom  
Class: double (NSNumber)  
DisplayName English: Zoom  
DisplayName German: Zoom  
DisplayName French: Zoom  
DisplayName Italian: Zoom  
DisplayName Spanish: Zoom  
Type: CIAttributeTypeScalar

See Attribute inputZoom for more details.  
(Read and Write property)
52.83. class CIFilterEdgePreserveUpsampleFilterMBS

52.83.1 class CIFilterEdgePreserveUpsampleFilterMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Edge Preserve Upsample Filter filter.
**Notes:**
Details for this filter:

- **FilterName:** CIEdgePreserveUpsampleFilter
- **DisplayName English:** Edge Preserve Upsample Filter
- **DisplayName German:** Kantenerhaltender Upsample-Filter
- **DisplayName French:** Filtre de surchantillonnage pour la préservation des contours
- **DisplayName Italian:** Filtro di ricampionamento per la conservazione dei bordi
- **DisplayName Spanish:** Filtro de interpolación con preservación de bordes

**Categories:**
- CICategoryGeometryAdjustment: Geometry Adjustment
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryBuiltIn: Built-In

**Input:**
- inputImage: Image
- inputSmallImage: Small Image
- inputSpatialSigma: Spatial Sigma
- inputLumaSigma: Luma Sigma

**Output:**
- outputImage

Subclass of the CIFilterMBS class.
52.83.2 Methods

52.83.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The constructor. Notes: On success the handle property is not zero and the filter has the default values set.

52.83.4 Properties

52.83.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Details about the Edge Preserve Upsample Filter attribute. Notes: This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.83.6 Attribute inputLumaSigma as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Details about the Edge Preserve Upsample Filter attribute. Notes: This attribute should have this content: (Read only property)
52.83. CLASS CIFILTEREDGEPRESERVEUPSAMPLEFILTERMBS

Name: inputLumaSigma
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Luma Sigma
DisplayName German: Luma-Sigma
DisplayName French: Sigma de la luminance
DisplayName Italian: Sigma luminanza
DisplayName Spanish: Desviación estándar sigma de luminancia
DefaultNumber: 0.15
IdentityNumber: 0
MaxNumber: 1
MinNumber: 0

52.83.7 AttributeinputSmallImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Details about the Edge Preserve Upsample Filter attribute.
Notes:
This attribute should have this content:

Name: inputSmallImage
Class: CIImageMBS
DisplayName English: Small Image
DisplayName German: Kleines Bild
DisplayName French: Petite image
DisplayName Italian: Immagine di dimensioni ridotte
DisplayName Spanish: Imagen pequeña
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.83.8 AttributeinputSpatialSigma as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Details about the Edge Preserve Upsample Filter attribute.
Notes:
This attribute should have this content:

(Read only property)
52.83.9  **inputImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Image</td>
</tr>
<tr>
<td>German</td>
<td>Bild</td>
</tr>
<tr>
<td>French</td>
<td>Image</td>
</tr>
<tr>
<td>Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>

See Attribute inputImage for more details.
(Read and Write property)

52.83.10  **inputLumaSigma as double**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Luma Sigma

**Notes:**

See Attribute inputLumaSigma for more details.
(Read and Write property)
**52.83. CLASS CIFILTEREDGEPRESERVEUPSAMPLEFILTERMBS**

- **Name:** inputLumaSigma
- **Class:** double (NSNumber)
- **DisplayName**
  - English: Luma Sigma
  - German: Luma-Sigma
  - French: Sigma de la luminance
  - Italian: Sigma luminanza
  - Spanish: Desviación estándar sigma de luminancia
- **Type:** CIAttributeTypeScalar

**52.83.11 inputSmallImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Small Image **Notes:**

- **Name:** inputSmallImage
- **Class:** CIImageMBS (CIImage)
- **DisplayName**
  - English: Small Image
  - German: Kleines Bild
  - French: Petite image
  - Italian: Immagine di dimensioni ridotte
  - Spanish: Imagen pequeña
- **Type:**

See Attribute inputSmallImage for more details. (Read and Write property)

**52.83.12 inputSpatialSigma as double**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Spatial Sigma **Notes:**

- **Name:** inputSpatialSigma
- **Class:** double (NSNumber)
- **DisplayName**
  - English: Spatial Sigma
  - German: Räumliches Sigma
  - French: Sigma spatial
  - Italian: Sigma spaziale
  - Spanish: Desviación estándar sigma espacial
- **Type:** CIAttributeTypeScalar

See Attribute inputSpatialSigma for more details.
8828

(Read and Write property)
52.84. CLASS CIFILTEREDGESMBS

52.84 class CIFilterEdgesMBS

52.84.1 class CIFilterEdgesMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Edges filter. 

**Notes:**

Details for this filter:

- **FilterName:** CIEdges
- **DisplayName English:** Edges
- **DisplayName German:** Kanten
- **DisplayName French:** Contours
- **DisplayName Italian:** Estremit
- **DisplayName Spanish:** Bordes

**Categories:**

- CICategoryStylize: Stylize
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputIntensity: Intensity

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.84.2 Methods

52.84.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.84.4 Properties

52.84.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Edges attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>inputImage</td>
</tr>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.84.6 Attribute inputIntensity as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Edges attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.84. **CLASS CIFILTEREDGESMBS**

Name: inputIntensity
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Intensity
DisplayName German: Intensität
DisplayName French: Intensité
DisplayName Italian: Intensità
DisplayName Spanish: Intensidad
DefaultNumber: 1
IdentityNumber: 0
SliderMaxNumber: 10
SliderMinNumber: 0

52.84.7 **inputImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)

52.84.8 **inputIntensity as double**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Intensity

**Notes:**

See Attribute inputIntensity for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name:</th>
<th>inputIntensity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Intensity</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Intensità</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Intensité</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Intensità</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Intensidad</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeScalar</td>
</tr>
</tbody>
</table>
52.85. class CIFilterEdgeWorkMBS

52.85.1 class CIFilterEdgeWorkMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Edge Work filter.
**Notes:**
Details for this filter:

- **FilterName:** CIEdgeWork
- **DisplayName English:** Edge Work
- **DisplayName German:** Kontur finden
- **DisplayName French:** Contourage
- **DisplayName Italian:** Lavoro sull’estremit
- **DisplayName Spanish:** Trabajo en bordes

**Categories:**

- CICategoryStylize: Stylize
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- **inputImage:** Image
- **inputRadius:** Radius

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
52.85.2 Methods

52.85.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.85.4 Properties

52.85.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Edge Work attribute.
**Notes:**
This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.85.6 Attribute inputRadius as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Edge Work attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.85. CLASS CIFILTEREDGEWORKMBS

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputRadius</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>double</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeDistance</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Radius</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Radius</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Rayon</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Raggio</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Radio</td>
</tr>
<tr>
<td>DefaultNumber:</td>
<td>3</td>
</tr>
<tr>
<td>IdentityNumber:</td>
<td>0</td>
</tr>
<tr>
<td>SliderMaxNumber:</td>
<td>20</td>
</tr>
<tr>
<td>SliderMinNumber:</td>
<td>0</td>
</tr>
</tbody>
</table>

52.85.7  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>

See Attribute inputImage for more details.
(Read and Write property)

52.85.8  inputRadius as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Radius

**Notes:**

See Attribute inputRadius for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputRadius</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>Display Name English</td>
<td>Radius</td>
</tr>
<tr>
<td>Display Name German</td>
<td>Radius</td>
</tr>
<tr>
<td>Display Name French</td>
<td>Rayon</td>
</tr>
<tr>
<td>Display Name Italian</td>
<td>Raggio</td>
</tr>
<tr>
<td>Display Name Spanish</td>
<td>Radio</td>
</tr>
<tr>
<td>Type</td>
<td>CIAtributeTypeDistance</td>
</tr>
</tbody>
</table>
52.86. class CIFilterEightfoldReflectedTileMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Eightfold Reflected Tile filter.

**Notes:**
Details for this filter:

FilterName: CIEightfoldReflectedTile
DisplayName English: Eightfold Reflected Tile
DisplayName German: 8-fach reflektierte Kachel
DisplayName French: Mosaque rflchie 8 fois
DisplayName Italian: Mosaico riflesso in otto direzioni
DisplayName Spanish: Mosaico reflejado ocho veces

**Categories:**
- CICategoryTileEffect: Tile Effect
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**
- inputImage: Image
- inputCenter: Center
- inputAngle: Angle
- inputWidth: Width

**Output:**
- outputImage

Subclass of the CIFilterMBS class.
52.86.2 Methods

52.86.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.86.4 Properties

52.86.5 Attribute inputAngle as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Eightfold Reflected Tile attribute.
**Notes:**
This attribute should have this content:

- **Name:** inputAngle
- **Class:** double
- **Type:** CIAttributeTypeAngle
- **DisplayName English:** Angle
- **DisplayName German:** Winkel
- **DisplayName French:** Angle
- **DisplayName Italian:** Angolo
- **DisplayName Spanish:** ngulo
- **DefaultNumber:** 0
- **IdentityNumber:** 0
- **SliderMaxNumber:** 3.141593
- **SliderMinNumber:** -3.141593

(Read only property)

52.86.6 Attribute inputCenter as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Eightfold Reflected Tile attribute.
**Notes:**
This attribute should have this content:
52.86.  **CLASS CIFILTEREIGHTFOLDREFLECTEDTILEMBS**

Name: inputCenter  
Class: CIVectorMBS  
Type: CIAttributeTypePosition  
DisplayName English: Center  
DisplayName German: Mitte  
DisplayName French: Centre  
DisplayName Italian: Centro  
DisplayName Spanish: Centro  
DefaultVector: [150 150]  
IdentityVector: n/a

(Read only property)

52.86.7  **Attribute** inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Details about the Eightfold Reflected Tile attribute.  
**Notes:**  
This attribute should have this content:

Name: inputImage  
Class: CIImageMBS  
Type: CIAttributeTypeImage  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
DefaultNumber: 0  
IdentityNumber: 0

(Read only property)

52.86.8  **Attribute** inputWidth as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Details about the Eightfold Reflected Tile attribute.  
**Notes:**  
This attribute should have this content:
Name: inputWidth  
Class: double  
Type: CIAttributeTypeDistance  
DisplayName English: Width  
DisplayName German: Breite  
DisplayName French: Largeur  
DisplayName Italian: Larghezza  
DisplayName Spanish: Anchura  
DefaultNumber: 100  
IdentityNumber: 100  
SliderMaxNumber: 200  
SliderMinNumber: 1

(Read only property)

52.86.9  inputAngle as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Angle

**Notes:**

Name: inputAngle  
Class: double (NSNumber)  
DisplayName English: Angle  
DisplayName German: Winkel  
DisplayName French: Angle  
DisplayName Italian: Angolo  
DisplayName Spanish: Angle  
Type: CIAttributeTypeAngle

See Attribute inputAngle for more details.
(Read and Write property)

52.86.10  inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Center

**Notes:**

See Attribute inputCenter for more details.
52.86. CLASS CIFILTEREIGHTFOLDREFLECTEDTILEMBS

Name: inputCenter
Class: CIVectorMBS (CIVector)
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
Type: CIAttributeTypePosition

(Read and Write property)

52.86.11 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)

52.86.12 inputWidth as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Width

**Notes:**

See Attribute inputWidth for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name:</th>
<th>inputWidth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Width</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Breite</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Largeur</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Larghezza</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Anchura</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAtributeTypeDistance</td>
</tr>
</tbody>
</table>
class CIFilterExclusionBlendModeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Exclusion Blend Mode filter.  
**Notes:**

Details for this filter:

- **FilterName:** CIExclusionBlendMode
- **DisplayName English:** Exclusion Blend Mode
- **DisplayName German:** Mischmethode Ausschluss
- **DisplayName French:** Mode de fusion Exclusion
- **DisplayName Italian:** Modalità sfumatura esclusione
- **DisplayName Spanish:** Modo de mezcla por exclusión

**Categories:**

- CICategoryCompositeOperation: Composite Operation
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputBackgroundImage: Background Image

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.87.2 Methods

52.87.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.87.4 Properties

52.87.5 AttributeinputBackgroundImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Exclusion Blend Mode attribute.
**Notes:**
This attribute should have this content:

Name: inputBackgroundImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Background Image
DisplayName German: Hintergrundbild
DisplayName French: Image darrriere-plan
DisplayName Italian: Immagine di sfondo
DisplayName Spanish: Imagen de fondo
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.87.6 AttributeinputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Exclusion Blend Mode attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.87. CLASS CIFILTEREXCLUSIONBLENDMODEMBS

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

52.87.7 inputBackgroundImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Background Image

**Notes:**

Name: inputBackgroundImage
Class: CIImageMBS (CIImage)
DisplayName English: Background Image
DisplayName German: Hintergrundbild
DisplayName French: Image derrière-plan
DisplayName Italian: Immagine di sfondo
DisplayName Spanish: Imagen de fondo
Type: CIAttributeTypeImage

See Attribute inputBackgroundImage for more details.
(Read and Write property)

52.87.8 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

See Attribute inputImage for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>
52.88. class CIFilterExposureAdjustMBS

52.88.1 class CIFilterExposureAdjustMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Exposure Adjust filter.

**Notes:**

Details for this filter:

- **FilterName:** CIExposureAdjust
- **DisplayName English:** Exposure Adjust
- **DisplayName German:** Belichtung anpassen
- **DisplayName French:** Ajustement d'exposition
- **DisplayName Italian:** Regolazione esposizione
- **DisplayName Spanish:** Ajuste de exposición

**Categories:**

- **CICategoryColorAdjustment:** Color Adjustment
- **CICategoryVideo:** Video
- **CICategoryStillImage:** Still Image
- **CICategoryInterlaced:** Interlaced
- **CICategoryNonSquarePixels:** Non-Square Pixels
- **CICategoryBuiltIn:** Built-In
- **CICategoryXMPSerializable:** CICategoryXMPSerializable

**Input:**

- **inputImage:** Image
- **inputEV:** EV

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
52.88.2 Methods

52.88.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.88.4 Properties

52.88.5 Attribute inputEV as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Exposure Adjust attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputEV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeScalar</td>
</tr>
<tr>
<td>DisplayName</td>
<td>EV</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
<tr>
<td>SliderMaxNumber</td>
<td>10</td>
</tr>
<tr>
<td>SliderMinNumber</td>
<td>-10</td>
</tr>
</tbody>
</table>

(Read only property)

52.88.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Exposure Adjust attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.88. **CLASS CIFILTEREXPOSUREADJUSTMBS**

Name: inputImage  
Class: CIImageMBS  
Type: CIAttributeTypeImage  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
DefaultNumber: 0  
IdentityNumber: 0

---

52.88.7 **inputEV as double**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute EV  
**Notes:**

Name: inputEV  
Class: double (NSNumber)  
DisplayName English: EV  
DisplayName German: EV  
DisplayName French: EV  
DisplayName Italian: EV  
DisplayName Spanish: EV  
Type: CIAttributeTypeScalar

See Attribute inputEV for more details.  
(Read and Write property)

---

52.88.8 **inputImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image  
**Notes:**

See Attribute inputImage for more details.  
(Read and Write property)
<table>
<thead>
<tr>
<th>Name:</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>
52.89. class CIFilterFalseColorMBS

52.89.1 class CIFilterFalseColorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage False Color filter.

**Notes:**
Details for this filter:

- **FilterName:** CIFalseColor
- **DisplayName English:** False Color
- **DisplayName German:** Falschfarbendarstellung
- **DisplayName French:** Fausse couleur
- **DisplayName Italian:** Colore falso
- **DisplayName Spanish:** Color falso

**Categories:**

- CICategoryColorEffect: Color Effect
- CICategoryVideo: Video
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- **inputImage:** Image
- **inputColor0:** Color 1
- **inputColor1:** Color 2

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
52.89.2 Methods

52.89.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.89.4 Properties

52.89.5 AttributeinputColor0 as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the False Color attribute.
**Notes:**
This attribute should have this content:

Name: inputColor0
Class: CIColorMBS
Type: CIAttributeTypeColor
DisplayName English: Color 1
DisplayName German: Farbe 1
DisplayName French: Couleur 1
DisplayName Italian: Colore 1
DisplayName Spanish: Color 1
DefaultColor: Red = 0.3, Green = 0, Blue = 0, Alpha = 1
IdentityNumber: 0

(Read only property)

52.89.6 AttributeinputColor1 as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the False Color attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.89. **CLASS CIFILTERFALSECOLORMBS**

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputColor1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIColorMBS</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAtributeTypeColor</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Color 2</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Farbe 2</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Couleur 2</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Colore 2</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Color 2</td>
</tr>
<tr>
<td>DefaultColor:</td>
<td>Red = 1, Green = 0.9, Blue = 0.8, Alpha = 1</td>
</tr>
<tr>
<td>IdentityNumber:</td>
<td>0</td>
</tr>
</tbody>
</table>

52.89.7 **Attribute inputImage as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the False Color attribute. **Notes:**

This attribute should have this content:

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAtributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber:</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber:</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.89.8 **inputColor0 as CIColorMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

The attribute Color 1

**Notes:**

See Attribute inputColor0 for more details.

(Read and Write property)
52.89.9  inputColor1 as CIColorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Color 2

**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputColor1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIColorMBS (CIColor)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Color 2</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Farbe 2</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Couleur 2</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Colore 2</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Color 2</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeColor</td>
</tr>
</tbody>
</table>

See Attribute inputColor1 for more details.
(Read and Write property)

52.89.10  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>

See Attribute inputImage for more details.
52.89. **CLASS CIFILTERFALSECOLORMBS**

(Read and Write property)
CHAPTER 52. COREIMAGE

52.90 class CIFilterFlashTransitionMBS

52.90.1 class CIFilterFlashTransitionMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Flash filter.

**Notes:**
Details for this filter:

- **FilterName:** CIFlashTransition
- **DisplayName English:** Flash
- **DisplayName German:** Blinken
- **DisplayName French:** Flash
- **DisplayName Italian:** Flash
- **DisplayName Spanish:** Flash

**Categories:**

- CICategoryTransition: Transition
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- **inputImage:** Image
- **inputTargetImage:** Target Image
- **inputCenter:** Center
- **inputExtent:** Extent
- **inputColor:** Color
- **inputTime:** Time
- **inputMaxStriationRadius:** Maximum Striation Radius
- **inputStriationStrength:** Striation Strength
- **inputStriationContrast:** Striation Contrast
- **inputFadeThreshold:** Fade Threshold
52.90. CLASS CIFILTERFLASHTRANSITIONMBS

Output:

- outputImage

Subclass of the CIFilterMBS class.

52.90.2 Methods

52.90.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.  
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.90.4 Properties

52.90.5 Attribute inputCenter as CIAtributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Flash attribute.  
**Notes:** This attribute should have this content:

Name: inputCenter  
Class: CIVectorMBS  
Type: CIAtributeTypePosition  
DisplayName English: Center  
DisplayName German: Mitte  
DisplayName French: Centre  
DisplayName Italian: Centro  
DisplayName Spanish: Centro  
DefaultVector: [ 150 150 ]  
IdentityVector: n/a

(Read only property)
52.90.6  Attribute inputColor as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Flash attribute.

**Notes:**
This attribute should have this content:

Name:  inputColor
Class:  CIColorMBS
Type:  CIAttributeTypeColor
DisplayName English:  Color
DisplayName German:  Farbe
DisplayName French:  Couleur
DisplayName Italian:  Colore
DisplayName Spanish:  Color
DefaultColor:  Red = 1, Green = 0.8, Blue = 0.6, Alpha = 1
IdentityNumber:  0

(Read only property)

52.90.7  Attribute inputExtent as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Flash attribute.

**Notes:**
This attribute should have this content:

Name:  inputExtent
Class:  CIVectorMBS
Type:  CIAttributeTypeRectangle
DisplayName English:  Extent
DisplayName German:  Betrag
DisplayName French:  tendue
DisplayName Italian:  Ampiezza
DisplayName Spanish:  Amplitud
DefaultVector:  [ 0 0 300 300 ]
IdentityVector:  n/a

(Read only property)
**52.90.8 Attribute inputFadeThreshold as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Flash attribute.

**Notes:**
This attribute should have this content:

- **Name:** inputFadeThreshold
- **Class:** double
- **Type:** CIAttributeTypeScalar
- **DisplayName English:** Fade Threshold
- **DisplayName German:** Schwellenwert für berblenden
- **DisplayName French:** Seuil de décoloration
- **DisplayName Italian:** Soglia dissolvenza
- **DisplayName Spanish:** Umbral de fundido
- **DefaultNumber:** 0.85
- **IdentityNumber:** 0
- **MaxNumber:** 1
- **MinNumber:** 0
- **SliderMaxNumber:** 1
- **SliderMinNumber:** 0

(Read only property)

**52.90.9 Attribute inputImage as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Flash attribute.

**Notes:**
This attribute should have this content:

(Read only property)

**52.90.10 Attribute inputMaxStriationRadius as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Flash attribute.

**Notes:**
This attribute should have this content:
Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

Name: inputMaxStriationRadius
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Maximum Striation Radius
DisplayName German: Maximaler Radius für Riffelung
DisplayName French: Rayon maximum des stries
DisplayName Italian: Raggio di massima striatura
DisplayName Spanish: Radio de estriación máximo
DefaultNumber: 2.58
IdentityNumber: 0
SliderMaxNumber: 10
SliderMinNumber: 0

(Read only property)

52.90.11  AttributeinputStriationContrast as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Details about the Flash attribute.
Notes:
This attribute should have this content:

(Read only property)

52.90.12  AttributeinputStriationStrength as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Details about the Flash attribute.
Notes:
**52.90. CLASS CIFILTERFLASHTRANSITIONMBS**

Name: inputStriationContrast  
Class: double  
Type: CIAttributeTypeScalar  
DisplayName English: Striation Contrast  
DisplayName German: Kontrast für Riffelung  
DisplayName French: Contraste des stries  
DisplayName Italian: Contrasto striatura  
DisplayName Spanish: Contraste de la estriación  
DefaultNumber: 1.375  
IdentityNumber: 0  
SliderMaxNumber: 5  
SliderMinNumber: 0

This attribute should have this content:

Name: inputStriationStrength  
Class: double  
Type: CIAttributeTypeScalar  
DisplayName English: Striation Strength  
DisplayName German: Strie der Riffelung  
DisplayName French: Force des stries  
DisplayName Italian: Livello striatura  
DisplayName Spanish: Intensidad de la estriación  
DefaultNumber: 0.5  
IdentityNumber: 0  
SliderMaxNumber: 3  
SliderMinNumber: 0

(Read only property)

---

**52.90.13 Attribute inputTargetImage as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Flash attribute.  
**Notes:**

This attribute should have this content:

(Read only property)
52.90.14  Attribute inputTime as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Flash attribute.

**Notes:**
This attribute should have this content:

Name: inputTime
Class: double
Type: CIAttributeTypeTime
DisplayName English: Time
DisplayName German: Zeit
DisplayName French: Dure
DisplayName Italian: Tempo
DisplayName Spanish: Tiempo
DefaultNumber: 0
IdentityNumber: 0
MaxNumber: 1
MinNumber: 0
SliderMaxNumber: 1
SliderMinNumber: 0

(Read only property)

52.90.15  inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Center

**Notes:**
See Attribute inputCenter for more details.
52.90. CLASS CIFILTERFLASHTRANSITIONMBS

Name: inputCenter
Class: CIVectorMBS (CIVector)
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
Type: CIAutoAttributeTypePosition

(Read and Write property)

52.90.16 inputColor as CIColorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Color

**Notes:**

Name: inputColor
Class: CIColorMBS (CIColor)
DisplayName English: Color
DisplayName German: Farbe
DisplayName French: Couleur
DisplayName Italian: Colore
DisplayName Spanish: Color
Type: CIAutoAttributeTypeColor

See Attribute inputColor for more details.
(Read and Write property)

52.90.17 inputExtent as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Extent

**Notes:**

See Attribute inputExtent for more details.
(Read and Write property)
CHAPTER 52. COREIMAGE

Name: inputExtent
Class: CIVectorMBS (CIVector)
DisplayName English: Extent
DisplayName German: Betrag
DisplayName French: tendue
DisplayName Italian: Ampiezza
DisplayName Spanish: Amplitud
Type: CIAttributeTypeRectangle

52.90.18 inputFadeThreshold as double

Notes:
Name: inputFadeThreshold
Class: double (NSNumber)
DisplayName English: Fade Threshold
DisplayName German: Schwellenwert für beraubten
DisplayName French: Seuil de décoloration
DisplayName Italian: Soglia dissolvenza
DisplayName Spanish: Umbral de fundido
Type: CIAttributeTypeScalar

See Attribute inputFadeThreshold for more details.
(Read and Write property)

52.90.19 inputImage as CIImageMBS

Notes:
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
52.90.20  inputMaxStriationRadius as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Maximum Striation Radius

**Notes:**

Name: inputMaxStriationRadius  
Class: double (NSNumber)  
DisplayName English: Maximum Striation Radius  
DisplayName German: Maximaler Radius fr Riffelung  
DisplayName French: Rayon maximum des stries  
DisplayName Italian: Raggio di massima striatura  
DisplayName Spanish: Radio de estriacin mximo  
Type: CIAttributeTypeScalar

See Attribute inputMaxStriationRadius for more details.

(Read and Write property)

52.90.21  inputStriationContrast as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Striation Contrast

**Notes:**

Name: inputStriationContrast  
Class: double (NSNumber)  
DisplayName English: Striation Contrast  
DisplayName German: Kontrast fr Riffelung  
DisplayName French: Contraste des stries  
DisplayName Italian: Contrasto striatura  
DisplayName Spanish: Contraste de la estriacin  
Type: CIAttributeTypeScalar

See Attribute inputStriationContrast for more details.

(Read and Write property)
52.90.22 inputStriationStrength as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Striation Strength

**Notes:**

Name: inputStriationStrength
Class: double (NSNumber)
DisplayName English: Striation Strength
DisplayName German: Strke der Riffelung
DisplayName French: Force des stries
DisplayName Italian: Livello striatura
DisplayName Spanish: Intensidad de la estriacin
Type: CIAttributeTypeScalar

See Attribute inputStriationStrength for more details.
(Read and Write property)

52.90.23 inputTargetImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Target Image

**Notes:**

Name: inputTargetImage
Class: CIImageMBS (CIImage)
DisplayName English: Target Image
DisplayName German: Zielbild
DisplayName French: Image cible
DisplayName Italian: Immagine target
DisplayName Spanish: Imagen de destino
Type: CIAttributeTypeImage

See Attribute inputTargetImage for more details.
(Read and Write property)

52.90.24 inputTime as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Time

**Notes:**
Name: inputTime
Class: double (NSNumber)
DisplayName English: Time
DisplayName German: Zeit
DisplayName French: Dure
DisplayName Italian: Tempo
DisplayName Spanish: Tiempo
Type: CIAttributeTypeTime

See Attribute inputTime for more details.
(Read and Write property)
class CIFilterFourfoldReflectedTileMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Fourfold Reflected Tile filter. **Notes:**

Details for this filter:

- **FilterName:** CIFourfoldReflectedTile
- **DisplayName English:** Fourfold Reflected Tile
- **DisplayName German:** 4-fach reflektierte Kachel
- **DisplayName French:** Mosaque réfléchi 4 fois
- **DisplayName Italian:** Mosaico riflesso in quattro direzioni
- **DisplayName Spanish:** Mosaico reflejado cuatro veces

**Categories:**

- CICategoryTileEffect: Tile Effect
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- **inputImage:** Image
- **inputCenter:** Center
- **inputAngle:** Angle
- **inputWidth:** Width
- **inputAcuteAngle:** Acute Angle

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
52.91.2 Methods

52.91.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.91.4 Properties

52.91.5 Attribute `inputAcuteAngle` as `CIAttributeMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Fourfold Reflected Tile attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputAcuteAngle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double</td>
</tr>
<tr>
<td>Type</td>
<td><code>CIAttributeTypeAngle</code></td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Acute Angle</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Spitzer Winkel</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Angle aigu</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Angolo acuto</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>ángulo agudo</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>1.570796</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>1.570796</td>
</tr>
<tr>
<td>SliderMaxNumber</td>
<td>3.141593</td>
</tr>
<tr>
<td>SliderMinNumber</td>
<td>-3.141593</td>
</tr>
</tbody>
</table>

(Read only property)

52.91.6 Attribute `inputAngle` as `CIAttributeMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Fourfold Reflected Tile attribute.
**Notes:**
This attribute should have this content:
52.91.7 Attribute inputCenter as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Fourfold Reflected Tile attribute.

**Notes:**

This attribute should have this content:

Name: inputCenter  
Class: CIVectorMBS  
Type: CIAttributeTypePosition  
DisplayName English: Center  
DisplayName German: Mitte  
DisplayName French: Centre  
DisplayName Italian: Centro  
DisplayName Spanish: Centro  
DefaultVector: [150 150]  
IdentityVector: n/a

(Read only property)

52.91.8 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Fourfold Reflected Tile attribute.

**Notes:**

(name and content)
This attribute should have this content:

Name: inputImage  
Class: CIImageMBS  
Type: CIAttributeTypeImage  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
DefaultNumber: 0  
IdentityNumber: 0

(Read only property)

52.91.9 Attribute inputWidth as CIAttributeMBS

Notes:  
This attribute should have this content:

Name: inputWidth  
Class: double  
Type: CIAttributeTypeDistance  
DisplayName English: Width  
DisplayName German: Breite  
DisplayName French: Largeur  
DisplayName Italian: Larghezza  
DisplayName Spanish: Anchura  
DefaultNumber: 100  
IdentityNumber: 100  
SliderMaxNumber: 200  
SliderMinNumber: 1

(Read only property)
52.91.10  inputAcuteAngle as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Acute Angle
Notes:

Name:    inputAcuteAngle
Class:   double (NSNumber)
DisplayName English:  Acute Angle
DisplayName German:   Spitzer Winkel
DisplayName French:   Angle aigu
DisplayName Italian:  Angolo acuto
DisplayName Spanish:  ngulo agudo
Type:    CIAttributeTypeAngle

See Attribute inputAcuteAngle for more details.
(Read and Write property)

52.91.11  inputAngle as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Angle
Notes:

Name:    inputAngle
Class:   double (NSNumber)
DisplayName English:  Angle
DisplayName German:   Winkel
DisplayName French:   Angle
DisplayName Italian:  Angolo
DisplayName Spanish:  ngulo
Type:    CIAttributeTypeAngle

See Attribute inputAngle for more details.
(Read and Write property)

52.91.12  inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Center
Notes:
52.91. **CLASS CIFILTERFOURFOLDREFLECTEDTILEMBS**

Name: inputCenter  
Class: CIVectorMBS (CIVector)  
DisplayName English: Center  
DisplayName German: Mitte  
DisplayName French: Centre  
DisplayName Italian: Centro  
DisplayName Spanish: Centro  
Type: CIAttributeTypePosition

See Attribute inputCenter for more details.  
(Read and Write property)

52.91.13 **inputImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image  
**Notes:**

Name: inputImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
Type: CIAttributeTypeImage

See Attribute inputImage for more details.  
(Read and Write property)

52.91.14 **inputWidth as double**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Width  
**Notes:**

See Attribute inputWidth for more details.  
(Read and Write property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputWidth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Width</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Breite</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Largeur</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Larghezza</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Anchura</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeDistance</td>
</tr>
</tbody>
</table>
class CIFilterFourfoldRotatedTileMBS


Details for this filter:

FilterName: CIFourfoldRotatedTile
DisplayName English: Fourfold Rotated Tile
DisplayName German: 4-fach gedrehte Kachel
Display Name French: Mosaique pivote 4 fois
DisplayName Italian: Mosaico ruotato in quattro direzioni
DisplayName Spanish: Mosaico rotado cuatro veces

Categories:

- CICategoryTileEffect: Tile Effect
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

Input:

- inputImage: Image
- inputCenter: Center
- inputAngle: Angle
- inputWidth: Width

Output:

- outputImage

Subclass of the CIFilterMBS class.
52.92.2 Methods

52.92.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.92.4 Properties

52.92.5 Attribute `inputAngle` as `CIAttributeMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Fourfold Rotated Tile attribute.
**Notes:**
This attribute should have this content:

- **Name:** inputAngle
- **Class:** double
- **Type:** CIAttributeTypeAngle
- **DisplayName English:** Angle
- **DisplayName German:** Winkel
- **DisplayName French:** Angle
- **DisplayName Italian:** Angolo
- **DisplayName Spanish:** ngulo
- **DefaultNumber:** 0
- **IdentityNumber:** 0
- **SliderMaxNumber:** 3.141593
- **SliderMinNumber:** -3.141593

(Read only property)

52.92.6 Attribute `inputCenter` as `CIAttributeMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Fourfold Rotated Tile attribute.
**Notes:**
This attribute should have this content:
52.92. **CLASS CIFILTERFOURFOLDROTATEDTILEMBS**

Name: inputCenter  
Class: CIVectorMBS  
Type: CIAttributeTypePosition  
DisplayName English: Center  
DisplayName German: Mitte  
DisplayName French: Centre  
DisplayName Italian: Centro  
DisplayName Spanish: Centro  
DefaultVector: [ 150 150 ]  
IdentityVector: n/a

(Read only property)

52.92.7 **Attribute inputImage as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Fourfold Rotated Tile attribute.  
**Notes:**

This attribute should have this content:

Name: inputImage  
Class: CIImageMBS  
Type: CIAttributeTypeImage  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
DefaultNumber: 0  
IdentityNumber: 0

(Read only property)

52.92.8 **Attribute inputWidth as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Fourfold Rotated Tile attribute.  
**Notes:**

This attribute should have this content:
Name: inputWidth
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Anchura
DefaultNumber: 100
IdentityNumber: 100
SliderMaxNumber: 200
SliderMinNumber: 1

(Read only property)

52.92.9  inputAngle as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Angle

**Notes:**

Name: inputAngle
Class: double (NSNumber)
DisplayName English: Angle
DisplayName German: Winkel
DisplayName French: Angle
DisplayName Italian: Angolo
DisplayName Spanish: ngulo
Type: CIAttributeTypeAngle

See AttributeinputAngle for more details.
(Read and Write property)

52.92.10  inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Center

**Notes:**
See AttributeinputCenter for more details.
52.92. **CLASS CIFILTERFOURFOLDROTATEDTILEMBS**

Name: inputCenter
Class: CIVectorMBS (CIVector)
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
Type: CIAtributeTypePosition

(Read and Write property)

52.92.11 **inputImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

Notes:

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAtributeTypeImage

See AttributeinputImage for more details.

(Read and Write property)

52.92.12 **inputWidth as double**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Width

Notes:

See AttributeinputWidth for more details.

(Read and Write property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputWidth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Width</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Breite</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Largeur</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Larghezza</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Anchura</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeDistance</td>
</tr>
</tbody>
</table>
52.93. class CIFilterFourfoldTranslatedTileMBS

52.93.1 class CIFilterFourfoldTranslatedTileMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Fourfold Translated Tile filter.

**Notes:**
Details for this filter:

- FilterName: CIFourfoldTranslatedTile
- DisplayName English: Fourfold Translated Tile
- DisplayName German: 4-fach bersetzte Kachel
- DisplayName French: Mosaque dplace 4 fois
- DisplayName Italian: Mosaico traslato in quattro direzioni
- DisplayName Spanish: Mosaico desplazado cuatro veces

**Categories:**
- CICategoryTileEffect: Tile Effect
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**
- inputImage: Image
- inputCenter: Center
- inputAngle: Angle
- inputWidth: Width
- inputAcuteAngle: Acute Angle

**Output:**
- outputImage

Subclass of the CIFilterMBS class.
52.93.2 Methods

52.93.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.93.4 Properties

52.93.5 Attribute `inputAcuteAngle` as `CIAttributeMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Fourfold Translated Tile attribute.
**Notes:**
This attribute should have this content:

Name: `inputAcuteAngle`
Class: `double`
Type: `CIAttributeTypeAngle`
DisplayName English: Acute Angle
DisplayName German: Spitzer Winkel
DisplayName French: Angle aigu
DisplayName Italian: Angolo acuto
DisplayName Spanish: ngulo agudo
DefaultNumber: 1.570796
IdentityNumber: 1.570796
SliderMaxNumber: 3.141593
SliderMinNumber: -3.141593

(Read only property)

52.93.6 Attribute `inputAngle` as `CIAttributeMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Fourfold Translated Tile attribute.
**Notes:**
This attribute should have this content:
### 52.93. CLASS CIFILTERFOURFOLDTRANSLATEDTILEMBS

<table>
<thead>
<tr>
<th>Name</th>
<th>inputAngle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeAngle</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Angle</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Winkel</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Angle</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Angolo</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>angulo</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
<tr>
<td>SliderMaxNumber</td>
<td>3.141593</td>
</tr>
<tr>
<td>SliderMinNumber</td>
<td>-3.141593</td>
</tr>
</tbody>
</table>

(Read only property)

### 52.93.7 Attribute inputCenter as CIAttributeMBS

**MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**  
**Function:**  
Details about the Fourfold Translated Tile attribute.  
**Notes:**

This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputCenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIVectorMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypePosition</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Center</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Mitte</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Centre</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Centro</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Centro</td>
</tr>
<tr>
<td>DefaultVector</td>
<td>[ 150 150 ]</td>
</tr>
<tr>
<td>IdentityVector</td>
<td>n/a</td>
</tr>
</tbody>
</table>

(Read only property)

### 52.93.8 Attribute inputImage as CIAttributeMBS

**MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**  
**Function:**  
Details about the Fourfold Translated Tile attribute.  
**Notes:**
52.93.9 Attribute inputWidth as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Details about the Fourfold Translated Tile attribute.
Notes:
This attribute should have this content:

Name: inputWidth
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Ancha
DefaultNumber: 100
IdentityNumber: 100
SliderMaxNumber: 200
SliderMinNumber: 1

(Read only property)
52.93.10  \textbf{inputAcuteAngle as double}

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. \textbf{Function:}
The attribute Acute Angle

\textbf{Notes:}

Name: \texttt{inputAcuteAngle}
Class: double (NSNumber)
DisplayName English: Acute Angle
DisplayName German: Spitzer Winkel
DisplayName French: Angle aigu
DisplayName Italian: Angolo acuto
DisplayName Spanish: ngulo agudo
Type: CIAttributeTypeAngle

See Attribute\texttt{inputAcuteAngle} for more details.
(Read and Write property)

52.93.11  \textbf{inputAngle as double}

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. \textbf{Function:}
The attribute Angle

\textbf{Notes:}

Name: \texttt{inputAngle}
Class: double (NSNumber)
DisplayName English: Angle
DisplayName German: Winkel
DisplayName French: Angle
DisplayName Italian: Angolo
DisplayName Spanish: ngulo
Type: CIAttributeTypeAngle

See Attribute\texttt{inputAngle} for more details.
(Read and Write property)

52.93.12  \textbf{inputCenter as CIVectorMBS}

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. \textbf{Function:}
The attribute Center

\textbf{Notes:}
Name: inputCenter
Class: CIVectorMBS (CIVector)
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
Type: CIAttributeTypePosition

See Attribute inputCenter for more details.
(Read and Write property)

52.93.13 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Image
 Notes:
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)

52.93.14 inputWidth as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Width
 Notes:
See Attribute inputWidth for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name:</th>
<th>inputWidth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Width</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Breite</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Largeur</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Larghezza</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Anchura</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeDistance</td>
</tr>
</tbody>
</table>
52.94 class CIFilterGammaAdjustMBS

52.94.1 class CIFilterGammaAdjustMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Gamma Adjust filter.

**Notes:**

Details for this filter:

- **FilterName:** CIGammaAdjust
- **DisplayName English:** Gamma Adjust
- **DisplayName German:** Gamma anpassen
- **DisplayName French:** Ajustement gamma
- **DisplayName Italian:** Regolazione gamma
- **DisplayName Spanish:** Ajuste de gama

**Categories:**

- CICategoryColorAdjustment: Color Adjustment
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputPower: Power

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.94.2  Methods

52.94.3  Constructor

Notes: On success the handle property is not zero and the filter has the default values set.

52.94.4  Properties

52.94.5  Attribute inputImage as CIAttributeMBS

Notes:
This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.94.6  Attribute inputPower as CIAttributeMBS

Notes:
This attribute should have this content:

(Read only property)
Name: inputPower
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Power
DisplayName German: Strike
DisplayName French: Puissance
DisplayName Italian: Energia
DisplayName Spanish: Alimentación
DefaultNumber: 0.75
IdentityNumber: 1
SliderMaxNumber: 4
SliderMinNumber: 0.25

52.94.7 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See AttributeinputImage for more details.
(Read and Write property)

52.94.8 inputPower as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Power

**Notes:**

See AttributeinputPower for more details.
(Read and Write property)
Name: inputPower
Class: double (NSNumber)
DisplayName English: Power
DisplayName German: Strke
DisplayName French: Puissance
DisplayName Italian: Energia
DisplayName Spanish: Alimentacin
Type: CIAttributeTypeScalar
52.95 class CIFilterGaussianBlurMBS

52.95.1 class CIFilterGaussianBlurMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Gaussian Blur filter.

**Example:**

```plaintext
dim CIFilter as new CIFilterGaussianBlurMBS
dim ROIpic as Picture = LogoMBS(500)
dim CGImage as CGImageMBS = CGCreateImageMBS(ROIpic)
dim ciimage as CIImageMBS = NewCIImageWithCGImageMBS(CGImage)
CIFilter.inputImage = CIImage
 CIFilter.inputRadius = 10 //the property which holds the blur radius

dim result as CIImageMBS = cifilter.outputImage

dim r as Picture = result.RenderPicture

window1.Backdrop = r
```

**Notes:**

Details for this filter:

- **FilterName:** CIGaussianBlur
- **DisplayName English:** Gaussian Blur
- **DisplayName German:** Gausche Unschrfe
- **DisplayName French:** Flou gaussien
- **DisplayName Italian:** Sfumatura gaussiana
- **DisplayName Spanish:** Difuminado gaussiano

**Categories:**

- CICategoryBlur: Blur
- CICategoryStillImage: Still Image
- CICategoryVideo: Video
- CICategoryBuiltIn: Built-In

**Input:**
Class CIFilterGaussianBlurMBS

- inputImage: Image
- inputRadius: Radius

Output:

- outputImage

Warning: Due to the blur, the output image may be bigger, so you need to crop space on the border to get back to old size.
Subclass of the CIFilterMBS class.

52.95.2 Methods

52.95.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.95.4 Properties

52.95.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Gaussian Blur attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>
52.95.6 Attribute inputRadius as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Gaussian Blur attribute.

**Notes:**
This attribute should have this content:

Name: inputRadius
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Radius
DisplayName German: Radius
DisplayName French: Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
DefaultNumber: 10
IdentityNumber: 0
SliderMaxNumber: 100
SliderMinNumber: 0

(Read only property)

52.95.7 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
52.95. CLASS CIFILTERGAUSSIANBLURMBS

(Read and Write property)

52.95.8 inputRadius as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Radius

**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputRadius</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>Display Name English</td>
<td>Radius</td>
</tr>
<tr>
<td>Display Name German</td>
<td>Radius</td>
</tr>
<tr>
<td>Display Name French</td>
<td>Rayon</td>
</tr>
<tr>
<td>Display Name Italian</td>
<td>Raggio</td>
</tr>
<tr>
<td>Display Name Spanish</td>
<td>Radio</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeScalar</td>
</tr>
</tbody>
</table>

See Attribute inputRadius for more details.
(Read and Write property)
52.96 class CIFilterGaussianGradientMBS

52.96.1 class CIFilterGaussianGradientMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Gaussian Gradient filter.

**Notes:**
Details for this filter:

- **FilterName:** CIGaussianGradient
- **DisplayName English:** Gaussian Gradient
- **DisplayName German:** Dgrad gaussien
- **DisplayName French:** Gradiente gaussiano
- **DisplayName Italian:** Degradado gaussiano

**Categories:**

- CICategoryGradient: Gradient
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputCenter: Center
- inputColor0: Color 1
- inputColor1: Color 2
- inputRadius: Radius

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.96.2 Methods

52.96.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.96.4 Properties

52.96.5 Attribute inputCenter as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Gaussian Gradient attribute.
**Notes:** This attribute should have this content:

Name: inputCenter  
Class: CIVectorMBS  
Type: CIAttributeTypePosition  
DisplayName English: Center  
DisplayName German: Mitte  
DisplayName French: Centre  
DisplayName Italian: Centro  
DisplayName Spanish: Centro  
DefaultVector: [ 150 150 ]  
IdentityVector: n/a

(Read only property)

52.96.6 Attribute inputColor0 as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Gaussian Gradient attribute.
**Notes:** This attribute should have this content:

(Read only property)
Name: inputColor0
Class: CIColorMBS
Type: CIAttributeTypeColor
DisplayName English: Color 1
DisplayName German: Farbe 1
DisplayName French: Couleur 1
DisplayName Italian: Colore 1
DisplayName Spanish: Color 1
DefaultColor: Red = 1, Green = 1, Blue = 1, Alpha = 1
IdentityNumber: 0

52.96.7 Attribute inputColor1 as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Gaussian Gradient attribute.

**Notes:**
This attribute should have this content:

Name: inputColor1
Class: CIColorMBS
Type: CIAttributeTypeColor
DisplayName English: Color 2
DisplayName German: Farbe 2
DisplayName French: Couleur 2
DisplayName Italian: Colore 2
DisplayName Spanish: Color 2
DefaultColor: Red = 0, Green = 0, Blue = 0, Alpha = 0
IdentityNumber: 0

(Read only property)

52.96.8 Attribute inputRadius as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Gaussian Gradient attribute.

**Notes:**
This attribute should have this content:

(Read only property)
52.96. **CLASS CIFILTERGAUSSIANGRADIENTMBS**

Name: inputRadius  
Class: double  
Type: CIAttributeTypeDistance  
DisplayName English: Radius  
DisplayName German: Radius  
DisplayName French: Rayon  
DisplayName Italian: Raggio  
DisplayName Spanish: Radio  
DefaultNumber: 300  
IdentityNumber: 0  
SliderMaxNumber: 800  
SliderMinNumber: 0

52.96.9 **inputCenter as CIVectorMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**  
The attribute Center  
**Notes:**

Name: inputCenter  
Class: CIVectorMBS (CIVector)  
DisplayName English: Center  
DisplayName German: Mitte  
DisplayName French: Centre  
DisplayName Italian: Centro  
DisplayName Spanish: Centro  
Type: CIAttributeTypePosition

See Attribute inputCenter for more details.  
(Read and Write property)

52.96.10 **inputColor0 as CIColorMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**  
The attribute Color 1  
**Notes:**

See Attribute inputColor0 for more details.  
(Read and Write property)
Name: inputColor0
Class: CIColorMBS (CIColor)
DisplayName English: Color 1
DisplayName German: Farbe 1
DisplayName French: Couleur 1
DisplayName Italian: Colore 1
DisplayName Spanish: Color 1
Type: CIAttributeTypeColor

52.96.11 inputColor1 as CIColorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Color 2

**Notes:**

Name: inputColor1
Class: CIColorMBS (CIColor)
DisplayName English: Color 2
DisplayName German: Farbe 2
DisplayName French: Couleur 2
DisplayName Italian: Colore 2
DisplayName Spanish: Color 2
Type: CIAttributeTypeColor

See Attribute inputColor1 for more details. (Read and Write property)

52.96.12 inputRadius as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Radius

**Notes:**

Name: inputRadius
Class: double (NSNumber)
DisplayName English: Radius
DisplayName German: Radius
DisplayName French: Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
Type: CIAttributeTypeDistance

See Attribute inputRadius for more details.
52.96. CLASS CIFILTERGAUSSIANGRADIENTMBS

(Read and Write property)
52.97  class CIFilterGeneratorMBS

52.97.1  class CIFilterGeneratorMBS

**Function:** An object that creates and configures chains of individual image filters. 

**Notes:** 

The CIFilterGenerator class provides methods for creating a CIFilter object by chaining together existing 
CIFilter objects to create complex effects. (A filter chain refers to the CIFilter objects that are connected in 
the CIFilterGenerator object.) The complex effect can be encapsulated as a CIFilterGenerator object and 
saved as a file so that it can be used again. The filter generator file contains an archived instance of all the 
CIFilter objects that are chained together.

Any filter generator files that you copy to /Library/Graphics/Image Units/ are loaded when any of the 
loading methods provided by the CIPlugIn class are invoked. A CIFilterGenerator object is registered by 
its filename or, if present, by a class attribute that you supply in its description.

You can create a CIFilterGenerator object programmatically, using the methods provided by the CIFilter-
Generator class, or by using the editor view provided by Core Image (see CIFilter Image Kit Additions).

52.97.2  Methods

52.97.3  connectObject(sourceObject as Variant, sourceKey as string, targetO-
object as Variant, targetKey as String)

**Function:** Adds an object to the filter chain. 

**Notes:** 

sourceObject: A CIFilterMBS object, a CIImageMBS object, or a the path (an string or folderitem object) 
to an image. 

sourceKey: The key that specifies the source object. For example, if the source is the output image of a 
filter, pass the outputImage key. Pass nil if the source object is used directly.

targetObject: The object that to link the source object to. 

targetKey: The key that specifies the target for the source. For example, if you are connecting the source 
to the input image of a CIFilterMBS object, you would pass the inputImage key.

52.97.4  Constructor

**Function:** Creates and returns an empty filter generator object.
52.97. **CLASS CIFILTERGENERATORMBS** 8903

**Notes:** You use the returned object to connect two or more CIFilter objects and input images. It is also valid to have only one CIFilter object in a filter generator.

See also:

- 52.97.5 Constructor(File as folderItem) 8903
- 52.97.6 Constructor(Handle as Integer) 8903
- 52.97.7 Constructor(URL as string) 8903

### 52.97.5 Constructor(File as folderItem)

MBS MacCG Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns a filter generator object and initializes it with the contents of a filter generator file. **Notes:** Raises exception on failure.

See also:

- 52.97.4 Constructor 8902
- 52.97.6 Constructor(Handle as Integer) 8903
- 52.97.7 Constructor(URL as string) 8903

### 52.97.6 Constructor(Handle as Integer)

MBS MacCG Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes Xojo object with given handle to CIFilterGenerator object.

See also:

- 52.97.4 Constructor 8902
- 52.97.5 Constructor(File as folderItem) 8903
- 52.97.7 Constructor(URL as string) 8903

### 52.97.7 Constructor(URL as string)

MBS MacCG Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns a filter generator object and initializes it with the contents of a filter generator file. **Notes:** Raises exception on failure.

See also:

- 52.97.4 Constructor 8902
- 52.97.5 Constructor(File as folderItem) 8903
- 52.97.6 Constructor(Handle as Integer) 8903
52.97.8  copy as CIFilterGeneratorMBS

MBS MacCG Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy of the object.

52.97.9  disconnectObject(sourceObject as Variant, sourceKey as string, targetObject as Variant, targetKey as String)

MBS MacCG Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes the connection between two objects in the filter chain.

**Notes:**

- **sourceObject:** A CIFilterMBS object, a CIImageMBS object, or a the path (an string or folderitem object) to an image.
- **sourceKey:** The key that specifies the source object. Pass nil if the source object is used directly.
- **targetObject:** The object that you want to disconnect the source object from.
- **targetKey:** The key that specifies the target that the source object is currently connected to.

52.97.10  exportKey(key as string, targetObject as Variant, exportedKeyName as String)

MBS MacCG Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Exports an input or output key of an object in the filter chain.

**Notes:**

- **key:** The key to export from the target object (for example, inputImage).
- **targetObject:** The object associated with the key (for example, the filter).
- **exportedKeyName:** A unique name to use for the exported key. Pass "" to use the original key name.

When you create a CIFilterMBS object from a CIFilterGeneratorMBS object, you might want the filter client to be able to set some of the parameters associated with the filter chain. You can make a parameter settable by exporting the key associated with the parameter. If the exported key represents an input parameter of the filter, the key is exported as an input key. If the key represents an output parameter, it is exported as an output key.

52.97.11  filterGenerator as CIFilterGeneratorMBS

MBS MacCG Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an empty filter generator object.

**Notes:** You use the returned object to connect two or more CIFilter objects and input images. It is also valid to have only one CIFilter object in a filter generator.
52.97.12  `filterGeneratorWithContentsOfFile(File as folderItem) as CIFilterGeneratorMBS`

MBS MacCG Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns a filter generator object and initializes it with the contents of a filter generator file. **Notes:** Returns a CIFilterGeneratorMBS object; returns nil if the file can't be read.

52.97.13  `filterGeneratorWithContentsOfURL(URL as string) as CIFilterGeneratorMBS`

MBS MacCG Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns a filter generator object and initializes it with the contents of a filter generator file. **Notes:** Returns a CIFilterGeneratorMBS object; returns nil if the file can't be read.

52.97.14  `filterWithName(name as String) as CIFilterMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries filter based on its name. **Notes:** Returns nil in case of error.

52.97.15  `kCIFilterGeneratorExportedKey as String`

MBS MacCG Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the dictionary keys describing exports. **Notes:** The key (CIFilterGeneratorExportedKey) for the exported parameter. The associated value is the key name of the parameter you are exporting, such as inputRadius.

52.97.16  `kCIFilterGeneratorExportedKeyName as String`

MBS MacCG Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the dictionary keys describing exports. **Notes:** The key (CIFilterGeneratorExportedKey) for the exported parameter. The associated value is the key name of the parameter you are exporting, such as inputRadius.
52.97.17  kCIFilterGeneratorExportedKeyTargetObject as String

MBS MacCG Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the dictionary keys describing exports.
**Notes:** The target object (CIFilterGeneratorExportedKeyTargetObject) for the exported key. The associated value is the name of the object, such as CIMotionBlur.

52.97.18  registerFilterName(name as string)

MBS MacCG Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Registers the name associated with a filter chain.
**Notes:**

name: A unique name for the filter chain you want to register.

This method allows you to register the filter chain as a named filter in the Core Image filter repository. You can then create a CIFilterMBS object from it using the the filterWithName method of the CIFilterMBS class.

52.97.19  removeExportedKey(exportedKeyName as string)

MBS MacCG Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Removes a key that was previously exported.

52.97.20  setAttributes(attributes as dictionary, ExportedKey as string)

MBS MacCG Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Sets a dictionary of attributes for an exported key.
**Notes:**

attributes: A dictionary that describes the attributes associated with the specified key.
key: The exported key whose attributes you want to set.

By default, the exported key inherits the attributes from its original key and target object. You can use this method to change one or more of the existing attributes for the key, such as the default value or maximum value. For more information on attributes, see CIFilterMBS and Core Image Programming Guide.
52.97. CLASS CIFILTERGENERATORMBS

52.97.21 writeToFile(File as FolderItem, atomically as Boolean = true) as Boolean


Notes:
File: A location for the file generator file.
atomically: Pass true to specify that Core Image should create an interim file to avoid overwriting an existing file.

Returns true if the object is successfully archived to the file.
Use this method to save your filter chain to a file for later use.

52.97.22 writeToFile(URL as String, atomically as Boolean = true) as Boolean


Notes:
URL: A location for the file generator file.
atomically: Pass true to specify that Core Image should create an interim file to avoid overwriting an existing file.

Returns true if the object is successfully archived to the file.
Use this method to save your filter chain to a file for later use.

52.97.23 Properties

52.97.24 classAttributes as Dictionary


Notes:
For more information about class attributes for a filter, see Core Image Programming Guide and the filter attributes key constants defined in CIFilterMBS.
(Read and Write property)
52.97.25 **exportedKeys as Dictionary**

MBS MacCG Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of the exported keys. **Notes:**

An array of dictionaries that describe the exported key and target object. See kCIFilterGeneratorExportedKey, kCIFilterGeneratorExportedKeyTargetObject, and kCIFilterGeneratorExportedKey for keys used in the dictionary.

This method returns the keys that you exported using the exportKey method or that were exported before being written to the file from which you read the filter chain.

(Read only property)

52.97.26 **filter as CIFilterMBS**

MBS MacCG Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a filter object based on the filter chain. **Notes:**

The topology of the filter chain is immutable, meaning that any changes you make to the filter chain are not reflected in the filter. The returned filter has the input an output keys that are exported.

(Read only property)

52.97.27 **Handle as Integer**

MBS MacCG Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal reference to the object. **Notes:** (Read only property)
52.98.  **CLASS CIFILTERGLASSDISTORTIONMBS**

52.98  **class CIFilterGlassDistortionMBS**

52.98.1  **class CIFilterGlassDistortionMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Glass Distortion filter.

**Notes:**

Details for this filter:

- **FilterName:** CIGlassDistortion
- **DisplayName English:** Glass Distortion
- **DisplayName German:** Verzerrung Glas
- **DisplayName French:** Dformation Verre
- **DisplayName Italian:** Distorsione vetro
- **DisplayName Spanish:** Distorsin vidriosa

Categories:

- **CICategoryDistortionEffect:** Distortion Effect
- **CICategoryVideo:** Video
- **CICategoryStillImage:** Still Image
- **CICategoryBuiltIn:** Built-In

**Input:**

- **inputImage:** Image
- **inputTexture:** Texture
- **inputCenter:** Center
- **inputScale:** Scale

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
52.98.2 Methods

52.98.3 Constructor

Notes: On success the handle property is not zero and the filter has the default values set.

52.98.4 Properties

52.98.5 Attribute inputCenter as CIAttributeMBS

Notes: This attribute should have this content:

Name: inputCenter
Class: CIVectorMBS
Type: CIAttributeTypePosition
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
DefaultVector: [ 150 150 ]
IdentityVector: n/a

(Read only property)

52.98.6 Attribute inputImage as CIAttributeMBS

Notes: This attribute should have this content:

(Read only property)
Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

52.98.7 Attribute inputScale as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Details about the Glass Distortion attribute.
Notes:
This attribute should have this content:

Name: inputScale
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Scale
DisplayName German: Skalierung
DisplayName French: chelle
DisplayName Italian: Scala
DisplayName Spanish: Escala
DefaultNumber: 200
IdentityNumber: 0
SliderMaxNumber: 500
SliderMinNumber: 0.01

(Read only property)

52.98.8 Attribute inputTexture as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Details about the Glass Distortion attribute.
Notes:
This attribute should have this content:
Name: inputTexture  
Class: CIImageMBS  
Type: CIAttributeTypeImage  
DisplayName English: Texture  
DisplayName German: Struktur  
DisplayName French: Texture  
DisplayName Italian: Trama  
DisplayName Spanish: Textura  
DefaultNumber: 0  
IdentityNumber: 0  

(Read only property)

52.98.9 inputCenter as CIVectorMBS

Function: The attribute Center

Notes:

Name: inputCenter  
Class: CIVectorMBS (CIVector)  
DisplayName English: Center  
DisplayName German: Mitte  
DisplayName French: Centre  
DisplayName Italian: Centro  
DisplayName Spanish: Centro  
Type: CIAttributeTypePosition

See AttributeinputCenter for more details.  
(Read and Write property)

52.98.10 inputImage as CIImageMBS

Function: The attribute Image

Notes:

See AttributeinputImage for more details.  
(Read and Write property)
52.98. **CLASS CIFILTERGLASSDISTORTIONMBS**

Name: inputImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
Type: CIAttributeTypeImage

52.98.11  **inputScale as double**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Scale  
**Notes:**  
Name: inputScale  
Class: double (NSNumber)  
DisplayName English: Scale  
DisplayName German: Skalierung  
DisplayName French: chelle  
DisplayName Italian: Scala  
DisplayName Spanish: Escala  
Type: CIAttributeTypeDistance

See AttributeinputScale for more details.  
(Read and Write property)

52.98.12  **inputTexture as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Texture  
**Notes:**  
Name: inputTexture  
Class: CIImageMBS (CIImage)  
DisplayName English: Texture  
DisplayName German: Struktur  
DisplayName French: Texture  
DisplayName Italian: Trama  
DisplayName Spanish: Textura  
Type: CIAttributeTypeImage

See AttributeinputTexture for more details.
(Read and Write property)
**52.99.  CLASS CIFILTERGLASSLOZENGEMBS**

**52.99  class CIFilterGlassLozengeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Glass Lozenge filter.  
**Notes:**

Details for this filter:

- **FilterName**: CIGlassLozenge
- **DisplayName English**: Glass Lozenge
- **DisplayName German**: Glasrhombus
- **DisplayName French**: Losange de verre
- **DisplayName Italian**: Losanga vetro
- **DisplayName Spanish**: Romboedro vidrioso

**Categories:**

- **CICategoryDistortionEffect**: Distortion Effect
- **CICategoryVideo**: Video
- **CICategoryStillImage**: Still Image
- **CICategoryBuiltIn**: Built-In

**Input:**

- **inputImage**: Image
- **inputPoint0**: Point 0
- **inputPoint1**: Point 1
- **inputRadius**: Radius
- **inputRefraction**: Refraction

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
52.99.2 Methods

52.99.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.99.4 Properties

52.99.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Glass Lozenge attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.99.6 Attribute inputPoint0 as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Glass Lozenge attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.99. **CLASS CIFILTERGLASSLOZENGEMBS**

Name: inputPoint0  
Class: CIVectorMBS  
Type: CIAttributeTypePosition  
DisplayName English: Point 0  
DisplayName German: Punkt 0  
DisplayName French: Point0  
DisplayName Italian: Punto 0  
DisplayName Spanish: Punto 0  
DefaultVector: [ 150 150 ]  
IdentityVector: n/a

52.99.7 **Attribute inputPoint1 as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Glass Lozenge attribute.  
**Notes:**  
This attribute should have this content:

Name: inputPoint1  
Class: CIVectorMBS  
Type: CIAttributeTypePosition  
DisplayName English: Point 1  
DisplayName German: Punkt 1  
DisplayName French: Point1  
DisplayName Italian: Punto 1  
DisplayName Spanish: Punto 1  
DefaultVector: [ 350 150 ]  
IdentityVector: n/a

(Read only property)

52.99.8 **Attribute inputRadius as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Glass Lozenge attribute.  
**Notes:**  
This attribute should have this content:

(Read only property)
52.99.9  Attribute inputRefraction as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Glass Lozenge attribute.
**Notes:**
This attribute should have this content:

```
Name: inputRefraction
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Refraction
DisplayName German: Lichtbrechung
DisplayName French: Rfraction
DisplayName Italian: Rifrazione
DisplayName Spanish: Refraccion
DefaultNumber: 1.7
IdentityNumber: 1
SliderMaxNumber: 5
SliderMinNumber: 0
```

(Read only property)

52.99.10  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image
**Notes:**
See Attribute inputImage for more details.
52.99. **CLASS CIFILTERGLASSLOZENGE**

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

(Read and Write property)

52.99.11 **inputPoint0 as CIVectorMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Point 0
**Notes:**

Name: inputPoint0
Class: CIVectorMBS (CIVector)
DisplayName English: Point 0
DisplayName German: Punkt 0
DisplayName French: Point 0
DisplayName Italian: Punto 0
DisplayName Spanish: Punto 0
Type: CIAttributeTypePosition

See AttributeinputPoint0 for more details.
(Read and Write property)

52.99.12 **inputPoint1 as CIVectorMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Point 1
**Notes:**

See AttributeinputPoint1 for more details.
(Read and Write property)
Name: inputPoint1
Class: CIVectorMBS (CIVector)
DisplayName English: Point 1
DisplayName German: Punkt 1
DisplayName French: Point 1
DisplayName Italian: Punto 1
DisplayName Spanish: Punto 1
Type: CIAttributeTypePosition

52.99.13 inputRadius as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Radius

**Notes:**
Name: inputRadius
Class: double (NSNumber)
DisplayName English: Radius
DisplayName German: Radius
DisplayName French: Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
Type: CIAttributeTypeDistance

See Attribute inputRadius for more details.
(Read and Write property)

52.99.14 inputRefraction as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Refraction

**Notes:**
Name: inputRefraction
Class: double (NSNumber)
DisplayName English: Refraction
DisplayName German: Lichtbrechung
DisplayName French: Rfraction
DisplayName Italian: Rifrazione
DisplayName Spanish: Refraccion
Type: CIAttributeTypeScalar

See Attribute inputRefraction for more details.
52.99. CLASS CIFILTERGLASSLOZENGEMBS

(Read and Write property)
52.100  class CIFilterGlideReflectedTileMBS

52.100.1  class CIFilterGlideReflectedTileMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Glide Reflected Tile filter.

**Notes:**
Details for this filter:

- **FilterName:** CIFilterGlideReflectedTile
- **DisplayName English:** Glide Reflected Tile
- **DisplayName German:** Gleitende reflektierte Kachel
- **DisplayName French:** Mosaque rflchie Glide
- **DisplayName Italian:** Mosaico riflesso di scivolamento
- **DisplayName Spanish:** Mosaico de deslizamiento reflejado

**Categories:**

- CICategoryTileEffect: Tile Effect
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- **inputImage:** Image
- **inputCenter:** Center
- **inputAngle:** Angle
- **inputWidth:** Width

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
52.100.2  Methods

52.100.3  Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.100.4  Properties

52.100.5  AttributeinputAngle as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Glide Reflected Tile attribute.
**Notes:**
This attribute should have this content:

Name: inputAngle  
Class: double  
Type: CIAttributeTypeAngle  
DisplayName English: Angle  
DisplayName German: Winkel  
DisplayName French: Angle  
DisplayName Italian: Angolo  
DisplayName Spanish: ngulo  
DefaultNumber: 0  
IdentityNumber: 0  
SliderMaxNumber: 3.141593  
SliderMinNumber: -3.141593

(Read only property)

52.100.6  AttributeinputCenter as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Glide Reflected Tile attribute.
**Notes:**
This attribute should have this content:
52.100.7  Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Glide Reflected Tile attribute.

**Notes:**

This attribute should have this content:

Name: inputImage  
Class: CIImageMBS  
Type: CIAttributeTypeImage  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
DefaultNumber: 0  
IdentityNumber: 0

(Read only property)

52.100.8  Attribute inputWidth as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Glide Reflected Tile attribute.

**Notes:**

This attribute should have this content:
52.100. CLASS CIFILTERGLIDEREFLECTEDTILEMBS

Name:           inputWidth
Class:          double
Type:           CIAttributeTypeDistance
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Anchura
DefaultNumber:  100
IdentityNumber: 100
SliderMaxNumber: 200
SliderMinNumber: 1

(Read only property)

52.100.9  inputAngle as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Angle
Notes:

Name:           inputAngle
Class:          double (NSNumber)
DisplayName English: Angle
DisplayName German: Winkel
DisplayName French: Angle
DisplayName Italian: Angolo
DisplayName Spanish: ngulo
Type:           CIAttributeTypeAngle

See Attribute inputAngle for more details.
(Read and Write property)

52.100.10  inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Center
Notes:
See Attribute inputCenter for more details.
CHAPTER 52. COREIMAGE

Name: inputCenter
Class: CIVectorMBS (CIVector)
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
Type: CIAttributeTypePosition

(Read and Write property)

52.100.11 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See AttributeinputImage for more details.
(Read and Write property)

52.100.12 inputWidth as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Width

**Notes:**

See AttributeinputWidth for more details.
(Read and Write property)
Name: inputWidth
Class: double (NSNumber)
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Anchura
Type: CIAttributeTypeDistance
52.101.1 class CIFilterGloomMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Gloom filter.

**Notes:**
Details for this filter:

- **FilterName:** CIGloom
- **DisplayName English:** Gloom
- **DisplayName German:** Dster
- **DisplayName French:** Tnbres
- **DisplayName Italian:** Oscurit
- **DisplayName Spanish:** Oscurecer

**Categories:**
- **CICategoryStylize:** Stylize
- **CICategoryVideo:** Video
- **CICategoryStillImage:** Still Image
- **CICategoryBuiltIn:** Built-In

**Input:**
- **inputImage:** Image
- **inputRadius:** Radius
- **inputIntensity:** Intensity

**Output:**
- **outputImage**

Subclass of the CIFilterMBS class.
52.101.2 Methods

52.101.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.101.4 Properties

52.101.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Gloom attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.101.6 Attribute inputIntensity as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Gloom attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.101.7 Attribute inputRadius as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Gloom attribute.
**Notes:**
This attribute should have this content:

Name: inputRadius
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Radius
DisplayName German: Radius
DisplayName French: Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
DefaultNumber: 10
IdentityNumber: 0
SliderMaxNumber: 100
SliderMinNumber: 0

(Read only property)

52.101.8 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image
**Notes:**
See Attribute inputImage for more details.
52.101.  CLASS CIFILTERGLOOMMBS

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

(Read and Write property)

52.101.9  inputIntensity as double

Notes:

Name: inputIntensity
Class: double (NSNumber)
DisplayName English: Intensity
DisplayName German: Intensitt
DisplayName French: Intensit
DisplayName Italian: Intensit
DisplayName Spanish: Intensidad
Type: CIAttributeTypeScalar

See Attribute inputIntensity for more details.
(Read and Write property)

52.101.10  inputRadius as double

Notes:

See Attribute inputRadius for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name:</th>
<th>inputRadius</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Radius</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Radius</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Rayon</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Raggio</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Radio</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeDistance</td>
</tr>
</tbody>
</table>
52.102. class CIFilterHardLightBlendModeMBS

52.102.1 class CIFilterHardLightBlendModeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Hard Light Blend Mode filter.

**Notes:**
Details for this filter:

- **FilterName:** CIHardLightBlendMode
- **DisplayName English:** Hard Light Blend Mode
- **DisplayName German:** Mischmethode Hartes Licht
- **DisplayName French:** Mode de fusion Lumire crue
- **DisplayName Italian:** Modalit sfumatura luce intensa
- **DisplayName Spanish:** Modo de mezcla por luz directa

**Categories:**
- **CICategoryCompositeOperation:** Composite Operation
- **CICategoryVideo:** Video
- **CICategoryStillImage:** Still Image
- **CICategoryInterlaced:** Interlaced
- **CICategoryNonSquarePixels:** Non-Square Pixels
- **CICategoryBuiltIn:** Built-In

**Input:**
- **inputImage:** Image
- **inputBackgroundImage:** Background Image

**Output:**
- **outputImage**

Subclass of the CIFilterMBS class.
52.102.2 Methods

52.102.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.102.4 Properties

52.102.5 Attribute `inputBackgroundImage` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Hard Light Blend Mode attribute.
**Notes:**
This attribute should have this content:

```
Name: inputBackgroundImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Background Image
DisplayName German: Hintergrundbild
DisplayName French: Image darrrière-plan
DisplayName Italian: Immagine di sfondo
DisplayName Spanish: Imagen de fondo
DefaultNumber: 0
IdentityNumber: 0
```

(Read only property)

52.102.6 Attribute `inputImage` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Hard Light Blend Mode attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.102.1 CLASS CIFILTERHARDDLIGHTBLENDMODEMBS

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

52.102.7 inputBackgroundImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Background Image
**Notes:**
Name: inputBackgroundImage
Class: CIImageMBS (CIImage)
DisplayName English: Background Image
DisplayName German: Hintergrundbild
DisplayName French: Image derrière-plan
DisplayName Italian: Immagine di sfondo
DisplayName Spanish: Imagen de fondo
Type: CIAttributeTypeImage

See Attribute inputBackgroundImage for more details.
(Read and Write property)

52.102.8 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image
**Notes:**
See Attribute inputImage for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>
52.103.  CLASS CIFILTERHATCHEDSCREENMBS

52.103  class CIFilterHatchedScreenMBS

52.103.1  class CIFilterHatchedScreenMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Hatched Screen filter. **Notes:**

Details for this filter:

<table>
<thead>
<tr>
<th>FilterName</th>
<th>CIHatchedScreen</th>
</tr>
</thead>
<tbody>
<tr>
<td>DisplayName English</td>
<td>Hatched Screen</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Schraffierter Bereich</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>cran traits parallles</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Schermo ombreggiato</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Pantalla tramada</td>
</tr>
</tbody>
</table>

**Categories:**

- CICategoryHalftoneEffect: Halftone Effect
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputCenter: Center
- inputAngle: Angle
- inputWidth: Width
- inputSharpness: Sharpness

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.103.2 Methods

52.103.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.103.4 Properties

52.103.5 Attribute inputAngle as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Hatched Screen attribute.
**Notes:**
This attribute should have this content:

```
Name: inputAngle
Class: double
Type: CIAttributeTypeAngle
DisplayName English: Angle
DisplayName German: Winkel
DisplayName French: Angle
DisplayName Italian: Angolo
DisplayName Spanish: ngulo
DefaultNumber: 0
IdentityNumber: 0
SliderMaxNumber: 3.141593
SliderMinNumber: -3.141593
```

(Read only property)

52.103.6 Attribute inputCenter as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Hatched Screen attribute.
**Notes:**
This attribute should have this content:
52.103. **CLASS CIFILTERHATCHEDSCREENMBS**

Name: inputCenter  
Class: CIVectorMBS  
Type: CIAttributeTypePosition  
DisplayName English: Center  
DisplayName German: Mitte  
DisplayName French: Centre  
DisplayName Italian: Centro  
DisplayName Spanish: Centro  
DefaultVector: [150 150]  
IdentityVector: n/a

(Read only property)

52.103.7 **Attribute inputImage as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Hatched Screen attribute.  
**Notes:**

This attribute should have this content:

Name: inputImage  
Class: CIImageMBS  
Type: CIAttributeTypeImage  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
DefaultNumber: 0  
IdentityNumber: 0

(Read only property)

52.103.8 **Attribute inputSharpness as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Hatched Screen attribute.  
**Notes:**

This attribute should have this content:
Name: inputSharpness
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Sharpness
DisplayName German: Schärfe
DisplayName French: Nettet
DisplayName Italian: Nitidezza
DisplayName Spanish: Nitidez
DefaultNumber: 0.7
IdentityNumber: 0
MaxNumber: 1
MinNumber: 0
SliderMaxNumber: 1
SliderMinNumber: 0

(Read only property)

52.103.9 Attribute inputWidth as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Hatched Screen attribute.

**Notes:**
This attribute should have this content:

Name: inputWidth
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Anchura
DefaultNumber: 6
IdentityNumber: 0
MaxNumber: 0
MinNumber: 1
SliderMaxNumber: 50
SliderMinNumber: 2

(Read only property)
52.103.10  inputAngle as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Angle

**Notes:**

- Name: inputAngle
- Class: double (NSNumber)
- DisplayName English: Angle
- DisplayName German: Winkel
- DisplayName French: Angle
- DisplayName Italian: Angolo
- DisplayName Spanish: ngulo
- Type: CIAttributeTypeAngle

See Attribute inputAngle for more details.
(Read and Write property)

52.103.11  inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Center

**Notes:**

- Name: inputCenter
- Class: CIVectorMBS (CIVector)
- DisplayName English: Center
- DisplayName German: Mitte
- DisplayName French: Centre
- DisplayName Italian: Centro
- DisplayName Spanish: Centro
- Type: CIAttributeTypePosition

See Attribute inputCenter for more details.
(Read and Write property)

52.103.12  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**
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Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)

52.103.13  inputSharpness as double

Notes:

Name: inputSharpness
Class: double (NSNumber)
DisplayName English: Sharpness
DisplayName German: Schärfe
DisplayName French: Nettet
DisplayName Italian: Nitidezza
DisplayName Spanish: Nitidez
Type: CIAttributeTypeScalar

See Attribute inputSharpness for more details.
(Read and Write property)

52.103.14  inputWidth as double

Notes:

See Attribute inputWidth for more details.
(Read and Write property)
Name: inputWidth
Class: double (NSNumber)
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Anchura
Type: CIAttributeTypeDistance
52.104 class CIFilterHeightFieldFromMaskMBS

52.104.1 class CIFilterHeightFieldFromMaskMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Height Field From Mask filter.

**Notes:**

Details for this filter:

- **FilterName:** CIHeightFieldFromMask
  - **DisplayName English:** Height Field From Mask
  - **DisplayName German:** Hfenwerte von Maske
  - **DisplayName French:** Champ de hauteur du masque
  - **DisplayName Italian:** Altezza campo dalla maschera
  - **DisplayName Spanish:** Campo de altura a partir de mascara

**Categories:**

- CICategoryStylize: Stylize
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputRadius: Radius

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.104.2  Methods

52.104.3  Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.104.4  Properties

52.104.5  Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Height Field From Mask attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber:</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber:</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.104.6  Attribute inputRadius as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Height Field From Mask attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.104.7 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

Name: inputImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)

52.104.8 inputRadius as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Radius

**Notes:**

See Attribute inputRadius for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputRadius</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Radius</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Radius</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Rayon</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Raggio</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Radio</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeDistance</td>
</tr>
</tbody>
</table>
52.105  class CIFilterHexagonalPixellateMBS

52.105.1  class CIFilterHexagonalPixellateMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Hexagonal Pixelate filter.

**Notes:**
Details for this filter:

FilterName: CIHexagonalPixellate
DisplayName English: Hexagonal Pixelate
DisplayName German: Hexagonales Verpixeln
DisplayName French: Pixellisation hexagonale
DisplayName Italian: Effetto pixel esagonale
DisplayName Spanish: Pixelado hexagonal

**Categories:**

- CICategoryStylize: Stylize
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputCenter: Center
- inputScale: Scale

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.105.2 Methods

52.105.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

**Notes:** On success the handle property is not zero and the filter has the default values set.

52.105.4 Properties

52.105.5 Attribute inputCenter as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Details about the Hexagonal Pixelate attribute.

**Notes:**

This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputCenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIVectorMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypePosition</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Center</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Mitte</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Centre</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Centro</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Centro</td>
</tr>
<tr>
<td>DefaultVector</td>
<td>[ 150 150 ]</td>
</tr>
<tr>
<td>IdentityVector</td>
<td>n/a</td>
</tr>
</tbody>
</table>

(Read only property)

52.105.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Details about the Hexagonal Pixelate attribute.

**Notes:**

This attribute should have this content:

(Read only property)
52.105.7 Attribute inputScale as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Hexagonal Pixelate attribute. **Notes:** This attribute should have this content:

Name: inputScale
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Scale
DisplayName German: Skalierung
DisplayName French: chelle
DisplayName Italian: Scala
DisplayName Spanish: Escala
DefaultNumber: 8
IdentityNumber: 1
MaxNumber: 0
MinNumber: 1
SliderMaxNumber: 100
SliderMinNumber: 1

(Read only property)

52.105.8 inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Center **Notes:** See Attribute inputCenter for more details.
52.105. CLASS CIFILTERHEXAGONALPIXELLATEMBS

Name: inputCenter
Class: CIVectorMBS (CIVector)
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
Type: CIAttributeTypePosition

(Read and Write property)

52.105.9 inputImage as CIImageMBS

Notes:
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See AttributeinputImage for more details.
(Read and Write property)

52.105.10 inputScale as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The attribute Scale
Notes:
See AttributeinputScale for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name:</th>
<th>inputScale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Scale</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Skalierung</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>chelle</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Scala</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Escala</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeDistance</td>
</tr>
</tbody>
</table>
52.106.1  class CIFilterHighlightShadowAdjustMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Highlight and Shadow Adjust filter.

**Notes:**

Details for this filter:

<table>
<thead>
<tr>
<th>FilterName</th>
<th>CIColorAdjust</th>
</tr>
</thead>
<tbody>
<tr>
<td>DisplayName English</td>
<td>Highlight and Shadow Adjust</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Helle und dunkle Bereiche anpassen</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Ajuster les luminaires et les ombres</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Regolazione luce e ombre</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Ajuste de resaltados y sombras</td>
</tr>
</tbody>
</table>

**Categories:**

- CICategoryStylize: Stylize
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputRadius: Radius
- inputShadowAmount: Shadow Amount
- inputHighlightAmount: Highlight Amount

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.106.2 Methods

52.106.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.106.4 Properties

52.106.5 Attribute`inputHighlightAmount` as `CIAttributeMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Highlight and Shadow Adjust attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputHighlightAmount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeScalar</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Highlight Amount</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Striche der Hervorhebung</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Quantité de surbrillance</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Quantità luci</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Cantidad de resaltados</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>1</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>1</td>
</tr>
<tr>
<td>MaxNumber</td>
<td>1</td>
</tr>
<tr>
<td>MinNumber</td>
<td>0</td>
</tr>
<tr>
<td>SliderMaxNumber</td>
<td>1</td>
</tr>
<tr>
<td>SliderMinNumber</td>
<td>0.3</td>
</tr>
</tbody>
</table>

(Read only property)

52.106.6 Attribute`inputImage` as `CIAttributeMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Highlight and Shadow Adjust attribute.
**Notes:**
This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.106.7 AttributeinputRadius as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Highlight and Shadow Adjust attribute.

**Notes:**
This attribute should have this content:

Name: inputRadius
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Radius
DisplayName German: Radius
DisplayName French: Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
DefaultNumber: 0
IdentityNumber: 0
SliderMaxNumber: 10
SliderMinNumber: 0

(Read only property)
52.106.8  AttributeinputShadowAmount as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Highlight and Shadow Adjust attribute.

**Notes:**
This attribute should have this content:

Name: inputShadowAmount  
Class: double  
Type: CIAttributeTypeScalar  
DisplayName English: Shadow Amount  
DisplayName German: Schattenumfang  
DisplayName French: Quantité d’ombre  
DisplayName Italian: Quantità ombreggiatura  
DisplayName Spanish: Cantidad de sombreado  
DefaultNumber: 0  
IdentityNumber: 0  
MaxNumber: 1  
MinNumber: -1  
SliderMaxNumber: 1  
SliderMinNumber: -1

(Read only property)

52.106.9  inputHighlightAmount as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Highlight Amount

**Notes:**

Name: inputHighlightAmount  
Class: double (NSNumber)  
DisplayName English: Highlight Amount  
DisplayName German: Strich der Hervorhebung  
DisplayName French: Quantité de surbrillance  
DisplayName Italian: Quantità luci  
DisplayName Spanish: Cantidad de resaltados  
Type: CIAttributeTypeScalar

See AttributeinputHighlightAmount for more details.  
(Read and Write property)
52.106.10  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

- **Name:** inputImage
- **Class:** CIImageMBS (CIImage)
- **DisplayName English:** Image
- **DisplayName German:** Bild
- **DisplayName French:** Image
- **DisplayName Italian:** Immagine
- **DisplayName Spanish:** Imagen
- **Type:** CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)

52.106.11  inputRadius as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Radius

**Notes:**

- **Name:** inputRadius
- **Class:** double (NSNumber)
- **DisplayName English:** Radius
- **DisplayName German:** Radius
- **DisplayName French:** Rayon
- **DisplayName Italian:** Raggio
- **DisplayName Spanish:** Radio
- **Type:** CIAttributeTypeScalar

See Attribute inputRadius for more details.
(Read and Write property)

52.106.12  inputShadowAmount as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Shadow Amount

**Notes:**
<table>
<thead>
<tr>
<th>Name</th>
<th>inputShadowAmount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Shadow Amount</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Schattenumfang</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Quantité d’ombre</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Quantità ombreggiatura</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Cantidad de sombreado</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeScalar</td>
</tr>
</tbody>
</table>

See Attribute `inputShadowAmount` for more details.
(Read and Write property)
52.107. class CIFilterHistogramDisplayFilterMBS

52.107.1 class CIFilterHistogramDisplayFilterMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Histogram Display filter.

**Notes:**
Details for this filter:

- **FilterName:** CIHistogramDisplayFilter
- **DisplayName English:** Histogram Display
- **DisplayName German:** Histogrammanzeige
- **DisplayName French:** Affichage de l'histogramme
- **DisplayName Italian:** Visualizzazione istogramma
- **DisplayName Spanish:** Visualizacin de histograma

**Categories:**

- CICategoryReduction: Reduction
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- **inputImage:** Image
- **inputHeight:** Height
- **inputHighLimit:** HighLimit
- **inputLowLimit:** LowLimit

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
52.107.2 Methods

52.107.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.107.4 Properties

52.107.5 Attribute inputHeight as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Histogram Display attribute.
**Notes:**
This attribute should have this content:

Name: inputHeight  
Class: double  
Type: CIAttributeTypeScalar  
DisplayName: Height  
DefaultNumber: 100  
IdentityNumber: 0  
MaxNumber: 200  
MinNumber: 1  
SliderMaxNumber: 100  
SliderMinNumber: 1

(Read only property)

52.107.6 Attribute inputHighLimit as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Histogram Display attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.107. CLASS CIFILTERHISTOGRAMDISPLAYFILTERMBS

Name: inputHighLimit
Class: double
Type: CIAttributeTypeScalar
DisplayName: HighLimit
DefaultNumber: 1
IdentityNumber: 0
MaxNumber: 1
MinNumber: 0
SliderMaxNumber: 1
SliderMinNumber: 0

52.107.7 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Histogram Display attribute.

**Notes:**
This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.107.8 Attribute inputLowLimit as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Histogram Display attribute.

**Notes:**
This attribute should have this content:

(Read only property)
52.107.9 inputHeight as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Height

**Notes:**

Name: inputHeight
Class: double (NSNumber)
DisplayName English: Height
DisplayName German: Height
DisplayName French: Height
DisplayName Italian: Height
DisplayName Spanish: Height
Type: CIAttributeTypeScalar

See Attribute inputHeight for more details.
(Read and Write property)

52.107.10 inputHighLimit as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute HighLimit

**Notes:**

See Attribute inputHighLimit for more details.
(Read and Write property)
52.107. CLASS CIFILTERHISTOGRAMDISPLAYFILTERMBS

Name: inputHighLimit
Class: double (NSNumber)
DisplayName English: HighLimit
DisplayName German: HighLimit
DisplayName French: HighLimit
DisplayName Italian: HighLimit
DisplayName Spanish: HighLimit
Type: CIAttributeTypeScalar

52.107.11 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image
**Notes:**

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)

52.107.12 inputLowLimit as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute LowLimit
**Notes:**

Name: inputLowLimit
Class: double (NSNumber)
DisplayName English: LowLimit
DisplayName German: LowLimit
DisplayName French: LowLimit
DisplayName Italian: LowLimit
DisplayName Spanish: LowLimit
Type: CIAttributeTypeScalar

See Attribute inputLowLimit for more details.
(Read and Write property)
52.108. class CIFilterHoleDistortionMBS

52.108.1 class CIFilterHoleDistortionMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Hole Distortion filter.

**Notes:**

Details for this filter:

- **FilterName:** CIHoleDistortion
- **DisplayName English:** Hole Distortion
- **DisplayName German:** Verzerrung Loch
- **DisplayName French:** Distorsion Dformation Orifice
- **DisplayName Italian:** Distorsione foro
- **DisplayName Spanish:** Distorsión de orificios

**Categories:**

- CICategoryDistortionEffect: Distortion Effect
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- **inputImage:** Image
- **inputCenter:** Center
- **inputRadius:** Radius

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
52.108.2 Methods

52.108.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.108.4 Properties

52.108.5 AttributeinputCenter as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Hole Distortion attribute.
**Notes:**
This attribute should have this content:

Name: inputCenter
Class: CIVectorMBS
Type: CIAttributeTypePosition
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
DefaultVector: [150 150]
IdentityVector: n/a

(Read only property)

52.108.6 AttributeinputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Hole Distortion attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.108. **CLASS CIFILTERHOLEDISTORTIONMBS**

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

52.108.7 **Attribute**inputRadius as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Hole Distortion attribute.
**Notes:**
This attribute should have this content:

Name: inputRadius
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Radius
DisplayName German: Radius
DisplayName French: Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
DefaultNumber: 150
IdentityNumber: 0.1
MaxNumber: 0
MinNumber: 0.01
SliderMaxNumber: 1000
SliderMinNumber: 0.01

(Read only property)

52.108.8 **inputCenter as CIVectorMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Center
**Notes:**
See AttributeinputCenter for more details.
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Name: inputCenter
Class: CIVectorMBS (CIVector)
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
Type: CIAttributeTypePosition

(Read and Write property)

52.108.9 inputImage as CIImageMBS

Notes:

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)

52.108.10 inputRadius as double

Notes:

See Attribute inputRadius for more details.
(Read and Write property)
### Name: inputRadius
- **Class:** double (NSNumber)
- **DisplayName English:** Radius
- **DisplayName German:** Radius
- **DisplayName French:** Rayon
- **DisplayName Italian:** Raggio
- **DisplayName Spanish:** Radio
- **Type:** CIAttributeTypeDistance
52.109  class CIFilterHueAdjustMBS

52.109.1  class CIFilterHueAdjustMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Hue Adjust filter.

**Notes:**
Details for this filter:

- **FilterName:** CIHueAdjust
- **DisplayName English:** Hue Adjust
- **DisplayName German:** Farbton anpassen
- **DisplayName French:** Ajustement de tonalité
- **DisplayName Italian:** Regolazione tonalità
- **DisplayName Spanish:** Ajuste de matiz

**Categories:**

- CICategoryColorAdjustment: Color Adjustment
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputAngle: Angle

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.109.2 Methods

52.109.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.109.4 Properties

52.109.5 AttributeinputAngle as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Hue Adjust attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputAngle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>double</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeAngle</td>
</tr>
<tr>
<td>DisplayName:</td>
<td></td>
</tr>
<tr>
<td>English:</td>
<td>Angle</td>
</tr>
<tr>
<td>German:</td>
<td>Winkel</td>
</tr>
<tr>
<td>French:</td>
<td>Angle</td>
</tr>
<tr>
<td>Italian:</td>
<td>Angolo</td>
</tr>
<tr>
<td>Spanish:</td>
<td>ngulo</td>
</tr>
<tr>
<td>DefaultNumber:</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber:</td>
<td>0</td>
</tr>
<tr>
<td>SliderMaxNumber:</td>
<td>3.141593</td>
</tr>
<tr>
<td>SliderMinNumber:</td>
<td>-3.141593</td>
</tr>
</tbody>
</table>

(Read only property)

52.109.6 AttributeinputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Hue Adjust attribute.
**Notes:**
This attribute should have this content:
Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.109.7 inputAngle as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Angle

**Notes:**

Name: inputAngle
Class: double (NSNumber)
DisplayName English: Angle
DisplayName German: Winkel
DisplayName French: Angle
DisplayName Italian: Angolo
DisplayName Spanish: ángulo
Type: CIAttributeTypeAngle

See Attribute inputAngle for more details.
(Read and Write property)

52.109.8 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

See Attribute inputImage for more details.
(Read and Write property)
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage
52.110 class CIFilterHueBlendModeMBS

52.110.1 class CIFilterHueBlendModeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Hue Blend Mode filter.

**Notes:**
Details for this filter:

<table>
<thead>
<tr>
<th>FilterName</th>
<th>CIHueBlendMode</th>
</tr>
</thead>
<tbody>
<tr>
<td>DisplayName English</td>
<td>Hue Blend Mode</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Mischmethode Farbton</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Mode de fusion Tonalit</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Modalit sfumatura tonalit</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Modo de mezcla de matiz</td>
</tr>
</tbody>
</table>

**Categories:**
- CICategoryCompositeOperation: Composite Operation
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryBuiltIn: Built-In

**Input:**
- inputImage: Image
- inputBackgroundImage: Background Image

**Output:**
- outputImage

Subclass of the CIFilterMBS class.
52.110.2 Methods

52.110.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.110.4 Properties

52.110.5 Attribute inputBackgroundImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Hue Blend Mode attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputBackgroundImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Background Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Hintergrundbild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image darrire-plan</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine di sfondo</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen de fondo</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.110.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Hue Blend Mode attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.110.7  inputBackgroundImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Background Image

**Notes:**

- Name: inputBackgroundImage
- Class: CIImageMBS (CIImage)
- DisplayName English: Background Image
- DisplayName German: Hintergrundbild
- DisplayName French: Image derrière-plan
- DisplayName Italian: Immagine di sfondo
- DisplayName Spanish: Imagen de fondo
- Type: CIAttributeValueImage

See Attribute inputBackgroundImage for more details.
(Read and Write property)

52.110.8  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

See Attribute inputImage for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Image</td>
</tr>
<tr>
<td>English</td>
<td>Image</td>
</tr>
<tr>
<td>German</td>
<td>Bild</td>
</tr>
<tr>
<td>French</td>
<td>Image</td>
</tr>
<tr>
<td>Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>
class CIFilterHueSaturationValueGradientMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Hue/Saturation/Value Gradient filter.

**Notes:**
Details for this filter:

<table>
<thead>
<tr>
<th>FilterName:</th>
<th>CIHueSaturationValueGradient</th>
</tr>
</thead>
<tbody>
<tr>
<td>DisplayName English:</td>
<td>Hue/Saturation/Value Gradient</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Farbton/Sttigung/Wertverlauf</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Dgrad de teinte/saturation/valeur</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Tonalit/saturazione/valore gradiente</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Degradado de matiz/saturacin/valor</td>
</tr>
</tbody>
</table>

**Categories:**

- CICategoryGradient: Gradient
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputValue: Value
- inputRadius: Radius
- inputSoftness: Softness
- inputDither: Dither
- inputColorSpace: ColorSpace

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.111.2 Methods

52.111.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor. 
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.111.4 Properties

52.111.5 Attribute `inputColorSpace` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Hue/Saturation/Value Gradient attribute. 
**Notes:** This attribute should have this content:

- Name: inputColorSpace
- Class: CGColorSpaceMBS
- DisplayName: ColorSpace
- DefaultNumber: 0
- IdentityNumber: 0

(Read only property)

52.111.6 Attribute `inputDither` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Hue/Saturation/Value Gradient attribute. 
**Notes:** This attribute should have this content:

(Read only property)
**52.111.7 Attribute inputRadius as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Hue/Saturation/Value Gradient attribute.

**Notes:**
This attribute should have this content:

- **Name:** inputRadius
- **Class:** double
- **Type:** CIAttributeTypeDistance
- **DisplayName English:** Radius
- **DisplayName German:** Radius
- **DisplayName French:** Rayon
- **DisplayName Italian:** Raggio
- **DisplayName Spanish:** Radio
- **DefaultNumber:** 300
- **IdentityNumber:** 0
- **SliderMaxNumber:** 800
- **SliderMinNumber:** 0

(Read only property)

**52.111.8 Attribute inputSoftness as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Hue/Saturation/Value Gradient attribute.

**Notes:**
This attribute should have this content:

(Read only property)
52.111.  CLASS CIFILTERHUESATURATIONVALUEGRADIENTMBS

Name: inputSoftness
Class: double
Type: CIAttributeTypeScalar
DisplayName: Softness
DefaultNumber: 1
IdentityNumber: 0
SliderMaxNumber: 1
SliderMinNumber: 0

52.111.9  AttributeinputValue as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Hue/Saturation/Value Gradient attribute.

**Notes:**
This attribute should have this content:

Name: inputValue
Class: double
Type: CIAttributeTypeScalar
DisplayName: Value
DefaultNumber: 1
IdentityNumber: 0
SliderMaxNumber: 1
SliderMinNumber: 0

(Read only property)

52.111.10  inputColorSpace as CGColorSpaceMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute ColorSpace

**Notes:**
See AttributeinputColorSpace for more details.
(Read and Write property)
52.111.11 inputDither as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Dither

**Notes:**

Name: inputDither  
Class: double (NSNumber)  
DisplayName English: Dither  
DisplayName German: Dither  
DisplayName French: Dither  
DisplayName Italian: Dither  
DisplayName Spanish: Dither  
Type: CIAttributeTypeScalar

See AttributeinputDither for more details.  
(Read and Write property)

52.111.12 inputRadius as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Radius

**Notes:**

Name: inputRadius  
Class: double (NSNumber)  
DisplayName English: Radius  
DisplayName German: Radius  
DisplayName French: Rayon  
DisplayName Italian: Raggio  
DisplayName Spanish: Radio  
Type: CIAttributeTypeDistance

See AttributeinputRadius for more details.
52.111.13  inputSoftness as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Softness

**Notes:**

- Name: inputSoftness
- Class: double (NSNumber)
- DisplayName English: Softness
- DisplayName German: Softness
- DisplayName French: Softness
- DisplayName Italian: Softness
- DisplayName Spanish: Softness
- Type: CIAttributeTypeScalar

See Attribute inputSoftness for more details.
(Read and Write property)

52.111.14  inputValue as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Value

**Notes:**

- Name: inputValue
- Class: double (NSNumber)
- DisplayName English: Value
- DisplayName German: Value
- DisplayName French: Value
- DisplayName Italian: Value
- DisplayName Spanish: Value
- Type: CIAttributeTypeScalar

See Attribute inputValue for more details.
(Read and Write property)
52.112 class CIFilterKaleidoscopeMBS

52.112.1 class CIFilterKaleidoscopeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Kaleidoscope filter. **Notes:**

Details for this filter:

FilterName: CIKaleidoscope
DisplayName English: Kaleidoscope
DisplayName German: Kaleidoskop
DisplayName French: Kalidoscope
DisplayName Italian: Caleidoscopio
DisplayName Spanish: Caleidoscopio

Categories:

- CICategoryTileEffect: Tile Effect
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

Input:

- inputImage: Image
- inputCount: Count
- inputCenter: Center
- inputAngle: Angle

Output:

- outputImage

Subclass of the CIFilterMBS class.
52.112.2 Methods

52.112.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.112.4 Properties

52.112.5 Attribute `inputAngle` as `CIAttributeMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Kaleidoscope attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputAngle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>double</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeAngle</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Angle</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Winkel</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Angle</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Angolo</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>ngulo</td>
</tr>
<tr>
<td>DefaultNumber:</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber:</td>
<td>0</td>
</tr>
<tr>
<td>SliderMaxNumber:</td>
<td>3.141593</td>
</tr>
<tr>
<td>SliderMinNumber:</td>
<td>-3.141593</td>
</tr>
</tbody>
</table>

(Read only property)

52.112.6 Attribute `inputCenter` as `CIAttributeMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Kaleidoscope attribute.
**Notes:**
This attribute should have this content:
Name: inputCenter
Class: CIVectorMBS
Type: CIAttributeTypePosition
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
DefaultVector: [150 150]
IdentityVector: n/a

(Read only property)

## 52.112.7 Attribute inputCount as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Kaleidoscope attribute.

**Notes:**
This attribute should have this content:

Name: inputCount
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Count
DisplayName German: Anzahl
DisplayName French: Compte
DisplayName Italian: Conteggio
DisplayName Spanish: Recuento
DefaultNumber: 6
IdentityNumber: 0
MaxNumber: 0
MinNumber: 1
SliderMaxNumber: 64
SliderMinNumber: 1

(Read only property)
52.112.8  Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Kaleidoscope attribute.

**Notes:**

This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.112.9  inputAngle as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Angle

**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputAngle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Angle</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Winkel</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Angle</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Angolo</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>ngulo</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeAngle</td>
</tr>
</tbody>
</table>

See Attribute inputAngle for more details.

(Read and Write property)
CHAPTER 52. COREIMAGE

52.112.10  inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Center

**Notes:**

Name: inputCenter  
Class: CIVectorMBS (CIVector)  
DisplayName English: Center  
DisplayName German: Mitte  
DisplayName French: Centre  
DisplayName Italian: Centro  
DisplayName Spanish: Centro  
Type: CIAttributeTypePosition

See AttributeinputCenter for more details.  
(Read and Write property)

52.112.11  inputCount as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Count

**Notes:**

Name: inputCount  
Class: double (NSNumber)  
DisplayName English: Count  
DisplayName German: Anzahl  
DisplayName French: Compte  
DisplayName Italian: Conteggio  
DisplayName Spanish: Recuento  
Type: CIAttributeTypeScalar

See AttributeinputCount for more details.  
(Read and Write property)

52.112.12  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)
52.113 class CIFilterLabDeltaEMBS

52.113.1 class CIFilterLabDeltaEMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Lab E filter.

**Notes:**
Details for this filter:

- FilterName: CILabDeltaE
- DisplayName English: Lab E
- DisplayName German: Lab E
- DisplayName French: Lab E
- DisplayName Italian: Lab E
- DisplayName Spanish: Valores E del espacio de color Lab

**Categories:**
- CICategoryColorEffect: Color Effect
- CICategoryVideo: Video
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**
- inputImage: Image
- inputImage2: Image2

**Output:**
- outputImage

Subclass of the CIFilterMBS class.
52.113.2 Methods

52.113.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.113.4 Properties

52.113.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Lab E attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.113.6 Attribute inputImage2 as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Lab E attribute.
**Notes:**
This attribute should have this content:

(Read only property)
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52.113.7 inputImage as CIImageMBS


Notes:

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See AttributeinputImage for more details.
(Read and Write property)

52.113.8 inputImage2 as CIImageMBS


Notes:

Name: inputImage2
Class: CIImageMBS (CIImage)
DisplayName English: Image2
DisplayName German: Image2
DisplayName French: Image2
DisplayName Italian: Image2
DisplayName Spanish: Image2
Type:

See AttributeinputImage2 for more details.
(Read and Write property)
52.114.1 class CIFilterLanczosScaleTransformMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Lanczos Scale Transform filter.

**Notes:**
Details for this filter:

- FilterName: CILanczosScaleTransform
- DisplayName English: Lanczos Scale Transform
- DisplayName German: Lanczos Skalierungstransformation
- DisplayName French: Transformation d'echelle de Lanczos
- DisplayName Italian: Trasforma scala di Lanczos
- DisplayName Spanish: Transformar mediante escala Lanczos

**Categories:**
- CICategoryGeometryAdjustment: Geometry Adjustment
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**
- inputImage: Image
- inputScale: Scale
- inputAspectRatio: Aspect Ratio

**Output:**
- outputImage

Subclass of the CIFilterMBS class.
52.114.2 Methods

52.114.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.114.4 Properties

52.114.5 Attribute inputAspectRatio as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Lanczos Scale Transform attribute.
**Notes:**
This attribute should have this content:

- **Name:** inputAspectRatio
- **Class:** double
- **Type:** CIAttributeTypeScalar
- **DisplayName English:** Aspect Ratio
- **DisplayName German:** Seitenverhältnis
- **DisplayName French:** Proportions
- **DisplayName Italian:** Proporzioni
- **DisplayName Spanish:** Proporciones
- **DefaultNumber:** 1
- **IdentityNumber:** 1
- **SliderMaxNumber:** 2
- **SliderMinNumber:** 0.5

(Read only property)

52.114.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Lanczos Scale Transform attribute.
**Notes:**
This attribute should have this content:
52.114. CLASS CFILTERLANCZOSCALETRANSFORMMBS

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.114.7 AttributeinputScale as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Lanczos Scale Transform attribute.

**Notes:**
This attribute should have this content:

Name: inputScale
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Scale
DisplayName German: Skalierung
DisplayName French: chelle
DisplayName Italian: Scala
DisplayName Spanish: Escala
DefaultNumber: 1
IdentityNumber: 1
SliderMaxNumber: 1.5
SliderMinNumber: 0.05

(Read only property)

52.114.8 inputAspectRatio as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Aspect Ratio

**Notes:**
Name: inputAspectRatio
Class: double (NSNumber)
DisplayName English: Aspect Ratio
DisplayName German: Seitenverhältnis
DisplayName French: Proportions
DisplayName Italian: Proporzioni
DisplayName Spanish: Proporciones
Type: CIAttributeTypeScalar

See AttributeinputAspectRatio for more details.
(Read and Write property)

52.114.9 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See AttributeinputImage for more details.
(Read and Write property)

52.114.10 inputScale as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Scale

**Notes:**
See AttributeinputScale for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name:</th>
<th>inputScale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Scale</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Skalierung</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>chelle</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Scala</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Escala</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeScalar</td>
</tr>
</tbody>
</table>
52.115 class CIFilterLenticularHaloGeneratorMBS

52.115.1 class CIFilterLenticularHaloGeneratorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Lenticular Halo filter. 
**Notes:**
Details for this filter:

| FilterName: | CILenticularHaloGenerator |
| DisplayName English: | Lenticular Halo |
| DisplayName German: | Linsenfrmiges Halo |
| DisplayName French: | Halo lenticulaire |
| DisplayName Italian: | Alone lenticolare |
| DisplayName Spanish: | Halo lenticular |

**Categories:**

- CICategoryGenerator: Generator
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputCenter: Center
- inputColor: Color
- inputHaloRadius: Halo Radius
- inputHaloWidth: Halo Width
- inputHaloOverlap: Halo Overlap
- inputStriationStrength: Striation Strength
- inputStriationContrast: Striation Contrast
- inputTime: Time

**Output:**
52.115. Class CIFilterLenticularHaloGeneratorMBS

- outputImage

Subclass of the CIFilterMBS class.

52.115.2 Methods

52.115.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

**Notes:** On success the handle property is not zero and the filter has the default values set.

52.115.4 Properties

52.115.5 Attribute inputCenter as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Lenticular Halo attribute.

**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputCenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIVectorMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypePosition</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Center</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Mitte</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Centre</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Centro</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Centro</td>
</tr>
<tr>
<td>DefaultVector</td>
<td>[ 150 150 ]</td>
</tr>
<tr>
<td>IdentityVector</td>
<td>n/a</td>
</tr>
</tbody>
</table>

(Read only property)

52.115.6 Attribute inputColor as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Lenticular Halo attribute.

**Notes:**
This attribute should have this content:

| Name:       | inputColor            |
| Class:      | CIColorMBS            |
| DisplayName English: | Color               |
| DisplayName German:   | Farbe                |
| DisplayName French:   | Couleur              |
| DisplayName Italian:  | Colore               |
| DisplayName Spanish:  | Color                |
| DefaultColor:        | Red = 1, Green = 0.9, Blue = 0.8, Alpha = 1 |
| IdentityNumber:      | 0                    |

(Read only property)

52.115.7 Attribute inputHaloOverlap as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Lenticular Halo attribute.

**Notes:**

This attribute should have this content:

| Name:       | inputHaloOverlap              |
| Class:      | double                         |
| Type:       | CIAttributeTypeScalar         |
| DisplayName English: | Halo Overlap             |
| DisplayName German:   | Halo berlappen             |
| DisplayName French:   | Superposition de halo         |
| DisplayName Italian:  | Sovrapposizione alone         |
| DisplayName Spanish:  | Superposicin del halo         |
| DefaultNumber:        | 0.77                           |
| IdentityNumber:      | 0                               |
| SliderMaxNumber:     | 1                               |
| SliderMinNumber:     | 0                               |

(Read only property)

52.115.8 Attribute inputHaloRadius as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Lenticular Halo attribute.
### 52.115. CLASS CIFILTERLENTICULARHALOGENERATORMBS

**Notes:**

This attribute should have this content:

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputHaloRadius</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>double</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeDistance</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Halo Radius</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Radius des Halo</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Rayon du halo</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Raggio alone</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Radio del halo</td>
</tr>
<tr>
<td>DefaultNumber:</td>
<td>70</td>
</tr>
<tr>
<td>IdentityNumber:</td>
<td>0</td>
</tr>
<tr>
<td>SliderMaxNumber:</td>
<td>1000</td>
</tr>
<tr>
<td>SliderMinNumber:</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

### 52.115.9 Attribute inputHaloWidth as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Details about the Lenticular Halo attribute.

**Notes:**

This attribute should have this content:

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputHaloWidth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>double</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeDistance</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Halo Width</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Breite des Halo</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Largeur du halo</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Larghezza alone</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Anchura del halo</td>
</tr>
<tr>
<td>DefaultNumber:</td>
<td>87</td>
</tr>
<tr>
<td>IdentityNumber:</td>
<td>0</td>
</tr>
<tr>
<td>SliderMaxNumber:</td>
<td>300</td>
</tr>
<tr>
<td>SliderMinNumber:</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)
52.115.10  AttributeinputStriationContrast as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Lenticular Halo attribute. **Notes:**

This attribute should have this content:

- **Name:** inputStriationContrast
- **Class:** double
- **Type:** CIAttributeTypeScalar
- **DisplayName English:** Striation Contrast
- **DisplayName German:** Kontrast fr Riffelung
- **DisplayName French:** Contraste des stries
- **DisplayName Italian:** Contrasto striatura
- **DisplayName Spanish:** Contraste de la estriacin
- **DefaultNumber:** 1
- **IdentityNumber:** 0
- **SliderMaxNumber:** 5
- **SliderMinNumber:** 0

(Read only property)

52.115.11  AttributeinputStriationStrength as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Lenticular Halo attribute. **Notes:**

This attribute should have this content:

(Read only property)

52.115.12  AttributeinputTime as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Lenticular Halo attribute. **Notes:**

This attribute should have this content:
Name: inputStriationStrength
Class: double
Type: CIAAttributeTypeScalar
DisplayName English: Striation Strength
DisplayName German: Strke der Riffelung
DisplayName French: Force des stries
DisplayName Italian: Livello striatura
DisplayName Spanish: Intensidad de la estriacin
DefaultNumber: 0.5
IdentityNumber: 0
SliderMaxNumber: 3
SliderMinNumber: 0

Name: inputTime
Class: double
Type: CIAAttributeTypeScalar
DisplayName English: Time
DisplayName German: Zeit
DisplayName French: Dure
DisplayName Italian: Tempo
DisplayName Spanish: Tiempo
DefaultNumber: 0
IdentityNumber: 0
MaxNumber: 1
MinNumber: 0
SliderMaxNumber: 1
SliderMinNumber: 0

(Read only property)

52.115.13  inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Center

**Notes:**
See Attribute inputCenter for more details.
(Read and Write property)
Name: inputCenter
Class: CIVectorMBS (CIVector)
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
Type: CIAttributeTypePosition

52.115.14 inputColor as CIColorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Color
**Notes:**
Name: inputColor
Class: CIColorMBS (CIColor)
DisplayName English: Color
DisplayName German: Farbe
DisplayName French: Couleur
DisplayName Italian: Colore
DisplayName Spanish: Color
Type:
See Attribute inputColor for more details.
(Read and Write property)

52.115.15 inputHaloOverlap as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Halo Overlap
**Notes:**
Name: inputHaloOverlap
Class: double (NSNumber)
DisplayName English: Halo Overlap
DisplayName German: Halo berlappen
DisplayName French: Superposition de halo
DisplayName Italian: Sovrapposizione alone
DisplayName Spanish: Superposicin del halo
Type: CIAttributeTypeScalar
See Attribute inputHaloOverlap for more details.
52.115.16 inputHaloRadius as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Halo Radius

**Notes:**

- **Name:** inputHaloRadius
- **Class:** double (NSNumber)
- **DisplayName English:** Halo Radius
- **DisplayName German:** Radius des Halo
- **DisplayName French:** Rayon du halo
- **DisplayName Italian:** Raggio alone
- **DisplayName Spanish:** Radio del halo
- **Type:** CIAttributeTypeDistance

See Attribute inputHaloRadius for more details.
(Read and Write property)

52.115.17 inputHaloWidth as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Halo Width

**Notes:**

- **Name:** inputHaloWidth
- **Class:** double (NSNumber)
- **DisplayName English:** Halo Width
- **DisplayName German:** Breite des Halo
- **DisplayName French:** Largeur du halo
- **DisplayName Italian:** Larghezza alone
- **DisplayName Spanish:** Anchura del halo
- **Type:** CIAttributeTypeDistance

See Attribute inputHaloWidth for more details.
(Read and Write property)
52.115.18  inputStriationContrast as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
The attribute Striation Contrast
**Notes:**
Name: inputStriationContrast
Class: double (NSNumber)
DisplayName English: Striation Contrast
DisplayName German: Kontrast fr Riffelung
DisplayName French: Contraste des stries
DisplayName Italian: Contrasto striatura
DisplayName Spanish: Contraste de la estriacin
Type: CIAttributeTypeScalar

See Attribute inputStriationContrast for more details.
(Read and Write property)

52.115.19  inputStriationStrength as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
The attribute Striation Strength
**Notes:**
Name: inputStriationStrength
Class: double (NSNumber)
DisplayName English: Striation Strength
DisplayName German: Strke der Riffelung
DisplayName French: Force des stries
DisplayName Italian: Livello striatura
DisplayName Spanish: Intensidad de la estriacin
Type: CIAttributeTypeScalar

See Attribute inputStriationStrength for more details.
(Read and Write property)

52.115.20  inputTime as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
The attribute Time
**Notes:**
Name: inputTime
Class: double (NSNumber)
DisplayName English: Time
DisplayName German: Zeit
DisplayName French: Dure
DisplayName Italian: Tempo
DisplayName Spanish: Tiempo
Type: CIAttributeTypeScalar

See Attribute inputTime for more details.
(Read and Write property)
52.116 class CIFilterLightenBlendModeMBS

52.116.1 class CIFilterLightenBlendModeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Lighten Blend Mode filter. **Notes:** Details for this filter:

| FilterName: | CILightenBlendMode |
| DisplayName English: | Lighten Blend Mode |
| DisplayName German: | Mischmethode Aufhellen |
| DisplayName French: | Mode de fusion claircir |
| DisplayName Italian: | Modalit sfumatura chiara |
| DisplayName Spanish: | Aclarar modo de mezcla |

**Categories:**

- CICategoryCompositeOperation: Composite Operation
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputBackgroundImage: Background Image

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.116.2 Methods

52.116.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.116.4 Properties

52.116.5 Attribute inputBackgroundImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Lighten Blend Mode attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputBackgroundImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Background Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Hintergrundbild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image darrire-plan</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine di sfondo</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen de fondo</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.116.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Lighten Blend Mode attribute.
**Notes:**
This attribute should have this content:

(Read only property)
Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

52.116.7 inputBackgroundImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Background Image
Notes:

Name: inputBackgroundImage
Class: CIImageMBS (CIImage)
DisplayName English: Background Image
DisplayName German: Hintergrundbild
DisplayName French: Image derrière-plan
DisplayName Italian: Immagine di sfondo
DisplayName Spanish: Imagen de fondo
Type: CIAttributeTypeImage

See Attribute inputBackgroundImage for more details.
(Read and Write property)

52.116.8 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Image
Notes:

See Attribute inputImage for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>
CHAPTER 52. COREIMAGE

52.117 class CIFilterLightTunnelMBS

52.117.1 class CIFilterLightTunnelMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Light Tunnel Distortion filter.

**Notes:**

Details for this filter:

<table>
<thead>
<tr>
<th>FilterName:</th>
<th>CILightTunnel</th>
</tr>
</thead>
<tbody>
<tr>
<td>DisplayName English:</td>
<td>Light Tunnel Distortion</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Lichttunnelverzerrung</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Dformation du tunnel lumineux</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Distorsione tunnel di luce</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Distorsin del tunnel de luz</td>
</tr>
</tbody>
</table>

Categories:

- CICategoryDistortionEffect: Distortion Effect
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputCenter: Center
- inputRotation: Rotation
- inputRadius: Radius

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.117.2 Methods

52.117.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.117.4 Properties

52.117.5 Attribute inputCenter as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Light Tunnel Distortion attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputCenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIVectorMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypePosition</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Center</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Mitte</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Centre</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Centro</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Centro</td>
</tr>
<tr>
<td>DefaultVector</td>
<td>[ 150 150 ]</td>
</tr>
<tr>
<td>IdentityVector</td>
<td>n/a</td>
</tr>
</tbody>
</table>

(Read only property)

52.117.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Light Tunnel Distortion attribute.
**Notes:**
This attribute should have this content:

(Read only property)
CHAPTER 52. COREIMAGE

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

52.117.7 Attribute inputRadius as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Light Tunnel Distortion attribute.

**Notes:**

This attribute should have this content:

Name: inputRadius
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Radius
DisplayName German: Radius
DisplayName French: Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
DefaultNumber: 100
IdentityNumber: 0
SliderMaxNumber: 500
SliderMinNumber: 1

(Read only property)

52.117.8 Attribute inputRotation as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Light Tunnel Distortion attribute.

**Notes:**

This attribute should have this content:
52.117.  CLASS CIFILTERLIGHTTUNNELMBS

Name: inputRotation
Class: double
Type: CIAttributeTypeAngle
DisplayName: Rotation
DefaultNumber: 0
IdentityNumber: 0
SliderMaxNumber: 1.570796
SliderMinNumber: 0

(Read only property)

52.117.9  inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Center

Notes:

Name: inputCenter
Class: CIVectorMBS (CIVector)
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
Type: CIAttributeTypePosition

See AttributeinputCenter for more details.
(Read and Write property)

52.117.10  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Image

Notes:

See AttributeinputImage for more details.
(Read and Write property)
**52.117.11  inputRadius as double**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Radius

**Notes:**

Name: inputRadius
Class: double (NSNumber)
DisplayName English: Radius
DisplayName German: Radius
DisplayName French: Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
Type: CIAttributeTypeDistance

See Attribute inputRadius for more details.
(Read and Write property)

**52.117.12  inputRotation as double**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Rotation

**Notes:**

Name: inputRotation
Class: double (NSNumber)
DisplayName English: Rotation
DisplayName German: Rotation
DisplayName French: Rotation
DisplayName Italian: Rotation
DisplayName Spanish: Rotation
Type: CIAttributeTypeAngle

See Attribute inputRotation for more details.
52.117. CLASS CIFILTERLIGHTTUNNELMBS

(Read and Write property)
52.118 class CIFilterLinearBurnBlendModeMBS

52.118.1 class CIFilterLinearBurnBlendModeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Linear Burn Blend Mode filter. **Notes:**

Details for this filter:

- **FilterName:** CILinearBurnBlendMode
- **DisplayName English:** Linear Burn Blend Mode
- **DisplayName German:** Mischmethode Linear nachbelichten
- **DisplayName French:** Mode de fusion claircissement linéaire
- **DisplayName Italian:** Modalità sfumatura bruciata lineare
- **DisplayName Spanish:** Modo de mezcla por sobreexposición lineal

**Categories:**

- CICategoryCompositeOperation: Composite Operation
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputBackgroundImage: Background Image

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.118.2 Methods

52.118.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.118.4 Properties

52.118.5 Attribute`inputBackgroundImage` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Linear Burn Blend Mode attribute.
**Notes:**
This attribute should have this content:

- **Name:** `inputBackgroundImage`
- **Class:** CIImageMBS
- **Type:** CIAttributeTypeImage
- **DisplayName English:** Background Image
- **DisplayName German:** Hintergrundbild
- **DisplayName French:** Image d’arrière-plan
- **DisplayName Italian:** Immagine di sfondo
- **DisplayName Spanish:** Imagen de fondo
- **DefaultNumber:** 0
- **IdentityNumber:** 0

(Read only property)

52.118.6 Attribute`inputImage` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Linear Burn Blend Mode attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.118.7  inputBackgroundImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Background Image

**Notes:**

See Attribute inputBackgroundImage for more details.  
(Read and Write property)

52.118.8  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

See Attribute inputImage for more details.  
(Read and Write property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>
class CIFilterLinearDodgeBlendModeMBS

52.119.1 class CIFilterLinearDodgeBlendModeMBS


Notes:

Details for this filter:

FilterName: CILinearDodgeBlendMode
DisplayName English: Linear Dodge Blend Mode
DisplayName German: Mischmethode Linear abwedeln
DisplayName French: Mode de fusion Assombrissement linaire
DisplayName Italian: Modalit sfumatura schermata lineare
DisplayName Spanish: Modo de mezcla por evasin lineal

Categories:

- CICategoryCompositeOperation: Composite Operation
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryBuiltIn: Built-In

Input:

- inputImage: Image
- inputBackgroundImage: Background Image

Output:

- outputImage

Subclass of the CIFilterMBS class.
52.119.2 Methods

52.119.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.119.4 Properties

52.119.5 Attribute inputBackgroundImage as CIAtributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Linear Dodge Blend Mode attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputBackgroundImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAtributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Background Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Hintergrundbild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image darrere-plan</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine di sfondo</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen de fondo</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.119.6 Attribute inputImage as CIAtributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Linear Dodge Blend Mode attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.119.7  inputBackgroundImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Background Image

**Notes:**

- Name: inputBackgroundImage
- Class: CIImageMBS (CIImage)
- DisplayName English: Background Image
- DisplayName German: Hintergrundbild
- DisplayName French: Image derrière-plan
- DisplayName Italian: Immagine di sfondo
- DisplayName Spanish: Imagen de fondo
- Type: CIAttributeTypeImage

See Attribute inputBackgroundImage for more details.
(Read and Write property)

52.119.8  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

See Attribute inputImage for more details.
(Read and Write property)
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage
52.120.1 class CIFilterLinearGradientMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Linear Gradient filter.

**Example:**

```realbasic
// create gradient
dim vektor1 as CIVectorMBS = CIVectorMBS.vectorWithXY(800,600)
dim vektor2 as CIVectorMBS = CIVectorMBS.vectorWithXY(0,0)

dim CiGradientFilter as new CIFilterLinearGradientMBS
CiGradientFilter.SetDefaults
CiGradientFilter.inputPoint0 = vektor1
CiGradientFilter.inputPoint1 = vektor2
CiGradientFilter.inputColor0 = CIColorMBS.colorWithRGB(1,1,1)
CiGradientFilter.inputColor1 = CIColorMBS.colorWithRGB(1,0.5,0.3)

dim r as CIImageMBS = CiGradientFilter.outputImage
Backdrop = r.RenderPicture(800, 600)
```

**Notes:**

Details for this filter:

- **FilterName:** CILinearGradient
- **DisplayName English:** Linear Gradient
- **DisplayName German:** Linearer Verlauf
- **DisplayName French:** Dgrad linaire
- **DisplayName Italian:** Gradiente lineare
- **DisplayName Spanish:** Degradado lineal

**Categories:**

- **CICategoryGradient:** Gradient
- **CICategoryVideo:** Video
- **CICategoryStillImage:** Still Image
- **CICategoryBuiltIn:** Built-In
Input:

- inputPoint0: Point 0
- inputPoint1: Point 1
- inputColor0: Color 1
- inputColor1: Color 2

Output:

- outputImage

Subclass of the CIFilterMBS class.

### 52.120.2 Methods

### 52.120.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor. **Notes:** On success the handle property is not zero and the filter has the default values set.

### 52.120.4 Properties

### 52.120.5 Attribute inputColor0 as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Linear Gradient attribute. **Notes:** This attribute should have this content:

(Read only property)

### 52.120.6 Attribute inputColor1 as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Linear Gradient attribute. **Notes:**
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Name: inputColor0
Class: CIColorMBS
Type: CIAttributeTypeColor
DisplayName English: Color 1
DisplayName German: Farbe 1
DisplayName French: Couleur 1
DisplayName Italian: Colore 1
DisplayName Spanish: Color 1
DefaultColor: Red = 1, Green = 1, Blue = 1, Alpha = 1
IdentityNumber: 0

This attribute should have this content:

Name: inputColor1
Class: CIColorMBS
Type: CIAttributeTypeColor
DisplayName English: Color 2
DisplayName German: Farbe 2
DisplayName French: Couleur 2
DisplayName Italian: Colore 2
DisplayName Spanish: Color 2
DefaultColor: Red = 0, Green = 0, Blue = 0, Alpha = 1
IdentityNumber: 0

(Read only property)

52.120.7 Attribute inputPoint0 as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Details about the Linear Gradient attribute.
Notes:
This attribute should have this content:

(Read only property)

52.120.8 Attribute inputPoint1 as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Details about the Linear Gradient attribute.
52.120. **CLASS CIFILTERLINEARGRADIENTMBS**

Name: inputPoint0  
Class: CIVectorMBS  
Type: CIAtributeTypePosition  
DisplayName English: Point 0  
DisplayName German: Punkt 0  
DisplayName French: Point0  
DisplayName Italian: Punto 0  
DisplayName Spanish: Punto 0  
DefaultVector: [ 0 0 ]  
IdentityVector: n/a

**Notes:**

This attribute should have this content:

Name: inputPoint1  
Class: CIVectorMBS  
Type: CIAtributeTypePosition  
DisplayName English: Point 1  
DisplayName German: Punkt 1  
DisplayName French: Point1  
DisplayName Italian: Punto 1  
DisplayName Spanish: Punto 1  
DefaultVector: [ 200 200 ]  
IdentityVector: n/a

(Read only property)

52.120.9 **inputColor0 as CIColorMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Color 1

**Notes:**

See Attribute inputColor0 for more details.  
(Read and Write property)

52.120.10 **inputColor1 as CIColorMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Color 2
Name: inputColor0
Class: CIColorMBS (CIColor)
DisplayName English: Color 1
DisplayName German: Farbe 1
DisplayName French: Couleur 1
DisplayName Italian: Colore 1
DisplayName Spanish: Color 1
Type: CIAttributeTypeColor

Notes:

Name: inputColor1
Class: CIColorMBS (CIColor)
DisplayName English: Color 2
DisplayName German: Farbe 2
DisplayName French: Couleur 2
DisplayName Italian: Colore 2
DisplayName Spanish: Color 2
Type: CIAttributeTypeColor

See Attribute inputColor1 for more details.
(Read and Write property)

52.120.11 inputPoint0 as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The attribute Point 0

Notes:

Name: inputPoint0
Class: CIVectorMBS (CIVector)
DisplayName English: Point 0
DisplayName German: Punkt 0
DisplayName French: Point0
DisplayName Italian: Punto 0
DisplayName Spanish: Punto 0
Type: CIAttributeTypePosition

See Attribute inputPoint0 for more details.
(Read and Write property)
**52.120. CLASS CIFILTERLINEARGRADIENTMBS**

**52.120.12 inputPoint1 as CIVectorMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Point 1

**Notes:**

Name: inputPoint1  
Class: CIVectorMBS (CIVector)  
DisplayName English: Point 1  
DisplayName German: Punkt 1  
DisplayName French: Point 1  
DisplayName Italian: Punto 1  
DisplayName Spanish: Punto 1  
Type: CIAtributeTypePosition

See Attribute inputPoint1 for more details.  
(Read and Write property)
52.121 class CIFilterLinearToSRGBToneCurveMBS

52.121.1 class CIFilterLinearToSRGBToneCurveMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Linear to sRGB Tone Curve filter.

**Notes:**
Details for this filter:

- **FilterName:** CIFilterLinearToSRGBToneCurve
- **DisplayName English:** Linear to sRGB Tone Curve
- **DisplayName German:** Lineare Farbtonkurve in eine sRGB-Farbtonkurve
- **DisplayName French:** Linaire vers courbe tonale sRGB
- **DisplayName Italian:** Da lineare a curva tonale sRGB
- **DisplayName Spanish:** Curva tonal de lineal a sRGB

**Categories:**

- **CICategoryColorAdjustment:** Color Adjustment
- **CICategoryVideo:** Video
- **CICategoryStillImage:** Still Image
- **CICategoryInterlaced:** Interlaced
- **CICategoryNonSquarePixels:** Non-Square Pixels
- **CICategoryBuiltIn:** Built-In

**Input:**

- **inputImage:** Image

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
52.121.2 Methods

52.121.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

The constructor.

**Notes:** On success the handle property is not zero and the filter has the default values set.

---

52.121.4 Properties

52.121.5 AttributeinputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Details about the Linear to sRGB Tone Curve attribute.

**Notes:**

This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

---

52.121.6 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

The attribute Image

**Notes:**

See AttributeinputImage for more details.

(Read and Write property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type</td>
<td>CIAtributeTypeImage</td>
</tr>
</tbody>
</table>
52.122. class CIFilterLineOverlayMBS

52.122.1 class CIFilterLineOverlayMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Line Overlay filter.

**Notes:**

Details for this filter:

- **FilterName:** CILineOverlay
- **DisplayName English:** Line Overlay
- **DisplayName German:** Linienberlagerung
- **DisplayName French:** Incrustation de lignes
- **DisplayName Italian:** Sovrapposizione linea
- **DisplayName Spanish:** Lnea superpuesta

**Categories:**

- CICategoryBuiltIn: Built-In
- CICategoryStillImage: Still Image
- CICategoryVideo: Video
- CICategoryStylize: Stylize

**Input:**

- inputImage: Image
- inputNRNoiseLevel: NR Noise Level
- inputNRSharpness: NR Sharpness
- inputEdgeIntensity: Edge Intensity
- inputThreshold: Threshold
- inputContrast: Contrast

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.122.2 Methods

52.122.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.122.4 Properties

52.122.5 Attribute inputContrast as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Line Overlay attribute.
**Notes:**
This attribute should have this content:

- Name: inputContrast
- Class: double
- Type: CIAttributeTypeScalar
- DisplayName English: Contrast
- DisplayName German: Kontrast
- DisplayName French: Contraste
- DisplayName Italian: Contrasto
- DisplayName Spanish: Contraste
- DefaultNumber: 50
- IdentityNumber: 1
- MaxNumber: 0
- MinNumber: 0.25
- SliderMaxNumber: 200
- SliderMinNumber: 0.25

(Read only property)

52.122.6 Attribute inputEdgeIntensity as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Line Overlay attribute.
**Notes:**
This attribute should have this content:

Name: inputEdgeIntensity
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Edge Intensity
DisplayName German: Edge Intensity
DisplayName French: Intensit des contours
DisplayName Italian: Intensità margini
DisplayName Spanish: Intensidad del borde
DefaultNumber: 1
IdentityNumber: 0
SliderMaxNumber: 200
SliderMinNumber: 0

(Read only property)

52.122.7 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Line Overlay attribute.

**Notes:**
This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)
52.122.8  Attribute input NRNoiseLevel as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Line Overlay attribute.  
**Notes:**  
This attribute should have this content:

```plaintext
Name: inputNRNoiseLevel  
Class: double  
Type: CIAttributeTypeScalar  
DisplayName English: NR Noise Level  
DisplayName German: NR Rauschpegel  
DisplayName French: Niveau de bruit NR  
DisplayName Italian: Livello disturbo NS  
DisplayName Spanish: Nivel de ruido NR  
DefaultNumber: 0.07  
IdentityNumber: 0  
SliderMaxNumber: 0.1  
SliderMinNumber: 0
```

(Read only property)

52.122.9  Attribute input NRSharpness as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Line Overlay attribute.  
**Notes:**  
This attribute should have this content:

(Read only property)

52.122.10  Attribute input Threshold as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Line Overlay attribute.  
**Notes:**  
This attribute should have this content:
Name: inputNRSharpness  
Class: double  
Type: CIAttributeTypeScalar  
DisplayName English: NR Sharpness  
DisplayName German: NR Schärfe  
DisplayName French: Nettet NR  
DisplayName Italian: Nitidezza NR  
DisplayName Spanish: Nitidez NR  
DefaultNumber: 0.71  
IdentityNumber: 0  
SliderMaxNumber: 2  
SliderMinNumber: 0

Name: inputThreshold  
Class: double  
Type: CIAttributeTypeScalar  
DisplayName English: Threshold  
DisplayName German: Schwellenwert  
DisplayName French: Seuil  
DisplayName Italian: Soglia  
DisplayName Spanish: Umbral  
DefaultNumber: 0.1  
IdentityNumber: 0  
SliderMaxNumber: 1  
SliderMinNumber: 0

(Read only property)

**52.122.11 inputContrast as double**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Contrast

**Notes:**
See AttributeinputContrast for more details.
(Read and Write property)

**52.122.12 inputEdgeIntensity as double**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Edge Intensity
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Name: inputContrast
Class: double (NSNumber)
DisplayName English: Contrast
DisplayName German: Kontrast
DisplayName French: Contraste
DisplayName Italian: Contrasto
DisplayName Spanish: Contraste
Type: CIAttributeTypeScalar

Notes:

Name: inputEdgeIntensity
Class: double (NSNumber)
DisplayName English: Edge Intensity
DisplayName German: Edge Intensity
DisplayName French: Intensit des contours
DisplayName Italian: Intensit margini
DisplayName Spanish: Intensidad del borde
Type: CIAttributeTypeScalar

See Attribute inputEdgeIntensity for more details.
(Read and Write property)

52.122.13 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Image

Notes:

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)
52.122.14  inputNRNoiseLevel as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute NR Noise Level
**Notes:**
Name: inputNRNoiseLevel
Class: double (NSNumber)
DisplayName English: NR Noise Level
DisplayName German: NR Rauschpegel
DisplayName French: Niveau de bruit NR
DisplayName Italian: Livello disturbo NS
DisplayName Spanish: Nivel de ruido NR
Type: CIAttributeTypeScalar

See Attribute inputNRNoiseLevel for more details.
(Read and Write property)

52.122.15  inputNRSharpness as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute NR Sharpness
**Notes:**
Name: inputNRSharpness
Class: double (NSNumber)
DisplayName English: NR Sharpness
DisplayName German: NR Schärfe
DisplayName French: Nettet NR
DisplayName Italian: Nitidezza NR
DisplayName Spanish: Nitidez NR
Type: CIAttributeTypeScalar

See Attribute inputNRSharpness for more details.
(Read and Write property)

52.122.16  inputThreshold as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Threshold
**Notes:**
Name: inputThreshold
Class: double (NSNumber)
DisplayName English: Threshold
DisplayName German: Schwellenwert
DisplayName French: Seuil
DisplayName Italian: Soglia
DisplayName Spanish: Umbral
Type: CIAttributeTypeScalar

See Attribute inputThreshold for more details.
(Read and Write property)
52.123. CLASS CIFILTERLINESCREENMBS

52.123  class CIFilterLineScreenMBS

52.123.1  class CIFilterLineScreenMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Line Screen filter.

**Notes:**

Details for this filter:

FilterName: CILineScreen
DisplayName English: Line Screen
DisplayName German: Liniertes Halbtonraster
DisplayName French: cran traits
DisplayName Italian: Schermo lineare
DisplayName Spanish: Pantalla de lneas

Categories:

- CICategoryHalftoneEffect: Halftone Effect
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputCenter: Center
- inputAngle: Angle
- inputWidth: Width
- inputSharpness: Sharpness

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.123.2 Methods

52.123.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

**Notes:** On success the handle property is not zero and the filter has the default values set.

52.123.4 Properties

52.123.5 Attribute inputAngle as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Line Screen attribute.

**Notes:**

This attribute should have this content:

Name: inputAngle
Class: double
Type: CIAttributeTypeAngle
DisplayName English: Angle
DisplayName German: Winkel
DisplayName French: Angle
DisplayName Italian: Angolo
DisplayName Spanish: ngulo
DefaultNumber: 0
IdentityNumber: 0
SliderMaxNumber: 3.141593
SliderMinNumber: -3.141593

(Read only property)

52.123.6 Attribute inputCenter as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Line Screen attribute.

**Notes:**

This attribute should have this content:
52.123. **CLASS CIFILTERLINESCREENMBS**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputCenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIVectorMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypePosition</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Center</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Mitte</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Centre</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Centro</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Centro</td>
</tr>
<tr>
<td>DefaultVector</td>
<td>[ 150 150 ]</td>
</tr>
<tr>
<td>IdentityVector</td>
<td>n/a</td>
</tr>
</tbody>
</table>

(Read only property)

### 52.123.7 Attribute `inputImage` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Line Screen attribute.

**Notes:**

This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

### 52.123.8 Attribute `inputSharpness` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Line Screen attribute.

**Notes:**

This attribute should have this content:
Name: inputSharpness
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Sharpness
DisplayName German: Schärfe
DisplayName French: Nettet
DisplayName Italian: Nitidezza
DisplayName Spanish: Nitidez
DefaultNumber: 0.7
IdentityNumber: 0
MaxNumber: 1
MinNumber: 0
SliderMaxNumber: 1
SliderMinNumber: 0

(Read only property)

52.123.9 Attribute inputWidth as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Line Screen attribute.

**Notes:**
This attribute should have this content:

Name: inputWidth
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Anchura
DefaultNumber: 6
IdentityNumber: 0
MaxNumber: 0
MinNumber: 1
SliderMaxNumber: 50
SliderMinNumber: 2

(Read only property)
52.123. CLASS CIFILTERLINESCREENMBS

52.123.10  inputAngle as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Angle
**Notes:**

Name: inputAngle
Class: double (NSNumber)
DisplayName English: Angle
DisplayName German: Winkel
DisplayName French: Angle
DisplayName Italian: Angolo
DisplayName Spanish: ngulo
Type: CIAttributeTypeAngle

See Attribute inputAngle for more details.
(Read and Write property)

52.123.11  inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Center
**Notes:**

Name: inputCenter
Class: CIVectorMBS (CIVector)
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
Type: CIAttributeTypePosition

See Attribute inputCenter for more details.
(Read and Write property)

52.123.12  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image
**Notes:**
### 52.123.13 inputSharpness as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Sharpness

**Notes:**

- **Name:** inputSharpness
- **Class:** double (NSNumber)
- **DisplayName English:** Sharpness
- **DisplayName German:** Schärfe
- **DisplayName French:** Nettet
- **DisplayName Italian:** Nitidezza
- **DisplayName Spanish:** Nitidez
- **Type:** CIAttributeTypeScalar

See Attribute inputSharpness for more details.
(Read and Write property)

### 52.123.14 inputWidth as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Width

**Notes:**

See Attribute inputWidth for more details.
(Read and Write property)
Name: inputWidth
Class: double (NSNumber)
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Anchura
Type: CIAttributeTypeDistance
52.124 class CIFilterLuminosityBlendModeMBS

52.124.1 class CIFilterLuminosityBlendModeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Luminosity Blend Mode filter. **Notes:**

Details for this filter:

FilterName: CILuminosityBlendMode
DisplayName English: Luminosity Blend Mode
DisplayName German: Mischmethode Leuchtkraft
DisplayName French: Mode de fusion Luminosit
DisplayName Italian: Modalit sfumatura luminosit
DisplayName Spanish: Modo de mezcla por luminosidad

Categories:

- CICategoryCompositeOperation: Composite Operation
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryBuiltIn: Built-In

Input:

- inputImage: Image
- inputBackgroundImage: Background Image

Output:

- outputImage

Subclass of the CIFilterMBS class.
52.124.2 Methods

52.124.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.124.4 Properties

52.124.5 Attribute inputBackgroundImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Luminosity Blend Mode attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputBackgroundImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Background Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Hintergrundbild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image darrire-plan</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine di sfondo</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen de fondo</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.124.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Luminosity Blend Mode attribute.
**Notes:**
This attribute should have this content:

(Read only property)
Table of Contents

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Name: inputBackgroundImage</th>
<th>Name: inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIImageMBS (CIImage)</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Background Image</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Hintergrundbild</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Image derrière-plan</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Immagine di sfondo</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Imagen de fondo</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber:</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber:</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

52.124.7 inputBackgroundImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The attribute Background Image

Notes:

See Attribute inputBackgroundImage for more details.
(Read and Write property)

52.124.8 inputImage as CIImageMBS


Notes:

See Attribute inputImage for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAtributeTypeImage</td>
</tr>
</tbody>
</table>
52.125 class CIFilterMaskedVariableBlurMBS

52.125.1 class CIFilterMaskedVariableBlurMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Masked Variable Blur filter.

**Notes:**

Details for this filter:

- FilterName: CIMaskedVariableBlur
- DisplayName English: Masked Variable Blur
- DisplayName German: Maskierte variable Weichzeichnung
- DisplayName French: Flou variable masqu
- DisplayName Italian: Sfocatura variabile mascherata
- DisplayName Spanish: Desenfoque variable con mascara

**Categories:**

- CICategoryBlur: Blur
- CICategoryStillImage: Still Image
- CICategoryVideo: Video
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputMask: Mask
- inputRadius: Radius

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.125.2 Methods

52.125.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.  
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.125.4 Properties

52.125.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Masked Variable Blur attribute.  
**Notes:**  
This attribute should have this content:

Name: inputImage  
Class: CIImageMBS  
Type: CIAttributeTypeImage  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
DefaultNumber: 0  
IdentityNumber: 0  

(Read only property)

52.125.6 Attribute inputMask as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Masked Variable Blur attribute.  
**Notes:**  
This attribute should have this content:  

(Read only property)
52.125.7 Attribute inputRadius as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Masked Variable Blur attribute.
**Notes:**
This attribute should have this content:

Name: inputRadius
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Radius
DisplayName German: Radius
DisplayName French: Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
DefaultNumber: 5
IdentityNumber: 0
SliderMaxNumber: 10
SliderMinNumber: 0

(Read only property)

52.125.8 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image
**Notes:**
See Attribute inputImage for more details.
(Read and Write property)
52.125. **CLASS CIFILTERMASKEDVARIABLEBLURMBS**

Name: inputImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
Type: CIAttributeTypeImage

52.125.9 **inputMask as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**  
The attribute Mask  
**Notes:**

Name: inputMask  
Class: CIImageMBS (CIImage)  
DisplayName English: Mask  
DisplayName German: Mask  
DisplayName French: Mask  
DisplayName Italian: Mask  
DisplayName Spanish: Mask  
Type:

See AttributeinputMask for more details.  
(Read and Write property)

52.125.10 **inputRadius as double**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**  
The attribute Radius  
**Notes:**

Name: inputRadius  
Class: double (NSNumber)  
DisplayName English: Radius  
DisplayName German: Radius  
DisplayName French: Rayon  
DisplayName Italian: Raggio  
DisplayName Spanish: Radio  
Type: CIAttributeTypeScalar

See AttributeinputRadius for more details.
(Read and Write property)
52.126. class CIFilterMaskToAlphaMBS

The Realbasic class for the CoreImage Mask to Alpha filter.

Notes:

Details for this filter:

FilterName: CIMaskToAlpha
DisplayName English: Mask to Alpha
DisplayName German: Mit Alpha-Kanal maskieren
DisplayName French: Masque vers alpha
DisplayName Italian: Maschera ad alfa
DisplayName Spanish: Mscara a alfa

Categories:

- CICategoryColorEffect: Color Effect
- CICategoryVideo: Video
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

Input:

- inputImage: Image

Output:

- outputImage

Subclass of the CIFilterMBS class.
52.126.2 Methods

52.126.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.126.4 Properties

52.126.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Mask to Alpha attribute.
**Notes:**
This attribute should have this content:

- Name: inputImage
- Class: CIImageMBS
- Type: CIAttributeTypeImage
- DisplayName English: Image
- DisplayName German: Bild
- DisplayName French: Image
- DisplayName Italian: Immagine
- DisplayName Spanish: Imagen
- DefaultNumber: 0
- IdentityNumber: 0

(Read only property)

52.126.6 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image
**Notes:**
See Attribute inputImage for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>
52.127 class CIFilterMaximumComponentMBS

52.127.1 class CIFilterMaximumComponentMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Maximum Component filter. **Notes:**

Details for this filter:

- **FilterName:** CIMaximumComponent
- **DisplayName English:** Maximum Component
- **DisplayName German:** Maximaler Kanal
- **DisplayName French:** Composante maximum
- **DisplayName Italian:** Componente massimo
- **DisplayName Spanish:** Componente máximo

Categories:

- **CICategoryColorEffect:** Color Effect
- **CICategoryVideo:** Video
- **CICategoryInterlaced:** Interlaced
- **CICategoryNonSquarePixels:** Non-Square Pixels
- **CICategoryStillImage:** Still Image
- **CICategoryBuiltIn:** Built-In

**Input:**

- inputImage: Image

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.127.2 Methods

52.127.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.127.4 Properties

52.127.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Maximum Component attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.127.6 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image
**Notes:**
See Attribute inputImage for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name:</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>
52.128. class CIFilterMaximumCompositingMBS

52.128.1 class CIFilterMaximumCompositingMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Maximum filter.

**Notes:**

Details for this filter:

- **FilterName:** CIMaximumCompositing
- **DisplayName English:** Maximum
- **DisplayName German:** Maximum
- **DisplayName French:** Maximum
- **DisplayName Italian:** Massima
- **DisplayName Spanish:** Mximo

**Categories:**

- CICategoryCompositeOperation: Composite Operation
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryHighDynamicRange: High Dynamic Range
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputBackgroundImage: Background Image

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.128.2 Methods

52.128.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.128.4 Properties

52.128.5 Attribute `inputBackgroundImage` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Maximum attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td><code>inputBackgroundImage</code></td>
</tr>
<tr>
<td>Class</td>
<td><code>CIImageMBS</code></td>
</tr>
<tr>
<td>Type</td>
<td><code>CIAttributeTypeImage</code></td>
</tr>
<tr>
<td>DisplayName English</td>
<td><code>Background Image</code></td>
</tr>
<tr>
<td>DisplayName German</td>
<td><code>Hintergrundbild</code></td>
</tr>
<tr>
<td>DisplayName French</td>
<td><code>Image darrire-plan</code></td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td><code>Immagine di sfondo</code></td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td><code>Imagen de fondo</code></td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.128.6 Attribute `inputImage` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Maximum attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.128. CLASS CIFILTERMAXIMUMCOMPOSITINGMBS

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

52.128.7 inputBackgroundImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Background Image
**Notes:**

Name: inputBackgroundImage
Class: CIImageMBS (CIImage)
DisplayName English: Background Image
DisplayName German: Hintergrundbild
DisplayName French: Image derrière-plan
DisplayName Italian: Immagine di sfondo
DisplayName Spanish: Imagen de fondo
Type: CIAttributeTypeImage

See Attribute inputBackgroundImage for more details.
(Read and Write property)

52.128.8 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image
**Notes:**

See Attribute inputImage for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type</td>
<td>CIAtributeTypeImage</td>
</tr>
</tbody>
</table>
52.129. **CLASS CIFILTERMBS**

52.129 **class CIFilterMBS**

52.129.1 **class CIFilterMBS**

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** CIFilter are filter objects for CoreImage that encapsulate the filter with its attributes. **Notes:** Mac OS X 10.4 only.

52.129.2 **Methods**

52.129.3 **attributesDictionary as dictionary**

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a dictionary of key-value pairs that describe the filter. **Example:**

```plaintext
dim d as new CIFilterComicEffectMBS
dim a as Dictionary = d.attributesDictionary
break // see values in debugger
```

**Notes:** Returns a dictionary that contains a key for each input and output parameter for the filter. Each key is a dictionary that contains all the attributes of an input or output parameter.

52.129.4 **AttributesItem(index as Integer) as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the attribute with the given index. **Notes:**

- Index is zero based.
- Nil on any error.

See also:

- 52.129.5 **AttributesItem(name as string) as CIAttributeMBS**

52.129.5 **AttributesItem(name as string) as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the attribute with the given name.
CHAPTER 52. COREIMAGE

Notes: nil on error.
See also:

- 52.129.4 AttributesItem(index as Integer) as CIAttributeMBS

52.129.6 AttributesName(index as Integer) as string

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The name of the attribute with the given index.

52.129.7 Categories as string()

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Array of filter category names.
Notes: nil on any error.

52.129.8 Constructor(Handle as Integer)

MBS MacCG Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Initializes object with given object reference.
Notes:
ref should be a CIFilter* and the object is retained.
Raises UnsupportedOperationError if object is not a CIFilter.

52.129.9 copy as CIFilterMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a copy of the filter.

52.129.10 filterArrayFromSerializedXMP(xmpData as MemoryBlock, extent as CGRectMBS, byref NSError as Variant) as CIFilterMBS()

MBS MacCG Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns an array of filter objects de-serialized from XMP data.
Notes:
xmpData: The XMP data created previously by calling serializedXMPFromFilters.
extent: The extent of the image from which the XMP data was extracted.
e: The address of an variant for receiving errors, otherwise nil. This is a NSErrorMBS.

Available in OS X v10.9 and later.

52.129.11 FilterNamesInCategories(categories() as String) as string()

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Returns an array containing all published filter names that belong to all listed categories.

**Notes:**

categories: string array with the constants kCICategory*.

Returns nil on any error.

52.129.12 FilterNamesInCategory(category as String) as string()

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Returns an array containing all published filter names in a category.

**Example:**

```java
// load list of filters into Listbox

dim a() as string

dim cf as CIFilterMBS

// get all image categories
a=cIFilterMBS.FilterNamesInCategory(CIFilterMBS.kCICategoryStillImage)

StaticText1.text=str(UBound(a))+" filters."

for each s as string in a

    // add to listbox
    ListBox1.AddRow s

    // load this filter
    cf=CIFilterMBS.FilterWithName(s)

    // And look into the attributes for the Displayname
    if cf<>nil then
        ListBox1.cell(Listbox1.LastIndex,1)=cf.DisplayName
    end if

next
```
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Notes: nil on any error.

52.129.13 FilterWithHandle(handle as Integer) as CIFilterMBS

MBS MacCG Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new filter object based on the given handle.

**Example:**

```vbscript
// some filter
dim x as new CIFilterCropMBS

// create a copy
dim f as CIFilterMBS = CIFilterMBS.FilterWithHandle(x.Handle)

// and show name
MsgBox f.FilterName
```

Notes:
The object is retained.
Returns nil on error.

52.129.14 filterWithImageData(Data as MemoryBlock, options as Dictionary) as CIFilterMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a CIFilter that will in turn return a properly processed CIImage as "outputImage".

**Notes:** Note that when using this initializer, you should pass in a source type identifier hint (kCGImageSourceTypeInfo) key/value pair in order to help the decoder determine the file type, as otherwise confusion and incorrect results are possible.

52.129.15 filterWithImageFile(File as FolderItem, options as Dictionary) as CIFilterMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a CIFilter that will in turn return a properly processed CIImage as "outputImage".
52.129.16  filterWithURL(URL as String, options as Dictionary) as CIFilterMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a CIFilter that will in turn return a properly processed CIImage as "outputImage".

52.129.17  FilterWithName(name as String) as CIFilterMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new filter of type 'name'. All input values will be undefined.

**Example:**
```
   dim cf as CIFilterMBS
   // load this filter
   cf=CIFilterMBS.FilterWithName("CIAffineTile")
```

**Notes:** Returns filter object for the name if found.
See also:
- 52.129.18 FilterWithName(name as String, options as Dictionary) as CIFilterMBS

52.129.18 FilterWithName(name as String, options as Dictionary) as CIFilterMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new filter of type 'name'.
**Notes:**
The filter's input parameters are set from the dictionary of key-value pairs.
On OSX, any of the filter input parameters not specified in the dictionary will be undefined.
On iOS, any of the filter input parameters not specified in the dictionary will be set to default values.
Available in macOS 10.10 or newer.
See also:
- 52.129.17 FilterWithName(name as String) as CIFilterMBS

52.129.19  InputKeys as string()

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array containing the names of all inputs in the filter.
52.129.20  kCIActiveKeys as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the options for image filter initialization.
**Notes:**
Read-only array containing a list of keys that affect the output image.
Depending on the RAW decoder version (kCIInputDecoderVersionKey) and the input image type, some
input keys might have no effect.

52.129.21  kCIApplyOptionColorSpace as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the apply options.
**Notes:**
If used, the value of the kCIApplyOptionColorSpace key be must be an RGB CGColorSpaceMBS.
Using this option specifies that the output of the kernel is in this color space.
If not specified, the output of the kernel is in the working color space of the rendering CIContextMBS.

52.129.22  kCIApplyOptionDefinition as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the apply options.

52.129.23  kCIApplyOptionExtent as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the apply options.

52.129.24  kCIApplyOptionUserInfo as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the apply options.
52.129.25  kCIAttributeClass as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Class name of the filter.
**Notes:** The class name of the filter.

52.129.26  kCIAttributeDefault as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Default value for the slider.
**Notes:** The default value, specified as a floating-point value, for a filter parameter.

52.129.27  kCIAttributeDescription as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the filter attributes.
**Notes:** The localized description of the filter. This description should inform the end user what the filter does and be short enough to display in the user interface for the filter. It is not intended to be technically detailed.

52.129.28  kCIAttributeDisplayName as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Display name of this attribute (localized).
**Notes:** The localized version of the filter name that is displayed in the user interface.

52.129.29  kCIAttributeFilterAvailable_iOS as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the filter attributes.
**Notes:** The iOS version in which the filter first became available, specified as a string.

52.129.30  kCIAttributeFilterAvailable_Mac as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the filter attributes.
**Notes:** The OS X version in which the filter first became available, specified as a string.
52.129.31 kCIAttributeFilterCategories as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Array of filter category names (see below)
**Notes:** An array of filter category keys that specifies all the categories in which the filter is a member.

52.129.32 kCIAttributeFilterDisplayName as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Name of the filter intended for UI display (eg. localized).
**Notes:** The localized display name of the attribute.

52.129.33 kCIAttributeFilterName as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constant for the name of the filter.

52.129.34 kCIAttributeIdentity as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The identity value for this attribute.
**Notes:** If supplied as a value for a parameter, the parameter has no effect on the input image.

52.129.35 kCIAttributeMax as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Maximum value for the attribute.
**Notes:** The maximum value for a filter parameter, specified as a floating-point value.

52.129.36 kCIAttributeMin as String

**Notes:** The minimum value for a filter parameter, specified as a floating-point value.
52.129.37  kCIAttributeName as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the filter attributes.  
**Notes:** The name of the attribute.

52.129.38  kCIAttributeReferenceDocumentation as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the filter attributes.  
**Notes:** The localized reference documentation for the filter. The reference should provide developers with technical details.

52.129.39  kCIAttributeSliderMax as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Default value for the slider.  
**Notes:** The maximum value, specified as a floating-point value, to use for a slider that controls input values for a filter parameter.

52.129.40  kCIAttributeSliderMin as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Minimum value for the slider.  
**Notes:** The minimum value, specified as a floating-point value, to use for a slider that controls input values for a filter parameter.

52.129.41  kCIAttributeType as string

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Type of the attribute.  
**Notes:** An attribute may have a type which defines what kind this attribute type is. e.g. a number attribute may be a time or a distance.
52.129.42 kCIAttributeTypeAngle as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the types for numbers. **Notes:** An angle.

52.129.43 kCIAttributeTypeBoolean as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the types for numbers. **Notes:** A Boolean value.

52.129.44 kCIAttributeTypeColor as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute data types. **Notes:** A Core Image color (CIColor object) that specifies red, green, and blue component values.

52.129.45 kCIAttributeTypeCount as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attribute data types. **Notes:** A positive integer value.

52.129.46 kCIAttributeTypeDistance as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the types for numbers. **Notes:** A distance.

52.129.47 kCIAttributeTypeGradient as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the types for colors. **Notes:** An n-by-1 gradient image used to describe a color ramp.
52.129.  CLASS CIFILTERMBS

52.129.48  kCIAttributeTypeImage as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
One of the attribute data types.
**Notes:** A CIImage object.

52.129.49  kCIAttributeTypeInteger as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
One of the attribute data types.
**Notes:** An integer value.

52.129.50  kCIAttributeTypeOffset as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
One of the types for 2-element vectors.
**Notes:** An offset. (A 2-element vector type.)

52.129.51  kCIAttributeTypeOpaqueColor as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
One of the types for colors.
**Notes:** A Core Image color (CIColor object) that specifies red, green, and blue component values. Use this key for colors with no alpha component. If the key is not present, Core Image assumes color with alpha.

52.129.52  kCIAttributeTypePosition as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
One of the types for 2-element vectors.
**Notes:** A two-dimensional location in the working coordinate space. (A 2-element vector type.)

52.129.53  kCIAttributeTypePosition3 as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
One of the types for 3-element vectors.
**Notes:** A three-dimensional location in the working coordinate space. (A 3-element vector type.)
52.129.54  kCIAttributeTypeRectangle as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the types for 4-element vectors.
**Notes:** A Core Image vector that specifies the x and y values of the rectangle origin, and the width (w) and
height (h) of the rectangle. The vector takes the form \([ x, y, w, h ]\). (A 4-element vector type.)

52.129.55  kCIAttributeTypeScalar as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the types for numbers.
**Notes:** A scalar value.

52.129.56  kCIAttributeTypeTime as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute data types.
**Notes:** A parametric time for transitions, specified as a floating-point value in the range of 0.0 to 1.0.

52.129.57  kCIAttributeTypeTransform as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the attribute data types.
**Notes:** An CGAffineTransform is associated with attribute.

52.129.58  kCICategoryBlur as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the categories.
**Notes:** A filter that softens images, decreasing the contrast between the edges in an image. Examples of
blur filters are Gaussian blur and zoom blur.

52.129.59  kCICategoryBuiltIn as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the categories.
**Notes:** A filter provided by Core Image. This distinguishes built-in filters from plug-in filters.
52.129.60  kCICategoryColorAdjustment as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the categories. **Notes:** A filter that changes color values. Color adjustment filters are used to eliminate color casts, adjust hue, and correct brightness and contrast. Color adjustment filters do not perform color management; ColorSync performs color management. You can use Quartz 2D to specify the color space associated with an image.

52.129.61  kCICategoryColorEffect as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the categories. **Notes:** A filter that modifies the color of an image to achieve an artistic effect. Examples of color effect filters include filters that change a color image to a sepia image or a monochrome image or that produces such effects as posterizing.

52.129.62  kCICategoryCompositeOperation as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the categories. **Notes:** A filter operates on two image sources, using the color values of one image to operate on the other. Composite filters perform computations such as computing maximum values, minimum values, and multiplying values between input images. You can use compositing filters to add effects to an image, crop an image, and achieve a variety of other effects.

52.129.63  kCICategoryDistortionEffect as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the categories. **Notes:** A filter that reshapes an image by altering its geometry to create a 3D effect. Using distortion filters, you can displace portions of an image, apply lens effects, make a bulge in an image, and perform other operation to achieve an artistic effect.

52.129.64  kCICategoryFilterGenerator as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the categories. **Notes:** A filter created by chaining several filters together and then packaged as a CIFilterGenerator object.
52.129.65 kCICategoryGenerator as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the categories. **Notes:** A filter that generates a pattern, such as a solid color, a checkerboard, or a star shine. The generated output is typically used as input to another filter.

52.129.66 kCICategoryGeometryAdjustment as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the categories. **Notes:** A filter that changes the geometry of an image. Some of these filters are used to warp an image to achieve an artistic effects, but these filters can also be used to correct problems in the source image. For example, you can apply an affine transform to straighten an image that is rotated with respect to the horizon.

52.129.67 kCICategoryGradient as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the categories. **Notes:** A filter that generates a fill whose color varies smoothly. Exactly how color varies depends on the type of gradient: linear, radial, or Gaussian.

52.129.68 kCICategoryHalftoneEffect as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the categories. **Notes:** A filter that simulates a variety of halftone screens, to mimic the halftone process used in print media. The output of these filters has the familiar newspaper look of the various dot patterns. Filters are typically named after the pattern created by the virtual halftone screen, such as circular screen or hatched screen.

52.129.69 kCICategoryHighDynamicRange as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the categories. **Notes:** A filter that works on high dynamic range pixels.
52.129.70 kCICategoryInterlaced as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the categories. **Notes:** A filter that works on interlaced images.

52.129.71 kCICategoryNonSquarePixels as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the categories. **Notes:** A filter that works on non-square pixels.

52.129.72 kCICategoryReduction as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the categories. **Notes:** A filter that reduces image data. These filters are used to solve image analysis problems.

52.129.73 kCICategorySharpen as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the categories. **Notes:** A filter that sharpens images, increasing the contrast between the edges in an image. Examples of sharpen filters are unsharp mask and sharpen luminance.

52.129.74 kCICategoryStillImage as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the categories. **Notes:** A filter that works on still images.

52.129.75 kCICategoryStylize as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the categories. **Notes:** A filter that makes a photographic image look as if it was painted or sketched. These filters are typically used alone or in combination with other filters to achieve artistic effects.
**52.129.76** kCICategoryTileEffect as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the categories.  
**Notes:** A filter that typically applies an effect to an image and then create smaller versions of the image (tiles), which are then laid out to create a pattern that's infinite in extent.

**52.129.77** kCICategoryTransition as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the categories.  
**Notes:** A filter that provides a bridge between two or more images by applying a motion effect that defines how the pixels of a source image yield to that of the destination image.

**52.129.78** kCICategoryVideo as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the categories.  
**Notes:** A filter that works on video images.

**52.129.79** kCIInputAllowDraftModeKey as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the options for image filter initialization.  
**Notes:** Boolean: Setting Draft Mode to true can improve image decoding speed without minimal loss of quality. The default value is false.

**52.129.80** kCIInputAngleKey as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the input keys.

**52.129.81** kCIInputAspectRatioKey as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the input keys.
52.129.82  kCIInputBackgroundImageKey as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the input keys.

52.129.83  kCIInputBaselineExposureKey as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the options for image filter initialization.
**Notes:**
Float: A value controlling the amount of baseline exposure applied to the image. A value of 0 indicates no baseline exposure, i.e. linear response. Default varies from with camera settings. Available on macOS 10.12 or newer.

52.129.84  kCIInputBiasKey as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the input keys.

52.129.85  kCIInputBoostKey as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the options for image filter initialization.
**Notes:**
Float: A value in the range of 0...1, controlling the amount of boost applied to the image. A value of 0 indicates no boost, i.e. linear response. Default is 1, full boost.

52.129.86  kCIInputBoostShadowAmountKey as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the options for image filter initialization.
**Notes:**
Float: The amount to boost the shadow areas of the image. Can be used to lighten details in shadows. Has no effect if the image used for initialization was not RAW.
52.129.87 kCIInputBrightnessKey as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the input keys.

52.129.88 kCIInputCenterKey as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the input keys.

52.129.89 kCIInputColorKey as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the input keys.

52.129.90 kCIInputColorNoiseReductionAmountKey as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the options for image filter initialization. **Notes:** Double: The amount of color noise reduction applied. Range is 0 to 1.

52.129.91 kCIInputContrastKey as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the input keys.

52.129.92 kCIInputDecoderVersionKey as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the options for image filter initialization. **Notes:** Version string representing the decoder version to be used. A newly initialized object defaults to the newest available decoder version for the given image type. User can request an alternative, older version in order to maintain compatibility with older releases. Must be one of kCISupportedDecoderVersions (below), otherwise a nil output image will be generated.
52.129.93 kCIInputDepthImageKey as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the common filter parameter keys. **Notes:** Available on macOS 10.13 or newer.

52.129.94 kCIInputDisableGamutMapKey as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the options for image filter initialization. **Notes:** Boolean: Setting DisableGamutMap to true disables gamut mapping. The default value is false.

52.129.95 kCIInputDisparityImageKey as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the common filter parameter keys. **Notes:** Available on macOS 10.13 or newer.

52.129.96 kCIInputEnableChromaticNoiseTrackingKey as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the options for image filter initialization. **Notes:** Boolean: Determines if progressive chromatic noise tracking (based on ISO and exposure time) should be used. default = true. Has no effect if the image used for initialization was not RAW.

52.129.97 kCIInputEnableSharpeningKey as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the options for image filter initialization. **Notes:** Boolean: Determines if the default sharpening should be on. default = true. Has no effect if the image used for initialization was not RAW.
52.129.98  kCIInputEnableVendorLensCorrectionKey as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the options for image filter initialization. **Notes:** Boolean: Determines if the default vendor lens correction be on. default = true if raw image used for initialization contains lens distortion parameters.

52.129.99  kCIInputEVKey as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the input keys.

52.129.100  kCIInputExtentKey as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the input keys.

52.129.101  kCIInputGradientImageKey as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the input keys.

52.129.102  kCIInputIgnoreImageOrientationKey as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the options for image filter initialization. **Notes:** Boolean: Normally, an image is loaded in its proper orientation, given the associated metadata gives an indication about the orientation. For special purposes it may be useful to load the image in its physical orientation. The exact meaning of this is dependent on the image in question. The default value is false.
52.129.103  kCIInputImageKey as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the input keys.

52.129.104  kCIInputImageOrientationKey as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the options for image filter initialization. **Notes:** Integer: Overriding this value allows the user to change the orientation of the image. The valid values are in range 1..8 and follow the EXIF specification. Changing this value makes for instance rotation in 90-degree increments easy. The value is disregarded when the kCIInputIgnoreImageOrientationKey flag is set.

52.129.105  kCIInputIntensityKey as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the input keys.

52.129.106  kCIInputLinearSpaceFilter as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the options for image filter initialization. **Notes:** CIFilterMBS: CIFilter to be applied to the RAW image while it is in linear space.

52.129.107  kCIInputLuminanceNoiseReductionAmountKey as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the options for image filter initialization. **Notes:** Double: The amount of luminance noise reduction applied. Range is 0 to 1.

52.129.108  kCIInputMaskImageKey as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the input keys.
52.129.109  kCIInputMoireAmountKey as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the options for image filter initialization.
**Notes:**
Double: The amount of moire reduction applied. Range is 0 to 1.
Available on macOS 10.13

52.129.110  kCIInputNeutralChromaticityXKey as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the options for image filter initialization.
**Notes:** Float: The X value of the chromaticity. You can always query this value and you’ll get the current
X value for neutral X,Y.

52.129.111  kCIInputNeutralChromaticityYKey as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the options for image filter initialization.
**Notes:** Float: The Y value of the chromaticity. You can always query this value and you’ll get the current
Y value for neutral X,Y.

52.129.112  kCIInputNeutralLocationKey as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the options for image filter initialization.
**Notes:**
CIVector: (x, y) location in geometric coordinates of the unrotated output image that should be used as neutral.
You can’t query this value - it’s undefined for reading.

52.129.113  kCIInputNeutralTemperatureKey as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the options for image filter initialization.
**Notes:** Float: The color temperature to be considered neutral. You can always query this value and you’ll get the current value for temperature.
52.129.114  kCIInputNeutralTintKey as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the options for image filter initialization. **Notes:** Float: The tint to be considered neutral. You can always query this value and you’ll get the current value for tint.

52.129.115  kCIInputNoiseReductionAmountKey as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the options for image filter initialization. **Notes:** Double: The amount of noise reduction applied. Range is 0 to 1.

52.129.116  kCIInputNoiseReductionContrastAmountKey as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the options for image filter initialization. **Notes:** Double: The amount of noise reduction contrast applied. Range is 0 to 1.

52.129.117  kCIInputNoiseReductionDetailAmountKey as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the options for image filter initialization. **Notes:** Double: The amount of noise reduction detail applied. Range is 0 to 1.

52.129.118  kCIInputNoiseReductionSharpnessAmountKey as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the options for image filter initialization. **Notes:** Double: The amount of noise reduction sharpness applied. Range is 0 to 1.

52.129.119  kCIInputRadiusKey as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the input keys.
52.129.120  kCIInputRefractionKey as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the input keys.

52.129.121  kCIInputSaturationKey as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the input keys.

52.129.122  kCIInputScaleFactorKey as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the options for image filter initialization.
**Notes:** Float: The desired scale factor at which the image will be eventually drawn. Setting this value can greatly improve the drawing performance. A value of 1 would mean identity, values smaller than 1 will result in a smaller output image. Changing the Scale Factor with enabled Draft Mode may also improve performance.

52.129.123  kCIInputScaleKey as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the input keys.

52.129.124  kCIInputShadingImageKey as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the input keys.

52.129.125  kCIInputSharpnessKey as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the input keys.
52.129.126  kCIInputTargetImageKey as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the input keys.

52.129.127  kCIInputTimeKey as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the input keys.

52.129.128  kCIInputTransformKey as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the input keys.

52.129.129  kCIInputVersionKey as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the input keys.

52.129.130  kCIInputWeightsKey as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the common filter parameter keys.

52.129.131  kCIInputWidthKey as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the input keys.

52.129.132  kCIOoutputImageKey as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The key for the output image.
52.129.133 kCIOOutputNativeSizeKey as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the options for image filter initialization. **Notes:**

CIVector containing the full native size of the unscaled image. The vector’s X value is the width, Y is the height.
This is not affected by changing either kCIInputIgnoreImageOrientationKey or kCIInputImageOrientationKey.

52.129.134 kCISupportedDecoderVersionsKey as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the options for image filter initialization. **Notes:** Array of dictionary: Array of all supported decoder versions for the given image type, sorted in increasingly newer order. Each entry is a NSDictionary with a number of key/value pairs. All entries would represent a valid version identifier to be passed in for kCIInputDecoderVersion. This value can be only read; setting this value will raise an exception. Currently, the only defined key is "version" which has as a value an String uniquely describing a given decoder version. This string may not be suitable for user interface display.

52.129.135 kCIUIParameterSet as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets of controls for various user scenarios. **Notes:** The set of input parameters to use. The associated value can be kCIUISetBasic, kCIUISetIntermediate, kCIUISetAdvanced, or kCIUISetDevelopment.

52.129.136 kCIUISetAdvanced as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the UI Set constants. **Notes:** Controls that are appropriate for an advanced user scenario.

52.129.137 kCIUISetBasic as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the UI Set constants. **Notes:** Controls that are appropriate for a basic user scenario, that is, the minimum of settings to control
the filter.

52.129.138  kCIUISetDevelopment as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the UI Set constants.  
**Notes:** Controls that should be visible only for development purposes.

52.129.139  kCIUISetIntermediate as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the UI Set constants.  
**Notes:** Controls that are appropriate for an intermediate user scenario.

52.129.140  localizedDescriptionForFilterName(filterName as String) as String

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the localized description of a filter for display in the user interface.  
**Example:**
MsgBox CIFilterMBS.localizedDescriptionForFilterName("CIComicEffect")

**Notes:**

filterName: The filter name.  
Returns the localized description of the filter.

Available in OS X v10.5 and later.

52.129.141  LocalizedNameForCategory(name as String) as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The localized name of a category.
52.129.142  LocalizedNameForFilterName(name as String) as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns the localized name of a filter.

52.129.143  localizedReferenceDocumentationForFilterName(filterName as String) as String

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns the location of the localized reference documentation that describes the filter.
Example:
MsgBox CIFilterMBS.localizedReferenceDocumentationForFilterName("CIComicEffect")

Notes:
filterName: The filter name.

Returns an URL that specifies the location of the localized documentation, or "" if the filter does not provide
localized reference documentation.

The URL can be a local file or a remote document on a web server. Because filters created prior to OS X
v10.5 could return nil, you should be make sure that your code handles this case gracefully.

Available in OS X v10.5 and later.

52.129.144  OutputKeys as string()

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns an array containing the names of all outputs in the filter.

52.129.145  serializedXMPFromFilters(filters() as CIFilterMBS, extent as CGRectMBS) as Memoryblock

MBS MacCG Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Serializes filter parameters into XMP form that is suitable for embedding in an image.
Notes:
filters: The array of filters to serialize. See Discussion for the filters that can be serialized.
extent: The extent of the input image to the filter.

At this time the only filters classes that can be serialized using this method are, CIAffineTransform, CICrop, and the filters returned by the CIImage methods autoAdjustmentFilters and autoAdjustmentFiltersWithOptions. The parameters of other filter classes will not be serialized.

Available in OS X v10.9 and later.

52.129.146 SetDefaults

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets all inputs to their default values (where default values are defined, other inputs are left as-is).

52.129.147 Properties

52.129.148 AttributesCount as Integer

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Number of attributes.

**Notes:** (Read only property)

52.129.149 description as String

MBS MacCG Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the textual description for this filter.

**Notes:** (Read only property)

52.129.150 DisplayName as string

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Name of the filter intended for UI display (eg. localized)

**Example:**

```dim cf as new CIFilterLuminosityBlendModeMBS
MsgBox cf.DisplayName // shows: "Luminosity Blend Mode"
```
52.129.151 Enabled as Boolean

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether filter is enabled for animation. **Notes:** The 'enabled' property is used only by CoreAnimation and is animatable. In Core Animation, a CIFilter only applied to its input when this property is set to true. (Read and Write property)

52.129.152 FilterName as string

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Name of the filter. **Notes:** (Read only property)

52.129.153 Handle as Integer

MBS MacCG Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle to the internal used CIFilter reference. **Notes:** (Read only property)

52.129.154 Name as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The filter name. **Notes:** On OSX this property is read-write. This can be useful when using CIFilters with CALayers to construct unique keypaths. For example, to set an attribute of a filter attached to a layer, a path such as "filters.myExposureFilter.inputEV" could be used. CALayer animations may also access filter attributes via key-paths. (Read and Write property)
52.129. CLASS CIFILTERMBS

52.129.155  outputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The output image.  
**Notes:** Available directly on OS X 10.10 or newer, but our plugin implements it also for older versions by using valueForKey internally.  
(Read only property)

52.129.156  ValueAsAffineTransform(key as string) as NSAffineTransformMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Get or set a value as an affine transform.  
**Notes:** On if attributes classname is NSAffineTransform.  
(Read and Write computed property)

52.129.157  ValueAsCIColor(key as string) as CIColorMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Get or set a value as a color.  
**Notes:** On if attributes classname is CIColor.  
(Read and Write computed property)

52.129.158  ValueAsCIImage(key as string) as CIImageMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Get or set a value as an image.  
**Notes:** On if attributes classname is NSImage.  
(Read and Write computed property)

52.129.159  ValueAsCIVector(key as string) as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Get or set a value as a vector.
Notes:

On if attributes classname is CIVector.
(Read and Write computed property)

52.129.160  ValueAsData(key as string) as memoryblock

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Get or set a value as a memoryblock.
Notes:

On if attributes classname is memoryblock.
(Read and Write computed property)

52.129.161  ValueAsNumber(key as string) as Double

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Get or set a value as a double.
Notes:

On if attributes classname is number.
(Read and Write computed property)

52.129.162  ValueAsString(key as string) as String

MBS MacCG Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Get or set a value as a string.
Notes:

On if attributes classname is NSString.
(Read and Write computed property)
52.130. class CIFilterMedianFilterMBS

52.130.1 class CIFilterMedianFilterMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Median filter.

**Notes:**
Details for this filter:

<table>
<thead>
<tr>
<th>FilterName</th>
<th>CIMedianFilter</th>
</tr>
</thead>
<tbody>
<tr>
<td>DisplayName English</td>
<td>Median</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Median</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Median</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Mediana</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Mediano</td>
</tr>
</tbody>
</table>

**Categories:**

- CICategoryBlur: Blur
- CICategoryStillImage: Still Image
- CICategoryVideo: Video
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.130.2 Methods

52.130.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.130.4 Properties

52.130.5 AttributeinputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Median attribute.
**Notes:**
This attribute should have this content:

```
Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0
```

(Read only property)

52.130.6 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image
**Notes:**
See AttributeinputImage for more details.
(Read and Write property)
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAtributeTypeImage
52.131 class CIFilterMinimumComponentMBS

52.131.1 class CIFilterMinimumComponentMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Minimum Component filter.

**Notes:**

Details for this filter:

- **FilterName:** CIMinimumComponent
- **DisplayName English:** Minimum Component
- **DisplayName German:** Minimaler Kanal
- **DisplayName French:** Composante minimum
- **DisplayName Italian:** Componente minimo
- **DisplayName Spanish:** Componente mínimo

**Categories:**

- CICategoryColorEffect: Color Effect
- CICategoryVideo: Video
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.131.2 Methods

52.131.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.131.4 Properties

52.131.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Minimum Component attribute.
**Notes:**
This attribute should have this content:

- **Name:** inputImage
- **Class:** CIImageMBS
- **Type:** CIAttributeTypeImage
- **DisplayName English:** Image
- **DisplayName German:** Bild
- **DisplayName French:** Image
- **DisplayName Italian:** Immagine
- **DisplayName Spanish:** Imagen
- **DefaultNumber:** 0
- **IdentityNumber:** 0

(Read only property)

52.131.6 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image
**Notes:**
See Attribute inputImage for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName</td>
<td>English: Image</td>
</tr>
<tr>
<td></td>
<td>German: Bild</td>
</tr>
<tr>
<td></td>
<td>French: Image</td>
</tr>
<tr>
<td></td>
<td>Italian: Immagine</td>
</tr>
<tr>
<td></td>
<td>Spanish: Imagen</td>
</tr>
<tr>
<td>Type</td>
<td>CIAtributeTypeImage</td>
</tr>
</tbody>
</table>
52.132 class CIFilterMinimumCompositingMBS

Notes:
Details for this filter:

FilterName: CIMinimumCompositing
DisplayName English: Minimum
DisplayName German: Minimum
DisplayName French: Minimum
DisplayName Italian: Minima
DisplayName Spanish: Mnimo

Categories:

- CICategoryCompositeOperation: Composite Operation
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryHighDynamicRange: High Dynamic Range
- CICategoryBuiltIn: Built-In

Input:

- inputImage: Image
- inputBackgroundImage: Background Image

Output:

- outputImage

Subclass of the CIFilterMBS class.
52.132.2 Methods

52.132.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.132.4 Properties

52.132.5 AttributeinputBackgroundImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Minimum attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputBackgroundImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Background Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Hintergrundbild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image darrire-plan</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine di sfondo</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen de fondo</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.132.6 AttributeinputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Minimum attribute.
**Notes:**
This attribute should have this content:

(Read only property)
### 52.132. CLASS CIFILTERMINIMUMCOMPOSITINGMBS

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAtributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>inputBackgroundImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Background Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Hintergrundbild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image darrire-plan</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine di sfondo</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen de fondo</td>
</tr>
<tr>
<td>Type</td>
<td>CIAtributeTypeImage</td>
</tr>
</tbody>
</table>

The attribute Background Image

**Function:**

See AttributeinputBackgroundImage for more details.
(Read and Write property)

### 52.132.8 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

The attribute Image

**Notes:**

See AttributeinputImage for more details.
(Read and Write property)
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage
52.133.1 class CIFilterModTransitionMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Mod filter.

**Notes:**
Details for this filter:

<table>
<thead>
<tr>
<th>FilterName</th>
<th>CI ModTransition</th>
</tr>
</thead>
<tbody>
<tr>
<td>DisplayName English</td>
<td>Mod</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Mod</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Mod</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Mod</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Mod</td>
</tr>
</tbody>
</table>

**Categories:**

- CICategoryTransition: Transition
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputTargetImage: Target Image
- inputCenter: Center
- inputTime: Time
- inputAngle: Angle
- inputRadius: Radius
- inputCompression: Compression

**Output:**
• outputImage

Subclass of the CIFilterMBS class.

52.133.2 Methods

52.133.3 Constructor

Notes: On success the handle property is not zero and the filter has the default values set.

52.133.4 Properties

52.133.5 AttributeinputAngle as CIAttributeMBS

Notes:
This attribute should have this content:

Name:       inputAngle
Class:      double
Type:       CIAttributeTypeAngle
DisplayName English:  Angle
DisplayName German:  Winkel
DisplayName French:  Angle
DisplayName Italian: Angolo
DisplayName Spanish:  ngulo
DefaultValue:  2
IdentityNumber:  0
SliderMaxNumber:  6.283185
SliderMinNumber: -6.283185

(Read only property)
52.133.6  Attribute inputCenter as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Mod attribute.
**Notes:**
This attribute should have this content:

Name:                     inputCenter  
Class:                    CIVectorMBS  
Type:                     CIAttributeTypePosition  
DisplayName English:     Center  
DisplayName German:      Mitte  
DisplayName French:      Centre  
DisplayName Italian:     Centro  
DisplayName Spanish:     Centro  
DefaultVector:            [ 150 150 ]  
IdentityVector:          n/a  

(Read only property)

52.133.7  Attribute inputCompression as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Mod attribute.
**Notes:**
This attribute should have this content:

(Read only property)

52.133.8  Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Mod attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.133.9  Attribute inputRadius as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Mod attribute.

**Notes:**

This attribute should have this content:

(Read only property)

52.133.10  Attribute inputTargetImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Mod attribute.

**Notes:**

This attribute should have this content:
### 52.133. CLASS CIFILTERMODTRANSITIONMBS

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name:</td>
<td>inputRadius</td>
</tr>
<tr>
<td>Class:</td>
<td>double</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeDistance</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Radius</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Radius</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Rayon</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Raggio</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Radio</td>
</tr>
<tr>
<td>DefaultNumber:</td>
<td>150</td>
</tr>
<tr>
<td>IdentityNumber:</td>
<td>0</td>
</tr>
<tr>
<td>MaxNumber:</td>
<td>0</td>
</tr>
<tr>
<td>MinNumber:</td>
<td>1</td>
</tr>
<tr>
<td>SliderMaxNumber:</td>
<td>200</td>
</tr>
<tr>
<td>SliderMinNumber:</td>
<td>1</td>
</tr>
</tbody>
</table>

(Read only property)

Name: inputTargetImage  
Class: CIImageMBS  
Type: CIAttributeTypeImage  
DisplayName English: Target Image  
DisplayName German: Zielbild  
DisplayName French: Image cible  
DisplayName Italian: Immagine target  
DisplayName Spanish: Imagen de destino  
DefaultNumber: 0  
IdentityNumber: 0  

(Read only property)

### 52.133.11 Attribute inputTime as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Mod attribute.  
**Notes:**  
This attribute should have this content:  

(Read only property)
CHAPTER 52. COREIMAGE

Name: inputTime
Class: double
Type: CIAttributeTypeTime
DisplayName English: Time
DisplayName German: Zeit
DisplayName French: Durée
DisplayName Italian: Tempo
DisplayName Spanish: Tiempo
DefaultNumber: 0
IdentityNumber: 0
MaxNumber: 1
MinNumber: 0
SliderMaxNumber: 1
SliderMinNumber: 0

52.133.12 inputAngle as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Angle

Notes:

Name: inputAngle
Class: double (NSNumber)
DisplayName English: Angle
DisplayName German: Winkel
DisplayName French: Angle
DisplayName Italian: Angolo
DisplayName Spanish: Ángulo
Type: CIAttributeTypeAngle

See Attribute inputAngle for more details.
(Read and Write property)

52.133.13 inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Center

Notes:

See Attribute inputCenter for more details.
(Read and Write property)
52.133. CLASS CIFILTERMODTRANSITIONMBS

Name: inputCenter
Class: CIVectorMBS (CIVector)
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
Type: CIAttributeTypePosition

52.133.14 inputCompression as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Compression

**Notes:**
Name: inputCompression
Class: double (NSNumber)
DisplayName English: Compression
DisplayName German: Komprimierung
DisplayName French: Compression
DisplayName Italian: Compressione
DisplayName Spanish: Compresión
Type: CIAttributeTypeDistance

See Attribute inputCompression for more details.
(Read and Write property)

52.133.15 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
52.133.16  **inputRadius** as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Radius

**Notes:**

Name: inputRadius  
Class: double (NSNumber)  
DisplayName English: Radius  
DisplayName German: Radius  
DisplayName French: Rayon  
DisplayName Italian: Raggio  
DisplayName Spanish: Radio  
Type: CIAttributeTypeDistance

See Attribute inputRadius for more details.  
(Read and Write property)

52.133.17  **inputTargetImage** as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Target Image

**Notes:**

Name: inputTargetImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Target Image  
DisplayName German: Zielbild  
DisplayName French: Image cible  
DisplayName Italian: Immagine target  
DisplayName Spanish: Imagen de destino  
Type: CIAttributeTypeImage

See Attribute inputTargetImage for more details.  
(Read and Write property)
52.133.18  inputTime as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Time

**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputTime</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Time</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Zeit</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Dure</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Tempo</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Tiempo</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeTime</td>
</tr>
</tbody>
</table>

See AttributeinputTime for more details.

(Read and Write property)
52.134 class CIFilterMorphologyGradientMBS

52.134.1 class CIFilterMorphologyGradientMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Morphology Gradient filter.

**Notes:**
Details for this filter:

FilterName: CIMorphologyGradient
DisplayName English: Morphology Gradient
DisplayName German: Morphologischer Verlauf
DisplayName French: Gradient morphologique
DisplayName Italian: Gradiente morfologico
DisplayName Spanish: Gradiente morfolgico

Categories:

- CICategoryBlur: Blur
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputRadius: Radius

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.134.2 Methods

52.134.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.134.4 Properties

52.134.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Morphology Gradient attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.134.6 Attribute inputRadius as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Morphology Gradient attribute.
**Notes:**
This attribute should have this content:

(Read only property)
Name: inputRadius  
Class: double  
Type: CIAttributeTypeDistance  
DisplayName English: Radius  
DisplayName German: Radius  
DisplayName French: Rayon  
DisplayName Italian: Raggio  
DisplayName Spanish: Radio  
DefaultNumber: 5  
IdentityNumber: 0  
SliderMaxNumber: 50  
SliderMinNumber: 0

52.134.7 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Image  
Notes:  
Name: inputImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
Type: CIAttributeTypeImage

See AttributeinputImage for more details.  
(Read and Write property)

52.134.8 inputRadius as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Radius  
Notes:  
See AttributeinputRadius for more details.  
(Read and Write property)
<table>
<thead>
<tr>
<th>Name:</th>
<th>inputRadius</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Radius</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Radius</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Rayon</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Raggio</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Radio</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeDistance</td>
</tr>
</tbody>
</table>
52.135 class CIFilterMorphologyMaximumMBS

52.135.1 class CIFilterMorphologyMaximumMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Morphology Maximum filter.

**Notes:**
Details for this filter:

- **FilterName:** CIMorphologyMaximum
- **DisplayName English:** Morphology Maximum
- **DisplayName German:** Morphologisches Maximum
- **DisplayName French:** Maximum morphologique
- **DisplayName Italian:** Massimo morfologico
- **DisplayName Spanish:** Máximo morfológico

**Categories:**
- **CICategoryBlur:** Blur
- **CICategoryVideo:** Video
- **CICategoryStillImage:** Still Image
- **CICategoryBuiltIn:** Built-In

**Input:**
- **inputImage:** Image
- **inputRadius:** Radius

**Output:**
- **outputImage**

Subclass of the CIFilterMBS class.
52.135.2 Methods

52.135.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The constructor. Notes: On success the handle property is not zero and the filter has the default values set.

52.135.4 Properties

52.135.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Details about the Morphology Maximum attribute. Notes: This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.135.6 Attribute inputRadius as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Details about the Morphology Maximum attribute. Notes: This attribute should have this content:

(Read only property)
Name: inputRadius
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Radius
DisplayName German: Radius
DisplayName French: Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
DefaultNumber: 0
IdentityNumber: 0
SliderMaxNumber: 50
SliderMinNumber: 0

52.135.7 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See AttributeinputImage for more details.
(Read and Write property)

52.135.8 inputRadius as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Radius

**Notes:**

See AttributeinputRadius for more details.
(Read and Write property)
Name:          inputRadius
Class:         double (NSNumber)
DisplayName English: Radius
DisplayName German: Radius
DisplayName French: Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
Type:          CIAttributeTypeDistance
52.136 class CIFilterMorphologyMinimumMBS

52.136.1 class CIFilterMorphologyMinimumMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Morphology Minimum filter.  
**Notes:**

Details for this filter:

FilterName: CI::CIMorphologyMinimum
DisplayName English: Morphology Minimum
DisplayName German: Morphologisches Minimum
DisplayName French: Minimum morphologique
DisplayName Italian: Minimo morfologico
DisplayName Spanish: Mnimo morfolgico

Categories:

- CICategoryBlur: Blur
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

Input:

- inputImage: Image
- inputRadius: Radius

Output:

- outputImage

Subclass of the CIFilterMBS class.
52.136.2 Methods

52.136.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.136.4 Properties

52.136.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Morphology Minimum attribute.
**Notes:**
This attribute should have this content:

Name: inputImage  
Class: CIImageMBS  
Type: CIAttributeTypeImage  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
DefaultNumber: 0  
IdentityNumber: 0

(Read only property)

52.136.6 Attribute inputRadius as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Morphology Minimum attribute.
**Notes:**
This attribute should have this content:

(Read only property)
CHAPTER 52. COREIMAGE

Name: inputRadius
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Radius
DisplayName German: Radius
DisplayName French: Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
DefaultNumber: 0
IdentityNumber: 0
SliderMaxNumber: 50
SliderMinNumber: 0

52.136.7  inputImage as CIImageMBS

Notes:

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See AttributeinputImage for more details.
(Read and Write property)

52.136.8  inputRadius as double

Notes:
See AttributeinputRadius for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputRadius</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Radius</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Radius</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Rayon</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Raggio</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Radio</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeDistance</td>
</tr>
</tbody>
</table>
52.137 class CIFilterMotionBlurMBS

52.137.1 class CIFilterMotionBlurMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Motion Blur filter.

**Notes:**

Details for this filter:

- FilterName: CIMotionBlur
- DisplayName English: Motion Blur
- DisplayName German: Bewegungsunschärfe
- DisplayName French: Flou mouvement
- DisplayName Italian: Sfumatura movimento
- DisplayName Spanish: Difuminado de movimiento

**Categories:**

- CICategoryBlur: Blur
- CICategoryStillImage: Still Image
- CICategoryVideo: Video
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputRadius: Radius
- inputAngle: Angle

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.137.2 Methods

52.137.3 Constructor

Notes: On success the handle property is not zero and the filter has the default values set.

52.137.4 Properties

52.137.5 Attribute inputAngle as CIAttributeMBS

Notes:
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputAngle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributetypeAngle</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Angle</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Winkel</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Angle</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Angolo</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>ngulo</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
<tr>
<td>SliderMaxNumber</td>
<td>3.141593</td>
</tr>
<tr>
<td>SliderMinNumber</td>
<td>-3.141593</td>
</tr>
</tbody>
</table>

(Read only property)

52.137.6 Attribute inputImage as CIAttributeMBS

Notes:
This attribute should have this content:
Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.137.7 Attribute inputRadius as CIAttributeMBS

Notes:
This attribute should have this content:

Name: inputRadius
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Radius
DisplayName German: Radius
DisplayName French: Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
DefaultNumber: 20
IdentityNumber: 0
SliderMaxNumber: 100
SliderMinNumber: 0

(Read only property)

52.137.8 inputAngle as double

Notes:
52.137. CLASS CIFILTERMOTIONBLURMBS

Name: inputAngle
Class: double (NSNumber)
DisplayName English: Angle
DisplayName German: Winkel
DisplayName French: Angle
DisplayName Italian: Angolo
DisplayName Spanish: angulo
Type: CIAttributeTypeAngle

See Attribute inputAngle for more details.
(Read and Write property)

52.137.9 inputImage as CIImageMBS

Notes:

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)

52.137.10 inputRadius as double

Notes:

See Attribute inputRadius for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputRadius</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Radius</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Radius</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Rayon</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Raggio</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Radio</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeDistance</td>
</tr>
</tbody>
</table>
52.138.1  class CIFilterMultiplyBlendModeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Multiply Blend Mode filter.

**Notes:**

Details for this filter:

- **FilterName:** CIMultiplyBlendMode
- **DisplayName English:** Multiply Blend Mode
- **DisplayName German:** Mischmethode Multiplizieren
- **DisplayName French:** Mode de fusion Multiplication
- **DisplayName Italian:** Modalit sfumatura multiplicata
- **DisplayName Spanish:** Multiplicar modo de mezcla

**Categories:**

- **CICategoryCompositeOperation:** Composite Operation
- **CICategoryVideo:** Video
- **CICategoryStillImage:** Still Image
- **CICategoryInterlaced:** Interlaced
- **CICategoryNonSquarePixels:** Non-Square Pixels
- **CICategoryBuiltIn:** Built-In

**Input:**

- **inputImage:** Image
- **inputBackgroundImage:** Background Image

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
52.138.2 Methods

52.138.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

**Notes:** On success the handle property is not zero and the filter has the default values set.

52.138.4 Properties

52.138.5 AttributeinputBackgroundImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Multiply Blend Mode attribute.

**Notes:**

This attribute should have this content:

```
Name: inputBackgroundImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Background Image
DisplayName German: Hintergrundbild
DisplayName French: Image derrière-plan
DisplayName Italian: Immagine di sfondo
DisplayName Spanish: Imagen de fondo
DefaultNumber: 0
IdentityNumber: 0
```

(Read only property)

52.138.6 AttributeinputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Multiply Blend Mode attribute.

**Notes:**

This attribute should have this content:

(Read only property)
### 52.138.7  `inputBackgroundImage` as `CIImageMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Background Image  
**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th><code>inputBackgroundImage</code></th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td><code>CIImageMBS</code> (CIImage)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Background Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Hintergrundbild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image darrire-plan</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine di sfondo</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen de fondo</td>
</tr>
<tr>
<td>Type</td>
<td><code>CIAttributeTypeImage</code></td>
</tr>
</tbody>
</table>

See Attribute `inputBackgroundImage` for more details.  
(Read and Write property)

### 52.138.8  `inputImage` as `CIImageMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image  
**Notes:**

See Attribute `inputImage` for more details.  
(Read and Write property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type</td>
<td>CIAtributeTypeImage</td>
</tr>
</tbody>
</table>
52.139. CLASS CIFILTERMULTIPLYCOMPOSITINGMBS

52.139  class CIFilterMultiplyCompositingMBS

52.139.1  class CIFilterMultiplyCompositingMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Multiply filter.

**Notes:**
Details for this filter:

<table>
<thead>
<tr>
<th>FilterName</th>
<th>CIMultiplyCompositing</th>
</tr>
</thead>
<tbody>
<tr>
<td>DisplayName English</td>
<td>Multiply</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Multiplizieren</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Multiplier</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Moltiplica</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Multiplicar</td>
</tr>
</tbody>
</table>

Categories:

- CICategoryCompositeOperation: Composite Operation
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryHighDynamicRange: High Dynamic Range
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputBackgroundImage: Background Image

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.139.2 Methods

52.139.3 Constructor

Notes: On success the handle property is not zero and the filter has the default values set.

52.139.4 Properties

52.139.5 Attribute inputBackgroundImage as CIAttributeMBS

Notes: This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputBackgroundImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Background Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Hintergrundbild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image darrire-plan</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine di sfondo</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen de fondo</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.139.6 Attribute inputImage as CIAttributeMBS

Notes: This attribute should have this content:

(Read only property)
52.139. CLASS CIFILTERMULTIPLYCOMPOSITINGMBS

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage

DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

52.139.7 inputBackgroundImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Background Image

**Notes:**

Name: inputBackgroundImage
Class: CIImageMBS (CIImage)
DisplayName English: Background Image
DisplayName German: Hintergrundbild
DisplayName French: Image darrire-plan
DisplayName Italian: Immagine di sfondo
DisplayName Spanish: Imagen de fondo
Type: CIAttributeTypeImage

See Attribute inputBackgroundImage for more details.
(Read and Write property)

52.139.8 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**

See Attribute inputImage for more details.
(Read and Write property)
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage
52.140.1 class CIFilterNinePartStretchedMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Nine Part Stretched filter.

**Notes:**
Details for this filter:

| FilterName: | CINinePartStretched |
| DisplayName English: | Nine Part Stretched |
| DisplayName German: | Neun Teile gedehnt |
| DisplayName French: | tir en neuf parties |
| DisplayName Italian: | Allungamento a nove parti |
| DisplayName Spanish: | Estirado en nueve partes |

**Categories:**
- CICategoryDistortionEffect: Distortion Effect
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**
- inputImage: Image
- inputBreakpoint0: Breakpoint0
- inputBreakpoint1: Breakpoint1
- inputGrowAmount: GrowAmount

**Output:**
- outputImage

Subclass of the CIFilterMBS class.
52.140.2 Methods

52.140.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.140.4 Properties

52.140.5 Attribute `inputBreakpoint0` as `CIAttributeMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Nine Part Stretched attribute.
**Notes:**
This attribute should have this content:

- **Name:** `inputBreakpoint0`
- **Class:** `CIVectorMBS`
- **Type:** `CIAttributeTypePosition`
- **DisplayName:** `Breakpoint0`
- **DefaultVector:** `[ 50 50 ]`
- **IdentityVector:** n/a

(Read only property)

52.140.6 Attribute `inputBreakpoint1` as `CIAttributeMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Nine Part Stretched attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.140. CLASS CIFILTERNINEPARTSTRETCHEDMBS

Name: inputBreakpoint1
Class: CIVectorMBS
Type: CIAttributeTypePosition
DisplayName: Breakpoint1
DefaultVector: [150 150]
IdentityVector: n/a

52.140.7 Attribute inputGrowAmount as CIAttributeMBS


Function:

Details about the Nine Part Stretched attribute.

Notes:
This attribute should have this content:

Name: inputGrowAmount
Class: CIVectorMBS
Type: CIAttributeTypeOffset
DisplayName: GrowAmount
DefaultVector: [100 100]
IdentityVector: n/a

(Read only property)

52.140.8 Attribute inputImage as CIAttributeMBS


Function:

Details about the Nine Part Stretched attribute.

Notes:
This attribute should have this content:

(Read only property)

52.140.9 inputBreakpoint0 as CIVectorMBS


Function:
The attribute Breakpoint0

Notes:
Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

Name: inputBreakpoint0
Class: CIVectorMBS (CIVector)
DisplayName English: Breakpoint0
DisplayName German: Breakpoint0
DisplayName French: Breakpoint0
DisplayName Italian: Breakpoint0
DisplayName Spanish: Breakpoint0
Type: CIAttributeTypePosition

See Attribute inputBreakpoint0 for more details.
(Read and Write property)

52.140.10 inputBreakpoint1 as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Breakpoint1
**Notes:**

Name: inputBreakpoint1
Class: CIVectorMBS (CIVector)
DisplayName English: Breakpoint1
DisplayName German: Breakpoint1
DisplayName French: Breakpoint1
DisplayName Italian: Breakpoint1
DisplayName Spanish: Breakpoint1
Type: CIAttributeTypePosition

See Attribute inputBreakpoint1 for more details.
(Read and Write property)
52.140.11 inputGrowAmount as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute GrowAmount

**Notes:**

Name: inputGrowAmount
Class: CIVectorMBS (CIVector)
DisplayName English: GrowAmount
DisplayName German: GrowAmount
DisplayName French: GrowAmount
DisplayName Italian: GrowAmount
DisplayName Spanish: GrowAmount
Type: CIAttributeTypeOffset

See Attribute inputGrowAmount for more details.
(Read and Write property)

52.140.12 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)
52.141 class CIFilterNinePartTiledMBS

52.141.1 class CIFilterNinePartTiledMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Nine Part Tiled filter.  
**Notes:**
Details for this filter:

- **FilterName:** CINinePartTiled
- **DisplayName English:** Nine Part Tiled
- **DisplayName German:** Neun Teile gekachelt
- **DisplayName French:** Mosaque en neuf parties
- **DisplayName Italian:** Disposizione su nove caselle
- **DisplayName Spanish:** Mosaico en nueve partes

**Categories:**
- **CICategoryDistortionEffect:** Distortion Effect
- **CICategoryVideo:** Video
- **CICategoryStillImage:** Still Image
- **CICategoryBuiltIn:** Built-In

**Input:**
- **inputImage:** Image
- **inputBreakpoint0:** Breakpoint0
- **inputBreakpoint1:** Breakpoint1
- **inputGrowAmount:** GrowAmount
- **inputFlipYTiles:** FlipYTiles

**Output:**
- **outputImage**

Subclass of the CIFilterMBS class.
52.141.2 Methods

52.141.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.141.4 Properties

52.141.5 Attribute inputBreakpoint0 as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Nine Part Tiled attribute.
**Notes:**
This attribute should have this content:

Name: inputBreakpoint0
Class: CIVectorMBS
Type: CIAttributeTypePosition
DisplayName: Breakpoint0
DefaultVector: [50 50]
IdentityVector: n/a

(Read only property)

52.141.6 Attribute inputBreakpoint1 as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Nine Part Tiled attribute.
**Notes:**
This attribute should have this content:

(Read only property)
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Name: inputBreakpoint1
Class: CIVectorMBS
Type: CIAttributeTypePosition
DisplayName: Breakpoint1
DefaultVector: [ 150 150 ]
IdentityVector: n/a

52.141.7 Attribute inputFlipYTiles as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Details about the Nine Part Tiled attribute.
Notes:
This attribute should have this content:

Name: inputFlipYTiles
Class: double
Type: CIAttributeTypeBoolean
DisplayName: FlipYTiles
DefaultNumber: 1
IdentityNumber: 0
MaxNumber: 1
MinNumber: 0

(Read only property)

52.141.8 Attribute inputGrowAmount as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Details about the Nine Part Tiled attribute.
Notes:
This attribute should have this content:

(Read only property)
52.141.9 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Details about the Nine Part Tiled attribute.
Notes:
This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.141.10 inputBreakpoint0 as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Breakpoint0
Notes:
See Attribute inputBreakpoint0 for more details.
(Read and Write property)

52.141.11 inputBreakpoint1 as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Breakpoint1
Name: inputBreakpoint0
Class: CIVectorMBS (CIVector)
DisplayName English: Breakpoint0
DisplayName German: Breakpoint0
DisplayName French: Breakpoint0
DisplayName Italian: Breakpoint0
DisplayName Spanish: Breakpoint0
Type: CIAttributeTypePosition

Notes:

Name: inputBreakpoint1
Class: CIVectorMBS (CIVector)
DisplayName English: Breakpoint1
DisplayName German: Breakpoint1
DisplayName French: Breakpoint1
DisplayName Italian: Breakpoint1
DisplayName Spanish: Breakpoint1
Type: CIAttributeTypePosition

See Attribute inputBreakpoint1 for more details.
(Read and Write property)

52.141.12 inputFlipYTiles as double


Notes:

Name: inputFlipYTiles
Class: double (NSNumber)
DisplayName English: FlipYTiles
DisplayName German: FlipYTiles
DisplayName French: FlipYTiles
DisplayName Italian: FlipYTiles
DisplayName Spanish: FlipYTiles
Type: CIAttributeTypeBoolean

See Attribute inputFlipYTiles for more details.
(Read and Write property)
52.141.13  inputGrowAmount as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute GrowAmount
**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputGrowAmount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIVectorMBS (CIVector)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>GrowAmount</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>GrowAmount</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>GrowAmount</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>GrowAmount</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>GrowAmount</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeOffset</td>
</tr>
</tbody>
</table>

See Attribute inputGrowAmount for more details.
(Read and Write property)

52.141.14  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image
**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>

See Attribute inputImage for more details.
(Read and Write property)
52.142 class CIFilterNoiseReductionMBS

52.142.1 class CIFilterNoiseReductionMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Noise Reduction filter.

**Notes:**
Details for this filter:

- **FilterName:** CINoiseReduction
- **DisplayName English:** Noise Reduction
- **DisplayName German:** Rauschunterdrückung
- **DisplayName French:** Réduction du bruit
- **DisplayName Italian:** Riduzione disturbo
- **DisplayName Spanish:** Reducción de ruido

Categories:

- CICategoryBlur: Blur
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

Input:

- **inputImage:** Image
- **inputNoiseLevel:** Noise Level
- **inputSharpness:** Sharpness

Output:

- **outputImage**

Subclass of the CIFilterMBS class.
52.142.2 Methods

52.142.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.142.4 Properties

52.142.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Noise Reduction attribute.
**Notes:**
This attribute should have this content:

Name: inputImage  
Class: CIImageMBS  
Type: CIAttributeTypeImage  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
DefaultNumber: 0  
IdentityNumber: 0

(Read only property)

52.142.6 Attribute inputNoiseLevel as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Noise Reduction attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.142.7   **Attribute inputSharpness as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Noise Reduction attribute.

**Notes:**

This attribute should have this content:

Name:          inputSharpness  
Class:         double  
Type:         CIAttributeTypeScalar  
DisplayName English: Sharpness  
DisplayName German: Schärfe  
DisplayName French: Nettet  
DisplayName Italian: Nitidezza  
DisplayName Spanish: Nitidez  
DefaultNumber: 0.4  
IdentityNumber: 0  
SliderMaxNumber: 2  
SliderMinNumber: 0  

(Read only property)

52.142.8   **inputImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**

See Attribute inputImage for more details.
52.142. CLASS CIFILTERNOISEREDUCTIONMBS

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

(Read and Write property)

52.142.9 inputNoiseLevel as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Noise Level
**Notes:**

Name: inputNoiseLevel
Class: double (NSNumber)
DisplayName English: Noise Level
DisplayName German: Rauschpegel
DisplayName French: Niveau de bruit
DisplayName Italian: Livello disturbo
DisplayName Spanish: Nivel de ruido
Type: CIAttributeTypeScalar

See AttributeinputNoiseLevel for more details.
(Read and Write property)

52.142.10 inputSharpness as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Sharpness
**Notes:**

See AttributeinputSharpness for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputSharpness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Sharpness</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Schrfe</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Nettet</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Nitidezza</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Nitidez</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeScalar</td>
</tr>
</tbody>
</table>
52.143. class CIFilterOpTileMBS


**Notes:**

Details for this filter:

<table>
<thead>
<tr>
<th>FilterName</th>
<th>OptionName English</th>
<th>OptionName German</th>
<th>OptionName French</th>
<th>OptionName Italian</th>
<th>OptionName Spanish</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIOpTile</td>
<td>Op Tile</td>
<td>Op kacheln</td>
<td>Mosaque oprationelle</td>
<td>Mosaico ottico</td>
<td>Mosaico ptico</td>
</tr>
</tbody>
</table>

**Categories:**

- CICategoryTileEffect: Tile Effect
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputCenter: Center
- inputScale: Scale
- inputAngle: Angle
- inputWidth: Width

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.143.2 Methods

52.143.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.143.4 Properties

52.143.5 Attribute inputAngle as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Op Tile attribute.
**Notes:**
This attribute should have this content:

Name: inputAngle
Class: double
Type: CIAttributeTypeAngle
DisplayName English: Angle
DisplayName German: Winkel
DisplayName French: Angle
DisplayName Italian: Angolo
DisplayName Spanish: ngulo
DefaultNumber: 0
IdentityNumber: 0
SliderMaxNumber: 3.141593
SliderMinNumber: -3.141593

(Read only property)

52.143.6 Attribute inputCenter as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Op Tile attribute.
**Notes:**
This attribute should have this content:
52.143. **CLASS CIFILTEROPTILEMBS**

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputCenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIVectorMBS</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAtributeTypePosition</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Center</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Mitte</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Centre</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Centro</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Centro</td>
</tr>
<tr>
<td>DefaultVector:</td>
<td>[ 150 150 ]</td>
</tr>
<tr>
<td>IdentityVector:</td>
<td>n/a</td>
</tr>
</tbody>
</table>

(Read only property)

### 52.143.7 Attribute inputImage as CIAtributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Op Tile attribute. **Notes:** This attribute should have this content:

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAtributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber:</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber:</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

### 52.143.8 Attribute inputScale as CIAtributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Op Tile attribute. **Notes:** This attribute should have this content:
Name: inputScale
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Scale
DisplayName German: Skalierung
DisplayName French: chelle
DisplayName Italian: Scala
DisplayName Spanish: Escala
DefaultNumber: 2.8
IdentityNumber: 1
SliderMaxNumber: 10
SliderMinNumber: 0.1

(Read only property)

52.143.9  **Attribute inputWidth as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Op Tile attribute.
**Notes:**
This attribute should have this content:

Name: inputWidth
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Anchura
DefaultNumber: 65
IdentityNumber: 65
SliderMaxNumber: 1000
SliderMinNumber: 1

(Read only property)
52.143.10  inputAngle as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Angle

**Notes:**

- Name: inputAngle
- Class: double (NSNumber)
- DisplayName English: Angle
- DisplayName German: Winkel
- DisplayName French: Angle
- DisplayName Italian: Angolo
- DisplayName Spanish: Angle
- Type: CIAttributeTypeAngle

See Attribute inputAngle for more details.
(Read and Write property)

52.143.11  inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Center

**Notes:**

- Name: inputCenter
- Class: CIVectorMBS (CIVector)
- DisplayName English: Center
- DisplayName German: Mitte
- DisplayName French: Centre
- DisplayName Italian: Centro
- DisplayName Spanish: Centro
- Type: CIAttributeTypePosition

See Attribute inputCenter for more details.
(Read and Write property)

52.143.12  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)

52.143.13 inputScale as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Scale
**Notes:**

Name: inputScale
Class: double (NSNumber)
DisplayName English: Scale
DisplayName German: Skalierung
DisplayName French: Chelle
DisplayName Italian: Scala
DisplayName Spanish: Escala
Type: CIAttributeTypeScalar

See Attribute inputScale for more details.
(Read and Write property)

52.143.14 inputWidth as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Width
**Notes:**

See Attribute inputWidth for more details.
(Read and Write property)
Name: inputWidth
Class: double (NSNumber)
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Anchura
Type: CIAttributeTypeDistance
52.144 class CIFilterOverlayBlendModeMBS

52.144.1 class CIFilterOverlayBlendModeMBS


Notes:

Details for this filter:

FilterName: CIOverlayBlendMode
DisplayName English: Overlay Blend Mode
DisplayName German: Mischmethode berlagerung
DisplayName French: Mode de fusion Superposition
DisplayName Italian: Modalit sfumatura sovrapposizione
DisplayName Spanish: Superponer modo de mezcla

Categories:

- CICategoryCompositeOperation: Composite Operation
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryBuiltIn: Built-In

Input:

- inputImage: Image
- inputBackgroundImage: Background Image

Output:

- outputImage

Subclass of the CIFilterMBS class.
52.144.2 Methods

52.144.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.144.4 Properties

52.144.5 AttributeinputBackgroundImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Overlay Blend Mode attribute.
**Notes:**
This attribute should have this content:

Name: inputBackgroundImage  
Class: CIImageMBS  
Type: CIAttributeTypeImage  
DisplayName English: Background Image  
DisplayName German: Hintergrundbild  
DisplayName French: Image darrire-plan  
DisplayName Italian: Immagine di sfondo  
DisplayName Spanish: Imagen de fondo  
DefaultNumber: 0  
IdentityNumber: 0

(Read only property)

52.144.6 AttributeinputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Overlay Blend Mode attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.144.7  inputBackgroundImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Background Image

**Notes:**

See AttributeinputBackgroundImage for more details.
(Read and Write property)

52.144.8  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

See AttributeinputImage for more details.
(Read and Write property)
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage
52.145 class CIFilterPageCurlTransitionMBS

52.145.1 class CIFilterPageCurlTransitionMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Page Curl filter.

**Notes:**
Details for this filter:

<table>
<thead>
<tr>
<th>FilterName</th>
<th>CIPageCurlTransition</th>
</tr>
</thead>
<tbody>
<tr>
<td>DisplayName English</td>
<td>Page Curl</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Umbittern</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Repli de page</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Ricciolo pagina</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Ondulación de página</td>
</tr>
</tbody>
</table>

**Categories:**

- CICategoryTransition: Transition
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputTargetImage: Target Image
- inputBacksideImage: Backside Image
- inputShadingImage: Shading Image
- inputExtent: Extent
- inputTime: Time
- inputAngle: Angle
- inputRadius: Radius

**Output:**
52.145. CLASS CIFILTERPAGECURLTRANSITIONMBS

- outputImage

Subclass of the CIFilterMBS class.

52.145.2 Methods

52.145.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.145.4 Properties

52.145.5 Attribute inputAngle as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Page Curl attribute.
**Notes:**

This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>InputAngle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeAngle</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Angle</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Winkel</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Angle</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Angolo</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>ngulo</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
<tr>
<td>SliderMaxNumber</td>
<td>3.141593</td>
</tr>
<tr>
<td>SliderMinNumber</td>
<td>-3.141593</td>
</tr>
</tbody>
</table>

(Read only property)
52.145.6 Attribute `inputBacksideImage` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Page Curl attribute.

**Notes:**
This attribute should have this content:

- **Name:** `inputBacksideImage`
- **Class:** CIImageMBS
- **DisplayName English:** Backside Image
- **DisplayName German:** Bild auf der Hinterseite
- **DisplayName French:** Image arrière
- **DisplayName Italian:** Immagine posteriore
- **DisplayName Spanish:** Imagen de reverso
- **DefaultNumber:** 0
- **IdentityNumber:** 0

(Read only property)

52.145.7 Attribute `inputExtent` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Page Curl attribute.

**Notes:**
This attribute should have this content:

- **Name:** `inputExtent`
- **Class:** CIVectorMBS
- **Type:** CIAttributeTypeRectangle
- **DisplayName English:** Extent
- **DisplayName German:** Betrag
- **DisplayName French:** tendue
- **DisplayName Italian:** Ampiezza
- **DisplayName Spanish:** Amplitud
- **DefaultVector:** `[0 0 300 300]`
- **IdentityVector:** n/a

(Read only property)
52.145.8 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Page Curl attribute.

**Notes:**
This attribute should have this content:

```
Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0
```

(Read only property)

52.145.9 Attribute inputRadius as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Page Curl attribute.

**Notes:**
This attribute should have this content:

(Read only property)

52.145.10 Attribute inputShadingImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Page Curl attribute.

**Notes:**
This attribute should have this content:

(Read only property)
CHAPTER 52. COREIMAGE

Name: inputRadius
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Radius
DisplayName German: Radius
DisplayName French: Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
DefaultNumber: 100
IdentityNumber: 0
MaxNumber: 0
MinNumber: 0.01
SliderMaxNumber: 400
SliderMinNumber: 0.01

Name: inputShadingImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Shading Image
DisplayName German: Bild schattieren
DisplayName French: Image dombrage
DisplayName Italian: Immagine ombreggiatura
DisplayName Spanish: Imagen de sombra
DefaultNumber: 0
IdentityNumber: 0

52.145.11 AttributeinputTargetImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Page Curl attribute.

**Notes:**

This attribute should have this content:

(Read only property)

52.145.12 AttributeinputTime as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Page Curl attribute.

**Notes:**

This attribute should have this content:
52.145. CLASS CIFILTERPAGECURLTRANSITIONMBS

Name: inputTargetImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Target Image
DisplayName German: Zielbild
DisplayName French: Image cible
DisplayName Italian: Immagine target
DisplayName Spanish: Imagen de destino
DefaultNumber: 0
IdentityNumber: 0

Name: inputTime
Class: double
Type: CIAttributeTypeTime
DisplayName English: Time
DisplayName German: Zeit
DisplayName French: Dure
DisplayName Italian: Tempo
DisplayName Spanish: Tiempo
DefaultNumber: 0
IdentityNumber: 0
MaxNumber: 1
MinNumber: 0
SliderMaxNumber: 1
SliderMinNumber: 0

(Read only property)

52.145.13 inputAngle as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Angle
Notes:
See AttributeinputAngle for more details.
(Read and Write property)
### 52.145.14 inputBacksideImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Backside Image

**Notes:**

Name: inputBacksideImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Backside Image  
DisplayName German: Bild auf der Hinterseite  
DisplayName French: Image arrière  
DisplayName Italian: Immagine posteriore  
DisplayName Spanish: Imagen de reverso  
Type:  

See Attribute inputBacksideImage for more details.  
(Read and Write property)

### 52.145.15 inputExtent as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Extent

**Notes:**

Name: inputExtent  
Class: CIVectorMBS (CIVector)  
DisplayName English: Extent  
DisplayName German: Betrag  
DisplayName French: tendue  
DisplayName Italian: Ampiezza  
DisplayName Spanish: Amplitud  
Type: CIAtributeTypeRectangle  

See Attribute inputExtent for more details.
52.145.16  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

Name: inputImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
Type: CIAttributeTypeImage

See AttributeinputImage for more details.
(Read and Write property)

52.145.17  inputRadius as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Radius

**Notes:**

Name: inputRadius  
Class: double (NSNumber)  
DisplayName English: Radius  
DisplayName German: Radius  
DisplayName French: Rayon  
DisplayName Italian: Raggio  
DisplayName Spanish: Radio  
Type: CIAttributeTypeDistance

See AttributeinputRadius for more details.
(Read and Write property)
### 52.145.18 inputShadingImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Shading Image  
**Notes:**

- **Name:** inputShadingImage  
- **Class:** CIImageMBS (CIImage)  
- **DisplayName**  
  - English: Shading Image  
  - German: Bild schattieren  
  - French: Image dombrage  
  - Italian: Immagine ombreggiatura  
  - Spanish: Imagen de sombra  
- **Type:** CIAttributeTypeImage

See Attribute inputShadingImage for more details.  
(Read and Write property)

### 52.145.19 inputTargetImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Target Image  
**Notes:**

- **Name:** inputTargetImage  
- **Class:** CIImageMBS (CIImage)  
- **DisplayName**  
  - English: Target Image  
  - German: Zielfoto  
  - French: Image cible  
  - Italian: Immagine target  
  - Spanish: Imagen de destino  
- **Type:** CIAttributeTypeImage

See Attribute inputTargetImage for more details.  
(Read and Write property)

### 52.145.20 inputTime as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Time  
**Notes:**
Name: inputTime
Class: double (NSNumber)
DisplayName English: Time
DisplayName German: Zeit
DisplayName French: Dure
DisplayName Italian: Tempo
DisplayName Spanish: Tiempo
Type: CIAttributeTypeTime

See AttributeinputTime for more details.
(Read and Write property)
CHAPTER 52. COREIMAGE

52.146  class CIFilterPageCurlWithShadowTransitionMBS

52.146.1  class CIFilterPageCurlWithShadowTransitionMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Page Curl With Shadow filter.

**Notes:**

Details for this filter:

- **FilterName:** CIPageCurlWithShadowTransition
- **DisplayName English:** Page Curl With Shadow
- **DisplayName German:** Umblittern mit Schatten
- **DisplayName French:** Repli de page avec ombre
- **DisplayName Italian:** Piega pagina con ombra
- **DisplayName Spanish:** Página con el borde ondulado y sombra

**Categories:**

- CICategoryTransition: Transition
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- **inputImage:** Image
- **inputTargetImage:** Target Image
- **inputBacksideImage:** Backside Image
- **inputExtent:** Extent
- **inputTime:** Time
- **inputAngle:** Angle
- **inputRadius:** Radius
- **inputShadowSize:** ShadowSize
- **inputShadowAmount:** Shadow Amount
- **inputShadowExtent:** ShadowExtent
Output:

- outputImage

Subclass of the CIFilterMBS class.

### 52.146.2 Methods

### 52.146.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

**Notes:** On success the handle property is not zero and the filter has the default values set.

### 52.146.4 Properties

### 52.146.5 Attribute inputAngle as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Page Curl With Shadow attribute.

**Notes:**

This attribute should have this content:

```
Name: inputAngle
Class: double
Type: CIAttributeTypeAngle
DisplayName English: Angle
DisplayName German: Winkel
DisplayName French: Angle
DisplayName Italian: Angolo
DisplayName Spanish: ngulo
DefaultNumber: 0
IdentityNumber: 0
SliderMaxNumber: 3.141593
SliderMinNumber: -3.141593
```

(Read only property)
CHAPTER 52. COREIMAGE

52.146.6  Attribute inputBacksideImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Details about the Page Curl With Shadow attribute.

**Notes:**

This attribute should have this content:

Name: inputBacksideImage  
Class: CIImageMBS  
DisplayName English: Backside Image  
DisplayName German: Bild auf der Hinterseite  
DisplayName French: Image arrière  
DisplayName Italian: Immagine posteriore  
DisplayName Spanish: Imagen de reverso  
DefaultNumber: 0  
IdentityNumber: 0  

(Read only property)

52.146.7  Attribute inputExtent as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Details about the Page Curl With Shadow attribute.

**Notes:**

This attribute should have this content:

Name: inputExtent  
Class: CIVectorMBS  
Type: CIAttributeTypeRectangle  
DisplayName English: Extent  
DisplayName German: Betrag  
DisplayName French: tendue  
DisplayName Italian: Ampiezza  
DisplayName Spanish: Amplitud  
DefaultVector: [ 0 0 0 0 ]  
IdentityVector: n/a  

(Read only property)
52.146.8 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Page Curl With Shadow attribute.

**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.146.9 Attribute inputRadius as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Page Curl With Shadow attribute.

**Notes:**
This attribute should have this content:

(Read only property)

52.146.10 Attribute inputShadowAmount as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Page Curl With Shadow attribute.

**Notes:**
This attribute should have this content:

(Read only property)
CHAPTER 52. COREIMAGE

Name: inputRadius  
Class: double  
Type: CIAttributeTypeDistance  
DisplayName English: Radius  
DisplayName German: Radius  
DisplayName French: Rayon  
DisplayName Italian: Raggio  
DisplayName Spanish: Radio  
DefaultNumber: 100  
IdentityNumber: 0  
MaxNumber: 0  
MinNumber: 0.01  
SliderMaxNumber: 400  
SliderMinNumber: 0.01

Name: inputShadowAmount  
Class: double  
Type: CIAttributeTypeDistance  
DisplayName English: Shadow Amount  
DisplayName German: Schattenumfang  
DisplayName French: Quantit dombre  
DisplayName Italian: Quantit ombreggiatura  
DisplayName Spanish: Cantidad de sombreado  
DefaultNumber: 0.7  
IdentityNumber: 0  
MaxNumber: 1  
MinNumber: 0  
SliderMaxNumber: 1  
SliderMinNumber: 0

52.146.11 Attribute inputShadowExtent as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Page Curl With Shadow attribute.

**Notes:**

This attribute should have this content:

(Read only property)
52.146. CLASS CIFILTERPAGECURLWITHSHADOWTRANSITIONMBS

Name: inputShadowExtent
Class: CIVectorMBS
Type: CIAttributeTypeRectangle
DisplayName: ShadowExtent
DefaultVector: [ 0 0 0 0 ]
IdentityVector: n/a

52.146.12 Attribute inputShadowSize as CIAttributeMBS

Notes: This attribute should have this content:

Name: inputShadowSize
Class: double
Type: CIAttributeTypeDistance
DisplayName: ShadowSize
DefaultNumber: 0.5
IdentityNumber: 0
MaxNumber: 1
MinNumber: 0
SliderMaxNumber: 1
SliderMinNumber: 0

(Read only property)

52.146.13 Attribute inputTargetImage as CIAttributeMBS

Notes: This attribute should have this content:

(Read only property)
CHAPTER 52. COREIMAGE

Name: inputTargetImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Target Image
DisplayName German: Zielbild
DisplayName French: Image cible
DisplayName Italian: Immagine target
DisplayName Spanish: Imagen de destino
DefaultNumber: 0
IdentityNumber: 0

52.146.14 AttributeinputTime as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Page Curl With Shadow attribute.

**Notes:**

This attribute should have this content:

Name: inputTime
Class: double
Type: CIAttributeTypeTime
DisplayName English: Time
DisplayName German: Zeit
DisplayName French: Dure
DisplayName Italian: Tempo
DisplayName Spanish: Tiempo
DefaultNumber: 0
IdentityNumber: 0
MaxNumber: 1
MinNumber: 0
SliderMaxNumber: 1
SliderMinNumber: 0

(Read only property)

52.146.15 inputAngle as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Angle

**Notes:**

See AttributeinputAngle for more details.
52.146. **CLASS CIFILTERPAGECURLWITHSHADOWTRANSITIONMBS**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputAngle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName <strong>English</strong></td>
<td>Angle</td>
</tr>
<tr>
<td>DisplayName <strong>German</strong></td>
<td>Winkel</td>
</tr>
<tr>
<td>DisplayName <strong>French</strong></td>
<td>Angle</td>
</tr>
<tr>
<td>DisplayName <strong>Italian</strong></td>
<td>Angolo</td>
</tr>
<tr>
<td>DisplayName <strong>Spanish</strong></td>
<td>ángulo</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeAngle</td>
</tr>
</tbody>
</table>

*(Read and Write property)*

52.146.16  **inputBacksideImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Backside Image

**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputBacksideImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName <strong>English</strong></td>
<td>Backside Image</td>
</tr>
<tr>
<td>DisplayName <strong>German</strong></td>
<td>Bild auf der Hinterseite</td>
</tr>
<tr>
<td>DisplayName <strong>French</strong></td>
<td>Image arrière</td>
</tr>
<tr>
<td>DisplayName <strong>Italian</strong></td>
<td>Immagine posteriore</td>
</tr>
<tr>
<td>DisplayName <strong>Spanish</strong></td>
<td>Imagen de reverso</td>
</tr>
<tr>
<td>Type</td>
<td></td>
</tr>
</tbody>
</table>

See Attribute inputBacksideImage for more details.
*(Read and Write property)*

52.146.17  **inputExtent as CIVectorMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Extent

**Notes:**

See Attribute inputExtent for more details.
*(Read and Write property)*
Name: inputExtent
Class: CIVectorMBS (CIVector)
DisplayName English: Extent
DisplayName German: Betrag
DisplayName French: tendue
DisplayName Italian: Ampiezza
DisplayName Spanish: Amplitud
Type: CIAttributeTypeRectangle

52.146.18  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image
**Notes:**
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)

52.146.19  inputRadius as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Radius
**Notes:**
Name: inputRadius
Class: double (NSNumber)
DisplayName English: Radius
DisplayName German: Radius
DisplayName French: Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
Type: CIAttributeTypeDistance

See Attribute inputRadius for more details.
52.146.20  inputShadowAmount as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Shadow Amount

**Notes:**

Name: inputShadowAmount  
Class: double (NSNumber)  
DisplayName English: Shadow Amount  
DisplayName German: Schattenumfang  
DisplayName French: Quantité d’ombre  
DisplayName Italian: Quantità ombreggiatura  
DisplayName Spanish: Cantidad de sombreado  
Type: CIAttributeTypeDistance

See Attribute inputShadowAmount for more details.  
(Read and Write property)

52.146.21  inputShadowExtent as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute ShadowExtent

**Notes:**

Name: inputShadowExtent  
Class: CIVectorMBS (CIVector)  
DisplayName English: ShadowExtent  
DisplayName German: ShadowExtent  
DisplayName French: ShadowExtent  
DisplayName Italian: ShadowExtent  
DisplayName Spanish: ShadowExtent  
Type: CIAttributeTypeRectangle

See Attribute inputShadowExtent for more details.  
(Read and Write property)
52.146.22  inputShadowSize as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute ShadowSize

**Notes:**

- **Name:** inputShadowSize
- **Class:** double (NSNumber)
- **DisplayName English:** ShadowSize
- **DisplayName German:** ShadowSize
- **DisplayName French:** ShadowSize
- **DisplayName Italian:** ShadowSize
- **DisplayName Spanish:** ShadowSize
- **Type:** CIAttributeTypeDistance

See Attribute inputShadowSize for more details.
(Read and Write property)

52.146.23  inputTargetImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Target Image

**Notes:**

- **Name:** inputTargetImage
- **Class:** CIImageMBS (CIImage)
- **DisplayName English:** Target Image
- **DisplayName German:** Zielbild
- **DisplayName French:** Image cible
- **DisplayName Italian:** Immagine target
- **DisplayName Spanish:** Imagen de destino
- **Type:** CIAttributeTypeImage

See Attribute inputTargetImage for more details.
(Read and Write property)

52.146.24  inputTime as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Time

**Notes:**
Name: inputTime
Class: double (NSNumber)
DisplayName English: Time
DisplayName German: Zeit
DisplayName French: Dure
DisplayName Italian: Tempo
DisplayName Spanish: Tiempo
Type: CIAttributeTypeTime

See Attribute inputTime for more details.
(Read and Write property)
52.147 class CIFilterParallelogramTileMBS

52.147.1 class CIFilterParallelogramTileMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Parallelogram Tile filter. **Notes:** Details for this filter:

- **FilterName:** CIParallelogramTile
- **DisplayName English:** Parallelogram Tile
- **DisplayName German:** Parallelogramme
- **DisplayName French:** Mosaque de paralllogrammes
- **DisplayName Italian:** Mosaico parallelogramma
- **DisplayName Spanish:** Mosaico paralelogramo

**Categories:**

- CICategoryTileEffect: Tile Effect
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- **inputImage:** Image
- **inputCenter:** Center
- **inputAngle:** Angle
- **inputAcuteAngle:** Acute Angle
- **inputWidth:** Width

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
52.147.2 Methods

52.147.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.147.4 Properties

52.147.5 Attribute inputAcuteAngle as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Parallelogram Tile attribute.
**Notes:**
This attribute should have this content:

Name: inputAcuteAngle  
Class: double  
Type: CIAttributeTypeAngle  
DisplayName English: Acute Angle  
DisplayName German: Spitzer Winkel  
DisplayName French: Angle aigu  
DisplayName Italian: Angolo acuto  
DisplayName Spanish: ngulo agudo  
DefaultNumber: 1.570796  
IdentityNumber: 1.570796  
SliderMaxNumber: 3.141593  
SliderMinNumber: -3.141593

(Read only property)

52.147.6 Attribute inputAngle as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Parallelogram Tile attribute.
**Notes:**
This attribute should have this content:
Name: inputAngle  
Class: double  
Type: CIAttributeTypeAngle

DisplayName English: Angle  
DisplayName German: Winkel  
DisplayName French: Angle  
DisplayName Italian: Angolo  
DisplayName Spanish: ngulo

DefaultNumber: 0  
IdentityNumber: 0  
SliderMaxNumber: 3.141593  
SliderMinNumber: -3.141593

(Read only property)

52.147.7 Attribute inputCenter as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Parallelogram Tile attribute.

**Notes:**

This attribute should have this content:

Name: inputCenter  
Class: CIVectorMBS  
Type: CIAttributeTypePosition

DisplayName English: Center  
DisplayName German: Mitte  
DisplayName French: Centre  
DisplayName Italian: Centro  
DisplayName Spanish: Centro

DefaultVector: [ 150 150 ]  
IdentityVector: n/a

(Read only property)

52.147.8 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Parallelogram Tile attribute.

**Notes:**
This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

**52.147.9 Attribute inputWidth as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Parallelogram Tile attribute.

**Notes:**
This attribute should have this content:

Name: inputWidth
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Anchura
DefaultNumber: 100
IdentityNumber: 100
SliderMaxNumber: 200
SliderMinNumber: 1

(Read only property)
### 52.147.10 inputAcuteAngle as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Acute Angle  
**Notes:**  
- Name: inputAcuteAngle  
- Class: double (NSNumber)  
- DisplayName English: Acute Angle  
- DisplayName German: Spitzer Winkel  
- DisplayName French: Angle aigu  
- DisplayName Italian: Angolo acuto  
- DisplayName Spanish: ngulo agudo  
- Type: CIAttributeTypeAngle  

See Attribute inputAcuteAngle for more details.  
(Read and Write property)

### 52.147.11 inputAngle as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Angle  
**Notes:**  
- Name: inputAngle  
- Class: double (NSNumber)  
- DisplayName English: Angle  
- DisplayName German: Winkel  
- DisplayName French: Angle  
- DisplayName Italian: Angolo  
- DisplayName Spanish: ngulo  
- Type: CIAttributeTypeAngle  

See Attribute inputAngle for more details.  
(Read and Write property)

### 52.147.12 inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Center  
**Notes:**
### 52.147.13  `inputImage` as `CIImageMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>

See Attribute `inputImage` for more details.
(Read and Write property)

### 52.147.14  `inputWidth` as `double`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Width

**Notes:**

See Attribute `inputWidth` for more details.
(Read and Write property)
Name: inputWidth
Class: double (NSNumber)
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Anchura
Type: CIAtributeTypeDistance
52.148.1 class CIFilterPDF417BarcodeGeneratorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage PDF417 Barcode Generator filter.

**Notes:**
Details for this filter:

- **FilterName:** CIPDF417BarcodeGenerator
- **DisplayName English:** PDF417 Barcode Generator
- **DisplayName German:** PDF417 Barcode-Generator
- **DisplayName French:** Générateur de code-barres PDF417
- **DisplayName Italian:** Generatore codice a barre PDF417
- **DisplayName Spanish:** Generador de códigos de barras PDF417

**Categories:**

- CICategoryGenerator: Generator
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- **inputMessage:** Message
- **inputMinWidth:** MinWidth
- **inputMaxWidth:** MaxWidth
- **inputMinHeight:** MinHeight
- **inputMaxHeight:** MaxHeight
- **inputDataColumns:** DataColumns
- **inputRows:** Rows
- **inputPreferredAspectRatio:** PreferredAspectRatio
- **inputCompactionMode:** CompactionMode
- **inputCompactStyle:** CompactStyle
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- inputCorrectionLevel: CorrectionLevel
- inputAlwaysSpecifyCompaction: AlwaysSpecifyCompaction

Output:

- outputImage
- outputCGImage

Subclass of the CIFilterMBS class.

52.148.2 Methods

52.148.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.148.4 Properties

52.148.5 Attribute inputAlwaysSpecifyCompaction as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the PDF417 Barcode Generator attribute.
**Notes:**

This attribute should have this content:

Name: inputAlwaysSpecifyCompaction
Class: double
DisplayName: AlwaysSpecifyCompaction
DefaultNumber: 0
IdentityNumber: 0
MaxNumber: 1
MinNumber: 0
SliderMaxNumber: 1
SliderMinNumber: 0

(Read only property)
52.148.6  Attribute inputCompactionMode as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the PDF417 Barcode Generator attribute. **Notes:**

This attribute should have this content:

```
Name:     inputCompactionMode
Class:    double
DisplayName:  CompactionMode
DefaultNumber:  0
IdentityNumber:  0
MaxNumber:  3
MinNumber:  0
SliderMaxNumber:  3
SliderMinNumber:  0
```

(Read only property)

52.148.7  Attribute inputCompactStyle as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the PDF417 Barcode Generator attribute. **Notes:**

This attribute should have this content:

```
Name:     inputCompactStyle
Class:    double
DisplayName:  CompactStyle
DefaultNumber:  0
IdentityNumber:  0
MaxNumber:  1
MinNumber:  0
SliderMaxNumber:  1
SliderMinNumber:  0
```

(Read only property)
52.148.8 Attribute inputCorrectionLevel as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Details about the PDF417 Barcode Generator attribute.
Notes:
This attribute should have this content:

```
Name: inputCorrectionLevel
Class: double
DisplayName: CorrectionLevel
DefaultNumber: 0
IdentityNumber: 0
MaxNumber: 8
MinNumber: 0
SliderMaxNumber: 8
SliderMinNumber: 0
```

(Read only property)

52.148.9 Attribute inputDataColumns as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Details about the PDF417 Barcode Generator attribute.
Notes:
This attribute should have this content:

```
Name: inputDataColumns
Class: double
DisplayName: DataColumns
DefaultNumber: 0
IdentityNumber: 0
MaxNumber: 30
MinNumber: 1
SliderMaxNumber: 30
SliderMinNumber: 1
```

(Read only property)
52.148.10 Attribute inputMaxHeight as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the PDF417 Barcode Generator attribute.

**Notes:**

This attribute should have this content:

```plaintext
Name: inputMaxHeight
Class: double
DisplayName: MaxHeight
DefaultNumber: 0
IdentityNumber: 0
MaxNumber: 283
MinNumber: 13
SliderMaxNumber: 283
SliderMinNumber: 13
```

(Read only property)

52.148.11 Attribute inputMaxWidth as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the PDF417 Barcode Generator attribute.

**Notes:**

This attribute should have this content:

```plaintext
Name: inputMaxWidth
Class: double
DisplayName: MaxWidth
DefaultNumber: 0
IdentityNumber: 0
MaxNumber: 583
MinNumber: 56
SliderMaxNumber: 583
SliderMinNumber: 56
```

(Read only property)
52.148.12  AttributeinputMessage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the PDF417 Barcode Generator attribute.  
**Notes:** This attribute should have this content:

- **Name:** inputMessage
- **Class:** Memoryblock
- **DisplayName:** Message
- **DefaultNumber:** 0
- **IdentityNumber:** 0

(Read only property)

52.148.13  AttributeinputMinHeight as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the PDF417 Barcode Generator attribute.  
**Notes:** This attribute should have this content:

- **Name:** inputMinHeight
- **Class:** double
- **DisplayName:** MinHeight
- **DefaultNumber:** 0
- **IdentityNumber:** 0
- **MaxNumber:** 283
- **MinNumber:** 13
- **SliderMaxNumber:** 283
- **SliderMinNumber:** 13

(Read only property)

52.148.14  AttributeinputMinWidth as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the PDF417 Barcode Generator attribute.
52.148.15  **Attribute inputPreferredAspectRatio as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the PDF417 Barcode Generator attribute.

**Notes:**
This attribute should have this content:

Name:       inputPreferredAspectRatio  
Class:      double  
DisplayName:  PreferredAspectRatio  
DefaultNumber:  0  
IdentityNumber:  0  
MaxNumber:  2.147484e+9  
MinNumber:  0  
SliderMaxNumber:  2.147484e+9  
SliderMinNumber:  0

(Read only property)
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Notes:
This attribute should have this content:

Name: inputRows
Class: double
DisplayName: Rows
DefaultNumber: 0
IdentityNumber: 0
MaxNumber: 90
MinNumber: 3
SliderMaxNumber: 90
SliderMinNumber: 3

(Read only property)

52.148.17  inputAlwaysSpecifyCompaction as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute AlwaysSpecifyCompaction

Notes:

Name: inputAlwaysSpecifyCompaction
Class: double (NSNumber)
DisplayName English: AlwaysSpecifyCompaction
DisplayName German: AlwaysSpecifyCompaction
DisplayName French: AlwaysSpecifyCompaction
DisplayName Italian: AlwaysSpecifyCompaction
DisplayName Spanish: AlwaysSpecifyCompaction

Type:

See Attribute inputAlwaysSpecifyCompaction for more details.
(Read and Write property)

52.148.18  inputCompactionMode as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute CompactionMode

Notes:

See Attribute inputCompactionMode for more details.
### 52.148. inputCompactStyle as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute CompactStyle
**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputCompactStyle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>CompactStyle</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>CompactStyle</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>CompactStyle</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>CompactStyle</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>CompactStyle</td>
</tr>
</tbody>
</table>

See Attribute inputCompactStyle for more details.  
(Read and Write property)

### 52.148.20 inputCorrectionLevel as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute CorrectionLevel
**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputCorrectionLevel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>CompactStyle</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>CompactStyle</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>CompactStyle</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>CompactStyle</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>CompactStyle</td>
</tr>
</tbody>
</table>

See Attribute inputCorrectionLevel for more details.  
(Read and Write property)
52.148.21  **inputDataColumns as double**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute DataColumns

**Notes:**

Name: inputDataColumns
Class: double (NSNumber)
DisplayName English: DataColumns
DisplayName German: DataColumns
DisplayName French: DataColumns
DisplayName Italian: DataColumns
DisplayName Spanish: DataColumns
Type:

See AttributeinputDataColumns for more details.

(Read and Write property)

52.148.22  **inputMaxHeight as double**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute MaxHeight

**Notes:**

Name: inputMaxHeight
Class: double (NSNumber)
DisplayName English: MaxHeight
DisplayName German: MaxHeight
DisplayName French: MaxHeight
DisplayName Italian: MaxHeight
DisplayName Spanish: MaxHeight
Type:

See AttributeinputMaxHeight for more details.
### 52.148.23 inputMaxWidth as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute MaxWidth

**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputMaxWidth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>MaxWidth</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>MaxWidth</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>MaxWidth</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>MaxWidth</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>MaxWidth</td>
</tr>
<tr>
<td>Type</td>
<td></td>
</tr>
</tbody>
</table>

See Attribute inputMaxWidth for more details.
(Read and Write property)

### 52.148.24 inputMessage as Memoryblock

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Message

**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputMessage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>Memoryblock (NSData)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Message</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Message</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Message</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Message</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Message</td>
</tr>
<tr>
<td>Type</td>
<td></td>
</tr>
</tbody>
</table>

See Attribute inputMessage for more details.
(Read and Write property)
52.148.25  inputMinHeight as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute MinHeight

**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputMinHeight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>MinHeight</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>MinHeight</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>MinHeight</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>MinHeight</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>MinHeight</td>
</tr>
</tbody>
</table>

Type:

See Attribute inputMinHeight for more details.
(Read and Write property)

52.148.26  inputMinWidth as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute MinWidth

**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputMinWidth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>MinWidth</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>MinWidth</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>MinWidth</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>MinWidth</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>MinWidth</td>
</tr>
</tbody>
</table>

Type:

See Attribute inputMinWidth for more details.
(Read and Write property)

52.148.27  inputPreferredAspectRatio as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute PreferredAspectRatio

**Notes:**
52.148. **CLASS CIFILTERPDF417BARCODEGENERATORMBS**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputPreferredAspectRatio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>PreferredAspectRatio</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>PreferredAspectRatio</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>PreferredAspectRatio</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>PreferredAspectRatio</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>PreferredAspectRatio</td>
</tr>
<tr>
<td>Type:</td>
<td></td>
</tr>
</tbody>
</table>

See Attribute `inputPreferredAspectRatio` for more details.
(Read and Write property)

### 52.148.28 inputRows as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Rows

**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputRows</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Rows</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Rows</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Rows</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Rows</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Rows</td>
</tr>
<tr>
<td>Type:</td>
<td></td>
</tr>
</tbody>
</table>

See Attribute `inputRows` for more details.
(Read and Write property)
CHAPTER 52. COREIMAGE

52.149 class CIFilterPerspectiveCorrectionMBS

52.149.1 class CIFilterPerspectiveCorrectionMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Perspective Correction filter.

**Notes:**

Details for this filter:

- **FilterName:** CIPerspectiveCorrection
- **DisplayName English:** Perspective Correction
- **DisplayName German:** Perspektivenkorrektur
- **DisplayName French:** Correction de la perspective
- **DisplayName Italian:** Correzione prospettiva
- **DisplayName Spanish:** Correccin de la perspectiva

**Categories:**

- CICategoryGeometryAdjustment: Geometry Adjustment
- CICategoryStillImage: Still Image
- CICategoryVideo: Video
- CICategoryBuiltIn: Built-In

**Input:**

- **inputImage:** Image
- **inputTopLeft:** Top Left
- **inputTopRight:** Top Right
- **inputBottomRight:** Bottom Right
- **inputBottomLeft:** Bottom Left
- **inputCrop:** Crop

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
52.149.2 Methods

52.149.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.149.4 Properties

52.149.5 Attribute inputBottomLeft as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Perspective Correction attribute.
**Notes:**
This attribute should have this content:

- **Name:** inputBottomLeft
- **Class:** CIVectorMBS
- **Type:** CIAttributeTypePosition
- **DisplayName English:** Bottom Left
- **DisplayName German:** Unten links
- **DisplayName French:** En bas gauche
- **DisplayName Italian:** In basso a sinistra
- **DisplayName Spanish:** Abajo izquierda
- **DefaultVector:** [155 153]
- **IdentityVector:** n/a

(Read only property)

52.149.6 Attribute inputBottomRight as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Perspective Correction attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.149.7 Attribute inputCrop as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Perspective Correction attribute. **Notes:** This attribute should have this content:

Name: inputCrop  
Class: double  
Type: CIAttributeTypeBoolean  
DisplayName: Crop  
DefaultNumber: 1  
IdentityNumber: 0

(Read only property)

52.149.8 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Perspective Correction attribute. **Notes:** This attribute should have this content:

(Read only property)
52.149. **CLASS CIFILTERPERSPECTIVECORRECTIONMBS**

Name: inputImage  
Class: CIImageMBS  
Type: CIAttributeTypeImage  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
DefaultNumber: 0  
IdentityNumber: 0

52.149.9 **Attribute inputTopLeft as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Perspective Correction attribute.  
**Notes:**  
This attribute should have this content:

- Name: inputTopLeft  
- Class: CIVectorMBS  
- Type: CIAttributeTypePosition  
- DisplayName English: Top Left  
- DisplayName German: Oben links  
- DisplayName French: En haut gauche  
- DisplayName Italian: In alto a sinistra  
- DisplayName Spanish: Arriba izquierda  
- DefaultVector: [118 484]  
- IdentityVector: n/a

(Read only property)

52.149.10 **Attribute inputTopRight as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Perspective Correction attribute.  
**Notes:**  
This attribute should have this content:

(Read only property)
### 52.149.11 `inputBottomLeft` as `CIVectorMBS`

**MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**  
**Function:** The attribute Bottom Left  
**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th><code>inputBottomLeft</code></th>
<th>Class</th>
<th><code>CIVectorMBS</code> (CIVector)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display Name</td>
<td>Bottom Left</td>
<td>German</td>
<td>Unten links</td>
</tr>
<tr>
<td></td>
<td></td>
<td>French</td>
<td>En bas gauche</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Italian</td>
<td>In basso a sinistra</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spanish</td>
<td>Abajo izquierda</td>
</tr>
<tr>
<td>Type</td>
<td><code>CIAttributeTypePosition</code></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See Attribute `inputBottomLeft` for more details.  
(Read and Write property)

### 52.149.12 `inputBottomRight` as `CIVectorMBS`

**MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**  
**Function:** The attribute Bottom Right  
**Notes:**

See Attribute `inputBottomRight` for more details.  
(Read and Write property)

### 52.149.13 `inputCrop` as double

**MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**  
**Function:** The attribute Crop
52.149.  CLASS CIFILTERPERSPECTIVECORRECTIONMBS

Name: inputBottomRight
Class: CIVectorMBS (CIVector)
DisplayName English: Bottom Right
DisplayName German: Unten rechts
DisplayName French: En bas droite
DisplayName Italian: In basso a destra
DisplayName Spanish: Abajo derecha
Type: CIAttributeTypePosition

Notes:

Name: inputCrop
Class: double (NSNumber)
DisplayName English: Crop
DisplayName German: Crop
DisplayName French: Crop
DisplayName Italian: Crop
DisplayName Spanish: Crop
Type: CIAttributeTypeBoolean

See AttributeinputCrop for more details.
(Read and Write property)

52.149.14  inputImage as CII mageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

Notes:

Name: inputImage
Class: CII mageMBS (CII mage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See AttributeinputImage for more details.
(Read and Write property)
52.149.15  inputTopLeft as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Top Left  
**Notes:**

Name: inputTopLeft  
Class: CIVectorMBS (CIVector)  
DisplayName English: Top Left  
DisplayName German: Oben links  
DisplayName French: En haut gauche  
DisplayName Italian: In alto a sinistra  
DisplayName Spanish: Arriba izquierda  
Type: CIAttributeTypePosition

See Attribute inputTopLeft for more details.  
(Read and Write property)

52.149.16  inputTopRight as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Top Right  
**Notes:**

Name: inputTopRight  
Class: CIVectorMBS (CIVector)  
DisplayName English: Top Right  
DisplayName German: Oben rechts  
DisplayName French: En haut droite  
DisplayName Italian: In alto a destra  
DisplayName Spanish: Arriba derecha  
Type: CIAttributeTypePosition

See Attribute inputTopRight for more details.  
(Read and Write property)
class CIFilterPerspectiveTileMBS

FilterName: CIPerspectiveTile
DisplayName English: Perspective Tile
DisplayName German: Perspektivisch kacheln
DisplayName French: Mosaque en perspective
DisplayName Italian: Mosaico prospettiva
DisplayName Spanish: Mosaico en perspectiva

Categories:

- CICategoryTileEffect: Tile Effect
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

Input:

- inputImage: Image
- inputTopLeft: Top Left
- inputTopRight: Top Right
- inputBottomRight: Bottom Right
- inputBottomLeft: Bottom Left

Output:

- outputImage

Subclass of the CIFilterMBS class.
52.150.2 Methods

52.150.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.150.4 Properties

52.150.5 Attribute inputBottomLeft as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Perspective Tile attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputBottomLeft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIVectorMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypePosition</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Bottom Left</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Unten links</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>En bas gauche</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>In basso a sinistra</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Abajo izquierda</td>
</tr>
<tr>
<td>Default Vector</td>
<td>[ 155 153 ]</td>
</tr>
<tr>
<td>Identity Vector</td>
<td>n/a</td>
</tr>
</tbody>
</table>

(Read only property)

52.150.6 Attribute inputBottomRight as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Perspective Tile attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.150. **CLASS CIFILTERPERSPECTIVETILEMBS**

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputBottomRight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIVectorMBS</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypePosition</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Bottom Right</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Unten rechts</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>En bas droite</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>In basso a destra</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Abajo derecha</td>
</tr>
<tr>
<td>DefaultVector:</td>
<td>[ 548 140 ]</td>
</tr>
<tr>
<td>IdentityVector:</td>
<td>n/a</td>
</tr>
</tbody>
</table>

**52.150.7 Attribute inputImage as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Perspective Tile attribute.

**Notes:**

This attribute should have this content:

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber:</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber:</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

**52.150.8 Attribute inputTopLeft as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Perspective Tile attribute.

**Notes:**

This attribute should have this content:

(Read only property)
CHAPTER 52. COREIMAGE

Name: inputTopLeft
Class: CIVectorMBS
Type: CIAttributeTypePosition
DisplayName English: Top Left
DisplayName German: Oben links
DisplayName French: En haut gauche
DisplayName Italian: In alto a sinistra
DisplayName Spanish: Arriba izquierda
DefaultVector: [ 118 484 ]
IdentityVector: n/a

52.150.9 Attribute inputTopRight as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Perspective Tile attribute.

**Notes:**

This attribute should have this content:

Name: inputTopRight
Class: CIVectorMBS
Type: CIAttributeTypePosition
DisplayName English: Top Right
DisplayName German: Oben rechts
DisplayName French: En haut droite
DisplayName Italian: In alto a destra
DisplayName Spanish: Arriba derecha
DefaultVector: [ 646 507 ]
IdentityVector: n/a

(Read only property)

52.150.10 inputBottomLeft as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Bottom Left

**Notes:**

See Attribute inputBottomLeft for more details.
(Read and Write property)
Name: inputBottomLeft
Class: CIVectorMBS (CIVector)
DisplayName English: Bottom Left
DisplayName German: Unten links
DisplayName French: En bas gauche
DisplayName Italian: In basso a sinistra
DisplayName Spanish: Abajo izquierda
Type: CIAttributeTypePosition

52.150.11 inputBottomRight as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Bottom Right

**Notes:**

Name: inputBottomRight
Class: CIVectorMBS (CIVector)
DisplayName English: Bottom Right
DisplayName German: Unten rechts
DisplayName French: En bas droite
DisplayName Italian: In basso a destra
DisplayName Spanish: Abajo derecha
Type: CIAttributeTypePosition

See AttributeinputBottomRight for more details.
(Read and Write property)

52.150.12 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See AttributeinputImage for more details.
52.150.13  inputTopLeft as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Top Left

**Notes:**

- **Name:** inputTopLeft
- **Class:** CIVectorMBS (CIVector)
- **DisplayName English:** Top Left
- **DisplayName German:** Oben links
- **DisplayName French:** En haut gauche
- **DisplayName Italian:** In alto a sinistra
- **DisplayName Spanish:** Arriba izquierda
- **Type:** CIAttributeTypePosition

See AttributeinputTopLeft for more details.
(Read and Write property)

52.150.14  inputTopRight as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Top Right

**Notes:**

- **Name:** inputTopRight
- **Class:** CIVectorMBS (CIVector)
- **DisplayName English:** Top Right
- **DisplayName German:** Oben rechts
- **DisplayName French:** En haut droite
- **DisplayName Italian:** In alto a destra
- **DisplayName Spanish:** Arriba derecha
- **Type:** CIAttributeTypePosition

See AttributeinputTopRight for more details.
(Read and Write property)
52.151.1 class CIFilterPerspectiveTransformMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Perspective Transform filter.

**Notes:**

Details for this filter:

- **FilterName:** CIPerspectiveTransform
- **DisplayName English:** Perspective Transform
- **DisplayName German:** Perspektivisch transformieren
- **DisplayName French:** Transformation en perspective
- **DisplayName Italian:** Trasformazione prospettiva
- **DisplayName Spanish:** Transformación en perspectiva

**Categories:**

- **CICategoryGeometryAdjustment:** Geometry Adjustment
- **CICategoryVideo:** Video
- **CICategoryStillImage:** Still Image
- **CICategoryBuiltIn:** Built-In

**Input:**

- **inputImage:** Image
- **inputTopLeft:** Top Left
- **inputTopRight:** Top Right
- **inputBottomRight:** Bottom Right
- **inputBottomLeft:** Bottom Left

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
52.151.2 Methods

52.151.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.151.4 Properties

52.151.5 `AttributeinputBottomLeft` as `CIAttributeMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Perspective Transform attribute.
**Notes:**
This attribute should have this content:

Name:       inputBottomLeft  
Class:      CIVectorMBS  
Type:       CIAttributeTypePosition  
DisplayName English: Bottom Left  
DisplayName German: Unten links  
DisplayName French: En bas gauche  
DisplayName Italian: In basso a sinistra  
DisplayName Spanish: Abajo izquierda  
DefaultVector: [155 153]  
IdentityVector: n/a

(Read only property)

52.151.6 `AttributeinputBottomRight` as `CIAttributeMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Perspective Transform attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.151. **CLASS CIFILTERPERSPECTIVETRANSFORMMBS**

Name: inputBottomRight
Class: CIVectorMBS
Type: CIAtributeTypePosition
DisplayName English: Bottom Right
DisplayName German: Unten rechts
DisplayName French: En bas droite
DisplayName Italian: In basso a destra
DisplayName Spanish: Abajo derecha
DefaultVector: [ 548 140 ]
IdentityVector: n/a

52.151.7 **AttributeInputImage as CIAtributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Perspective Transform attribute.
**Notes:**
This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAtributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.151.8 **AttributeInputTopLeft as CIAtributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Perspective Transform attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.151.9  Attribute `inputTopRight` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Perspective Transform attribute.

**Notes:**

This attribute should have this content:

```
Name: inputTopRight
Class: CIVectorMBS
Type: CIAttributeTypePosition
DisplayName English: Top Right
DisplayName German: Oben rechts
DisplayName French: En haut droite
DisplayName Italian: In alto a destra
DisplayName Spanish: Arriba derecha
DefaultVector: [ 646 507 ]
IdentityVector: n/a
```

(Read only property)

52.151.10  `inputBottomLeft` as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Bottom Left.

**Notes:**

See Attribute `inputBottomLeft` for more details.

(Read and Write property)
52.151. **CLASS CIFILTERPERSPECTIVETRANSFORMMBS**

Name: inputBottomLeft  
Class: CIVectorMBS (CIVector)  
DisplayName English: Bottom Left  
DisplayName German: Unten links  
DisplayName French: En bas gauche  
DisplayName Italian: In basso a sinistra  
DisplayName Spanish: Abajo izquierda  
Type: CIAttributeTypePosition

52.151.11 **inputBottomRight as CIVectorMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Bottom Right  
**Notes:**

Name: inputBottomRight  
Class: CIVectorMBS (CIVector)  
DisplayName English: Bottom Right  
DisplayName German: Unten rechts  
DisplayName French: En bas droite  
DisplayName Italian: In basso a destra  
DisplayName Spanish: Abajo derecha  
Type: CIAttributeTypePosition

See Attribute inputBottomRight for more details.  
(Read and Write property)

52.151.12 **inputImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image  
**Notes:**

Name: inputImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
52.151.13  inputTopLeft as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Top Left.

**Notes:**

Name: inputTopLeft
Class: CIVectorMBS (CIVector)
DisplayName English: Top Left
DisplayName German: Oben links
DisplayName French: En haut gauche
DisplayName Italian: In alto a sinistra
DisplayName Spanish: Arriba izquierda
Type: CIAttributeTypePosition

See AttributeinputTopLeft for more details.
(Read and Write property)

52.151.14  inputTopRight as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Top Right.

**Notes:**

Name: inputTopRight
Class: CIVectorMBS (CIVector)
DisplayName English: Top Right
DisplayName German: Oben rechts
DisplayName French: En haut droite
DisplayName Italian: In alto a destra
DisplayName Spanish: Arriba derecha
Type: CIAttributeTypePosition

See AttributeinputTopRight for more details.
(Read and Write property)
52.152.1  class CIFilterPerspectiveTransformWithExtentMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Perspective Transform with Extent filter.

**Notes:**
Details for this filter:

- **FilterName:** CIFilterPerspectiveTransformWithExtent
- **DisplayName English:** Perspective Transform with Extent
- **DisplayName German:** Perspektivische Transformation mit Ausbreitung
- **DisplayName French:** Transformation de perspective avec Extent
- **DisplayName Italian:** Trasformazione prospettiva con ampiezza
- **DisplayName Spanish:** Transformación en perspectiva con amplitud

**Categories:**
- **CICategoryGeometryAdjustment:** Geometry Adjustment
- **CICategoryVideo:** Video
- **CICategoryStillImage:** Still Image
- **CICategoryBuiltIn:** Built-In

**Input:**
- **inputImage:** Image
- **inputExtent:** Extent
- **inputTopLeft:** Top Left
- **inputTopRight:** Top Right
- **inputBottomRight:** Bottom Right
- **inputBottomLeft:** Bottom Left

**Output:**
- **outputImage

Subclass of the CIFilterMBS class.
52.152.2 Methods

52.152.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.152.4 Properties

52.152.5 Attribute inputBottomLeft as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Perspective Transform with Extent attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputBottomLeft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIVectorMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypePosition</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Bottom Left</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Unten links</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>En bas gauche</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>In basso a sinistra</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Abajo izquierda</td>
</tr>
<tr>
<td>DefaultVector</td>
<td>[ 155 153 ]</td>
</tr>
<tr>
<td>IdentityVector</td>
<td>n/a</td>
</tr>
</tbody>
</table>

(Read only property)

52.152.6 Attribute inputBottomRight as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Perspective Transform with Extent attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.152. **CLASS CIFILTERPERSPECTIVETRANSFORMWITHEXTENTMBS**

Name: inputBottomRight  
Class: CIVectorMBS  
Type: CIAttributeTypePosition  
DisplayName English: Bottom Right  
DisplayName German: Unten rechts  
DisplayName French: En bas droite  
DisplayName Italian: In basso a destra  
DisplayName Spanish: Abajo derecha  
DefaultVector: [548 140]  
IdentityVector: n/a

52.152.7 **Attribute inputExtent as CIAttributeMBS**

Notes:  
This attribute should have this content:

Name: inputExtent  
Class: CIVectorMBS  
Type: CIAttributeTypeRectangle  
DisplayName English: Extent  
DisplayName German: Betrag  
DisplayName French: tendue  
DisplayName Italian: Ampiezza  
DisplayName Spanish: Amplitud  
DefaultVector: [0 0 300 300]  
IdentityVector: n/a

(Read only property)

52.152.8 **Attribute inputImage as CIAttributeMBS**

Notes:  
This attribute should have this content:

(Read only property)
Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

52.152.9 Attribute inputTopLeft as CIAttributeMBS

Notes:
This attribute should have this content:

Name: inputTopLeft
Class: CIVectorMBS
Type: CIAttributeTypePosition
DisplayName English: Top Left
DisplayName German: Oben links
DisplayName French: En haut gauche
DisplayName Italian: In alto a sinistra
DisplayName Spanish: Arriba izquierda
DefaultVector: [ 118 484 ]
IdentityVector: n/a

(Read only property)

52.152.10 Attribute inputTopRight as CIAttributeMBS

Notes:
This attribute should have this content:

(Read only property)
52.152.11 inputBottomLeft as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Bottom Left

**Notes:**

See Attribute inputBottomLeft for more details.
(Read and Write property)

52.152.12 inputBottomRight as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Bottom Right

**Notes:**

See Attribute inputBottomRight for more details.
(Read and Write property)

52.152.13 inputExtent as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Extent
**Name:** inputBottomRight  
**Class:** CIVectorMBS (CIVector)  
**DisplayName English:** Bottom Right  
**DisplayName German:** Unten rechts  
**DisplayName French:** En bas droite  
**DisplayName Italian:** In basso a destra  
**DisplayName Spanish:** Abajo derecha  
**Type:** CIAttributeTypePosition

**Notes:**

**Name:** inputExtent  
**Class:** CIVectorMBS (CIVector)  
**DisplayName English:** Extent  
**DisplayName German:** Betrag  
**DisplayName French:** tendue  
**DisplayName Italian:** Ampiezza  
**DisplayName Spanish:** Amplitud  
**Type:** CIAttributeTypeRectangle

See Attribute inputExtent for more details.  
(Read and Write property)

### 52.152.14 inputImage as CIImageMBS

**Function:** The attribute Image  
**Notes:**

**Name:** inputImage  
**Class:** CIImageMBS (CIImage)  
**DisplayName English:** Image  
**DisplayName German:** Bild  
**DisplayName French:** Image  
**DisplayName Italian:** Immagine  
**DisplayName Spanish:** Imagen  
**Type:** CIAttributeTypeImage

See Attribute inputImage for more details.  
(Read and Write property)
52.152.15  **inputTopLeft** as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Top Left  
**Notes:**

Name: inputTopLeft  
Class: CIVectorMBS (CIVector)  
DisplayName English: Top Left  
DisplayName German: Oben links  
DisplayName French: En haut gauche  
DisplayName Italian: In alto a sinistra  
DisplayName Spanish: Arriba izquierda  
Type: CIAttributeTypePosition

See Attribute inputTopLeft for more details.  
(Read and Write property)

52.152.16  **inputTopRight** as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Top Right  
**Notes:**

Name: inputTopRight  
Class: CIVectorMBS (CIVector)  
DisplayName English: Top Right  
DisplayName German: Oben rechts  
DisplayName French: En haut droite  
DisplayName Italian: In alto a destra  
DisplayName Spanish: Arriba derecha  
Type: CIAttributeTypePosition

See Attribute inputTopRight for more details.  
(Read and Write property)
52.153 class CILFilterPhotoEffectChromeMBS

52.153.1 class CILFilterPhotoEffectChromeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Photo Effect Chrome filter.

**Notes:**

Details for this filter:

- **FilterName:** CIPhotoEffectChrome
- **DisplayName English:** Photo Effect Chrome
- **DisplayName German:** Fotoeffekt Chrom
- **DisplayName French:** Effet de photo Chrom
- **DisplayName Italian:** Effetto foto Chrome
- **DisplayName Spanish:** Efecto fotográfico Chrome

**Categories:**

- CICategoryColorEffect: Color Effect
- CICategoryVideo: Video
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In
- CICategoryXMPSerializable: CICategoryXMPSerializable

**Input:**

- inputImage: Image

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.153.2 Methods

52.153.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.153.4 Properties

52.153.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Photo Effect Chrome attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.153.6 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image
**Notes:**
See Attribute inputImage for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name:</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>
52.154.1 class CIFilterPhotoEffectFadeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Photo Effect Fade filter.

**Notes:**
Details for this filter:

- **FilterName:** CIPhotoEffectFade
- **DisplayName English:** Photo Effect Fade
- **DisplayName German:** Fotoeffekt Alt
- **DisplayName French:** Effet de photo Fondu
- **DisplayName Italian:** Effetto foto Dissolvenza
- **DisplayName Spanish:** Efecto fotográfico Fundido

**Categories:**

- CICategoryColorEffect: Color Effect
- CICategoryVideo: Video
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In
- CICategoryXMPSerializable: CICategoryXMPSerializable

**Input:**

- inputImage: Image

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.154.2 Methods

52.154.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

**Notes:** On success the handle property is not zero and the filter has the default values set.

52.154.4 Properties

52.154.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Photo Effect Fade attribute.

**Notes:**

This attribute should have this content:

```
Name:           inputImage
Class:          CIImageMBS
Type:           CIAttributeTypeImage
DisplayName English:  Image
DisplayName German:  Bild
DisplayName French:  Image
DisplayName Italian: Immagine
DisplayName Spanish:  Imagen
DefaultNumber:   0
IdentityNumber:  0
```

(Read only property)

52.154.6 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**

See Attribute inputImage for more details.

(Read and Write property)
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage
52.155 class CIFilterPhotoEffectInstantMBS

52.155.1 class CIFilterPhotoEffectInstantMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Photo Effect Instant filter.

**Notes:** Details for this filter:

- **FilterName:** CIPhotoEffectInstant
- **DisplayName English:** Photo Effect Instant
- **DisplayName German:** Fotoeffekt Sofortbild
- **DisplayName French:** Effet de photo Instantan
- **DisplayName Italian:** Effetto foto Instant
- **DisplayName Spanish:** Efecto fotográfico Instantneo

**Categories:**

- CICategoryColorEffect: Color Effect
- CICategoryVideo: Video
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In
- CICategoryXMPSerializable: CICategoryXMPSerializable

**Input:**

- inputImage: Image

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.155.2 Methods

52.155.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.155.4 Properties

52.155.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Photo Effect Instant attribute.
**Notes:**
This attribute should have this content:

- **Name:** inputImage
- **Class:** CIImageMBS
- **Type:** CIAttributeTypeImage
- **DisplayName English:** Image
- **DisplayName German:** Bild
- **DisplayName French:** Image
- **DisplayName Italian:** Immagine
- **DisplayName Spanish:** Imagen
- **DefaultNumber:** 0
- **IdentityNumber:** 0

*(Read only property)*

52.155.6 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image
**Notes:**
See Attribute inputImage for more details.
*(Read and Write property)*
<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>
52.156.1 class CIFilterPhotoEffectMonoMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Photo Effect Mono filter.

**Notes:**
Details for this filter:

FilterName: CIPhotoEffectMono
DisplayName English: Photo Effect Mono
DisplayName German: Fotoeffekt S/W hell
DisplayName French: Effet de photo Mono
DisplayName Italian: Effetto foto Mono
DisplayName Spanish: Efecto fotográfico Mono

**Categories:**
- CICategoryColorEffect: Color Effect
- CICategoryVideo: Video
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In
- CICategoryXMPSerializable: CICategoryXMPSerializable

**Input:**
- inputImage: Image

**Output:**
- outputImage

Subclass of the CIFilterMBS class.
52.156.2 Methods

52.156.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The constructor. Notes: On success the handle property is not zero and the filter has the default values set.

52.156.4 Properties

52.156.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Details about the Photo Effect Mono attribute. Notes: This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.156.6 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The attribute Image Notes: See Attribute inputImage for more details. (Read and Write property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>
52.157 class CIFilterPhotoEffectNoirMBS

52.157.1 class CIFilterPhotoEffectNoirMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Photo Effect Noir filter.

**Notes:**
Details for this filter:

FilterName: CIPhotoEffectNoir
DisplayName English: Photo Effect Noir
DisplayName German: Fotoeffekt S/W dunkel
DisplayName French: Effet de photo Noir
DisplayName Italian: Effetto foto Noir
DisplayName Spanish: Efecto fotográfico Noir

Categories:

- CICategoryColorEffect: Color Effect
- CICategoryVideo: Video
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In
- CICategoryXMPSerializable: CICategoryXMPSerializable

**Input:**

- inputImage: Image

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.157.2 Methods

52.157.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.157.4 Properties

52.157.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Photo Effect Noir attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.157.6 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image
**Notes:**
See Attribute inputImage for more details.
(Read and Write property)
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage
MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Photo Effect Process filter.

**Notes:**
Details for this filter:

- **FilterName:** CIPhotoEffectProcess
- **DisplayName English:** Photo Effect Process
- **DisplayName German:** Fotoeffekt Prozess
- **DisplayName French:** Effet de photo Traitement
- **DisplayName Italian:** Effetto foto Processing
- **DisplayName Spanish:** Efecto fotográfico Procesamiento

**Categories:**

- CICategoryColorEffect: Color Effect
- CICategoryVideo: Video
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In
- CICategoryXMPSerializable: CICategoryXMPSerializable

**Input:**

- **inputImage: Image**

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
52.158.2 Methods

52.158.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.158.4 Properties

52.158.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Photo Effect Process attribute.
**Notes:**
This attribute should have this content:

- **Name:** inputImage
- **Class:** CIImageMBS
- **Type:** CIAttributeTypeImage
- **DisplayName English:** Image
- **DisplayName German:** Bild
- **DisplayName French:** Image
- **DisplayName Italian:** Immagine
- **DisplayName Spanish:** Imagen
- **DefaultNumber:** 0
- **IdentityNumber:** 0

(Read only property)

52.158.6 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image
**Notes:**
See Attribute inputImage for more details.
(Read and Write property)
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage
52.159 class CIFilterPhotoEffectTonalMBS

52.159.1 class CIFilterPhotoEffectTonalMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Photo Effect Tonal filter.

**Notes:**
Details for this filter:

- **FilterName:** CIPhotoEffectTonal
- **DisplayName English:** Photo Effect Tonal
- **DisplayName German:** Fotoeffekt S/W mittel
- **DisplayName French:** Effet de photo Tonalits
- **DisplayName Italian:** Effetto foto Tonale
- **DisplayName Spanish:** Efecto fotográfico Tonal

**Categories:**

- CICategoryColorEffect: Color Effect
- CICategoryVideo: Video
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In
- CICategoryXMPSerializable: CICategoryXMPSerializable

**Input:**

- inputImage: Image

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.159.2 Methods

52.159.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.159.4 Properties

52.159.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Photo Effect Tonal attribute.
**Notes:**
This attribute should have this content:

- **Name:** inputImage
- **Class:** CIImageMBS
- **Type:** CIAttributeTypeImage
- **DisplayName English:** Image
- **DisplayName German:** Bild
- **DisplayName French:** Image
- **DisplayName Italian:** Immagine
- **DisplayName Spanish:** Imagen
- **DefaultNumber:** 0
- **IdentityNumber:** 0

(Read only property)

52.159.6 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image
**Notes:**
See Attribute inputImage for more details.
(Read and Write property)
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage
52.160. CLASS CIFILTERPHOTOEFFECTTRANSFERMBS

52.160  class CIFilterPhotoEffectTransferMBS

52.160.1  class CIFilterPhotoEffectTransferMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Photo Effect Transfer filter.

**Notes:**

Details for this filter:

- **FilterName:** CIPhotoEffectTransfer
- **DisplayName English:** Photo Effect Transfer
- **DisplayName German:** Fotoeffekt Transfer
- **DisplayName French:** Effet de photo Transfert
- **DisplayName Italian:** Effetto foto Transfer
- **DisplayName Spanish:** Efecto fotográfico Transferencia

**Categories:**

- **CICategoryColorEffect:** Color Effect
- **CICategoryVideo:** Video
- **CICategoryInterlaced:** Interlaced
- **CICategoryNonSquarePixels:** Non-Square Pixels
- **CICategoryStillImage:** Still Image
- **CICategoryBuiltIn:** Built-In
- **CICategoryXMPSerializable:** CICategoryXMPSerializable

**Input:**

- **inputImage:** Image

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
52.160.2 Methods

52.160.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.160.4 Properties

52.160.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Photo Effect Transfer attribute.
**Notes:** This attribute should have this content:

Name: inputImage  
Class: CIImageMBS  
Type: CIAttributeTypeImage  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
DefaultNumber: 0  
IdentityNumber: 0

(Read only property)

52.160.6 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image
**Notes:** See Attribute inputImage for more details.
(Read and Write property)
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage
52.161 class CIFilterPinchDistortionMBS

52.161.1 class CIFilterPinchDistortionMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Pinch Distortion filter.

**Notes:**
Details for this filter:

FilterName: CIPinchDistortion
DisplayName English: Pinch Distortion
DisplayName German: Verzerrung Drcken
DisplayName French: Dformation Pincement
DisplayName Italian: Distorsione minima
DisplayName Spanish: Distorsin por contraccin

Categories:

- CICategoryDistortionEffect: Distortion Effect
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

Input:

- inputImage: Image
- inputCenter: Center
- inputRadius: Radius
- inputScale: Scale

Output:

- outputImage

Subclass of the CIFilterMBS class.
52.161.2 Methods

52.161.3 Constructor

Notes: On success the handle property is not zero and the filter has the default values set.

52.161.4 Properties

52.161.5 Attribute inputCenter as CIAttributeMBS

Notes: This attribute should have this content:

Name: inputCenter
Class: CIVectorMBS
Type: CIAttributeTypePosition
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
DefaultVector: [ 150 150 ]
IdentityVector: n/a

(Read only property)

52.161.6 Attribute inputImage as CIAttributeMBS

Notes: This attribute should have this content:

(Read only property)
52.161.7 Attribute inputRadius as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Pinch Distortion attribute.

**Notes:**

This attribute should have this content:

Name: inputRadius
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Radius
DisplayName German: Radius
DisplayName French: Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
DefaultNumber: 300
IdentityNumber: 0
SliderMaxNumber: 1000
SliderMinNumber: 0

(Read only property)

52.161.8 Attribute inputScale as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Pinch Distortion attribute.

**Notes:**

This attribute should have this content: 
52.161. CLASS CIFILTERPINCHDISTORTIONMBS

Name: inputScale
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Scale
DisplayName German: Skalierung
DisplayName French: chelle
DisplayName Italian: Scala
DisplayName Spanish: Escala
DefaultNumber: 0.5
IdentityNumber: 0
SliderMaxNumber: 2
SliderMinNumber: 0

(Read only property)

52.161.9 inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Center
**Notes:**

Name: inputCenter
Class: CIVectorMBS (CIVector)
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
Type: CIAttributeTypePosition

See Attribute inputCenter for more details.
(Read and Write property)

52.161.10 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image
**Notes:**

See Attribute inputImage for more details.
(Read and Write property)
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

52.161.11 inputRadius as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Radius

**Notes:**
Name: inputRadius
Class: double (NSNumber)
DisplayName English: Radius
DisplayName German: Radius
DisplayName French: Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
Type: CIAttributeTypeDistance

See Attribute inputRadius for more details.  
(Read and Write property)

52.161.12 inputScale as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Scale

**Notes:**
Name: inputScale
Class: double (NSNumber)
DisplayName English: Scale
DisplayName German: Skalierung
DisplayName French: chelle
DisplayName Italian: Scala
DisplayName Spanish: Escala
Type: CIAttributeTypeScalar

See Attribute inputScale for more details.
52.161.  CLASS CIFILTERPINCHDISTORTIONMBS  
(Read and Write property)
52.162 class CIFilterPinLightBlendModeMBS

52.162.1 class CIFilterPinLightBlendModeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Pin Light Blend Mode filter. **Notes:** Details for this filter:

<table>
<thead>
<tr>
<th>FilterName</th>
<th>CIFilterPinLightBlendMode</th>
</tr>
</thead>
<tbody>
<tr>
<td>DisplayName English</td>
<td>Pin Light Blend Mode</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Mischmethode Punktuelles Licht</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>pingler le mode de fusion Lumire</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Modalit sfumatura luce puntiforme</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Modo de mezcla por luz focal</td>
</tr>
</tbody>
</table>

**Categories:**

- CICategoryCompositeOperation: Composite Operation
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputBackgroundImage: Background Image

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.162.2 Methods

52.162.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.162.4 Properties

52.162.5 Attribute inputBackgroundImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Pin Light Blend Mode attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputBackgroundImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Background Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Hintergrundbild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image darrire-plan</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine di sfondo</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen de fondo</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.162.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Pin Light Blend Mode attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.162.7  inputBackgroundImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Background Image

**Notes:**

Name: inputBackgroundImage
Class: CIImageMBS (CIImage)
DisplayName English: Background Image
DisplayName German: Hintergrundbild
DisplayName French: Image derrière-plan
DisplayName Italian: Immagine di sfondo
DisplayName Spanish: Imagen de fondo
Type: CIAttributeTypeImage

See AttributeinputBackgroundImage for more details.
(Read and Write property)

52.162.8  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**

See AttributeinputImage for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name:</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIFilterPinLightBlendModeMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAtributeTypeImage</td>
</tr>
</tbody>
</table>
CHAPTER 52. COREIMAGE

52.163 class CIFilterPixellateMBS

52.163.1 class CIFilterPixellateMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Pixelate filter.

**Notes:**
Details for this filter:

FilterName: CIPixellate
DisplayName English: Pixelate
DisplayName German: Pixeln
DisplayName French: Pixiliser
DisplayName Italian: Suddividi in pixel
DisplayName Spanish: Pixelar

Categories:

- CICategoryStylize: Stylize
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

Input:

- inputImage: Image
- inputCenter: Center
- inputScale: Scale

Output:

- outputImage

Subclass of the CIFilterMBS class.
52.163.2 Methods

52.163.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.163.4 Properties

52.163.5 Attribute `inputCenter` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Pixelate attribute.
**Notes:**

This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputCenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIVectorMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypePosition</td>
</tr>
<tr>
<td>Display Name English</td>
<td>Center</td>
</tr>
<tr>
<td>Display Name German</td>
<td>Mitte</td>
</tr>
<tr>
<td>Display Name French</td>
<td>Centre</td>
</tr>
<tr>
<td>Display Name Italian</td>
<td>Centro</td>
</tr>
<tr>
<td>Display Name Spanish</td>
<td>Centro</td>
</tr>
<tr>
<td>Default Vector</td>
<td>[ 150 150 ]</td>
</tr>
<tr>
<td>Identity Vector</td>
<td>n/a</td>
</tr>
</tbody>
</table>

(Read only property)

52.163.6 Attribute `inputImage` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Pixelate attribute.
**Notes:**

This attribute should have this content:

(Read only property)
52.163.7  Attribute inputScale as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Pixelate attribute.

**Notes:**

This attribute should have this content:

Name: inputScale
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Scale
DisplayName German: Skalierung
DisplayName French: chelle
DisplayName Italian: Scala
DisplayName Spanish: Escala
DefaultNumber: 8
IdentityNumber: 0
MaxNumber: 0
MinNumber: 1
SliderMaxNumber: 100
SliderMinNumber: 1

(Read only property)

52.163.8  inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Center

**Notes:**

See Attribute inputCenter for more details.
52.163. CLASS CIFILTERPIXELLATEMBS

Name: inputCenter
Class: CIVectorMBS (CIVector)
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
Type: CIAtributeTypePosition

(Read and Write property)

52.163.9 inputImage as CIImageMBS

Notes:

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAtributeTypeImage

See AttributeinputImage for more details.
(Read and Write property)

52.163.10 inputScale as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The attribute Scale
Notes:
See AttributeinputScale for more details.
(Read and Write property)
Name: inputScale
Class: double (NSNumber)
DisplayName English: Scale
DisplayName German: Skalierung
DisplayName French: chelle
DisplayName Italian: Scala
DisplayName Spanish: Escala
Type: CIAttributeTypeDistance
52.164.1  class CIFilterPointillizeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Pointillize filter.
**Notes:**
Details for this filter:

<table>
<thead>
<tr>
<th>FilterName</th>
<th>CIFilterPointillize</th>
</tr>
</thead>
<tbody>
<tr>
<td>DisplayName English</td>
<td>Pointillize</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Punktieren</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Pointilliste</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Divisione in punti</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Puntilllear</td>
</tr>
</tbody>
</table>

**Categories:**
- CICategoryStylize: Stylize
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**
- inputImage: Image
- inputRadius: Radius
- inputCenter: Center

**Output:**
- outputImage

Subclass of the CIFilterMBS class.
52.164.2 Methods

52.164.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.164.4 Properties

52.164.5 Attribute inputCenter as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Pointillize attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputCenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIVectorMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypePosition</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Center</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Mitte</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Centre</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Centro</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Centro</td>
</tr>
<tr>
<td>Default Vector</td>
<td>[ 150 150 ]</td>
</tr>
<tr>
<td>Identity Vector</td>
<td>n/a</td>
</tr>
</tbody>
</table>

(Read only property)

52.164.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Pointillize attribute.
**Notes:**
This attribute should have this content:

(Read only property)
### 52.164.7 Attribute `inputRadius` as `CIAttributeMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Pointillize attribute.

**Notes:**

This attribute should have this content:

- **Name:** `inputRadius`
- **Class:** `double`
- **Type:** `CIAttributeTypeDistance`
- **DisplayName English:** Radius
- **DisplayName German:** Radius
- **DisplayName French:** Rayon
- **DisplayName Italian:** Raggio
- **DisplayName Spanish:** Radio
- **DefaultNumber:** 20
- **IdentityNumber:** 1
- **MaxNumber:** 0
- **MinNumber:** 1
- **SliderMaxNumber:** 100
- **SliderMinNumber:** 1

(Read only property)

### 52.164.8 `inputCenter` as `CIVectorMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Center

**Notes:**

See Attribute `inputCenter` for more details.
Name: inputCenter
Class: CIVectorMBS (CIVector)
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
Type: CIAttributeTypePosition

(Read and Write property)

### 52.164.9 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)

### 52.164.10 inputRadius as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Radius

**Notes:**

See Attribute inputRadius for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name:</th>
<th>inputRadius</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Radius</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Radius</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Rayon</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Raggio</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Radio</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeDistance</td>
</tr>
</tbody>
</table>
52.165 class CIFilterQRCodeGeneratorMBS

52.165.1 class CIFilterQRCodeGeneratorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage QRCode Generator filter.

**Notes:**

Details for this filter:

- **FilterName:** CIQRCodeGenerator
- **DisplayName English:** QRCode Generator
- **DisplayName German:** QRCode-Generator
- **DisplayName French:** Générateur QRCode
- **DisplayName Italian:** Generatore QRCode
- **DisplayName Spanish:** Generador de QRCode

**Categories:**

- **CICategoryGenerator:** Generator
- **CICategoryStillImage:** Still Image
- **CICategoryBuiltIn:** Built-In

**Input:**

- **inputMessage:** Message
- **inputCorrectionLevel:** CorrectionLevel

**Output:**

- **outputImage**
- **outputCGImage**

Subclass of the CIFilterMBS class.
52.165.2 Methods

52.165.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.165.4 Properties

52.165.5 Attribute inputCorrectionLevel as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the QRCode Generator attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputCorrectionLevel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>String</td>
</tr>
<tr>
<td>DisplayName</td>
<td>CorrectionLevel</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.165.6 Attribute inputMessage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the QRCode Generator attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputMessage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>Memoryblock</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Message</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>
52.165.7 inputCorrectionLevel as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute CorrectionLevel

**Notes:**

Name: inputCorrectionLevel
Class: String (NSString)
DisplayName English: CorrectionLevel
DisplayName German: CorrectionLevel
DisplayName French: CorrectionLevel
DisplayName Italian: CorrectionLevel
DisplayName Spanish: CorrectionLevel
Type: 

See Attribute inputCorrectionLevel for more details.
(Read and Write property)

52.165.8 inputMessage as Memoryblock

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Message

**Notes:**

Name: inputMessage
Class: Memoryblock (NSData)
DisplayName English: Message
DisplayName German: Message
DisplayName French: Message
DisplayName Italian: Message
DisplayName Spanish: Message
Type: 

See Attribute inputMessage for more details.
(Read and Write property)
52.166.1 class CIFilterRadialGradientMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Radial Gradient filter.

**Notes:**
Details for this filter:

FilterName: CIFilterRadialGradient
DisplayName English: Radial Gradient
DisplayName German: Radialer Verlauf
DisplayName French: Dgrad radial
DisplayName Italian: Gradiente radiale
DisplayName Spanish: Degradado radial

Categories:

- CICategoryGradient: Gradient
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputCenter: Center
- inputRadius0: Radius 1
- inputRadius1: Radius 2
- inputColor0: Color 1
- inputColor1: Color 2

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.166.2 Methods

52.166.3 Constructor

Notes: On success the handle property is not zero and the filter has the default values set.

52.166.4 Properties

52.166.5 Attribute inputCenter as CIAttributeMBS

Notes:
This attribute should have this content:

Name: inputCenter
Class: CIVectorMBS
Type: CIAttributeTypePosition
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
DefaultVector: [ 150 150 ]
IdentityVector: n/a

(Read only property)

52.166.6 Attribute inputColor0 as CIAttributeMBS

Notes:
This attribute should have this content:

(Read only property)
52.166. CL S C IFIL TRADIAL GRADIENT MBS

Name: inputColor0
Class: CIColorMBS
Type: CIAttributeTypeColor
DisplayName English: Color 1
DisplayName German: Farbe 1
DisplayName French: Couleur 1
DisplayName Italian: Colore 1
DisplayName Spanish: Color 1
DefaultColor: Red = 1, Green = 1, Blue = 1, Alpha = 1
IdentityNumber: 0

52.166.7 Attribute inputColor1 as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Radial Gradient attribute.
**Notes:**
This attribute should have this content:

Name: inputColor1
Class: CIColorMBS
Type: CIAttributeTypeColor
DisplayName English: Color 2
DisplayName German: Farbe 2
DisplayName French: Couleur 2
DisplayName Italian: Colore 2
DisplayName Spanish: Color 2
DefaultColor: Red = 0, Green = 0, Blue = 0, Alpha = 1
IdentityNumber: 0
(Read only property)

52.166.8 Attribute inputRadius0 as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Radial Gradient attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.166.9  Attribute inputRadius1 as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Radial Gradient attribute.

**Notes:**

This attribute should have this content:

Name: inputRadius1
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Radius 2
DisplayName German: Radius 2
DisplayName French: Rayon 2
DisplayName Italian: Raggio 2
DisplayName Spanish: Radio 2
DefaultNumber: 100
IdentityNumber: 0
SliderMaxNumber: 800
SliderMinNumber: 0

(Read only property)

52.166.10  inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Center

**Notes:**

See Attribute inputCenter for more details.
52.166. **CLASS CIFILTERRADIALGRADIENTMBS**

Name: inputCenter
Class: CIVectorMBS (CIVector)
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
Type: CIAttributeTypePosition

(Read and Write property)

52.166.11 **inputColor0 as CIColorMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Color 1

**Notes:**

Name: inputColor0
Class: CIColorMBS (CIColor)
DisplayName English: Color 1
DisplayName German: Farbe 1
DisplayName French: Couleur 1
DisplayName Italian: Colore 1
DisplayName Spanish: Color 1
Type: CIAttributeTypeColor

See Attribute inputColor0 for more details.
(Read and Write property)

52.166.12 **inputColor1 as CIColorMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Color 2

**Notes:**

See Attribute inputColor1 for more details.
(Read and Write property)
52.166.13  inputRadius0 as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Radius 1

**Notes:**

Name: inputRadius0
Class: double (NSNumber)
DisplayName English: Radius 1
DisplayName German: Radius 1
DisplayName French: Rayon 1
DisplayName Italian: Raggio 1
DisplayName Spanish: Radio 1
Type: CIAttributeTypeDistance

See Attribute inputRadius0 for more details.
(Read and Write property)

52.166.14  inputRadius1 as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Radius 2

**Notes:**

Name: inputRadius1
Class: double (NSNumber)
DisplayName English: Radius 2
DisplayName German: Radius 2
DisplayName French: Rayon 2
DisplayName Italian: Raggio 2
DisplayName Spanish: Radio 2
Type: CIAttributeTypeDistance

See Attribute inputRadius1 for more details.
52.166. CLASS CIFILTERRADIALGRADIENTMBS
(Read and Write property)
52.167 class CIFilterRandomGeneratorMBS

52.167.1 class CIFilterRandomGeneratorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Random Generator filter.  
**Notes:** Details for this filter:

FilterName: CIRandomGenerator  
DisplayName English: Random Generator  
DisplayName German: Zufallsmuster  
DisplayName French: Génrateur alatoire  
DisplayName Italian: Generatore casuale  
DisplayName Spanish: Generador aleatorio

Categories:

- CICategoryGenerator: Generator
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

**Output:**

- outputImage

Subclass of the CIFilterMBS class.

52.167.2 Methods

52.167.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.  
**Notes:** On success the handle property is not zero and the filter has the default values set.
52.168. CLASS CIFILTERRIPPLETRANSITIONMBS

52.168  class CIFilterRippleTransitionMBS

52.168.1  class CIFilterRippleTransitionMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Ripple filter.

**Notes:**

Details for this filter:

- **FilterName:** CIRippleTransition
- **DisplayName English:** Ripple
- **DisplayName German:** Wellen
- **DisplayName French:** Ondulation
- **DisplayName Italian:** Increspatura
- **DisplayName Spanish:** Ondas

**Categories:**

- CICategoryTransition: Transition
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputTargetImage: Target Image
- inputShadingImage: Shading Image
- inputCenter: Center
- inputExtent: Extent
- inputTime: Time
- inputWidth: Width
- inputScale: Scale

**Output:**
52.168.2 Methods

52.168.3 Constructor

Notes: On success the handle property is not zero and the filter has the default values set.

52.168.4 Properties

52.168.5 Attribute inputCenter as CIAttributeMBS

Notes:
This attribute should have this content:

Name: inputCenter
Class: CIVectorMBS
Type: CIAttributeTypePosition
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
DefaultVector: [ 150 150 ]
IdentityVector: n/a

(Read only property)

52.168.6 Attribute inputExtent as CIAttributeMBS

Notes:
This attribute should have this content:

Name: inputExtent
Class: CIVectorMBS
Type: CIAttributeTypeRectangle
DisplayName English: Extent
DisplayName German: Betrag
DisplayName French: tendue
DisplayName Italian: Ampiezza
DisplayName Spanish: Amplitud
DefaultVector: [ 0 0 300 300 ]
IdentityVector: n/a

(Read only property)

52.168.7 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Ripple attribute.

**Notes:**

This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.168.8 Attribute inputScale as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Ripple attribute.

**Notes:**
This attribute should have this content:

- **Name:** inputScale
- **Class:** double
- **Type:** CIAttributeTypeScalar
- **DisplayName English:** Scale
- **DisplayName German:** Skalierung
- **DisplayName French:** chelle
- **DisplayName Italian:** Scala
- **DisplayName Spanish:** Escala
- **DefaultNumber:** 50
- **IdentityNumber:** 0
- **MaxNumber:** 0
- **MinNumber:** -50
- **SliderMaxNumber:** 50
- **SliderMinNumber:** -50

(Read only property)

### 52.168.9 Attribute `inputShadingImage` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Ripple attribute.

**Notes:**

This attribute should have this content:

- **Name:** inputShadingImage
- **Class:** CIImageMBS
- **Type:** CIAttributeTypeImage
- **DisplayName English:** Shading Image
- **DisplayName German:** Bild schattieren
- **DisplayName French:** Image dombrage
- **DisplayName Italian:** Immagine ombreggiatura
- **DisplayName Spanish:** Imagen de sombra
- **DefaultNumber:** 0
- **IdentityNumber:** 0

(Read only property)
52.168.10  Attribute inputTargetImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Ripple attribute.

**Notes:**

This attribute should have this content:

- **Name:** inputTargetImage
- **Class:** CIImageMBS
- **Type:** CIAttributeTypeImage
- **DisplayName English:** Target Image
- **DisplayName German:** Zielbild
- **DisplayName French:** Image cible
- **DisplayName Italian:** Immagine target
- **DisplayName Spanish:** Imagen de destino
- **DefaultNumber:** 0
- **IdentityNumber:** 0

(Read only property)

52.168.11  Attribute inputTime as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Ripple attribute.

**Notes:**

This attribute should have this content:

(Read only property)

52.168.12  Attribute inputWidth as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Ripple attribute.

**Notes:**

This attribute should have this content:

(Read only property)
Name: inputTime
Class: double
Type: CIAttributeTypeTime
DisplayName English: Time
DisplayName German: Zeit
DisplayName French: Dure
DisplayName Italian: Tempo
DisplayName Spanish: Tiempo
DefaultNumber: 0
IdentityNumber: 0
MaxNumber: 1
MinNumber: 0
SliderMaxNumber: 1
SliderMinNumber: 0

Name: inputWidth
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Anchura
DefaultNumber: 100
IdentityNumber: 0
MaxNumber: 0
MinNumber: 1
SliderMaxNumber: 300
SliderMinNumber: 10

52.168.13  inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Center
**Notes:**
See Attribute inputCenter for more details.
(Read and Write property)

52.168.14  inputExtent as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Extent
52.168. **CLASS CIFILTERNIPPLETRANSITIONMBS**

Name: inputCenter  
Class: CIVectorMBS (CIVector)  
DisplayName English: Center  
DisplayName German: Mitte  
DisplayName French: Centre  
DisplayName Italian: Centro  
DisplayName Spanish: Centro  
Type: CIAtributeTypePosition

Notes:

Name: inputExtent  
Class: CIVectorMBS (CIVector)  
DisplayName English: Extent  
DisplayName German: Betrag  
DisplayName French: teneur  
DisplayName Italian: Ampiezza  
DisplayName Spanish: Amplitud  
Type: CIAtributeTypeRectangle

See Attribute inputExtent for more details.  
(Read and Write property)

52.168.15 **inputImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**  
The attribute Image  
Notes:

Name: inputImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
Type: CIAtributeTypeImage

See Attribute inputImage for more details.  
(Read and Write property)
52.168.16  inputScale as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Scale

**Notes:**

Name: inputScale  
Class: double (NSNumber)  
DisplayName English: Scale  
DisplayName German: Skalierung  
DisplayName French: chelle  
DisplayName Italian: Scala  
DisplayName Spanish: Escala  
Type: CIAttributeTypeScalar

See Attribute inputScale for more details.  
(Read and Write property)

52.168.17  inputShadingImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Shading Image

**Notes:**

Name: inputShadingImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Shading Image  
DisplayName German: Bild schattieren  
DisplayName French: Image dombrage  
DisplayName Italian: Immagine ombreggiatura  
DisplayName Spanish: Imagen de sombra  
Type: CIAttributeTypeImage

See Attribute inputShadingImage for more details.  
(Read and Write property)

52.168.18  inputTargetImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Target Image

**Notes:**
52.168.19  inputTime as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Time **Notes:**

Name: inputTime
Class: double (NSNumber)
DisplayName English: Time
DisplayName German: Zeit
DisplayName French: Dure
DisplayName Italian: Tempo
DisplayName Spanish: Tiempo
Type: CIAttributeTypeTime

See Attribute inputTime for more details.
(Read and Write property)

52.168.20  inputWidth as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Width **Notes:**

See Attribute inputWidth for more details.
(Read and Write property)
Name: inputWidth
Class: double (NSNumber)
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Anchura
Type: CIAttributeTypeDistance
52.169.1  class CICFilterRowAverageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Row Average filter.
**Notes:**
Details for this filter:

- **FilterName:** CIRowAverage
- **DisplayName English:** Row Average
- **DisplayName German:** Zeilendurchschnitt
- **DisplayName French:** Moyenne de ranges
- **DisplayName Italian:** Media riga
- **DisplayName Spanish:** Media de la fila

**Categories:**
- CICategoryReduction: Reduction
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**
- inputImage: Image
- inputExtent: Extent

**Output:**
- outputImage

Subclass of the CIFilterMBS class.
52.169.2 Methods

52.169.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.169.4 Properties

52.169.5 Attribute inputExtent as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Row Average attribute.
**Notes:**
This attribute should have this content:

Name: inputExtent
Class: CIVectorMBS
Type: CIAttributeTypeRectangle
DisplayName English: Extent
DisplayName German: Betrag
DisplayName French: tendue
DisplayName Italian: Ampiezza
DisplayName Spanish: Amplitud
DefaultVector: [ 0 0 640 80 ]
IdentityVector: n/a

(Read only property)

52.169.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Row Average attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.169.  CLASS CIFILTERROWAVERAGEMBS

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

52.169.7  inputExtent as CIVectorMBS

Function:
The attribute Extent
Notes:

Name: inputExtent
Class: CIVectorMBS (CIVector)
DisplayName English: Extent
DisplayName German: Betrag
DisplayName French: tendue
DisplayName Italian: Ampiezza
DisplayName Spanish: Amplitud
Type: CIAttributeTypeRectangle

See AttributeinputExtent for more details.
(Read and Write property)

52.169.8  inputImage as CIImageMBS

Function:
The attribute Image
Notes:
See AttributeinputImage for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name:</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>
52.170. class CIFilterSaturationBlendModeMBS

52.170.1 class CIFilterSaturationBlendModeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Saturation Blend Mode filter.

**Notes:**

Details for this filter:

- **FilterName:** CISaturationBlendMode
- **DisplayName English:** Saturation Blend Mode
- **DisplayName German:** Mischmethode Stigung
- **DisplayName French:** Mode de fusion Saturation
- **DisplayName Italian:** Modalit sfumatura saturazione
- **DisplayName Spanish:** Modo de mezcla de saturacin

**Categories:**

- CICategoryCompositeOperation: Composite Operation
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputBackgroundImage: Background Image

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.170.2 Methods

52.170.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.170.4 Properties

52.170.5 Attribute inputBackgroundImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Saturation Blend Mode attribute.
**Notes:** This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputBackgroundImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Background Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Hintergrundbild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image darrire-plan</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine di sfondo</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen de fondo</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.170.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Saturation Blend Mode attribute.
**Notes:** This attribute should have this content:

(Read only property)
52.170. **CLASS CIFILTERSATURATIONBLENDMODEMBS**

Name: inputImage  
Class: CIImageMBS  
Type: CIAttributeTypeImage  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
DefaultNumber: 0  
IdentityNumber: 0

52.170.7 **inputBackgroundImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Background Image  
**Notes:**

Name: inputBackgroundImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Background Image  
DisplayName German: Hintergrundbild  
DisplayName French: Image derrière-plan  
DisplayName Italian: Immagine di sfondo  
DisplayName Spanish: Imagen de fondo  
Type: CIAttributeTypeImage

See Attribute inputBackgroundImage for more details.  
(Read and Write property)

52.170.8 **inputImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image  
**Notes:**

See Attribute inputImage for more details.  
(Read and Write property)
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage
52.171.1 class CIFilterScreenBlendModeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Screen Blend Mode filter.

**Notes:**

Details for this filter:

- **FilterName:** CIScreenBlendMode
- **DisplayName English:** Screen Blend Mode
- **DisplayName German:** Mischmethode Blende
- **DisplayName French:** Mode de fusion cran
- **DisplayName Italian:** Modalità sfumatura schermo
- **DisplayName Spanish:** Modo de mezcla de pantalla

**Categories:**

- **CICategoryCompositeOperation:** Composite Operation
- **CICategoryVideo:** Video
- **CICategoryStillImage:** Still Image
- **CICategoryInterlaced:** Interlaced
- **CICategoryNonSquarePixels:** Non-Square Pixels
- **CICategoryBuiltIn:** Built-In

**Input:**

- **inputImage:** Image
- **inputBackgroundImage:** Background Image

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
CHAPTER 52. COREIMAGE

52.171.2 Methods

52.171.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.171.4 Properties

52.171.5 Attribute inputBackgroundImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Screen Blend Mode attribute.
**Notes:**
This attribute should have this content:

Name: inputBackgroundImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Background Image
DisplayName German: Hintergrundbild
DisplayName French: Image d'arrière-plan
DisplayName Italian: Immagine di sfondo
DisplayName Spanish: Imagen de fondo
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.171.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Screen Blend Mode attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.171. **CLASS CIFILTERSCREENBLENDMODEMBS**

Name: inputImage  
Class: CIImageMBS  
Type: CIAttributeTypeImage  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
DefaultNumber: 0  
IdentityNumber: 0

52.171.7 **inputBackgroundImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**  
The attribute Background Image  
**Notes:**

Name: inputBackgroundImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Background Image  
DisplayName German: Hintergrundbild  
DisplayName French: Image darrire-plan  
DisplayName Italian: Immagine di sfondo  
DisplayName Spanish: Imagen de fondo  
Type: CIAttributeTypeImage

See AttributeinputBackgroundImage for more details.  
(Read and Write property)

52.171.8 **inputImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**  
The attribute Image  
**Notes:**

See AttributeinputImage for more details.  
(Read and Write property)
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage
52.172.1  class CIFilterSepiaToneMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Sepia Tone filter.

**Notes:**

Details for this filter:

- **FilterName:** CISepiaTone
- **DisplayName English:** Sepia Tone
- **DisplayName German:** Sepia-Farbtne
- **DisplayName French:** Ton spia
- **DisplayName Italian:** Tonalit seppia
- **DisplayName Spanish:** Tono sepi

**Categories:**

- CICategoryColorEffect: Color Effect
- CICategoryVideo: Video
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In
- CICategoryXMPSerializable: CICategoryXMPSerializable

**Input:**

- inputImage: Image
- inputIntensity: Intensity

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.172.2 Methods

52.172.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.172.4 Properties

52.172.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Sepia Tone attribute.
**Notes:**
This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.172.6 Attribute inputIntensity as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Sepia Tone attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.172. **CLASS CIFILTERSEPIATONEMBS**

Name: inputIntensity  
Class: double  
Type: CIAttributeTypeScalar  
DisplayName English: Intensity  
DisplayName German: Intensität  
DisplayName French: Intensité  
DisplayName Italian: Intensità  
DisplayName Spanish: Intensidad  
DefaultNumber: 1  
IdentityNumber: 0  
SliderMaxNumber: 1  
SliderMinNumber: 0

52.172.7 **inputImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image  
**Notes:**

Name: inputImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
Type: CIAttributeTypeImage

See Attribute inputImage for more details.  
(Read and Write property)

52.172.8 **inputIntensity as double**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Intensity  
**Notes:**

See Attribute inputIntensity for more details.  
(Read and Write property)
Name: inputIntensity
Class: double (NSNumber)
DisplayName English: Intensity
DisplayName German: Intensität
DisplayName French: Intensité
DisplayName Italian: Intensità
DisplayName Spanish: Intensidad
Type: CIAttributeTypeScalar
52.173.1 class CIFilterShadedMaterialMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Shaded Material filter.

**Notes:**

Details for this filter:

- **FilterName:** CIShadedMaterial
- **DisplayName English:** Shaded Material
- **DisplayName German:** Schattiertes Material
- **DisplayName French:** Matéria ombré
- **DisplayName Italian:** Materiale ombreggiato
- **DisplayName Spanish:** Material sombreado

**Categories:**

- CICategoryStylize: Stylize
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- **inputImage:** Image
- **inputShadingImage:** Shading Image
- **inputScale:** Scale

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
52.173.2 Methods

52.173.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.173.4 Properties

52.173.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Shaded Material attribute.
**Notes:**
This attribute should have this content:

- Name: inputImage
- Class: CIImageMBS
- Type: CIAttributeValueImage
- DisplayName English: Image
- DisplayName German: Bild
- DisplayName French: Image
- DisplayName Italian: Immagine
- DisplayName Spanish: Imagen
- DefaultNumber: 0
- IdentityNumber: 0

(Read only property)

52.173.6 Attribute inputScale as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Shaded Material attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.173. **CLASS CIFILTERSHADEDMATERIALMBS**

| Name: | inputScale |
| Class: | double |
| Type: | CIAttributeTypeDistance |
| DisplayName English: | Scale |
| DisplayName German: | Skalierung |
| DisplayName French: | chelle |
| DisplayName Italian: | Scala |
| DisplayName Spanish: | Escala |
| DefaultNumber: | 10 |
| IdentityNumber: | 0 |
| SliderMaxNumber: | 200 |
| SliderMinNumber: | 0.5 |

52.173.7 **Attribute inputShadingImage as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Shaded Material attribute.

**Notes:**

This attribute should have this content:

| Name: | inputShadingImage |
| Class: | CIImageMBS |
| Type: | CIAttributeTypeImage |
| DisplayName English: | Shading Image |
| DisplayName German: | Bild schattieren |
| DisplayName French: | Image dombrage |
| DisplayName Italian: | Immagine ombreggiatura |
| DisplayName Spanish: | Imagen de sombra |
| DefaultNumber: | 0 |
| IdentityNumber: | 0 |

(Read only property)

52.173.8 **inputImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**

See Attribute inputImage for more details.

(Read and Write property)
Name: inputImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
Type: CIAttributeTypeImage

52.173.9 inputScale as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**  
The attribute Scale

**Notes:**

Name: inputScale  
Class: double (NSNumber)  
DisplayName English: Scale  
DisplayName German: Skalierung  
DisplayName French: chelle  
DisplayName Italian: Scala  
DisplayName Spanish: Escala  
Type: CIAttributeTypeDistance

See Attribute inputScale for more details.  
(Read and Write property)

52.173.10 inputShadingImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**  
The attribute Shading Image

**Notes:**

Name: inputShadingImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Shading Image  
DisplayName German: Bild schattieren  
DisplayName French: Image dombrage  
DisplayName Italian: Immagine ombreggiatura  
DisplayName Spanish: Imagen de sombra  
Type: CIAttributeTypeImage

See Attribute inputShadingImage for more details.
52.173.  CLASS CIFILTERSHADEDMATERIALMBS

(Read and Write property)
52.174 class CIFilterShapeMBS

52.174.1 class CIFilterShapeMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class to represent a filter shape in Realbasic.

52.174.2 Methods

52.174.3 Constructor(cgrect as CGRectMBS)

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Create a shape representing the smallest integral rect containing `cgrect`.
See also:

- 52.174.4 Constructor(Handle as Integer)

52.174.4 Constructor(Handle as Integer)

MBS MacCG Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Initializes object with given object reference.
Notes:
ref should be a CIFilterShape* and the object is retained.
Raises UnsupportedOperationException if object is not a CIFilterShape.
See also:

- 52.174.3 Constructor(cgrect as CGRectMBS)

52.174.5 copy as CIFilterShapeMBS

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a copy of the filter shape object.

52.174.6 InsetByX(x as Integer, y as Integer) as CIFilterShapeMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Create a shape representing the shape inset by `delta`.
**52.174.7 IntersectWith(s as CIFilterShapeMBS) as CIFilterShapeMBS**

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create a shape representing the intersection of the shape and 's'.

**52.174.8 IntersectWithRect(cgrect as CGRectMBS) as CIFilterShapeMBS**

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create a shape representing the intersection of the shape and the smallest integral rect containing 'cgrect'.

**52.174.9 shapeWithRect(r as CGRectMBS) as CIFilterShapeMBS**

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a filter shape object and initializes it with a rectangle. **Notes:** R: A rectangle. The filter shape object will contain the smallest integral rectangle specified by this argument.

**52.174.10 TransformBy(CGAffineTransform as NSAffineTransformMBS, flag as boolean) as CIFilterShapeMBS**

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create a shape from the result of transforming the shape by CGAffineTransform. **Notes:**
- If flag is false the new shape will contain all pixels in the transformed shape (and possibly some outside the transformed shape).
- If flag is false the new shape will contain a subset of the pixels in the transformed shape (but none of those outside the transformed shape).

**52.174.11 UnionWith(s as CIFilterShapeMBS) as CIFilterShapeMBS**

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create a shape representing the union of the shape and 's'.

**52.174.12 UnionWithRect(cgrect as CGRectMBS) as CIFilterShapeMBS**

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create a shape representing the union of the shape and the smallest integral rect containing 'cgrect'.
52.174.13 Properties

52.174.14 description as String

MBS MacCG Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the textual description for this filter shape. **Notes:** (Read only property)

52.174.15 extent as CGRectMBS

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The extent of the filter shape. **Notes:** Extent is a rectangle that describes the filter shape in the working coordinate space with a fixed area. Available in OS X v10.11 and later. (Read only property)

52.174.16 Handle as Integer

MBS MacCG Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle to the internal used CIFilterShape reference. **Notes:** (Read only property)
52.175. class CIFilterSharpenLuminanceMBS

52.175.1 class CIFilterSharpenLuminanceMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Sharpen Luminance filter.

**Notes:**
Details for this filter:

FilterName: CISharpenLuminance
DisplayName English: Sharpen Luminance
DisplayName German: Luminanz scharfzeichnen
DisplayName French: Renforcer la luminance
DisplayName Italian: Luminosità nitidezza
DisplayName Spanish: Agudizar luminancia

**Categories:**
- CICategorySharpen: Sharpen
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**
- inputImage: Image
- inputSharpness: Sharpness

**Output:**
- outputImage

Subclass of the CIFilterMBS class.
52.175.2 Methods

52.175.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.175.4 Properties

52.175.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Sharpen Luminance attribute.
**Notes:**

This attribute should have this content:

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>inputImage</td>
</tr>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.175.6 Attribute inputSharpness as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Sharpen Luminance attribute.
**Notes:**

This attribute should have this content:

(Read only property)
52.175.  CLASS CIFILTERSHARPENLUMINANCEDMBS

Name:          inputSharpness
Class:         double
Type:          CIAttributeTypeScalar
DisplayName English: Sharpness
DisplayName German: Schärfe
DisplayName French: Nettet
DisplayName Italian: Nitidezza
DisplayName Spanish: Nitidez
DefaultNumber: 0.4
IdentityNumber: 0
SliderMaxNumber: 2
SliderMinNumber: 0

52.175.7  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image
**Notes:**

Name:          inputImage
Class:         CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type:          CIAttributeTypeImage

See AttributeinputImage for more details.
(Read and Write property)

52.175.8  inputSharpness as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Sharpness
**Notes:**

See AttributeinputSharpness for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name:</th>
<th>inputSharpness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Sharpness</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Schrfe</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Nettet</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Nitidezza</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Nitidez</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeScalar</td>
</tr>
</tbody>
</table>
52.176. class CIFilterSixfoldReflectedTileMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Sixfold Reflected Tile filter.

**Notes:**

Details for this filter:

- **FilterName:** CISixfoldReflectedTile
- **DisplayName English:** Sixfold Reflected Tile
- **DisplayName German:** 6-fach reflektierte Kachel
- **DisplayName French:** Mosaque rflchie 6 fois
- **DisplayName Italian:** Mosaico riflesso in sei direzioni
- **DisplayName Spanish:** Mosaico reflejado seis veces

**Categories:**

- CICategoryTileEffect: Tile Effect
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputCenter: Center
- inputAngle: Angle
- inputWidth: Width

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.176.2 Methods

52.176.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor. **Notes:** On success the handle property is not zero and the filter has the default values set.

52.176.4 Properties

52.176.5 AttributeinputAngle as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Sixfold Reflected Tile attribute. **Notes:** This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputAngle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeAngle</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Angle</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Winkel</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Angle</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Angolo</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>ngulo</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
<tr>
<td>SliderMaxNumber</td>
<td>3.141593</td>
</tr>
<tr>
<td>SliderMinNumber</td>
<td>-3.141593</td>
</tr>
</tbody>
</table>

(Read only property)

52.176.6 AttributeinputCenter as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Sixfold Reflected Tile attribute. **Notes:** This attribute should have this content:
Name: inputCenter
Class: CIVectorMBS
Type: CIAttributeTypePosition
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
DefaultVector: [ 150 150 ]
IdentityVector: n/a

(Read only property)

52.176.7 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Details about the Sixfold Reflected Tile attribute.
Notes:
This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.176.8 Attribute inputWidth as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Details about the Sixfold Reflected Tile attribute.
Notes:
This attribute should have this content:
Name: inputWidth
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Ancho
DefaultNumber: 100
IdentityNumber: 100
SliderMaxNumber: 200
SliderMinNumber: 1

(Read only property)

52.176.9 inputAngle as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Angle
**Notes:**

Name: inputAngle
Class: double (NSNumber)
DisplayName English: Angle
DisplayName German: Winkel
DisplayName French: Angle
DisplayName Italian: Angolo
DisplayName Spanish: Angulo
Type: CIAttributeTypeAngle

See Attribute inputAngle for more details.
(Read and Write property)

52.176.10 inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Center
**Notes:**
See Attribute inputCenter for more details.
Name: inputCenter
Class: CIVectorMBS (CIVector)
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
Type: CIAttributeTypePosition

(Read and Write property)

52.176.11  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Image
Notes:
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)

52.176.12  inputWidth as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Width
Notes:
See Attribute inputWidth for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th><strong>Name:</strong></th>
<th>inputWidth</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class:</strong></td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td><strong>DisplayName English:</strong></td>
<td>Width</td>
</tr>
<tr>
<td><strong>DisplayName German:</strong></td>
<td>Breite</td>
</tr>
<tr>
<td><strong>DisplayName French:</strong></td>
<td>Largeur</td>
</tr>
<tr>
<td><strong>DisplayName Italian:</strong></td>
<td>Larghezza</td>
</tr>
<tr>
<td><strong>DisplayName Spanish:</strong></td>
<td>Anchura</td>
</tr>
<tr>
<td><strong>Type:</strong></td>
<td>CIAttributeTypeDistance</td>
</tr>
</tbody>
</table>
52.177. class CIFilterSixfoldRotatedTileMBS

52.177.1 class CIFilterSixfoldRotatedTileMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Sixfold Rotated Tile filter.

**Notes:**
Details for this filter:

- FilterName: CISixfoldRotatedTile
- DisplayName English: Sixfold Rotated Tile
- DisplayName German: 6-fach gedrehte Kachel
- DisplayName French: Mosaque pivote 6 fois
- DisplayName Italian: Mosaico ruotato in sei direzioni
- DisplayName Spanish: Mosaico rotado seis veces

**Categories:**
- CICategoryTileEffect: Tile Effect
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**
- inputImage: Image
- inputCenter: Center
- inputAngle: Angle
- inputWidth: Width

**Output:**
- outputImage

Subclass of the CIFilterMBS class.
52.177.2 Methods

52.177.3 Constructor


Notes: On success the handle property is not zero and the filter has the default values set.

52.177.4 Properties

52.177.5 Attribute inputAngle as CIAttributeMBS


Notes:

This attribute should have this content:

- Name: inputAngle
- Class: double
- Type: CIAttributeTypeAngle
- DisplayName English: Angle
- DisplayName German: Winkel
- DisplayName French: Angle
- DisplayName Italian: Angolo
- DisplayName Spanish: ngulo
- DefaultNumber: 0
- IdentityNumber: 0
- SliderMaxNumber: 3.141593
- SliderMinNumber: -3.141593

(Read only property)

52.177.6 Attribute inputCenter as CIAttributeMBS


Notes:

This attribute should have this content:
52.177. CLASS CIFILTERSIXFOLDROTATEDTILEMBS

Name: inputCenter
Class: CIVectorMBS
Type: CIAttributeTypePosition
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
DefaultVector: [150 150]
IdentityVector: n/a

(Read only property)

52.177.7 Attribute inputImage as CIAttributeMBS

Notes:
This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.177.8 Attribute inputWidth as CIAttributeMBS

Notes:
This attribute should have this content:
Name: inputWidth
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Anchura
DefaultNumber: 100
IdentityNumber: 100
SliderMaxNumber: 200
SliderMinNumber: 1

(Read only property)

52.177.9 inputAngle as double

Notes:

Name: inputAngle
Class: double (NSNumber)
DisplayName English: Angle
DisplayName German: Winkel
DisplayName French: Angle
DisplayName Italian: Angolo
DisplayName Spanish: angulo
Type: CIAttributeTypeAngle

See Attribute inputAngle for more details.
(Read and Write property)

52.177.10 inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The attribute Center
Notes:

See Attribute inputCenter for more details.
52.177.  

Name: inputCenter  
Class: CIVectorMBS (CIVector)  
DisplayName English: Center  
DisplayName German: Mitte  
DisplayName French: Centre  
DisplayName Italian: Centro  
DisplayName Spanish: Centro  
Type: CIAttributeTypePosition  

(Read and Write property)

52.177.11  inputImage as CIImageMBS

**Function:**  
The attribute Image

**Notes:**

Name: inputImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish:Imagen  
Type: CIAttributeTypeImage  

See AttributeinputImage for more details.  
(Read and Write property)

52.177.12  inputWidth as double

**Function:**  
The attribute Width

**Notes:**

See AttributeinputWidth for more details.  
(Read and Write property)
Name: inputWidth
Class: double (NSNumber)
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Anchura
Type: CIAttributeTypeDistance
class CIFilterSmoothLinearGradientMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Smooth Linear Gradient filter. **Notes:**

Details for this filter:

- **FilterName:** CISmoothLinearGradient
- **DisplayName English:** Smooth Linear Gradient
- **DisplayName German:** Glatter linearer Verlauf
- **DisplayName French:** Dgrad linaire lisse
- **DisplayName Italian:** Gradiente lineare graduale
- **DisplayName Spanish:** Suavizar el degradado lineal

**Categories:**

- **CICategoryGradient:** Gradient
- **CICategoryVideo:** Video
- **CICategoryStillImage:** Still Image
- **CICategoryBuiltIn:** Built-In

**Input:**

- **inputPoint0:** Point 0
- **inputPoint1:** Point 1
- **inputColor0:** Color 1
- **inputColor1:** Color 2

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
52.178.2 Methods

52.178.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The constructor. Notes: On success the handle property is not zero and the filter has the default values set.

52.178.4 Properties

52.178.5 Attribute inputColor0 as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Details about the Smooth Linear Gradient attribute. Notes: This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputColor0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIColorMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeColor</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Color 1</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Farbe 1</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Couleur 1</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Colore 1</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Color 1</td>
</tr>
<tr>
<td>DefaultColor</td>
<td>Red = 1, Green = 1, Blue = 1, Alpha = 1</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.178.6 Attribute inputColor1 as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Details about the Smooth Linear Gradient attribute. Notes: This attribute should have this content:

(Read only property)
52.178.  **CLASS CIFILTERSMOOTHLINEARGRADIENTMBS**

Name:  
Class:  CIColorMBS  
Type:  CIColorMBS  
DisplayName English:  Color 2  
DisplayName German:  Farbe 2  
DisplayName French:  Couleur 2  
DisplayName Italian:  Colore 2  
DisplayName Spanish:  Color 2  
DefaultColor:  Red = 0, Green = 0, Blue = 0, Alpha = 1  
IdentityNumber:  0

52.178.7  **AttributeinputPoint0 as CIAtributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
Details about the Smooth Linear Gradient attribute.

**Notes:**
This attribute should have this content:

Name:  inputPoint0  
Class:  CIVectorMBS  
Type:  CIVectorMBS  
DisplayName English:  Point 0  
DisplayName German:  Punkt 0  
DisplayName French:  Point 0  
DisplayName Italian:  Punto 0  
DisplayName Spanish:  Punto 0  
DefaultVector:  [ 0 0 ]  
IdentityVector:  n/a

(Read only property)

52.178.8  **AttributeinputPoint1 as CIAtributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
Details about the Smooth Linear Gradient attribute.

**Notes:**
This attribute should have this content:

(Read only property)
Name: inputPoint1
Class: CIVectorMBS
Type: CIAttributeTypePosition
DisplayName English: Point 1
DisplayName German: Punkt 1
DisplayName French: Point 1
DisplayName Italian: Punto 1
DisplayName Spanish: Punto 1
DefaultVector: [200 200]
IdentityVector: n/a

52.178.9 inputColor0 as CIColorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Color 1

**Notes:**
Name: inputColor0
Class: CIColorMBS (CIColor)
DisplayName English: Color 1
DisplayName German: Farbe 1
DisplayName French: Couleur 1
DisplayName Italian: Colore 1
DisplayName Spanish: Color 1
Type: CIAttributeTypeColor

See Attribute inputColor0 for more details.
(Read and Write property)

52.178.10 inputColor1 as CIColorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Color 2

**Notes:**
See Attribute inputColor1 for more details.
(Read and Write property)

52.178.11 inputPoint0 as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Point 0
52.178.  CLASS CIFILTERSMOOTHLINEARGRADIENTMBS

Name:       inputColor1
Class:      CIColorMBS (CIColor)
DisplayName English: Color 2
DisplayName German: Farbe 2
DisplayName French: Couleur 2
DisplayName Italian: Colore 2
DisplayName Spanish: Color 2
Type:       CIAttributeTypeColor

Notes:

Name:       inputPoint0
Class:      CIVectorMBS (CIVector)
DisplayName English: Point 0
DisplayName German: Punkt 0
DisplayName French: Point0
DisplayName Italian: Punto 0
DisplayName Spanish: Punto 0
Type:       CIAttributeTypePosition

See Attribute inputPoint0 for more details.
(Read and Write property)

52.178.12  inputPoint1 as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Point 1

Notes:

Name:       inputPoint1
Class:      CIVectorMBS (CIVector)
DisplayName English: Point 1
DisplayName German: Punkt 1
DisplayName French: Point 1
DisplayName Italian: Punto 1
DisplayName Spanish: Punto 1
Type:       CIAttributeTypePosition

See Attribute inputPoint1 for more details.
(Read and Write property)
52.179 class CIFilterSoftLightBlendModeMBS

52.179.1 class CIFilterSoftLightBlendModeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Soft Light Blend Mode filter. **Notes:**

Details for this filter:

FilterName: CISoftLightBlendMode
DisplayName English: Soft Light Blend Mode
DisplayName German: Mischmethode Weiches Licht
DisplayName French: Mode de fusion Lumire tamise
DisplayName Italian: Modalit sfumatura luce soffusa
DisplayName Spanish: Modo de mezcla por luz indirecta

Categories:

- CICategoryCompositeOperation: Composite Operation
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryBuiltIn: Built-In

Input:

- inputImage: Image
- inputBackgroundImage: Background Image

Output:

- outputImage

Subclass of the CIFilterMBS class.
52.179.2 Methods

52.179.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.179.4 Properties

52.179.5 Attribute inputBackgroundImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Soft Light Blend Mode attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputBackgroundImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Background Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Hintergrundbild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image darrre-plan</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine di sfondo</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen de fondo</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.179.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Soft Light Blend Mode attribute.
**Notes:**
This attribute should have this content:

(Read only property)
CHAPTER 52. COREIMAGE

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

52.179.7 inputBackgroundImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The attribute Background Image
Notes:

Name: inputBackgroundImage
Class: CIImageMBS (CIImage)
DisplayName English: Background Image
DisplayName German: Hintergrundbild
DisplayName French: Image derrière-plan
DisplayName Italian: Immagine di sfondo
DisplayName Spanish: Imagen de fondo
Type: CIAttributeTypeImage

See Attribute inputBackgroundImage for more details.
(Read and Write property)

52.179.8 inputImage as CIImageMBS

Notes:

See Attribute inputImage for more details.
(Read and Write property)
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAtributeTypeImage
52.180  class CIFilterSourceAtopCompositingMBS

52.180.1 class CIFilterSourceAtopCompositingMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Source Atop filter.

**Notes:**
Details for this filter:

<table>
<thead>
<tr>
<th>FilterName</th>
<th>CISourceAtopCompositing</th>
</tr>
</thead>
<tbody>
<tr>
<td>DisplayName English</td>
<td>Source Atop</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Quelle oben auf</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Source dessus</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Sorgente sopra</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Sobre la fuente</td>
</tr>
</tbody>
</table>

**Categories:**
- CICategoryCompositeOperation: Composite Operation
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryHighDynamicRange: High Dynamic Range
- CICategoryBuiltIn: Built-In

**Input:**
- inputImage: Image
- inputBackgroundImage: Background Image

**Output:**
- outputImage

Subclass of the CIFilterMBS class.
52.180. Methods

52.180.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

Notes: On success the handle property is not zero and the filter has the default values set.

52.180.4 Properties

52.180.5 Attribute inputBackgroundImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Source Atop attribute.

Notes:

This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>InputBackgroundImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Background Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Hintergrundbild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image darrrire-plan</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine di sfondo</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen de fondo</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.180.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Source Atop attribute.

Notes:

This attribute should have this content:

(Read only property)
52.180.7  **inputBackgroundImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Background Image

**Notes:**

Name:  inputBackgroundImage  
Class:  CIImageMBS (CIImage)  
DisplayName English:  Background Image  
DisplayName German:  Hintergrundbild  
DisplayName French:  Image darrire-plan  
DisplayName Italian:  Immagine di sfondo  
DisplayName Spanish:  Imagen de fondo  
Type:  CIAttributeTypeImage

See AttributeinputBackgroundImage for more details.  
(Read and Write property)

---

52.180.8  **inputImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**

See AttributeinputImage for more details.  
(Read and Write property)
<table>
<thead>
<tr>
<th>Name:</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>
52.181 class CIFilterSourceInCompositingMBS

52.181.1 class CIFilterSourceInCompositingMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Source In filter.
**Notes:**
Details for this filter:

- **FilterName:** CIFilterSourceInCompositing
- **DisplayName English:** Source In
- **DisplayName German:** Quelle innen
- **DisplayName French:** Source lintrieur
- **DisplayName Italian:** Sorgente ingresso
- **DisplayName Spanish:** Desde dentro de la fuente

**Categories:**
- CICategoryCompositeOperation: Composite Operation
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryHighDynamicRange: High Dynamic Range
- CICategoryBuiltIn: Built-In

**Input:**
- inputImage: Image
- inputBackgroundImage: Background Image

**Output:**
- outputImage

Subclass of the CIFilterMBS class.
52.181.2 Methods

52.181.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.181.4 Properties

52.181.5 Attribute inputBackgroundImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Source In attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputBackgroundImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Background Image</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Hintergrundbild</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Image darrrire-plan</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Immagine di sfondo</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Imagen de fondo</td>
</tr>
<tr>
<td>DefaultNumber:</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber:</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.181.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Source In attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.181.7 inputBackgroundImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Background Image

**Notes:**

- Name: inputBackgroundImage
- Class: CIImageMBS (CIImage)
- DisplayName English: Background Image
- DisplayName German: Hintergrundbild
- DisplayName French: Image derrière-plan
- DisplayName Italian: Immagine di sfondo
- DisplayName Spanish: Imagen de fondo
- Type: CIAttributeTypeImage

See Attribute inputBackgroundImage for more details.

(Read and Write property)

52.181.8 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**

See Attribute inputImage for more details.

(Read and Write property)
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage
52.182 class CIFilterSourceOutCompositingMBS

52.182.1 class CIFilterSourceOutCompositingMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Source Out filter. **Notes:**

Details for this filter:

FilterName: CISourceOutCompositing
DisplayName English: Source Out
DisplayName German: Quelle auen
DisplayName French: Source lextrieur
DisplayName Italian: Sorgente uscita
DisplayName Spanish: Desde fuera de la fuente

Categories:

- CICategoryCompositeOperation: Composite Operation
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryHighDynamicRange: High Dynamic Range
- CICategoryBuiltIn: Built-In

Input:

- inputImage: Image
- inputBackgroundImage: Background Image

Output:

- outputImage

Subclass of the CIFilterMBS class.
52.182.2 Methods

52.182.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.182.4 Properties

52.182.5 Attribute `inputBackgroundImage` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Source Out attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputBackgroundImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Background Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Hintergrundbild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image derrière-plan</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine di sfondo</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen de fondo</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.182.6 Attribute `inputImage` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Source Out attribute.
**Notes:**
This attribute should have this content:

(Read only property)
CHAPTER 52. COREIMAGE

52.182.7  inputBackgroundImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Background Image

**Notes:**

See Attribute inputBackgroundImage for more details.
(Read and Write property)

52.182.8  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

See Attribute inputImage for more details.
(Read and Write property)
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage
52.183 class CIFilterSourceOverCompositingMBS

52.183.1 class CIFilterSourceOverCompositingMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Source Over filter.

**Notes:**
Details for this filter:

- **FilterName:** CISourceOverCompositing
- **DisplayName English:** Source Over
- **DisplayName German:** Quelle ber
- **DisplayName French:** Source au-dessus
- **DisplayName Italian:** Sorgente sovrapposizione
- **DisplayName Spanish:** Alrededor de la fuente

**Categories:**
- CICategoryCompositeOperation: Composite Operation
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryHighDynamicRange: High Dynamic Range
- CICategoryBuiltIn: Built-In

**Input:**
- **inputImage:** Image
- **inputBackgroundImage:** Background Image

**Output:**
- **outputImage**

Subclass of the CIFilterMBS class.
52.183.2 Methods

52.183.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.183.4 Properties

52.183.5 Attribute inputBackgroundImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Source Over attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputBackgroundImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Background Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Hintergrundbild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image darrire-plan</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine di sfondo</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen de fondo</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.183.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Source Over attribute.
**Notes:**
This attribute should have this content:

(Read only property)
CHAPTER 52. COREIMAGE

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

52.183.7 inputBackgroundImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The attribute Background Image
Notes:

Name: inputBackgroundImage
Class: CIImageMBS (CIImage)
DisplayName English: Background Image
DisplayName German: Hintergrundbild
DisplayName French: Image d'arrière-plan
DisplayName Italian: Immagine di sfondo
DisplayName Spanish: Imagen de fondo
Type: CIAttributeTypeImage

See AttributeinputBackgroundImage for more details.
(Read and Write property)

52.183.8 inputImage as CIImageMBS

Notes:

See AttributeinputImage for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name:</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>
52.184 class CIFilterSpotColorMBS

52.184.1 class CIFilterSpotColorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Spot Color filter.

**Notes:**

Details for this filter:

- **FilterName:** CISpotColor
- **DisplayName English:** Spot Color
- **DisplayName German:** Spot-Farbe
- **DisplayName French:** Couleur de la tache
- **DisplayName Italian:** Colore tinta piatta
- **DisplayName Spanish:** Color del punto

**Categories:**

- **CICategoryBuiltIn:** Built-In
- **CICategoryStillImage:** Still Image
- **CICategoryVideo:** Video
- **CICategoryStylize:** Stylize

**Input:**

- **inputImage:** Image
- **inputCenterColor1:** Center Color 1
- **inputReplacementColor1:** Replacement Color 1
- **inputCloseness1:** Closeness 1
- **inputContrast1:** Contrast 1
- **inputCenterColor2:** Center Color 2
- **inputReplacementColor2:** Replacement Color 2
- **inputCloseness2:** Closeness 2
- **inputContrast2:** Contrast 2
- **inputCenterColor3:** Center Color 3
52.184. CLASS CIFILTERSPOTCOLORMBS

- inputReplacementColor3: Replacement Color 3
- inputCloseness3: Closeness 3
- inputContrast3: Contrast 3

Output:

- outputImage

Subclass of the CIFilterMBS class.

52.184.2 Methods

52.184.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

**Notes:** On success the handle property is not zero and the filter has the default values set.

52.184.4 Properties

52.184.5 Attribute inputCenterColor1 as CIAtributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Spot Color attribute.

**Notes:**

This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputCenterColor1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIColorMBS</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Center Color 1</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Mittenfarbe 1</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Couleur centrale 1</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Colore centrale 1</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Color del centro 1</td>
</tr>
<tr>
<td>DefaultColor</td>
<td>Red = 0.0784, Green = 0.0627, Blue = 0.0706, Alpha = 1</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)
52.184.6 Attribute inputCenterColor2 as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Spot Color attribute.

**Notes:**

This attribute should have this content:

- **Name:** inputCenterColor2
- **Class:** CIColorMBS
- **DisplayName English:** Center Color 2
- **DisplayName German:** Mittenfarbe 2
- **DisplayName French:** Couleur centrale 2
- **DisplayName Italian:** Colore centrale 2
- **DisplayName Spanish:** Color del centro 2
- **DefaultColor:** Red = 0.5255, Green = 0.3059, Blue = 0.3451, Alpha = 1
- **IdentityNumber:** 0

(Read only property)

52.184.7 Attribute inputCenterColor3 as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Spot Color attribute.

**Notes:**

This attribute should have this content:

- **Name:** inputCenterColor3
- **Class:** CIColorMBS
- **DisplayName English:** Center Color 3
- **DisplayName German:** Mittenfarbe 3
- **DisplayName French:** Couleur centrale 3
- **DisplayName Italian:** Colore centrale 3
- **DisplayName Spanish:** Color del centro 3
- **DefaultColor:** Red = 0.9216, Green = 0.4549, Blue = 0.3333, Alpha = 1
- **IdentityNumber:** 0

(Read only property)
52.184.8 Attribute inputCloseness1 as CIAtributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Spot Color attribute.

**Notes:**
This attribute should have this content:

Name:                   inputCloseness1
Class:                  double
Type:                   CIAttributeTypeScalar
DisplayName English:    Closeness 1
DisplayName German:     Nhe 1
DisplayName French:     Rapprochement 1
DisplayName Italian:    Distanza 1
DisplayName Spanish:    Acercamiento 1
DefaultNumber:          0.22
IdentityNumber:         0
SliderMaxNumber:        0.5
SliderMinNumber:        0

(Read only property)

52.184.9 Attribute inputCloseness2 as CIAtributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Spot Color attribute.

**Notes:**
This attribute should have this content:

(Read only property)

52.184.10 Attribute inputCloseness3 as CIAtributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Spot Color attribute.

**Notes:**
This attribute should have this content:
Name: inputCloseness2
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Closeness 2
DisplayName German: Nhe 2
DisplayName French: Rapprochement 2
DisplayName Italian: Distanza 2
DisplayName Spanish: Acercamiento 2
DefaultNumber: 0.15
IdentityNumber: 0
SliderMaxNumber: 0.5
SliderMinNumber: 0

Name: inputCloseness3
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Closeness 3
DisplayName German: Nhe 3
DisplayName French: Rapprochement 3
DisplayName Italian: Distanza 3
DisplayName Spanish: Acercamiento 3
DefaultNumber: 0.5
IdentityNumber: 0
SliderMaxNumber: 0.5
SliderMinNumber: 0

(Read only property)

52.184.11 Attribute inputContrast1 as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Spot Color attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.184. CLASS CIFILTERSPOTCOLORMBS

Name: inputContrast1
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Contrast 1
DisplayName German: Kontrast 1
DisplayName French: Contraste 1
DisplayName Italian: Contrasto 1
DisplayName Spanish: Contraste 1
DefaultNumber: 0.98
IdentityNumber: 0
SliderMaxNumber: 1
SliderMinNumber: 0

52.184.12 Attribute inputContrast2 as CIAttributeMBS

Notes: This attribute should have this content:

Name: inputContrast2
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Contrast 2
DisplayName German: Kontrast 2
DisplayName French: Contraste 2
DisplayName Italian: Contrasto 2
DisplayName Spanish: Contraste 2
DefaultNumber: 0.98
IdentityNumber: 0
SliderMaxNumber: 1
SliderMinNumber: 0

(Read only property)

52.184.13 Attribute inputContrast3 as CIAttributeMBS

Notes: This attribute should have this content:
Name: inputContrast3  
Class: double  
Type: CIAttributeTypeScalar  
DisplayName English: Contrast 3  
DisplayName German: Kontrast 3  
DisplayName French: Contraste 3  
DisplayName Italian: Contrasto 3  
DisplayName Spanish: Contraste 3  
DefaultNumber: 0.99  
IdentityNumber: 0  
SliderMaxNumber: 1  
SliderMinNumber: 0

(Read only property)

52.184.14 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Spot Color attribute.  
**Notes:**
This attribute should have this content:

Name: inputImage  
Class: CIImageMBS  
Type: CIAttributeTypeImage  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
DefaultNumber: 0  
IdentityNumber: 0

(Read only property)

52.184.15 Attribute inputReplacementColor1 as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Spot Color attribute.
52.184.  CLASS CIFILTERSPOTCOLORMBS

Notes:

This attribute should have this content:

Name: inputReplacementColor1
Class: CIColorMBS
DisplayName English: Replacement Color 1
DisplayName German: Ersetzungsfarbe 1
DisplayName French: Couleur de remplacement 1
DisplayName Italian: Colore di sostituzione 1
DisplayName Spanish: Color de reemplazo 1
DefaultColor: Red = 0.4392, Green = 0.1922, Blue = 0.1961, Alpha = 1
IdentityNumber: 0

(Read only property)

52.184.16  Attribute inputReplacementColor2 as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  Function:
Details about the Spot Color attribute.
Notes:

This attribute should have this content:

Name: inputReplacementColor2
Class: CIColorMBS
DisplayName English: Replacement Color 2
DisplayName German: Ersetzungsfarbe 2
DisplayName French: Couleur de remplacement 2
DisplayName Italian: Colore di sostituzione 2
DisplayName Spanish: Color de reemplazo 2
DefaultColor: Red = 0.9137, Green = 0.5608, Blue = 0.5059, Alpha = 1
IdentityNumber: 0

(Read only property)

52.184.17  Attribute inputReplacementColor3 as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  Function:
Details about the Spot Color attribute.
Notes:
This attribute should have this content:

Name: inputReplacementColor3
Class: CIColorMBS
DisplayName English: Replacement Color 3
DisplayName German: Ersetzungsfarbe 3
DisplayName French: Couleur de remplacement 3
DisplayName Italian: Colore di sostituzione 3
DisplayName Spanish: Color de reemplazo 3
DefaultColor: Red = 0.9098, Green = 0.7529, Blue = 0.6078, Alpha = 1
IdentityNumber: 0

(Read only property)

52.184.18 inputCenterColor1 as CIColorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Center Color 1

**Notes:**

Name: inputCenterColor1
Class: CIColorMBS (CIColor)
DisplayName English: Center Color 1
DisplayName German: Mittenfarbe 1
DisplayName French: Couleur centrale 1
DisplayName Italian: Colore centrale 1
DisplayName Spanish: Color del centro 1
Type:

See Attribute inputCenterColor1 for more details.
(Read and Write property)

52.184.19 inputCenterColor2 as CIColorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Center Color 2

**Notes:**

See Attribute inputCenterColor2 for more details.
(Read and Write property)
52.184.  CLASS CIFILTERSPOTCOLORMBS

Name: inputCenterColor2
Class: CIColorMBS (CIColor)
DisplayName English: Center Color 2
DisplayName German: Mittenfarbe 2
DisplayName French: Couleur centrale 2
DisplayName Italian: Colore centrale 2
DisplayName Spanish: Color del centro 2
Type:

52.184.20  inputCenterColor3 as CIColorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Center Color 3
**Notes:**

Name: inputCenterColor3
Class: CIColorMBS (CIColor)
DisplayName English: Center Color 3
DisplayName German: Mittenfarbe 3
DisplayName French: Couleur centrale 3
DisplayName Italian: Colore centrale 3
DisplayName Spanish: Color del centro 3
Type:

See Attribute inputCenterColor3 for more details.
(Read and Write property)

52.184.21  inputCloseness1 as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Closeness 1
**Notes:**

Name: inputCloseness1
Class: double (NSNumber)
DisplayName English: Closeness 1
DisplayName German: Nhe 1
DisplayName French: Rapprochement 1
DisplayName Italian: Distanza 1
DisplayName Spanish: Acercamiento 1
Type: CIAttributeTypeScalar

See Attribute inputCloseness1 for more details.
52.184.22  inputCloseness2 as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Closeness 2

**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputCloseness2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Closeness 2</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Nhe 2</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Rapprochement 2</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Distanza 2</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Acercamiento 2</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeScalar</td>
</tr>
</tbody>
</table>

See Attribute inputCloseness2 for more details.
(Read and Write property)

52.184.23  inputCloseness3 as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Closeness 3

**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputCloseness3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Closeness 3</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Nhe 3</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Rapprochement 3</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Distanza 3</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Acercamiento 3</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeScalar</td>
</tr>
</tbody>
</table>

See Attribute inputCloseness3 for more details.
(Read and Write property)
52.184.24  inputContrast1 as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Contrast 1

**Notes:**
- Name: inputContrast1
- Class: double (NSNumber)
- DisplayName English: Contrast 1
- DisplayName German: Kontrast 1
- DisplayName French: Contraste 1
- DisplayName Italian: Contrasto 1
- DisplayName Spanish: Contraste 1
- Type: CIAttributeTypeScalar

See Attribute inputContrast1 for more details.
(Read and Write property)

52.184.25  inputContrast2 as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Contrast 2

**Notes:**
- Name: inputContrast2
- Class: double (NSNumber)
- DisplayName English: Contrast 2
- DisplayName German: Kontrast 2
- DisplayName French: Contraste 2
- DisplayName Italian: Contrasto 2
- DisplayName Spanish: Contraste 2
- Type: CIAttributeTypeScalar

See Attribute inputContrast2 for more details.
(Read and Write property)

52.184.26  inputContrast3 as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Contrast 3

**Notes:**
Name: inputContrast3  
Class: double (NSNumber)  
DisplayName English: Contrast 3  
DisplayName German: Kontrast 3  
DisplayName French: Contraste 3  
DisplayName Italian: Contrasto 3  
DisplayName Spanish: Contraste 3  
Type: CIAttributeTypeScalar  

See AttributeinputContrast3 for more details.  
(Read and Write property)

52.184.27 inputImage as CIImageMBS

Function:  
The attribute Image  
Notes:  

Name: inputImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
Type: CIAttributeTypeImage  

See AttributeinputImage for more details.  
(Read and Write property)

52.184.28 inputReplacementColor1 as CIColorMBS

Function:  
The attribute Replacement Color 1  
Notes:  

See AttributeinputReplacementColor1 for more details.  
(Read and Write property)
52.184.29  inputReplacementColor2 as CIColorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Replacement Color 2

**Notes:**

Name: inputReplacementColor2
Class: CIColorMBS (CIColor)
DisplayName English: Replacement Color 2
DisplayName German: Ersetzungsfarbe 2
DisplayName French: Couleur de remplacement 2
DisplayName Italian: Colore di sostituzione 2
DisplayName Spanish: Color de reemplazo 2
Type:

See Attribute inputReplacementColor2 for more details.
(Read and Write property)

52.184.30  inputReplacementColor3 as CIColorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Replacement Color 3

**Notes:**

Name: inputReplacementColor3
Class: CIColorMBS (CIColor)
DisplayName English: Replacement Color 3
DisplayName German: Ersetzungsfarbe 3
DisplayName French: Couleur de remplacement 3
DisplayName Italian: Colore di sostituzione 3
DisplayName Spanish: Color de reemplazo 3
Type:

See Attribute inputReplacementColor3 for more details.
(Read and Write property)
52.185. class CIFilterSpotLightMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Spot Light filter.

**Notes:**

Details for this filter:

- **FilterName:** CISpotLight
- **DisplayName English:** Spot Light
- **DisplayName German:** Rampenlicht
- **DisplayName French:** Phare
- **DisplayName Italian:** Luminosità tinta piatta
- **DisplayName Spanish:** Luz concentrada

**Categories:**

- CICategoryStylize: Stylize
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputLightPosition: Light Position
- inputLightPointsAt: Light Points At
- inputBrightness: Brightness
- inputConcentration: Concentration
- inputColor: Color

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.185.2 Methods

52.185.3 Constructor

Notes: On success the handle property is not zero and the filter has the default values set.

52.185.4 Properties

52.185.5 Attribute inputBrightness as CIAttributeMBS

Notes: This attribute should have this content:

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputBrightness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>double</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeDistance</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Brightness</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Helligkeit</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Luminosit</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Luminosit</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Brillo</td>
</tr>
<tr>
<td>DefaultNumber:</td>
<td>3</td>
</tr>
<tr>
<td>IdentityNumber:</td>
<td>1</td>
</tr>
<tr>
<td>SliderMaxNumber:</td>
<td>10</td>
</tr>
<tr>
<td>SliderMinNumber:</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.185.6 Attribute inputColor as CIAttributeMBS

Notes: This attribute should have this content:
52.185. **CLASS CIFILTERSPOTLIGHTMBS**

Name: inputColor  
Class: CIColorMBS  
Type: CIAttributeTypeOpaqueColor  
DisplayName English: Color  
DisplayName German: Farbe  
DisplayName French: Couleur  
DisplayName Italian: Colore  
DisplayName Spanish: Color  
DefaultColor: Red = 1, Green = 1, Blue = 1, Alpha = 1  
IdentityNumber: 0

(Read only property)

52.185.7 **Attribute inputConcentration as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Spot Light attribute.

**Notes:**
This attribute should have this content:

Name: inputConcentration  
Class: double  
Type: CIAttributeTypeScalar  
DisplayName English: Concentration  
DisplayName German: Konzentration  
DisplayName French: Concentration  
DisplayName Italian: Concentrazione  
DisplayName Spanish: Concentracin  
DefaultNumber: 0.1  
IdentityNumber: 20  
MaxNumber: 0  
MinNumber: 0.001  
SliderMaxNumber: 1.5  
SliderMinNumber: 0.001

(Read only property)
52.185.8 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Spot Light attribute.

**Notes:**

This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.185.9 Attribute inputLightPointsAt as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Spot Light attribute.

**Notes:**

This attribute should have this content:

Name: inputLightPointsAt
Class: CIVectorMBS
Type: CIAttributeTypePosition3
DisplayName English: Light Points At
DisplayName German: Lichtpunkte bei
DisplayName French: Points lumineux
DisplayName Italian: Punti luce a
DisplayName Spanish: El foco apunta a
DefaultVector: [200 200 0]
IdentityVector: n/a

(Read only property)
52.185.10  Attribute inputLightPosition as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Spot Light attribute.
**Notes:**
This attribute should have this content:

Name: inputLightPosition
Class: CIVectorMBS
Type: CIAttributeTypePosition3
DisplayName English: Light Position
DisplayName German: Lichtposition
DisplayName French: Position de la lumire
DisplayName Italian: Posizione luce
DisplayName Spanish: Posicin de la luz
Default Vector: [ 400 600 150 ]
Identity Vector: n/a

(Read only property)

52.185.11  inputBrightness as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Brightness
**Notes:**

Name: inputBrightness
Class: double (NSNumber)
DisplayName English: Brightness
DisplayName German: Helligkeit
DisplayName French: Luminosit
DisplayName Italian: Luminosit
DisplayName Spanish: Brillo
Type: CIAttributeTypeDistance

See Attribute inputBrightness for more details.
(Read and Write property)
### 52.185.12 inputColor as CIColorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Color

**Notes:**

- Name: inputColor
- Class: CIColorMBS (CIColor)
- DisplayName English: Color
- DisplayName German: Farbe
- DisplayName French: Couleur
- DisplayName Italian: Colore
- DisplayName Spanish: Color
- Type: CIAttributeTypeOpaqueColor

See AttributeinputColor for more details.
(Read and Write property)

### 52.185.13 inputConcentration as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Concentration

**Notes:**

- Name: inputConcentration
- Class: double (NSNumber)
- DisplayName English: Concentration
- DisplayName German: Konzentration
- DisplayName French: Concentration
- DisplayName Italian: Concentrazione
- DisplayName Spanish: Concentracin
- Type: CIAttributeTypeScalar

See AttributeinputConcentration for more details.
(Read and Write property)

### 52.185.14 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**
52.185. **CLASS CIFILTERSPOTLIGHTMBS**

Name: inputImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
Type: CIAttributeTypeImage

See Attribute inputImage for more details.  
(Read and Write property)

52.185.15 **inputLightPointsAt** as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Light Points At  
**Notes:**

Name: inputLightPointsAt  
Class: CIVectorMBS (CIVector)  
DisplayName English: Light Points At  
DisplayName German: Lichtpunkte bei  
DisplayName French: Points lumineux  
DisplayName Italian: Punti luce a  
DisplayName Spanish: El foco apunta a  
Type: CIAttributeTypePosition3

See Attribute inputLightPointsAt for more details.  
(Read and Write property)

52.185.16 **inputLightPosition** as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Light Position  
**Notes:**

See Attribute inputLightPosition for more details.  
(Read and Write property)
Name: inputLightPosition  
Class: CIVectorMBS (CIVector)  
DisplayName English: Light Position  
DisplayName German: Lichtposition  
DisplayName French: Position de la lumire  
DisplayName Italian: Posizione luce  
DisplayName Spanish: Posici\n de la luz  
Type: CIAttributeTypePosition3
52.186. CLASS CIFILTERSRGBTONECURVETOLINEARMBS

52.186  class CIFilterSRGBToneCurveToLinearMBS

52.186.1  class CIFilterSRGBToneCurveToLinearMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage sRGB Tone Curve to Linear filter.

**Notes:**
Details for this filter:

- **FilterName:** CISRGBToneCurveToLinear
- **DisplayName English:** sRGB Tone Curve to Linear
- **DisplayName German:** sRGB-Farbtonkurve in eine lineare Farbtonkurve
- **DisplayName French:** Courbe tonale sRGB vers linaire
- **DisplayName Italian:** Da curva tonale sRGB a lineare
- **DisplayName Spanish:** Curva tonal de sRGB a lineal

**Categories:**

- CICategoryColorAdjustment: Color Adjustment
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryBuiltIn: Built-In

**Input:**

- **inputImage:** Image

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
52.186.2 Methods

52.186.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

**Notes:** On success the handle property is not zero and the filter has the default values set.

52.186.4 Properties

52.186.5 AttributeinputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the sRGB Tone Curve to Linear attribute.

**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.186.6 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**
See AttributeinputImage for more details.

(Read and Write property)
<table>
<thead>
<tr>
<th>Name:</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>
52.187 class CIFilterStarShineGeneratorMBS

52.187.1 class CIFilterStarShineGeneratorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Star Shine filter.

**Notes:**
Details for this filter:

- FilterName: CIStarShineGenerator
- DisplayName English: Star Shine
- DisplayName German: Sternenlicht
- DisplayName French: Brillance dtoile
- DisplayName Italian: Stella luminosa
- DisplayName Spanish: Brillo estrellado

**Categories:**

- CICategoryGenerator: Generator
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputCenter: Center
- inputColor: Color
- inputRadius: Radius
- inputCrossScale: Cross Scale
- inputCrossAngle: Cross Angle
- inputCrossOpacity: Cross Opacity
- inputCrossWidth: Cross Width
- inputEpsilon: Epsilon

**Output:**
Subclass of the CIFilterMBS class.

### 52.187.2 Methods

### 52.187.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

### 52.187.4 Properties

#### 52.187.5 Attribute inputCenter as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Star Shine attribute.
**Notes:**

This attribute should have this content:

- **Name:** inputCenter
- **Class:** CIVectorMBS
- **Type:** CIAttributeTypePosition
- **DisplayName English:** Center
- **DisplayName German:** Mitte
- **DisplayName French:** Centre
- **DisplayName Italian:** Centro
- **DisplayName Spanish:** Centro
- **DefaultVector:** [150 150]
- **IdentityVector:** n/a

(Read only property)

#### 52.187.6 Attribute inputColor as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Star Shine attribute.
**Notes:**
CHAPTER 52. COREIMAGE

This attribute should have this content:

Name: inputColor  
Class: CIColorMBS  
DisplayName English: Color  
DisplayName German: Farbe  
DisplayName French: Couleur  
DisplayName Italian: Colore  
DisplayName Spanish: Color  
DefaultColor: Red = 1, Green = 0.8, Blue = 0.6, Alpha = 1  
IdentityNumber: 0

(Read only property)

52.187.7 Attribute inputCrossAngle as CIAttributeMBS

Function: Details about the Star Shine attribute.  
Notes:  
This attribute should have this content:

Name: inputCrossAngle  
Class: double  
Type: CIAttributeTypeAngle  
DisplayName English: Cross Angle  
DisplayName German: Cross-Winkel  
DisplayName French: Angle croisé  
DisplayName Italian: Angolo incrociato  
DisplayName Spanish: ángulo cruzado  
DefaultNumber: 0.6  
IdentityNumber: 0  
SliderMaxNumber: 3.141593  
SliderMinNumber: -3.141593

(Read only property)

52.187.8 Attribute inputCrossOpacity as CIAttributeMBS

Function: Details about the Star Shine attribute.
### Notes:

This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputCrossOpacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeScalar</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Cross Opacity</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Cross-Deckkraft</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Opacit croise</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Opacit incrociata</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Opacidad cruzada</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>-2</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>-2</td>
</tr>
<tr>
<td>MaxNumber</td>
<td>0</td>
</tr>
<tr>
<td>MinNumber</td>
<td>-8</td>
</tr>
<tr>
<td>SliderMaxNumber</td>
<td>0</td>
</tr>
<tr>
<td>SliderMinNumber</td>
<td>-8</td>
</tr>
</tbody>
</table>

(Read only property)

---

#### 52.187.9 Attribute `inputCrossScale` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Star Shine attribute.

### Notes:

This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputCrossScale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeScalar</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Cross Scale</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Cross-Skalierung</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>chelle croise</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Scala incrociata</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Escala cruzada</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>15</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>15</td>
</tr>
<tr>
<td>MaxNumber</td>
<td>100</td>
</tr>
<tr>
<td>MinNumber</td>
<td>0</td>
</tr>
<tr>
<td>SliderMaxNumber</td>
<td>100</td>
</tr>
<tr>
<td>SliderMinNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)
52.187.10  AttributeinputCrossWidth as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Star Shine attribute. **Notes:**

This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputCrossWidth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeDistance</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Cross Width</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Cross-Breite</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Largeur croise</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Larghezza incrociata</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Anchura cruzada</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>2.5</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
<tr>
<td>SliderMaxNumber</td>
<td>10</td>
</tr>
<tr>
<td>SliderMinNumber</td>
<td>0.5</td>
</tr>
</tbody>
</table>

(Read only property)

52.187.11  AttributeinputEpsilon as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Star Shine attribute. **Notes:**

This attribute should have this content:

(Read only property)

52.187.12  AttributeinputRadius as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Star Shine attribute. **Notes:**
**52.187. CLASS CIFILTERSTARSHINEGENERATORMBS**

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputEpsilon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>double</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeScalar</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Epsilon</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Epsilon</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Epsilon</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Ipsilon</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>psilon</td>
</tr>
<tr>
<td>DefaultNumber:</td>
<td>-2</td>
</tr>
<tr>
<td>IdentityNumber:</td>
<td>-2</td>
</tr>
<tr>
<td>MaxNumber:</td>
<td>0</td>
</tr>
<tr>
<td>MinNumber:</td>
<td>-8</td>
</tr>
<tr>
<td>SliderMaxNumber:</td>
<td>0</td>
</tr>
<tr>
<td>SliderMinNumber:</td>
<td>-8</td>
</tr>
</tbody>
</table>

This attribute should have this content:

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputRadius</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>double</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeDistance</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Radius</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Radius</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Rayon</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Raggio</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Radio</td>
</tr>
<tr>
<td>DefaultNumber:</td>
<td>50</td>
</tr>
<tr>
<td>IdentityNumber:</td>
<td>0</td>
</tr>
<tr>
<td>SliderMaxNumber:</td>
<td>300</td>
</tr>
<tr>
<td>SliderMinNumber:</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

**52.187.13 inputCenter as CIVectorMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Center

**Notes:**

See Attribute inputCenter for more details.

(Read and Write property)
Name: inputCenter
Class: CIVectorMBS (CIVector)
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
Type: CIAttributeTypePosition

52.187.14 inputColor as CIColorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Color

**Notes:**
Name: inputColor
Class: CIColorMBS (CIColor)
DisplayName English: Color
DisplayName German: Farbe
DisplayName French: Couleur
DisplayName Italian: Colore
DisplayName Spanish: Color
Type:

See Attribute inputColor for more details.
(Read and Write property)

52.187.15 inputCrossAngle as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Cross Angle

**Notes:**
Name: inputCrossAngle
Class: double (NSNumber)
DisplayName English: Cross Angle
DisplayName German: Cross-Winkel
DisplayName French: Angle croisé
DisplayName Italian: Angolo incrociato
DisplayName Spanish: ngulo cruzado
Type: CIAttributeTypeAngle

See Attribute inputCrossAngle for more details.
52.187.16  inputCrossOpacity as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Cross Opacity

**Notes:**

- **Name:** inputCrossOpacity
- **Class:** double (NSNumber)
- **DisplayName English:** Cross Opacity
- **DisplayName German:** Cross-Deckkraft
- **DisplayName French:** Opacite croise
- **DisplayName Italian:** Opacita incrociata
- **DisplayName Spanish:** Opacidad cruzada
- **Type:** CIAttributeTypeScalar

See Attribute inputCrossOpacity for more details.
(Read and Write property)

52.187.17  inputCrossScale as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Cross Scale

**Notes:**

- **Name:** inputCrossScale
- **Class:** double (NSNumber)
- **DisplayName English:** Cross Scale
- **DisplayName German:** Cross-Skalierung
- **DisplayName French:** chelle croise
- **DisplayName Italian:** Scala incrociata
- **DisplayName Spanish:** Escala cruzada
- **Type:** CIAttributeTypeScalar

See Attribute inputCrossScale for more details.
(Read and Write property)
52.187.18  inputCrossWidth as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Cross Width
**Notes:**

- Name: inputCrossWidth
- Class: double (NSNumber)
- DisplayName English: Cross Width
- DisplayName German: Cross-Breite
- DisplayName French: Largeur croise
- DisplayName Italian: Larghezza incrociata
- DisplayName Spanish: Anchura cruzada
- Type: CIAttributeTypeDistance

See Attribute inputCrossWidth for more details.
(Read and Write property)

52.187.19  inputEpsilon as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Epsilon
**Notes:**

- Name: inputEpsilon
- Class: double (NSNumber)
- DisplayName English: Epsilon
- DisplayName German: Epsilon
- DisplayName French: Epsilon
- DisplayName Italian: Ipsilon
- DisplayName Spanish: psilon
- Type: CIAttributeTypeDistance

See Attribute inputEpsilon for more details.
(Read and Write property)

52.187.20  inputRadius as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Radius
**Notes:**
Name: inputRadius
Class: double (NSNumber)
DisplayName English: Radius
DisplayName German: Radius
DisplayName French: Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
Type: CIAttributeTypeDistance

See Attribute inputRadius for more details.
(Read and Write property)
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52.188 class CIFilterStraightenFilterMBS

52.188.1 class CIFilterStraightenFilterMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Straighten filter.

**Notes:**
Details for this filter:

FilterName: CIStraightenFilter

DisplayName English: Straighten
DisplayName German: Begradigen
DisplayName French: Redresser
DisplayName Italian: Raddrizza
DisplayName Spanish: Enderezar

Categories:

- CICategoryGeometryAdjustment: Geometry Adjustment
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputAngle: Angle

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.188.2 Methods

52.188.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.188.4 Properties

52.188.5 Attribute inputAngle as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Straighten attribute.
**Notes:**
This attribute should have this content:

Name: inputAngle  
Class: double  
Type: CIAttributeTypeAngle  
DisplayName English: Angle  
DisplayName German: Winkel  
DisplayName French: Angle  
DisplayName Italian: Angolo  
DisplayName Spanish: ngulo  
DefaultNumber: 0  
IdentityNumber: 0  
SliderMaxNumber: 3.141593  
SliderMinNumber: -3.141593

(Read only property)

52.188.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Straighten attribute.
**Notes:**
This attribute should have this content:
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CHAPTER 52. COREIMAGE

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.188.7 inputAngle as double

Notes:

Name: inputAngle
Class: double (NSNumber)
DisplayName English: Angle
DisplayName German: Winkel
DisplayName French: Angle
DisplayName Italian: Angolo
DisplayName Spanish: ngulo
Type: CIAttributeTypeAngle

See AttributeinputAngle for more details.
(Read and Write property)

52.188.8 inputImage as CIImageMBS

Notes:

See AttributeinputImage for more details.
(Read and Write property)
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage
52.189 class CIFilterStretchCropMBS

52.189.1 class CIFilterStretchCropMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Stretch Crop filter.

**Notes:**

Details for this filter:

- **FilterName:** CIStretchCrop
- **DisplayName English:** Stretch Crop
- **DisplayName German:** Schnitt dehnen
- **DisplayName French:** tirer le recadrage
- **DisplayName Italian:** Allarga o ritaglia
- **DisplayName Spanish:** Estirar recorte

**Categories:**

- CICategoryDistortionEffect: Distortion Effect
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- **inputImage:** Image
- **inputSize:** Size
- **inputCropAmount:** CropAmount
- **inputCenterStretchAmount:** CenterStretchAmount

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
52.189.2 Methods

52.189.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.189.4 Properties

52.189.5 Attribute `inputCenterStretchAmount` as `CIAttributeMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Stretch Crop attribute.
**Notes:**
This attribute should have this content:

- Name: `inputCenterStretchAmount`
- Class: `double`
- Type: `CIAttributeTypeScalar`
- DisplayName: `CenterStretchAmount`
- DefaultNumber: `0.25`
- IdentityNumber: `0`
- MaxNumber: `1`
- MinNumber: `0`
- SliderMaxNumber: `1`
- SliderMinNumber: `0`

(Read only property)

52.189.6 Attribute `inputCropAmount` as `CIAttributeMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Stretch Crop attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.189.7 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Stretch Crop attribute.

**Notes:**

This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.189.8 Attribute inputSize as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Stretch Crop attribute.

**Notes:**

This attribute should have this content:

(Read only property)
52.189. CLASS CIFILTERSTRETCHCROPMBS

Name: inputSize
Class: CIVectorMBS
Type: CIAttributeTypePosition
DisplayName: Size
DefaultVector: \[ 1280 720 \]
IdentityVector: n/a

52.189.9 inputCenterStretchAmount as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute CenterStretchAmount

**Notes:**

Name: inputCenterStretchAmount
Class: double (NSNumber)
DisplayName English: CenterStretchAmount
DisplayName German: CenterStretchAmount
DisplayName French: CenterStretchAmount
DisplayName Italian: CenterStretchAmount
DisplayName Spanish: CenterStretchAmount
Type: CIAttributeTypeScalar

See Attribute inputCenterStretchAmount for more details.
(Read and Write property)

52.189.10 inputCropAmount as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute CropAmount

**Notes:**

Name: inputCropAmount
Class: double (NSNumber)
DisplayName English: CropAmount
DisplayName German: CropAmount
DisplayName French: CropAmount
DisplayName Italian: CropAmount
DisplayName Spanish: CropAmount
Type: CIAttributeTypeScalar

See Attribute inputCropAmount for more details.
(Read and Write property)
52.189.11  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Image
Notes:

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See AttributeinputImage for more details.
(Read and Write property)

52.189.12  inputSize as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The attribute Size
Notes:

Name: inputSize
Class: CIVectorMBS (CIVector)
DisplayName English: Size
DisplayName German: Size
DisplayName French: Size
DisplayName Italian: Size
DisplayName Spanish: Size
Type: CIAttributeTypePosition

See AttributeinputSize for more details.
(Read and Write property)
class CIFilterStripesGeneratorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Stripes filter.

**Notes:**
Details for this filter:

- **FilterName:** CIFiltersGenerator
- **DisplayName English:** Stripes
- **DisplayName German:** Streifen
- **DisplayName French:** Rayures
- **DisplayName Italian:** Strisce
- **DisplayName Spanish:** Franjas

**Categories:**

- CICategoryGenerator: Generator
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputCenter: Center
- inputColor0: Color 1
- inputColor1: Color 2
- inputWidth: Width
- inputSharpness: Sharpness

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.190.2 Methods

52.190.3 Constructor

Notes: On success the handle property is not zero and the filter has the default values set.

52.190.4 Properties

52.190.5 Attribute inputCenter as CIAttributeMBS

Notes: This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputCenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIVectorMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypePosition</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Center</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Mitte</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Centre</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Centro</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Centro</td>
</tr>
<tr>
<td>Default Vector:</td>
<td>[ 150 150 ]</td>
</tr>
<tr>
<td>Identity Vector:</td>
<td>n/a</td>
</tr>
</tbody>
</table>

(Read only property)

52.190.6 Attribute inputColor0 as CIAttributeMBS

Notes: This attribute should have this content:

(Read only property)
52.190. CLASS CIFILTERSTRIPESGENERATORMBS

Name: inputColor0
Class: CIColorMBS
DisplayName English: Color 1
DisplayName German: Farbe 1
DisplayName French: Couleur 1
DisplayName Italian: Colore 1
DisplayName Spanish: Color 1
DefaultColor: Red = 1, Green = 1, Blue = 1, Alpha = 1
IdentityNumber: 0

52.190.7 Attribute inputColor1 as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Details about the Stripes attribute.
Notes:
This attribute should have this content:

Name: inputColor1
Class: CIColorMBS
DisplayName English: Color 2
DisplayName German: Farbe 2
DisplayName French: Couleur 2
DisplayName Italian: Colore 2
DisplayName Spanish: Color 2
DefaultColor: Red = 0, Green = 0, Blue = 0, Alpha = 1
IdentityNumber: 0

(Read only property)

52.190.8 Attribute inputSharpness as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Details about the Stripes attribute.
Notes:
This attribute should have this content:

(Read only property)
Name: inputSharpness
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Sharpness
DisplayName German: Schärfe
DisplayName French: Nettet
DisplayName Italian: Nitidezza
DisplayName Spanish: Nitidez
DefaultNumber: 1
IdentityNumber: 0
MaxNumber: 1
MinNumber: 0
SliderMaxNumber: 1
SliderMinNumber: 0

52.190.9 Attribute inputWidth as CIAttributeMBS

Notes:
This attribute should have this content:

Name: inputWidth
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Anchura
DefaultNumber: 80
IdentityNumber: 0
SliderMaxNumber: 800
SliderMinNumber: 0

(Read only property)

52.190.10 inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The attribute Center
Notes:
52.190. **CLASS CIFILTERSTRIPESGENERATORMBS**

Name: inputCenter  
Class: CIVectorMBS (CIVector)  
DisplayName English: Center  
DisplayName German: Mitte  
DisplayName French: Centre  
DisplayName Italian: Centro  
DisplayName Spanish: Centro  
Type: CIAttributeTypePosition

See Attribute inputCenter for more details.  
(Read and Write property)

52.190.11 **inputColor0 as CIColorMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Color 1  
**Notes:**

Name: inputColor0  
Class: CIColorMBS (CIColor)  
DisplayName English: Color 1  
DisplayName German: Farbe 1  
DisplayName French: Couleur 1  
DisplayName Italian: Colore 1  
DisplayName Spanish: Color 1  
Type:

See Attribute inputColor0 for more details.  
(Read and Write property)

52.190.12 **inputColor1 as CIColorMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Color 2  
**Notes:**

See Attribute inputColor1 for more details.  
(Read and Write property)
52.190.13 inputSharpness as double


Notes:

Name: inputSharpness
Class: double (NSNumber)
DisplayName English: Sharpness
DisplayName German: Schärfe
DisplayName French: Nettet
DisplayName Italian: Nitidezza
DisplayName Spanish: Nitidez
Type: CIAttributeTypeScalar

See Attribute inputSharpness for more details.
(Read and Write property)

52.190.14 inputWidth as double


Notes:

Name: inputWidth
Class: double (NSNumber)
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Anchura
Type: CIAttributeTypeDistance

See Attribute inputWidth for more details.
52.190. CLASS CIFILTERSTRIPESGENERATORMBS

(Read and Write property)
52.191 class CIFilterSubtractBlendModeMBS

52.191.1 class CIFilterSubtractBlendModeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Subtract Blend Mode filter.

**Notes:**

Details for this filter:

- **FilterName:** CISubtractBlendMode
- **DisplayName English:** Subtract Blend Mode
- **DisplayName German:** Mischmethode Subtrahieren
- **DisplayName French:** Mode de fusion Soustraction
- **DisplayName Italian:** Modalit sfumatura sottrazione
- **DisplayName Spanish:** Restar modo de mezcla

**Categories:**

- CICategoryCompositeOperation: Composite Operation
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputBackgroundImage: Background Image

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.191.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.191.4 Properties

52.191.5 Attribute inputBackgroundImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Subtract Blend Mode attribute.
**Notes:**
This attribute should have this content:

Name: inputBackgroundImage  
Class: CIImageMBS  
Type: CIAttributeTypeImage  
DisplayName English: Background Image  
DisplayName German: Hintergrundbild  
DisplayName French: Image derrière-plan  
DisplayName Italian: Immagine di sfondo  
DisplayName Spanish: Imagen de fondo  
DefaultNumber: 0  
IdentityNumber: 0

(Read only property)

52.191.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Subtract Blend Mode attribute.
**Notes:**
This attribute should have this content:

(Read only property)
### Name: inputImage

**Class:** CIImageMBS  
**Type:** CIAttributedString

**DisplayName**
- English: Image
- German: Bild
- French: Image
- Italian: Immagine
- Spanish: Imagen

**DefaultNumber:** 0  
**IdentityNumber:** 0

---

#### 52.191.7 inputBackgroundImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Background Image  
**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputBackgroundImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Background Image</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Hintergrundbild</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Image darrrire-plan</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Immagine di sfondo</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Imagen de fondo</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributedString</td>
</tr>
</tbody>
</table>

See Attribute inputBackgroundImage for more details.  
(Read and Write property)

---

#### 52.191.8 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image  
**Notes:**

See Attribute inputImage for more details.  
(Read and Write property)
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage
52.192  class CIFilterSunbeamsGeneratorMBS

52.192.1  class CIFilterSunbeamsGeneratorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Sunbeams filter.

**Notes:**
Details for this filter:

- **FilterName:** CISunbeamsGenerator
- **DisplayName English:** Sunbeams
- **DisplayName German:** Sonnenstrahlen
- **DisplayName French:** Rayons solaires
- **DisplayName Italian:** Raggi di sole
- **DisplayName Spanish:** Rayos de sol

**Categories:**

- CICategoryGenerator: Generator
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputCenter: Center
- inputColor: Color
- inputSunRadius: Sun Radius
- inputMaxStriationRadius: Maximum Striation Radius
- inputStriationStrength: Striation Strength
- inputStriationContrast: Striation Contrast
- inputTime: Time

**Output:**
• outputImage

Subclass of the CIFilterMBS class.

52.192.2 Methods

52.192.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.192.4 Properties

52.192.5 Attribute inputCenter as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Sunbeams attribute.
**Notes:**

This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputCenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIVectorMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypePosition</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Center</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Mitte</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Centre</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Centro</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Centro</td>
</tr>
<tr>
<td>DefaultVector</td>
<td>[ 150 150 ]</td>
</tr>
<tr>
<td>IdentityVector</td>
<td>n/a</td>
</tr>
</tbody>
</table>

(Read only property)

52.192.6 Attribute inputColor as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Sunbeams attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputColor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIColorMBS</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Color</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Farbe</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Couleur</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Colore</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Color</td>
</tr>
<tr>
<td>DefaultColor</td>
<td>Red = 1, Green = 0.5, Blue = 0, Alpha = 1</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

### 52.192.7 Attribute inputMaxStriationRadius as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Sunbeams attribute. **Notes:**

This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputMaxStriationRadius</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeScalar</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Maximum Striation Radius</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Maximaler Radius fr Riffelung</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Rayon maximum des stries</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Raggio di massima striatura</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Radio de estriacin maximo</td>
</tr>
<tr>
<td>DefaultValue</td>
<td>2.58</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>2.58</td>
</tr>
<tr>
<td>SliderMaxNumber</td>
<td>10</td>
</tr>
<tr>
<td>SliderMinNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

### 52.192.8 Attribute inputStriationContrast as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Sunbeams attribute.
**Notes:**

This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputStriationContrast</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeScalar</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Striation Contrast</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Kontrast fr Riffelung</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Contraste des stries</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Contrasto striatura</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Contraste de la estriacin</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>1.375</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>1.375</td>
</tr>
<tr>
<td>SliderMaxNumber</td>
<td>5</td>
</tr>
<tr>
<td>SliderMinNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

### 52.192.9  Attribute `inputStriationStrength` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Sunbeams attribute.

**Notes:**

This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputStriationStrength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeScalar</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Striation Strength</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Strke der Riffelung</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Force des stries</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Livello striatura</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Intensidad de la estriacin</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0.5</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0.5</td>
</tr>
<tr>
<td>SliderMaxNumber</td>
<td>3</td>
</tr>
<tr>
<td>SliderMinNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)
52.192.10  Attribute inputSunRadius as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Sunbeams attribute.

**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputSunRadius</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeDistance</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Sun Radius</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Radius der Sonne</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Rayon du soleil</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Raggio del sole</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Radio solar</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>40</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>40</td>
</tr>
<tr>
<td>SliderMaxNumber</td>
<td>800</td>
</tr>
<tr>
<td>SliderMinNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.192.11  Attribute inputTime as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Sunbeams attribute.

**Notes:**
This attribute should have this content:

(Read only property)

52.192.12  inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Center

**Notes:**
See Attribute inputCenter for more details.
(Read and Write property)
Name: inputTime
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Time
DisplayName German: Zeit
DisplayName French: Dure
DisplayName Italian: Tempo
DisplayName Spanish: Tiempo
DefaultNumber: 0
IdentityNumber: 0
MaxNumber: 1
MinNumber: 0
SliderMaxNumber: 1
SliderMinNumber: 0

Name: inputCenter
Class: CIVectorMBS (CIVector)
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
Type: CIAttributeTypePosition

52.192.13 inputColor as CIColorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Color
**Notes:**

Name: inputColor
Class: CIColorMBS (CIColor)
DisplayName English: Color
DisplayName German: Farbe
DisplayName French: Couleur
DisplayName Italian: Colore
DisplayName Spanish: Color
Type:

See Attribute inputColor for more details.
(Read and Write property)
52.192.14  inputMaxStriationRadius as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
The attribute Maximum Striation Radius  
**Notes:**

Name:    inputMaxStriationRadius  
Class:    double (NSNumber)  
DisplayName English:    Maximum Striation Radius  
DisplayName German:    Maximaler Radius für Riffelung  
DisplayName French:    Rayon maximum des stries  
DisplayName Italian:    Raggio di massima striatura  
DisplayName Spanish:    Radio de estriación máximo  
Type:    CIAutoAttributeTypeScalar

See Attribute inputMaxStriationRadius for more details.  
(Read and Write property)

52.192.15  inputStriationContrast as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
The attribute Striation Contrast  
**Notes:**

Name:    inputStriationContrast  
Class:    double (NSNumber)  
DisplayName English:    Striation Contrast  
DisplayName German:    Kontrast für Riffelung  
DisplayName French:    Contraste des stries  
DisplayName Italian:    Contrasto striatura  
DisplayName Spanish:    Contraste de la estriación  
Type:    CIAutoAttributeTypeScalar

See Attribute inputStriationContrast for more details.  
(Read and Write property)

52.192.16  inputStriationStrength as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
The attribute Striation Strength  
**Notes:**
52.192. **CLASS CIFILTERSUNBEAMSGENERATORMBS**  

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputStriationStrength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Striation Strength</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Strke der Riffelung</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Force des stries</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Livello striatura</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Intensidad de la estriacin</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeScalar</td>
</tr>
</tbody>
</table>

See Attribute inputStriationStrength for more details.  
(Read and Write property)

52.192.17 **inputSunRadius as double**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Sun Radius  
**Notes:**

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputSunRadius</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Sun Radius</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Radius der Sonne</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Rayon du soleil</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Raggio del sole</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Radio solar</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeDistance</td>
</tr>
</tbody>
</table>

See Attribute inputSunRadius for more details.  
(Read and Write property)

52.192.18 **inputTime as double**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Time  
**Notes:**

See Attribute inputTime for more details.  
(Read and Write property)
<table>
<thead>
<tr>
<th>Name:</th>
<th>inputTime</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Time</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Zeit</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Dure</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Tempo</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Tiempo</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeScalar</td>
</tr>
</tbody>
</table>
52.193. class CIFilterSwipeTransitionMBS

52.193.1 class CIFilterSwipeTransitionMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Swipe filter.

**Notes:**
Details for this filter:

| FilterName: | CISwipeTransition |
| DisplayName English: | Swipe |
| DisplayName German: | Wischen |
| DisplayName French: | Balayer |
| DisplayName Italian: | Colpo |
| DisplayName Spanish: | Araazo |

**Categories:**
- CICategoryTransition: Transition
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputTargetImage: Target Image
- inputExtent: Extent
- inputColor: Color
- inputTime: Time
- inputAngle: Angle
- inputWidth: Width
- inputOpacity: Opacity

**Output:**
• outputImage

Subclass of the CIFilterMBS class.

52.193.2 Methods

52.193.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.193.4 Properties

52.193.5 Attribute inputAngle as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Swipe attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputAngle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>double</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeAngle</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Angle</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Winkel</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Angle</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Angolo</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>angulo</td>
</tr>
<tr>
<td>DefaultNumber:</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber:</td>
<td>0</td>
</tr>
<tr>
<td>SliderMaxNumber:</td>
<td>3.141593</td>
</tr>
<tr>
<td>SliderMinMaxNumber:</td>
<td>-3.141593</td>
</tr>
</tbody>
</table>

(Read only property)
52.193.6 Attribute inputColor as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Swipe attribute.

**Notes:**

This attribute should have this content:

- **Name:** inputColor
- **Class:** CIColorMBS
- **Type:** CIAttributeTypeOpaqueColor
- **DisplayName English:** Color
- **DisplayName German:** Farbe
- **DisplayName French:** Couleur
- **DisplayName Italian:** Colore
- **DisplayName Spanish:** Color
- **DefaultColor:** Red = 1, Green = 1, Blue = 1, Alpha = 1
- **IdentityNumber:** 0

(Read only property)

52.193.7 Attribute inputExtent as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Swipe attribute.

**Notes:**

This attribute should have this content:

- **Name:** inputExtent
- **Class:** CIVectorMBS
- **Type:** CIAttributeTypeRectangle
- **DisplayName English:** Extent
- **DisplayName German:** Betrag
- **DisplayName French:** tendue
- **DisplayName Italian:** Ampiezza
- **DisplayName Spanish:** Amplitud
- **DefaultVector:** [ 0 0 300 300 ]
- **IdentityVector:** n/a

(Read only property)
CHAPTER 52. COREIMAGE

52.193.8 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Swipe attribute.

**Notes:**
This attribute should have this content:

Name: inputImage  
Class: CIImageMBS  
Type: CIAttributeTypeImage  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
DefaultNumber: 0  
IdentityNumber: 0

(Read only property)

52.193.9 Attribute inputOpacity as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Swipe attribute.

**Notes:**
This attribute should have this content:

Name: inputOpacity  
Class: double  
Type: CIAttributeTypeScalar  
DisplayName English: Opacity  
DisplayName German: Deckkraft  
DisplayName French: Opacité  
DisplayName Italian: Opacità  
DisplayName Spanish: Opacidad  
DefaultNumber: 0  
IdentityNumber: 0  
SliderMaxNumber: 1  
SliderMinNumber: 0

(Read only property)
52.193.10  AttributeinputTargetImage as CIArrtributeMBS

Notes:
This attribute should have this content:

Name: inputTargetImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Target Image
DisplayName German: Zielbild
DisplayName French: Image cible
DisplayName Italian: Immagine target
DisplayName Spanish: Imagen de destino
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.193.11  AttributeinputTime as CIArrtributeMBS

Notes:
This attribute should have this content:

(Read only property)

52.193.12  AttributeinputWidth as CIArrtributeMBS

Notes:
This attribute should have this content:
### CHAPTER 52. COREIMAGE

<table>
<thead>
<tr>
<th>Name</th>
<th>inputTime</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeTime</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Time</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Zeit</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Dure</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Tempo</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Tiempo</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
<tr>
<td>MaxNumber</td>
<td>1</td>
</tr>
<tr>
<td>MinNumber</td>
<td>0</td>
</tr>
<tr>
<td>SliderMaxNumber</td>
<td>1</td>
</tr>
<tr>
<td>SliderMinNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>inputWidth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeDistance</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Width</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Breite</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Largeur</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Larghezza</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Anchura</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>300</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
<tr>
<td>MaxNumber</td>
<td>0</td>
</tr>
<tr>
<td>MinNumber</td>
<td>0.1</td>
</tr>
<tr>
<td>SliderMaxNumber</td>
<td>800</td>
</tr>
<tr>
<td>SliderMinNumber</td>
<td>0.1</td>
</tr>
</tbody>
</table>

(Read only property)

### 52.193.13  inputAngle as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Angle

**Notes:**

See Attribute inputAngle for more details.

(Read and Write property)
52.193. **CLASS CIFILTERSWIPETRANSITIONMBS**

Name: inputAngle
Class: double (NSNumber)
DisplayName English: Angle
DisplayName German: Winkel
DisplayName French: Angle
DisplayName Italian: Angolo
DisplayName Spanish: ngulo
Type: CIAttributeTypeAngle

52.193.14 **inputColor as CIColorMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Color

Notes:

Name: inputColor
Class: CIColorMBS (CIColor)
DisplayName English: Color
DisplayName German: Farbe
DisplayName French: Couleur
DisplayName Italian: Colore
DisplayName Spanish: Color
Type: CIAttributeTypeOpaqueColor

See AttributeinputColor for more details.
(Read and Write property)

52.193.15 **inputExtent as CIVectorMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Extent

Notes:

Name: inputExtent
Class: CIVectorMBS (CIVector)
DisplayName English: Extent
DisplayName German: Betrag
DisplayName French: tendue
DisplayName Italian: Ampiezza
DisplayName Spanish: Amplitud
Type: CIAttributeTypeRectangle

See AttributeinputExtent for more details.
## 52.193.16 `inputImage` as `CIImageMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>

See Attribute `inputImage` for more details.

(Read and Write property)

## 52.193.17 `inputOpacity` as `double`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Opacity

**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputOpacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Opacity</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Deckkraft</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Opacit</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Opacit</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Opacidad</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeScalar</td>
</tr>
</tbody>
</table>

See Attribute `inputOpacity` for more details.

(Read and Write property)
### 52.193.18  inputTargetImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Target Image  
**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputTargetImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Target Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Zielbild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image cible</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine target</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen de destino</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>

See Attribute inputTargetImage for more details.  
(Read and Write property)

### 52.193.19  inputTime as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Time  
**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputTime</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Time</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Zeit</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Dure</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Tempo</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Tiempo</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeTime</td>
</tr>
</tbody>
</table>

See Attribute inputTime for more details.  
(Read and Write property)

### 52.193.20  inputWidth as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Width  
**Notes:**
Name: inputWidth
Class: double (NSNumber)
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Anchura
Type: CIAttributeTypeDistance

See Attribute inputWidth for more details.
(Read and Write property)
MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Temperature and Tint filter.

**Notes:**
Details for this filter:

FilterName: CITemperatureAndTint
DisplayName English: Temperature and Tint
DisplayName German: Temperatur und FARBung
DisplayName French: Temperature et teinte
DisplayName Italian: Temperatura e tinta
DisplayName Spanish: Temperatura y tinte

Categories:
- CICategoryColorAdjustment: Color Adjustment
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryBuiltIn: Built-In

**Input:**
- inputImage: Image
- inputNeutral: Neutral
- inputTargetNeutral: TargetNeutral

**Output:**
- outputImage

Subclass of the CIFilterMBS class.
52.194.2 Methods

52.194.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.194.4 Properties

52.194.5 AttributeinputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Temperature and Tint attribute.
**Notes:**
This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0
(Read only property)

52.194.6 AttributeinputNeutral as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Temperature and Tint attribute.
**Notes:**
This attribute should have this content:
(Read only property)
52.194. Class CIFILTERTEMPERATUREANDTINTMBS

Name: inputNeutral
Class: CIVectorMBS
Type: CIAttributeTypeOffset
DisplayName: Neutral
DefaultVector: [ 6500 0 ]
IdentityVector: [ 6500 0 ]

52.194.7 Attribute inputTargetNeutral as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Temperature and Tint attribute.

**Notes:**
This attribute should have this content:

Name: inputTargetNeutral
Class: CIVectorMBS
Type: CIAttributeTypeOffset
DisplayName: TargetNeutral
DefaultVector: [ 6500 0 ]
IdentityVector: [ 6500 0 ]

(Read only property)

52.194.8 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)
52.194.9  inputNeutral as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Neutral

**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputNeutral</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIVectorMBS (CIVector)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Neutral</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Neutral</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Neutral</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Neutral</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Neutral</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeOffset</td>
</tr>
</tbody>
</table>

See Attribute inputNeutral for more details.
(Read and Write property)

52.194.10  inputTargetNeutral as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute TargetNeutral

**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputTargetNeutral</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIVectorMBS (CIVector)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>TargetNeutral</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>TargetNeutral</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>TargetNeutral</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>TargetNeutral</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>TargetNeutral</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeOffset</td>
</tr>
</tbody>
</table>

See Attribute inputTargetNeutral for more details.
(Read and Write property)
52.195.1 class CIFilterTextImageGeneratorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Text Image Generator filter. **Notes:** Details for this filter:

- **FilterName:** CITextImageGenerator
- **DisplayName English:** Text Image Generator
- **DisplayName German:** Textbildgenerator
- **DisplayName French:** Génrateur d'image de texte
- **DisplayName Italian:** Generatore immagine di testo
- **DisplayName Spanish:** Generador de imágenes con texto

**Categories:**

- CICategoryGenerator: Generator
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- **inputText:** Text
- **inputFontName:** FontName
- **inputFontSize:** FontSize
- **inputScaleFactor:** Scale Factor

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
52.195.2 Methods

52.195.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.195.4 Properties

52.195.5 Attribute `inputFontName` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Text Image Generator attribute.
**Notes:**
This attribute should have this content:

```
<table>
<thead>
<tr>
<th>Name</th>
<th>inputFontName</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>String</td>
</tr>
<tr>
<td>DisplayName</td>
<td>FontName</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>
```

(Read only property)

52.195.6 Attribute `inputFontSize` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Text Image Generator attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.195. CLASS CIFILTERTEXTIMAGEGENERATORMBS

Name: inputFontSize  
Class: double  
Type: CIAttributeTypeScalar  
DisplayName: FontSize  
DefaultNumber: 12  
IdentityNumber: 0  
SliderMaxNumber: 128  
SliderMinNumber: 9

52.195.7 Attribute inputScaleFactor as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Text Image Generator attribute.  
**Notes:** This attribute should have this content:

Name: inputScaleFactor  
Class: double  
Type: CIAttributeTypeScalar  
DisplayName English: Scale Factor  
DisplayName German: Skalierungsfaktor  
DisplayName French: Facteur dchelle  
DisplayName Italian: Fattore di scala  
DisplayName Spanish: Factor de escala  
DefaultNumber: 1  
IdentityNumber: 0  
SliderMaxNumber: 4  
SliderMinNumber: 1

(Read only property)

52.195.8 Attribute inputText as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Text Image Generator attribute.  
**Notes:** This attribute should have this content:

(Read only property)
52.195.9  inputFontName as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute FontName

**Notes:**

- Name: inputFontName
- Class: String (NSString)
- DisplayName English: FontName
- DisplayName German: FontName
- DisplayName French: FontName
- DisplayName Italian: FontName
- DisplayName Spanish: FontName
- Type:

See AttributeinputFontName for more details.
(Read and Write property)

52.195.10  inputFontSize as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute FontSize

**Notes:**

- Name: inputFontSize
- Class: double (NSNumber)
- DisplayName English: FontSize
- DisplayName German: FontSize
- DisplayName French: FontSize
- DisplayName Italian: FontSize
- DisplayName Spanish: FontSize
- Type: CIAttributeTypeScalar

See AttributeinputFontSize for more details.
(Read and Write property)
52.195.11 inputScaleFactor as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Scale Factor

**Notes:**
- Name: inputScaleFactor
- Class: double (NSNumber)
- DisplayName English: Scale Factor
- DisplayName German: Skalierungsfaktor
- DisplayName French: Facteur dchelle
- DisplayName Italian: Fattore di scala
- DisplayName Spanish: Factor de escala
- Type: CIAttributeTypeScalar

See Attribute inputScaleFactor for more details.
(Read and Write property)

52.195.12 inputText as String

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Text

**Notes:**
- Name: inputText
- Class: String (NSString)
- DisplayName English: Text
- DisplayName German: Text
- DisplayName French: Text
- DisplayName Italian: Text
- DisplayName Spanish: Text
- Type: CIAttributeTypeScalar

See Attribute inputText for more details.
(Read and Write property)
52.196   class CIFilterThermalMBS

52.196.1 class CIFilterThermalMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Thermal filter.

**Notes:**

Details for this filter:

- **FilterName:** CIThermal
- **DisplayName English:** Thermal
- **DisplayName German:** Wmmebild
- **DisplayName French:** Thermique
- **DisplayName Italian:** Termico
- **DisplayName Spanish:** Trmica

**Categories:**

- CICategoryColorEffect: Color Effect
- CICategoryVideo: Video
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.196.2 Methods

52.196.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.196.4 Properties

52.196.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Thermal attribute.
**Notes:**
This attribute should have this content:

```
Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0
```

(Read only property)

52.196.6 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image
**Notes:**
See Attribute inputImage for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>
52.197. class CIFilterToneCurveMBS

52.197.1 class CIFilterToneCurveMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Tone Curve filter.

**Notes:**

Details for this filter:

- **FilterName:** CIToneCurve
- **DisplayName English:** Tone Curve
- **DisplayName German:** Farbtonkurve
- **DisplayName French:** Courbe tonale
- **DisplayName Italian:** Curva tonale
- **DisplayName Spanish:** Curva tonal

**Categories:**

- CICategoryColorAdjustment: Color Adjustment
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputPoint0: Point 0
- inputPoint1: Point 1
- inputPoint2: Point 2
- inputPoint3: Point 3
- inputPoint4: Point 4

**Output:**
CHAPTER 52. COREIMAGE

• outputImage

Subclass of the CIFilterMBS class.

52.197.2 Methods

52.197.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

**Notes:** On success the handle property is not zero and the filter has the default values set.

52.197.4 Properties

52.197.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Tone Curve attribute.

**Notes:**

This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.197.6 Attribute inputPoint0 as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Tone Curve attribute.

**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputPoint0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIVectorMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeOffset</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Point 0</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Punkt 0</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Point0</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Punto 0</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Punto 0</td>
</tr>
<tr>
<td>DefaultVector:</td>
<td>[ 0 0 ]</td>
</tr>
<tr>
<td>IdentityVector:</td>
<td>[ 0 0 ]</td>
</tr>
</tbody>
</table>

(Read only property)

### 52.197.7 Attribute `inputPoint1` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Tone Curve attribute. **Notes:**

This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputPoint1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIVectorMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeOffset</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Point 1</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Punkt 1</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Point 1</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Punto 1</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Punto 1</td>
</tr>
<tr>
<td>DefaultVector:</td>
<td>[ 0.25 0.25 ]</td>
</tr>
<tr>
<td>IdentityVector:</td>
<td>[ 0.25 0.25 ]</td>
</tr>
</tbody>
</table>

(Read only property)

### 52.197.8 Attribute `inputPoint2` as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Tone Curve attribute. **Notes:**
This attribute should have this content:

Name: inputPoint2  
Class: CIVectorMBS  
Type: CIAttributeTypeOffset  
DisplayName English: Point 2  
DisplayName German: Punkt 2  
DisplayName French: Point 2  
DisplayName Italian: Punto 2  
DisplayName Spanish: Punto 2  
DefaultVector: [ 0.5 0.5 ]  
IdentityVector: [ 0.5 0.5 ]

(Read only property)

52.197.9 Attribute inputPoint3 as CIAttributeMBS

Notes:

This attribute should have this content:

Name: inputPoint3  
Class: CIVectorMBS  
Type: CIAttributeTypeOffset  
DisplayName English: Point 3  
DisplayName German: Punkt 3  
DisplayName French: Point3  
DisplayName Italian: Punto 3  
DisplayName Spanish: Punto 3  
DefaultVector: [ 0.75 0.75 ]  
IdentityVector: [ 0.75 0.75 ]

(Read only property)

52.197.10 Attribute inputPoint4 as CIAttributeMBS

Notes:
This attribute should have this content:

Name: inputPoint4
Class: CIVectorMBS
Type: CIAttributeTypeOffset
DisplayName English: Point 4
DisplayName German: Punkt 4
DisplayName French: Point4
DisplayName Italian: Punto 4
DisplayName Spanish: Punto 4
DefaultVector: [ 1 1 ]
IdentityVector: [ 1 1 ]

(Read only property)

52.197.11  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)

52.197.12  inputPoint0 as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Point 0

**Notes:**

See Attribute inputPoint0 for more details.
(Read and Write property)
Name: inputPoint0
Class: CIVectorMBS (CIVector)
DisplayName English: Point 0
DisplayName German: Punkt 0
DisplayName French: Point 0
DisplayName Italian: Punto 0
DisplayName Spanish: Punto 0
Type: CIAttributeTypeOffset

52.197.13 inputPoint1 as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Point 1

**Notes:**
Name: inputPoint1
Class: CIVectorMBS (CIVector)
DisplayName English: Point 1
DisplayName German: Punkt 1
DisplayName French: Point 1
DisplayName Italian: Punto 1
DisplayName Spanish: Punto 1
Type: CIAttributeTypeOffset

See Attribute inputPoint1 for more details.
(Read and Write property)

52.197.14 inputPoint2 as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Point 2

**Notes:**
Name: inputPoint2
Class: CIVectorMBS (CIVector)
DisplayName English: Point 2
DisplayName German: Punkt 2
DisplayName French: Point 2
DisplayName Italian: Punto 2
DisplayName Spanish: Punto 2
Type: CIAttributeTypeOffset

See Attribute inputPoint2 for more details.
52.197. CLASS CIFILTERTONECURVEMBS

(Read and Write property)

52.197.15  inputPoint3 as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Point 3

**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputPoint3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIVectorMBS (CIVector)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Point 3</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Punkt 3</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Point3</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Punto 3</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Punto 3</td>
</tr>
<tr>
<td>Type</td>
<td>CIAtributeTypeOffset</td>
</tr>
</tbody>
</table>

See Attribute inputPoint3 for more details.
(Read and Write property)

52.197.16  inputPoint4 as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Point 4

**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputPoint4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIVectorMBS (CIVector)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Point 4</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Punkt 4</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Point4</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Punto 4</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Punto 4</td>
</tr>
<tr>
<td>Type</td>
<td>CIAtributeTypeOffset</td>
</tr>
</tbody>
</table>

See Attribute inputPoint4 for more details.
(Read and Write property)
52.198 class CIFilterTorusLensDistortionMBS

52.198.1 class CIFilterTorusLensDistortionMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Torus Lens Distortion filter.

**Notes:**
Details for this filter:

<table>
<thead>
<tr>
<th>FilterName: CIName</th>
<th>CIPrefix</th>
<th>CIPrefixLength</th>
<th>CIPrefixType</th>
<th>CIPrefixVersion</th>
<th>CIPrefixDescription</th>
<th>CIPrefixDescriptionLength</th>
<th>CIPrefixDescriptionType</th>
</tr>
</thead>
<tbody>
<tr>
<td>FilterName:</td>
<td>CITorusLensDistortion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Torus Lens Distortion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Verzerrung Torus-Linse</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Dformation Lentille torique</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Distorsione lenti Torus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Distorsin por lente toroidal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Categories:**

- **CICategoryDistortionEffect:** Distortion Effect
- **CICategoryVideo:** Video
- **CICategoryStillImage:** Still Image
- **CICategoryBuiltIn:** Built-In

**Input:**

- **inputImage:** Image
- **inputCenter:** Center
- **inputRadius:** Radius
- **inputWidth:** Width
- **inputRefraction:** Refraction

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
52.198.2 Methods

52.198.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.198.4 Properties

52.198.5 Attribute inputCenter as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Torus Lens Distortion attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputCenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIVectorMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypePosition</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Center</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Mitte</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Centre</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Centro</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Centro</td>
</tr>
<tr>
<td>DefaultVector</td>
<td>[150 150]</td>
</tr>
<tr>
<td>IdentityVector</td>
<td>n/a</td>
</tr>
</tbody>
</table>

(Read only property)

52.198.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Torus Lens Distortion attribute.
**Notes:**
This attribute should have this content:

(Read only property)
Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

52.198.7 Attribute inputRadius as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Torus Lens Distortion attribute.

**Notes:**

This attribute should have this content:

Name: inputRadius
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Radius
DisplayName German: Radius
DisplayName French: Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
DefaultNumber: 160
IdentityNumber: 0
SliderMaxNumber: 500
SliderMinNumber: 0

(Read only property)

52.198.8 Attribute inputRefraction as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Torus Lens Distortion attribute.

**Notes:**

This attribute should have this content:
52.198. CLASS CIFILTERTORUSLENSDISTORTIONMBS

Name: inputRefraction
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Refraction
DisplayName German: Lichtbrechung
DisplayName French: Rfraction
DisplayName Italian: Rifrazione
DisplayName Spanish: Refraccion
DefaultNumber: 1.7
IdentityNumber: 1
SliderMaxNumber: 5
SliderMinNumber: 0

(Read only property)

52.198.9 Attribute inputWidth as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Details about the Torus Lens Distortion attribute.
Notes:
This attribute should have this content:

Name: inputWidth
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Anchura
DefaultNumber: 80
IdentityNumber: 0
SliderMaxNumber: 200
SliderMinNumber: 0

(Read only property)
52.198.10  inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Center

**Notes:**

Name: inputCenter  
Class: CIVectorMBS (CIVector)  
DisplayName English: Center  
DisplayName German: Mitte  
DisplayName French: Centre  
DisplayName Italian: Centro  
DisplayName Spanish: Centro  
Type: CIAttributeTypePosition

See Attribute inputCenter for more details.  
(Read and Write property)

52.198.11  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**

Name: inputImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
Type: CIAttributeTypeImage

See Attribute inputImage for more details.  
(Read and Write property)

52.198.12  inputRadius as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Radius

**Notes:**
52.198.  CLASS CIFILTERTORUSLENSDISTORTIONMBS

Name: inputRadius
Class: double (NSNumber)
DisplayName English: Radius
DisplayName German: Radius
DisplayName French: Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
Type: CIAttributeTypeDistance

See Attribute inputRadius for more details.
(Read and Write property)

52.198.13  inputRefraction as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Refraction

**Notes:**

Name: inputRefraction
Class: double (NSNumber)
DisplayName English: Refraction
DisplayName German: Lichtbrechung
DisplayName French: Refraction
DisplayName Italian: Rifrazione
DisplayName Spanish: Refraccion
Type: CIAttributeTypeScalar

See Attribute inputRefraction for more details.
(Read and Write property)

52.198.14  inputWidth as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Width

**Notes:**

See Attribute inputWidth for more details.
(Read and Write property)
Name: inputWidth
Class: double (NSNumber)
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Anchura
Type: CIAttributeTypeDistance
52.199. CLASS CIFILTERTRIANGLEKALEIDOSCOPEMBS

52.199  class CIFilterTriangleKaleidoscopeMBS

52.199.1  class CIFilterTriangleKaleidoscopeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Triangle Kaleidoscope filter.

**Notes:**

Details for this filter:

- **FilterName:** CITriangleKaleidoscope
- **DisplayName English:** Triangle Kaleidoscope
- **DisplayName German:** Dreieckskaleidoskop
- **DisplayName French:** Kalidoscope en forme de triangle
- **DisplayName Italian:** Caleidoscopio triangolare
- **DisplayName Spanish:** Caleidoscopio triangular

**Categories:**

- CICategoryTileEffect: Tile Effect
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputPoint: Point
- inputSize: Size
- inputRotation: Rotation
- inputDecay: Decay

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.199.2 Methods

52.199.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.199.4 Properties

52.199.5 Attribute inputDecay as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Triangle Kaleidoscope attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name:</th>
<th>inputDecay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>double</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeScalar</td>
</tr>
<tr>
<td>DisplayName:</td>
<td>Decay</td>
</tr>
<tr>
<td>DefaultNumber:</td>
<td>0.85</td>
</tr>
<tr>
<td>IdentityNumber:</td>
<td>0</td>
</tr>
<tr>
<td>SliderMaxNumber:</td>
<td>1</td>
</tr>
<tr>
<td>SliderMinNumber:</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.199.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Triangle Kaleidoscope attribute.
**Notes:**
This attribute should have this content:

(Read only property)
52.199. **CLASS CIFILTERTRIANGLEKALEIDOSCOPEMBS**

Name: inputImage  
Class: CIImageMBS  
Type: CIAttributeTypeImage  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
DefaultNumber: 0  
IdentityNumber: 0

52.199.7 **Attribute inputPoint as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Triangle Kaleidoscope attribute.  
**Notes:**

This attribute should have this content:

Name: inputPoint  
Class: CIVectorMBS  
Type: CIAttributeTypePosition  
DisplayName English: Point  
DisplayName German: Point  
DisplayName French: Point  
DisplayName Italian: Punto  
DisplayName Spanish: Punto  
DefaultVector: [ 150 150 ]  
IdentityVector: n/a

(Read only property)

52.199.8 **Attribute inputRotation as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Triangle Kaleidoscope attribute.  
**Notes:**

This attribute should have this content:

(Read only property)
52.199.9 Attribute inputSize as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Triangle Kaleidoscope attribute.
**Notes:**
This attribute should have this content:

```
Name: inputSize
Class: double
Type: CIAttributeTypeScalar
DisplayName: Size
DefaultNumber: 700
IdentityNumber: 0
SliderMaxNumber: 1000
SliderMinNumber: 0
```

(Read only property)

52.199.10 inputDecay as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Decay
**Notes:**
See Attribute inputDecay for more details.
(Read and Write property)
Name: inputDecay
Class: double (NSNumber)
DisplayName English: Decay
DisplayName German: Decay
DisplayName French: Decay
DisplayName Italian: Decay
DisplayName Spanish: Decay
Type: CIAttributeTypeScalar

52.199.11 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image
**Notes:**
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)

52.199.12 inputPoint as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Point
**Notes:**
Name: inputPoint
Class: CIVectorMBS (CIVector)
DisplayName English: Point
DisplayName German: Point
DisplayName French: Point
DisplayName Italian: Punto
DisplayName Spanish: Punto
Type: CIAttributeTypePosition

See Attribute inputPoint for more details.
52.199.13  inputRotation as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Rotation

**Notes:**

- Name: inputRotation
- Class: double (NSNumber)
- DisplayName English: Rotation
- DisplayName German: Rotation
- DisplayName French: Rotation
- DisplayName Italian: Rotation
- DisplayName Spanish: Rotation
- Type: CIAttributeTypeAngle

See AttributeinputRotation for more details.
(Read and Write property)

52.199.14  inputSize as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Size

**Notes:**

- Name: inputSize
- Class: double (NSNumber)
- DisplayName English: Size
- DisplayName German: Size
- DisplayName French: Size
- DisplayName Italian: Size
- DisplayName Spanish: Size
- Type: CIAttributeTypeScalar

See AttributeinputSize for more details.
(Read and Write property)
52.200.1  class CIFilterTriangleTileMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Triangle Tile filter.
**Notes:**
Details for this filter:

- **FilterName:** CITriangleTile
- **DisplayName English:** Triangle Tile
- **DisplayName German:** Dreieckig kacheln
- **DisplayName French:** Mosaque de triangles
- **DisplayName Italian:** Mosaico triangolare
- **DisplayName Spanish:** Mosaico triangular

**Categories:**
- **CICategoryTileEffect:** Tile Effect
- **CICategoryVideo:** Video
- **CICategoryStillImage:** Still Image
- **CICategoryBuiltIn:** Built-In

**Input:**
- **inputImage:** Image
- **inputCenter:** Center
- **inputAngle:** Angle
- **inputWidth:** Width

**Output:**
- **outputImage**

Subclass of the CIFilterMBS class.
52.200.2 Methods

52.200.3 Constructor

**Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.200.4 Properties

52.200.5 AttributeinputAngle as CIAttributeMBS

**Function:**
Details about the Triangle Tile attribute.
**Notes:**
This attribute should have this content:

Name: inputAngle
Class: double
Type: CIAttributeTypeAngle
DisplayName English: Angle
DisplayName German: Winkel
DisplayName French: Angle
DisplayName Italian: Angolo
DisplayName Spanish: angulo
DefaultNumber: 0
IdentityNumber: 0
SliderMaxNumber: 3.141593
SliderMinNumber: -3.141593

(Read only property)

52.200.6 AttributeinputCenter as CIAttributeMBS

**Function:**
Details about the Triangle Tile attribute.
**Notes:**
This attribute should have this content:
Class: CIVectorMBS
Type: CIAttributeTypePosition
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
DefaultVector: [ 150 150 ]
IdentityVector: n/a

(Read only property)

52.200.7 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Details about the Triangle Tile attribute.
Notes:
This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.200.8 Attribute inputWidth as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Details about the Triangle Tile attribute.
Notes:
This attribute should have this content:
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Name: inputWidth
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Ancha
DefaultNumber: 100
IdentityNumber: 0
SliderMaxNumber: 200
SliderMinNumber: 1

(Read only property)

52.200.9 inputAngle as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Angle

**Notes:**

Name: inputAngle
Class: double (NSNumber)
DisplayName English: Angle
DisplayName German: Winkel
DisplayName French: Angle
DisplayName Italian: Angolo
DisplayName Spanish: angel
Type: CIAttributeTypeAngle

See Attribute inputAngle for more details.
(Read and Write property)

52.200.10 inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Center

**Notes:**

See Attribute inputCenter for more details.
52.200.  CLASS CIFILTERTRIANGLETILEMBS

Name: inputCenter
Class: CIVectorMBS (CIVector)
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
Type: CIAttributeTypePosition

(Read and Write property)

52.200.11  inputImage as CIImageMBS

Notes:

Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See AttributeinputImage for more details.
(Read and Write property)

52.200.12  inputWidth as double

Notes:
See AttributeinputWidth for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name</th>
<th>inputWidth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Width</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Breite</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Largeur</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Larghezza</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Anchura</td>
</tr>
<tr>
<td>Type</td>
<td>CIAbstractTypeDistance</td>
</tr>
</tbody>
</table>
52.201. CLASS CIFILTERTWELVEFOLDREFLECTEDTILEMBS

52.201 class CIFilterTwelvefoldReflectedTileMBS

52.201.1 class CIFilterTwelvefoldReflectedTileMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Twelvefold Reflected Tile filter.

**Notes:**

Details for this filter:

- **FilterName:** CITwelvefoldReflectedTile
- **DisplayName English:** Twelvefold Reflected Tile
- **DisplayName German:** 12-fach reflektierte Kachel
- **DisplayName French:** Mosaque rifflé 12 fois
- **DisplayName Italian:** Mosaico riflesso in dodici direzioni
- **DisplayName Spanish:** Mosaico reflejado doce veces

**Categories:**

- CICategoryTileEffect: Tile Effect
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- **inputImage:** Image
- **inputCenter:** Center
- **inputAngle:** Angle
- **inputWidth:** Width

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
52.201.2 Methods

52.201.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.201.4 Properties

52.201.5 Attribute `inputAngle` as `CIAttributeMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Twelvefold Reflected Tile attribute.
**Notes:**
This attribute should have this content:

```plaintext
Name:          inputAngle
Class:         double
Type:          CIAttributeTypeAngle
DisplayName English:  Angle
DisplayName German:  Winkel
DisplayName French:  Angle
DisplayName Italian: Angolo
DisplayName Spanish:  ngulo
DefaultNumber:  0
IdentityNumber:  0
SliderMaxNumber: 3.141593
SliderMinNumber: -3.141593
```

(Read only property)

52.201.6 Attribute `inputCenter` as `CIAttributeMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Twelvefold Reflected Tile attribute.
**Notes:**
This attribute should have this content:
52.201. CLASS CIFILTERTWELVEFOLDREFLECTEDTILEMBS

Name: inputCenter
Class: CIVectorMBS
Type: CIAttributeTypePosition
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
DefaultVector: [ 150 150 ]
IdentityVector: n/a

(Read only property)

52.201.7 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Twelvefold Reflected Tile attribute.

**Notes:**

This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.201.8 Attribute inputWidth as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Twelvefold Reflected Tile attribute.

**Notes:**

This attribute should have this content:
52.201.9  **inputAngle as double**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Angle  
**Notes:**

See Attribute inputAngle for more details.  
(Read and Write property)

52.201.10  **inputCenter as CIVectorMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Center  
**Notes:**
See Attribute inputCenter for more details.
Name: inputCenter
Class: CIVectorMBS (CIVector)
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
Type: CIAtributeTypePosition

(Read and Write property)

52.201.11 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image
**Notes:**
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAtributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)

52.201.12 inputWidth as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Width
**Notes:**
See Attribute inputWidth for more details.
(Read and Write property)
Name: inputWidth
Class: double (NSNumber)
DisplayName English: Width
DisplayName German: Breite
DisplayName French: Largeur
DisplayName Italian: Larghezza
DisplayName Spanish: Anchura
Type: CIAttributeTypeDistance
52.202. CLASS CIFILERTWIRLDISTORTIONMBS

52.202.1 class CIFilterTwirlDistortionMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Twirl Distortion filter.

**Notes:**

Details for this filter:

- **FilterName:** CITwirlDistortion
- **DisplayName English:** Twirl Distortion
- **DisplayName German:** Verzerrung Wirbeln
- **DisplayName French:** Dformation Spirale
- **DisplayName Italian:** Distorsione spirale
- **DisplayName Spanish:** Distorsión por giro

**Categories:**

- CICategoryDistortionEffect: Distortion Effect
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputCenter: Center
- inputRadius: Radius
- inputAngle: Angle

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
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52.202.2 Methods

52.202.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.202.4 Properties

52.202.5 Attribute `inputAngle` as `CIAttributeMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Twirl Distortion attribute.
**Notes:**
This attribute should have this content:

- Name: `inputAngle`
- Class: `double`
- Type: `CIAttributeTypeAngle`
- DisplayName English: Angle
- DisplayName German: Winkel
- DisplayName French: Angle
- DisplayName Italian: Angolo
- DisplayName Spanish: ángulo
- DefaultNumber: 3.141593
- IdentityNumber: 0
- SliderMaxNumber: 12.56637
- SliderMinNumber: -12.56637

(Read only property)

52.202.6 Attribute `inputCenter` as `CIAttributeMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Twirl Distortion attribute.
**Notes:**
This attribute should have this content:
52.202. CLASS CIFILTERTWIRLDISTORTIONMBS

Name:          inputCenter
Class:         CIVectorMBS
Type:          CIAttributeTypePosition
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
DefaultVector:   [ 150 150 ]
IdentityVector:  n/a

(Read only property)

52.202.7 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Twirl Distortion attribute.

**Notes:**
This attribute should have this content:

Name:          inputImage
Class:         CIImageMBS
Type:          CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber:   0
IdentityNumber:  0

(Read only property)

52.202.8 Attribute inputRadius as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Twirl Distortion attribute.

**Notes:**
This attribute should have this content:
52.202.9  inputAngle as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
The attribute Angle

**Notes:**

Name:           inputAngle
Class:          double (NSNumber)
DisplayName English:  Angle
DisplayName German: Winkel
DisplayName French: Angle
DisplayName Italian: Angolo
DisplayName Spanish: ngulo
Type:           CIAttributeTypeAngle

See Attribute inputAngle for more details.
(Read and Write property)

52.202.10  inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
The attribute Center

**Notes:**

See Attribute inputCenter for more details.
52.202. **CLASS CIFILTERTWIRLDISTORTIONMBS**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputCenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIVectorMBS (CIVector)</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Center</td>
</tr>
<tr>
<td>Class</td>
<td>CIVectorMBS (CIVector)</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Mitte</td>
</tr>
<tr>
<td>Class</td>
<td>CIVectorMBS (CIVector)</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Centre</td>
</tr>
<tr>
<td>Class</td>
<td>CIVectorMBS (CIVector)</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Centro</td>
</tr>
<tr>
<td>Class</td>
<td>CIVectorMBS (CIVector)</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Centro</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypePosition</td>
</tr>
</tbody>
</table>

(Read and Write property)

52.202.11 **inputImage as CIImageMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Image</td>
</tr>
<tr>
<td>Class</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Bild</td>
</tr>
<tr>
<td>Class</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Image</td>
</tr>
<tr>
<td>Class</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Immagine</td>
</tr>
<tr>
<td>Class</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
</tbody>
</table>

See Attribute inputImage for more details.
(Read and Write property)

52.202.12 **inputRadius as double**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Radius

**Notes:**

See Attribute inputRadius for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name:</th>
<th>inputRadius</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Radius</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Radius</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Rayon</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Raggio</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Radio</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeDistance</td>
</tr>
</tbody>
</table>
52.203.1  class CIFilterUnsharpMaskMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Unsharp Mask filter.

**Notes:**
Details for this filter:

FilterName: CIUnsharpMask
DisplayName English: Unsharp Mask
DisplayName German: Unscharf maskieren
DisplayName French: Rendre le masque flou
DisplayName Italian: Maschera di contrasto
DisplayName Spanish: Desenfocar mascara

Categories:

- CICategorySharpen: Sharpen
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputRadius: Radius
- inputIntensity: Intensity

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.203.2 Methods

52.203.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.203.4 Properties

52.203.5 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Unsharp Mask attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.203.6 Attribute inputIntensity as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Unsharp Mask attribute.
**Notes:**
This attribute should have this content:

(Read only property)
Name: inputIntensity
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Intensity
DisplayName German: Intensität
DisplayName French: Intensité
DisplayName Italian: Intensità
DisplayName Spanish: Intensidad
DefaultNumber: 0.5
IdentityNumber: 0
SliderMaxNumber: 1
SliderMinNumber: 0

52.203.7 Attribute inputRadius as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Unsharp Mask attribute.

**Notes:**

This attribute should have this content:

Name: inputRadius
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Radius
DisplayName German: Radius
DisplayName French: Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
DefaultNumber: 2.5
IdentityNumber: 0
SliderMaxNumber: 100
SliderMinNumber: 0

(Read only property)

52.203.8 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image

**Notes:**

See Attribute inputImage for more details.
52.203.9  **inputIntensity** as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
The attribute Intensity

**Notes:**
See Attribute inputIntensity for more details.
(Read and Write property)

52.203.10  **inputRadius** as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
The attribute Radius

**Notes:**
See Attribute inputRadius for more details.
(Read and Write property)
Name: inputRadius
Class: double (NSNumber)
DisplayName English: Radius
DisplayName German: Radius
DisplayName French: Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
Type: CIAttributeTypeDistance
52.204 class CIFilterVibranceMBS

52.204.1 class CIFilterVibranceMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Vibrance filter.

**Notes:**

Details for this filter:

FilterName: CIVibrance
DisplayName English: Vibrance
DisplayName German: Lebendigkeit
DisplayName French: Brillance
DisplayName Italian: Vivacità
DisplayName Spanish: Vivacidad

Categories:

- CICategoryColorAdjustment: Color Adjustment
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputAmount: Amount

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.204.2 Methods

52.204.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.204.4 Properties

52.204.5 Attribute inputAmount as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Vibrance attribute.
**Notes:**
This attribute should have this content:

Name: inputAmount  
Class: double  
Type: CIAttributeTypeScalar  
DisplayName English: Amount  
DisplayName German: Strke  
DisplayName French: Montant  
DisplayName Italian: Quantit  
DisplayName Spanish: Cantidad  
DefaultNumber: 0  
IdentityNumber: 0  
MaxNumber: 1  
MinNumber: -1  
SliderMaxNumber: 1  
SliderMinNumber: -1

(Read only property)

52.204.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Vibrance attribute.
**Notes:**
This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.204.7 inputAmount as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Amount

**Notes:**
Name: inputAmount
Class: double (NSNumber)
DisplayName English: Amount
DisplayName German: Strke
DisplayName French: Montant
DisplayName Italian: Quantit
DisplayName Spanish: Cantidad
Type: CIAttributeTypeScalar

See AttributeinputAmount for more details.
(Read and Write property)

52.204.8 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**
See AttributeinputImage for more details.
(Read and Write property)
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAtributeTypeImage
52.205 class CIFilterVignetteEffectMBS

52.205.1 class CIFilterVignetteEffectMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Realbasic class for the CoreImage Vignette Effect filter.

**Notes:**
Details for this filter:

- **FilterName:** CIVignetteEffect
- **DisplayName English:** Vignette Effect
- **DisplayName German:** Vignetteneffekt
- **DisplayName French:** Effet de vignette
- **DisplayName Italian:** Effetto vignettatura
- **DisplayName Spanish:** Efecto de degradado

**Categories:**
- CICategoryColorEffect: Color Effect
- CICategoryVideo: Video
- CICategoryInterlaced: Interlaced
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**
- **inputImage:** Image
- **inputCenter:** Center
- **inputRadius:** Radius
- **inputIntensity:** Intensity
- **inputFalloff:** Falloff

**Output:**
- **outputImage**

Subclass of the CIFilterMBS class.
52.205.2 Methods

52.205.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.205.4 Properties

52.205.5 Attribute inputCenter as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Vignette Effect attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputCenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIVectorMBS</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypePosition</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Center</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Mitte</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Centre</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Centro</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Centro</td>
</tr>
<tr>
<td>Default Vector</td>
<td>[ 150 150 ]</td>
</tr>
<tr>
<td>Identity Vector</td>
<td>n/a</td>
</tr>
</tbody>
</table>

(Read only property)

52.205.6 Attribute inputFalloff as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Vignette Effect attribute.
**Notes:**
This attribute should have this content:

(Read only property)
Name: inputFalloff
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Falloff
DisplayName German: Nachlassen
DisplayName French: Attnuation
DisplayName Italian: Calo
DisplayName Spanish: Disminución
DefaultNumber: 0.5
IdentityNumber: 0
MaxNumber: 1
MinNumber: 0
SliderMaxNumber: 1
SliderMinNumber: 0

52.205.7 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Vignette Effect attribute.
**Notes:**
This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

(Read only property)

52.205.8 Attribute inputIntensity as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Vignette Effect attribute.
**Notes:**
This attribute should have this content:
### 52.205.9 Attribute `inputRadius` as `CIAttributeMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Vignette Effect attribute.

**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td><code>inputRadius</code></td>
</tr>
<tr>
<td>Class</td>
<td><code>double</code></td>
</tr>
<tr>
<td>Type</td>
<td><code>CIAttributeTypeDistance</code></td>
</tr>
<tr>
<td>DisplayName English</td>
<td><code>Radius</code></td>
</tr>
<tr>
<td>DisplayName German</td>
<td><code>Radius</code></td>
</tr>
<tr>
<td>DisplayName French</td>
<td><code>Rayon</code></td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td><code>Raggio</code></td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td><code>Radio</code></td>
</tr>
<tr>
<td>DefaultNumber</td>
<td>150</td>
</tr>
<tr>
<td>IdentityNumber</td>
<td>0</td>
</tr>
<tr>
<td>MaxNumber</td>
<td>-1</td>
</tr>
<tr>
<td>MinNumber</td>
<td>0</td>
</tr>
<tr>
<td>SliderMaxNumber</td>
<td>2000</td>
</tr>
<tr>
<td>SliderMinNumber</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)
52.205.10  inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Center

**Notes:**

Name:  inputCenter  
Class:  CIVectorMBS (CIVector)  
DisplayName English:  Center  
DisplayName German:  Mitte  
DisplayName French:  Centre  
DisplayName Italian:  Centro  
DisplayName Spanish:  Centro  
Type:  CIAttributeTypePosition

See Attribute inputCenter for more details.  
(Read and Write property)

52.205.11  inputFalloff as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Falloff

**Notes:**

Name:  inputFalloff  
Class:  double (NSNumber)  
DisplayName English:  Falloff  
DisplayName German:  Nachlassen  
DisplayName French:  Attenuation  
DisplayName Italian:  Calo  
DisplayName Spanish:  Disminución  
Type:  CIAttributeTypeScalar

See Attribute inputFalloff for more details.  
(Read and Write property)

52.205.12  inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**
52.205. **CLASS CIFILTERVIGNETTEEFFECTMBS**

Name: inputImage  
Class: CIImageMBS (CIImage)  
DisplayName English: Image  
DisplayName German: Bild  
displayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
Type: CIAttributeTypeImage

See AttributeinputImage for more details.  
(Read and Write property)

### 52.205.13 inputIntensity as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**  
The attribute Intensity  
**Notes:**

Name: inputIntensity  
Class: double (NSNumber)  
DisplayName English: Intensity  
DisplayName German: Intensität  
DisplayName French: Intensité  
DisplayName Italian: Intensità  
DisplayName Spanish: Intensidad  
Type: CIAttributeTypeScalar

See AttributeinputIntensity for more details.  
(Read and Write property)

### 52.205.14 inputRadius as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**  
The attribute Radius  
**Notes:**

See AttributeinputRadius for more details.  
(Read and Write property)
<table>
<thead>
<tr>
<th>Name:</th>
<th>inputRadius</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>double (NSNumber)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Radius</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Radius</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Rayon</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Raggio</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Radio</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAttributeTypeDistance</td>
</tr>
</tbody>
</table>
52.206. class CIFilterVignetteMBS

52.206.1 class CIFilterVignetteMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Vignette filter.

**Notes:**

Details for this filter:

- FilterName: CIVignette
- DisplayName English: Vignette
- DisplayName German: Vignette
- DisplayName French: Vignette
- DisplayName Italian: Vignettatura
- DisplayName Spanish: Degradado

Categories:

- CICategoryColorEffect: Color Effect
- CICategoryVideo: Video
- CICategoryInterlaced: Interlaced
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image
- inputIntensity: Intensity
- inputRadius: Radius

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.206.2 Methods

52.206.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.206.4 Properties

52.206.5 Attribute `inputImage` as `CIAttributeMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Vignette attribute.
**Notes:**

This attribute should have this content:

Name: inputImage  
Class: CIImageMBS  
Type: CIAttributeTypeImage  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
DefaultNumber: 0  
IdentityNumber: 0

(Read only property)

52.206.6 Attribute `inputIntensity` as `CIAttributeMBS`

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Vignette attribute.
**Notes:**

This attribute should have this content:

(Read only property)
52.206. **CLASS CIFILTERVIGNETTEMBS**

Name: inputIntensity
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Intensity
DisplayName German: Intensität
DisplayName French: Intensité
DisplayName Italian: Intensità
DisplayName Spanish: Intensidad
DefaultNumber: 0
IdentityNumber: 0
MaxNumber: 1
MinNumber: -1
SliderMaxNumber: 1
SliderMinNumber: -1

52.206.7 **AttributeinputRadius as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the Vignette attribute.

**Notes:**
This attribute should have this content:

Name: inputRadius
Class: double
Type: CIAttributeTypeScalar
DisplayName English: Radius
DisplayName German: Radius
DisplayName French: Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
DefaultNumber: 1
IdentityNumber: 0
MaxNumber: 2
MinNumber: 0
SliderMaxNumber: 2
SliderMinNumber: 0

(Read only property)
52.206.8 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image

**Notes:**

- Name: inputImage
- Class: CIImageMBS (CIImage)
- DisplayName English: Image
- DisplayName German: Bild
- DisplayName French: Image
- DisplayName Italian: Immagine
- DisplayName Spanish: Imagen
- Type: CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)

52.206.9 inputIntensity as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Intensity

**Notes:**

- Name: inputIntensity
- Class: double (NSNumber)
- DisplayName English: Intensity
- DisplayName German: Intensität
- DisplayName French: Intensité
- DisplayName Italian: Intensità
- DisplayName Spanish: Intensidad
- Type: CIAttributeTypeScalar

See Attribute inputIntensity for more details.
(Read and Write property)

52.206.10 inputRadius as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Radius

**Notes:**
Name: inputRadius
Class: double (NSNumber)
DisplayName English: Radius
DisplayName German: Radius
DisplayName French: Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
Type: CIAttributeTypeScalar

See Attribute inputRadius for more details.
(Read and Write property)
52.207 class CIFilterVortexDistortionMBS

52.207.1 class CIFilterVortexDistortionMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Vortex Distortion filter.

**Notes:**

Details for this filter:

- **FilterName:** CIVortexDistortion
- **DisplayName English:** Vortex Distortion
- **DisplayName German:** Verzerrung Vortex
- **DisplayName French:** Dformation Tourbillon
- **DisplayName Italian:** Distorsione Vortex
- **DisplayName Spanish:** Distorsión por vértice

Categories:

- **CICategoryDistortionEffect:** Distortion Effect
- **CICategoryVideo:** Video
- **CICategoryStillImage:** Still Image
- **CICategoryBuiltIn:** Built-In

**Input:**

- **inputImage:** Image
- **inputCenter:** Center
- **inputRadius:** Radius
- **inputAngle:** Angle

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
52.207.2 Methods

52.207.3 Constructor


Notes: On success the handle property is not zero and the filter has the default values set.

52.207.4 Properties

52.207.5 AttributeinputAngle as CIAttributeMBS


Notes:

This attribute should have this content:

- **Name**: inputAngle
- **Class**: double
- **Type**: CIAttributeTypeAngle
- **DisplayName English**: Angle
- **DisplayName German**: Winkel
- **DisplayName French**: Angle
- **DisplayName Italian**: Angolo
- **DisplayName Spanish**: ángulo
- **DefaultNumber**: 56.54867
- **IdentityNumber**: 0
- **SliderMaxNumber**: 94.24778
- **SliderMinNumber**: -94.24778

(Read only property)

52.207.6 AttributeinputCenter as CIAttributeMBS


Notes:

This attribute should have this content:
CHAPTER 52. COREIMAGE

Name: inputCenter
Class: CIVectorMBS
Type: CIAttributeTypePosition
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
DefaultVector: [150 150]
IdentityVector: n/a
(Read only property)

52.207.7 Attribute inputImage as CIAttributeMBS

Notes:
This attribute should have this content:

Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0
(Read only property)

52.207.8 Attribute inputRadius as CIAttributeMBS

Notes:
This attribute should have this content:
Name:                     inputRadius  
Class:                    double  
Type:                     CISAttributeTypeDistance  
DisplayName English:     Radius  
DisplayName German:      Radius  
DisplayName French:      Rayon  
DisplayName Italian:     Raggio  
DisplayName Spanish:     Radio  
DefaultNumber:           300  
IdentityNumber:          0  
SliderMaxNumber:         800  
SliderMinNumber:         0  

(Read only property)

52.207.9   inputAngle as double

Function:  
The attribute Angle  
Notes:  

Name:                     inputAngle  
Class:                    double (NSNumber)  
DisplayName English:     Angle  
DisplayName German:      Winkel  
DisplayName French:      Angle  
DisplayName Italian:     Angolo  
DisplayName Spanish:     ngulo  
Type:                     CISAttributeTypeAngle  

See AttributeinputAngle for more details.  
(Read and Write property)

52.207.10   inputCenter as CIVectorMBS

Function:  
The attribute Center  
Notes:  
See AttributeinputCenter for more details.
Name: inputCenter
Class: CIVectorMBS (CIVector)
DisplayName English: Center
DisplayName German: Mitte
DisplayName French: Centre
DisplayName Italian: Centro
DisplayName Spanish: Centro
Type: CIAttributeTypePosition

(Read and Write property)

52.207.11 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Image
**Notes:**
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage

See Attribute inputImage for more details.
(Read and Write property)

52.207.12 inputRadius as double

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The attribute Radius
**Notes:**
See Attribute inputRadius for more details.
(Read and Write property)
Name: inputRadius
Class: double (NSNumber)
DisplayName English: Radius
DisplayName German: Radius
DisplayName French: Rayon
DisplayName Italian: Raggio
DisplayName Spanish: Radio
Type: CIAttributeTypeDistance
52.208 class CIFilterWhitePointAdjustMBS

52.208.1 class CIFilterWhitePointAdjustMBS


Notes:

Details for this filter:

FilterName: CIWhitePointAdjust
DisplayName English: White Point Adjust
DisplayName German: Weipunkt anpassen
DisplayName French: Ajustement du point blanc
DisplayName Italian: Regolazione punto di bianco
DisplayName Spanish: Ajuste de punto blanco

Categories:

- CICategoryColorAdjustment: Color Adjustment
- CICategoryVideo: Video
- CICategoryStillImage: Still Image
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryBuiltIn: Built-In

Input:

- inputImage: Image
- inputColor: Color

Output:

- outputImage

Subclass of the CIFilterMBS class.
52.208.2 Methods

52.208.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.208.4 Properties

52.208.5 Attribute inputColor as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the White Point Adjust attribute.
**Notes:**
This attribute should have this content:

Name: inputColor
Class: CIColorMBS
Type: CIAttributeTypeColor
DisplayName English: Color
DisplayName German: Farbe
DisplayName French: Couleur
DisplayName Italian: Colore
DisplayName Spanish: Color
DefaultColor: Red = 1, Green = 0.9, Blue = 0.8, Alpha = 1
IdentityNumber: 0

(Read only property)

52.208.6 Attribute inputImage as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Details about the White Point Adjust attribute.
**Notes:**
This attribute should have this content:

(Read only property)
Name: inputImage
Class: CIImageMBS
Type: CIAttributeTypeImage
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
DefaultNumber: 0
IdentityNumber: 0

52.208.7 inputColor as CIColorMBS

Notes:
Name: inputColor
Class: CIColorMBS (CIColor)
DisplayName English: Color
DisplayName German: Farbe
DisplayName French: Couleur
DisplayName Italian: Colore
DisplayName Spanish: Color
Type: CIAttributeTypeColor

See AttributeinputColor for more details.
(Read and Write property)

52.208.8 inputImage as CIImageMBS

Notes:
See AttributeinputImage for more details.
(Read and Write property)
<table>
<thead>
<tr>
<th>Name:</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIImageMBS (CIImage)</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Imagen</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAtributeTypeImage</td>
</tr>
</tbody>
</table>
52.209 class CIFilterXRayMBS

52.209.1 class CIFilterXRayMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage X-Ray filter.

**Notes:**

Details for this filter:

<table>
<thead>
<tr>
<th>FilterName</th>
<th>CIXRay</th>
</tr>
</thead>
<tbody>
<tr>
<td>DisplayName English</td>
<td>X-Ray</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Rntgen</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Rayon X</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Raggi X</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Rayos X</td>
</tr>
</tbody>
</table>

**Categories:**

- CICategoryColorEffect: Color Effect
- CICategoryVideo: Video
- CICategoryInterlaced: Interlaced
- CICategoryNonSquarePixels: Non-Square Pixels
- CICategoryStillImage: Still Image
- CICategoryBuiltIn: Built-In

**Input:**

- inputImage: Image

**Output:**

- outputImage

Subclass of the CIFilterMBS class.
52.209.2 Methods

52.209.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.209.4 Properties

52.209.5 AttributeinputImage as CIAtributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the X-Ray attribute.
**Notes:**
This attribute should have this content:

<table>
<thead>
<tr>
<th>Name</th>
<th>inputImage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class:</td>
<td>CIImageMBS</td>
</tr>
<tr>
<td>Type:</td>
<td>CIAtributeTypeImage</td>
</tr>
<tr>
<td>DisplayName English:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName German:</td>
<td>Bild</td>
</tr>
<tr>
<td>DisplayName French:</td>
<td>Image</td>
</tr>
<tr>
<td>DisplayName Italian:</td>
<td>Immagine</td>
</tr>
<tr>
<td>DisplayName Spanish:</td>
<td>Imagen</td>
</tr>
<tr>
<td>DefaultNumber:</td>
<td>0</td>
</tr>
<tr>
<td>IdentityNumber:</td>
<td>0</td>
</tr>
</tbody>
</table>

(Read only property)

52.209.6 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Image
**Notes:**
See AttributeinputImage for more details.
(Read and Write property)
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage
52.210. class CIFilterZoomBlurMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class for the CoreImage Zoom Blur filter.

**Notes:**

Details for this filter:

- **FilterName:** CIZoomBlur
- **DisplayName English:** Zoom Blur
- **DisplayName German:** Zoom weichzeichnen
- **DisplayName French:** Zoom flou
- **DisplayName Italian:** Sfumatura zoom
- **DisplayName Spanish:** Ampliar difuminado

Categories:

- **CICategoryBlur:** Blur
- **CICategoryStillImage:** Still Image
- **CICategoryVideo:** Video
- **CICategoryBuiltIn:** Built-In

**Input:**

- **inputImage:** Image
- **inputCenter:** Center
- **inputAmount:** Amount

**Output:**

- **outputImage**

Subclass of the CIFilterMBS class.
52.210.2 Methods

52.210.3 Constructor

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:** On success the handle property is not zero and the filter has the default values set.

52.210.4 Properties

52.210.5 Attribute inputAmount as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Zoom Blur attribute.
**Notes:**
This attribute should have this content:

Name: inputAmount
Class: double
Type: CIAttributeTypeDistance
DisplayName English: Amount
DisplayName German: Strke
DisplayName French: Montant
DisplayName Italian: Quantit
DisplayName Spanish: Cantidad
DefaultNumber: 20
IdentityNumber: 0
SliderMaxNumber: 200
SliderMinNumber: 0

(Read only property)

52.210.6 Attribute inputCenter as CIAttributeMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Zoom Blur attribute.
**Notes:**
This attribute should have this content:
52.210. **CLASS CIFILTERZOOMBLURMBS**

Name: inputCenter  
Class: CIVectorMBS  
Type: CIAttributeTypePosition  
DisplayName English: Center  
DisplayName German: Mitte  
DisplayName French: Centre  
DisplayName Italian: Centro  
DisplayName Spanish: Centro  
DefaultVector: [ 150 150 ]  
IdentityVector: n/a  

(Read only property)

52.210.7 **Attribute inputImage as CIAttributeMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Details about the Zoom Blur attribute.  
**Notes:**  
This attribute should have this content:

Name: inputImage  
Class: CIImageMBS  
Type: CIAttributeTypeImage  
DisplayName English: Image  
DisplayName German: Bild  
DisplayName French: Image  
DisplayName Italian: Immagine  
DisplayName Spanish: Imagen  
DefaultNumber: 0  
IdentityNumber: 0  

(Read only property)

52.210.8 **inputAmount as double**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute Amount  
**Notes:**  
See Attribute inputAmount for more details.
### 52.210.9 inputCenter as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

The attribute Center

**Notes:**

<table>
<thead>
<tr>
<th>Name</th>
<th>inputCenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>CIVectorMBS (CIVector)</td>
</tr>
<tr>
<td>DisplayName English</td>
<td>Center</td>
</tr>
<tr>
<td>DisplayName German</td>
<td>Mitte</td>
</tr>
<tr>
<td>DisplayName French</td>
<td>Centre</td>
</tr>
<tr>
<td>DisplayName Italian</td>
<td>Centro</td>
</tr>
<tr>
<td>DisplayName Spanish</td>
<td>Centro</td>
</tr>
<tr>
<td>Type</td>
<td>CIAttributeTypePosition</td>
</tr>
</tbody>
</table>

See Attribute inputCenter for more details.

(Read and Write property)

### 52.210.10 inputImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

The attribute Image

**Notes:**

See Attribute inputImage for more details.

(Read and Write property)
Name: inputImage
Class: CIImageMBS (CIImage)
DisplayName English: Image
DisplayName German: Bild
DisplayName French: Image
DisplayName Italian: Immagine
DisplayName Spanish: Imagen
Type: CIAttributeTypeImage
52.211 class CIImageMBS

52.211.1 class CIImageMBS


52.211.2 Methods

52.211.3 AsNSImageMBS as Variant

MBS MacCG Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creates a NSImageMBS which references the given CIImage.
Example:

```plaintext
// make a dummy CIImage
dim Logo as Picture = LogoMBS(500)
dim jpeg as string = PictureToJPEGStringMBS(logo, 80)
dim ci as CIImageMBS = CIImageMBS.imageWithData(jpeg)

// convert to NSImage
dim ni as NSImageMBS = ci.AsNSImageMBS

// and display
Backdrop = ni.CopyPictureWithMask
```

Notes:
Returns nil on error.
Result declared as Variant to avoid plugin dependencies.

52.211.4 autoAdjustmentFilters as CIFilterMBS()

Example:

```plaintext
dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim image as CIImageMBS = CIImageMBS.imageWithContentsOfFile(f)

dim filters() as CIFilterMBS = image.autoAdjustmentFilters
```
dim beginImage as CIImageMBS = image
for each filter as CIFilterMBS in filters
    filter.ValueAsCIImage("inputImage") = beginImage
    beginImage = filter.ValueAsCIImage("outputImage")
next

Backdrop = beginImage.RenderPicture

Notes: An array of auto adjustment filters to apply to the image. The filters are preset with values for correcting deficiencies in the supplied image.

52.211.5 autoAdjustmentFiltersWithOptions(options as dictionary) as CIFilterMBS()


Example:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim image as CIImageMBS = CIImageMBS.imageWithContentsOfFile(f)

dim options as new Dictionary
options.Value(CIImageMBS.kCIImageAutoAdjustEnhance) = true
options.Value(CIImageMBS.kCIImageAutoAdjustRedEye) = true

dim filters() as CIFilterMBS = image.autoAdjustmentFiltersWithOptions(options)

dim beginImage as CIImageMBS = image
for each filter as CIFilterMBS in filters
    filter.ValueAsCIImage("inputImage") = beginImage
    beginImage = filter.ValueAsCIImage("outputImage")
next

Backdrop = beginImage.RenderPicture

Notes:
options: You can control which filters are returned by supplying one or more of the keys described in "Auto Adjustment Keys."
The options dictionary can also contain a CIDetectorImageOrientation key. This key is a number with the same value as defined by the TIFF and EXIF specifications; values can range from 1 through 8. The value specifies where the origin (0,0) of the image is located. If not present, the default value is 1, which means the origin of the image is top, left. For details on the image origin specified by each value, see kCGImage-
PropertyOrientation.

Returns an array of auto adjustment filters, filtered by the supplied options, to apply to the image. The filters are preset with values for correcting deficiencies in the supplied image.

52.211.6 Constructor(cgimage as CGImageMBS, cgcolorspace as CGColorSpaceMBS)

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a CIImage based on a CGImage.

**Notes:**

cgcolorspace: Use this colorspace when opening the image.
On success, the handle is not zero.
See also:

- 52.211.7 Constructor(cgimage as CGImageMBS, options as Dictionary = nil) 9536
- 52.211.8 Constructor(CGLayer as CGLayerMBS, options as Dictionary = nil) 9537
- 52.211.9 Constructor(data as memoryblock) 9538
- 52.211.10 Constructor(data as memoryblock, BytesPerRow as Integer, width as Integer, height as Integer, format as Integer, cgcolorspace as CGColorSpaceMBS) 9538
- 52.211.11 Constructor(data as memoryblock, cgcolorspace as CGColorSpaceMBS) 9539
- 52.211.12 Constructor(data as Memoryblock, Length as Integer, BytesPerRow as Integer, width as Integer, height as Integer, format as Integer, cgcolorspace as CGColorSpaceMBS) 9540
- 52.211.13 Constructor(file as FolderItem) 9540
- 52.211.14 Constructor(file as FolderItem, cgcolorspace as CGColorSpaceMBS) 9541
- 52.211.15 Constructor(Handle as Integer) 9541

52.211.7 Constructor(cgimage as CGImageMBS, options as Dictionary = nil)

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a CIImage based on a CGImage.

**Notes:** On success, the handle is not zero.
See also:

- 52.211.6 Constructor(cgimage as CGImageMBS, cgcolorspace as CGColorSpaceMBS) 9536
- 52.211.8 Constructor(CGLayer as CGLayerMBS, options as Dictionary = nil) 9537
- 52.211.9 Constructor(data as memoryblock) 9538
52.211. CLASS CIIMAGEMBS

- 52.211.10 Constructor(data as memoryblock, BytesPerRow as Integer, width as Integer, height as Integer, format as Integer, cgcolorspace as CGColorSpaceMBS) 9538
- 52.211.11 Constructor(data as memoryblock, cgcolorspace as CGColorSpaceMBS) 9539
- 52.211.12 Constructor(data as Memoryblock, Length as Integer, BytesPerRow as Integer, width as Integer, height as Integer, format as Integer, cgcolorspace as CGColorSpaceMBS) 9540
- 52.211.13 Constructor(file as FolderItem) 9540
- 52.211.14 Constructor(file as FolderItem, cgcolorspace as CGColorSpaceMBS) 9541
- 52.211.15 Constructor(Handle as Integer) 9541

52.211.8 Constructor(CGLayer as CGLayerMBS, options as Dictionary = nil)


Notes:
layer: A CGLayer object. For more information see Quartz 2D Programming Guide and CGLayer Reference.
options: A dictionary specifying image options.

Returns an image object initialized with the contents of the layer object and set up with the specified options. See also:

- 52.211.6 Constructor(cgimage as CGIImageMBS, cgcolorspace as CGColorSpaceMBS) 9536
- 52.211.7 Constructor(cgimage as CGIImageMBS, options as Dictionary = nil) 9536
- 52.211.9 Constructor(data as memoryblock) 9538
- 52.211.10 Constructor(data as memoryblock, BytesPerRow as Integer, width as Integer, height as Integer, format as Integer, cgcolorspace as CGColorSpaceMBS) 9538
- 52.211.11 Constructor(data as memoryblock, cgcolorspace as CGColorSpaceMBS) 9539
- 52.211.12 Constructor(data as Memoryblock, Length as Integer, BytesPerRow as Integer, width as Integer, height as Integer, format as Integer, cgcolorspace as CGColorSpaceMBS) 9540
- 52.211.13 Constructor(file as FolderItem) 9540
- 52.211.14 Constructor(file as FolderItem, cgcolorspace as CGColorSpaceMBS) 9541
- 52.211.15 Constructor(Handle as Integer) 9541
52.211.9 Constructor(data as memoryblock)

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a CIImage based on the image file content stored inside the data string.

**Example:**

```vba
dim p as Picture = LogoMBS(500)
dim data as string = PictureToPNGStringMBS(p,80)
dim i as new CIImageMBS(data)

dim c as new CIFilterCircularWrapMBS
    c.inputImage = i

dim o as CIImageMBS = c.outputImage
    Backdrop = o.RenderPicture
```

**Notes:** On success, the handle is not zero.

See also:

- 52.211.6 Constructor(cgimage as CGImageMBS, cgcolorspace as CGColorSpaceMBS) 9536
- 52.211.7 Constructor(cgimage as CGImageMBS, options as Dictionary = nil) 9536
- 52.211.8 Constructor(CGLayer as CGLayerMBS, options as Dictionary = nil) 9537
- 52.211.10 Constructor(data as memoryblock, BytesPerRow as Integer, width as Integer, height as Integer, format as Integer, cgcolorspace as CGColorSpaceMBS) 9538
- 52.211.11 Constructor(data as memoryblock, cgcolorspace as CGColorSpaceMBS) 9539
- 52.211.12 Constructor(data as Memoryblock, Length as Integer, BytesPerRow as Integer, width as Integer, height as Integer, format as Integer, cgcolorspace as CGColorSpaceMBS) 9540
- 52.211.13 Constructor(file as FolderItem) 9540
- 52.211.14 Constructor(file as FolderItem, cgcolorspace as CGColorSpaceMBS) 9541
- 52.211.15 Constructor(Handle as Integer) 9541

52.211.10 Constructor(data as memoryblock, BytesPerRow as Integer, width as Integer, height as Integer, format as Integer, cgcolorspace as CGColorSpaceMBS)

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a CIImage from a RAW memory buffer.

**Notes:**

Format must be one of this constants: kCIFormatRGBA, kCIFormatRGBA16 and kCIFormatARGB8.
52.211. CLASS CIIMAGEMBS

On success, the handle is not zero.

See also:

- 52.211.6 Constructor(cgimage as CGImageMBS, cgcolorspace as CGColorSpaceMBS) 9536
- 52.211.7 Constructor(cgimage as CGImageMBS, options as Dictionary = nil) 9536
- 52.211.8 Constructor(CGLayer as CGLayerMBS, options as Dictionary = nil) 9537
- 52.211.9 Constructor(data as memoryblock) 9538
- 52.211.11 Constructor(data as memoryblock, cgcolorspace as CGColorSpaceMBS) 9539
- 52.211.12 Constructor(data as Memoryblock, Length as Integer, BytesPerRow as Integer, width as Integer, height as Integer, format as Integer, cgcolorspace as CGColorSpaceMBS) 9540
- 52.211.13 Constructor(file as FolderItem) 9540
- 52.211.14 Constructor(file as FolderItem, cgcolorspace as CGColorSpaceMBS) 9541
- 52.211.15 Constructor(Handle as Integer) 9541

52.211.11 Constructor(data as memoryblock, cgcolorspace as CGColorSpaceMBS)

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a CIImage based on the image file content stored inside the data string. **Notes:**

cgcolorspace: Use this colorspace when opening the image.

On success, the handle is not zero.

See also:

- 52.211.6 Constructor(cgimage as CGImageMBS, cgcolorspace as CGColorSpaceMBS) 9536
- 52.211.7 Constructor(cgimage as CGImageMBS, options as Dictionary = nil) 9536
- 52.211.8 Constructor(CGLayer as CGLayerMBS, options as Dictionary = nil) 9537
- 52.211.9 Constructor(data as memoryblock) 9538
- 52.211.10 Constructor(data as memoryblock, BytesPerRow as Integer, width as Integer, height as Integer, format as Integer, cgcolorspace as CGColorSpaceMBS) 9538
- 52.211.12 Constructor(data as Memoryblock, Length as Integer, BytesPerRow as Integer, width as Integer, height as Integer, format as Integer, cgcolorspace as CGColorSpaceMBS) 9540
- 52.211.13 Constructor(file as FolderItem) 9540
- 52.211.14 Constructor(file as FolderItem, cgcolorspace as CGColorSpaceMBS) 9541
- 52.211.15 Constructor(Handle as Integer) 9541
**52.211.12 Constructor**(data as Memoryblock, Length as Integer, BytesPerRow as Integer, width as Integer, height as Integer, format as Integer, cgcolorspace as CGColorSpaceMBS)

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a CIImage from a RAW memory buffer. **Notes:**

- Data points directly to the row data.
- Length is the size of the memoryblock in bytes.
- BytesPerRow is the size of a row in bytes.
- Width and height are the dimensions of the image.
- Format must be one of this constants: kCIFormatRGBAf, kCIFormatRGBA16 and kCIFormatARGB8.
- Colorspace is the CoreGraphics Colorspace object to be used.

On success, the handle is not zero.

See also:

- 52.211.6 Constructor(cgimage as CGImageMBS, cgcolorspace as CGColorSpaceMBS) 9536
- 52.211.7 Constructor(cgimage as CGImageMBS, options as Dictionary = nil) 9536
- 52.211.8 Constructor(CGLayer as CGLayerMBS, options as Dictionary = nil) 9537
- 52.211.9 Constructor(data as memoryblock) 9538
- 52.211.10 Constructor(data as memoryblock, BytesPerRow as Integer, width as Integer, height as Integer, format as Integer, cgcolorspace as CGColorSpaceMBS) 9538
- 52.211.11 Constructor(data as memoryblock, cgcolorspace as CGColorSpaceMBS) 9539
- 52.211.13 Constructor(file as FolderItem) 9540
- 52.211.14 Constructor(file as FolderItem, cgcolorspace as CGColorSpaceMBS) 9541
- 52.211.15 Constructor(Handle as Integer) 9541

**52.211.13 Constructor**(file as FolderItem)

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a CIImage based on the content of the file. **Notes:** On success, the handle is not zero.

See also:

- 52.211.6 Constructor(cgimage as CGImageMBS, cgcolorspace as CGColorSpaceMBS) 9536
- 52.211.7 Constructor(cgimage as CGImageMBS, options as Dictionary = nil) 9536
- 52.211.8 Constructor(CGLayer as CGLayerMBS, options as Dictionary = nil) 9537
52.211. CLASS CIIMAGEMBS

- 52.211.9 Constructor(data as memoryblock)
- 52.211.10 Constructor(data as memoryblock, BytesPerRow as Integer, width as Integer, height as Integer, format as Integer, cgcolorspace as CGColorSpaceMBS)
- 52.211.11 Constructor(data as memoryblock, cgcolorspace as CGColorSpaceMBS)
- 52.211.12 Constructor(data as Memoryblock, Length as Integer, BytesPerRow as Integer, width as Integer, height as Integer, format as Integer, cgcolorspace as CGColorSpaceMBS)
- 52.211.14 Constructor(file as FolderItem, cgcolorspace as CGColorSpaceMBS)
- 52.211.15 Constructor(Handle as Integer)

52.211.14 Constructor(file as FolderItem, cgcolorspace as CGColorSpaceMBS)

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a CIImage based on a the content of the file.

**Notes:**

cgcolorspace: Use this colorspace when opening the image.

On success, the handle is not zero.

See also:

- 52.211.6 Constructor(cgimage as CGImageMBS, cgcolorspace as CGColorSpaceMBS)
- 52.211.7 Constructor(cgimage as CGImageMBS, options as Dictionary = nil)
- 52.211.8 Constructor(CGLayer as CGLayerMBS, options as Dictionary = nil)
- 52.211.9 Constructor(data as memoryblock)
- 52.211.10 Constructor(data as memoryblock, BytesPerRow as Integer, width as Integer, height as Integer, format as Integer, cgcolorspace as CGColorSpaceMBS)
- 52.211.11 Constructor(data as memoryblock, cgcolorspace as CGColorSpaceMBS)
- 52.211.12 Constructor(data as Memoryblock, Length as Integer, BytesPerRow as Integer, width as Integer, height as Integer, format as Integer, cgcolorspace as CGColorSpaceMBS)
- 52.211.13 Constructor(file as FolderItem)
- 52.211.15 Constructor(Handle as Integer)

52.211.15 Constructor(Handle as Integer)

MBS MacCG Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes object with given object reference.

**Notes:**
ref should be a CIImage* and the object is retained. Raises UnsupportedOperation exception if object is not a CIImage. 
See also:

- 52.211.6 Constructor(cgimage as CGImageMBS, cgcolorspace as CGColorSpaceMBS) 9536
- 52.211.7 Constructor(cgimage as CGImageMBS, options as Dictionary = nil) 9536
- 52.211.8 Constructor(CGLayer as CGLayerMBS, options as Dictionary = nil) 9537
- 52.211.9 Constructor(data as memoryblock) 9538
- 52.211.10 Constructor(data as memoryblock, BytesPerRow as Integer, width as Integer, height as Integer, format as Integer, cgcolorspace as CGColorSpaceMBS) 9538
- 52.211.11 Constructor(data as memoryblock, cgcolorspace as CGColorSpaceMBS) 9539
- 52.211.12 Constructor(data as Memoryblock, Length as Integer, BytesPerRow as Integer, width as Integer, height as Integer, format as Integer, cgcolorspace as CGColorSpaceMBS) 9540
- 52.211.13 Constructor(file as FolderItem) 9540
- 52.211.14 Constructor(file as FolderItem, cgcolorspace as CGColorSpaceMBS) 9541

52.211.16  copy as CIImageMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy of the image.

52.211.17  CreateCGImage(r as CGRectMBS = nil) as CGImageMBS

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new image with the content of the CIImage.  
**Example:**

```plaintext
dim logo as Picture = LogoMBS(500)
dim ci as CIImageMBS = CIImageMBS.imageWithPicture(logo)
dim cg as CGImageMBS = ci.CreateCGImage
Backdrop = cg.Picture
```

**Notes:**

Render the region 'r' of image 'im' into a temporary buffer using the context, then create and return a new CoreGraphics image with the results.  
If r is nil, the whole image extent is used.  
See also:
52.211. CLASS CIIMAGEMBS

- 52.211.18 CreateCGImage(r as CGRectMBS, ColorSpace as CGColorSpaceMBS) as CGImageMBS

52.211.18 CreateCGImage(r as CGRectMBS, ColorSpace as CGColorSpaceMBS) as CGImageMBS

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new image with the content of the CIImage.

**Notes:**
Render the region 'r' of image 'im' into a temporary buffer using the context, then create and return a new
CoreGraphics image with the results.
If r is nil, the whole image extent is used.
See also:

- 52.211.17 CreateCGImage(r as CGRectMBS = nil) as CGImageMBS

52.211.19 emptyImage as CIImageMBS

MBS MacCG Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates and returns an empty image object.

**Example:**
```
dim image as CIImageMBS = CIImageMBS.emptyImage
MsgBox str(image.Width) // shows zero
```

**Notes:** Available in OS X v10.5 and later.

52.211.20 imageByApplyingOrientation(orientation as Integer) as CIImageMBS

MBS MacCG Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a new image representing the original image with a transform appied to it based on an orientation value.

**Notes:**
Orientation values from 1 to 8 as defined in the TIFF spec are supported.
Returns original image if the image is of infinite extent.

Possible orientation values:
### 52.211.21 `ImageByApplyingTransform(transform as NSAffineTransformMBS)` as CIImageMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returs a new image representing the original image with the transform 'matrix' appended to it.

### 52.211.22 `imageByClampingToExtent` as CIImageMBS

MBS MacCG Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Return a new infinite image by replicating the pixels of the receiver image’s extent.

### 52.211.23 `imageByCompositingOverImage(dest as CIImageMBS)` as CIImageMBS

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a new image created by compositing the original image over the specified destination image. **Notes:**
dest: An image to serve as the destination of the compositing operation.

Returns an image object representing the result of the compositing operation.

Calling this method is equivalent to using the CISourceOverCompositing filter. To use other compositing operations and blending modes, create a CIFilter object using one of the built-in filters from the CICategoryCompositeOperation category. For details, see Core Image Filter Reference.

Available in OS X v10.4 and later.
52.211.24  imageByCroppingToRect(r as CGRectMBS) as CIImageMBS

MBS MacCG Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a new image that represents the original image after cropping to a rectangle. **Notes:** Available in OS X v10.5 and later.

52.211.25  imageWithCGImage(CGImage as CGImageMBS, colorspace as CGColorSpaceMBS) as CIImageMBS

MBS MacCG Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an image object from a Quartz 2D image using the specified color space. **Notes:** Returns nil on any error. See also:

- 52.211.26 imageWithCGImage(CGImage as CGImageMBS, options as Dictionary = nil) as CIImageMBS

52.211.26  imageWithCGImage(CGImage as CGImageMBS, options as Dictionary = nil) as CIImageMBS

MBS MacCG Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an image object from a Quartz 2D image. **Notes:** Returns nil on any error. See also:

- 52.211.25 imageWithCGImage(CGImage as CGImageMBS, colorspace as CGColorSpaceMBS) as CIImageMBS

52.211.27  imageWithCGLayer(CGImage as CGImageMBS, options as Dictionary = nil) as CIImageMBS

MBS MacCG Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an image object from the contents supplied by a CGLayer object, using the specified options. **Notes:** layer: A CGLayer object. For more information see Quartz 2D Programming Guide and CGLayer Reference. options: A dictionary specifying image options.

An image object initialized with the contents of the layer object and set up with the specified options.
### 52.211.28 imageWithColor(color as CIColorMBS) as CIImageMBS

MBS MacCG Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an image of infinite extent that is initialized the specified color. **Notes:** Returns the image object initialized with the color represented by the CIColorMBS object. Available in OS X v10.5 and later.

### 52.211.29 imageWithContentsOfFile(file as folderitem) as CIImageMBS

MBS MacCG Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an image object from the contents of a file. **Example:**
```jack"
dim file as FolderItem = SpecialFolder/Desktop/Child("mbs.jpg")
dim image as CIImageMBS = CIImageMBS/imageWithContentsOfFile(file)
Backdrop = image.RenderPicture"

**Notes:** Returns nil on any error. See also:
- 52.211.30 imageWithContentsOfFile(file as folderitem, colorspace as CGColorSpaceMBS) as CIImageMBS

### 52.211.30 imageWithContentsOfFile(file as folderitem, colorspace as CGColorSpaceMBS) as CIImageMBS

MBS MacCG Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an image object from the contents of a file. **Notes:** Returns nil on any error. See also:
- 52.211.29 imageWithContentsOfFile(file as folderitem) as CIImageMBS

### 52.211.31 imageWithContentsOfFileMT(file as folderitem) as CIImageMBS

MBS MacCG Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an image object from the contents of a file. **Example:**
```jack"
dim file as FolderItem = SpecialFolder/Desktop/Child("mbs.jpg")
dim image as CIImageMBS = CIImageMBS/imageWithContentsOfFileMT(file)
```
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Backdrop = image.RenderPicture

Notes:
Returns nil on any error.
Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.

See also:

- 52.211.32 imageWithContentsOfFileMT(file as folderitem, colorspace as CGColorSpaceMBS) as CIImageMBS

52.211.32 imageWithContentsOfFileMT(file as folderitem, colorspace as CGColorSpaceMBS) as CIImageMBS

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates and returns an image object from the contents of a file.

**Example:**

```pascal
dim file as FolderItem = SpecialFolder.Desktop.Child("mbs.jpg")
dim cs as CGColorSpaceMBS = CGColorSpaceMBS.CreateDeviceRGB
dim image as CIImageMBS = CIImageMBS.imageWithContentsOfFileMT(file, cs)
Backdrop = image.RenderPicture
```

Notes:
Returns nil on any error.
Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.

See also:

- 52.211.31 imageWithContentsOfFileMT(file as folderitem) as CIImageMBS

52.211.33 imageWithContentsOfFileMT(Path as string, colorspace as CGColorSpaceMBS) as CIImageMBS

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates and returns an image object from the contents of a file.

**Example:**

```pascal
// load image
dim inputimage as CIImageMBS = CIImageMBS.imageWithContentsOfFileMT("/Library/Desktop Pictures/Rice Paddy.jpg", nil)
```
// rotate 90
ScaleXFilter = new CIFilterAffineTransformMBS
ScaleXFilter.inputImage = inputimage
af = new NSAffineTransformMBS
af.translate(inputimage.height, 0)
af.rotateByDegrees(90)
ScaleXFilter.inputTransform = af

// produce output
outputimage = ScaleXFilter.outputImage
outputimage.extent = outputimage.RenderPicture
Backdrop = outputimage.RenderPicture
Title = Str(Backdrop.Width) + " x " + Str(Backdrop.Height)

// write to PNG file
n = outputimage.AsNSImageMBS
n.PNGRepresentation = n.PNGRepresentation
f = SpecialFolder.Desktop.Child("test.png")
b = BinaryStream.Create(f, true)
b.Write data
b.Close

Notes: Returns nil on any error.

52.211.34  imageWithContentsOfURL(url as String) as CIImageMBS

Notes: Returns nil on any error.
See also:

• 52.211.35 imageWithContentsOfURL(URL as string, colorspace as CGColorSpaceMBS) as CIImageMBS 9548

52.211.35  imageWithContentsOfURL(URL as string, colorspace as CGColorSpaceMBS) as CIImageMBS

Notes: Returns nil on any error.
See also:
52.211.36  imageWithData(data as memoryblock, Options as Dictionary = nil) as CIImageMBS

MBS MacCG Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an image object initialized with the supplied image data.

**Example:**

```pascal
dim logo as Picture = LogoMBS(500)
dim jpegData as string = PictureToJPEGStringMBS(logo, 75)
dim image as CIImageMBS = CIImageMBS.imageWithData(jpegData)
Backdrop = image.RenderPicture
```

**Notes:**

data: The data object that holds the contents of an image file (such as TIFF, GIF, JPG, or whatever else the system supports). The image data must be premultiplied.

Returns an image object initialized with the supplied data, or nil if the method cannot create an image representation from the contents of the supplied data object.

52.211.37  imageWithDataMT(data as memoryblock, Options as Dictionary = nil) as CIImageMBS

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an image object initialized with the supplied image data.

**Example:**

```pascal
dim logo as Picture = LogoMBS(500)
dim jpegData as string = PictureToJPEGStringMBS(logo, 75)
dim image as CIImageMBS = CIImageMBS.imageWithDataMT(jpegData)
Backdrop = image.RenderPicture
```

**Notes:**

data: The data object that holds the contents of an image file (such as TIFF, GIF, JPG, or whatever else the system supports). The image data must be premultiplied.

Returns an image object initialized with the supplied data, or nil if the method cannot create an image representation from the contents of the supplied data object.

Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI...
52.211.38  imageWithPicture(Pic as Picture) as CIImageMBS

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an image object from a Real Studio Picture.
**Example:**
```python
dim logo as Picture = LogoMBS(500)
dim ci as CIImageMBS = CIImageMBS.imageWithPicture(logo)
dim cg as CGImageMBS = ci.CreateCGImage
Backdrop = cg.Picture
```
**Notes:** Returns nil on any error.

52.211.39  kCIImageAutoAdjustCrop as string

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A key used to specify whether to return a filter that crops the image to focus on detected features.
**Notes:**
The value associated with this key is a Boolean value. If true, the returned filters include an operation that crops the image around the features specified with the kCIImageAutoAdjustFeatures option (or any features detected in the image, if that option is not present). Supply false to indicate not to return a crop filter. If you don’t specify this option, Core Image assumes its value is false.
Available in OS X v10.10 and later.

52.211.40  kCIImageAutoAdjustEnhance as string

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the Keys used in the options dictionary to control which filters Core Image returns.
**Notes:**
A key used to specify whether to return enhancement filters.
The value associated with this key is a CFBoolean value. Supply false to indicate not to return enhancement filters. If you don’t specify this option, Core Image assumes its value is true.
52.211.41 kCIImageAutoAdjustFeatures as string

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the Keys used in the options dictionary to control which filters Core Image returns. **Notes:**

A key used to specify an array of features to which to apply enhancement and red eye filter. The associated value is an array of CIFeatureMBS objects. If you don’t supply an array, the receiver will search for features using the CIDetectorMBS class.

52.211.42 kCIImageAutoAdjustLevel as string

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A key used to specify whether to return a filter that rotates the image to keep a level perspective. **Notes:**

The value associated with this key is a Boolean value. If true, Core Image analyzes the image to determine whether it would benefit from rotation for example, a landscape photo in which the horizon is not horizontal and returns a filter to perform that rotation. Supply false to indicate not to return a rotation filter. If you don’t specify this option, Core Image assumes its value is false.

Available in OS X v10.10 and later.

52.211.43 kCIImageAutoAdjustRedEye as string

MBS MacCG Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the Keys used in the options dictionary to control which filters Core Image returns. **Notes:**

A key used to specify whether to return a red eye filter. The value associated with this key is a Boolean value. Supply false to indicate not to return a red eye filter. If you don’t specify this option, Core Image assumes its value is true.

52.211.44 kCIImageTextureFormat as string

MBS MacCG Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys in the options dictionary when initializing an image. **Notes:**

The key for an OpenGL texture format. The value for this key must be an NSNumber object containing a Core Image pixel format constant. (See ”Pixel Formats.”) You may only use this key when initializing an image using the initWithTexture method.
52.211.45  kCIImageTextureTarget as string

MBS MacCG Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys in the options dictionary when initializing an image.
**Notes:**
The key for an OpenGL texture target. The value for this key must be an NSNumber object containing a sup-
ported OpenGL texture target constant, either GL_TEXTURE_2D or GL_TEXTURE_RECTANGLE_ARB. You may only use this key when initializing an image using the initWithTexture method.
Available in OS X v10.9 and later.

52.211.46  properties as Dictionary

MBS MacCG Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the metadata properties of an image.
**Notes:** If the image is the output of one or more CIFilters, then the metadata of the root inputImage will be returned.

52.211.47  releaseHandle

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Decrements the retain count of a CIImage reference.
**Notes:**
Each retain must have a release. Too many releases and your app will crash, too many retains and it will leak memory.
Use only if you really know what you are doing.

52.211.48  RenderNSImage(UseSoftwareRenderer as boolean = false) as Variant

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a picture based of the CIImage content.
**Example:**
```plaintext
dim f as CIFilterEdgesMBS
f=new CIFilterEdgesMBS
```
52.211. CLASS CIIMAGE MBS

f.inputIntensity=5

dim n as NSImageMBS
n=f.outputImage.RenderNSImage(false)

Notes:

Creates a new NSImage, creates a CGContext for it, draws the image into the buffer and returns it as a Realbasic object.

Returns nil on failure.
Rendering the image will cause the calculations to be done so this call is quite expensive.

If UseSoftwareRenderer is true, the hardware acceleration is not used.

52.211.49 RenderPicture(Width as Integer = 0, Height as Integer = 0, UseSoftwareRenderer as boolean = false) as Picture

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
Creates a picture based of the CIImage content.
Example:

dim f as CIFilterEdgesMBS

f=new CIFilterEdgesMBS
f.inputIntensity=5
Backdrop=f.outputImage.RenderPicture

Notes:

Creates a new image buffer, creates a CGContext for it, draws the image into the buffer and returns it as a picture with mask. If you need picture with alpha channel, please use RenderPictureWithAlpha function.

Returns nil on failure.
Rendering the image will cause the calculations to be done so this call is quite expensive.

If UseSoftwareRenderer is true, the hardware acceleration is not used.
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52.211.50  RenderPictureWithAlpha(Width as Integer = 0, Height as Integer = 0, UseSoftwareRenderer as boolean = false) as Picture

MBS MacCG Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a picture based of the CIImage content.

**Example:**

```xojo
dim f as CIFilterEdgesMBS

f=new CIFilterEdgesMBS
f.inputIntensity=5
Backdrop= f.outputImage.RenderPictureWithAlphaMT
```

**Notes:**

Creates a new image buffer, creates a CGContext for it, draws the image into the buffer and returns it as a Xojo picture with alpha channel.

Returns nil on failure.

Rendering the image will cause the calculations to be done so this call is quite expensive.

If UseSoftwareRenderer is true, the hardware acceleration is not used.

52.211.51  RenderPictureWithAlphaMT(Width as Integer = 0, Height as Integer = 0, UseSoftwareRenderer as boolean = false) as Picture

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a picture based of the CIImage content.

**Notes:**

Same as the other RenderPictureWithAlpha function, but threaded.

Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.

Creates a new image buffer, creates a CGContext for it, draws the image into the buffer and returns it as a Xojo picture with alpha channel.

Returns nil on failure.

Rendering the image will cause the calculations to be done so this call is quite expensive.

If UseSoftwareRenderer is true, the hardware acceleration is not used.
### 52.211.52 retainHandle

**Notes:**  
Each retain must have a release. Too many releases and your app will crash, too many retains and it will leak memory.  
Use only if you really know what you are doing.

### 52.211.53 Properties

#### 52.211.54 colorSpace as CGColorSpaceMBS

MBS MacCG Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns if possible the color space of the image it was defined in.  
**Notes:**  
This method will return nil, if the color space cannot be determined.  
(Read only property)

#### 52.211.55 Definition as CIFilterShapeMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return the Domain of Definition of the image.  
**Notes:**  
Nil on any error.  
(Read only property)

#### 52.211.56 description as String

MBS MacCG Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the textual description for this image.  
**Example:**

```vbnet
dim p as Picture = LogoMBS(500)
dim data as string = PictureToPNGStringMBS(p,80)
dim i as new CIImageMBS(data)
MsgBox i.description
```
52.211.57  Extent as CGRectMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The extent of the image in world coordinates.

**Example:**

```vbs
    dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
    dim i as new CIImageMBS(f)
    dim r as CGRectMBS = i.Extent
    MsgBox str(r.Width) + " x " + str(r.Height)
```

**Notes:**
Can be undefined. In that case x/y are -Infinity and width/height are Infinity (3.402823466 * 10^-38).
(Read only property)

52.211.58  Handle as Integer

MBS MacCG Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle to the CIImage object used internally.

**Notes:** (Read only property)

52.211.59  Height as Double

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The height of the image in pixel.

**Notes:** (Read only property)

52.211.60  RetainCount as Integer

52.211. Notes:
This is useful for debugging.
The retain count is for the CIImage reference, not the CIImageMBS object.
(Read only property)

52.211.61 url as string
Notes: Returns the URL of the image when the image was created using the imageWithContentsOfURL APIs. This method will return nil, if the URL cannot be determined.
(Read only property)

52.211.62 Width as Double
Notes: (Read only property)

52.211.63 Constants
52.211.64 kCIFormatARGB8 = 23
MBS MacCG Plugin, Plugin Version: 7.3. Function: One of the pixel formats: 32bpp, fixed point.

52.211.65 kCIFormatRGBA16 = 27
MBS MacCG Plugin, Plugin Version: 7.3. Function: One of the pixel formats: 64bpp, fixed point.

52.211.66 kCIFormatRGBAf = 34
52.212 class CIPDF417CodeDescriptorMBS

52.212.1 class CIPDF417CodeDescriptorMBS


Notes:
Refer to the ISO/IEC 15438:2006(E) for the PDF417 symbol specification.
Subclass of the CIBarcodeDescriptorMBS class.

52.212.2 Methods

52.212.3 Constructor(errorCorrectedPayload as MemoryBlock, isCompact as Boolean, rowCount as Integer, columnCount as Integer)

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Initializes a descriptor that can be used as input to CIBarcodeGenerator

52.212.4 descriptorWithPayload(errorCorrectedPayload as MemoryBlock, isCompact as Boolean, rowCount as Integer, columnCount as Integer) as CIPDF417CodeDescriptorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Construct a descriptor that can be used as input to CIBarcodeGenerator

52.212.5 Properties

52.212.6 columnCount as Integer

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Indicates the number of columns in the rectangular matrix, excluding the columns used to indicate the symbol structure.

Notes:
columnCount values range from 1 to 30.
(Read only property)
52.212.7 errorCorrectedPayload as MemoryBlock

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The error-corrected codewords which comprise the PDF417 symbol. The first codeword indicates the number of data codewords in the errorCorrectedPayload. **Notes:**

PDF417 codes are comprised of a start character on the left and a stop character on the right. Each row begins and ends with special characters indicating the current row as well as information about the dimensions of the PDF417 symbol. The errorCorrectedPayload represents the sequence of PDF417 codewords that make up the body of the message. The first codeword indicates the number of codewords in the message. This count includes the "count" codeword and any padding codewords, but does not include the error correction codewords. Each codeword is a 16-bit value in the range of 0..928. The sequence is to be interpreted as described in the PDF417 bar code symbology specification – ISO/IEC 15438:2006(E). (Read only property)

52.212.8 isCompact as Boolean

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A boolean indicating whether the symbol is compact. **Notes:**

Compact PDF417 symbols have abbreviated right-side guard bars. (Read only property)

52.212.9 rowCount as Integer

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates the number of rows in the rectangular matrix. **Notes:**

rowCount values range from 3 to 90. (Read only property)
**52.213** class CIQRCodeDescriptorMBS

**52.213.1** class CIQRCodeDescriptorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** CIQRCodeDescriptor is a concrete subclass of CIBarcodeDescriptor that defines an abstract representation of a QR code symbol. **Notes:** Subclass of the CIBarcodeDescriptorMBS class.

**52.213.2** Methods

**52.213.3** Constructor(errorCorrectedPayload as MemoryBlock, symbolVersion as Integer, maskPattern as Integer, errorCorrectionLevel as Integer)

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Initializes a descriptor that can be used as input to CIBarcodeGenerator.

**52.213.4** descriptorWithPayload(errorCorrectedPayload as MemoryBlock, symbolVersion as Integer, maskPattern as Integer, errorCorrectionLevel as Integer) as CIQRCodeDescriptorMBS

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Construct a descriptor that can be used as input to CIBarcodeGenerator.

**52.213.5** Properties

**52.213.6** errorCorrectedPayload as MemoryBlock

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The error-corrected codewords that comprise the QR code symbol. **Notes:**

QR Codes are formally specified in ISO/IEC 18004:2006(E). Section 6.4.10 "Bitstream to codeword conversion" specifies the set of 8-bit codewords in the symbol immediately prior to splitting the message into blocks and applying error correction.

During decode, error correction is applied and if successful, the message is re-ordered to the state immediately following "Bitstream to codeword conversion." The errorCorrectedPayload corresponds to this sequence of 8-bit codewords.
52.213.7  errorCorrectionLevel as Integer

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The error correction level of the QR code. **Notes:**
QR Codes support four levels of Reed-Solomon error correction, in increasing error correction capability: L, M, Q, and H.
(Read only property)

52.213.8  maskPattern as Integer

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The data mask pattern for the QR code symbol. **Notes:**
QR Codes support eight data mask patterns, which are used to avoid large black or large white areas inside the symbol body. Valid values range from 0 to 7.
(Read only property)

52.213.9  symbolVersion as Integer

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The version property corresponds to the size of the QR Code. **Notes:**
QR Codes are square. ISO/IEC 18004 defines versions from 1 to 40, where a higher symbol version indicates a larger data carrying capacity. This field is required in order to properly interpret the error corrected payload.
(Read only property)

52.213.10  Constants

52.213.11  ErrorCorrectionLevelH = 72

MBS MacCG Plugin, Plugin Version: 17.4. **Function:** One of the constants indicating the percentage of the symbol that is dedicated to error correction. **Notes:** Indicates that approximately 65% of the symbol data is dedicated to error correction.
52.213.12 ErrorCorrectionLevelL = 76

MBS MacCG Plugin, Plugin Version: 17.4. **Function:** One of the constants indicating the percentage of the symbol that is dedicated to error correction.
**Notes:** Indicates that approximately 20% of the symbol data is dedicated to error correction.

52.213.13 ErrorCorrectionLevelM = 77

MBS MacCG Plugin, Plugin Version: 17.4. **Function:** One of the constants indicating the percentage of the symbol that is dedicated to error correction.
**Notes:** Indicates that approximately 37% of the symbol data is dedicated to error correction.

52.213.14 ErrorCorrectionLevelQ = 81

MBS MacCG Plugin, Plugin Version: 17.4. **Function:** One of the constants indicating the percentage of the symbol that is dedicated to error correction.
**Notes:** Indicates that approximately 55% of the symbol data is dedicated to error correction.
52.214. CLASS CIQRCodeFeatureMBS

52.214.1 class CIQRCodeFeatureMBS

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The feature for a detected QRCode.

**Notes:**
A CIQRCodeFeature describes a Quick Response code (a two-dimensional barcode using the ISO/IEC 18004:2006 standard) detected in a video or still image. The properties of a QR code feature identify the corners of the barcode as it appears in perspective in the image and provide the message decoded from the barcode.

To detect QR codes in an image or video, choose the CIDetectorTypeQRCode type when initializing a CIDetector object.
Subclass of the CIFeatureMBS class.

52.214.2 Methods

52.214.3 Constructor(Handle as Integer)

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes an object using the given handle.

52.214.4 Properties

52.214.5 bottomLeft as CGPointMBS

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The lower left corner of the detected barcode, in image coordinates.
**Notes:** (Read only property)

52.214.6 bottomRight as CGPointMBS

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The lower right corner of the detected barcode, in image coordinates.
**Notes:** (Read only property)
52.214.7 **messageString as string**

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The string decoded from the detected barcode. **Notes:** (Read only property)

52.214.8 **symbolDescriptor as CIQRCodeDescriptorMBS**

MBS MacCG Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The QRCode symbol descriptor. **Notes:** Available on macOS 10.13 or newer. (Read only property)

52.214.9 **topLeft as CGPointMBS**

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The upper left corner of the detected barcode, in image coordinates. **Notes:** (Read only property)

52.214.10 **topRight as CGPointMBS**

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The upper right corner of the detected barcode, in image coordinates. **Notes:** (Read only property)
52.215. **CLASS CIRECTANGLEFEATUREMBS**

52.215 class CIRectangleFeatureMBS

52.215.1 class CIRectangleFeatureMBS

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A CIRectangleFeature object describes a quadrilateral region detected in a video or still image.

Notes:
A detected rectangle feature is not necessarily rectangular in the plane of the image; rather, the feature identifies a shape that may be rectangular in space but which appears in perspective in the image for example, a paper or book on a desk. The properties of a rectangle feature identify its corners in image coordinates.

For example, you can use rectangle feature detection together with the CIPerspectiveCorrection filter to detect rectangular objects in an image or video and transform them to their original orientation.

To detect rectangles in an image or video, choose the CIDetectorTypeRectangle type when initializing a CIDetector object, and use the CIDetectorAspectRatio option to specify the approximate shape of rectangular features to search for.

Subclass of the CIFeatureMBS class.

52.215.2 Methods

52.215.3 Constructor(Handle as Integer)

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new object from a handle.

52.215.4 Properties

52.215.5 bottomLeft as CGPointMBS

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The lower left corner of the detected rectangle, in image coordinates.

Notes: (Read only property)

52.215.6 bottomRight as CGPointMBS

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The lower right corner of the detected rectangle, in image coordinates.
52.215.7  topLeft as CGPointMBS

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The upper left corner of the detected rectangle, in image coordinates.
**Notes:** (Read only property)

52.215.8  topRight as CGPointMBS

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The upper right corner of the detected rectangle, in image coordinates.
**Notes:** (Read only property)
52.216. class CISamplerMBS

52.216.1 class CISamplerMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Realbasic class to wrap a CoreImage sampler.

52.216.2 Methods

52.216.3 Constructor(ciImage as CIImageMBS)

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new sampler based on the given image. **Notes:** On success handle will not be 0. See also:

- 52.216.4 Constructor(ciImage as CIImageMBS, matrix as NSAffineTransformMBS, WrapMode as String, FilterMode as string) 9567
- 52.216.5 Constructor(Handle as Integer) 9568

52.216.4 Constructor(ciImage as CIImageMBS, matrix as NSAffineTransformMBS, WrapMode as String, FilterMode as string)

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new sampler based on the given image. **Notes:**

- **matrix:** An affine transformation $\begin{bmatrix} a & b & c & d & tx & ty \end{bmatrix}$ defining the transformation to be applied to the sampler.
- **wrapmode:** A string defining how pixels outside the sampler’s extent are produced. Options include kCISamplerWrapBlack (pixels are transparent black, the default) and kCISamplerWrapClamp (coordinates are clamped to the extent).
- **FilterMode:** A string defining the filter to use when sampling the image. One of kCISamplerFilterNearest (point sampling) or kCISamplerFilterLinear (bilinear interpolation, the default).

On success handle will not be 0. See also:

- 52.216.3 Constructor(ciImage as CIImageMBS) 9567
- 52.216.5 Constructor(Handle as Integer) 9568
52.216.5 Constructor(Handle as Integer)

MBS MacCG Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Initializes object with given object reference.
**Notes:**
ref should be a CISampler* and the object is retained.
Raises UnsupportedOperationException if object is not a CISampler.
See also:
- 52.216.3 Constructor(ciImage as CIImageMBS)
- 52.216.4 Constructor(ciImage as CIImageMBS, matrix as NSAffineTransformMBS, WrapMode as String, FilterMode as string)

52.216.6 copy as CISamplerMBS

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a copy of the sampler.

52.216.7 kCISamplerAffineMatrix as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the option keys for creating a sampler.
**Notes:**
The key for an affine matrix. The associated value is an NSArray object ([a b c d tx ty] ) that defines the transformation to apply to the sampler.
Available in OS X v10.4 and later.

52.216.8 kCISamplerColorSpace as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the option keys for creating a sampler.
**Notes:**
The key for the color space to use when sampling the image. The associated value must be an RGB CGColorSpaceRef object. Using this option specifies that samples should be converted to this color space before being passed to a kernel. If not specified, samples will be passed to the kernel in the working color space of the Core Image context used to render the image.
Available in OS X v10.4 and later.

52.216.9  kCISamplerFilterLinear as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the values for filter modes. **Notes:** Bilinear interpolation.

52.216.10  kCISamplerFilterMode as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the option keys for creating a sampler. **Notes:** The key for the filtering to use when sampling the image. Possible values are kCISamplerFilterNearest and kCISamplerFilterLinear.

Available in OS X v10.4 and later.

52.216.11  kCISamplerFilterNearest as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the values for filter modes. **Notes:** Nearest neighbor sampling.

52.216.12  kCISamplerWrapBlack as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the values for wrap modes. **Notes:** Pixels are transparent black.

52.216.13  kCISamplerWrapClamp as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the values for wrap modes. **Notes:** Coordinates are clamped to the extent.
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52.216.14  kCISamplerWrapMode as String

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the option keys for creating a sampler.
**Notes:**
The key for the sampler wrap mode. The wrap mode specifies how Core Image produces pixels that are
outside the extent of the sample. Possible values are kCISamplerWrapBlack and kCISamplerWrapClamp.

Available in OS X v10.4 and later.

52.216.15  samplerWithImage(ciImage as CIImageMBS) as CISamplerMBS

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates and returns a sampler that references an image.
**Notes:** A sampler object that references the image specified by the ciImage argument.
See also:

- 52.216.16 samplerWithImage(ciImage as CIImageMBS, matrix as NSAffineTransformMBS, WrapMode as String, FilterMode as string) as CISamplerMBS
- 52.216.17 samplerWithImage(ciImage as CIImageMBS, Options as Dictionary) as CISamplerMBS

52.216.16  samplerWithImage(ciImage as CIImageMBS, matrix as NSAffineTransformMBS, WrapMode as String, FilterMode as string) as CISamplerMBS

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new sampler based on the given image.
**Notes:**
matrix: An affine transformation \[ \begin{bmatrix} a & b & c & d & tx & ty \end{bmatrix} \] defining the transformation to be applied to the sampler.
wrapmode: A string defining how pixels outside the sampler’s extent are produced. Options include kCISamplerWrapBlack (pixels are transparent black, the default) and kCISamplerWrapClamp (coordinates are clamped to the extent).
FilterMode: A string defining the filter to use when sampling the image. One of kCISamplerFilterNearest (point sampling) or kCISamplerFilterLinear (bilinear interpolation, the default).

On success handle will not be nil.
See also:
52.216.  **CLASS CISAMPLERMBS**

- 52.216.15 samplerWithImage(ciImage as CIImageMBS) as CISamplerMBS
- 52.216.17 samplerWithImage(ciImage as CIImageMBS, Options as Dictionary) as CISamplerMBS

### 52.216.17  samplerWithImage(ciImage as CIImageMBS, Options as Dictionary) as CISamplerMBS

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates and returns a sampler that references an image using options specified in a dictionary. **Notes:** See kCISampler* shared methods for constants. See also:

- 52.216.15 samplerWithImage(ciImage as CIImageMBS) as CISamplerMBS
- 52.216.16 samplerWithImage(ciImage as CIImageMBS, matrix as NSAffineTransformMBS, WrapMode as String, FilterMode as string) as CISamplerMBS

### 52.216.18  Properties

#### 52.216.19  **Definition** as CIFilterShapeMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the shape containing the Domain Of Definition (DOD) of the sampler. **Notes:**
The DOD is defined such that it contains all non-transparent pixels produced by referencing the sampler. (Read only property)

#### 52.216.20  **description** as String

MBS MacCG Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the textual description for this sampler. **Notes:** (Read only property)

#### 52.216.21  **Extent** as CGRectMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the extent of the sampler. **Notes:**
Sampling outside the extent will bring the sampler’s wrap mode into action.
Returns nil on any error.
(Read only property)

### 52.216.22 Handle as Integer

MBS MacCG Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle to the internal used CISampler reference. **Notes:** (Read only property)
52.217.1  class CITextFeatureMBS

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for a text feature.

**Notes:**

A CITextFeature object describes a quadrilateral region likely to contain upright text detected in a video or still image. The properties of a text feature identify its corners in image coordinates.

Use this class to locate areas of text within an image for example, to extract and perspective-correct those portions of the image before performing your own optical character recognition or other processing tasks.

To detect rectangles in an image or video, choose the CIDetectorTypeText type when initializing a CIDetector object, and use the CIDetectorImageOrientation option to specify the desired orientation for finding upright text.

Subclass of the CIFeatureMBS class.

52.217.2  Methods

52.217.3  Constructor(Handle as Integer)

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor to create an object from a handle.

52.217.4  subFeatures as CIFeatureMBS()

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An array containing additional features detected within the feature.

**Notes:**

A text detector can identify both a major region that is likely to contain text as well as the areas within that region that likely to contain individual text features. Such features might be single characters, groups of closely-packed characters, or entire words.

Core Image populates this array only if you enable the CIDetectorReturnSubFeatures option when retrieving features.
52.217.5 Properties

52.217.6 bottomLeft as CGPointMBS

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The lower left corner of the detected text region, in image coordinates.
**Notes:** (Read only property)

52.217.7 bottomRight as CGPointMBS

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The lower right corner of the detected text region, in image coordinates.
**Notes:** (Read only property)

52.217.8 topLeft as CGPointMBS

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The upper left corner of the detected text region, in image coordinates.
**Notes:** (Read only property)

52.217.9 topRight as CGPointMBS

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The upper right corner of the detected text region, in image coordinates.
**Notes:** (Read only property)
52.218.  CLASS CIVECTORMBS

52.218  class CIVectorMBS

52.218.1  class CIVectorMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class for a vector in the CoreImage world.
**Notes:** May contain one to four floating point values.

52.218.2  Methods

52.218.3  CGAffineTransformValue as CGAffineTransformMBS

MBS MacCG Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the values stored in the CIVector object as an affine transform.
**Example:**
```
dim p as new CGAffineTransformMBS
dim v as new CIVectorMBS(p)
dim x as CGAffineTransformMBS = v.CGAffineTransformValue
MsgBox str(x.A)+" "+str(x.B)+" "+str(x.C)+" "+str(x.D)+" "+str(x.TX)+" "+str(x.TY)
```

**Notes:**
The first six values in the vector become the values that comprise the affine transform.
Available in OS X v10.9 and later.

52.218.4  CGPointValue as CGPointMBS

MBS MacCG Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the values stored in the CIVector object as a point.
**Example:**
```
dim p as new CGPointMBS(10, 20)
dim v as CIVectorMBS = CIVectorMBS.vectorWithCGPoint(p)
dim x as CGPointMBS = v.CGPointValue
MsgBox str(x.x)+" "+str(x.y)
```

**Notes:**
The vector’s X and Y property values become the CGPoint’s X and Y values.
52.218.5 CGRectValue as CGRectMBS

MBS MacCG Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the values stored in the CIVector object as an rect.

**Example:**

```dim p as new CGRectMBS(10, 20, 30, 40)
dim v as CIVectorMBS = CIVectorMBS.vectorWithCGRect(p)
dim x as CGRectMBS = v.CGRectValue
MsgBox str(x.Origin.X)+" "+str(x.Origin.y)+" "+str(x.Size.Width)+" "+str(x.Size.Height)```

**Notes:**
The vector’s X, Y, Z and W property values become the CGRect’s X, Y, height and width values.
Available in OS X v10.9 and later.

52.218.6 Constructor(Handle as Integer)

MBS MacCG Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Initializes object with given object reference.

**Notes:**
ref should be a CIVector* and the object is retained.
Raises UnsupportedOperationException if object is not a CIVector.
See also:

- 52.218.7 Constructor(p as CGPointMBS)
- 52.218.8 Constructor(r as CGRectMBS)
- 52.218.9 Constructor(StringRepresentation as String)
- 52.218.10 Constructor(t as CGAffineTransformMBS)
- 52.218.11 Constructor(values() as Double)
- 52.218.12 Constructor(values() as single)
- 52.218.13 Constructor(x as Double)
- 52.218.14 Constructor(x as Double, y as Double)
- 52.218.15 Constructor(x as Double, y as Double, z as Double)
- 52.218.16 Constructor(x as Double, y as Double, z as Double, w as Double)
52.218. CLASS CIVECTORMBS

52.218.7 Constructor(p as CGPointMBS)

MBS MacCG Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes a vector that is initialized with values provided by a CGPoint.

**Example:**

```vbs
dim p as new CGPointMBS(10, 20)
dim v as new CIVectorMBS(p)
MsgBox str(v.x)+" "+str(v.y)
```

**Notes:**
The CGPoint’s X and Y values are stored in the vector’s X and Y properties.

Available in OS X v10.9 and later.

See also:

- 52.218.6 Constructor(Handle as Integer) 9576
- 52.218.8 Constructor(r as CGRectMBS) 9577
- 52.218.9 Constructor(StringRepresentation as String) 9578
- 52.218.10 Constructor(t as CGAffineTransformMBS) 9579
- 52.218.11 Constructor(values() as Double) 9579
- 52.218.12 Constructor(values() as single) 9580
- 52.218.13 Constructor(x as Double) 9581
- 52.218.14 Constructor(x as Double, y as Double) 9581
- 52.218.15 Constructor(x as Double, y as Double, z as Double) 9582
- 52.218.16 Constructor(x as Double, y as Double, z as Double, w as Double) 9583

52.218.8 Constructor(r as CGRectMBS)

MBS MacCG Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes a vector that is initialized with values provided by a CGRect.

**Example:**

```vbs
dim p as new CGRectMBS(10, 20, 30, 40)
dim v as new CIVectorMBS(p)
dim x as CGRectMBS = v.CGRectValue
MsgBox str(x.Origin.X)+" "+str(x.Origin.y)+" "+str(x.Size.Width)+" "+str(x.Size.Height)
```
Notes:

The CGRect structure’s X, Y, height and width values are stored in the vector’s X, Y, Z and W properties. Available in OS X v10.9 and later.

See also:

- 52.218.6 Constructor(Handle as Integer)
- 52.218.7 Constructor(p as CGPointMBS)
- 52.218.9 Constructor(StringRepresentation as String)
- 52.218.10 Constructor(t as CGAffineTransformMBS)
- 52.218.11 Constructor(values() as Double)
- 52.218.12 Constructor(values() as single)
- 52.218.13 Constructor(x as Double)
- 52.218.14 Constructor(x as Double, y as Double)
- 52.218.15 Constructor(x as Double, y as Double, z as Double)
- 52.218.16 Constructor(x as Double, y as Double, z as Double, w as Double)

52.218.9 Constructor(StringRepresentation as String)

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new vector based on content of the string.

**Example:**

```plaintext
dim v as CIVectorMBS
v=New CIVectorMBS("[ 1 2 3 ]")
```

See also:

- 52.218.6 Constructor(Handle as Integer)
- 52.218.7 Constructor(p as CGPointMBS)
- 52.218.8 Constructor(r as CGRectMBS)
- 52.218.10 Constructor(t as CGAffineTransformMBS)
- 52.218.11 Constructor(values() as Double)
- 52.218.12 Constructor(values() as single)
- 52.218.13 Constructor(x as Double)
52.218. CLASS CIVECTORMBS

- 52.218.14 Constructor(x as Double, y as Double) 9581
- 52.218.15 Constructor(x as Double, y as Double, z as Double) 9582
- 52.218.16 Constructor(x as Double, y as Double, z as Double, w as Double) 9583

52.218.10 Constructor(t as CGAffineTransformMBS)

MBS MacCG Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes a vector that is initialized with values provided by a CGAffineTransform.

**Example:**

```vbnet
dim p as new CGAffineTransformMBS
dim v as new CIVectorMBS(p)
dim x as CGAffineTransformMBS = v.CGAffineTransformValue
MsgBox str(x.A)+" "+str(x.B)+" "+str(x.C)+" "+str(x.D)+" "+str(x.TX)+" "+str(x.TY)
```

**Notes:**
The six values that comprise the affine transform fill the first six positions of the resulting CIVector object. Available in OS X v10.9 and later.

See also:

- 52.218.6 Constructor(Handle as Integer) 9576
- 52.218.7 Constructor(p as CGPointMBS) 9577
- 52.218.8 Constructor(r as CGRectMBS) 9577
- 52.218.9 Constructor(StringRepresentation as String) 9578
- 52.218.11 Constructor(values() as Double) 9579
- 52.218.12 Constructor(values() as single) 9580
- 52.218.13 Constructor(x as Double) 9581
- 52.218.14 Constructor(x as Double, y as Double) 9581
- 52.218.15 Constructor(x as Double, y as Double, z as Double) 9582
- 52.218.16 Constructor(x as Double, y as Double, z as Double, w as Double) 9583

52.218.11 Constructor(values() as Double)

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes a new vector with given values.

See also:
52.218.12 Constructor(values() as single)

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes a new vector with given values.

See also:

- 52.218.6 Constructor(Handle as Integer) 9576
- 52.218.7 Constructor(p as CGPointMBS) 9577
- 52.218.8 Constructor(r as CGRectMBS) 9577
- 52.218.9 Constructor(StringRepresentation as String) 9578
- 52.218.10 Constructor(t as CGAffineTransformMBS) 9579
- 52.218.11 Constructor(values() as Double) 9579
- 52.218.12 Constructor(values() as single) 9580
- 52.218.13 Constructor(x as Double) 9581
- 52.218.14 Constructor(x as Double, y as Double) 9581
- 52.218.15 Constructor(x as Double, y as Double, z as Double) 9582
- 52.218.16 Constructor(x as Double, y as Double, z as Double, w as Double) 9583
52.218. CLASS CIVECTORMBS

52.218.13 Constructor(x as Double)

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new vector based on one value.

**Example:**

```plaintext
dim x as Double
dim v as CIVectorMBS
v=New CIVectorMBS(x)
```

See also:

- 52.218.6 Constructor(Handle as Integer)
- 52.218.7 Constructor(p as CGPointMBS)
- 52.218.8 Constructor(r as CGRectMBS)
- 52.218.9 Constructor(StringRepresentation as String)
- 52.218.10 Constructor(t as CGAffineTransformMBS)
- 52.218.11 Constructor(values() as Double)
- 52.218.12 Constructor(values() as single)
- 52.218.14 Constructor(x as Double, y as Double)
- 52.218.15 Constructor(x as Double, y as Double, z as Double)
- 52.218.16 Constructor(x as Double, y as Double, z as Double, w as Double)

52.218.14 Constructor(x as Double, y as Double)

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new vector based on two values.

**Example:**

```plaintext
dim x,y as Double
dim v as CIVectorMBS
v=New CIVectorMBS(x,y)
```

See also:

- 52.218.6 Constructor(Handle as Integer)
- 52.218.7 Constructor(p as CGPointMBS)
52.218.15 Constructor(x as Double, y as Double, z as Double)

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new vector based on three values.

**Example:**

```plaintext
dim x,y,z as Double
dim v as CIVectorMBS
v=New CIVectorMBS(x,y,z)
```

See also:

- 52.218.6 Constructor(Handle as Integer)
- 52.218.7 Constructor(p as CGPointMBS)
- 52.218.8 Constructor(r as CGRectMBS)
- 52.218.9 Constructor(StringRepresentation as String)
- 52.218.10 Constructor(t as CGAffineTransformMBS)
- 52.218.11 Constructor(values() as Double)
- 52.218.12 Constructor(values() as single)
- 52.218.13 Constructor(x as Double)
- 52.218.14 Constructor(x as Double, y as Double)
- 52.218.16 Constructor(x as Double, y as Double, z as Double, w as Double)
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52.218.16 Constructor(x as Double, y as Double, z as Double, w as Double)

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new vector based on 4 values.  
**Example:**

dim x,y,z,w as Double  
dim v as CIVectorMBS  
v=New CIVectorMBS(x,y,z,w)

See also:

- 52.218.6 Constructor(Handle as Integer)  
- 52.218.7 Constructor(p as CGPointMBS)  
- 52.218.8 Constructor(r as CGRectMBS)  
- 52.218.9 Constructor(StringRepresentation as String)  
- 52.218.10 Constructor(t as CGAffineTransformMBS)  
- 52.218.11 Constructor(values() as Double)  
- 52.218.12 Constructor(values() as single)  
- 52.218.13 Constructor(x as Double)  
- 52.218.14 Constructor(x as Double, y as Double)  
- 52.218.15 Constructor(x as Double, y as Double, z as Double)

52.218.17 copy as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy of the vector object.

52.218.18 Value(index as Integer) as Double

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The value with the given index.  
**Notes:** Index is zero based.
52.218.19  vectorWithCGAffineTransform(t as CGAffineTransformMBS) as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns a vector that is initialized with values provided by a CGAffineTransform. **Example:**

```
dim p as new CGAffineTransformMBS
dim v as CIVectorMBS = CIVectorMBS.vectorWithCGAffineTransform(p)
dim x as CGAffineTransformMBS = v.CGAffineTransformValue
MsgBox str(x.A)+" "+str(x.B)+" "+str(x.C)+" "+str(x.D)+" "+str(x.TX)+" "+str(x.TY)
```

**Notes:**
- t: A transform.
- Returns a vector initialized with the specified values.
- The six values that comprise the affine transform fill the first six positions of the resulting CIVector object.

52.218.20  vectorWithCGPoint(p as CGPointMBS) as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns a vector that is initialized with values provided by a CGPoint. **Example:**

```
dim p as new CGPointMBS(10, 20)
dim v as CIVectorMBS = CIVectorMBS.vectorWithCGPoint(p)
MsgBox str(v.x)+" "+str(v.y)
```

**Notes:**
- p: A point.
- A vector initialized with the specified values.
- The CGPoint’s X and Y values are stored in the vector’s X and Y properties.

52.218.21  vectorWithCGRect(r as CGRectMBS) as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns a vector that is initialized with values provided by a CGRect.
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Example:

```dim p as new CGRectMBS(10, 20, 30, 40)
    dim v as CIVectorMBS = CIVectorMBS.vectorWithCGRect(p)
    dim x as CGRectMBS = v.CGRectValue
    MsgBox str(x.Origin.X)+" "+str(x.Origin.y)+" "+str(x.Size.Width)+" "+str(x.Size.Height)
```

Notes:

r: A rect.

Returns a vector initialized with the specified values. The CGRect’s X, Y, height and width values are stored in the vector’s X, Y, Z and W properties.

52.218.22 vectorWithString(s as string) as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new vector based on content of the string.

52.218.23 vectorWithValues(values() as Double) as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new vector based on the given values. See also:

- 52.218.24 vectorWithValues(values() as single) as CIVectorMBS

9585

52.218.24 vectorWithValues(values() as single) as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new vector based on the given values. See also:

- 52.218.23 vectorWithValues(values() as Double) as CIVectorMBS

9585

52.218.25 vectorWithX(x as Double) as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new vector based on one value.
vectorWithXY(x as Double, y as Double) as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new vector based on two values.

vectorWithXYZ(x as Double, y as Double, z as Double) as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new vector based on three values.

vectorWithXYZW(x as Double, y as Double, z as Double, w as Double) as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new vector based on 4 values.

Properties

Count as Integer

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return the number of values stored in the vector. **Notes:** (Read only property)

Description as String

MBS MacCG Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the textual description for this vector. **Notes:** (Read only property)

Handle as Integer

MBS MacCG Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle to the CIVector reference used. **Notes:** (Read only property)
52.218. CLASS CIVECTORMBS

52.218.33 StringRepresentation as String

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the vector as a string

**Example:**

dim v as CIVectorMBS

v=NewCIVectorWithXYZMBS(1,2,3)

MsgBox v.StringRepresentation // shows "[ 1 2 3 ]"

**Notes:**

Value is "" on any error.

(Read only property)

52.218.34 W as Double


**Notes:** (Read only property)

52.218.35 X as Double

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The X value.

**Notes:** (Read only property)

52.218.36 Y as Double

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Y value.

**Notes:** (Read only property)

52.218.37 Z as Double

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Z value.
Notes: (Read only property)
52.219  class NSAffineTransformMBS

52.219.1  class NSAffineTransformMBS

MBS Main Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for transformation.  
**Notes:** As being used by CoreImage and by the NS* classes, it is a free plugin class requiring no registration.

52.219.2  Methods

52.219.3  appendTransform(transform as NSAffineTransformMBS)

MBS Main Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Transforms the transformation by applying the given transform on the current one.

52.219.4  CGAffineTransformToNSAffineTransform(CGAffineTransform as Variant) as NSAffineTransformMBS

MBS Main Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Converts NSAffineTransformMBS to CGAffineTransformMBS.  
**Example:**
```
dim n as new NSAffineTransformMBS(1,2,3,4,5,6)
dim c as CGAffineTransformMBS = NSAffineTransformMBS.NSAffineTransformToCGAffineTransform(n)
dim r as NSAffineTransformMBS = NSAffineTransformMBS.CGAffineTransformToNSAffineTransform(c)
```

**Notes:** To reduce plugin interdependencies, the parameter is declared as Variant and not as CGAffineTransformMBS.

52.219.5  Constructor

MBS Main Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor to create a new transformation.  
**Notes:** On success the handle property will not be 0.  
See also:

- 52.219.6 Constructor(m11 as Double, m12 as Double, m21 as Double, m22 as Double, tx as Double,
52.219.6 Constructor(m11 as Double, m12 as Double, m21 as Double, m22 as Double, tx as Double, ty as Double)

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new NSAffineTransformMBS based on the given values.

See also:

- 52.219.5 Constructor
- 52.219.7 Constructor(transform as NSAffineTransformMBS)

52.219.7 Constructor(transform as NSAffineTransformMBS)

MBS Main Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new transformation based on the values of an existing transformation. **Notes:** On success the handle property will not be 0.

See also:

- 52.219.5 Constructor
- 52.219.6 Constructor(m11 as Double, m12 as Double, m21 as Double, m22 as Double, tx as Double, ty as Double)

52.219.8 getValues(byref m11 as Double, byref m12 as Double, byref m21 as Double, byref m22 as Double, byref tx as Double, byref ty as Double)

MBS Main Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Copies all the values from the internal matrix.

52.219.9 invert

MBS Main Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Inverts the transformation.
52.219. CLASS NSAFFINETRANFORMMBS

52.219.10 NSAffineTransformToCGAffineTransform(NSAffineTransform as NSAffineTransformMBS) as Variant

MBS Main Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Converts NSAffineTransformMBS to CGAffineTransformMBS.

**Example:**

```vbnet
dim n as new NSAffineTransformMBS(1,2,3,4,5,6)
dim c as CGAffineTransformMBS = NSAffineTransformMBS.NSAffineTransformToCGAffineTransform(n)
dim r as NSAffineTransformMBS = NSAffineTransformMBS.CGAffineTransformToNSAffineTransform(c)
```

**Notes:** To reduce plugin interdependencies, the result is declared as Variant and not as CGAffineTransformMBS.

52.219.11 prependTransform(transform as NSAffineTransformMBS)

MBS Main Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Transforms the transformation by applying the given transform on the current one.

52.219.12 rotateByDegrees(angle as Double)

MBS Main Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Rotates transformation by the given angle in degrees.

**Example:**

```vbnet
dim t as new NSAffineTransformMBS
  t.rotateByDegrees 90 // rotate by 90 degrees
```

52.219.13 rotateByRadians(angle as Double)

MBS Main Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Rotates transformation by the given angle in radians.

**Example:**

```vbnet
const pi=3.14159265
  dim t as new NSAffineTransformMBS
  t.rotateByDegrees pi // rotate by 180 degrees
```
52.219.14  scale(scale as Double)

MBS Main Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Scales the transformation.

**Example:**

```plaintext
dim t as new NSAffineTransformMBS
t.scale 2.0 // double size
```

See also:

- 52.219.15 scale(scaleX as Double, scaleY as Double)

52.219.15  scale(scaleX as Double, scaleY as Double)

MBS Main Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Scales transformation.

**Example:**

```plaintext
dim t as new NSAffineTransformMBS
t.scale 1,2
```

See also:

- 52.219.14 scale(scale as Double)

52.219.16  setValues(m11 as Double, m12 as Double, m21 as Double, m22 as Double, tx as Double, tY as Double)

MBS Main Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Sets all the values from the internal matrix.

52.219.17  transform as NSAffineTransformMBS

MBS Main Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates and returns a new NSAffineTransform object initialized to the identity matrix.

**Example:**
52.219. CLASS NSAFFINETRANSFORMMBS

Dim a As NSAffineTransformMBS = NSAffineTransformMBS.transform
MsgBox str(a.m11)+", "+str(a.m12)+", "+str(a.m21)+", "+str(a.m22)+", "+str(a.tx)+", "+str(a.ty)

Notes: This matrix transforms any point to the same point.

52.219.18 transformBezierPath(NSBezierPath as Variant) as Variant

MBS Main Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Transforms a bezier path with current transformation.

52.219.19 transformPoint(byref x as Double, byref y as Double)

MBS Main Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Transforming the given point.

52.219.20 transformSize(byref width as Double, byref height as Double)

MBS Main Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Transforming the given size.

52.219.21 translate(deltaX as Double, deltaY as Double)

MBS Main Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Translates by the given delta.

52.219.22 Properties

52.219.23 Data as MemoryBlock

MBS Main Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The transform data structure.
Example:
Dim n as new NSAffineTransformMBS(1,2,3,4,5,6)
Dim m as MemoryBlock = n.Data
Break  // check in debugger

Notes:

Returns a copy of the structure as memoryblock.
Can be set with memoryblock of right size and content.

Due to CoreGraphics using 32bit floats in 32bit app, you need to use SingleValue there in the memoryblock which has a size of 24 bytes.

For 64-bit application, the sizes double and you need to use DoubleValue.
(Read and Write property)

52.219.24  m11 as Double

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The matrix value at position 1/1.
**Notes:** (Read only property)

52.219.25  m12 as Double

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The matrix value at position 1/2.
**Notes:** (Read only property)

52.219.26  m21 as Double

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The matrix value at position 2/1.
**Notes:** (Read only property)

52.219.27  m22 as Double

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The matrix value at position 2/2.
**Notes:** (Read only property)
52.219. CLASS NSAFFINETRANSFORMMBS

52.219.28  tx as Double

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The translate X value.
**Notes:** (Read only property)

52.219.29  ty as Double

MBS Main Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The translate Y value.
**Notes:** (Read only property)
52.220.1  NewCIColorMBS(red as single, green as single, blue as single, alpha as single=1.0) as CIColorMBS

Notes:
Returns nil on any error.
Requires Mac OS X 10.4 to work.

52.220.2  NewCIColorWithCGColorMBS(CGColor as Variant) as CIColorMBS

Notes:
CGColor parameter must be a CGColorMBS object.
Returns nil on any error.
Requires Mac OS X 10.4 to work.

52.220.3  NewCIColorWithStringMBS(s as String) as CIColorMBS

Example:

dim c as CIColorMBS
c=NewCIColorWithStringMBS(“1 0.5 0 1”)
MsgBox c.stringRepresentation // shows ”1 0.5 0 1”

Notes:
Returns nil on any error.
Requires Mac OS X 10.4 to work.
52.220.4 NewCIContextMBS(cgcontext as CGContextMBS) as CIContextMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create a new CoreImage context object without options, all output will be drawn into the CG context. **Notes:**

Returns nil on any error.
Requires Mac OS X 10.4 to work.
See also:

- 52.220.5 NewCIContextMBS(cgcontext as CGContextMBS, OutputColorSpace as CGColorSpaceMBS, WorkingColorSpace as CGColorSpaceMBS, UseSoftwareRenderer as Boolean) as CIContextMBS

52.220.5 NewCIContextMBS(cgcontext as CGContextMBS, OutputColorSpace as CGColorSpaceMBS, WorkingColorSpace as CGColorSpaceMBS, UseSoftwareRenderer as Boolean) as CIContextMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create a new CoreImage context object with options, all output will be drawn into the CG context. **Notes:**

OutputColorSpace: A CGColorSpaceMBS object defining the color space in which all intermediate operations are performed.
WorkingColorSpace: A CGColorSpaceRef object defining the color space that images are converted to before rendering into the context.
UseSoftwareRenderer: Whether you want software renderer only.

Returns nil on any error.
Requires Mac OS X 10.4 to work.
See also:

- 52.220.4 NewCIContextMBS(cgcontext as CGContextMBS) as CIContextMBS

52.220.6 NewCIImagewithBitmapDataMBS(data as memoryblock, BytesPerRow as Integer, Width as Integer, Height as Integer, Format as Integer, colorspace as CGColorSpaceMBS) as CIImageMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a CIImage from a RAW memory buffer. **Notes:**

Format must be one of this constants: kCIFormatRGBAf, kCIFormatRGBA16 and kCIFormatARGB8.

Returns nil on any error.
 Requires Mac OS X 10.4 to work.
52.220.7  NewCIImagewithBitmapMemoryMBS(data as memoryblock, DataLength as Integer, BytesPerRow as Integer, Width as Integer, Height as Integer, Format as Integer, colorspace as CGColorSpaceMBS) as CIImageMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a CIImage from a RAW memory buffer. **Notes:**

- Data points directly to the row data.
- Length is the size of the memoryblock in bytes.
- BytesPerRow is the size of a row in bytes.
- Width and height are the dimensions of the image.
- Format must be one of this constants: kCIFormatRGBAf, kCIFormatRGBA16 and kCIFormatARGB8.
- Colorspace is the CoreGraphics Colorspace object to be used.

Returns nil on any error.
Requires Mac OS X 10.4 to work.

52.220.8  NewCIImagewithCGImageMBS(cgimage as CGImageMBS, cgcolorspace as CGColorSpaceMBS) as CIImageMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a CIImage based on a CGImage. **Notes:**

- cgcolorspace: Use this colorspace when opening the image.
Returns nil on any error.
Requires Mac OS X 10.4 to work.
See also:

- 52.220.9  NewCIImagewithCGImageMBS(cgimage as CGImageMBS, options as dictionary = nil) as CIImageMBS

52.220.9  NewCIImagewithCGImageMBS(cgimage as CGImageMBS, options as dictionary = nil) as CIImageMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a CIImage based on a CGImage. **Notes:**
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Returns nil on any error.
Requires Mac OS X 10.4 to work.
See also:

- 52.220.8 NewCIImageWithCGImageMBS(cgimage as CGImageMBS, cgcolorspace as CGColorSpaceMBS) as CIImageMBS

52.220.10 NewCIImageWithDataMBS(Data as memoryblock, cgcolorspace as CGColorSpaceMBS) as CIImageMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a CIImage based on the image file content stored inside the data string.
**Notes:**
cgcolorspace: Use this colorspace when opening the image.

Returns nil on any error.
Requires Mac OS X 10.4 to work.
See also:

- 52.220.11 NewCIImageWithDataMBS(Data as Memoryblock, Options as Dictionary = nil) as CIImageMBS

52.220.11 NewCIImageWithDataMBS(Data as Memoryblock, Options as Dictionary = nil) as CIImageMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a CIImage based on the image file content stored inside the data string.
**Notes:**

Returns nil on any error.
Requires Mac OS X 10.4 to work.
See also:

- 52.220.10 NewCIImageWithDataMBS(Data as memoryblock, cgcolorspace as CGColorSpaceMBS) as CIImageMBS

52.220.12 NewCIImageWithFileMBS(file as folderitem) as CIImageMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a CIImage based on the content of the file.
**Notes:**

Returns nil on any error.
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Requires Mac OS X 10.4 to work.

In plugin version 7.5 and Mac OS X 10.4.10 this method leaks the data because of a bug in the framework. See also:

- 52.220.13 NewCIImagewithFileMBS(file as folderitem, cgcolorspace as CGColorSpaceMBS) as CIImageMBS

52.220.13  NewCIImagewithFileMBS(file as folderitem, cgcolorspace as CGColorSpaceMBS) as CIImageMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a CIImage based on the content of the file. **Notes:**

- cgcolorspace: Use this colorspace when opening the image.

Returns nil on any error.

Requires Mac OS X 10.4 to work.

In plugin version 7.5 and Mac OS X 10.4.10 this method leaks the data because of a bug in the framework. See also:

- 52.220.12 NewCIImagewithFileMBS(file as folderitem) as CIImageMBS

52.220.14  NewCIImagewithURLMBS(url as String) as CIImageMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a CIImage based on the content of the file where the URL points to. **Notes:**

- Returns nil on any error.

Requires Mac OS X 10.4 to work.

See also:

- 52.220.15 NewCIImagewithURLMBS(url as String, cgcolorspace as CGColorSpaceMBS) as CIImageMBS

52.220.15  NewCIImagewithURLMBS(url as String, cgcolorspace as CGColorSpaceMBS) as CIImageMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a CIImage based on the content of the file where the URL points to. **Notes:**
cicolorspace: Use this colorspace when opening the image.

Returns nil on any error.
Requires Mac OS X 10.4 to work.
See also:

• 52.220.14 NewCIImagewithURLMBS(url as String) as CIImageMBS

52.220.16 NewCISamplerMBS(ciImage as CIImageMBS) as CISamplerMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new sampler based on the given image.

**Notes:**

Returns nil on any error.
Requires Mac OS X 10.4 to work.
See also:

• 52.220.17 NewCISamplerMBS(ciImage as CIImageMBS, matrix as NSAffineTransformMBS, WrapMode as String, FilterMode as string) as CISamplerMBS

52.220.17 NewCISamplerMBS(ciImage as CIImageMBS, matrix as NSAffineTransformMBS, WrapMode as String, FilterMode as string) as CISamplerMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new sampler based on the given image.

**Notes:**

matrix: An affine transformation \([ a b c d tx ty ]\) defining the transformation to be applied to the sampler.

wrapmode: A string defining how pixels outside the sampler’s extent are produced. Options include kCISamplerWrapBlack (pixels are transparent black, the default) and kCISamplerWrapClamp (coordinates are clamped to the extent).

FilterMode: A string defining the filter to use when sampling the image. One of kCISamplerFilterNearest (point sampling) or kCISamplerFilterLinear (bilinear interpolation, the default).

Returns nil on any error.
Requires Mac OS X 10.4 to work.
See also:

• 52.220.16 NewCISamplerMBS(ciImage as CIImageMBS) as CISamplerMBS
52.220.18 NewCIVectorWithStringMBS(s as string) as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new vector based on content of the string.

**Example:**
```
dim v as CIVectorMBS
v=NewCIVectorWithStringMBS(" [ 1 2 3 ] ")
```

**Notes:**
- Returns nil on any error.
- Requires Mac OS X 10.4 to work.

52.220.19 NewCIVectorWithXMBS(x as Double) as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new vector based on one value.

**Example:**
```
dim x as Double = 1
dim v as CIVectorMBS
v=NewCIVectorWithXMBS(x)
```

**Notes:**
- Returns nil on any error.
- Requires Mac OS X 10.4 to work.

52.220.20 NewCIVectorWithXYMBS(x as Double, y as Double) as CIVectorMBS

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new vector based on two values.

**Example:**
```
dim x as Double = 1
dim y as Double = 2
dim v as CIVectorMBS
v=NewCIVectorWithXYMBS(x,y)
```

**Notes:**
Returns nil on any error.
Requires Mac OS X 10.4 to work.

### 52.220.21 `NewCIVectorWithXYZMBS(x as Double, y as Double, z as Double) as CIVectorMBS`

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new vector based on three values.

**Example:**
```vbnet
dim x as Double = 1
dim y as Double = 2
dim z as Double = 3
dim v as CIVectorMBS
v=NewCIVectorWithXYZMBS(x,y,z)
```

**Notes:**
Returns nil on any error.
Requires Mac OS X 10.4 to work.

### 52.220.22 `NewCIVectorWithXYZWMBS(x as Double, y as Double, z as Double, w as Double) as CIVectorMBS`

MBS MacCG Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new vector based on 4 values.

**Example:**
```vbnet
dim x as Double = 1
dim y as Double = 2
dim z as Double = 3
dim w as Double = 4
dim v as CIVectorMBS
v=NewCIVectorWithXYZWMBS(x,y,z,w)
```

**Notes:**
Returns nil on any error.
Requires Mac OS X 10.4 to work.
Chapter 53

CoreLocation

53.1 class CLGeocodeCompletionHandlerMBS

53.1.1 class CLGeocodeCompletionHandlerMBS

Function: The class to receive the Complete event from a geocoder.

53.1.2 Events

53.1.3 Completed(geocoder as CLGeocoderMBS, placemarks() as CLPlacemarkMBS, error as NSErrorMBS, tag as Variant)

Function: The event to be called when a geocoding request is complete.
Notes:
Upon completion of a geocoding request, a block of this form is called to give you a chance to process the results. The parameters of this block are as follows:

placemark: Contains an array of CLPlacemark objects. For most geocoding requests, this array should contain only one entry. However, forward-geocoding requests may return multiple placemark objects in situations where the specified address could not be resolved to a single location.
If the request was canceled or there was an error in obtaining the placemark information, this parameter is nil.
error: Contains an error object (if any) indicating why the placemark data was not returned. For a list of possible error codes, see CLLocationManager Class Reference.

9605
Available in OS X v10.8 and later.
Tag parameter added in version 14.2.
53.2. class CLGeocoderMBS

53.2.1. class CLGeocoderMBS

MBS MacFrameworks Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The CLGeocoder class provides services for converting between a coordinate (specified as a latitude and longitude) and the user-friendly representation of that coordinate.

**Notes:**

A user-friendly representation of the coordinate typically consists of the street, city, state, and country information corresponding to the given location, but it may also contain a relevant point of interest, landmarks, or other identifying information. A geocoder object is a single-shot object that works with a network-based service to look up placemark information for its specified coordinate value.

To use a geocoder object, create it and call one of its forward- or reverse-geocoding methods to begin the request. Reverse-geocoding requests take a latitude and longitude value and find a user-readable address. Forward-geocoding requests take a user-readable address and find the corresponding latitude and longitude value. Forward-geocoding requests may also return additional information about the specified location, such as a point of interest or building at that location. For both types of request, the results are returned using a CLPlacemark object. In the case of forward-geocoding requests, multiple placemark objects may be returned if the provided information yielded multiple possible locations.

To make smart decisions about what types of information to return, the geocoder server uses all the information provided to it when processing the request. For example, if the user is moving quickly along a highway, it might return the name of the overall region, and not the name of a small park that the user is passing through.

Applications should be conscious of how they use geocoding. Here are some rules of thumb for using this class effectively:

Send at most one geocoding request for any one user action.
If the user performs multiple actions that involve geocoding the same location, reuse the results from the initial geocoding request instead of starting individual requests for each action.
When you want to update the user’s current location automatically (such as when the user is moving), issue new geocoding requests only when the user has moved a significant distance and after a reasonable amount of time has passed. For example, in a typical situation, you should not send more than one geocoding request per minute.
Do not start a geocoding request at a time when the user will not see the results immediately. For example, do not start a request if your application is inactive or in the background.
The computer or device must have access to the network in order for the geocoder object to return detailed placemark information. Although, the geocoder stores enough information locally to report the localized country name and ISO country code for many locations. If country information is not available for a specific location, the geocoder may still report an error to your completion block.

see also
53.2.2 Methods

53.2.3 Available as boolean

Function: Returns true if this class is available.

53.2.4 cancelGeocode

Function: Cancels a pending geocoding request.
Notes:
You can use this method to cancel a pending request and free up the resources associated with that request. Canceling a pending request causes the completion handler event to be called.

If the request is not pending, because it has already returned or has not yet begun, this method does nothing. Available in OS X v10.8 and later.

53.2.5 Constructor

Function: The constructor.

53.2.6 geocodeAddressDictionary(addressDictionary as Dictionary, completionHandler as CLGeocodeCompletionHandlerMBS, tag as Variant = nil)

Function: Submits a forward-geocoding request using the specified address dictionary.
Notes:
addressDictionary: An Address Book dictionary containing information about the address to look up.
completionHandler: A handler object containing the code to execute at the end of the request. This code is called whether the request is successful or unsuccessful.

This method submits the specified location data to the geocoding server asynchronously and returns. Your completion handler block will be executed on the main thread. After initiating a forward-geocoding request,
53.2.7 geocodeAddressString(addressString as string, completionHandler as CLGeocodeCompletionHandlerMBS, tag as Variant = nil)

Function: Submits a forward-geocoding request using the specified string.
Notes:
addressString: A string describing the location you want to look up. For example, you could specify the string "1 Infinite Loop, Cupertino, CA" to locate Apple headquarters.
completionHandler: A handler object containing the code to execute at the end of the request. This code is called whether the request is successful or unsuccessful.

This method submits the specified location data to the geocoding server asynchronously and returns. Your completion handler block will be executed on the main thread. After initiating a forward-geocoding request, do not attempt to initiate another forward- or reverse-geocoding request. Available in OS X v10.8 and later.

See also:
- 53.2.8 geocodeAddressString(addressString as string, region as CLRegionMBS, completionHandler as CLGeocodeCompletionHandlerMBS, tag as Variant = nil) 9609
- 53.2.9 geocodeAddressString(addressString as string, region as CLRegionMBS, preferredLocale as NSLocaleMBS, completionHandler as CLGeocodeCompletionHandlerMBS, tag as variant = nil) 9610

53.2.8 geocodeAddressString(addressString as string, region as CLRegionMBS, completionHandler as CLGeocodeCompletionHandlerMBS, tag as Variant = nil)

Function: Submits a forward-geocoding request using the specified string and region information.
Notes:
addressString: A string describing the location you want to look up. For example, you could specify the string "1 Infinite Loop, Cupertino, CA" to locate Apple headquarters.
region: A geographical region to use as a hint when looking up the specified address. Specifying a region lets you prioritize the returned set of results to locations that are close to some specific geographical area, which is typically the user's current location. If nil and the application is authorized for location services, the set of results is prioritized based on the user's approximate location. Invoking this method does not trigger a location services authorization request.
completionHandler: A handler object containing the code to execute at the end of the request. This code is called whether the request is successful or unsuccessful.
This method submits the specified location data to the geocoding server asynchronously and returns. Your completion handler block will be executed on the main thread. After initiating a forward-geocoding request, do not attempt to initiate another forward- or reverse-geocoding request.

Available in OS X v10.8 and later.

See also:

- 53.2.7 `geocodeAddressString` (addressString as string, completionHandler as CLGeocodeCompletionHandlerMBS, tag as Variant = nil) 9609

- 53.2.9 `geocodeAddressString` (addressString as string, region as CLRegionMBS, preferredLocale as NSLocaleMBS, completionHandler as CLGeocodeCompletionHandlerMBS, tag as variant = nil) 9610

### 53.2.9 geocodeAddressString

(addressString as string, region as CLRegionMBS, preferredLocale as NSLocaleMBS, completionHandler as CLGeocodeCompletionHandlerMBS, tag as variant = nil) 9610


**Function:** Submits a forward-geocoding request using the specified string and region information.

**Notes:**

- **addressString:** A string describing the location you want to look up. For example, you could specify the string "1 Infinite Loop, Cupertino, CA" to locate Apple headquarters.
- **region:** A geographical region to use as a hint when looking up the specified address. Specifying a region lets you prioritize the returned set of results to locations that are close to some specific geographical area, which is typically the user’s current location. If nil and the application is authorized for location services, the set of results is prioritized based on the user’s approximate location. Invoking this method does not trigger a location services authorization request.
- **completionHandler:** A handler object containing the code to execute at the end of the request. This code is called whether the request is successful or unsuccessful.

This method submits the specified location data to the geocoding server asynchronously and returns. Your completion handler block will be executed on the main thread. After initiating a forward-geocoding request, do not attempt to initiate another forward- or reverse-geocoding request.

Available in OS X v10.8 and later.

For macOS 10.13 or newer we can optionally pass preferred locale.

See also:

- 53.2.7 `geocodeAddressString` (addressString as string, completionHandler as CLGeocodeCompletionHandlerMBS, tag as Variant = nil) 9609

- 53.2.8 `geocodeAddressString` (addressString as string, region as CLRegionMBS, completionHandler as CLGeocodeCompletionHandlerMBS, tag as Variant = nil) 9609
53.2. CLASS CLGEOCODERMBS

53.2.10 geocodePostalAddress(postalAddress as Variant, completionHandler as CLGeocodeCompletionHandlerMBS, tag as variant = nil)

Function: Queries coordinates for postal address.
Notes:
postalAddress must be a CNPostalAddressMBS.
For macOS 10.13 or newer.
See also:
• 53.2.11 geocodePostalAddress(postalAddress as Variant, preferredLocale as NSLocaleMBS, completionHandler as CLGeocodeCompletionHandlerMBS, tag as variant = nil)

53.2.11 geocodePostalAddress(postalAddress as Variant, preferredLocale as NSLocaleMBS, completionHandler as CLGeocodeCompletionHandlerMBS, tag as variant = nil)

Function: Queries coordinates for postal address.
Notes:
postalAddress must be a CNPostalAddressMBS.
For macOS 10.13 or newer.
See also:
• 53.2.10 geocodePostalAddress(postalAddress as Variant, completionHandler as CLGeocodeCompletionHandlerMBS, tag as variant = nil)

53.2.12 isGeocoding as boolean

Function: A Boolean value indicating whether the receiver is in the middle of geocoding its value. (read-only)
Notes:
This property contains the value true if the process is ongoing or false if the process is done or has not yet been initiated.
Available in OS X v10.8 and later.
53.2.13 reverseGeocodeLocation(location as CLLocationMBS, completionHandler as CLGeocodeCompletionHandlerMBS, tag as Variant = nil)

Function: Submits a reverse-geocoding request for the specified location.
Notes:
location: The location object containing the coordinate data to look up.
completionHandler: The handler object containing the code to execute at the end of the request. This code is called whether the request is successful or unsuccessful.

This method submits the specified location data to the geocoding server asynchronously and returns. Your completion handler block will be executed on the main thread. After initiating a reverse-geocoding request, do not attempt to initiate another reverse- or forward-geocoding request.

Available in OS X v10.8 and later.
See also:

- 53.2.14 reverseGeocodeLocation(location as CLLocationMBS, preferredLocale as NSLocaleMBS, completionHandler as CLGeocodeCompletionHandlerMBS, tag as variant = nil)

53.2.14 reverseGeocodeLocation(location as CLLocationMBS, preferredLocale as NSLocaleMBS, completionHandler as CLGeocodeCompletionHandlerMBS, tag as variant = nil)

Function: Submits a reverse-geocoding request for the specified location.
Notes:
location: The location object containing the coordinate data to look up.
completionHandler: The handler object containing the code to execute at the end of the request. This code is called whether the request is successful or unsuccessful.

This method submits the specified location data to the geocoding server asynchronously and returns. Your completion handler block will be executed on the main thread. After initiating a reverse-geocoding request, do not attempt to initiate another reverse- or forward-geocoding request.

Available in OS X v10.8 and later.
For macOS 10.13 or newer we can optionally pass preferred locale.
See also:

- 53.2.13 reverseGeocodeLocation(location as CLLocationMBS, completionHandler as CLGeocodeCompletionHandlerMBS, tag as Variant = nil)
53.2.15 Properties

53.2.16 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)
53.3 class CLHeadingMBS

53.3.1 class CLHeadingMBS

Function: A CLHeading object contains heading data generated by a CLLocationManager object.
Notes:
The heading data consists of computed values for true and magnetic north. It also includes the raw data for
the three-dimensional vector used to compute those values.

Typically, you do not create instances of this class yourself, nor do you subclass it. Instead, you receive
instances of this class through the delegate assigned to the CLLocationManager object whose startUpdatingHeading method you called.

Note: If you want heading objects to contain valid data for the trueHeading property, your location manager
object should also be configured to deliver location updates. You can start the delivery of these updates by
calling the location manager object’s startUpdatingLocation method.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

53.3.2 Methods

53.3.3 Available as boolean

Function: Returns true if this class is available.

53.3.4 Constructor

Function: The private constructor.

53.3.5 copy as CLHeadingMBS

Function: Creates a clone of this object.
53.3. CLASS CLHEADINGMBS

53.3.6 description as string

Function: Returns the heading data in a formatted text string.
Notes:
A string of the form "magneticHeading <magnetic>trueHeading <heading>accuracy <accuracy>x <x>y <y>z <z>@ <date-time>" where <magnetic>, <heading>, <accuracy>, <x>, <y>, and <z> are formatted floating-point numbers and <date-time> is a formatted date string that includes date, time, and time zone information.

Available in OS X v10.7 and later.

53.3.7 headingAccuracy as Double

Function: The maximum deviation (measured in degrees) between the reported heading and the true geomagnetic heading. (read-only)
Notes:
A positive value in this property represents the potential error between the value reported by the magneticHeading property and the actual direction of magnetic north. Thus, the lower the value of this property, the more accurate the heading. A negative value means that the reported heading is invalid, which can occur when the device is uncalibrated or there is strong interference from local magnetic fields.

Available in OS X v10.7 and later.

53.3.8 kCLHeadingFilterNone as Double

Function: Special value for heading filter to define that you don’t want to filter.

53.3.9 magneticHeading as Double

Function: The heading (measured in degrees) relative to magnetic north. (read-only)
Notes:
The value in this property represents the heading relative to the magnetic North Pole, which is different from the geographic North Pole. The value 0 means the device is pointed toward magnetic north, 90 means it is pointed east, 180 means it is pointed south, and so on. The value in this property should always be valid.
If the headingAccuracy property contains a negative value, the value in this property should be considered unreliable.

Available in OS X v10.7 and later.

### 53.3.10 timestamp as date


**Function:** The time at which this heading was determined. (read-only)

**Notes:** Available in OS X v10.7 and later.

### 53.3.11 trueHeading as Double


**Function:** The heading (measured in degrees) relative to true north. (read-only)

**Notes:**
The value in this property represents the heading relative to the geographic North Pole. The value 0 means the device is pointed toward true north, 90 means it is pointed due east, 180 means it is pointed due south, and so on. A negative value indicates that the heading could not be determined.

Important This property contains a valid value only if location updates are also enabled for the corresponding location manager object. Because the position of true north is different from the position of magnetic north on the Earth’s surface, Core Location needs the current location of the device to compute the value of this property.

Available in OS X v10.7 and later.

### 53.3.12 x as Double


**Function:** The geomagnetic data (measured in microteslas) for the x-axis. (read-only)

**Notes:**
This value represents the x-axis deviation from the magnetic field lines being tracked by the device.

Available in OS X v10.7 and later.
53.3.13  y as Double

Function: The geomagnetic data (measured in microteslas) for the y-axis. (read-only)
Notes: This value represents the y-axis deviation from the magnetic field lines being tracked by the device. Available in OS X v10.7 and later.

53.3.14  z as Double

Function: The geomagnetic data (measured in microteslas) for the z-axis. (read-only)
Notes: This value represents the z-axis deviation from the magnetic field lines being tracked by the device. Available in OS X v10.7 and later.

53.3.15  Properties

53.3.16  Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)
53.4  class CLLocationCoordinate2DMBS

53.4.1  class CLLocationCoordinate2DMBS

Function: The class for a location coordinate.

53.4.2  Methods

53.4.3  Constructor(latitude as Double = 0.0, longitude as Double = 0.0)

Function: Initializes a coordinate with values.

53.4.4  Properties

53.4.5  latitude as Double

Function: The latitude.
Notes: (Read and Write property)

53.4.6  longitude as Double

Function: The longitude.
Notes: (Read and Write property)
53.5. class CLLocationManagerMBS

53.5.1 class CLLocationManagerMBS

Function: The CoreLocation base class.
Example:

```vbnet
dim c as new CLLocationManagerMBS

c.startUpdatingLocation
```

Notes:
The CLLocationManagerMBS class defines the interface for configuring the delivery of location- and heading-related events to your application. You use an instance of this class to establish the parameters that determine when location and heading events should be delivered. You can also a location manager object to retrieve the most recent location data.

To use a CLLocationManagerMBS object to deliver location events, create an instance, configure the desired accuracy and distance filter values, and call the startUpdatingLocation method. The location service returns an initial location as quickly as possible, returning cached information when available. After delivery of the initial event notification, the CLLocationManagerMBS object may deliver additional events if the minimum threshold distance (as specified by the distanceFilter property) is exceeded or a more accurate location value is determined.

Important: The user has the option of denying an application’s access to the location service data. During its initial uses by an application, the Core Location framework prompts the user to confirm that using the location service is acceptable. If the user denies the request, the CLLocationManagerMBS object reports an appropriate error to its delegate during future requests.

See also documentation from Apple for the CLLocationManager class:
https://developer.apple.com/library/mac/#documentation/CoreLocation/Reference/CLLocationManager_Class/CLLocationManager.html

53.5.2 Methods

53.5.3 authorizationStatus as Integer

Function: Returns the application’s authorization status for using location services.
Notes:
The authorization status of a given application is managed by the system and determined by several factors.
Applications must be explicitly authorized to use location services by the user and location services must themselves currently be enabled for the system. This authorization takes place automatically when your application first attempts to use location services.

Available on Mac OS X 10.7 or later.

### 53.5.4 CheckEvents

MBS MacFrameworks Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  
**Function:** Checks for new events.  
**Notes:**  
This is a helper app to make CoreLocation geocoder work in web projects.  
Should not be called in desktop apps.  
But for a web app, use a Timer (not WebTimer) to run it on main loop every few milliseconds (e.g. 500 ms).

### 53.5.5 Constructor

**Function:** The constructor.  
**Example:**

```vba
dim c as new CLLocationManagerMBS
MsgBox str(c.Handle) // not zero on success
```

### 53.5.6 deferredLocationUpdatesAvailable as boolean

**Function:** Returns true if the device supports deferred location updates, otherwise false.  
**Notes:** Requires Mac OS X 10.9.

### 53.5.7 Destructor

**Function:** The destructor.
53.5.8 dismissHeadingCalibrationDisplay

**Function:** Dismisses the heading calibration view from the screen immediately.
**Notes:** Core Location uses the heading calibration alert to calibrate the available heading hardware as needed. The display of this view is automatic, assuming your delegate supports displaying the view at all. If the view is displayed, you can use this method to dismiss it after an appropriate amount of time to ensure that your application’s user interface is not unduly disrupted.

53.5.9 headingAvailable as boolean

**Function:** Returns a Boolean value indicating whether the location manager is able to generate heading-related events.
**Example:**
```
msgbox "headingAvailable available: " + str(CLLocationManagerMBS.headingAvailable)
```

**Notes:**
Returns true if heading data is available or false if it is not.

Heading data may not be available on all iOS-based devices. You should check the value returned by this method before asking the location manager to deliver heading-related events.

Available on Mac OS X 10.7 or later.

53.5.10 kCLErrorDomain as string

**Function:** The domain for Core Location errors. This value is used in the NSError class.

53.5.11 kCLErrorUserInfoAlternateRegionKey as string

**Function:** A key in the user information dictionary of an kCLErrorRegionMonitoringResponseDelayed error whose value is a CLRegionMBS object that the location services can more effectively monitor.
53.5.12 locationServicesAvailable as boolean


Function: Whether the CoreLocation framework is available.

Example:

if CLLocationManagerMBS.locationServicesAvailable then
    if CLLocationManagerMBS.locationServicesEnabled then
        MsgBox "available and enabled"
    else
        MsgBox "available and not enabled"
    end if
else
    MsgBox "Not available"
end if

Notes: Returns true on Mac OS X 10.6 and false on all other systems.

53.5.13 locationServicesEnabled as boolean


Function: A Boolean value indicating whether location services are enabled on the device.

Example:

if CLLocationManagerMBS.locationServicesAvailable then
    if CLLocationManagerMBS.locationServicesEnabled then
        MsgBox "available and enabled"
    else
        MsgBox "available and not enabled"
    end if
else
    MsgBox "Not available"
end if

53.5.14 monitoredRegions as CLRegionMBS()


Function: The array of shared regions monitored by all location manager objects.

Notes:

You cannot add regions to this property directly. Instead, you must register regions by calling the startMonitoringForRegion method. The regions in this property are shared by all instances of the CLLocationMan-
The objects in this set may not necessarily be the same objects you specified at registration time. Only the region data itself is maintained by the system. Therefore, the only way to uniquely identify a registered region is using its identifier property.

The location manager persists region data between launches of your application. If your application is terminated and then relaunched, the contents of this property are repopulated with region objects that contain the previously registered data.

Available on Mac OS X 10.7 or later.

53.5.15  regionMonitoringAvailable as boolean

Function: Returns a Boolean indicating whether region monitoring is supported on the current device.
Example:
msgbox "regionMonitoringAvailable available: " + str(CLLocationManagerMBS.regionMonitoringAvailable)

Notes:
Available on Mac OS X 10.7 or later.

Returns true if region monitoring is available or false if it is not.

Support for region monitoring may not be available on all devices and models. You should check the value of this property before attempting to set up any regions or initiate region monitoring.

Even if region monitoring support is present on a device, it may still be unavailable because the user disabled it for the current application or for all applications.

53.5.16  regionMonitoringEnabled as boolean

Function: Returns a Boolean indicating whether region monitoring is currently enabled.
Notes:
Returns true if region monitoring is available and is currently enabled or false if it is unavailable or not enabled.
The user can enable or disable location services (including region monitoring) altogether from the System Preferences.

You should check the return value of this method before starting region monitoring updates to determine if the user currently allows location services to be used at all. If this method returns false and you start region monitoring updates anyway, the Core Location framework prompts the user with a confirmation panel asking whether location services should be reenabled.

This method does not check to see if region monitoring capabilities are actually supported by the device. Therefore, you should also check the return value of the regionMonitoringAvailable class method before attempting to start region monitoring services.

Available on Mac OS X 10.7 or later.

53.5.17 significantLocationChangeMonitoringAvailable as boolean


Function: Returns true if the device supports significant location change monitoring, otherwise false.

Example:

```
msgbox "significantLocationChangeMonitoringAvailable available: " + str(CLLocationManagerMBS.significantLocationChangeMonitoringAvailable)
```

Notes:

Available on Mac OS X 10.7 or later.

This method indicates whether the device is able to report updates based on significant location changes only. (This primarily involves detecting changes in the cell tower currently associated with the device.) This capability provides tremendous power savings for applications that want to track a user’s approximate location and do not need highly accurate position information.

53.5.18 startMonitoringForRegion(region as CLRegionMBS)


Function: Starts monitoring the specified region.

Notes:

region: The region object that defines the boundary to monitor. This parameter must not be nil.
You must call this method separately for each region you want to monitor. If an existing region with the
same identifier is already being monitored by the application, the old region is replaced by the new one. The
regions you add using this method are shared by all location manager objects in your application and stored
in the monitoredRegions property.

Region events are delivered to the didEnterRegion and didExitRegion events. If there is an error, the location
manager calls the monitoringDidFailForRegion event instead.

53.5.19 startMonitoringSignificantLocationChanges

Function: Starts the generation of updates based on significant location changes.
Example:

```dim c as new CLLocationManagerMBS
c.startMonitoringSignificantLocationChanges```

Notes:
This method initiates the delivery of location events asynchronously, returning shortly after you call it. Location events are delivered to your delegate’s didUpdateToLocation event. The first event to be delivered is usually the most recently cached location event (if any) but may be a newer event in some circumstances. Obtaining a current location fix may take several additional seconds, so be sure to check the timestamps on the location events in your event code.

After returning a current location fix, the receiver generates update events only when a significant change in the user’s location is detected. For example, it might generate a new event when the device becomes associated with a different cell tower. It does not rely on the value in the distanceFilter property to generate events. Calling this method several times in succession does not automatically result in new events being generated. Calling stopMonitoringSignificantLocationChanges in between, however, does cause a new initial event to be sent the next time you call this method.

In addition to your subclass implementing the didUpdateToLocation event, it should also implement the
didFailWithError event to respond to potential errors.

Available in Mac OS X 10.7 or later.
53.5.20  startUpdatingHeading


Function: Starts the generation of updates that report the user’s current heading.

Notes:

This method returns immediately. Calling this method when the receiver is stopped causes it to obtain an
initial heading and notify your delegate. After that, the receiver generates update events when the value in
the headingFilter property is exceeded.

Before calling this method, you should always check the headingAvailable property to see whether heading
information is supported on the current device. If heading information is not supported, calling this method
has no effect and does not result in the delivery of events to your delegate.

Calling this method several times in succession does not automatically result in new events being generated.
Calling stopUpdatingHeading in between, however, does cause a new initial event to be sent the next time
you call this method.

If you start this service and your application is suspended, the system stops the delivery of events until your
application starts running again (either in the foreground or background). If your application is terminated,
the delivery of new heading events stops altogether and must be restarted by your code when the application
is relaunched.

Heading events are delivered to the didUpdateHeading event. If there is an error, the location manager calls
the didFailWithError event instead.

53.5.21  startUpdatingLocation


Function: Starts the generation of updates that report the user’s current location.

Example:

```dim c as new CLLocationManagerMBS
c.startUpdatingLocation```

Notes:

This method returns immediately. Calling this method when the receiver is stopped causes it to obtain an
initial location fix (which may take several seconds) and notify your delegate. After that, the receiver gen-
erates update events primarily when the value in the distanceFilter property is exceeded. Updates may be
delivered in other situations though. For example, the receiver may send another notification if the hardware
gathers a more accurate location reading.

Calling this method several times in succession does not automatically result in new events being generated. Calling stopUpdatingLocation in between, however, does cause a new initial event to be sent the next time you call this method.

### 53.5.22 stopMonitoringForRegion(region as CLRegionMBS)


**Function:** Stops monitoring the specified region.

**Notes:**
- region: The region object currently being monitored. This parameter must not be nil.
- If the specified region object is not currently being monitored, this method has no effect.

Available on Mac OS X 10.7 or later.

### 53.5.23 stopMonitoringSignificantLocationChanges


**Function:** Stops the delivery of location events based on significant location changes.

**Notes:**
- Use this method to stop the delivery of location events that was started using the startMonitoringSignificantLocationChanges method.
- Available on Mac OS X 10.7 or later.

### 53.5.24 stopUpdatingHeading


**Function:** Stops the generation of heading updates.

**Notes:**
- Call this method whenever your code no longer needs to receive heading-related events. Disabling event delivery gives the receiver the option of disabling the appropriate hardware (and thereby saving power) when no clients need location data. You can always restart the generation of heading updates by calling the startUpdatingHeading method again.
53.5.25 stopUpdatingLocation


**Function:** Stops the generation of location updates.

**Example:**

```dim c as new CLLocationManagerMBS
c.startUpdatingLocation
// later
c.stopUpdatingLocation```

**Notes:** You should call this method whenever your code no longer needs to receive location-related events. Disabling event delivery gives the receiver the option of disabling the appropriate hardware (and thereby saving power) when no clients need location data. You can always restart the generation of location updates by calling the startUpdatingLocation method again.

53.5.26 Properties

53.5.27 desiredAccuracy as Double


**Function:** The desired accuracy of the location data.

**Example:**

```dim c as new CLLocationManagerMBS
c.desiredAccuracy=CLLocationMBS.kCLLocationAccuracyBest```

**Notes:**

The receiver does its best to achieve the requested accuracy; however, the actual accuracy is not guaranteed.

You should assign a value to this property that is appropriate for your usage scenario. In other words, if you need only the current location within a few kilometers, you should not specify kCLLocationAccuracyBest for the accuracy. Determining a location with greater accuracy requires more time and more power.

When requesting high accuracy location data, the initial event delivered by the location service may not have the accuracy you requested. The location service delivers the initial event as quickly as possible. It then continues to determine the location with the accuracy you requested and delivers additional events, as necessary, when that data is available.
The default value of this property is kCLLocationAccuracyBest.
(Read and Write property)

### 53.5.28 distanceFilter as Double

**Function:** The minimum distance (measured in meters) a device must move laterally before an update event is generated.
**Example:**
```vbnet
dim c as new CLLocationManagerMBS
c.distanceFilter=CLLocationMBS.kCLDistanceFilterNone
```
**Notes:**
This distance is measured relative to the previously delivered location. Use the value kCLDistanceFilterNone to be notified of all movements.

The default value of this property is kCLDistanceFilterNone.
(Read and Write property)

### 53.5.29 Handle as Integer

**Function:** The internal reference to the CLLocationManager object.
**Example:**
```vbnet
dim c as new CLLocationManagerMBS
MsgBox str(c.Handle) // not zero on success
```
**Notes:** (Read and Write property)

### 53.5.30 location as CLLocationMBS

**Function:** The most recently retrieved user location.
**Example:**
dim c as new CLLocationMBS(1,2,3,4,5,nil)
MsgBox c.description

Notes:
The value of this property is nil if no location data has ever been retrieved.

It is a good idea to check the timestamp of the location that is returned. If the receiver is currently gathering location data, but the minimum distance filter is large, the returned location might be relatively old. If it is, you can stop the receiver and start it again to force an update.
(Read only property)

53.5.31  maximumRegionMonitoringDistance as Double

Function:  The largest boundary distance that can be assigned to a region.
Notes:
This property defines the largest boundary distance allowed from a region’s center point. Attempting to monitor a region with a distance larger than this value causes the location manager to send a kCLErrorRegionMonitoringFailure error to the delegate.

If region monitoring is unavailable or not supported, the value in this property is -1.

Available on Mac OS X 10.7 or later.
(Read only property)

53.5.32  purpose as string

Function:  An application-provided string that describes the reason for using location services.
Notes:
If this property is not "" and the system needs to ask for the user’s consent to use location services, it displays the provided string. You can use this string to explain why your application is using location services.

You must set the value of this property prior to starting any location services. Because the string is ultimately displayed to the user, you should always load it from a localized strings file.
53.5. **CLASS CLLOCATIONMANAGERMBS**

Available on Mac OS X 10.7 or later.
(Read and Write property)

### 53.5.33 Events

#### 53.5.34 `didChangeAuthorizationStatus(status as Integer)`

**Function:** Tells the delegate that the authorization status for the application changed.
**Notes:**

*status:* The new authorization status for the application.

This method is called whenever the application’s ability to use location services changes. Changes can occur because the user allowed or denied the use of location services for your application or for the system as a whole.

#### 53.5.35 `didEnterRegion(region as CLRegionMBS)`

**Function:** Tells the delegate that the user entered the specified region.
**Notes:**

*region:* An object containing information about the region that was entered.

The region object provided may not be the same one that was registered. As a result, you should never perform pointer-level comparisons to determine equality. Instead, use the region’s identifier string to determine if your delegate should respond.

#### 53.5.36 `didExitRegion(region as CLRegionMBS)`

**Function:** Tells the delegate that the user left the specified region.
**Notes:**

*manager:* The location manager object reporting the event.
*region:* An object containing information about the region that was exited.

The region object provided may not be the same one that was registered. As a result, you should never perform pointer-level comparisons to determine equality. Instead, use the region’s identifier string to determine
if your delegate should respond.

53.5.37 didFailWithError(error as NSErrorMBS)

Function: Tells you that the location manager was unable to retrieve a location value.
Notes:
error: The error object containing the reason why the location could not be retrieved.

If the location service is unable to retrieve a location fix right away, it reports a kCLErrorLocationUnknown error and keeps trying. In such a situation, you can simply ignore the error and wait for a new event.

If the user denies your application’s use of the location service, this method reports a kCLErrorDenied error. Upon receiving such an error, you should stop the location service.

53.5.38 didFinishDeferredUpdatesWithError(error as NSErrorMBS)

Function: Invoked when deferred updates will no longer be delivered.
Notes:
Stopping location, disallowing deferred updates, and meeting a specified criterion are all possible reasons for finishing deferred updates.

An error will be returned if deferred updates end before the specified criteria are met (see CLError). Requires Mac OS X 10.9.

53.5.39 didStartMonitoringForRegion(region as CLRegionMBS)

Function: Tells you that a new region is being monitored.
Notes: region: The region that is being monitored.

53.5.40 didUpdate(newLocation as CLLocationMBS, oldLocation as CLLocationMBS)

Function: Tells you that a new location value is available.
53.5. **CLASS CLLOCATIONMANAGERMBS**

**Notes:**

newLocation: The new location data.
oldLocation: The location data from the previous update. If this is the first update event delivered by this location manager, this parameter is nil.

By the time this event is called, the new location data is also available directly from the CLLocationManagerMBS object. The newLocation parameter may contain the data that was cached from a previous usage of the location service. You can use the timestamp property of the location object to determine how recent the location data is.

53.5.41 **didUpdateHeading(newHeading as CLHeadingMBS)**

**Function:** Tells you that the location manager received updated heading information.
**Notes:**

Implementation of this method is optional but expected if you start heading updates using the startUpdatingHeading method.

The location manager object calls this method after you initially start the heading service. Subsequent events are delivered when the previously reported value changes by more than the value specified in the headingFilter property of the location manager object.

53.5.42 **didUpdateLocations(locations() as CLLocationMBS)**

**Function:** Invoked when new locations are available.
**Notes:**

Required for delivery of deferred locations.
If implemented, updates will not be delivered to didUpdate.
Requires Mac OS X 10.9.

53.5.43 **monitoringDidFailForRegion(region as CLRegionMBS, error as NSErrorMBS)**

**Function:** Tells the delegate that a region monitoring error occurred.
**Notes:**

region: The region for which the error occurred.
error: An error object containing the error code that indicates why region monitoring failed.

If an error occurs while trying to monitor a given region, the location manager sends this message to its delegate. Region monitoring might fail because the region itself cannot be monitored or because there was a more general failure in configuring the region monitoring service.

Although implementation of this event is optional, it is recommended that you implement it if you use region monitoring in your application.

53.5.44 Constants

53.5.45 kCLAuthorizationStatusAuthorized = 3

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the authorization status constants. **Notes:** This application is authorized to use location services.

53.5.46 kCLAuthorizationStatusDenied = 2

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the authorization status constants. **Notes:** The user explicitly denied the use of location services for this application or location services are currently disabled in Settings.

53.5.47 kCLAuthorizationStatusNotDetermined = 0

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the authorization status constants. **Notes:** The user has not yet made a choice regarding whether this application can use location services.

53.5.48 kCLAuthorizationStatusRestricted = 1

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the authorization status constants. **Notes:** This application is not authorized to use location services. The user cannot change this application’s status, possibly due to active restrictions such as parental controls being in place.
53.5.49  kCLDeviceOrientationFaceDown = 6

MBS MacFrameworks Plugin, Plugin Version: 12.3. Function: One of the orientation constants
Notes: The device is held parallel to the ground with the screen facing downwards.

53.5.50  kCLDeviceOrientationFaceUp = 5

MBS MacFrameworks Plugin, Plugin Version: 12.3. Function: One of the orientation constants
Notes: The device is held parallel to the ground with the screen facing upwards.

53.5.51  kCLDeviceOrientationLandscapeLeft = 3

MBS MacFrameworks Plugin, Plugin Version: 12.3. Function: One of the orientation constants
Notes: The device is in landscape mode, with the device held upright and the home button on the right side.

53.5.52  kCLDeviceOrientationLandscapeRight = 4

MBS MacFrameworks Plugin, Plugin Version: 12.3. Function: One of the orientation constants
Notes: The device is in landscape mode, with the device held upright and the home button on the left side.

53.5.53  kCLDeviceOrientationPortrait = 1

MBS MacFrameworks Plugin, Plugin Version: 12.3. Function: One of the orientation constants
Notes: The device is in portrait mode, with the device held upright and the home button at the bottom.

53.5.54  kCLDeviceOrientationPortraitUpsideDown = 2

MBS MacFrameworks Plugin, Plugin Version: 12.3. Function: One of the orientation constants
Notes: The device is in portrait mode but upside down, with the device held upright and the home button at the top.

53.5.55  kCLDeviceOrientationUnknown = 0

MBS MacFrameworks Plugin, Plugin Version: 12.3. Function: One of the orientation constants
Notes: The orientation is currently not known.
53.5.56 kCLErrorDenied = 1

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the error codes reported by the location manager error event. **Notes:** Access to the location service was denied by the user.

53.5.57 kCLErrorGeocodeCanceled = 10

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the CoreLocation error constants. **Notes:** The geocode request was canceled.

53.5.58 kCLErrorGeocodeFoundNoResult = 8

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the CoreLocation error constants. **Notes:** The geocode request yielded no result.

53.5.59 kCLErrorGeocodeFoundPartialResult = 9

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the CoreLocation error constants. **Notes:** The geocode request yielded a partial result.

53.5.60 kCLErrorHeadingFailure = 3

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the CoreLocation error constants. **Notes:** The heading could not be determined.

53.5.61 kCLErrorLocationUnknown = 0

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the error codes reported by the location manager error event. **Notes:** The location manager was unable to obtain a location value right now.

53.5.62 kCLErrorNetwork = 2

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the CoreLocation error constants. **Notes:** The network was unavailable or a network error occurred.
53.5.63  kCLErrorRegionMonitoringDenied = 4

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the CoreLocation error constants. **Notes:** Access to the region monitoring service was denied by the user.

53.5.64  kCLErrorRegionMonitoringFailure = 5

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the CoreLocation error constants. **Notes:** A registered region cannot be monitored.

53.5.65  kCLErrorRegionMonitoringResponseDelayed = 7

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the CoreLocation error constants. **Notes:** Core Location will deliver events but they may be delayed.

53.5.66  kCLErrorRegionMonitoringSetupDelayed = 6

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the CoreLocation error constants. **Notes:** Core Location could not initialize the region monitoring feature immediately.
53.6 class CLLocationMBS

53.6.1 class CLLocationMBS


**Function:** A CLLocationMBS object represents the location data generated by a CLLocationManagerMBS object.

**Example:**

```dim c as new CLLocationMBS(50,7)```

```MsgBox c.description```

```// example output: <+50.00000000, +7.00000000>+/- 0.00m (speed -1.00 mps / course -1.00) @ 2009-08-28 23:59:58 +0200```

**Notes:**

This object incorporates the geographical coordinates and altitude of the device’s location along with values indicating the accuracy of the measurements and when those measurements were made. On some devices, this class also reports information about the speed and heading in which the device is moving.

Typically, you use a CLLocationManagerMBS object to create instances of this class based on the last known location of the user’s device. You can create instances yourself, however, if you want to cache custom location data or get the distance between two different coordinate points.

This class is designed to be used as is and should not be subclassed.

Requires Mac OS X 10.6

53.6.2 Methods

53.6.3 Available as boolean


**Function:** Returns true if this class is available.
53.6. **CLASS CLLOCATIONMBS**

### 53.6.4 Constructor(latitude as Double, longitude as Double)


**Function:** Initializes and returns a location object with the specified latitude and longitude.

**Example:**

```mbs
    dim c as new CLLocationMBS(50,7)
```

MsgBox c.description

```
    // example output: <+50.00000000, +7.000000000000000> +/- 0.00m (speed -1.00 mps / course -1.00) @ 2009-08-28 23:59:58 +0200
```

**Notes:**

- **latitude:** The latitude of the coordinate point.
- **longitude:** The longitude of the coordinate point.

Typically, you acquire location objects from the location service, but you can use this method to create new location objects for other uses in your application. When using this method, the other properties of the object are initialized to appropriate values. In particular, the altitude and horizontalAccuracy properties are set to 0, the verticalAccuracy property is set to -1 to indicate that the altitude value is invalid, and the timestamp property is set to the time at which the instance was initialized.

Requires Mac OS X 10.6

See also:

- 53.6.5 Constructor(latitude as Double, longitude as Double, altitude as Double, horizontalAccuracy as Double, verticalAccuracy as Double, course as Double, speed as Double, timestamp as date) 9639
- 53.6.6 Constructor(latitude as Double, longitude as Double, altitude as Double, horizontalAccuracy as Double, verticalAccuracy as Double, timestamp as date) 9640

### 53.6.5 Constructor(latitude as Double, longitude as Double, altitude as Double, horizontalAccuracy as Double, verticalAccuracy as Double, course as Double, speed as Double, timestamp as date)


**Function:** Initializes a location object with the specified coordinate and course information.

**Notes:**

- **latitude and longitude:** A coordinate structure containing the latitude and longitude values.
- **altitude:** The altitude value for the location.
- **horizontalAccuracy:** The accuracy of the coordinate value. Specifying a negative number indicates that the coordinate value is invalid.
verticalAccuracy: The accuracy of the altitude value. Specifying a negative number indicates that the altitude value is invalid.
course: The direction of travel for the location.
speed: The current speed associated with this location.
timestamp: The time to associate with the location object. Typically, you would set this to the current time.

Typically, you acquire location objects from the location service, but you can use this method to create new location objects for other uses in your application.

Available on Mac OS X 10.7 or newer.
See also:

- 53.6.4 Constructor(latitude as Double, longitude as Double)
- 53.6.6 Constructor(latitude as Double, longitude as Double, altitude as Double, horizontalAccuracy as Double, verticalAccuracy as Double, timestamp as date)

53.6.6 Constructor(latitude as Double, longitude as Double, altitude as Double, horizontalAccuracy as Double, verticalAccuracy as Double, timestamp as date)

Function: Initializes and returns a location object with the specified coordinate information.
Example:

dim c as new CLLocationMBS(1,2,3,4,5,nil)

MsgBox c.description

Notes:

coordinate: A coordinate structure containing the latitude and longitude values.
alitude: The altitude value for the location.
horizontalAccuracy: The accuracy of the coordinate value. Specifying a negative number indicates that the coordinate value is invalid.
verticalAccuracy: The accuracy of the altitude value. Specifying a negative number indicates that the altitude value is invalid.
timestamp: The time to associate with the location object. Typically, you would set this to the current time.

Typically, you acquire location objects from the location service, but you can use this method to create new location objects for other uses in your application.
See also:

- 53.6.4 Constructor(latitude as Double, longitude as Double)
53.6. **CLASS CLLOCATIONMBS**

- 53.6.5 Constructor(latitude as Double, longitude as Double, altitude as Double, horizontalAccuracy as Double, verticalAccuracy as Double, course as Double, speed as Double, timestamp as date)

53.6.7 **copy as CLLocationMBS**


**Function:** Creates a copy of the object.

**Example:**

```plaintext
dim c as new CLLocationMBS(5,6)
dim n as CLLocationMBS = c.copy
MsgBox n.description
```

**Notes:** Internally a new CLLocation object is created with a copy of the data.

53.6.8 **distanceFromLocation(location as CLLocationMBS) as Double**


**Function:** Returns the distance (in meters) between the two locations.

**Example:**

```plaintext
// Nickenich 50 24' 48" N, 7 19' 47" E
// Andernach 50 26' 23" N, 7 24' 6" E

dim c1 as new CLLocationMBS(50.439722, 7.40167) // Andernach
dim c2 as new CLLocationMBS(50.413333, 7.32972) // Nickenich
MsgBox str(c1.distanceFromLocation(c2)) + ” meter”
```

**Notes:** This method measures the distance between the two locations by tracing a line between them that follows the curvature of the Earth. The resulting arc is a smooth curve and does not take into account specific altitude changes between the two locations.

53.6.9 **kCLDistanceFilterNone as Double**


**Function:** This constant indicates the minimum distance required before an event is generated.

**Notes:** All movements are reported.
53.6.10 kCLLocationAccuracyBest as Double

Function: A constant value you can use to specify the accuracy of a location.
Example:

```plaintext
dim c as new CLLocationManagerMBS

c.desiredAccuracy=CLLocationMBS.kCLLocationAccuracyBest
```

Notes: Use the best possible accuracy.

53.6.11 kCLLocationAccuracyBestForNavigation as Double

Function: A constant value you can use to specify the accuracy of a location.
Notes: Available on Mac OS X 10.7 or later.

53.6.12 kCLLocationAccuracyHundredMeters as Double

Function: A constant value you can use to specify the accuracy of a location.
Example:

```plaintext
dim c as new CLLocationManagerMBS

c.desiredAccuracy=CLLocationMBS.kCLLocationAccuracyHundredMeters
```

Notes: Accurate to within one hundred meters.

53.6.13 kCLLocationAccuracyKilometer as Double

Function: A constant value you can use to specify the accuracy of a location.
Example:
dim c as new CLLocationManagerMBS

c.desiredAccuracy=CLLocationMBS.kCLLocationAccuracyKilometer

Notes: Accurate to the nearest kilometer.

53.6.14 kCLLocationAccuracyNearestTenMeters as Double

Function: A constant value you can use to specify the accuracy of a location.  
Example:  
dim c as new CLLocationManagerMBS

c.desiredAccuracy=CLLocationMBS.kCLLocationAccuracyNearestTenMeters

Notes: Accurate to within ten meters of the desired target.

53.6.15 kCLLocationAccuracyThreeKilometers as Double

Function: A constant value you can use to specify the accuracy of a location.  
Example:  
dim c as new CLLocationManagerMBS

c.desiredAccuracy=CLLocationMBS.kCLLocationAccuracyThreeKilometers

Notes: Accurate to the nearest three kilometers.

53.6.16 Properties

53.6.17 altitude as Double

Function: The altitude in meters.  
Example:
dim c as new CLLocationMBS(1,2,3,4,5,nil)

MsgBox str(c.altitude)

Notes:
Positive values indicate altitudes above sea level. Negative values indicate altitudes below sea level.
(Read only property)

53.6.18 course as Double

Function: The direction in which the device is travelling.
Example:

dim c as CLLocationManagerMBS // your global instance

dim l as CLLocationMBS = c.location

if l<>Nil then
    MsgBox str(l.course)
end if

Notes:
Course values are measured in degrees starting at due north and continuing clockwise around the compass.
Thus, north is 0 degrees, east is 90 degrees, south is 180 degrees, and so on. Course values may not be
available on all devices. A negative value indicates that the direction is invalid.
(Read only property)

53.6.19 description as string

Function: Returns the location data in a formatted text string.
Example:

dim c as new CLLocationMBS(50.439722, 7.40167)

MsgBox C.description
// shows for example:
// <+50.43972200, +7.40167000>+/-. 00m (speed -1.00 mps / course -1.00) @ 2009-08-29 14:22:39 +0200
Notes:
A string of the form "<<latitude>, <longitude>>+/- <accuracy>m (speed <speed>kph / heading <heading>) @ <date-time>", where <latitude>, <longitude>, <accuracy>, <speed>, and <heading> are formatted floating point numbers and <date-time> is a formatted date string that includes date, time, and time zone information.

The returned string is intended for display purposes only.
(Read only property)

53.6.20 Handle as Integer

Function: The internal reference to the CLLocation object.
Example:

    dim c as CLLocationManagerMBS // your global instance
    
    dim l as CLLocationMBS = c.location

    if l<>Nil then
        MsgBox str(l.handle)
    end if

Notes: (Read and Write property)

53.6.21 horizontalAccuracy as Double

Function: The radius of uncertainty for the location, measured in meters.
Example:

    dim c as CLLocationManagerMBS // your global instance
    
    dim l as CLLocationMBS = c.location

    if l<>Nil then
        MsgBox str(l.horizontalAccuracy)
    end if
Notes:
The coordinate’s latitude and longitude identify the center of the circle and this value indicates the radius of that circle. A negative value indicates that the coordinate’s latitude and longitude are invalid.
(Read only property)

53.6.22 latitude as Double

Function: The geographical coordinate information.
Example:

```vbs
dim c as new CLLocationMBS(50.413333, 7.32972)
MsgBox str(C.latitude) // shows 50.413333
```

Notes: (Read only property)

53.6.23 longitude as Double

Function: The geographical coordinate information.
Example:

```vbs
dim c as new CLLocationMBS(50.413333, 7.32972)
MsgBox str(C.longitude) // shows 7.32972
```

Notes: (Read only property)

53.6.24 speed as Double

Function: The instantaneous speed of the device in meters per second.
Example:

```vbs
dim c as CLLocationManagerMBS // your global instance
dim l as CLLocationMBS = c.location
```
if l<>Nil then
    MsgBox str(l.speed)
end if

Notes:
This value reflects the instantaneous speed of the device in the direction of its current heading. A negative value indicates an invalid speed. Because the actual speed can change many times between the delivery of subsequent location events, you should use this property for informational purposes only.
(Read only property)

53.6.25 timestamp as date

Function: The time at which this location was determined.
Example:

    dim c as CLLocationManagerMBS // your global instance
    dim l as CLLocationMBS = c.location
    if l<>Nil then
        MsgBox l.timestamp.SQLDateTime
    end if

Notes: (Read only property)

53.6.26 verticalAccuracy as Double

Function: The accuracy of the altitude value in meters.
Example:

    dim c as CLLocationManagerMBS // your global instance
    dim l as CLLocationMBS = c.location
    if l<>Nil then
        MsgBox str(l.verticalAccuracy)
    end if
Notes:
The value in the altitude property could be plus or minus the value indicated by this property. A negative value indicates that the altitude value is invalid.
(Read only property)
53.7 class CLPlacemarkMBS

53.7.1 class CLPlacemarkMBS


Function: A CLPlacemark object stores placemark data for a given latitude and longitude.
Notes: Placemark data includes information such as the country, state, city, and street address associated with the specified coordinate. It can also include points of interest and geographically related data. Placemark objects are typically generated by a CLGeocoder object, although you can also create them explicitly yourself.

53.7.2 Methods

53.7.3 addressDictionary as Dictionary


Function: A dictionary containing the Address Book keys and values for the placemark. (read-only)
Notes:
The keys in this dictionary are those defined by the Address Book framework and used to access address information for a person. For a list of the strings that can be in this dictionary, see the Address Property constants in ABPerson Reference.

You can format the contents of this dictionary to get a full address string as opposed to building the address yourself.

Available in OS X v10.8 and later.

53.7.4 administrativeArea as string


Function: The state or province associated with the placemark. (read-only)
Notes:
If the placemark location is Apple's headquarters, for example, the value for this property would be the string "CA" or "California".
Available in OS X v10.8 and later.
### 53.7.5 areasOfInterest as string()


**Function:** The relevant areas of interest associated with the placemark. (read-only)

**Notes:**

Examples of an area of interest are the name of a military base or large national park or an attraction such as Eiffel Tower, Disneyland, or Golden Gate Park.

Available in OS X v10.8 and later.

### 53.7.6 Available as boolean


**Function:** Returns true if this class is available.

### 53.7.7 Constructor(placement as CLPlacemarkMBS)


**Function:** Initializes and returns a placemark object from another placemark object.

**Notes:**

You can use this method to transfer information from one placemark object to another placemark object.

Available in OS X v10.8 and later.

### 53.7.8 copy as CLPlacemarkMBS


**Function:** Creates a clone of this object.

### 53.7.9 country as string


**Function:** The name of the country associated with the placemark. (read-only)

**Notes:**

If the placemark location is Apple's headquarters, for example, the value for this property would be the string "United States".

Available in OS X v10.8 and later.
53.7. **CLASS CLPLACEMARKMBS**

### 53.7.10 description as string

**Function:** The description for debugging.

### 53.7.11 inlandWater as string

**Function:** The name of the inland water body associated with the placemark. (read-only)
**Notes:**
For coordinates that lie over an inland body of water, this property contains the name of that water bodythe name of a lake, stream, river, or other waterway.
Available in OS X v10.8 and later.

### 53.7.12 ISOcountryCode as string

**Function:** The abbreviated country name. (read-only)
**Notes:**
This string is the standard abbreviation used to refer to the country. For example, if the placemark location is Apple’s headquarters, the value for this property would be the string "US".
Available in OS X v10.8 and later.

### 53.7.13 locality as string

**Function:** The city associated with the placemark. (read-only)
**Notes:**
If the placemark location is Apple’s headquarters, for example, the value for this property would be the string "Cupertino".
Available in OS X v10.8 and later.

### 53.7.14 location as CLLocationMBS

**Function:** The location object containing latitude and longitude information. (read-only)
**Notes:**
This object is used to initialize the placemark object.
Available in OS X v10.8 and later.

### 53.7.15 name as string

**Function:** The name of the placemark. (read-only)
**Notes:** Available in OS X v10.8 and later.

### 53.7.16 ocean as string

**Function:** The name of the ocean associated with the placemark. (read-only)
**Notes:** For coordinates that lie over an ocean, this property contains the name of the ocean.
Available in OS X v10.8 and later.

### 53.7.17 postalAddress as variant

**Function:** The address as CNPostalAddressMBS object.

### 53.7.18 postalCode as string

**Function:** The postal code associated with the placemark. (read-only)
**Notes:** If the placemark location is Apple’s headquarters, for example, the value for this property would be the string "95014".
Available in OS X v10.8 and later.

### 53.7.19 region as CLRegionMBS

**Function:** The geographic region associated with the placemark. (read-only)
**Notes:** Available in OS X v10.8 and later.
53.7. **CLASS CLPLACEMARKMBS**

53.7.20  **subAdministrativeArea as string**

**Function:** Additional administrative area information for the placemark. (read-only)  
**Notes:**  
Subadministrative areas typically correspond to counties or other regions that are then organized into a larger administrative area or state. For example, if the placemark location is Apple's headquarters, the value for this property would be the string "Santa Clara", which is the county in California that contains the city of Cupertino.  

Available in OS X v10.8 and later.

53.7.21  **subLocality as string**

**Function:** Additional city-level information for the placemark. (read-only)  
**Notes:**  
This property contains additional information, such as the name of the neighborhood or landmark associated with the placemark. It might also refer to a common name that is associated with the location.  
Available in OS X v10.8 and later.

53.7.22  **subThoroughfare as string**

**Function:** Additional street-level information for the placemark. (read-only)  
**Notes:**  
Subthroughfares provide information such as the street number for the location. For example, if the placemark location is Apple's headquarters (1 Infinite Loop), the value for this property would be the string "1".  

Available in OS X v10.8 and later.

53.7.23  **thoroughfare as string**

**Function:** The street address associated with the placemark. (read-only)  
**Notes:**  
The street address contains the street name. For example, if the placemark location is Apple’s headquarters, the value for this property would be the string "Infinite Loop".
Available in OS X v10.8 and later.

53.7.24 Properties

53.7.25 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)
53.8. CLASS CLREGIONMBS

53.8 class CLRegionMBS

53.8.1 class CLRegionMBS


Function: The CLRegion class defines a geographical area that can be tracked.

Example:

```dim c as new CLRegionMBS(50.413333, 7.329722, 3000, "Nickenich")
```

```msgbox c.identifier+" "+str(c.latitude)+"/"+str(c.longitude)+", "+str(c.radius)+" m"
```

Notes:
When an instance of this class is registered with a CLLocationManagerMBS object, the location manager generates an appropriate event whenever the user crosses the boundaries of the defined area.

To use this class, create an instance of it and use the startMonitoringForRegion method of a CLLocationManager object to begin monitoring it.

Please also check the documentation from Apple for the CLRegion class.
Available on Mac OS X 10.7 or later.

53.8.2 Methods

53.8.3 Available as boolean


Function: Returns true if this class is available.

53.8.4 Constructor(latitude as Double, longitude as Double, radius as Double, identifier as string)


Function: Initializes a region object defining a circular area.

Notes:
latitude and longitude: The center point of the region.
radius: The distance (measured in meters) from the center point that marks the boundary of the region.
identifier: A unique identifier to associate with the region object. You use this identifier to differentiate regions within your application. This value must not be "".
identifier is a description for the region that could be displayed to the user, and ideally should be chosen by the user.

On success the handle property is not zero.

53.8.5 containsCoordinate(latitude as Double, longitude as Double) as boolean

Function: Returns a Boolean value indicating whether the region contains the specified coordinate.
Notes:
latitude and longitude: The coordinate to test against the region.
Returns true if the coordinate lies within the region’s boundaries or false if it does not.

53.8.6 copy as CLRegionMBS

Function: Creates a copy of the region object.

53.8.7 identifier as string

Function: The identifier for the region object.
Example:
```dim c as new CLRegionMBS(50.413333, 7.329722, 3000, "Nickenich")
msgbox c.identifier
```

53.8.8 latitude as Double

Function: The position of the center of the region.
53.8. CLASS CLREGIONMBS

53.8.9  longitude as Double

**Function:** The position of the center of the region.

53.8.10  radius as Double

**Function:** The radius (measured in meters) that defines the region’s outer boundary.

53.8.11  Properties

53.8.12  Handle as Integer

**Function:** The internal CLRegion object reference.
**Notes:** (Read and Write property)
Chapter 54

CoreML

54.1  class MLDictionaryConstraintMBS

54.1.1  class MLDictionaryConstraintMBS

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Constraint describing expected NSDictionary properties. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

54.1.2  Methods

54.1.3  Constructor

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.

54.1.4  Properties

54.1.5  Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference. **Notes:** (Read and Write property)
54.1.6 keyType as Integer

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** Required key type.
**Notes:**
See MLFeatureValueMBS.Type* constants.
(Read only property)
54.2. class MLDictionaryFeatureProviderMBS

54.2.1 class MLDictionaryFeatureProviderMBS

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A concrete convenience class conforming to MLFeatureProvider protocol. **Notes:** Subclass of the MLFeatureProviderMBS class.

54.2.2 Methods

54.2.3 Constructor(content as Dictionary, byref error as NSErrorMBS)

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create from a generic dictionary by converting all values to MLFeatureValues or from a dictionary with values already stored as MLFeatureValues. **Notes:** An error results if the values are not or cannot be represented as MLFeatureValues.

54.2.4 objectForKeyedSubscript(script as string) as MLFeatureValueMBS

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Get the value for specified feature.

54.2.5 Properties

54.2.6 Content as Dictionary

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Dictionary holding the feature values. **Notes:** When you query this, you get a copy of the dictionary, so any modification doesn’t go back to the feature provider. (Read only property)
54.3 class MLFeatureDescriptionMBS

54.3.1 class MLFeatureDescriptionMBS


54.3.2 Methods

54.3.3 Constructor


54.3.4 copy as MLFeatureDescriptionMBS


54.3.5 isAllowedValue(value as MLFeatureValueMBS) as boolean

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Check if MLFeatureValue is valid based on this description.

54.3.6 Properties

54.3.7 dictionaryConstraint as MLDictionaryConstraintMBS


Notes:

Only set when type is dictionary.
(Read only property)
54.3. **CLASS MLFEATUREDESCRIPTIONMBS**

### 54.3.8 Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: The internal object reference. **Notes**: (Read and Write property)

### 54.3.9 imageConstraint as MLImageConstraintMBS

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Constraint for image. **Notes**: Only set when type is image. (Read only property)

### 54.3.10 isOptional as Boolean

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Whether this feature can take an undefined value or not. **Notes**: (Read only property)

### 54.3.11 multiArrayConstraint as MLMultiArrayConstraintMBS

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Constraint for multi array. **Notes**: Only set when type is array. (Read only property)

### 54.3.12 Name as String

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Name of feature. **Notes**: (Read only property)
54.3.13  Type as Integer

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Type of data.
**Notes**: (Read only property)

54.3.14  Constants

54.3.15  TypeDictionary = 6

MBS Mac64bit Plugin, Plugin Version: 17.4. **Function**: One of the type constants.
**Notes**: Numerically weighted hashable objects (e.g. word counts)

54.3.16  TypeDouble = 2

MBS Mac64bit Plugin, Plugin Version: 17.4. **Function**: One of the type constants.
**Notes**: Continuous values

54.3.17  TypeImage = 4

MBS Mac64bit Plugin, Plugin Version: 17.4. **Function**: One of the type constants.
**Notes**: CVPixelBufferRef or converted by plugin to Xojo picture.

54.3.18  TypeInt64 = 1

MBS Mac64bit Plugin, Plugin Version: 17.4. **Function**: One of the type constants.
**Notes**: Discrete values, sometimes used to hold numeric encoding of a categorical value

54.3.19  TypeInvalid = 0

MBS Mac64bit Plugin, Plugin Version: 17.4. **Function**: One of the type constants.
**Notes**: Undefined type.
54.3. **CLASS MLFEATUREDESCRIPTIONMBS**

### 54.3.20 TypeMultiArray = 5

MBS Mac64bit Plugin, Plugin Version: 17.4. **Function:** One of the type constants.  
**Notes:** An array of values.

### 54.3.21 TypeString = 3

MBS Mac64bit Plugin, Plugin Version: 17.4. **Function:** One of the type constants.  
**Notes:** Text or categorical strings
54.4 class MLFeatureProviderMBS

54.4.1 class MLFeatureProviderMBS

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** Protocol for accessing a feature value for a feature name.

**Notes:**

In Xojo defined as class, but in objective-c just a protocol.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

54.4.2 Methods

54.4.3 Constructor

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** The private constructor.

54.4.4 featureNames as String()

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** Queries list of all feature names available.

54.4.5 featureValueForName(featureName as String) as MLFeatureValueMBS

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** Queries value for feature by name.
**Notes:** Returns nil if the provided featureName is not in the set of featureNames

54.4.6 Properties

54.4.7 Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** The internal object reference.
**Notes:** (Read and Write property)
54.5 class MLFeatureValueMBS

54.5.1 class MLFeatureValueMBS

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An immutable variant holding a data value of a supported MLFeatureType.  
**Notes:**  
MLFeatureValue does not support type conversion in its accessor properties. It can also have a missing or undefined value of a well defined type.

54.5.2 Methods

54.5.3 Constructor

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.

54.5.4 copy as MLFeatureValueMBS

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy.

54.5.5 featureValueWithDictionary(value as Dictionary, byref error as NSErrorMBS) as MLFeatureValueMBS

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates new feature based on a dictionary.  
**Notes:**  
Copies the dictionary.  
For encoding a sparse feature set or for encoding probabilities. Input keys that are not number or string are rejected on construction and return a MLMModelErrorFeatureTypeMismatch error. Further validation for consistency occurs on evaluation.

54.5.6 featureValueWithDouble(value as double) as MLFeatureValueMBS

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns feature object for given value.
54.5.7 featureValueWithInt64(value as Int64) as MLFeatureValueMBS


54.5.8 featureValueWithMultiArray(value as MLMultiArrayMBS) as MLFeatureValueMBS


54.5.9 featureValueWithPicture(value as Picture) as MLFeatureValueMBS


54.5.10 featureValueWithString(value as string) as MLFeatureValueMBS


54.5.11 isEqualToFeatureValue(value as MLFeatureValueMBS) as Boolean

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Queries whether two feature objects are the same.

54.5.12 undefinedFeatureValueWithType(type as Integer) as MLFeatureValueMBS

54.5.13  Properties

54.5.14  CIImageValue as Variant

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries image as CIImageMBS object.  
**Notes:** (Read only property)

54.5.15  dictionaryValue as Dictionary

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  
**Function:** Populated value if the type is TypeDictionary.  
**Notes:**  
When you query the dictionary, you get a copy.  
(Read only property)

54.5.16  doubleValue as Double

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  
**Function:** Populated value if the type is TypeDouble.  
**Notes:** (Read only property)

54.5.17  Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  
**Function:** The internal object reference.  
**Notes:** (Read and Write property)

54.5.18  int64Value as Int64

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  
**Function:** Populated value if the type is TypeInt64.  
**Notes:** (Read only property)
54.5.19 multiArrayValue as MLMultiArrayMBS

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Populated value if the type is TypeMultiArray. **Notes:** (Read only property)

54.5.20 PictureHeight as Integer

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The picture height. **Notes:** Populated value if the type is TypeImage. (Read only property)

54.5.21 PictureValue as Picture

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Populated value if the type is TypeImage. **Notes:** (Read only property)

54.5.22 PictureWidth as Integer

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The picture width. **Notes:** Populated value if the type is TypeImage. (Read only property)

54.5.23 stringValue as String

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Populated value if the type is TypeString. **Notes:** (Read only property)
54.5. **CLASS MLFEATUREVALUEMBS**

54.5.24 **Type as Integer**

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Type of the value for which the corresponding property below is held. **Notes:** (Read only property)

54.5.25 **Undefined as Boolean**

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** True if the value represents a missing or undefined value. **Notes:** (Read only property)

54.5.26 **value as Variant**

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries value as variant. **Notes:** (Read only property)

54.5.27 **Constants**

54.5.28 **TypeDictionary = 6**

MBS Mac64bit Plugin, Plugin Version: 17.4. **Function:** One of the type constants. **Notes:** Numerically weighted hashable objects (e.g. word counts)

54.5.29 **TypeDouble = 2**

MBS Mac64bit Plugin, Plugin Version: 17.4. **Function:** One of the type constants. **Notes:** Continuous values

54.5.30 **TypeName = 4**

MBS Mac64bit Plugin, Plugin Version: 17.4. **Function:** One of the type constants. **Notes:** CVPixelBufferRef or converted by plugin to Xojo picture.
54.5.31 TypeInt64 = 1

MBS Mac64bit Plugin, Plugin Version: 17.4. **Function:** One of the type constants.  
**Notes:** Discrete values, sometimes used to hold numeric encoding of a categorical value.

54.5.32 TypeInvalid = 0

MBS Mac64bit Plugin, Plugin Version: 17.4. **Function:** One of the type constants.  
**Notes:** Undefined type.

54.5.33 TypeMultiArray = 5

MBS Mac64bit Plugin, Plugin Version: 17.4. **Function:** One of the type constants.  
**Notes:** An array of values.

54.5.34 TypeString = 3

MBS Mac64bit Plugin, Plugin Version: 17.4. **Function:** One of the type constants.  
**Notes:** Text or categorical strings.
54.6. **CLASS MLIMAGECONSTRAINTMBS**

54.6  **class MLImageConstraintMBS**

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Constraint on image properties.  
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

54.6.2  **Methods**

54.6.3  **Constructor**

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.

54.6.4  **Properties**

54.6.5  **Handle as Integer**

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference.  
**Notes:** (Read and Write property)

54.6.6  **PixelFormatType as Integer**

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The accepted kCVPixelFormatType for the image.  
**Notes:** (Read only property)

54.6.7  **pixelsHigh as Integer**

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The required height of the image.  
**Notes:** (Read only property)
54.6.8 pixelsWide as Integer

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The required width of the image.

**Notes:** (Read only property)
54.7. CLASS MLMODELDESCRIPTIONMBS

54.7 class MLModelDescriptionMBS

54.7.1 class MLModelDescriptionMBS

Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

54.7.2 Methods

54.7.3 Constructor


54.7.4 Properties

54.7.5 Handle as Integer

Notes: (Read and Write property)

54.7.6 inputDescriptionsByName as Dictionary

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Description of the inputs to the model.
Notes: (Read only property)

54.7.7 metadata as Dictionary

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Optional metadata describing the model.
Notes: (Read only property)
54.7.8 outputDescriptionsByName as Dictionary

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Description of the outputs from the model.  
**Notes:** (Read only property)

54.7.9 predictedFeatureName as String

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Name of the primary target / predicted output feature in the output descriptions.  
**Notes:** (Read only property)

54.7.10 predictedProbabilitiesName as String

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key for all predicted probabilities stored as a MLFeatureTypeDictionary in the output descriptions.  
**Notes:** (Read only property)
54.8 class MLModelMBS

54.8.1 class MLModelMBS

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Construct a model and evaluate on a specific set of input features.
Notes:
Inputs and outputs are accessed via the MLFeatureProvider protocol.
Returns a model or nil if there is an error.

Available on macOS 10.13 or newer.

54.8.2 Methods

54.8.3 available as Boolean

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Whether CoreML is available.
Notes: Should return true on macOS 10.13 or newer.

54.8.4 compileModelAtURL(URL as string, byref error as NSErrorMBS) as String

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Compile a .mlmodel for this device.
Notes:
URL: URL file path to .mlmodel file you wish to compile
error: Any errors are surfaced here

Returns a URL to the compiled .mlmodelc bundle if successful.
The model is compiled to a temporary location on disk.
You must move the compiled model to a permanent location if you wish to keep it.

54.8.5 compileModelFile(File as folderItem, byref error as NSErrorMBS) as folderItem

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Compile a .mlmodel for this device.
Example:
dim SourceFile as FolderItem = SpecialFolder.Desktop.child("resnet50.MLmodel")
dim Error as NSErrorMBS

dim Tempfile as FolderItem = MLModelMBS.compileModelFile(SourceFile, Error)

if Tempfile <> nil then
tempfile.MoveFileTo SpecialFolder.Desktop
MsgBox "OK"
else
MsgBox Error.localizedDescription
end if

Notes:
File: FolderItem for .mlmodel file you wish to compile
error: Any errors are surfaced here

Returns a folderitem to the compiled .mlmodelc bundle if successful.
The model is compiled to a temporary location on disk.
You must move the compiled model to a permanent location if you wish to keep it.

54.8.6 Constructor


54.8.7 MLModelAuthorKey as String

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the keys for the metadata dictionary.
Notes: The author of this model.

54.8.8 MLModelCreatorDefinedKey as String

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the keys for the metadata dictionary.
Notes: Any additional pertinent information specified by the model creator.
54.8.9 MLModelDescriptionKey as String

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the keys for the metadata dictionary.
Notes: A short description of what the model does and/or its purpose

54.8.10 MLModelErrorDomain as String

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The error domain string for the CoreML errors.

54.8.11 MLModelLicenseKey as String

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the keys for the metadata dictionary.
Notes: License information for the model.

54.8.12 MLModelVersionStringKey as String

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the keys for the metadata dictionary.
Notes: A version number encoded as a string.

54.8.13 modelWithContentsOfFile(file as FolderItem, byref error as NSErrorMBS) as MLModelMBS

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Construct a model given the location of its on-disk representation.
Notes: Returns nil on error.

54.8.14 modelWithContentsOfFile(Path as string, byref error as NSErrorMBS) as MLModelMBS

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Construct a model given the location of its on-disk representation.
Notes: Returns nil on error.
54.8.15 `modelWithContentsOfURL(URL as string, byref error as NSErrorMBS) as MLModelMBS`

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Construct a model given the location of its on-disk representation.  
**Notes:** Returns nil on error.

54.8.16 `predictionFromFeatures(input as MLFeatureProviderMBS, options as MLPredictionOptionsMBS = nil, byref error as NSErrorMBS) as MLFeatureProviderMBS`

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** All models can predict on a specific set of input features.

54.8.17 `predictionFromFeaturesMT(input as MLFeatureProviderMBS, options as MLPredictionOptionsMBS = nil, byref error as NSErrorMBS) as MLFeatureProviderMBS`

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** All models can predict on a specific set of input features.  
**Notes:** The work is performed on an extra thread, so this function can yield time to other Xojo threads. And it calles the Working event regularly. For best user experience run this command on a Xojo thread, so your GUI stays responsive.

54.8.18 Properties

54.8.19 Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference.  
**Notes:** (Read and Write property)

54.8.20 `modelDescription as MLModelDescriptionMBS`

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A model holds a description of its required inputs and expected outputs.  
**Notes:** (Read only property)
54.8.21 Constants

54.8.22 ErrorDescriptionMismatch = 2
MBS Mac64bit Plugin, Plugin Version: 17.4. Function: One of the error codes. Notes: Mismatch error.

54.8.23 ErrorFeatureType = 1
MBS Mac64bit Plugin, Plugin Version: 17.4. Function: One of the error codes. Notes: Type error.

54.8.24 ErrorGeneric = 0
MBS Mac64bit Plugin, Plugin Version: 17.4. Function: One of the error codes. Notes: Generic error.

54.8.25 ErrorIO = 3
54.9 class MLMultiArrayConstraintMBS

54.9.1 class MLMultiArrayConstraintMBS

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Constraint describing expected MLMultiArray properties. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

54.9.2 Methods

54.9.3 Constructor

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.

54.9.4 shape as Integer()

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Required shape of array. **Notes:** One value for each dimension.

54.9.5 Properties

54.9.6 dataType as Integer

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Required dataType. **Notes:** (Read only property)

54.9.7 Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference. **Notes:** (Read and Write property)
54.9. CLASS MLMULTIARRAYCONSTRAINTMBS

54.9.8 shape0 as Integer

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The shape(0) value.
Notes: Convenience property to see value in debugger.
(Read only property)

54.9.9 shape1 as Integer

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The shape(1) value.
Notes: Convenience property to see value in debugger.
(Read only property)

54.9.10 shape2 as Integer

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The shape(2) value.
Notes: Convenience property to see value in debugger.
(Read only property)
54.10 class MLMultiArrayMBS

54.10.1 class MLMultiArrayMBS


54.10.2 Methods

54.10.3 Constructor(dataPointer as Ptr, shape() as Integer, dataType as Integer, strides() as Integer, byref error as NSErrorMBS)

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Create by wrapping existing data.
Notes: Please make sure that memory is not deallocated too early, e.g. by subclassing and freeing it in destructor.
See also:

- 54.10.4 Constructor(shape() as Integer, dataType as Integer, byref error as NSErrorMBS)

54.10.4 Constructor(shape() as Integer, dataType as Integer, byref error as NSErrorMBS)

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Create by C-style contiguous array by allocating and managing the necessary memory.
See also:

- 54.10.3 Constructor(dataPointer as Ptr, shape() as Integer, dataType as Integer, strides() as Integer, byref error as NSErrorMBS)

54.10.5 shape as Integer()

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: An array containing the sizes of each dimension in the multiarray.

54.10.6 strides as Integer()

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: An array containing the stride in memory for each dimension.
Notes: The element referred to by a multidimensional index is located at an offset equal to sum_d index [
54.10. CLASS MLMULTIARRAYMBS

54.10.7 Properties

54.10.8 count as Integer

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Count of total number of elements. Notes: (Read only property)

54.10.9 dataPointer as Ptr

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Unsafe pointer to underlying buffer holding the data. Notes: (Read only property)

54.10.10 dataType as Integer

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Type of element held. Notes: See DataType* constants. (Read only property)

54.10.11 Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The internal object reference. Notes: (Read and Write property)

54.10.12 shape0 as Integer

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The shape(0) value. Notes:
Convenience property to see value in debugger.
(Read only property)

54.10.13  shape1 as Integer

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The shape(1) value.
Notes:
Convenience property to see value in debugger.
(Read only property)

54.10.14  shape2 as Integer

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The shape(2) value.
Notes:
Convenience property to see value in debugger.
(Read only property)

54.10.15  strides0 as Integer

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The strides(0) value.
Notes:
Convenience property to see value in debugger.
(Read only property)

54.10.16  strides1 as Integer

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The strides(1) value.
Notes:
Convenience property to see value in debugger.
(Read only property)
54.10. **CLASS MLMULTIARRAYMBS**

54.10.17 **strides2 as Integer**

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** The strides(2) value.

**Notes:**
Convenience property to see value in debugger.
(Read only property)

54.10.18 **doubleValue(index as Integer) as Double**

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** Query or set value for single dimensional array.

**Notes:**
Pass the index for the value to query.
(Read and Write computed property)
See also:

• 54.10.19 doubleValue(indexes() as Integer) as Double

9687

54.10.19 **doubleValue(indexes() as Integer) as Double**

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** Query or set value for multi dimensional array.

**Notes:**
Pass one index value for each dimension in the array.
(Read and Write computed property)
See also:

• 54.10.18 doubleValue(index as Integer) as Double

9687

54.10.20 **integerValue(index as Integer) as Integer**

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** Query or set value for single dimensional array.

**Notes:**
Pass the index for the value to query.
(Read and Write computed property)
See also:

• 54.10.21 integerValue(indexes() as Integer) as Integer

9688
54.10.21 integerValue(indexes() as Integer) as Integer

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** Query or set value for multi dimensional array.
**Notes:**
Pass one index value for each dimension in the array.
(Read and Write computed property)
See also:

- 54.10.20 integerValue(index as Integer) as Integer

54.10.22 singleValue(index as Integer) as Single

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** Query or set value for single dimensional array.
**Notes:**
Pass the index for the value to query.
(Read and Write computed property)
See also:

- 54.10.23 singleValue(indexes() as Integer) as Single

54.10.23 singleValue(indexes() as Integer) as Single

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** Query or set value for multi dimensional array.
**Notes:**
Pass one index value for each dimension in the array.
(Read and Write computed property)
See also:

- 54.10.22 singleValue(index as Integer) as Single

54.10.24 Constants

54.10.25 DataTypeDouble = & h10040

MBS Mac64bit Plugin, Plugin Version: 17.4. **Function:** One for the data types for arrays.
**Notes:** Data is double values.
54.10. CLASS MLMULTIARRAYMBS

54.10.26 **DataTypeFloat32 = & h10020**

MBS Mac64bit Plugin, Plugin Version: 17.4. **Function:** One for the data types for arrays. **Notes:** Data is single values (32-bit).

54.10.27 **DataTypeInt32 = & h20020**

MBS Mac64bit Plugin, Plugin Version: 17.4. **Function:** One for the data types for arrays. **Notes:** Data is 32-bit integer values.
54.11 class MLPredictionOptionsMBS

54.11.1 class MLPredictionOptionsMBS

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: An object to hold options / controls / parameters of how model prediction is performed. Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

54.11.2 Methods

54.11.3 Constructor


54.11.4 Properties

54.11.5 Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The internal object reference. Notes: (Read and Write property)

54.11.6 usesCPUOnly as Boolean

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Set to true to force computation to be on the CPU only. Notes: (Read and Write property)
Chapter 55

CoreText

55.1 class CoreTextMBS

55.1.1 class CoreTextMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The central CoreText class. 
**Notes:** Some global methods, constants and events for CoreText.

55.1.2 Methods

55.1.3 AutoActivationSetting(BundleID as string) as Integer

**Notes:**

bundleID: The bundle identifier used to specify a particular application bundle. If "", the current application bundle is used. If kCTFontManagerBundleIdentifier is specified, sets global auto-activation. 
(Read and Write computed property)

55.1.4 AvailableFontFamilyNames as string()

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of visible font family names sorted for user interface display.
55.1.5 AvailableFontURLs as string()


55.1.6 AvailablePostScriptNames as string()


55.1.7 CompareFontFamilyNames(name1 as string, name2 as string) as Integer

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A comparator function to compare font family names and sort them according to Apple guidelines. **Notes:**

family1: The first localized font family name to compare, as a string.
family2: The second localized font family name to compare, as a string.

Returns a CFComparisonResult value indicating the sort order for the two family names. kCFComparisonResultGreaterThan (1) if family1 is greater than family2, kCFComparisonResultLessThan (-1) if family1 is less than family2, and kCFComparisonResultEqualTo (0) if they are equal.

This CFComparatorFunction function compares font family names and sorts them in the Apple preferred order, accounting for foundry prefix. Family names with recognized prefixes are sorted after the unprefixed names in prefix order.

55.1.8 Constructor


55.1.9 CoreTextVersion as Integer

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the version of the CoreText framework. **Notes:**

This function returns a number indicating the version of the CoreText framework. Note that framework
55.1. CLASS CORETEXTMBS

version is not always an accurate indicator of feature availability. The recommended way to use this function is first to check that the function pointer is non nil (plugin will do and raise exceptions), followed by calling it and comparing its result to a defined constant (or constants).

Returns the version number. This value is for comparison with the constants beginning with kCTVersion-Number.

55.1.10 CreateFontDescriptorFromData(data as memoryblock) as CTFontDescriptorMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns a font descriptor representing the font in the supplied data.

Notes:
Note: the font descriptor is not available through font descriptor matching.

data: A memoryblock containing font data.

Returns a font descriptor created from the data, or nil on error.

See also:
- 55.1.11 CreateFontDescriptorFromData(data as string) as CTFontDescriptorMBS

55.1.11 CreateFontDescriptorFromData(data as string) as CTFontDescriptorMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns a font descriptor representing the font in the supplied data.

Notes:
Note: the font descriptor is not available through font descriptor matching.

data: A string containing font data.

Returns a font descriptor created from the data, or nil on error.

See also:
- 55.1.10 CreateFontDescriptorFromData(data as memoryblock) as CTFontDescriptorMBS

55.1.12 CreateFontDescriptorsFromFile(file as folderitem) as CTFontDescriptorMBS()

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns an array of font descriptors representing each of the fonts in the specified file.
Example:

dim file as FolderItem = SpecialFolder.Desktop.Child("Didot.ttc")

dim descriptor() as CTFontDescriptorMBS
dim result() as string

descriptor = CoreTextMBS.CreateFontDescriptorsFromFile(file)

for i as Integer = 0 to descriptor.Ubound
result.append descriptor(i).DisplayName
next

MsgBox Join(result, EndOfLine)

Notes: file: A folderitem referencing a valid font file.

55.1.13 CreateFontDescriptorsFromURL(URL as string) as CTFontDescriptorMBS()

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns an array of font descriptors representing each of the fonts in the specified URL.
**Notes:** URL: A file system URL referencing a valid font file.

55.1.14 Destructor

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The destructor.

55.1.15 EnableFontDescriptors(descriptors() as CTFontDescriptorMBS, enable as boolean)

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Enables or disables the matching font descriptors for font descriptor matching.
**Notes:**
descriptors: Array of font descriptors.
enable: Boolean value indicating whether the fonts matching descriptors should be enabled for font descriptor matching.
55.1.16  GetScopeForFile(file as folderitem) as Integer

Notes: The registration scope of the specified file or kCTFontManagerScopeNone if not currently registered. Available in OS X v10.6 and later.

55.1.17  GetScopeForURL(URL as string) as Integer

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the registration scope of the specified URL.
Notes: The registration scope of the specified URL or kCTFontManagerScopeNone if not currently registered. Available in OS X v10.6 and later.

55.1.18  IsSupportedFontFile(file as folderitem) as boolean

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Determines whether the referenced font data is supported on the current platform.
Notes: Returns true if the folderitem refers to a valid font that can be used on the current platform; false otherwise.

55.1.19  IsSupportedFontURL(URL as string) as boolean

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Determines whether the referenced font data (usually by file URL) is supported on the current platform.
Notes: Returns true if the URL refers to a valid font that can be used on the current platform; false otherwise.

55.1.20  kCTBaselineClassAttributeName as string

Notes: Value must be one of the kCTBaselineClass constants. Normally, glyphs on the line will be assigned baseline classes according to the 'bsln' or 'BASE' table in the font. This attribute may be used to change this
assignment.

see also: kCTBaselineClassRoman, kCTBaselineClassIdeographicCentered, kCTBaselineClassIdeographicLow, kCTBaselineClassIdeographicHigh, kCTBaselineClassHanging, kCTBaselineClassMath.

55.1.21 kCTBaselineInfoAttributeName as string

Notes: Value must be a CFDictionaryRef. Normally, baseline offsets will be assigned based on the 'bsln' or 'BASE' table in the font. This attribute may be used to assign different offsets. Each key in the dictionary is one of the kCTBaselineClass constants and the value is a number of the baseline offset in points. You only need to specify the offsets you wish to change.

55.1.22 kCTBaselineReferenceInfoAttributeName as string

Notes: Value must be a Dictionary. All glyphs in a run are assigned a baseline class and then aligned to the offset for that class in the reference baseline baseline info. See the discussion of kCTBaselineInfoAttributeName for information about the contents of the dictionary. You can also use the kCTBaselineReferenceFont key to specify that the baseline offsets of a particular CTFontMBS should be used as the reference offsets.

55.1.23 kCTCharacterShapeAttributeName as string

Notes: Value must be a number. Default is value is 0 (disabled). A non-zero value is interpreted as an SFNT kCharacterShapeType selector + 1; see SFNTLayoutTypes.h for selectors. For example, an attribute value of 1 corresponds to kTraditionalCharactersSelector.

55.1.24 kCTFontAttributeName as string

Notes: Value must be a CTFontMBS. Default is Helvetica 12.
55.1.25  **kCTFontManagerBundleIdentifier** as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
CTFontManager bundle identifier.
**Notes:** The CTFontManager bundle identifier to be used with get or set global auto-activation settings.

55.1.26  **kCTFontManagerErrorDomain** as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
The error domain for CoreText.
**Notes:** CFError objects with this domain have error codes corresponding to one of the CTFontManager-
Error errors listed in "Font Registration Errors" and "Font Unregistration Errors."

55.1.27  **kCTFontManagerErrorFontURLsKey** as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
User info key to be used with CFError references returned from registration functions.
**Notes:** The value associated with this key in the user info dictionary of a CFError object is a CFArray of
font URLs that failed with the given error.

55.1.28  **kCTFontManagerRegisteredFontsChangedNotification** as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
Notification name for font registry changes.
**Notes:** This is the string to use as the notification name when subscribing to Core Text Font Manager
notifications. This notification is posted when fonts are added to the font registry. The client is responsible
for registered with the distributed notification center to receive notifications for changes to the session or
user scopes, and with a local notification center for changes to the process scope.

55.1.29  **kCTFontSlantTrait** as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
Dictionary key to access the slant trait value.
**Notes:** Use this key to access the normalized slant angle from the font traits dictionary. The value returned
is a number representing a float value between -1.0 and 1.0 for normalized slant angle. The value or 0.0 cor-
responds to 0 degree clockwise rotation from the vertical and 1.0 corresponds to 30 degrees clockwise rotation.
55.1.30  **kCTFontSymbolicTrait as string**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Dictionary key to access the symbolic traits value.  
**Notes:** Use this key to access the symbolic traits value from the font traits dictionary. The value is returned as a number.

55.1.31  **kCTFontWeightTrait as string**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Dictionary key to access the weight trait value.  
**Notes:** Use this key to access the normalized weight trait from the font traits dictionary. The value returned is a number representing a float value between -1.0 and 1.0 for normalized weight. The value of 0.0 corresponds to the regular or medium font weight.

55.1.32  **kCTFontWidthTrait as string**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Dictionary key to access the width (condense/expand) trait value.  
**Notes:** Use this key to access the normalized proportion trait from the font traits dictionary. This value corresponds to the relative inter-glyph spacing for a given font. The value returned is a number representing a float between -1.0 and 1.0. The value of 0.0 corresponds to regular glyph spacing while negative values represent condensed glyph spacing.

55.1.33  **kCTForegroundColorAttributeName as string**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The key for the foreground color.  
**Notes:** Value must be a CGColorMBS. Default value is black.

55.1.34  **kCTForegroundColorFromContextAttributeName as string**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for font attributes.  
**Notes:** Never set a foreground color in the CGContext; use what is set as the context’s fill color.  
Value must be a boolean. Default is false. The reason why this exists is because an NSAttributedString
defaults to a black color if no color attribute is set. This forces CoreText to set the color in the context. This will allow developers to sidestep this, making CoreText set nothing but font information in the CGContext. If set, this attribute also determines the color used by kCTUnderlineStyleAttributeName, in which case it overrides the foreground color.

55.1.35  kCTGlyphInfoAttributeName as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for font attributes.

**Notes:**
Allows the use of unencoded glyphs.
Value must be a CTGlyphInfoMBS. The glyph specified by this CTGlyphInfo object is assigned to the entire attribute range, provided that its contents match the specified base string and that the specified glyph is available in the font specified by kCTFontAttributeName.

55.1.36  kCTKernAttributeName as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for font attributes.

**Notes:**
A kerning adjustment.
Value must be a float. Default is standard kerning. The kerning attribute indicate how many points the following character should be shifted from its default offset as defined by the current character’s font in points; a positive kern indicates a shift farther along and a negative kern indicates a shift closer to the current character. If this attribute is not present, standard kerning will be used. If this attribute is set to 0.0, no kerning will be done at all.

55.1.37  kCTLanguageAttributeName as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for font attributes.

**Notes:**
Specifies text language.

Value must be a String containing a locale identifier. Default is unset. When this attribute is set to a valid identifier, it will be used to select localized glyphs (if supported by the font) and locale-specific line breaking rules.
55.1.38  kCTLigatureAttributeName as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for font attributes.
**Notes:**
Controls ligature formation.

Value must be a number. Default is int value 1. The ligature attribute determines what kinds of ligatures should be used when displaying the string. A value of 0 indicates that only ligatures essential for proper rendering of text should be used, 1 indicates that standard ligatures should be used, and 2 indicates that all available ligatures should be used. Which ligatures are standard depends on the script and possibly the font. Arabic text, for example, requires ligatures for many character sequences, but has a rich set of additional ligatures that combine characters. English text has no essential ligatures, and typically has only two standard ligatures, those for "fi" and "fl" – all others being considered more advanced or fancy.

On iOS releases prior to 6.0 essential ligatures are applied if the font contains glyphs for any of U+FB00 through U+FB04 and the font lacks AAT or OpenType shaping tables, but as of 6.0 shaping tables (or the lack thereof) are treated as definitive. This character-based shaping will still be performed if this attribute is explicitly specified with the default value of 1.

55.1.39  kCTParagraphStyleAttributeName as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for font attributes.
**Notes:**
A CTParagraphStyle object which is used to specify things like line alignment, tab rulers, writing direction, etc.
Value must be a CTParagraphStyleMBS. Default is an empty CTParagraphStyle object.

55.1.40  kCTRunDelegateAttributeName as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for font attributes.
**Notes:**
Allows customization of certain aspects of a range of text’s appearance.

Value must be a CTRunDelegateMBS. The values returned by the embedded object for an attribute range apply to each glyph resulting from the text in that range. Because an embedded object is only a display-time modification, care should be taken to avoid applying this attribute to a range of text with complex behavior, such as a change of writing direction, combining marks, etc. Consequently, it is recommended that this
attribute be applied to a range containing the single character U+FFFC.

55.1.41  kCTStrokeColorAttributeName as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for font attributes.
**Notes:**
The stroke color.
Value must be a CGColorMBS. Default is the foreground color.

55.1.42  kCTStrokeWidthAttributeName as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for font attributes.
**Notes:**
The stroke width.
Value must be a number. Default value is 0.0, or no stroke. This attribute, interpreted as a percentage of
font point size, controls the text drawing mode: positive values effect drawing with stroke only; negative
values are for stroke and fill. A typical value for outlined text is 3.0.

55.1.43  kCTSuperscriptAttributeName as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for font attributes.
**Notes:**
Controls vertical text positioning.
Value must be a number. Default is int value 0. If supported by the specified font, a value of 1 enables
superscripting and a value of -1 enables subscripting.

55.1.44  kCTUnderlineColorAttributeName as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for font attributes.
**Notes:**
The underline color.
Value must be a CGColorMBS. Default is the foreground color.
55.1.45  kCTUnderlineStyleAttributeName as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for font attributes.

**Notes:**
Allows the setting of an underline to be applied at render time.

Value must be a number. Default is kCTUnderlineStyleNone. Set a value of something other than kCTUnderlineStyleNone to draw an underline. In addition, the CTUnderlineStyleModifiers can be used to modify the look of the underline. The underline color will be determined by the text’s foreground color.

55.1.46  kCTVerticalFormsAttributeName as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for font attributes.

**Notes:**
Controls glyph orientation.

Value must be a boolean. Default is false. A value of false indicates that horizontal glyph forms are to be used, true indicates that vertical glyph forms are to be used.

55.1.47  kCTWritingDirectionAttributeName as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for font attributes.

**Notes:**
Specifies a bidirectional override or embedding.

Value must be a CFArray of CFNumberRefs, each of which should have a value of either kCTWritingDirectionLeftToRight or kCTWritingDirectionRightToLeft, plus one of kCTWritingDirectionEmbedding or kCTWritingDirectionOverride. This array represents a sequence of nested bidirectional embeddings or overrides, in order from outermost to innermost, with (kCTWritingDirectionLeftToRight | kCTTextWritingDirectionEmbedding) corresponding to a LRE/PDF pair in plain text or `<span dir=”ltr”></span>` in HTML, (kCTWritingDirectionRightToLeft | kCTTextWritingDirectionEmbedding) corresponding to a RLE/PDF pair in plain text or a `<span dir=”rtl”></span>` in HTML, (kCTWritingDirectionLeftToRight | kCTTextWritingDirectionOverride) corresponding to a LRO/PDF pair in plain text or `<bdo dir=”ltr”></bdo>` in HTML, and (kCTWritingDirectionRightToLeft | kCTTextWritingDirectionOverride) corresponding to a RLO/PDF pair in plain text or `<bdo dir=”rtl”></bdo>` in HTML.
55.1.48 MatchFontDescriptorsWithProgressHandler(descriptors() as CTFontDescriptorMBS, mandatoryAttributes() as string, tag as Variant = nil) as boolean


**Notes:**
This function returns immediately, but can potentially take long time to process. The progress is notified via progress event.

descriptors: An array of descriptors to process.
mandatoryAttributes: some mandatory attributes.
Returns false if it couldn’t start the work.

55.1.49 RegisterFontsForFile(file as folderitem, scope as Integer, byref error as CFErrorMBS) as boolean

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Registers fonts from the specified font URL with the Font Manager. Registered fonts are discoverable through font descriptor matching.

**Notes:**
fontURL: The font URL.
scope: Scope constant defining the availability and lifetime of the registration. See ”Font Registration Scope” for values to pass for this parameter.
error: a CFError object which, in case of failed registration, contains error information.

Returns true if registration of the fonts was successful, otherwise false.

55.1.50 RegisterFontsForFiles(files() as folderitem, scope as Integer, errors() as CFErrorMBS) as boolean

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Registers fonts from the specified array of font URLs with the Font Manager. Registered fonts are discoverable through font descriptor matching.

**Notes:**
files: Array of font files.
scope: Scope constant defining the availability and lifetime of the registration. See ”Font Registration Scope” for values to pass for this parameter.
errors: An array of CFError objects which, in case of failed registration, contain error information. Each error contains a CFArray of font URLs corresponding to kCTFontManagerErrorFontURLsKey. These URLs represent the font files that caused the error and were not successfully registered. The array must be released
by the caller. Can be nil.

Returns true if registration of all font URLs was successful, otherwise false.

### 55.1.51 RegisterFontsForURL(URL as string, scope as Integer, byref error as CFErrorMBS) as boolean

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Registers fonts from the specified font URL with the Font Manager. Registered fonts are discoverable through font descriptor matching.

**Notes:**
- fontURL: The font URL.
- scope: Scope constant defining the availability and lifetime of the registration. See "Font Registration Scope" for values to pass for this parameter.
- error: a CFError object which, in case of failed registration, contains error information.

Returns true if registration of the fonts was successful, otherwise false.
See also:
- 55.1.52 RegisterFontsForURL(URLs() as string, scope as Integer, errors() as CFErrorMBS) as boolean

### 55.1.52 RegisterFontsForURL(URLs() as string, scope as Integer, errors() as CFErrorMBS) as boolean

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Registers fonts from the specified array of font URLs with the Font Manager. Registered fonts are discoverable through font descriptor matching.

**Notes:**
- URLs: Array of font URLs.
- scope: Scope constant defining the availability and lifetime of the registration. See "Font Registration Scope" for values to pass for this parameter.
- errors: Array of CFError objects which, in case of failed registration, contain error information. Each error contains a CFArray of font URLs corresponding to `kCTFontManagerErrorFontURlsKey`. These URLs represent the font files that caused the error and were not successfully registered. The array must be released by the caller. Can be nil.

Returns true if registration of all font URLs was successful, otherwise false.
See also:
- 55.1.51 RegisterFontsForURL(URL as string, scope as Integer, byref error as CFErrorMBS) as boolean
### 55.1.53 RegisterGraphicsFont

**Function:**

Registers the specified graphics font with the font manager.

**Notes:**

- **font:** The graphics font to be registered.
- **error:** Returns by indirection an error object in the case of failed registration.

Returns true if registration of the font was successful, otherwise false.

Registered fonts are discoverable through font descriptor matching. Any attempt to register a font that is either already registered or contains the same Postscript of an already registered font will fail. This behavior is useful for fonts that may be embedded in documents or constructed in memory. A graphics font is obtained by calling `CGFontMBS.CreateWithDataProvider`. Fonts that are backed by files should be registered using `CoreTextMBS.RegisterFontsForURL`.

### 55.1.54 UnregisterFontsForFile

**Function:**

Unregisters fonts from the specified font URL with the Font Manager. Unregistered fonts are no longer discoverable through font descriptor matching.

**Notes:**

- **URL:** The font URL.
- **scope:** Scope constant defining the availability and lifetime of the registration. See "Font Registration Scope" for values to pass for this parameter.
- **error:** A CFError object which, in case of failed registration, contains error information.

Returns true if unregistration of the fonts was successful, otherwise false.

### 55.1.55 UnregisterFontsForFiles

**Function:**

Unregisters fonts from the specified array of font URLs with the Font Manager. Unregistered fonts are no longer discoverable through font descriptor matching.

**Notes:**

- **files:** Array of font folderitems.
- **scope:** Scope constant defining the availability and lifetime of the registration. See "Font Registration Scope"
for values to pass for this parameter.

errors: An array of CFError objects which, in case of failed registration, contain error information. Each error contains a CFArray of font URLs corresponding to kCTFontManagerErrorFontURLsKey. These URLs represent the font files that caused the error and were not successfully registered. The array must be released by the caller.

Returns true if unregistration of all font URLs was successful, otherwise false.

### 55.1.56 UnregisterFontsForURL(URL as string, scope as Integer, byref error as CFErrorMBS) as boolean

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Unregisters fonts from the specified font URL with the Font Manager. Unregistered fonts are no longer discoverable through font descriptor matching.

**Notes:**

URL: The font URL.
scope: Scope constant defining the availability and lifetime of the registration. See "Font Registration Scope" for values to pass for this parameter.
error: A CFError object which, in case of failed registration, contains error information.

Returns true if unregistration of the fonts was successful, otherwise false.

### 55.1.57 UnregisterFontsForURLs(URLs() as string, scope as Integer, errors() as CFErrorMBS) as boolean

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Unregisters fonts from the specified array of font URLs with the Font Manager. Unregistered fonts are no longer discoverable through font descriptor matching.

**Notes:**

URLs: Array of font URLs.
scope: Scope constant defining the availability and lifetime of the registration. See "Font Registration Scope" for values to pass for this parameter.
errors: An array of CFError objects which, in case of failed registration, contain error information. Each error contains a CFArray of font URLs corresponding to kCTFontManagerErrorFontURLsKey. These URLs represent the font files that caused the error and were not successfully registered. The array must be released by the caller.

Returns true if unregistration of all font URLs was successful, otherwise false.
55.1.58 UnregisterGraphicsFont(font as CGFontMBS, byref error as CFErrorMBS) as boolean

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Unregisters the specified graphics font with the font manager.

**Notes:**
- font: The graphics font to be unregistered.
- error: Returns by indirection an error object in the case of failed unregistration.

Returns true if unregistration of the font was successful, otherwise false.

Unregistered fonts are no longer discoverable through font descriptor matching. Fonts that are backed by files should be unregistered using CTFontManagerUnregisterFontsForURL.

55.1.59 Events

55.1.60 FontCollectionSortDescriptors(first as CTFontDescriptorMBS, second as CTFontDescriptorMBS, tag as Variant) as Integer

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The event to sort font descriptors.

**Notes:**
- This callback can be specified to obtain the matching font descriptors of a collection in sorted order. Return the appropriate comparison result of first descriptor to second descriptor.

Return -1 if smaller, 0 if equal or 1 if bigger.

55.1.61 Progress(state as Integer, progressParameter as Dictionary, tag as Variant) as boolean

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Progress was made for a call to MatchFontDescriptorsWithProgressHandler.

**Notes:**
- Return true to continue, and return false to cancel the process.
55.1.62 Constants

55.1.63 kCTFontClassClarendonSerifs = & H040000000

MBS MacCG Plugin, Plugin Version: 14.2. Function: One of the font class constants.
Notes: Clarendon Serifs

55.1.64 kCTFontClassFreeformSerifs = & H070000000

MBS MacCG Plugin, Plugin Version: 14.2. Function: One of the font class constants.
Notes: Freeform Serifs

55.1.65 kCTFontClassMaskShift = 28

MBS MacCG Plugin, Plugin Version: 14.2. Function: One of the font class constants.
Notes: The font class shift.
This is used to shift the font class to the upper most 4 bits of the symbolic traits.

55.1.66 kCTFontClassModernSerifs = & H030000000

MBS MacCG Plugin, Plugin Version: 14.2. Function: One of the font class constants.
Notes: Modern Serifs

55.1.67 kCTFontClassOldStyleSerifs = & H010000000

MBS MacCG Plugin, Plugin Version: 14.2. Function: One of the font class constants.
Notes: OldStyleSerifs

55.1.68 kCTFontClassOrnamentals = & H090000000

MBS MacCG Plugin, Plugin Version: 14.2. Function: One of the font class constants.
Notes: Ornamentals
55.1.69  kCTFontClassSansSerif = & H080000000

MBS MacCG Plugin, Plugin Version: 14.2. Function: One of the font class constants. Notes: Sans Serif

55.1.70  kCTFontClassScripts = & H0A0000000

MBS MacCG Plugin, Plugin Version: 14.2. Function: One of the font class constants. Notes: Scripts

55.1.71  kCTFontClassSlabSerifs = & H050000000

MBS MacCG Plugin, Plugin Version: 14.2. Function: One of the font class constants. Notes: Slab Serifs

55.1.72  kCTFontClassSymbolic = & H0C0000000

MBS MacCG Plugin, Plugin Version: 14.2. Function: One of the font class constants. Notes: Symbolic

55.1.73  kCTFontClassTransitionalSerifs = & H020000000

MBS MacCG Plugin, Plugin Version: 14.2. Function: One of the font class constants. Notes: Transitional Serifs

55.1.74  kCTFontClassUnknown = & H000000000

MBS MacCG Plugin, Plugin Version: 14.2. Function: One of the font class constants. Notes: Unknown

55.1.75  kCTFontManagerAutoActivationDefault = 0

MBS MacCG Plugin, Plugin Version: 14.2. Function: One of the auto-activation constants. Notes: Default auto-activation setting. When specified, the application uses the global setting.
55.1.76  kCTFontManagerAutoActivationDisabled = 1


55.1.77  kCTFontManagerAutoActivationEnabled = 2


55.1.78  kCTFontManagerAutoActivationPromptUser = 3

MBS MacCG Plugin, Plugin Version: 14.2. Function: One of the auto-activation constants. Notes: Requires user input for auto-activation. A dialog is presented to the user to confirm auto-activation of the font.

55.1.79  kCTFontManagerErrorAlreadyRegistered = 105

MBS MacCG Plugin, Plugin Version: 14.2. Function: One of the activation errors. Notes: The file has already been registered in the specified scope.

55.1.80  kCTFontManagerErrorFileNotFound = 101

MBS MacCG Plugin, Plugin Version: 14.2. Function: One of the activation errors. Notes: The file does not exist at the specified URL.

55.1.81  kCTFontManagerErrorInsufficientPermissions = 102

MBS MacCG Plugin, Plugin Version: 14.2. Function: One of the activation errors. Notes: Cannot access the file due to insufficient permissions.

55.1.82  kCTFontManagerErrorInUse = 202

MBS MacCG Plugin, Plugin Version: 14.2. Function: One of the errors that would prevent unregistration of fonts for a specified font file URL.
55.1.83 kCTFontManagerErrorInvalidFontData = 104

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the activation errors.  
**Notes:** The file contains invalid font data that could cause system problems.

55.1.84 kCTFontManagerErrorNotRegistered = 201

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the errors that would prevent unregistration of fonts for a specified font file URL.  
**Notes:** The file is not registered in the specified scope.

55.1.85 kCTFontManagerErrorSystemRequired = 202

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the errors that would prevent unregistration of fonts for a specified font file URL.  
**Notes:** The file is required by the system and cannot be unregistered.

55.1.86 kCTFontManagerErrorUnrecognizedFormat = 103

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the activation errors.  
**Notes:** The file is not a recognized or supported font file format.

55.1.87 kCTFontManagerScopeNone = 0

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants for font registration scope.  
**Notes:** No scope is defined.

55.1.88 kCTFontManagerScopeProcess = 1

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants for font registration scope.  
**Notes:** The font is available to the current process for the duration of the process unless directly unregistered.
55.1.89  kCTFontManagerScopeSession = 3

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants for font registration scope.  
**Notes:** The font is available to the current user session but will not be available in subsequent sessions.

55.1.90  kCTFontManagerScopeUser = 2

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants for font registration scope.  
**Notes:** The font is available to all processes for the current user session and will be available in subsequent sessions unless unregistered.

55.1.91  kCTFontTraitBold = 2

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants for Symbolic representation of stylistic font attributes.  
**Notes:**

Bold.  
Additional detail available via kCTFontWeightTrait

55.1.92  kCTFontTraitClassMask = 4026531840

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants for Symbolic representation of stylistic font attributes.  
**Notes:** Mask for the font class

55.1.93  kCTFontTraitColorGlyphs = 8192

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants for Symbolic representation of stylistic font attributes.  
**Notes:** Color bitmap glyphs are available.

55.1.94  kCTFontTraitComposite = 16384

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants for Symbolic representation of stylistic font attributes.  
**Notes:**
Composite
The font is a CFR (Composite font reference), a cascade list is expected per font.

55.1.95 kCTFontTraitCondensed = 64

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants for Symbolic representation of stylistic font attributes.

**Notes:**
Condensed
Additional detail available via kCTFontWidthTrait

55.1.96 kCTFontTraitExpanded = 32

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants for Symbolic representation of stylistic font attributes.

**Notes:**
Expanded
Expanded and condensed traits are mutually exclusive

55.1.97 kCTFontTraitItalic = 1

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants for Symbolic representation of stylistic font attributes.

**Notes:**
Italic
Additional detail available via kCTFontSlantTrait

55.1.98 kCTFontTraitMonoSpace = 1024

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants for Symbolic representation of stylistic font attributes.

**Notes:**
MonoSpace
Use fixed-pitch glyphs if available. May have multiple glyph advances (most CJK glyphs may contain two spaces)
55.1.99  kCTFontTraitUIOptimized = 4096

MBS MacCG Plugin, Plugin Version: 14.2.  **Function:** One of the constants for Symbolic representation of stylistic font attributes.
**Notes:**
UI optimized
Synthesize appropriate attributes for UI rendering such as control titles if necessary

55.1.100  kCTFontTraitVertical = 2048

MBS MacCG Plugin, Plugin Version: 14.2.  **Function:** One of the constants for Symbolic representation of stylistic font attributes.
**Notes:**
Vertical
Use vertical glyph variants and metrics.

55.1.101  kCTUnderlinePatternDash = & h0200

MBS MacCG Plugin, Plugin Version: 14.2.  **Function:** One of the underline pattern.
**Notes:** Dash

55.1.102  kCTUnderlinePatternDashDot = & h0300

MBS MacCG Plugin, Plugin Version: 14.2.  **Function:** One of the underline pattern.
**Notes:** Dash Dot

55.1.103  kCTUnderlinePatternDashDotDot = & h0400

MBS MacCG Plugin, Plugin Version: 14.2.  **Function:** One of the underline pattern.
**Notes:** Dash Dot Dot

55.1.104  kCTUnderlinePatternDot = & h0100

MBS MacCG Plugin, Plugin Version: 14.2.  **Function:** One of the underline pattern.
**Notes:** Dot
55.1. CLASS CORETEXTMBS

55.1.105 kCTUnderlinePatternSolid = &h0000

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the underline pattern.  
**Notes:** Solid

55.1.106 kCTUnderlineStyleDouble = 9

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the underline type specifiers.  
**Notes:** Double underlined.

55.1.107 kCTUnderlineStyleNone = 0

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the underline type specifiers.  
**Notes:** Not underlined.

55.1.108 kCTUnderlineStyleSingle = 1

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the underline type specifiers.  
**Notes:** Single underlined.

55.1.109 kCTUnderlineStyleThick = 2

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the underline type specifiers.  
**Notes:** Thick underlined.

55.1.110 kCTVersionNumber10.5 = &h00020000

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the version constants.  
**Notes:** Mac OS X 10.5

55.1.111 kCTVersionNumber10.5.2 = &h00020001

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the version constants.  
**Notes:** Mac OS X 10.5.2
55.1.112  kCTVersionNumber10_5.3 = & h00020002

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the version constants.  
**Notes:** Mac OS X 10.5.3

55.1.113  kCTVersionNumber10_5.5 = & h00020003

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the version constants.  
**Notes:** Mac OS X 10.5.5

55.1.114  kCTVersionNumber10_6 = & h00030000

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the version constants.  
**Notes:** Mac OS X 10.6

55.1.115  kCTVersionNumber10_7 = & h00040000

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the version constants.  
**Notes:** Mac OS X 10.7

55.1.116  kCTVersionNumber10_8 = & h00050000

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the version constants.  
**Notes:** Mac OS X 10.8

55.1.117  kCTVersionNumber10_9 = & h00060000

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the version constants.  
**Notes:** Mac OS X 10.9

55.1.118  kCTWritingDirectionEmbedding = 0

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the values for kCTWritingDirectionAttributeName attribute.
55.1. CLASS CORETEXTMBS

55.1.119 kCTWritingDirectionOverride = 1

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the values for kCTWritingDirectionAttribute-Name attribute.
55.2 class CTFontCollectionMBS

55.2.1 class CTFontCollectionMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The CTFontCollection opaque type represents a font collection, that is, a group of font descriptors taken together as a single object.

**Notes:**
Font collections provide the capabilities of font enumeration, access to global and custom font collections, and access to the font descriptors comprising the collection.
Subclass of the CFObjectMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

55.2.2 Methods

55.2.3 Available as boolean

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this class is available.

**Notes:** Returns true in OS X v10.5 and later.

55.2.4 Constructor


55.2.5 CopyWithFontDescriptors(queryDescriptors() as CTFontDescriptorMBS, options as dictionary) as CTFontCollectionMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a copy of the original collection augmented with the given new font descriptors.

**Notes:**
queryDescriptors: An array of font descriptors to augment those of the original collection.
options: The options dictionary.

Returns a copy of the original font collection augmented by the new font descriptors and options.

The new font descriptors are merged with the existing descriptors to create a single set.
55.2. CLASS CTFONTCOLLECTIONMBS

Available in OS X v10.5 and later.

55.2.6 CreateCopyWithFontDescriptors(original as CTFontCollectionMBS, query-Descriptors() as CTFontDescriptorMBS, options as dictionary) as CT-FontCollectionMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a copy of the original collection augmented with the given new font descriptors.

**Notes:**

queryDescriptors: An array of font descriptors to augment those of the original collection.
options: The options dictionary.

Returns a copy of the original font collection augmented by the new font descriptors and options.

The new font descriptors are merged with the existing descriptors to create a single set.
Available in OS X v10.5 and later.

55.2.7 CreateFromAvailableFonts(options as Dictionary) as CTFontCollection-


**Notes:**
options: The options dictionary.

Returns a new collection containing all fonts available to the current application.

55.2.8 CreateWithFontDescriptors(queryDescriptors() as CTFontDescriptorMBS, options as dictionary) as CTFontCollectionMBS


**Notes:**

An array of font descriptors to use for matching.
options: The options dictionary. See constant option keys.

Returns this function creates a new collection based on the provided font descriptors. The contents of this
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collection is defined by matching the provided descriptors against all available font descriptors.

### 55.2.9 ExclusionDescriptors as CTFontDescriptorMBS()

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the array of descriptors to exclude from the match.

### 55.2.10 FontAttribute(attributeName as string, options as Integer) as Dictionary()

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns an array of font descriptor attribute values.

**Notes:**
- attributeName: The attribute to retrieve for each descriptor in the collection.
- options: Options to alter the return value.

This function returns a retained reference to an array, or nil on error. The caller is responsible for releasing the array. The array contains one value for each descriptor, in the same order as the results from CreateMatchingDescriptors. When the kCTFontCollectionCopyUnique is set, duplicate values will be removed. When kCTFontCollectionCopyStandardSort is set, the values will be sorted in standard UI order.

See also:

- 55.2.11 FontAttribute(attributeNames() as string, options as Integer) as Dictionary()

### 55.2.11 FontAttribute(attributeNames() as string, options as Integer) as Dictionary()

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns an array of dictionaries containing font descriptor attribute values.

**Notes:**
This function returns a retained reference to a array, or nil on error. The caller is responsible for releasing the array. The array contains one value for each descriptor, in the same order as the results from CreateMatchingDescriptors. When the kCTFontCollectionCopyUnique is set, duplicate values will be removed. When kCTFontCollectionCopyStandardSort is set, the values will be sorted in standard UI order.

See also:

- 55.2.10 FontAttribute(attributeName as string, options as Integer) as Dictionary()
55.2.12  **kCTFontCollectionDisallowAutoActivationOption as string**


**Notes:**
Option key to avoid auto-activating fonts.
Specify this option key in the options dictionary with a non-zero value to disallow searches for missing fonts (font descriptors returning no results).

55.2.13  **kCTFontCollectionIncludeDisabledFontsOption as string**


**Notes:** Specify this option key in the options dictionary with a non-zero value to enable matching of disabled fonts. You can pass font descriptors specifying disabled fonts to CTFontManagerEnableFontDescriptors, but you cannot use such a font descriptor to query font attributes from the system database or create a CTFontMBS.

55.2.14  **kCTFontCollectionRemoveDuplicatesOption as string**


**Notes:** Option key to specify filtering of duplicates.

55.2.15  **MatchingFontDescriptors(options as dictionary = nil) as CTFontDescriptorMBS()**


55.2.16  **MatchingFontDescriptorsForFamily(familyName as string, options as dictionary = nil) as CTFontDescriptorMBS()**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of font descriptors matching the specified family, one descriptor for each style in the collection.
55.2.17 MatchingFontDescriptorsSorted(tag as Variant) as CTFontDescriptorMBS()

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the array of matching font descriptors sorted with the callback function.

**Notes:**
This function returns an array of font descriptors matching the criteria of the collection and sorted by the results of the sorting callback function.

Calls FontCollectionSortDescriptors in CoreTextMBS class.

55.2.18 MutableCopy as CTMutableFontCollectionMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a mutable copy of the original collection.

55.2.19 QueryDescriptors as CTFontDescriptorMBS()

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the array of descriptors to match.

55.2.20 Constants

55.2.21 kCTFontCollectionCopyDefaultOptions = 0

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the Bulk attribute access.
**Notes:**
Passing this option indicates that defaults are to be used.
Available in OS X v10.7 and later.

55.2.22 kCTFontCollectionCopyStandardSort = 2

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the Bulk attribute access.
**Notes:**
Passing this option indicates that the return values should be sorted in standard UI order, suitable for display to the user. This is the same sorting behavior used by NSFontPanel and Font Book.
Available in OS X v10.7 and later.
55.2. CLASS CTFONTCOLLECTIONMBS

55.2.23 kCTFontCollectionCopyUnique = 1

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the Bulk attribute access.
**Notes:**
Passing this option indicates that duplicate values should be removed from the results. Available in OS X v10.7 and later.
55.3 class CTFontDescriptorMBS

55.3.1 class CTFontDescriptorMBS

The CTFontDescriptor opaque type represents a font descriptor, that is, a dictionary of attributes (such as name, point size, and variation) that can completely specify a font.

Notes:
A font descriptor can be an incomplete specification, in which case the system chooses the most appropriate font to match the given attributes.
Subclass of the CFObjectMBS class.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

55.3.2 Methods

55.3.3 AttributeValue(key as string) as Variant

Returns the value associated with an arbitrary attribute.

key: The requested attribute.

Returns a attribute value, or nil if the requested attribute is not present.

55.3.4 AttributeValues as Dictionary

Returns the attributes dictionary of the font descriptor.

Notes: The font descriptor attributes dictionary. This dictionary contains the minimum number of attributes to specify fully this particular font descriptor.

55.3.5 Available as boolean

Whether this class is available.

Notes: Returns true in OS X v10.5 and later.
55.3.6 Constructor

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The private constructor.

55.3.7 CopyWithAttributes(attributeValues as Dictionary) as CTFontDescriptorMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a copy of the original font descriptor with new attributes.

**Notes:**

attributes: A dictionary containing arbitrary attributes.

Returns a new copy of the original font descriptor with attributes augmented by those specified. If there are
conflicts between attributes, the new attributes replace existing ones.

55.3.8 CopyWithFamily(family as String) as CTFontDescriptorMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a new font descriptor in the specified family based on the traits of the original descriptor.

**Notes:**

family: The name of the desired family.

Returns a new font reference with the original traits in the given family, or nil if none found in the system.

55.3.9 CopyWithFeature(featureTypeIdentifier as Integer, featureSelectorIdentifier as Integer) as CTFontDescriptorMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Copies a font descriptor with new feature settings.

**Notes:**

featureTypeIdentifier: The feature type identifier.
featureSelectorIdentifier: The feature selector identifier.

Returns a copy of the original font descriptor modified with the given feature settings.
This is a convenience method to toggle more easily the state of individual features.
55.3.10 CopyWithSymbolicTraits(symTraitValue as Integer, symTraitMask as Integer) as CTFontDescriptorMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a new font descriptor based on the original descriptor having the specified symbolic traits.

**Notes:**
symTraitValue: The value of the symbolic traits. This bitfield is used to indicate the desired value for the traits specified by the symTraitMask parameter. Used in conjunction, they can allow for trait removal as well as addition.
symTraitMask: The mask bits of the symbolic traits. This bitfield is used to indicate the traits that should be changed.

Returns a new font descriptor reference in the same family with the given symbolic traits, or nil if none found in the system.

55.3.11 CopyWithVariation(variationIdentifier as Integer, variationValue as Double) as CTFontDescriptorMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a copy of the original font descriptor with a new variation instance.

**Notes:**
variationIdentifier: The variation axis identifier. This is the four-character code of the variation axis as a number.
variationValue: The value corresponding with the variation instance.

Returns a copy of the original font descriptor with a new variation instance. This is a convenience method for easily creating new variation font instances.

55.3.12 CreateCopyWithFamily(orignal as CTFontDescriptorMBS, family as String) as CTFontDescriptorMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a new font descriptor in the specified family based on the traits of the original descriptor.

**Notes:**
original: The original font descriptor reference.
family: The name of the desired family.

Returns a new font reference with the original traits in the given family, or nil if none found in the system.
55.3.13  CreateCopyWithSymbolicTraits(original as CTFontDescriptorMBS, symTraitValue as Integer, symTraitMask as Integer) as CTFontDescriptorMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a new font descriptor based on the original descriptor having the specified symbolic traits. **Example:**

```swift
// find PostScript names for a font
cnst nameOfAFont = "Arial"

dim FontName as string
dim FontFamilyName as string
dim FontPostscriptName as string
dim FontPostscriptNameBold as string
dim FontPostscriptNameItalic as string

dim f as CTFontMBS = CTFontMBS.CreateWithName(nameOfAFont, 13)
if f <> nil then
    FontName = f.FullName
    FontFamilyName = f.FamilyName
    FontPostscriptName = f.PostScriptName
    dim d as CTFontDescriptorMBS = f.FontDescriptor
    dim db as CTFontDescriptorMBS = CTFontDescriptorMBS.CreateCopyWithSymbolicTraits(d, CoreTextMBS.kCTFontTraitBold, CoreTextMBS.kCTFontTraitBold)
    dim di as CTFontDescriptorMBS = CTFontDescriptorMBS.CreateCopyWithSymbolicTraits(d, CoreTextMBS.kCTFontTraitItalic, CoreTextMBS.kCTFontTraitItalic)
    dim fb as CTFontMBS = f.CreateCopyWithAttributes(f.Size, nil, db)
    dim fi as CTFontMBS = f.CreateCopyWithAttributes(f.Size, nil, di)

    FontPostscriptNameBold = fb.PostScriptName
    FontPostscriptNameItalic = fi.PostScriptName
end if

Break // read names in debugger
```

**Notes:**

original: The original font descriptor reference.
symTraitValue: The value of the symbolic traits. This bitfield is used to indicate the desired value for the traits specified by the symTraitMask parameter. Used in conjunction, they can allow for trait removal as well as addition.
symTraitMask: The mask bits of the symbolic traits. This bitfield is used to indicate the traits that should be changed.

Returns a new font descriptor reference in the same family with the given symbolic traits, or nil if none found in the system.

Requires Mac OS X 10.9 or newer.

### 55.3.14 CreateWithAttributes(attributeValues as Dictionary) as CTFontDescriptorMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new font descriptor reference from a dictionary of attributes. **Notes:** The provided attribute dictionary can contain arbitrary attributes that are preserved; however, unrecognized attributes are ignored on font creation and may not be preserved over the round trip from descriptor to font and back to descriptor.

### 55.3.15 CreateWithNameAndSize(Name as string, Size as Double = 0.0) as CTFontDescriptorMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new font descriptor with the provided PostScript name and size. **Example:**

```no
dim c as CTFontDescriptorMBS = CTFontDescriptorMBS.CreateWithNameAndSize(“Times”, 12)
MsgBox c.AttributeValue(c.kCTFontFamilyNameAttribute)
```

**Notes:**

name: The PostScript name to be used for the font descriptor as a string.
size: The point size. If 0.0, the font size attribute (kCTFontSizeAttribute) is omitted from the returned font descriptor.

Return a new font descriptor reference with the given PostScript name and point size.

### 55.3.16 kCTFontBaselineAdjustAttribute as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants keys for accessing font attributes from a font descriptor.
55.3. **CLASS CTFONTDESCRIPTORMBS**

**Notes:** Key to specify or obtain the baseline adjustment for a font reference. This is primarily used when defining font descriptors for a cascade list to keep the baseline of all fonts even. The value associated with this is a float represented as a number.

55.3.17 kCTFontCascadeListAttribute as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants keys for accessing font attributes from a font descriptor. **Notes:** Key to specify or obtain the cascade list used for a font reference. The cascade list is a array containing CTFontDescriptorMBS elements. If unspecified, the global cascade list is used.

55.3.18 kCTFontCharacterSetAttribute as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants keys for accessing font attributes from a font descriptor. **Notes:** Key to specify or obtain the Unicode character coverage set for a font reference. The value for this key is a CharSetMBS object. If specified, this attribute can be used to restrict the font to a subset of its actual character set. If unspecified, this attribute is ignored and the actual character set is used.

55.3.19 kCTFontDescriptorMatchingCurrentAssetSize as string


55.3.20 kCTFontDescriptorMatchingDescriptors as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for progressParameter dictionary. **Notes:** Array of descriptors to be queried. Valid while downloading or when state is kCTFontDescriptorMatchingWillBeginQuerying.

55.3.21 kCTFontDescriptorMatchingError as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for progressParameter dictionary.
Notes: A CFErrorMBS; Valid when state kCTFontDescriptorMatchingDidFailWithError.

55.3.22 kCTFontDescriptorMatchingPercentage as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for progressParameter dictionary.
**Notes:** A Number; Download progress in 0 - 100. Valid during Downloading state.

55.3.23 kCTFontDescriptorMatchingResult as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for progressParameter dictionary.
**Notes:**
Array of matched font descriptors.
Valid when state is kCTFontDescriptorMatchingDidMatch or CTFontDescriptorMatchingEnd.

55.3.24 kCTFontDescriptorMatchingSourceDescriptor as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for progressParameter dictionary.
**Notes:**
A CTFontDescriptorMBS; The current font descriptor.
Valid when state is kCTFontDescriptorMatchingDidMatch.

55.3.25 kCTFontDescriptorMatchingTotalAssetSize as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for progressParameter dictionary.
**Notes:**
A Number; Total byte size to download.
Always valid, but may be Zero when information is not available.

55.3.26 kCTFontDescriptorMatchingTotalDownloadedSize as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for progressParameter dictionary.
Notes: A Number; Total downloaded byte size. Valid during Downloading state.

55.3.27 kCTFontDisplayNameAttribute as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants keys for accessing font attributes from a font descriptor. Notes: Key for accessing the name used to display the font. Most commonly this is the full name. The value associated with this key is a string. If the value is unspecified, it defaults to Helvetica, and if that font is unavailable, it falls back to the global font cascade list.

55.3.28 kCTFontDownloadableAttribute as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants keys for accessing font attributes from a font descriptor. Notes: The font downloadable state. The value associated with this key is a Boolean. If it is true, CoreText attempts to download a font if necessary when matching a descriptor.

55.3.29 kCTFontEnabledAttribute as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants keys for accessing font attributes from a font descriptor. Notes: Key to obtain the font enabled state. The returned value is an integer represented as a number representing a Boolean value. Unregistered font descriptors return nil, which is equivalent to false. Available in OS X v10.6 and later.

55.3.30 kCTFontFamilyNameAttribute as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants keys for accessing font attributes from a font descriptor. Notes: Key for accessing the font family name from the font descriptor. The value associated with this key is a string.
55.3.31  kCTFontFeaturesAttribute as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the constants keys for accessing font attributes from a font descriptor.
**Notes:**
Key to specify or obtain the font features for a font reference. The value associated with this key is an array containing font feature dictionaries. This feature list contains the feature information from the 'feat' table of the font. For more information, see Features.
Available in OS X v10.5 and later.

55.3.32  kCTFontFeatureSettingsAttribute as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the constants keys for accessing font attributes from a font descriptor.
**Notes:**
Key to specify or obtain the font features settings for a font reference. The value associated with this key is a CFArrayRef object containing font feature-setting dictionaries. A feature-setting dictionary contains a tuple of a kCTFontFeatureTypeIdentifierKey key-value pair and a kCTFontFeatureSelectorIdentifierKey key-value pair. Each setting dictionary indicates which setting should be turned on. In the case of duplicate or conflicting setting, the last setting in the list takes precedence. It is the caller’s responsibility to handle exclusive and nonexclusive settings as necessary.
Available in OS X v10.5 and later.

55.3.33  kCTFontFixedAdvanceAttribute as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the constants keys for accessing font attributes from a font descriptor.
**Notes:**
Key to specify a fixed advance to be used for a font reference. If present and specified, this attribute is used to specify a constant advance to override any font values. The value associated with this key is a float represented as a number.
Available in OS X v10.5 and later.

55.3.34  kCTFontFormatAttribute as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the constants keys for accessing font attributes from a font descriptor.
**Notes:**
Key to specify or obtain the recognized format of the font. The value associated with this key is an integer
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represented as a number containing one of the constants in "Font Format Constants."
Available in OS X v10.6 and later.

55.3.35  kCTFontLanguagesAttribute as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the constants keys for accessing font attributes from a font descriptor.
**Notes:**
Key to specify or obtain a list of covered languages for a font reference. The value for this key is an array
containing string elements. If specified, this attribute restricts the search to matching fonts that support
the specified languages. The language identifier string should conform to the RFC 3066bis standard. If
unspecified, this attribute is ignored.
Available in OS X v10.5 and later.

55.3.36  kCTFontMacintoshEncodingsAttribute as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the constants keys for accessing font attributes from a font descriptor.
**Notes:**
Key to specify or obtain the Macintosh encodings for a font reference. The value associated with this key is a
number containing a bit field of the Macintosh encodings. This attribute is provided for legacy compatibility.
Available in OS X v10.5 and later.

55.3.37  kCTFontMatrixAttribute as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the constants keys for accessing font attributes from a font descriptor.
**Notes:**
Key to specify the font transformation matrix when creating a font. If unspecified it defaults to the
unit matrix. The value for this key is a Memoryblock object containing a CGAffineTransform.

55.3.38  kCTFontNameAttribute as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the constants keys for accessing font attributes from a font descriptor.
**Notes:**
Key for accessing the PostScript name from the font descriptor. The value associated with this key
is a string. If the value is unspecified, it defaults to Helvetica, and if that font is unavailable, it falls back to
the global font cascade list.
55.3.39 kCTFontOrientationAttribute as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants keys for accessing font attributes from a font descriptor. **Notes:** Key to specify a particular orientation for the glyphs of the font. The value associated with this key is an integer represented as a number containing one of the constants in "Font Orientation Constants." If you want to receive vertical metrics from a font for vertical rendering, specify kCTFontVerticalOrientation. If unspecified, the font uses its native orientation.

55.3.40 kCTFontPriorityAttribute as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants keys for accessing font attributes from a font descriptor. **Notes:** Key to specify or obtain the font priority used by font descriptors when resolving duplicates and sorting match results. The value associated with this key is an integer represented as a CFNumberRef object containing one of the values enumerated in "Font Priority Constants." The higher the value, the higher the priority of the font. Only registered fonts have a priority. Unregistered font descriptors return nil. Available in OS X v10.6 and later.

55.3.41 kCTFontRegistrationScopeAttribute as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants keys for accessing font attributes from a font descriptor. **Notes:** Key to specify or obtain the font descriptor’s registration scope. The value associated with this key is an integer represented as a number containing one of the CTFontManagerScope enumerated values. A value of nil can be returned for font descriptors that are not registered. Available in OS X v10.6 and later.

55.3.42 kCTFontSizeAttribute as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants keys for accessing font attributes from a font descriptor. **Notes:** Key to obtain or specify the font point size. Creating a font with this unspecified will default to a point size of 12.0. The value for this key is represented as a number.
55.3.43 kCTFontStyleNameAttribute as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants keys for accessing font attributes from a font descriptor.
**Notes:** Key for accessing the style name of the font. This name represents the designer’s description of the font’s style. The value associated with this key is a string.

55.3.44 kCTFontTraitsAttribute as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants keys for accessing font attributes from a font descriptor.
**Notes:** Key for accessing the dictionary of font traits for stylistic information. See "Font Traits" for the list of font traits. The value associated with this key is a dictionary.

55.3.45 kCTFontURLAttribute as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants keys for accessing font attributes from a font descriptor.
**Notes:** Key for accessing the font URL from the font descriptor. The value associated with this key is an URL string.
Available in OS X v10.6 and later.

55.3.46 kCTFontVariationAttribute as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants keys for accessing font attributes from a font descriptor.
**Notes:** Key to obtain the font variation dictionary instance as a dictionary object. If specified in a font descriptor, fonts with the specified axes are primary match candidates; if no such fonts exist, this attribute is ignored.

55.3.47 LocalizedAttributeValue(key as string, byref lang as string) as Variant

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a localized value for the requested attribute, if available.
**Notes:**
key: The requested font attribute.
lang: On output, contains a reference to the matched language. The language identifier will conform to the
RFC 3066bis standard.

Returns a localized attribute value based on the global language list.

This function passes back the matched language in language. If localization is not possible for the attribute, the behavior matches the value returned from AttributeValue. Generally, localization of attributes is applicable to name attributes of only a normalized font descriptor.

### 55.3.48 MatchingFontDescriptor(mandatoryAttributes() as String) as CTFontDescriptorMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the single preferred matching font descriptor based on the original descriptor and system precedence. **Notes:**

mandatoryAttributes: A set of attribute keys which must be identically matched in any returned font descriptors.

Returns a normalized font descriptor matching the attributes present in descriptor.

The original descriptor may be returned in normalized form. In the context of font descriptors, normalized infers that the input values were matched up with actual existing fonts, and the descriptors for those existing fonts are the returned normalized descriptors.

### 55.3.49 MatchingFontDescriptors(mandatoryAttributes() as String) as CTFontDescriptorMBS()

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of normalized font descriptors matching the provided descriptor. **Notes:**

mandatoryAttributes: A set of attribute keys that must be identically matched in any returned font descriptors.

Returns an array of normalized font descriptors matching the attributes present in descriptor.

If descriptor itself is normalized, then the array will contain only one item: the original descriptor. In the context of font descriptors, normalized infers that the input values were matched up with actual existing fonts, and the descriptors for those existing fonts are the returned normalized descriptors.
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55.3.50  **Properties**

55.3.51  **DisplayName as String**

MBS MacCG Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The display name.

**Example:**

```vbnet
dim f as CTFontMBS = CTFontMBS.CreateWithName("Times")
dim d as CTFontDescriptorMBS = f.FontDescriptor
MsgBox d.DisplayName
```

**Notes:** (Read only property)

55.3.52  **FamilyName as String**

MBS MacCG Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The family name.

**Example:**

```vbnet
dim f as CTFontMBS = CTFontMBS.CreateWithName("Times")
dim d as CTFontDescriptorMBS = f.FontDescriptor
MsgBox d.FamilyName
```

**Notes:** (Read only property)

55.3.53  **File as FolderItem**

MBS MacCG Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The font file.

**Example:**

```vbnet
dim f as CTFontMBS = CTFontMBS.CreateWithName("Times")
dim d as CTFontDescriptorMBS = f.FontDescriptor
MsgBox d.file.NativePath
```

**Notes:** (Read only property)
55.3.54  FontSize as Double

MBS MacCG Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The font size.  
**Example:**
```vbnet
dim f as CTFontMBS = CTFontMBS.CreateWithName("Times")
dim d as CTFontDescriptorMBS = f.FontDescriptor
MsgBox str(d.FontSize)
```

**Notes:**
Can be zero if unknown.  
(Read only property)

55.3.55  Name as String

MBS MacCG Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The PostScript name.  
**Example:**
```vbnet
dim f as CTFontMBS = CTFontMBS.CreateWithName("Times")
dim d as CTFontDescriptorMBS = f.FontDescriptor
MsgBox d.Name
```

**Notes:**
When matching, this is treated more generically: the system first tries to find fonts with this PostScript name. If none is found, the system tries to find fonts with this family name, and, finally, if still nothing, tries to find fonts with this display name.  
(Read only property)

55.3.56  StyleName as String

MBS MacCG Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The style name.  
**Example:**
```vbnet
dim f as CTFontMBS = CTFontMBS.CreateWithName("Times")
dim d as CTFontDescriptorMBS = f.FontDescriptor
MsgBox d.StyleName
```
Notes:
This name represents the designer’s description of the font’s style.
Can be empty if unknown.
(Read only property)

55.3.57 URL as String

MBS MacCG Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The font URL.
**Example:**
```vbnet
dim f as CTFontMBS = CTFontMBS.CreateWithName(“Times”)  
dim d as CTFontDescriptorMBS = f.FontDescriptor  
MsgBox d.URL
```

Notes: (Read only property)

55.3.58 Constants

55.3.59 kCFTFontDescriptorMatchingDidBegin = 0

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font matching states.
**Notes:** called once at the beginning.

55.3.60 kCFTFontDescriptorMatchingDidFailWithError = 8

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font matching states.
**Notes:** called when an error occurred. (may be called multiple times.)

55.3.61 kCFTFontDescriptorMatchingDidFinish = 1

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font matching states.
**Notes:** called once at the end.
55.3.62 kCTFontDescriptorMatchingDidFinishDownloading = 6

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font matching states.  
**Notes:** Finished downloading a descriptor.

55.3.63 kCTFontDescriptorMatchingDidMatch = 7

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font matching states.  
**Notes:** called when font descriptor is matched.

55.3.64 kCTFontDescriptorMatchingDownloading = 5

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font matching states.  
**Notes:** Downloading a descriptor.

55.3.65 kCTFontDescriptorMatchingStalled = 3

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font matching states.  
**Notes:** called when stalled. (e.g. while waiting for server response.)

55.3.66 kCTFontDescriptorMatchingWillBeginDownloading = 4

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font matching states.  
**Notes:**  
Starts downloading a descriptor.  
Downloading part may be skipped if all the assets are already downloaded

55.3.67 kCTFontDescriptorMatchingWillBeginQuerying = 2

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font matching states.  
**Notes:** called once before talking to the server. Skipped if not necessary.
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### 55.3.68 kCTFontFormatBitmap = 5

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font format constants.  **Notes:** The font is a bitmap only format.

### 55.3.69 kCTFontFormatOpenTypePostScript = 1

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font format constants.  **Notes:** The font is an OpenType format containing PostScript data.

### 55.3.70 kCTFontFormatOpenTypeTrueType = 2

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font format constants.  **Notes:** The font is an OpenType format containing TrueType data.

### 55.3.71 kCTFontFormatPostScript = 4

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font format constants.  **Notes:** The font is a recognized PostScript format.

### 55.3.72 kCTFontFormatTrueType = 3

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font format constants.  **Notes:** The font is a recognized TrueType format.

### 55.3.73 kCTFontFormatUnrecognized = 0

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font format constants.  **Notes:** The font is not a recognized format.

### 55.3.74 kCTFontOrientationDefault = 0

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the orientation constants.  **Notes:** Default.
55.3.75  kCTFontOrientationHorizontal = 1

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the orientation constants.  
**Notes:** Horizontal

55.3.76  kCTFontOrientationVertical = 2

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the orientation constants.  
**Notes:** Vertical

55.3.77  kCTFontPriorityComputer = 30000

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font priorities constants.  
**Notes:** Priority of computer local fonts (located in /Library/Fonts).

55.3.78  kCTFontPriorityDynamic = 50000

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font priorities constants.  
**Notes:** Priority of fonts registered dynamically, not located in a standard location (either kCTFontManagerScopeUser, or kCTFontManagerScopeSession).

55.3.79  kCTFontPriorityNetwork = 20000

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font priorities constants.  
**Notes:** Priority of network fonts (located in /Network/Library/Fonts).

55.3.80  kCTFontPriorityProcess = 60000

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font priorities constants.  
**Notes:** Priority of fonts registered for the process (kCTFontManagerScopeProcess).

55.3.81  kCTFontPrioritySystem = 10000

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font priorities constants.  
**Notes:** Priority of system fonts (located in /System/Library/Fonts).
55.3.82  kCTFontPriorityUser = 40000

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font priorities constants.  
**Notes:** Priority of local fonts (located in user’s Library/Fonts).
55.4 class CTFontMBS

55.4.1 class CTFontMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The CTFont opaque type represents a Core Text font object.

**Example:**
```
dim c as CTFontMBS = CTFontMBS.CreateWithName("times", 10)
MsgBox c.FullName
```

**Notes:**
Font objects represent fonts to an application, providing access to characteristics of the font, such as point size, transform matrix, and other attributes. Fonts provide assistance in laying out glyphs relative to one another and are used to establish the current font when drawing in a graphics context.

Subclass of the CFObjectMBS class.

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

55.4.2 Methods

55.4.3 AdvancesForGlyphs(orientation as Integer, glyphs() as Integer) as Double

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Calculates the advances for an array of glyphs and returns the summed advance.

**Notes:**
- **font:** The font reference.
- **orientation**
  The intended drawing orientation of the glyphs. Used to determined which glyph metrics to return.
- **glyphs:** An array of count number of glyphs.
- **advances:** An array of count number of CGSizeMBS objects to receive the computed glyph advances. Optional.

Returns the summed glyph advance of an array of glyphs.

Individual glyph advances are passed back via the advances parameter. These are the ideal metrics for each glyph scaled and transformed in font space.

See also:
- 55.4.4 AdvancesForGlyphs(orientation as Integer, glyphs() as Integer, boundingRects() as CGSizeMBS) as Double
55.4. AdvancesForGlyphs(orientation as Integer, glyphs() as Integer, boundingRects() as CGSizeMBS) as Double

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Calculates the advances for an array of glyphs and returns the summed advance.

**Notes:**
- font: The font reference.
- orientation: The intended drawing orientation of the glyphs. Used to determine which glyph metrics to return.
- glyphs: An array of count number of glyphs.
- advances: An array of count number of CGSizeMBS objects to receive the computed glyph advances. Optional.

Returns the summed glyph advance of an array of glyphs.

Individual glyph advances are passed back via the advances parameter. These are the ideal metrics for each glyph scaled and transformed in font space.

See also:

- 55.4.3 AdvancesForGlyphs(orientation as Integer, glyphs() as Integer) as Double

55.4.5 AttributeValue(key as string) as Variant

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the value associated with an arbitrary attribute of the given font.

**Notes:**
- key: The requested attribute.

Returns attribute value or nil if the requested attribute is not present.

Available in OS X v10.5 and later.

55.4.6 Available as boolean

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this class is available.

**Notes:** Returns true in OS X v10.5 and later.
55.4.7 AvailableTables(options as Integer) as String()

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns an array of font table tags.

**Notes:**
options: The font table options.

Returns an array of Font Table Tag Constants values for the given font and the supplied options.
Available in OS X v10.5 and later.

55.4.8 BoundingRectsForGlyphs(orientation as Integer, glyphs() as Integer) as CGRectMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Calculates the bounding rects for an array of glyphs and returns the overall bounding rectangle for the glyph run.

**Notes:**
font: The font reference.
orientation: The intended drawing orientation of the glyphs. Used to determined which glyph metrics to return.
glyphs: An array of count number of glyphs.
boundingRects: Optional. On output, the computed glyph rectangles in an array of count number of CGRect objects.

Returns the overall bounding rectangle for an array or run of glyphs. Returns CGRectNull on error.

The bounding rectangles of the individual glyphs are returned through the boundingRects parameter. These are the design metrics from the font transformed in font space.
See also:

- 55.4.9 BoundingRectsForGlyphs(orientation as Integer, glyphs() as Integer, boundingRects() as CGRectMBS) as CGRectMBS

55.4.9 BoundingRectsForGlyphs(orientation as Integer, glyphs() as Integer, boundingRects() as CGRectMBS) as CGRectMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Calculates the bounding rects for an array of glyphs and returns the overall bounding rectangle for the glyph run.

**Notes:**
font: The font reference.
orientation: The intended drawing orientation of the glyphs. Used to determined which glyph metrics to return.
glyphs: An array of count number of glyphs.
boundingRects: Optional. On output, the computed glyph rectangles in an array of count number of CGRect objects.

Returns the overall bounding rectangle for an array or run of glyphs. Returns CGRectNull on error.

The bounding rectangles of the individual glyphs are returned through the boundingRects parameter. These are the design metrics from the font transformed in font space.
See also:

- 55.4.8 BoundingRectsForGlyphs(orientation as Integer, glyphs() as Integer) as CGRectMBS

55.4.10 Constructor

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The private constructor.

55.4.11 CreateCopyWithAttributes(size as Double, Matrix as CGAffineTransformMBS, fontAttributes as CTFontDescriptorMBS) as CTFontMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns a new font with additional attributes based on the original font.
Example:

```plaintext
// find PostScript names for a font
const nameOfAFont = "Arial"

dim FontName as string
dim FontFamilyName as string
dim FontPostscriptName as string
dim FontPostscriptNameBold as string
dim FontPostscriptNameItalic as string

dim f as CTFontMBS = CTFontMBS.CreateWithName(nameOfAFont, 13)
if f <> nil then
    FontName = f.FullName
    FontFamilyName = f.FamilyName
    FontPostscriptName = f.PostScriptName
    FontPostscriptNameBold = f.PostScriptNameBold
    FontPostscriptNameItalic = f.PostScriptNameItalic

    dim d as CTFontDescriptorMBS = f.FontDescriptor
```
dim db as CTFontDescriptorMBS = CTFontDescriptorMBS.CreateCopyWithSymbolicTraits(d, CoreTextMBS.kCTFontTraitBold, CoreTextMBS.kCTFontTraitBold)
dim di as CTFontDescriptorMBS = CTFontDescriptorMBS.CreateCopyWithSymbolicTraits(d, CoreTextMBS.kCTFontTraitItalic, CoreTextMBS.kCTFontTraitItalic)

dim fb as CTFontMBS = f.CreateCopyWithAttributes(f.Size, nil, db)
dim fi as CTFontMBS = f.CreateCopyWithAttributes(f.Size, nil, di)

FontPostscriptNameBold = fb.PostScriptName
FontPostscriptNameItalic = fi.PostScriptName

end if

Break // read names in debugger

Notes:

size: The point size for the font reference. If 0.0 is specified, the original fonts size is preserved.
matrix: The transformation matrix for the font. In most cases, set this parameter to be nil. If nil is specified, the original font’s matrix is preserved.
fontAttributes: A font descriptor containing additional attributes that the new font should contain.

Returns a new font reference converted from the original with the specified attributes.

This function provides a mechanism to change attributes quickly on a given font reference in response to user actions. For instance, the size can be changed in response to a user manipulating a size slider. Available in OS X v10.5 and later.

55.4.12 CreateForString(text as string, location as Integer, length as Integer) as CTFontMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a new font reference that can best map the given string range based on the current font.

Notes:

string: A unicode string containing characters that cannot be encoded by the current font.
location and length: The range of the string that needs to be mapped.

Returns the best substitute font from the cascade list of the current font that can encode the specified string range. If the current font is capable of encoding the string range, then it is retained and returned.
55.4.13 CreatePathForGlyph(glyph as Integer, transform as CGAffineTransformMBS) as CGPathMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a path for the specified glyph.

**Notes:**
glyph: The glyph.
transform: An affine transform applied to the path. Can be nil. If nil, CGAffineTransformIdentity is used.

Returns a CGPath object containing the glyph outlines, nil on error. Must be released by caller.

Creates a path from the outlines of the glyph for the specified font. The path reflects the font point size, matrix, and transform parameter, applied in that order. The transform parameter is most commonly be used to provide a translation to the desired glyph origin.

55.4.14 CreateUIFontForLanguage(Type as Integer, size as Double = 0.0, language as string = "") as CTFontMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the special user-interface font for the given language and user-interface type.

**Notes:**
Type: A constant specifying the intended user-interface use for the requested font reference. See Enumerations for possible values.
size: The point size for the font reference. If 0.0 is specified, the default size for the requested user-interface type is used.
language: Language specifier string to select a font for a particular localization. If "" is specified, the current system language is used. The format of the language identifier should conform to the RFC 3066bis standard.

Returns the correct font for various user-interface uses.
The only required parameter is the Type selector; the other parameters have default values.

55.4.15 CreateWithFamily(size as Double, Matrix as CGAffineTransformMBS, family as string) as CTFontMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a new font in the specified family based on the traits of the original font.

**Notes:**
size: The point size for the font reference. If 0.0 is specified, the original fonts size is preserved.
matrix: The transformation matrix for the font. In most cases, set this parameter to be nil. If nil is specified, the original font’s matrix is preserved.
family: The name of the desired family.

Returns a new font reference with the original traits in the given family, or nil if none is found in the system. Available in OS X v10.5 and later.

55.4.16 CreateWithFontDescriptor(descriptor as CTFontDescriptorMBS, size as Double = 0.0, matrix as CGAffineTransformMBS = nil, options as Integer = 0) as CTFontMBS


Notes:

descrriptor: A font descriptor containing attributes that specify the requested font.
size: The point size for the font reference. If 0.0 is specified, the default font size of 12.0 is used. This parameter is optional.
matrix: The transformation matrix for the font. In most cases, set this parameter to be nil. If nil is specified, the identity matrix is used. This parameter is optional.

Returns a CTFontMBS that best matches the attributes provided with the font descriptor.

The size and matrix parameters override any specified in the font descriptor unless they are unspecified (0.0 for size and NULL for matrix). A best match font is always returned, and default values are used for any unspecified parameters.

55.4.17 CreateWithGraphicsFont(graphicsFont as CGFontMBS, size as Double = 0.0, matrix as CGAffineTransformMBS = nil, attributeValues as CTFontDescriptorMBS = nil) as CTFontMBS


Notes:

graphicsFont: A valid Core Graphics font reference.
size: The point size for the font reference. If 0.0 is specified the default font size of 12.0 is used.
matrix: The transformation matrix for the font. In most cases, set this parameter to be nil. If nil, the identity matrix is used. Optional.
attributes: Additional attributes that should be matched. Optional.

Returns a new font reference for an existing CGFontRef object with the specified size, matrix, and additional attributes.
55.4.18  CreateWithName(name as string, size as Double = 0.0, matrix as CGAffineTransformMBS = nil, options as Integer = 0) as CTFontMBS

Example:
```vbnet
dim c as CTFontMBS = CTFontMBS.CreateWithName("Times", 12)
MsgBox c.FullName
```

Notes:
- name: The font name for which you wish to create a new font reference. A valid PostScript name is preferred, although other font name types are matched in a fallback manner.
- size: The point size for the font reference. If 0.0 is specified, the default font size of 12.0 is used. This parameter is optional.
- matrix: The transformation matrix for the font. In most cases, set this parameter to be nil. If nil is specified, the identity matrix is used. This parameter is optional.

Returns a CTFontRef that best matches the name provided with size and matrix attributes.

The name parameter is the only required parameter, and default values are used for unspecified parameters (0.0 for size and nil for matrix). If all parameters cannot be matched identically, a best match is found.

55.4.19  CreateWithPlatformFont(ATSFontHandle as Integer, size as Double = 0.0, matrix as CGAffineTransformMBS = nil, attributeValues as CTFontDescriptorMBS = nil) as CTFontMBS

Notes:
- ATSFontHandle: A valid ATSFontRef object.
- size: The point size for the font reference. If 0.0 is specified the default font size of 12.0 is used.
- matrix: The transformation matrix for the font. In most cases, set this parameter to be nil. If nil, the identity matrix is used. Optional.
- attributes: A CTFontDescriptorMBS containing additional attributes that should be matched. Optional.

Returns a new font reference for an ATSFontRef with the specified size, matrix, and additional attributes.
55.4.20  CreateWithQuickdrawInstance(name as String, identifier as Integer = 0, Style as Integer = 0, size as Double = 0.0) as CTFontMBS

Returns a font reference for the given QuickDraw instance.

Notes:
- name: The QuickDraw font name. If zero length, identifier must be specified.
- identifier: The QuickDraw font identifier. Can be 0, but if so, name must be specified.
- style: The QuickDraw font style.
- size: The point size for the font reference. If 0.0 is specified, the default size of 12.0 is used.

Returns the best font instance matching the QuickDraw instance information.

This function is provided for compatibility support between Core Text and clients needing to support QuickDraw-style font references. QuickDraw is a deprecated technology in OS X v10.4 and later.

55.4.21  CreateWithSymbolicTraits(size as Double, Matrix as CGAffineTransformMBS, symTraitValue as Integer, symTraitMask as Integer) as CTFontMBS

Returns a new font in the same font family as the original with the specified symbolic traits.

Example:
```
dim helveticaBold as CTFontMBS = CTFontMBS.CreateWithName("Helvetica-Bold", 12)
MsgBox helveticaBold.FullName

// now create similar fonts with

dim Trait as Integer = CoreTextMBS.kCTFontTraitItalic
dim TraitMask as Integer = CoreTextMBS.kCTFontTraitItalic+CoreTextMBS.kCTFontTraitBold

dim helveticaItalic as CTFontMBS = helveticaBold.CreateWithSymbolicTraits(12, nil, Trait, TraitMask)
MsgBox helveticaItalic.FullName
```

Notes:
- size: The point size for the font reference. If 0.0 is specified, the original fonts size is preserved.
- matrix: The transformation matrix for the font. In most cases, set this parameter to be nil. If nil is specified, the original font’s matrix is preserved.
- symTraitValue: The value of the symbolic traits.
- symTraitMask: The mask bits of the symbolic traits.
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Returns a new font reference in the same family with the given symbolic traits. or nil if none is found in the system.

Available in OS X v10.5 and later.

55.4.22  **DefaultCascadeListForLanguages(languagePrefList() as string) as String()**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return an ordered list of CTFontDescriptorMBS's for font fallback derived from the system default fallback region according to the given language preferences.

**Notes:**
The style of the given is also matched as well as the weight and width of the font is not one of the system UI font, otherwise the UI font fallback is applied.

languagePrefList: The language preference list - ordered array of CFStringRef's of ISO language codes.

The ordered list of fallback fonts - ordered array of CTFontDescriptors.

55.4.23  **Draw(glyphs() as Integer, positions() as CGPointMBS, context as CGContextMBS)**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Renders the given glyphs of a font at the specified positions in the supplied graphics context.

**Notes:**
font: The font with glyphs to render. If the font has a size or matrix attribute, context is set with these values.
glyphs: The glyphs to be rendered. The glyphs should be the result of proper Unicode text layout operations (such as with CTLine). Functions such as CTFontMBS.GetGlyphsForCharacters do not perform any Unicode text layout.
positions: The positions (origins) for each glyph in glyphs. The positions are in user space. The number of positions passed in must match the number of glyphs (in glyphs).
context: The graphics context used to render the glyphs.

This function modifies graphics state including font, text size, and text matrix if these attributes are specified in font. These attributes are not restored.

Available in OS X v10.7 and later.
55.4.24  Features as Dictionary()

**Notes:** Returns an array of font feature dictionaries for the font reference.

55.4.25  FeatureSettings as Dictionary()

**Notes:** Returns a normalized array of font feature-setting dictionaries. The array contains only the non-default settings that should be applied to the font, or nil if the default settings should be used.

A feature-setting dictionary is a tuple of a kCTFontFeatureTypeIdentifierKey key-value pair and a kCTFontFeatureSelectorIdentifierKey key-value pair. Each setting dictionary indicates which setting is enabled. It is the caller’s responsibility to handle exclusive and nonexclusive settings as necessary.

The feature settings are verified against those that the font supports and any that do not apply are removed. Further, feature settings that represent a default setting for the font are also removed.

55.4.26  GlyphsForCharacters(characters() as Integer) as Integer()

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Provides basic Unicode encoding for the given font, returning by reference an array of CGGlyph values corresponding to a given array of Unicode characters for the given font.  
**Notes:** If a glyph could not be encoded, a value of 0 is passed back at the corresponding index in the glyphs array and the function returns False. It is the responsibility of the caller to handle the Unicode properties of the input characters.

55.4.27  GlyphWithName(name as string) as Integer

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the CGGlyph value for the specified glyph name in the given font.  
**Notes:**  
Name: The glyph name as a CFString object.

Returns the glyph value for the named glyph as a CGGlyph object, or if the glyph name is not recognized, the .notdef glyph index value.
The returned CGGlyph object can be used with any of the subsequent glyph data accessors or directly with Core Graphics.

55.4.28 GraphicsFont(byref fontAttributes as CTFontDescriptorMBS) as CGFontMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Core Graphics font reference and attributes. **Notes:**

- Attributes: On output, points to a font descriptor containing additional attributes from the font.

Returns a CGFontMBS object for the given font reference.

55.4.29 kCTBaselineClassHanging as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key to reference the Hanging baseline class. **Notes:** This key can be used with a baseline info dictionary to offset to the Hanging baseline as a float. It can also be used as the value for kCTBaselineClassAttributeName.

55.4.30 kCTBaselineClassIdeographicCentered as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key to reference the Ideographic Centered baseline class. **Notes:** This key can be used with a baseline info dictionary to offset to the Ideographic Centered baseline as a float. It can also be used as the value for kCTBaselineClassAttributeName.

55.4.31 kCTBaselineClassIdeographicHigh as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key to reference the Ideographic High baseline class. **Notes:** This key can be used with a baseline info dictionary to offset to the Ideographic High baseline as a float. It can also be used as the value for kCTBaselineClassAttributeName.
55.4.32 kCTBaselineClassIdeographicLow as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key to reference the Ideographic Low baseline class. **Notes:** This key can be used with a baseline info dictionary to offset to the Ideographic Low baseline as a float. It can also be used as the value for kCTBaselineClassAttributeName.

55.4.33 kCTBaselineClassMath as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key to reference the Math baseline class. **Notes:** This key can be used with a baseline info dictionary to offset to the Math baseline as a float. It can also be used as the value for kCTBaselineClassAttributeName.

55.4.34 kCTBaselineClassRoman as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key to reference the Roman baseline class. **Notes:** This key can be used with a baseline info dictionary to offset to the Roman baseline as a float. It can also be used as the value for kCTBaselineClassAttributeName.

55.4.35 kCTBaselineOriginalFont as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Use the original font for setting the reference baseline. **Notes:** This constant can be used as the value for kCTBaselineReferenceFont to specify that the original font should be used for the reference baseline.

55.4.36 kCTBaselineReferenceFont as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Key to reference a font for the reference baseline. **Notes:** This key can be used to specify a font for the reference baseline. The value is a CTFontMBS or the kCTBaselineOriginalFont constant.
55.4.37 kCTFontCopyrightNameKey as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the name specifier constants provide access to the different names associated with a font. **Notes:** The name specifier for the copyright name.

55.4.38 kCTFontDescriptionNameKey as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the name specifier constants provide access to the different names associated with a font. **Notes:** The name specifier for the description name.

55.4.39 kCTFontDesignerNameKey as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the name specifier constants provide access to the different names associated with a font. **Notes:** The name specifier for the designer name.

55.4.40 kCTFontDesignerURLNameKey as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the name specifier constants provide access to the different names associated with a font. **Notes:** The name specifier for the vendor URL name.

55.4.41 kCTFontFamilyNameKey as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the name specifier constants provide access to the different names associated with a font. **Notes:** The name specifier for the family name.

55.4.42 kCTFontFeatureSelectorDefaultKey as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys to font feature dictionary values. **Notes:** Key to be used with a selector dictionary to get the default indicator for the selector. This value is a boolean, which if present and true, indicates that this selector is the default setting for the current feature type.
55.4.43  kCTFontFeatureSelectorIdentifierKey as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
One of the keys to font feature dictionary values.
Notes: Key to be used with a selector dictionary corresponding to a feature type to obtain the selector
identifier value as a number.

55.4.44  kCTFontFeatureSelectorNameKey as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
One of the keys to font feature dictionary values.
Notes: Key to be used with a selector dictionary to get the localized name string for the selector as a string.

55.4.45  kCTFontFeatureSelectorSettingKey as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
One of the keys to font feature dictionary values.
Notes: Key to be used with a selector dictionary to get or specify the current setting for the selector. This
value is a Boolean to indicate whether this selector is on or off. If this key is not present, the default setting
is used.

55.4.46  kCTFontFeatureTypeExclusiveKey as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
One of the keys to font feature dictionary values.
Notes: Key to get the font feature exclusive setting of the feature as a Boolean. The value associated with
this key indicates whether the feature selectors associated with this type should be mutually exclusive.

55.4.47  kCTFontFeatureTypeIdentifierKey as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
One of the keys to font feature dictionary values.
Notes: Key to get the font feature type value as a number.

55.4.48  kCTFontFeatureTypeNameKey as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
One of the keys to font feature dictionary values.
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**Notes:** Key to get the localized font feature type name as a string.

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**55.4.49  kCTFontFeatureTypeSelectorsKey as string**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys to font feature dictionary values. **Notes:** Key to get the the array of font feature selectors as an array. This is an array of selector dictionaries that contain the values for the font feature selector keys listed in this group.

---

**55.4.50  kCTFontFullNameKey as string**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the name specifier constants provide access to the different names associated with a font. **Notes:** The name specifier for the full name.

---

**55.4.51  kCTFontLicenseNameKey as string**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the name specifier constants provide access to the different names associated with a font. **Notes:** The name specifier for the license name.

---

**55.4.52  kCTFontLicenseURLNameKey as string**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the name specifier constants provide access to the different names associated with a font. **Notes:** The name specifier for the license URL name.

---

**55.4.53  kCTFontManufacturerNameKey as string**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the name specifier constants provide access to the different names associated with a font. **Notes:** The name specifier for the manufacturer name.
55.4.54 kCTFontPostScriptCIDNameKey as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the name specifier constants provide access to the different names associated with a font. **Notes:** The name specifier for the PostScript character identifier (CID) font name.

55.4.55 kCTFontPostScriptNameKey as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the name specifier constants provide access to the different names associated with a font. **Notes:** The name specifier for the PostScript name.

55.4.56 kCTFontSampleTextNameKey as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the name specifier constants provide access to the different names associated with a font. **Notes:** The name specifier for the sample text name string.

55.4.57 kCTFontStyleNameKey as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the name specifier constants provide access to the different names associated with a font. **Notes:** The name specifier for the style name.

55.4.58 kCTFontSubFamilyNameKey as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the name specifier constants provide access to the different names associated with a font. **Notes:** The name specifier for the subfamily name.

55.4.59 kCTFontTrademarkNameKey as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the name specifier constants provide access to the different names associated with a font. **Notes:** The name specifier for the trademark name.
55.4.60  **kCTFontUniqueNameKey as string**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the name specifier constants provide access to the different names associated with a font. **Notes:** The name specifier for the unique name.

55.4.61  **kCTFontVariationAxisDefaultValueKey as string**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys to font variation axis dictionary. **Notes:** Key to get the variation axis default value as a number.

55.4.62  **kCTFontVariationAxisIdentifierKey as string**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys to font variation axis dictionary. **Notes:** Key to get the variation axis identifier value as a number.

55.4.63  **kCTFontVariationAxisMaximumValueKey as string**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys to font variation axis dictionary. **Notes:** Key to get the variation axis maximum value as a number.

55.4.64  **kCTFontVariationAxisMinimumValueKey as string**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys to font variation axis dictionary. **Notes:** Key to get the variation axis minimum value as a number.

55.4.65  **kCTFontVariationAxisNameKey as string**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys to font variation axis dictionary. **Notes:** Key to get the localized variation axis name string.
55.4.66 kCTFontVendorURLNameKey as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the name specifier constants provide access to the different names associated with a font.
**Notes:** The name specifier for the vendor URL name.

55.4.67 kCTFontVersionNameKey as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the name specifier constants provide access to the different names associated with a font.
**Notes:** The name specifier for the version name.

55.4.68 LigatureCaretPositions(glyph as Integer) as Double()

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns caret positions within a glyph.
**Notes:**
glyph: A reference to the glyph.
This function is used to obtain caret positions for a specific glyph. The return value is the maximum number of positions possible, and the function will populate the caller’s positions buffer with available positions if possible. This function might not be able to produce positions if the font does not have the appropriate data, in which case it will return 0.

55.4.69 Name(nameKey as string) as String

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a reference to the requested name of the given font.
**Example:**
```vbscript
dim c as CTFontMBS = CTFontMBS.CreateWithName("Times", 12)
MsgBox c.name(CTFontMBS.kCTFont FullNameKey)
```
**Notes:**
nameKey: The name specifier. See Name Specifier Constants for possible values.
Returns The requested name for the font, or "" if the font does not have an entry for the requested name. The Unicode version of the name is preferred, otherwise the first available version is returned.
55.4. **CLASS CTFONTMBS**

See also:

- 55.4.70 Name(nameKey as string, byref language as string) as String

55.4.70  **Name(nameKey as string, byref language as string) as String**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Returns a reference to a localized name for the given font.

**Example:**

```vba
dim c as CTFontMBS = CTFontMBS.CreateWithName(“Times”, 12)
dim lang as string
MsgBox c.name(CTFontMBS.kCTFontFullNameKey, lang)+EndOfLine+lang
// shows name and “en” as language.
```

**Notes:**

nameKey: The name specifier. See Name Specifier Constants for possible values.
language: On output, points to the language string of the returned name string. The format of the language identifier conforms to the RFC 3066bis standard.

Returns a specific localized name from the font reference or “” if the font does not have an entry for the requested name key.

The name is localized based on the user’s global language preference precedence. That is, the users language preference is a list of languages in order of precedence. So, for example, if the list had Japanese and English, in that order, then a font that did not have Japanese name strings but had English strings would return the English strings.

Available in OS X v10.5 and later.
See also:

- 55.4.69 Name(nameKey as string) as String

55.4.71  **OpticalBoundsForGlyphs(glyphs() as Integer, boundingRects() as CGRectMBS, options as Integer = 0) as CGRectMBS**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Calculates the optical bounding rects for an array of glyphs and returns the overall optical bounding rect for the run.

**Notes:**

Fonts may specify the optical edges of glyphs that can be used to make the edges of lines of text line up in a more visually pleasing way. This function returns bounding rects corresponding to this information if
present in a font, otherwise it returns typographic bounding rects (composed of the font’s ascent and descent and a glyph’s advance width).

font: The font reference.
glyphs: An array of count number of glyphs.
boundingRects: An array of count number of CGRects to receive the computed glyph rects. Can be nil, in which case only the overall bounding rect is calculated.
options: Reserved, set to zero.

This function returns the overall bounding rectangle for an array or run of glyphs. The bounding rects of the individual glyphs are returned through the boundingRects parameter. These are the design metrics from the font transformed in font space.

See also:

- 55.4.71 OpticalBoundsForGlyphs(glyphs() as Integer, boundingRects() as CGRectMBS, options as Integer = 0) as CGRectMBS 9763

55.4.72 OpticalBoundsForGlyphs(glyphs() as Integer, options as Integer = 0) as CGRectMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Calculates the optical bounding rects for an array of glyphs and returns the overall optical bounding rect for the run.

**Notes:**
Fonts may specify the optical edges of glyphs that can be used to make the edges of lines of text line up in a more visually pleasing way. This function returns bounding rects corresponding to this information if present in a font, otherwise it returns typographic bounding rects (composed of the font’s ascent and descent and a glyph’s advance width).

font: The font reference.
glyphs: An array of count number of glyphs.
boundingRects: An array of count number of CGRects to receive the computed glyph rects. Can be nil, in which case only the overall bounding rect is calculated.
options: Reserved, set to zero.

This function returns the overall bounding rectangle for an array or run of glyphs. The bounding rects of the individual glyphs are returned through the boundingRects parameter. These are the design metrics from the font transformed in font space.

See also:

- 55.4.71 OpticalBoundsForGlyphs(glyphs() as Integer, boundingRects() as CGRectMBS, options as Integer = 0) as CGRectMBS 9763
55.4.73 PlatformFont(byref fontAttributes as CTFontDescriptorMBS) as Integer


55.4.74 SupportedLanguages as String()

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of languages supported by the font.

**Example:**
```vbnet
dim c as CTFontMBS = CTFontMBS.CreateWithName(”Times”, 12)
MsgBox Join(c.SupportedLanguages,EndOfLine)
```

55.4.75 Table(table as string, options as Integer) as Memoryblock

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a reference to the font table data.

**Notes:**
table: The font table identifier as a Font Table Tag Constants constant. See Font Table Tag Constants for possible values.
options: The font table options.

Returns a retained reference to the font table data as a Memoryblock.

55.4.76 VariationAxes as Dictionary()


**Notes:** An array of variation axes dictionaries. Each variation axis dictionary contains the five variation axis keys listed in Font Variation Axis Dictionary Keys.

55.4.77 VerticalTranslationsForGlyphs(glyphs() as Integer) as CGSizeMBS()

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Calculates the offset from the default (horizontal) origin to the vertical origin for an array of glyphs.

**Notes:**
glyphs: An array of count number of glyphs. Returns the computed origin offsets in an array of count number of CGSizeMBS objects.

### 55.4.78 Properties

#### 55.4.79 Ascent as Double

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the scaled font-ascent metric of the given font. **Notes:**

The font-ascent metric scaled according to the point size and matrix of the font reference. (Read only property)

#### 55.4.80 BoundingBox as CGRectMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the scaled bounding box of the given font. **Notes:**

The design bounding box of the font, which is the rectangle defined by xMin, yMin, xMax, and yMax values for the font. Returns CGRectNull on error. (Read only property)

#### 55.4.81 CapHeight as Double

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the font-cap-height metric of the given font. **Notes:**

The font cap-height metric scaled according to the point size and matrix of the font reference. (Read only property)

#### 55.4.82 CharacterSet as Variant

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Unicode character set of the font. **Notes:**

Value is a CFCharacterSetMBS object. The returned character set covers the nominal referenced by the font’s Unicode ‘cmap table.
55.4.83 Descent as Double

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the scaled font-descent metric of the given font.
**Notes:**
The font-descent metric scaled according to the point size and matrix of the font reference.
(Read only property)

55.4.84 DisplayName as String

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the display name of the given font.
**Example:**
```vba
dim c as CTFontMBS = CTFontMBS.CreateWithName(”Times”, 12)
MsgBox c.DisplayName
```
**Notes:** (Read only property)

55.4.85 FamilyName as String

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the family name of the given font.
**Example:**
```vba
dim c as CTFontMBS = CTFontMBS.CreateWithName(”Times”, 12)
MsgBox c.FamilyName
```
**Notes:** (Read only property)

55.4.86 File as FolderItem

MBS MacCG Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The font file.
**Example:**
dim f as CTFontMBS = CTFontMBS.CreateWithName("Times")
MsgBox f.file.NativePath

Notes: (Read only property)

55.4.87 FontDescriptor as CTFontDescriptorMBS

Notes: A normalized font descriptor for a font containing enough information to recreate this font at a later time. (Read only property)

55.4.88 FullName as String

Example:
    dim c as CTFontMBS = CTFontMBS.CreateWithName("Times", 12)
    MsgBox c.FullName

Notes: (Read only property)

55.4.89 GlyphCount as Integer

Notes: (Read only property)

55.4.90 Leading as Double

Notes:
The font-leading metric scaled according to the point size and matrix of the font reference.
(Read only property)

55.4.91 Matrix as CGAffineTransformMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the transformation matrix of the given font.
**Notes:**
The transformation matrix for the given font reference. This is the matrix that was provided when the font was created.
(Read only property)

55.4.92 PostScriptName as String

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the PostScript name of the given font.
**Example:**
```plaintext
dim c as CTFontMBS = CTFontMBS.CreateWithName("Times", 12)
MsgBox c.PostScriptName
```
**Notes:** (Read only property)

55.4.93 Size as Double

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the point size of the given font.
**Notes:**
This is the point size provided when the font was created.
(Read only property)

55.4.94 SlantAngle as Double

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the slant angle of the given font.
**Notes:**
The transformed slant angle of the font. This is equivalent to the italic or caret angle with any skew from the transformation matrix applied.
(Read only property)

**55.4.95 StringEncoding as UInt32**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the best string encoding for legacy format support.
**Notes:**
The best string encoding for the font.
(Read only property)

**55.4.96 SymbolicTraits as UInt32**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the symbolic traits of the given font.
**Notes:**
The symbolic traits of the font. This is equivalent to the kCTFontSymbolicTrait value of the traits dictionary.
(Read only property)

**55.4.97 Traits as Dictionary**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the traits dictionary of the given font.
**Notes:**
A retained reference to the font traits dictionary. Individual traits can be accessed with the trait key constants.
(Read only property)

**55.4.98 UnderlinePosition as Double**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the scaled underline position of the given font.
**Notes:**
The font underline-position metric scaled according to the point size and matrix of the font reference.
(Read only property)
55.4.99 UnderlineThickness as Double

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the scaled underline-thickness metric of the given font.

**Notes:**
The font underline-thickness metric scaled according to the point size and matrix of the font reference. (Read only property)

55.4.100 UnitsPerEm as UInt64

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the units-per-em metric of the given font.

**Notes:** (Read only property)

55.4.101 URL as String

MBS MacCG Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The font URL.

**Example:**

```dim f as CTFontMBS = CTFontMBS.CreateWithName("Times")
MsgBox f.URL```

**Notes:** (Read only property)

55.4.102 Variation as Dictionary


**Notes:**
The keys for each variation correspond to the variation identifier obtained via kCTFontVariationAxisIdentifierKey, which represents the four-character axis code as a number. (Read only property)
55.4.103  XHeight as Double

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the x-height metric of the given font.

**Notes:**
The font x-height metric scaled according to the point size and matrix of the font reference. (Read only property)
55.4.104  Constants

55.4.105  kCTFontOptionsDefault = 0

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the Font Option Constants.  
**Notes:**  
Default options are used.  
Available in OS X v10.6 and later.

55.4.106  kCTFontOptionsPreferSystemFont = 4

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the Font Option Constants.  
**Notes:**  
Font matching prefers to match Apple system fonts.  
Available in OS X v10.6 and later.

55.4.107  kCTFontOptionsPreventAutoActivation = 1

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the Font Option Constants.  
**Notes:**  
Prevents automatic font activation.  
Available in OS X v10.6 and later.

55.4.108  kCTFontTableAcnt = ”acnt”

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants.  
**Notes:**  
Font table tag for accent attachment.

55.4.109  kCTFontTableAnkr = ”ankr”

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants.  
**Notes:**  
Anchor points
55.4.110 \texttt{kCTFontTableAvar = ”avar”}

MBS MacCG Plugin, Plugin Version: 14.2. \textbf{Function:} One of the font table tag constants. 
\textbf{Notes:} Font table tag for axis variation.

55.4.111 \texttt{kCTFontTableBASE = ”BASE”}

MBS MacCG Plugin, Plugin Version: 14.2. \textbf{Function:} One of the font table tag constants. 
\textbf{Notes:} Font table tag for the font baseline.

55.4.112 \texttt{kCTFontTableBdat = ”bdat”}

MBS MacCG Plugin, Plugin Version: 14.2. \textbf{Function:} One of the font table tag constants. 
\textbf{Notes:} Font table tag for bitmap data.

55.4.113 \texttt{kCTFontTableBhed = ”bhed”}

MBS MacCG Plugin, Plugin Version: 14.2. \textbf{Function:} One of the font table tag constants. 
\textbf{Notes:} Font table tag for bitmap font header.

55.4.114 \texttt{kCTFontTableBloc = ”bloc”}

MBS MacCG Plugin, Plugin Version: 14.2. \textbf{Function:} One of the font table tag constants. 
\textbf{Notes:} Font table tag for bitmap location.

55.4.115 \texttt{kCTFontTableBsln = ”bsln”}

MBS MacCG Plugin, Plugin Version: 14.2. \textbf{Function:} One of the font table tag constants. 
\textbf{Notes:} Font table tag for baseline.

55.4.116 \texttt{kCTFontTableCFF = ”CFF ”}

MBS MacCG Plugin, Plugin Version: 14.2. \textbf{Function:} One of the font table tag constants. 
\textbf{Notes:} Font table tag for a PostScript font program.
55.4. CLASS CTFONTMBS

55.4.117 kCTFontTableCmap = "cmap"
MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants.  
**Notes:** Font table tag for character-to-glyph mapping.

55.4.118 kCTFontTableCvar = "cvar"
MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants.  
**Notes:** Font table tag for control value variation, or CVT variation.

55.4.119 kCTFontTableCvt = "cvt"
MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants.  
**Notes:** Font table tag for control value table.

55.4.120 kCTFontTableDSIG = "DSIG"
MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants.  
**Notes:** Font table tag for a digital signature.

55.4.121 kCTFontTableEBDT = "EBDT"
MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants.  
**Notes:** Font table tag for an embedded bitmap.

55.4.122 kCTFontTableEBLC = "EBLC"
MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants.  
**Notes:** Font table tag for the embedded bitmap location.

55.4.123 kCTFontTableEBSC = "EBSC"
MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants.  
**Notes:** Font table tag for embedded bitmap scaling.
55.4.124  kCTFontTableFdesc = "fdsc"

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants.  
**Notes:** Font table tag for font descriptor.

55.4.125  kCTFontTableFeat = "feat"

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants.  
**Notes:** Font table tag for layout feature.

55.4.126  kCTFontTableFmtx = "fmtx"

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants.  
**Notes:** Font table tag for font metrics.

55.4.127  kCTFontTableFpgm = "fpgm"

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants.  
**Notes:** Font table tag for font program.

55.4.128  kCTFontTableFvar = "fvar"

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants.  
**Notes:** Font table tag for font variation.

55.4.129  kCTFontTableGasp = "gasp"

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants.  
**Notes:** Font table tag for grid-fitting/scan-conversion.

55.4.130  kCTFontTableGDEF = "GDEF"

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants.  
**Notes:** Font table tag for glyph definition.
55.4. CLASS CTFONTMBS

55.4.131 kCTFontTableGlyf = ”glyf”
MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants. **Notes:** Font table tag for glyph data.

55.4.132 kCTFontTableGPOS = ”GPOS”
MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants. **Notes:** Font table tag for glyph positioning.

55.4.133 kCTFontTableGSUB = ”GSUB”
MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants. **Notes:** Font table tag for glyph substitution.

55.4.134 kCTFontTableGvar = ”gvar”
MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants. **Notes:** Font table tag for glyph variation.

55.4.135 kCTFontTableHdmx = ”hdmx”
MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants. **Notes:** Font table tag for horizontal device metrics.

55.4.136 kCTFontTableHead = ”head”
MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants. **Notes:** Font table tag for font header.

55.4.137 kCTFontTableHhea = ”hhea”
MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants. **Notes:** Font table tag for horizontal header.
55.4.138 \texttt{kCTFontTableHmtx = "hmtx"}


55.4.139 \texttt{kCTFontTableHsty = "hsty"}


55.4.140 \texttt{kCTFontTableJSTF = "JSTF"}


55.4.141 \texttt{kCTFontTableJust = "just"}


55.4.142 \texttt{kCTFontTableKern = "kern"}


55.4.143 \texttt{kCTFontTableKerx = "kerx"}


55.4.144 \texttt{kCTFontTableLcar = "lcar"}

55.4.145  kCTFontTableLoca = "loca"

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants.  
**Notes:** Font table tag for index to location.

55.4.146  kCTFontTableLtag = "ltag"

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants.  
**Notes:** Language tags

55.4.147  kCTFontTableLTSH = "LTSH"

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants.  
**Notes:** Font table tag for linear threshold.

55.4.148  kCTFontTableMaxp = "maxp"

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants.  
**Notes:** Font table tag for maximum profile.

55.4.149  kCTFontTableMort = "mort"

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants.  
**Notes:** Font table tag for morph.

55.4.150  kCTFontTableMorx = "morx"

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants.  
**Notes:** Font table tag for extended morph.

55.4.151  kCTFontTableName = "name"

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants.  
**Notes:** Font table tag for naming table.
55.4.152  \texttt{kCTFontTableOpbd = "opbd"}

MBS MacCG Plugin, Plugin Version: 14.2. \textbf{Function:} One of the font table tag constants. 
\textbf{Notes:} Font table tag for optical bounds.

55.4.153  \texttt{kCTFontTableOptionExcludeSynthetic = 1}

MBS MacCG Plugin, Plugin Version: 14.2. \textbf{Function:} One of the Font Table Option Constants. 
\textbf{Notes:} 
The font table excludes synthetic font data. 
Available in OS X v10.5 and later. 
Deprecated in OS X v10.8.

55.4.154  \texttt{kCTFontTableOptionNoOptions = 0}

MBS MacCG Plugin, Plugin Version: 14.2. \textbf{Function:} One of the Font Table Option Constants. 
\textbf{Notes:} No font table options are specified.

55.4.155  \texttt{kCTFontTableOS2 = "OS/2"}

MBS MacCG Plugin, Plugin Version: 14.2. \textbf{Function:} One of the font table tag constants. 
\textbf{Notes:} Font table tag for OS/2 and Windows-specific metrics.

55.4.156  \texttt{kCTFontTablePCLT = "PCLT"}

MBS MacCG Plugin, Plugin Version: 14.2. \textbf{Function:} One of the font table tag constants. 
\textbf{Notes:} Font table tag for PCL 5 data.

55.4.157  \texttt{kCTFontTablePost = "post"}

MBS MacCG Plugin, Plugin Version: 14.2. \textbf{Function:} One of the font table tag constants. 
\textbf{Notes:} Font table tag for PostScript information.
55.4.158 kCTFontTablePrep = "prep"


55.4.159 kCTFontTableProp = "prop"


55.4.160 kCTFontTableSbit = "sbit"


55.4.161 kCTFontTableSbix = "sbix"


55.4.162 kCTFontTableTrak = "trak"


55.4.163 kCTFontTableVDMX = "VDMX"

55.4.164  kCTFontTableVhea = "vhea"

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants. **Notes:** Font table tag for vertical header.

55.4.165  kCTFontTableVmtx = "vmtx"

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants. **Notes:** Font table tag for vertical metrics.

55.4.166  kCTFontTableVORG = "VORG"

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants. **Notes:** Font table tag for vertical origin.

55.4.167  kCTFontTableZapf = "Zapf"

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the font table tag constants. **Notes:** Font table tag for glyph reference.

55.4.168  kCTFontUIFontAlertHeader = 18

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the User Interface Type Constants **Notes:** The font used for alert headers.

55.4.169  kCTFontUIFontApplication = 9

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the User Interface Type Constants **Notes:** The default font for text documents.

55.4.170  kCTFontUIFontControlContent = 26

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the User Interface Type Constants **Notes:** The font used for contents of user-interface controls.
55.4.171  kCTFontUIFontEmphasizedSystem = 3

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the User Interface Type Constants
**Notes:** The system font used for emphasis in alerts.

55.4.172  kCTFontUIFontEmphasizedSystemDetail = 20

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the User Interface Type Constants
**Notes:** The system font used for emphasis in details.

55.4.173  kCTFontUIFontLabel = 10

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the User Interface Type Constants
**Notes:** The font used for labels and tick marks on full-size sliders.

55.4.174  kCTFontUIFontMenuItem = 12

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the User Interface Type Constants
**Notes:** The font used for menu items.

55.4.175  kCTFontUIFontMenuItemCmdKey = 14

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the User Interface Type Constants
**Notes:** The font used for menu-item command-key equivalents.

55.4.176  kCTFontUIFontMenuItemMark = 13

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the User Interface Type Constants
**Notes:** The font used to draw menu item marks.

55.4.177  kCTFontUIFontMenuTitle = 11

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the User Interface Type Constants
**Notes:** The font used for menu titles.
55.4.178  kCTFontUIFontMessage = 23

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the User Interface Type Constants
**Notes:** The font used for standard interface items, such as button labels, menu items, and so on.

55.4.179  kCTFontUIFontMiniEmphasizedSystem = 7

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the User Interface Type Constants
**Notes:** The small system font used for emphasis.

55.4.180  kCTFontUIFontMiniSystem = 6

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the User Interface Type Constants
**Notes:** The standard small system font used for informative text in alerts, column headings in lists, help
tags, and small controls.

55.4.181  kCTFontUIFontNone = -1

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the User Interface Type Constants
**Notes:** The user-interface font type is not specified.

55.4.182  kCTFontUIFontPalette = 24

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the User Interface Type Constants
**Notes:** The font used in tool palettes.

55.4.183  kCTFontUIFontPushButton = 16

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the User Interface Type Constants
**Notes:** The font used for a push button (a rounded rectangular button with a text label on it).

55.4.184  kCTFontUIFontSmallEmphasizedSystem = 5

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the User Interface Type Constants
**Notes:** The system font used for emphasis in alerts.
55.4.185  kCTFontUIFontSmallSystem = 4

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the User Interface Type Constants  
**Notes:** The standard small system font used for informative text in alerts, column headings in lists, help tags, and small controls.

55.4.186  kCTFontUIFontSmallToolbar = 22

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the User Interface Type Constants  
**Notes:** The small font used for labels of toolbar items.

55.4.187  kCTFontUIFontSystem = 2

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the User Interface Type Constants  
**Notes:** The system font used for standard user-interface items such as button labels, menu items, and so on.

55.4.188  kCTFontUIFontSystemDetail = 19

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the User Interface Type Constants  
**Notes:** The standard system font used for details.

55.4.189  kCTFontUIFontToolbar = 21

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the User Interface Type Constants  
**Notes:** The font used for labels of toolbar items.

55.4.190  kCTFontUIFontToolTip = 25

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the User Interface Type Constants  
**Notes:** The font used for tool tips.

55.4.191  kCTFontUIFontUser = 0

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the User Interface Type Constants  
**Notes:** The font used by default for documents and other text under the users control (that is, text whose
font the user can normally change).

55.4.192  kCTFontUIFontUserFixedPitch = 1

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the User Interface Type Constants  
**Notes:** The font used by default for documents and other text under the users control when that font is fixed-pitch. Available in OS X v10.5 and later.

55.4.193  kCTFontUIFontUtilityWindowTitle = 17

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the User Interface Type Constants  
**Notes:** The font used for utility window titles.

55.4.194  kCTFontUIFontViews = 8

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the User Interface Type Constants  
**Notes:** The view font used as the default font of text in lists and tables.

55.4.195  kCTFontUIFontWindowTitle = 15

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the User Interface Type Constants  
**Notes:** The font used for utility window titles.
55.5. CLASS CTFRAMEMBS

55.5. class CTFrameMBS

55.5.1 class CTFrameMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The CTFrame opaque type represents a frame containing multiple lines of text.

**Example:**

```dim longText as string = "Lorem ipsum dolor sit amet..."

dim ct as new CFStringMBS(longText)
dim s as new CFAttributedStringMBS(ct, nil)
```

// layout master
dim framesetter as CTFramesetterMBS = CTFramesetterMBS.CreateWithAttributedString(s)

// a column
dim ColumnPath as new CGMutablePathMBS
dim Rect as new CGRectMBS(0, 0, g.Width, g.Height)
ColumnPath.AddRect nil, Rect

// context
dim CGContextHandle as Integer = g.Handle(g.HandleTypeCGContextRef)
dim CGContext as CGContextMBS = CGContextMBS.contextWithCGContext(CGContextHandle)

CGContext.SaveGState
// reset text matrix
dim a as CGAffineTransformMBS = CGAffineTransformMBS.Identity
CGContext.TextMatrix = a

```dim Frame as CTFrameMBS = framesetter.CreateFrame(0, 0, ColumnPath, nil)
```

// draw
Frame.Draw(CGContext)

// cleanup
CGContext.RestoreGState
CGContext.Flush

**Notes:**
The frame object is the output resulting from the text-framing process performed by a framesetter object.

You can draw the entire text frame directly into the current graphic context. The frame object contains an array of line objects that can be retrieved for individual rendering or to get glyph information. Subclass of the CFObjectMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

### 55.5.2 Methods

#### 55.5.3 Available as boolean

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this class is available. **Notes:** Returns true in OS X v10.5 and later.

#### 55.5.4 Constructor


#### 55.5.5 Draw(context as CGContextMBS)

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Draws an entire frame into a context. **Notes:** context: The context in which to draw the frame. If both the frame and the context are valid, the frame is drawn in the context. This call can leave the context in any state and does not flush it after the draw operation.

#### 55.5.6 kCTFrameClippingPathsAttributeName as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attributes keys. **Notes:** Specifies array of paths to clip frame. The value must be a array containing dictionaries. Each dictionary should have a kCTFramePathClippingPathAttributeName key-value pair, and can have a kCTFramePathFillRuleAttributeName key-value pair and kCTFramePathFillRuleAttributeName key-value pair as optional parameters. Available in OS X v10.7 and later.
55.5. **CLASS CTFRAMEMEMBS**

### 55.5.7  kCTFramePathClippingPathAttributeName as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the attributes keys. **Notes:**

Specifies clipping path. This attribute is valid only in a dictionary contained in an array specified by kCTFrameClippingPathsAttributeName.

The value must be a CGPathMBS specifying a clipping path. See kCTFrameClippingPathsAttributeName. Available in OS X v10.7 and later.

### 55.5.8  kCTFramePathFillRuleAttributeName as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

The key used to specify the fill rule for a frame. **Notes:**

The value must be a CFNumberRef object containing a CTFramePathFillRule constant. See CTFramePathFillRule Constants for more information. The default value is kCTFramePathFillEvenOdd. Available in OS X v10.7 and later.

### 55.5.9  kCTFramePathWidthAttributeName as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

One of the attributes keys. **Notes:**

The key used to specify the frame width. The value must be a number containing a value specifying the frame width. The default width value is zero. Available in OS X v10.7 and later.

### 55.5.10  kCTFrameProgressionAttributeName as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

One of the attributes keys. **Notes:**

Specifies progression for a frame. A number containing a CTFrameProgression constant. The default is kCTFrameProgressionTopToBottom. Available in OS X v10.5 and later.
This value determines the line-stacking behavior for a frame and does not affect the appearance of the glyphs within that frame.

55.5.11  LineOrigins(location as Integer, length as Integer) as CGPointMBS()

Function: Copies a range of line origins for a frame.  
Notes:  
location and length: The range of line origins you wish to copy. If the length of the range is 0, then the copy operation continues from the start index of the range to the last line origin.  

Returns array with CGPoints. Empty array in case of errors.  

Special Considerations  
In versions of OS X prior to 10.7 and versions of iOS prior to 4.2, this function may function unpredictably if the frame is not rectangular.  

55.5.12  Lines as CTLineMBS()  

Function: Returns an array of lines stored in the frame.  

55.5.13  Properties  

55.5.14  FrameAttributes as Dictionary  

Function: Returns the frame attributes used to create the frame.  
Notes:  
Returns a reference to a CFDictionary object containing the frame attributes that were used to create the frame, or, if the frame was created without any frame attributes, nil.  

You can create a frame with an attributes dictionary to control various aspects of the framing process. These attributes are different from the ones used to create an attributed string.  
(Read only property)
55.5. **CLASS CTFRAMEMBS**

55.5.15 **Path as CGPathMBS**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the path used to create the frame.
**Notes:** (Read only property)

55.5.16 **StringLengthRange as Integer**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the range of characters originally requested to fill the frame.
**Notes:** (Read only property)

55.5.17 **StringLengthLocation as Integer**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the range of characters originally requested to fill the frame.
**Notes:** (Read only property)

55.5.18 **VisibleStringLengthRange as Integer**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the range of characters that actually fit in the frame.
**Notes:**
This function can be used to cascade frames, because it returns the range of characters that can be seen in the frame. The next frame would start where this frame ends.
(Read only property)

55.5.19 **VisibleStringLengthLocation as Integer**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the range of characters that actually fit in the frame.
**Notes:**
This function can be used to cascade frames, because it returns the range of characters that can be seen in the frame. The next frame would start where this frame ends.
(Read only property)
55.5.20 Constants

55.5.21 kCTFramePathFillEvenOdd = 0

MBS MacCG Plugin, Plugin Version: 14.2. Function: One of the constants to specify the fill rule used by a frame.
Notes:
Text is filled in the area that would be painted if the path were given to CGContextMBS.EOFillPath. Available in OS X v10.7 and later.

55.5.22 kCTFramePathFillWindingNumber = 1

MBS MacCG Plugin, Plugin Version: 14.2. Function: One of the constants to specify the fill rule used by a frame.
Notes:
Text is fill in the area that would be painted if the path were given to CGContextMBS.FillPath. Available in OS X v10.7 and later.

55.5.23 kCTFrameProgressionLeftToRight = 2

MBS MacCG Plugin, Plugin Version: 14.2. Function: One of the constants to specify frame progression types.
Notes:
Lines are stacked left to right for vertical text. The lines of text within a frame may be stacked for either horizontal or vertical text. Values are enumerated for each stacking type supported by CTFrame. Frames created with a progression type specifying vertical text rotate lines 90 degrees counterclockwise when drawing.

55.5.24 kCTFrameProgressionRightToLeft = 1

MBS MacCG Plugin, Plugin Version: 14.2. Function: One of the constants to specify frame progression types.
Notes:
Lines are stacked right to left for vertical text. The lines of text within a frame may be stacked for either horizontal or vertical text. Values are enumerated for each stacking type supported by CTFrame. Frames created with a progression type specifying vertical text rotate lines 90 degrees counterclockwise when drawing.
55.5.25  \( \text{kCTFrameProgressionTopToBottom} = 0 \)

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants to specify frame progression types.

**Notes:**

Lines are stacked top to bottom for horizontal text.
The lines of text within a frame may be stacked for either horizontal or vertical text. Values are enumerated for each stacking type supported by CTFrame. Frames created with a progression type specifying vertical text rotate lines 90 degrees counterclockwise when drawing.
55.6 class CTFramesetterMBS

55.6.1 class CTFramesetterMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The CTFramesetter opaque type is used to generate text frames. That is, CTFramesetter is an object factory for CTFrame objects.
**Notes:**
The framesetter takes an attributed string object and a shape descriptor object and calls into the typesetter to create line objects that fill that shape. The output is a frame object containing an array of lines. The frame can then draw itself directly into the current graphic context.
Subclass of the CFObjectMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

55.6.2 Methods

55.6.3 Available as boolean

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Whether this class is available.
**Notes:** Returns true in OS X v10.5 and later.

55.6.4 Constructor

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The private constructor.

55.6.5 CreateFrame(location as Integer, length as Integer, path as CGPathMBS, frameAttributes as dictionary = nil) as CTFrameMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates an immutable frame using a framesetter.
**Notes:**
location and length: The range, of the attributed string that was used to create the framesetter, that is to be typeset in lines fitted into the frame. If the length portion of the range is set to 0, then the framesetter continues to add lines until it runs out of text or space.
path: A CGPath object that specifies the shape of the frame. The path may be non-rectangular in versions of OS X v10.7 or later and versions of iOS 4.2 or later.
frameAttributes: Additional attributes that control the frame filling process can be specified here, or nil if
there are no such attributes.

Returns a reference to a new CTFrame object if the call was successful; otherwise, nil.

This call creates a frame full of glyphs in the shape of the path provided by the path parameter. The framesetter continues to fill the frame until it either runs out of text or it finds that text no longer fits.

Special Considerations
In versions of OS X prior to 10.7 and versions of iOS prior to 4.2, this function returns NULL if the CGPath specified by the path parameter is not rectangular.

55.6.6 CreateWithAttributedString(s as CFAttributedStringMBS) as CTFramesetterMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an immutable framesetter object from an attributed string.

**Notes:**

s: The attributed string with which to construct the framesetter object.

Returns a reference to a CTFramesetter object if the call was successful; otherwise, NULL. The resultant framesetter object can be used to create and fill text frames with the CreateFrame call.

55.6.7 SuggestFrameSizeWithConstraints(location as Integer, length as Integer, frameAttributes as dictionary, constraints as CGSizeMBS, byref fitRangeLocation as Integer, byref fitRangeLength as Integer) as CGSizeMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Determines the frame size needed for a string range.

**Notes:**

location and length: The string range to which the frame size applies. The string range is a range over the string used to create the framesetter. If the length portion of the range is set to 0, then the framesetter continues to add lines until it runs out of text or space.

frameAttributes: Additional attributes that control the frame filling process, or NULL if there are no such attributes.

constraints: The width and height to which the frame size is constrained. A value of CGFLOAT_MAX for either dimension indicates that it should be treated as unconstrained.

fitRange: On return, contains the range of the string that actually fit in the constrained size.
Returns the actual dimensions for the given string range and constraints.

This function can be used to determine how much space is needed to display a string, optionally by con- straining the space along either dimension.
Available in OS X v10.5 and later.

55.6.8 Properties

55.6.9 TypeSetter as CTTypesetterMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns the typesetter object being used by the framesetter.
Notes:
Return sa reference to a CTTypesetter object if the call was successful; otherwise, nil. The framesetter maintains a reference to the returned object, which should not be released by the caller.

Each framesetter uses a typesetter internally to perform line breaking and other contextual analysis based on the characters in a string; this function returns the typesetter being used by a particular framesetter in case the caller would like to perform other operations on that typesetter.

Available in OS X v10.5 and later.
(Read only property)
55.7.  CLASS CTGLYPHINFOMBS

55.7   class CTGlyphInfoMBS

55.7.1   class CTGlyphInfoMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The CTGlyphInfo opaque type enables you to override a font’s specified mapping from Unicode to the glyph ID. **Notes:** Subclass of the CFObjectMBS class. This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

55.7.2   Methods

55.7.3   Available as boolean

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this class is available. **Notes:** Returns true in OS X v10.5 and later.

55.7.4   Constructor


55.7.5   CreateWithCharacterIdentifier(cid as Integer, collection as Integer, baseString as string) as CTGlyphInfoMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an immutable glyph info object with a character identifier. **Notes:**
cid: A character identifier.
collection: A character collection identifier.
baseString: The part of the string the returned object is intended to override.

Returns a valid reference to an immutable CTGlyphInfoMBS object if glyph info creation was successful; otherwise, nil.

This function creates an immutable glyph info object for a character identifier and a character collection.
55.7.6 CreateWithGlyph(glyph as Integer, font as CTFontMBS, baseString as string) as CTGlyphInfoMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an immutable glyph info object with a glyph index.  
**Notes:**  
glyph: The index of the glyph.  
font: The font to be associated with the returned CTGlyphInfoMBS object.  
baseString: The part of the string the returned object is intended to override.  

Returns a valid reference to an immutable CTGlyphInfoMBS object, if glyph info creation was successful; otherwise, nil.  

This function creates an immutable glyph info object for a glyph index using a specified font.  
Available in OS X v10.5 and later.

55.7.7 CreateWithGlyphName(glyphName as string, font as CTFontMBS, baseString as string) as CTGlyphInfoMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an immutable glyph info object with a glyph name.  
**Notes:**  
glyphName: The name of the glyph.  
font: The font to be associated with the returned CTGlyphInfo object.  
baseString: The part of the string the returned object is intended to override.  

Returns a valid reference to an immutable CTGlyphInfo object if glyph info creation was successful; otherwise, nil.  
This function creates an immutable glyph info object for a glyph name such as copyright using a specified font.  
Available in OS X v10.5 and later.
55.7. **CLASS CTGLYPHINFOMBS**

55.7.8 **Properties**

55.7.9 **CharacterCollection as Integer**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Gets the character collection for a glyph info object.

**Notes:**
If the glyph info object was created with a glyph name or a glyph index, its character collection is kCTIdentityMappingCharacterCollection.
(Read only property)

55.7.10 **CharacterIdentifier as Integer**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Gets the character identifier for a glyph info object.

**Notes:** (Read only property)

55.7.11 **GlyphName as String**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Gets the glyph name for a glyph info object if that object exists.

**Notes:** (Read only property)

55.7.12 **Constants**

55.7.13 **kCTAdobeCNS1CharacterCollection = 1**

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants to specify character collections.

**Notes:** The Adobe-CNS1 mapping.

55.7.14 **kCTAdobeGB1CharacterCollection = 2**

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants to specify character collections.

**Notes:** The Adobe-GB1 mapping.
55.7.15  \textbf{kCTAdobeJapan1CharacterCollection} = 3


55.7.16  \textbf{kCTAdobeJapan2CharacterCollection} = 4


55.7.17  \textbf{kCTAdobeKorea1CharacterCollection} = 5

MBS MacCG Plugin, Plugin Version: 14.2. \textbf{Function:} One of the constants to specify character collections. \textbf{Notes:} The Adobe-Korea1 mapping.

55.7.18  \textbf{kCTCharacterCollectionAdobeCNS1} = 1


55.7.19  \textbf{kCTCharacterCollectionAdobeGB1} = 2


55.7.20  \textbf{kCTCharacterCollectionAdobeJapan1} = 3


55.7.21  \textbf{kCTCharacterCollectionAdobeJapan2} = 4

55.7.22 kCTCharacterCollectionAdobeKorea1 = 5

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants to specify character collections. **Notes:** The Adobe-Korea1 mapping.

55.7.23 kCTCharacterCollectionIdentityMapping = 0

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants to specify character collections. **Notes:** The character identifier is equal to the CGGlyph glyph index.

55.7.24 kCTIdentityMappingCharacterCollection = 0

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants to specify character collections. **Notes:** The character identifier is equal to the CGGlyph glyph index.
55.8 class CTLineMBS

55.8.1 class CTLineMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The CTLine opaque type represents a line of text.

Example:

Sub Paint(g As Graphics)
    // inside paint event of a Canvas
    // create a font, quasi systemFontWithSize:24.0
    dim sysUIFont as CTFontMBS = CTFontMBS.CreateUIFontForLanguage(CTFontMBS.kCTFontUIFontSystem, 24.0)
    // create a naked string
    dim text as string = "Some Text."
    // blue
    dim cgColor as CGColorMBS = CGColorMBS.CreateGenericRGB(0.0, 0.0, 1.0)
    // single underline
    dim underline as Integer = CoreTextMBS.kCTUnderlineStyleSingle
    // pack it into attributes dictionary
    dim attributesDict as new Dictionary
    attributesDict.Value(CoreTextMBS.kCTFontAttributeName) = sysUIFont
    attributesDict.Value(CoreTextMBS.kCTForegroundColorAttributeName) = cgColor
    attributesDict.Value(CoreTextMBS.kCTUnderlineStyleAttributeName) = underline
    // make the attributed string
    dim cfDic as new CFDictionaryMBS(attributesDict)
    dim cfStr as new CFStringMBS(text)
    dim stringToDraw as CFAttributedStringMBS = CFAttributedStringMBS.Create(cfStr, cfDic)
    // now for the actual drawing
    dim CGContextHandle as Integer = g.Handle(g.HandleTypeCGContextRef)
    dim CGContext as CGContextMBS = CGContextMBS.contextWithCGContext(CGContextHandle)
    CGContext.SaveGState
    // reset text matrix
    dim a as CGAffineTransformMBS = CGAffineTransformMBS.Identity
    CGContext.TextMatrix = a
    // draw
    dim line as CTLineMBS = CTLineMBS.CreateWithAttributedString(stringToDraw)
55.8. CLASS CTLINEMBS

```csharp
dim x as Integer = 10
dim y as Integer = 10

// plus text height
y = y + 24

// swap y
y = g.Height - y

CGContext.TextPosition = new CGPointMBS(x, y)
line.Draw(CGContext)

CGContext.RestoreGState
CGContext.Flush
End Sub
```

**Notes:**
A CTLLine object contains an array of glyph runs. Line objects are created by the typesetter during a frame-setting operation and can draw themselves directly into a graphics context. Subclass of the CFObjectMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

### 55.8.2 Methods

### 55.8.3 Available as boolean

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Whether this class is available.
**Notes:** Returns true in OS X v10.5 and later.

### 55.8.4 Bounds(options as Integer = 0) as CGRectMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Queries bounds.
55.8.5 Constructor

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The private constructor.

55.8.6 CreateJustifiedLine(justificationFactor as Double, justificationWidth as Double) as CTLineMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a justified line from an existing line.
**Notes:**
- line: The line from which to create a justified line.
- justificationFactor: Full or partial justification. When set to 1.0 or greater, full justification is performed. If this parameter is set to less than 1.0, varying degrees of partial justification are performed. If it is set to 0 or less, no justification is performed.
- justificationWidth: The width to which the resultant line is justified. If justificationWidth is less than the actual width of the line, then negative justification is performed (that is, glyphs are squeezed together).

Returns a reference to a justified CTLine object if the call was successful; otherwise, nil.
Available in OS X v10.5 and later.

55.8.7 CreateTruncatedLine(width as Double, truncationType as Integer, truncationToken as CTLineMBS = nil) as CTLineMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a truncated line from an existing line.
**Notes:**
- line: The line from which to create a truncated line.
- width: The width at which truncation begins. The line is truncated if its width is greater than the width passed in this parameter.
- truncationType: The type of truncation to perform if needed. See constants for possible values.
- truncationToken: This token is added at the point where truncation took place, to indicate that the line was truncated. Usually, the truncation token is the ellipsis character (U+2026). If this parameter is set to nil, then no truncation token is used and the line is simply cut off.

Returns a reference to a truncated CTLine object if the call was successful; otherwise, NULL.

The line specified in truncationToken should have a width less than the width specified by the width parameter. If the width of the line specified in truncationToken is greater than width and truncation is needed, the function returns nil.
Available in OS X v10.5 and later.

55.8.8 CreateWithAttributedString(s as CFAttributedStringMBS) as CTLineMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a single immutable line object directly from an attributed string.

**Notes:**
- `s`: The string from which the line is created.

Returns a reference to a CTLine object if the call was successful; otherwise, nil.

This function allows clients who need very simple line generation to create a line without creating a typesetter object. The typesetting is done under the hood. Without a typesetter object, the line cannot be properly broken. However, for simple things like text labels, line breaking is not an issue.

Available in OS X v10.5 and later.

55.8.9 Draw(context as CGContextMBS)

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Draws a complete line.

**Notes:**
- `context`: The context into which the line is drawn.

This is a convenience function because the line could be drawn run-by-run by getting the glyph runs, getting the glyphs out of them, and calling a function such as CGContextMBS.ShowGlyphsAtPositions. This call can leave the graphics context in any state and does not flush the context after the draw operation.

Available in OS X v10.5 and later.

55.8.10 GlyphRuns as CTRunMBS()

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the array of glyph runs that make up the line object.

**Notes:**
- Returns an array containing the CTRunMBS objects that make up the line.

Available in OS X v10.5 and later.
55.8.11 *ImageBounds(context as CGContextMBS) as CGRectMBS*

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Calculates the image bounds for a line.

**Notes:**

context: The context for which the image bounds are calculated. This is required because the context could have settings in it that would cause changes in the image bounds.

Returns a rectangle that tightly encloses the paths of the line’s glyphs, or, if the line or context is invalid, CGRectNull.
Available in OS X v10.5 and later.

55.8.12 *OffsetForStringIndex(charIndex as Integer, byref secondaryOffset as Double) as Double*

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Determines the graphical offset or offsets for a string index.

**Notes:**

charIndex: The string index corresponding to the desired position.
secondaryOffset: On output, the secondary offset along the baseline for charIndex. When a single caret is sufficient for a string index, this value will be the same as the primary offset, which is the return value of this function. May be NULL.

Returns the primary offset along the baseline for charIndex, or 0.0 if the line does not support string access.

This function returns the graphical offset or offsets corresponding to a string index, suitable for movement between adjacent lines or for drawing a custom caret. For moving between adjacent lines, the primary offset can be adjusted for any relative indentation of the two lines; a CGPoint constructed with the adjusted offset for its x value and 0.0 for its y value is suitable for passing to CTLineGetStringIndexForPosition. For drawing a custom caret, the returned primary offset corresponds to the portion of the caret that represents the visual insertion location for a character whose direction matches the line’s writing direction.

Available in OS X v10.5 and later.
55.8.13 PenOffsetForFlush(flushFactor as Double, flushWidth as Double) as Double

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Gets the pen offset required to draw flush text.

**Notes:**
- flushFactor: Determines the type of flushness. A flushFactor of 0 or less indicates left flush. A flushFactor of 1.0 or more indicates right flush. Flush factors between 0 and 1.0 indicate varying degrees of center flush, with a value of 0.5 being totally center flush.
- flushWidth: Specifies the width to which the flushness operation should apply.

Returns the offset from the current pen position for the flush operation.
Available in OS X v10.5 and later.

55.8.14 StringIndexForPosition(position as CGPointMBS) as Integer

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Performs hit testing.

**Notes:**
- position: The location of the mouse click relative to the line’s origin.

Returns the string index for the position, or if the line does not support string access, kCFNotFound. Relative to the line’s string range, this value can be no less than the first string index and no greater than the last string index plus 1.

This function can be used to determine the string index for a mouse click or other event. This string index corresponds to the character before which the next character should be inserted. This determination is made by analyzing the string from which a typesetter was created and the corresponding glyphs as embodied by a particular line.
Available in OS X v10.5 and later.

55.8.15 TypographicBounds(byref ascent as Double, byref descent as Double, byref leading as Double) as Double

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Calculates the typographic bounds of a line.

**Notes:**
- ascent: On output, the ascent of the line.
- descent: On output, the descent of the line.
- leading: On output, the leading of the line.
Returns the typographic width of the line. If the line is invalid, this function returns 0.

55.8.16 Properties

55.8.17 GlyphCount as Integer

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the total glyph count for the line object.

**Notes:**
The total glyph count is equal to the sum of all of the glyphs in the glyph runs forming the line. (Read only property)

55.8.18 StringRangeLength as Integer

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Gets the range of characters that originally spawned the glyphs in the line.

**Notes:** (Read only property)

55.8.19 StringRangeLocation as Integer

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Gets the range of characters that originally spawned the glyphs in the line.

**Notes:** (Read only property)

55.8.20 TrailingWhitespaceWidth as Double

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the trailing whitespace width for a line.

**Notes:**
The width of the line’s trailing whitespace. If the line is invalid, this function will always return zero.

Creating a line for a width can result in a line that is actually longer than the desired width due to trailing whitespace. Although this is typically not an issue due to whitespace being invisible, this function can be used to determine what amount of a line’s width is due to trailing whitespace. Available in OS X v10.5 and later.
55.8. Constants

55.8.21 kCTLineBoundsExcludeTypographicLeading = 1

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the line bounds constants. **Notes:** Pass this option to exclude typographic leading.

55.8.22 kCTLineBoundsExcludeTypographicShifts = 2

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the line bounds constants. **Notes:** Pass this option to ignore cross-stream shifts due to positioning (such as kerning or baseline alignment).

55.8.23 kCTLineBoundsUseGlyphPathBounds = 8

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the line bounds constants. **Notes:** Pass this option to use glyph path bounds rather than the default typographic bounds.

55.8.24 kCTLineBoundsUseHangingPunctuation = 4

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the line bounds constants. **Notes:** Normally line bounds include all glyphs; pass this option to treat standard punctuation hanging off either end of the line as fully hanging.

55.8.25 kCTLineBoundsUseOpticalBounds = 16

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the line bounds constants. **Notes:** Pass this option to use optical bounds. This option overrides kCTLineBoundsUseGlyphPathBounds.

55.8.26 kCTLineTruncationEnd = 1

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the values to tell the truncation engine which type of truncation is being requested.
Notes: Truncate the end of the line, leaving the start portion visible.

55.8.28  \texttt{kCTLineTruncationMiddle} = 2

MBS MacCG Plugin, Plugin Version: 14.2. \textbf{Function}: One of the values to tell the truncation engine which type of truncation is being requested.
\textbf{Notes}: Truncate the middle of the line, leaving both the start and the end portions visible.

55.8.29  \texttt{kCTLineTruncationStart} = 0

MBS MacCG Plugin, Plugin Version: 14.2. \textbf{Function}: One of the values to tell the truncation engine which type of truncation is being requested.
\textbf{Notes}: Truncate the beginning of the line, leaving the end portion visible.
55.9. class CTMutableFontCollectionMBS

55.9.1 class CTMutableFontCollectionMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The mutable font collection class.

**Notes:**
Subclass of the CTFontCollectionMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

55.9.2 Methods

55.9.3 Constructor

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The private constructor.

55.9.4 SetExclusionDescriptors(descriptors() as CTFontDescriptorMBS)

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Replaces the array of descriptors to exclude from the match.

55.9.5 SetQueryDescriptors(descriptors() as CTFontDescriptorMBS)

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Replaces the array of descriptors to match.
55.10 class CTParagraphStyleMBS

55.10.1 class CTParagraphStyleMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The CTParagraphStyle opaque type represents paragraph or ruler attributes in an attributed string.
**Notes:**
A paragraph style object represents a complex attribute value in an attributed string, storing a number of
subattributes that affect paragraph layout for the characters of the string. Among these subattributes are
alignment, tab stops, writing direction, line-breaking mode, and indentation settings.
Subclass of the CFObjectMBS class.

55.10.2 Methods

55.10.3 Available as boolean

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Whether this class is available.
**Notes:** Returns true in OS X v10.5 and later.

55.10.4 Constructor

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates an immutable paragraph style.
**Notes:**
Returns a valid reference to an immutable CTParagraphStyle object, If the paragraph style creation was
successful; otherwise, nil.

Using this function is the easiest and most efficient way to create a paragraph style. Paragraph styles should
be kept immutable for totally lock-free operation. If an invalid paragraph style setting specifier is passed into
the settings parameter, nothing bad will happen, but you will be unable to query for this value. The rea-
son is to allow backward compatibility with style setting specifiers that may be introduced in future versions.

Available in OS X v10.5 and later.
55.10. CLASS CTParagraphStyleMBS

55.10.5 Create as CTParagraphStyleMBS


**Notes:**
Returns a valid reference to an immutable CTParagraphStyle object, if the paragraph style creation was successful; otherwise, nil.

Using this function is the easiest and most efficient way to create a paragraph style. Paragraph styles should be kept immutable for totally lock-free operation. If an invalid paragraph style setting specifier is passed into the settings parameter, nothing bad will happen, but you will be unable to query for this value. The reason is to allow backward compatibility with style setting specifiers that may be introduced in future versions.

Available in OS X v10.5 and later.

See also:
- 55.10.6 Create(settings() as CTParagraphStyleSettingMBS) as CTParagraphStyleMBS

55.10.6 Create(settings() as CTParagraphStyleSettingMBS) as CTParagraphStyleMBS


**Notes:**
- settings: The settings with which to preload the paragraph style.

Returns a valid reference to an immutable CTParagraphStyle object, if the paragraph style creation was successful; otherwise, nil.

Using this function is the easiest and most efficient way to create a paragraph style. Paragraph styles should be kept immutable for totally lock-free operation. If an invalid paragraph style setting specifier is passed into the settings parameter, nothing bad will happen, but you will be unable to query for this value. The reason is to allow backward compatibility with style setting specifiers that may be introduced in future versions.

Available in OS X v10.5 and later.

See also:
- 55.10.5 Create as CTParagraphStyleMBS
55.10.7  CreateCopy as CTParagraphStyleMBS

**Notes:** A valid reference to an immutable CTParagraphStyle object that is a copy of the one passed into paragraphStyle, If the paragraphStyle reference is valid; otherwise nil, if any error occurred, including being supplied with an invalid reference.

55.10.8  CreateWithAlignment(Alignment as Integer) as CTParagraphStyleMBS

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an immutable paragraph style.  
**Example:**

```vba
Dim a As Integer
Dim t As CTParagraphStyleMBS
a = CTParagraphStyleMBS.kCTTextAlignmentRight
t = CTParagraphStyleMBS.CreateWithAlignment(a)
MsgBox str(T.Alignment) // shows 1
```

55.10.9  Tab Stops as CTTextTabMBS()

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The CTTextTab objects, sorted by location, that define the tab stops for the paragraph style.  
**Notes:** Type: Array of CTTextTabMBS. Default: 12 left-aligned tabs, spaced by 28.0 points. Application: CTFramesetter, CTTypesetter.

55.10.10  Properties

55.10.11  Alignment as Integer

**Notes:** Natural text alignment is realized as left or right alignment, depending on the line sweep direction of the first script contained in the paragraph. Type: CTTextAlignment. Default: kCTNaturalTextAlignment. Application: CTFramesetter.
55.10.12 BaseWritingDirection as Integer

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The base writing direction of the lines.
**Notes:**
(Read only property)

55.10.13 DefaultTabInterval as Double

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The documentwide default tab interval.
**Notes:**
Tabs after the last specified by kCTParagraphStyleSpecifierTabStops are placed at integer multiples of this
distance (if positive). Type: CGFloat. Default: 0.0. Application: CTFramesetter, CTTypesetter.
(Read only property)

55.10.14 FirstLineHeadIndent as Double

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The distance, in points, from the leading margin of a frame to the beginning of the paragraph’s first line.
**Notes:**
This value is always nonnegative. Type: CGFloat. Default: 0.0. Application: CTFramesetter.
(Read only property)

55.10.15 HeadIndent as Double

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The distance, in points, from the leading margin of a text container to the beginning of lines other than the first.
**Notes:**
This value is always nonnegative. Type: CGFloat Default: 0.0 Application: CTFramesetter
(Read only property)
55.10.16 LineBoundsOptions as Integer

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The options controlling the alignment of the line edges with the leading and trailing margins.

**Notes:**

Type: CTLineBoundsOptions
Default: 0 (no options)
Application: CTTypesetter
(Read only property)

55.10.17 LineBreakMode as Integer

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The mode that should be used to break lines when laying out the paragraph’s text.

**Notes:**

Type: CTLineBreakMode. Default: kCTLineBreakByWordWrapping. Application: CTFramesetter
(Read only property)

55.10.18 LineHeightMultiple as Double


**Notes:**

The natural line height of the receiver is multiplied by this factor (if positive) before being constrained by minimum and maximum line height. Type: CGFloat. Default: 0.0. Application: CTFramesetter.
(Read only property)

55.10.19 LineSpacingAdjustment as Double

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The space in points added between lines within the paragraph (commonly known as leading).

**Notes:**

Available in OS X v10.7 and later.
(Read only property)
55.10.20 MaximumLineHeight as Double

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The maximum height that any line in the frame will occupy, regardless of the font size or size of any attached graphic.

**Notes:**
Glyphs and graphics exceeding this height will overlap neighboring lines. A maximum height of 0 implies no line height limit. This value is always nonnegative. Type: CGFloat. Default: 0.0. Application: CTFramesetter.
(Read only property)

55.10.21 MaximumLineSpacing as Double

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The maximum space in points between lines within the paragraph (commonly known as leading).

**Notes:**
This value is always nonnegative. Available in OS X v10.7 and later.
(Read only property)

55.10.22 MinimumLineHeight as Double

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The minimum height that any line in the frame will occupy, regardless of the font size or size of any attached graphic.

**Notes:**
This value is always nonnegative. Type: CGFloat. Default: 0.0. Application: CTFramesetter.
(Read only property)

55.10.23 MinimumLineSpacing as Double

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The minimum space in points between lines within the paragraph (commonly known as leading).

**Notes:**
This value is always nonnegative. Available in OS X v10.7 and later.
(Read only property)
55.10.24  ParagraphSpacing as Double

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The space added at the end of the paragraph to separate it from the following paragraph. **Notes:** This value is always nonnegative and is determined by adding the previous paragraph's kCTParagraphStyleSpecifierParagraphSpacing setting and the current paragraph's kCTParagraphStyleSpecifierParagraphSpacingBefore setting. Type:CGFloat. Default: 0.0. Application: CTFramesetter. (Read only property)

55.10.25  ParagraphSpacingBefore as Double

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The distance between the paragraph's top and the beginning of its text content. **Notes:** Type: CGFloat. Default: 0.0. Application: CTFramesetter. (Read only property)

55.10.26  TailIndent as Double

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The distance, in points, from the margin of a frame to the end of lines. **Notes:** If positive, this value is the distance from the leading margin (for example, the left margin in left-to-right text). If 0 or negative, it’s the distance from the trailing margin. Type: CGFloat. Default: 0.0. Application: CTFramesetter. (Read only property)

55.10.27  Constants

55.10.28  kCTLineBreakByCharWrapping = 1

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants to specify what happens when a line is too long for its frame. **Notes:** Wrapping occurs before the first character that doesn’t fit.
55.10.29  kCTLineBreakByClipping = 2

MBS MacCG Plugin, Plugin Version: 14.2. Function: One of the constants to specify what happens when a line is too long for its frame. 
Notes: Lines are simply not drawn past the edge of the frame.

55.10.30  kCTLineBreakByTruncatingHead = 3

MBS MacCG Plugin, Plugin Version: 14.2. Function: One of the constants to specify what happens when a line is too long for its frame. 
Notes: Each line is displayed so that the end fits in the frame and the missing text is indicated by an ellipsis glyph.

55.10.31  kCTLineBreakByTruncatingMiddle = 5

MBS MacCG Plugin, Plugin Version: 14.2. Function: One of the constants to specify what happens when a line is too long for its frame. 
Notes: Each line is displayed so that the beginning and end fit in the container and the missing text is indicated by an ellipsis glyph in the middle.

55.10.32  kCTLineBreakByTruncatingTail = 4

MBS MacCG Plugin, Plugin Version: 14.2. Function: One of the constants to specify what happens when a line is too long for its frame. 
Notes: Each line is displayed so that the beginning fits in the container and the missing text is indicated by an ellipsis glyph.

55.10.33  kCTLineBreakByWordWrapping = 0

MBS MacCG Plugin, Plugin Version: 14.2. Function: One of the constants to specify what happens when a line is too long for its frame. 
Notes: Wrapping occurs at word boundaries unless the word itself doesn’t fit on a single line.

55.10.34  kCTParagraphStyleSpecifierAlignment = 0

MBS MacCG Plugin, Plugin Version: 14.2. Function: One of the constants used to query and modify the CTParagraphStyle object. 
Notes:
The text alignment. Natural text alignment is realized as left or right alignment, depending on the line sweep direction of the first script contained in the paragraph. Type: CTTextAlignment. Default: kCTNaturalTextAlignment. Application: CTFramesetter. Available in OS X v10.5 and later.

### 55.10.35 kCTParagraphStyleSpecifierBaseWritingDirection = 13

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants used to query and modify the CTParagraphStyle object. **Notes:** The base writing direction of the lines. Type: CTWritingDirection. Default: kCTWritingDirection-Natural. Application: CTFramesetter, CTTypesetter.

### 55.10.36 kCTParagraphStyleSpecifierDefaultTabInterval = 5

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants used to query and modify the CTParagraphStyle object. **Notes:** The documentwide default tab interval. Tabs after the last specified by kCTParagraphStyleSpecifierTabStops are placed at integer multiples of this distance (if positive). Type: CGFloat. Default: 0.0. Application: CTFramesetter, CTTypesetter.

### 55.10.37 kCTParagraphStyleSpecifierFirstLineHeadIndent = 1

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants used to query and modify the CTParagraphStyle object. **Notes:** The distance, in points, from the leading margin of a frame to the beginning of the paragraph’s first line. This value is always nonnegative. Type: CGFloat. Default: 0.0. Application: CTFramesetter.

### 55.10.38 kCTParagraphStyleSpecifierHeadIndent = 2

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants used to query and modify the CTParagraphStyle object. **Notes:** The distance, in points, from the leading margin of a text container to the beginning of lines other than the first. This value is always nonnegative. Type: CGFloat. Default: 0.0. Application: CTFramesetter.

### 55.10.39 kCTParagraphStyleSpecifierLineBoundsOptions = 17

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants used to query and modify the CTParagraphStyle object.
55.10. **CLASS CTPARAGRAPHSTYLEMBS**

**Notes:**

The options controlling the alignment of the line edges with the leading and trailing margins.

Type: CTLineBoundsOptions  
Default: 0 (no options)  
Application: CTTypesetter

55.10.40 **kCTParagraphStyleSpecifierLineBreakMode = 6**

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants used to query and modify the CTParagraphStyle object.  
**Notes:** The mode that should be used to break lines when laying out the paragraph’s text. Type: CTLineBreakMode. Default: kCTLineBreakByWordWrapping. Application: CTFramesetter

55.10.41 **kCTParagraphStyleSpecifierLineHeightMultiple = 7**

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants used to query and modify the CTParagraphStyle object.  
**Notes:** The line height multiple. The natural line height of the receiver is multiplied by this factor (if positive) before being constrained by minimum and maximum line height. Type: CGFloat. Default: 0.0. Application: CTFramesetter.

55.10.42 **kCTParagraphStyleSpecifierLineSpacing = 10**

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants used to query and modify the CTParagraphStyle object.  
**Notes:** Deprecated. Use kCTParagraphStyleSpecifierMaximumLineSpacing, kCTParagraphStyleSpecifierMinimumLineSpacing, and kCTParagraphStyleSpecifierLineSpaceAdjustment to control space between lines. The space in points added between lines within the paragraph (commonly known as leading). This value is always nonnegative. Type: CGFloat. Default: 0.0. Application: CTFramesetter.

55.10.43 **kCTParagraphStyleSpecifierLineSpacingAdjustment = 16**

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants used to query and modify the CTParagraphStyle object.  
**Notes:**

The space in points added between lines within the paragraph (commonly known as leading). Available in OS X v10.7 and later.
55.10.44  kCTParagraphStyleSpecifierMaximumLineHeight = 8

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants used to query and modify the CTParagraphStyle object.
**Notes:** The maximum height that any line in the frame will occupy, regardless of the font size or size of any attached graphic. Glyphs and graphics exceeding this height will overlap neighboring lines. A maximum height of 0 implies no line height limit. This value is always nonnegative. Type: CGFloat. Default: 0.0. Application: CTFramesetter.

55.10.45  kCTParagraphStyleSpecifierMaximumLineSpacing = 14

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants used to query and modify the CTParagraphStyle object.
**Notes:**
The maximum space in points between lines within the paragraph (commonly known as leading). This value is always nonnegative.
Available in OS X v10.7 and later.

55.10.46  kCTParagraphStyleSpecifierMinimumLineHeight = 9

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants used to query and modify the CTParagraphStyle object.
**Notes:** The minimum height that any line in the frame will occupy, regardless of the font size or size of any attached graphic. This value is always nonnegative. Type: CGFloat. Default: 0.0. Application: CTFramesetter.

55.10.47  kCTParagraphStyleSpecifierMinimumLineSpacing = 15

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants used to query and modify the CTParagraphStyle object.
**Notes:**
The minimum space in points between lines within the paragraph (commonly known as leading). This value is always nonnegative.
Available in OS X v10.7 and later.
### 55.10.48 kCTParagraphStyleSpecifierParagraphSpacing = 11

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants used to query and modify the CTParagraphStyle object.  
**Notes:** The space added at the end of the paragraph to separate it from the following paragraph. This value is always nonnegative and is determined by adding the previous paragraph’s kCTParagraphStyleSpecifierParagraphSpacing setting and the current paragraph’s kCTParagraphStyleSpecifierParagraphSpacingBefore setting. Type: CGFloat. Default: 0.0. Application: CTFramesetter.

### 55.10.49 kCTParagraphStyleSpecifierParagraphSpacingBefore = 12

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants used to query and modify the CTParagraphStyle object.  
**Notes:** The distance between the paragraph’s top and the beginning of its text content. Type: CGFloat. Default: 0.0. Application: CTFramesetter.

### 55.10.50 kCTParagraphStyleSpecifierTabStops = 4

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants used to query and modify the CTParagraphStyle object.  
**Notes:** The CTTextTab objects, sorted by location, that define the tab stops for the paragraph style. Type: CFArray of CTTextTabRef. Default: 12 left-aligned tabs, spaced by 28.0 points. Application: CTFramesetter, CTTypesetter.

### 55.10.51 kCTParagraphStyleSpecifierTailIndent = 3

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants used to query and modify the CTParagraphStyle object.  
**Notes:** The distance, in points, from the margin of a frame to the end of lines. If positive, this value is the distance from the leading margin (for example, the left margin in left-to-right text). If 0 or negative, it’s the distance from the trailing margin. Type: CGFloat. Default: 0.0. Application: CTFramesetter.

### 55.10.52 kCTTextAlignmentCenter = 2

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants to specify text alignment.  
**Notes:** Text is visually center aligned.
55.10.53  kCTTextAlignmentJustified = 3

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants to specify text alignment. **Notes:** Text is fully justified. The last line in a paragraph is naturally aligned.

55.10.54  kCTTextAlignmentLeft = 0

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants to specify text alignment. **Notes:** Text is visually left aligned.

55.10.55  kCTTextAlignmentNatural = 4

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants to specify text alignment. **Notes:** Text uses the natural alignment of the text’s script.

55.10.56  kCTTextAlignmentRight = 1

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants to specify text alignment. **Notes:** Text is visually right aligned.

55.10.57  kCTWritingDirectionLeftToRight = 0

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants to specify the writing direction. **Notes:** The writing direction is left to right.

55.10.58  kCTWritingDirectionNatural = -1

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants to specify the writing direction. **Notes:** The writing direction is algorithmically determined using the Unicode Bidirectional Algorithm rules P2 and P3.

55.10.59  kCTWritingDirectionRightToLeft = 1

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the constants to specify the writing direction. **Notes:** The writing direction is right to left.
55.11. CLASS CTPARAGRAPHSTYLESETTINGMBS

55.11 class CTParagraphStyleSettingMBS

55.11.1 class CTParagraphStyleSettingMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
This class is used to alter the paragraph style.

55.11.2 Methods

55.11.3 SetTextTabs(textTabs() as CTTextTabMBS)

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Sets the array of text tabs.
**Notes:** for use with kCTParagraphStyleSpecifierTabStops.

55.11.4 Properties

55.11.5 doubleValue as Double

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The double value.
**Notes:** (Read and Write property)

55.11.6 intValue as Integer

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The integer value.
**Notes:**
Also used for enumerations.
(Read and Write property)

55.11.7 Spec as Integer

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The specifier of the setting.
**Notes:**
See CTParagraphStyleMBS for possible values.
(Read and Write property)
55.12. CLASS CTRUNDELEGATEMBS

55.12 class CTRunDelegateMBS

55.12.1 class CTRunDelegateMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The class to get events for CTRun runs.
**Notes:**
The CTRunDelegate opaque type represents a run delegate, which is assigned to a run (attribute range) to control typographic traits such as glyph ascent, glyph descent, and glyph width.

The events defined for CTRunDelegate are used to modify glyph metrics during layout. The values returned by the delegate are applied to each glyph in the run or runs corresponding to the attribute with that delegate. Subclass of the CFObjectMBS class.

55.12.2 Methods

55.12.3 Available as boolean

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Whether this class is available.
**Notes:** Returns true in OS X v10.5 and later.

55.12.4 Close

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Shuts down the delegate.
**Notes:** Please call this to explicitly end the delegate and avoid memory leaks.
See also:
* 55.12.7 Close

55.12.5 Constructor

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates an immutable instance of a run delegate.
**Notes:** The run-delegate object can be used for reserving space in a line or for eliding the glyphs for a range of text altogether.
55.12.6 Events

55.12.7 Close

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Event called when item closes.

See also:

- 55.12.4 Close

55.12.8 GetAscent as Double


**Notes:** Returns the typographic ascent of glyphs in the run associated with the run delegate.

55.12.9 GetDescent as Double


**Notes:** Returns the typographic descent of glyphs in the run associated with the run delegate.

55.12.10 GetWidth as Double

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Event that determines the typographic width of glyphs in the run.

**Notes:** Returns the typographic width of glyphs in the run associated with the run delegate. A value of 0.0 indicates that the glyphs should not be drawn.
55.13.1 class CTRunMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The CTRun opaque type represents a glyph run, which is a set of consecutive glyphs sharing the same attributes and direction.  
**Notes:** The typesetter creates glyph runs as it produces lines from character strings, attributes, and font objects. That is, a line is constructed of one or more glyph runs. Glyph runs can draw themselves into a graphic context, if desired, although most users have no need to interact directly with glyph runs.  
Subclass of the CFObjectMBS class.  
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

55.13.2 Methods

55.13.3 Advances as CGSizeMBS()

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Copies a range of glyph advances into an array.

55.13.4 Available as boolean

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this class is available.  
**Notes:** Returns true in OS X v10.5 and later.

55.13.5 Constructor


55.13.6 Draw(context as CGContextMBS, location as Integer, length as Integer = 0)

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Draws a complete run or part of one.  
**Notes:**
context: The context into which to draw the run.
range: The portion of the run to draw. If the length of the range is set to 0, then the draw operation continues from the start index of the range to the end of the run.

This is a convenience call, because the run could be drawn by accessing the glyphs. This call can leave the graphics context in any state and does not flush the context after the draw operation.

Available in OS X v10.5 and later.

55.13.7 Glyphs as Integer()

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Copies a range of glyphs into an array.

55.13.8 ImageBounds(context as CGContextMBS, location as Integer, length as Integer) as CGRectMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Calculates the image bounds for a glyph range.

**Notes:**
context: The context for the image bounds being calculated. This is required because the context could have settings in it that would cause changes in the image bounds.
range: The portion of the run to measure. If the length of the range is set to 0, then the measure operation continues from the start index of the range to the end of the run.

Returns a rectangle that tightly encloses the paths of the run’s glyphs, or, if run, context, or range is invalid, CGRectNull.
Available in OS X v10.5 and later.

55.13.9 Positions as CGPointMBS()

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Copies a range of glyph positions into an array.
55.13.10 **StringIndices as Integer()**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Copies a range of string indices into an array. **Notes:** The indices are the character indices that originally spawned the glyphs that make up the run. They can be used to map the glyphs in the run back to the characters in the backing store.

55.13.11 **TypographicBounds(location as Integer, length as Integer, byref ascent as Double, byref descent as Double, byref leading as Double) as Double**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Gets the typographic bounds of the run. **Notes:**

- range: The portion of the run to measure. If the length of the range is set to 0, then the measure operation continues from the range’s start index to the end of the run.
- ascent: On output, the ascent of the run.
- descent: On output, the descent of the run.
- leading: On output, the leading of the run.

Returns the typographic width of the run, or if run or range is invalid, 0. Available in OS X v10.5 and later.

55.13.12 **Properties**

55.13.13 **AttributeValues as Dictionary**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the attribute dictionary that was used to create the glyph run. **Notes:**

Return a valid Dictionary or nil on error or if the run has no attributes.

The dictionary returned is either the same one that was set as an attribute dictionary on the original attribute string or a dictionary that has been manufactured by the layout engine. Attribute dictionaries can be manufactured in the case of font substitution or if the run is missing critical attributes. *(Read only property)*
55.13.14 GlyphCount as Integer

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Gets the glyph count for the run.

**Notes:**
run: The run for which to return the glyph count.

Returns the number of glyphs that the run contains, or if there are no glyphs in this run, a value of 0.
Available in OS X v10.5 and later.
(Read only property)

55.13.15 Status as Integer

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the run’s status.

**Notes:**
Runs have status that can be used to expedite certain operations. Knowing the direction and ordering of a run’s glyphs can aid in string index analysis, whereas knowing whether the positions reference the identity text matrix can avoid expensive comparisons. This status is provided as a convenience, because this information is not strictly necessary but can be helpful in some circumstances.
(Read only property)

55.13.16 StringRangeLength as Integer

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Gets the range of characters that originally spawned the glyphs in the run.

**Notes:**
The range of characters that originally spawned the glyphs, of if run is invalid, an empty range.
(Read only property)

55.13.17 StringRangeLocation as Integer

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Gets the range of characters that originally spawned the glyphs in the run.

**Notes:**
The range of characters that originally spawned the glyphs, of if run is invalid, an empty range.
(Read only property)
55.13.18  TextMatrix as CGAffineTransformMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the text matrix needed to draw this run.

**Notes:**
To properly draw the glyphs in a run, the fields tx and ty of the CGAffineTransform returned by this function should be set to the current text position.
(Read only property)

55.13.19  Constants

55.13.20  kCTRunStatusHasNonIdentityMatrix = 4

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the possible values for the status bitfield.

**Notes:**
The run requires a specific text matrix to be set in the current Core Graphics context for proper drawing.
Use BitwiseAnd() to check if the status has a given value.

55.13.21  kCTRunStatusNonMonotonic = 2

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the possible values for the status bitfield.

**Notes:**
The run has been reordered in some way such that the string indices associated with the glyphs are no longer strictly increasing (for left-to-right runs) or decreasing (for right-to-left runs).
Use BitwiseAnd() to check if the status has a given value.

55.13.22  kCTRunStatusNoStatus = 0

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the possible values for the status bitfield.

**Notes:** The run has no special attributes.

55.13.23  kCTRunStatusRightToLeft = 1

MBS MacCG Plugin, Plugin Version: 14.2. **Function:** One of the possible values for the status bitfield.

**Notes:**
The run proceeds from right to left.
Use BitwiseAnd() to check if the status has a given value.
55.14. **CLASS CTTEXTTABMBS**

**55.14 class CTTextTabMBS**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The CTTextTab opaque type represents a tab in a paragraph style, storing an alignment type and location. **Notes:**
Core Text supports four alignment types: left, center, right, and decimal. These alignment types are absolute, not based on the line sweep direction of text. For example, tabbed text is always positioned to the left of a right-aligned tab, whether the line sweep direction is left to right or right to left. A tab’s location, on the other hand, is relative to the back margin. A tab set at 1.5 inches, for example, is at 1.5 inches from the right in right-to-left text.
Subclass of the CFOObjectMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

**55.14.2 Methods**

**55.14.3 Available as boolean**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Whether this class is available. **Notes:** Returns true in OS X v10.5 and later.

**55.14.4 Constructor**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The private constructor.

**55.14.5 Create(alignment as Integer, location as Double, options as Dictionary = nil) as CTTextTabMBS**

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates and initializes a new text tab object. **Notes:**
alignment: The tab’s alignment. This is used to determine the position of text inside the tab column. This parameter must be set to a valid CTTextAlignment value or this function returns nil.
location: The tab’s ruler location, relative to the back margin.
options: Options to pass in when the tab is created. Currently, the only option available is kCTTabColumnTerminatorsAttributeName. This parameter is optional and can be set to nil if not needed.
Return a reference to a CTTextTab object if the call was successful; otherwise, nil.
Available in OS X v10.5 and later.

55.14.6 kCTTabColumnTerminatorsAttributeName as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
One of the options keys.
Notes:
Specifies the terminating character for a tab column.

The value associated with this attribute is a CFCharacterSet object. The character set is used to determine
the terminating character for a tab column. The tab and newline characters are implied even if they don’t
exist in the character set. This attribute can be used to implement decimal tabs, for instance. This attribute
is optional.

55.14.7 Properties

55.14.8 Alignment as Integer

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns the text alignment of the tab.
Notes: (Read only property)

55.14.9 Location as Double

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns the tab’s ruler location.
Notes:
The tab’s ruler location relative to the back margin.
(Read only property)

55.14.10 Options as Dictionary

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns the dictionary of attributes associated with the tab.
Notes:
The dictionary of attributes associated with the tab, or if no dictionary is present, nil.
(Read only property)
55.15  class CTTypesetterMBS

55.15.1  class CTTypesetterMBS

Notes: Line layout includes word wrapping, hyphenation, and line breaking in either vertical or horizontal rectangles. A typesetter object takes as input an attributed string and produces a line of typeset glyphs (composed into glyph runs) in a CTLine object. The typesetter performs character-to-glyph encoding, glyph ordering, and positional operations, such as kerning, tracking, and baseline adjustments. If multiline layout is needed, it is performed by a framesetter object, which calls into the typesetter to generate the typeset lines to fill the frame.

A framesetter encapsulates a typesetter and provides a reference to it as a convenience, but a caller may also choose to create a freestanding typesetter.
Subclass of the CFOBJECTMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

55.15.2  Methods

55.15.3  Available as boolean

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether this class is available.
Notes: Returns true in OS X v10.5 and later.

55.15.4  Constructor


55.15.5  CreateLine(location as Integer, length as Integer, offset as Double = 0.0) as CTLineMBS

Notes:
location and length: The string range on which the line is based. If the length portion of range is set to 0, then the typesetter continues to add glyphs to the line until it runs out of characters in the string. The location and length of the range must be within the bounds of the string, or the call will fail.

offset: The line position offset.

Returns a reference to a CTLine object if the call was successful; otherwise, nil.
The resultant line consists of glyphs in the correct visual order, ready to draw.
Available in OS X v10.6 and later.

55.15.6  CreateWithAttributedString(s as CFAttributedStringMBS) as CTType-setterMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Creates an immutable typesetter object using an attributed string.
Notes:
s: The attributed string to typeset. This parameter must be filled in with a valid CFAttributedString object.

Returns a reference to a CTTypesetter object if the call was successful; otherwise, nil.
The resultant typesetter can be used to create lines, perform line breaking, and do other contextual analysis based on the characters in the string.

Available in OS X v10.5 and later.
See also:

- 55.15.7 CreateWithAttributedString(s as CFAttributedStringMBS, options as dictionary) as CTType-setterMBS

55.15.7  CreateWithAttributedString(s as CFAttributedStringMBS, options as dictionary) as CTTypesetterMBS

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Creates an immutable typesetter object using an attributed string and a dictionary of options.
Notes:
s: The attributed string to typeset. This parameter must be filled in with a valid CFAttributedString object.
options: A dictionary of typesetter options, or nil if there are none.

Returns a reference to a CTTypesetter object if the call was successful; otherwise, nil.
The resultant typesetter can be used to create lines, perform line breaking, and do other contextual analysis
based on the characters in the string.
Available in OS X v10.5 and later.
See also:

- 55.15.6 CreateWithAttributedString(s as CFAttributedStringMBS) as CTTypesetterMBS

55.15.8 kCTTypesetterOptionDisableBidiProcessing as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the constants to control aspects of the typesetters bidirectional text processing.
**Notes:**
Disables bidirectional processing. Value must be a CFBoolean object. Default value is false. Normally,
typesetting applies the Unicode Bidirectional Algorithm as described in Unicode Standard Annex # 9. If a
typesetter is created with this option set to true, no directional reordering is performed, and any directional
c Control characters are ignored.
Available in OS X v10.5 and later.
Deprecated in OS X v10.8.

55.15.9 kCTTypesetterOptionForcedEmbeddingLevel as string

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the constants to control aspects of the typesetters bidirectional text processing.
**Notes:**
Specifies the embedding level. Value must be a CFNumberRef object. Default is unset. Normally,
typesetting applies the Unicode Bidirectional Algorithm as described in Unicode Standard Annex # 9. If present,
this option specifies the embedding level, and any directional control characters are ignored.
Available in OS X v10.5 and later.

55.15.10 SuggestClusterBreak(startIndex as Integer, width as Double) as Integer

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Suggests a cluster line breakpoint based on the width provided.
**Notes:**
startIndex: The starting point for the typographic cluster-break calculations. The break calculations include
the character starting at startIndex.
width: The requested typographic cluster-break width.

Return a count of the characters from startIndex that would cause the cluster break. The value returned
can be used to construct a character range for CTTypesetterCreateLine.
This cluster break is similar to a character break, except that it does not break apart linguistic clusters.
No other contextual analysis is done. This can be used by the caller to implement a different line-breaking
scheme, such as hyphenation. A typographic cluster break can also be triggered by a hard-break character
in the stream. This function is equivalent to SuggestClusterBreakWithOffset with an offset of 0.0.

Available in OS X v10.5 and later.
See also:

- 55.15.11 SuggestClusterBreak(startIndex as Integer, width as Double, offset as Double) as Integer

55.15.11 SuggestClusterBreak(startIndex as Integer, width as Double, offset as Double) as Integer

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Suggests a cluster line breakpoint based on the specified width and line offset.
**Notes:**

startIndex: The starting point for the typographic cluster-break calculations. The break calculations include
the character starting at startIndex.
width: The requested typographic cluster-break width.
offset: The line offset position.

Returns a count of the characters from startIndex that would cause the cluster break. The value returned
can be used to construct a character range for CreateLine.

This cluster break is similar to a character break, except that it does not break apart linguistic clusters.
No other contextual analysis is done. This can be used by the caller to implement a different line-breaking
scheme, such as hyphenation. A typographic cluster break can also be triggered by a hard-break character
in the stream.

Available in OS X v10.6 and later.
See also:

- 55.15.10 SuggestClusterBreak(startIndex as Integer, width as Double) as Integer

55.15.12 SuggestLineBreak(startIndex as Integer, width as Double) as Integer

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Suggests a contextual line breakpoint based on the width provided.
**Notes:**

startIndex: The starting point for the line-break calculations. The break calculations include the character
starting at startIndex.
width: The requested line-break width.

Returns a count of the characters from startIndex that would cause the line break. The value returned can be used to construct a character range for CreateLine.

The line break can be triggered either by a hard-break character in the stream or by filling the specified width with characters. This function is equivalent to SuggestLineBreakWithOffset with an offset of 0.0.

Available in OS X v10.5 and later.

See also:

- 55.15.13 SuggestLineBreak(startIndex as Integer, width as Double, offset as Double) as Integer

55.15.13 SuggestLineBreak(startIndex as Integer, width as Double, offset as Double) as Integer

MBS MacCG Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Suggests a contextual line breakpoint based on the width provided and the specified offset.

**Notes:**

startIndex: The starting point for the line-break calculations. The break calculations include the character starting at startIndex.
width: The requested line-break width.
offset: The line position offset.

Returns a count of the characters from startIndex and offset that would cause the line break. The value returned can be used to construct a character range for CreateLine.

The line break can be triggered either by a hard-break character in the stream or by filling the specified width with characters.

Available in OS X v10.6 and later.

See also:

- 55.15.12 SuggestLineBreak(startIndex as Integer, width as Double) as Integer
Chapter 56

CPUInfo

56.1 class CPUIDMBS

56.1.1 class CPUIDMBS

MBS Util Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A class around the CPUID command of x86 CPUs.
**Example:**

```vba
dim c as new CPUIDMBS
MsgBox c.BrandString
```

**Notes:**
This class works only on x86 CPUs.
Values returned in the properties have very CPU vendor specific values.
So Intel and AMD use different meanings for a lot of values.

56.1.2 Methods

56.1.3 BrandString as String

MBS Util Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The brand string.
**Notes:** contains the brand string, e.g. "Intel(R) Xeon(TM) CPU 2.40GHz"
See also:

- 56.1.23 BrandString as String
56.1.4 CodeName as String

MBS Util Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The brief and human-friendly CPU codename, which was recognized.

56.1.5 CPUID(Selector as Integer) as boolean

MBS Util Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calls CPUID for the given selector.

**Example:**

```vba
dim c as new CPUIDMBS
if c.CPUID(0) then MsgBox hex(c.EDX)
end if
```

**Notes:**

Returns true on success and false on failure.
(always true on x86 CPUs and always false on PowerPC CPUs.)
Result values are stored in the four properties EAX, EBX, ECX and EDX.

56.1.6 ExtFamily as Integer


56.1.7 ExtModel as Integer


56.1.8 Family as Integer

See also:
56.1. **CLASS CPUIDMBS**

- 56.1.28 Family as Integer

56.1.9 **FeatureName(index as Integer) as String**


**Notes:**
A constant string like "fpu", "tsc", "sse2", etc.
See kFeature* constants.

56.1.10 **Flags(index as Integer) as Boolean**

MBS Util Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries whether a given feature is available.

**Example:**

```vbnet
dim c as new CPUIDMBS

if c.Flags(CPUIDMBS.kFeatureLM) then
    MsgBox "64-bit CPU"
else
    MsgBox "32-bit CPU"
end if
```

**Notes:** See kFeature* constants.

56.1.11 **L1DataCache as Integer**

MBS Util Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** L1 data cache size in KB.

**Notes:**
Could be zero, if the CPU lacks cache.
If the size cannot be determined, it will be -1.

56.1.12 **L1InstructionCache as Integer**

MBS Util Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** L1 instruction cache size in KB.
Notes:
Could be zero, if the CPU lacks cache. If the size cannot be determined, it will be -1.
On some Intel CPUs, whose instruction cache is in fact a trace cache, the size will be expressed in K uOps.

56.1.13 L2Cache as Integer

Notes:
Could be zero, if the CPU lacks L2 cache.
If the size of the cache could not be determined, it will be -1

56.1.14 L3Cache as Integer

Notes: Zero on most systems.

56.1.15 Model as Integer

See also:
- 56.1.29 Model as Integer

56.1.16 NumCores as Integer


56.1.17 NumLogicalCPUs as Integer

Notes: Could be more than the number of physical cores, e.g. when the processor has HyperThreading.
56.1. **CLASS CPUIDMBS**

### 56.1.18 Stepping as Integer


See also:

- 56.1.31 Stepping as Integer

### 56.1.19 TotalLogicalCPUs as Integer

MBS Util Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The total number of logical processors.

**Notes:**

This is num\_logical\_cpus * { total physical processors in the system }

If you're writing a multithreaded program and you want to run it on all CPUs, this is the number of threads you need.

### 56.1.20 Vendor as Integer


**Notes:** See kVendor constants.

### 56.1.21 VendorName as String


**Notes:** contains the CPU vendor string, e.g. "GenuineIntel"

### 56.1.22 Properties

#### 56.1.23 BrandString as String

MBS Util Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A string (47 characters maximum) with the brand name of the CPU.

**Example:**

```vbs
dim c as new CPUIDMBS
MsgBox c.BrandString
```
CHAPTER 56. CPUINFO

Notes:
Is "" if not supported.
(Read and Write property)
See also:

• 56.1.3 BrandString as String

56.1.24 EAX as Integer

MBS Util Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The EAX register value after a CPUID function call.
**Example:**

```vba
dim c as new CPUIDMBS
MsgBox str(c.EAX)
```

Notes: (Read and Write property)

56.1.25 EBX as Integer

MBS Util Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The EBX register value after a CPUID function call.
**Example:**

```vba
dim c as new CPUIDMBS
MsgBox str(c.EBX)
```

Notes: (Read and Write property)

56.1.26 ECX as Integer

MBS Util Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The ECX register value after a CPUID function call.
**Example:**

```vba
dim c as new CPUIDMBS
MsgBox str(c.ECX)
```
Notes: (Read and Write property)

56.1.27 **EDX as Integer**

MBS Util Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The EDX register value after a CPUID function call.

**Example:**

```
dim c as new CPUIDMBS
MsgBox str(c.EDX)
```

Notes: (Read and Write property)

56.1.28 **Family as Integer**

MBS Util Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The Family ID of the CPU.

**Example:**

```
dim c as new CPUIDMBS
MsgBox str(c.Family)
```

Notes: e.g. Family 6, Model 14 can be an Intel Core Duo CPU.
(Read and Write property)
See also:

- 56.1.8 Family as Integer

56.1.29 **Model as Integer**

MBS Util Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The Model ID of the CPU.

**Example:**

```
dim c as new CPUIDMBS
MsgBox str(c.Model)
```
Notes:
Every CPU Family has several Models.
e.g. Family 6, Model 14 can be an Intel Core Duo CPU.
(Read and Write property)
See also:

- 56.1.15 Model as Integer

56.1.30 ProcessorVendor as String

MBS Util Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
The Name of the Processor Vendor.
Example:

```vbnet
dim c as new CPUIDMBS
MsgBox c.ProcessorVendor
```

Notes:
Possible values:

- CPUID_VID_INTEL "GenuineIntel"
- CPUID_VID_UMC "UMC UMC UMC "
- CPUID_VID_AMD "AuthenticAMD"
- CPUID_VID_CYRIX "CyrixInstead"
- CPUID_VID_NEXGEN "NexGenDriven"
- CPUID_VID_CENTAUR "CentaurHauls"
- CPUID_VID_RISE "RiseRiseRise"
- CPUID_VID_SIS "SiS SiS SiS "
- CPUID_VID_TRANSMETA "GenuineTMx86"
- CPUID_VID_NSC "Geode by NSC"

(Read and Write property)

56.1.31 Stepping as Integer

MBS Util Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
The stepping ID of the CPU.
Example:
56.1. CLASS CPUIDMBS

dim c as new CPUIDMBS
MsgBox str(c.Stepping)

Notes:
Can be seen as a revision number of the processor.
(Read and Write property)
See also:

• 56.1.18 Stepping as Integer

56.1.32 Constants

56.1.33 kFeature100MHzSteps = 80
Notes: 100 MHz multiplier control

56.1.34 kFeature3DNOW = 56
Notes: AMD 3DNow! instructions supported

56.1.35 kFeature3DNOWEXT = 57
Notes: AMD 3DNow! extended instructions supported

56.1.36 kFeature3DNOWPrefetch = 68
Notes: PREFETCH/PREFETCHW support

56.1.37 kFeatureABM = 65
Notes: LZCNT instruction support
56.1.38  kFeature ACPI = 20

MBS Util Plugin, Plugin Version: 14.3. **Function**: One of the feature constants.
**Notes**: ACPI support (power states)

56.1.39  kFeature AES = 51

MBS Util Plugin, Plugin Version: 14.3. **Function**: One of the feature constants.
**Notes**: AES* instructions supported

56.1.40  kFeature APERFMPERF = 91

MBS Util Plugin, Plugin Version: 14.3. **Function**: One of the feature constants.
**Notes**: MPERF/APERF MSRs support

56.1.41  kFeature APIC = 9

MBS Util Plugin, Plugin Version: 14.3. **Function**: One of the feature constants.
**Notes**: APIC support

56.1.42  kFeature AVX = 54

MBS Util Plugin, Plugin Version: 14.3. **Function**: One of the feature constants.
**Notes**: Advanced vector extensions supported

56.1.43  kFeature CID = 40

MBS Util Plugin, Plugin Version: 14.3. **Function**: One of the feature constants.
**Notes**: Context ID supported
56.1.44 kFeatureCLFLUSH = 18
MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants. **Notes:** CLFLUSH instruction supported

56.1.45 kFeatureCMOV = 14
MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants. **Notes:** CMOVxx instructions supported

56.1.46 kFeatureCMP_LEGACY = 63
MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants. **Notes:** core multi-processing legacy mode

56.1.47 kFeatureConstantTSC = 82
MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants. **Notes:** TSC ticks at constant rate

56.1.48 kFeatureCPB = 90
MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants. **Notes:** Core performance boost

56.1.49 kFeatureCX16 = 41
MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants. **Notes:** CMPXCHG16B instruction supported

56.1.50 kFeatureCX8 = 8
MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants. **Notes:** CMPXCHG8B instruction supported
56.1.51  kFeatureDCA = 44

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** Direct cache access supported

56.1.52  kFeatureDE = 2

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** Debugging extension

56.1.53  kFeatureDS_CPL = 34

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** CPL Qualified Debug Store

56.1.54  kFeatureDTS = 19

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** Debug store supported

56.1.55  kFeatureDTS64 = 32

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** 64-bit Debug store supported

56.1.56  kFeatureEST = 37

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** Enhanced SpeedStep

56.1.57  kFeatureF16C = 87

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** 16-bit FP convert instruction support
56.1. **CLASS CPUIDMBS**

### 56.1.58 kFeatureFID = 75

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** Frequency ID control

### 56.1.59 kFeatureFMA3 = 84

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** The FMA3 instruction set

### 56.1.60 kFeatureFMA4 = 85

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** The FMA4 instruction set

### 56.1.61 kFeatureFPU = 0

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** Floating point unit

### 56.1.62 kFeatureFXSR = 22

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** FXSAVE / FXRSTOR supported

### 56.1.63 kFeatureFXSR_OPT = 59

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** FFXSR: FXSAVE and FXRSTOR optimizations

### 56.1.64 kFeatureHT = 26

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** Hyper-threading supported (but might be disabled)
56.1.65  \textit{kFeatureHWPState} = 81

\textbf{Notes}: Hardware P-state control

56.1.66  \textit{kFeatureIA64} = 28

\textbf{Notes}: IA64 supported (Itanium only)

56.1.67  \textit{kFeatureIBS} = 70

\textbf{Notes}: Instruction-based sampling

56.1.68  \textit{kFeatureLAHF\_LM} = 62

\textbf{Notes}: LAHF/SAHF supported in 64-bit mode

56.1.69  \textit{kFeatureLM} = 61

\textbf{Example}:

\begin{verbatim}
dim c as new CPUIDMBS

if c.Flags(CPUIDMBS.kFeatureLM) then
    MsgBox "64-bit CPU"
else
    MsgBox "32-bit CPU"
end if
\end{verbatim}

\textbf{Notes}: Long mode (x86_64/EM64T) supported
56.1. CLASS CPUIDMBS

56.1.70  kFeatureMCA = 13

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** Machine check architecture

56.1.71  kFeatureMCE = 7

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** Machine check exception

56.1.72  kFeatureMisalignSSE = 66

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** Misaligned SSE supported

56.1.73  kFeatureMMX = 21

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** MMX instruction set supported

56.1.74  kFeatureMMXEXT = 55

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** AMD MMX-extended instructions supported

56.1.75  kFeatureMONITOR = 33

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** MONITOR / MWAIT supported

56.1.76  kFeatureMOVBE = 49

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** MOVBE instruction supported
56.1.77 \( k\text{FeatureMSR} = 5 \)

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** Model-specific registers, RDMSR/WRMSR supported

56.1.78 \( k\text{FeatureMTRR} = 10 \)

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** Memory type range registers

56.1.79 \( k\text{FeatureNX} = 58 \)

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** No-execute bit supported

56.1.80 \( k\text{FeatureOSVW} = 69 \)

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** OS Visible Workaround (AMD)

56.1.81 \( k\text{FeatureOSXSAVE} = 53 \)

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** non-privileged copy of OSXSAVE supported

56.1.82 \( k\text{FeaturePA} = 93 \)

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** Processor accumulator

56.1.83 \( k\text{FeaturePAE} = 6 \)

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** Physical address extension
56.1. **CLASS CPUIDMBS**

56.1.84 **kFeaturePAT = 15**

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** Page attribute table

56.1.85 **kFeaturePBE = 29**

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** Pending-break enable

56.1.86 **kFeaturePCLMUL = 31**

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** PCLMULQDQ instruction supported

56.1.87 **kFeaturePDCM = 43**

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** Performance capabilities MSR supported

56.1.88 **kFeaturePFI = 92**

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** Processor Feedback Interface support

56.1.89 **kFeaturePGE = 12**

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** Page global enable

56.1.90 **kFeaturePN = 17**

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** Processor serial # implemented (Intel P3 only)
56.1.91  \textbf{kFeaturePNI} = 30

\textbf{Notes:} PNI (SSE3) instructions supported

56.1.92  \textbf{kFeaturePOPCNT} = 50

\textbf{Notes:} POPCNT instruction supported

56.1.93  \textbf{kFeaturePSE} = 3

\textbf{Notes:} Page size extension

56.1.94  \textbf{kFeaturePSE36} = 16

\textbf{Notes:} 36-bit page address extension

56.1.95  \textbf{kFeatureRDRAND} = 88

\textbf{Notes:} RdRand instruction

56.1.96  \textbf{kFeatureRDTSCP} = 60

\textbf{Notes:} RDTSCP instruction supported (AMD-only)

56.1.97  \textbf{kFeatureSEP} = 11

\textbf{Notes:} SYSENDER / SYSEXIT instructions supported
56.1. CLASS CPUIDMBS

56.1.98 kFeatureSKINIT = 72

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** SKINIT / STGI supported

56.1.99 kFeatureSMX = 36

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** Safer mode exceptions

56.1.100 kFeatureSS = 25

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** Self-snoop

56.1.101 kFeatureSSE = 23

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** Streaming-SIMD Extensions (SSE) supported

56.1.102 kFeatureSSE2 = 24

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** SSE2 instructions supported

56.1.103 kFeatureSSE4A = 67

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** SSE 4a from AMD

56.1.104 kFeatureSSE4_1 = 45

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** SSE 4.1 instructions supported
56.1.105 \textit{kFeatureSSE4.2} = 46

\textbf{Notes:} SSE 4.2 instructions supported

56.1.106 \textit{kFeatureSSE5} = 71

\textbf{Notes:} SSE 5 instructions supported (deprecated, will never be 1)

56.1.107 \textit{kFeatureSSSE3} = 39

\textbf{Notes:} SSSE3 instructions supported (this is different from SSE3!)

56.1.108 \textit{kFeatureSTC} = 79

\textbf{Notes:} Software thermal control

56.1.109 \textit{kFeatureSVM} = 64

\textbf{Notes:} AMD Secure virtual machine

56.1.110 \textit{kFeatureSYSCALL} = 47

\textbf{Notes:} SYSCALL / SYSRET instructions supported

56.1.111 \textit{kFeatureTBM} = 86

\textbf{Notes:} Trailing bit manipulation instruction support
56.1.112  \texttt{kFeatureTM} = 27

\textbf{Notes:} Thermal monitor

56.1.113  \texttt{kFeatureTM2} = 38

\textbf{Notes:} Thermal monitor 2

56.1.114  \texttt{kFeatureTM_AMD} = 78

\textbf{Notes:} AMD-specified hardware thermal control

56.1.115  \texttt{kFeatureTS} = 74

\textbf{Notes:} Temperature sensor

56.1.116  \texttt{kFeatureTSC} = 4

\textbf{Notes:} Time-stamp counter

56.1.117  \texttt{kFeatureTTP} = 77

\textbf{Notes:} THERMTRIP

56.1.118  \texttt{kFeatureVID} = 76

\textbf{Notes:} Voltage ID control
56.1.119  kFeatureVME = 1

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** Virtual mode extension

56.1.120  kFeatureVMX = 35

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** Virtualization technology supported

56.1.121  kFeatureWDT = 73

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** Watchdog timer support

56.1.122  kFeatureX2APIC = 89

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** x2APIC, APIC_BASE.EXTD, MSRs 0000_0800h...0000_0BFFh 64-bit ICR (+030h but not +031h),  
no DFR (+00Eh), SELF_IPI (+040h) also see standard level 0000_000Bh.

56.1.123  kFeatureXD = 48

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** Execute disable bit supported

56.1.124  kFeatureXOP = 83

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** The XOP instruction set (same as the old CPU_FEATURE_SSE5)

56.1.125  kFeatureXSAVE = 52

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** XSAVE/XRSTOR/etc instructions supported
56.1. CLASS CPUIDMBS

56.1.126  kFeatureXTPR = 42

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the feature constants.  
**Notes:** Send Task Priority Messages disable

56.1.127  kVendorAMD = 1

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the vendor constants.  
**Notes:** AMD CPU

56.1.128  kVendorCentaur = 6

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the vendor constants.  
**Notes:** x86 CPU by IDT

56.1.129  kVendorCyrix = 2

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the vendor constants.  
**Notes:** Cyrix CPU

56.1.130  kVendorIntel = 0

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the vendor constants.  
**Notes:** Intel CPU

56.1.131  kVendorNexGen = 3

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the vendor constants.  
**Notes:** NexGen CPU

56.1.132  kVendorNSC = 9

MBS Util Plugin, Plugin Version: 14.3. **Function:** One of the vendor constants.  
**Notes:** x86 CPU by National Semiconductor
56.1.133  \text{kVendorRISE} = 7

MBS Util Plugin, Plugin Version: 14.3. \textbf{Function}: One of the vendor constants.
\textbf{Notes}: \text{x86 CPU by Rise Technology}

56.1.134  \text{kVendorSiS} = 8

MBS Util Plugin, Plugin Version: 14.3. \textbf{Function}: One of the vendor constants.
\textbf{Notes}: \text{x86 CPU by SiS}

56.1.135  \text{kVendorTransmeta} = 4

MBS Util Plugin, Plugin Version: 14.3. \textbf{Function}: One of the vendor constants.
\textbf{Notes}: \text{Transmeta CPU}

56.1.136  \text{kVendorUMC} = 5

MBS Util Plugin, Plugin Version: 14.3. \textbf{Function}: One of the vendor constants.
\textbf{Notes}: \text{x86 CPU by UMC}

56.1.137  \text{kVendorUnknown} = -1

MBS Util Plugin, Plugin Version: 14.3. \textbf{Function}: One of the vendor constants.
\textbf{Notes}: \text{Unknown}
Chapter 57

CUPS

57.1  class CUPSDestinationMBS

57.1.1  class CUPSDestinationMBS

MBS Tools Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** The class for a CUPS destination.

**Example:**

```vbs
dim lines(-1) as string
for each c as CUPSDestinationMBS in CUPSMBS.GetDestinations
    lines.append c.Name
next

MsgBox Join(lines, EndOfLine)
```

57.1.2  Methods

57.1.3  Options as CUPSOPTIONMBS()
57.1.4 Properties

57.1.5 Instance as String

MBS Tools Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:**
Local instance name or "".
**Notes:** (Read and Write property)

57.1.6 isDefault as Boolean

MBS Tools Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:**
Is this printer the default?
**Example:**
```vbnet
for each c as CUPSDestinationMBS in CUPSMBS.GetDestinations
if c.isDefault then
    MsgBox c.Name
end if
next
```

**Notes:** (Read and Write property)

57.1.7 Name as String

MBS Tools Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:**
The name of the printer.
**Example:**
```vbnet
dim lines(-1) as string
for each c as CUPSDestinationMBS in CUPSMBS.GetDestinations
    lines.append c.Name
next
MsgBox Join(lines,EndOfLine)
```

**Notes:** (Read and Write property)
57.2. class CUPSErrorExceptionMBS

57.2.1 class CUPSErrorExceptionMBS

MBS Tools Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:**
The error exception raised by some CUPS functions.
**Notes:** Subclass of the RuntimeException class.
57.3  class CUPSJobMBS

57.3.1  class CUPSJobMBS

MBS Tools Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:**
The class for job details.

**Example:**

```vbscript
dim jobs() as CUPSJobMBS = CUPSMBS.GetJobs("", true, CUPSMBS.kWhichJobsActive)

if UBound(jobs) < 0 then
    MsgBox "no job"
else
    dim j as CUPSJobMBS = jobs(0)
    dim lines(-1) as string

    lines.Append "Title: "+j.Title
    lines.Append "User: "+j.User
    lines.Append "Format: "+j.Format
    lines.Append "Dest: "+j.Dest
    lines.Append "ID: "+str(j.ID)
    lines.Append "Priority: "+str(j.Priority)
    lines.Append "Size: "+str(j.Size)
    lines.Append "State: "+str(j.State)

    if j.CompletedTime<>nil then
        lines.Append "CompletedTime: "+j.CompletedTime.AbbreviatedDate+" "+j.CompletedTime.longtime
    else
        lines.Append "CompletedTime: nil"
    end if

    if j.CreationTime<>nil then
        lines.Append "CreationTime: "+j.CreationTime.AbbreviatedDate+" "+j.CreationTime.longtime
    else
        lines.Append "CreationTime: nil"
    end if

    if j.ProcessingTime<>nil then
        lines.Append "ProcessingTime: "+j.ProcessingTime.AbbreviatedDate+" "+j.ProcessingTime.longtime
    else
        lines.Append "ProcessingTime: nil"
    end if

    MsgBox join(lines,EndOfLine)
end if
```
57.3.2 Properties

57.3.3 CompletedTime as Date

MBS Tools Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:**
Time the job was completed.

**Example:**
```vba
dim jobs() as CUPSJobMBS = CUPSMBS.GetJobs("", false, CUPSMBS.kWhichJobsComplete)
if UBound(jobs)<0 then
    MsgBox "no job"
else
    dim j as CUPSJobMBS = jobs(0)
    MsgBox j.Title+" completed at "+j.CompletedTime.AbbreviatedDate+" "+j.CompletedTime.longtime
end if
```

**Notes:**
Value is nil if the value is not set.
(Read and Write property)

57.3.4 CreationTime as Date

MBS Tools Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:**
Time the job was created.

**Example:**
```vba
dim jobs() as CUPSJobMBS = CUPSMBS.GetJobs("", false, CUPSMBS.kWhichJobsComplete)
if UBound(jobs)<0 then
    MsgBox "no job"
else
    dim j as CUPSJobMBS = jobs(0)
    MsgBox j.Title+" completed at "+j.CreationTime.AbbreviatedDate+" "+j.CreationTime.longtime
end if
```

**Notes:**
Value is nil if the value is not set.
(Read and Write property)

57.3.5 Dest as String

MBS Tools Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:**
Printer or class name.
**Example:**
```vbscript
dim jobs() as CUPSMBSJobMBS = CUPSMBS.GetJobs("", false, CUPSMBS.kWhichJobsAll)
dim lines(-1) as string

for each j as CUPSMBSJobMBS in jobs
    lines.Append j.Dest
next

MsgBox Join(lines, EndOfLine)
```

**Notes:** (Read and Write property)

57.3.6 Format as String

MBS Tools Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:**
Document format.
**Example:**
```vbscript
dim jobs() as CUPSMBSJobMBS = CUPSMBS.GetJobs("", true, CUPSMBS.kWhichJobsAll)
dim lines(-1) as string

for each j as CUPSMBSJobMBS in jobs
    lines.Append j.Format
next

MsgBox Join(lines, EndOfLine)
```

**Notes:** (Read and Write property)
57.3. **CLASS CUPSJOBMBS**

### 57.3.7 ID as Integer

MBS Tools Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** The job ID.

**Example:**

```vbscript
dim jobs(-1) as CUPSJobMBS = CUPSMBS.GetJobs("", false, CUPSMBS.kWhichJobsAll)
MsgBox jobs(0).Title + " has ID " + str(jobs(0).ID)
```

**Notes:** (Read and Write property)

### 57.3.8 Priority as Integer


**Example:**

```vbscript
dim jobs(-1) as CUPSJobMBS = CUPSMBS.GetJobs("", false, CUPSMBS.kWhichJobsAll)
MsgBox jobs(0).Title + " has priority " + str(jobs(0).Priority)
```

**Notes:** (Read and Write property)

### 57.3.9 ProcessingTime as Date

MBS Tools Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** Time the job was processed.

**Example:**

```vbscript
dim jobs() as CUPSJobMBS = CUPSMBS.GetJobs("", false, CUPSMBS.kWhichJobsComplete)
if UBound(jobs) < 0 then
    MsgBox "no job"
else
    dim j as CUPSJobMBS = jobs(0)
    MsgBox j.Title + " completed at " + j.ProcessingTime.AbbreviatedDate + " + " + j.ProcessingTime.longtime
end if
```

**Notes:**
Value is nil if the value is not set.
(Read and Write property)

### 57.3.10 Size as Integer

**Example:**

```vba
dim sum as Integer
dim jobs() as CUPSJobMBS = CUPSMBS.GetJobs("", false, CUPSMBS.kWhichJobsAll)

if UBound(jobs)<0 then
    MsgBox "no job"
else
    for each j as CUPSJobMBS in jobs
        sum=sum+j.Size
    next

    MsgBox "Total size of all print jobs: " +str(sum)+" KB"
end if
```

**Notes:** (Read and Write property)

### 57.3.11 State as Integer

**Example:**

```vba
dim jobs(-1) as CUPSJobMBS = CUPSMBS.GetJobs("", false, CUPSMBS.kWhichJobsAll)
dim state as Integer = jobs(0).State // check state of first job
dim s as string = "?"

Select case state
    case CUPSMBS.kJobAborted
        s = "Aborted"
    case CUPSMBS.kJobCanceled
        s = "Canceled"
    case CUPSMBS.kJobCompleted
        s = "Completed"
    case CUPSMBS.kJobHeld
        s = "Held"
    case else
        s = "?"
end Select
```

**Notes:**
57.3. **CLASS CUPSJOBMBS**

```vba
case CUPSMBS.kJobStopped
    s = "Stopped"
case CUPSMBS.kJobPending
    s = "Pending"
case CUPSMBS.kJobProcessing
    s = "Processing"
end Select

MsgBox str(State) + ": " + s
```

**Notes:** (Read and Write property)

### 57.3.12 Title as String


**Example:**

```vba
dim jobs() as CUPSJobMBS = CUPSMBS.GetJobs("", false, CUPSMBS.kWhichJobsAll)
dim lines(-1) as string

for each j as CUPSJobMBS in jobs
    lines.Append j.Title
next

MsgBox Join(lines, EndOfLine)
```

**Notes:** (Read and Write property)

### 57.3.13 User as String

MBS Tools Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** User the submitted the job.

**Example:**

```vba
dim jobs() as CUPSJobMBS = CUPSMBS.GetJobs("", false, CUPSMBS.kWhichJobsAll)
dim lines(-1) as string

for each j as CUPSJobMBS in jobs
    lines.Append j.User
next
```
MsgBox Join(lines, EndOfLine)

**Notes:** (Read and Write property)
57.4. module CUPSMBS

57.4.1 module CUPSMBS


57.4.2 Methods

57.4.3 CancelJob(name as string, job as Int32)


Notes:
name: Name of printer or class
job: Job ID, kJobIDCurrent for the current job, or kJobIDAll for all jobs

Pass kJobIDAll to cancel all jobs or kJobIDCurrent to cancel the current job on the named destination.

Raises exception on error.

57.4.4 GetDefault as string


Example:
MsgBox CUPSMBS.GetDefault

57.4.5 GetDestinations as CUPSDestinationMBS()


Example:

dim lines(-1) as string
for each c as CUPSDestinationMBS in CUPSMBS.GetDestinations
lines.append c.Name
next
MsgBox Join(lines, EndOfLine)

**Notes:** Starting with CUPS 1.2, the returned list of destinations include the printer-info, printer-is-accepting-jobs, printer-is-shared, printer-make-and-model, printer-state, printer-state-change-time, printer-state-reasons, and printer-type attributes as options. CUPS 1.4 adds the marker-change-time, marker-colors, marker-high-levels, marker-levels, marker-low-levels, marker-message, marker-names, marker-types, and printer-commands attributes as well.

### 57.4.6 GetJobs(name as string, OnlyMyJobs as boolean, whichjobs as Integer) as CUPSJobMBS()

MBS Tools Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** Get the jobs from the default server.

**Notes:**
- name: "" = all destinations, otherwise show jobs for named destination
- OnlyMyJobs: false = all users, true = mine
- whichjobs: kWhichJobsAll, kWhichJobsActive, or kWhichJobsComplete

A "whichjobs" value of kWhichJobsAll returns all jobs regardless of state, while kWhichJobsActive returns jobs that are pending, processing, or held and kWhichJobsComplete returns jobs that are stopped, canceled, aborted, or completed.

### 57.4.7 GetPassword(prompt as string) as string

MBS Tools Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** Get a password from the user.

**Notes:** Returns "" if the user does not provide a password.

### 57.4.8 GetPPD(name as string) as string

MBS Tools Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** Get the PPD file for a printer on the default server.

**Example:**

```vbscript
for each c as CUPSDestinationMBS in CUPSMBS.GetDestinations
if c.isDefault then
  MsgBox cupsmb.GetPPD(c.Name)
end if
```
57.4. MODULE CUPSMBS

Notes:
Returns Filename for PPD file.

For classes, cupsGetPPD returns the PPD file for the first printer in the class.

The returned filename is stored in a static buffer and is overwritten with each call to cupsGetPPD or cupsGetPPD2. The caller "owns" the file that is created and must unlink the returned filename.

57.4.9 LastError as Integer

MBS Tools Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** Return the last IPP status code.

57.4.10 LastErrorMessage as string

**Example:**

MsgBox CUPSMBS.LastErrorMessage

**Notes:** Returns status-message text from last request.

57.4.11 PrintData(name as string, Data as String, Title as string) as Integer

MBS Tools Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** Print a file to a printer or class on the default server.

**Notes:**
Name: Destination name
Data: Data to print
Title: Title of job

Returns Job ID or 0 on error
57.4.12 PrintFile(name as string, file as folderitem, title as string) as Integer

MBS Tools Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:**
Print a file to a printer or class on the default server.

**Example:**

```vba
// Print file on default printer...
Dim f As FolderItem = SpecialFolder.Desktop.Child("test.ps")

For Each c As CUPSDestinationMBS In CUPSMBS.GetDestinations
    If c.isDefault Then
        Call CUPSMBS.PrintFile(c.Name, f, f.Name)
    End If
Next
```

**Notes:**
- name: Destination name
- filename: File to print
- title: Title of job

Returns Job ID or 0 on error

See also:

- 57.4.13 PrintFile(name as string, file as folderitem, title as string, options() as CUPSOptionMBS) as Integer

57.4.13 PrintFile(name as string, file as folderitem, title as string, options() as CUPSOptionMBS) as Integer

MBS Tools Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:**
Print a file to a printer or class on the default server.

**Notes:**
- name: Destination name
- filename: File to print
- title: Title of job
- options: Options

Returns Job ID or 0 on error

See also:

- 57.4.12 PrintFile(name as string, file as folderitem, title as string) as Integer
57.4. MODULE CUPSMBS

57.4.14 PrintFiles(name as string, files() as folderitem, title as string) as Integer

MBS Tools Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:**
Print files to a printer or class on the default server.

**Notes:**
- name: Destination name
- filename: Files to print
- title: Title of job

Returns Job ID or 0 on error

See also:
- 57.4.15 PrintFiles(name as string, files() as folderitem, title as string, options() as CUPSOptionMBS) as Integer

57.4.15 PrintFiles(name as string, files() as folderitem, title as string, options() as CUPSOptionMBS) as Integer

MBS Tools Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:**
Print files to a printer or class on the default server.

**Notes:**
- name: Destination name
- files: Files to print
- title: Title of job
- options: Options

Returns Job ID or 0 on error

See also:
- 57.4.14 PrintFiles(name as string, files() as folderitem, title as string) as Integer

57.4.16 Server as string

MBS Tools Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:**
Return the hostname/address of the default server.

**Example:**
MsgBox CUPSMBS.Server

**Notes:** The returned value can be a fully-qualified hostname, a numeric IPv4 or IPv6 address, or a domain socket pathname.
57.4.17  SetDefaultPrinter(printer as string)

MBS Tools Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** Sets the default printer. **Notes:** Name must be one of CUPSDestinationMBS’s name.

57.4.18  SetServer(server as string)

MBS Tools Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** Set the default server name. **Notes:**

server: Server name

The ”server” string can be a fully-qualified hostname, a numeric IPv4 or IPv6 address, or a domain socket pathname. Pass ”” to restore the default server name.

57.4.19  SetUser(user as string)

MBS Tools Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** Set the default user name. **Notes:**

user: User name

Pass ”” to restore the default user name.

57.4.20  User as string

MBS Tools Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** Return the current user’s name. **Example:**

MsgBox CUPSMBS.User
57.4.21 Constants

57.4.22 kJobAborted = 8

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the constants for the job state. **Example:**

```vbs
dim jobs(-1) as CUPSJobMBS = CUPSMBS.GetJobs("", false, CUPSMBS.kWhichJobsAll)
dim state as Integer = jobs(0).State // check state of first job
dim s as string = "?"
Select case state
case CUPSMBS.kJobAborted
s = "Aborted"
case CUPSMBS.kJobCanceled
s = "Canceled"
case CUPSMBS.kJobCompleted
s = "Completed"
case CUPSMBS.kJobHeld
s = "Held"
case CUPSMBS.kJobStopped
s = "Stopped"
case CUPSMBS.kJobPending
s = "Pending"
case CUPSMBS.kJobProcessing
s = "Processing"
end Select
MsgBox str(State) + ": " + s
```

**Notes:** Job was aborted.

57.4.23 kJobCanceled = 7

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the constants for the job state. **Example:**

```vbs
dim jobs(-1) as CUPSJobMBS = CUPSMBS.GetJobs("", false, CUPSMBS.kWhichJobsAll)
dim state as Integer = jobs(0).State // check state of first job
dim s as string = "?"
Select case state
case CUPSMBS.kJobAborted
s = "Aborted"
case CUPSMBS.kJobCanceled
s = "Canceled"
```

```vbs
case CUPSMBS.kJobCanceled
s = "Canceled"
```
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s = "Canceled"
case CUPSMBS.kJobCompleted
s = "Completed"
case CUPSMBS.kJobHeld
s = "Held"
case CUPSMBS.kJobStopped
s = "Stopped"
case CUPSMBS.kJobPending
s = "Pending"
case CUPSMBS.kJobProcessing
s = "Processing"
end Select

MsgBox str(State) + ": " + s

Notes: Job was canceled.

57.4.24 kJobCompleted = 9

MBS Tools Plugin, Plugin Version: 9.7. Function: One of the constants for the job state.
Example:

dim jobs(-1) as CUPSJobMBS = CUPSMBS.GetJobs("", false, CUPSMBS.kWhichJobsAll)
dim state as Integer = jobs(0).State // check state of first job
dim s as string = "?"

Select case state
case CUPSMBS.kJobAborted
s = "Aborted"
case CUPSMBS.kJobCanceled
s = "Canceled"
case CUPSMBS.kJobCompleted
s = "Completed"
case CUPSMBS.kJobHeld
s = "Held"
case CUPSMBS.kJobStopped
s = "Stopped"
case CUPSMBS.kJobPending
s = "Pending"
case CUPSMBS.kJobProcessing
s = "Processing"
end Select

MsgBox str(State) + ": " + s
Notes: Job was completed.

57.4.25  kJobHeld = 4

MBS Tools Plugin, Plugin Version: 9.7. Function: One of the constants for the job state.
Example:

```vba
Dim jobs(-1) As CUPSJobMBS = CUPSMBS.GetJobs("", False, CUPSMBS.kWhichJobsAll)
Dim state As Integer = jobs(0).State 'check state of first job
Dim s As String = "?
Select Case state
Case CUPSMBS.kJobAborted
    s = "Aborted"
Case CUPSMBS.kJobCanceled
    s = "Canceled"
Case CUPSMBS.kJobCompleted
    s = "Completed"
Case CUPSMBS.kJobHeld
    s = "Held"
Case CUPSMBS.kJobStopped
    s = "Stopped"
Case CUPSMBS.kJobPending
    s = "Pending"
Case CUPSMBS.kJobProcessing
    s = "Processing"
End Select
MsgBox str(State) & " : " & s
```

Notes: Job is held.

57.4.26  kJobIDAll = -1

### 57.4.27  kJobIDCurrent = 0

MBS Tools Plugin, Plugin Version: 9.7. **Function:** A job constant for the current job.

### 57.4.28  kJobPending = 3

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the constants for the job state.  
**Example:**

```vbnet
dim jobs(-1) as CUPSJobMBS = CUPSMBS.GetJobs("", false, CUPSMBS.kWhichJobsAll)
dim state as Integer = jobs(0).State // check state of first job
dim s as string = "?"
Select case state
    case CUPSMBS.kJobAborted
        s = "Aborted"
    case CUPSMBS.kJobCanceled
        s = "Canceled"
    case CUPSMBS.kJobCompleted
        s = "Completed"
    case CUPSMBS.kJobHeld
        s = "Held"
    case CUPSMBS.kJobStopped
        s = "Stopped"
    case CUPSMBS.kJobPending
        s = "Pending"
    case CUPSMBS.kJobProcessing
        s = "Processing"
end Select
MsgBox str(State)+": " +s
```

**Notes:** Job is pending

### 57.4.29  kJobProcessing = 5

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the constants for the job state.  
**Example:**

```vbnet
dim jobs(-1) as CUPSJobMBS = CUPSMBS.GetJobs("", false, CUPSMBS.kWhichJobsAll)
dim state as Integer = jobs(0).State // check state of first job
dim s as string = "?"
```
Select case state
case CUPSMBS.kJobAborted
  s = "Aborted"
case CUPSMBS.kJobCanceled
  s = "Canceled"
case CUPSMBS.kJobCompleted
  s = "Completed"
case CUPSMBS.kJobHeld
  s = "Held"
case CUPSMBS.kJobStopped
  s = "Stopped"
case CUPSMBS.kJobPending
  s = "Pending"
case CUPSMBS.kJobProcessing
  s = "Processing"
end Select

MsgBox str(State) + ": " + s

Notes: Job is processing.

57.4.30 kJobStopped = 6

MBS Tools Plugin, Plugin Version: 9.7. Function: One of the constants for the job state.
Example:

dim jobs(-1) as CUPSJobMBS = CUPSMBS.GetJobs("", false, CUPSMBS.kWhichJobsAll)
dim state as Integer = jobs(0).State // check state of first job
dim s as string = "?

Select case state
case CUPSMBS.kJobAborted
  s = "Aborted"
case CUPSMBS.kJobCanceled
  s = "Canceled"
case CUPSMBS.kJobCompleted
  s = "Completed"
case CUPSMBS.kJobHeld
  s = "Held"
case CUPSMBS.kJobStopped
  s = "Stopped"
case CUPSMBS.kJobPending
  s = "Pending"
case CUPSMBS.kJobProcessing
  s = "Processing"
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end Select

MsgBox str(State)+"": "+s

Notes: Job is stopped.

57.4.31 kPrinterAUTHENTICATED = & h400000

MBS Tools Plugin, Plugin Version: 9.7. **Function**: One of the printer type/capability bit constants. 
**Notes**: Printer requires authentication

57.4.32 kPrinterBIND = & h0400

MBS Tools Plugin, Plugin Version: 9.7. **Function**: One of the printer type/capability bit constants. 
**Notes**: Can bind output

57.4.33 kPrinterBW = & h0004

MBS Tools Plugin, Plugin Version: 9.7. **Function**: One of the printer type/capability bit constants. 
**Example**:

dim lines(-1) as string

for each c as CUPSDestinationMBS in CUPS.GetDestinations
for each o as CUPSOptionMBS in c.Options
if o.Name="printer-type" then
    dim x as Integer = val(o.Value)

    if BitwiseAnd(x, CUPS.kPrinterBW)=CUPS.kPrinterBW then
        lines.Append c.Name+"": yes"
    else
        lines.Append c.Name+"": no"
end if
end if
next
next

MsgBox Join(lines,EndOfLine)
57.4.34 \textbf{kPrinterCLASS} = \& h0001

\textbf{Notes}: Printer class

57.4.35 \textbf{kPrinterCOLLATE} = \& h0080

\textbf{Notes}: Can collage copies

57.4.36 \textbf{kPrinterCOLOR} = \& h0008

\textbf{Example}: 
\begin{verbatim}
dim lines(-1) as string
for each c as CUPSDestinationMBS in CUPSMBS.GetDestinations
for each o as CUPSOptionMBS in c.Options
if o.Name="printer-type" then
    dim x as Integer = val(o.Value)
    if BitwiseAnd(x, CUPSMBS.kPrinterCOLOR)=CUPSMBS.kPrinterCOLOR then
        lines.Append c.Name+"": yes"
    else
        lines.Append c.Name+"": no"
    end if
end if
next
next
MsgBox Join(lines,EndOfLine)
\end{verbatim}

\textbf{Notes}: Can do color printing
57.4.37 kPrinterCOMMANDS = & h800000

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the printer type/capability bit constants. 
**Notes:** Printer supports maintenance commands

57.4.38 kPrinterCOPIES = & h0040

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the printer type/capability bit constants. 
**Notes:** Can do copies

57.4.39 kPrinterCOVER = & h0200

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the printer type/capability bit constants. 
**Notes:** Can cover output

57.4.40 kPrinterDEFAULT = & h20000

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the printer type/capability bit constants. 
**Notes:** Default printer on network

57.4.41 kPrinterDELETE = & h10000

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the printer type/capability bit constants. 
**Notes:** Delete printer

57.4.42 kPrinterDISCOVERED = & h100000

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the printer type/capability bit constants. 
**Notes:** Printer was automatically discovered and added.

57.4.43 kPrinterDUPLEX = & h0010

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the printer type/capability bit constants. 
**Example:**
57.4. MODULE CUPSMBS

```vbscript
dim lines(-1) as string

for each c as CUPSDestinationMBS in CUPSMBS.GetDestinations
    for each o as CUPSOptionMBS in c.Options
        if o.Name="printer-type" then
            dim x as Integer = val(o.Value)
            if BitwiseAnd(x, CUPSMBS.kPrinterDUPLEX)=CUPSMBS.kPrinterDUPLEX then
                lines.Append c.Name+" yes"
            else
                lines.Append c.Name+" no"
            end if
        end if
    next
next
MsgBox Join(lines,EndOfLine)
```

**Notes:** Can do duplexing

---

57.4.44 kPrinterFAX = & h40000

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the printer type/capability bit constants. **Example:**

```vbscript
dim lines(-1) as string

for each c as CUPSDestinationMBS in CUPSMBS.GetDestinations
    for each o as CUPSOptionMBS in c.Options
        if o.Name="printer-type" then
            dim x as Integer = val(o.Value)
            if BitwiseAnd(x, CUPSMBS.kPrinterFAX)=CUPSMBS.kPrinterFAX then
                lines.Append c.Name+" yes"
            else
                lines.Append c.Name+" no"
            end if
        end if
    next
next
MsgBox Join(lines,EndOfLine)
```
Notes: Fax queue

57.4.45  kPrinterIMPLICIT = & h10000

Notes: Implicit class

57.4.46  kPrinterLARGE = & h4000

Notes: Can do D/E/A1/A0

57.4.47  kPrinterLOCAL = & h0000

Notes: Local printer or class

57.4.48  kPrinterMEDIUM = & h2000

Notes: Can do Tabloid/B/C/A3/A2

57.4.49  kPrinterMFP = & h4000000

Example:

```vbs
dim lines(-1) as string
for each c as CUPSDestinationMBS in CUPSMBS.GetDestinations
    for each o as CUPSOptionMBS in c.Options
        if o.Name="printer-type" then
            dim x as Integer = val(o.Value)
            if BitwiseAnd(x, CUPSMBS.kPrinterMFP)=CUPSMBS.kPrinterMFP then
                lines.Append c.Name+": yes"
            else
                lines.Append c.Name+": no"
```
end if
end if
next
next

MsgBox Join(lines, EndOfLine)

Notes: Printer with scanning capabilities

57.4.50  kPrinterNotShared = & h200000

Notes: Printer is not shared.

57.4.51  kPrinterOPTIONS = & h6fffc


57.4.52  kPrinterPUNCH = & h0100

Notes: Can punch output.

57.4.53  kPrinterREJECTING = & h80000

Notes: Printer is rejecting jobs.

57.4.54  kPrinterREMOTE = & h0002

Notes: Remote printer or class.
57.4.55  

**kPrinterSCANNER = & h2000000**

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the printer type/capability bit constants. **Example:**

```vba
dim lines(-1) as string
for each c as CUPSDestinationMBS in CUPSMBS.GetDestinations
    for each o as CUPSOptionMBS in c.Options
        if o.Name="printer-type" then
            dim x as Integer = val(o.Value)
            if BitwiseAnd(x, CUPSMBS.kPrinterSCANNER)=CUPSMBS.kPrinterSCANNER then
                lines.Append c.Name+" : yes"
            else
                lines.Append c.Name+" : no"
            end if
        end if
    next
next
MsgBox Join(lines,EndOfLine)
```

**Notes:** Scanner-only device

---

57.4.56  

**kPrinterSMALL = & h1000**

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the printer type/capability bit constants. **Example:**

```vba
dim lines(-1) as string
for each c as CUPSDestinationMBS in CUPSMBS.GetDestinations
    for each o as CUPSOptionMBS in c.Options
        if o.Name="printer-type" then
            dim x as Integer = val(o.Value)
            if BitwiseAnd(x, CUPSMBS.kPrinterSMALL)=CUPSMBS.kPrinterSMALL then
                lines.Append c.Name+" : yes"
            else
                lines.Append c.Name+" : no"
            end if
        end if
    next
next
MsgBox Join(lines,EndOfLine)
```
MsgBox Join(lines,EndOfLine)

Notes: Can do Letter/Legal/A4.

57.4.57  kPrinterSORT = & h0800

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the printer type/capability bit constants. **Notes:** Can sort output.

57.4.58  kPrinterSTAPLE = & h0020

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the printer type/capability bit constants. **Notes:** Can staple output.

57.4.59  kPrinterVARIABLE = & h8000

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the printer type/capability bit constants. **Notes:** Can do variable sizes.

57.4.60  kStatusAttributes = & h040B

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants. **Notes:** client error attributes or values not supported

57.4.61  kStatusAttributesNotSettable = & h0413

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants. **Notes:** client error attributes not settable

57.4.62  kStatusBadRequest = & h0400

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants. **Notes:** client error bad request
57.4.63  kStatusCharset = & h040D

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants. 
**Notes:** client error charset not supported

57.4.64  kStatusCompressionError = & h0410

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants. 
**Notes:** client error compression error

57.4.65  kStatusCompressionNotSupported = & h040F

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants. 
**Notes:** client error compression not supported

57.4.66  kStatusConflict = & h040E

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants. 
**Notes:** client error conflicting attributes

57.4.67  kStatusDeviceError = & h0504

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants. 
**Notes:** server error device error

57.4.68  kStatusDocumentAccessError = & h0412

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants. 
**Notes:** client error document access error
57.4.  MODULE CUPSMBS

57.4.69  `kStatusDocumentFormat = &h040A`

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants. **Notes:** client error document format not supported

57.4.70  `kStatusDocumentFormatError = &h0411`

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants. **Notes:** client error document format error

57.4.71  `kStatusErrorJobCanceled = &h0508`

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants. **Notes:** server error job canceled

57.4.72  `kStatusForbidden = &h0401`

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants. **Notes:** client error forbidden

57.4.73  `kStatusGone = &h0407`

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants. **Notes:** client error gone

57.4.74  `kStatusIgnoredAllNotifications = &h0416`

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants. **Notes:** client error ignored all notifications

57.4.75  `kStatusIgnoredAllSubscriptions = &h0414`

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants. **Notes:** client error ignored all subscriptions
57.4.76  kStatusInternalError = & h0500

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants.  
**Notes:** server error internal error

57.4.77  kStatusMultipleJobsNotSupported = & h0509

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants.  
**Notes:** server error multiple document jobs not supported

57.4.78  kStatusNotAccepting = & h0506

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants.  
**Notes:** server error not accepting jobs

57.4.79  kStatusNotAuthenticated = & h0402

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants.  
**Notes:** client error not authenticated

57.4.80  kStatusNotAuthorized = & h0403

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants.  
**Notes:** client error not authorized

57.4.81  kStatusNotFound = & h0406

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants.  
**Notes:** client error not found

57.4.82  kStatusNotPossible = & h0404

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants.  
**Notes:** client error not possible
57.4.83 kStatusOK = 0

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants. **Notes:** successful ok

57.4.84 kStatusOKButCancelSubscription = 6

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants. **Notes:** successful ok but cancel subscription

57.4.85 kStatusOKConflict = 2

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants. **Notes:** successful ok conflicting attributes

57.4.86 kStatusOKEventsComplete = 7

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants. **Notes:** successful ok events complete

57.4.87 kStatusOKIgnoredNotifications = 4

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants. **Notes:** successful ok ignored notifications

57.4.88 kStatusOKIgnoredSubscriptions = 3

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants. **Notes:** successful ok ignored subscriptions

57.4.89 kStatusOKSubst = 1

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants. **Notes:** successful ok ignored or substituted attributes
57.4.90  kStatusOKTooManyEvents = 5

MBS Tools Plugin, Plugin Version: 9.7. Function: One of the CUPS error constants. Notes: successful ok too many events

57.4.91  kStatusOperationNotSupported = & h0501

MBS Tools Plugin, Plugin Version: 9.7. Function: One of the CUPS error constants. Notes: server error operation not supported

57.4.92  kStatusPrinterBusy = & h0507

MBS Tools Plugin, Plugin Version: 9.7. Function: One of the CUPS error constants. Notes: server error busy

57.4.93  kStatusPrinterIsDeactivated = & h050A

MBS Tools Plugin, Plugin Version: 9.7. Function: One of the CUPS error constants. Notes: server error printer is deactivated

57.4.94  kStatusPrintSupportFileNotFound = & h0417

MBS Tools Plugin, Plugin Version: 9.7. Function: One of the CUPS error constants. Notes: client error print support file not found

57.4.95  kStatusRedirectionOtherSite = & h200

MBS Tools Plugin, Plugin Version: 9.7. Function: One of the CUPS error constants. Notes: redirection other site

57.4.96  kStatusRequestEntity = & h0408

MBS Tools Plugin, Plugin Version: 9.7. Function: One of the CUPS error constants. Notes: client error request entity too large
57.4. **MODULE CUPSMBS**

57.4.97  kStatusRequestValue = & h0409

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants.  
**Notes:** client error request value too long

57.4.98  kStatusSeeOther = & h280

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants.  
**Notes:** cups see other

57.4.99  kStatusServiceUnavailable = & h0502

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants.  
**Notes:** server error service unavailable

57.4.100  kStatusTemporaryError = & h0505

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants.  
**Notes:** server error temporary error

57.4.101  kStatusTimeout = & h0405

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants.  
**Notes:** client error timeout

57.4.102  kStatusTooManySubscriptions = & h0415

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants.  
**Notes:** client error too many subscriptions

57.4.103  kStatusURIScheme = & h040C

MBS Tools Plugin, Plugin Version: 9.7. **Function:** One of the CUPS error constants.  
**Notes:** client error uri scheme not supported
57.4.104 \textbf{kStatusVersionNotSupported} = \& \textbf{h0503}

\textbf{Notes}: server error version not supported

57.4.105 \textbf{kWhichJobsActive} = 0


57.4.106 \textbf{kWhichJobsAll} = -1


57.4.107 \textbf{kWhichJobsComplete} = 1

57.5. class CUPSMissingFunctionExceptionMBS

57.5.1 class CUPSMissingFunctionExceptionMBS

MBS Tools Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** The exception raised if a CUPS function is not found. **Notes:**
On Windows this method is raised for each function you call.
Subclass of the RuntimeException class.
57.6 class CUPSOptionMBS

57.6.1 class CUPSOptionMBS

The class for the options in CUPS.

Example:

```vbscript
dim options() as CUPSOptionMBS

dim o1 as new CUPSOptionMBS
o1.Name = "media"
o1.Value = "A4"
options.Append o1

dim o2 as new CUPSOptionMBS
o2.Name = "scaling"
o2.Value = "75"
options.Append o2

dim o3 as new CUPSOptionMBS
o3.Name = "Collate"
o3.Value = "True"
options.Append o3

dim o4 as new CUPSOptionMBS
o4.Name = "sides"
o4.Value = "two-sided-long-edge"
options.Append o4
```

57.6.2 Properties

57.6.3 Name as String

Name of option.

Notes: (Read and Write property)

57.6.4 Value as String

Value of option.
57.6. CLASS CUPSOPTIONMBS

Notes: (Read and Write property)
Chapter 58

CURL

58.1 class CURLEmailMBS

58.1.1 class CURLEmailMBS

MBS CURL Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Our plugin class to help building and sending emails.

**Example:**

```vbnet
dim e as new CURLEmailMBS

e.SetFrom "test@test.test", "christian Mller"
e.Subject = "Hello World 
"e.SMTPPassword = "xxx"
e.SMTPUsername = "xxx"
e.SetServer "smtp.test.test", true
e.AddTo "test@test.test", "Test Mller"
e.PlainText = "Hello World," + EndOfLine + "Smilies: 
"

dim c as new CURLSMBS

if c.SetupEmail(e) then

dim er as Integer = c.Perform
if er = 0 then
MsgBox "Email sent"
end if
end if
```

9907
58.1.2 Methods

58.1.3 AddAttachment(data as MemoryBlock, name as string, type as string = "", InlineID as string = "")

MBS CURL Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds an attachment to the email.

**Notes:**

name: The name for the attachment.
type: Optional, the mime type to use. e.g. "application/pdf" for PDF files. If missing, we use "application/octet-stream".
data: The data to include.

For best results use attachment sizes below 50 MB.
The plugin will encode your data as Base64. If you want to attach a picture, you can use PictureToPNGStringMBS (mime type "image/png") or PictureToJPEGStringMBS (mime type "image/jpeg") to encode a picture.

Version 15.0 of MBS Plugin can encode file name for preserving non AScII characters. Still for compatibility it is recommended to use simply AScII names.

If InlineID is set, we include the attachment for inlining. Please pass content ID (cID).
Empty text or no parameter gives regular attachment.
You can use AddAttachment several times to add several attachments.
See also:

- 58.1.4 AddAttachment(data as string, name as string, type as string = "", InlineID as string = "")
  9908
- 58.1.5 AddAttachment(file as FolderItem, name as string = "", type as string = "", InlineID as string = ")
  9909

58.1.4 AddAttachment(data as string, name as string, type as string = "", InlineID as string = "")

MBS CURL Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds an attachment to the email.

**Notes:**

name: The name for the attachment.
type: Optional, the mime type to use. e.g. "application/pdf" for PDF files. If missing, we use "application/octet-stream".
data: The data to include.
58.1. CLASS CURLEMAILMBS

For best results use attachment sizes below 50 MB.
The plugin will encode your data as Base64. If you want to attach a picture, you can use PictureToPNGStringMBS (mime type "image/png") or PictureToJPEGStringMBS (mime type "image/jpeg") to encode a picture.

Version 15.0 of MBS Plugin can encode file name for preserving non ASCII characters. Still for compatibility it is recommended to use simply ASCII names.

If InlineID is set, we include the attachment for inlining. Please pass content ID (cID).
Empty text or no parameter gives regular attachment.
You can use AddAttachment several times to add several attachments.
See also:

- 58.1.3 AddAttachment(data as MemoryBlock, name as string, type as string = "", InlineID as string = "")
- 58.1.5 AddAttachment(file as FolderItem, name as string = "", type as string = "", InlineID as string = "")

58.1.5 AddAttachment(file as FolderItem, name as string = "", type as string = "", InlineID as string = "")

MBS CURL Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds an attachment to the email.

**Notes:**

name: The name for the attachment. If empty, version 16.2 uses file name from folderitem.
type: Optional, the mime type to use. e.g. "application/pdf" for PDF files. If missing, we use "application/octet-stream".
file: The file to use. This file is read and content used for attachment.

For best results use attachment sizes below 50 MB.
The plugin will encode your data as Base64. If you want to attach a picture, you can use PictureToPNGStringMBS (mime type "image/png") or PictureToJPEGStringMBS (mime type "image/jpeg") to encode a picture.

Version 15.0 of MBS Plugin can encode file name for preserving non ASCII characters. Still for compatibility it is recommended to use simply ASCII names.

If InlineID is set, we include the attachment for inlining. Please pass content ID (cID).
Empty text or no parameter gives regular attachment.
You can use AddAttachment several times to add several attachments.
See also:

- 58.1.3 AddAttachment(data as MemoryBlock, name as string, type as string = "", InlineID as string = "")
58.1.4 AddAttachment(data as string, name as string, type as string = "", InlineID as string = "")

58.1.6 AddBcc(email as string, name as string)


**Example:**
```vba
dim e as new CURLEmailMBS

e.AddBcc "test@monkeybreadsoftware.test", "Test Miller"

dim Bccs() as string = e.Bccs
MsgBox Bccs(0)
```

**Notes:**
Please pass email and optionally name of recipient.
If this name contains special characters, it will be automatically encoded with UTF-8.

58.1.7 Addcc(email as string, name as string)


**Example:**
```vba
dim e as new CURLEmailMBS

e.Addcc "test@monkeybreadsoftware.test", "Test Miller"

dim ccs() as string = e.ccs
MsgBox ccs(0)
```

**Notes:**
Please pass email and optionally name of recipient.
If this name contains special characters, it will be automatically encoded with UTF-8.
### 58.1.8 AddHeader(header as string)


**Example:**

```vba
dim e as new CURLEmailMBS

e.AddHeader "X-company: My company, Inc."

dim Headers() as string = e.Headers
MsgBox Headers(0)
```

**Notes:**

This header is passed as is and not preprocessed. You can use this function to pass custom headers for "X-Universally-Unique-Identifier:“, "Date:“, "X-Mailer:“, "Message-Id:“ and "Mime-Version:“. If you pass header without text following ":“, the header is not included.

### 58.1.9 AddReplyTo(email as string, name as string)


**Example:**

```vba
dim e as new CURLEmailMBS

e.AddReplyTo "test@monkeybreadsoftware.test", "Test Mller"

dim ReplyTos() as string = e.ReplyTOs
MsgBox ReplyTos(0)
```

**Notes:**

Please pass email and optionally name of recipient. If this name contains special characters, it will be automatically encoded with UTF-8.

### 58.1.10 AddTo(email as string, name as string)

Example:

```vba
dim e as new CURLEmailMBS

e.AddTo "test@monkeybreadsoftware.test", "Test Miller"

dim TOs() as string = e.TOs
MsgBox TOs(0)
```

Notes:
Please pass email and optionally name of recipient.
If this name contains special characters, it will be automatically encoded with UTF-8.

### 58.1.11 Bccs as String()

MBS CURL Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries list of Bcc recipients.

**Example:**

```vba
dim e as new CURLEmailMBS

e.AddBcc "test@monkeybreadsoftware.test", "Test Miller"

dim Bccs() as string = e.Bccs
MsgBox Bccs(0)
```

Notes: Entries may be encoded if necessary.

### 58.1.12 ccs as String()

MBS CURL Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries list of cc recipients.

**Example:**

```vba
dim e as new CURLEmailMBS

e.Addcc "test@monkeybreadsoftware.test", "Test Miller"

dim ccs() as string = e.ccs
MsgBox ccs(0)
```
Notes: Entries may be encoded if necessary.

58.1.13 clearAttachments

MBS CURL Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Clears all attachments from this email. 
**Notes:** Useful in case you want to send same email with different attachments to another recipient.

58.1.14 ClearHeaders

MBS CURL Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Clears all headers from this email. 
**Notes:** Useful in case you want to send same email with different headers to another recipient.

58.1.15 clearRecipients

**Notes:** Removes all TO, cc, Bcc and ReplyTO entries. Useful in case you want to send same email to another recipient.

58.1.16 constructor(Encoding as string = ”UTF-8”)

MBS CURL Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor.  
**Notes:** Normally, ignore parameter and use UTF-8. But alternative you can pass: UTF-8, AScII, MacRoman, Latin1 or Windows.

58.1.17 EmailSource as string

MBS CURL Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries the source code for the email.
Notes: This is more for debugging, than for real use.

58.1.18 Headers as String()

**Example:**
```vbs
dim e as new CURLEmailMBS
e.AddHeader "X-company: My company, Inc."

dim Headers() as string = e.Headers
MsgBox Headers(0)
```

58.1.19 ReplyTOs as String()

MBS CURL Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries list of ReplyTo recipients.
**Example:**
```vbs
dim e as new CURLEmailMBS
e.AddReplyTo "test@monkeybreadsoftware.test", "Test Mller"

dim ReplyTos() as string = e.ReplyTOs
MsgBox ReplyTos(0)
```

Notes: Entries may be encoded if necessary.

58.1.20 SetFrom(email as string, name as string)

MBS CURL Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the email from address.
**Example:**
```vbs
dim e as new CURLEmailMBS
e.SetFrom "test@test.test", "christian Mller"
```
58.1. CLASS CURLEMAILMBS

Notes: Please pass email and name of the recipient. If this name contains special characters, it will be automatically encoded with UTF-8.

58.1.21 SetServer(server as string, UseSSL as boolean)


Example:

```vbs
    dim e as new CURLEmailMBS
    e.SMTPPassword = "rGc3_promyjR% k"
    e.SMTPUsername = "sammler@monkeybreadsoftware.de"
    e.SetServer "smtprelaypool.ispgateway.de", true
```

Notes:
Sets which SMTP server to use.
There are a few combinations possible.
First you can use SetServer with SSL and pass true for UseURL parameter.
Or you pass false for no SSL. Still you can use CURL's OptionFTPSSL set to 3 to allow TLS for an upgrade of the unencrypted connection to SSL later.
Some servers don’t support unencrypted, SSL or TLS, so only one may work.
And ports can be difficult, too. You can use CURL OptionPort to set a port explicit or include it in the server with double colon on the end. common ports are 25, 587 or 465.

58.1.22 TOs as String()


Example:

```vbs
    dim e as new CURLEmailMBS
    e.AddTo "test@monkeybreadsoftware.test", "Test Miller"
    dim TOs() as string = e.TOs
    MsgBox TOs(0)
```

Notes: Entries may be encoded if necessary.
58.1.23 Properties

58.1.24 Attachmentcount as Integer

MBS CURL Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns number of attachments. **Notes:** (Read only property)

58.1.25 BoundaryName as String

MBS CURL Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Optional name to use in boundaries for MIME parts. **Notes:**
by default MBS Plugin.
(Read and Write property)

58.1.26 HTMLText as String

MBS CURL Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The HTML text of the email. **Notes:**
This text is encoded as quoted printable UTF-8 text.
(Read and Write property)

58.1.27 InReplyTo as String

MBS CURL Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The in reply to message ID. **Notes:**
Here you can define the message ID of the email you reply to.
(Read and Write property)
58.1. CLASS CURLEMAILMBS

58.1.28 MessageID as String

MBS CURL Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets a custom message ID. **Notes:** The plugin normally creates one by default when setting from address. (Read and Write property)

58.1.29 PlainText as String

MBS CURL Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The plain text of the email. **Example:**

```plaintext
dim e as new CURLEmailMBS
e.PlainText = "Hello World," + EndOfLine + "Smilies: "
```

**Notes:** This text is encoded as quoted printable UTF-8 text. (Read and Write property)

58.1.30 RichText as String

MBS CURL Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The enriched text of the email. **Notes:** This text is encoded as quoted printable UTF-8 text. This is not to be confused with RTF file format. Enriched text is described here: http://en.wikipedia.org/wiki/Enriched_text Please note that most email clients do not support this nowadays. (Read and Write property)

58.1.31 Server as String

MBS CURL Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The effective server URL used. **Notes:** Only for debugging.
58.1.32  SMTPPassword as String


**Example:**

```vba
dim e as new CURLEmailMBS

e.SMTPPassword = "rGc3_mdYjR% k"
e.SMTPUsername = "sammler@monkeybreadsoftware.de"
e.SetServer "smtprelaypool.ispgateway.de", true
```

**Notes:** (Read and Write property)

58.1.33  SMTPServer as String

MBS CURL Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The domain name of the SMTP Server to use.

**Example:**

```vba
dim e as new CURLEmailMBS

e.SMTPPassword = "rGc3_mdYjR% k"
e.SMTPUsername = "sammler@monkeybreadsoftware.de"
e.SMTPServer = "smtprelaypool.ispgateway.de"
e.UseSSL = true
```

**Notes:** (Read and Write property)

58.1.34  SMTPUsername as String


**Example:**

```vba
dim e as new CURLEmailMBS

e.SMTPPassword = "rGc3_mdYjR% k"
```
58.1. **CLASS CURLEMAILMBS**

e.SMTPUsername = "sammler@monkeybreadsoftware.de"
e.SetServer "smtprelaypool.ispgateway.de", true

**Notes:** (Read and Write property)

### 58.1.35 Subject as String

MBS CURL Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The subject line.

**Example:**

```vbnet
dim e as new CURLEmailMBS

e.Subject = "Hello World 
```

**Notes:**

If subject lines contains special characters, it is automatically encoded as UTF-8.
(Read and Write property)

### 58.1.36 UseSSL as Boolean

MBS CURL Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether to use SSL or not.

**Example:**

```vbnet
dim e as new CURLEmailMBS

e.SMTPPassword = "rGc3_mdyjR% k"
e.SMTPUsername = "sammler@monkeybreadsoftware.de"
e.SMTPServer = "smtprelaypool.ispgateway.de"
e.UseSSL = true
```

**Notes:**

When using SSL right, please also check cAInfo, cAPath, OptionSSLVerifyHost and OptionSSLVerifyPeer properties on the CURLSMBS class.

Pass false for TLS and later configure CURL for TLS.
(Read and Write property)
58.2. CLASS CURLFILEINFOMBS

58.2 class CURLFileInfoMBS

58.2.1 class CURLFileInfoMBS

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for file information.
**Notes:** Content of this structure depends on information which is known and is achievable (e.g. by FTP LIST parsing).

58.2.2 Properties

58.2.3 Date as Date

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The timestamp as a date object.
**Notes:**
As of plugin version 15.2 the CURL library does not parse the timestamp.
So for some timestamp formats we have code in our plugin to do the parsing from the TimeString property.
But this is limited. No seconds and the year is a guess. Files newer in the year than today are from last year and other files from current year. The server doesn’t provide year details.
(Read only property)

58.2.4 FileName as String

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The file name.
**Notes:** (Read only property)

58.2.5 FileType as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The file type.
**Notes:** (Read only property)

58.2.6 Flags as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The flags.
Notes:
Flags define which fields are set.
Also you can just use the Has properties for same information.
(Read only property)

58.2.7 GID as Integer

Notes: (Read only property)

58.2.8 GroupString as String

Notes: (Read only property)

58.2.9 HardLinks as Integer

Notes: (Read only property)

58.2.10 HasFileName as Boolean

Notes: (Read only property)

58.2.11 HasFileType as Boolean

Notes: (Read only property)
58.2.12 HasGID as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if GID property is valid. 
**Notes:** (Read only property)

58.2.13 HasHardLinks as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if hardlinks property is valid. 
**Notes:** (Read only property)

58.2.14 HasPermissions as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if permissions property is valid. 
**Notes:** (Read only property)

58.2.15 HasSize as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if size property is valid. 
**Notes:** (Read only property)

58.2.16 HasTime as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if time and date properties have values. 
**Notes:** (Read only property)

58.2.17 HasUID as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if UID field has a value. 
**Notes:** (Read only property)
58.2.18 IsDirectory as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if entry is a directory. 
**Notes:**
Same as FileType = FileTypeDirectory.
(Read only property)

58.2.19 IsFile as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if entry is a regular file. 
**Notes:**
Same as FileType = FileTypeFile.
(Read only property)

58.2.20 Permissions as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The permission value. 
**Notes:** (Read only property)

58.2.21 PermissionString as String

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The permission string. 
**Notes:** (Read only property)

58.2.22 Size as Int64

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The file size. 
**Notes:** (Read only property)
58.2. CLASS CURLFILEINFOMBS

58.2.23 Target as String

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The target for a symlink.
**Notes:** (Read only property)

58.2.24 Time as Int64

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The time value.
**Notes:** (Read only property)

58.2.25TimeString as String

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The time string parsed.
**Notes:** (Read only property)

58.2.26 UID as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The user ID.
**Notes:** (Read only property)

58.2.27 UserString as String

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The user ID as text.
**Notes:** (Read only property)

58.2.28 Constants

58.2.29 FileTypeDeviceBlock = 3

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the file type constants.
**Notes:** Block Device
58.2.30 FileTypeDeviceChar = 4

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the file type constants.  
**Notes:** Character Device

58.2.31 FileTypeDirectory = 1

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the file type constants.  
**Notes:** Directory

58.2.32 FileTypeDoor = 7

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the file type constants.  
**Notes:** Door, is possible only on Sun Solaris now.

58.2.33 FileTypeFile = 0

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the file type constants.  
**Notes:** Regular file

58.2.34 FileTypeNamedPipe = 5

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the file type constants.  
**Notes:** Named Pipe

58.2.35 FileTypeSocket = 6

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the file type constants.  
**Notes:** Socket

58.2.36 FileTypeSymlink = 2

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the file type constants.  
**Notes:** Symbolic links
58.2.37  **FileTypeUnknown = 8**

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the file type constants. 
**Notes:** Unknown file type. Should never occur.

58.2.38  **FlagKnownFileName = 1**

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the flag constants. 
**Notes:** Filename Known

58.2.39  **FlagKnownFileType = 2**

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the flag constants. 
**Notes:** File Type Known

58.2.40  **FlagKnownGID = 32**

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the flag constants. 
**Notes:** GID Known

58.2.41  **FlagKnownHardLinks = 128**

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the flag constants. 
**Notes:** Hardlink Count Known

58.2.42  **FlagKnownPermissions = 8**

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the flag constants. 
**Notes:** Permissions Known

58.2.43  **FlagKnownSize = 64**

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the flag constants. 
**Notes:** Size Known
58.2.44 FlagKnownTime = 4

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the flag constants.  
**Notes:** Time Known

58.2.45 FlagKnownUID = 16

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the flag constants.  
**Notes:** UID Known
58.3. CLASS CURLListMBS

58.3  class CURLListMBS

58.3.1  class CURLListMBS

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class to hold a list of strings from the CURL library. **Notes:** Data is copied for this list, so you can just keep it around.

58.3.2  Methods

58.3.3  Item(index as Integer) as string

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the item with the given index. **Notes:** Index is zero based.

58.3.4  List as String()

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Converts list to a string array.

58.3.5  Operator Convert as String()

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Converts list to a string array.

58.3.6  Properties

58.3.7  Count as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Number of items in this list. **Notes:** (Read only property)
58.4 class CURLMBS

58.4.1 class CURLMBS

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class to wrap libCURL.

**Notes:**

We have two variants:

CURLS* classes include a static CURL library with SSL and SSH.
CURLN* classes include a static CURL library with native SSL on Mac and Windows.
CURL* classes without S need you to supply your own CURL library.

All variants can load a custom CURL library or use the one from the system on Mac and Linux. If no library is loaded or included, the plugin will try to load the system one in constructor.

from the website libCURL website:
http://CURL.haxx.se/libCURL/

libCURL is a free and easy-to-use client-side URL transfer library, supporting FTP, FTPS, HTTP, HTTPS, SCP, SFTP, TFTP, TELNET, DICT, FILE and LDAP. libCURL supports SSL certificates, HTTP POST, HTTP PUT, FTP uploading, HTTP form based upload, proxies, cookies, user+password authentication (Basic, Digest, NTLM, Negotiate, Kerberos4), file transfer resume, http proxy tunneling and more!

libCURL is highly portable, it builds and works identically on numerous platforms, including Solaris, NetBSD, FreeBSD, OpenBSD, Darwin, HPUX, IRIX, AIX, Tru64, Linux, UnixWare, HURD, Windows, Amiga, OS/2, BeOs, Mac OS X, Ultrix, QNX, OpenVMS, RISC OS, Novell NetWare, DOS and more...

libCURL is free, thread-safe, IPv6 compatible, feature rich, well supported, fast, thoroughly documented and is already used by many known, big and successful companies and numerous applications.

On Linux you may need to install libraries like ldap: apt-get install libldap-2.4.2:i386

58.4.2 Methods

58.4.3 AddMimePart as CURLMimePartMBS


**Notes:** Returns mime object, so you can set properties.
58.4.4  ClearData

MBS CURL Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Clears data properties.  
**Notes:** Resets OutputData, DebugData and HeaderData.

58.4.5  CloseMTDebugOutputFile

MBS CURL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Closes the debug output file for PerformMT.  
**Notes:**
Call after PerformMT finished.
With 15.2 version of plugin, this also works with Perform.

58.4.6  CloseMTHeaderOutputFile

MBS CURL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Closes the header output file for PerformMT.  
**Notes:**
Call after PerformMT finished.
With 15.2 version of plugin, this also works with Perform.

58.4.7  CloseMTInputFile

MBS CURL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Closes the input file for PerformMT.  
**Notes:**
Call after PerformMT finished.
With 15.2 version of plugin, this also works with Perform.

58.4.8  CloseMTOutputFile

MBS CURL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Closes the output file for PerformMT.  
**Notes:**
Call after PerformMT finished.
With 15.2 version of plugin, this also works with Perform.

58.4.9 CreateMTDebugOutputFile(file as folderitem) as boolean

MBS CURL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a file where debug data is written to.
**Notes:**
Returns true on success and false on failure (e.g. permission error).
With 15.2 version of plugin, this also works with Perform.

58.4.10 CreateMTHeaderOutputFile(file as folderitem) as boolean

MBS CURL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a file where header data is written to.
**Notes:**
Returns true on success and false on failure (e.g. permission error).
With 15.2 version of plugin, this also works with Perform.

58.4.11 CreateMTOoutputFile(file as folderitem) as boolean

MBS CURL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a file where output data is written to.
**Notes:**
Returns true on success and false on failure (e.g. permission error).
With 15.2 version of plugin, this also works with Perform.

58.4.12 FileInfos as CURLFileInfoMBS()

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Queries array with file information.
**Notes:** If you use OptionWildcard, you find after the transfer all CURLFileInfoMBS objects for all the files/folders found.
58.4. **CLASS CURLMBS**

### 58.4.13 FinishMime

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Finishes mime data.

**Example:**

```vbnet
dim c as new CURLMBS

// add mime
dim p as CURLMimePartMBS = c.AddMimePart

p.name = "Text"
p.FileName = "test.txt"
p.MimeType = "text/plain"
p.DataString = "Hello World"

c.FinishMime

// now you can send...
```

**Notes:** Please call AddMimePart for each part you like to add and than finally FinishMime before calling perform.

### 58.4.14 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, FormOptions() as Integer, Texts() as string)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Add a section to a multipart/formdata HTTP POST.

**Example:**

```vbnet
dim c as new CURLMBS
dim file1 as string = "my-face.jpg"
dim file2 as string = "your-face.jpg"
dim formOptions(-1) as Integer
dim formValues(-1) as string

const CURLFORM_COPYNAME = 1
const CURLFORM_ARRAY = 8
const CURLFORM_FILE = 10

'/* Add two file section using CURLFORM_ARRAY */
formOptions.Append CURLFORM_FILE
formValues.append file1
formOptions.Append CURLFORM_FILE
formValues.append file2
```
```
/* no option needed for the end marker */
c.FormAdd CURLFORM_COPYNAME, "pictures", CURLFORM_ARRAY, formOptions, formValues
```

**Notes:**

Lasterror is set.
See other FormAdd methods for details.
See also:

- 58.4.15 `FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string)`
- 58.4.16 `FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer)`
- 58.4.17 `FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Number4 as Integer)`
- 58.4.18 `FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Text4 as string)`
- 58.4.19 `FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string)`
- 58.4.20 `FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string, FormOption4 as Integer, Number4 as Integer)`
- 58.4.21 `FormAdd(FormOption1 as integer, Text1 as string, FormOption2 as integer, Text2 as string, FormOption3 as integer, Text3 as string, FormOption4 as integer, Number4 as integer, FormOption5 as integer, Text5 as string)`

**58.4.15** `FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string)`

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Add a section to a multipart/formdata HTTP POST.

**Notes:**

Lasterror is set.
See other FormAdd methods for details.
See also:

- 58.4.14 `FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, FormOptions() as Integer, Texts() as string)`
- 58.4.16 `FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer)`
58.4.16  FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Add a section to a multipart/formdata HTTP POST.

Notes:
Lasterror is set.
See other FormAdd methods for details.
See also:

- 58.4.17 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Number4 as Integer)  
- 58.4.18 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Text4 as string)  
- 58.4.19 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string)  
- 58.4.20 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string, FormOption4 as Integer, Number4 as Integer)  
- 58.4.21 FormAdd(FormOption1 as integer, Text1 as string, FormOption2 as integer, Text2 as string, FormOption3 as integer, Text3 as string, FormOption4 as integer, Number4 as integer, FormOption5 as integer, Text5 as string)
58.4.17 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Number4 as Integer)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Add a section to a multipart/formdata HTTP POST.

**Notes:**
Lasterror is set.
See other FormAdd methods for details.
See also:

- 58.4.14 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, FormOptions() as Integer, Texts() as string) 9933
- 58.4.15 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string) 9934
- 58.4.16 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer) 9935
- 58.4.18 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Text4 as string) 9936
- 58.4.19 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string) 9937
- 58.4.20 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string, FormOption4 as Integer, Number4 as Integer) 9938
- 58.4.21 FormAdd(FormOption1 as integer, Text1 as string, FormOption2 as integer, Text2 as string, FormOption3 as integer, Text3 as string, FormOption4 as integer, Number4 as integer, FormOption5 as integer, Text5 as string) 9940

58.4.18 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Text4 as string)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Add a section to a multipart/formdata HTTP POST.

**Notes:**
Lasterror is set.
See other FormAdd methods for details.
See also:

- 58.4.14 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, FormOptions() as Integer, Texts() as string) 9933
• 58.4.15 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string) 9934
• 58.4.16 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer) 9935
• 58.4.17 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Number4 as Integer) 9936
• 58.4.19 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string) 9937
• 58.4.20 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string, FormOption4 as Integer, Number4 as Integer) 9938
• 58.4.21 FormAdd(FormOption1 as integer, Text1 as string, FormOption2 as integer, Text2 as string, FormOption3 as integer, Text3 as string, FormOption4 as integer, Number4 as integer, FormOption5 as integer, Text5 as string) 9940

58.4.19  FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Add a section to a multipart/formdata HTTP POST.

Notes:
Lasterror is set.
See other FormAdd methods for details.
See also:
• 58.4.14 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, FormOptions() as Integer, Texts() as string) 9933
• 58.4.15 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string) 9934
• 58.4.16 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer) 9935
• 58.4.17 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Number4 as Integer) 9936
• 58.4.18 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Text4 as string) 9936
• 58.4.20 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string, FormOption4 as Integer, Number4 as Integer) 9938
• 58.4.21 FormAdd(FormOption1 as integer, Text1 as string, FormOption2 as integer, Text2 as string, FormOption3 as integer, Text3 as string, FormOption4 as integer, Number4 as integer, FormOption5 as integer, Text5 as string) 9940
58.4.20 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string, FormOption4 as Integer, Number4 as Integer)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Add a section to a multipart/formdata HTTP POST.

**Notes:**
Several FormAdd methods are there. Send a request to support if you need another parameter combination.

LastError is set.

FormAdd() is used to append sections when building a multipart/formdata HTTP POST (sometimes referred to as rfc1867-style posts). Append one section at a time until you’ve added all the sections you want included and then you call FormFinish.

Using POST with HTTP 1.1 implies the use of a ”Expect: 100-continue” header. You can disable this header with CURLOPT_HTTPHEADER as usual.

First, there are some basics you need to understand about multipart/formdata posts. Each part consists of at least a NAME and a CONTENTS part. If the part is made for file upload, there are also a stored CONTENT-TYPE and a FILENAME. Below, we’ll discuss what options you use to set these properties in the parts you want to add to your post.

The options listed first are for making normal parts. The options from CURLOPT_FILE through CURLOPT_BUFFERLENGTH are for file upload parts.

CURLFORM_COPYNAME:
followed by a string which provides the name of this part. libCURL copies the string so your application doesn’t need to keep it around after this function call. If the name isn’t null terminated, or if you’d like it to contain zero bytes, you must set its length with CURLOPT_NAMELENGTH.

CURLFORM_PTRNAME:
followed by a string which provides the name of this part. libCURL will use the string and refer to the data in your application, so you must make sure it remains until CURL no longer needs it. If the name isn’t null terminated, or if you’d like it to contain zero bytes, you must set its length with CURLOPT_NAMELENGTH.

CURLFORM_COPYCONTENTS:
followed by a string to the contents of this part, the actual data to send away. libCURL copies the provided data, so your application doesn’t need to keep it around after this function call. If the data isn’t null terminated, or if you’d like it to contain zero bytes, you must set the length of the name with CURLOPT_CONTENTSLENGTH.
58.4. CLASS CURLMBS

CURLFORM_PTRCONTENTS:
followed by a string to the contents of this part, the actual data to send away. libCURL will use the string
and refer to the data in your application, so you must make sure it remains until CURL no longer needs
it. If the data isn’t null terminated, or if you’d like it to contain zero bytes, you must set its length with
CURLFORM_CONTENTSLENGTH.

CURLFORM_CONTENTSLENGTH:
followed by a long giving the length of the contents.

CURLFORM_FILECONTENT:
followed by a filename, causes that file to be read and its contents used as data in this part. This part does
not automatically become a file upload part simply because its data was read from a file.

CURLFORM_FILE:
followed by a filename, makes this part a file upload part. It sets the filename field to the basename of the
provided filename, it reads the contents of the file and passes them as data and sets the content-type if the
given file match one of the internally known file extensions. For CURLFORM_FILE the user may send one
or more files in one part by providing multiple CURLFORM_FILE arguments each followed by the filename
(and each CURLFORM_FILE is allowed to have a CURLFORM_CONTENTTYPE).

CURLFORM_CONTENTTYPE:
is used in combination with CURLFORM_FILE. Followed a string which provides the content-type for this
part, possibly instead of an internally chosen one.

CURLFORM_FILENAME:
is used in combination with CURLFORM_FILE. Followed a string, it tells libCURL to use the given string
as the filename in the file upload part instead of the actual file name.

CURLFORM_BUFFER:
is used for custom file upload parts without use of CURLFORM_FILE. It tells libCURL that the file contents
are already present in a buffer. The parameter is a string which provides the filename field in the content
header.

CURLFORM_BUFFERPTR:
is used in combination with CURLFORM_BUFFER. The parameter is the string to be uploaded. You must
also use CURLFORM_BUFFERLENGTH to set the number of bytes in the buffer. Keep the buffer variable
alive till the upload is finished.

CURLFORM_BUFFERLENGTH:
is used in combination with CURLFORM_BUFFER. The parameter is a long which gives the length of the
buffer.
CHAPTER 58. CURL

CURLFORM_ARRAY:
Another possibility to send options to CURL_formadd() is the CURLFORM_ARRAY option, that passes an Integer Array and a String Array defining its value. Each element in the form is constructed using the option from the integer array and the value from the string array. All available options can be used in an array, except the CURLFORM_ARRAY option itself!

CURLFORMCONTENTHEADER:
specifies extra headers for the form POST section. This takes a CURL_slist prepared in the usual way using CURL_slist_append and appends the list of headers to those libCURL automatically generates. The list must exist while the POST occurs, if you free it before the post completes you may experience problems.

PS: CURLFORM_FILE does not work in all CURL versions on all platforms due to a bug with integer numbers.
See also:

- 58.4.14 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, FormOptions() as Integer, Texts() as string) 9933
- 58.4.15 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string) 9934
- 58.4.16 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer) 9935
- 58.4.17 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Number4 as Integer) 9936
- 58.4.18 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Text4 as string) 9936
- 58.4.19 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string) 9937
- 58.4.21 FormAdd(FormOption1 as integer, Text1 as string, FormOption2 as integer, Text2 as string, FormOption3 as integer, Text3 as string, FormOption4 as integer, Number4 as integer, FormOption5 as integer, Text5 as string) 9940

58.4.21 FormAdd(FormOption1 as integer, Text1 as string, FormOption2 as integer, Text2 as string, FormOption3 as integer, Text3 as string, FormOption4 as integer, Number4 as integer, FormOption5 as integer, Text5 as string)

MBS CURL Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Add a section to a multipart/formdata HTTP POST.
Notes:
Lasterror is set.
See other FormAdd methods for details.
See also:
58.4. **CLASS CURLMBS**

- 58.4.14 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, FormOptions() as Integer, Texts() as string) 9933
- 58.4.15 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string) 9934
- 58.4.16 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer) 9935
- 58.4.17 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Number4 as Integer) 9936
- 58.4.18 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Text4 as string) 9936
- 58.4.19 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string) 9937
- 58.4.20 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string, FormOption4 as Integer, Number4 as Integer) 9938

58.4.22  **FormAddField**

function Name: FormAddField

- **fieldName** as String
- **fieldValue** as String
- **ContentType** as String = ""

MBS CURL Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Add a section to a multipart/formdata HTTP POST.

**Example:**

```java
dim d as new CURLMBS
d.FormAddField("company", "Test, Inc.")
```

**Notes:**

For **fieldName** and **ContentType**, we use UTF8 always. For **fieldValue**, we pass through whatever is in the string, so please make sure encoding is working.
**ContentType** is optional.

58.4.23  **FormAddFile**

function Name: FormAddFile

- **fieldName** as String
- **fileName** as String
- **fileContent** as string
- **ContentType** as String = ""

MBS CURL Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Add a section to a multipart/formdata HTTP POST.

**Example:**

```java
dim d as new CURLMBS
d.FormAddFile("FileAttachment", "test.txt", "just a form test", "text/plain")
```
Notes:
For fieldName, fileName and ContentType, we use UTF8 always. For fieldValue, we pass through whatever is in the string, so please make sure encoding is working.

Filename is ignored, if empty.
ContentType is optional.

58.4.24 FormData as String

MBS CURL Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Queries current form data. Notes: This is more for debugging as it builds form data as if we would send it.

58.4.25 FormFinish

Example:

```
dim c as new CURLMBS
dim namebuffer as string = "name buffer"
dim namelength as Integer = lenb(namebuffer)
dim buffer as string = "test buffer"
dim htmlbuffer as string = "<HTML>test buffer</HTML>"
dim htmlbufferlength as Integer = lenb(htmlbuffer)
dim file1 as string = "my-face.jpg"
dim file2 as string = "your-face.jpg"
dim formOptions(-1) as Integer
  dim formValues(-1) as string
  dim recordbuffer as string = "record buffer"
dim recordlength as Integer = lenb(recordbuffer)

const CURLFORM NOTHING = 0
const CURLFORM COPYNAME = 1
const CURLFORM PTRNAME = 2
const CURLFORM NAMELENGTH = 3
const CURLFORM COPYCONTENTS = 4
const CURLFORM PTRCONTENTS = 5
const CURLFORM CONTENTSLENGTH = 6
const CURLFORM FILECONTENT = 7
```
const CURLFORM_ARRAY = 8
const CURLFORM_FILE = 10
const CURLFORM_BUFFER = 11
const CURLFORM_BUFFERPTR = 12
const CURLFORM_BUFFERLENGTH = 13
const CURLFORM_CONTENTTYPE = 14
const CURLFORM_CONTENTHEADER = 15
const CURLFORM_FILENAME = 16

'/* Add simple name/content section */
c.FormAdd CURLFORM_COPYNAME, "name", CURLFORM_COPYCONTENTS, "content"

'/* Add simple name/content/contenttype section */
c.FormAdd CURLFORM_COPYNAME, "htmlcode", CURLFORM_COPYCONTENTS, "<HTML></HTML>", CURLFORM_CONTENTTYPE, "text/html"

'/* Add name/ptrcontent section */
c.FormAdd CURLFORM_PTRNAME, "name_for_ptrcontent", CURLFORM_PTRCONTENTS, buffer

'/* Add ptrname/ptrcontent section */
c.FormAdd CURLFORM_PTRNAME, namebuffer, CURLFORM_PTRCONTENTS, buffer, CURLFORM_NAMELENGTH, namelength

'/* Add name/ptrcontent/contenttype section */
c.FormAdd CURLFORM_COPYNAME, "html_code_with_hole", CURLFORM_PTRCONTENTS, htmlbuffer, CURLFORM_CONTENTSLENGTH, htmlbufferlength, CURLFORM_CONTENTTYPE, "text/html"

'/* Add simple file section */
c.FormAdd CURLFORM_COPYNAME, "picture", CURLFORM_FILE, "my-face.jpg"

'/* Add file/contenttype section */
c.FormAdd CURLFORM_COPYNAME, "picture", CURLFORM_FILE, "my-face.jpg", CURLFORM_CONTENTTYPE, "image/jpeg"

'/* Add two file section */
c.FormAdd CURLFORM_COPYNAME, "pictures", CURLFORM_FILE, "my-face.jpg", CURLFORM_FILE, "your-face.jpg"

'/* Add two file section using CURLFORM_ARRAY */
formOptions.Append CURLFORM_FILE
formValues.append file1
formOptions.Append CURLFORM_FILE
formValues.append file2
'/* Add a buffer to upload */
c.FormAdd CURLFORM_COPYNAME, "name", CURLFORM_BUFFER, "data", CURLFORM_BUFFERPTR, recordbuffer, CURLFORM_BUFFERLENGTH, recordlength

'/* no option needed for the end marker */
c.FormAdd CURLFORM_COPYNAME, "pictures", CURLFORM_ARRAY, formOptions, formValues

'/* Add the content of a file as a normal post text value */
c.FormAdd CURLFORM_COPYNAME, "filecontent", CURLFORM_FILECONTENT, "bashrc"

'/* Set the form info */

c.FormFinish

Notes:
Lasterror is set.
The form is assigned to the HTTPPost property.

58.4.26 GetInfoActiveSocket as integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Receive the active socket used by this curl session.
**Notes:**
If the socket is no longer valid, -1 is returned. When you finish working with the socket, the Destructor closes the socket and cleanup other resources associated with the handle. This is typically used in combination with OptionConnectOnly.

This option was added as a replacement for GetInfoLastSocket since that one isn’t working on all platforms.

58.4.27 GetInfoAppConnectTime as Double

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The time stamp when app connected.

58.4.28 GetInfoCertInfo as CURLListMBS()

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries information on the certificate chain.
**Example:**
58.4.  CLASS CURLMBS

dim c as new CURLMBS

    // do some transfer
    c.OptionURL = "https://www.mbsplugins.de/"
    dim e as Integer = c.perform

    // query certificate info
    dim lists() as CURLListMBS = c.GetInfoCertInfo

    for each l as CURLListMBS in lists
        MsgBox Join(l, EndOfLine)
    next

    MsgBox c.DebugData

58.4.29  GetInfoConditionUnmet as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Return if the time condition prevented the document to get transferred.

58.4.30  GetInfoConnectTime as Double

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The time, in seconds, it took from the start until the connect to the remote host (or proxy) was completed.
**Notes:** The Lasterror property is set. 0 for success.

58.4.31  GetInfoContentLengthDownload as Double

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The content-length of the download.
**Notes:**
The Lasterror property is set. 0 for success.
This is the value read from the Content-Length: field.

58.4.32  GetInfoContentLengthUpload as Double

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The specified size of the upload.
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Notes: The Lasterror property is set. 0 for success.

58.4.33 GetInfoContentType as string

Notes:
The Lasterror property is set. 0 for success.
This is the value read from the Content-Type: field. If you get "", it means that the server didn’t send a valid Content-Type header or that the protocol used doesn’t support this.

58.4.34 GetInfoCookieList as CURLListMBS

Notes:
The Lasterror property is set. 0 for success.
If there are no cookies (cookies for the handle have not been enabled or simply none have been received) the result is nil.

58.4.35 GetInfoEffectiveURL as string

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The last used effective URL.
Notes: The Lasterror property is set. 0 for success.

58.4.36 GetInfoFileTime as Integer

Example:

```
// init CURL with options
dim d as new CURLMBS
d.OptionFileTime = true
d.OptionURL = "http://www.monkeybreadsoftware.de/images/mbs.jpg"

// run query
```
58.4. **CLASS CURLMBS**

dim e as Integer = d.Perform

// calculate date object
dim da as new date(1970,1,1,0,0,0)

// show date
ResultText.text=str(d.GetInfoFileTime)+" "+da.ShortDate+" "+da.ShortTime

Notes:
The Lasterror property is set. 0 for success.
If you get -1, it can be because of many reasons (unknown, the server hides it or the server doesn’t support
the command that tells document time etc) and the time of the document is unknown. Note that you must
tell the server to collect this information before the transfer is made, by using the OptionFileTime option or
you will unconditionally get a -1 back. (Added in 7.5)

58.4.37 **GetInfoFTPEntryPath as string**

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns a string holding the path of the entry path.
**Notes:**
That is the initial path libCURL ended up in when logging on to the remote FTP server.
Empty string if unknown.

58.4.38 **GetInfoHeaderSize as Integer**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The total size of all the headers received.
**Notes:** The Lasterror property is set. 0 for success.

58.4.39 **GetInfoHTTPAuthAvail as Integer**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A bitmask indicating the authentication method(s) available.
**Notes:**
The Lasterror property is set. 0 for success.
The meaning of the bits is explained in the HTTPAuth option.
58.4.40 GetInfoHTTPConnectCode as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last received proxy response code to a CONNECT request.

**Notes:**
The Lasterror property is set. 0 for success.

none

58.4.41 GetInfoHTTPVersion as integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get the http version used in the connection.

**Notes:** The returned value will be kHTTP_VERSION_1_0, kHTTP_VERSION_1_1, or kHTTP_VERSION_2_0, or 0 if the version can’t be determined.

58.4.42 GetInfoLastSocket as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Receive the last socket used by this CURL session.

**Notes:** If the socket is no longer valid, -1 is returned. When you finish working with the socket, the destructor will free the handle as usual and let libCURL close the socket and cleanup other resources associated with the handle. This is typically used in combination with OptionConnectOnly. (Added in 7.15.2)

NOTE: this API is not really working on win64, since the SOCKET type on win64 is 64 bit large while its 'long' is only 32 bits.

58.4.43 GetInfoLocalIP as string

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries local IP.

**Example:**

```vba
dim c as new CURLMBS

// do some transfer
c.OptionURL = "http://www.mbsplugins.de/

dim e as Integer = c.perform

// now check local IP
```
58.4. CLASS CURLMBS

MsgBox c.GetInfoLocalIP

58.4.44 GetInfoLocalPort as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Return the local port of the most recent (primary) connection.

**Example:**

```vba
dim c as new CURLMBS

// do some transfer
c.OptionURL = "http://www.mbsplugins.de/"
dim e as Integer = c.perform

// now check local IP and port
MsgBox c.GetInfoLocalIP + ":" + str(c.GetInfoLocalPort)
```

58.4.45 GetInfoNameLookupTime as Double

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The time, in seconds, it took from the start until the name resolving was completed.

**Notes:** The Lasterror property is set. 0 for success.

58.4.46 GetInfoNumConnects as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** How many new connections libCURL had to create to achieve the previous transfer.

**Notes:**
The Lasterror property is set. 0 for success.
(only the successful connects are counted)
Combined with RedirectCount you are able to know how many times libCURL successfully reused existing connection(s) or not. See the Connection Options to see how libCURL tries to make persistent connections to save time.

58.4.47 GetInfoOSErrno as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The errno variable from a connect failure.
58.4.48  GetInfoPreTransferTime as Double

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The time, in seconds, it took from the start until the file transfer is just about to begin.
**Notes:**
The Lasterror property is set. 0 for success.
This includes all pre-transfer commands and negotiations that are specific to the particular protocol(s) involved.

58.4.49  GetInfoPrimaryIP as string

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Return the ip address of the most recent (primary) connection.
**Example:**
```vbs
dim c as new CURLMBS
// do some transfer
c.OptionURL = "http://www.mbsplugins.de/")
dim e as Integer = c.perform

// now check primary IP and port
MsgBox c.GetInfoPrimaryIP+":"+str(c.GetInfoPrimaryport)
```

58.4.50  GetInfoPrimaryPort as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Return the (remote) port of the most recent (primary) connection.
**Example:**
```vbs
dim c as new CURLMBS
// do some transfer
c.OptionURL = "http://www.mbsplugins.de/")
dim e as Integer = c.perform

// now check primary IP and port
MsgBox c.GetInfoPrimaryIP+":"+str(c.GetInfoPrimaryport)
```
58.4.51 GetInfoProtocol as integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get the protocol used in the connection.
**Notes:** See kProtocol* constants.

58.4.52 GetInfoProxyAuthAvail as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A bitmask indicating the authentication method(s) available for your proxy authentication.
**Notes:** The Lasterror property is set. 0 for success.

58.4.53 GetInfoProxySSLSVerifyResult as integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get the result of the proxy certificate verification.
**Notes:** receive the result of the certificate verification that was requested (using the OptionProxySSLSVerifyPeer option. This is only used for HTTPS proxies.

58.4.54 GetInfoRedirectCount as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The total number of redirections that were actually followed.
**Notes:** The Lasterror property is set. 0 for success.

58.4.55 GetInfoRedirectTime as Double

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
the total time, in seconds, it took for all redirection steps include name lookup, connect, pretransfer and transfer before final transaction was started.
**Notes:**
The Lasterror property is set. 0 for success.
RedirectTime contains the complete execution time for multiple redirections. (Added in 7.9.7)
58.4.56  GetInfoRedirectURL as string

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The redirection URL.

58.4.57  GetInfoRequestSize as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The total size of the issued requests.

**Notes:**
The Lasterror property is set. 0 for success.
This is so far only for HTTP requests. Note that this may be more than one request if FOLLOWLOCATION is true.

58.4.58  GetInfoResponseCode as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last received HTTP or FTP code.

**Notes:**
The Lasterror property is set. 0 for success.
This will be zero if no server response code has been received. Note that a proxy’s CONNECT response should be read with GetInfoHTTPConnectCode and not this.

With HTTP transfer, a successful transfer reports 200 here. If the page is not found, you get 404. Or any other HTTP Response code.

58.4.59  GetInfoRTSPClientCSEQ as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Query RTSP Client sequence counter.

58.4.60  GetInfoRTSPCSEQRecv as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Query RTSP sequence counter received.
58.4. CLASS CURLMBS

58.4.61 GetInfoRTSPServerCSEQ as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Query RTSP Server sequence counter.

58.4.62 GetInfoRTSPSessionID as string

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Query RTSP session ID.

58.4.63 GetInfoScheme as string

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get the URL scheme (sometimes called protocol) used in the connection.

58.4.64 GetInfoSizeDownload as Double

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The total amount of bytes that were downloaded.

**Notes:**
- The Lasterror property is set. 0 for success.
- The amount is only for the latest transfer and will be reset again for each new transfer.

58.4.65 GetInfoSizeUpload as Double

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The total amount of bytes that were uploaded.

**Notes:** The Lasterror property is set. 0 for success.

58.4.66 GetInfoSpeedDownload as Double

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The average download speed that CURL measured for the complete download.

**Notes:** The Lasterror property is set. 0 for success.
58.4.67  GetInfoSpeedUpload as Double

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The average upload speed that CURL measured for the complete upload.
**Notes:** The Lasterror property is set. 0 for success.

58.4.68  GetInfoSSLEngines as CURLListMBS

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Receive a linked-list of OpenSSL crypto-engines supported.
**Notes:**
The Lasterror property is set. 0 for success.
Note that engines are normally implemented in separate dynamic libraries. Hence not all the returned engines may be available at run-time.

58.4.69  GetInfoSSLVerifyResult as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
the result of the certification verification that was requested (using the SSLVerifyPeer option).
**Notes:** The Lasterror property is set. 0 for success.

58.4.70  GetInfoStartTransferTime as Double

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
the time, in seconds, it took from the start until the first byte is just about to be transferred.
**Notes:**
The Lasterror property is set. 0 for success.
This includes the pretransfer time and also the time the server needs to calculate the result.

58.4.71  GetInfoTotalTime as Double

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The total time in seconds for the previous transfer, including name resolving, TCP connect etc.
**Notes:** The Lasterror property is set. 0 for success.
58.4. **CLASS CURLMBS**

### 58.4.72 LoadAPI

MBS CURL Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Loads the default CURL library.

**Notes:**
This method is called by the constructor. So you don’t need this except you want to test explicit with APILoaded whether the loading worked before you use the CURLMBS class.

Loads the “libCURL.dll” Windows library (with SSL support this one max require OpenSSL).

Loads on Mac OS X and Linux the libCURL file in /usr/lib.

### 58.4.73 LoadErrorString as string

MBS CURL Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The last error string from the LoadLibrary function.

### 58.4.74 LoadLibrary(file as folderitem) as boolean

MBS CURL Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Loads the CURL library from the given path.

**Notes:**
You only need to use this function if you have your own CURL Library.

Loads a Windows DLL, a Linux shared library or a Mac OS X shared library from the given path.

Returns true on success.

See also:
- **58.4.75 LoadLibrary(path as string) as boolean**

### 58.4.75 LoadLibrary(path as string) as boolean

MBS CURL Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Loads the CURL library from the given path.

**Notes:**
You only need to use this function if you have your own CURL Library.

Loads a Windows DLL, a Linux shared library or a Mac OS X shared library from the given path.
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Returns true on success.
See also:

- 58.4.74 LoadLibrary(file as folderitem) as boolean

58.4.76 OpenMTInputFile(file as folderitem, Offset as Integer = 0) as boolean

MBS CURL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Opens input file for reading data while PerformMT runs.
Notes:
The read event is not called with PerformMT.
Offset is helpful for HTTP PUT requests with range, so you can start with an offset.
With 15.2 version of plugin, this also works with Perform.

58.4.77 Perform as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Perform a file transfer
Notes:
This function is called after all the options are set, and will perform the transfer as described in the options.

You can do any amount of calls to Perform. If you intend to transfer more than one file, you are even encouraged to do so. libCURL will then attempt to re-use the same connection for the following transfers, thus making the operations faster, less CPU intense and using less network resources. Just note that you will have to use the option properties between the invokes to set options for the following Perform.

Typical error codes are 6 for a wrong domain name in the URL, 67 for wrong name/password combination,
60 for missing SSL settings, 1 for an unsupported protocol.

Possible values for the return value:

The error value -1 is used from the plugin to report that something is missing like OpenSSL dlls on Windows.

With SFTP, you can get logged error "Upload failed: Operation failed (4/-31)" when upload uses path to folder instead of file in URL.
58.4.78 PerformMT as Integer

MBS CURL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Perform a file transfer with preemptive multithreading.

**Notes:**
Same as Perform, but with additional multithreading.
Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.

As the actual transfer runs on a preemptive thread, the events Debug, Write, Header and Progress are called asynchronously and run a few milliseconds later. You can return true in Progress event to stop transfer, but you will get more events before the transfer is stopped.

You can call CreateMTDebugOutputFile, CreateMTHHeaderOutputFile and CreateMTOOutputFile before PerformMT to have output data be written into files. Call OpenMTInputFile to let the plugin read input data (form post or upload) from an input file.

Do not call other CURL functions on this CURLMBS instance while PerformMT is running!

Typical error codes are 6 for a wrong domain name in the URL, 67 for wrong name/password combination, 60 for missing SSL settings, 1 for an unsupported protocol.

To avoid trouble with app hanging on quit of application, be sure to set cancel property to true in window close event to cancel any pending transfer.

58.4.79 ReceiveData(byref data as Memoryblock, BytesToRead as Int64) as Int64

MBS CURL Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Receives raw data on a connection.

**Notes:**
This function receives raw data from the established connection. You may use it together with SendData to implement custom protocols using libcurl. This functionality can be particularly useful if you use proxies and/or SSL encryption: libcurl will take care of proxy negotiation and connection set-up.

The data memoryblock is a reference to your variable that will get the received data. BytesToRead is the maximum amount of data you can get in that buffer. The function returns the number of received bytes.

To establish the connection, set OptionConnectOnly = true before calling Perform. Note that ReceiveData does not work on connections that were created without this option.
The call will return kError_AGAIN if there is no data to read - the socket is used in non-blocking mode internally. When kError_AGAIN is returned, wait for data to arrive.

Wait on the socket only if ReceiveData returns kError_AGAIN. The reason for this is libcurl or the SSL library may internally cache some data, therefore you should call ReceiveData until all data is read which would include any cached data.

Furthermore if you wait on the socket and it tells you there is data to read, ReceiveData may return CURLE_AGAIN if the only data that was read was for internal SSL processing, and no other data is available.

On success, sets lasterror to kError_OK (0), stores the received data into memory block, and returns the number of bytes it actually read.

On failure, returns zero and lasterror is set to the appropriate error code.

The function may return kError_AGAIN. In this case, use your operating system facilities to wait until data can be read, and retry.

Reading exactly 0 bytes indicates a closed connection.

If there’s no socket available to use from the previous transfer, this function returns kError_UNSUPPORTED_PROTOCOL.

58.4.80 Reset

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Re-initializes all options previously set on a specified CURL handle to the default values. **Notes:** It does not change the following information kept in the handle: live connections, the Session ID cache, the DNS cache, the cookies and shares.

58.4.81 SendData(data as Memoryblock) as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sends raw data over a connection. **Notes:** This function sends arbitrary data over the established connection. You may use it together with ReceiveData to implement custom protocols using libcurl. This functionality can be particularly useful if you use
58.4. CLASS CURLMBS

proxies and/or SSL encryption: libcurl will take care of proxy negotiation and connection set-up.

Provide the data to send via parameter. We return the number of bytes sent.

To establish the connection, set OptionConnectOnly = true option before calling Perform methods. Note that SendData will not work on connections that were created without this option.

The call will return kError_AGAIN if it’s not possible to send data right now - the socket is used in non-blocking mode internally. When kError_AGAIN is returned, please wait.

Furthermore if you wait on the socket and it tells you it’s writable, SendData may return kError_AGAIN if the only data that was sent was for internal SSL processing, and no other data could be sent.

See also:

• 58.4.82 SendData(data as string) as Integer

58.4.82 SendData(data as string) as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Sends raw data over a connection.

**Notes:**

This function sends arbitrary data over the established connection. You may use it together with ReceiveData to implement custom protocols using libcurl. This functionality can be particularly useful if you use proxies and/or SSL encryption: libcurl will take care of proxy negotiation and connection set-up.

Provide the data to send via parameter. We return the number of bytes sent.

To establish the connection, set OptionConnectOnly = true option before calling Perform methods. Note that SendData will not work on connections that were created without this option.

The call will return kError_AGAIN if it’s not possible to send data right now - the socket is used in non-blocking mode internally. When kError_AGAIN is returned, please wait.

Furthermore if you wait on the socket and it tells you it’s writable, SendData may return kError_AGAIN if the only data that was sent was for internal SSL processing, and no other data could be sent.

See also:

• 58.4.81 SendData(data as Memoryblock) as Integer
58.4.83  **SetInputData(data as MemoryBlock)**

MBS CURL Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the input data.

**Notes:**

If you set input data, you do not need to use Read, RestartRead or Seek events. The plugin will use the provided data for the upload. Setting input data size, will also set the input file size (OptionInFileSizeLarge and OptionInFileSize).

Alternatively you can provide data in Read event or use OpenMTInputFile method to open a file on disk to upload.

See also:

- 58.4.84 SetInputData(data as string)

58.4.84  **SetInputData(data as string)**

MBS CURL Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the input data.

**Notes:**

If you set input data, you do not need to use Read, RestartRead or Seek events. The plugin will use the provided data for the upload. Setting input data size, will also set the input file size (OptionInFileSizeLarge and OptionInFileSize).

Alternatively you can provide data in Read event or use OpenMTInputFile method to open a file on disk to upload.

See also:

- 58.4.83 SetInputData(data as MemoryBlock)

58.4.85  **SetOptionConnectTo(list() as string)**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set list of host:port:connect-to-host:connect-to-port, overrides the URL’s host:port (only for the network layer)

58.4.86  **SetOptionEmptyPassword**

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets an empty password.

**Notes:**
Normally you have no password unless you set it. But if you set a password with empty string, the plugin sets CURL to use no password. This method is to use an empty password.

58.4.87 SetOptionHTTP200Aliases(list() as string)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: A linked list of aliases to be treated as valid HTTP 200 responses.
Notes:
Some servers respond with a custom header response line. For example, IceCast servers respond with "ICY 200 OK". By including this string in your list of aliases, the response will be treated as a valid HTTP header line such as "HTTP/1.0 200 OK".

The alias itself is not parsed for any version strings. So if your alias is "MYHTTP/9.9", LibCURL will not treat the server as responding with HTTP version 9.9. Instead LibCURL will use the value set by option HTTPVersion.

The Lasterror property is set. 0 for success.

58.4.88 SetOptionHTTPHeader(list() as string)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: A linked list of HTTP headers to pass to the server in your HTTP request.
Example:
```pascal
dim c as new CURLMBS
c.SetOptionHTTPHeader array("Expect:", "Content-Type: text/xml", "SOAPAction: ""login""")
```
Notes:
If you add a header that is otherwise generated and used by libCURL internally, your added one will be used instead. If you add a header with no contents as in 'Accept:' (no data on the right side of the colon), the internally used header will get disabled. Thus, using this option you can add new headers, replace internal headers and remove internal headers. To add a header with no contents, make the contents be two quotes: "". The headers included in the linked list must not be CRLF-terminated, because CURL adds CRLF after each header item. Failure to comply with this will result in strange bugs because the server will most likely ignore part of the headers you specified.

The first line in a request (containing the method, usually a GET or POST) is not a header and cannot be replaced using this option. Only the lines following the request-line are headers. Adding this method line in
this list of headers will only cause your request to send an invalid header.

Pass an empty array to this to reset back to no custom headers.

The Lasterror property is set. 0 for success.

58.4.89 SetOptionMailRecipients(list() as string)

MBS CURL Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the array of email recipient addresses.

58.4.90 SetOptionPostQuote(list() as string)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Pass an array to a list of FTP commands to pass to the server after your ftp transfer request.
**Example:**

```vbnet
dim d as CURLMBS // your CURL object

dim ws() As String
ws.Append "RNFR Temp.txt"
ws.append "RNTO MyFile.txt"
d.SetOptionPostQuote(ws)
```

**Notes:**
Disable this operation again by using an empty array for this option.

The Lasterror property is set. 0 for success.
If you want to do a ftp operation instead of download/upload/directory listing, please use SetOptionQuote.

58.4.91 SetOptionPreQuote(list() as string)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Pass an array to a list of FTP commands to pass to the server after the transfer type is set.
**Notes:**
Disable this operation again by using an empty array for this option. Before version 7.15.6, if you also set Nobody to true, this option didn’t work.
The Lasterror property is set. 0 for success.

58.4.92 SetOptionProxyHeader(list() as string)

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Set list of headers used for proxy requests only.

58.4.93 SetOptionQuote(list() as string)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Pass an array or a list of FTP commands to pass to the server prior to your ftp request.  
**Example:**
```
dim curl as new CURLMBS
curl.SetOptionQuote array("DELE filename.txt")
```

**Notes:**
This will be done before any other FTP commands are issued (even before the CWD command).

Disable this operation again by using an empty array for this option.

The Lasterror property is set. 0 for success.

58.4.94 SetOptionResolve(list() as string)

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Send linked-list of name:port:address sets.

58.4.95 SetOptionTelnetOptions(list() as string)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Provide an array of variables to pass to the telnet negotiations.  
**Notes:**
The variables should be in the format `<option=value>`. libCURL supports the options 'TTYPE', 'XDISPLOC' and 'NEW_ENV'. See the TELNET standard for details.
The Lasterror property is set. 0 for success.

58.4.96  SetPathCAInfo(path as folderitem)

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A path holding one or more certificates to verify the peer with.

**Example:**

```plaintext
dim cacert as FolderItem // your cacert.pem file
dim CURL as new CURLMBS
CURL.OptionSSLVerifyHost = 2 // verify server
CURL.OptionSSLVerifyPeer = 1 // proofs certificate is authentic
CURL.SetPathCAInfo cacert
```

**Notes:**

This makes sense only when used in combination with the OptionSSLVerifyPeer option. If OptionSSLVerifyPeer is false, OptionCAINFO need not even indicate an accessible file.

Note that option is by default set to the system path where libCURL’s cacert bundle is assumed to be stored, as established at build time.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

58.4.97  SetPathCAPath(path as folderitem)

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A path to the directory holding multiple CA certificates to verify the peer with.

**Notes:**

The certificate directory must be prepared using the openssl c_rehash utility. This makes sense only when used in combination with the CURLOPT_SSL_VERIFYPEER option. If OptionSSLVerifyPeer is zero, OptionCAPath need not even indicate an accessible path. The OptionCAPath function apparently does not work in Windows due to some limitation in openssl. This option is OpenSSL-specific and does nothing if libCURL is built to use GnuTLS.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
58.4.98 SetPathCRLFile(path as folderitem)

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the path with the concatenation of CRL (in PEM format) to use in the certificate validation that occurs during the SSL exchange.

**Notes:**

When CURL is built to use NSS or GnuTLS, there is no way to influence the use of CRL passed to help in the verification process. When libCURL is built with OpenSSL support, `X509_V_FLAG_CRL_CHECK` and `X509_V_FLAG_CRL_CHECK_ALL` are both set, requiring CRL check against all the elements of the certificate chain if a CRL file is passed.

This option makes sense only when used in combination with the OptionSSLVerifyPeer option.

A specific error code (CURLE_SSL_CRL_BADFILE) is defined with the option. It is returned when the SSL exchange fails because the CRL file cannot be loaded. Note that a failure in certificate verification due to a revocation information found in the CRL does not trigger this specific error. (Added in 7.19.0)

58.4.99 SetPathIssuerCert(path as folderitem)

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the path to a CA certificate in PEM format.

**Notes:**

If the option is set, an additional check against the peer certificate is performed to verify the issuer is indeed the one associated with the certificate provided by the option. This additional check is useful in multi-level PKI where one needs to enforce that the peer certificate is from a specific branch of the tree.

This option makes sense only when used in combination with the OptionSSLVerifyPeer option. Otherwise, the result of the check is not considered as failure.

A specific error code (CURLE_SSL_ISSUER_ERROR) is defined with the option, which is returned if the setup of the SSL/TLS session has failed due to a mismatch with the issuer of peer certificate (OptionSSLVerifyPeer has to be set too for the check to fail). (Added in 7.19.0)

58.4.100 SetPathNetRCFile(path as folderitem)

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the path to the file you want libCURL to use as .netrc file.

**Notes:**

If this option is omitted, and OptionNETRC is set, libCURL will attempt to find the .netrc file in the
current user’s home directory. (Added in 7.10.9)

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

58.4.101 SetupEmail(email as Variant) as boolean

MBS CURL Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets up an existing CURL session for an email transfer.

**Example:**

```vbscript
dim e as new CURLEmailMBS

e.SetFrom "test@test.test", "Christian Mller"
e.Subject = "Hello World 
"e.SMTPPassword = "xxx"
e.SMTPUsername = "xxx"
e.SetServer "smtp.test.test", true
e.AddTo "test@test.test", "Test Mller"
e.PlainText = "Hello World," + EndOfLine + "Smilies: 
"

dim c as new CURLMBS

if c.SetupEmail(e) then

  dim er as Integer = c.Perform
  if er = 0 then
    MsgBox "Email sent"
  end if
end if
```

**Notes:**

You can set your own settings like proxy after this function call.
If you like you can reuse the email and CURL objects after you sent an email, change values and send another email.
Returns true on success or false on failure.
58.4.102 Properties

58.4.103 APILoaded as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the CURL library was loaded.

**Notes:**
The CURLMBS constructor loads the library if it was not loaded before.
(Read only property)
const kError FunctionMissing = -1
const kError OK = 0
const kError UNSUPPORTED_PROTOCOL = 1
const kError FAILED_INIT = 2
const kError URL MALFORMAT = 3
const kError URL MALFORMAT_USER = 4 (NOT USED)
const kError COULDN'T.Resolve_PROXY = 5
const kError COULDN'T.Resolve_HOST = 6
const kError COULDN'T.CONNECT = 7
const kError FTP WEIRD_SERVER_REPLY = 8
const kError FTP ACCESS_DENIED = 9 a service was denied by the FTP server due to lack of access when login fails
this is not returned.
const kError FTP_USER_PASSWORD_INCORRECT = 10
const kError FTP WEIRD PASS_REPLY = 11
const kError FTP WEIRD USER_REPLY = 12
const kError FTP COULDN'T SET BINARY = 17
const kError FTP COULDN'T RETR_FILE = 19
const kError FTP WRITE ERROR = 20
const kError FTP QUOTE_ERROR = 21
const kError HTTP RETURNED ERROR = 22
const kError WRITE ERROR = 23
const kError FTP USER_PASSWORD INCORRECT = 24 (NOT USED)
const kError FTP COULDN'T STOR_FILE = 25 failed FTP upload
const kError FTP_USER_PASSWORD_INCORRECT = 26 could open/read from file
const kError FTP_READ_ERROR = 26 the timeout time was reached
const kError FTP_OPERATION_TIMEOUTED = 28 TYPE A failed
const kError FTP COULDN'T SET ASCII = 29
const kError FTP_PORT_FAILED = 30 FTP PORT operation failed
const kError FTP_COULDN'T_USE_REST = 31 the REST command failed
const kError HTTP_RANGE_ERROR = 33 RANGE "command" didn't work
const kError HTTP_POST_ERROR = 34
const kError SSL_CONNECT_ERROR = 35 wrong when connecting with SSL
const kError BAD_DOWNLOAD_RESUME = 36 couldn’t resume download
const kError FILE_COULDN'T_READ_FILE = 37
const kError LDAP_CANT_READ_FILE = 38
const kError LDAP_CANT_SEARCH = 39
const kError LIBRARY_NOT_FOUND = 40
const kError FUNCTION_NOT_FOUND = 41
const kError ABORTED_BY_CALLBACK = 42
const kError BAD_FUNCTION_ARGUMENT = 43 (NOT USED)
const kError BAD_CALLING_ORDER = 44 CURLOPT_INTERFACE failed
const kError INTERFACE_FAILED = 45
const kError BAD_PASSWORD_ENTERED = 46 NOT USED
const kError TOO_MANY_REDIRECTS = 47 catch endless re-direct loops
const kError UNKNOWN_TELNET_OPTION = 48 User specified an unknown option
const kError TELNET_OPTION_SYNTAX = 49 Malformed telnet option
const kError OBsolete = 50 NOT USED
const kError SSL_PEER_CERTIFICATE = 51 peer’s certificate wasn’t ok
const kError SSL_VERIFY_FAILURE = 52 when this is a specific error
const kError SSL_ENGINE_NOTFOUND = 53 SSL crypto engine not found
const kError SSL_ENGINE_SETFAILED = 54 can not set SSL crypto engine as default
const kError SEND_ERROR = 55 failed sending network data
const kError RECV_ERROR = 56 failure in receiving network data
const kError SHARE_IN_USE = 57 share is in use
const kError SSL_CERTPROBLEM = 58 problem with the local certificate
const kError SSL_CIPHER = 59 couldn’t use specified cipher
const kError SSL_CIPHER = 60 problem with the CA cert (path?)
const kError BAD_CONTENT_ENCODING = 61 Unrecognized transfer encoding
const kError INVALID_LDAP_URL = 62 Invalid LDAP URL
const kError FILE_SIZE_EXCEEDED = 63 Maximum file size exceeded
const kError FTP_SSL_FAILED = 64 Requested FTP SSL level failed
const kError SEND_FAIL_REWIND = 65 Sending the data requires a rewind that failed
const kError SSL_ENGINE_INITFAILED = 66 failed to initialise ENGINE
const kError LOGIN_DENIED = 67 user, password or similar was not accepted and we failed to login
58.4.104  Cancel as Boolean

MBS CURL Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Tells CURL instance to cancel transfer as soon as possible. **Notes:**

Especially when using PerformMT, you may see your app hang if user tries to quit application. To prevent the hang, please set Cancel = true in window close event. So when app quits and windows get destroyed, the PerformMT will see the Cancel being true and returns soon.

(Read and Write property)

58.4.105  CollectDebugData as Boolean

MBS CURL Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to collect debug message data. **Notes:**

If you set this property to true, you can grab the data from the transfer in the DebugData Property instead of collecting the pieces yourself in the DebugMessage event. Of course this is optional and you can still process data in DebugMessage event.

Due to memory limitation, collecting data will not work right if your app is running low on memory.

(Read and Write property)

58.4.106  CollectHeaderData as Boolean

MBS CURL Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to collect header data. **Notes:**

If you set this property to true, you can grab the data from the transfer in the headerData Property instead of collecting the pieces yourself in the header event. Of course this is optional and you can still process data in header event.

Due to memory limitation, collecting data will not work right if your app is running low on memory.

(Read and Write property)

58.4.107  CollectOutputData as Boolean

MBS CURL Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to collect output data. **Notes:**

If you set this property to true, you can grab the data from the transfer in the OutputData Property instead of collecting the pieces yourself in the write event. Of course this is optional and you can still process data
in write event.
Due to memory limitation, collecting data will not work right if your app is running low on memory.
(Read and Write property)

58.4.108 DebugData as String

MBS CURL Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The debug data from CURL.
**Notes:**
If CollectDebugData property is true, the plugin puts the data received in debugMessage event also into this property, so you can grab it after the transfer. Use ClearData method to clear when reusing CURL object. (Read only property)

58.4.109 Handle as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The internal handle of the CURL object.
**Notes:** (Read and Write property)

58.4.110 HeaderData as String

MBS CURL Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The header data from CURL.
**Notes:**
If CollectHeaderData property is true, the plugin puts the data received in header event also into this property, so you can grab it after the transfer. Use ClearData method to clear when reusing CURL object. (Read only property)

58.4.111 InputData as String

MBS CURL Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The input data.
**Notes:**
If you set input data, you do not need to use Read, RestartRead or Seek events. The plugin will use the provided data for the upload. Setting input data size, will also set the input file size (OptionInFileSizeLarge and OptionInFileSize).
Alternatively you can provide data in Read event or use OpenMTInputFile method to open a file on disk to upload.  
(Read and Write property)

58.4.112 Lasterror as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**  
The lasterror from the library.  
**Notes:**  
Set in the constructor while doing initialization.  
Check the kError* constants.  
(Read and Write property)

58.4.113 LasterrorMessage as String

MBS CURL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**  
The last error message.  
**Notes:**  
(Read only property)

58.4.114 LasterrorText as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**  
The text for the lasterror code.  
**Notes:**  
Static string matched to the error code, so you have an idea what’s wrong.  
(Read and Write property)

58.4.115 LibraryUsed as String

MBS CURL Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**  
Which library is in use.  
**Notes:**  
This is for debugging only to see which library is in use.  
(Read only property)
58.4.116 LibVersion as string

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns a human readable string with the version number of libCURL and some of its important components (like OpenSSL version).
**Notes:** (Read only property)

58.4.117 OptionAbstractUnixSocket as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Path to an abstract Unix domain socket.
**Notes:** (Read and Write property)
See also ABSTRACT_UNIX_SOCKET option in CURL manual.

58.4.118 OptionAcceptEncoding as String

MBS CURL Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the contents of the Accept-Encoding: header sent in a HTTP request, and enables decoding of a response when a Content-Encoding: header is received.
**Example:**
```vbscript
dim c as new CURLMBS
C.OptionAcceptEncoding = "deflate"
```

**Notes:**
Three encodings are supported: identity, which does nothing, deflate which requests the server to compress its response using the zlib algorithm, and gzip which requests the gzip algorithm. If a zero-length string is set, then an Accept-Encoding: header containing all supported encodings is sent.

This is a request, not an order; the server may or may not do it. This option must be set (to any non-NULL value) or else any unsolicited encoding done by the server is ignored. See the special file README.encoding for details (included with CURL source code).
(Read and Write property)
See also ACCEPT_ENCODING option in CURL manual.

58.4.119 OptionAcceptTimeoutMS as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Time-out accept operations (currently for FTP only) after this amount of milliseconds.
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Notes: (Read and Write property)
See also ACCEPTTIMEOUT_MS option in CURL manual.

58.4.120 OptionAddressScope as Integer

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Pass an integer specifying the scope_id value to use when connecting to IPv6 link-local or site-local addresses.
Notes:
(Added in CURL 7.19.0)
(Read and Write property)
See also ADDRESS_SCOPE option in CURL manual.

58.4.121 OptionAppend as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
True tells the library to append to the remote file instead of overwrite it.
Notes:
This is only useful when uploading to an ftp site.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also APPEND option in CURL manual.

58.4.122 OptionAutoReferer as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
When enabled, libCURL will automatically set the Referer: field in requests where it follows a Location: redirect.
Notes:
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also AUTOREFERER option in CURL manual.
58.4.123 OptionBufferSize as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Your preferred size (in bytes) for the receive buffer in libCURL.
**Notes:**
The main point of this would be that the write callback gets called more often and with smaller chunks. This is just treated as a request, not an order. You cannot be guaranteed to actually get the given size. (Added in 7.10)

This size is by default set as big as possible (OptionMaxWriteSize), so it only makes sense to use this option if you want it smaller.

The Lasterror property is set. 0 for success. You can set this value and later you can read it, but you cannot read the default value. (Read and Write property)
See also **BUFFERSIZE** option in CURL manual.

58.4.124 OptionCAInfo as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A string naming a file holding one or more certificates to verify the peer with.
**Notes:**
This makes sense only when used in combination with the OptionSSLVerifyPeer option. If OptionSSLVerifyPeer is false, OptionCAINFO need not even indicate an accessible file.

Note that option is by default set to the system path where libCURL's cacert bundle is assumed to be stored, as established at build time.

The Lasterror property is set. 0 for success. You can set this value and later you can read it, but you cannot read the default value.

Starting with version 18.0 the plugin will always use UTF-8 encoding for file path on Linux and macOS. For macOS we also do the unicode character normalization for file names for you. (Read and Write property)
See also **CAINFO** option in CURL manual.
58.4. OptionCAPath as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A string naming a directory holding multiple CA certificates to verify the peer with. **Notes:**

The certificate directory must be prepared using the openssl c_rehash utility. This makes sense only when used in combination with the CURLOPT_SSL_VERIFYPEER option. If OptionSSLVerifyPeer is zero, OptionCAPath need not even indicate an accessible path. The OptionCAPath function apparently does not work in Windows due to some limitation in openssl. This option is OpenSSL-specific and does nothing if libCURL is built to use GnuTLS.

The Lasterror property is set. 0 for success. You can set this value and later you can read it, but you cannot read the default value.

Starting with version 18.0 the plugin will always use UTF-8 encoding for file path on Linux and macOS. For macOS we also do the unicode character normalization for file names for you. 

(Read and Write property)

See also CAPATH option in CURL manual.

58.4. OptionCertInfo as boolean

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set to true to enable libCURL’s certificate chain info gatherer. **Notes:**

With this enabled, libCURL (if built with OpenSSL) will extract lots of information and data about the certificates in the certificate chain used in the SSL connection. This data is then possible to extract after a transfer using GetInfoCertInfo. (Added in 7.19.1)

(Read and Write property)

See also CERTINFO option in CURL manual.

58.4. OptionConnectionTimeout as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The maximum time in seconds that you allow the connection to the server to take. **Notes:**

This only limits the connection phase, once it has connected, this option is of no more use. Set to zero to disable connection timeout (it will then only timeout on the system’s internal timeouts). See also the OptionTimeout option. 

(Read and Write property)

See also CONNECTTIMEOUT option in CURL manual.
58.4.128  OptionConnectionTimeOutMS as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The maximum time in milli seconds that you allow the connection to the server to take.
**Notes:**
This only limits the connection phase, once it has connected, this option is of no more use. Set to zero
to disable connection timeout (it will then only timeout on the system’s internal timeouts). See also the
OptionTimeout option.
(Read and Write property)

58.4.129  OptionConnectOnly as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A true tells the library to perform any required proxy authentication and connection setup, but no data
transfer.
**Notes:**
This option is useful with the CURLMBS.GetInfoLastSocket function. The library can set up the connec-
tion and then the application can obtain the most recently used socket for special data transfers. (Added in
7.15.2)
(Read and Write property)
See also CONNECT ONLY option in CURL manual.

58.4.130  OptionCookie as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
It will be used to set a cookie in the http request.
**Notes:**
The format of the string should be NAME=CONTENTS, where NAME is the cookie name and CONTENTS
is what the cookie should contain.

If you need to set multiple cookies, you need to set them all using a single option and thus you need to
concatenate them all in one single string. Set multiple cookies in one string like this: "name1=content1;
name2=content2;" etc.

Using this option multiple times will only make the latest string override the previously ones.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also COOKIE option in CURL manual.
58.4.131 OptionCookieFile as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The cookie file content.

**Notes:**
It should contain the name of your file holding cookie data to read. The cookie data may be in Netscape / Mozilla cookie data format or just regular HTTP-style headers dumped to a file.

Given an empty or non-existing file or by passing the empty string (""), this option will enable cookies for this CURL handle, making it understand and parse received cookies and then use matching cookies in future request.

If you use this option multiple times, you just add more files to read. Subsequent files will add more cookies.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

Starting with version 18.0 the plugin will always use UTF-8 encoding for file path on Linux and macOS. For macOS we also do the unicode character normalization for file names for you.
(Read and Write property)
See also COOKIEFILE option in CURL manual.

58.4.132 OptionCookieJar as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
File path where to write the cookies to.

**Notes:**
This will make libCURL write all internally known cookies to the specified file, when the object is destroyed.
If no cookies are known, no file will be created. Specify ".-" to instead have the cookies written to stdout.
Using this option also enables cookies for this session, so if you for example follow a location it will make matching cookies get sent accordingly.

If the cookie jar file can’t be created or written to, libCURL will not and cannot report an error for this. Using OptionVerbose or DebugFunction event will get a warning to display, but that is the only visible feedback you get about this possibly lethal situation.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
Starting with version 18.0 the plugin will always use UTF-8 encoding for file path on Linux and macOS. For macOS we also do the unicode character normalization for file names for you.

(Read and Write property)
See also COOKIEJAR option in CURL manual.

58.4.133 OptionCookieList as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The cookie string.

**Notes:**
Cookie can be either in Netscape / Mozilla format or just regular HTTP-style header (Set-Cookie: ...) format. If CURL cookie engine was not enabled it will enable its cookie engine. Passing a magic string "ALL" will erase all cookies known by CURL. (Added in 7.14.1) Passing the special string "SESS" will only erase all session cookies known by CURL. (Added in 7.15.4)

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also COOKIELIST option in CURL manual.

58.4.134 OptionCookieSession as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Set to true to mark this as a new cookie "session".

**Notes:**
It will force libCURL to ignore all cookies it is about to load that are "session cookies" from the previous session. By default, libCURL always stores and loads all cookies, independent if they are session cookies are not. Session cookies are cookies without expiry date and they are meant to be alive and existing for this "session" only.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also COOKIESSESSION option in CURL manual.
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58.4.135 OptionCRLF as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Convert Unix newlines to CRLF newlines on transfers.

**Notes:**

The Lasterror property is set. 0 for success.

You can set this value and later you can read it, but you cannot read the default value.

(Read and Write property)

See also CRLF option in CURL manual.

58.4.136 OptionCRLFile as String

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A string naming a file with the concatenation of CRL (in PEM format) to use in the certificate validation that occurs during the SSL exchange.

**Notes:**

When CURL is built to use NSS or GnuTLS, there is no way to influence the use of CRL passed to help in the verification process. When libCURL is built with OpenSSL support, X509_V_FLAG_CRL_CHECK and X509_V_FLAG_CRL_CHECK_ALL are both set, requiring CRL check against all the elements of the certificate chain if a CRL file is passed.

This option makes sense only when used in combination with the OptionSSLVerifyPeer option.

A specific error code (CURLE_SSL_CRL_BADFILE) is defined with the option. It is returned when the SSL exchange fails because the CRL file cannot be loaded. Note that a failure in certificate verification due to a revocation information found in the CRL does not trigger this specific error. (Added in 7.19.0)

(Read and Write property)

See also CRLFILE option in CURL manual.

58.4.137 OptionCustomRequest as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** It will be user instead of GET or HEAD when doing an HTTP request, or instead of LIST or NLST when doing an ftp directory listing.

**Example:**

```dim c as CURLMBS // your CURL instance```
```c.URL = "ftp://..."
c.customRequest = "MLSD" // ftp advanced directory listing```
Notes:
This is useful for doing DELETE or other more or less obscure HTTP requests. Don’t do this at will, make sure your server supports the command first.

Restore to the internal default by setting this to "".

Many people have wrongly used this option to replace the entire request with their own, including multiple headers and POST contents. While that might work in many cases, it will cause libCURL to send invalid requests and it could possibly confuse the remote server badly. Use CURLOPT_POST and OptionPostFields to set POST data. Use OptionHTTPHeader to replace or extend the set of headers sent by libCURL. Use OptionHTTPVersion to change HTTP version.

The Lasterror property is set. 0 for success. You can set this value and later you can read it, but you cannot read the default value. (Read and Write property)
See also CUSTOMREQUEST option in CURL manual.

58.4.138 OptionDefaultProtocol as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Set the protocol used when curl is given a URL without a protocol.
Notes: (Read and Write property)
See also DEFAULT_PROTOCOL option in CURL manual.

58.4.139 OptionDirListOnly as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: For FTP and SFTP based URLs a parameter set to true tells the library to list the names of files in a directory, rather than performing a full directory listing that would normally include file sizes, dates etc.
Notes:
For POP3 a parameter of true tells the library to list the email message or messages on the POP3 server. This can be used to change the default behaviour of libCURL, when combined with a URL that contains a message ID, to perform a “scan listing” which can then be used to determine the size of an email.

Note: For FTP this causes a NLST command to be sent to the FTP server. Beware that some FTP servers list only files in their response to NLST; they might not include subdirectories and symbolic links.

Setting this option to true also implies a directory listing even if the URL doesn’t end with a slash, which otherwise is necessary.
Do NOT use this option if you also use OptionWildCardMatch as it will effectively break that feature then. 
(Read and Write property)
See also **DIRLISTONLY** option in CURL manual.

### 58.4.140 OptionDNSCacheTimeout as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The timeout in seconds.  
**Notes:**
Name resolves will be kept in memory for this number of seconds. Set to zero (0) to completely disable caching, or set to -1 to make the cached entries remain forever. By default, libCURL caches this info for 60 seconds.

The Lasterror property is set. 0 for success.  
You can set this value and later you can read it, but you cannot read the default value.  
(Read and Write property)  
See also **DNS_CACHE_TIMEOUT** option in CURL manual.

### 58.4.141 OptionDNSInterface as String

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Set the name of the network interface that the DNS resolver should bind to.  
**Notes:**
This must be an interface name (not an address). Set this option to "" to use the default setting (don’t bind to a specific interface).  
(Read and Write property)  
See also **DNS_INTERFACE** option in CURL manual.

### 58.4.142 OptionDNSLocalIPv4 as String

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Set the local IPv4 address that the resolver should bind to.  
**Notes:**
The argument should be of string and contain a single numerical IPv4 address as a string.
Set this option to "" to use the default setting (don’t bind to a specific IP address).  
(Read and Write property)  
See also **DNS_LOCAL_IPV4** option in CURL manual.
58.4.143 OptionDNSLocalIPv6 as String

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Set the local IPv6 address that the resolver should bind to.

**Notes:**
The argument should be of type string and contain a single IPv6 address as a string.
Set this option to "" to use the default setting (don’t bind to a specific IP address).
(Read and Write property)
See also DNS_LOCAL_IPV6 option in CURL manual.

58.4.144 OptionDNSServers as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Set the name servers to use for DNS resolution.

**Notes:** (Read and Write property)
See also DNS_SERVERS option in CURL manual.

58.4.145 OptionDNSShuffleAddresses as Boolean

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether to shuffle DNS addresses.

**Notes:**
When a name is resolved and more than one IP address is returned, shuffle the order of all returned addresses so that they will be used in a random order. This is similar to the ordering behavior of gethostbyname which is no longer used on most platforms.

Addresses will not be reshuffled if a name resolution is completed using the DNS cache. DNSCacheTimeout property can be used together with this option to reduce DNS cache timeout or disable caching entirely if frequent reshuffling is needed.

Since the addresses returned will be reordered randomly, their order will not be in accordance with RFC 3484 or any other deterministic order that may be generated by the system’s name resolution implementation. This may have performance impacts and may cause IPv4 to be used before IPv6 or vice versa.
Default is false.
(Read and Write property)
See also DNS_SHUFFLE_ADDRESSES option in CURL manual.
58.4.146  OptionEGDSocket as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The path name to the Entropy Gathering Daemon socket.

**Notes:**
It will be used to seed the random engine for SSL.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also EGDSOCKET option in CURL manual.

58.4.147  OptionExpect100TimeoutMS as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets Expect 100 timeout.

**Notes:**
Time to wait in milliseconds for a response to a HTTP request containing an Expect: 100-continue header before sending the data anyway.
(Read and Write property)
See also EXPECT_100_TIMEOUT_MS option in CURL manual.

58.4.148  OptionFailOnError as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
True tells the library to fail silently if the HTTP code returned is equal to or larger than 400. The default action would be to return the page normally, ignoring that code.

**Notes:**
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

This method is not fail-safe and there are occasions where non-succesful response codes will slip through, especially when authentication is involved (response codes 401 and 407).

You might get some amounts of headers transferred before this situation is detected, like for when a ”100-continue” is received as a response to a POST/PUT and a 401 or 407 is received immediately afterwards.
(Read and Write property)
See also FAILONERROR option in CURL manual.
58.4.149 OptionFileTime as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether filetime should be queried.

**Example:**

```vbnet
// init CURL with options
dim d as new CURLMBS
d.OptionFileTime = true
d.OptionURL = ”http://www.monkeybreadsoftware.de/images/mbs.jpg”

// run query
dim e as Integer = d.Perform

// calculate date object
dim da as new date(1970,1,1,0,0,0)

// show date
ResultText.text=str(d.GetInfoFileTime)+” ”+da.ShortDate+” ”+da.ShortTime
```

**Notes:**

If it is true, libCURL will attempt to get the modification date of the remote document in this operation. This requires that the remote server sends the time or replies to a time querying command.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value. (Read and Write property)
See also FILETIME option in CURL manual.

58.4.150 OptionFollowLocation as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A boolean parameter tells the library to follow any Location: header that the server sends as part of an HTTP header.

**Example:**

```vbnet
dim c as new CURLMBS
c.OptionFollowLocation = true
c.OptionMaxRedirs = 3
```
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**Notes:**

This means that the library will re-send the same request on the new location and follow new Location: headers all the way until no more such headers are returned. OptionMaxRedirs can be used to limit the number of redirects libCURL will follow.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also FOLLOWLOCATION option in CURL manual.

### 58.4.151 OptionForbitReuse as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Set to true to make the next transfer explicitly close the connection when done.

**Notes:**

Normally, libCURL keep all connections alive when done with one transfer in case there comes a succeeding one that can re-use them. This option should be used with caution and only if you understand what it does. Set to false to have libCURL keep the connection open for possibly later re-use (default behavior).

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)

### 58.4.152 OptionFreshConnect as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Set to true to make the next transfer use a new (fresh) connection by force.

**Example:**

```vbs
dim c as new CURLMBS

c.OptionFreshConnect=True
```

**Notes:**

If the connection cache is full before this connection, one of the existing connections will be closed as according to the selected or default policy. This option should be used with caution and only if you understand what it does. Set this to 0 to have libCURL attempt re-using an existing connection (default behavior).

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also FRESH_CONNECT option in CURL manual.

58.4.153 OptionFTPAccount as String

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The FTP account name to use.
**Notes:**
When an FTP server asks for "account data" after user name and password has been provided, this data is
sent off using the ACCT command.
(Read and Write property)
See also FTP_ACCOUNT option in CURL manual.

58.4.154 OptionFTPAlternativeToUser as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The alternative username.
**Notes:**
Pass a string as parameter, pointing to a string which will be used to authenticate if the usual FTP "USER
user" and "PASS password" negotiation fails. This is currently only known to be required when connecting
to Tumbleweed’s Secure Transport FTPS server using client certificates for authentication. (Added in 7.15.5)
(Read and Write property)
See also FTP_ALTERNATIVE_TO_USER option in CURL manual.

58.4.155 OptionFTPAppend as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
True tells the library to append to the remote file instead of overwrite it.
**Deprecated:** This item is deprecated and should no longer be used. You can use OptionAppend instead.
**Notes:**
This is only useful when uploading to an ftp site.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
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58.4.156 OptionFTPCreateMissingDirs as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
If the value is 1, CURL will attempt to create any remote directory that it fails to CWD into.

**Notes:**
CWD is the command that changes working directory. (Added in 7.10.7)

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
Newer CURL Library versions allow a value of 2 to do a CWD after the directory was created, so this
property changed from boolean to integer.
(Read and Write property)
See also FTP_CREATE_MISSING_DIRS option in CURL manual.

58.4.157 OptionFTPFileMethod as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Pass an integer that should have one of the following values.

**Notes:**
This option controls what method libCURL should use to reach a file on a FTP(S) server. The argument
should be one of the following alternatives:

URLFTPMETHOD_MULTICWD = 1

libCURL does a single CWD operation for each path part in the given URL. For deep hierarchies this means
very many commands. This is how RFC1738 says it should be done. This is the default but the slowest
behavior.

CURLFTPMETHOD_NOCWD = 2

libCURL does no CWD at all. libCURL will do SIZE, RETR, STOR etc and give a full path to the server
for all these commands. This is the fastest behavior.

CURLFTPMETHOD_SINGLECWD = 3

libCURL does one CWD with the full target directory and then operates on the file ”normally” (like in the
multicwd case). This is somewhat more standards compliant than ’nocwd’ but without the full penalty of
’multicwd’.
(Read and Write property)
See also FTP_FILEMETHOD option in CURL manual.
58.4.158 OptionFTPListOnly as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
True tells the library to just list the names of an ftp directory, instead of doing a full directory listing that would include file sizes, dates etc.
**Deprecated:** This item is deprecated and should no longer be used. You can use OptionDirListOnly instead. **Notes:**
This causes an FTP NLST command to be sent. Beware that some FTP servers list only files in their response to NLST; they might not include subdirectories and symbolic links.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)

58.4.159 OptionFTPPort as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The port to use for ftp.
**Notes:**
It will be used to get the IP address to use for the ftp PORT instruction. The PORT instruction tells the remote server to connect to our specified IP address. The string may be a plain IP address, a host name, an network interface name (under Unix) or just a '-' letter to let the library use your systems default IP address. Default FTP operations are passive, and thus won’t use PORT.

You disable PORT again and go back to using the passive version by setting this option to "".

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also FTPPORT option in CURL manual.

58.4.160 OptionFTPPResponseTimeout as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Causes CURL to set a timeout period (in seconds) on the amount of time that the server is allowed to take in order to generate a response message for a command before the session is considered hung.
**Notes:**
While CURL is waiting for a response, this value overrides OptionTimeout. It is recommended that if used in conjunction with OptionTimeout, you set OptionFTPResponseTimeout to a value smaller than OptionTimeout. (Added in 7.10.8)

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also FTP RESPONSE TIMEOUT option in CURL manual.

58.4.161 OptionFTPSkipPasvIP as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
If set to a non-zero value, it instructs libCURL to not use the IP address the server suggests in its 227-response to libCURL’s PASV command when libCURL connects the data connection.

**Notes:**
Instead libCURL will re-use the same IP address it already uses for the control connection. But it will use the port number from the 227-response. (Added in 7.14.2)

This option has no effect if PORT, EPRT or EPSV is used instead of PASV.
(Read and Write property)
See also FTP_SKIP_PASV_IP option in CURL manual.

58.4.162 OptionFTPSSL as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Request using SSL / TLS for the transfer.

**Example:**

```vba
dim c as CURLMBS
c.OptionUseSSL = c.kFTPSSL_ALL
c.OptionSSLVersion = c.kSSLVersionTLSv12
```

**Deprecated:** This item is deprecated and should no longer be used. You can use OptionUseSSL instead.

**Notes:**
Set to an integer using one of the values from below, to make libCURL use your desired level of SSL for the transfer.
These are all protocols that start out plain text and get ”upgraded” to SSL using the STARTTLS command.
This is for enabling SSL/TLS when you use FTP, SMTP, POP3, IMAP etc.

(Read and Write property)
CURLUSESSL_NONE 0 Don’t attempt to use SSL.
CURLUSESSL_TRY 1 Try using SSL, proceed as normal otherwise.
CURLUSESSL_CONTROL 2 Require SSL for the control connection or fail with CURLE_USE_SSL_FAILED.
CURLUSESSL_ALL 3 Require SSL for all communication or fail with CURLE_USE_SSL_FAILED.

58.4.163 OptionFTPSSLAuth as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: What kind of SSL authentication to use for FTP. Notes: Pass an integer using one of the values from below, to alter how libCURL issues "AUTH TLS" or "AUTH SSL" when FTP over SSL is activated (see CURLOPT_FTP_SSL). (Added in 7.12.2)

kFTPAUTH_DEFAULT = 0

Allow libCURL to decide

kFTPAUTH_SSL = 1

Try "AUTH SSL" first, and only if that fails try "AUTH TLS"

kFTPAUTH_TLS = 2

Try "AUTH TLS" first, and only if that fails try "AUTH SSL"

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value. (Read and Write property)
See also FTPSSLAUTH option in CURL manual.

58.4.164 OptionFTPSSLCCC as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: If enabled, this option makes libCURL use CCC (Clear Command Channel). Notes: It shuts down the SSL/TLS layer after authenticating. The rest of the control channel communication will
be unencrypted. This allows NAT routers to follow the FTP transaction. Pass a long using one of the values below. (Added in 7.16.1)

- CURLFTPSSL_CCC_NONE 0: Don’t attempt to use CCC.
- CURLFTPSSL_CCC_PASSIVE 1: Do not initiate the shutdown, but wait for the server to do it. Do not send a reply.
- CURLFTPSSL_CCC_ACTIVE 2: Initiate the shutdown and wait for a reply.

(Read and Write property)
See also FTP_SSL_CCC option in CURL manual.

### 58.4.165 OptionFTPUseEPRT as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** If the value is true, it tells CURL to use the EPRT (and LPRT) command when doing active FTP downloads (which is enabled by CURLOPT_FTPPORT).

**Notes:**
Using EPRT means that it will first attempt to use EPRT and then LPRT before using PORT, but if you pass FALSE (zero) to this option, it will not try using EPRT or LPRT, only plain PORT. (Added in 7.10.5)

If the server is an IPv6 host, this option will have no effect as of 7.12.3.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also FTP_USE_EPRT option in CURL manual.

### 58.4.166 OptionFTPUseEPSV as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** If the value is true, it tells CURL to use the EPSV command when doing passive FTP downloads (which it always does by default).

**Notes:**
Using EPSV means that it will first attempt to use EPSV before using PASV, but if you pass FALSE (zero) to this option, it will not try using EPSV, only plain PASV.

If the server is an IPv6 host, this option will have no effect as of 7.12.3.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also FTP_USE_EPSV option in CURL manual.

58.4.167 OptionFTPusePret as Boolean

MBS CURL Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: If the value is true, it tells CURL to send a PRET command before PASV (and EPSV). Certain FTP servers, mainly drftpd, require this non-standard command for directory listings as well as up and downloads in PASV mode.
Notes: Has no effect when using the active FTP transfers mode. (Added in 7.20.0)
(Read and Write property)
See also FTP_USE_PRET option in CURL manual.

58.4.168 OptionGet as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: If the true, this forces the HTTP request to get back to GET.
Notes: usable if a POST, HEAD, PUT or a custom request have been used previously using the same CURL handle.

When setting OptionGet to a true value, it will automatically set OptionNoBody to true (since 7.14.1).

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)

58.4.169 OptionGSSAPIDelegation as Integer

Notes: (Read and Write property)
See also GSSAPI_DELEGATION option in CURL manual.
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58.4.170 OptionHappyEyeballsTimeOutMS as Integer


**Notes:**
Head start in milliseconds to give happy eyeballs.
(Read and Write property)
See also HAPPY_EYEBALLS_TIMEOUT_MS option in CURL manual.

58.4.171 OptionHAProxyProtocol as Boolean

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Wether to send an HAProxy PROXY protocol header.

**Notes:**
Set to true to tell the library to send an HAProxy PROXY protocol header at beginning of the connection.
The default action is not to send this header.
This option is primarily useful when sending test requests to a service that expects this header.
Most applications do not need this option.
Default false, do not send HAProxy PROXY protocol header.
(Read and Write property)
See also HAPROXYPROTOCOL option in CURL manual.

58.4.172 OptionHeader as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True tells the library to include the header in the body output.

**Notes:**
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

This is only relevant for protocols that actually have headers preceding the data (like HTTP).
(Read and Write property)
See also HEADER option in CURL manual.

58.4.173 OptionHeaderOptions as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Pass in a bitmask of "header options".

**Notes:** (Read and Write property)
See also **HEADEROPT** option in CURL manual.

### 58.4.174 OptionHTTPAuth as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Which http authentication to use.  
**Notes:**  
Pass an integer as parameter, which is set to a bitmask, to tell libCURL what authentication method(s) you want it to use. The available bits are listed below. If more than one bit is set, libCURL will first query the site to see what authentication methods it supports and then pick the best one you allow it to use. For some methods, this will induce an extra network round-trip. Set the actual name and password with the UserPassword option. (Added in 7.10.6)

- **kAuthBASIC = 1**  
  HTTP Basic authentication. This is the default choice, and the only method that is in wide-spread use and supported virtually everywhere. This is sending the user name and password over the network in plain text, easily captured by others.

- **kAuthDIGEST = 2**  
  HTTP Digest authentication. Digest authentication is defined in RFC2617 and is a more secure way to do authentication over public networks than the regular old-fashioned Basic method.

- **kAuthGSSNEGOTIATE = 4**  
  HTTP GSS-Negotiate authentication. The GSS-Negotiate (also known as plain ”Negotiate”) method was designed by Microsoft and is used in their web applications. It is primarily meant as a support for Kerberos5 authentication but may be also used along with another authentication methods. For more information see IETF draft draft-brezak-spnego-http-04.txt.

  You need to build libCURL with a suitable GSS-API library for this to work.

- **kAuthNTLM = 8**  
  HTTP NTLM authentication. A proprietary protocol invented and used by Microsoft. It uses a challenge-response and hash concept similar to Digest, to prevent the password from being eavesdropped.

  You need to build libCURL with OpenSSL support for this option to work, or build libCURL on Windows.
kAuthANY = & hFFFFFFFF

This is a convenience macro that sets all bits and thus makes libCURL pick any it finds suitable. libCURL will automatically select the one it finds most secure.

kAuthANYSAFE = & hFFFFFFFE

This is a convenience macro that sets all bits except Basic and thus makes libCURL pick any it finds suitable. libCURL will automatically select the one it finds most secure.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also HTTPAUTH option in CURL manual.

58.4.175 OptionHTTPContentDecoding as Integer

Notes:
If set to zero, content decoding will be disabled. If set to 1 it is enabled. Note however that libCURL has no default content decoding but requires you to use OptionEncoding for that. (added in 7.16.2)
(Read and Write property)
See also HTTP_CONTENT_DECODING option in CURL manual.

58.4.176 OptionHTTPProxyTunnel as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Set the parameter to true to get the library to tunnel all operations through a given HTTP proxy.
Notes:
There is a big difference between using a proxy and to tunnel through it. If you don’t know what this means, you probably don’t want this tunneling option.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also HTTP_PROXYTUNNEL option in CURL manual.
58.4.177 OptionHTTPTransferDecoding as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Pass an integer to tell libCURL how to act on transfer decoding. **Notes:**

If set to zero, transfer decoding will be disabled, if set to 1 it is enabled (default). libCURL does chunked transfer decoding by default unless this option is set to zero. (added in 7.16.2)

(Read and Write property)

See also HTTP_TRANSFER_DECODING option in CURL manual.

58.4.178 OptionHTTPVersion as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set to one of the values described below. **Notes:**

They force libCURL to use the specific HTTP versions. This is not sensible to do unless you have a good reason.

kHTTP_VERSION_NONE = 0

We don’t care about what version the library uses. libCURL will use whatever it thinks fit.

kHTTP_VERSION_1_0 = 1

Enforce HTTP 1.0 requests.

kHTTP_VERSION_1_1 = 2

Enforce HTTP 1.1 requests.

The Lasterror property is set. 0 for success.

You can set this value and later you can read it, but you cannot read the default value. (Read and Write property)

See also HTTP_VERSION option in CURL manual.
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### 58.4.179 OptionIgnoreContentLength as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to ignore the Content-Length header.

**Notes:**
This is useful for Apache 1.x (and similar servers) which will report incorrect content length for files over 2 gigabytes. If this option is used, CURL will not be able to accurately report progress, and will simply stop the download when the server ends the connection. (added in 7.14.1)

(Read and Write property)
See also **IGNORE_CONTENT_LENGTH** option in CURL manual.

### 58.4.180 OptionInFileSize as Int64

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** When uploading a file to a remote site, this option should be used to tell libCURL what the expected size of the infile is.

**Notes:**
Note that this option does not limit how much data libCURL will actually send, as that is controlled entirely by what the read callback returns.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also **INFILESIZE** option in CURL manual.

### 58.4.181 OptionInFileSizeLarge as Int64

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** When uploading a file to a remote site, this option should be used to tell libCURL what the expected size of the infile is.

**Deprecated:** This item is deprecated and should no longer be used. You can use OptionInFileSize instead.

**Notes:**
This value should be passed as a CURL_off.t. (Added in 7.11.0)

Note that this option does not limit how much data libCURL will actually send, as that is controlled entirely by what the read callback returns.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
58.4.182 OptionInterface as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This set the interface name to use as outgoing network interface.
**Notes:**
The name can be an interface name, an IP address or a host name.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also INTERFACE option in CURL manual.

58.4.183 OptionIPResolve as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Allows an application to select what kind of IP addresses to use when resolving host names.
**Example:**
```vba
dim c as new CURLMBS
C.OptionIPResolve = c.kIPRESOLVE_V4
```
**Notes:**
This is only interesting when using host names that resolve addresses using more than one version of IP.
The allowed values are:

- `kIPRESOLVE_WHATEVER = 0`
  Default, resolves addresses to all IP versions that your system allows.

- `kIPRESOLVE_V4 = 1`
  Resolve to ipv4 addresses.

- `kIPRESOLVE_V6 = 2`
  Resolve to ipv6 addresses.
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also **IPRESOLVE** option in CURL manual.

### 58.4.184 OptionIssuerCert as String

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A string naming a file holding a CA certificate in PEM format.
**Notes:**
If the option is set, an additional check against the peer certificate is performed to verify the issuer is indeed the one associated with the certificate provided by the option. This additional check is useful in multi-level PKI where one needs to enforce that the peer certificate is from a specific branch of the tree.

This option makes sense only when used in combination with the **OptionSSLLVerifyPeer** option. Otherwise, the result of the check is not considered as failure.

A specific error code (CURLE_SSL_ISSUER_ERROR) is defined with the option, which is returned if the setup of the SSL/TLS session has failed due to a mismatch with the issuer of peer certificate (**OptionSSLLVerifyPeer** has to be set too for the check to fail). (Added in 7.19.0)

Starting with version 18.0 the plugin will always use UTF-8 encoding for file path on Linux and macOS. For macOS we also do the unicode character normalization for file names for you.
(Read and Write property)
See also **ISSUERCERT** option in CURL manual.

### 58.4.185 OptionKeepSendingOnError as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Wether to keep sending on error.
**Notes:**
Continue to send data if the server responds early with an HTTP status code $\geq$ 300
(Read and Write property)
See also **KEEP_SENDING_ON_ERROR** option in CURL manual.
10000

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OptionKeyPassword as String

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Set passphrase to private key.
Notes:
It will be used as the password required to use the OptionSSLKey or OptionSSHPrivateKeyfile private key.
You never needed a pass phrase to load a certificate but you need one to load your private key.
(Read and Write property)
See also KEYPASSWD option in CURL manual.

58.4.187

OptionKRB4Level as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Set the krb4 security level, this also enables krb4 awareness.
Deprecated: This item is deprecated and should no longer be used. You can use OptionKRBLevel instead.
Notes:
This is a string, ’clear’, ’safe’, ’confidential’ or ’private’. If the string is set but doesn’t match one of these,
’private’ will be used. Set the string to ”” to disable kerberos4. The kerberos support only works for FTP.
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)

58.4.188

OptionKRBLevel as String

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
FTP kerberos security level.
Notes:
Set the kerberos security level for FTP; this also enables kerberos awareness. This is a string that should
match one of the following: ’clear’, ’safe’, ’confidential’ or ’private’. If the string is set but doesn’t match
one of these, ’private’ will be used. Set the string to NULL to disable kerberos support for FTP.
(Read and Write property)
See also KRBLEVEL option in CURL manual.

58.4.189

OptionLocalPort as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
This sets the local port number of the socket used for connection.
Notes:


This can be used in combination with OptionInterface and you are recommended to use OptionLocalPortRange as well when this is set. Note that port numbers are only valid 1 - 65535. (Added in 7.15.2)  
(Read and Write property)  
See also LOCALPORT option in CURL manual.

58.4.190  OptionLocalPortRange as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:  
This is the number of attempts libCURL should do to find a working local port number.  
Notes:  
It starts with the given OptionLocalPort and adds one to the number for each retry. Setting this value to 1 or below will make libCURL do only one try for exact port number. Note that port numbers by nature is a scarce resource that will be busy at times so setting this value to something too low might cause unnecessary connection setup failures. (Added in 7.15.2)  
(Read and Write property)  
See also LOCALPORTRANGE option in CURL manual.

58.4.191  OptionLoginOptions as String

MBS CURL Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:  
Login options string to use for the transfer.  
Notes:  
For more information about the login options please see RFC 2384, RFC5092 and IETF draft draft-earhart-url-smtp-00.txt  
CURLOPT_LOGIN_OPTIONS can be used to set protocol specific login options, such as the preferred authentication mechanism via "AUTH=NTLM" or "AUTH=*", and should be used in conjunction with the OptionUserName option.  
Only IMAP, POP3 and SMTP support login options.  
(Read and Write property)  
See also LOGIN_OPTIONS option in CURL manual.

58.4.192  OptionLowSpeedLimit as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:  
This property contains the transfer speed in bytes per second that the transfer should be below during OptionLowSpeedTime seconds for the library to consider it too slow and abort.  
Notes:  
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also LOW_SPEED_LIMIT option in CURL manual.

58.4.193 OptionLowSpeedTime as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This property contains the time in seconds that the transfer should be below the OptionLowSpeedLimit for
the library to consider it too slow and abort.
**Notes:**
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also LOW_SPEED_TIME option in CURL manual.

58.4.194 OptionMailAuth as String

MBS CURL Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This string will be used to specify the authentication address (identity) of a submitted message that is being
relayed to another server.
**Notes:**
This optional parameter allows co-operating agents in a trusted environment to communicate the authen-
tication of individual messages and should only be used by the application program, using libCURL, if the
application is itself a mail server acting in such an environment. If the application is operating as such and
the AUTH address is not known or is invalid, then an empty string should be used for this parameter.
Unlike OptionMailFrom and SetOptionMailRecipients, the address should not be specified within a pair of
angled brackets (<>). However, if an empty string is used then a pair of brackets will be sent by libCURL
as required by RFC 2554.
(Read and Write property)
See also MAIL_AUTH option in CURL manual.

58.4.195 OptionMailFrom as String

MBS CURL Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A string that will be used to specify the sender address in a mail when sending an SMTP mail with libCURL.
**Notes:** (Read and Write property)
See also MAIL_FROM option in CURL manual.
58.4.196 OptionMaxConnects as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The set number will be the persistent connection cache size.

**Notes:**
The set amount will be the maximum amount of simultaneously open connections that libCURL may cache.
Default is 5, and there isn’t much point in changing this value unless you are perfectly aware of how this work and changes libCURL’s behaviour. This concerns connection using any of the protocols that support persistent connections.

When reaching the maximum limit, CURL closes the oldest one in the cache to prevent the number of open connections to increase.

If you already have performed transfers with this CURL handle, setting a smaller MAXCONNECTS than before may cause open connections to get closed unnecessarily.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also MAXCONNECTS option in CURL manual.

58.4.197 OptionMaxFileSize as Int64

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This allows you to specify the maximum size (in bytes) of a file to download.

**Notes:**
If the file requested is larger than this value, the transfer will not start and kError_FILESIZE_EXCEEDED will be returned.

The file size is not always known prior to download, and for such files this option has no effect even if the file transfer ends up being larger than this given limit. This concerns both FTP and HTTP transfers.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also MAXFILESIZE option in CURL manual.
58.4.198  OptionMaxFileSizeLarge as Int64

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This allows you to specify the maximum size (in bytes) of a file to download.

**Deprecated:** This item is deprecated and should no longer be used. You can use OptionMaxFileSize instead.

**Notes:**
If the file requested is larger than this value, the transfer will not start and kError_FILESIZE_EXCEEDED will be returned. (Added in 7.11.0)

The file size is not always known prior to download, and for such files this option has no effect even if the file transfer ends up being larger than this given limit. This concerns both FTP and HTTP transfers.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)

58.4.199  OptionMaxRecvSpeed as Int64

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Defines the maximum download speed.

**Notes:**
If a download exceeds this speed (counted in bytes per second) on cumulative average during the transfer, the transfer will pause to keep the average rate less than or equal to the parameter value. Defaults to unlimited speed. (Added in 7.15.5)
(Read and Write property)
See also MAX_RECV_SPEED option in CURL manual.

58.4.200  OptionMaxRecvSpeedLarge as Int64

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Defines the maximum download speed.

**Deprecated:** This item is deprecated and should no longer be used. You can use OptionMaxRecvSpeed instead.

**Notes:**
If a download exceeds this speed (counted in bytes per second) on cumulative average during the transfer, the transfer will pause to keep the average rate less than or equal to the parameter value. Defaults to unlimited speed. (Added in 7.15.5)
(Read and Write property)
58.4. **CLASS CURLMBS**

### 58.4.201 OptionMaxRedirs as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The set number will be the redirection limit.

**Example:**

```plaintext
dim c as new CURLMBS

c.OptionFollowLocation = true
c.OptionMaxRedirs = 3
```

**Notes:**
If that many redirections have been followed, the next redirect will cause an error (kError_TOO_MANY_REDIRECTS).
This option only makes sense if the CURLOPT_FOLLOWLOCATION is used at the same time. Added in 7.15.1: Setting the limit to 0 will make libCURL refuse any redirect. Set it to -1 for an infinite number of redirects (which is the default)

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also MAXREDIRS option in CURL manual.

### 58.4.202 OptionMaxSendSpeed as Int64

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Defines the maximum upload speed.

**Notes:**
If an upload exceeds this speed on cumulative average during the transfer, the transfer will pause to keep the average rate less than or equal to the parameter value. Defaults to unlimited speed. (Added in 7.15.5)
Value is in bytes per second.
Useful if you have a limited pipe and you’d like your transfer not to use your entire bandwidth.
Slowing down the transfer speed is also useful for lowering CPU consumption during transfers.
(Read and Write property)
See also MAX_SEND_SPEED option in CURL manual.

### 58.4.203 OptionMaxSendSpeedLarge as Int64

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Defines the maximum upload speed.

**Deprecated:** This item is deprecated and should no longer be used. You can use OptionMaxSendSpeed instead. **Notes:**
If an upload exceeds this speed on cumulative average during the transfer, the transfer will pause to keep the average rate less than or equal to the parameter value. Defaults to unlimited speed. (Added in 7.15.5) Value is in bytes per second. Useful if you have a limited pipe and you’d like your transfer not to use your entire bandwidth. Slowing down the transfer speed is also useful for lowering CPU consumption during transfers. (Read and Write property)

58.4.204 OptionNetRC as Integer

Notes: This parameter controls the preference of libCURL between using user names and passwords from your textasciitilde /.netrc file, relative to user names and passwords in the URL supplied with OptionURL.

libCURL uses a user name (and supplied or prompted password) supplied with OptionUsername and OptionPassword in preference to any of the options controlled by this parameter.

An integer, set to one of the values described below.

kNETRC_OPTIONAL = 1

The use of your textasciitilde /.netrc file is optional, and information in the URL is to be preferred. The file will be scanned with the host and user name (to find the password only) or with the host only, to find the first user name and password after that machine, which ever information is not specified in the URL.

Undefined values of the option will have this effect.

kNETRC_IGNORED = 0

The library will ignore the file and use only the information in the URL.

This is the default.

kNETRC_REQUIRED = 2

This value tells the library that use of the file is required, to ignore the information in the URL, and to search the file with the host only.
Only machine name, user name and password are taken into account (init macros and similar things aren’t supported).

libCURL does not verify that the file has the correct properties set (as the standard Unix ftp client does). It should only be readable by user.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also NETRC option in CURL manual.

58.4.205 OptionNetRCFFile as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: A string containing the full path name to the file you want libCURL to use as .netrc file.
Notes:
If this option is omitted, and OptionNETRC is set, libCURL will attempt to find the a .netrc file in the current user’s home directory. (Added in 7.10.9)

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

Starting with version 18.0 the plugin will always use UTF-8 encoding for file path on Linux and macOS. For macOS we also do the unicode character normalization for file names for you.
(Read and Write property)
See also NETRC_FILE option in CURL manual.

58.4.206 OptionNewDirectoryPerms as Integer

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: An integer, containing the value of the permissions that will be assigned to newly created directories on the remote server.
Notes:
The default value is 0755, but any valid value can be used. The only protocols that can use this are sftp://, scp://, and file://. (Added in 7.16.4)
Value must be octal, so use & o prefix for number.
(Read and Write property)
See also NEW_DIRECTORY_PERMS option in CURL manual.
58.4.207 OptionNewFilePerms as Integer

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An integer, containing the value of the permissions that will be assigned to newly created files on the remote server.

**Notes:**

The default value is & o0644, but any valid value can be used. The only protocols that can use this are sftp://, scp://, and file://. (Added in 7.16.4)

Be aware that you normally specify this in octal values. So use the & o prefix in Real Studio.

(Read and Write property)

See also NEW_FILE_PERMS option in CURL manual.

58.4.208 OptionNoBody as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True tells the library to not include the body-part in the output.

**Notes:**

This is only relevant for protocols that have separate header and body parts. On HTTP(S) servers, this will make libCURL do a HEAD request.

To change request to GET, you should use OptionGet. Change request to POST with OptionPost etc.

The Lasterror property is set. 0 for success.

You can set this value and later you can read it, but you cannot read the default value.

(Read and Write property)

See also NOBODY option in CURL manual.

58.4.209 OptionNoProxy as String

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A string with a comma- separated list of hosts which do not use a proxy, if one is specified.

**Notes:**

The only wildcard is a single * character, which matches all hosts, and effectively disables the proxy. Each name in this list is matched as either a domain which contains the hostname, or the hostname itself. For example, local.com would match local.com, local.com:80, and www.local.com, but not www.notlocal.com.

(Added in 7.19.4)

(Read and Write property)

See also NOPROXY option in CURL manual.
58.4. **CLASS CURLMBS**

### 58.4.210 OptionNoSignal as Integer

MBS CURL Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to not use signals.

**Notes:**
If it is true, libCURL will not use any functions that install signal handlers or any functions that cause signals to be sent to the process. This option is mainly here to allow multi-threaded unix applications to still set/use all timeout options etc, without risking getting signals. (Added in 7.10)

If this option is set and libCURL has been built with the standard name resolver, timeouts will not occur while the name resolve takes place. Consider building libCURL with c-ares support to enable asynchronous DNS lookups, which enables nice timeouts for name resolves without signals.

Setting OptionNoSignal to true makes libCURL NOT ask the system to ignore SIGPIPE signals, which otherwise are sent by the system when trying to send data to a socket which is closed in the other end. libCURL makes an effort to never cause such SIGPIPEs to trigger, but some operating systems have no way to avoid them and even on those that have there are some corner cases when they may still happen, contrary to our desire. In addition, using CURLAUTH_NTLM_WB authentication could cause a SIGCHLD signal to be raised.

(Read and Write property)
See also **NOSIGNAL** option in CURL manual.

### 58.4.211 OptionPassword as String

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The password to use for the transfer.

**Notes:**
The OptionPassword option should be used in conjunction with the OptionUsername option.

(Read and Write property)
See also **PASSWORD** option in CURL manual.

### 58.4.212 OptionPathAsIs as Boolean

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Pass path as it is and do not resolve dots.

**Notes:**
Do not squash dot-dot sequences.

(Read and Write property)
See also **PATH_AS_IS** option in CURL manual.
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58.4.213 OptionPinnedPublicKey as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The public key in DER form used to validate the peer public key. **Notes:** Native path to key file. This option is used only if SSLVerifyPeer is true. (Read and Write property) See also PINNEDPUBLICKEY option in CURL manual.

58.4.214 OptionPipeWait as Boolean

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Wait/don’t wait for pipe/mutex to clarify. **Notes:** (Read and Write property) See also PIPEWAIT option in CURL manual.

58.4.215 OptionPort as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The remote port number to connect to, instead of the one specified in the URL or the default port for the used protocol. **Notes:** The Lasterror property is set. 0 for success. You can set this value and later you can read it, but you cannot read the default value. (Read and Write property) See also PORT option in CURL manual.

58.4.216 OptionPost as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A boolean parameter tells the library to do a regular HTTP post. **Notes:** This will also make the library use the a ’Content-Type: application/x-www-form-urlencoded’ header. (This is by far the most commonly used POST method). Use the OptionPostFields option to specify what data to post.

Optionally, you can provide data to POST using the Read event but then you must make sure to not set
OptionPostFields to anything but "". When providing data with an event, you must transmit it using chunked transfer-encoding.

You can override the default POST Content-Type: header by setting your own with OptionHTTPHeader.

Using POST with HTTP 1.1 implies the use of a "Expect: 100-continue" header. You can disable this header with OptionHTTPHeader as usual.

If you use POST to a HTTP 1.1 server, you can send data without knowing the size before starting the POST if you use chunked encoding. You enable this by adding a header like "Transfer-Encoding: chunked" with OptionHTTPHeader. With HTTP 1.0 or without chunked transfer, you must specify the size in the request.

When setting CURLOPT_POST to a non-zero value, it will automatically set OptionNoBody to 0 (since 7.14.1).

If you issue a POST request and then want to make a HEAD or GET using the same re-used handle, you must explictly set the new request type using OptionNoBody or OptionGet or similar.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also POST option in CURL manual.

**58.4.217 OptionPostFields as String**

A string which should be the full data to post in an HTTP POST operation.

**Example:**

```vba
dim xml as string // XML or JSON to send as payload
dim c as new CURLMBS

c.OptionFollowLocation = true
c.OptionMaxRedirs = 3
c.OptionPostFields = xml
c.OptionUserAgent = "Test App"
c.OptionPost = true

// for SOAP use right content type
c.SetOptionHTTPHeader array("Content-Type: application/soap+xml; charset=utf-8")
```
Notes:

You must make sure that the data is formatted the way you want the server to receive it. libCURL will not convert or encode it for you. Most web servers will assume this data to be url-encoded. Take note.

This POST is a normal application/x-www-form-urlencoded kind (and libCURL will set that Content-Type by default when this option is used), which is the most commonly used one by HTML forms. See also the OptionPost. Using OptionPostFields implies OptionPost.

Using POST with HTTP 1.1 implies the use of a "Expect: 100-continue" header. You can disable this header with CURLOPT_HTTPHEADER as usual.

To make multipart/formdata posts (aka rfc1867-posts), check out the OptionPost option.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also COPYPOSTFIELDS option in CURL manual.

58.4.218 OptionPostFieldSize as Int64

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The size of the post data.

**Notes:**
Optional you can set the size of your post data.
If you specify a postfield string, this size will be set automatically.

If you specify a size and no postfield string, the Read event will request data.
(Read and Write property)
See also POSTFIELDSIZE option in CURL manual.

58.4.219 OptionPostFieldSizeLarge as Int64

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The size of the post data. (64 bit version)
**Deprecated:** This item is deprecated and should no longer be used. You can use OptionPostFieldSize instead.

**Notes:**
Optional you can set the size of your post data.
If you specify a postfield string, this size will be set automatically.
If you specify a size and no postfield string, the Read event will request data.
(Read and Write property)

### 58.4.220 OptionPostRedir as Integer

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A bitmask to control how libCURL acts on redirects after POSTs that get a 301 or 302 response back.
**Notes:**
A parameter with bit 0 set (value CURL_REDIR_POST_301=1) tells the library to respect RFC 2616/10.3.2 and not convert POST requests into GET requests when following a 301 redirection. Setting bit 1 (value CURL_REDIR_POST_302=2) makes libCURL maintain the request method after a 302 redirect. CURL_REDIR_POST_ALL is a convenience define that sets both bits.

The non-RFC behaviour is ubiquitous in web browsers, so the library does the conversion by default to maintain consistency. However, a server may require a POST to remain a POST after such a redirection. This option is meaningful only when setting OptionFollowLocation. (Added in 7.17.1) (This option was known as CURLOPT_POST301 up to 7.19.0 as it only supported the 301 way before then)
(Read and Write property)
See also POSTREDIR option in CURL manual.

### 58.4.221 OptionPreProxy as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Name of pre proxy to use.
**Notes:** (Read and Write property)
See also PRE_PROXY option in CURL manual.

### 58.4.222 OptionProtocols as Integer

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A bitmask of kProtocol* constants.
**Notes:**
If used, this bitmask limits what protocols libCURL may use in the transfer. This allows you to have a libCURL built to support a wide range of protocols but still limit specific transfers to only be allowed to use a subset of them. By default libCURL will accept all protocols it supports. See also OptionRedirProtocols.
(Added in 7.19.4)
(Read and Write property)
See also PROTOCOLS option in CURL manual.
58.4.223  OptionProxy as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Set HTTP proxy to use.

**Example:**

```plaintext
dim c as CURLMBS // your CURL object
dim psAddress as string // your proxy address
dim psPort as Integer // your proxy port

c.OptionProxy=psAddress
c.OptionProxyPort=psPort
c.OptionProxyType=c.kPROXY_HTTP
```

**Notes:**
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

The parameter should be a string holding the host name or dotted IP address. To specify port number in this string, append : [ port ] to the end of the host name. The proxy string may be prefixed with [ protocol ] :// since any such prefix will be ignored. The proxy’s port number may optionally be specified with the separate option ProxyHost.

When you tell the library to use an HTTP proxy, libCURL will transparently convert operations to HTTP even if you specify an FTP URL etc. This may have an impact on what other features of the library you can use, such as CURLOPT_QUOTE and similar FTP specifics that don’t work unless you tunnel through the HTTP proxy. Such tunneling is activated with HTTPProxyTunnel.

libCURL respects the environment variables http_proxy, ftp_proxy, all_proxy etc, if any of those is set. The Proxy option does however override any possibly set environment variables.

Starting with 7.14.1, the proxy host string given in environment variables can be specified the exact same way as the proxy can be set with Proxy, include protocol prefix (http://) and embedded user + password.

You can use WinHTTPClientMBS class on Windows or CFProxyMBS on Mac to discover system proxy settings.
(Read and Write property)
See also PROXY option in CURL manual.
58.4. CLASS CURLMBS

58.4.224 OptionProxyAuth as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Which proxy authentication to use.

**Notes:**
Pass an integer as parameter, which is set to a bitmask, to tell libCURL what authentication method(s) you want it to use for your proxy authentication. If more than one bit is set, libCURL will first query the site to see what authentication methods it supports and then pick the best one you allow it to use. For some methods, this will induce an extra network round-trip. Set the actual name and password with the ProxyUserPassword option. The bitmask can be constructed by or’ing together the bits listed above for the HTTPAuth option. As of this writing, only Basic, Digest and NTLM work. (Added in 7.10.7)

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also PROXYAUTH option in CURL manual.

58.4.225 OptionProxyCAInfo as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The CApath or CAfile used to validate the proxy certificate.

**Notes:**
Pass native file path.
This option is used only if CURLMBS.OptionProxySSLVerifyPeer is true
(Read and Write property)
See also PROXY_CAINFO option in CURL manual.

58.4.226 OptionProxyCAPath as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The CApath directory used to validate the proxy certificate.

**Notes:**
Pass native file path.
This option is used only if CURLMBS.OptionProxySSLVerifyPeer is true
(Read and Write property)
See also PROXY_CAPATH option in CURL manual.
58.4.227 OptionProxyCRLFile as String

**Notes:**  
Pass native file path.  
(Read and Write property)  
See also PROXY_CRLFILE option in CURL manual.

58.4.228 OptionProxyKeyPassword as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Password for the SSL private key for proxy.  
**Notes:** (Read and Write property)  
See also PROXY_KEYPASSWD option in CURL manual.

58.4.229 OptionProxyPassword as String

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A string which should be pointing to the password to use for the transfer while connecting to Proxy.  
**Notes:**  
The OptionProxyPassword option should be used in conjunction with the OptionProxyUsername option. (Added in 7.19.1)  
(Read and Write property)  
See also PROXYPASSWORD option in CURL manual.

58.4.230 OptionProxyPinnedPublicKey as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The public key in DER form used to validate the proxy public key.  
**Notes:**  
This option is used only if CURLMBS.OptionProxySSLVerifyPeer is true.  
Please path native file path to key file.  
(Read and Write property)  
See also PROXY_PINNEDPUBLICKEY option in CURL manual.
58.4. CLASS CURLMBS

58.4.231 OptionProxyPort as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The proxy port to connect to unless it is specified in the proxy string OptionProxy.
**Notes:**
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
You can use OptionProxy with port, e.g. "12.34.56.78:8080" or pass port here and proxy without port.
For some users it seems like the option with OptionProxy including port works better.
(Read and Write property)
See also PROXYPORT option in CURL manual.

58.4.232 OptionProxyServiceName as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Proxy Service Name.
**Notes:** (Read and Write property)
See also PROXY_SERVICE_NAME option in CURL manual.

58.4.233 OptionProxySSLCert as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Name of the file keeping your private SSL-certificate for proxy.
**Notes:** (Read and Write property)
See also PROXY_SSLCERT option in CURL manual.

58.4.234 OptionProxySSLCertType as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Type of the file keeping your SSL-certificate for proxy.
**Notes:**
Value can be "DER", "PEM" or "ENG".
(Read and Write property)
See also PROXY_SSLCERTTYPE option in CURL manual.
58.4.235 OptionProxySSLCipherList as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Specify which SSL ciphers to use for proxy. **Notes:** (Read and Write property) See also PROXY_SSL_CIPHER_LIST option in CURL manual.

58.4.236 OptionProxySSLKey as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Name of the file keeping your private SSL-key for proxy. **Notes:** Pass native file path. (Read and Write property) See also PROXY_SSLKEY option in CURL manual.

58.4.237 OptionProxySSLKeyType as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets type of the file keeping your private SSL-key for proxy. **Notes:** Value is DER, PEM or ENG. (Read and Write property) See also PROXY_SSLKEYTYPE option in CURL manual.

58.4.238 OptionProxySSLOptions as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Enable/disable specific SSL features with a bitmask for proxy. **Notes:** (Read and Write property) See also PROXY_SSL_OPTIONS option in CURL manual.

58.4.239 OptionProxySSLVerifyHost as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Enable SSL Host verification. **Notes:**
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Set if we should verify the Common name from the proxy certificate in ssl handshake, set 1 to check existence, 2 to ensure that it matches the provided hostname.
(Read and Write property)
See also PROXY_SSL_VERIFYHOST option in CURL manual.

58.4.240 OptionProxySSLSVerifyPeer as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Set if we should verify the proxy in ssl handshake.
Notes:
set 1 to verify.
(Read and Write property)
See also PROXY_SSL_VERIFYPEER option in CURL manual.

58.4.241 OptionProxySSLVersion as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
What version to specifically try to use for proxy.
Notes:
The available options are:

Default 0 The default action. This will attempt to figure out the remote SSL protocol version, i.e. either SSLv3 or TLSv1 (but not SSLv2, which became disabled by default with 7.18.1).
TLSv1 1 Force TLSv1.x
SSLv2 2 Force SSLv2
SSLv3 3 Force SSLv3
TLSv1.0 4 Force TLSv1.0
TLSv1.1 5 Force TLSv1.1
TLSv1.2 6 Force TLSv1.2
TLSv1.3 7 Force TLSv1.3

(Read and Write property)
See also PROXY_SSLVERSION option in CURL manual.
58.4.242 OptionProxyTLSAuthPassword as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Password for authenticated TLS for proxy. **Notes:** (Read and Write property) See also PROXY_TLSAUTH_PASSWORD option in CURL manual.

58.4.243 OptionProxyTLSAuthType as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set authentication type for authenticated TLS for proxy. **Notes:** (Read and Write property) See also PROXY_TLSAUTH_TYPE option in CURL manual.

58.4.244 OptionProxyTLSAuthUsername as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set a username for authenticated TLS for proxy. **Notes:** (Read and Write property) See also PROXY_TLSAUTH_USERNAME option in CURL manual.

58.4.245 OptionProxyTransferMode as Integer

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** If this integer value is set to 1 (one), it tells libCURL to set the transfer mode (binary or ASCII) for FTP transfers done via an HTTP proxy, by appending ;type=a or ;type=i to the URL. **Notes:** Without this setting, or it being set to 0 (zero, the default), OptionTransferText has no effect when doing FTP via a proxy. Beware that not all proxies support this feature. (Added in 7.18.0) **(Read and Write property)** See also PROXY_TRANSFER_MODE option in CURL manual.

58.4.246 OptionProxyType as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This option is to set type of the proxy. **Notes:** The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

Available options for this are kPROXY_HTTP, kPROXY_SOCKS4 (added in 7.15.2) kPROXY_SOCKS5. The HTTP type is default.
(Read and Write property)
See also PROXYTYPE option in CURL manual.

58.4.247 OptionProxyUsername as String

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A string, which should be pointing to the user name to use for the transfer while connecting to Proxy.

Notes:
In order to specify the password to be used in conjunction with the user name use the OptionProxyPassword option.
(Read and Write property)
See also PROXYUSERNAME option in CURL manual.

58.4.248 OptionPut as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A non-zero parameter tells the library to use HTTP PUT to transfer data.

Notes:
The data should be set with OptionInFileSize.

This option is deprecated and starting with version 7.12.1 you should instead use OptionUpload.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also PUT option in CURL manual.

58.4.249 OptionRandomFile as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A file name for the random file.

Notes:
The file will be used to read from to seed the random engine for SSL. The more random the specified file is, the more secure the SSL connection will become.
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

Starting with version 18.0 the plugin will always use UTF-8 encoding for file path on Linux and macOS. For macOS we also do the unicode character normalization for file names for you.
(Read and Write property)
See also RANDOM_FILE option in CURL manual.

58.4.250 OptionRange as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
A string which should contain the specified range you want.
Notes:
It should be in the format ”X-Y”, where X or Y may be left out. HTTP transfers also support several intervals, separated with commas as in ”X-Y,N-M”. Using this kind of multiple intervals will cause the HTTP server to send the response document in pieces (using standard MIME separation techniques). Pass a NULL to this option to disable the use of ranges.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also RANGE option in CURL manual.

58.4.251 OptionRedirProtocols as Integer

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
An integer that holds a bitmask of kProtocol* constants.
Notes:
If used, this bitmask limits what protocols libCURL may use in a transfer that it follows to in a redirect when OptionFollowLocation is enabled. This allows you to limit specific transfers to only be allowed to use a subset of protocols in redirections. By default libCURL will allow all protocols except for FILE and SCP. This is a difference compared to pre-7.19.4 versions which unconditionally would follow to all protocols supported. (Added in 7.19.4)
(Read and Write property)
See also REDIR_PROTOCOLS option in CURL manual.
58.4.252 OptionReferer as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The referer to pass to the server.

**Notes:**

It will be used to set the Referer: header in the http request sent to the remote server. This can be used to fool servers or scripts. You can also set any custom header with OptionHTTPHeader.

The Lasterror property is set. 0 for success.

You can set this value and later you can read it, but you cannot read the default value.

(Read and Write property)

See also REFERER option in CURL manual.

58.4.253 OptionRequestTarget as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The request target, instead of extracted from the URL.

**Notes:** (Read and Write property)

See also REQUEST_TARGET option in CURL manual.

58.4.254 OptionResumeFrom as Int64

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** It contains the offset in number of bytes that you want the transfer to start from.

**Notes:**

Set this option to 0 to make the transfer start from the beginning (effectively disabling resume). For FTP, set this option to -1 to make the transfer start from the end of the target file (useful to continue an interrupted upload).

The Lasterror property is set. 0 for success.

You can set this value and later you can read it, but you cannot read the default value.

(Read and Write property)

See also RESUME_FROM option in CURL manual.

58.4.255 OptionResumeFromLarge as Int64

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** It contains the offset in number of bytes that you want the transfer to start from.
Deprecated: This item is deprecated and should no longer be used. You can use OptionResumeFrom instead. Notes:
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)

58.4.256 OptionRTSPClientCSEQ as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Manually initialize the client RTSP CSeq for this handle.
Notes: (Read and Write property)
See also RTSP_CLIENT_CSEQ option in CURL manual.

58.4.257 OptionRTSPRequest as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
RTSP request method (OPTIONS, SETUP, PLAY, etc...).
Notes: (Read and Write property)
See also RTSP_REQUEST option in CURL manual.

58.4.258 OptionRTSPServerCSEQ as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Manually initialize the server RTSP CSeq for this handle.
Notes: (Read and Write property)
See also RTSP_SERVER_CSEQ option in CURL manual.

58.4.259 OptionRTSPSessionID as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
The RTSP session identifier.
Notes: (Read and Write property)
See also RTSP_SESSION_ID option in CURL manual.
58.4. CLASS CURLMBS

58.4.260 OptionRTSPStreamURI as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The RTSP stream URI.  
**Notes:** (Read and Write property)  
See also RTSP_STREAM_URI option in CURL manual.

58.4.261 OptionRTSPTransport as String

**Notes:** (Read and Write property)  
See also RTSP_TRANSPORT option in CURL manual.

58.4.262 OptionSASLIR as Integer

**Notes:** (Read and Write property)  
See also SASL_IR option in CURL manual.

58.4.263 OptionServiceName as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Service Name.  
**Notes:** (Read and Write property)  
See also SERVICE_NAME option in CURL manual.

58.4.264 OptionSocks5Auth as Integer

**Notes:** (Read and Write property)  
See also SOCKS5_AUTH option in CURL manual.
**58.4.265 OptionSocks5GSSAPINEC as Boolean**

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to protect SOCKS5 connection is protected.

**Notes:**
Set to true to enable or false to disable. As part of the gssapi negotiation a protection mode is negotiated. The rfc1961 says in section 4.3/4.4 it should be protected, but the NEC reference implementation does not. If enabled, this option allows the unprotected exchange of the protection mode negotiation. (Added in 7.19.4).

(Read and Write property)
See also `SOCKS5_GSSAPI_NEC` option in CURL manual.

**58.4.266 OptionSocks5GSSAPIService as String**

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A string holding the name of the service.

**Notes:**
The default service name for a SOCKS5 server is rcmd/server-fqdn. This option allows you to change it. (Added in 7.19.4)
(Read and Write property)
See also `SOCKS5_GSSAPI_SERVICE` option in CURL manual.

**58.4.267 OptionSSHAuthTypes as Integer**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Define the SSH authorization types.

**Notes:**
Pass a long set to a bitmask consisting of one or more of CURLSSH_AUTH_PUBLICKEY, CURLSSH_AUTH_PASSWORD, CURLSSH_AUTH_HOST, CURLSSH_AUTH_KEYBOARD. Set CURLSSH_AUTH_ANY to let libCURL pick one. (Added in 7.16.1)

constants:
CURLSSH_AUTH_ANY = & hFFFFFFFF
CURLSSH_AUTH_NONE = 0
CURLSSH_AUTH_PUBLICKEY = 1
CURLSSH_AUTH_PASSWORD = 2
CURLSSH_AUTH_HOST = 4
CURLSSH_AUTH_KEYBOARD = 8
CURLSSH_AUTH_DEFAULT = CURLSSH_AUTH_ANY
(Read and Write property)
See also `SSH_AUTH_TYPES` option in CURL manual.
58.4. CLASS CURLMBS

58.4.268 OptionSSHCompression as Boolean

**Notes:** (Read and Write property)  
See also **SSH_COMPRESSION** option in CURL manual.

58.4.269 OptionSSHHostPublicKeyMD5 as String

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A string containing 32 hexadecimal digits with the 128 bit MD5 checksum of the remote host’s public key.  
**Notes:**  
libCURL will reject the connection to the host unless the md5sums match. This option is only for SCP and SFTP transfers. (Added in 7.17.1)  
(Read and Write property)  
See also **SSH_HOST_PUBLIC_KEY_MD5** option in CURL manual.

58.4.270 OptionSSHKnownhosts as String

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A string holding the file name of the known_host file to use.  
**Notes:**  
The known_hosts file should use the OpenSSH file format as supported by libssh2. If this file is specified, libCURL will only accept connections with hosts that are known and present in that file, with a matching public key. (Added in 7.19.6)  
(Read and Write property)  
See also **SSH_KNOWNHOSTS** option in CURL manual.

58.4.271 OptionSSHPrivateKeyfile as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Pass a path pointing to a file name for your private key.  
**Notes:**  
If not used, libCURL defaults to using `textasciitilde/.ssh/id_dsa`. If the file is password-protected, set the password with OptionSSLKeyPassword. (Added in 7.16.1)  
For a SFTP transfer (= file transfer over SSH), you would tell the plugin your public and private keys, so the plugin can login.
Starting with version 18.0 the plugin will always use UTF-8 encoding for file path on Linux and macOS. For macOS we also do the unicode character normalization for file names for you.

See also **SSH_PRIVATE_KEYFILE** option in CURL manual.

### 58.4.272 OptionSSHPublicKeyfile as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Pass a path pointing to a file name for your public key.

**Notes:**
If not used, libCURL defaults to using
```
textasciitilde/.ssh/id_dsa.pub. (Added in 7.16.1)
```

For a SFTP transfer (= file transfer over SSH), you would tell the plugin your public and private keys, so the plugin can login.

Starting with version 18.0 the plugin will always use UTF-8 encoding for file path on Linux and macOS. For macOS we also do the unicode character normalization for file names for you.

See also **SSH_PUBLIC_KEYFILE** option in CURL manual.

### 58.4.273 OptionSSLCert as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The string should be the file name of your certificate.

**Notes:**
The default format is "PEM" and can be changed with OptionSSLCERTTYPE.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

Starting with version 18.0 the plugin will always use UTF-8 encoding for file path on Linux and macOS. For macOS we also do the unicode character normalization for file names for you.

See also **SSLCERT** option in CURL manual.
58.4.274 OptionSSLCertPassword as String

MBS CURL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The certificate password.  
**Deprecation:** This item is deprecated and should no longer be used. You can use OptionKeyPassword instead. **Notes:** (Read and Write property)

58.4.275 OptionSSLCertType as String

**Function:** The string should be the format of your certificate.  
**Notes:** Supported formats are "PEM" and "DER". (Added in 7.9.3)

The Lasterror property is set. 0 for success.  
You can set this value and later you can read it, but you cannot read the default value.  
(Read and Write property)  
See also SSLCERTTYPE option in CURL manual.

58.4.276 OptionSSLCipherList as String

**Function:** A string holding the list of ciphers to use for the SSL connection.  
**Notes:**  
The list must be syntactically correct, it consists of one or more cipher strings separated by colons. Commas or spaces are also acceptable separators but colons are normally used, !, - and + can be used as operators.  
Valid examples of cipher lists include 'RC4-SHA', 'SHA1+DES', 'TLSv1' and 'DEFAULT'. The default list is normally set when you compile OpenSSL.  

You'll find more details about cipher lists on this URL:  

http://www.openssl.org/docs/apps/ciphers.html

The Lasterror property is set. 0 for success.  
You can set this value and later you can read it, but you cannot read the default value.  
(Read and Write property)  
See also SSL_CIPHER_LIST option in CURL manual.
58.4.277 OptionSSLEnableALPN as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Enable/disable TLS ALPN extension (http2 over ssl might fail without).
**Notes:** (Read and Write property)
See also SSL_ENABLE_ALPN option in CURL manual.

58.4.278 OptionSSLEnableNPN as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Enable/disable TLS NPN extension (http2 over ssl might fail without)
**Notes:** (Read and Write property)
See also SSL_ENABLE_NPN option in CURL manual.

58.4.279 OptionSSLEngine as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** It will be used as the identifier for the crypto engine you want to use for your private key.
**Notes:**
If the crypto device cannot be loaded, kError_SSL_ENGINE_NOTFOUND is returned.
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also SSLENGINE option in CURL manual.

58.4.280 OptionSSLEngineDefault as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the actual crypto engine as the default for (asymmetric) crypto operations.
**Notes:**
If the crypto device cannot be set, kError_SSL_ENGINE_SETFAILED is returned.
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also SSLENGINE_DEFAULT option in CURL manual.
58.4. **CLASS CURLMBS**

58.4.281 **OptionSSLFalseStart as Integer**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set if we should enable TLS false start. **Notes:** (Read and Write property) See also SSL_FALSESTART option in CURL manual.

58.4.282 **OptionSSLKey as String**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The string should be the file name of your private key. **Notes:** The default format is "PEM" and can be changed with OptionSSLKEYTYPE.

The Lasterror property is set. 0 for success. You can set this value and later you can read it, but you cannot read the default value.

Starting with version 18.0 the plugin will always use UTF-8 encoding for file path on Linux and macOS. For macOS we also do the unicode character normalization for file names for you. **(Read and Write property)** See also SSLKEY option in CURL manual.

58.4.283 **OptionSSLKeyPassword as String**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The password required to use the OptionSSLKEY private key. **Deprecated:** This item is deprecated and should no longer be used. You can use OptionKeyPassword instead. **Notes:** The Lasterror property is set. 0 for success. You can set this value and later you can read it, but you cannot read the default value. **(Read and Write property)**

58.4.284 **OptionSSLKeyType as String**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The string should be the format of your private key. **Notes:** Supported formats are "PEM", "DER" and "ENG".
The format "ENG" enables you to load the private key from a crypto engine. In this case OptionSSLKEY is used as an identifier passed to the engine. You have to set the crypto engine with OptionSSLENGINE. "DER" format key file currently does not work because of a bug in OpenSSL.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also SSLKEYTYPE option in CURL manual.

58.4.285  OptionSSLOptions as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Enable/disable specific SSL features with a bitmask.
Notes: (Read and Write property)
See also SSL_OPTIONS option in CURL manual.

58.4.286  OptionSSLSessionIDCache as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Whether to use the SSL session ID cache.
Notes:
Pass false to disable libCURL's use of SSL session-ID caching. Set this to true to enable it. By default all transfers are done using the cache. Note that while nothing ever should get hurt by attempting to reuse SSL session-IDs, there seem to be broken SSL implementations in the wild that may require you to disable this in order for you to succeed. (Added in 7.16.0)
(Read and Write property)
See also SSL_SESSIONID_CACHE option in CURL manual.

58.4.287  OptionSSLVerifyHost as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
This option determines whether libCURL verifies that the server cert is for the server it is known as.
Notes:
When negotiating an SSL connection, the server sends a certificate indicating its identity.

When OptionSSLVerifyHost is 2, that certificate must indicate that the server is the server to which you meant to connect, or the connection fails.

CURL considers the server the intended one when the Common Name field or a Subject Alternate Name
field in the certificate matches the host name in the URL to which you told CURL to connect.

When the value is 1, the certificate must contain a Common Name field, but it doesn’t matter what name it says. (This is not ordinarily a useful setting).

When the value is 0, the connection succeeds regardless of the names in the certificate.

The default, since 7.10, is 2.

The checking this option controls is of the identity that the server claims. The server could be lying. To control lying, see OptionSSLVerifyPeer.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also SSL_VERIFYHOST option in CURL manual.

58.4.288 OptionSSLVerifyPeer as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Configure whether this CURL instance will verify the SSL peer certificate.

**Notes:**
This option determines whether CURL verifies the authenticity of the peer’s certificate. A value of 1 means CURL verifies; zero means it doesn’t. The default is nonzero, but before 7.10, it was zero.

When negotiating an SSL connection, the server sends a certificate indicating its identity. CURL verifies whether the certificate is authentic, i.e. that you can trust that the server is who the certificate says it is. This trust is based on a chain of digital signatures, rooted in certification authority (CA) certificates you supply. As of 7.10, CURL installs a default bundle of CA certificates and you can specify alternate certificates with the OptionCAINFO option or the OptionCAPATH option.

When OptionSSLVerifyPeer is nonzero, and the verification fails to prove that the certificate is authentic, the connection fails. When the option is zero, the connection succeeds regardless.

Authenticating the certificate is not by itself very useful. You typically want to ensure that the server, as authentically identified by its certificate, is the server you mean to be talking to. Use OptionSSLVerifyHost to control that.
(Read and Write property)
See also SSL_VERIFYPEER option in CURL manual.
58.4.289 OptionSSLVerifyStatus as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Set if we should verify the certificate status.
**Notes:** (Read and Write property)
See also `SSL_VERIFYSTATUS` option in CURL manual.

58.4.290 OptionSSLVersion as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
What version of SSL/TLS to attempt to use.
**Example:**
```vba
dim c as CURLMBS
c.OptionUseSSL = c.kFTPSSL_ALL
c.OptionSSLVersion = c.kSSLVersionTLSv12
```

**Notes:**
The available options are:

- `kSSLVERSION_DEFAULT = 0`
  The default action. When libCURL built with OpenSSL, this will attempt to figure out the remote SSL protocol version. Unfortunately there are a lot of ancient and broken servers in use which cannot handle this technique and will fail to connect. When libCURL is built with GnuTLS, this will mean SSLv3.

- `kSSLVERSION_TLSv1 = 1`
  Force TLSv1

- `kSSLVERSION_SSLv2 = 2`
  Force SSLv2

- `kSSLVERSION_SSLv3 = 3`
  Force SSLv3
The lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also SSLVERSION option in CURL manual.

58.4.291  OptionStreamDepends as CURLMBS

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Set stream dependency on another CURL handle.
Notes: (Read and Write property)
See also STREAM_DEPENDS option in CURL manual.

58.4.292  OptionStreamDependsE as CURLMBS

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Set E-xclusive stream dependency on another CURL handle.
Notes: (Read and Write property)
See also STREAM_DEPENDS_E option in CURL manual.

58.4.293  OptionStreamWeight as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Set stream weight, 1 - 256.
Notes:
Default is 16.
(Read and Write property)
See also STREAM_WEIGHT option in CURL manual.

58.4.294  OptionSuppressConnectHeaders as Boolean

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Suppress proxy CONNECT response headers from user callbacks.
Notes: (Read and Write property)
See also SUPPRESS_CONNECT_HEADERS option in CURL manual.
58.4.295 OptionTCPFastOpen as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Set TCP Fast Open.
**Notes:** (Read and Write property)
See also TCP_FASTOPEN option in CURL manual.

58.4.296 OptionTCPKeepAlive as Boolean

MBS CURL Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
If set to true, TCP keepalive probes will be sent.
**Notes:**
The delay and frequency of these probes can be controlled by the OptionTCPKeepIdle and OptionTCPKeep-
Interval options, provided the operating system supports them. Set to false (default behavior) to disable
keepalive probes (Added in 7.25.0).
(Read and Write property)
See also TCP_KEEPALIVE option in CURL manual.

58.4.297 OptionTCPKeepIdle as Integer

MBS CURL Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the delay, in seconds, that the operating system will wait while the connection is idle before sending
keepalive probes.
**Notes:**
Not all operating systems support this option. (Added in 7.25.0)
(Read and Write property)
See also TCP_KEEPIDLE option in CURL manual.

58.4.298 OptionTCPKeepInterval as Integer

MBS CURL Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the interval, in seconds, that the operating system will wait between sending keepalive probes.
**Notes:**
Not all operating systems support this option. (Added in 7.25.0)
(Read and Write property)
See also TCP_KEEPINTVL option in CURL manual.
58.4. **CLASS CURLMBS**

### 58.4.299 **OptionTCPNoDelay as Boolean**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An integer specifying whether the TCP_NODELAY option should be set or cleared (true = set, false = clear).

**Notes:**
The option is cleared by default. This will have no effect after the connection has been established.

Setting this option will disable TCP’s Nagle algorithm. The purpose of this algorithm is to try to minimize the number of small packets on the network (where ”small packets” means TCP segments less than the Maximum Segment Size (MSS) for the network).

Maximizing the amount of data sent per TCP segment is good because it amortizes the overhead of the send. However, in some cases (most notably telnet or rlogin) small segments may need to be sent without delay. This is less efficient than sending larger amounts of data at a time, and can contribute to congestion on the network if overdone.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also TCP_NODELAY option in CURL manual.

### 58.4.300 **OptionTFTPBlockSize as Integer**

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Specify block size to use for TFTP data transmission.

**Notes:**
Valid range as per RFC 2348 is 8-65544 bytes. The default of 512 bytes will be used if this option is not specified. The specified block size will only be used pending support by the remote server. If the server does not return an option acknowledgement or returns an option acknowledgement with no blksize, the default of 512 bytes will be used. (added in 7.19.4)
(Read and Write property)
See also TFTP_BLKSIZE option in CURL manual.

### 58.4.301 **OptionTFTPNoOptions as Integer**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether not send any tftp option requests to the server.

**Notes:** (Read and Write property)
See also TFTP_NO_OPTIONS option in CURL manual.
58.4.302 OptionTimeCondition as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The Time condition option. **Notes:**
This defines how the OptionTimeValue time value is treated. You can set this parameter to kTimeConditionIfModifiedSince (1) or kTimeConditionIfUnModifiedSince (2). This feature applies to HTTP and FTP.
The last modification time of a file is not always known and in such instances this feature will have no effect even if the given time condition would have not been met.
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also TIMECONDITION option in CURL manual.

58.4.303 OptionTimeOut as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The maximum time in seconds that you allow the libCURL transfer operation to take. **Notes:**
Normally, name lookups can take a considerable time and limiting operations to less than a few minutes risk aborting perfectly normal operations. This option will cause CURL to use the SIGALRM to enable time-outing system calls.
In unix-like systems, this might cause signals to be used unless CURLOPT_NOSIGNAL is set.
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also TIMEOUT option in CURL manual.

58.4.304 OptionTimeOutMS as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Pass a long as parameter containing the maximum time in milli seconds that you allow the libCURL transfer operation to take. **Notes:**
Normally, name lookups can take a considerable time and limiting operations to less than a few minutes
risk aborting perfectly normal operations. This option will cause CURL to use the SIGALRM to enable
time-outing system calls.
(Read and Write property)
See also TIMEOUT_MS option in CURL manual.

58.4.305 OptionTimeValue as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
This should be the time in seconds since 1 jan 1970, and the time will be used in a condition as specified
with OptionTimeCondition.
Notes:
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also TIMEVALUE option in CURL manual.

58.4.306 OptionTLSAuthPassword as String

MBS CURL Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Sets the TSL authentication password.
Notes:
Please also set OptionTLSAuthType.
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also TLSAUTH_PASSWORD option in CURL manual.

58.4.307 OptionTLSAuthType as String

MBS CURL Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Sets the TLS authentication type.
Notes:
You can set this to "SRP" to use Secure Remote Password authentication.
Please also set username and password.
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also TLSAUTH_TYPE option in CURL manual.
58.4.308 OptionTLSAuthUsername as String

MBS CURL Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the TSL authentication user name.

**Notes:**
Please also set OptionTLSAuthType.
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also TLSAUTH_USERNAME option in CURL manual.

58.4.309 OptionTransferEncoding as Boolean

MBS CURL Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Adds a request for compressed Transfer Encoding in the outgoing HTTP request.

**Notes:**
If the server supports this and so desires, it can respond with the HTTP response sent using a compressed
Transfer-Encoding that will be automatically uncompressed by libCURL on reception.

Transfer-Encoding differs slightly from the Content-Encoding you ask for with OptionAcceptEncoding in
that a Transfer-Encoding is strictly meant to be for the transfer and thus MUST be decoded before the
data arrives in the client. Traditionally, Transfer-Encoding has been much less used and supported by both
HTTP clients and HTTP servers.
(Read and Write property)
See also TRANSFER_ENCODING option in CURL manual.

58.4.310 OptionTransferText as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
True tells the library to use ASCII mode for ftp transfers, instead of the default binary transfer.

**Notes:**
For win32 systems it does not set the stdout to binary mode. This option can be usable when transferring
text data between systems with different views on certain characters, such as newlines or similar.

libCURL does not do a complete ASCII conversion when doing ASCII transfers over FTP. This is a known
limitation/flaw that nobody has rectified. libCURL simply sets the mode to ascii and performs a standard
transfer.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
58.4. **CLASS CURLMBS**

(Read and Write property)
See also **TRANSFERTEXT** option in CURL manual.

### 58.4.311 **OptionUnixSocketPath as String**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Path to Unix domain socket.  
**Notes:** (Read and Write property)  
See also **UNIX_SOCKET_PATH** option in CURL manual.

### 58.4.312 **OptionUnrestrictedAuth as Boolean**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A boolean parameter tells the library it can continue to send authentication (user+password) when following locations, even when hostname changed.  
**Notes:**  
This option is meaningful only when setting FollowOption.

The Lasterror property is set. 0 for success. 
You can set this value and later you can read it, but you cannot read the default value.  
(Read and Write property)  
See also **UNRESTRICTED_AUTH** option in CURL manual.

### 58.4.313 **OptionUpload as Boolean**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True tells the library to prepare for an upload.  
**Notes:**  
The OptionInFileSize or OptionInFileSizeLarge options are also interesting for uploads. If the protocol is HTTP, uploading means using the PUT request unless you tell libCURL otherwise.

Using PUT with HTTP 1.1 implies the use of a ”Expect: 100-continue” header. You can disable this header with OptionHTTPHeader as usual.

If you use PUT to a HTTP 1.1 server, you can upload data without knowing the size before starting the transfer if you use chunked encoding. You enable this by adding a header like ”Transfer-Encoding: chunked” with OptionHTTPHeader. With HTTP 1.0 or without chunked transfer, you must specify the size.
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also UPLOAD option in CURL manual.

58.4.314 OptionURL as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The actual URL to deal with.
**Notes:**
If you need to pass username or password, please consider using the OptionUsername and OptionPassword properties. If your username or password contains characters like @ or :, you must use those properties.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

The parameter should be a char * to a zero terminated string. The string must remain present until CURL no longer needs it, as it doesn’t copy the string.

If the given URL lacks the protocol part ("http://" or "ftp://" etc), it will attempt to guess which protocol to use based on the given host name. If the given protocol of the set URL is not supported, libCURL will return on error (kError_UNSUPPORTED_PROTOCOL) when you call Perform. Use VersionInfo for detailed info on which protocols that are supported.

The string given to CURLOPT_URL must be url-encoded and following the RFC 2396:
http://CURL.haxx.se/rfc/rfc2396.txt

CURLOPT_URL is the only option that must be set before Perform is called.
For file uploads or downloads, please include the file name in the URL.

Please do never include username and passwords in URLs, as those get often written to log files and would reveal your credentials!
Instead use OptionUsername and OptionPassword.
(Read and Write property)
See also URL option in CURL manual.

58.4.315 OptionUserAgent as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The user agent string to pass to the server.
Notes:
It will be used to set the User-Agent: header in the http request sent to the remote server. This can be used to fool servers or scripts. You can also set any custom header with OptionHTTPHeader.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also USERAGENT option in CURL manual.

58.4.316 OptionUsername as String

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
The user name to be used in protocol authentication
Notes:
In order to specify the password to be used in conjunction with the user name use the OptionPassword option
(Read and Write property)
See also USERNAME option in CURL manual.

58.4.317 OptionUseSSL as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Request using SSL / TLS for the transfer.
Notes:
Set to an integer using one of the values from below, to make libCURL use your desired level of SSL for the transfer.
These are all protocols that start out plain text and get "upgraded" to SSL using the STARTTLS command. This is for enabling SSL/TLS when you use FTP, SMTP, POP3, IMAP etc.

| CURLUSESSL_NONE | 0 | Don’t attempt to use SSL. |
| CURLUSESSL_TRY  | 1 | Try using SSL, proceed as normal otherwise. |
| CURLUSESSL_CONTROL | 2 | Require SSL for the control connection or fail with CURLE_USE_SSL_FAILED. |
| CURLUSESSL_ALL   | 3 | Require SSL for all communication or fail with CURLE_USE_SSL_FAILED. |

(Read and Write property)
See also USE_SSL option in CURL manual.
58.4.318  OptionVerbose as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether debug messages are sent to the DebugMessage event.  
**Notes:**
- Default is false.
- You need to subclass the CURLMBS class to add code in the DebugMessage event.
- Or you set CollectDebugData = true and later query DebugData property.
- Or you use CreateMTDebugOutputFile to stream them to a file.

(Read and Write property)

See also **VERBOSE** option in CURL manual.

58.4.319  OptionWildCardMatch as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Enable wildcard matching.  
**Notes:**
- Set onoff to true if you want to transfer multiple files according to a file name pattern. The pattern can be specified as part of the OptionURL option, using an fnmatch-like pattern (Shell Pattern Matching) in the last part of URL (file name).

By default, libCURL uses its internal wildcard matching implementation. You can provide your own matching function by the CURLMBS.FileNameMatch event.

A brief introduction of its syntax follows:

- **- ASTERISK**

  ftp://example.com/some/path/*.txt (for all txt’s from the root directory)

- **? - QUESTION MARK**

  Question mark matches any (exactly one) character.

  ftp://example.com/some/path/photo?.jpeg

- **[ - BRACKET EXPRESSION**

  The left bracket opens a bracket expression. The question mark and asterisk have no special meaning in a
58.4. **CLASS CURLMBS**

bracket expression. Each bracket expression ends by the right bracket and matches exactly one character. Some examples follow:

\[
[\text{a-zA-Z0-9}] \text{ or } [\text{f-gF-G}] - \text{character interval} \\
[\text{abc}] - \text{character enumeration} \\
[\text{\textasciitilde abc}] \text{ or } [\text{!abc}] - \text{negation} \\
[\text{[:name:]}] - \text{class expression. Supported classes are alnum,lower, space, alpha, digit, print, upper, blank, graph, xdigit.} \\
[\text{[]-!\textasciitilde}] - \text{special case - matches only ‘-’, ‘’} \\
[\text{\textbackslash \textbackslash \textbackslash}] - \text{escape syntax. Matches ‘‘ ‘’} \\
\]

Using the rules above, a file name pattern can be constructed:

ftp://example.com/some/path/ [\text{a-z [:upper:]} \text{\textbackslash \textbackslash}] .jpeg

This feature is only supported for FTP download. Not for SFTP or HTTP. (Read and Write property)
See also **WILDCARDMATCH** option in CURL manual.

### 58.4.320 OptionXOAuth2Bearer as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The XOAUTH2 bearer token. **Notes:** (Read and Write property) See also **XOAUTH2, BEARER** option in CURL manual.

### 58.4.321 OutputData as String

MBS CURL Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The output data from CURL. **Notes:**
If CollectOutputData property is true, the plugin puts the data received in write event also into this property, so you can grab it after the transfer. Use ClearData method to clear when reusing CURL object. (Read only property)

### 58.4.322 Paused as Boolean

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether transfer is paused.
Notes:
You can set it to true while transfer runs to pause it.
(Read and Write property)

58.4.323 ProgressDownloadCurrent as Int64

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Bytes downloaded so far.
**Notes:** (Read only property)

58.4.324 ProgressDownloadTotal as Int64

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Bytes to download in total.
**Notes:** (Read only property)

58.4.325 ProgressPercent as Double

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Current download/upload progress in percent.
**Notes:**
Range from 0 to 100.
(Read only property)

58.4.326 ProgressUploadCurrent as Int64

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Bytes uploaded so far.
**Notes:** (Read only property)

58.4.327 ProgressUploadTotal as Int64

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Bytes to upload in total.
**Notes:** (Read only property)
58.4. CLASS CURLMBS

58.4.328 Version as CURLVersionMBS

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a version object to a filled with information about various run-time features in libCURL. **Notes:** (Read only property)

58.4.329 YieldTime as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether plugin should yield time. **Notes:** If set the plugin will yield time to Realbasic back so threads and timers work while you download. Seems like in RB 2009 this property only has effect if you run CURL in a thread. (Read and Write property)

58.4.330 Events

58.4.331 ChunkBegin(FileInfo as CURLFileInfoMBS, Remains as Integer) as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event called on begin of a new chunk. **Notes:** If splitting of data transfer is enabled, this callback is called before download of an individual chunk started. Note that parameter "remains" works only for FTP wildcard downloading (for now), otherwise is not used.

58.4.332 ChunkEnd(FileInfo as CURLFileInfoMBS, Remains as Integer) as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Download of a chunk ended. **Notes:** If splitting of data transfer is enabled this callback is called after download of an individual chunk finished. This event is called for skipped or downloaded files.
58.4.333  DebugMessage(infotype as Integer, data as string, dataSize as Integer)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A debug event to get data of ongoing process.

**Notes:**
You may need to set OptionVerbose to true.

infotype constants:

<table>
<thead>
<tr>
<th>Constant</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kInfo_TEXT</td>
<td>The data is informational text.</td>
</tr>
<tr>
<td>kInfo_HEADER_IN</td>
<td>The data is header (or header-like) data received from the peer.</td>
</tr>
<tr>
<td>kInfo_HEADER_OUT</td>
<td>The data is header (or header-like) data sent to the peer.</td>
</tr>
<tr>
<td>kInfo_DATA_IN</td>
<td>The data is protocol data received from the peer.</td>
</tr>
<tr>
<td>kInfo_DATA_OUT</td>
<td>The data is protocol data sent to the peer.</td>
</tr>
<tr>
<td>kInfo_SSL_DATA_IN</td>
<td>The data is protocol data received from the peer.</td>
</tr>
<tr>
<td>kInfo_SSL_DATA_OUT</td>
<td>The data is protocol data sent to the peer.</td>
</tr>
</tbody>
</table>

If you set CollectDebugData, the plugin will collect the messages and provide them via the DebugData property. You can still use this event to write your own log instead of in addition.

58.4.334  FileNameMatch(Pattern as String, Name as String) as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Match a file against a pattern.

**Notes:**
If you don’t implement this event, you get the default implementation from CURL.
Return kFileNameMatchNoMatch, kFileNameMatchIsMatch or kFileNameMatchFailed.

58.4.335  Finished(Result as Integer)

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The event called when transfer has finished.

**Notes:**
For Perform and PerformMT it is called before Perform function returns, so in PerformMT this is called on the thread.
For use with CURLMultiMBS, it is called after TransferFinished event and before TransfersFinished event.
If you want to modify GUI and use PeformMT, you may need to start a timer to do so.
58.4.336 Header(data as string, dataSize as Integer) as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
New Header data was received.

**Notes:**
You can get error 23 if you don’t return lenb(data) in this event.
Or just leave it empty so RB will not include it in your application the plugin will return lenb(data) itself.

If you set CollectHeaderData to true, the plugin will collect the messages and provide them via the Header-
Data property. You can still use this event to write your own log instead of in addition.

58.4.337 Progress(dltotal as Int64, dlnow as Int64, ultotal as Int64, ulnow as
Int64, percent as Double) as boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
An event to report progress of ongoing transfers.

**Notes:**
This function gets called by libCURL with a frequent interval during operation (roughly once per second)
no matter if data is being transferred or not. Unknown/unused argument values passed to the callback will
be set to zero (like if you only download data, the upload size will remain 0).
Returning a true from this event will cause libCURL to abort the transfer and return kError_ABORTED_BY_CALLBACK.

You can run CURL from a thread to download several things at the same time or keep the GUI more
responsive. For better GUI, you can even call a method like app.DoEvents to get the GUI updated more
often.

When sending email, ultotal may be zero. In that case use OptionInFileSize to know size of email to upload.

58.4.338 Read(count as Integer) as string

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This event gets called by libCURL as soon as it needs to read data in order to send it to the peer.

**Notes:**
Return the number of bytes requested. Never return a string with lenb(string) > count. You can return 0 to
inform about end of file.

If you stop the current transfer by returning 0 "pre-maturely" (i.e before the server expected it, like when
you’ve told you will upload N bytes and you upload less than N bytes), you may experience that the server
"hangs" waiting for the rest of the data that won’t come.
The read event may return CURL_READFUNC_ABORT (& h10000000) to stop the current operation immediately, resulting in a kError_ABORTED_BY_CALLBACK error code from the transfer (Added in 7.12.1)

This event is not called when using PerformMT.

If you provide Input data via SetInputData or OpenMTInputFile method, this event is not called and data is taken from the data you provided.

58.4.339 RestartRead() as boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function:
An event to inform you that reading on the file needs to start at the beginning again.
Notes:
Return true on success.
If you use a binarystream for reading you will have to set position to 0 in this event.

This event is not called when using PerformMT.

58.4.340 Seek(pos as Int64, whence as Integer) as Integer

MBS CURL Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function:
Called when CURL needs to perform a seek.
Notes:
Normally only needed if you resume a download (Seek forward) or upload is reset (seek back).
Whence is kSeekOriginCurrent, kSeekOriginEnd or kSeekOriginSet.
Please return one of this constants: kSeekReturnCantSeek, kSeekReturnFail or kSeekReturnOk.

58.4.341 SSHKey(KnownKey as string, KnownKeyLength as Integer, KnownKeyType as Integer, FoundKey as string, FoundKeyLength as Integer, FoundKeyType as Integer, MatchStatus as Integer) as Integer

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function:
The event for known hosts callback for SFTP and SCP.
Notes:
KnownKey: The known key as string encoded with base64 if KnownKeyLength is zero, otherwise the "raw" data.
KnownKeyLength: The length of the key. Zero for base64 encoded key.
KnownKeyType: The type of the key. (0 = Unknown, 1 = RSA1, 2 = RSA, 3 = DSS)
FoundKey: The found key as string encoded with base64 if FoundKeyLength is zero, otherwise the "raw" data.
FoundKeyLength: The length of the key. Zero for base64 encoded key.
FoundKeyType: The type of the key. (0 = Unknown, 1 = RSA1, 2 = RSA, 3 = DSS)
MatchStatus: The status CURL found. (0 = OK, 1 = Mismatch, 2 = Missing)

Return one of the following values:

<table>
<thead>
<tr>
<th>CURLKHSTAT</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURLKHSTAT_FINE_ADD_TO_FILE</td>
<td>0  Fine and add to file</td>
</tr>
<tr>
<td>CURLKHSTAT_FINE</td>
<td>1  Fine</td>
</tr>
<tr>
<td>CURLKHSTAT_REJECT</td>
<td>2  reject the connection, return an error</td>
</tr>
<tr>
<td>CURLKHSTAT_DEFER</td>
<td>3  do not accept it, but we can’t answer right now so this causes a CURLE_DEFER error but otherwise the connection will be left intact etc</td>
</tr>
</tbody>
</table>

### 58.4.342 Write(data as string, dataSize as Integer) as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This event gets called by libCURL as soon as there is data received that needs to be saved. **Notes:** Return the number of bytes actually taken care of. If that amount differs from the amount passed to your function, it'll signal an error to the library and it will abort the transfer and return kError_WRITE_ERROR.

This function may be called with zero bytes data if the transfered file is empty.

The event function will be passed as much data as possible in all invokes, but you cannot possibly make any assumptions. It may be one byte, it may be thousands. The maximum amount of data that can be passed to the write callback is defined in the CURL.h header file: CURL_MAX_WRITE_SIZE (16384).

If you set CollectOutputData to true, the plugin will automatically collect the data and provide it to you after the transfer with the OutputData property. This collecting feature will only work right, if there is enough free memory. You can of course still process data yourself in this event instead of in addition.

### 58.4.343 Constants

#### 58.4.344 kAUTH_ANY = & hFFFFFFFEF

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the authentication constants for the Option-HTTPAuth property.
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Notes: all types set

58.4.345  kAUTH_ANYSAFE = & hFFFFFFFFE

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the authentication constants for the Option-HTTPAuth property.

58.4.346  kAUTH_BASIC = 1

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the authentication constants for the Option-HTTPAuth property.
Notes: Basic (default)

58.4.347  kAUTH_DIGEST = 2

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the authentication constants for the Option-HTTPAuth property.
Notes: Digest

58.4.348  kAUTH_DIGEST_IE = 16

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the authentication constants for the Option-HTTPAuth property.
Notes: HTTP Digest authentication with an IE flavor. Digest authentication is defined in RFC 2617 and is a more secure way to do authentication over public networks than the regular old-fashioned Basic method. The IE flavor is simply that libCURL will use a special "quirk" that IE is known to have used before version 7 and that some servers require the client to use.

58.4.349  kAUTH_GSSNEGOTIATE = 4

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the authentication constants for the Option-HTTPAuth property.
Notes: GSS-Negotiate
Please check SupportsGSSNEGOTIATE property in CURLVersionMBS class whether this is supported/implemented by your copy of the CURL library.

58.4.350 kAUTH_NEGOTIATE = 4

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the authentication constants for the Option-HTTPAuth property.

**Notes:**

HTTP Negotiate (SPNEGO) authentication. Negotiate authentication is defined in RFC 4559 and is the most secure way to perform authentication over HTTP.

You need to build libCURL with a suitable GSS-API library or SSPI on Windows for this to work.

58.4.351 kAUTH_NONE = 0

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the authentication constants for the Option-HTTPAuth property.

58.4.352 kAUTH_NTLM = 8

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the authentication constants for the Option-HTTPAuth property.

58.4.353 kAUTH_NTLM_WB = 32

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the authentication constants for the Option-HTTPAuth property.

**Notes:**

NTLM delegating to winbind helper. Authentication is performed by a separate binary application that is executed when needed. The name of the application is specified at compile time but is typically /usr/bin/ntlm_auth

Note that libCURL will fork when necessary to run the winbind application and kill it when complete, calling waitpid() to await its exit when done. On POSIX operating systems, killing the process will cause a SIGCHLD signal to be raised (regardless of whether OptionNoSignal is set), which must be handled intelligently by the application. In particular, the application must not unconditionally call wait() in its SIGCHLD signal handler to avoid being subject to a race condition. This behavior is subject to change in future versions of libCURL.
58.4.354  kAUTH_Only = & h80000000

MBS CURL Plugin, Plugin Version: 15.2. Function: One of the authentication constants for the Option-HTTPAuth property.
Notes: This is a meta symbol. OR this value together with a single specific auth value to force libCURL to probe for un-restricted auth and if not, only that single auth algorithm is acceptable.

58.4.355  kChunkBeginFailed = 1

MBS CURL Plugin, Plugin Version: 15.2. Function: One of the result values for the ChunkBegin event.
Notes: Failed, so we exit downloads.

58.4.356  kChunkBeginOK = 0

MBS CURL Plugin, Plugin Version: 15.2. Function: One of the result values for the ChunkBegin event.
Notes: OK, download this file.

58.4.357  kChunkBeginSkip = 2

MBS CURL Plugin, Plugin Version: 15.2. Function: One of the result values for the ChunkBegin event.
Notes: Skip the file.

58.4.358  kChunkEndFailed = 1

MBS CURL Plugin, Plugin Version: 15.2. Function: One of the result values for the ChunkEnd event.
Notes: Failed, so we exit downloads.

58.4.359  kChunkEndOK = 0

MBS CURL Plugin, Plugin Version: 15.2. Function: One of the result values for the ChunkEnd event.
Notes: Download success.
58.4.360 kError_ABORTED_BY_CALLBACK = 42

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.4.361 kErrorAGAIN = 81

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** socket is not ready for send/recv, wait till it’s ready and try again (Added in CURL 7.18.2)

58.4.362 kError_BAD_CONTENT_ENCODING = 61

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** Unrecognized transfer encoding

58.4.363 kError_BAD_DOWNLOAD_RESUME = 36

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** couldn’t resume download

58.4.364 kError_BAD_FUNCTION_ARGUMENT = 43

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.4.365 kError_CHUNK_FAILED = 88

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** Chunk callback reported error.

58.4.366 kError_CONV_FAILED = 75

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** Conversion failed.
58.4.367  kError_CONV_REQD = 76

MBS CURL Plugin, Plugin Version: 11.2. Function: One of the error constants for the Error event. Notes: Not used with plugin.

58.4.368  kError_COULDNT_CONNECT = 7


58.4.369  kError_COULDNT_RESOLVE_HOST = 6


58.4.370  kError_COULDNT_RESOLVE_PROXY = 5


58.4.371  kError_FAILED_INIT = 2


58.4.372  kError_FILESIZE_EXCEEDED = 63

MBS CURL Plugin, Plugin Version: 9.8. Function: One of the error constants for the Error event. Notes: Maximum file size exceeded

58.4.373  kError_FILE_COULDNT_READ_FILE = 37

58.4.374  kError_FTP_ACCEPT_FAILED = 10

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the error constants for the Error event.  
**Notes:** While waiting for the server to connect back when an active FTP session is used, an error code was sent over the control connection or similar.

58.4.375  kError_FTP_ACCEPT_TIMEOUT = 12

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the error constants for the Error event.  
**Notes:** During an active FTP session while waiting for the server to connect, the OptionAcceptTimeoutMS (or the internal default) timeout expired.

58.4.376  kError_FTP_BAD_FILE_LIST = 87

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event.  
**Notes:** Unable to parse FTP file list.

58.4.377  kError_FTP_CANT_GET_HOST = 15

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.4.378  kError_FTP_COULDNT_RETR_FILE = 19

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.4.379  kError_FTP_COULDNT_SET_TYPE = 17

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event.

58.4.380  kError_FTP_COULDNT_USE_REST = 31

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.  
**Notes:** the REST command failed
58.4.381  kError_FTP_PORT_FAILED = 30

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.
**Notes:** FTP PORT operation failed

58.4.382  kError_FTP_PRET_FAILED = 84

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event.
**Notes:** a PRET command failed

58.4.383  kError_FTP_WEIRD_227_FORMAT = 14

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.4.384  kError_FTP_WEIRD_PASS_REPLY = 11

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.4.385  kError_FTP_WEIRD_PASV_REPLY = 13

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.4.386  kError_FTP_WEIRD_SERVER_REPLY = 8

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.4.387  kError_FUNCTION_NOT_FOUND = 41

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.4.388  kError_GOT_NOTHING = 52

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.
**Notes:** when this is a specific error
58.4.389  kError_HTTP2 = 16

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the error constants for the Error event.  
**Notes:** A problem was detected in the HTTP2 framing layer. This is somewhat generic and can be one out of several problems, see the error buffer for details.

58.4.390  kError_HTTP2_STREAM = 92

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the error constants for the Error event.  
**Notes:** stream error in HTTP/2 framing layer

58.4.391  kError_HTTP_POST_ERROR = 34

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.4.392  kError_HTTP_RETURNED_ERROR = 22

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.4.393  kError_INTERFACE_FAILED = 45

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.4.394  kError_LDAP_CANNOT_BIND = 38

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.4.395  kError_LDAP_INVALID_URL = 62

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.  
**Notes:** Invalid LDAP URL
58.4.396 kError_LDAP_SEARCH_FAILED = 39


58.4.397 kError_LOGIN_DENIED = 67

MBS CURL Plugin, Plugin Version: 9.8. Function: One of the error constants for the Error event. Notes: user, password or similar was not accepted and we failed to login

58.4.398 kError_NOT_BUILT_IN = 4

MBS CURL Plugin, Plugin Version: 15.2. Function: One of the error constants for the Error event. Notes: A requested feature, protocol or option was not found built-in in this libCURL due to a build-time decision. This means that a feature or option was not enabled or explicitly disabled when libCURL was built and in order to get it to function you have to get a rebuilt libCURL.

58.4.399 kError_NO_CONNECTION_AVAILABLE = 89

MBS CURL Plugin, Plugin Version: 15.2. Function: One of the error constants for the Error event. Notes: For internal use only, will never be returned by libCURL. No connection available, the session will be queued. (added in 7.30.0)

58.4.400 kError_OK = 0


58.4.401 kError_OPERATION_TIMEDOUT = 28

MBS CURL Plugin, Plugin Version: 11.2. Function: One of the error constants for the Error event.

58.4.402 kError_OUT_OF_MEMORY = 27

58.4.403 kError_PARTIAL_FILE = 18
MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.4.404 kError_PEER_FAILED_VERIFICATION = 51
MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event.

58.4.405 kErrorQUOTE_ERROR = 21
MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event.

58.4.406 kError_RANGE_ERROR = 33
MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event.

58.4.407 kError_READ_ERROR = 26
MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** could open/read from file

58.4.408 kError_RECURSIVE_API_CALL = 93
MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the error constants for the Error event. **Notes:** an api function was called from inside a callback/event.

58.4.409 kError_RECV_ERROR = 56
MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** failure in receiving network data
58.4.410 kError_REMOTE_ACCESS_DENIED = 9

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event.

58.4.411 kError_REMOTE_DISK_FULL = 70

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. 
**Notes:** Out of disk space on server.

58.4.412 kError_REMOTE_FILE_EXISTS = 73

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. 
**Notes:** File already exists.

58.4.413 kError_REMOTE_FILE_NOT_FOUND = 78

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. 
**Notes:** Remote file not found.

58.4.414 kError_RTSP_CSEQ_ERROR = 85

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. 
**Notes:** Mismatch of RTSP CSeq numbers.

58.4.415 kError_RTSP_SESSION_ERROR = 86

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. 
**Notes:** mismatch of RTSP Session Identifiers

58.4.416 kError_SEND_ERROR = 55

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. 
**Notes:** failed sending network data
58.4. **CLASS CURLMBS**

58.4.417  **kError_SEND_FAIL_REWIND = 65**

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** Sending the data requires a rewind that failed

58.4.418  **kError_SSL = 79**

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** Error from the SSH layer, somewhat generic so the error message will be of interest when this has happened.

58.4.419  **kError_SSL_CACERT = 60**

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:**

problem with the CA cert (path?)

You can often workaround by setting OptionSSLVerifyPeer = 0 and OptionSSLVerifyHost = 0. But that reduces security.

58.4.420  **kError_SSL_CACERT_BADFILE = 77**

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** Could not load CACERT file, missing or wrong format.

58.4.421  **kError_SSL_CERTPROBLEM = 58**

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** problem with the local certificate

58.4.422  **kError_SSL_CIPHER = 59**

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** couldn’t use specified cipher
58.4.423  kError_SSL_CONNECT_ERROR = 35

MBS CURL Plugin, Plugin Version: 9.8.  **Function:** One of the error constants for the Error event.  
**Notes:** wrong when connecting with SSL

58.4.424  kError_SSL_CRL_BADFILE = 82

MBS CURL Plugin, Plugin Version: 11.2.  **Function:** One of the error constants for the Error event.  
**Notes:** Could not load CRL file, missing or wrong format (Added in 7.19.0)

58.4.425  kError_SSL_ENGINE_INITFAILED = 66

MBS CURL Plugin, Plugin Version: 9.8.  **Function:** One of the error constants for the Error event.  
**Notes:** failed to initialise ENGINE

58.4.426  kError_SSL_ENGINE_NOTFOUND = 53

MBS CURL Plugin, Plugin Version: 9.8.  **Function:** One of the error constants for the Error event.  
**Notes:** SSL crypto engine not found

58.4.427  kError_SSL_ENGINE_SETFAILED = 54

MBS CURL Plugin, Plugin Version: 9.8.  **Function:** One of the error constants for the Error event.  
**Notes:** can not set SSL crypto engine as default

58.4.428  kError_SSL_INVALIDCERTSTATUS = 91

MBS CURL Plugin, Plugin Version: 18.2.  **Function:** One of the error constants for the Error event.  
**Notes:** invalid certificate status

58.4.429  kError_SSL_ISSUER_ERROR = 83

MBS CURL Plugin, Plugin Version: 11.2.  **Function:** One of the error constants for the Error event.  
**Notes:** Issuer check failed. (Added in CURL 7.19.0)
58.4. **CLASS CURLMBS**

### 58.4.430 kError_SSL_PINNEDPUBKEYNOTMATCH = 90

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the error constants for the Error event.  
**Notes:** specified pinned public key did not match.

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### 58.4.431 kError_SSL_SHUTDOWN_FAILED = 80

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event.  
**Notes:** Failed to shut down the SSL connection.

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### 58.4.432 kError_TELNET_OPTION_SYNTAX = 49

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.  
**Notes:** Malformed telnet option  
See also:

- 58.4.433 kError_TELNET_OPTION_SYNTAX = 49

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### 58.4.433 kError_TELNET_OPTION_SYNTAX = 49

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event.  
See also:

- 58.4.432 kError_TELNET_OPTION_SYNTAX = 49

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### 58.4.434 kError_TFTP_ILLEGAL = 71

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event.  
**Notes:** Illegal TFTP operation.

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### 58.4.435 kError_TFTP_NOSUCHUSER = 74

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event.  
**Notes:** No such user.
58.4.436  \texttt{kError\_TFTP\_NOTFOUND} = 68

MBS CURL Plugin, Plugin Version: 11.2. \textbf{Function}: One of the error constants for the Error event. 
\textbf{Notes}: File not found on server.

58.4.437  \texttt{kError\_TFTP\_PERM} = 69

MBS CURL Plugin, Plugin Version: 11.2. \textbf{Function}: One of the error constants for the Error event. 
\textbf{Notes}: Permission problem on server.

58.4.438  \texttt{kError\_TFTP\_UNKNOWNID} = 72

MBS CURL Plugin, Plugin Version: 11.2. \textbf{Function}: One of the error constants for the Error event. 
\textbf{Notes}: Unknown transfer ID.

58.4.439  \texttt{kError\_TOO\_MANY\_REDIRECTS} = 47

MBS CURL Plugin, Plugin Version: 9.8. \textbf{Function}: One of the error constants for the Error event. 
\textbf{Notes}: catch endless re-direct loops

58.4.440  \texttt{kError\_UNKNOWN\_TELNET\_OPTION} = 48

MBS CURL Plugin, Plugin Version: 9.8. \textbf{Function}: One of the error constants for the Error event. 
\textbf{Notes}: User specified an unknown option

58.4.441  \texttt{kError\_UNSUPPORTED\_PROTOCOL} = 1

MBS CURL Plugin, Plugin Version: 9.8. \textbf{Function}: One of the error constants for the Error event.

58.4.442  \texttt{kError\_UPLOAD\_FAILED} = 25

MBS CURL Plugin, Plugin Version: 11.2. \textbf{Function}: One of the error constants for the Error event.
58.4.443  kError_URL_MALFORMAT = 3

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.4.444  kError_USE_SSL_FAILED = 64

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** Requested FTP SSL level failed

58.4.445  kError_WRITE_ERROR = 23

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.4.446  kFileNameMatchFailed = 2

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the possible return values for FileNameMatch event. **Notes:** Failed.

58.4.447  kFileNameMatchIsMatch = 0

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the possible return values for FileNameMatch event. **Notes:** Is Match.

58.4.448  kFileNameMatchNoMatch = 1

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the possible return values for FileNameMatch event. **Notes:** No match.

58.4.449  kFormArray = 8

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.
58.4.450  kFormBuffer = 11

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.4.451  kFormBufferLength = 13

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.4.452  kFormBufferPtr = 12

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.4.453  kFormContentHeader = 15

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.4.454  kFormContentsLength = 6

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.4.455  kFormContentType = 14

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.4.456  kFormCopyContents = 4

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.4.457  kFormCopyName = 1

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.
58.4.458 kFormEnd = 17

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.4.459 kFormFile = 10

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.4.460 kFormFileContent = 7

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.4.461 kFormFilename = 16

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.4.462 kFormNameLength = 3

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.4.463 kFormPtrContents = 5

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.4.464 kFormPtrName = 2

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.4.465 kFTPAUTH_DEFAULT=0

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the FTP Authentication constants for the OptionFTPPSSLAuth property.
**Notes:** Allow libCURL to decide
58.4.466 kFTPAUTH_SSL=1

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the FTP Authentication constants for the OptionFTPSSLAuth property.
**Notes:** Try "AUTH SSL" first, and only if that fails try "AUTH TLS"

58.4.467 kFTPAUTH_TLS=2

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the FTP Authentication constants for the OptionFTPSSLAuth property.
**Notes:** Try "AUTH TLS" first, and only if that fails try "AUTH SSL"

58.4.468 kFTPMethodDefault = 0

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the FTP CWD method.
**Notes:** let libcurl pick

58.4.469 kFTPMethodMultiCWD = 1

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the FTP CWD method.
**Notes:** single CWD operation for each path part

58.4.470 kFTPMethodNoCWD = 2

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the FTP CWD method.
**Notes:** no CWD at all

58.4.471 kFTPMethodSingleCWD = 3

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the FTP CWD method.
**Notes:** one CWD to full dir, then work on file

58.4.472 kFTPSSL_ALL=3

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the FTP SSL constants for the OptionFTPSSL property.
58.4.473 kFTPSSL_CONTROL=2

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the FTP SSL constants for the OptionFTPSSL property.
**Notes:** Require SSL for the control connection or fail with kError_FTP_SSL_FAILED.

58.4.474 kFTPSSL_NONE=0

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the FTP SSL constants for the OptionFTPSSL property.
**Notes:** Don’t attempt to use SSL.

58.4.475 kFTPSSL_TRY=1

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the FTP SSL constants for the OptionFTPSSL property.
**Notes:** Try using SSL, proceed as normal otherwise.

58.4.476 kGSSAPIDelegationFlag = 2

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the GSS API delegation modes.
**Notes:** delegate always

58.4.477 kGSSAPIDelegationNone = 0

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the GSS API delegation modes.
**Notes:** no delegation (default)

58.4.478 kGSSAPIDelegationPolicyFlag = 1

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the GSS API delegation modes.
**Notes:** if permitted by policy
58.4.479  kHTTP_VERSION_1_0 = 1

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the HTTP Version constants for the Option-HTTPVersion property.  
**Notes:** Enforce HTTP 1.0 requests.

58.4.480  kHTTP_VERSION_1_1 = 2

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the HTTP Version constants for the Option-HTTPVersion property.  
**Notes:** Enforce HTTP 1.1 requests.

58.4.481  kHTTP_VERSION_2TLS = 4

MBS CURL Plugin, Plugin Version: 17.2. **Function:** One of the HTTP Version constants for the Option-HTTPVersion property.  
**Notes:** use version 2 for HTTPS, version 1.1 for HTTP

58.4.482  kHTTP_VERSION_2_0 = 3

MBS CURL Plugin, Plugin Version: 17.2. **Function:** One of the HTTP Version constants for the Option-HTTPVersion property.  
**Notes:** please use HTTP 2 in the request

58.4.483  kHTTP_VERSION_2_PRIOR_KNOWLEDGE = 5

MBS CURL Plugin, Plugin Version: 17.2. **Function:** One of the HTTP Version constants for the Option-HTTPVersion property.  
**Notes:** please use HTTP 2 without HTTP/1.1 Upgrade

58.4.484  kHTTP_VERSION_NONE = 0

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the HTTP Version constants for the Option-HTTPVersion property.  
**Notes:** We don’t care about what version the library uses. libCURL will use whatever it thinks fit.
58.4. CLASS CURLMBS

58.4.485  kINFO_DATA_IN = 3

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the info constants for the DebugMessage event. **Notes:** The data is protocol data received from the peer.

58.4.486  kINFO_DATA_OUT = 4

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the info constants for the DebugMessage event. **Notes:** The data is protocol data sent to the peer.

58.4.487  kINFO_HEADER_IN = 1

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the info constants for the DebugMessage event. **Notes:** The data is header (or header-like) data received from the peer.

58.4.488  kINFO_HEADER_OUT = 2

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the info constants for the DebugMessage event. **Notes:** The data is header (or header-like) data sent to the peer.

58.4.489  kINFO_SSL_DATA_IN = 5

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the info constants for the DebugMessage event. **Notes:** The data is protocol data received from the peer.

58.4.490  kINFO_SSL_DATA_OUT = 6

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the info constants for the DebugMessage event. **Notes:** The data is protocol data sent to the peer.

58.4.491  kINFO_TEXT = 0

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the info constants for the DebugMessage event. **Notes:** The data is informational text.
58.4.492 \textbf{kIPRESOLVE\_V4} = 1

MBS CURL Plugin, Plugin Version: 9.8. \textbf{Function:} One of the IP Resolve constants for the OptionIPResolve property.
\textbf{Example:}

```plaintext
dim c as new CURLMBS
c.OptionIPResolve = c.kIPRESOLVE\_V4
```

58.4.493 \textbf{kIPRESOLVE\_V6} = 2

MBS CURL Plugin, Plugin Version: 9.8. \textbf{Function:} One of the IP Resolve constants for the OptionIPResolve property.
\textbf{Example:}

```plaintext
dim c as new CURLMBS
c.OptionIPResolve = c.kIPRESOLVE\_V6
```

58.4.494 \textbf{kIPRESOLVE\_WHATEVER} = 0

MBS CURL Plugin, Plugin Version: 9.8. \textbf{Function:} One of the IP Resolve constants for the OptionIPResolve property.
\textbf{Example:}

```plaintext
dim c as new CURLMBS
c.OptionIPResolve = c.kIPRESOLVE\_WHATEVER
```

58.4.495 \textbf{kNETRC\_IGNORED} = 0

\textbf{Notes:}

The .netrc will never be read.
This is the default.
58.4. **CLASS CURLMBS**

58.4.496 kNETRC_OPTIONAL=1

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the NetRC constants for the OptionNetRC property.  
**Notes:** A user:password in the URL will be preferred to one in the .netrc.

58.4.497 kNETRC_REQUIRED=2

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the NetRC constants for the OptionNetRC property.  
**Notes:** A user:password in the URL will be ignored. Unless one is set programmatically, the .netrc will be queried.

58.4.498 kProtocolAll = -1

MBS CURL Plugin, Plugin Version: 10.0. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.  
**Notes:** Enable all protocols.

58.4.499 kProtocolDICT = & h200

MBS CURL Plugin, Plugin Version: 10.0. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.  
**Notes:** DICT

58.4.500 kProtocolFILE = & h400

MBS CURL Plugin, Plugin Version: 10.0. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.  
**Notes:** File

58.4.501 kProtocolFTP = 4

MBS CURL Plugin, Plugin Version: 10.0. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.  
**Notes:** FTP
58.4.502  kProtocolFTPS = 8

MBS CURL Plugin, Plugin Version: 10.0. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** FTPS

58.4.503  kProtocolGopher = & h2000000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** Gopher

58.4.504  kProtocolHTTP = 1

MBS CURL Plugin, Plugin Version: 10.0. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** HTTP

58.4.505  kProtocolHTTPS = 2

MBS CURL Plugin, Plugin Version: 10.0. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** HTTPS

58.4.506  kProtocolIMAP = & h1000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** IMAP

58.4.507  kProtocolIMAPS = & h2000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** IMAPS
58.4.508 kProtocolLDAP = & h80

MBS CURL Plugin, Plugin Version: 10.0. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** LDAP

58.4.509 kProtocolLDAPS = & h100

MBS CURL Plugin, Plugin Version: 10.0. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** LDAPS

58.4.510 kProtocolPOP3 = & h4000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** POP3

58.4.511 kProtocolPOP3S = & h8000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** POP3S

58.4.512 kProtocolRTMP = & h80000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** RTMP

58.4.513 kProtocolRTMPE = & h200000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** RTMPE
58.4.514  kProtocolRTMPS = & h800000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** RTMPS

58.4.515  kProtocolRTMPT = & h100000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** RTMPT

58.4.516  kProtocolRTMPTE = & h400000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** RTMPTE

58.4.517  kProtocolRTMPTS = & h1000000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** RTMPTS

58.4.518  kProtocolRTSP = & h40000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** RTSP

58.4.519  kProtocolSCP = & h10

MBS CURL Plugin, Plugin Version: 10.0. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** SCP
58.4.520  \( \text{kProtocolSFTP} = \& h20 \)

MBS CURL Plugin, Plugin Version: 10.0. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** SFTP

58.4.521  \( \text{kProtocolSMB} = \& h4000000 \)

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** SMB

58.4.522  \( \text{kProtocolSMBS} = \& h8000000 \)

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** SMBS

58.4.523  \( \text{kProtocolSMTP} = \& h10000 \)

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** SMTP

58.4.524  \( \text{kProtocolSMTPS} = \& h20000 \)

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** SMTPS

58.4.525  \( \text{kProtocolTelnet} = \& h40 \)

MBS CURL Plugin, Plugin Version: 10.0. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** Telnet
58.4.526  kProtocolTFTP = & h800

MBS CURL Plugin, Plugin Version: 10.0. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** TFTP

58.4.527  kPROXY_HTTP = 0

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the proxy constants for the OptionProxyType property.

58.4.528  kPROXY_HTTP10 = 1

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the proxy constants for the OptionProxyType property.
**Notes:** Force to use CONNECT HTTP/1.0.

58.4.529  kPROXY_HTTP11 = 0

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the proxy constants for the OptionProxyType property.
**Notes:** Connect using HTTP/1.1.

58.4.530  kPROXY_SOCKS4 = 4

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the proxy constants for the OptionProxyType property.

58.4.531  kPROXY_SOCKS4A = 6

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the proxy constants for the OptionProxyType property.
**Notes:** Using SOCKS 4A.
58.4.532 kPROXY_SOCKS5 = 5

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the proxy constants for the OptionProxyType property.

58.4.533 kPROXY_SOCKS5_Hostname = 7

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the proxy constants for the OptionProxyType property.  
**Notes:** Use the SOCKS5 protocol but pass along the host name rather than the IP address. added in 7.18.0

58.4.534 kSeekOriginCurrent = 1

MBS CURL Plugin, Plugin Version: 12.2. **Function:** One of the origin values for seek event. 
**Notes:** Seek relative to current file position.

58.4.535 kSeekOriginEnd = 2

MBS CURL Plugin, Plugin Version: 12.2. **Function:** One of the origin values for seek event. 
**Notes:** Seek relative to end of file.

58.4.536 kSeekOriginSet = 0

MBS CURL Plugin, Plugin Version: 12.2. **Function:** One of the origin values for seek event. 
**Notes:** Seek relative to start of file.

58.4.537 kSeekReturnCantSeek = 3

MBS CURL Plugin, Plugin Version: 12.2. **Function:** One of the result values for the Seek Event. 
**Notes:** Return this value if you can’t seek as you are not using a file, but for example a stream.

58.4.538 kSeekReturnFail = 2

MBS CURL Plugin, Plugin Version: 12.2. **Function:** One of the result values for the Seek Event. 
**Notes:** Returns this value if your seek operation failed.
58.4.539 $k\text{SeekReturnOk} = 1$

MBS CURL Plugin, Plugin Version: 12.2. **Function:** One of the result values for the Seek Event.
**Notes:** Returns this value if your seek operation succeeded.

58.4.540 $k\text{SSHAuthAgent} = 16$

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSH Authentication modes.
**Notes:** agent (ssh-agent, pageant...)

58.4.541 $k\text{SSHAuthAny} = -1$

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSH Authentication modes.
**Notes:** Any allowed

58.4.542 $k\text{SSHAuthDefault} = -1$

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSH Authentication modes.
**Notes:** Default: Any

58.4.543 $k\text{SSHAuthGSSAPI} = 32$

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSH Authentication modes.
**Notes:** gssapi (kerberos, ...)

58.4.544 $k\text{SSHAuthHost} = 4$

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSH Authentication modes.
**Notes:** host key files

58.4.545 $k\text{SSHAuthKeyboard} = 8$

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSH Authentication modes.
**Notes:** keyboard interactive
58.4. CLASS CURLMBS

58.4.546  kSSHAuthNone = 0

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSH Authentication modes. **Notes:** none allowed, silly but complete

58.4.547  kSSHAuthPassword = 2

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSH Authentication modes. **Notes:** password

58.4.548  kSSHAuthPublicKey = 1

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSH Authentication modes. **Notes:** public/private key files

58.4.549  kSSLVersionDefault = 0

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the SSL Version constants for the OptionSSLVersion property.

58.4.550  kSSLVersionSSLv2 = 2

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the SSL Version constants for the OptionSSLVersion property.

58.4.551  kSSLVersionSSLv3 = 3

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the SSL Version constants for the OptionSSLVersion property.

58.4.552  kSSLVersionTLSv1 = 1

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the SSL Version constants for the OptionSSLVersion property.
58.4.553 \( \text{kSSLVersionTLSv10} = 4 \)

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the SSL Version constants for the OptionSSLVersion property.
**Notes:** TLSv1.0 (Added in 7.34.0)

58.4.554 \( \text{kSSLVersionTLSv11} = 5 \)

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the SSL Version constants for the OptionSSLVersion property.
**Notes:** TLSv1.1 (Added in 7.34.0)

58.4.555 \( \text{kSSLVersionTLSv12} = 6 \)

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the SSL Version constants for the OptionSSLVersion property.
**Notes:** TLSv1.2 (Added in 7.34.0)

58.4.556 \( \text{kSSLVersionTLSv13} = 7 \)

MBS CURL Plugin, Plugin Version: 17.2. **Function:** One of the SSL Version constants for the OptionSSLVersion property.
**Notes:** TLSv1.3

58.4.557 \( \text{kTimeConditionIfModifiedSince} = 1 \)

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the time condition constants for the OptionTimeCondition property.

58.4.558 \( \text{kTimeConditionIfUnModifiedSince} = 2 \)

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the time condition constants for the OptionTimeCondition property.
58.4. CLASS CURLMBS

58.4.559 kTimeConditionNone = 0

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the time condition constants for the OptionTimeCondition property.
**Notes:** No condition.

58.4.560 kUseSSLall = 3

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSL constants for the OptionFTPSSL property.
**Notes:** Require SSL for all communication or fail with kError_FTP_SSL_FAILED.

58.4.561 kUseSSLcontrol = 2

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSL constants for the OptionFTPSSL property.
**Notes:** Require SSL for the control connection or fail with kError_FTP_SSL_FAILED.

58.4.562 kUseSSLnone = 0

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSL constants for the OptionFTPSSL property.
**Notes:** Don’t attempt to use SSL.

58.4.563 kUseSSLtry = 1

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSL constants for the OptionFTPSSL property.
**Notes:** Try using SSL, proceed as normal otherwise.
58.5 class CURLMimePartMBS

58.5.1 class CURLMimePartMBS

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for mime parts.

**Notes:**
You can provide data via file path, folderitem, data in memoryblock or string.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

58.5.2 Methods

58.5.3 Constructor

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

58.5.4 Headers as String()

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Queries header.

58.5.5 SetHeaders(headers() as String)

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets header.

58.5.6 Properties

58.5.7 DataMemory as Memoryblock

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The mime part data source from memory data.
**Notes:** (Read and Write property)
58.5.8 **DataString as String**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The mime part data source from memory data.

**Example:**

```vbscript
dim c as new CURLMBS

// add mime
dim p as CURLMimePartMBS = c.AddMimePart

p.name = "Text"
p.FileName = "test.txt"
p.MimeType = "text/plain"
p.DataString = "Hello World"

C.FinishMime

// now you can send...
```

**Notes:** (Read and Write property)

---

58.5.9 **Encoding as String**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The mime data transfer encoder.

**Notes:**

If set to binary, 8bit, 7bit, base64 or quoted-printable, the matching encoding is applied.
(Read and Write property)

---

58.5.10 **File as Folderitem**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The file to stream.

**Notes:**

When you set property, the plugin will open file and may raise IOException on failure.
(Read and Write property)
58.5.11 FileName as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The mime part remote file name.  
**Notes:** 
If mime type is not set, we pick extension from file name. 
This includes gif, jpg, jpeg, png, svg, txt, htm, html, pdf and xml file extensions.  
(Read and Write property)

58.5.12 FilePath as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The mime part data source from named file.  
**Notes:** (Read and Write property)

58.5.13 Lasterror as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last error code.  
**Notes:** (Read and Write property)

58.5.14 MimeType as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The mime part type.  
**Notes:** (Read and Write property)

58.5.15 Name as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The mime/form part name.  
**Notes:** (Read and Write property)

58.5.16 Parent as Variant

58.5.17 Constants

58.5.18 kEncoding7bit = ”7bit”

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the encoding modes. **Notes:** 7bit

58.5.19 kEncoding8bit = ”8bit”

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the encoding modes. **Notes:** 8bit

58.5.20 kEncodingBase64 = ”base64”

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the encoding modes. **Notes:** Base64

58.5.21 kEncodingBinary = ”binary”

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the encoding modes. **Notes:** Binary mode

58.5.22 kEncodingNone = ””

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the encoding modes. **Notes:** No mode, so data is passed through and header has no encoding defined.

58.5.23 kEncodingQuotedPrintable = ”quoted-printable”

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the encoding modes. **Notes:** Quoted printable
58.5.24  kMimeTypeGIF = "image/gif"

MBS CURL Plugin, Plugin Version: 18.2. Function: One of the mime types. Notes: GIF

58.5.25  kMimeTypeHTML = "text/html"

MBS CURL Plugin, Plugin Version: 18.2. Function: One of the mime types. Notes: HTML

58.5.26  kMimeTypeJPEG = "image/jpeg"

MBS CURL Plugin, Plugin Version: 18.2. Function: One of the mime types. Notes: JPEG

58.5.27  kMimeTypePDF = "application/pdf"

MBS CURL Plugin, Plugin Version: 18.2. Function: One of the mime types. Notes: PDF

58.5.28  kMimeTypePNG = "image/png"

MBS CURL Plugin, Plugin Version: 18.2. Function: One of the mime types. Notes: PNG

58.5.29  kMimeTypeSVG = "image/svg+xml"

MBS CURL Plugin, Plugin Version: 18.2. Function: One of the mime types. Notes: SVG

58.5.30  kMimeTypeText = "text/plain"

MBS CURL Plugin, Plugin Version: 18.2. Function: One of the mime types. Notes: Text
58.5.31 kMimeTypeXML = "application/xml"

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the mime types. **Notes:** XML.
58.6 class CURLMissingFunctionExceptionMBS

58.6.1 class CURLMissingFunctionExceptionMBS

MBS CURL Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An exception raised if a CURL library function is not loaded. **Notes:** If you call load library before you use the CURLMBS Constructor, you should never see this. Subclass of the RuntimeException class.
58.7  class CURLMultiMBS

58.7.1  class CURLMultiMBS

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for multiple CURL transfers running in parallel.

58.7.2  Methods

58.7.3  AddCURL(CURL as CURLMBS) as boolean

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Add a standard CURL handle to the multi stack.
**Notes:** Lasterror is set.

58.7.4  CURLs as CURLMBS()

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Queries list of current CURL instances.

58.7.5  ErrorString(ErrorCode as Integer) as String

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Queries text message for a given error code.

58.7.6  Perform

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Checks for things to see.
**Notes:**
When the app thinks there’s data available for CURL it calls this function to read/write whatever there is right now. This returns as soon as the reads and writes are done. This function does not require that there actually is data available for reading or that data can be written, it can be called just in case.

Lasterror is set. This only provides errors etc regarding the whole multi stack. There might still have occurred problems on invidual transfers even when this returns OK.
Sets RunningTransfers property.

58.7.7 RemoveCURL(CURL as CURLMBS) as boolean

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Removes a CURL handle from the multi stack again. **Notes:**

Lasterror is set.
Plugin calls this automatically when TransferFinished event was called.

58.7.8 Properties

58.7.9 ChunkLengthPenaltySize as Int64

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A connection with a chunk length longer than this will not be considered for pipelining. **Notes:** (Read and Write property)

58.7.10 ContentLengthPenaltySize as Int64

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A connection with a content-length longer than this will not be considered for pipelining. **Notes:** (Read and Write property)

58.7.11 Handle as Integer

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal object reference. **Notes:** (Read only property)

58.7.12 Lasterror as Integer

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last error code. **Notes:** (Read and Write property)
58.7. **CLASS CURLMULTIMBS**

### 58.7.13 MaxConnects as Integer

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Maximum number of entries in the connection cache. **Notes:** (Read and Write property)

### 58.7.14 MaxHostConnections as Integer

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Maximum number of (pipelining) connections to one host. **Notes:** (Read and Write property)

### 58.7.15 MaxPipelineLength as Integer

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Maximum number of requests in a pipeline. **Notes:** (Read and Write property)

### 58.7.16 MaxTotalConnections as Integer

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Maximum number of open connections in total. **Notes:** (Read and Write property)

### 58.7.17 Pipelining as Integer

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set to 1 to enable pipelining for this multi handle. **Notes:**
- Only for HTTP protocol.
- Used to be a boolean property for 15.0 to 18.1, but changed to integer for 18.2.
  (Read and Write property)

### 58.7.18 RunningTransfers as Integer

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Number of running transfers.
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Notes:
Set by Perform method.
(Read only property)

58.7.19 Events

58.7.20 TransferFinished(CURL as CURLMBS, result as Integer, RemainingFinishedTransfers as Integer)

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
One transfer finished.
**Notes:**
Query CURL object for details.
Result is the result of the transfer as returned by Perform method of CURL object.
RemainingFinishedTransfers is how many transfers are also finished and will be called right after this event.

This event fires always when the queue is empty.
You may want to turn off the timer calling Perform method when this event fires.
Later you can start timer again if you call Add method.

58.7.21 TransfersFinished

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
All pending transfers finished.

58.7.22 Constants

58.7.23 kErrorAddedAlready = 7

MBS CURL Plugin, Plugin Version: 15.0. **Function:** One of the multi interface error codes.
**Notes:** An easy handle already added to a multi handle was attempted to get added - again.

58.7.24 kErrorBadEadyHandle = 2

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the multi interface error codes.
**Notes:** An easy handle was not good/valid.
58.7.25 \texttt{kErrorBadHandle} = 1

MBS CURL Plugin, Plugin Version: 15.0. \textbf{Function}: One of the multi interface error codes. \textbf{Notes}: The passed-in handle is not a valid CURLM handle.

58.7.26 \texttt{kErrorBadSocket} = 5

MBS CURL Plugin, Plugin Version: 15.0. \textbf{Function}: One of the multi interface error codes. \textbf{Notes}: The passed in socket argument did not match.

58.7.27 \texttt{kErrorCallPerform} = -1

MBS CURL Plugin, Plugin Version: 15.0. \textbf{Function}: One of the multi interface error codes. \textbf{Notes}: Please call Perform soon to do some tasks.

58.7.28 \texttt{kErrorInternalError} = 4

MBS CURL Plugin, Plugin Version: 15.0. \textbf{Function}: One of the multi interface error codes. \textbf{Notes}: This is a libCURL bug.

58.7.29 \texttt{kErrorOK} = 0

MBS CURL Plugin, Plugin Version: 15.0. \textbf{Function}: One of the multi interface error codes. \textbf{Notes}: Everything OK.

58.7.30 \texttt{kErrorOutOfMemory} = 3

MBS CURL Plugin, Plugin Version: 15.0. \textbf{Function}: One of the multi interface error codes. \textbf{Notes}: Running low on memory.

58.7.31 \texttt{kErrorRecursiveAPICall} = 8

MBS CURL Plugin, Plugin Version: 18.2. \textbf{Function}: One of the multi interface error codes. \textbf{Notes}: An api function was called from inside an event.
58.7.32  kErrorUnknownOption = 6

MBS CURL Plugin, Plugin Version: 15.0. **Function:** One of the multi interface error codes.  
**Notes:** Tried to set unsupported option.

58.7.33  kPipeHTTP1 = 1

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the pipeline modes.  
**Notes:** Pipe with HTTP/1.1.

58.7.34  kPipeMultiPlex = 2

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the pipeline modes.  
**Notes:** Pipe with multiplex.

58.7.35  kPipeNothing = 0

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the pipeline modes.  
**Notes:** No piping.
58.8. CLASS CURLNFILEINFOMBS

58.8 class CURLNFileInfoMBS

58.8.1 class CURLNFileInfoMBS

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for file information.
**Notes:** Content of this structure depends on information which is known and is achievable (e.g. by FTP LIST parsing).

58.8.2 Properties

58.8.3 Date as Date

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The timestamp as a date object.
**Notes:**
As of plugin version 15.2 the CURL library does not parse the timestamp.
So for some timestamp formats we have code in our plugin to do the parsing from the TimeString property.
But this is limited. No seconds and the year is a guess. Files newer in the year than today are from last year and other files from current year. The server doesn’t provide year details.
(Read only property)

58.8.4 FileName as String

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The file name.
**Notes:** (Read only property)

58.8.5 FileType as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The file type.
**Notes:** (Read only property)

58.8.6 Flags as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The flags.
Notes:
Flags define which fields are set.
Also you can just use the Has properties for same information.
(Read only property)

58.8.7  GID as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The group ID.
**Notes:** (Read only property)

58.8.8  GroupString as String

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The group string.
**Notes:** (Read only property)

58.8.9  HardLinks as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The hard link count.
**Notes:** (Read only property)

58.8.10  HasFileName as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
True if filename property is valid.
**Notes:** (Read only property)

58.8.11  HasFileType as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
True if filetype property is valid.
**Notes:** (Read only property)
58.8.12 HasGID as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if GID property is valid. 
**Notes:** (Read only property)

58.8.13 HasHardLinks as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if hardlinks property is valid. 
**Notes:** (Read only property)

58.8.14 HasPermissions as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if permissions property is valid. 
**Notes:** (Read only property)

58.8.15 HasSize as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if size property is valid. 
**Notes:** (Read only property)

58.8.16 HasTime as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if time and date properties have values. 
**Notes:** (Read only property)

58.8.17 HasUID as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if UID field has a value. 
**Notes:** (Read only property)
58.8.18  IsDirectory as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
True if entry is a directory.
**Notes:**
Same as FileType = FileTypeDirectory.
(Read only property)

58.8.19  IsFile as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
True if entry is a regular file.
**Notes:**
Same as FileType = FileTypeFile.
(Read only property)

58.8.20  Permissions as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The permission value.
**Notes:** (Read only property)

58.8.21  PermissionString as String

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The permission string.
**Notes:** (Read only property)

58.8.22  Size as Int64

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The file size.
**Notes:** (Read only property)
58.8. **Target as String**

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The target for a symlink. **Notes:** (Read only property)

58.8. **Time as Int64**

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The time value. **Notes:** (Read only property)

58.8. **TimeString as String**

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The time string parsed. **Notes:** (Read only property)

58.8. **UID as Integer**

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The user ID. **Notes:** (Read only property)

58.8. **UserString as String**

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The user ID as text. **Notes:** (Read only property)

58.8. **Constants**

58.8. **FileTypeDeviceBlock = 3**

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the file type constants. **Notes:** Block Device
58.8.30  FileTypeDeviceChar = 4

MBS CURL Plugin, Plugin Version: 15.2. Function: One of the file type constants.
Notes: Character Device

58.8.31  FileTypeDirectory = 1

MBS CURL Plugin, Plugin Version: 15.2. Function: One of the file type constants.
Notes: Directory

58.8.32  FileTypeDoor = 7

MBS CURL Plugin, Plugin Version: 15.2. Function: One of the file type constants.
Notes: Door, is possible only on Sun Solaris now.

58.8.33  FileTypeFile = 0

MBS CURL Plugin, Plugin Version: 15.2. Function: One of the file type constants.
Notes: Regular file

58.8.34  FileTypeNamedPipe = 5

MBS CURL Plugin, Plugin Version: 15.2. Function: One of the file type constants.
Notes: Named Pipe

58.8.35  FileTypeSocket = 6

MBS CURL Plugin, Plugin Version: 15.2. Function: One of the file type constants.
Notes: Socket

58.8.36  FileTypeSymlink = 2

MBS CURL Plugin, Plugin Version: 15.2. Function: One of the file type constants.
Notes: Symbolic links
58.8.37  **FileTypeUnknown = 8**

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the file type constants.  
**Notes:** Unknown file type. Should never occur.

58.8.38  **FlagKnownFileName = 1**

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the flag constants.  
**Notes:** Filename Known

58.8.39  **FlagKnownFileType = 2**

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the flag constants.  
**Notes:** File Type Known

58.8.40  **FlagKnownGID = 32**

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the flag constants.  
**Notes:** GID Known

58.8.41  **FlagKnownHardLinks = 128**

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the flag constants.  
**Notes:** Hardlink Count Known

58.8.42  **FlagKnownPermissions = 8**

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the flag constants.  
**Notes:** Permissions Known

58.8.43  **FlagKnownSize = 64**

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the flag constants.  
**Notes:** Size Known
58.8.44 FlagKnownTime = 4

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the flag constants.  
**Notes:** Time Known

58.8.45 FlagKnownUID = 16

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the flag constants.  
**Notes:** UID Known
58.9. **CLASS CURLNLISTMBS**

58.9  class CURLNListMBS

58.9.1 class CURLNListMBS

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A class to hold a list of strings from the CURL library.
**Notes:** Data is copied for this list, so you can just keep it around.

58.9.2 Methods

58.9.3 Item(index as Integer) as string

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the item with the given index.
**Notes:** Index is zero based.

58.9.4 List as String()

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Converts list to a string array.

58.9.5 Operator Convert as String()

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Converts list to a string array.

58.9.6 Properties

58.9.7 Count as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Number of items in this list.
**Notes:** (Read only property)
58.10  class CURLNMBS

58.10.1  class CURLNMBS

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A class to wrap libCURL.

**Notes:**
We have two variants:

CURLS* classes include a static CURL library with SSL and SSH.
CURLN* classes include a static CURL library with native SSL on Mac and Windows.
CURL* classes without S need you to supply your own CURL library.

All variants can load a custom CURL library or use the one from the system on Mac and Linux.
If no library is loaded or included, the plugin will try to load the system one in constructor.

from the website libCURL website:
http://CURL.haxx.se/libCURL/

libCURL is a free and easy-to-use client-side URL transfer library, supporting FTP, FTPS, HTTP, HTTPS,
SCP, SFTP, TFTP, TELNET, DICT, FILE and LDAP. libCURL supports SSL certificates, HTTP POST,
HTTP PUT, FTP uploading, HTTP form based upload, proxies, cookies, user+password authentication
(Basic, Digest, NTLM, Negotiate, Kerberos4), file transfer resume, http proxy tunneling and more!

libCURL is highly portable, it builds and works identically on numerous platforms, including Solaris,
NetBSD, FreeBSD, OpenBSD, Darwin, HPUX, IRIX, AIX, Tru64, Linux, UnixWare, HURD, Windows,
Amiga, OS/2, BeOs, Mac OS X, Ultrix, QNX, OpenVMS, RISC OS, Novell NetWare, DOS and more...

libCURL is free, thread-safe, IPv6 compatible, feature rich, well supported, fast, thoroughly documented
and is already used by many known, big and successful companies and numerous applications.

On Linux you may need to install libraries like ldap: apt-get install libldap-2.4.2:i386

58.10.2  Methods

58.10.3  AddMimePart as CURLNMimePartMBS

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Adds a new blank mime part.

**Notes:** Returns mime object, so you can set properties.
58.10.4 ClearData

MBS CURL Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Cleans data properties.
**Notes:** Resets OutputData, DebugData and HeaderData.

58.10.5 CloseMTDebugOutputFile

MBS CURL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Closes the debug output file for PerformMT.
**Notes:**
Call after PerformMT finished.
With 15.2 version of plugin, this also works with Perform.

58.10.6 CloseMTHeaderOutputFile

MBS CURL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Closes the header output file for PerformMT.
**Notes:**
Call after PerformMT finished.
With 15.2 version of plugin, this also works with Perform.

58.10.7 CloseMTInputFile

MBS CURL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Closes the input file for PerformMT.
**Notes:**
Call after PerformMT finished.
With 15.2 version of plugin, this also works with Perform.

58.10.8 CloseMTOutputFile

MBS CURL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Closes the output file for PerformMT.
**Notes:**
Call after PerformMT finished.
With 15.2 version of plugin, this also works with Perform.

58.10.9 CreateMTDebugOutputFile(file as folderitem) as boolean

MBS CURL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a file where debug data is written to.
**Notes:**
Returns true on success and false on failure (e.g. permission error).
With 15.2 version of plugin, this also works with Perform.

58.10.10 CreateMTHeaderOutputFile(file as folderitem) as boolean

MBS CURL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a file where header data is written to.
**Notes:**
Returns true on success and false on failure (e.g. permission error).
With 15.2 version of plugin, this also works with Perform.

58.10.11 CreateMTOutputFile(file as folderitem) as boolean

MBS CURL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a file where output data is written to.
**Notes:**
Returns true on success and false on failure (e.g. permission error).
With 15.2 version of plugin, this also works with Perform.

58.10.12 FileInfos as CURLNFileInfoMBS()

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Queries array with file information.
**Notes:** If you use OptionWildcard, you find after the transfer all CURLNFileInfoMBS objects for all the files/folders found.
58.10. CLASS CURLNMBS

58.10.13 FinishMime

Example:

```vbs
dim c as new CURLNMBS

// add mime
dim p as CURLMimePartMBS = c.AddMimePart

p.name = "Text"
p.FileName = "test.txt"
p.MimeType = "text/plain"
p.DataString = "Hello World"

c.FinishMime
// now you can send...
```

Notes: Please call AddMimePart for each part you like to add and than finally FinishMime before calling perform.

58.10.14 FormAdd(FormControl1 as Integer, Text1 as string, FormControl2 as Integer, FormOptions() as Integer, Texts() as string)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Add a section to a multipart/formdata HTTP POST.
Example:

```vbs
dim c as new CURLNMBS
dim file1 as string = "my-face.jpg"
dim file2 as string = "your-face.jpg"
dim formOptions(-1) as Integer
dim formValues(-1) as string

const CURLFORM_COPYNAME = 1
const CURLFORM_ARRAY = 8
const CURLFORM_FILE = 10

'/* Add two file section using CURLFORM_ARRAY */
formOptions.Append CURLFORM_FILE
formValues.append file1
formOptions.Append CURLFORM_FILE
formValues.append file2
```
/* no option needed for the end marker */
c.FormAdd CURLFORM_COPYNAME, "pictures", CURLFORM_ARRAY, formOptions, formValues

Notes:
Lasterror is set.
See other FormAdd methods for details.
See also:

- 58.10.15 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string) 10112
- 58.10.16 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer) 10113
- 58.10.17 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Number4 as Integer) 10114
- 58.10.18 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Text4 as string) 10114
- 58.10.19 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string) 10115
- 58.10.20 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string, FormOption4 as Integer, Number4 as Integer) 10116
- 58.10.21 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string, FormOption4 as Integer, Number4 as Integer, FormOption5 as integer, Text5 as string) 10118

58.10.15 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Add a section to a multipart/formdata HTTP POST.

Notes:
Lasterror is set.
See other FormAdd methods for details.
See also:

- 58.10.14 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, FormOptions() as Integer, Texts() as string) 10111
- 58.10.16 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer) 10113
58.10. CLASS CURLNMBS

- 58.10.17 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Number4 as Integer)
- 58.10.18 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Text4 as string)
- 58.10.19 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string)
- 58.10.20 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string, FormOption4 as Integer, Number4 as Integer)
- 58.10.21 FormAdd(FormOption1 as integer, Text1 as string, FormOption2 as integer, Text2 as string, FormOption3 as integer, Text3 as string, FormOption4 as integer, Number4 as integer, FormOption5 as integer, Text5 as string)

58.10.16 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Add a section to a multipart/formdata HTTP POST. **Notes:**

Lasterror is set.
See other FormAdd methods for details.
See also:

- 58.10.14 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, FormOptions() as Integer, Texts() as string)
- 58.10.15 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string)
- 58.10.17 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Number4 as Integer)
- 58.10.18 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Text4 as string)
- 58.10.19 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string)
- 58.10.20 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string, FormOption4 as Integer, Number4 as Integer)
- 58.10.21 FormAdd(FormOption1 as integer, Text1 as string, FormOption2 as integer, Text2 as string, FormOption3 as integer, Text3 as string, FormOption4 as integer, Number4 as integer, FormOption5 as integer, Text5 as string)
58.10.17  **FormAdd** (FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Number4 as Integer)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Add a section to a multipart/formdata HTTP POST.

**Notes:**

Lasterror is set.

See other FormAdd methods for details.

See also:

- 58.10.14 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, FormOptions() as Integer, Texts() as string) 10111
- 58.10.15 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string) 10112
- 58.10.16 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer) 10113
- 58.10.18 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Text4 as string) 10114
- 58.10.19 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string) 10115
- 58.10.20 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string, FormOption4 as Integer, Number4 as Integer) 10116
- 58.10.21 FormAdd(FormOption1 as integer, Text1 as string, FormOption2 as integer, Text2 as string, FormOption3 as integer, Text3 as string, FormOption4 as integer, Number4 as integer, FormOption5 as integer, Text5 as string) 10118

58.10.18  **FormAdd** (FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Text4 as string)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Add a section to a multipart/formdata HTTP POST.

**Notes:**

Lasterror is set.

See other FormAdd methods for details.

See also:

- 58.10.14 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, FormOptions() as Integer, Texts() as string) 10111
58.10. CLASS CURLNMBS

- 58.10.15 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string) 10112
- 58.10.16 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer) 10113
- 58.10.17 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Number4 as Integer) 10114
- 58.10.19 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string) 10115
- 58.10.20 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string, FormOption4 as Integer, Number4 as Integer) 10116
- 58.10.21 FormAdd(FormOption1 as integer, Text1 as string, FormOption2 as integer, Text2 as string, FormOption3 as integer, Text3 as string, FormOption4 as integer, Number4 as integer, FormOption5 as integer, Text5 as string) 10118

58.10.19 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Add a section to a multipart/formdata HTTP POST.

**Notes:**

Lasterror is set.

See other FormAdd methods for details.

See also:

- 58.10.14 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, FormOptions() as Integer, Texts() as string) 10111
- 58.10.15 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string) 10112
- 58.10.16 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer) 10113
- 58.10.17 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Number4 as Integer) 10114
- 58.10.18 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Text4 as string) 10114
- 58.10.20 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string, FormOption4 as Integer, Number4 as Integer) 10116
- 58.10.21 FormAdd(FormOption1 as integer, Text1 as string, FormOption2 as integer, Text2 as string, FormOption3 as integer, Text3 as string, FormOption4 as integer, Number4 as integer, FormOption5 as integer, Text5 as string) 10118
58.10.20 **FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string, FormOption4 as Integer, Number4 as Integer)**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Add a section to a multipart/formdata HTTP POST.

**Notes:**

Several FormAdd methods are there. Send a request to support if you need another parameter combination.

Lasterror is set.

FormAdd() is used to append sections when building a multipart/formdata HTTP POST (sometimes referred to as rfc1867-style posts). Append one section at a time until you've added all the sections you want included and then you call FormFinish.

Using POST with HTTP 1.1 implies the use of a "Expect: 100-continue" header. You can disable this header with CURLOPT_HTTPHEADER as usual.

First, there are some basics you need to understand about multipart/formdata posts. Each part consists of at least a NAME and a CONTENTS part. If the part is made for file upload, there are also a stored CONTENT-TYPE and a FILENAME. Below, we'll discuss what options you use to set these properties in the parts you want to add to your post.

The options listed first are for making normal parts. The options from CURLFORM_FILE through CURLFORM_BUFFERLENGTH are for file upload parts.

**CURLFORM_COPYNAME:** followed by a string which provides the name of this part. libCURL copies the string so your application doesn't need to keep it around after this function call. If the name isn't null terminated, or if you'd like it to contain zero bytes, you must set its length with CURLFORM_NAMELENGTH.

**CURLFORM_PTRNAME:** followed by a string which provides the name of this part. libCURL will use the string and refer to the data in your application, so you must make sure it remains until CURL no longer needs it. If the name isn’t null terminated, or if you’d like it to contain zero bytes, you must set its length with CURLFORM_NAMELENGTH.

**CURLFORM_COPYCONTENTS:** followed by a string to the contents of this part, the actual data to send away. libCURL copies the provided data, so your application doesn’t need to keep it around after this function call. If the data isn’t null terminated, or if you’d like it to contain zero bytes, you must set the length of the name with CURLFORM_CONTENTSLENGTH.
CURLFORM_PTRCONTENTS:
followed by a string to the contents of this part, the actual data to send away. libCURL will use the string
and refer to the data in your application, so you must make sure it remains until CURL no longer needs
it. If the data isn’t null terminated, or if you’d like it to contain zero bytes, you must set its length with
CURLFORM_CONTENTSLENGTH.

CURLFORM_CONTENTSLENGTH:
followed by a long giving the length of the contents.

CURLFORM_FILECONTENT:
followed by a filename, causes that file to be read and its contents used as data in this part. This part does
not automatically become a file upload part simply because its data was read from a file.

CURLFORM_FILE:
followed by a filename, makes this part a file upload part. It sets the filename field to the basename of the
provided filename, it reads the contents of the file and passes them as data and sets the content-type if the
given file match one of the internally known file extensions. For CURLFORM_FILE the user may send one
or more files in one part by providing multiple CURLFORM_FILE arguments each followed by the filename
(and each CURLFORM_FILE is allowed to have a CURLFORM_CONTENTTYPE).

CURLFORM_CONTENTTYPE:
is used in combination with CURLFORM_FILE. Followed a string which provides the content-type for this
part, possibly instead of an internally chosen one.

CURLFORM_FILENAME:
is used in combination with CURLFORM_FILE. Followed a string, it tells libCURL to use the given string
as the filename in the file upload part instead of the actual file name.

CURLFORM_BUFFER:
is used for custom file upload parts without use of CURLFORM_FILE. It tells libCURL that the file contents
are already present in a buffer. The parameter is a string which provides the filename field in the content
header.

CURLFORM_BUFFERPTR:
is used in combination with CURLFORM_BUFFER. The parameter is the string to be uploaded. You must
also use CURLFORM_BUFFERLENGTH to set the number of bytes in the buffer. Keep the buffer variable
alive till the upload is finished.

CURLFORM_BUFFERLENGTH:
is used in combination with CURLFORM_BUFFER. The parameter is a long which gives the length of the
buffer.
CURLFORM_ARRAY:
Another possibility to send options to CURL_formadd() is the CURLFORM_ARRAY option, that passes an Integer Array and a String Array defining its value. Each element in the form is constructed using the option from the integer array and the value from the string array. All available options can be used in an array, except the CURLFORM_ARRAY option itself!

CURLFORM_CONTENTHEADER:
specifies extra headers for the form POST section. This takes a CURL_slist prepared in the usual way using CURL_slist_append and appends the list of headers to those libCURL automatically generates. The list must exist while the POST occurs, if you free it before the post completes you may experience problems.

PS: CURLFORM_FILE does not work in all CURL versions on all platforms due to a bug with integer numbers.
See also:

• 58.10.14 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, FormOptions() as Integer, Texts() as string) 10111
• 58.10.15 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string) 10112
• 58.10.16 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer) 10113
• 58.10.17 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Number4 as Integer) 10114
• 58.10.18 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Text4 as string) 10114
• 58.10.19 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string) 10115
• 58.10.21 FormAdd(FormOption1 as integer, Text1 as string, FormOption2 as integer, Text2 as string, FormOption3 as integer, Text3 as string, FormOption4 as integer, Number4 as integer, FormOption5 as integer, Text5 as string) 10118

58.10.21 FormAdd(FormOption1 as integer, Text1 as string, FormOption2 as integer, Text2 as string, FormOption3 as integer, Text3 as string, FormOption4 as integer, Number4 as integer, FormOption5 as integer, Text5 as string)

MBS CURL Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Add a section to a multipart/formdata HTTP POST.

**Notes:**
Lasterror is set.
See other FormAdd methods for details.
See also:
58.10. **CLASS CURLNMBS**

- 58.10.14 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, FormOptions() as Integer, Texts() as string)
- 58.10.15 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string)
- 58.10.16 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer)
- 58.10.17 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Number4 as Integer)
- 58.10.18 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Text4 as string)
- 58.10.19 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string)
- 58.10.20 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string, FormOption4 as Integer, Number4 as Integer)

58.10.22 **FormAddField** *(fieldName as String, fieldValue as String, ContentType as String = "")*

MBS CURL Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Add a section to a multipart/formdata HTTP POST.

**Example:**

```dim d as new CURLNMBS
d.FormAddField("company", "Test, Inc.")```

**Notes:**

For fieldName and ContentType, we use UTF8 always. For fieldValue, we pass through whatever is in the string, so please make sure encoding is working. ContentType is optional.

58.10.23 **FormAddFile** *(fieldName as String, fileName as String, fileContent as string, ContentType as String = "")*

MBS CURL Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Add a section to a multipart/formdata HTTP POST.

**Example:**

```dim d as new CURLNMBS
d.FormAddFile("FileAttachment", "test.txt", "just a form test", "text/plain")```
Notes:
For fieldName, fileName and ContentType, we use UTF8 always. For fieldValue, we pass through whatever is in the string, so please make sure encoding is working.

Filename is ignored, if empty.
ContentType is optional.

58.10.24 FormData as String

MBS CURL Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Queries current form data. Notes: This is more for debugging as it builds form data as if we would send it.

58.10.25 FormFinish

Example:

```plaintext
dim c as new CURLNMB
dim namebuffer as string = "name buffer"
dim namelength as Integer = lenb(namebuffer)
dim buffer as string = "test buffer"
dim htmlbuffer as string = "<HTML>test buffer</HTML>"
dim htmlbufferlength as Integer = lenb(htmlbuffer)
dim file1 as string = "my-face.jpg"
dim file2 as string = "your-face.jpg"
dim formOptions(-1) as Integer
dim formValues(-1) as string
dim recordbuffer as string = "record buffer"
dim recordlength as Integer = lenb(recordbuffer)
```

const CURLOPT NOTHING = 0
const CURLOPT COPYNAME = 1
const CURLOPT PTRNAME = 2
const CURLOPT NAMELENGTH = 3
const CURLOPT COPYCONTENTS = 4
const CURLOPT PTRCONTENTS = 5
const CURLOPT CONTENTSLENGTH = 6
const CURLOPT FILECONTENT = 7
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```c
const CURLOPT_ARRAY = 8
const CURLOPT_FILE = 10
const CURLOPT_BUFFER = 11
const CURLOPT_BUFFERPTR = 12
const CURLOPT_BUFFERLENGTH = 13
const CURLOPT_CONTENTTYPE = 14
const CURLOPT_CONTENTHEADER = 15
const CURLOPT_FILENAME = 16

/* Add simple name/content section */
c.FormAdd CURLOPT_COPYNAME, "name", CURLOPT_COPYCONTENTS, "content"

/* Add simple name/content/contenttype section */
c.FormAdd CURLOPT_COPYNAME, "htmlcode", CURLOPT_COPYCONTENTS, "<HTML><HTML>", CURLOPT_CONTENTTYPE,"text/html"

/* Add name/ptrcontent section */
c.FormAdd CURLOPT_COPYNAME, "name_for_ptrcontent", CURLOPT_PTRCONTENTS, buffer

/* Add ptrname/ptrcontent section */
c.FormAdd CURLOPT_PTRNAME, namebuffer, CURLOPT_PTRCONTENTS, buffer, CURLOPT_NAMELENGTH, namelength

/* Add name/ptrcontent/contenttype section */
c.FormAdd CURLOPT_COPYNAME, "html_code_with_hole", CURLOPT_PTRCONTENTS, htmlbuffer, CURLOPT_CONTENTTYPE, "text/html"

/* Add simple file section */
c.FormAdd CURLOPT_COPYNAME, "picture", CURLOPT_FILE, "my-face.jpg"

/* Add file/contenttype section */
c.FormAdd CURLOPT_COPYNAME, "picture", CURLOPT_FILE, "my-face.jpg", CURLOPT_CONTENTTYPE, "image/jpeg"

/* Add two file section */
c.FormAdd CURLOPT_COPYNAME, "picture", CURLOPT_FILE, "my-face.jpg", CURLOPT_FILE, "your-face.jpg"

/* Add two file section using CURLOPT_ARRAY */
formOptions.Append CURLOPT_FILE
formValues.append file1
formOptions.Append CURLOPT_FILE
formValues.append file2
```
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/* Add a buffer to upload */
c.FormAdd CURLFORM_COPYNAME, "name", CURLFORM_BUFFER, "data", CURLFORM_BUFFERPTR, recordbuffer, CURLFORM_BUFFERLENGTH, recordlength

/* no option needed for the end marker */
c.FormAdd CURLFORM_COPYNAME, "pictures", CURLFORM_ARRAY, formOptions, formValues

/* Add the content of a file as a normal post text value */
c.FormAdd CURLFORM_COPYNAME, "filecontent", CURLFORM_FILECONTENT, ".bashrc"

/* Set the form info */
c.FormFinish

Notes:
Lasterror is set.
The form is assigned to the HTTPPost property.

58.10.26 GetInfoActiveSocket as integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Receive the active socket used by this curl session.

Notes:
If the socket is no longer valid, -1 is returned. When you finish working with the socket, the Destructor closes
the socket and cleanup other resources associated with the handle. This is typically used in combination
with OptionConnectOnly.

This option was added as a replacement for GetInfoLastSocket since that one isn’t working on all platforms.

58.10.27 GetInfoAppConnectTime as Double

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The time stamp when app connected.

58.10.28 GetInfoCertInfo as CURLNListMBS()

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Queries information on the certificate chain.

Example:
dim c as new CURLNMBS

// do some transfer
c.OptionURL = "https://www.mbsplugins.de/

dim e as Integer = c.perform

// query certificate info
dim lists() as CURLNLListMBS = c.GetInfoCertInfo

for each l as CURLNLListMBS in lists
    MsgBox Join(l, EndOfLine)
next

MsgBox c.DebugData

58.10.29 GetInfoConditionUnmet as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Return if the time condition prevented the document to get transferred.

58.10.30 GetInfoConnectTime as Double

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The time, in seconds, it took from the start until the connect to the remote host (or proxy) was completed. **Notes:** The Lasterror property is set. 0 for success.

58.10.31 GetInfoContentLengthDownload as Double

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The content-length of the download. **Notes:**
The Lasterror property is set. 0 for success. This is the value read from the Content-Length: field.

58.10.32 GetInfoContentLengthUpload as Double

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The specified size of the upload.
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Notes: The Lasterror property is set. 0 for success.

58.10.33 GetInfoContentType as string

Notes: The Lasterror property is set. 0 for success.
This is the value read from the Content-Type: field. If you get "", it means that the server didn’t send a valid Content-Type header or that the protocol used doesn’t support this.

58.10.34 GetInfoCookieList as CURLNListMBS

Notes: The Lasterror property is set. 0 for success.
If there are no cookies (cookies for the handle have not been enabled or simply none have been received) the result is nil.

58.10.35 GetInfoEffectiveURL as string

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The last used effective URL.
Notes: The Lasterror property is set. 0 for success.

58.10.36 GetInfoFileTime as Integer

Example:

// init CURL with options
dim d as new CURLNMBS
d.OptionFileTime = true
d.OptionURL = "http://www.monkeybreadsoftware.de/images/mbs.jpg"

// run query
dim e as Integer = d.Perform

// calculate date object
dim da as new Date(1970,1,1,0,0,0)

// show date
ResultText.text = str(d.GetInfoFileTime) + " " + da.ShortDate + " " + da.ShortTime

Notes:
The Lasterror property is set. 0 for success.
If you get -1, it can be because of many reasons (unknown, the server hides it or the server doesn’t support
the command that tells document time etc) and the time of the document is unknown. Note that you must
tell the server to collect this information before the transfer is made, by using the OptionFileTime option or
you will unconditionally get a -1 back. (Added in 7.5)

58.10.37 GetInfoFTPEntryPath as string

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Returns a string holding the path of the entry path.
Notes:
That is the initial path libCURL ended up in when logging on to the remote FTP server.
Empty string if unknown.

58.10.38 GetInfoHeaderSize as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
The total size of all the headers received.
Notes: The Lasterror property is set. 0 for success.

58.10.39 GetInfoHTTPAuthAvail as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
A bitmask indicating the authentication method(s) available.
Notes:
The Lasterror property is set. 0 for success.
The meaning of the bits is explained in the HTTPAuth option.
58.10.40  GetInfoHTTPConnectCode as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last received proxy response code to a CONNECT request.

**Notes:**
The Lasterror property is set. 0 for success.

none

58.10.41  GetInfoHTTPVersion as integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get the http version used in the connection.

**Notes:** The returned value will be kHTTP_VERSION_1_0, kHTTP_VERSION_1_1, or kHTTP_VERSION_2_0, or 0 if the version can’t be determined.

58.10.42  GetInfoLastSocket as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Receive the last socket used by this CURL session.

**Notes:** If the socket is no longer valid, -1 is returned. When you finish working with the socket, the destructor will free the handle as usual and let libCURL close the socket and cleanup other resources associated with the handle. This is typically used in combination with OptionConnectOnly. (Added in 7.15.2)

NOTE: this API is not really working on win64, since the SOCKET type on win64 is 64 bit large while its 'long' is only 32 bits.

58.10.43  GetInfoLocalIP as string

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries local IP.

**Example:**

```vbs
    dim c as new CURLNMBS

    // do some transfer
c.OptionURL = "http://www.mbsplugins.de/
    dim e as Integer = c.perform

    // now check local IP
```
58.10.44  GetInfoLocalPort as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Return the local port of the most recent (primary) connection. **Example:**

dim c as new CURLNMBS

// do some transfer
c.OptionURL = ”http://www.mbsplugins.de/”
dim e as Integer = c.perform

// now check local IP and port
MsgBox c.GetInfoLocalIP+”:"+str(c.GetInfoLocalPort)

58.10.45  GetInfoNameLookupTime as Double

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The time, in seconds, it took from the start until the name resolving was completed. **Notes:** The Lasterror property is set. 0 for success.

58.10.46  GetInfoNumConnects as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** How many new connections libCURL had to create to achieve the previous transfer. **Notes:** The Lasterror property is set. 0 for success.

(only the successful connects are counted)
Combined with RedirectCount you are able to know how many times libCURL successfully reused existing connection(s) or not. See the Connection Options to see how libCURL tries to make persistent connections to save time.

58.10.47  GetInfoOSErrno as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The errno variable from a connect failure.
58.10.48 GetInfoPreTransferTime as Double

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The time, in seconds, it took from the start until the file transfer is just about to begin.
**Notes:**
The Lasterror property is set. 0 for success.
This includes all pre-transfer commands and negotiations that are specific to the particular protocol(s) involved.

58.10.49 GetInfoPrimaryIP as string

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Return the ip address of the most recent (primary) connection.
**Example:**
```vba
dim c as new CURLNMBS

// do some transfer
c.OptionURL = "http://www.mbsplugins.de/

dim e as Integer = c.perform

// now check primary IP and port
MsgBox c.GetInfoPrimaryIP+":"+str(c.GetInfoPrimaryport)
```

58.10.50 GetInfoPrimaryPort as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Return the (remote) port of the most recent (primary) connection.
**Example:**
```vba
dim c as new CURLNMBS

// do some transfer
c.OptionURL = "http://www.mbsplugins.de/

dim e as Integer = c.perform

// now check primary IP and port
MsgBox c.GetInfoPrimaryIP+":"+str(c.GetInfoPrimaryport)
```
58.10.51 GetInfoProtocol as integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get the protocol used in the connection.  
**Notes:** See kProtocol* constants.

58.10.52 GetInfoProxyAuthAvail as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A bitmask indicating the authentication method(s) available for your proxy authentication.  
**Notes:** The Lasterror property is set. 0 for success.

58.10.53 GetInfoProxySSLVerifyResult as integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get the result of the proxy certificate verification.  
**Notes:** receive the result of the certificate verification that was requested (using the OptionProxySSLVerifyPeer option. This is only used for HTTPS proxies.

58.10.54 GetInfoRedirectCount as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The total number of redirections that were actually followed.  
**Notes:** The Lasterror property is set. 0 for success.

58.10.55 GetInfoRedirectTime as Double

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** the total time, in seconds, it took for all redirection steps include name lookup, connect, pretransfer and transfer before final transaction was started.  
**Notes:**  
The Lasterror property is set. 0 for success.  
RedirectTime contains the complete execution time for multiple redirections. (Added in 7.9.7)
58.10.56 GetInfoRedirectURL as string

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The redirection URL.

58.10.57 GetInfoRequestSize as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The total size of the issued requests.
**Notes:**
The Lasterror property is set. 0 for success.
This is so far only for HTTP requests. Note that this may be more than one request if FOLLOWLOCATION is true.

58.10.58 GetInfoResponseCode as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last received HTTP or FTP code.
**Notes:**
The Lasterror property is set. 0 for success.
This will be zero if no server response code has been received. Note that a proxy's CONNECT response should be read with GetInfoHTTPConnectCode and not this.

With HTTP transfer, a successful transfer reports 200 here. If the page is not found, you get 404. Or any other HTTP Response code.

58.10.59 GetInfoRTSPClientCSEQ as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Query RTSP Client sequence counter.

58.10.60 GetInfoRTSPCSEQRecv as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Query RTSP sequence counter received.
58.10.61 GetInfoRTSPServerCSEQ as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Query RTSP Server sequence counter.

58.10.62 GetInfoRTSPSessionID as string

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Query RTSP session ID.

58.10.63 GetInfoScheme as string

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get the URL scheme (sometimes called protocol) used in the connection

58.10.64 GetInfoSizeDownload as Double

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The total amount of bytes that were downloaded.
**Notes:**
The Lasterror property is set. 0 for success.
The amount is only for the latest transfer and will be reset again for each new transfer.

58.10.65 GetInfoSizeUpload as Double

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The total amount of bytes that were uploaded.
**Notes:** The Lasterror property is set. 0 for success.

58.10.66 GetInfoSpeedDownload as Double

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The average download speed that CURL measured for the complete download.
**Notes:** The Lasterror property is set. 0 for success.
58.10.67 GetInfoSpeedUpload as Double

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The average upload speed that CURL measured for the complete upload. **Notes:** The Lasterror property is set. 0 for success.

58.10.68 GetInfoSSLEngines as CURLNListMBS

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Receive a linked-list of OpenSSL crypto-engines supported. **Notes:** The Lasterror property is set. 0 for success. Note that engines are normally implemented in separate dynamic libraries. Hence not all the returned engines may be available at run-time.

58.10.69 GetInfoSSLVerifyResult as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** the result of the certification verification that was requested (using the SSLVerifyPeer option). **Notes:** The Lasterror property is set. 0 for success.

58.10.70 GetInfoStartTransferTime as Double

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** the time, in seconds, it took from the start until the first byte is just about to be transferred. **Notes:** The Lasterror property is set. 0 for success. This includes the pretransfer time and also the time the server needs to calculate the result.

58.10.71 GetInfoTotalTime as Double

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The total time in seconds for the previous transfer, including name resolving, TCP connect etc. **Notes:** The Lasterror property is set. 0 for success.
58.10. CLASS CURLNMBS

58.10.72 LoadAPI

MBS CURL Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads the default CURL library.

**Notes:**
This method is called by the constructor. So you don’t need this except you want to test explicit with APILoaded whether the loading worked before you use the CURLNMBS class.

Loads the “libCURL.dll” Windows library (with SSL support this one max require OpenSSL). Loads on Mac OS X and Linux the libCURL file in /usr/lib.

58.10.73 LoadErrorString as string

MBS CURL Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last error string from the LoadLibrary function.

58.10.74 LoadLibrary(file as folderitem) as boolean

MBS CURL Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads the CURL library from the given path.

**Notes:**
You only need to use this function if you have your own CURL Library.

Loads a Windows DLL, a Linux shared library or a Mac OS X shared library from the given path.

Returns true on success.
See also:
- 58.10.75 LoadLibrary(path as string) as boolean

58.10.75 LoadLibrary(path as string) as boolean

MBS CURL Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads the CURL library from the given path.

**Notes:**
You only need to use this function if you have your own CURL Library.

Loads a Windows DLL, a Linux shared library or a Mac OS X shared library from the given path.
Returns true on success.
See also:

- 58.10.74 LoadLibrary(file as folderitem) as boolean

58.10.76 OpenMTInputFile(file as folderitem, Offset as Integer = 0) as boolean

MBS CURL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Opens input file for reading data while PerformMT runs.
Notes:
The read event is not called with PerformMT.
Offset is helpful for HTTP PUT requests with range, so you can start with an offset.
With 15.2 version of plugin, this also works with Perform.

58.10.77 Perform as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Perform a file transfer
Notes:
This function is called after all the options are set, and will perform the transfer as described in the options.

You can do any amount of calls to Perform. If you intend to transfer more than one file, you are even encouraged to do so. libCURL will then attempt to re-use the same connection for the following transfers, thus making the operations faster, less CPU intense and using less network resources. Just note that you will have to use the option properties between the invokes to set options for the following Perform.

Typical error codes are 6 for a wrong domain name in the URL, 67 for wrong name/password combination, 60 for missing SSL settings, 1 for an unsupported protocol.

Possible values for the return value:

The error value -1 is used from the plugin to report that something is missing like OpenSSL dlls on Windows.

With SFTP, you can get logged error "Upload failed: Operation failed (4/-31)" when upload uses path to folder instead of file in URL.
58.10. **CLASS CURLNMBS**

### 58.10.78 PerformMT as Integer

MBS CURL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Perform a file transfer with preemptive multithreading.

**Notes:**

Same as Perform, but with additional multithreading.

Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.

As the actual transfer runs on a preemptive thread, the events Debug, Write, Header and Progress are called asynchronously and run a few milliseconds later. You can return true in Progress event to stop transfer, but you will get more events before the transfer is stopped.

You can call CreateMTDebugOutputFile, CreateMTHHeaderOutputFile and CreateMTOOutputFile before PerformMT to have output data be written into files. Call OpenMTInputFile to let the plugin read input data (form post or upload) from an input file.

Do not call other CURL functions on this CURLNMBS instance while PerformMT is running!

Typical error codes are 6 for a wrong domain name in the URL, 67 for wrong name/password combination, 60 for missing SSL settings, 1 for an unsupported protocol.

To avoid trouble with app hanging on quit of application, be sure to set cancel property to true in window close event to cancel any pending transfer.

### 58.10.79 ReceiveData(byref data as Memoryblock, BytesToRead as Int64) as Int64


**Notes:**

This function receives raw data from the established connection. You may use it together with SendData to implement custom protocols using libcurl. This functionality can be particularly useful if you use proxies and/or SSL encryption: libcurl will take care of proxy negotiation and connection set-up.

The data memoryblock is a reference to your variable that will get the received data. BytesToRead is the maximum amount of data you can get in that buffer. The function returns the number of received bytes.

To establish the connection, set OptionConnectOnly = true before calling Perform. Note that ReceiveData does not work on connections that were created without this option.
The call will return kError_AGAIN if there is no data to read - the socket is used in non-blocking mode internally. When kError_AGAIN is returned, wait for data to arrive.

Wait on the socket only if ReceiveData returns kError_AGAIN. The reason for this is libcurl or the SSL library may internally cache some data, therefore you should call ReceiveData until all data is read which would include any cached data.

Furthermore if you wait on the socket and it tells you there is data to read, ReceiveData may return CURLE_AGAIN if the only data that was read was for internal SSL processing, and no other data is available.

On success, sets lasterror to kError_OK (0), stores the received data into memory block, and returns the number of bytes it actually read.

On failure, returns zero and lasterror is set to the appropriate error code.

The function may return kError_AGAIN. In this case, use your operating system facilities to wait until data can be read, and retry.

Reading exactly 0 bytes indicates a closed connection.

If there’s no socket available to use from the previous transfer, this function returns kError_UNSUPPORTED_PROTOCOL.

58.10.80  Reset

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Re-initializes all options previously set on a specified CURL handle to the default values. **Notes:** It does not change the following information kept in the handle: live connections, the Session ID cache, the DNS cache, the cookies and shares.

58.10.81  SendData(data as Memoryblock) as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sends raw data over a connection. **Notes:** This function sends arbitrary data over the established connection. You may use it together with ReceiveData to implement custom protocols using libcurl. This functionality can be particularly useful if you use...
proxies and/or SSL encryption: libcurl will take care of proxy negotiation and connection set-up.

Provide the data to send via parameter. We return the number of bytes sent.

To establish the connection, set OptionConnectOnly = true option before calling Perform methods. Note that SendData will not work on connections that were created without this option.

The call will return kError_AGAIN if it’s not possible to send data right now - the socket is used in non-blocking mode internally. When kError_AGAIN is returned, please wait.

Furthermore if you wait on the socket and it tells you it’s writable, SendData may return kError_AGAIN if the only data that was sent was for internal SSL processing, and no other data could be sent.

See also:

- 58.10.82 SendData(data as string) as Integer

58.10.82 SendData(data as string) as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sends raw data over a connection.  
**Notes:**  
This function sends arbitrary data over the established connection. You may use it together with ReceiveData to implement custom protocols using libcurl. This functionality can be particularly useful if you use proxies and/or SSL encryption: libcurl will take care of proxy negotiation and connection set-up.

Provide the data to send via parameter. We return the number of bytes sent.

To establish the connection, set OptionConnectOnly = true option before calling Perform methods. Note that SendData will not work on connections that were created without this option.

The call will return kError_AGAIN if it’s not possible to send data right now - the socket is used in non-blocking mode internally. When kError_AGAIN is returned, please wait.

Furthermore if you wait on the socket and it tells you it’s writable, SendData may return kError_AGAIN if the only data that was sent was for internal SSL processing, and no other data could be sent.

See also:

- 58.10.81 SendData(data as Memoryblock) as Integer
**58.10.83  SetInputData(data as MemoryBlock)**

MBS CURL Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the input data.

**Notes:**
If you set input data, you do not need to use Read, RestartRead or Seek events.
The plugin will use the provided data for the upload.
Setting input data size, will also set the input file size (OptionInFileSizeLarge and OptionInFileSize).

Alternatively you can provide data in Read event or use OpenMTInputFile method to open a file on disk to upload.
See also:
- 58.10.84 SetInputData(data as string)

**58.10.84  SetInputData(data as string)**

MBS CURL Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the input data.

**Notes:**
If you set input data, you do not need to use Read, RestartRead or Seek events.
The plugin will use the provided data for the upload.
Setting input data size, will also set the input file size (OptionInFileSizeLarge and OptionInFileSize).

Alternatively you can provide data in Read event or use OpenMTInputFile method to open a file on disk to upload.
See also:
- 58.10.83 SetInputData(data as MemoryBlock)

**58.10.85  SetOptionConnectTo(list() as string)**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Set list of host:port:connect-to-host:connect-to-port, overrides the URL’s host:port (only for the network layer)

**58.10.86  SetOptionEmptyPassword**

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets an empty password.

**Notes:**
Normally you have no password unless you set it. But if you set a password with empty string, the plugin sets CURL to use no password. This method is to use an empty password.

58.10.87 SetOptionHTTP200Aliases(list() as string)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A linked list of aliases to be treated as valid HTTP 200 responses. **Notes:** Some servers respond with a custom header response line. For example, IceCast servers respond with "ICY 200 OK". By including this string in your list of aliases, the response will be treated as a valid HTTP header line such as "HTTP/1.0 200 OK".

The alias itself is not parsed for any version strings. So if your alias is "MYHTTP/9.9", LibCURL will not treat the server as responding with HTTP version 9.9. Instead LibCURL will use the value set by option HTTPVersion.

The Lasterror property is set. 0 for success.

58.10.88 SetOptionHTTPHeader(list() as string)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A linked list of HTTP headers to pass to the server in your HTTP request. **Example:**

```dim c as new CURLNMBS
c.SetOptionHTTPHeader array("Expect:", "Content-Type: text/xml", "SOAPAction: ""login""")```

**Notes:**

If you add a header that is otherwise generated and used by libCURL internally, your added one will be used instead. If you add a header with no contents as in 'Accept:' (no data on the right side of the colon), the internally used header will get disabled. Thus, using this option you can add new headers, replace internal headers and remove internal headers. To add a header with no contents, make the contents be two quotes: "". The headers included in the linked list must not be CRLF-terminated, because CURL adds CRLF after each header item. Failure to comply with this will result in strange bugs because the server will most likely ignore part of the headers you specified.

The first line in a request (containing the method, usually a GET or POST) is not a header and cannot be replaced using this option. Only the lines following the request-line are headers. Adding this method line in
this list of headers will only cause your request to send an invalid header.

Pass an empty array to this to reset back to no custom headers.

The Lasterror property is set. 0 for success.

58.10.89 SetOptionMailRecipients(list() as string)

MBS CURL Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the array of email recipient addresses.

58.10.90 SetOptionPostQuote(list() as string)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Pass an array to a list of FTP commands to pass to the server after your ftp transfer request.

**Example:**

```vbs
Dim d As CURLNMBS ' your CURL object
Dim ws() As String
ws.Append "RNFR Temp.txt"
ws.append "RNTO MyFile.txt"
d.SetOptionPostQuote(ws)
```

**Notes:**

Disable this operation again by using an empty array for this option.

The Lasterror property is set. 0 for success.

If you want to do a ftp operation instead of download/upload/directory listing, please use SetOptionQuote.

58.10.91 SetOptionPreQuote(list() as string)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Pass an array to a list of FTP commands to pass to the server after the transfer type is set.

**Notes:**

Disable this operation again by using an empty array for this option. Before version 7.15.6, if you also set Nobody to true, this option didn’t work.
58.10.92 SetOptionProxyHeader(list() as string)

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set list of headers used for proxy requests only.

58.10.93 SetOptionQuote(list() as string)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Pass an array or a list of FTP commands to pass to the server prior to your ftp request. **Example:**

```
dim curl as new CURLNMBS
curl.SetOptionQuote array("DELE filename.txt")
```

**Notes:**
This will be done before any other FTP commands are issued (even before the CWD command).

Disable this operation again by using an empty array for this option.

The Lasterror property is set. 0 for success.

58.10.94 SetOptionResolve(list() as string)

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Send linked-list of name:port:address sets.

58.10.95 SetOptionTelnetOptions(list() as string)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Provide an array of variables to pass to the telnet negotiations. **Notes:**

The variables should be in the format `<option=value>`. libCURL supports the options 'TTYPE', 'XDISPLOC' and 'NEW_ENV'. See the TELNET standard for details.
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The Lasterror property is set. 0 for success.

58.10.96 SetPathCAInfo(path as folderitem)

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
A path holding one or more certificates to verify the peer with.
Example:

dim cacert as FolderItem // your cacert.pem file
dim CURL as new CURLMBS
CURL.OptionSSLVerifyHost = 2 // verify server
CURL.OptionSSLVerifyPeer = 1 // proofs certificate is authentic
CURL.SetPathCAInfo cacert

Notes:
This makes sense only when used in combination with the OptionSSLVerifyPeer option. If OptionSSLVerifyPeer is false, OptionCAINFO need not even indicate an accessible file.

Note that option is by default set to the system path where libCURL’s cacert bundle is assumed to be stored, as established at build time.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

58.10.97 SetPathCAPath(path as folderitem)

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
A path to the directory holding multiple CA certificates to verify the peer with.
Notes:
The certificate directory must be prepared using the openssl c_rehash utility. This makes sense only when used in combination with the CURLOPT_SSL_VERIFYPEER option. If OptionSSLVerifyPeer is zero, OptionCAPath need not even indicate an accessible path. The OptionCAPath function apparently does not work in Windows due to some limitation in openssl. This option is OpenSSL-specific and does nothing if libCURL is built to use GnuTLS.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
58.10. **SetPathCRLFile(path as folderitem)**

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the path with the concatenation of CRL (in PEM format) to use in the certificate validation that occurs during the SSL exchange.

**Notes:**

When CURL is built to use NSS or GnuTLS, there is no way to influence the use of CRL passed to help in the verification process. When libCURL is built with OpenSSL support, X509_V_FLAG_CRL_CHECK and X509_V_FLAG_CRL_CHECK_ALL are both set, requiring CRL check against all the elements of the certificate chain if a CRL file is passed.

This option makes sense only when used in combination with the OptionSSLVerifyPeer option.

A specific error code (CURLE_SSL_CRL_BADFILE) is defined with the option. It is returned when the SSL exchange fails because the CRL file cannot be loaded. Note that a failure in certificate verification due to a revocation information found in the CRL does not trigger this specific error. (Added in 7.19.0)

58.10.99 **SetPathIssuerCert(path as folderitem)**

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the path to a CA certificate in PEM format.

**Notes:**

If the option is set, an additional check against the peer certificate is performed to verify the issuer is indeed the one associated with the certificate provided by the option. This additional check is useful in multi-level PKI where one needs to enforce that the peer certificate is from a specific branch of the tree.

This option makes sense only when used in combination with the OptionSSLVerifyPeer option. Otherwise, the result of the check is not considered as failure.

A specific error code (CURLE_SSL_ISSUER_ERROR) is defined with the option, which is returned if the setup of the SSL/TLS session has failed due to a mismatch with the issuer of peer certificate (OptionSSLVerifyPeer has to be set too for the check to fail). (Added in 7.19.0)

58.10.100 **SetPathNetRCFile(path as folderitem)**

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the path to the file you want libCURL to use as .netrc file.

**Notes:**

If this option is omitted, and OptionNETRC is set, libCURL will attempt to find the a .netrc file in the
current user’s home directory. (Added in 7.10.9)

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

58.10.101  **SetupEmail(email as Variant) as boolean**

MBS CURL Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets up existing CURL session for an email transfer.

**Example:**

```vbnet
dim e as new CURLEmailMBS

e.SetFrom "test@test.test", "Christian Miller"
e.Subject = "Hello World"
e.SMTPPassword = "xxx"
e.SMTPUsername = "xxx"
e.SetServer "smtp.test.test", true
e.AddTo "test@test.test", "Test Miller"
e.PlainText = "Hello World," + EndOfLine + "Smilies: "

dim c as new CURLNMBS

if c.SetupEmail(e) then

    dim er as Integer = c.Perform
    if er = 0 then
        MsgBox "Email sent"
    end if
end if
```

**Notes:**
You can set your own settings like proxy after this function call.
If you like you can reuse the email and CURL objects after you sent an email, change values and send another email.
Returns true on success or false on failure.
58.10. Class CURLNMBS

58.10.102 Properties

58.10.103 APILoaded as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the CURL library was loaded.

**Notes:**

The CURLNMBS constructor loads the library if it was not loaded before.

(Read only property)
const kError_FunctionMissing = -1
const kError_OK = 0
const kError_UNSUPPORTED_PROTOCOL, = 1
const kError_FailedInit, = 2
const kError_URL_Malformat, = 3
const kError_URL_MalformatUser, = 4 (NOT USED)
const kError_COULDN'T_RESOLVE_PROXY, = 5
const kError_COULDN'T_RESOLVE_HOST, = 6
const kError_COULDN'T_CONNECT, = 7
const kError_FTP_WEIRD_SERVER_REPLY, = 8
const kError_FTP_ACCESS_DENIED, = 9 a service was denied by the FTP server due to lack of access when login fails this is not returned.
const kError_FTP_USER_PASSWORD_INCORRECT, = 10
const kError_FTP_WEIRD_PASS_REPLY, = 11
const kError_FTP_WEIRD_USER_REPLY, = 12
const kError_FTP_WEIRD_PASV_REPLY, = 13
const kError_FTP_MALFORMAT_USER, = 14 (NOT USED)
const kError_COULDN'T_RESOLVE_PROXY, = 5
const kError_COULDN'T_RESOLVE_HOST, = 6
const kError_COULDN'T_CONNECT, = 7
const kError_FTP_WEIRD_SERVER_REPLY, = 8
const kError_FTP_ACCESS_DENIED, = 9 a service was denied by the FTP server due to lack of access when login fails this is not returned.
const kError_FTP_USER_PASSWORD_INCORRECT, = 10
const kError_FTP_WEIRD_PASS_REPLY, = 11
const kError_FTP_WEIRD_USER_REPLY, = 12
const kError_FTP_WEIRD_PASV_REPLY, = 13
const kError_FTP_MALFORMAT_USER, = 14 (NOT USED)
const kError_COULDN'T_RESOLVE_PROXY, = 5
const kError_COULDN'T_RESOLVE_HOST, = 6
const kError_COULDN'T_CONNECT, = 7
const kError_FTP_WEIRD_SERVER_REPLY, = 8
const kError_FTP_ACCESS_DENIED, = 9 a service was denied by the FTP server due to lack of access when login fails this is not returned.
58.10. CLASS CURLNMBS

58.10.104 Cancel as Boolean

MBS CURL Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Tells CURL instance to cancel transfer as soon as possible.

**Notes:**
Especially when using PerformMT, you may see your app hang if user tries to quit application. To prevent the hang, please set Cancel = true in window close event. So when app quits and windows get destroyed, the PerformMT will see the Cancel being true and returns soon.
(Read and Write property)

58.10.105 CollectDebugData as Boolean

MBS CURL Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to collect debug message data.

**Notes:**
If you set this property to true, you can grab the data from the transfer in the DebugData Property instead of collecting the pieces yourself in the DebugMessage event. Of course this is optional and you can still process data in DebugMessage event.
Due to memory limitation, collecting data will not work right if your app is running low on memory.
(Read and Write property)

58.10.106 CollectHeaderData as Boolean

MBS CURL Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to collect header data.

**Notes:**
If you set this property to true, you can grab the data from the transfer in the headerData Property instead of collecting the pieces yourself in the header event. Of course this is optional and you can still process data in header event.
Due to memory limitation, collecting data will not work right if your app is running low on memory.
(Read and Write property)

58.10.107 CollectOutputData as Boolean

MBS CURL Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to collect output data.

**Notes:**
If you set this property to true, you can grab the data from the transfer in the OutputData Property instead of collecting the pieces yourself in the write event. Of course this is optional and you can still process data
in write event. Due to memory limitation, collecting data will not work right if your app is running low on memory. (Read and Write property)

58.10.108 DebugData as String

MBS CURL Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The debug data from CURL.

**Notes:**
If CollectDebugData property is true, the plugin puts the data received in debugMessage event also into this property, so you can grab it after the transfer. Use ClearData method to clear when reusing CURL object. (Read only property)

58.10.109 Handle as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal handle of the CURL object.

**Notes:** (Read and Write property)

58.10.110 HeaderData as String

MBS CURL Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The header data from CURL.

**Notes:**
If CollectHeaderData property is true, the plugin puts the data received in header event also into this property, so you can grab it after the transfer. Use ClearData method to clear when reusing CURL object. (Read only property)

58.10.111 InputData as String

MBS CURL Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The input data.

**Notes:**
If you set input data, you do not need to use Read, RestartRead or Seek events. The plugin will use the provided data for the upload. Setting input data size, will also set the input file size (OptionInFileSizeLarge and OptionInFileSize).
Alternatively you can provide data in Read event or use OpenMTInputFile method to open a file on disk to upload. 
(Read and Write property)

58.10.112 Lasterror as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The lasterror from the library.
**Notes:**
Set in the constructor while doing initialization.
Check the kError* constants.
(Read and Write property)

58.10.113 LasterrorMessage as String

MBS CURL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The last error message.
**Notes:** (Read only property) 

58.10.114 LasterrorText as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The text for the lasterror code.
**Notes:**
Static string matched to the error code, so you have an idea what’s wrong.
(Read and Write property)

58.10.115 LibraryUsed as String

MBS CURL Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Which library is in use.
**Notes:**
This is for debugging only to see which library is in use.
(Read only property)
58.10.116 LibVersion as string

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a human readable string with the version number of libCURL and some of its important components (like OpenSSL version).
**Notes:** (Read only property)

58.10.117 OptionAbstractUnixSocket as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Path to an abstract Unix domain socket.
**Notes:** (Read and Write property)
See also ABSTRACT_UNIX_SOCKET option in CURL manual.

58.10.118 OptionAcceptEncoding as String

MBS CURL Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the contents of the Accept-Encoding: header sent in a HTTP request, and enables decoding of a response when a Content-Encoding: header is received.
**Example:**
```vba
dim c as new CURLNMBS
    c.OptionAcceptEncoding = "deflate"
```
**Notes:**
Three encodings are supported: identity, which does nothing, deflate which requests the server to compress its response using the zlib algorithm, and gzip which requests the gzip algorithm. If a zero-length string is set, then an Accept-Encoding: header containing all supported encodings is sent.

This is a request, not an order; the server may or may not do it. This option must be set (to any non-NULL value) or else any unsolicited encoding done by the server is ignored. See the special file README.encoding for details (included with CURL source code).
(Read and Write property)
See also ACCEPT_ENCODING option in CURL manual.

58.10.119 OptionAcceptTimeoutMS as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Time-out accept operations (currently for FTP only) after this amount of milliseconds.
58.10. CLASS CURLNMBS

Notes: (Read and Write property)
See also ACCEPTTIMEOUT_MS option in CURL manual.

58.10.120 OptionAddressScope as Integer

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Pass an integer specifying the scope_id value to use when connecting to IPv6 link-local or site-local addresses.
Notes:
(Added in CURL 7.19.0)
(Read and Write property)
See also ADDRESS_SCOPE option in CURL manual.

58.10.121 OptionAppend as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
True tells the library to append to the remote file instead of overwrite it.
Notes:
This is only useful when uploading to an ftp site.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also APPEND option in CURL manual.

58.10.122 OptionAutoReferer as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
When enabled, libCURL will automatically set the Referer: field in requests where it follows a Location: redirect.
Notes:
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also AUTOREFERER option in CURL manual.
58.10.123 OptionBufferSize as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Your preferred size (in bytes) for the receive buffer in libCURL.
Notes:
The main point of this would be that the write callback gets called more often and with smaller chunks. This is just treated as a request, not an order. You cannot be guaranteed to actually get the given size. (Added in 7.10)

This size is by default set as big as possible (OptionMaxWriteSize), so it only makes sense to use this option if you want it smaller.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also BUFFERSIZE option in CURL manual.

58.10.124 OptionCAInfo as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: A string naming a file holding one or more certificates to verify the peer with.
Notes:
This makes sense only when used in combination with the OptionSSLVerifyPeer option. If OptionSSLVerifyPeer is false, OptionCAINFO need not even indicate an accessible file.

Note that option is by default set to the system path where libCURL’s cacert bundle is assumed to be stored, as established at build time.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

Starting with version 18.0 the plugin will always use UTF-8 encoding for file path on Linux and macOS. For macOS we also do the unicode character normalization for file names for you.
(Read and Write property)
See also CAINFO option in CURL manual.
58.10. **CLASS CURLNMBS**

### 58.10.125 **OptionCAPath as String**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A string naming a directory holding multiple CA certificates to verify the peer with.

**Notes:**

The certificate directory must be prepared using the openssl c_rehash utility. This makes sense only when used in combination with the CURLOPT_SSL_VERIFYPEER option. If OptionSSLVerifyPeer is zero, OptionCAPath need not even indicate an accessible path. The OptionCAPath function apparently does not work in Windows due to some limitation in openssl. This option is OpenSSL-specific and does nothing if libCURL is built to use GnuTLS.

The Lasterror property is set. 0 for success.

You can set this value and later you can read it, but you cannot read the default value.

Starting with version 18.0 the plugin will always use UTF-8 encoding for file path on Linux and macOS. For macOS we also do the unicode character normalization for file names for you.

(Read and Write property)

See also **CAPATH** option in CURL manual.

### 58.10.126 **OptionCertInfo as boolean**

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set to true to enable libCURL’s certificate chain info gatherer.

**Notes:**

With this enabled, libCURL (if built with OpenSSL) will extract lots of information and data about the certificates in the certificate chain used in the SSL connection. This data is then possible to extract after a transfer using GetInfoCertInfo. (Added in 7.19.1)

(Read and Write property)

See also **CERTINFO** option in CURL manual.

### 58.10.127 **OptionConnectionTimeout as Integer**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The maximum time in seconds that you allow the connection to the server to take.

**Notes:**

This only limits the connection phase, once it has connected, this option is of no more use. Set to zero to disable connection timeout (it will then only timeout on the system’s internal timeouts). See also the OptionTimeout option.

(Read and Write property)

See also **CONNECTTIMEOUT** option in CURL manual.
58.10.128  OptionConnectionTimeOutMS as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**
The maximum time in milli seconds that you allow the connection to the server to take.

**Notes:**
This only limits the connection phase, once it has connected, this option is of no more use. Set to zero to disable connection timeout (it will then only timeout on the system’s internal timeouts). See also the OptionTimeout option.
(Read and Write property)

58.10.129  OptionConnectOnly as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**
A true tells the library to perform any required proxy authentication and connection setup, but no data transfer.

**Notes:**
This option is useful with the CURLNMBS.GetInfoLastSocket function. The library can set up the connection and then the application can obtain the most recently used socket for special data transfers. (Added in 7.15.2)
(Read and Write property)
See also CONNECT ONLY option in CURL manual.

58.10.130  OptionCookie as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**
It will be used to set a cookie in the http request.

**Notes:**
The format of the string should be NAME=CONTENTS, where NAME is the cookie name and CONTENTS is what the cookie should contain.

If you need to set multiple cookies, you need to set them all using a single option and thus you need to concatenate them all in one single string. Set multiple cookies in one string like this: "name1=content1; name2=content2;" etc.

Using this option multiple times will only make the latest string override the previously ones.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also COOKIE option in CURL manual.
58.10.131 OptionCookieFile as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The cookie file content.
**Notes:**
It should contain the name of your file holding cookie data to read. The cookie data may be in Netscape / Mozilla cookie data format or just regular HTTP-style headers dumped to a file.

Given an empty or non-existing file or by passing the empty string (""), this option will enable cookies for this CURL handle, making it understand and parse received cookies and then use matching cookies in future request.

If you use this option multiple times, you just add more files to read. Subsequent files will add more cookies.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

Starting with version 18.0 the plugin will always use UTF-8 encoding for file path on Linux and macOS. For macOS we also do the unicode character normalization for file names for you.
(Read and Write property)
See also COOKIEFILE option in CURL manual.

58.10.132 OptionCookieJar as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
File path where to write the cookies to.
**Notes:**
This will make libCURL write all internally known cookies to the specified file, when the object is destroyed. If no cookies are known, no file will be created. Specify "." to instead have the cookies written to stdout. Using this option also enables cookies for this session, so if you for example follow a location it will make matching cookies get sent accordingly.

If the cookie jar file can’t be created or written to, libCURL will not and cannot report an error for this. Using OptionVerbose or DebugFunction event will get a warning to display, but that is the only visible feedback you get about this possibly lethal situation.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
Starting with version 18.0 the plugin will always use UTF-8 encoding for file path on Linux and macOS. For macOS we also do the unicode character normalization for file names for you.

(Read and Write property)
See also COOKIEJAR option in CURL manual.

58.10.133 OptionCookieList as String

Notes:
Cookie can be either in Netscape / Mozilla format or just regular HTTP-style header (Set-Cookie: ...) format. If CURL cookie engine was not enabled it will enable its cookie engine. Passing a magic string "ALL" will erase all cookies known by CURL. (Added in 7.14.1) Passing the special string "SESS" will only erase all session cookies known by CURL. (Added in 7.15.4)

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also COOKIELIST option in CURL manual.

58.10.134 OptionCookieSession as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Set to true to mark this as a new cookie "session".
Notes:
It will force libCURL to ignore all cookies it is about to load that are "session cookies" from the previous session. By default, libCURL always stores and loads all cookies, independent if they are session cookies are not. Session cookies are cookies without expiry date and they are meant to be alive and existing for this "session" only.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also COOKIESSESSION option in CURL manual.
58.10. **CLASS CURLNMBS**

### 58.10.135 **OptionCRLF as Boolean**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Convert Unix newlines to CRLF newlines on transfers.

**Notes:**

The Lasterror property is set. 0 for success.

You can set this value and later you can read it, but you cannot read the default value. (Read and Write property)

See also CRLF option in CURL manual.

### 58.10.136 **OptionCRLFile as String**

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A string naming a file with the concatenation of CRL (in PEM format) to use in the certificate validation that occurs during the SSL exchange.

**Notes:**

When CURL is built to use NSS or GnuTLS, there is no way to influence the use of CRL passed to help in the verification process. When libCURL is built with OpenSSL support, X509_V_FLAG_CRL_CHECK and X509_V_FLAG_CRL_CHECK_ALL are both set, requiring CRL check against all the elements of the certificate chain if a CRL file is passed.

This option makes sense only when used in combination with the OptionSSLVerifyPeer option.

A specific error code (CURLE_SSL_CRL_BADFILE) is defined with the option. It is returned when the SSL exchange fails because the CRL file cannot be loaded. Note that a failure in certificate verification due to a revocation information found in the CRL does not trigger this specific error. (Added in 7.19.0)

(Read and Write property)

See also CRLFILE option in CURL manual.

### 58.10.137 **OptionCustomRequest as String**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** It will be user instead of GET or HEAD when doing an HTTP request, or instead of LIST or NLST when doing an ftp directory listing.

**Example:**

```dim c as CURLNMBS ' your CURL instance

c.URL = "ftp://..."
c.customRequest = "MLSD" ' ftp advanced directory listing```
CHAPTER 58. CURL

Notes:
This is useful for doing DELETE or other more or less obscure HTTP requests. Don’t do this at will, make sure your server supports the command first.

Restore to the internal default by setting this to "".

Many people have wrongly used this option to replace the entire request with their own, including multiple headers and POST contents. While that might work in many cases, it will cause libCURL to send invalid requests and it could possibly confuse the remote server badly. Use CURLOPT_POST and OptionPostFields to set POST data. Use OptionHTTPHeader to replace or extend the set of headers sent by libCURL. Use OptionHTTPVersion to change HTTP version.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also CUSTOMREQUEST option in CURL manual.

58.10.138 OptionDefaultProtocol as String
MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Set the protocol used when curl is given a URL without a protocol.
Notes: (Read and Write property)
See also DEFAULT_PROTOCOL option in CURL manual.

58.10.139 OptionDirListOnly as Boolean
MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
For FTP and SFTP based URLs a parameter set to true tells the library to list the names of files in a directory, rather than performing a full directory listing that would normally include file sizes, dates etc.
Notes:
For POP3 a parameter of true tells the library to list the email message or messages on the POP3 server. This can be used to change the default behaviour of libCURL, when combined with a URL that contains a message ID, to perform a "scan listing" which can then be used to determine the size of an email.
Note: For FTP this causes a NLST command to be sent to the FTP server. Beware that some FTP servers list only files in their response to NLST; they might not include subdirectories and symbolic links.
Setting this option to true also implies a directory listing even if the URL doesn’t end with a slash, which otherwise is necessary.
Do NOT use this option if you also use OptionWildCardMatch as it will effectively break that feature then.

(Read and Write property)

See also DIRLISTONLY option in CURL manual.

58.10.140 OptionDNSCacheTimeout as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The timeout in seconds.

**Notes:**
Name resolves will be kept in memory for this number of seconds. Set to zero (0) to completely disable caching, or set to -1 to make the cached entries remain forever. By default, libCURL caches this info for 60 seconds.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

(Read and Write property)
See also DNS_CACHE_TIMEOUT option in CURL manual.

58.10.141 OptionDNSInterface as String

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Set the name of the network interface that the DNS resolver should bind to.

**Notes:**
This must be an interface name (not an address). Set this option to "" to use the default setting (don’t bind to a specific interface).

(Read and Write property)
See also DNS_INTERFACE option in CURL manual.

58.10.142 OptionDNSLocalIPv4 as String

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Set the local IPv4 address that the resolver should bind to.

**Notes:**
The argument should be of string and contain a single numerical IPv4 address as a string.
Set this option to "" to use the default setting (don’t bind to a specific IP address).

(Read and Write property)
See also DNS_LOCAL_IP4 option in CURL manual.
58.10.143 OptionDNSLocalIPv6 as String

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set the local IPv6 address that the resolver should bind to. **Notes:**
The argument should be of type string and contain a single IPv6 address as a string. Set this option to "" to use the default setting (don’t bind to a specific IP address). (Read and Write property) See also DNS_LOCAL_IPV6 option in CURL manual.

58.10.144 OptionDNSServers as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set the name servers to use for DNS resolution. **Notes:** (Read and Write property) See also DNS_SERVERS option in CURL manual.

58.10.145 OptionDNSShuffleAddresses as Boolean

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to shuffle DNS addresses. **Notes:**
When a name is resolved and more than one IP address is returned, shuffle the order of all returned addresses so that they will be used in a random order. This is similar to the ordering behavior of gethostbyname which is no longer used on most platforms.

Addresses will not be reshuffled if a name resolution is completed using the DNS cache. DNSCacheTimeout property can be used together with this option to reduce DNS cache timeout or disable caching entirely if frequent reshuffling is needed.

Since the addresses returned will be reordered randomly, their order will not be in accordance with RFC 3484 or any other deterministic order that may be generated by the system’s name resolution implementation. This may have performance impacts and may cause IPv4 to be used before IPv6 or vice versa. Default is false. (Read and Write property) See also DNS_SHUFFLE_ADDRESSES option in CURL manual.
58.10. CLASS CURLNMBS

58.10.146 OptionEGDSocket as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The path name to the Entropy Gathering Daemon socket.

**Notes:**
It will be used to seed the random engine for SSL.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also EGDSOCKET option in CURL manual.

58.10.147 OptionExpect100TimeoutMS as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets Expect 100 timeout.

**Notes:**
Time to wait in milliseconds for a response to a HTTP request containing an Expect: 100-continue header before sending the data anyway.
(Read and Write property)
See also EXPECT 100_TIMEOUT_MS option in CURL manual.

58.10.148 OptionFailOnError as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
True tells the library to fail silently if the HTTP code returned is equal to or larger than 400. The default action would be to return the page normally, ignoring that code.

**Notes:**
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

This method is not fail-safe and there are occasions where non-successful response codes will slip through, especially when authentication is involved (response codes 401 and 407).

You might get some amounts of headers transferred before this situation is detected, like for when a ”100-continue” is received as a response to a POST/PUT and a 401 or 407 is received immediately afterwards.
(Read and Write property)
See also FAILONERROR option in CURL manual.
58.10.149 OptionFileTime as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether filetime should be queried.

**Example:**

```vbnet
// init CURL with options
dim d as new CURLNMBS
d.OptionFileTime = true
d.OptionURL = ”http://www.monkeybreadsoftware.de/images/mbs.jpg”

// run query
dim e as Integer = d.Perform

// calculate date object
dim da as new date(1970,1,1,0,0,0)

// show date
ResultText.text=str(d.GetInfoFileTime)+” ”+da.ShortDate+” ”+da.ShortTime
```

**Notes:**

If it is true, libCURL will attempt to get the modification date of the remote document in this operation. This requires that the remote server sends the time or replies to a time querying command.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value. (Read and Write property)
See also FILETIME option in CURL manual.

58.10.150 OptionFollowLocation as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A boolean parameter tells the library to follow any Location: header that the server sends as part of an HTTP header.

**Example:**

```vbnet
dim c as new CURLNMBS
c.OptionFollowLocation = true
c.OptionMaxRedirs = 3
```
Notes:
This means that the library will re-send the same request on the new location and follow new Location:
headers all the way until no more such headers are returned. OptionMaxRedirs can be used to limit the
number of redirects libCURL will follow.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also FOLLOWLOCATION option in CURL manual.

58.10.151 OptionForbitReuse as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Set to true to make the next transfer explicitly close the connection when done.
Notes:
Normally, libCURL keep all connections alive when done with one transfer in case there comes a succeeding
one that can re-use them. This option should be used with caution and only if you understand what it does.
Set to false to have libCURL keep the connection open for possibly later re-use (default behavior).

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)

58.10.152 OptionFreshConnect as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Set to true to make the next transfer use a new (fresh) connection by force.
Example:

```dim c as new CURLNMBS
c.OptionFreshConnect=True```

Notes:
If the connection cache is full before this connection, one of the existing connections will be closed as accord-
ing to the selected or default policy. This option should be used with caution and only if you understand
what it does. Set this to 0 to have libCURL attempt re-using an existing connection (default behavior).

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also FRESH.CONNECT option in CURL manual.

58.10.153  OptionFTPAccount as String

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The FTP account name to use.
**Notes:**
When an FTP server asks for "account data" after user name and password has been provided, this data is
sent off using the ACCT command.
(Read and Write property)
See also FTP_ACCOUNT option in CURL manual.

58.10.154  OptionFTPAlternativeToUser as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The alternative username.
**Notes:**
Pass a string as parameter, pointing to a string which will be used to authenticate if the usual FTP "USER
user" and "PASS password" negotiation fails. This is currently only known to be required when connecting
to Tumbleweed’s Secure Transport FTPS server using client certificates for authentication. (Added in 7.15.5)
(Read and Write property)
See also FTP_ALTERNATIVE_TO_USER option in CURL manual.

58.10.155  OptionFTPAppend as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
True tells the library to append to the remote file instead of overwrite it.
**Deprecation:** This item is deprecated and should no longer be used. You can use OptionAppend instead.
**Notes:**
This is only useful when uploading to an ftp site.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
58.10. CLASS CURLNMBS

58.10.156 OptionFTPCreateMissingDirs as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
If the value is 1, CURL will attempt to create any remote directory that it fails to CWD into.
**Notes:**
CWD is the command that changes working directory. (Added in 7.10.7)

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
Newer CURL Library versions allow a value of 2 to do a CWD after the directory was created, so this
property changed from boolean to integer.
(Read and Write property)
See also FTP_CREATE_MISSING_DIRS option in CURL manual.

58.10.157 OptionFTPFileMethod as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Pass an integer that should have one of the following values.
**Notes:**
This option controls what method libCURL should use to reach a file on a FTP(S) server. The argument
should be one of the following alternatives:

**URLFTPMethod_MULTICWD = 1**

libCURL does a single CWD operation for each path part in the given URL. For deep hierarchies this means
very many commands. This is how RFC1738 says it should be done. This is the default but the slowest
behavior.

**CURLFTPMethod_NOCWD = 2**

libCURL does no CWD at all. libCURL will do SIZE, RETR, STOR etc and give a full path to the server
for all these commands. This is the fastest behavior.

**CURLFTPMethod_SINGLECWD = 3**

libCURL does one CWD with the full target directory and then operates on the file ”normally” (like in the
multicwd case). This is somewhat more standards compliant than ‘nocwd’ but without the full penalty of
‘multicwd’.
(Read and Write property)
See also FTP_FILEMETHOD option in CURL manual.
58.10.158  **OptionFTPListOnly as Boolean**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True tells the library to just list the names of an ftp directory, instead of doing a full directory listing that would include file sizes, dates etc. **Deprecated:** This item is deprecated and should no longer be used. You can use OptionDirListOnly instead. **Notes:**

This causes an FTP NLST command to be sent. Beware that some FTP servers list only files in their response to NLST; they might not include subdirectories and symbolic links.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)

58.10.159  **OptionFTPPort as String**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The port to use for ftp. **Notes:**

It will be used to get the IP address to use for the ftp PORT instruction. The PORT instruction tells the remote server to connect to our specified IP address. The string may be a plain IP address, a host name, an network interface name (under Unix) or just a '-' letter to let the library use your systems default IP address. Default FTP operations are passive, and thus won’t use PORT.

You disable PORT again and go back to using the passive version by setting this option to "".

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also FTPPORT option in CURL manual.

58.10.160  **OptionFTPResponseTimeout as Integer**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Causes CURL to set a timeout period (in seconds) on the amount of time that the server is allowed to take in order to generate a response message for a command before the session is considered hung. **Notes:**
While CURL is waiting for a response, this value overrides OptionTimeout. It is recommended that if used in conjunction with OptionTimeout, you set OptionFTPResponseTimeout to a value smaller than OptionTimeout. (Added in 7.10.8)

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also FTP_RESPONSE_TIMEOUT option in CURL manual.

58.10.161 OptionFTPSkipPasvIP as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: If set to a non-zero value, it instructs libCURL to not use the IP address the server suggests in its 227-response to libCURL’s PASV command when libCURL connects the data connection.
Notes:
Instead libCURL will re-use the same IP address it already uses for the control connection. But it will use the port number from the 227-response. (Added in 7.14.2)

This option has no effect if PORT, EPRT or EPSV is used instead of PASV.
(Read and Write property)
See also FTP_SKIP_PASV_IP option in CURL manual.

58.10.162 OptionFTPSSL as Integer

Example:

```vbscript
dim c as CURLNMBS
c.OptionUseSSL = c.kFTPSSL_ALL
c.OptionSSLVersion = c.kSSLVersionTLSv12
```

Deprecated: This item is deprecated and should no longer be used. You can use OptionUseSSL instead.
Notes:
Set to an integer using one of the values from below, to make libCURL use your desired level of SSL for the transfer.
These are all protocols that start out plain text and get "upgraded" to SSL using the STARTTLS command.
This is for enabling SSL/TLS when you use FTP, SMTP, POP3, IMAP etc.

(Read and Write property)
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CURLUSESSL

<table>
<thead>
<tr>
<th>Option</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURLUSESSL_NONE</td>
<td>0</td>
<td>Don’t attempt to use SSL.</td>
</tr>
<tr>
<td>CURLUSESSL_TRY</td>
<td>1</td>
<td>Try using SSL, proceed as normal otherwise.</td>
</tr>
<tr>
<td>CURLUSESSL_CONTROL</td>
<td>2</td>
<td>Require SSL for the control connection or fail with CURLE_USE_SSL_FAILED.</td>
</tr>
<tr>
<td>CURLUSESSL_ALL</td>
<td>3</td>
<td>Require SSL for all communication or fail with CURLE_USE_SSL_FAILED.</td>
</tr>
</tbody>
</table>

58.10.163 OptionFTPSSLAUTH as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

What kind of SSL authentication to use for FTP.

**Notes:**

Pass an integer using one of the values from below, to alter how libCURL issues "AUTH TLS" or "AUTH SSL" when FTP over SSL is activated (see CURLOPT FTP_SSL). (Added in 7.12.2)

kFTPAUTH_DEFAULT = 0

Allow libCURL to decide

kFTPAUTH_SSL = 1

Try "AUTH SSL" first, and only if that fails try "AUTH TLS"

kFTPAUTH_TLS = 2

Try "AUTH TLS" first, and only if that fails try "AUTH SSL"

The Lasterror property is set. 0 for success.

You can set this value and later you can read it, but you cannot read the default value.

(Read and Write property)

See also FTPSSLAUTH option in CURL manual.

58.10.164 OptionFTPSSLCCC as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

If enabled, this option makes libCURL use CCC (Clear Command Channel).

**Notes:**

It shuts down the SSL/TLS layer after authenticating. The rest of the control channel communication will
be unencrypted. This allows NAT routers to follow the FTP transaction. Pass a long using one of the values below. (Added in 7.16.1)

```
CURLFTPSSL_CCC_NONE  0  Don’t attempt to use CCC.
CURLFTPSSL_CCC_PASSIVE 1  Do not initiate the shutdown, but wait for the server to do it. Do not send a reply.
CURLFTPSSL_CCC_ACTIVE  2  Initiate the shutdown and wait for a reply.
```

(Read and Write property)
See also FTP_SSL_CCC option in CURL manual.

### 58.10.165 OptionFTPUseEPRT as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** If the value is true, it tells CURL to use the EPRT (and LPRT) command when doing active FTP downloads (which is enabled by CURLOPT_FTPPORT).

**Notes:**

Using EPRT means that it will first attempt to use EPRT and then LPRT before using PORT, but if you pass FALSE (zero) to this option, it will not try using EPRT or LPRT, only plain PORT. (Added in 7.10.5)

If the server is an IPv6 host, this option will have no effect as of 7.12.3.

The Lasterror property is set. 0 for success.

You can set this value and later you can read it, but you cannot read the default value.

(Read and Write property)
See also FTP_USE_EPRT option in CURL manual.

### 58.10.166 OptionFTPUseEPSV as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** If the value is true, it tells CURL to use the EPSV command when doing passive FTP downloads (which it always does by default).

**Notes:**

Using EPSV means that it will first attempt to use EPSV before using PASV, but if you pass FALSE (zero) to this option, it will not try using EPSV, only plain PASV.

If the server is an IPv6 host, this option will have no effect as of 7.12.3.

The Lasterror property is set. 0 for success.
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You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also FTP_USE_EPSV option in CURL manual.

58.10.167  OptionFTPusePret as Boolean

MBS CURL Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
If the value is true, it tells CURL to send a PRET command before PASV (and EPSV). Certain FTP servers,
mainly drftpd, require this non-standard command for directory listings as well as up and downloads in PASV
mode.
**Notes:**
Has no effect when using the active FTP transfers mode. (Added in 7.20.0)
(Read and Write property)
See also FTP_USE_PRET option in CURL manual.

58.10.168  OptionGet as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
If the true, this forces the HTTP request to get back to GET.
**Notes:**
usable if a POST, HEAD, PUT or a custom request have been used previously using the same CURL handle.

When setting OptionGet to a true value, it will automatically set OptionNoBody to true (since 7.14.1).

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)

58.10.169  OptionGSSAPIDelegation as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Allow GSSAPI credential delegation.
**Notes:** (Read and Write property)
See also GSSAPI_DELEGATION option in CURL manual.
58.10.170  **OptionHappyEyeballsTimeOutMS as Integer**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The happy eyeballs timeout.
**Notes:**
Head start in milliseconds to give happy eyeballs.
(Read and Write property)
See also **HAPPY_EYEBALLS_TIMEOUT_MS** option in CURL manual.

58.10.171  **OptionHAProxyProtocol as Boolean**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Wether to send an HAProxy PROXY protocol header.
**Notes:**
Set to true to tell the library to send an HAProxy PROXY protocol header at beginning of the connection.
The default action is not to send this header.
This option is primarily useful when sending test requests to a service that expects this header.
Most applications do not need this option.
Default false, do not send HAProxy PROXY protocol header.
(Read and Write property)
See also **HAPROXYPROTOCOL** option in CURL manual.

58.10.172  **OptionHeader as Boolean**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
True tells the library to include the header in the body output.
**Notes:**
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
This is only relevant for protocols that actually have headers preceding the data (like HTTP).
(Read and Write property)
See also **HEADER** option in CURL manual.

58.10.173  **OptionHeaderOptions as Integer**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Pass in a bitmask of "header options".
**Notes:** (Read and Write property)
See also **HEADEROPT** option in CURL manual.

### 58.10.174 OptionHTTPAuth as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Which http authentication to use.

**Notes:**

Pass an integer as parameter, which is set to a bitmask, to tell libCURL what authentication method(s) you want it to use. The available bits are listed below. If more than one bit is set, libCURL will first query the site to see what authentication methods it supports and then pick the best one you allow it to use. For some methods, this will induce an extra network round-trip. Set the actual name and password with the UserPassword option. (Added in 7.10.6)

- **kAuthBASIC = 1**
  
  HTTP Basic authentication. This is the default choice, and the only method that is in wide-spread use and supported virtually everywhere. This is sending the user name and password over the network in plain text, easily captured by others.

- **kAuthDIGEST = 2**
  
  HTTP Digest authentication. Digest authentication is defined in RFC2617 and is a more secure way to do authentication over public networks than the regular old-fashioned Basic method.

- **kAuthGSSNEGOTIATE = 4**
  
  HTTP GSS-Negotiate authentication. The GSS-Negotiate (also known as plain "Negotiate") method was designed by Microsoft and is used in their web applications. It is primarily meant as a support for Kerberos5 authentication but may be also used along with another authentication methods. For more information see IETF draft draft-brezak-spnego-http-04.txt.

  You need to build libCURL with a suitable GSS-API library for this to work.

- **kAuthNTLM = 8**
  
  HTTP NTLM authentication. A proprietary protocol invented and used by Microsoft. It uses a challenge-response and hash concept similar to Digest, to prevent the password from being eavesdropped.

  You need to build libCURL with OpenSSL support for this option to work, or build libCURL on Windows.
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kAuthANY = & hFFFFFFFF

This is a convenience macro that sets all bits and thus makes libCURL pick any it finds suitable. libCURL will automatically select the one it finds most secure.

kAuthANYSAFE = & hFFFFFFFE

This is a convenience macro that sets all bits except Basic and thus makes libCURL pick any it finds suitable. libCURL will automatically select the one it finds most secure.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also HTTPAUTH option in CURL manual.

58.10.175 OptionHTTPContentDecoding as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Pass a long to tell libCURL how to act on content decoding.
Notes:
If set to zero, content decoding will be disabled. If set to 1 it is enabled. Note however that libCURL has no default content decoding but requires you to use OptionEncoding for that. (added in 7.16.2)
(Read and Write property)
See also HTTP_CONTENT_DECODING option in CURL manual.

58.10.176 OptionHTTPProxyTunnel as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Set the parameter to true to get the library to tunnel all operations through a given HTTP proxy.
Notes:
There is a big difference between using a proxy and to tunnel through it. If you don’t know what this means, you probably don’t want this tunneling option.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also HTTP_PROXY_TUNNEL option in CURL manual.
58.10.177 OptionHTTPTransferDecoding as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Pass an integer to tell libCURL how to act on transfer decoding.

**Notes:**
If set to zero, transfer decoding will be disabled, if set to 1 it is enabled (default). libCURL does chunked transfer decoding by default unless this option is set to zero. (added in 7.16.2)
(Read and Write property)
See also HTTP_TRANSFER_DECODING option in CURL manual.

58.10.178 OptionHTTPVersion as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Set to one of the values described below.

**Notes:**
They force libCURL to use the specific HTTP versions. This is not sensible to do unless you have a good reason.

kHTTP_VERSION_NONE = 0

We don’t care about what version the library uses. libCURL will use whatever it thinks fit.

kHTTP_VERSION_1_0 = 1

Enforce HTTP 1.0 requests.

kHTTP_VERSION_1_1 = 2

Enforce HTTP 1.1 requests.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also HTTP_VERSION option in CURL manual.
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58.10.179 **OptionIgnoreContentLength as Boolean**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to ignore the Content-Length header.

**Notes:**
This is useful for Apache 1.x (and similar servers) which will report incorrect content length for files over 2 gigabytes. If this option is used, CURL will not be able to accurately report progress, and will simply stop the download when the server ends the connection. (added in 7.14.1)

(Read and Write property)
See also **IGNORE_CONTENT_LENGTH** option in CURL manual.

58.10.180 **OptionInFileSize as Int64**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** When uploading a file to a remote site, this option should be used to tell libCURL what the expected size of the infile is.

**Notes:**
Note that this option does not limit how much data libCURL will actually send, as that is controlled entirely by what the read callback returns.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also **INFILESIZE** option in CURL manual.

58.10.181 **OptionInFileSizeLarge as Int64**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** When uploading a file to a remote site, this option should be used to tell libCURL what the expected size of the infile is.

**Deprecated:** This item is deprecated and should no longer be used. You can use OptionInFileSize instead.

**Notes:**
This value should be passed as a CURLOPT_oft.t. (Added in 7.11.0)

Note that this option does not limit how much data libCURL will actually send, as that is controlled entirely by what the read callback returns.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
58.10.182 OptionInterface as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This set the interface name to use as outgoing network interface.

**Notes:**
The name can be an interface name, an IP address or a host name.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also INTERFACE option in CURL manual.

58.10.183 OptionIPResolve as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Allows an application to select what kind of IP addresses to use when resolving host names.

**Example:**
```
dim c as new CURLNMBS

c.OptionIPResolve = c.kIPRESOLVE_V4
```

**Notes:**
This is only interesting when using host names that resolve addresses using more than one version of IP.
The allowed values are:

- `kIPRESOLVE_WHATEVER = 0`
Default, resolves addresses to all IP versions that your system allows.

- `kIPRESOLVE_V4 = 1`
Resolve to ipv4 addresses.

- `kIPRESOLVE_V6 = 2`
Resolve to ipv6 addresses.
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also IPRESOLVE option in CURL manual.

58.10.184  OptionIssuerCert as String

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
A string naming a file holding a CA certificate in PEM format.
Notes:
If the option is set, an additional check against the peer certificate is performed to verify the issuer is indeed
the one associated with the certificate provided by the option. This additional check is useful in multi-level
PKI where one needs to enforce that the peer certificate is from a specific branch of the tree.

This option makes sense only when used in combination with the OptionSSLVerifyPeer option. Otherwise,
the result of the check is not considered as failure.

A specific error code (CURLE_SSL_ISSUER_ERROR) is defined with the option, which is returned if the
setup of the SSL/TLS session has failed due to a mismatch with the issuer of peer certificate (OptionSS-
LVerifyPeer has to be set too for the check to fail). (Added in 7.19.0)

Starting with version 18.0 the plugin will always use UTF-8 encoding for file path on Linux and macOS. For
macOS we also do the unicode character normalization for file names for you.
(Read and Write property)
See also ISSUERCERT option in CURL manual.

58.10.185  OptionKeepSendingOnError as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Wether to keep sending on error.
Notes:
Continue to send data if the server responds early with an HTTP status code >= 300
(Read and Write property)
See also KEEP_SENDING_ON_ERROR option in CURL manual.
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OptionKeyPassword as String

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Set passphrase to private key.
Notes:
It will be used as the password required to use the OptionSSLKey or OptionSSHPrivateKeyfile private key.
You never needed a pass phrase to load a certificate but you need one to load your private key.
(Read and Write property)
See also KEYPASSWD option in CURL manual.

58.10.187

OptionKRB4Level as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Set the krb4 security level, this also enables krb4 awareness.
Deprecated: This item is deprecated and should no longer be used. You can use OptionKRBLevel instead.
Notes:
This is a string, ’clear’, ’safe’, ’confidential’ or ’private’. If the string is set but doesn’t match one of these,
’private’ will be used. Set the string to ”” to disable kerberos4. The kerberos support only works for FTP.
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)

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OptionKRBLevel as String

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
FTP kerberos security level.
Notes:
Set the kerberos security level for FTP; this also enables kerberos awareness. This is a string that should
match one of the following: ’clear’, ’safe’, ’confidential’ or ’private’. If the string is set but doesn’t match
one of these, ’private’ will be used. Set the string to NULL to disable kerberos support for FTP.
(Read and Write property)
See also KRBLEVEL option in CURL manual.

58.10.189

OptionLocalPort as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
This sets the local port number of the socket used for connection.
Notes:


This can be used in combination with OptionInterface and you are recommended to use OptionLocalPortRange as well when this is set. Note that port numbers are only valid 1 - 65535. (Added in 7.15.2) (Read and Write property) See also LOCALPORT option in CURL manual.

58.10.190  OptionLocalPortRange as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This is the number of attempts libCURL should do to find a working local port number. Notes: It starts with the given OptionLocalPort and adds one to the number for each retry. Setting this value to 1 or below will make libCURL do only one try for exact port number. Note that port numbers by nature is a scarce resource that will be busy at times so setting this value to something too low might cause unnecessary connection setup failures. (Added in 7.15.2) (Read and Write property) See also LOCALPORTRANGE option in CURL manual.

58.10.191  OptionLoginOptions as String

MBS CURL Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Login options string to use for the transfer. Notes: For more information about the login options please see RFC 2384, RFC5092 and IETF draft draft-earhart-url-smtp-00.txt

CURLOPT_LOGIN_OPTIONS can be used to set protocol specific login options, such as the preferred authentication mechanism via "AUTH=NTLM" or "AUTH=*", and should be used in conjunction with the OptionUsername option. Only IMAP, POP3 and SMTP support login options. (Read and Write property) See also LOGIN OPTIONS option in CURL manual.

58.10.192  OptionLowSpeedLimit as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This property contains the transfer speed in bytes per second that the transfer should be below during OptionLowSpeedTime seconds for the library to consider it too slow and abort. Notes: The Lasterror property is set. 0 for success.
58.10.193 OptionLowSpeedTime as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This property contains the time in seconds that the transfer should be below the OptionLowSpeedLimit for
the library to consider it too slow and abort.
**Notes:**
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also LOW_SPEED_LIMIT option in CURL manual.

58.10.194 OptionMailAuth as String

MBS CURL Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This string will be used to specify the authentication address (identity) of a submitted message that is being
relayed to another server.
**Notes:**
This optional parameter allows co-operating agents in a trusted environment to communicate the authen-
tication of individual messages and should only be used by the application program, using libCURL, if the
application is itself a mail server acting in such an environment. If the application is operating as such and
the AUTH address is not known or is invalid, then an empty string should be used for this parameter.

Unlike OptionMailFrom and SetOptionMailRecipients, the address should not be specified within a pair of
angled brackets (<>). However, if an empty string is used then a pair of brackets will be sent by libCURL
as required by RFC 2554.
(Read and Write property)
See also MAIL_AUTH option in CURL manual.

58.10.195 OptionMailFrom as String

MBS CURL Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A string that will be used to specify the sender address in a mail when sending an SMTP mail with libCURL.
**Notes:** (Read and Write property)
See also MAIL_FROM option in CURL manual.
58.10.196 OptionMaxConnects as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The set number will be the persistent connection cache size.

**Notes:**
The set amount will be the maximum amount of simultaneously open connections that libCURL may cache. Default is 5, and there isn’t much point in changing this value unless you are perfectly aware of how this work and changes libCURL’s behaviour. This concerns connection using any of the protocols that support persistent connections.

When reaching the maximum limit, CURL closes the oldest one in the cache to prevent the number of open connections to increase.

If you already have performed transfers with this CURL handle, setting a smaller MAXCONNECTS than before may cause open connections to get closed unnecessarily.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also MAXCONNECTS option in CURL manual.

58.10.197 OptionMaxFileSize as Int64

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This allows you to specify the maximum size (in bytes) of a file to download.

**Notes:**
If the file requested is larger than this value, the transfer will not start and kError_FILESIZE_EXCEEDED will be returned.

The file size is not always known prior to download, and for such files this option has no effect even if the file transfer ends up being larger than this given limit. This concerns both FTP and HTTP transfers.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also MAXFILESIZE option in CURL manual.
58.10.198 OptionMaxFileSizeLarge as Int64

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This allows you to specify the maximum size (in bytes) of a file to download. **Deprecated:** This item is deprecated and should no longer be used. You can use OptionMaxFileSize instead. **Notes:**

If the file requested is larger than this value, the transfer will not start and kError_FILESIZE_EXCEEDED will be returned. (Added in 7.11.0)

The file size is not always known prior to download, and for such files this option has no effect even if the file transfer ends up being larger than this given limit. This concerns both FTP and HTTP transfers.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value. (Read and Write property)

58.10.199 OptionMaxRecvSpeed as Int64

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Defines the maximum download speed. **Notes:**

If a download exceeds this speed (counted in bytes per second) on cumulative average during the transfer, the transfer will pause to keep the average rate less than or equal to the parameter value. Defaults to unlimited speed. (Added in 7.15.5)
(Read and Write property)
See also MAX_RECV_SPEED option in CURL manual.

58.10.200 OptionMaxRecvSpeedLarge as Int64

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Defines the maximum download speed. **Deprecated:** This item is deprecated and should no longer be used. You can use OptionMaxRecvSpeed instead. **Notes:**

If a download exceeds this speed (counted in bytes per second) on cumulative average during the transfer, the transfer will pause to keep the average rate less than or equal to the parameter value. Defaults to unlimited speed. (Added in 7.15.5)
(Read and Write property)
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58.10.201  OptionMaxRedirs as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The set number will be the redirection limit.

**Example:**

```
dim c as new CURLNMBS

c.OptionFollowLocation = true

c.OptionMaxRedirs = 3
```

**Notes:**

If that many redirections have been followed, the next redirect will cause an error (kError_TOO_MANY_REDIRECTS). This option only makes sense if the CURLOPT_FOLLOWLOCATION is used at the same time. Added in 7.15.1: Setting the limit to 0 will make libCURL refuse any redirect. Set it to -1 for an infinite number of redirects (which is the default)

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also MAXREDIRS option in CURL manual.

58.10.202  OptionMaxSendSpeed as Int64

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Defines the maximum upload speed.

**Notes:**

If an upload exceeds this speed on cumulative average during the transfer, the transfer will pause to keep the average rate less than or equal to the parameter value. Defaults to unlimited speed. (Added in 7.15.5)
Value is in bytes per second.
Useful if you have a limited pipe and you’d like your transfer not to use your entire bandwidth.
Slowing down the transfer speed is also useful for lowering CPU consumption during transfers.
(Read and Write property)
See also MAX_SEND_SPEED option in CURL manual.

58.10.203  OptionMaxSendSpeedLarge as Int64

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Defines the maximum upload speed.

**Deprecated:** This item is deprecated and should no longer be used. You can use OptionMaxSendSpeed instead.

**Notes:**
If an upload exceeds this speed on cumulative average during the transfer, the transfer will pause to keep the average rate less than or equal to the parameter value. Defaults to unlimited speed. (Added in 7.15.5) Value is in bytes per second.
Useful if you have a limited pipe and you’d like your transfer not to use your entire bandwidth. Slowing down the transfer speed is also useful for lowering CPU consumption during transfers. (Read and Write property)

58.10.204 OptionNetRC as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Controls usage of netrc file.

**Notes:**
This parameter controls the preference of libCURL between using user names and passwords from your textasciitilde /.netrc file, relative to user names and passwords in the URL supplied with OptionURL.

libCURL uses a user name (and supplied or prompted password) supplied with OptionUsername and OptionPassword in preference to any of the options controlled by this parameter.

An integer, set to one of the values described below.

**kNETRC_OPTIONAL = 1**

The use of your textasciitilde /.netrc file is optional, and information in the URL is to be preferred. The file will be scanned with the host and user name (to find the password only) or with the host only, to find the first user name and password after that machine, which ever information is not specified in the URL.

Undefined values of the option will have this effect.

**kNETRC_IGNORED = 0**

The library will ignore the file and use only the information in the URL.

This is the default.

**kNETRC_REQUIRED = 2**

This value tells the library that use of the file is required, to ignore the information in the URL, and to search the file with the host only.
Only machine name, user name and password are taken into account (init macros and similar things aren’t supported).

libCURL does not verify that the file has the correct properties set (as the standard Unix ftp client does). It should only be readable by user.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value. (Read and Write property)
See also NETRC option in CURL manual.

58.10.205  OptionNetRCFile as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A string containing the full path name to the file you want libCURL to use as .netrc file.

**Notes:**
If this option is omitted, and OptionNETRC is set, libCURL will attempt to find the a .netrc file in the current user’s home directory. (Added in 7.10.9)

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

Starting with version 18.0 the plugin will always use UTF-8 encoding for file path on Linux and macOS. For macOS we also do the unicode character normalization for file names for you. (Read and Write property)
See also NETRC_FILE option in CURL manual.

58.10.206  OptionNewDirectoryPerms as Integer

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An integer, containing the value of the permissions that will be assigned to newly created directories on the remote server.

**Notes:**
The default value is 0755, but any valid value can be used. The only protocols that can use this are sftp://, scp://, and file://. (Added in 7.16.4)
Value must be octal, so use & o prefix for number. (Read and Write property)
See also NEW_DIRECTORY_PERMS option in CURL manual.
58.10.207 OptionNewFilePerms as Integer

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
An integer, containing the value of the permissions that will be assigned to newly created files on the remote server.

**Notes:**
- The default value is & o0644, but any valid value can be used. The only protocols that can use this are sftp://, scp://, and file:///.
- Be aware that you normally specify this in octal values. So use the & o prefix in Real Studio.
- (Added in 7.16.4)
- (Read and Write property)
- See also NEW_FILE_PERMS option in CURL manual.

58.10.208 OptionNoBody as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
True tells the library to not include the body-part in the output.

**Notes:**
- This is only relevant for protocols that have separate header and body parts. On HTTP(S) servers, this will make libCURL do a HEAD request.
- To change request to GET, you should use OptionGet. Change request to POST with OptionPost etc.
- The Lasterror property is set. 0 for success.
- You can set this value and later you can read it, but you cannot read the default value.
- (Read and Write property)
- See also NOBODY option in CURL manual.

58.10.209 OptionNoProxy as String

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A string with a comma-separated list of hosts which do not use a proxy, if one is specified.

**Notes:**
- The only wildcard is a single * character, which matches all hosts, and effectively disables the proxy. Each name in this list is matched as either a domain which contains the hostname, or the hostname itself. For example, local.com would match local.com, local.com:80, and www.local.com, but not www.notlocal.com.
- (Added in 7.19.4)
- (Read and Write property)
- See also NOPROXY option in CURL manual.
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58.10.210 **OptionNoSignal as Integer**

MBS CURL Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to not use signals.

**Notes:**

If it is true, libCURL will not use any functions that install signal handlers or any functions that cause signals to be sent to the process. This option is mainly here to allow multi-threaded unix applications to still set/use all timeout options etc, without risking getting signals. (Added in 7.10)

If this option is set and libCURL has been built with the standard name resolver, timeouts will not occur while the name resolve takes place. Consider building libCURL with c-ares support to enable asynchronous DNS lookups, which enables nice timeouts for name resolves without signals.

Setting OptionNoSignal to true makes libCURL NOT ask the system to ignore SIGPIPE signals, which otherwise are sent by the system when trying to send data to a socket which is closed in the other end. libCURL makes an effort to never cause such SIGPIPEs to trigger, but some operating systems have no way to avoid them and even on those that have there are some corner cases when they may still happen, contrary to our desire. In addition, using CURLAUTH\_NTLM\_WB authentication could cause a SIGCHLD signal to be raised.

(Read and Write property)

See also NOSIGNAL option in CURL manual.

58.10.211 **OptionPassword as String**

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The password to use for the transfer.

**Notes:**

The OptionPassword option should be used in conjunction with the OptionUsername option.

(Read and Write property)

See also PASSWORD option in CURL manual.

58.10.212 **OptionPathAsIs as Boolean**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Pass path as it is and do not resolve dots.

**Notes:**

Do not squash dot-dot sequences.

(Read and Write property)

See also PATH\_AS\_IS option in CURL manual.
58.10.213 OptionPinnedPublicKey as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The public key in DER form used to validate the peer public key.

**Notes:**
Native path to key file.
This option is used only if SSLVerifyPeer is true.
(Read and Write property)
See also PINNEDPUBLICKEY option in CURL manual.

58.10.214 OptionPipeWait as Boolean

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Wait/don’t wait for pipe/mutex to clarify.
**Notes:** (Read and Write property)
See also PIPEWAIT option in CURL manual.

58.10.215 OptionPort as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The remote port number to connect to, instead of the one specified in the URL or the default port for the used protocol.

**Notes:**
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also PORT option in CURL manual.

58.10.216 OptionPost as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A boolean parameter tells the library to do a regular HTTP post.

**Notes:**
This will also make the library use the a ”Content-Type: application/x-www-form-urlencoded” header. (This is by far the most commonly used POST method).

Use the OptionPostFields option to specify what data to post.

Optionally, you can provide data to POST using the Read event but then you must make sure to not set
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OptionPostFields to anything but "". When providing data with an event, you must transmit it using chunked transfer-encoding.

You can override the default POST Content-Type: header by setting your own with OptionHTTPHeader.

Using POST with HTTP 1.1 implies the use of a "Expect: 100-continue" header. You can disable this header with OptionHTTPHeader as usual.

If you use POST to a HTTP 1.1 server, you can send data without knowing the size before starting the POST if you use chunked encoding. You enable this by adding a header like "Transfer-Encoding: chunked" with OptionHTTPHeader. With HTTP 1.0 or without chunked transfer, you must specify the size in the request.

When setting CURLOPT_POST to a non-zero value, it will automatically set OptionNoBody to 0 (since 7.14.1).

If you issue a POST request and then want to make a HEAD or GET using the same re-used handle, you must explicitly set the new request type using OptionNoBody or OptionGet or similar.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also POST option in CURL manual.

58.10.217 OptionPostFields as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: A string which should be the full data to post in an HTTP POST operation.

Example:

```vbnet
dim xml as string // XML or JSON to send as payload
dim c as new CURLNMBS

c.OptionFollowLocation = true
c.OptionMaxRedirs = 3
c.OptionPostFields = xml
c.OptionUserAgent = "Test App"
c.OptionPost = true

// for SOAP use right content type
c.SetOptionHTTPHeader array("Content-Type: application/soap+xml; charset=utf-8")
```
Notes:

You must make sure that the data is formatted the way you want the server to receive it. libCURL will not convert or encode it for you. Most web servers will assume this data to be url-encoded. Take note.

This POST is a normal application/x-www-form-urlencoded kind (and libCURL will set that Content-Type by default when this option is used), which is the most commonly used one by HTML forms. See also the OptionPost. Using OptionPostFields implies OptionPost.

Using POST with HTTP 1.1 implies the use of a "Expect: 100-continue" header. You can disable this header with CURLOPT_HTTPHEADER as usual.

To make multipart/formdata posts (aka rfc1867-posts), check out the OptionPost option.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also COPYPOSTFIELDS option in CURL manual.

### 58.10.218 OptionPostFieldSize as Int64

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The size of the post data.

**Notes:**
Optional you can set the size of your post data.
If you specify a postfield string, this size will be set automatically.

If you specify a size and no postfield string, the Read event will request data.
(Read and Write property)
See also POSTFIELDSIZE option in CURL manual.

### 58.10.219 OptionPostFieldSizeLarge as Int64

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The size of the post data. (64 bit version)

**Deprecated:** This item is deprecated and should no longer be used. You can use OptionPostFieldSize instead.

**Notes:**
Optional you can set the size of your post data.
If you specify a postfield string, this size will be set automatically.
If you specify a size and no postfield string, the Read event will request data.  
(Read and Write property)

58.10.220 OptionPostRedir as Integer

**Function:** A bitmask to control how libCURL acts on redirects after POSTs that get a 301 or 302 response back.  
**Notes:**  
A parameter with bit 0 set (value CURL\_REDIR\_POST\_301=1) tells the library to respect RFC 2616/10.3.2 and not convert POST requests into GET requests when following a 301 redirection.  Setting bit 1 (value CURL\_REDIR\_POST\_302=2) makes libCURL maintain the request method after a 302 redirect.  CURL\_REDIR\_POST\_ALL is a convenience define that sets both bits.  
The non-RFC behaviour is ubiquitous in web browsers, so the library does the conversion by default to maintain consistency.  However, a server may require a POST to remain a POST after such a redirection.  This option is meaningful only when setting OptionFollowLocation.  (Added in 7.17.1)  (This option was known as CURLOPT\_POST301 up to 7.19.0 as it only supported the 301 way before then)  
(Read and Write property)  
See also POSTREDIR option in CURL manual.

58.10.221 OptionPreProxy as String

**Function:** Name of pre proxy to use.  
**Notes:**  
(Read and Write property)  
See also PRE\_PROXY option in CURL manual.

58.10.222 OptionProtocols as Integer

**Function:** A bitmask of kProtocol\* constants.  
**Notes:**  
If used, this bitmask limits what protocols libCURL may use in the transfer.  This allows you to have a libCURL built to support a wide range of protocols but still limit specific transfers to only be allowed to use a subset of them.  By default libCURL will accept all protocols it supports.  See also OptionRedirProtocols.  (Added in 7.19.4)  
(Read and Write property)  
See also PROTOCOLS option in CURL manual.
58.10.223  OptionProxy as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Set HTTP proxy to use.

**Example:**

```vba
dim c as CURLNMBS // your CURL object
dim psAddress as string // your proxy address
dim psPort as Integer // your proxy port

c.OptionProxy=psAddress
c.OptionProxyPort=psPort
c.OptionProxyType=c.kPROXY_HTTP
```

**Notes:**
The Lasterror property is set. 0 for success. 
You can set this value and later you can read it, but you cannot read the default value.

The parameter should be a string holding the host name or dotted IP address. To specify port number in this string, append : [port] to the end of the host name. The proxy string may be prefixed with [protocol] :// since any such prefix will be ignored. The proxy's port number may optionally be specified with the separate option ProxyHost.

When you tell the library to use an HTTP proxy, libCURL will transparently convert operations to HTTP even if you specify an FTP URL etc. This may have an impact on what other features of the library you can use, such as CURLOPT\_QUOTE and similar FTP specifics that don't work unless you tunnel through the HTTP proxy. Such tunneling is activated with HTTPProxyTunnel.

libCURL respects the environment variables http\_proxy, ftp\_proxy, all\_proxy etc, if any of those is set. The Proxy option does however override any possibly set environment variables.

Starting with 7.14.1, the proxy host string given in environment variables can be specified the exact same way as the proxy can be set with Proxy, include protocol prefix (http://) and embedded user + password.

You can use WinHTTPClientMBS class on Windows or CFProxyMBS on Mac to discover system proxy settings.
(Read and Write property)
See also PROXY option in CURL manual.
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58.10.224 OptionProxyAuth as Integer

Notes:
Pass an integer as parameter, which is set to a bitmask, to tell libCURL what authentication method(s) you want it to use for your proxy authentication. If more than one bit is set, libCURL will first query the site to see what authentication methods it supports and then pick the best one you allow it to use. For some methods, this will induce an extra network round-trip. Set the actual name and password with the ProxyUserPassword option. The bitmask can be constructed by or’ing together the bits listed above for the HTTPAuth option. As of this writing, only Basic, Digest and NTLM work. (Added in 7.10.7)

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also PROXYAUTH option in CURL manual.

58.10.225 OptionProxyCAInfo as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The CApath or CAfile used to validate the proxy certificate.
Notes:
Pass native file path.
This option is used only if CURLNMBS.OptionProxySSLVerifyPeer is true
(Read and Write property)
See also PROXY_CAINFO option in CURL manual.

58.10.226 OptionProxyCAPath as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The CApath directory used to validate the proxy certificate.
Notes:
Pass native file path.
This option is used only if CURLNMBS.OptionProxySSLVerifyPeer is true
(Read and Write property)
See also PROXY_CAPATH option in CURL manual.
**58.10.227 OptionProxyCRLFile as String**

**Notes:**  
Pass native file path.  
(Read and Write property)  
See also PROXY_CRLFILE option in CURL manual.

**58.10.228 OptionProxyKeyPassword as String**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Password for the SSL private key for proxy.  
**Notes:** (Read and Write property)  
See also PROXY_KEYPASSWD option in CURL manual.

**58.10.229 OptionProxyPassword as String**

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A string which should be pointing to the password to use for the transfer while connecting to Proxy.  
**Notes:**  
The OptionProxyPassword option should be used in conjunction with the OptionProxyUsername option.  
(Added in 7.19.1)  
(Read and Write property)  
See also PROXYPASSWORD option in CURL manual.

**58.10.230 OptionProxyPinnedPublicKey as String**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The public key in DER form used to validate the proxy public key.  
**Notes:**  
This option is used only if CURLNMBS.OptionProxySSLVerifyPeer is true.  
Please path native file path to key file.  
(Read and Write property)  
See also PROXY_PINNEDPUBLICKEY option in CURL manual.
58.10.231 OptionProxyPort as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The proxy port to connect to unless it is specified in the proxy string OptionProxy.

**Notes:**
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

You can use OptionProxy with port, e.g. "12.34.56.78:8080" or pass port here and proxy without port. For some users it seems like the option with OptionProxy including port works better.
(Read and Write property)
See also PROXYPORT option in CURL manual.

58.10.232 OptionProxyServiceName as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Proxy Service Name.

**Notes:** (Read and Write property)
See also PROXY_SERVICE_NAME option in CURL manual.

58.10.233 OptionProxySSLCert as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Name of the file keeping your private SSL-certificate for proxy.

**Notes:** (Read and Write property)
See also PROXY_SSLCERT option in CURL manual.

58.10.234 OptionProxySSLCertType as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Type of the file keeping your SSL-certificate for proxy.

**Notes:**
Value can be "DER", "PEM" or "ENG".
(Read and Write property)
See also PROXY_SSLCERTTYPE option in CURL manual.
58.10.235  **OptionProxySSLCipherList as String**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Specify which SSL ciphers to use for proxy.
**Notes:** (Read and Write property)
See also `PROXY_SSL_CIPHER_LIST` option in CURL manual.

58.10.236  **OptionProxySSLKey as String**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Name of the file keeping your private SSL-key for proxy.
**Notes:**
Pass native file path.
(Read and Write property)
See also `PROXY_SSLKEY` option in CURL manual.

58.10.237  **OptionProxySSLKeyType as String**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets type of the file keeping your private SSL-key for proxy.
**Notes:**
Value is DER, PEM or ENG.
(Read and Write property)
See also `PROXY_SSLKEYTYPE` option in CURL manual.

58.10.238  **OptionProxySSLOptions as Integer**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Enable/disable specific SSL features with a bitmask for proxy.
**Notes:** (Read and Write property)
See also `PROXY_SSL_OPTIONS` option in CURL manual.

58.10.239  **OptionProxySSLVerifyHost as Integer**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Enable SSL Host verification.
**Notes:**
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Set if we should verify the Common name from the proxy certificate in ssl handshake, set 1 to check existence, 2 to ensure that it matches the provided hostname.  
(Read and Write property)  
See also `PROXY_SSL_VERIFYHOST` option in CURL manual.

---

**58.10.240 OptionProxySSLVerifyPeer as Integer**

**Function:** Set if we should verify the proxy in ssl handshake.  
**Notes:**  
set 1 to verify.  
(Read and Write property)  
See also `PROXY_SSL_VERIFYPEER` option in CURL manual.

---

**58.10.241 OptionProxySSLVersion as Integer**

**Function:** What version to specifically try to use for proxy.  
**Notes:**  
The available options are:

- **Default** 0: The default action. This will attempt to figure out the remote SSL protocol version, i.e. either SSLv3 or TLSv1 (but not SSLv2, which became disabled by default with 7.18.1).
- **TLSv1** 1: Force TLSv1.x
- **SSLv2** 2: Force SSLv2
- **SSLv3** 3: Force SSLv3
- **TLSv1.0** 4: Force TLSv1.0
- **TLSv1.1** 5: Force TLSv1.1
- **TLSv1.2** 6: Force TLSv1.2
- **TLSv1.3** 7: Force TLSv1.3

(Read and Write property)  
See also `PROXY_SSLVERSION` option in CURL manual.
58.10.242  OptionProxyTLSAuthPassword as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Password for authenticated TLS for proxy. **Notes:** (Read and Write property) See also PROXY_TLSAUTH_PASSWORD option in CURL manual.

58.10.243  OptionProxyTLSAuthType as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set authentication type for authenticated TLS for proxy. **Notes:** (Read and Write property) See also PROXY_TLSAUTH_TYPE option in CURL manual.

58.10.244  OptionProxyTLSAuthUsername as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set a username for authenticated TLS for proxy. **Notes:** (Read and Write property) See also PROXY_TLSAUTH_USERNAME option in CURL manual.

58.10.245  OptionProxyTransferMode as Integer

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** If this integer value is set to 1 (one), it tells libCURL to set the transfer mode (binary or ASCII) for FTP transfers done via an HTTP proxy, by appending ;type=a or ;type=i to the URL. **Notes:** Without this setting, or it being set to 0 (zero, the default), OptionTransferText has no effect when doing FTP via a proxy. Beware that not all proxies support this feature. (Added in 7.18.0) (Read and Write property) See also PROXY_TRANSFER_MODE option in CURL manual.

58.10.246  OptionProxyType as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This option is to set type of the proxy. **Notes:** The Lasterror property is set 0 for success.
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You can set this value and later you can read it, but you cannot read the default value.

Available options for this are kPROXY_HTTP, kPROXY_SOCKS4 (added in 7.15.2) kPROXY_SOCKS5. The HTTP type is default.
(Read and Write property)
See also PROXYTYPE option in CURL manual.

58.10.247 OptionProxyUsername as String

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A string, which should be pointing to the user name to use for the transfer while connecting to Proxy.
**Notes:**
In order to specify the password to be used in conjunction with the user name use the OptionProxyPassword option.
(Read and Write property)
See also PROXYUSERNAME option in CURL manual.

58.10.248 OptionPut as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A non-zero parameter tells the library to use HTTP PUT to transfer data.
**Notes:**
The data should be set with OptionInFileSize.

This option is deprecated and starting with version 7.12.1 you should instead use OptionUpload.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also PUT option in CURL manual.

58.10.249 OptionRandomFile as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A file name for the random file.
**Notes:**
The file will be used to read from to seed the random engine for SSL. The more random the specified file is, the more secure the SSL connection will become.
The Lasterror property is set. 0 for success. You can set this value and later you can read it, but you cannot read the default value.

Starting with version 18.0 the plugin will always use UTF-8 encoding for file path on Linux and macOS. For macOS we also do the unicode character normalization for file names for you.
(Read and Write property)
See also RANDOM_FILE option in CURL manual.

58.10.250  OptionRange as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A string which should contain the specified range you want.
**Notes:**
It should be in the format "X-Y", where X or Y may be left out. HTTP transfers also support several intervals, separated with commas as in "X-Y,N-M". Using this kind of multiple intervals will cause the HTTP server to send the response document in pieces (using standard MIME separation techniques). Pass a NULL to this option to disable the use of ranges.

The Lasterror property is set. 0 for success. You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also RANGE option in CURL manual.

58.10.251  OptionRedirProtocols as Integer

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An integer that holds a bitmask of kProtocol* constants.
**Notes:**
If used, this bitmask limits what protocols libCURL may use in a transfer that it follows to in a redirect when OptionFollowLocation is enabled. This allows you to limit specific transfers to only be allowed to use a subset of protocols in redirections. By default libCURL will allow all protocols except for FILE and SCP. This is a difference compared to pre-7.19.4 versions which unconditionally would follow to all protocols supported. (Added in 7.19.4)
(Read and Write property)
See also REDIR_PROTOCOLS option in CURL manual.
58.10.252 OptionReferer as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The referer to pass to the server.
**Notes:**
It will be used to set the Referer: header in the http request sent to the remote server. This can be used to fool servers or scripts. You can also set any custom header with OptionHTTPHeader.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also REFERER option in CURL manual.

58.10.253 OptionRequestTarget as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The request target, instead of extracted from the URL.
**Notes:** (Read and Write property)
See also REQUEST_TARGET option in CURL manual.

58.10.254 OptionResumeFrom as Int64

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
It contains the offset in number of bytes that you want the transfer to start from.
**Notes:**
Set this option to 0 to make the transfer start from the beginning (effectively disabling resume). For FTP, set this option to -1 to make the transfer start from the end of the target file (useful to continue an interrupted upload).

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also RESUME_FROM option in CURL manual.

58.10.255 OptionResumeFromLarge as Int64

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
It contains the offset in number of bytes that you want the transfer to start from.
**58.10.256 OptionRTSPClientCSEQ as Integer**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Manually initialize the client RTSP CSeq for this handle. **Notes:** (Read and Write property) See also **RTSP_CLIENT_CSEQ** option in CURL manual.

**58.10.257 OptionRTSPRequest as Integer**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** RTSP request method (OPTIONS, SETUP, PLAY, etc...). **Notes:** (Read and Write property) See also **RTSP_REQUEST** option in CURL manual.

**58.10.258 OptionRTSPServerCSEQ as Integer**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Manually initialize the server RTSP CSeq for this handle. **Notes:** (Read and Write property) See also **RTSP_SERVER_CSEQ** option in CURL manual.

**58.10.259 OptionRTSPSessionID as String**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The RTSP session identifier. **Notes:** (Read and Write property) See also **RTSP_SESSION_ID** option in CURL manual.
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58.10.260 OptionRTSPStreamURI as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The RTSP stream URI. **Notes:** (Read and Write property) See also RTSP_STREAM_URI option in CURL manual.

58.10.261 OptionRTSPTransport as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The Transport: header to use in RTSP requests. **Notes:** (Read and Write property) See also RTSP_TRANSPORT option in CURL manual.

58.10.262 OptionSASLIR as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Enable/disable SASL initial response. **Notes:** (Read and Write property) See also SASL_IR option in CURL manual.

58.10.263 OptionServiceName as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Service Name. **Notes:** (Read and Write property) See also SERVICE_NAME option in CURL manual.

58.10.264 OptionSocks5Auth as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Bitmask of allowed auth methods for connections to SOCKS5 proxies. **Notes:** (Read and Write property) See also SOCKS5_AUTH option in CURL manual.
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58.10.265  OptionSocks5GSSAPINEC as Boolean

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:** Whether to protect SOCKS5 connection is protected.

**Notes:**
Set to true to enable or false to disable. As part of the gssapi negotiation a protection mode is negotiated. The rfc1961 says in section 4.3/4.4 it should be protected, but the NEC reference implementation does not. If enabled, this option allows the unprotected exchange of the protection mode negotiation. (Added in 7.19.4).

(Read and Write property)
See also SOCKS5_GSSAPI_NEC option in CURL manual.

58.10.266  OptionSocks5GSSAPIService as String

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:** A string holding the name of the service.

**Notes:**
The default service name for a SOCKS5 server is rcmd/server-fqdn. This option allows you to change it. (Added in 7.19.4)
(Read and Write property)
See also SOCKS5_GSSAPI_SERVICE option in CURL manual.

58.10.267  OptionSSHAuthTypes as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:** Define the SSH authorization types.

**Notes:**
Pass a long set to a bitmask consisting of one or more of CURLSSH_AUTH_PUBLICKEY, CURLSSH_AUTH_PASSWORD, CURLSSH_AUTH_HOST, CURLSSH_AUTH_KEYBOARD. Set CURLSSH_AUTH_ANY to let libCURL pick one. (Added in 7.16.1)

**constants:**
CURLSSH_AUTH_ANY = & hFFFFFFFF
CURLSSH_AUTH_NONE = 0
CURLSSH_AUTH_PUBLICKEY = 1
CURLSSH_AUTH_PASSWORD = 2
CURLSSH_AUTH_HOST = 4
CURLSSH_AUTH_KEYBOARD = 8
CURLSSH_AUTH_DEFAULT = CURLSSH_AUTH_ANY
(Read and Write property)
See also SSH_AUTH_TYPES option in CURL manual.
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### OptionSSHCompression as Boolean

**Notes:** (Read and Write property)
See also **SSH_COMPRESSION** option in CURL manual.

### OptionSSHHostPublicKeyMD5 as String

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A string containing 32 hexadecimal digits with the 128 bit MD5 checksum of the remote host’s public key.
**Notes:**
libCURL will reject the connection to the host unless the md5sums match. This option is only for SCP and SFTP transfers. (Added in 7.17.1)
(Read and Write property)
See also **SSH_HOST_PUBLIC_KEY_MD5** option in CURL manual.

### OptionSSHKnownhosts as String

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A string holding the file name of the known host file to use.
**Notes:**
The known hosts file should use the OpenSSH file format as supported by libssh2. If this file is specified, libCURL will only accept connections with hosts that are known and present in that file, with a matching public key. (Added in 7.19.6)
(Read and Write property)
See also **SSH_KNOWNHOSTS** option in CURL manual.

### OptionSSHPrivateKeyfile as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Pass a path pointing to a file name for your private key.
**Notes:**
If not used, libCURL defaults to using textasciitilde /.ssh/id_dsa. If the file is password-protected, set the password with OptionSSLKeyPassword. (Added in 7.16.1)

For a SFTP transfer (= file transfer over SSH), you would tell the plugin your public and private keys, so the plugin can login.
Starting with version 18.0 the plugin will always use UTF-8 encoding for file path on Linux and macOS. For macOS we also do the unicode character normalization for file names for you.

(Read and Write property)
See also **SSH_PRIVATE_KEYFILE** option in CURL manual.

### 58.10.272 OptionSSHPublicKeyfile as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Pass a path pointing to a file name for your public key.

**Notes:**
If not used, libCURL defaults to using `textasciitilde/.ssh/id_dsa.pub`. (Added in 7.16.1)

For a SFTP transfer (= file transfer over SSH), you would tell the plugin your public and private keys, so the plugin can login.

Starting with version 18.0 the plugin will always use UTF-8 encoding for file path on Linux and macOS. For macOS we also do the unicode character normalization for file names for you.

(Read and Write property)
See also **SSH_PUBLIC_KEYFILE** option in CURL manual.

### 58.10.273 OptionSSLCert as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The string should be the file name of your certificate.

**Notes:**
The default format is "PEM" and can be changed with OptionSSLCERTTYPE.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

Starting with version 18.0 the plugin will always use UTF-8 encoding for file path on Linux and macOS. For macOS we also do the unicode character normalization for file names for you.

(Read and Write property)
See also **SSLCERT** option in CURL manual.
58.10. CLASS CURLNMBS

58.10.274 OptionSSLCertPassword as String

MBS CURL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The certificate password. **Deprecated:** This item is deprecated and should no longer be used. You can use OptionKeyPassword instead. **Notes:** (Read and Write property)

58.10.275 OptionSSLCertType as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The string should be the format of your certificate. **Notes:** Supported formats are "PEM" and "DER". (Added in 7.9.3)

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also SSLCERTTYPE option in CURL manual.

58.10.276 OptionSSLCipherList as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A string holding the list of ciphers to use for the SSL connection. **Notes:** The list must be syntactically correct, it consists of one or more cipher strings separated by colons. Commas or spaces are also acceptable separators but colons are normally used, !, - and + can be used as operators. Valid examples of cipher lists include 'RC4-SHA', 'SHA1+DES', 'TLSv1' and 'DEFAULT'. The default list is normally set when you compile OpenSSL.

You’ll find more details about cipher lists on this URL:

http://www.openssl.org/docs/apps/ciphers.html

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also SSL_CIPHER_LIST option in CURL manual.
58.10.277 **OptionSSLEnableALPN as Integer**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Enable/disable TLS ALPN extension (http2 over ssl might fail without).  
**Notes:** (Read and Write property)  
See also SSL_ENABLE_ALPN option in CURL manual.

58.10.278 **OptionSSLEnableNPN as Integer**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Enable/disable TLS NPN extension (http2 over ssl might fail without)  
**Notes:** (Read and Write property)  
See also SSL_ENABLE_NPN option in CURL manual.

58.10.279 **OptionSSLEngine as String**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** It will be used as the identifier for the crypto engine you want to use for your private key.  
**Notes:**  
If the crypto device cannot be loaded, kError_SSL_ENGINE_NOTFOUND is returned.  
The Lasterror property is set. 0 for success.  
You can set this value and later you can read it, but you cannot read the default value.  
(Read and Write property)  
See also SSLENGINE option in CURL manual.

58.10.280 **OptionSSLEngineDefault as Integer**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the actual crypto engine as the default for (asymmetric) crypto operations.  
**Notes:**  
If the crypto device cannot be set, kError_SSL_ENGINE_SETFAILED is returned.  
The Lasterror property is set. 0 for success.  
You can set this value and later you can read it, but you cannot read the default value.  
(Read and Write property)  
See also SSLENGINE_DEFAULT option in CURL manual.
**58.10.281 OptionSSLFalseStart as Integer**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set if we should enable TLS false start. **Notes:** (Read and Write property) See also SSL_FALSESTART option in CURL manual.

**58.10.282 OptionSSLKey as String**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The string should be the file name of your private key. **Notes:**

The default format is "PEM" and can be changed with OptionSSLKEYTYPE.

The Lasterror property is set. 0 for success. You can set this value and later you can read it, but you cannot read the default value.

Starting with version 18.0 the plugin will always use UTF-8 encoding for file path on Linux and macOS. For macOS we also do the unicode character normalization for file names for you. (Read and Write property) See also SSLKEY option in CURL manual.

**58.10.283 OptionSSLKeyPassword as String**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The password required to use the OptionSSLKEY private key. **Deprecated:** This item is deprecated and should no longer be used. You can use OptionKeyPassword instead. **Notes:**

The Lasterror property is set. 0 for success. You can set this value and later you can read it, but you cannot read the default value. (Read and Write property)

**58.10.284 OptionSSLKeyType as String**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The string should be the format of your private key. **Notes:**

Supported formats are "PEM", "DER" and "ENG".
The format "ENG" enables you to load the private key from a crypto engine. In this case OptionSSLKEY is used as an identifier passed to the engine. You have to set the crypto engine with OptionSSLENGINE. "DER" format key file currently does not work because of a bug in OpenSSL.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value. (Read and Write property)
See also SSLKEYTYPE option in CURL manual.

**58.10.285 OptionSSLOptions as Integer**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Enable/disable specific SSL features with a bitmask. **Notes:** (Read and Write property)
See also SSL_OPTIONS option in CURL manual.

**58.10.286 OptionSSLSessionIDCache as Boolean**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to use the SSL session ID cache. **Notes:**
Pass false to disable libCURL's use of SSL session-ID caching. Set this to true to enable it. By default all transfers are done using the cache. Note that while nothing ever should get hurt by attempting to reuse SSL session-IDs, there seem to be broken SSL implementations in the wild that may require you to disable this in order for you to succeed. (Added in 7.16.0) (Read and Write property)
See also SSL_SESSIONID_CACHE option in CURL manual.

**58.10.287 OptionSSLVerifyHost as Integer**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This option determines whether libCURL verifies that the server cert is for the server it is known as. **Notes:**
When negotiating an SSL connection, the server sends a certificate indicating its identity.

When OptionSSLVerifyHost is 2, that certificate must indicate that the server is the server to which you meant to connect, or the connection fails.

CURL considers the server the intended one when the Common Name field or a Subject Alternate Name
field in the certificate matches the host name in the URL to which you told CURL to connect.

When the value is 1, the certificate must contain a Common Name field, but it doesn’t matter what name it says. (This is not ordinarily a useful setting).

When the value is 0, the connection succeeds regardless of the names in the certificate.

The default, since 7.10, is 2.

The checking this option controls is of the identity that the server claims. The server could be lying. To control lying, see OptionSSLVerifyPeer.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also SSL_VERIFYHOST option in CURL manual.

58.10.288  OptionSSLVerifyPeer as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Configure whether this CURL instance will verify the SSL peer certificate.
**Notes:**
This option determines whether CURL verifies the authenticity of the peer’s certificate. A value of 1 means CURL verifies; zero means it doesn’t. The default is nonzero, but before 7.10, it was zero.

When negotiating an SSL connection, the server sends a certificate indicating its identity. CURL verifies whether the certificate is authentic, i.e. that you can trust that the server is who the certificate says it is. This trust is based on a chain of digital signatures, rooted in certification authority (CA) certificates you supply. As of 7.10, CURL installs a default bundle of CA certificates and you can specify alternate certificates with the OptionCAINFO option or the OptionCAPATH option.

When OptionSSLVerifyPeer is nonzero, and the verification fails to prove that the certificate is authentic, the connection fails. When the option is zero, the connection succeeds regardless.

Authenticating the certificate is not by itself very useful. You typically want to ensure that the server, as authentically identified by its certificate, is the server you mean to be talking to. Use OptionSSLVerifyHost to control that.
(Read and Write property)
See also SSL_VERIFYPEER option in CURL manual.
58.10.289  OptionSSLVerifyStatus as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Set if we should verify the certificate status.
**Notes:** (Read and Write property)
See also SSL_VERIFYSTATUS option in CURL manual.

58.10.290  OptionSSLVersion as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
What version of SSL/TLS to attempt to use.
**Example:**
```
dim c as CURLNMBS
    c.OptionUseSSL = c.kFTPSSL_ALL
    c.OptionSSLVersion = c.kSSLVersionTLSv12
```

**Notes:**
The available options are:

- **kSSLVERSION_DEFAULT** = 0

  The default action. When libCURL built with OpenSSL, this will attempt to figure out the remote SSL protocol version. Unfortunately there are a lot of ancient and broken servers in use which cannot handle this technique and will fail to connect. When libCURL is built with GnuTLS, this will mean SSLv3.

- **kSSLVERSION_TLSv1** = 1
  Force TLSv1

- **kSSLVERSION_SSLv2** = 2
  Force SSLv2

- **kSSLVERSION_SSLv3** = 3
  Force SSLv3
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also SSLVERSION option in CURL manual.

58.10.291 OptionStreamDepends as CURLNMBS

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Set stream dependency on another CURL handle.
**Notes:** (Read and Write property)
See also STREAM_DEPENDS option in CURL manual.

58.10.292 OptionStreamDependsE as CURLNMBS

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Set E-xclusive stream dependency on another CURL handle.
**Notes:** (Read and Write property)
See also STREAM_DEPENDS_E option in CURL manual.

58.10.293 OptionStreamWeight as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Set stream weight, 1 - 256.
**Notes:**
Default is 16.
(Read and Write property)
See also STREAM_WEIGHT option in CURL manual.

58.10.294 OptionSuppressConnectHeaders as Boolean

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Suppress proxy CONNECT response headers from user callbacks.
**Notes:** (Read and Write property)
See also SUPPRESS_CONNECT_HEADERS option in CURL manual.
58.10.295  OptionTCPFastOpen as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set TCP Fast Open.
**Notes:** (Read and Write property)
See also **TCP_FASTOPEN** option in CURL manual.

58.10.296  OptionTCPKeepAlive as Boolean

MBS CURL Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** If set to true, TCP keepalive probes will be sent.
**Notes:**
The delay and frequency of these probes can be controlled by the OptionTCPKeepIdle and OptionTCPKeepInterval options, provided the operating system supports them. Set to false (default behavior) to disable keepalive probes (Added in 7.25.0).
(Read and Write property)
See also **TCP_KEEPALIVE** option in CURL manual.

58.10.297  OptionTCPKeepIdle as Integer

MBS CURL Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the delay, in seconds, that the operating system will wait while the connection is idle before sending keepalive probes.
**Notes:**
Not all operating systems support this option. (Added in 7.25.0)
(Read and Write property)
See also **TCP_KEEPIDLE** option in CURL manual.

58.10.298  OptionTCPKeepInterval as Integer

MBS CURL Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the interval, in seconds, that the operating system will wait between sending keepalive probes.
**Notes:**
Not all operating systems support this option. (Added in 7.25.0)
(Read and Write property)
See also **TCP_KEEPINTVL** option in CURL manual.
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58.10.299 OptionTCPNoDelay as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An integer specifying whether the TCP_NODELAY option should be set or cleared (true = set, false = clear). **Notes:**
The option is cleared by default. This will have no effect after the connection has been established.

Setting this option will disable TCP’s Nagle algorithm. The purpose of this algorithm is to try to minimize the number of small packets on the network (where ”small packets” means TCP segments less than the Maximum Segment Size (MSS) for the network).

Maximizing the amount of data sent per TCP segment is good because it amortizes the overhead of the send. However, in some cases (most notably telnet or rlogin) small segments may need to be sent without delay. This is less efficient than sending larger amounts of data at a time, and can contribute to congestion on the network if overdone.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also TCP_NODELAY option in CURL manual.

58.10.300 OptionTFTPBlockSize as Integer

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Specify block size to use for TFTP data transmission. **Notes:**
Valid range as per RFC 2348 is 8-65464 bytes. The default of 512 bytes will be used if this option is not specified. The specified block size will only be used pending support by the remote server. If the server does not return an option acknowledgement or returns an option acknowledgement with no blksize, the default of 512 bytes will be used. (added in 7.19.4)
(Read and Write property)
See also TFTP_BLKSIZE option in CURL manual.

58.10.301 OptionTFTPNoOptions as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether not send any tftp option requests to the server. **Notes:** (Read and Write property)
See also TFTP_NO_OPTIONS option in CURL manual.
58.10.302 OptionTimeCondition as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The Time condition option.

**Notes:**
This defines how the OptionTimeValue time value is treated. You can set this parameter to kTimeConditionIfModifiedSince (1) or kTimeConditionIfUnModifiedSince (2). This feature applies to HTTP and FTP.

The last modification time of a file is not always known and in such instances this feature will have no effect even if the given time condition would have not been met.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also TIMECONDITION option in CURL manual.

58.10.303 OptionTimeOut as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The maximum time in seconds that you allow the libCURL transfer operation to take.

**Notes:**
Normally, name lookups can take a considerable time and limiting operations to less than a few minutes risk aborting perfectly normal operations. This option will cause CURL to use the SIGALRM to enable time-outing system calls.

In unix-like systems, this might cause signals to be used unless CURLOPT_NOSIGNAL is set.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also TIMEOUT option in CURL manual.

58.10.304 OptionTimeOutMS as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Pass a long as parameter containing the maximum time in milli seconds that you allow the libCURL transfer operation to take.

**Notes:**
Normally, name lookups can take a considerable time and limiting operations to less than a few minutes
risk aborting perfectly normal operations. This option will cause CURL to use the SIGALRM to enable
time-outing system calls.
(Read and Write property)
See also `TIMEOUT_MS` option in CURL manual.

58.10.305 OptionTimeValue as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This should be the time in seconds since 1 jan 1970, and the time will be used in a condition as specified
with OptionTimeCondition.
**Notes:**
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also `TIMEVALUE` option in CURL manual.

58.10.306 OptionTLSAuthPassword as String

MBS CURL Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the TSL authentication password.
**Notes:**
Please also set OptionTLSAuthType.
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also `TLSAUTH_PASSWORD` option in CURL manual.

58.10.307 OptionTLSAuthType as String

MBS CURL Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the TLS authentication type.
**Notes:**
You can set this to "SRP" to use Secure Remote Password authentication.
Please also set username and password.
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also `TLSAUTH_TYPE` option in CURL manual.
58.10.308 OptionTLSAuthUsername as String

MBS CURL Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the TSL authentication user name.

**Notes:**
Please also set OptionTLSAuthType.
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also TLSAUTH_USERNAME option in CURL manual.

58.10.309 OptionTransferEncoding as Boolean

MBS CURL Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Adds a request for compressed Transfer Encoding in the outgoing HTTP request.

**Notes:**
If the server supports this and so desires, it can respond with the HTTP response sent using a compressed Transfer-Encoding that will be automatically uncompressed by libCURL on reception.

Transfer-Encoding differs slightly from the Content-Encoding you ask for with OptionAcceptEncoding in that a Transfer-Encoding is strictly meant to be for the transfer and thus MUST be decoded before the data arrives in the client. Traditionally, Transfer-Encoding has been much less used and supported by both HTTP clients and HTTP servers.
(Read and Write property)
See also TRANSFER_ENCODING option in CURL manual.

58.10.310 OptionTransferText as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
True tells the library to use ASCII mode for ftp transfers, instead of the default binary transfer.

**Notes:**
For win32 systems it does not set the stdout to binary mode. This option can be usable when transferring text data between systems with different views on certain characters, such as newlines or similar.

libCURL does not do a complete ASCII conversion when doing ASCII transfers over FTP. This is a known limitation/flaw that nobody has rectified. libCURL simply sets the mode to ascii and performs a standard transfer.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
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(Read and Write property)
See also TRANSFERTEXT option in CURL manual.

58.10.311 OptionUnixSocketPath as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Path to Unix domain socket.
**Notes:** (Read and Write property)
See also UNIX_SOCKET_PATH option in CURL manual.

58.10.312 OptionUnrestrictedAuth as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A boolean parameter tells the library it can continue to send authentication (user+password) when following
locations, even when hostname changed.
**Notes:**
This option is meaningful only when setting FollowOption.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also UNRESTRICTED_AUTH option in CURL manual.

58.10.313 OptionUpload as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
True tells the library to prepare for an upload.
**Notes:**
The OptionInFileSize or OptionInFileSizeLarge options are also interesting for uploads. If the protocol is
HTTP, uploading means using the PUT request unless you tell libCURL otherwise.

Using PUT with HTTP 1.1 implies the use of a "Expect: 100-continue" header. You can disable this header
with OptionHTTPHeader as usual.

If you use PUT to a HTTP 1.1 server, you can upload data without knowing the size before starting the
transfer if you use chunked encoding. You enable this by adding a header like "Transfer-Encoding: chunked"
with OptionHTTPHeader. With HTTP 1.0 or without chunked transfer, you must specify the size.
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also UPLOAD option in CURL manual.

58.10.314 OptionURL as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The actual URL to deal with.

**Notes:**
If you need to pass username or password, please consider using the OptionUsername and OptionPassword
properties. If you username or password contains characters like @ or :, you must use those properties.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

The parameter should be a char * to a zero terminated string. The string must remain present until CURL
no longer needs it, as it doesn’t copy the string.

If the given URL lacks the protocol part ("http:/* or "ftp://" etc), it will attempt to guess which protocol
to use based on the given host name. If the given protocol of the set URL is not supported, libCURL
will return on error (kError_UNSUPORTED_PROTOCOL) when you call Perform. Use VersionInfo for
detailed info on which protocols that are supported.

The string given to CURLOPT_URL must be url-encoded and following the RFC 2396:
http://CURL.haxx.se/rfc/rfc2396.txt

CURLOPT_URL is the only option that must be set before Perform is called.
For file uploads or downloads, please include the file name in the URL.

Please do never include username and passwords in URLs, as those get often written to log files and would
reveal your credentials!
Instead use OptionUsername and OptionPassword.
(Read and Write property)
See also URL option in CURL manual.

58.10.315 OptionUserAgent as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The user agent string to pass to the server.
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Notes:
It will be used to set the User-Agent: header in the http request sent to the remote server. This can be used
to fool servers or scripts. You can also set any custom header with OptionHTTPHeader.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also USERAGENT option in CURL manual.

58.10.316 OptionUsername as String

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The user name to be used in protocol authentication
**Notes:**
In order to specify the password to be used in conjunction with the user name use the OptionPassword option
(Read and Write property)
See also USERNAME option in CURL manual.

58.10.317 OptionUseSSL as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Request using SSL / TLS for the transfer.
**Notes:**
Set to an integer using one of the values from below, to make libCURL use your desired level of SSL for the
transfer.
These are all protocols that start out plain text and get "upgraded" to SSL using the STARTTLS command.
This is for enabling SSL/TLS when you use FTP, SMTP, POP3, IMAP etc.

<table>
<thead>
<tr>
<th>CURLUSESSL_NONE</th>
<th>0</th>
<th>Don’t attempt to use SSL.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURLUSESSL_TRY</td>
<td>1</td>
<td>Try using SSL, proceed as normal otherwise.</td>
</tr>
<tr>
<td>CURLUSESSL_CONTROL</td>
<td>2</td>
<td>Require SSL for the control connection or fail with CURLE_USE_SSL_FAILED.</td>
</tr>
<tr>
<td>CURLUSESSL_ALL</td>
<td>3</td>
<td>Require SSL for all communication or fail with CURLE_USE_SSL_FAILED.</td>
</tr>
</tbody>
</table>

(Read and Write property)
See also USE_SSL option in CURL manual.
58.10.318 OptionVerbose as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether debug messages are sent to the DebugMessage event.

**Notes:**
Default is false.
You need to subclass the CURLNMBS class to add code in the DebugMessage event.
Or you set CollectDebugData = true and later query DebugData property.
Or you use CreateMTDebugOutpuFile to stream them to a file.
(Read and Write property)
See also VERBOSE option in CURL manual.

58.10.319 OptionWildCardMatch as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Enable wildcard matching.

**Notes:**
Set onoff to true if you want to transfer multiple files according to a file name pattern. The pattern can be specified as part of the OptionURL option, using an fnmatch-like pattern (Shell Pattern Matching) in the last part of URL (file name).

By default, libCURL uses its internal wildcard matching implementation. You can provide your own matching function by the CURLNMBS.FileNameMatch event.

A brief introduction of its syntax follows:

- **- ASTERISK**

  ftp://example.com/some/path/*.txt (for all txt’s from the root directory)

- **? - QUESTION MARK**

  Question mark matches any (exactly one) character.

  ftp://example.com/some/path/photo?.jpeg

- **[ - BRACKET EXPRESSION**

  The left bracket opens a bracket expression. The question mark and asterisk have no special meaning in a
bracket expression. Each bracket expression ends by the right bracket and matches exactly one character. Some examples follow:

\[
[\text{a-zA-Z0-9}] \text{ or } [\text{f-gF-G}] \quad \text{- character interval}
\]

\[
[\text{abc}] \quad \text{- character enumeration}
\]

\[
[^\text{abc}] \text{ or } ![\text{abc}] \quad \text{- negation}
\]

\[
[\{\text{name:}\}] \quad \text{class expression. Supported classes are alnum,lower, space, alpha, digit, print, upper, blank, graph, xdigit.}
\]

\[
[\{\{\}^{\ldots}\}] \quad \text{- special case - matches only ‘-‘, ‘ ‘, ‘\’, ‘!‘ or ‘’‘. These characters have no special purpose.}
\]

\[
[\\\\\\\\] \quad \text{- escape syntax. Matches ‘[‘, ‘]‘ or ‘.}
\]

Using the rules above, a file name pattern can be constructed:

ftp://example.com/some/path/ [ a-z [ :upper: ] \\\\\\\\\].jpeg

This feature is only supported for FTP download. Not for SFTP or HTTP.
(Read and Write property)
See also WILDCARDMATCH option in CURL manual.

58.10.320 OptionXOAuth2Bearer as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
The XOAUTH2 bearer token.
Notes: (Read and Write property)
See also XOAUTH2_BEARER option in CURL manual.

58.10.321 OutputData as String

MBS CURL Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
The output data from CURL.
Notes:
If CollectOutputData property is true, the plugin puts the data received in write event also into this property, so you can grab it after the transfer. Use ClearData method to clear when reusing CURL object.
(Read only property)

58.10.322 Paused as Boolean

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Whether transfer is paused.
Notes:
You can set it to true while transfer runs to pause it.
(Read and Write property)

58.10.323 ProgressDownloadCurrent as Int64

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Bytes downloaded so far.
**Notes:** (Read only property)

58.10.324 ProgressDownloadTotal as Int64

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Bytes to download in total.
**Notes:** (Read only property)

58.10.325 ProgressPercent as Double

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Current download/upload progress in percent.
**Notes:**
Range from 0 to 100.
(Read only property)

58.10.326 ProgressUploadCurrent as Int64

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Bytes uploaded so far.
**Notes:** (Read only property)

58.10.327 ProgressUploadTotal as Int64

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Bytes to upload in total.
**Notes:** (Read only property)
58.10. CLASS CURLNMBS

58.10.328 Version as CURLNVersionMBS

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns a version object to a filled with information about various run-time features in libCURL. Notes: (Read only property)

58.10.329 YieldTime as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Whether plugin should yield time. Notes: If set the plugin will yield time to Realbasic back so threads and timers work while you download.

Seems like in RB 2009 this property only has effect if you run CURL in a thread. (Read and Write property)

58.10.330 Events

58.10.331 ChunkBegin(FileInfo as CURLNFileInfoMBS, Remains as Integer) as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: The event called on begin of a new chunk. Notes: If splitting of data transfer is enabled, this callback is called before download of an individual chunk started. Note that parameter "remains" works only for FTP wildcard downloading (for now), otherwise is not used.

58.10.332 ChunkEnd(FileInfo as CURLNFileInfoMBS, Remains as Integer) as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: Download of a chunk ended. Notes: If splitting of data transfer is enabled this callback is called after download of an individual chunk finished. This event is called for skipped or downloaded files.
58.10.333 DebugMessage(infotype as Integer, data as string, dataSize as Integer)

Notes:
You may need to set OptionVerbose to true.

infotype constants:

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kInfo_TEXT</td>
<td>0</td>
<td>The data is informational text.</td>
</tr>
<tr>
<td>kInfo_HEADER_IN</td>
<td>1</td>
<td>The data is header (or header-like) data received from the peer.</td>
</tr>
<tr>
<td>kInfo_HEADER_OUT</td>
<td>2</td>
<td>The data is header (or header-like) data sent to the peer.</td>
</tr>
<tr>
<td>kInfo_DATA_IN</td>
<td>3</td>
<td>The data is protocol data received from the peer.</td>
</tr>
<tr>
<td>kInfo_DATA_OUT</td>
<td>4</td>
<td>The data is protocol data sent to the peer.</td>
</tr>
<tr>
<td>kInfo_SSL_DATA_IN</td>
<td>5</td>
<td>The data is protocol data received from the peer.</td>
</tr>
<tr>
<td>kInfo_SSL_DATA_OUT</td>
<td>6</td>
<td>The data is protocol data sent to the peer.</td>
</tr>
</tbody>
</table>

If you set CollectDebugData, the plugin will collect the messages and provide them via the DebugData property. You can still use this event to write your own log instead of in addition.

58.10.334 FileNameMatch(Pattern as String, Name as String) as Integer

Notes:
If you don’t implement this event, you get the default implementation from CURL.
Return kFileNameMatchNoMatch, kFileNameMatchIsMatch or kFileNameMatchFailed.

58.10.335 Finished(Result as Integer)

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: The event called when transfer has finished.
Notes:
For Perform and PerformMT it is called before Perform function returns, so in PerformMT this is called on the thread.
For use with CURLNMultiMBS, it is called after TransferFinished event and before TransfersFinished event. If you want to modify GUI and use PeformMT, you may need to start a timer to do so.
58.10. CLASS CURLNMBS

58.10.336 Header(data as string, dataSize as Integer) as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
New Header data was received.
**Notes:**
You can get error 23 if you don’t return lenb(data) in this event.
Or just leave it empty so RB will not include it in your application the plugin will return lenb(data) itself.

If you set CollectHeaderData to true, the plugin will collect the messages and provide them via the Header-
Data property. You can still use this event to write your own log instead of in addition.

58.10.337 Progress(dltotal as Int64, dlnow as Int64, ultotal as Int64, ulnow as Int64, percent as Double) as boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
An event to report progress of ongoing transfers.
**Notes:**
This function gets called by libCURL with a frequent interval during operation (roughly once per second)
no matter if data is being transferred or not. Unknown/unused argument values passed to the callback will
be set to zero (like if you only download data, the upload size will remain 0).
Returning a true from this event will cause libCURL to abort the transfer and return kError_ABORTED_BY_CALLBACK.

You can run CURL from a thread to download several things at the same time or keep the GUI more
responsive. For better GUI, you can even call a method like app.DoEvents to get the GUI updated more
often.

When sending email, ultotal may be zero. In that case use OptionInFileSize to know size of email to upload.

58.10.338 Read(count as Integer) as string

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This event gets called by libCURL as soon as it needs to read data in order to send it to the peer.
**Notes:**
Return the number of bytes requested. Never return a string with lenb(string)>count. You can return 0 to
inform about end of file.

If you stop the current transfer by returning 0 "pre-maturely" (i.e before the server expected it, like when
you’ve told you will upload N bytes and you upload less than N bytes), you may experience that the server
"hangs" waiting for the rest of the data that won’t come.
The read event may return `CURL_READFUNC_ABORT` (& h10000000) to stop the current operation immediately, resulting in a `kError_ABORTED_BY_CALLBACK` error code from the transfer (Added in 7.12.1)

This event is not called when using PerformMT.

If you provide Input data via `SetInputData` or `OpenMTInputFile` method, this event is not called and data is taken from the data you provided.

### 58.10.339 RestartRead() as boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An event to inform you that reading on the file needs to start at the beginning again.  
**Notes:**  
Return true on success.  
If you use a binarystream for reading you will have to set position to 0 in this event.

This event is not called when using PerformMT.

### 58.10.340 Seek(pos as Int64, whence as Integer) as Integer

MBS CURL Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Called when CURL needs to perform a seek.  
**Notes:**  
Normally only needed if you resume a download (Seek forward) or upload is reset (seek back).  
Whence is kSeekOriginCurrent, kSeekOriginEnd or kSeekOriginSet.  
Please return one of this constants: kSeekReturnCantSeek, kSeekReturnFail or kSeekReturnOk.

### 58.10.341 SSHKey(KnownKey as string, KnownKeyLength as Integer, KnownKeyType as Integer, FoundKey as string, FoundKeyLength as Integer, FoundKeyType as Integer, MatchStatus as Integer) as Integer

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event for known hosts callback for SFTP and SCP.  
**Notes:**  
KnownKey: The known key as string encoded with base64 if KnownKeyLength is zero, otherwise the "raw" data.
KnownKeyLength: The length of the key. Zero for base64 encoded key.
KnownKeyType: The type of the key. (0 = Unknown, 1 = RSA1, 2 = RSA, 3 = DSS)
FoundKey: The found key as string encoded with base64 if FoundKeyLength is zero, otherwise the "raw" data.
FoundKeyLength: The length of the key. Zero for base64 encoded key.
FoundKeyType: The type of the key. (0 = Unknown, 1 = RSA1, 2 = RSA, 3 = DSS)
MatchStatus: The status CURL found. (0 = OK, 1 = Mismatch, 2 = Missing)

Return one of the following values:

- CURLKHSTAT_FINE_ADD_TO_FILE 0 Fine and add to file
- CURLKHSTAT_FINE 1 Fine
- CURLKHSTAT_REJECT 2 reject the connection, return an error
- CURLKHSTAT_DEFER 3 do not accept it, but we can’t answer right now so this causes a CURLE_DEFER error but otherwise the connection will be left intact etc

### 58.10.342 Write(data as string, dataSize as Integer) as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This event gets called by libCURL as soon as there is data received that needs to be saved. **Notes:**

Return the number of bytes actually taken care of. If that amount differs from the amount passed to your function, it'll signal an error to the library and it will abort the transfer and return kError_WRITE_ERROR.

This function may be called with zero bytes data if the transferred file is empty.

The event function will be passed as much data as possible in all invokes, but you cannot possibly make any assumptions. It may be one byte, it may be thousands. The maximum amount of data that can be passed to the write callback is defined in the CURL.h header file: CURL_MAX_WRITE_SIZE (16384).

If you set CollectOutputData to true, the plugin will automatically collect the data and provide it to you after the transfer with the OutputData property. This collecting feature will only work right, if there is enough free memory. You can of course still process data yourself in this event instead of in addition.

### 58.10.343 Constants

#### 58.10.344 kAUTH_ANY = & hFFFFFFFEF

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the authentication constants for the Option-HTTPAuth property.
Notes: all types set

58.10.345  kAUTH_ANYSAFE = \& hFFFFFFEE

MBS CURL Plugin, Plugin Version: 9.8.  Function: One of the authentication constants for the Option-
HTTPAuth property.

58.10.346  kAUTH_BASIC = 1

MBS CURL Plugin, Plugin Version: 9.8.  Function: One of the authentication constants for the Option-
HTTPAuth property.
Notes: Basic (default)

58.10.347  kAUTH_DIGEST = 2

MBS CURL Plugin, Plugin Version: 9.8.  Function: One of the authentication constants for the Option-
HTTPAuth property.
Notes: Digest

58.10.348  kAUTH_DIGEST_IE = 16

MBS CURL Plugin, Plugin Version: 15.2.  Function: One of the authentication constants for the Option-
HTTPAuth property.
Notes: HTTP Digest authentication with an IE flavor. Digest authentication is defined in RFC 2617 and is
a more secure way to do authentication over public networks than the regular old-fashioned Basic method.
The IE flavor is simply that libCURL will use a special "quirk" that IE is known to have used before version
7 and that some servers require the client to use.

58.10.349  kAUTH_GSSNEGOITIATE = 4

MBS CURL Plugin, Plugin Version: 9.8.  Function: One of the authentication constants for the Option-
HTTPAuth property.
Notes:
GSS-Negotiate
58.10. CLASS CURLNMBS

Please check SupportsGSSNEGOTIATE property in CURLVersionMBS class whether this is supported/implemented by your copy of the CURL library.

58.10.350 kAUTH_NEGOTIATE = 4

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the authentication constants for the OptionHTTPAuth property.

**Notes:**

HTTP Negotiate (SPNEGO) authentication. Negotiate authentication is defined in RFC 4559 and is the most secure way to perform authentication over HTTP.

You need to build libCURL with a suitable GSS-API library or SSPI on Windows for this to work.

58.10.351 kAUTH_NONE = 0

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the authentication constants for the OptionHTTPAuth property.

58.10.352 kAUTH_NTLN = 8

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the authentication constants for the OptionHTTPAuth property.

58.10.353 kAUTH_NTLN_WB = 32

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the authentication constants for the OptionHTTPAuth property.

**Notes:**

NTLM delegating to winbind helper. Authentication is performed by a separate binary application that is executed when needed. The name of the application is specified at compile time but is typically /usr/bin/ntlm_auth

Note that libCURL will fork when necessary to run the winbind application and kill it when complete, calling waitpid() to await its exit when done. On POSIX operating systems, killing the process will cause a SIGCHLD signal to be raised (regardless of whether OptionNoSignal is set), which must be handled intelligently by the application. In particular, the application must not unconditionally call wait() in its SIGCHLD signal handler to avoid being subject to a race condition. This behavior is subject to change in future versions of libCURL.
58.10.354  kAUTH_Only = & h80000000

MBS CURL Plugin, Plugin Version: 15.2.  Function: One of the authentication constants for the Option-HTTPAuth property.
Notes: This is a meta symbol. OR this value together with a single specific auth value to force libCURL to probe for un-restricted auth and if not, only that single auth algorithm is acceptable.

58.10.355  kChunkBeginFailed = 1

MBS CURL Plugin, Plugin Version: 15.2.  Function: One of the result values for the ChunkBegin event.
Notes: Failed, so we exit downloads.

58.10.356  kChunkBeginOK = 0

MBS CURL Plugin, Plugin Version: 15.2.  Function: One of the result values for the ChunkBegin event.
Notes: OK, download this file.

58.10.357  kChunkBeginSkip = 2

MBS CURL Plugin, Plugin Version: 15.2.  Function: One of the result values for the ChunkBegin event.
Notes: Skip the file.

58.10.358  kChunkEndFailed = 1

MBS CURL Plugin, Plugin Version: 15.2.  Function: One of the result values for the ChunkEnd event.
Notes: Failed, so we exit downloads.

58.10.359  kChunkEndOK = 0

MBS CURL Plugin, Plugin Version: 15.2.  Function: One of the result values for the ChunkEnd event.
Notes: Download success.
58.10.360  kError_ABORTED_BY_CALLBACK = 42

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.10.361  kError_AGAIN = 81

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** socket is not ready for send/recv, wait till it’s ready and try again (Added in CURL 7.18.2)

58.10.362  kError_BAD_CONTENT_ENCODING = 61

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** Unrecognized transfer encoding

58.10.363  kError_BADDOWNLOAD_RESUME = 36

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** couldn’t resume download

58.10.364  kError_BAD_FUNCTION_ARGUMENT = 43

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.10.365  kError_CHUNK_FAILED = 88

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** Chunk callback reported error.

58.10.366  kError_CONV_FAILED = 75

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** Conversion failed.
58.10.367  kError_CONV_REQD = 76

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. 
**Notes:** Not used with plugin.

58.10.368  kError_COULDNT_CONNECT = 7

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. 
**Notes:** Could not connect. Proxy set? Firewall open?

58.10.369  kError_COULDNT_RESOLVE_HOST = 6

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.10.370  kError_COULDNT_RESOLVE_PROXY = 5

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.10.371  kError_FAILED_INIT = 2

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.10.372  kError_FILESIZE_EXCEEDED = 63

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. 
**Notes:** Maximum file size exceeded

58.10.373  kError_FILE_COULDNT_READ_FILE = 37

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.
58.10. CLASS CURLNMBS

58.10.374  kError_FTP_ACCEPT_FAILED = 10

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the error constants for the Error event. **Notes:** While waiting for the server to connect back when an active FTP session is used, an error code was sent over the control connection or similar.

58.10.375  kError_FTP_ACCEPT_TIMEOUT = 12

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the error constants for the Error event. **Notes:** During an active FTP session while waiting for the server to connect, the OptionAcceptTimeoutMS (or the internal default) timeout expired.

58.10.376  kError_FTP_BAD_FILE_LIST = 87

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** Unable to parse FTP file list.

58.10.377  kError_FTP_CANT_GET_HOST = 15

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.10.378  kError_FTP_COULDNT_RETR_FILE = 19

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.10.379  kError_FTP_COULDNT_SET_TYPE = 17

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event.

58.10.380  kError_FTP_COULDNT_USE_REST = 31

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** the REST command failed
58.10.381 kError_FTP_PORT_FAILED = 30

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** FTP PORT operation failed.

58.10.382 kError_FTP_PRET_FAILED = 84

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** a PRET command failed.

58.10.383 kError_FTP_WEIRD_227_FORMAT = 14

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.10.384 kError_FTP_WEIRD_PASS_REPLY = 11

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.10.385 kError_FTP_WEIRD_PASV_REPLY = 13

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.10.386 kError_FTP_WEIRD_SERVER_REPLY = 8

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.10.387 kError_FUNCTION_NOT_FOUND = 41

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.10.388 kError_GOT NOTHING = 52

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** when this is a specific error.
58.10.389  \textit{kError\_HTTP2} = 16

MBS CURL Plugin, Plugin Version: 15.2. \textbf{Function}: One of the error constants for the Error event.  
\textbf{Notes}: A problem was detected in the HTTP2 framing layer. This is somewhat generic and can be one out of several problems, see the error buffer for details.

58.10.390  \textit{kError\_HTTP2\_STREAM} = 92

MBS CURL Plugin, Plugin Version: 18.2. \textbf{Function}: One of the error constants for the Error event.  
\textbf{Notes}: stream error in HTTP/2 framing layer

58.10.391  \textit{kError\_HTTP\_POST\_ERROR} = 34

MBS CURL Plugin, Plugin Version: 9.8. \textbf{Function}: One of the error constants for the Error event.

58.10.392  \textit{kError\_HTTP\_RETURNED\_ERROR} = 22

MBS CURL Plugin, Plugin Version: 9.8. \textbf{Function}: One of the error constants for the Error event.

58.10.393  \textit{kError\_INTERFACE\_FAILED} = 45

MBS CURL Plugin, Plugin Version: 9.8. \textbf{Function}: One of the error constants for the Error event.

58.10.394  \textit{kError\_LDAP\_CANNOT\_BIND} = 38

MBS CURL Plugin, Plugin Version: 9.8. \textbf{Function}: One of the error constants for the Error event.

58.10.395  \textit{kError\_LDAP\_INVALID\_URL} = 62

MBS CURL Plugin, Plugin Version: 9.8. \textbf{Function}: One of the error constants for the Error event.  
\textbf{Notes}: Invalid LDAP URL
58.10.396  
**kError_LDAP_SEARCH_FAILED = 39**

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.10.397  
**kError_LOGIN_DENIED = 67**

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. 
**Notes:** user, password or similar was not accepted and we failed to login

58.10.398  
**kError_NOT_BUILT_IN = 4**

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the error constants for the Error event. 
**Notes:** A requested feature, protocol or option was not found built-in in this libCURL due to a build-time decision. This means that a feature or option was not enabled or explicitly disabled when libCURL was built and in order to get it to function you have to get a rebuilt libCURL.

58.10.399  
**kError_NO_CONNECTION_AVAILABLE = 89**

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the error constants for the Error event. 
**Notes:** For internal use only, will never be returned by libCURL. 
No connection available, the session will be queued. (added in 7.30.0)

58.10.400  
**kError_OK = 0**

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.10.401  
**kError_OPERATION_TIMEDOUT = 28**

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event.

58.10.402  
**kError_OUT_OF_MEMORY = 27**

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.
58.10. CLASS CURLNMBS

58.10.403 kError_PARTIAL_FILE = 18

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.10.404 kError_PEER_FAILED_VERIFICATION = 51

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event.

58.10.405 kError_QUOTE_ERROR = 21

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event.

58.10.406 kError_RANGE_ERROR = 33

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event.

58.10.407 kError_READ_ERROR = 26

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** could open/read from file

58.10.408 kError_RECURSIVE_API_CALL = 93

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the error constants for the Error event. **Notes:** an api function was called from inside a callback/event.

58.10.409 kError_RECV_ERROR = 56

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** failure in receiving network data
58.10.410  kError_REMOTE_ACCESS_DENIED = 9

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event.

58.10.411  kError_REMOTE_DISK_FULL = 70

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** Out of disk space on server.

58.10.412  kError_REMOTE_FILE_EXISTS = 73

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** File already exists.

58.10.413  kError_REMOTE_FILE_NOT_FOUND = 78

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** Remote file not found.

58.10.414  kError_RTSP_CSEQ_ERROR = 85

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** Mismatch of RTSP CSeq numbers.

58.10.415  kError_RTSP_SESSION_ERROR = 86

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** Mismatch of RTSP Session Identifiers

58.10.416  kError_SEND_ERROR = 55

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** Failed sending network data
58.10.417  kError_SEND_FAIL_REWIND = 65

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** Sending the data requires a rewind that failed

58.10.418  kError_SSH = 79

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** Error from the SSH layer, somewhat generic so the error message will be of interest when this has happened.

58.10.419  kError_SSL_CACERT = 60

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:**

problem with the CA cert (path?)

You can often workaround by setting OptionSSLVerifyPeer = 0 and OptionSSLVerifyHost = 0. But that reduces security.

58.10.420  kError_SSL_CACERT_BADFILE = 77

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** Could not load CACERT file, missing or wrong format.

58.10.421  kError_SSL_CERTPROBLEM = 58

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** problem with the local certificate

58.10.422  kError_SSL_CIPHER = 59

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** couldn’t use specified cipher
58.10.423 kError_SSL_CONNECT_ERROR = 35

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.  
**Notes:** wrong when connecting with SSL

58.10.424 kError_SSL_CRL_BADFILE = 82

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event.  
**Notes:** Could not load CRL file, missing or wrong format (Added in 7.19.0)

58.10.425 kError_SSL_ENGINE_INITFAILED = 66

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.  
**Notes:** failed to initialise ENGINE

58.10.426 kError_SSL_ENGINE_NOTFOUND = 53

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.  
**Notes:** SSL crypto engine not found

58.10.427 kError_SSL_ENGINE_SETFAILED = 54

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.  
**Notes:** can not set SSL crypto engine as default

58.10.428 kError_SSL_INVALIDCERTSTATUS = 91

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the error constants for the Error event.  
**Notes:** invalid certificate status

58.10.429 kError_SSL_ISSUER_ERROR = 83

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event.  
**Notes:** Issuer check failed. (Added in CURL 7.19.0)
58.10.430  kError_SSL_PINNEDPUBKEYNOTMATCH = 90

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the error constants for the Error event.  
**Notes:** specified pinned public key did not match.

58.10.431  kError_SSL_SHUTDOWN_FAILED = 80

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event.  
**Notes:** Failed to shut down the SSL connection.

58.10.432  kError_TELNET_OPTION_SYNTAX = 49

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event.  
See also:

- 58.10.433 kError_TELNET_OPTION_SYNTAX = 49

58.10.433  kError_TELNET_OPTION_SYNTAX = 49

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.  
**Notes:** Malformed telnet option  
See also:

- 58.10.432 kError_TELNET_OPTION_SYNTAX = 49

58.10.434  kError_TFTP_ILLEGAL = 71

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event.  
**Notes:** Illegal TFTP operation.

58.10.435  kError_TFTP_NOSUCHUSER = 74

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event.  
**Notes:** No such user.
58.10.436  kError_TFTP_NOTFOUND = 68

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** File not found on server.

58.10.437  kError_TFTP_PERM = 69

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** Permission problem on server.

58.10.438  kError_TFTP_UNKNOWNID = 72

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** Unknown transfer ID.

58.10.439  kError_TOO_MANY_REDIRECTS = 47

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** catch endless re-direct loops

58.10.440  kError_UNKNOWN_TELNET_OPTION = 48

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** User specified an unknown option

58.10.441  kError_UNSUPPORTED_PROTOCOL = 1

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.10.442  kError_UPLOAD_FAILED = 25

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event.
58.10.443  kError_URL_MALFORMAT = 3

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.10.444  kError_USE_SSL_FAILED = 64

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. 
**Notes:** Requested FTP SSL level failed

58.10.445  kError_WRITE_ERROR = 23

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.10.446  kFileNameMatchFailed = 2

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the possible return values for FileNameMatch event. 
**Notes:** Failed.

58.10.447  kFileNameMatchIsMatch = 0

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the possible return values for FileNameMatch event. 
**Notes:** Is Match.

58.10.448  kFileNameMatchNoMatch = 1

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the possible return values for FileNameMatch event. 
**Notes:** No match.

58.10.449  kFormArray = 8

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.
58.10.450  kFormBuffer = 11
MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.10.451  kFormBufferLength = 13
MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.10.452  kFormBufferPtr = 12
MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.10.453  kFormContentHeader = 15
MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.10.454  kFormContentsLength = 6
MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.10.455  kFormContentType = 14
MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.10.456  kFormCopyContents = 4
MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.10.457  kFormCopyName = 1
MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.
58.10.  CLASS CURLNMBS

58.10.458  kFormEnd = 17
MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.10.459  kFormFile = 10
MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.10.460  kFormFileContent = 7
MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.10.461  kFormFilename = 16
MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.10.462  kFormNameLength = 3
MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.10.463  kFormPtrContents = 5
MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.10.464  kFormPtrName = 2
MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.10.465  kFTPAUTH_DEFAULT=0
MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the FTP Authentication constants for the OptionFTPSSSLAuth property.
**Notes:** Allow libCURL to decide
58.10.466  kFTPAUTH_SSL=1

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the FTP Authentication constants for the OptionFTPSSLAuth property.
**Notes:** Try "AUTH SSL" first, and only if that fails try "AUTH TLS"

58.10.467  kFTPAUTH_TLS=2

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the FTP Authentication constants for the OptionFTPSSLAuth property.
**Notes:** Try "AUTH TLS" first, and only if that fails try "AUTH SSL"

58.10.468  kFTPMethodDefault = 0

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the FTP CWD method.
**Notes:** let libcurl pick

58.10.469  kFTPMethodMultiCWD = 1

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the FTP CWD method.
**Notes:** single CWD operation for each path part

58.10.470  kFTPMethodNoCWD = 2

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the FTP CWD method.
**Notes:** no CWD at all

58.10.471  kFTPMethodSingleCWD = 3

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the FTP CWD method.
**Notes:** one CWD to full dir, then work on file

58.10.472  kFTPSSL_ALL=3

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the FTP SSL constants for the OptionFTPSSL property.
58.10. CLASS CURLNMBS

Notes: Require SSL for all communication or fail with kError_FTP_SSL_FAILED.

58.10.473 kFTPSSL_CONTROL=2

Notes: Require SSL for the control connection or fail with kError_FTP_SSL_FAILED.

58.10.474 kFTPSSL_NONE=0

Notes: Don’t attempt to use SSL.

58.10.475 kFTPSSL_TRY=1

Notes: Try using SSL, proceed as normal otherwise.

58.10.476 kGSSAPIDelegationFlag = 2

MBS CURL Plugin, Plugin Version: 18.2. Function: One of the GSS API delegation modes.
Notes: delegate always

58.10.477 kGSSAPIDelegationNone = 0

MBS CURL Plugin, Plugin Version: 18.2. Function: One of the GSS API delegation modes.
Notes: no delegation (default)

58.10.478 kGSSAPIDelegationPolicyFlag = 1

MBS CURL Plugin, Plugin Version: 18.2. Function: One of the GSS API delegation modes.
Notes: if permitted by policy
58.10.479  kHTTP_VERSION_1_0 = 1

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the HTTP Version constants for the Option-HTTPVersion property.
**Notes:** Enforce HTTP 1.0 requests.

58.10.480  kHTTP_VERSION_1_1 = 2

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the HTTP Version constants for the Option-HTTPVersion property.
**Notes:** Enforce HTTP 1.1 requests.

58.10.481  kHTTP_VERSION_2TLS = 4

MBS CURL Plugin, Plugin Version: 17.2. **Function:** One of the HTTP Version constants for the Option-HTTPVersion property.
**Notes:** use version 2 for HTTPS, version 1.1 for HTTP

58.10.482  kHTTP_VERSION_2_0 = 3

MBS CURL Plugin, Plugin Version: 17.2. **Function:** One of the HTTP Version constants for the Option-HTTPVersion property.
**Notes:** please use HTTP 2 in the request

58.10.483  kHTTP_VERSION_2_PRIOR_KNOWLEDGE = 5

MBS CURL Plugin, Plugin Version: 17.2. **Function:** One of the HTTP Version constants for the Option-HTTPVersion property.
**Notes:** please use HTTP 2 without HTTP/1.1 Upgrade

58.10.484  kHTTP_VERSION_NONE = 0

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the HTTP Version constants for the Option-HTTPVersion property.
**Notes:** We don’t care about what version the library uses. libCURL will use whatever it thinks fit.
58.10. CLASS CURLNMBS

58.10.485  `kINFO_DATA_IN = 3`

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the info constants for the DebugMessage event. **Notes:** The data is protocol data received from the peer.

58.10.486  `kINFO_DATA_OUT = 4`

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the info constants for the DebugMessage event. **Notes:** The data is protocol data sent to the peer.

58.10.487  `kINFO_HEADER_IN = 1`

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the info constants for the DebugMessage event. **Notes:** The data is header (or header-like) data received from the peer.

58.10.488  `kINFO_HEADER_OUT = 2`

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the info constants for the DebugMessage event. **Notes:** The data is header (or header-like) data sent to the peer.

58.10.489  `kINFO_SSL_DATA_IN = 5`

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the info constants for the DebugMessage event. **Notes:** The data is protocol data received from the peer.

58.10.490  `kINFO_SSL_DATA_OUT = 6`

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the info constants for the DebugMessage event. **Notes:** The data is protocol data sent to the peer.

58.10.491  `kINFO_TEXT = 0`

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the info constants for the DebugMessage event. **Notes:** The data is informational text.
58.10.492  kIPRESOLVE_V4 = 1

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the IP Resolve constants for the OptionIPResolve property.

**Example:**

```vba
dim c as new CURLNMBS
  c.OptionIPResolve = c.kIPRESOLVE_V4
```

58.10.493  kIPRESOLVE_V6 = 2

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the IP Resolve constants for the OptionIPResolve property.

**Example:**

```vba
dim c as new CURLNMBS
  c.OptionIPResolve = c.kIPRESOLVE_V6
```

58.10.494  kIPRESOLVE_WHATEVER=0

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the IP Resolve constants for the OptionIPResolve property.

**Example:**

```vba
dim c as new CURLNMBS
  c.OptionIPResolve = c.kIPRESOLVE_WHATEVER
```

58.10.495  kNETRC_IGNORED=0

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the NetRC constants for the OptionNetRC property.

**Notes:**

The .netrc will never be read.
This is the default.
58.10.496  kNETRC_OPTIONAL=1

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the NetRC constants for the OptionNetRC property.
**Notes:** A user:password in the URL will be preferred to one in the .netrc.

58.10.497  kNETRC_REQUIRED=2

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the NetRC constants for the OptionNetRC property.
**Notes:** A user:password in the URL will be ignored. Unless one is set programmatically, the .netrc will be queried.

58.10.498  kProtocolAll = -1

MBS CURL Plugin, Plugin Version: 10.0. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** Enable all protocols.

58.10.499  kProtocolDICT = & h200

MBS CURL Plugin, Plugin Version: 10.0. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** DICT

58.10.500  kProtocolFILE = & h400

MBS CURL Plugin, Plugin Version: 10.0. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** File

58.10.501  kProtocolFTP = 4

MBS CURL Plugin, Plugin Version: 10.0. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** FTP
**58.10.502**  \( \text{kProtocolFTPS} = 8 \)

MBS CURL Plugin, Plugin Version: 10.0. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** FTPS

**58.10.503**  \( \text{kProtocolGopher} = \& \text{h}2000000 \)

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** Gopher

**58.10.504**  \( \text{kProtocolHTTP} = 1 \)

MBS CURL Plugin, Plugin Version: 10.0. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** HTTP

**58.10.505**  \( \text{kProtocolHTTPS} = 2 \)

MBS CURL Plugin, Plugin Version: 10.0. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** HTTPS

**58.10.506**  \( \text{kProtocolIMAP} = \& \text{h}1000 \)

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** IMAP

**58.10.507**  \( \text{kProtocolIMAPS} = \& \text{h}2000 \)

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** IMAPS
58.10.508  kProtocolLDAP = & h80

MBS CURL Plugin, Plugin Version: 10.0. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** LDAP

58.10.509  kProtocolLDAPS = & h100

MBS CURL Plugin, Plugin Version: 10.0. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** LDAPS

58.10.510  kProtocolPOP3 = & h4000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** POP3

58.10.511  kProtocolPOP3S = & h8000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** POP3S

58.10.512  kProtocolRTMP = & h80000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** RTMP

58.10.513  kProtocolRTMPE = & h200000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** RTMPE
58.10.514 kProtocolRTMPS = & h800000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** RTMPS

58.10.515 kProtocolRTMPT = & h100000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** RTMPT

58.10.516 kProtocolRTMPTE = & h400000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** RTMPTE

58.10.517 kProtocolRTMPTS = & h1000000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** RTMPTS

58.10.518 kProtocolRTSP = & h4000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** RTSP

58.10.519 kProtocolSCP = & h10

MBS CURL Plugin, Plugin Version: 10.0. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** SCP
58.10. **CLASS CURLNMBS**

### 58.10.520 kProtocolSFTP = & h20

MBS CURL Plugin, Plugin Version: 10.0. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.  
**Notes:** SFTP

### 58.10.521 kProtocolSMB = & h4000000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.  
**Notes:** SMB

### 58.10.522 kProtocolSMBS = & h8000000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.  
**Notes:** SMBS

### 58.10.523 kProtocolSMTP = & h10000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.  
**Notes:** SMTP

### 58.10.524 kProtocolSMTPS = & h20000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.  
**Notes:** SMTPS

### 58.10.525 kProtocolTelnet = & h40

MBS CURL Plugin, Plugin Version: 10.0. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.  
**Notes:** Telnet
58.10.526  kProtocolTFTP = & h800

MBS CURL Plugin, Plugin Version: 10.0. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** TFTP

58.10.527  kPROXY_HTTP = 0

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the proxy constants for the OptionProxyType property.

58.10.528  kPROXY_HTTP10 = 1

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the proxy constants for the OptionProxyType property.
**Notes:** Force to use CONNECT HTTP/1.0.

58.10.529  kPROXY_HTTP11 = 0

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the proxy constants for the OptionProxyType property.
**Notes:** Connect using HTTP/1.1.

58.10.530  kPROXY_SOCKS4 = 4

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the proxy constants for the OptionProxyType property.

58.10.531  kPROXY_SOCKS4A = 6

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the proxy constants for the OptionProxyType property.
**Notes:** Using SOCKS 4A.
58.10. CLASS CURLNMBS

58.10.532 kPROXY_SOCKS5 = 5

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the proxy constants for the OptionProxyType property.

58.10.533 kPROXY_SOCKS5_Hostname = 7

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the proxy constants for the OptionProxyType property.
**Notes:** Use the SOCKS5 protocol but pass along the host name rather than the IP address. added in 7.18.0

58.10.534 kSeekOriginCurrent = 1

MBS CURL Plugin, Plugin Version: 12.2. **Function:** One of the origin values for seek event.
**Notes:** Seek relative to current file position.

58.10.535 kSeekOriginEnd = 2

MBS CURL Plugin, Plugin Version: 12.2. **Function:** One of the origin values for seek event.
**Notes:** Seek relative to end of file.

58.10.536 kSeekOriginSet = 0

MBS CURL Plugin, Plugin Version: 12.2. **Function:** One of the origin values for seek event.
**Notes:** Seek relative to start of file.

58.10.537 kSeekReturnCantSeek = 3

MBS CURL Plugin, Plugin Version: 12.2. **Function:** One of the result values for the Seek Event.
**Notes:** Return this value if you can’t seek as you are not using a file, but for example a stream.

58.10.538 kSeekReturnFail = 2

MBS CURL Plugin, Plugin Version: 12.2. **Function:** One of the result values for the Seek Event.
**Notes:** Returns this value if your seek operation failed.
**58.10.539**  kSeekReturnOk = 1

MBS CURL Plugin, Plugin Version: 12.2. **Function:** One of the result values for the Seek Event. **Notes:** Returns this value if your seek operation succeeded.

**58.10.540**  kSSHAuthAgent = 16

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSH Authentication modes. **Notes:** agent (ssh-agent, pageant...)

**58.10.541**  kSSHAuthAny = -1

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSH Authentication modes. **Notes:** Any allowed

**58.10.542**  kSSHAuthDefault = -1

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSH Authentication modes. **Notes:** Default: Any

**58.10.543**  kSSHAuthGSSAPI = 32

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSH Authentication modes. **Notes:** gssapi (kerberos, ...)

**58.10.544**  kSSHAuthHost = 4

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSH Authentication modes. **Notes:** host key files

**58.10.545**  kSSHAuthKeyboard = 8

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSH Authentication modes. **Notes:** keyboard interactive
58.10. **CLASS CURLNMBS**

58.10.546  **kSSHAuthNone = 0**

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSH Authentication modes.  
**Notes:** none allowed, silly but complete

58.10.547  **kSSHAuthPassword = 2**

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSH Authentication modes.  
**Notes:** password

58.10.548  **kSSHAuthPublicKey = 1**

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSH Authentication modes.  
**Notes:** public/private key files

58.10.549  **kSSLVersionDefault = 0**

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the SSL Version constants for the OptionSSLVersion property.

58.10.550  **kSSLVersionSSLv2 = 2**

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the SSL Version constants for the OptionSSLVersion property.

58.10.551  **kSSLVersionSSLv3 = 3**

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the SSL Version constants for the OptionSSLVersion property.

58.10.552  **kSSLVersionTLSv1 = 1**

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the SSL Version constants for the OptionSSLVersion property.
58.10.553   kSSLVersionTLSv10 = 4

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the SSL Version constants for the OptionSSLVersion property.  
**Notes:** TLSv1.0 (Added in 7.34.0)

58.10.554   kSSLVersionTLSv11 = 5

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the SSL Version constants for the OptionSSLVersion property.  
**Notes:** TLSv1.1 (Added in 7.34.0)

58.10.555   kSSLVersionTLSv12 = 6

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the SSL Version constants for the OptionSSLVersion property.  
**Notes:** TLSv1.2 (Added in 7.34.0)

58.10.556   kSSLVersionTLSv13 = 7

MBS CURL Plugin, Plugin Version: 17.2. **Function:** One of the SSL Version constants for the OptionSSLVersion property.  
**Notes:** TLSv1.3

58.10.557   kTimeConditionIfModifiedSince = 1

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the time condition constants for the OptionTimeCondition property.

58.10.558   kTimeConditionIfUnModifiedSince = 2

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the time condition constants for the OptionTimeCondition property.
58.10.559  kTimeConditionNone = 0

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the time condition constants for the OptionTimeCondition property.
**Notes:** No condition.

58.10.560  kUseSSLall = 3

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSL constants for the OptionFTPSSSL property.
**Notes:** Require SSL for all communication or fail with kError_FTP_SSL_FAILED.

58.10.561  kUseSSLcontrol = 2

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSL constants for the OptionFTPSSSL property.
**Notes:** Require SSL for the control connection or fail with kError_FTP_SSL_FAILED.

58.10.562  kUseSSLnone = 0

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSL constants for the OptionFTPSSSL property.
**Notes:** Don’t attempt to use SSL.

58.10.563  kUseSSLtry = 1

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSL constants for the OptionFTPSSSL property.
**Notes:** Try using SSL, proceed as normal otherwise.
58.11 class CURLNMimePartMBS

58.11.1 class CURLNMimePartMBS

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for mime parts.

**Notes:**
You can provide data via file path, folderitem, data in memoryblock or string.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

58.11.2 Methods

58.11.3 Constructor

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

58.11.4 Headers as String()

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Queries header.

58.11.5 SetHeaders(headers() as String)

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets header.

58.11.6 Properties

58.11.7 DataMemory as Memoryblock

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The mime part data source from memory data.
**Notes:** (Read and Write property)
58.11.8 DataString as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The mime part data source from memory data.
**Example:**
```vbs
dim c as new CURLNMBS

// add mime
dim p as CURLNMimePartMBS = c.AddMimePart

p.name = "Text"
p.FileName = "test.txt"
p.MimeType = "text/plain"
p.DataString = "Hello World"

C.FinishMime
// now you can send...
```

**Notes:** (Read and Write property)

58.11.9 Encoding as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The mime data transfer encoder.
**Notes:**
If set to binary, 8bit, 7bit, base64 or quoted-printable, the matching encoding is applied.
(Read and Write property)

58.11.10 File as Folderitem

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The file to stream.
**Notes:**
When you set property, the plugin will open file and may raise IOException on failure.
(Read and Write property)
58.11.11 FileName as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The mime part remote file name.
**Notes:**
If mime type is not set, we pick extension from file name.
This includes gif, jpg, jpeg, png, svg, txt, htm, html, pdf and xml file extensions.
(Read and Write property)

58.11.12 FilePath as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The mime part data source from named file.
**Notes:** (Read and Write property)

58.11.13 Lasterror as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The last error code.
**Notes:** (Read and Write property)

58.11.14 MimeType as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The mime part type.
**Notes:** (Read and Write property)

58.11.15 Name as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The mime/form part name.
**Notes:** (Read and Write property)

58.11.16 Parent as Variant

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The parent object.
58.11. Constants

58.11.17 kEncoding7bit = "7bit"

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the encoding modes. **Notes:** 7bit

58.11.18 kEncoding8bit = "8bit"

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the encoding modes. **Notes:** 8bit

58.11.19 kEncodingBase64 = "base64"

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the encoding modes. **Notes:** Base64

58.11.20 kEncodingBinary = "binary"

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the encoding modes. **Notes:** Binary mode

58.11.21 kEncodingNone = ""

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the encoding modes. **Notes:** No mode, so data is passed through and header has no encoding defined.

58.11.22 kEncodingQuotedPrintable = "quoted-printable"

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the encoding modes. **Notes:** Quoted printable
58.11.24  kMimeTypeGIF = "image/gif"

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the mime types.
**Notes:** GIF

58.11.25  kMimeTypeHTML = "text/html"

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the mime types.
**Notes:** HTML

58.11.26  kMimeTypeJPEG = "image/jpeg"

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the mime types.
**Notes:** JPEG

58.11.27  kMimeTypePDF = "application/pdf"

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the mime types.
**Notes:** PDF

58.11.28  kMimeTypePNG = "image/png"

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the mime types.
**Notes:** PNG

58.11.29  kMimeTypeSVG = "image/svg+xml"

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the mime types.
**Notes:** SVG

58.11.30  kMimeTypeText = "text/plain"

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the mime types.
**Notes:** Text
58.11. CLASS CURLNMIMEPARTMBS

58.11.31  kMimeTypeXML = "application/xml"

MBS CURL Plugin, Plugin Version: 18.2. Function: One of the mime types. Notes: XML
58.12 class CURLNMissingFunctionExceptionMBS

58.12.1 class CURLNMissingFunctionExceptionMBS

MBS CURL Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An exception raised if a CURL library function is not loaded. **Notes:**
If you call load library before you use the CURLNMBS Constructor, you should never see this. Subclass of the RuntimeException class.
58.13. **CLASS CURLNMULTIMBS**

### 58.13 class CURLNMultiMBS

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for multiple CURL transfers running in parallel.

#### 58.13.2 Methods

#### 58.13.3 AddCURL(CURL as CURLNMBS) as boolean

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Add a standard CURL handle to the multi stack.
**Notes:** Lasterror is set.

#### 58.13.4 CURLs as CURLNMBS()

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Queries list of current CURL instances.

#### 58.13.5 ErrorString(ErrorCode as Integer) as String

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Queries text message for a given error code.

#### 58.13.6 Perform

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Checks for things to see.
**Notes:**
When the app thinks there’s data available for CURL it calls this function to read/write whatever there is right now. This returns as soon as the reads and writes are done. This function does not require that there actually is data available for reading or that data can be written, it can be called just in case.
Lasterror is set. This only provides errors etc regarding the whole multi stack. There might still have occurred problems on individual transfers even when this returns OK.
Sets RunningTransfers property.

---

**58.13.7 RemoveCURL(CURL as CURLNMBS) as boolean**

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Removes a CURL handle from the multi stack again.  
**Notes:**  
Lasterror is set.  
Plugin calls this automatically when TransferFinished event was called.

---

**58.13.8 Properties**

**58.13.9 ChunkLengthPenaltySize as Int64**

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A connection with a chunk length longer than this will not be considered for pipelining.  
**Notes:** (Read and Write property)

---

**58.13.10 ContentLengthPenaltySize as Int64**

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A connection with a content-length longer than this will not be considered for pipelining.  
**Notes:** (Read and Write property)

---

**58.13.11 Handle as Integer**

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal object reference.  
**Notes:** (Read only property)

---

**58.13.12 Lasterror as Integer**

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last error code.  
**Notes:** (Read and Write property)
58.13. **MaxConnects as Integer**

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Maximum number of entries in the connection cache.  
**Notes:** (Read and Write property)

58.13.14 **MaxHostConnections as Integer**

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Maximum number of (pipelining) connections to one host.  
**Notes:** (Read and Write property)

58.13.15 **MaxPipelineLength as Integer**

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Maximum number of requests in a pipeline.  
**Notes:** (Read and Write property)

58.13.16 **MaxTotalConnections as Integer**

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Maximum number of open connections in total.  
**Notes:** (Read and Write property)

58.13.17 **Pipelining as Integer**

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set to 1 to enable pipelining for this multi handle.  
**Notes:**  
Only for HTTP protocol.  
Used to be a boolean property for 15.0 to 18.1, but changed to integer for 18.2.  
(Read and Write property)

58.13.18 **RunningTransfers as Integer**

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Number of running transfers.
58.13.19 Events

58.13.20 TransferFinished(CURL as CURLNMBS, result as Integer, RemainingFinishedTransfers as Integer)

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One transfer finished.

**Notes:**
Query CURL object for details.
Result is the result of the transfer as returned by Perform method of CURL object.
RemainingFinishedTransfers is how many transfers are also finished and will be called right after this event.

This event fires always when the queue is empty.
You may want to turn off the timer calling Perform method when this event fires.
Later you can start timer again if you call Add method.

58.13.21 TransfersFinished

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** All pending transfers finished.

58.13.22 Constants

58.13.23 kErrorAddedAlready = 7

MBS CURL Plugin, Plugin Version: 15.0. **Function:** One of the multi interface error codes.
**Notes:** An easy handle already added to a multi handle was attempted to get added - again.

58.13.24 kErrorBadEadyHandle = 2

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the multi interface error codes.
**Notes:** An easy handle was not good/valid.
58.13. **CLASS CURLNMULTIMBS**

58.13.25  **kErrorBadHandle = 1**  
MBS CURL Plugin, Plugin Version: 15.0. **Function:** One of the multi interface error codes.  
**Notes:** The passed-in handle is not a valid CURLM handle.

58.13.26  **kErrorBadSocket = 5**  
MBS CURL Plugin, Plugin Version: 15.0. **Function:** One of the multi interface error codes.  
**Notes:** The passed in socket argument did not match.

58.13.27  **kErrorCallPerform = -1**  
MBS CURL Plugin, Plugin Version: 15.0. **Function:** One of the multi interface error codes.  
**Notes:** Please call Perform soon to do some tasks.

58.13.28  **kErrorInternalError = 4**  
MBS CURL Plugin, Plugin Version: 15.0. **Function:** One of the multi interface error codes.  
**Notes:** This is a libCURL bug.

58.13.29  **kErrorOK = 0**  
MBS CURL Plugin, Plugin Version: 15.0. **Function:** One of the multi interface error codes.  
**Notes:** Everything OK.

58.13.30  **kErrorOutOfMemory = 3**  
MBS CURL Plugin, Plugin Version: 15.0. **Function:** One of the multi interface error codes.  
**Notes:** Running low on memory.

58.13.31  **kErrorRecursiveAPICall = 8**  
MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the multi interface error codes.  
**Notes:** An api function was called from inside an event.
58.13.32  kErrorUnknownOption = 6

MBS CURL Plugin, Plugin Version: 15.0. **Function:** One of the multi interface error codes.  
**Notes:** Tried to set unsupported option.

58.13.33  kPipeHTTP1 = 1

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the pipeline modes.  
**Notes:** Pipe with HTTP/1.1.

58.13.34  kPipeMultiPlex = 2

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the pipeline modes.  
**Notes:** Pipe with multiplex.

58.13.35  kPipeNothing = 0

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the pipeline modes.  
**Notes:** No piping.
58.14 class CURLNNotInitializedExceptionMBS

58.14.1 class CURLNNotInitializedExceptionMBS

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
An exception raised if CURL library is not initialized.

**Notes:**
If you call load library before you use the CURLMBS Constructor, you should never see this.
Subclass of the RuntimeException class.
58.15 class CURLNotInitializedExceptionMBS

58.15.1 class CURLNotInitializedExceptionMBS

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An exception raised if CURL library is not initialized.

**Notes:**

If you call load library before you use the CURLMBS Constructor, you should never see this.
Subclass of the RuntimeException class.
58.16  class CURLNSSLBackendMBS

58.16.1  class CURLNSSLBackendMBS

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for a SSL backend.  
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

58.16.2  Methods

58.16.3  Constructor

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

58.16.4  List as CURLNSSLBackendMBS()

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Lists the backends.  
**Example:**

```vbscript
dim list() as CURLNSSLBackendMBS = CURLNSSLBackendMBS.List

for each l as CURLNSSLBackendMBS in list
    MsgBox l.name
next
```

**Notes:** The list may not be available if called too late.

58.16.5  SetSSLBackend(id as Integer) as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the SSL backend.  
**Notes:**
When built with multiple SSL backends, SetSSLBackend() allows to choose one. This function can only be called once, and it must be called *before* CURL constructor().
The backend can be identified by the id (e.g. CURLSSLBACKEND_OPENSSL). The backend can also be specified via the name parameter (passing -1 as id). If both id and name are specified, the name will be ignored. If neither id nor name are specified, the function will fail with CURLSSLSET_UNKNOWN_BACKEND and set the "avail" pointer to the NULL-terminated list of available backends.

Upon success, the function returns kErrorOK.
If the specified SSL backend is not available, the function returns kErrorUnknownBackend.

The SSL backend can be set only once. If it has already been set, a subsequent attempt to change it will result in a kErrorTooLate.

Returns nil, if there are no backends to choose.
See also:

- 58.16.6 SetSSLBackend(name as string) as Integer

58.16.6 SetSSLBackend(name as string) as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the SSL backend.
**Notes:**
When built with multiple SSL backends, SetSSLBackend() allows to choose one. This function can only be called once, and it must be called *before* CURL constructor().

The backend can be identified by the id (e.g. CURLSSLBACKEND_OPENSSL). The backend can also be specified via the name parameter (passing -1 as id). If both id and name are specified, the name will be ignored. If neither id nor name are specified, the function will fail with CURLSSLSET_UNKNOWN_BACKEND and set the "avail" pointer to the NULL-terminated list of available backends.

Upon success, the function returns kErrorOK.
If the specified SSL backend is not available, the function returns kErrorUnknownBackend.

The SSL backend can be set only once. If it has already been set, a subsequent attempt to change it will result in a kErrorTooLate.

Returns nil, if there are no backends to choose.
See also:

- 58.16.5 SetSSLBackend(id as Integer) as Integer
58.16.7 Properties

58.16.8 ID as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The ID of this SSL backend.
**Notes:** (Read only property)

58.16.9 Name as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The name of this SSL backend.
**Notes:** (Read only property)

58.16.10 Constants

58.16.11 kErrorNoBackends = 3

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the error codes.
**Notes:** libcurl was built without any SSL support

58.16.12 kErrorOK = 0

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the error codes.
**Notes:** OK

58.16.13 kErrorTooLate = 2

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the error codes.
**Notes:** You can’t set SSL backend after SSL initialization.

58.16.14 kErrorUnknownBackend = 1

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the error codes.
**Notes:** Unknown backend name or ID.
**58.16.15** kSSLBackendAXTLS = 10

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSL backend IDs.  
**Notes:** AXTLS

**58.16.16** kSSLBackendDarwinSSL = 9

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSL backend IDs.  
**Notes:** DarwinSSL

**58.16.17** kSSLBackendGNUTLS = 2

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSL backend IDs.  
**Notes:** GNUTLS

**58.16.18** kSSLBackendGSKIT = 5

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSL backend IDs.  
**Notes:** GSKIT

**58.16.19** kSSLBackendMBEDTLS = 11

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSL backend IDs.  
**Notes:** MBEDTLS

**58.16.20** kSSLBackendNone = 0

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSL backend IDs.

**58.16.21** kSSLBackendNSS = 3

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSL backend IDs.  
**Notes:** NSS
58.16.22  kSSLBackendOpenSSL = 1

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSL backend IDs.
**Notes:** OpenSSL or BoringSSL

58.16.23  kSSLBackendPolarSSL = 6

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSL backend IDs.
**Notes:** PolarSSL

58.16.24  kSSLBackendSChannel = 8

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSL backend IDs.
**Notes:** SChannel

58.16.25  kSSLBackendWolfSSL = 7

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSL backend IDs.
**Notes:** WolfSSL
58.17  class CURLNVersionMBS

58.17.1  class CURLNVersionMBS

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A class to hold version information from libCURL.

58.17.2  Methods

58.17.3  Constructor

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constructor.

58.17.4  Protocol(index as Integer) as string

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
An array containing the names protocols that libCURL supports (using lowercase letters).
**Notes:**
The protocol names are the same as would be used in URLs.
Index is zero based.

58.17.5  Properties

58.17.6  brotliVersion as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Brothli library version string.
**Notes:**
Empty if library is not used in the CURL library you use.
(Read and Write property)

58.17.7  brotliVersionNumber as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Version of brotli version.
58.17. **CLASS CURLVERSIONMBS**

**Notes:** (Read and Write property)

### 58.17.8 Features as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Bits which define what features libCURL can and can’t.

**Notes:**
Use the Supports Boolean properties instead.
Additional feature bits may be found in the libCURL documentation.
(Read and Write property)

### 58.17.9 Host as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
An ascii string showing what host information that this libCURL was built for.

**Notes:**
As discovered by a configure script or set by the build environment.
e.g. ”powerpc-apple-darwin8.0”
(Read and Write property)

### 58.17.10 iconvVersionNumber as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Version number of iconv library.

**Notes:** (Read and Write property)

### 58.17.11 libidnVersion as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Version of LibIDN used.

**Notes:**
Empty if library is not used in the CURL library you use.
(Read and Write property)
58.17.12 libsshVersion as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Version of LibSSH2 used.
**Notes:** Empty if library is not used in the CURL library you use. (Read and Write property)

58.17.13 LibZVersion as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An ascii string (there is no numerical version).
**Notes:** If libCURL has no libz support, this is "".
  e.g. "1.2.3"
  (Read and Write property)

58.17.14 ProtocolCount as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of entries in the Protocol array.
**Notes:** (Read and Write property)

58.17.15 SSLVersion as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An ascii string for the OpenSSL version used.
**Notes:** If libCURL has no SSL support, this is "".
  e.g. "OpenSSL/0.9.7l"
  (Read and Write property)

58.17.16 SupportsASYNCHDNS as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether libCURL was built with support for asynchronous name lookups, which allows more exact timeouts (even on Windows) and less blocking when using the multi interface.
**Notes:**
58.17. **CLASS CURLVERSIONMBS**

(added in 7.10.7)
(Read only property)

### 58.17.17 SupportsBrotri as Boolean

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Brotri features are present.
**Notes:** (Read only property)

### 58.17.18 SupportsConv as Boolean

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Character conversions supported.
**Notes:** (Read only property)

### 58.17.19 SupportsGSSAPI as Boolean

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Built against a GSS-API library.
**Notes:** (Read only property)

### 58.17.20 SupportsGSSNEGOTIATE as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether libCURL supports HTTP GSS-Negotiate
**Notes:**
(added in 7.10.6)
(Read only property)

### 58.17.21 SupportsHTTP2 as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether currently used CURL library supports HTTP2.
**Example:**

```vbnet
dim c as new CURLNMBS
dim v as CURLNVersionMBS = c.version
```
if v.SupportsHTTP2 then
MsgBox "HTTP2 is supported"
else
MsgBox "HTTP2 is not supported"
end if

Notes:
While our CURL Plugin with CURLNMBS plugin may not support this currently, you could use LoadLibrary function to load a CURL library supporting it.
(Read only property)

58.17.22 SupportsHTTPSProxy as Boolean
Notes: (Read only property)

58.17.23 SupportsIDN as Boolean
MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Whether libCURL was built with support for IDNA, domain names with international letters.
Notes: (Added in 7.12.0)
(Read only property)

58.17.24 SupportsIPV6 as Boolean
Notes: (Read only property)

58.17.25 SupportsKERBEROS4 as Boolean
58.17. **CLASS CURLVERSIONMBS**

Notes: (Read only property)

---

### 58.17.26 SupportsKerberos5 as Boolean

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Kerberos V5 auth is supported.  
**Notes:** (Read only property)

---

### 58.17.27 SupportsLARGEFILE as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether libCURL was built with support for large files.  
**Notes:**

(Added in 7.11.1)  
(Read only property)

---

### 58.17.28 SupportsLIBZ as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether libCURL supports HTTP deflate using libz  
**Notes:**

(Added in 7.10)  
(Read only property)

---

### 58.17.29 SupportsMultiSSL as Boolean

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Multiple SSL backends available.  
**Notes:** (Read only property)

---

### 58.17.30 SupportsNTLM as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether libCURL supports HTTP NTLM  
**Example:**

---
dim c as new CURLNMBS
dim v as CURLNVersionMBS = c.Version

MsgBox "SupportsNTLM: " +str(v.SupportsNTLM)

Notes:
(added in 7.10.6)
(Read only property)

58.17.31 SupportsNTLMWB as Boolean

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
NTLM delegation to winbind helper is supported.
**Notes:** (Read only property)

58.17.32 SupportsPSL as Boolean

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Mozilla’s Public Suffix List, used for cookie domain verification.
**Notes:** (Read only property)

58.17.33 SupportsSPNEGO as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether libCURL was built with support for SPNEGO authentication
**Notes:**
(Simple and Protected GSS-API Negotiation Mechanism, defined in RFC 2478.) (added in 7.10.8)
(Read only property)

58.17.34 SupportsSSL as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether libCURL supports SSL (HTTPS/FTPS)
**Notes:**
(Added in 7.10)
(Read only property)
58.17.35  SupportsSSPI as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether libCURL was built with support for SSPI.
**Notes:**
This is only available on Windows and makes libCURL use Windows-provided functions for NTLM authentication. It also allows libCURL to use the current user and the current user’s password without the app having to pass them on. (Added in 7.13.2)
(Read only property)

58.17.36  SupportsTLSAUTHSRP as Boolean

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** TLS-SRP auth is supported.
**Notes:** (Read only property)

58.17.37  SupportsUnixSockets as Boolean

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Unix domain sockets support.
**Notes:** (Read only property)

58.17.38  Version as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An ascii string for the libCURL version.
**Notes:**
e.g. "7.13.1"
(Read and Write property)

58.17.39  VersionNumber as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The version of libCURL as number.
**Notes:**
a 24 bit number created like this:
"<8 bits major number>| <8 bits minor number>| <8 bits patch number>".
Version 7.9.8 is therefore returned as 0x070908.
(Read and Write property)
58.18. CLASS CURLSFILEINFOMBS

58.18 class CURLSFileInfoMBS

58.18.1 class CURLSFileInfoMBS

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for file information.
**Notes:** Content of this structure depends on information which is known and is achievable (e.g. by FTP LIST parsing).

58.18.2 Properties

58.18.3 Date as Date

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The timestamp as a date object.
**Notes:**
As of plugin version 15.2 the CURL library does not parse the timestamp. So for some timestamp formats we have code in our plugin to do the parsing from the TimeString property. But this is limited. No seconds and the year is a guess. Files newer in the year than today are from last year and other files from current year. The server doesn’t provide year details.
(Read only property)

58.18.4 FileName as String

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The file name.
**Notes:** (Read only property)

58.18.5 FileType as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The file type.
**Notes:** (Read only property)

58.18.6 Flags as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The flags.
Notes:
Flags define which fields are set.
Also you can just use the Has properties for same information.
(Read only property)

58.18.7  GID as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The group ID.
**Notes:** (Read only property)

58.18.8  GroupString as String

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The group string.
**Notes:** (Read only property)

58.18.9  HardLinks as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The hard link count.
**Notes:** (Read only property)

58.18.10  HasFileName as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
True if filename property is valid.
**Notes:** (Read only property)

58.18.11  HasFileType as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
True if filetype property is valid.
**Notes:** (Read only property)
58.18.12 HasGID as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if GID property is valid. **Notes:** (Read only property)

58.18.13 HasHardLinks as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if hardlinks property is valid. **Notes:** (Read only property)

58.18.14 HasPermissions as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if permissions property is valid. **Notes:** (Read only property)

58.18.15 HasSize as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if size property is valid. **Notes:** (Read only property)

58.18.16 HasTime as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if time and date properties have values. **Notes:** (Read only property)

58.18.17 HasUID as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if UID field has a value. **Notes:** (Read only property)
58.18.18 IsDirectory as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if entry is a directory.  
**Notes:**  
Same as FileType = FileTypeDirectory.  
(Read only property)

58.18.19 IsFile as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if entry is a regular file.  
**Notes:**  
Same as FileType = FileTypeFile.  
(Read only property)

58.18.20 Permissions as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The permission value.  
**Notes:** (Read only property)

58.18.21 PermissionString as String

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The permission string.  
**Notes:** (Read only property)

58.18.22 Size as Int64

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The file size.  
**Notes:** (Read only property)
58.18.23 Target as String

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The target for a symlink. Notes: (Read only property)

58.18.24 Time as Int64

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The time value. Notes: (Read only property)

58.18.25 TimeString as String

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The time string parsed. Notes: (Read only property)

58.18.26 UID as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The user ID. Notes: (Read only property)

58.18.27 UserString as String

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The user ID as text. Notes: (Read only property)

58.18.28 Constants

58.18.29 FileTypeDeviceBlock = 3

MBS CURL Plugin, Plugin Version: 15.2. Function: One of the file type constants. Notes: Block Device
58.18.30  *FileTypeDeviceChar = 4*

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the file type constants.  
**Notes:** Character Device

58.18.31  *FileTypeDirectory = 1*

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the file type constants.  
**Notes:** Directory

58.18.32  *FileTypeDoor = 7*

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the file type constants.  
**Notes:** Door, is possible only on Sun Solaris now.

58.18.33  *FileTypeFile = 0*

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the file type constants.  
**Notes:** Regular file

58.18.34  *FileTypeNamedPipe = 5*

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the file type constants.  
**Notes:** Named Pipe

58.18.35  *FileTypeSocket = 6*

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the file type constants.  
**Notes:** Socket

58.18.36  *FileTypeSymlink = 2*

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the file type constants.  
**Notes:** Symbolic links
58.18.37  **FileTypeUnknown = 8**

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the file type constants.  
**Notes:** Unknown file type. Should never occur.

58.18.38  **FlagKnownFileName = 1**

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the flag constants.  
**Notes:** Filename Known

58.18.39  **FlagKnownFileType = 2**

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the flag constants.  
**Notes:** File Type Known

58.18.40  **FlagKnownGID = 32**

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the flag constants.  
**Notes:** GID Known

58.18.41  **FlagKnownHardLinks = 128**

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the flag constants.  
**Notes:** Hardlink Count Known

58.18.42  **FlagKnownPermissions = 8**

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the flag constants.  
**Notes:** Permissions Known

58.18.43  **FlagKnownSize = 64**

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the flag constants.  
**Notes:** Size Known
58.18.44 FlagKnownTime = 4

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the flag constants.  
**Notes:** Time Known

58.18.45 FlagKnownUID = 16

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the flag constants.  
**Notes:** UID Known
58.19. CLASS CURLSLISTMBS

58.19.1 class CURLSListMBS

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: A class to hold a list of strings from the CURL library.
Notes: Data is copied for this list, so you can just keep it around.

58.19.2 Methods

58.19.3 Item(index as Integer) as string

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns the item with the given index.
Notes: Index is zero based.

58.19.4 List as String()


58.19.5 Operator_Convert as String()


58.19.6 Properties

58.19.7 Count as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Number of items in this list.
Notes: (Read only property)
58.20 class CURLSMBS

58.20.1 class CURLSMBS

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A class to wrap libCURL.

**Notes:**
We have two variants:

CURLS* classes include a static CURL library with SSL and SSH.
CURLN* classes include a static CURL library with native SSL on Mac and Windows.
CURL* classes without S need you to supply your own CURL library.

All variants can load a custom CURL library or use the one from the system on Mac and Linux.
If no library is loaded or included, the plugin will try to load the system one in constructor.

from the website libCURL website:
http://CURL.haxx.se/libCURL/

libCURL is a free and easy-to-use client-side URL transfer library, supporting FTP, FTPS, HTTP, HTTPS,
SCP, SFTP, TFTP, TELNET, DICT, FILE and LDAP. libCURL supports SSL certificates, HTTP POST,
HTTP PUT, FTP uploading, HTTP form based upload, proxies, cookies, user+password authentication
(Basic, Digest, NTLM, Negotiate, Kerberos4), file transfer resume, http proxy tunneling and more!

libCURL is highly portable, it builds and works identically on numerous platforms, including Solaris,
NetBSD, FreeBSD, OpenBSD, Darwin, HPUX, IRIX, AIX, Tru64, Linux, UnixWare, HURD, Windows,
Amiga, OS/2, BeOs, Mac OS X, Ultrix, QNX, OpenVMS, RISC OS, Novell NetWare, DOS and more...

libCURL is free, thread-safe, IPv6 compatible, feature rich, well supported, fast, thoroughly documented
and is already used by many known, big and successful companies and numerous applications.

On Linux you may need to install libraries like ldap: apt-get install libldap-2.4.2:i386

58.20.2 Methods

58.20.3 AddMimePart as CURLSMimePartMBS

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Adds a new blank mime part.

**Notes:** Returns mime object, so you can set properties.
58.20.4 ClearData

MBS CURL Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Clears data properties.  
**Notes:** Resets OutputData, DebugData and HeaderData.

58.20.5 CloseMTDebugOutputFile

MBS CURL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Closes the debug output file for PerformMT.  
**Notes:**  
Call after PerformMT finished.  
With 15.2 version of plugin, this also works with Perform.

58.20.6 CloseMTHeaderOutputFile

MBS CURL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Closes the header output file for PerformMT.  
**Notes:**  
Call after PerformMT finished.  
With 15.2 version of plugin, this also works with Perform.

58.20.7 CloseMTInputFile

MBS CURL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Closes the input file for PerformMT.  
**Notes:**  
Call after PerformMT finished.  
With 15.2 version of plugin, this also works with Perform.

58.20.8 CloseMTOutputFile

MBS CURL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Closes the output file for PerformMT.  
**Notes:**
Call after PerformMT finished.
With 15.2 version of plugin, this also works with Perform.

58.20.9 CreateMTDebugOutputFile(file as folderitem) as boolean

MBS CURL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a file where debug data is written to.
**Notes:**
Returns true on success and false on failure (e.g. permission error).
With 15.2 version of plugin, this also works with Perform.

58.20.10 CreateMTHeaderOutputFile(file as folderitem) as boolean

MBS CURL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a file where header data is written to.
**Notes:**
Returns true on success and false on failure (e.g. permission error).
With 15.2 version of plugin, this also works with Perform.

58.20.11 CreateMTOutputFile(file as folderitem) as boolean

MBS CURL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a file where output data is written to.
**Notes:**
Returns true on success and false on failure (e.g. permission error).
With 15.2 version of plugin, this also works with Perform.

58.20.12 FileInfos as CURLSFileInfoMBS()

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Queries array with file information.
**Notes:** If you use OptionWildcard, you find after the transfer all CURLSFileInfoMBS objects for all the files/folders found.
58.20.13 FinishMime

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Finishes mime data. **Example:**

```vbnet
dim c as new CURLSMBS

// add mime
dim p as CURLMimePartMBS = c.AddMimePart

p.name = "Text"
p.FileName = "test.txt"
p.MimeType = "text/plain"
p.DataString = "Hello World"

c.FinishMime

// now you can send...
```

**Notes:** Please call AddMimePart for each part you like to add and than finally FinishMime before calling perform.

58.20.14 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, FormOptions() as Integer, Texts() as string)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Add a section to a multipart/formdata HTTP POST. **Example:**

```vbnet
dim c as new CURLSMBS

dim file1 as string = "my-face.jpg"
dim file2 as string = "your-face.jpg"
dim formOptions(-1) as Integer
dim formValues(-1) as string

const CURLFORM_COPYNAME = 1
const CURLFORM_ARRAY = 8
const CURLFORM_FILE = 10

'/* Add two file section using CURLFORM_ARRAY */
formOptions.Append CURLFORM_FILE
formValues.append file1
formOptions.Append CURLFORM_FILE
formValues.append file2
```
CHAPTER 58. CURL

`c.FormAdd CURLFORM_COPYNAME, "pictures", CURLFORM_ARRAY, formOptions, formValues`

Notes:

LastError is set.

See other FormAdd methods for details.

See also:

- 58.20.15 `FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string)` 10306
- 58.20.16 `FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer)` 10307
- 58.20.17 `FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Number4 as Integer)` 10308
- 58.20.18 `FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Text4 as string)` 10308
- 58.20.19 `FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string)` 10309
- 58.20.20 `FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string, FormOption4 as Integer, Number4 as Integer)` 10310
- 58.20.21 `FormAdd(FormOption1 as integer, Text1 as string, FormOption2 as integer, Text2 as string, FormOption3 as integer, Text3 as string, FormOption4 as integer, Number4 as integer, FormOption5 as integer, Text5 as string)` 10312

58.20.15 `FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string)`

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Add a section to a multipart/formdata HTTP POST.

Notes:

LastError is set.

See other FormAdd methods for details.

See also:

- 58.20.14 `FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, FormOptions() as Integer, Texts() as string)` 10305
- 58.20.16 `FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer)` 10307
58.20. CLASS CURLSMBS

- 58.20.17 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Number4 as Integer) 10308
- 58.20.18 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Text4 as string) 10308
- 58.20.19 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string) 10309
- 58.20.20 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string, FormOption4 as Integer, Number4 as Integer) 10310
- 58.20.21 FormAdd(FormOption1 as integer, Text1 as string, FormOption2 as integer, Text2 as string, FormOption3 as integer, Text3 as string, FormOption4 as integer, Number4 as integer, FormOption5 as integer, Text5 as string) 10312

58.20.16 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Add a section to a multipart/formdata HTTP POST.

**Notes:**

Lasterror is set.

See other FormAdd methods for details.

See also:

- 58.20.14 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, FormOptions() as Integer, Texts() as string) 10305
- 58.20.15 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string) 10306
- 58.20.17 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Number4 as Integer) 10308
- 58.20.18 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Text4 as string) 10308
- 58.20.19 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string) 10309
- 58.20.20 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string, FormOption4 as Integer, Number4 as Integer) 10310
- 58.20.21 FormAdd(FormOption1 as integer, Text1 as string, FormOption2 as integer, Text2 as string, FormOption3 as integer, Text3 as string, FormOption4 as integer, Number4 as integer, FormOption5 as integer, Text5 as string) 10312
CHAPTER 58. CURL

58.20.17 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Number4 as Integer)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Add a section to a multipart/formdata HTTP POST.

Notes:
Lasterror is set.
See other FormAdd methods for details.
See also:

• 58.20.14 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, FormOptions() as Integer, Texts() as string) 10305
• 58.20.15 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string) 10306
• 58.20.16 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer) 10307
• 58.20.18 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Text4 as string) 10308
• 58.20.19 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string) 10309
• 58.20.20 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string, FormOption4 as Integer, Number4 as Integer) 10310
• 58.20.21 FormAdd(FormOption1 as integer, Text1 as string, FormOption2 as integer, Text2 as string, FormOption3 as integer, Text3 as string, FormOption4 as integer, Number4 as integer, FormOption5 as integer, Text5 as string) 10312

58.20.18 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Text4 as string)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Add a section to a multipart/formdata HTTP POST.

Notes:
Lasterror is set.
See other FormAdd methods for details.
See also:

• 58.20.14 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, FormOptions() as Integer, Texts() as string) 10305
58.20. FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string)  

58.20.15 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string)  

58.20.16 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer)  

58.20.17 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Number4 as Integer)  

58.20.19 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string)  

58.20.20 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string, FormOption4 as Integer, Number4 as Integer)  

58.20.21 FormAdd(FormOption1 as integer, Text1 as string, FormOption2 as integer, Text2 as string, FormOption3 as integer, Text3 as string, FormOption4 as integer, Number4 as integer, FormOption5 as integer, Text5 as string)  

58.20.19 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Add a section to a multipart/formdata HTTP POST.  

**Notes:**  
Lasterror is set.  
See other FormAdd methods for details.  
See also:

- 58.20.14 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, FormOptions() as Integer, Texts() as string)  

- 58.20.15 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string)  

- 58.20.16 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer)  

- 58.20.17 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Number4 as Integer)  

- 58.20.18 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Text4 as string)  

- 58.20.20 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string, FormOption4 as Integer, Number4 as Integer)  

- 58.20.21 FormAdd(FormOption1 as integer, Text1 as string, FormOption2 as integer, Text2 as string, FormOption3 as integer, Text3 as string, FormOption4 as integer, Number4 as integer, FormOption5 as integer, Text5 as string)
CHAPTER 58. CURL

58.20.20 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string, FormOption4 as Integer, Number4 as Integer)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Add a section to a multipart/formdata HTTP POST.

**Notes:**
Several FormAdd methods are there. Send a request to support if you need another parameter combination.

LastError is set.

FormAdd() is used to append sections when building a multipart/formdata HTTP POST (sometimes referred to as rfc1867-style posts). Append one section at a time until you've added all the sections you want included and then you call FormFinish.

Using POST with HTTP 1.1 implies the use of a "Expect: 100-continue" header. You can disable this header with CURLOPT_HTTPHEADER as usual.

First, there are some basics you need to understand about multipart/formdata posts. Each part consists of at least a NAME and a CONTENTS part. If the part is made for file upload, there are also a stored CONTENT-TYPE and a FILENAME. Below, we'll discuss what options you use to set these properties in the parts you want to add to your post.

The options listed first are for making normal parts. The options from CURLOPT_FILE through CURLOPT_CHANNELDATA are for file upload parts.

**CURLFORM_COPYNAME:**
followed by a string which provides the name of this part. libCURL copies the string so your application doesn't need to keep it around after this function call. If the name isn't null terminated, or if you'd like it to contain zero bytes, you must set its length with CURLOPT_NAMELENGTH.

**CURLFORM_PTRNAME:**
followed by a string which provides the name of this part. libCURL will use the string and refer to the data in your application, so you must make sure it remains until CURL no longer needs it. If the name isn't null terminated, or if you'd like it to contain zero bytes, you must set its length with CURLOPT_NAMELENGTH.

**CURLFORM_COPYCONTENTS:**
followed by a string to the contents of this part, the actual data to send away. libCURL copies the provided data, so your application doesn't need to keep it around after this function call. If the data isn't null terminated, or if you'd like it to contain zero bytes, you must set the length of the name with CURLOPT_CONTENTSLENGTH.
CURLFORM_PTRCONTENTS:
followed by a string to the contents of this part, the actual data to send away. libCURL will use the string and refer to the data in your application, so you must make sure it remains until CURL no longer needs it. If the data isn’t null terminated, or if you’d like it to contain zero bytes, you must set its length with CURLFORM_CONTENTSLENGTH.

CURLFORM_CONTENTSLENGTH:
followed by a long giving the length of the contents.

CURLFORM_FILECONTENT:
followed by a filename, causes that file to be read and its contents used as data in this part. This part does not automatically become a file upload part simply because its data was read from a file.

CURLFORM_FILE:
followed by a filename, makes this part a file upload part. It sets the filename field to the basename of the provided filename, it reads the contents of the file and passes them as data and sets the content-type if the given file match one of the internally known file extensions. For CURLFORM_FILE the user may send one or more files in one part by providing multiple CURLFORM_FILE arguments each followed by the filename (and each CURLFORM_FILE is allowed to have a CURLFORM_CONTENTTYPE).

CURLFORM_CONTENTTYPE:
is used in combination with CURLFORM_FILE. Followed a string which provides the content-type for this part, possibly instead of an internally chosen one.

CURLFORM_FILENAME:
is used in combination with CURLFORM_FILE. Followed a string, it tells libCURL to use the given string as the filename in the file upload part instead of the actual file name.

CURLFORM_BUFFER:
is used for custom file upload parts without use of CURLFORM_FILE. It tells libCURL that the file contents are already present in a buffer. The parameter is a string which provides the filename field in the content header.

CURLFORM_BUFFERPTR:
is used in combination with CURLFORM_BUFFER. The parameter is the string to be uploaded. You must also use CURLFORM_BUFFERLENGTH to set the number of bytes in the buffer. Keep the buffer variable alive till the upload is finished.

CURLFORM_BUFFERLENGTH:
is used in combination with CURLFORM_BUFFER. The parameter is a long which gives the length of the buffer.
CURLFORM_ARRAY:
Another possibility to send options to CURL_formadd() is the CURLFORM_ARRAY option, that passes an Integer Array and a String Array defining its value. Each element in the form is constructed using the option from the integer array and the value from the string array. All available options can be used in an array, except the CURLFORM_ARRAY option itself!

CURLFORM_CONTENTHEADER:
specifies extra headers for the form POST section. This takes a CURL_slist prepared in the usual way using CURL_slist_append and appends the list of headers to those libCURL automatically generates. The list must exist while the POST occurs, if you free it before the post completes you may experience problems.

PS: CURLFORM_FILE does not work in all CURL versions on all platforms due to a bug with integer numbers.
See also:

- 58.20.14 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, FormOptions() as Integer, Texts() as string) 10305
- 58.20.15 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string) 10306
- 58.20.16 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer) 10307
- 58.20.17 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Number4 as Integer) 10308
- 58.20.18 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Number3 as Integer, FormOption4 as Integer, Text4 as string) 10308
- 58.20.19 FormAdd(FormOption1 as Integer, Text1 as string, FormOption2 as Integer, Text2 as string, FormOption3 as Integer, Text3 as string) 10309
- 58.20.21 FormAdd(FormOption1 as integer, Text1 as string, FormOption2 as integer, Text2 as string, FormOption3 as integer, Text3 as string, FormOption4 as integer, Number4 as integer, FormOption5 as integer, Text5 as string) 10312

58.20.21 FormAdd(FormOption1 as integer, Text1 as string, FormOption2 as integer, Text2 as string, FormOption3 as integer, Text3 as string, FormOption4 as integer, Number4 as integer, FormOption5 as integer, Text5 as string)

MBS CURL Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Add a section to a multipart/formdata HTTP POST.
Notes:
Lasterror is set.
See other FormAdd methods for details.
See also:
58.20.22 FormAddField(fieldName as String, fieldValue as String, ContentType as String = "")

MBS CURL Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Add a section to a multipart/formdata HTTP POST.
**Example:**
```
    dim d as new CURLSMBS
d.FormAddField("company", "Test, Inc.")
```

**Notes:**
For fieldName and ContentType, we use UTF8 always. For fieldValue, we pass through whatever is in the string, so please make sure encoding is working. 
ContentType is optional.

58.20.23 FormAddFile(fieldName as String, fileName as String, fileContent as string, ContentType as String = "")

MBS CURL Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Add a section to a multipart/formdata HTTP POST.
**Example:**
```
    dim d as new CURLSMBS
d.FormAddFile("FileAttachment", "test.txt", "just a form test", "text/plain")
```
Notes:
For fieldName, fileName and ContentType, we use UTF8 always. For fieldValue, we pass through whatever is in the string, so please make sure encoding is working.

Filename is ignored, if empty.
ContentType is optional.

58.20.24 FormData as String

MBS CURL Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Queries current form data.
**Notes:** This is more for debugging as it builds form data as if we would send it.

58.20.25 FormFinish

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Finishes constructing a form.
**Example:**

```vba
dim c as new CURLSMBS
dim namebuffer as string = "name buffer"
dim namelength as Integer = lenb(namebuffer)
dim buffer as string = "test buffer"
dim htmlbuffer as string = "<HTML>test buffer</HTML>"
dim htmlbufferlength as Integer = lenb(htmlbuffer)
dim file1 as string = "my-face.jpg"
dim file2 as string = "your-face.jpg"
dim formOptions(-1) as Integer
dim formValues(-1) as string
dim recordbuffer as string = "record buffer"
dim recordlength as Integer = lenb(recordbuffer)

const CURLFORM NOTHING = 0
const CURLFORM COPYNAME = 1
const CURLFORM PTRNAME = 2
const CURLFORM NAMELENGTH = 3
const CURLFORM COPYCONTENTS = 4
const CURLFORM PTRCONTENTS = 5
const CURLFORM CONTENTSLENGTH = 6
const CURLFORM FILECONTENT = 7
```
const CURLFORM_ARRAY = 8
const CURLFORM_FILE = 10
const CURLFORM_BUFFER = 11
const CURLFORM_BUFFERPTR = 12
const CURLFORM_BUFFERLENGTH = 13
const CURLFORM_CONTENTTYPE = 14
const CURLFORM_FILENAME = 16

'/* Add simple name/content section */
c.FormAdd CURLFORM_COPYNAME, "name", CURLFORM_COPYCONTENTS, "content"

'/* Add simple name/content/contenttype section */
c.FormAdd CURLFORM_COPYNAME, "htmlcode", CURLFORM_COPYCONTENTS, "<HTML></HTML>", CURLFORM_CONTENTTYPE, "text/html"

'/* Add name/ptrcontent section */
c.FormAdd CURLFORM_PTRNAME, "name_for_ptrcontent", CURLFORM_PTRCONTENTS, buffer

'/* Add ptrname/ptrcontent section */
c.FormAdd CURLFORM_PTRNAME, namebuffer, CURLFORM_PTRCONTENTS, buffer, CURLFORM_NAMELENGTH, namelength

'/* Add name/ptrcontent/contenttype section */
c.FormAdd CURLFORM_COPYNAME, "html_code_with_hole", CURLFORM_PTRCONTENTS, htmlbuffer, CURLFORM_CONTENTSLENGTH, htmlbufferlength, CURLFORM_CONTENTTYPE, "text/html"

'/* Add simple file section */
c.FormAdd CURLFORM_COPYNAME, "picture", CURLFORM_FILE, "my-face.jpg"

'/* Add file/contenttype section */
c.FormAdd CURLFORM_COPYNAME, "picture", CURLFORM_FILE, "my-face.jpg", CURLFORM_CONTENTTYPE, "image/jpeg"

'/* Add two file section */
c.FormAdd CURLFORM_COPYNAME, "pictures", CURLFORM_FILE, "my-face.jpg", CURLFORM_FILE, "your-face.jpg"

'/* Add two file section using CURLFORM_ARRAY */
formOptions.Append CURLFORM_FILE
formValues.append file1
formOptions.Append CURLFORM_FILE
formValues.append file2
'/* Add a buffer to upload */
c.FormAdd CURLFORM_COPYNAME, "name", CURLFORM_BUFFER, "data", CURLFORM_BUFFERPTR, recordbuffer, CURLFORM_BUFFERLENGTH, recordlength

'/* no option needed for the end marker */
c.FormAdd CURLFORM_COPYNAME, "pictures", CURLFORM_ARRAY, formOptions, formValues

'/* Add the content of a file as a normal post text value */
c.FormAdd CURLFORM_COPYNAME, "filecontent", CURLFORM_FILECONTENT, ".bashrc"

'/* Set the form info */

c.FormFinish

Notes:
Lasterror is set.
The form is assigned to the HTTPPost property.

58.20.26 GetInfoActiveSocket as integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Receive the active socket used by this curl session.

**Notes:**
If the socket is no longer valid, -1 is returned. When you finish working with the socket, the Destructor closes
the socket and cleanup other resources associated with the handle. This is typically used in combination
with OptionConnectOnly.

This option was added as a replacement for GetInfoLastSocket since that one isn’t working on all platforms.

58.20.27 GetInfoAppConnectTime as Double

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The time stamp when app connected.

58.20.28 GetInfoCertInfo as CURLSListMBS()

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Queries information on the certificate chain.

**Example:**
58.20. **CLASS CURLSMBS**

dim c as new CURLSMBS

// do some transfer
c.OptionURL = "https://www.mbsplugins.de/"
dim e as Integer = c.perform

// query certificate info
dim lists() as CURLSListMBS = c.GetInfoCertInfo

for each l as CURLSListMBS in lists
    MsgBox Join(l, EndOfLine)
next

MsgBox c.DebugData

---

**58.20.29 GetInfoConditionUnmet as Integer**

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Return if the time condition prevented the document to get transferred.

---

**58.20.30 GetInfoConnectTime as Double**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The time, in seconds, it took from the start until the connect to the remote host (or proxy) was completed. **Notes:** The Lasterror property is set. 0 for success.

---

**58.20.31 GetInfoContentLengthDownload as Double**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The content-length of the download.
**Notes:**
The Lasterror property is set. 0 for success.
This is the value read from the Content-Length: field.

---

**58.20.32 GetInfoContentLengthUpload as Double**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The specified size of the upload.
Notes: The Lasterror property is set. 0 for success.

58.20.33 GetInfoContentType as string

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The content-type of the downloaded object. Notes: The Lasterror property is set. 0 for success. This is the value read from the Content-Type: field. If you get "", it means that the server didn’t send a valid Content-Type header or that the protocol used doesn’t support this.

58.20.34 GetInfoCookieList as CURLSListMBS

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: A linked-list of all cookies CURL knows (expired ones, too). Notes: The Lasterror property is set. 0 for success. If there are no cookies (cookies for the handle have not been enabled or simply none have been received) the result is nil.

58.20.35 GetInfoEffectiveURL as string

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The last used effective URL. Notes: The Lasterror property is set. 0 for success.

58.20.36 GetInfoFileTime as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: the remote time of the retrieved document (in number of seconds since 1 Jan 1970 in the GMT/UTC time zone). Example:

```plaintext
// init CURL with options
dim d as new CURLSMBS
d.OptionFileTime = true
d.OptionURL = "http://www.monkeybreadsoftware.de/images/mbs.jpg"

// run query
```
58.20. CLASS CURLSMBS

\[
dim \ e \ as \ Integer = d.\text{Perform}
\]

// calculate date object
\[
dim \ da as new date(1970,1,1,0,0,0)
da.\text{TotalSeconds} = da.\text{TotalSeconds} + d.\text{GetInfoFileTime}
\]

// show date
ResultText.text = str(d.\text{GetInfoFileTime}) + " " + da.\text{ShortDate} + " " + da.\text{ShortTime}

Notes:
The Lasterror property is set. 0 for success.
If you get -1, it can be because of many reasons (unknown, the server hides it or the server doesn’t support
the command that tells document time etc) and the time of the document is unknown. Note that you must
tell the server to collect this information before the transfer is made, by using the OptionFileTime option or
you will unconditionally get a -1 back. (Added in 7.5)

58.20.37 GetInfoFTPEntryPath as string

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. \textbf{Function:}
Returns a string holding the path of the entry path.
Notes:
That is the initial path libCURL ended up in when logging on to the remote FTP server.
Empty string if unknown.

58.20.38 GetInfoHeaderSize as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. \textbf{Function:}
The total size of all the headers received.
Notes: The Lasterror property is set. 0 for success.

58.20.39 GetInfoHTTPAuthAvail as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. \textbf{Function:}
A bitmask indicating the authentication method(s) available.
Notes:
The Lasterror property is set. 0 for success.
The meaning of the bits is explained in the HTTPAuth option.
58.20.40  GetInfoHTTPConnectCode as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The last received proxy response code to a CONNECT request.
**Notes:**
The Lasterror property is set. 0 for success.

58.20.41  GetInfoHTTPVersion as integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get the http version used in the connection.
**Notes:** The returned value will be kHTTP_VERSION_1_0, kHTTP_VERSION_1_1, or kHTTP_VERSION_2_0, or 0 if the version can’t be determined.

58.20.42  GetInfoLastSocket as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Receive the last socket used by this CURL session.
**Notes:**
If the socket is no longer valid, -1 is returned. When you finish working with the socket, the destructor will free the handle as usual and let libCURL close the socket and cleanup other resources associated with the handle. This is typically used in combination with OptionConnectOnly. (Added in 7.15.2)

NOTE: this API is not really working on win64, since the SOCKET type on win64 is 64 bit large while its 'long' is only 32 bits.

58.20.43  GetInfoLocalIP as string

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Queries local IP.
**Example:**
```vba
dim c as new CURLSMBS

// do some transfer
c.OptionURL = "http://www.mbsplugins.de/

dim e as Integer = c.perform

// now check local IP
```
58.20.44 GetInfoLocalPort as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Return the local port of the most recent (primary) connection.

**Example:**
```vbs
Dim c As New CURLSMBS

// do some transfer
C.OptionURL = "http://www.mbsplugins.de/"
Dim e As Integer = c.perform

// now check local IP and port
MsgBox c.GetInfoLocalIP + ";" + Str(c.GetInfoLocalPort)
```

58.20.45 GetInfoNameLookupTime as Double

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The time, in seconds, it took from the start until the name resolving was completed.

**Notes:** The Lasterror property is set. 0 for success.

58.20.46 GetInfoNumConnects as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
How many new connections libCURL had to create to achieve the previous transfer.

**Notes:**
The Lasterror property is set. 0 for success.
(only the successful connects are counted)
Combined with RedirectCount you are able to know how many times libCURL successfully reused existing connection(s) or not. See the Connection Options to see how libCURL tries to make persistent connections to save time.

58.20.47 GetInfoOSErrno as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The errno variable from a connect failure.
Notes: The Lasterror property is set. 0 for success.

58.20.48 GetInfoPreTransferTime as Double

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The time, in seconds, it took from the start until the file transfer is just about to begin.
**Notes:**
The Lasterror property is set. 0 for success.
This includes all pre-transfer commands and negotiations that are specific to the particular protocol(s) involved.

58.20.49 GetInfoPrimaryIP as string

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Return the ip address of the most recent (primary) connection.
**Example:**
```vba
dim c as new CURLSMBS
// do some transfer
c.OptionURL = "http://www.mbsplugins.de/
dim e as Integer = c.perform

// now check primary IP and port
MsgBox c.GetInfoPrimaryIP+":"+str(c.GetInfoPrimaryPort)
```

58.20.50 GetInfoPrimaryPort as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Return the (remote) port of the most recent (primary) connection.
**Example:**
```vba
dim c as new CURLSMBS
// do some transfer
c.OptionURL = "http://www.mbsplugins.de/
dim e as Integer = c.perform

// now check primary IP and port
MsgBox c.GetInfoPrimaryIP+":"+str(c.GetInfoPrimaryPort)
```
58.20.51 GetInfoProtocol as integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get the protocol used in the connection. **Notes:** See kProtocol* constants.

58.20.52 GetInfoProxyAuthAvail as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A bitmask indicating the authentication method(s) available for your proxy authentication. **Notes:** The Lasterror property is set. 0 for success.

58.20.53 GetInfoProxySSLVerifyResult as integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get the result of the proxy certificate verification. **Notes:** receive the result of the certificate verification that was requested (using the OptionProxySSLVerifyPeer option. This is only used for HTTPS proxies.

58.20.54 GetInfoRedirectCount as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The total number of redirections that were actually followed. **Notes:** The Lasterror property is set. 0 for success.

58.20.55 GetInfoRedirectTime as Double

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** the total time, in seconds, it took for all redirection steps include name lookup, connect, pretransfer and transfer before final transaction was started. **Notes:** The Lasterror property is set. 0 for success. RedirectTime contains the complete execution time for multiple redirections. (Added in 7.9.7)
58.20.56  **GetInfoRedirectURL as string**

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The redirection URL.

58.20.57  **GetInfoRequestSize as Integer**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The total size of the issued requests. **Notes:**

The Lasterror property is set. 0 for success.
This is so far only for HTTP requests. Note that this may be more than one request if FOLLOWLOCATION is true.

58.20.58  **GetInfoResponseCode as Integer**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last received HTTP or FTP code. **Notes:**

The Lasterror property is set. 0 for success.
This will be zero if no server response code has been received. Note that a proxy’s CONNECT response should be read with GetInfoHTTPConnectCode and not this.

With HTTP transfer, a successful transfer reports 200 here. If the page is not found, you get 404. Or any other HTTP Response code.

58.20.59  **GetInfoRTSPClientCSEQ as Integer**

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Query RTSP Client sequence counter.

58.20.60  **GetInfoRTSPCSEQRecv as Integer**

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Query RTSP sequence counter received.
58.20.61 GetInfoRTSPServerCSEQ as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Query RTSP Server sequence counter.

58.20.62 GetInfoRTSPSessionID as string

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Query RTSP session ID.

58.20.63 GetInfoScheme as string

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get the URL scheme (sometimes called protocol) used in the connection.

58.20.64 GetInfoSizeDownload as Double

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The total amount of bytes that were downloaded.
**Notes:**
The Lasterror property is set. 0 for success.
The amount is only for the latest transfer and will be reset again for each new transfer.

58.20.65 GetInfoSizeUpload as Double

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The total amount of bytes that were uploaded.
**Notes:** The Lasterror property is set. 0 for success.

58.20.66 GetInfoSpeedDownload as Double

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The average download speed that CURL measured for the complete download.
**Notes:** The Lasterror property is set. 0 for success.
58.20.67 GetInfoSpeedUpload as Double

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The average upload speed that CURL measured for the complete upload.
**Notes:** The Lasterror property is set. 0 for success.

58.20.68 GetInfoSSLEngines as CURLSListMBS

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Receive a linked-list of OpenSSL crypto-engines supported.
**Notes:**
The Lasterror property is set. 0 for success.
Note that engines are normally implemented in separate dynamic libraries. Hence not all the returned engines may be available at run-time.

58.20.69 GetInfoSSLVerifyResult as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
the result of the certification verification that was requested (using the SSLVerifyPeer option).
**Notes:** The Lasterror property is set. 0 for success.

58.20.70 GetInfoStartTransferTime as Double

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
the time, in seconds, it took from the start until the first byte is just about to be transferred.
**Notes:**
The Lasterror property is set. 0 for success.
This includes the pretransfer time and also the time the server needs to calculate the result.

58.20.71 GetInfoTotalTime as Double

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The total time in seconds for the previous transfer, including name resolving, TCP connect etc.
**Notes:** The Lasterror property is set. 0 for success.
58.20. CLASS CURLSMBS

58.20.72 LoadAPI

MBS CURL Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads the default CURL library.

**Notes:**
This method is called by the constructor. So you don’t need this except you want to test explicit with APILoaded whether the loading worked before you use the CURLSMBS class.

Loads the “libCURL.dll” Windows library (with SSL support this one max require OpenSSL).
Loads on Mac OS X and Linux the libCURL file in `/usr/lib`.

58.20.73 LoadErrorString as string

MBS CURL Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last error string from the LoadLibrary function.

58.20.74 LoadLibrary(file as folderitem) as boolean

MBS CURL Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads the CURL library from the given path.

**Notes:**
You only need to use this function if you have your own CURL Library.

Loads a Windows DLL, a Linux shared library or a Mac OS X shared library from the given path.

Returns true on success.

See also:

- 58.20.75 LoadLibrary(path as string) as boolean

58.20.75 LoadLibrary(path as string) as boolean

MBS CURL Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads the CURL library from the given path.

**Notes:**
You only need to use this function if you have your own CURL Library.

Loads a Windows DLL, a Linux shared library or a Mac OS X shared library from the given path.
Returns true on success.
See also:

- 58.20.74 LoadLibrary(file as folderitem) as boolean

58.20.76 OpenMTInputFile(file as folderitem, Offset as Integer = 0) as boolean

MBS CURL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Opens input file for reading data while PerformMT runs.
**Notes:**
The read event is not called with PerformMT.
Offset is helpful for HTTP PUT requests with range, so you can start with an offset.
With 15.2 version of plugin, this also works with Perform.

58.20.77 Perform as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Perform a file transfer
**Notes:**
This function is called after all the options are set, and will perform the transfer as described in the options.

You can do any amount of calls to Perform. If you intend to transfer more than one file, you are even encouraged to do so. libCURL will then attempt to re-use the same connection for the following transfers, thus making the operations faster, less CPU intense and using less network resources. Just note that you will have to use the option properties between the invokes to set options for the following Perform.

Typical error codes are 6 for a wrong domain name in the URL, 67 for wrong name/password combination, 60 for missing SSL settings, 1 for an unsupported protocol.

Possible values for the return value:

The error value -1 is used from the plugin to report that something is missing like OpenSSL dlls on Windows.

With SFTP, you can get logged error "Upload failed: Operation failed (4/-31)" when upload uses path to folder instead of file in URL.
58.20. CLASS CURLSMBS

58.20.78 PerformMT as Integer

MBS CURL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Perform a file transfer with preemptive multithreading.

**Notes:**
Same as Perform, but with additional multithreading.
Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.

As the actual transfer runs on a preemptive thread, the events Debug, Write, Header and Progress are called asynchronously and run a few milliseconds later. You can return true in Progress event to stop transfer, but you will get more events before the transfer is stopped.

You can call CreateMTDebugOutputFile, CreateMTHHeaderOutputFile and CreateMTOoutputFile before PerformMT to have output data be written into files. Call OpenMTInputFile to let the plugin read input data (form post or upload) from an input file.

Do not call other CURL functions on this CURLSMBS instance while PerformMT is running!

Typical error codes are 6 for a wrong domain name in the URL, 67 for wrong name/password combination, 60 for missing SSL settings, 1 for an unsupported protocol.

To avoid trouble with app hanging on quit of application, be sure to set cancel property to true in window close event to cancel any pending transfer.

58.20.79 ReceiveData(byref data as Memoryblock, BytesToRead as Int64) as Int64


**Notes:**
This function receives raw data from the established connection. You may use it together with SendData to implement custom protocols using libcurl. This functionality can be particularly useful if you use proxies and/or SSL encryption: libcurl will take care of proxy negotiation and connection set-up.

The data memoryblock is a reference to your variable that will get the received data. BytesToRead is the maximum amount of data you can get in that buffer. The function returns the number of received bytes.

To establish the connection, set OptionConnectOnly = true before calling Perform. Note that ReceiveData does not work on connections that were created without this option.
The call will return kError AGAIN if there is no data to read - the socket is used in non-blocking mode internally. When kError AGAIN is returned, wait for data to arrive.

Wait on the socket only if ReceiveData returns kError AGAIN. The reason for this is libcurl or the SSL library may internally cache some data, therefore you should call ReceiveData until all data is read which would include any cached data.

Furthermore if you wait on the socket and it tells you there is data to read, ReceiveData may return CURLE AGAIN if the only data that was read was for internal SSL processing, and no other data is available.

On success, sets lasterror to kError_OK (0), stores the received data into memory block, and returns the number of bytes it actually read.

On failure, returns zero and lasterror is set to the appropriate error code.

The function may return kError AGAIN. In this case, use your operating system facilities to wait until data can be read, and retry.

Reading exactly 0 bytes indicates a closed connection.

If there’s no socket available to use from the previous transfer, this function returns kError UNSUPPORTED_PROTOCOL.

58.20.80 Reset

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Re-initializes all options previously set on a specified CURL handle to the default values. Notes: It does not change the following information kept in the handle: live connections, the Session ID cache, the DNS cache, the cookies and shares.

58.20.81 SendData(data as Memoryblock) as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Sends raw data over a connection. Notes: This function sends arbitrary data over the established connection. You may use it together with ReceiveData to implement custom protocols using libcurl. This functionality can be particularly useful if you use
proxies and/or SSL encryption: libcurl will take care of proxy negotiation and connection set-up.

Provide the data to send via parameter. We return the number of bytes sent.

To establish the connection, set OptionConnectOnly = true option before calling Perform methods. Note that SendData will not work on connections that were created without this option.

The call will return kError_AGAIN if it’s not possible to send data right now - the socket is used in non-blocking mode internally. When kError_AGAIN is returned, please wait.

Furthermore if you wait on the socket and it tells you it’s writable, SendData may return kError_AGAIN if the only data that was sent was for internal SSL processing, and no other data could be sent.

See also:

• 58.20.82 SendData(data as string) as Integer

58.20.82 SendData(data as string) as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sends raw data over a connection. **Notes:**

This function sends arbitrary data over the established connection. You may use it together with ReceiveData to implement custom protocols using libcurl. This functionality can be particularly useful if you use proxies and/or SSL encryption: libcurl will take care of proxy negotiation and connection set-up.

Provide the data to send via parameter. We return the number of bytes sent.

To establish the connection, set OptionConnectOnly = true option before calling Perform methods. Note that SendData will not work on connections that were created without this option.

The call will return kError_AGAIN if it’s not possible to send data right now - the socket is used in non-blocking mode internally. When kError_AGAIN is returned, please wait.

Furthermore if you wait on the socket and it tells you it’s writable, SendData may return kError_AGAIN if the only data that was sent was for internal SSL processing, and no other data could be sent.

See also:

• 58.20.81 SendData(data as Memoryblock) as Integer
58.20.83 SetInputData(data as MemoryBlock)

MBS CURL Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the input data.

**Notes:**
If you set input data, you do not need to use Read, RestartRead or Seek events.
The plugin will use the provided data for the upload.
Setting input data size, will also set the input file size (OptionInFileSizeLarge and OptionInFileSize).

Alternatively you can provide data in Read event or use OpenMTInputFile method to open a file on disk to upload.
See also:

- 58.20.84 SetInputData(data as string)

58.20.84 SetInputData(data as string)

MBS CURL Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the input data.

**Notes:**
If you set input data, you do not need to use Read, RestartRead or Seek events.
The plugin will use the provided data for the upload.
Setting input data size, will also set the input file size (OptionInFileSizeLarge and OptionInFileSize).

Alternatively you can provide data in Read event or use OpenMTInputFile method to open a file on disk to upload.
See also:

- 58.20.83 SetInputData(data as MemoryBlock)

58.20.85 SetOptionConnectTo(list() as string)

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Set list of host:port:connect-to-host:connect-to-port, overrides the URL’s host:port (only for the network layer)

58.20.86 SetOptionEmptyPassword

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets an empty password.

**Notes:**
Normally you have no password unless you set it. But if you set a password with empty string, the plugin sets CURL to use no password. This method is to use an empty password.

58.20.87 SetOptionHTTP200Aliases(list() as string)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: A linked list of aliases to be treated as valid HTTP 200 responses.
Notes:
Some servers respond with a custom header response line. For example, IceCast servers respond with "ICY 200 OK". By including this string in your list of aliases, the response will be treated as a valid HTTP header line such as "HTTP/1.0 200 OK".

The alias itself is not parsed for any version strings. So if your alias is "MYHTTP/9.9", LibCURL will not treat the server as responding with HTTP version 9.9. Instead LibCURL will use the value set by option HTTPVersion.

The Lasterror property is set. 0 for success.

58.20.88 SetOptionHTTPHeader(list() as string)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: A linked list of HTTP headers to pass to the server in your HTTP request.
Example:
```
Dim c As New CURLSMBS
C.SetOptionHTTPHeader Array("Expect:", "Content-Type: text/xml", "SOAPAction: ""login""")
```

Notes:
If you add a header that is otherwise generated and used by libCURL internally, your added one will be used instead. If you add a header with no contents as in 'Accept:' (no data on the right side of the colon), the internally used header will get disabled. Thus, using this option you can add new headers, replace internal headers and remove internal headers. To add a header with no contents, make the contents be two quotes: "". The headers included in the linked list must not be CRLF-terminated, because CURL adds CRLF after each header item. Failure to comply with this will result in strange bugs because the server will most likely ignore part of the headers you specified.

The first line in a request (containing the method, usually a GET or POST) is not a header and cannot be replaced using this option. Only the lines following the request-line are headers. Adding this method line in
this list of headers will only cause your request to send an invalid header.

Pass an empty array to this to reset back to no custom headers.

The Lasterror property is set. 0 for success.

**58.20.89 SetOptionMailRecipients(list() as string)**

MBS CURL Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the array of email recipient addresses.

**58.20.90 SetOptionPostQuote(list() as string)**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Pass an array to a list of FTP commands to pass to the server after your ftp transfer request.

**Example:**

dim d as CURLSMBS // your CURL object

dim ws() As String
ws.Append "RNFR Temp.txt"
ws.append "RNTO MyFile.txt"
d.SetOptionPostQuote(ws)

**Notes:**
Disable this operation again by using an empty array for this option.

The Lasterror property is set. 0 for success.
If you want to do a ftp operation instead of download/upload/directory listing, please use SetOptionQuote.

**58.20.91 SetOptionPreQuote(list() as string)**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Pass an array to a list of FTP commands to pass to the server after the transfer type is set.

**Notes:**
Disable this operation again by using an empty array for this option. Before version 7.15.6, if you also set Nobody to true, this option didn’t work.
The Lasterror property is set. 0 for success.

58.20.92 **SetOptionProxyHeader(list() as string)**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set list of headers used for proxy requests only.

58.20.93 **SetOptionQuote(list() as string)**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Pass an array or a list of FTP commands to pass to the server prior to your ftp request. **Example:**

```dim curl as new CURLSMBS
curl.SetOptionQuote array("DELE filename.txt")```

**Notes:**
This will be done before any other FTP commands are issued (even before the CWD command).

Disable this operation again by using an empty array for this option.

The Lasterror property is set. 0 for success.

58.20.94 **SetOptionResolve(list() as string)**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Send linked-list of name:port:address sets.

58.20.95 **SetOptionTelnetOptions(list() as string)**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Provide an array of variables to pass to the telnet negotiations. **Notes:**

The variables should be in the format `<option=value>`. libCURL supports the options 'TTYPE', 'XDISPLOC' and 'NEW_ENV'. See the TELNET standard for details.
The Lasterror property is set. 0 for success.

### 58.20.96 SetPathCAInfo(path as folderitem)

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A path holding one or more certificates to verify the peer with.

**Example:**

```plaintext
dim cacert as FolderItem // your cacert.pem file
dim CURL as new CURLMBS
CURL.OptionSSLVerifyHost = 2 // verify server
CURL.OptionSSLVerifyPeer = 1 // proofs certificate is authentic
CURL.SetPathCAInfo cacert
```

**Notes:**

This makes sense only when used in combination with the OptionSSLVerifyPeer option. If OptionSSLVerifyPeer is false, OptionCAINFO need not even indicate an accessible file.

Note that option is by default set to the system path where libCURL’s cacert bundle is assumed to be stored, as established at build time.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

### 58.20.97 SetPathCAPath(path as folderitem)

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A path to the directory holding multiple CA certificates to verify the peer with.

**Notes:**

The certificate directory must be prepared using the openssl c_rehash utility. This makes sense only when used in combination with the CURLOPT_SSL_VERIFYPEER option. If OptionSSLVerifyPeer is zero, OptionCAPath need not even indicate an accessible path. The OptionCAPath function apparently does not work in Windows due to some limitation in openssl. This option is OpenSSL-specific and does nothing if libCURL is built to use GnuTLS.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
58.20.98 **SetPathCRLFile**(path as folderitem)

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the path with the concatenation of CRL (in PEM format) to use in the certificate validation that occurs during the SSL exchange.

**Notes:**
When CURL is built to use NSS or GnuTLS, there is no way to influence the use of CRL passed to help in the verification process. When libCURL is built with OpenSSL support, X509 V_FLAG_CRL_CHECK and X509 V_FLAG_CRL_CHECK_ALL are both set, requiring CRL check against all the elements of the certificate chain if a CRL file is passed.

This option makes sense only when used in combination with the OptionSSLVerifyPeer option.

A specific error code (CURLE_SSL_CRL_BADFILE) is defined with the option. It is returned when the SSL exchange fails because the CRL file cannot be loaded. Note that a failure in certificate verification due to a revocation information found in the CRL does not trigger this specific error. (Added in 7.19.0)

58.20.99 **SetPathIssuerCert**(path as folderitem)

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the path to a CA certificate in PEM format.

**Notes:**
If the option is set, an additional check against the peer certificate is performed to verify the issuer is indeed the one associated with the certificate provided by the option. This additional check is useful in multi-level PKI where one needs to enforce that the peer certificate is from a specific branch of the tree.

This option makes sense only when used in combination with the OptionSSLVerifyPeer option. Otherwise, the result of the check is not considered as failure.

A specific error code (CURLE_SSL_ISSUER_ERROR) is defined with the option, which is returned if the setup of the SSL/TLS session has failed due to a mismatch with the issuer of peer certificate (OptionSSLVerifyPeer has to be set too for the check to fail). (Added in 7.19.0)

58.20.100 **SetPathNetRCFile**(path as folderitem)

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the path to the file you want libCURL to use as .netrc file.

**Notes:**
If this option is omitted, and OptionNETRC is set, libCURL will attempt to find the a .netrc file in the
current user’s home directory. (Added in 7.10.9)

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

58.20.101 SetupAWS(AWSAccessKeyId as String, AWSSecretAccessKey as String, 
Region as String, Service as String, Path as String, Domain as String, 
Verb as String, HashedPayload as String = ””, Headers() as String
= nil) as boolean

MBS CURL Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Setup CURL to transfer to Amazon Webservices.
**Notes:**
This implements AWS4-HMAC-SHA256 signature for credentials, sets authentication, URL, HTTP Headers 
and other parameters.
For upload or post, please set input parameters first.

Returns true on success or false on failure.

58.20.102 SetupEmail(email as Variant) as boolean

MBS CURL Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Setups existing CURL session for an email transfer.
**Example:**

```vbnet
dim e as new CURLEmailMBS

e.SetFrom "test@test.test", "Christian Miiler"
e.Subject = "Hello World "
e.SMTPPassword = "xxx"
e.SMTPUsername = "xxx"
e.SetServer "smtp.test.test", true
e.AddTo "test@test.test", "Test Miiler"
e.PlainText = "Hello World," + EndOfLine + "Smilies: "

dim c as new CURLSMBS

if c.SetupEmail(e) then

dim er as Integer = c.Perform
if er = 0 then
MsgBox "Email sent"
```


end if
end if

Notes:
You can set your own settings like proxy after this function call.
If you like you can reuse the email and CURL objects after you sent an email, change values and send another
email.
Returns true on success or false on failure.
const kError_FunctionMissing = -1
const kError_OK = 0
const kError_UNSUPPORTED_PROTOCOL, = 1
const kError_FAILED_INIT, = 2
const kError_URL_MALFORMAT, = 3
const kError_URL_MALFORMAT_USER, = 4 (NOT USED)
const kError_COULDNT_RESOLVE_PROXY, = 5
const kError_COULDNT_RESOLVE_HOST, = 6
const kError_COULDNT_CONNECT, = 7
const kError_FTP_WEIRD_SERVER_REPLY, = 8
const kError_FTP_ACCESS_DENIED, = 9 a service was denied by the FTP server due to lack of access when login fails this is not returned.
const kError_FTP_USER_PASSWORD_INCORRECT, = 10
const kError_FTP_WEIRD_PASS_REPLY, = 12
const kError_FTP_WEIRD_USER_REPLY, = 13
const kError_FTP_CANT_GET_HOST, = 15
const kError_FTP_CANT_RECONNECT, = 16
const kError_FTP_COULDNT_SET_BINARY, = 17
const kError_Partial_File, = 18
const kError_FTP_COULDNT_RETR_FILE, = 19
const kError_FTP_WRITE_ERROR, = 20
const kError_FTP_QUOTE_ERROR, = 21
const kError_HTTP_RETURNED_ERROR, = 22
const kError_INTERFACE_FAILED, = 25 NOTEED
const kError_FTP_COULDNT_STOR_FILE, = 25 failed FTP upload
const kError_READ_ERROR, = 26 could open/read from file
const kError_OUT_OF_MEMORY, = 27
const kError_OPERATION_TIMEOUTED, = 28 the timeout time was reached
const kError_FTP_COULDNT_SET_ASCII, = 29 TYPE A failed
const kError_FTP_PORT_FAILED, = 30 FTP PORT operation failed
const kError_FTP_COULDNT_USE_REST, = 31 the REST command failed
const kError_FTP_COULDNT_GET_SIZE, = 32 the SIZE command failed
const kError_HTTP_RANGE_ERROR, = 33 RANGE “command” didn’t work
const kError_HTTP_POST_ERROR, = 34
const kError_SSL_CONNECT_ERROR, = 35 wrong when connecting with SSL
const kError_BAD_DOWNLOAD_RESUME, = 36 couldn’t resume download
const kError_FILE_COULDNT_READ_FILE, = 37
const kError_LDAP_CANT_BIND, = 38
const kError_LDAP_search_failed, = 39
const kError_LIBRARY_NOT_FOUND, = 40
const kError_FUNCTION_NOT_FOUND, = 41
const kError_ABORTED_BY_CALLBACK, = 42
const kError_BAD_FUNCTION_ARGUMENT, = 43 NOT USED
const kError_BAD_CALLING_ORDER, = 44 CURLPROTO_INTERFACE failed
const kError_INTERFACE_FAILED, = 45
const kError_BAD_PASSWORD_ENTERED, = 46 NOT USED
const kError_TOO_MANY_REDIRECTS, = 47 catch endless re-direct loops
const kError_UNKNOWN_TELNET_OPTION, = 48 User specified an unknown option
const kError_TELNET_OPTION_SYNTAX, = 49 Malformed option
const kError_OBSOLETE, = 50 NOT USED
const kError_SSL_PEER_CERTIFICATE, = 51 peer’s certificate wasn’t ok
const kError_GOT NOTHING, = 52 when this is a specific error
const kError_SSL_ENGINE_NOTFOUND, = 53 SSL crypto engine not found
const kError_SSL_ENGINE_SETFAILED, = 54 can not set SSL crypto engine as default
const kError_SEND_ERROR, = 55 failed sending network data
const kError_RECV_ERROR, = 56 failure in receiving network data
const kError_SHARE_IN_USE, = 57 share is in use
const kError_SSL_CERTPROBLEM, = 58 problem with the local certificate
const kError_SSL_CIPHER, = 59 couldn’t use specified cipher
const kError_SSL_CIPHER, = 60 problem with the CA cert (path?)
const kError_BAD_CONTENT_ENCODING, = 61 Unrecognized transfer encoding
const kError_LDAP_INVALID_URL, = 62 Invalid LDAP URL
const kError_FILESIZE_EXCEEDED, = 63 Maximum file size exceeded
const kError_FTP_SSL_FAILED, = 64 Requested FTP SSL level failed
const kError_SEND_FAIL_REWIND, = 65 Sending the data requires a rewind that failed
const kError_SSL_ENGINE_INITFAILED, = 66 failed to initialise ENGINE
const kError_LOGIN_DENIED, = 67 user, password or similar was not accepted and we failed to login
<table>
<thead>
<tr>
<th>AWSAccessKeyId</th>
<th>Your access key for AWS.</th>
</tr>
</thead>
<tbody>
<tr>
<td>AWSSecretAccessKey</td>
<td>Your secret.</td>
</tr>
<tr>
<td>Region</td>
<td>The region to use.</td>
</tr>
<tr>
<td>Service</td>
<td>The service to use.</td>
</tr>
<tr>
<td>Path</td>
<td>The path for the URL. Should always start with <code>/</code>.</td>
</tr>
<tr>
<td>Domain</td>
<td>The domain to use. By default we just build it from region and service.</td>
</tr>
<tr>
<td>Verb</td>
<td>The HTTP operation to do. Can be <code>POST</code>, <code>PUT</code>, <code>GET</code> or <code>DELETE</code>.</td>
</tr>
<tr>
<td>SignedPayload</td>
<td>The signed payload. If empty, we calculate it automatically from input data or postfields. This is a lowercase hex SHA256.</td>
</tr>
<tr>
<td>Headers</td>
<td>Optional extra HTTP headers to include.</td>
</tr>
<tr>
<td></td>
<td><code>x-amz-acl: public-read</code></td>
</tr>
<tr>
<td></td>
<td><code>x-amz-date: ”2014-02-10T00:00:00Z”</code></td>
</tr>
</tbody>
</table>

"eu-central-1" |
"us" |
"host.jpg" |
"sts.amazonaws.com" or "+d-aws-codeindex-2.amazonaws.com" |
"PUT"
58.20.103 UseSystemCertificates as Integer

MBS CURL Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Read certificate from system and installs them in CURL session.

**Notes:**
For macOS and Windows we load the available certificates from keychain or Windows Certificate Store and pass them to CURL. This is better than having no certificates at all.
Even better is normally to provide a cacert.pem file with only the expected certificates.

Returns number of certificates loaded.

58.20.104 Properties

58.20.105 APILoaded as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the CURL library was loaded.

**Notes:**
The CURLSMBS constructor loads the library if it was not loaded before.
(Read only property)

58.20.106 Cancel as Boolean

MBS CURL Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Tells CURL instance to cancel transfer as soon as possible.

**Notes:**
Especially when using PerformMT, you may see your app hang if user tries to quit application. To prevent the hang, please set Cancel = true in window close event. So when app quits and windows get destroyed, the PerformMT will see the Cancel being true and returns soon.
(Read and Write property)

58.20.107 CollectDebugData as Boolean

MBS CURL Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to collect debug message data.

**Notes:**
If you set this property to true, you can grab the data from the transfer in the DebugData Property instead of collecting the pieces yourself in the DebugMessage event. Of course this is optional and you can still
process data in DebugMessage event. Due to memory limitation, collecting data will not work right if your app is running low on memory. (Read and Write property)

58.20.108  CollectHeaderData as Boolean

Notes: If you set this property to true, you can grab the data from the transfer in the headerData Property instead of collecting the pieces yourself in the header event. Of course this is optional and you can still process data in header event. Due to memory limitation, collecting data will not work right if your app is running low on memory. (Read and Write property)

58.20.109  CollectOutputData as Boolean

Notes: If you set this property to true, you can grab the data from the transfer in the OutputData Property instead of collecting the pieces yourself in the write event. Of course this is optional and you can still process data in write event. Due to memory limitation, collecting data will not work right if your app is running low on memory. (Read and Write property)

58.20.110  DebugData as String

Notes: If CollectDebugData property is true, the plugin puts the data received in debugMessage event also into this property, so you can grab it after the transfer. Use ClearData method to clear when reusing CURL object. (Read only property)
58.20.111 Handle as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal handle of the CURL object. **Notes:** (Read and Write property)

58.20.112 HeaderData as String

MBS CURL Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The header data from CURL. **Notes:**
If CollectHeaderData property is true, the plugin puts the data received in header event also into this property, so you can grab it after the transfer. Use ClearData method to clear when reusing CURL object. (Read only property)

58.20.113 InputData as String

MBS CURL Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The input data. **Notes:**
If you set input data, you do not need to use Read, RestartRead or Seek events. The plugin will use the provided data for the upload. Setting input data size, will also set the input file size (OptionInFileSizeLarge and OptionInFileSize).
Alternatively you can provide data in Read event or use OpenMTInputFile method to open a file on disk to upload. (Read and Write property)

58.20.114 Lasterror as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The lasterror from the library. **Notes:**
Set in the constructor while doing initialization. Check the kError* constants. (Read and Write property)
58.20. **CLASS CURLSMBS**

58.20.115 **LastErrorMessage as String**

MBS CURL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last error message. **Notes:** (Read only property)

58.20.116 **LasterrorText as String**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The text for the lasterror code. **Notes:** Static string matched to the error code, so you have an idea what’s wrong. (Read and Write property)

58.20.117 **LibraryUsed as String**

MBS CURL Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Which library is in use. **Notes:** This is for debugging only to see which library is in use. (Read only property)

58.20.118 **LibVersion as string**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a human readable string with the version number of libCURL and some of its important components (like OpenSSL version). **Notes:** (Read only property)

58.20.119 **OptionAbstractUnixSocket as String**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Path to an abstract Unix domain socket. **Notes:** (Read and Write property) See also **ABSTRACT_UNIX_SOCKET** option in CURL manual.
58.20.120  OptionAcceptEncoding as String

MBS CURL Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the contents of the Accept-Encoding: header sent in a HTTP request, and enables decoding of a response when a Content-Encoding: header is received.

**Example:**
```pascal
dim c as new CURLSMBS
c.OptionAcceptEncoding = "deflate"
```

**Notes:**
Three encodings are supported: identity, which does nothing, deflate which requests the server to compress its response using the zlib algorithm, and gzip which requests the gzip algorithm. If a zero-length string is set, then an Accept-Encoding: header containing all supported encodings is sent.

This is a request, not an order; the server may or may not do it. This option must be set (to any non-NULL value) or else any unsolicited encoding done by the server is ignored. See the special file README.encoding for details (included with CURL source code).

(Read and Write property)
See also ACCEPT_ENCODING option in CURL manual.

58.20.121  OptionAcceptTimeoutMS as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Time-out accept operations (currently for FTP only) after this amount of milliseconds.

**Notes:** (Read and Write property)
See also ACCEPTTIMEOUT_MS option in CURL manual.

58.20.122  OptionAddressScope as Integer

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Pass an integer specifying the scope_id value to use when connecting to IPv6 link-local or site-local addresses.

**Notes:**
(Added in CURL 7.19.0)
(Read and Write property)
See also ADDRESS_SCOPE option in CURL manual.
58.20. **CLASS CURLSMBS**

### 58.20.123 OptionAppend as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True tells the library to append to the remote file instead of overwrite it.

**Notes:**

This is only useful when uploading to an ftp site.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also **APPEND** option in CURL manual.

### 58.20.124 OptionAutoReferer as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** When enabled, libCURL will automatically set the Referer: field in requests where it follows a Location: redirect.

**Notes:**

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also **AUTOREFERER** option in CURL manual.

### 58.20.125 OptionBufferSize as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Your preferred size (in bytes) for the receive buffer in libCURL.

**Notes:**

The main point of this would be that the write callback gets called more often and with smaller chunks. This is just treated as a request, not an order. You cannot be guaranteed to actually get the given size. (Added in 7.10)

This size is by default set as big as possible (OptionMaxWriteSize), so it only makse sense to use this option if you want it smaller.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also **BUFFERSIZE** option in CURL manual.
58.20.126 OptionCAInfo as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A string naming a file holding one or more certificates to verify the peer with.

**Notes:**
This makes sense only when used in combination with the OptionSSLVerifyPeer option. If OptionSSLVerifyPeer is false, OptionCAINFO need not even indicate an accessible file.

Note that option is by default set to the system path where libCURL’s cacert bundle is assumed to be stored, as established at build time.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

Starting with version 18.0 the plugin will always use UTF-8 encoding for file path on Linux and macOS. For macOS we also do the unicode character normalization for file names for you.
(Read and Write property)
See also CAINFO option in CURL manual.

58.20.127 OptionCAPath as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A string naming a directory holding multiple CA certificates to verify the peer with.

**Notes:**
The certificate directory must be prepared using the openssl crehash utility. This makes sense only when used in combination with the CURLOPT_SSL_VERIFYPEER option. If OptionSSLVerifyPeer is zero, OptionCAPath need not even indicate an accessible path. The OptionCAPath function apparently does not work in Windows due to some limitation in openssl. This option is OpenSSL-specific and does nothing if libCURL is built to use GnuTLS.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

Starting with version 18.0 the plugin will always use UTF-8 encoding for file path on Linux and macOS. For macOS we also do the unicode character normalization for file names for you.
(Read and Write property)
See also CAPATH option in CURL manual.
58.20.128 OptionCertInfo as boolean

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set to true to enable libCURL’s certificate chain info gatherer.  
**Notes:** 
With this enabled, libCURL (if built with OpenSSL) will extract lots of information and data about the certificates in the certificate chain used in the SSL connection. This data is then possible to extract after a transfer using GetInfoCertInfo. (Added in 7.19.1)  
(Read and Write property)  
See also CERTINFO option in CURL manual.

58.20.129 OptionConnectionTimeout as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The maximum time in seconds that you allow the connection to the server to take.  
**Notes:** 
This only limits the connection phase, once it has connected, this option is of no more use. Set to zero to disable connection timeout (it will then only timeout on the system’s internal timeouts). See also the OptionTimeout option.  
(Read and Write property)  
See also CONNECTTIMEOUT option in CURL manual.

58.20.130 OptionConnectionTimeOutMS as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The maximum time in milli seconds that you allow the connection to the server to take.  
**Notes:** 
This only limits the connection phase, once it has connected, this option is of no more use. Set to zero to disable connection timeout (it will then only timeout on the system’s internal timeouts). See also the OptionTimeout option.  
(Read and Write property)

58.20.131 OptionConnectOnly as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A true tells the library to perform any required proxy authentication and connection setup, but no data transfer.  
**Notes:** 
This option is useful with the CURLSMBS.GetInfoLastSocket function. The library can set up the connec-
tion and then the application can obtain the most recently used socket for special data transfers. (Added in 7.15.2)
(Read and Write property)
See also CONNECT ONLY option in CURL manual.

58.20.132 OptionCookie as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
It will be used to set a cookie in the http request.
**Notes:**
The format of the string should be NAME=CONTENTS, where NAME is the cookie name and CONTENTS is what the cookie should contain.

If you need to set multiple cookies, you need to set them all using a single option and thus you need to concatenate them all in one single string. Set multiple cookies in one string like this: "name1=content1; name2=content2;" etc.

Using this option multiple times will only make the latest string override the previously ones.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also COOKIE option in CURL manual.

58.20.133 OptionCookieFile as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The cookie file content.
**Notes:**
It should contain the name of your file holding cookie data to read. The cookie data may be in Netscape / Mozilla cookie data format or just regular HTTP-style headers dumped to a file.

Given an empty or non-existing file or by passing the empty string (""), this option will enable cookies for this CURL handle, making it understand and parse received cookies and then use matching cookies in future request.

If you use this option multiple times, you just add more files to read. Subsequent files will add more cookies.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

Starting with version 18.0 the plugin will always use UTF-8 encoding for file path on Linux and macOS. For macOS we also do the unicode character normalization for file names for you.
(Read and Write property)
See also **COOKIEFILE** option in CURL manual.

### 58.20.134 OptionCookieJar as String

**MBS CURL Plugin, Plugin Version:** 9.8, **Console & Web:** Yes, **Mac:** Yes, **Win:** Yes, **Linux:** Yes. 
**Function:** File path where to write the cookies to.

**Notes:**
This will make libCURL write all internally known cookies to the specified file, when the object is destroyed. If no cookies are known, no file will be created. Specify "-" to instead have the cookies written to stdout.
Using this option also enables cookies for this session, so if you for example follow a location it will make matching cookies get sent accordingly.

If the cookie jar file can’t be created or written to, libCURL will not and cannot report an error for this. Using OptionVerbose or DebugFunction event will get a warning to display, but that is the only visible feedback you get about this possibly lethal situation.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

Starting with version 18.0 the plugin will always use UTF-8 encoding for file path on Linux and macOS. For macOS we also do the unicode character normalization for file names for you.
(Read and Write property)
See also **COOKIEJAR** option in CURL manual.

### 58.20.135 OptionCookieList as String

**MBS CURL Plugin, Plugin Version:** 9.8, **Console & Web:** Yes, **Mac:** Yes, **Win:** Yes, **Linux:** Yes. 
**Function:** The cookie string.

**Notes:**
Cookie can be either in Netscape / Mozilla format or just regular HTTP-style header (Set-Cookie: ...) format. If CURL cookie engine was not enabled it will enable its cookie engine. Passing a magic string "ALL" will erase all cookies known by CURL. (Added in 7.14.1) Passing the special string "SESS" will only erase all session cookies known by CURL. (Added in 7.15.4)

The Lasterror property is set. 0 for success.
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You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also COOKIELIST option in CURL manual.

58.20.136 OptionCookieSession as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Set to true to mark this as a new cookie "session".
**Notes:**
It will force libCURL to ignore all cookies it is about to load that are "session cookies" from the previous
session. By default, libCURL always stores and loads all cookies, independent if they are session cookies are
not. Session cookies are cookies without expiry date and they are meant to be alive and existing for this
"session" only.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also COOKIESESSION option in CURL manual.

58.20.137 OptionCRLF as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Convert Unix newlines to CRLF newlines on transfers.
**Notes:**
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also CRLF option in CURL manual.

58.20.138 OptionCRLFile as String

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A string naming a file with the concatenation of CRL (in PEM format) to use in the certificate validation
that occurs during the SSL exchange.
**Notes:**
When CURL is built to use NSS or GnuTLS, there is no way to influence the use of CRL passed to help
in the verification process. When libCURL is built with OpenSSL support, X509_V_FLAG_CRL_CHECK
and X509_V_FLAG_CRL_CHECK_ALL are both set, requiring CRL check against all the elements of the
certificate chain if a CRL file is passed.
This option makes sense only when used in combination with the OptionSSLVerifyPeer option.

A specific error code (CURLE_SSL_CRL_BADFILE) is defined with the option. It is returned when the SSL exchange fails because the CRL file cannot be loaded. Note that a failure in certificate verification due to a revocation information found in the CRL does not trigger this specific error. (Added in 7.19.0)

(Read and Write property)
See also CRLFILE option in CURL manual.

58.20.139 OptionCustomRequest as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** It will be user instead of GET or HEAD when doing an HTTP request, or instead of LIST or NLST when doing an ftp directory listing.

**Example:**

```vba
dim c as CURLSMBS // your CURL instance

c.URL = "ftp://..."
c.customRequest = "MLSD" // ftp advanced directory listing
```

**Notes:**

This is useful for doing DELETE or other more or less obscure HTTP requests. Don’t do this at will, make sure your server supports the command first.

Restore to the internal default by setting this to "".

Many people have wrongly used this option to replace the entire request with their own, including multiple headers and POST contents. While that might work in many cases, it will cause libCURL to send invalid requests and it could possibly confuse the remote server badly. Use CURLOPT_POST and OptionPostFields to set POST data. Use OptionHTTPHeader to replace or extend the set of headers sent by libCURL. Use OptionHTTPVersion to change HTTP version.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

(Read and Write property)
See also CUSTOMREQUEST option in CURL manual.
58.20.140 OptionDefaultProtocol as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Set the protocol used when curl is given a URL without a protocol.
**Notes:** (Read and Write property)
See also DEFAULT_PROTOCOL option in CURL manual.

58.20.141 OptionDirListOnly as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
For FTP and SFTP based URLs a parameter set to true tells the library to list the names of files in a directory,
rather than performing a full directory listing that would normally include file sizes, dates etc.
**Notes:**
For POP3 a parameter of true tells the library to list the email message or messages on the POP3 server.
This can be used to change the default behaviour of libCURL, when combined with a URL that contains a
message ID, to perform a "scan listing" which can then be used to determine the size of an email.

Note: For FTP this causes a NLST command to be sent to the FTP server. Beware that some FTP servers
list only files in their response to NLST; they might not include subdirectories and symbolic links.

Setting this option to true also implies a directory listing even if the URL doesn’t end with a slash, which
otherwise is necessary.

Do NOT use this option if you also use OptionWildCardMatch as it will effectively break that feature then.
(Read and Write property)
See also DIRLISTONLY option in CURL manual.

58.20.142 OptionDNSCacheTimeout as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The timeout in seconds.
**Notes:**
Name resolves will be kept in memory for this number of seconds. Set to zero (0) to completely disable
caching, or set to -1 to make the cached entries remain forever. By default, libCURL caches this info for 60
seconds.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also DNS_CACHE_TIMEOUT option in CURL manual.
58.20.143 OptionDNSInterface as String

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set the name of the network interface that the DNS resolver should bind to.

**Notes:**
This must be an interface name (not an address). Set this option to "" to use the default setting (don’t bind to a specific interface).
(Read and Write property)
See also DNS_INTERFACE option in CURL manual.

58.20.144 OptionDNSLocalIPv4 as String

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set the local IPv4 address that the resolver should bind to.

**Notes:**
The argument should be of string and contain a single numerical IPv4 address as a string. Set this option to "" to use the default setting (don’t bind to a specific IP address).
(Read and Write property)
See also DNS_LOCAL_IP4 option in CURL manual.

58.20.145 OptionDNSLocalIPv6 as String

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set the local IPv6 address that the resolver should bind to.

**Notes:**
The argument should be of type string and contain a single IPv6 address as a string. Set this option to "" to use the default setting (don’t bind to a specific IP address).
(Read and Write property)
See also DNS_LOCAL_IP6 option in CURL manual.

58.20.146 OptionDNSServers as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set the name servers to use for DNS resolution.

**Notes:** (Read and Write property)
See also DNS_SERVERS option in CURL manual.
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58.20.147  OptionDNSShuffleAddresses as Boolean

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to shuffle DNS addresses.

**Notes:**

When a name is resolved and more than one IP address is returned, shuffle the order of all returned addresses so that they will be used in a random order. This is similar to the ordering behavior of gethostbyname which is no longer used on most platforms.

Addresses will not be reshuffled if a name resolution is completed using the DNS cache. DNSCacheTimeout property can be used together with this option to reduce DNS cache timeout or disable caching entirely if frequent reshuffling is needed.

Since the addresses returned will be reordered randomly, their order will not be in accordance with RFC 3484 or any other deterministic order that may be generated by the system’s name resolution implementation. This may have performance impacts and may cause IPv4 to be used before IPv6 or vice versa.

Default is false.

(Read and Write property)

See also DNS_SHUFFLE_ADDRESSES option in CURL manual.

58.20.148  OptionEGDSocket as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The path name to the Entropy Gathering Daemon socket.

**Notes:**

It will be used to seed the random engine for SSL.

The Lasterror property is set. 0 for success.

You can set this value and later you can read it, but you cannot read the default value.

(Read and Write property)

See also EGDSOCKET option in CURL manual.

58.20.149  OptionExpect100TimeoutMS as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets Expect 100 timeout.

**Notes:**

Time to wait in milliseconds for a response to a HTTP request containing an Expect: 100-continue header before sending the data anyway.

(Read and Write property)
See also EXPECT\_100\_TIMEOUT\_MS option in CURL manual.

### 58.20.150 OptionFailOnError as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
True tells the library to fail silently if the HTTP code returned is equal to or larger than 400. The default action would be to return the page normally, ignoring that code.

**Notes:**
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

This method is not fail-safe and there are occasions where non-succesful response codes will slip through, especially when authentication is involved (response codes 401 and 407).

You might get some amounts of headers transferred before this situation is detected, like for when a ”100-continue” is received as a response to a POST/PUT and a 401 or 407 is received immediately afterwards. (Read and Write property)
See also FAILONERROR option in CURL manual.

### 58.20.151 OptionFileTime as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether filetime should be querried.

**Example:**
```vbnet
// init CURL with options
dim d as new CURLSMBS
d.OptionFileTime = true
d.OptionURL = ”http://www.monkeybreadsoftware.de/images/mbs.jpg”

// run query
dim e as Integer = d.Perform

// calculate date object
dim da as new date(1970,1,1,0,0,0)

// show date
ResultText.text=str(d.GetInfoFileTime)+” ”+da.ShortDate+” ”+da.ShortTime
```

**Notes:**
If it is true, libCURL will attempt to get the modification date of the remote document in this operation. This requires that the remote server sends the time or replies to a time querying command.

The Lasterror property is set. 0 for success. You can set this value and later you can read it, but you cannot read the default value. (Read and Write property) See also FILETIME option in CURL manual.

58.20.152 OptionFollowLocation as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: A boolean parameter tells the library to follow any Location: header that the server sends as part of an HTTP header. Example:

```dim c as new CURLSMBS
c.OptionFollowLocation = true
c.OptionMaxRedirs = 3```

Notes: This means that the library will re-send the same request on the new location and follow new Location: headers all the way until no more such headers are returned. OptionMaxRedirs can be used to limit the number of redirects libCURL will follow.

The Lasterror property is set. 0 for success. You can set this value and later you can read it, but you cannot read the default value. (Read and Write property) See also FOLLOWLOCATION option in CURL manual.

58.20.153 OptionForbitReuse as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Set to true to make the next transfer explicitly close the connection when done. Notes: Normally, libCURL keep all connections alive when done with one transfer in case there comes a succeeding one that can re-use them. This option should be used with caution and only if you understand what it does. Set to false to have libCURL keep the connection open for possibly later re-use (default behavior). The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value. (Read and Write property)

58.20.154 OptionFreshConnect as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Set to true to make the next transfer use a new (fresh) connection by force.

Example:

dim c as new CURLSMBS

c.OptionFreshConnect=True

Notes:
If the connection cache is full before this connection, one of the existing connections will be closed as according to the selected or default policy. This option should be used with caution and only if you understand what it does. Set this to 0 to have libCURL attempt re-using an existing connection (default behavior).

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value. (Read and Write property)
See also FRESHCONNECT option in CURL manual.

58.20.155 OptionFTPAccount as String


Notes:
When an FTP server asks for ”account data” after user name and password has been provided, this data is sent off using the ACCT command.
(Read and Write property)
See also FTPACCOUNT option in CURL manual.

58.20.156 OptionFTPAutomaticalToUser as String


Notes:
Pass a string as parameter, pointing to a string which will be used to authenticate if the usual FTP "USER user" and "PASS password" negotiation fails. This is currently only known to be required when connecting to Tumbleweed’s Secure Transport FTPS server using client certificates for authentication. (Added in 7.15.5) (Read and Write property)
See also FTP_ALTERNATIVE_TO_USER option in CURL manual.

58.20.157 OptionFTPAppend as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
True tells the library to append to the remote file instead of overwrite it.
**Deprecated:** This item is deprecated and should no longer be used. You can use OptionAppend instead.
**Notes:**
This is only useful when uploading to an ftp site.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)

58.20.158 OptionFTPCreateMissingDirs as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
If the value is 1, CURL will attempt to create any remote directory that it fails to CWD into.
**Notes:**
CWD is the command that changes working directory. (Added in 7.10.7)

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
Newer CURL Library versions allow a value of 2 to do a CWD after the directory was created, so this property changed from boolean to integer.
(Read and Write property)
See also FTP_CREATE_MISSING_DIRS option in CURL manual.

58.20.159 OptionFTPFileMethod as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Pass an integer that should have one of the following values.
**Notes:**
This option controls what method libCURL should use to reach a file on a FTP(S) server. The argument should be one of the following alternatives:
URLFTPMETHOD_MULTICWD = 1

libCURL does a single CWD operation for each path part in the given URL. For deep hierarchies this means very many commands. This is how RFC1738 says it should be done. This is the default but the slowest behavior.

CURLFTPMETHOD_NOCWD = 2

libCURL does no CWD at all. libCURL will do SIZE, RETR, STOR etc and give a full path to the server for all these commands. This is the fastest behavior.

CURLFTPMETHOD_SINGLECWD = 3

libCURL does one CWD with the full target directory and then operates on the file "normally" (like in the multicwd case). This is somewhat more standards compliant than 'nocwd' but without the full penalty of 'multicwd'.

(Read and Write property)
See also FTP_FILEMETHOD option in CURL manual.

58.20.160 OptionFTPListOnly as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True tells the library to just list the names of an ftp directory, instead of doing a full directory listing that would include file sizes, dates etc. **Deprecated:** This item is deprecated and should no longer be used. You can use OptionDirListOnly instead. **Notes:**

This causes an FTP NLST command to be sent. Beware that some FTP servers list only files in their response to NLST; they might not include subdirectories and symbolic links.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)

58.20.161 OptionFTPPort as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The port to use for ftp. **Notes:**
It will be used to get the IP address to use for the ftp PORT instruction. The PORT instruction tells the remote server to connect to our specified IP address. The string may be a plain IP address, a host name, an network interface name (under Unix) or just a '-' letter to let the library use your systems default IP address. Default FTP operations are passive, and thus won’t use PORT.

You disable PORT again and go back to using the passive version by setting this option to "".

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also FTPPORT option in CURL manual.

### 58.20.162 OptionFTPPResponseTimeout as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Causes CURL to set a timeout period (in seconds) on the amount of time that the server is allowed to take in order to generate a response message for a command before the session is considered hung.

**Notes:**
While CURL is waiting for a response, this value overrides OptionTimeout. It is recommended that if used in conjunction with OptionTimeout, you set OptionFTPPResponseTimeout to a value smaller than OptionTimeout. (Added in 7.10.8)

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also FTP_RESPONSE_TIMEOUT option in CURL manual.

### 58.20.163 OptionFTPSkipPasvIP as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
If set to a non-zero value, it instructs libCURL to not use the IP address the server suggests in its 227-response to libCURL's PASV command when libCURL connects the data connection.

**Notes:**
Instead libCURL will re-use the same IP address it already uses for the control connection. But it will use the port number from the 227-response. (Added in 7.14.2)

This option has no effect if PORT, EPRT or EPSV is used instead of PASV.
(Read and Write property)
See also FTP_SKIP_PASV_IP option in CURL manual.
**58.20.164 OptionFTPSSL as Integer**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Request using SSL / TLS for the transfer.

**Example:**

```vbnet
dim c as CURLSMBS
    c.OptionUseSSL = c.kFTPSSL_ALL
    c.OptionSSLVersion = c.kSSLVersionTLSv12
```

**Deprecated:** This item is deprecated and should no longer be used. You can use OptionUseSSL instead.

**Notes:**

Set to an integer using one of the values from below, to make libCURL use your desired level of SSL for the transfer.

These are all protocols that start out plain text and get "upgraded" to SSL using the STARTTLS command. This is for enabling SSL/TLS when you use FTP, SMTP, POP3, IMAP etc.

<table>
<thead>
<tr>
<th>CURLUSESSL_NONE</th>
<th>0</th>
<th>Don’t attempt to use SSL.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURLUSESSL_TRY</td>
<td>1</td>
<td>Try using SSL, proceed as normal otherwise.</td>
</tr>
<tr>
<td>CURLUSESSL_CONTROL</td>
<td>2</td>
<td>Require SSL for the control connection or fail with CURLE_USE_SSL_FAILED.</td>
</tr>
<tr>
<td>CURLUSESSL_ALL</td>
<td>3</td>
<td>Require SSL for all communication or fail with CURLE_USE_SSL_FAILED.</td>
</tr>
</tbody>
</table>

(Read and Write property)

**58.20.165 OptionFTPSSLAuth as Integer**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** What kind of SSL authentication to use for FTP.

**Notes:**

Pass an integer using one of the values from below, to alter how libCURL issues "AUTH TLS" or "AUTH SSL" when FTP over SSL is activated (see CURLOPT_FTP_SSL). (Added in 7.12.2)

kFTPAUTH_DEFAULT = 0

Allow libCURL to decide

kFTPAUTH_SSL = 1

Try "AUTH SSL" first, and only if that fails try "AUTH TLS"
kFTPAUTH_TLS = 2

Try "AUTH TLS" first, and only if that fails try "AUTH SSL"

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also FTPSSLAUTH option in CURL manual.

### 58.20.166 OptionFTPSSLC CCC as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
If enabled, this option makes libCURL use CCC (Clear Command Channel).

**Notes:**
It shuts down the SSL/TLS layer after authenticating. The rest of the control channel communication will be unencrypted. This allows NAT routers to follow the FTP transaction. Pass a long using one of the values below. (Added in 7.16.1)

<table>
<thead>
<tr>
<th>Option</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURLFTPSSL_CCC_NONE</td>
<td>0</td>
<td>Don’t attempt to use CCC.</td>
</tr>
<tr>
<td>CURLFTPSSL_CCC_PASSIVE</td>
<td>1</td>
<td>Do not initiate the shutdown, but wait for the server to do it. Do not send a reply.</td>
</tr>
<tr>
<td>CURLFTPSSL_CCC_ACTIVE</td>
<td>2</td>
<td>Initiate the shutdown and wait for a reply.</td>
</tr>
</tbody>
</table>

(Read and Write property)
See also FTP_SSL_CCC option in CURL manual.

### 58.20.167 OptionFTPUseEPRT as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
If the value is true, it tells CURL to use the EPRT (and LPRT) command when doing active FTP downloads (which is enabled by CURLOPT_FTPPORT).

**Notes:**
Using EPRT means that it will first attempt to use EPRT and then LPRT before using PORT, but if you pass FALSE (zero) to this option, it will not try using EPRT or LPRT, only plain PORT. (Added in 7.10.5)

If the server is an IPv6 host, this option will have no effect as of 7.12.3.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
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(Read and Write property)
See also FTP_USE_EPRT option in CURL manual.

58.20.168 OptionFTPUseEPSV as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
If the value is true, it tells CURL to use the EPSV command when doing passive FTP downloads (which it always does by default).
**Notes:**
Using EPSV means that it will first attempt to use EPSV before using PASV, but if you pass FALSE (zero) to this option, it will not try using EPSV, only plain PASV.

If the server is an IPv6 host, this option will have no effect as of 7.12.3.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also FTP_USE_EPSV option in CURL manual.

58.20.169 OptionFTPusePret as Boolean

MBS CURL Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
If the value is true, it tells CURL to send a PRET command before PASV (and EPSV). Certain FTP servers, mainly drftpd, require this non-standard command for directory listings as well as up and downloads in PASV mode.
**Notes:**
Has no effect when using the active FTP transfers mode. (Added in 7.20.0)
(Read and Write property)
See also FTP_USE_PRET option in CURL manual.

58.20.170 OptionGet as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
If the true, this forces the HTTP request to get back to GET.
**Notes:**
usable if a POST, HEAD, PUT or a custom request have been used previously using the same CURL handle.

When setting OptionGet to a true value, it will automatically set OptionNoBody to true (since 7.14.1).
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)

58.20.171  OptionGSSAPIDelegation as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
 Allow GSSAPI credential delegation.
**Notes:** (Read and Write property)
See also GSSAPI_DELEGATION option in CURL manual.

58.20.172  OptionHappyEyeballsTimeOutMS as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The happy eyeballs timeout.
**Notes:**
Head start in milliseconds to give happy eyeballs.
(Read and Write property)
See also HAPPY_EYEBALLS_TIMEOUT_MS option in CURL manual.

58.20.173  OptionHAProxyProtocol as Boolean

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Wether to send an HAProxy PROXY protocol header.
**Notes:**
Set to true to tell the library to send an HAProxy PROXY protocol header at beginning of the connection.
The default action is not to send this header.
This option is primarily useful when sending test requests to a service that expects this header.
Most applications do not need this option.
Default false, do not send HAProxy PROXY protocol header.
(Read and Write property)
See also HAPROXYPROTOCOL option in CURL manual.

58.20.174  OptionHeader as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
True tells the library to include the header in the body output.
Notes:

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

This is only relevant for protocols that actually have headers preceding the data (like HTTP).
(Read and Write property)
See also HEADER option in CURL manual.

58.20.175 OptionHeaderOptions as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Pass in a bitmask of “header options”.
Notes: (Read and Write property)
See also HEADEROPT option in CURL manual.

58.20.176 OptionHTTPAuth as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Which http authentication to use.
Notes:
Pass an integer as parameter, which is set to a bitmask, to tell libCURL what authentication method(s) you
want it to use. The available bits are listed below. If more than one bit is set, libCURL will first query
the site to see what authentication methods it supports and then pick the best one you allow it to use. For
some methods, this will induce an extra network round-trip. Set the actual name and password with the
UserPassword option. (Added in 7.10.6)

kAuthBASIC = 1

HTTP Basic authentication. This is the default choice, and the only method that is in wide-spread use and
supported virtually everywhere. This is sending the user name and password over the network in plain text,
easily captured by others.

kAuthDIGEST = 2

HTTP Digest authentication. Digest authentication is defined in RFC2617 and is a more secure way to do
authentication over public networks than the regular old-fashioned Basic method.

kAuthGSSNEGOTIATE = 4
HTTP GSS-Negotiate authentication. The GSS-Negotiate (also known as plain "Negotiate") method was designed by Microsoft and is used in their web applications. It is primarily meant as a support for Kerberos5 authentication but may be also used along with another authentication methods. For more information see IETF draft draft-brezak-spnego-http-04.txt.

You need to build libCURL with a suitable GSS-API library for this to work.

kAuthNTLM = 8

HTTP NTLM authentication. A proprietary protocol invented and used by Microsoft. It uses a challenge-response and hash concept similar to Digest, to prevent the password from being eavesdropped.

You need to build libCURL with OpenSSL support for this option to work, or build libCURL on Windows.

kAuthANY = & hFFFFFFFF

This is a convenience macro that sets all bits and thus makes libCURL pick any it finds suitable. libCURL will automatically select the one it finds most secure.

kAuthANYSAFE = & hFFFFFFFE

This is a convenience macro that sets all bits except Basic and thus makes libCURL pick any it finds suitable. libCURL will automatically select the one it finds most secure.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also HTTPAUTH option in CURL manual.

58.20.177 OptionHTTPContentDecoding as Integer

Notes:
If set to zero, content decoding will be disabled. If set to 1 it is enabled. Note however that libCURL has no default content decoding but requires you to use OptionEncoding for that. (added in 7.16.2)
(Read and Write property)
See also HTTPCONTENTDECODING option in CURL manual.
58.20.178  OptionHTTPProxyTunnel as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Set the parameter to true to get the library to tunnel all operations through a given HTTP proxy.

**Notes:**
There is a big difference between using a proxy and to tunnel through it. If you don’t know what this means, you probably don’t want this tunneling option.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also HTTPPROXYTUNNEL option in CURL manual.

58.20.179  OptionHTTPTransferDecoding as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Pass an integer to tell libCURL how to act on transfer decoding.

**Notes:**
If set to zero, transfer decoding will be disabled, if set to 1 it is enabled (default). libCURL does chunked transfer decoding by default unless this option is set to zero. (added in 7.16.2)
(Read and Write property)
See also HTTP_TRANSFER_DECODING option in CURL manual.

58.20.180  OptionHTTPVersion as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Set to one of the values described below.

**Notes:**
They force libCURL to use the specific HTTP versions. This is not sensible to do unless you have a good reason.

kHTTP_VERSION_NONE = 0
We don’t care about what version the library uses. libCURL will use whatever it thinks fit.

kHTTP_VERSION_1_0 = 1
Enforce HTTP 1.0 requests.
kHTTP_VERSION_1_1 = 2

Enforce HTTP 1.1 requests.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also HTTP_VERSION option in CURL manual.

58.20.181 OptionIgnoreContentLength as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to ignore the Content-Length header.

**Notes:**
This is useful for Apache 1.x (and similar servers) which will report incorrect content length for files over 2 gigabytes. If this option is used, CURL will not be able to accurately report progress, and will simply stop the download when the server ends the connection. (added in 7.14.1)
(Read and Write property)
See also IGNORE_CONTENT_LENGTH option in CURL manual.

58.20.182 OptionInFileSize as Int64

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** When uploading a file to a remote site, this option should be used to tell libCURL what the expected size of the infile is.

**Notes:**
Note that this option does not limit how much data libCURL will actually send, as that is controlled entirely by what the read callback returns.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also INFILESIZE option in CURL manual.

58.20.183 OptionInFileSizeLarge as Int64

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** When uploading a file to a remote site, this option should be used to tell libCURL what the expected size of the infile is.
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**Deprecated:** This item is deprecated and should no longer be used. You can use OptionInFileSize instead.

**Notes:**

This value should be passed as a CURL_off_t. (Added in 7.11.0)

Note that this option does not limit how much data libCURL will actually send, as that is controlled entirely by what the read callback returns.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)

---

**58.20.184 OptionInterface as String**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This set the interface name to use as outgoing network interface.

**Notes:**

The name can be an interface name, an IP address or a host name.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also INTERFACE option in CURL manual.

---

**58.20.185 OptionIPResolve as Integer**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Allows an application to select what kind of IP addresses to use when resolving host names.

**Example:**

```pascal
dim c as new CURLSMBS
c.OptionIPResolve = c.kIPRESOLVE_V4
```

**Notes:**

This is only interesting when using host names that resolve addresses using more than one version of IP.
The allowed values are:

kIPRESOLVE_WHATEVER = 0
Default, resolves addresses to all IP versions that your system allows.

kIPRESOLVE_V4 = 1

Resolve to ipv4 addresses.

kIPRESOLVE_V6 = 2

Resolve to ipv6 addresses.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also IPRESOLVE option in CURL manual.

**58.20.186 OptionIssuerCert as String**

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A string naming a file holding a CA certificate in PEM format.

**Notes:**
If the option is set, an additional check against the peer certificate is performed to verify the issuer is indeed the one associated with the certificate provided by the option. This additional check is useful in multi-level PKI where one needs to enforce that the peer certificate is from a specific branch of the tree.

This option makes sense only when used in combination with the OptionSSLVerifyPeer option. Otherwise, the result of the check is not considered as failure.

A specific error code (CURLE_SSL_ISSUER_ERROR) is defined with the option, which is returned if the setup of the SSL/TLS session has failed due to a mismatch with the issuer of peer certificate (OptionSSLVerifyPeer has to be set too for the check to fail). (Added in 7.19.0)

Starting with version 18.0 the plugin will always use UTF-8 encoding for file path on Linux and macOS. For macOS we also do the unicode character normalization for file names for you.
(Read and Write property)
See also ISSUERCERT option in CURL manual.
58.20.187  OptionKeepSendingOnError as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Wether to keep sending on error.

**Notes:**
Continue to send data if the server responds early with an HTTP status code $\geq 300$
(Read and Write property)
See also `KEEP_SENDING_ON_ERROR` option in CURL manual.

58.20.188  OptionKeyPassword as String

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Set passphrase to private key.

**Notes:**
It will be used as the password required to use the OptionSSLKey or OptionSSHPrivateKeyfile private key.
You never needed a pass phrase to load a certificate but you need one to load your private key.
(Read and Write property)
See also `KEYPASSWD` option in CURL manual.

58.20.189  OptionKRB4Level as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Set the krb4 security level, this also enables krb4 awareness.

**Deprecated:** This item is deprecated and should no longer be used. You can use OptionKRB4Level instead.

**Notes:**
This is a string, 'clear', 'safe', 'confidential' or 'private'. If the string is set but doesn’t match one of these,
'private' will be used. Set the string to "" to disable kerberos4. The kerberos support only works for FTP.
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)

58.20.190  OptionKRB4Level as String

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
FTP kerberos security level.

**Notes:**
Set the kerberos security level for FTP; this also enables kerberos awareness. This is a string that should
match one of the following: 'clear', 'safe', 'confidential' or 'private'. If the string is set but doesn’t match
one of these, 'private' will be used. Set the string to NULL to disable kerberos support for FTP.
(Read and Write property)
See also KRLEVEL option in CURL manual.

58.20.191 OptionLocalPort as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This sets the local port number of the socket used for connection.
**Notes:**
This can be used in combination with OptionInterface and you are recommended to use OptionLocalPortRange as well when this is set. Note that port numbers are only valid 1 - 65535. (Added in 7.15.2)
(Read and Write property)
See also LOCALPORT option in CURL manual.

58.20.192 OptionLocalPortRange as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This is the number of attempts libCURL should do to find a working local port number.
**Notes:**
It starts with the given OptionLocalPort and adds one to the number for each retry. Setting this value to 1 or below will make libCURL do only one try for exact port number. Note that port numbers by nature is a scarce resource that will be busy at times so setting this value to something too low might cause unnecessary connection setup failures. (Added in 7.15.2)
(Read and Write property)
See also LOCALPORTRANGE option in CURL manual.

58.20.193 OptionLoginOptions as String

MBS CURL Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Login options string to use for the transfer.
**Notes:**
For more information about the login options please see RFC 2384, RFC5092 and IETF draft draft-earhart-url-smtp-00.txt
CURLOPT_LOGIN_OPTIONS can be used to set protocol specific login options, such as the preferred authentication mechanism via "AUTH=NTLM" or "AUTH=*", and should be used in conjunction with the OptionUserName option.
Only IMAP, POP3 and SMTP support login options.
(Read and Write property)
58.20. **CLASS CURLSMBS**

See also **LOGIN_OPTIONS** option in CURL manual.

### 58.20.194 OptionLowSpeedLimit as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This property contains the transfer speed in bytes per second that the transfer should be below during OptionLowSpeedTime seconds for the library to consider it too slow and abort.

**Notes:**
- The Lasterror property is set. 0 for success.
- You can set this value and later you can read it, but you cannot read the default value.
- (Read and Write property)
- See also **LOW_SPEED_LIMIT** option in CURL manual.

### 58.20.195 OptionLowSpeedTime as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This property contains the time in seconds that the transfer should be below the OptionLowSpeedLimit for the library to consider it too slow and abort.

**Notes:**
- The Lasterror property is set. 0 for success.
- You can set this value and later you can read it, but you cannot read the default value.
- (Read and Write property)
- See also **LOW_SPEED_TIME** option in CURL manual.

### 58.20.196 OptionMailAuth as String

MBS CURL Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This string will be used to specify the authentication address (identity) of a submitted message that is being relayed to another server.

**Notes:**
- This optional parameter allows co-operating agents in a trusted environment to communicate the authentication of individual messages and should only be used by the application program, using libCURL, if the application is itself a mail server acting in such an environment. If the application is operating as such and the AUTH address is not known or is invalid, then an empty string should be used for this parameter.
- Unlike OptionMailFrom and SetOptionMailRecipients, the address should not be specified within a pair of angled brackets (<>). However, if an empty string is used then a pair of brackets will be sent by libCURL as required by RFC 2554.
- (Read and Write property)
See also MAIL_AUTH option in CURL manual.

### 58.20.197 OptionMailFrom as String

MBS CURL Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A string that will be used to specify the sender address in a mail when sending an SMTP mail with libCURL.
**Notes:** (Read and Write property)
See also MAIL_FROM option in CURL manual.

### 58.20.198 OptionMaxConnects as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The set number will be the persistent connection cache size.
**Notes:**
The set amount will be the maximum amount of simultaneously open connections that libCURL may cache.
Default is 5, and there isn’t much point in changing this value unless you are perfectly aware of how this work and changes libCURL’s behaviour. This concerns connection using any of the protocols that support persistent connections.

When reaching the maximum limit, CURL closes the oldest one in the cache to prevent the number of open connections to increase.

If you already have performed transfers with this CURL handle, setting a smaller MAXCONNECTS than before may cause open connections to get closed unnecessarily.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also MAXCONNECTS option in CURL manual.

### 58.20.199 OptionMaxFileSize as Int64

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This allows you to specify the maximum size (in bytes) of a file to download.
**Notes:**
If the file requested is larger than this value, the transfer will not start and kError_FILESIZE_EXCEEDED will be returned.
The file size is not always known prior to download, and for such files this option has no effect even if the
file transfer ends up being larger than this given limit. This concerns both FTP and HTTP transfers.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also MAXFILESIZE option in CURL manual.

**58.20.200 OptionMaxFileSizeLarge as Int64**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This allows you to specify the maximum size (in bytes) of a file to download.
**Deprecated:** This item is deprecated and should no longer be used. You can use OptionMaxFileSize
instead. **Notes:**
If the file requested is larger than this value, the transfer will not start and kError_FILESIZEDEEXCEEDED
will be returned. (Added in 7.11.0)

The file size is not always known prior to download, and for such files this option has no effect even if the
file transfer ends up being larger than this given limit. This concerns both FTP and HTTP transfers.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)

**58.20.201 OptionMaxRecvSpeed as Int64**

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Defines the maximum download speed.
**Notes:**
If a download exceeds this speed (counted in bytes per second) on cumulative average during the transfer, the
transfer will pause to keep the average rate less than or equal to the parameter value. Defaults to unlimited
speed. (Added in 7.15.5)
(Read and Write property)
See also MAX_RECV_SPEED option in CURL manual.

**58.20.202 OptionMaxRecvSpeedLarge as Int64**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Defines the maximum download speed.
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**Deprecated:** This item is deprecated and should no longer be used. You can use OptionMaxRecvSpeed instead. **Notes:**

If a download exceeds this speed (counted in bytes per second) on cumulative average during the transfer, the transfer will pause to keep the average rate less than or equal to the parameter value. Defaults to unlimited speed. (Added in 7.15.5)

(Read and Write property)

### 58.20.203 OptionMaxRedirs as Integer

**Function:** The set number will be the redirection limit.

**Example:**

```csharp
dim c as new CURLSMBS

c.OptionFollowLocation = true

c.OptionMaxRedirs = 3
```

**Notes:**

If that many redirections have been followed, the next redirect will cause an error (kError_TOO_MANY_REDIRECTS). This option only makes sense if the CURLOPT_FOLLOWLOCATION is used at the same time. Added in 7.15.1: Setting the limit to 0 will make libCURL refuse any redirect. Set it to -1 for an infinite number of redirects (which is the default)

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also MAXREDIRS option in CURL manual.

### 58.20.204 OptionMaxSendSpeed as Int64

**Function:** Defines the maximum upload speed.

**Notes:**

If an upload exceeds this speed on cumulative average during the transfer, the transfer will pause to keep the average rate less than or equal to the parameter value. Defaults to unlimited speed. (Added in 7.15.5)

Value is in bytes per second.
Useful if you have a limited pipe and you’d like your transfer not to use your entire bandwidth. Slowing down the transfer speed is also useful for lowering CPU consumption during transfers.
(Read and Write property)
See also MAX_SEND_SPEED option in CURL manual.

58.20.205 OptionMaxSendSpeedLarge as Int64

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Defines the maximum upload speed. Deprecated: This item is deprecated and should no longer be used. You can use OptionMaxSendSpeed instead. Notes: If an upload exceeds this speed on cumulative average during the transfer, the transfer will pause to keep the average rate less than or equal to the parameter value. Defaults to unlimited speed. (Added in 7.15.5) Value is in bytes per second. Useful if you have a limited pipe and you’d like your transfer not to use your entire bandwidth. Slowing down the transfer speed is also useful for lowering CPU consumption during transfers. (Read and Write property)

58.20.206 OptionNetRC as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Controls usage of netrc file. Notes: This parameter controls the preference of libCURL between using user names and passwords from your textasciitilde /.netrc file, relative to user names and passwords in the URL supplied with OptionURL.

libCURL uses a user name (and supplied or prompted password) supplied with OptionUsername and OptionPassword in preference to any of the options controlled by this parameter.

An integer, set to one of the values described below.

kNETRC_OPTIONAL = 1

The use of your textasciitilde /.netrc file is optional, and information in the URL is to be preferred. The file will be scanned with the host and user name (to find the password only) or with the host only, to find the first user name and password after that machine, which ever information is not specified in the URL.

Undefined values of the option will have this effect.

kNETRC_IGNORED = 0
The library will ignore the file and use only the information in the URL.

This is the default.

\[ k\text{NETRC}_\text{REQUIRED} = 2 \]

This value tells the library that use of the file is required, to ignore the information in the URL, and to search the file with the host only.

Only machine name, user name and password are taken into account (init macros and similar things aren't supported).

libCURL does not verify that the file has the correct properties set (as the standard Unix ftp client does). It should only be readable by user.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also NETRC option in CURL manual.

\section*{58.20.207 \hspace{1em} OptionNetRCFile as String}

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. \textbf{Function:} A string containing the full path name to the file you want libCURL to use as .netrc file.
\textbf{Notes:}
If this option is omitted, and OptionNETRC is set, libCURL will attempt to find the a .netrc file in the current user's home directory. (Added in 7.10.9)

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

Starting with version 18.0 the plugin will always use UTF-8 encoding for file path on Linux and macOS. For macOS we also do the unicode character normalization for file names for you.
(Read and Write property)
See also NETRC\_FILE option in CURL manual.
58.20. CLASS CURLSMBS

58.20.208 OptionNewDirectoryPerms as Integer

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
An integer, containing the value of the permissions that will be assigned to newly created directories on the
remote server.

**Notes:**
The default value is 0755, but any valid value can be used. The only protocols that can use this are sftp://,
scp://, and file:///. (Added in 7.16.4)
Value must be octal, so use & o prefix for number.
(Read and Write property)
See also NEW_DIRECTORY_PERMS option in CURL manual.

58.20.209 OptionNewFilePerms as Integer

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
An integer, containing the value of the permissions that will be assigned to newly created files on the remote
server.

**Notes:**
The default value is & o0644, but any valid value can be used. The only protocols that can use this are sftp://,
scp://, and file:///. (Added in 7.16.4)
Be aware that you normally specify this in octal values. So use the & o prefix in Real Studio.
(Read and Write property)
See also NEW_FILE_PERMS option in CURL manual.

58.20.210 OptionNoBody as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
True tells the library to not include the body-part in the output.

**Notes:**
This is only relevant for protocols that have separate header and body parts. On HTTP(S) servers, this will
make libCURL do a HEAD request.

To change request to GET, you should use OptionGet. Change request to POST with OptionPost etc.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also NOBODY option in CURL manual.
58.20.211 OptionNoProxy as String

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A string with a comma- separated list of hosts which do not use a proxy, if one is specified. **Notes:**
The only wildcard is a single * character, which matches all hosts, and effectively disables the proxy. Each name in this list is matched as either a domain which contains the hostname, or the hostname itself. For example, local.com would match local.com, local.com:80, and www.local.com, but not www.notlocal.com. (Added in 7.19.4) (Read and Write property) See also NOPROXY option in CURL manual.

58.20.212 OptionNoSignal as Integer

MBS CURL Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to not use signals. **Notes:**
If it is true, libCURL will not use any functions that install signal handlers or any functions that cause signals to be sent to the process. This option is mainly here to allow multi-threaded unix applications to still set/use all timeout options etc, without risking getting signals. (Added in 7.10)

If this option is set and libCURL has been built with the standard name resolver, timeouts will not occur while the name resolve takes place. Consider building libCURL with c-ares support to enable asynchronous DNS lookups, which enables nice timeouts for name resolves without signals.

Setting OptionNoSignal to true makes libCURL NOT ask the system to ignore SIGPIPE signals, which otherwise are sent by the system when trying to send data to a socket which is closed in the other end. libCURL makes an effort to never cause such SIGPIPEs to trigger, but some operating systems have no way to avoid them and even on those that have there are some corner cases when they may still happen, contrary to our desire. In addition, using CURLAUTH_NTLM_WB authentication could cause a SIGCHLD signal to be raised. (Read and Write property) See also NOSIGNAL option in CURL manual.

58.20.213 OptionPassword as String

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The password to use for the transfer. **Notes:**
The OptionPassword option should be used in conjunction with the OptionUsername option. (Read and Write property)
58.20. **CLASS CURLSMBS**

See also **PASSWORD** option in CURL manual.

58.20.214 **OptionPathAsIs as Boolean**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Pass path as it is and do not resolve dots.

**Notes:**
Do not squash dot-dot sequences.

(Read and Write property)
See also **PATH AS IS** option in CURL manual.

58.20.215 **OptionPinnedPublicKey as String**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The public key in DER form used to validate the peer public key.

**Notes:**
Native path to key file.
This option is used only if SSLVerifyPeer is true.
(Read and Write property)
See also **PINNEDPUBLICKEY** option in CURL manual.

58.20.216 **OptionPipeWait as Boolean**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Wait/don’t wait for pipe/mutex to clarify.

**Notes:** (Read and Write property)
See also **PIPEWAIT** option in CURL manual.

58.20.217 **OptionPort as Integer**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The remote port number to connect to, instead of the one specified in the URL or the default port for the used protocol.

**Notes:**
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
58.20.218 OptionPost as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A boolean parameter tells the library to do a regular HTTP post.

**Notes:**
This will also make the library use the a "Content-Type: application/x-www-form-urlencoded" header. (This is by far the most commonly used POST method).

Use the OptionPostFields option to specify what data to post.

Optionally, you can provide data to POST using the Read event but then you must make sure to not set OptionPostFields to anything but "". When providing data with an event, you must transmit it using chunked transfer-encoding.

You can override the default POST Content-Type: header by setting your own with OptionHTTPHeader.

Using POST with HTTP 1.1 implies the use of a "Expect: 100-continue" header. You can disable this header with OptionHTTPHeader as usual.

If you use POST to a HTTP 1.1 server, you can send data without knowing the size before starting the POST if you use chunked encoding. You enable this by adding a header like "Transfer-Encoding: chunked" with OptionHTTPHeader. With HTTP 1.0 or without chunked transfer, you must specify the size in the request.

When setting CURLOPT_POST to a non-zero value, it will automatically set OptionNoBody to 0 (since 7.14.1).

If you issue a POST request and then want to make a HEAD or GET using the same re-used handle, you must explicitly set the new request type using OptionNoBody or OptionGet or similar.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also **POST** option in CURL manual.
58.20.219  OptionPostFields as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A string which should be the full data to post in an HTTP POST operation.

**Example:**

```dim xml as string // XML or JSON to send as payload
dim c as new CURLSMBS

c.OptionFollowLocation = true

c.OptionMaxRedirs = 3

c.OptionPostFields = xml

c.OptionUserAgent = "Test App"
c.OptionPost = true

// for SOAP use right content type
c.SetOptionHTTPHeader array("Content-Type: application/soap+xml; charset=utf-8")
```

**Notes:**

You must make sure that the data is formatted the way you want the server to receive it. libCURL will not convert or encode it for you. Most web servers will assume this data to be url-encoded. Take note.

This POST is a normal application/x-www-form-urlencoded kind (and libCURL will set that Content-Type by default when this option is used), which is the most commonly used one by HTML forms. See also the OptionPost. Using OptionPostFields implies OptionPost.

Using POST with HTTP 1.1 implies the use of a "Expect: 100-continue" header. You can disable this header with CURLOPT_HTTPHEADER as usual.

To make multipart/formdata posts (aka rfc1867-posts), check out the OptionPost option.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also COPYPOSTFIELDS option in CURL manual.

58.20.220  OptionPostFieldSize as Int64

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The size of the post data.

**Notes:**
Optional you can set the size of your post data.
If you specify a postfield string, this size will be set automatically.

If you specify a size and no postfield string, the Read event will request data.
(Read and Write property)
See also POSTFIELDSIZE option in CURL manual.

58.20.221 OptionPostFieldSizeLarge as Int64

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The size of the post data. (64 bit version) **Deprecated:** This item is deprecated and should no longer be used. You can use OptionPostFieldSize instead. **Notes:**
Optional you can set the size of your post data.
If you specify a postfield string, this size will be set automatically.

If you specify a size and no postfield string, the Read event will request data.
(Read and Write property)

58.20.222 OptionPostRedir as Integer

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A bitmask to control how libCURL acts on redirects after POSTs that get a 301 or 302 response back.
**Notes:**
A parameter with bit 0 set (value CURL_REDIR_POST_301=1) tells the library to respect RFC 2616/10.3.2 and not convert POST requests into GET requests when following a 301 redirection. Setting bit 1 (value CURL_REDIR_POST_302=2) makes libCURL maintain the request method after a 302 redirect. CURL_REDIR_POST_ALL is a convenience define that sets both bits.

The non-RFC behaviour is ubiquitous in web browsers, so the library does the conversion by default to maintain consistency. However, a server may require a POST to remain a POST after such a redirection. This option is meaningful only when setting OptionFollowLocation. (Added in 7.17.1) (This option was known as CURLOPT_POST301 up to 7.19.0 as it only supported the 301 way before then) (Read and Write property)
See also POSTREDIR option in CURL manual.
58.20.223  **OptionPreProxy as String**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Name of pre proxy to use.  
**Notes:** (Read and Write property)  
See also **PRE.PROXY** option in CURL manual.

58.20.224  **OptionProtocols as Integer**

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A bitmask of kProtocol\(^*\) constants.  
**Notes:**  
If used, this bitmask limits what protocols libCURL may use in the transfer. This allows you to have a libCURL built to support a wide range of protocols but still limit specific transfers to only be allowed to use a subset of them. By default libCURL will accept all protocols it supports. See also OptionRedirProtocols.  
(Added in 7.19.4)  
(Read and Write property)  
See also **PROTOCOLS** option in CURL manual.

58.20.225  **OptionProxy as String**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set HTTP proxy to use.  
**Example:**

```plaintext
dim c as CURLSMBS  // your CURL object  
dim psAddress as string  // your proxy address  
dim psPort as Integer  // your proxy port
```

c.OptionProxy=psAddress  
c.OptionProxyPort=psPort  
c.OptionProxyType=c.kPROXY_HTTP

**Notes:**  
The Lasterror property is set. 0 for success. You can set this value and later you can read it, but you cannot read the default value.  
The parameter should be a string holding the host name or dotted IP address. To specify port number in this string, append \([:]\) [ port ] to the end of the host name. The proxy string may be prefixed with \([ protocol \) :// since any such prefix will be ignored. The proxy's port number may optionally be specified with the
separate option ProxyHost.

When you tell the library to use an HTTP proxy, libCURL will transparently convert operations to HTTP even if you specify an FTP URL etc. This may have an impact on what other features of the library you can use, such as CURLOPT_QUOTE and similar FTP specifics that don’t work unless you tunnel through the HTTP proxy. Such tunneling is activated with HTTPProxyTunnel.

libCURL respects the environment variables http_proxy, ftp_proxy, all_proxy etc, if any of those is set. The Proxy option does however override any possibly set environment variables.

Starting with 7.14.1, the proxy host string given in environment variables can be specified the exact same way as the proxy can be set with Proxy, include protocol prefix (http://) and embedded user + password.

You can use WinHTTPClientMBS class on Windows or CFProxyMBS on Mac to discover system proxy settings.
(Read and Write property)
See also PROXY option in CURL manual.

58.20.226 OptionProxyAuth as Integer

Notes:
Pass an integer as parameter, which is set to a bitmask, to tell libCURL what authentication method(s) you want it to use for your proxy authentication. If more than one bit is set, libCURL will first query the site to see what authentication methods it supports and then pick the best one you allow it to use. For some methods, this will induce an extra network round-trip. Set the actual name and password with the ProxyUserPassword option. The bitmask can be constructed by or’ing together the bits listed above for the HTTPAuth option. As of this writing, only Basic, Digest and NTLM work. (Added in 7.10.7)

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also PROXYAUTH option in CURL manual.

58.20.227 OptionProxyCAInfo as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The CApath or CAfile used to validate the proxy certificate.
Notes:
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Pass native file path. This option is used only if CURLSMBS.OptionProxySSLVerifyPeer is true (Read and Write property). See also **PROXY_CAIINFO** option in CURL manual.

### 58.20.228 OptionProxyCAPath as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The CApath directory used to validate the proxy certificate.

**Notes:**
Pass native file path. This option is used only if CURLSMBS.OptionProxySSLVerifyPeer is true (Read and Write property). See also **PROXY_CAPATH** option in CURL manual.

### 58.20.229 OptionProxyCRLFile as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
CRL file for proxy.

**Notes:**
Pass native file path. (Read and Write property)
See also **PROXY_CRLFILE** option in CURL manual.

### 58.20.230 OptionProxyKeyPassword as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Password for the SSL private key for proxy.

**Notes:** (Read and Write property)
See also **PROXY_KEYPASSWD** option in CURL manual.

### 58.20.231 OptionProxyPassword as String

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A string which should be pointing to the password to use for the transfer while connecting to Proxy.

**Notes:**
The OptionProxyPassword option should be used in conjunction with the OptionProxyUsername option. (Added in 7.19.1)
### 58.20.232 OptionProxyPinnedPublicKey as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The public key in DER form used to validate the proxy public key. **Notes:** This option is used only if CURLSMBS.OptionProxySSLVerifyPeer is true. Please path native file path to key file. (Read and Write property) See also PROXY_PINNEDPUBLICKEY option in CURL manual.

### 58.20.233 OptionProxyPort as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The proxy port to connect to unless it is specified in the proxy string OptionProxy. **Notes:** The Lasterror property is set. 0 for success. You can set this value and later you can read it, but you cannot read the default value. You can use OptionProxy with port, e.g. "12.34.56.78:8080" or pass port here and proxy without port. For some users it seems like the option with OptionProxy including port works better. (Read and Write property) See also PROXYPORT option in CURL manual.

### 58.20.234 OptionProxyServiceName as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Proxy Service Name. **Notes:** (Read and Write property) See also PROXY_SERVICE_NAME option in CURL manual.

### 58.20.235 OptionProxySSLCert as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Name of the file keeping your private SSL-certificate for proxy. **Notes:** (Read and Write property)
58.20. CLASS CURLSMBS

See also PROXY_SSLCERT option in CURL manual.

58.20.236 OptionProxySSLCertType as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Type of the file keeping your SSL-certificate for proxy.

**Notes:**
Value can be "DER", "PEM" or "ENG".
(Read and Write property)
See also PROXY_SSLCERTTYPE option in CURL manual.

58.20.237 OptionProxySSLCipherList as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Specify which SSL ciphers to use for proxy.

**Notes:** (Read and Write property)
See also PROXY_SSL_CIPHER_LIST option in CURL manual.

58.20.238 OptionProxySSLKey as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Name of the file keeping your private SSL-key for proxy.

**Notes:**
Pass native file path.
(Read and Write property)
See also PROXY_SSLKEY option in CURL manual.

58.20.239 OptionProxySSLKeyType as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets type of the file keeping your private SSL-key for proxy.

**Notes:**
Value is DER, PEM or ENG.
(Read and Write property)
See also PROXY_SSLKEYTYPE option in CURL manual.
58.20.240 OptionProxySSLOptions as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Enable/disable specific SSL features with a bitmask for proxy. **Notes:** (Read and Write property) See also `PROXY_SSL_OPTIONS` option in CURL manual.

58.20.241 OptionProxySSLVerifyHost as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Enable SSL Host verification. **Notes:** Set if we should verify the Common name from the proxy certificate in ssl handshake, set 1 to check existence, 2 to ensure that it matches the provided hostname. (Read and Write property) See also `PROXY_SSL_VERIFYHOST` option in CURL manual.

58.20.242 OptionProxySSLVerifyPeer as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set if we should verify the proxy in ssl handshake. **Notes:** set 1 to verify. (Read and Write property) See also `PROXY_SSL_VERIFYPEER` option in CURL manual.

58.20.243 OptionProxySSLVersion as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** What version to specifically try to use for proxy. **Notes:** The available options are:

(Read and Write property) See also `PROXY_SSLVERSION` option in CURL manual.
58.20. **CLASS CURLSMBS**

Default 0 The default action. This will attempt to figure out the remote SSL protocol version, i.e. either SSLv3 or TLSv1 (but not SSLv2, which became disabled by default with 7.18.1).

TLSv1 1 Force TLSv1.x
SSLv2 2 Force SSLv2
SSLv3 3 Force SSLv3
TLSv1.0 4 Force TLSv1.0
TLSv1.1 5 Force TLSv1.1
TLSv1.2 6 Force TLSv1.2
TLSv1.3 7 Force TLSv1.3

58.20.244 **OptionProxyTLSAuthToken** as String

**Notes:** (Read and Write property)
See also PROXY_TLSAUTH_PASSWORD option in CURL manual.

58.20.245 **OptionProxyTLSAuthTokenType** as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set authentication type for authenticated TLS for proxy.
**Notes:** (Read and Write property)
See also PROXY_TLSAUTH_TYPE option in CURL manual.

58.20.246 **OptionProxyTLSAuthTokenUsername** as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set a username for authenticated TLS for proxy.
**Notes:** (Read and Write property)
See also PROXY_TLSAUTH_USERNAME option in CURL manual.

58.20.247 **OptionProxyTransferMode** as Integer

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** If this integer value is set to 1 (one), it tells libCURL to set the transfer mode (binary or ASCII) for FTP transfers done via an HTTP proxy, by appending ;type=a or ;type=i to the URL.
**Notes:**
Without this setting, or it being set to 0 (zero, the default), OptionTransferText has no effect when doing FTP via a proxy. Beware that not all proxies support this feature. (Added in 7.18.0) (Read and Write property) See also PROXY_TRANSFER_MODE option in CURL manual.

58.20.248 OptionProxyType as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This option is to set type of the proxy.
Notes:
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

Available options for this are kPROXY_HTTP, kPROXY.SOCKS4 (added in 7.15.2) kPROXY.SOCKS5. The HTTP type is default. (Read and Write property) See also PROXYTYPE option in CURL manual.

58.20.249 OptionProxyUsername as String

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: A string, which should be pointing to the user name to use for the transfer while connecting to Proxy.
Notes:
In order to specify the password to be used in conjunction with the user name use the OptionProxyPassword option. (Read and Write property) See also PROXYUSERNAME option in CURL manual.

58.20.250 OptionPut as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: A non-zero parameter tells the library to use HTTP PUT to transfer data.
Notes:
The data should be set with OptionInFileSize.
This option is deprecated and starting with version 7.12.1 you should instead use OptionUpload.
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also PUT option in CURL manual.

58.20.251 OptionRandomFile as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A file name for the random file.
**Notes:**
The file will be used to read from to seed the random engine for SSL. The more random the specified file is,
the more secure the SSL connection will become.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

Starting with version 18.0 the plugin will always use UTF-8 encoding for file path on Linux and macOS. For
macOS we also do the unicode character normalization for file names for you.
(Read and Write property)
See also RANDOM_FILE option in CURL manual.

58.20.252 OptionRange as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A string which should contain the specified range you want.
**Notes:**
It should be in the format “X-Y”, where X or Y may be left out. HTTP transfers also support several
intervals, separated with commas as in ”X-Y,N-M”. Using this kind of multiple intervals will cause the
HTTP server to send the response document in pieces (using standard MIME separation techniques). Pass
a NULL to this option to disable the use of ranges.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also RANGE option in CURL manual.

58.20.253 OptionRedirProtocols as Integer

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
An integer that holds a bitmask of kProtocol* constants.
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Notes:
If used, this bitmask limits what protocols libCURL may use in a transfer that it follows to in a redirect when OptionFollowLocation is enabled. This allows you to limit specific transfers to only be allowed to use a subset of protocols in redirections. By default libCURL will allow all protocols except for FILE and SCP. This is a difference compared to pre-7.19.4 versions which unconditionally would follow to all protocols supported. (Added in 7.19.4)
(Read and Write property)
See also REDIR_PROTOCOLS option in CURL manual.

58.20.254 OptionReferer as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
The referer to pass to the server.
Notes:
It will be used to set the Referer: header in the http request sent to the remote server. This can be used to fool servers or scripts. You can also set any custom header with OptionHTTPHeader.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also REFERER option in CURL manual.

58.20.255 OptionRequestTarget as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
The request target, instead of extracted from the URL.
Notes: (Read and Write property)
See also REQUEST_TARGET option in CURL manual.

58.20.256 OptionResumeFrom as Int64

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
It contains the offset in number of bytes that you want the transfer to start from.
Notes:
Set this option to 0 to make the transfer start from the beginning (effectively disabling resume). For FTP, set this option to -1 to make the transfer start from the end of the target file (useful to continue an interrupted upload).

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also RESUME_FROM option in CURL manual.

58.20.257 OptionResumeFromLarge as Int64

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
It contains the offset in number of bytes that you want the transfer to start from.
**Deprecated:** This item is deprecated and should no longer be used. You can use OptionResumeFrom instead. **Notes:**
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)

58.20.258 OptionRTSPClientCSEQ as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Manually initialize the client RTSP CSeq for this handle. **Notes:** (Read and Write property)
See also RTSP_CLIENT_CSEQ option in CURL manual.

58.20.259 OptionRTSPRequest as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
RTSP request method (OPTIONS, SETUP, PLAY, etc...). **Notes:** (Read and Write property)
See also RTSP_REQUEST option in CURL manual.

58.20.260 OptionRTSPServerCSEQ as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Manually initialize the server RTSP CSeq for this handle. **Notes:** (Read and Write property)
See also RTSP_SERVER_CSEQ option in CURL manual.
58.20.261  OptionRTSPSessionID as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The RTSP session identifier.
**Notes:** (Read and Write property)
See also RTSP_SESSION_ID option in CURL manual.

58.20.262  OptionRTSPStreamURI as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The RTSP stream URI.
**Notes:** (Read and Write property)
See also RTSP_STREAM_URI option in CURL manual.

58.20.263  OptionRTSPTransport as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The Transport: header to use in RTSP requests.
**Notes:** (Read and Write property)
See also RTSP_TRANSPORT option in CURL manual.

58.20.264  OptionSASLIR as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Enable/disable SASL initial response.
**Notes:** (Read and Write property)
See also SASL_IR option in CURL manual.

58.20.265  OptionServiceName as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Service Name.
**Notes:** (Read and Write property)
See also SERVICE_NAME option in CURL manual.
58.20.266  OptionSocks5Auth as Integer

**Notes:**  
(Read and Write property)  
See also SOCKS5_AUTH option in CURL manual.

58.20.267  OptionSocks5GSSAPINEC as Boolean

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to protect SOCKS5 connection is protected.  
**Notes:**  
Set to true to enable or false to disable. As part of the gssapi negotiation a protection mode is negotiated. The rfc1961 says in section 4.3/4.4 it should be protected, but the NEC reference implementation does not. If enabled, this option allows the unprotected exchange of the protection mode negotiation. (Added in 7.19.4).  
(Read and Write property)  
See also SOCKS5_GSSAPI_NEC option in CURL manual.

58.20.268  OptionSocks5GSSAPIService as String

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A string holding the name of the service.  
**Notes:**  
The default service name for a SOCKS5 server is rcmd/server-fqdn. This option allows you to change it.  
(Added in 7.19.4)  
(Read and Write property)  
See also SOCKS5_GSSAPI_SERVICE option in CURL manual.

58.20.269  OptionSSHAuthTypes as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Define the SSH authorization types.  
**Notes:**  
Pass a long set to a bitmask consisting of one or more of CURLSSH_AUTH_PUBLICKEY, CURLSSH_AUTH_PASSWORD, CURLSSH_AUTH_HOST, CURLSSH_AUTH_KEYBOARD. Set CURLSSH_AUTH_ANY to let libCURL pick one. (Added in 7.16.1)  
  
constants:  
CURLSSH_AUTH_ANY = & hFFFFFFFF
58.20.270 OptionSSHCompression as Boolean


58.20.271 OptionSSHHostPublicKeyMD5 as String

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: A string containing 32 hexadecimal digits with the 128 bit MD5 checksum of the remote host’s public key. Notes: libCURL will reject the connection to the host unless the md5sums match. This option is only for SCP and SFTP transfers. (Added in 7.17.1) (Read and Write property) See also SSH_HOST_PUBLIC_KEY_MD5 option in CURL manual.

58.20.272 OptionSSHKnownhosts as String

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: A string holding the file name of the known_host file to use. Notes: The known_hosts file should use the OpenSSH file format as supported by libssh2. If this file is specified, libCURL will only accept connections with hosts that are known and present in that file, with a matching public key. (Added in 7.19.6) (Read and Write property) See also SSH_KNOWNHOSTS option in CURL manual.
58.20. CLASS CURLSMBS

58.20.273 OptionSSHPPrivateKeyfile as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Pass a path pointing to a file name for your private key.

**Notes:**

If not used, libCURL defaults to using `textasciitilde /.ssh/id_dsa`. If the file is password-protected, set the password with OptionSSLPKeyPassword. (Added in 7.16.1)

For a SFTP transfer (= file transfer over SSH), you would tell the plugin your public and private keys, so the plugin can login.

Starting with version 18.0 the plugin will always use UTF-8 encoding for file path on Linux and macOS. For macOS we also do the unicode character normalization for file names for you.

(Read and Write property)

See also `SSH_PRIVATE_KEYFILE` option in CURL manual.

58.20.274 OptionSSHPublicKeyfile as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Pass a path pointing to a file name for your public key.

**Notes:**

If not used, libCURL defaults to using `textasciitilde /.ssh/id_dsa.pub`. (Added in 7.16.1)

For a SFTP transfer (= file transfer over SSH), you would tell the plugin your public and private keys, so the plugin can login.

Starting with version 18.0 the plugin will always use UTF-8 encoding for file path on Linux and macOS. For macOS we also do the unicode character normalization for file names for you.

(Read and Write property)

See also `SSH_PUBLIC_KEYFILE` option in CURL manual.

58.20.275 OptionSSLCert as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The string should be the file name of your certificate.

**Notes:**

The default format is "PEM" and can be changed with OptionSSLCERTTYPE.
The Lasterror property is set. 0 for success. You can set this value and later you can read it, but you cannot read the default value.

Starting with version 18.0 the plugin will always use UTF-8 encoding for file path on Linux and macOS. For macOS we also do the unicode character normalization for file names for you.
(Read and Write property)
See also SSLCERT option in CURL manual.

58.20.276 OptionSSLCertPassword as String

MBS CURL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The certificate password.
**Deprecated:** This item is deprecated and should no longer be used. You can use OptionKeyPassword instead. **Notes:** (Read and Write property)

58.20.277 OptionSSLCertType as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The string should be the format of your certificate.
**Notes:**
Supported formats are "PEM" and "DER". (Added in 7.9.3)

The Lasterror property is set. 0 for success. You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also SSLCERTTYPE option in CURL manual.

58.20.278 OptionSSLCipherList as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A string holding the list of ciphers to use for the SSL connection.
**Notes:**
The list must be syntactically correct, it consists of one or more cipher strings separated by colons. Commas or spaces are also acceptable separators but colons are normally used, !, - and + can be used as operators. Valid examples of cipher lists include 'RC4-SHA', 'SHA1+DES', 'TLSv1' and 'DEFAULT'. The default list is normally set when you compile OpenSSL.
You'll find more details about cipher lists on this URL:

http://www.openssl.org/docs/apps/ciphers.html

The Lasterror property is set. 0 for success. You can set this value and later you can read it, but you cannot read the default value. (Read and Write property)
See also SSL_CIPHER_LIST option in CURL manual.

### 58.20.279 OptionSSLEnableALPN as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Enable/disable TLS ALPN extension (http2 over ssl might fail without).
**Notes:** (Read and Write property)
See also SSL_ENABLE_ALPN option in CURL manual.

### 58.20.280 OptionSSLEnableNPN as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Enable/disable TLS NPN extension (http2 over ssl might fail without)
**Notes:** (Read and Write property)
See also SSL_ENABLE_NPN option in CURL manual.

### 58.20.281 OptionSSLEngine as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** It will be used as the identifier for the crypto engine you want to use for your private key.
**Notes:**
If the crypto device cannot be loaded, kError_SSL_ENGINE_NOTFOUND is returned.

The Lasterror property is set. 0 for success. You can set this value and later you can read it, but you cannot read the default value. (Read and Write property)
See also SSLENGINE option in CURL manual.
### 58.20.282 OptionSSLEngineDefault as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the actual crypto engine as the default for (asymmetric) crypto operations. **Notes:**
If the crypto device cannot be set, kError_SSL_ENGINESETFAILED is returned.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also SSLENGINE_DEFAULT option in CURL manual.

### 58.20.283 OptionSSLFalseStart as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Set if we should enable TLS false start. **Notes:** (Read and Write property)
See also SSL_FALSESTART option in CURL manual.

### 58.20.284 OptionSSLKey as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The string should be the file name of your private key. **Notes:**
The default format is ”PEM” and can be changed with OptionSSLKEYTYPE.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.

Starting with version 18.0 the plugin will always use UTF-8 encoding for file path on Linux and macOS. For macOS we also do the unicode character normalization for file names for you.
(Read and Write property)
See also SSLKEY option in CURL manual.

### 58.20.285 OptionSSLKeyPassword as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The password required to use the OptionSSLKEY private key.
58.20. **CLASS CURLSMBS**

**Deprecated:** This item is deprecated and should no longer be used. You can use `OptionKeyPassword` instead. **Notes:**

The `Lasterror` property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)

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### 58.20.286 OptionSSLKeyType as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The string should be the format of your private key.

**Notes:**
Supported formats are "PEM", "DER" and "ENG".

The format "ENG" enables you to load the private key from a crypto engine. In this case `OptionSSLKEY` is used as an identifier passed to the engine. You have to set the crypto engine with `OptionSSLENGINE`. "DER" format key file currently does not work because of a bug in OpenSSL.

The `Lasterror` property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also `SSLKEYTYPE` option in CURL manual.

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### 58.20.287 OptionSSLOptions as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Enable/disable specific SSL features with a bitmask.

**Notes:** (Read and Write property)
See also `SSL_OPTIONS` option in CURL manual.

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### 58.20.288 OptionSSLSessionIDCache as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether to use the SSL session ID cache.

**Notes:**
Pass false to disable libCURL’s use of SSL session-ID caching. Set this to true to enable it. By default all transfers are done using the cache. Note that while nothing ever should get hurt by attempting to reuse SSL session-IDs, there seem to be broken SSL implementations in the wild that may require you to disable this in order for you to succeed. (Added in 7.16.0)
(Read and Write property)
58.20.289 OptionSSLVerifyHost as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This option determines whether libCURL verifies that the server cert is for the server it is known as. Notes: When negotiating an SSL connection, the server sends a certificate indicating its identity. When OptionSSLVerifyHost is 2, that certificate must indicate that the server is the server to which you meant to connect, or the connection fails.

CURL considers the server the intended one when the Common Name field or a Subject Alternate Name field in the certificate matches the host name in the URL to which you told CURL to connect.

When the value is 1, the certificate must contain a Common Name field, but it doesn’t matter what name it says. (This is not ordinarily a useful setting).

When the value is 0, the connection succeeds regardless of the names in the certificate.

The default, since 7.10, is 2.

The checking this option controls is of the identity that the server claims. The server could be lying. To control lying, see OptionSSLVerifyPeer.

The Lasterror property is set. 0 for success. You can set this value and later you can read it, but you cannot read the default value. (Read and Write property) See also SSL_VERIFYHOST option in CURL manual.

58.20.290 OptionSSLVerifyPeer as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Configure whether this CURL instance will verify the SSL peer certificate. Notes: This option determines whether CURL verifies the authenticity of the peer’s certificate. A value of 1 means CURL verifies; zero means it doesn’t. The default is nonzero, but before 7.10, it was zero.
When negotiating an SSL connection, the server sends a certificate indicating its identity. CURL verifies whether the certificate is authentic, i.e., that you can trust that the server is who the certificate says it is. This trust is based on a chain of digital signatures, rooted in certification authority (CA) certificates you supply. As of 7.10, CURL installs a default bundle of CA certificates and you can specify alternate certificates with the OptionCAINFO option or the OptionCAPATH option.

When OptionSSLVerifyPeer is nonzero, and the verification fails to prove that the certificate is authentic, the connection fails. When the option is zero, the connection succeeds regardless.

Authenticating the certificate is not by itself very useful. You typically want to ensure that the server, as authentically identified by its certificate, is the server you mean to be talking to. Use OptionSSLVerifyHost to control that.

(Read and Write property)
See also SSL_VERIFYPEER option in CURL manual.

58.20.291 OptionSSLVerifyStatus as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Set if we should verify the certificate status. Notes: (Read and Write property)
See also SSL_VERIFYSTATUS option in CURL manual.

58.20.292 OptionSSLVersion as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: What version of SSL/TLS to attempt to use. Example:

```vbscript
dim c as CURLSMBS
C.c.OptionUseSSL = c.kFTPSSL_ALL
C.c.OptionSSLVersion = c.kSSLVersionTLSv12
```

Notes:
The available options are:

kSSLVERSION_DEFAULT = 0

The default action. When libCURL built with OpenSSL, this will attempt to figure out the remote SSL protocol version. Unfortunately there are a lot of ancient and broken servers in use which cannot handle
this technique and will fail to connect. When libCURL is built with GnuTLS, this will mean SSLv3.

kSSLVERSION_TLSv1 = 1

Force TLSv1

kSSLVERSION_SSLv2 = 2

Force SSLv2

kSSLVERSION_SSLv3 = 3

Force SSLv3

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also SSLVERSION option in CURL manual.

58.20.293 OptionStreamDepends as CURLSMBS

Notes: (Read and Write property)
See also STREAM_DEPENDS option in CURL manual.

58.20.294 OptionStreamDependsE as CURLSMBS

Notes: (Read and Write property)
See also STREAM_DEPENDS_E option in CURL manual.

58.20.295 OptionStreamWeight as Integer

Notes:
58.20. **CLASS CURLSMBS**  

Default is 16.  
(Read and Write property)  
See also **STREAM_WEIGHT** option in CURL manual.

### 58.20.296 OptionSuppressConnectHeaders as Boolean

**Function:** Suppress proxy CONNECT response headers from user callbacks.  
**Notes:** (Read and Write property)  
See also **SUPPRESS_CONNECT_HEADERS** option in CURL manual.

### 58.20.297 OptionTCPFastOpen as Integer

**Function:** Set TCP Fast Open.  
**Notes:** (Read and Write property)  
See also **TCP_FASTOPEN** option in CURL manual.

### 58.20.298 OptionTCPKeepAlive as Boolean

**Function:** If set to true, TCP keepalive probes will be sent.  
**Notes:**  
The delay and frequency of these probes can be controlled by the OptionTCPKeepIdle and OptionTCPKeepInterval options, provided the operating system supports them. Set to false (default behavior) to disable keepalive probes (Added in 7.25.0).  
(Read and Write property)  
See also **TCP_KEEPALIVE** option in CURL manual.

### 58.20.299 OptionTCPKeepIdle as Integer

**Function:** Sets the delay, in seconds, that the operating system will wait while the connection is idle before sending keepalive probes.  
**Notes:**  
Not all operating systems support this option. (Added in 7.25.0)  
(Read and Write property)  
See also **TCP_KEEPIDLE** option in CURL manual.
CHAPTER 58. CURL

58.20.300 OptionTCPKeepInterval as Integer

MBS CURL Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the interval, in seconds, that the operating system will wait between sending keepalive probes.

**Notes:**
Not all operating systems support this option. (Added in 7.25.0)
(Read and Write property)
See also TCP_KEEPINTVL option in CURL manual.

58.20.301 OptionTCPNoDelay as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An integer specifying whether the TCP_NODELAY option should be set or cleared (true = set, false = clear).

**Notes:**
The option is cleared by default. This will have no effect after the connection has been established.

Setting this option will disable TCP’s Nagle algorithm. The purpose of this algorithm is to try to minimize the number of small packets on the network (where "small packets" means TCP segments less than the Maximum Segment Size (MSS) for the network).

Maximizing the amount of data sent per TCP segment is good because it amortizes the overhead of the send. However, in some cases (most notably telnet or rlogin) small segments may need to be sent without delay. This is less efficient than sending larger amounts of data at a time, and can contribute to congestion on the network if overdone.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also TCP_NODELAY option in CURL manual.

58.20.302 OptionTFTPBlockSize as Integer

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Specify block size to use for TFTP data transmission.

**Notes:**
Valid range as per RFC 2348 is 8-65464 bytes. The default of 512 bytes will be used if this option is not specified. The specified block size will only be used pending support by the remote server. If the server does not return an option acknowledgement or returns an option acknowledgement with no blksize, the default of 512 bytes will be used. (added in 7.19.4)
58.20. **CLASS CURLSMBS**

(Read and Write property)
See also **TFTP_BLKSIZE** option in CURL manual.

### 58.20.303 OptionTFTPNoOptions as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether not send any tftp option requests to the server. **Notes:** (Read and Write property) See also **TFTP_NO_OPTIONS** option in CURL manual.

### 58.20.304 OptionTimeCondition as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The Time condition option. **Notes:**

This defines how the OptionTimeValue time value is treated. You can set this parameter to kTimeConditionIfModifiedSince (1) or kTimeConditionIfUnModifiedSince (2). This feature applies to HTTP and FTP.

The last modification time of a file is not always known and in such instances this feature will have no effect even if the given time condition would have not been met.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value. (Read and Write property) See also **TIMECONDITION** option in CURL manual.

### 58.20.305 OptionTimeOut as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The maximum time in seconds that you allow the libCURL transfer operation to take. **Notes:**

Normally, name lookups can take a considerable time and limiting operations to less than a few minutes risk aborting perfectly normal operations. This option will cause CURL to use the SIGALRM to enable time-outing system calls.

In unix-like systems, this might cause signals to be used unless CURLOPT_NOSIGNAL is set.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also TIMEOUT option in CURL manual.

58.20.306 OptionTimeOutMS as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Pass a long as parameter containing the maximum time in milli seconds that you allow the libCURL transfer operation to take.
**Notes:**
Normally, name lookups can take a considerable time and limiting operations to less than a few minutes risk aborting perfectly normal operations. This option will cause CURL to use the SIGALRM to enable time-outing system calls.
(Read and Write property)
See also TIMEOUT_MS option in CURL manual.

58.20.307 OptionTimeValue as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This should be the time in seconds since 1 jan 1970, and the time will be used in a condition as specified with OptionTimeCondition.
**Notes:**
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also TIMEVALUE option in CURL manual.

58.20.308 OptionTLSAuthPassword as String

MBS CURL Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the TSL authentication password.
**Notes:**
Please also set OptionTLSAuthType.
The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also TLSAUTH_PASSWORD option in CURL manual.
58.20.309  OptionTLSAuthType as String

MBS CURL Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the TLS authentication type.

**Notes:**
- You can set this to "SRP" to use Secure Remote Password authentication.
- Please also set username and password.
- The Lasterror property is set. 0 for success.
- You can set this value and later you can read it, but you cannot read the default value.
  (Read and Write property)
- See also **TLSAUTH_TYPE** option in CURL manual.

58.20.310  OptionTLSAuthUsername as String

MBS CURL Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the TSL authentication user name.

**Notes:**
- Please also set OptionTLSAuthType.
- The Lasterror property is set. 0 for success.
- You can set this value and later you can read it, but you cannot read the default value.
  (Read and Write property)
- See also **TLSAUTH_USERNAME** option in CURL manual.

58.20.311  OptionTransferEncoding as Boolean

MBS CURL Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Adds a request for compressed Transfer Encoding in the outgoing HTTP request.

**Notes:**
- If the server supports this and so desires, it can respond with the HTTP response sent using a compressed
  Transfer-Encoding that will be automatically uncompressed by libCURL on reception.

- Transfer-Encoding differs slightly from the Content-Encoding you ask for with OptionAcceptEncoding in
  that a Transfer-Encoding is strictly meant to be for the transfer and thus MUST be decoded before the
  data arrives in the client. Traditionally, Transfer-Encoding has been much less used and supported by both
  HTTP clients and HTTP servers.
  (Read and Write property)
- See also **TRANSFER_ENCODING** option in CURL manual.
58.20.312  OptionTransferText as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True tells the library to use ASCII mode for ftp transfers, instead of the default binary transfer. **Notes:**

For win32 systems it does not set the stdout to binary mode. This option can be usable when transferring text data between systems with different views on certain characters, such as newlines or similar.

libCURL does not do a complete ASCII conversion when doing ASCII transfers over FTP. This is a known limitation/flaw that nobody has rectified. libCURL simply sets the mode to ascii and performs a standard transfer.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value. (Read and Write property)
See also TRANSFERTEXT option in CURL manual.

58.20.313  OptionUnixSocketPath as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Path to Unix domain socket. **Notes:** (Read and Write property)
See also UNIX_SOCKET_PATH option in CURL manual.

58.20.314  OptionUnrestrictedAuth as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A boolean parameter tells the library it can continue to send authentication (user+password) when following locations, even when hostname changed. **Notes:**

This option is meaningful only when setting FollowOption.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value. (Read and Write property)
See also UNRESTRICTED_AUTH option in CURL manual.
58.20. **CLASS CURLSMBS**

### 58.20.315 OptionUpload as Boolean

**MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:**

True tells the library to prepare for an upload.

**Notes:**

The OptionInFileSize or OptionInFileSizeLarge options are also interesting for uploads. If the protocol is HTTP, uploading means using the PUT request unless you tell libCURL otherwise.

Using PUT with HTTP 1.1 implies the use of a "Expect: 100-continue" header. You can disable this header with OptionHTTPHeader as usual.

If you use PUT to a HTTP 1.1 server, you can upload data without knowing the size before starting the transfer if you use chunked encoding. You enable this by adding a header like "Transfer-Encoding: chunked" with OptionHTTPHeader. With HTTP 1.0 or without chunked transfer, you must specify the size.

The Lasterror property is set. 0 for success.

You can set this value and later you can read it, but you cannot read the default value.

(Read and Write property)

See also **UPLOAD** option in CURL manual.

### 58.20.316 OptionURL as String

**MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:**

The actual URL to deal with.

**Notes:**

If you need to pass username or password, please consider using the OptionUsername and OptionPassword properties. If you username or password contains characters like @ or :, you must use those properties.

The Lasterror property is set. 0 for success.

You can set this value and later you can read it, but you cannot read the default value.

The parameter should be a char * to a zero terminated string. The string must remain present until CURL no longer needs it, as it doesn’t copy the string.

If the given URL lacks the protocol part ("http://" or "ftp://" etc), it will attempt to guess which protocol to use based on the given host name. If the given protocol of the set URL is not supported, libCURL will return on error (kError_UNSUPPORTED_PROTOCOL) when you call Perform. Use VersionInfo for detailed info on which protocols that are supported.

The string given to CURLOPT_URL must be url-encoded and following the RFC 2396:
CURLOPT_URL is the only option that must be set before Perform is called.
For file uploads or downloads, please include the file name in the URL.

Please do never include username and passwords in URLs, as those get often written to log files and would reveal your credentials!
Instead use OptionUsername and OptionPassword.
(Read and Write property)
See also URL option in CURL manual.

58.20.317 OptionUserAgent as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The user agent string to pass to the server.
**Notes:**
It will be used to set the User-Agent: header in the http request sent to the remote server. This can be used to fool servers or scripts. You can also set any custom header with OptionHTTPHeader.

The Lasterror property is set. 0 for success.
You can set this value and later you can read it, but you cannot read the default value.
(Read and Write property)
See also USERAGENT option in CURL manual.

58.20.318 OptionUsername as String

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The user name to be used in protocol authentication
**Notes:**
In order to specify the password to be used in conjunction with the user name use the OptionPassword option
(Read and Write property)
See also USERNAME option in CURL manual.

58.20.319 OptionUseSSL as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Request using SSL / TLS for the transfer.
**Notes:**
Set to an integer using one of the values from below, to make libCURL use your desired level of SSL for the transfer.
These are all protocols that start out plain text and get "upgraded" to SSL using the STARTTLS command. This is for enabling SSL/TLS when you use FTP, SMTP, POP3, IMAP etc.

```
CURLUSESSL_NONE 0  Don't attempt to use SSL.
CURLUSESSL_TRY 1  Try using SSL, proceed as normal otherwise.
CURLUSESSL_CONTROL 2  Require SSL for the control connection or fail with CURLE_USE_SSL_FAILED.
CURLUSESSL_ALL 3  Require SSL for all communication or fail with CURLE_USE_SSL_FAILED.
```

(Read and Write property)
See also USE_SSL option in CURL manual.

---

**58.20.320 OptionVerbose as Boolean**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether debug messages are sent to the DebugMessage event.

**Notes:**
- Default is false.
- You need to subclass the CURLSMBS class to add code in the DebugMessage event.
- Or you set CollectDebugData = true and later query DebugData property.
- Or you use CreateMTDebugOutputFile to stream them to a file.

(Read and Write property)
See also VERBOSE option in CURL manual.

---

**58.20.321 OptionWildCardMatch as Boolean**

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Enable wildcard matching.

**Notes:**
- Set onoff to true if you want to transfer multiple files according to a file name pattern. The pattern can be specified as part of the OptionURL option, using an fnmatch-like pattern (Shell Pattern Matching) in the last part of URL (file name).

By default, libCURL uses its internal wildcard matching implementation. You can provide your own matching function by the CURLSMBS.FileNameMatch event.

A brief introduction of its syntax follows:
ftp://example.com/some/path/*.{txt} (for all txt’s from the root directory)

? - QUESTION MARK

Question mark matches any (exactly one) character.

ftp://example.com/some/path/photo?.jpeg

[ - BRACKET EXPRESSION

The left bracket opens a bracket expression. The question mark and asterisk have no special meaning in a bracket expression. Each bracket expression ends by the right bracket and matches exactly one character. Some examples follow:

[ a-zA-Z0-9 ] or [ f-gF-G ] - character interval
[ abc ] - character enumeration
[ ^abc ] or [ !abc ] - negation
[ [ :name: ] ] class expression. Supported classes are alnum, lower, space, alpha, digit, print, upper, blank, graph, xdigit,
[ ] [ -!^] - special case - matches only ‘-’, ‘!’ or ‘^’. These characters have no special purpose.
[ \[ \] \] ] - escape syntax. Matches ‘ [’, ‘ ]’ or ‘\’.

Using the rules above, a file name pattern can be constructed:


This feature is only supported for FTP download. Not for SFTP or HTTP.
(Read and Write property)
See also WILDCARDMATCH option in CURL manual.

58.20.322 OptionXOAuth2Bearer as String

Notes: (Read and Write property)
See also XOAUTH2_BEARER option in CURL manual.
58.20.323  **OutputData as String**

MBS CURL Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The output data from CURL.

**Notes:**

If CollectOutputData property is true, the plugin puts the data received in write event also into this property, so you can grab it after the transfer. Use ClearData method to clear when reusing CURL object.

(Read only property)

58.20.324  **Paused as Boolean**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether transfer is paused.

**Notes:**

You can set it to true while transfer runs to pause it.

(Read and Write property)

58.20.325  **ProgressDownloadCurrent as Int64**

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Bytes downloaded so far.

**Notes:** (Read only property)

58.20.326  **ProgressDownloadTotal as Int64**

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Bytes to download in total.

**Notes:** (Read only property)

58.20.327  **ProgressPercent as Double**

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Current download/upload progress in percent.

**Notes:**

Range from 0 to 100.

(Read only property)
58.20.328  ProgressUploadCurrent as Int64

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Bytes uploaded so far.
**Notes:** (Read only property)

58.20.329  ProgressUploadTotal as Int64

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Bytes to upload in total.
**Notes:** (Read only property)

58.20.330  Version as CURLSVersionMBS

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns a version object to a filled with information about various run-time features in libCURL.
**Notes:** (Read only property)

58.20.331  YieldTime as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether plugin should yield time.
**Notes:**
If set the plugin will yield time to Realbasic back so threads and timers work while you download.
Seems like in RB 2009 this property only has effect if you run CURL in a thread.
(Read and Write property)

58.20.332  Events

58.20.333  ChunkBegin(FileInfo as CURLSFileInfoMBS, Remains as Integer) as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The event called on begin of a new chunk.
**Notes:** If splitting of data transfer is enabled, this callback is called before download of an individual chunk started. Note that parameter "remains" works only for FTP wildcard downloading (for now), otherwise is
not used.

58.20.334 ChunkEnd(FileInfo as CURLSFileInfoMBS, Remains as Integer) as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Download of a chunk ended.
**Notes:**
If splitting of data transfer is enabled this callback is called after download of an individual chunk finished. This event is called for skipped or downloaded files.

58.20.335 DebugMessage(infotype as Integer, data as string, dataSize as Integer)

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A debug event to get data of ongoing process.
**Notes:**
You may need to set OptionVerbose to true.

infotype constants:

<table>
<thead>
<tr>
<th>infotype</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kInfo_TEXT</td>
<td>0</td>
<td>The data is informational text.</td>
</tr>
<tr>
<td>kInfo_HEADER_IN</td>
<td>1</td>
<td>The data is header (or header-like) data received from the peer.</td>
</tr>
<tr>
<td>kInfo_HEADER_OUT</td>
<td>2</td>
<td>The data is header (or header-like) data sent to the peer.</td>
</tr>
<tr>
<td>kInfo_DATA_IN</td>
<td>3</td>
<td>The data is protocol data received from the peer.</td>
</tr>
<tr>
<td>kInfo_DATA_OUT</td>
<td>4</td>
<td>The data is protocol data sent to the peer.</td>
</tr>
<tr>
<td>kInfo_SSL_DATA_IN</td>
<td>5</td>
<td>The data is protocol data received from the peer.</td>
</tr>
<tr>
<td>kInfo_SSL_DATA_OUT</td>
<td>6</td>
<td>The data is protocol data sent to the peer.</td>
</tr>
</tbody>
</table>

If you set CollectDebugData, the plugin will collect the messages and provide them via the DebugData property. You can still use this event to write your own log instead of in addition.

58.20.336 FileNameMatch(Pattern as String, Name as String) as Integer

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Match a file against a pattern.
**Notes:**
If you don’t implement this event, you get the default implementation from CURL. Return kFileNameMatchNoMatch, kFileNameMatchIsMatch or kFileNameMatchFailed.

58.20.337 Finished(Result as Integer)

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: The event called when transfer has finished. Notes: For Perform and PerformMT it is called before Perform function returns, so in PerformMT this is called on the thread. For use with CURLSMultiMBS, it is called after TransferFinished event and before TransfersFinished event. If you want to modify GUI and use PeformMT, you may need to start a timer to do so.

58.20.338 Header(data as string, dataSize as Integer) as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: New Header data was received. Notes: You can get error 23 if you don’t return lenb(data) in this event. Or just leave it empty so RB will not include it in your application the plugin will return lenb(data) itself. If you set CollectHeaderData to true, the plugin will collect the messages and provide them via the Header-Data property. You can still use this event to write your own log instead of in addition.

58.20.339 Progress(dltotal as Int64, dlnow as Int64, ultotal as Int64, ulnow as Int64, percent as Double) as boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: An event to report progress of ongoing transfers. Notes: This function gets called by libCURL with a frequent interval during operation (roughly once per second) no matter if data is being transferred or not. Unknown/unused argument values passed to the callback will be set to zero (like if you only download data, the upload size will remain 0). Returning a true from this event will cause libCURL to abort the transfer and return kError_ABORTED_BY_CALLBACK. You can run CURL from a thread to download several things at the same time or keep the GUI more responsive. For better GUI, you can even call a method like app.DoEvents to get the GUI updated more often.
When sending email, ultotal may be zero. In that case use OptionInFileSize to know size of email to upload.

**58.20.340 Read(count as Integer) as string**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

This event gets called by libCURL as soon as it needs to read data in order to send it to the peer.

**Notes:**

Return the number of bytes requested. Never return a string with lenb(string) > count. You can return 0 to inform about end of file.

If you stop the current transfer by returning 0 “pre-maturely” (i.e before the server expected it, like when you’ve told you will upload N bytes and you upload less than N bytes), you may experience that the server “hangs” waiting for the rest of the data that won’t come.

The read event may return CURL_READFUNC_ABORT (& h10000000) to stop the current operation immediately, resulting in a kError_ABORTED_BY_CALLBACK error code from the transfer (Added in 7.12.1)

This event is not called when using PerformMT.

If you provide Input data via SetInputData or OpenMTInputFile method, this event is not called and data is taken from the data you provided.

**58.20.341 RestartRead() as boolean**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

An event to inform you that reading on the file needs to start at the beginning again.

**Notes:**

Return true on success.

If you use a binarystream for reading you will have to set position to 0 in this event.

This event is not called when using PerformMT.

**58.20.342 Seek(pos as Int64, whence as Integer) as Integer**

MBS CURL Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Called when CURL needs to perform a seek.

**Notes:**
Normally only needed if you resume a download (Seek forward) or upload is reset (seek back).
Whence is kSeekOriginCurrent, kSeekOriginEnd or kSeekOriginSet.
Please return one of this constants: kSeekReturnCantSeek, kSeekReturnFail or kSeekReturnOk.

58.20.343 \texttt{SSHKey(KnownKey as string, KnownKeyLength as Integer, KnownKeyType as Integer, FoundKey as string, FoundKeyLength as Integer, FoundKeyType as Integer, MatchStatus as Integer) as Integer}

MBS CURL Plugin, Plugin Version: 10.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The event for known hosts callback for SFTP and SCP.
**Notes:**
- **KnownKey:** The known key as string encoded with base64 if KnownKeyLength is zero, otherwise the "raw" data.
- **KnownKeyLength:** The length of the key. Zero for base64 encoded key.
- **KnownKeyType:** The type of the key. (0 = Unknown, 1 = RSA1, 2 = RSA, 3 = DSS)
- **FoundKey:** The found key as string encoded with base64 if FoundKeyLength is zero, otherwise the "raw" data.
- **FoundKeyLength:** The length of the key. Zero for base64 encoded key.
- **FoundKeyType:** The type of the key. (0 = Unknown, 1 = RSA1, 2 = RSA, 3 = DSS)
- **MatchStatus:** The status CURL found. (0 = OK, 1 = Mismatch, 2 = Missing)

Return one of the following values:

- \texttt{CURLKHSTAT_FINE_ADD_TO_FILE} 0 Fine and add to file
- \texttt{CURLKHSTAT_FINE} 1 Fine
- \texttt{CURLKHSTAT_REJECT} 2 reject the connection, return an error
- \texttt{CURLKHSTAT_DEFER} 3 do not accept it, but we can’t answer right now so this causes a CURLE_DEFER error but otherwise the connection will be left intact etc

58.20.344 \texttt{Write(data as string, dataSize as Integer) as Integer}

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This event gets called by libCURL as soon as there is data received that needs to be saved.
**Notes:**
Return the number of bytes actually taken care of. If that amount differs from the amount passed to your function, it’ll signal an error to the library and it will abort the transfer and return kError_WRITE_ERROR.

This function may be called with zero bytes data if the transferred file is empty.

The event function will be passed as much data as possible in all invokes, but you cannot possibly make any
assumptions. It may be one byte, it may be thousands. The maximum amount of data that can be passed to the write callback is defined in the CURL.h header file: CURL_MAX_WRITE_SIZE (16384).

If you set CollectOutputData to true, the plugin will automatically collect the data and provide it to you after the transfer with the OutputData property. This collecting feature will only work right, if there is enough free memory. You can of course still process data yourself in this event instead of in addition.

58.20.345 Constants

58.20.346 kAUTH_ANY = & hFFFFFFFEEF

Notes: all types set

58.20.347 kAUTH_ANYSAFE = & hFFFFFFFEF


58.20.348 kAUTH_BASIC = 1

Notes: Basic (default)

58.20.349 kAUTH_DIGEST = 2

Notes: Digest

58.20.350 kAUTH_DIGEST_IE = 16

MBS CURL Plugin, Plugin Version: 15.2. Function: One of the authentication constants for the Option-HTTPAuth property.
Notes: HTTP Digest authentication with an IE flavor. Digest authentication is defined in RFC 2617 and is
a more secure way to do authentication over public networks than the regular old-fashioned Basic method. The IE flavor is simply that libCURL will use a special "quirk" that IE is known to have used before version 7 and that some servers require the client to use.

58.20.351  kAUTH_GSSNEGOTIATE = 4

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the authentication constants for the Option-HTTPAuth property.

**Notes:**

GSS-Negotiate

Please check SupportsGSSNEGOTIATE property in CURLSVersionMBS class whether this is supported/implemented by your copy of the CURL library.

58.20.352  kAUTH_NEGOTIATE = 4

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the authentication constants for the Option-HTTPAuth property.

**Notes:**

HTTP Negotiate (SPNEGO) authentication. Negotiate authentication is defined in RFC 4559 and is the most secure way to perform authentication over HTTP.

You need to build libCURL with a suitable GSS-API library or SSPI on Windows for this to work.

58.20.353  kAUTH_NONE = 0

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the authentication constants for the Option-HTTPAuth property.

58.20.354  kAUTH_NTLM = 8

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the authentication constants for the Option-HTTPAuth property.
58.20. **CLASS CURLSMBS**

58.20.355  **kAUTH_NTLM_WB = 32**

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the authentication constants for the Option-HTTPAuth property.

**Notes:**

NTLM delegating to winbind helper. Authentication is performed by a separate binary application that is executed when needed. The name of the application is specified at compile time but is typically /usr/bin/ntlm_auth

Note that libCURL will fork when necessary to run the winbind application and kill it when complete, calling waitpid() to await its exit when done. On POSIX operating systems, killing the process will cause a SIGCHLD signal to be raised (regardless of whether OptionNoSignal is set), which must be handled intelligently by the application. In particular, the application must not unconditionally call wait() in its SIGCHLD signal handler to avoid being subject to a race condition. This behavior is subject to change in future versions of libCURL.

58.20.356  **kAUTH_Only = & h80000000**

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the authentication constants for the Option-HTTPAuth property.

**Notes:** This is a meta symbol. OR this value together with a single specific auth value to force libCURL to probe for un-restricted auth and if not, only that single auth algorithm is acceptable.

58.20.357  **kChunkBeginFailed = 1**

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the result values for the ChunkBegin event.

**Notes:** Failed, so we exit downloads.

58.20.358  **kChunkBeginOK = 0**

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the result values for the ChunkBegin event.

**Notes:** OK, download this file.

58.20.359  **kChunkBeginSkip = 2**

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the result values for the ChunkBegin event.

**Notes:** Skip the file.
58.20.360  kChunkEndFailed = 1

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the result values for the ChunkEnd event. **Notes:** Failed, so we exit downloads.

58.20.361  kChunkEndOK = 0

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the result values for the ChunkEnd event. **Notes:** Download success.

58.20.362  kError_ABORTED_BY_CALLBACK = 42

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.20.363  kError AGAIN = 81

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** socket is not ready for send/recv, wait till it’s ready and try again (Added in CURL 7.18.2)

58.20.364  kError_BAD_CONTENT_ENCODING = 61

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** Unrecognized transfer encoding

58.20.365  kError_BAD_DOWNLOAD_RESUME = 36

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** couldn’t resume download

58.20.366  kError_BAD_FUNCTION_ARGUMENT = 43

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.
58.20. CLASS CURLSMBS

58.20.367  kError_CHUNK_FAILED = 88

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** Chunk callback reported error.

58.20.368  kError_CONV_FAILED = 75

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** Conversion failed.

58.20.369  kError_CONV_REQD = 76

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** Not used with plugin.

58.20.370  kError_COULDN'T_CONNECT = 7

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** Could not connect. Proxy set? Firewall open?

58.20.371  kError_COULDN'T_RESOLVE_HOST = 6

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.20.372  kError_COULDN'T_RESOLVE_PROXY = 5

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.20.373  kError_FAILED_INIT = 2

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.
58.20.374 \text{ kError_FILESIZE_EXCEEDED} = 63

MBS CURL Plugin, Plugin Version: 9.8. \textbf{Function:} One of the error constants for the Error event.  
\textbf{Notes:} Maximum file size exceeded

58.20.375 \text{ kError_FILE_COULDNT_READ_FILE} = 37

MBS CURL Plugin, Plugin Version: 9.8. \textbf{Function:} One of the error constants for the Error event.

58.20.376 \text{ kError_FTP_ACCEPT_FAILED} = 10

MBS CURL Plugin, Plugin Version: 15.2. \textbf{Function:} One of the error constants for the Error event.  
\textbf{Notes:} While waiting for the server to connect back when an active FTP session is used, an error code was sent over the control connection or similar.

58.20.377 \text{ kError_FTP_ACCEPT_TIMEOUT} = 12

MBS CURL Plugin, Plugin Version: 15.2. \textbf{Function:} One of the error constants for the Error event.  
\textbf{Notes:} During an active FTP session while waiting for the server to connect, the OptionAcceptTimeoutMS (or the internal default) timeout expired.

58.20.378 \text{ kError_FTP_BAD_FILE_LIST} = 87

MBS CURL Plugin, Plugin Version: 11.2. \textbf{Function:} One of the error constants for the Error event.  
\textbf{Notes:} Unable to parse FTP file list.

58.20.379 \text{ kError_FTP_CANT_GET_HOST} = 15

MBS CURL Plugin, Plugin Version: 9.8. \textbf{Function:} One of the error constants for the Error event.

58.20.380 \text{ kError_FTP_COULDNT_RETR_FILE} = 19

MBS CURL Plugin, Plugin Version: 9.8. \textbf{Function:} One of the error constants for the Error event.
58.20.381 kError_FTP_COULDN'T_SET_TYPE = 17

MBS CURL Plugin, Plugin Version: 11.2. Function: One of the error constants for the Error event.

58.20.382 kError_FTP_COULDN'T_USE_REST = 31

Notes: the REST command failed

58.20.383 kError_FTP_PORT_FAILED = 30

Notes: FTP PORT operation failed

58.20.384 kError_FTP_PRET_FAILED = 84

MBS CURL Plugin, Plugin Version: 11.2. Function: One of the error constants for the Error event.
Notes: a PRET command failed

58.20.385 kError_FTP_WEIRD_227_FORMAT = 14


58.20.386 kError_FTP_WEIRD_PASS_REPLY = 11


58.20.387 kError_FTP_WEIRD_PASV_REPLY = 13

58.20.388  kError_FTP_WEIRD_SERVER_REPLY = 8


58.20.389  kError_FUNCTION_NOT_FOUND = 41


58.20.390  kError_GOT NOTHING = 52

MBS CURL Plugin, Plugin Version: 9.8. Function: One of the error constants for the Error event. Notes: when this is a specific error

58.20.391  kError_HTTP2 = 16

MBS CURL Plugin, Plugin Version: 15.2. Function: One of the error constants for the Error event. Notes: A problem was detected in the HTTP2 framing layer. This is somewhat generic and can be one out of several problems, see the error buffer for details.

58.20.392  kError_HTTP2_STREAM = 92

MBS CURL Plugin, Plugin Version: 18.2. Function: One of the error constants for the Error event. Notes: stream error in HTTP/2 framing layer

58.20.393  kError_HTTP_POST_ERROR = 34


58.20.394  kError_HTTP_RETURNED_ERROR = 22

58.20.395  kError_INTERFACE_FAILED = 45
MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.20.396  kError_LDAP_CANNOT_BIND = 38
MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.20.397  kError_LDAP_INVALID_URL = 62
MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** Invalid LDAP URL

58.20.398  kError_LDAP_SEARCH_FAILED = 39
MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.20.399  kError_LOGIN_DENIED = 67
MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** user, password or similar was not accepted and we failed to login

58.20.400  kError_NOT_BUILT_IN = 4
MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the error constants for the Error event. **Notes:** A requested feature, protocol or option was not found built-in in this libCURL due to a build-time decision. This means that a feature or option was not enabled or explicitly disabled when libCURL was built and in order to get it to function you have to get a rebuilt libCURL.

58.20.401  kError_NO_CONNECTION_AVAILABLE = 89
MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the error constants for the Error event. **Notes:**
For internal use only, will never be returned by libCURL.
No connection available, the session will be queued. (added in 7.30.0)

58.20.402 kError_OK = 0

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.20.403 kError_OPERATION_TIMEDOUT = 28

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event.

58.20.404 kError_OUT_OF_MEMORY = 27

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.20.405 kError_PARTIAL_FILE = 18

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.20.406 kError_PEER_FAILED_VERIFICATION = 51

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event.

58.20.407 kError_QUOTE_ERROR = 21

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event.

58.20.408 kError_RANGE_ERROR = 33

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event.
58.20. CLASS CURLSMBS

58.20.409  kError_READ_ERROR = 26

MBS CURL Plugin, Plugin Version: 9.8. Function: One of the error constants for the Error event. Notes: could open/read from file

58.20.410  kError_RECURSIVE_API_CALL = 93

MBS CURL Plugin, Plugin Version: 18.2. Function: One of the error constants for the Error event. Notes: an api function was called from inside a callback/event.

58.20.411  kError_RECV_ERROR = 56


58.20.412  kErrorREMOTE_ACCESS_DENIED = 9

MBS CURL Plugin, Plugin Version: 11.2. Function: One of the error constants for the Error event.

58.20.413  kError_REMOTE_DISK_FULL = 70

MBS CURL Plugin, Plugin Version: 11.2. Function: One of the error constants for the Error event. Notes: Out of disk space on server.

58.20.414  kError_REMOTE_FILE_EXISTS = 73


58.20.415  kError_REMOTE_FILE_NOT_FOUND = 78

MBS CURL Plugin, Plugin Version: 11.2. Function: One of the error constants for the Error event. Notes: Remote file not found.
58.20.416 kError_RTSP_CSEQ_ERROR = 85

MBS CURL Plugin, Plugin Version: 11.2. Function: One of the error constants for the Error event.
Notes: Mismatch of RTSP CSeq numbers.

58.20.417 kError_RTSP_SESSION_ERROR = 86

MBS CURL Plugin, Plugin Version: 11.2. Function: One of the error constants for the Error event.
Notes: mismatch of RTSP Session Identifiers

58.20.418 kError_SEND_ERROR = 55

Notes: failed sending network data

58.20.419 kError_SEND_FAIL_REWIND = 65

Notes: Sending the data requires a rewind that failed

58.20.420 kError_SSH = 79

MBS CURL Plugin, Plugin Version: 11.2. Function: One of the error constants for the Error event.
Notes: Error from the SSH layer, somewhat generic so the error message will be of interest when this has happened.

58.20.421 kError_SSL_CACERT = 60

Notes:
problem with the CA cert (path?)

You can often workaround by setting OptionSSLVerifyPeer = 0 and OptionSSLVerifyHost = 0. But that reduces security.
kError_SSL_CACERT_BADFILE = 77

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** Could not load CACERT file, missing or wrong format.

kError_SSL_CERTPROBLEM = 58

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** problem with the local certificate

kError_SSL_CIPHER = 59

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** couldn’t use specified cipher

kError_SSL_CONNECT_ERROR = 35

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** wrong when connecting with SSL

kError_SSL_CRL_BADFILE = 82

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** Could not load CRL file, missing or wrong format (Added in 7.19.0)

kError_SSL_ENGINE_INITFAILED = 66

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** failed to initialise ENGINE

kError_SSL_ENGINE_NOTFOUND = 53

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** SSL crypto engine not found
58.20.429 kError_SSL_ENGINE_SETFAILED = 54

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** can not set SSL crypto engine as default

58.20.430 kError_SSL_INVALIDCERTSTATUS = 91

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the error constants for the Error event. **Notes:** invalid certificate status

58.20.431 kError_SSL_ISSUER_ERROR = 83

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** Issuer check failed. (Added in CURL 7.19.0)

58.20.432 kError_SSL_PINNEDPUBKEYNOTMATCH = 90

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the error constants for the Error event. **Notes:** specified pinned public key did not match.

58.20.433 kError_SSL_SHUTDOWN_FAILED = 80

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** Failed to shut down the SSL connection.

58.20.434 kError_TELNET_OPTION_SYNTAX = 49

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** Malformed telnet option

See also:

- 58.20.435 kError_TELNET_OPTION_SYNTAX = 49

58.20.435 kError_TELNET_OPTION_SYNTAX = 49

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** Malformed telnet option

See also:
58.20. CLASS CURLSMBS

- 58.20.434 kError_TELNET_OPTION_SYNTAX = 49

58.20.436 kError_TFTP_ILLEGAL = 71

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** Illegal TFTP operation.

58.20.437 kError_TFTP_NOSUCHUSER = 74

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** No such user.

58.20.438 kError_TFTP_NOTFOUND = 68

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** File not found on server.

58.20.439 kError_TFTP_PERM = 69

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** Permission problem on server.

58.20.440 kError_TFTP_UNKNOWNID = 72

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** Unknown transfer ID.

58.20.441 kError_TOO_MANY_REDIRECTS = 47

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** catch endless re-direct loops.
58.20.442  kError_UNKnown_TELNET_OPTION = 48

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event. **Notes:** User specified an unknown option

58.20.443  kError_UNSUPPORTED_PROTOCOL = 1

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.20.444  kError_UPLOAD_FAILED = 25

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event.

58.20.445  kError_URL_MALFORMAT = 3

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.20.446  kError_USE_SSL_FAILED = 64

MBS CURL Plugin, Plugin Version: 11.2. **Function:** One of the error constants for the Error event. **Notes:** Requested FTP SSL level failed

58.20.447  kError_WRITE_ERROR = 23

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the error constants for the Error event.

58.20.448  kFileNameMatchFailed = 2

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the possible return values for FileNameMatch event. **Notes:** Failed.
58.20. CLASS CURLSMBS

58.20.449 kFileNameMatchIsMatch = 0

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the possible return values for FileNameMatch event.
**Notes:** Is Match.

58.20.450 kFileNameMatchNoMatch = 1

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the possible return values for FileNameMatch event.
**Notes:** No match.

58.20.451 kFormArray = 8

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.20.452 kFormBuffer = 11

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.20.453 kFormBufferLength = 13

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.20.454 kFormBufferPtr = 12

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.20.455 kFormContentHeader = 15

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.
58.20.456 \textit{kFormContentsLength} = 6
MBS CURL Plugin, Plugin Version: 14.3. \textbf{Function}: One of the form constants.

58.20.457 \textit{kFormContentType} = 14
MBS CURL Plugin, Plugin Version: 14.3. \textbf{Function}: One of the form constants.

58.20.458 \textit{kFormCopyContents} = 4
MBS CURL Plugin, Plugin Version: 14.3. \textbf{Function}: One of the form constants.

58.20.459 \textit{kFormCopyName} = 1
MBS CURL Plugin, Plugin Version: 14.3. \textbf{Function}: One of the form constants.

58.20.460 \textit{kFormEnd} = 17
MBS CURL Plugin, Plugin Version: 14.3. \textbf{Function}: One of the form constants.

58.20.461 \textit{kFormFile} = 10
MBS CURL Plugin, Plugin Version: 14.3. \textbf{Function}: One of the form constants.

58.20.462 \textit{kFormFileContent} = 7
MBS CURL Plugin, Plugin Version: 14.3. \textbf{Function}: One of the form constants.

58.20.463 \textit{kFormFilename} = 16
MBS CURL Plugin, Plugin Version: 14.3. \textbf{Function}: One of the form constants.
58.20. CLASS CURLSMBS

58.20.464  kFormNameLength = 3

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.20.465  kFormPtrContents = 5

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.20.466  kFormPtrName = 2

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the form constants.

58.20.467  kFTPAUTH_DEFAULT=0

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the FTP Authentication constants for the OptionFTPSSLAuth property.
**Notes:** Allow libCURL to decide

58.20.468  kFTPAUTH_SSL=1

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the FTP Authentication constants for the OptionFTPSSLAuth property.
**Notes:** Try "AUTH SSL" first, and only if that fails try "AUTH TLS"

58.20.469  kFTPAUTH_TLS=2

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the FTP Authentication constants for the OptionFTPSSLAuth property.
**Notes:** Try "AUTH TLS" first, and only if that fails try "AUTH SSL"

58.20.470  kFTPMethodDefault = 0

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the FTP CWD method.
**Notes:** let libcurl pick
58.20.471  kFTPMethodMultiCWD = 1

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the FTP CWD method.
**Notes:** single CWD operation for each path part

58.20.472  kFTPMethodNoCWD = 2

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the FTP CWD method.
**Notes:** no CWD at all

58.20.473  kFTPMethodSingleCWD = 3

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the FTP CWD method.
**Notes:** one CWD to full dir, then work on file

58.20.474  kFTPSSL_ALL=3

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the FTP SSL constants for the OptionFTPSSL property.
**Notes:** Require SSL for all communication or fail with kError_FTP_SSL_FAILED.

58.20.475  kFTPSSL_CONTROL=2

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the FTP SSL constants for the OptionFTPSSL property.
**Notes:** Require SSL for the control connection or fail with kError_FTP_SSL_FAILED.

58.20.476  kFTPSSL_NONE=0

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the FTP SSL constants for the OptionFTPSSL property.
**Notes:** Don’t attempt to use SSL.
58.20.477  kFTPSSL_TRY = 1

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the FTP SSL constants for the OptionFTPSSL property.
**Notes:** Try using SSL, proceed as normal otherwise.

58.20.478  kGSSAPIDelegationFlag = 2

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the GSS API delegation modes.
**Notes:** delegate always

58.20.479  kGSSAPIDelegationNone = 0

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the GSS API delegation modes.
**Notes:** no delegation (default)

58.20.480  kGSSAPIDelegationPolicyFlag = 1

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the GSS API delegation modes.
**Notes:** if permitted by policy

58.20.481  kHTTP_VERSION_1_0 = 1

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the HTTP Version constants for the OptionHTTPVersion property.
**Notes:** Enforce HTTP 1.0 requests.

58.20.482  kHTTP_VERSION_1_1 = 2

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the HTTP Version constants for the OptionHTTPVersion property.
**Notes:** Enforce HTTP 1.1 requests.
58.20.483  kHTTP_VERSION_2TLS = 4

MBS CURL Plugin, Plugin Version: 17.2. **Function:** One of the HTTP Version constants for the OptionHTTPVersion property.  
**Notes:** use version 2 for HTTPS, version 1.1 for HTTP

58.20.484  kHTTP_VERSION_2_0 = 3

MBS CURL Plugin, Plugin Version: 17.2. **Function:** One of the HTTP Version constants for the OptionHTTPVersion property.  
**Notes:** please use HTTP 2 in the request

58.20.485  kHTTP_VERSION_2_PRIOR_KNOWLEDGE = 5

MBS CURL Plugin, Plugin Version: 17.2. **Function:** One of the HTTP Version constants for the OptionHTTPVersion property.  
**Notes:** please use HTTP 2 without HTTP/1.1 Upgrade

58.20.486  kHTTP_VERSION_NONE = 0

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the HTTP Version constants for the OptionHTTPVersion property.  
**Notes:** We don’t care about what version the library uses. libCURL will use whatever it thinks fit.

58.20.487  kINFO_DATA_IN = 3

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the info constants for the DebugMessage event.  
**Notes:** The data is protocol data received from the peer.

58.20.488  kINFO_DATA_OUT = 4

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the info constants for the DebugMessage event.  
**Notes:** The data is protocol data sent to the peer.
58.20. **CLASS CURLSMBS**

58.20.489  **kINFO_HEADER_IN = 1**

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the info constants for the DebugMessage event. **Notes:** The data is header (or header-like) data received from the peer.

58.20.490  **kINFO_HEADER_OUT = 2**

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the info constants for the DebugMessage event. **Notes:** The data is header (or header-like) data sent to the peer.

58.20.491  **kINFO_SSL_DATA_IN = 5**

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the info constants for the DebugMessage event. **Notes:** The data is protocol data received from the peer.

58.20.492  **kINFO_SSL_DATA_OUT = 6**

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the info constants for the DebugMessage event. **Notes:** The data is protocol data sent to the peer.

58.20.493  **kINFO_TEXT = 0**

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the info constants for the DebugMessage event. **Notes:** The data is informational text.

58.20.494  **kIPRESOLVE_V4 = 1**

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the IP Resolve constants for the OptionIPResolve property. **Example:**

```vbnet
dim c as new CURLSMBS
c.OptionIPResolve = c.kIPRESOLVE_V4
```
58.20.495 \( \text{kIPRESOLVE}_V6 = 2 \)

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the IP Resolve constants for the OptionIPResolve property.

**Example:**

```plaintext
dim c as new CURLSMBS
c.OptionIPResolve = c.kIPRESOLVE_V6
```

58.20.496 \( \text{kIPRESOLVE\_WHATEVER}=0 \)

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the IP Resolve constants for the OptionIPResolve property.

**Example:**

```plaintext
dim c as new CURLSMBS
c.OptionIPResolve = c.kIPRESOLVE\_WHATEVER
```

58.20.497 \( \text{kNETRC\_IGNORED}=0 \)

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the NetRC constants for the OptionNetRC property.

**Notes:**

The .netrc will never be read.

This is the default.

58.20.498 \( \text{kNETRC\_OPTIONAL}=1 \)

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the NetRC constants for the OptionNetRC property.

**Notes:** A user:password in the URL will be preferred to one in the .netrc.

58.20.499 \( \text{kNETRC\_REQUIRED}=2 \)

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the NetRC constants for the OptionNetRC property.

**Notes:** A user:password in the URL will be ignored. Unless one is set programmatically, the .netrc will be
58.20.  CLASS CURLSMBS

queried.

58.20.500  kProtocolAll = -1

MBS CURL Plugin, Plugin Version: 10.0.  **Function**: One of the constants for the OptionRedirProtocols and the OptionProtocols properties.  
**Notes**: Enable all protocols.

58.20.501  kProtocolDICT = & h200

MBS CURL Plugin, Plugin Version: 10.0.  **Function**: One of the constants for the OptionRedirProtocols and the OptionProtocols properties.  
**Notes**: DICT

58.20.502  kProtocolFILE = & h400

MBS CURL Plugin, Plugin Version: 10.0.  **Function**: One of the constants for the OptionRedirProtocols and the OptionProtocols properties.  
**Notes**: File

58.20.503  kProtocolFTP = 4

MBS CURL Plugin, Plugin Version: 10.0.  **Function**: One of the constants for the OptionRedirProtocols and the OptionProtocols properties.  
**Notes**: FTP

58.20.504  kProtocolFTPS = 8

MBS CURL Plugin, Plugin Version: 10.0.  **Function**: One of the constants for the OptionRedirProtocols and the OptionProtocols properties.  
**Notes**: FTPS

58.20.505  kProtocolGopher = & h2000000

MBS CURL Plugin, Plugin Version: 18.2.  **Function**: One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
58.20.506 kProtocolHTTP = 1

MBS CURL Plugin, Plugin Version: 10.0. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.

Notes: HTTP

58.20.507 kProtocolHTTPS = 2

MBS CURL Plugin, Plugin Version: 10.0. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.

Notes: HTTPS

58.20.508 kProtocolIMAP = & h1000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.

Notes: IMAP

58.20.509 kProtocolIMAPS = & h2000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.

Notes: IMAPS

58.20.510 kProtocolLDAP = & h80

MBS CURL Plugin, Plugin Version: 10.0. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.

Notes: LDAP

58.20.511 kProtocolLDAPS = & h100

MBS CURL Plugin, Plugin Version: 10.0. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
58.20.512  kProtocolPOP3 = & h4000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** POP3

58.20.513  kProtocolPOP3S = & h8000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** POP3S

58.20.514  kProtocolRTMP = & h80000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** RTMP

58.20.515  kProtocolRTMPE = & h200000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** RTMPE

58.20.516  kProtocolRTMPS = & h800000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
**Notes:** RTMPS

58.20.517  kProtocolRTMPT = & h100000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
58.20.518  kProtocolRTMPTE = & h4000000

MBS CURL Plugin, Plugin Version: 18.2. Function: One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
Notes: RTMPTE

58.20.519  kProtocolRTMPTS = & h1000000

MBS CURL Plugin, Plugin Version: 18.2. Function: One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
Notes: RTMPTS

58.20.520  kProtocolRTSP = & h40000

MBS CURL Plugin, Plugin Version: 18.2. Function: One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
Notes: RTSP

58.20.521  kProtocolSCP = & h10

MBS CURL Plugin, Plugin Version: 10.0. Function: One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
Notes: SCP

58.20.522  kProtocolSFTP = & h20

MBS CURL Plugin, Plugin Version: 10.0. Function: One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
Notes: SFTP

58.20.523  kProtocolSMB = & h4000000

MBS CURL Plugin, Plugin Version: 18.2. Function: One of the constants for the OptionRedirProtocols and the OptionProtocols properties.
58.20.524  kProtocolSMBS = \& h8000000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.  
**Notes:** SMBS

58.20.525  kProtocolSMTP = \& h10000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.  
**Notes:** SMTP

58.20.526  kProtocolSMTPS = \& h20000

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.  
**Notes:** SMTPS

58.20.527  kProtocolTelnet = \& h40

MBS CURL Plugin, Plugin Version: 10.0. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.  
**Notes:** Telnet

58.20.528  kProtocolTFTP = \& h800

MBS CURL Plugin, Plugin Version: 10.0. **Function:** One of the constants for the OptionRedirProtocols and the OptionProtocols properties.  
**Notes:** TFTP

58.20.529  kPROXY_HTTP = 0

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the proxy constants for the OptionProxyType property.
58.20.530  kPROXY_HTTP10 = 1

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the proxy constants for the OptionProxyType property.
**Notes:** Force to use CONNECT HTTP/1.0.

58.20.531  kPROXY_HTTP11 = 0

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the proxy constants for the OptionProxyType property.
**Notes:** Connect using HTTP/1.1.

58.20.532  kPROXY_SOCKS4 = 4

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the proxy constants for the OptionProxyType property.

58.20.533  kPROXY_SOCKS4A = 6

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the proxy constants for the OptionProxyType property.
**Notes:** Using SOCKS 4A.

58.20.534  kPROXY_SOCKS5 = 5

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the proxy constants for the OptionProxyType property.

58.20.535  kPROXY_SOCKS5_Hostname = 7

MBS CURL Plugin, Plugin Version: 15.2. **Function:** One of the proxy constants for the OptionProxyType property.
**Notes:** Use the SOCKS5 protocol but pass along the host name rather than the IP address. added in 7.18.0
58.20.536  \textbf{kSeekOriginCurrent} = 1

MBS CURL Plugin, Plugin Version: 12.2. \textbf{Function}: One of the origin values for seek event. 
\textbf{Notes}: Seek relative to current file position.

58.20.537  \textbf{kSeekOriginEnd} = 2

MBS CURL Plugin, Plugin Version: 12.2. \textbf{Function}: One of the origin values for seek event. 
\textbf{Notes}: Seek relative to end of file.

58.20.538  \textbf{kSeekOriginSet} = 0

MBS CURL Plugin, Plugin Version: 12.2. \textbf{Function}: One of the origin values for seek event. 
\textbf{Notes}: Seek relative to start of file.

58.20.539  \textbf{kSeekReturnCantSeek} = 3

MBS CURL Plugin, Plugin Version: 12.2. \textbf{Function}: One of the result values for the Seek Event. 
\textbf{Notes}: Return this value if you can’t seek as you are not using a file, but for example a stream.

58.20.540  \textbf{kSeekReturnFail} = 2

MBS CURL Plugin, Plugin Version: 12.2. \textbf{Function}: One of the result values for the Seek Event. 
\textbf{Notes}: Returns this value if your seek operation failed.

58.20.541  \textbf{kSeekReturnOk} = 1

MBS CURL Plugin, Plugin Version: 12.2. \textbf{Function}: One of the result values for the Seek Event. 
\textbf{Notes}: Returns this value if your seek operation succeeded.

58.20.542  \textbf{kSSHAuthAgent} = 16

MBS CURL Plugin, Plugin Version: 18.2. \textbf{Function}: One of the SSH Authentication modes. 
\textbf{Notes}: agent (ssh-agent, pageant...
58.20.543  \text{kSSHAuthAny} = -1

MBS CURL Plugin, Plugin Version: 18.2. \textbf{Function:} One of the SSH Authentication modes.  
\textbf{Notes:} Any allowed

58.20.544  \text{kSSHAuthDefault} = -1

MBS CURL Plugin, Plugin Version: 18.2. \textbf{Function:} One of the SSH Authentication modes.  
\textbf{Notes:} Default: Any

58.20.545  \text{kSSHAuthGSSAPI} = 32

MBS CURL Plugin, Plugin Version: 18.2. \textbf{Function:} One of the SSH Authentication modes.  
\textbf{Notes:} gssapi (kerberos, ...)

58.20.546  \text{kSSHAuthHost} = 4

MBS CURL Plugin, Plugin Version: 18.2. \textbf{Function:} One of the SSH Authentication modes.  
\textbf{Notes:} host key files

58.20.547  \text{kSSHAuthKeyboard} = 8

MBS CURL Plugin, Plugin Version: 18.2. \textbf{Function:} One of the SSH Authentication modes.  
\textbf{Notes:} keyboard interactive

58.20.548  \text{kSSHAuthNone} = 0

MBS CURL Plugin, Plugin Version: 18.2. \textbf{Function:} One of the SSH Authentication modes.  
\textbf{Notes:} none allowed, silly but complete

58.20.549  \text{kSSHAuthPassword} = 2

MBS CURL Plugin, Plugin Version: 18.2. \textbf{Function:} One of the SSH Authentication modes.  
\textbf{Notes:} password
58.20. CLASS CURLSMBS

58.20.550  kSSHAUTHPublicKey = 1

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSH Authentication modes.
**Notes:** public/private key files

58.20.551  kSSLVersionDefault = 0

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the SSL Version constants for the OptionSSLVersion property.

58.20.552  kSSLVersionSSLv2 = 2

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the SSL Version constants for the OptionSSLVersion property.

58.20.553  kSSLVersionSSLv3 = 3

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the SSL Version constants for the OptionSSLVersion property.

58.20.554  kSSLVersionTLSv1 = 1

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the SSL Version constants for the OptionSSLVersion property.

58.20.555  kSSLVersionTLSv10 = 4

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the SSL Version constants for the OptionSSLVersion property.
**Notes:** TLSv1.0 (Added in 7.34.0)

58.20.556  kSSLVersionTLSv11 = 5

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the SSL Version constants for the OptionSSLVersion property.
58.20.557  kSSLVersionTLSv12 = 6

MBS CURL Plugin, Plugin Version: 14.3. **Function:** One of the SSL Version constants for the OptionSSLVersion property.
**Notes:** TLSv1.2 (Added in 7.34.0)

58.20.558  kSSLVersionTLSv13 = 7

MBS CURL Plugin, Plugin Version: 17.2. **Function:** One of the SSL Version constants for the OptionSSLVersion property.
**Notes:** TLSv1.3

58.20.559  kTimeConditionIfModifiedSince = 1

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the time condition constants for the TimeCondition property.

58.20.560  kTimeConditionIfUnModifiedSince = 2

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the time condition constants for the TimeCondition property.

58.20.561  kTimeConditionNone = 0

MBS CURL Plugin, Plugin Version: 9.8. **Function:** One of the time condition constants for the TimeCondition property.
**Notes:** No condition.

58.20.562  kUseSSLall = 3

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSL constants for the OptionFTPSSSL property.
**Notes:** Require SSL for all communication or fail with kError_FTP_SSL_FAILED.
58.20.563  kUseSSLcontrol = 2

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSL constants for the OptionFTPSSL property.  
**Notes:** Require SSL for the control connection or fail with kError_FTP_SSL_FAILED.

58.20.564  kUseSSLnone = 0

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSL constants for the OptionFTPSSL property.  
**Notes:** Don’t attempt to use SSL.

58.20.565  kUseSSLtry = 1

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSL constants for the OptionFTPSSL property.  
**Notes:** Try using SSL, proceed as normal otherwise.
58.21 class CURLSMimePartMBS

58.21.1 class CURLSMimePartMBS

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for mime parts.

**Notes:**
You can provide data via file path, folderitem, data in memoryblock or string.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

58.21.2 Methods

58.21.3 Constructor

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The private constructor.

58.21.4 Headers as String()

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries header.

58.21.5 SetHeaders(headers() as String)


58.21.6 Properties

58.21.7 DataMemory as Memoryblock

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The mime part data source from memory data.

**Notes:** (Read and Write property)
58.21.8 DataString as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The mime part data source from memory data.
**Example:**
```plaintext
dim c as new CURLSMBS

// add mime
dim p as CURLSMimePartMBS = c.AddMimePart

p.name = "Text"
p.FileName = "test.txt"
p.MimeType = "text/plain"
p.DataString = "Hello World"

C.FinishMime
// now you can send...
```

**Notes:** (Read and Write property)

58.21.9 Encoding as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The mime data transfer encoder.
**Notes:**
If set to binary, 8bit, 7bit, base64 or quoted-printable, the matching encoding is applied.
(Read and Write property)

58.21.10 File as Folderitem

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The file to stream.
**Notes:**
When you set property, the plugin will open file and may raise IOException on failure.
(Read and Write property)
58.21.11 FileName as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The mime part remote file name.

**Notes:**
If mime type is not set, we pick extension from file name.
This includes gif, jpg, jpeg, png, svg, txt, htm, html, pdf and xml file extensions.
(Read and Write property)

58.21.12 FilePath as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The mime part data source from named file.

**Notes:** (Read and Write property)

58.21.13 Lasterror as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last error code.

**Notes:** (Read and Write property)

58.21.14 MimeType as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The mime part type.

**Notes:** (Read and Write property)

58.21.15 Name as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The mime/form part name.

**Notes:** (Read and Write property)

58.21.16 Parent as Variant

58.21.17 Constants

58.21.18 kEncoding7bit = "7bit"

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the encoding modes. **Notes:** 7bit

58.21.19 kEncoding8bit = "8bit"

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the encoding modes. **Notes:** 8bit

58.21.20 kEncodingBase64 = "base64"

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the encoding modes. **Notes:** Base64

58.21.21 kEncodingBinary = "binary"

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the encoding modes. **Notes:** Binary mode

58.21.22 kEncodingNone = ""

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the encoding modes. **Notes:** No mode, so data is passed through and header has no encoding defined.

58.21.23 kEncodingQuotedPrintable = "quoted-printable"

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the encoding modes. **Notes:** Quoted printable
58.21.24  kMimeTypeGIF = ”image/gif”

MBS CURL Plugin, Plugin Version: 18.2. Function: One of the mime types.
Notes: GIF

58.21.25  kMimeTypeHTML = ”text/html”

MBS CURL Plugin, Plugin Version: 18.2. Function: One of the mime types.
Notes: HTML

58.21.26  kMimeTypeJPEG = ”image/jpeg”

MBS CURL Plugin, Plugin Version: 18.2. Function: One of the mime types.
Notes: JPEG

58.21.27  kMimeTypePDF = ”application/pdf”

MBS CURL Plugin, Plugin Version: 18.2. Function: One of the mime types.
Notes: PDF

58.21.28  kMimeTypePNG = ”image/png”

MBS CURL Plugin, Plugin Version: 18.2. Function: One of the mime types.
Notes: PNG

58.21.29  kMimeTypeSVG = ”image/svg+xml”

MBS CURL Plugin, Plugin Version: 18.2. Function: One of the mime types.
Notes: SVG

58.21.30  kMimeTypeText = ”text/plain”

MBS CURL Plugin, Plugin Version: 18.2. Function: One of the mime types.
Notes: Text
58.21.31  kMimeTypeXML = "application/xml"

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the mime types.  
**Notes:** XML
58.22 class CURLSMissingFunctionExceptionMBS

58.22.1 class CURLSMissingFunctionExceptionMBS

MBS CURL Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
An exception raised if a CURL library function is not loaded.

**Notes:**
If you call load library before you use the CURLSMBS Constructor, you should never see this.
Subclass of the RuntimeException class.
58.23. **CLASS CURLSMULTIMBS**

58.23  **class CURLSMultiMBS**

58.23.1  **class CURLSMultiMBS**

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for multiple CURL transfers running in parallel.

58.23.2  **Methods**

58.23.3  **AddCURL(CURL as CURLSMBS) as boolean**

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Add a standard CURL handle to the multi stack.
**Notes:** Lasterror is set.

58.23.4  **CURLs as CURLSMBS()**

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Queries list of current CURL instances.

58.23.5  **ErrorString(ErrorCode as Integer) as String**

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Queries text message for a given error code.

58.23.6  **Perform**

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Checks for things to see.
**Notes:**
When the app thinks there’s data available for CURL it calls this function to read/write whatever there is right now. This returns as soon as the reads and writes are done. This function does not require that there actually is data available for reading or that data can be written, it can be called just in case.

Lasterror is set. This only provides errors etc regarding the whole multi stack. There might still have occurred problems on individual transfers even when this returns OK.
CHAPTER 58. CURL

Sets RunningTransfers property.

58.23.7  RemoveCURL(CURL as CURLSMBS) as boolean

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Removes a CURL handle from the multi stack again.  
**Notes:**  
Lasterror is set.  
Plugin calls this automatically when TransferFinished event was called.

58.23.8  Properties

58.23.9  ChunkLengthPenaltySize as Int64

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A connection with a chunk length longer than this will not be considered for pipelining.  
**Notes:** (Read and Write property)

58.23.10  ContentLengthPenaltySize as Int64

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A connection with a content-length longer than this will not be considered for pipelining.  
**Notes:** (Read and Write property)

58.23.11  Handle as Integer

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal object reference.  
**Notes:** (Read only property)

58.23.12  Lasterror as Integer

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last error code.  
**Notes:** (Read and Write property)
58.23.  CLASS CURLSMULTIMBS

58.23.13  MaxConnects as Integer

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Maximum number of entries in the connection cache. 
**Notes:** (Read and Write property)

58.23.14  MaxHostConnections as Integer

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Maximum number of (pipelining) connections to one host. 
**Notes:** (Read and Write property)

58.23.15  MaxPipelineLength as Integer

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Maximum number of requests in a pipeline. 
**Notes:** (Read and Write property)

58.23.16  MaxTotalConnections as Integer

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Maximum number of open connections in total. 
**Notes:** (Read and Write property)

58.23.17  Pipelining as Integer

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set to 1 to enable pipelining for this multi handle. 
**Notes:**
Only for HTTP protocol. 
Used to be a boolean property for 15.0 to 18.1, but changed to integer for 18.2. 
(Read and Write property)

58.23.18  RunningTransfers as Integer

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Number of running transfers.
58.23.19 Events

58.23.20 TransferFinished(CURL as CURLSMBS, result as Integer, RemainingFinishedTransfers as Integer)

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
One transfer finished.
**Notes:**
Query CURL object for details.
Result is the result of the transfer as returned by Perform method of CURL object.
RemainingFinishedTransfers is how many transfers are also finished and will be called right after this event.

This event fires always when the queue is empty.
You may want to turn off the timer calling Perform method when this event fires.
Later you can start timer again if you call Add method.

58.23.21 TransfersFinished

MBS CURL Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
All pending transfers finished.

58.23.22 Constants

58.23.23 kErrorAddedAlready = 7

MBS CURL Plugin, Plugin Version: 15.0. **Function:** One of the multi interface error codes.
**Notes:** An easy handle already added to a multi handle was attempted to get added - again.

58.23.24 kErrorBadEadyHandle = 2

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the multi interface error codes.
**Notes:** An easy handle was not good/valid.
58.23. **CLASS CURLSMULTIMBS**

**58.23.25** kErrorBadHandle = 1

MBS CURL Plugin, Plugin Version: 15.0. **Function:** One of the multi interface error codes. **Notes:** The passed-in handle is not a valid CURLM handle.

**58.23.26** kErrorBadSocket = 5

MBS CURL Plugin, Plugin Version: 15.0. **Function:** One of the multi interface error codes. **Notes:** The passed in socket argument did not match.

**58.23.27** kErrorCallPerform = -1

MBS CURL Plugin, Plugin Version: 15.0. **Function:** One of the multi interface error codes. **Notes:** Please call Perform soon to do some tasks.

**58.23.28** kErrorInternalError = 4

MBS CURL Plugin, Plugin Version: 15.0. **Function:** One of the multi interface error codes. **Notes:** This is a libCURL bug.

**58.23.29** kErrorOK = 0

MBS CURL Plugin, Plugin Version: 15.0. **Function:** One of the multi interface error codes. **Notes:** Everything OK.

**58.23.30** kErrorOutOfMemory = 3

MBS CURL Plugin, Plugin Version: 15.0. **Function:** One of the multi interface error codes. **Notes:** Running low on memory.

**58.23.31** kErrorRecursiveAPICall = 8

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the multi interface error codes. **Notes:** An api function was called from inside an event.
58.23.32 kErrorUnknownOption = 6

MBS CURL Plugin, Plugin Version: 15.0. **Function:** One of the multi interface error codes. **Notes:** Tried to set unsupported option.

58.23.33 kPipeHTTP1 = 1

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the pipeline modes. **Notes:** Pipe with HTTP/1.1.

58.23.34 kPipeMultiPlex = 2

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the pipeline modes. **Notes:** Pipe with multiplex.

58.23.35 kPipeNothing = 0

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the pipeline modes. **Notes:** No piping.
58.24. **CLASS CURLSNOTINITIALIZEDEXCEPTIONMBS**

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### 58.24 class CURLSNotInitializedExceptionMBS

**MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:**
An exception raised if CURL library is not initialized.

**Notes:**
If you call load library before you use the CURLMBS Constructor, you should never see this.
Subclass of the RuntimeException class.
58.25 class CURLSSLBackendMBS

58.25.1 class CURLSSLBackendMBS

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for a SSL backend.

**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

58.25.2 Methods

58.25.3 Constructor

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The private constructor.

58.25.4 List as CURLSSLBackendMBS()

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Lists the backends.

**Example:**

```
dim list() as CURLSSLBackendMBS = CURLSSLBackendMBS.List

for each l as CURLSSLBackendMBS in list
    MsgBox l.name
next
```

**Notes:** The list may not be available if called too late.

58.25.5 SetSSLBackend(id as Integer) as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the SSL backend.

**Notes:**

When built with multiple SSL backends, SetSSLBackend() allows to choose one. This function can only be called once, and it must be called *before* CURL constructor().
The backend can be identified by the id (e.g. CURLSSLBACKEND_OPENSSL). The backend can also be specified via the name parameter (passing -1 as id). If both id and name are specified, the name will be ignored. If neither id nor name are specified, the function will fail with CURLSSLSETUNKNOWN_BACKEND and set the "avail" pointer to the NULL-terminated list of available backends.

Upon success, the function returns kErrorOK.
If the specified SSL backend is not available, the function returns kErrorUnknownBackend.

The SSL backend can be set only once. If it has already been set, a subsequent attempt to change it will result in a kErrorTooLate.

Returns nil, if there are no backends to choose.
See also:

- 58.25.6 SetSSLBackend(name as string) as Integer

### 58.25.6 SetSSLBackend(name as string) as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the SSL backend.

**Notes:**
When built with multiple SSL backends, SetSSLBackend() allows to choose one. This function can only be called once, and it must be called *before* CURL constructor().

The backend can be identified by the id (e.g. CURLSSLBACKEND_OPENSSL). The backend can also be specified via the name parameter (passing -1 as id). If both id and name are specified, the name will be ignored. If neither id nor name are specified, the function will fail with CURLSSLSETUNKNOWN_BACKEND and set the "avail" pointer to the NULL-terminated list of available backends.

Upon success, the function returns kErrorOK.
If the specified SSL backend is not available, the function returns kErrorUnknownBackend.

The SSL backend can be set only once. If it has already been set, a subsequent attempt to change it will result in a kErrorTooLate.

Returns nil, if there are no backends to choose.
See also:

- 58.25.5 SetSSLBackend(id as Integer) as Integer
58.25.7 Properties

58.25.8 ID as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The ID of this SSL backend. **Notes:** (Read only property)

58.25.9 Name as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The name of this SSL backend. **Notes:** (Read only property)

58.25.10 Constants

58.25.11 kErrorNoBackends = 3

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the error codes. **Notes:** libcurl was built without any SSL support

58.25.12 kErrorOK = 0

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the error codes. **Notes:** OK

58.25.13 kErrorTooLate = 2

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the error codes. **Notes:** You can’t set SSL backend after SSL initialization.

58.25.14 kErrorUnknownBackend = 1

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the error codes. **Notes:** Unknown backend name or ID.
58.25.15  kSSLBackendAXTLS = 10

MBS CURL Plugin, Plugin Version: 18.2. **Function**: One of the SSL backend IDs.  
**Notes**: AXTLS

58.25.16  kSSLBackendDarwinSSL = 9

MBS CURL Plugin, Plugin Version: 18.2. **Function**: One of the SSL backend IDs.  
**Notes**: DarwinSSL

58.25.17  kSSLBackendGNUTLS = 2

MBS CURL Plugin, Plugin Version: 18.2. **Function**: One of the SSL backend IDs.  
**Notes**: GNUTLS

58.25.18  kSSLBackendGSKIT = 5

MBS CURL Plugin, Plugin Version: 18.2. **Function**: One of the SSL backend IDs.  
**Notes**: GSKIT

58.25.19  kSSLBackendMBEDTLS = 11

MBS CURL Plugin, Plugin Version: 18.2. **Function**: One of the SSL backend IDs.  
**Notes**: MBEDTLS

58.25.20  kSSLBackendNone = 0

MBS CURL Plugin, Plugin Version: 18.2. **Function**: One of the SSL backend IDs.  

58.25.21  kSSLBackendNSS = 3

MBS CURL Plugin, Plugin Version: 18.2. **Function**: One of the SSL backend IDs.  
**Notes**: NSS
58.25.22  kSSLBackendOpenSSL = 1

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSL backend IDs. **Notes:** OpenSSL or BoringSSL

58.25.23  kSSLBackendPolarSSL = 6

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSL backend IDs. **Notes:** PolarSSL

58.25.24  kSSLBackendSChannel = 8

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSL backend IDs. **Notes:** SChannel

58.25.25  kSSLBackendWolfSSL = 7

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSL backend IDs. **Notes:** WolfSSL
**58.26. class CURLSSSLBackendMBS**

**58.26.1 class CURLSSSLBackendMBS**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for a SSL backend.
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

**58.26.2 Methods**

**58.26.3 Constructor**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

**58.26.4 List as CURLSSSLBackendMBS()**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Lists the backends.
**Example:**
```vba
dim list() as CURLSSSLBackendMBS = CURLSSSLBackendMBS.List

for each l as CURLSSSLBackendMBS in list
    MsgBox l.name
next
```

**Notes:** The list may not be available if called too late.

**58.26.5 SetSSLBackend(id as Integer) as Integer**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the SSL backend.
**Notes:**
When built with multiple SSL backends, SetSSLBackend() allows to choose one. This function can only be called once, and it must be called *before* CURL constructor().
The backend can be identified by the id (e.g. CURLSSLBACKEND_OPENSSL). The backend can also be specified via the name parameter (passing -1 as id). If both id and name are specified, the name will be ignored. If neither id nor name are specified, the function will fail with CURLSSLSETUNKNOWN_BACKEND and set the "avail" pointer to the NULL-terminated list of available backends.

Upon success, the function returns kErrorOK. If the specified SSL backend is not available, the function returns kErrorUnknownBackend.

The SSL backend can be set only once. If it has already been set, a subsequent attempt to change it will result in a kErrorTooLate.

Returns nil, if there are no backends to choose.

See also:

• 58.26.6 SetSSLBackend(name as string) as Integer

58.26.6 SetSSLBackend(name as string) as Integer


Notes:

When built with multiple SSL backends, SetSSLBackend() allows to choose one. This function can only be called once, and it must be called *before* CURL constructor().

The backend can be identified by the id (e.g. CURLSSLBACKEND_OPENSSL). The backend can also be specified via the name parameter (passing -1 as id). If both id and name are specified, the name will be ignored. If neither id nor name are specified, the function will fail with CURLSSLSETUNKNOWN_BACKEND and set the "avail" pointer to the NULL-terminated list of available backends.

Upon success, the function returns kErrorOK. If the specified SSL backend is not available, the function returns kErrorUnknownBackend.

The SSL backend can be set only once. If it has already been set, a subsequent attempt to change it will result in a kErrorTooLate.

Returns nil, if there are no backends to choose.

See also:

• 58.26.5 SetSSLBackend(id as Integer) as Integer
58.26.7  Properties

58.26.8  ID as Integer

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The ID of this SSL backend. **Notes:** (Read only property)

58.26.9  Name as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The name of this SSL backend. **Notes:** (Read only property)

58.26.10  Constants

58.26.11  kErrorNoBackends = 3

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the error codes. **Notes:** libcurl was built without any SSL support

58.26.12  kErrorOK = 0

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the error codes. **Notes:** OK

58.26.13  kErrorTooLate = 2

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the error codes. **Notes:** You can’t set SSL backend after SSL initialization.

58.26.14  kErrorUnknownBackend = 1

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the error codes. **Notes:** Unknown backend name or ID.
58.26.15  kSSLBackendAXTLS = 10

MBS CURL Plugin, Plugin Version: 18.2. **Function**: One of the SSL backend IDs.  
**Notes**: AXTLS

58.26.16  kSSLBackendDarwinSSL = 9

MBS CURL Plugin, Plugin Version: 18.2. **Function**: One of the SSL backend IDs.  
**Notes**: DarwinSSL

58.26.17  kSSLBackendGNUTLS = 2

MBS CURL Plugin, Plugin Version: 18.2. **Function**: One of the SSL backend IDs.  
**Notes**: GNUTLS

58.26.18  kSSLBackendGSKIT = 5

MBS CURL Plugin, Plugin Version: 18.2. **Function**: One of the SSL backend IDs.  
**Notes**: GSKIT

58.26.19  kSSLBackendMBEDTLS = 11

MBS CURL Plugin, Plugin Version: 18.2. **Function**: One of the SSL backend IDs.  
**Notes**:MBEDTLS

58.26.20  kSSLBackendNone = 0

MBS CURL Plugin, Plugin Version: 18.2. **Function**: One of the SSL backend IDs.  

58.26.21  kSSLBackendNSS = 3

MBS CURL Plugin, Plugin Version: 18.2. **Function**: One of the SSL backend IDs.  
**Notes**: NSS
58.26.22 kSSLBackendOpenSSL = 1

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSL backend IDs. **Notes:** OpenSSL or BoringSSL

58.26.23 kSSLBackendPolarSSL = 6

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSL backend IDs. **Notes:** PolarSSL

58.26.24 kSSLBackendSChannel = 8

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSL backend IDs. **Notes:** SChannel

58.26.25 kSSLBackendWolfSSL = 7

MBS CURL Plugin, Plugin Version: 18.2. **Function:** One of the SSL backend IDs. **Notes:** WolfSSL
58.27 class CURLSVersionMBS

58.27.1 class CURLSVersionMBS

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class to hold version information from libCURL.

58.27.2 Methods

58.27.3 Constructor

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor.

58.27.4 Protocol(index as Integer) as string

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An array containing the names protocols that libCURL supports (using lowercase letters). 
**Notes:**
The protocol names are the same as would be used in URLs.
Index is zero based.

58.27.5 Properties

58.27.6 brotliVersion as String

**Notes:**
Empty if library is not used in the CURL library you use.
(Read and Write property)

58.27.7 brotliVersionNumber as Integer

58.27. **CLASS CURLSVERSIONMBS**

**Notes:** (Read and Write property)

### 58.27.8 Features as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Bits which define what features libCURL can and can’t.

**Notes:**
Use the Supports Boolean properties instead.
Additional feature bits may be found in the libCURL documentation.
(Read and Write property)

### 58.27.9 Host as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An ascii string showing what host information that this libCURL was built for.

**Notes:**
As discovered by a configure script or set by the build environment.
e.g. "powerpc-apple-darwin8.0"
(Read and Write property)

### 58.27.10 iconvVersionNumber as Integer


**Notes:** (Read and Write property)

### 58.27.11 libidnVersion as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Version of LibIDN used.

**Notes:**
Empty if library is not used in the CURL library you use.
(Read and Write property)
58.27.12  libsshVersion as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Version of LibSSH2 used.
**Notes:**
Empty if library is not used in the CURL library you use.
(Read and Write property)

58.27.13  LibZVersion as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An ascii string (there is no numerical version).
**Notes:**
If libCURL has no libz support, this is "".
e.g. "1.2.3"
(Read and Write property)

58.27.14  ProtocolCount as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of entries in the Protocol array.
**Notes:** (Read and Write property)

58.27.15  SSLVersion as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An ascii string for the OpenSSL version used.
**Notes:**
If libCURL has no SSL support, this is "".
e.g. "OpenSSL/0.9.7l"
(Read and Write property)

58.27.16  SupportsASYNCHDNS as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether libCURL was built with support for asynchronous name lookups, which allows more exact timeouts (even on Windows) and less blocking when using the multi interface.
**Notes:**
58.27. **CLASS CURLSVERSIONMBS**

(added in 7.10.7)
(Read only property)

### 58.27.17 SupportsBrothli as Boolean

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Brothli features are present.
**Notes:** (Read only property)

### 58.27.18 SupportsConv as Boolean

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Character conversions supported.
**Notes:** (Read only property)

### 58.27.19 SupportsGSSAPI as Boolean

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Built against a GSS-API library.
**Notes:** (Read only property)

### 58.27.20 SupportsGSSNEGOTIATE as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether libCURL supports HTTP GSS-Negotiate
**Notes:**
(added in 7.10.6)
(Read only property)

### 58.27.21 SupportsHTTP2 as Boolean

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether currently used CURL library supports HTTP2.
**Example:**
```dim c as new CURLSMBS
dim v as CURLSVersionsMBS = c.version```
if v.SupportsHTTP2 then
    MsgBox "HTTP2 is supported"
else
    MsgBox "HTTP2 is not supported"
end if

Notes:
While our CURL Plugin with CURLSMBS plugin may not support this currently, you could use LoadLibrary function to load a CURL library supporting it.
(Read only property)

### 58.27.22 SupportsHTTPSProxy as Boolean

**Notes:** (Read only property)

### 58.27.23 SupportsIDN as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether libCURL was built with support for IDNA, domain names with international letters.
**Notes:**
(Added in 7.12.0)
(Read only property)

### 58.27.24 SupportsIPV6 as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether libCURL supports IPv6
**Notes:** (Read only property)

### 58.27.25 SupportsKERBEROS4 as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether libCURL supports kerberos4 (when using FTP).
58.27. **CLASS CURLSVERSIONMBS**

**Notes:** (Read only property)

58.27.26 **SupportsKerberos5 as Boolean**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Kerberos V5 auth is supported. **Notes:** (Read only property)

58.27.27 **SupportsLARGEFILE as Boolean**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether libCURL was built with support for large files. **Notes:**

(Added in 7.11.1)  
(Read only property)

58.27.28 **SupportsLIBZ as Boolean**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether libCURL supports HTTP deflate using libz **Notes:**

(Added in 7.10)  
(Read only property)

58.27.29 **SupportsMultiSSL as Boolean**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Multiple SSL backends available. **Notes:** (Read only property)

58.27.30 **SupportsNTLM as Boolean**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether libCURL supports HTTP NTLM  
**Example:**
dim c as new CURLSMBS
dim v as CURLSVersionMBS = c.Version

MsgBox "SupportsNTLM: " + str(v.SupportsNTLM)

Notes:
(added in 7.10.6)
(Read only property)

58.27.31  SupportsNTLMWB as Boolean

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
NTLM delegation to winbind helper is supported.
**Notes:** (Read only property)

58.27.32  SupportsPSL as Boolean

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Mozilla’s Public Suffix List, used for cookie domain verification.
**Notes:** (Read only property)

58.27.33  SupportsSPNEGO as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether libCURL was built with support for SPNEGO authentication
**Notes:**
(Simple and Protected GSS-API Negotiation Mechanism, defined in RFC 2478.) (added in 7.10.8)
(Read only property)

58.27.34  SupportsSSL as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether libCURL supports SSL (HTTPS/FTPS)
**Notes:**
(Added in 7.10)
(Read only property)
58.27.35  **SupportsSSPI as Boolean**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether libCURL was built with support for SSPI.  
**Notes:**  
This is only available on Windows and makes libCURL use Windows-provided functions for NTLM authentication. It also allows libCURL to use the current user and the current user’s password without the app having to pass them on. (Added in 7.13.2)  
(Read only property)

58.27.36  **SupportsTLSAUTHSRP as Boolean**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** TLS-SRP auth is supported.  
**Notes:** (Read only property)

58.27.37  **SupportsUnixSockets as Boolean**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Unix domain sockets support.  
**Notes:** (Read only property)

58.27.38  **Version as String**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An ascii string for the libCURL version.  
**Notes:**  
e.g. ”7.13.1”  
(Read and Write property)

58.27.39  **VersionNumber as Integer**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The version of libCURL as number.  
**Notes:**
a 24 bit number created like this:
<8 bits major number>|<8 bits minor number>|<8 bits patch number>.
Version 7.9.8 is therefore returned as 0x070908.
(Read and Write property)
58.28 class CURLVersionMBS

58.28.1 class CURLVersionMBS

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class to hold version information from libCURL.

58.28.2 Methods

58.28.3 Constructor

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor.

58.28.4 Protocol(index as Integer) as string

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An array containing the names protocols that libCURL supports (using lowercase letters).

**Notes:**
The protocol names are the same as would be used in URLs.
Index is zero based.

58.28.5 Properties

58.28.6 brotliVersion as String


**Notes:**
Empty if library is not used in the CURL library you use.
(Read and Write property)

58.28.7 brotliVersionNumber as Integer

58.28.8 Features as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Bits which define what features libCURL can and can’t.

**Notes:**
Use the Supports Boolean properties instead.
Additional feature bits may be found in the libCURL documentation.
(Read and Write property)

58.28.9 Host as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An ascii string showing what host information that this libCURL was built for.

**Notes:**
As discovered by a configure script or set by the build environment.
e.g. "powerpc-apple-darwin8.0"
(Read and Write property)

58.28.10 iconvVersionNumber as Integer


**Notes:** (Read and Write property)

58.28.11 libidnVersion as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Version of LibIDN used.

**Notes:**
Empty if library is not used in the CURL library you use.
(Read and Write property)
58.28. CLASS CURLVERSIONMBS

58.28.12  libsshVersion as String

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Version of LibSSH2 used.
**Notes:**
Empty if library is not used in the CURL library you use.
(Read and Write property)

58.28.13  LibZVersion as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An ascii string (there is no numerical version).
**Notes:**
If libCURL has no libz support, this is "".
e.g. "1.2.3"
(Read and Write property)

58.28.14  ProtocolCount as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of entries in the Protocol array.
**Notes:** (Read and Write property)

58.28.15  SSLVersion as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An ascii string for the OpenSSL version used.
**Notes:**
If libCURL has no SSL support, this is "".
e.g. "OpenSSL/0.9.7l"
(Read and Write property)

58.28.16  SupportsASYNCHDNS as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether libCURL was built with support for asynchronous name lookups, which allows more exact timeouts (even on Windows) and less blocking when using the multi interface.
**Notes:**
58.28.17  **SupportsBrotili as Boolean**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Brotili features are present. **Notes:** (Read only property)

58.28.18  **SupportsConv as Boolean**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Character conversions supported. **Notes:** (Read only property)

58.28.19  **SupportsGSSAPI as Boolean**

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Built against a GSS-API library. **Notes:** (Read only property)

58.28.20  **SupportsGSSNEGOTIATE as Boolean**

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether libCURL supports HTTP GSS-Negotiate. **Notes:** (added in 7.10.6) (Read only property)

58.28.21  **SupportsHTTP2 as Boolean**

MBS CURL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether currently used CURL library supports HTTP2. **Example:**

```dim c as new CURLMBS
dim v as CURLVersionMBS = c.version```
if v.SupportsHTTP2 then
  MsgBox "HTTP2 is supported"
else
  MsgBox "HTTP2 is not supported"
end if

Notes:
While our CURL Plugin with CURLMBS plugin may not support this currently, you could use LoadLibrary function to load a CURL library supporting it. (Read only property)

58.28.22 SupportsHTTPSProxy as Boolean

**Notes:** (Read only property)

58.28.23 SupportsIDN as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether libCURL was built with support for IDNA, domain names with international letters. 
**Notes:** (Added in 7.12.0) (Read only property)

58.28.24 SupportsIPV6 as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether libCURL supports IPv6 
**Notes:** (Read only property)

58.28.25 SupportsKERBEROS4 as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether libCURL supports kerberos4 (when using FTP).
58.28.26  SupportsKerberos5 as Boolean

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Kerberos V5 auth is supported.  
**Notes:** (Read only property)

58.28.27  SupportsLARGEFILE as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether libCURL was built with support for large files.  
**Notes:**
(Added in 7.11.1)  
(Read only property)

58.28.28  SupportsLIBZ as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether libCURL supports HTTP deflate using libz  
**Notes:**
(Added in 7.10)  
(Read only property)

58.28.29  SupportsMultiSSL as Boolean

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Multiple SSL backends available.  
**Notes:** (Read only property)

58.28.30  SupportsNTLM as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether libCURL supports HTTP NTLM  
**Example:**
58.28. **CLASS CURLVERSIONMBS**

```vbscript
dim c as new CURLMBS
dim v as CURLVersionMBS = c.Version
MsgBox "SupportsNTLM: "+str(v.SupportsNTLM)
```

**Notes:**

(added in 7.10.6)
(Read only property)

### 58.28.31 SupportsNTLMWB as Boolean

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** NTLM delegation to winbind helper is supported.

**Notes:** (Read only property)

### 58.28.32 SupportsPSL as Boolean

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Mozilla’s Public Suffix List, used for cookie domain verification.

**Notes:** (Read only property)

### 58.28.33 SupportsSPNEGO as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether libCURL was built with support for SPNEGO authentication

**Notes:**

(Simple and Protected GSS-API Negotiation Mechanism, defined in RFC 2478.) (added in 7.10.8)
(Read only property)

### 58.28.34 SupportsSSL as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether libCURL supports SSL (HTTPS/FTPS)

**Notes:**

(Added in 7.10)
(Read only property)
58.28.35 SupportsSSPI as Boolean

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether libCURL was built with support for SSPI.

**Notes:**
This is only available on Windows and makes libCURL use Windows-provided functions for NTLM authentication. It also allows libCURL to use the current user and the current user’s password without the app having to pass them on. (Added in 7.13.2)
(Read only property)

58.28.36 SupportsTLSAUTHSRP as Boolean

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
TLS-SRP auth is supported.

**Notes:** (Read only property)

58.28.37 SupportsUnixSockets as Boolean

MBS CURL Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Unix domain sockets support.

**Notes:** (Read only property)

58.28.38 Version as String

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
An ascii string for the libCURL version.

**Notes:**
e.g. "7.13.1"
(Read and Write property)

58.28.39 VersionNumber as Integer

MBS CURL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The version of libCURL as number.

**Notes:**
a 24 bit number created like this:

\(<8 \text{ bits major number}> | <8 \text{ bits minor number}> | <8 \text{ bits patch number}>\).

Version 7.9.8 is therefore returned as 0x070908.

(Read and Write property)
58.29  Globals

58.29.1  FileExtensionToMimeTypeMBS(FileExtension as String) as string

MBS CURL Plugin, Plugin Version: 15.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Finds a mime type for a file extension.

**Example:**

```vbs
dim FileExtension as string = MimeTypeToFileExtensionMBS("application/pdf")
dim MimeType as string = FileExtensionToMimeTypeMBS("pdf")
```

**Notes:**

Please report any missing mime type in our lookup table, so we can add more.
See also **MimeTypeToFileExtensionMBS**.
Returns empty string if not found.

58.29.2  MimeTypeToFileExtensionMBS(MimeType as String) as string

MBS CURL Plugin, Plugin Version: 15.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns file extension for given mime type.

**Example:**

```vbs
dim FileExtension as string = MimeTypeToFileExtensionMBS("application/pdf")
dim MimeType as string = FileExtensionToMimeTypeMBS("pdf")
```

**Notes:**

Extension is returned with dot prefix.
Please report any missing file extensions in our lookup table, so we can add more.
See also **FileExtensionToMimeTypeMBS**.
Returns empty string if not found.
Chapter 59

Currency, Date and Time Format

59.1  Globals

59.1.1  CDblMBS(text as string, byref value as Double, locale as string = ")
as boolean

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Parses a double value from a text with given locale.

**Example:**
```vba
    dim value as Double
    if CDblMBS("12,345", value, "de_DE") then
        MsgBox str(value)
    end if
```

**Notes:**
- Returns true on success and false on failure.
- Value is set to the value detected.
- Raises exception on invalid locale.

59.1.2  FormatDateMBS(format as string, value as date, locale as string = ")
as string

MBS Util Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Formats a date with C time formatting functions.

**Example:**
// for Mac, Windows and Linux we usually have different locale names
dim fr as string
# if TargetMacOS then
fr = "fr_FR"
# elseif TargetWin32 then
fr = "fra"
# elseif TargetLinux
fr = "fr_FR.UTF8"
# else
?
# endif

dim d as new date
MsgBox FormatDateMBS("% x % X", d, fr)

Notes:
locale is the name of the locale to use. You can pass empty string to use default/current locale.
Format is a format string like for strftime command in C.

The format specification is a string and may contain special character sequences called conversion speci-
fications, each of which is introduced by a '%' character and terminated by some other character known as a
conversion specifier character. All other character sequences are ordinary character sequences.

The characters of ordinary character sequences (including the null byte) are copied verbatim from format to
s. However, the characters of conversion specifications are replaced as follows:

Some conversion specifications can be modified by preceding the conversion specifier character by the E or
O modifier to indicate that an alternative format should be used. If the alternative format or specification
does not exist for the current locale, the behavior will be as if the unmodified conversion specification were
used. (SU) The Single UNIX Specification mentions %Ec, %EC, %Ex, %EX, %Ey, %EY, %Od, %Oe,
%OH, %OI, %Om, %OM, %OS, %Ou, %OU, %OV, %Ov, %OW, %Oy, where the effect of the O
modifier is to use alternative numeric symbols (say, roman numerals), and that of the E modifier is to use a
locale-dependent alternative representation.

59.1.3 FormatMBS(format as string, value as Double, locale as string = "") as
string

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Formats a double value.
Example:
MsgBox FormatMBS("% 1.2f", 12.345, "de_DE")

Notes:
locale is the name of the locale to use. You can pass empty string to use default/current locale.
Format is a format string like for printf command in C.

The FormatMBS formats the value under control of the format. The format is a character string which
contains three types of objects: plain characters, which are simply copied to standard output, character
escape sequences which are converted and copied to the standard output, and format specifications, each of
which causes printing of the next successive argument.

Character escape sequences are in backslash notation as defined in the ANSI X3.159-1989 ("ANSI C89"),
with extensions. The characters and their meanings are as follows:

Each format specification is introduced by the percent character ("% "). The remainder of the format spec-
ification includes, in the following order:

Zero or more of the following flags:

59.1.4 ParseDateMBS(format as string, text as string, byref value as date,
locale as string = "") as boolean

MBS Util Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Parses a date.
Example:

    dim s as string = "2013-11-12 18:31:01"
dim f as string = "% Y-% m-% d % H:% M:% S"
dim d as date

    if ParseDateMBS(f, s, d) then
        MsgBox d.LongDate + " " + d.LongTime
    end if

Notes:
locale is the name of the locale to use. You can pass empty string to use default/current locale.
Format is a format string like for strftime command in C.

On success returns true. But even for half parsed dates you can find values in date.
Locale not supported on Windows.
The plugin does not support parsing time zones.

The ParseDateMBS function is the converse function to FormateDateMBS and converts the character string pointed to by s to values which are stored in the date, using the format specified by format. Here format is a character string that consists of field descriptors and text characters, reminiscent of scanf (in C++). Each field descriptor consists of a % character followed by another character that specifies the replacement for the field descriptor. All other characters in the format string must have a matching character in the input string, except for whitespace, which matches zero or more whitespace characters in the input string. There should be whitespace or other alphanumeric characters between any two field descriptors.

The ParseDateMBS function processes the input string from left to right. Each of the three possible input elements (whitespace, literal, or format) are handled one after the other. If the input cannot be matched to the format string the function stops. The remainder of the format and input strings are not processed.

The supported input field descriptors are listed below. In case a text string (such as a weekday or month name) is to be matched, the comparison is case insensitive. In case a number is to be matched, leading zeros are permitted but not required.

Some field descriptors can be modified by the E or O modifier characters to indicate that an alternative format or specification should be used. If the alternative format or specification does not exist in the current locale, the unmodified field descriptor is used.

The E modifier specifies that the input string may contain alternative locale-dependent versions of the date and time representation:

Returns true on success. If the functions fails to match all of the format string and therefore an error occurred the function returns false.

Before libc 5.4.13 whitespace (and the 'n' and 't' specifications) was not handled, no 'E' and 'O' locale modifier characters were accepted, and the 'C' specification was a synonym for the 'c' specification.

The 'y' (year in century) specification is taken to specify a year in the 20th century by libc4 and libc5. It is taken to be a year in the range 1950-2049 by glibc 2.0. It is taken to be a year in 1969-2068 since glibc 2.1.

For reasons of symmetry, glibc tries to support for ParseDateMBS the same format characters as for FormatDateMBS. (In most cases the corresponding fields are parsed, but no field in tm is changed.) This leads to

Similarly, because of GNU extensions to FormatDateMBS, % k is accepted as a synonym for % H, and % l should be accepted as a synonym for % I, and % P is accepted as a synonym for % p. Finally

The glibc implementation does not require whitespace between two field descriptors.
59.2. CLASS LOCALEMBS

59.2. class LocaleMBS

59.2.1. class LocaleMBS

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The plugin class which provides parameters for formatting numbers, especially currency values.

**Example:**
```vbscript
dim l as LocaleMBS = LocaleMBS.Locale("de_DE")
MsgBox l.CurrencySymbol
```

**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

59.2.2. Methods

59.2.3. Constructor

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

59.2.4. Locale(Locale as string = "") as LocaleMBS

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Queries C locale for the given locale name.

**Example:**
```vbscript
dim l as LocaleMBS = LocaleMBS.Locale("de_DE")
MsgBox l.CurrencySymbol
```

**Notes:**
Returns nil if no locale for that name was found.

If name is empty, you get current locale. If you use locale name "C", you get the default C locale.
The locale name depends on the OS. For Mac and Linux you can see available locales in /usr/share/locale directory.
For Windows, please take a look here:
59.2.5 Properties

59.2.6 CurrencySymbol as String

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The local currency symbol.
**Example:**
```vbscript
dim l as LocaleMBS = LocaleMBS.Locale("de_DE")
MsgBox l.CurrencySymbol
```
**Notes:** (Read only property)

59.2.7 DecimalPoint as String

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The decimal point character, except for currency values, cannot be an empty string.
**Notes:** (Read only property)

59.2.8 FracDigits as Integer

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The number of digits after the decimal point in the local style for currency values.
**Notes:** (Read only property)

59.2.9 Grouping as String

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The sizes of the groups of digits, except for currency values.
**Notes:**
This is a string where the asc value gives the actual value, representing group size from low order digit groups to high order (right to left). The list may be terminated with 0 or CHAR_MAX. If the list is terminated with 0, the last group size before the 0 is repeated to account for all the digits. If the list is terminated with CHAR_MAX, no more grouping is performed.

See example project for a function to decode.
(Read only property)
59.2. CLASS LOCALEMBS

59.2.10 IntCurrSymbol as String

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The standardized international currency symbol. **Notes:** (Read only property)

59.2.11 IntFracDigits as Integer

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of digits after the decimal point in an international-style currency value. **Notes:** (Read only property)

59.2.12 IntNegCSPrecedes as Integer

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if the currency symbol precedes the currency value for negative values, false if it follows. **Notes:** For internationally formatted monetary quantities. (Read only property)

59.2.13 IntNegSepBySpace as Integer

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if a space is inserted between the currency symbol and the currency value for negative values, false otherwise. **Notes:** For internationally formatted monetary quantities. (Read only property)

59.2.14 IntNegSignPosition as Integer

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The location of the NegativeSign with respect to a negative quantity and the CurrencySymbol. **Notes:** For internationally formatted monetary quantities.
CHAPTER 59. CURRENCY, DATE AND TIME FORMAT

59.2.15 IntPosCSPrecedes as Integer

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if the currency symbol precedes the currency value for nonnegative values, false if it follows. 
**Notes:** For internationally formatted monetary quantities. 
(Read only property)

59.2.16 IntPosSepBySpace as Integer

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if a space is inserted between the currency symbol and the currency value for nonnegative values, false otherwise. 
**Notes:** For internationally formatted monetary quantities. 
(Read only property)

59.2.17 IntPosSignPosition as Integer

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The location of the PositiveSign with respect to a nonnegative quantity and the CurrencySymbol. 
**Notes:** For internationally formatted monetary quantities. 
Possible values:

(Read only property)

59.2.18 monDecimalPoint as String

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The decimal point character for currency values.
59.2. CLASS LOCALEMBS

Notes: (Read only property)

59.2.19  monGrouping as String

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Like grouping but for currency values. **Notes:** (Read only property)

59.2.20  monThousandsSep as String

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The separator for digit groups in currency values. **Notes:** (Read only property)

59.2.21  Name as String

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The name of the locale. **Notes:** The name may be different to the one you asked for as some locales are mapped to others internally. (Read only property)

59.2.22  NegativeSign as String

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The character used to denote negative currency values, usually a minus sign. **Notes:** (Read only property)

59.2.23  NegCSPrecedes as Boolean

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if the currency symbol precedes the currency value for negative values, false if it follows. **Notes:** (Read only property)
59.2.24 NegSepBySpace as Boolean

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if a space is inserted between the currency symbol and the currency value for negative values, false otherwise. **Notes:** (Read only property)

59.2.25 NegSignPosition as Integer

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The location of the NegativeSign with respect to a negative quantity and the CurrencySymbol. **Notes:** Possible values: (Read only property)

59.2.26 PosCSPrecedes as Boolean

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if the currency symbol precedes the currency value for nonnegative values, false if it follows. **Notes:** (Read only property)

59.2.27 PositiveSign as String

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The character used to denote nonnegative currency values, usually the empty string. **Notes:** (Read only property)

59.2.28 PosSepBySpace as Boolean

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if a space is inserted between the currency symbol and the currency value for nonnegative values, false otherwise. **Notes:** (Read only property)
59.2. CLASS LOCALEMBS

59.2.29 PosSignPosition as Integer

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The location of the PositiveSign with respect to a nonnegative quantity and the CurrencySymbol.
**Notes:**
Possible values:

(Read only property)

59.2.30 ThousandsSep as String

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The separator between groups of digits before the decimal point, except for currency values.
**Notes:** (Read only property)
% a  The abbreviated weekday name according to the current locale.
% A  The full weekday name according to the current locale.
% b  The abbreviated month name according to the current locale.
% B  The full month name according to the current locale.
% c  The preferred date and time representation for the current locale.
% C  The century number (year/100) as a 2-digit integer. (SU)
% d  The day of the month as a decimal number (range 01 to 31).
% D  Equivalent to % m/% d/% y. (Yech-for Americans only. Americans should note that in other countries % d/% m/% y is rather common. This means that in international context this format is ambiguous and should not be used.)
% e  Like % d, the day of the month as a decimal number, but a leading zero is replaced by a space. (SU)
% E  Modifier: use alternative format, see below. (SU)
% F  Equivalent to % Y-%m-%d (the ISO 8601 date format). (C99)
% G  The ISO 8601 week-based year (see NOTES) with century as a decimal number. The 4-digit year corresponding to the ISO week number (see % V). This has the same format and value as % Y, except that if the ISO week number belongs to the previous or next year, that year is used instead. (TZ)
% g  Like % G, but without century, that is, with a 2-digit year (00-99). (TZ)
% h  Equivalent to % b. (SU)
% H  The hour as a decimal number using a 24-hour clock (range 00 to 23).
% I  The hour as a decimal number using a 12-hour clock (range 01 to 12).
% j  The day of the year as a decimal number (range 001 to 366).
% k  The hour (24-hour clock) as a decimal number (range 0 to 23); single digits are preceded by a blank. (See also % H.) (TZ)
% l  The hour (12-hour clock) as a decimal number (range 1 to 12); single digits are preceded by a blank. (See also % I.) (TZ)
% m  The month as a decimal number (range 01 to 12).
% M  The minute as a decimal number (range 00 to 59).
% n  A newline character. (SU)
% O  Modifier: use alternative format, see below. (SU)
% p  Either "AM" or "PM" according to the given time value, or the corresponding strings for the current locale. Noon is treated as "PM" and midnight as "AM".
% P  Like % p but in lowercase: "am" or "pm" or a corresponding string for the current locale. (GNU)
% r  The time in a.m. or p.m. notation. In the POSIX locale this is equivalent to % I:%M:%S %p. (SU)
% R  The time in 24-hour notation (% H:%M). (SU) For a version including the seconds, see % T below.
% s  The number of seconds since the Epoch, 1970-01-01 00:00:00 +0000 (UTC). (TZ)
% S  The second as a decimal number (range 00 to 60). (The range is up to 60 to allow for occasional leap seconds.)
% t  A tab character. (SU)
% T  The time in 24-hour notation (% H:%M:%S). (SU)
% u  The day of the week as a decimal, range 1 to 7, Monday being 1. See also % w. (SU)
% U  The week number of the current year as a decimal number, range 00 to 53, starting with the first Sunday as the first day of week 01. (SU)
% v  The ISO 8601 week number (see NOTES) of the current year as a decimal number, range 01 to 53, where week 1 is the first week that has at least 4 days in the new year. See also % U and % W. (SU)
% w  The day of the week as a decimal, range 0 to 6, Sunday being 0. See also % u.
% W  The week number of the current year as a decimal number, range 00 to 53, starting with the first Monday as the first day of week 01. (SU)
% x  The preferred date representation for the current locale without the time.
% X  The preferred time representation for the current locale without the date.
% y  The year as a decimal number without a century (range 00 to 99).
% Y  The year as a decimal number including the century.
% z  The +hhmm or -hhmm numeric timezone (that is, the hour and minute offset from UTC). (SU)
% Z  The timezone or name or abbreviation.
% +  The date and time in date(1) format. (TZ) (Not supported in glibc2.)
% % A literal '%' character.
\a Write a <bell>character.
\b Write a <backspace>character.
\c Ignore remaining characters in this string.
\f Write a <form-feed>character.
\n Write a <new-line>character.
\r Write a <carriage return>character.
\t Write a <tab>character.
\v Write a <vertical tab>character.
\\ Write a backslash character.
\num or \0num Write an 8-bit character whose ASCII value is the 1-, 2-, or 3-digit octal number num.
% % The % character.
% a or % A The weekday name according to the current locale, in abbreviated form or the full name.
% b or % B or % h The month name according to the current locale, in abbreviated form or the full name.
% c The date and time representation for the current locale.
% C The century number (0-99).
% d or % e The day of month (1-31).
% D Equivalent to % m/% d/% y. (This is the American style date, very confusing to non-Americans, especially since % d/% m/% y is widely used in Europe. The ISO 8601 standard format is % Y-% m-% d.)
% H The hour (0-23).
% I The hour on a 12-hour clock (1-12).
% j The day number in the year (1-366).
% m The month number (1-12).
% M The minute (0-59).
% n Arbitrary whitespace.
% p The locale’s equivalent of AM or PM. (Note: there may be none.)
% r The 12-hour clock time (using the locale’s AM or PM). In the POSIX locale equivalent to % I:% M:% S % p. If t_fmt_ampm is empty in the LC_TIME part of the current locale then the behavior is undefined.
% R Equivalent to % H:% M.
% S The second (0-60; 60 may occur for leap seconds; earlier also 61 was allowed).
% t Arbitrary whitespace.
% T Equivalent to % H:% M:% S.
% U The week number with Sunday the first day of the week (0-53). The first Sunday of January is the first day of week 1.
% w The weekday number (0-6) with Sunday = 0.
% W The week number with Monday the first day of the week (0-53). The first Monday of January is the first day of week 1.
% x The date, using the locale’s date format.
% X The time, using the locale’s time format.
% y The year within century (0-99). When a century is not otherwise specified, values in the range 69-99 refer to years in the twentieth century (1969-1999); values in the range 00-68 refer to years in the twenty-first century (2000-2068).
% Y The year, including century (for example, 1991).
% Ec  The locale’s alternative date and time representation.
% EC  The name of the base year (period) in the locale’s alternative representation.
% Ex  The locale’s alternative date representation.
% EX  The locale’s alternative time representation.
% Ey  The offset from % EC (year only) in the locale’s alternative representation.
% EY  The full alternative year representation. The O modifier specifies that the
      numerical input may be in an alternative locale-dependent format:
% Od or % Oe  The day of the month using the locale’s alternative numeric symbols; leading
              zeros are permitted but not required.
% OH  The hour (24-hour clock) using the locale’s alternative numeric symbols.
% OI  The hour (12-hour clock) using the locale’s alternative numeric symbols.
% Om  The month using the locale’s alternative numeric symbols.
% OM  The minutes using the locale’s alternative numeric symbols.
% OS  The seconds using the locale’s alternative numeric symbols.
% OU  The week number of the year (Sunday as the first day of the week) using the
      locale’s alternative numeric symbols.
% Ow  The number of the weekday (Sunday=0) using the locale’s alternative numeric
      symbols.
% OW  The week number of the year (Monday as the first day of the week) using the
      locale’s alternative numeric symbols.
% Oy  The year (offset from % C) using the locale’s alternative numeric symbols.
% F   Equivalent to % Y-% m-% d, the ISO 8601 date format.
% g   The year corresponding to the ISO week number, but without the century
      (0-99).
% G   The year corresponding to the ISO week number. (For example, 1991.)
% u   The day of the week as a decimal number (1-7, where Monday = 1).
% V   The ISO 8601:1988 week number as a decimal number (1-53). If the week
      (starting on Monday) containing 1 January has four or more days in the new
      year, then it is considered week 1. Otherwise, it is the last week of the previous
      year, and the next week is week 1.
% z   An RFC-822/ISO 8601 standard timezone specification.
% Z   The timezone name.

% s   The number of seconds since the Epoch, 1970-01-01 00:00:00 +0000 (UTC).
      Leap seconds are not counted unless leap second support is available.
0  Parentheses around the entire string.
1  Before the string.
2  After the string.
3  Just before CurrencySymbol.
4  Just after CurrencySymbol.

0  Parentheses around the entire string.
1  Before the string.
2  After the string.
3  Just before CurrencySymbol.
4  Just after CurrencySymbol.

0  Parentheses around the entire string.
1  Before the string.
2  After the string.
3  Just before CurrencySymbol.
4  Just after CurrencySymbol.

0  Parentheses around the entire string.
1  Before the string.
2  After the string.
3  Just before CurrencySymbol.
4  Just after CurrencySymbol.
59.3. **CLASS NSLOCALEDATEMBS**

59.3  **class NSLocaleDateMBS**

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a date format.  
**Notes:** Should be used with the NSLocaleMBS class, but can be used on its own, too.

59.3.2  **Methods**

59.3.3  **Constructor**

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The default constructor.  
**Notes:** Creates a different object than the once you get by the NSLocaleMBS class. But this date information you get than works on Mac OS X 10.0. The NSLocaleMBS class is Mac OS X 10.4 only.  
See also:

- 59.3.4 Constructor(locale as NSLocaleMBS)

59.3.4  **Constructor(locale as NSLocaleMBS)**

MBS MacBase Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.  
**Example:**

```plaintext
dim n1 as new NSLocaleDateMBS
dim n2 as new NSLocaleDateMBS(NSLocaleMBS.currentLocale)
dim n3 as new NSLocaleDateMBS(NSLocaleMBS.systemLocale)

break // see differences in debugger
```

**Notes:** Initializes the object for a given locale.  
See also:

- 59.3.3 Constructor

59.3.5  **eraSymbols as string()**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the array of era symbols.  
**Example:**
dim l as new NSLocaleMBS
dim n as NSLocaleDateMBS = l.DateLong
dim s(-1) as string = n.eraSymbols

MsgBox join(s, ", ")

// shows for example "v. Chr., n. Chr." (in Germany)
// shows for example "BC, AD" (in USA)
// shows for example "av. J.-C., ap. J.-C." (in France)

Notes:
for example, "BCE", "CE" in the USA.
On error returns an empty array.

59.3.6 longEraSymbols as string()

MBS MacBase Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the long era symbols for the receiver.
Example:

dim l as new NSLocaleMBS
dim n as NSLocaleDateMBS = l.DateLong
dim s(-1) as string = n.longEraSymbols

MsgBox join(s, ", ")

// shows for example "v. Chr., n. Chr." (in Germany)
// shows for example "Before Christ, Anno Domini" (in USA)
// shows for example "avant Jsus-Christ, aprs Jsus-Christ" (in France)

Notes:
An array containing strings representing the era symbols for the receiver (for example, { "Before Common Era", "Common Era" } ).
Available in Mac OS X v10.5 and later.

59.3.7 monthSymbols as string()

Example:
59.3. **CLASS NSLOCALEDATEMBS**

```vba
dim l as new NSLocaleMBS
dim n as NSLocaleDateMBS = l.DateLong
dim s(-1) as string = n.monthSymbols
MsgBox join(s,",")

// shows for example "Januar, Februar, Mrz, April, Mai, Juni, Juli, August, September, Oktober, November, Dezember" (in Germany)
// shows for example "January, February, March, April, May, June, July, August, September, October, November, December" (in USA)
// shows for example "janvier, fvrier, mars, avril, mai, juin, juillet, aot, septembre, octobre, novembre, dcembre" (in France)
```

**Notes:** On error returns an empty array.

### 59.3.8 `quarterSymbols as string()`

MBS MacBase Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the quarter symbols for the receiver.

**Example:**

```vba
dim l as new NSLocaleMBS
dim n as NSLocaleDateMBS = l.DateLong
dim s(-1) as string = n.quarterSymbols
MsgBox join(s,",")

// shows for example "1. Quartal, 2. Quartal, 3. Quartal, 4. Quartal" (in Germany)
// shows for example "1st quarter, 2nd quarter, 3rd quarter, 4th quarter" (in USA)
// shows for example "1er trimestre, 2e trimestre, 3e trimestre, 4e trimestre" (in France)
```

**Notes:** Available in Mac OS X v10.5 and later.

### 59.3.9 `shortMonthSymbols as string()`

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the array of short month.

**Example:**

```vba
dim l as new NSLocaleMBS
dim n as NSLocaleDateMBS = l.DateLong
```

```vba
define m as string
m = "January, February, March, April, May, June, July, August, September, October, November, December"
MsgBox join(s, ",")
```
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59.3.10 shortQuarterSymbols as string()


Example:

```vb
Dim l As New NSLocaleMBS
Dim n As NSLocaleDateMBS = l.DateLong
Dim s(-1) As String = n.shortQuarterSymbols
MsgBox Join(s, ",")

// shows for example "Q1, Q2, Q3, Q4" (in Germany)
// shows for example "Q1, Q2, Q3, Q4" (in USA)
// shows for example "T1, T2, T3, T4" (in France)
```

Notes: Available in Mac OS X v10.5 and later.

59.3.11 shortStandaloneMonthSymbols as string()


Example:

```vb
Dim l As New NSLocaleMBS
Dim n As NSLocaleDateMBS = l.DateLong
Dim s(-1) As String = n.shortStandaloneMonthSymbols
MsgBox Join(s, ",")

// shows for example "Jan, Feb, Mr, Apr, Mai, Jun, Jul, Aug, Sep, Okt, Nov, Dez" (in Germany)
```

Notes: On error returns an empty array.
59.3. CLASS NSLOCALEDATEMBS

// shows for example ”Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec” (in USA)
// shows for example ”janv., fvr., mars, avr., mai, juin, juil., aot, sept., oct., nov., dc.” (in France)

Notes: Available in Mac OS X v10.5 and later.

59.3.12 shortStandaloneQuarterSymbols as string()

Example:

```vbscript
dim l as new NSLocaleMBS
dim n as NSLocaleDateMBS = l.DateLong
dim s(-1) as string = n.shortStandaloneQuarterSymbols
MsgBox join(s, ", ")
```

// shows for example ”Q1, Q2, Q3, Q4” (in Germany)
// shows for example ”Q1, Q2, Q3, Q4” (in USA)
// shows for example ”T1, T2, T3, T4” (in France)

Notes: Available in Mac OS X v10.5 and later.

59.3.13 shortStandaloneWeekdaySymbols as string()

Example:

```vbscript
dim l as new NSLocaleMBS
dim n as NSLocaleDateMBS = l.DateLong
dim s(-1) as string = n.shortStandaloneWeekdaySymbols
MsgBox join(s, ", ")
```

// shows for example ”So., Mo., Di., Mi., Do., Fr., Sa.” (in Germany)
// shows for example ”Sun, Mon, Tue, Wed, Thu, Fri, Sat” (in USA)
// shows for example ”dim., lun., mar., mer., jeu., ven., sam.” (in France)

Notes: Available in Mac OS X v10.5 and later.
59.3.14  shortWeekdaySymbols as string()

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Sets the short weekday symbols.

**Example:**

```vba
dim l as new NSLocaleMBS
dim n as NSLocaleDateMBS = l.DateLong
dim s(-1) as string = n.shortWeekdaySymbols

MsgBox join(s, ", ")
```

// shows for example "So., Mo., Di., Mi., Do., Fr., Sa." (in Germany)
// shows for example "Sun, Mon, Tue, Wed, Thu, Fri, Sat" (in USA)
// shows for example "dim., lun., mar., mer., jeu., ven., sam." (in France)

**Notes:** On error returns an empty array.

59.3.15  standaloneMonthSymbols as string()

MBS MacBase Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the standalone month symbols for the receiver.

**Example:**

```vba
dim l as new NSLocaleMBS
dim n as NSLocaleDateMBS = l.DateLong
dim s(-1) as string = n.standaloneMonthSymbols

MsgBox join(s, ", ")
```

// shows for example "Januar, Februar, Mrz, April, Mai, Juni, Juli, August, September, Oktober, November, Dezember" (in Germany)
// shows for example "January, February, March, April, May, June, July, August, September, October, November, December" (in USA)
// shows for example "janvier, fvrier, mars, avril, mai, juin, juillet, aot, septembre, octobre, novembre, dcembre" (in France)

**Notes:** Available in Mac OS X v10.5 and later.
59.3.16 standaloneQuarterSymbols as string()

MBS MacBase Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the standalone quarter symbols for the receiver.

**Example:**
```
dim l as new NSLocaleMBS
dim n as NSLocaleDateMBS = l.DateLong
dim s(-1) as string = n.standaloneQuarterSymbols

MsgBox join(s, ", ")
```

// shows for example "1. Quartal, 2. Quartal, 3. Quartal, 4. Quartal" (in Germany)
// shows for example "1st quarter, 2nd quarter, 3rd quarter, 4th quarter" (in USA)
// shows for example "1er trimestre, 2e trimestre, 3e trimestre, 4e trimestre" (in France)

**Notes:** Available in Mac OS X v10.5 and later.

59.3.17 standaloneWeekdaySymbols as string()

MBS MacBase Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the array of standalone weekday symbols for the receiver.

**Example:**
```
dim l as new NSLocaleMBS
dim n as NSLocaleDateMBS = l.DateLong
dim s(-1) as string = n.standaloneWeekdaySymbols

MsgBox join(s, ", ")
```

// shows for example "Sonntag, Montag, Dienstag, Mittwoch, Donnerstag, Freitag, Samstag" (in Germany)
// shows for example "Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday" (in USA)
// shows for example "dimanche, lundi, mardi, mercredi, jeudi, vendredi, samedi" (in France)

**Notes:** Available in Mac OS X v10.5 and later.

59.3.18 veryShortMonthSymbols as string()

MBS MacBase Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the very short month symbols for the receiver.

**Example:**
`dim l as new NSLocaleMBS`
`dim n as NSLocaleDateMBS = l.DateLong`
`dim s(-1) as string = n.veryShortMonthSymbols`

`MsgBox join(s,"",")`

// shows for example "J, F, M, A, M, J, J, A, S, O, N, D" (in Germany)
// shows for example "J, F, M, A, M, J, J, A, S, O, N, D" (in USA)
// shows for example "J, F, M, A, M, J, J, A, S, O, N, D" (in France)

**Notes:** Available in Mac OS X v10.5 and later.

### 59.3.19 veryShortStandAloneMonthSymbols as string()

MBS MacBase Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the very short month symbols for the receiver. **Example:**

`dim l as new NSLocaleMBS`
`dim n as NSLocaleDateMBS = l.DateLong`
`dim s(-1) as string = n.veryShortStandAloneMonthSymbols`

`MsgBox join(s,"",")`

// shows for example "J, F, M, A, M, J, J, A, S, O, N, D" (in Germany)
// shows for example "J, F, M, A, M, J, J, A, S, O, N, D" (in USA)
// shows for example "J, F, M, A, M, J, J, A, S, O, N, D" (in France)

**Notes:** Available in Mac OS X v10.5 and later.

### 59.3.20 veryShortStandAloneWeekdaySymbols as string()

MBS MacBase Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the array of very short standalone weekday symbols for the receiver. **Example:**

`dim l as new NSLocaleMBS`
`dim n as NSLocaleDateMBS = l.DateLong`
`dim s(-1) as string = n.veryShortStandAloneWeekdaySymbols`

`MsgBox join(s,"",")`

// shows for example "J, F, M, A, M, J, J, A, S, O, N, D" (in Germany)
// shows for example "J, F, M, A, M, J, J, A, S, O, N, D" (in USA)
// shows for example "J, F, M, A, M, J, J, A, S, O, N, D" (in France)
59.3. class NSLocaleDateMBS

// shows for example "S, M, D, M, D, F, S" (in Germany)
// shows for example "S, M, T, W, T, F, S" (in USA)
// shows for example "D, L, M, M, J, V, S" (in France)

Notes: Available in Mac OS X v10.5 and later.

59.3.21 veryShortWeekdaySymbols as string()

MBS MacBase Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the array of very short weekday symbols for the receiver.

Example:

dim l as new NSLocaleMBS
dim n as NSLocaleDateMBS = l.DateLong
dim s(-1) as string = n.veryShortWeekdaySymbols

MsgBox Join(s," ","")

// shows for example "S, M, D, M, D, F, S" (in Germany)
// shows for example "S, M, T, W, T, F, S" (in USA)
// shows for example "D, L, M, M, J, V, S" (in France)

Notes: Available in Mac OS X v10.5 and later.

59.3.22 weekdaySymbols as string()

MBS MacBase Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the array of weekday symbols for the receiver.

Example:

dim l as new NSLocaleMBS
dim n as NSLocaleDateMBS = l.DateLong
dim s(-1) as string = n.weekdaySymbols

MsgBox Join(s," ","")

// shows for example "Sonntag, Montag, Dienstag, Mittwoch, Donnerstag, Freitag, Samstag" (in Germany)
// shows for example "Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday" (in USA)
// shows for example "dimanche, lundi, mardi, mercredi, jeudi, vendredi, samedi" (in France)
Notes: Available in Mac OS X v10.4 and later.

59.3.23 Properties

59.3.24 AMSymbol as String

Example:
```plaintext
dim l as new NSLocaleMBS
dim n as NSLocaleDateMBS = l.DateLong

MsgBox n.AMSymbol // shows for example "vorm." (in Germany)
```

Notes: (Read only property)

59.3.25 dateFormat as String

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the date format string.
Example:
```plaintext
dim l as new NSLocaleMBS
dim n as NSLocaleDateMBS = l.DateLong

MsgBox n.dateFormat // shows for example: "d. MMMM yyyy" (in Germany)
```

Notes:

Format of this string (if object was made with new):

If you got this object from NSLocale, it uses a different format.
(Read only property)
59.3. **CLASS NSLOCALEDATEMBS**

59.3.26 **PMSymbol as String**

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the PM symbol.

**Example:**

```vbs
dim l as new NSLocaleMBS
dim n as NSLocaleDateMBS = l.DateLong

MsgBox n.PMSymbol // shows for example "nachm." (in Germany)
```

**Notes:** (Read only property)
59.4 class NSLocaleMBS

59.4.1 class NSLocaleMBS

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The class for Cocoa localization data.
**Example:**
```
dim n as NSLocaleMBS
n=NSLocaleMBS.currentLocale
MsgBox n.CountryCode
```
**Notes:** Available in Mac OS X v10.4 and later.

59.4.2 Methods

59.4.3 autoupdatingCurrentLocale as NSLocaleMBS

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the current logical locale for the current user.
**Notes:**
The current logical locale for the current user. The locale is formed from the settings for the current user’s chosen system locale overlaid with any custom settings the user has specified in System Preferences.

The object always reflects the current state of the current user’s locale settings.

Settings you get from this locale do change as the user’s settings change (contrast with currentLocale).

Note that if you cache values based on the locale or related information, those caches will of course not be automatically updated by the updating of the locale object.

Available in Mac OS X v10.5 and later.

59.4.4 availableLocaleIdentifiers as string()

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns an array of strings, each of which identifies a locale available on the system.
Example:

MsgBox join(NSLocaleMBS.availableLocaleIdentifiers,", ")

// shows "zh_Hans_CN, sq_AL, he_IL, uz_Latn, en_CA, zh, kk_Cyrl, sr_Cyrl,
// fr_CA, sr_Cyrl_RS, fr_LU, bg_BG, es_ES, da DK, el_CY, ja_JP, kok_IN,
// nl_MT, fr_JP, de LU, uz_Cyril pt_PT, af, ms_MY, ml_BE, es_US, en_PH,
// zh_HK, be, sr_Latn BA, es CR, ca, vi_VN, zh_Hant HK, bg, gu_IN, si_LK,
// am, or_IN, en_ZA, ar YE, da, uk_UA, ar OM, es PE, cs CZ, kk Cyril KZ,
// de_AT, lv LV, en NZ, ar BH, ar, en AU, az Cyril de, as, bn, zh Hans SG,
// es PY, es EC, ne_IN, pa Guru IN, fa, sw KE, es AR, az, fr FR,
// en US POSIX, sr Cyril BA, cs, zh Hans, en ES, ga, en PK, ar LB, el,
// zh Hant TW, et EE, fi, en, uz Arab AF, sw TZ, it CH, en ZW, ha eo,
// ar SA, cy, th TH, bn BD, te IN, ml IN, he, es, fo, en IN, et, om KE,
// haw, eu, gl, ta IN, zh Hans MO, id, fr, hi, ja, es SV, hu HU, en SG,
// mn NO, az Latn ii, id ID, en DO, fr CH, ka, es UY, en MT, ar QA, ar TN,
// gu, de CH, gv, sk SK, hr, kn IN, de LI, ar EG, el GR, ar SD, hu, af NA,
// zh Hant, ti ER, ar LY, is, ka GE, it, om ET, hy, ii CN, hr HR, ps AF,
// pa Arab PK, es NI, en TT, pa Guru, kk, kl, be BY, km, zh Hans HK, kn,
// sv SE, es BO, ko, nb, ne NP, pa Arab, fr MC, is IS, ne, ar SY, mk,
// uz Arab, so KE, ml, it IT, hy AM, sl SI, ti ET, uz Latn UZ, ar AE,
// lt LT, kw, pa, lt, nl, lv, so SO, mr, nn, ru RU, ms, ga IE, fo FO, mt,
// om, ar MA, ms BN, pl, ha Latn, kok, mk MK, or, uz Cyril UZ, so ET, de DE,
// gl ES, en BW, en JM, ar IQ, ps, az Latn AZ, ta, pt, so DJ, ml NL, af ZA,
// nb NO, en HK, fr SN, si, km KH, te, ro, ko KR, mr IN, sk, en BE, en MH,
// sl, th, ti, fr BE, es CL, pt BR, en VI, es VE, sr Latn ME, so, hi IN,
// as IN, ru, de BE, sq, en GB, sr, fa AF, es MX, kw GB, es PR, ro RO, uk,
// cy GB, en NA, fi FI, ca ES, az Cyril AZ, en IE, gv GB, sv, tr, sw, vi,
// en BZ, en US, hy AM REVISED, ru UA, ur PK, ur, sr Latn RS, am ET, hu IN,
// ar KW, haw US, sr Cyril ME, es PA, es CO, kl GL, sr Latn, uz, ur IN,
// zh Hant MO, ha Latn NG, es GT, tr TR, fa IR, pl PL, sv FI, ar DZ"

Notes: Available in Mac OS X v10.4 and later.

59.4.5 canonicalLanguageIdentifierFromString(s as string) as string

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Returns a canonical language identifier by mapping an arbitrary locale identification string to the canonical identifier.

**Notes:**

s: A string representation of an arbitrary locale identifier.

Returns a string that represents the canonical language identifier for the specified arbitrary locale identifier. Available in Mac OS X v10.6 and later.
59.4.6 canonicalLocaleIdentifierFromString(s as string) as string

Notes: Available in Mac OS X v10.4 and later.

59.4.7 characterDirectionForLanguage(isoLangCode as string) as Integer

Notes: Returns the character direction for the language. See constants for possible values. If the appropriate direction can't be determined NSLocaleLanguageDirectionUnknown is returned.
Available in Mac OS X v10.6 and later.

59.4.8 commonISOCurrencyCodes as string()

Example:
MsgBox join(NSLocaleMBS.commonISOCurrencyCodes, ", ")
// shows "AED, AFN, ALL, AMD, ANG, AOA, ARS, AUD, AWG, AZN, 
// BAM, BBD, BDT, BGN, BHD, BIF, BMD, BND, BOB, BRL, BSD, BTN, 
// BWP, BYR, BZD, CAD, CDF, CHF, CLP, CNY, COP, CRC, CUP, CVE, 
// CZK, DJF, DDK, DOP, DZD, EEP, EGP, ERN, ETB, EUR, FJD, FKP, 
// GBP, GEL, GHS, GIP, GMD, GNF, GTQ, GWP, GYD, HKD, HNL, HRK, 
// HTG, HUF, IDR, ILS, INR, IQD, IRR, ISK, JMD, JOD, JPY, KES, 
// KGS, KHR, KMF, KPW, KRW, KWD, KYD, KZT, LAK, LBP, LKR, LRD, 
// LSL, LTL, LVL, LYD, MAD, MDL, MGA, MKD, MMK, MNT, MOP, MRO, 
// MUR, MVR, MWK, MXN, MYR, MZN, NAD, NGN, NIO, NOK, NPR, 
// NZD, OMR, PAB, PEN, PGK, PHP, PKR, PLN, PYG, QAR, RON, RSD, 
// RUB, RWF, SAR, SBD, SCR, SDG, SEK, SGD, SHP, SKK, SLL, SOS, 
// SRD, STD, SVC, SYP, SZL, THB, TJS, TMM, TND, TOP, TRY, TTD, 
// TWD, TZS, UAH, UGX, USD, UYU, UZS, VEF, VND, VUV, WST, XAF, 
// XCD, XOF, XPF, YER, ZAR, ZMK, ZWD"

Notes:
Common codes may include, for example, AED, AUD, BZD, DKK, EUR, GBP, JPY, KES, MXN, OMR,
59.4. CLASS NSLOCALEMBS

STD, USD, XCD, and ZWD.
Available in Mac OS X v10.5 and later.

59.4.9 Constructor

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The default constructor.

**Notes:**
Available in Mac OS X v10.4 and later.
Loads the same values for this object as if you just take the object from NSLocaleMBS.currentLocale.
See also:

* 59.4.10 Constructor(Identifier as string)

59.4.10 Constructor(Identifier as string)

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor.

**Example:**

```vba
Dim a(-1) As String = NSLocaleMBS.AvailableLocaleIdentifiers

// show all identifiers:
Dim s(-1) As String
s.Append "All available Locale Identifiers:"

Dim c As Integer = UBound(a)
For i As Integer = 0 To c
    Dim identifier As String = a(i)
    s.Append identifier
Next

MsgBox Join(s)

// now show the currency symbols:

Redim s(-1)
s.Append "All Currency symbols:"

Dim c As Integer = UBound(a)
For i As Integer = 0 To c
    Dim identifier As String = a(i)
    Dim n As New NSLocaleMBS(identifier)
    s.Append n.CurrencySymbol
Next
```

```
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Next

MsgBox Join(s)

Notes:
Available in Mac OS X v10.4 and later.
Pass in the country identifier which you get with the availableLocaleIdentifiers function.
See also:
- 59.4.9 Constructor

59.4.11 currentLocale as NSLocaleMBS

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the logical locale for the current user.

Notes:
Available in Mac OS X v10.4 and later.

The logical locale for the current user. The locale is formed from the settings for the current user’s chosen system locale overlaid with any custom settings the user has specified in System Preferences.

This method may return a retained cached object.

Discussion:
Settings you get from this locale do not change as System Preferences are changed so that your operations are consistent. Typically you perform some operations on the returned object and then allow it to be disposed of. Moreover, since the returned object may be cached, you do not need to hold on to it indefinitely.

59.4.12 displayName(key as string, value as string) as string

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the display name for the given value.

**Example:**

```dim displayNameString as string

// The first uses the fr_FR locale.

dim frLocale as new NSLocaleMBS("fr_FR")

displayNameString = frLocale.displayName(frLocale.NSLocaleIdentifier, "fr_FR")```
MsgBox "display name for fr_FR in fr_FR: " + displayNameString
// shows: "display name for fr_FR in fr_FR: franais (France)"

displayNameString = frLocale.displayName(frLocale.NSLocaleIdentifier, "en_US")
MsgBox "display name for en_US in fr_FR: " + displayNameString
// shows: "display name for en_US in fr_FR: anglais (tats-Unis)"

// The following example uses the en_GB locale.

dim gbLocale as new NSLocaleMBS("en_US")

displayNameString = gbLocale.displayName(frLocale.NSLocaleIdentifier, "fr_FR")
MsgBox "display name for fr_FR in en_US: " + displayNameString
// shows: "display name for fr_FR in en_US: French (France)"

displayNameString = gbLocale.displayName(frLocale.NSLocaleIdentifier, "en_US")
MsgBox "display name for en_US in en_US: " + displayNameString
// shows: "display name for en_US in en_US: English (United States)"

Notes:

Not all locale property keys have values with display name values.

You can use the NSLocaleIdentifier key to get the name of a locale in the language of another locale, as illustrated in the example code above.

59.4.13 ExemplarCharacterSet as Variant


Example:

dim n as NSLocaleMBS = NSLocaleMBS.currentLocale

MsgBox n.ExemplarCharacterSet.StringValue
// shows "ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz" in Germany

Notes:

Returns a NSCharacterSetMBS object.
Available in Mac OS X v10.4 and later.
59.4.14 GetString(key as string) as string

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a string for one of the NSLocate keys.

**Notes:**
Available in Mac OS X v10.4 and later.
This keys can be found int he NSLocale reference from Apple.

59.4.15 ISOCountryCodes as string()

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of strings that represents all known legal country codes.

**Example:**

MsgBox join(NSLocaleMBS.ISOCountryCodes, ", ")

```
// shows "AD, AE, AF, AG, AI, AL, AM, AN, AO, AQ, AR, AS, AT, AU,
// AW, AX, AZ, BA, BB, BD, BE, BF, BG, BH, BI, BJ, BL, BM, BN, BO,
// BR, BS, BT, BV, BW, BY, BZ, CA, CC, CD, CF, CG, CH, CI, CK, CL,
// CM, CN, CO, CR, CU, CV, CX, CY, CZ, DE, DJ, DK, DM, DO, DZ, EC,
// EE, EG, EH, ER, ES, ET, FI, FJ, FK, FM, FO, FR, GA, GB, GD, GE,
// GF, GG, GH, GI, GL, GM, GN, GP, GQ, GR, GS, GT, GU, GW, GY, HK,
// HM, HN, HR, HT, HU, ID, IE, IL, IN, IO, IQ, IR, IS, IT, JE,
// JM, JO, JP, KE, KG, KH, KI, KM, KN, KP, KR, KW, KY, KZ, LA, LB,
// LC, LI, LK, LR, LS, LT, LU, LV, LY, MA, MC, MD, ME, MF, MG, MH,
// MK, ML, MM, MN, MO, MP, MQ, MR, MS, MT, MU, MV, MW, MX, MY, MZ,
// NA, NC, NE, NF, NG, NI, NL, false, NP, NR, NU, NZ, OM, PA, PE, PF,
// PG, PH, PK, PL, PM, PN, PR, PS, PT, PW, PY, QA, RE, RO, RS, RU,
// RW, SA, SB, SC, SD, SE, SG, SH, SI, SJ, SK, SL, SM, SN, SO, SR,
// ST, SV, SY, SZ, TC, TD, TF, TG, TH, TJ, TK, TL, TM, TN, TO, TR,
// TT, TV, TW, TZ, UA, UG, UM, US, UY, UZ, VA, VC, VE, VG, VI, VN,
// VU, WF, WS, YE, YT, ZA, ZM, ZW"
```

**Notes:**
Available in Mac OS X v10.4 and later.
Note that many of country codes do not have any supporting locale data in Mac OS X.

59.4.16 ISOCurrencyCodes as string()

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of strings that represents all known legal ISO currency codes.
59.4. CLASS NSLOCALEMBS

Example:

MsgBox join(NSLocaleMBS.ISOCurrencyCodes, ", " )

// shows "ADP, AED, AFA, AFN, ALK, ALL, AMD, ANG, AOA, AOK, AON, AOR, // ARA, ARP, ARS, ATS, AUD, AWG, AZM, AZN, BAD, BAM, BBD, BDT, BGN, // BEF, BEL, BGL, BGR, BHD, BIF, BMD, BND, BOB, BOG, BOV, BRB, // BRC, BRE, BRL, BTN, BRR, BSD, BTN, BWP, BYB, BYN, BZD, CAD, // CDF, CHE, CHF, CHW, CLF, CLP, CNX, CNY, COP, CRC, CSD, CSK, // CUP, CVE, CYP, CZK, DEM, DJF, DKK, DOP, DZD, ECS, ECV, EEP, // EGP, GEL, GHS, GIP, GMD, GNF, GNS, GQF, GTD, GWE, GWP, // GYD, HKD, HNL, HRD, HUF, IDR, IEP, ILS, INR, IQD, // IRR, ISK, JPY, JOD, JPY, KES, KGS, KHR, KMF, KPW, KRW, KWD, // KYD, KZT, LAK, LBP, LKR, LRD, LSL, LTM, LTT, LUC, LUF, LUL, // LVL, LVR, LYD, MAD, MAF, MDL, MGA, MGF, MKD, MLE, MMK, MNT, MOP, // MRU, MTL, MTP, MVR, MWK, MXN, MXP, MYR, MZM, MZN, // NAD, NGN, NIC, NIO, NLG, NOK, NPR, NZD, OMR, PAB, PEN, PES, // PGK, PHP, PRK, PLN, PLZ, PYG, QAR, RHD, ROL, RON, RSD, RUB, // RUR, RWF, SAR, SBD, SCR, SDG, SDN, SEK, SHF, SIT, SKK, // SLL, SOS, STD, SUR, SVC, SYP, SZL, TJS, TMT, // TND, TOP, TPO, TRY, TWD, TZS, UAH, UAK, UGS, UGX, USD, // USN, UUS, UYP, UYU, UZS, VEC, VEF, VND, VUV, WST, XAF, XAG, // XAU, XBA, XBB, XBC, XBD, XCD, XDR, XEU, XFO, XFR, XOF, XPD, XPF, // XPT, XRE, XTS, XXX, YDD, YER, YUD, YUM, YUN, ZAL, ZAR, ZMK, ZRN, // ZRZ, ZWD"

Notes:

Available in Mac OS X v10.4 and later.

Note that some of the currency codes may not have any supporting locale data in Mac OS X.

59.4.17 ISOLanguageCodes as string()


Example:

MsgBox join(NSLocaleMBS.ISOLanguageCodes, ", " )

// shows "aa, ab, ace, ach, ada, ady, ae, af, afa, afh, ain, ak, akk, // alg, alt, am, an, ang, anp, apa, ar, arc, arn, arp, art, arw, // as, ast, ath, aus, av, awa, ay, az, ba, bad, bai, bal, ban, bas, // bat, be, bej, bem, ber, bg, bh, bho, bi, bik, bin, bla, bm, bn, bnt,
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Available in Mac OS X v10.4 and later.

Note that many of the language codes will not have any supporting locale data in Mac OS X.

59.4.18 lineDirectionForLanguage(isoLangCode as string) as Integer


Function:
Returns the line direction for the specified ISO language code.

Notes:
Returns the line direction for the language. See constants for possible values. If the appropriate direction
59.4. CLASS NSLOCALEMBS

Can't be determined NSLocaleLanguageDirectionUnknown is returned.

Available in Mac OS X v10.6 and later.

59.4.19 localeIdentifier as string

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the identifier for the receiver.

**Notes:**
The identifier for the receiver. This may not be the same string that the locale was created with, since NSLocale may canonicalize it.

Available in Mac OS X v10.4 and later.

59.4.20 localeIdentifierFromWindowsLocaleCode(code as Integer) as string

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a locale identifier from a Windows locale code.

**Notes:** Available in Mac OS X v10.6 and later.

59.4.21 NSBuddhistCalendar as string

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the calendar indentifiers.

**Notes:**
Identifier for the Buddhist calendar.
Available in Mac OS X v10.4 and later.

59.4.22 NSChineseCalendar as string

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the calendar indentifiers.

**Notes:**
Identifier for the Chinese calendar (unsupported).

Note that the Chinese calendar is not supported in Mac OS X v10.4-10.5. Although you can create a calendar
using this constant, the object will not function correctly.

Available in Mac OS X v10.4 and later.

59.4.23  NSGregorianCalendar as string

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the calendar identifiers.

**Notes:**
Identifier for the Gregorian calendar.
Available in Mac OS X v10.4 and later.

59.4.24  NSHebrewCalendar as string

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the calendar identifiers.

**Notes:**
Identifier for the Hebrew calendar.
Available in Mac OS X v10.4 and later.

59.4.25  NSIndianCalendar as string

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the calendar identifiers.

**Notes:**
Identifier for the Indian calendar.
Available in Mac OS X v10.6 and later.

59.4.26  NSIslamicCalendar as string

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the calendar identifiers.

**Notes:**
59.4. CLASS NSLOCALEMBS

Identifier for the Islamic calendar.

Available in Mac OS X v10.4 and later.

59.4.27 NSIslamicCivilCalendar as string

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the calendar identifiers.  
**Notes:**  
Identifier for the Islamic civil calendar.

Available in Mac OS X v10.4 and later.

59.4.28 NSISO8601Calendar as string

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the calendar identifiers.  
**Notes:**  
Identifier for the ISO8601. The ISO8601 calendar is not yet implemented.

Available in Mac OS X v10.6 and later.

59.4.29 NSJapaneseCalendar as string

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the calendar identifiers.  
**Notes:**  
Identifier for the Japanese calendar.  
Available in Mac OS X v10.4 and later.

59.4.30 NSLocaleAlternateQuotationBeginDelimiterKey as string

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the displayName and GetString functions.  
**Notes:**
The key for the alternating begin quotation symbol associated with the locale. In some locales, when quotations are nested, the quotation characters alternate. Thus, NSLocaleQuotationBeginDelimiterKey, then NSLocaleAlternateQuotationBeginDelimiterKey, etc.

The corresponding value is a string.
Available in Mac OS X v10.6 and later.

59.4.31 NSLocaleAlternateQuotationEndDelimiterKey as string

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
One of the constants for the displayName and GetString functions.
Notes:
The key for the alternating enda quotation symbol associated with the locale. In some locales, when quotations are nested, the quotation characters alternate. Thus, NSLocaleQuotationEndDelimiterKey, then NSLocaleAlternateQuotationEndDelimiterKey, etc.

The corresponding value is a string.
Available in Mac OS X v10.6 and later.

59.4.32 NSLocaleCalendar as string

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
One of the calendar indentifiers.

59.4.33 NSLocaleCollationIdentifier as string

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
One of the constants for the displayName and GetString functions.

59.4.34 NSLocaleCollatorIdentifier as string

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
One of the constants for the displayName and GetString functions.
Notes:
The key for the collation identifier for the locale.
The corresponding value is a string. If unknown, "" is returned.
59.4. **CLASS NSLOCALEMBS**

Available in Mac OS X v10.6 and later.

### 59.4.35 **NSLocaleCountryCode as string**

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the displayName and GetString functions.

### 59.4.36 **NSLocaleCurrencyCode as string**

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the displayName and GetString functions.

### 59.4.37 **NSLocaleCurrencySymbol as string**

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the displayName and GetString functions.

### 59.4.38 **NSLocaleDecimalSeparator as string**

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the displayName and GetString functions.

### 59.4.39 **NSLocaleExemplarCharacterSet as string**

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the displayName and GetString functions.

### 59.4.40 **NSLocaleGroupingSeparator as string**

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the displayName and GetString functions.
59.4.41  NSLocaleIdentifier as string

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the displayName and GetString functions.

**Example:**

```plaintext
dim n as new NSLocaleMBS("de")
MsgBox n.displayName(n.NSLocaleIdentifier, "en")
```

59.4.42  NSLocaleLanguageCode as string

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the displayName and GetString functions.

59.4.43  NSLocaleMeasurementSystem as string

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the displayName and GetString functions.

59.4.44  NSLocaleQuotationBeginDelimiterKey as string

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the displayName and GetString functions.

**Notes:**

The key for the begin quotation symbol associated with the locale.
The corresponding value is a string.
Available in Mac OS X v10.6 and later.

59.4.45  NSLocaleQuotationEndDelimiterKey as string

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the displayName and GetString functions.

**Notes:**

The key for the begin quotation symbol associated with the locale.
The corresponding value is string.
Available in Mac OS X v10.6 and later.
59.4. CLASS NSLOCALEMBS

59.4.46 NSLocaleScriptCode as string

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the constants for the displayName and GetString functions.

59.4.47 NSLocaleUsesMetricSystem as string

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the constants for the displayName and GetString functions.

59.4.48 NSLocaleVariantCode as string

MBS MacBase Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the constants for the displayName and GetString functions.

59.4.49 NSPersianCalendar as string

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the calendar indentifiers.
**Notes:**
Identifier for the Persian calendar.
Available in Mac OS X v10.6 and later.

59.4.50 NSRepublicOfChinaCalendar as string

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the calendar indentifiers.
**Notes:**
Identifier for the Republic of China (Taiwan) calendar.

A Chinese calendar can be created, and one can do calendrical calculations with it, but it should not be used
for formatting as the necessary underlying functionality is not functioning correctly yet.

Available in Mac OS X v10.6 and later.
**59.4.51 preferredLanguages as string()**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the user’s language preference order as an array of strings.

**Example:**

```plaintext
MsgBox join(NSLocaleMBS.preferredLanguages," ",")
```

// shows "de, en, fr, es, it, pt, pt-PT, nl, sv, nb, da, fi, ru, pl, zh-Hans, ja, zh-Hant, ko"

**Notes:**

The user’s language preference order as an array of String objects, each of which is a canonicalized IETF BCP 47 language identifier.

Available in Mac OS X v10.5 and later.

This is the language the user prefers. To get the country linked to the number and date formats, use the CountryCode property.

**59.4.52 systemLocale as NSLocaleMBS**

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the "root", canonical locale, that contains fixed "backstop" settings that provide values for otherwise undefined keys.

**Notes:** Available in Mac OS X v10.4 and later.

**59.4.53 windowsLocaleCodeFromLocaleIdentifier(s as string) as Integer**

MBS MacBase Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Window locale code from the locale identifier.

**Notes:** Available in Mac OS X v10.6 and later.

**59.4.54 Properties**

**59.4.55 CollationIdentifier as String**

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The collation associated with the locale.

**Example:**
59.4. CLASS NSLOCALEMBS

dim n as new NSLocaleMBS

MsgBox n.CollationIdentifier // shows "" in Germany

Notes:
Available in Mac OS X v10.4 and later.
(Read only property)

59.4.56 CountryCode as String

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The country code.
**Example:**

dim n as new NSLocaleMBS

MsgBox n.CountryCode // shows "DE" in Germany

Notes:
An example value might be "ES".
Available in Mac OS X v10.4 and later.

This code here is the country where the number and date settings belong to. This is not the language the user has. To get the languages, check the preferredLanguages array.
(Read only property)

59.4.57 CurrencyCode as String

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The currency code associated with the locale.
**Example:**

dim n as new NSLocaleMBS

MsgBox n.CurrencyCode // shows "EUR" in Germany

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Available in Mac OS X v10.4 and later.
(Read only property)

59.4.58 CurrencySymbol as String

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The currency symbol associated with the locale.
Example:

```dim n as new NSLocaleMBS
MsgBox n.CurrencySymbol // shows "$" in Germany```

Notes:
Available in Mac OS X v10.4 and later.
(Read only property)

59.4.59 DateFull as NSLocaleDateMBS

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The full date format.
Notes:
Available in Mac OS X v10.4 and later.
(Read only property)

59.4.60 DateLong as NSLocaleDateMBS

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The long date format.
Notes:
Available in Mac OS X v10.4 and later.
(Read only property)

59.4.61 DateMedium as NSLocaleDateMBS

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The medium date format.
59.4. CLASS NSLOCALEMBS

Notes:
Available in Mac OS X v10.4 and later.
(Read only property)

59.4.62 DateShort as NSLocaleMBS

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The short date format.

**Example:**
MsgBox NSLocaleMBS.currentLocale.DateShort.dateFormat
// in Germany: "dd.MM.yy"

Notes:
Available in Mac OS X v10.4 and later.
(Read only property)

59.4.63 DecimalSeparator as String

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The decimal separator associated with the locale.

**Example:**
dim n as new NSLocaleMBS
MsgBox n.DecimalSeparator // shows ",," in Germany

Notes:
Available in Mac OS X v10.4 and later.
(Read only property)

59.4.64 GroupingSeparator as String

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The numeric grouping separator associated with the locale.

**Example:**
dim n as new NSLocaleMBS

MsgBox n.GroupingSeparator // shows "." in Germany

Notes:
Available in Mac OS X v10.4 and later.
(Read only property)

59.4.65 Identifier as String

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The locale identifier.
**Example:**

dim n as new NSLocaleMBS

MsgBox n.Identifier // shows "de_DE" in Germany

Notes:
An example value might be "es_ES_PREEURO".
Available in Mac OS X v10.4 and later.
(Read only property)

59.4.66 LanguageCode as String

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The language code.
**Example:**

dim n as new NSLocaleMBS

MsgBox n.LanguageCode // shows "de" in Germany

Notes:
An example value might be "es".
Available in Mac OS X v10.4 and later.
(Read only property)
59.4. **CLASS NSLOCALEMBS**

59.4.67 **MeasurementSystem as String**

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The measurement system associated with the locale.

**Example:**

```vbnet
dim n as new NSLocaleMBS
MsgBox n.MeasurementSystem // shows "Metric" in Germany
```

**Notes:**

Available in Mac OS X v10.4 and later.
(Read only property)

59.4.68 **NumberCurrency as NSLocaleNumberMBS**

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The currency style for number formatting.

**Notes:**

Available in Mac OS X v10.4 and later.
(Read only property)

59.4.69 **NumberDecimal as NSLocaleNumberMBS**

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Specifies a decimal style for numbers.

**Notes:**

Available in Mac OS X v10.4 and later.
(Read only property)

59.4.70 **NumberPercent as NSLocaleNumberMBS**

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The percent style for number formatting.

**Notes:**

Available in Mac OS X v10.4 and later.
(Read only property)
59.4.71 NumberScientific as NSLocaleNumberMBS

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Specifies a scientific style for numbers. **Notes:**
Available in Mac OS X v10.4 and later. (Read only property)

59.4.72 NumberSpellOut as NSLocaleNumberMBS

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Specifies a spell-out format; for numbers, "23" becomes "twenty-three". **Notes:**
Available in Mac OS X v10.4 and later. (Read only property)

59.4.73 ScriptCode as String

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The locale script code. **Example:**
```vbs
dim n as new NSLocaleMBS
MsgBox n.ScriptCode // shows "" in Germany
```

**Notes:**
Available in Mac OS X v10.4 and later. (Read only property)

59.4.74 UsesMetricSystem as Boolean

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The flag that indicates whether the locale uses the metric system. **Example:**
```vbs
dim n as new NSLocaleMBS
dim v as Variant
```
v=n.UsesMetricSystem
MsgBox v // shows "True" in Germany

Notes:
Available in Mac OS X v10.4 and later.
(Read only property)

59.4.75 VariantCode as String

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The locale variant code. **Example:**

dim n as new NSLocaleMBS

MsgBox n.VariantCode // shows "" in Germany

Notes:
An example value might be "PREEURO". Available in Mac OS X v10.4 and later.
(Read only property)

59.4.76 Constants

59.4.77 NSLocaleLanguageDirectionBottomToTop = 4

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants describing the text direction for a language. **Notes:**
The language direction is from bottom to top. Available in Mac OS X v10.6 and later.

59.4.78 NSLocaleLanguageDirectionLeftToRight = 1

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants describing the text direction for a language. **Notes:**
The language direction is from left to right.
Available in Mac OS X v10.6 and later.

59.4.79  **NSLocaleLanguageDirectionRightToLeft** = 2

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants describing the text direction for a language.
**Notes:**
The language direction is from right to left.
Available in Mac OS X v10.6 and later.

59.4.80  **NSLocaleLanguageDirectionTopToBottom** = 3

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants describing the text direction for a language.
**Notes:**
The language direction is from top to bottom.
Available in Mac OS X v10.6 and later.

59.4.81  **NSLocaleLanguageDirectionUnknown** = 0

MBS MacBase Plugin, Plugin Version: 9.6. **Function:** One of the constants describing the text direction for a language.
**Notes:**
The direction of the language is unknown.
Available in Mac OS X v10.6 and later.
59.5. **CLASS NSLOCALENUMBERMBS**

59.5 class NSLocaleNumberMBS

59.5.1 class NSLocaleNumberMBS

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a number format.
**Notes:** Should be used with the NSLocaleMBS class, but can be used on its own, too.

59.5.2 Methods

59.5.3 Constructor

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Notes:**
- Loads values.
- No the same values as if you get when using this class with NSLocaleMBS.
- See also:

- 59.5.4 Constructor(locale as NSLocaleMBS)

59.5.4 Constructor(locale as NSLocaleMBS)

MBS MacBase Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
**Example:**
```
    dim n1 as new NSLocaleNumberMBS
    dim n2 as new NSLocaleNumberMBS(NSLocaleMBS.currentLocale)
    dim n3 as new NSLocaleNumberMBS(NSLocaleMBS.systemLocale)

    break // see differences in debugger
```

**Notes:** Initializes the object for a given locale.
See also:

- 59.5.3 Constructor
59.5.5 Properties

59.5.6 alwaysShowsDecimalSeparator as Boolean

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value that indicates whether the receiver always shows a decimal separator, even if the number is an integer.

**Notes:** (Read and Write property)

59.5.7 currencyCode as String

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the currency code.

**Example:**

```dim l as new NSLocaleMBS
dim n as NSLocaleNumberMBS = l.NumberCurrency
MsgBox n.currencycode
// shows for example: e.g "EUR" (in Germany)
```

**Notes:**

A currency code is a three-letter code that is, in most cases, composed of a country’s two-character Internet country code plus an extra character to denote the currency unit. For example, the currency code for the Australian dollar is "AUD". Currency codes are based on the ISO 4217 standard.

Available in Mac OS X v10.4 and later.

(Read and Write property)

59.5.8 currencyDecimalSeparator as String

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the currency decimal separator as a string.

**Example:**

```dim l as new NSLocaleMBS
dim n as NSLocaleNumberMBS = l.NumberCurrency
MsgBox n.currencyDecimalSeparator
// shows for example: e.g "," (in Germany)
```
59.5.9 currencyGroupingSeparator as String

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The currency grouping separator for the receiver. 
**Notes:**
Available in Mac OS X v10.5 and later.
(Read and Write property)

59.5.10 currencySymbol as String

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the local currency symbol.
**Example:**
```lisp
dim l as new NSLocaleMBS
dim n as NSLocaleNumberMBS = l.NumberCurrency
MsgBox n.currencycode
// shows for example: e.g "" (in Germany)
```
**Notes:** (Read and Write property)

59.5.11 decimalSeparator as String

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a string containing the character to represent decimal separators.
**Example:**
```lisp
dim l as new NSLocaleMBS
dim n as NSLocaleNumberMBS = l.NumberCurrency
MsgBox n.decimalSeparator
// shows for example: e.g "," (in Germany)
```
**Notes:** (Read and Write property)
59.5.12 exponentSymbol as String

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the string used as an exponent symbol.
**Example:**
```
dim l as new NSLocaleMBS
dim n as NSLocaleNumberMBS = l.NumberCurrency
MsgBox n.exponentSymbol
// shows for example: e.g "E" (in Germany)
```

**Notes:**
The exponent symbol is the "E" or "e" in the scientific notation of numbers, as in 1.0e+56.
(Read and Write property)

59.5.13 format as String

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The format used by the receiver.
**Notes:** (Read and Write property)

59.5.14 groupingSeparator as String

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a string containing the grouping separator.
**Example:**
```
dim l as new NSLocaleMBS
dim n as NSLocaleNumberMBS = l.NumberCurrency
MsgBox n.groupingSeparator
// shows for example: e.g "." (in Germany)
```

**Notes:**
For example, the grouping separator used in the United States is the comma ("10,000") whereas in France it is the period ("10.000").
59.5. **CLASS NSLOCALENUMBERMBS**

(Read and Write property)

59.5.15 **hasThousandSeparators as Boolean**

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value that indicates whether the receiver’s format includes thousand separators.  
**Notes:** (Read and Write property)

59.5.16 **internationalCurrencySymbol as String**

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the international currency symbol.  
**Example:**

```vbnet
dim l as new NSLocaleMBS
dim n as NSLocaleNumberMBS = l.NumberCurrency
MsgBox n.internationalCurrencySymbol
// shows for example: e.g "EUR" (in Germany)
```

**Notes:**

A country typically has a local currency symbol and an international currency symbol. The local symbol is used within the country, while the international currency symbol is used in international contexts to specify that country’s currency unambiguously. The international currency symbol is often represented by a Unicode code point.  
(Read and Write property)

59.5.17 **Lenient as Boolean**

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value that indicates whether the receiver uses heuristics to guess at the date which is intended by a string.  
**Notes:** (Read and Write property)

59.5.18 **localizesFormat as Boolean**

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value that indicates whether the receiver localizes formats.
59.5.19  minusSign as String

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the string used to represent the minus sign.
**Example:**
```
dim l as new NSLocaleMBS
dim n as NSLocaleNumberMBS = l.NumberCurrency
MsgBox n.minusSign
// shows for example: e.g ”-“ (in Germany)
```

**Notes:** (Read and Write property)

59.5.20  negativeFormat as String

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the format used to display negative numbers.
**Example:**
```
dim l as new NSLocaleMBS
dim n as NSLocaleNumberMBS = l.NumberCurrency
MsgBox n.negativeFormat
// shows for example: e.g ”#,#,0.00” (in Germany)
```

**Notes:** (Read and Write property)

59.5.21  negativeInfinitySymbol as String

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the symbol used to represent negative infinity.
**Example:**
```
dim l as new NSLocaleMBS
dim n as NSLocaleNumberMBS = l.NumberCurrency
MsgBox n.negativeInfinitySymbol
```
59.5. CLASS NSLOCALENUMBERMBS

// shows for example: e.g "" (in Germany)

Notes: (Read only property)

59.5.22 negativePrefix as String

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the string which is inserted as a prefix to negative values.
Example:

```vba
dim l as new NSLocaleMBS
dim n as NLSLocaleNumberMBS = l.NumberCurrency
MsgBox n.negativePrefix
// shows for example: e.g "-" (in Germany)
```

Notes: (Read and Write property)

59.5.23 negativeSuffix as String

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the string which adds as a suffix to negative values.
Example:

```vba
dim l as new NSLocaleMBS
dim n as NLSLocaleNumberMBS = l.NumberCurrency
MsgBox n.negativeSuffix
// shows for example: e.g "" (in Germany)
```

Notes: (Read and Write property)

59.5.24 nilSymbol as String

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the string used to represent a nil value.
Example:
CHAPTER 59. CURRENCY, DATE AND TIME FORMAT

```vbnet
Dim l As New NSLocaleMBS
Dim n As NSLocaleNumberMBS = l.NumberCurrency

MsgBox n.nilSymbol
// shows for example: e.g "" (in Germany)

Notes: (Read only property)
```

### 59.5.25 notANumberSymbol as String

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the symbol used to represent NaN ("not a number") when it converts values.

**Example:**
```
Dim l As New NSLocaleMBS
Dim n As NSLocaleNumberMBS = l.NumberCurrency

MsgBox n.notANumberSymbol
// shows for example: e.g "NaN" (in Germany)
```

Notes: (Read only property)

### 59.5.26 paddingCharacter as String

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a string containing the padding character.

**Example:**
```
Dim l As New NSLocaleMBS
Dim n As NSLocaleNumberMBS = l.NumberCurrency

MsgBox n.paddingCharacter
// shows for example: e.g "*" (in Germany)
```

Notes: (Read and Write property)
59.5.27 PartialStringValidationEnabled as Boolean

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value that indicates whether partial string validation is enabled. **Notes:** (Read and Write property)

59.5.28 percentSymbol as String

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the string that is used to represent the percent symbol. **Example:**

```vbnet
dim l as new NSLocaleMBS
dim n as NSLocaleNumberMBS = l.NumberCurrency
MsgBox n.percentSymbol
// shows for example: e.g ”% ” (in Germany)
```

**Notes:** (Read and Write property)

59.5.29 perMillSymbol as String

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the string that is used for the per-thousands symbol. **Example:**

```vbnet
dim l as new NSLocaleMBS
dim n as NSLocaleNumberMBS = l.NumberCurrency
MsgBox n.perMillSymbol
// shows for example: e.g ”‰” (in Germany)
```

**Notes:** (Read and Write property)

59.5.30 plusSign as String

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the string used for the plus sign. **Example:**

```vbnet
CHAPTER 59. CURRENCY, DATE AND TIME FORMAT

dim l as new NSLocaleMBS
dim n as NSLocaleNumberMBS = l.NumberCurrency

MsgBox n.plusSign
// shows for example: e.g ”+” (in Germany)

Notes: (Read and Write property)

59.5.31 positiveFormat as String

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns the format used to display positive numbers.
Example:
dim l as new NSLocaleMBS
dim n as NSLocaleNumberMBS = l.NumberCurrency

MsgBox n.negativeFormat
// shows for example: e.g ”# ,# # 0.00 ” (in Germany)

Notes: (Read and Write property)

59.5.32 positiveInfinitySymbol as String

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns the string used for the positive infinity symbol.
Example:
dim l as new NSLocaleMBS
dim n as NSLocaleNumberMBS = l.NumberCurrency

MsgBox n.positiveInfinitySymbol
// shows for example: e.g ”” (in Germany)

Notes: (Read only property)
59.5.33 positivePrefix as String

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the string used as the prefix for positive values.

**Example:**
```
Dim l As New NSLocaleMBS
Dim n As NSLocaleNumberMBS = l.NumberCurrency
MsgBox n.positivePrefix
// shows for example: e.g "" (in Germany)
```

**Notes:** (Read and Write property)

59.5.34 positiveSuffix as String

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the string used as the suffix for positive values.

**Example:**
```
Dim l As New NSLocaleMBS
Dim n As NSLocaleNumberMBS = l.NumberCurrency
MsgBox n.positiveSuffix
// shows for example: e.g " " (in Germany)
```

**Notes:** (Read and Write property)

59.5.35 thousandSeparator as String

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value that indicates whether the receiver’s format includes thousand separators.

**Notes:** (Read and Write property)

59.5.36 usesGroupingSeparator as Boolean

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value that indicates whether the receiver uses the grouping separator.
59.5.37  usesSignificantDigits as Boolean

MBS MacBase Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A Boolean value that indicates whether the receiver uses significant digits. Notes: (Read and Write property)

59.5.38  zeroSymbol as String

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the string used as the zero symbol. Example:

```vba
dim l as new NSLocaleMBS
dim n as NSLocaleNumberMBS = l.NumberCurrency
MsgBox n.zeroSymbol
// shows for example: e.g "0" (in Germany)
```

Notes: (Read and Write property)
59.6.  CLASS WINLOCALIZATIONMBS

59.6  class WinLocalizationMBS

59.6.1  class WinLocalizationMBS

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A class for details about the current localization

**Example:**

```vbnet
dim l as WinLocalizationMBS
l=new WinLocalizationMBS
```

**Notes:**

This class has a constructor to specify whether you want unicode or not.

You may write yourself functions to acquire the details you need in your application from the Windows and from the Mac classes.
Also you may consider to update your values as the user may change them while your application is running.

59.6.2  Methods

59.6.3  AbbreviatedDayName(index as Integer) as string

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The localized name of the day.

**Notes:**

Index from 0 to 6.
e.g. on a German Windows XP system: AbbreviatedDayName(0)=”Mo"

59.6.4  AbbreviatedMonthName(index as Integer) as string

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The localized month name.

**Notes:**

Index from 0 to 12. 0=January, 11=December, 12=13th month if exists.
e.g. on a German Windows XP system: AbbreviatedMonthName(0)=”Jan”
59.6.5 Constructor

MBS Win Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The constructor to get the values for the current locale.

**Notes:**

There are four constructors:

- You can pass nothing to get the current locale.
- You can pass a Locale Identifier.
- You can pass a LanguageID and a SortID.
- You can pass a PrimaryLanguageID and a SubLanguageID combined with a SortID.

Use the LANG_* constants for the PrimaryLanguageID, the SUBLANG_* constants for the SubLanguageID and the SORT_* constants for the SortID.

**See also:**

- 59.6.6 Constructor(LanguageID as Integer, SortID as Integer)
- 59.6.7 Constructor(LCID as Integer)
- 59.6.8 Constructor(PrimaryLanguage as Integer, SubLanguage as Integer, SortID as Integer)

59.6.6 Constructor(LanguageID as Integer, SortID as Integer)

MBS Win Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor to query values for a given language.

**Notes:**

There are four constructors:

- You can pass nothing to get the current locale.
- You can pass a Locale Identifier.
- You can pass a LanguageID and a SortID.
- You can pass a PrimaryLanguageID and a SubLanguageID combined with a SortID.

Use the LANG_* constants for the PrimaryLanguageID, the SUBLANG_* constants for the SubLanguageID and the SORT_* constants for the SortID.

**See also:**

- 59.6.5 Constructor
- 59.6.7 Constructor(LCID as Integer)
- 59.6.8 Constructor(PrimaryLanguage as Integer, SubLanguage as Integer, SortID as Integer)
59.6. **CLASS WINLOCALIZATIONMBS**

### 59.6.7 Constructor(LCID as Integer)

MBS Win Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor to query values for a given language.  
**Notes:**  
There are four constructors:

- You can pass nothing to get the current locale.
- You can pass a Locale Identifier.
- You can pass a LanguageID and a SortID.
- You can pass a PrimaryLanguageID and a SubLanguageID combined with a SortID.

Use the LANG_* constants for the PrimaryLanguageID, the SUBLANG_* constants for the SubLanguageID and the SORT_* constants for the SortID.  
See also:

- 59.6.5 Constructor  
- 59.6.6 Constructor(LanguageID as Integer, SortID as Integer)  
- 59.6.8 Constructor(PrimaryLanguage as Integer, SubLanguage as Integer, SortID as Integer)

### 59.6.8 Constructor(PrimaryLanguage as Integer, SubLanguage as Integer, SortID as Integer)

MBS Win Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor to query values for a given language.  
**Notes:**  
There are four constructors:

- You can pass nothing to get the current locale.
- You can pass a Locale Identifier.
- You can pass a LanguageID and a SortID.
- You can pass a PrimaryLanguageID and a SubLanguageID combined with a SortID.

Use the LANG_* constants for the PrimaryLanguageID, the SUBLANG_* constants for the SubLanguageID and the SORT_* constants for the SortID.  
See also:
59.6.9 LongDayName(index as Integer) as string

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The localized name of the day.
**Notes:**
Index from 0 to 6.
e.g. on a German Windows XP system: LongDayName(0)="Montag"

59.6.10 LongMonthName(index as Integer) as string

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The localized month name.
**Notes:**
Index from 0 to 12. 0=January, 11=December, 12=13th month if exists.
e.g. on a German Windows XP system: LongMonthName(0)="Januar"

59.6.11 Properties

59.6.12 CalendarTypeSpecifier as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Current calendar type.
**Notes:**
This type can be one of these values:

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gregorian (as in United States)</td>
</tr>
<tr>
<td>2</td>
<td>Gregorian (English strings always)</td>
</tr>
<tr>
<td>3</td>
<td>Era: Year of the Emperor (Japan)</td>
</tr>
<tr>
<td>4</td>
<td>Era: Year of Taiwan Region</td>
</tr>
<tr>
<td>5</td>
<td>Tangun Era (Korea)</td>
</tr>
</tbody>
</table>
59.6. **CLASS WINLOCALIZATIONMBS**

 e.g. on a German Windows XP system: "1"
 (Read only property)

---

### 59.6.13 **CalendarTypeSpecifier2 as String**

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Additional calendar types.

**Notes:**

This can be a zero-separated list of one or more of these calendars type values:

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No additional types valid</td>
</tr>
<tr>
<td>1</td>
<td>Gregorian (as in United States)</td>
</tr>
<tr>
<td>2</td>
<td>Gregorian (English strings always)</td>
</tr>
<tr>
<td>3</td>
<td>Era: Year of the Emperor (Japan)</td>
</tr>
<tr>
<td>4</td>
<td>Era: Year of Taiwan Region</td>
</tr>
<tr>
<td>5</td>
<td>Tangun Era (Korea)</td>
</tr>
</tbody>
</table>

 e.g. on a German Windows XP system: ""
 (Read only property)

---

### 59.6.14 **CountryCode as String**

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Country code, based on international phone codes, also referred to as IBM country codes.

**Notes:**

The maximum number of characters allowed for this string is 6.
 e.g. on a German Windows XP system: "49"
 (Read only property)

---

### 59.6.15 **CountryNameAbbreviated as String**

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Abbreviated name of the country from the ISO Standard 3166.

**Notes:**

 e.g. on a German Windows XP system: "DEU"
59.6.16 CountryNameAbbreviatedISO as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** ISO abbreviated country name.

**Notes:**
e.g. on a German Windows XP system: "DE"

(Read only property)

59.6.17 CountryNameEnglish as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Full English name of the country.

**Notes:**
This is always restricted to characters mappable into the ASCII 127-character subset.
e.g. on a German Windows XP system: "English"

(Read only property)

59.6.18 CountryNameLocalized as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Full localized name of the country.

**Notes:**
e.g. on a German Windows XP system: "Deutschland"

(Read only property)

59.6.19 CountryNameNative as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Native name of the country.

**Notes:**
e.g. on a German Windows XP system: "Deutschland"

(Read only property)
59.6. **CLASS WINLOCALIZATIONMBS**

### 59.6.20 CurrencyDecimalSeparator as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Character(s) used as the monetary decimal separator. **Notes:**

- e.g. on a German Windows XP system: ","
- (Read only property)

### 59.6.21 CurrencyDigitsInternational as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Number of fractional digits for the international monetary format. **Notes:**

- The maximum number of characters allowed for this string is 3.
- e.g. on a German Windows XP system: "2"
- (Read only property)

### 59.6.22 CurrencyDigitsLocalized as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Number of fractional digits for the local monetary format. **Notes:**

- The maximum number of characters allowed for this string is 3.
- e.g. on a German Windows XP system: "2"
- (Read only property)

### 59.6.23 CurrencyGroupingMode as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Sizes for each group of monetary digits to the left of the decimal. **Notes:**

- An explicit size is needed for each group; sizes are separated by semicolons. If the last value is zero, the preceding value is repeated. To group thousands, specify 3;0, for example.
- e.g. on a German Windows XP system: "3;0"
- (Read only property)
59.6.24 CurrencyNameEnglish as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The full English name of the currency associated with the locale.
**Notes:**
e.g. on a German Windows XP system: "Euro"
Introduced with Windows 2000.
(Read only property)

59.6.25 CurrencyNameNative as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The native name of the currency associated with the locale.
**Notes:**
e.g. on a German Windows XP system: "Euro"
Introduced with Windows 2000.
(Read only property)

59.6.26 CurrencyNegativeMode as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Negative currency mode.
**Notes:**
The maximum number of characters allowed for this string is 3. The mode can be one of the following values:
e.g. on a German Windows XP system: "8"
(Read only property)

59.6.27 CurrencyPositiveMode as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Positive currency mode.
**Notes:**
The maximum number of characters allowed for this string is 2. The mode can be one of the following values:
e.g. on a German Windows XP system: "3"
(Read only property)
59.6. **CLASS WINLOCALIZATIONMBS**

<table>
<thead>
<tr>
<th>Value</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>($ 1.1)</td>
</tr>
<tr>
<td>1</td>
<td>$ 1.1</td>
</tr>
<tr>
<td>2</td>
<td>$ 1.1</td>
</tr>
<tr>
<td>3</td>
<td>$ 1.1</td>
</tr>
<tr>
<td>4</td>
<td>(1.1$ )</td>
</tr>
<tr>
<td>5</td>
<td>1.1$</td>
</tr>
<tr>
<td>6</td>
<td>1.1$</td>
</tr>
<tr>
<td>7</td>
<td>1.1$</td>
</tr>
<tr>
<td>8</td>
<td>1.1 $ (space before $ )</td>
</tr>
<tr>
<td>9</td>
<td>$ 1.1 (space after $ )</td>
</tr>
<tr>
<td>10</td>
<td>1.1 $ (space before $ )</td>
</tr>
<tr>
<td>11</td>
<td>$ 1.1 (space after $ )</td>
</tr>
<tr>
<td>12</td>
<td>$ 1.1 (space after $ )</td>
</tr>
<tr>
<td>13</td>
<td>1.1 $ (space before $ )</td>
</tr>
<tr>
<td>14</td>
<td>($ 1.1) (space after $ )</td>
</tr>
<tr>
<td>15</td>
<td>(1.1 $ ) (space before $ )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Prefix, no separation</td>
</tr>
<tr>
<td>1</td>
<td>Suffix, no separation</td>
</tr>
<tr>
<td>2</td>
<td>Prefix, 1-char. separation</td>
</tr>
<tr>
<td>3</td>
<td>Suffix, 1-char. separation</td>
</tr>
</tbody>
</table>

59.6.28 **CurrencySymbolInternational as String**

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Three characters of the international monetary symbol specified in ISO 4217, "Codes for the Representation of Currencies and Funds," followed by the character separating this string from the amount.

**Example:**

```vbnet
Dim WinLoc As WinLocalizationMBS
dim s as string

WinLoc=New WinLocalizationMBS

s=WinLoc.CurrencySymbolLocalized
msgbox str(lenb(s))+” ”+str(len(s))+” ”+s
s=WinLoc.CurrencySymbolInternational
msgbox str(lenb(s))+” ”+str(len(s))+” ”+s
```
CHAPTER 59. CURRENCY, DATE AND TIME FORMAT

Notes:

e.g. on a German Windows XP system: "EUR"
(Read only property)

59.6.29 CurrencySymbolLocalized as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
String used as the local monetary symbol.

**Example:**

Dim WinLoc As WinLocalizationMBS
dim s as string

WinLoc=New WinLocalizationMBS

s=WinLoc.CurrencySymbolLocalized
msgbox str(lenb(s))+""+str(len(s))+""+s
s=WinLoc.CurrencySymbolInternational
msgbox str(lenb(s))+""+str(len(s))+""+s

Notes:

e.g. on a German Windows XP system: ""
(Read only property)

59.6.30 CurrencyThousandSeparator as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Character(s) used as the monetary separator between groups of digits to the left of the decimal.

**Notes:**

e.g. on a German Windows XP system: "."
(Read only property)

59.6.31 DateLeadingZerosDay as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Specifier for leading zeros in day fields.

**Notes:**
The maximum number of characters allowed for this string is 2. The specifier can be one of the following values:

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No leading zeros for days</td>
</tr>
<tr>
<td>1</td>
<td>Leading zeros for days</td>
</tr>
</tbody>
</table>

*Note:* e.g. on a German Windows XP system: "1"  
(Read only property)

**59.6.32**  
**DateLeadingZerosMonth as String**

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Specifier for leading zeros in month fields.  
**Notes:**  
The maximum number of characters allowed for this string is 2. The specifier can be one of the following values:

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No leading zeros for months</td>
</tr>
<tr>
<td>1</td>
<td>Leading zeros for months</td>
</tr>
</tbody>
</table>

*Note:* e.g. on a German Windows XP system: "1"  
(Read only property)

**59.6.33**  
**DateLongFormatOrdering as String**

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Long date format-ordering specifier.  
**Notes:**  
The maximum number of characters allowed for this string is 2. The specifier can be one of the following values:

*Note:* e.g. on a German Windows XP system: "1"  
(Read only property)
59.6.34 DateLongFormatString as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Long date formatting string for this locale.

**Notes:**

The string can consist of a combination of day, month, and year format pictures defined in the Day, Month, Year, and Era Format Pictures table in National Language Support Constants and any string of characters enclosed in single quotes. Characters in single quotes remain as given.

E.g. on a German Windows XP system: "dddd, d. MMMM yyyy"
(Read only property)

59.6.35 DateSeparator as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Character(s) for the date separator.

**Notes:**

E.g. on a German Windows XP system: "."
(Read only property)

59.6.36 DateShortFormatOrdering as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Short date format-ordering specifier.

**Notes:**

The maximum number of characters allowed for this string is 2. The specifier can be one of the following values:

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Month-Day-Year</td>
</tr>
<tr>
<td>1</td>
<td>Day-Month-Year</td>
</tr>
<tr>
<td>2</td>
<td>Year-Month-Day</td>
</tr>
</tbody>
</table>
59.6. CLASS WINLOCALIZATIONMBS

59.6.37 DateShortFormatString as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Short date formatting string for this locale. **Example:**

```vba
dim w as new WinLocalizationMBS
MsgBox w.DateShortFormatString
```

**Notes:**
The string can consist of a combination of day, month, and year format pictures defined in Day, Month, Year, and Era Format Pictures table in National Language Support Constants. e.g. on a German Windows XP system: "dd.MM.yyyy" (Read only property)

59.6.38 DateShortYearMonth as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The Year/Month formatting string for the locale. **Notes:**
This string shows the proper format for a date string that contains only the year and the month. e.g. on a German Windows XP system: "MMMM yyyy" Introduced with Windows 2000. (Read only property)

59.6.39 DecimalSeparator as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Character(s) used as the decimal separator. **Notes:**
e.g. on a German Windows XP system: "," (Read only property)
59.6.40  DefaultCodePageANSI as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** American National Standards Institute (ANSI) code page associated with this locale. **Notes:**

The maximum number of characters allowed for this string is 6.
e.g. on a German Windows XP system: "1252"
(Read only property)

59.6.41  DefaultCodePageEBCDIC as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Default EBCDIC code page associated with the locale. **Notes:**

The maximum number of characters allowed for this string is 6.
e.g. on a German Windows XP system: "20273"
Introduced with Windows 2000.
(Read only property)

59.6.42  DefaultCodePageMac as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Original equipment manufacturer (OEM) code page associated with the country. **Notes:**

The maximum number of characters allowed for this string is 6.
e.g. on a German Windows XP system: "10000"
(Read only property)

59.6.43  DefaultCodePageOEM as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Original equipment manufacturer (OEM) code page associated with the locale. **Notes:**

The maximum number of characters allowed for this string is 6.
e.g. on a German Windows XP system: "850"
(Read only property)
59.6. CLASS WINLOCALIZATIONMBS

59.6.44 DefaultCountryCode as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Country code for the principal country in this locale.

**Notes:**
This is provided so that partially specified locales can be completed with default values. The maximum number of characters allowed for this string is 6.
e.g. on a German Windows XP system: "49"
(Read only property)

59.6.45 DefaultLanguageID as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Language identifier for the principal language spoken in this locale.

**Notes:**
This is provided so that partially specified locales can be completed with default values. The maximum number of characters allowed for this string is 5.
e.g. on a German Windows XP system: "0407"
(Read only property)

59.6.46 DigitGrouping as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Sizes for each group of digits to the left of the decimal.

**Notes:**
An explicit size is needed for each group; sizes are separated by semicolons. If the last value is zero, the preceding value is repeated. To group thousands, specify 3:0, for example.
e.g. on a German Windows XP system: "3;0"
(Read only property)

59.6.47 DigitSubstitution as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Unkown.

**Notes:**
0 = context, 1 = none, 2 = national
e.g. on a German Windows XP system: "1"
Introduced with Windows 2000.
59.6.48  FirstDayOfWeek as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Specifier for the first day in a week.

**Notes:**
Value from 0 to 6.
e.g. on a German Windows XP system: "0"
(Read only property)

59.6.49  FirstWeekOfYear as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Specifier for the first week of the year.

**Notes:**
The specifier can be one of these values:

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Week containing 1/1 is the first week of that year.</td>
</tr>
<tr>
<td>1</td>
<td>First full week following 1/1 is the first week of that year.</td>
</tr>
<tr>
<td>2</td>
<td>First week containing at least 4 days is the first week of that year.</td>
</tr>
</tbody>
</table>

e.g. on a German Windows XP system: "2"
(Read only property)

59.6.50  LanguageID as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Language identifier indicating the language.

**Notes:**
The maximum number of characters allowed for this string is 5.
e.g. on a German Windows XP system: "0407"
(Read only property)
59.6. CLASS WINLOCALIZATIONMBS

59.6.51 LanguageNameAbbreviated as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Abbreviated name of the language, created by taking the 2-letter language abbreviation from the ISO Standard 639 and adding a third letter, as appropriate, to indicate the sublanguage.

**Notes:**

e.g. on a German Windows XP system: "DEU"
(Read only property)

59.6.52 LanguageNameAbbreviatedISO as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** ISO abbreviated language name.

**Notes:**

e.g. on a German Windows XP system: "de"
(Read only property)

59.6.53 LanguageNameEnglish as String


**Notes:**

This is always restricted to characters mappable into the ASCII 127-character subset.

e.g. on a German Windows XP system: "German"
(Read only property)

59.6.54 LanguageNameLocalized as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Full localized name of the language.

**Notes:**

e.g. on a German Windows XP system: "Deutsch (Deutschland)"
(Read only property)
59.6.55  LanguageNameNativ as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Native name of the language.
**Notes:**
e.g. on a German Windows XP system: "Deutsch"
(Read only property)

59.6.56  LeadingZeros as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Specifier for leading zeros in decimal fields.
**Notes:**
The maximum number of characters allowed for this string is 2. The specifier can be one of the following values:

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No leading zeros</td>
</tr>
<tr>
<td>1</td>
<td>Leading zeros</td>
</tr>
</tbody>
</table>

e.g. on a German Windows XP system: "1"
(Read only property)

59.6.57  ListItemSeparator as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Character(s) used to separate list items.
**Notes:**
For example, a comma is used in many locales.
e.g. on a German Windows XP system: ",;"
(Read only property)

59.6.58  MeasureSystem as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
System of measurement.
**Notes:**
This value is 0 if the metric system (Systme International d’Units, or S.I.) is used and 1 if the U.S. system is used. The maximum number of characters allowed for this string is 2.

e.g. on a German Windows XP system: "0"

(Read only property)

59.6.59  NativeASCII0to9 as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Native equivalents to ASCII 0 through 9.

**Notes:**

e.g. on a German Windows XP system: "0123456789"

(Read only property)

59.6.60  NegativeNumberMode as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Negative number mode.

**Notes:**

The mode can be one of these values:

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>(1.1)</td>
</tr>
<tr>
<td>1</td>
<td>1.1</td>
</tr>
<tr>
<td>2</td>
<td>1.1</td>
</tr>
<tr>
<td>3</td>
<td>1.1</td>
</tr>
<tr>
<td>4</td>
<td>1.1</td>
</tr>
</tbody>
</table>

e.g. on a German Windows XP system: "1"

(Read only property)

59.6.61  NegSepBySpace as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Separation of monetary symbol in a negative monetary value.

**Notes:**

This value is 1 if the monetary symbol is separated by a space from the negative amount, 0 if it is not. The maximum number of characters allowed for this string is 2.
e.g. on a German Windows XP system: "1"
(Read only property)

**59.6.62 NegSymPrecedes as String**

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Position of monetary symbol in a negative monetary value.

**Notes:**
This value is 1 if the monetary symbol precedes the negative amount, 0 if it follows it. The maximum number of characters allowed for this string is 2.
e.g. on a German Windows XP system: "0"
(Read only property)

**59.6.63 NumberOfFraction as String**

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Number of fractional digits.

**Notes:**
The maximum number of characters allowed for this string is 3.
e.g. on a German Windows XP system: "2"
(Read only property)

**59.6.64 Papersize as String**

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Default paper size associated with the locale.

**Notes:**
Possible values:

1  Letter
5  Legal
8  DIN A3
9  DIN A4

e.g. on a German Windows XP system: "9"
Introduced with Windows 2000.
59.6. CLASS WINLOCALIZATIONMBS

(Read only property)

59.6.65 PosSepBySpace as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Separation of monetary symbol in a positive monetary value.

**Notes:**
This value is 1 if the monetary symbol is separated by a space from a positive amount, 0 if it is not. The maximum number of characters allowed for this string is 2.
e.g. on a German Windows XP system: "1"
(Read only property)

59.6.66 PosSymPrecedes as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Position of monetary symbol in a positive monetary value.

**Notes:**
This value is 1 if the monetary symbol precedes the positive amount, 0 if it follows it. The maximum number of characters allowed for this string is 2.
e.g. on a German Windows XP system: "0"
(Read only property)

59.6.67 SignNegative as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** String value for the negative sign.

**Notes:**
e.g. on a German Windows XP system: ".-"
(Read only property)

59.6.68 SignNegativePosition as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Formatting index for negative values.

**Notes:**
This index uses the same values as SignPositivePosition. The maximum number of characters allowed for this string is 2.
e.g. on a German Windows XP system: "1"
(Read only property)

59.6.69  **SignPositive as String**

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
String value for the positive sign.

**Notes:**
e.g. on a German Windows XP system: ""
(Read only property)

59.6.70  **SignPositivePosition as String**

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Formatting index for positive values.

**Notes:**
The maximum number of characters allowed for this string is 2. The index can be one of the following values:

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Parentheses surround the amount and the monetary symbol.</td>
</tr>
<tr>
<td>1</td>
<td>The sign string precedes the amount and the monetary symbol.</td>
</tr>
<tr>
<td>2</td>
<td>The sign string succeeds the amount and the monetary symbol.</td>
</tr>
<tr>
<td>3</td>
<td>The sign string immediately precedes the monetary symbol.</td>
</tr>
<tr>
<td>4</td>
<td>The sign string immediately succeeds the monetary symbol.</td>
</tr>
</tbody>
</table>

e.g. on a German Windows XP system: "1"
(Read only property)

59.6.71  **Sortname as String**

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The full localized name of the sort for the given locale ID.

**Notes:**
e.g. on a German Windows XP system: "Wrterbuch"
Introduced with Windows 2000.
(Read only property)
### 59.6.72 ThousandSeparator as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Character(s) used to separate groups of digits to the left of the decimal.  
**Notes:**  
e.g. on a German Windows XP system: "."  
(Read only property)

### 59.6.73 TimeAM as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** String for the AM designator.  
**Notes:**  
e.g. on a German Windows XP system: ""  
(Read only property)

### 59.6.74 TimeCenturyFormatSpecifier as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Specifier for full 4-digit century.  
**Notes:**  
The maximum number of characters allowed for this string is 2. The specifier can be one of the following values:  

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Abbreviated 2-digit century</td>
</tr>
<tr>
<td>1</td>
<td>Full 4-digit century</td>
</tr>
</tbody>
</table>

e.g. on a German Windows XP system: "1"  
(Read only property)

### 59.6.75 TimeFormatSpecifier as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Time format specifier.  
**Notes:**
The maximum number of characters allowed for this string is 2. The specifier can be one of the following values:

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>AM / PM 12-hour format</td>
</tr>
<tr>
<td>1</td>
<td>24-hour format</td>
</tr>
</tbody>
</table>

e.g. on a German Windows XP system: "1"  
(Read only property)

59.6.76  **TimeLeadingZeros as String**

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Specifier for leading zeros in time fields.  
**Notes:**  
The maximum number of characters allowed for this string is 2. The specifier can be one of the following values:

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No leading zeros for hours</td>
</tr>
<tr>
<td>1</td>
<td>Leading zeros for hours</td>
</tr>
</tbody>
</table>

e.g. on a German Windows XP system: "1"  
(Read only property)

59.6.77  **TimeMarkerPosition as String**

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Unknown.  
**Notes:**  
e.g. on a German Windows XP system: "0"  
(Read only property)
59.6. CLASS WINLOCALIZATIONMBS

59.6.78 TimePM as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** String for the PM designator.  
**Notes:**  
e.g. on a German Windows XP system: 
(Read only property)

59.6.79 TimeSeparator as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Character(s) for the time separator.  
**Notes:**  
e.g. on a German Windows XP system:  
(Read only property)

59.6.80 TimeShortFormatString as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Time formatting strings for this locale.  
**Notes:**  
The string can consist of a combination of the hour, minute, and second format pictures defined in the Hour, Minute, and Second Format Pictures table in National Language Support Constants.  
e.g. on a German Windows XP system: "HH:mm:ss"  
(Read only property)

59.6.81 Constants

59.6.82 LANG_AFRIKAANS = & h36

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.83 LANG_ALBANIAN = & h1c

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.
59.6.84  LANG_ARABIC = 1
MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.85  LANG_ARMENIAN = & h2b
MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.86  LANG_ASSAMESE = & h4d
MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.87  LANG_AZERI = & h2c
MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.88  LANG_BASQUE = & h2d
MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.89  LANG_BELARUSIAN = & h23
MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.90  LANG_BENGALI = & h45
MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.91  LANG_BULGARIAN = 2
MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.
59.6. CLASS WINLOCALIZATIONMBS

59.6.92 LANG_CATALAN = 3

MBS Win Plugin, Plugin Version: 9.1. **Function**: One of the constants for the LanguageID.

59.6.93 LANG_CHINESE = 4

MBS Win Plugin, Plugin Version: 9.1. **Function**: One of the constants for the LanguageID.

59.6.94 LANG_CROATIAN = & h1a

MBS Win Plugin, Plugin Version: 9.1. **Function**: One of the constants for the LanguageID.

59.6.95 LANG_CZECH = 5

MBS Win Plugin, Plugin Version: 9.1. **Function**: One of the constants for the LanguageID.

59.6.96 LANG_DANISH = 6

MBS Win Plugin, Plugin Version: 9.1. **Function**: One of the constants for the LanguageID.

59.6.97 LANG_DUTCH = & h13

MBS Win Plugin, Plugin Version: 9.1. **Function**: One of the constants for the LanguageID.

59.6.98 LANG_ENGLISH = 9

MBS Win Plugin, Plugin Version: 9.1. **Function**: One of the constants for the LanguageID.

59.6.99 LANG_ESTONIAN = & h25

MBS Win Plugin, Plugin Version: 9.1. **Function**: One of the constants for the LanguageID.
59.6.100  LANG_FAOEROESE = & h38

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.101  LANG_FARSI = & h29

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.102  LANG_FINNISH = & h0b

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.103  LANG_FRENCH = & h0c

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.104  LANG_GEORGIAN = & h37

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.
59.6. CLASS WINLOCALIZATIONMBS

59.6.105  LANG_GERMAN = 7

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.106  LANG_GREEK = 8

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.107  LANG_GUJARATI = & h47

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.108  LANG_HEBREW = & h0d

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.109  LANG_HINDI = & h39

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.110  LANG_HUNGARIAN = & h0e

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.111  LANG_ICELANDIC = & h0f

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.112  LANG_INDONESIAN = & h21

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.
59.6.113    LANG_ITALIAN = & h10
MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.114    LANG_JAPANESE = & h11
MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.115    LANG_KANNADA = & h4b
MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.116    LANG_KASHMIRI = & h60
MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.117    LANG_KAZAK = & h3f
MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.118    LANG_KONKANI = & h57
MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.119    LANG_KOREAN = & h12
MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.120    LANG_LATVIAN = & h26
MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.
59.6.121  LANG_LITHUANIAN = & h27

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.122  LANG_MACEDONIAN = & h2f

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.123  LANG_MALAY = & h3e

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.124  LANG_MALAYALAM = & h4c

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.125  LANG_MANIPURI = & h58

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.126  LANG_MARATHI = & h4e

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.127  LANG_NEPALI = & h61

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.128  LANG_NEUTRAL = 0

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.
59.6.129  LANG_NORWEGIAN = & h14

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.130  LANG_ORIYA = & h48

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.131  LANG_POLISH = & h15

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.132  LANG_PORTUGUESE = & h16

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.133  LANG_PUNJABI = & h46

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.134  LANG_ROMANIAN = & h18

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.135  LANG_RUSSIAN = & h19

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.136  LANG_SANSKRIT = & h4f

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.
59.6.137  LANG_SERBIAN = & h1a

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.138  LANG_SINDHI = & h59

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.139  LANG_SLOVAK = & h1b

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.140  LANG_SLOVENIAN = & h24

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.141  LANG_SPANISH = & h0a

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.142  LANG_SWAHILI = & h41

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.143  LANG_SWEDISH = & h1d

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.144  LANG_TAMIL = & h49

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.
59.6.145  LANG_TATAR = & h44

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.146  LANG_TELUGU = & h4a

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.147  LANG_THAI = & h1e

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.148  LANG_TURKISH = & h1f

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.149  LANG_UKRAINIAN = & h22

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.150  LANG_URDU = & h20

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.151  LANG_UZBEK = & h43

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.

59.6.152  LANG_VIETNAMESE = & h2a

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the LanguageID.
59.6. CLASS WINLOCALIZATIONMBS

59.6.153  **SORT_CHINESE_BIG5** = 0

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SortID.

59.6.154  **SORT_CHINESE_BOPOMOFO** = 3

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SortID.

59.6.155  **SORT_CHINESE_PRC** = 2

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SortID.

59.6.156  **SORT_CHINESE_PRCP** = 0

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SortID.

59.6.157  **SORT_CHINESE_UNICODE** = 1

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SortID.

59.6.158  **SORT_DEFAULT** = 0

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SortID.

59.6.159  **SORT_GEORGIAN_MODERN** = 1

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SortID.

59.6.160  **SORT_GEORGIAN_TRADITIONAL** = 0

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SortID.
59.6.161  \textsc{sort\_german\_phone\_book} = 1

MBS Win Plugin, Plugin Version: 9.1. \textbf{Function}: One of the constants for the SortID.

59.6.162  \textsc{sort\_hungarian\_default} = 0

MBS Win Plugin, Plugin Version: 9.1. \textbf{Function}: One of the constants for the SortID.

59.6.163  \textsc{sort\_hungarian\_technical} = 1

MBS Win Plugin, Plugin Version: 9.1. \textbf{Function}: One of the constants for the SortID.

59.6.164  \textsc{sort\_japanese\_unicode} = 1

MBS Win Plugin, Plugin Version: 9.1. \textbf{Function}: One of the constants for the SortID.

59.6.165  \textsc{sort\_japanese\_xjis} = 0

MBS Win Plugin, Plugin Version: 9.1. \textbf{Function}: One of the constants for the SortID.

59.6.166  \textsc{sort\_korean\_ksc} = 0

MBS Win Plugin, Plugin Version: 9.1. \textbf{Function}: One of the constants for the SortID.

59.6.167  \textsc{sort\_korean\_unicode} = 1

MBS Win Plugin, Plugin Version: 9.1. \textbf{Function}: One of the constants for the SortID.

59.6.168  \textsc{sublang\_arabic\_algeria} = 5

MBS Win Plugin, Plugin Version: 9.1. \textbf{Function}: One of the constants for the SubLanguageID.
59.6. CLASS WINLOCALIZATIONMBS

59.6.169 SUBLANG_ARABIC_BAHRAIN = &h0f

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.170 SUBLANG_ARABIC_EGYPT = 3

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.171 SUBLANG_ARABIC IRAQ = 2

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.172 SUBLANG_ARABIC_JORDAN = &h0b

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.173 SUBLANG_ARABIC_KUWAIT = &h0d

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.174 SUBLANG_ARABIC_LEBANON = &h0c

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.175 SUBLANG_ARABIC_LIBYA = 4

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.176 SUBLANG_ARABIC_MOROCCO = 6

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.
59.6.177 SUBLANG_ARABIC_OMAN = 8

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.178 SUBLANG_ARABIC_QATAR = & h10

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.179 SUBLANG_ARABIC_SAUDI_ARABIA = 1

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.180 SUBLANG_ARABIC_SYRIA = & h0a

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.181 SUBLANG_ARABIC_TUNISIA = 7

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.182 SUBLANG_ARABIC_UAE = & h0e

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.183 SUBLANG_ARABIC_YEMEN = 9

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.184 SUBLANG_AZERI_CYRILLIC = 2

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.
59.6. **CLASS WINLOCALIZATIONMBS**

59.6.185 **SUBLANG_AZERI_LATIN = 1**

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.186 **SUBLANG_CHINESE_HONGKONG = 3**

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.187 **SUBLANG_CHINESE_MACAU = 5**

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.188 **SUBLANG_CHINESE_SIMPLIFIED = 2**

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.189 **SUBLANG_CHINESE_SINGAPORE = 4**

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.190 **SUBLANG_CHINESE_TRADITIONAL = 1**

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.191 **SUBLANG_DEFAULT = 1**

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.192 **SUBLANG_DUTCH = 1**

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.
59.6.193  **SUBLANG_DUTCH_BELGIAN = 2**

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.194  **SUBLANG_ENGLISH_AUS = 3**

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.195  **SUBLANG_ENGLISH_BELIZE = & h0a**

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.196  **SUBLANG_ENGLISH_CAN = 4**

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.197  **SUBLANG_ENGLISH_CARIBBEAN = 9**

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.198  **SUBLANG_ENGLISH_EIRE = 6**

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.199  **SUBLANG_ENGLISH_JAMAICA = 8**

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.200  **SUBLANG_ENGLISH_NZ = 5**

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.
59.6. CLASS WINLOCALIZATIONMBS

59.6.201 SUBLANG_ENGLISH_PHILIPPINES = &h0d

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.202 SUBLANG_ENGLISH_SOUTH_AFRICA = 7

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.203 SUBLANG_ENGLISH_TRINIDAD = &h0b

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.204 SUBLANG_ENGLISH_UK = 2

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.205 SUBLANG_ENGLISH_US = 1

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.206 SUBLANG_ENGLISH_ZIMBABWE = &h0c

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.207 SUBLANG_FRENCH = 1

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.208 SUBLANG_FRENCH BELGIAN = 2

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.
59.6.209   SUBLANG_FRENCH_CANADIAN = 3

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.210   SUBLANG_FRENCH_LUXEMBOURG = 5

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.211   SUBLANG_FRENCH_MONACO = 6

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.212   SUBLANG_FRENCH_SWISS = 4

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.213   SUBLANG_GERMAN = 1

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.214   SUBLANG_GERMAN_AUSTRIAN = 3

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.215   SUBLANG_GERMAN_LIECHTENSTEIN = 5

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.216   SUBLANG_GERMAN_LUXEMBOURG = 4

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.
59.6. **CLASS WINLOCALIZATIONMBS**

59.6.217 **SUBLANG_GERMAN_SWISS = 2**
MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.218 **SUBLANG_ITALIAN = 1**
MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.219 **SUBLANG_ITALIAN_SWISS = 2**
MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.220 **SUBLANG_KASHMIRI_INDIA = 2**
MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.221 **SUBLANG_KOREAN = 1**
MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.222 **SUBLANG_LITHUANIAN = 1**
MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.223 **SUBLANG_MALAY_BRUNEI_DARUSSALAM = 2**
MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.224 **SUBLANG_MALAY_MALAYSIA = 1**
MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.
59.6.225 SUBLANG_NEPALI_INDIA = 2

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.226 SUBLANG_NEUTRAL = 0

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.227 SUBLANG_NORWEGIAN_BOKMAL = 1

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.228 SUBLANG_NORWEGIAN_NYNORSK = 2

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.229 SUBLANG_PORTUGUESE = 2

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.230 SUBLANG_PORTUGUESE_BRAZILIAN = 1

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.231 SUBLANG_SERBIAN_CYRILLIC = 3

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.232 SUBLANG_SERBIAN_LATIN = 2

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.
59.6. **CLASS WINLOCALIZATIONMBS**

59.6.233 **SUBLANG_SPANISH = 1**

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.234 **SUBLANG_SPANISH_ARGENTINA = &h0b**

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.235 **SUBLANG_SPANISH_BOLIVIA = &h10**

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.236 **SUBLANG_SPANISH_CHILE = &h0d**

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.237 **SUBLANG_SPANISH_COLOMBIA = 9**

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.238 **SUBLANG_SPANISH_COSTA_RICA = 5**

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.239 **SUBLANG_SPANISH_DOMINICAN_REPUBLIC = 7**

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.240 **SUBLANG_SPANISH_ECUADOR = &h0c**

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.
59.6.241 \( \text{SUBLANG\_SPANISH\_EL\_SALVADOR} = \& \text{h11} \)

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.242 \( \text{SUBLANG\_SPANISH\_GUATEMALA} = 4 \)

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.243 \( \text{SUBLANG\_SPANISH\_HONDURAS} = \& \text{h12} \)

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.244 \( \text{SUBLANG\_SPANISH\_MEXICAN} = 2 \)

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.245 \( \text{SUBLANG\_SPANISH\_MODERN} = 3 \)

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.246 \( \text{SUBLANG\_SPANISH\_NICARAGUA} = \& \text{h13} \)

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.247 \( \text{SUBLANG\_SPANISH\_PANAMA} = 6 \)

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.248 \( \text{SUBLANG\_SPANISH\_PARAGUAY} = \& \text{h0f} \)

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.
59.6. CLASS WINLOCALIZATIONMBS

59.6.249  SUBLANG_SPANISH_PERU = & h0a

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.250  SUBLANG_SPANISH PUERTO_RICO = & h14

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.251  SUBLANG_SPANISH URUGUAY = & h0e

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.252  SUBLANG_SPANISH VENEZUELA = 8

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.253  SUBLANG SWEDISH = 1

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.254  SUBLANG SWEDISH FINLAND = 2

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.255  SUBLANG SYS DEFAULT = 2

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.256  SUBLANG URDU INDIA = 2

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.
59.6.257  **SUBLANG_URDU_PAKISTAN = 1**

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.258  **SUBLANG_UZBEK_CYRILLIC = 2**

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.

59.6.259  **SUBLANG_UZBEK_LATIN = 1**

MBS Win Plugin, Plugin Version: 9.1. **Function:** One of the constants for the SubLanguageID.
Chapter 60

Data Types

60.1 class ComplexDoubleMBS

60.1.1 class ComplexDoubleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: A class for complex numbers.
Example:

```
dim c as new ComplexDoubleMBS(1,2)
dim d as new ComplexDoubleMBS(4,7)
dim sum as ComplexDoubleMBS = c+d
```

MsgBox sum.str

60.1.2 Methods

60.1.3 abs as Double

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The absolute value of the complex number.
Example:

```
dim c as new ComplexDoubleMBS(1,2)
MsgBox str(c.abs)
```
60.1.4  Add(c as ComplexDoubleMBS)

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Adds the given value to this complex number.  
See also:  
• 60.1.5 Add(x as Double)

60.1.5  Add(x as Double)

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Adds the given value to this complex number.  
See also:  
• 60.1.4 Add(c as ComplexDoubleMBS)

60.1.6  arg as Double

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Return phase angle of complex.  
**Example:**  
```vbnet
dim c as new ComplexDoubleMBS(1,2)  
MsgBox str(c.arg)
```

60.1.7  conj as ComplexDoubleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Returns complex conjugate.  
**Example:**  
```vbnet
dim c as new ComplexDoubleMBS(1,2)  
dim e as ComplexDoubleMBS = c.conj  
MsgBox e.str
```

60.1.8  Constructor(other as ComplexDoubleMBS)

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Creates a new complex number with the values from the given one.  
**Example:**
60.1. CLASS COMPLEXDOUBLEMBS

```vba
dim c as new ComplexDoubleMBS(1,2)
dim d as new ComplexDoubleMBS(c)

d.Add 1 ' modify second object
MsgBox "d: " + d.str + ", c: " + c.str
```

See also:

- 60.1.9 Constructor(x as Double = 0.0, y as Double = 0.0)

60.1.9 Constructor(x as Double = 0.0, y as Double = 0.0)

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function**: Creates a new complex number with the given values. **Example**:

```vba
dim c as new ComplexDoubleMBS(1,2)
MsgBox str(c.Real) + "+" + str(c.Imag)
```

See also:

- 60.1.8 Constructor(other as ComplexDoubleMBS)

60.1.10 cos as ComplexDoubleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function**: Return cosine of complex. **Example**:

```vba
dim c as new ComplexDoubleMBS(1,2)
MsgBox c.cos.str
```

60.1.11 cosh as ComplexDoubleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function**: Return hyperbolic cosine of complex. **Example**:

```vba
dim c as new ComplexDoubleMBS(1,2)
MsgBox c.cosh.str
```
60.1.12 Divide(c as ComplexDoubleMBS)

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Divides this complex number by the given complex number.

See also:
- 60.1.13 Divide(x as Double)

60.1.13 Divide(x as Double)

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Divides this complex number by the given value.

See also:
- 60.1.12 Divide(c as ComplexDoubleMBS)

60.1.14 exp as ComplexDoubleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Return exponential of complex.

**Notes:**

dim c as new ComplexDoubleMBS(1,2)
MsgBox c.exp.str

60.1.15 log as ComplexDoubleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Return natural logarithm of complex.

**Example:**

dim c as new ComplexDoubleMBS(10,10)
MsgBox c.log.str

60.1.16 log10 as ComplexDoubleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Return common logarithm of complex.
Example:

```vbs```
dim c as new ComplexDoubleMBS(10,0)
MsgBox c.log10.str
```

60.1.17 Multiply(c as ComplexDoubleMBS)

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Multiplies this complex number with the given value.
See also:

- 60.1.18 Multiply(x as Double)

60.1.18 Multiply(x as Double)

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Multiplies this complex number with the given value.
See also:

- 60.1.17 Multiply(c as ComplexDoubleMBS)

60.1.19 norm as Double

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Return norm of complex number.
Example:

```vbs```
dim c as new ComplexDoubleMBS(1,2)
MsgBox str(c.norm)
```

60.1.20 Operator_Add(c as ComplexDoubleMBS) as ComplexDoubleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** This method is called by Real Studio in order to add two complex numbers.
Example:

```vbs```
dim c as new ComplexDoubleMBS(1,2)
dim d as new ComplexDoubleMBS(3,4)
dim e as ComplexDoubleMBS = c+d
MsgBox e.str
```
60.1.21  Operator_Add(x as Double) as ComplexDoubleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: This method is called by Real Studio in order to add a value to this complex number.
Example:

dim c as new ComplexDoubleMBS(3,4)
dim e as ComplexDoubleMBS = c+2
MsgBox e.str

See also:

• 60.1.20 Operator_Add(c as ComplexDoubleMBS) as ComplexDoubleMBS

60.1.22  Operator_Compare(c as ComplexDoubleMBS) as Integer

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Compares two complex numbers.
Example:

dim c as new ComplexDoubleMBS(1,2)
dim d as new ComplexDoubleMBS(1,2)
if c = d then
    MsgBox "equal"
else
    MsgBox "not equal"
end if

60.1.23  Operator_Divide(c as ComplexDoubleMBS) as ComplexDoubleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: This method is called by Real Studio in order to divide one complex number by another.
Example:
60.1. CLASS COMPLEXDOUBLEMBS

```vbnet
dim c as new ComplexDoubleMBS(1,2)
dim d as new ComplexDoubleMBS(3,4)
dim e as ComplexDoubleMBS = c/d
MsgBox e.str
```

See also:

- 60.1.24 Operator_Divide(x as Double) as ComplexDoubleMBS

60.1.24 Operator_Divide(x as Double) as ComplexDoubleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** This method is called by Real Studio in order to divide a complex number by the given value.
**Example:**

```vbnet
dim c as new ComplexDoubleMBS(3,4)
dim e as ComplexDoubleMBS = c/2
MsgBox e.str
```

See also:

- 60.1.23 Operator_Divide(c as ComplexDoubleMBS) as ComplexDoubleMBS

60.1.25 Operator_Multiply(c as ComplexDoubleMBS) as ComplexDoubleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** This method is called by Real Studio in order to multiply two complex numbers.
**Example:**

```vbnet
dim c as new ComplexDoubleMBS(1,2)
dim d as new ComplexDoubleMBS(3,4)
dim e as ComplexDoubleMBS = c*d
MsgBox e.str
```

See also:

- 60.1.26 Operator_Multiply(x as Double) as ComplexDoubleMBS
60.1.26 Operator_Multiply(x as Double) as ComplexDoubleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: This method is called by Real Studio in order to multiply a double to a complex number.
Example:

```vbscript
dim c as new ComplexDoubleMBS(3,4)
dim e as ComplexDoubleMBS = c*2
MsgBox e.str
```

See also:

- 60.1.25 Operator_Multiply(c as ComplexDoubleMBS) as ComplexDoubleMBS

60.1.27 Operator_Power(x as ComplexDoubleMBS) as ComplexDoubleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: This method is called by Real Studio in order to calculate the power of two complex numbers.
Example:

```vbscript
dim c as new ComplexDoubleMBS(1,2)
dim d as new ComplexDoubleMBS(3,4)
dim e as ComplexDoubleMBS = c^d
MsgBox e.str
```

60.1.28 Operator_Subtract(c as ComplexDoubleMBS) as ComplexDoubleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: This method is called by Real Studio in order to subtract one complex number from another.
Example:

```vbscript
dim c as new ComplexDoubleMBS(1,2)
dim d as new ComplexDoubleMBS(3,4)
dim e as ComplexDoubleMBS = c-d
MsgBox e.str
```

See also:

- 60.1.29 Operator_Subtract(x as Double) as ComplexDoubleMBS
60.1. CLASS COMPLEXDOUBLEMBS

60.1.29 Operator_Subtract(x as Double) as ComplexDoubleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: This method is called by Real Studio in order to subtract the given value from this complex number.
Example:

```vbnet
dim c as new ComplexDoubleMBS(3,4)
dim e as ComplexDoubleMBS = c - 2
MsgBox e.str
```

See also:

- 60.1.28 Operator_Subtract(c as ComplexDoubleMBS) as ComplexDoubleMBS

60.1.30 PI as Double

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The PI constant.
Example:

```vbnet
MsgBox str(ComplexDoubleMBS.PI)
```

60.1.31 polar(rho as Double, theta as Double) as ComplexDoubleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Creates a new complex number with the given polar coordinate.
Example:

```vbnet
MsgBox ComplexDoubleMBS.polar(10, 0.5).str
```

60.1.32 pow(x as ComplexDoubleMBS) as ComplexDoubleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Return complex power.
Example:

```vbnet
dim c as new ComplexDoubleMBS(1,2)
dim d as new ComplexDoubleMBS(2,0)
dim m as ComplexDoubleMBS = c.pow(d)
```
MsgBox "c: " + c.str + EndOfLine + "d: " + d.str + EndOfLine + "c^d: " + m.str

See also:

- 60.1.33 pow(x as Double) as ComplexDoubleMBS
- 60.1.34 pow(x as Double, y as ComplexDoubleMBS) as ComplexDoubleMBS

60.1.33 pow(x as Double) as ComplexDoubleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Return complex power.
Example:

dim c as new ComplexDoubleMBS(1,2)
dim m as ComplexDoubleMBS = c.pow(2)

MsgBox "c: " + c.str + EndOfLine + "c^2: " + m.str

See also:

- 60.1.32 pow(x as ComplexDoubleMBS) as ComplexDoubleMBS
- 60.1.34 pow(x as Double, y as ComplexDoubleMBS) as ComplexDoubleMBS

60.1.34 pow(x as Double, y as ComplexDoubleMBS) as ComplexDoubleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Calculates the power of the given values.
Example:

dim x as new ComplexDoubleMBS(2,3)
dim c as ComplexDoubleMBS = ComplexDoubleMBS.pow(2, x)

MsgBox c.str

See also:

- 60.1.32 pow(x as ComplexDoubleMBS) as ComplexDoubleMBS
- 60.1.33 pow(x as Double) as ComplexDoubleMBS
60.1.35  **sin as ComplexDoubleMBS**

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Return sine of complex.  
**Example:**
```vbnet
dim c as new ComplexDoubleMBS(1,2)  
MsgBox c.sin.str  
```

60.1.36  **sinh as ComplexDoubleMBS**

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Return hyperbolic sine of complex.  
**Example:**
```vbnet
dim c as new ComplexDoubleMBS(1,2)  
MsgBox c.sinh.str  
```

60.1.37  **sqrt as ComplexDoubleMBS**

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Return square root of complex.  
**Example:**
```vbnet
dim c as new ComplexDoubleMBS(1,2)  
dim r as ComplexDoubleMBS = c.sqrt  
dim m as ComplexDoubleMBS = r*r  
MsgBox "number: "+c.str+"root: "+r.str+"back: "+m.str  
```

60.1.38  **str as string**

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Shows the number in an human readable format.  
**Example:**
```vbnet
dim c as new ComplexDoubleMBS(1,2)  
MsgBox c.str  
```
CHAPTER 60. DATA TYPES

Notes: The actual format can change.

60.1.39 Subtract(c as ComplexDoubleMBS)

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Subtracts the given complex number from this complex number.
See also:

- 60.1.40 Subtract(x as Double)

60.1.40 Subtract(x as Double)

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Subtracts the given value from this complex number.
See also:

- 60.1.39 Subtract(c as ComplexDoubleMBS)

60.1.41 tan as ComplexDoubleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Return tangent of complex.
Example:

dim c as new ComplexDoubleMBS(1,2)
MsgBox c.tan.str

60.1.42 tanh as ComplexDoubleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Return hyperbolic tangent of complex.
Example:

dim c as new ComplexDoubleMBS(1,2)
MsgBox c.tanh.str
60.1.43 Properties

60.1.44 Imag as Double

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Get or set the imaginary part of the complex number.

Example:

```vba
dim c as new ComplexDoubleMBS(1,2)
MsgBox str(c.Imag)
```

Notes: (Read and Write property)

60.1.45 Real as Double

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Get or set the real part of the complex number.

Example:

```vba
dim c as new ComplexDoubleMBS(1,2)
MsgBox str(c.Real)
```

Notes: (Read and Write property)
60.2 class ComplexSingleMBS

60.2.1 class ComplexSingleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: A class for complex numbers.

Example:

dim c as new ComplexSingleMBS(1,2)
dim d as new ComplexSingleMBS(4,7)

dim sum as ComplexSingleMBS = c+d

MsgBox sum.str

60.2.2 Methods

60.2.3 abs as single

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: The absolute value of the complex number.

Example:

dim c as new ComplexSingleMBS(1,2)
MsgBox str(c.abs)

60.2.4 Add(c as ComplexSingleMBS)

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Adds the given value to this complex number.

See also:

- 60.2.5 Add(x as single)

60.2.5 Add(x as single)

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Adds the given value to this complex number.

See also:

- 60.2.4 Add(c as ComplexSingleMBS)
60.2. CLASS COMPLEXSINGLEMBS

60.2.6 arg as single

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Return phase angle of complex.
**Example:**
```vba
dim c as new ComplexSingleMBS(1,2)
MsgBox str(c.arg)
```

60.2.7 conj as ComplexSingleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns complex conjugate.
**Example:**
```vba
dim c as new ComplexSingleMBS(1,2)
dim e as ComplexSingleMBS = c.conj
MsgBox e.str
```

60.2.8 Constructor(other as ComplexSingleMBS)

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Creates a new complex number with the values from the given one.
**Example:**
```vba
dim c as new ComplexSingleMBS(1,2)
dim d as new ComplexSingleMBS(c)
d.Add 1 // modify second object
MsgBox "d: "+d.str+", c: "+c.str
```

See also:

- 60.2.9 Constructor(x as single = 0.0, y as single = 0.0)

60.2.9 Constructor(x as single = 0.0, y as single = 0.0)

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Creates a new complex number with the given values.
**Example:**
dim c as new ComplexSingleMBS(1,2)
MsgBox str(c.Real) + " " + str(c.Imag)

See also:

- 60.2.8 Constructor(other as ComplexSingleMBS)

60.2.10 cos as ComplexSingleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Return cosine of complex.  
**Example:**

dim c as new ComplexSingleMBS(1,2)
MsgBox c.cos.str

60.2.11 cosh as ComplexSingleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Return hyperbolic cosine of complex.  
**Example:**

dim c as new ComplexSingleMBS(1,2)
MsgBox c.cosh.str

60.2.12 Divide(c as ComplexSingleMBS)

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Divides this complex number by the given complex number.  
See also:

- 60.2.13 Divide(x as single)

60.2.13 Divide(x as single)

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Divides this complex number by the given value.  
See also:
60.2.14  exp as ComplexSingleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Return exponential of complex.
Notes:
dim c as new ComplexSingleMBS(1,2)
MsgBox c.exp.str

60.2.15  log as ComplexSingleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Return natural logarithm of complex.
Example:
dim c as new ComplexSingleMBS(10,10)
MsgBox c.log.str

60.2.16  log10 as ComplexSingleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Return common logarithm of complex.
Example:
dim c as new ComplexSingleMBS(10,0)
MsgBox c.log10.str

60.2.17  Multiply(c as ComplexSingleMBS)

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Multiplies this complex number with the given value.
See also:
• 60.2.18 Multiply(x as single)
**60.2.18 Multiply(x as single)**

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Multiplies this complex number with the given value.
See also:

- 60.2.17 Multiply(c as ComplexSingleMBS)

**60.2.19 norm as single**

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Return norm of complex number.
**Example:**
```vbscript
dim c as new ComplexSingleMBS(1,2)
MsgBox str(c.norm)
```

**60.2.20 Operator_Add(c as ComplexSingleMBS) as ComplexSingleMBS**

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** This method is called by Real Studio in order to add two complex numbers.
**Example:**
```vbscript
dim c as new ComplexSingleMBS(1,2)
dim d as new ComplexSingleMBS(3,4)
dim e as ComplexSingleMBS = c+d
MsgBox e.str
```

See also:

- 60.2.21 Operator_Add(x as single) as ComplexSingleMBS

**60.2.21 Operator_Add(x as single) as ComplexSingleMBS**

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** This method is called by Real Studio in order to add a value to this complex number.
**Example:**
```vbscript
dim c as new ComplexSingleMBS(3,4)
dim e as ComplexSingleMBS = c+2
MsgBox e.str
```
60.2. CLASS COMPLEXSINGLEMBS

See also:

- 60.2.20 Operator_Add(c as ComplexSingleMBS) as ComplexSingleMBS

60.2.22 Operator_Compare(c as ComplexSingleMBS) as Integer

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Compares two complex numbers.

Example:

```vbnet
dim c as new ComplexSingleMBS(1,2)
dim d as new ComplexSingleMBS(1,2)
if c = d then
    MsgBox "equal"
else
    MsgBox "not equal"
eend if
```

60.2.23 Operator_Divide(c as ComplexSingleMBS) as ComplexSingleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: This method is called by Real Studio in order to divide one complex number by another.

Example:

```vbnet
dim c as new ComplexSingleMBS(1,2)
dim d as new ComplexSingleMBS(3,4)
dim e as ComplexSingleMBS = c/d
MsgBox e.str
```

See also:

- 60.2.24 Operator_Divide(x as single) as ComplexSingleMBS

60.2.24 Operator_Divide(x as single) as ComplexSingleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: This method is called by Real Studio in order to divide a complex number by the given value.

Example:
\begin{verbatim}
dim c as new ComplexSingleMBS(3,4)
dim e as ComplexSingleMBS = c/2
MsgBox e.str
\end{verbatim}

See also:

- 60.2.23 Operator\_Divide(c as ComplexSingleMBS) as ComplexSingleMBS

\textbf{60.2.25 Operator\_Multiply(c as ComplexSingleMBS) as ComplexSingleMBS}

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

\textbf{Function:} This method is called by Real Studio in order to multiply two complex numbers.

\textbf{Example:}
\begin{verbatim}
dim c as new ComplexSingleMBS(1,2)
dim d as new ComplexSingleMBS(3,4)
dim e as ComplexSingleMBS = c*d
MsgBox e.str
\end{verbatim}

See also:

- 60.2.26 Operator\_Multiply(x as single) as ComplexSingleMBS

\textbf{60.2.26 Operator\_Multiply(x as single) as ComplexSingleMBS}

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

\textbf{Function:} This method is called by Real Studio in order to multiply a single to a complex number.

\textbf{Example:}
\begin{verbatim}
dim c as new ComplexSingleMBS(3,4)
dim e as ComplexSingleMBS = c*2
MsgBox e.str
\end{verbatim}

See also:

- 60.2.25 Operator\_Multiply(c as ComplexSingleMBS) as ComplexSingleMBS

\textbf{60.2.27 Operator\_Power(x as ComplexSingleMBS) as ComplexSingleMBS}

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

\textbf{Function:} This method is called by Real Studio in order to calculate the power of two complex numbers.
Example:

dim c as new ComplexSingleMBS(1,2)
dim d as new ComplexSingleMBS(3,4)
dim e as ComplexSingleMBS = cˆd
MsgBox e.str

60.2.28 Operator_Subtract(c as ComplexSingleMBS) as ComplexSingleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: This method is called by Real Studio in order to subtract one complex number from another.
Example:

dim c as new ComplexSingleMBS(1,2)
dim d as new ComplexSingleMBS(3,4)
dim e as ComplexSingleMBS = c-d
MsgBox e.str

See also:

- 60.2.29 Operator_Subtract(x as single) as ComplexSingleMBS

60.2.29 Operator_Subtract(x as single) as ComplexSingleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: This method is called by Real Studio in order to subtract the given value from this complex number.
Example:

dim c as new ComplexSingleMBS(3,4)
dim e as ComplexSingleMBS = c-2
MsgBox e.str

See also:

- 60.2.28 Operator_Subtract(c as ComplexSingleMBS) as ComplexSingleMBS

60.2.30 PI as Double

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The PI constant.
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Example:
MsgBox str(ComplexSingleMBS.PI)

60.2.31 polar(rho as single, theta as single) as ComplexSingleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Creates a new complex number with the given polar coordinate.
Example:
MsgBox ComplexSingleMBS.polar(10, 0.5).str

60.2.32 pow(x as ComplexSingleMBS) as ComplexSingleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Return complex power.
Example:

dim c as new ComplexSingleMBS(1,2)
dim d as new ComplexSingleMBS(2,0)
dim m as ComplexSingleMBS = c.pow(d)

MsgBox "c: " +c.str+EndOfLine+"d: " +d.str+EndOfLine+"c^d: " +m.str

See also:

- 60.2.33 pow(x as single) as ComplexSingleMBS
- 60.2.34 pow(x as single, y as ComplexSingleMBS) as ComplexSingleMBS

60.2.33 pow(x as single) as ComplexSingleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Return complex power.
Example:

dim c as new ComplexSingleMBS(1,2)
dim m as ComplexSingleMBS = c.pow(2)

MsgBox "c: " +c.str+EndOfLine+"c^2: " +m.str
60.2. CLASS COMPLEXSINGLEMBS

See also:

- 60.2.32 pow(x as ComplexSingleMBS) as ComplexSingleMBS  
- 60.2.34 pow(x as single, y as ComplexSingleMBS) as ComplexSingleMBS

60.2.34 pow(x as single, y as ComplexSingleMBS) as ComplexSingleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Calculates the power of the given values.
Example:

```
dim x as new ComplexSingleMBS(2,3)
dim c as ComplexSingleMBS = ComplexSingleMBS.pow(2, x)
```

MsgBox c.str

See also:

- 60.2.32 pow(x as ComplexSingleMBS) as ComplexSingleMBS  
- 60.2.33 pow(x as single) as ComplexSingleMBS

60.2.35 sin as ComplexSingleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Return sine of complex.
Example:

```
dim c as new ComplexSingleMBS(1,2)
MsgBox c.sin.str
```

60.2.36 sinh as ComplexSingleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Return hyperbolic sine of complex.
Example:

```
dim c as new ComplexSingleMBS(1,2)
MsgBox c.sinh.str
```
60.2.37 sqrt as ComplexSingleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Return square root of complex.
Example:

dim c as new ComplexSingleMBS(1,2)
dim r as ComplexSingleMBS = c.sqrt
dim m as ComplexSingleMBS = r*r

MsgBox "number: "+c.str+EndOfLine+"root: "+r.str+EndOfLine+"back: "+m.str

60.2.38 str as string

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Shows the number in an human readable format.
Example:

dim c as new ComplexSingleMBS(1,2)
MsgBox c.str

Notes: The actual format can change.

60.2.39 Subtract(c as ComplexSingleMBS)

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Subtracts the given complex number from this complex number.
See also:

• 60.2.40 Subtract(x as single)

60.2.40 Subtract(x as single)

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Subtracts the given value from this complex number.
See also:
60.2. CLASS COMPLEXSINGLEMBS

- 60.2.39 Subtract(c as ComplexSingleMBS)

60.2.41 tan as ComplexSingleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Return tangent of complex.
**Example:**
```vbnet
dim c as new ComplexSingleMBS(1,2)
MsgBox c.tan.str
```

60.2.42 tanh as ComplexSingleMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Return hyperbolic tangent of complex.
**Example:**
```vbnet
dim c as new ComplexSingleMBS(1,2)
MsgBox c.tanh.str
```

60.2.43 Properties

60.2.44 Imag as single

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Get or set the imaginary part of the complex number.
**Example:**
```vbnet
dim c as new ComplexSingleMBS(1,2)
MsgBox str(c.Imag)
```

**Notes:** (Read and Write property)

60.2.45 Real as single

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Get or set the real part of the complex number.
**Example:**
\textbf{Notes:} (Read and Write property)
60.3. GLOBALS

60.3  Globals

60.3.1  FFTDoubleAbsMBS(x as MemoryBlock, N as Integer = -1) as Double()

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Performs a Fast Fourier Transformation and applies abs operation on result.
Notes:
Memoryblock contains DoubleValue values (8 byte each).
If N is not provided, the plugin chooses a value.
See also:
• 60.3.2 FFTDoubleAbsMBS(x() as ComplexDoubleMBS, N as Integer = -1) as Double() 10641
• 60.3.3 FFTDoubleAbsMBS(x() as Double, N as Integer = -1) as Double() 10641

60.3.2  FFTDoubleAbsMBS(x() as ComplexDoubleMBS, N as Integer = -1) as Double()

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Performs a Fast Fourier Transformation and applies abs operation on result.
Notes: If N is not provided, the plugin chooses a value.
See also:
• 60.3.1 FFTDoubleAbsMBS(x as MemoryBlock, N as Integer = -1) as Double() 10641
• 60.3.3 FFTDoubleAbsMBS(x() as Double, N as Integer = -1) as Double() 10641

60.3.3  FFTDoubleAbsMBS(x() as Double, N as Integer = -1) as Double()

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Performs a Fast Fourier Transformation and applies abs operation on result.
Notes: If N is not provided, the plugin chooses a value.
See also:
• 60.3.1 FFTDoubleAbsMBS(x as MemoryBlock, N as Integer = -1) as Double() 10641
• 60.3.2 FFTDoubleAbsMBS(x() as ComplexDoubleMBS, N as Integer = -1) as Double() 10641

60.3.4  FFTDoubleMBS(x() as ComplexDoubleMBS, N as Integer = -1) as ComplexDoubleMBS()

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Performs a Fast Fourier Transformation.
Notes: If N is not provided, the plugin chooses a value.
See also:
60.3.5 FFTDoubleMBS(x() as Double, N as Integer = -1) as ComplexDoubleMBS()

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Performs a Fast Fourier Transformation.
Notes: If N is not provided, the plugin chooses a value.
See also:
• 60.3.4 FFTDoubleMBS(x() as ComplexDoubleMBS, N as Integer = -1) as ComplexDoubleMBS() 10641

60.3.6 FFTSingleAbsMBS(x as MemoryBlock, N as Integer = -1) as single()

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Performs a Fast Fourier Transformation and applies abs operation on result.
Notes: Memoryblock contains SingleValue values (4 byte each).
If N is not provided, the plugin chooses a value.
See also:
• 60.3.7 FFTSingleAbsMBS(x() as ComplexSingleMBS, N as Integer = -1) as single() 10642
• 60.3.8 FFTSingleAbsMBS(x() as single, N as Integer = -1) as single() 10642

60.3.7 FFTSingleAbsMBS(x() as ComplexSingleMBS, N as Integer = -1) as single()

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Performs a Fast Fourier Transformation and applies abs operation on result.
Notes: If N is not provided, the plugin chooses a value.
See also:
• 60.3.6 FFTSingleAbsMBS(x as MemoryBlock, N as Integer = -1) as single() 10642
• 60.3.8 FFTSingleAbsMBS(x() as single, N as Integer = -1) as single() 10642

60.3.8 FFTSingleAbsMBS(x() as single, N as Integer = -1) as single()

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Performs a Fast Fourier Transformation and applies abs operation on result.
Notes: If N is not provided, the plugin chooses a value.
See also:
60.4. CLASS INTEGERHASHSETITERATORMBS

- 60.3.6 FFTSingleAbsMBS(x as MemoryBlock, N as Integer = -1) as single()
- 60.3.7 FFTSingleAbsMBS(x() as ComplexSingleMBS, N as Integer = -1) as single()

60.3.9 FFTSingleMBS(x() as ComplexSingleMBS, N as Integer = -1) as ComplexSingleMBS()

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Performs a Fast Fourier Transformation.

See also:

- 60.3.10 FFTSingleMBS(x() as single, N as Integer = -1) as ComplexSingleMBS()

60.3.10 FFTSingleMBS(x() as single, N as Integer = -1) as ComplexSingleMBS()

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Performs a Fast Fourier Transformation.

**Notes:** If N is not provided, the plugin chooses a value.

See also:

- 60.3.9 FFTSingleMBS(x() as ComplexSingleMBS, N as Integer = -1) as ComplexSingleMBS()

60.4 class IntegerHashSetIteratorMBS

60.4.1 class IntegerHashSetIteratorMBS


**Function:** The iterator for the IntegerHashSet class.

**Example:**

```vbnet
// Create a map
dim m as new IntegerHashSetMBS

m.insert(1)
m.insert(2)
m.insert(3)

// get iterators pointing to first and after last element
dim i as IntegerHashSetIteratorMBS = m.first
dim e as IntegerHashSetIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)
```

60.4.2 Methods

60.4.3 isEqual(other as IntegerHashSetIteratorMBS) as boolean

Function: Returns true if both iterators are equal.
Example:

// Create a map
dim m as new IntegerHashSetMBS
m.insert(1)
m.insert(2)
m.insert(3)

// get iterators pointing to first and after last element
dim i as IntegerHashSetIteratorMBS = m.first
dim e as IntegerHashSetIteratorMBS = m.last

// Show all keys and values
while i.isEqual(e) = false
MsgBox str(i.Key)
i.MoveNext
wend

60.4.4 isNotEqual(other as IntegerHashSetIteratorMBS) as boolean

MBS DataTypes Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns true if both iterators are not equal.
Example:

// Create a map
dim m as new IntegerHashSetMBS
m.insert(1)
m.insert(2)
m.insert(3)

// get iterators pointing to first and after last element
60.4. CLASS INTEGERHASHSETITERATORMBS

dim i as IntegerHashSetIteratorMBS = m.first
dim e as IntegerHashSetIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)
i.MoveNext
wend

60.4.5 Key as Integer


60.4.6 MoveNext

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Moves the iterator to the next item.

Example:

// Create a map
dim m as new IntegerHashSetMBS
m.insert(1)
m.insert(2)
m.insert(3)

// get iterators pointing to first and after last element
dim i as IntegerHashSetIteratorMBS = m.first
dim e as IntegerHashSetIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)
i.MoveNext
wend
60.5  class IntegerHashSetMBS

60.5.1  class IntegerHashSetMBS


**Function:** An alternative dictionary class for a hash set with integers.

**Example:**

dim s as new IntegerHashSetMBS

s.insert 1
s.insert 2

MsgBox str(s.Count) // shows 2

**Notes:** You can choose whether you want to keep the set ordered using the OrderedSet class or whether you prefer a higher speed with the HashSet class.

60.5.2  Methods

60.5.3  Clear


**Function:** Erases all of the elements.

60.5.4  Constructor


**Function:** The default constructor.

See also:

- 60.5.5 Constructor(Keys() as Integer)

60.5.5  Constructor(Keys() as Integer)


**Function:** Creates a new set from the values in the array.

**Notes:** If the array has duplicates, the later elements overwrite the earlier keys.

See also:

- 60.5.4 Constructor
60.5.6 CountKey(key as Integer) as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Counts how often a key is used in this set.

60.5.7 find(key as Integer) as IntegerHashSetIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Finds the key and returns an iterator. **Notes:** Returns the same value as the last method if the item was not found.

60.5.8 first as IntegerHashSetIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an iterator pointing to the beginning of the set. **Example:**

```vbnet
// Create a map
dim m as new IntegerHashSetMBS
m.insert(1)
m.insert(2)
m.insert(3)

// get iterators pointing to first and after last element
dim i as IntegerHashSetIteratorMBS = m.first
dim e as IntegerHashSetIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)
i.MoveNext
wend
```

60.5.9 insert(key as Integer)

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds a value to the set.
60.5.10 Key(index as Integer) as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns the value of key for the Indexth sequential item. Notes: If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.5.11 Keys as Integer()

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns all the keys as an array. Example:

```vbnet
dim m as new IntegerHashSetMBS
m.insert(1)
m.insert(2)
for each v as Integer in m.Keys
    MsgBox str(v)
next
```

Notes: The order is stable and matches the order returned by the Values method at least until the Dictionary is modified. Use this method with For Each to loop through all the keys.

60.5.12 last as IntegerHashSetIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns an iterator pointing to the end of the set. Example:

```vbnet
// Create a map
dim m as new IntegerHashSetMBS
m.insert(1)
m.insert(2)
m.insert(3)

// get iterators pointing to first and after last element
dim i as IntegerHashSetIteratorMBS = m.first
dim e as IntegerHashSetIteratorMBS = m.last

// Show all keys and values
```
while i.isNotEqual(e)
MsgBox str(i.Key)
i.MoveNext
wend

60.5.13 lookup(key as Integer) as boolean

Function: Checks whether an element with the given key exists in this set.
Example:

dim set as new IntegerHashSetMBS

set.insert 1
set.insert 2

MsgBox str(set.lookup(3)) // shows false as value is missing
MsgBox str(set.lookup(1)) // shows true as value is found

Notes: Returns true if yes and false if no.

60.5.14 Remove(first as IntegerHashSetIteratorMBS, last as IntegerHashSetIteratorMBS)

Function: Erases all elements in a range.
See also:

- 60.5.15 Remove(key as Integer) as Integer
- 60.5.16 Remove(pos as IntegerHashSetIteratorMBS)

60.5.15 Remove(key as Integer) as Integer

Function: Erases the element with the given key.
See also:

- 60.5.14 Remove(first as IntegerHashSetIteratorMBS, last as IntegerHashSetIteratorMBS)
- 60.5.16 Remove(pos as IntegerHashSetIteratorMBS)
60.5.16 Remove(pos as IntegerHashSetIteratorMBS)


Function: Erases the element pointed to by the pos iterator.

See also:
- 60.5.14 Remove(first as IntegerHashSetIteratorMBS, last as IntegerHashSetIteratorMBS)
- 60.5.15 Remove(key as Integer) as Integer

60.5.17 Properties

60.5.18 BinCount as Integer


Function: The number of bins the hash table uses.

Example:

```vba
dim v as new IntegerHashSetMBS
v.insert 1
v.insert 5
MsgBox str(v.BinCount)
```

Notes:
This is a measure of the hash table size, independent of the number of items the Dictionary contains.
(Read only property)

60.5.19 Count as Integer


Function: The number of items in this set.

Example:

```vba
dim set as new IntegerHashSetMBS
set.insert 1
set.insert 2
MsgBox str(set.Count)
```
60.5. CLASS INTEGERHASHSETMBS

Notes: (Read only property)

60.5.20 Empty as Boolean

Function: True if the size is zero. 
Notes: (Read only property)

60.5.21 MaxSize as Integer

Function: Returns the largest possible size for this set. 
Notes:
Value is -1 if no limit is defined. 
(Read only property)
60.6 class IntegerOrderedSetIteratorMBS

60.6.1 class IntegerOrderedSetIteratorMBS


Function: The iterator for the IntegerOrderedSet class.

Example:

// Create a map
dim m as new IntegerOrderedSetMBS

m.insert(1)
m.insert(2)
m.insert(3)

// get iterators pointing to first and after last element
dim i as IntegerOrderedSetIteratorMBS = m.first
dim e as IntegerOrderedSetIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)
i.MoveNext
wend

60.6.2 Methods

60.6.3 isEqual(other as IntegerOrderedSetIteratorMBS) as boolean


Function: Returns true if both iterators are equal.

Example:

// Create a map
dim m as new IntegerOrderedSetMBS

m.insert(1)
m.insert(2)
m.insert(3)

// get iterators pointing to first and after last element
dim i as IntegerOrderedSetIteratorMBS = m.first
dim e as IntegerOrderedSetIteratorMBS = m.last

// Show all keys and values
while i.isEqual(e) = false
MsgBox str(i.Key)
i.MoveNext
wend

60.6.4 isNotEqual(other as IntegerOrderedSetIteratorMBS) as boolean

MBS DataTypes Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns true if both iterators are not equal.
**Example:**

```plaintext
// Create a map
dim m as new IntegerOrderedSetMBS
m.insert(1)
m.insert(2)
m.insert(3)

// get iterators pointing to first and after last element
dim i as IntegerOrderedSetIteratorMBS = m.first
dim e as IntegerOrderedSetIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
MsgBox str(i.Key)
i.MoveNext
wend
```

60.6.5 Key as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the current key.

60.6.6 MoveNext

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Moves the iterator to the next item.
**Example:**

```
// Create a map
dim m as new IntegerOrderedSetMBS
```
m.insert(1)
m.insert(2)
m.insert(3)

// get iterators pointing to first and after last element
dim i as IntegerOrderedSetIteratorMBS = m.first
dim e as IntegerOrderedSetIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)
i.MoveNext
wend

60.6.7 MovePrev

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Moves the iterator to the previous item.
60.7. **CLASS INTEGERORDEREDSETMBS**

60.7  **class IntegerOrderedSetMBS**

60.7.1  **class IntegerOrderedSetMBS**

**Function:** An alternative dictionary class for an ordered set with integers.  
**Example:**

```plaintext
dim s as new IntegerOrderedSetMBS  
s.insert 1  
s.insert 2  
MsgBox str(s.Count) // shows 2
```

**Notes:** You can choose whether you want to keep the set ordered using the OrderedSet class or whether you prefer a higher speed with the HashSet class.

60.7.2  **Methods**

60.7.3  **Clear**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases all of the elements.

60.7.4  **Constructor**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The default constructor.  
See also:

- 60.7.5 Constructor(Keys() as Integer)

60.7.5  **Constructor(Keys() as Integer)**

MBS DataTypes Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new set from the values in the array.  
**Notes:** If the array has duplicates, the later elements overwrite the earlier keys.  
See also:

- 60.7.4 Constructor
60.7.6 CountKey(key as Integer) as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Counts how often a key is used in this set.

60.7.7 find(key as Integer) as IntegerOrderedSetIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Finds the key and returns an iterator. **Notes:** Returns the same value as the last method if the item was not found.

60.7.8 first as IntegerOrderedSetIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an iterator pointing to the beginning of the set. **Example:**

```vba
// Create a map
dim m as new IntegerOrderedSetMBS
m.insert(1)
m.insert(2)
m.insert(3)

// get iterators pointing to first and after last element
dim i as IntegerOrderedSetIteratorMBS = m.first
dim e as IntegerOrderedSetIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)
i.MoveNext
wend
```

60.7.9 insert(key as Integer)

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds a value to the set.
60.7. **CLASS INTEGERORDEREDSETMBS**

### 60.7.10 Key(index as Integer) as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value of key for the Indexth sequential item. **Notes:** If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

### 60.7.11 Keys as Integer()

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns all the keys as an array. **Example:**

```vbp
' Create a map
Dim m As New IntegerOrderedSetMBS
m.insert(1)
m.insert(2)

For Each v As Integer In m.Keys
    MsgBox Str(v)
Next
```

**Notes:** The order is stable and matches the order returned by the Values method at least until the Dictionary is modified. Use this method with For Each to loop through all the keys.

### 60.7.12 last as IntegerOrderedSetIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an iterator pointing to the end of the set. **Example:**

```vbp
' Create a map
Dim m As New IntegerOrderedSetMBS
m.insert(1)
m.insert(2)
m.insert(3)

' get iterators pointing to first and after last element
Dim i As IntegerOrderedSetIteratorMBS = m.first
Dim e As IntegerOrderedSetIteratorMBS = m.last

' Show all keys and values
```
while i.isNotEqual(e)
MsgBox str(i.Key)
i.MoveNext
wend

60.7.13 lookup(key as Integer) as boolean

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Checks whether an element with the given key exists in this set. **Example:**

dim set as new IntegerOrderedSetMBS

set.insert 1
set.insert 2

MsgBox str(set.lookup(3)) // shows false as value is missing
MsgBox str(set.lookup(1)) // shows true as value is found

**Notes:** Returns true if yes and false if no.

60.7.14 LowerBound(key as Integer) as IntegerOrderedSetIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an iterator for the first element whose key is not less than k.

60.7.15 Remove(first as IntegerOrderedSetIteratorMBS, last as IntegerOrderedSetIteratorMBS)

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases all elements in a range. **See also:**

- 60.7.16 Remove(key as Integer) as Integer
- 60.7.17 Remove(pos as IntegerOrderedSetIteratorMBS)
60.7. **CLASS INTEGERORDEREDSETMBS**

60.7.16 **Remove(key as Integer) as Integer**

**Function:** Erases the element with the given key.  
See also:

- 60.7.15 Remove(first as IntegerOrderedSetIteratorMBS, last as IntegerOrderedSetIteratorMBS)  
- 60.7.17 Remove(pos as IntegerOrderedSetIteratorMBS)

60.7.17 **Remove(pos as IntegerOrderedSetIteratorMBS)**

**Function:** Erases the element pointed to by the pos iterator.  
See also:

- 60.7.15 Remove(first as IntegerOrderedSetIteratorMBS, last as IntegerOrderedSetIteratorMBS)  
- 60.7.16 Remove(key as Integer) as Integer

60.7.18 **UpperBound(key as Integer) as IntegerOrderedSetIteratorMBS**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an iterator for the first element whose key is greater than k.

60.7.19 **Properties**

60.7.20 **Count as Integer**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of items in this set.  
**Example:**

```basic
    dim set as new IntegerOrderedSetMBS

    set.insert 1
    set.insert 2

    MsgBox str(set.Count)
```

**Notes:** (Read only property)
60.7.21 Empty as Boolean

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if the size is zero.  
**Notes:** (Read only property)

60.7.22 MaxSize as Integer

**Function:** Returns the largest possible size for this set.  
**Notes:**  
Value is -1 if no limit is defined.  
(Read only property)
60.8. class IntegerToIntegerHashMapIteratorMBS

60.8.1 class IntegerToIntegerHashMapIteratorMBS


Function: The iterator for the IntegerToIntegerHashMap class.

Example:

```vba
// Create a map
dim m as new IntegerToIntegerHashMapMBS
m.value(1)=2
m.value(2)=4
m.value(3)=8

// get iterators pointing to first and after last element
dim i as IntegerToIntegerHashMapIteratorMBS = m.first
dim e as IntegerToIntegerHashMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)+" -"+str(i.Value)
i.MoveNext
wend
```

60.8.2 Methods

60.8.3 isEqual(other as IntegerToIntegerHashMapIteratorMBS) as boolean


Function: Returns true if both iterators are equal.

Example:

```vba
// Create a map
dim m as new IntegerToIntegerHashMapMBS
m.value(1)=2
m.value(2)=4
m.value(3)=8

// get iterators pointing to first and after last element
dim i as IntegerToIntegerHashMapIteratorMBS = m.first
dim e as IntegerToIntegerHashMapIteratorMBS = m.last

// Show all keys and values
```
while i.isEqual(e) = false
MsgBox str(i.Key) + " - > " + str(i.Value)
i.MoveNext
wend

60.8.4 `isNotEqual(other as IntegerToIntegerHashMapIteratorMBS)` as boolean

MBS DataTypes Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if both iterators are not equal. **Example:**

```vbnet
// Create a map
dim m as new IntegerToIntegerHashMapMBS
m.value(1) = 2
m.value(2) = 4
m.value(3) = 8

// get iterators pointing to first and after last element
dim i as IntegerToIntegerHashMapIteratorMBS = m.first
dim e as IntegerToIntegerHashMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
MsgBox str(i.Key) + " - > " + str(i.Value)
i.MoveNext
wend
```

60.8.5 `Key as Integer`

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the current key.

60.8.6 `MoveNext`

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Moves the iterator to the next item. **Example:**

```vbnet
// Create a map
dim m as new IntegerToIntegerHashMapMBS
```
m.value(1)=2
m.value(2)=4
m.value(3)=8

// get iterators pointing to first and after last element
dim i as IntegerToIntegerHashMapIteratorMBS = m.first
dim e as IntegerToIntegerHashMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key) + “ -> ” + str(i.Value)
i.MoveNext
wend

60.8.7 Properties

60.8.8 Value as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The value of the current item in the iterator. Notes: (Read and Write computed property)
60.9 class IntegerToIntegerHashMapMBS

60.9.1 class IntegerToIntegerHashMapMBS

**Function:** An alternative dictionary class for a hash map with integers as keys and values. 
**Example:**

```
Dim s As New IntegerToIntegerHashMapMBS
s.Value(1) = 3
s.Value(2) = 4

MsgBox Str(s.Count) // shows 2

MsgBox Str(s.Value(1) + s.Value(2)) // shows 7
```

**Notes:** You can choose whether you want to keep the map ordered using the OrderedMap class or whether you prefer a higher speed with the HashMap class.

60.9.2 Methods

60.9.3 AddKeys(targetArray() As Integer)

**Function:** Similar to keys, but adds keys to the given array. 
**Notes:** For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys function returns always nil.

60.9.4 AddValues(targetArray() As Integer)

**Function:** Similar to values, but adds values to the given array. 
**Notes:** For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys function returns always nil.

60.9.5 Clear

**Function:** Erases all of the elements.
60.9.6 **Clone as IntegerToIntegerHashMapMBS**

**Function:** Creates a copy of this map.

60.9.7 **CloneDictionary as Dictionary**

**Function:** Creates a copy of this map as a dictionary.

60.9.8 **Constructor**

**Function:** The default constructor.
**See also:**
- 60.9.9 Constructor(dic as dictionary)
- 60.9.10 Constructor(other as IntegerToIntegerHashMapMBS)

60.9.9 **Constructor(dic as dictionary)**

**Function:** Creates a new map with the keys and values from the dictionary.
**See also:**
- 60.9.8 Constructor
- 60.9.10 Constructor(other as IntegerToIntegerHashMapMBS)

60.9.10 **Constructor(other as IntegerToIntegerHashMapMBS)**

**Function:** Creates a new map with the keys and values from the existing map.
**See also:**
- 60.9.8 Constructor
- 60.9.9 Constructor(dic as dictionary)
60.9.11  **CountKey(key as Integer) as Integer**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Counts how often a key is used in this map.

60.9.12  **find(key as Integer) as IntegerToIntegerHashMapIteratorMBS**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Finds the key and returns an iterator.
**Notes:** Returns the same value as the last method if the item was not found.

60.9.13  **first as IntegerToIntegerHashMapIteratorMBS**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an iterator pointing to the beginning of the map.
**Example:**

```vbnet
// Create a map
dim m as new IntegerToIntegerHashMapMBS
  m.value(1)=2
  m.value(2)=4
  m.value(3)=8

  // get iterators pointing to first and after last element
  dim i as IntegerToIntegerHashMapIteratorMBS = m.first
  dim e as IntegerToIntegerHashMapIteratorMBS = m.last

  // Show all keys and values
  while i.isNotEqual(e)
    MsgBox i.Key & ” ->” & i.Value
    i.MoveNext
  wend
```

60.9.14  **hasKey(key as Integer) as boolean**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns True if Key is in the map and False if it is not. Returns a Boolean.
60.9.15  **Key(index as Integer) as Integer**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value of key for the Indexth sequential item. **Notes:** If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.9.16  **Keys as Integer()**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns all the keys as an array. **Example:**

```vba
dim m as new IntegerToIntegerHashMapMBS

m.Value(1)=5
m.Value(2)=7

for each v as Integer in m.keys
    MsgBox str(v)
next
```

**Notes:** The order is stable and matches the order returned by the Values method at least until the Dictionary is modified. Use this method with For Each to loop through all the keys.

60.9.17  **last as IntegerToIntegerHashMapIteratorMBS**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an iterator pointing to the end of the map. **Example:**

```vba
// Create a map
dim m as new IntegerToIntegerHashMapMBS

m.value(1)=2
m.value(2)=4
m.value(3)=8

// get iterators pointing to first and after last element
dim i as IntegerToIntegerHashMapIteratorMBS = m.first
dim e as IntegerToIntegerHashMapIteratorMBS = m.last

// Show all keys and values
```
while i.isNotEqual(e) 
MsgBox str(i.Key)+" ->"+str(i.Value) 
i.MoveNext 
wend

60.9.18 lookup(key as Integer, defaultvalue as Integer) as Integer

Function: Looks up the passed value of Key.
Example:
dim map as new IntegerToIntegerHashMapMBS
map.value(10)=1
map.value(100)=2
map.value(1000)=3

MsgBox str(map.lookup(5,0)) // shows 0 as value is missing
MsgBox str(map.lookup(10,0)) // shows 1 as value is found

Notes: If Key is found, it returns the corresponding value. If Key is not found, it returns the passed defaultValue.

60.9.19 Operator_Convert as Dictionary

Function: Creates a copy of the map as dictionary.

60.9.20 Remove(first as IntegerToIntegerHashMapIteratorMBS, last as IntegerToIntegerHashMapIteratorMBS)

Function: Erases all elements in a range.
See also:

- 60.9.21 Remove(key as Integer) as Integer
- 60.9.22 Remove(pos as IntegerToIntegerHashMapIteratorMBS)
60.9. CLASS INTEGERTOINTEGERHASHMAPMBS

60.9.21 Remove(key as Integer) as Integer

Function: Erases the element with the given key.
See also:
  - 60.9.20 Remove(first as IntegerToIntegerHashMapIteratorMBS, last as IntegerToIntegerHashMapIteratorMBS)
  - 60.9.22 Remove(pos as IntegerToIntegerHashMapIteratorMBS)

60.9.22 Remove(pos as IntegerToIntegerHashMapIteratorMBS)

Function: Erases the element pointed to by the pos iterator.
See also:
  - 60.9.20 Remove(first as IntegerToIntegerHashMapIteratorMBS, last as IntegerToIntegerHashMapIteratorMBS)
  - 60.9.21 Remove(key as Integer) as Integer

60.9.23 ValueAtIndex(index as Integer) as Integer

Function: Returns the value with the given index.
Notes: If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.9.24 Values as Integer()

Function: Returns all the values as an array
Example:
```vba
dim m as new IntegerToIntegerHashMapMBS

m.Value(1)=5
m.Value(2)=7

for each v as Integer in m.Values
    MsgBox str(v)
next
```
Notes: The order is stable and matches the order returned by Keys at least until the Map is modified. Use this method with For Each to loop through all the values.

### 60.9.25 Properties

#### 60.9.26 BinCount as Integer


**Function:** The number of bins the hash table uses.

**Example:**

```vbnet
dim v as new IntegerToIntegerHashMapMBS

v.value(1)=10
v.value(2)=20

MsgBox str(v.BinCount)
```

**Notes:**

This is a measure of the hash table size, independent of the number of items the Dictionary contains. (Read only property)

#### 60.9.27 Count as Integer


**Function:** The number of items in this map.

**Example:**

```vbnet
dim map as new IntegerToIntegerHashMapMBS

map.Value(1)=3
map.Value(2)=4

MsgBox str(map.Count)
```

**Notes:** (Read only property)
60.9. **CLASS INTEGERTOINTEGERHASHMAPMBS**

### 60.9.28 Empty as Boolean

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if the size is zero.  
**Notes:** (Read only property)

### 60.9.29 MaxSize as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the largest possible size for this map.  
**Notes:**  
Value is -1 if no limit is defined.  
(Read only property)

### 60.9.30 value(key as Integer) as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The value associated with the given key.  
**Notes:**  
If you query for a key which does not exist, a KeyNotFoundException is raised.  
(Read and Write computed property)
60.10  class IntegerToIntegerOrderedMapIteratorMBS

60.10.1  class IntegerToIntegerOrderedMapIteratorMBS

**Function:**  The iterator for the `IntegerToIntegerOrderedMap` class.
**Example:**

```vba
// Create a map
dim m as new IntegerToIntegerOrderedMapMBS
m.value(1)=2
m.value(2)=4
m.value(3)=8

// get iterators pointing to first and after last element
dim i as IntegerToIntegerOrderedMapIteratorMBS = m.first
dim e as IntegerToIntegerOrderedMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)+" -"+str(i.Value)
i.MoveNext
wend
```

60.10.2  Methods

60.10.3  isEqual(other as IntegerToIntegerOrderedMapIteratorMBS) as boolean

**Function:**  Returns true if both iterators are equal.
**Example:**

```vba
// Create a map
dim m as new IntegerToIntegerOrderedMapMBS
m.value(1)=2
m.value(2)=4
m.value(3)=8

// get iterators pointing to first and after last element
dim i as IntegerToIntegerOrderedMapIteratorMBS = m.first
dim e as IntegerToIntegerOrderedMapIteratorMBS = m.last

// Show all keys and values
```
60.10.4  isNotEqual(other as IntegerToIntegerOrderedMapIteratorMBS) as boolean

MBS DataTypes Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Returns true if both iterators are not equal.

**Example:**

```vbscript
// Create a map
dim m as new IntegerToIntegerOrderedMapMBS
m.value(1)=2
m.value(2)=4
m.value(3)=8

// get iterators pointing to first and after last element
dim i as IntegerToIntegerOrderedMapIteratorMBS = m.first
dim e as IntegerToIntegerOrderedMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)+” -”+str(i.Value)
i.MoveNext
wend
```

60.10.5  Key as Integer


**Function:** Returns the current key.

60.10.6  MoveNext


**Function:** Moves the iterator to the next item.

**Example:**

```vbscript
// Create a map
dim m as new IntegerToIntegerOrderedMapMBS
```
m.value(1)=2
m.value(2)=4
m.value(3)=8

// get iterators pointing to first and after last element
dim i as IntegerToIntegerOrderedMapIteratorMBS = m.first
dim e as IntegerToIntegerOrderedMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
  MsgBox str(i.Key) + " -> " + str(i.Value)
i.MoveNext
wend

60.10.7 MovePrev

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Moves the iterator to the previous item.

60.10.8 Properties

60.10.9 Value as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The value of the current item in the iterator.

**Notes:** (Read and Write computed property)
60.11.  CLASS INTEGERTOINTEGERORDEREDMAPMBS

60.11  class IntegerToIntegerOrderedMapMBS

60.11.1  class IntegerToIntegerOrderedMapMBS

Function: An alternative dictionary class for an ordered map for integers for keys and values.
Example:

dim s as new IntegerToIntegerHashMapMBS
s.Value(1)=3
s.Value(2)=4

MsgBox str(s.Count) // shows 2

MsgBox str(s.Value(1)+s.Value(2)) // shows 7

Notes: You can choose whether you want to keep the map ordered using the OrderedMap class or whether
you prefer a higher speed with the HashMap class.

60.11.2  Methods

60.11.3  AddKeys(targetArray() as Integer)

Function: Similar to keys, but adds keys to the given array.
Notes: For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys
function returns always nil.

60.11.4  AddValues(targetArray() as Integer)

Function: Similar to values, but adds values to the given array.
Notes: For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys
function returns always nil.

60.11.5  Clear

Function: Erases all of the elements.
60.11.6 Clone as IntegerToIntegerOrderedMapMBS

Function: Creates a copy of this map.

60.11.7 CloneDictionary as Dictionary

Function: Creates a copy of this map as a dictionary.

60.11.8 Constructor

Function: The default constructor.
See also:
- 60.11.9 Constructor(dic as dictionary)
- 60.11.10 Constructor(other as IntegerToIntegerOrderedMapMBS)

60.11.9 Constructor(dic as dictionary)

Function: Creates a new map with the keys and values from the dictionary.
See also:
- 60.11.8 Constructor
- 60.11.10 Constructor(other as IntegerToIntegerOrderedMapMBS)

60.11.10 Constructor(other as IntegerToIntegerOrderedMapMBS)

Function: Creates a new map with the keys and values from the existing map.
See also:
- 60.11.8 Constructor
- 60.11.9 Constructor(dic as dictionary)
60.11. CLASS INTEGRERTOINTEGERORDEREDMAPMBS

60.11.11 CountKey(key as Integer) as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Counts how often a key is used in this map.

60.11.12 find(key as Integer) as IntegerToIntegerOrderedMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Finds the key and returns an iterator. **Notes:** Returns the same value as the last method if the item was not found.

60.11.13 first as IntegerToIntegerOrderedMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an iterator pointing to the beginning of the map. **Example:**

```plaintext
// Create a map
dim m as new IntegerToIntegerOrderedMapMBS
m.value(1)=2
m.value(2)=4
m.value(3)=8

// get iterators pointing to first and after last element
dim i as IntegerToIntegerOrderedMapIteratorMBS = m.first
dim e as IntegerToIntegerOrderedMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)+” - >”+str(i.Value)
i.MoveNext
wend
```

60.11.14 hasKey(key as Integer) as boolean

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns True if Key is in the map and False if it is not. Returns a Boolean.
60.11.15   **Key(index as Integer) as Integer**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value of key for the Indexth sequential item.  **Notes:** If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.11.16   **Keys as Integer()**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns all the keys as an array.  **Example:**

```vba
dim m as new IntegerToIntegerOrderedMapMBS
m.Value(1)=5
m.Value(2)=7

for each v as Integer in m.keys
    MsgBox str(v)
next
```

**Notes:** The order is stable and matches the order returned by the Values method at least until the Dictionary is modified. Use this method with For Each to loop through all the keys.

60.11.17   **last as IntegerToIntegerOrderedMapIteratorMBS**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an iterator pointing to the end of the map.  **Example:**

```vba
// Create a map
dim m as new IntegerToIntegerOrderedMapMBS
m.value(1)=2
m.value(2)=4
m.value(3)=8

// get iterators pointing to first and after last element
dim i as IntegerToIntegerOrderedMapIteratorMBS = m.first
dim e as IntegerToIntegerOrderedMapIteratorMBS = m.last

// Show all keys and values
```
while i.isNotEqual(e)
MsgBox str(i.Key)+” ->”+str(i.Value)
i.MoveNext
wend

60.11.18  lookup(key as Integer, defaultValue as Integer) as Integer

Function:  Looks up the passed value of Key.
Example:
dim map as new IntegerToIntegerOrderedMapMBS

map.value(10)=1
map.value(100)=2
map.value(1000)=3

MsgBox str(map.lookup(5,0))  // shows 0 as value is missing
MsgBox str(map.lookup(10,0))  // shows 1 as value is found

Notes:  If Key is found, it returns the corresponding value.  If Key is not found, it returns the passed defaultValue.

60.11.19  LowerBound(key as Integer) as IntegerToIntegerOrderedMapIteratorMBS

MBS DataTypes Plugin, Plugin Version:  8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  Function:  Returns an iterator for the first element whose key is not less than k.

60.11.20  Operator_Convert as Dictionary

**60.11.21** Remove(first as IntegerToIntegerOrderedMapIteratorMBS, last as IntegerToIntegerOrderedMapIteratorMBS)

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases all elements in a range.

See also:
- 60.11.22 Remove(key as Integer) as Integer
- 60.11.23 Remove(pos as IntegerToIntegerOrderedMapIteratorMBS)

**60.11.22** Remove(key as Integer) as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases the element with the given key.

See also:
- 60.11.21 Remove(first as IntegerToIntegerOrderedMapIteratorMBS, last as IntegerToIntegerOrderedMapIteratorMBS)
- 60.11.23 Remove(pos as IntegerToIntegerOrderedMapIteratorMBS)

**60.11.23** Remove(pos as IntegerToIntegerOrderedMapIteratorMBS)

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases the element pointed to by the pos iterator.

See also:
- 60.11.21 Remove(first as IntegerToIntegerOrderedMapIteratorMBS, last as IntegerToIntegerOrderedMapIteratorMBS)
- 60.11.22 Remove(key as Integer) as Integer

**60.11.24** UpperBound(key as Integer) as IntegerToIntegerOrderedMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an iterator for the first element whose key is greater than k.

**60.11.25** ValueAtIndex(index as Integer) as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value with the given index.
60.11. CLASS INTEGERTOINTEGERORDEREDMAPMBS

**Notes:** If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

### 60.11.26 Values as Integer()


**Function:** Returns all the values as an array

**Example:**

```vbnet
dim m as new IntegerToIntegerOrderedMapMBS

m.Value(1)=5
m.Value(2)=7

for each v as Integer in m.Values
    MsgBox str(v)
next
```

**Notes:** The order is stable and matches the order returned by Keys at least until the Map is modified. Use this method with For Each to loop through all the values.

### 60.11.27 Properties

#### 60.11.28 Count as Integer


**Function:** The number of items in this map.

**Example:**

```vbnet
dim map as new IntegerToIntegerOrderedMapMBS

map.Value(1)=3
map.Value(2)=4

MsgBox str(map.Count)
```

**Notes:** (Read only property)
60.11.29  Empty as Boolean

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if the size is zero. **Notes:** (Read only property)

60.11.30  MaxSize as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the largest possible size for this map. **Notes:** Value is -1 if no limit is defined. (Read only property)

60.11.31  value(key as Integer) as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The value associated with the given key. **Notes:** If you query for a key which does not exist, a KeyNotFoundException is raised. (Read and Write computed property)
60.12. class IntegerToStringHashMapIteratorMBS

60.12.1 class IntegerToStringHashMapIteratorMBS

**Function:** The iterator for the IntegerToStringHashMap class.

**Example:**

```vba
// Create a map
dim m as new IntegerToStringHashMapMBS

m.value(1)="Hello"
m.value(2)="World"
m.value(3)="!"

// get iterators pointing to first and after last element
dim i as IntegerToStringHashMapIteratorMBS = m.first
dim e as IntegerToStringHashMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
  MsgBox str(i.Key)+" - >"+i.Value
  i.MoveNext
wend
```

60.12.2 Methods

60.12.3 isEqual(other as IntegerToStringHashMapIteratorMBS) as boolean

**Function:** Returns true if both iterators are equal.

**Example:**

```vba
// Create a map
dim m as new IntegerToStringHashMapMBS

m.value(1)="Hello"
m.value(2)="World"
m.value(3)="!"

// get iterators pointing to first and after last element
dim i as IntegerToStringHashMapIteratorMBS = m.first
dim e as IntegerToStringHashMapIteratorMBS = m.last

// Show all keys and values
```
while i.isEqual(e) = false
MsgBox str(i.Key)+” -”+i.Value
i.MoveNext
wend

60.12.4  isNotEqual(other as IntegerToStringHashMapIteratorMBS) as boolean

MBS DataTypes Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if both iterators are not equal. **Example:**

```vba
// Create a map
dim m as new IntegerToStringHashMapMBS
m.value(1)="Hello"
m.value(2)="World"
m.value(3)="!

// get iterators pointing to first and after last element
dim i as IntegerToStringHashMapIteratorMBS = m.first
dim e as IntegerToStringHashMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
MsgBox str(i.Key)+” -”+i.Value
i.MoveNext
wend
```

60.12.5  Key as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the current key.

60.12.6  MoveNext

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Moves the iterator to the next item. **Example:**

```vba
// Create a map
dim m as new IntegerToStringHashMapMBS
```
m.value(1)="Hello"
m.value(2)="World"
m.value(3)="!"

// get iterators pointing to first and after last element
dim i as IntegerToStringHashMapIteratorMBS = m.first
dim e as IntegerToStringHashMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)+" ->"+i.Value
    i.MoveNext
wend

60.12.7 Properties

60.12.8 Value as string

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The value of the current item in the iterator.
**Notes:** (Read and Write computed property)
60.13 class IntegerToStringHashMapMBS

60.13.1 class IntegerToStringHashMapMBS


**Function:** An alternative dictionary class for a hash map with integers as keys and strings as values.

**Example:**

```vbnet
dim s as new IntegerToStringHashMapMBS

s.Value(1)="Hello"
s.Value(2)="World"

MsgBox str(s.Count) // shows 2
MsgBox s.Value(1)+" " +s.Value(2) // shows "Hello World"
```

**Notes:** You can choose whether you want to keep the map ordered using the OrderedMap class or whether you prefer a higher speed with the HashMap class.

60.13.2 Methods

60.13.3 AddKeys(targetArray() as Integer)


**Function:** Similar to keys, but adds keys to the given array.

**Notes:** For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys function returns always nil.

60.13.4 AddValues(targetArray() as string)


**Function:** Similar to values, but adds values to the given array.

**Notes:** For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys function returns always nil.

60.13.5 Clear


**Function:** Erases all of the elements.
60.13.6 **Clone as IntegerToStringHashMapMBS**


**Function:** Creates a copy of this map.

60.13.7 **CloneDictionary as Dictionary**


**Function:** Creates a copy of this map as a dictionary.

60.13.8 **Constructor**


**Function:** The default constructor.

See also:

- 60.13.9 Constructor(dic as dictionary)
- 60.13.10 Constructor(other as IntegerToStringHashMapMBS)

60.13.9 **Constructor(dic as dictionary)**


**Function:** Creates a new map with the keys and values from the dictionary.

See also:

- 60.13.8 Constructor
- 60.13.10 Constructor(other as IntegerToStringHashMapMBS)

60.13.10 **Constructor(other as IntegerToStringHashMapMBS)**


**Function:** Creates a new map with the keys and values from the existing map.

See also:

- 60.13.8 Constructor
- 60.13.9 Constructor(dic as dictionary)
60.13.11 CountKey(key as Integer) as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Counts how often a key is used in this map.

60.13.12 find(key as Integer) as IntegerToStringHashMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Finds the key and returns an iterator. **Notes:** Returns the same value as the last method if the item was not found.

60.13.13 first as IntegerToStringHashMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an iterator pointing to the beginning of the map. **Example:**

```vba
// Create a map
dim m as new IntegerToStringHashMapMBS
m.value(1)="Hello"
m.value(2)="World"
m.value(3)="!

// get iterators pointing to first and after last element
dim i as IntegerToStringHashMapIteratorMBS = m.first
dim e as IntegerToStringHashMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)+" - >"+i.Value
    i.MoveNext
wend
```

60.13.14 hasKey(key as Integer) as boolean

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns True if Key is in the map and False if it is not. Returns a Boolean.
60.13.15 Key(index as Integer) as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value of key for the Indexth sequential item. **Notes:** If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.13.16 Keys as Integer()

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns all the keys as an array. **Example:**

```vbs
dim m as new IntegerToStringHashMapMBS
m.Value(1)="Hello"
m.Value(2)="World"

for each v as Integer in m.keys
    MsgBox str(v)
next
```

**Notes:** The order is stable and matches the order returned by the Values method at least until the Dictionary is modified. Use this method with For Each to loop through all the keys.

60.13.17 last as IntegerToStringHashMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an iterator pointing to the end of the map. **Example:**

```vbs
// Create a map
dim m as new IntegerToStringHashMapMBS

m.Value(1)="Hello"
m.Value(2)="World"
m.Value(3)="!"

// get iterators pointing to first and after last element
dim i as IntegerToStringHashMapIteratorMBS = m.first
dim e as IntegerToStringHashMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
MsgBox str(i.Key)+" -\>"+i.Value
i.MoveNext
wend

60.13.18  lookup(key as Integer, defaultValue as string) as string

Function: Looks up the passed value of Key.
Example:
dim map as new IntegerToStringOrderedMapMBS

map.value(10)="Hello"
map.value(100)="World"
map.value(1000)="!"

MsgBox str(map.lookup(5,"?")) // shows "?" as value is missing
MsgBox str(map.lookup(10,"?")) // shows "Hello" as value is found

Notes: If Key is found, it returns the corresponding value. If Key is not found, it returns the passed defaultValue.

60.13.19  Operator_Convert as Dictionary

Function: Creates a copy of the map as dictionary.

60.13.20  Remove(first as IntegerToStringHashMapIteratorMBS, last as IntegerToStringHashMapIteratorMBS)

Function: Erases all elements in a range.
See also:

- 60.13.21 Remove(key as Integer) as Integer
- 60.13.22 Remove(pos as IntegerToStringHashMapIteratorMBS)
60.13. CLASS INTEGERTOSTRINGHASHMAPMBS

60.13.21 Remove(key as Integer) as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases the element with the given key. See also:

- 60.13.20 Remove(first as IntegerToStringHashMapIteratorMBS, last as IntegerToStringHashMapIteratorMBS) 10690
- 60.13.22 Remove(pos as IntegerToStringHashMapIteratorMBS) 10691

60.13.22 Remove(pos as IntegerToStringHashMapIteratorMBS)

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases the element pointed to by the pos iterator. See also:

- 60.13.20 Remove(first as IntegerToStringHashMapIteratorMBS, last as IntegerToStringHashMapIteratorMBS) 10690
- 60.13.21 Remove(key as Integer) as Integer 10691

60.13.23 ValueAtIndex(index as Integer) as string

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value with the given index. **Notes:** If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.13.24 Values as string()

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns all the values as an array. **Example:**

```vbnet
dim m as new IntegerToStringHashMapMBS
m.Value(1)="Hello"
m.Value(2)="World"
for each v as string in m.Values
MsgBox v
next
```
**Notes:** The order is stable and matches the order returned by Keys at least until the Map is modified. Use this method with For Each to loop through all the values.

### 60.13.25 Properties

#### 60.13.26 BinCount as Integer

**Function:** The number of bins the hash table uses.
**Example:**
```vbs
dim v as new IntegerToStringHashMapMBS
v.value(1)="Hello"
v.value(2)="World"
MsgBox str(v.BinCount)
```

**Notes:**
This is a measure of the hash table size, independent of the number of items the Dictionary contains.
(Read only property)

### 60.13.27 Count as Integer

**Function:** The number of items in this map.
**Example:**
```vbs
dim map as new IntegerToStringHashMapMBS
map.Value(1)="Hello"
map.Value(2)="World"
MsgBox str(map.Count)
```

**Notes:** (Read only property)
60.13.28 Empty as Boolean

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: True if the size is zero. Notes: (Read only property)

60.13.29 MaxSize as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns the largest possible size for this map. Notes: Value is -1 if no limit is defined. (Read only property)

60.13.30 value(key as Integer) as string

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The value associated with the given key. Notes: If you query for a key which does not exist, a KeyNotFoundException is raised. (Read and Write computed property)
60.14 **class IntegerToStringOrderedMapIteratorMBS**

60.14.1 **class IntegerToStringOrderedMapIteratorMBS**

**Function:** The iterator for the IntegerToStringOrderedMap class.  
**Example:**

```vbnet
' Create a map  
dim m as new IntegerToStringOrderedMapMBS

m.value(1)="Hello"  
m.value(2)="World"  
m.value(3)="!"

' get iterators pointing to first and after last element  
dim i as IntegerToStringOrderedMapIteratorMBS = m.first  
dim e as IntegerToStringOrderedMapIteratorMBS = m.last

' Show all keys and values  
while i.isNotEqual(e)  
    MsgBox str(i.Key) + " - " + i.Value  
i.MoveNext
wend
```

60.14.2 **Methods**

60.14.3 **isEqual(other as IntegerToStringOrderedMapIteratorMBS) as boolean**

**Function:** Returns true if both iterators are equal.  
**Example:**

```vbnet
' Create a map  
dim m as new IntegerToStringOrderedMapMBS

m.value(1)="Hello"  
m.value(2)="World"  
m.value(3)="!"

' get iterators pointing to first and after last element  
dim i as IntegerToStringOrderedMapIteratorMBS = m.first  
dim e as IntegerToStringOrderedMapIteratorMBS = m.last

' Show all keys and values
```
while i.isEqual(e) = false
MsgBox str(i.Key) + " - > " + i.Value
i.MoveNext
wend

### 60.14.4 isNotEqual(other as IntegerToStringOrderedMapIteratorMBS) as boolean

MBS DataTypes Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns true if both iterators are not equal.
**Example:**

```vba
// Create a map
dim m as new IntegerToStringOrderedMapMBS
m.value(1) = "Hello"
m.value(2) = "World"
m.value(3) = "!

// get iterators pointing to first and after last element
dim i as IntegerToStringOrderedMapIteratorMBS = m.first
dim e as IntegerToStringOrderedMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
MsgBox str(i.Key) + " - > " + i.Value
i.MoveNext
wend
```

### 60.14.5 Key as Integer

**Function:** Returns the current key.

### 60.14.6 MoveNext

**Function:** Moves the iterator to the next item.
**Example:**

```vba
// Create a map
dim m as new IntegerToStringOrderedMapMBS
```
m.value(1)="Hello"
m.value(2)="World"
m.value(3)="!"

// get iterators pointing to first and after last element
dim i as IntegerToStringOrderedMapIteratorMBS = m.first
dim e as IntegerToStringOrderedMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
  MsgBox str(i.Key)+" ->"+i.Value
  i.MoveNext
wend

60.14.7 MovePrev

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Moves the iterator to the previous item.

60.14.8 Properties

60.14.9 Value as string

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The value of the current item in the iterator.  
**Notes:** (Read and Write computed property)
60.15. **CLASS INTEGERTOSTRINGORDEREDMAPMBS**

60.15  **class IntegerToStringOrderedMapMBS**

60.15.1  **class IntegerToStringOrderedMapMBS**

**Function:** An alternative dictionary class for an ordered map with integer keys and string values.  
**Example:**

```vbnet
dim s as new IntegerToStringOrderedMapMBS

s.Value(1)="Hello"
s.Value(2)="World"

MsgBox str(s.Count) // shows 2
MsgBox s.Value(1)+" " +s.Value(2) // shows "Hello World"
```

**Notes:** You can choose whether you want to keep the map ordered using the OrderedMap class or whether you prefer a higher speed with the HashMap class.

60.15.2  **Methods**

60.15.3  **AddKeys(targetArray() as Integer)**

**Function:** Similar to keys, but adds keys to the given array.  
**Notes:** For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys function returns always nil.

60.15.4  **AddValues(targetArray() as string)**

**Function:** Similar to values, but adds values to the given array.  
**Notes:** For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys function returns always nil.

60.15.5  **Clear**

**Function:** Erases all of the elements.
60.15.6  Clone as IntegerToStringOrderedMapMBS

**Function:** Creates a copy of this map.

60.15.7  CloneDictionary as Dictionary

**Function:** Creates a copy of this map as a dictionary.

60.15.8  Constructor

**Function:** The default constructor.
See also:
- 60.15.9 Constructor(dic as dictionary) 10698
- 60.15.10 Constructor(other as IntegerToStringOrderedMapMBS) 10698

60.15.9  Constructor(dic as dictionary)

**Function:** Creates a new map with the keys and values from the dictionary.
See also:
- 60.15.8 Constructor 10698
- 60.15.10 Constructor(other as IntegerToStringOrderedMapMBS) 10698

60.15.10  Constructor(other as IntegerToStringOrderedMapMBS)

**Function:** Creates a new map with the keys and values from the existing map.
See also:
- 60.15.8 Constructor 10698
- 60.15.9 Constructor(dic as dictionary) 10698
60.15. **CLASS INTEGERSTRINGORDEREDMAPMBS**

### 60.15.11 **CountKey(key as Integer) as Integer**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Counts how often a key is used in this map.

### 60.15.12 **find(key as Integer) as IntegerToStringOrderedMapIteratorMBS**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Finds the key and returns an iterator. **Notes:** Returns the same value as the last method if the item was not found.

### 60.15.13 **first as IntegerToStringOrderedMapIteratorMBS**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an iterator pointing to the beginning of the map. **Example:**

```vbscript
// Create a map
dim m as new IntegerToStringOrderedMapMBS
m.value(1)="Hello"
m.value(2)="World"
m.value(3)="!

// get iterators pointing to first and after last element
dim i as IntegerToStringOrderedMapIteratorMBS = m.first
dim e as IntegerToStringOrderedMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)+" ->"+i.Value
    i.MoveNext
wend
```

### 60.15.14 **hasKey(key as Integer) as boolean**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns True if Key is in the map and False if it is not. Returns a Boolean.
60.15.15 Key(index as Integer) as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value of key for the Indexth sequential item. **Notes:** If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.15.16 Keys as Integer()

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns all the keys as an array. **Example:**

```vbnet
dim m as new IntegerToStringOrderedMapMBS
m.Value(1)="Hello"
m.Value(2)="World"
for each v as Integer in m.keys
    MsgBox str(v)
next
```

**Notes:** The order is stable and matches the order returned by the Values method at least until the Dictionary is modified. Use this method with For Each to loop through all the keys.

60.15.17 last as IntegerToStringOrderedMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an iterator pointing to the end of the map. **Example:**

```vbnet
// Create a map
dim m as new IntegerToStringOrderedMapMBS
m.value(1)="Hello"
m.value(2)="World"
m.value(3)="!

// get iterators pointing to first and after last element
dim i as IntegerToStringOrderedMapIteratorMBS = m.first
dim e as IntegerToStringOrderedMapIteratorMBS = m.last

// Show all keys and values
```
while i.isNotEqual(e)
MsgBox str(i.Key)+" -">" +i.Value
i.MoveNext
wend

60.15.18  lookup(key as Integer, defaultValue as string) as string

Function: Looks up the passed value of Key.
Example:

dim map as new IntegerToStringOrderedMapMBS

map.value(10)="Hello"
map.value(100)="World"
map.value(1000)="!

MsgBox str(map.lookup(5,"?")) // shows "?" as value is missing
MsgBox str(map.lookup(10,"?")) // shows "Hello" as value is found

Notes: If Key is found, it returns the corresponding value. If Key is not found, it returns the passed default Value.

60.15.19  LowerBound(key as Integer) as IntegerToStringOrderedMapIteratorMBS

Function: Returns an iterator for the first element whose key is not less than k.

60.15.20  Operator_Convert as Dictionary

Function: Creates a copy of the map as dictionary.
60.15.21 Remove(first as IntegerToStringOrderedMapIteratorMBS, last as IntegerToStringOrderedMapIteratorMBS)

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases all elements in a range. See also:

* 60.15.22 Remove(key as Integer) as Integer
* 60.15.23 Remove(pos as IntegerToStringOrderedMapIteratorMBS)

60.15.22 Remove(key as Integer) as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases the element with the given key. See also:

* 60.15.21 Remove(first as IntegerToStringOrderedMapIteratorMBS, last as IntegerToStringOrderedMapIteratorMBS)
* 60.15.23 Remove(pos as IntegerToStringOrderedMapIteratorMBS)

60.15.23 Remove(pos as IntegerToStringOrderedMapIteratorMBS)

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases the element pointed to by the pos iterator. See also:

* 60.15.21 Remove(first as IntegerToStringOrderedMapIteratorMBS, last as IntegerToStringOrderedMapIteratorMBS)
* 60.15.22 Remove(key as Integer) as Integer

60.15.24 UpperBound(key as Integer) as IntegerToStringOrderedMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an iterator for the first element whose key is greater than k.

60.15.25 ValueAtIndex(index as Integer) as string

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value with the given index. **Notes:** If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first
60.15.26 Values as string()

**Function:** Returns all the values as an array

**Example:**

```vbscript
dim m as new IntegerToStringOrderedMapMBS

m.Value(1)="Hello"
m.Value(2)="World"

for each v as string in m.Values
    MsgBox v
next
```

**Notes:** The order is stable and matches the order returned by Keys at least until the Map is modified. Use this method with For Each to loop through all the values.

60.15.27 Properties

60.15.28 Count as Integer

**Function:** The number of items in this map.

**Example:**

```vbscript
dim map as new IntegerToStringOrderedMapMBS

map.Value(1)="Hello"
map.Value(2)="World"

MsgBox str(map.Count)
```

**Notes:** (Read only property)
60.15.29 Empty as Boolean

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if the size is zero.  
**Notes:** (Read only property)

60.15.30 MaxSize as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the largest possible size for this map.  
**Notes:**  
Value is -1 if no limit is defined.  
(Read only property)

60.15.31 value(key as Integer) as string

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The value associated with the given key.  
**Notes:**  
If you query for a key which does not exist, a KeyNotFoundException is raised.  
(Read and Write computed property)
60.16. CLASS INTEGERTOTEXTHASHMAPITERATORMBS

60.16  class IntegerToTextHashMapIteratorMBS

60.16.1  class IntegerToTextHashMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
Function: The iterator for the IntegerToTextHashMapMBS class.

60.16.2  Methods

60.16.3  isEqual(other as IntegerToTextHashMapIteratorMBS) as boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
Function: Returns true if both iterators are equal.

60.16.4  isNotEqual(other as IntegerToTextHashMapIteratorMBS) as boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
Function: Returns true if both iterators are not equal.

60.16.5  Key as Integer

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
Function: Returns the current key.

60.16.6  MoveNext

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
Function: Moves the iterator to the next item.

60.16.7  Properties

60.16.8  Value as text

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
Function: The value of the current item in the iterator.
Notes: (Read and Write computed property)
60.17. **CLASS INTEGERTOTEXTHASHMAPMBS**

60.17  **class IntegerToTextHashMapMBS**

60.17.1  **class IntegerToTextHashMapMBS**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** An alternative dictionary class for a hash map with integers as keys and texts as values.  
**Example:**

```vbnet
dim s as new IntegerToTextHashMapMBS
s.Value(1)="Hello"
s.Value(2)="World"
MsgBox str(s.Count) // shows 2
MsgBox s.Value(1)+" " +s.Value(2) // shows "Hello World"
```

**Notes:** You can choose whether you want to keep the map ordered using the OrderedMap class or whether you prefer a higher speed with the HashMap class.

60.17.2  **Methods**

60.17.3  **AddKeys(targetArray() as Integer)**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Similar to keys, but adds keys to the given array.  
**Notes:** For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys function returns always nil.

60.17.4  **AddValues(targetArray() as text)**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Similar to values, but adds values to the given array.  
**Notes:** For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys function returns always nil.

60.17.5  **Clear**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Erases all of the elements.
60.17.6 Clone as IntegerToTextHashMapMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Creates a copy of this map.

60.17.7 CloneDictionary as Dictionary

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Creates a copy of this map as a dictionary.

60.17.8 Constructor

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The default constructor.
See also:

- 60.17.9 Constructor(dic as dictionary) 10708
- 60.17.10 Constructor(other as IntegerToTextHashMapMBS) 10708

60.17.9 Constructor(dic as dictionary)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Creates a new map with the keys and values from the dictionary.
See also:

- 60.17.8 Constructor 10708
- 60.17.10 Constructor(other as IntegerToTextHashMapMBS) 10708

60.17.10 Constructor(other as IntegerToTextHashMapMBS)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Creates a new map with the keys and values from the existing map.
See also:

- 60.17.8 Constructor 10708
- 60.17.9 Constructor(dic as dictionary) 10708
60.17. CLASS INTEGERTOTEXTHASHMAPMBS

60.17.11  CountKey(key as Integer) as Integer

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Counts how often a key is used in this map.

60.17.12  find(key as Integer) as IntegerToTextHashMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Finds the key and returns an interator.  
**Notes:** Returns the same value as the last method if the item was not found.

60.17.13  first as IntegerToTextHashMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Returns an iterator pointing to the beginning of the map.

60.17.14  hasKey(key as Integer) as boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Returns True if Key is in the map and False if it is not.  Returns a Boolean.

60.17.15  Key(index as Integer) as Integer

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Returns the value of key for the Indexth sequential item.  
**Notes:** If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.17.16  Keys as Integer()

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Returns all the keys as an array.  
**Notes:** The order is stable and matches the order returned by the Values method at least until the Dictionary is modified. Use this method with For Each to loop through all the keys.
60.17.17  last as IntegerToTextHashMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an iterator pointing to the end of the map.

60.17.18  lookup(key as Integer, defaultvalue as text) as text

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Looks up the passed value of Key. **Notes:** If Key is found, it returns the corresponding value. If Key is not found, it returns the passed defaultValue.

60.17.19  Operator 
\_Convert as Dictionary

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a copy of the map as dictionary.

60.17.20  Remove(first as IntegerToTextHashMapIteratorMBS, last as IntegerToTextHashMapIteratorMBS)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases all elements in a range. **See also:**

- 60.17.21 Remove(key as Integer) as Integer
- 60.17.22 Remove(pos as IntegerToTextHashMapIteratorMBS)

60.17.21  Remove(key as Integer) as Integer

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases the element with the given key. **See also:**

- 60.17.20 Remove(first as IntegerToTextHashMapIteratorMBS, last as IntegerToTextHashMapIteratorMBS)
- 60.17.22 Remove(pos as IntegerToTextHashMapIteratorMBS)
60.17. **CLASS INTEGERTOTEXTHASHMAPMBS**

60.17.22 **Remove(pos as IntegerToTextHashMapIteratorMBS)**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Erases the element pointed to by the pos iterator.

See also:

- 60.17.20 Remove(first as IntegerToTextHashMapIteratorMBS, last as IntegerToTextHashMapIteratorMBS)
- 60.17.21 Remove(key as Integer) as Integer

60.17.23 **ValueAtIndex(index as Integer) as text**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns the value with the given index.
**Notes:** If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.17.24 **Values as text()**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns all the values as an array
**Notes:** The order is stable and matches the order returned by Keys at least until the Map is modified. Use this method with For Each to loop through all the values.

60.17.25 **Properties**

60.17.26 **BinCount as Integer**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The number of bins the hash table uses.
**Notes:**
This is a measure of the hash table size, independent of the number of items the Dictionary contains.
(Read only property)

60.17.27 **Count as Integer**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The number of items in this map.
60.17.28 Empty as Boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** True if the size is zero.
**Notes:** (Read only property)

60.17.29 MaxSize as Integer

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns the largest possible size for this set.
**Notes:**
Value is -1 if no limit is defined.
(Read only property)

60.17.30 value(key as Integer) as text

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The value associated with the given key.
**Notes:**
If you query for a key which does not exist, a KeyNotFoundException is raised.
(Read and Write computed property)
60.18. CLASS INTEGERTOTEXTORDEREDMAPITERATORMBS

60.18  class IntegerToTextOrderedMapIteratorMBS

60.18.1  class IntegerToTextOrderedMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** The iterator for the IntegerToTextOrderedMapMBS class.

60.18.2  Methods

60.18.3  isEqual(other as IntegerToTextOrderedMapIteratorMBS) as boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Returns true if both iterators are equal.

60.18.4  isNotEqual(other as IntegerToTextOrderedMapIteratorMBS) as boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Returns true if both iterators are not equal.

60.18.5  Key as Integer

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Returns the current key.

60.18.6  MoveNext

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Moves the iterator to the next item.

60.18.7  MovePrev

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Moves the iterator to the previous item.
60.18.8 Properties

60.18.9 Value as Text

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The value of the current item in the iterator.

**Notes:** (Read and Write computed property)
60.19.  

### 60.19.1  
**class IntegerToTextOrderedMapMBS**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** An alternative dictionary class for an ordered map with integer keys and text values.  
**Example:**

```vbnet
    dim s as new IntegerToTextOrderedMapMBS
    s.Value(1)="Hello"
    s.Value(2)="World"
    MsgBox str(s.Count)  // shows 2
    MsgBox s.Value(1)+" " +s.Value(2)  // shows "Hello World"
```

**Notes:** You can choose whether you want to keep the map ordered using the OrderedMap class or whether you prefer a higher speed with the HashMap class.

### 60.19.2  
**Methods**

#### 60.19.3  
**AddKeys(targetArray() as Integer)**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Similar to keys, but adds keys to the given array.  
**Notes:** For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys function returns always nil.

#### 60.19.4  
**AddValues(targetArray() as Text)**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Similar to values, but adds values to the given array.  
**Notes:** For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys function returns always nil.

### 60.19.5  
**Clear**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Erases all of the elements.
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60.19.6 Clone as IntegerToTextOrderedMapMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Creates a copy of this map.

60.19.7 CloneDictionary as Dictionary

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Creates a copy of this map as a dictionary.

60.19.8 Constructor

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The default constructor. See also:
- 60.19.9 Constructor(dic as dictionary) 10716
- 60.19.10 Constructor(other as IntegerToTextOrderedMapMBS) 10716

60.19.9 Constructor(dic as dictionary)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Creates a new map with the keys and values from the dictionary. See also:
- 60.19.8 Constructor 10716
- 60.19.10 Constructor(other as IntegerToTextOrderedMapMBS) 10716

60.19.10 Constructor(other as IntegerToTextOrderedMapMBS)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Creates a new map with the keys and values from the existing map. See also:
- 60.19.8 Constructor 10716
- 60.19.9 Constructor(dic as dictionary) 10716
60.19.11  **CountKey(key as Integer) as Integer**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Counts how often a key is used in this map.

60.19.12  **find(key as Integer) as IntegerToTextOrderedMapIteratorMBS**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Finds the key and returns an interator.
**Notes:** Returns the same value as the last method if the item was not found.

60.19.13  **first as IntegerToTextOrderedMapIteratorMBS**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns an iterator pointing to the beginning of the map.

60.19.14  **hasKey(key as Integer) as boolean**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns True if Key is in the map and False if it is not. Returns a Boolean.

60.19.15  **Key(index as Integer) as Integer**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns the value of key for the Indexth sequential item.
**Notes:** If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.19.16  **Keys as Integer()**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns all the keys as an array.
**Notes:** The order is stable and matches the order returned by the Values method at least until the Dictionary is modified. Use this method with For Each to loop through all the keys.
60.19.17  last as IntegerToTextOrderedMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns an iterator pointing to the end of the map.

60.19.18  lookup(key as Integer, defaultValue as Text) as Text

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Looks up the passed value of Key.
**Notes:** If Key is found, it returns the corresponding value. If Key is not found, it returns the passed defaultValue.

60.19.19  LowerBound(key as Integer) as IntegerToTextOrderedMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns an iterator for the first element whose key is not less than k.

60.19.20  Operator_Convert as Dictionary

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Creates a copy of the map as dictionary.

60.19.21  Remove(first as IntegerToTextOrderedMapIteratorMBS, last as IntegerToTextOrderedMapIteratorMBS)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Erases all elements in a range.
See also:
- 60.19.22 Remove(key as Integer) as Integer
- 60.19.23 Remove(pos as IntegerToTextOrderedMapIteratorMBS)

60.19.22  Remove(key as Integer) as Integer

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Erases the element with the given key.
See also:
60.19. **CLASS INTEGERTOTEXTORDEREDMAPMBS**

- 60.19.21 `Remove(first as IntegerToTextOrderedMapIteratorMBS, last as IntegerToTextOrderedMapIteratorMBS)`
- 60.19.23 `Remove(pos as IntegerToTextOrderedMapIteratorMBS)`

60.19.23 **Remove(pos as IntegerToTextOrderedMapIteratorMBS)**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Erases the element pointed to by the pos iterator.

See also:
- 60.19.21 `Remove(first as IntegerToTextOrderedMapIteratorMBS, last as IntegerToTextOrderedMapIteratorMBS)`
- 60.19.22 `Remove(key as Integer) as Integer`

60.19.24 **UpperBound(key as Integer) as IntegerToTextOrderedMapIteratorMBS**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns an iterator for the first element whose key is greater than k.

60.19.25 **ValueAtIndex(index as Integer) as Text**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns the value with the given index.
**Notes:** If there is no indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.19.26 **Values as Text()**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns all the values as an array.
**Notes:** The order is stable and matches the order returned by Keys at least until the Map is modified. Use this method with For Each to loop through all the values.

60.19.27 **Properties**

60.19.28 **Count as Integer**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The number of items in this map.
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Notes: (Read only property)

60.19.29 Empty as Boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: True if the size is zero.
Notes: (Read only property)

60.19.30 MaxSize as Integer

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns the largest possible size for this set.
Notes:
Value is -1 if no limit is defined.
(Read only property)

60.19.31 value(key as Integer) as Text

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The value associated with the given key.
Notes:
If you query for a key which does not exist, a KeyNotFoundException is raised.
(Read and Write computed property)
60.20  class IntegerToVariantHashMapIteratorMBS

60.20.1  class IntegerToVariantHashMapIteratorMBS

Function: The iterator for the IntegerToVariantHashMap class.
Example:

// Create a map
dim m as new IntegerToVariantHashMapMBS

m.value(1)=2
m.value(2)=4
m.value(3)=8

// get iterators pointing to first and after last element
dim i as IntegerToVariantHashMapIteratorMBS = m.first
dim e as IntegerToVariantHashMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)+” -”+i.Value
    i.MoveNext
wend

60.20.2  Methods

60.20.3  isEqual(other as IntegerToVariantHashMapIteratorMBS) as boolean

Function: Returns true if both iterators are equal.
Example:

// Create a map
dim m as new IntegerToVariantHashMapMBS

m.value(1)=2
m.value(2)=4
m.value(3)=8

// get iterators pointing to first and after last element
dim i as IntegerToVariantHashMapIteratorMBS = m.first
dim e as IntegerToVariantHashMapIteratorMBS = m.last

// Show all keys and values
while i.isEqual(e) = false
MsgBox str(i.Key)+” -”+i.Value
i.MoveNext
wend

60.20.4 isNotEqual(other as IntegerToVariantHashMapIteratorMBS) as boolean

MBS DataTypes Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns true if both iterators are not equal.
Example:

// Create a map
dim m as new IntegerToVariantHashMapMBS
m.value(1)=2
m.value(2)=4
m.value(3)=8

// get iterators pointing to first and after last element
dim i as IntegerToVariantHashMapIteratorMBS = m.first
dim e as IntegerToVariantHashMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
MsgBox str(i.Key)+” -”+i.Value
i.MoveNext
wend

60.20.5 Key as Integer


60.20.6 MoveNext

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Moves the iterator to the next item.
Example:

// Create a map
dim m as new IntegerToVariantHashMapMBS
m.value(1)=2
m.value(2)=4
m.value(3)=8

// get iterators pointing to first and after last element
dim i as IntegerToVariantHashMapIteratorMBS = m.first
dim e as IntegerToVariantHashMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)+" -"+i.Value
    i.MoveNext
wend

60.20.7 Properties

60.20.8 Value as Variant

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The value of the current item in the iterator. **Notes:** (Read and Write computed property)
60.21 class IntegerToVariantHashMapMBS

60.21.1 class IntegerToVariantHashMapMBS


Function: An alternative dictionary class for a hash map with integers as keys and variants as values.

Example:

dim s as new IntegerToVariantHashMapMBS

s.Value(1)="Hello"
s.Value(2)="World"

MsgBox str(s.Count) // shows 2

MsgBox s.Value(1)+" " +s.Value(2) // shows "Hello World"

Notes: You can choose whether you want to keep the map ordered using the OrderedMap class or whether you prefer a higher speed with the HashMap class.

60.21.2 Methods

60.21.3 AddKeys(targetArray() as Integer)


Function: Similar to keys, but adds keys to the given array.

Notes: For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys function returns always nil.

60.21.4 AddValues(targetArray() as Variant)


Function: Similar to values, but adds values to the given array.

Notes: For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys function returns always nil.

60.21.5 Clear


Function: Erases all of the elements.
60.21.6 Clone as IntegerToVariantHashMapMBS

Function: Creates a copy of this map.

60.21.7 CloneDictionary as Dictionary

Function: Creates a copy of this map as a dictionary.

60.21.8 Constructor

Function: The default constructor.
See also:
- 60.21.9 Constructor(dic as dictionary)
- 60.21.10 Constructor(other as IntegerToVariantHashMapMBS)

60.21.9 Constructor(dic as dictionary)

Function: Creates a new map with the keys and values from the dictionary.
See also:
- 60.21.8 Constructor
- 60.21.10 Constructor(other as IntegerToVariantHashMapMBS)

60.21.10 Constructor(other as IntegerToVariantHashMapMBS)

Function: Creates a new map with the keys and values from the existing map.
See also:
- 60.21.8 Constructor
- 60.21.9 Constructor(dic as dictionary)
60.21.11 CountKey(key as Integer) as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Counts how often a key is used in this map.

60.21.12 find(key as Integer) as IntegerToVariantHashMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Finds the key and returns an iterator. **Notes:** Returns the same value as the last method if the item was not found.

60.21.13 first as IntegerToVariantHashMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an iterator pointing to the beginning of the map. **Example:**

```javascript
// Create a map
dim m as new IntegerToVariantHashMapMBS
m.value(1)=2
m.value(2)=4
m.value(3)=8

// get iterators pointing to first and after last element
dim i as IntegerToVariantHashMapIteratorMBS = m.first
dim e as IntegerToVariantHashMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)+” - >”+i.Value
    i.MoveNext
wend
```

60.21.14 hasKey(key as Integer) as boolean

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns True if Key is in the map and False if it is not. Returns a Boolean.
60.21. **CLASS INTEGERTOVARIANTHASHMAPMBS**

### 60.21.15 Key(index as Integer) as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value of key for the Indexth sequential item. **Notes:** If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

### 60.21.16 Keys as Integer()

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns all the keys as an array. **Example:**

```vbnet
dim m as new IntegerToVariantHashMapMBS
m.Value(1)="Hello"
m.Value(2)="World"
for each v as Integer in m.keys
    MsgBox str(v)
next
```

**Notes:** The order is stable and matches the order returned by the Values method at least until the Dictionary is modified. Use this method with For Each to loop through all the keys.

### 60.21.17 last as IntegerToVariantHashMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an iterator pointing to the end of the map. **Example:**

```vbnet
// Create a map
dim m as new IntegerToVariantHashMapMBS
m.Value(1)=2
m.Value(2)=4
m.Value(3)=8

// get iterators pointing to first and after last element
dim i as IntegerToVariantHashMapIteratorMBS = m.first
dim e as IntegerToVariantHashMapIteratorMBS = m.last

// Show all keys and values
```

// Show all keys and values
while i.isNotEqual(e)
MsgBox str(i.Key) + " ->" + i.Value
i.MoveNext
wend

60.21.18  lookup(key as Integer, defaultvalue as Variant) as Variant

Function: Looks up the passed value of Key.  
Example:

dim map as new IntegerToVariantHashMapMBS

map.value(10)=1  
map.value(100)=2  
map.value(1000)=3  

MsgBox str(map.lookup(5,0)) // shows 0 as value is missing  
MsgBox str(map.lookup(10,0)) // shows 1 as value is found

Notes: If Key is found, it returns the corresponding value. If Key is not found, it returns the passed defaultValue.

60.21.19  Operator_Convert as Dictionary

Function: Creates a copy of the map as dictionary.

60.21.20  Remove(first as IntegerToVariantHashMapIteratorMBS, last as IntegerToVariantHashMapIteratorMBS)

Function: Erases all elements in a range.  
See also:

• 60.21.21 Remove(key as Integer) as Integer
• 60.21.22 Remove(pos as IntegerToVariantHashMapIteratorMBS)
60.21. **CLASS INTEGERTOVARIANThASHMAPMBS**

60.21.21 **Remove(key as Integer) as Integer**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases the element with the given key.

See also:

- 60.21.20 Remove(first as IntegerToVariantHashMapIteratorMBS, last as IntegerToVariantHashMapIteratorMBS)
- 60.21.22 Remove(pos as IntegerToVariantHashMapIteratorMBS)

60.21.22 **Remove(pos as IntegerToVariantHashMapIteratorMBS)**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases the element pointed to by the pos iterator.

See also:

- 60.21.20 Remove(first as IntegerToVariantHashMapIteratorMBS, last as IntegerToVariantHashMapIteratorMBS)
- 60.21.21 Remove(key as Integer) as Integer

60.21.23 **ValueAtIndex(index as Integer) as Variant**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value with the given index.

**Notes:** If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.21.24 **Values as Variant()**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns all the values as an array.

**Example:**

```// Create a map```
```dim m as new IntegerToVariantHashMapMBS```

```m.Value(1)="Hello"
m.Value(2)="World"
```

```for each v as Variant in m.Keys```
```MsgBox v```
```next```
Notes: The order is stable and matches the order returned by Keys at least until the Map is modified. Use this method with For Each to loop through all the values.

60.21.25 Properties

60.21.26 BinCount as Integer

Function: The number of bins the hash table uses.
Example:

```v
Dim v as new IntegerToVariantHashMapMBS
v.Value(1)="Hello"
v.Value(2)="World"
MsgBox str(v.BinCount)
```

Notes:
This is a measure of the hash table size, independent of the number of items the Dictionary contains.
(Read only property)

60.21.27 Count as Integer

Function: The number of items in this map.
Example:

```v
Dim map as new IntegerToVariantHashMapMBS
map.Value(1)=3
map.Value(2)=4
MsgBox str(map.Count)
```

Notes: (Read only property)
60.21. **CLASS INTEGERTOVARIANTHASHMAPMBS**

### 60.21.28 Empty as Boolean

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if the size is zero.  
**Notes:** (Read only property)

### 60.21.29 MaxSize as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the largest possible size for this map.  
**Notes:**  
Value is -1 if no limit is defined.  
(Read only property)

### 60.21.30 `value(key as Integer) as Variant`

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The value associated with the given key.  
**Notes:**  
If you query for a key which does not exist, a KeyNotFoundException is raised.  
(Read and Write computed property)
60.22  class IntegerToVariantOrderedMapIteratorMBS

60.22.1  class IntegerToVariantOrderedMapIteratorMBS

**Function:** The iterator for the IntegerToVariantOrderedMap class.  
**Example:**

```vba
// Create a map
dim m as new IntegerToVariantOrderedMapMBS
m.value(1)=2
m.value(2)=4
m.value(3)=8

// get iterators pointing to first and after last element
dim i as IntegerToVariantOrderedMapIteratorMBS = m.first
dim e as IntegerToVariantOrderedMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)+" - >"+i.Value
    i.MoveNext
wend
```

60.22.2  Methods

60.22.3  isEqual(other as IntegerToVariantOrderedMapIteratorMBS) as boolean

**Function:** Returns true if both iterators are equal.  
**Example:**

```vba
// Create a map
dim m as new IntegerToVariantOrderedMapMBS
m.value(1)=2
m.value(2)=4
m.value(3)=8

// get iterators pointing to first and after last element
dim i as IntegerToVariantOrderedMapIteratorMBS = m.first
dim e as IntegerToVariantOrderedMapIteratorMBS = m.last

// Show all keys and values
```

// Show all keys and values
while i.isEqual(e) = false
MsgBox str(i.Key)+” -”+i.Value
i.MoveNext
wend

60.22.4 isNotEqual(other as IntegerToVariantOrderedMapIteratorMBS) as boolean

MBS DataTypes Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Returns true if both iterators are not equal. 
**Example:**

```vba
// Create a map
dim m as new IntegerToVariantOrderedMapMBS
m.value(1)=2
m.value(2)=4
m.value(3)=8

// get iterators pointing to first and after last element
dim i as IntegerToVariantOrderedMapIteratorMBS = m.first
dim e as IntegerToVariantOrderedMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
MsgBox str(i.Key)+” -”+i.Value
i.MoveNext
wend
```

60.22.5 Key as Integer

**Function:** Returns the current key.

60.22.6 MoveNext

**Function:** Moves the iterator to the next item. 
**Example:**

```vba
// Create a map
dim m as new IntegerToVariantOrderedMapMBS
```
m.value(1)=2
m.value(2)=4
m.value(3)=8

    // get iterators pointing to first and after last element
    dim i as IntegerToVariantOrderedMapIteratorMBS = m.first
    dim e as IntegerToVariantOrderedMapIteratorMBS = m.last

    // Show all keys and values
    while i.isNotEqual(e)
        MsgBox str(i.Key)+" ->"+i.Value
        i.MoveNext
    wend

60.22.7 MovePrev

    MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Moves the iterator to the previous item.

60.22.8 Properties

60.22.9 Value as Variant

    MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The value of the current item in the iterator. **Notes:** (Read and Write computed property)
60.23. **CLASS INTEGERTOVARIANTORDEREDMAPMBS**

60.23  class IntegerToVariantOrderedMapMBS

60.23.1  class IntegerToVariantOrderedMapMBS

**Function:** An alternative dictionary class for an ordered map with integers as keys and variants as values.  
**Example:**

```vba
Dim s As New IntegerToVariantOrderedMapMBS

s.Value(1) = "Hello"
s.Value(2) = "World"

MsgBox str(s.Count) ' shows 2

MsgBox s.Value(1) + " " + s.Value(2) ' shows "Hello World"
```

**Notes:** You can choose whether you want to keep the map ordered using the OrderedMap class or whether you prefer a higher speed with the HashMap class.

60.23.2  Methods

60.23.3  AddKeys(targetArray() as Integer)

**Function:** Similar to keys, but adds keys to the given array.  
**Notes:** For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys function returns always nil.

60.23.4  AddValues(targetArray() as Variant)

**Function:** Similar to values, but adds values to the given array.  
**Notes:** For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys function returns always nil.

60.23.5  Clear

**Function:** Erases all of the elements.
60.23.6 Clone as IntegerToVariantOrderedMapMBS

**Function:** Creates a copy of this map.

60.23.7 CloneDictionary as Dictionary

**Function:** Creates a copy of this map as a dictionary.

60.23.8 Constructor

**Function:** The default constructor.
See also:
- 60.23.9 Constructor(dic as dictionary) 10736
- 60.23.10 Constructor(other as IntegerToVariantOrderedMapMBS) 10736

60.23.9 Constructor(dic as dictionary)

**Function:** Creates a new map with the keys and values from the dictionary.
See also:
- 60.23.8 Constructor 10736
- 60.23.10 Constructor(other as IntegerToVariantOrderedMapMBS) 10736

60.23.10 Constructor(other as IntegerToVariantOrderedMapMBS)

**Function:** Creates a new map with the keys and values from the existing map.
See also:
- 60.23.8 Constructor 10736
- 60.23.9 Constructor(dic as dictionary) 10736
60.23. **CLASS INTEGERTOVARIANTORDEREDMAPMBS**

### 60.23.11 CountKey(key as Integer) as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Counts how often a key is used in this map.

### 60.23.12 find(key as Integer) as IntegerToVariantOrderedMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Finds the key and returns an iterator. **Notes:** Returns the same value as the last method if the item was not found.

### 60.23.13 first as IntegerToVariantOrderedMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an iterator pointing to the beginning of the map. **Example:**

```vba
// Create a map
dim m as new IntegerToVariantOrderedMapMBS
m.value(1)=2
m.value(2)=4
m.value(3)=8

// get iterators pointing to first and after last element
dim i as IntegerToVariantOrderedMapIteratorMBS = m.first
dim e as IntegerToVariantOrderedMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)+” - >”+i.Value
    i.MoveNext
wend
```

### 60.23.14 hasKey(key as Integer) as boolean

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns True if Key is in the map and False if it is not. Returns a Boolean.
60.23.15  Key(index as Integer) as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns the value of key for the Indexth sequential item. Notes: If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.23.16  Keys as Integer()

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns all the keys as an array. Example:

```vbs
dim m as new IntegerToVariantOrderedMapMBS
m.Value(1)="Hello"
m.Value(2)="World"

for each v as Integer in m.keys
    MsgBox str(v)
next
```

Notes: The order is stable and matches the order returned by the Values method at least until the Dictionary is modified. Use this method with For Each to loop through all the keys.

60.23.17  last as IntegerToVariantOrderedMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns an iterator pointing to the end of the map. Example:

```vbs
// Create a map
dim m as new IntegerToVariantOrderedMapMBS
m.value(1)=2
m.value(2)=4
m.value(3)=8

// get iterators pointing to first and after last element
dim i as IntegerToVariantOrderedMapIteratorMBS = m.first
dim e as IntegerToVariantOrderedMapIteratorMBS = m.last

// Show all keys and values
```
while i.isNotEqual(e)
MsgBox str(i.Key) + " ->" + i.Value
i.MoveNext
wend

60.23.18 **lookup(key as Integer, defaultValue as Variant) as Variant**

**Function:** Looks up the passed value of Key.  
**Example:**
```
    dim map as new IntegerToVariantOrderedMapMBS
    
    map.value(10)=1
    map.value(100)=2
    map.value(1000)=3
    
    MsgBox str(map.lookup( 5,0)) // shows 0 as value is missing
    MsgBox str(map.lookup( 10,0)) // shows 1 as value is found
```

**Notes:** If Key is found, it returns the corresponding value. If Key is not found, it returns the passed defaultValue.

60.23.19 **LowerBound(key as Integer) as IntegerToVariantOrderedMapIteratorMBS**

**Function:** Returns an iterator for the first element whose key is not less than k.

60.23.20 **Operator_Convert as Dictionary**

**Function:** Creates a copy of the map as dictionary.
60.23.21 Remove(first as IntegerToVariantOrderedMapIteratorMBS, last as IntegerToVariantOrderedMapIteratorMBS)

**Function:** Erases all elements in a range.  
See also:  
- 60.23.22 Remove(key as Integer) as Integer
- 60.23.23 Remove(pos as IntegerToVariantOrderedMapIteratorMBS)

60.23.22 Remove(key as Integer) as Integer

**Function:** Erases the element with the given key.  
See also:  
- 60.23.21 Remove(first as IntegerToVariantOrderedMapIteratorMBS, last as IntegerToVariantOrderedMapIteratorMBS)
- 60.23.23 Remove(pos as IntegerToVariantOrderedMapIteratorMBS)

60.23.23 Remove(pos as IntegerToVariantOrderedMapIteratorMBS)

**Function:** Erases the element pointed to by the pos iterator.  
See also:  
- 60.23.21 Remove(first as IntegerToVariantOrderedMapIteratorMBS, last as IntegerToVariantOrderedMapIteratorMBS)
- 60.23.22 Remove(key as Integer) as Integer

60.23.24 UpperBound(key as Integer) as IntegerToVariantOrderedMapIteratorMBS

**Function:** Returns an iterator for the first element whose key is greater than k.

60.23.25 ValueAtIndex(index as Integer) as Variant

**Function:** Returns the value with the given index.
Notes: If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.23.26 Values as Variant()

Function: Returns all the values as an array
Example:

```vba
// Create a map
dim m as new IntegerToVariantOrderedMapMBS
m.Value(1)="Hello"
m.Value(2)="World"

for each v as Variant in m.Keys
    MsgBox v
next
```

Notes: The order is stable and matches the order returned by Keys at least until the Map is modified. Use this method with For Each to loop through all the values.

60.23.27 Properties

60.23.28 Count as Integer

Function: The number of items in this map.
Example:

```vba
dim map as new IntegerToVariantOrderedMapMBS

map.Value(1)=3
map.Value(2)=4

MsgBox str(map.Count)
```

Notes: (Read only property)
60.23.29 Empty as Boolean

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: True if the size is zero. Notes: (Read only property)

60.23.30 MaxSize as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns the largest possible size for this map. Notes: Value is -1 if no limit is defined. (Read only property)

60.23.31 value(key as Integer) as Variant

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The value associated with the given key. Notes: If you query for a key which does not exist, a KeyNotFoundException is raised. (Read and Write computed property)
60.24. CLASS STACKDOUBLEMBS

60.24 class StackDoubleMBS

60.24.1 class StackDoubleMBS

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: A class for a stack of doubles.
Example:

dim s as new StackDoubleMBS
call s.Push 5
MsgBox str(s.Top)

60.24.2 Methods

60.24.3 Bottom as Double

MBS DataTypes Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns the bottom item of the stack and returns the value.
Example:

dim s as new StackDoubleMBS
call s.Push 5
MsgBox str(s.Bottom)

60.24.4 clear

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Clears the stack.
Example:

dim s as new StackDoubleMBS
call s.Push 5
s.Clear

if s.IsEmpty then
MsgBox "OK"
end if
60.24.5 close

MBS DataTypes Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The destructor.

**Notes:**
There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

60.24.6 Contains(o as Double) as boolean

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Returns true if one of the items on the stack is equal to the given double value.

**Example:**
```
dim s as new StackDoubleMBS

call s.Push 5

if s.Contains(5) then
    MsgBox "found. OK"
else
    MsgBox "not found. Failed"
end if
```

60.24.7 Deep as Integer

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Counts how much items are on the stack.

**Example:**
```
dim s as new StackDoubleMBS

MsgBox str(s.Deep)
call s.Push 5
MsgBox str(s.Deep)
```
60.24. Pop as Double

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Removes the top item of the stack and returns the value.
**Example:**
```
   dim s as new StackDoubleMBS
   call s.Push 5
   MsgBox str(s.pop)
```

**Notes:** Returns 0 on any error.

60.24.9 PopBottom as Double

MBS DataTypes Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Removes the bottom item of the stack and returns the value.
**Example:**
```
   dim s as new StackDoubleMBS
   call s.Push 5
   MsgBox str(s.PopBottom)
```

60.24.10 Push(o as Double) as boolean

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Pushes a value on the stack.
**Example:**
```
   dim s as new StackDoubleMBS

   call s.Push 5
```

**Notes:**

Returns true if successful.
May fail on low memory.
### 60.24.11 Top as Double

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Returns the value of the top item on the stack.

**Example:**
```vbnet
dim s as new StackDoubleMBS
call s.Push 5
MsgBox str(s.Top)
```

**Notes:** Returns 0 on any error.

### 60.24.12 Properties

#### 60.24.13 IsEmpty as Boolean

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Returns true if the stack is empty.

**Example:**
```vbnet
dim s as new StackDoubleMBS
if s.IsEmpty then
    MsgBox "IsEmpty ok"
else
    MsgBox "IsEmpty failed"
end if
call s.Push 5
if s.IsEmpty then
    MsgBox "IsEmpty failed"
else
    MsgBox "IsEmpty ok"
end if
```

**Notes:** (Read only property)
60.25 class StackIntegerMBS

60.25.1 class StackIntegerMBS

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: A class for a stack of integers.
Example:

dim s as new StackIntegerMBS

call s.Push 5

MsgBox str(S.Top)

60.25.2 Methods

60.25.3 Bottom as Integer

MBS DataTypes Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns the bottom item of the stack and returns the value.
Example:

dim s as new StackIntegerMBS

call s.Push 5

MsgBox str(s.Bottom)

60.25.4 clear

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Clears the stack.
Example:

dim s as new StackIntegerMBS

call s.Push 5

s.Clear

if s.IsEmpty then
MsgBox "OK"
60.25.5 close

MBS DataTypes Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The destructor.
Notes:
There is no need to call this method except you want to free all resources of this object now without waiting
for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

60.25.6 Contains(o as Integer) as boolean

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns true if one of the items on the stack is equal to the given integer value.
Example:

dim s as new StackIntegerMBS

call s.Push 5

if s.Contains(5) then
    MsgBox "found. OK"
else
    MsgBox "not found. Failed"
end if

60.25.7 Deep as Integer

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Counts how much items are on the stack.
Example:

dim s as new StackIntegerMBS

MsgBox str(s.Deep)

call s.Push 5

MsgBox str(s.Deep)
60.25.8 Pop as Integer

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Removes the top item of the stack and returns the value.
**Example:**
```vba
dim s as new StackIntegerMBS

call s.Push 5

MsgBox str(s.pop)
```

**Notes:** Returns 0 on any error.

60.25.9 PopBottom as Integer

MBS DataTypes Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Removes the bottom item of the stack and returns the value.
**Example:**
```vba
dim s as new StackIntegerMBS

call s.Push 5

MsgBox str(s.PopBottom)
```

60.25.10 Push(o as Integer) as boolean

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Pushes a value on the stack.
**Example:**
```vba
dim s as new StackIntegerMBS

call s.Push 5
```

**Notes:**
60.25.11 Top as Integer

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns the value of the top item on the stack.
**Example:**
```plaintext
dim s as new StackIntegerMBS

call s.Push 5

MsgBox str(S.Top)
```

**Notes:** Returns 0 on any error.

60.25.12 Properties

60.25.13 IsEmpty as Boolean

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns true if the stack is empty.
**Example:**
```plaintext
dim s as new StackIntegerMBS

if s.IsEmpty then
    MsgBox "IsEmpty ok"
else
    MsgBox "IsEmpty failed"
end if

call s.Push 5

if s.IsEmpty then
    MsgBox "IsEmpty failed"
else
    MsgBox "IsEmpty ok"
end if
```
60.25. CLASS STACKINTEGERMBS

Notes: (Read only property)
60.26  class StackObjectMBS

60.26.1  class StackObjectMBS

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function:  A class for a stack of objects.
Example:

```vba
dim s as new StackObjectMBS
call s.Push window1
MsgBox window(s.top).title
```

60.26.2  Methods

60.26.3  Bottom as object

MBS DataTypes Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function:  Returns the bottom item of the stack and returns the value.
Example:

```vba
dim s as new StackObjectMBS
call s.Push window1
MsgBox window(s.Bottom).title
```

60.26.4  clear

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function:  Clears the stack.
Example:

```vba
dim s as new StackObjectMBS
call s.Push window1
s.Clear

if s.IsEmpty then
    MsgBox "OK"
end if
```
60.26.5 close

MBS DataTypes Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The destructor.

**Notes:**
There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

60.26.6 Contains(o as object) as boolean

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns true if one of the object references on the stack is equal to the given object reference.

**Example:**
```ruby
dim s as new StackObjectMBS

call s.Push window1

if s.Contains(window1) then
  MsgBox "found. OK"
else
  MsgBox "not found. Failed"
end if
```

60.26.7 Deep as Integer

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Counts how much items are on the stack.

**Example:**
```ruby
dim s as new StackObjectMBS

MsgBox str(s.Deep)

call s.Push window1

MsgBox str(s.Deep)
```
60.26.8  Pop as object

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Removes the top item of the stack and returns the value.
Example:

```plaintext
dim s as new StackObjectMBS
call s.Push window1
MsgBox window(s.pop).title
```

Notes: Returns nil on any error.

60.26.9  PopBottom as object

MBS DataTypes Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Removes the bottom item of the stack and returns the value.
Example:

```plaintext
dim s as new StackObjectMBS
call s.Push window1
MsgBox window(s.PopBottom).title
```

60.26.10  Push(o as object) as boolean

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Pushes a value on the stack.
Example:

```plaintext
dim s as new StackObjectMBS
call s.Push window1
```

Notes:
Returns true if successful.
May fail on low memory.
Does not push nil.
60.26. **CLASS STACKOBJECTMBS**

60.26.11 **Top as object**

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns the value of the top item on the stack.
**Example:**
```
dim s as new StackObjectMBS
call s.Push window1
MsgBox window(s.top).title
```

**Notes:** Returns nil on any error.

60.26.12 **Properties**

60.26.13 **IsEmpty as Boolean**

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns true if the stack is empty.
**Example:**
```
dim s as new StackObjectMBS

if s.IsEmpty then
MsgBox "IsEmpty ok"
else
MsgBox "IsEmpty failed"
end if

call s.Push window1

if s.IsEmpty then
MsgBox "IsEmpty failed"
else
MsgBox "IsEmpty ok"
end if
```

**Notes:** (Read only property)
60.27 class StackSingleMBS

60.27.1 class StackSingleMBS

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: A class for a stack of singles.
Example:

dim s as new StackSingleMBS

call s.Push 5

MsgBox str(S.Top)

60.27.2 Methods

60.27.3 Bottom as single

MBS DataTypes Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns the bottom item of the stack and returns the value.
Example:

dim s as new StackSingleMBS

call s.Push 5

MsgBox str(s.Bottom)

60.27.4 clear

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Clears the stack.
Example:

dim s as new StackSingleMBS

call s.Push 5

s.Clear

if s.IsEmpty then
MsgBox "OK"
end if

60.27.5 close

MBS DataTypes Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The destructor.
Notes:
There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

60.27.6 Contains(o as single) as boolean

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns true if one of the items on the stack is equal to the given single value.
Example:

dim s as new StackSingleMBS

call s.Push 5

if s.Contains(5) then
    MsgBox "found. OK"
else
    MsgBox "not found. Failed"
end if

60.27.7 Deep as Integer

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Counts how much items are on the stack.
Example:

dim s as new StackSingleMBS

MsgBox str(s.Deep)
call s.Push 5
MsgBox str(s.Deep)
60.27.8 Pop as single

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Removes the top item of the stack and returns the value.
**Example:**
```vbnet
dim s as new StackSingleMBS

call s.Push 5

MsgBox str(s.Pop)
```

**Notes:** Returns 0 on any error.

60.27.9 PopBottom as single

MBS DataTypes Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Removes the bottom item of the stack and returns the value.
**Example:**
```vbnet
dim s as new StackSingleMBS

call s.Push 5

MsgBox str(S.PopBottom)
```

60.27.10 Push(o as single) as boolean

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Pushes a value on the stack.
**Example:**
```vbnet
dim s as new StackSingleMBS

call s.Push 5
```

**Notes:**
60.27. CLASS STACKSINGLEMBS

Returns true if successful.
May fail on low memory.

60.27.11 Top as single

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Returns the value of the top item on the stack.  
**Example:**

```
dim s as new StackSingleMBS

call s.Push 5

MsgBox str(S.Top)
```

**Notes:** Returns 0 on any error.

60.27.12 Properties

60.27.13 IsEmpty as Boolean

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Returns true if the stack is empty.  
**Example:**

```
dim s as new StackSingleMBS

if s.IsEmpty then
  MsgBox "IsEmpty ok"
else
  MsgBox "IsEmpty failed"
end if

call s.Push 5

if s.IsEmpty then
  MsgBox "IsEmpty failed"
else
  MsgBox "IsEmpty ok"
end if
```
Notes: (Read only property)
60.28. CLASS STACKSTRINGMBS

60.28 class StackStringMBS

60.28.1 class StackStringMBS

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: A class for a stack of strings.
Example:

```vbnet
dim s as new StackStringMBS
call s.Push "Hello"
MsgBox s.Pop
```

60.28.2 Methods

60.28.3 Bottom as string

MBS DataTypes Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns the bottom item of the stack and returns the value.
Example:

```vbnet
dim s as new StackStringMBS
call s.Push "Hello"
MsgBox s.Bottom
```

60.28.4 clear

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Clears the stack.
Example:

```vbnet
dim s as new StackStringMBS

call s.Push "abc"
s.Clear

if s.IsEmpty then
MsgBox "OK"
end if
```
60.28.5 close

MBS DataTypes Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The destructor.
**Notes:**
There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

60.28.6 Contains(o as string) as boolean

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns true if one of the string references on the stack is equal to the given double reference.
**Example:**
```plaintext
dim s as new StackStringMBS

call s.Push "Hello"

if s.Contains("Hello") then
    MsgBox "found. OK"
else
    MsgBox "not found. Failed"
end if
```

60.28.7 Deep as Integer

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Counts how much items are on the stack.
**Example:**
```plaintext
dim s as new StackStringMBS

MsgBox str(s.Deep)

call s.Push "Hello"

MsgBox str(s.Deep)
```
60.28.8 Pop as string

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Removes the top item of the stack and returns the value.
**Example:**
```vbscript
dim s as new StackStringMBS
call s.Push "Hello"
MsgBox s.Pop
```

**Notes:** Returns "" on any error.

60.28.9 PopBottom as string

MBS DataTypes Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Removes the bottom item of the stack and returns the value.
**Example:**
```vbscript
dim s as new StackStringMBS
call s.Push "Hello"
MsgBox s.PopBottom
```

60.28.10 Push(o as string) as boolean

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Pushes a value on the stack.
**Example:**
```vbscript
dim s as new StackStringMBS
call s.Push "Hello"
```

**Notes:**
Returns true if successful.
May fail on low memory.
60.28.11 Top as string

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns the value of the top item on the stack.
Example:
```
dim s as new StackStringMBS
call s.Push "Hello"
MsgBox s.Top
```

Notes: Returns "" on any error.

60.28.12 Properties

60.28.13 IsEmpty as Boolean

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns true if the stack is empty.
Example:
```
dim s as new StackStringMBS

if s.IsEmpty then
    MsgBox "IsEmpty ok"
else
    MsgBox "IsEmpty failed"
end if

call s.Push "Hello"

if s.IsEmpty then
    MsgBox "IsEmpty failed"
else
    MsgBox "IsEmpty ok"
end if
```

Notes: (Read only property)
60.29. **CLASS STACKVARIANTMBS**

60.29  **class StackVariantMBS**

60.29.1  **class StackVariantMBS**

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** A class for a stack of variants.

**Example:**

```vba
dim s as new StackVariantMBS

call s.Push 5

MsgBox s.PopBottom
```

60.29.2  **Methods**

60.29.3  **Bottom as Variant**

MBS DataTypes Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Returns the bottom item of the stack and returns the value.

**Example:**

```vba
dim s as new StackVariantMBS

call s.Push 5

MsgBox s.Bottom
```

60.29.4  **clear**

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Clears the stack.

**Example:**

```vba
dim s as new StackVariantMBS

call s.Push 5

s.Clear

if s.IsEmpty then
    MsgBox "OK"
```
60.29.5 close

MBS DataTypes Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The destructor.

**Notes:**

There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

60.29.6 Contains(o as Variant) as boolean

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Returns true if one of the variant references on the stack is equal to the given variant reference.

**Example:**

```vbp
dim s as new StackObjectMBS

call s.Push window1

if s.Contains(window1) then
    MsgBox "found. OK"
else
    MsgBox "not found. Failed"
end if
```

60.29.7 Deep as Integer

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Counts how much items are on the stack.

**Example:**

```vbp
dim s as new StackVariantMBS

MsgBox str(s.Deep)

call s.Push window1

MsgBox str(s.Deep)
```
60.29.8  Pop as Variant

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Removes the top item of the stack and returns the value.
Example:

```vbs
dim s as new StackVariantMBS
call s.Push 5
MsgBox s.pop
```

Notes: Returns nil on any error.

60.29.9  PopBottom as Variant

MBS DataTypes Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Removes the bottom item of the stack and returns the value.
Example:

```vbs
dim s as new StackVariantMBS
call s.Push 5
MsgBox s.PopBottom
```

60.29.10  Push(o as Variant) as boolean

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Pushes a value on the stack.
Example:

```vbs
dim s as new StackVariantMBS
call s.Push 5
```

Notes:
Returns true if successfull.
May fail on low memory.

60.29.11 Top as Variant

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns the value of the top item on the stack.
**Example:**
```vbnet
dim s as new StackVariantMBS

call s.Push 5

MsgBox s.top
```

**Notes:** Returns nil on any error.

60.29.12 Properties

60.29.13 IsEmpty as Boolean

MBS DataTypes Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns true if the stack is empty.
**Example:**
```vbnet
dim s as new StackVariantMBS

if s.IsEmpty then
    MsgBox "IsEmpty ok"
else
    MsgBox "IsEmpty failed"
end if

call s.Push 5

if s.IsEmpty then
    MsgBox "IsEmpty failed"
else
    MsgBox "IsEmpty ok"
end if
60.29. CLASS STACKVARIANTMBS

Notes: (Read only property)
60.30 class StringHashSetIteratorMBS

60.30.1 class StringHashSetIteratorMBS


Function: The iterator for the StringHashSet class.

Example:

// Create a map
dim m as new StringHashSetMBS

m.insert("1")
m.insert("2")
m.insert("3")

// get iterators pointing to first and after last element
dim i as StringHashSetIteratorMBS = m.first
dim e as StringHashSetIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox i.Key
    i.MoveNext
wend

60.30.2 Methods

60.30.3 isEqual(other as StringHashSetIteratorMBS) as boolean


Function: Returns true if both iterators are equal.

Example:

// Create a map
dim m as new StringHashSetMBS

m.insert("1")
m.insert("2")
m.insert("3")

// get iterators pointing to first and after last element
dim i as StringHashSetIteratorMBS = m.first
dim e as StringHashSetIteratorMBS = m.last

// Show all keys and values
while i.isEqual(e) = false
MsgBox i.Key
i.MoveNext
wend

60.30.4 isNotEqual(other as StringHashSetIteratorMBS) as boolean

MBS DataTypes Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Returns true if both iterators are not equal.  
**Example:**

```vbs
// Create a map
dim m as new StringHashSetMBS

m.insert("1")
m.insert("2")
m.insert("3")

// get iterators pointing to first and after last element
dim i as StringHashSetIteratorMBS = m.first
dim e as StringHashSetIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
  MsgBox i.Key
  i.MoveNext
wend
```

60.30.5 Key as string

**Function:** Returns the current key.

60.30.6 MoveNext

**Function:** Moves the iterator to the next item.  
**Example:**

```vbs
// Create a map
dim m as new StringHashSetMBS
```
m.insert("1")
m.insert("2")
m.insert("3")

// get iterators pointing to first and after last element
dim i as StringHashSetIteratorMBS = m.first
dim e as StringHashSetIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox i.Key
    i.MoveNext
wend
60.31.1 class StringHashSetMBS

**Function:** An alternative dictionary class for a hash set with strings. 
**Example:**
```vba
dim s as new StringHashSetMBS
s.insert "test"
s.insert "Test"
MsgBox str(s.Count) // shows 2
```

**Notes:**
All text comparison is done either case sensitive or insensitive. Defined in constructor. 
You can choose whether you want to keep the set ordered using the OrderedSet class or whether you prefer a higher speed with the HashSet class.

60.31.2 Methods

60.31.3 Clear

**Function:** Erases all of the elements.

60.31.4 Constructor(CaseSensitive as Boolean = true)

**Function:** The default constructor. 
**Notes:** If CaseSensitive is true, the comparison of texts or strings is case sensitive. 
See also:
- 60.31.5 Constructor(Keys() as string)

60.31.5 Constructor(Keys() as string)

**Function:** Creates a new set from the values in the array.
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Example:

```vbscript
dim s() as string = array(“Hello”, “World”, “test”)

dim set as new StringHashSetMBS(s)

MsgBox str(set.Count)+” entries: ” +Join(set.keys,”, ”)
```

Notes: If the array has duplicates, the later elements overwrite the earlier keys.
See also:

- 60.31.4 Constructor(CaseSensitive as Boolean = true)

60.31.6 CountKey(key as string) as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Counts how often a key is used in this set.

60.31.7 find(key as string) as StringHashSetIteratorMBS

Notes: Returns the same value as the last method if the item was not found.

60.31.8 first as StringHashSetIteratorMBS

Example:

```vbscript
// Create a map
dim m as new StringHashSetMBS

m.insert(“1”)
m.insert(“2”)
m.insert(“3”)

// get iterators pointing to first and after last element
dim i as StringHashSetIteratorMBS = m.first
dim e as StringHashSetIteratorMBS = m.last

// Show all keys and values
```
while i.isNotEqual(e)
MsgBox i.Key
i.MoveNext
wend

60.31.9  insert(key as string)

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds a value to the set.

60.31.10  Key(index as Integer) as string

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value of key for the Indexth sequential item. **Notes:** If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.31.11  Keys as string()

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns all the keys as an array. **Example:**

```dim m as new StringHashSetMBS
m.insert("1")
m.insert("2")
for each v as string in m.Keys
MsgBox v
next```

**Notes:** The order is stable and matches the order returned by the Values method at least until the Dictionary is modified. Use this method with For Each to loop through all the keys.
60.31.12 last as StringHashSetIteratorMBS


**Function:** Returns an iterator pointing to the end of the set.

**Example:**

```plaintext
// Create a map
dim m as new StringHashSetMBS
m.insert("1")
m.insert("2")
m.insert("3")

// get iterators pointing to first and after last element
dim i as StringHashSetIteratorMBS = m.first
dim e as StringHashSetIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox i.Key
    i.MoveNext
wend
```

60.31.13 lookup(key as string) as boolean


**Function:** Checks whether an element with the given key exists in this set.

**Example:**

```plaintext
dim set as new StringHashSetMBS
set.insert "Hello"
set.insert "World"

MsgBox str(set.lookup("missed")) // shows false as value is missing
MsgBox str(set.lookup("Hello")) // shows true as value is found
```

**Notes:** Returns true if yes and false if no.
60.31. **CLASS STRINGHASHSETMBS**

**60.31.14 Remove(first as StringHashSetIteratorMBS, last as StringHashSetIteratorMBS)**

**Function:** Erases all elements in a range.
See also:
- 60.31.15 Remove(key as string) as Integer
- 60.31.16 Remove(pos as StringHashSetIteratorMBS)

**60.31.15 Remove(key as string) as Integer**

**Function:** Erases the element with the given key.
See also:
- 60.31.14 Remove(first as StringHashSetIteratorMBS, last as StringHashSetIteratorMBS)
- 60.31.16 Remove(pos as StringHashSetIteratorMBS)

**60.31.16 Remove(pos as StringHashSetIteratorMBS)**

**Function:** Erases the element pointed to by the pos iterator.
See also:
- 60.31.14 Remove(first as StringHashSetIteratorMBS, last as StringHashSetIteratorMBS)
- 60.31.15 Remove(key as string) as Integer

**60.31.17 Properties**

**60.31.18 BinCount as Integer**

**Function:** The number of bins the hash table uses.
**Example:**

```vbs
    dim v as new StringHashSetMBS
    v.insert "1"
    v.insert "Hello"
    MsgBox str(v.BinCount)
```
Notes:
This is a measure of the hash table size, independent of the number of items the Dictionary contains.
(Read only property)

60.31.19 CaseSensitive as Boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Whether text/string comparison is case sensitive.
Example:

dim s1 as new StringHashSetMBS(true)
dim s2 as new StringHashSetMBS(false)

s1.insert ”a”
s1.insert ”A”

s2.insert ”a”
s2.insert ”A”

MsgBox str(s1.Count)+” “+str(s2.Count)

Notes: (Read only property)

60.31.20 Count as Integer

Function: The number of items in this set.
Example:

dim set as new StringHashSetMBS

set.insert ”a”
set.insert ”b”

MsgBox str(set.Count)

Notes: (Read only property)
60.31.21 Empty as Boolean

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if the size is zero.  
**Notes:** (Read only property)

60.31.22 MaxSize as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the largest possible size for this set.  
**Notes:**  
Value is -1 if no limit is defined.  
(Read only property)
CHAPTER 60. DATA TYPES

60.32 class StringOrderedSetIteratorMBS

60.32.1 class StringOrderedSetIteratorMBS


Function: The iterator for the StringOrderedSet class.

Example:

```vbs```
// Create a map
dim m as new StringOrderedSetMBS

m.insert("1")

m.insert("2")

m.insert("3")

// get iterators pointing to first and after last element
dim i as StringOrderedSetIteratorMBS = m.first
dim e as StringOrderedSetIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox i.Key
    i.MoveNext
wend
```

60.32.2 Methods

60.32.3 isEqual(other as StringOrderedSetIteratorMBS) as boolean


Function: Returns true if both iterators are equal.

Example:

```vbs```
// Create a map
dim m as new StringOrderedSetMBS

m.insert("1")

m.insert("2")

m.insert("3")

// get iterators pointing to first and after last element
dim i as StringOrderedSetIteratorMBS = m.first
dim e as StringOrderedSetIteratorMBS = m.last

// Show all keys and values
```
while i.isEqual(e) = false
MsgBox i.Key
i.MoveNext
wend

60.32.4  isNotEqual(other as StringOrderedSetIteratorMBS) as boolean

MBS DataTypes Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if both iterators are not equal. **Example:**

```vbnet
// Create a map
dim m as new StringOrderedSetMBS
m.insert("1")
m.insert("2")
m.insert("3")

// get iterators pointing to first and after last element
dim i as StringOrderedSetIteratorMBS = m.first
dim e as StringOrderedSetIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
MsgBox i.Key
i.MoveNext
wend
```

60.32.5  Key as string

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the current key.

60.32.6  MoveNext

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Moves the iterator to the next item. **Example:**

```vbnet
// Create a map
dim m as new StringOrderedSetMBS
```
m.insert("1")
m.insert("2")
m.insert("3")

// get iterators pointing to first and after last element
dim i as StringOrderedSetIteratorMBS = m.first
dim e as StringOrderedSetIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox i.Key
    i.MoveNext
wend

60.32.7 MovePrev

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Moves the iterator to the previous item.
60.33.  CLASS STRINGORDEREDSETMBS

60.33  class StringOrderedSetMBS

60.33.1  class StringOrderedSetMBS

Function: An alternative dictionary class for an ordered set of strings.
Example:

```vba
dim s as new StringOrderedSetMBS
s.insert "test"
s.insert "Test"
MsgBox str(s.Count) // shows 2
```

Notes:
All text comparison is done either case sensitive or insensitive. Defined in constructor.
You can choose whether you want to keep the set ordered using the OrderedSet class or whether you prefer a higher speed with the HashSet class.

60.33.2  Methods

60.33.3  Clear


60.33.4  Constructor(CaseSensitive as Boolean = true)

Notes: If CaseSensitive is true, the comparison of texts or strings is case sensitive.
See also:

- 60.33.5 Constructor(Keys() as string)

60.33.5  Constructor(Keys() as string)

Example:

```vbs
    dim s() as string = array("Hello", "World", "test")
    dim set as new StringOrderedSetMBS(s)
    MsgBox str(set.Count)+" entries: " +Join(set.keys," ")
```

Notes: If the array has duplicates, the later elements overwrite the earlier keys.
See also:

- 60.33.4 Constructor(CaseSensitive as Boolean = true)

60.33.6 CountKey(key as string) as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Counts how often a key is used in this set.

60.33.7 find(key as string) as StringOrderedSetIteratorMBS

Notes: Returns the same value as the last method if the item was not found.

60.33.8 first as StringOrderedSetIteratorMBS

Example:

```vbs
    // Create a map
    dim m as new StringOrderedSetMBS
    m.insert("1")
    m.insert("2")
    m.insert("3")

    // get iterators pointing to first and after last element
    dim i as StringOrderedSetIteratorMBS = m.first
    dim e as StringOrderedSetIteratorMBS = m.last

    // Show all keys and values
```
while i.isNotEqual(e)
MsgBox i.Key
i.MoveNext
wend

60.33.9 insert(key as string)


60.33.10 Key(index as Integer) as string

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns the value of key for the Indexth sequential item. Notes: If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.33.11 Keys as string()

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns all the keys as an array. Example:

dim m as new StringOrderedSetMBS

m.insert("1")
m.insert("2")

for each v as string in m.Keys
MsgBox v
next

Notes: The order is stable and matches the order returned by the Values method at least until the Dictionary is modified. Use this method with For Each to loop through all the keys.
60.33.12 last as StringOrderedSetIteratorMBS

Function: Returns an iterator pointing to the end of the set.
Example:

```vbnet
// Create a map
dim m as new StringOrderedSetMBS
m.insert("1")
m.insert("2")
m.insert("3")

// get iterators pointing to first and after last element
dim i as StringOrderedSetIteratorMBS = m.first
dim e as StringOrderedSetIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox i.Key
    i.MoveNext
wend
```

60.33.13 lookup(key as string) as boolean

Function: Checks whether an element with the given key exists in this set.
Example:

dim set as new StringOrderedSetMBS

set.insert "Hello"
set.insert "World"

MsgBox str(set.lookup("missed")) // shows false as value is missing
MsgBox str(set.lookup("Hello")) // shows true as value is found

Notes: Returns true if yes and false if no.
60.33. **CLASS STRINGORDEREDSETMBS**

60.33.14 **LowerBound(key as string) as StringOrderedSetIteratorMBS**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an iterator for the first element whose key is not less than k.

60.33.15 **Remove(first as StringOrderedSetIteratorMBS, last as StringOrderedSetIteratorMBS)**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases all elements in a range.

See also:

- 60.33.16 Remove(key as string) as Integer

- 60.33.17 Remove(pos as StringOrderedSetIteratorMBS)

60.33.16 **Remove(key as string) as Integer**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases the element with the given key.

See also:

- 60.33.15 Remove(first as StringOrderedSetIteratorMBS, last as StringOrderedSetIteratorMBS)

- 60.33.17 Remove(pos as StringOrderedSetIteratorMBS)

60.33.17 **Remove(pos as StringOrderedSetIteratorMBS)**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases the element pointed to by the pos iterator.

See also:

- 60.33.15 Remove(first as StringOrderedSetIteratorMBS, last as StringOrderedSetIteratorMBS)

- 60.33.16 Remove(key as string) as Integer

60.33.18 **UpperBound(key as string) as StringOrderedSetIteratorMBS**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an iterator for the first element whose key is greater than k.
60.33.19 Properties

60.33.20 CaseSensitive as Boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Whether text/string comparison is case sensitive.
**Example:**
```vba
dim s1 as new StringOrderedSetMBS(true)
dim s2 as new StringOrderedSetMBS(false)
```
```vba
s1.insert "a"
s1.insert "A"
s2.insert "a"
s2.insert "A"
```
```vba
MsgBox str(s1.Count)+" "+str(s2.Count)
```

**Notes:** (Read only property)

60.33.21 Count as Integer

**Function:** The number of items in this set.
**Example:**
```vba
dim set as new StringOrderedSetMBS

set.insert "a"
set.insert "b"
```
```vba
MsgBox str(set.Count)
```

**Notes:** (Read only property)

60.33.22 Empty as Boolean

**Function:** True if the size is zero.
**Notes:** (Read only property)
60.33.23  MaxSize as Integer

**Function:** Returns the largest possible size for this set.
**Notes:**
Value is -1 if no limit is defined.
(Read only property)
60.34 class StringToStringHashMapIteratorMBS

60.34.1 class StringToStringHashMapIteratorMBS


Function: The iterator for the StringToStringHashMap class.

Example:

```vbnet
// Create a map
dim m as new StringToStringHashMapMBS
m.value("1")="Hello"
m.value("2")="World"
m.value("3")="!

// get iterators pointing to first and after last element
dim i as StringToStringHashMapIteratorMBS = m.first
dim e as StringToStringHashMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key) + " -" + i.Value
    i.MoveNext
wend
```

60.34.2 Methods

60.34.3 isEqual(other as StringToStringHashMapIteratorMBS) as boolean


Function: Returns true if both iterators are equal.

Example:

```vbnet
// Create a map
dim m as new StringToStringHashMapMBS
m.value("1")="Hello"
m.value("2")="World"
m.value("3")="!

// get iterators pointing to first and after last element
dim i as StringToStringHashMapIteratorMBS = m.first
dim e as StringToStringHashMapIteratorMBS = m.last

// Show all keys and values
```
while i.isEqual(e) = false
MsgBox str(i.Key)+" ->"+i.Value
i.MoveNext
wend

60.34.4  isNotEqual(other as StringToNullahMapIteratorMBS) as boolean

MBS DataTypes Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function**: Returns true if both iterators are not equal. 

**Example**: 
``` vbnet
// Create a map
dim m as new StringToNullahMapMBS

m.value("1")="Hello"
m.value("2")="World"
m.value("3")="!

// get iterators pointing to first and after last element
dim i as StringToNullahMapIteratorMBS = m.first
dim e as StringToNullahMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
MsgBox str(i.Key)+" ->"+i.Value
i.MoveNext
wend
```

60.34.5  Key as string

**Function**: Returns the current key. 

60.34.6  MoveNext

**Function**: Moves the iterator to the next item. 

**Example**: 
``` vbnet
// Create a map
dim m as new StringToNullahMapMBS
```
m.value("1")="Hello"
m.value("2")="World"
m.value("3")="!"

// get iterators pointing to first and after last element
dim i as StringToStringHashMapIteratorMBS = m.first
dim e as StringToStringHashMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)+ " ->"+i.Value
    i.MoveNext
wend

60.34.7 Properties

60.34.8 Value as string

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The value of the current item in the iterator. **Notes:** (Read and Write computed property)
60.35  class StringToStringHashMapMBS

60.35.1  class StringToStringHashMapMBS

**Function:** An alternative dictionary class for a hash map with strings as keys and values.  
**Example:**

```vbnet
dim s as new StringToStringHashMapMBS

s.Value("Test")="Hello"
s.Value("test")="World"

MsgBox str(s.Count) // shows 2

s.Value(ConvertEncoding("test",encodings.UTF16))="Just a"
s.Value(ConvertEncoding("Test",encodings.UTF16))="test"

MsgBox str(s.Count) // shows 4
```

**Notes:**

All text comparison is done either case sensitive or insensitive. Defined in constructor.  
You can choose whether you want to keep the map ordered using the OrderedMap class or whether you prefer a higher speed with the HashMap class.

60.35.2  Methods

60.35.3  AddKeys(targetArray() as string)

**Function:** Similar to keys, but adds keys to the given array.  
**Notes:** For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys function returns always nil.

60.35.4  AddValues(targetArray() as string)

**Function:** Similar to values, but adds values to the given array.  
**Notes:** For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys function returns always nil.
60.35.5 Clear

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases all of the elements.

60.35.6 Clone as StringToStringHashMapMBS

MBS DataTypes Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a copy of this map.

60.35.7 CloneDictionary as Dictionary

MBS DataTypes Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a copy of this map as a dictionary.

**Example:**

```vbnet
dim d as new Dictionary
d.Value("Hello") = "World"

// convert o map
dim m as new StringToStringHashMapMBS(d)
MsgBox str(m.Count)

// convert back
dim o as Dictionary = m.CloneDictionary
MsgBox o.Value("Hello")
```

60.35.8 Constructor(CaseSensitive as Boolean = true)

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The default constructor.

**Notes:** If CaseSensitive is true, the comparison of texts or strings is case sensitive.

See also:

- 60.35.9 Constructor(dic as dictionary, CaseSensitive as Boolean = true)
- 60.35.10 Constructor(other as StringToStringHashMapMBS)
60.35.9 Constructor(dic as dictionary, CaseSensitive as Boolean = true)

Function: Creates a new map with the keys and values from the dictionary.
Example:

```vbnet
' convert to map
Dim m As New StringToStringHashMapMBS(d)
MsgBox Str(m.Count)

' convert back
Dim o As Dictionary = m.CloneDictionary
MsgBox o.Value("Hello")
```

See also:

- 60.35.8 Constructor(CaseSensitive as Boolean = true)
- 60.35.10 Constructor(other as StringToStringHashMapMBS)

60.35.10 Constructor(other as StringToStringHashMapMBS)

Function: Creates a new map with the keys and values from the existing map.
Example:

```vbnet
' convert to map
Dim m As New StringToStringHashMapMBS(d)
MsgBox Str(m.Count)

' convert back
Dim o As StringToStringHashMapMBS = m.Clone
MsgBox o.Value("Hello")
```

See also:

- 60.35.8 Constructor(CaseSensitive as Boolean = true)
- 60.35.9 Constructor(dic as dictionary, CaseSensitive as Boolean = true)
### 60.35.11 CountKey(key as string) as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Counts how often a key is used in this map.

### 60.35.12 find(key as string) as StringToStringHashMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Finds the key and returns an iterator. **Notes:** Returns the same value as the last method if the item was not found.

### 60.35.13 first as StringToStringHashMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an iterator pointing to the beginning of the map. **Example:**

```vba
// Create a map
dim m as new StringToStringHashMapMBS
m.value("1")="Hello"
m.value("2")="World"
m.value("3")="!

// get iterators pointing to first and after last element
dim i as StringToStringHashMapIteratorMBS = m.first
dim e as StringToStringHashMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)+" -"+i.Value
    i.MoveNext
wend
```

### 60.35.14 hasKey(key as string) as boolean

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns True if Key is in the map and False if it is not. Returns a Boolean.
60.35. CLASS STRINGTOSTRINGHASHMAPMBS

60.35.15 Key(index as Integer) as string

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value of key for the Indexth sequential item. **Notes:** If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.35.16 Keys as string()

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns all the keys as an array. **Example:**
```
    dim m as new StringToStringHashMapMBS
    m.Value("1")="Hello"
    m.Value("2")="World"
    for each v as string in m.Keys
        MsgBox str(v)
    next
```
**Notes:** The order is stable and matches the order returned by the Values method at least until the Dictionary is modified. Use this method with For Each to loop through all the keys.

60.35.17 last as StringToStringHashMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an iterator pointing to the end of the map. **Example:**
```
    // Create a map
    dim m as new StringToStringHashMapMBS
    m.value("1")="Hello"
    m.value("2")="World"
    m.value("3")="!"
    // get iterators pointing to first and after last element
    dim i as StringToStringHashMapIteratorMBS = m.first
    dim e as StringToStringHashMapIteratorMBS = m.last
    // Show all keys and values
```
while i.isNotEqual(e)
        MsgBox str(i.Key) + " - > " + i.Value
        i.MoveNext
wend

60.35.18  lookup(key as string, defaultValue as string) as string

Function: Looks up the passed value of Key.
Example:

        dim map as new StringToStringHashMapMBS

        map.value("a") = "Hello"
        map.value("b") = "World"
        map.value("c") = "!

        MsgBox str(map.lookup("d","?"))  // shows "?" as value is missing
        MsgBox str(map.lookup("a","?"))  // shows "Hello" as value is found

Notes: If Key is found, it returns the corresponding value. If Key is not found, it returns the passed default Value.

60.35.19  Operator Convert as Dictionary

Function: Creates a copy of the map as dictionary.
Example:

        dim d as new Dictionary
        d.Value("Hello") = "World"

        // convert o map
        dim m as StringToStringHashMapMBS = d
        MsgBox str(m.Count)

        // convert back
        dim o as Dictionary = m
        MsgBox o.Value("Hello")
60.35. CLASS STRINGTOSTRINGHASHMAPMBS

60.35.20 Remove(first as StringToStringHashMapIteratorMBS, last as StringToStringHashMapIteratorMBS)

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases all elements in a range.

See also:

- 60.35.21 Remove(key as string) as Integer
- 60.35.22 Remove(pos as StringToStringHashMapIteratorMBS)

60.35.21 Remove(key as string) as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases the element with the given key.

See also:

- 60.35.20 Remove(first as StringToStringHashMapIteratorMBS, last as StringToStringHashMapIteratorMBS)
- 60.35.22 Remove(pos as StringToStringHashMapIteratorMBS)

60.35.22 Remove(pos as StringToStringHashMapIteratorMBS)

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases the element pointed to by the pos iterator.

See also:

- 60.35.20 Remove(first as StringToStringHashMapIteratorMBS, last as StringToStringHashMapIteratorMBS)
- 60.35.21 Remove(key as string) as Integer

60.35.23 ValueAtIndex(index as Integer) as string

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value with the given index.

**Notes:** If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.35.24 Values as string()

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns all the values as an array
Example:

dim m as new StringToStringHashMapMBS

m.Value("1")="Hello"
m.Value("2")="World"

for each v as string in m.Values
    MsgBox str(v)
next

Notes: The order is stable and matches the order returned by Keys at least until the Map is modified. Use this method with For Each to loop through all the values.

60.35.25 Properties

60.35.26 BinCount as Integer

Function: The number of bins the hash table uses.
Example:

dim v as new StringToStringHashMapMBS

v.value("1")="Hello"
v.value("2")="World"

MsgBox str(v.BinCount)

Notes:  
This is a measure of the hash table size, independent of the number of items the Dictionary contains.  
(Read only property)

60.35.27 CaseSensitive as Boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
Function: Whether text/string comparison is case sensitive.
Example:

dim s1 as new StringToStringHashMapMBS(true)  
dim s2 as new StringToStringHashMapMBS(false)
s1.value("a") = "1"
s1.value("A") = "2"

s2.value("a") = "1"
s2.value("A") = "2"

MsgBox str(s1.Count) + " " + str(s2.Count)

Notes: (Read only property)

60.35.28 Count as Integer

Function: The number of items in this map.
Example:

```vba
Dim map As New StringToStringHashMapMBS
map.Value("?") = "?"
map.Value("Hello") = "World"
MsgBox str(map.Count)
```

Notes: (Read only property)

60.35.29 Empty as Boolean

Function: True if the size is zero.
Notes: (Read only property)

60.35.30 MaxSize as Integer

Function: Returns the largest possible size for this map.
Notes: Value is -1 if no limit is defined.
60.35.31  value(key as string) as string


Function: The value associated with the given key.

Notes:
If you query for a key which does not exist, a KeyNotFoundException is raised.
(Read and Write computed property)
**60.36. CLASS STRINGTOSTRINGORDEREDMAPITERATORMBS**

**60.36 class StringToStringOrderedMapIteratorMBS**


**Function:** The iterator for the StringToStringOrderedMap class.

**Example:**

```vbnet
// Create a map
dim m as new StringToStringOrderedMapMBS
m.value("1")="Hello"
m.value("2")="World"
m.value("3")="!

// get iterators pointing to first and after last element
dim i as StringToStringOrderedMapIteratorMBS = m.first
dim e as StringToStringOrderedMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)+" ->"+i.Value
    i.MoveNext
wend
```

**60.36.2 Methods**

**60.36.3 isEqual(other as StringToStringOrderedMapIteratorMBS) as boolean**


**Function:** Returns true if both iterators are equal.

**Example:**

```vbnet
// Create a map
dim m as new StringToStringOrderedMapMBS
m.value("1")="Hello"
m.value("2")="World"
m.value("3")="!

// get iterators pointing to first and after last element
dim i as StringToStringOrderedMapIteratorMBS = m.first
dim e as StringToStringOrderedMapIteratorMBS = m.last

// Show all keys and values
```
while i.isEqual(e) = false
MsgBox str(i.Key)+" -"+i.Value
i.MoveNext
wend

60.36.4 isNotEqual(other as StringToStringOrderedMapIteratorMBS) as boolean

MBS DataTypes Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Returns true if both iterators are not equal. 
**Example:**

// Create a map
dim m as new StringToStringOrderedMapMBS
m.value("1")="Hello"
m.value("2")="World"
m.value("3")="!

// get iterators pointing to first and after last element
dim i as StringToStringOrderedMapIteratorMBS = m.first
dim e as StringToStringOrderedMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e) = false
MsgBox str(i.Key)+" -"+i.Value
i.MoveNext
wend

60.36.5 Key as string

**Function:** Returns the current key.

60.36.6 MoveNext

**Function:** Moves the iterator to the next item. 
**Example:**

// Create a map
dim m as new StringToStringOrderedMapMBS
m.value("1")="Hello"
m.value("2")="World"
m.value("3")="!"

// get iterators pointing to first and after last element
dim i as StringToStringOrderedMapIteratorMBS = m.first
dim e as StringToStringOrderedMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)+" >"+i.Value
    i.MoveNext
wend

60.36.7 MovePrev

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Moves the iterator to the previous item.

60.36.8 Properties

60.36.9 Value as string

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The value of the current item in the iterator.

**Notes:** (Read and Write computed property)
60.37  class StringToStringOrderedMapMBS

60.37.1  class StringToStringOrderedMapMBS

Function: An alternative dictionary class for an ordered map with strings for keys and values.
Example:

```vba
dim s as new StringToStringOrderedMapMBS
s.Value("Test")="Hello"
s.Value("test")="World"
MsgBox str(s.Count) // shows 2

s.Value(ConvertEncoding("test",encodings.UTF16))="Just a"
s.Value(ConvertEncoding("Test",encodings.UTF16))="test"
MsgBox str(s.Count) // shows 4
```

Notes:
All text comparison is done either case sensitive or insensitive. Defined in constructor.
You can choose whether you want to keep the map ordered using the OrderedMap class or whether you
prefer a higher speed with the HashMap class.

60.37.2  Methods

60.37.3  AddKeys(targetArray() as string)

Function: Similar to keys, but adds keys to the given array.
Notes: For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys
function returns always nil.

60.37.4  AddValues(targetArray() as string)

Function: Similar to values, but adds values to the given array.
Notes: For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys
function returns always nil.
60.37.5 Clear

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases all of the elements.

60.37.6 Clone as StringToStringOrderedMapMBS

MBS DataTypes Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a copy of this map.

60.37.7 CloneDictionary as Dictionary

MBS DataTypes Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a copy of this map as a dictionary.

60.37.8 Constructor(CaseSensitive as Boolean = true)

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The default constructor. **Notes:** If CaseSensitive is true, the comparison of texts or strings is case sensitive. See also:

- 60.37.9 Constructor(dic as dictionary, CaseSensitive as Boolean = true) 10807
- 60.37.10 Constructor(other as StringToStringOrderedMapMBS) 10807

60.37.9 Constructor(dic as dictionary, CaseSensitive as Boolean = true)

MBS DataTypes Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new map with the keys and values from the dictionary. See also:

- 60.37.8 Constructor(CaseSensitive as Boolean = true) 10807
- 60.37.10 Constructor(other as StringToStringOrderedMapMBS) 10807

60.37.10 Constructor(other as StringToStringOrderedMapMBS)

MBS DataTypes Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new map with the keys and values from the existing map. See also:
60.37.11 CountKey(key as string) as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Counts how often a key is used in this map.

60.37.12 find(key as string) as StringToStringOrderedMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Finds the key and returns an iterator. **Notes:** Returns the same value as the last method if the item was not found.

60.37.13 first as StringToStringOrderedMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an iterator pointing to the beginning of the map. **Example:**

```vbnet
// Create a map
dim m as new StringToStringOrderedMapMBS
m.value("1")="Hello"
m.value("2")="World"
m.value("3")="!

// get iterators pointing to first and after last element
dim i as StringToStringOrderedMapIteratorMBS = m.first
dim e as StringToStringOrderedMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)+" - >"+i.Value
    i.MoveNext
wend
```
60.37. **CLASS STRINGTOSTRINGORDEREDMAPMBS**

### 60.37.14 hasKey(key as string) as boolean

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns True if Key is in the map and False if it is not. Returns a Boolean.

### 60.37.15 Key(index as Integer) as string

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value of key for the Indexth sequential item. **Notes:** If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

### 60.37.16 Keys as string()

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns all the keys as an array. **Example:**

```plaintext
dim m as new StringToStringOrderedMapMBS
m.Value("1")="Hello"
m.Value("2")="World"
for each v as string in m.Keys
    MsgBox str(v)
next
```

**Notes:** The order is stable and matches the order returned by the Values method at least until the Dictionary is modified. Use this method with For Each to loop through all the keys.

### 60.37.17 last as StringToStringOrderedMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an iterator pointing to the end of the map. **Example:**

```plaintext
// Create a map
dim m as new StringToStringOrderedMapMBS
m.value("1")="Hello"
m.value("2")="World"
```
m.value("3")="!"

// get iterators pointing to first and after last element
dim i as StringToStringOrderedMapIteratorMBS = m.first
dim e as StringToStringOrderedMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key) + " ->" + i.Value
    i.MoveNext
wend

60.37.18  lookup(key as string, defaultValue as string) as string

Function: Looks up the passed value of Key.
Example:

dim map as new StringToStringOrderedMapMBS

map.value("a")="Hello"
map.value("b")="World"
map.value("c")="!

MsgBox str(map.lookup("d","?"))  // shows "?" as value is missing
MsgBox str(map.lookup("a","?"))  // shows "Hello" as value is found

Notes: If Key is found, it returns the corresponding value. If Key is not found, it returns the passed default Value.

60.37.19  LowerBound(key as string) as StringToStringOrderedMapIteratorMBS

Function: Returns an iterator for the first element whose key is not less than k.

60.37.20  Operator Convert as Dictionary

Function: Creates a copy of the map as dictionary.
60.37.21  Remove(first as StringToStringOrderedMapIteratorMBS, last as StringToStringOrderedMapIteratorMBS)

**Function:** Erases all elements in a range.  
See also:
- 60.37.22 Remove(key as string) as Integer  
- 60.37.23 Remove(pos as StringToStringOrderedMapIteratorMBS)

60.37.22  Remove(key as string) as Integer

**Function:** Erases the element with the given key.  
See also:
- 60.37.21 Remove(first as StringToStringOrderedMapIteratorMBS, last as StringToStringOrderedMapIteratorMBS)  
- 60.37.23 Remove(pos as StringToStringOrderedMapIteratorMBS)

60.37.23  Remove(pos as StringToStringOrderedMapIteratorMBS)

**Function:** Erases the element pointed to by the pos iterator.  
See also:
- 60.37.21 Remove(first as StringToStringOrderedMapIteratorMBS, last as StringToStringOrderedMapIteratorMBS)  
- 60.37.22 Remove(key as string) as Integer

60.37.24  UpperBound(key as string) as StringToStringOrderedMapIteratorMBS

**Function:** Returns an iterator for the first element whose key is greater than k.

60.37.25  ValueAtIndex(index as Integer) as string

**Function:** Returns the value with the given index.  
**Notes:** If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first
item has the index zero.

### 60.37.26 Values as string()


**Function:** Returns all the values as an array

**Example:**

```vbs
dim m as new StringToStringOrderedMapMBS

m.Value("1")="Hello"
m.Value("2")="World"

for each v as string in m.Values
    MsgBox str(v)
next
```

**Notes:** The order is stable and matches the order returned by Keys at least until the Map is modified. Use this method with For Each to loop through all the values.

### 60.37.27 Properties

#### 60.37.28 CaseSensitive as Boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Whether text/string comparison is case sensitive.

**Example:**

```vbs
dim s1 as new StringToStringOrderedMapMBS(true)
dim s2 as new StringToStringOrderedMapMBS(false)

s1.value("a") = "1"
s1.value("A") = "2"

s2.value("a") = "1"
s2.value("A") = "2"

MsgBox str(s1.Count)+" "+str(s2.Count)
```

**Notes:** (Read only property)
### 60.37.29 Count as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of items in this map.

**Example:**

```vbs
Dim map As New StringToStringOrderedMapMBS
map.Value("?") = "?
map.Value("Hello") = "World"
MsgBox Str(map.Count)
```

**Notes:** (Read only property)

### 60.37.30 Empty as Boolean

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if the size is zero.

**Notes:** (Read only property)

### 60.37.31 MaxSize as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the largest possible size for this map.

**Notes:**

Value is -1 if no limit is defined.
(Read only property)

### 60.37.32 value(key as string) as string

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The value associated with the given key.

**Notes:**

If you query for a key which does not exist, a KeyNotFoundException is raised.
(Read and Write computed property)
60.38 class StringToVariantHashMapIteratorMBS

60.38.1 class StringToVariantHashMapIteratorMBS

**Function:** The iterator for the StringToVariantHashMap class. 
**Example:**

```plaintext
// Create a map
Dim m As New StringToVariantHashMapMBS

m.value("1")="Hello"
m.value("2")="World"
m.value("3")="!

// get iterators pointing to first and after last element
Dim i As StringToVariantHashMapIteratorMBS = m.first
Dim e As StringToVariantHashMapIteratorMBS = m.last

// Show all keys and values
While i.isNotEqual(e)
    MsgBox str(i.Key)+" -"+i.Value
    i.MoveNext
Wend
```

60.38.2 Methods

60.38.3 isEqual(other as StringToVariantHashMapIteratorMBS) as boolean

**Function:** Returns true if both iterators are equal. 
**Example:**

```plaintext
// Create a map
Dim m As New StringToVariantHashMapMBS

m.value("1")="Hello"
m.value("2")="World"
m.value("3")="!

// get iterators pointing to first and after last element
Dim i As StringToVariantHashMapIteratorMBS = m.first
Dim e As StringToVariantHashMapIteratorMBS = m.last

// Show all keys and values
```
while i.isEqual(e) = false
MsgBox str(i.Key)+” -”+i.Value
i.MoveNext
wend

60.38.4 isNotEqual(other as StringToVariantHashMapIteratorMBS) as boolean

MBS DataTypes Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Returns true if both iterators are not equal. 
**Example:**

// Create a map
dim m as new StringToVariantHashMapMBS
m.value("1")="Hello"
m.value("2")="World"
m.value("3")="!

// get iterators pointing to first and after last element
dim i as StringToVariantHashMapIteratorMBS = m.first
dim e as StringToVariantHashMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
MsgBox str(i.Key)+” -”+i.Value
i.MoveNext
wend

60.38.5 Key as string

**Function:** Returns the current key. 

60.38.6 MoveNext

**Function:** Moves the iterator to the next item. 
**Example:**

// Create a map
dim m as new StringToVariantHashMapMBS
m.value("1")="Hello"
m.value("2")="World"
m.value("3")="!

// get iterators pointing to first and after last element
dim i as StringToVariantHashMapIteratorMBS = m.first
dim e as StringToVariantHashMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)+" ->"+i.Value
    i.MoveNext
wend

60.38.7 Properties

60.38.8 Value as Variant

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The value of the current item in the iterator. Notes: (Read and Write computed property)
60.39  class StringToVariantHashMapMBS

60.39.1  class StringToVariantHashMapMBS

**Function:** An alternative dictionary class for a hash map with strings as keys and variants as values.  
**Example:**

```
dim s as new StringToVariantHashMapMBS

s.Value("Test")="Hello"
s.Value("test")="World"

MsgBox str(s.Count) // shows 2

s.Value(ConvertEncoding("test",encodings.UTF16))="Just a"
s.Value(ConvertEncoding("Test",encodings.UTF16))="test"

MsgBox str(s.Count) // shows 4
```

**Notes:**  
All text comparison is done either case sensitive or insensitive. Defined in constructor.  
You can choose whether you want to keep the map ordered using the OrderedMap class or whether you  
prefer a higher speed with the HashMap class.

60.39.2  Methods

60.39.3  AddKeys(targetArray() as string)

**Function:** Similar to keys, but adds keys to the given array.  
**Notes:** For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys  
function returns always nil.

60.39.4  AddValues(targetArray() as Variant)

**Function:** Similar to values, but adds values to the given array.  
**Notes:** For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys  
function returns always nil.
60.39.5  Clear

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases all of the elements.

60.39.6  Clone as StringToVariantHashMapMBS

MBS DataTypes Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a copy of this map.

60.39.7  CloneDictionary as Dictionary

MBS DataTypes Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a copy of this map as a dictionary.

60.39.8  Constructor(CaseSensitive as Boolean = true)

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The default constructor.  
**Notes:** If CaseSensitive is true, the comparison of texts or strings is case sensitive.  
See also:
- 60.39.9 Constructor(dic as dictionary, CaseSensitive as Boolean = true)  
- 60.39.10 Constructor(other as StringToVariantHashMapMBS)

60.39.9  Constructor(dic as dictionary, CaseSensitive as Boolean = true)

MBS DataTypes Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new map with the keys and values from the dictionary.  
See also:
- 60.39.8 Constructor(CaseSensitive as Boolean = true)  
- 60.39.10 Constructor(other as StringToVariantHashMapMBS)

60.39.10  Constructor(other as StringToVariantHashMapMBS)

MBS DataTypes Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new map with the keys and values from the existing map.  
See also:
60.39. CLASS STRINGTOVARIANTHASHMAPMBS

- 60.39.8 Constructor(CaseSensitive as Boolean = true)
- 60.39.9 Constructor(dic as dictionary, CaseSensitive as Boolean = true)

60.39.11 CountKey(key as string) as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Counts how often a key is used in this map.

60.39.12 find(key as string) as StringToVariantHashMapIteratorMBS

Notes: Returns the same value as the last method if the item was not found.

60.39.13 first as StringToVariantHashMapIteratorMBS

Example:

```vbs
// Create a map
dim m as new StringToVariantHashMapMBS
m.value("1")="Hello"
m.value("2")="World"
m.value("3")="!

// get iterators pointing to first and after last element
dim i as StringToVariantHashMapIteratorMBS = m.first
dim e as StringToVariantHashMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)+" -">" +i.Value
    i.MoveNext
wend
```
60.39.14  hasKey(key as string) as boolean

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns True if Key is in the map and False if it is not. Returns a Boolean.

60.39.15  Key(index as Integer) as string

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value of key for the Indexth sequential item. 

**Example:**
```v
dim v as new StringToVariantHashMapMBS
v.Value("Hello") = "World"
MsgBox v.Key(0) + ": " + v.ValueAtIndex(0)
```

**Notes:** If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.39.16  Keys as string()

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns all the keys as an array. 

**Example:**
```v
dim m as new StringToVariantHashMapMBS
m.Value("1") = "Hello"
m.Value("2") = "World"
for each v as string in m.Keys
    MsgBox str(v)
next
```

**Notes:** The order is stable and matches the order returned by the Values method at least until the Dictionary is modified. Use this method with For Each to loop through all the keys.
60.39. **CLASS STRINGTOVARIANTHASHMAPMBS**

60.39.17 **last** as StringToVariantHashMapIteratorMBS

**Function:** Returns an iterator pointing to the end of the map.  
**Example:**

```vbnet
// Create a map
dim m as new StringToVariantHashMapMBS

m.value("1")="Hello"
m.value("2")="World"
m.value("3")="!

// get iterators pointing to first and after last element
dim i as StringToVariantHashMapIteratorMBS = m.first
dim e as StringToVariantHashMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)+" -> " + i.Value
    i.MoveNext
wend
```

60.39.18 **lookup(key as string, defaultvalue as Variant) as Variant**

**Function:** Looks up the passed value of Key.  
**Example:**

```vbnet
dim map as new StringToVariantHashMapMBS

map.value("a")="Hello"
map.value("b")="World"
map.value("c")="!

MsgBox str(map.lookup("d","?"))) // shows "?" as value is missing
MsgBox str(map.lookup("a","?"))) // shows "Hello" as value is found
```

**Notes:** If Key is found, it returns the corresponding value. If Key is not found, it returns the passed default value.
60.39.19 Operator_Convert as Dictionary

Function: Creates a copy of the map as dictionary.

60.39.20 Remove(first as StringToVariantHashMapIteratorMBS, last as StringToVariantHashMapIteratorMBS)

Function: Erases all elements in a range.  
See also:

• 60.39.21 Remove(key as string) as Integer 10822
• 60.39.22 Remove(pos as StringToVariantHashMapIteratorMBS) 10822

60.39.21 Remove(key as string) as Integer

Function: Erases the element with the given key.  
See also:

• 60.39.20 Remove(first as StringToVariantHashMapIteratorMBS, last as StringToVariantHashMapIteratorMBS) 10822
• 60.39.22 Remove(pos as StringToVariantHashMapIteratorMBS) 10822

60.39.22 Remove(pos as StringToVariantHashMapIteratorMBS)

Function: Erases the element pointed to by the pos iterator.  
See also:

• 60.39.20 Remove(first as StringToVariantHashMapIteratorMBS, last as StringToVariantHashMapIteratorMBS) 10822
• 60.39.21 Remove(key as string) as Integer 10822

60.39.23 ValueAtIndex(index as Integer) as Variant

Function: Returns the value with the given index.  
Example:
dim v as new StringToVariantHashMapMBS
v.Value("Hello") = "World"
MsgBox v.Key(0)+": " +v.ValueAtIndex(0)

Notes: If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.39.24 Values as Variant()

Function: Returns all the values as an array
Example:

dim m as new StringToVariantHashMapMBS
m.Value("1") = "Hello"
m.Value("2") = "World"

for each v as string in m.Values
    MsgBox str(v)
next

Notes: The order is stable and matches the order returned by Keys at least until the Map is modified. Use this method with For Each to loop through all the values.

60.39.25 Properties

60.39.26 BinCount as Integer

Function: The number of bins the hash table uses.
Example:

dim v as new StringToVariantHashMapMBS
v.value("1") = "Hello"
v.value("2") = "World"

MsgBox str(v.BinCount)
Notes:
This is a measure of the hash table size, independent of the number of items the Dictionary contains.
(Read only property)

60.39.27 CaseSensitive as Boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Whether text/string comparison is case sensitive.
Example:

```vba
dim s1 as new StringToVariantHashMapMBS(true)
dim s2 as new StringToVariantHashMapMBS(false)

s1.value("a") = "1"
s1.value("A") = "2"

s2.value("a") = "1"
s2.value("A") = "2"

MsgBox str(s1.Count) + " " + str(s2.Count)
```

Notes: (Read only property)

60.39.28 Count as Integer

Function: The number of items in this map.
Example:

```vba
dim map as new StringToVariantHashMapMBS

map.Value("?" ) = "?"
map.Value("Hello") = "World"

MsgBox str(map.Count)
```

Notes: (Read only property)
60.39. **CLASS STRINGTOVARIANTHASHMAPMBS**

60.39.29 **Empty as Boolean**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if the size is zero. **Notes:** (Read only property)

60.39.30 **MaxSize as Integer**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the largest possible size for this map. **Notes:**

Value is -1 if no limit is defined. (Read only property)

60.39.31 **value(key as string) as Variant**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The value associated with the given key. **Example:**

```vbnet
dim v as new StringToVariantHashMapMBS
v.Value("Hello") = "World"
MsgBox v.Key(0) + ": " + v.ValueAtIndex(0)
```

**Notes:**

If you query for a key which does not exist, a KeyNotFoundException is raised. (Read and Write computed property)
CHAPTER 60. DATA TYPES

60.40  class StringToVariantOrderedMapIteratorMBS

60.40.1  class StringToVariantOrderedMapIteratorMBS


**Function:** The iterator for the StringToVariantOrderedMap class.

**Example:**

```vbscript
// Create a map
dim m as new StringToVariantOrderedMapMBS

m.value("1")="Hello"
m.value("2")="World"
m.value("3")="!

// get iterators pointing to first and after last element
dim i as StringToVariantOrderedMapIteratorMBS = m.first
dim e as StringToVariantOrderedMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key) + " - > " + i.Value
    i.MoveNext
wend
```

60.40.2  Methods

60.40.3  isEqual(other as StringToVariantOrderedMapIteratorMBS) as boolean


**Function:** Returns true if both iterators are equal.

**Example:**

```vbscript
// Create a map
dim m as new StringToVariantOrderedMapMBS

m.value("1")="Hello"
m.value("2")="World"
m.value("3")="!

// get iterators pointing to first and after last element
dim i as StringToVariantOrderedMapIteratorMBS = m.first
dim e as StringToVariantOrderedMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key) + " - > " + i.Value
    i.MoveNext
wend
```
while i.isEqual(e) = false
MsgBox str(i.Key)+" -" + i.Value
i.MoveNext
wend

60.40.4 isNotEqual(other as StringToVariantOrderedMapIteratorMBS) as boolean

MBS DataTypes Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns true if both iterators are not equal.

**Example:**
// Create a map
dim m as new StringToVariantOrderedMapMBS
m.value("1")="Hello"
m.value("2")="World"
m.value("3")="!

// get iterators pointing to first and after last element
dim i as StringToVariantOrderedMapIteratorMBS = m.first
dim e as StringToVariantOrderedMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
MsgBox str(i.Key)+" -" + i.Value
i.MoveNext
wend

60.40.5 Key as string

**Function:** Returns the current key.

60.40.6 MoveNext

**Function:** Moves the iterator to the next item.

**Example:**
// Create a map
dim m as new StringToVariantOrderedMapMBS
m.value("1")="Hello"
m.value("2")="World"
m.value("3")="!

// get iterators pointing to first and after last element
dim i as StringToVariantOrderedMapIteratorMBS = m.first
dim e as StringToVariantOrderedMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)+" =>"+i.Value
    i.MoveNext
wend

60.40.7 MovePrev

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Moves the iterator to the previous item.

60.40.8 Properties

60.40.9 Value as Variant

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The value of the current item in the iterator. **Notes:** (Read and Write computed property)
60.41.  CLASS STRINGTOVARIANTORDEREDMAPMBS

60.41  class StringToVariantOrderedMapMBS

60.41.1  class StringToVariantOrderedMapMBS

Function: An alternative dictionary class for an ordered map with strings as keys and variants as values.
Example:

```rb
dim s as new StringToVariantOrderedMapMBS

s.Value(“Test”)=”Hello”
s.Value(“test”)=”World”

MsgBox str(s.Count) // shows 2

s.Value(ConvertEncoding(“test”, encodings.UTF16))=”Just a”
s.Value(ConvertEncoding(“Test”, encodings.UTF16))=”test”

MsgBox str(s.Count) // shows 4
```

Notes:
All text comparison is done either case sensitive or insensitive. Defined in constructor.
You can choose whether you want to keep the map ordered using the OrderedMap class or whether you prefer a higher speed with the HashMap class.

60.41.2  Methods

60.41.3  AddKeys(targetArray() as string)

Function: Similar to keys, but adds keys to the given array.
Notes: For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys function returns always nil.

60.41.4  AddValues(targetArray() as Variant)

Function: Similar to values, but adds values to the given array.
Notes: For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys function returns always nil.
60.41.5 Clear

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases all of the elements.

60.41.6 Clone as StringToVariantOrderedMapMBS

MBS DataTypes Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a copy of this map.

60.41.7 CloneDictionary as Dictionary

MBS DataTypes Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a copy of this map as a dictionary.

60.41.8 Constructor(CaseSensitive as Boolean = true)

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The default constructor. **Notes:** If CaseSensitive is true, the comparison of texts or strings is case sensitive. See also:

- 60.41.9 Constructor(dic as dictionary, CaseSensitive as Boolean = true) 10830
- 60.41.10 Constructor(other as StringToVariantOrderedMapMBS) 10830

60.41.9 Constructor(dic as dictionary, CaseSensitive as Boolean = true)

MBS DataTypes Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new map with the keys and values from the dictionary. See also:

- 60.41.8 Constructor(CaseSensitive as Boolean = true) 10830
- 60.41.10 Constructor(other as StringToVariantOrderedMapMBS) 10830

60.41.10 Constructor(other as StringToVariantOrderedMapMBS)

MBS DataTypes Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new map with the keys and values from the existing map. See also:
60.41. **CLASS STRINGTOVARIANTORDEREDMAPMBS**

- 60.41.8 Constructor(CaseSensitive as Boolean = true)  
- 60.41.9 Constructor(dic as dictionary, CaseSensitive as Boolean = true)

### 60.41.11 CountKey(key as string) as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Counts how often a key is used in this map.

### 60.41.12 find(key as string) as StringToVariantOrderedMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Finds the key and returns an iterator.  
**Notes:** Returns the same value as the last method if the item was not found.

### 60.41.13 first as StringToVariantOrderedMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an iterator pointing to the beginning of the map.  
**Example:**

```vba
// Create a map
dim m as new StringToVariantOrderedMapMBS
m.value("1")="Hello"
m.value("2")="World"
m.value("3")="!

// get iterators pointing to first and after last element
dim i as StringToVariantOrderedMapIteratorMBS = m.first
dim e as StringToVariantOrderedMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)+" - >"+i.Value
    i.MoveNext
wend
```
60.41.14  hasKey(key as string) as boolean

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns True if Key is in the map and False if it is not. Returns a Boolean.

60.41.15  Key(index as Integer) as string

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value of key for the Indexth sequential item. **Notes:** If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.41.16  Keys as string()

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns all the keys as an array. **Example:**

```vba
dim m as new StringToVariantOrderedMapMBS
m.Value("1")="Hello"
m.Value("2")="World"

for each v as string in m.Keys
    MsgBox v
next
```

**Notes:** The order is stable and matches the order returned by the Values method at least until the Dictionary is modified. Use this method with For Each to loop through all the keys.

60.41.17  last as StringToVariantOrderedMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an iterator pointing to the end of the map. **Example:**

```vba
// Create a map
dim m as new StringToVariantOrderedMapMBS
m.value("1")="Hello"
m.value("2")="World"
```
m.value("3")="!

// get iterators pointing to first and after last element
dim i as StringToVariantOrderedMapIteratorMBS = m.first
dim e as StringToVariantOrderedMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)+" - >"+i.Value
    i.MoveNext
wend

60.41.18 lookup(key as string, defaultValue as Variant) as Variant

Function: Looks up the passed value of Key.
Example:

    dim map as new StringToVariantOrderedMapMBS

    map.value("a")="Hello"
    map.value("b")="World"
    map.value("c")="!

    MsgBox str(map.lookup( "d","?")) // shows "?" as value is missing
    MsgBox str(map.lookup( "a","?")) // shows "Hello" as value is found

Notes: If Key is found, it returns the corresponding value. If Key is not found, it returns the passed defaultValue.

60.41.19 LowerBound(key as string) as StringToVariantOrderedMapIteratorMBS

Function: Returns an iterator for the first element whose key is not less than k.

60.41.20 Operator_Convert as Dictionary

Function: Creates a copy of the map as dictionary.
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60.41.21 Remove(first as StringToVariantOrderedMapIteratorMBS, last as StringToVariantOrderedMapIteratorMBS)

**Function:** Erases all elements in a range. 
See also:

- 60.41.22 Remove(key as string) as Integer
- 60.41.23 Remove(pos as StringToVariantOrderedMapIteratorMBS)

60.41.22 Remove(key as string) as Integer

**Function:** Erases the element with the given key. 
See also:

- 60.41.21 Remove(first as StringToVariantOrderedMapIteratorMBS, last as StringToVariantOrderedMapIteratorMBS)
- 60.41.23 Remove(pos as StringToVariantOrderedMapIteratorMBS)

60.41.23 Remove(pos as StringToVariantOrderedMapIteratorMBS)

**Function:** Erases the element pointed to by the pos iterator. 
See also:

- 60.41.21 Remove(first as StringToVariantOrderedMapIteratorMBS, last as StringToVariantOrderedMapIteratorMBS)
- 60.41.22 Remove(key as string) as Integer

60.41.24 UpperBound(key as string) as StringToVariantOrderedMapIteratorMBS

**Function:** Returns an iterator for the first element whose key is greater than k.

60.41.25 ValueAtIndex(index as Integer) as Variant

**Function:** Returns the value with the given index. 
**Notes:** If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first
item has the index zero.

### 60.41.26 Values as Variant()

**Function:** Returns all the values as an array
**Example:**
```vbnet
dim m as new StringToVariantOrderedMapMBS
m.Value("1")="Hello"
m.Value("2")="World"
for each v as string in m.Values
    MsgBox v
next
```

**Notes:** The order is stable and matches the order returned by Keys at least until the Map is modified. Use this method with For Each to loop through all the values.

### 60.41.27 Properties

#### 60.41.28 CaseSensitive as Boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Whether text/string comparison is case sensitive.
**Example:**
```vbnet
dim s1 as new StringToVariantOrderedMapMBS(true)
dim s2 as new StringToVariantOrderedMapMBS(false)
s1.value("a") = "1"
s1.value("A") = "2"
s2.value("a") = "1"
s2.value("A") = "2"
MsgBox str(s1.Count)+" "+str(s2.Count)
```

**Notes:** (Read only property)
60.41.29  Count as Integer

**Function:** The number of items in this map.  
**Example:**

```vbnet
dim map as new StringToVariantOrderedMapMBS
map.Value("?")="?"
map.Value("Hello")="World"
MsgBox str(map.Count)
```

**Notes:** (Read only property)

60.41.30  Empty as Boolean

**Function:** True if the size is zero.  
**Notes:** (Read only property)

60.41.31  MaxSize as Integer

**Function:** Returns the largest possible size for this map.  
**Notes:**  
Value is -1 if no limit is defined.  
(Read only property)

60.41.32  value(key as string) as Variant

**Function:** The value associated with the given key.  
**Notes:**  
If you query for a key which does not exist, a KeyNotFoundException is raised.  
(Read and Write computed property)
60.42. **CLASS TEXTHASHSETITERATORMBS**

60.42  **class TextHashSetIteratorMBS**

60.42.1  **class TextHashSetIteratorMBS**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The iterator for the TextHashSetMBS class.

60.42.2  **Methods**

60.42.3  **isEqual(other as TextHashSetIteratorMBS) as boolean**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Returns true if both iterators are equal.

60.42.4  **isNotEqual(other as TextHashSetIteratorMBS) as boolean**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Returns true if both iterators are not equal.

60.42.5  **Key as Text**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Returns the current key.

60.42.6  **MoveNext**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Moves the iterator to the next item.
60.43 class TextHashSetMBS

60.43.1 class TextHashSetMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** An alternative dictionary class for an ordered hash set of texts. 

**Example:**

```vbs
dim s as new TextHashSetMBS
s.insert "test"
s.insert "Test"
MsgBox str(s.Count) // shows 2
```

**Notes:**

All string comparison is done either case sensitive or insensitive. See parameter in constructor. 
You can choose whether you want to keep the set ordered using the OrderedSet class or whether you prefer a higher speed with the HashSet class.

60.43.2 Methods

60.43.3 Clear

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Erases all of the elements.

60.43.4 Constructor(CaseSensitive as Boolean = true)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** The default constructor. 
**Notes:** If CaseSensitive is true, the comparison of texts or strings is case sensitive. 
See also:

- 60.43.5 Constructor(Keys() as Text)

60.43.5 Constructor(Keys() as Text)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Creates a new set from the values in the array.
60.43. CLASS TEXTHASHSETMBS

Notes: If the array has duplicates, the later elements overwrite the earlier keys.
See also:

- 60.43.4 Constructor(CaseSensitive as Boolean = true)

60.43.6 CountKey(key as Text) as Integer

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Counts how often a key is used in this set.

60.43.7 find(key as Text) as TextHashSetIteratorMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Finds the key and returns an iterator.
Notes: Returns the same value as the last method if the item was not found.

60.43.8 first as TextHashSetIteratorMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns an iterator pointing to the beginning of the set.

60.43.9 insert(key as Text)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Adds a value to the set.

60.43.10 Key(index as Integer) as Text

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns the value of key for the Indexth sequential item.
Notes: If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.43.11 Keys as Text()

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns all the keys as an array.
Notes: The order is stable and matches the order returned by the Values method at least until the Dictionary is modified. Use this method with For Each to loop through all the keys.

60.43.12 last as TextHashSetIteratorMBS


60.43.13 lookup(key as Text) as boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Checks whether an element with the given key exists in this set. Notes: Returns true if yes and false if no.

60.43.14 Remove(first as TextHashSetIteratorMBS, last as TextHashSetIteratorMBS)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Erases all elements in a range. See also:

- 60.43.15 Remove(key as Text) as Integer
- 60.43.16 Remove(pos as TextHashSetIteratorMBS)

60.43.15 Remove(key as Text) as Integer

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Erases the element with the given key. See also:

- 60.43.14 Remove(first as TextHashSetIteratorMBS, last as TextHashSetIteratorMBS)
- 60.43.16 Remove(pos as TextHashSetIteratorMBS)

60.43.16 Remove(pos as TextHashSetIteratorMBS)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Erases the element pointed to by the pos iterator. See also:
60.43. CLASS TEXTHASHSETMBS

- 60.43.14 Remove(first as TextHashSetIteratorMBS, last as TextHashSetIteratorMBS)
- 60.43.15 Remove(key as Text) as Integer

60.43.17 Properties

60.43.18 BinCount as Integer

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The number of bins the hash table uses.
**Notes:**
This is a measure of the hash table size, independent of the number of items the Dictionary contains.
(Read only property)

60.43.19 CaseSensitive as Boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Whether text/string comparison is case sensitive.
**Example:**
```vba
dim s1 as new TextHashSetMBS(true)
dim s2 as new TextHashSetMBS(false)

s1.insert ”a”
s1.insert ”A”
s2.insert ”a”
s2.insert ”A”

MsgBox str(s1.Count)+” ”+str(s2.Count)
```

**Notes:** (Read only property)

60.43.20 Count as Integer

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The number of items in this set.
**Notes:** (Read only property)
60.43.21 Empty as Boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: True if the size is zero.
Notes: (Read only property)

60.43.22 MaxSize as Integer

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns the largest possible size for this set.
Notes:
Value is -1 if no limit is defined.
(Read only property)
60.44. **CLASS TEXTORDEREDSETITERATORMBS**

60.44  **class TextOrderedSetIteratorMBS**

60.44.1  **class TextOrderedSetIteratorMBS**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The iterator for the TextOrderedSetMBS class.

60.44.2  **Methods**

60.44.3  **isEqual(other as TextOrderedSetIteratorMBS) as boolean**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if both iterators are equal.

60.44.4  **isNotEqual(other as TextOrderedSetIteratorMBS) as boolean**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if both iterators are not equal.

60.44.5  **Key as Text**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the current key.

60.44.6  **MoveNext**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Moves the iterator to the next item.

60.44.7  **MovePrev**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Moves the iterator to the previous item.
60.45 class TextOrderedSetMBS

60.45.1 class TextOrderedSetMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** An alternative dictionary class for an ordered set of texts.

**Example:**

```vbnet
dim s as new TextOrderedSetMBS

s.insert "test"
s.insert "Test"

MsgBox str(s.Count) // shows 2
```

**Notes:**

All string comparison is done either case sensitive or insensitive. See parameter in constructor.
You can choose whether you want to keep the set ordered using the OrderedSet class or whether you prefer
a higher speed with the HashSet class.

60.45.2 Methods

60.45.3 Clear

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Erases all of the elements.

60.45.4 Constructor(CaseSensitive as Boolean = true)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The default constructor.

**Notes:** If CaseSensitive is true, the comparison of texts or strings is case sensitive.
See also:

- 60.45.5 Constructor(Keys() as Text)

60.45.5 Constructor(Keys() as Text)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Creates a new set from the values in the array.
60.45. CLASS TEXTORDEREDSETMBS

Notes: If the array has duplicates, the later elements overwrite the earlier keys.
See also:

- 60.45.4 Constructor(CaseSensitive as Boolean = true)

60.45.6 CountKey(key as Text) as Integer

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Counts how often a key is used in this set.

60.45.7 find(key as Text) as TextOrderedSetIteratorMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Finds the key and returns an iterator.
Notes: Returns the same value as the last method if the item was not found.

60.45.8 first as TextOrderedSetIteratorMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns an iterator pointing to the beginning of the set.

60.45.9 insert(key as Text)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Adds a value to the set.

60.45.10 Key(index as Integer) as Text

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns the value of key for the Indexth sequential item.
Notes: If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.45.11 Keys as Text()

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns all the keys as an array.
Notes: The order is stable and matches the order returned by the Values method at least until the Dictionary is modified. Use this method with For Each to loop through all the keys.

60.45.12 last as TextOrderedSetIteratorMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns an iterator pointing to the end of the set.

60.45.13 lookup(key as Text) as boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Checks whether an element with the given key exists in this set.
Notes: Returns true if yes and false if no.

60.45.14 LowerBound(key as Text) as TextOrderedSetIteratorMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns an iterator for the first element whose key is not less than k.

60.45.15 Remove(first as TextOrderedSetIteratorMBS, last as TextOrderedSetIteratorMBS)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Erases all elements in a range.
See also:

- 60.45.16 Remove(key as Text) as Integer 10846
- 60.45.17 Remove(pos as TextOrderedSetIteratorMBS) 10847

60.45.16 Remove(key as Text) as Integer

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Erases the element with the given key.
See also:

- 60.45.15 Remove(first as TextOrderedSetIteratorMBS, last as TextOrderedSetIteratorMBS) 10846
- 60.45.17 Remove(pos as TextOrderedSetIteratorMBS) 10847
60.45. CLASS TEXTORDEREDSETMBS

60.45.17 Remove(pos as TextOrderedSetIteratorMBS)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Erases the element pointed to by the pos iterator.

See also:

- 60.45.15 Remove(first as TextOrderedSetIteratorMBS, last as TextOrderedSetIteratorMBS)
- 60.45.16 Remove(key as Text) as Integer

60.45.18 UpperBound(key as Text) as TextOrderedSetIteratorMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Returns an iterator for the first element whose key is greater than k.

60.45.19 Properties

60.45.20 CaseSensitive as Boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Whether text/string comparison is case sensitive.

**Example:**

```vba
dim s1 as new TextOrderedSetMBS(true)
dim s2 as new TextOrderedSetMBS(false)

s1.insert "a"
s1.insert "A"

s2.insert "a"
s2.insert "A"

MsgBox str(s1.Count)+" "+str(s2.Count)
```

**Notes:** (Read only property)

60.45.21 Count as Integer

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The number of items in this set.

**Notes:** (Read only property)
60.45.22 Empty as Boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: True if the size is zero.
Notes: (Read only property)

60.45.23 MaxSize as Integer

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns the largest possible size for this set.
Notes:
Value is -1 if no limit is defined.
(Read only property)
60.46. CLASS TEXTTOTEXTHASHMAPITERATORMBS

60.46. class TextToTextHashMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The iterator for the TextToTextHashMapMBS class.

60.46.2. Methods

60.46.3. isEqual(other as TextToTextHashMapIteratorMBS) as boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns true if both iterators are equal.

60.46.4. isNotEqual(other as TextToTextHashMapIteratorMBS) as boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns true if both iterators are not equal.

60.46.5. Key as Text

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns the current key.

60.46.6. MoveNext

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Moves the iterator to the next item.

60.46.7. Properties

60.46.8. Value as Text

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The value of the current item in the iterator.
Notes: (Read and Write computed property)
60.47. class TextToTextHashMapMBS

60.47.1. class TextToTextHashMapMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** An alternative dictionary class for a hash map with texts as keys and values.
**Example:**
```vba
dim s as new TextToTextHashMapMBS
s.Value(“Test”)=”Hello”
s.Value(“test”)=”World”
MsgBox str(s.Count) // shows 2
```

**Notes:**
All text comparison is done either case sensitive or insensitive. Defined in constructor.
You can choose whether you want to keep the map ordered using the OrderedMap class or whether you prefer a higher speed with the HashMap class.

60.47.2. Methods

60.47.3. AddKeys(targetArray() as Text)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Similar to keys, but adds keys to the given array.
**Notes:** For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys function returns always nil.

60.47.4. AddValues(targetArray() as Text)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Similar to values, but adds values to the given array.
**Notes:** For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys function returns always nil.
60.47.5 Clear

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Erases all of the elements.

60.47.6 Clone as TextToTextHashMapMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Creates a copy of this map.

60.47.7 CloneDictionary as Dictionary

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Creates a copy of this map as a dictionary.

60.47.8 Constructor(CaseSensitive as Boolean = true)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The default constructor.
**Notes:** If CaseSensitive is true, the comparison of texts or strings is case sensitive.
See also:
- 60.47.9 Constructor(dic as dictionary, CaseSensitive as Boolean = true) 10852
- 60.47.10 Constructor(other as TextToTextHashMapMBS) 10852

60.47.9 Constructor(dic as dictionary, CaseSensitive as Boolean = true)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Creates a new map with the keys and values from the dictionary.
See also:
- 60.47.8 Constructor(CaseSensitive as Boolean = true) 10852
- 60.47.10 Constructor(other as TextToTextHashMapMBS) 10852

60.47.10 Constructor(other as TextToTextHashMapMBS)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Creates a new map with the keys and values from the existing map.
See also:
60.47. CLASS TEXTTOTEXTHASHMAPMBS

- 60.47.8 Constructor(CaseSensitive as Boolean = true)
- 60.47.9 Constructor(dic as dictionary, CaseSensitive as Boolean = true)

60.47.11 CountKey(key as Text) as Integer

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Counts how often a key is used in this map.

60.47.12 find(key as Text) as TextToTextHashMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Finds the key and returns an interator.
**Notes:** Returns the same value as the last method if the item was not found.

60.47.13 first as TextToTextHashMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns an iterator pointing to the beginning of the map.

60.47.14 hasKey(key as Text) as boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns True if Key is in the map and False if it is not. Returns a Boolean.

60.47.15 Key(index as Integer) as Text

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns the value of key for the Indexth sequential item.
**Notes:** If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.47.16 Keys as Text()

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns all the keys as an array.
Notes: The order is stable and matches the order returned by the Values method at least until the Dictionary is modified. Use this method with For Each to loop through all the keys.

**60.47.17 last as TextToTextHashMapIteratorMBS**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Returns an iterator pointing to the end of the map.

**60.47.18 lookup(key as Text, defaultValue as Text) as Text**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Looks up the passed value of Key.  
**Notes:** If Key is found, it returns the corresponding value. If Key is not found, it returns the passed defaultValue.

**60.47.19 Operator Convert as Dictionary**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Creates a copy of the map as dictionary.

**60.47.20 Remove(first as TextToTextHashMapIteratorMBS, last as TextToTextHashMapIteratorMBS)**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Erases all elements in a range.  
See also:

- 60.47.21 Remove(key as Text) as Integer

- 60.47.22 Remove(pos as TextToTextHashMapIteratorMBS)

**60.47.21 Remove(key as Text) as Integer**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Erases the element with the given key.  
See also:

- 60.47.20 Remove(first as TextToTextHashMapIteratorMBS, last as TextToTextHashMapIteratorMBS)
60.47.22 Remove(pos as TextToTextHashMapIteratorMBS)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Erases the element pointed to by the pos iterator.
See also:

- 60.47.20 Remove(first as TextToTextHashMapIteratorMBS, last as TextToTextHashMapIteratorMBS) 10854
- 60.47.21 Remove(key as Text) as Integer 10854

60.47.23 ValueAtIndex(index as Integer) as Text

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns the value with the given index.
Notes: If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first
item has the index zero.

60.47.24 Values as Text()

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns all the values as an array
Notes: The order is stable and matches the order returned by Keys at least until the Map is modified. Use
this method with For Each to loop through all the values.

60.47.25 Properties

60.47.26 BinCount as Integer

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The number of bins the hash table uses.
Notes:
This is a measure of the hash table size, independent of the number of items the Dictionary contains.
(Read only property)
60.47.27 CaseSensitive as Boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Whether text/string comparison is case sensitive. 
**Example:**
```vbnet
dim s1 as new TextToTextHashMapMBS(true) 
dim s2 as new TextToTextHashMapMBS(false)

s1.value("a") = "1"
s1.value("A") = "2"

s2.value("a") = "1"
s2.value("A") = "2"

MsgBox str(s1.Count) + " " + str(s2.Count)
```

**Notes:** (Read only property)

60.47.28 Count as Integer

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** The number of items in this map. 
**Notes:** (Read only property)

60.47.29 Empty as Boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** True if the size is zero. 
**Notes:** (Read only property)

60.47.30 MaxSize as Integer

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Returns the largest possible size for this set. 
**Notes:**
Value is -1 if no limit is defined. 
(Read only property)
60.47. CLASS TEXTTOTEXTHASHMAPMBS

60.47.31 value(key as Text) as Text

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The value associated with the given key.

**Notes:**

If you query for a key which does not exist, a KeyNotFoundException is raised.

(Read and Write computed property)
60.48 class TextToTextOrderedMapIteratorMBS

60.48.1 class TextToTextOrderedMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The iterator for the TextToTextOrderedMapMBS class.

60.48.2 Methods

60.48.3 isEqual(other as TextToTextOrderedMapIteratorMBS) as boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if both iterators are equal.

60.48.4 isNotEqual(other as TextToTextOrderedMapIteratorMBS) as boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if both iterators are not equal.

60.48.5 Key as Text

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the current key.

60.48.6 MoveNext

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Moves the iterator to the next item.

60.48.7 MovePrev

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Moves the iterator to the previous item.
60.48.8 Properties

60.48.9 Value as Text

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The value of the current item in the iterator.

**Notes:** (Read and Write computed property)
60.49  class TextToTextOrderedMapMBS

60.49.1  class TextToTextOrderedMapMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: An alternative dictionary class for an ordered map with texts for keys and values.
Example:

dim s as new TextToTextOrderedMapMBS
s.Value("Test")="Hello"
s.Value("test")="World"
MsgBox str(s.Count)  // shows 2

Notes:
All text comparison is done either case sensitive or insensitive.
You can choose whether you want to keep the map ordered using the OrderedMap class or whether you prefer a higher speed with the HashMap class.

60.49.2  Methods

60.49.3  AddKeys(targetArray() as Text)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Similar to keys, but adds keys to the given array.
Notes: For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys function returns always nil.

60.49.4  AddValues(targetArray() as Text)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Similar to values, but adds values to the given array.
Notes: For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys function returns always nil.
60.49. CLASS TEXTTOTEXTORDEREDMAPMBS

60.49.5 Clear

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Erases all of the elements.

60.49.6 Clone as TextToTextOrderedMapMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Creates a copy of this map.

60.49.7 CloneDictionary as Dictionary

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Creates a copy of this map as a dictionary.

60.49.8 Constructor(CaseSensitive as Boolean = true)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The default constructor.
**Notes:** If CaseSensitive is true, the comparison of texts or strings is case sensitive.
See also:
- 60.49.9 Constructor(dic as dictionary, CaseSensitive as Boolean = true)
- 60.49.10 Constructor(other as TextToTextOrderedMapMBS)

60.49.9 Constructor(dic as dictionary, CaseSensitive as Boolean = true)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Creates a new map with the keys and values from the dictionary.
See also:
- 60.49.8 Constructor(CaseSensitive as Boolean = true)
- 60.49.10 Constructor(other as TextToTextOrderedMapMBS)

60.49.10 Constructor(other as TextToTextOrderedMapMBS)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Creates a new map with the keys and values from the existing map.
See also:
60.49.11  **CountKey(key as Text) as Integer**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Counts how often a key is used in this map.

60.49.12  **find(key as Text) as TextToTextOrderedMapIteratorMBS**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Finds the key and returns an iterator.
**Notes:** Returns the same value as the last method if the item was not found.

60.49.13  **first as TextToTextOrderedMapIteratorMBS**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns an iterator pointing to the beginning of the map.

60.49.14  **hasKey(key as Text) as boolean**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns True if Key is in the map and False if it is not. Returns a Boolean.

60.49.15  **Key(index as Integer) as Text**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns the value of key for the Indexth sequential item.
**Notes:** If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.49.16  **Keys as Text()**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns all the keys as an array.
Notes: The order is stable and matches the order returned by the Values method at least until the Dictionary is modified. Use this method with For Each to loop through all the keys.

60.49.17 last as TextToTextOrderedMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns an iterator pointing to the end of the map.

60.49.18 lookup(key as Text, defaultvalue as Text) as Text

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Looks up the passed value of Key.
Notes: If Key is found, it returns the corresponding value. If Key is not found, it returns the passed defaultValue.

60.49.19 LowerBound(key as Text) as TextToTextOrderedMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns an iterator for the first element whose key is not less than k.

60.49.20 Operator_Convert as Dictionary

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Creates a copy of the map as dictionary.

60.49.21 Remove(first as TextToTextOrderedMapIteratorMBS, last as TextToTextOrderedMapIteratorMBS)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Erases all elements in a range.
See also:

- 60.49.22 Remove(key as Text) as Integer
- 60.49.23 Remove(pos as TextToTextOrderedMapIteratorMBS)
60.49.22 Remove(key as Text) as Integer

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Erases the element with the given key.

See also:

- 60.49.21 Remove(first as TextToTextOrderedMapIteratorMBS, last as TextToTextOrderedMapIteratorMBS) 10863
- 60.49.23 Remove(pos as TextToTextOrderedMapIteratorMBS) 10864

60.49.23 Remove(pos as TextToTextOrderedMapIteratorMBS)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Erases the element pointed to by the pos iterator.

See also:

- 60.49.21 Remove(first as TextToTextOrderedMapIteratorMBS, last as TextToTextOrderedMapIteratorMBS) 10863
- 60.49.22 Remove(key as Text) as Integer 10864

60.49.24 UpperBound(key as Text) as TextToTextOrderedMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Returns an iterator for the first element whose key is greater than k.

60.49.25 ValueAtIndex(index as Integer) as Text

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Returns the value with the given index.

**Notes:** If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.49.26 Values as Text()

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Returns all the values as an array

**Notes:** The order is stable and matches the order returned by Keys at least until the Map is modified. Use this method with For Each to loop through all the values.
60.49.28 CaseSensitive as Boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Whether text/string comparison is case sensitive.
Notes:

dim s1 as new TextToTextOrderedMapMBS(true)
dim s2 as new TextToTextOrderedMapMBS(false)

s1.value("a") = "1"
s1.value("A") = "2"

s2.value("a") = "1"
s2.value("A") = "2"

MsgBox str(s1.Count)+" "+str(s2.Count)
(Read only property)

60.49.29 Count as Integer

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The number of items in this map.
Notes: (Read only property)

60.49.30 Empty as Boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: True if the size is zero.
Notes: (Read only property)

60.49.31 MaxSize as Integer

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns the largest possible size for this set.
Notes:
Value is -1 if no limit is defined.
(Read only property)
60.49.32 value(key as Text) as Text

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: The value associated with the given key.

Notes: If you query for a key which does not exist, a KeyNotFoundException is raised.
(Read and Write computed property)
60.50. CLASS TEXTTOVARIANTHASHMAPITERATORMBS

60.50.1 class TextToVariantHashMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** The iterator for the TextToVariantHashMapMBS class.

60.50.2 Methods

60.50.3 isEqual(other as TextToVariantHashMapIteratorMBS) as boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Returns true if both iterators are equal.

60.50.4 isNotEqual(other as TextToVariantHashMapIteratorMBS) as boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Returns true if both iterators are not equal.

60.50.5 Key as Text

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Returns the current key.

60.50.6 MoveNext

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Moves the iterator to the next item.

60.50.7 Properties

60.50.8 Value as Variant

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** The value of the current item in the iterator.
Notes: (Read and Write computed property)
60.51. class TextToVariantHashMapMBS

60.51.1 class TextToVariantHashMapMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** An alternative dictionary class for a hash map with strings as keys and variants as values.

**Example:**

```vba
dim s as new TextToVariantHashMapMBS

s.Value("Hello") = "Hallo"
s.Value("World") = "Leute"

MsgBox str(s.Count) // shows 2

MsgBox s.Value("Hello") + " " + s.Value("World") // shows "Hallo Leute"
MsgBox s.Key(1) + " " + s.Key(0) // shows "Hello World"
MsgBox s.ValueAtIndex(1) + " " + s.ValueAtIndex(0) // shows "Hallo Leute"
```

**Notes:**

All text comparison is done either case sensitive or insensitive.
You can choose whether you want to keep the map ordered using the OrderedMap class or whether you prefer a higher speed with the HashMap class.

60.51.2 Methods

60.51.3 AddKeys(targetArray() as Text)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Similar to keys, but adds keys to the given array.

**Notes:** For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys function returns always nil.

60.51.4 AddValues(targetArray() as Variant)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Similar to values, but adds values to the given array.

**Notes:** For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys function returns always nil.
60.51.5 Clear

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Erases all of the elements.

60.51.6 Clone as TextToVariantHashMapMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Creates a copy of this map.

60.51.7 CloneDictionary as Dictionary

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Creates a copy of this map as a dictionary.

60.51.8 Constructor(CaseSensitive as Boolean = true)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The default constructor.
Notes: If CaseSensitive is true, the comparison of texts or strings is case sensitive.
See also:
- 60.51.9 Constructor(dic as dictionary, CaseSensitive as Boolean = true) 10870
- 60.51.10 Constructor(other as TextToVariantHashMapMBS) 10870

60.51.9 Constructor(dic as dictionary, CaseSensitive as Boolean = true)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Creates a new map with the keys and values from the dictionary.
See also:
- 60.51.8 Constructor(CaseSensitive as Boolean = true) 10870
- 60.51.10 Constructor(other as TextToVariantHashMapMBS) 10870

60.51.10 Constructor(other as TextToVariantHashMapMBS)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Creates a new map with the keys and values from the existing map.
See also:
60.51.11 CountKey(key as Text) as Integer

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Counts how often a key is used in this map.

60.51.12 find(key as Text) as TextToVariantHashMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Finds the key and returns an iterator.
Notes: Returns the same value as the last method if the item was not found.

60.51.13 first as TextToVariantHashMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns an iterator pointing to the beginning of the map.

60.51.14 hasKey(key as Text) as boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns True if Key is in the map and False if it is not. Returns a Boolean.

60.51.15 Key(index as Integer) as Text

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns the value of key for the Indexth sequential item.
Notes: If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.51.16 Keys as Text()

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns all the keys as an array.
Notes: The order is stable and matches the order returned by the Values method at least until the Dictionary is modified. Use this method with For Each to loop through all the keys.

60.51.17 last as TextToVariantHashMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Returns an iterator pointing to the end of the map.

60.51.18 lookup(key as Text, defaultValue as Variant) as Variant

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Looks up the passed value of Key. 
**Notes:** If Key is found, it returns the corresponding value. If Key is not found, it returns the passed default Value.

60.51.19 Operator Convert as Dictionary

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Creates a copy of the map as dictionary.

60.51.20 Remove(first as TextToVariantHashMapIteratorMBS, last as TextToVariantHashMapIteratorMBS)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Erases all elements in a range. 
See also:

- 60.51.21 Remove(key as Text) as Integer 10872
- 60.51.22 Remove(pos as TextToVariantHashMapIteratorMBS) 10873

60.51.21 Remove(key as Text) as Integer

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Erases the element with the given key. 
See also:

- 60.51.20 Remove(first as TextToVariantHashMapIteratorMBS, last as TextToVariantHashMapIteratorMBS) 10872
60.51. CLASS TEXTTOVARIANTHASHMAPMBS

- 60.51.22 Remove(pos as TextToVariantHashMapIteratorMBS)

60.51.22 Remove(pos as TextToVariantHashMapIteratorMBS)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Erases the element pointed to by the pos iterator.

See also:

- 60.51.20 Remove(first as TextToVariantHashMapIteratorMBS, last as TextToVariantHashMapIteratorMBS)
- 60.51.21 Remove(key as Text) as Integer

60.51.23 ValueAtIndex(index as Integer) as Variant

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Returns the value with the given index.

Notes: If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.51.24 Values as Variant()

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Returns all the values as an array

Notes: The order is stable and matches the order returned by Keys at least until the Map is modified. Use this method with For Each to loop through all the values.

60.51.25 Properties

60.51.26 BinCount as Integer

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: The number of bins the hash table uses.

Notes:
This is a measure of the hash table size, independent of the number of items the Dictionary contains.
(Read only property)
60.51.27 CaseSensitive as Boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Whether text/string comparison is case sensitive.
**Example:**

```vbnet
dim s1 as new TextToVariantHashMapMBS(true)
dim s2 as new TextToVariantHashMapMBS(false)

s1.value("a") = "1"
s1.value("A") = "2"

s2.value("a") = "1"
s2.value("A") = "2"

MsgBox str(s1.Count)+" "+str(s2.Count)
```

**Notes:** (Read only property)

60.51.28 Count as Integer

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The number of items in this map.
**Notes:** (Read only property)

60.51.29 Empty as Boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** True if the size is zero.
**Notes:** (Read only property)

60.51.30 MaxSize as Integer

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns the largest possible size for this set.
**Notes:**
Value is -1 if no limit is defined.
(Read only property)
MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The value associated with the given key.

**Notes:**
If you query for a key which does not exist, a KeyNotFoundException is raised.
(Read and Write computed property)
60.52 class TextToVariantOrderedMapIteratorMBS

60.52.1 class TextToVariantOrderedMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The iterator for the TextToVariantOrderedMapMBS class.

60.52.2 Methods

60.52.3 isEqual(other as TextToVariantOrderedMapIteratorMBS) as boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns true if both iterators are equal.

60.52.4 isNotEqual(other as TextToVariantOrderedMapIteratorMBS) as boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns true if both iterators are not equal.

60.52.5 Key as Text

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns the current key.

60.52.6 MoveNext

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Moves the iterator to the next item.

60.52.7 MovePrev

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Moves the iterator to the previous item.
60.52.8 Properties

60.52.9 Value as Variant

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The value of the current item in the iterator.

**Notes:** (Read and Write computed property)
60.53  class TextToVariantOrderedMapMBS

60.53.1  class TextToVariantOrderedMapMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** An alternative dictionary class for an ordered map with texts as keys and variants as values.

**Example:**

```vbnet
dim s as new TextToVariantOrderedMapMBS

s.Value("Hello") = "Hallo"
s.Value("World") = "Leute"

MsgBox str(s.Count) // shows 2

MsgBox s.Value("Hello")+" " +s.Value("World") // shows "Hallo Leute"
MsgBox s.Key(1)+" " +s.Key(0) // shows "Hello World"
MsgBox s.ValueAtIndex(1)+" " +s.ValueAtIndex(0) // shows "Hallo Leute"
```

**Notes:**

All text comparison is done either case sensitive or insensitive.

You can choose whether you want to keep the map ordered using the OrderedMap class or whether you prefer a higher speed with the HashMap class.

60.53.2  Methods

60.53.3  AddKeys(targetArray() as Text)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Similar to keys, but adds keys to the given array.

**Notes:** For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys function returns always nil.

60.53.4  AddValues(targetArray() as Variant)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Similar to values, but adds values to the given array.

**Notes:** For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys function returns always nil.
60.53.5 Clear

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Erases all of the elements.

60.53.6 Clone as TextToVariantOrderedMapMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Creates a copy of this map.

60.53.7 CloneDictionary as Dictionary

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Creates a copy of this map as a dictionary.

60.53.8 Constructor(CaseSensitive as Boolean = true)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The default constructor.
Notes: If CaseSensitive is true, the comparison of texts or strings is case sensitive.
See also:
- 60.53.9 Constructor(dic as dictionary, CaseSensitive as Boolean = true)
- 60.53.10 Constructor(other as TextToVariantOrderedMapMBS)

60.53.9 Constructor(dic as dictionary, CaseSensitive as Boolean = true)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Creates a new map with the keys and values from the dictionary.
See also:
- 60.53.8 Constructor(CaseSensitive as Boolean = true)
- 60.53.10 Constructor(other as TextToVariantOrderedMapMBS)

60.53.10 Constructor(other as TextToVariantOrderedMapMBS)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Creates a new map with the keys and values from the existing map.
See also:
60.53.11 CountKey(key as Text) as Integer

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Counts how often a key is used in this map.

60.53.12 find(key as Text) as TextToVariantOrderedMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Finds the key and returns an iterator.
Notes: Returns the same value as the last method if the item was not found.

60.53.13 first as TextToVariantOrderedMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns an iterator pointing to the beginning of the map.

60.53.14 hasKey(key as Text) as boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns True if Key is in the map and False if it is not. Returns a Boolean.

60.53.15 Key(index as Integer) as Text

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns the value of key for the Indexth sequential item.
Notes: If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.53.16 Keys as Text()

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns all the keys as an array.
Notes: The order is stable and matches the order returned by the Values method at least until the Dictionary is modified. Use this method with For Each to loop through all the keys.

60.53.17 last as TextToVariantOrderedMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns an iterator pointing to the end of the map.

60.53.18 lookup(key as Text, defaultValue as Variant) as Variant

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Looks up the passed value of Key.
Notes: If Key is found, it returns the corresponding value. If Key is not found, it returns the passed defaultValue.

60.53.19 LowerBound(key as Text) as TextToVariantOrderedMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns an iterator for the first element whose key is not less than k.

60.53.20 Operator_Convert as Dictionary

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Creates a copy of the map as dictionary.

60.53.21 Remove(first as TextToVariantOrderedMapIteratorMBS, last as TextToVariantOrderedMapIteratorMBS)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Erases all elements in a range.
See also:

- 60.53.22 Remove(key as Text) as Integer
- 60.53.23 Remove(pos as TextToVariantOrderedMapIteratorMBS)
60.53.22 Remove(key as Text) as Integer

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Erases the element with the given key.

See also:
- 60.53.21 Remove(first as TextToVariantOrderedMapIteratorMBS, last as TextToVariantOrderedMapIteratorMBS)
- 60.53.23 Remove(pos as TextToVariantOrderedMapIteratorMBS)

60.53.23 Remove(pos as TextToVariantOrderedMapIteratorMBS)

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Erases the element pointed to by the pos iterator.

See also:
- 60.53.21 Remove(first as TextToVariantOrderedMapIteratorMBS, last as TextToVariantOrderedMapIteratorMBS)
- 60.53.22 Remove(key as Text) as Integer

60.53.24 UpperBound(key as Text) as TextToVariantOrderedMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Returns an iterator for the first element whose key is greater than k.

60.53.25 ValueAtIndex(index as Integer) as Variant

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Returns the value with the given index.

**Notes:** If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.53.26 Values as Variant()

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Returns all the values as an array

**Notes:** The order is stable and matches the order returned by Keys at least until the Map is modified. Use this method with For Each to loop through all the values.
60.53.27 Properties

60.53.28 CaseSensitive as Boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Whether text/string comparison is case sensitive.
Example:

```plaintext
dim s1 as new TextToVariantOrderedMapMBS(true)
dim s2 as new TextToVariantOrderedMapMBS(false)

s1.value("a") = "1"
s1.value("A") = "2"
s2.value("a") = "1"
s2.value("A") = "2"

MsgBox str(s1.Count)+" "+str(s2.Count)
```

Notes: (Read only property)

60.53.29 Count as Integer

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The number of items in this map.
Notes: (Read only property)

60.53.30 Empty as Boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: True if the size is zero.
Notes: (Read only property)

60.53.31 MaxSize as Integer

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns the largest possible size for this set.
Notes: Value is -1 if no limit is defined.
60.53.32  value(key as Text) as Variant

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The value associated with the given key.

**Notes:**

If you query for a key which does not exist, a KeyNotFoundException is raised.

(Read and Write computed property)
class VariantHashSetIteratorMBS


Function: The iterator for the VariantHashSet class.

Example:

```vbs
// Create a map
dim m as new VariantHashSetMBS

m.insert(1.0) // double
m.insert("Hello") // string
m.insert(3) // integer

// get iterators pointing to first and after last element
dim i as VariantHashSetIteratorMBS = m.first
dim e as VariantHashSetIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox i.Key
    i.MoveNext
wend
```

Methods

isEqual(other as VariantHashSetIteratorMBS) as boolean


Function: Returns true if both iterators are equal.

Example:

```vbs
// Create a map
dim m as new VariantHashSetMBS

m.insert(1.0) // double
m.insert("Hello") // string
m.insert(3) // integer

// get iterators pointing to first and after last element
dim i as VariantHashSetIteratorMBS = m.first
dim e as VariantHashSetIteratorMBS = m.last

// Show all keys and values
```
while i.isEqual(e) = false
MsgBox i.Key
i.MoveNext
wend

60.54.4 isNotEqual(other as VariantHashSetIteratorMBS) as boolean

MBS DataTypes Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Returns true if both iterators are not equal. 
**Example:**

// Create a map
dim m as new VariantHashSetMBS

m.insert(1.0) // double
m.insert("Hello") // string
m.insert(3) // integer

// get iterators pointing to first and after last element
dim i as VariantHashSetIteratorMBS = m.first
dim e as VariantHashSetIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
MsgBox i.Key
i.MoveNext
wend

60.54.5 Key as Variant

**Function:** Returns the current key.

60.54.6 MoveNext

**Function:** Moves the iterator to the next item. 
**Example:**

// Create a map
dim m as new VariantHashSetMBS
m.insert(1.0) // double
m.insert("Hello") // string
m.insert(3) // integer

// get iterators pointing to first and after last element
dim i as VariantHashSetIteratorMBS = m.first
dim e as VariantHashSetIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox i.Key
    i.MoveNext
wend
60.55 class VariantHashSetMBS

60.55.1 class VariantHashSetMBS

**Function:** An alternative dictionary class for a hash set with variants.  
**Example:**
```
    Dim s As New VariantHashSetMBS
    s.Insert "test"
    s.Insert "Test"
    MsgBox s.Count // shows 2
    s.Insert ConvertEncoding( "test", encodings.UTF16)
    s.Insert ConvertEncoding( "Test", encodings.UTF16)
    MsgBox s.Count // shows 4
```

**Notes:**
When using variants for keys, you may get better results if all keys used have the same data type to improve comparison.
All text comparison is done either case sensitive or insensitive. Defined in constructor.  
You can choose whether you want to keep the set ordered using the OrderedSet class or whether you prefer a higher speed with the HashSet class.

60.55.2 Methods

60.55.3 Clear

**Function:** Erases all of the elements.

60.55.4 Constructor(CaseSensitive as Boolean = true)

**Function:** The default constructor.  
**Notes:** If CaseSensitive is true, the comparison of texts or strings is case sensitive.  
See also:
60.55. **CLASS VARIANTHASHSETMBS**

- **60.55.5 Constructor(Keys() as string)**
- **60.55.6 Constructor(Keys() as Variant)**

### 60.55.5 Constructor(Keys() as string)

**Function:** Creates a new set from the values in the array.
**Notes:** If the array has duplicates, the later elements overwrite the earlier keys.
See also:
- **60.55.4 Constructor(CaseSensitive as Boolean = true)**
- **60.55.6 Constructor(Keys() as Variant)**

### 60.55.6 Constructor(Keys() as Variant)

**Function:** Creates a new set from the values in the array.
**Notes:** If the array has duplicates, the later elements overwrite the earlier keys.
See also:
- **60.55.4 Constructor(CaseSensitive as Boolean = true)**
- **60.55.5 Constructor(Keys() as string)**

### 60.55.7 CountKey(key as Variant) as Integer

**Function:** Counts how often a key is used in this set.

### 60.55.8 find(key as Variant) as VariantHashSetIteratorMBS

**Function:** Finds the key and returns an iterator.
**Notes:** Returns the same value as the last method if the item was not found.

### 60.55.9 first as VariantHashSetIteratorMBS

**Function:** Returns an iterator pointing to the beginning of the set.
**Example:**
// Create a map
dim m as new VariantHashSetMBS

m.insert(1.0) // double
m.insert("Hello") // string
m.insert(3) // integer

// get iterators pointing to first and after last element
dim i as VariantHashSetIteratorMBS = m.first
dim e as VariantHashSetIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox i.Key
    i.MoveNext
wend

60.55.10  **insert(key as Variant)**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds a value to the set.

60.55.11  **Key(index as Integer) as Variant**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value of key for the Indexth sequential item. **Notes:** If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.55.12  **Keys as Variant()**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns all the keys as an array. **Example:**

dim m as new VariantHashSetMBS

m.insert("1")
m.insert("2")

for each v as Variant in m.Keys
60.55. CLASS VARIANTHASHSETMBS

MsgBox v
next

Notes: The order is stable and matches the order returned by the Values method at least until the Dictionary is modified. Use this method with For Each to loop through all the keys.

60.55.13  last as VariantHashSetIteratorMBS

Function: Returns an iterator pointing to the end of the set.
Example:

// Create a map
dim m as new VariantHashSetMBS
m.insert(1.0)  // double
m.insert("Hello")  // string
m.insert(3)  // integer

// get iterators pointing to first and after last element
dim i as VariantHashSetIteratorMBS = m.first
dim e as VariantHashSetIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox i.Key
    i.MoveNext
wend

60.55.14  lookup(key as Variant) as boolean

Function: Checks whether an element with the given key exists in this set.
Example:

dim set as new VariantHashSetMBS

set.insert "Hello"
set.insert "World"

MsgBox str(set.lookup("missed"))  // shows false as value is missing
MsgBox str(set.lookup("Hello"))  // shows true as value is found
Notes: Returns true if yes and false if no.

60.55.15  Remove(first as VariantHashSetIteratorMBS, last as VariantHashSetIteratorMBS)

Function: Erases all elements in a range.
See also:

- 60.55.16 Remove(key as Variant) as Integer 10892
- 60.55.17 Remove(pos as VariantHashSetIteratorMBS) 10892

60.55.16  Remove(key as Variant) as Integer

Function: Erases the element with the given key.
See also:

- 60.55.15 Remove(first as VariantHashSetIteratorMBS, last as VariantHashSetIteratorMBS) 10892
- 60.55.17 Remove(pos as VariantHashSetIteratorMBS) 10892

60.55.17  Remove(pos as VariantHashSetIteratorMBS)

Function: Erases the element pointed to by the pos iterator.
See also:

- 60.55.15 Remove(first as VariantHashSetIteratorMBS, last as VariantHashSetIteratorMBS) 10892
- 60.55.16 Remove(key as Variant) as Integer 10892

60.55.18  Properties

60.55.19  BinCount as Integer

Function: The number of bins the hash table uses.
Example:
60.55. CLASS VARIANTHASHSETMBS

dim v as new VariantHashSetMBS

v.insert "1"
v.insert "Hello"

MsgBox str(v.BinCount)

Notes:
This is a measure of the hash table size, independent of the number of items the Dictionary contains. (Read only property)

60.55.20 CaseSensitive as Boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
Function: Whether text/string comparison is case sensitive.  
Example:

dim s1 as new VariantHashSetMBS(true)
dim s2 as new VariantHashSetMBS(false)

s1.insert("a")
s1.insert("A")

s2.insert("a")
s2.insert("A")

MsgBox str(s1.Count)+" +"+str(s2.Count)

Notes: (Read only property)

60.55.21 Count as Integer

Function: The number of items in this set.
Example:

dim set as new VariantHashSetMBS

set.insert 1
set.insert 2


```
MsgBox str(set.Count)
```

**Notes:** (Read only property)

### 60.55.22 Empty as Boolean

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if the size is zero.  
**Notes:** (Read only property)

### 60.55.23 MaxSize as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the largest possible size for this set.  
**Notes:** Value is -1 if no limit is defined.  
(Read only property)
60.56. class VariantOrderedSetIteratorMBS

60.56.1 class VariantOrderedSetIteratorMBS


Function: The iterator for the VariantOrderedSet class.

Example:

// Create a map
dim m as new VariantOrderedSetMBS

m.insert(1.0) // double
m.insert("Hello") // string
m.insert(3) // integer

// get iterators pointing to first and after last element
dim i as VariantOrderedSetIteratorMBS = m.first
dim e as VariantOrderedSetIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox i.Key
    i.MoveNext
wend

60.56.2 Methods

60.56.3 isEqual(other as VariantOrderedSetIteratorMBS) as boolean


Function: Returns true if both iterators are equal.

Example:

// Create a map
dim m as new VariantOrderedSetMBS

m.insert(1.0) // double
m.insert("Hello") // string
m.insert(3) // integer

// get iterators pointing to first and after last element
dim i as VariantOrderedSetIteratorMBS = m.first
dim e as VariantOrderedSetIteratorMBS = m.last

// Show all keys and values
while i.isEqual(e) = false
MsgBox i.Key
i.MoveNext
wend

60.56.4  isNotEqual(other as VariantOrderedSetIteratorMBS) as boolean

MBS DataTypes Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if both iterators are not equal. **Example:**

```vba
// Create a map
dim m as new VariantOrderedSetMBS

m.insert(1.0) // double
m.insert("Hello") // string
m.insert(3) // integer

// get iterators pointing to first and after last element
dim i as VariantOrderedSetIteratorMBS = m.first
dim e as VariantOrderedSetIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
MsgBox i.Key
i.MoveNext
wend
```

60.56.5  Key as Variant

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the current key.

60.56.6  MoveNext

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Moves the iterator to the next item. **Example:**

```vba
// Create a map
dim m as new VariantOrderedSetMBS
```
m.insert(1.0) // double
m.insert("Hello") // string
m.insert(3) // integer

// get iterators pointing to first and after last element
dim i as VariantOrderedSetIteratorMBS = m.first
dim e as VariantOrderedSetIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox i.Key
    i.MoveNext
wend

60.56.7 MovePrev

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Moves the iterator to the previous item.
60.57 class VariantOrderedSetMBS

60.57.1 class VariantOrderedSetMBS


**Function:** An alternative dictionary class for an ordered set with variants.

**Example:**

```vba
dim s as new VariantOrderedSetMBS

s.insert "test"
s.insert "Test"

MsgBox str(s.Count) // shows 2

s.insert ConvertEncoding("test",encodings.UTF16)
s.insert ConvertEncoding("Test",encodings.UTF16)

MsgBox str(s.Count) // shows 4
```

**Notes:**

When using variants for keys, you may get better results if all keys used have the same data type to improve comparison.

All text comparison is done either case sensitive or insensitive. Defined in constructor.

You can choose whether you want to keep the set ordered using the OrderedSet class or whether you prefer a higher speed with the HashSet class.

60.57.2 Methods

60.57.3 Clear

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases all of the elements.

60.57.4 Constructor(CaseSensitive as Boolean = true)

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The default constructor.

**Notes:** If CaseSensitive is true, the comparison of texts or strings is case sensitive.

See also:
60.57. CLASS VARIANTORDEREDSETMBS 10899

- 60.57.5 Constructor(Keys() as string) 10899
- 60.57.6 Constructor(Keys() as Variant) 10899

60.57.5 Constructor(Keys() as string)

MBS DataTypes Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new set from the values in the array. **Notes:** If the array has duplicates, the later elements overwrite the earlier keys. See also:

- 60.57.4 Constructor(CaseSensitive as Boolean = true) 10898
- 60.57.6 Constructor(Keys() as Variant) 10899

60.57.6 Constructor(Keys() as Variant)

MBS DataTypes Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new set from the values in the array. **Notes:** If the array has duplicates, the later elements overwrite the earlier keys. See also:

- 60.57.4 Constructor(CaseSensitive as Boolean = true) 10898
- 60.57.5 Constructor(Keys() as string) 10899

60.57.7 CountKey(key as Variant) as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Counts how often a key is used in this set.

60.57.8 find(key as Variant) as VariantOrderedSetIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Finds the key and returns an interator. **Notes:** Returns the same value as the last method if the item was not found.

60.57.9 first as VariantOrderedSetIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an iterator pointing to the beginning of the set. **Example:**
// Create a map
dim m as new VariantOrderedSetMBS

m.insert(1.0) // double
m.insert("Hello") // string
m.insert(3) // integer

// get iterators pointing to first and after last element
dim i as VariantOrderedSetIteratorMBS = m.first
dim e as VariantOrderedSetIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox i.Key
    i.MoveNext
wend

60.57.10 insert(key as Variant)


60.57.11 Key(index as Integer) as Variant

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns the value of key for the Indexth sequential item. Notes: If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.57.12 Keys as Variant()

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns all the keys as an array. Example:

dim m as new VariantOrderedSetMBS
m.insert("1")
m.insert("2")

for each v as Variant in m.Keys
**60.57. **CLASS VARIANTORDEREDSETMBS

MsgBox v
next

**Notes:** The order is stable and matches the order returned by the Values method at least until the Dictionary is modified. Use this method with For Each to loop through all the keys.

**60.57.13 last as VariantOrderedSetIteratorMBS**

**Function:** Returns an iterator pointing to the end of the set.
**Example:**

```vba
// Create a map
dim m as new VariantOrderedSetMBS

m.insert(1.0) // double
m.insert("Hello") // string
m.insert(3) // integer

// get iterators pointing to first and after last element
dim i as VariantOrderedSetIteratorMBS = m.first
dim e as VariantOrderedSetIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox i.Key
    i.MoveNext
wend
```

**60.57.14 lookup(key as Variant) as boolean**

**Function:** Checks whether an element with the given key exists in this set.
**Example:**

```vba
dim set as new VariantOrderedSetMBS
set.insert "Hello"
set.insert "World"

MsgBox str(set.lookup("missed")) // shows false as value is missing
MsgBox str(set.lookup("Hello")) // shows true as value is found
```
Notes: Returns true if yes and false if no.

60.57.15 LowerBound(key as Variant) as VariantOrderedSetIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an iterator for the first element whose key is not less than k.

60.57.16 Remove(first as VariantOrderedSetIteratorMBS, last as VariantOrderedSetIteratorMBS)

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases all elements in a range. See also:

- 60.57.17 Remove(key as Variant) as Integer
- 60.57.18 Remove(pos as VariantOrderedSetIteratorMBS)

60.57.17 Remove(key as Variant) as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases the element with the given key. See also:

- 60.57.16 Remove(first as VariantOrderedSetIteratorMBS, last as VariantOrderedSetIteratorMBS)
- 60.57.18 Remove(pos as VariantOrderedSetIteratorMBS)

60.57.18 Remove(pos as VariantOrderedSetIteratorMBS)

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases the element pointed to by the pos iterator. See also:

- 60.57.16 Remove(first as VariantOrderedSetIteratorMBS, last as VariantOrderedSetIteratorMBS)
- 60.57.17 Remove(key as Variant) as Integer
60.57.19 UpperBound(key as Variant) as VariantOrderedSetIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an iterator for the first element whose key is greater than k.

**Properties**

60.57.21 CaseSensitive as Boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether text/string comparison is case sensitive. **Example:**

```vbnet
dim s1 as new VariantOrderedSetMBS(true)
dim s2 as new VariantOrderedSetMBS(false)
s1.insert("a")
s1.insert("A")
s2.insert("a")
s2.insert("A")
MsgBox str(s1.Count)+" "+str(s2.Count)
```

**Notes:** (Read only property)

60.57.22 Count as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of items in this set. **Example:**

```vbnet
dim set as new VariantOrderedSetMBS
set.insert 1
set.insert 2
MsgBox str(set.Count)
```

**Notes:** (Read only property)
60.57.23 Empty as Boolean

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: True if the size is zero. Notes: (Read only property)

60.57.24 MaxSize as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns the largest possible size for this set. Notes:

Value is -1 if no limit is defined. (Read only property)
60.58.1 class VariantToVariantHashMapIteratorMBS

Function: The iterator for the VariantToVariantHashMap class.
Example:

```vba
// Create a map
dim m as new VariantToVariantHashMapMBS
m.value(1)=2
m.value(2)=4
m.value(3)=8

// get iterators pointing to first and after last element
dim i as VariantToVariantHashMapIteratorMBS = m.first
dim e as VariantToVariantHashMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)+” -”+str(i.Value)
i.MoveNext
wend
```

60.58.2 Methods

60.58.3 isEqual(other as VariantToVariantHashMapIteratorMBS) as boolean

Function: Returns true if both iterators are equal.
Example:

```vba
// Create a map
dim m as new VariantToVariantHashMapMBS
m.value(1)=2
m.value(2)=4
m.value(3)=8

// get iterators pointing to first and after last element
dim i as VariantToVariantHashMapIteratorMBS = m.first
dim e as VariantToVariantHashMapIteratorMBS = m.last

// Show all keys and values
```
while i.isEqual(e) = false  
MsgBox str(i.Key)+” -”+str(i.Value)  
i.MoveNext  
wend

60.58.4  isNotEqual(other as VariantToVariantHashMapIteratorMBS) as boolean

MBS DataTypes Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns true if both iterators are not equal.
Example:
// Create a map  
dim m as new VariantToVariantHashMapMBS
m.value(1)=2  
m.value(2)=4  
m.value(3)=8

// get iterators pointing to first and after last element  
dim i as VariantToVariantHashMapIteratorMBS = m.first  
dim e as VariantToVariantHashMapIteratorMBS = m.last

// Show all keys and values  
while i.isNotEqual(e)  
MsgBox str(i.Key)+” -”+str(i.Value)  
i.MoveNext  
wend

60.58.5  Key as Variant

Function: Returns the current key.

60.58.6  MoveNext

Function: Moves the iterator to the next item.
Example:
// Create a map  
dim m as new VariantToVariantHashMapMBS
m.value(1)=2
m.value(2)=4
m.value(3)=8

// get iterators pointing to first and after last element
dim i as VariantToVariantHashMapIteratorMBS = m.first
dim e as VariantToVariantHashMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key) + " ->" + str(i.Value)
i.MoveNext
wend

60.58.7 Properties

60.58.8 Value as Variant

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The value of the current item in the iterator. Notes: (Read and Write computed property)
60.59 class VariantToVariantHashMapMBS

60.59.1 class VariantToVariantHashMapMBS


Function: An alternative dictionary class for an hash map with variants and keys and values.

Example:

dim s as new VariantToVariantHashMapMBS

s.Value("Test")="Hello"
s.Value("test")="World"

MsgBox str(s.Count) // shows 2

s.Value(ConvertEncoding("test",encodings.UTF16))="Just a"
s.Value(ConvertEncoding("Test",encodings.UTF16))="test"

MsgBox str(s.Count) // shows 4

Notes:

Think of this class like the reimplementation for dictionary class with being case sensitive.

When using variants for keys, you may get better results if all keys used have the same data type to improve comparison.

All text comparison is done either case sensitive or insensitive. Defined in constructor.

You can choose whether you want to keep the map ordered using the OrderedMap class or whether you prefer a higher speed with the HashMap class.

60.59.2 Methods

60.59.3 AddKeys(targetArray() as Variant)


Function: Similar to keys, but adds keys to the given array.

Notes: For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys function returns always nil.
60.59. CLASS VARIANTTOTARIANTTHASHMAPMBS

60.59.4 AddValues(targetArray() as Variant)

MBS DataTypes Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Similar to values, but adds values to the given array. **Notes:** For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys function returns always nil.

60.59.5 Clear

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases all of the elements.

60.59.6 Clone as VARIANTTOTARIANTTHASHMAPMBS

MBS DataTypes Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a copy of this map.

60.59.7 CloneDictionary as Dictionary

MBS DataTypes Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a copy of this map as a dictionary.

60.59.8 Constructor(CaseSensitive as Boolean = true)

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The default constructor. **Notes:** If CaseSensitive is true, the comparison of texts or strings is case sensitive. See also:

- 60.59.9 Constructor(dic as dictionary, CaseSensitive as Boolean = true)
- 60.59.10 Constructor(other as VARIANTTOTARIANTTHASHMAPMBS)

60.59.9 Constructor(dic as dictionary, CaseSensitive as Boolean = true)

MBS DataTypes Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new map with the keys and values from the dictionary. See also:
60.59.8 Constructor(CaseSensitive as Boolean = true)

60.59.10 Constructor(other as VariantToVariantHashMapMBS)

60.59.10 Constructor(other as VariantToVariantHashMapMBS)

**Function:** Creates a new map with the keys and values from the existing map. 
See also:

- 60.59.8 Constructor(CaseSensitive as Boolean = true)
- 60.59.9 Constructor(dic as dictionary, CaseSensitive as Boolean = true)

60.59.11 CountKey(key as Variant) as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Counts how often a key is used in this map.

60.59.12 find(key as Variant) as VariantToVariantHashMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Finds the key and returns an iterator. 
**Notes:** Returns the same value as the last method if the item was not found.

60.59.13 first as VariantToVariantHashMapIteratorMBS

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an iterator pointing to the beginning of the map. 
**Example:**

```vbnet
// Create a map
dim m as new VariantToVariantHashMapMBS
m.value(1) = 2
m.value(2) = 4
m.value(3) = 8

// get iterators pointing to first and after last element
dim i as VariantToVariantHashMapIteratorMBS = m.first
dim e as VariantToVariantHashMapIteratorMBS = m.last

// Show all keys and values
```
while i.isNotEqual(e)
MsgBox str(i.Key) + " -> " + str(i.Value)
i.MoveNext
wend

60.59.14 hasKey(key as Variant) as boolean

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns True if Key is in the map and False if it is not. Returns a Boolean.

60.59.15 Key(index as Integer) as Variant

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value of key for the Indexth sequential item. **Notes:** If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.59.16 Keys as Variant()

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns all the keys as an array. **Example:**

```vbs
// Create a map
dim m as new VariantToVariantHashMapMBS

m.Value(1) = "Hello"
m.Value(2) = "World"

for each v as Variant in m.Keys
    MsgBox v
next
```

**Notes:** The order is stable and matches the order returned by the Values method at least until the Dictionary is modified. Use this method with For Each to loop through all the keys.
### 60.59.17 last as VariantToVariantHashMapIteratorMBS

**Function:** Returns an iterator pointing to the end of the map.  
**Example:**

```vbs
// Create a map
dim m as new VariantToVariantHashMapMBS
m.value(1)=2
m.value(2)=4
m.value(3)=8

// get iterators pointing to first and after last element
dim i as VariantToVariantHashMapIteratorMBS = m.first
dim e as VariantToVariantHashMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)+" - >"+str(i.Value)
i.MoveNext
wend
```

### 60.59.18 lookup(key as Variant, defaultvalue as Variant) as Variant

**Function:** Looks up the passed value of Key.  
**Example:**

```vbs
dim map as new VariantToVariantHashMapMBS
map.value("a")="Hello"
map.value("b")="World"
map.value("c")="!

MsgBox str(map.lookup("d","?")) // shows "?" as value is missing
MsgBox str(map.lookup("a","?")) // shows "Hello" as value is found
```

**Notes:** If Key is found, it returns the corresponding value. If Key is not found, it returns the passed defaultValue.
60.59. **CLASS VARIANTTOVARIANTHASHMAPMBS**

### 60.59.19 Operator Convert as Dictionary

MBS DataTypes Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a copy of the map as dictionary.

### 60.59.20 Remove(first as VariantToVariantHashMapIteratorMBS, last as VariantToVariantHashMapIteratorMBS)

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases all elements in a range. See also:

- 60.59.21 Remove(key as Variant) as Integer
- 60.59.22 Remove(pos as VariantToVariantHashMapIteratorMBS)

### 60.59.21 Remove(key as Variant) as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases the element with the given key. See also:

- 60.59.20 Remove(first as VariantToVariantHashMapIteratorMBS, last as VariantToVariantHashMapIteratorMBS)
- 60.59.22 Remove(pos as VariantToVariantHashMapIteratorMBS)

### 60.59.22 Remove(pos as VariantToVariantHashMapIteratorMBS)

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases the element pointed to by the pos iterator. See also:

- 60.59.20 Remove(first as VariantToVariantHashMapIteratorMBS, last as VariantToVariantHashMapIteratorMBS)
- 60.59.21 Remove(key as Variant) as Integer

### 60.59.23 ValueAtIndex(index as Integer) as Variant

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value with the given index. **Notes:** If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first
item has the index zero.

60.59.24 Values as Variant()


Function: Returns all the values as an array

Example:

```vbs
// Create a map
dim m as new VariantToVariantHashMapMBS

m.Value(1)="Hello"
m.Value(2)="World"

for each v as Variant in m.Values
    MsgBox v
next
```

Notes: The order is stable and matches the order returned by Keys at least until the Map is modified. Use this method with For Each to loop through all the values.

60.59.25 Properties

60.59.26 BinCount as Integer


Function: The number of bins the hash table uses.

Example:

```vbs
dim v as new VariantToVariantHashMapMBS

v.value(1)="Hello"
v.value(2)="World"

MsgBox str(v.BinCount)
```

Notes: This is a measure of the hash table size, independent of the number of items the Dictionary contains. (Read only property)
60.59.27 CaseSensitive as Boolean

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Whether text/string comparison is case sensitive.

**Example:**
```vbs
Dim s1 As New VariantToVariantHashMapMBS(True)
Dim s2 As New VariantToVariantHashMapMBS(False)

s1.value("a") = "1"
s1.value("A") = "2"

s2.value("a") = "1"
s2.value("A") = "2"

MsgBox str(s1.Count) + " " + str(s2.Count)
```

**Notes:** (Read only property)

60.59.28 Count as Integer


**Function:** The number of items in this map.

**Example:**
```vbs
Dim map As New VariantToVariantHashMapMBS

map.Value(1) = true
map.Value("Hello") = "World"

MsgBox str(map.Count)
```

**Notes:** (Read only property)

60.59.29 Empty as Boolean


**Function:** True if the size is zero.

**Notes:** (Read only property)
60.59.30 MaxSize as Integer

Function: Returns the largest possible size for this map.
Notes:
Value is -1 if no limit is defined.
(Read only property)

60.59.31 value(key as Variant) as Variant

Function: The value associated with the given key.
Notes:
If you query for a key which does not exist, a KeyNotFoundException is raised.
(Read and Write computed property)
60.60. CLASS VARIANTTOVARIANTMAPITERATORMBS

60.60 class VariantToVariantMapIteratorMBS

60.60.1 class VariantToVariantMapIteratorMBS

Function: The iterator for the VariantToVariantMap class.
Example:

// Create a map
dim m as new VariantToVariantOrderedMapMBS
m.value(1)=2
m.value(2)=4
m.value(3)=8

// get iterators pointing to first and after last element
dim i as VariantToVariantMapIteratorMBS = m.first
dim e as VariantToVariantMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)+” -”+str(i.Value)
i.MoveNext
wend

60.60.2 Methods

60.60.3 isEqual(other as VariantToVariantMapIteratorMBS) as boolean

Function: Returns true if both iterators are equal.
Example:

// Create a map
dim m as new VariantToVariantOrderedMapMBS
m.value(1)=2
m.value(2)=4
m.value(3)=8

// get iterators pointing to first and after last element
dim i as VariantToVariantMapIteratorMBS = m.first
dim e as VariantToVariantMapIteratorMBS = m.last

// Show all keys and values
while i.isEqual(e) = false
MsgBox str(i.Key) + " ->" + str(i.Value)
i.MoveNext
wend

60.60.4 isNotEqual(other as VariantToVariantMapIteratorMBS) as boolean

MBS DataTypes Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns true if both iterators are not equal. Example:

// Create a map
dim m as new VariantToVariantOrderedMapMBS
m.value(1) = 2
m.value(2) = 4
m.value(3) = 8

// get iterators pointing to first and after last element
dim i as VariantToVariantMapIteratorMBS = m.first
dim e as VariantToVariantMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
MsgBox str(i.Key) + " ->" + str(i.Value)
i.MoveNext
wend

60.60.5 Key as Variant


60.60.6 MoveNext

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Moves the iterator to the next item. Example:

// Create a map
dim m as new VariantToVariantOrderedMapMBS
m.value(1)=2
m.value(2)=4
m.value(3)=8

// get iterators pointing to first and after last element
dim i as VariantToVariantMapIteratorMBS = m.first
dim e as VariantToVariantMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)+" ->"+str(i.Value)
i.MoveNext
wend

60.60.7 MovePrev

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Moves the iterator to the previous item.

60.60.8 Properties

60.60.9 Value as Variant

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The value of the current item in the iterator. Notes: (Read and Write computed property)
60.61 class VariantToVariantOrderedMapMBS

60.61.1 class VariantToVariantOrderedMapMBS


**Function:** An alternative dictionary class for an ordered map with variants as keys and values.

**Example:**

```vbnet
dim s as new VariantToVariantOrderedMapMBS

s.Value("Test")="Hello"
s.Value("test")="World"

MsgBox str(s.Count) // shows 2

s.Value(ConvertEncoding("test",encodings.UTF16))="Just a"
s.Value(ConvertEncoding("Test",encodings.UTF16))="test"

MsgBox str(s.Count) // shows 4
```

**Notes:**

Think of this class like the reimplementation for dictionary class with being case sensitive and with storing items ordered.

When using variants for keys, you may get better results if all keys used have the same data type to improve comparison.

All text comparison is done either case sensitive or insensitive. Defined in constructor.

You can choose whether you want to keep the map ordered using the OrderedMap class or whether you prefer a higher speed with the HashMap class.

60.61.2 Methods

60.61.3 AddKeys(targetArray() as Variant)


**Function:** Similar to keys, but adds keys to the given array.

**Notes:** For older Realbasic version 2007/2008 where the plugin can't create an array, so the values and keys function returns always nil.
60.61.4 AddValues(targetArray() as Variant)

MBS DataTypes Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Similar to values, but adds values to the given array. **Notes:** For older Realbasic version 2007/2008 where the plugin can’t create an array, so the values and keys function returns always nil.

60.61.5 Clear

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases all of the elements.

60.61.6 Clone as VariantToVariantOrderedMapMBS

MBS DataTypes Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a copy of this map.

60.61.7 CloneDictionary as Dictionary

MBS DataTypes Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a copy of this map as a dictionary.

60.61.8 Constructor(CaseSensitive as Boolean = true)

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The default constructor. **Notes:** If CaseSensitive is true, the comparison of texts or strings is case sensitive. See also:

- 60.61.9 Constructor(dic as dictionary, CaseSensitive as Boolean = true)

- 60.61.10 Constructor(other as VariantToVariantOrderedMapMBS)

60.61.9 Constructor(dic as dictionary, CaseSensitive as Boolean = true)

MBS DataTypes Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new map with the keys and values from the dictionary. See also:
60.61.10 Constructor(other as VariantToVariantOrderedMapMBS)

**Function:** Creates a new map with the keys and values from the existing map.

See also:
- 60.61.8 Constructor(CaseSensitive as Boolean = true)
- 60.61.9 Constructor(dic as dictionary, CaseSensitive as Boolean = true)

60.61.11 CountKey(key as Variant) as Integer

**Function:** Counts how often a key is used in this map.

60.61.12 find(key as Variant) as VariantToVariantMapIteratorMBS

**Function:** Finds the key and returns an iterator.
**Notes:** Returns the same value as the last method if the item was not found.

60.61.13 first as VariantToVariantMapIteratorMBS

**Function:** Returns an iterator pointing to the beginning of the map.

**Example:**

```vba
// Create a map
dim m as new VariantToVariantOrderedMapMBS
m.value(1)=2
m.value(2)=4
m.value(3)=8

// get iterators pointing to first and after last element
dim i as VariantToVariantMapIteratorMBS = m.first
dim e as VariantToVariantMapIteratorMBS = m.last

// Show all keys and values
```
while i.isNotEqual(e)
MsgBox str(i.Key)+" -"+str(i.Value)
i.MoveNext
wend

60.61.14 hasKey(key as Variant) as boolean

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns True if Key is in the map and False if it is not. Returns a Boolean.

60.61.15 Key(index as Integer) as Variant

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value of key for the Indexth sequential item. **Notes:** If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.61.16 Keys as Variant()

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns all the keys as an array. **Example:**

```vba
// Create a map
dim m as new VariantToVariantOrderedMapMBS

m.Value(1)="Hello"
m.Value(2)="World"

for each v as Variant in m.Keys
    MsgBox v
next
```

**Notes:** The order is stable and matches the order returned by the Values method at least until the Dictionary is modified. Use this method with For Each to loop through all the keys.
60.61.17  last as VariantToVariantMapIteratorMBS

Function: Returns an iterator pointing to the end of the map.
Example:

// Create a map
dim m as new VariantToVariantOrderedMapMBS

m.value(1)=2
m.value(2)=4
m.value(3)=8

// get iterators pointing to first and after last element
dim i as VariantToVariantMapIteratorMBS = m.first
dim e as VariantToVariantMapIteratorMBS = m.last

// Show all keys and values
while i.isNotEqual(e)
    MsgBox str(i.Key)+" ->"+str(i.Value)
i.MoveNext
wend

60.61.18  lookup(key as Variant, defaultValue as Variant) as Variant

Function: Looks up the passed value of Key.
Example:

dim map as new VariantToVariantOrderedMapMBS

map.value("a")="Hello"
map.value("b")="World"
map.value("c")="!

MsgBox str(map.lookup("d","?"))  // shows "?" as value is missing
MsgBox str(map.lookup("a","?"))  // shows "Hello" as value is found

Notes: If Key is found, it returns the corresponding value. If Key is not found, it returns the passed defaultValue.
60.61.19  **LowerBound(key as Variant) as VariantToVariantMapIteratorMBS**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an iterator for the first element whose key is not less than k.

60.61.20  **Operator Convert as Dictionary**

MBS DataTypes Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a copy of the map as dictionary.

60.61.21  **Remove(first as VariantToVariantMapIteratorMBS, last as VariantToVariantMapIteratorMBS)**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases all elements in a range.

See also:

- 60.61.22 Remove(key as Variant) as Integer
- 60.61.23 Remove(pos as VariantToVariantMapIteratorMBS)

60.61.22  **Remove(key as Variant) as Integer**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases the element with the given key.

See also:

- 60.61.21 Remove(first as VariantToVariantMapIteratorMBS, last as VariantToVariantMapIteratorMBS)
- 60.61.23 Remove(pos as VariantToVariantMapIteratorMBS)

60.61.23  **Remove(pos as VariantToVariantMapIteratorMBS)**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Erases the element pointed to by the pos iterator.

See also:

- 60.61.21 Remove(first as VariantToVariantMapIteratorMBS, last as VariantToVariantMapIteratorMBS)
- 60.61.22 Remove(key as Variant) as Integer
60.61.24 **UpperBound(key as Variant) as VariantToVariantMapIteratorMBS**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an iterator for the first element whose key is greater than k.

60.61.25 **ValueAtIndex(index as Integer) as Variant**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value with the given index. **Notes:** If there is no Indexth item in the map, a call generates an OutOfBoundsException error. The first item has the index zero.

60.61.26 **Values as Variant()**

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns all the values as an array **Example:**

```vbscript
// Create a map
dim m as new VariantToVariantOrderedMapMBS

m.Value(1)="Hello"
m.Value(2)="World"

for each v as Variant in m.Values
    MsgBox v
next
```

**Notes:** The order is stable and matches the order returned by Keys at least until the Map is modified. Use this method with For Each to loop through all the values.

60.61.27 **Properties**

60.61.28 **CaseSensitive as Boolean**

MBS DataTypes Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether text/string comparison is case sensitive. **Example:**

```vbscript
dim s1 as new VariantToVariantOrderedMapMBS(true)
dim s2 as new VariantToVariantOrderedMapMBS(false)
```
s1.value("a") = "1"
s1.value("A") = "2"

s2.value("a") = "1"
s2.value("A") = "2"

MsgBox str(s1.Count) + " " + str(s2.Count)

Notes: (Read only property)

60.61.29 Count as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The number of items in this map. Example:

dim map as new VariantToVariantOrderedMapMBS

map.Value(1)=true
map.Value("Hello")="World"

MsgBox str(map.Count)

Notes: (Read only property)

60.61.30 Empty as Boolean

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: True if the size is zero. Notes: (Read only property)

60.61.31 MaxSize as Integer

MBS DataTypes Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns the largest possible size for this map. Notes:

Value is -1 if no limit is defined.
60.61.32 value(key as Variant) as Variant


Function: The value associated with the given key.

Notes: If you query for a key which does not exist, a KeyNotFoundException is raised.
(Read and Write computed property)
Chapter 61

DDE

61.1 class DDEBinaryDataMBS

61.1.1 class DDEBinaryDataMBS

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Binary Data for DDEMBS conversation. **Notes:** Be carefully: This objects for data received inside a DDEMBS Event are read only. Passing an object to a function normally destroys it.

61.1.2 Methods

61.1.3 Mem as memoryblock

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the data as a memoryblock.

61.1.4 size as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the size of this data object.
61.1.5 Str as string

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the data as a string.

61.1.6 Properties

61.1.7 Handle as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The handle for this data.
**Notes:** (Read and Write property)

61.1.8 Release as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** whether the destructor will release the data handle or not.
**Notes:** (Read and Write property)
61.2. class DDEContextInfoMBS

61.2.1 class DDEContextInfoMBS

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Details for a connection.

61.2.2 Properties

61.2.3 Ansi as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** whether the other side works with Ansi strings (the normal ones).

**Notes:**
Currently this DDEMBS Classes are only tested for ANSI Systems. And I’m not sure if REALbasic itself does handle Unicode correctly on Windows.
(Read and Write property)

61.2.4 CountryID as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The country ID for this connection.

**Notes:**
Some Windows country constants:

(Read and Write property)

61.2.5 Flags as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Flags for this connection.

**Notes:**
Currently not used by Windows.
(Read and Write property)
61.2.6 LangID as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The language ID for this connection.
**Notes:**
Some Windows language constants:

(Read and Write property)

61.2.7 Security as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A user defined security code.
**Notes:**
A security value, which may be anything you need.
Maybe a code to verify that it is your app or the encryption code?
(Read and Write property)

61.2.8 Unicode as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** whether the other side works with Unicode strings.
**Notes:**
Currently this DDEMBS Classes are only tested for ANSI Systems. And I’m not sure if REALbasic itself does handle Unicode correctly on Windows.
(Read and Write property)
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61.3. CLASS DDEMBS

61.3 class DDEMBS

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Gives access to Windows DDE functions.
**Notes:** DDE on Windows is like AppleEvents on Mac OS, but not so comfortable.

61.3.2 Methods

61.3.3 clientTransaction(type as Integer, topic as DDEStringMBS) as DDEBinaryDataMBS

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Runs a Transaction with the server.
**Notes:** Short version of ClientTransaction with datatype=CF_TEXT and data=nil.
See also:
- 61.3.4 clientTransaction(type as Integer, topic as DDEStringMBS, data as DDEBinaryDataMBS) as DDEBinaryDataMBS
- 61.3.5 clientTransaction(type as Integer, topic as DDEStringMBS, data as DDEBinaryDataMBS, datatype as Integer) as DDEBinaryDataMBS

61.3.4 clientTransaction(type as Integer, topic as DDEStringMBS, data as DDEBinaryDataMBS) as DDEBinaryDataMBS

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Runs a Transaction with the server.
**Notes:** Short version of ClientTransaction with datatype=CF_TEXT.
See also:
- 61.3.3 clientTransaction(type as Integer, topic as DDEStringMBS) as DDEBinaryDataMBS
- 61.3.5 clientTransaction(type as Integer, topic as DDEStringMBS, data as DDEBinaryDataMBS, datatype as Integer) as DDEBinaryDataMBS

61.3.5 clientTransaction(type as Integer, topic as DDEStringMBS, data as DDEBinaryDataMBS, datatype as Integer) as DDEBinaryDataMBS

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Runs a Transaction with the server.
**Example:**
// List all Excel Topics

    dim d as DDEMBS
    dim s, topic as DDEStringMBS
    dim g as DDEStringMBS
    dim m as DDEBinaryDataMBS
    dim t, enter, z as string
    dim i, c as Integer

    list.deleteAllRows
    d=new DDEMBS
    if d.InitClient then
        s=d.newDDEString("Excel")
        topic=d.newDDEString("System")
        if topic<>nil and s<>nil and d.ConnectToServer(s,topic) then
            g=d.newDDEString("Topics")
            if g<>nil then
                m=d.ClientTransaction(d.XTYP_REQUEST,g)
                if m<>nil then
                    t=m.str
                    t=left(t,len(t)-1) // remove chr(0) at end
                    enter=chr(9)
                    c=countfields(t,Enter)
                    for i=1 to c
                        z=nthfield(t,enter,i)
                        list.addRow z
                    next
                    list.listindex=0
                else
                    msgBox "Failed to transfer."
                end if
            else
                msgBox "Fail to create second string."
            end if
        else
            msgBox "Fail to create connect."
        end if
    else
        msgBox "Fail to init for Client."
    end if

Notes:
61.3. CLASS DDEMBS

Use this ClientTransaction if the application returns a value or ClientTransactionBoolean if it returns a boolean.
Data and Datatype are optional. If no datatype is set, the datatype is set to the value of CF_TEXT.
See also:

- 61.3.3 clientTransaction(type as Integer, topic as DDEStringMBS) as DDEBinaryDataMBS
- 61.3.4 clientTransaction(type as Integer, topic as DDEStringMBS, data as DDEBinaryDataMBS) as DDEBinaryDataMBS

61.3.6 clientTransactionBoolean(type as Integer, topic as DDEStringMBS) as Boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Runs a Transaction with the server.
**Notes:** Short version of ClientTransactionBoolean with datatype=CF_TEXT and data=nil.
See also:

- 61.3.7 clientTransactionBoolean(type as Integer, topic as DDEStringMBS, data as DDEBinaryDataMBS) as Boolean
- 61.3.8 clientTransactionBoolean(type as Integer, topic as DDEStringMBS, data as DDEBinaryDataMBS, datatype as Integer) as Boolean

61.3.7 clientTransactionBoolean(type as Integer, topic as DDEStringMBS, data as DDEBinaryDataMBS) as Boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Runs a Transaction with the server.
**Notes:** Short version of ClientTransactionBoolean with Datatype=CF_TEXT.
See also:

- 61.3.6 clientTransactionBoolean(type as Integer, topic as DDEStringMBS) as Boolean
- 61.3.8 clientTransactionBoolean(type as Integer, topic as DDEStringMBS, data as DDEBinaryDataMBS, datatype as Integer) as Boolean

61.3.8 clientTransactionBoolean(type as Integer, topic as DDEStringMBS, data as DDEBinaryDataMBS, datatype as Integer) as Boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Runs a Transaction with the server.
**Notes:**
Use this ClientTransaction if the application returns a value or ClientTransactionBoolean if it returns a boolean.
Data and Datatype are optional. If no datatype is set, the datatype is set to the value of CF\_TEXT.

See also:

- 61.3.6 clientTransactionBoolean(type as Integer, topic as DDEStringMBS) as Boolean
- 61.3.7 clientTransactionBoolean(type as Integer, topic as DDEStringMBS, data as DDEBinaryDataMBS) as Boolean

### 61.3.9 close

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Closes the running connection.

**Example:**

```vbs
dim d as DDEMSB
// work with dde object

if d<>nil then
  d.close
  d=nil
end if
```

**Notes:** RB seems to crash, if the object is not destroyed before application is quit.

### 61.3.10 ConnectToServer(appname as DDEStringMBS, topic as DDEStringMBS) as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Connects to the application for the given topic.

**Example:**

```vbs
dim a,b as DDEStringMBS
dim d as DDEMSB

d=new DDEMSB
if d.InitClient then
  a=d.newDDEString(“servicename”)  
  b=d.newDDEString(“topicname”)  
  if a<>nil and b<>nil then
    if d.ConnectToServer(a,b) then
      msgBox “Connected.”
      return // ok, so leave before closing.
    else
      msgBox “Failed to connect.”
    end if
  end if
end if
```
end if
else
msgBox "Unable to make DDE Strings."
end if
d.close // failed
else
msgBox "Failed to initClient."
end if

Notes:
Using nil for appname or topic you can try to connect to anyone who accepts.
Renamed in v4.3 to ConnectToServer from Connect for better RB 6 compatibility.

61.3.11 InitClient as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Starts DDE, but only for Client stuff.
**Notes:**
With plugin version 6.1pr4 and newer you can have eight DDE objects in your application.
With older plugin versions you can only have one instance of the DDEMBS class at all!

61.3.12 InitServer as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Starts DDE for client and server stuff.
**Notes:**
With plugin version 6.1pr4 and newer you can have eight DDE objects in your application.
With older plugin versions you can only have one instance of the DDEMBS class at all!

61.3.13 NewDDEBinaryData(name as DDEStringMBS,data as memoryblock,offset as Integer,length as Integer,dataformat as Integer) as DDEBinaryDataMBS

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Creates a new binary data object.
See also:
61.3.14 NewDDEBinaryData(name as DDEStringMBS, data as string) as DDEBinaryDataMBS

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Creates a new binary data object.

**Notes:** A short version of NewDDEBinaryData which takes the whole string.

See also:

- 61.3.13 NewDDEBinaryData(name as DDEStringMBS, data as memoryblock, offset as Integer, length as Integer, dataformat as Integer) as DDEBinaryDataMBS
- 61.3.15 NewDDEBinaryData(name as DDEStringMBS, data as string, offset as Integer, length as Integer) as DDEBinaryDataMBS

61.3.15 NewDDEBinaryData(name as DDEStringMBS, data as string, offset as Integer, length as Integer) as DDEBinaryDataMBS

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Creates a new binary data object.

**Notes:** The offset and length is optional.

See also:

- 61.3.13 NewDDEBinaryData(name as DDEStringMBS, data as memoryblock, offset as Integer, length as Integer, dataformat as Integer) as DDEBinaryDataMBS
- 61.3.14 NewDDEBinaryData(name as DDEStringMBS, data as string) as DDEBinaryDataMBS

61.3.16 NewDDEString(ansistring as string) as DDEStringMBS

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Creates a new ANSI DDE string.

**Example:**

```vbnet
dim d as DDEMBS // your DDE object
dim a as DDEStringMBS
a=d.newDDEString("servicename")
```

**Notes:** ANSI is the normal string encoding on Windows.
61.3. CLASS DDEMBS

61.3.17 NewDDEStringUnicode(unicodestring as string) as DDEStringMBS

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Creates a new Unicode DDE string.

**Example:**

```vbnet
dim d as DDEMBS // your DDE object
dim a as DDEStringMBS
a=d.NewDDEStringUnicode("servicename")
```

**Notes:** Currently this DDE Classes are only tested for ANSI Systems. And I'm not sure if REALbasic itself does handle Unicode correctly on Windows.

61.3.18 RegisterService(name as DDEStringMBS) as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Registers a service name.

**Example:**

```vbnet
dim d as DDEMBS // your dde object
dim s as DDEStringMBS
if d<>nil then
s=d.newDDEString(editfield1.text)
if s<>nil then
if d.registerService(s) then
msgBox "Registered."
else
msgBox "Register fails."
end if
else
msgBox "Failed on NewDDEString"
end if
else
msgBox "No DDE object?!"
end if
```

61.3.19 UnRegisterService(name as DDEStringMBS) as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Unregisters a service name.
61.3.20  Properties

61.3.21  LastError as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The last error code. **Notes:** (Read only property)

61.3.22  Timeout as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Timeout in milliseconds. **Example:**

```
dim d as DDEMBS  // your DDE object
dim s as DDEStringMBS

if d<>nil then
    s=d.newDDEString(editfield1.text)

if s<>nil then
    if d.UnRegisterService(s) then
        msgBox "Unregistered."
    else
        msgBox "Unregister fails."
    end if
else
    msgBox "Failed on NewDDEString"
end if
else
    msgBox "No DDE object!?"
end if
```

**Notes:**
Default is 1000.  
(Read and Write property)
61.3. CLASS DDEMBS

61.3.23 Events

61.3.24 AdviceData(topic as DDEStringMBS, item as DDEStringMBS, dataformat as Integer, data as DDEBinaryDataMBS) as Integer

MBS Win Plugin, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: One of the DDE events. Notes: A dynamic data exchange (DDE) client receives the AdviceData event after establishing an advise loop with a server. This transaction informs the client that the value of the data item has changed.

Return Values: A DDE callback function should return DDE_FACK if it processes this transaction, DDE_FBUSY if it is too busy to process this transaction, or DDE_FNOTPROCESSED if it rejects this transaction.

Remarks: An application must copy the data associated with the DDEBinaryDataMBS object if the application must process the data after the callback function returns.

61.3.25 AdviceRequest(topic as DDEStringMBS, item as DDEStringMBS, dataformat as Integer, remaincount as Integer) as DDEBinaryDataMBS

MBS Win Plugin, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: One of the DDE events. Notes: The system sends the AdviceRequest event to a server after the server calls the DdePostAdvise function. This transaction informs the server that an advise transaction is outstanding on the specified topic name and item name pair and that data corresponding to the topic name and item name pair has changed.

Return Values: The server should first call the NewDDEBinaryData function to create a data object that identifies the changed data and then return this object. The server should return nil if it is unable to complete the transaction.

Remarks: A client uses this event to establish an advise loop with a server.
61.3.27  AdviceStop(topic as DDEStringMBS, item as DDEStringMBS, dataformat as Integer)

MBS Win Plugin, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** One of the DDE events. **Notes:** A client uses this event to end an advise loop with a server.

61.3.28  ConfirmConnect(topic as DDEStringMBS, service as DDEStringMBS, myself as Boolean)

MBS Win Plugin, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** One of the DDE events. **Notes:** Your connection was accepted.

61.3.29  Connect(topic as DDEStringMBS, service as DDEStringMBS, myself as Boolean, info as DDEContextInfoMBS) as Boolean

MBS Win Plugin, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** One of the DDE events. **Notes:** Return true if you accept this connection.

61.3.30  Disconnect(myself as Boolean)

MBS Win Plugin, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** One of the DDE events. **Notes:** The connection was closed.

61.3.31  Error(errorcode as Integer)

MBS Win Plugin, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** One of the DDE events. **Notes:**

A dynamic data exchange (DDE) object receives the Error event when a critical error occurs.

Possible errors:

61.3.32  Execute(topic as DDEStringMBS, data as DDEBinaryDataMBS) as Integer

MBS Win Plugin, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** One of the DDE events. **Notes:**
A dynamic data exchange (DDE) server object receives the Execute event when a client specifies XTYP_EXECUTE in the ClientTransaction function. A client uses this transaction to send a command string to the server.

Return Values:
A server should return DDE_FACK if it processes this transaction, DDE_FBUSY if it is too busy to process this transaction, or DDE_FNOTPROCESSED if it rejects this transaction.

The data property is only valid while inside the event.

61.3.33 Poke(topic as DDEStringMBS,item as DDEStringMBS,data as DDE-BinaryDataMBS) as Integer

MBS Win Plugin, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: One of the DDE events.
Notes:
Return Values:
A server should return DDE_FACK if it processes this transaction, DDE_FBUSY if it is too busy to process this transaction, or DDE_FNOTPROCESSED if it rejects this transaction.

61.3.34 Register(application as DDEStringMBS,service as DDEStringMBS)

MBS Win Plugin, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: One of the DDE events.
Notes: A service is registered. You may add it to your own list.
61.3.35 Request(topic as DDEStringMBS,item as DDEStringMBS,dataformat as Integer) as DDEBinaryDataMBS

MBS Win Plugin, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** One of the DDE events. **Notes:** The server should create a DDEBinaryDataMBS object that identifies the data and then return this object. The server should return nil if it is unable to complete the transaction. If the server returns nil, the client will receive a DDE_FNOTPROCESSED flag.

61.3.36 UnRegister(application as DDEStringMBS,service as DDEStringMBS)

MBS Win Plugin, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** One of the DDE events. **Notes:** A service was unregistered.

61.3.37 WildConnect(topic as DDEStringMBS,service as DDEStringMBS, myself as boolean,info as DDEContextInfoMBS) as DDEStringPairListMBS

MBS Win Plugin, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** One of the DDE events. **Notes:** A connection is tried to all available servers. Return true if you accept.

61.3.38 Constants

61.3.39 CF_BITMAP = 2

MBS Win Plugin. **Function:** A constant for the format parameter. **Notes:** Specifies a Windows bitmap format.

61.3.40 CF_DIB = 8

MBS Win Plugin. **Function:** A constant for the format parameter. **Notes:** Specifies the Windows Device Independent Bitmap (DIB) format.

61.3.41 CF_DIBV5 = 17

MBS Win Plugin. **Function:** A constant for the format parameter. **Notes:** Specifies the Windows Device Independent Bitmap (DIB) format of Windows 2000 and newer.
61.3. CLASS DDEMB5

61.3.42 CF_DIF = 5

MBS Win Plugin. **Function:** A constant for the format parameter. **Notes:** Specifies the Windows data interchange format.

61.3.43 CF_ENHMETAFILE = 14

MBS Win Plugin. **Function:** A constant for the format parameter. **Notes:** Specifies the Windows enhanced metafile format.

61.3.44 CF_HDROP = 15

MBS Win Plugin. **Function:** A constant for the format parameter. **Notes:** Specifies the Windows file drop format.

61.3.45 CF_LOCALE = 16

MBS Win Plugin. **Function:** A constant for the format parameter. **Notes:** Specifies the Windows locale format.

61.3.46 CF_METAFILEPICT = 3

MBS Win Plugin. **Function:** A constant for the format parameter. **Notes:** Specifies the Windows metafile format.

61.3.47 CF_OEMTEXT = 7

MBS Win Plugin. **Function:** A constant for the format parameter. **Notes:** Specifies the standard Windows original equipment manufacturer (OEM) text format.

61.3.48 CF_PALETTE = 9

MBS Win Plugin. **Function:** A constant for the format parameter. **Notes:** Specifies the Windows Palette format.
61.3.49  CF_PENDATA = 10

MBS Win Plugin. **Function:** A constant for the format parameter.
**Notes:** Specifies the Windows pen data format.

61.3.50  CF_RIFF = 11

MBS Win Plugin. **Function:** A constant for the format parameter.
**Notes:** Specifies the Resource Interchange File Format (RIFF) audio format.

61.3.51  CF_SYLK = 4

MBS Win Plugin. **Function:** A constant for the format parameter.
**Notes:** Specifies the Windows symbolic link format.

61.3.52  CF_TEXT = 1

MBS Win Plugin. **Function:** A constant for the format parameter.
**Notes:** Specifies the standard American National Standards Institute (ANSI) text format.

61.3.53  CF_TIFF = 6

MBS Win Plugin. **Function:** A constant for the format parameter.
**Notes:** Specifies the Tagged Image File Format (TIFF).

61.3.54  CF_UNICODETEXT = 13

MBS Win Plugin. **Function:** A constant for the format parameter.
**Notes:** Specifies the standard Windows Unicode text format.

61.3.55  CF_WAVE = 12

MBS Win Plugin. **Function:** A constant for the format parameter.
**Notes:** Specifies the wave audio format.
61.3. CLASS DDEMBS

61.3.56  DDE_FACK = & h8000

MBS Win Plugin. **Function:** A constant for the return parameter of some events.
**Notes:** Return DDE_FACK if everything was handled well.

61.3.57  DDE_FBUSY = & h4000

MBS Win Plugin. **Function:** A constant for the return parameter of some events.
**Notes:** Return DDE_FBUSY if your application is busy and can’t currently handle the request.

61.3.58  DDE_FNOTPROCESSED = 0

MBS Win Plugin. **Function:** A constant for the return parameter of some events.
**Notes:** Return DDE_FNOTPROCESSED if something went wrong will processing this event.

61.3.59  XTYP_EXECUTE = & h4050

MBS Win Plugin. **Function:** A constant for the type parameter of ClientTransaction and ClientTransactionBoolean.

61.3.60  XTYP_POKE = & h4090

MBS Win Plugin. **Function:** A constant for the type parameter of ClientTransaction and ClientTransactionBoolean.

61.3.61  XTYP_REQUEST = & h20B0

MBS Win Plugin. **Function:** A constant for the type parameter of ClientTransaction and ClientTransactionBoolean.
61.4 class DDEStringMBS

61.4.1 class DDEStringMBS

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A string for DDEMBS conversation. **Notes:** Be carefully: This objects for data received inside a DDEMBS Event are read only. Passing an object to a function normally destroys it.

61.4.2 Methods

61.4.3 Len as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the length of this string.

61.4.4 Mem as memoryblock

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the content of this DDEMBS String as Realbasic Memoryblock.

61.4.5 Str as string

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the content of this DDEMBS String as Realbasic String.

61.4.6 Properties

61.4.7 Handle as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The handle for this data. **Notes:** (Read and Write property)
61.4.8 Release as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** whether the destructor will release the data handle or not.
**Notes:** (Read and Write property)
61.5 class DDEStringPairListMBS

61.5.1 class DDEStringPairListMBS

MBS Win Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A list of DDE string pairs.
**Notes:** Used for the wild connect event.

61.5.2 Methods

61.5.3 Append (item as DDEStringPairMBS)

MBS Win Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Adds another item to the list.

61.5.4 Count as Integer

MBS Win Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Counts the number of items in the list.

61.5.5 Item (index as Integer) as DDEStringPairMBS

MBS Win Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns an item from this list.
**Notes:**
Returns nil on any error.
Index is from 0 to count-1.
61.6. **CLASS DDESTRINGPAIRMBS**

### 61.6 class DDEStringPairMBS

MBS Win Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A pair of topic and service DDEString objects. **Notes:** Used for the wild connect event.

### 61.6.2 Properties

### 61.6.3 Service as DDEStringMBS

MBS Win Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The service of this pair. **Notes:** (Read and Write property)

### 61.6.4 Topic as DDEStringMBS

MBS Win Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The topic of this pair. **Notes:** (Read and Write property)
Chapter 62

Declare

62.1 class BlockMBS

Function: A class to use blocks on Mac OS X with declares.

62.1.2 Methods

62.1.3 Close

Function: Releases all blocks.

62.1.4 GetBlockB(tag as Variant = nil) as Integer

Function: Returns the address of a block to pass to a declare.
Notes:
Tag is passed to the event.
Later when the block is invoked, the BlockB event is called. If the block is invoked on the main thread, we call the event directly. Else we schedule to call the event as soon as possible on the main thread. With running the event later, we can of course not return the event result to the block caller, but only the value in the AsyncResult property.
62.1.5  GetBlockBI(tag as Variant = nil) as Integer

Function: Returns the address of a block to pass to a declare.
Notes:
Tag is passed to the event.
Later when the block is invoked, the BlockBI event is called. If the block is invoked on the main thread,
we call the event directly. Else we schedule to call the event as soon as possible on the main thread. With
running the event later, we can of course not return the event result to the block caller, but only the value
in the AsyncBoolResult property.

62.1.6  GetBlockBII(tag as Variant = nil) as Integer

Function: Returns the address of a block to pass to a declare.
Notes:
Tag is passed to the event.
Later when the block is invoked, the BlockBII event is called. If the block is invoked on the main thread,
we call the event directly. Else we schedule to call the event as soon as possible on the main thread. With
running the event later, we can of course not return the event result to the block caller, but only the value
in the AsyncBoolResult property.

62.1.7  GetBlockBIII(tag as Variant = nil) as Integer

Function: Returns the address of a block to pass to a declare.
Notes:
Tag is passed to the event.
Later when the block is invoked, the BlockBIII event is called. If the block is invoked on the main thread,
we call the event directly. Else we schedule to call the event as soon as possible on the main thread. With
running the event later, we can of course not return the event result to the block caller, but only the value
in the AsyncBoolResult property.

62.1.8  GetBlockBIIII(tag as Variant = nil) as Integer

Function: Returns the address of a block to pass to a declare.
Notes:
Tag is passed to the event.
Later when the block is invoked, the BlockBIII event is called. If the block is invoked on the main thread, we call the event directly. Else we schedule to call the event as soon as possible on the main thread. With running the event later, we can of course not return the event result to the block caller, but only the value in the AsyncBoolResult property.

### 62.1.9 GetBlockV(tag as Variant = nil) as Integer

**Function:** Returns the address of a block to pass to a declare.
**Notes:**
Tag is passed to the event.
Later when the block is invoked, the BlockV event is called. If the block is invoked on the main thread, we call the event directly. Else we schedule to call the event as soon as possible on the main thread.

### 62.1.10 GetBlockVI(tag as Variant = nil) as Integer

**Function:** Returns the address of a block to pass to a declare.
**Notes:**
Tag is passed to the event.
Later when the block is invoked, the BlockVI event is called. If the block is invoked on the main thread, we call the event directly. Else we schedule to call the event as soon as possible on the main thread.

### 62.1.11 GetBlockVII(tag as Variant = nil) as Integer

**Function:** Returns the address of a block to pass to a declare.
**Notes:**
Tag is passed to the event.
Later when the block is invoked, the BlockVII event is called. If the block is invoked on the main thread, we call the event directly. Else we schedule to call the event as soon as possible on the main thread.

### 62.1.12 GetBlockVIII(tag as Variant = nil) as Integer

**Function:** Returns the address of a block to pass to a declare.
**Notes:**
Tag is passed to the event.
Later when the block is invoked, the BlockVIII event is called. If the block is invoked on the main thread, we call the event directly. Else we schedule to call the event as soon as possible on the main thread.

62.1.13  GetBlockVIII(tag as Variant = nil) as Integer

Function: Returns the address of a block to pass to a declare.
Notes:
Tag is passed to the event.
Later when the block is invoked, the BlockVIII event is called. If the block is invoked on the main thread, we call the event directly. Else we schedule to call the event as soon as possible on the main thread.

62.1.14  Properties

62.1.15  AsyncBoolResult as Boolean

Function: The result for a boolean block called on a non main thread.
Notes:
If you use one of the BlockB methods to get a block and it’s called on another thread but the main thread, we return the value of this property instead of the actual event result.
(Read only property)

62.1.16  Synchronous as Boolean

Function: Whether to call events synchronously.
Notes:
If the block is called on another thread, the plugin calls the event on the main thread.
If Synchronous is true, we call the main thread synchronously, else asynchronously.
Default is asynchronously to avoid dead locks.
(Read and Write property)
62.1. Events

62.1.18 BlockB(Async_ as boolean, tag as Variant) as boolean

Function: Called when block is invoked.
Notes:
Async: False if block is invoked directly on main thread. Else true so invoked later on main thread.
Tag: The tag value passed on block creation.
If you return a boolean, we pass it to the caller if async=false. For Async = true, the plugin already passed
back AsyncBoolResult for you before this event is called.

62.1.19 BlockBI(Async_ as boolean, tag as Variant, value as Integer) as boolean

Function: Called when block is invoked.
Notes:
Async: False if block is invoked directly on main thread. Else true so invoked later on main thread.
Tag: The tag value passed on block creation.
Value properties give the actual values. You may need to cast to Ptr, Boolean or whatever data type you
expect.
If you return a boolean, we pass it to the caller if async=false. For Async = true, the plugin already passed
back AsyncBoolResult for you before this event is called.

62.1.20 BlockBII(Async_ as boolean, tag as Variant, value1 as Integer, value2 as Integer) as boolean

Function: Called when block is invoked.
Notes:
Async: False if block is invoked directly on main thread. Else true so invoked later on main thread.
Tag: The tag value passed on block creation.
Value properties give the actual values. You may need to cast to Ptr, Boolean or whatever data type you
expect.
If you return a boolean, we pass it to the caller if async=false. For Async = true, the plugin already passed
back AsyncBoolResult for you before this event is called.
62.1.21  BlockBIII(Async as boolean, tag as Variant, value1 as Integer, value2 as Integer, value3 as Integer) as boolean

Function: Called when block is invoked.
Notes:
Async: False if block is invoked directly on main thread. Else true so invoked later on main thread.
Tag: The tag value passed on block creation.
Value properties give the actual values. You may need to cast to Ptr, Boolean or whatever data type you expect.
If you return a boolean, we pass it to the caller if async=false. For Async = true, the plugin already passed back AsyncBoolResult for you before this event is called.

62.1.22  BlockBIIII(Async as boolean, tag as Variant, value1 as Integer, value2 as Integer, value3 as Integer, value4 as Integer) as boolean

Function: Called when block is invoked.
Notes:
Async: False if block is invoked directly on main thread. Else true so invoked later on main thread.
Tag: The tag value passed on block creation.
Value properties give the actual values. You may need to cast to Ptr, Boolean or whatever data type you expect.
If you return a boolean, we pass it to the caller if async=false. For Async = true, the plugin already passed back AsyncBoolResult for you before this event is called.

62.1.23  BlockV(Async as boolean, tag as Variant)

Function: Called when block is invoked.
Notes:
Async: False if block is invoked directly on main thread. Else true so invoked later on main thread.
Tag: The tag value passed on block creation.

62.1.24  BlockVI(Async as boolean, tag as Variant, value as Integer)

Function: Called when block is invoked.
Notes:
Async: False if block is invoked directly on main thread. Else true so invoked later on main thread.
Tag: The tag value passed on block creation.
Value properties give the actual values. You may need to cast to Ptr, Boolean or whatever data type you expect.

62.1.25 BlockVII(Async as boolean, tag as Variant, value1 as Integer, value2 as Integer)

Function: Called when block is invoked.
Notes:
Async: False if block is invoked directly on main thread. Else true so invoked later on main thread.
Tag: The tag value passed on block creation.
Value properties give the actual values. You may need to cast to Ptr, Boolean or whatever data type you expect.

62.1.26 BlockVIII(Async as boolean, tag as Variant, value1 as Integer, value2 as Integer, value3 as Integer)

Function: Called when block is invoked.
Notes:
Async: False if block is invoked directly on main thread. Else true so invoked later on main thread.
Tag: The tag value passed on block creation.
Value properties give the actual values. You may need to cast to Ptr, Boolean or whatever data type you expect.

62.1.27 BlockVIII(Async as boolean, tag as Variant, value1 as Integer, value2 as Integer, value3 as Integer, value4 as Integer)

Function: Called when block is invoked.
Notes:
Async: False if block is invoked directly on main thread. Else true so invoked later on main thread.
Tag: The tag value passed on block creation.
Value properties give the actual values. You may need to cast to Ptr, Boolean or whatever data type you expect.
62.2 class SoftDeclareMBS

62.2.1 class SoftDeclareMBS

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A way to do soft linking to libraries.

**Example:**

// Load the Stuffit Bundle on Mac OS X:

dim f as FolderItem

dim s as SoftDeclareMBS

f=FrameworksFolderMBS(-32765).Child("StuffIt.framework")

s=new SoftDeclareMBS

if s.LoadFrameworkFile(f) then
    MsgBox "ok"
end if

**Notes:**

You can make a declare like this:

Declare Function SpeakString lib "SpeechLib" (SpeakString as pstring) as Integer

But what if the SpeechLib is not installed?
Simple, but your application won’t even launch on this machine.
Now you can of course use this MBS Plugin using the SpeechMBS functions, which are all week linked.
But you can also use this class to weak link to the SpeechMBS library like this:

dim b as boolean, m,p as memoryblock, c as SoftDeclareMBS

c=new SoftDeclareMBS

p=newmemoryBlock(256) // make the string for the first parameter
p.pstring(0)="Hello World!"

m=newmemoryBlock(4) // make the memoryblock for the parameters
m.long(0)=p.Address(0) // set the first parameter to the address of the string buffer

if c.loadlibrary("SpeechLib") then // Load libraries
    if c.loadfunction("SpeakString") then // Load function
        b=c.Call(1,m)
    end if
end if
end if
This way your application will be loaded, you can call the function, but people who don’t have the SpeechLib will also hear it.

### 62.2.2 Methods

#### 62.2.3 CallFunction(param as string, data as memoryblock) as boolean


**Example:**

```basic
Dim c As SoftDeclareMBS
Dim m, p, b As memoryBlock
Dim f As folderItem
Dim path As string

f = ApplicationsFolderMBS(-32766) // get a folder...
path = f.absolutePath

MsgBox path

b = NewMemoryBlock(1024)
b.long(0) = 0 // make empty C string

p = NewMemoryBlock(lenb(path) + 3)
p.cstring(0) = path

m = NewMemoryBlock(12 + 10)
m.long(0) = p.AddressMBS(0)
m.long(4) = b.AddressMBS(0)
m.long(8) = 1023

c = New SoftDeclareMBS
If c.LoadDLL("KERNEL32") Then
    If c.loadfunction("GetShortPathNameA") Then
        c.CallingMode = 0
        MsgBox "found function"
        If c.CallFunction("iii", m) Then
            MsgBox "Short path is: " + b.cstring(0)
        Else
            MsgBox "Failed to call function."
        End If
    Else
        MsgBox "Loading of function "+c.FunctionName+" failed."
    End If
End If
```
else
msgbox "Loading of Kernel32 failed."
end if

Notes:
The param string is a combination of the characters ”i” for integer, ”l” for 64bit integer, ”f” for single (float) and ”d” for double.
Use ”i” for booleans, shorts and pointers.

the memoryblock must match exactly the parameters you specified.
Returns true on success.
See also:

- 62.2.4 CallFunction(paramcount as Integer, data as memoryblock) as boolean

62.2.4 CallFunction(paramcount as Integer, data as memoryblock) as boolean


Example:

dim c as SoftDeclareMBS
dim m,p,b as memoryBlock
dim f as folderItem
dim path as string

f=ApplicationsFolderMBS(-32766) // get a folder...
path=f.absolutePath

MsgBox path

b=newmemoryBlock(1024)
b.long(0)=0 // make empty C string

p=newmemoryBlock(lenb(path)+3)
p.cstring(0)=path

m=newmemoryBlock(12+10)
m.long(0)=p.AddressMBS(0)
m.long(4)=b.AddressMBS(0)
m.long(8)=1023

c=new SoftDeclareMBS
if c.LoadDLL("KERNEL32") then
if c.loadfunction("GetShortPathNameA") then
c.CallingMode=0
MsgBox "found function"
if c.CallFunction(3,m) then
    messagebox "Short path is: " + b.cstring(0)
else
    messagebox "Failed to call function."
end if
else
    messagebox "Loading of function " + c.FunctionName+" failed."
end if
else
    messagebox "Loading of Kernel32 failed."
end if

Notes:
If parametercount is 0, the memoryblock is ignored.
The size of the memoryblock must be minimum 4*paramcount.
Each parameter is set using m.long(n*4) where n=0 is the first parameter.
A parameter may be any integer value or an address of a memoryblock. The address can be read using
memoryblock.addressMBS which is part of the plugin. You can even use only one memoryblock for all 3
parameters in the example like this:

m=newmemoryBlock(2100)
m.cstring(1024)=path
m.long(0)=m.address(20)
m.long(4)=m.address(1024)
m.long(8)=1024

First 12 bytes for the parameter table, the next 1000 bytes for the result buffer and finally a thousand
bytes for the input string.

Before RB 3.1 this function was named "Call", but RB5 requires that the word "Call" is no longer valid for
a function name.

Softdeclare is limited to only 6 parameters for plugin version 3.2. Plugin version 3.3 extends this to 8
parameters.
See also:

- 62.2.3 CallFunction(param as string,data as memoryblock) as boolean
62.2.5 CallFunctionDouble(param as string, data as memoryblock) as boolean

MBS Util Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a function which returns a double value.
**Notes:**
The param string is a combination of the characters "i" for integer, "l" for 64bit integer, "f" for single (float) and "d" for double.
Use "i" for booleans, shorts and pointers.

the memoryblock must match exactly the parameters you specified.
Returns true on success.
See also:
- 62.2.6 CallFunctionDouble(paramcount as Integer, data as memoryblock) as boolean

62.2.6 CallFunctionDouble(paramcount as Integer, data as memoryblock) as boolean

MBS Util Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a function which returns a double value.
**Notes:**
Fills the ResultDouble property.

If paramtercount is 0, the memoryblock is ignored.
The size of the memoryblock must be minimum 4*paramcount.
Each parameter is set using m.long(n*4) where n=0 is the first parameter.
A parameter may be any integer value or an address of a memoryblock. The address can be read using memoryblock.addressMBS which is part of the plugin.
Only 10 parameters can currently be used.
See also:
- 62.2.5 CallFunctionDouble(param as string, data as memoryblock) as boolean

62.2.7 CallFunctionInteger64(param as string, data as memoryblock) as boolean

MBS Util Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a function which returns an integer value.
**Notes:**
The param string is a combination of the characters "i" for integer, "l" for 64bit integer, "f" for single (float) and "d" for double.
Use "i" for booleans, shorts and pointers.

the memoryblock must match exactly the parameters you specified.
Returns true on success.

See also:

- **62.2.8 CallFunctionInteger64(paramcount as Integer, data as memoryblock) as boolean**

### 62.2.8 CallFunctionInteger64(paramcount as Integer, data as memoryblock) as boolean

MBS Util Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a function which returns an integer value.

**Notes:**

Fills the ResultInt64 property.

If paramtercount is 0, the memoryblock is ignored.
The size of the memoryblock must be minimum 4*paramcount.
Each parameter is set using m.long(n*4) where n=0 is the first parameter.
A parameter may be any integer value or an address of a memoryblock. The address can be read using
memoryblock.addressMBS which is part of the plugin.
Only 10 parameters can currently be used.

See also:

- **62.2.7 CallFunctionInteger64(param as string, data as memoryblock) as boolean**

### 62.2.9 CallMethod(param as string, data as memoryblock) as boolean

MBS Util Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a function which returns no value.

**Notes:**

The param string is a combination of the characters ”i” for integer, ”l” for 64bit integer, ”f” for single (float) and ”d” for double.
Use ”i” for booleans, shorts and pointers.

the memoryblock must match exactly the parameters you specified.
Returns true on success.

See also:

- **62.2.10 CallMethod(paramcount as Integer, data as memoryblock) as boolean**

### 62.2.10 CallMethod(paramcount as Integer, data as memoryblock) as boolean

MBS Util Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a function which returns no value.
CHAPTER 62. DECLARE

Notes:

If paramtercount is 0, the memoryblock is ignored.
The size of the memoryblock must be minimum 4*paramcount.
Each parameter is set using $m.long(n*4)$ where n=0 is the first parameter.
A parameter may be any integer value or an address of a memoryblock. The address can be read using
memoryblock.addressMBS which is part of the plugin.
Only 10 parameters can currently be used.
Returns true on success.
See also:

- 62.2.9 CallMethod(param as string, data as memoryblock) as boolean

62.2.11 CopyLibrary(byref target as SoftDeclareMBS)

MBS Util Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Copies the library handle to another softdeclare object.
Notes:
if target is nil, a new object is created.
The library handle in the target object is set to point to the same library as the original object.

62.2.12 FreeLibrary as boolean

MBS Util Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
Releases the library.
Notes:
Only for Windows currently this function releases the handles and unloads the library. Windows internally
has a reference counter for the library so memory is only released when the last reference is freed.
LastError is set.

62.2.13 LoadConstant(constname as string) as boolean

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Loads a constant from
inside the library.
Example:

dim c as SoftDeclareMBS
dim s as CFStringMBS
dim m as MemoryBlock
dim handle as Integer

// Test Mac OS X
62.2. CLASS SOFTDECLAREMBS

// Load the constant kABFirstNameProperty from the Addressbook framework

c=new SoftDeclareMBS

if c.LoadFramework("Addressbook.framework") then
    msgbox "Loaded "+c.libname+" to "+format(c.libhandle,"-0")+"." 
if c.LoadConstant("kABFirstNameProperty") then
    msgbox "Loaded constant "+c.ConstantName+" to "+format(c.ConstantPointer,"-0")+"." 

m=NewMemoryBlockFromPtrMBS(c.ConstantPointer) // I hope it’s not nil!

handle=m.Long(0)
if handle<>0 then
    s=new CFStringMBS
    s.Handle=handle
    msgbox "Got value: "+s.str
else
    msgbox "Loading of constant "+c.ConstantName+" failed." 
else
    msgbox "Loading of Addressbook.framework failed." 
end if

Notes: Lasterror is set.

62.2.14 LoadDLL(libname as string) as boolean

MBS Util Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: Loads a Windows DLL.
Notes:
Lasterror is set.
libname can be name (e.g. "KERNEL32"), filename (e.g. "KERNEL32.DLL") or path (e.g. "C:\WIN-DOWS\KERNEL32.DLL").

62.2.15 LoadDLLfromMemory(data as string) as boolean

Notes:
Some libraries don’t like to be loaded from a string.  
But else you can pass any DLL file content to this function.

The string is locked so it stays in memory.  
On success the handle property is not zero and the function returns true.

62.2.16 LoadDylib(path as string) as boolean

MBS Util Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  
Function: Loads a library in Mac OS X dylib format.  
Notes: Lasterror and Liberror are set.

62.2.17 LoadFramework(frameworkfilename as string) as boolean

MBS Util Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  
Function: Loads a framework in Mac OS X.  
Example:

// A user’s question:  
// I am trying to call this to Carbon.framework using the softdeclare function:

// UInt32 SwapQDTextFlags(UInt32 newFlags);

// flags are OR’d

// kQDUseDefaultTextRendering = 0  
// kQDUseTrueTypeScalerGlyphs = (1 <<0)  
// kQDUseCGTextRendering = (1 <<1)  
// kQDUseCGTextMetrics = (1 <<2)  
// kQDDonChangTextFlags = 0xFFFFFFFF

// The call is to make the system use Quartz rendering for QuickDraw text (like the text in my WASTE-Field).  
// How should I call this?

// The solution code:

dim s as SoftDeclareMBS
dim m as MemoryBlock

const flags=-1  // = 0xFFFFFFFF

s=new SoftDeclareMBS
m=NewMemoryBlock(10)
m.Long(0)=flags
if s.LoadFramework("Carbon.Framework") then
if s.LoadFunction("SwapQDTextFlags") then
if s.CallFunction(1,m) then
MsgBox str(s.Result) // returns 7 for me (using Silk)
end if
end if
end if

// Without any error checking!

Notes:
frameworkfilename is e.g. "Carbon.framework"
Lasterror is set.

62.2.18 LoadFrameworkFile(frameworkpath as folderitem) as boolean

MBS Util Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Loads on Mac OS X a framework from the given file specification.
Example:

`dim f as FolderItem
dim s as SoftDeclareMBS
f=SpecialFolder.Desktop.Child("spellcheck.bundle")
s=new SoftDeclareMBS
if s.LoadFrameworkFile(f) then
MsgBox "OK"
end if`

Notes:
Returns true if successfull.
Lasterror is set.

62.2.19 LoadFunction(funcname as string) as boolean

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Loads a function from
inside the library.
Example:
dim s as SoftDeclareMBS
dim m as MemoryBlock

cnst flags=-1 // = 0xFFFFFFFF

s=new SoftDeclareMBS
m=NewMemoryBlock(10)
m.Long(0)=flags

if s.LoadLibrary("Carbon.Framework") then
if s.LoadFunction("SwapQDTextFlags") then
if s.CallFunction(1,m) then
MsgBox str(s.Result) // returns 7 for me (using Silk)
end if
end if
end if

Notes:

A user’s question:
I am trying to call this to Carbon.framework using the softdeclare function:

 UInt32 SwapQDTextFlags(UInt32 newFlags);

flags are OR’d

kQDUseDefaultTextRendering = 0
kQDUseTrueTypeScalerGlyphs = (1 << 0)
kQDUseCGTextRendering = (1 << 1)
kQDUseCGTextMetrics = (1 << 2)
kQDDontChangeFlags = 0xFFFFFFFF

The call is to make the system use Quartz rendering for QuickDraw text (like the text in my WASTEField). How should I call this?

The solution code is above without any error checking!

Lasterror is set.
62.2. CLASS SOFTDECLAREMBS

62.2.20 LoadLibrary(libname as string) as boolean

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads a library.
**Notes:**
On Mac OS X e.g. "Carbon.framework" or "System.framework".
On Mac OS Carbon inside Classic e.g. "CarbonLib".
On Windows e.g. "KERNEL32" or "USER32".

Lasterror is set.

62.2.21 ParametersSupported(param as string) as boolean

MBS Util Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Tests whether plugin supports the given parameter string.
**Notes:**
The param string is a combination of the characters "i" for integer, "l" for 64bit integer, "f" for single (float) and "d" for double.
Use "i" for booleans, shorts and pointers.

Any new parameter string can be added. Please send an email to support to get a new combination added.

62.2.22 Properties

62.2.23 CallingMode as Integer

MBS Util Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** What calling mode to use.
**Notes:**
0 = Pascal (default)
1 = C

The Windows API works with Pascal, but calls to QuickTime DLL use C.
(Read and Write property)

62.2.24 ConstantFound as boolean

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Was the constant loaded?
62.2.25  ConstantName as string

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The name of the constant to load.
**Notes:**
Set by the LoadConstant function.
(Read and Write property)

62.2.26  ConstantPointer as Integer

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The pointer of the constant loaded.
**Notes:**
Set by the LoadConstant function.
(Read and Write property)

62.2.27  FunctionFound as boolean

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Was the function loaded?
**Notes:**
Set by the LoadFunction function.
(Read only property)

62.2.28  FunctionName as string

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The name of the function to load.
**Notes:**
Set by the LoadFunction function.
(Read and Write property)
62.2. CLASS SOFTDECLAREMBS

62.2.29 FunctionPointer as Integer

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The pointer of the function loaded.

**Notes:**
Set by the LoadFunction function.
(Read and Write property)

62.2.30 Lasterror as Integer

MBS Util Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last error code.

**Notes:**
LoadLibraryFile, LoadLibrary, LoadFunction, LoadConstant and FreeLibrary set this property.
(Read and Write property)

62.2.31 Liberror as string

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An error message from loadlibrary.

**Notes:**
Set by the LoadLibrary function.
(Read and Write property)

62.2.32 Libfound as boolean

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Was the library loaded?

**Notes:**
Set by the LoadLibrary function.
(Read only property)

62.2.33 Libhandle as Integer

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The handle of the library loaded.

**Notes:**
CHAPTER 62. DECLARE

Set by the LoadLibrary function.
On Mac OS Classic a CFragConnectionID.
On Mac OS X a CFBundleRef.
On Windows a HINSTANCE.
(Read and Write property)

62.2.34 Libname as string

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The name of the library to load.
**Notes:**
Set by the LoadLibrary function.
(Read and Write property)

62.2.35 Result as Integer

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The result of the call function.
**Notes:**
Set by the Call function.
(Read and Write property)

62.2.36 ResultDouble as Double

MBS Util Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The result of the call function CallFunctionDouble.
**Notes:** (Read and Write property)

62.2.37 ResultInt64 as MemoryBlock

MBS Util Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The result of the call function CallFunctionInteger64.
**Example:**
```dim s as SoftDeclareMBS
dim m as MemoryBlock
s=new SoftDeclareMBS
if s.LoadDLL("test64bit.dll") then```
if s.LoadFunction("Get64bitNumber") then
  if s.CallFunctionInteger64(0,nil) then
    MsgBox hex(s.ResultInt64.long(4))+hex(s.ResultInt64.long(0))
  end if
end if

' DLL was created with a function like this:
' IMPEXP long long Get64bitNumber()
' {
'    return 0x1122334455667788;
' }
Chapter 63

DirectShow

63.1  class DirectShowAMCameraControlMBS

MBS Win Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** This interface provides local or remote control over a camera.

**Notes:**
Applications can use this interface to control camera settings such as zoom, pan, aperture adjustment, or shutter speed. To obtain this interface, query the filter that controls the camera.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

63.1.2 Methods

63.1.3 Constructor

MBS Win Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The private constructor.

63.1.4 Get(PropertySelector as Integer, byref Value as Integer, byref Flags as Integer)

MBS Win Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** This method retrieves the current setting of a camera property.

**Notes:**
CHAPTER 63. DIRECTSHOW

PropertySelector: A long value that specifies the property to retrieve, see kProperty* constants.
Value: receives the value of the property.
Flags: Receives a member of the CameraControlFlags enumeration. The returned value indicates whether
the setting is controlled manually or automatically.

LastError is set.

63.1.5 GetRange(PropertySelector as Integer, byref MinValue as Integer, byref MaxValue as Integer, byref SteppingDelta as Integer, byref DefaultValue as Integer, byref CapsFlags as Integer)

MBS Win Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
This method retrieves the range and default value of a specified camera property.
**Notes:**
PropertySelector: A long value that specifies the property to query, see kProperty* constants.
MinValue: Receives the minimum value of the property.
MaxValue: Receives the maximum value of the property.
SteppingDelta: Receives the step size for the property. The step size is the smallest increment by which the
property can change.
DefaultValue: Receives the default value of the property.
CapsFlags: Receives an element of the CameraControlFlags enumeration, indicating whether the property
is controlled automatically or manually.

LastError is set.

63.1.6 Set(PropertySelector as Integer, Value as Integer, Flags as Integer = 0)

MBS Win Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
This method sets a specified property on the camera.
**Notes:**
PropertySelector: A long value that specifies the property to set, see kProperty* constants.
Value: A long value that specifies the new value of the property.
Flags: A long value that specifies the desired control setting. See kFlags* constants.

LastError is set.
63.1.7 Properties

63.1.8 Handle as Integer

MBS Win Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The internal object reference. **Notes:** Points to an IAMCameraControl interface. (Read and Write property)

63.1.9 Lasterror as Integer

MBS Win Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The last error code. **Notes:** Please check function documentation and also LastErrorMessage property for a human readable error message. (Read and Write property)

63.1.10 LasterrorMessage as String

MBS Win Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The formatted error message for the last error. **Notes:** (Read and Write property)

63.1.11 Constants

63.1.12 kFlagsAuto = 1

MBS Win Plugin, Plugin Version: 12.4. **Function:** One of the flags for Get/Set. **Notes:** The setting is controlled automatically.

63.1.13 kFlagsManual = 2

MBS Win Plugin, Plugin Version: 12.4. **Function:** One of the flags for Get/Set. **Notes:** The setting is controlled manually.
63.1.14 \( \text{kPropertyExposure} = 4 \)

MBS Win Plugin, Plugin Version: 12.4. **Function:** One of the property selectors.
**Notes:**
Identifies the exposure setting, in log base 2 seconds. In other words, for values less than zero, the exposure time is \(1/2^n\) seconds, and for values zero or above, the exposure time is \(2^n\) seconds. For example:

<table>
<thead>
<tr>
<th>Value</th>
<th>Seconds</th>
</tr>
</thead>
<tbody>
<tr>
<td>-3</td>
<td>1/8</td>
</tr>
<tr>
<td>-2</td>
<td>1/4</td>
</tr>
<tr>
<td>-1</td>
<td>1/2</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

63.1.15 \( \text{kPropertyFocus} = 6 \)

MBS Win Plugin, Plugin Version: 12.4. **Function:** One of the property selectors.
**Notes:** Specifies the camera’s focus setting, as the distance to the optimally focused target, in millimeters. The range and default value are specific to the device.

63.1.16 \( \text{kPropertyIris} = 5 \)

MBS Win Plugin, Plugin Version: 12.4. **Function:** One of the property selectors.
**Notes:** Specifies the camera’s iris setting, in units of fstop * 10.

63.1.17 \( \text{kPropertyPan} = 0 \)

MBS Win Plugin, Plugin Version: 12.4. **Function:** One of the property selectors.
**Notes:** Identifies the camera’s pan setting, in degrees. Values range from 180 to +180, with the default set to zero. Positive values are clockwise from the origin (the camera rotates clockwise when viewed from above), and negative values are counterclockwise from the origin.
63.1.18  **kPropertyRoll = 2**

MBS Win Plugin, Plugin Version: 12.4. **Function:** One of the property selectors.  
**Notes:** Identifies the camera’s roll setting, in degrees. Values range from 180 to +180, with the default set to zero. Positive values cause a clockwise rotation of the camera along the image-viewing axis, and negative values cause a counterclockwise rotation of the camera.

63.1.19  **kPropertyTilt = 1**

MBS Win Plugin, Plugin Version: 12.4. **Function:** One of the property selectors.  
**Notes:** Identifies the camera’s tilt setting, in degrees. Values range from 180 to +180, with the default set to zero. Positive values point the imaging plane up, and negative values point the imaging plane down.

63.1.20  **kPropertyZoom = 3**

MBS Win Plugin, Plugin Version: 12.4. **Function:** One of the property selectors.  
**Notes:** Identifies the camera’s zoom setting, in millimeters. Values range from 10 to 600, and the default is specific to the device.
63.2  class DirectShowAMCrossbarMBS

63.2.1  class DirectShowAMCrossbarMBS

MBS Win Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The IAMCrossbar interface routes signals from an analog or digital source to a video capture filter.
**Notes:**
This interface is implemented by the Analog Video Crossbar Filter. The Analog Video Crossbar filter is
modeled after a general switching matrix, with n inputs and m outputs. For example, a video card might
have two external connectors: a coaxial connector for TV, and an S-video input. These would be represented
as input pins on the filter. To select one of the inputs, an application would use the IAMCrossbar interface
to "route" an input pin to the filter's output pin, by calling the Route method.

see also
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

63.2.2  Methods

63.2.3  BaseFilter as DirectShowBaseFilterMBS

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Queries the base filter for the crossbar.
**Notes:**
See also:

63.2.4  CanRoute(OutputPinIndex as Integer, InputPinIndex as Integer) as boolean

MBS Win Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The CanRoute method queries whether a specified input pin can be routed to a specified output pin.
**Notes:**
OutputPinIndex: Specifies the index of the output pin.
InputPinIndex: Specifies the index of input pin.
Lasterror is set.
Returns true if two pins can be routed.

To route the pins, call the Route method. Output pins and input pins are both indexed from zero. To
determine the number of output and input pins, call the getPinCounts method.
63.2.5 Constructor

MBS Win Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The private constructor.

63.2.6 GetCrossbarPinInfo(IsInputPin as boolean, PinIndex as Integer, byref PinIndexRelated as Integer, byref PhysicalType as Integer)

MBS Win Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The getCrossbarPinInfo method retrieves information about a specified pin. **Notes:**

IsInputPin: Specifies the direction of the pin. Use one of the following values.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>True</td>
<td>Input pin</td>
</tr>
<tr>
<td>False</td>
<td>Output pin</td>
</tr>
</tbody>
</table>

PinIndex: Specifies the index of the pin.
PinIndexRelated: Variable that receives the index of the related pin, or 1 if no pin is related to this pin. The related pin is a pin on the same filter, with the same direction; it typically represents the same physical jack or connector. For example, a video tuner and an audio tuner might be related pins. Typically, if two pins are related, you should route them together.
PhysicalType: Variable that receives a member of the PhysicalConnectorType enumeration, indicating the pin’s physical type.

Lasterror is set.
Output pins and input pins are both indexed from zero. To determine the number of output and input pins, call the getPinCounts method.

63.2.7 GetPinCounts(byref OutputPinCount as Integer, byref InputPinCount as Integer)

MBS Win Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The getPinCounts method retrieves the number of input and output pins on the crossbar filter. **Notes:**

OutputPinCount: Variable that receives the number of output pins.
InputPinCount: Variable that receives the number of input pins.
The other IAMCrossbar methods take parameters that specify pins by index number. For these methods, output pins and input pins are both indexed from zero. Use the getPinCounts method to determine the upper bounds for each.

### 63.2.8 IsRoutedTo(InputPinIndex as Integer) as Integer

MBS Win Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The IsRoutedTo method retrieves the input pin that is currently routed to the specified output pin.  
**Notes:**  
OutputPinIndex: Specifies the index of the output pin.  
InputPinIndex: Variable that receives the index of the input pin, or -1 if no input pin is routed to this output pin.  

Output pins and input pins are both indexed from zero. To determine the number of output and input pins, call the getPinCounts method.  
LastError is set.

### 63.2.9 PhysicalPinName(type as Integer) as string

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries the name for a given type.  
**Notes:** Just a convenience method to return english names for types.

### 63.2.10 Route(OutputPinIndex as Integer, InputPinIndex as Integer)

MBS Win Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The Route method routes an input pin to an output pin.  
**Notes:**  
OutputPinIndex: Specifies the index of the output pin.  
InputPinIndex: Specifies the index of the input pin.  

LastError is set.

Routing two pins causes the output pin to deliver data from that input pin. Only one input pin at a time can be routed to a given output pin.  
Output pins and input pins are both indexed from zero. To determine the number of output and input pins,
call the getPinCounts method.

63.2.11 Properties

63.2.12 Handle as Integer

MBS Win Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The internal object reference.  
**Notes:**  
Points to an IAMCrossbar interface.  
(Read and Write property)

63.2.13 Lasterror as Integer

MBS Win Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The last error code.  
**Notes:**  
Please check function documentation and also LastErrorMessage property for a human readable error mes- 
sage.  
(Read and Write property)

63.2.14 LasterrorMessage as String

MBS Win Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The formatted error message for the last error.  
**Notes:** (Read and Write property)

63.2.15 Constants

63.2.16 PhysConn_Audio_1394 = 4103

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the constants to specify the physical type of pin  
(audio or video).  
**Notes:** Specifies an IEEE 1394 pin for audio.
63.2.17 PhysConn_Audio_AESDigital = 4099

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the constants to specify the physical type of pin (audio or video).
**Notes:** Specifies an AES/EBU (Audio Engineering Society/European Broadcast Union) digital pin for audio.

63.2.18 PhysConn_Audio_AudioDecoder = 4105

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the constants to specify the physical type of pin (audio or video).
**Notes:** Specifies an audio decoder pin.

63.2.19 PhysConn_Audio_AUX = 4102

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the constants to specify the physical type of pin (audio or video).
**Notes:** Specifies an AUX pin for audio.

63.2.20 PhysConn_Audio_Line = 4097

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the constants to specify the physical type of pin (audio or video).
**Notes:** Specifies a line pin for audio.

63.2.21 PhysConn_Audio_Mic = 4098

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the constants to specify the physical type of pin (audio or video).
**Notes:** Specifies a microphone pin.

63.2.22 PhysConn_Audio_SCSI = 4101

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the constants to specify the physical type of pin (audio or video).
**Notes:** Specifies a SCSI pin for audio.
63.2.23  PhysConn_Audio_SPDIFDigital = 4100

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the constants to specify the physical type of pin (audio or video).
**Notes:** Specifies an S/PDIF (Sony/Philips Digital Interface Format) digital pin for audio.

63.2.24  PhysConn_Audio_Tuner = 4096

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the constants to specify the physical type of pin (audio or video).
**Notes:** Specifies a tuner pin for audio.

63.2.25  PhysConn_Audio_USB = 4104

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the constants to specify the physical type of pin (audio or video).
**Notes:** Specifies a USB pin for audio.

63.2.26  PhysConn_Video_1394 = 10

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the constants to specify the physical type of pin (audio or video).
**Notes:** Specifies an IEEE 1394 pin for video.

63.2.27  PhysConn_Video_AUX = 9

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the constants to specify the physical type of pin (audio or video).
**Notes:** Specifies an AUX (auxiliary) pin for video.

63.2.28  PhysConn_Video_Black = 15

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the constants to specify the physical type of pin (audio or video).
**Notes:** Not used.
63.2.29  PhysConn_Video_Composite = 2

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the constants to specify the physical type of pin (audio or video).
**Notes:** Specifies a composite pin for video.

63.2.30  PhysConn_Video_ParallelDigital = 7

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the constants to specify the physical type of pin (audio or video).
**Notes:** Specifies a parallel digital pin for video.

63.2.31  PhysConn_Video_RGB = 4

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the constants to specify the physical type of pin (audio or video).
**Notes:** Specifies an RGB pin for video.

63.2.32  PhysConn_Video_SCART = 14

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the constants to specify the physical type of pin (audio or video).
**Notes:** Specifies a SCART (Peritel) pin for video.

63.2.33  PhysConn_Video_SCSI = 8

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the constants to specify the physical type of pin (audio or video).
**Notes:** Specifies a SCSI (Small Computer System Interface) pin for video.

63.2.34  PhysConn_Video_SerialDigital = 6

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the constants to specify the physical type of pin (audio or video).
**Notes:** Specifies a serial digital pin for video.
63.2.35  **PhysConn_Video_SVideo = 3**

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the constants to specify the physical type of pin (audio or video).
**Notes:** Specifies an S-Video (Y/C video) pin.

63.2.36  **PhysConn_Video_Tuner = 1**

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the constants to specify the physical type of pin (audio or video).
**Notes:** Specifies a tuner pin for video.

63.2.37  **PhysConn_Video_USB = 11**

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the constants to specify the physical type of pin (audio or video).
**Notes:** Specifies a USB (Universal Serial Bus) pin for video.

63.2.38  **PhysConn_Video_VideoDecoder = 12**

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the constants to specify the physical type of pin (audio or video).
**Notes:** Specifies a video decoder pin.

63.2.39  **PhysConn_Video_VideoEncoder = 13**

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the constants to specify the physical type of pin (audio or video).
**Notes:** Specifies a video encoder pin.

63.2.40  **PhysConn_Video_YRYBY = 5**

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the constants to specify the physical type of pin (audio or video).
**Notes:** Specifies a YRYBY (Y, RY, BY) pin for video.
63.3 class DirectShowAMStreamConfigMBS

63.3.1 class DirectShowAMStreamConfigMBS

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The IAMStreamConfig interface sets the output format on certain capture and compression filters, for both audio and video.

Notes:
Applications can use this interface to set format properties, such as the output dimensions and frame rate (for video) or the sample rate and number of channels (for audio).
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

63.3.2 Methods

63.3.3 AudioCaps as DirectShowAudioStreamConfigCapsMBS()


Notes:
Lasterror is set.
Returns empty array for video streams.

63.3.4 Constructor


63.3.5 MediaTypes as DirectShowMediaTypeMBS()


Notes:
Lasterror is set.
see also
63.3. **CLASS DIRECTSHOWAMSTREAMCONFIGMBS**

### 63.3.6 NumberOfCapabilities as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Retrieves the number of format capabilities that this pin supports. **Notes:** Lasterror is set.

### 63.3.7 VideoCaps as DirectShowVideoStreamConfigCapsMBS()

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries the video capabilities. **Notes:** Lasterror is set. Returns empty array for audio streams.

### 63.3.8 Properties

#### 63.3.9 Handle as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The internal object reference. **Notes:** (Read and Write property)

#### 63.3.10 Lasterror as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The last error code. **Notes:** Please check function documentation and also LastErrorMessage property for a human readable error message. (Read and Write property)

#### 63.3.11 LasterrorMessage as String

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The formatted error message for the last error. **Notes:** (Read and Write property)
63.3.12 Format as DirectShowMediaTypeMBS

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Get or set the preferred output format.

**Notes:**
Lasterror is set.

see also
(Read and Write computed property)
63.4 class DirectShowAMVideoProcAmpMBS

63.4.1 class DirectShowAMVideoProcAmpMBS

MBS Win Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The AMVideoProcAmp interface adjusts the qualities of an incoming video signal, such as brightness, contrast, hue, saturation, gamma, and sharpness.

**Notes:**

The WDM Video Capture filter exposes this interface if the hardware supports image adjustment.

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

63.4.2 Methods

63.4.3 Constructor

MBS Win Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The private constructor.

63.4.4 Get(PropertySelector as Integer, byref Value as Integer, byref Flags as Integer)

MBS Win Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Gets video quality for a specified property.

**Notes:**

PropertySelector: Specifies the property to retrieve, as a value from the kProperty* constants.

Value: Receives the value of the property.

Flags: Receives the flags. The returned value indicates whether the setting is controlled manually or automatically.

Lasterror is set.

63.4.5 GetRange(PropertySelector as Integer, byref MinValue as Integer, byref MaxValue as Integer, byref SteppingDelta as Integer, byref DefaultValue as Integer, byref CapsFlags as Integer)

MBS Win Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Gets the minimum, maximum, and default values for setting properties.

**Notes:**

PropertySelector: Specifies the property to retrieve, as a value from the kProperty* constants.
MinValue: Receives the minimum value of the property.
MaxValue: Receives the maximum value of the property.
SteppingDelta: Receives the step size for the property. The step size is the smallest increment by which the
property can change.
DefaultValue: Receives the default value of the property.
CapsFlags: Receives a member of the VideoProcAmpFlags enumeration, indicating whether the property is
controlled automatically or manually.
LastError is set.

63.4.6 Set(PropertySelector as Integer, Value as Integer, Flags as Integer = 0)

MBS Win Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Sets video quality for a specified property.
**Notes:**
PropertySelector: Specifies the property to retrieve, as a value from the kProperty* constants.
Value: The new value of the property.
Flags: The desired control setting. See kFlags* constants.

LastError is set.

63.4.7 Properties

63.4.8 Handle as Integer

MBS Win Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The internal object reference.
**Notes:**
Points to an IAMVideoProcAmp interface.
(Read and Write property)

63.4.9 Lasterror as Integer

MBS Win Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The last error code.
**Notes:**
Please check function documentation and also LastError_Message property for a human readable error mes-
sage.
(Read and Write property)
63.4.10 LasterrorMessage as String

MBS Win Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The formatted error message for the last error. **Notes:** (Read and Write property)

63.4.11 Constants

63.4.12 kFlagsAuto = 1

MBS Win Plugin, Plugin Version: 12.4. **Function:** One of the flags for Get/Set. **Notes:** The setting is controlled automatically.

63.4.13 kFlagsManual = 2

MBS Win Plugin, Plugin Version: 12.4. **Function:** One of the flags for Get/Set. **Notes:** The setting is controlled manually.

63.4.14 kPropertyBacklightCompensation = 8

MBS Win Plugin, Plugin Version: 12.4. **Function:** One of the property selectors. **Notes:** Specifies the backlight compensation setting. Possible values are 0 (off) and 1 (on).

63.4.15 kPropertyBrightness = 0

MBS Win Plugin, Plugin Version: 12.4. **Function:** One of the property selectors. **Notes:** Specifies the brightness, also called the black level. For NTSC, the value is expressed in IRE units * 100. For non-NTSC sources, the units are arbitrary, with zero representing blanking and 10,000 representing pure white. Values range from 10,000 to 10,000.

63.4.16 kPropertyColorEnable = 6

MBS Win Plugin, Plugin Version: 12.4. **Function:** One of the property selectors. **Notes:** Specifies the color enable setting. The possible values are 0 (off) and 1 (on).
63.4.17  \textbf{kPropertyContrast} = 1

MBS Win Plugin, Plugin Version: 12.4. \textbf{Function}: One of the property selectors. 
\textbf{Notes}: Specifies the contrast, expressed as gain factor $\times 100$. Values range from zero to 10,000.

63.4.18  \textbf{kPropertyGain} = 9

MBS Win Plugin, Plugin Version: 12.4. \textbf{Function}: One of the property selectors. 
\textbf{Notes}: Specifies the gain adjustment. Zero is normal. Positive values are brighter and negative values are darker. The range of values depends on the device.

63.4.19  \textbf{kPropertyGamma} = 5

MBS Win Plugin, Plugin Version: 12.4. \textbf{Function}: One of the property selectors. 
\textbf{Notes}: Specifies the gamma, as gamma $\times 100$. Values range from 1 to 500.

63.4.20  \textbf{kPropertyHue} = 2

MBS Win Plugin, Plugin Version: 12.4. \textbf{Function}: One of the property selectors. 
\textbf{Notes}: Specifies the hue, in degrees $\times 100$. Values range from -180,000 to 180,000 (-180 to +180 degrees).

63.4.21  \textbf{kPropertySaturation} = 3

MBS Win Plugin, Plugin Version: 12.4. \textbf{Function}: One of the property selectors. 
\textbf{Notes}: Specifies the saturation. Values range from 0 to 10,000.

63.4.22  \textbf{kPropertySharpness} = 4

MBS Win Plugin, Plugin Version: 12.4. \textbf{Function}: One of the property selectors. 
\textbf{Notes}: Specifies the sharpness. Values range from 0 to 100.

63.4.23  \textbf{kPropertyWhiteBalance} = 7

MBS Win Plugin, Plugin Version: 12.4. \textbf{Function}: One of the property selectors. 
\textbf{Notes}: Specifies the white balance, as a color temperature in degrees Kelvin. The range of values depends
63.4. CLASS DIRECTSHOWAMVIDEOPROCAMPMB5

on the device.
63.5 class DirectShowAudioStreamConfigCapsMBS

63.5.1 class DirectShowAudioStreamConfigCapsMBS

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Describes a range of audio formats.

**Notes:**
Audio compression and capture filters use this structure to describe the formats they can produce.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

63.5.2 Methods

63.5.3 Constructor

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The private constructor.

63.5.4 Properties

63.5.5 BitsPerSampleGranularity as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Granularity of the bits per sample.

**Notes:**
For example, the filter might specify 8 bits per sample through 32 bits per sample, in steps of 8.
(Read only property)

63.5.6 ChannelsGranularity as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Granularity of the channels.

**Notes:**
For example, the filter might specify channels 2 through 4, in steps of 2.
(Read only property)
63.5.7 MaximumBitsPerSample as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Maximum sample frequency. **Notes:** (Read only property)

63.5.8 MaximumChannels as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Maximum number of channels. **Notes:** (Read only property)

63.5.9 MaximumSampleFrequency as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Maximum sample frequency. **Notes:** (Read only property)

63.5.10 MinimumBitsPerSample as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Minimum bits per sample. **Notes:** (Read only property)

63.5.11 MinimumChannels as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Minimum number of channels. **Notes:** (Read only property)

63.5.12 MinimumSampleFrequency as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Minimum sample frequency. **Notes:** (Read only property)
63.5.13 SampleFrequencyGranularity as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Granularity of the frequency. **Notes:** For example, the filter might specify 11025 Hz to 44100 Hz, in steps of 11025 Hz. (Read only property)
63.6. **CLASS DIRECTSHOWBASEFILTERMBS**

63.6. class DirectShowBaseFilterMBS

63.6.1 class DirectShowBaseFilterMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The BaseFilter interface is the primary interface for DirectShow filters.

**Notes:**

All DirectShow filters must expose this interface. The Filter Graph Manager uses this interface to control filters. Applications can use this interface to enumerate pins and query for filter information, but should not use it to change the state of a filter. Instead, use the MediaControl interface on the Filter Graph Manager. Subclass of the DirectShowMediaFilterMBS class.

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

63.6.2 Methods

63.6.3 AMCameraControl as DirectShowAMCameraControlMBS

MBS Win Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries camera control object.

**Example:**

```vbnet
dim srcfilter as DirectShowBaseFilterMBS // your basefilter
dim value, flags as Integer
dim c as DirectShowAMCameraControlMBS = srcfilter.AMCameraControl
if c <> nil then
    c.Get(c.kPropertyZoom, value, flags)
    if c.Lasterror = 0 then
        MsgBox "Zoom: " + str(value)
    else
        MsgBox "Zoom: " + c.LasterrorMessage
    end if

    c.Get(c.kPropertyFocus, value, flags)
    if c.Lasterror = 0 then
        MsgBox "Focus: " + str(value)
    else
        MsgBox "Focus: " + c.LasterrorMessage
    end if

    c.Get(c.kPropertyExposure, value, flags)
    if c.Lasterror = 0 then
        MsgBox "Exposure: " + str(value)
    else
        MsgBox "Exposure: " + c.LasterrorMessage
    end if
```

Notes:
Returns object when this filter represents a device supporting this interface.
Else returns nil on any error.
Also sets lasterror property.

63.6.4 AMCrossbar as DirectShowAMCrossbarMBS

MBS Win Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries the IAMCrossbar interface for this filter.
**Notes:** Returns nil if no such interface exists.

63.6.5 AMVideoProcAmp as DirectShowAMVideoProcAmpMBS

MBS Win Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries video properties object.
**Example:**

```vbscript
dim srcfilter as DirectShowBaseFilterMBS // your basefilter
dim value, flags as Integer
dim v as DirectShowAMVideoProcAmpMBS = srcfilter.AMVideoProcAmp
if v<>nil then
  v.Get(v.kPropertyHue, value, flags)
  if v.Lasterror = 0 then
    MsgBox "Hue: " +str(value)
  else
    MsgBox "Hue: " +v.LasterrorMessage
  end if

  v.Get(v.kPropertyBrightness, value, flags)
  if v.Lasterror = 0 then
    MsgBox "Brightness: " +str(value)
  else
    MsgBox "Brightness: " +v.LasterrorMessage
  end if
end if
```

end if
63.6. **CLASS DIRECTSHOWBASEFILTERMBS**

**Notes:**

Returns object when this filter represents a device supporting this interface.
Else returns nil on any error.
Also sets lasterror property.

### 63.6.6 **ConfigAviMux as DirectShowConfigAviMuxMBS**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Queries the config avimux object.

**Notes:**

Lasterorr is set.
Works only with filters which support this interface.

### 63.6.7 **ConfigInterleaving as DirectShowConfigInterleavingMBS**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Queries the config interleaving object.

**Notes:**

Lasterorr is set.
Works only with filters which support this interface.

### 63.6.8 **Constructor**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The private constructor.

### 63.6.9 **EnumPins as DirectShowEnumPinsMBS**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The EnumPins method enumerates the pins on this filter.

**Notes:** Lasterror is set.

### 63.6.10 **FindPin(name as string) as DirectShowPinMBS**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The FindPin method retrieves the pin with the specified identifier.
name: string that identifies the pin.

Returns the pin object.
Lasterror is set.

This method supports graph persistence. Use the DirectShowPinMBS.QueryId method to save a pin’s state, and use this method to restore the state. The pin’s identifier string is defined by the filter implementation. The identifier must be unique within the filter.

63.6.11  Info as DirectShowFilterInfoMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Retrieves information about the filter.

**Notes:**
Lasterror is set.
Returns nil on error.

63.6.12  VendorInfo as string

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Retrieves a string containing vendor information.

**Notes:**
Lasterror is set.
This method is optional; filters are not required to support it.
63.7. **CLASS DIRECTSHOWBINDCONTEXTMBS**

63.7  **class DirectShowBindContextMBS**

63.7.1  **class DirectShowBindContextMBS**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Provides access to a bind context, which is an object that stores information about a particular moniker binding operation.

63.7.2  **Methods**

63.7.3  **Constructor**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor to create a new bind context.

63.7.4  **Properties**

63.7.5  **Handle as Integer**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal object reference.

**Notes:**
Points to an IConfigAviMux interface.
(Read and Write property)

63.7.6  **Lasterror as Integer**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last error code.

**Notes:**
Please check function documentation and also LastErrorMessage property for a human readable error message.
(Read and Write property)
63.7.7 LastErrorMessage as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The formatted error message for the last error.
**Notes:** (Read and Write property)
63.8. class DirectShowCaptureGraphBuilderMBS

63.8.1 class DirectShowCaptureGraphBuilderMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Builds capture graphs and other custom filter graphs.

**Notes:**
see also

63.8.2 Methods

63.8.3 AllocCapFile(filePath as string, size as UInt64)

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The AllocCapFile method preallocates a capture file to a specified size. For best results, always capture to a defragmented, preallocated capture file that is larger than the size of the capture data.

**Notes:**
FilePath: a string that contains the name of the file to create or resize.
Size: Size of the file to allocate, in bytes.

LastError is set.

This method fails if the file is read-only.
It is best to allocate as much space as possible, ideally, more than needed. However, this can result in a very large file that contains relatively little data. For example, a 1-gigabyte (GB) capture file might contain a few megabytes of captured video. Use the CopyCaptureFile method to copy the data into a new file. That method copies only the data and ignores the empty portion of the original file.
If you use this method to preallocate the file, call SetMode on the file-writer filter with the value zero. If the filter is set to AM.FILE.OVERWRITE, it will delete the preallocated file. Note that some file-writer filters do not support mode 0.

63.8.4 Constructor

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The constructor.
63.8.5 Crossbar(filter as DirectShowBaseFilterMBS) as DirectShowAMCrossbarMBS

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Finds a crossbar in the graph.
**Notes:**
See also:

This function implements the FindInterface call with LOOK_UPSTREAM_ONLY and the filter you provide.

63.8.6 GetFiltergraph as DirectShowGraphBuilderMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Retrieves the filter graph that the builder is using.
**Notes:** Sets lasterror.

63.8.7 GetStreamConfig(preview as boolean, filter as DirectShowBaseFilterMBS) as DirectShowAMStreamConfigMBS

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Queries the stream config object for this graph.
**Notes:** Lasterror is set.

63.8.8 MEDIATYPE_Audio as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
One of the media type GUIDs.
**Notes:** Audio.

63.8.9 MEDIATYPE_AUXLine21Data as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
One of the media type GUIDs.
**Notes:** Line 21 data. Used by closed captions.
63.8. **CLASS DIRECTSHOWCAPTUREGRAPHBUILDERMBS**

### 63.8.10 MEDIATYPE_Interleaved as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the media type GUIDs.
**Notes:** Interleaved audio and video. Used for Digital Video (DV).

### 63.8.11 MEDIATYPE_Midi as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the media type GUIDs.
**Notes:** MIDI format.

### 63.8.12 MEDIATYPE_ScriptCommand as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the media type GUIDs.
**Notes:** Data is a script command, used by closed captions.

### 63.8.13 MEDIATYPE_Stream as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the media type GUIDs.
**Notes:** Byte stream with no time stamps.

### 63.8.14 MEDIATYPE_Text as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the media type GUIDs.
**Notes:** Text.

### 63.8.15 MEDIATYPE_Timecode as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the media type GUIDs.
**Notes:** Timecode data. Note: DirectShow does not provide any filters that support this media type.
63.8.16 MEDIATYPE_Video as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
One of the media type GUIDs.
**Notes:** Video.

63.8.17 RenderStream(category as DirectShowGUIDMBS, Type as DirectShowGUIDMBS, Source as DirectShowBaseFilterMBS, Intermediate as DirectShowBaseFilterMBS = nil, Sink as DirectShowBaseFilterMBS = nil)

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The RenderStream method connects an output pin on a source filter to a sink filter, optionally through an intermediate filter.
**Notes:**
Lasterror is set:
Category: A GUID that specifies one of the pin categories listed in Pin Property Set. To match any pin, regardless of category, set this parameter to nil. Typical values include the following. PIN_CATEGORY_CAPTURE, PIN_CATEGORY_PREVIEW, PIN_CATEGORY_CC.
Type: A major-type GUID that specifies the media type of the output pin; or nil to use any pin, regardless of media type.
Source: Specifies a pointer to the starting filter for the connection, or to an output pin.
Intermediate: BaseFilter interface of an intermediate filter, such as a compression filter. Can be nil.
Sink: BaseFilter interface of a sink filter, such as a renderer or mux filter. If the value is nil, the method uses a default renderer (see Remarks).

see also:
See also:

- 63.8.18 RenderStream(category as DirectShowGUIDMBS, Type as DirectShowGUIDMBS, Source as DirectShowPinMBS, Intermediate as DirectShowBaseFilterMBS = nil, Sink as DirectShowBaseFilterMBS = nil)

63.8.18 RenderStream(category as DirectShowGUIDMBS, Type as DirectShowGUIDMBS, Source as DirectShowPinMBS, Intermediate as DirectShowBaseFilterMBS = nil, Sink as DirectShowBaseFilterMBS = nil)

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The RenderStream method connects an output pin on a source filter to a sink filter, optionally through an intermediate filter.
**Notes:**
Lasterror is set:

Category: A GUID that specifies one of the pin categories listed in Pin Property Set. To match any pin, regardless of category, set this parameter to nil. Typical values include the following. PIN_CATEGORY_CAPTURE, PIN_CATEGORY_PREVIEW, PIN_CATEGORY_CC.
Type: A major-type GUID that specifies the media type of the output pin; or nil to use any pin, regardless of media type.
Source: Specifies a pointer to the starting filter for the connection, or to an output pin.
Intermediate: BaseFilter interface of an intermediate filter, such as a compression filter. Can be nil.
Sink: BaseFilter interface of a sink filter, such as a renderer or mux filter. If the value is nil, the method uses a default renderer (see Remarks).

see also:
See also:

- 63.8.17 RenderStream(category as DirectShowGUIDMBS, Type as DirectShowGUIDMBS, Source as DirectShowBaseFilterMBS, Intermediate as DirectShowBaseFilterMBS = nil, Sink as DirectShowBaseFilterMBS = nil)

63.8.19 SetFiltergraph(graph as DirectShowGraphBuilderMBS)

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: Tells the graph builder object which filter graph to use.
Notes:
Lasterror is set.

graph: specifies the filter graph to use for subsequent calls to the AddFilter method.

The graph builder will automatically create a filter graph if you don’t call this method. If you call this method after the graph builder has created its own filter graph, the call will fail.

63.8.20 SetOutputFileName(Type as DirectShowGUIDMBS, FilePath as string)

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: Creates the rendering section of the filter graph, which will save bits to disk with the specified file name.
Notes:
Lasterror is set.

Type: GUID representing the media subtype. Must be MEDIASUBTYPE_Avi.
FilePath: string containing the output file name.
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filter: Optional, a filter representing the multiplexer filter.
Sink: Optional, a FileSinkFilter object representing the file writer.

This method inserts the multiplexer and the file writer into the filter graph and calls SetFileName to set the output file name.
See also:

- 63.8.21 SetOutputFileName(Type as DirectShowGUIDMBS, FilePath as string, byref filter as DirectShowBaseFilterMBS, byref sink as DirectShowFileSinkFilterMBS)

63.8.21 SetOutputFileName

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Creates the rendering section of the filter graph, which will save bits to disk with the specified file name.
**Notes:**
Lasterror is set.

Type: GUID representing the media subtype. Must be MEDIASUBTYPE_Avi.
FilePath: string containing the output file name.
filter: Optional, a filter representing the multiplexer filter.
Sink: Optional, a FileSinkFilter object representing the file writer.

This method inserts the multiplexer and the file writer into the filter graph and calls SetFileName to set the output file name.
See also:

- 63.8.20 SetOutputFileName(Type as DirectShowGUIDMBS, FilePath as string)

63.8.22 Properties

63.8.23 Handle as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The internal object reference.
**Notes:**
Points to an ICaptureGraphBuilder interface.
(Read and Write property)
63.8.24 Lasterror as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The last error code.
**Notes:**
Please check function documentation and also LastErrorMessage property for a human readable error message.
(Read and Write property)

63.8.25 LasterrorMessage as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The formatted error message for the last error.
**Notes:** (Read and Write property)
63.9 class DirectShowConfigAviMuxMBS

63.9.1 class DirectShowConfigAviMuxMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
This class configures the AVI Mux filter.
**Notes:**
Applications can use this class to set the master stream and to create an AVI 1.0 index.

DirectShowConfigAviMuxMBS provides backward compatibility with older Video for Windows (VFW) Audio-Video Interleaved (AVI) index formats (idx1) as well as extended AVI 2.0 index formats (indx) to allow for file sizes greater than 1 gigabyte (GB). Set and retrieve the compatibility indexes by using the OutputCompatibilityIndex property.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

63.9.2 Methods

63.9.3 Constructor

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The private constructor.

63.9.4 Properties

63.9.5 Handle as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The internal object reference.
**Notes:**
Points to an IConfigAviMux interface.
(Read and Write property)

63.9.6 Lasterror as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The last error code.
**Notes:**
Please check function documentation and also LastErrorMessage property for a human readable error message.
(Read and Write property)

### 63.9.7 LasterrorMessage as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The formatted error message for the last error.
**Notes:** (Read and Write property)

### 63.9.8 MasterStream as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Specifies the master stream that will be used to synchronize the other streams in the file.
**Notes:**
Specifies the index of the stream, or 1 to indicate no master stream. The AVI Mux writes one stream for each connected input pin. Stream numbers are indexed from zero. Lasterror is set.

If you are capturing audio and video from two different sources, use this method to synchronize the streams. Streams coming from separate capture sources may be captured at slightly different rates. If you specify a master stream, the AVI Mux adjusts the playback rates for the other streams, to compensate for any drift that might occur.

It is recommended to use the audio stream as the master stream, because minor adjustments to the video playback rate are less noticeable than changes to the audio playback rate. Also, modifying the audio playback rate will cause the audio to be resampled by the audio driver.

This method works by adjusting the dwScale and dwRate values in the AVISTREAMHEADER structure.
(Read and Write computed property)

### 63.9.9 OutputCompatibilityIndex as Boolean

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Get or set the AVI index format.
**Notes:**
Lasterror is set.
True: Create an AVI 1.0 index, as well as an AVI 2.0 index.
False: Create an AVI 2.0 index, but not an AVI 1.0 index.

The AVI Mux filter always creates an AVI 2.0 index (‘indx’ format). If the value given in fOldIndex is
TRUE, the AVI Mux also creates an AVI 1.0 index (’idx1’ format), for backward compatibility with Video for Windows.
The AVI 2.0 index format allows for larger files, incremental growth of files, and minimized disk seeks.
(Read and Write computed property)
63.10 class DirectShowConfigInterleavingMBS

63.10.1 class DirectShowConfigInterleavingMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The ConfigInterleaving interface controls how the AVI Mux filter interleaves audio and video samples.
**Notes:**
Video-authoring applications that handle capturing should use this interface when they need to control how audio samples and video frames will be saved on a disk.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

63.10.2 Methods

63.10.3 Constructor

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The private constructor.

63.10.4 Properties

63.10.5 Handle as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The internal object reference.
**Notes:**
Points to an IConfigInterleaving interface.
(Read and Write property)

63.10.6 Lasterror as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The last error code.
**Notes:**
Please check function documentation and also LastErrorMessage property for a human readable error message.
(Read and Write property)
63.10.7 LasterrorMessage as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The formatted error message for the last error.
**Notes:** (Read and Write property)

63.10.8 Mode as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The interleaving quality setting.
**Notes:**
Lasterror is set.
See kInterleaving* constants.
(Read and Write computed property)

63.10.9 Constants

63.10.10 kInterleaveBuffered = 3

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the interleaving mode constants.
**Notes:**
Noninterleaved.
This mode is equivalent to kInterleaveNone but uses less file space and system overhead.

63.10.11 kInterleaveCapture = 1

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the interleaving mode constants.
**Notes:**
Approximate interleaving with less overhead than kInterleaveFull.
This mode is suitable for video capture. The AVI Mux attempts to use unbuffered, overlapped write operations. Unless the interleaving parameters are configured properly, however, frames may be dropped if one stream blocks while it waits for data from another stream. In particular, audio buffers should be less than .5 second, or else the video stream will block for excessive periods of time.

63.10.12 kInterleaveFull = 2

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the interleaving mode constants.
**Notes:**
Full, precise interleaving of audio samples and video frames. Streams will block indefinitely, waiting for equal amounts of data before interleaving. This mode is suitable for authoring and playback.

63.10.13 kInterleaveNone = 0

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the interleaving mode constants. **Notes:**

Noninterleaved. Frames are written in the order they arrive. Files must be interleaved for playback at a later time. In this mode, the AVI Mux filter attempts to use unbuffered, overlapped write operations, to increase throughput.
CHAPTER 63. DIRECTSHOW

63.11 class DirectShowDVInfoMBS

63.11.1 class DirectShowDVInfoMBS

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Describes the format of a digital video (DV) stream. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

63.11.2 Methods

63.11.3 Constructor

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The private constructor.

63.11.4 Properties

63.11.5 DVAAuxCtl as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Specifies the AAUX source control Pack for the first audio block. **Notes:** (Read and Write property)

63.11.6 DVAAuxCtl1 as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Specifies the AAUX source control pack for the second audio block. **Notes:** (Read and Write property)

63.11.7 DVAAuxSrc as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Specifies the audio auxiliary (AAUX) source pack for the first audio block. **Notes:** (Read and Write property)
63.11.8  DVAAuxSrc1 as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Specifies the AAUX source pack for the second audio block. **Notes:** (Read and Write property)

63.11.9  DVVAuxCtl as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Specifies the VAUX source control pack. **Notes:** (Read and Write property)

63.11.10  DVVAuxSrc as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Specifies the video auxiliary (VAUX) source pack. **Notes:** (Read and Write property)
63.12 class DirectShowEnumMonikerMBS

63.12.1 class DirectShowEnumMonikerMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Enumerates the monikers in a table of monikers.

63.12.2 Methods

63.12.3 Clone as DirectShowEnumMonikerMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Creates a new enumerator that contains the same enumeration state as the current one.  
**Notes:** This method makes it possible to record a particular point in the enumeration sequence and then return to that point at a later time. The caller must release this new enumerator separately from the first enumerator. 

Returns nil on any error.  
Lasterror is set.

63.12.4 CLSID_AudioCompressorCategory as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the DirectShow filter categories.  
**Notes:** Audio Compressors

63.12.5 CLSID_AudioInputDeviceCategory as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the DirectShow filter categories.  
**Notes:** Audio Capture Sources

63.12.6 CLSID_AudioRendererCategory as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the DirectShow filter categories.  
**Notes:** Audio Renderers
63.12.7  CLSID_DeviceControlCategory as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the DirectShow filter categories.  
**Notes:** Device Control Filters

63.12.8  CLSID_DVDHWDecodersCategory as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the DirectShow filter categories.  
**Notes:**  
WDM Stream Decompression Devices  
This category contains hardware DVD decoders.

63.12.9  CLSID_LegacyAmFilterCategory as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the DirectShow filter categories.  
**Notes:** DirectShow Filters

63.12.10  CLSID_MidiRendererCategory as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the DirectShow filter categories.  
**Notes:** Midi Renderers

63.12.11  CLSID_TransmitCategory as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the DirectShow filter categories.  
**Notes:** External Renderers

63.12.12  CLSID_VideoCompressorCategory as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the DirectShow filter categories.
Notes: Video Compressors

63.12.13 CLSID_VideoInputDeviceCategory as DirectShowGUIDMBS


63.12.14 Constructor(clsidDeviceClass as DirectShowGUIDMBS)

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: Creates an enumerator for a specified device category. Notes: This method makes it possible to record a particular point in the enumeration sequence and then return to that point at a later time. The caller must release this new enumerator separately from the first enumerator. Lasterror is set.

63.12.15 NextObject as DirectShowMonikerMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: Retrieves the next item in the enumeration sequence. Notes: Returns nil on any error. Lasterror is set.

63.12.16 Reset

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: Resets the enumeration sequence to the beginning. Notes: Lasterror is set. There is no guarantee that the same set of objects will be enumerated after the reset operation has completed. A static collection is reset to the beginning, but it can be too expensive for some collections, such as files in a directory, to guarantee this condition.
63.12.17  Skip(n as Integer)

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Skips over the specified number of items in the enumeration sequence. **Notes:** Lasterror is set.

63.12.18  Properties

63.12.19  Handle as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The internal object reference. **Notes:** Points to an IEnumMoniker interface. (Read and Write property)

63.12.20  Lasterror as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The last error code. **Notes:** Please check function documentation and also LastErrorMessage property for a human readable error message. (Read and Write property)

63.12.21  LasterrorMessage as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The formatted error message for the last error. **Notes:** (Read and Write property)
63.13 class DirectShowEnumPinsMBS

63.13.1 class DirectShowEnumPinsMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Enumerates pins on a filter.
**Notes:**
The BaseFilterMBS.EnumPins method returns this interface. It is based on the standard Component Object Model (COM) enumerators.
The filter graph manager uses this interface when it connects filters. Applications can use it to retrieve pins on a filter. For more information, see Enumerating Objects in a Filter Graph.
If the number of pins on the filter changes, some methods on this interface return VFW_E_ENUM_OUT_OF_SYNC. Call the Reset method to resynchronize the enumerator.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

63.13.2 Methods

63.13.3 Clone as DirectShowEnumPinsMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The Clone method makes a copy of the enumerator with the same enumeration state.
**Notes:**
Lasterror is set. Returns nil on any error.
If the number of pins changes, the enumerator is no longer consistent with the filter, and the method returns VFW_E_ENUM_OUT_OF_SYNC. Discard any data obtained from previous calls to the enumerator, because it might be invalid. Update the enumerator by calling the IEnumPins::Reset method. You can then call the Clone method safely.

63.13.4 Constructor

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The private constructor.

63.13.5 NextObject as DirectShowPinMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The Next method retrieves the next pin in the enumeration sequence.
**Notes:**
63.13. **CLASS DIRECTSHOWENUMPINS**

Lasterror is set. Returns nil on any error.

If the number of pins changes, the enumerator is no longer consistent with the filter, and the method returns VFW_E_ENUM_OUT_OF_SYNC. Discard any data obtained from previous calls to the enumerator, because it might be invalid. Update the enumerator by calling the IEnumPins::Reset method. You can then call the Next method safely.

### 63.13.6 Reset

**MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.** **Function:**
The Reset method resets the enumeration sequence to the beginning.  
**Notes:** Lasterror is set.

### 63.13.7 Skip(n as Integer)

**MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.** **Function:**
The Skip method skips over a specified number of pins.  
**Notes:**

n: Number of pins to skip.

Lasterror is set.

If the number of pins changes, the enumerator is no longer consistent with the filter, and the method returns VFW_E_ENUM_OUT_OF_SYNC. Discard any data obtained from previous calls to the enumerator, because it might be invalid. Update the enumerator by calling the IEnumPins::Reset method. You can then call the Skip method safely.

### 63.13.8 Properties

### 63.13.9 Handle as Integer

**MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.** **Function:**
The internal object reference.  
**Notes:**
Points to an IEnumPins interface.  
(Read and Write property)
63.13.10 Lasterror as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The last error code.

**Notes:**
Please check function documentation and also LastErrorMessage property for a human readable error message.
(Read and Write property)

63.13.11 LasterrorMessage as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The formatted error message for the last error.

**Notes:** (Read and Write property)
63.14. class DirectShowFileSinkFilterMBS

63.14.1. class DirectShowFileSinkFilterMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The FileSinkFilter interface is implemented on filters that write media streams to a file.
**Notes:**
A file sink filter in a video capture filter graph, for instance, writes the output of the video compression filter
to a file. Typically, the application running this filter graph should enable the user to enter the name of the
file to be written to. This interface enables the communication of this information.
If a filter needs the name of an output file, it should expose this interface to allow an application to set the
file name. Note that there is currently no base class implementation of this interface.
Any application that must set the name of the file into which the file sink filter will write should use this
interface to get and set the file name.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

63.14.2. Methods

63.14.3. Constructor

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The private constructor.

63.14.4. MEDIASUBTYPE_Asf as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The media sub type for ASF video files.

63.14.5. MEDIASUBTYPE_Avi as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The media sub type for AVI video files.


63.14.6 Properties

63.14.7 Handle as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The internal object reference.  
**Notes:**  
Points to an IFileSinkFilter interface.  
(Read and Write property)

63.14.8 Lasterror as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The last error code.  
**Notes:**  
Please check function documentation and also LastErrorMessage property for a human readable error message.  
(Read and Write property)

63.14.9 LasterrorMessage as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The formatted error message for the last error.  
**Notes:** (Read and Write property)
63.15  CLASS DIRECTSHOWFILTERGRAPHMBS

63.15  class DirectShowFilterGraphMBS

63.15.1  class DirectShowFilterGraphMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  **Function:** This class provides methods for building a filter graph.

**Notes:**
An application can use it to add filters to the graph, connect or disconnect filters, remove filters, and perform other basic operations. However, the DirectShowGraphBuilderMBS interface inherits from this interface and provides additional methods that are more sophisticated. Therefore, applications should use DirectShowGraphBuilderMBS rather than using DirectShowFilterGraphMBS directly.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

63.15.2  Methods

63.15.3  AddFilter(SourceFilter as DirectShowBaseFilterMBS, Name as string = "")

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  **Function:** Adds a filter to the graph.

**Notes:**
Filter: The filter to add.
Name: name for filter.

Lasterror is set.

The name of the filter can be ",", in which case the Filter Graph Manager generates a name. If the name is not "," and is not unique, this method will modify the name in an attempt to generate a new unique name. If this is successful, this method sets lasterror to VFW_S_DUPLICATE_NAME. If it cannot generate a unique name, it sets lasterror to VFW_E_DUPLICATE_NAME.

AddFilter calls the filter’s JoinFilterGraph method to inform the filter that it has been added. AddFilter must be called before attempting to use the Connect, ConnectDirect, or Render method to connect or render pins belonging to the added filter.
The Filter Graph Manager holds a reference count on the filter until the filter is removed from the graph or the Filter Graph Manager is released.

63.15.4  Constructor

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  **Function:** The private constructor.
63.15.5 SetDefaultSyncSource

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Sets the reference clock to the default clock.  
**Notes:**  
LastError is set.  

This method instructs the Filter Graph Manager to choose a reference clock using its default algorithm. For more information about the algorithm that it uses, see Reference Clocks. Usually you do not need to call this method, because the Filter Graph Manager automatically selects a clock. However, if you call SetSyncSource to override the clock, you can use SetDefaultSyncSource to restore the default clock. This method fails if the filter graph is running or paused.

63.15.6 Properties

63.15.7 Handle as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The internal object reference.  
**Notes:**  
Points to an IFilterGraph interface.  
(Read and Write property)

63.15.8 Lasterror as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The last error code.  
**Notes:**  
Please check function documentation and also LastErrorMessage property for a human readable error message.  
(Read and Write property)
63.15.9 LasterrorMessage as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The formatted error message for the last error.
**Notes:** (Read and Write property)
63.16 class DirectShowFilterInfoMBS

63.16.1 class DirectShowFilterInfoMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The class for information about a filter. Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

63.16.2 Methods

63.16.3 Constructor


63.16.4 Properties

63.16.5 Graph as DirectShowFilterGraphMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: Returns filter graph. Notes: If the filter is member of a filter graph, this is a reference to the filter graph’s FilterGraph interface. If the filter is not a member of a filter graph, this value of this member is nil. (Read and Write property)

63.16.6 Name as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The name of the filter. Notes: (Read and Write property)
63.17 class DirectShowGraphBuilderMBS

63.17.1 class DirectShowGraphBuilderMBS

This class provides methods that enable an application to build a filter graph.

Notes:

The GraphBuilder interface inherits from the FilterGraph interface. FilterGraph provides basic operations, such as adding a filter to the graph or connecting two pins. GraphBuilder adds further methods that construct graphs from partial information. For example, the RenderFile method builds a graph for file playback, given the name of the file. The Render method renders data from an output pin by connecting new filters to the pin.

Using these methods, an application does not need to specify every filter and pin connection in the graph. Instead, the Filter Graph Manager selects filters that are registered on the user’s system, adds them to the graph, and connects them.

see also

Subclass of the DirectShowFilterGraphMBS class.

63.17.2 Methods

63.17.3 Abort

Function:
The Abort method requests the Filter Graph Manager to halt its current task as quickly as possible.

Notes:
The current task may or may not fail to complete. Possibly the fastest option for the Filter Graph Manager is to complete the task.

Lasterror is set.

63.17.4 AddSourceFilter(FileName as string, FilterName as string) as DirectShowBaseFilterMBS

Function:
Add a source filter for a specified file to the filter graph.

Notes:
FileName: the name of the file to load.
FilterName: name for the source filter.

Lasterror is set.

This method searches for an installed filter that can read the specified file. If it finds one, the method adds it to the filter graph and returns a pointer to the filter’s IBaseFilter interface. To determine the media type and compression scheme of the file, the Filter Graph Manager reads the first few bytes of the file, looking for specific patterns of bytes, as documented in the article Registering a Custom File Type.

The application is responsible for building the rest of the filter graph. To do so, call EnumPins to enumerate the output pins on the source filter. Then use either the Connect method or the Render method.

If the method succeeds, the BaseFilter interface has an outstanding reference count. The caller must release the interface.

To render a file for default playback, use the RenderFile method.

The Filter Graph Manager holds a reference count on the filter until the filter is removed from the graph or the Filter Graph Manager is released.

63.17.5  Connect(pinOut as DirectShowPinMBS, pinIn as DirectShowPinMBS)

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  Function: Connects the two pins, using intermediates if necessary.
Notes:
pinOut: the output pin.
pinIn: the input pin.

Lasterror is set.

This method connects two pins directly or indirectly, adding intermediate filters if necessary. The method starts by attempting a direct connection. If that fails, it tries to use any filters that are already in the filter graph and have unconnected input pins. (It enumerates these in an arbitrary order.) If that fails, it searches for filters in the registry, and tries them in order of merit.

During the connection process, the Filter Graph Manager ignores pins on intermediate filters if the pin name begins with a tilde (\textasciitilde).
63.17. **CLASS DIRECTSHOWGRAPHBUILDERMBS**

see also

63.17.6 **ConnectFilters**(pinOut as DirectShowPinMBS, dest as DirectShowBaseFilterMBS)

MBS Win Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Convenience function to connect an output pin to a filter.
**Notes:** Lasterror is set.
See also:
- 63.17.7 ConnectFilters(source as DirectShowBaseFilterMBS, dest as DirectShowBaseFilterMBS) 11039
- 63.17.8 ConnectFilters(source as DirectShowBaseFilterMBS, pinIn as DirectShowPinMBS) 11039

63.17.7 **ConnectFilters**(source as DirectShowBaseFilterMBS, dest as DirectShowBaseFilterMBS)

MBS Win Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Convenience function to connect two filters.
**Notes:** Lasterror is set.
See also:
- 63.17.6 ConnectFilters(pinOut as DirectShowPinMBS, dest as DirectShowBaseFilterMBS) 11039
- 63.17.8 ConnectFilters(source as DirectShowBaseFilterMBS, pinIn as DirectShowPinMBS) 11039

63.17.8 **ConnectFilters**(source as DirectShowBaseFilterMBS, pinIn as DirectShowPinMBS)

MBS Win Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Convenience function to connect a filter to an input pin.
**Notes:** Lasterror is set.
See also:
- 63.17.6 ConnectFilters(pinOut as DirectShowPinMBS, dest as DirectShowBaseFilterMBS) 11039
- 63.17.7 ConnectFilters(source as DirectShowBaseFilterMBS, dest as DirectShowBaseFilterMBS) 11039

63.17.9 **Constructor**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The constructor.
63.17.10 MediaControl as DirectShowMediaControlMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries related media control object. **Notes:** Lasterror is set.

63.17.11 MediaEventEx as DirectShowMediaEventExMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries related media event object. **Notes:** Lasterror is set.

63.17.12 Render(pinOut as DirectShowPinMBS)

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The Render method builds a filter graph that renders the data from a specified output pin. **Notes:**

- pinOut: an output pin.
- Lasterror is set.

This method renders the data from a specified output pin, adding new filters to the graph as needed. Filters are tried in the same order as for the Connect method. For more information, see Intelligent Connect.

During the connection process, the Filter Graph Manager ignores pins on intermediate filters if the pin name begins with a tilde (textasciitilde).

63.17.13 RenderFile(filePath as string)

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Builds a filter graph that renders the specified file. **Notes:**

- filePath: string that contains the name of a media file.
- Lasterror is set.

If the filePath parameter specifies a media file, the method builds a filter graph for default playback. First it adds a source filter that can read the file, using the same process as the AddSourceFilter method. Then it renders the output pins on the source filter, adding intermediate filters if necessary. It tries filters in the same order as the Connect method.

During the connection process, the Filter Graph Manager ignores pins on intermediate filters if the pin name
begins with a tilde (`textasciitilde`).

Note that the RenderFile method does not remove any filters from the graph. If you call RenderFile twice, the second call simply adds more filters to the graph. When you run the graph, both sources will play at the same time.

### 63.17.14 SetLogFile(FilePath as string)

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The SetLogFile method sets the file for logging actions taken when attempting to perform an operation.

**Notes:**
This method is for use in debugging; it is intended to help you determine the cause of any failure to automatically build a filter graph. Lasterror is set.

### 63.17.15 VideoWindow as DirectShowVideoWindowMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Queries the video window related to this graph builder.

**Notes:** Lasterror is set.
63.18 class DirectShowGUIDMBS

63.18.1 class DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The class for a Windows unique ID. **Notes:** If you need to validate a GUID or UUID, please check the IsGUID function in our FAQ.

63.18.2 Methods

63.18.3 Constructor

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Creates a GUID with only zeros. 
**Example:**
```vba
dim g as new DirectShowGUIDMBS
MsgBox g.DisplayString
```

See also:

- 63.18.4 Constructor(value1 as Integer, value2 as Integer, value3 as Integer, value4 as Integer, value5 as Integer, value6 as Integer, value7 as Integer, value8 as Integer, value9 as Integer, value10 as Integer, value11 as Integer, value12 as Integer, value13 as Integer, value14 as Integer, value15 as Integer, value16 as Integer)

63.18.4 Constructor(value1 as Integer, value2 as Integer, value3 as Integer, value4 as Integer, value5 as Integer, value6 as Integer, value7 as Integer, value8 as Integer, value9 as Integer, value10 as Integer, value11 as Integer, value12 as Integer, value13 as Integer, value14 as Integer, value15 as Integer, value16 as Integer)

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Creates a new GUID with the given byte values. 
**Example:**
```vba
dim g as new DirectShowGUIDMBS(&h14, &h3e, &h4e, &h83, &h64, &h97, &h11, &hd2, &ha2, &h31, &h00, &h0, &h4f, &ha3, &h18, &h09)
MsgBox g.DisplayString
```
63.18. CLASS DIRECTSHOWGUIDMBS

See also:

- 63.18.3 Constructor

63.18.5 DisplayString as string

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The ID well formatted.

63.18.6 Equal(other as DirectShowGUIDMBS) as boolean

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Checks whether two GUIDs are equal.
**Notes:** Returns true if both items are equals.

63.18.7 Parse(GUID as String) as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Parses GUID string into a GUID object.

63.18.8 Properties

63.18.9 Byte(index as Integer) as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Read or write the byte value.
**Example:**
```vba
dim g as new DirectShowGUIDMBS

g.Byte(1) = 65

MsgBox str(g.Byte(1)) // shows 65
```

**Notes:** (Read and Write computed property)
63.18.10 Data as string

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The UID as binary string.
**Notes:** (Read and Write computed property)
class DirectShowMediaControlMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Provides methods for controlling the flow of data through the filter graph.

**Notes:**

It includes methods for running, pausing, and stopping the graph. The Filter Graph Manager implements this interface.

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

**Methods**

**Constructor**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The private constructor.

**GetState(msTimeout as Integer = -1) as Integer**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Retrieves the state of the filter graph: paused, running, or stopped.

**Notes:**

*msTimeout*: Duration of the time-out, in milliseconds, or INFINITE (-1) to specify an infinite time-out.

State transitions are not necessarily synchronous. Therefore, when you call this method, the filter graph might be in transition to a new state. In that case, the method blocks until the transition completes or until the specified time-out elapses.

Lasterror is set.

Applications can use this method to determine whether playback has started after a call to Run. Generally, applications should have their own mechanism for tracking which state they have put the filter graph into. Applications typically use the current state to determine which user interface controls are enabled or disabled. For example, once the graph goes into the running state, the application might disable a ”Play” button and enable ”Stop” and ”Pause” buttons.

If the filter graph is in a transition to a new state, the returned state is the new state, not the previous state. This method returns an error if there is a call on another thread to change the state while this method is blocked.

Avoid specifying a time-out of INFINITE, because threads cannot process messages while waiting in Get-
State. If you call GetState from the thread that processes Windows messages, specify small wait times on the call in order to remain responsive to user input. This is especially important when the source is streaming over a network or from the Internet because state transitions in these environments can take significantly more time to complete.

63.19.5 Pause

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Pauses all the filters in the filter graph.

**Notes:**

LastError is set.

Pausing the filter graph cues the graph for immediate rendering when the graph is next run. While the graph is paused, filters process data but do not render it. Data is pushed through the graph and processed by transform filters as far as buffering permits, but renderer filters do not render the data. However, video renderers display a static poster frame of the first sample.

If the method returns S_FALSE, call the GetState method to wait for the state transition to complete, or to check if the transition has completed. When you call Pause to display the first frame of a video file, always follow it immediately with a call to GetState to ensure that the state transition has completed. Failure to do this can result in the video rectangle being painted black. If the method fails, it stops the graph before returning.

63.19.6 RenderFile(FilePath as string)

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Builds a filter graph that renders the specified file.

**Notes:**

LastError is set.

FilePath: Specifies the name of the file to load.

63.19.7 Run

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Runs all the filters in the filter graph.

**Notes:**

While the graph is running, data moves through the graph and is rendered.
Lasterror is set.

If the filter graph is stopped, this method pauses the graph before running. If the graph is already running, the method returns S_OK but has no effect.

The graph runs until the application calls the Pause or Stop method. When playback reaches the end of the stream, the graph continues to run, but the filters do not stream any more data. At that point, the application can pause or stop the graph. For information about the end-of-stream event, see Pause and EC_COMPLETE.

This method does not seek to the beginning of the stream. Therefore, if you run the graph, pause it, and then run it again, playback resumes from the paused position. If you run the graph after it has reached the end of the stream, nothing is rendered. To seek the graph, use the MediaSeeking interface.

If method returns S_FALSE, it means that the method returned before all of the filters switched to a running state. The filters will complete the transition after the method returns. Optionally, you can wait for the transition to complete by calling the GetState method with a timeout value. However, this is not required.

If the Run method returns an error code, it means that one or more filters failed to run. However, some filters might be in a running state. In a multistream graph, entire streams might be playing successfully. Typically the application would tear down the graph and report an error in this case.

63.19.8 Stop

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Stops all the filters in the graph.

**Notes:**

Lasterror is set.

If the graph is running, this method pauses the graph before stopping it. While paused, video renderers can copy the current frame to display as a poster frame.

This method does not seek to the beginning of the stream. If you call this method and then call the Run method, playback resumes from the stopped position. To seek, use the IMediaSeeking interface.

The Filter Graph Manager pauses all the filters in the graph, and then calls the Stop method on all filters, without waiting for the pause operations to complete. Therefore, some filters might have their Stop method called before they complete their pause operation. If you develop a custom rendering filter, you might need to handle this case by pausing the filter if it receives a stop command while in a running state. However, most filters do not need to take any special action in this regard.

63.19.9 StopWhenReady

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Pauses the filter graph, allowing filters to queue data, and then stops the filter graph.
Notes:

Lasterror is set.

This method is useful if you want to seek the filter graph while the graph is stopped. As long as the filter graph is stopped, changes in the current position do not repaint the video window with a new frame. Therefore, calling SetPositions does not update the video window. To update the window after the seek operation, call StopWhenReady. This method transitions the graph to a paused state, waits for the pause operation to complete, and then transitions the graph back to stopped. The pause operation queues data in the graph, so that the video renderer receives and displays the new frame.

This method is asynchronous. It waits on a separate thread for the pause to complete. The calling thread does not block, which enables the application to respond to user input. When the method returns, the logical state of the graph is stopped, even before the pause operation completes. If you call the GetState method at this point, it returns StateStopped.

If the application issues another state-change command (such as pause, run, or seek) before the pause operation completes, the new command cancels the pending stop command. The pause operation completes, but the graph does not stop.

63.19.10 Properties

63.19.11 Handle as Integer


Notes:

Points to an IMediaControl interface.

(Read and Write property)

63.19.12 Lasterror as Integer


Notes:

Please check function documentation and also LastErrorMessage property for a human readable error message.

(Read and Write property)
63.19.13 LastErrorMessage as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The formatted error message for the last error. **Notes:** (Read and Write property)

63.19.14 Constants

63.19.15 kStatePaused = 1

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the state constants. **Notes:** Paused

63.19.16 kStateRunning = 2

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the state constants. **Notes:** Running

63.19.17 kStateStopped = 0

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the state constants. **Notes:** Stopped.
63.20 class DirectShowMediaEventExMBS

63.20.1 class DirectShowMediaEventExMBS

The class for extended options for media event handling.

Notes:

The DirectShowMediaEventExMBS interface inherits the DirectShowMediaEventMBS interface, which contains methods for retrieving event notifications and for overriding the filter graph’s default handling of events. MediaEventEx adds methods that enable an application window to receive messages when events occur. Subclass of the DirectShowMediaEventMBS class. This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

63.20.2 Methods

63.20.3 Constructor

The private constructor.

63.20.4 Properties

63.20.5 NotifyFlags as Integer

Enables or disables event notifications. Must be one of the following values: 0 = Enable event notifications or AM_MEDIAEVENT_NONOTIFY = Disable event notifications.

Notes:

By default, the Filter Graph Manager posts event notifications for the application. If the NotifyFlags parameter is AM_MEDIAEVENT_NONOTIFY, the Filter Graph Manager clears any pending event notifications from the queue, and does not post any new ones. If event notifications are disabled, the handle returned by the GetEventHandle method is signaled at the end of each stream that is, whenever the Filter Graph Manager receives an EC_COMPLETE event.

(Read and Write computed property)
63.20.6 Constants

63.20.7 AM_MEDIAEVENT_NONOTIFY = 1

MBS Win Plugin, Plugin Version: 12.1. Function: One of the notify flags constant. Notes: Pass this value to NotifyFlags to disable event notification.
63.21 class DirectShowMediaEventMBS

63.21.1 class DirectShowMediaEventMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The class for media event handling.

**Notes:**

The MediaEvent interface contains methods for retrieving event notifications and for overriding the Filter Graph Manager’s default handling of events. The MediaEventEx interface inherits this interface and extends it.

The Filter Graph Manager implements this interface. Applications can use it to respond to events that occur in the filter graph, such as the end of a stream or a rendering error. Filters post events to the filter graph using the IMediaEventSink interface.

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

63.21.2 Methods

63.21.3 CancelDefaultHandling(eventCode as Integer)

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Cancels the Filter Graph Manager’s default handling for a specified event.

**Notes:**

The event notification is passed to the application.

Lasterror is set.

To restore the default handling for an event, call the RestoreDefaultHandling method with the event code.

63.21.4 Constructor

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The private constructor.

63.21.5 FreeEventParams(eventCode as Integer, Param1 as Integer, Param2 as Integer)

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Frees resources associated with the parameters of an event.
Notes:
EventCode: Event code.
Param1: First event parameter.
Param2: Second event parameter.

Lasterorr is set.
After you call the GetEvent method to retrieve an event notification, you must call FreeEventParams. This method frees any resources that were allocated for the event parameters. Pass in the same variables used for the GetEvent call.

63.21.6 RestoreDefaultHandling(eventCode as Integer)

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Restores the Filter Graph Manager's default handling for a specified event.

Notes:
Lasterror is set.
By default, the Filter Graph Manager handles some events (such as EC_REPAINT) without passing them to the application. If you call the CancelDefaultHandling method to override the default handling for an event, you can restore the default behavior by calling RestoreDefaultHandling with the same event code.

63.21.7 Properties

63.21.8 Handle as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The internal object reference.

Notes:
Points to an IMediaEvent interface.
(Read and Write property)

63.21.9 Lasterror as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The last error code.

Notes:
Please check function documentation and also LastErrorMessage property for a human readable error message.
(Read and Write property)
63.21.10 LasterrorMessage as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The formatted error message for the last error. **Notes:** (Read and Write property)

63.21.11 Constants

63.21.12 AM_MEDIAEVENT_NONOTIFY = 1

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the notify flags constant. **Notes:** Pass this value to NotifyFlags to disable event notification.
63.22 class DirectShowMediaFilterMBS

63.22.1 class DirectShowMediaFilterMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The MediaFilter interface controls the streaming state of a filter.

**Notes:**
All DirectShow filters implement this interface. It provides methods for switching the filter between states (stopped, paused, and running); for retrieving the filter's current state; and for setting a reference clock. Applications should not call MediaFilter methods on filters.

The Filter Graph Manager also exposes this interface. Applications can use the SetSyncSource method to set the graph reference clock, and GetSyncSource to retrieve the clock. Applications should not call the other methods on this interface. Instead, use the corresponding methods on the MediaControl interface. The BaseFilter interface inherits from MediaFilter.

This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

63.22.2 Methods

63.22.3 Constructor

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The private constructor.

63.22.4 Pause

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The Pause method pauses the filter.

**Notes:**
Lasterror is set.

When a filter is paused, it can receive, process, and deliver samples. However, a renderer filter will only accept one sample while paused. Therefore, when the filter graph is paused, samples move through the graph until the first sample reaches the renderer. At that point, streaming is paused until the Run method is called. Video renderers display the first sample as a still frame.

Live capture filters do not deliver any samples while paused, only while running.

The state transition might be asynchronous. If the method returns before the transition completes, the
lasterror value is 1. A renderer filter does not complete the transition to paused until either (1) it receives one sample, or (2) it receives an end-of-stream notification. While the state transition is pending, State gives lasterror VFW_S_STATE_INTERMEDIATE.

### 63.22.5 Run(StartTime as Int64)

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The Run method runs the filter.

**Notes:**

StartTime: Reference time corresponding to stream time 0.
Lasterror is set.

When a filter is running, it can receive, process, and deliver samples. Source filters generate new samples, and renderer filters render them.
The state transition might be asynchronous. If the method returns before the transition completes, the lasterror value is 1.
Stream time is calculated as the current reference time minus StartTime. To calculate when a media sample should be rendered, the renderer compares the time stamp with the current stream time. Thus, a media sample with a time stamp of zero should be rendered at time StartTime. For more information, see Time and Clocks in DirectShow.
When an application calls the Run method, the Filter Graph Manager calls Run on each filter. It sets the value of StartTime slightly in the future, to account for graph latency.

### 63.22.6 Stop

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The Stop method stops the filter.

**Notes:**

Lasterror is set.
When a filter is stopped, it does not process or deliver any samples, and it rejects samples from upstream filters.
The state transition might be asynchronous. If the method returns before the transition completes, the lasterror value is 1.
This method always sets the filter’s state to kStateStopped, even if the method returns an error code.
63.22. CLASS DIRECTSHOWMEDIAFILTERMBS

63.22.7 Properties

63.22.8 Handle as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The internal object reference.
**Notes:** Points to an IMediaFilter interface.
(Read and Write property)

63.22.9 Lasterror as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The last error code.
**Notes:** Please check function documentation and also LastErrorMessage property for a human readable error message.
(Read and Write property)

63.22.10 LasterrorMessage as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The formatted error message for the last error.
**Notes:** (Read and Write property)

63.22.11 Constants

63.22.12 kStatePaused = 1

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the filter state constants.
**Notes:** Paused. The filter is processing data, but not rendering it.

63.22.13 kStateRunning = 2

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the filter state constants.
**Notes:** Running. The filter is processing and rendering data.
63.22.14  kStateStopped = 0

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the filter state constants.  
**Notes:** Stopped. The filter is not processing data.
63.23. **CLASS DIRECTSHOWMEDIATYPEMBS**

### 63.23 class DirectShowMediaTypeMBS

#### 63.23.1 class DirectShowMediaTypeMBS

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**

Describes the format of a media sample.

**Notes:**

see also


This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

---

### 63.23.2 Methods

#### 63.23.3 Constructor

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**

The private constructor.

---

### 63.23.4 Properties

#### 63.23.5 DVINFO as DirectShowDVInfoMBS

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**

Queries format data as DVInfo.

**Notes:**

Returns nil if format is not a DVInfo.

(Read only property)

---

#### 63.23.6 FixedSizeSamples as Boolean

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**

If true, samples are of a fixed size.

**Notes:**

This field is informational only. For audio, it is generally set to true. For video, it is usually true for uncompressed video and false for compressed video.

(Read and Write property)
63.23.7 FormatType as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** GUID that specifies the structure used for the format block. **Notes:** (Read and Write property)

63.23.8 Handle as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Internal object reference. **Notes:** (Read and Write property)

63.23.9 MajorType as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Globally unique identifier (GUID) that specifies the major type of the media sample. **Notes:** For a list of possible major types, see Media Types. http://msdn.microsoft.com/en-us/library/windows/desktop/dd390670(v=vs.85).aspx (Read and Write property)

63.23.10 SampleSize as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Size of the sample in bytes. For compressed data, the value can be zero. **Notes:** (Read and Write property)

63.23.11 SubType as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** GUID that specifies the subtype of the media sample. **Notes:** For a list of possible subtypes, see Media Types. For some formats, the value might be MEDIASUB-TYPE_None, which means the format does not require a subtype. http://msdn.microsoft.com/en-us/library/windows/desktop/dd390670(v=vs.85).aspx (Read and Write property)
63.23.12 TemporalCompression as Boolean

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
If true, samples are compressed using temporal (interframe) compression.

**Notes:**
A value of true indicates that not all frames are key frames. This field is informational only.
(Read and Write property)

63.23.13 VideoInfoHeader as DirectShowVideoInfoHeaderMBS

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Queries format data as VideoInfoHeader.

**Notes:**
Returns nil if format is not a VideoInfoHeader.
(Read only property)

63.23.14 VideoInfoHeader2 as DirectShowVideoInfoHeader2MBS

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Queries format data as VideoInfoHeader2.

**Notes:**
Returns nil if format is not a VideoInfoHeader2.
(Read only property)

63.23.15 WaveFormat as DirectShowWaveFormatMBS

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Queries format data as WaveFormat.

**Notes:**
Returns nil if format is not a WaveFormat.
(Read only property)
class DirectShowMonikerMBS


Notes:
In this plugin we use monikers to enumerate filters and devices in order to connect with BindBaseFilter method.

Enables you to use a moniker object, which contains information that uniquely identifies a COM object. An object that has a pointer to the moniker object’s IMoniker interface can locate, activate, and get access to the identified object without having any other specific information on where the object is actually located in a distributed system.
Monikers are used as the basis for linking in COM. A linked object contains a moniker that identifies its source. When the user activates the linked object to edit it, the moniker is bound; this loads the link source into memory.

see also
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

Methods

BindBaseFilter as DirectShowBaseFilterMBS


Notes:
Lasterror is set.

This implements the primary function of a moniker, which is to locate the object identified by the moniker and return a pointer to one of its interfaces.

see also
63.24. CLASS DIRECTSHOWMONIKERMBS

63.24.4 Constructor

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The private constructor.

63.24.5 DisplayName(BindContext as DirectShowBindContextMBS = nil) as string

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves the display name for the moniker.
**Notes:**
BindContext: The DirectShowBindContextMBS interface on the bind context to be used in this operation. The bind context caches objects bound during the binding process, contains parameters that apply to all operations using the bind context, and provides the means by which the moniker implementation should retrieve information about its environment. If you provide nil, the plugin creates a temporary context.

GetDisplayName provides a string that is a displayable representation of the moniker. A display name is not a complete representation of a moniker’s internal state; it is simply a form that can be read by users. As a result, it is possible (though rare) for two different monikers to have the same display name.

This is not a text to show to user.

63.24.6 EnumMonikers(forward as boolean) as DirectShowEnumMonikerMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves enumerator for the components of a composite moniker.
**Notes:** Lasterror is set.

63.24.7 Hash as UInt32

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a hash value using the internal state of the moniker.
**Notes:** Lasterror is set.

63.24.8 IsEqual(other as DirectShowMonikerMBS) as Boolean

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Determines whether this moniker is identical to the specified moniker.
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Notes:
Returns true if both are identical.
LastError is set.

63.24.9 Properties(BindContext as DirectShowBindContextMBS = nil) as DirectShowPropertyBagMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates property bag with properties of the moniker.
**Notes:** Lasterror is set.

63.24.10 Properties

63.24.11 Handle as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The internal object reference.
**Notes:**
Points to an IMoniker interface.
(Read and Write property)

63.24.12 Lasterror as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The last error code.
**Notes:**
Please check function documentation and also LastErrorMessage property for a human readable error message.
(Read and Write property)

63.24.13 LasterrorMessage as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The formatted error message for the last error.
**Notes:** (Read and Write property)
63.25 class DirectShowNullRendererMBS

63.25.1 class DirectShowNullRendererMBS


**Notes:**

The Null Renderer filter is a renderer that discards every sample it receives, without displaying or rendering the sample data.

Use this filter when an output pin in the graph requires a downstream connection, but you do not wish to render the data from that pin. By connecting the output pin to the Null Renderer, you complete the connection without rendering the data.

Subclass of the DirectShowBaseFilterMBS class.

63.25.2 Methods

63.25.3 Constructor


**Notes:** On success the handle property is not zero.
63.26 class DirectShowPinMBS

63.26.1 class DirectShowPinMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
This interface is exposed by all input and output pins.
**Notes:**
The filter graph manager uses this interface to connect pins and perform flushing operations. Applications can use this interface to query the pin for information.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

63.26.2 Methods

63.26.3 Constructor

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The private constructor.

63.26.4 Disconnect

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The Disconnect method breaks the current pin connection.
**Notes:**
The Filter Graph Manager calls this method when it disconnects two filters. Applications and filters should not call this method. Instead, call the DirectShowFilterGraphMBS.Disconnect method on the Filter Graph Manager.
Sets lasterror.

This method fails if the filter is paused or running. If the pin supports the PinConnection interface, call PinConnection DynamicDisconnect to disconnect the pin when the filter is paused or running.
This method does not disconnect the other pin in the pin connection.

63.26.5 PIN_CATEGORY_ANALOGVIDEOIN as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
One of the DirectShow pin categories.
**Notes:** Input pin of the capture filter that takes analog and digitizes it.
63.26.6 PIN_CATEGORY_CAPTURE as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the DirectShow pin categories. **Notes:** Capture pin.

63.26.7 PIN_CATEGORY_CC as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the DirectShow pin categories. **Notes:** Pin providing closed captioning data from Line 21.

63.26.8 PIN_CATEGORY_EDS as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the DirectShow pin categories. **Notes:** Pin providing Extended Data Services (Line 21, even fields).

63.26.9 PIN_CATEGORY_NABTS as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the DirectShow pin categories. **Notes:** Pin providing North American Videotext Standard data.

63.26.10 PIN_CATEGORY_PREVIEW as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the DirectShow pin categories. **Notes:** Preview pin.

63.26.11 PIN_CATEGORY_STILL as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the DirectShow pin categories. **Notes:** Pin that provides a still image. The filter’s capture pin must be connected before the still-image pin is connected.
63.26.12 PINCATEGORY_TELETEXT as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
One of the DirectShow pin categories.  
**Notes:** Pin providing teletext (a closed captioning variant).

63.26.13 PINCATEGORY_TIMECODE as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
One of the DirectShow pin categories.  
**Notes:** Pin providing timecode data.

63.26.14 PINCATEGORY_VBI as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
One of the DirectShow pin categories.  
**Notes:** Pin to be connected to the VBI Surface Allocator, the VBI surface allocator filter that is needed to allocate the correct video memory for things like closed captioning overlays in scenarios where a video port is being used. PCI, IEEE 1394, and USB scenarios do not use this filter.

63.26.15 PINCATEGORY_VIDEOPORT as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
One of the DirectShow pin categories.  
**Notes:** Video output pin to be connected to input pin zero on the Overlay Mixer.

63.26.16 PINCATEGORY_VIDEOPORT_VBI as DirectShowGUIDMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
One of the DirectShow pin categories.  
**Notes:** Pin providing vertical blanking interval data.
63.26.17 Properties

63.26.18 Handle as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The internal object reference.
**Notes:**
Points to an IPin interface.
(Read and Write property)

63.26.19 Lasterror as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The last error code.
**Notes:**
Please check function documentation and also LastErrorMessage property for a human readable error mes-
sage.
(Read and Write property)

63.26.20 LasterrorMessage as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The formatted error message for the last error.
**Notes:** (Read and Write property)
63.27 class DirectShowPropertyBagMBS

63.27.1 class DirectShowPropertyBagMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Provides an object with a property bag in which the object can save its properties persistently.
**Notes:**
used for Monikers to store properties like description and user friendly name.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

63.27.2 Methods

63.27.3 Constructor

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

63.27.4 Description as string

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Convenience method to read description.
**Notes:** Lasterror is set.

63.27.5 DevicePath as string

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Convenience method to read device path.
**Notes:** Lasterror is set.

63.27.6 FriendlyName as string

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Convenience method to read friendly name.
**Notes:** Lasterror is set.
63.27.7 Read(name as string) as Variant

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads one of the properties into a variant.

**Notes:**
As we only need 3 properties for DirectShowMonikerMBS.Properties, we have direct accessors. Lasterror is set.

63.27.8 Properties

63.27.9 Handle as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal object reference.

**Notes:**
Points to an IPropertyBag interface.
(Read and Write property)

63.27.10 Lasterror as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last error code.

**Notes:**
Please check function documentation and also LastErrorMessage property for a human readable error message.
(Read and Write property)

63.27.11 LasterrorMessage as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The formatted error message for the last error.

**Notes:** (Read and Write property)
63.28 class DirectShowSampleGrabberMBS

63.28.1 class DirectShowSampleGrabberMBS


Notes:
The Sample Grabber filter provides a way to retrieve samples as they pass through the filter graph. It is a transform filter with one input pin and one output pin. It passes all samples downstream unchanged, so you can insert it into a filter graph without altering the data stream. Your application can then retrieve individual samples from the filter by calling methods on the ISampleGrabber interface. If you want to retrieve samples without rendering the data, connect the Sample Grabber filter to the Null Renderer filter.

63.28.2 Methods

63.28.3 BaseFilter as DirectShowBaseFilterMBS


Notes: So you can add it to a graph builder.

63.28.4 Constructor


63.28.5 Current as Picture


Notes:
This actually makes a copy of the internal buffer into a new picture object.
Lasterror is set.
63.28. Destructor

MBS Win Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The destructor.

63.28.7 SetOneShot(OneShot as boolean)

MBS Win Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The SetOneShot method specifies whether the Sample Grabber filter halts after the filter receives a sample.

63.28.8 Properties

63.28.9 Handle as Integer

MBS Win Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The internal object reference.
**Notes:**
Points to an ISampleGrabber interface.
(Read and Write property)

63.28.10 Lasterror as Integer

MBS Win Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The last error code.
**Notes:**
Please check function documentation and also LastErrorMessage property for a human readable error message.
(Read and Write property)

63.28.11 LasterrorMessage as String

MBS Win Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The formatted error message for the last error.
**Notes:** (Read and Write property)
63.28.12 Events

63.28.13 NewFrame(Time as Double)

MBS Win Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**

The event for a new video frame.

**Notes:**

time is the starting time of the sample, in seconds.

Use the Current method to get the picture.
63.29. **CLASS DIRECTSHOWVIDEOINFOHEADER2MBS**

**63.29 class DirectShowVideoInfoHeader2MBS**

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**

Describes the bitmap and color information for a video image, including interlace, copy protection, and pixel aspect ratio information.

**Notes:**

see also


This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

**63.29.2 Methods**

**63.29.3 Constructor**

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**

The private constructor.

**63.29.4 Properties**

**63.29.5 AvgTimePerFrame as Int64**

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**

The desired average display time of the video frames, in 100-nanosecond units.

**Notes:**

The actual time per frame may be longer.

see also


(Read and Write property)

**63.29.6 BitErrorRate as Integer**

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**

Data error rate, in bit errors per second.

**Notes:** (Read and Write property)
63.29.7  BitRate as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Approximate data rate of the video stream, in bits per second.
**Notes:** (Read and Write property)

63.29.8  ControlFlags as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Control flags.
**Notes:**
see also
(Read and Write property)

63.29.9  CopyProtectFlags as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Flag set with the AMCOPYPROTECT.RestrictDuplication value (0x00000001) to indicate that the duplication of the stream should be restricted.
**Notes:**
If undefined, specify zero or else the connection will be rejected.
(Read and Write property)

63.29.10 Height as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The bitmap height.
**Notes:** (Read and Write property)

63.29.11 InterlaceFlags as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Flags that specify how the video is interlaced.
**Notes:**
see also
63.29. **CLASS DIRECTSHOWVIDEOINFOHEADER2MBS**

(Read and Write property)

63.29.12 **PictAspectRatioX** as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The X dimension of picture aspect ratio. For example, 16 for a 16-inch x 9-inch display.
**Notes:** (Read and Write property)

63.29.13 **PictAspectRatioY** as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The Y dimension of picture aspect ratio. For example, 9 for a 16-inch x 9-inch display.
**Notes:** (Read and Write property)

63.29.14 **SourceBottom** as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Part of the rectangle defining the source video window.
**Notes:** This rectangle can be a clipping rectangle, to select a portion of the source video stream.
(Read and Write property)

63.29.15 **SourceLeft** as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Part of the rectangle defining the source video window.
**Notes:** This rectangle can be a clipping rectangle, to select a portion of the source video stream.
(Read and Write property)

63.29.16 **SourceRight** as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Part of the rectangle defining the source video window.
**Notes:**
This rectangle can be a clipping rectangle, to select a portion of the source video stream.  
(Read and Write property)

63.29.17  SourceTop as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  Function:  
Part of the rectangle defining the source video window.  
Notes:  
This rectangle can be a clipping rectangle, to select a portion of the source video stream.  
(Read and Write property)

63.29.18  TargetBottom as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  Function:  
Part of the target rectangle for the destination video window.  
Notes:  
(Read and Write property)

63.29.19  TargetLeft as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  Function:  
Part of the target rectangle for the destination video window.  
Notes:  
(Read and Write property)

63.29.20  TargetRight as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  Function:  
Part of the target rectangle for the destination video window.  
Notes:  
(Read and Write property)

63.29.21  TargetTop as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  Function:  
Part of the target rectangle for the destination video window.  
Notes:  
(Read and Write property)
63.29.22 Width as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The bitmap width. **Notes:** (Read and Write property)
63.30  class DirectShowVideoInfoHeaderMBS

63.30.1  class DirectShowVideoInfoHeaderMBS

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Describes the bitmap and color information for a video image.

**Notes:**

see also http://msdn.microsoft.com/en-us/library/windows/desktop/dd407325(v=vs.85).aspx

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

63.30.2  Methods

63.30.3  Constructor

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The private constructor.

63.30.4  Properties

63.30.5  AvgTimePerFrame as Int64

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The desired average display time of the video frames, in 100-nanosecond units.

**Notes:**

The actual time per frame may be longer.

see also http://msdn.microsoft.com/en-us/library/windows/desktop/dd407325(v=vs.85).aspx

(Read and Write property)

63.30.6  BitCount as Integer


**Notes:**

The number of bits-per-pixel. Determines the number of bits that define each pixel and the maximum number of colors in the bitmap. This member must be one of the following values.

Can be 0 for PNG/JPEG images, 1 for B/W, 4 for 16 colors, 8 for 256 colors, 16 for thousands of colors, 24 for millions of colors or 32 for millions of colors with alpha.
63.30. CLASS DIRECTSHOWVIDEOINFOHEADERMBS

(Read and Write property)

63.30.7 BitErrorRate as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Data error rate, in bit errors per second.
**Notes:** (Read and Write property)

63.30.8 BitRate as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Approximate data rate of the video stream, in bits per second.
**Notes:** (Read and Write property)

63.30.9 BMIHeaderPtr as Ptr

MBS Win Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Returns pointer to BITMAPINFOHEADER structure.
**Notes:**
You can use this to modify any field directly.
You need to know what you do and know the exact offset. (which can be different in 32-bit vs. 64-bit)
(Read only property)

63.30.10 Height as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The bitmap height.
**Notes:** (Read and Write property)

63.30.11 SourceBottom as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Part of the rectangle defining the source video window.
**Notes:**
This rectangle can be a clipping rectangle, to select a portion of the source video stream.
(Read and Write property)
63.30.12 SourceLeft as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Part of the rectangle defining the source video window.
**Notes:**
This rectangle can be a clipping rectangle, to select a portion of the source video stream.
(Read and Write property)

63.30.13 SourceRight as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Part of the rectangle defining the source video window.
**Notes:**
This rectangle can be a clipping rectangle, to select a portion of the source video stream.
(Read and Write property)

63.30.14 SourceTop as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Part of the rectangle defining the source video window.
**Notes:**
This rectangle can be a clipping rectangle, to select a portion of the source video stream.
(Read and Write property)

63.30.15 TargetBottom as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Part of the target rectangle for the destination video window.
**Notes:** (Read and Write property)

63.30.16 TargetLeft as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Part of the target rectangle for the destination video window.
**Notes:** (Read and Write property)
63.30. **CLASS DIRECTSHOWVIDEOINFOHEADERMBS**

63.30.17 **TargetRight as Integer**

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Part of the target rectangle for the destination video window.
**Notes:** (Read and Write property)

63.30.18 **TargetTop as Integer**

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Part of the target rectangle for the destination video window.
**Notes:** (Read and Write property)

63.30.19 **VideoInfoHeaderPtr as Ptr**

MBS Win Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Returns pointer to VIDEOINFOHEADER structure.
**Notes:**
You can use this to modify any field directly.
You need to know what you do and know the exact offset. (which can be different in 32-bit vs. 64-bit)
(Read only property)

63.30.20 **Width as Integer**

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The bitmap width.
**Notes:** (Read and Write property)
class DirectShowVideoStreamConfigCapsMBS

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Describes a range of video formats.  
**Notes:**  
Video compression and video capture filters use this structure to describe what formats they can produce. Microsoft deprecated this structure some time ago in favor of DirectShowMediaTypeMBS class.  

see also  
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.  

### 63.31.2 Methods

### 63.31.3 Constructor

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The private constructor.

### 63.31.4 Properties

#### 63.31.5 CropAlignX as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Required horizontal alignment of the source rectangle.  
**Notes:**  
 Deprecated.  
(Read only property)

#### 63.31.6 CropAlignY as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Required vertical alignment of the source rectangle.  
**Notes:**  
 Deprecated.  
(Read only property)
63.31.7 CropGranularityX as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Horizontal granularity of the source rectangle.

**Notes:**
This value specifies the increments that are valid between MinCroppingSize and MaxCroppingSize. Deprecated.
(Read only property)

63.31.8 CropGranularityY as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Vertical granularity of the source rectangle.

**Notes:**
This value specifies the increments that are valid between MinCroppingSize and MaxCroppingSize. Note Deprecated.
(Read only property)

63.31.9 InputSizeHeight as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Native size of the incoming video signal.

**Notes:**
For a compressor, the size is taken from the input pin. For a capture filter, the size is the largest signal the filter can digitize with every pixel remaining unique. Deprecated.
(Read only property)

63.31.10 InputSizeWidth as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Native size of the incoming video signal.

**Notes:**
For a compressor, the size is taken from the input pin. For a capture filter, the size is the largest signal the filter can digitize with every pixel remaining unique. Deprecated.
63.31.11 MaxBitsPerSecond as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Maximum data rate this pin can produce.

**Notes:**
Deprecated
(Read only property)

63.31.12 MaxCroppingSizeHeight as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Largest source rectangle allowed.

**Notes:**
Deprecated.
(Read only property)

63.31.13 MaxCroppingSizeWidth as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Largest source rectangle allowed.

**Notes:**
Deprecated.
(Read only property)

63.31.14 MaxFrameInterval as Int64

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The maximum frame duration, in 100-nanosecond units.

**Notes:**
This value applies only to capture filters.
(Read and Write property)
63.31.15 MaxOutputSizeHeight as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Maximum output size.
**Notes:**
Deprecated.
(Read only property)

63.31.16 MaxOutputSizeWidth as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Maximum output size.
**Notes:**
Deprecated.
(Read only property)

63.31.17 MinBitsPerSecond as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Minimum data rate this pin can produce.
**Notes:**
Deprecated.
(Read only property)

63.31.18 MinCroppingSizeHeight as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Smallest source rectangle allowed.
**Notes:**
The source rectangle is defined in the Source rectangle of the DirectShowVideoInfoHeader2MBS or Direct-
ShowVideoInfoHeaderMBS classes.
Note Deprecated.
(Read only property)
63.31.19  MinCroppingSizeWidth as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  **Function:** Smallest source rectangle allowed.  
**Notes:**  
The source rectangle is defined in the Source rectangle of the DirectShowVideoInfoHeader2MBS or DirectShowVideoInfoHeaderMBS classes.  
Note Deprecated.  
(Read only property)

63.31.20  MinFrameInterval as Int64

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  **Function:** The minimum frame duration, in 100-nanosecond units. This value applies only to capture filters.  
**Notes:** (Read and Write property)

63.31.21  MinOutputSizeHeight as Integer

**Notes:**  
Deprecated.  
(Read only property)

63.31.22  MinOutputSizeWidth as Integer

**Notes:**  
Deprecated.  
(Read only property)

63.31.23  OutputGranularityX as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  **Function:** Granularity of the output width.  
**Notes:**
This value specifies the increments that are valid between MinOutputSize and MaxOutputSize. Deprecated. (Read only property)

### 63.31.24 OutputGranularityY as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Granularity of output height. **Notes:** This value specifies the increments that are valid between MinOutputSize and MaxOutputSize. Deprecated. (Read only property)

### 63.31.25 ShrinkTapsX as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Indicates how well the filter can shrink the image horizontally. **Notes:** Deprecated.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Does not support stretching/shrinking.</td>
</tr>
<tr>
<td>1</td>
<td>Uses pixel doubling (stretching) or eliminates pixels (shrinking)</td>
</tr>
<tr>
<td>2</td>
<td>Uses interpolation (2 taps)</td>
</tr>
<tr>
<td>3 and higher</td>
<td>Uses interpolation (&gt;2 taps)</td>
</tr>
</tbody>
</table>

(Read only property)

### 63.31.26 ShrinkTapsY as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Indicates how well the filter can shrink the image vertically. **Notes:** Deprecated.

(Read only property)
63.31.27 StretchTapsX as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Indicates how well the filter can stretch the image horizontally.

**Notes:**
Deprecated.

<table>
<thead>
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<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>3 and higher</td>
<td>Uses interpolation (&gt;2 taps)</td>
</tr>
</tbody>
</table>

(Read only property)

63.31.28 StretchTapsY as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Indicates how well the filter can stretch the image vertically.

**Notes:**
Deprecated.

<table>
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</tr>
</tbody>
</table>

(Read only property)
63.31. **CLASS DIRECTSHOWVIDEOSTREAMCONFIGCAPSMBS**

### 63.31.29 VideoStandard as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The analog video standard supported.
**Notes:**
The value is a bitwise combination of flags from the AnalogVideoStandard enumeration type, or zero.
(Read only property)
63.32 class DirectShowVideoWindowMBS

63.32.1 class DirectShowVideoWindowMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The direct show class for a video window.

**Notes:**
The DirectShowVideoWindowMBS interface sets properties on the video window. Applications can use it to set the window owner, the position and dimensions of the window, and other properties.

The Video Renderer filter and the Filter Graph Manager both expose this interface. The Filter Graph Manager forwards all method calls to the Video Renderer. It also forwards certain window messages that the Video Renderer needs to receive, such as WM_DISPLAYCHANGE. Because the video window is usually a child of an application window, the filter would not otherwise receive these messages. Therefore it relies on the Filter Graph Manager to forward them.

In most cases, an application should query the Filter Graph Manager for this interface, and not call the filter directly, because of the messaging issue just described. However, if the filter graph has more than one Video Renderer, the Filter Graph Manager only communicates with one of them, selected arbitrarily. Therefore, if your application uses multiple video windows, use the DirectShowVideoWindowMBS interface directly on the filters. In that case, you must forward window messages to each Video Renderer instance, using the NotifyOwnerMessage method.

Properties set on a video renderer persist between successive connections and disconnections.

**Error codes:** If the video renderer filter is not connected to another filter, all methods return the error code VFW_E_NOT_CONNECTED. For the Filter Graph Manager’s implementation, if the graph does not contain a video renderer filter, all methods return E_NOINTERFACE. Note that the Filter Graph Manager exposes the interface even when the graph does not contain a video renderer, so an application can query for the interface before it builds the graph.

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

63.32.2 Methods

63.32.3 Constructor

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The private constructor to create a new video window.
63.32.4 GetMaxIdealImageSize(byref width as Integer, byref height as Integer)

Notes:
Width: Receives the maximum ideal width, in pixels.
Height: Receives the maximum ideal height, in pixels.
Lasterror is set.

The maximum ideal size may differ from the native video size, because the video hardware might have specific stretching requirements.

63.32.5 GetMinIdealImageSize(byref width as Integer, byref height as Integer)

Notes:
Width: Receives the minimum ideal width, in pixels.
Height: Receives the minimum ideal height, in pixels.
Lasterror is set.

The maximum ideal size may differ from the native video size, because the video hardware might have specific stretching requirements.

63.32.6 GetRestorePosition(byref left as Integer, byref top as Integer, byref width as Integer, byref height as Integer)

Notes:
Left: Receives the x-coordinate, in pixels.
Top: Receives the y-coordinate, in pixels.
Width: Receives the width of the window, in pixels.
Height: Receives the height of the window, in pixels.
Lasterror is set.

If the video window is minimized or maximized, you can use this method to get the window’s restored position.
63.32.7 GetWindowPosition(byref left as Integer, byref top as Integer, byref width as Integer, byref height as Integer)

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The GetWindowPosition method retrieves the position of the video window.

**Notes:**
- Left: Receives the x-coordinate, in pixels.
- Top: Receives the y-coordinate, in pixels.
- Width: Receives the width of the window, in pixels.
- Height: Receives the height of the window, in pixels.

LastError is set.
This method has the same effect as querying left, top, width and height methods.

63.32.8 HideCursor(hide as boolean)

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The HideCursor method shows or hides the cursor when the mouse is positioned over the video window.

**Notes:**
- Hide: Whether to hide or show the cursor.
- Lasterror is set.

63.32.9 IsCursorHidden as Boolean

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The IsCursorHidden method queries whether the cursor is hidden.

**Notes:** Lasterror is set.

63.32.10 SetWindowForeground(Focus as Boolean)

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The SetWindowForeground method places the video window at the top of the Z order.

**Notes:**
- Focus: whether to give the window focus.
- Lasterror is set.
63.32.11 SetWindowPosition(left as Integer, top as Integer, width as Integer, height as Integer)

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The SetWindowPosition method sets the position of the video window.  
**Notes:**  
- Left: The x-coordinate, in pixels.  
- Top: The y-coordinate, in pixels.  
- Width: The width, in pixels.  
- Height: The height, in pixels.  
- Lasterror is set.  

This method has the same effect as setting the Left, Top, Width, and Height methods. If resizing the window to the specified dimensions is impossible, this method modifies the window’s size and location to make the window fit. Call the GetWindowPosition method to determine the result.

63.32.12 Properties

63.32.13 Handle as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The internal object reference.  
**Notes:**  
- Points to an IVideoWindow interface.  
- (Read and Write property)

63.32.14 Lasterror as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The last error code.  
**Notes:**  
- Please check function documentation and also LastErrorMessage property for a human readable error message.  
- (Read and Write property)

63.32.15 LasterrorMessage as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The formatted error message for the last error.
63.32.16 AutoShow as Boolean

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether the video renderer automatically shows the video window when it receives video data. 
**Notes:**
Lasterror is set.
By default, when the filter graph changes state to paused or running, the video renderer shows the video window and moves it to the foreground. If the user closes the window, it will not automatically reappear. (Read and Write computed property)

63.32.17 BackgroundPalette as Boolean

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether the video window realizes its palette in the background. 
**Notes:**
Lasterror is set.
If BackgroundPalette is true and the video image requires a palette, the video renderer will realize that palette in the background. Any colors that the palette uses will change to their closest match in the display palette prior to drawing. This ensures that an application will not have its palette disturbed. However, it imposes severe performance penalties on the video. (Read and Write computed property)

63.32.18 BorderColor as color

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The color that appears around the edges of the destination rectangle. 
**Notes:**
Lasterror is set.
If the destination rectangle is smaller than the client area of the video window, a border is exposed around the edges of the video. The default color is black. Use this method to override the default color. If a palette is in use, a nonsystem color is converted to its closest match. (Read and Write computed property)
63.32. **CLASS DIRECTSHOWVIDEOWINDOWMBS**

63.32.19 **Caption as string**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The video window caption.
**Notes:**
Lasterror is set.
(Read and Write computed property)

63.32.20 **FullScreenMode as Boolean**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Enables or disables full-screen video rendering.
**Notes:**
Set to true to switch to full-screen mode. Set to false to disable full-screen mode. (Default.)
Lasterror is set.

Depending on the video renderer, the switch to full-screen mode may not be visible until the application
runs or pauses the graph. In full-screen mode, if the user switches away from the application (for example,
using ALT + TAB), the Filter Graph Manager sends an EC_FULLSCREEN_LOST event.
The following remarks describe how the Filter Graph Manager implements full-screen mode. Application
developers can probably ignore this information, but it may be useful if you are writing a custom video
renderer.
When an application switches to full-screen mode, the Filter Graph Manager searches for a video renderer
that will function most efficiently. In order of preference, these are:

- Any video renderer in the filter graph that natively supports full-screen mode.
- Any video renderer in the filter graph that can stretch the video to full-screen without a significant
  performance cost.
- The Full Screen Renderer filter.
- Any video renderer in the filter graph that supports DirectShowVideoWindowMBS.

For the first option, the Filter Graph Manager sets FullScreenMode on every video renderer in the graph. Most renderers return E_NOTIMPL, indicating the filter does not natively support full-screen mode. If any renderer returns a value not equal to E_NOTIMPL, the Filter Graph Manager uses that one.
For the second option, the Filter Graph Manager calls GetMaxIdealImageSize and GetMinIdealImageSize
on every video renderer in the graph. If the size of the display falls within the filter’s reported range, it
indicates that the filter can stretch the video without a significant performance cost.
Note If the graph is stopped, the Filter Graph Manager pauses each renderer before calling these methods. This gives the renderer an opportunity to initialize any resources it needs, because many renderers cannot determine these values while they are stopped.
Except on older hardware, the second option will generally succeed. The third option is to use the Full Screen Renderer filter, adding it to the graph if necessary. The fourth option is simply to find the first renderer in the graph that supports DirectShowVideoWindowMBS, and stretch the video regardless of performance. (Read and Write computed property)

63.32.21 Height as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The height of the video window. Notes: Lasterror is set. (Read and Write computed property)

63.32.22 Left as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The x-coordinate of the video window. Notes: Lasterror is set. (Read and Write computed property)

63.32.23 MessageDrain as Window

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: The window to receive mouse and keyboard messages from the video window. Notes: Lasterror is set. This method enables an application to respond to mouse and keyboard events generated within the video window. If Drain is non-nil, the video renderer forwards certain messages to the specified window, using the PostMessage function. Which messages are forwarded might depend on the video renderer in use. (Read and Write computed property)

63.32.24 Owner as Window

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: The parent window for the video window. Notes:
Lasterror is set.
Use this method to display videos in a compound document. This method changes the parent of the video
window and sets the WS_CHILD style for the video window.
Reset the owner to nil before releasing the Filter Graph Manager. Otherwise, messages will continue to be
sent to this window and errors will likely occur when the application is terminated.
(Read and Write computed property)

63.32.25  Top as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The y-coordinate of the video window.
**Notes:**
Lasterror is set.
(Read and Write computed property)

63.32.26  Visible as Boolean

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Shows or hides the video window.
**Notes:**
Set to true to show the window or set to false to hide the window.
Lasterror is set.
(Read and Write computed property)

63.32.27  Width as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The width of the video window.
**Notes:** (Read and Write computed property)

63.32.28  WindowState as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Shows, hides, minimizes, or maximizes the video window.
**Notes:**
Lasterror is set.
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See MSDN page for ShowWindow for SW_* constants:
(Read and Write computed property)

63.32.29 WindowStyle as Integer

Notes:
Lasterror is set.
See MSDN for SetWindowLong for details on the WS_* constants.
(Read and Write computed property)

63.32.30 WindowStyleEx as Integer

Notes:
Lasterror is set.
See MSDN for SetWindowLong for details on the WS_EX_* constants.
(Read and Write computed property)

63.32.31 Constants

63.32.32 SW_FORCEMINIMIZEx = 11

MBS Win Plugin, Plugin Version: 12.1. Function: One of the window show modes.#

63.32.33 SW_HIDE = 0

MBS Win Plugin, Plugin Version: 12.1. Function: One of the window show modes.#

63.32.34 SW_MAXIMIZE = 3

MBS Win Plugin, Plugin Version: 12.1. Function: One of the window show modes.#
63.32.35  SW_MINIMIZE = 6

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the window show modes.

63.32.36  SW_NORMAL = 1

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the window show modes.

63.32.37  SW_RESTORE = 9

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the window show modes.

63.32.38  SW_SHOW = 5

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the window show modes.

63.32.39  SW_SHOWDEFAULT = 10

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the window show modes.

63.32.40  SW_SHOWMAXIMIZED = 3

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the window show modes.

63.32.41  SW_SHOWMINIMIZED = 2

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the window show modes.

63.32.42  SW_SHOWMINNOACTIVE = 7

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the window show modes.
63.32.43  **SW_SHOWNA = 8**
MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the window show modes.

63.32.44  **SW_SHOWNOACTIVATE = 4**
MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the window show modes.

63.32.45  **SW_SHOWNORMAL = 1**
MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the window show modes.

63.32.46  **WS_BORDER = & h00800000**
MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyle property.

63.32.47  **WS_CAPTION = & h00C00000**
MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyle property.

63.32.48  **WS_CHILD = & h40000000**
MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyle property.

63.32.49  **WS_CHILDWINDOW = & h40000000**
MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyle property.

63.32.50  **WS_CLIPCHILDREN = & h02000000**
MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyle property.
63.32.51  WS_CLIPSIBLINGS = & h04000000
MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyle property.

63.32.52  WS_DISABLED = & h08000000
MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyle property.

63.32.53  WS_DLFRAME = & h00400000
MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyle property.

63.32.54  WS_EX_ACCEPTFILES = & h00000010
MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyleEx property.

63.32.55  WS_EX_APPWINDOW = & h00040000
MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyleEx property.

63.32.56  WS_EX_CLIENTEDGE = & h00000200
MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyleEx property.

63.32.57  WS_EX_CONTEXTHELP = & h00000400
MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyleEx property.

63.32.58  WS_EX_CONTROLPARENT = & h00010000
MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyleEx property.
63.32.59  WS_EX_DLGMODALFRAME = & h00000001

MBS Win Plugin, Plugin Version: 12.1.  Function: One of the flags for WindowsStyleEx property.

63.32.60  WS_EX_LAYERED = & h00080000

MBS Win Plugin, Plugin Version: 12.1.  Function: One of the flags for WindowsStyleEx property.

63.32.61  WS_EX_LAYOUTRTL = & h00400000

MBS Win Plugin, Plugin Version: 12.1.  Function: One of the flags for WindowsStyleEx property.

63.32.62  WS_EX_LEFT = & h00000000

MBS Win Plugin, Plugin Version: 12.1.  Function: One of the flags for WindowsStyleEx property.

63.32.63  WS_EX_LEFTSCROLLBAR = & h00004000

MBS Win Plugin, Plugin Version: 12.1.  Function: One of the flags for WindowsStyleEx property.

63.32.64  WS_EX_LTRREADING = & h00000000

MBS Win Plugin, Plugin Version: 12.1.  Function: One of the flags for WindowsStyleEx property.

63.32.65  WS_EX_MDICHILD = & h00000040

MBS Win Plugin, Plugin Version: 12.1.  Function: One of the flags for WindowsStyleEx property.

63.32.66  WS_EX_NOACTIVATE = & h08000000

MBS Win Plugin, Plugin Version: 12.1.  Function: One of the flags for WindowsStyleEx property.
63.32. CLASS DIRECTSHOWVIDEOWINDOWMBS

63.32.67  WS_EX_NOINHERITLAYOUT = & h00100000

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyleEx property.

63.32.68  WS_EX_NOPARENTNOTIFY = & h00000004

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyleEx property.

63.32.69  WS_EX_OVERLAPPEDWINDOW = & h00000300

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyleEx property.

63.32.70  WS_EX_PALETTEWINDOW = & h00000188

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyleEx property.

63.32.71  WS_EX_RIGHT = & h00001000

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyleEx property.

63.32.72  WS_EX_RIGHTSCROLLBAR = & h00000000

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyleEx property.

63.32.73  WS_EX_RTLREADING = & h00002000

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyleEx property.

63.32.74  WS_EX_STATICEDGE = & h00020000

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyleEx property.
63.32.75  **WS_EX_TOOLWINDOW = & h00000080**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyleEx property.

63.32.76  **WS_EX_TOPMOST = & h00000008**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyleEx property.

63.32.77  **WS_EX_TRANSPARENT = & h00000020**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyleEx property.

63.32.78  **WS_EX_WINDOWEDGE = & h00000100**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyleEx property.

63.32.79  **WS_GROUP = & h00020000**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyle property.

63.32.80  **WS_HSCROLL = & h00100000**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyle property.

63.32.81  **WS_ICONIC = & h20000000**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyle property.

63.32.82  **WS_MAXIMIZE = & h01000000**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyle property.
63.32. **CLASS DIRECTSHOWVIDEOWINDOWMBS**

63.32.83 **WS_MAXIMIZEBOX = & h00010000**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyle property.

63.32.84 **WS_MINIMIZE = & h20000000**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyle property.

63.32.85 **WS_MINIMIZEBOX = & h00020000**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyle property.

63.32.86 **WS_OVERLAPPED = & h00000000**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyle property.

63.32.87 **WS_OVERLAPPEDWINDOW = & h00CF0000**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyle property.

63.32.88 **WS_POPUP = & h80000000**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyle property.

63.32.89 **WS_POPUPWINDOW = & h80880000**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyle property.

63.32.90 **WS_SIZEBOX = & h00040000**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyle property.
63.32.91  **WS_SYSMENU = & h00080000**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyle property.

63.32.92  **WS_TABSTOP = & h00010000**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyle property.

63.32.93  **WS_THICKFRAME = & h00040000**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyle property.

63.32.94  **WS_TILED = & h00000000**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyle property.

63.32.95  **WS_TILEDWINDOW = & h00CF0000**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyle property.

63.32.96  **WS_VISIBLE = & h10000000**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyle property.

63.32.97  **WS_VSCROLL = & h00200000**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flags for WindowsStyle property.
63.33. **CLASS DIRECTSHOWWAVEFORMATMBS**

63.33  class DirectShowWaveFormatMBS

63.33.1  class DirectShowWaveFormatMBS

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Defines the format of waveform-audio data.

**Notes:**
Only format information common to all waveform-audio data formats is included in this structure. For formats that require additional information, this structure is included as the first member in another structure, along with the additional information.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

63.33.2  Methods

63.33.3  Constructor

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The private constructor.

63.33.4  Properties

63.33.5  AvgBytesPerSec as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Required average data-transfer rate, in bytes per second, for the format tag.

**Notes:**
If wFormatTag is WAVE_FORMAT_PCM, nAvgBytesPerSec must equal nSamplesPerSec x nBlockAlign.
For non-PCM formats, this member must be computed according to the manufacturer’s specification of the format tag.
(Read and Write property)

63.33.6  BitsPerSample as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Bits per sample for the FormatTag format type.

**Notes:**
If wFormatTag is WAVE_FORMAT_PCM, then BitsPerSample should be equal to 8 or 16. For non-PCM formats, this member must be set according to the manufacturer’s specification of the format tag. If FormatTag is WAVE_FORMAT_EXTENSIBLE, this value can be any integer multiple of 8.
Some compression schemes do not define a value for BitsPerSample, so this member can be zero.

(Read and Write property)

### 63.33.7 BlockAlign as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Block alignment, in bytes.

**Notes:**

The block alignment is the minimum atomic unit of data for the wFormatTag format type. If wFormatTag is WAVE_FORMAT_PCM, nBlockAlign must equal (nChannels * wBitsPerSample) / 8. For non-PCM formats, this member must be computed according to the manufacturer’s specification of the format tag. Software must process a multiple of nBlockAlign bytes of data at a time. Data written to and read from a device must always start at the beginning of a block. For example, it is illegal to start playback of PCM data in the middle of a sample (that is, on a non-block-aligned boundary).

(Read and Write property)

### 63.33.8 Channels as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Number of channels in the waveform-audio data.

**Notes:**

Monaural data uses one channel and stereo data uses two channels.

(Read and Write property)

### 63.33.9 Data as Ptr

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Pointer to raw data of WAVEFORMATEX structure.

**Notes:** (Read only property)

### 63.33.10 FormatTag as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Waveform-audio format type.

**Notes:**

Format tags are registered with Microsoft Corporation for many compression algorithms. A complete list of format tags can be found in the Mmreg.h header file. For one- or two-channel Pulse Code Modulation
(PCM) data, this value should be WAVE_FORMAT_PCM.

- If FormatTag equals WAVE_FORMAT_EXTENSIBLE, the structure is interpreted as a WAVEFORMATEXTENSIBLE structure.
- If FormatTag equals WAVE_FORMAT_MPEG, the structure is interpreted as an MPEG1WAVEFORMAT structure.
- If FormatTag equals WAVE_FORMAT_MPEGLAYER3, the structure is interpreted as an MPEGLAYER3WAVEFORMAT structure.

Before reinterpreting a WAVEFORMATEX structure as one of these extended structures, verify that the actual structure size is sufficiently large and that the cbSize member indicates a valid size.

Please contact MBS if you need the above structures as classes in Xojo.

(Read and Write property)

### 63.33.11 SamplesPerSec as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Sample rate, in samples per second (hertz).

**Notes:**

If FormatTag is WAVE_FORMAT_PCM, then common values for SamplesPerSec are 8.0 kHz, 11.025 kHz, 22.05 kHz, and 44.1 kHz. For non-PCM formats, this member must be computed according to the manufacturer's specification of the format tag.

(Read and Write property)

### 63.33.12 Size as Integer

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Size, in bytes, of extra format information appended to the end of the WAVEFORMATEX structure.

**Notes:**

This information can be used by non-PCM formats to store extra attributes for the wFormatTag. If no extra information is required by the wFormatTag, this member must be set to zero. For WAVE_FORMAT_PCM formats (and only WAVE_FORMAT_PCM formats), this member is ignored. However it is still recommended to set the value.

(Read and Write property)
Chapter 64

Disassembler

64.1 Globals

64.1.1 DisAssembleMBS

MBS Util Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Disassembles all further instructions from the current method following this command. **Notes:** The result is stored inside the plugin memory and you can get a copy using the GetDisAssembleMBS function.

64.1.2 DisAssembleObjectMethodMBS(target as object, Declaration as string)

MBS Util Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Disassembles all instructions from the given method inside the given object. **Notes:** The result is stored inside the plugin memory and you can get a copy using the GetDisAssembleMBS function. Requires Realbasic 5.5 or newer.

64.1.3 GetDisAssembleMBS as string

MBS Util Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a string with the disassembled text.
Chapter 65

DiscRecording

65.1 class DRBurnMBS

65.1.1 class DRBurnMBS


Function: A class to perform and monitor the burning of a CD or DVD disc.

Notes:

Each time you want to burn to a disc, an instance of DRBurnMBS needs to be created.

When an instance is created, you pass in an instance of DRDevice to let the DRBurn object know what device to use. This object is retained for the life of the DRBurn instance. Before burning, you can set several options that control the behavior of the burn and the handling of the disc once the burn completes.

A DRBurn object will send out notifications through the DRNotificationCenter mechanism to broadcast the burn state to any interested observers. However, if for some reason you don’t want to use notifications, you can poll the burn object at any time for the current status using the status properties. This is not recommended in any application using a run loop, because it involves polling.

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
65.1.2 Methods

65.1.3 abort

Function: Stops the burn.
Notes: When this method returns the burn might not actually be fully stopped but it has been cancelled and only cleanup is going on. If a burn has not completed writing data to disc, you just made a coaster.

Typically this method is only used as a result of the user hitting a cancel/stop button somewhere in the user interface.

65.1.4 burnForDevice(device as DRDeviceMBS) as DRBurnMBS

Function: Creates an autoreleased burn object.
Notes: Once a burn is created with this method, the object is ready to write data to the disc.

65.1.5 Constructor(device as DRDeviceMBS)

Function: Creates a burn object.
Notes: Once a burn is created with this method, the object is ready to write data to the disc.

65.1.6 device as DRDeviceMBS

Function: Returns the device being used for the burn.
Notes: Returns nil on any error.

65.1.7 DRBurnAppendableKey as string

Function: One of the property key constants.
Notes: The burn property whose value is a boolean indicating if the disc will still be appendable after the burn. If this key is not present, the burn will default to a value of false and the disc will be marked as not
65.1.8 **DRBurnCompletionActionEject as string**


**Function:** An string value for the CompletionAction indicating that the burn object should eject the disc from the drive when the burn completes.

65.1.9 **DRBurnCompletionActionKey as string**


**Function:** One of the property key constants.

**Notes:** The burn property whose value is a String containing one of the completion actions possible for the disc handling. If this key is not present, the burn will default to a value of DRBurnCompletionActionEject and the disc will be ejected.

65.1.10 **DRBurnCompletionActionMount as string**


**Function:** An string value for the CompletionAction property indicating that the burn object should mount the disc on the desktop when the burn completes.

65.1.11 **DRBurnDoubleLayerL0DataZoneBlocksKey as string**


**Function:** One of the property key constants.

**Notes:**

The burn property key whose value is an double containing the number of blocks desired for the layer 0 data zone on a double layer writable disc.

The size of the layer 0 data zone dictates where the transition point is from layer 0 to layer 1. If this key is present, the data zone size will be set prior to the start of the burn using the value for this key. If it is not present, the default layer 0 data zone will be used (half the available blocks on an empty disc).

The transition point can be specified two ways. If the value specified in this key is greater than 1.0, then it will designate an absolute block number for the transition point. In this case, the block number should be a multiple of 16 and at least 40000h per specification. If the value is less than 1.0, it will specify the percentage of the burn that should reside on layer 0. A typical value is 0.5, designating half the burn for
each layer. A value of 0.0 or 1.0 will not change the layer 0 transition point.

### 65.1.12 DRBurnFailureActionEject as string

**Function:** An string constant for FailureAction indicating that the burn object should eject the disc from the drive if the burn fails.

### 65.1.13 DRBurnFailureActionKey as string

**Function:** One of the property key constants.  
**Notes:**  
The burn property whose value is a string containing a one of the failure actions possible for the disc handling.  
If this key is not present, the burn will default to a value of DRBurnFailureActionEject and the disc will be ejected.

### 65.1.14 DRBurnFailureActionNone as string

**Function:** An string constant for FailureAction indicating that the burn object should do nothing with the disc if the burn fails.

### 65.1.15 DRBurnOverwriteDiscKey as string

**Function:** One of the property key constants.  
**Notes:** The burn property whose value is a boolean indicating if the disc will be overwritten from block zero for the burn. If this key is not present, the burn will default to a value of false and the disc will be appended.

### 65.1.16 DRBurnRequestedSpeedKey as string

**Function:** One of the property key constants.
Notes: The burn property whose value is a number containing the speed at which the burn should run, expressed as a float value of kilobytes per second. If this key is not present, the speed will default to DRDeviceBurnSpeedMax.

65.1.17 DRBurnStatusChangedNotification as string

Function: The notification name for a status update on a burn operation.
Notes: See the "DataBurn with Events and Notification" example project.

65.1.18 DRBurnStrategyBDDAO as string

Function: One of the string constants for the burn strategy.
Notes: An string value for DRBurnStrategyKey representing the DAO (disc-at-once) burn strategy for BD (Blu-ray). This strategy applies only to BDs.

65.1.19 DRBurnStrategyCDSAO as string

Function: One of the string constants for the burn strategy.
Notes: An String value for DRBurnStrategyKey representing the SAO (session-at-once) burn strategy for CD.

65.1.20 DRBurnStrategyCDTAO as string

Function: One of the string constants for the burn strategy.
Notes: An String value for DRBurnStrategyKey representing the TAO (track-at-once) burn strategy for CD.

65.1.21 DRBurnStrategyDVDDDAO as string

Function: One of the string constants for the burn strategy.
Notes: An String value for DRBurnStrategyKey representing the DAO (disc-at-once) burn strategy for DVD. This strategy applies only to DVDs; it is invalid when burning to CD media.
65.1.22 DRBurnStrategyIsRequiredKey as string

Function: One of the property key constants.
Notes:
The burn property whose value is a BOOL indicating whether the burn strategy/strategies listed for DRBurnStrategyKey are the only strategies allowed. If this key is not present, the burn will default to a value of false.

If this value is set to true, and the device does not support the type(s) of burn requested, the burn will fail with kDRDeviceBurnStrategyNotAvailableErr.

If this value is set to false, and the device does not support the type(s) of burn requested, the engine will choose an alternate burn strategy automatically - one that will provide an equivalent disc.

65.1.23 DRBurnStrategyKey as string

Function: One of the property key constants.
Notes:
The burn property whose value is a string, or array of strings, indicating the burn strategy or strategies that are suggested. If this key is not present, the burn engine picks an appropriate burn strategy automatically. Most clients will not need to specify a specific burn strategy.

When more than one strategy is suggested, the burn engine will attempt to use the first strategy in the list which is available. A burn strategy will never be used if it cannot write the required data: for example, TAO cannot be used to write CD-Text.

The presence of this key by itself is just a suggestion, and if the burn engine cannot fulfill the request it will burn using whatever strategy is available. To make the suggestion into a requirement, add DRBurnStrategyIsRequiredKey with a value of true.

65.1.24 DRBurnTestingKey as string

Function: One of the property key constants.
Notes:
The burn property whose value is a boolean indicating if the burn will run as a test burn.

When this is set and the burn object is sent writeLayout, the entire burn process proceeds as if data would
be written to the disc, but the laser is not turned on to full power, so the physical disc is not modified.

If this key is not present or the selected burning device does not support test burning, the burn will default to a value of false and a normal burn will occur.

### 65.1.25 DRBurnUnderrunProtectionKey as string


**Function:** One of the property key constants.

**Notes:**
The burn property whose value is a boolean indicating if burn underrun protection will be on or off for devices which support it.

For those devices which support it, burn underrun protection is enabled by default.

If the device supports burn underrun protection and this key is not present, the burn will default to a value of true and burn underrun protection will be enabled.

### 65.1.26 DRBurnVerifyDiscKey as string


**Function:** One of the property key constants.

**Notes:** The burn property whose value is a boolean indicating if the disc will be verified after being burned. If this key is not present, the burn will default to a value of true and the disc will be verified.

### 65.1.27 DRCDTextKey as string


**Function:** One of the property key constants.

**Notes:**
This key points to a DRCDTextBlockMBS, or array of DRCDTextBlockMBS objects containing the CD-Text information for the disc. If this key is not present, the burn will not write CD-Text.

Before using this key, you should to make sure that the device supports CD-Text by checking the value of DRDeviceCanWriteCDTextKey in the device’s write capabilities dictionary.

If this value is set to true, and the device does not support writing CD-Text, the burn will fail with kDRDeviceCantWriteCDTextErr.
65.1.28  DRErrorStatusAdditionalSenseStringKey as string

**Function:** One of the dictionary keys for the burn status dictionary.
**Notes:** String describing the RBC additional sense code and additional sense code qualifier pair returned by the device. If no sense is reported, this key will not be present.

65.1.29  DRErrorStatusErrorInfoStringKey as string

**Function:** One of the dictionary keys for the burn status dictionary.
**Notes:** String describing extended error information in a user appropriate manner.

65.1.30  DRErrorStatusErrorKey as string

**Function:** One of the dictionary keys for the burn status dictionary.
**Notes:** Number containing the OS error code for the error.

65.1.31  DRErrorStatusErrorStringKey as string

**Function:** One of the dictionary keys for the burn status dictionary.
**Notes:** String describing the error in a user appropriate manner.

65.1.32  DRErrorStatusKey as string

**Function:** One of the dictionary keys for the burn status dictionary.
**Notes:** The key in the status dictionary for the error dictionary.

65.1.33  DRErrorStatusSenseCodeStringKey as string

**Function:** One of the dictionary keys for the burn status dictionary.
65.1. CLASS DRBURNMBS

Notes: String describing the RBC sense code returned by the device. If no sense is reported, this key will not be present.

65.1.34 DRErrorStatusSenseKey as string

Function: One of the dictionary keys for the burn status dictionary.
Notes: String containing the raw RBC sense information structure reported by the device. If no sense is reported, this key will not be present.

65.1.35 DRMediaCatalogNumberKey as string

Function: One of the property key constants.
Notes: The burn property whose value is a memoryblock containing exactly 13 bytes of data, which will be written to the disc as the Media Catalog Number. If this key is not present, it will default to all zeroes, indicating that a MCN is not supplied.

This value is the UPC/EAN product number, and should conform to the specifications of the UCC and EAN. See ean-int.org and uc-council.org for more details on the UPC/EAN standard.

http://www.ean-int.org/
http://www.uc-council.org/

65.1.36 DRStatusCurrentSessionKey as string

Function: One of the dictionary keys for the burn status dictionary.
Notes: Number indicating the current session being burned.

65.1.37 DRStatusCurrentSpeedKey as string

Function: One of the dictionary keys for the burn status dictionary.
Notes: Number indicating the current burn speed.
65.1.38 **DRStatusCurrentTrackKey as string**

Function: One of the dictionary keys for the burn status dictionary.
Notes: Number indicating the current track being burned.

65.1.39 **DRStatusEraseTypeKey as string**

Function: One of the dictionary keys for the burn status dictionary.
Notes: String indicating the type of erase operation.

65.1.40 **DRStatusPercentCompleteKey as string**

Function: One of the dictionary keys for the burn status dictionary.
Notes: A key for the status dictionaries.
Number containing the percent complete of the operation expressed as a floating point number from 0 to 1.

65.1.41 **DRStatusProgressCurrentKPS as string**

Function: The current burn speed in kilobytes per second.
Notes: This is an optional key within the DRStatusProgressInfoKey dictionary. The value of this key, if present, is a Number containing the write speed of the burn.

65.1.42 **DRStatusProgressCurrentXFactor as string**

Function: The current burn speed in a media appropriate x-factor
Notes: This is an optional key within the DRStatusProgressInfoKey dictionary. The value of this key, if present, is a number containing the appropriate x-factor for the media.
65.1.43 DRStatusProgressInfoKey as string

Function: One of the dictionary keys for the burn status dictionary.
Notes: A dictionary of extended progress information.
A key for the status dictionary. The value of this key is a reference to a Dictionary object containing extended progress information.

65.1.44 DRStatusStateDone as string

Function: One possible value for DRStatusStateKey. Indicates the operation is finished and it succeeded.

65.1.45 DRStatusStateErasing as string

Function: One possible value for DRStatusStateKey in the erase status dictionary.
Notes: Indicates the erase is currently in progress.

65.1.46 DRStatusStateFailed as string

Function: One possible value for DRStatusStateKey. Indicates the operation is finished and it failed.

65.1.47 DRStatusStateFinishing as string

Function: One possible value for DRStatusStateKey in the burn status dictionary.
Notes: Indicates the burn is finishing up (closing the last session, writing the TOC, etc).

65.1.48 DRStatusStateKey as string

Function: One of the dictionary keys for the burn status dictionary.
Notes:
A key for the status dictionaries.
String indicating the current state of the operation.

### 65.1.49 DRStatusStateNone as string

**Function:** One possible value for DRStatusStateKey. Indicates the operation has not yet begun.

### 65.1.50 DRStatusStatePreparing as string

**Function:** One possible value for DRStatusStateKey. Indicates the operation is preparing to begin.

### 65.1.51 DRStatusStateSessionClose as string

**Function:** One possible value for DRStatusStateKey in the burn status dictionary.
**Notes:** Indicates the burn is closing a session on disc. The exact session being closing is contained in DRStatusCurrentSessionKey.

### 65.1.52 DRStatusStateSessionOpen as string

**Function:** One possible value for DRStatusStateKey in the burn status dictionary.
**Notes:** Indicates the burn is opening a session on disc. The exact session being opened is contained in DRStatusCurrentSessionKey.

### 65.1.53 DRStatusStateTrackClose as string

**Function:** One possible value for DRStatusStateKey in the burn status dictionary.
**Notes:** Indicates the burn is closing a track on disc. The exact track being closed is contained in DRStatusCurrentTrackKey.
65.1.54  **DRStatusStateTrackOpen as string**

**Function:** One possible value for DRStatusStateKey in the burn status dictionary.
**Notes:** Indicates the burn is opening a track on disc. The exact track being opened is contained in DRStatusCurrentTrackKey.

65.1.55  **DRStatusStateTrackWrite as string**

**Function:** One possible value for DRStatusStateKey in the burn status dictionary.
**Notes:** Indicates the burn is writing a track on disc. The exact track being written is contained in DRStatusCurrentTrackKey.

65.1.56  **DRStatusStateVerifying as string**

**Function:** One possible value for DRStatusStateKey. Indicates the operation is verifying what it did.

65.1.57  **DRStatusTotalSessionsKey as string**

**Function:** One of the dictionary keys for the burn status dictionary.
**Notes:** Number indicating the total number of sessions being burned.

65.1.58  **DRStatusTotalTracksKey as string**

**Function:** One of the dictionary keys for the burn status dictionary.
**Notes:** Number indicating the total number of tracks in the current session being burned.

65.1.59  **DRSynchronousBehaviorKey as string**

**Function:** One of the property key constants.
**Notes:**
The burn property whose value is a BOOL indicating if burn operations will behave synchronously. If this key is not present, it will default to a value of false and burn operations will behave asynchronously.

Synchronous operations do not post status notifications, and will not return until they are completed. Status can still be queried at any time, and will remain valid even after the burn operation has finished.

65.1.60  status as dictionary

Function: Returns a dictionary describing the status of the burn.
Notes: The same dictionary is returned through the DRBurnStatusChangedNotification notification.

65.1.61  writeImageFile(ImageFile as FolderItem) as boolean

Function: Writes the image tracks to the disc.
Notes: Requires Mac OS X 10.4.

ImageFile: The path to the image file. This file must be one that can be read by DiscRecording. The supported image types include: .dmg, .iso, .cue, and .toc. For .cue and .toc files the corresponding data files (.bin, .img, etc) must also be present and correctly referenced in the .cue/.toc file.

Returns true on success and false on failure.
See also:
• 65.1.62 writeImageFile(ImagePath as String) as boolean

65.1.62  writeImageFile(ImagePath as String) as boolean

Function: Writes the image tracks to the disc.
Notes: Requires Mac OS X 10.4.

ImageFile: The path to the image file. This file must be one that can be read by DiscRecording. The supported image types include: .dmg, .iso, .cue, and .toc. For .cue and .toc files the corresponding data files (.bin, .img, etc) must also be present and correctly referenced in the .cue/.toc file.
65.1. CLASS DRBURNMBS

Returns true on success and false on failure.
See also:

- 65.1.61 writeImageFile(ImageFile as FolderItem) as boolean

65.1.63 writeLayout(track as DRTrackMBS)

Function: Writes the track to the disc.
Notes: A single session disc will be created with the given track.
See also:

- 65.1.64 writeLayout(tracks() as DRTrackMBS)

65.1.64 writeLayout(tracks() as DRTrackMBS)

Function: Writes the tracks to the disc.
Notes: A multi session disc will be created with the given tracks.
See also:

- 65.1.63 writeLayout(track as DRTrackMBS)

65.1.65 Properties

65.1.66 appendable as boolean

Function: Indicates whether the burn is appendable.
Example:

dim b as DRBurnMBS // get a burn object
b.appendable=true

Notes:

When a burn completes, it can mark the disc so that no more data can be written to it. This creates a closed or non-appendable disc (which is the most compatible with audio CD players). If this method returns false, then the disc will be marked as closed and no data can be appended to it. A return value of true indicates further burns can be appended to the disc.
(Read and Write computed property)
65.1.67  **BurnFailureAction as string**

**Function:** What to do on a failure.
**Notes:**
The burn property whose value is a string containing a one of the failure actions possible for the disc handling.

If this key is not present, the burn will default to a value of DRBurnFailureActionEject and the disc will be ejected.
(Read and Write computed property)

65.1.68  **completionAction as string**

**Function:** The action to be performed at the end of the burn.
**Notes:**
Value must be DRBurnCompletionActionEject, DRBurnCompletionActionMount or empty for default.
(Read and Write computed property)

65.1.69  **DoubleLayerL0DataZoneBlocks as Double**

**Function:** A double containing the number of blocks desired for the layer 0 data zone on a double layer writable disc.
**Notes:**
The size of the layer 0 data zone dictates where the transition point is from layer 0 to layer 1. If this key is present, the data zone size will be set prior to the start of the burn using the value for this key. If it is not present, the default layer 0 data zone will be used (half the available blocks on an empty disc). The transition point can be specified two ways. If the value specified in this key is greater than 1.0, then it will designate an absolute block number for the transition point. In this case, the block number should be a multiple of 16 and at least & h40000 per specification. If the value is less than 1.0, it will specify the percentage of the burn that should reside on layer 0. A typical value is 0.5, designating half the burn for each layer. A value of 0.0 or 1.0 will not change the layer 0 transition point.
(Read and Write computed property)

65.1.70  **MediaCatalogNumber as memoryblock**

**Function:** The media catalog number as a binary data string.
65.1. CLASS DRBURNMBS

Notes:

The burn property whose value is a memoryblock containing exactly 13 bytes of data, which will be written to the disc as the Media Catalog Number. If this key is not present, it will default to all zeroes, indicating that a MCN is not supplied.

This value is the UPC/EAN product number, and should conform to the specifications of the UCC and EAN. See http://www.ean-int.org/ and http://www.uc-council.org/ for more details on the UPC/EAN standard. (Read and Write computed property)

65.1.71 Overwrite as boolean

Function: The burn property whose value is a boolean indicating if the disc will be overwritten from block zero for the burn.
Notes:
If this key is not present, the burn will default to a value of false and the disc will be appended. (Read and Write computed property)

65.1.72 properties as dictionary

Function: The properties dictionary of the burn.
Notes: (Read and Write computed property)

65.1.73 requestedBurnSpeed as single

Function: The speed at which this burn will attempt to write data.
Notes:
The actual speed also depends on the capabilities of the bus the device is on, the maximum speed of the device itself, and the media used.

Value is a float indicating the speed the burn should run at in kilobytes per second. (Read and Write computed property)
### 65.1.74 Testing as boolean

**Function:** Whether the burn will run as a test burn.  
**Notes:**  
When this is set and the burn starts, the entire burn process proceeds as if data would be written to the disc, but the laser is not turned on to full power, so the physical disc is not modified.  
If this key is not present or the selected burning device does not support test burning, the burn will default to a value of false and a normal burn will occur.  
(Read and Write computed property)

### 65.1.75 UnderrunProtection as boolean

**Function:** A boolean indicating if burn underrun protection will be on or off for devices which support it.  
**Notes:**  
For those devices which support it, burn underrun protection is enabled by default.  
If the device supports burn underrun protection and this key is not present, the burn will default to a value of `<i>true</i>` and burn underrun protection will be enabled.  
(Read and Write computed property)

### 65.1.76 verifyDisc as boolean

**Function:** Indicates whether the resulting disc will be verified.  
**Example:**
```
dim b as DRBurnMBS // get a burn object  
b.verifyDisc=true
```

**Notes:**  
After data is written to disc, the data can be verified. The verification process will read the data on the disc back into memory and compare it to the data originally used to write to disc. The type of verification is determined by a track property on a track-by-track basis. See the DRTrackMBS documentation for more information on verification types.  
(Read and Write computed property)
65.2.1 class DRBurnProgressPanelMBS


Function: Run and display progress while burning data to media.

Example:

```dim track as DRTrackMBS
dim bsp as DRBurnSetupPanelMBS
dim bpp as DRBurnProgressPanelMBS

// we need a track
track=CreateTrack
if track<>nil then
    bsp=new DRBurnSetupPanelMBS
    // set a few options
    bsp.setCanSelectAppendableMedia true
    bsp.setCanSelectTestBurn true
    if bsp.runSetupPanel=bsp.NSOKButton then
        bpp=new DRBurnProgressPanelMBS
        // And start off the burn itself. This will put up the progress dialog
        // and do all the nice pretty things that a happy app does.
        bpp.beginProgressPanelForBurn bsp.burnObject, track
    else
        MsgBox "You pressed cancel."
    end if
end if```

Notes:

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

Subclass of the NSPanelMBS class.
65.2.2 Methods

65.2.3 beginProgressPanelForBurn(burn as DRBurnMBS, track as DRTrackMBS)

Function: Presents the progress panel on screen and begins the burn process.
Notes:
This method returns control to the caller after it has displayed the progress sheet and begun the burn. Once
the method has returned the caller can perform other operations while the burn continues.

Burns a single session disc with one track.
See also:

• 65.2.4 beginProgressPanelForBurn(burn as DRBurnMBS, tracks() as DRTrackMBS)

65.2.4 beginProgressPanelForBurn(burn as DRBurnMBS, tracks() as DRTrackMBS)

Function: Presents the progress panel on screen and begins the burn process.
Notes:
This method returns control to the caller after it has displayed the progress sheet and begun the burn. Once
the method has returned the caller can perform other operations while the burn continues.

Burns a multi session disc with several tracks.
See also:

• 65.2.3 beginProgressPanelForBurn(burn as DRBurnMBS, track as DRTrackMBS)

65.2.5 beginProgressPanelForImageFile(burn as DRBurnMBS, file as folderitem) as boolean

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Presents the progress panel on screen and begins the burn process.
Notes:
This method returns control to the caller after it has displayed the progress sheet and begun the burn. Once
the method has returned the caller can perform other operations while the burn continues.

Burns the image file located on the given position.

This file must be one that can be read by DiscRecording. The supported image types include: .dmg, .iso,
.cue, and .toc. For .cue and .toc files the corresponding data files (.bin, .img, etc) must also be present and
65.2. CLASS DRBURNPROGRESSPANELMBS

correctly referenced in the .cue/.toc file.
See also:

- 65.2.6 beginProgressPanelForImageFile(burn as DRBurnMBS, file as string) as boolean

65.2.6 beginProgressPanelForImageFile(burn as DRBurnMBS, file as string) as boolean

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Presents the progress panel on screen and begins the burn process.
Notes:
This method returns control to the caller after it has displayed the progress sheet and begun the burn. Once
the method has returned the caller can perform other operations while the burn continues.

Burns the image file located on the given position.

This file must be one that can be read by DiscRecording. The supported image types include: .dmg, .iso,
.cue, and .toc. For .cue and .toc files the corresponding data files (.bin, .img, etc) must also be present and
correctly referenced in the .cue/.toc file.
See also:

- 65.2.5 beginProgressPanelForImageFile(burn as DRBurnMBS, file as folderitem) as boolean

65.2.7 beginProgressSheetForBurn(burn as DRBurnMBS, track as DRTrackMBS,
docWindow as NSWindowMBS)

Function: Presents the progress panel as a sheet and begins the burn process.
Notes:
docWindow: The window the sheet will be attached to. If docWindow is not nil, the panel slides down as a
sheet running as a document modal window. If owner is nil, this is an error.

This method returns control to the caller after it has displayed the progress sheet and begun the burn. Once
the method has returned the caller can perform other operations while the burn continues.

Burns a single session disc with one track.
See also:

- 65.2.8 beginProgressSheetForBurn(burn as DRBurnMBS, tracks() as DRTrackMBS, docWindow as
  NSWindowMBS)
65.2.8 beginProgressSheetForBurn(burn as DRBurnMBS, tracks() as DRTrackMBS, docWindow as NSWindowMBS)

Function: Presents the progress panel as a sheet and begins the burn process.
Notes:
docWindow: The window the sheet will be attached to. If docWindow is not nil, the panel slides down as a sheet running as a document modal window. If owner is nil, this is an error.

This method returns control to the caller after it has displayed the progress sheet and begun the burn. Once the method has returned the caller can perform other operations while the burn continues.

Burns a multi session disc with several tracks.
See also:
- 65.2.7 beginProgressSheetForBurn(burn as DRBurnMBS, track as DRTrackMBS, docWindow as NSWindowMBS)

65.2.9 beginProgressSheetForImageFile(burn as DRBurnMBS, file as folderitem, docWindow as NSWindowMBS) as boolean

Function: Presents the progress panel as a sheet and begins the burn process.
Notes:
docWindow: The window the sheet will be attached to. If docWindow is not nil, the panel slides down as a sheet running as a document modal window. If owner is nil, this is an error.

This method returns control to the caller after it has displayed the progress sheet and begun the burn. Once the method has returned the caller can perform other operations while the burn continues.

Burns the image file located on the given position.

This file must be one that can be read by DiscRecording. The supported image types include: .dmg, .iso, .cue, and .toc. For .cue and .toc files the corresponding data files (.bin, .img, etc) must also be present and correctly referenced in the .cue/.toc file.
See also:
- 65.2.10 beginProgressSheetForImageFile(burn as DRBurnMBS, file as string, docWindow as NSWindowMBS) as boolean
65.2. CLASS DRBURNPROGRESSPANELMBS

65.2.10 beginProgressSheetForImageFile(burn as DRBurnMBS, file as string, docWindow as NSWindowMBS) as boolean


Function: Presents the progress panel as a sheet and begins the burn process.

Notes:

docWindow: The window the sheet will be attached to. If docWindow is not nil, the panel slides down as a sheet running as a document modal window. If owner is nil, this is an error.

This method returns control to the caller after it has displayed the progress sheet and begun the burn. Once the method has returned the caller can perform other operations while the burn continues.

Burns the image file located on the given position.

This file must be one that can be read by DiscRecording. The supported image types include: .dmg, .iso, .cue, and .toc. For .cue and .toc files the corresponding data files (.bin, .img, etc) must also be present and correctly referenced in the .cue/.toc file.

See also:
- 65.2.9 beginProgressSheetForImageFile(burn as DRBurnMBS, file as folderitem, docWindow as NSWindowMBS) as boolean

65.2.11 Constructor


Function: The constructor to create a new burn progress panel.

65.2.12 DRBurnProgressPanelDidFinishNotification as string


Function: One of the notification names for use with a burn progress panel.

Notes:

Posted when the DRBurnProgressPanel has finished and is about to go away.
This notification contains a notification object but no userInfo dictionary. The notification object is the DRBurnProgressPanel that will be closed.

65.2.13 DRBurnProgressPanelWillBeginNotification as string


Function: One of the notification names for use with a burn progress panel.
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Notes:
Posted when the DRBurnProgressPanel is about to begin displaying progress. This notification contains a notification object but no userInfo dictionary. The notification object is the DRBurnProgressPanel that will be displayed.

65.2.14 stopBurn

Function: Invoked when the user clicks the panel’s stop button.
Notes: If you overwrite this method in Real Studio, your method will not be called. You can only call this method to trigger the same behavior as if the user clicked the control.

65.2.15 Properties

65.2.16 Description as string

Function: The description string displayed in the panel.
Notes: If no description is explicitly set, this method will return the standard text string.

The panel’s description is typically a short text string that gives an indication to the user what operation is being performed. If no description is explicitly set, the progress panel uses a standard text string suitable to the burn.
(Read and Write computed property)

65.2.17 VerboseProgressStatus as boolean

Function: The verbosity of the progress feedback.
Notes: If verbose is true, the panel will update status for every change. If verbose is false, the panel will filter some status messages and only update for major changes. The default for the panel is filter the status messages.
(Read and Write computed property)
65.2.19 burnProgressPanelBurnDidFinish(burn as DRBurnMBS) as boolean

MBS MacControls Plugin, Plugin Version: 7.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Allows the delegate to handle the end-of-burn feedback. **Notes:** This method allows the delegate to handle or modify the end-of-burn feedback performed by the progress panel. Return true to indicate the delegate handled the burn completion and the standard feedback should be suppressed. If this method returns false, the normal end-of-burn handling is performed (displaying an error if appropriate, playing an "I'm done" sound, etc). The delegate is messaged before the progress panel is ordered out so a sheet may be displayed on a progress panel displayed as a window.

65.2.20 burnProgressPanelDidFinish

MBS MacControls Plugin, Plugin Version: 7.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Notification sent by the panel after ordering out. **Notes:** If the delegate implements this method it will receive the message after the panel is removed from display.

65.2.21 burnProgressPanelWillBegin

MBS MacControls Plugin, Plugin Version: 7.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Notification sent by the panel before display. **Notes:** If the delegate implements this method it will receive the message immediately before the panel is displayed.
**Function:** The burn progress panel running.
65.3. **CLASS DRBURNSETUP PANELMBS**

65.3 **class DRBurnSetupPanelMBS**

65.3.1 **class DRBurnSetupPanelMBS**


**Function:** Manages a panel that allows users to specify the parameters of an burn.

**Example:**

```vbnet
dim track as DRTrackMBS
dim bsp as DRBurnSetupPanelMBS
dim bpp as DRBurnProgressPanelMBS

// we need a track
track=CreateTrack

if track<>nil then
bsp=new DRBurnSetupPanelMBS

    // set a few options
    bsp.setCanSelectAppendableMedia true
    bsp.setCanSelectTestBurn true

    if bsp.runSetupPanel=bsp.NSOKButton then
    bpp=new DRBurnProgressPanelMBS

        // And start off the burn itself. This will put up the progress dialog
        // and do all the nice pretty things that a happy app does.
        bpp.beginProgressPanelForBurn bsp.burnObject, track

    else
    MsgBox "You pressed cancel."
    end if
end if
```

**Notes:**

This class supports choosing the the device to use, whether or not to verify the burned data and how to handle the burned disc when it completes.

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

Subclass of the DRSetupPanelMBS class.
65.3.2 Methods

65.3.3 appendable

Function: Invoked when the user clicks the panel’s appendable checkbox.
Notes: If you overwrite this method in Real Studio, your method will not be called. You can only call this method to trigger the same behavior as if the user clicked the control.

65.3.4 burnObject as DRBurnMBS

Function: Creates and returns a new DRBurn object that’s configured to write data to the currently selected device.
Notes: The new DRBurn object is configured based on the settings in the setup panel when the user clicks the OK button.

Do not invoke this method within a modal session because the burn object information is only updated just before the modal session ends.

Returns nil on any error.

65.3.5 burnSpeed

Function: Invoked when the user clicks the panel’s burn speed popup button.
Notes: If you overwrite this method in Real Studio, your method will not be called. You can only call this method to trigger the same behavior as if the user clicked the control.

65.3.6 completionAction

Function: Invoked when the user clicks one of the panel’s completion action radio buttons.
Notes: If you overwrite this method in Real Studio, your method will not be called. You can only call this method to trigger the same behavior as if the user clicked the control.
65.3. CLASS DRBURNSETUPPANELMBS

65.3.7 Constructor

Function: The constructor to create a new burn setup panel.

65.3.8 DRBurnSetupPanelCancelButtonDefaultTitle as string

Function: The constant to use for the build title so it is replaced by the real default title string.

65.3.9 expand

Function: Invoked when the user clicks the panel’s expand button.
Notes: If you overwrite this method in Real Studio, your method will not be called. You can only call this
method to trigger the same behavior as if the user clicked the control.

65.3.10 setCanSelectAppendableMedia(flag as boolean)

Function: Specifies whether the user can choose to leave the disc appendable.
Notes:
This method controls whether the appendable checkbox is enabled.

If the data being written to disc does not lend itself to having more data appended on to it, you can disable
the ability of the user to leave the disc open.

This method must be called before the panel is displayed.

Set to yes to enable the appendable checkbox, false to disable.

65.3.11 setCanSelectTestBurn(flag as boolean)

Function: Specifies whether the user can choose to make a test burn.
Notes:
This method controls whether a checkbox should be added to the receiver that allows the user to set the
burn to be a test burn. By default, the test burn button is not displayed.

This method must be called before the panel is displayed.

Set to yes to show the test burn checkbox, false to hide it.

### 65.3.12 setDefaultButtonTitle(title as string)

**Function:** Sets the title for the receiver’s default button to title.
**Example:**
```dim panel as new DRBurnSetupPanelMBS
panel.setDefaultButtonTitle "Do Burn"
```

**Notes:** Normally, the default button is "Burn".

### 65.3.13 testBurn

**Function:** Invoked when the user clicks the panel’s test burn checkbox.
**Notes:** If you overwrite this method in Real Studio, your method will not be called. You can only call this method to trigger the same behavior as if the user clicked the control.

### 65.3.14 verifyBurn

**Function:** Invoked when the user clicks the panel’s verify burn checkbox.
**Notes:** If you overwrite this method in Real Studio, your method will not be called. You can only call this method to trigger the same behavior as if the user clicked the control.
Function: The burn setup panel running.
65.4 class DRCDTextBlockMBS

65.4.1 class DRCDTextBlockMBS

Function: A class for a Text block.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

65.4.2 Methods

65.4.3 Constructor

Function: The private constructor.

65.4.4 encoding as Integer

Function: The text encoding to use.

65.4.5 language as string

Function: The language of this text block.
65.5. CLASS DRDEVICEMBS

65.5 class DRDeviceMBS

65.5.1 class DRDeviceMBS

Function: Represents a physical CD/DVD drive connected to the computer.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

65.5.2 Methods

65.5.3 acquireExclusiveAccess as boolean

Function: Attempts to acquire an exclusive access session with the device.
Notes:
Acquiring exclusive access to the device prevents any process other than the one acquiring access from communicating with the device. So once exclusive access is granted, the device is unusable by any other process. Because of this all volumes mounted from media in the drive must be unmounted before exclusive access can be granted.

Exclusive access can be acquired multiple times. Each time this method is called, a call to releaseExclusiveAccess must be made at a later time, otherwise the process will never release its exclusive access.

Returns true if the exclusive access is acquired and false if not.

65.5.4 acquireMediaReservation

Function: Indicate an interest in the blank media reservation.
Example:

```plaintext
dim d as DRDeviceMBS // get a device
d.AcquireMediaReservation
```

Notes: Blank media participates in a reservation system that allows applications to express their claim on
blank media to other applications. Indicating an interest in the reservation isn’t enough to assume its been acquired, as there are likely to be other applications in the system whom have also indicated an interest in the blank media reservation.

65.5.5 bsdName as string

Function: Returns the bsd /dev node name.

65.5.6 closeTray as boolean

Function: Commands the device to close its tray.
Notes: Does nothing if the device does not have a tray (slotload).
Returns true if the tray could be closed and false if not.

65.5.7 Constructor

Function: The private constructor.

65.5.8 device(index as UInt32) as DRDeviceMBS

Function: Queries the device with the given index.
Notes: Index from 0 to deviceCount-1.
Same as devices(), but if you only need one, this method is more efficient.

65.5.9 deviceCount as UInt32

Function: Queries the number of devices on this computer.
65.5.10  deviceForBSDName(bsdName as string) as DRDeviceMBS

Function: Obtains a DRDevice for the device corresponding to the bsd /dev node.
Notes: If the device is not an authoring device (i.e., CDR, CDRW, DVR-R, etc), returns nil.

65.5.11  deviceForIORegistryEntryPath(path as string) as DRDeviceMBS

Function: Obtains a DRDevice for the device at the path.
Notes: If the device is not an authoring device (i.e., CDR, CDRW, DVR-R, etc), returns nil.

65.5.12  devices as DRDeviceMBS()

Function: Obtains a static list of devices connected to the computer.
Example:

// shows all devices with their product names:
dim devices() as DRDeviceMBS = DRDeviceMBS.devices

for each dd as DRDeviceMBS in devices
    MsgBox dd.info.lookup(DRDeviceMBS.DRDeviceProductNameKey, "?")
next

Notes: Returns all CD/DVD devices connected to the computer at the time this method is called. Since devices can come and go at any time, the output of this method is simply a snapshot of the set of devices connected.

65.5.13  displayName as string

Function: Returns a string suitable for display in the user interface.

65.5.14  DRDeviceAppearedNotification as string

Function: One of the notification names used with a DRBurn object.
Notes:

Posted by a DRNotificationCenter when a device is added to the system.

This notification is registered for only by name.

The object associated with this notification is the the device that has appeared. The userInfo is the same dictionary returned by info for that device.

65.5.15  DRDeviceBurnSpeedBD1x as single

Function: One of the possible burn speed values.
Notes: 4496.0 KB/sec.

65.5.16  DRDeviceBurnSpeedCD1x as single

Function: One of the possible burn speed values.
Notes: 176.4 KB/sec.

65.5.17  DRDeviceBurnSpeedDVD1x as single

Function: One of the possible burn speed values.
Notes: 1385.0 KB/sec.

65.5.18  DRDeviceBurnSpeedHDDVD1x as single

Function: One of the possible burn speed values.
Notes: 4568.0 KB/sec.

65.5.19  DRDeviceBurnSpeedMax as single

Function: One of the possible burn speed values.
Notes: A value representing the maximum speed at which a device can burn. The actual speed will vary from device to device.

65.5.20 DRDeviceBurnSpeedsKey as string

Function: One of the keys in the dictionary returned by the status method.
Notes: An array containing the possible burn speeds available to use. This key may not be present if no media is inserted.

65.5.21 DRDeviceCanTestWriteCDKey as string

Function: One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.
Notes: Value for this key is a boolean value indicating whether the device can perform a test burn to CD media.

65.5.22 DRDeviceCanTestWriteDVDKey as string

Function: One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.
Notes: A boolean value indicating whether the device can perform a test burn to DVD media.

65.5.23 DRDeviceCanUnderrunProtectCDKey as string

Function: One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.
Notes: Boolean value indicating whether the device supports burn underrun protection when writing to CD media.

65.5.24 DRDeviceCanUnderrunProtectDVDKey as string

Function: One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.
Notes: Boolean value indicating whether the device supports burn underrun protection when writing to DVD media.
65.5.25 **DRDeviceCanWriteBDKey as string**

**Function:** One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.
**Notes:** Boolean value indicating whether the device can write to some type of BD (Blu-ray) based media.

65.5.26 **DRDeviceCanWriteBDREKey as string**

**Function:** One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.
**Notes:** Boolean value indicating whether the device can write to BD-RE media.

65.5.27 **DRDeviceCanWriteBDRKey as string**

**Function:** One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.
**Notes:** Boolean value indicating whether the device can write to BD-R media.

65.5.28 **DRDeviceCanWriteCDKey as string**

**Function:** One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.
**Notes:** Boolean value indicating whether the device can write to some type of CD based media.

65.5.29 **DRDeviceCanWriteCDRawKey as string**

**Function:** One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.
**Notes:** Boolean value indicating whether the device supports a raw mode burn strategy for CD. Raw mode is sometimes incorrectly referred to as DAO (disc-at-once).

65.5.30 **DRDeviceCanWriteCDRKey as string**

**Function:** One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.
**Notes:** Boolean value indicating whether the device can write to CD-R media.
65.5. CLASS DRDEVICEMBS

65.5.31 DRDeviceCanWriteCDRWKey as string

Function: One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.
Notes: Boolean value indicating whether the device can write to CD-RW media.

65.5.32 DRDeviceCanWriteCDSAOKey as string

Function: One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.
Notes: Boolean value indicating whether the device supports a SAO (session-at-once) burn strategy for CD.

65.5.33 DRDeviceCanWriteCDTAOKey as string

Function: One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.
Notes: Boolean value indicating whether the device supports a TAO (track-at-once) burn strategy for CD.

65.5.34 DRDeviceCanWriteCDTextKey as string

Function: One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.
Notes: Boolean value indicating whether the device can write CD-Text information to media.

65.5.35 DRDeviceCanWriteDVDDDAOKey as string

Function: One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.
Notes: Boolean value indicating whether the device supports a DAO (disc-at-once) burn strategy on DVD media.

65.5.36 DRDeviceCanWriteDVDKey as string

Function: One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.
Notes: Boolean value indicating whether the device can write to some type of DVD based media.
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65.5.37 DRDeviceCanWriteDVDPlusRDoubleLayerKey as string

Function: One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.
Notes: Boolean value indicating whether the device can write to DVD+R DL media.

65.5.38 DRDeviceCanWriteDVDPlusRKey as string

Function: One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.
Notes: Boolean value indicating whether the device can write to DVD+R media.

65.5.39 DRDeviceCanWriteDVDPlusRWDoubleLayerKey as string

Function: One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.
Notes: Boolean value indicating whether the device can write to DVD+RW DL media.

65.5.40 DRDeviceCanWriteDVDPlusRWKey as string

Function: One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.
Notes: Boolean value indicating whether the device can write to DVD+RW media.

65.5.41 DRDeviceCanWriteDVDRAMKey as string

Function: One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.
Notes: Boolean value indicating whether the device can write to DVD-RAM media.

65.5.42 DRDeviceCanWriteDVDRDualLayerKey as string

Function: One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.
Notes: Boolean value indicating whether the device can write to DVD-R DL media.
65.5.43  **DRDeviceCanWriteDVDRKey as string**

**Function:** One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.
**Notes:** Boolean value indicating whether the device can write to DVD-R media.

65.5.44  **DRDeviceCanWriteDVDRWDualLayerKey as string**

**Function:** One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.
**Notes:** Boolean value indicating whether the device can write to DVD-RW DL media.

65.5.45  **DRDeviceCanWriteDVDRWKey as string**

**Function:** One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.
**Notes:** Boolean value indicating whether the device can write to DVD-RW media.

65.5.46  **DRDeviceCanWriteHDDVDKey as string**

**Function:** One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.
**Notes:** Boolean value indicating whether the device can write to some type of HDDVD based media.

65.5.47  **DRDeviceCanWriteHDDVDRAKem as string**

**Function:** One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.
**Notes:** Boolean value indicating whether the device can write to HD DVD-RAM media.

65.5.48  **DRDeviceCanWriteHDDVDRDualLayerKey as string**

**Function:** One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.
**Notes:** Boolean value indicating whether the device can write to HD DVD-R DL media.
65.5.49  **DRDeviceCanWriteHDDVDRKey** as string

**Function:** One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.  
**Notes:** Boolean value indicating whether the device can write to HD DVD-R media.

65.5.50  **DRDeviceCanWriteHDDVDRWDDualLayerKey** as string

**Function:** One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.  
**Notes:** Boolean value indicating whether the device can write to HD DVD-RW DL media.

65.5.51  **DRDeviceCanWriteHDDVDRWKey** as string

**Function:** One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.  
**Notes:** Boolean value indicating whether the device can write to HD DVD-RW media.

65.5.52  **DRDeviceCanWriteIndexPointsKey** as string

**Function:** One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.  
**Notes:** Boolean value indicating whether the device can write index points to CD media.

65.5.53  **DRDeviceCanWriteISRCKey** as string

**Function:** One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.  
**Notes:** Boolean value indicating whether the device can write ISRC to CD media.

65.5.54  **DRDeviceCanWriteKey** as string

**Function:** One of the keys in the DRDeviceWriteCapabilitiesKey dictionary.  
**Notes:** Boolean value indicating whether the device can write to some type of media.
65.5.55  **DRDeviceCurrentWriteSpeedKey as string**

**Function:** One of the keys in the dictionary returned by the status method.
**Notes:** Number containing the current burning speed of this device.

65.5.56  **DRDeviceDisappearedNotification as string**

**Function:** One of the notification names used with a DRBurn object.
**Notes:**
Posted by a DRNotificationCenter when a device is removed from the system.

The object associated with this notification is the device that has disappeared. The userInfo is the same dictionary returned by info for that device.

65.5.57  **DRDeviceFirmwareRevisionKey as string**

**Function:** One of the keys in the dictionary returned by the info method.
**Notes:** String containing the firmware revision extracted from the device.

65.5.58  **DRDeviceIORegistryEntryPathKey as string**

**Function:** String containing the path of the device in the IO Registry.
**Notes:** One of the keys in the dictionary returned by the info method.

65.5.59  **DRDeviceIsBusyKey as string**

**Function:** One of the keys in the dictionary returned by the status method.
**Notes:** Number containing a boolean value indicating whether the device is busy or not.
65.5.60  **DRDeviceIsTrayOpenKey as string**

**Function:** One of the keys in the dictionary returned by the status method.  
**Notes:** Number containing a boolean value indicating whether the device’s tray is open or not.

65.5.61  **DRDeviceLoadingMechanismCanEjectKey as string**

**Function:** One of the keys in the dictionary returned by the info method.  
**Notes:** Number describing if the loading mechanism of the drive can eject.

65.5.62  **DRDeviceLoadingMechanismCanInjectKey as string**

**Function:** One of the keys in the dictionary returned by the info method.  
**Notes:** Number describing if the loading mechanism of the drive can inject.

65.5.63  **DRDeviceLoadingMechanismCanOpenKey as string**

**Function:** One of the keys in the dictionary returned by the info method.  
**Notes:** Number describing if the loading mechanism of the drive can open.

65.5.64  **DRDeviceMaximumWriteSpeedKey as string**

**Function:** One of the keys in the dictionary returned by the status method.  
**Notes:** Number containing the maximum burning speed of this device.

65.5.65  **DRDeviceMediaBlocksFreeKey as string**

**Function:** One of the keys in the DRDeviceMediaInfoKey dictionary.  
**Notes:** Number containing the amount of space available (in blocks) on the media to be written to. If the media already contains data and this value will be less than the normal maximum size of the disc. This value will normally only be used if the intent is to append data onto an open disc.
65.5.66 DRDeviceMediaBlocksOverwritableKey as string

Function: One of the keys in the DRDeviceMediaInfoKey dictionary.
Notes: Number containing the total amount of writable space available (in blocks) on the media to be written to - if that media can be overwritten. Media that can be overwritten is designated through the DRDeviceMediaIsOverwritableKey.

The overwritable space is the amount of space on the disc that would be available if any data currently on the disc is first erased.

65.5.67 DRDeviceMediaBlocksUsedKey as string

Function: One of the keys in the DRDeviceMediaInfoKey dictionary.
Notes: Number containing the amount of space currently used (in blocks) for existing data.

65.5.68 DRDeviceMediaBSDNameKey as string

Function: One of the keys in the DRDeviceMediaInfoKey dictionary.
Notes: String containing the BSD /dev node name assigned to the media in the device.

65.5.69 DRDeviceMediaClassBD as string

Function: One possible value of the DRDeviceMediaClassKey.
Notes: Indicates the media is some type of BD (Blu-ray) based media.

65.5.70 DRDeviceMediaClassCD as string

Function: One possible value of the DRDeviceMediaClassKey.
Notes: Indicates the media is some type of CD based media.
65.5.71  DRDeviceMediaClassDVD as string

Function: One possible value of the DRDeviceMediaClassKey.
Notes: Indicates the media is some type of DVD based media.

65.5.72  DRDeviceMediaClassHDDVD as string

Function: One possible value of the DRDeviceMediaClassKey.
Notes: Indicates the media is some type of HD DVD based media.

65.5.73  DRDeviceMediaClassKey as string

Function: One of the keys in the DRDeviceMediaInfoKey dictionary.
Notes: String containing the class of media present in the drive.

65.5.74  DRDeviceMediaClassUnknown as string

Function: One possible value of the DRDeviceMediaClassKey.
Notes: Indicates the media class is unknown.

65.5.75  DRDeviceMediaDoubleLayerL0DataZoneBlocksKey as string

Function: One of the keys in the DRDeviceMediaInfoKey dictionary.
Notes: Number containing the amount of space available (in blocks) on layer 0 of a double layer piece of media.

65.5.76  DRDeviceMediaFreeSpaceKey as string

Function: One of the keys in the DRDeviceMediaInfoKey dictionary.
Notes: MSF value of the amount of space available on the media to be written to. If the media already contains data and this value will be less than the normal maximum size of the disc. This value will normally
only be used if the intent is to append data onto an open disc.

65.5.77  DRDeviceMediaInfoKey as string

Function: One of the keys in the dictionary returned by the status method.
Notes: Dictionary of information describing the media currently in the device. This key may not be present if no media is inserted.

65.5.78  DRDeviceMediaIsAppendableKey as string

Function: One of the keys in the DRDeviceMediaInfoKey dictionary.
Notes: Number containing a boolean value indicating that data can be appended to the existing data (if any).

65.5.79  DRDeviceMediaIsBlankKey as string

Function: One of the keys in the DRDeviceMediaInfoKey dictionary.
Notes: Number containing a boolean value indicating whether data has previously been written to the media.

65.5.80  DRDeviceMediaIsErasableKey as string

Function: One of the keys in the DRDeviceMediaInfoKey dictionary.
Notes: Number containing a boolean value indicating whether this media can be erased.

65.5.81  DRDeviceMediaIsOverwritableKey as string

Function: One of the keys in the DRDeviceMediaInfoKey dictionary.
Notes: Number containing a boolean value indicating that the data on the disc (if any) can be overwritten. Rewritable media can always be erased, and then rewritten in its entirety, so it is always considered over-

writable.

Write-once media, if its blank, can also be written in its entirety and is also considered overwriteable.

Write-once media, that has been partially written, can never again enter a state where it is entirely writable and will have lost its overwriteable designation.

**65.5.82 DRDeviceMediaIsReservedKey as string**

**Function:** One of the keys in the DRDeviceMediaInfoKey dictionary.  
**Notes:** Number containing a boolean value indicating whether the media is reserved for exclusive use by the current process.

**65.5.83 DRDeviceMediaOverwritableSpaceKey as string**

**Function:** One of the keys in the DRDeviceMediaInfoKey dictionary.  
**Notes:** MSF value of the amount of writable space available on the media to be written to - if that media can be overwritten. Media that can be overwritten is designated through the DRDeviceMediaIsOverwritableKey.  

The overwritable space is the amount of space on the disc that would be available if any data currently on the disc is first erased.

**65.5.84 DRDeviceMediaSessionCountKey as string**

**Function:** One of the keys in the DRDeviceMediaInfoKey dictionary.  
**Notes:** Number containing the current number of sessions present on the media.

**65.5.85 DRDeviceMediaStateInTransition as string**

**Function:** One of the possible values for the DRDeviceMediaStateKey.  
**Notes:** The media is transitioning from one state to another (i.e., being spun up/down).
65.5. **CLASS DRDEVICEMBS**

65.5.86 **DRDeviceMediaStateKey** as string

**Function:** One of the keys in the dictionary returned by the status method.
**Notes:** String describing the state of the media.

65.5.87 **DRDeviceMediaStateMediaPresent** as string

**Function:** One of the possible values for the DRDeviceMediaStateKey.
**Notes:** Device contains media of some type.

65.5.88 **DRDeviceMediaStateNone** as string

**Function:** One of the possible values for the DRDeviceMediaStateKey.
**Notes:** No media is present in the device.

65.5.89 **DRDeviceMediaTrackCountKey** as string

**Function:** One of the keys in the DRDeviceMediaInfoKey dictionary.
**Notes:** Number containing the number of tracks present on the media.

65.5.90 **DRDeviceMediaTypeBDR** as string

**Function:** One of the possible values of the DRDeviceMediaTypeKey.
**Notes:** Media is a BD-R.

65.5.91 **DRDeviceMediaTypeBDRE** as string

**Function:** One of the possible values of the DRDeviceMediaTypeKey.
**Notes:** Media is a BD-RE.
65.5.92  **DRDeviceMediaTypeBDROM as string**


**Function:** One of the possible values of the DRDeviceMediaTypeKey.

**Notes:** Media is a BD-ROM.

65.5.93  **DRDeviceMediaTypeCDR as string**


**Function:** One of the possible values of the DRDeviceMediaTypeKey.

**Notes:** Media is a CD-R.

65.5.94  **DRDeviceMediaTypeCDROM as string**


**Function:** One of the possible values of the DRDeviceMediaTypeKey.

**Notes:** Media is a CD-ROM.

65.5.95  **DRDeviceMediaTypeCDRW as string**


**Function:** One of the possible values of the DRDeviceMediaTypeKey.

**Notes:** Media is a CD-RW.

65.5.96  **DRDeviceMediaTypeDVDPlusR as string**


**Function:** One of the possible values of the DRDeviceMediaTypeKey.

**Notes:** Media is a DVD+R.

65.5.97  **DRDeviceMediaTypeDVDPlusRDoubleLayer as string**


**Function:** One of the possible values of the DRDeviceMediaTypeKey.

**Notes:** Media is a DVD+R Double Layer.
65.5.98  **DRDeviceMediaTypeDVDPlusRW as string**

**Function:** One of the possible values of the DRDeviceMediaTypeKey.
**Notes:** Media is a DVD+RW.

65.5.99  **DRDeviceMediaTypeDVDPlusRWDoubleLayer as string**

**Function:** One of the possible values of the DRDeviceMediaTypeKey.
**Notes:** Media is a DVD+RW Double Layer.

65.5.100  **DRDeviceMediaTypeDVDR as string**

**Function:** One of the possible values of the DRDeviceMediaTypeKey.
**Notes:** Media is a DVD+RW.

65.5.101  **DRDeviceMediaTypeDVDRAM as string**

**Function:** One of the possible values of the DRDeviceMediaTypeKey.
**Notes:** Media is a DVD-RAM.

65.5.102  **DRDeviceMediaTypeDVDRDualLayer as string**

**Function:** One of the possible values of the DRDeviceMediaTypeKey.
**Notes:** Media is a DVD-R DL.
65.5.103 **DRDeviceMediaTypeDVDROM as string**

**Function:** One of the possible values of the DRDeviceMediaTypeKey.  
**Notes:** Media is a DVD-ROM.

65.5.104 **DRDeviceMediaTypeDVDRW as string**

**Function:** One of the possible values of the DRDeviceMediaTypeKey.  
**Notes:** Media is a DVD-RW.

65.5.105 **DRDeviceMediaTypeDVDRWDualLayer as string**

**Function:** One of the possible values of the DRDeviceMediaTypeKey.  
**Notes:** Media is a DVD-R DL.

65.5.106 **DRDeviceMediaTypeHDDVDR as string**

**Function:** One of the possible values of the DRDeviceMediaTypeKey.  
**Notes:** Media is a HD DVD-R.

65.5.107 **DRDeviceMediaTypeHDDVDRAM as string**

**Function:** One of the possible values of the DRDeviceMediaTypeKey.  
**Notes:** Media is a HD DVD-RAM.

65.5.108 **DRDeviceMediaTypeHDDVDRDualLayer as string**

**Function:** One of the possible values of the DRDeviceMediaTypeKey.  
**Notes:** Media is a HD DVD-R DL.
65.5. CLASS DRDEVICEMBS

65.5.109 DRDeviceMediaTypeHDDVDROM as string

Function: One of the possible values of the DRDeviceMediaTypeKey.
Notes: Media is a HD DVD-ROM.

65.5.110 DRDeviceMediaTypeHDDVDRW as string

Function: One of the possible values of the DRDeviceMediaTypeKey.
Notes: Media is a HD DVD-RW.

65.5.111 DRDeviceMediaTypeHDDVDRWDualLayer as string

Function: One of the possible values of the DRDeviceMediaTypeKey.
Notes: Media is a HD DVD-RW DL.

65.5.112 DRDeviceMediaTypeKey as string

Function: One of the keys in the DRDeviceMediaInfoKey dictionary.
Notes: String containing the type of media inserted in the device.

65.5.113 DRDeviceMediaTypeUnknown as string

Function: One of the possible values of the DRDeviceMediaTypeKey.
Notes: The type of the media cannot be determined.

65.5.114 DRDeviceMediaUsedSpaceKey as string

Function: One of the keys in the DRDeviceMediaInfoKey dictionary.
Notes: MSF value of the amount of space currently used for existing data.
65.5.115  DRDevicePhysicalInterconnectATAPI as string

Function: One of the possible values of the DRDevicePhysicalInterconnectKey.
Notes: Device is connected on an ATAPI interface.

65.5.116  DRDevicePhysicalInterconnectFibreChannel as string

Function: One of the possible values of the DRDevicePhysicalInterconnectKey.
Notes: Device is connected through a Fibre Channel interface.

65.5.117  DRDevicePhysicalInterconnectFireWire as string

Function: One of the possible values of the DRDevicePhysicalInterconnectKey.
Notes: Device is connected through a Firewire interface.

65.5.118  DRDevicePhysicalInterconnectKey as string

Function: One of the keys in the dictionary returned by the info method.
Notes: String describing the connection of the device to the computer.

65.5.119  DRDevicePhysicalInterconnectLocationExternal as string

Function: One of the possible values of the DRDevicePhysicalInterconnectLocationKey.
Notes: Device is connected to the machine externally.

65.5.120  DRDevicePhysicalInterconnectLocationInternal as string

Function: One of the possible values of the DRDevicePhysicalInterconnectLocationKey.
Notes: Device is connected to the machine internally.
65.5.121 DRDevicePhysicalInterconnectLocationKey as string

**Function:** One of the keys in the dictionary returned by the info method.
**Notes:** String describing the location of the device (e.g. internal/external).

65.5.122 DRDevicePhysicalInterconnectLocationUnknown as string

**Function:** One of the possible values of the DRDevicePhysicalInterconnectLocationKey.
**Notes:** It’s not known how the device is connected.

65.5.123 DRDevicePhysicalInterconnectSCSI as string

**Function:** One of the possible values of the DRDevicePhysicalInterconnectKey.
**Notes:** Device is connected on a SCSI interface.

65.5.124 DRDevicePhysicalInterconnectUSB as string

**Function:** One of the possible values of the DRDevicePhysicalInterconnectKey.
**Notes:** Device is connected through a USB interface.

65.5.125 DRDeviceProductNameKey as string

**Function:** One of the keys in the dictionary returned by the info method.
**Example:**

```vbs
// shows all devices with their product names:
Dim devices() As DRDeviceMBS = DRDeviceMBS.devices

For Each dd As DRDeviceMBS In devices
    MsgBox dd.info.lookup(DRDeviceMBS.DRDeviceProductNameKey, "")
Next
```
Notes: String containing the product name extracted from the device.

65.5.126 DRDeviceStatusChangedNotification as string

Function: One of the notification names used with a DRBurn object.
Notes: Posted by a DRNotificationCenter when the media in a device changes state. This can include being ejected, inserted, becoming busy, etc.

The object for this notification is the device who's media is changing state. The userInfo for this notification is the same dictionary returned by status for that device.

65.5.127 DRDeviceSupportLevelAppleShipping as string

Function: One of the values for DRDeviceSupportLevelKey.
Notes: This value indicates this device is shipping in some Apple machine.

65.5.128 DRDeviceSupportLevelAppleSupported as string

Function: One of the values for DRDeviceSupportLevelKey.
Notes: This value indicates this device has been tested by Apple for support.

65.5.129 DRDeviceSupportLevelKey as string

Function: One of the keys in the dictionary returned by the info method.
Notes: String describing the support level the device enjoys from the engine.

65.5.130 DRDeviceSupportLevelNone as string

Function: One of the values for DRDeviceSupportLevelKey.
Notes: This value indicates this device is not supported.
65.5. CLASS DRDEVICEMBS

65.5.131 DRDeviceSupportLevelUnsupported as string

Function: One of the values for DRDeviceSupportLevelKey.
Notes: This value indicates the device is unsupported, but the engine will try to use it anyway.

65.5.132 DRDeviceSupportLevelVendorSupported as string

Function: One of the values for DRDeviceSupportLevelKey.
Notes: This value indicates this device has been tested by a third party for support.

65.5.133 DRDeviceTrackInfoKey as string

Function: One of the keys in the dictionary returned by the status method.
Notes: Dictionary containing dictionaries describing the tracks. DRTracks from the DRDeviceTrackRefsKey are used as keys into this dictionary.

65.5.134 DRDeviceTrackRefsKey as string

Function: One of the keys in the dictionary returned by the status method.
Notes: An array containing a list of DRTrack objects describing any tracks that are already on the disc.

65.5.135 DRDeviceVendorNameKey as string

Function: One of the keys in the dictionary returned by the info method.
Notes: String containing the vendor name extracted from the device.

65.5.136 DRDeviceWriteBufferSizeKey as string

Function: One of the keys in the dictionary returned by the info method.
Notes: Number containing the size of the write buffer of the device.
65.5.137  **DRDeviceWriteCapabilitiesKey as string**

**Function:** One of the keys in the dictionary returned by the info method.
**Notes:** Dictionary containing the capabilities of the device for writing different kinds of media.

65.5.138  **ejectMedia as boolean**

**Function:** Commands the device to eject the media.
**Notes:**
This command first unmounts any volumes associated with the media and then eject the media from the drive. If the media could not be ejected, most likely this is because a volume associated with the media could not be unmounted.

Returns true if the media could be ejected and false if not.

65.5.139  **info as dictionary**

**Function:** Returns a dictionary of information describing the device.
**Notes:** The information returned include the types of media the device can write to, how it’s connected and its identifying information such as the vendor and product name.

65.5.140  **ioRegistryEntryPath as string**

**Function:** Returns the path to the device in the IO Registry.

65.5.141  **isEqualToDevice(value as DRDeviceMBS) as boolean**

**Function:** Compares the receiver to another device.
**Notes:** Returns true if the receiver is equal to otherDevice.
65.5. **CLASS DRDEVICEMBS**

65.5.142 **isValid as boolean**


**Function:** Returns whether or not the device represented by the receiver is still attached to the computer.

**Notes:**

Because of the way some physical interconnects work, a device which is unplugged and replugged in does not necessarily look like the same device to the computer and would be invalid in that instance.

Returns true if the device is valid and false if not.

65.5.143 **mediaIsAppendable as boolean**


**Function:** Returns true if the media in the device can have more data appended to any existing data.

65.5.144 **mediaIsBlank as boolean**


**Function:** Returns true the media in the device is blank.

65.5.145 **mediaIsBusy as boolean**


**Function:** Returns true if the media is in use by some process - even the one making this call.

65.5.146 **mediaIsErasable as boolean**


**Function:** Returns true if the media can be erased (i.e., CD-RW, DVD-RW, etc).

65.5.147 **mediaIsOverwritable as boolean**


**Function:** Returns true if the media in the device can be fully (re)written.
65.5.148 mediaIsPresent as boolean

Function: Reports the presence of the media.

65.5.149 mediaIsReserved as boolean

Function: Returns true if the application calling this method currently holds the reservation on the media.

65.5.150 mediaIsTransitioning as boolean

Function: Returns true if the media is in transition (spinning up or down for example).

65.5.151 mediaSpaceFree as DRMSFMBS

Function: Returns the amount of free space on the media.

65.5.152 mediaSpaceOverwritable as DRMSFMBS

Function: Returns the amount of writable space on the media.

65.5.153 mediaSpaceUsed as DRMSFMBS

Function: Returns the amount of used space on the media.

65.5.154 mediaType as string

Function: Returns the type of media currently inserted into the device.
65.5. **CLASS DRDEVICEMBS**

### 65.5.155 openTray as boolean

**Function:** Commands the device to open it’s tray.
**Notes:**

Does nothing if the device does not have a tray (slotload). If there is media in the drive this method will do nothing and return false. In this case use ejectMedia to eject the media and open the tray.

Returns true if the tray could be opened and false if not.

### 65.5.156 PhysicalInterconnect as string

**Function:** The connection of the device to the computer.

### 65.5.157 PhysicalInterconnectLocation as string

**Function:** The location of the device (internal/external/unknown).
**Notes:** Use the DRDevicePhysicalInterconnectLocation* constants.

### 65.5.158 releaseExclusiveAccess

**Function:** Releases the latest exclusive access request for the device.
**Notes:** A call to this method must be made for every call to acquireExclusiveAccess, otherwise the process will never release its exclusive access.

### 65.5.159 releaseMediaReservation

**Function:** Releases any media reservation that might be in place for the device.
**Notes:** If media is inserted and reserved, then the reservation will be passed on to the next process with a reservation request.
65.5.160 status as dictionary

Function: Returns a dictionary of information describing the media in the device.
Notes: In addition to information about the media (type, space available/used, etc), the dictionary returned includes those pieces of information about the device itself which are in part determined by the media (i.e., maximum burn speed).

65.5.161 trayIsOpen as boolean

Function: Reports the tray state of the device.
Notes: Returns true if the device has a tray and it is open.

65.5.162 writesCD as boolean

Function: Reports the device’s ability to burn to CD-type media.
Notes: Returns true if the device has the ability to write to CD-R media.

65.5.163 writesDVD as boolean

Function: Reports the device’s ability to burn to DVD-type media.
Notes: Returns true if the device has the ability to write to DVD-R media.
65.6   class DREraseMBS

65.6.1   class DREraseMBS

**Function:** Perform and monitor the erasing a rewritable CD or DVD disc.
**Notes:** All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead.
Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

65.6.2   Methods

65.6.3   Constructor(device as DREraseMBS)

**Function:** Initializes an erase object.

65.6.4   device as DRDeviceMBS

**Function:** Returns the device being used for the erase.

65.6.5   DREraseStatusChangedNotification as string

**Function:** One of the notification names you can use to register notifications on the erase status.

65.6.6   DREraseTypeComplete as string

**Function:** A constant to be used for the eraseType property.
**Notes:** Configures the erase object to perform a complete erase, erasing every byte on the disk. This operation is slow (on the order of 30 minutes) to complete.
**65.6.7  DREraseTypeKey as string**

Function: One of the property names in the properties dictionary of the erase object.

**65.6.8  DREraseTypeQuick as string**

Function: A constant to be used for the eraseType property.
Notes: Configures the erase object to perform a quick erase, doing the minimal amount of work to make the disc appear blank. This operation typically takes only a minute or two.

**65.6.9  eraseForDevice(device as DRDeviceMBS) as DREraseMBS**

Function: Creates and returns an erase object.
Notes: Returns nil on any error.

**65.6.10  start**

Function: Begin the process of erasing media.
Notes: This method only kicks off the erase. Once the erasure starts, control returns to the caller.

**65.6.11  status as dictionary**

Function: Returns a dictionary containing the status of the erase.
Notes: The same dictionary is returned through the DREraseStatusChangedNotification notification.

**65.6.12  Properties**

**65.6.13  eraseType as string**

Function: The type of erase to be performed.
65.6. **CLASS DRERASEMBS**

**Notes:** (Read and Write computed property)

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### 65.6.14 properties as dictionary


**Function:** The properties dictionary of the erase.

**Notes:** (Read and Write computed property)
65.7 class DRoseProgressPanelMBS

65.7.1 class DRoseProgressPanelMBS

**Function:** Panel to display progress while erasing media.  
**Notes:** All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct. Subclass of the NSPanelMBS class.

65.7.2 Methods

65.7.3 beginProgressPanelForErase(erase as DRoseMBS)

**Function:** Presents the progress panel on screen and begins the erase process.  
**Notes:** This method returns control to the caller after it has displayed the progress sheet and begun the erase. Once the method has returned the caller can perform other operations while the erase continues.

65.7.4 beginProgressSheetForErase(erase as DRoseMBS, docWindow as NSWindowMBS)

**Function:** Presents the progress panel as a sheet and begins the erase process.  
**Notes:** erase: The object performing the erase.  
docWindow: The window the sheet will be attached to. If docWindow is not nil, the panel slides down as a sheet running as a document modal window. If owner is nil, this is an error.

This method returns control to the caller after it has displayed the progress sheet and begun the erase. Once the method has returned the caller can perform other operations while the erase continues.

65.7.5 Constructor

**Function:** The constructor which creates the erase progress panel.
65.7. **DREraseProgressPanelDidFinishNotification as string**

**Function:** One of the notification names for use with an erase progress panel.  
**Notes:**  
Posted when the DREraseProgressPanel has finished and is about to go away.  

This notification contains a notification object but no userInfo dictionary. The notification object is the DREraseProgressPanel that will be closed.

65.7.7 **DREraseProgressPanelWillBeginNotification as string**

**Function:** One of the notification names for use with an erase progress panel.  
**Notes:**  
Posted when the DREraseProgressPanel is about to begin displaying progress.  

This notification contains a notification object but no userInfo dictionary. The notification object is the DREraseProgressPanel that will be displayed.

65.7.8 **Properties**

65.7.9 **Description as string**

**Function:** The description string displayed in the panel.  
**Notes:**  
If no description is explicitly set, this method will return the standard text string.

The panel’s description is typically a short text string that gives an indication to the user what operation is being performed. If no description is explicitly set, the progress panel uses a standard text string suitable to the erase.  
(Read and Write computed property)
65.7.10 Events

65.7.11 eraseProgressPanelDidFinish


65.7.12 eraseProgressPanelEraseDidFinish(erase as DREraseMBS) as boolean

MBS MacControls Plugin, Plugin Version: 7.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Allows the delegate to handle the end-of-erase feedback. Notes: This method allows the delegate to handle or modify the end-of-erase feedback performed by the progress panel. Return true to indicate the delegate handled the erase completion and the standard feedback should be suppressed. If this method returns false, the normal end-of-erase handling is performed (displaying an error if appropriate, playing an "I’m done" sound, etc). The delegate is messaged before the progress panel is ordered out so a sheet may be displayed on a progress panel displayed as a window.

65.7.13 eraseProgressPanelWillBegin

65.8. **class DREraseSetupPanelMBS**

65.8.1 **class DREraseSetupPanelMBS**


**Function:** Manages a panel that allows users to specify the parameters of an erase.

**Notes:**

This class supports choosing the device to use and what sort of erase to perform. When the panel is closed by the user choosing to erase the media in the device, the device is exclusively held by the application for its own use to prevent possible bad or corrupt media from causing problem for the rest of the system. This means that if the erase object obtained from the panel is not used to do an erase, the device will remain unavailable to other applications until the exclusive access is released.

Subclass of the DRSetupPanelMBS class.

65.8.2 **Methods**

65.8.3 **Constructor**


**Function:** The constructor to create the erase setup panel.

**Example:**

```dim d as DREraseSetupPanelMBS
d=new DREraseSetupPanelMBS
call d.runSetupPanel```

65.8.4 **eraseObject as DREraseMBS**


**Function:** Creates and returns a new DRErase object that’s configured to erase the disc in the currently selected device.

**Notes:**

The new DRErase object is configured based on the settings in the setup panel when the user clicks the OK button.

Do not invoke this method within a modal session runSetupPanel because the erase object information is only updated just before the modal session ends.

Returns a new DRErase object.
65.9. **CLASS DRFILEMBS**

65.9 **class DRFileMBS**

65.9.1 **class DRFileMBS**


**Function:** Represents a file to be created on the disc.

**Notes:**

A file can be either a pointer to an exiting file (residing on a hard drive for example) or can be created at burn time from data passed into the file object as requested. DRFiles can only exist inside of DRFolder objects.

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

Subclass of the DRFSObjectMBS class.

65.9.2 **Methods**

65.9.3 **Constructor**


**Function:** Dummy constructor.

**Notes:**

See also:

- 65.9.4 Constructor(name as string) 11185
- 65.9.5 Constructor(name as string, data as memoryblock) 11186
- 65.9.6 Constructor(path as folderitem) 11186

65.9.4 **Constructor(name as string)**


**Function:** Creates a "virtual" file object.

**Notes:**

This type of DRFile burns the data produced to the output disc, creating a file with the passed in name.

You need to subclass the DRFileMBS class and handle the events.

See also:

- 65.9.3 Constructor 11185
65.9.5 Constructor(name as string, data as memoryblock)

**Function:** Creates a "virtual" file object.  
**Notes:** This type of DRFile burns the data passed in to disc, creating a file with the passed in name.  
See also:

- 65.9.3 Constructor
- 65.9.4 Constructor(name as string)
- 65.9.6 Constructor(path as folderitem)

65.9.6 Constructor(path as folderitem)

**Function:** Initializes a "real" file object  
**Notes:** This type of DRFile reads in data from an existing file located at path and burns that data to disc.  
See also:

- 65.9.3 Constructor
- 65.9.4 Constructor(name as string)
- 65.9.5 Constructor(name as string, data as memoryblock)

65.9.7 DRLinkTypeFinderAlias as string

**Function:** The constant used with linkWithLinkType to create a Finder alias.

65.9.8 DRLinkTypeHardLink as string

**Function:** The constant used with linkWithLinkType to create a hard link.
65.9.9  DRLinkTypeSymbolicLink as string

Function: The constant used with linkWithLinkType to create a symbolic link.

65.9.10  fileWithPath(path as folderitem) as DRFileMBS

Function: Creates a "real" file object.
Example:

```
dim file as FolderItem = GetFolderItem("/System/Library/Fonts/Helvetica.dfont", FolderItem.PathType-Shell)
dim f as DRFileMBS = DRFileMBS.fileWithPath(file)
MsgBox f.baseName
```

Notes: This type of DRFile reads in data from an existing file located at path and burns that data to disc.
See also:

- 65.9.11 fileWithPath(path as string) as DRFileMBS

65.9.11  fileWithPath(path as string) as DRFileMBS

Function: Creates a "real" file object.
Example:

```
dim f as DRFileMBS = DRFileMBS.fileWithPath(”/System/Library/Fonts/Helvetica.dfont”)```

MsgBox f.baseName

Notes: This type of DRFile reads in data from an existing file located at path and burns that data to disc.
See also:

- 65.9.10 fileWithPath(path as folderitem) as DRFileMBS
65.9.12 finderAliasPointingTo(original as DRFSObjectMBS, filesystem as string) as DRFileMBS

**Function:** Creates a Finder alias to another file on the output disc.
**Notes:**
original: The file to point the hard link to
filesystem: The filesystem this link will exist on.

As with Mac OS X 10.6.4 this method seems to create an empty file only (no alias).

65.9.13 hardLinkPointingTo(original as DRFileMBS, filesystem as string) as DRFileMBS

**Function:** Creates a hard link to another file on the output disc.
**Notes:**
original: The file to point the hard link to
filesystem: The filesystem this link will exist on.

As with Mac OS X 10.6.4 this method seems to crash always.

65.9.14 linkWithLinkType(linkType as string, original as DRFSObjectMBS, filesystem as string) as DRFileMBS

**Function:** Initializes a file object to point to another file on the output disc.
**Example:**

```plaintext
dim SomeFolder as new DRFolderMBS("Some new folder")

// Let's have a file to test

dim data as string = "Hello World" // file content
dim name as string = "test.txt" // file name
dim testfile as DRFileMBS = DRFileMBS.virtualFileWithName(name, data)

// and create a sym link for it

dim SymLink as DRFileMBS = DRFileMBS.linkWithLinkType(DRFileMBS.DRLinkTypeSymbolicLink, testfile, DRFileMBS.DRHFSPlus)
if SymLink = nil then
```

MsgBox "SymLink is nil!?"
else
SomeFolder.addChild SymLink
end if

Notes:

linkType: The type of link that will be created.
original: The file to point the hard link to
filesystem: The filesystem this link will exist on.

65.9.15  symLinkPointingTo(original as DRFSObjectMBS, filesystem as string) as DRFileMBS

Function: Creates a symbolic link to another file on the output disc.
Example:

dim SomeFolder as new DRFolderMBS("Some new folder")

// Let’s have a file to test

dim data as string = "Hello World" // file content
dim name as string = "test.txt" // file name
dim testfile as DRFileMBS = DRFileMBS.virtualFileWithName(name, data)

// and create a sym link for it
dim SymLink as DRFileMBS = DRFileMBS.symLinkPointingTo(testfile, DRFileMBS.DRHFSPlus)
if SymLink = nil then
MsgBox "SymLink is nil!?"
else
SomeFolder.addChild SymLink
end if

Notes:

original: The file to point the hard link to
filesystem: The filesystem this link will exist on.

As with Mac OS X 10.6.4 this method seems to work just fine.
65.9.16 `virtualFileWithName(name as string, data as memoryblock) as DRFileMBS`

**Function:** Creates a ”virtual” file object.

**Example:**

```vba
dim data as string = "Hello World" ' file content
dim name as string = "test.txt" ' file name

dim f as DRFileMBS = DRFileMBS.virtualFileWithName(name, data)

MsgBox f.baseName
```

**Notes:** This type of DRFile burns the data passed in to disc, creating a file with the passed in name.

65.9.17 Events

65.9.18 `calculateSizeOfFile(fork as Integer, estimating as boolean) as uint64`

**Function:** Calculates the size of a file’s fork.

**Notes:**
This method may be sent at any time after the file object has been instantiated. Requests that the receiver calculate the file size of file fork (for instance data or resource).

If estimate is true, you are being asked for an estimate of the final fork size, perhaps to provide an estimate of the track size, and do not have to be exact. Estimates should err on the high side; it’s better to overestimate than underestimate.

An estimate call may be made at any time.

If estimate is false, you are being asked for the actual fork size, to be used in the burn. This call is only made in the burn phase.

**fork:** The fork of the file whose size is to be calculated.
**estimate:** If the file size should be estimated or exact.

Return the length of the file’s fork.
65.9. **CLASS DRFILEMBS**

65.9.19 cleanupFileAfterBurn

MBS MacControls Plugin, Plugin Version: 7.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Cleanup the file once the burn is complete. **Notes:** Sent to the receiver after the burn completes. This would be an appropriate place to close files, or do any other teardown work needed. This message will always be sent regardless of whether the burn succeeded or failed.

65.9.20 prepareFileForBurn as boolean

MBS MacControls Plugin, Plugin Version: 7.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Prepare the file object for burning. **Notes:**

Sent to the receiver before the burn begins. This would be an appropriate method to open files, or do any other prep work needed. The disc’s entire hierarchy is completely in place and can be queried if needed.

After this call, the burn’s content is locked down, and you should be able to respond to the calculateSizeOfFile messages with exact values.

65.9.21 prepareFileForVerification as boolean

MBS MacControls Plugin, Plugin Version: 7.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Prepare the file object for verification. **Notes:** Called during the burn (after production, before the cleanupFileAfterBurn event is called) to indicate that verification is about to begin. Now would be a good time to rewind to the start of the file, reset state machines, or do whatever else is needed to prepare to produce again.

65.9.22 produceFile(fork as Integer, buffer as memoryblock, Bufferlen as uint32, address as uint64, blocksize as uint32) as uint32

MBS MacControls Plugin, Plugin Version: 7.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Calculates the size of a file’s fork. **Notes:**

Sent during the burn (after the prepareFileForBurn message) requesting that the receiver produce the data fork contents.

The receiver should fill up the buffer passed in as full as possible and then return control to the caller. Since while burning, keeping the drive’s buffer full is of utmost importance, you should not perform lengthy
operations or block for data in this method. This method should return the number of bytes actually in the buffer or 0 to indicate that there was an error producing the data.

You may be asked to produce twice, once during the actual burn and once during verification.

fork: The fork of the file to produce.
buffer: The buffer to produce data into.
bufferLength: The length of the buffer to produce data into
blockSize: The size of the track blocks

Return the number of bytes produced.

65.9.23 Constants

65.9.24 DRFileForkData = 0

MBS MacControls Plugin, Plugin Version: 7.4. Function: The constant which specifies which fork is currently needed.
Notes:
The data fork contains the primary information for the file and is the fork used for files such as JPEGs, text files, etc.

The resource fork contains secondary meta-data, which is not important to the primary content of the file and may safely be ignored when the file is sent to a filesystem or OS which does not support multiple forks.

65.9.25 DRFileForkResource = 1

MBS MacControls Plugin, Plugin Version: 7.4. Function: The constant which specifies which fork is currently needed.
Notes:
The data fork contains the primary information for the file and is the fork used for files such as JPEGs, text files, etc.

The resource fork contains secondary meta-data, which is not important to the primary content of the file and may safely be ignored when the file is sent to a filesystem or OS which does not support multiple forks.
65.10 class DRFolderMBS


**Function:** A class for folder objects used in filesystem creation.

**Notes:**

A DRFile object is a subclass of DRFSObject and represents a folder on the finished disc. DRFolders can be either a pointer to an existing folder (residing on a hard drive for example) or can be a "virtual" folder which exists only on the resulting burned disc. A DRFolder pointing to an existing folder ("real" folder) cannot have its contents changed - only those files/folders which are children of the actual folder on disk will be included on the resulting disc. "Virtual" folders are entirely created programatically and any virtual folder structure can exist and be burned to disc. It is possible to convert a "real" folder to a "virtual" folder using the makeVirtual method.

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

Subclass of the DRFSObjectMBS class.

65.10.2 Methods

65.10.3 addChild(child as DRFSObjectMBS)


**Function:** Adds an object reference (either a file or folder) as a child of a virtual folder object.

**Notes:** This method only applies to virtual folders. Real folders are considered "leaf nodes" and cannot have children.

65.10.4 children as DRFSObjectMBS()


**Function:** Returns an array containing the children of a virtual folder.

**Notes:** The order of children in the array is arbitrary – since the various filesystems being generated may have different sorting requirements, there is no one true way to sort the children. The ordering will change only when children are added or removed. You should sort the children according to the needs of your display, and in a consistent manner. This function only applies to virtual folders. Real folders are considered "leaf nodes" and should not be passed into this call.
65.10.5 Constructor


Function: The dummy constructor.

See also:
- 65.10.6 Constructor(name as string)
- 65.10.7 Constructor(path as folderitem)

65.10.6 Constructor(name as string)


Function: Creates a "virtual" folder object with a name.

See also:
- 65.10.5 Constructor
- 65.10.7 Constructor(path as folderitem)

65.10.7 Constructor(path as folderitem)


Function: Initializes a DRFolder object that will use the folder contents of the folder located at path as a source.

See also:
- 65.10.5 Constructor
- 65.10.6 Constructor(name as string)

65.10.8 count as Integer


Function: Returns the number of children of a virtual folder.

Notes: This method returns a "shallow" count of only those children that are immediately contained within the virtual folder. This method only applies to virtual folders. Real folders are considered "leaf nodes" and should not be passed into this call.

65.10.9 folderWithPath(path as folderitem) as DRFolderMBS


Function: Initializes a DRFolder object that will use the folder contents of the folder located at path as a
65.10. **CLASS DRFOLDERMBS**

source.

See also:

- 65.10.10 folderWithPath(path as string) as DRFolderMBS

### 65.10.10 folderWithPath(path as string) as DRFolderMBS

**Function:** Initializes a DRFolder object that will use the folder contents of the folder located at path as a source.  
See also:

- 65.10.9 folderWithPath(path as folderitem) as DRFolderMBS

### 65.10.11 makeVirtual

**Function:** Changes the real DRFolder object into a "virtual" DRFolder object.  
**Notes:** The virtual folder created in this way is a snapshot of the on-disk folder at the moment of the call. The newly created virtual folder will contain real folder and file objects corresponding to the on-disk children of the original on-disk folder. If the on-disk folder is modified (eg, if the folder attributes change, or if children are added to or removed from the on-disk tree): during this call, the virtual folder may or may not reflect the changes. If modified after this call, the virtual folder will not reflect the changes.

### 65.10.12 removeChild(child as DRFSObjectMBS)

**Function:** Removes an object reference (either a file or folder) as a child of a virtual folder object.  
**Notes:** This method only applies to virtual folders. Real folders are considered "leaf nodes" and cannot have children.

### 65.10.13 virtualFolderWithName(name as string) as DRFolderMBS

**Function:** Creates a "virtual" folder object with a name.
65.11 class DRFSObjectMBS

65.11.1 class DRFSObjectMBS

Function: A class which defines common features of all filesystem content objects.
Notes: Please read Apples documentation for more details.

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

65.11.2 Methods

65.11.3 Constructor

Function: The private constructor.

65.11.4 DRAccessDate as string

Function: One of the property keys.
Notes: Date containing the item’s last-accessed date.

65.11.5 DRAllFilesystems as string

Function: The key for accessing the name or properties for the file in all filesystems together.
Notes: When this key is used to refer to a name, it refers to the base name (which has no naming restrictions).

65.11.6 DRAtributeModificationDate as string

Function: One of the property keys.
65.11. CLASS DRFSOBJECTMBS

Notes: Date containing the item’s attribute modification date.

65.11.7 DRBackupDate as string

Function: One of the property keys.
Notes: Date containing the item’s backup date.

65.11.8 DRContentModificationDate as string

Function: One of the property keys.
Notes: Date containing the item’s content modification date.

65.11.9 DRCreationDate as string

Function: One of the property keys.
Notes: Date containing the item’s creation date.

65.11.10 DREffectiveDate as string

Function: One of the property keys.
Notes: Date containing the item’s effective date.

65.11.11 DRExpirationDate as string

Function: One of the property keys.
Notes: Date containing the item’s expiration date.

65.11.12 DRHFSPlus as string

Function: The key for accessing the HFS+ name/properties for the file.
Notes: HFS+ names can be up to 255 decomposed unicode characters long.

65.11.13 DRHFSPlusCatalogNodeID as string

Function: One of the property keys.
Notes: Number containing item's catalog node ID (HFS+ only). Currently, this value if set is only a suggestion. The burn engine will attempt to use this node ID, but may use another value if it needs to resolve conflicts. Default behavior is to allocate node IDs incrementally from kHFSFirstUserCatalogNodeID.

65.11.14 DRHFSPlusTextEncodingHint as string

Function: One of the property keys.
Notes: Number containing the item's text encoding hint (HFS+ only).

This value is used by the MacOS to help when converting the natively UTF-16 filename into an 8-bit-per-character representation (such as MacRoman, Shift-JIS, or UTF8). If not set, default behavior is to call CFStringGetMostCompatibleMacStringEncoding (CFStringGetSmallestEncoding()).

65.11.15 DRInvisible as string

Function: One of the property keys.
Notes: Boolean indicating whether the item is invisible or not.

65.11.16 DRISO9660 as string

Function: The key for accessing the ISO-9660 properties for the file.
Notes: This key cannot be used to refer to the name of the file; it is ambiguous, since the name may be in either level 1 or level 2 format.
65.11. CLASS DRFSOBJECTMBS

65.11.17 DRISO9660LevelOne as string

Function: The key for accessing the ISO-9660 level 1 name for the file.
Notes: This key is used to refer specifically to the name generated for ISO-9660 if the ISO level is set to 1. When used for a property, it is equivalent in use to the DRISO9660 key and acts as a synonym for that key.
ISO9660 level 1 names are in the form typically known as 8.3 - eight characters of name and three characters of extension (if it’s a file; directories can’t have extensions). Character set is limited to A-Z, 0-9, and .

65.11.18 DRISO9660LevelTwo as string

Function: The key for accessing the ISO-9660 level 2 name for the file.
Notes: This key is used to refer specifically to the name generated for ISO-9660 if the ISO level is set to 2. When used for a property, it is equivalent in use to the DRISO9660 key and acts as a synonym for that key.
ISO9660 level 2 names can be 32 chars long, are limited to a subset of the 7-bit ASCII chars (capital letters, numbers, space, punctuation), and are only allowed one "." character.

65.11.19 DRISO9660VersionNumber as string

Function: One of the property keys.
Notes: Number containing the ISO9660 version number for the object. Default value is 1.

65.11.20 DRJoliet as string

Function: The key for accessing the Joliet name/properties for the file.
Notes: Joliet names can be 64 precomposed unicode characters long, but are only allowed one "." character and many punctuation characters are illegal.
65.11.21 DRMacExtendedFinderFlags as string

Function: One of the property keys.
Notes: Number containing the item’s extended Finder flags (MacOS only).

65.11.22 DRMacFileCreator as string

Function: One of the property keys.
Notes: A binary string containing the OSType for the file creator (MacOS only).

65.11.23 DRMacFileType as string

Function: One of the property keys.
Notes: A binary string containing the OSType for the file type (MacOS only).

65.11.24 DRMacFinderFlags as string

Function: One of the property keys.
Notes: Number containing the item’s Finder flags (MacOS only). The invisible bit is ignored - use DRInvisible instead.

65.11.25 DRMacFinderHideExtension as string

Function: One of the property keys.
Notes: A boolean indicating whether the extension should be hidden in the Finder or not. The default is false and only applies to files.

65.11.26 DRMacIconLocation as string

Function: One of the property keys.
Notes: A binary string containing a Point (not NSPoint) for the item’s icon location in its parent folder
65.11.27 DRMacScrollPosition as string

Function: One of the property keys.
Notes: Binary string containing a Point (not NSPoint) for the folder’s scroll position (MacOS only).

65.11.28 DRMacWindowBounds as string

Function: One of the property keys.
Notes: Binary string containing a Rect (not NSRect) for the window bounds for a folder (MacOS only).

65.11.29 DRMacWindowView as string

Function: One of the property keys.
Notes: Number containing the folder’s window view type (MacOS only).

65.11.30 DRPosixFileMode as string

Function: One of the property keys.
Notes: Number containing the item’s POSIX file mode.

65.11.31 DRPosixGID as string

Function: One of the property keys.
Notes: Number containing the item’s POSIX GID.

65.11.32 DRPosixUID as string

Function: One of the property keys.
Notes: Number containing the item’s POSIX UID.

65.11.33  DRRecordingDate as string

**Function:** One of the property keys.
**Notes:** Date containing the item’s recording date.

65.11.34  DRUDF as string

**Function:** The key for accessing the UDF name/properties for the file.

65.11.35  DRUDFApplicationIdentifierSuffix as string

**Function:** One of the property keys.
**Notes:** Optional key. Binary string of up to 8 bytes in length, for application use. The presence of this key requires the DRApplicationIdentifier key.

65.11.36  DRUDFExtendedFilePermissions as string

**Function:** One of the property keys.
**Notes:**
Number indicating the extended UDF file permissions of this file.

Bit 0: Change attributes for others (low order bit) Bit 1: Delete permissions for others Bit 2: Change attributes for group Bit 3: Delete permissions for group Bit 4: Change attributes for owner Bit 5: Delete permissions for owner Bit 6 & 7: Reserved If this key is not present, DRPosixFileMode will be used with the above bits being set to the corresponding write bit for owner, group, and others. If DRPosixFileMode is not present, the file mode from the file on disc will be used, again using the write bit for these permissions.

65.11.37  DRUDFInterchangeLevel as string

**Function:** One of the property keys.
65.11. **CLASS DRFSOBJECTMBS**

**Notes:** Optional key. Number containing the volume interchange level. See the UDF specs for details.

---

**65.11.38 DRUDFMaxInterchangeLevel as string**


**Function:** One of the property keys.

**Notes:** Optional key. Number containing the maximum volume interchange level number. See the UDF specs for details.

---

**65.11.39 DRUDFMaxVolumeSequenceNumber as string**


**Function:** One of the property keys.

**Notes:** Optional key. Number containing the maximum volume sequence number. See the UDF specs for details.

---

**65.11.40 DRUDFPrimaryVolumeDescriptorNumber as string**


**Function:** One of the property keys.

**Notes:** Optional key. Number containing the primary volume sequence number. See the UDF specs for details.

---

**65.11.41 DRUDFRealTimeFile as string**


**Function:** One of the property keys.

**Notes:** Number indicating whether the file is a UDF Real-Time file.

---

**65.11.42 DRUDFVersion102 as string**


**Function:** This value is used in DRUDFWriteVersion.
65.11.43 **DRUDFVersion** as string

**Function:** This value is used in DRUDFWriteVersion.

65.11.44 **DRUDFVolumeSequenceNumber** as string

**Function:** One of the property keys.
**Notes:** Optional key. Number containing the volume sequence number. See the UDF specs for details.

65.11.45 **DRUDFVolumeSetIdentifier** as string

**Function:** One of the property keys.
**Notes:** Optional key. The Volume Set Identifier for the UDF volume set. If this key is not present, DRVolumeSet will be used if present. The Volume Set Identifier is composed of the Volume Set Timestamp, the Implementation Use, and a the string contained in this property.

65.11.46 **DRUDFVolumeSetImplementationUse** as string

**Function:** One of the property keys.
**Notes:** Optional key. A binary string (8 bytes in length) for implementation use data. See the UDF specs for details.

65.11.47 **DRUDFVolumeSetTimestamp** as string

**Function:** One of the property keys.
**Notes:** Optional key. A date object for the volume set timestamp. See the UDF specs for details.

65.11.48 **DRUDFWriteVersion** as string

**Function:** One of the property keys.
**Notes:** Optional key. This property key defines the version for the UDF structures written to disk. Values
CLASS DRFSOBJECTMBS

are defined in UDF Version types.

65.11.49 **effectiveFilesystemMask as Integer**

**Function:** The effective filesystem mask set for the receiver.

65.11.50 **isVirtual as boolean**

**Function:** Indicates whether the receiver is real or virtual. 
**Notes:** 
True if the receiver is virtual and false if real.

65.11.51 **mangledNameForFilesystem(filesystem as string) as string**

**Function:** A single mangled filesystem-specific name for this fsobject. 
**Notes:** Use DRISO9660LevelOne, DRISO9660, DRHFSPlus, DRUDF, DRJoliet, DRISO9660LevelTwo or DRAIIFilesystems for the filesystem parameter.

65.11.52 **mangledNames as dictionary**

**Function:** Returns a dictionary containing all of the filesystem-specific names for the receiver, each one mangled for uniqueness.  
**Notes:** The dictionary will return only the names which are indicated by the receiver’s effective mask. If the receiver’s effective mask is zero, an empty dictionary is returned.

65.11.53 **parent as DRFolderMBS**

**Function:** The parent object.
65.11.54 propertiesForFileSystem(filesystem as string, mergeWithOtherFilesystems as boolean) as dictionary

Function: Returns all the filesystem properties set for the specified filesystem.
Notes:
filesystem: The filesystem to look in.
merge: If true, also look for properties in the umbrella DRAllFilesystems.

Normally you would call this method with merge set to true since you are interested in the set of properties that will be used when writing the object to disc. But if you have a need to determine what properties are set just for a specific filesystem, then pass in false for merge. In this case only the specific filesystem is checked. So if filesystem is set to DRHFSPlus and merge is false then the properties dictionary contains the values set for the HFS+ filesystem only. If no properties have been directly set for HFS+ yet, then this properties dictionary will be empty.

65.11.55 propertyForKey(key as string, filesystem as string, mergeWithOtherFilesystems as boolean) as Variant

Function: Returns a file/folder property specified by key for the specified filesystem.
Notes:
key: The property to return.
filesystem: The filesystem to look in.
merge: If true, also look for the property in the umbrella DRAllFilesystems.

Returns the value associated with the property.

Normally you would call this method with merge set to true since you are interested in the property that will be used when writing the object to disc. But if you have a need to determine what property is set just for a specific filesystem, then pass in false for merge. In this case only the specific filesystem is checked. So if DRHFSPlus is passed in for filesystem and merge is false then the property returned is the value set for the HFS+ filesystem only. If that property has not been directly set for HFS+ yet, then the returned value will be nil.

65.11.56 setProperties(Value as dictionary, filesystem as string)

Function: Sets the value of all the receiver’s properties specified by the keys in properties for the specific filesystem.
Notes:

properties: The value of the property.
filesystem: The filesystem to set the property in.

The properties are set only in the filesystem dictionary specified by filesystem. DRAAllFilesystems may be specified as the filesystem in which case the umbrella property affecting all filesystems at once will be set. Setting properties for DRAAllFilesystems does not preclude setting a filesystem specific property.

65.11.57 setProperty(Value as Variant, key as string, filesystem as string)


Function: Sets the value of the receiver’s property specified by key for the specific filesystem.

Notes:

property: The value of the property.
key: The property key.
filesystem: The filesystem to set the property in.

The property is set only in the filesystem dictionary specified by filesystem. DRAAllFilesystems may be specified as the filesystem in which case the umbrella property affecting all filesystems at once will be set. Setting a property for DRAAllFilesystems does not preclude setting a filesystem specific property.

65.11.58 sourcePath as string


Function: The source path.

65.11.59 Properties

65.11.60 baseName as string


Function: Returns the base name for the receiver.

Notes:

The base name is the name from which any necessary filesystem-specific names are automatically generated.

Because the content creation API is able to generate multiple filesystems which require multiple varied naming conventions, a sensible system for naming is required. Thus each file has a "base name" which
corresponds to its default name in any filesystem.

Whenever possible, the "base name" will be used in the generated filesystem without modification. If the name cannot be used as-is (if, for example, it contains illegal characters, exceeds the length requirements, doesn’t meet the required format, or a name collision is detected) then an acceptable name that meets the filesystem’s criteria will be generated automatically from the base name.

The default base name for a real file or folder is the actual on-disk name of the item.

(Read and Write computed property)

65.11.61 explicitFilesystemMask as Integer

Function: The explicit filesystem mask set for the receiver.
Notes: (Read and Write computed property)

65.11.62 specificNameForFilesystem(filesystem as string) as string

Function: A single filesystem-specific name for this fsobject.
Notes:
Use DRISO9660LevelOne, DRISO9660, DRHFSPlus, DRUDF, DRJoliet, DRISO9660LevelTwo or DRAll-Filesystems for the filesystem parameter.
(Read and Write computed property)

65.11.63 specificNames as dictionary

Function: The names used for the receiver in the different filesystems all at once.
Notes:
An Dictionary of filesystem keys with corresponding name strings as their values for each specific filesystem name that should be set.

Every effort will be made to use the names passed in. However, if a name is illegal, it will be modified to fit the rules for that filesystem’s names. Because of this, you should always call specificNames after setSpecificNames: to ensure that you are always displaying the most current names to the user.
(Read and Write computed property)
65.11. Constants

65.11.65 DRFilesystemInclusionMaskHFSPlus $= 8$
MBS MacControls Plugin, Plugin Version: 7.4. **Function:** The value which indicates the object should be included in the HFS+ filesystem.

65.11.66 DRFilesystemInclusionMaskISO9660 $= 1$
MBS MacControls Plugin, Plugin Version: 7.4. **Function:** The value which indicates the object should be included in the ISO9660 filesystem.

65.11.67 DRFilesystemInclusionMaskJoliet $= 2$
MBS MacControls Plugin, Plugin Version: 7.4. **Function:** The value which indicates the object should be included in the Joliet filesystem.

65.11.68 DRFilesystemInclusionMaskUDF $= 4$
MBS MacControls Plugin, Plugin Version: 7.4. **Function:** The value which indicates the object should be included in the UDF filesystem.
65.12 class DRMSFMBS

65.12.1 class DRMSFMBS

Function: Minutes/Seconds/Frames handling.
Notes:
On CDs, minutes/seconds/frames are used to identify positioning on a disc (which is most useful on an audio disc), but applies to any position on a disc no matter what type of data is present.

A frame is equivalent to a sector or block in normal disk parlance. 75 frames make up one second, so a 2 second pause (typical pregap size) is 150 frames.

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

65.12.2 Methods

65.12.3 Constructor

Function: The dummy constructor.
See also:

- 65.12.4 Constructor(frames as Integer)
- 65.12.5 Constructor(s as string)

65.12.4 Constructor(frames as Integer)

Function: Creates an msf object whose length is frames.
See also:

- 65.12.3 Constructor
- 65.12.5 Constructor(s as string)
65.12. CLASS DRMSFMBS

65.12.5 Constructor(s as string)

**Function:** Creates an msf object initialized to the value represented by string
See also:

- 65.12.3 Constructor
- 65.12.4 Constructor(frames as Integer)

65.12.6 description as string

**Function:** Returns a textual representation.

65.12.7 descriptionWithFormat(format as string) as string

**Function:** Returns a textual representation of the receiver.

**Notes:**
The format string is very similar to
A printf-style format string with % -escaped formatting characters.

```plaintext
% % A ”% ” character
% m Minutes as a decimal number
% s Seconds as a decimal number
% f Frames as a decimal number
```

In addition to these formatting characters an optional length specifier can come between then % and the
formatting character. This length specifier will force the field in question to be at least that wide. For
example a format specifier of ”% 02m:% 02s” will cause a DRMSF object representing 3 minutes 9 seconds
to be formatted as ”03:09”.

A formatter is aware of and respects rounding. If a bit of the msf is no zero, but the format does not display
that value, the next higher value will be increased by one to reflect that. Extending our example above, an
DRMSF with a value of 3 minutes, 9 seconds, 15 frames using a format specifier of ”% 02m:% 02s”, will be
formatted as ”03:10” since the 15 frames rounds up the seconds to the next value.

Returns a string containing a textual representation of the object utilizing the specified format.
65.12.8 frames as Integer

Function: Returns the number of frames represented by the receiver.
Notes: This method differs from sectors in that it returns to the caller the number of frames remaining in the current second. For example an DRMSF value of 5:30:72 will return 72 from frames.

65.12.9 isEqualToMSF(value as DRMSFMBS) as boolean

Function: Compares one msf to another.
Notes: True if the two objects are equal, false otherwise.

65.12.10 minutes as Integer

Function: Returns the number of minutes represented by the receiver.
Notes: If the receiver represents a non-integral number of minutes, only the whole minute value is returned. For example an DRMSF value of 5:30:72 will return 5 from a minutes.

65.12.11 msf as DRMSFMBS

Function: Creates an msf object with no length/time.
Notes: Returns nil on any error.

65.12.12 msfByAdding(value as DRMSFMBS) as DRMSFMBS

Function: Adds an msf to the receiver.
Notes: Returns nil on any error.

65.12.13 msfBySubtracting(value as DRMSFMBS) as DRMSFMBS

Function: Subtracts an msf to the receiver.
Notes: Returns nil on any error.
**65.12.14 msfWithFrames(frames as Integer) as DRMSFMBS**

**Function:** Creates an msf object whose length is frames.
**Notes:** Returns nil on any error.

**65.12.15 msfWithString(s as string) as DRMSFMBS**

**Function:** Creates an msf object initialized to the value represented by string.
**Notes:** Returns nil on any error.

**65.12.16 seconds as Integer**

**Function:** Returns the number of seconds represented by the receiver.
**Notes:** If the receiver represents a non integral number of seconds, only the whole second value is returned. For example an DRMSF value of 5:30:72 will return 30 from seconds.

**65.12.17 sectors as Integer**

**Function:** Returns the total number of frames/sectors represented by the receiver.
**Notes:**
This method differs from frames in that it returns to the caller the total number of frames/sectors represented by the object. For example an DRMSF value of 5:30:72 will return 24822 from sectors.
65.13 class DRNotificationCenterMBS

65.13.1 class DRNotificationCenterMBS

MBS MacBase Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for notifications.

**Notes:** All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

65.13.2 Methods

65.13.3 addObserver(observer as NSNotificationObserverMBS, name as string="", theObject as Variant=nil)

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds an entry to the receiver’s dispatch table with an observer and optional criteria: notification name and sender.

**Notes:**
- observer: Object registering as an observer. This value must not be nil.
- name: The name of the notification for which to register the observer; that is, only notifications with this name are delivered to the observer. If you pass nil, the notification center doesn’t use a notification’s name to decide whether to deliver it to the observer.
- theObject: The object whose notifications the observer wants to receive; that is, only notifications sent by this sender are delivered to the observer. If you pass nil, the notification center doesn’t use a notification’s sender to decide whether to deliver it to the observer.

65.13.4 Constructor

MBS MacBase Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor to create a new instance of notification center pointing to the default notification center.

**Notes:**

A DRNotificationCenter object (or simply, notification center) is essentially a notification dispatch table. It notifies all observers of notifications meeting specific criteria. This information is encapsulated in NSNotification objects, also known as notifications. Client objects register themselves with the notification center as observers of specific notifications posted by DiscRecording. When an event occurs, DiscRecording posts an appropriate notification to the notification center. The notification center dispatches a message to each registered observer, passing the notification as the sole argument.

There are two main differences between a DRNotificationCenter and the NSNotificationCenter from Founda-
65.13. CLASS DRNOTIFICATIONCENTERMBS

First is that only Disc Recording posts notifications received through this mechanism. You use this to obtain device plug/unplug events, burn status, etc. Second, there can be multiple notification centers active at once. Each run loop of your application will have its own notification center and notifications from that notification center will be posted to the runloop it was created on.

65.13.5 removeObserver(observer as NSNotificationObserverMBS, name as string, theObject as Variant=nil)


Notes:

notificationObserver: Observer to remove from the dispatch table. Specify an observer to remove only entries for this observer. Must not be nil, or message will have no effect.
notificationName: Name of the notification to remove from dispatch table. Specify a notification name to remove only entries that specify this notification name. When nil, the receiver does not use notification names as criteria for removal.
notificationSender: Sender to remove from the dispatch table. Specify a notification sender to remove only entries that specify this sender. When nil, the receiver does not use notification senders as criteria for removal.

Be sure to invoke this method before the observer object or any object specified in addObserver is deallocated.
65.14 class DRSetupPanelMBS

65.14.1 class DRSetupPanelMBS

Function: Base class for the DiscRecordingUI setup panels.
Notes: Provides a base framework for handling device selection, media ejection and confirming or cancelling the panel.

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the NSPanelMBS class.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

65.14.2 Methods

65.14.3 cancel

Function: Invoked when the user clicks the panel's cancel button.
Notes: If you overwrite this method in Real Studio, your method will not be called. You can only call this method to trigger the same behavior as if the user clicked the control.

65.14.4 close

Function: Invoked when the user clicks the panel's close button.
Notes: If you overwrite this method in Real Studio, your method will not be called. You can only call this method to trigger the same behavior as if the user clicked the control.

65.14.5 Constructor

Function: The private constructor.
65.14. CLASS DRSETUPPANELMBS

65.14.6  eject

**Function:** Invoked when the user clicks the panel’s eject button.
**Notes:** If you overwrite this method in Real Studio, your method will not be called. You can only call this method to trigger the same behavior as if the user clicked the control.

65.14.7  ok

**Function:** Invoked when the user clicks the panel’s default button.
**Notes:** If you overwrite this method in Real Studio, your method will not be called. You can only call this method to trigger the same behavior as if the user clicked the control.

65.14.8  open

**Function:** Invoked when the user clicks the panel’s open button.
**Notes:** If you overwrite this method in Real Studio, your method will not be called. You can only call this method to trigger the same behavior as if the user clicked the control.

65.14.9  runSetupPanel as Integer

**Function:** Displays the panel and begins its event loop.
**Notes:** Returns NSOKButton (if the user clicks the default button) or NSCancelButton (if the user clicks the Cancel button).

65.14.10  Events

65.14.11  determineBestDevice(deviceA as DRDeviceMBS, deviceB as DRDeviceMBS) as DRDeviceMBS

**Function:** Called to let you decide which device is better to use.
**Notes:** Default returns device A.
65.14.12 DeviceContainsSuitableMedia(device as DRDeviceMBS, byref prompt as string) as boolean

**Function:** This delegate method allows the delegate to determine if the media inserted in the device is suitable for whatever operation is to be performed.
**Notes:**

- **device:** The device that contains the media being asked about.
- **prompt:** Pass back a string object describing the media state.

Return false to disable the default button.

65.14.13 DeviceCouldBeTarget(device as DRDeviceMBS) as boolean

**Function:** Allows the delegate to determine if device can be used as a target.
**Notes:**

This method is used to limit the menu to only those devices that you want to appear. For example, a DVD burning application might use this to limit the menu to only devices that are capable of writing DVD-Rs.

- **device:** The candidate device.
- Returns true if the device is acceptable, false if not.

65.14.14 DeviceSelectionChanged(device as DRDeviceMBS)

**Function:** Sent by the default notification center when the device selection in the panel has changed.

65.14.15 SetupPanelShouldHandleMediaReservations as boolean

**Function:** This event allows the delegate to control how media reservations are handled.
**Notes:** Return false to indicate the delegate will handle media reservations. Return true to indicate the setupPanel should handle media reservations itself.
65.14.16 Constants

65.14.17 NSCancelButton = 0

MBS MacControls Plugin, Plugin Version: 7.4. **Function:** The value runSetupPanel returns if the Cancel button is clicked.

65.14.18 NSOKButton = 1

MBS MacControls Plugin, Plugin Version: 7.4. **Function:** The value runSetupPanel returns if the OK button is clicked.
65.15 class DRTrackMBS

65.15.1 class DRTrackMBS


**Function:** The DRTrack class represents a track on the burned disc.

**Example:**

```dim track as DRTrackMBS
dim bsp as DRBurnSetupPanelMBS
dim bpp as DRBurnProgressPanelMBS

// we need a track
track=CreateTrack

if track<>nil then
    bsp=new DRBurnSetupPanelMBS

    // set a few options
    bsp.setCanSelectAppendableMedia true
    bsp.setCanSelectTestBurn true

    if bsp.runSetupPanel=bsp.NSOKButton then
        bpp=new DRBurnProgressPanelMBS

        // And start off the burn itself. This will put up the progress dialog
        // and do all the nice pretty things that a happy app does.
        bpp.beginProgressPanelForBurn bsp.burnObject, track

    else
        MsgBox "You pressed cancel."
    end if
end if
```

**Notes:**

A DRTrack provides data to the for the burn and contains a description of the track on disc (length, block type, data format, etc). Data is provided for the burn in a real-time thread. It is up to the track to provide this data in a timely manner, otherwise a burn underrun can occur and ruin a disc.

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
65.15.2 Methods

65.15.3 Constructor

Function: Dummy constructor.

65.15.4 DRAbstractFile as string

Function: One of the key constants for the properties dictionary.
Notes: DRFileMBS object pointing to the abstract file for ISO and Joliet volumes. The file must be in the root directory.

65.15.5 DRApplicationIdentifier as string

Function: One of the key constants for the properties dictionary.
Notes: String indicating the application identifier for ISO, Joliet and UDF volumes.

65.15.6 DRAudioFourChannelKey as string

Function: One of the key constants for the properties dictionary.
Notes:
For CD-DA audio tracks only. This key points to a boolean value indicating whether the track data has four channels, as opposed to the two channels of normal stereo. If this key is not present, the engine will use a default value of false and standard two-channel stereo is assumed.

Note that while four-channel is technically allowed in the Red Book, it never caught on and is probably being replaced by SACD, so you probably shouldn’t attempt to use it.

On the media, this key corresponds to bit 3 of the control field in sub-channel Q.

65.15.7 DRAudioPreEmphasisKey as string

Function: One of the key constants for the properties dictionary.
Notes: For CD-DA audio tracks only. This key points to a boolean value indicating whether the track includes pre-emphasis of 50/15us. If this key is not present, the engine will use a default value of false. On the media, this key corresponds to bit 0 of the control field in sub-channel Q.

65.15.8 DRBibliographicFile as string

Function: One of the key constants for the properties dictionary.
Notes: DRFile pointing to the bibliographic file for ISO and Joliet volumes. The file must be in the root directory.

65.15.9 DRBlockSize as string

Function: One of the key constants for the properties dictionary.
Notes: Number indicating the block size of the track. Currently always 2048. Do not change.

65.15.10 DRBlockSizeKey as string

Function: One of the key constants for the properties dictionary.
Notes: Number containing the size in bytes of each track block. See the Mt. Fuji (INF-8090i) specification for CD/DVD devices for possible values for this property.

65.15.11 DRBlockTypeKey as string

Function: One of the key constants for the properties dictionary.
Notes: Number containing the type of each track block. See the Mt. Fuji (INF-8090i) specification for CD/DVD devices for possible values for this property.

65.15.12 DRCopyrightFile as string

Function: One of the key constants for the properties dictionary.
Notes: DRFileMBS pointing to the copyright file for ISO and Joliet volumes. The file must be in the root directory.
65.15.13  DRDataFormKey as string

Function: One of the key constants for the properties dictionary.
Notes: Number containing the data form of each block in the track. See the Mt. Fuji (INF-8090i) specification for CD/DVD devices for possible values for this property.

65.15.14  DRDataPreparer as string

Function: One of the key constants for the properties dictionary.
Notes: String indicating the data preparer for ISO and Joliet volumes.

65.15.15  DRDefaultDate as string

Function: One of the key constants for the properties dictionary.
Notes: Date containing the default date to use for any unspecified dates in the filesystem. The current date and time is used if unspecified.

65.15.16  DRDVDCopyrightInfoKey as string

Function: One of the key constants for the properties dictionary.
Notes: For DVD tracks only. A binary string containing the DVD copyright info structure sent through the SEND DVD STRUCTURE command. The contents of this will be sent directly to the drive.

65.15.17  DRDVDTimestampKey as string

Function: One of the key constants for the properties dictionary.
Notes: For DVD tracks only. Binary string containing the DVD timestamp structure sent through the SEND DVD STRUCTURE command. The contents of this will be sent directly to the drive.

65.15.18  DRFreeBlocksKey as string

Function: One of the key constants for the properties dictionary.
Notes: Number containing the length, in blocks, which is still available in a writable track.

65.15.19  DRIndexPointsKey as string

Function: One of the key constants for the properties dictionary.
Notes:
For CD tracks only. This key points to an NSArray of NSNumbers, indicating the index points inside the track. Each index point is specified as a number of blocks (frames) relative to the start of the track. There are 75 blocks in one second of CD audio. No more than 98 index points may be specified for a track.

Not all drives are capable of writing index points, and not all consumer CD players report or use them. If this key is present in any track and the drive cannot write index points, the burn will fail with kDRDevice-CantWriteIndexPointsErr.

65.15.20  DRISOLevel as string

Function: One of the key constants for the properties dictionary.
Notes: Number containing the ISO level of the ISO-9660 filesystem on the track. Currently should be 1 or 2.

65.15.21  DRISOMacExtensions as string

Function: One of the key constants for the properties dictionary.
Notes: Boolean indicating whether the track should have Mac extensions.

65.15.22  DRISORockRidgeExtensions as string

Function: One of the key constants for the properties dictionary.
Notes: Boolean indicating whether the track should have RockRidge (POSIX) extensions.

65.15.23  DRMaxBurnSpeedKey as string

Function: One of the key constants for the properties dictionary.
65.15. **CLASS DRTRACKMBS**

**Notes:** Number containing the maximum burn speed at which data can be produced. The speed is represented in KB/s (1 KB = 1000 bytes). This key can only be used to limit the speed at which the burn runs.

### 65.15.24 DRNextWritableAddressKey as string


**Function:** One of the key constants for the properties dictionary.

**Notes:** Number containing the LBA of the next writable address in the track. This key is not present in closed tracks.

### 65.15.25 DRPreGapIsRequiredKey as string


**Function:** One of the key constants for the properties dictionary.

**Notes:**

For CD tracks only. Number indicating whether the pregap listed for the track is required. If this key is not present, the track will behave as though the key were false.

If this key’s value is set to true and the device does not support the exact pregap length, the burn will fail with a return value of kDRDevicePregapLengthNotAvailableErr.

If this key’s value is set to true and the device does not support any of the suggested pregap length, the engine will choose an alternate pregap length.

### 65.15.26 DRPreGapLengthKey as string


**Function:** One of the key constants for the properties dictionary.

**Notes:** For CD tracks only. Number containing the length of silence or data at the beginning of the track. This defaults to 2 seconds of silence. If this key is present, the track producer will be asked for the pregap data first. If the producer implements the proper selector, then it’s the responsibility of the producer to provide data for the pregap, otherwise that length of silence will be produced by Disc Recording.

### 65.15.27 DRPublisher as string


**Function:** One of the key constants for the properties dictionary.
Notes: String indicating the publisher for ISO and Joliet volumes.

65.15.28 DRSCMSCopyrightFree as string

Function: One of the key constants for the properties dictionary.
Notes: One possible value for the DRSerialCopyManagementStateKey. Indicates that the track has no copying restrictions. Copies of this track should also be copyright free.

65.15.29 DRSCMSCopyrightProtectedCopy as string

Function: One of the key constants for the properties dictionary.
Notes: One possible value for the DRSerialCopyManagementStateKey. Indicates that the track is a first-generation copy of an original that was subject to copy protection. No further digital copying should be allowed.

65.15.30 DRSCMSCopyrightProtectedOriginal as string

Function: One of the key constants for the properties dictionary.
Notes: One possible value for the DRSerialCopyManagementStateKey. Indicates that the track is an original subject to copyright protection. Digital copying of this track should be allowed, but copies should be marked with SCMS.

65.15.31 DRSerialCopyManagementStateKey as string

Function: One of the key constants for the properties dictionary.
Notes: For CD tracks only. This key points to a string value indicating the SCMS state of the track. If this key is not present, no SCMS data is written.

Not all drives are capable of writing SCMS. If this key is present in any track and the drive cannot write SCMS, the burn will fail with kDRDeviceCantWriteSCMSErr.
65.15.32 **DRSessionFormatKey** as string

**Function:** One of the key constants for the properties dictionary.
**Notes:** Number containing the session format of the track. See the Mt. Fuji (INF-8090i) specification for CD/DVD devices for possible values for this property.

65.15.33 **DRSessionNumberKey** as string

**Function:** One of the key constants for the properties dictionary.
**Notes:** Number containing the physical session number of a track.

65.15.34 **DRSubchannelDataFormKey** as string

**Function:** One of the key constants for the properties dictionary.
**Notes:**

The property whose value is the data mode of the subchannel data sent to the drive. If this key is not present, the track will default to a value of DRSubchannelDataFormNone and no subchannel information will be requested from the producer.

Subchannel data is returned from the producer in the same production method that produces normal user data. Normally a producer returns user data in chunks of DRBlockSizeKey size. When subchannel data is also produced, the producer is expected to return user data of DRBlockSizeKey in length with an additional 96 bytes of subchannel data. Depending on the data form specified in this key, the format of this 96 bytes is either in raw or pack format. When subchannel data is requested from the producer, the DRFlagSubchannelDataRequested flag is set in the flags parameter of producePreGapForTrack or produceDataForTrack and blockSize is increased by 96 bytes.

65.15.35 **DRSubchannelDataFormNone** as string

**Function:** A value for DRSubchannelDataFormKey indicating that the subchannel data will not be provided by the producer.
65.15.36 DrSubchannelDataFormPack as string

Function: One of the key constants for the properties dictionary.
Notes: A value for DrSubchannelDataFormKey indicating that the producer will be asked to provide pack format subchannel data for the track. If this form is selected, the drive will perform P and Q parity calculations on each pack and interleave the packs before writing them to disc. This corresponds to a subchannel data form of 0xC0.

65.15.37 DrSubchannelDataFormRaw as string

Function: One of the key constants for the properties dictionary.
Notes: A value for DrSubchannelDataFormKey indicating that the producer will be asked to provide raw format subchannel data for the track. If this form is selected, the producer must have performed P and Q parity calculations for each pack and done proper interleaving of the subchannel data. The drive will fill in the P-Q subchannel information and write the R-W subchannel data as is to the disc. This corresponds to a subchannel data form of & h40.

65.15.38 DrSuppressMacSpecificFiles as string

Function: One of the key constants for the properties dictionary.
Notes: Boolean indicating whether the track should suppress Mac-specific files from non-HFS filesystems.

65.15.39 DrSystemIdentifier as string

Function: One of the key constants for the properties dictionary.
Notes: String indicating the system identifier for ISO and Joliet volumes.

65.15.40 DrTrackIsEmptyKey as string

Function: One of the key constants for the properties dictionary.
Notes: Number containing a boolean value and indicates whether the track is empty.
65.15. **CLASS DRTRACKMBS**

65.15.41 **DRTrackISRCKey as string**


**Function:** One of the key constants for the properties dictionary.

**Notes:**

For CD-DA audio tracks only. This key points to an memoryblock containing exactly 12 bytes, which will be written to the disc as the International Standard Recording Code (ISRC). If this key is not present, no ISRC is written.

The use of this value should conform to the specifications of the IFPI. More details: http://www.ifpi.org/isrc/

Not all drives are capable of the write modes necessary to write the ISRC. If this key is present in any track and the drive cannot write the ISRC, the burn will fail with kDRDeviceCantWriteISRCErr.

65.15.42 **DRTrackLengthKey as string**


**Function:** One of the key constants for the properties dictionary.

**Notes:** Number representing the length of the track.

65.15.43 **DRTrackModeKey as string**


**Function:** One of the key constants for the properties dictionary.

**Notes:** Number containing the track mode of the track. See the Mt. Fuji (INF-8090i) specification for CD/DVD devices for possible values for this property.

65.15.44 **DRTrackNumberKey as string**


**Function:** One of the key constants for the properties dictionary.

**Notes:** Number containing the physical track number of a track.

65.15.45 **DRTrackPacketSizeKey as string**


**Function:** One of the key constants for the properties dictionary.
Notes: Number containing the number of blocks per packet for the disc. It will only be present if the disc contains fixed packets. This key will contain 16 for DVD media, and typically contains either 16 or 32 for CD media.

65.15.46  DRTrackPacketTypeFixed as string

Function: If this is the value of the DRTrackPacketTypeKey then the disc is written with fixed sized packets. When this value is present the DRPacketSizeKey will also be present.

65.15.47  DRTrackPacketTypeKey as string

Function: One of the key constants for the properties dictionary.
Notes: String indicating the kind of packets being written.

65.15.48  DRTrackPacketTypeVariable as string

Function: If this is the value of the DRTrackPacketTypeKey then the disc is written with sequential variable sized packets. The presence of this value indicates the lack of the DRPacketSizeKey.

65.15.49  DRTrackStartAddressKey as string

Function: One of the key constants for the properties dictionary.
Notes: Number containing the LBA of the start address for the track.

65.15.50  DRTrackTypeClosed as string

Function: If this is the value of the DRTrackTypeKey then the track has been written and is closed.
65.15. **CLASS DRTRACKMBS**

65.15.51 **DRTrackTypeIncomplete as string**

**Function:** If this is the value of the DRTrackTypeKey then the track is not invisible or reserved and is available for writing.

65.15.52 **DRTrackTypeInvisible as string**

**Function:** One of the key constants for the properties dictionary.  
**Notes:** If this is the value of the DRTrackTypeKey then the track is invisible and available to writing. If it is packet written and not closed, DRPacketTypeKey will be present, along with DRTrackPacketType and DRTrackPacketSize keys.

65.15.53 **DRTrackTypeKey as string**

**Function:** One of the key constants for the properties dictionary.  
**Notes:** String indicating the type of track. Possible values are: DRTrackTypeIncomplete, DRTrackTypeReserved or DRTrackTypeClosed.

65.15.54 **DRTrackTypeReserved as string**

**Function:** One of the key constants for the properties dictionary.  
**Notes:** If this is the value of the DRTrackTypeKey then the track is reserved for writing.

65.15.55 **DRVerificationTypeChecksum as string**

**Function:** One of the possible values of the VerificationType.  
**Notes:** The engine will verify the track data with an internally calculated checksum.

65.15.56 **DRVerificationTypeKey as string**

**Function:** One of the key constants for the properties dictionary.
Notes: String indicating the type of verification to be performed. If this is not present, the track will not be verified.

65.15.57 DRVerificationTypeNone as string

Function: One of the possible values of the VerificationType property.
Notes: No verification is desired, so verification will be skipped.

65.15.58 DRVerificationTypeProduceAgain as string

Function: One of the possible values of the VerificationType property.
Notes: The engine will simply begin another production cycle and start calling produceDataForTrack again.

65.15.59 DRVerificationTypeReceiveData as string

Function: One of the possible values of the VerificationType property.
Notes: The engine will begin reading data from the disc and calling verifyDataForTrack.

65.15.60 DRVolumeCheckedDate as string

Function: One of the key constants for the properties dictionary.
Notes: Date containing the volume-checked date for HFS+ volumes. DRDefaultDate is used if unspecified.

65.15.61 DRVolumeCreationDate as string

Function: One of the key constants for the properties dictionary.
Notes: Date containing the volume creation date. DRDefaultDate is used if unspecified.
65.15.62 DRVolumeEffectiveDate as string

Function: One of the key constants for the properties dictionary.
Notes: Date containing the date and time at which the volume is effective for ISO and Joliet volumes.

65.15.63 DRVolumeExpirationDate as string

Function: One of the key constants for the properties dictionary.
Notes: Date containing the volume expiration date for ISO and Joliet volumes.

65.15.64 DRVolumeModificationDate as string

Function: One of the key constants for the properties dictionary.
Notes: Date containing the volume modification date. DRDefaultDate is used if unspecified.

65.15.65 DRVolumeSet as string

Function: One of the key constants for the properties dictionary.
Notes: String indicating the volume set name for ISO and Joliet volumes.

65.15.66 estimateLength as UInt64

Function: Asks the track producer for a size estimate.
Notes:
This method calls the track producer to ask it to estimate the size needed for its data.

For some types of track, this call may be very expensive. For example, a DRFilesystemTrack may need to iterate folders on disk to provide an accurate estimate, which (if a large number of files and folders are involved) can cause this call to take 30 seconds or more. Since your main thread should not be allowed to block for this long, you may wish to call this function on a separate thread.

Requires Mac OS X 10.3.
65.15.67 testProductionSpeedForInterval(seconds as Double) as Double


Function: Tests the production speed for a specified interval.

Notes:
Runs a fake "production" cycle, repeatedly asking the receiver for data by calling it’s producer’s produceDataIntoBuffer for the specified time interval.

Use this function to verify that the the production code can produce data fast enough to satisfy the data throughput requirements of the burn.

Returns the calculated maximum speed the at which the receiver can produce data. This value should be used when setting up a burn to limit the burn speed.

65.15.68 testProductionSpeedForLength(length as Integer) as Double


Function: Tests the production speed for a specified byte count.

Notes:
Runs a fake "production" cycle, repeatedly asking the receiver for data by calling it’s producer’s produceDataIntoBuffer:length:atAddress:blockSize:ioFlags: until the specified length number of bytes have been produced.

Use this function to verify that the the production code can produce data fast enough to satisfy the data throughput requirements of the burn.

Returns the calculated maximum speed the at which the receiver can produce data. This value should be used when setting up a burn to limit the burn speed.

Length: length of test in seconds.

65.15.69 trackForAudioFile(path as folderitem) as DRTrackMBS


Function: Creates an audio track capable of burning RedBook CD audio from a file.

Example:

dim f as FolderItem
f=SelectFolder
if f<>nil then
    // Create tracks for the audio files
65.15. CLASS DRTRACKMBS

```vba
dim tracks(-1) as DRTrackMBS
    dim c as Integer=f.Count
    for i as Integer=1 to c
        dim g as FolderItem=f.Item(i)
        if g<>nil and g.visible then
            dim track as DRTrackMBS=DRTrackMBS.trackForAudioFile(g)
            if track<>nil then
                tracks.Append track
            end if
        end if
    next

    // display gui
    if UBound(tracks)>=0 then
        dim bsp as DRBurnSetupPanelMBS=new DRBurnSetupPanelMBS // you may want to use your own subclass to catch events
        if bsp.runSetupPanel=bsp.NSOKButton then
            dim bpp as new DRBurnProgressPanelMBS // you may want to use your own subclass to catch events
            bpp.beginProgressPanelForBurn(bsp.burnObject, tracks)
        end if
    end if
```

**Notes:**

This function creates a track object configured and primed to output RedBook audio CD data. It accepts any file readable by QuickTime and extracts the audio data (if any) from the file, translating that into the correct format for output to the disc.

Returns nil on any error. Requires Mac OS X 10.3.

See also:

- 65.15.70 trackForAudioFile(path as string) as DRTrackMBS

65.15.70 trackForAudioFile(path as string) as DRTrackMBS

**MBS MacControls Plugin, Plugin Version:** 7.4, **Console & Web:** Yes, **Mac:** Yes, **Win:** No, **Linux:** No.

**Function:** Creates an audio track capable of burning RedBook CD audio from a file.

**Notes:**

This function creates a track object configured and primed to output RedBook audio CD data. It accepts any file readable by QuickTime and extracts the audio data (if any) from the file, translating that into the correct format for output to the disc.

Returns nil on any error. Requires Mac OS X 10.3.
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See also:

- 65.15.69 trackForAudioFile(path as folderitem) as DRTrackMBS

65.15.71 trackForRootFolder(folder as DRFolderMBS) as DRTrackMBS

Function: Creates a filesystem track capable of burning a folder.
Notes: Returns a track which contains the given folder as root.
See also:

- 65.15.72 trackForRootFolder(folder as folderitem) as DRTrackMBS

65.15.72 trackForRootFolder(folder as folderitem) as DRTrackMBS

Function: Creates a filesystem track capable of burning a folder.
Notes: Returns a track which contains the given folder as root.
See also:

- 65.15.71 trackForRootFolder(folder as DRFolderMBS) as DRTrackMBS

65.15.73 Properties

65.15.74 BlockSize as Integer

Function: The size in bytes of each track block.
Notes: (Read and Write computed property)

65.15.75 BlockType as Integer

Function: The type of each track block.
Notes: (Read and Write computed property)

65.15.76 DataForm as Integer

Function: The data form of each block in the track.
65.15. **CLASS DRTRACKMBS**

**Notes:** (Read and Write computed property)

### 65.15.77 length as DRMSFMBS


**Function:** Returns the length of the track data.

**Notes:**

The length returned does not include the length of the pregap. Only the length of the track data itself is returned.

(Read and Write computed property)

### 65.15.78 MaxBurnSpeed as Double


**Function:** A number containing the maximum burn speed at which data can be produced.

**Notes:**

The speed is represented in KB/s (1 KB = 1000 bytes). This value can only be used to limit the speed at which the burn runs.

(Read and Write computed property)

### 65.15.79 preGap as DRMSFMBS


**Function:** The length of the pre gap.

**Notes:** (Read and Write computed property)

### 65.15.80 PreGapIsRequired as boolean


**Function:** A boolean indicating whether the pregap listed for the track is required.

**Notes:**

For CD tracks only.
If this value is not set, the track will behave as though the value were false.

If this value is set to true and the device does not support the exact pregap length, the burn will fail with a return value of kDRDevicePregapLengthNotAvailableErr.
If this value is set to true and the device does not support any of the suggested pregap length, the engine will choose an alternate pregap length.

(Read and Write computed property)

### 65.15.81 PreGapLength as Double

**Function:** A number containing the length of silence or data at the beginning of the track.
**Notes:**
For CD tracks only.
This defaults to 2 seconds of silence. If this value is set, the track producer will be asked for the pregap data first.
If the producer implements the proper event, then it’s the responsibility of the producer to provide data for the pregap, otherwise that length of silence will be produced by Disc Recording.
(Read and Write computed property)

### 65.15.82 properties as dictionary

**Function:** The properties dictionary of the track
**Notes:** (Read and Write computed property)

### 65.15.83 SessionFormat as Integer

**Function:** The session format of the track.
**Notes:** (Read and Write computed property)

### 65.15.84 TrackISRC as memoryblock

**Function:** The property for the tracks ISRC data.
**Notes:**
For CD-DA audio tracks only. This key points to a memoryblock containing exactly 12 bytes, which will be written to the disc as the International Standard Recording Code (ISRC). If this key is not present, no ISRC is written.
The use of this value should conform to the specifications of the IFPI. See http://www.ifpi.org/isrc/ for more details on the ISRC standard.

Not all drives are capable of the write modes necessary to write the ISRC. If this key is present in any track and the drive cannot write the ISRC, the burn will fail with kDRDeviceCantWriteISRCErr.

(Read and Write computed property)

**65.15.85 TrackMode as Integer**


**Function:** The track mode of the track.

**Notes:** (Read and Write computed property)

**65.15.86 VerificationType as string**


**Function:** The type of verification requested.

**Notes:**

Value should be DRVerificationTypeReceiveData, DRVerificationTypeProduceAgain, DRVerificationTypeNone or DRVerificationTypeChecksum.

(Read and Write computed property)

**65.15.87 Events**

**65.15.88 cleanupTrackAfterBurn**


**Function:** Cleans up the track after the burn completes.

**Notes:**

Called after burning is complete. Typically you’ll clean up what was setup is prepareTrackForBurn. Since this method is called after the laser is turned off and the burn is finished, this method can perform time consuming tasks.

True to indicate that the burn should proceed and false to indicate a failure occurred.
65.15.89 cleanupTrackAfterVerification as boolean


**Function:** Cleans up the track after the verification completes.

**Notes:**
Once the verification phase is complete, this method is called. The class implementing the method has a chance to do anything up to and including failing the verification.

Return true to indicate success, false to indicate failure.

65.15.90 estimateLengthOfTrack as uint64


**Function:** Estimates the size of the track to be burned.

**Notes:**
This message is sent outside of a burn cycle in response to a -estimateLength message sent to the track.

Returns the number of blocks of data that the track will occupy. The estimate should be reasonably accurate, and no smaller than the actual size that will be needed.

Only on Mac OS X 10.3 and newer.

65.15.91 prepareTrack(burn as DRBurnMBS) as boolean


**Function:** Prepares the track for burning.

**Notes:**
Called before any burning starts. Do any sort of setup that needs to be performed (such as opening files). This method can calculate and update the exact track length that will be burned.

Since this method is called before the laser is turned on, this method can perform time consuming tasks.

burn: The burn object controlling the burn

Return true to indicate that the burn should proceed and false to indicate a failure occurred.
**65.15.92** prepareTrackForVerification as boolean


**Function:** Prepare the track to be verified.

**Notes:**

This method is called after the burn completes writing data to disc and before verification phase starts. Now would be a good time to prepare to produce data again by rewinding to the start of files, etc.

Return true to indicate that the verification should proceed and false to indicate a failure occurred.

---

**65.15.93** produceDataForTrack(buffer as memoryblock, Bufferlen as uint32, address as uint64, blocksize as uint32, byref flags as uint32) as uint32


**Function:** Produces the track data.

**Notes:**

This method is called many times over the course of a burn to obtain data for the track. The buffer passed in will be a multiple of blockSize (bufferLength == blockSize * N, where N >1) and should be filled as full as possible with data. address is the sector address on the disc from the start of the track that is the buffer will be written to.

Since while burning, keeping the drive’s buffer full is of utmost importance, you should not perform lengthy operations or block for data in this method. This method should return the number of bytes actually in the buffer or 0 to indicate that there was an error producing the data.

- buffer: The buffer to place data into
- bufferLength: The length of buffer
- address: The on-disc address of where data will be written
- blockSize: the size of each block on the disc. It’s best to return a multiple of this size.
- flags: Some flags. Not yet used.

Return the number of bytes produced.

---

**65.15.94** producePreGapForTrack(buffer as memoryblock, Bufferlen as uint32, address as uint64, blocksize as uint32, byref flags as uint32) as uint32


**Function:** Produces the pregap data.

**Notes:**

---
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This method is called to obtain data for the track’s pregap. If the DRPreGapLengthKey key is present in the track properties, the track producer will be asked for the pregap data first. If the producer implements this selector, then it’s the responsibility of the producer to provide data for the pregap, otherwise that length of silence will be produced by DiscRecording.

The buffer passed in will be a multiple of blockSize (bufferLength = blockSize * N, where N > 1) and should be filled as full as possible with data. address is the sector address on the disc from the start of the track that is the buffer will be written to.

Since while burning, keeping the drive’s buffer full is of utmost importance, you should not perform lengthy operations or block for data in this method. This method should return the number of bytes actually in the buffer or 0 to indicate that there was an error producing the data.

buffer: The buffer to place data into
bufferLength: The length of buffer
address: The on-disc address of where data will be written
blockSize: the size of each block on the disc. It’s best to return a multiple of this size.
flags: Some flags (not used).

Return the number of bytes produced.

65.15.95 verifyDataForTrack(buffer as memoryblock, Bufferlen as uint32, address as uint64, blocksize as uint32, byref flags as uint32) as boolean

Function: Cleans up the track after the burn completes.
Notes:
If the class implementing this method asks for a verification type of DRVerificationTypeReceiveData, then a series of calls to this method will start. It’s up to the class to reproduce the data again and compare it to the data passed in buffer. The buffer passed in will be a multiple of blockSize (bufferLength == blockSize * N, where N > 1). address is the sector address on the disc from the start of the track that is the buffer was written to.

buffer: The data read in from the track to compare with
bufferLength: The length of buffer
address: The on-disc address of where data will was read from.
blockSize: the size of each block on the disc. It’s best to return a multiple of this size.
flags: Some flags. Not used.

Return true to indicate that the data compared successfully and false to indicate a failure occurred.
65.15.96  verifyPreGapForTrack(buffer as memoryblock, Bufferlen as uint32, address as uint64, blocksize as uint32, byref flags as uint32) as boolean

Function: Checks the integrity track pregap after a burn.
Notes:
If the class implementing this method asks for a verification type of DRVerificationTypeReceiveData, then a series of calls to this method will start. It’s up to the class to reproduce the pregap again and compare it to the data passed in buffer. The buffer passed in will be a multiple of blockSize (bufferLength == blockSize * N, where N > 1). address is the sector address on the disc from the start of the track that is the buffer was written to.

buffer: The data read in from the track to compare with
bufferLength: The length of buffer
address: The on-disc address of where data will was read from.
blockSize: the size of each block on the disc. It’s best to return a multiple of this size.
flags: Some flags. (not used)

Return true to indicate that the data compared successfully and false to indicate a failure occurred.

65.15.97  Constants

65.15.98  DRFlagSubchannelDataRequested = 2

MBS MacControls Plugin, Plugin Version: 10.4. Function: A flag passed to producePreGapForTrack or produceDataForTrack.
Notes:
Indicates that the blockSize passed in includes room for subchannel data.
Data producers should check this flag and perform subchannel data production in addition to user data production. Each block requested from the producer in this case will be formatted as [ user data (as specified in track properties) ] [ subchannel data(96 bytes) ] .

For example an audio producer callback should repeatedly produce 2352 bytes of audio data into bytes 0-2351 of the block and an additional 96 bytes of subchannel data into bytes 2352-2447.

65.15.99  kDRBlockSizeAudio = 2352

MBS MacControls Plugin, Plugin Version: 10.3. Function: One of the block size constants.
Notes: Audio data.
65.15.100  kDRBlockSizeDVDData = 2048

MBS MacControls Plugin, Plugin Version: 10.3. **Function:** One of the block size constants. **Notes:** DVD data.

65.15.101  kDRBlockSizeMode1Data = 2048

MBS MacControls Plugin, Plugin Version: 10.3. **Function:** One of the block size constants. **Notes:** Mode 1 data.

65.15.102  kDRBlockSizeMode2Data = 2332

MBS MacControls Plugin, Plugin Version: 10.3. **Function:** One of the block size constants. **Notes:** Mode 2 data. Photo CD and CD-i use this.

65.15.103  kDRBlockSizeMode2Form1Data = 2048

MBS MacControls Plugin, Plugin Version: 10.3. **Function:** One of the block size constants. **Notes:** Mode 2 Form 1 data.

65.15.104  kDRBlockSizeMode2Form2Data = 2324

MBS MacControls Plugin, Plugin Version: 10.3. **Function:** One of the block size constants. **Notes:** Mode 2 Form 2 data.

65.15.105  kDRBlockTypeAudio = 0

MBS MacControls Plugin, Plugin Version: 10.3. **Function:** One of the block type constants. **Notes:** Audio data.
65.15.106  kDRBlockTypeDVDData = 8

MBS MacControls Plugin, Plugin Version: 10.3. **Function:** One of the block type constants.  
**Notes:** DVD data.

---

65.15.107  kDRBlockTypeMode1Data = 8

MBS MacControls Plugin, Plugin Version: 10.3. **Function:** One of the block type constants.  
**Notes:** Mode 1 data.

---

65.15.108  kDRBlockTypeMode2Data = 13

MBS MacControls Plugin, Plugin Version: 10.3. **Function:** One of the block type constants.  
**Notes:** Mode 2 data. Photo CD and CD-i use this.

---

65.15.109  kDRBlockTypeMode2Form1Data = 10

MBS MacControls Plugin, Plugin Version: 10.3. **Function:** One of the block type constants.  
**Notes:** Mode 2 Form 1 data.

---

65.15.110  kDRBlockTypeMode2Form2Data = 12

MBS MacControls Plugin, Plugin Version: 10.3. **Function:** One of the block type constants.  
**Notes:** Mode 2 Form 2 data.

---

65.15.111  kDRDataFormAudio = 0

MBS MacControls Plugin, Plugin Version: 10.3. **Function:** One of the data form constants.  
**Notes:** Audio data.

---

65.15.112  kDRDataFormDVDData = 16

MBS MacControls Plugin, Plugin Version: 10.3. **Function:** One of the data form constants.  
**Notes:** DVD data.
65.15.113 kDRDataFormMode1Data = 16

MBS MacControls Plugin, Plugin Version: 10.3. **Function:** One of the data form constants. **Notes:** Mode 1 data.

65.15.114 kDRDataFormMode2Data = 32

MBS MacControls Plugin, Plugin Version: 10.3. **Function:** One of the data form constants. **Notes:** Mode 2 data. Photo CD and CD-i use this.

65.15.115 kDRDataFormMode2Form1Data = 32

MBS MacControls Plugin, Plugin Version: 10.3. **Function:** One of the data form constants. **Notes:** Mode 2 Form 1 data.

65.15.116 kDRDataFormMode2Form2Data = 32

MBS MacControls Plugin, Plugin Version: 10.3. **Function:** One of the data form constants. **Notes:** Mode 2 Form 2 data.

65.15.117 kDRSessionFormatAudio = 0

MBS MacControls Plugin, Plugin Version: 10.3. **Function:** One of the constants for the session format. **Notes:** Audio data.

65.15.118 kDRSessionFormatCDI = 16

MBS MacControls Plugin, Plugin Version: 10.3. **Function:** One of the constants for the session format. **Notes:** CD-I disc.

65.15.119 kDRSessionFormatCDXA = 32

MBS MacControls Plugin, Plugin Version: 10.3. **Function:** One of the constants for the session format. **Notes:** CD-ROM XA disc.
65.15. **CLASS DRTRACKMBS**

### 65.15.120 kDRSessionFormatDVDData = 0

MBS MacControls Plugin, Plugin Version: 10.3. **Function:** One of the constants for the session format. **Notes:** DVD data.

### 65.15.121 kDRSessionFormatMode1Data = 0

MBS MacControls Plugin, Plugin Version: 10.3. **Function:** One of the constants for the session format. **Notes:** Mode 1 data.

### 65.15.122 kDRTrackMode1Data = 4

MBS MacControls Plugin, Plugin Version: 10.3. **Function:** One of the track mode constants. **Notes:** Mode 1 data.

### 65.15.123 kDRTrackMode2Data = 4

MBS MacControls Plugin, Plugin Version: 10.3. **Function:** One of the track mode constants. **Notes:** Mode 2 data. Photo CD and CD-i use this.

### 65.15.124 kDRTrackMode2Form1Data = 4

MBS MacControls Plugin, Plugin Version: 10.3. **Function:** One of the track mode constants. **Notes:** Mode 2 Form 1 data.

### 65.15.125 kDRTrackMode2Form2Data = 4

MBS MacControls Plugin, Plugin Version: 10.3. **Function:** One of the track mode constants. **Notes:** Mode 2 Form 2 data.

### 65.15.126 kDRTrackModeAudio = 0

MBS MacControls Plugin, Plugin Version: 10.3. **Function:** One of the track mode constants. **Notes:** Audio data.
65.15.127  kDRTrackModeDVDData = 5

MBS MacControls Plugin, Plugin Version: 10.3. **Function:** One of the track mode constants. **Notes:** DVD data.
65.16. CLASS WINDOWSBURNMBS

65.16  class WindowsBurnMBS

65.16.1  class WindowsBurnMBS

MBS Win Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Exposes methods that determine whether a system has hardware for writing to CD, the drive letter of a CD writer device, and programmatically initiate a CD writing session.

65.16.2  Methods

65.16.3  CDBurn

MBS Win Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Instructs data to be copied from the staging area to a writable CD.

**Notes:**
The staging area has a default location of `%userprofile%\Local Settings\Application Data\Microsoft\CD Burning`. Its actual path can be retrieved through `WindowsBurnAreaFolderMBS`.

This method returns when the CD is done or the user cancelled.

See also:

- 65.16.4 CDBurn(hostwindow as window)

65.16.4  CDBurn(hostwindow as window)

MBS Win Plugin, Plugin Version: 8.5, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Instructs data to be copied from the staging area to a writable CD.

**Notes:**
Hostwindow: parent window of the user interface (UI)

The staging area has a default location of `%userprofile%\Local Settings\Application Data\Microsoft\CD Burning`. Its actual path can be retrieved through `WindowsBurnAreaFolderMBS`.

This method returns when the CD is done or the user cancelled.

See also:

- 65.16.3 CDBurn
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65.16.5 HasRecordableDrive as boolean

MBS Win Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Scans the system for a CD drive with write-capability, returning true if one is found.
**Notes:** This search does not rely on the state of the Enable cd writing on this drive option found on the drive’s property sheet. Instead, the determination is based on IMAPI.

65.16.6 RecorderDriveLetter as string

MBS Win Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Gets the drive letter of a CD drive that has been marked as write-enabled.
**Notes:**
The drive whose letter designation is returned by this method is the drive that has the Enable cd writing on this drive option selected. This option is found on the drive’s property sheet. Only one drive on a system can have this option selected.

If a recordable CD drive is present but that option has been deselected, the method will return an empty string.

65.16.7 Properties

65.16.8 Available as boolean

MBS Win Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Whether the Shell extension on Windows for CD Burning is available.
**Notes:**
Available should be true on Windows XP and newer.
(Read only property)

65.16.9 Lasterror as Integer

MBS Win Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The last error code reported by one of the methods.
**Notes:** (Read and Write property)
Chapter 66

DNS

66.1 class DNSAddressRecordMBS

66.1.1 class DNSAddressRecordMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The class for an address record.
**Example:**
```vba
dim r as DNSReplyMBS = DNSUtilMBS.Lookup(”www.six.heise.de”, DNSUtilMBS.ClassINTERNET, DNSUtilMBS.TypeA)
if r<>Nil then
  for each d as DNSResourceRecordMBS in r.Answers
    if d.A<>Nil then
      MsgBox d.A.address
    end if
  next
end if
```

66.1.2 Properties

66.1.3 address as String

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The IPv4 address.
**Example:**
dim r as DNSReplyMBS = DNSUtilMBS.Lookup("www.six.heise.de", DNSUtilMBS.ClassINTERNET, DNSUtilMBS.TypeA)
if r<>Nil then
for each d as DNSResourceRecordMBS in r.Answers
if d.A<>Nil then
    MsgBox d.A.address
end if
next
end if

Notes: (Read and Write property)
66.2. class DNSAFSDBRecordMBS

66.2.1 class DNSAFSDBRecordMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for an AFSDB record.

66.2.2 Properties

66.2.3 hostname as String

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The hostname. **Notes:** (Read and Write property)

66.2.4 subtype as Integer

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The sub type. **Notes:** (Read and Write property)
66.3 class DNSDomainNameRecordMBS

66.3.1 class DNSDomainNameRecordMBS


66.3.2 Properties

66.3.3 name as String

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The queried name. Notes: (Read and Write property)
66.4. CLASS DNSHEADERMBS

66.4  class DNSHeaderMBS

66.4.1  class DNSHeaderMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for a header of a DNS query.

66.4.2  Properties

66.4.3  AdditionalCount as Integer

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of additional items.

**Example:**

```vbs
dim r as DNSReplyMBS = DNSUtilMBS.Lookup("www.apple.com", DNSUtilMBS.ClassINTERNET, DNSUtilMBS.TypeA)
if r<>Nil then
    MsgBox "AdditionalCount: "+str(r.Header.AdditionalCount)
end if
```

**Notes:** (Read and Write property)

66.4.4  AnswerCount as Integer

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of answers in this query.

**Example:**

```vbs
dim r as DNSReplyMBS = DNSUtilMBS.Lookup("www.apple.com", DNSUtilMBS.ClassINTERNET, DNSUtilMBS.TypeA)
if r<>Nil then
    MsgBox "AnswerCount: "+str(r.Header.AnswerCount)
end if
```

**Notes:** (Read and Write property)
66.4.5 AuthorityCount as Integer

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The number of authority records.
**Example:**
```vba
dim r as DNSReplyMBS = DNSUtilMBS.Lookup(”www.apple.com”, DNSUtilMBS.ClassINTERNET, DNSUtilMBS.TypeA)
if r<>Nil then
    MsgBox ”AuthorityCount: ”+str(r.Header.AuthorityCount)
end if
```

**Notes:** (Read and Write property)

66.4.6 Flags as Integer

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The flags.
**Example:**
```vba
dim r as DNSReplyMBS = DNSUtilMBS.Lookup(”www.apple.com”, DNSUtilMBS.ClassINTERNET, DNSUtilMBS.TypeA)
if r<>Nil then
    MsgBox ”Flags: ”+str(r.Header.Flags)
end if
```

**Notes:** (Read and Write property)

66.4.7 QuestionCount as Integer

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The number of questions in this query.
**Example:**
```vba
dim r as DNSReplyMBS = DNSUtilMBS.Lookup(”www.apple.com”, DNSUtilMBS.ClassINTERNET, DNSUtilMBS.TypeA)
if r<>Nil then
    MsgBox ”QuestionCount: ”+str(r.Header.QuestionCount)
end if
```
Notes: (Read and Write property)

66.4.8 xid as Integer

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The xid value.

**Example:**

```vba
    dim r as DNSReplyMBS = DNSUtilMBS.Lookup("www.apple.com", DNSUtilMBS.ClassINTERNET, DNSUtilMBS.TypeA)
    if r<>Nil then
        MsgBox "xid: "+str(r.Header.xid)
    end if
```

Notes: (Read and Write property)
66.5 class DNSHINFORecordMBS

66.5.1 class DNSHINFORecordMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for the host information record.

66.5.2 Properties

66.5.3 CPU as String

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The CPU information string.
**Notes:** (Read and Write property)

66.5.4 OS as String

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The operation system name.
**Notes:** (Read and Write property)
66.6. **CLASS DNSIN6ADDRESSRECORDMBS**

### 66.6 class DNSIN6AddressRecordMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for an IPv6 address record.

**Example:**

```vba
dim r as DNSReplyMBS = DNSUtilMBS.Lookup("www.six.heise.de", DNSUtilMBS.ClassINTERNET, DNSUtilMBS.TypeAAAA)
if r<>Nil then
for each d as DNSResourceRecordMBS in r.Answers
if d.AAAA<>Nil then
    MsgBox d.AAAA.address
end if
next
end if
```

### 66.6.2 Properties

#### 66.6.3 address as String

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The IPv6 address.

**Example:**

```vba
dim r as DNSReplyMBS = DNSUtilMBS.Lookup("www.six.heise.de", DNSUtilMBS.ClassINTERNET, DNSUtilMBS.TypeAAAA)
if r<>Nil then
for each d as DNSResourceRecordMBS in r.Answers
if d.AAAA<>Nil then
    MsgBox d.AAAA.address
end if
next
end if
```

**Notes:** (Read and Write property)
66.6.4 rawaddress as Memoryblock

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The raw address as a memoryblock. **Notes:** (Read and Write property)
66.7.  CLASS DNSISDNRECORDMBS

66.7  class DNSISDNRecordMBS

66.7.1  class DNSISDNRecordMBS


66.7.2  Properties

66.7.3  isdnAddress as String

Notes: (Read and Write property)

66.7.4  subAddress as String

Notes: (Read and Write property)
class DNSLocRecordMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The location record class.

### 66.8.2 Properties

#### 66.8.3 altitude as Integer

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The altitude value. **Notes:** (Read and Write property)

#### 66.8.4 horizontalPrecision as Integer

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The horizontal precision value. **Notes:** (Read and Write property)

#### 66.8.5 latitude as Integer

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The latitude value. **Notes:** (Read and Write property)

#### 66.8.6 longitude as Integer

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The longitude value. **Notes:** (Read and Write property)

#### 66.8.7 size as Integer

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The size value.
66.8.8 version as Integer

Notes: (Read and Write property)

66.8.9 verticalPrecision as Integer

Notes: (Read and Write property)
66.9 class DNSMINFORecordMBS

66.9.1 class DNSMINFORecordMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The MINFO record class.

66.9.2 Properties

66.9.3 emailbx as String

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The emailbx value. **Notes:** (Read and Write property)

66.9.4 rmailbx as String

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The rmailbx value. **Notes:** (Read and Write property)
66.10. CLASS DNSSMRECORDMBS

66.10 class DNSSMRecordMBS

66.10.1 class DNSSMRecordMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for a mx (mailbox) record.

66.10.2 Properties

66.10.3 name as String

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of this email server. **Notes:** (Read and Write property)

66.10.4 preference as Integer

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The preference value for this email server. **Notes:** (Read and Write property)
66.11 class DNSQuestionMBS

66.11.1 class DNSQuestionMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for a DNS query question.

66.11.2 Properties

66.11.3 dnsclass as Integer

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The DNS class value. **Notes:** See the Class* constants in DNSUtilMBS module. (Read and Write property)

66.11.4 dnstype as Integer

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The DNS type value. **Notes:** See the Type* constants in DNSUtilMBS module. (Read and Write property)

66.11.5 name as String

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The query in the question. **Notes:** (Read and Write property)
66.12 class DNSRawResourceRecordMBS

66.12.1 class DNSRawResourceRecordMBS


66.12.2 Properties

66.12.3 data as String


Notes:

Just the raw bytes as string.
(Read and Write property)

66.12.4 length as Integer


Notes: (Read and Write property)
66.13 class DNSReplyMBS

66.13.1 class DNSReplyMBS


66.13.2 Methods

66.13.3 Additional(index as Integer) as DNSResourceRecordMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the additional record with the given index. Notes: index is zero based.

66.13.4 Additionals as DNSResourceRecordMBS()


66.13.5 Answer(index as Integer) as DNSResourceRecordMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the answer with the given index. Notes: index is zero based.

66.13.6 Answers as DNSResourceRecordMBS()


66.13.7 Authority(index as Integer) as DNSResourceRecordMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the authority with the given index. Notes: index is zero based.
66.13.8 Authoritys as DNSResourceRecordMBS()

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array with the authority records.

66.13.9 Question(index as Integer) as DNSQuestionMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The question with the given index. 
**Notes:** index is zero based.

66.13.10 Questions as DNSQuestionMBS()

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array with the question records.

66.13.11 Properties

66.13.12 additionalCount as Integer

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of additional records. 
**Example:**

```pascal
dim r as DNSReplyMBS = DNSUtilMBS.Lookup("www.apple.com", DNSUtilMBS.ClassINTERNET, DNSUtilMBS.TypeA)
if r<>Nil then
    MsgBox "additionalCount: "+str(r.additionalCount)
end if
```

**Notes:** (Read and Write property)

66.13.13 answerCount as Integer

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of answer records. 
**Example:**
dim r as DNSReplyMBS = DNSUtilMBS.Lookup("www.apple.com", DNSUtilMBS.ClassINTERNET, DNSUtilMBS.TypeA)

if r<>Nil then
    MsgBox "answerCount: "+str(r.answerCount)
end if

Notes: (Read and Write property)

66.13.14 authorityCount as Integer


Example:

dim r as DNSReplyMBS = DNSUtilMBS.Lookup("www.apple.com", DNSUtilMBS.ClassINTERNET, DNSUtilMBS.TypeA)

if r<>Nil then
    MsgBox "authorityCount: "+str(r.authorityCount)
end if

Notes: (Read and Write property)

66.13.15 Header as DNSHeaderMBS


Notes: (Read and Write property)

66.13.16 questionCount as Integer


Example:

dim r as DNSReplyMBS = DNSUtilMBS.Lookup("www.apple.com", DNSUtilMBS.ClassINTERNET, DNSUtilMBS.TypeA)
if r<>Nil then
MsgBox "questionCount: "+str(r.questionCount)
end if

Notes: (Read and Write property)

66.13.17 Server as DNSSocketAddressMBS

Notes: (Read and Write property)

66.13.18 Status as Integer

Example:
dim r as DNSReplyMBS = DNSUtilMBS.Lookup("www.apple.com", DNSUtilMBS.ClassINTERNET, DNSUtilMBS.TypeA)
if r<>Nil then
MsgBox "Status: "+str(r.Status)
end if

Notes:
See the Status* constants.
(Read and Write property)

66.13.19 Constants

66.13.20 StatusBadHandle = 1

MBS MacOSX Plugin, Plugin Version: 9.7. Function: One of the status constants for the status property.
66.13.21 StatusConnectionFailed = 6
MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the status constants for the status property.

66.13.22 StatusMalformedQuery = 2
MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the status constants for the status property.

66.13.23 StatusOK = 0
MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the status constants for the status property.

66.13.24 StatusReceiveFailed = 5
MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the status constants for the status property.

66.13.25 StatusSendFailed = 4
MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the status constants for the status property.

66.13.26 StatusTimeout = 3
MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the status constants for the status property.

66.13.27 StatusWrongQuestion = 9
MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the status constants for the status property.

66.13.28 StatusWrongServer = 7
MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the status constants for the status property.
66.13. CLASS DNSREPLYMBS

66.13.29 StatusWrongXID = 8

MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the status constants for the status property.
66.14 class DNSResourceRecordMBS

66.14.1 class DNSResourceRecordMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for a resource record. **Notes:** Data contained in unsupported or obsolete Resource Record types may be accessed via RAW as a DNSRawResourceRecordMBS.

66.14.2 Properties

66.14.3 A as DNSAddressRecordMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The record content. **Notes:** (Read and Write property)

66.14.4 AAAA as DNSIN6AddressRecordMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The record content. **Notes:** (Read and Write property)

66.14.5 AFSDB as DNSAFSDBRecordMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The record content. **Notes:** (Read and Write property)

66.14.6 CNAME as DNSDomainNameRecordMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The record content. **Notes:** (Read and Write property)
66.14. **CLASS DNSRESOURCERECORDMBS**

66.14.7 **dnsclass as Integer**

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The DNS class value. 
**Notes:**
See the Class* constants in DNSUtilMBS module. 
(Read and Write property)

66.14.8 **dnstype as Integer**

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The DNS type value. 
**Notes:**
See the Type* constants in DNSUtilMBS module. 
(Read and Write property)

66.14.9 **HINFO as DNSHINFORecordMBS**

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The record content. 
**Notes:** (Read and Write property)

66.14.10 **ISDN as DNSISDNRecordMBS**

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The record content. 
**Notes:** (Read and Write property)

66.14.11 **LOC as DNSLocRecordMBS**

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The record content. 
**Notes:** (Read and Write property)
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66.14.12 MB as DNSDomainNameRecordMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The record content. **Notes:** (Read and Write property)

66.14.13 MD as DNSDomainNameRecordMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The record content. **Notes:** (Read and Write property)

66.14.14 MF as DNSDomainNameRecordMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The record content. **Notes:** (Read and Write property)

66.14.15 MG as DNSDomainNameRecordMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The record content. **Notes:** (Read and Write property)

66.14.16 MINFO as DNSMINFORecordMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The record content. **Notes:** (Read and Write property)

66.14.17 MR as DNSDomainNameRecordMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The record content. **Notes:** (Read and Write property)
66.14. CLASS DNSRESOURCERECORDMBS

66.14.18  MX as DNSMXRecordMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The record content.  
**Notes:** (Read and Write property)

66.14.19  name as String

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name.  
**Notes:** (Read and Write property)

66.14.20  NS as DNSDomainNameRecordMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The record content.  
**Notes:** (Read and Write property)

66.14.21  PTR as DNSDomainNameRecordMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The record content.  
**Notes:** (Read and Write property)

66.14.22  RAW as DNSRawResourceRecordMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The record content.  
**Notes:**  
Data contained in unsupported or obsolete Resource Record types may be accessed via RAW as a DNSRawResourcerecordMBS.  
(Read and Write property)

66.14.23  Record as Variant

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**  
The record content as a variant.
Notes:
Each resource record contains only one subrecord. So this record property has a reference to it and the corresponding property.
(Read and Write property)

66.14.24 RP as DNSRPRecordMBS

Notes: (Read and Write property)

66.14.25 RT as DNSRTRecordMBS

Notes: (Read and Write property)

66.14.26 SOA as DNSSOARecordMBS

Notes: (Read and Write property)

66.14.27 SRV as DNSSRVRecordMBS

Notes: (Read and Write property)

66.14.28 ttl as Integer

Notes: (Read and Write property)
66.14. CLASS DNSRESOURCEREORDMBS

66.14.29 TXT as DNSTXTRecordMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The record content.
**Notes:** (Read and Write property)

66.14.30 WKS as DNSWKSEcordMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The record content.
**Notes:** (Read and Write property)

66.14.31 X25 as DNSX25RecordMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The record content.
**Notes:** (Read and Write property)
66.15 class DNSRPRecordMBS

66.15.1 class DNSRPRecordMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for a RP record.

66.15.2 Properties

66.15.3 mailbox as String

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The mailbox value.  
**Notes:** (Read and Write property)

66.15.4 txtdname as String

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The txtdname value.  
**Notes:** (Read and Write property)
66.16. CLASS DNSRTRECORDMBS

66.16. class DNSRTRecordMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for a RT record.

### 66.16.2 Properties

#### 66.16.3 intermediate as String

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The intermediate value.  
**Notes:** (Read and Write property)

#### 66.16.4 preference as Integer

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The preference value.  
**Notes:** (Read and Write property)
66.17 class DNSServiceQueryRecordMBS

66.17.1 class DNSServiceQueryRecordMBS

MBS Network Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The class to query for an arbitrary DNS record. **Notes:** Subclass of the DNSServiceBaseMBS class.

66.17.2 Methods

66.17.3 QueryRecord(InterfaceIndex as Integer, FullName as string, rrType as Integer, rrClass as Integer, Flags as Integer = 0) as boolean

MBS Network Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Query for an arbitrary DNS record. **Notes:**

- Flags: kFlagsForceMulticast or kFlagsLongLivedQuery. Pass kFlagsLongLivedQuery to create a "long-lived" unicast query to a unicast DNS server that implements the protocol. This flag has no effect on link-local multicast queries.
- interfaceIndex: If non-zero, specifies the interface on which to issue the query (the index for a given interface is determined via the if_nametoindex() family of calls.) Passing 0 causes the name to be queried for on all interfaces. See "Constants for specifying an interface index" for more details.
- fullname: The full domain name of the resource record to be queried for.
- rrtype: The numerical type of the resource record to be queried for (e.g. kType_PTR, kType_SRV, etc)
- rrclass: The class of the resource record (usually kClass_IN).

Lastly, Lasterror is set: Returns kErr_NoError on success (any subsequent, asynchronous errors are delivered to the event), otherwise returns an error code indicating the error that occurred. Returns false in case of error or true in case of success.

You can use DNSServiceBaseMBS.ConstructFullName to build the full name.

66.17.4 Events

66.17.5 ServiceQueryRecord(flags as Integer, InterfaceIndex as Integer, ErrorCode as Integer, Fullname as string, rrType as Integer, rrClass as Integer, Length as Integer, Data as string, ttl as Integer)

MBS Network Plugin, Plugin Version: 16.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The event called when data is received for DNS query.
Notes:

flags: Possible values are kFlagsMoreComing and kFlagsAdd. The Add flag is NOT set for PTR records with a ttl of 0, i.e. "Remove" events.

InterfaceIndex: The interface on which the query was resolved.

errorCode: Will be kErr_NoError on success, otherwise will indicate the failure that occurred. Other parameters are undefined if errorCode is nonzero.

fullname: The resource record’s full domain name.

rrtype: The resource record’s type (e.g. kType_PTR, kType_SRV, etc)

rrclass: The class of the resource record (usually kClass_IN).

Length: The length, in bytes, of the resource record rdata.

Data: The raw record data of the resource record.

ttl: If the client wishes to cache the result for performance reasons, the TTL indicates how long the client may legitimately hold onto this result, in seconds. After the TTL expires, the client should consider the result no longer valid, and if it requires this data again, it should be re-fetched with a new query. Of course, this only applies to clients that cancel the asynchronous operation when they get a result. Clients that leave the asynchronous operation running can safely assume that the data remains valid until they get another callback telling them otherwise.
66.18 class DNSSOARecordMBS

66.18.1 class DNSSOARecordMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The SOA record class.  
**Notes:** The Start of Authority (SOA) record contains information about the zone.

66.18.2 Properties

66.18.3 expire as Integer

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The expire value.  
**Notes:** (Read and Write property)

66.18.4 minimum as Integer

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The minimum value.  
**Notes:** (Read and Write property)

66.18.5 mname as String

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The mname value.  
**Notes:** (Read and Write property)

66.18.6 refresh as Integer

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The refresh delay in seconds before the slave contacts the master.  
**Notes:** (Read and Write property)
66.18.7  retry as Integer

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  Function: The retry delay in seconds before the slave contacts the master again.  Notes: (Read and Write property)

66.18.8  rname as String

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  Function: The name value.  Notes: (Read and Write property)

66.18.9  serial as Integer

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  Function: The serial value.  Notes: (Read and Write property)
66.19   class DNSSocketAddressMBS

66.19.1   class DNSSocketAddressMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The DNS socket address class.

66.19.2   Properties

66.19.3   address as String

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The address value.
**Example:**
```
dim r as DNSReplyMBS = DNSUtilMBS.Lookup("www.apple.com", DNSUtilMBS.ClassINTERNET, DNSUtilMBS.TypeA)
if r<>Nil then
    MsgBox "Server.address: " + r.Server.address
end if
```

**Notes:**
This is IPv4 or IPv6.
(Read and Write property)

66.19.4   data as Memoryblock

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The raw data of this socket address.
**Notes:** (Read and Write property)

66.19.5   Family as Integer

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The family value.
**Example:**
dim r as DNSReplyMBS = DNSUtilMBS.Lookup("www.apple.com", DNSUtilMBS.ClassINTERNET, DNSUtilMBS.TypeA)

if r<>Nil then
    MsgBox "Server.Family: " + str(r.Server.Family)
end if

Notes: (Read and Write property)

66.19.6 Port as Integer

Example:

dim r as DNSReplyMBS = DNSUtilMBS.Lookup("www.apple.com", DNSUtilMBS.ClassINTERNET, DNSUtilMBS.TypeA)

if r<>Nil then
    MsgBox "Server.Port: " + str(r.Server.Port)
end if

Notes: (Read and Write property)
66.20 class DNSSRVRecordMBS

66.20.1 class DNSSRVRecordMBS


66.20.2 Properties

66.20.3 port as Integer

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The port value. Notes: (Read and Write property)

66.20.4 priority as Integer

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The priority value. Notes: (Read and Write property)

66.20.5 target as String

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The target value. Notes: (Read and Write property)

66.20.6 weight as Integer

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The weight value. Notes: (Read and Write property)
66.21 class DNSTXTRecordMBS

66.21.1 class DNSTXTRecordMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for a text record.

66.21.2 Methods

66.21.3 Strings(index as Integer) as string

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The strings by index.  
**Notes:** Index is zero based.

66.21.4 Properties

66.21.5 Count as Integer

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of strings in this text record. 
**Notes:** (Read only property)
66.22 module DNSUtilMBS

66.22.1 module DNSUtilMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The module for DNS queries.

66.22.2 Methods

66.22.3 ClassNumber(dnsClass as string, byref n as Integer) as boolean

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the DNS class constants. **Example:**

```vbscript
dim n as Integer
if DNSUtilMBS.ClassNumber("CH", n) then
    MsgBox str(n) // shows 3
end if
```

**Notes:** Returns true on success.

66.22.4 ClassString(dnsclass as Integer) as string

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the string name of this class value. **Example:**

```vbscript
MsgBox DNSUtilMBS.ClassString(DNSUtilMBS.ClassCHAOS) // shows "CH"
```

66.22.5 Lookup(name as string, dnsclass as Integer, dnsType as Integer) as DNSReplyMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Performs a DNS query. **Example:**

```vbscript
```
66.22. MODULE DNSUTILMBS

// lookup MX record for email sending
dim r as DNSReplyMBS = DNSUtilMBS.Lookup("macsw.de", DNSUtilMBS.ClassINTERNET, DNSUtilMBS.TypeMX)
if r <> nil then
    MsgBox "macsw.de -" + r.Answer(0).MX.name
end if

Notes: Use the Class* constants for the dnsclass parameter. And use the Type* constants for the dnsType parameter.

66.22.6 LookupMT(name as string, dnsclass as Integer, dnsType as Integer) as DNSReplyMBS

Notes:
Use the Class* constants for the dnsclass parameter. And use the Type* constants for the dnsType parameter.

The work is performed on an extra thread, so this function can yield time to other Xojo (Real Studio) threads. And it calles the Working event regularly. For best user experience run this command on a Xojo (Real Studio) thread, so your GUI stays responsive.

66.22.7 TypeNumber(dnsType as string, byref n as Integer) as boolean

Example:

dim n as Integer

if DNSUtilMBS.TypeNumber("AAAA", n) then
    MsgBox str(n) // shows 28
end if

Notes: Returns true on success.
66.22.8 TypeString(dnstype as Integer) as string

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the string name of this type value.
**Example:**
MsgBox DNSUtilMBS.TypeString(DNSUtilMBS.TypeMD) // shows "MD"

66.22.9 Constants

66.22.10 ClassALL = & hff

MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS class constants.

66.22.11 ClassANY = & hff

MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS class constants.

66.22.12 ClassCHAOS = 3

MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS class constants.

66.22.13 ClassCSNET = 2

MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS class constants.

66.22.14 ClassHESIOD = 4

MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS class constants.

66.22.15 ClassINTERNET = 1

MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS class constants.
66.22. MODULE DNSUTILMBS

66.22.16 ClassNONE = & hfe

MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS class constants.

66.22.17 TypeA = 1

MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.

66.22.18 TypeAAAA = & h1c

MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.

66.22.19 TypeAFSDB = & h12

MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.

66.22.20 TypeALL = & hff

MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.

66.22.21 TypeANY = & hff

MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.

66.22.22 TypeATMA = & h22

MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.

66.22.23 TypeAXFR = & hfc

MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.
66.22.24 TypeCNAME = 5

MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.

66.22.25 TypeGPOS = & h1b

MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.

66.22.26 TypeHINFO = & h0d

MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.

66.22.27 TypeISDN = & h14

MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.

66.22.28 TypeIXFR = & hfb

MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.

66.22.29 TypeKEY = & h19

MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.

66.22.30 TypeLOC = & h1d

MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.

66.22.31 TypeMAILA = & hfe

MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.
66.22.32 TypeMAILB = & hfd
MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.

66.22.33 TypeMB = 7
MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.

66.22.34 TypeMD = 3
MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.

66.22.35 TypeMF = 4
MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.

66.22.36 TypeMG = 8
MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.

66.22.37 TypeMINFO = & h0e
MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.

66.22.38 TypeMR = 9
MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.

66.22.39 TypeMX = & h0f
MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.

**Example:**
// lookup MX record for email sending
Dim r As DNSReplyMBS = DNSUtilMBS.Lookup("macsw.de", DNSUtilMBS.ClassINTERNET, DNSUtilMBS.TypeMX)
If r <> Nothing Then
 MsgBox "macsw.de ->" + r.Answer(0).MX.name
End If

66.22.40 TypeNS = 2
MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.

66.22.41 TypeNSAP = & h16
MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.

66.22.42 TypeNSAPPTR = & h17
MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.

66.22.43 TypeNULL = & h0a
MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.

66.22.44 TypeNXT = & h1e
MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.

66.22.45 TypePTR = & h0c
MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.
66.22.46  TypePX = \& h1a

MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.

66.22.47  TypeRP = \& h11

MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.

66.22.48  TypeRT = \& h15

MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.

66.22.49  TypeSIG = \& h18

MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.

66.22.50  TypeSOA = 6

MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.

66.22.51  TypeSRV = \& h21

MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.

66.22.52  TypeTEXT = \& h10

MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.

66.22.53  TypeTKEY = \& hf9

MBS MacOSX Plugin, Plugin Version: 9.7. **Function:** One of the DNS type constants.
66.22.54 TypeTSIG = & hfa

MBS MacOSX Plugin, Plugin Version: 9.7. Function: One of the DNS type constants.

66.22.55 TypeWKS = & h0b

MBS MacOSX Plugin, Plugin Version: 9.7. Function: One of the DNS type constants.

66.22.56 TypeX25 = & h13

MBS MacOSX Plugin, Plugin Version: 9.7. Function: One of the DNS type constants.
66.23. CLASS DNSWKSRECORDMBS

66.23 class DNSWKSRecordMBS

66.23.1 class DNSWKSRecordMBS


66.23.2 Methods

66.23.3 Map(index as Integer) as Integer

Notes: Index is zero based.

66.23.4 Properties

66.23.5 address as String

Notes: (Read and Write property)

66.23.6 maplength as Integer

Notes: (Read and Write property)

66.23.7 protocol as Integer

Notes: (Read and Write property)
66.24 class DNSX25RecordMBS

66.24.1 class DNSX25RecordMBS

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for a X25 record.

66.24.2 Properties

66.24.3 psdnAddress as String

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The psdn address. **Notes:** (Read and Write property)
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Dongle

67.1  Globals

67.1.1  CallHASPMBS(service as Integer, seed as Integer, lptnum as Integer, pass1 as Integer, pass2 as Integer, byref p1 as Integer, byref p2 as Integer, byref p3 as Integer, byref p4 as Integer)

MBS Dongle Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calls the HASP API.
**Notes:**
You may need drivers from Aladdin Knowledge Systems for your HASP keys, but the plugin should run and compile even without.

Linux added for plugin v7.0
Please check the HASP documentation from Aladdin for the list of error codes.
If you need a plugin for HASP SRM, please contact us.

With plugin version 14.2 we see problems on Windows with Xojo, but works with Real Studio.

Please use HASPHLDMBS for newer projects.

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67.1.2 CallHASPMemMBS(service as Integer, seed as Integer, lptnum as Integer, pass1 as Integer, pass2 as Integer, byref p1 as Integer, byref p2 as Integer, byref p3 as Integer, byref p4 as Integer, mem as memoryblock)

MBS Dongle Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls the HASP API.

**Notes:**
This version of the Call will pass in the p3 and p4 parameters the address of the memoryblock to the function.

Linux added for plugin v7.0

Please check the HASP documentation from Aladdin for the list of error codes.

67.1.3 GetHASPErrorStrMBS(error as Integer) as string

MBS Dongle Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns a human readable error string for the given error code.

**Notes:**
May return "" on low memory.

Please check the HASP documentation from Aladdin for the list of error codes.

67.1.4 GetNetHaspWarningStrMBS(error as Integer) as string

MBS Dongle Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns a human readable string for the given error code.

**Notes:**
May return nil on low memory.

Please check the HASP documentation from Aladdin for the list of error codes.
67.2. CLASS HASPHLDMBS

67.2.1 class HASPHLDMBS

MBS Dongle Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class for accessing HASP HL or Sentinel dongles.

**Example:**

// Load your vendor library or the demo one
dim LibFile as FolderItem = GetFolderItem("hasp_darwin_12345.dylib")

if HASPHLDMBS.LoadLibrary(LibFile) then
    'MsgBox "OK"
else
    MsgBox "Failed to load library."
    Return
end if

// init dongle
' This method runs the actual tests on the given program number
dim blob as MemoryBlock // container for data for en-/decryption

dim FeatureID = HASPHLDMBS.HASP_DEFAULT_FID
dim VendorCode = "123456" // your vendor code here, some big Base64 encoded block

dim hasp as new HASPHLDMBS(FeatureID, VendorCode)
Select case hasp.Lasterror
    case HASPHLDMBS.HASP_STATUS_OK
        // ok
    case HASPHLDMBS.HASP_HASP_NOT_FOUND
        MsgBox "Dongle not found."
        return
    case HASPHLDMBS.HASP_INV_VCODE
        MsgBox "Invalid vendor code"
        Return
    else
        MsgBox "Error: " + str(hasp.Lasterror)
        return
end Select

// read a file ID
dim fileid as Integer = 65524
dim size as Integer = hasp.GetSize( fileid )

if hasp.Lasterror = HASPHLDMBS.HASP_STATUS_OK then // ONLY IF FILE IS SUPPORTED

// read to memoryblock
blob = hasp.ReadMemory( fileid, 0, size )
if hasp.Lasterror = HASPHLMBS.HASP_STATUS_OK then
    // show in MsgBox
    s = Blob.stringvalue(0,blob.size)
    MsgBox DefineEncoding(s,Encodings.UTF8)
end if
end if

Notes:

Please use HASP Master Wizard Suite to generate your own runtime libraries. Than you get a couple of DLLs which you can load with this class. For the demo keys, you can use the demo DLLs.
The demo DLL for example is named "hasp_windows_x64_demo.dll" or including your vendor code "hasp_windows_x64_12345.dll" (64bit). 32bit Windows DLL is named hasp_windows_12345.dll, hasp_windows_demo.dll or haspvlib_12345.dll.

Now when you have the platform dependent libraries, you can use LoadLibrary() function in this class to load the right one.

HASPHLMBS uses a linked in library. This is okay for older HASP HL versions. But newer versions require you to create your own signed libraries. For them use the HASPHLDMBS class.

67.2.2 Methods

67.2.3 Available as boolean

Notes: Returns true if library was loaded successfully or we use internal library.

67.2.4 Close

Notes:
Called automatically for you by the destructor.

Use this function to end a connection to an API session object. Once logged out from a session, all memory allocated for the session is released.

Lasterror is set.
67.2.5 Constructor(FeatureID as Integer, scope as string, VendorCode as string)

MBS Dongle Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Logs into a Feature to establish a session, according to predefined search parameters. **Notes:**

This function is used to specify conditions that describe where login information is to searched for.

The requisite Vendor Codes are stored in a VendorCodes folder in your system. Without the correct Vendor Code, the function call cannot succeed.

You can open up to 512 simultaneous login sessions.

This function does not work with legacy HASP Features.

FeatureID: Unique identifier for a specific Feature stored in a Sentinel HASP protection key
Scope: Definition of the search parameters for this Feature ID. See the additional HASP API Reference documentation for more information about Scope XML Tags.
VendorCode: the vendor code

Lasterror is set. This calls SDK function hasp_login_scope.
See also:

- 67.2.6 Constructor(FeatureID as Integer, VendorCode as string)

67.2.6 Constructor(FeatureID as Integer, VendorCode as string)

MBS Dongle Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Logs into a Feature and thereby establishes a session context.

**Notes:**

This function establishes a context to a Sentinel HASP protection key containing a license for the requested Feature ID.

The requisite Vendor Codes are stored in a VendorCodes folder in your system. Without the correct Vendor Code, the function call cannot succeed.

You can open up to 512 simultaneous login sessions.

Legacy HASP Remarks
For local prognum Features, concurrency is not handled and each login performs a decrement if it is a count-
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ing license.

Network "prognum" features continue to use the old HASP LM login logic, with its inherent limitations.

There is only support for concurrent usage of one server (global server address).

With "Program Number" features (see HASP_FEATURETYPE_MASK), 8 bits are reserved for legacy options (see HASP_PROGNUM_OPT_MASK, currently 5 bits are used):

- only local
- only remote
- login is counted per process ID
- disable terminal server check
- enable access to old (HASP3/HASP4) keys

FeatureID: Unique identifier for a specific Feature stored in a Sentinel HASP protection key
VendorCode: the Vendor Code

Lasterror is set. This calls SDK function hasp_login.

See also:

- 67.2.5 Constructor(FeatureID as Integer, scope as string, VendorCode as string)

67.2.7 DateTimeToHaspTime(day as Integer, month as Integer, year as Integer, hour as Integer, minute as Integer, second as Integer) as memoryblock

MBS Dongle Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Converts a date and time value to hasptime (the number of elapsed seconds since January 1 1970).

**Notes:**
Time values are in UTC.
Memoryblock has 8 bytes.

67.2.8 DecryptMemory(Data as Memoryblock, DataOffset as Integer, Size as Integer)

MBS Dongle Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Decrypts a buffer.

**Notes:**
67.2. CLASS HASPHLDMBS

Decrypts data using the decryption engine in the Sentinel HASP protection key. The specific session handle determines which Sentinel HASP protection key and which Feature ID decrypts the data buffer. The decryption key remains in the Sentinel HASP protection key. If the decryption fails, the buffer is not modified. To encrypt the data buffer, use the Encrypt function.

Data: The data to decrypt.
DataOffset: Start address in Bytes in the memoryblock.
Size: Data size in Bytes in memoryblock. (16 bytes minimum)

Lasterror is set. This calls SDK function hasp_decrypt.

67.2.9 DecryptString(Data as string) as string

MBS Dongle Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Decrypts a buffer.
**Notes:**
Decrypts data using the decryption engine in the Sentinel HASP protection key. The specific session handle determines which Sentinel HASP protection key and which Feature ID decrypts the data buffer. The decryption key remains in the Sentinel HASP protection key. If the decryption fails, the buffer is not modified. To encrypt the data buffer, use the Encrypt function.

Data: The data to decrypt.
Returns the decrypted data.
Lasterror is set. This calls SDK function hasp_decrypt.

67.2.10 Detach(detachAction as string, scope as string, VendorCode as string, recipient as string, byref info as string) as Integer

MBS Dongle Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Detaches or cancels an attached license, according to customizable parameters
**Notes:**
You do not need to be logged in to a Sentinel HASP Feature in order to use this function.
This function is used to detach a license for a Product (i.e. all Sentinel HASP Features and Memory files which belong to this Product) from a HASP SL Protection key. The function returns a H2R file which must then be applied on the recipient machine using hasp_update() or the ACC.
This function only works with HASP SL Protection Keys; HASP HL Protection Keys are ignored.
This function can also be used on the recipient machine to cancel an attached license. In this case, the recipient parameter is ignored and should be set to NULL. For cancelling, the function returns a R2H file which must be applied on the host machine using hasp_update() or the ACC. If the detached Product is already expired, no R2H file will be returned.
The required Vendor Codes are stored in a VendorCodes folder in your system. Without the correct Vendor
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Code, the function call cannot succeed.

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<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>detachAction:</td>
<td>Parameters for the operation, in XML format. For more information, see the</td>
</tr>
<tr>
<td>scope:</td>
<td>accompanying Sentinel HASP Run-time API help documentation.</td>
</tr>
<tr>
<td>VendorCode:</td>
<td>The Vendor Code.</td>
</tr>
<tr>
<td>recipient:</td>
<td>Definition in XML format of the recipient computer, on which the detached</td>
</tr>
<tr>
<td></td>
<td>Product will be installed. This information can be retrieved using either Get-</td>
</tr>
<tr>
<td></td>
<td>Info or GetSessionInfo together with the format specifier HASP_RECIPIENT.</td>
</tr>
<tr>
<td></td>
<td>Set to &quot;&quot; if an attached protection key is cancelled.</td>
</tr>
<tr>
<td>info:</td>
<td>The information that is retrieved, in XML format. This information is a V2C,</td>
</tr>
<tr>
<td></td>
<td>which can then be installed on the recipient computer via Update.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Return code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HASP_STATUS_OK</td>
<td>Request was successfully completed</td>
</tr>
<tr>
<td>HASP_INVDETACH_ACTION</td>
<td>Invalid XML &quot;detach_action&quot; parameter</td>
</tr>
<tr>
<td>HASP_INV_RECIPIENT</td>
<td>Invalid XML &quot;recipient&quot; parameter</td>
</tr>
<tr>
<td>HASP_TOO_MANY_PRODUCTS</td>
<td>Scope for Detach does not specify a unique Parameter</td>
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<tr>
<td>HASP_TOO_MANY_USERS</td>
<td>Too many users currently connected, or: at least one detachable Feature does</td>
</tr>
<tr>
<td></td>
<td>not have enough network seats available</td>
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<tr>
<td>HASP_ACCESS_DENIED</td>
<td>Request cannot be processed due to ACC restrictions</td>
</tr>
<tr>
<td>HASP_FEATURE_EXPIRED</td>
<td>All detachable Features are expired</td>
</tr>
<tr>
<td>HASP_INV_PRODUCT</td>
<td>Invalid Product information</td>
</tr>
<tr>
<td>HASP_INV_DURATION</td>
<td>In the case of a new detachable license, duration exceeds maximum allowed</td>
</tr>
<tr>
<td></td>
<td>OR, in the case of a detachable license extension, expiration date earlier</td>
</tr>
<tr>
<td></td>
<td>than original date or too short (if an existing detached Product is extended,</td>
</tr>
<tr>
<td></td>
<td>and the new expiration date is earlier than the original expiration date)</td>
</tr>
<tr>
<td>HASP_INSUF_MEM</td>
<td>Out of memory</td>
</tr>
<tr>
<td>HASP_DEVICE_ERR</td>
<td>Input/Output error in HASP SL secure storage, OR in case of a HASP HL key,</td>
</tr>
<tr>
<td></td>
<td>USB communication error</td>
</tr>
<tr>
<td>HASP_LOCAL_COMM_ERR</td>
<td>Communication error between API and local HASP License Manager</td>
</tr>
<tr>
<td>HASP_REMOTE_COMM_ERR</td>
<td>Communication error between local and remote HASP License Manager</td>
</tr>
</tbody>
</table>

67.2.11 EncryptMemory(Data as Memoryblock, DataOffset as Integer, Size as Integer)

MBS Dongle Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Encrypts a buffer.

**Notes:**

Encrypts data using the encryption engine in the Sentinel HASP protection key.
The specific session handle determines which Sentinel HASP protection key and which Feature ID encrypts the data buffer. The encryption key remains in the Sentinel HASP protection key. If the encryption fails,
the buffer is not modified. To decrypt the data buffer, use the Decrypt function.

Data: The data to encrypt.
DataOffset: Start address in Bytes in the memoryblock.
Size: Data size in Bytes in memoryblock. (16 bytes minimum)

Lasterror is set. This calls SDK function hasp_encrypt.

67.2.12 EncryptString(Data as string) as string

MBS Dongle Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Encrypts a buffer.

**Notes:**
Encrypted data using the encryption engine in the Sentinel HASP protection key. The specific session handle determines which Sentinel HASP protection key and which Feature ID encrypts the data buffer. The encryption key remains in the Sentinel HASP protection key. If the encryption fails, the buffer is not modified. To decrypt the data buffer, use the Decrypt function.

Data: The data to encrypt. (16 bytes minimum)

Returns encrypted string.

Lasterror is set. This calls SDK function hasp_encrypt.

67.2.13 GetInfo(scope as string, format as string, VendorCode as string, byref info as string) as Integer

MBS Dongle Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves information about system components, according to customizable search parameters, and presents it according to customizable formats.

**Notes:**
You do not need to be logged in to a Sentinel HASP Feature in order to use this function.

This function is used to specify conditions about where to search for information. In addition, it enables you to specify conditions about the format in which the retrieved information is presented. If retrieved information is appropriately formatted, it can be used as a template in the Constructor.

The requisite Vendor Codes are stored in a VendorCodes folder in your system. Without the correct Vendor
Code, the function call cannot succeed.

This function cannot be used to retrieve legacy HASP Features.

scope: Definition of the data that is to be searched, in XML format. For more information, see the accompanying Sentinel HASP Run-time API help documentation.

format: Definition of the format in which the data is to be displayed, in XML format. For more information, see the accompanying Sentinel HASP Run-time API help documentation.

VendorCode: the Vendor Code

info: The information that is retrieved, in XML format

<table>
<thead>
<tr>
<th>Return Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HASP_STATUS_OK</td>
<td>Request was successfully completed</td>
</tr>
<tr>
<td>HASP_SCOPE_RESULTS_EMPTY</td>
<td>Unable to locate a Feature matching the scope</td>
</tr>
<tr>
<td>HASP_INSUF_MEM</td>
<td>Out of memory</td>
</tr>
<tr>
<td>HASP_INV_VCODE</td>
<td>Invalid Vendor Code</td>
</tr>
<tr>
<td>HASP_UNKNOWN_VCODE</td>
<td>Vendor Code not recognized</td>
</tr>
<tr>
<td>HASP_INVALID_PARAMETER</td>
<td>Scope or format string too long (max. length 32 kb)</td>
</tr>
<tr>
<td>HASP_DEVICE_ERR</td>
<td>Input/Output error in HASP SL secure storage, OR in case of a HASP HL key, USB communication error</td>
</tr>
<tr>
<td>HASP_LOCAL_COMM_ERR</td>
<td>Communication error between API and local HASP License Manager</td>
</tr>
<tr>
<td>HASP_REMOTE_COMM_ERR</td>
<td>Communication error between local and remote HASP License Manager</td>
</tr>
<tr>
<td>HASP_INV_FORMAT</td>
<td>Unrecognized format string</td>
</tr>
<tr>
<td>HASP_INV_SCOPE</td>
<td>Unrecognized scope string</td>
</tr>
<tr>
<td>HASP_BROKEN_SESSION</td>
<td>Session has been interrupted</td>
</tr>
</tbody>
</table>

### 67.2.14 GetRTC as memoryblock

MBS Dongle Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the current time.

**Notes:**

Only HASP HL keys with a Real-time clock (rtc) and HASP SL keys can provide the current time. Primarily used to obtain reliable timestamps that are independent from the system clock. Time values are returned as the number of seconds that have elapsed since Jan-01-1970 0:00:00 UTC. This request is only supported on locally accessed keys. Trying to get the time from a remotely accessed key will return HASP_NO_TIME. Returns time as a 8 byte memoryblock. Lasterror is set.

### 67.2.15 GetSessionInfo(format as string) as string

MBS Dongle Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves information regarding a session context.
Notes:

format: Definition for the type of output data structure, in XML format.
There are three format options:

- **HASP_KEYINFO** For retrieving information on the Sentinel HASP protection key
- **HASP_SESSIONINFO** For retrieving information on the login session
- **HASP_UPDATEINFO** For retrieving information on a license update usually contained in a C2V file.
  The retrieved information includes the current state of the key, including update counters, license availability and memory images

Returns answer. Lasterror is set.

HASP_KEYINFO is "<haspformat format=""keyinfo""/>
HASP_SESSIONINFO is "<haspformat format=""sessioninfo""/>
HASP_UPDATEINFO is "<haspformat format=""updateinfo""/>

67.2.16 GetSize(FileID as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves the byte size of a memory file from a HASP protection key.

**Notes:**

This function is used to determine the file size of a HASP memory file.
FileID: Identifier for the file that is to be queried.
Returns file size. Lasterror is set.

Possible File ID constants: HASP_FILEID_LICENSE, HASP_FILEID_MAIN, HASP_FILEID_RO or HASP_FILEID_RW.

67.2.17 GetVersion(byref MajorVersion as Integer, byref MinorVersion as Integer, byref BuildServer as Integer, byref BuildNumber as Integer, VendorCode as string) as Integer

MBS Dongle Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves version and build number of the HASP library.

**Notes:** Returns error code.
67.2.18  **HaspTimeToDateTime(time as memoryblock, byref day as Integer, byref month as Integer, byref year as Integer, byref hour as Integer, byref minute as Integer, byref second as Integer)**

MBS Dongle Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Converts a time value (elapsed seconds since January 1 1970) into a date and time

**Notes:**
- Memoryblock has 8 bytes.
- Time values are in UTC.

67.2.19  **LegacyDecryptMemory(Data as Memoryblock, DataOffset as Integer, Size as Integer)**

MBS Dongle Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Legacy HASP4 compatible decryption function.

**Notes:**
- This object must have been created by calling Constructor() with a "prognum" Feature ID.
- Data: The memoryblock where bytes are decrypted.
- DataOffset is the start position in Bytes in the memoryblock and size the length of the data block to decrypt.
- Size: Size of the data in the memoryblock to decrypt.
- Lasterror is set.

67.2.20  **LegacyDecryptString(Data as string) as string**

MBS Dongle Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Legacy HASP4 compatible decryption function.

**Notes:**
- This object must have been created by calling Constructor() with a "prognum" Feature ID.
- Lasterror is set.
67.2.21 LegacyEncryptMemory(Data as Memoryblock, DataOffset as Integer, Size as Integer)

MBS Dongle Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Legacy HASP4 compatible encryption function.

**Notes:**
This object must have been created by calling Constructor() with a "prognum" Feature ID.

Data: The memoryblock where bytes are encrypted.
DataOffset is the start position in Bytes in the memoryblock and size the length of the data block to encrypt.
Size: Size of the data in the memoryblock to encrypt.

LastError is set.

67.2.22 LegacyEncryptString(Data as string) as string

MBS Dongle Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Legacy HASP4 compatible encryption function.

**Notes:**
This object must have been created by calling Constructor() with a "prognum" Feature ID.

LastError is set.

67.2.23 LegacySetIdleTime(idletime as Integer)

MBS Dongle Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set the LM idle time.

**Notes:**
This object must have been created by calling Constructor() with a "prognum" Feature ID.

time: The idle time in minutes.

LastError is set.
67.2.24 LegacySetRTC(time as memoryblock)

MBS Dongle Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes to HASP4-compatible real-time clock.

**Notes:**
This object must have been created by calling Constructor() with a "prognum" Feature ID.

This request is only supported on locally accessed keys. Attempting to set the time on a remotely accessed key will return HASP_NO_TIME.

time: The new time value (8 byte Memoryblock)

LastError is set.

67.2.25 LoadLibrary(file as folderitem) as boolean

MBS Dongle Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads the HASPHL shared library.

**Notes:**
Returns true on success and false on failure.

Loads a Windows DLL, a Linux shared library, a Mac OS X shared library or a Mac OS X framework from the given path.

See also:
- 67.2.26 LoadLibrary(path as string) as boolean

67.2.26 LoadLibrary(path as string) as boolean

MBS Dongle Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads the HASPHL shared library.

**Notes:**
Returns true on success and false on failure.

Path can be an absolute, a relative or just a file name.

Loads a Windows DLL, a Linux shared library, a Mac OS X shared library or a Mac OS X framework from the given path.

See also:
- 67.2.25 LoadLibrary(file as folderitem) as boolean
67.2.27 ReadMemory(FileID as Integer, Offset as Integer, Size as Integer) as Memoryblock

MBS Dongle Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the memory of a Sentinel HASP protection key.  
**Notes:**  
Valid File IDs are HASP\_FILEID\_RW and HASP\_FILEID\_RO.

Legacy HASP Remarks  
Valid File IDs are HASP\_FILEID\_LICENSE and HASP\_FILEID\_MAIN.

FileID: Identifier for the file that is to be read  
Offset: Byte offset in the file  
Size: Number of bytes to read.

LastError is set.

67.2.28 ReadString(FileID as Integer, Offset as Integer, Size as Integer) as string

MBS Dongle Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the memory of a Sentinel HASP protection key.  
**Notes:**  
Valid File IDs are HASP\_FILEID\_RW and HASP\_FILEID\_RO.

Legacy HASP Remarks  
Valid File IDs are HASP\_FILEID\_LICENSE and HASP\_FILEID\_MAIN.

FileID: Identifier for the file that is to be read  
Offset: Byte offset in the file  
Size: Number of bytes to read.

LastError is set.
67.2.29 Transfer(action as string, scope as string, VendorCode as string, recipient as string, byref info as string) as Integer

MBS Dongle Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Performs a transfer operation.

**Notes:**

Sentinel Licensing API Usage Notes
You do not need to be logged in to a Sentinel Feature in order to use this function.

This function is used to perform the following task as per its "action" parameter.

for "detach" action: detach a license for a Product (i.e. all Sentinel Features and Memory files which belong to this Product) from a Sentinel SL/SL-AdminMode/SL-UserMode key. The function returns a buffer which should be saved as H2R file.

for "cancel" action: This action runs on the recipient machine to cancel an attached license. In this case, the recipient parameter is ignored and should be set to "". For cancelling, the function returns a buffer which must be applied on the host machine using Update() or ACC If the detached Product is already expired, no buffer will be returned.

for "rehost" action: create a transferable license for given container (i.e. all Sentinel Features and Memory files which belong to this container) from SL-AdminMode/SL-UserMode Protection key. The function returns buffer on success which must be saved as V2C file. Update() or ACC is used to apply this on destination machine.

This function only works with Sentinel SL/SL-AdminMode/SL-UserMode Protection Keys; Sentinel HL Protection Keys are ignored.

The required Vendor Codes are stored in a VendorCodes folder in your system. Without the correct Vendor Code, the function call cannot succeed.

**action:** Parameters for the operation, in XML format. For more information, see the accompanying Sentinel Licensing API help documentation.
**scope:** Search parameters for the container-id that is to be re-hosted. For more information, see the accompanying Sentinel Licensing API help documentation.
**VendorCode:** The Vendor Code
**recipient:** Definition in XML format of the recipient computer, on which the detached Product will be installed.

This information can be retrieved using either GetInfo or GetSessionInfo together with the format specifier...
info: String for the information that is retrieved, in XML format. This information is a V2C, which can then be installed on the destination computer via Update.

67.2.30 Update(data as string) as string


Notes:
This function writes update information. Note that the Sentinel HASP protection key must be locally connected.

The update code contains all necessary data to perform the update on a deployed Sentinel HASP protection key including:

- The Sentinel HASP protection key on which the updated information is to be written
- The necessary Vendor Code that is required to access the Sentinel HASP key
- The actual update information

Depending on the update data, the function returns an acknowledgement code that is signed/encrypted by the key. The code is evidence that an update has been applied to a license.

data: The update data.
Returns the acknowledge data.

Lasterror is set.

67.2.31 WriteMemory(FileID as Integer, FileOffset as Integer, Data as Memo-ryblock, DataOffset as Integer, Size as Integer)


Notes:
Valid File ID is HASP_FILEID_RW.
Depending on the provided session handle (either logged into the default Feature or any other Feature), write access to the FAS memory (HASP_FILEID_LICENSE) is not permitted.

FileID: Identifier for the file that is to be written
FileOffset: Byte offset in the file
Data: the data
DataOffset: Start address in Bytes in the memoryblock.
Size: Data size in Bytes in memoryblock.

LastError is set.

### 67.2.32 WriteString(FileID as Integer, FileOffset as Integer, Data as String)

MBS Dongle Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes to the memory of a Sentinel HASP protection key.

**Notes:**
- Valid File ID is HASP_FILEID_RW.

Depending on the provided session handle (either logged into the default Feature or any other Feature), write access to the FAS memory (HASP_FILEID_LICENSE) is not permitted.

FileID: Identifier for the file that is to be written
FileOffset: Byte offset in the file
Data: the data

LastError is set.

### 67.2.33 Properties

### 67.2.34 Handle as Integer

MBS Dongle Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Internal handle for the session.

**Notes:** (Read and Write property)
67.2.  CLASS HASPHLDMBS

67.2.35  Lasterror as Integer

MBS Dongle Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last error value. **Notes:** (Read and Write property)

67.2.36  Constants

67.2.37  HASP_ACCESS_DENIED = 5

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes. **Notes:** Access to Feature, HASP protection key or functionality denied.

67.2.38  HASP_ALREADY_LOGGED_IN = 502

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes. **Notes:** C++ API: Logging in twice to the same object.

67.2.39  HASP_ALREADY_LOGGED_OUT = 503

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes. **Notes:** C++ API: Logging out twice of the same object

67.2.40  HASP_BROKEN_SESSION = 39

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes. **Notes:** Session been interrupted.

67.2.41  HASP_CANNOT_READ_FILE = 72

MBS Dongle Plugin, Plugin Version: 15.4. **Function:** One of the HASP error codes. **Notes:** File not found or access denied.
67.2.42  **HASP_CLONE_DETECTED = 64**

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  **Notes:** Cloned HASP SL secure storage detected.

67.2.43  **HASP_CONTAINER_NOT_FOUND = 7**

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  **Notes:** Deprecated - use HASP_HASP_NOT_FOUND.

67.2.44  **HASP_DEFAULT_FID = 0**

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** The HASP default Feature ID.  **Notes:** Available in every HASP key.

67.2.45  **HASP_DETACHED_LICENSE_FOUND = 76**

MBS Dongle Plugin, Plugin Version: 15.4. **Function:** One of the HASP error codes.  **Notes:**
Format SL-AdminMode or migrate SL-Legacy to SL-AdminMode not allowed as container has detached license.

67.2.46  **HASP_DETACH_DISABLE = 74**

MBS Dongle Plugin, Plugin Version: 15.4. **Function:** One of the HASP error codes.  **Notes:**
Detach of license not allowed as product.
contains VM disabled feature and host machine is a virtual machine.

67.2.47  **HASP_DEVICE_ERR = 43**

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  **Notes:** Input/Output error occurred in secure storage area of HASP SL key OR a USB error occurred when communicating with a HASP HL key.
67.2. CLASS HASPHLDMBS

67.2.48  HASP_DUPLICATE_HOSTNAME = 79

MBS Dongle Plugin, Plugin Version: 15.4. **Function:** One of the HASP error codes.  
**Notes:** Duplicate Hostname found while key contains Hostname Fingerprinting.

67.2.49  HASP_ENC_NOT_SUPP = 23

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** Sentinel HASP protection key does not support encryption type.

67.2.50  HASP_EXTENSION_NOT_ALLOWED = 73

MBS Dongle Plugin, Plugin Version: 15.4. **Function:** One of the HASP error codes.  
**Notes:**  
Extension of license not allowed as number of detached licenses is greater than current concurrency count.

67.2.51  HASP_FEATURETYPE_MASK = & hffff0000

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** Legacy HASP HL Run-time API: "Feature Type" mask.  
**Notes:** AND-mask used to identify Feature type.

67.2.52  HASP_FEATURE_EXPIRED = 41

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** Feature expired.

67.2.53  HASP_FEATURE_NOT_FOUND = 31

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** Requested Feature not available.
67.2.54  **HASP_FEATURE_TYPE_NOT_IMPL = 28**

MBS Dongle Plugin, Plugin Version: 11.1. **Function**: One of the HASP error codes.  
**Notes**: Requested Feature type not implemented.

67.2.55  **HASP_FILEID_DYNAMIC_FIRST = 1**

MBS Dongle Plugin, Plugin Version: 15.4. **Function**: One of the HASP error codes.  
**Notes**:  
Sentinel dynamic memory file ID available range  
File ID lower limit for Sentinel dynamic memory file.

67.2.56  **HASP_FILEID_DYNAMIC_LAST = & hffbf**

MBS Dongle Plugin, Plugin Version: 15.4. **Function**: One of the HASP error codes.  
**Notes**:  
Sentinel dynamic memory file ID available range  
File ID upper limit for Sentinel dynamic memory file.

67.2.57  **HASP_FILEID_LICENSE = & hff2**

MBS Dongle Plugin, Plugin Version: 11.1. **Function**: One of the Memory File ID constants  
**Notes**:  
Legacy HASP HL Run-time API: HASP4 FAS memory file  
(Dummy) File ID for the license data area of memory contents.

67.2.58  **HASP_FILEID_MAIN = & hff0**

MBS Dongle Plugin, Plugin Version: 11.1. **Function**: One of the Memory File ID constants  
**Notes**:  
Legacy HASP HL Run-time API: HASP4 memory file  
File ID for HASP4-compatible memory contents w/o FAS.
67.2. CLASS HASP_HLDMBS

67.2.59 HASP_FILEID_RO = & hfff5

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the Memory File ID constants
**Notes:**
Sentinel HASP secure read only memory file.
File ID for HASP Sentinel HASP read only memory.

67.2.60 HASP_FILEID_RW = & hfff4

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the Memory File ID constants
**Notes:**
Sentinel HASP secure writable memory file
File ID for Sentinel HASP secure writable memory.

67.2.61 HASP_FIRST_HASP_ACT = 3001

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.
**Notes:** Reserved for HASP Activation API

67.2.62 HASP_FIRST_HELPER = 2001

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.
**Notes:** Reserved for HASP helper libraries.

67.2.63 HASP_HARDWARE_MODIFIED = 52

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.
**Notes:** HASP SL key incompatible with machine hardware; HASP SL key is locked to different hardware.
OR: In the case of a V2C file, conflict between HASP SL key data and machine hardware data; HASP SL key locked to different hardware

67.2.64 HASP_HASP_INACTIVE = 66

MBS Dongle Plugin, Plugin Version: 15.4. **Function:** One of the HASP error codes.
**Notes:** Specified Hasp Id is in Inactive state
67.2.65  HASP_HASP_NOT_FOUND = 7

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** Sentinel HASP protection key not available.

67.2.66  HASP_INCOMPAT_FEATURE = 6

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** Legacy decryption function cannot work on Feature.

67.2.67  HASP_INSUF_MEM = 3

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** System is out of memory.

67.2.68  HASP_INT_ERR = 699

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** Internal error occurred in API.

67.2.69  HASP_INVALID_HANDLE_VALUE = 0

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** Invalid handle value for Handle property.

67.2.70  HASP_INVALID_OBJECT = 500

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** C++ API: Object incorrectly initialized.

67.2.71  HASP_INVALID_PARAMETER = 501

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** Invalid function parameter.
67.2.72  HASP_INV_ACTION = 59

MBS Dongle Plugin, Plugin Version: 15.4. **Function:** One of the HASP error codes.  
**Notes:** Invalid XML "action" parameter

67.2.73  HASP_INV_API_DYLIB = 401

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** API dispatcher: Unable to load API; DLL possibly corrupt?

67.2.74  HASP_INV_DETACH_ACTION = 59

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** Invalid XML "action" parameter.

67.2.75  HASP_INV_DURATION = 63

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** Invalid duration.

67.2.76  HASP_INV_FILEID = 10

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** Specified File ID not recognized by API.

67.2.77  HASP_INV_FORMAT = 15

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** Invalid XML format.

67.2.78  HASP_INV_HND = 9

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** Invalid login handle passed to function.
**67.2.79**  \texttt{HASP\_INV\_PORT = 651} \\
MBS Dongle Plugin, Plugin Version: 11.1. \textbf{Function}: One of the HASP error codes. 
\textbf{Notes}: Internal use: invalid port value.

**67.2.80**  \texttt{HASP\_INV\_PORT\_TYPE = 650} \\
MBS Dongle Plugin, Plugin Version: 11.1. \textbf{Function}: One of the HASP error codes. 
\textbf{Notes}: Internal use: invalid port type.

**67.2.81**  \texttt{HASP\_INV\_PRODUCT = 61} \\
MBS Dongle Plugin, Plugin Version: 11.1. \textbf{Function}: One of the HASP error codes. 
\textbf{Notes}: Invalid Product information.

**67.2.82**  \texttt{HASP\_INV\_PROGNUM\_OPT = 2} \\
MBS Dongle Plugin, Plugin Version: 11.1. \textbf{Function}: One of the HASP error codes. 
\textbf{Notes}: Legacy HASP HL Run-time API: Unknown/Invalid Feature ID option.

**67.2.83**  \texttt{HASP\_INV\_RECIPIENT = 58} \\
MBS Dongle Plugin, Plugin Version: 11.1. \textbf{Function}: One of the HASP error codes. 
\textbf{Notes}: Invalid XML "recipient" parameter.

**67.2.84**  \texttt{HASP\_INV\_SCOPE = 36} \\
MBS Dongle Plugin, Plugin Version: 11.1. \textbf{Function}: One of the HASP error codes. 
\textbf{Notes}: Invalid XML scope.

**67.2.85**  \texttt{HASP\_INV\_SIG = 30} \\
MBS Dongle Plugin, Plugin Version: 11.1. \textbf{Function}: One of the HASP error codes. 
\textbf{Notes}: Signature verification operation failed.
67.2. CLASS HASP_ILDMBS

67.2.86 HASP_INV_SPEC = 35

MBS Dongle Plugin, Plugin Version: 11.1. Function: One of the HASP error codes. 
Notes: Invalid XML specification.

67.2.87 HASP_INV_TIME = 24

MBS Dongle Plugin, Plugin Version: 11.1. Function: One of the HASP error codes. 
Notes: Passed time value outside supported value range.

67.2.88 HASP_INV_UPDATE_CNTR = 21

MBS Dongle Plugin, Plugin Version: 11.1. Function: One of the HASP error codes. 
Notes: Update counter set incorrectly.

67.2.89 HASP_INV_UPDATE_DATA = 19

MBS Dongle Plugin, Plugin Version: 11.1. Function: One of the HASP error codes. 
Notes: Required XML tags not found; Contents in binary data are missing or invalid

67.2.90 HASP_INV_UPDATE_NOTSUPP = 20

MBS Dongle Plugin, Plugin Version: 11.1. Function: One of the HASP error codes. 
Notes: Update request not supported by Sentinel HASP protection key.

67.2.91 HASP_INV_UPDATE_OBJ = 17

MBS Dongle Plugin, Plugin Version: 11.1. Function: One of the HASP error codes. 
Notes: Binary data passed to function does not contain valid update.

67.2.92 HASP_INV_VCODE = 22

MBS Dongle Plugin, Plugin Version: 11.1. Function: One of the HASP error codes. 
Notes: Invalid Vendor Code passed.
67.2.93 \textbf{HASP\textunderscore INV\textunderscore VLIB} = 49

MBS Dongle Plugin, Plugin Version: 11.1. \textbf{Function}: One of the HASP error codes. 
\textbf{Notes}: Unable to load Vendor library.

67.2.94 \textbf{HASP\textunderscore KEYID\textunderscore NOT\textunderscore FOUND} = 18

MBS Dongle Plugin, Plugin Version: 11.1. \textbf{Function}: One of the HASP error codes. 
\textbf{Notes}: HASP protection key not found.

67.2.95 \textbf{HASP\textunderscore LICENSE\textunderscore REHOSTED} = 70

MBS Dongle Plugin, Plugin Version: 15.4. \textbf{Function}: One of the HASP error codes. 
\textbf{Notes}: License is rehosted to other machine

67.2.96 \textbf{HASP\textunderscore LOCAL\textunderscore COMM\textunderscore ERR} = 33

MBS Dongle Plugin, Plugin Version: 11.1. \textbf{Function}: One of the HASP error codes. 
\textbf{Notes}: Communication error between API and local Sentinel HASP License Manager.

67.2.97 \textbf{HASP\textunderscore MEM\textunderscore RANGE} = 1

MBS Dongle Plugin, Plugin Version: 11.1. \textbf{Function}: One of the HASP error codes. 
\textbf{Notes}: Request exceeds memory range of a HASP file.

67.2.98 \textbf{HASP\textunderscore MIN\textunderscore BLOCK\textunderscore SIZE} = 16


67.2.99 \textbf{HASP\textunderscore MIN\textunderscore BLOCK\textunderscore SIZE\textunderscore LEGACY} = 8

67.2. CLASS HASPHLDMBS

67.2.100 HASP_MISSING_LM = 80

MBS Dongle Plugin, Plugin Version: 15.4. **Function:** One of the HASP error codes. **Notes:** The Sentinel License Manager is required for this operation.

67.2.101 HASP_NET_DLL_BROKEN = 652

MBS Dongle Plugin, Plugin Version: 15.4. **Function:** One of the HASP error codes. **Notes:** Dot-Net DLL found broken.

67.2.102 HASP_NEXT_FREE_VALUES = 5001

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes. **Notes:** Next free error code.

67.2.103 HASP_NOT_IMPL = 698

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes. **Notes:** Requested function not implemented.

67.2.104 HASP_NO_ACK_SPACE = 26

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes. **Notes:** Acknowledge data requested by update, but ack_data parameter is NULL.
67.2.105 HASP_NO_API_DYLIB = 400

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** API dispatcher: API for this Vendor Code was not found.

67.2.106 HASP_NO_BATTERY_POWER = 25

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** Real-time clock battery out of power.

67.2.107 HASP_NO_DETACHABLE_FEATURE = 67

MBS Dongle Plugin, Plugin Version: 15.4. **Function:** One of the HASP error codes.  
**Notes:** No detachable feature exists.

67.2.108 HASP_NO_DRIVER = 14

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** Required driver not installed.

67.2.109 HASP_NO_EXTBLOCK = 600

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** Internal use: no classic memory extension block available.

67.2.110 HASP_NO_LOG = 32

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** Access log not enabled.

67.2.111 HASP_NO_TIME = 12

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** Real-time clock (rtc) not available.
### Class HASP_HLDMBS

#### 67.2.112 HASP_NO_VLIB = 48

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** Unable to find Vendor library.

#### 67.2.113 HASP_OLD_DRIVER = 11

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** Installed driver or daemon too old to execute function.

#### 67.2.114 HASP_OLD_LM = 42

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** Sentinel HASP License Manager version too old.

#### 67.2.115 HASP_OLD_VLIB = 56

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** Vendor library version too old.

#### 67.2.116 HASP_OPERATION_FAILED = 525

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** .NET API: Incorrect use of system or platform

#### 67.2.117 HASP_PROGNUM_DEFAULT_FID = & hfff0000

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** Legacy HASP HL Run-time API: The HASP default Feature ID  
**Notes:** Available in every legacy HASP hardware key.

#### 67.2.118 HASP_PROGNUM_FEATURETYPE = & hfff0000

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** Legacy HASP HL Run-time API: "Program Number Feature" type
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Notes: After AND-ing with HASP_FEATURETYPE_MASK the Feature type contain this value.

67.2.119  HASP_PROGNUM_MASK = & h000000ff

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** Legacy HASP HL Run-time API: "Program Number Mask"
**Notes:** AND-mask used to extract the Program Number from a "prognum" Feature ID.

67.2.120  HASP_PROGNUM_OPT_CLASSIC = & h00001000

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** Legacy HASP HL Run-time API: "Program Number" option
**Notes:** Enables the API to access "classic" (HASP4 or earlier) keys.

67.2.121  HASP_PROGNUM_OPT_MASK = & h0000ff00

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** Legacy HASP HL Run-time API: "Program Number Options" mask.
**Notes:**
AND-mask used to identify Program Number options:

- HASP_PROGNUM_OPT_NO_LOCAL
- HASP_PROGNUM_OPT_NO_REMOTE
- HASP_PROGNUM_OPT_PROCESS
- HASP_PROGNUM_OPT_CLASSIC
- HASP_PROGNUM_OPT_TS

3 bits of the mask are reserved for future extensions and currently unused. Initialize them with zero.

67.2.122  HASP_PROGNUM_OPT_NO_LOCAL = & h00008000

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** Legacy HASP HL Run-time API: "Program Number" option
**Notes:** Disables the search for local licenses.
67.2.123  HASP_PROGNUM_OPT_NO_REMOTE = & h00004000

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** Legacy HASP HL Run-time API: "Program Number" option
**Notes:** Disables the search for network licenses.

67.2.124  HASP_PROGNUM_OPT_PROCESS = & h00002000

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** Legacy HASP HL Run-time API: "Program Number" option
**Notes:** Sets session count of network licenses to "per-process".

67.2.125  HASP_PROGNUM_OPT_TS = & h00000800

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** Legacy HASP HL Run-time API: "Program Number" option
**Notes:** Ignores the presence of terminal servers.

67.2.126  HASP_RDP_DETECTED = 27

MBS Dongle Plugin, Plugin Version: 15.4. **Function:** One of the HASP error codes.
**Notes:** Program running on a Remote Desktop

67.2.127  HASP_RECIPIENT_OLD_LM = 77

MBS Dongle Plugin, Plugin Version: 15.4. **Function:** One of the HASP error codes.
**Notes:** Recipient of the requested operation is older than expected.

67.2.128  HASP_REHOST_ALREADY_APPLIED = 71

MBS Dongle Plugin, Plugin Version: 15.4. **Function:** One of the HASP error codes.
**Notes:** Old rehost license try to apply
67.2.129  **HASP_REHOST_DISABLED = 75**

MBS Dongle Plugin, Plugin Version: 15.4. **Function:** One of the HASP error codes.  
**Notes:**  
Rehost of license not allowed as container  
contains VM disabled feature and host machine is a virtual machine

67.2.130  **HASP_REHOST_NOT_ALLOWED = 69**

MBS Dongle Plugin, Plugin Version: 15.4. **Function:** One of the HASP error codes.  
**Notes:** Rehost is not allowed for any license

67.2.131  **HASP_REMOTE_COMM_ERR = 40**

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** Communication error between local and remote Sentinel HASP License Managers.

67.2.132  **HASP_REQ_NOT_SUPP = 16**

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** Unable to execute function in this context; the requested functionality is not implemented.

67.2.133  **HASP_SCHAN_ERR = 46**

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** Communication error occurred in secure channel.

67.2.134  **HASP_SCOPE_RESULTS_EMPTY = 50**

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** Unable to locate any Feature matching scope.
67.2. CLASS HASPHLD MBS

67.2.135 HASP_SECURE_STORE_ID_MISMATCH = 78

MBS Dongle Plugin, Plugin Version: 15.4. **Function:** One of the HASP error codes.  
**Notes:** Secure storage ID mismatch

67.2.136 HASP_STATUS_OK = 0

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** Request successfully completed

67.2.137 HASP_STORAGE_CORRUPT = 47

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** Corrupt data exists in secure storage area of HASP SL protection key.

67.2.138 HASP_SYS_ERR = 13

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** Generic error from host system call.

67.2.139 HASP_TIME_ERR = 45

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** System time has been tampered with.

67.2.140 HASP_TMOF = 4

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** Too many open Features/login sessions.

67.2.141 HASP_TOO_MANY_HOSTS = 68

MBS Dongle Plugin, Plugin Version: 15.4. **Function:** One of the HASP error codes.  
**Notes:** Scope does not specify a unique host
67.2.142 **HASP_TOO_MANY_KEYS = 37**

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes. 
**Notes:** Too many Sentinel HASP protection keys currently connected.

67.2.143 **HASP_TOO_MANY_PRODUCTS = 60**

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes. 
**Notes:** Scope does not specify a unique Product.

67.2.144 **HASP_TOO_MANY_USERS = 38**

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes. 
**Notes:** Too many concurrent user sessions currently connected.

67.2.145 **HASP_TOO_SHORT = 8**

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes. 
**Notes:** Encrypted/decrypted data length too short to execute function call.

67.2.146 **HASP_TS_DETECTED = 27**

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes. 
**Notes:** Program running on a terminal server.

67.2.147 **HASP_UNKNOWN_ALG = 29**

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes. 
**Notes:** Unknown algorithm used in H2R/V2C file.

67.2.148 **HASP_UNKNOWN_RECIPIENT = 62**

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes. 
**Notes:** Unknown Recipient; update can only be applied to the Recipient specified in hasp_detach(), and not to this computer.
67.2. CLASS HASPHLDMS

67.2.149 HASP_UNKNOWN_VCODE = 34

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes. **Notes:** Vendor Code not recognized by API.

67.2.150 HASP_UPDATE_ALREADY_ADDED = 65

MBS Dongle Plugin, Plugin Version: 15.4. **Function:** One of the HASP error codes. **Notes:** Specified V2C update already installed in the LLM

67.2.151 HASP_UPDATE_BLOCKED = 44

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes. **Notes:** Update installation not permitted; This update was already applied.

67.2.152 HASP_UPDATE_TOO_NEW = 55

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes. **Notes:** Trying to install a V2C file with an update counter that is out of sequence with update counter in the Sentinel HASP protection key. The first value in the V2C file is greater than the value in the Sentinel HASP protection key.

67.2.153 HASP_UPDATE_TOO_OLD = 54

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes. **Notes:** Trying to install a V2C file with an update counter that is out of sequence with the update counter on the Sentinel HASP protection key. The update counter value in the V2C file is lower than the value in sentinel HASP protection key.

67.2.154 HASP_UPLOAD_ERROR = 57

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes. **Notes:** Upload via ACC failed, e.g. because of illegal format.
67.2.155  **HASP_USER_DENIED = 53**

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** Login denied because of user restrictions.

---

67.2.156  **HASP_VM_DETECTED = 51**

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the HASP error codes.  
**Notes:** Program running on a virtual machine.
67.3. **CLASS HASPHLMBS**

67.3 **class HASPHLMBS**

67.3.1 **class HASPHLMBS**

MBS Dongle Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** A class for accessing HASP HL dongles. **Deprecated:** This item is deprecated and should no longer be used. You can use HASPHLDMBS instead. **Notes:**

HASPHLMBS uses a linked in library. This is okay for older HASP HL versions. But newer versions require you to create your own signed libraries. For them use the HASPHLDMBS class.

Please use HASPHLDMBS for newer projects.

67.3.2 **Methods**

67.3.3 **Close**

MBS Dongle Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The destructor. **Notes:**

If you logged in successful before, it logs out from a session and frees all allocated resources for the session. Lasterror is set.

67.3.4 **Constructor(FeatureID as Integer, VendorCode as string)**

MBS Dongle Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Login into a feature. **Notes:**

This function establishes a context (logs into a feature).

feature_id: Unique identifier of the feature. Combinations of constants below.

vendor_code: string with the vendor code

For local prognum features, concurrency is not handled and each login performs a decrement if it is a counting license.

Network prognum features just use the old HASPLM login logic with all drawbacks. There is only support for concurrent usage of \( b \) one server (global server address).
Lasterror is set.

const HASP_PROGNUM_OPT_NO_LOCAL = &h00008000 Disable local license search
const HASP_PROGNUM_OPT_NO_REMOTE = &h00004000 Disable network license search
const HASP_PROGNUM_OPT_PROCESS = &h00002000 Sets session count of network licenses to per-process
const HASP_PROGNUM_OPT_CLASSIC = &h00001000 Enables the API to access "classic" (HASP4 or earlier) keys
const HASP_PROGNUM_OPT_TS = &h00000800 Presence of Terminal Services gets ignored

67.3.5 DateTimeToHaspTime(day as Integer, month as Integer, year as Integer, hour as Integer, minute as Integer, second as Integer) as memoryblock

Notes:
Lasterror is set.
Times are in UTC.

67.3.6 DecryptMemory(Data as Memoryblock, DataOffset as Integer, Size as Integer)

Notes:
This is the reverse operation of the hasp_encrypt() function.
Lasterror is set.

Data: Buffer
DataOffset: Start offset in the buffer.
Size: size in bytes of the buffer to be decrypted (16 bytes minimum)

If the decryption fails (e.g. key removed in-between) the data pointed to by buffer is unmodified.

67.3.7 DecryptString(Data as string) as string

Notes:
This is the reverse operation of the hasp_encrypt() function.
This function encrypts a buffer.
If the decryption fails (e.g. key removed in-between) an empty string is returned.

### 67.3.8 EncryptMemory(Data as Memoryblock, DataOffset as Integer, Size as Integer)

MBS Dongle Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:**
Encrypt a buffer.

**Example:**

```vba
dim h as HASPHLMBS // your hasp object
dim mem as MemoryBlock // your data

h.EncryptMemory(mem,0,mem.size) // Whole block
```

**Notes:**

This function encrypts a buffer.
Lasterror is set.

Data: Buffer
DataOffset: Start offset in the buffer.
Size: size in bytes of the buffer to be encrypted (16 bytes minimum)

If the encryption fails (e.g. key removed in-between) the data pointed to by buffer is unmodified.

### 67.3.9 EncryptString(Data as string) as string

MBS Dongle Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:**
Encrypt a buffer.

**Notes:**

This function encrypts a buffer.
Lasterror is set.

If the encryption fails (e.g. key removed in-between) an empty string is returned.
### 67.3.10 GetRTC as memoryblock

MBS Dongle Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Read current time from a time key.  
**Notes:**  
This function reads the current time from a time key.  
The time will be returned in seconds since Jan-01-1970 0:00:00 GMT.  

The general purpose of this function is not related to licensing, but to get reliable timestamps which are  
independent from the system clock.  
This request is only supported on locally accessed keys. Trying to get the time from a remotely accessed key  
will return HASP.NO.TIME.  

Returns a 64bit integer inside an eight byte memoryblock.

### 67.3.11 GetSessionInfo(format as string) as string

MBS Dongle Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Get information in a session context.  
**Notes:**  
format: XML definition of the output data structure

```
const HASP_UPDATEINFO = <haspformat format="updateinfo"/>  
const HASP_SESSIONINFO = <haspformat format="sessioninfo"/>  
const HASP_KEYINFO = <haspformat format="keyinfo"/>  
```

Returns XML data with the requested information.  

Calling GetSessionInfo with HASP_UPDATEINFO format will return something like this:

```
<?xml version="1.0" encoding="UTF-8"?>  
<hasp_info>  
<c2v>  
```

YYIbIADY3R2oQAfAEAuwulCiCYABaoEBhIABOBxoaABAIGBwD2sfFiy8UKuDvNWH9  
LhfRKDzUbLCAi6E9mN8ea7EclwQI9VeLMDuLvfsEvkor2ignwvjg/wWss6HCypEFi6  
V/Fkl4EUmQNmcKSIY302s9CzHP7aCtG7QKvzaRvq25Nc7UxIQJ4kZJm1oWiw3zZJq  
UY+G0EleETkPZ8u2uDFmauBpdWhW0R35hIRM4wiYCCzaelpRtDXs6HDh1caqfpaL  
mUnwWRxzo+tLs+Dvd+kLncvQ6jWJb4r2xywG2IFW1WTJWBsI+h0/Usig9lG1J+9R  
EQ1srMx3YQ2qpdIK3FHzYVDaw9o9k7idxKJS4zGG+4U0ccpKT4aWJi9cR0vdn4s/  
J6fIUNbK5z2x/gdwr51a6l146GpVn2HjD0ZpAgCeu6xAiwhJ7Kc6tjeRfxy9YksE  
aB9JoJv7uPTHbnu2AgQmd0t09p0zmXgD4Kuk8EtTs1GobY7WF3qHJsj1lZ1ZeAdA  
rONYKSogA/q1tuLLR70kdag  
```
67.3. CLASS HASPHLMBS

Calling GetSessionInfo with HASP_SESSIONINFO format will return something like this:

```xml
<hasp_info>
<feature>
<featureid>4294905856</featureid>
<maxlogins>5</maxlogins>
<currentlogins>1</currentlogins>
<activations>unlimited</activations>
</feature>
</hasp_info>
```

In case of an expiring license on a time enabled key (prognum \(\leq 8\)), instead of the remaining activations the expiration date will be returned:

```xml
<hasp_info>
<feature>
<featureid>4294905857</featureid>
<expirationdate>1052919239</expirationdate>
</feature>
</hasp_info>
```

For locally accessed keys there is no maxlogins and currentlogins field.

Calling GetSessionInfo with HASP_KEYINFO format will return something like this for a locally accessed key:

```xml
<?xml version="1.0" encoding="UTF-8"?>
<hasp_info>
<keyspec>
<keycaps>
<hasp4/>
<aes/>
<newintf/>
</keycaps>
<hasp>
<haspid>12345</haspid>
<nethasptype>0</nethasptype>
<memoryinfo>
<name>"Main"</name>
<fileid>65520</fileid>
<size>48</size>
```
Calling GetSessionInfo with HASP_KEYINFO format will return something like this for a remotely accessed key:

```xml
<?xml version="1.0" encoding="UTF-8"?>
<hasp_info>
  <keycaps>
    <hasp4/>
  </keycaps>
  <hasp>
    <haspid>782062012</haspid>
    <nethasptype>5</nethasptype>
  </hasp>
  <memoryinfo>
    <name>"Main"</name>
    <fileid>65520</fileid>
    <size>432</size>
  </memoryinfo>
  <memoryinfo>
    <name>"FAS"</name>
    <fileid>65522</fileid>
    <size>448</size>
  </memoryinfo>
  <serveraddress>
    <protocol>"IP"</protocol>
    <address>"10.20.3.10"</address>
  </serveraddress>
</hasp_info>
```

decrypt this hasp info and keycaps flags:
67.3. CLASS HASPHLMBS

hasp4 support HASP4 compatible encryption
aes support AES encryption
rtc key has real time clock chip
newintf supports new access interface

67.3.12 GetSize(FileID as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:**
Get memory size.

**Notes:**
This function is used to determine the memory size.
Returns the number of bytes inside the file.
Lasterror is set.

```cpp
class const HASP_FILEID_MAIN = & hfff0 File id for HASP4 compatible memory contents w/o FAS
class const HASP_FILEID_LICENSE = & hfff2 (Dummy) file id for license data area of memory contents
```

67.3.13 HaspTimeToDateTime(time as memoryblock, byref day as Integer, byref month as Integer, byref year as Integer, byref hour as Integer, byref minute as Integer, byref second as Integer)

MBS Dongle Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:**
Convert time type into broken up time

**Notes:**
Lasterror is set.
Times are in UTC.

67.3.14 LegacyDecryptMemory(Data as Memoryblock, DataOffset as Integer, Size as Integer)

MBS Dongle Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:**
This function decrypts a buffer.

**Notes:**
This is the reverse operation of the hasp_encrypt() function.
Lasterror is set.

**Data:** Buffer

**DataOffset:** Start offset in the buffer.
Size: size in bytes of the buffer to be decrypted (16 bytes minimum)

If the decryption fails (e.g. key removed in-between) the data pointed to by buffer is unmodified.

Legacy HASP functionality for backward compatibility.

**67.3.15 LegacyDecryptString(Data as string) as string**

MBS Dongle Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** This function decrypts a buffer.  
**Notes:**  
This is the reverse operation of the hasp_encrypt() function.  
This function encrypts a buffer.  
Lasterror is set.

If the decryption fails (e.g. key removed in-between) an empty string is returned.

Legacy HASP functionality for backward compatibility.

**67.3.16 LegacyEncryptMemory(Data as Memoryblock, DataOffset as Integer, Size as Integer)**

**Example:**
```vba
dim h as HASPHLMBS // your hasp object
dim mem as MemoryBlock // your data

h.LegacyEncryptMemory(mem, 0, mem.size) // Whole block
```

**Notes:**  
This function encrypts a buffer.  
Lasterror is set.

Data: Buffer  
DataOffset: Start offset in the buffer.  
Size: size in bytes of the buffer to be encrypted (16 bytes minimum)
If the encryption fails (e.g. key removed in-between) the data pointed to by buffer is unmodified.

Legacy HASP functionality for backward compatibility.

67.3.17 LegacyEncryptString(Data as string) as string

Notes: This function encrypts a buffer.
Lasterror is set.

If the encryption fails (e.g. key removed in-between) an empty string is returned.

Legacy HASP functionality for backward compatibility.

67.3.18 LegacySetIdleTime(idletime as Integer)

Notes: idletime: the idle time in minutes

Legacy HASP functionality for backward compatibility.

67.3.19 LegacySetRTC(time as memoryblock)

MBS Dongle Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. Function: Write to HASP4 compatible real time clock
Notes: This request is only supported on locally accessed keys. Trying to set the time on a remotely accessed key will return HASP.NO_TIME.

Legacy HASP functionality for backward compatibility.
67.3.20  **ReadMemory(FileID as Integer, Offset as Integer, Size as Integer) as Memoryblock**

MBS Dongle Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** This function is used to read from the key memory.

**Notes:**
- Lasterror is set.
- Offset: Byte start in the file.
- Size: Number of bytes in the file.
- Result: The data read from the file.

```plaintext
const HASP_FILEID_MAIN = & hfff0 File id for HASP4 compatible memory contents w/o FAS
const HASP_FILEID_LICENSE = & hfff2 (Dummy) file id for license data area of memory contents
```

67.3.21  **ReadString(FileID as Integer, Offset as Integer, Size as Integer) as string**

MBS Dongle Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** This function is used to read from the key memory.

**Notes:**
- Lasterror is set.
- Offset: Byte start in the file.
- Size: Number of bytes in the file.
- Result: The data read from the file.

```plaintext
const HASP_FILEID_MAIN = & hfff0 File id for HASP4 compatible memory contents w/o FAS
const HASP_FILEID_LICENSE = & hfff2 (Dummy) file id for license data area of memory contents
```

67.3.22  **Update(data as string) as string**


**Notes:**
- This function writes update information. The update blob contains all necessary data to perform the update:
  - Where to write (in which “container”, e.g. dongle), the necessary access data (vendor code) and of course the update itself.
  - If the update blob requested it, the function returns in an acknowledge blob, which is signed/encrypted by the updated instance and contains a proof that this update was successfully installed.
67.3.  **CLASS HASPHLMBS**

data: string with the complete update data.

Update via LM is not supported.

Lasterror is set.

### 67.3.23  **WriteMemory(FileID as Integer, FileOffset as Integer, Data as Memoryblock, DataOffset as Integer, Size as Integer)**

MBS Dongle Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Write to key memory.  
**Notes:**

Lasterror is set.  
FileOffset: Byte start in the file.  
Data: The data to be written to the file.  
DataOffset: The byte offset inside the memoryblock.  
Size: The number of bytes to be written.

```plaintext
const HASP_FILEID_MAIN = & hfff0  File id for HASP4 compatible memory contents w/o FAS
const HASP_FILEID_LICENSE = & hfff2  (Dummy) file id for license data area of memory contents
```

### 67.3.24  **WriteString(FileID as Integer, FileOffset as Integer, Data as String)**

MBS Dongle Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Write to key memory.  
**Notes:**

Lasterror is set.  
FileOffset: Byte start in the file.  
Data: The data to be written to the file.

```plaintext
const HASP_FILEID_MAIN = & hfff0  File id for HASP4 compatible memory contents w/o FAS
const HASP_FILEID_LICENSE = & hfff2  (Dummy) file id for license data area of memory contents
```
67.3.25 Properties

67.3.26 Handle as Integer

MBS Dongle Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The handle of the current session.
**Notes:** (Read and Write property)

67.3.27 Lasterror as Integer

MBS Dongle Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Last error code reported from one of the functions.
**Notes:**

```
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HASP_STATUS_OK</td>
<td>no error occurred</td>
</tr>
<tr>
<td>HASP_MEM_RANGE</td>
<td>invalid memory address</td>
</tr>
<tr>
<td>HASP_INV_PROGRNUM_OPT</td>
<td>unknown/invalid feature id option</td>
</tr>
<tr>
<td>HASP_INSUF_MEM</td>
<td>memory allocation failed</td>
</tr>
<tr>
<td>HASP_TMOF</td>
<td>too many open features</td>
</tr>
<tr>
<td>HASP_ACCESS_DENIED</td>
<td>feature access denied</td>
</tr>
<tr>
<td>HASP_INCOMPAT_FEATURE</td>
<td>incompatible feature</td>
</tr>
<tr>
<td>HASP_CONTAINER_NOT_FOUND</td>
<td>license container not found</td>
</tr>
<tr>
<td>HASP_TOO_SHORT</td>
<td>en-/decryption length too short</td>
</tr>
<tr>
<td>HASP_INV_HND</td>
<td>invalid handle</td>
</tr>
<tr>
<td>HASP_INV_FILEID</td>
<td>invalid file id / memory descriptor</td>
</tr>
<tr>
<td>HASP_OLD_DRIVER</td>
<td>driver or support daemon version too old</td>
</tr>
<tr>
<td>HASP_NO_TIME</td>
<td>real time support not available</td>
</tr>
<tr>
<td>HASP_SYS_ERR</td>
<td>generic error from host system call</td>
</tr>
<tr>
<td>HASP_NO_DRIVER</td>
<td>hardware key driver not found</td>
</tr>
<tr>
<td>HASP_INV_FORMAT</td>
<td>unrecognized info format</td>
</tr>
<tr>
<td>HASP_REQ_NOT_SUPP</td>
<td>request not supported</td>
</tr>
<tr>
<td>HASP_INV_UPDATEOBJ</td>
<td>invalid update object</td>
</tr>
<tr>
<td>HASP_KEYID_NOT_FOUND</td>
<td>key with requested id was not found</td>
</tr>
<tr>
<td>HASP_INV_UPDATE_DATA</td>
<td>update data consistency check failed</td>
</tr>
<tr>
<td>HASP_INV_UPDATE_NOTSUPP</td>
<td>update not supported by this key</td>
</tr>
<tr>
<td>HASP_INV_UPDATE_CNTR</td>
<td>update counter mismatch</td>
</tr>
<tr>
<td>HASP_INV_VCODE</td>
<td>invalid vendor code</td>
</tr>
<tr>
<td>HASP_ENC_NOT_SUPP</td>
<td>requested encryption algorithm not supported</td>
</tr>
<tr>
<td>HASP_INV_TIME</td>
<td>invalid date / time</td>
</tr>
<tr>
<td>HASP_NO_BATTERY_POWER</td>
<td>clock has no power</td>
</tr>
<tr>
<td>HASP_NO_ACK_SPACE</td>
<td>update requested acknowledgement, but no area to return it</td>
</tr>
<tr>
<td>HASP_TS_DETECTED</td>
<td>feature type not implemented</td>
</tr>
<tr>
<td>HASP_FEATURE_TYPE_NOT_IMPL</td>
<td>unknown algorithm</td>
</tr>
<tr>
<td>HASP_UNKNOWN_ALG</td>
<td>signature check failed</td>
</tr>
<tr>
<td>HASP_INV_SIG</td>
<td>feature not found</td>
</tr>
<tr>
<td>HASP_NO_LOG</td>
<td>trace log is not enabled</td>
</tr>
</tbody>
</table>
```

(Read and Write property)
67.4. module MatrixDongleMBS

67.4.1 module MatrixDongleMBS

MBS Dongle Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This module implements methods to access the matrix lock dongles from Technodata Interware.

**Notes:**
Note: You will find the newest versions of the API and tools available for download at www.tdi-matrix.com

The plugin is from MBS. The library code it is using is based on work from tdi, so if you have trouble, ask both of us.

67.4.2 Methods

67.4.3 DongleCount(PortNr as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of dongles available at the specified LPT or USB interface.

**Notes:** Please check the documentation of the dongle API for more details.

67.4.4 DongleDecryptData(UserCode as Integer, Data as memoryblock, DongleNr as Integer, PortNr as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Transmit a 8 bytes encrypted data block to the dongle. This is returned decrypted as clear data.

**Notes:** Please check the documentation of the dongle API for more details.

67.4.5 DongleEncryptData(UserCode as Integer, Data as memoryblock, DongleNr as Integer, PortNr as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Transmit a 8 bytes clear data block to the dongle. This is returned in XTEA-encrypted form.

**Notes:** Please check the documentation of the dongle API for more details.
67.4.6 DongleExit as Integer

MBS Dongle Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Exits the dongle.
**Notes:** Please check the documentation of the dongle API for more details.

67.4.7 DongleFind as Integer

MBS Dongle Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Searches for the dongle and returns the LPT/USB interface at which it was found.
**Notes:** Please check the documentation of the dongle API for more details.

67.4.8 DongleFindEx(byref LPTNr1 as Integer, byref LPTAdr1 as Integer, byref DNGCnt1 as Integer, byref LPTNr2 as Integer, byref LPTAdr2 as Integer, byref DNGCnt2 as Integer, byref LPTNr3 as Integer, byref LPTAdr3 as Integer, byref DNGCnt3 as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Searches for all LPT ports and dongles and stores this information in a data buffer.
**Notes:** Please check the documentation of the dongle API for more details.

67.4.9 DongleGetKeyFlag(UserCode as Integer, DongleNr as Integer, PortNr as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Checks whether a 128-bit XTEA key different to zero is available in the dongle.
**Notes:** Please check the documentation of the dongle API for more details.

67.4.10 DongleMemSize(DongleNr as Integer, PortNr as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the memory size of the dongle in Bytes.
**Notes:** Please check the documentation of the dongle API for more details.
67.4.11 DongleModel(DongleNr as Integer, PortNr as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the model number of the hardware from the dongle. **Notes:** Please check the documentation of the dongle API for more details.

67.4.12 DongleReadData(UserCode as Integer, Data as memoryblock, count as Integer, DongleNr as Integer, PortNr as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the data from the Matrix-dongle beginning from the first memory field. **Notes:** Please check the documentation of the dongle API for more details.

67.4.13 DongleReadDataEx(UserCode as Integer, Data as memoryblock, FPos as Integer, count as Integer, DongleNr as Integer, PortNr as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the data from the Matrix-dongle beginning from the specified memory field. **Notes:** Please check the documentation of the dongle API for more details.

67.4.14 DongleReadSerNr(UserCode as Integer, DongleNr as Integer, PortNr as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the unique serial number which is assigned to each Matrix-dongle. **Notes:** Please check the documentation of the dongle API for more details.

67.4.15 DongleSetLedFlag(a as Integer, b as Integer, c as Integer, d as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** Sets the LED flag. **Notes:** Please check the documentation of the dongle API for more details.
67.4.16 DongleVersion(DongleNr as Integer, PortNr as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the version number of the dongle. **Notes:** Please check the documentation of the dongle API for more details.

67.4.17 DongleWriteData(UserCode as Integer, Data as memoryblock, count as Integer, DongleNr as Integer, PortNr as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes data into the Matrix-dongle beginning from the first memory field. **Notes:** Please check the documentation of the dongle API for more details.

67.4.18 DongleWriteDataEx(UserCode as Integer, Data as memoryblock, FPos as Integer, count as Integer, DongleNr as Integer, PortNr as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes data into the Matrix-dongle beginning from the specified memory field. **Notes:** Please check the documentation of the dongle API for more details.

67.4.19 DongleWriteKey(UserCode as Integer, KeyData as memoryblock, DongleNr as Integer, PortNr as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Saves the 128-bit XTEA key in the dongle. **Notes:** Please check the documentation of the dongle API for more details.

67.4.20 GetConfigMatrixNet(Category as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns from Server-File parameters configured with the MxNet server program. **Notes:** Please check the documentation of the dongle API for more details.
67.4.21 GetDriverFlag(UserCode as Integer, DongleNr as Integer, PortNr as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the current USB operating mode of the dongle "HID-Mode" or "Driver-Mode". **Notes:** Please check the documentation of the dongle API for more details.

67.4.22 GetPortAdr(LptNr as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the address of the LPT port. **Notes:** Please check the documentation of the dongle API for more details.

67.4.23 GetVersionAPI as Integer

MBS Dongle Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the version number of the Matrix-API. **Notes:** Please check the documentation of the dongle API for more details.

67.4.24 GetVersionDRV as Integer

MBS Dongle Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the version number of the LPT driver. **Notes:** Please check the documentation of the dongle API for more details.

67.4.25 GetVersionDRV_USB as Integer

MBS Dongle Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the version number of the USB driver. **Notes:** Please check the documentation of the dongle API for more details.

67.4.26 InitMatrixAPI as Integer

MBS Dongle Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Starts the Matrix API. **Notes:** Please check the documentation of the dongle API for more details.
67.4.27 LogInMatrixNet(UserCode as Integer, AppSlot as Integer, DongleNr as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Logs on the network client and acquires/refreshes the user slot in the server file. **Notes:** Please check the documentation of the dongle API for more details.

67.4.28 LogOutMatrixNet(UserCode as Integer, AppSlot as Integer, DongleNr as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Logs off the network client and releases the UserSlot in the server file again. **Notes:** Please check the documentation of the dongle API for more details.

67.4.29 PausePrinterActivity as Integer

MBS Dongle Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Stops the Windows print-spooler. (under Win9.x / Win-NT / 2000 only) **Notes:** Please check the documentation of the dongle API for more details.

67.4.30 ReleaseMatrixAPI as Integer

MBS Dongle Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Close the Matrix API. **Notes:** Please check the documentation of the dongle API for more details.

67.4.31 ResumePrinterActivity as Integer

MBS Dongle Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Releases the Windows print-spooler again. (under Win9.x / Win-NT / 2000 only) **Notes:** Please check the documentation of the dongle API for more details.

67.4.32 SetConfigMatrixNet(Access as Integer, File as string) as Integer

MBS Dongle Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Activates or deactivates network access.
Notes: Please check the documentation of the dongle API for more details.

67.4.33 SetDriverFlag(UserCode as Integer, DriverFlag as Integer, DongleNr as Integer, PortNr as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the dongle to the desired USB operating mode "HID-Mode" or "Driver-Mode". **Notes:** Please check the documentation of the dongle API for more details.

67.4.34 SetW95Access(mode as Integer)

MBS Dongle Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Win95/98 with or without VXD driver. **Notes:** Can have the value 1 or 2 or the predefined values: IW_DRIVER / IW_NODRIVER

1. Communication takes place via the VXD driver.
2. Communication takes place without the VXD driver.

Please check the documentation of the dongle API for more details.
67.5 class Rockey2MBS

67.5.1 class Rockey2MBS

MBS Dongle Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class to use Rockey 2 dongles in REALbasic.

67.5.2 Methods

67.5.3 Available as boolean

MBS Dongle Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether library was loaded. **Notes:** Returns true if library was loaded successfully or we use internal library.

67.5.4 Close

MBS Dongle Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Closes the dongle. **Notes:**

Lasterror is set.
This is called automatically by the destructor.

67.5.5 Find as Int32

MBS Dongle Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Searches for Rockey 2 dongles on the computer. **Notes:**

Lasterror is set.
Returns the number of attached Rockey 2 dongles.

67.5.6 GenUID(byref uid as UInt32, seed as string, isProtect as boolean) as Int32

MBS Dongle Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Generates an user ID. **Notes:**
67.5. CLASS ROCKEY2MBS

UID: the generated user id.
seed: Seed to generate UID. It is a character string with the maximum length of 64 bytes.
isProtect: Sets write protection. 0=dongle not write protected, 1=dongle write protected.

LastError is set.

67.5.7 LoadLibrary(file as folderitem) as boolean

MBS Dongle Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads the Rockey2 shared library. **Notes:** Returns true on success and false on failure.

Loads a Windows DLL, a Linux shared library, a Mac OS X shared library from the given path. See also:

- 67.5.8 LoadLibrary(path as string) as boolean

67.5.8 LoadLibrary(path as string) as boolean

MBS Dongle Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads the Rockey2 shared library. **Notes:** Returns true on success and false on failure.

Path can be an absolute, a relative or just a file name.

Loads a Windows DLL, a Linux shared library, a Mac OS X shared library from the given path. See also:

- 67.5.7 LoadLibrary(file as folderitem) as boolean

67.5.9 Open(mode as Int32, uid as UInt32, byref hid as UInt32)

MBS Dongle Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Opens a specific rockey 2 dongle. **Notes:**

mode:
This parameter indicates the way to open the dongle
mode = 0, open the first found ROCKEY2 dongle
mode >0, open the dongle according to the UID. The mode value is the dongle number, for example:
uid=12345678, mode=2, this means it will open the second dongle with UID 12345678
mode = -1, open the dongle according to the HID, and *hid can not be 0We defined two constants:
AUTO_MODE=0 and HID_MODE=-1

uid(UserID): You need to specify the dongle UID and this UID is generated withRY2_GenUID
hid(HardwareID): Open dongle with HID of hid. The dongle HID will be returned to hid regardless of how
the dongle was opened.

Sets the handle and lasterror properties.

67.5.10  Read(BlockIndex as Int32) as string

MBS Dongle Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: 
Read dongle content.
Notes:
BlockIndex: Block index. Specify the block to write. The value range is 0-4
Returns 512 bytes on success.
Lasterror is set.

67.5.11  Transform(data as string) as string

MBS Dongle Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. Function: 
Transforms data.

67.5.12  Write(BlockIndex as Int32, data as string)

MBS Dongle Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: 
Writes data to the dongle.
Notes:
Blockindex: Specify the block to write. The value range is 0-4.
Lasterror is set.
If you pass less than 512 bytes, the remaining space is filled with zeros.
67.5. **CLASS ROKEY2MBS**

### 67.5.13 Properties

#### 67.5.14 Handle as Integer

MBS Dongle Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal handle for dongle communication. **Notes:** (Read and Write property)

#### 67.5.15 Lasterror as Integer

MBS Dongle Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last error code. **Notes:** (Read and Write property)

### 67.5.16 Constants

#### 67.5.17 AUTO_MODE = 0

MBS Dongle Plugin, Plugin Version: 9.6. **Function:** A constant for use in the Open method.

#### 67.5.18 HID_MODE = -1

MBS Dongle Plugin, Plugin Version: 9.6. **Function:** A constant for use in the Open method.

#### 67.5.19 R2_MINOR = 16

MBS Dongle Plugin, Plugin Version: 9.6. **Function:** The maximum number of dongles the plugin can handle.

#### 67.5.20 ROCKEY2_DISABLE_WRITE_PROTECT = false

MBS Dongle Plugin, Plugin Version: 9.6. **Function:** One of the constants for the GenUID function.
67.5.21 ROCKEY2_ENABLE_WRITE_PROTECT = true

MBS Dongle Plugin, Plugin Version: 9.6. **Function**: One of the constants for the GenUID function.

67.5.22 RY2ERR_FLUSH_QUEUE = & hA010000F

MBS Dongle Plugin, Plugin Version: 9.6. **Function**: One of the error constants. **Notes**: Internal error (Windows error)

67.5.23 RY2ERR_FREE_PREPARSED_DATA = & hA010000E

MBS Dongle Plugin, Plugin Version: 9.6. **Function**: One of the error constants. **Notes**: Internal error (Windows error)

67.5.24 RY2ERR_GETCAPS = & hA010000D

MBS Dongle Plugin, Plugin Version: 9.6. **Function**: One of the error constants. **Notes**: Internal error (Windows error)

67.5.25 RY2ERR_GET_ATTRIBUTES = & hA010000B

MBS Dongle Plugin, Plugin Version: 9.6. **Function**: One of the error constants. **Notes**: Internal error (Windows error)

67.5.26 RY2ERR_GET_PREPARSED_DATA = & hA010000C

MBS Dongle Plugin, Plugin Version: 9.6. **Function**: One of the error constants. **Notes**: Internal error (Windows error)

67.5.27 RY2ERR_GET_SERIAL = & hA0100011

MBS Dongle Plugin, Plugin Version: 9.6. **Function**: One of the error constants. **Notes**: Internal error (Windows error)
67.5. CLASS ROCKEY2MBS

67.5.28  **RY2ERR_NOT_OPENED_DEVICE = & hA0100002**

MBS Dongle Plugin, Plugin Version: 9.6. **Function:** One of the error constants. **Notes:** Need to call RY2_Open first to open the dongle, then call this function (operation error)

67.5.29  **RY2ERR_NO_SUCH_DEVICE = & hA0100001**

MBS Dongle Plugin, Plugin Version: 9.6. **Function:** One of the error constants. **Notes:** Specified dongle is not found (parameter error)

67.5.30  **RY2ERR_OPEN_DEVICE = & hA0100007**

MBS Dongle Plugin, Plugin Version: 9.6. **Function:** One of the error constants. **Notes:** Open device error (Windows error)

67.5.31  **RY2ERR_READ_REPORT = & hA0100008**

MBS Dongle Plugin, Plugin Version: 9.6. **Function:** One of the error constants. **Notes:** Read record error (Windows error)

67.5.32  **RY2ERR_SETUP_DI_CLASS_DEVS = & hA0100010**

MBS Dongle Plugin, Plugin Version: 9.6. **Function:** One of the error constants. **Notes:** Internal error (Windows error)

67.5.33  **RY2ERR_SETUP_DI_GET_DEVICE_INTERFACE_DETAIL = & hA010000A**

MBS Dongle Plugin, Plugin Version: 9.6. **Function:** One of the error constants. **Notes:** Internal error (Windows error)

67.5.34  **RY2ERR_SUCCESS = 0**

MBS Dongle Plugin, Plugin Version: 9.6. **Function:** One of the error constants. **Notes:** Success
67.5.35 **RY2ERR_TOO_LONG_DEVICE_DETAIL = & hA0100012**

MBS Dongle Plugin, Plugin Version: 9.6. **Function:** One of the error constants.  
**Notes:** Internal error

67.5.36 **RY2ERR_TOO_LONG_SEED = & hA0100005**

MBS Dongle Plugin, Plugin Version: 9.6. **Function:** One of the error constants.  
**Notes:** Seed character string is longer than 64 bytes when calling GenUID (parameter error)

67.5.37 **RY2ERR_UNKNOWNDEVICE = & hA0100020**

MBS Dongle Plugin, Plugin Version: 9.6. **Function:** One of the error constants.  
**Notes:** Unknown device.

67.5.38 **RY2ERR_UNKNOWNERROR = & hA010FFFF**

MBS Dongle Plugin, Plugin Version: 9.6. **Function:** One of the error constants.  
**Notes:** Unknown error (hardware error)

67.5.39 **RY2ERR_VERIFY = & hA0100014**

MBS Dongle Plugin, Plugin Version: 9.6. **Function:** One of the error constants.  
**Notes:** Verification error (hardware error)

67.5.40 **RY2ERR_WRITE_PROTECT = & hA0100006**

MBS Dongle Plugin, Plugin Version: 9.6. **Function:** One of the error constants.  
**Notes:** Tried to write to write-protected dongle (operation error)

67.5.41 **RY2ERR_WRITEREPORT = & hA0100009**

MBS Dongle Plugin, Plugin Version: 9.6. **Function:** One of the error constants.  
**Notes:** Write record error (Windows error)
67.5.42  **RY2ERR_WRONG_INDEX = & hA0100004**

MBS Dongle Plugin, Plugin Version: 9.6. **Function**: One of the error constants.  
**Notes**: Block index error (parameter error)

67.5.43  **RY2ERR_WRONG_REPORT_LENGTH = & hA0100013**

MBS Dongle Plugin, Plugin Version: 9.6. **Function**: One of the error constants.  
**Notes**: Wrong report length.

67.5.44  **RY2ERR_WRONG_UID = & hA0100003**

MBS Dongle Plugin, Plugin Version: 9.6. **Function**: One of the error constants.  
**Notes**: Wrong UID (parameter error)
67.6 class Rockey4NDMBS

67.6.1 class Rockey4NDMBS

MBS Dongle Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A class to handle calls to the Rockey4ND Dongle API.

67.6.2 Methods

67.6.3 Rockey(FunctionCode as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
calls the Rockey Dongle API.
**Example:**

```vba
dim r as RockeyMBS
dim e as Integer

r=new RockeyMBS
r.p1=&HC44C
r.p2=&HC8F8
r.p3=0
r.p4=0

e=r.Rockey(1)

if e=0 then
    MsgBox "Found dongle: " + hex(r.lp1)
else
    MsgBox "Error: " + str(e)
end if
```

**Notes:**
See the Rockey dongle documentation for more details.

Be aware that no endian correction is done!

Error codes from the plugin:
-1 = memoryblock is nil
-2 = library not present
67.6. **CLASS ROCKEY4NDMBS**

### 67.6.4 RockeyCall(FunctionCode as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Same as Rockey but a different name for compatibility.  
**Notes:** The original Rockey dongle calls the function RockeyCall.

### 67.6.5 Properties

#### 67.6.6 Buffer as MemoryBlock

MBS Dongle Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A one KB big buffer.  
**Notes:** (Read and Write property)

#### 67.6.7 Handle as Integer

MBS Dongle Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The 16bit handle value.  
**Notes:** (Read and Write property)

#### 67.6.8 LP1 as Integer

MBS Dongle Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The first 32bit parameter for the rockey function.  
**Notes:** (Read and Write property)

#### 67.6.9 LP2 as Integer

MBS Dongle Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The second 32bit parameter for the rockey function.  
**Notes:** (Read and Write property)

#### 67.6.10 P1 as Integer

MBS Dongle Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The first 16bit parameter for the rockey function.
67.6.11 P2 as Integer

MBS Dongle Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The second 16bit parameter for the rockey function.
**Notes:** (Read and Write property)

67.6.12 P3 as Integer

MBS Dongle Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The third 16bit parameter for the rockey function.
**Notes:** (Read and Write property)

67.6.13 P4 as Integer

MBS Dongle Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The forth 16bit parameter for the rockey function.
**Notes:** (Read and Write property)
67.7. **CLASS ROCKEYMBS**

67.7  **class RockeyMBS**

67.7.1  **class RockeyMBS**

MBS Dongle Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class to handle calls to the Rockey Dongle API.

67.7.2  **Methods**

67.7.3  **Rockey(FunctionCode as Integer) as Integer**

MBS Dongle Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calls the Rockey Dongle API.

**Example:**

```vba
dim r as RockeyMBS
dim e as Integer

r=new RockeyMBS
r.p1=& HC44C
r.p2=& HC8F8
r.p3=0
r.p4=0

e=r.Rockey(1)

if e=0 then
    MsgBox "Found dongle: " +hex(r.lp1)
else
    MsgBox "Error: " +str(e)
end if
```

**Notes:**

See the Rockey dongle documentation for more details.

Be aware that no endian correction is done!

Error codes from the plugin:
-1 = memoryblock is nil
-2 = library not present (always on Linux)
67.7.4 RockeyCall(FunctionCode as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Same as Rockey but a different name for compatibility.
**Notes:** The original Rockey dongle calls the function RockeyCall.

67.7.5 Properties

67.7.6 Buffer as memoryblock

MBS Dongle Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A one KB big buffer.
**Notes:** (Read and Write property)

67.7.7 Handle as Integer

MBS Dongle Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The 16bit handle value.
**Notes:** (Read and Write property)

67.7.8 LP1 as Integer

MBS Dongle Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The first 32bit parameter for the rockey function.
**Notes:** (Read and Write property)

67.7.9 LP2 as Integer

MBS Dongle Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The second 32bit parameter for the rockey function.
**Notes:** (Read and Write property)

67.7.10 P1 as Integer

MBS Dongle Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The first 16bit parameter for the rockey function.
67.7. CLASS ROCKYMBS

Notes: (Read and Write property)

67.7.11  P2 as Integer

MBS Dongle Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The second 16bit parameter for the rockey function.
Notes: (Read and Write property)

67.7.12  P3 as Integer

MBS Dongle Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The third 16bit parameter for the rockey function.
Notes: (Read and Write property)

67.7.13  P4 as Integer

MBS Dongle Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The forth 16bit parameter for the rockey function.
Notes: (Read and Write property)
67.8 module SecureDongleXMBS

67.8.1 module SecureDongleXMBS


**Function:**
This module implements an interface to the SecureDongleX products from SecureMetric Technology Sdn. Bhd.

**Notes:**
For more details see the website:
http://www.securemetric.com/

Please order there your evaluation SDK as well as further dongles.

67.8.2 Methods

67.8.3 Close(handle as Integer)


**Function:** Close specified SecureDongle X

**Notes:** Pass the handle you got returned from Open method.

67.8.4 Find as Integer


**Function:** Find dongles attached to the computer

**Notes:**
See SDK Developer Guide for details.
Returns number of dongles or negative error code.

67.8.5 GetVersion(handle as Integer) as Integer


**Function:** Get SecureDongle X hardware version

**Notes:**
See SDK Developer Guide for details.
Returns positive version number or nega...
67.8. **MODULE SECUREDONGLEXMBS**

### 67.8.6 Open(mode as Integer, uid as UInt32) as Integer

MBS Dongle Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Open specified SecureDongle X

**Notes:**
Convenience method where hid parameter is left away.
The default UID is 715400947 for demo dongles.
See SDK Developer Guide for details.
See also:

- 67.8.7 Open(mode as Integer, uid as UInt32, byref hid as UInt32) as Integer

### 67.8.7 Open(mode as Integer, uid as UInt32, byref hid as UInt32) as Integer

MBS Dongle Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Open specified SecureDongle X

**Notes:**
The default UID is 715400947 for demo dongles.
See SDK Developer Guide for details.
See also:

- 67.8.6 Open(mode as Integer, uid as UInt32) as Integer

### 67.8.8 Read(handle as Integer, BlockIndex as Integer, byref data as string) as Integer

MBS Dongle Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Read SecureDongle X content

**Notes:**
handle: SDX handle. It is the handle returned from Open
block_index: The block index. Specify the block to read. The value range is 0-4
data: Read buffer. Here you receive a string with 512 bytes.

Returns an error code.

See SDK Developer Guide for details.
67.8.9  RSADecrypt(handle as Integer, startIndex as Integer, byref buf as string, byref key as string) as Integer


67.8.10 RSAEncrypt(handle as Integer, startIndex as Integer, byref buf as string, byref key as string) as Integer


67.8.11 Transform(handle as Integer, byref data as string) as Integer

MBS Dongle Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Data hashing function. Notes: On input data contains a string to transform (maximum 32 bytes) and on return the hash value. See SDK Developer Guide for details.

67.8.12 Write(handle as Integer, BlockIndex as Integer, data as string) as Integer

MBS Dongle Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Write to SecureDongle X Notes: handle: SDX handle. It is the handle returned from Open block_index: The Block index. Specify the block to write. The value range is 0-4 data: Write buffer. The buffer can be at maximum 512 bytes to accommodate the 512-byte block size. The plugin will fill the rest with zeros. Returns error code. See SDK Developer Guide for details.
67.8.13 Constants

67.8.14 HID_MODE = -1

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** The constant for default HID mode.

67.8.15 SDXERR_FAILED_DECRYPTION = & hA010000E

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the possible error codes for functions in this module.
**Notes:** Failed Decrypt string (Cryptography error)

67.8.16 SDXERR_FAILED_ENCRYPTION = & hA010000C

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the possible error codes for functions in this module.
**Notes:** Failed encrypt string (cryptography error)

67.8.17 SDXERR_FAILED_WRITE_KEY = & hA010000D

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the possible error codes for functions in this module.
**Notes:** Failed write key (cryptography error)

67.8.18 SDXERR_FLUSH_QUEUE = & hA0100017

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the possible error codes for functions in this module.
**Notes:** Internal error (Windows error)

67.8.19 SDXERR_FREE_PREPARSED_DATA = & hA0100016

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the possible error codes for functions in this module.
**Notes:** Internal error (Windows error)
67.8.20  **SDXERR_GENERATE_KEY = & hA010000A**

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the possible error codes for functions in this module.  
**Notes:** Generate key error (cryptography error)

67.8.21  **SDXERR_GETCAPS = & hA0100015**

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the possible error codes for functions in this module.  
**Notes:** Internal error (Windows error)

67.8.22  **SDXERR_GET_ATTRIBUTES = & hA0100013**

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the possible error codes for functions in this module.  
**Notes:** Internal error (Windows error)

67.8.23  **SDXERR_GET_PREPARSED_DATA = & hA0100014**

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the possible error codes for functions in this module.  
**Notes:** Internal error (Windows error)

67.8.24  **SDXERR_GET_SERIAL = & hA0100019**

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the possible error codes for functions in this module.  
**Notes:** Internal error (Windows error)

67.8.25  **SDXERR_INVALID_KEY = & hA010000B**

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the possible error codes for functions in this module.  
**Notes:** Invalid key (cryptography error)
67.8.26 SDXERR_INVALID_LEN = & hA0100008

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the possible error codes for functions in this module.
**Notes:** Invalid length (parameter error)

67.8.27 SDXERR_NOT_OPENEDDEVICE = & hA0100002

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the possible error codes for functions in this module.
**Notes:** Need to call SDX_Open first to open the SDX, then call this function (operation error)

67.8.28 SDXERR_NO_SUCH_DEVICE = & hA0100001

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the possible error codes for functions in this module.
**Notes:** Specified SDX is not found (parameter error)

67.8.29 SDXERR_OPEN_DEVICE = & hA010000F

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the possible error codes for functions in this module.
**Notes:** Open device error (Windows error)

67.8.30 SDXERR_READ_REPORT = & hA0100010

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the possible error codes for functions in this module.
**Notes:** Read record error (Windows error)

67.8.31 SDXERR_SETUP_DI_CLASS_DEVS = & hA0100018

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the possible error codes for functions in this module.
**Notes:** Internal error (Windows error)
67.8.32  SDXERR_SETUP_DI_GET_DEVICE_INTERFACE_DETAIL = & hA0100012

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the possible error codes for functions in this module.
**Notes:** Internal error (Windows error)

67.8.33  SDXERR_SUCCESS = 0

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the possible error codes for functions in this module.
**Notes:** Success

67.8.34  SDXERR_TOO_LONG_DEVICE_DETAIL = & hA010001B

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the possible error codes for functions in this module.
**Notes:** Internal error

67.8.35  SDXERR_TOO_LONG_ENCRYPTION_DATA = & hA0100009

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the possible error codes for functions in this module.
**Notes:** Cipher text length is too long (cryptography error)

67.8.36  SDXERR_TOO_LONG_SEED = & hA0100005

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the possible error codes for functions in this module.
**Notes:** Seed character string is longer than 64 bytes when calling GenUID (parameter error)

67.8.37  SDXERR_UNKNOWN_DEVICE = & hA0100020

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the possible error codes for functions in this module.
**Notes:** Unknown device.
67.8.38  **SDXERR_UNKNOWN_ERROR = & hA010FFFF**

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the possible error codes for functions in this module.
**Notes:** Unknown error (hardware error)

67.8.39  **SDXERR_VERIFY = & hA0100021**

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the possible error codes for functions in this module.
**Notes:** Verification error (hardware error)

67.8.40  **SDXERR_WRITE_PROTECT = & hA0100006**

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the possible error codes for functions in this module.
**Notes:** Tried to write to write-protected SDX (operation error)

67.8.41  **SDXERR_WRITE_REPORT = & hA0100011**

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the possible error codes for functions in this module.
**Notes:** Write record error (Windows error)

67.8.42  **SDXERR_WRONG_INDEX = & hA0100004**

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the possible error codes for functions in this module.
**Notes:** Block index error (parameter error)

67.8.43  **SDXERR_WRONG_REPORT_LENGTH = & hA010001A**

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the possible error codes for functions in this module.
**Notes:** Unknown device (hardware error)
67.8.44 SDXERR_WRONG_START_INDEX = & hA0100007

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the possible error codes for functions in this module.  
**Notes:** Start index error (parameter error)

67.8.45 SDXERR_WRONG_UID = & hA0100003

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** One of the possible error codes for functions in this module.  
**Notes:** Wrong UID (parameter error)

67.8.46 SDX_MINOR = 16

MBS Dongle Plugin, Plugin Version: 11.1. **Function:** The maximum number of sdx devices.
67.9. **CLASS UNIKEYMBS**

### 67.9. class UnikeyMBS

#### 67.9.1 class UnikeyMBS

MBS Dongle Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class to enable REALbasic to use Unikey dongles.  
**Notes:**

Website:  
http://www.esecutech.com

#### 67.9.2 Methods

##### 67.9.3 Calculate1(StartAddress as Integer, Module as Integer, byref RegA as Integer, byref RegB as Integer, byref RegC as Integer, byref RegD as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Return the results of a calculation performed in UniKey, using input provided by the developer and the CALCULATE1 function.  
**Notes:**

See Unikey API Reference for details on UniKey_Calculate1 function.  
Returns error code.

##### 67.9.4 Calculate2(StartAddress as Integer, Seed as Integer, byref RegA as Integer, byref RegB as Integer, byref RegC as Integer, byref RegD as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Return the results of a calculation performed in UniKey, using input provided by the developer and the CALCULATE2 function.  
**Notes:**

See Unikey API Reference for details on UniKey_Calculate2 function.  
Returns error code.
67.9.5 Calculate3(StartAddress as Integer, Module as Integer, byref RegA as Integer, byref RegB as Integer, byref RegC as Integer, byref RegD as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Return results of a calculation performed in UniKey, using input provided by the developer and the CALCULATE3 function.
Notes:
See Unikey API Reference for details on UniKey_Calculate3 function.
Returns error code.

67.9.6 CheckModule(Module as Integer, byref Value as Integer, byref Decrease as Integer) as Integer

Notes:
See Unikey API Reference for details on UniKey_Check_Module function.
Returns error code.

67.9.7 CheckTimeModule(Module as Integer, byref RemainDays as Integer, Year as Integer, Month as Integer, Day as Integer, Hour as Integer) as Integer

Notes:
See Unikey API Reference for details on UniKey_Check_Time_Module function.
Returns error code.

67.9.8 CheckTimeModuleNow(Module as Integer, byref RemainDays as Integer, byref RemainHours as Integer) as Integer

Notes:
See Unikey API Reference for details on UniKey_Check_Time_Module_Now function.
Returns error code.
67.9.9  **CheckTimeModuleNowPC(Module as Integer, byref RemainDays as Integer, byref RemainHours as Integer) as Integer**

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Read the attributes of a specific UniKey Time license module Now PC.
**Notes:**
See Unikey API Reference for details on UniKey_Check_Time_Module_Now_PC function.
Returns error code.

67.9.10 **Decrypt(BufferLength as Integer, KeyNumber as Integer, Buffer as Ptr) as Integer**

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Decrypt an amount of memory with a key.
**Notes:**
The length of data must be a multiple of 8.
See Unikey API Reference for details on UniKey_Decrypt function.
Returns error code.

67.9.11 **Encrypt(BufferLength as Integer, KeyNumber as Integer, Buffer as Ptr) as Integer**

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Encrypt an amount of memory with a key.
**Notes:**
The length of data must be a multiple of 8.
See Unikey API Reference for details on UniKey_Encrypt function.
Returns error code.

67.9.12 **EraseTimeModule(Module as Integer) as Integer**

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Erase/Reset a real time module, and all the info in the module will be erased including start, end or duration.
**Notes:**
See Unikey API Reference for details on UniKey_Erase_Time_Module function.
Returns error code.
67.9.13  **Find(byref Setting1 as Integer, byref Setting2 as Integer) as Integer**

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Check if a specific UniKey is attached to the USB port.
**Notes:**
This is the first API to start a UniKey session.
Sets handle property.
See Unikey API Reference for details on UniKey_Find function.

67.9.14  **FindNext(byref Setting1 as Integer, byref Setting2 as Integer) as Integer**

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Check if another UniKey is attached to the USB port.
**Notes:**
Sets the handle property.
Returns error code.
See Unikey API Reference for details on UniKey_Find_Next function.

67.9.15  **GenerateKey(KeyNumber as Integer) as Integer**

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Generate a new key in the specific key storage.
**Notes:**
See Unikey API Reference for details on UniKey_Generate_Key function.
Returns error code.

67.9.16  **GenerateKeyViaSeed(KeyNumber as Integer, byref Seed1 as Integer, byref Seed2 as Integer, byref Seed3 as Integer, byref Seed4 as Integer) as Integer**

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Generate a new key in the specific key storage via seed.
**Notes:**
See Unikey API Reference for details on UniKey_Generate_Key_Via_Seed function. Returns error code.

67.9.17 GenerateNewPassword(Seed as Integer, byref Password1 as Integer, byref Password2 as Integer, byref Password3 as Integer, byref Password4 as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Generate a new password via a seed code; the mapping from the seed code to the password is only one way. Without the seed, you cannot generate the same password. **Notes:** See Unikey API Reference for details on UniKey_Generate_New_Password function. Returns error code.

67.9.18 GetCliNum(byref Count as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get the UniKey client number. **Notes:** See Unikey API Reference for details on UniKey_Get_Cli_Num function. Returns error code.

67.9.19 GetDongleLocation(byref IP as String) as Integer

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get the Server IP, if it is local, return 127.0.0.1. **Notes:** See Unikey API Reference for details on UniKey_Get_Dongle_Location function. Returns error code.

67.9.20 GetMaxNum(byref Count as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get the maximum client number. **Notes:** See Unikey API Reference for details on UniKey_Get_Max_Num function. Returns error code.
67.9.21 GetModule(Module as Integer, byref Value as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get a value from a specific UniKey license module. **Notes:** See Unikey API Reference for details on UniKey_Get_Module function. Returns error code.

67.9.22 GetModuleEndTime(Module as Integer, byref Year as Integer, byref Month as Integer, byref Day as Integer, byref Hour as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the end time of a specific UniKey Time license module. **Notes:** See Unikey API Reference for details on UniKey_Get_Module_End_Time function. Returns error code.

Not supported for 64-bit Linux and Mac PPC.

67.9.23 GetModuleStartTime(Module as Integer, byref Year as Integer, byref Month as Integer, byref Day as Integer, byref Hour as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the start time of a specific UniKey Time license module. **Notes:** See Unikey API Reference for details on UniKey_Get_Module_Start_Time function. Returns error code.

Not supported for 64-bit Linux and Mac PPC.
67.9.24 GetTime(byref Year as Integer, byref Month as Integer, byref Day as Integer, byref Hour as Integer, byref Minute as Integer, byref Second as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get UniKey Times real time clocks time.

**Notes:**
See Unikey API Reference for details on UniKey_Get_Time function.
Returns error code.
Year is 10 for 2010.

67.9.25 GetType(byref type as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** GetType can help you get the type of the UniKey dongle.

**Notes:**
The return value of type will indicate the type of the UniKey dongle.
UNIKEY_TYPE_TIME 101
UNIKEY_TYPE_PRO 102
UNIKEY_TYPE_STD 103

See Unikey API Reference for details on UniKey_Get_Type function.

67.9.26 GetVersion(byref Version as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get the current UniKey library version.

**Notes:**
See Unikey API Reference for details on UniKey_Get_Version function.
Returns error code.

67.9.27 Logoff as Integer

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Logoff a UniKey dongle with a specific handle.

**Notes:**
This API should be called at the end of UniKey session.
See Unikey API Reference for details on UniKey_Logoff function.
Returns error code.

**67.9.28 MD5(BufferLength as Integer, Buffer as Ptr) as Integer**

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Make an MD5 digest for a mount of content or data.
**Notes:**
See Unikey API Reference for details on UniKey_MD5 function.
Returns error code.

**67.9.29 ModuleDecrease(Module as Integer) as Integer**

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Decrease the value in a specified UniKey license module by 1.
**Notes:**
See Unikey API Reference for details on UniKey_Module_Decrease function.
Returns error code.

For Linux, does not work on Linux ARM or 32-bit Linux. Works on 64-bit Linux.

**67.9.30 Random(byref Return1 as Integer, byref Return2 as Integer, byref Return3 as Integer, byref Return4 as Integer) as Integer**

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Generate a random number from the dongle.
**Notes:**
See Unikey API Reference for details on UniKey_Random function.
Returns error code.

**67.9.31 ReadMemory(StartAddress as Integer, BufferLength as Integer, Buffer as Ptr) as Integer**

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Read the contents of the Memory.
**Notes:**
This API needs to be called after logon of a UniKey dongle.
67.9. **CLASS UNIKEYMBS**

See Unikey API Reference for details on UniKey_Read_Memory function.
Returns error code.

### 67.9.32 ReadSoftID(byref SoftID as Integer) as Integer

**MBS Dongle Plugin, Plugin Version:** 16.4, **Console & Web:** Yes, **Mac:** Yes, **Win:** Yes, **Linux:** Yes. **Function:**
Read the user defined SoftID.

**Notes:**
See Unikey API Reference for details on UniKey_Read_SoftID function.
Returns error code.

### 67.9.33 ReadUpdateTag(byref UpdateTag as Integer) as Integer

**MBS Dongle Plugin, Plugin Version:** 16.4, **Console & Web:** Yes, **Mac:** Yes, **Win:** Yes, **Linux:** Yes. **Function:**
Read UpdateTag from a specific dongle.

**Notes:**
See Unikey API Reference for details on UniKey_Read_UpdateTag function.
Returns error code.

### 67.9.34 Seed(Seed as Integer, byref Return1 as Integer, byref Return2 as Integer, byref Return3 as Integer, byref Return4 as Integer) as Integer

**MBS Dongle Plugin, Plugin Version:** 16.4, **Console & Web:** Yes, **Mac:** Yes, **Win:** Yes, **Linux:** Yes. **Function:**
Get return codes from the input of a seed code.

**Notes:**
This API return for values which are related to Seed and UniKey dongles password.
See Unikey API Reference for details on UniKey_Seed function.
Returns error code.

### 67.9.35 SetMaxNum(byref Count as Integer) as Integer

**MBS Dongle Plugin, Plugin Version:** 16.4, **Console & Web:** Yes, **Mac:** Yes, **Win:** Yes, **Linux:** Yes. **Function:**
Set the maximum client number.

**Notes:**
See Unikey API Reference for details on UniKey_Set_Max_Num function.
Returns error code.
Not supported for Mac PPC.

67.9.36  SetModule(Module as Integer, Value as Integer, Decrease as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** To write a value to a specific UniKey license module and set the Decrement attribute. **Notes:** See Unikey API Reference for details on UniKey_Set_Module function. Returns error code.

67.9.37  SetNETINILocation(byref Setting1 as Integer, byref Setting2 as Integer, IniFile as String) as Integer

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Sets ini location. **Notes:** See Unikey API Reference for details on UniKey_SetNETINILocation function. Returns error code.

67.9.38  SetTime(Year as Integer, Month as Integer, Day as Integer, Hour as Integer, Minute as Integer, Second as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set UniKey Times real time clocks time. **Notes:** See Unikey API Reference for details on UniKey_Set_Time function. Returns error code. Year is 10 for 2010.

67.9.39  SetTimeModuleDuration(Module as Integer, Year as Integer, Day as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set the duration time for a specific real time module. The total duration is (Day)*24 + (Hour) in hours. **Notes:**
See Unikey API Reference for details on UniKey_Set_Time_Module_Duration function.
Returns error code.

67.9.40 SetTimeModuleEndTime(Module as Integer, Year as Integer, Month as Integer, Day as Integer, Hour as Integer) as Integer

Notes: See Unikey API Reference for details on UniKey_Set_Time_Module_End_Time function.
Returns error code.

67.9.41 SetTimeModuleStartTime(Module as Integer, Year as Integer, Month as Integer, Day as Integer, Hour as Integer) as Integer

Notes: See Unikey API Reference for details on UniKey_Set_Time_Module_Start_Time function.
Returns error code.

67.9.42 SetTimeModuleStartTimeNow(Module as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Set a real time modules start time as the now time in UniKey dongles clock.
Notes: See Unikey API Reference for details on UniKey_Set_Time_Module_Start_Time_Now function.
Returns error code.

67.9.43 SetTimeModuleStartTimeNowPC(Module as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Set a real time modules start time as the now time in host computer.
Notes: See Unikey API Reference for details on UniKey_Set_Time_Module_Start_Time_Now_PC function.
Returns error code.
67.9.44 SetTimeNow as Integer

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Set UniKey Times real time clocks time by the host computers clock.

**Notes:**
See Unikey API Reference for details on UniKey_Set_Time_Now function.
Returns error code.

67.9.45 Unikey(FunctionCode as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
calls the unikey function with the values from this object.

**Notes:** See the unikey documentation for what values to use.

67.9.46 UserLogon(Password1 as Integer, Password2 as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Logon a UniKey dongle with specified passwords.

**Notes:**
This API should be called in the released software in order to improve security.
See Unikey API Reference for details on UniKey_User_Logon function.
Returns error code.
Sets handle property.

67.9.47 VendorLogon(Password1 as Integer, Password2 as Integer, Password3 as Integer, Password4 as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:**
Logon a UniKey dongle in vendor mode with specified passwords.

**Notes:**
This API helps software vendors to logon the UniKey dongle in vendor mode, and get the full permission to UniKey dongle.
We do NOT advise you to enclose this API in the final released software. This API is only for software vendors usage.
If password3 or password4 is wrong while password1 and password2 is correct, the dongle is also logged on in user mode automatically.

Sets handle property.
See Unikey API Reference for details on UniKey_Vender_Logon function.
67.9. **CLASS UNIKEYMBS**

Returns error code.

Not supported on Linux.

### 67.9.48 WriteArithmetic(StartAddress as Integer, Buffer as Ptr) as Integer

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Write user-defined mathematical algorithms.

**Notes:**
See Unikey API Reference for details on UniKey_Write_Arithmetic function. Returns error code.

### 67.9.49 WriteMemory(StartAddress as Integer, BufferLength as Integer, Buffer as Ptr) as Integer

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Write data into the memory.

**Notes:**
This API needs to be called after logging on to a UniKey dongle.
See Unikey API Reference for details on UniKey_Write_Memory function. Returns error code.

### 67.9.50 WriteSoftID(SoftID as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Write the vendor defined SoftID.

**Notes:**
See Unikey API Reference for details on UniKey_Write_SoftID function. Returns error code.

### 67.9.51 WriteUpdateTag(UpdateTag as Integer) as Integer

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Write UpdateTag into a specific dongle.

**Notes:**
See Unikey API Reference for details on UniKey_Write_UpdateTag function. Returns error code.
67.9.52  Properties

67.9.53  Buffer as MemoryBlock

MBS Dongle Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The memoryblock to use when calling the unikey function.  
**Notes:** (Read and Write property)

67.9.54  Handle as Integer

MBS Dongle Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The handle to the dongle.  
**Notes:** (Read and Write property)

67.9.55  LP1 as Integer

MBS Dongle Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The parameter LP1.  
**Notes:** (Read and Write property)

67.9.56  LP2 as Integer

MBS Dongle Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The parameter LP2.  
**Notes:** (Read and Write property)

67.9.57  P1 as Integer

MBS Dongle Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The value for the parameter p1.  
**Notes:** (Read and Write property)
67.9.58 P2 as Integer

MBS Dongle Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The value for the parameter p2.
**Notes:** (Read and Write property)

67.9.59 P3 as Integer

MBS Dongle Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The value for the parameter p3.
**Notes:** (Read and Write property)

67.9.60 P4 as Integer

**Notes:** (Read and Write property)

67.9.61 Result as Integer

MBS Dongle Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The result of the last function call.
**Notes:** (Read and Write property)

67.9.62 Constants

67.9.63 CBC_MODE = 2

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the encryption modes.
**Notes:** CBC Mode

67.9.64 DES1 1

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the encryption modes.
**Notes:** DES1
67.9.65  DES2 2

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the encryption modes.  
**Notes:** DES2

67.9.66  DES3 3

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the encryption modes.  
**Notes:** DES3

67.9.67  DES_KEY = 2

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the encryption modes.  
**Notes:** DES Key

67.9.68  DES_KEY_LEN = 24

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the encryption modes.  
**Notes:** DES Key Len

67.9.69  ECB_MODE = 1

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the encryption modes.  
**Notes:** ECB Mode

67.9.70  ERROR_KEY_INDEX = 259

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.  
**Notes:** Error with key index.

67.9.71  ERROR_MAX_KEYS = 258

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.  
**Notes:** Error with max keys.
67.9. CLASS UNIKEYMBS

67.9.72 ERROR_MAX_USERS = 257

67.9.73 ERROR_UNIKEY_ALREADY_LOCKED = 236
MBS Dongle Plugin, Plugin Version: 16.4. Function: One of the error codes. Notes: Dongle Already Locked (When Lock Twice Or Open After Lock)

67.9.74 ERROR_UNIKEY_AR_BAD_COMMAND = 217
MBS Dongle Plugin, Plugin Version: 16.4. Function: One of the error codes. Notes: Arithmetic Instruction Error

67.9.75 ERROR_UNIKEY_AR_UNKNOWN_OPCODE = 218

67.9.76 ERROR_UNIKEY_AR_VALUE_OVERFLOW = 221
MBS Dongle Plugin, Plugin Version: 16.4. Function: One of the error codes. Notes: Const Number > 63

67.9.77 ERROR_UNIKEY_AR_WRONG_BEGIN = 219
MBS Dongle Plugin, Plugin Version: 16.4. Function: One of the error codes. Notes: Const Number Can’t Use On First Arithmetic Instruction

67.9.78 ERROR_UNIKEY_AR_WRONG_END = 220
MBS Dongle Plugin, Plugin Version: 16.4. Function: One of the error codes. Notes: Const Number Can’t Use On Last Arithmetic Instruction
67.9.79  ERROR_UNIKEY_CALCULATE = 211

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.  
**Notes:** Calculate Failed

67.9.80  ERROR_UNIKEYCOMPARE_TIME_MODULE = 233

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.  
**Notes:** The Specific Time Is Before The Module’s Start Time

67.9.81  ERROR_UNIKEY_DECRYPT_FAILED = 229

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.  
**Notes:** Decrypt Data Failed

67.9.82  ERROR_UNIKEY_ENCRYPT_FAILED = 228

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.  
**Notes:** Encrypt Data Failed

67.9.83  ERROR_UNIKEY_FILE_LOCK_CLOSE = 261

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.  
**Notes:** close lock file error

67.9.84  ERROR_UNIKEY_FILE_LOCK_OPEN = 260

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.  
**Notes:** open lock file error

67.9.85  ERROR_UNIKEY_FS_ERR_OPEN_FILE = 247

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.  
**Notes:** Can’t Open File
67.9. CLASS UNIKEYMBS

67.9.86  ERROR_UNIKEY_FS_ERR_SYS_UNINIT = 246

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes. **Notes:** File Sys Is Not Initialized

67.9.87  ERROR_UNIKEY_FS_FILE_EXIST = 245

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes. **Notes:** File Already Existed

67.9.88  ERROR_UNIKEY_FS_FILE_NAME = 240

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes. **Notes:** Wrong Or Invalid File Name

67.9.89  ERROR_UNIKEY_FS_FILE_OFFSET = 242

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes. **Notes:** Offset Of File Error

67.9.90  ERROR_UNIKEY_FS_NO_FILE = 241

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes. **Notes:** No Such File Name

67.9.91  ERROR_UNIKEY_FS_NO_MEMORY = 244

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes. **Notes:** Not Enough Free Memory

67.9.92  ERROR_UNIKEY_FS_UNKONW = 243

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes. **Notes:** Unknown Error
67.9.93 **ERROR_UNIKEY_GENERATE_NEW_PASSWORD = 225**

MBS Dongle Plugin, Plugin Version: 16.4. **Function**: One of the error codes.  
**Notes**: Generate New Password Failed

67.9.94 **ERROR_UNIKEY_GET_TYPE = 256**

MBS Dongle Plugin, Plugin Version: 16.4. **Function**: One of the error codes.  
**Notes**: Failed to get type of dongle.

67.9.95 **ERROR_UNIKEY_INVALID_ADDR_OR_SIZE = 204**

MBS Dongle Plugin, Plugin Version: 16.4. **Function**: One of the error codes.  
**Notes**: Read/Write Address Or Length Is Wrong

67.9.96 **ERROR_UNIKEY_INVALID_KEY = 222**

MBS Dongle Plugin, Plugin Version: 16.4. **Function**: One of the error codes.  
**Notes**: The Key In The Key Storage Is Wrong

67.9.97 **ERROR_UNIKEY_INVALID_KEY_STORE = 224**

MBS Dongle Plugin, Plugin Version: 16.4. **Function**: One of the error codes.  
**Notes**: Wrong Key Storage Number

67.9.98 **ERROR_UNIKEY_INVALID_PASSWORD = 201**

MBS Dongle Plugin, Plugin Version: 16.4. **Function**: One of the error codes.  
**Notes**: Found UniKey Dongle, But Basic Password Is Wrong

67.9.99 **ERROR_UNIKEY_INVALID_PASSWORD_OR_ID = 202**

MBS Dongle Plugin, Plugin Version: 16.4. **Function**: One of the error codes.  
**Notes**: Wrong Password Or UniKey HID
67.9. CLASS UNIKEYMBS

67.9.100  ERROR_UNIKEY_KEY_INDEX = 239

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes. 
**Notes:** Dongle Over Keyindex, No Key To Delete

67.9.101  ERROR_UNIKEY_LOGOUT = 251

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes. 
**Notes:** Logout error?

67.9.102  ERROR_UNIKEY_MAX KEYS = 238

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes. 
**Notes:** Dongle Already Max Keys, Need To Delete And The Regenerate

67.9.103  ERROR_UNIKEY_MAX_USERS = 237

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes. 
**Notes:** Dongle Already Max Users Logoned

67.9.104  ERROR_UNIKEY_MODULE = 216

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes. 
**Notes:** License Module Error
67.9.105  **ERROR_UNIKEY_NEED_FIND = 215**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.  
**Notes:** No Find Before FindNext

67.9.106  **ERROR_UNIKEY_NEED_OPEN = 212**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.  
**Notes:** Need Open Dongle Before Operating Dongle

67.9.107  **ERROR_UNIKEY_NOMORE = 214**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.  
**Notes:** No More Dongle

67.9.108  **ERROR_UNIKEY_NOTBELEVEL3 206**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.  
**Notes:** Internal Error

67.9.109  **ERROR_UNIKEY_NOT_FOUND = 200**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.  
**Notes:** No UniKey Dongle

67.9.110  **ERROR_UNIKEY_NO_ENCYYPT = 248**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.  
**Notes:** No Secure Drive

67.9.111  **ERROR_UNIKEY_OPEN_OVERFLOW = 213**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.  
**Notes:** Too Many Open Dongles (>16)
67.9.112  ERROR_UNIKEY_PARAMETER = 254

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.  
**Notes:** Some parameter is wrong.

67.9.113  ERROR_UNIKEY_PASSWORD = 249

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.  
**Notes:** Password Error

67.9.114  ERROR_UNIKEY_RANDOM = 209

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.  
**Notes:** Random Number Failed

67.9.115  ERROR_UNIKEY_READ_MEMORY = 207

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.  
**Notes:** Read Memory Failed

67.9.116  ERROR_UNIKEY_READ_TIME = 230

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.  
**Notes:** Get UniKey Time Failed

67.9.117  ERROR_UNIKEY_READ_UPDATETAG = 226

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.  
**Notes:** Read UpdateTag Failed

67.9.118  ERROR_UNIKEY_SEED = 210

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.  
**Notes:** Get Seed Code Failed
67.9.119  **ERROR_UNIKEY_SET_SOFTID_FAILED = 203**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.
**Notes:** Set UniKey ID Failed

67.9.120  **ERROR_UNIKEY_TIME_MODULE_NOT_NULL = 234**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.
**Notes:** The Real Time Module Is Not Null, This Error is returned when write once flag is set

67.9.121  **ERROR_UNIKEY_TIME_MODULE_OVERDUR = 235**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.
**Notes:** The Specific Time Is Later Than The Module's End Time, Or The Module Is Expired

67.9.122  **ERROR_UNIKEY_TOO_MUCH_THREAD = 255**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.
**Notes:** Too many (>100) threads in the single process open the dongle

67.9.123  **ERROR_UNIKEY_UNKNOW = 252**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.
**Notes:** Unknown error

67.9.124  **ERROR_UNIKEY_UNKNOWN_COMMAND = 205**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.
**Notes:** No Such Command

67.9.125  **ERROR_UNIKEY_USERLOCK = 250**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.
**Notes:** User Has Been Locked
67.9. CLASS UNIKEYMBS

67.9.126  ERROR_UNIKEY_VERIFY_ADV_PASSWORD = 223

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.  
**Notes:** Advanced Passwords (Password3 and Passowrd4) Not Verified

67.9.127  ERROR_UNIKEY_WRITE_ARITHMETIC = 253

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.  
**Notes:** Dongle Write Arithmetic is ERROR

67.9.128  ERROR_UNIKEY_WRITE_MEMORY = 208

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.  
**Notes:** Write Memory Failed

67.9.129  ERROR_UNIKEY_WRITE_TIME = 231

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.  
**Notes:** Set UniKey Time Failed

67.9.130  ERROR_UNIKEY_WRITE_TIME_MODULE = 232

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.  
**Notes:** Write Time Module Error

67.9.131  ERROR_UNIKEY_WRITE_UPDATETAG = 227

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the error codes.  
**Notes:** Write UpdateTag Failed

67.9.132  NET_UNIKEY_AREADY_START = 111

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the NetUniKey Error Codes.  
**Notes:** The Server Has Already Started
67.9.133  NET_UNIKEY_CLIENT_EXISTS = 106

Notes: The Client Already Exists, Per This Mode

67.9.134  NET_UNIKEY_DISCARD_BY_SERVER = 118

Notes: The Client Is Discarded By The Server

67.9.135  NET_UNIKEY_ERROR_BASE = 100

Notes: NetUniKey Error Base

67.9.136  NET_UNIKEY_GET_NUM_CLIENT = 226

Notes: get the number of client for netunikey

67.9.137  NET_UNIKEY_INIFILE_NOT_EXISTS = 120

Notes: ZhaoHJ: 2015-08-13, INI file not exists

67.9.138  NET_UNIKEY_IN_BLACKLIST = 108

Notes: The Client Is In The Black List

67.9.139  NET_UNIKEY_MEMORY_ERROR = 101

Notes: Memory Allocation Error
67.9. CLASS UNIKEYMBS

67.9.140 NET_UNIKEY_MESSAGE_CHANGE = 110


67.9.141 NET_UNIKEY_MESSAGE_WRONG = 104


67.9.142 NET_UNIKEY_NOT_WORKING = 117


67.9.143 NET_UNIKEY_OUT_WHITELIST = 109


67.9.144 NET_UNIKEY_RECEIVE_ERROR = 103

MBS Dongle Plugin, Plugin Version: 16.4. Function: One of the NetUniKey Error Codes. Notes: Receive Error

67.9.145 NET_UNIKEY_SEND_ERROR = 102

MBS Dongle Plugin, Plugin Version: 16.4. Function: One of the NetUniKey Error Codes. Notes: Send Error

67.9.146 NET_UNIKEY_SERVER_RESOURCE_INADEQUACY = 119

MBS Dongle Plugin, Plugin Version: 16.4. Function: One of the NetUniKey Error Codes. Notes: by lzm
**67.9.147 NET_UNIKEY_SETUP_SOCKET_ERROR = 105**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the NetUniKey Error Codes. **Notes:** Setup Socket Error

---

**67.9.148 NET_UNIKEY_SET_NUM_CLIENT = 225**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the unikey function codes. **Notes:** set the number of client for netunikey

---

**67.9.149 NET_UNIKEY_SOCKET_BIND_FAILED = 113**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the NetUniKey Error Codes. **Notes:** Cannot Bind The Port With The Socket

---

**67.9.150 NET_UNIKEY_SOCKET_INIT_FAILED = 112**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the NetUniKey Error Codes. **Notes:** Cannot Initialize The Socket

---

**67.9.151 NET_UNIKEY_SOCKET_LISTEN_FAILED = 114**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the NetUniKey Error Codes. **Notes:** Cannot Start Listening With The Socket

---

**67.9.152 NET_UNIKEY_START_UDP_SERVER_FAILED = 115**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the NetUniKey Error Codes. **Notes:** Start Udp Server Failed
67.9.153  **NET_UNIKEY_TOO_LONG_MESSAGE = 116**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the NetUniKey Error Codes.  
**Notes:** Too Long Message

67.9.154  **NET_UNIKEY_TOO_MANY_CLIENT = 107**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the NetUniKey Error Codes.  
**Notes:** The Number Of Client Reach The Limitation

67.9.155  **RSA = 4**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the encryption modes.  
**Notes:** RSA

67.9.156  **RSA_KEY = 1**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the encryption modes.  
**Notes:** RSA Key

67.9.157  **RSA_KEY_1024 3**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the encryption modes.  
**Notes:** RSA Key 1024 bit.

67.9.158  **RSA_KEY_2048 4**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the encryption modes.  
**Notes:** RSA Key 2048 bit.

67.9.159  **RSA_KEY_LEN = 1408**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the encryption modes.  
**Notes:** RSA Key Len
67.9.160 SUCCESS = 0

MBS Dongle Plugin, Plugin Version: 16.4. **Function**: One of the error codes.
**Notes**: Success

67.9.161 UNIKEY_CALCULATE1 = 14

MBS Dongle Plugin, Plugin Version: 16.4. **Function**: One of the unikey function codes.
**Notes**: Calculate 1

67.9.162 UNIKEY_CALCULATE2 = 15

MBS Dongle Plugin, Plugin Version: 16.4. **Function**: One of the unikey function codes.
**Notes**: Calculate 2

67.9.163 UNIKEY_CALCULATE3 = 16

MBS Dongle Plugin, Plugin Version: 16.4. **Function**: One of the unikey function codes.

67.9.164 UNIKEY_CHECK_MODULE = 12

MBS Dongle Plugin, Plugin Version: 16.4. **Function**: One of the unikey function codes.
**Notes**: Check Module

67.9.165 UNIKEY_CHECK_TIME_MODULE = 35

MBS Dongle Plugin, Plugin Version: 16.4. **Function**: One of the unikey Real Time Clock Functions codes.
**Notes**: check if a time >START_TIME and the time <END_TIME(or START_TIME+DURATION) (p1,p2,p3,p4 = year,month,day,hour)

67.9.166 UNIKEY_CHECK_TIME_MODULE_NOW = 36

MBS Dongle Plugin, Plugin Version: 16.4. **Function**: One of the unikey Real Time Clock Functions codes.
**Notes**: check if now >START_TIME and now <END_TIME(or START_TIME+DURATION) use dongle time (lp1 = module index)
67.9. CLASS UNIKEYMBS

67.9.167 UNIKEY_CHECK_TIME_MODULE_NOW_PC = 37

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the unikey Real Time Clock Functions codes. **Notes:** check if now > START_TIME and now < END_TIME (or START_TIME + DURATION) use host time (lp1 = module index)

67.9.168 UNIKEY_DECRYPT = 21

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the unikey function codes. **Notes:** Decrypt the Buffer with a Specific Key

67.9.169 UNIKEY_ENCRYPT = 20

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the unikey function codes. **Notes:** Encrypt the Buffer with a Specific Key

67.9.170 UNIKEY_ERASE_TIME_MODULE = 29

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the unikey Real Time Clock Functions codes. **Notes:** ERASE TIME MODULE to NULL. (lp1 = module index)

67.9.171 UNIKEY_FIND = 1

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the unikey function codes. **Notes:** Find UniKey

67.9.172 UNIKEY_FIND_NEXT = 2

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the unikey function codes. **Notes:** Find next UniKey

67.9.173 UNIKEY_GENERATE_KEY = 19

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the unikey function codes. **Notes:** Generate a New Key in specific Key Store
67.9.174 **UNIKEY_GET_MODULE = 25**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the unikey function codes.  
**Notes:** Get Module. p1 [ in ] Number [ p3 ] out Value

67.9.175 **UNIKEY_GET_MODULE_END_TIME = 39**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the unikey Real Time Clock Functions codes.  
**Notes:** get module end time (lp1 = module index)

67.9.176 **UNIKEY_GET_MODULE_START_TIME = 38**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the unikey Real Time Clock Functions codes.  
**Notes:** get module start time (lp1 = module index)

67.9.177 **UNIKEY_GET_TIME = 26**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the unikey Real Time Clock Functions codes.  
**Notes:** read rtc time (lp1,lp2,p1,p2,p3,p4 = year,month,day,hour,minute,second)

67.9.178 **UNIKEY_GET_TYPE = 100**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the unikey function codes.  
**Notes:** get the Unikey type

67.9.179 **UNIKEY_LOCK = 41**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the unikey functions codes.  
**Notes:** Lock

67.9.180 **UNIKEY_LOGOFF = 4**

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the unikey function codes.  
**Notes:** Close UniKey
67.9.181 UNIKEY_LOGON = 3

MBS Dongle Plugin, Plugin Version: 16.4. Function: One of the unikey function codes. Notes: Open UniKey

67.9.182 UNIKEY_MD5 = 22

MBS Dongle Plugin, Plugin Version: 16.4. Function: One of the unikey function codes. Notes: Make an MD5 Digest for a Certain Content

67.9.183 UNIKEY_MODULE_DECREASE = 17

MBS Dongle Plugin, Plugin Version: 16.4. Function: One of the unikey function codes. Notes: Decrease Module Unit

67.9.184 UNIKEY_RANDOM = 7

MBS Dongle Plugin, Plugin Version: 16.4. Function: One of the unikey function codes. Notes: Generate Random Number

67.9.185 UNIKEY_READ_MEMORY = 5

MBS Dongle Plugin, Plugin Version: 16.4. Function: One of the unikey function codes. Notes: Read UniKey

67.9.186 UNIKEY_READ_SOFTID = 10

MBS Dongle Plugin, Plugin Version: 16.4. Function: One of the unikey function codes. Notes: Read Software ID

67.9.187 UNIKEY_READ_UPDATETAG = 23

MBS Dongle Plugin, Plugin Version: 16.4. Function: One of the unikey function codes. Notes: Read UpdateTag from a Specific Key
67.9.188 UNIKEY_SEED = 8

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the unikey function codes.  
**Notes:** Generate Seed Code

67.9.189 UNIKEY_SET_MODULE = 11

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the unikey function codes.  
**Notes:** Set Module

67.9.190 UNIKEY_SET_NEW_PASSWORD = 18

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the unikey function codes.  
**Notes:** Set New Password via a New Seed

67.9.191 UNIKEY_SET_TIME = 27

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the unikey Real Time Clock Functions codes.  
**Notes:** write rtc time (lp1,lp2,p1,p2,p3,p4 = year,month,day,hour,minute,second)

67.9.192 UNIKEY_SET_TIME_MODULE_DURATION = 34

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the unikey Real Time Clock Functions codes.  
**Notes:** write rtc time module duration (lp2,p1 = day,hour)=24*day+hour

67.9.193 UNIKEY_SET_TIME_MODULE_END_TIME = 33

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the unikey Real Time Clock Functions codes.  
**Notes:** write rtc time module end time (p1,p2,p3,p4 = year,month,day,hour)

67.9.194 UNIKEY_SET_TIME_MODULE_START_TIME = 30

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the unikey Real Time Clock Functions codes.  
**Notes:** write rtc time module start time(p1,p2,p3,p4 = year,month,day,hour)
67.9. CLASS UNIKEYMBS

67.9.195 UNIKEY_SET_TIME_MODULE_START_TIME_NOW = 31

MBS Dongle Plugin, Plugin Version: 16.4. Function: One of the unikey Real Time Clock Functions codes. Notes: write rtc time module start time use dongle time (lp1 = module index)

67.9.196 UNIKEY_SET_TIME_MODULE_START_TIME_NOW_PC = 32

MBS Dongle Plugin, Plugin Version: 16.4. Function: One of the unikey Real Time Clock Functions codes. Notes: write rtc time module start time use host time (lp1 = module index)

67.9.197 UNIKEY_SET_TIME_NOW = 28

MBS Dongle Plugin, Plugin Version: 16.4. Function: One of the unikey Real Time Clock Functions codes. Notes: write rtc time use host time (lp1 = module index)

67.9.198 UNIKEY_TYPE_PRO = 102

MBS Dongle Plugin, Plugin Version: 16.4. Function: One of the dongle types. Notes: Pro Unikey

67.9.199 UNIKEY_TYPE_STD = 103

MBS Dongle Plugin, Plugin Version: 16.4. Function: One of the dongle types. Notes: Standard Unikey

67.9.200 UNIKEY_TYPE_TIME = 101

MBS Dongle Plugin, Plugin Version: 16.4. Function: One of the dongle types. Notes: Time Unikey

67.9.201 UNIKEY_UNLOCK = 42

MBS Dongle Plugin, Plugin Version: 16.4. Function: One of the unikey functions codes. Notes: Unlock
67.9.202  UNIKEY_WRITE_ARITHMETIC = 13

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the unikey function codes. 
**Notes:** Write Arithmetic

67.9.203  UNIKEY_WRITE_MEMORY = 6

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the unikey function codes. 
**Notes:** Write UniKey

67.9.204  UNIKEY_WRITE_SOFTID = 9

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the unikey function codes. 
**Notes:** Write Software ID

67.9.205  UNIKEY_WRITE_UPDATETAG = 24

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the unikey function codes. 
**Notes:** Write UpdateTag to a Specific Key

67.9.206  UNKEY_GET_CLI_NUM = 101

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the unikey function codes. 
**Notes:** Get client number now.

67.9.207  UNKEY_GET_MAX_NUM = 226

MBS Dongle Plugin, Plugin Version: 16.4. **Function:** One of the unikey function codes. 
**Notes:** Get Max number.
Chapter 68

Drag & Drop

68.1 class DragFolderItemMBS

68.1.1 class DragFolderItemMBS

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: A class for a Drag folderitem.
Notes:
This class is only for Carbon applications, not Cocoa!
While the drag classes compile for Web Edition, they run on the server, so they have no effect on the client browser!

68.1.2 Methods

68.1.3 close

Function: The destructor.
Notes:
There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)
68.1.4 Properties

68.1.5 File as FolderItem

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Creates a folderitem for this file reference.
Notes:
As RB does some caching for folderitems you may get better performance if you check the file reference by type & creator before you ask for this folderitem.
(Read and Write property)

68.1.6 Finderflags as Integer

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The finder flags for this file.
Notes:
Finder flags:
Any flag reserved or not specified should be set to 0.

Useful constants:

- kIsOnDesk & h0001 Files and folders (System 6)
- kColor & h000E Files and folders, 3 bits for colors.
- kReserved1 & h0020 Reserved for future use
- kIsShared & h0040 Files only (Applications only). If clear, the application needs to write to its resource fork, and therefore cannot be shared on a server.
- kHasNoINITs & h0080 Files only (Extensions/Control Panels only). This file contains no INIT resource
- kHasBeenInited & h0100 Files only, Clear if the file contains desktop database, resources (‘BNDL’, ‘FREF’, ‘open’, ‘kind’...) that have not been added yet. Set only by the Finder, Reserved for folders - make sure this bit is cleared for folders.
- kReserved2 & h0200 Reserved for future use
- kHasCustomIcon & h0400 Files and folders
- kIsStationery & h0800 Files only
- kNameLocked & h1000 Files and folders
- kHasBundle & h2000 Files only
- klsInvisible & h4000 Files and folders
- klsAlias & h8000 Files only

(Read and Write property)
68.1.7 MacCreator as String

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The Mac creator code for this file.  
**Notes:** (Read and Write property)

68.1.8 MacType as String

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The Mac type code for this file.  
**Notes:** (Read and Write property)
68.2 class DragItem

68.2.1 class DragItem

Plugin Version: 14.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The dragitem class from Xojo framework.

68.2.2 Methods

68.2.3 NSDraggingInfoMBS as NSDraggingInfoMBS

68.3. CLASS DRAGITEMMBS

68.3 class DragItemMBS

68.3.1 class DragItemMBS

**Function:** A class for a DragItem.
**Notes:**
This class is only for Carbon applications, not Cocoa!
A dragitem is built using several items. Each item has it’s ID and may contain several data types.

While the drag classes compile for Web Edition, they run on the server, so they have no effect on the client browser!

68.3.2 Methods

68.3.3 AddFlavorDataAsMemory(ID as Integer, type as Integer, data as memoryblock)

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.
**Function:** Adds data to the drag item.
**Notes:**
Type is a normal flavortype like e.g. "TEXT" (use StringToOSTypeMBS).
ID is an user choosen ID and data the data you want to add.
Lasterror is set.
Done use ID=0 because some applications like the Finder will ignore this ID.
See also:
- 68.3.4 AddFlavorDataAsMemory(ID as Integer, type as Integer, data as memoryblock, OnlyPrivate as boolean)

68.3.4 AddFlavorDataAsMemory(ID as Integer, type as Integer, data as memoryblock, OnlyPrivate as boolean)

**Function:** Adds (public or private) data to the drag item.
**Notes:**
Type is a normal flavortype like e.g. "TEXT" (use StringToOSTypeMBS).
ID is an user choosen ID and data the data you want to add.
Lasterror is set.
Done use ID=0 because some applications like the Finder will ignore this ID.
See also:
68.3.5 AddFlavorDataAsString(ID as Integer, type as Integer, data as string)

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Adds data to the drag item.
Example:

dim d as new DragItemMBS
if d.Create then
    dim t as Integer = OSTypeFromStringMBS("TEXT")
    d.AddFlavorDataAsString 1, t, "Hello World"
    MsgBox str(D.ItemCount)+' item"
end if

Notes:
Type is a normal flavortype like e.g. "TEXT" (use OSTypeFromStringMBS).
ID is an user choosen ID and data the data you want to add.
Lastererror is set.
Done use ID=0 because some applications like the Finder will ignore this ID.
See also:

• 68.3.6 AddFlavorDataAsString(ID as Integer, type as Integer, data as string, OnlyPrivate as boolean)

68.3.6 AddFlavorDataAsString(ID as Integer, type as Integer, data as string, OnlyPrivate as boolean)

Function: Adds (public or private) data to the drag item.
Notes:
Type is a normal flavortype like e.g. "TEXT" (use StringToOSTypeMBS).
ID is an user choosen ID and data the data you want to add.
Lastererror is set.
Done use ID=0 because some applications like the Finder will ignore this ID.
See also:

• 68.3.5 AddFlavorDataAsString(ID as Integer, type as Integer, data as string)
68.3. CLASS DRAGITEMMBS

68.3.7 AddFlavorFileReference(ID as Integer, file as DragFolderItemMBS)

Function: Adds a folderitem to the drag item.
Notes:
Lasterror is set.
ID is an user choosen ID.
Done use ID=0 because some applications like the Finder will ignore this ID.
See also:

- 68.3.8 AddFlavorFileReference(ID as Integer, file as DragFolderItemMBS, OnlyPrivate as boolean)

68.3.8 AddFlavorFileReference(ID as Integer, file as DragFolderItemMBS, OnlyPrivate as boolean)

Function: Adds a folderitem to the drag item.
Example:

```vba
dim d as DragItemMBS
dim f as DragFolderItemMBS

f=new DragFolderItemMBS
f.File=SpecialFolder.Desktop
f.MacCreator=SpecialFolder.Desktop.MacCreator
f.MacType=SpecialFolder.Desktop.MacType

d=new DragItemMBS
if d.create then
d.AddFlavorFileReference(1,f)

d.FlavorFileReference(1)=f
if d.Lasterror<>0 then
    MsgBox str(d.Lasterror)
else
    MsgBox d.FlavorFileReference(1).MacCreator
end if
end if
```

Notes:
Lasterror is set.
ID is an user choosen ID.
If OnlyPrivate is true, the folderitem is only visible to your own application.
Done use ID=0 because some applications like the Finder will ignore this ID.

See also:

- 68.3.7 AddFlavorFileReference(ID as Integer, file as DragFolderItemMBS)

### 68.3.9 close


**Function:** The destructor.

**Notes:**

There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.

(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

### 68.3.10 Create as boolean

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.

**Function:** Creates a new drag object handle.

**Notes:** On success, lasterror is 0 and handle not 0.

See also:

- 68.3.11 Create(PasteboardRef as Integer) as boolean

### 68.3.11 Create(PasteboardRef as Integer) as boolean


**Function:** Creates a new drag object handle.

**Notes:**

PasteboardRef is a PasteboardRef, e.g. created with PasteboardCreate function.

On success, lasterror is 0 and handle not 0.

See also:

- 68.3.10 Create as boolean

### 68.3.12 DragAllowableActions as Integer


**Function:** Gets the actions the drag sender has allowed the receiver to perform.

**Notes:**


These are not requirements, but they highly suggested actions which allows the drag receiver to improve harmony across the system. The allowable actions received are always those local to the caller’s process.

Lasterror is set.

### 68.3.13 FlavorCount(ID as Integer) as Integer

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.

**Function:** Counts the different flavors in one item.

**Example:**

```vbs
dim d as new DragItemMBS
if d.Create then
    dim t as Integer = OSTypeFromStringMBS("TEXT")
    d.AddFlavorDataAsString 1, t, "Hello World"
    MsgBox str(D.FlavorCount(1)) + " flavor"
end if
```

**Notes:**

Returns 0 on any error.
Lasterror is set.

### 68.3.14 FlavorDataFlags(ID as Integer, type as Integer) as Integer

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.

**Function:** Returns the flags for a specified flavor.

**Notes:**

You can check lasterror after calling this to see whether the flavor is available.
ID must be a valid item ID.
Lasterror is set.

Possible values:
68.3.15 **FlavorFileReferenceAvailable**(ID as Integer) as boolean

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function**: Returns true if given drag item contains a file reference.

68.3.16 **FlavorMovieAvailable**(ID as Integer) as boolean

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function**: Returns true if given drag item contains a movie handle.

68.3.17 **FlavorPicture**(ID as Integer) as Picture

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function**: Returns a picture if one is found. **Notes**: Returns nil on any error.

68.3.18 **FlavorPictureAvailable**(ID as Integer) as boolean

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function**: Returns true if given drag item contains a picture handle.

68.3.19 **FlavorSoundAvailable**(ID as Integer) as boolean

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function**: Returns true if given drag item contains a sound handle.

68.3.20 **FlavorTextAvailable**(ID as Integer) as boolean

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function**: Returns true if given drag item contains text.
68.3.21  **FlavorTextStyle(ID as Integer) as string**

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns text style data if present in this drag item.

68.3.22  **FlavorTextStyleAvailable(ID as Integer) as boolean**

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if given drag item contains text styles.

68.3.23  **FlavorType(ID as Integer, index as Integer) as Integer**

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the flavor type of the specified flavor. **Notes:** Value may be the number of e.g. StringToOSTypeMBS("TEXT")

68.3.24  **FlavorUnicodeTextAvailable(ID as Integer) as boolean**

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if given drag item contains an unicode text.

68.3.25  **HasLeftSenderWindow as boolean**

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Drag has left the source window since Drag has started.

68.3.26  **InsideSenderApplication as boolean**

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Drag is occurring within the sender application.
### 68.3.27 InsideSenderWindow as boolean

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Drag is occurring within the sender window.

### 68.3.28 IsDroppedToTrash as boolean

MBS MacClassic Plugin, Plugin Version: 8.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** True if the item has been dropped on the trash. **Notes:** Only valid after the dragging has finished. Requires Mac OS X 10.2.

### 68.3.29 ItemCount as Integer

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The number of items in the dragitem. **Notes:** Lasterror is set. Returns 0 on any error.

### 68.3.30 ItemGetRect(ID as Integer, byref left as Integer, byref top as Integer, byref width as Integer, byref height as Integer)

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Gets the rectangle for a given item. **Notes:** Lasterror is set.

### 68.3.31 ItemID(index as Integer) as Integer

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The ID of the item with the given index. **Notes:** Lasterror is set. Returns 0 on any error.
68.3.32 **ItemSetRect** (ID as Integer, left as Integer, top as Integer, width as Integer, height as Integer)

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sets the rectangle for a given item.  
**Notes:** Lasterror is set.

68.3.33 **ModifiersCurrent** as Integer

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The modifiers from the keyboard at the current time.  
**Notes:**

Values:

<table>
<thead>
<tr>
<th>Modifier</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cmdKey</td>
<td>256</td>
<td>set if Command key down</td>
</tr>
<tr>
<td>shiftKey</td>
<td>512</td>
<td>set if Shift key down</td>
</tr>
<tr>
<td>alphaLock</td>
<td>1024</td>
<td>set if Caps Lock key down</td>
</tr>
<tr>
<td>optionKey</td>
<td>2048</td>
<td>set if Option key down</td>
</tr>
<tr>
<td>controlKey</td>
<td>4096</td>
<td>set if Control key down</td>
</tr>
<tr>
<td>rightshiftKey</td>
<td>8192</td>
<td>set if right Shift key down</td>
</tr>
<tr>
<td>rightoptionKey</td>
<td>16384</td>
<td>set if right Option key down</td>
</tr>
<tr>
<td>rightcontrolKey</td>
<td>32768</td>
<td>set if right Control key down</td>
</tr>
</tbody>
</table>

Lasterror is set.

68.3.34 **ModifiersMouseDown** as Integer

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The modifiers from the keyboard at the time the mouse was going down.  
**Notes:**

Values:

Lasterror is set.

68.3.35 **ModifiersMouseUp** as Integer

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The modifiers from the keyboard at the time the mouse was going up.
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cmdKey 256 set if Command key down
shiftKey 512 set if Shift key down
alphaLock 1024 set if Caps Lock key down
optionKey 2048 set if Option key down
controlKey 4096 set if Control key down
rightshiftKey 8192 set if right Shift key down
rightoptionKey 16384 set if right Option key down
rightcontrolKey 32768 set if right Control key down

Notes:
Values:

cmdKey 256 set if Command key down
shiftKey 512 set if Shift key down
alphaLock 1024 set if Caps Lock key down
optionKey 2048 set if Option key down
controlKey 4096 set if Control key down
rightshiftKey 8192 set if right Shift key down
rightoptionKey 16384 set if right Option key down
rightcontrolKey 32768 set if right Control key down

Lasterror is set.

68.3.36 MouseGlobalPinnedX as Integer

MBS MacClassic Plugin, Plugin Version: 4.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The current pinned mouse location in global screen coordinates. Notes: The value will be (0, 0) if the drag is not yet used. After a drag completes, the drop location is returned. The pinned mouse location is the mouse location that is used to draw the drag region on the screen. The pinned mouse location is different from the mouse location when the cursor is being constrained in either dimension by a tracking handler.

68.3.37 MouseGlobalPinnedY as Integer

MBS MacClassic Plugin, Plugin Version: 4.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The current pinned mouse location in global screen coordinates. Notes: The value will be (0, 0) if the drag is not yet used. After a drag completes, the drop location is returned. The pinned mouse location is the mouse location that is used to draw the drag region on the screen. The pinned mouse location is different from the mouse location when the cursor is being constrained
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in either dimension by a tracking handler.

---

**68.3.38 **MouseOriginX as Integer

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The initial mouse position.  
**Notes:** Lasterror is set.

---

**68.3.39 **MouseOriginY as Integer

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The initial mouse position.  
**Notes:** Lasterror is set.

---

**68.3.40 **MouseX as Integer

MBS MacClassic Plugin, Plugin Version: 4.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The current mouse location in global screen coordinates.  
**Notes:** The value will be (0, 0) if the drag is not yet used. After a drag completes, the drop location is returned.

---

**68.3.41 **MouseY as Integer

MBS MacClassic Plugin, Plugin Version: 4.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The current mouse location in global screen coordinates.  
**Notes:** The value will be (0, 0) if the drag is not yet used. After a drag completes, the drop location is returned.

---

**68.3.42 **SetDragAllowableActions(actions as Integer, Local as boolean)

MBS MacClassic Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sets the actions the receiver of the drag is allowed to perform. 
**Notes:**  
These are not requirements, but they highly suggested actions which allows the drag receiver to improve harmony across the system. The caller may select whether these drag actions apply to a local or remote process.
Local: A boolean value allowing the drag sender to distinguish between those drag actions allowable by the local receiver versus a remote one.

LastError is set.

**68.3.43 SetDragCGImage(CGImageHandle as Integer, ImageOffsetX as single, ImageOffsetY as single, flags as Integer)**

**Function:** Sets the drag image.  
**Notes:**  
ImageOffsetX and ImageOffsetY is the place inside the image where the mouse cursor is (negative value).  
Values for flags:

- `kDragStandardTranslucency` 0 65% image translucency (standard)  
- `kDragDarkTranslucency` 1 50% image translucency  
- `kDragDarkerTranslucency` 2 25% image translucency  
- `kDragOpaqueTranslucency` 3 0% image translucency (opaque)

LastError is set.  
The cgimage is retained, so you don’t need to keep a reference around.

**68.3.44 SetDragImage(pic as picture, OffsetX as Integer, OffsetY as Integer, flags as Integer)**

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.  
**Function:** Sets the drag image.  
**Notes:**  
Values for flags:

- `kDragStandardTranslucency` 0 65% image translucency (standard)  
- `kDragDarkTranslucency` 1 50% image translucency  
- `kDragDarkerTranslucency` 2 25% image translucency  
- `kDragOpaqueTranslucency` 3 0% image translucency (opaque)

LastError is set.  
The image must be one made using NewPicture (a bitmap image) and it must be kept until the drag is
finished. (Don’t loose it!)

68.3.45 SetDragImageWithRegion(pic as picture, OffsetX as Integer, OffsetY as Integer, flags as Integer, regionhandle as Integer)

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Same as SetDragImage, but with an additional region handle.

68.3.46 SetDragPicture(pic as picture, ImageOffsetX as single, ImageOffsetY as single, flags as Integer)

MBS MacClassic Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sets the drag image.

**Notes:**
This is the same method as SetDragCGImage, but it takes REALbasic picture.
Supports transparency.

ImageOffsetX and ImageOffsetY is the place inside the image where the mouse cursor is (negative value).

Values for flags:

- kDragStandardTranslucency 0 65% image translucency (standard)
- kDragDarkTranslucency 1 50% image translucency
- kDragDarkerTranslucency 2 25% image translucency
- kDragOpaqueTranslucency 3 0% image translucency (opaque)

Lasterror is set.

68.3.47 StartDrag(MouseX as Integer, MouseY as Integer, MouseModifiers as Integer, Left as Integer, Top as Integer, Width as Integer, Height as Integer)

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Starts dragging.

**Notes:**
The plugin is not perfect with dragging as it does not have as much control as RB itself has over events.
Values:

- **cmdKey** 256 set if Command key down
- **shiftKey** 512 set if Shift key down
- **alphaLock** 1024 set if Caps Lock key down
- **optionKey** 2048 set if Option key down
- **controlKey** 4096 set if Control key down
- **rightshiftKey** 8192 set if right Shift key down
- **rightoptionKey** 16384 set if right Option key down
- **rightcontrolKey** 32768 set if right Control key down

### 68.3.48 Properties

#### 68.3.49 Handle as Integer

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.

Function: The handle of the DragRef.

Notes:

Maybe useful for toolbox calls.

(Read and Write property)

#### 68.3.50 Lasterror as Integer

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.

Function: The last error code reported.

Notes: (Read and Write property)

#### 68.3.51 Release as Boolean

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.

Function: Whether the destructor will release the handle.

Notes: (Read and Write property)

#### 68.3.52 DragDropAction as Integer


Function: The action performed by the receiver of the drag.

Notes:
More than one action may have been performed.

LastError is set.
(Read and Write computed property)

68.3.53  **FlavorDataAsMemory** (ID as Integer, type as Integer) as memoryblock

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Get and set flavor data.
**Notes:** (Read and Write computed property)

68.3.54  **FlavorDataAsString** (ID as Integer, type as Integer) as string

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Get and set flavor data.
**Notes:** (Read and Write computed property)

68.3.55  **FlavorFileReference** (ID as Integer) as DragFolderItemMBS

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns a file reference if one is inside the drag item.
**Notes:**
Returns nil on any error.
Value is setable in plugin version 4.2.
(Read and Write computed property)

68.3.56  **FlavorText** (ID as Integer) as string

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns text data if present in this drag item.
**Notes:** (Read and Write computed property)
68.3.57 Constants

68.3.58 kDragActionAlias=2


Notes:
The drag action constants define, in a general way, what actions a drag should or has performed. Some drag actions enforce a mode of operation while others are flexible suggestions.

Suggests the data contained within the drag can be/is shared.

68.3.59 kDragActionAll=& hFFFFFFFF


Notes:
The drag action constants define, in a general way, what actions a drag should or has performed. Some drag actions enforce a mode of operation while others are flexible suggestions.

All of the above drag actions are allowed.

68.3.60 kDragActionCopy=1


Notes:
The drag action constants define, in a general way, what actions a drag should or has performed. Some drag actions enforce a mode of operation while others are flexible suggestions.

Suggests the data contained within the drag can be/was copied.

68.3.61 kDragActionDelete=32


Notes: The drag action constants define, in a general way, what actions a drag should or has performed. Some drag actions enforce a mode of operation while others are flexible suggestions.
68.3.62  \texttt{kDragActionGeneric=4}

MBS MacClassic Plugin, Plugin Version: 9.2. **Function:** One of the drag action constants.  
**Notes:**  
The drag action constants define, in a general way, what actions a drag should or has performed. Some drag actions enforce a mode of operation while others are flexible suggestions.

Suggests the drag action is can be defined by the drag destination or was not defined by the drag destination.

68.3.63  \texttt{kDragActionMove=16}

MBS MacClassic Plugin, Plugin Version: 9.2. **Function:** One of the drag action constants.  
**Notes:**  
The drag action constants define, in a general way, what actions a drag should or has performed. Some drag actions enforce a mode of operation while others are flexible suggestions.

68.3.64  \texttt{kDragActionNothing=0}

MBS MacClassic Plugin, Plugin Version: 9.2. **Function:** One of the drag action constants.  
**Notes:**  
The drag action constants define, in a general way, what actions a drag should or has performed. Some drag actions enforce a mode of operation while others are flexible suggestions.

Suggests nothing should be/was done with the data in a drag. When set as an allowable action for remote drags, the drag will not be sent to apps other than the sender.

68.3.65  \texttt{kDragActionPrivate=8}

MBS MacClassic Plugin, Plugin Version: 9.2. **Function:** One of the drag action constants.  
**Notes:**  
The drag action constants define, in a general way, what actions a drag should or has performed. Some drag actions enforce a mode of operation while others are flexible suggestions.

Suggests the drag action should be negotiated privately between the drag source and destination.
68.4  class DragReceiverMBS

68.4.1  class DragReceiverMBS

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: A class for a drag receiver.
Notes:
This class is only for Carbon applications, not Cocoa!
Whenever you drop something on a window and the Drag Tracker accepted the DragItem, your DragReceiver will get it finally.
While the drag classes compile for Web Edition, they run on the server, so they have no effect on the client browser!

68.4.2  Methods

68.4.3  AttachWindow(win as window) as boolean

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Attaches this object to the given window.
Notes:
Returns true on success.
You can only attach to one object to one window at once.
You can pass nil to attach to all of your windows.

68.4.4  AttachWindowHandle(win as Integer) as boolean

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Attaches this object to the window given using the window handle.
Example:

    dim d as DragReceiverMBS  // your receiver
    dim b as boolean
    b=d.AttachWindowHandle(MyOverlayWindow.handle)

Notes:
Returns true on success.
You can only attach to one object to one window at once.
You can pass 0 to attach to all of your windows.
68.4.5 close

Function: The destructor.
Notes:
There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

68.4.6 Properties

68.4.7 WindowHandle as Integer

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The handle of the used window.
Notes:
0 if not attached to a window.
(Read only property)

68.4.8 Events

68.4.9 Received(drag as DragItemMBS) as boolean

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Called whenever someone dropped something on your window and the DragTracker accepted it.
Notes: Return true if you accept the given drag item.
68.5 class DragTrackerMBS

68.5.1 class DragTrackerMBS

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: A class for a drag tracker.
Notes:
This class is only for Carbon applications, not Cocoa!
Whenever something is dragged over a window, the Drag Manager calls all registered Drag Tracker to ask them whether the window can accept the given DragItem.

While the drag classes compile for Web Edition, they run on the server, so they have no effect on the client browser!

68.5.2 Methods

68.5.3 AttachWindow(win as window) as boolean

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Attaches this object to the given window.
Notes:
Returns true on success.
You can only attach to one object to one window at once.
You can pass nil to attach to all of your windows.

68.5.4 AttachWindowHandle(win as Integer) as boolean

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Attaches this object to the window given using the window handle.
Example:

dim d as DragTrackerMBS // your tracker
dim b as boolean
b=d.AttachWindowHandle(MyOverlayWindow.handle)

Notes:
Returns true on success.
You can only attach to one object to one window at once.
You can pass 0 to attach to all of your windows.
68.5.5 close

Function: The destructor.
Notes:
There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

68.5.6 Properties

68.5.7 WindowHandle as Integer

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The handle of the used window.
Notes:
0 if not attached to a window.
(Read only property)

68.5.8 Events

68.5.9 Dragging(message as Integer, drag as DragItemMBS) as boolean

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The user is dragging over the window.
Notes:
Values for message:

1 Enter Handler
2 Enter Window
3 Inside Window
4 Leave Window
5 Leave Handler

While running inside the RB IDE your application may not receive all events.
Return true if you accept the given drag item.
68.6. class NSDraggingImageComponentMBS

68.6.1 class NSDraggingImageComponentMBS

Notes: An array of NSDraggingImageComponent instances are composited together to create the dragging image for an NSDraggingItem. NSDraggingImageComponent instances can simply be considered as named images with a location used by an NSDraggingItem instance.

68.6.2 Methods

68.6.3 Constructor(key as string)

Notes:

key: The key.
Available in OS X v10.7 and later.

68.6.4 draggingImageComponentWithKey(key as string) as NSDraggingImageComponentMBS

Notes: Available in OS X v10.7 and later.

68.6.5 NSDraggingImageComponentIconKey as string

Notes:

Key with a corresponding value that is an image of the item being dragged.
Available in OS X v10.7 and later.
68.6.6 NSDraggingImageComponentLabelKey as string

**Function:** One of the keys for Constructor.  
**Notes:**  
Key with a corresponding value that represents a textual label associate with the item, for example, a file name.  
Available in OS X v10.7 and later.

68.6.7 Properties

68.6.8 Handle as Integer

**Function:** The internal object handle.  
**Notes:** (Read and Write property)

68.6.9 contents as Variant

**Function:** An object providing the image contents of the component.  
**Notes:**  
Typically you set an NSImage instance as content.  
Available in OS X v10.7 and later.  
(Read and Write computed property)

68.6.10 frame as NSRectMBS

**Function:** The coordinate space is the bounds of the parent dragging item.  
**Notes:**  
The frame is `{ { 0,0 }, { draggingFrame.size.width, draggingFrame.size.height } } .  

The coordinate space is the bounds of the parent NSDraggingItem instance’s draggingFrame.  
Available in OS X v10.7 and later.  
(Read and Write computed property)
68.6.11  key as string


Function: The unique name of this image component instance.

Notes:

The key must be unique for each component in an NSDraggingItem instance. You can create your own named components, however the keys described in NSDragImage Component Keys have special meanings.

When an NSDraggingItem instances imageComponents are changed by one of the enumerateDraggingItemsWithOptions methods the image associated with this key is morphed into the new image component’s image associated with the same key.

Available in OS X v10.7 and later.
(Read and Write computed property)
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68.7 class NSDraggingInfoMBS

68.7.1 class NSDraggingInfoMBS

MBS MacCocoa Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The NSDraggingInfo protocol declares methods that supply information about a dragging session. Notes: NSDraggingInfo protocol methods are designed to be invoked from within a class’s implementation of NSDraggingDestination protocol methods. The Application Kit automatically passes an object that conforms to the NSDraggingInfo protocol as the argument to each of the methods defined by NSDraggingDestination. NSDraggingInfo messages should be sent to this object; you never need to create a class that implements the NSDraggingInfo protocol.

68.7.2 Methods

68.7.3 Constructor

MBS MacCocoa Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The private constructor. See also:

• 68.7.4 Constructor(Handle as Integer)

68.7.4 Constructor(Handle as Integer)

MBS MacCocoa Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The constructor to build an NSDraggingInfo object with a handle. Notes: Handle should be a Cocoa object reference implementing the NSDraggingInfo protocol. See also:

• 68.7.3 Constructor

68.7.5 namesOfPromisedFilesDroppedAtDestination(dropDestination as FolderItem) as string()

MBS MacCocoa Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Sets the drop location for promised files and returns the names of the files that the receiver promises to create there. Notes:

dropDestination: A folderitem specifying the drop location for promised files.

Return an array of file names, which are not full paths.
Drag destinations should invoke this method within their `performDragOperation` method. The source may or may not have created the files by the time this method returns.

### 68.7.6 promisedFilesDroppedAtDestination

**Function:** Sets the drop location for promised files and returns the files that the receiver promises to create there.

**Notes:**
- `dropDestination`: A `FolderItem` specifying the drop location for promised files.

Return an array of `FolderItem` for the files.
The files may not yet exist.

Drag destinations should invoke this method within their `performDragOperation` method. The source may or may not have created the files by the time this method returns.

### 68.7.7 slideDraggedImageTo

**Function:** Slides the image to a specified location.

**Notes:**
- `screenPoint`: A point that specifies a location in the screen coordinate system.

This method can be used to adjust the location to which the dragged image will slide back if the drag is rejected.
It should only be invoked from within the destination’s implementation of `prepareForDragOperation`, and will only have effect if the destination rejects the drag.
This method is invoked after the user has released the image but before it is removed from the screen.

### 68.7.8 Properties

#### 68.7.9 animatesToDestination as boolean

**Function:** Whether the dragging formation animates while the drag is over this destination.

**Notes:**
During the conclusion of an accepted drag, if this property is set to true, the drag manager will animate each dragging image to their NSDraggingFormationNone locations. Otherwise, the drag images are removed without any animation.

This property is inspected between prepareForDragOperation and performDragOperation. You should enumerate through the dragging items during performDragOperation to set the item’s draggingFrame to the correct destinations.

Available in OS X v10.7 and later.

(Read and Write property)

### 68.7.10 draggedImage as Variant


**Function:** Returns the image being dragged.

**Notes:**

Value is a NSImageMBS object. Returned as Variant to reduce plugin dependencies.

This image object visually represents the data put on the pasteboard during the drag operation; however, it is the pasteboard data and not this image that is ultimately utilized in the dragging operation.

This method returns non-nil for a local drag, but nil for a cross-process drag. With the new multi-image dragging capabilities, a cross-process destination may participate and change the drag image. But it still cannot get the current drag image.

(Read only property)

### 68.7.11 draggedImageLocation as NSPointMBS


**Function:** Returns the current location of the dragged image’s origin.

**Notes:**

Returns the dragged image’s origin, in the base coordinate system of the destination object’s window. The image moves along with the mouse pointer (the position of which is given by draggingLocation) but may be positioned at some offset.

(Read only property)
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68.7.12 draggingDestinationWindow as Variant

**Function:** Returns the destination window for the dragging operation.
**Notes:**
Value is a NSWindowMBS object. Returned as Variant to reduce plugin dependencies.
Either this window is the destination itself, or it contains the view object that is the destination.
(Read only property)

68.7.13 draggingFormation as Integer

**Function:** Returns the dragging formation while the drag is over this destination.
**Notes:**
Set this property to change the formation of the drag items. This is generally done during the updateDraggingItemsForDrag method or whenever you enumerate the dragging items.
The default value is the current drag formation.
Note: Set this property before or after the NSDraggingInfo or NSDraggingSession class’s method enumerateDraggingItemsWithOptions not inside the enumeration Block.
Available in OS X v10.7 and later.
(Read and Write property)

68.7.14 draggingLocation as NSPointMBS

**Function:** Returns the current location of the mouse pointer in the base coordinate system of the destination object’s window.
**Notes:** (Read only property)

68.7.15 draggingPasteboard as Variant

**Function:** Returns the pasteboard object that holds the data being dragged.
**Notes:**
Value is a NSPasteboardMBS object. Returned as Variant to reduce plugin dependencies.

The dragging operation that is ultimately performed utilizes this pasteboard data and not the image returned by the draggedImage method.
(Read only property)

68.7.16 draggingSequenceNumber as Integer

MBS MacCocoa Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a number that uniquely identifies the dragging session.
**Notes:** (Read only property)

68.7.17 draggingSource as Variant

MBS MacCocoa Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the source, or owner, of the dragged data.
**Notes:**
This method returns nil if the source is not in the same application as the destination. The dragging source implements methods from the NSDraggingSource protocol.
(Read only property)

68.7.18 draggingSourceOperationMask as Integer

MBS MacCocoa Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the dragging operation mask of the dragging source.
**Notes:**
The dragging operation mask, which is declared by the dragging source through the NSDraggingSource sourceOperationMaskForDraggingContext method (preferred) or the NSDraggingSource draggingSourceOperationMaskForLocal method. If the source does not permit any dragging operations, this method should return NSDragOperationNone.

If the source permits dragging operations, the elements in the mask are one or more of the constants described in "Obtaining Information About the Dragging Session", combined using the C bitwise OR operator.

If the user is holding down a modifier key during the dragging session and the source does not prohibit modifier keys from affecting the drag operation (through its ignoreModifierKeysWhileDragging method), then the operating system combines the dragging operation value that corresponds to the modifier key (see the descriptions below) with the source's mask using the C bitwise AND operator.
The modifier keys are associated with the dragging operation options shown below:

<table>
<thead>
<tr>
<th>Modifier Key</th>
<th>Dragging Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>NSDragOperationLink</td>
</tr>
<tr>
<td>Option</td>
<td>NSDragOperationCopy</td>
</tr>
<tr>
<td>Command</td>
<td>NSDragOperationGeneric</td>
</tr>
</tbody>
</table>

(Modifier Key Dragging Operation)

**68.7.19 Handle as Integer**

MBS MacCocoa Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference. **Notes:** (Read and Write property)

**68.7.20 numberOfValidItemsForDrop as Integer**

MBS MacCocoa Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Specifies the number of valid items for a drop operation. **Notes:** During draggingEntered or draggingUpdated, you are responsible for returning the drag operation. In some cases, you may accept some, but not all items on the dragging pasteboard. (For example, your application may only accept image files.)

If you only accept some of the items, set this property to the number of items accepted so the drag manager can update the drag count badge.

When updateDraggingItemsForDrag is called, you should set the image of non-valid dragging items to nil. If none of the drag items are valid then you should not updateItems, simply return NSDragOperationNone from your implementation of draggingEntered and, or draggingUpdated and do not modify any drag item properties.

Available in OS X v10.7 and later. **(Read and Write property)**
CHAPTER 68. DRAG & DROP

68.7.21 Constants

68.7.22 NSDraggingFormationDefault = 0

MBS MacCocoa Plugin, Plugin Version: 13.1. **Function:** One of the constants to control the visual format of multiple items being dragged.

**Notes:**
The system determined formation.
Available in OS X v10.7 and later.

68.7.23 NSDraggingFormationList = 3

MBS MacCocoa Plugin, Plugin Version: 13.1. **Function:** One of the constants to control the visual format of multiple items being dragged.

**Notes:**
Drag images are laid out vertically, non-overlapping with the left edges aligned.
Available in OS X v10.7 and later.

68.7.24 NSDraggingFormationNone = 1

MBS MacCocoa Plugin, Plugin Version: 13.1. **Function:** One of the constants to control the visual format of multiple items being dragged.

**Notes:**
Drag images maintain their set positions relative to each other.
Available in OS X v10.7 and later.

68.7.25 NSDraggingFormationPile = 2

MBS MacCocoa Plugin, Plugin Version: 13.1. **Function:** One of the constants to control the visual format of multiple items being dragged.

**Notes:**
Drag images are placed on top of each other with random rotations.
Available in OS X v10.7 and later.
68.7. **CLASS NSDRAGGINGINFOMBS**

68.7.26  **NSDraggingFormationStack = 4**

MBS MacCocoa Plugin, Plugin Version: 13.1. **Function:** One of the constants to control the visual format of multiple items being dragged.  
**Notes:**

Drag images are laid out overlapping diagonally.  
Available in OS X v10.7 and later.

68.7.27  **NSDragOperationAll_Obsolete = 15**

MBS MacCocoa Plugin, Plugin Version: 13.1. **Function:** One of the drag operation constants.  
**Notes:** The NSDragOperationAll constant is deprecated. Use NSDragOperationEvery instead.

68.7.28  **NSDragOperationCopy = 1**

MBS MacCocoa Plugin, Plugin Version: 13.1. **Function:** One of the drag operation constants.  
**Notes:** The data represented by the image can be copied.

68.7.29  **NSDragOperationDelete = 32**

MBS MacCocoa Plugin, Plugin Version: 13.1. **Function:** One of the drag operation constants.  
**Notes:** The data can be deleted.

68.7.30  **NSDragOperationEvery = -1**

MBS MacCocoa Plugin, Plugin Version: 13.1. **Function:** One of the drag operation constants.  
**Notes:** All of the above.

68.7.31  **NSDragOperationGeneric = 4**

MBS MacCocoa Plugin, Plugin Version: 13.1. **Function:** One of the drag operation constants.  
**Notes:** The operation can be defined by the destination.
68.7.32 **NSDragOperationLink = 2**

MBS MacCocoa Plugin, Plugin Version: 13.1. **Function:** One of the drag operation constants.

68.7.33 **NSDragOperationMove = 16**

MBS MacCocoa Plugin, Plugin Version: 13.1. **Function:** One of the drag operation constants. **Notes:** The data can be moved.

68.7.34 **NSDragOperationNone = 0**

MBS MacCocoa Plugin, Plugin Version: 13.1. **Function:** One of the drag operation constants. **Notes:** No drag operations are allowed.

68.7.35 **NSDragOperationPrivate = 8**

MBS MacCocoa Plugin, Plugin Version: 13.1. **Function:** One of the drag operation constants. **Notes:** The operation is negotiated privately between the source and the destination.
68.8 class NSDraggingItemMBS

68.8.1 class NSDraggingItemMBS


**Function:** The NSDraggingItem class encompasses a single dragged item within an NSDraggingSession instance.

**Notes:**

See NSDraggingSessionMBS Class Reference for more information.

When the NSDraggingSession method beginDraggingSessionWithItems is called, the dragging items passed to the method are consumed immediately and are not retained.

68.8.2 Methods

68.8.3 Constructor(item as NSPasteboardItemMBS)


**Function:** Initializes a dragging item using the specified content.

**Notes:**

item: The object that provides the dragging content.

When the developer creates an NSDraggingItem instance, it is for use with the view method beginDraggingSessionWithItems. During the invocation of that method, the item is placed onto the dragging pasteboard for the NSDraggingSession that contains the dragging item instance.

Available in OS X v10.7 and later.

68.8.4 item as Variant

MBS MacCocoa Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the pasteboard reader or writer object dependent on the context of where this dragging item is used. (read-only)

**Notes:** When you create an NSDraggingItem instance, item is the pasteboardWriter passed to Constructor.
68.8.5 *setDraggingFrame*(frame as NSRectMBS, contents as Variant)


**Function:** Sets the item’s dragging frame and contents.

**Notes:**

frame: The item content frame in the same coordinate space that the draggingFrame.
contents: The item contents to display when dragging. Typically this is an NSImage, but a CGImageRef will also work.

Alternate single image component setter.

This method simplifies modifying the components of an NSDraggingItem when there is only one component.

This is a convenience method. This method sets the draggingFrame and creates a single NSDraggingImage-Component instance with one image corresponding to the NSDraggingImageComponentIconKey key. You should only use this method under the following conditions: the drag image for this item is composed of a single image., or there are a reasonable number of dragging item instances being created or enumerated.

This method will set the draggingFrame and imageComponents properties. Available in OS X v10.7 and later.

68.8.6 Properties

68.8.7 *Handle as Integer*


**Notes:** (Read and Write property)

68.8.8 *draggingFrame as NSRectMBS*

MBS MacCocoa Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The frame of the dragging item.

**Notes:**

The dragging frame provides the spatial relationship between NSDraggingItem instances when the dragging formation is set to NSDraggingFormationNone.

The exact coordinate space of this rectangle is dependent on where it is used. The view that initiated the drag using beginDraggingSessionWithItems or the view your pass to the NSDraggingSession instance
implantation of enumerateDragggingItemsWithOptions.

Available in OS X v10.7 and later.
(Read and Write computed property)
68.9 class NSDraggingSessionMBS

68.9.1 class NSDraggingSessionMBS


**Function:** The NSDraggingSession class encompasses a drag and drop action and allows modification of the drag while in progress.

**Notes:**

You start a new dragging session by calling the NSView method beginDraggingSessionWithItems method. This method immediately returns and you can further modify the properties of the dragging session. The actual drag begins at the next turn of the run loop.

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

68.9.2 Methods

68.9.3 Constructor


**Function:** The private constructor.

68.9.4 draggingLeaderIndex as Integer


**Function:** The index of the dragging item under the cursor.

**Notes:**

The index is to an element in the array passed as the first parameter to the NSView method beginDraggingSessionWithItem.

The default is the NSDraggingItem closest to the location field in the event parameter that was passed to the beginDraggingSessionWithItems method.

Available in OS X v10.7 and later.

68.9.5 draggingLocation as NSPointMBS


**Function:** The current cursor location of the drag in screen coordinates. (read-only)
**68.9. CLASS NSDRAGGINGSESSIONMBS**

Notes: Available in OS X v10.7 and later.

### 68.9.6 draggingPasteboard as NSPasteboardMBS

MBS MacCocoa Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the pasteboard object that contains the data being dragged. (read-only)  
**Notes:** Available in OS X v10.7 and later.

### 68.9.7 draggingSequenceNumber as Integer

MBS MacCocoa Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a number that uniquely identifies the dragging session. (read-only)  
**Notes:** Available in OS X v10.7 and later.

### 68.9.8 Properties

### 68.9.9 Handle as Integer

**Notes:** (Read and Write property)

### 68.9.10 animatesToStartingPositionsOnCancelOrFail as boolean

MBS MacCocoa Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Controls whether the dragging image animates back to its starting point on a cancelled or failed drag.  
**Notes:**  
This property should be set immediately after creating the dragging session.

The default value is true.  
Available in OS X v10.7 and later.  
(Read and Write computed property)
68.9.11 draggingFormation as Integer

**Function:** Controls the dragging formation when the drag is not over the source or a valid destination. 
**Notes:**
Setting this value causes the dragging formation to change immediately, provided a valid destination has not overridden the behavior. If the dragging session hasn’t started yet, the dragging items will animate into formation immediately upon start. It is highly recommended to never change the formation when starting a drag.

The default value is NSDraggingFormationNone.  
Available in OS X v10.7 and later.  
(Read and Write computed property)

68.9.12 Constants

68.9.13 NSDraggingContextOutsideApplication = 0

MBS MacCocoa Plugin, Plugin Version: 13.1. **Function:** Whether a drag terminates within or outside the application. 
**Notes:**
The dragging terminates outside the application.  
Available in OS X v10.7 and later.

68.9.14 NSDraggingContextWithinApplication = 1

MBS MacCocoa Plugin, Plugin Version: 13.1. **Function:** Whether a drag terminates within or outside the application. 
**Notes:**
The dragging terminates within the application. 
Available in OS X v10.7 and later.

68.9.15 NSDraggingFormationDefault = 0

MBS MacCocoa Plugin, Plugin Version: 13.1. **Function:** One of the constants to control the visual format of multiple items being dragged. 
**Notes:**
The system determined formation.
68.9.16  **NSDraggingFormationList = 3**

MBS MacCocoa Plugin, Plugin Version: 13.1. **Function:** One of the constants to control the visual format of multiple items being dragged.

**Notes:**
Drag images are laid out vertically, non-overlapping with the left edges aligned.
Available in OS X v10.7 and later.

68.9.17  **NSDraggingFormationNone = 1**

MBS MacCocoa Plugin, Plugin Version: 13.1. **Function:** One of the constants to control the visual format of multiple items being dragged.

**Notes:**
Drag images maintain their set positions relative to each other/
Available in OS X v10.7 and later.

68.9.18  **NSDraggingFormationPile = 2**

MBS MacCocoa Plugin, Plugin Version: 13.1. **Function:** One of the constants to control the visual format of multiple items being dragged.

**Notes:**
Drag images are placed on top of each other with random rotations.
Available in OS X v10.7 and later.

68.9.19  **NSDraggingFormationStack = 4**

MBS MacCocoa Plugin, Plugin Version: 13.1. **Function:** One of the constants to control the visual format of multiple items being dragged.

**Notes:**
Drag images are laid out overlapping diagonally.
Available in OS X v10.7 and later.
CHAPTER 68. DRAG & DROP

68.10  Globals

68.10.1  InstallDragImageMBS

MBS MacExtrax Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Install drag image patch.
Notes: This allows you to use retina NSImage for drag image with using Xojo’s built in drag and drop classes.
So call InstallDragImageMBS once in app.open to initialize.

Than before call DragItem.Drag, call SetNextDragImageMBS and provide a 2x image as NSImageMBS object.
See example project for details.

68.10.2  SetNextDragImageMBS(Img as NSImageMBS)

MBS MacExtrax Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Sets which image to use for next drag.
Notes: Once image has been replaced for Xojo’s drag, the image reference is freed by plugin.

68.11  class WinDataObjectMBS

68.11.1  class WinDataObjectMBS

Function: The class for a data object for Drag and Drop.
Example:

// take some picture
dim p as Picture = LogoMBS(500)

// create data object
dim w as new WinDataObjectMBS(p)

Notes: While the drag classes compile for Web Edition, they run on the server, so they have no effect on
the client browser!
68.11. Methods

68.11.3 AddDragImage(pic as picture, width as Integer, height as Integer, x as Integer, y as Integer)

MBS Win Plugin, Plugin Version: 11.0, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Adds a drag image to the data object.

**Notes:**
- pic: the picture to use.
- width and height: The size of the picture.
- x and y: The location of the cursor within the drag image. The point should contain the offset from the upper-left corner of the drag image to the location of the cursor.

Requires Windows 2000 Professional with SP3, Windows XP.
On success the HelperHandle property is not zero.

Turn off antialiasing when drawing text. Otherwise, artifacts could occur at the edges, between the text color and the color key.

This function takes the picture (and it’s mask) and turns it in a nice drag picture. This includes applying the mask and passing black for the background color. Dark colors which should be transparent will be made lighter.

See also:

- 68.11.4 AddDragImage(pic as picture, width as Integer, height as Integer, x as Integer, y as Integer, ImageBackgroundColor as color)

68.11.4 AddDragImage(pic as picture, width as Integer, height as Integer, x as Integer, y as Integer, ImageBackgroundColor as color)

MBS Win Plugin, Plugin Version: 10.5, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Adds a drag image to the data object.

**Notes:**
- pic: the picture to use.
- width and height: The size of the picture.
- x and y: The location of the cursor within the drag image. The point should contain the offset from the upper-left corner of the drag image to the location of the cursor.
- ImageBackgroundColor: The color used by the control to fill the background of the drag image.

Requires Windows 2000 Professional with SP3, Windows XP.
On success the HelperHandle property is not zero.
Turn off antialiasing when drawing text. Otherwise, artifacts could occur at the edges, between the text color and the color key.

See also:

- 68.11.3 AddDragImage(pic as picture, width as Integer, height as Integer, x as Integer, y as Integer)

### 68.11.5 AddFiles(files() as folderitem)

MBS Win Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Adds file references in the format the explorer can understand them.

See also:

- 68.11.6 AddFiles(pathes() as string)

### 68.11.6 AddFiles(pathes() as string)

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Adds file paths in the format the explorer can understand them.

**Notes:** Folder paths should have no backslash on the end.

See also:

- 68.11.5 AddFiles(files() as folderitem)

### 68.11.7 AddPicture(pic as picture)

MBS Win Plugin, Plugin Version: 10.5, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Adds a picture to the data object.

### 68.11.8 AddRaw(format as Integer, data as string)

MBS Win Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Adds raw data to the data object.

**Notes:** Depending of the format you may need to add chr(0) on the end.

### 68.11.9 AddText(text as string)

MBS Win Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Adds the text to the data object.
68.11. CLASS WINDATAOBJECTMBS

68.11.10 Constructor

MBS Win Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Creates an empty data object.
See also:

- 68.11.11 Constructor(files() as folderitem)
- 68.11.12 Constructor(pic as picture)
- 68.11.13 Constructor(text as string)

68.11.11 Constructor(files() as folderitem)

MBS Win Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Creates a data object and adds the files.
See also:

- 68.11.10 Constructor
- 68.11.12 Constructor(pic as picture)
- 68.11.13 Constructor(text as string)

68.11.12 Constructor(pic as picture)

MBS Win Plugin, Plugin Version: 10.5, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Creates a new data object and adds the given picture.

**Example:**
```javascript
// take some picture
dim p as Picture = LogoMBS(500)

// create data object
dim w as new WinDataObjectMBS(p)
```

See also:

- 68.11.10 Constructor
- 68.11.11 Constructor(files() as folderitem)
- 68.11.13 Constructor(text as string)
68.11.13 Constructor(text as string)

MBS Win Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Creates a new data object and adds the given text.

**Example:**

```vbnet
// create data object with text
dim w as new WinDataObjectMBS("Hello World")
```

See also:

- 68.11.10 Constructor
- 68.11.11 Constructor(files() as folderitem)
- 68.11.12 Constructor(pic as picture)

68.11.14 Formats as String()

MBS Win Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries list of formats in the data object.

**Notes:** Helps for debugging to see what is inside.

68.11.15 GetFileContents(index as Integer) as string

MBS Win Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries file content for the file with the given index.

**Notes:**

Use index from WindowsFileDescriptorMBS.index property.

This works for files up to a few hundred megabytes in size. For larger files we will have to change plugin if you want to receive those.

68.11.16 GetFileDescriptors as WindowsFileDescriptorMBS()

MBS Win Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries file descriptors.

**Example:**

```vbnet
dim dataObject as WinDataObjectMBS // your data object
```
68.11. **CLASS WINDATAOBJECTMBS**

```vba
dim des(-1) as WindowsFileDescriptorMBS = dataObject.GetFileDescriptors

for each d as WindowsFileDescriptorMBS in des
    // we got file descriptions. Some metadata and the data. No path.
    dim data as string = dataObject.GetFileContents(0)
    msgbox "File """" + d.FileName + """" with """" + str(lenb(data)) + """" bytes data."
next
```

**Notes:** Result array is empty on any error.

---

### 68.11.17 GetFileName as string

MBS Win Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries filename from data object.  

**Notes:** Depending on how the other application works, the drag data object may have either file descriptors, a file path or path strings.

The file name is valid at least as long as this object is alive.

---

### 68.11.18 GetPaths as folderitem()

MBS Win Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries the paths in the data object.  

**Example:**

```vba
dim dataObject as WinDataObjectMBS // your data object

dim files(-1) as FolderItem = dataObject.GetPaths

for each f as FolderItem in files
    // we got a file you can use like any other file (e.g. copy)
    listbox1.AddRow "Path """" + f.AbsolutePath + """"
next
```

**Notes:** Checks for a CF_HDROP type. May return one or more folderitems.
68.11.19  GetPathStrings as string()

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries the paths in the data object. **Notes:** Checks for a CF_HDROP type. May return one or more folderitems.

68.11.20  GetPicture as picture

MBS Win Plugin, Plugin Version: 10.5, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Queries the picture from the data object. **Notes:** Supports CF_BITMAP/TYMED_GDI.

68.11.21  GetRaw(format as Integer) as string

MBS Win Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries the raw data for the given type.

68.11.22  GetText as string

MBS Win Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries the text from the data object. **Notes:** Returns unicode or ANSI text depending on what is available. Unicode is preferred.

68.11.23  HasFileDescriptors as boolean

MBS Win Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Checks whether this data object contains file descriptors. **Notes:** Returns true if a path is found. Checks for CF_FILEGROUPDESCRIPTOR.

Windows uses File Descriptors and FileContents for drag and drop operations where the data is not stored in a file. You get the descriptors and if you need you can get the data which is delivered just in time.
68.11. **CLASS WINDATAOBJECTMBS**

68.11.24 **HasFileName as boolean**

MBS Win Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Checks to see if a filename entry is in the data object.

68.11.25 **HasPaths as boolean**

MBS Win Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Checks whether this data object contains file paths.

Notes:
Returns true if a path is found.
Checks for CF_HDROP.

68.11.26 **HasPicture as boolean**

MBS Win Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Checks if a picture is part of this data object.

Notes:
Returns true if a picture is found.
Checks for CF_BITMAP.

68.11.27 **HasRaw(format as Integer) as boolean**

MBS Win Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Checks whether this data object contains data in the given format.

68.11.28 **HasText as boolean**

MBS Win Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Checks whether this data object contains Text or UnicodeText.

Notes:
Returns true if text is found.
Checks for CF_UNICODETEXT and CF_TEXT.
68.11.29 Properties

68.11.30 DragImage as Picture

MBS Win Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The drag image.
**Notes:**
Used to show user what he is dragging.
(Read only property)

68.11.31 Handle as Integer

MBS Win Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The internal handle.
**Notes:** (Read and Write property)

68.11.32 HelperHandle as Integer

MBS Win Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The internal helper object to handle the drag image.
**Notes:**
This value is not zero if the AddDragImage call was successful.
(Read and Write property)

68.11.33 Lasterror as Integer

MBS Win Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The last error code.
**Notes:** (Read and Write property)

68.11.34 Constants

68.11.35 CF_BITMAP = 2

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the constants for the data types.
68.11. **CLASS WINDATAOBJECTMBS**

68.11.36 **CF\_DIB = 8**

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the constants for the data types.

68.11.37 **CF\_DIBV5 = 17**

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the constants for the data types.

68.11.38 **CF\_DIF = 5**

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the constants for the data types.

68.11.39 **CF\_ENHMETAFILE = 14**

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the constants for the data types.

68.11.40 **CF\_HDROP = 15**

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the constants for the data types.

68.11.41 **CF\_LOCALE = 16**

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the constants for the data types.

68.11.42 **CF\_METAFILEPICT = 3**

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the constants for the data types.

68.11.43 **CF\_OEMTEXT = 7**

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the constants for the data types.
68.11.44 CF_PALETTE = 9

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the constants for the data types.

68.11.45 CF_PENDATA = 10

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the constants for the data types.

68.11.46 CF_RIFF = 11

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the constants for the data types.

68.11.47 CF_SYLK = 4

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the constants for the data types.

68.11.48 CF_TEXT = 1

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the constants for the data types.

68.11.49 CF_TIFF = 6

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the constants for the data types.

68.11.50 CF_UNICODETEXT = 13

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the constants for the data types.

68.11.51 CF_WAVE = 12

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the constants for the data types.
68.12  class WindowsDragSourceMBS

**Function:**
The class for Drag and Drop on Windows to create a drag source.

**Notes:**
The WindowsDragSourceMBS class is one of the class you implement to provide drag-and-drop operations in your application. It contains methods used in any application used as a data source in a drag-and-drop operation. The data source application in a drag-and-drop operation is responsible for:

- Determining the data being dragged based on the user’s selection.
- Initiating the drag-and-drop operation based on the user’s mouse actions.
- Generating some of the visual feedback during the drag-and-drop operation, such as setting the cursor and highlighting the data selected for the drag-and-drop operation.
- Canceling or completing the drag-and-drop operation based on the user’s mouse actions.
- Performing any action on the original data caused by the drop operation, such as deleting the data on a drag move.

WindowsDragSourceMBS contains the events for generating visual feedback to the end user and for canceling or completing the drag-and-drop operation.

**When To Implement**
Implement WindowsDragSourceMBS if you are developing a container or server application that can act as a data source for a drag-and-drop operation. The WindowsDragSourceMBS interface is only required during the drag-and-drop operation.

If you implement the WindowsDragSourceMBS class, you must also implement the DataObjectMBS class on the same object to represent the data being transferred.

You can use the same implementation of DataObjectMBS for drag-and-drop data as for the data object offered to the clipboard. After you have implemented clipboard operations in your application, you can add drag-and-drop operations with only a little extra work.

**When To Use**
You do not usually call the WindowsDragSourceMBS methods directly. Instead, your data source calls the DoDragDrop function when it detects that the user has initiated a drag-and-drop operation. Then, DoDrag-
Drop calls the WindowsDragSourceMBS methods during the drag-and-drop operation.

For example, DoDragDrop calls WindowsDragSourceMBS.GiveFeedback when you need to change the cursor shape or when you need to provide some other visual feedback. DoDragDrop calls WindowsDragSourceMBS.QueryContinueDrag when there is a change in the mouse button state to determine if the drag-and-drop operation was canceled or completed.

While the drag classes compile for Web Edition, they run on the server, so they have no effect on the client browser!

**68.12.2 Methods**

**68.12.3 DoDragDrop(dataObject as WinDataObjectMBS, OKEffect as Integer, byref Effect as Integer) as Integer**

MBS Win Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Carries out an OLE drag and drop operation. **Notes:**

Parameters:

- **dataObject:** The WinDataObjectMBS data object that contains the data being dragged.
- **OKEffects:** Effects the source allows in the OLE drag-and-drop operation. Most significant is whether it permits a move. The OKEffect and Effect parameters obtain values from the DROPEFFECT* constants.
- **Effect:** Pointer to a value that indicates how the OLE drag-and-drop operation affected the source data. The pdwEffect parameter is set only if the operation is not canceled.

This function returns S_OK on success. Other possible values include the following.

<table>
<thead>
<tr>
<th>Return code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRAGDROP_S_DROP</td>
<td>The OLE drag-and-drop operation was successful.</td>
</tr>
<tr>
<td>DRAGDROP_S_CANCEL</td>
<td>The OLE drag-and-drop operation was canceled.</td>
</tr>
<tr>
<td>E_UNSPEC</td>
<td>Unexpected error occurred.</td>
</tr>
</tbody>
</table>

Remarks

If you are developing an application that can act as a data source for an OLE drag-and-drop operation, you must call DoDragDrop when you detect that the user has started an OLE drag-and-drop operation.

The DoDragDrop function enters a loop in which it calls various methods in the WindowsDragSourceMBS and WindowsDropTargetMBS interfaces. (For a successful drag-and-drop operation, the application acting
as the data source must also implement WindowsDragSourceMBS, while the target application must implement WindowsDropTargetMBS.)

The DoDragDrop function determines the window under the current cursor location. It then checks to see if this window is a valid drop target.

If the window is a valid drop target, DoDragDrop calls WindowsDropTargetMBS.DragEnter. This method supplies an effect code indicating what would happen if the drop actually occurred. For a list of valid drop effects, see the DROPEFFECT* constants.

DoDragDrop calls WindowsDragSourceMBS.GiveFeedback with the effect code so that the drop source interface can provide appropriate visual feedback to the user.

DoDragDrop tracks mouse cursor movements and changes in the keyboard or mouse button state.

If the user moves out of a window, DoDragDrop calls WindowsDropTargetMBS.DragLeave.

If the mouse enters another window, DoDragDrop determines if that window is a valid drop target and then calls WindowsDropTargetMBS.DragEnter for that window.

If the mouse moves but stays within the same window, DoDragDrop calls WindowsDropTargetMBS.DragOver.

If there is a change in the keyboard or mouse button state, DoDragDrop calls WindowsDragSourceMBS.QueryContinueDrag and determines whether to continue the drag, to drop the data, or to cancel the operation based on the return value.

If the return value is S_OK, DoDragDrop first calls WindowsDropTargetMBS.DragOver to continue the operation. This method returns a new effect value and DoDragDrop then calls WindowsDragSourceMBS.GiveFeedback with the new effect so appropriate visual feedback can be set. For a list of valid drop effects, see the DROPEFFECT constants. WindowsDropTargetMBS.DragOver and WindowsDragSourceMBS.GiveFeedback are paired so that as the mouse moves across the drop target, the user is given the most up-to-date feedback on the mouse’s position.

If the return value is DRAGDROP_S_DROP, DoDragDrop calls WindowsDropTargetMBS.Drop. The DoDragDrop function returns the last effect code to the source, so the source application can perform the appropriate operation on the source data, for example, cut the data if the operation was a move.

If the return value is DRAGDROP_S_CANCEL, the DoDragDrop function calls WindowsDropTargetMBS.DragLeave.
68.12.4 Properties

68.12.5 Handle as Integer

MBS Win Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The internal handle.
**Notes:** (Read and Write property)

68.12.6 Events

68.12.7 GiveFeedback(Effect as Integer) as Integer

MBS Win Plugin, Plugin Version: 10.5, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Enables a source application to give visual feedback to the end user during a drag-and-drop operation by
providing the DoDragDrop function with an enumeration value specifying the visual effect.
**Notes:**
Effect: The drop effect value returned by the most recent call to WindowsDropTargetMBS.DragEnter, Win-
dowsDropTargetMBS.DragOver, or WindowsDropTargetMBS.DragLeave.

Return S_OK on success. Return DRAGDROP_S_USEDEFAULTCURSORS to indicate successful comple-
tion of the method, and requests OLE to update the cursor using the OLE-provided default cursors.

When your application detects that the user has started a drag-and-drop operation, it should call the Do-
DragDrop function. DoDragDrop enters a loop, calling WindowsDropTargetMBS.DragEnter when the mouse
first enters a drop target window, WindowsDropTargetMBS.DragOver when the mouse changes its position
within the target window, and WindowsDropTargetMBS.DragLeave when the mouse leaves the target win-
dow.

For every call to either WindowsDropTargetMBS.DragEnter or WindowsDropTargetMBS.DragOver, Do-
DragDrop calls WindowsDropTargetMBS.GiveFeedback, passing it the drop effect value returned from the
drop target call.

DoDragDrop calls WindowsDropTargetMBS.DragLeave when the mouse has left the target window. Then,
DoDragDrop calls WindowsDropTargetMBS.GiveFeedback and passes the DROPEFFECT_NONE value in
the dwEffect parameter.

The Effect parameter can include DROPEFFECT_SCROLL, indicating that the source should put up the
drag-scrolling variation of the appropriate pointer.

Notes to Implementers
This function is called frequently during the DoDragDrop loop, so you can gain performance advantages if you optimize your implementation as much as possible.

GiveFeedback is responsible for changing the cursor shape or for changing the highlighted source based on the value of the dwEffect parameter. If you are using default cursors, you can return DRAGDROP_S_USEDEFAULTCURSORS, which causes OLE to update the cursor for you, using its defaults.

### 68.12.8 QueryContinueDrag(EscapePressed as boolean, KeyState as Integer) as Integer

MBS Win Plugin, Plugin Version: 10.5, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Determines whether a drag-and-drop operation should be continued, canceled, or completed. You do not call this method directly.

**Notes:**
The OLE DoDragDrop function calls this method during a drag-and-drop operation.

**EscapePressed:** Indicates whether the Esc key has been pressed since the previous call to QueryContinueDrag or to DoDragDrop if this is the first call to QueryContinueDrag. A true value indicates the end user has pressed the escape key; a false value indicates it has not been pressed.

**KeyState:** The current state of the keyboard modifier keys on the keyboard. Possible values can be a combination of any of the flags MK_CONTROL, MK_SHIFT, MK_ALT, MK_BUTTON, MK_LBUTTON, MK_MBUTTON, and MK_RBUTTON.

This event can return the following values.

<table>
<thead>
<tr>
<th>Return code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>S_OK</td>
<td>The drag operation should continue. This result occurs if no errors are detected, the mouse button starting the drag-and-drop operation has not been released, and the Esc key has not been detected.</td>
</tr>
<tr>
<td>DRAGDROP_S_DROP</td>
<td>The drop operation should occur completing the drag operation. This result occurs if KeyState indicates that the key that started the drag-and-drop operation has been released.</td>
</tr>
<tr>
<td>DRAGDROP_S_CANCEL</td>
<td>The drag operation should be canceled with no drop operation occurring. This result occurs if EscapePressed is true, indicating the Esc key has been pressed.</td>
</tr>
</tbody>
</table>

The DoDragDrop function calls QueryContinueDrag whenever it detects a change in the keyboard or mouse button state during a drag-and-drop operation. QueryContinueDrag must determine whether the drag-and-drop operation should be continued, canceled, or completed based on the contents of the parameters KeyState and EscapePressed.
68.12.9 Constants

68.12.10 DRAGDROP_S_CANCEL = & H00040101

MBS Win Plugin, Plugin Version: 10.5. Function: One of the OLE error codes. Notes: Drag and Drop was cancelled.

68.12.11 DRAGDROP_S_DROP = & h00040100

MBS Win Plugin, Plugin Version: 10.5. Function: One of the OLE error codes. Notes: Do the drop operation.

68.12.12 DRAGDROP_S_USEDEFAULTCURSORS = & h00040102

MBS Win Plugin, Plugin Version: 10.5. Function: One of the OLE error codes.

68.12.13 DROPEFFECT_COPY = 1

MBS Win Plugin, Plugin Version: 10.5. Function: One of the drop effect constants. Notes: Drop results in a copy. The original data is untouched by the drag source.

Your application should always mask drop effect constants to ensure compatibility with future implementations. Presently, only some of the bit positions in a drop effect value have meaning. In the future, more interpretations for the bits will be added. Drag sources and drop targets should carefully mask these values appropriately before comparing. They should never compare a drop effect value against, say, DROPEFFECT_COPY by doing the following:

if DropEffect = DROPEFFECT_COPY then

Instead, the application should always mask for the value or values being sought as using one of the following techniques:

if bitwiseAnd(DropEffect, DROPEFFECT_COPY) = DROPEFFECT_COPY then

This allows for the definition of new drop effects, while preserving backwards compatibility with existing code.
68.12.14 DROPEFFECT_LINK = 4

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the drop effect constants.  
**Notes:** Drag source should create a link to the original data.

68.12.15 DROPEFFECT_MOVE = 2

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the drop effect constants.  
**Notes:** Drag source should remove the data.

68.12.16 DROPEFFECT_NONE = 0

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the drop effect constants.  
**Notes:** Drop target cannot accept the data.

68.12.17 DROPEFFECT_SCROLL = & h80000000

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the drop effect constants.  
**Notes:** Scrolling is about to start or is currently occurring in the target. This value is used in addition to the other values.

68.12.18 MK_CONTROL = 8

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the key state constants.  
**Notes:** The CTRL key is down.

68.12.19 MK_LBUTTON = 1

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the key state constants.  
**Notes:** The left mouse button is down.

68.12.20 MK_MBUTTON = & h10

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the key state constants.  
**Notes:** The middle mouse button is down.
68.12.21 MK_RBUTTON = 2

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the key state constants. **Notes:** The right mouse button is down.

68.12.22 MK_SHIFT = 4

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the key state constants. **Notes:** The SHIFT key is down.

68.12.23 MK_XBUTTON1 = & h20

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the key state constants. **Notes:** The first X button is down.

68.12.24 MK_XBUTTON2 = & h40

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the key state constants. **Notes:** The second X button is down.

68.12.25 S_FALSE = 1

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the OLE error codes.

68.12.26 S_OK = 0

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the OLE error codes.
68.13. class WindowsDropTargetMBS

MBS Win Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The WindowsDropTargetMBS interface is one of the interfaces you implement to provide drag-and-drop operations in your application. **Notes:** It contains methods used in any application that can be a target for data during a drag-and-drop operation. A drop-target application is responsible for:

- Determining the effect of the drop on the target application.
- Incorporating any valid dropped data when the drop occurs.
- Communicating target feedback to the source so the source application can provide appropriate visual feedback such as setting the cursor.
- Implementing drag scrolling.
- Registering and revoking its application windows as drop targets.

The WindowsDropTargetMBS class contains methods that handle all these responsibilities except registering and revoking the application window as a drop target, for which you must call the AttachToWindow functions.

**When To Implement**

Implement the WindowsDropTargetMBS interface if you are developing an application that can act as a target for a drag-and-drop operation. The WindowsDropTargetMBS interface is associated with your application windows and is implemented on your window objects. Call the AttachToWindow function to register your window objects as drop targets.

**When To Use**

You do not call the methods of WindowsDropTargetMBS directly. The DoDragDrop function calls the WindowsDropTargetMBS methods during the drag-and-drop operation.

For example, DoDragDrop calls WindowsDropTargetMBS.DragEnter when it detects the mouse has moved over a window that is registered as a drag target. After the mouse has entered a drag-target window, DoDragDrop calls WindowsDropTargetMBS.DragOver as the mouse moves through the window and calls WindowsDropTargetMBS.DragLeave if the mouse leaves the target window or if the user cancels or completes the drag-and-drop operation. DoDragDrop calls WindowsDropTargetMBS.Drop if the drop finally
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occurs.

To see the ghost picture of the drag, please register a WindowsDragSourceMBS for the same window.

While the drag classes compile for Web Edition, they run on the server, so they have no effect on the client browser!

68.13.2 Methods

68.13.3 AttachToControl(ctl as control, showDragImage as boolean = true) as Integer


Notes:

This method unregistered any existing drop target on the control (including the one from Real Studio).

Registers the specified control as one that can be the target of an OLE drag-and-drop operation and specifies the WindowsDropTargetMBS instance to use for drop operations.

c: The control that can be a target for an OLE drag-and-drop operation.
showDragImage: Whether we should support the drag image methods in the newer Windows versions.

This function returns S_OK on success. Other possible values include the following.

<table>
<thead>
<tr>
<th>Return code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRAGDROP_E_INVALIDHWND</td>
<td>Invalid handle returned in the hwnd parameter.</td>
</tr>
<tr>
<td>DRAGDROP_E_ALREADYREGISTERED</td>
<td>The specified window has already been registered as a drop target.</td>
</tr>
<tr>
<td>E_OUTOFMEMORY</td>
<td>Insufficient memory for the operation.</td>
</tr>
</tbody>
</table>

If your application can accept dropped objects during OLE drag-and-drop operations, you must call the AttachToControl function. Do this whenever one of your application windows is available as a potential drop target, i.e., when the window appears unobscured on the screen.

AttachToControl must be called on the main thread of your application.

The AttachToControl function only registers one control at a time, so you must call it for each application control capable of accepting dropped objects. For each control, you need your own instance of the WindowsDropTargetMBS class.
As the mouse passes over unobscured portions of the target control during an OLE drag-and-drop operation, the DoDragDrop function calls the specified WindowsDropTargetMBS.DragOver method for the current control. When a drop operation actually occurs in a given control, the DoDragDrop function calls WindowsDropTargetMBS.Drop.

### 68.13.4 AttachToWindow(win as window, showDragImage as boolean = true) as Integer

MBS Win Plugin, Plugin Version: 10.5, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Attached the drop target to the window.

**Notes:**
This method unregistered any existing drop target on the window (including the one from Real Studio).

Registers the specified window as one that can be the target of an OLE drag-and-drop operation and specifies the WindowsDropTargetMBS instance to use for drop operations.

**Win:** The window that can be a target for an OLE drag-and-drop operation.
**showDragImage:** Whether we should support the drag image methods in the newer Windows versions.

This function returns S_OK on success. Other possible values include the following.

<table>
<thead>
<tr>
<th>Return code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRAGDROP_E_INVALIDHWND</td>
<td>Invalid handle returned in the hwnd parameter.</td>
</tr>
<tr>
<td>DRAGDROP_E_ALREADYREGISTERED</td>
<td>The specified window has already been registered as a drop target.</td>
</tr>
<tr>
<td>E_OUTOFMEMORY</td>
<td>Insufficient memory for the operation.</td>
</tr>
</tbody>
</table>

If your application can accept dropped objects during OLE drag-and-drop operations, you must call the AttachToWindow function. Do this whenever one of your application windows is available as a potential drop target, i.e., when the window appears unobscured on the screen.

AttachToWindow must be called on the main thread of your application.

The AttachToWindow function only registers one window at a time, so you must call it for each application window capable of accepting dropped objects. For each window, you need your own instance of the WindowsDropTargetMBS class.

As the mouse passes over unobscured portions of the target window during an OLE drag-and-drop operation, the DoDragDrop function calls the specified WindowsDropTargetMBS.DragOver method for the current window. When a drop operation actually occurs in a given window, the DoDragDrop function calls WindowsDropTargetMBS.Drop.
### 68.13.5 Properties

**68.13.6 Handle as Integer**

MBS Win Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The internal handle.
**Notes:** (Read and Write property)

**68.13.7 Helper as Integer**

MBS Win Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The internal reference to the helper object.
**Notes:** (Read and Write property)

### 68.13.8 Events

**68.13.9 DragEnter(dataObject as WinDataObjectMBS, keystate as Integer, x as Integer, y as Integer, byref effect as Integer) as Integer**

MBS Win Plugin, Plugin Version: 10.5, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Indicates whether a drop can be accepted, and, if so, the effect of the drop.
**Notes:**

**dataObject:** This data object contains the data being transferred in the drag-and-drop operation. If the drop occurs, this data object will be incorporated into the target.

**KeyState:** The current state of the keyboard modifier keys on the keyboard. Possible values can be a combination of any of the flags MK_CONTROL, MK_SHIFT, MK_ALT, MK_BUTTON, MK_LBUTTON, MK_MBUTTON, and MK_RBUTTON.

**x and y:** A point containing the current cursor coordinates in screen coordinates.

**effect:** The value of the Effect parameter of the DoDragDrop function. On return, must contain one of the DROPEFFECT flags, which indicates what the result of the drop operation would be.

Return S_OK on success. Other possible values include the following.

You do not call DragEnter directly; instead the DoDragDrop function calls it to determine the effect of a drop the first time the user drags the mouse into the registered window of a drop target.
To implement DragEnter, you must determine whether the target can use the data in the source data object by checking three things:

- The format and medium specified by the data object
- The input value of Effect
- The state of the modifier keys

To check the format and medium, use the WinDataObjectMBS object.

On entry to WindowsDropTargetMBS.DragEnter, the Effect parameter is set to the effects given to the OkEffect parameter of the DoDragDrop function. The WindowsDropTargetMBS.DragEnter method must choose one of these effects or disable the drop.

The following modifier keys affect the result of the drop.

<table>
<thead>
<tr>
<th>Key Combination</th>
<th>User-Visible Feedback</th>
<th>Drop Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTRL + SHIFT</td>
<td>DROPEFFECT_LINK</td>
<td></td>
</tr>
<tr>
<td>CTRL +</td>
<td>DROPEFFECT_COPY</td>
<td></td>
</tr>
<tr>
<td>No keys or SHIFT</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

On return, the method must write the effect, one of the DROPEFFECT flags, to the Effect parameter. DoDragDrop then takes this parameter and writes it to its Effect parameter. You communicate the effect of the drop back to the source through DoDragDrop in the Effect parameter. The DoDragDrop function then calls WindowsDragSourceMBS.GiveFeedback so that the source application can display the appropriate visual feedback to the user through the target window.

### 68.13.10 DragLeave as Integer

MBS Win Plugin, Plugin Version: 10.5, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Removes target feedback and releases the data object. **Notes:** Return S_OK on success. Other possible values include the following.
Return code   Description
E_OUTOFMEMORY There is insufficient memory available for this operation.

You do not call this method directly. The DoDragDrop function calls this method in either of the following cases:

- When the user drags the cursor out of a given target window.
- When the user cancels the current drag-and-drop operation.

To implement WindowsDropTargetMBS.DragLeave, you must remove any target feedback that is currently displayed. You must also release any references you hold to the data transfer object.

### 68.13.11 DragOver(keystate as Integer, x as Integer, y as Integer, byref effect as Integer) as Integer

**MBS Win Plugin, Plugin Version: 10.5, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function:** Provides target feedback to the user and communicates the drop’s effect to the DoDragDrop function so it can communicate the effect of the drop back to the source.

**Notes:**

- **KeyState:** The current state of the keyboard modifier keys on the keyboard. Valid values can be a combination of any of the flags MK_CONTROL, MK_SHIFT, MK_ALT, MK_BUTTON, MK_LBUTTON, MK_MBUTTON, and MK_RBUTTON.
- **x and y:** The point containing the current cursor coordinates in screen coordinates.
- **Effect:** On input, pointer to the value of the Effect parameter of the DoDragDrop function. On return, must contain one of the DROPEFFECT flags, which indicates what the result of the drop operation would be.

Return S_OK on success. Other possible values include the following.

<table>
<thead>
<tr>
<th>Return code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>E_UNEXPECTED</td>
<td>An unexpected error has occurred.</td>
</tr>
<tr>
<td>E_INVALIDARG</td>
<td>The Effect value is not valid.</td>
</tr>
<tr>
<td>E_OUTOFMEMORY</td>
<td>There was insufficient memory available for this operation.</td>
</tr>
</tbody>
</table>

You do not call DragOver directly. The DoDragDrop function calls this method each time the user moves the mouse across a given target window. DoDragDrop exits the loop if the drag-and-drop operation is canceled, if the user drags the mouse out of the target window, or if the drop is completed.

In implementing WindowsDropTargetMBS.DragOver, you must provide features similar to those in WindowsDropTargetMBS.DragEnter. You must determine the effect of dropping the data on the target by
examine the FORMATETC defining the data object’s formats and medium, along with the state of the modifier keys. The mouse position may also play a role in determining the effect of a drop. The following modifier keys affect the result of the drop.

<table>
<thead>
<tr>
<th>Key Combination</th>
<th>User-Visible Feedback</th>
<th>Drop Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTRL + SHIFT</td>
<td>=</td>
<td>DROPEFFECT_LINK</td>
</tr>
<tr>
<td>CTRL</td>
<td>+</td>
<td>DROPEFFECT_COPY</td>
</tr>
<tr>
<td>No keys or SHIFT</td>
<td>None</td>
<td>DROPEFFECT_MOVE</td>
</tr>
</tbody>
</table>

You communicate the effect of the drop back to the source through DoDragDrop in Effect. The DoDragDrop function then calls WindowsDragSourceMBS.GiveFeedback so the source application can display the appropriate visual feedback to the user.

On entry to WindowsDropTargetMBS.DragOver, the Effect parameter must be set to the allowed effects passed to the OkEffect parameter of the DoDragDrop function. The WindowsDropTargetMBS.DragOver method must be able to choose one of these effects or disable the drop.

Upon return, Effect is set to one of the DROPEFFECT flags. This value is then passed to the Effect parameter of DoDragDrop. Reasonable values are DROPEFFECT_COPY to copy the dragged data to the target, DROPEFFECT_LINK to create a link to the source data, or DROPEFFECT_MOVE to allow the dragged data to be permanently moved from the source application to the target.

You may also wish to provide appropriate visual feedback in the target window. There may be some target feedback already displayed from a previous call to WindowsDropTargetMBS.DragOver or from the initial WindowsDropTargetMBS.DragEnter. If this feedback is no longer appropriate, you should remove it.

For efficiency reasons, a data object is not passed in WindowsDropTargetMBS.DragOver. The data object passed in the most recent call to WindowsDropTargetMBS.DragEnter is available and can be used.

When WindowsDropTargetMBS.DragOver has completed its operation, the DoDragDrop function calls WindowsDragSourceMBS.GiveFeedback so the source application can display the appropriate visual feedback to the user.

Notes to Implementers

This function is called frequently during the DoDragDrop loop so it makes sense to optimize your implementation of the DragOver method as much as possible.
68.13.12 Drop(dataObject as WinDataObjectMBS, keystate as Integer, x as Integer, y as Integer, byref effect as Integer) as Integer

MBS Win Plugin, Plugin Version: 10.5, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Incorporates the source data into the target window, removes target feedback, and releases the data object. **Notes:**

dataObject: The data object being transferred in the drag-and-drop operation.
KeyState: The current state of the keyboard modifier keys on the keyboard. Possible values can be a combination of any of the flags MK_CONTROL, MK_SHIFT, MK_ALT, MK_BUTTON, MK_LBUTTON, MK MBUTTON, and MK RBUTTON.
x and y: The point containing the current cursor coordinates in screen coordinates.
Effect: On input, the value of the Effect parameter of the DoDragDrop function. On return, must contain one of the DROPEFFECT flags, which indicates what the result of the drop operation would be.

Return \texttt{S_OK} on success. Other possible values include the following.

<table>
<thead>
<tr>
<th>Return code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>E_UNEXPECTED</td>
<td>An unexpected error has occurred.</td>
</tr>
<tr>
<td>E_INVALIDARG</td>
<td>The pdwEffect parameter is not valid.</td>
</tr>
<tr>
<td>E_OUTOFMEMORY</td>
<td>There is insufficient memory available for this operation.</td>
</tr>
</tbody>
</table>

You do not call this method directly. The DoDragDrop function calls this method when the user completes the drag-and-drop operation.

In implementing Drop, you must incorporate the data object into the target. Use the formats available in WinDataObjectMBS, available through dataObject, along with the current state of the modifier keys to determine how the data is to be incorporated, such as linking or embedding.

In addition to incorporating the data, you must also clean up as you do in the WindowsDropTargetMBS.DragLeave method:

Remove any target feedback that is currently displayed.
Release any references to the data object.
You also pass the effect of this operation back to the source application through DoDragDrop, so the source application can clean up after the drag-and-drop operation is complete:

Remove any source feedback that is being displayed.
Make any necessary changes to the data, such as removing the data if the operation was a move.
68.13.14 DROPEFFECT_COPY = 1

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the drop effect constants.

**Notes:**
Drop results in a copy. The original data is untouched by the drag source.

Your application should always mask drop effect constants to ensure compatibility with future implementations. Presently, only some of the bit positions in a drop effect value have meaning. In the future, more interpretations for the bits will be added. Drag sources and drop targets should carefully mask these values appropriately before comparing. They should never compare a drop effect value against, say, DROPEFFECT_COPY by doing the following:

```python
if DropEffect = DROPEFFECT_COPY then
```

Instead, the application should always mask for the value or values being sought as using one of the following techniques:

```python
if bitwiseAnd(DropEffect, DROPEFFECT_COPY) = DROPEFFECT_COPY then
```

This allows for the definition of new drop effects, while preserving backwards compatibility with existing code.

68.13.15 DROPEFFECT_LINK = 4

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the drop effect constants.

**Notes:** Drag source should create a link to the original data.

68.13.16 DROPEFFECT_MOVE = 2

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the drop effect constants.

**Notes:** Drag source should remove the data.

68.13.17 DROPEFFECT_NONE = 0

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the drop effect constants.

**Notes:** Drop target cannot accept the data.
68.13.18  **DROPEFFECT_SCROLL = & h80000000**

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the drop effect constants. **Notes:** Scrolling is about to start or is currently occurring in the target. This value is used in addition to the other values.

68.13.19  **E_INVALIDARG = & h80070057**

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the OLE error codes. **Notes:** An invalid argument was passed.

68.13.20  **E_OUTOFMEMORY = & h80000002**

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the OLE error codes. **Notes:** There was insufficient memory available for this operation.

68.13.21  **E_UNEXPECTED = & h8000FFFF**

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the OLE error codes. **Notes:** An unexpected error has occurred.

68.13.22  **MK_CONTROL = 8**

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the key state constants. **Notes:** The CTRL key is down.

68.13.23  **MK_LBUTTON = 1**

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the key state constants. **Notes:** The left mouse button is down.

68.13.24  **MK_MBUTTON = & h10**

MBS Win Plugin, Plugin Version: 10.5. **Function:** One of the key state constants. **Notes:** The middle mouse button is down.
68.13.25  MK_RBUTTON = 2

MBS Win Plugin, Plugin Version: 10.5. Function: One of the key state constants.
Notes: The right mouse button is down.

68.13.26  MK_SHIFT = 4

MBS Win Plugin, Plugin Version: 10.5. Function: One of the key state constants.
Notes: The SHIFT key is down.

68.13.27  MK_XBUTTON1 = & h20

MBS Win Plugin, Plugin Version: 10.5. Function: One of the key state constants.
Notes: The first X button is down.

68.13.28  MK_XBUTTON2 = & h40

MBS Win Plugin, Plugin Version: 10.5. Function: One of the key state constants.
Notes: The second X button is down.

68.13.29  S_FALSE = 1

MBS Win Plugin, Plugin Version: 10.5. Function: One of the OLE error codes.

68.13.30  S_OK = 0

MBS Win Plugin, Plugin Version: 10.5. Function: One of the OLE error codes.
68.14  class WindowsFileDescriptorMBS

68.14.1  class WindowsFileDescriptorMBS

MBS Win Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The class for a file description.

### 68.14.2 Properties

#### 68.14.3 ClassID as String

MBS Win Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The file type identifier.

**Example:**

```vba
    dim d as WindowsFileDescriptorMBS  // your file description
    if BitwiseAnd(d.Flags, d.FD_CLSID) <> 0 then
        MsgBox d.ClassID
    end if
```

**Notes:**

Only valid if FD_CLSID is set in the flags.
(Read and Write property)

#### 68.14.4 CreationTime as Double

MBS Win Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The time of file creation.

**Example:**

```vba
    dim d as WindowsFileDescriptorMBS  // your file description
    if BitwiseAnd(d.Flags, d.FD_CREATETIME) <> 0 then
        dim da as new date
        da.TotalSeconds = d.CreationTime
        MsgBox da.LongDate
    end if
```

**Notes:**


68.14. CLASS WINDOWSFILEDESCRIPTORMBS

Only valid if FD_CREATETIME is set in the flags.
(Read and Write property)

68.14.5 FileAttributes as Integer


**Example:**

```vbscript
dim d as WindowsFileDescriptorMBS // your file description

if BitwiseAnd(d.Flags, d.FD_ATTRIBUTES) <> 0 then
    if BitwiseAnd(d.FileAttributes, d.FILE_ATTRIBUTE_TEMPORARY) = d.FILE_ATTRIBUTE_TEMPORARY then
        MsgBox "temp file"
    else
        MsgBox "no temp file"
    end if
end if
```

**Notes:**

This will be a combination of the FILE_ATTRIBUTE_* constants.
Only valid if FD_ATTRIBUTES is set in the flags.
(Read and Write property)

68.14.6 FileName as String

MBS Win Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The string that contains the name of the file.

**Example:**

```vbscript
dim d as WindowsFileDescriptorMBS // your file description

MsgBox d.FileName
```

**Notes:** (Read and Write property)
### 68.14.7 FileSize as Int64

MBS Win Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The file size, in bytes.

**Example:**
```vbnet
dim d as WindowsFileDescriptorMBS // your file description
if BitwiseAnd(d.Flags, d.FDFILESIZE) <> 0 then
    MsgBox str(d.FileSize)
end if
```

**Notes:**
Only valid if FDFILESIZE is set in flags.
(Read and Write property)

### 68.14.8 Flags as Integer

MBS Win Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
An array of flags that indicate which of the other structure members contain valid data.

**Notes:**
A combination of the FD_* constants.
(Read and Write property)

### 68.14.9 IconHeight as Integer

MBS Win Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The height of the file icon.

**Example:**
```vbnet
dim d as WindowsFileDescriptorMBS // your file description
if BitwiseAnd(d.Flags, d.FD_SIZEPOINT) <> 0 then
    MsgBox "file object at " + str(d.Pointx) + "/" + str(d.Pointy) + " with size " + str(d.IconWidth) + "/" + str(d.IconHeight)
end if
```

**Notes:**
Only valid if FD_SIZEPOINT is set in the flags.
68.14. CLASS WINODWSFILEDESCRIPTORMBS

(Read and Write property)

68.14.10  IconWidth as Integer

MBS Win Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  **Function:** The width of the file icon.

**Example:**

```vbnet
dim d as WindowsFileDescriptorMBS // your file description

if BitwiseAnd(d.Flags, d.FD_SIZEPOINT) <> 0 then
    MsgBox "file object at " + str(d.Pointx) + "/" + str(d.Pointy) + " with size " + str(d.IconWidth) + "/" + str(d.IconHeight)
end if
```

**Notes:**

Only valid if FD_SIZEPOINT is set in the flags.

(Read and Write property)

68.14.11  Index as Integer

MBS Win Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  **Function:** The index of the file descriptor.

**Notes:**

Use this entry for GetFileContent call.

(Read and Write property)

68.14.12  LastAccessTime as Double

MBS Win Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  **Function:** The time that the file was last accessed.

**Example:**

```vbnet
dim d as WindowsFileDescriptorMBS // your file description

if BitwiseAnd(d.Flags, d.FD_ACCESSSTIME) <> 0 then
    dim da as new date
    da.TotalSeconds = d.LastAccessTime
    MsgBox da.LongDate
end if
```
Notes:
Only valid if FD_ACCESSTIME is set in the flags.
(Read and Write property)

68.14.13 LastWriteTime as Double

MBS Win Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The time of the last write operation.
**Example:**

dim d as WindowsFileDescriptorMBS // your file description

if BitwiseAnd(d.Flags, d.FD_WRITESTIME) <> 0 then
    dim da as new date
    da.TotalSeconds = d.LastWriteTime
    MsgBox da.LongDate
end if

Notes:
Only valid if FD_WRITESTIME is set in the flags.
(Read and Write property)

68.14.14 PointX as Integer

MBS Win Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The x screen coordinate of the file object.
**Example:**

dim d as WindowsFileDescriptorMBS // your file description

if BitwiseAnd(d.Flags, d.FD_SIZEPOINT) <> 0 then
    MsgBox "file object at " + stR(d.Pointx) + " / " + stR(d.Pointy) + " with size " + stR(d.IconWidth) + " / " + stR(d.IconHeight)
end if

Notes:
Only valid if FD_SIZEPOINT is set in the flags.
68.14.15  **PointY as Integer**

MBS Win Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The y screen coordinate of the file object.

**Example:**

```vbs
dim d as WindowsFileDescriptorMBS  // your file description

if BitwiseAnd(d.Flags, d.FD_SIZEPOINT) <> 0 then
    MsgBox "file object at " +str(d.Pointx) +"/" +str(d.Pointy) +" with size " +str(d.IconWidth) +"/" +str(d.IconHeight)
end if
```

**Notes:**

Only valid if FD_SIZEPOINT is set in the flags.

(Read and Write property)

---

68.14.16  **Constants**

68.14.17  **FD_ACCESSSTIME = & h0010**

MBS Win Plugin, Plugin Version: 11.2. **Function:** One of the flag constants.

**Example:**

```vbs
dim d as WindowsFileDescriptorMBS  // your file description

if BitwiseAnd(d.Flags, d.FD_ACCESSSTIME) <> 0 then
    dim da as new date
    da.TotalSeconds = d.LastAccessTime
    MsgBox da.LongDate
end if
```

**Notes:** The LastAccessTime member is valid.
68.14.18  **FD_ATTRIBUTES = 4**

MBS Win Plugin, Plugin Version: 11.2. **Function:** One of the flag constants.  
**Example:**

```vba
    dim d as WindowsFileDescriptorMBS // your file description

    if BitwiseAnd(d.Flags, d.FD_ATTRIBUTES) <> 0 then
        if BitwiseAnd(d.FileAttributes, d.FILE_ATTRIBUTE_TEMPORARY) <> 0 then
            MsgBox "temp file"
        else
            MsgBox "no temp file"
        end if
    end if
```

**Notes:** The FileAttributes member is valid.

---

68.14.19  **FD_CLSID = 1**

MBS Win Plugin, Plugin Version: 11.2. **Function:** One of the flag constants.  
**Example:**

```vba
    dim d as WindowsFileDescriptorMBS // your file description

    if BitwiseAnd(d.Flags, d.FD_CLSID) <> 0 then
        MsgBox d.ClassID
    end if
```

**Notes:** The ClassID member is valid.

---

68.14.20  **FD_CREATETIME = 8**

MBS Win Plugin, Plugin Version: 11.2. **Function:** One of the flag constants.  
**Example:**

```vba
    dim d as WindowsFileDescriptorMBS // your file description

    if BitwiseAnd(d.Flags, d.FD_CREATETIME) <> 0 then
        dim da as new date
        da.TotalSeconds = d.CreationTime
        MsgBox da.LongDate
    end if
```
68.14. CLASS WINDOWSFILEDESCRIPTORMBS

Notes: The CreationTime member is valid.

68.14.21  FD_FILESIZE = & h0040

MBS Win Plugin, Plugin Version: 11.2. Function: One of the flag constants.
Example:

dim d as WindowsFileDescriptorMBS // your file description

if BitwiseAnd(d.Flags, d.FD_FILESIZE) <>0 then
  MsgBox str(d.FileSize)
end if

Notes: Whether the FileSize member is valid.

68.14.22  FD_LINKUI = & h8000

MBS Win Plugin, Plugin Version: 11.2. Function: One of the flag constants.
Notes: Treat the operation as a shortcut.

68.14.23  FD_PROGRESSUI = & h4000

MBS Win Plugin, Plugin Version: 11.2. Function: One of the flag constants.
Notes: A progress indicator is shown with drag-and-drop operations.

68.14.24  FD_SIZEPOINT = 2

MBS Win Plugin, Plugin Version: 11.2. Function: One of the flag constants.
Example:

dim d as WindowsFileDescriptorMBS // your file description

if BitwiseAnd(d.Flags, d.FD_SIZEPOINT) <>0 then
  MsgBox "file object at \"+str(d.Pointx)+"/\"+str(d.Pointy)+" with size \"+str(d.IconWidth)+"/\"+str(d.IconHeight)
end if
Notes: The Icon* and point* members are valid.

68.14.25  FD_WRITE TIME = & h0020

MBS Win Plugin, Plugin Version: 11.2. Function: One of the flag constants.  
Example:

```vbnet
dim d as WindowsFileDescriptorMBS // your file description

if BitwiseAnd(d.Flags, d.FD_WRITE TIME) <>0 then
dim da as new date
   da.TotalSeconds = d.LastWriteTime
   MsgBox da.LongDate
end if
```

Notes: Whether the LastWriteTime property is valid.

68.14.26  FILE_ATTRIBUTE_ARCHIVE = & h00000020

MBS Win Plugin, Plugin Version: 11.2. Function: One of the file attribute constants.  
Notes: A file or directory that is an archive file or directory. Applications typically use this attribute to mark files for backup or removal .

68.14.27  FILE_ATTRIBUTE.Atomic_WRITE = & h00000200

MBS Win Plugin, Plugin Version: 11.2. Function: One of the file attribute constants.

68.14.28  FILE_ATTRIBUTE_COMPRESSED = & h00000800

MBS Win Plugin, Plugin Version: 11.2. Function: One of the file attribute constants.  
Notes: A file or directory that is compressed. For a file, all of the data in the file is compressed. For a directory, compression is the default for newly created files and subdirectories.
68.14.29  FILE_ATTRIBUTE_DIRECTORY = & h00000010

MBS Win Plugin, Plugin Version: 11.2. Function: One of the file attribute constants.  
Notes: The handle that identifies a directory.

68.14.30  FILE_ATTRIBUTE_HIDDEN = & h00000002

MBS Win Plugin, Plugin Version: 11.2. Function: One of the file attribute constants.  
Notes: The file or directory is hidden. It is not included in an ordinary directory listing.

68.14.31  FILE_ATTRIBUTE_NORMAL = & h00000080

MBS Win Plugin, Plugin Version: 11.2. Function: One of the file attribute constants.  
Notes: A file that does not have other attributes set. This attribute is valid only when used alone.

68.14.32  FILE_ATTRIBUTE_OFFLINE = & h00001000

MBS Win Plugin, Plugin Version: 11.2. Function: One of the file attribute constants.  
Notes: The data of a file is not available immediately. This attribute indicates that the file data is physically moved to offline storage. This attribute is used by Remote Storage, which is the hierarchical storage management software. Applications should not arbitrarily change this attribute.

68.14.33  FILE_ATTRIBUTE_READONLY = & h00000001

MBS Win Plugin, Plugin Version: 11.2. Function: One of the file attribute constants.  
Notes: A file that is read-only. Applications can read the file, but cannot write to it or delete it.

68.14.34  FILE_ATTRIBUTE_SYSTEM = & h00000004

MBS Win Plugin, Plugin Version: 11.2. Function: One of the file attribute constants.  
Notes: A file or directory that the operating system uses a part of, or uses exclusively.

68.14.35  FILE_ATTRIBUTE_TEMPORARY = & h00000100

MBS Win Plugin, Plugin Version: 11.2. Function: One of the file attribute constants.  
Notes: A file that is being used for temporary storage. File systems avoid writing data back to mass storage
if sufficient cache memory is available, because typically, an application deletes a temporary file after the handle is closed. In that scenario, the system can entirely avoid writing the data. Otherwise, the data is written after the handle is closed.

68.14.36  FILE_ATTRIBUTE_XACTION_WRITE = & h00000400

MBS Win Plugin, Plugin Version: 11.2. **Function:** One of the file attribute constants.
Chapter 69

DVD Playback

69.1 class DVDPlaybackMBS

69.1.1 class DVDPlaybackMBS

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for DVD Playback on Mac OS X 10.3

**Notes:**

Requires Mac OS X 10.3 or newer.

The DVD Playback application programming interface (API) gives you access to the DVDPlayback framework, allowing you to offer DVD playback functionality from within your application.

During a playback "session," the application must perform specific minimum operations, as follows:

1. Initialize the playback framework with calling Open. The DVDPlayback framework can only be opened by one process at a time. If a second process attempts to initialize it, an error will be returned.
2. Set the playback window with SetPlayWindow.
4. Set the video bounds with SetVideoBounds. This is the bounds within the window and is in port coordinates.
5. Open the media with OpenMediaVolume (DVD disc) or OpenMediaFile (VIDEO_TS folder).
6. Play the media.
7. When finished or switching media, close with the appropriate call (CloseMediaVolume or CloseMediaFile)
8. When quitting or finishing session, tear down the DVDPlayback framework with calling close.
69.1.2 Methods

69.1.3 Available as boolean

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** True if the DVD playback is installed on this Mac.  **Notes:** Requires Mac OS X 10.3 or newer.

69.1.4 ClearLastPlayBookmark

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sets the video playback position to the beginning of the disc.  **Notes:** This function sets the video playback position to the beginning of the disc, but does not begin playing the media. Calling this function is equivalent to calling the function DVDStop twice in succession. Before calling this function, media needs to be open.  Available in Mac OS X v10.4 and later.  Lasterror is set.

69.1.5 close

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Call when completely done with playback. Usually when the application is quitting.  **Notes:** Requires Mac OS X 10.3 or newer.  Lasterror is set.

69.1.6 CloseMediaFile

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Closes a previously opened VIDEO_TS folder.  **Notes:** Requires Mac OS X 10.3 or newer.  Lasterror is set.
69.1.7  CloseMediaVolume

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Closes a previously opened DVD disc.

**Notes:**
Requires Mac OS X 10.3 or newer.
Lasterror is set.

69.1.8  DisplaySubPicture(value as boolean)

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Turns the display of subpictures on or off.

**Notes:**
value: A Boolean value that specifies whether to display subpictures in the current title. To display subpictures, specify TRUE. To hide subpictures, specify FALSE.

Lasterror is set.

Before calling this function, DVD-Video media needs to be open and video playback started. You can use this function to display or hide additional bitmap graphic elements such as subtitles.

Available in Mac OS X v10.3 and later.

69.1.9  DoButtonActivate(inIndex as Integer)

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Selects and activates a menu button by index.

**Notes:**
InIndex: The 1-based index of the menu button the user has selected.

If the index coincides with an active button, this function executes the action corresponding to the button.

Available in Mac OS X v10.4 and later.
CHAPTER 69. DVD PLAYBACK

69.1.10 DoMenuCGClick(x as Double, y as Double) as Integer

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
If the point (in window root view coordinates) coincides with a menu button, it will be selected.
**Notes:**
Requires Mac OS X 10.5.
Lasterror is set.

69.1.11 DoMenuCGMouseOver(x as Double, y as Double) as Integer

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
If the point (in window root view coordinates) coincides with a menu button, it will be highlighted.
**Notes:**
Requires Mac OS X 10.5.
Lasterror is set.

69.1.12 DoMenuClick(x as Integer, y as Integer) as Integer

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
If the point (in port coordinates) coincides with a menu button, it will be selected.
**Notes:**
Requires Mac OS X 10.3 or newer.
Lasterror is set.

69.1.13 DoMenuMouseOver(x as Integer, y as Integer) as Integer

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
If the point (in port coordinates) coincides with a menu button, it will be highlighted and its index returned in outIndex.
**Notes:**
Requires Mac OS X 10.3 or newer.
Lasterror is set.

69.1.14 DoUserNavigation(navigation as Integer)

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Allows the user to navigate between menu buttons.
69.1.  CLASS DVDPLAYBACKMBS

Notes:

This is usually done using keyboard keys (arrow keys to move and Enter key to choose a menu item).
Requires Mac OS X 10.3 or newer.
Lasterror is set.

Constants:

- kDVDUserNavigationMoveUp 1
- kDVDUserNavigationMoveDown 2
- kDVDUserNavigationMoveLeft 3
- kDVDUserNavigationMoveRight 4
- kDVDUserNavigationEnter 5

69.1.15 EnableWebAccess(enable as boolean)

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
Turns DVD@ccess support on or off.
Notes:

Lasterror is set.
Requires Mac OS X 10.3 or newer.

69.1.16 GetAngle as Integer

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
Gets the camera angle displayed.
Notes:

Returns the integer contains the 1-based index of the current camera angle.

Lasterror is set.
Before calling this function, DVD-Video media needs to be open and video playback started.
Available in Mac OS X v10.3 and later.
69.1.17 GetAspectRatio as Integer

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Gets the aspect ratio of the current title or menu.
**Notes:**
Returns the variable specifies the aspect ratio of the current title. For a list of possible aspect ratios see the aspect ration constants.

Lasterror is set.

The aspect ratio of the video can change whenever a different title or menu is displayed. You can use this function together with GetNativeVideoSize to calculate the bounds of the video area in a window.

Available in Mac OS X v10.3 and later.

69.1.18 GetAudioLanguageCode(byref DVDLanguageCode as string, byref DVDSubpictureExtensionCode as Integer)

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Gets the current audio language code and extension.
**Notes:**
DVDLanguageCode: On return, the variable contains the language code for the current audio stream. For a list of possible values, see the Language Codes constants.

DVDSubpictureExtensionCode: On return, the variable contains the audio extension code for the current audio stream. For a list of possible values, see Audio Extension Codes constants.

Lasterror is set.

Available in Mac OS X v10.3 and later.

69.1.19 GetAudioLanguageCodeByStream(StreamIndex as Integer, byref DVDLanguageCode as string, byref DVDSUBpictureExtensionCode as Integer)

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Gets the audio language code and extension for a specified stream.
**Notes:**
69.1. CLASS DVDPLAYBACKMBS

StreamIndex: An integer in the range 1 to 8 that specifies an audio stream in the current title.

DVDLanguageCode: On return, the variable contains the language code for the specified audio stream. For a list of possible values, see Language Codes.

DVDSubpictureExtensionCode: On return, the variable contains the audio extension code for the specified audio stream. For a list of possible values, see Audio Extension Codes.

LastError is set.

Available in Mac OS X v10.3 and later.

69.1.20 GetAudioOutputMode as Integer

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Gets the current audio mode setting.

**Notes:** Lasterror is set.

69.1.21 GetAudioOutputModeCapabilities as Integer

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the current possible audio output mode possibilities.

**Notes:** Lasterror is set.

69.1.22 GetAudioStream as Integer

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Gets the audio stream currently being used.

**Notes:**

Returns the number of the current audio stream, or 0 if the current title has no audio streams.

LastError is set.

Before calling this function, DVD-Video media needs to be open and video playback started.
69.1.23 GetAudioStreamFormat(byref outFormat as Integer, byref outBitsPerSample as Integer, byref outSamplesPerSecond as Integer, byref outChannels as Integer)

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Gets the current audio format (AC3, for example).

**Notes:**
Lasterror is set.
Requires Mac OS X 10.3.

**DVDAudioStreamFormat constants** - The different possible audio stream formats:

- kDVDAudioUnknownFormat 0
- kDVDAudioAC3Format 1
- kDVDAudioMPEG1Format 2
- kDVDAudioMPEG2Format 3
- kDVDAudioPCMFormat 4
- kDVDAudioDTSFormat 5
- kDVDAudioSDDSFormat 6

69.1.24 GetAudioStreamFormatByStream(index as Integer, byref outFormat as Integer, byref outBitsPerSample as Integer, byref outSamplesPerSecond as Integer, byref outChannels as Integer)

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Gets the audio format for a specified stream.

**Notes:**
index: An integer that specifies an audio stream in the current title.

outFormat: On return, the variable contains the audio format of the audio stream for the current title. For a list of possible formats, see "Audio Stream Formats."

outBitsPerSample: On return, the integer contains the number of bits per sample in the current audio stream.

outSamplesPerSecond: On return, the integer contains the number of samples per second in the current audio stream.

outChannels: On return, the integer contains the number of audio channels in the current audio stream.
69.1. CLASS DVDPLAYBACKMBS

Lasterror is set.

Before calling this function, DVD-Video media needs to be open.

Available in Mac OS X v10.4 and later.

69.1.25 GetAudioVolume as Integer


Notes:

Returns the current playback volume in the range 0 to 255.

Lasterror is set.

This function passes back the current playback audio volume setting. For more information, see DVDSetAudioVolume.

Available in Mac OS X v10.3 and later.

69.1.26 GetBookmark as string


Notes:

This function is used when playing media on a DVD-Video disc. Before calling this function, the media needs to be open and playing. This function passes back a bookmark to the current play position in the current DVD-Video playback session.

For information about requesting a bookmark when the media is not playing, see GetLastPlayBookmark.

The result is a binary string!

Available in Mac OS X v10.4 and later.
69.1.27 GetButtoninfo(byref numberOfButtons as Integer, byref selectedButton as Integer, byref forcedActivateButton as Integer, byref userButtonOffset as Integer, byref numberOfUserButtons as Integer)

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Gets information about all available menu buttons in the current title, domain, or content.

**Notes:**

numberOfButtons: On return, the integer contains the number of buttons in the current menu.

selectedButton: On return, the integer contains the 1-based index of the selected button.

forcedActivateButton: On return, the integer contains the index of the button whose action is performed when a specified period of time elapses after the menu is first displayed.

userButtonOffset: On return, the integer contains the index of the first user-selectable button. If the number of user-selectable buttons in a menu is smaller than the total number of buttons, this index may be greater than zero.

numberOfUserButtons: On return, the integer contains the number of user-selectable buttons in the current menu.

Lasterror is set.

Available in Mac OS X v10.4 and later.

69.1.28 GetButtonPosition(index as Integer, byref x as Double, byref y as Double, byref w as Double, byref h as Double, byref autoAction as Integer)

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Gets the position and default action of a menu button.

**Notes:**

index: The zero-based index of a menu button. If your button index is 1-based, you should decrement the index before you pass it to this function.

x,y,w,h: On return, the rectangle contains the position and dimensions of the specified button in window local coordinates.

autoAction: On return, a value of 1 indicates the button is a forced activate button—that is, the button’s action is executed immediately when the button is selected. A value of 0 indicates the button is not a forced
activate button.

Lasterror is set.

Available in Mac OS X v10.4 and later.

### 69.1.29 GetChapter as Integer

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Gets the current chapter.  
**Notes:** Lasterror is set.

### 69.1.30 GetCurrentAudioVolume as Integer

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the current video playback volume.  
**Notes:** Lasterror is set.

Currently the minimum and maximum volumes are always 0 and 255.

### 69.1.31 GetDiscRegionCode as Integer

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Gets the region codes available on a DVD-Video disc.  
**Notes:** Returns a bitfield that specifies one or more region codes. For more information about region codes, see Region Codes.  
Lasterror is set.

This function passes back the region codes assigned to the DVD-Video disc that’s currently in use. Before calling this function, you need to call the function DVDOpenMediaVolume to open the media folder on the disc.

To test whether a disc is authorized for playback in region n, you need to compute the bitwise AND of out-Code with region code n. If the result is equal to region code n, the disc is authorized for playback in region n.
Available in Mac OS X v10.3 and later.

69.1.32 GetDriveRegionCode(byref regioncode as Integer, byref NumberChangesLeft as Integer)

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the region code the drive is set to and how many changes are left. **Notes:**

Lasterror is set.
Requires Mac OS X 10.3.

Region Codes:
The drive region code must match the DVD disc region code. These calls allow getting the disc region code and getting or setting the drive region code.

**NOTE:** The drive region code is stored in the drive and can only be set a total of 5 times.

On the last time, the drive will be permanently locked to that region code.

69.1.33 GetFormatStandard as Integer

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Gets the video broadcast format of current DVD-Video media. **Notes:**

Returns the video broadcast format of the current media. For a list of possible values, see Video Broadcast Formats.

Lasterror is set.

This function determines which video broadcast format (NTSC or PAL) is used in the current media. Before calling this function, DVD-Video media needs to be open.

Available in Mac OS X v10.3 and later.
69.1.34 GetGPRMValue(index as Integer) as Integer

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the current value of a general parameter (GPRM) register. **Notes:**

index: An integer index that specifies the desired GPRM register. The valid range is 1 to 16.

Returns the current value of the specified GPRM register.

Lasterror is set.

Available in Mac OS X v10.4 and later.

69.1.35 GetLastPlayBookmark as string

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Requests a bookmark to the last play position. **Notes:**

Returns a binary string.

Lasterror is set.

Available in Mac OS X v10.4 and later.

69.1.36 GetMaxAudioVolume as Integer

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the maximum video playback volume. **Notes:**

Lasterror is set.

Currently the minimum and maximum volumes are always 0 and 255.

69.1.37 GetMediaUniqueID as memoryblock

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Gets a unique identifier for a media folder. **Notes:**
Returns the unique identifier of the current media.

This function passes back a 64-bit identifier that can help you distinguish between different media folders. While the identifiers generated by this function are not guaranteed to be unique (see below), duplicate identifiers are extremely rare.

There are two known limitations of this function:

Two copies of the same DVD that are produced at different times do not necessarily have the same identifier. This can happen when the two media folders have minor differences.

Two different DVDs with similar content—collections of episodes from a television series, for example—do not always have different identifiers. This can happen when the two media folders are identical.

Available in Mac OS X v10.4 and later.

69.1.38 GetMediaVolumeName as string

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Gets the volume name of the current media.

**Notes:**

This function passes back the media volume name as a string. This is the name seen on the desktop when Mac OS X mounts a DVD-Video disc.

Available in Mac OS X v10.4 and later.

69.1.39 GetMenuLanguageCode as string

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Gets the menu language code for the current title.

**Notes:**

Returns the menu language code for the current title. For a list of possible values, see Language Codes.

Lasterror is set.

Available in Mac OS X v10.3 and later.
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**69.1.40  GetMinAudioVolume as Integer**

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the minimum video playback volume.

**Notes:**
LastError is set.

Currently the minimum and maximum volumes are always 0 and 255.

**69.1.41  GetNativeVideoHeight as Integer**

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the native height of the current title.

**Notes:**
Available in Mac OS X v10.3 and later.
LastError is set.

**69.1.42  GetNativeVideoSize(byref w as Integer, byref h as Integer)**

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The native video size.

**Notes:**
Requires Mac OS X 10.3 or newer.
LastError is set.

**69.1.43  GetNativeVideoWidth as Integer**

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the native width of the current title.

**Notes:**
Available in Mac OS X v10.3 and later.
LastError is set.

**69.1.44  GetNumberOfAngles as Integer**

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Gets the number of camera angles currently available.
Notes:
Returns the number of different camera angles in the current title. DVD-Video media supports up to 9 camera angles.

Lasterror is set.
Available in Mac OS X v10.3 and later.

69.1.45  GetNumberOfAudioStreams as Integer

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
Gets the number of audio streams currently available.
Notes:
Returns the number of audio streams available in the current title.
Lasterror is set.
Before calling this function, DVD-Video media needs to be open.
Available in Mac OS X v10.3 and later.

69.1.46  GetNumberOfChapters(title as Integer) as Integer

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
Gets the number of chapters in the specified title.
Notes:
title: An integer in the range 1 to 99 that specifies a title on the current media.
Returns the number of chapters in the specified title.
Lasterror is set.
If the specified chapter does not exist, this function does nothing and returns an error.
Available in Mac OS X v10.3 and later.

69.1.47  GetNumberOfSubPictureStreams as Integer

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
Gets the number of subpicture streams currently available.
Notes:
Returns the number of subpicture streams available in the current title. DVD-Video media supports up to 32 subpicture streams per title.

Lasterror is set.
Before calling this function, DVD-Video media needs to be open and video playback started.

Available in Mac OS X v10.3 and later.

### 69.1.48 GetNumberOfTitles as Integer

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**

Gets the number of titles available on the media.

**Notes:**

Returns the number of titles on the current media in the range 0 to 99.

Lasterror is set.

Available in Mac OS X v10.3 and later.

### 69.1.49 GetScanRate(byref scanrate as Integer, byref direction as Integer)

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**

Returns the current scan direction and rate.

**Notes:**

Requires Mac OS X 10.3 or newer.

Lasterror is set.

### 69.1.50 GetSPDIFDataOutDevice as Integer

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**

Returns the selected SPDIF capable audio device.

**Notes:**

Lasterror is set.

### 69.1.51 GetSPDIFDataOutDeviceCount as Integer

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**

Gets the number of SPDIF capable audio devices.

**Notes:**

Lasterror is set.
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69.1.52 GetSPDIFDataOutDeviceName(index as Integer) as string

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Gets the name of a SPDIF capable audio device
**Notes:** Lasterror is set.

69.1.53 GetState as Integer

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the current play state of the DVDPlayback framework.
**Notes:**
Requires Mac OS X 10.3 or newer.
Lasterror is set.

The current play state of the framework.

**Constants:**

- kDVDStateUnknown 0
- kDVDStatePlaying 1 playing 1x or less (slow mo)
- kDVDStatePlayingStill 2
- kDVDStatePaused 3 pause and step frame
- kDVDStateStopped 4
- kDVDStateScanning 5 playing greater than 1x
- kDVDStateIdle 6

69.1.54 GetSubPictureLanguageCode(byref DVDLanguageCode as string, byref DVDSUBpictureExtensionCode as Integer)

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Gets the subpicture language code and extension for the current subpicture stream.
**Notes:**
DVDLanguageCode: On return, the variable contains the language code for the current subpicture. For a list of possible values, see Language Codes.
DVDSUBpictureExtensionCode: On return, the variable contains the extension code for the current subpicture. For a list of possible values, see Subpicture Extension Codes.

If subpictures are not available, this function does nothing and lasterror is set to 0.
Lasterror is set.
69.1.55  GetSubPictureLanguageCodeByStream(StreamIndex as Integer, byref DVDLanguageCode as string, byref DVDSubpictureExtensionCode as Integer)

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Gets the subpicture language code and extension for a specified subpicture stream.

**Notes:**
StreamIndex: A subpicture stream number in the current title. Subpicture stream numbers range from 1 to 32.

DVDLanguageCode: On return, the variable contains the language code for the subpicture stream. For a list of possible values, see Language Codes.

DVDSubpictureExtensionCode: On return, the variable contains the extension code for the subpicture stream. For a list of possible values, see Subpicture Extension Codes.

Lasterror is set.

If subpictures are not available, this function does nothing and lasterror is not 0.

Available in Mac OS X v10.3 and later.

69.1.56  GetSubPictureStream as Integer

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Gets the current subpicture stream.

**Notes:**
Returns the identifier of the current subpicture stream, or 0 if the current title has no subpictures. DVD-Video media supports up to 32 subpicture streams per title.

Lasterror is set.

Before calling this function, DVD-Video media needs to be open and video playback started.

Available in Mac OS X v10.3 and later.
69.1.57  GetTime(timecode as Integer, byref time as Integer, byref frames as Integer)

Function: Gets the current playback position in the current title in seconds relative to the requested time code (elapsed, remaining).
Notes:
Requires Mac OS X 10.3 or newer.
Lasterror is set.

Constants:

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kDVDTimeCodeUninitialized</td>
<td>0</td>
</tr>
<tr>
<td>kDVDTimeCodeElapsedSeconds</td>
<td>1</td>
</tr>
<tr>
<td>kDVDTimeCodeRemainingSeconds</td>
<td>2</td>
</tr>
<tr>
<td>kDVDTimeCodeTitleDurationSeconds</td>
<td>3</td>
</tr>
<tr>
<td>kDVDTimeCodeChapterElapsedSeconds</td>
<td>4</td>
</tr>
<tr>
<td>kDVDTimeCodeChapterRemainingSeconds</td>
<td>5</td>
</tr>
<tr>
<td>kDVDTimeCodeChapterDurationSeconds</td>
<td>6</td>
</tr>
</tbody>
</table>

69.1.58  GetTimeEventRate as Integer

Function: Gets the rate of the time event.
Notes:
Returns the current interval between time events in milliseconds.

Lasterror is set.
Available in Mac OS X v10.3 and later.

69.1.59  GetTitle as Integer

Function: Gets the number of the current title.
Notes:
Returns the current title number, or 0 if a menu is active. DVD-Video media can contain up to 99 titles.
Lasterror is set.
Available in Mac OS X v10.3 and later.

69.1.60 GetVideoBounds(byref x as Integer, byref y as Integer, byref w as Integer, byref h as Integer)

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Returns (in port coordinates) the rect used to play video.
**Notes:**
Lasterror is set.
Requires Mac OS X 10.3.

69.1.61 GetVideoDisplay as Integer

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Gets the graphics display for the current DVD-Video playback session.
**Notes:**
Returns the display ID is set to the current video playback display.
Lasterror is set.
Before calling this function, you need to set the video playback display using SetVideoDisplay or SwitchToDisplay.

Available in Mac OS X v10.3 and later.

69.1.62 GetVideoKeyColor as color

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Gets the key color used by the video driver.
**Notes:**
Available in Mac OS X v10.3 and later.
Deprecated in Mac OS X v10.5.
Not available to 64-bit applications.
This function does nothing and returns the color black.
69.1.63 GetVideoWindowID as Integer

**Function:** Gets the window ID of the Cocoa window in use for DVD-Video playback.  
**Notes:** Returns the window ID of the Cocoa window currently in use for DVD-Video playback, or zero if there is no Cocoa window.  

Lasterror is set.  
Available in Mac OS X v10.3 and later.

69.1.64 GoBackOneLevel

**Function:** If a submenu is active, moves up one level in the same domain.  
**Notes:** Lasterror is set.  

This function is used to navigate one level up in a hierarchical structure in the same domain, for example, from a scene selection menu back to the main menu. This action is comparable to navigating upwards in the directory or folder hierarchy of a file system.  

Available in Mac OS X v10.3 and later.

69.1.65 GotoBookmark(Bookmark as string)

**Function:** Sets the video playback position using a bookmark, and resumes play.  
**Notes:** This function is used when playing media on a DVD-Video disc. Before calling this function, the media needs to be open. This function uses the specified bookmark to set the video playback position, and begins playing the media.  

Bookmark ist a binary string. Make sure you did not destroy it by an encoding conversion!  

Requires Mac OS X 10.4 or newer.  
Lasterror is set.
69.1.66 GoToMenu(menu as Integer)

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Jump to a particular menu (Root Menu, Sub Picture Menu, etc.).
**Notes:**
Requires Mac OS X 10.3 or newer.
LastError is set.

69.1.67 HasMedia as boolean

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Returns true if the playback framework has media to play and the framework had received an Open call on
the media.
**Notes:**
Requires Mac OS X 10.3 or newer.
LastError is set.

69.1.68 HasMenu(menu as Integer) as boolean

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Returns if input menu type is available.
**Notes:**
Requires Mac OS X 10.3 or newer.
LastError is set.

69.1.69 HasNextChapter as boolean

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Returns true if there is a chapter after the current chapter.
**Notes:**
Requires Mac OS X 10.3 or newer.
LastError is set.

69.1.70 HasPreviousChapter as boolean

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Returns true if there is a chapter before the current chapter.
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Notes:
Requires Mac OS X 10.3 or newer.
Lasterror is set.

69.1.71   Idle
MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Allows the framework to get a consistent time to process at. (Might be removed in the future).
Notes:
Requires Mac OS X 10.3 or newer.
Lasterror is set.

69.1.72   IsDisplayingSubPicture as boolean
MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if subpictures are currently being displayed.
Notes:
Requires Mac OS X 10.3 or newer.
Lasterror is set.

69.1.73   IsMuted as boolean
MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Toggles the mute setting on or off.
Notes:
Returns true if the playback volume is currently muted.
Requires Mac OS X 10.3 or newer.
Lasterror is set.

69.1.74   IsOnMenu(byref OnMenu as boolean, byref menu as Integer)
MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Are we currently on a menu, and if so, which one.
Notes:
Requires Mac OS X 10.3 or newer.
Lasterror is set.
69.1. **CLASS DVDPLAYBACKMBS**

### 69.1.75 IsPaused as boolean

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Returns true if the framework has media and is paused.
**Notes:**
Requires Mac OS X 10.3 or newer.
Lasterror is set.

### 69.1.76 IsPlaying as boolean

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Returns true if the framework has media and is playing (even if paused).
**Notes:**
Requires Mac OS X 10.3 or newer.
Lasterror is set.

### 69.1.77 IsSupportedDisplay(CGVideoDisplayHandle as Integer) as boolean

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
True if the display is supported.
**Notes:**
Lasterror is set.
Requires Mac OS X 10.3 or newer.
You can use the handle from a CGDisplayMBS object.

### 69.1.78 IsSupportedScreen(screenNumber as Integer) as boolean

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Returns true if this display is known to support DVD playback.
**Notes:**
Lasterror is set.
Requires Mac OS X 10.3.

Could return false for a display capable DVD playback but using a different video driver than the one currently in use.
69.1.79  IsValidMedia(folder as folderitem) as boolean

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if the folderitem points to a valid media layout.

**Notes:**
Requires Mac OS X 10.3 or newer. Lasterror is set.

69.1.80  Lasterror as Integer

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The last error code reported.

**Notes:**
Requires Mac OS X 10.3 or newer.

```
kDVDErrorUnknown -70001 Catch all error
kDVDErrorInitializingLib -70002 There was an error initializing the playback framework
kDVDErrorUninitializedLib -70003 The playback framework has not been initialized.
kDVDErrorNotAllowedDuringPlayback -70004 action is not allowed during playback
kDVDErrorUnassignedGrafPort -70005 A grafport was not set.
kDVDErrorAlreadyPlaying -70006 Media is already being played.
kDVDErrorNoFatalErrCallBack -70007 The application did not install a callback routine for fatal errors returned by the framework.
kDVDErrorIsAlreadySleeping -70008 The framework has already been notified to sleep.
kDVDErrorDontNeedWakeup -70009 DVDWakeUp was called when the framework was not asleep.
kDVDErrorTimeOutOfRange -70010 Time code is outside the valid range for the current title.
kDVDErrorUserActionNoOp -70011 The operation was not allowed by the media at this time.
kDVDErrorMissingDrive -70012 The DVD drive is not available.
kDVDErrorNotSupportedConfiguration -70013 The current system configuration is not supported.
kDVDErrorNotSupportedFunction -70014 The operation is not supported. For example, trying to slow mo backwards.
kDVDErrorNoValidMedia -70015 The media was not valid for playback.
kDVDErrordWrongParam -70016 The invalid parameter was passed.
kDVDErrorMissingGraphicsDevice -70017 A valid graphics device is not available.
kDVDErrorGraphicsDevice -70018 A graphics device error was encountered.
kDVDErrorPlaybackOpen -70019 The framework is already open (probably by another process).
kDVDErrorInvalidRegionCode -70020 The region code was not valid.
kDVDErrorRgnMgrInstall -70021 The region manager was not properly installed or missing from the system.
kDVDErrorMismatchedRegionCode -70022 The disc region code and the drive region code do not match.
kDVDErrorNoMoreRegionSets -70023 The drive does not have any region changes left.
kDVDErrorRegionCodeUninitialized -70024 The drive region code was not initialized.
kDVDErrorAuthentification -70025 The user attempting to change the region code could not be authenticated.
kDVDErrorOutOfVideoMemory -70026 The video driver does not have enough video memory available to playback the media.
kDVDErrorNoAudioOutputDevice -70027 An appropriate audio output device could not be found.
kDVDErrorSystem -70028 A system error was encountered.
kDVDErrorNavigation -70029 The user has made a selection not supported in the current menu.
```
69.1. CLASS DVDPLAYBACKMBS

69.1.81 LastErrorString as string

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns an error message for the lasterror code.  
**Notes:** Requires Mac OS X 10.3 or newer.

69.1.82 Mute(mute as boolean)

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Toggles the mute setting on or off.  
**Notes:** mute: a boolean value that specifies whether to turn the mute setting on or off. To mute the video playback volume, pass TRUE. To restore the previous volume setting, pass FALSE.

Lasterror is set.

Available in Mac OS X v10.3 and later.

69.1.83 NextChapter

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sets to the next chapter on the current title.  
**Notes:** Requires Mac OS X 10.3 or newer.  
Lasterror is set.

69.1.84 Open

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Call when preparing for playback. Usually when the application is initializing.  
**Notes:** Requires Mac OS X 10.3 or newer.  
Lasterror is set.  
Returns an error of kDVDErrorPlaybackOpen if the playback framework is already being used.
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69.1.85 OpenMediaFile(folder as folderitem)

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Opens a VIDEO_TS folder (can be on a hard drive or a dvd disc).
**Notes:**
Requires Mac OS X 10.3 or newer.
Lasterror is set.

69.1.86 OpenMediaVolume(disc as folderitem)

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Opens a DVD disc for playback.
**Notes:**
Requires Mac OS X 10.3 or newer.
Lasterror is set.

69.1.87 Pause

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Pauses the media if currently playing.
**Notes:**
Requires Mac OS X 10.3 or newer.
Lasterror is set.

69.1.88 Play

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Starts playing the media.
**Notes:**
Requires Mac OS X 10.3 or newer.
Lasterror is set.

69.1.89 PreviousChapter

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Sets to the previous chapter on the current title.
**Notes:**
69.1.90  Resume

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Starts playing if currently paused.

**Notes:**
Requires Mac OS X 10.3 or newer.
Lasterror is set.

69.1.91  ReturnToTitle

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns from the menu back to the current position within the title.

**Notes:**
Requires Mac OS X 10.3 or newer.
Lasterror is set.

69.1.92  SetAngle(angle as Integer)

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sets the camera angle to display.

**Notes:**
angle: A 1-based index that specifies the camera angle to display. The angle number of the main angle is 1. DVD-Video media supports up to nine camera angles.

Lasterror is set.
Before calling this function, DVD-Video media needs to be open and video playback started. The DVD-Video author decides how many camera angles are used. If the specified angle does not exist, this function does nothing.

Available in Mac OS X v10.3 and later.
69.1.93 SetAspectRatio(AspectRatio as Integer)

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Sets the aspect ratio for the current title.

**Notes:**
AspectRatio: A constant that specifies the desired aspect ratio for the current title. For a list of possible values, see Aspect Ratios.

Lasterror is set.
This function does nothing and returns noErr.

Available in Mac OS X v10.3 and later.

69.1.94 SetAudioOutputMode(Mode as Integer)

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Set the audio mode.

**Notes:** Lasterror is set.

69.1.95 SetAudioStream(index as Integer)

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Sets the audio stream to use.

**Notes:**
index: An integer from 1 to 8 that specifies an audio stream in the current title. DVD-Video media supports up to 8 audio streams per title.

Lasterror is set.
Before calling this function, DVD-Video media needs to be open and video playback started.

Available in Mac OS X v10.3 and later.

69.1.96 SetAudioVolume(Volume as Integer)

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Sets the playback audio volume setting (0 - 255).

**Notes:**
Volume: An integer in the range 0 to 255 that specifies the new video playback volume setting. Larger values are clamped to 255.

LastError is set.

This function changes the current playback audio volume setting, not the system audio volume setting. The actual audio volume experienced by the user is a function of these two settings:

Actual audio volume = system volume * playback audio volume / 255

For example, if you set the playback volume to 127, the actual volume is approximately one-half the current system volume.

Available in Mac OS X v10.3 and later.

69.1.97 SetChapter(Chapter as Integer)


Notes:

Chapter: An integer that specifies the chapter to play.

LastError is set.

This function defines the specified chapter to be the current video playback chapter. If video playback is paused, this function starts playing the chapter immediately. Note that some discs do not allow jumping directly to a chapter.

Available in Mac OS X v10.3 and later.

69.1.98 SetDefaultAudioLanguageCode(DVDLanguageCode as string, DVDSubpictureExtensionCode as Integer)


Notes:

DVDLanguageCode: A constant that specifies the default audio language for the specified audio extension. For a list of possible values, see Language Codes. If no language is specified that is, if you pass in kDVDLanguageNoPreference or kDVDLanguageCodeNone the default audio language is matched to the language

DVDSubpictureExtensionCode: An integer that specifies the default subpicture language for the specified subpicture extension.
setting in the International Preferences Panel.

**DVDSubpictureExtensionCode:** A constant that specifies an audio extension. For a list of possible values, see Audio Extension Codes.

Lasterror is set.

This function selects an audio language other than the DVD’s default language for a specified audio extension. Before calling this function, DVD-Video media needs to be open.

Available in Mac OS X v10.3 and later.

### 69.1.99 SetDefaultMenuLanguageCode(Code as string)

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sets the default menu language code.

**Notes:**

Code: An integer code that specifies the default menu language for the current title. For a list of possible values, see "Language Codes." If no language is specified—that is, if you pass in kDVDLanguageNoPreference or kDVDLanguageCodeNonethe default menu language is matched to the language setting in the International Preferences Panel.

Lasterror is set.

This function selects a language other than the DVD’s default language for menus in the current title. Before calling this function, DVD-Video media needs to be open and video playback stopped.

Available in Mac OS X v10.3 and later.

### 69.1.100 SetDefaultSubPictureLanguageCode(DVDLanguageCode as string, DVDSubpictureExtensionCode as Integer)

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sets the default subpicture language and extension when subpictures are enabled.

**Notes:**

DVDLanguageCode: A constant that specifies the default language for the specified subpicture extension. For a list of possible values, see "Language Codes." If no language is specified—that is, if you pass in kDVDLanguageNoPreference or kDVDLanguageCodeNonethe default subpicture language code is matched to the
language setting in the International Preferences Panel.

**DVDSubpictureExtensionCode**

A constant that specifies a subpicture extension. For a list of possible values, see "Subpicture Extension Codes."

Lasterror is set.
If the current title is playing, this function does nothing and lasterror is set to kDVDErrorAlreadyPlaying.

This function is used to select a subpicture language other than the system default language. Before calling this function, DVD-Video media needs to be open and video playback stopped.

Available in Mac OS X v10.3 and later.

### 69.1.101 SetDriveRegionCode(regioncode as Integer, AuthorizationHandle as Integer)

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Sets the drive region code (requires user authentication).

**Notes:**

Lasterror is set.
Requires Mac OS X 10.3.

**DVDRRegionCode constants** - The different possible region codes (used for both the disc and the drive):

- kDVDRRegionCodeUninitialized: & hff
- kDVDRRegionCode1: & hfe
- kDVDRRegionCode2: & hfd
- kDVDRRegionCode3: & hfb
- kDVDRRegionCode4: & hf7
- kDVDRRegionCode5: & hef
- kDVDRRegionCode6: & hdf
- kDVDRRegionCode7: & hbf
- kDVDRRegionCode8: & h7f

### 69.1.102 SetLastPlayBookmark(Bookmark as string)

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Sets the video playback position using a bookmark.

**Notes:**
Lasterror is set.

This function is used when playing media on a DVD-Video disc. Before calling this function, the media needs to be open. This function uses the specified bookmark to set the video playback position, but does not begin playing the media. See also GotoBookmark.

Available in Mac OS X v10.4 and later.
69.1.103 SetPlayWindow(win as window, screennumber as Integer)

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Redirects the output to the given window on the given screen.

Notes:
Requires Mac OS X 10.3 or newer.
LastError is set.

69.1.104 SetScanRate(scanrate as Integer, direction as Integer)


Notes:
Requires Mac OS X 10.3 or newer.
LastError is set.

The rate at which to scan:

<table>
<thead>
<tr>
<th>Rate</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kDVDScanRateOneEighth</td>
<td>-8</td>
</tr>
<tr>
<td>kDVDScanRateOneFourth</td>
<td>-4</td>
</tr>
<tr>
<td>kDVDScanRateOneHalf</td>
<td>-2</td>
</tr>
<tr>
<td>kDVDScanRate1x</td>
<td>1</td>
</tr>
<tr>
<td>kDVDScanRate2x</td>
<td>2</td>
</tr>
<tr>
<td>kDVDScanRate4x</td>
<td>4</td>
</tr>
<tr>
<td>kDVDScanRate8x</td>
<td>8</td>
</tr>
<tr>
<td>kDVDScanRate16x</td>
<td>16</td>
</tr>
<tr>
<td>kDVDScanRate32x</td>
<td>32</td>
</tr>
</tbody>
</table>

Direction constants:

<table>
<thead>
<tr>
<th>Direction</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kDVDScanDirectionForward</td>
<td>0</td>
</tr>
<tr>
<td>kDVDScanDirectionBackward</td>
<td>1</td>
</tr>
</tbody>
</table>

69.1.105 SetSPDIFDataOutDevice(Device as Integer)


Notes: Lasterror is set.
69.1.106 SetSubPictureStream(index as Integer)

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sets the current subpicture stream.

**Notes:**

index: A positive integer that specifies the subpicture stream to display. Subpicture stream numbers range from 1 to 32.

LastError is set.

Before calling this function, DVD-Video media needs to be open and video playback started.

Available in Mac OS X v10.3 and later.

69.1.107 SetTime(timecode as Integer, time as Integer, frames as Integer)

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sets the current playback position in the current title based on a time position in seconds relative to the time code (elapsed, remaining).

**Notes:**

timecode: A time code constant. You must specify one of two values: kDVDTimeCodeElapsedSeconds or kDVDTimeCodeRemainingSeconds.

time: An integer that specifies the position in seconds.

frames: An integer that specifies the frame number. For the NTSC video format, the range of frame numbers is 0 to 29. For the PAL format, the range is 0 to 24.

This function sets the video playback position in the current title. Not all titles permit this operation, so it's important to check the result code returned by this function.

Before calling this function, DVD-Video media needs to be open and video playback started.

Requires Mac OS X 10.3 or newer.

LastError is set.
69.1. **CLASS DVDPLAYBACKMBS**

69.1.108 **SetTimeEventRate(rate as Integer)**

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Sets the rate of the DVD Playback time event.

**Notes:**
The new interval between time events, specified in milliseconds.

Lasterror is set.

The default interval between DVD Playback time events is 900 milliseconds. You can use this function to lengthen or shorten the interval between time events. This function is relevant when you have used the function DVDRegisterEventCallBack to register a callback for one or both of the time events: kDVDEventTitleTime and kDVDEventChapterTime. Time event callbacks are typically used for tasks such as updating the elapsed time or remaining time displayed in your user interface.

Available in Mac OS X v10.3 and later.

69.1.109 **SetTitle(Title as Integer)**

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Sets the title to play.

**Notes:**
Title: An integer in the range 1 to 99 that specifies the title to play.

Lasterror is set.

If the specified title exists on the current media and the media permits this operation, this function begins playing the title.

Available in Mac OS X v10.3 and later.

69.1.110 **SetVideoBounds(x as Integer, y as Integer, w as Integer, h as Integer)**

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Sets the bounds in which to display the video.

**Notes:**
x,y,w,h: A rectangle that contains the desired bounds in window local coordinates.

Lasterror is set.
This function is used to set the area inside the current window in which to display the video. The video area is not required to fill the entire window. Generally you should set the video area to be smaller than the window whenever the aspect ratio of the current title and window are different. To find the aspect ratio of the current title, use the function GetAspectRatio.

Because the aspect ratios of the titles in a DVD-Video media folder are not always the same, you may need to call this function repeatedly to reset the video area as the user makes different viewing choices.

Available in Mac OS X v10.3 and later.
Deprecated in Mac OS X v10.5.
Not available to 64-bit applications.

69.1.111 SetVideoDisplay(CGVideoDisplayHandle as Integer)

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sets the graphics display for the current DVD-Video playback session.  
**Notes:**  
The Quartz display ID for the graphics display you want to use for video playback. For information about how to get a display ID, see Quartz Display Services Reference. (or CGDisplayMBS class)

Lasterror is set.

You need to call this function or DVDSetVideoDevice each time you move the video playback window to a new graphics display. To avoid degrading video performance, you should not attempt to draw a video playback window that spans two different displays.

Available in Mac OS X v10.3 and later.

69.1.112 SetVideoWindow(win as window)

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sets the video output to the given window.  
**Notes:**  
As QuickDraw Ports are deprecated, Apple introduced this new function to replace SetPlayWindow. Requires Mac OS X 10.5 or newer.
Lasterror is set.
### 69.1.113 SetVideoWindowID(WindowID as Integer)

**MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No.**

**Function:** Enables or disables DVD-Video playback in a Cocoa window.

**Notes:**

WindowID: The window ID associated with a Cocoa window, or NULL. For information about when to pass 0, see the Discussion below.

Lasterror is set.

If you’re using a Cocoa window for DVD-Video playback, you need to use this function in two different situations:

Immediately after calling the constructor to start a new DVD-Video playback session, you should call this function and pass the window ID associated with the Cocoa window.

When video is not playing and you want to draw into the area of the window you set by calling the function SetVideoBounds, you should call this function and pass 0 in the inVidWindowID parameter.

To learn how to obtain the window number for a Cocoa window, see the description of the windowNumber method in the NSWindow class.

**Availability**

Available in Mac OS X v10.3 and later.

### 69.1.114 Sleep

**MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No.**

**Function:** Call when system is putting machine to sleep so playback information can be saved.

**Notes:**

Requires Mac OS X 10.3 or newer.

Lasterror is set.

The client must register for sleep notifications with the system so that it can notify the framework of sleep and wake notifications.

### 69.1.115 StepFrame(direction as Integer)

**MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No.**

**Function:** Steps one frame in the direction specified in DVDScanDirection.
CHAPTER 69. DVD PLAYBACK

Notes:
Requires Mac OS X 10.3 or newer.
Lasterror is set.
Currently only supports kDVDScanDirectionForward.

69.1.116 Stop

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Stops if playing.
**Notes:**
Requires Mac OS X 10.3 or newer.
Lasterror is set.

69.1.117 SwitchToDisplay(CGVideoDisplayHandle as Integer) as boolean

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Switches the output to the given display.
**Notes:**
Requires Mac OS X 10.3 or newer.
Lasterror is set.
You can use the handle from a CGDisplayMBS object.

69.1.118 UpdateVideo

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Forces the video to be updated.
**Notes:**
Requires Mac OS X 10.3 or newer.
Lasterror is set.

69.1.119 WakeUp

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Call when system is waking up so playback information can be reset.
**Notes:**
Requires Mac OS X 10.3 or newer.
Lasterror is set.
69.1. CLASS DVDPLAYBACKMBS

The client must register for sleep notifications with the system so that it can notify the framework of sleep and wake notifications.

69.1.120 Events

69.1.121 DVDEvent(eventcode as Integer, value1 as Integer, value2 as Integer)

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
A DVD event.
**Notes:**
Lasterror is set.
Requires Mac OS X 10.3.

DVDEventCode constants - The different event a client can register for to get notified (return value: UInt32)

<table>
<thead>
<tr>
<th>Event Code</th>
<th>Value 1</th>
<th>Value 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>kDVDEventTitle</td>
<td>Title</td>
<td></td>
</tr>
<tr>
<td>kDVDEventPTT</td>
<td>Chapter</td>
<td></td>
</tr>
<tr>
<td>kDVDEventValidUOP</td>
<td>UOP code mask (DUDUOPCode)</td>
<td></td>
</tr>
<tr>
<td>kDVDEventAngle</td>
<td>StreamID</td>
<td></td>
</tr>
<tr>
<td>kDVDEventAudioStream</td>
<td>StreamID</td>
<td></td>
</tr>
<tr>
<td>kDVDEventSubpictureStream</td>
<td>streamID / (value2 ! 0): visible</td>
<td></td>
</tr>
<tr>
<td>kDVDEventDisplayMode</td>
<td>DVDAspectRatio</td>
<td></td>
</tr>
<tr>
<td>kDVDEventDomain</td>
<td>DVDDomainCode</td>
<td></td>
</tr>
<tr>
<td>kDVDEventBitrate</td>
<td>Bits / sec</td>
<td></td>
</tr>
<tr>
<td>kDVDEventStill</td>
<td>On (1) - Off (0)</td>
<td></td>
</tr>
<tr>
<td>kDVDEventPlayback</td>
<td>DVDState</td>
<td></td>
</tr>
<tr>
<td>kDVDEventVideoStandard</td>
<td>DVDFormat</td>
<td></td>
</tr>
<tr>
<td>kDVDEventStreams</td>
<td>None (trigger for general stream change)</td>
<td></td>
</tr>
<tr>
<td>kDVDEventScanSpeed</td>
<td>Speed (1x,2x,3x,...)</td>
<td></td>
</tr>
<tr>
<td>kDVDEventMenuCalled</td>
<td>DVDMenu</td>
<td></td>
</tr>
<tr>
<td>kDVDEventParental</td>
<td>parental level number</td>
<td></td>
</tr>
<tr>
<td>kDVDEventPGC</td>
<td>PGC number</td>
<td></td>
</tr>
<tr>
<td>kDVDEventGPRM</td>
<td>GPRM index / value2: data</td>
<td></td>
</tr>
<tr>
<td>kDVDEventRegionMismatch</td>
<td>disc region</td>
<td></td>
</tr>
<tr>
<td>kDVDEventTitleTime</td>
<td>elapsed time / value2: duration of title [ ms ]</td>
<td></td>
</tr>
<tr>
<td>kDVDEventSubpictureStreamNumbers</td>
<td>number of subpicture streams in title</td>
<td></td>
</tr>
<tr>
<td>kDVDEventAudioStreamNumbers</td>
<td>number of audio streams in title</td>
<td></td>
</tr>
<tr>
<td>kDVDEventAngleNumbers</td>
<td>number of angles in title</td>
<td></td>
</tr>
<tr>
<td>kDVDEventError</td>
<td>DVDErrorCode</td>
<td></td>
</tr>
<tr>
<td>kDVDEventCCInfo</td>
<td>cc event opcode, value2: cc event data</td>
<td></td>
</tr>
<tr>
<td>kDVDEventChapterTime</td>
<td>elapsed time / value2: duration of current chapter [ ms ]</td>
<td></td>
</tr>
</tbody>
</table>

69.1.122 FatalError(errorcode as Integer)

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
A fatal error. Quit the application as soon as possible.
CHAPTER 69. DVD PLAYBACK

Notes:
Lasterror is set.
Requires Mac OS X 10.3.

69.1.123 Constants

69.1.124 kDVDAMGMDomain = 5
MBS MacOSX Plugin, Plugin Version: 9.2. Function: A constant that specifies playback domains or modes that define a set of possible actions.
Notes: Audio Manager Menu domain (DVD-Audio only, not used).

69.1.125 kDVDAspectRatio16x9 = 3
MBS MacOSX Plugin, Plugin Version: 9.2. Function: A constant that specifies the current aspect ratio.
Notes: The process of displaying a 16:9 video frame on a screen with the same aspect ratio.

69.1.126 kDVDAspectRatio4x3 = 1
MBS MacOSX Plugin, Plugin Version: 9.2. Function: A constant that specifies the current aspect ratio.
Notes: The process of displaying a 4:3 video frame on a screen with the same aspect ratio.

69.1.127 kDVDAspectRatio4x3PanAndScan = 2
MBS MacOSX Plugin, Plugin Version: 9.2. Function: A constant that specifies the current aspect ratio.
Notes: The process of choosing a sample area of a 16:9 video frame for display on a 4:3 screen, using center-of-interest information stored on the DVD.

69.1.128 kDVDAspectRatioLetterBox = 4
MBS MacOSX Plugin, Plugin Version: 9.2. Function: A constant that specifies the current aspect ratio.
Notes: The process of displaying the entire 16:9 video frame on a 4:3 screen by shrinking the frame and adding mattes or black bars above and below the frame.
69.1.129 kDVDAspectRatioUninitialized = 0

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies the current aspect ratio.  
**Notes:** Available in Mac OS X v10.3 and later.

69.1.130 kDVDAudioAC3Format = 1

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies the audio stream format.  
**Notes:** The Dolby Digital AC-3 format.

69.1.131 kDVDAudioDDPlusFormat = 8

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies an audio mode.

69.1.132 kDVDAudioDTSFormat = 5

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies the audio stream format.  
**Notes:** The Digital Theater Systems (DTS) format. This format is not supported.

69.1.133 kDVDAudioDTSHDFormat = 9

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies an audio mode.

69.1.134 kDVDAudioExtensionCodeDirectorsComment1 = 3

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies the purpose of an audio channel.  
**Notes:** First audio channel for the artistic director’s comments.

69.1.135 kDVDAudioExtensionCodeDirectorsComment2 = 4

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies the purpose of an audio channel.  
**Notes:** Second audio channel for the artistic director’s comments.
69.1.136  kDVDAudioExtensionCodeNormalCaptions = 1

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies the purpose of an audio channel.
**Notes:** Audio channel for extended information about the title.

69.1.137  kDVDAudioExtensionCodeNotSpecified = 0

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies the purpose of an audio channel.
**Notes:** Audio extension not specified.

69.1.138  kDVDAudioExtensionCodeNVisualImpaired = 2

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies the purpose of an audio channel.
**Notes:** Audio channel for the visually impaired.

69.1.139  kDVDAudioMLPFormat = 7

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies an audio mode.

69.1.140  kDVDAudioModeProLogic = 1

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies an audio mode.

69.1.141  kDVDAudioModeSPDIF = 2

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies an audio mode.

69.1.142  kDVDAudioModeUninitialized = 0

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies an audio mode.
69.1.143  kDVDAudioMPEG1Format = 2

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies the audio stream format. **Notes:** The MPEG-1 Layer II digital format.

69.1.144  kDVDAudioMPEG2Format = 3

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies the audio stream format. **Notes:** The MPEG-2 digital format.

69.1.145  kDVDAudioPCMFormat = 4

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies the audio stream format. **Notes:** The linear pulse-code modulation (PCM) format used on CDs.

69.1.146  kDVDAudioSDDSFormat = 6

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies the audio stream format. **Notes:** The Sony Dynamic Digital Sound (SDDS) format. This format is not supported.

69.1.147  kDVDAudioUnknownFormat = 0

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies the audio stream format. **Notes:** An unspecified audio format.

69.1.148  kDVDButtonIndexNone = -1

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant for an index of the selected menu button.

69.1.149  kDVDErrorAlreadyPlaying = -70006

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the result codes defined for DVD Playback. **Notes:** See kDVDErrorNotAllowedDuringPlayback.
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>69.1.150</td>
<td><strong>kDVDErrorAuthentication = -70025</strong></td>
<td>MBS MacOSX Plugin, Plugin Version: 9.2. Function: A constant that specify the result codes defined for DVD Playback. Notes: An attempt to change the DVD drive region code could not be authenticated.</td>
</tr>
<tr>
<td>69.1.151</td>
<td><strong>kDVDErrorDontNeedWakeup = -70009</strong></td>
<td>MBS MacOSX Plugin, Plugin Version: 9.2. Function: A constant that specify the result codes defined for DVD Playback. Notes: DVDWakeUp was called without first calling Sleep.</td>
</tr>
<tr>
<td>69.1.152</td>
<td><strong>kDVDErrorGraphicsDevice = -70018</strong></td>
<td>MBS MacOSX Plugin, Plugin Version: 9.2. Function: A constant that specify the result codes defined for DVD Playback. Notes: A graphics device error was encountered.</td>
</tr>
<tr>
<td>69.1.153</td>
<td><strong>kDVDErrorInitializingLib = -70002</strong></td>
<td>MBS MacOSX Plugin, Plugin Version: 9.2. Function: A constant that specify the result codes defined for DVD Playback. Notes: An error occurred while initializing a DVD-Video playback session. DVD Playback Services is probably being used in another process.</td>
</tr>
<tr>
<td>69.1.154</td>
<td><strong>kDVDErrorInvalidBookmarkForMedia = -70032</strong></td>
<td>MBS MacOSX Plugin, Plugin Version: 9.2. Function: A constant that specify the result codes defined for DVD Playback.</td>
</tr>
<tr>
<td>69.1.155</td>
<td><strong>kDVDErrorInvalidBookmarkSize = -70031</strong></td>
<td>MBS MacOSX Plugin, Plugin Version: 9.2. Function: A constant that specify the result codes defined for DVD Playback.</td>
</tr>
</tbody>
</table>
69.1. CLASS DVDPLAYBACKMBS

69.1.156 kDVDErrorInvalidBookmarkVersion = -70030

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the result codes defined for DVD Playback.

69.1.157 kDVDErrorInvalidRegionCode = -70020

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the result codes defined for DVD Playback.
**Notes:** Region code is not valid.

69.1.158 kDVDErrorIsAlreadySleeping = -70008

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the result codes defined for DVD Playback.
**Notes:** DVDSleep was called twice without an intervening call to WakeUp.

69.1.159 kDVDErrorMismatchedRegionCode = -70022

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the result codes defined for DVD Playback.
**Notes:** DVD-Video disc region code does not match the region code currently assigned to the DVD drive.

69.1.160 kDVDErrorMissingDrive = -70012

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the result codes defined for DVD Playback.
**Notes:** A DVD drive is not available.

69.1.161 kDVDErrorMissingGraphicsDevice = -70017

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the result codes defined for DVD Playback.
**Notes:** A graphics device is not available.
69.1.162 kDVDErrorNavigation = -70029

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the result codes defined for DVD Playback.
**Notes:** The user has made a selection not supported in the current menu.

69.1.163 kDVDErrorNoAudioOutputDevice = -70027

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the result codes defined for DVD Playback.
**Notes:** An appropriate audio output device could not be found.

69.1.164 kDVDErrorNoFatalErrCallBack = -70007

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the result codes defined for DVD Playback.
**Notes:** No callback has been registered to handle unrecoverable errors during playback.

69.1.165 kDVDErrorNoMoreRegionSets = -70023

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the result codes defined for DVD Playback.
**Notes:** Changing the region code assigned to the DVD drive is no longer permitted.

69.1.166 kDVDErrorNotAllowedDuringPlayback = -70004

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the result codes defined for DVD Playback.
**Notes:** The operation is not permitted while DVD-Video media is playing.

69.1.167 kDVDErrorNotSupportedConfiguration = -70013

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the result codes defined for DVD Playback.
**Notes:** The current system configuration does not support DVD-Video playback.
69.1.168  kDVDErrorNotSupportedFunction = -70014

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the result codes defined for DVD Playback.
**Notes:** DVD Playback Services does not support this operation.

69.1.169  kDVDErrorNoValidBookmarkForLastPlay = -70033

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the result codes defined for DVD Playback.

69.1.170  kDVDErrorNoValidMedia = -70015

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the result codes defined for DVD Playback.
**Notes:** A VIDEO_TS media folder is not open for playback.

69.1.171  kDVDErrorOutOfVideoMemory = -70026

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the result codes defined for DVD Playback.
**Notes:** The video driver does not have enough video memory available for playback.

69.1.172  kDVDErrorPlaybackOpen = -70019

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the result codes defined for DVD Playback.
**Notes:** A VIDEO_TS media folder is already open for playback.

69.1.173  kDVDErrorRegionCodeUninitialized = -70024

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the result codes defined for DVD Playback.
**Notes:** No region code has been assigned to the DVD drive.
69.1.174  kDVDErrorRgnMgrInstall = -70021

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the result codes defined for DVD Playback.
**Notes:** Not used.

69.1.175  kDVDErrorSystem = -70028

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the result codes defined for DVD Playback.
**Notes:** A system error occurred.

69.1.176  kDVDErrorTimeOutOfRange = -70010

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the result codes defined for DVD Playback.
**Notes:** The time code is outside the valid range for the current title.

69.1.177  kDVDErrorUnassignedGrafPort = -70005

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the result codes defined for DVD Playback.
**Notes:** A graphics port for DVD-Video playback has not been set.

69.1.178  kDVDErrorUninitializedLib = -70003

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the result codes defined for DVD Playback.
**Notes:** A DVD-Video playback session has not been initialized. Any function except DVDInitialize could return this value.

69.1.179  kDVDErrorUnknown = -70001

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the result codes defined for DVD Playback.
**Notes:** Unspecified error.
69.1.180  kDVDErrorUserActionNoOp = -70011

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the result codes defined for DVD Playback.
**Notes:** The operation is not permitted at this time.

69.1.181  kDVDErrorWrongParam = -70016

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the result codes defined for DVD Playback.
**Notes:** An argument is invalid.

69.1.182  kDVDEventAngle = 4

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the event ID used in the DVDEvent event.
**Notes:** Camera angle has changed.

69.1.183  kDVDEventAngleNumbers = 23

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the event ID used in the DVDEvent event.
**Notes:** The number of angles has changed.

69.1.184  kDVDEventAudioStream = 5

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the event ID used in the DVDEvent event.
**Notes:** Audio stream has changed.

69.1.185  kDVDEventAudioStreamNumbers = 22

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the event ID used in the DVDEvent event.
**Notes:** The number of audio streams has changed.
69.1.186 \(k_{\text{DVDEventBitrate}} = 9\)

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the event ID used in the DVDEvent event.  
**Notes:** Bit rate has changed.

69.1.187 \(k_{\text{DVDEventCCInfo}} = 25\)

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the event ID used in the DVDEvent event.  
**Notes:** Closed caption has changed.

69.1.188 \(k_{\text{DVDEventChapterTime}} = 26\)

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the event ID used in the DVDEvent event.  
**Notes:** Chapter time has changed.

69.1.189 \(k_{\text{DVDEventDisplayMode}} = 7\)

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the event ID used in the DVDEvent event.  
**Notes:** Display mode has changed.

69.1.190 \(k_{\text{DVDEventDomain}} = 8\)

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the event ID used in the DVDEvent event.  
**Notes:** Domain has changed.

69.1.191 \(k_{\text{DVDEventError}} = 24\)

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the event ID used in the DVDEvent event.  
**Notes:** Hardware error.
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69.1.192 kDVDEventGPRM = 18
MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the event ID used in the DVDEvent event. **Notes:** GPRM data has changed.

69.1.193 kDVDEventMenuCalled = 15
MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the event ID used in the DVDEvent event. **Notes:** Menu has changed.

69.1.194 kDVDEventParental = 16
MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the event ID used in the DVDEvent event. **Notes:** Parental level has changed.

69.1.195 kDVDEventPGC = 17
MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the event ID used in the DVDEvent event. **Notes:** Program chain has changed.

69.1.196 kDVDEventPlayback = 11
MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the event ID used in the DVDEvent event. **Notes:** Playback state has changed.

69.1.197 kDVDEventPTT = 2
MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the event ID used in the DVDEvent event. **Notes:** Chapter has changed.
69.1.198  kDVDEventRegionMismatch = 19

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the event ID used in the DVDEvent event.  
**Notes:** Region mismatch between disc and playback device.

69.1.199  kDVDEventScanSpeed = 14

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the event ID used in the DVDEvent event.  
**Notes:** Scan rate has changed.

69.1.200  kDVDEventStill = 10

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the event ID used in the DVDEvent event.  
**Notes:** Still picture on or off.

69.1.201  kDVDEventStreams = 13

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the event ID used in the DVDEvent event.  
**Notes:** Stream has changed (audio, subpicture, or angle).

69.1.202  kDVDEventSubpictureStream = 6

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the event ID used in the DVDEvent event.  
**Notes:** Subpicture has changed.

69.1.203  kDVDEventSubpictureStreamNumbers = 21

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the event ID used in the DVDEvent event.  
**Notes:** The number of subpicture streams has changed.
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69.1.204  **kDVDEventTitle = 1**

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the event ID used in the DVDEvent event.
**Notes:** Title has changed.

69.1.205  **kDVDEventTitleTime = 20**

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the event ID used in the DVDEvent event.
**Notes:** Title time has changed.

69.1.206  **kDVDEventValidUOP = 3**

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the event ID used in the DVDEvent event.
**Notes:** User operations that are disabled.

69.1.207  **kDVDEventVideoStandard = 12**

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify the event ID used in the DVDEvent event.
**Notes:** Video format has changed

69.1.208  **kDVDFormatNTSC = 1**

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies video broadcast formats used in DVD media.
**Notes:** National Television Standards Committee (NTSC) video format used in North America and Japan.

69.1.209  **kDVDFormatNTSC_HDTV = 3**

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies video broadcast formats used in DVD media.
69.1.210  kDVDFormatPAL = 2

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies video broadcast formats used in DVD media.
**Notes:** Phase Alternating Line (PAL) video format widely used in Europe, South Asia, Africa, and South America.

69.1.211  kDVDFormatPAL_HDTV = 4

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies video broadcast formats used in DVD media.

69.1.212  kDVDFormatUninitialized = 0

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies video broadcast formats used in DVD media.
**Notes:** An unspecified video format.

69.1.213  kDVDFPDomain = 0

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies playback domains or modes that define a set of possible actions.
**Notes:** First Play domain.

69.1.214  kDVDLanguageCodeAbkhazian = ”ab ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.215  kDVDLanguageCodeAfar = ”aa ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.
69.1.216  kDVDLanguageCodeAfrikaans = ”af ”
MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.217  kDVDLanguageCodeAlbanian = ”sq ”
MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.218  kDVDLanguageCodeAmharic = ”am ”
MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.219  kDVDLanguageCodeArabic = ”ar ”
MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.220  kDVDLanguageCodeArmenian = ”hy ”
MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.221  kDVDLanguageCodeAssamese = ”as ”
MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.222  kDVDLanguageCodeAymara = ”ay ”
MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.
69.1.223 kDVDLanguageCodeAzerbaijani = ”az ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.224 kDVDLanguageCodeBashkir = ”ba ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.225 kDVDLanguageCodeBasque = ”eu ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.226 kDVDLanguageCodeBengali = ”bn ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.227 kDVDLanguageCodeBhutani = ”dz ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.228 kDVDLanguageCodeBihari = ”bh ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.229 kDVDLanguageCodeBislama = ”bi ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.
69.1.230 kDVDLanguageCodeBreton = "br"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.231 kDVDLanguageCodeBulgarian = "bg"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.232 kDVDLanguageCodeBurmese = "my"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.233 kDVDLanguageCodeByelorussian = "be"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.234 kDVDLanguageCodeCambodian = "km"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.235 kDVDLanguageCodeCatalan = "ca"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.236 kDVDLanguageCodeChinese = "zh"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.
69.1.237  kDVDLanguageCodeCorsican = ”co ”
MBS MacOSX Plugin, Plugin Version: 9.2. Function: A constant that specifies a language used in subpictures, audio, and menus.

69.1.238  kDVDLanguageCodeCroatian = ”hr ”
MBS MacOSX Plugin, Plugin Version: 9.2. Function: A constant that specifies a language used in subpictures, audio, and menus.

69.1.239  kDVDLanguageCodeCzech = ”cs ”
MBS MacOSX Plugin, Plugin Version: 9.2. Function: A constant that specifies a language used in subpictures, audio, and menus.

69.1.240  kDVDLanguageCodeDanish = ”da ”
MBS MacOSX Plugin, Plugin Version: 9.2. Function: A constant that specifies a language used in subpictures, audio, and menus.

69.1.241  kDVDLanguageCodeDutch = ”nl ”
MBS MacOSX Plugin, Plugin Version: 9.2. Function: A constant that specifies a language used in subpictures, audio, and menus.

69.1.242  kDVDLanguageCodeEnglish = ”en ”
MBS MacOSX Plugin, Plugin Version: 9.2. Function: A constant that specifies a language used in subpictures, audio, and menus.

69.1.243  kDVDLanguageCodeEsperanto = ”eo ”
MBS MacOSX Plugin, Plugin Version: 9.2. Function: A constant that specifies a language used in subpictures, audio, and menus.
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69.1.244 kDVDLanguageCodeEstonian = "et "

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.245 kDVDLanguageCodeFaeroese = "fo "

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.246 kDVDLanguageCodeFiji = "fj "

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.247 kDVDLanguageCodeFinnish = "fi "

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.248 kDVDLanguageCodeFrench = "fr "

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.249 kDVDLanguageCodeFrisian = "fy "

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.250 kDVDLanguageCodeGalician = "gl "

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.
69.1.251 kDVDLanguageCodeGeorgian = "ka "
MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.252 kDVDLanguageCodeGerman = "de "
MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.253 kDVDLanguageCodeGreek = "el "
MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.254 kDVDLanguageCodeGreenlandic = "kl "
MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.255 kDVDLanguageCodeGuarani = "gn "
MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.256 kDVDLanguageCodeGujarati = "gu "
MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.257 kDVDLanguageCodeHausa = "ha "
MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.
69.1. CLASS DVDPLAYBACKMBS

69.1.258 kDVDLanguageCodeHebrew = "iw"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.259 kDVDLanguageCodeHindi = "hi"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.260 kDVDLanguageCodeHungarian = "hu"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.261 kDVDLanguageCodeIcelandic = "is"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.262 kDVDLanguageCodeIndonesian = "in"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.263 kDVDLanguageCodeInterlingua = "ia"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.264 kDVDLanguageCodeInterlingue = "ie"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.
69.1.265  \texttt{kDVDLanguageCodeInupiak} = ”ik ”

MBS MacOSX Plugin, Plugin Version: 9.2. \textbf{Function}: A constant that specifies a language used in subpictures, audio, and menus.

69.1.266  \texttt{kDVDLanguageCodeIrish} = ”ga ”

MBS MacOSX Plugin, Plugin Version: 9.2. \textbf{Function}: A constant that specifies a language used in subpictures, audio, and menus.

69.1.267  \texttt{kDVDLanguageCodeItalian} = ”it ”

MBS MacOSX Plugin, Plugin Version: 9.2. \textbf{Function}: A constant that specifies a language used in subpictures, audio, and menus.

69.1.268  \texttt{kDVDLanguageCodeJapanese} = ”ja ”

MBS MacOSX Plugin, Plugin Version: 9.2. \textbf{Function}: A constant that specifies a language used in subpictures, audio, and menus.

69.1.269  \texttt{kDVDLanguageCodeJavanese} = ”jw ”

MBS MacOSX Plugin, Plugin Version: 9.2. \textbf{Function}: A constant that specifies a language used in subpictures, audio, and menus.

69.1.270  \texttt{kDVDLanguageCodeKannada} = ”kn ”

MBS MacOSX Plugin, Plugin Version: 9.2. \textbf{Function}: A constant that specifies a language used in subpictures, audio, and menus.

69.1.271  \texttt{kDVDLanguageCodeKashmiri} = ”ks ”

MBS MacOSX Plugin, Plugin Version: 9.2. \textbf{Function}: A constant that specifies a language used in subpictures, audio, and menus.
69.1.272 kDVDLanguageCodeKazakh = "kk"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.273 kDVDLanguageCodeKinyarwanda = "rw"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.274 kDVDLanguageCodeKirghiz = "ky"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.275 kDVDLanguageCodeKirundi = "rn"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.276 kDVDLanguageCodeKorean = "ko"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.277 kDVDLanguageCodeKurdish = "ku"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.278 kDVDLanguageCodeLaothian = "lo"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.
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69.1.279 kDVDLanguageCodeLatin = ”la ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.280 kDVDLanguageCodeLatvian = ”lv ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.281 kDVDLanguageCodeLingala = ”ln ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.282 kDVDLanguageCodeLithuanian = ”lt ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.283 kDVDLanguageCodeMacedonian = ”mk ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.284 kDVDLanguageCodeMalagasy = ”mg ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.285 kDVDLanguageCodeMalay = ”ms ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.
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69.1.286 kDVDLanguageCodeMalayalam = "ml"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.287 kDVDLanguageCodeMaltese = "mt"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.288 kDVDLanguageCodeMaori = "mi"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.289 kDVDLanguageCodeMarathi = "mr"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.290 kDVDLanguageCodeMoldavian = "mo"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.291 kDVDLanguageCodeMongolian = "mn"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.292 kDVDLanguageCodeNauru = "na"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.
69.1.293  kDVDLanguageCodeNepali = "ne 

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.294  kDVDLanguageCodeNone = "00 

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.295  kDVDLanguageCodeNorwegian = "no 

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.296  kDVDLanguageCodeOccitan = "oc 

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.297  kDVDLanguageCodeOriya = "or 

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.298  kDVDLanguageCodeOromo = "om 

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.299  kDVDLanguageCodePashto = "ps 

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.
69.1.300  kDVDLanguageCodePersian = ”fa ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.301  kDVDLanguageCodePolish = ”pl ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.302  kDVDLanguageCodePortuguese = ”pt ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.303  kDVDLanguageCodePunjabi = ”pa ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.304  kDVDLanguageCodeQuechua = ”qu ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.305  kDVDLanguageCodeRhaetoRomance = ”rm ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.306  kDVDLanguageCodeRomanian = ”ro ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.
69.1.307 kDVDLanguageCodeRussian = "ru "
MBS MacOSX Plugin, Plugin Version: 9.2. Function: A constant that specifies a language used in subpictures, audio, and menus.

69.1.308 kDVDLanguageCodeSamoan = "sm "
MBS MacOSX Plugin, Plugin Version: 9.2. Function: A constant that specifies a language used in subpictures, audio, and menus.

69.1.309 kDVDLanguageCodeSangro = "sg "
MBS MacOSX Plugin, Plugin Version: 9.2. Function: A constant that specifies a language used in subpictures, audio, and menus.

69.1.310 kDVDLanguageCodeSanskrit = "sa "
MBS MacOSX Plugin, Plugin Version: 9.2. Function: A constant that specifies a language used in subpictures, audio, and menus.

69.1.311 kDVDLanguageCodeScotsGaelic = "gd "
MBS MacOSX Plugin, Plugin Version: 9.2. Function: A constant that specifies a language used in subpictures, audio, and menus.

69.1.312 kDVDLanguageCodeSerbian = "sr "
MBS MacOSX Plugin, Plugin Version: 9.2. Function: A constant that specifies a language used in subpictures, audio, and menus.

69.1.313 kDVDLanguageCodeSerboCroatian = "sh "
MBS MacOSX Plugin, Plugin Version: 9.2. Function: A constant that specifies a language used in subpictures, audio, and menus.
69.1.314  kDVDLanguageCodeSesotho = "st "

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.315  kDVDLanguageCodeSetswana = "tn ">

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.316  kDVDLanguageCodeShona = "sn ">

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.317  kDVDLanguageCodeSindhi = "sd ">

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.318  kDVDLanguageCodeSinghalese = "si ">

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.319  kDVDLanguageCodeSiswati = "ss ">

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.320  kDVDLanguageCodeSlovak = "sk ">

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.
69.1.321 kDVDLanguageCodeSlovenian = "sl"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.322 kDVDLanguageCodeSomali = "so"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.323 kDVDLanguageCodeSpanish = "es"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.324 kDVDLanguageCodeSudanese = "su"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.325 kDVDLanguageCodeSwahili = "sw"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.326 kDVDLanguageCodeSwedish = "sv"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.327 kDVDLanguageCodeTagalog = "tl"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.
69.1.328  \texttt{kDVDLanguageCodeTajik} = "tg "

MBS MacOSX Plugin, Plugin Version: 9.2. \textbf{Function}: A constant that specifies a language used in subpictures, audio, and menus.

69.1.329  \texttt{kDVDLanguageCodeTamil} = "ta "

MBS MacOSX Plugin, Plugin Version: 9.2. \textbf{Function}: A constant that specifies a language used in subpictures, audio, and menus.

69.1.330  \texttt{kDVDLanguageCodeTatar} = "tt "

MBS MacOSX Plugin, Plugin Version: 9.2. \textbf{Function}: A constant that specifies a language used in subpictures, audio, and menus.

69.1.331  \texttt{kDVDLanguageCodeTelugu} = "te "

MBS MacOSX Plugin, Plugin Version: 9.2. \textbf{Function}: A constant that specifies a language used in subpictures, audio, and menus.

69.1.332  \texttt{kDVDLanguageCodeThai} = "th "

MBS MacOSX Plugin, Plugin Version: 9.2. \textbf{Function}: A constant that specifies a language used in subpictures, audio, and menus.

69.1.333  \texttt{kDVDLanguageCodeTibetan} = "bo "

MBS MacOSX Plugin, Plugin Version: 9.2. \textbf{Function}: A constant that specifies a language used in subpictures, audio, and menus.

69.1.334  \texttt{kDVDLanguageCodeTigrinya} = "ti "

MBS MacOSX Plugin, Plugin Version: 9.2. \textbf{Function}: A constant that specifies a language used in subpictures, audio, and menus.
69.1.335 kDVDLanguageCodeTonga = ”to ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.336 kDVDLanguageCodeTsonga = ”ts ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.337 kDVDLanguageCodeTurkish = ”tr ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.338 kDVDLanguageCodeTurkmen = ”tk ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.339 kDVDLanguageCodeTwi = ”tw ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.340 kDVDLanguageCodeUkrainian = ”uk ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.341 kDVDLanguageCodeUninitialized = ”?? ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.
69.1.342  kDVDLanguageCodeUrdu = "ur"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.343  kDVDLanguageCodeUzbek = "uz"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.344  kDVDLanguageCodeVietnamese = "vi"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.345  kDVDLanguageCodeVolapuk = "vo"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.346  kDVDLanguageCodeWelsh = "cy"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.347  kDVDLanguageCodeWolof = "wo"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.348  kDVDLanguageCodeXhosa = "xh"

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.
69.1.349  kDVDLanguageCodeYiddish = ”ji ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.350  kDVDLanguageCodeYoruba = ”yo ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.351  kDVDLanguageCodeZulu = ”zu ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.352  kDVDLanguageNoPreference = ”** ”

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a language used in subpictures, audio, and menus.

69.1.353  kDVDMenuAngle = 4

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify input menus for a DVD-Video volume.
**Notes:** A viewing angle menu.

69.1.354  kDVDMenuAudio = 3

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify input menus for a DVD-Video volume.
**Notes:** An audio menu.

69.1.355  kDVDMenuNone = 6

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specify input menus for a DVD-Video volume.
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Notes: Menu not defined.

69.1.356  kDVDMenuPTT = 5

Notes: A part-of-title (PTT) or chapter menu.

69.1.357  kDVDMenuRoot = 1

Notes: A root menu.

69.1.358  kDVDMenuSubPicture = 2

Notes: A menu used to select subpictures.

69.1.359  kDVDMenuTitle = 0

Notes: A title or top menu.

69.1.360  kDVDRegionCode1 = 254

Notes: Region 1: North America.

69.1.361  kDVDRegionCode2 = 253

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**Notes:** Region 2: Japan, Europe, South Africa.

### 69.1.362 kDVDRegionCode3 = 251

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies marketing regions for DVD discs and playback devices.

**Notes:** Region 3: Southeast Asia.

### 69.1.363 kDVDRegionCode4 = 247

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies marketing regions for DVD discs and playback devices.

**Notes:** Region 4: Australia, New Zealand, Central & South America.

### 69.1.364 kDVDRegionCode5 = 239

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies marketing regions for DVD discs and playback devices.

**Notes:** Region 5: Northwest Asia and North Africa.

### 69.1.365 kDVDRegionCode6 = 223

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies marketing regions for DVD discs and playback devices.

**Notes:** Region 6: China.

### 69.1.366 kDVDRegionCode7 = 191

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies marketing regions for DVD discs and playback devices.

**Notes:** Region 7: Unassigned.

### 69.1.367 kDVDRegionCode8 = 127

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies marketing regions for DVD discs and playback devices.
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Notes: Region 8: Special venues (airplanes, hotels, cruise ships).

69.1.368  kDVDRegionCodeUninitialized = 255

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies marketing regions for DVD discs and playback devices.
**Notes:** The default region code for an uninitialized DVD drive.

69.1.369  kDVDScanDirectionBackward = 1

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies the direction of play.
**Notes:** Scan in the reverse direction.

69.1.370  kDVDScanDirectionForward = 0

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies the direction of play.
**Notes:** Scan in the forward direction.

69.1.371  kDVDScanRate16x = 16

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies the rate at which to scan.
**Notes:** These constants are used along with the scan direction to specify the speed and direction of play. The constant kDVDScanRate1x represents the normal playback speed; the slower and faster playback speeds are multiples of the normal speed.

69.1.372  kDVDScanRate1x = 1

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies the rate at which to scan.
**Notes:** These constants are used along with the scan direction to specify the speed and direction of play. The constant kDVDScanRate1x represents the normal playback speed; the slower and faster playback speeds are multiples of the normal speed.

69.1.373  kDVDScanRate2x = 2

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies the rate at which to scan.
**Notes:** These constants are used along with the scan direction to specify the speed and direction of play.
The constant kDVDScanRate1x represents the normal playback speed; the slower and faster playback speeds are multiples of the normal speed.

### 69.1.374 kDVDScanRate32x = 32

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies the rate at which to scan. **Notes:** These constants are used along with the scan direction to specify the speed and direction of play. The constant kDVDScanRate1x represents the normal playback speed; the slower and faster playback speeds are multiples of the normal speed.

### 69.1.375 kDVDScanRate4x = 4

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies the rate at which to scan. **Notes:** These constants are used along with the scan direction to specify the speed and direction of play. The constant kDVDScanRate1x represents the normal playback speed; the slower and faster playback speeds are multiples of the normal speed.

### 69.1.376 kDVDScanRate8x = 8

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies the rate at which to scan. **Notes:** These constants are used along with the scan direction to specify the speed and direction of play. The constant kDVDScanRate1x represents the normal playback speed; the slower and faster playback speeds are multiples of the normal speed.

### 69.1.377 kDVDScanRateOneEighth = -8

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies the rate at which to scan. **Notes:** These constants are used along with the scan direction to specify the speed and direction of play. The constant kDVDScanRate1x represents the normal playback speed; the slower and faster playback speeds are multiples of the normal speed.

### 69.1.378 kDVDScanRateOneFourth = -4

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies the rate at which to scan. **Notes:** These constants are used along with the scan direction to specify the speed and direction of play. The constant kDVDScanRate1x represents the normal playback speed; the slower and faster playback speeds are multiples of the normal speed.
69.1.379  kDVDScanRateOneHalf = -2

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies the rate at which to scan. 
**Notes:** These constants are used along with the scan direction to specify the speed and direction of play. The constant kDVDScanRate1x represents the normal playback speed; the slower and faster playback speeds are multiples of the normal speed.

69.1.380  kDVDStateIdle = 6

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constants that specify the current play state. 
**Notes:** Not used.

69.1.381  kDVDStatePaused = 3

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constants that specify the current play state. 
**Notes:** DVD-Video media is open and paused or frame-stepping.

69.1.382  kDVDStatePlaying = 1

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constants that specify the current play state. 
**Notes:** DVD-Video media is open and playing at normal rate (1x scan rate).

69.1.383  kDVDStatePlayingSlow = 7

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constants that specify the current play state. 
**Notes:** DVD-Video media is open and playing in slow motion (less than 1x scan rate). Available in Mac OS X v10.4 and later.

69.1.384  kDVDStatePlayingStill = 2

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constants that specify the current play state. 
**Notes:** DVD-Video media is open and playing a single frame.
69.1.385  kDVDStateScanning = 5

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constants that specify the current play state. **Notes:** DVD-Video media is open and playing in fast motion (greater than 1x scan rate).

69.1.386  kDVDStateStopped = 4

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constants that specify the current play state. **Notes:** DVD-Video media is open and stopped (not playing).

69.1.387  kDVDStateUnknown = 0

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constants that specify the current play state. **Notes:** The initial state of a new DVD-Video playback session.

69.1.388  kDVDSTOPDomain = 4

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies playback domains or modes that define a set of possible actions. **Notes:** Stop State domain.

69.1.389  kDVDSubpictureExtensionCodeCaption4Children = 3

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies the purpose of a subpicture stream. **Notes:** A language-caption subpicture for children.

69.1.390  kDVDSubpictureExtensionCodeCaptionBiggerSize = 2

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies the purpose of a subpicture stream. **Notes:** A large language-caption subpicture.
69.1.391  kDVDSubpictureExtensionCodeCaptionNormalSize = 1

MBS MacOSX Plugin, Plugin Version: 9.2. **Function**: A constant that specifies the purpose of a subpicture stream.
**Notes**: A language-caption subpicture.

69.1.392  kDVDSubpictureExtensionCodeClosedCaption4Children = 7

MBS MacOSX Plugin, Plugin Version: 9.2. **Function**: A constant that specifies the purpose of a subpicture stream.
**Notes**: A closed-caption subpicture for children.

69.1.393  kDVDSubpictureExtensionCodeClosedCaptionBiggerSize = 6

MBS MacOSX Plugin, Plugin Version: 9.2. **Function**: A constant that specifies the purpose of a subpicture stream.
**Notes**: A large closed-caption subpicture.

69.1.394  kDVDSubpictureExtensionCodeClosedCaptionNormalSize = 5

MBS MacOSX Plugin, Plugin Version: 9.2. **Function**: A constant that specifies the purpose of a subpicture stream.
**Notes**: A closed-caption subpicture.

69.1.395  kDVDSubpictureExtensionCodeForcedCaption = 9

MBS MacOSX Plugin, Plugin Version: 9.2. **Function**: A constant that specifies the purpose of a subpicture stream.
**Notes**: A subpicture which is always visible, regardless of the viewer’s preferences.

69.1.396  kDVDSubpictureExtensionCodeNotSpecified = 0

MBS MacOSX Plugin, Plugin Version: 9.2. **Function**: A constant that specifies the purpose of a subpicture stream.
**Notes**: Subpicture not specified.
69.1.397  kDVDSubpictureExtensionDirectorsComment4Children = 15

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies the purpose of a subpicture stream.
**Notes:** A subpicture for director’s comments for children.

69.1.398  kDVDSubpictureExtensionDirectorsCommentBiggerSize = 14

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies the purpose of a subpicture stream.
**Notes:** A large subpicture for director’s comments.

69.1.399  kDVDSubpictureExtensionDirectorsCommentNormalSize = 13

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies the purpose of a subpicture stream.
**Notes:** A normal subpicture for director’s comments.

69.1.400  kDVDT imeCodeChapterDurationSeconds = 6

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a temporal location in the video stream of the current title or chapter.
**Notes:** Number of seconds in the current chapter.

69.1.401  kDVDT imeCodeChapterElapsedSeconds = 4

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a temporal location in the video stream of the current title or chapter.
**Notes:** Number of seconds elapsed since the beginning of the current chapter.

69.1.402  kDVDT imeCodeChapterRemainingSeconds = 5

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a temporal location in the video stream of the current title or chapter.
**Notes:** Number of seconds remaining before the end of the current chapter.
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69.1.403 kDVDTimeCodeElapsedSeconds = 1

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a temporal location in the video stream of the current title or chapter. 
**Notes:** Number of seconds after a specified position.

69.1.404 kDVDTimeCodeRemainingSeconds = 2

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a temporal location in the video stream of the current title or chapter. 
**Notes:** Number of seconds before a specified position.

69.1.405 kDVDTimeCodeTitleDurationSeconds = 3

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a temporal location in the video stream of the current title or chapter. 
**Notes:** Number of seconds in the current title.

69.1.406 kDVDTimeCodeUninitialized = 0

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies a temporal location in the video stream of the current title or chapter. 
**Notes:** Not used.

69.1.407 kDVDTTDomain = 3

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies playback domains or modes that define a set of possible actions. 
**Notes:** Title domain.

69.1.408 kDVDTTGRDomain = 6

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies playback domains or modes that define a set of possible actions. 
**Notes:** Title Group domain (DVD-Audio only, not used).
69.1.409  kDVDUOPAngleChange = 4194304

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies user operations (UOP) which are currently disabled.
**Notes:** The function SetAngle is disabled.

69.1.410  kDVDUOPAudioStreamChange = 1048576

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies user operations (UOP) which are currently disabled.
**Notes:** The function SetAudioStream is disabled.

69.1.411  kDVDUOPBackwardScan = 512

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies user operations (UOP) which are currently disabled.
**Notes:** The function Scan in the backward direction is disabled.

69.1.412  kDVDUOPButton = 131072

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies user operations (UOP) which are currently disabled.
**Notes:** The functions DoMenuClick, DoMenuMouseOver, and DoUserNavigation are disabled.

69.1.413  kDVDUOPForwardScan = 256

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies user operations (UOP) which are currently disabled.
**Notes:** The function Scan in the forward direction is disabled.

69.1.414  kDVDUOPGoUp = 16

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies user operations (UOP) which are currently disabled.
**Notes:** The function GoBackOneLevel is disabled.
69.1.415  kDVDUOPKaraokeModeChange = 8388608

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies user operations (UOP) which are currently disabled.
**Notes:** Not used.

69.1.416  kDVDUOPMenuCallAngle = 16384

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies user operations (UOP) which are currently disabled.
**Notes:** The function GoToMenu for an angle menu is disabled.

69.1.417  kDVDUOPMenuCallAudio = 8192

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies user operations (UOP) which are currently disabled.
**Notes:** The function GoToMenu for an audio menu is disabled.

69.1.418  kDVDUOPMenuCallPTT = 32768

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies user operations (UOP) which are currently disabled.
**Notes:** The function GoToMenu for a chapter menu is disabled.

69.1.419  kDVDUOPMenuCallRoot = 2048

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies user operations (UOP) which are currently disabled.
**Notes:** The function GoToMenu for a root menu is disabled.

69.1.420  kDVDUOPMenuCallSubPicture = 4096

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies user operations (UOP) which are currently disabled.
**Notes:** The function GoToMenu for a subpicture menu is disabled.
69.1.421  kDVDUOPMenuCallTitle = 1024

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies user operations (UOP) which are currently disabled.
**Notes:** The function GoToMenu for a title menu is disabled.

69.1.422  kDVDUOPNextPGSearch = 128

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies user operations (UOP) which are currently disabled.
**Notes:** The function NextChapter is disabled.

69.1.423  kDVDUOPPauseOff = 67108864

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies user operations (UOP) which are currently disabled.
**Notes:** The function Resume is disabled.

69.1.424  kDVDUOPPauseOn = 524288

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies user operations (UOP) which are currently disabled.
**Notes:** The function Pause is disabled.

69.1.425  kDVDUOPPrevTopPGSearch = 64

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies user operations (UOP) which are currently disabled.
**Notes:** The function PreviousChapter is disabled.

69.1.426  kDVDUOPPTTPlaySearch = 2

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies user operations (UOP) which are currently disabled.
**Notes:** The function SetTime is disabled.
69.1. CLASS DVDPLAYBACKMBS

69.1.427 kDVDUOPResume = 65536

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies user operations (UOP) which are currently disabled.
**Notes:** The function SetTime is disabled.

69.1.428 kDVDUOPScanOff = 33554432

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies user operations (UOP) which are currently disabled.
**Notes:** Not used.

69.1.429 kDVDUOPStillOff = 262144

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies user operations (UOP) which are currently disabled.
**Notes:** Not used.

69.1.430 kDVDUOPStop = 8

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies user operations (UOP) which are currently disabled.
**Notes:** The function Stop is disabled.

69.1.431 kDVDUOPSubPictureStreamChange = 2097152

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies user operations (UOP) which are currently disabled.
**Notes:** The function SetAudioStream is disabled.

69.1.432 kDVDUOPTimePlaySearch = 1

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies user operations (UOP) which are currently disabled.
**Notes:** The function SetTime is disabled.
69.1.433  kDVDUOPTimePTTSearch = 32

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies user operations (UOP) which are currently disabled.  
**Notes:** The function DVDSetChapter is disabled.

69.1.434  kDVDUOPTitlePlay = 4

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies user operations (UOP) which are currently disabled.  
**Notes:** The functions ReturnToTitle, SetTitle, and SetChapter are disabled.

69.1.435  kDVDUOPVideoModeChange = 16777216

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies user operations (UOP) which are currently disabled.  
**Notes:** Not used.

69.1.436  kDVDUserNavigationEnter = 5

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A Constant that specifies keyboard operations used to select a menu button and execute the action or command associated with a button.  
**Notes:** Execute the action of the selected button.

69.1.437  kDVDUserNavigationMoveDown = 2

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A Constant that specifies keyboard operations used to select a menu button and execute the action or command associated with a button.  
**Notes:** Move to and select the button above the current location.

69.1.438  kDVDUserNavigationMoveLeft = 3

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A Constant that specifies keyboard operations used to select a menu button and execute the action or command associated with a button.  
**Notes:** Move to and select the button to the left of the current location.
69.1.  CLASS DVDPLAYBACKMBS

69.1.439  kDVDUserNavigationMoveRight = 4

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A Constant that specifies keyboard operations used to select a menu button and execute the action or command associated with a button. **Notes:** Move to and select the button to the right of the current location.

69.1.440  kDVDUserNavigationMoveUp = 1

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A Constant that specifies keyboard operations used to select a menu button and execute the action or command associated with a button. **Notes:** Move to and select the button above the current location.

69.1.441  kDVDVMGMDomain = 1

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies playback domains or modes that define a set of possible actions. **Notes:** Video Manager Menu domain.

69.1.442  kDVDVTSMDomain = 2

MBS MacOSX Plugin, Plugin Version: 9.2. **Function:** A constant that specifies playback domains or modes that define a set of possible actions. **Notes:** Video Title Set Menu domain.
69.2 class DVDPlaybackMissingFunctionExceptionMBS

69.2.1 class DVDPlaybackMissingFunctionExceptionMBS

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The exception raised if a DVDPlayback function is not available on this Mac OS X version.

**Notes:**
Check the message property.
Subclass of the RuntimeException class.
69.3. class DVDPlaybackNotInitializedExceptionMBS

69.3.1 class DVDPlaybackNotInitializedExceptionMBS

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The exception raised when you use a method on the DVDPlaybackMBS class without initializing it. **Notes:** Subclass of the RuntimeException class.
Chapter 70

DynaPDF

70.1 class DynaPDFAnnotationExMBS

70.1.1 class DynaPDFAnnotationExMBS

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: The class for extended annotation information.

Example:

```vba
dim pdf as DynaPDFMBS // your instance

dim c as Integer = pdf.GetAnnotCount

for i as Integer = 0 to c-1
    dim a as DynaPDFAnnotationExMBS = pdf.GetAnnotEx(i)
    MsgBox str(a.Type)
next
```

Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.1.2 Methods

70.1.3 Constructor

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: The private constructor.
70.1.4  **DashPattern(index as UInt32) as single**

**Function:** The dash pattern.
**Notes:** If BorderStyle is kbsDashed.

70.1.5  **InkList(index as UInt32) as Single()**

**Function:** The ink list.
**Notes:**
Ink annotations only. Array of array.
Index is from 0 to InkListCount-1.

70.1.6  **QuadPoints(index as UInt32) as single**

**Function:** Gets a quad point value.
**Notes:**
Index from 0 to QuadPointsCount-1.
Highlight, Link, and Redact annotations only.

70.1.7  **Vertices(index as UInt32) as single**

**Function:** The vertices array.
**Notes:** Line, PolyLine, and Polygon annotations only.

70.1.8  **Properties**

70.1.9  **AnnotFlags as UInt32**

**Function:** The flags for this annotation.
**Notes:**
You can use this constants:

- `kafNone` = & h0000000
- `kafInvisible` = & h0000001
- `kafHidden` = & h0000002
- `kafPrint` = & h0000004
- `kafNoZoom` = & h0000008
- `kafNoRotate` = & h0000010
- `kafNoView` = & h0000020
- `kafReadOnly` = & h0000040

(Read only property)

### 70.1.10 Author as String

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Annotation's author.  
**Notes:** This string is either an unicode encoded string or an ASCII encoded string.  
(Read only property)

### 70.1.11 BackColor as UInt32

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Background color.  
**Notes:** (Read only property)

### 70.1.12 BBox as DynaPDFRectMBS

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Bounding box in bottom-up coordinates.  
**Notes:** (Read only property)

### 70.1.13 BorderColor as UInt32

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Border color.
70.1.14  BorderEffect as Integer

**Function:** The border effect.  
**Notes:**  
Circle, Square, FreeText, and Polygon annotations.  
(Read only property)

70.1.15  BorderStyle as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Border style.  
**Notes:** (Read only property)

70.1.16  BorderWidth as Single

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Border width.  
**Notes:** (Read only property)

70.1.17  Caption as Boolean

**Function:** If true, the annotation string Content is used as caption.  
**Notes:**  
The string is shown in a PopUp annotation otherwise.  
(Read only property)

70.1.18  CaptionOffsetX as Single

**Function:** Horizontal offset of the caption from its normal position.  
**Notes:** (Read only property)
70.1.19  CaptionOffsetY as Single

**Function:** Vertical offset of the caption from its normal position.  
**Notes:** (Read only property)

70.1.20  CaptionPos as Integer

**Function:** The position where the caption should be drawn if present.  
**Notes:** (Read only property)

70.1.21  Content as String

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Annotation’s contents.  
**Notes:**  
This string is either an unicode encoded string or an ASCII encoded string.  
(Read only property)

70.1.22 CreateDate as String

**Function:** Creation Date ->Optional  
**Notes:** (Read only property)

70.1.23  DashPatternCount as UInt32

**Function:** Number of values in the array.  
**Notes:** (Read only property)

70.1.24  Deleted as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Is this annotation marked as deleted?
70.1.25  **DestFile as String**

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The destination file.
**Notes:**
For File link or web link annotations.

(Read only property)

70.1.26  **DestPage as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The destination page.
**Notes:**
For Page link annotations only.

(Read only property)

70.1.27  **DestPos as DynaPDFRectMBS**

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The destination position.
**Notes:**
For Page link annotations only.

(Read only property)

70.1.28  **DestType as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The destination type.
**Notes:**
For Page link annotations only.
70.1. **CLASS DYNAPDFANNOTATIONEXMBS**

(Read only property)

70.1.29 **EmbeddedFileHandle as Integer**

**Function:** The handle for the embedded file.  
**Notes:**  
For FileAttach annotations only. Use the handle with the GetEmbeddedFile function.  
(Read only property)

70.1.30 **Grouped as Boolean**

**Function:** Meaningful only if Parent <>-1 and Type <>katPopUp.  
**Notes:**  
If true, the annotation is part of an annotation group. Properties like Content, CreateDate, ModDate, BackColor, Subject, and Open must be taken from the parent annotation.  
(Read only property)

70.1.31 **Handle as Integer**

**Function:** The internal object reference.  
**Notes:** (Read only property)

70.1.32 **HighlightMode as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Visual effect.  
**Notes:** (Read only property)

70.1.33 **Icon as Integer**

**Function:** The icon type for this annotation.  
**Notes:**
The Icon type depends on the annotation type. If the annotation type is atText then the Icon is of type TAnnotIcon. If the annotation type is atFileAttach then it is of type kTFileAttachIcon. If the annotation type is atStamp then the Icon is the stamp type (kTRubberStamp). For any other annotation type this value is not set (-1).

(Read only property)

**70.1.34 InkListCount as Integer**


**Function:** Number of ink arrays.

**Notes:** (Read only property)

**70.1.35 Intent as String**


**Function:** Markup annotations only.

**Notes:**

The intent allows to distinguish between different uses of an annotation. For example, line annotations have two intents: LineArrow and LineDimension.

(Read only property)

**70.1.36 LE1 as Integer**


**Function:** Style of the start point - Line and PolyLine annotations only.

**Notes:** (Read only property)

**70.1.37 LE2 as Integer**


**Function:** Style of the end point - Line and PolyLine annotations only.

**Notes:** (Read only property)

**70.1.38 LeaderLineExtend as Single**


**Function:** Optional leader line extend beyond the leader line.
70.1.39 LeaderLineLen as Single

MBS DynaPDF Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Length of the leader lines (positive or negative)  
**Notes:** (Read only property)

70.1.40 LeaderLineOffset as Single

MBS DynaPDF Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Amount of space between the endpoints of the annotation and the leader lines.  
**Notes:** (Read only property)

70.1.41 MarkupAnnot as Boolean

MBS DynaPDF Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** If true, the annotation is a markup annotation.  
**Notes:**  
Markup annotations can be flattened separately, see FlattenAnnots function.  
(Read only property)

70.1.42 ModDate as String

MBS DynaPDF Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Modification Date ->Optional  
**Notes:** (Read only property)

70.1.43 Name as String

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Annotation’s name.  
**Notes:**  
This string is either an unicode encoded string or an ASCII encoded string.  
(Read only property)
70.1.44 OC as Integer

MBS DynaPDF Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Handle of an OCG or OCMD or -1 if not set.
Notes:
Annotations can be part of an Optional Content Group (OCG) or Optional Content Membership Dictionary (OCMD). If OC is greater -1 an OCG or OCMD handle was set. To determine whether an OCG handle was set, check whether the value is smaller & h40000000.
(Read only property)

70.1.45 Opacity as Single

Function: The annotation’s opacity.
Notes:
Opacity = 1.0 = Opaque, Opacity <1.0 = Transparent, Markup annotations only
(Read only property)

70.1.46 Open as Boolean

MBS DynaPDF Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Meaningful only for annotations which have a corresponding PopUp annotation.
Notes: (Read only property)

70.1.47 PageIndex as UInt32

MBS DynaPDF Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The page index is used to sort form fields.
Notes:
See SortFieldsByIndex().
(Read only property)

70.1.48 PageNum as UInt32

Notes: (Read only property)
70.1.49 Parent as Integer


**Function:** Parent annotation handle of a PopUp Annotation or the parent annotation if this annotation represents a state of a base annotation.

**Notes:**
In this case, the annotation type is always atText and only the following members should be considered:

- **State** - The current state
- **StateModel** - Marked, Review, and so on
- **CreateDate** - Creation Date
- **ModDate** - Modification Date
- **Author** - The user who has set the state
- **Content** - Not displayed in Adobe’s Acrobat...
- **Subject** - Not displayed in Adobe’s Acrobat...

The PopUp annotation of a text annotation which represent an Annotation State must be ignored.
(Read only property)

70.1.50 PopUp as Integer


**Function:** Handle of the corresponding PopUp annotation if any.

**Notes:** (Read only property)

70.1.51 QuadPointsCount as UInt32


**Function:** The number of quad points.

**Notes:**
Highlight, Link, and Redact annotations only.
(Read only property)

70.1.52 RD as DynaPDFRectMBS


**Function:** The rectangular difference between the annotations bounding box and the content area.

**Notes:**
Caret, Circle, Square, and FreeText annotations.
(Read only property)

### 70.1.53 RichStyle as String

**Function:** Optional default style string.
**Notes:**
For FreeText annotations.
(Read only property)

### 70.1.54 RichText as String

**Function:** Optional rich text string (RC key).
**Notes:**
For Markup annotations.
(Read only property)

### 70.1.55 Rotate as Integer

**Function:** The rotation for caret annotations.
**Notes:**
Caret annotations only. Must be zero or a multiple of 90. This key is not documented in the specs.
(Read only property)

### 70.1.56 StampName as String

**Function:** The stamp name.
**Notes:**
Set only, if Icon property is rsUserDefined.
(Read only property)
70.1.57  State as String

MBS DynaPDF Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The state of the annotation. **Notes:** (Read only property)

70.1.58  StateModel as String

MBS DynaPDF Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The state model (Marked, Review, and so on). **Notes:** (Read only property)

70.1.59  Subject as String

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Annotation’s subject. **Notes:**

This string is either an unicode encoded string or an ASCII encoded string. (Read only property)

70.1.60  Subtype as String

MBS DynaPDF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The subtype. **Notes:**

Set only, if Type = katUnknownAnnot. (Read only property)

70.1.61  Type as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Annotation type. **Notes:**

See at* constants. (Read only property)
70.1.62 VerticesCount as UInt32


**Function:** Number of values in the vertices array.

**Notes:**
This is the raw number of floating point values. Since a vertice requires always two coordinate pairs, the number of vertices or points is VerticeCount divided by 2.
(Read only property)
70.2. class DynaPDFAnnotationMBS

70.2.1 class DynaPDFAnnotationMBS

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The class for annotation information.
Example:

```vba
dim pdf as DynaPDFMBS // your instance

dim c as Integer = pdf.GetAnnotCount

for i as Integer = 0 to c-1
dim a as DynaPDFAnnotationMBS = pdf.GetAnnot(i)

MsgBox str(a.Type)
next
```

Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.2.2 Methods

70.2.3 Constructor

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The private constructor.

70.2.4 Properties

70.2.5 Author as String

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Annotation’s author.
Notes:
This string is either an unicode encoded string or an ASCII encoded string.
(Read only property)
70.2.6 BackColor as UInt32

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Background color.
**Notes:** (Read only property)

70.2.7 BBox as DynaPDFRectMBS

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Bounding box in bottom-up coordinates.
**Notes:** (Read only property)

70.2.8 BorderColor as UInt32

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Border color.
**Notes:** (Read only property)

70.2.9 BorderStyle as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Border style.
**Notes:** (Read only property)

70.2.10 BorderWidth as Single

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Border width.
**Notes:** (Read only property)

70.2.11 Content as String

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Annotation’s contents.
**Notes:**
This string is either an unicode encoded string or an ASCII encoded string.
(Read only property)
70.2.12 Deleted as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Is this annotation marked as deleted? Notes: (Read only property)

70.2.13 Handle as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Annotation handle. Notes: (Read only property)

70.2.14 HighlightMode as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Visual effect. Notes: See hm* constants. (Read only property)

70.2.15 Name as String

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Annotation’s name. Notes: This string is either an unicode encoded string or an ASCII encoded string. (Read only property)

70.2.16 PageNum as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Page on which the annotation appears. Notes: (Read only property)
70.2.17 Subject as String

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Annotation’s subject.
Notes:
This string is either an unicode encoded string or an ASCII encoded string.
(Read only property)

70.2.18 Type as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Annotation type.
Notes:
See at* constants.
(Read only property)
70.3. class DynaPDFBarcodeMBS

70.3.1 class DynaPDFBarcodeMBS

*Function:* The class for detail information on barcode fields.

70.3.2 Properties

70.3.3 Caption as String

*Function:* Optional, the caption.
*Notes:* (Read and Write property)

70.3.4 ECC as Single

*Function:* The error correction code.
*Notes:* 0..8 for PDF417, or 0..3 for QRCode
(Read and Write property)

70.3.5 Height as Single

*Function:* Height in inches.
*Notes:* (Read and Write property)

70.3.6 nCodeWordCol as Single

*Function:* The number of codewords per barcode columnn.
*Notes:* Required for PDF417.
(Read and Write property)
70.3.7  nCodeWordRow as Single

**Function:** The number of codewords per barcode row.
**Notes:**
Required for PDF417.
(Read and Write property)

70.3.8  Resolution as Integer

**Function:** The resolution.
**Notes:**
Required. Should be 300.
(Read and Write property)

70.3.9  Symbology as String

**Function:** The symbology.
**Notes:**
PDF417, QRCode, or DataMatrix.
(Read and Write property)

70.3.10  Version as Single

**Function:** The version of this object.
**Notes:**
Should be 1
(Read and Write property)

70.3.11  Width as Single

**Function:** Width in inches.
70.3. CLASS DYNAPDFBARCODEMBS

Notes: (Read and Write property)

70.3.12 XSymHeight as Single


Function: The vertical distance between two barcode modules, measured in pixels.

Notes:

Only needed for PDF417.
The ratio XSymHeight/XSymWidth shall be an integer value. For PDF417, the acceptable ratio range is from 1 to 4. For QRCode and DataMatrix, this ratio shall always be 1.
(Read and Write property)

70.3.13 XSymWidth as Single


Function: Required. The horizontal distance, in pixels, between two barcode modules.

Notes: (Read and Write property)
70.4 class DynaPDFBitmapMBS

70.4.1 class DynaPDFBitmapMBS

Function: The class for a bitmap in DynaPDF.
Notes:
Currently only used for RenderAnnotOrField function.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.4.2 Methods

70.4.3 Constructor

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The private constructor.

70.4.4 Properties

70.4.5 Buffer as Memoryblock

Function: Raw image buffer.
Notes:
To avoid problems, this is a copy of the image data.
(Read and Write property)

70.4.6 BufSize as Integer

Function: Buffer size in bytes.
Notes: (Read and Write property)

70.4.7 DestX as Integer

Function: x-coordinate in the main image (the rendered page)
70.4. CLASS DYNAPDFBITMAPMBS

Notes: (Read and Write property)

70.4.8 DestY as Integer

Function: y-coordinate in the main image (the rendered page)
Notes: (Read and Write property)

70.4.9 Height as Integer

Function: Image height in pixels.
Notes: (Read and Write property)

70.4.10 Stride as Integer

Function: Scanline length in bytes.
Notes: (Read and Write property)

70.4.11 Width as Integer

Function: Image width.
Notes: (Read and Write property)
70.5  class DynaPDFBookmarkMBS

70.5.1  class DynaPDFBookmarkMBS

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for bookmark information. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.5.2  Methods

70.5.3  Constructor

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The private constructor.

70.5.4  Properties

70.5.5  ColorValue as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Bookmark color (PDF 1.4). **Notes:** (Read and Write property)

70.5.6  DestPage as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Destination page. **Notes:** (Read and Write property)

70.5.7  DestPos as DynaPDFRectMBS

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Destination position. **Notes:** (Read and Write property)
70.5. **CLASS DYNAPDFBOOKMARKMBS**

### 70.5.8 DestType as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Destination type. **Notes:** (Read and Write property)

### 70.5.9 Handle as Integer

MBS DynaPDF Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The bookmark handle. **Notes:** Index from 0 to GetBookmarkCount-1. (Read and Write property)

### 70.5.10 Open as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if the bookmark appears open. **Notes:** (Read and Write property)

### 70.5.11 Parent as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Parent bookmark if any or -1. **Notes:** (Read and Write property)

### 70.5.12 Style as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Text style (PDF 1.4). **Notes:** (Read and Write property)

### 70.5.13 Title as String

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The title string. **Notes:**
This string is either an unicode encoded string or an ASCII encoded string.
(Read and Write property)

70.5.14 TitleLen as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The title length.
**Notes:** (Read and Write property)
70.6. class DynaPDFChoiceValueMBS

70.6.1 class DynaPDFChoiceValueMBS


Function: The class for choice values in a PDF.

Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.6.2 Methods

70.6.3 Constructor

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: The private constructor.

70.6.4 Properties

70.6.5 ExpValue as String


Function: The ExpValue.

Notes: (Read and Write property)

70.6.6 Selected as Boolean


Function: Whether the choice value is selected.

Notes: (Read and Write property)

70.6.7 Value as String


Function: The value.

Notes: (Read and Write property)
70.7  class DynaPDFCIDMetricMBS

70.7.1  class DynaPDFCIDMetricMBS

Function: The class for a CID Metric.
Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.7.2  Methods

70.7.3  Constructor

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The private constructor.

70.7.4  Properties

70.7.5  Width as Double

Function: Width value.
Notes: (Read and Write property)

70.7.6  x as Double

Function: X value.
Notes: (Read and Write property)

70.7.7  y as Double

Function: Y value.
Notes: (Read and Write property)
70.8. CLASS DYNAPDFCMAPMBS

70.8  class DynapdfCMapMBS

70.8.1  class DynapdfCMapMBS

Function: The class for a character map in DynaPDF.  
Notes:  
This class contains several duplicate fields because CMap files contain usually a DSC comment section which provides Postscript specific initialization code. With exception of DSCRResName the strings in the DSC section should not differ from their CMap counterparts. The Identity mapping of a character collection should contain the DSC comment ”% % BeginResource: CMap (Identity)”. Otherwise the string should be set to the CMap name.  
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.8.2  Methods

70.8.3  Constructor

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
Function: The private constructor.  

70.8.4  Properties

70.8.5  BaseCMap as String

Function: If set, this base cmap is required when loading the cmap.  
Notes: (Read only property)

70.8.6  CIDCount as Integer

Function: The ID count.  
Notes:  
0 if not set.  
(Read only property)
70.8.7  CMapName as String

Function: The CMap name.
Notes: (Read only property)

70.8.8  CMapType as Integer

Function: The CMap type.
Notes:
Should be 1!
(Read only property)

70.8.9  CMapVersion as Double

Function: The CMap version.
Notes: (Read only property)

70.8.10  DSCBaseCMap as String

Function: DSC comment.
Notes: (Read only property)

70.8.11  DSCCMapVersion as Double

Function: The DSC CMap version.
Notes: (Read only property)

70.8.12  DSCResName as String

Function: DSC comment.
Notes:
If the CMap uses an Identity mapping this string should be set to Identity.
(Read only property)

70.8.13 DSCTitle as String

Function: The DSC title.
Notes:
DSC comment -> DSC CMap name + Registry + Ordering + Supplement, e.g. "GB-EUC-H Adobe GB1 0"
(Read only property)

70.8.14 FileName as String

Function: The file name.
Notes:
The file name and CMap name should be identical!
(Read only property)

70.8.15 FilePath as String

Function: The file path.
Notes: (Read only property)

70.8.16 Ordering as String

Function: The ordering.
Notes:
CIDSystemInfo -> The Character Collection, e.g. Japan1.
(Read only property)
70.8.17 Registry as String

Function: The registry string.
Notes:
CIDSystemInfo -> The registrant of the Character Collection is usually Adobe.
(Read only property)

70.8.18 Supplement as Integer

Function: The Supplement number.
Notes:
CIDSystemInfo -> The Supplement number should be supported in the used PDF Version.
(Read only property)

70.8.19 WritingMode as Integer

Function: The writing mode.
Notes:
0 == Horizontal, 1 == Vertical
(Read only property)
class DynaPDFColorProfilesExMBS


Function: A set of ICC profiles for color management.

Notes:
In general, the DefInXXX profiles are used if no other profile is available for the color space. Possible sources are DefaultGray, DefaultRGB, DefaultCMYK, and the Rendering Intents.
The SoftProof profile emulates the output device. This is typically a printer profile or a default CMYK profile. If no profile is set then no device will be emulated. What you see is maybe not what you get on a printer.
To disable color management set the parameter Profiles of InitColormanagement() to nil.

Please use DynaPDFColorProfilesExMBS when you have profiles in memory and DynaPDFColorProfilesMBS when you have them as files.

Properties

DefInCMYK as String


Function: The CMYK Profile.

Notes:
Optional, CMYK colors are the problematic ones.
The other profiles can be created on demand but this is not possible with a CMYK profile. So, this is the most important input profile.
(Read and Write property)

DefInGray as String


Function: The gray profile.

Notes:
Optional
(Read and Write property)
70.9.5 DefInRGB as String

Function: The RGB profile.
Notes:
Optional, sRGB is the default.
(Read and Write property)

70.9.6 DeviceProfile as String

Function: The output device profile.
Notes:
Optional, the output profile must be compatible with the output color space.
At this time only Gray or RGB profiles are supported. This is the monitor profile! Default is sRGB.
(Read and Write property)

70.9.7 SoftProof as String

Function: The proofing profile.
Notes:
Optional but very important. This profile emulates the output device.
(Read and Write property)
70.10. class DynaPDFColorProfilesMBS

70.10.1 class DynaPDFColorProfilesMBS


**Function:** A set of ICC profiles for color management.

**Notes:**
In general, the DefInXXX profiles are used if no other profile is available for the color space. Possible sources are DefaultGray, DefaultRGB, DefaultCMYK, and the Rendering Intents.

The SoftProof profile emulates the output device. This is typically a printer profile or a default CMYK profile. If no profile is set then no device will be emulated. What you see is maybe not what you get on a printer.

To disable color management set the parameter Profiles of InitColormanagement() to nil.

Please use DynaPDFColorProfilesExMBS when you have profiles in memory and DynaPDFColorProfilesMBS when you have them as files.

70.10.2 Properties

70.10.3 DefInCMYK as FolderItem


**Function:** The CMYK Profile.

**Notes:**
Optional, CMYK colors are the problematic ones.

The other profiles can be created on demand but this is not possible with a CMYK profile. So, this is the most important input profile.

(Read and Write property)

70.10.4 DefInGray as FolderItem


**Function:** The gray profile.

**Notes:**
Optional

(Read and Write property)
70.10.5 **DefInRGB as FolderItem**

**Function:** The RGB profile.  
**Notes:**  
Optional, sRGB is the default.  
(Read and Write property)

70.10.6 **DeviceProfile as FolderItem**

**Function:** The output device profile.  
**Notes:**  
Optional, the output profile must be compatible with the output color space.  
At this time only Gray or RGB profiles are supported. This is the monitor profile! Default is sRGB.  
(Read and Write property)

70.10.7 **SoftProof as FolderItem**

**Function:** The proofing profile.  
**Notes:**  
Optional but very important. This profile emulates the output device.  
(Read and Write property)
70.11 class DynapdfColorSpaceMBS

70.11.1 class DynapdfColorSpaceMBS

MBS DynaPDF Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The color space class. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.11.2 Methods

70.11.3 BlackPoint(index as Integer) as Double

MBS DynaPDF Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** CIE blackpoint. **Notes:** If set, the array contains exactly 3 values. (index 0 to 2)

70.11.4 Colorants(index as Integer) as string

MBS DynaPDF Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Colorant names (Separation, DeviceN, and NChannel only). **Example:**

```vbnet
Sub DrawSomething(pdf as DynaPDFMBS)
    // draw all colorants with their own color
    Dim MyX, MyY as Double
    MyX = 10
    MyY = 100

    // set a font
call pdf.SetFont "Times", pdf.kfsItalic, 10.0, true, pdf.kcp1252

    // loop over all color spaces
dim Colorcount as Integer = pdf.GetColorSpaceCount

    For j as Integer = 0 to Colorcount-1
        MyX = 10
        dim MyColourSpace as DynapdfColorSpaceMBS = PDF.GetColorSpaceObj(j)
        dim ColorantsCount as Integer = MyColourSpace.ColorantsCount
        dim c as Integer = MyColourSpace.NumInComponents
        Call pdf.SetExtColorSpace j
```
// draw name of each colorant
for i as Integer = 0 to c-1

// build array with colors and set 100% for the one color we need
dim values() as Double
redim values(c-1)
values(i) = 1.0

// get name
dim name as string = "# " + str(i)
if i <= ColorantsCount then
    name = MyColourSpace.Colorants(i)
end if

// seaw name
Call pdf.SetFillColor(values)
call pdf.WriteText(MyX,MyY, name)

// next
MyX = MyX + pdf.GetTextWidth(name) + 20
next

// next
MyY = MyY+20
Next
End Sub

Notes:
This array contains ColorantsCount strings.
The plugin marks the string as UTF-8 and it should contain UTF-8. Be we saw PDF files form other applications which put here WindowsANSI or MacRoman strings.

70.11.5 Constructor


70.11.6 Gamma(index as Integer) as Double

70.11.7  Matrix(index as Integer) as Double

Notes: If set, the array contains exactly 9 values.

70.11.8  Range(index as Integer) as Double

Notes: min/max for each component or for the .a and .b components of a Lab color space. Index is zero based.

70.11.9  WhitePoint(index as Integer) as Double

Notes: If set, the array contains exactly 3 values. (index 0 to 2)

70.11.10  Properties

70.11.11  Alternate as DynaPDFColorSpaceMBS

Notes: Only set if the color space contains an alternate or base color space.
(Read only property)

70.11.12  AlternateType as Integer

MBS DynaPDF Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Alternate color space or base space of an Indexed or Pattern color space.
Notes: (Read only property)
70.11.13 Buffer as string

MBS DynaPDF Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Contains either an ICC profile or the color table of an Indexed color space. **Notes:** (Read only property)

70.11.14 BufferSize as Integer

MBS DynaPDF Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The buffer length in bytes. **Notes:** (Read only property)

70.11.15 ColorantsCount as Integer

MBS DynaPDF Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of colorants in the array. **Example:**

```vbs
Sub DrawSomething(pdf as DynaPDFMBS)
    // draw all colorants with their own color
    Dim MyX, MyY as Double
    MyX = 10
    MyY = 100
    // set a font
    Call pdf.SetFont "Times", pdf.kfsItalic, 10.0, true, pdf.kcp1252

    // loop over all color spaces
    Dim Colorcount as Integer = pdf.GetColorSpaceCount
    For j as Integer = 0 to Colorcount-1
        MyX = 10
        Dim MyColourSpace as DynapdfColorSpaceMBS = PDF.GetColorSpaceObj(j)
        Dim ColorantsCount as Integer = MyColourSpace.ColorantsCount
        Dim c as Integer = MyColourSpace.NumInComponents
        Call pdf.SetExtColorSpace j
        For i as Integer = 0 to c-1
            // build array with colors and set 100% for the one color we need
            Dim values() as Double
            ReDim values(c-1)
```
values(i) = 1.0

// get name
dim name as string = "# " + str(i)
if i <= ColorantsCount then
    name = MyColourSpace.Colorants(i)
end if

// seaw name
Call pdf.SetFillColor(values)
call pdf.WriteText(MyX, MyY, name)

// next
MyX = MyX + pdf.GetTextWidth(name) + 20
next

// next
MyY = MyY + 20
Next
End Sub

Notes: (Read only property)

70.11.16 Description as String

Function: The description text for color space.
Notes:
For color spaces with valid ICC profile only.
(Read only property)

70.11.17 DeviceNAttributes as DynaPDFDeviceNAttributesMBS

Function: Optional attributes of DeviceN or NChannel color spaces.
Notes: (Read only property)
70.11.18 Handle as Integer

MBS DynaPDF Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal handle for this color space object. **Notes:** (Read only property)

70.11.19 HasBlackPoint as Boolean

MBS DynaPDF Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the black point array has values. **Notes:** (Read only property)

70.11.20 HasGamma as Boolean

MBS DynaPDF Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the gamma array has values. **Notes:** (Read only property)

70.11.21 HasMatrix as Boolean

MBS DynaPDF Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the matrix array has values. **Notes:** (Read only property)

70.11.22 HasRange as Boolean

MBS DynaPDF Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the range array has values. **Notes:** (Read only property)

70.11.23 HasWhitePoint as Boolean

MBS DynaPDF Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the white point array has values. **Notes:** (Read only property)
70.11.24 **Index as Integer**

MBS DynaPDF Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The index in the color space list for current document. **Notes:**

Can be -1 if not known by plugin. In that case you would need to get list of all colorspaces and compare handle values to see which entry you got. (Read only property)

70.11.25 **Manufacturer as String**

MBS DynaPDF Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The manufacturer text for color space. **Notes:**

For color spaces with valid ICC profile only. (Read only property)

70.11.26 **MetaData as string**

MBS DynaPDF Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Optional XMP metadata stream -> ICCBased only. **Notes:** (Read only property)

70.11.27 **MetadataSize as Integer**

MBS DynaPDF Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Metadata length in bytes. **Notes:** (Read only property)

70.11.28 **Model as String**

MBS DynaPDF Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The model text for color space. **Notes:**

For color spaces with valid ICC profile only. (Read only property)
70.11.29 Name as String

**Function:** The name of the color space.  
**Notes:**  
For color spaces with valid ICC profile only.  
The plugin picks name from Model, Description and Manufacturer properties.  
(Read only property)

70.11.30 NumColors as Integer

**Function:** The number of colors in this color space.  
**Notes:**  
HiVal + 1 as specified in the color space. Indexed color space only.  
(Read only property)

70.11.31 NumInComponents as Integer

**Function:** Number of input components.  
**Notes:** (Read only property)

70.11.32 NumOutComponents as Integer

**Function:** Number of output components.  
**Notes:** (Read only property)

70.11.33 Type as Integer

**Function:** The type of this color space.  
**Notes:** (Read only property)
70.11. CLASS DYNAPDFCOLORSPACEMBS

70.11.34 TypeString as String


Function: The type as string for viewing in debugger.

Notes: (Read only property)
70.12 class DynaPDFDeviceNAttributesMBS

70.12.1 class DynaPDFDeviceNAttributesMBS

MBS DynaPDF Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for information about a Device N.  
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.12.2 Methods

70.12.3 Constructor

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The private constructor.

70.12.4 ProcessColorants(index as Integer) as string

MBS DynaPDF Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns process colorants with the given index.  
**Notes:**  
Raises out of bounds exceptions on bad index or if object does not have such an array.  
Index is zero based.

70.12.5 Separations(index as Integer) as DynaPDFColorSpaceMBS

MBS DynaPDF Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Optional array of separation color spaces.  
**Notes:**  
Raises out of bounds exceptions if used with wrong index parameter.  
Index is zero based.
70.12.6  Properties

70.12.7  ProcessColorantsCount as Integer

MBS DynaPDF Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Number of process colorants in the array or zero if not set. **Notes:** (Read and Write property)

70.12.8  ProcessColorSpace as DynaPDFColorSpaceMBS

MBS DynaPDF Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The process color space. **Notes:** (Read and Write property)

70.12.9  SeparationsCount as Integer

MBS DynaPDF Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Number of color spaces in the Separations array. **Notes:** (Read and Write property)
70.13 class DynaPDFEditTextMBS

70.13.1 class DynaPDFEditTextMBS

Function: The text editor.
Notes: If you have problems with asian characters, please make sure you use SetCMapDir and load the CMAPs.

70.13.2 Methods

70.13.3 Constructor(PDF as DynaPDFMBS)

Function: Initializes the edit text class with the given PDF instance.

70.13.4 Destructor

Function: The destructor.

70.13.5 FindPattern(text as string) as Integer

Function: Searches the text on the current PDF page for the given text.
Notes: Returns the number of occurrences.
If you have problems with asian characters, please make sure you use SetCMapDir and load the CMAPs.

70.13.6 ReplacePattern(NewText as string)

Function: Replaces the text with a new one or deletes it if the new string is an empty string.
Notes: Use the PrepareWrite event.
If you have problems with asian characters, please make sure you use SetCMapDir and load the CMAPs.

### 70.13.7 Properties

### 70.13.8 Parent as DynaPDFMBS


**Function:** The reference of the DynaPDFMBS object.

**Notes:** (Read only property)

### 70.13.9 Events

#### 70.13.10 PrepareWrite(M as DynapdfMatrixMBS, text as string, FillCS as Integer, FillColor as UInt32, StrokeCS as Integer, StrokeColor as UInt32, FontSize as Double, x as Double, y as Double, w as Double, h as Double, font as DynaPDFFontMBS) as boolean


**Function:** The event called before replace function writes.

**Notes:**

- Changed font, text size or color here.
- If you return true, the text is not written.
- Like if you draw it yourself or delete it.

Add new parameters for fill color, stroke color, font size, rectangle and font information in version 17.0.
70.14 class DynaPDFEmbFileNodeMBS

70.14.1 class DynaPDFEmbFileNodeMBS

Function: The class for an embedded file node.
Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.14.2 Methods

70.14.3 Constructor

Function: The private constructor.

70.14.4 Properties

70.14.5 EF as DynaPDFFileSpecMBS

Function: Embedded file.
Notes: (Read only property)

70.14.6 Name as String

Function: The name.
Notes:
UTF-8 encoded name. This key contains usually a 7 bit ASCII string.
(Read only property)

70.14.7 NextObject as DynaPDFEmbFileNodeMBS

Function: Next node if any.
Notes: (Read only property)
70.15 class DynaPDFErrorMBS

70.15.1 class DynaPDFErrorMBS

**Function:** The class for an entry in the error log.
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.15.2 Methods

70.15.3 Constructor

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The private constructor.

70.15.4 Properties

70.15.5 Message as String

**Function:** The error message
**Notes:** (Read and Write property)

70.15.6 ObjNum as Integer

**Function:** Object Number.
**Notes:**
-1 if not available
(Read and Write property)

70.15.7 Offset as Integer

**Function:** The offset.
**Notes:**
-1 if not available
(Read and Write property)

### 70.15.8 SrcFile as String

**Function:** The source file.
**Notes:** (Read and Write property)

### 70.15.9 SrcLine as Integer

**Function:** The Source Line.
**Notes:** (Read and Write property)
70.16.  

**CLASS DYNAPDFEXTGSTATE2MBS**

70.16  

class DynapdfExtGState2MBS

70.16.1  

class DynapdfExtGState2MBS

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The extended graphics state class.

70.16.2  

**Methods**

70.16.3  

**BlendMode(index as Integer) as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The blend modes.

**Notes:** See bm* constants.

70.16.4  

**Properties**

70.16.5  

**AlphaIsShape as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The AlphaIsShape property.

**Notes:**

PDF_MAX_INT if not set.
(Read and Write property)

70.16.6  

**AutoStrokeAdjust as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The AutoStrokeAdjust property.

**Notes:**

PDF_MAX_INT if not set.
(Read and Write property)

70.16.7  

**BlackGen as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function handle or 0.
70.16.8  BlackGen2 as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function handle or 0.  
**Notes:** (Read and Write property)

70.16.9  BlendModeCount as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The blend mode count.  
**Notes:** (Read and Write property)

70.16.10  FillAlpha as Single

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The fill alpha.  
**Notes:** 
-1.0 if not set.  
(Read and Write property)

70.16.11  FlatnessTol as Single

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The FlatnessTol property.  
**Notes:** 
-1.0 if not set.  
(Read and Write property)

70.16.12  Halftone as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The halftone handle or 0.  
**Notes:** (Read and Write property)
70.16.13 OverPrintFill as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The OverPrintFill property.

**Notes:**
PDF_MAX_INT if not set.
(Read and Write property)

70.16.14 OverPrintMode as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The OverPrintMode property.

**Notes:**
PDF_MAX_INT if not set.
(Read and Write property)

70.16.15 OverPrintStroke as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The OverPrintStroke property.

**Notes:**
PDF_MAX_INT if not set.
(Read and Write property)

70.16.16 RenderingIntent as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The rendering intent.

**Notes:**
riNone if not set
(Read and Write property)

70.16.17 SmoothnessTol as Single

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The SmoothnessTol property.

**Notes:**


70.16.18 SoftMask as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The Soft mask handle. Notes: (Read and Write property)

70.16.19 SoftMaskNone as Boolean

MBS DynaPDF Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: If true, the softmask must be disabled. Notes: (Read and Write property)

70.16.20 StrokeAlpha as Single

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The stoke alpha value. Notes: -1.0 if not set. (Read and Write property)

70.16.21 TextKnockout as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The TextKnockout property. Notes: PDF_MAX_INT if not set. (Read and Write property)
70.17. CLASS DYNAPDFEXTGSTATEMBS

70.17 class dynapdfExtGStateMBS

70.17.1 class dynapdfExtGStateMBS

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The extended graphics state class.

70.17.2 Properties

70.17.3 AlphaIsShape as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The AlphaIsShape property.
**Notes:**
PDF_MAX_INT if not set.
(Read and Write property)

70.17.4 AutoStrokeAdjust as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The AutoStrokeAdjust property.
**Notes:**
PDF_MAX_INT if not set.
(Read and Write property)

70.17.5 BlendMode as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The blend mode.
**Notes:**
See bm* constants.
Default bmNotSet.
(Read and Write property)
70.17.6 FillAlpha as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The fill alpha.
Notes:
-1.0 if not set.
(Read and Write property)

70.17.7 FlatnessTol as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The FlatnessTol property.
Notes:
-1.0 if not set.
(Read and Write property)

70.17.8 OverPrintFill as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The OverPrintFill property.
Notes:
PDF_MAX_INT if not set.
(Read and Write property)

70.17.9 OverPrintMode as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The OverPrintMode property.
Notes:
PDF_MAX_INT if not set.
(Read and Write property)

70.17.10 OverPrintStroke as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The OverPrintStroke property.
Notes:
70.17. **CLASS DYNAPDFEXTGSTATEMBS**

PDF_MAX_INT if not set.
(Read and Write property)

### 70.17.11 RenderingIntent as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The rendering intent.
**Notes:**
riNone if not set
(Read and Write property)

### 70.17.12 SmoothnessTol as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The SmoothnessTol property.
**Notes:**
-1.0 if not set.
(Read and Write property)

### 70.17.13 SoftMask as Integer

**Function:** Soft mask pointer or nil. See CreateSoftMask for further information.
**Notes:** (Read and Write property)

### 70.17.14 SoftMaskNone as Boolean

**Function:** Disables the active soft mask.
**Notes:** (Read and Write property)

### 70.17.15 StrokeAlpha as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The stoke alpha value.
**Notes:**
70.17.16 TextKnockout as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The TextKnockout property.  
**Notes:**  
PDF_MAX_INT if not set.  
(Read and Write property)
70.18. **CLASS DYNAPDFFIELDEXMBS**

70.18  **class DynaPDFFieldExMBS**

70.18.1  **class DynaPDFFieldExMBS**


**Function:** The class for extended field information.

**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.18.2  **Methods**

70.18.3  **Close**


**Function:** The destructor.

**Notes:** You can call close to release all values now or simply let it go automatically later.

70.18.4  **Constructor**

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The private constructor.

70.18.5  **Kids(index as Integer) as DynaPDFFieldExMBS**


**Function:** Array of child fields.

70.18.6  **Properties**

70.18.7  **Action as Integer**


**Function:** Action handle or -1 if not set.

**Notes:**

This action is executed when the field is activated.

(Read only property)
70.18.8  **ActionType as Integer**

**Function:** The type of action.
**Notes:**
See kat* constants.
Meaningful only, if Action >= 0.
(Read only property)

70.18.9  **BackColor as UInt32**

**Function:** Background color.
**Notes:** (Read only property)

70.18.10  **BackColorSP as Integer**

**Function:** Color space of the background color.
**Notes:** (Read only property)

70.18.11  **Barcode as DynaPDFBarcodeMBS**

**Function:** If present, this field is a barcode field.
**Notes:**
The field type is set to kftText since barcode fields are extended text fields.
(Read only property)

70.18.12  **BBox as DynaPDFRectMBS**

**Function:** Bounding box of the field in bottom-up coordinates.
**Notes:** (Read only property)
70.18. **CLASS DYNAPDFFIELDDEXMBS**

70.18.13 **BorderColor as UInt32**

Function: The Border color.
Notes: (Read only property)

70.18.14 **BorderColorSP as Integer**

Function: Color space of the border color.
Notes: (Read only property)

70.18.15 **BorderStyle as Integer**

Function: The Border style.
Notes: (Read only property)

70.18.16 **BorderWidth as Single**

Function: The Border width.
Notes: (Read only property)

70.18.17 **CaptionPos as Integer**

Function: Where to position the caption.
Notes:
Use constants kbcpCaptionAbove, kbcpCaptionBelow, kbcpCaptionLeft, kbcpCaptionOnly, kbcpCaptionOver, kbcpCaptionRight or kbcpImageOnly.
(Read only property)

70.18.18 **CharSpacing as Single**

Function: The char spacing.
Notes:
Text fields only.
(Read only property)

70.18.19 CheckBoxChar as Integer

Function: The ZapfDingbats character that is used to display the on state.
Notes: (Read only property)

70.18.20 Checked as Boolean

Function: The check value.
Notes: Check boxes only
(Read only property)

70.18.21 DefState as Integer

Function: The default state.
Notes: Check boxes only
(Read only property)

70.18.22 DefValue as String

Function: Optional default value.
Notes: (Read only property)

70.18.23 Deleted as Boolean

Function: If true, the field was marked as deleted by DeleteField().
70.18.24 DownCaption as String

Function: Caption of the down state.
Notes: (Read only property)

70.18.25 DownImage as Integer

Function: Image handle of the down state.
Notes: You can use this image handle with GetImageObj to get the image.
(Read only property)

70.18.26 EditFont as String

Function: Postscript name of the editing font.
Notes: (Read only property)

70.18.27 Events as DynaPDFObjEventMBS

Function: The events for this fields.
Notes: (Read only property)

70.18.28 ExpValCount as Integer

Function: Combo and list boxes only.
Notes: The values can be accessed with GetFieldExpValueEx().
(Read only property)
70.18.29 ExpValue as String

**Function:** The exp value.
**Notes:**
Check boxes only.
(Read only property)

70.18.30 FieldFlags as Integer

**Function:** Field flags.
**Notes:** (Read only property)

70.18.31 FieldFont as String

**Function:** Postscript name of the font.
**Notes:** (Read only property)

70.18.32 FieldName as String

**Function:** The field name.
**Notes:**
Note that children of a field group or radio button have no name.
(Read only property)

70.18.33 FieldType as Integer

**Function:** Field type.
**Notes:** (Read only property)
70.18.34 FontSize as Double

**Function:** Font size. 0.0 means auto font size.
**Notes:** (Read only property)

70.18.35 GroupType as Integer

**Function:** If GroupType <> FieldType the field is a terminal field of a field group.
**Notes:** (Read only property)

70.18.36 Handle as Integer

**Function:** Field handle.
**Notes:** (Read only property)

70.18.37 HighlightMode as Integer

**Function:** Highlight mode.
**Notes:** (Read only property)

70.18.38 IEditFont as DynaPDFFontMBS

**Function:** The edit font object.
**Notes:**
The object is created on demand the first time you access and cached.
(Read only property)

70.18.39 IEditFontInfo as DynaPDFFontInfoMBS

**Function:** The edit font info object.
**Notes:**
The object is created on demand the first time you access and cached. (Read only property)

70.18.40  **IFieldFont as DynaPDFFontMBS**

**Function**: The field font object.  
**Notes**:  
The object is created on demand the first time you access and cached. (Read only property)

70.18.41  **IFieldFontInfo as DynaPDFFontInfoMBS**

**Function**: The field font info object.  
**Notes**:  
The object is created on demand the first time you access and cached. (Read only property)

70.18.42  **IsCalcField as Boolean**

**Function**: If true, the OnCalc event of the field is connected with a JavaScript action.  
**Notes**: (Read only property)

70.18.43  **KidCount as Integer**

**Function**: Number of fields in the Kids array.  
**Notes**: (Read only property)

70.18.44  **MapName as String**

**Function**: Optional unique mapping name of the field.  
**Notes**: (Read only property)
**70.18.45 MaxLen as Integer**

*Function:* The maximum text length.  
*Notes:*  
Text fields only - zero means not restricted.  
(Read only property)

**70.18.46 ModDate as String**

*Function:* Modification date.  
*Notes:* (Read only property)

**70.18.47 OC as Integer**

MBS DynaPDF Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
*Function:* Handle of an OCG or OCMD or -1.  
*Notes:*  
Fields can be part of an Optional Content Group (OCG) or Optional Content Membership Dictionary (OCMD). If OC is greater -1 an OCG or OCMD handle was set. To determine whether an OCG handle was set, check whether the value is smaller & h40000000.  
(Read only property)

**70.18.48 PageIndex as Integer**

*Function:* Array index to change the tab order.  
*Notes:*  
see SortFieldsByIndex().  
(Read only property)

**70.18.49 PageNum as Integer**

*Function:* Page on which the field is used or -1.  
*Notes:* (Read only property)
70.18.50 RollCaption as String

Function: Caption of the roll over state.
Notes: (Read only property)

70.18.51 RollImage as Integer

Function: Image handle of the roll over state.
Notes:
You can use this image handle with GetImageObj to get the image.
(Read only property)

70.18.52 Rotate as Integer

Function: Rotation angle in degrees.
Notes: (Read only property)

70.18.53 Signature as DynaPDFSigDictMBS

Function: The signature details.
Notes:
Signature fields only. Present only for imported signature fields which which have a value. That means the file was digitally signed. -
Signed signature fields are always marked as deleted!
(Read only property)

70.18.54 TextAlign as Integer

Function: The text align.
Notes:
Text fields only.
(Read only property)
70.18.55 TextColor as UInt32

Function: Text color.
Notes: (Read only property)

70.18.56 TextColorSP as Integer

Function: Color space of the field’s text.
Notes: (Read only property)

70.18.57 TextScaling as Single

Function: The text scaling.
Notes:
Text fields only.
(Read only property)

70.18.58 ToolTip as String

Function: The tooltip text.
Notes:
Optional tool tip.
(Read only property)

70.18.59 UniqueName as String

Function: Optional unique name (NM key).
Notes: (Read only property)
70.18.60  UpCaption as String

**Function:** Caption of the up state.
**Notes:** (Read only property)

70.18.61  UpImage as Integer

**Function:** Image handle of the up state.
**Notes:**
You can use this image handle with GetImageObj to get the image.
(Read only property)

70.18.62  Value as String

**Function:** The value of the field.
**Notes:** (Read only property)

70.18.63  WordSpacing as Single

**Function:** The word spacing.
**Notes:**
Text fields only.
(Read only property)
70.19.1 class DynaPDFFieldMBS

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for field information. **Deprecated:** This item is deprecated and should no longer be used. You can use DynaPDFFieldExMBS instead. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.19.2 Methods

70.19.3 Constructor

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The private constructor.

70.19.4 Properties

70.19.5 BackColor as UInt32

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Background color. **Notes:** (Read only property)

70.19.6 BackCS as UInt32

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Color space of background / border color **Notes:** (Read only property)

70.19.7 BBox as DynaPDFRectMBS

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The Bounding box. **Notes:** (Read only property)
**70.19.8 BorderColor as UInt32**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Border color.  
**Notes:** (Read only property)

**70.19.9 Checked as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Only set if the field is a check box.  
**Notes:** (Read only property)

**70.19.10 Deleted as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** If true, the field was deleted.  
**Notes:** (Read only property)

**70.19.11 FieldName as String**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Field name.  
**Notes:**  
May be unicode or ASCII encoded.  
(Read only property)

**70.19.12 FieldNameLen as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The Field name length in characters.  
**Notes:** (Read only property)

**70.19.13 FieldType as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Field type (see ft* constants)
70.19. CLASS DYNAPDFIELDMBS

Notes: (Read only property)

70.19.14 Font as String

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Used font by the field (PostScript name).
Notes: (Read only property)

70.19.15 FontSize as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Font size.
Notes: (Read only property)

70.19.16 Handle as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The Field handle.
Notes: (Read only property)

70.19.17 KidCount as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Greater zero if the field has childs.
Notes: (Read only property)

70.19.18 Parent as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Parent field handle if any.
Notes: (Read only property)

70.19.19 TextColor as UInt32

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Text color.
70.19.20 **TextCS as UInt32**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Color space of text color. **Notes:** (Read only property)

70.19.21 **ToolTip as String**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Tool tip if any. **Notes:**

Unicode or ASCII encoded. (Read only property)

70.19.22 **Value as String**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Field value. **Notes:**

Unicode or ASCII encoded. (Read only property)
70.20. class DynaPDFFileSpecExMBS

70.20.1 class DynaPDFFileSpecExMBS

Function: The class for an extended file specification.
Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.20.2 Methods

70.20.3 Constructor

Function: The private constructor.

70.20.4 Properties

70.20.5 AFRelationship as String

Function: The relationship.
Notes:
PDF 2.0
(Read and Write property)

70.20.6 ColItem as Ptr

Function: If <>nil the embedded file contains a collection item with user defined data.
Notes:
This entry can occur in PDF Collections only (PDF 1.7). See "PDF Collections" in the help file for further information.
(Read and Write property)
70.20.7 Description as String

Function: Optional description string.
Notes: (Read and Write property)

70.20.8 DOS as String

Function: Optional DOS file name.
Notes: (Read and Write property)

70.20.9 EmbFileNode as DynaPDFEmbFileNodeMBS

Function: The embedded file node for embedded file.
Notes: (Read and Write property)

70.20.10 FileName as String

Function: File name as 7 bit ASCII string.
Notes: (Read and Write property)

70.20.11 FileNameIsURL as Boolean

Function: If true, FileName contains a URL.
Notes: (Read and Write property)

70.20.12 ID1 as String

Function: Optional file ID.
Notes: Meaningful only if FileName points to a PDF file.
(Read and Write property)
70.20.13  **ID2 as String**

*Function:* Optional file ID.
*Notes:* Meaningful only if FileName points to a PDF file.
(Read and Write property)

70.20.14  **IsVolatile as Boolean**

*Function:* If true, the file changes frequently with time.
*Notes:* (Read and Write property)

70.20.15  **Mac as String**

*Function:* Optional Mac file name.
*Notes:* (Read and Write property)

70.20.16  **Thumb as DynaPDFImageMBS**

*Function:* Optional thumbnail image.
*Notes:* (Read and Write property)

70.20.17  **UFileName as String**

*Function:* The file name.
*Notes:* PDF 1.7. Same as FileName but Unicode is allowed.
(Read and Write property)
70.20.18  Unix as String


Function: Optional Unix file name.

Notes: (Read and Write property)
70.21. class dynapdfFileSpecMBS

70.21.1 class dynapdfFileSpecMBS

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class for information about an embedded file. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.21.2 Methods

70.21.3 Constructor

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The private constructor.

70.21.4 Properties

70.21.5 Buffer as String

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Buffer of an embedded file. **Notes:** (Read and Write property)

70.21.6 BufferSize as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Buffer size in bytes. **Notes:** (Read and Write property)

70.21.7 Checksum as String

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** 16 byte MD5 digest if set. **Notes:** (Read and Write property)
70.21.8 ColItem as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Pointer to user defined collection item. **Notes:** (Read and Write property)

70.21.9 Compressed as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Should be false if Decompress was true. **Notes:** (Read and Write property)

70.21.10 CreateDate as String

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creation date as string. **Notes:** (Read and Write property)

70.21.11 Description as String

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The Description. **Notes:**

This string is either an unicode encoded string or an ASCII encoded string. (Read and Write property)

70.21.12 FileName as String

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** File name as 7 bit ASCII string. **Notes:** (Read and Write property)

70.21.13 FileSize as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Decompressed stream size or zero if not known.
70.21.14 IsURL as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** If true, FileName contains a URL. **Notes:** (Read and Write property)

70.21.15 MIMEType as String

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** MIME media type name (RFC 2046). **Notes:**

See also MimeTypeToFileExtensionMBS function. (Read and Write property)

70.21.16 ModDate as String

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Modification date as string. **Notes:** (Read and Write property)

70.21.17 Name as String

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Name of the file specification in the name tree. **Notes:**

This string is either an unicode encoded string or an ASCII encoded string. This value is always present. (Read and Write property)

70.21.18 UnicodeFileName as String

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Same as FileName but Unicode is allowed. **Notes:**
PDF 1.7.
This string is either an unicode encoded string or an ASCII encoded string.
(Read and Write property)
70.22. **CLASS DYNAPDFFONTINFOMBS**

70.22 class DynaPDFFontInfoMBS

70.22.1 class DynaPDFFontInfoMBS

**Function:** The class for DynaPDF font info.
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.22.2 Methods

70.22.3 Constructor

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The private constructor.

70.22.4 HorzWidths(index as UInt32) as Single

**Function:** Horizontal glyph widths.
**Notes:** Index from 0 to HorzWidthsCount -1.

70.22.5 VertWidths(index as UInt32) as DynaPDFCIDMetricMBS

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Vertical glyph widths array.

70.22.6 Properties

70.22.7 Ascent as Single

**Function:** Ascent (optional).
**Notes:** (Read only property)
70.22.8 AvgWidth as Single

Function: Average character width (optional).
Notes: (Read only property)

70.22.9 BaseEncoding as Integer

Function: The base encoding.
Notes: Valid only if HaveEncoding is true.
Can be kbeWinAnsi, kbeStandard, kbeMacRoman or kbeMacExpert.
(Read only property)

70.22.10 BaseFont as String

Function: PostScript Name or Family Name.
Notes: (Read only property)

70.22.11 CapHeight as Single

Function: Cap height (optional).
Notes: (Read only property)

70.22.12 CharSet as String

Function: The charset describes which glyphs are present in the font.
Notes: (Read only property)

70.22.13 CharSetSize as UInt32

Function: Length of the CharSet in bytes.
70.22.  CLASS DYNAPDFONTINFOMBS

Notes: (Read only property)

70.22.14  CIDOrdering as String

Function: SystemInfo -> Character collection.
Notes: (Read only property)

70.22.15  CIDRegistry as String

Function: SystemInfo -> Issuer of the character collection.
Notes: (Read only property)

70.22.16  CIDSet as MemoryBlock

Function: CID fonts only.
Notes: This is a table of bits indexed by CIDs.
(Read only property)

70.22.17  CIDSetSize as UInt32

Function: Length of the CIDSet in bytes.
Notes: (Read only property)

70.22.18  CIDSupplement as UInt32

Function: CIDSystemInfo -> Supplement number.
Notes: (Read only property)
70.22.19 CIDToGIDMap as MemoryBlock

**Function:** Allowed for embedded TrueType based CID fonts only.
**Notes:** (Read only property)

70.22.20 CIDToGIDMapSize as UInt32

**Function:** Length of the CIDToGIDMap in bytes.
**Notes:** (Read only property)

70.22.21 CMapBuf as MemoryBlock

**Function:** The CMap data.
**Notes:** Only available if the CMap was embedded.
(Read only property)

70.22.22 CMapBufSize as UInt32

**Function:** CMAP Buffer size in bytes.
**Notes:** (Read only property)

70.22.23 CMapName as String

**Function:** CID fonts only external CMap name or encoding.
**Notes:** (Read only property)

70.22.24 Descent as Single

**Function:** Descent (optional).
70.22.25  Encoding as MemoryBlock

Function: Unicode mapping 0..255.
Notes:
not available for CID fonts.
(Read only property)

70.22.26  FirstChar as UInt32

Function: First char (simple fonts only).
Notes: (Read only property)

70.22.27  Flags as UInt32

Function: Font flags.
Notes:
See DynaPDF manual.

The font flags describe certain properties of the font. The most important flags are the following:

* 1  Fixed pitch font
* 2  Serif style
* 4  Symbol font
* 8  Script style
* & h20  Non-symbolic font
* & h40  Italic style
* & h40000  Force Bold (Type1 fonts only)

The full set of available flags can be found in the PDF Reference.
(Read only property)
70.22.28 **FontBBox as DynaPDFRectMBS**

**Function:** This is the size of the largest glyph in this font.
**Notes:** (Read only property)

70.22.29 **FontBuffer as MemoryBlock**

**Function:** The font data.
**Notes:**
Available if the font was embedded or loaded from a buffer.
(Read only property)

70.22.30 **FontBufSize as UInt32**

**Function:** Font file size in bytes.
**Notes:** (Read only property)

70.22.31 **FontFamily as String**

**Function:** Optional Font Family (Family Name).
**Notes:** (Read only property)

70.22.32 **FontFilePath as String**

**Function:** The font file path.
**Notes:**
Only available for system fonts.
(Read only property)
70.22.33  **FontFile** as Integer

**Function:** The font file type.
**Notes:**
Can be: kffsType1C, kffsOpenTypeC, kffsOpenType, kffsNoSubtype, kffsCIDFontType2 or kffsCIDFontType0C.
(Read only property)

70.22.34  **FontName** as String

**Function:** Font name (should be the same as BaseFont).
**Notes:** (Read only property)

70.22.35  **FontStretch** as String

**Function:** The font stretch.
**Notes:**
Optional - >Condensed, and so on.
(Read only property)

70.22.36  **FontType** as Integer

**Function:** The font type.
**Notes:**
If ftType0 the font is a CID font.
(Read only property)

70.22.37  **FontWeight** as Single

**Function:** Font weight (optional).
**Notes:** (Read only property)
70.22.38 FullName as String

Function: The full name.
Notes:
System fonts only.
(Read only property)

70.22.39 HaveEncoding as Boolean

Function: Whether encoding is known.
Notes:
If true, BaseEncoding was set from the font’s encoding.
(Read only property)

70.22.40 HorzWidthsCount as UInt32

Function: Number of horizontal widths in the array.
Notes: (Read only property)

70.22.41 Imported as Boolean

Function: Whether font is imported.
Notes:
If true, the font was imported from an external PDF file.
(Read only property)

70.22.42 ItalicAngle as Single

Function: Italic angle.
Notes: (Read only property)
70.22. **CLASS DYNAPDFONTINFOMBS**

### 70.22.43 Lang as String

**Function:** Optional language code defined by BCP 47.
**Notes:** (Read only property)

### 70.22.44 LastChar as UInt32

**Function:** Last char (simple fonts only).
**Notes:** (Read only property)

### 70.22.45 Leading as Single

**Function:** Leading (optional).
**Notes:** (Read only property)

### 70.22.46 Length1 as UInt32

**Function:** Length of the clear text portion of a Type1 font.
**Notes:** (Read only property)

### 70.22.47 Length2 as UInt32

**Function:** Length of the encrypted portion of a Type1 font program.
**Notes:** (Read only property)

### 70.22.48 Length3 as UInt32

**Function:** Length of the fixed-content portion of a Type1 font program.
**Notes:** (Read only property)
70.22.49  MaxWidth as Single

**Function:** Maximum glyph width (optional).
**Notes:** (Read only property)

70.22.50  Metadata as MemoryBlock

**Function:** Optional XMP metadata stream about the font file.
**Notes:** (Read only property)

70.22.51  MetadataSize as UInt32

**Function:** MetaData size in bytes.
**Notes:** (Read only property)

70.22.52  MisWidth as Single

**Function:** Missing width (default = 0.0).
**Notes:** (Read only property)

70.22.53  Panose as MemoryBlock

**Function:** Optional 12 bytes long Panose string.
**Notes:**
CID fonts only.
(Read only property)

70.22.54  PostScriptName as String

**Function:** System fonts only.
70.22. CLASS DYNAPDFFONTINFOMBS

Notes: (Read only property)

70.22.55 SpaceWidth as Single

Function: Space width in font units.
Notes: A default value is set if the font contains no space character.
(Read only property)

70.22.56 StemH as Single

Function: The thickness of horizontal stems.
Notes: (Read only property)

70.22.57 StemV as Single

Function: The thickness of vertical stems.
Notes: (Read only property)

70.22.58 ToUnicode as MemoryBlock

Function: ToUnicode CMap.
Notes: Only available for imported fonts.
(Read only property)

70.22.59 ToUnicodeSize as UInt32

Function: ToUnicode CMap size in bytes.
Notes: (Read only property)
70.22.60 VertDefPos as DynapdfPointMBS

Function: Default vertical displacement vector.
Notes: (Read only property)

70.22.61 VertWidthsCount as UInt32

Function: Number of vertical widths in the array.
Notes: (Read only property)

70.22.62 WMode as UInt32

Function: Writing Mode.
Notes:
0: Horizontal
1: Vertical.
(Read only property)

70.22.63 XHeight as Single

Function: The height of lowercase letters measured from the baseline.
Notes: (Read only property)
70.23. **CLASS DYNAPDFONTMBS**

70.23  **class dynapdfFontMBS**

70.23.1  **class dynapdfFontMBS**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class for pdf font information. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.23.2  **Methods**

70.23.3  **Constructor**

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The private constructor.

70.23.4  **Encoding(Index as Integer) as string**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Unicode mapping 0..255 if set. **Notes:** Index from 0 to 255.

70.23.5  **Widths(Index as Integer) as single**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Glyph widths. **Notes:** Index from 0 to WidthsCount-1.

70.23.6  **Properties**

70.23.7  **Ascent as Single**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The ascent of this font. **Notes:** (Read and Write property)
70.23.8 BaseFont as String

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: PostScript Name or Family Name. Notes: (Read and Write property)

70.23.9 CapHeight as Single

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The Cap height. Notes: (Read and Write property)

70.23.10 DefWidth as Single

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Default character widths ->CID fonts only. Notes: (Read and Write property)

70.23.11 Descent as Single

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The Descent. Notes: (Read and Write property)

70.23.12 FirstChar as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The first character. Notes: (Read and Write property)

70.23.13 Flags as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Font flags. Notes: (Read and Write property)
70.23. **CLASS DYNAPDFONTMBS**

70.23.14 **FontFamily as String**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Optional Font Family (Family Name). **Notes:**

Unicode or ASCII encoded. **(Read and Write property)**

70.23.15 **FontFile as Memoryblock**

MBS DynaPDF Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Font file buffer. **Notes:**

Only imported fonts are returned. **(Read and Write property)**

70.23.16 **FontFileType as Integer**

MBS DynaPDF Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The font file subtype. **Notes:**

See kffs* constants like those:

<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kffsType1C</td>
<td>0</td>
<td>CFF based Type1 font</td>
</tr>
<tr>
<td>kffsCIDFontType0C</td>
<td>1</td>
<td>CFF based Type1 CID font</td>
</tr>
<tr>
<td>kffsOpenType</td>
<td>2</td>
<td>TrueType based OpenType font</td>
</tr>
<tr>
<td>kffsOpenTypeC</td>
<td>3</td>
<td>CFF based OpenType font</td>
</tr>
<tr>
<td>kffsCIDFontType2</td>
<td>4</td>
<td>TrueType based CID Font</td>
</tr>
<tr>
<td>kffsNoSubtype</td>
<td>9</td>
<td>The font file is in the format of FontType</td>
</tr>
</tbody>
</table>

**(Read and Write property)**

70.23.17 **FontName as String**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The Font name. **Notes:** **(Read and Write property)**
70.23.18 **FontType as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The font type.  
**Notes:**  
If ftType0 the font is a CID font.  
(Read and Write property)

70.23.19 **ItalicAngle as Single**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Italic angle.  
**Notes:** (Read and Write property)

70.23.20 **LastChar as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The Last char.  
**Notes:** (Read and Write property)

70.23.21 **Length1 as Integer**

MBS DynaPDF Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Length of the clear text portion of the Type1 font, or the length of the entire font program if FontType <> kffType1.  
**Notes:** (Read and Write property)

70.23.22 **Length2 as Integer**

MBS DynaPDF Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Length of the encrypted portion of the Type1 font program (Type1 fonts only).  
**Notes:** (Read and Write property)

70.23.23 **Length3 as Integer**

MBS DynaPDF Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Length of the fixed-content portion of the Type1 font program or zero if not present.
70.23.24 SpaceWidth as Single

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Space width in font units or default value. Notes: (Read and Write property)

70.23.25 WidthsCount as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Number of widths in the array. Notes: (Read and Write property)

70.23.26 XHeight as Single

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The x-height. Notes: (Read and Write property)
70.24 class DynaPDFGlyphOutlineMBS

70.24.1 class DynaPDFGlyphOutlineMBS

Function: The class for glyph outline.
Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.24.2 Methods

70.24.3 Constructor

Function: The private constructor.

70.24.4 Outline(index as Integer) as DynapdfPointMBS

Function: Queries point with given index.
Notes: Index from 0 to OutlineCount-1.

70.24.5 Outlines as DynapdfPointMBS()

Function: Queries array with all points.

70.24.6 Properties

70.24.7 AdvanceX as Single

Function: Glyph width in horizontal writing mode.
Notes: (Read only property)
### 70.24.8 AdvanceY as Single

**Function:** Glyph height in vertical writing mode.
**Notes:** (Read only property)

### 70.24.9 BBox as DynaPDFRectMBS

**Function:** Bounding box of the glyph outline.
**Notes:** (Read and Write property)

### 70.24.10 HaveBBox as Boolean

**Function:** If true, BBox was computed.
**Notes:** (Read and Write property)

### 70.24.11 Lsb as Integer

**Function:** Left side bearing (already applied, info only).
**Notes:** (Read and Write property)

### 70.24.12 OriginX as Single

**Function:** Placement vector (vertical writing mode only).
**Notes:** (Read only property)

### 70.24.13 OriginY as Single

**Function:** Placement vector (vertical writing mode only).
**Notes:** (Read only property)
### 70.24.14 OutlineCount as Integer

**Function:** Number of points.
**Notes:** (Read and Write property)

### 70.24.15 Tsb as Integer

**Function:** Top side bearing (already applied, info only).
**Notes:** (Read and Write property)
70.25. CLASS DYNAPDFGOTOACTIONMBS

70.25  class DynaPDFGoToActionMBS

70.25.1  class DynaPDFGoToActionMBS

**Function:** The class for details on a GoTo action.  
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.25.2  Methods

70.25.3  Constructor

**Function:** The private constructor.

70.25.4  DestPos(index as Integer) as Single

**Function:** Destination position.  
**Notes:** Array of 4 floating point values if set. Index from 0 to 3.

70.25.5  Properties

70.25.6  DestFile as DynaPDFFileSpecExMBS

**Function:** The destination file.  
**Notes:** (Read only property)

70.25.7  DestName as String

**Function:** Optional named destination that shall be loaded when opening the file.  
**Notes:** (Read only property)
70.25.8 DestPage as Integer

Function: Destination page (the first page is denoted by 1).
Notes: (Read only property)

70.25.9 DestType as Integer

Function: Destination type.
Notes: (Read only property)

70.25.10 NewWindow as Integer

Function: Whether to open a new window.
Notes:
Meaningful only if the destination file points to a PDF file.
-1 = viewer default, 0 = false, 1 = true.
(Read only property)

70.25.11 NextAction as Integer

Function: The index of the action.
Notes:
-1 or next action handle to be executed if any.
(Read only property)

70.25.12 NextActionType as Integer

Function: The type of the action.
Notes:
Only set if NextAction is > 0.
(Read only property)
class DynaPDFHideActionMBS


**Function:** The class for a hide action.

**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

### Methods

#### Constructor


**Function:** The private constructor.

### Fields(index as Integer) as DynaPDFFieldExMBS


**Function:** Array of fields.

### Properties

#### FieldsCount as Integer


**Function:** Number of fields in the array.

**Notes:** (Read only property)

#### Hide as Boolean


**Function:** A flag indicating whether to hide or show the fields in the array.

**Notes:** (Read only property)
70.26.8 NextAction as Integer

Function: The handle of the next action to use.
Notes:
-1 or next action handle to be executed if any.
(Read only property)

70.26.9 NextActionType as Integer

Function: The type of the next action.
Notes:
Only set if NextAction is >= 0.
(Read only property)
70.27. CLASS DYNAPDFIMAGEMBS

70.27 class DynaPDFImageMBS

70.27.1 class DynaPDFImageMBS

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class for dynapdf for passing image data. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.27.2 Methods

70.27.3 Constructor

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The private constructor.

70.27.4 Decode as Single()

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The decode array. **Notes:**

If set, samples must be decoded. The array contains 2 * NumComponents values.
The decode array is never set if the image is returned decompressed since it is already applied during de-compression.

70.27.5 MaskImage(Flags as UInt32 = 0) as DynaPDFImageMBS

MBS DynaPDF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries the image details on the soft mask for this image. **Notes:**

If set, a 1 bit image is used as a transparency mask.
Plugin calls GetImageObjEx with the given flags to decode the image.
CHAPTER 70. DYNAPDF

70.27.6  **PictureData(ImageFormat as Integer = 0, ImageFilter as Integer = 0) as String**

**Function:** Requests images in the given format.
**Notes:**
Default for ImageFormat is Tiff (kifmTIFF is zero) and default Image Filter is flate (kcfFlate is zero).
You can pass different constants.
If you request JPEG or JPEG 2000 and the image is already in that format, we pass through.
Else we recompress image.

70.27.7  **SoftMask(Flags as UInt32 = 0) as DynaPDFImageMBS**

**Function:** Queries the image details on the soft mask for this image.
**Notes:**
If set, a grayscale image is used as alpha channel.
Plugin calls GetImageObjEx with the given flags to decode the image.

70.27.8  **Properties**

70.27.9  **BitsPerPixel as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Bit depth of the image buffer.
**Notes:**
Possible values are 1, 2, 4, 8, 24, 32, and 64.

(Read only property)

70.27.10  **Buffer as String**

**Function:** The buffer for the image data as a string.
**Notes:**
Each scanline is aligned to a full byte.
(Read only property)
70.27. **CLASS DYNAPDFIMAGEMBS**

### 70.27.11 BufferPtr as Ptr

MBS DynaPDF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The buffer for the image data.  
**Notes:**  
Each scanline is aligned to a full byte.  
(Read only property)

### 70.27.12 BufferSize as Integer

MBS DynaPDF Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The size of the image buffer in bytes.  
**Notes:** (Read only property)

### 70.27.13 ColorCount as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of colors in the color table.  
**Notes:** (Read only property)

### 70.27.14 ColorMask as Memoryblock

MBS DynaPDF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Pointer to color mask.  
**Notes:**  
The array contains ranges in the form min/max (2 values per component) for each component before decoding.  
(Read only property)

### 70.27.15 ColorSpace as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The color space refers either to the image buffer or to the color table if set.  
**Notes:**  
Note that 1 bit images can occur with and without a color table.
70.27.16  ColorSpaceObject as DynaPDFColorSpaceMBS

**Function:** The original color space.
**Notes:** (Read only property)

70.27.17  ColorTable as Memoryblock

**Function:** The color table or nil.
**Notes:** (Read only property)

70.27.18  Filter as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Required decode filter if the image is compressed.
**Notes:**
- Required decode filter if the image is compressed.
- Possible values are dfDCTDecode (JPEG), dfJPXDecode (JPEG2000), and dfJBIG2Decode. Other filters are already removed by DynaPDF since a conversion to a native file format is then always required.

(Read only property)

70.27.19  Height as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Image height in pixel.
**Notes:** (Read only property)

70.27.20  IMaskImageHandle as Integer

**Function:** The index of the mask image.
**Notes:**
This is the index to use with DynaPDFMBS.GetImageObj function.
(Read only property)

### 70.27.21 InlineImage as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** If true, the image is an inline image. **Notes:** (Read only property)

### 70.27.22 Intent as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The rendering intent. **Notes:** Default riNone. (Read only property)

### 70.27.23 Interpolate as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** If true, image interpolation should be performed. **Notes:** (Read and Write property)

### 70.27.24 ISoftMaskHandle as Integer

MBS DynaPDF Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The index of the soft mask image. **Notes:** This is the index to use with DynaPDFMBS.GetImageObj function. (Read only property)

### 70.27.25 JBIG2Globals as String

MBS DynaPDF Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Optional global page 0 segment (kdfJBIG2Decode filter only). **Notes:** (Read only property)
70.27.26 **JBIG2GlobalsSize as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The size of the bit stream in bytes. **Notes:** (Read only property)

70.27.27 **Measure as DynaPDFMeasureMBS**

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Optional measure dictionary. **Notes:** (Read only property)

70.27.28 **Metadata as String**

MBS DynaPDF Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Optional XML Metadata stream. **Notes:** (Read only property)

70.27.29 **MetadataSize as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Length of Metadata in bytes. **Notes:** (Read only property)

70.27.30 **MinIsWhite as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** If true, the colors of 1 bit images are reversed. **Notes:** (Read only property)

70.27.31 **NumComponents as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of components stored in the image buffer. **Notes:** (Read only property)
**70.27.32 OCG as Integer**

MBS DynaPDF Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Handle of an OCG or OCMD or -1.
**Notes:**
Images can be part of an Optional Content Group (OCG) or Optional Content Membership Dictionary (OCMD). If OC is greater -1 an OCG or OCMD handle was set. To determine whether an OCG handle was set, check whether the value is smaller & h40000000.
(Read only property)

**70.27.33 OrgFilter as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The image was compressed with this filter in the PDF file.
**Notes:**
This info is useful to determine which compression filter should be used when creating a new image file from the image buffer.
(Read only property)

**70.27.34 PDF as DynaPDFMBS**

**Function:** The reference to the parent DynaPDF object.
**Notes:** (Read only property)

**70.27.35 PtData as DynaPDFPointDataDictionaryMBS**

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The Point Data dictionary.
**Notes:** (Read only property)

**70.27.36 ResolutionX as Single**

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Image resolution on the x-axis.
**Notes:** (Read only property)
70.27.37 ResolutionY as Single

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Image resolution on the y-axis.
**Notes:** (Read only property)

70.27.38 ScanLineLength as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The length of a scanline in bytes.
**Notes:** (Read only property)

70.27.39 SMaskInData as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The SMaskInData value.
**Notes:**
JPXDecode only, PDF_MAX_INT if not set. See PDF Reference for further information.

(Read only property)

70.27.40 Transparent as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The transparent mode.
**Notes:**
The meaning is different depending on the bit depth and whether a color table is available. If the image is a 1 bit image and if no color table is available, black pixels must be drawn with the current fill color. If the image contains a color table ColorMask contains the range of indexes in the form min/max index which appears transparent. If no color table is present ColorMask contains the transparent ranges in the form min/max for each component.

(Read only property)

70.27.41 Width as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Image width in pixel.
70.27. CLASS DYNAPDFIMAGEMBS

Notes: (Read only property)
70.28 class DynaPDFImportDataActionMBS

70.28.1 class DynaPDFImportDataActionMBS

Function: The class for an import data action.
Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.28.2 Methods

70.28.3 Constructor

Function: The private constructor.

70.28.4 Properties

70.28.5 Data as DynaPDFFileSpecExMBS

Function: The data or file to be loaded.
Notes: (Read only property)

70.28.6 NextAction as Integer

Function: The handle to the next action.
Notes:
-1 or next action handle to be executed if any
(Read only property)

70.28.7 NextActionType as Integer

Function: The type of the next action.
Notes:
Only set if NextAction is $\geq 0$.
(Read only property)
70.29  class DynaPDFJavaScriptActionMBS

70.29.1  class DynaPDFJavaScriptActionMBS

Function: The class for a javascript action.
Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.29.2  Methods

70.29.3  Constructor

Function: The private constructor.

70.29.4  Properties

70.29.5  NextAction as Integer

Function: The handle to the next action.
Notes:
-1 or next action handle to be executed if any
(Read only property)

70.29.6  NextActionType as Integer

Function: The type of the next action.
Notes:
Only set if NextAction is >= 0.
(Read only property)
70.29.7 Script as String


**Function:** The script.

**Notes:** (Read only property)
70.30 class DynaPDFLaunchActionMBS

70.30.1 class DynaPDFLaunchActionMBS

**Function:** The class for details on a launch action.
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plug-in functions.

70.30.2 Methods

70.30.3 Constructor

**Function:** The private constructor.

70.30.4 Properties

70.30.5 AppName as String

**Function:** Optional. The name of the application that should be launched.
**Notes:** (Read only property)

70.30.6 DefDir as String

**Function:** Optional default directory.
**Notes:** (Read only property)

70.30.7 File as DynaPDFFileSpecExMBS

**Function:** The file specification for the launch.
**Notes:** (Read only property)
70.30.8 NewWindow as Integer

Function: Whether to launch in new window.
Notes:
-1 = viewer default, 0 = false, 1 = true.
(Read only property)

70.30.9 NextAction as Integer

Function: The handle to the next action.
Notes:
-1 or next action handle to be executed if any
(Read only property)

70.30.10 NextActionType as Integer

Function: The type of the next action.
Notes:
Only set if NextAction is >= 0.
(Read only property)

70.30.11 Operation as String

Function: Optional string specifying the operation to perform (open or print).
Notes: (Read only property)

70.30.12 Parameter as String

Function: Optional parameter string that shall be passed to the application (AppName).
Notes: (Read only property)
70.31 class DynaPDFLayerGroupMBS

70.31.1 class DynaPDFLayerGroupMBS

Function: The class for a DynaPDF Layer Group.
Notes:
Used to link layers in hierarchies.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.31.2 Methods

70.31.3 Constructor

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The private constructor.

70.31.4 Properties

70.31.5 Handle as Integer

Function: The internal object reference.
Notes: (Read only property)

70.31.6 Owner as DynaPDFMBS

Function: The link to the parent DynaPDF object.
Notes: (Read only property)
70.32. class DynaPDFLineAnnotParameterMBS

70.32.1 class DynaPDFLineAnnotParameterMBS


Function: The class for line annotation parameters.

70.32.2 Properties

70.32.3 Caption as Boolean


Function: Specifies whether the parameter Content of the function LineAnnot should be used as caption of the measure line.

Notes: (Read and Write property)

70.32.4 CaptionOffsetX as Single


Function: Horizontal offset of the caption from its normal position.

Notes: (Read and Write property)

70.32.5 CaptionOffsetY as Single


Function: Vertical offset of the caption from its normal position.

Notes: (Read and Write property)

70.32.6 CaptionPos as Integer


Function: The position where the caption should be drawn if present.

Notes: (Read and Write property)
70.32.7 LeaderLineExtend as Single

**Function:** Optional leader line extend beyond the leader line (must be a positive value or zero). 
**Notes:** (Read and Write property)

70.32.8 LeaderLineLen as Single

**Function:** Length of the leader lines (positive or negative). 
**Notes:** (Read and Write property)

70.32.9 LeaderLineOffset as Single

**Function:** Amount of space between the endpoints of the annotation and the leader lines (must be a positive value or zero) 
**Notes:** (Read and Write property)
70.33. **CLASS DYNAPDFMATRIXMBS**

### 70.33 class DynapdfMatrixMBS

**70.33.1 class DynapdfMatrixMBS**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for a DynaPDF matrix structure. **Notes:** in the documentation known as TCTM struct.

### 70.33.2 Methods

#### 70.33.3 Constructor

MBS DynaPDF Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new matrix and sets it to identity. **Example:**

```vbnet
dim m as new DynapdfMatrixMBS
MsgBox m
```

**See also:**

- 70.33.4 Constructor(a as Double, b as Double, c as Double, d as Double, x as Double, y as Double) 11723
- 70.33.5 Constructor(other as DynapdfMatrixMBS) 11724

#### 70.33.4 Constructor(a as Double, b as Double, c as Double, d as Double, x as Double, y as Double)

MBS DynaPDF Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new instance with setting values to the given parameters. **Example:**

```vbnet
dim m as new DynapdfMatrixMBS(1,2,3,4,5,6)
MsgBox m
```

**See also:**

- 70.33.3 Constructor 11723
- 70.33.5 Constructor(other as DynapdfMatrixMBS) 11724
70.33.5 Constructor(other as DynapdfMatrixMBS)

**Function:** Creates a matrix object with copying the values.
**Example:**
```vba
dim m as new DynapdfMatrixMBS(1,2,3,4,5,6)
dim n as new DynapdfMatrixMBS(m)
MsgBox n
```

See also:

- 70.33.3 Constructor
- 70.33.4 Constructor(a as Double, b as Double, c as Double, d as Double, x as Double, y as Double)

70.33.6 GetRotationAngle as Double

**Function:** Calculates the rotate angle.
**Example:**
```vba
dim m as DynapdfMatrixMBS = DynapdfMatrixMBS.Identity
m.Rotate 0.1
MsgBox str(m.GetRotationAngle) // shows 0.1
```

**Notes:** In radians from -pi to pi.

70.33.7 GetScaleFactor as Double

**Function:** Calculates the scale factor.
**Example:**
```vba
dim m as DynapdfMatrixMBS = DynapdfMatrixMBS.Identity
m.Scale 3.0, 4.0
MsgBox str(m.GetScaleFactor) // shows 3.535534
```
70.33.8  Identity as DynapdfMatrixMBS

Function: Creates new object with identity matrix.
Example:
```vba
dim m as DynapdfMatrixMBS = DynapdfMatrixMBS.Identity
MsgBox m // shows [ 1.000000 0.000000 0.000000 1.000000 0.000000 0.000000 ]
```

70.33.9  Invert

Function: Inverts the matrix.
Example:
```vba
dim m as new DynapdfMatrixMBS
m.Invert
MsgBox m // shows [ 1.000000 -0.000000 -0.000000 1.000000 0.000000 0.000000 ]
```

70.33.10  IsIdentity as boolean

Function: Checks whether matrix is the identity matrix.
Example:
```vba
dim m as new DynapdfMatrixMBS
MsgBox str(m.IsIdentity)
m.a = 3.0
MsgBox str(m.IsIdentity)
```

Notes: Returns true if a = 1, b = 0, c = 0, d = 1, x = 0 and y = 0.
70.33.11  **LeftMultiply**(a as Double, b as Double, c as Double, d as Double, x as Double, y as Double)

MBS DynaPDF Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Multiplies both matrix where self is on the left side. 
See also:

- 70.33.12 **LeftMultiply**(other as DynapdfMatrixMBS)

70.33.12  **LeftMultiply**(other as DynapdfMatrixMBS)

MBS DynaPDF Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Multiplies both matrix where self is on the left side. 
**Example:**

```vba
dim m1 as new DynapdfMatrixMBS
dim m2 as new DynapdfMatrixMBS

m1.Rotate 0.1
m2.Scale 2.0, 3.0

dim m3 as new DynapdfMatrixMBS(m1)
m3.LeftMultiply(m2)

MsgBox m1.Str+EndOfLine+m2.Str+EndOfLine+m3.Str
```

See also:

- 70.33.11 **LeftMultiply**(a as Double, b as Double, c as Double, d as Double, x as Double, y as Double)

70.33.13  **Operator_Compare**(other as DynapdfMatrixMBS) as Integer

MBS DynaPDF Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Compares two matrix objects whether they have same values. 
**Example:**

```vba
dim m1 as new DynapdfMatrixMBS
dim m2 as new DynapdfMatrixMBS

if m1 = m2 then
```
70.33. CLASS DYNAPDFMATRIXMBS

MsgBox "Equal, same values."
else
MsgBox "Not equal - Bug in Plugin."
end if

if m1 is m2 then
MsgBox "Equal - Bug in REAL Studio."
else
MsgBox "Not equal, different objects."
end if

70.33.14 Operator Convert as string


**Function:** Converts matrix into a string for displaying in log files.

**Example:**

dim m as new DynapdfMatrixMBS
MsgBox m // shows [ 1.000000 0.000000 0.000000 1.000000 0.000000 0.000000 ]

**Notes:** Added for debugging.

70.33.15 Operator Multiply(other as DynapdfMatrixMBS) as DynapdfMatrixMBS


**Function:** Multiplies both matrix where self is on the left side.

**Example:**

dim m1 as new DynapdfMatrixMBS
dim m2 as new DynapdfMatrixMBS

m1.Rotate 0.1
m2.Scale 2.0, 3.0

dim m3 as DynapdfMatrixMBS = m1*m2

MsgBox m1.Str+EndOfLine+m2.Str+EndOfLine+m3.Str
70.33.16 Operator_MultiplyRight(other as DynapdfMatrixMBS) as DynapdfMatrixMBS

MBS DynaPDF Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Multiplies both matrix where self is on the right side.

70.33.17 RightMultiply(a as Double, b as Double, c as Double, d as Double, x as Double, y as Double)

MBS DynaPDF Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Multiplies both matrix where self is on the right side. **See also:**

- 70.33.18 RightMultiply(other as DynapdfMatrixMBS)

70.33.18 RightMultiply(other as DynapdfMatrixMBS)

MBS DynaPDF Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Multiplies both matrix where self is on the right side. **See also:**

- 70.33.17 RightMultiply(a as Double, b as Double, c as Double, d as Double, x as Double, y as Double)

70.33.19 Rotate(angle as Double)

MBS DynaPDF Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Rotates matrix with the given angle. **Example:**

```vbnet
dim m as new DynapdfMatrixMBS

const pi = 3.14159265

dim angle as Double = 30.0/180.0*pi

m.Rotate(angle)

MsgBox m // shows [ 0.866025 0.500000 -0.500000 0.866025 0.000000 0.000000 ]
```

**Notes:** Angle in radians: 2*Pi = 360 degree
70.33. **CLASS DYNAPDFMATRIXMBS**

### 70.33.20 Scale(sx as Double, sy as Double)

**Function:** Scales the matrix.
**Example:**

```vbnet
dim m as new DynapdfMatrixMBS
m.Scale 2.0, 3.0
MsgBox m // [ 2.000000 0.000000 0.000000 3.000000 0.000000 0.000000 ]
```

### 70.33.21 SetIdentity

**Function:** Sets values back to the identity matrix.
**Example:**

```vbnet
dim m as new DynapdfMatrixMBS
m.Scale 2.0, 3.0 // modify values
m.SetIdentity // and reset
MsgBox m // [ 1.000000 0.000000 0.000000 1.000000 0.000000 0.000000 ]
```

### 70.33.22 SetValues(a as Double, b as Double, c as Double, d as Double, x as Double, y as Double)

**Function:** Sets all the values in one method
**Example:**

```vbnet
dim m as new DynapdfMatrixMBS
m.SetValues 1,2,3,4,5,6
MsgBox m
```
70.33.23  **Str as string**

**Function:** Converts matrix into a string for displaying in log files.  
**Example:**

```vbs
Dim m As New DynapdfMatrixMBS
MsgBox m.Str // shows [ 1.000000 0.000000 0.000000 1.000000 0.000000 0.000000]
```

**Notes:** Added for debugging.

70.33.24  **Transform(byref x as Double, byref y as Double)**

**Function:** Applies the matrix to the given point.  
**Example:**

```vbs
Const pi = 3.14159265
Dim angle As Double = 30.0 / 180.0 * pi
m.Rotate(angle)
m.Translate 2.0, 3.0
Dim x As Double = 100.0
Dim y As Double = 100.0
m.Transform x, y
MsgBox str(x) + " " + str(y) // 36.83459 140.2006
```

70.33.25  **TransformInv(byref x as Double, byref y as Double)**

**Function:** Applies the matrix to the given point in inverse mode.  
**Example:**

```vbs
Const pi = 3.14159265
Dim angle As Double = 30.0 / 180.0 * pi
m.Rotate(angle)
```
0.33. CLASS DYNAPDFMATRIXMBS

m.Translate 2.0, 3.0

dim x as Double = 100.0
dim y as Double = 100.0

// transform
m.Transform x, y

MsgBox str(x) + " " + str(y) // 36.83459 140.2006

// transform back
m.TransformInv x, y

MsgBox str(x) + " " + str(y) // 100 100#

Notes: Like you have a point and want to know whether it was before the matrix was applied.

0.33.26 Translate(x as Double, y as Double)

Function: Translates matrix by given values.
Example:

dim m as new DynapdfMatrixMBS

m.Translate 2, 3

MsgBox m // shows [ 1.000000 0.000000 0.000000 1.000000 2.000000 3.000000 ]

0.33.27 Properties

0.33.28 a as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: One of the matrix properties.
Notes: (Read and Write property)
**70.33.29  b as Double**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the matrix properties.
**Notes:** (Read and Write property)

---

**70.33.30  c as Double**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the matrix properties.
**Notes:** (Read and Write property)

---

**70.33.31  d as Double**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the matrix properties.
**Notes:** (Read and Write property)

---

**70.33.32  x as Double**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the matrix properties.
**Notes:** (Read and Write property)

---

**70.33.33  y as Double**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the matrix properties.
**Notes:** (Read and Write property)


**70.34. class DynaPDFMBS**

**70.34.1 class DynaPDFMBS**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The dynapdf class.

**Notes:**

A pdf library to create, modify, import pdf files.
You need a separate dynapdf license key for this class.

Please note that all constants have the prefix k. In the dynapdf_help.pdf file, the constants don’t have a k prefix. And the C functions there have IPDF parameters which the plugin automatically passes for you. So

```
SI32 pdfSetPageCoords(const void* IDPF, TPageCoord PageCoords)
```

translates in Real Studio to

```
function SetPageCoords(PageCoords as Integer) as Integer
```

and you call it like this:

```
call pdf.SetPageCoords pdf.kpcTopDown
```

where in this sample the DynaPDF object is named pdf.

Pro license is required for the following functions:

- BeginTransparencyGroup
- ConvertColors
- Create3DAnnot
- CreateSoftMask
- FlattenForm
- GetPageText
- ImportPage and ImportPageEx
- ParseContent
- RenderAnnotOrField
- RenderPage
- SetCMapDir
- SetExtColorSpace, SetExtFillColorSpace and SetExtStrokeColorSpace.
- SetUseGlobalImpFiles

Lite is required for:

- AddRenderingIntent and AddRenderingIntentEx
- CreateFormFields
- CloseFileEx
- ConvertEMFSpool
- CreateCollection
- CreateExtGState
- InsertMetafile and InsertMetafileEx
- OpenImportBuffer, OpenImportFile and OpenImportStream
- SetPDFVersion for PDF/A and PDF/X

And all functions relaying on those functions internally.

70.34.2 Methods

70.34.3 AddActionToObj(ObjType as Integer, theEvent as Integer, ActHandle as Integer, ObjHandle as Integer) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This function adds an action to a PDF object. See also AddActionToObj function in DynaPDF manual.

70.34.4 AddAnnotToPage(PageNum as UInt32, Handle as UInt32) as boolean

MBS DynaPDF Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Adds an annotation to a page. Notes:
With exception of PopUp annotations all annotation types can be drawn on multiple pages. Watermark or Stamp annotations are typical annotations which can be placed on multiple pages.
Returns true on success.
See also AddAnnotToPage function in DynaPDF manual.

70.34.5 AddArticle(PosX as Double, PosY as Double, Width as Double, Height as Double) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This function creates a new article and adds it to the currently open article thread that must be created with CreateArticleThread() beforehand.
See also AddArticle function in DynaPDF manual.

70.34.6 AddBookmark(title as String, parent as Integer, DestPage as Integer, Open as boolean) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This function adds a bookmark to the global outline tree of the document.
Notes: The title parameter is converted to unicode.
See also AddBookmark function in DynaPDF manual.

70.34.7 AddBookmarkAnsi(title as String, parent as Integer, DestPage as Integer, Open as boolean) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This function adds a bookmark to the global outline tree of the document.
Notes: The title parameter is converted to ANSI.

70.34.8 AddBookmarkEx(title as String, parent as Integer, NamedDest as Integer, Open as boolean) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This function adds a bookmark to the global outline tree of the document.
Notes: The title parameter is converted to unicode.
See also AddBookmarkEx function in DynaPDF manual.
70.34.9  AddBookmarkEx2(title as String, parent as Integer, NamedDest as String, unicode as boolean, Open as boolean) as Integer

Function: This function adds a bookmark to the global outline tree of the document.
Notes: If unicode is true, the plugin passes NamedDest as unicode, else as Windows ANSI text.
See also AddBookmarkEx2 function in DynaPDF manual.

70.34.10 AddBookmarkEx2Ansi(title as String, parent as Integer, NamedDest as String, unicode as boolean, Open as boolean) as Integer

Function: This function adds a bookmark to the global outline tree of the document.
Notes: If unicode is true, the plugin passes NamedDest as unicode, else as Windows ANSI text.

70.34.11 AddBookmarkExAnsi(title as String, parent as Integer, NamedDest as Integer, Open as boolean) as Integer

Function: This function adds a bookmark to the global outline tree of the document.
Notes: The title parameter is converted to ANSI.

70.34.12 AddButtonImage(BtnHandle as Integer, State as Integer, Caption as string, ImgFile as Folderitem) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The function adds an image to a push button to one or more of the three different states of a button.
See also AddButtonImage function in DynaPDF manual.

70.34.13 AddButtonImageEx(BtnHandle as Integer, State as Integer, Caption as string, hbitmap as Integer) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The function adds a memory bitmap to a push button in the same ways as AddButtonImage() but accepts a HBITMAP handle as input image.
See also AddButtonImageEx function in DynaPDF manual.
70.34. **AddContinueText**(text as string) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function prints a single text line and adds a line feed.  
**Notes:** The text string is converted to Unicode.  
See also AddContinueText function in DynaPDF manual.

70.34.15 **AddContinueTextAnsi**(text as string) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function prints a single text line and adds a line feed.  
**Notes:** The text string is converted to ANSI.

70.34.16 **AddDeviceNProcessColorants**(DeviceNCS as Integer, Colorants() as string, ProcessCS as Integer, Handle as Integer) as boolean

**Notes:** Returns true on success and false on failure.  
See also AddDeviceNProcessColorants function in DynaPDF manual.

70.34.17 **AddDeviceNSeparations**(DeviceNCS as Integer, Colorants() as string, SeparationCS() as Integer) as boolean

**Notes:**  
Same as AddDeviceNSeparationsAnsi, but here the ReALbasic colorant strings are converted to UTF-8 encoding before they are passed to the DynaPDF library.  

ubound(Colorants) must be ubound(SeparationCS).  
Returns true on success and false on failure.

Currently limited to 100 colorants on the plugin side.  
See also AddDeviceNSeparations function in DynaPDF manual.
70.34.18 **AddDeviceNSeparationsAnsi**(DeviceNCS as Integer, Colorants() as string, SeparationCS() as Integer) as boolean

**Function:** Adds device N separations.  
**Notes:**  
Same as AddDeviceNSeparations, but here the ReALbasic colorant strings are converted to ANSI encoding before they are passed to the DynaPDF library.  

```
ubound(Colorants) must be ubound(SeparationCS).
Returns true on success and false on failure.
```

Currently limited to 100 colorants on the plugin side.

70.34.19 **AddFieldToFormAction**(Action as Integer, Field as Integer, Include as Boolean) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Adds a field to a form action.  
**See also** AddFieldToFormAction function in DynaPDF manual.

70.34.20 **AddFieldToHideAction**(HideAct as Integer, Field as Integer) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** This function adds a field to a hide action.  
**See also** AddFieldToHideAction function in DynaPDF manual.

70.34.21 **AddFileComment**(Text as string) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Adds one or more comments to the end of the PDF file.  
**Notes:** The text parameter is converted to unicode.  
**See also** AddFileComment function in DynaPDF manual.

70.34.22 **AddFileCommentAnsi**(Text as string) as boolean

**Function:** Adds one or more comments to the end of the PDF file.
70.34.23  AddFontSearchPath(path as folderitem, recursive as boolean = true) as Integer


**Function:** This function adds a search path to the list of available font search paths.

**Notes:**
This function adds a search path to the list of available font search paths. An arbitrary number of search paths can be added at runtime. Subdirectories are included recursively if the parameter Recursive is true. DynaPDF requires no separate metric files for Type1 fonts.

The list of search directories can be cleared at runtime with the function ClearHostFonts().

If system fonts are enabled (default) DynaPDF adds the default font directories of the operating system automatically to the list of font search paths (Windows and Mac OSX only, see SetUseSystemFonts() for further information). On Windows this is the %Windows%/Fonts directory as well as fonts listed in the Registry and linked fonts.

On Mac OSX the following directories are added to the list of font search paths (in this order):

- users font folder in
  `~ /Library/Fonts`
- `/Library/Fonts`
- `/System/Library/Fonts`

If the function succeeds the function returns the number of found font files (this is maybe not the number of available fonts, because the list is cleared each time all fonts in the list are processed during font selection). If the function fails a negative error code is returned.

Please call this method on Linux to get fonts loaded from your font folder.

Also check the dynapdf manual on the pdfAddFontSearchPathA function (pdfAddFontSearchPathW for Windows).

See also AddFontSearchPath function in DynaPDF manual.

See also:

- 70.34.24 AddFontSearchPath(path as string, recursive as boolean = true) as Integer
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70.34.24 AddFontSearchPath(path as string, recursive as boolean = true) as Integer


**Function:** This function adds a search path to the list of available font search paths.

**Example:**

```pascal
dim d as new DynaPDFMBS
if TargetLinux then
call d.AddFontSearchPath "/usr/share/fonts/truetype", true
else
    // on Mac and Windows we use system fonts.
end if
```

**Notes:**

This function adds a search path to the list of available font search paths. An arbitrary number of search paths can be added at runtime. Subdirectories are included recursively if the parameter Recursive is true. DynaPDF requires no separate metric files for Type1 fonts.

This function is implemented in an ANSI and Unicode compatible version. However, Unicode file paths are converted back to ANSI on Windows. On non-Windows operating systems the path is converted to UTF-8 and passed to the ANSI version of the function.

The list of search directories can be cleared at runtime with the function ClearHostFonts().

If system fonts are enabled (default) DynaPDF adds the default font directories of the operating system automatically to the list of font search paths (Windows and Mac OSX only, see SetUseSystemFonts() for further information). On Windows this is the %Windows%/Fonts directory as well as fonts listed in the Registry and linked fonts.

On Mac OSX the following directories are added to the list of font search paths (in this order):

- users font folder in
  - `textasciitilde /Library/Fonts`
- `/Library/Fonts`
- `/System/Library/Fonts`

If the function succeeds the function returns the number of found font files (this is maybe not the number of available fonts, because the list is cleared each time all fonts in the list are processed during font selection). If the function fails a negative error code is returned.
Please call this method on Linux to get fonts loaded from your font folder.

Also check the dynapdf manual on the pdfAddFontSearchPathA function (pdfAddFontSearchPathW for Windows).
See also AddFontSearchPath function in DynaPDF manual.
See also:

- 70.34.23 AddFontSearchPath(path as folderitem, recursive as boolean = true) as Integer

### 70.34.25 AddImage(Filter as Integer, Flags as Integer, Image as DynaPDFImageMBS) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Adds an image to the current image file.
**Notes:**
For the filter you use one of the kcf* constants.
For the flags you use either kicNone of kicUseCCITT4.

TIFF is the only format that supports different compression filters. The Filter parameter of the function AddImage() is ignored if the image format supports only one specific compression filter.
Note that images are automatically converted to the nearest supported color space if the image format does not support the color space of the image.
See also AddImage function in DynaPDF manual.

### 70.34.26 AddInkList(InkAnnot as UInt32, points() as DynapdfPointMBS) as boolean

**Function:** Adds an array of points or path to an Ink Annotation.
**Notes:**
The function must be called within an open page.
An ink annotation can contain an arbitrary number of paths. The points will be connected by curves to achieve a smooth transition between points. The coordinates are treated in current user space. Any transformation that was applied on the coordinate system will be taken into account.
If the number of points is zero then all paths will be deleted from the annotation.

Returns true on success.
See also AddInkList function in DynaPDF manual.
70.34.27  AddJavaScript(Name as string, Script as string) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function adds a global JavaScript to the PDF file. **Notes:** The script parameter is converted to unicode. See also AddJavaScript function in DynaPDF manual.

70.34.28  AddJavaScriptAnsi(Name as string, Script as string) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function adds a global JavaScript to the PDF file. **Notes:** The script parameter is converted to ANSI.

70.34.29  AddLayerToDisplTree(parent as DynaPDFLayerGroupMBS, layer as UInt32, Title as string) as DynaPDFLayerGroupMBS

MBS DynaPDF Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds a layer to the display tree. See also AddLayerToDisplTree function in DynaPDF manual.

70.34.30  AddLayerToDisplTreeAnsi(parent as DynaPDFLayerGroupMBS, layer as UInt32, Title as string) as DynaPDFLayerGroupMBS

MBS DynaPDF Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds a layer to the display tree.

70.34.31  AddMaskImage(BaseImage as Integer, Buffer as MemoryBlock, Stride as UInt32, BitsPerPixel as UInt32, Width as UInt32, Height as UInt32) as boolean

MBS DynaPDF Plugin, Plugin Version: 13.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function adds an image mask to a base image. **Notes:** Please note that this function can be called with Ptr or Memoryblock. See also AddMaskImage function in dynapdf_help.pdf manual. See also: AddMaskImage function in DynaPDF manual.
70.34.32 AddMaskImage(BaseImage as Integer, Buffer as Ptr, BufSize as UInt32, Stride as UInt32, BitsPerPixel as UInt32, Width as UInt32, Height as UInt32) as boolean

**Function:** The function adds an image mask to a base image.  
**Notes:**  
Please note that this function can be called with Ptr or Memoryblock.  
See also AddMaskImage function in dynapdf_help.pdf manual.  
See also AddMaskImage function in DynaPDF manual.  
See also:

70.34.33 AddObjectToLayer(OCG as UInt32, ObjType as Integer, Handle as Integer) as boolean

**Function:** The function adds an object to an Optional Content Group (OCG) or Optional Content Membership dictionary (OCMD).  
**Notes:**  
If the function succeeds the return value is true. If the function fails the return value is false.  
For ObjectType use the constants: kooAnnotation, kooField, kooImage and kooTemplate.  
See also AddObjectToLayer function in DynaPDF manual.

70.34.34 AddOCGToAppEvent(Handle as UInt32, Events as Integer, Categories as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Adds an Optional Content Group (OCG) to an application event.  
**Notes:** See dynapdf_help.pdf manual for details.  
See also AddOCGToAppEvent function in DynaPDF manual.
**70.34.35 AddOutputIntent(ICCFile as folderitem) as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** This function adds an ICC color profile to the PDF file that should be used to render device-dependent colors.
**Notes:**
Also check the dynapdf manual on the pdfAddOutputIntentA function (pdfAddOutputIntentW on Windows).
This function was named AddRenderingIntent before.
Requires DynaPDF Lite license.
See also AddOutputIntent function in DynaPDF manual.

**70.34.36 AddOutputIntentEx(buffer as Memoryblock) as Integer**

**Function:** This function adds an ICC color profile to the PDF file that should be used to render device-dependent colors.
**Notes:**
This function was named AddRenderingIntentEx before.
Requires DynaPDF Lite license.
See also AddOutputIntentEx function in DynaPDF manual.
See also:
- 70.34.37 AddOutputIntentEx(buffer as string) as Integer

**70.34.37 AddOutputIntentEx(buffer as string) as Integer**

**Function:** This function adds an ICC color profile to the PDF file that should be used to render device-dependent colors.
**Notes:**
This function was named AddRenderingIntentEx before.
Requires DynaPDF Lite license.
See also AddOutputIntentEx function in DynaPDF manual.
See also:
- 70.34.36 AddOutputIntentEx(buffer as Memoryblock) as Integer
70.34.38  AddPageLabel(StartRange as UInt32, PageLabelFormat as Integer, Value as string, FirstPageNum as Int32) as Integer

**Function:** The function creates a page label object.
**Notes:** The Value string is converted to Unicode internally.
See also AddPageLabel function in DynaPDF manual.

70.34.39  AddPageLabelAnsi(StartRange as UInt32, PageLabelFormat as Integer, Value as string, FirstPageNum as Int32) as Integer

**Function:** The function creates a page label object.
**Notes:** The Value string is converted to Windows ANSI internally.

70.34.40  AddValToChoiceField(Field as Integer, ExpValue as string, Value as string, Selected as Boolean) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** This function adds a value to a choice field.
**Notes:** The Value string is converted to Unicode.
See also AddValToChoiceField function in DynaPDF manual.

70.34.41  AofLAB(LAB as Integer) as Integer

**Function:** Returns A of a LAB color value.
**Example:**
```powershell
dim lab as Integer = DynaPDFMBS.LAB(1,2,3)
MsgBox str(DynaPDFMBS.AofLAB(lab)) // shows 2
```

70.34.42  Append as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** This function appends an empty page to the document.
**Example:**
dim pdf as DynaPDFMBS  // your DynaPDF object
dim bBool as Boolean

// Create a new page
bBool=pdf.Append

See also Append function in DynaPDF manual.

### 70.34.43 ApplyAppEvent(TOCApplEvent as Integer, SaveResult as Boolean) as boolean

MBS DynaPDF Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The visibility state of optional content groups (OCGs) can be dynamically changed in application events like Export, View, or Print. **Notes:**

DynaPDF loads the view state when rendering PDF pages by default. The function can be used to apply the visibility state of another event if necessary. The result can optionally be stored in the PDF file but note that this has only an effect in PDF viewers which support layers but no application events since the events will not be deleted from the PDF file. It is also possible to delete the events with DeleteAppEvents().

If the function succeeds the return value is true. If the function fails the return value is false.

See also ApplyAppEvent function in DynaPDF manual.

### 70.34.44 ApplyPattern(PattHandle as Integer, ColorMode as Integer, ColorValue as Integer) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function sets a tiling pattern as current fill, stroke or fill, and stroke color. **See also** ApplyPattern function in DynaPDF manual.

### 70.34.45 ApplyShading(ShadHandle as Integer) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function applies a shading to the current clipping path, or if no clipping is active, to the entire page.
See also ApplyShading function in DynaPDF manual.

### 70.34.46 AssociateEmbFile(DestObject as Integer, DestHandle as Integer, Relationship as Integer, EmbFile as UInt32) as boolean

**Function:** The function associates an embedded file with a PDF object.

**Notes:**
- The parameter DestHandle must be a valid handle of a PDF object. If destination object type is a page, then the page number must be used as handle. The first page is denoted by one. If the destination object is the documents catalog then the parameter DestHandle is ignored. Set the parameter to zero or -1 in this case.
- The parameter EmbFile must be a valid handle of an embedded file. See AttachFile() or AttachFileEx() for further information.

Associated files are supported since PDF 2.0 and in PDF/A 3 files. In PDF/A 3 files all embedded files must be associated with a PDF object.

If the function succeeds the return value is true. If the function fails the return value is false.
See also AssociateEmbFile function in DynaPDF manual.

### 70.34.47 AttachFile(File as folderitem, Description as string, Compress as boolean) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The function attaches a file to the document.

**Notes:**
- On Windows, the description parameter is converted to unicode.
- Also check the dynapdf manual on the pdfAttachFileA function (pdfAttachFileW on Windows).
See also AttachFile function in DynaPDF manual.

### 70.34.48 AttachFileEx(Buffer as Memoryblock, Filename as string, Description as string, Compress as boolean) as Integer

**Function:** The function attaches a file to the document in the same way as AttachFile() but accepts a file buffer instead of a file path.

**Notes:** Also check the dynapdf manual on the pdfAttachFileA function (pdfAttachFileExW on Windows).
See also AttachFileEx function in DynaPDF manual.
See also:

- 70.34.49 AttachFileEx(Buffer as string, Filename as string, Description as string, Compress as boolean) as Integer

70.34.49 AttachFileEx(Buffer as string, Filename as string, Description as string, Compress as boolean) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function attaches a file to the document in the same way as AttachFile() but accepts a file buffer instead of a file path.
Example:

```vbnet
dim pdf as DynaPDFMBS // your dynapdf object

// add embedded file to PDF
const Compressed = true
call pdf.AttachFileEx("This is hidden text in an attached file.", "attachment.txt", ",", Compressed)
```

Notes: Also check the dynapdf manual on the pdfAttachFileA function (pdfAttachFileExW on Windows). See also AttachFileEx function in DynaPDF manual.
See also:

- 70.34.48 AttachFileEx(Buffer as Memoryblock, Filename as string, Description as string, Compress as boolean) as Integer

70.34.50 AutoTemplate(Templ as Integer, PosX as Double, PosY as Double, Width as Double, Height as Double) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: To insert a template automatically on newly created pages, use the function AutoTemplate(). See also AutoTemplate function in DynaPDF manual.

70.34.51 BeginContinueText(PosX as Double, PosY as Double) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This function prepares the output of multiple text lines which use the graphics state parameter Leading as line height, or the font size if Leading is not set. See also BeginContinueText function in DynaPDF manual.
70.34.52 BeginLayer(OCG as UInt32) as boolean

**Function:** The function opens a layer in the current open page or template. 
Notes: 
If the function succeeds the return value is true. If the function fails the return value is false.

See also **BeginLayer** function in DynaPDF manual.

70.34.53 BeginPageTemplate(Name as String, UseAutoTemplates as boolean) as boolean

**Function:** Creates a new page template with given name. 
Notes: 
This function creates or opens a page template for editing. Page templates are hidden pages which can be added to the document or overlaid on existing pages via JavaScript.

The usage of the function is like Append() or EditPage(). If the template does already exist then it will be opened for editing. Page templates support form fields and annotations but it is not allowed to add article beads to them. 
See also **BeginPageTemplate** function in DynaPDF manual.

70.34.54 BeginPattern(PatternType as Integer, TilingType as Integer, Width as Double, Height as Double) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** This function creates a new tiling pattern. 
See also **BeginPattern** function in DynaPDF manual.

70.34.55 BeginTemplate(Width as Double, Height as Double) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Begins a new template 
See also **BeginTemplate** function in DynaPDF manual.
70.34.56 BeginTemplateEx(BBox as DynaPDFRectMBS, Matrix as Dynapdf-MatrixMBS) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Begins a new template  
**Notes:** The plugin passes nil to the library for the bbox or the matrix parameter if they are nil.

70.34.57 BeginTransparencyGroup(x1 as Double, y1 as Double, x2 as Double, y2 as Double, Isolated as Boolean, Knockout as Boolean, CS as Integer, CSHandle as Int32) as Int32

MBS DynaPDF Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Begins a new transparency group.  
**Notes:** CS: color space, pass kes* constants.

Requires DynaPDF Pro license.  
See also BeginTransparencyGroup function in DynaPDF manual.

70.34.58 Bezier_1_2_3(x1 as Double, y1 as Double, x2 as Double, y2 as Double, x3 as Double, y3 as Double) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds a bezier path to the pdf.  
See also Bezier_1_2_3 function in DynaPDF manual.

70.34.59 Bezier_1_3(x1 as Double, y1 as Double, x3 as Double, y3 as Double) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds a bezier path to the pdf.  
See also Bezier_1_3 function in DynaPDF manual.
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70.34.60  Bezier_2_3(x2 as Double, y2 as Double, x3 as Double, y3 as Double) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:** Adds a bezier path to the pdf.
See also Bezier_2_3 function in DynaPDF manual.

70.34.61  BofLAB(LAB as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:** Returns B of a LAB color value.
**Example:**

```vbscript
dim lab as Integer = DynaPDFMBS.LAB(1,2,3)
MsgBox str(DynaPDFMBS.BofLAB(lab)) // shows 3
```

70.34.62  BofRGB(RGB as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:** Returns B of a RGB color value.
**Example:**

```vbscript
dim rgb as Integer = DynaPDFMBS.RGB(1,2,3)
MsgBox str(DynaPDFMBS.BofRGB(rgb)) // shows 3
```

70.34.63  BuildFamilyNameAndStyle(IFont as Integer, byref name as string, byref style as Integer) as boolean

MBS DynaPDF Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:** Builds a family name and style from a font object.
See also BuildFamilyNameAndStyle function in DynaPDF manual.

70.34.64  CalcWidthHeight(OrgWidth as Double, OrgHeight as Double, ScaledWidth as Double, ScaledHeight as Double) as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:** This function calculates the scaled width or height of a given size in the same way as InsertImage() or PlaceTemplate().
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See also CalcWidthHeight function in DynaPDF manual.

70.34.65 CaretAnnot(PosX as Double, PosY as Double, Width as Double, Height as Double, ColorValue as UInt32, ColorSpace as Integer, Author as string, Subject as string, Content as string) as Integer

Function: Creates a caret annotation.
Notes:
This type of annotation is typically used to mark a position on a page where a user should add or edit text.
If the coordinate system is bottom-up the point PosX, PosY defines the lower left corner of the bounding rectangle. If the coordinate system is top-down it defines the upper left corner.
This annotation type has an associated PopUp annotation that displays the string Content in a floating window. The initial window state of the associated PopUp annotation is closed by default but the state can be changed with SetAnnotOpenState if necessary.

If the function succeeds the return value is the annotation handle, a value greater or equal zero. If the function fails the return value is a negative error code.
See also CaretAnnot function in DynaPDF manual.

70.34.66 CaretAnnotAnsi(PosX as Double, PosY as Double, Width as Double, Height as Double, ColorValue as UInt32, ColorSpace as Integer, Author as string, Subject as string, Content as string) as Integer

Function: Creates a caret annotation.
Notes:
This type of annotation is typically used to mark a position on a page where a user should add or edit text.
If the coordinate system is bottom-up the point PosX, PosY defines the lower left corner of the bounding rectangle. If the coordinate system is top-down it defines the upper left corner.
This annotation type has an associated PopUp annotation that displays the string Content in a floating window. The initial window state of the associated PopUp annotation is closed by default but the state can be changed with SetAnnotOpenState if necessary.

If the function succeeds the return value is the annotation handle, a value greater or equal zero. If the function fails the return value is a negative error code.
70.34.67  ChangeAnnotName(Handle as Integer, Name as string) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function changes or deletes the optional name of an annotation. **Notes:** The Name parameter is converted to unicode. See also ChangeAnnotName function in DynaPDF manual.

70.34.68  ChangeAnnotNameAnsi(Handle as Integer, Name as string) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function changes or deletes the optional name of an annotation. **Notes:** The Name parameter is converted to ANSI.

70.34.69  ChangeAnnotPos(Handle as Integer, PosX as Double, PosY as Double, Width as Double, Height as Double) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function changes the position and size of an annotation. See also ChangeAnnotPos function in DynaPDF manual.

70.34.70  ChangeBookmark(ABmk as Integer, Text as string, Parent as Integer, DestPage as Integer, Open as Boolean) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function changes an existing bookmark. **Notes:** The text parameter is converted to unicode. See also ChangeBookmark function in DynaPDF manual.

70.34.71  ChangeBookmarkAnsi(ABmk as Integer, Text as string, Parent as Integer, DestPage as Integer, Open as Boolean) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function changes an existing bookmark. **Notes:** The text parameter is converted to ANSI.
70.34.72  **ChangeFont(Handle as Integer) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function changes or sets the font to the one defined by the parameter AHandle. See also ChangeFont function in DynaPDF manual.

70.34.73  **ChangeFontSize(size as Double) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function changes the font size of the current font. See also ChangeFontSize function in DynaPDF manual.

70.34.74  **ChangeFontStyle(Style as Integer) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function changes the style of the current font. See also ChangeFontStyle function in DynaPDF manual.

70.34.75  **ChangeFontStyleEx(Style as Integer) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function changes the font style of a font like ChangeFontStyle() but it accepts also the font styles fsBold and fsItalic. See also ChangeFontStyleEx function in DynaPDF manual.

70.34.76  **ChangeJavaScript(Handle as Integer, Text as string) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function replaces a global JavaScript with a new one. **Notes:** The text parameter is converted to unicode. See also ChangeJavaScript function in DynaPDF manual.

70.34.77  **ChangeJavaScriptAction(Handle as Integer, Text as string) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function replaces the script of a JavaScript action with a new one. **Notes:** The text parameter is converted to unicode.
70.34.78  ChangeJavaScriptActionAnsi(Handle as Integer, Text as string) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function replaces the script of a JavaScript action with a new one. **Notes:** The text parameter is converted to ANSI.

70.34.79  ChangeJavaScriptAnsi(Handle as Integer, Text as string) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function replaces a global JavaScript with a new one. **Notes:** The text parameter is converted to ANSI.

70.34.80  ChangeJavaScriptName(Handle as Integer, Text as string) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function changes the name of a global JavaScript. **Notes:** The text parameter is converted to unicode. See also ChangeJavaScriptName function in DynaPDF manual.

70.34.81  ChangeJavaScriptNameAnsi(Handle as Integer, Text as string) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function changes the name of a global JavaScript. **Notes:** The text parameter is converted to ANSI.

70.34.82  ChangeLinkAnnot(Handle as Integer, URL as string) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function changes the link of a file link or web link annotation. **Notes:** See also ChangeLinkAnnot function in DynaPDF manual.
70.34.83 ChangeSeparationColor(CSHandle as UInt32, NewColor as UInt32, AlternateExtColorSpace as Integer, AltHandle as Integer = -1) as boolean


Function: The function changes the color of a separation color space.

Example:

// your instance
dim pdf as DynaPDFMBS

dim ColorSpaceHandle as Integer = pdf.CreateSeparationCS("test", DynapdfMBS.kcsDeviceCMYK,-1,DynapdfMBS.CMYK(0,0,0,100))
call pdf.SetExtColorSpace(ColorSpaceHandle)

dim pdf.SetfillColor(255)  // 100% of the separation color test
call pdf.DrawCircle(193,389,66, pdf.kfmFill)

call pdf.ChangeSeparationColor(ColorSpaceHandle, 255, DynapdfMBS.kcsDeviceRGB, -1)

Notes:
The new color value must be defined in the alternate color space. The alternate color space can be any device or ICC based color space including Lab. If a non-device color space is used, the parameter AltHandle must be set to the color space handle of the alternate color space.

Returns true on success or false on failure.
See also ChangeSeparationColor function in DynaPDF manual.

70.34.84 CheckCollection as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function:
The function checks whether user defined data fields in embedded files are consistently defined with collection fields.

See also CheckCollection function in DynaPDF manual.
70.34. **CheckConformance**

**CheckConformance(ConformanceType as Integer, CheckOptions as Integer) as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function checks whether the PDF file is compatible to a specific PDF standard or PDF version depending on the parameter Type and modifies anything that is required to get the file compatible to the standard depending on the check options.

See also **CheckConformance** function in DynaPDF manual.

70.34.86 **CheckFieldNames as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function checks all currently defined interactive form fields for invalid duplicate field names.

See also **CheckFieldNames** function in DynaPDF manual.

70.34.87 **CircleAnnot(PosX as Double, PosY as Double, Width as Double, Height as Double, LineWidth as Double, FillColor as UInt32, StrokeColor as UInt32, ColorSpace as Integer, Author as string, Subject as string) as Integer**

MBS DynaPDF Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function draws a circle annotation on the current open page.

**Notes:**

If the parameters Width and Height are equal the function draws a circle, an ellipse otherwise. If the annotation should be drawn without a border, set the parameter LineWidth to zero or StrokeColor to the special constant kNO_COLOR.

If the interior should be transparent set FillColor to the special constant kNO_COLOR.

Although the line width can be set to any positive floating point value, Adobe's Acrobat or Reader restrict the line width to 0 through 12 units. The line width should be restricted in the same way to avoid issues in Adobe viewer products.

If the function succeeds the return value is the annotation handle, a value greater or equal zero. If the function fails, the return value is a negative error code.

See also **CircleAnnot** function in DynaPDF manual.
**70.34.88 CircleAnnotAnsi**

(PosX as Double, PosY as Double, Width as Double, Height as Double, LineWidth as Double, FillColor as UInt32, StrokeColor as UInt32, ColorSpace as Integer, Author as string, Subject as string, Comment as string) as Integer


**Function:** The function draws a circle annotation on the current open page.

**Notes:**

If the parameters Width and Height are equal the function draws a circle, an ellipse otherwise. If the annotation should be drawn without a border, set the parameter LineWidth to zero or StrokeColor to the special constant kNO_COLOR.

If the interior should be transparent set FillColor to the special constant kNO_COLOR.

Although the line width can be set to any positive floating point value, Adobe’s Acrobat or Reader restrict the line width to 0 through 12 units. The line width should be restricted in the same way to avoid issues in Adobe viewer products.

If the function succeeds the return value is the annotation handle, a value greater or equal zero. If the function fails, the return value is a negative error code.

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**70.34.89 ClearAutoTemplates as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** This function deletes the array of templates which are automatically added to newly created pages.

See also ClearAutoTemplates function in DynaPDF manual.

---

**70.34.90 ClearErrorLog**


**Function:** Clears the error log.

See also ClearErrorLog function in DynaPDF manual.

---

**70.34.91 ClearHostFonts as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** This function deletes the array of fonts included in all currently defined font search paths.

See also ClearHostFonts function in DynaPDF manual.
**70.34.92 ClipPath(ClipMode as Integer, FillMode as Integer) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function marks the current path as clipping path. See also ClipPath function in DynaPDF manual.

**70.34.93 CloseAndSignFile(CertFile as folderitem, Password as string, Reason as string, Location as string) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function finishes the PDF file, digitally signs it, and frees all used resources if the file was not created in memory. See also CloseAndSignFile function in DynaPDF manual.

**70.34.94 CloseAndSignFileEx(OpenPwd as string, OwnerPwd as string, KeyLen as Integer, Restrict as Integer, CertFile as folderitem, Password as string, Reason as string, Location as string) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function finishes the PDF file, encrypts it, digitally signs it, and frees all used resources if the file was not created in memory. See also CloseAndSignFileEx function in DynaPDF manual.

**70.34.95 CloseAndSignFileExt(SigParams as DynaPDFSigParmsMBS) as boolean**

MBS DynaPDF Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function closes the PDF file and returns either the file hash or the byte ranges to be signed by an external signature handler. See also CloseAndSignFileExt function in DynaPDF manual.

**70.34.96 CloseAndSignPDFFile(OutputFile as FolderItem, CertificateData as String, Password as String, ContactInfo as String = "", Location as String = "", Reason as String = ") as boolean**

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Closes and signs file. **Notes:** This uses pdf_signature.cpp example code from DynaPDF.
The function will on Windows use functions from Crypt DLL on Windows. Internally calls CloseAndSignFileExt, OpenOutputFile and FinishSignature. Returns true on success and false on failure.

Loads certificate from provided certificate file data.

Version 15.1 allows OutputFile to be nil.

**70.34.97 CloseAndSignPDFFileWithDialog(OutputFile as FolderItem, StoreName as String = ”MY”, ContactInfo as String = ””, Location as String = ””, Reason as String = ””) as boolean**

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.

**Function:** Closes and signs file.

**Notes:**

This uses pdf_signature.cpp example code from DynaPDF. The function will on Windows use functions from Crypt DLL on Windows. Internally calls CloseAndSignFileExt, OpenOutputFile and FinishSignature. Returns true on success and false on failure.

Version 15.1 allows OutputFile to be nil.

**70.34.98 CloseFile as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** This function finishes the PDF file and frees all used resources if the file was not created in memory.

**Example:**

```dim pdf as DynaPDFMBS // your DynaPDF object
dim bBool as Boolean

bBool=pdf.CloseFile```

See also CloseFile function in DynaPDF manual.
70.34.99  CloseFileEx(OpenPwd as string, OwnerPwd as string, KeyLen as Integer, Restrict as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function finishes the PDF file, encrypts it, and frees all used resources if the file was not created in memory.
**Notes:** Requires DynaPDF Lite license.
See also CloseFileEx function in DynaPDF manual.

70.34.100  CloseImage as boolean

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Closes the current open image.
See also CloseImage function in DynaPDF manual.

70.34.101  CloseImportFile as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function closes an open import file that was be opened by OpenImportFile() or OpenImportBuffer().
**Example:**
```pascal
dim pdf as DynaPDFMBS // your DynaPDF object
dim bBool as Boolean

bBool=pdf.CloseImportFile
```
See also CloseImportFile function in DynaPDF manual.

70.34.102  CloseImportFileEx(Handle as Integer) as boolean

MBS DynaPDF Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function closes a specific import file and deletes the corresponding parser instance.
**Notes:**
The parameter Handle must be a valid file handle that was returned by OpenImportFile() or OpenImportBuffer(). See OpenImportFile() for further information in dynapdf_help.pdf.
If the function succeeds the return value is true. If the function fails the return value is false.
See also CloseImportFileEx function in DynaPDF manual.
70.34.103  ClosePath(FillMode as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Closes the current path.
See also ClosePath function in DynaPDF manual.

70.34.104  CloseTag as boolean

See also CloseTag function in DynaPDF manual.

70.34.105  CMYK(C as Integer, M as Integer, Y as Integer, K as Integer) as UInt32

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Builds a CMYK color value based on the given component values.
**Example:**
```vbs
Dim cmyk as Integer = DynaPDFMBS.CMYK(1, 2, 3, 4)
MsgBox Hex(cmyk)
```
**Notes:** Returns different values on BigEndian and LittleEndian systems.

70.34.106  CofCMYK(CMYK as UInt32) as Integer

MBS DynaPDF Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns C of a CMYK color value.
**Example:**
```vbs
Dim cmyk as Integer = DynaPDFMBS.CMYK(1, 2, 3, 4)
MsgBox Str(DynaPDFMBS.CofCMYK(cmyk)) ' // shows 1
```
**Notes:** Returns different values on BigEndian and LittleEndian systems.
70.34. **CLASS DYNAPDFMBS**

### 70.34.107 ComputeBBox(Flags as Integer) as DynaPDFRectMBS

MBS DynaPDF Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Computes the bounding box.

See also `ComputeBBox` function in DynaPDF manual.

### 70.34.108 ConvColor(Colors() as Double, SourceColorSpaceHandle as Integer, DestColorSpace as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Converts a color from one ColorSpace to another.

**Example:**

```vbnet
// setup Environment
dim dy as new DynaPDFMBS
call dy.CreateNewPDF(nil)

// create a simple RGB colorspace
dim whitePoint as MemoryBlock = NewMemoryBlock(12)
whitePoint.SingleValue(0)=1.0
whitePoint.SingleValue(4)=1.0
whitePoint.SingleValue(8)=1.0

dim BlackPoint as MemoryBlock = nil // default
dim Gamma as MemoryBlock = nil // default
dim Matrix as MemoryBlock = nil // default

dim h as Integer = dy.CreateCIEColorSpace(dy.kesCalRGB, WhitePoint, BlackPoint, Gamma, Matrix)

// do we have one?
if dy.GetColorSpaceCount=0 then
MsgBox "No color space!"
Return
else
MsgBox str(dy.GetColorSpaceCount)+" Colorspace defined"
end if

// Now get the colorspace information including the Object reference:
dim c as DynapdfColorSpaceMBS = dy.GetColorSpaceObj(h)

dim d(-1) as Double = array(0.3,0.5,0.7)
dim IColorSpace as Integer = c.Handle
dim DestCS as Integer = DynaPDFMBS.kesDeviceCMYK

// convert a color
dim n as Integer = dy.ConvColor(d, IColorSpace, DestCS)
```
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MsgBox hex(n)

Notes:
Colors: The array of color values. 3 values for RGB, 4 values for CMYK and one value for Gray.
IColorSpaceSource: The source color space object reference.
DestCS: The destination color space. One of the kcs* constants.
See also ConvColor function in DynaPDF manual.

70.34.109  ConvertColors(Flags as Integer) as Boolean

Notes: Requires DynaPDF Pro license.
See also ConvertColors function in DynaPDF manual.

70.34.110  ConvertEMFSpool(File as folderitem, LeftMargin as Double, TopMargin as Double, Flags as Integer = 0) as Integer

MBS DynaPDF Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function converts an EMF spool file to PDF.
Notes: See dynapdf_help.pdf file.
Pass kspc* flags.
Requires DynaPDF Lite license.
See also ConvertEMFSpool function in DynaPDF manual.

70.34.111  ConvertStyledText(StyledText as StyledText) as String

Example:
Public Function Convert(s as StyledText) as string
dim d as new DynaPDFMBS

// create dummy in memory pdf
call d.CreateNewPDF(nil)
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// create dummy page
call d.Append

// convert
Return d.ConvertstyledText(s)

// destructor will cleanup
End Function

Notes:
You can use the result with WriteFText, WriteFTextEx or DynaPDFTableMBS.SetCellText functions. Needs an open page as it loads fonts for you. May cause error events if fonts are not found.

70.34.112 CopyChoiceValues(Source as UInt32, Dest as UInt32, Share as Boolean) as Boolean

Function: Copies the list items, default value, and value of the source field to the destination field.
Notes:
The source and destination field can be combo and list boxes. It is allowed to copy the list items of a list box to a combo box or vice versa.
If Share is true, the function adds just a reference to the list item so that both fields share the same list items. This is still the case if more list items will be added to such a field. If Share is false, the list items will be copied to the destination field. Both fields contain independent list items in this case.
Already existing list items of the destination field will be deleted.
See also CopyChoiceValues function in DynaPDF manual.

70.34.113 Create3DAnnot(PosX as Double, PosY as Double, Width as Double, Height as Double, Author as string, Name as string, U3DFile as string, Image as string) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The function creates a 3D annotation from a U3D file.
See also Create3DAnnot function in DynaPDF manual.
### 70.34.114 Create3DBackground(IView as Integer, BackColor as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function creates a background dictionary for a 3D annotation that is used to change the annotation's background color. See also Create3DBackground function in DynaPDF manual.

### 70.34.115 Create3DGotoViewAction(Base3DAnnot as Integer, IView as Integer, Named as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A go to 3D view action can be used to dynamically change the view of a 3D annotation. See also Create3DGotoViewAction function in DynaPDF manual.

### 70.34.116 Create3DProjection(IView as Integer, ProjType as Integer, ScaleType as Integer, Diameter as Double, FOV as Double) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function creates a projection dictionary for a 3D annotation. See also Create3DProjection function in DynaPDF manual.

### 70.34.117 Create3DView(Base3DAnnot as Integer, Name as string, SetAsDefault as boolean, Matrix as memoryblock, CamDistance as Double, RenderingMode as Integer, LightingScheme as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function creates a 3D view for a 3D annotation. **Notes:** The plugin passes nil for the matrix if the matrix memoryblock parameter is nil. See also Create3DView function in DynaPDF manual.

### 70.34.118 CreateAnnotAP(annot as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates an annotation appearance stream. **Notes:** Returns the new annotation handle. You can draw to this template directly.
You must close it with EndTemplate.

This method helps you to create a custom stamp or change different annotation appearance. See also CreateAnnotAP function in DynaPDF manual.

### 70.34.119 CreateArticleThread(ThreadName as string) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function creates a new article thread. **Notes:** ThreadName string is converted to Unicode. See also CreateArticleThread function in DynaPDF manual.

### 70.34.120 CreateArticleThreadAnsi(ThreadName as string) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function creates a new article thread. **Notes:** ThreadName string is converted to ANSI.

### 70.34.121 CreateAxialShading(sX as Double, sY as Double, eX as Double, eY as Double, SCenter as Double, SColor as Integer, EColor as Integer, Extend1 as Boolean, Extend2 as boolean) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Axial shadings define a color blend that varies along a linear axis between two endpoints and extends indefinitely perpendicular to that axis. See also CreateAxialShading function in DynaPDF manual.

### 70.34.122 CreateBarcodeField(Name as string, Parent as Integer, PosX as Double, PosY as Double, Width as Double, Height as Double, Barcode as DynaPDFBarcodeMBS) as Integer

MBS DynaPDF Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function creates a barcode field. **Notes:** Note that users require either the full version of Adobe’s Acrobat or a separate license of Adobe’s Barcodes Paper Forms Solutions to enable the usage of barcode fields in Adobe’s Reader. See also CreateBarcodeField function in DynaPDF manual.
70.34.123 CreateButton(Name As String, Caption as string, Parent as Integer, PosX as Double, PosY as Double, Width as Double, Height as Double) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** This function creates a push button.
**Notes:** The Caption parameter is converted to unicode.
See also CreateButton function in DynaPDF manual.

70.34.124 CreateButtonAnsi(Name As String, Caption as string, Parent as Integer, PosX as Double, PosY as Double, Width as Double, Height as Double) as Integer

**Function:** This function creates a push button.
**Notes:** The Caption parameter is converted to ANSI.

70.34.125 CreateCheckBox(Name as string, ExpValue as string, Checked as boolean, Parent as Integer, PosX as Double, PosY as Double, Width as Double, Height as Double) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** This function creates a check box.
See also CreateCheckBox function in DynaPDF manual.

70.34.126 CreateCIEColorSpace(Base as Integer, WhitePoint as memoryblock, BlackPoint as memoryblock, Gamma as memoryblock, Matrix as memoryblock) as Integer

**Function:** The function creates a CIE based color space.
See also CreateCIEColorSpace function in DynaPDF manual.

70.34.127 CreateColItemDate(EmbFile as Integer, Key as string, Value as Integer, Prefix as string) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** The function creates a user defined collection item which accepts a date time value.
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See also CreateColItemCount function in DynaPDF manual.

70.34.128 CreateColItemCountNumber(EmbFile as Integer, Key as string, Value as Double, Prefix as string) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function creates a user defined collection item which accepts an arbitrary number as value. See also CreateColItemCountNumber function in DynaPDF manual.

70.34.129 CreateColItemCountString(EmbFile as Integer, Key as string, Value as string, Prefix as string) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function creates a user defined collection item which accepts an arbitrary string as value. Notes: The value and prefix parameters are converted to unicode. See also CreateColItemCountString function in DynaPDF manual.

70.34.130 CreateColItemCountStringAnsi(EmbFile as Integer, Key as string, Value as string, Prefix as string) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function creates a user defined collection item which accepts an arbitrary string as value. Notes: The value and prefix parameters are converted to ANSI.

70.34.131 CreateCollection(View as Integer) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function marks the current PDF file in memory as PDF collection, also known as PDF Package. Notes: Requires DynaPDF Lite license. See also CreateCollection function in DynaPDF manual.

70.34.132 CreateCollectionField(ColType as Integer, Column as Integer, Name as String, Key as string, Visible as boolean, Editable as boolean) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function creates a user defined collection field.
Notes: The name parameter is converted to unicode.
See also CreateCollectionField function in DynaPDF manual.

70.34.133 CreateCollectionFieldAnsi(ColType as Integer, Column as Integer, Name as String, Key as string, Visible as boolean, Editable as boolean) as Integer

Notes: The name parameter is converted to ANSI.

70.34.134 CreateComboBox(Name as string, Sort as boolean, Parent as Integer,PosX as Double, PosY as Double, Width as Double, Height as Double) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This function creates a combo box.
See also CreateComboBox function in DynaPDF manual.

70.34.135 CreateDeviceNColorSpace(Colorants() as string, PostScriptFunc as string, AlternateColorSpace as Integer, Handle as Integer) as Integer

Notes: Strings are passed as UTF-8 Strings in this function to the library.
Currently the function is limited to 100 colorants on the plugin side.
See also CreateDeviceNColorSpace function in DynaPDF manual.

70.34.136 CreateDeviceNColorSpaceAnsi(Colorants() as string, PostScriptFunc as string, AlternateColorSpace as Integer, Handle as Integer) as Integer

Notes: Strings are passed as Windows ANSI Strings in this function to the library.
Currently the function is limited to 100 colorants on the plugin side.

### 70.34.137 CreateExtGState(e as dynapdfExtGStateMBS) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The function creates an extended graphics state dictionary from the structure e.

**Example:**

```vba
dim h as Integer ' handle
dim pdf as DynaPDFMBS
dim state as new dynapdfExtGStateMBS

' get pdf, set state properties
h=pdf.CreateExtGState(state)
call pdf.SetExtGState(h)
```

**Notes:** Requires DynaPDF Lite license.
See also CreateExtGState function in DynaPDF manual.

### 70.34.138 CreateGoToAction(DestType as Integer, PageNum as Integer, a as Double, b as Double, c as Double, d as Double) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** A go-to action changes the view to a specific destination (page, location, and magnification factor).

See also CreateGoToAction function in DynaPDF manual.
See also:

- 70.34.139 CreateGoToAction(NamedDest as Integer) as Integer

### 70.34.139 CreateGoToAction(NamedDest as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The function creates a go-to action which uses a named destination to open the target page.

See also CreateGoToAction function in DynaPDF manual.
See also:

- 70.34.138 CreateGoToAction(DestType as Integer, PageNum as Integer, a as Double, b as Double, c as Double, d as Double) as Integer
70.34.140 CreateGoToEAction(Location as Integer, Source as string, SrcPage as Integer, Target as string, DestName as string, DestPage as Integer, NewWindow as boolean) as Integer

Function: The function creates an embedded GoTo action.
Notes: See also CreateGoToEAction function in dynapdf help.pdf manual.
See also CreateGoToEAction function in DynaPDF manual.

70.34.141 CreateGoToRAction(File as folderitem, PageNum as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: This function creates a go to remote action.
Notes: See also CreateGoToRAction function in DynaPDF manual.
See also:
• 70.34.142 CreateGoToRAction(FilePath as String, PageNum as integer) as integer

70.34.142 CreateGoToRAction(FilePath as String, PageNum as integer) as integer

Function: The function creates a go-to-remote action that opens a named destination in an external PDF file.
Notes: Also check the dynapdf manual on the pdfCreateGoToRActionExA function (pdfCreateGoToRActionExW on Windows).
See also CreateGoToRActionEx function in DynaPDF manual.
See also:
• 70.34.143 CreateGoToRActionEx(File as folderitem, DestName as String, NewWindow as boolean) as Integer

70.34.143 CreateGoToRActionEx(File as folderitem, DestName as String, NewWindow as boolean) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The function creates a go-to-remote action that opens a named destination in an external PDF file.
Notes: Also check the dynapdf manual on the pdfCreateGoToRActionExA function (pdfCreateGoToRActionExW on Windows).
See also CreateGoToRActionEx function in DynaPDF manual.
See also:
• 70.34.144 CreateGoToRActionEx(FilePath as String, DestName as String, NewWindow as boolean) as integer
**70.34.144 CreateGoToRActionEx(FilePath as String, DestName as String, NewWindow as boolean) as integer**


**Function:** The function creates a go-to-remote action that opens a named destination in an external PDF file.

**Notes:** Also check the dynapdf manual on the pdfCreateGoToRActionExA function (pdfCreateGoToRActionExW on Windows).

See also: CreateGoToRActionEx function in DynaPDF manual.
See also:
- 70.34.143 CreateGoToRActionEx(File as folderitem, DestName as String, NewWindow as boolean) as Integer 11772

**70.34.145 CreateGoToRActionExU(File as folderitem, DestName as String, NewWindow as boolean) as Integer**


**Function:** The function creates a go-to-remote action that opens a named destination in an external PDF file.

See also:
- 70.34.146 CreateGoToRActionExU(FilePath as String, DestName as String, NewWindow as boolean) as integer 11773

**70.34.146 CreateGoToRActionExU(FilePath as String, DestName as String, NewWindow as boolean) as integer**


**Function:** The function creates a go-to-remote action that opens a named destination in an external PDF file.

See also:
- 70.34.145 CreateGoToRActionExU(File as folderitem, DestName as String, NewWindow as boolean) as Integer 11773

**70.34.147 CreateGroupField(Name as string, Parent as Integer) as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** This function creates a group field.

See also CreateGroupField function in DynaPDF manual.
70.34.148 CreateHideAction(Field as Integer, Hide as boolean) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A hide action hides or shows one or more interactive form fields on screen by setting or clearing their hidden flags. See also CreateHideAction function in DynaPDF manual.

70.34.149 CreateICCBasedColorSpace(File as folderitem) as Integer

MBS DynaPDF Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function creates an ICC based color space. **Notes:** Use the value returned for the SetExtColorSpace method. See also CreateICCBasedColorSpace function in DynaPDF manual.

70.34.150 CreateICCBasedColorSpaceEx(Buffer as Memoryblock) as Integer

MBS DynaPDF Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new ICC based color space from ICC file content in a string buffer. **Notes:** Returns the color space handle. See also:
- 70.34.151 CreateICCBasedColorSpaceEx(Buffer as string) as Integer

70.34.151 CreateICCBasedColorSpaceEx(Buffer as string) as Integer

MBS DynaPDF Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new ICC based color space from ICC file content in a string buffer. **Notes:** Returns the color space handle. See also:
- 70.34.150 CreateICCBasedColorSpaceEx(Buffer as Memoryblock) as Integer

70.34.152 CreateImage(file as folderitem, format as Integer) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates an image file with the given image format. **Notes:** For the format parameter use the kifm* constants. See also CreateImage function in DynaPDF manual.
**70.34.153** CreateImpDataAction(DataFile as folderitem) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An import data action imports FDF data into the document’s interactive form. **Notes:** Also check the dynapdf manual on the pdfCreateImpDataActionA function (pdfCreateImpDataActionW on Windows).

**70.34.154** CreateIndexedColorSpace(Base as Integer, Handle as Integer, ColorTable as memoryblock, NumColors as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function creates an indexed color space which can be used for vector graphics and text output. **Notes:** Use the value returned for the SetExtColorSpace method. See also CreateIndexedColorSpace function in DynaPDF manual.

**70.34.155** CreateJSAction(Script as string) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function creates a JavaScript action. **Notes:** The script parameter is converted to unicode. See also CreateJSAction function in DynaPDF manual.

**70.34.156** CreateJSActionAnsi(Script as string) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function creates a JavaScript action. **Notes:** The script parameter is converted to ANSI.

**70.34.157** CreateLaunchAction(OP as Integer, FileName as folderitem, DefDir as string, Param as string, NewWindow as boolean) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A launch action launches an application or opens or prints a document. See also CreateLaunchAction function in DynaPDF manual.
70.34.158 **CreateLaunchActionEx(FileName as folderitem, NewWindow as boolean) as Integer**

MBS DynaPDF Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a launch link. See also CreateLaunchActionEx function in DynaPDF manual.

70.34.159 **CreateListBox(Name as string, Sort as boolean, Parent as Integer,PosX as Double, PosY as Double, Width as Double, Height as Double) as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function creates a list box. See also CreateListBox function in DynaPDF manual.

70.34.160 **CreateNamedAction(Action as Integer) as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function creates a named action. See also CreateNamedAction function in DynaPDF manual.

70.34.161 **CreateNamedDest(Name as string, DestPage as Integer, DestType as Integer, a as Double, b as Double, c as Double, d as Double) as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function creates a named destination that can be accessed from external PDF files. **Notes:** The name parameter is converted to unicode. See also CreateNamedDest function in DynaPDF manual.

70.34.162 **CreateNamedDestAnsi(Name as string, DestPage as Integer, DestType as Integer, a as Double, b as Double, c as Double, d as Double) as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function creates a named destination that can be accessed from external PDF files. **Notes:** The name parameter is converted to ANSI.
70.34.163  CreateNewPDF(OutPDF as folderitem = nil) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** This function creates a new PDF file.

**Example:**

```vba
dim dest as folderitem ' where to save?
dim pdf as DynaPDFMBS ' your DynaPDF object
dim bBool as Boolean

// create new pdf
bBool=pdf.CreateNewPDF(dest)
if bBool=False then
    MsgBox "Failed to create pdf file "+dest.AbsolutePath
    Return
end if
```

**Notes:** Also check the dynapdf manual on the pdfCreateNewPDFA function (pdfCreateNewPDFW on Windows).
See also CreateNewPDF function in DynaPDF manual.

70.34.164  CreateOCG(name as string, DisplayInUI as boolean, Visible as boolean, Intent as Integer) as Integer

**Function:** The function creates an Optional Content Group (OCG).

**Notes:** CreateOCG stores the name in unicode encoding and CreateOCGAnsi in Windows ANSI encoding.
See also CreateOCG function in DynaPDF manual.

70.34.165  CreateOCGAnsi(name as string, DisplayInUI as boolean, Visible as boolean, Intent as Integer) as Integer

**Function:** The function creates an Optional Content Group (OCG).

**Notes:** CreateOCG stores the name in unicode encoding and CreateOCGAnsi in Windows ANSI encoding.
70.34.166  CreateOCMD(Visibility as Integer, OCGs() as Integer) as Integer

**Function:** The function creates an Optional Content Membership Dictionary (OCMD).  
**Notes:** For Visibility use the constants kovAllOff, kovAllOn, kovAnyOff, kovAnyOn and kovNotSet.  
See also CreateOCMD function in DynaPDF manual.

70.34.167  CreateRadialShading(sX as Double, sY as Double, R1 as Double, eX as Double, eY as Double, R2 as Double, SCenter as Double, SColor as Integer, EColor as Integer, Extend1 as boolean, Extend2 as boolean) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Radial shadings define a color blend that varies between two circles.  
See also CreateRadialShading function in DynaPDF manual.

70.34.168  CreateRadioButton(Name as string, ExpValue as string, Checked as boolean, Parent as Integer, PosX as Double, PosY as Double, Width as Double, Height as Double) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** A radio button field is a set of related toggle controls (check boxes), at most one of which may be on at any given time; selecting any one of the button automatically deselects all others.  
See also CreateRadioButton function in DynaPDF manual.

70.34.169  CreateResetAction as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** A reset form action resets all or specific fields of an interactive form to their default values.  
See also CreateResetAction function in DynaPDF manual.

70.34.170  CreateSeparationCS(Colorant as string, Alternate as Integer, Handle as Integer, ColorValue as Integer) as Integer

**Function:** The function creates a Separation color space.  
**Notes:** This function passes colorant string in UTF-8 encoding to the library.  
See also CreateSeparationCS function in DynaPDF manual.
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### 70.34.171 CreateSeparationCSAnsi(Colorant as string, Alternate as Integer, Handle as Integer, ColorValue as Integer) as Integer

**Function:** The function creates a Separation color space.
**Notes:** This function passes colorant string in Windows ANSI encoding to the library.

### 70.34.172 CreateSetOCGStateAction(On() as UInt32, Off() as UInt32, Toggle() as UInt32, PreserveRB as boolean) as Integer

**Function:** The function creates a SetOCGState action that can be used to change the visibility state of certain Optional Content Groups (OCGs).
**See also** CreateSetOCGStateAction function in DynaPDF manual.

### 70.34.173 CreateSigField(Name as string, Parent as Integer,PosX as Double,PosY as Double, Width as Double, Height as Double) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** This function creates an empty signature field which can be used to digitally sign the PDF file.
**See also** CreateSigField function in DynaPDF manual.

### 70.34.174 CreateSigFieldAP(SigField as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The function creates a signature appearance template in the exact size of the base signature field.
**See also** CreateSigFieldAP function in DynaPDF manual.

### 70.34.175 CreateSoftMask(TranspGroup as UInt32, MaskType as Integer, BackColor as UInt32) as Integer

**Function:** Creates a new soft mask.
**Notes:**
- MaskType: pass ksmtAlpha or ksmtLuminosity constants.
- Requires DynaPDF Pro license.
**See also** CreateSoftMask function in DynaPDF manual.
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70.34.176 CreateStdPattern(Pattern as Integer, LineWidth as Double, Distance as Double, LineColor as Integer, BackColor as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function creates a hatch pattern.
See also CreateStdPattern function in DynaPDF manual.

70.34.177 CreateStructureTree as boolean

MBS DynaPDF Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a structure tree.
See also CreateStructureTree function in DynaPDF manual.

70.34.178 CreateSubmitAction(Flags as Integer, URL as string) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A submit form action submits the field values of an interactive form to a web server.
See also CreateSubmitAction function in DynaPDF manual.

70.34.179 CreateTable(AllocRows as UInt32, NumCols as UInt32, width as Double, DefRowHeight as Double) as DynaPDFTableMBS

MBS DynaPDF Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a table with the given size.
**Notes:** Returns a new table object.
See also CreateTable function in DynaPDF manual.

70.34.180 CreateTextField(Name as string, Parent as Integer, Multiline as boolean, MaxLen as Integer, PosX as Double, PosY as Double, Width as Double, Height as Double) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function creates a text field.
See also CreateTextField function in DynaPDF manual.
70.34.181  **CreateURIAction(URL as string) as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:**
A uniform resource identifier (URI) is a string that identifies (resolves to) a resource on the internet - typically a file that is the destination of a hyperlink, although it can also resolve to a query or other entity.

**Notes:**
A URI action causes a URI to be resolved. The parameter URL must be 7 bit ASCII string.

See also **CreateURIAction** function in DynaPDF manual.

70.34.182  **DecryptPDF(File as folderitem, PwdType as Integer, Password as string) as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function decrypts a PDF file by using the supplied password to decrypt the file.

**Notes:** Also check the dynapdf manual on the pdfDecryptPDFA function (pdfDecryptPDFW on Windows).
See also **DecryptPDF** function in DynaPDF manual.

70.34.183  **DecryptPDFAnsi(Path as string, PwdType as Integer, Password as string) as Integer**

MBS DynaPDF Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function decrypts a PDF file by using the supplied password to decrypt the file.

**Notes:** Same as DecryptPDF, but takes path name in Windows ANSI encoding.

70.34.184  **DeleteAcroForm**

MBS DynaPDF Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Deletes an acrobat reader form.
See also **DeleteAcroForm** function in DynaPDF manual.
70.34.185  **DeleteActionFromObj**(ObjType as Integer, ActHandle as Integer, ObjHandle as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function**: This function deletes an action from a PDF object.
See also **DeleteActionFromObj** function in DynaPDF manual.

70.34.186  **DeleteActionFromObjEx**(ObjType as Integer, ObjHandle as Integer, ActIndex as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function**: This function can be used to delete an action from an object without using an action handle.
See also **DeleteActionFromObjEx** function in DynaPDF manual.

70.34.187  **DeleteAnnotation**(Handle as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function**: This function deletes an annotation.
See also **DeleteAnnotation** function in DynaPDF manual.

70.34.188  **DeleteAnnotationFromPage**(PageNum as UInt32, Handle as UInt32) as boolean

MBS DynaPDF Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function**: Deletes an annotation from a page.
See also **DeleteAnnotationFromPage** function in DynaPDF manual.

70.34.189  **DeleteAppEvents**(ApplyEvent as Boolean, TOCAppEvent as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function**: The function deletes all application events if any.
**Notes:**
The function can optionally apply the visibility state of an event before the application events will be deleted. The new visibility state will be stored in the PDF file. To apply the visibility state of a specific event without deletion call **ApplyAppEvent()** instead.
If the function succeeds and if application events were deleted the return value is 1. If the no application events were defined the return value is 0. If the function fails the return value is a negative error code.

See also DeleteAppEvents function in DynaPDF manual.

**70.34.190 DeleteBookmark(ABmk as Integer) as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This function deletes a bookmark. See also DeleteBookmark function in DynaPDF manual.

**70.34.191 DeleteEmbeddedFile(handle as Integer) as boolean**

MBS DynaPDF Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Deletes the embedded file with the given handle. See also DeleteEmbeddedFile function in DynaPDF manual.

**70.34.192 DeleteField(Field as Integer) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This function deletes an interactive form field. See also DeleteField function in DynaPDF manual.

**70.34.193 DeleteFieldEx(URL as string) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This function deletes an interactive form field by using its full qualified name, that is the name of any parent group field separated by a period (.) plus the field name. See also DeleteFieldEx function in DynaPDF manual.

**70.34.194 DeleteJavaScripts(DelJavaScriptActions as boolean)**

70.34.195  **DeleteOCGFromAppEvent(Handle as UInt32, Events as Integer, Categories as Integer, DelCategoryOnly as Boolean) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Deletes an OCG or layer from one or more application events, or it deletes only one or more categories from an application event in which the OCG was found (if DelCategoryOnly is true).
**Notes:**
If DelCategoryOnly is true, and if no more categories are left in the application event, then the event will be deleted. See also AddOCGToAppEvent() and SetOCGContUsage() for further information.
If the function succeeds the return value is true. If the function fails the return value is false.
See also DeleteOCGFromAppEvent function in DynaPDF manual.

70.34.196  **DeleteOutputIntent(Index as Integer) as Integer**

**Function:** Can be used to delete a specific or all output intents.
**Notes:**
A PDF file can contain more than one output intent. Call GetOutputIntentCount to determine the number of available output intents. If the parameter Index is set to -1 all output intents will be deleted.
If the function succeeds the return value is the remaining number of output intents. If the function fails the return value is a negative error code.
See also DeleteOutputIntent function in DynaPDF manual.

70.34.197  **DeletePage(PageNum as Integer) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** This function deletes a page.
See also DeletePage function in DynaPDF manual.

70.34.198  **DeletePageLabels**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The function deletes all page labels contained in the current open document, if any.
See also DeletePageLabels function in DynaPDF manual.
**70.34.199  DeleteSeparationInfo(AllPages as boolean) as boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function deleted the separation of the current open page or of all pages if the parameter AllPages is set to true.
See also DeleteSeparationInfo function in DynaPDF manual.

**70.34.200  DeleteTemplate(handle as Integer) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function deletes a template.
See also DeleteTemplate function in DynaPDF manual.

**70.34.201  DeleteTemplateEx(index as Integer) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function deletes a template by using an index instead of a template handle.
See also DeleteTemplateEx function in DynaPDF manual.

**70.34.202  DeleteXFAForm**

MBS DynaPDF Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Deletes XFA Form.
See also DeleteXFAForm function in DynaPDF manual.

**70.34.203  DrawArc(PosX as Double, PosY as Double, Radius as Double, StartAngle as Double, EndAngle as Double) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function draws an arc by using a start and end angle.
See also DrawArc function in DynaPDF manual.
70.34.204 **DrawArcEx**(PosX as Double, PosY as Double, Width as Double, Height as Double, StartAngle as Double, EndAngle as Double) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function draws an elliptical arc. **Example:**

```vba
dim pdf as new DynaPDFMBS
dim f as FolderItem = SpecialFolder.Desktop.Child("Create PDF.pdf")

pdf.SetLicenseKey "Starter" // For this example you can use a Starter, Lite, Pro or Enterprise License

// create new PDF
call pdf.CreateNewPDF f

// We want to use top-down coordinates
call pdf.SetPageCoords pdf.kpcTopDown

// new page
call pdf.Append

// black
call pdf.SetStrokeColor 0

// draw an arc
call pdf.DrawArcEx 100,100,100,100, 90,180
call pdf.StrokePath

// and a second one
call pdf.DrawArcEx 200,200,100,100, 0,90
call pdf.StrokePath

// and a third one. 0 to 0 gives a full circle
call pdf.DrawArcEx 300,300,100,100, 0,0
call pdf.StrokePath

// finish page
call pdf.EndPage

// Close file
call pdf.CloseFile

// open PDF
f.Launch
```
See also DrawArcEx function in DynaPDF manual.

### 70.34.205 DrawChord(PosX as Double, PosY as Double, Width as Double, Height as Double, StartAngle as Double, EndAngle as Double, FillMode as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** This function draws an elliptical chord (a region bounded by the intersection of an ellipse and a line segment, called a secant).

See also DrawChord function in DynaPDF manual.

### 70.34.206 DrawCircle(PosX as Double, PosY as Double, Radius as Double, FillMode as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** This function draws a circle.

**Example:**

```vba
dim pdf as new DynaPDFMBS
dim f as FolderItem = SpecialFolder.Desktop.Child("Create PDF with Line.pdf")

pdf.SetLicenseKey "Starter" // For this example you can use a Starter, Lite, Pro or Enterprise License

// Create a new PDF
call pdf.CreateNewPDF f

// We want to use top-down coordinates
call pdf.SetPageCoords pdf.kpcTopDown

// Add a page
call pdf.Append

// a circle, filled
call pdf.SetFillColor pdf.RGB(0,255,0) // green
call pdf.DrawCircle(100, 100, 100, pdf.kfmFill)

// a circle, stoked
call pdf.SetStrokeColor pdf.RGB(255,0,0) // red
call pdf.DrawCircle(200, 200, 100, pdf.kfmStroke)

// end page
call pdf.EndPage

// Close page
```
call pdf.CloseFile

// Open PDF
f.Launch

See also DrawCircle function in DynaPDF manual.

70.34.207  DrawPie(PosX as Double, PosY as Double, Width as Double, Height as Double, StartAngle as Double, EndAngle as Double, FillMode as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function draws a pie-shaped wedge bounded by the intersection of an ellipse and two angles. See also DrawPie function in DynaPDF manual.

70.34.208  EditPage(PageNum as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function prepares a page for editing. **Example:**

dim pdf as DynapdfMBS  // your dynapdf instance

// edit page 1
call pdf.EditPage(1)
// set a font
call pdf.SetFont( "Times New Roman",pdf.kfsNone,46,True,pdf.kcp1252 )
// set a color
call pdf.SetFillColor(0)

// now add a text annotation
call pdf.FreeTextAnnot( 100, 100, 100, 100, "author", "test", 0 )

// end page
call pdf.EndPage

See also EditPage function in DynaPDF manual.
**70.34.209 EditTemplate(index as Integer) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function prepares a template for editing. See also EditTemplate function in DynaPDF manual.

**70.34.210 EditTemplate2(handle as Integer) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function prepares the template for editing. See also EditTemplate2 function in DynaPDF manual.

**70.34.211 Ellipse(PosX as Double, PosY as Double, Width as Double, Height as Double, FillMode as Integer) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function draws an ellipse. See also Ellipse function in DynaPDF manual.

**70.34.212 EnableMutex(Value as boolean)**

MBS DynaPDF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to enable mutex or not.

**70.34.213 EncryptPDF(File as folderitem, OpenPwd as string, OwnerPwd as string, KeyLen as Integer, Restrict as Integer) as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function encrypts a PDF file. **Notes:** Also check the dynapdf manual on the pdfEncryptPDFA function (pdfEncryptPDFW on Windows). See also EncryptPDF function in DynaPDF manual.

**70.34.214 EncryptPDFAnsi(Path as string, OpenPwd as string, OwnerPwd as string, KeyLen as Integer, Restrict as Integer) as Integer**

MBS DynaPDF Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function encrypts a PDF file.
Notes: Same as EncryptPDF, but takes path name in Windows ANSI encoding.

70.34.215 EndContinueText as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This function finishes a continue text block that was created with the function BeginContinueText() beforehand. Deprecated: This item is deprecated and should no longer be used.

70.34.216 EndLayer as boolean

MBS DynaPDF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function closes a layer that was opened by BeginLayer. Notes: If the function succeeds the return value is true. If the function fails the return value is false.

See also EndLayer function in DynaPDF manual.

70.34.217 EndPage as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This function closes an open page that was opened by Append() or EditPage(). Example:

```
dim pdf as DynaPDFMBS // your DynaPDF object
dim bBool as Boolean

bBool=pdf.EndPage
```

See also EndPage function in DynaPDF manual.

70.34.218 EndPattern as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This function closes an open pattern that was opened by BeginPattern() or CreateStdPattern(). See also EndPattern function in DynaPDF manual.
70.34.219  EndTemplate as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function closes an open template that was opened by BeginTemplate(), EditTemplate() or EditTemplate2(). See also EndTemplate function in DynaPDF manual.

70.34.220  EnumDocFonts as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function enumerates all fonts used in the current PDF document. **Notes:** Will call the EnumDocFont event. See also EnumDocFonts function in DynaPDF manual.

70.34.221  EnumDocFontsCount as Integer

MBS DynaPDF Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function enumerates all fonts used in the current PDF document and returns the count. **Notes:** Returns the number of fonts found. Does not call the event.

70.34.222  EnumHostFonts as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function enumerates all fonts found in the search directories by passing the font names to a callback function. **Notes:** Calls the EnumHostFont event. See also EnumHostFonts function in DynaPDF manual.

70.34.223  EnumHostFontsCount as Integer

MBS DynaPDF Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function enumerates all fonts found in the search directories. **Notes:** Returns the number of fonts found. Does not call the event.

70.34.224  EnumHostFontsEx as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function enumerates all fonts found in the search directories in the same way as EnumHostFonts().
**Notes:** Calls the EnumHostFontEx event.
See also EnumHostFontsEx function in DynaPDF manual.

### 70.34.225 EnumHostFontsExCount as Integer

**Function:** The function enumerates all fonts found in the search directories in the same way as EnumHostFontsCount().
**Notes:** Returns the number of fonts found. Does not call the event.

### 70.34.226 ExchangeBookmarks(Bmk1 as Integer, Bmk2 as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** This function exchanges two bookmarks.
See also ExchangeBookmarks function in DynaPDF manual.

### 70.34.227 ExchangePages(first as Integer, second as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The function exchanges two pages.
See also ExchangePages function in DynaPDF manual.

### 70.34.228 ExtractPageText(RemoveText as boolean = false) as String

**Function:** Extracts text of current open page.
**Notes:**
This is a convenience function so you don’t need to use DynaPDFStackMBS class yourself.
Returns the text of the page. Use EditPage() to open a page and than EndPage() to close it.

If you have problems with asian characters, please make sure you use SetCMapDir and load the CMAPs.
Requires DynaPDF Pro license.
70.34.229 ExtractPageTextRect(Left as Double, Top as Double, Right as Double, Bottom as Double, RemoveText as boolean = false) as String

Function: Extracts text of current open page within given rectangle.
Notes:
Text that starts within the given rectangle is captured.
Be aware that PDF coordinates start on bottom left of page with 0/0.

This is a convenience function so you don’t need to use DynaPDFStackMBS class yourself.
Returns the text of the page. Use EditPage() to open a page and than EndPage() to close it.

If you have problems with asian characters, please make sure you use SetCMapDir and load the CMAPs.
Requires DynaPDF Pro license.

70.34.230 ExtractText(PageNum as Integer, Flags as Integer, rect as DynaPDFRectMBS = nil, byref text as string) as Boolean

Function: Extracts the text of the page PageNum.
Notes:
The first page is denoted by 1.

Text lines can be sorted in x- and y-direction. The flag ktefDeleteOverlappingText causes that identical text records which are placed on the same position (with a tolerance of 2 units) will be deleted. The records must occur one after the other in order to detect them.

The optional parameter Area can be set to restrict the text extraction to that rectangle. The rectangle must be defined according to the current coordinate system. That means either in bottom up or top down coordinates, see SetPageCoords() for further information. Note also that the function considers the orientation of the page. The width and height of the rectangle must be exchanged if the orientation is 90, -90, 270, or -270 degrees.

If the function succeeds the return value is true. If the function fails the return value is false.
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**70.34.231 FileAttachAnnot(PosX as Double, PosY as Double, Icon as Integer, Author as string, Desc as string, File as folderitem, Compress as boolean) as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The function inserts a file attachment annotation on the current open page.

**Notes:**

On Windows, the Desc and the Author parameters are converted to unicode.

Also check the dynapdf manual on the pdfFileAttachAnnotA function (pdfFileAttachAnnotW on Windows).

See also FileAttachAnnot function in DynaPDF manual.

**70.34.232 FileAttachAnnotEx(PosX as double, PosY as double, Icon as integer, Author as string, Desc as string, Filename as String, FileBuffer as MemoryBlock, Compress as boolean) as Integer**


**Function:** Creates a file attachment annotation exactly in the same way as FileAttachAnnot() but accepts a file buffer as input.

**Notes:**

See FileAttachAnnot() for further information. The parameter FileName is required. It should contain the file name including extension, e.g. "MyImage.jpg".

If the function succeeds the return value is the annotation handle, a value greater or equal zero. If the function fails the return value is a negative error code.

See also:

- 70.34.233 FileAttachAnnotEx(PosX as double, PosY as double, Icon as integer, Author as string, Desc as string, Filename as String, FileBuffer as String, Compress as boolean) as Integer

**70.34.233 FileAttachAnnotEx(PosX as double, PosY as double, Icon as integer, Author as string, Desc as string, Filename as String, FileBuffer as String, Compress as boolean) as Integer**


**Function:** Creates a file attachment annotation exactly in the same way as FileAttachAnnot() but accepts a file buffer as input.

**Notes:**

See FileAttachAnnot() for further information. The parameter FileName is required. It should contain the file name including extension, e.g. "MyImage.jpg".

If the function succeeds the return value is the annotation handle, a value greater or equal zero. If the
function fails the return value is a negative error code.

See also:

* 70.34.232 `FileAttachAnnotEx(PosX as double, PosY as double, Icon as integer, Author as string, Desc as string, Filename as string, FileBuffer as MemoryBlock, Compress as boolean) as Integer`

### 70.34.234 `FileLink(PosX as Double, PosY as Double, Width as Double, Height as Double, FileLink as string) as Integer`

**MBS DynaPDF Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:** The function creates a file link annotation.

**Notes:** Here you can pass a string which may be a relative file path like simply the file name of other pdf file in same folder.

See also `FileLink` function in DynaPDF manual.

### 70.34.235 `FileLinkAnsi(PosX as Double, PosY as Double, Width as Double, Height as Double, FileLink as string) as Integer`

**MBS DynaPDF Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:** The function creates a file link annotation.

**Notes:** Here you can pass a string which may be a relative file path like simply the file name of other pdf file in same folder.

### 70.34.236 `FindBookmark(DestPage as Integer, Text as string) as Integer`

**MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:** This function searches for a bookmark in the document outline tree.

**Notes:** The text parameter is converted to unicode.

See also `FindBookmark` function in DynaPDF manual.

### 70.34.237 `FindBookmarkAnsi(DestPage as Integer, Text as string) as Integer`

**MBS DynaPDF Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:** This function searches for a bookmark in the document outline tree.

**Notes:** The text parameter is converted to ANSI.
70.34.238  FindEmbeddedFile(Name as string) as Integer

MBS DynaPDF Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Searches for the embedded file Name and returns the handle of it when it can be found. **Notes:**
The file can then be extracted with GetEmbeddedFile().

If the function succeeds the return value is an embedded file handle, a value greater or equal zero. If the file cannot be found the return value is -1. See also FindEmbeddedFile function in DynaPDF manual.

70.34.239  FindField(Name as string) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function searches for an interactive form field by using the fully qualified field name. **Notes:** The Name parameter is converted to unicode. See also FindField function in DynaPDF manual.

70.34.240  FindFieldAnsi(Name as string) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function searches for an interactive form field by using the fully qualified field name. **Notes:** The Name parameter is converted to ANSI.

70.34.241  FindLinkAnnot(URL as string) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function searches for a file link or web link annotation. See also FindLinkAnnot function in DynaPDF manual.

70.34.242  FindNextBookmark as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function searches for the next bookmark with the same search parameters which were used by a previous call of FindBookmark(). See also FindNextBookmark function in DynaPDF manual.
70.34. FinishSignature(PKCS7 as Memoryblock) as boolean


**Function:** The function writes the PKCS# 7 signature object to the PDF file and writes finally the finish PDF file to disk and frees all used resources if the file was not created in memory.

**Notes:**
If the file was created in memory GetBuffer() can now be called to obtain the finish PDF buffer.
CloseAndSignFileExt() must be called prior this function can be called.

Return values: If the function succeeds the return value is true. If the function fails the return value is false.
See also FinishSignature function in DynaPDF manual.
See also:

- 70.34.244 FinishSignature(PKCS7 as string) as boolean

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70.34.244 FinishSignature(PKCS7 as string) as boolean


**Function:** The function writes the PKCS# 7 signature object to the PDF file and writes finally the finish PDF file to disk and frees all used resources if the file was not created in memory.

**Notes:**
If the file was created in memory GetBuffer() can now be called to obtain the finish PDF buffer.
CloseAndSignFileExt() must be called prior this function can be called.

Return values: If the function succeeds the return value is true. If the function fails the return value is false.
See also FinishSignature function in DynaPDF manual.
See also:

- 70.34.243 FinishSignature(PKCS7 as Memoryblock) as boolean

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70.34.245 FlattenAnnots(AnnotFlattenFlags as Integer = 0) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Flattens the annotations.

**Notes:**
By default all annotations which have an appearance stream and which have the print flag set are flattened.
All annotations are deleted when the function returns with the exception of file attachment annotations.
If you want to flatten the view state then set the flag affUseViewState.

Annotation flags:
kaffNone 0  Printable annotations independent of the type
kaffUseViewState 1  If set, annotations which are visible in a viewer become flattened.
kaffMarkupAnnots 2  If set, markup annotations are flattened only. Link, Sound, or FileAttach
annotations are no markup annotations. These types will be left intact.

See also FlattenAnnots function in DynaPDF manual.

70.34.246 FlattenForm as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function converts all fields of an Interactive Form to native PDF vector graphics and deletes the form after all fields are converted, incl. all JavaScript actions which are connected with form fields, pages, or the catalog object, and global JavaScript functions. **Notes:** Requires DynaPDF Pro license. See also FlattenForm function in DynaPDF manual.

70.34.247 FlushPageContent(stack as DynaPDFStackMBS) as boolean

MBS DynaPDF Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function replaces the content stream of a page or template that was changed with the function ReplacePageText() or ReplacePageTextEx() beforehand. **Notes:** The function must be called after all changes are made. See GetPageText() for an example application.

Return values:
If the function succeeds the return value is true. If the function fails the return value is false.

See also FlushPageContent function in DynaPDF manual.

70.34.248 FlushPages(Flags as Integer = 0) as boolean

MBS DynaPDF Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Flushes pages. **Notes:** Do not use FlushPages and SetUseSwapFile together. Use one function. See also FlushPages function in DynaPDF manual.
**70.34.249 FreeImageBuffer**

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Frees the current image buffer.  
See also FreeImageBuffer function in DynaPDF manual.

**70.34.250 FreeImageObj(Handle as UInt32) as boolean**

MBS DynaPDF Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function releases memory that was allocated by GetImageObj to decompress the image.  
**Notes:** If the function succeeds the return value is true. If the function fails the return value is false.  
See also FreeImageObj function in DynaPDF manual.

**70.34.251 FreePDF as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function frees all used resources except the font cache.  
See also FreePDF function in DynaPDF manual.

**70.34.252 FreeTextAnnot(PosX as Double, PosY as Double, Width as Double, Height as Double, Author as string, Text as string, Align as Integer) as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function creates a free text annotation.  
**Example:**
```
dim pdf as DynapdfMBS // your dynapdf instance

// edit page 1
call pdf.EditPage(1)

// set a font
call pdf.SetFont( "Times New Roman",pdf.kfsNone,46,True,pdf.kcp1252 )

// set a color
call pdf.SetFillColor(0)

// now add a text annotation
call pdf.FreeTextAnnot( 100, 100, 100, 100, "author", "test", 0 )

// end page
call pdf.EndPage
```
Notes: The Name and Author parameters are converted to unicode.
See also FreeTextAnnot function in DynaPDF manual.

70.34.253 FreeTextAnnotAnsi(PosX as Double, PosY as Double, Width as Double,
Height as Double, Author as string, Text as string, Align as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This function creates a free text annotation.
Notes: The Name and Author parameters are converted to ANSI.

70.34.254 GetActionCount as Integer

See also GetActionCount function in DynaPDF manual.

70.34.255 GetActionHandle(ObjType as Integer, ObjHandle as UInt32, ActIndex as UInt32) as Integer

Notes:
To determine the number of available actions of a specific object call GetObjActionCount. Since the Catalog object contains no handle, the parameter ObjHandle will be ignored for this object type.

If the function succeeds the return value is the action handle, a value greater or equal zero. If the function fails the return value is a negative error code.
See also GetActionHandle function in DynaPDF manual.

70.34.256 GetActionType(ActHandle as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function returns the type of an annotation.
See also GetActionType function in DynaPDF manual.
70.34.257 GetActionTypeEx(ObjType as Integer, ObjHandle as Integer, ActIndex as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the action type of an action used by a specific PDF object. See also GetActionTypeEx function in DynaPDF manual.

70.34.258 GetActiveFont as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the handle of the active font or 1 if no font is set. See also GetActiveFont function in DynaPDF manual.

70.34.259 GetAllocBy as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the pre allocated buffer size of page content streams in bytes. See also GetAllocBy function in DynaPDF manual.

70.34.260 GetAnnot(ahandle as Integer) as DynaPDFAnnotationMBS

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function retrieves the most important properties of an annotation. **Example:**

```
    dim pdf as DynaPDFMBS // your instance

    dim c as Integer = pdf.GetAnnotCount

    for i as Integer = 0 to c-1
    dim a as DynaPDFAnnotationMBS = pdf.GetAnnot(i)
        MsgBox str(a.Type)
    next
```

**Deprecated:** This item is deprecated and should no longer be used. You can use GetAnnotEx instead.
70.34.261  GetAnnotBBox(ahandle as Integer) as DynaPDFRectMBS

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This function retrieves the bounding box of an annotation measured in bottom up coordinates. See also GetAnnotBBox function in DynaPDF manual.

70.34.262  GetAnnotCount as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function returns the number of annotations currently used in the document. See also GetAnnotCount function in DynaPDF manual.

70.34.263  GetAnnotEx(ahandle as Integer) as DynaPDFAnnotationExMBS

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This function retrieves the most important properties of an annotation. Example:

```
dim pdf as DynaPDFMBS // your instance

dim c as Integer = pdf.GetAnnotCount

for i as Integer = 0 to c-1
    dim a as DynaPDFAnnotationExMBS = pdf.GetAnnotEx(i)
    MsgBox str(a.Type)
next
```

See also GetAnnotEx function in DynaPDF manual.

70.34.264  GetAnnotFlags as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function returns the default flags used for newly created annotations. See also GetAnnotFlags function in DynaPDF manual.
70.34.265  GetAnnotLink(Handle as Integer) as string

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function returns the URL or file path of a file link annotation. See also GetAnnotLink function in DynaPDF manual.

70.34.266  GetAnnotType(Handle as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the type of a specific annotation. See also GetAnnotType function in DynaPDF manual.

70.34.267  GetAscent as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the ascender of the active font. See also GetAscent function in DynaPDF manual.

70.34.268  GetBBox(boundary as Integer) as DynaPDFRectMBS

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns a bounding box of a PDF page. See also GetBBox function in DynaPDF manual.

70.34.269  GetBidiMode as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A new function in dynapdf which is not documented. See also GetBidiMode function in DynaPDF manual.

70.34.270  GetBookmark(ahandle as Integer) as DynaPDFBookmarkMBS

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function returns the properties of a bookmark. See also GetBookmark function in DynaPDF manual.
70.34.271 GetBookmarkCount as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the number of bookmarks defined in the document. See also GetBookmarkCount function in DynaPDF manual.

70.34.272 GetBorderStyle as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the global border style which is used for newly created Interactive Form fields. See also GetBorderStyle function in DynaPDF manual.

70.34.273 GetBuffer as string

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns a pointer to the buffer of a memory based PDF file. **Notes:** The result string has no encoding set. See also GetBuffer function in DynaPDF manual.

70.34.274 GetBufferMemory as Memoryblock

MBS DynaPDF Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns a pointer to the buffer of a memory based PDF file. **Notes:** The result string has no encoding set.

70.34.275 GetCapHeight as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the cap height of the active font. See also GetCapHeight function in DynaPDF manual.

70.34.276 GetCharacterSpacing as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the current character spacing. See also GetCharacterSpacing function in DynaPDF manual.
70.34.277 GetCheckBoxChar as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function returns the character used for newly created check boxes. See also GetCheckBoxChar function in DynaPDF manual.

70.34.278 GetCheckBoxCharEx(Field as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Queries the check box character for the given field. See also GetCheckBoxCharEx function in DynaPDF manual.

70.34.279 GetCheckBoxDefState(Field as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This function returns the default state of a check box, that is 1 == checked or 0 == unchecked. See also GetCheckBoxDefState function in DynaPDF manual.

70.34.280 GetCMap(index as Integer) as DynapdfCMapMBS

MBS DynaPDF Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns the CMap object with the given index. See also GetCMap function in DynaPDF manual.

70.34.281 GetCMapCount as Integer

MBS DynaPDF Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns the number of character maps. See also GetCMapCount function in DynaPDF manual.

70.34.282 GetColorSpace as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function returns the active color space. See also GetColorSpace function in DynaPDF manual.
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70.34.283  GetColorSpaceCount as Integer


**Function:** The number of color spaces.

**Example:**

```vba
Sub DrawSomething(pdf as DynaPDFMBS)
   '// draw all colorants with their own color
   Dim MyX, MyY as Double

   MyX = 10
   MyY = 100

   '// set a font
   call pdf.SetFont "Times", pdf.kfsItalic, 10.0, true, pdf.kcp1252

   '// loop over all color spaces
   Dim Colorcount as Integer = pdf.GetColorSpaceCount
   For j as Integer = 0 to Colorcount-1
      MyX = 10
      Dim MyColourSpace as DynapdfColorSpaceMBS = PDF.GetColorSpaceObj(j)
      Dim ColorantsCount as Integer = MyColourSpace.ColorantsCount
      Dim c as Integer = MyColourSpace.NumInComponents
      Call pdf.SetExtColorSpace j

      '// draw name of each colorant
      For i as Integer = 0 to c-1
         '// build array with colors and set 100% for the one color we need
         Dim values() as Double
         Redim values(c-1)
         values(i) = 1.0
         '// get name
         Dim name as string = "# " + str(i)
         If i <= ColorantsCount Then
            name = MyColourSpace.Colorants(i)
         End If

         '// seaw name
         Call pdf.SetFillColor(values)
         call pdf.WriteText(MyX,MyY, name)
      Next
      MyX = MyX + pdf.GetTextWidth(name) + 20
   Next
```
See also GetColorSpaceCount function in DynaPDF manual.

70.34.284  GetColorSpaceObj(index as Integer) as DynaPDFColorSpaceMBS


70.34.285  GetCompressionFilter as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function returns the standard compression filter for images. See also GetCompressionFilter function in DynaPDF manual.

70.34.286  GetCompressionLevel as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function returns the active compression level. See also GetCompressionLevel function in DynaPDF manual.

70.34.287  GetContent as string

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This function returns a pointer to the content stream of the currently open page or template. Notes: The result string has no encoding set. See also GetContent function in DynaPDF manual.
70.34.288  GetDefBitsPerPixel as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The function returns default color depth in bits per pixel, which determines whether images should be down sampled.  
See also GetDefBitsPerPixel function in DynaPDF manual.

70.34.289  GetDescent as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The function returns the descender of the active font.  
See also GetDescent function in DynaPDF manual.

70.34.290  GetDocInfo(dinfo as Integer) as string

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The function retrieves a document info entry as Unicode string.  
**Notes:** The result is an unicode string.  
See also GetDocInfo function in DynaPDF manual.

70.34.291  GetDocInfoCount as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The function returns the number of document info entries defined in the document.  
See also GetDocInfoCount function in DynaPDF manual.

70.34.292  GetDocInfoEx(index as Integer, byref DInfo as Integer, byref key as string, byref value as string) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The function returns a document info entry.  
**Notes:** Key is an ascii string and value an unicode string.  
See also GetDocInfoEx function in DynaPDF manual.

70.34.293  GetDocumentColorSpaces as DynaPDFColorSpaceMBS()

**Function:** Queries Colorspace objects for all colorspaces in the current working document.
70.34.294 GetDocUsesTransparency(Flags as UInt32 = 0) as boolean

MBS DynaPDF Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Checks whether this document uses transparency. **Notes:** Checks whether a PDF file uses native PDF Transparency (PDF 1.4). The file uses transparency when it contains soft masks, blend modes other than Normal, or fill or stroke alpha values smaller than 1.0. The function checks all pages, templates, extended graphics states, images, annotations, and form fields. If the file uses transparency the return value is true. If it uses no transparency the return value is false. See also GetDocUsesTransparency function in DynaPDF manual.

70.34.295 GetDrawDirection as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the actual draw direction for closed vector graphics such as rectangles, circles, ellipses and so on. See also GetDrawDirection function in DynaPDF manual.

70.34.296 GetDynaPDFVersion as string

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the version string of DynaPDF. **Notes:** Result is an ASCII string. See also GetDynaPDFVersion function in DynaPDF manual.

70.34.297 GetEmbeddedFile(Handle as Integer, byref FileSpec as dynapdfFileSpecMBS, Decompress as boolean) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function retrieves the most important properties of an embedded file as well as a pointer to the file buffer. **Example:**

```plaintext
// new PDF Environment
dim pdf as new MyDynapdfMBS
call pdf.CreateNewPDF nil

// import PDF file
```
```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("Create PDF with hidden data.pdf")
call pdf.SetImportFlags(pdf.kifImportAll + pdf.kifImportAsPage)
call pdf.OpenImportFile(f)
call pdf.ImportPDFFile(1)

' walk over list of embedded files and get their data
dim c as Integer = pdf.GetEmbeddedFileCount
for i as Integer = 0 to c-1
    dim e as DynaPDFFileSpecMBS
    if pdf.GetEmbeddedFile(i, e, true) then
        dim data as string = e.Buffer
        Break
    end if
next

' cleanup
call pdf.CloseFile
```

See also GetEmbeddedFile function in DynaPDF manual.

### 70.34.298 GetEmbeddedFileCount as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The function returns the number of embedded files available in the PDF file.  
**Example:**

```vbnet
' new PDF Environment
dim pdf as new MyDynapdfMBS
call pdf.CreateNewPDF nil

' import PDF file
dim f as FolderItem = SpecialFolder.Desktop.Child("Create PDF with hidden data.pdf")
call pdf.SetImportFlags(pdf.kifImportAll + pdf.kifImportAsPage)
call pdf.OpenImportFile(f)
call pdf.ImportPDFFile(1)

' walk over list of embedded files and get their data
dim c as Integer = pdf.GetEmbeddedFileCount
for i as Integer = 0 to c-1
    dim e as DynaPDFFileSpecMBS
    if pdf.GetEmbeddedFile(i, e, true) then
        dim data as string = e.Buffer
        Break
    end if
next
end if
next

// cleanup
call pdf.CloseFile

See also GetEmbeddedFileCount function in DynaPDF manual.

70.34.299 GetEMFPatternDistance as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: A new function in dynapdf which is not documented.
See also GetEMFPatternDistance function in DynaPDF manual.

70.34.300 GetErrLogMessage(index as Integer) as DynaPDFErrorMBS

Notes: Index from 0 to GetErrLogMessageCount-1.
See also GetErrLogMessage function in DynaPDF manual.

70.34.301 GetErrLogMessageCount as Integer

See also GetErrLogMessageCount function in DynaPDF manual.

70.34.302 GetErrorMessage as string

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function returns the last error message as a string, or "" if no error occurred.
See also GetErrorMessage function in DynaPDF manual.
70.34.303 GetErrorMode as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the current error mode. See also GetErrorMode function in DynaPDF manual.

70.34.304 GetField(index as Integer) as DynaPDFFieldMBS

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function retrieves the most important properties of a field. **Deprecated:** This item is deprecated and should no longer be used. You can use GetFieldEx instead.

70.34.305 GetFieldBackColor as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the default background color used for newly created interactive form fields. See also GetFieldBackColor function in DynaPDF manual.

70.34.306 GetFieldBorderColor as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the default border color used for newly created interactive form fields. See also GetFieldBorderColor function in DynaPDF manual.

70.34.307 GetFieldBorderStyle(Field as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the border style of a specific form field. See also GetFieldBorderStyle function in DynaPDF manual.

70.34.308 GetFieldBorderWidth(aField as Integer) as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the line width of the border of a field. See also GetFieldBorderWidth function in DynaPDF manual.
70.34.309 GetFieldChoiceValue(Field as Integer, ValIndex as Integer) as DynaPDFChoiceValueMBS

MBS DynaPDF Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries the choice values for this field. See also GetFieldChoiceValue function in DynaPDF manual.

70.34.310 GetFieldColor(Field as Integer, ColorType as Integer, byref ColorSpace as Integer, byref ColorValue as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function retrieves a specific color of an interactive form field. See also GetFieldColor function in DynaPDF manual.

70.34.311 GetFieldCount as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the number of fields contained in the document. See also GetFieldCount function in DynaPDF manual.

70.34.312 GetFieldEx(index as Integer) as DynaPDFFieldExMBS

MBS DynaPDF Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the most important properties of a field. **Example:**

```vbnet
dim pdf as new MyDynapdfMBS
pdf.SetLicenseKey "Lite" // For this example you can use a Lite, Pro or Enterprise License
call pdf.CreateNewPDF(nil)
call pdf.SetImportFlags(BitwiseOr(pdf.kifImportAll, pdf.kifImportAsPage))

dim filePath as FolderItem=SpecialFolder.Desktop.Child("acroform.pdf")
if (pdf.OpenImportFile(filePath, pdf.kptOpen, "]0) then
MsgBox "Input file "]“ not found!"
quit
end if

// import all pages
dim r as Integer = pdf.ImportPDFFile( 1, 1.0, 1.0)
```
// now check all fields
dim n as Integer = pdf.GetFieldCount
for i as Integer = 0 to n-1
    dim f as DynaPDFFieldExMBS = pdf.GetFieldEx(i)
    break // inspect in debugger
next

Notes: See dynapdf.help.pdf for more details.
See also GetFieldEx function in DynaPDF manual.

70.34.313 GetFieldExpValCount(Field as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function returns the number of values/export values which are defined for a field. See also GetFieldExpValCount function in DynaPDF manual.

70.34.314 GetFieldExpValue(Field as Integer) as string

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This function retrieves the export value(s) of a check box, list box, or combo box. See also GetFieldExpValue function in DynaPDF manual.

70.34.315 GetFieldExpValueEx(Field as Integer, ValIndex as Integer, byref Value as string, byref ExpValue as string, byref Selected as boolean) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This function can be used to enumerate the choice values of a combo box, list box, or radio button. See also GetFieldExpValueEx function in DynaPDF manual.

70.34.316 GetFieldFlags(Field as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function returns the flags of a specific interactive form field. See also GetFieldFlags function in DynaPDF manual.
70.34. **CLASS DYNAPDFMBS**

### 70.34.317 GetFieldGroupType(Field as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the base type of a field group.
See also GetFieldGroupType function in DynaPDF manual.

### 70.34.318 GetFieldHighlightMode(Field as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the highlight mode of buttons, checkboxes, and signature fields.
See also GetFieldHighlightMode function in DynaPDF manual.

### 70.34.319 GetFieldIndex(Field as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the index or tab order of the field.
See also GetFieldIndex function in DynaPDF manual.

### 70.34.320 GetFieldMapName(Field as Integer) as string

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function retrieves the mapping name of a specific form field if set.
**Notes:** The result string is in unicode or ASCII encoding.
See also GetFieldMapName function in DynaPDF manual.

### 70.34.321 GetFieldName(Field as Integer) as string

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function retrieves the name of a specific interactive form field.
See also GetFieldName function in DynaPDF manual.

### 70.34.322 GetFieldOrientation(Field as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the orientation of a field.
See also GetFieldOrientation function in DynaPDF manual.
70.34.323 GetFieldTextAlign(Field as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the text alignment of a text field or button field.
See also GetFieldTextAlign function in DynaPDF manual.

70.34.324 GetFieldTextColor as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the default text color used for newly created fields.
See also GetFieldTextColor function in DynaPDF manual.

70.34.325 GetFieldToolTip(Field as Integer) as string

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function retrieves a pointer to the tool tip string of a specific interactive form field.
**Notes:** The result string has either unicode or ascii encoding.
See also GetFieldToolTip function in DynaPDF manual.

70.34.326 GetFieldType(Field as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the field type.
See also GetFieldType function in DynaPDF manual.

70.34.327 GetFillColor as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the current color used for fillings.
See also GetFillColor function in DynaPDF manual.

70.34.328 GetFontCount as Integer

MBS DynaPDF Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries the font count.
See also GetFontCount function in DynaPDF manual.
70.34. **CLASS DYNAPDFMBS**

### 70.34.329 GetFontEx(index as Integer) as DynaPDFFontMBS


**Function:** Queries the font information for the font specified by the index value.

**Example:**

```realbasic
// create PDF object with page
dim pdf as new DynaPDFMBS
call pdf.CreateNewPDF(nil)
call pdf.Append

// draw some text
call pdf.SetFont "Times", pdf.kfsItalic, 40.0, true, pdf.kcp1252
call pdf.WriteFText pdf.ktaCenter, "My first Realbasic output!"

// and list all fonts:
dim n as Integer = pdf.GetFontCount-1
for i as Integer = 0 to n
    MsgBox pdf.GetFontEx(i).FontName
next
```

**Deprecated:** This item is deprecated and should no longer be used. You can use GetFontInfo instead.

**Notes:**
- Returns nil on any error.
- Index from 0 to GetFontCount-1.

---

### 70.34.330 GetFontInfoEx(index as Integer) as DynaPDFFontInfoMBS


**Function:** Retrieves the most important properties of a font.

**Notes:**
- This function accepts a font handle instead. A font handle is a simple array index. To enumerate all fonts of a document execute the function in a loop from zero to GetFontCount - 1.

If the function succeeds the return value is font info object. If the function fails the return value is nil.

See also GetFontInfoEx function in DynaPDF manual.
70.34.331 GetFontOrigin as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function returns the current font origin. See also GetFontOrigin function in DynaPDF manual.

70.34.332 GetFontSearchOrder as Integer()

MBS DynaPDF Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns the font search order. Notes:
The values in the array use this constants:

kfbtTrueType TrueType, TrueType Collections, or OpenType fonts with TrueType outlines
kfbtType1 Type1 font
kfbtOpenType OpenType font with Postscript outlines
kfbtStdFont PDF Standard font
kfbtDisabled This value can be used to disable a specific font format.

The array has 4 values. See also GetFontSearchOrder function in DynaPDF manual.

70.34.333 GetFontSelMode as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function returns the current font selection mode. See also GetFontSelMode function in DynaPDF manual.

70.34.334 GetFontWeight as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function returns the weight that will be used to emulate a bold font style. See also GetFontWeight function in DynaPDF manual.
70.34.335  GetFTextHeight(Align as Integer, aText as string) as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function measures the height of a formatted text block. Notes: The text parameter is converted to unicode. See also GetFTextHeight function in DynaPDF manual.

70.34.336  GetFTextHeightAnsi(Align as Integer, aText as string) as Double

MBS DynaPDF Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function measures the height of a formatted text block. Notes: The text parameter is converted to ANSI.

70.34.337  GetFTextHeightEx(Width as Double, Align as Integer, aText as string) as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function measures the height of a formatted text block. Notes: The text parameter is converted to unicode. See also GetFTextHeightEx function in DynaPDF manual.

70.34.338  GetFTextHeightExAnsi(Width as Double, Align as Integer, aText as string) as Double

MBS DynaPDF Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function measures the height of a formatted text block. Notes: The text parameter is converted to ANSI.

70.34.339  GetGlyphIndex(Index as UInt32) as Integer

MBS DynaPDF Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function returns the glyph index of the given code page or Unicode index. Notes: How Index must be defined depends on the code page with which the font was loaded. For example, if the font was loaded with a 8 bit code page, then indexes below 256 are treated as index into the code page table. Higher indexes are treated as Unicode value in this case. Note that all Unicode encoded glyphs of the font are accessible in this case, also if the font was loaded with a 8 bit code page!
At time of publication the function does not support CJK code pages which require a conversion to Unicode, e.g. cpCJK_Big5_Uni, cpCJK_EUC_JP_Uni, and so on.

If the function succeeds the return value is greater or equal zero. If the function fails the return value is a negative error code.
See also GetGlyphIndex function in DynaPDF manual.

**70.34.340 GetGlyphOutline(Index as UInt32) as DynaPDFGlyphOutlineMBS**

**Function:** The function returns the outline of a glyph of the active font.
**Notes:**
Note that not all glyphs have an outline. A space character, for example, has no outline and therefore the size can be zero. The function returns normalized outlines scaled to a font size of 1000 units.

Please see dynapdf_help.pdf and our example project on how to process the outline data.
See also GetGlyphOutline function in DynaPDF manual.

**70.34.341 GetGoToAction(index as Integer, Decompress as Boolean = false, ImageParseFlags as Integer = & h00000080) as DynaPDFGoToActionMBS**

**Function:** Queries details for a GoToR action.
**Notes:**
Index is from 0 to GetActionCount-1.

If Decompress is true, all file specification containing compressed data are uncompressed. And ImageParseFlags defines how GetImageObj is called internally to decompress image. Default is to only get image info, but you can pass other values to actually get image data.
See also GetGoToAction function in DynaPDF manual.

**70.34.342 GetGoToRAction(index as Integer, Decompress as Boolean = false, ImageParseFlags as Integer = & h00000080) as DynaPDFGoToActionMBS**

**Function:** Queries details for a GoTo action.
### 70.34.343 GetGStateFlags as Integer

**MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:** The function returns the current graphics state flags.

*See also GetGStateFlags function in DynaPDF manual.*

### 70.34.344 GetHideAction(index as Integer) as DynaPDFHideActionMBS

**MBS DynaPDF Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:** Queries details for a hide action.

**Notes:** Index is from 0 to GetActionCount-1.

*See also GetHideAction function in DynaPDF manual.*

### 70.34.345 GetIconColor as Integer

**MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:** The function returns the icon color used for newly created text annotations.

*See also GetIconColor function in DynaPDF manual.*

### 70.34.346 GetImageBuffer as string

**MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:** Returns the image buffer.

*See also GetImageBuffer function in DynaPDF manual.*

### 70.34.347 GetImageBufferMemory as memoryblock

**MBS DynaPDF Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:** Returns the image buffer.
**70.34.348 GetImageCount(File as folderitem) as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The function returns the number of images contained in a multi page image.  
See also GetImageCount function in DynaPDF manual.  
See also:

- **70.34.349 GetImageCount(Path as string) as Integer**

**70.34.349 GetImageCount(Path as string) as Integer**

**Function:** The function returns the number of images contained in a multi page image.  
See also GetImageCount function in DynaPDF manual.  
See also:

- **70.34.348 GetImageCount(File as folderitem) as Integer**

**70.34.350 GetImageCountEx(Buffer as Memoryblock) as Integer**

**Function:** The function determines the number of images in a multi-page image in the same way as GetImageCount(), but accepts a file buffer as input.  
See also GetImageCountEx function in DynaPDF manual.  
See also:

- **70.34.351 GetImageCountEx(Buffer as string) as Integer**

**70.34.351 GetImageCountEx(Buffer as string) as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The function determines the number of images in a multi-page image in the same way as GetImageCount(), but accepts a file buffer as input.  
See also GetImageCountEx function in DynaPDF manual.  
See also:

- **70.34.350 GetImageCountEx(Buffer as Memoryblock) as Integer**
70.34.352 GetImageHeight(Handle as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the height of an image in pixel.
See also GetImageHeight function in DynaPDF manual.

70.34.353 GetImageObj(Handle as UInt32, Flags as Integer) as DynaPDFImageMBS

MBS DynaPDF Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function retrieves the properties of an image as well as the decompressed image buffer if needed.
**Notes:**
For the flags use the constants: kpfNone, kpfDecompAllImages, kpfNoJPXDecode, kpfDitherImagesToBW, kpfConvImagesToGray, kpfConvImagesToRGB, kpfConvImagesToCMYK or kpfImageInfoOnly.

By default all images are returned decompressed, with exception of image types which are already stored in a valid file format like JPEG and JPEG 2000 images.
If all image types should be decompressed set the flag kpfDecompressAllImages.
This function allocates memory that should be released with FreeImageObj when finish.
Image handles are simple array indexes. The number of image objects can be determined with GetImageObjCount. Note that this array does not include inline images which are stored in content streams. Such images can only be accessed with ParseContent().

Returns the function succeeds the return value is true. If the function fails the return value is false.
See also GetImageObj function in DynaPDF manual.

70.34.354 GetImageObjCount as Integer

MBS DynaPDF Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of image objects which were loaded with DynaPDF functions or imported from external PDF files.
**Notes:**
The images can be accessed with GetImageObj().
The return value is the number of image objects. This function cannot fail.
See also GetImageObjCount function in DynaPDF manual.
### 70.34.355 GetImageWidth(Handle as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function**: The function returns the width of an image in pixel. See also `GetImageWidth` function in DynaPDF manual.

### 70.34.356 GetImportDataAction(index as Integer, Decompress as Boolean = false, ImageParseFlags as Integer = &h00000080) as DynaPDFImportDataActionMBS

MBS DynaPDF Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function**: Queries details for an import action. **Notes**: Index is from 0 to GetActionCount-1.

If Decompress is true, all file specification containing compressed data are uncompressed. And ImageParseFlags defines how `GetImageObj` is called internally to decompress image. Default is to only get image info, but you can pass other values to actually get image data. See also `GetImportDataAction` function in DynaPDF manual.

### 70.34.357 GetImportFlags as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function**: The function returns the current import flags used to import PDF files. See also `GetImportFlags` function in DynaPDF manual.

### 70.34.358 GetImportFlags2 as Integer

MBS DynaPDF Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function**: Queries import flags 2. See also `GetImportFlags2` function in DynaPDF manual.

### 70.34.359 GetInBBox(PageNum as Integer, Boundary as Integer) as DynaPDFRectMBS

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function**: The function retrieves a bounding box of an external PDF page. **Example:**
dim pdf as new MyDynaPDFMBS

// import some PDF
call pdf.CreateNewPDF(nil)
call pdf.OpenImportFile(file, 0, "")
call pdf.SetImportFlags(pdf.kifImportAsPage) // important! It makes the rendering faster.
call pdf.ImportPDFFile(1,1.0,1.0)

dim bounds as DynaPDFRectMBS = pdf.GetInBBox(1, pdf.kpbMediaBox)

See also GetInBBox function in DynaPDF manual.

70.34.360 GetInDocInfo(DInfo as Integer, byref value as string) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function retrieves a document info entry from an external PDF file as Unicode string. See also GetInDocInfo function in DynaPDF manual.

70.34.361 GetInDocInfoCount as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the number of available document info entries of the currently opened import file or a negative error code on failure. See also GetInDocInfoCount function in DynaPDF manual.

70.34.362 GetInDocInfoEx(index as Integer, byref DInfo as Integer, byref key as string, byref value as string) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns a document info entry from the currently opened import file. **Notes:**
The key result is an ASCII string.
The value result is an ASCII or Unicode string. See also GetInDocInfoEx function in DynaPDF manual.
70.34.363  GetInEncryptionFlags as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the encryption flags of the currently opened import file. See also GetInEncryptionFlags function in DynaPDF manual.

70.34.364  GetInFieldCount as Integer

MBS DynaPDF Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns number of field in open import file. See also GetInFieldCount function in DynaPDF manual.

70.34.365  GetInIsCollection as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function checks whether the currently opened import file is a portable collection. **Notes:** Changed to integer in order to allow returning error codes besides 0 for false and 1 for true. See also GetInIsCollection function in DynaPDF manual.

70.34.366  GetInIsEncrypted as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function checks whether the currently opened import file is encrypted. **Notes:** Changed to integer in order to allow returning error codes besides 0 for false and 1 for true. See also GetInIsEncrypted function in DynaPDF manual.

70.34.367  GetInIsSigned as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function can be used to determine whether a PDF file contains a digital signature. **Notes:** Changed to integer in order to allow returning error codes besides 0 for false and 1 for true. See also GetInIsSigned function in DynaPDF manual.

70.34.368  GetInIsTrapped as Integer

MBS DynaPDF Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the input PDF is trapped.
Notes: Changed to integer in order to allow returning error codes besides 0 for false and 1 for true.
See also GetInIsTrapped function in DynaPDF manual.

### 70.34.369 GetInIsXFAForm as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Whether the input PDF is a XFA form.
Notes:
See the dynapdf manual for details.
Changed to integer in order to allow returning error codes besides 0 for false and 1 for true.
See also GetInIsXFAForm function in DynaPDF manual.

### 70.34.370 GetInMetadata(PageNum as Integer) as String

Function: Access the optional metadata streams of pages or the global metadata stream of the current open import file.
Notes:
Metadata streams are in XMP format that is a superset of XML. The PDF file must be opened with OpenImportFile or OpenImportBuffer beforehand.
Although the global XMP stream does usually exist in todays PDF files, metadata streams are optional and maybe not present. The function returns true if no error occurs, also if no metadata stream is present.
See also GetInMetadata function in DynaPDF manual.

### 70.34.371 GetInOrientation(PageNum as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The function returns the orientation of a specific page within the currently open import file (see also OpenImportFile()).
See also GetInOrientation function in DynaPDF manual.

### 70.34.372 GetInPageCount as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The function returns the number of pages contained in an external PDF file.
See also GetInPageCount function in DynaPDF manual.
70.34.373  GetInPDFVersion as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the minor PDF version number of an external PDF file.
See also GetInPDFVersion function in DynaPDF manual.

70.34.374  GetInPrintSettings as DynapdfPrintSettingsMBS

MBS DynaPDF Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries the print settings for the imported document.
**Notes:** This is a PDF 1.7 extension.
See also GetInPrintSettings function in DynaPDF manual.

70.34.375  GetInRepairMode as Integer

MBS DynaPDF Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function can be used to determine whether the current open import file was opened in repair or normal mode.
**Notes:** Changed to integer in order to allow returning error codes besides 0 for false and 1 for true.
See also GetInRepairMode function in DynaPDF manual.

70.34.376  GetIsFixedPitch as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns 1 if the active font is a fixed pitch font or 0 if the font is a variable pitch font.
**Notes:** Changed to integer in order to allow returning error codes besides 0 for false and 1 for true.

70.34.377  GetIsTaggingEnabled as boolean

MBS DynaPDF Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether tagging is enabled.
See also GetIsTaggingEnabled function in DynaPDF manual.

70.34.378  GetItalicAngle as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the italic angle in degrees that will be used to emulate italic style fonts.
70.34.379 GetJavaScript(Handle as Integer) as string

Notes: The result text string has either unicode or ASCII encoding.
See also GetJavaScript function in DynaPDF manual.

70.34.380 GetJavaScriptAction(Handle as Integer) as string

Notes: May return an unicode string.
See also:

- 70.34.381 GetJavaScriptAction(ObjType as Integer, ObjHandle as Integer, ActIndex as Integer, byref ObjEvent as Integer) as string

70.34.381 GetJavaScriptAction(ObjType as Integer, ObjHandle as Integer, ActIndex as Integer, byref ObjEvent as Integer) as string

Notes: May return an unicode string.

The ObjEvent parameter was added in plugin version 9.3 and contains a value from the koe* constants.
See also:

- 70.34.380 GetJavaScriptAction(Handle as Integer) as string

70.34.382 GetJavaScriptActionEx(index as Integer) as DynaPDFJavaScriptActionMBS

Notes: Index is from 0 to GetActionCount-1.
See also GetJavaScriptActionEx function in DynaPDF manual.
70.34.383  GetJavaScriptCount as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:** The function returns the number of global JavaScripts contained in a document.
See also GetJavaScriptCount function in DynaPDF manual.

70.34.384  GetJavaScriptEx(Name as string) as string

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:** The function returns a global JavaScript as string by using the script s name instead of a handle to identify the script.
**Notes:** The result string is an unicode or an ASCII string.
See also GetJavaScriptEx function in DynaPDF manual.

70.34.385  GetJavaScriptName(Handle as Integer) as string

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:** The function returns the name of a global JavaScript.
**Notes:** The result string has either unicode or ASCII encoding.
See also GetJavaScriptName function in DynaPDF manual.

70.34.386  GetJPEGQuality as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:** The function returns the current JPEG compression quality in percent used for newly inserted images which are compressed with JPEG.
See also GetJPEGQuality function in DynaPDF manual.

70.34.387  GetJPEGVersion as String

**Notes:** Currently reporting 9.1 for version 9b.

70.34.388  GetLanguage as string

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:** The function returns the language identifier of the document as an ISO 3166 language tag or IANA
70.34.389 GetLastTextPosX as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the x coordinate of the last printed text.

70.34.390 GetLastTextPosY as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the y coordinate of the last printed text.

70.34.391 GetLaunchAction(index as Integer, Decompress as Boolean = false, ImageParseFlags as Integer = & h00000080) as DynaPDFLaunchActionMBS

MBS DynaPDF Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries details for a launch action. **Notes:**
- Index is from 0 to GetActionCount-1.
- If Decompress is true, all file specification containing compressed data are uncompressed.
- And ImageParseFlags defines how GetImageObj is called internally to decompress image. Default is to only get image info, but you can pass other values to actually get image data.
- See also GetLaunchAction function in DynaPDF manual.

70.34.392 GetLayerConfig(Index as Integer) as DynaPDFOCLayerConfigMBS

MBS DynaPDF Plugin, Plugin Version: 17.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the most important properties of a layer configuration. **Notes:**
- A PDF file can contain one or more layer configurations so that different layers can be initially shown or hidden.
- A PDF file that contains layers (Optional Content Groups in PDF syntax) contains usually at least a default configuration dictionary. This configuration is loaded by default when the visibility state of a layer or optional content group must be determined, e.g. when rendering a page.
- To determine the number of available configurations call GetLayerConfigCount(). The first index is denoted tag, or "" if not set. See also GetLanguage function in DynaPDF manual.
If the function succeeds the return value is the object. If the function fails the return value is nil.

70.34.393 GetLayerConfigCount as Integer

MBS DynaPDF Plugin, Plugin Version: 17.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of available layer configurations.

**Notes:**
Note that it is possible that a document contains layers but no layer configuration. To determine whether a document contains layers or optional content groups use GetOCGCount().
To load a specific layer configuration call LoadLayerConfig().

70.34.394 GetLeading as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the current leading.
See also GetLeading function in DynaPDF manual.

70.34.395 GetLineCapStyle as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the current line cap style used for vector graphics.
See also GetLineCapStyle function in DynaPDF manual.

70.34.396 GetLineJoinStyle as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the current line join style used for vector graphics.
See also GetLineJoinStyle function in DynaPDF manual.

70.34.397 GetLineWidth as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the current line width used for stroked vector graphics and the border of interactive objects.
70.34. CLASS DYNAPDFMBS

See also GetLineWidth function in DynaPDF manual.

70.34.398 GetLinkHighlightMode as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the current highlight mode used for newly created annotations. See also GetLinkHighlightMode function in DynaPDF manual.

70.34.399 GetLogMetafileSize(FileName as folderitem) as DynapdfRectMBS

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function retrieves the logical bounding box of an enhanced or Windows metafile. See also GetLogMetafileSize function in DynaPDF manual.

70.34.400 GetLogMetafileSizeEx(Buffer as Memoryblock) as DynaPDFRectMBS

MBS DynaPDF Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function retrieves the logical bounding box of an enhanced or Windows metafile. See also GetLogMetafileSizeEx function in DynaPDF manual. See also:

- 70.34.401 GetLogMetafileSizeEx(Buffer as string) as DynapdfRectMBS

70.34.401 GetLogMetafileSizeEx(Buffer as string) as DynapdfRectMBS

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function retrieves the logical bounding box of an enhanced or Windows metafile. See also GetLogMetafileSizeEx function in DynaPDF manual. See also:

- 70.34.400 GetLogMetafileSizeEx(Buffer as Memoryblock) as DynaPDFRectMBS

70.34.402 GetMatrix(byref Matrix as DynapdfMatrixMBS) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function retrieves the current transformation. See also GetMatrix function in DynaPDF manual.
70.34.403 GetMaxFieldLen(TxtField as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the allowed maximum string length of a text field, or zero if the length is not restricted. See also GetMaxFieldLen function in DynaPDF manual.

70.34.404 GetMetaConvFlags as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the conversion flags used to convert enhanced metafiles to PDF. See also GetMetaConvFlags function in DynaPDF manual.

70.34.405 GetMetadata(ObjType as Integer, Handle as Integer) as String

MBS DynaPDF Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function can be used to access the optional metadata streams of pages, fonts, images, pages, templates, as well as the global metadata stream that is associated with the Catalog object. **Notes:**
Metadata streams are in XMP format that is a superset of XML.
The global metadata stream will be created when this function is called. The returned stream is a preview of the XMP stream that will be stored in the file when CloseFile or CloseFileEx is called. Note that the creation and modification date will be updated when the file is closed.
The original global XMP stream of external PDF files can be accessed with GetInMetadata().
Metadata streams are optional and maybe not present. The function returns true if no error occurs, also if no metadata stream is present. See also GetMetadata function in DynaPDF manual.

70.34.406 GetMissingGlyphs as UInt32()

MBS DynaPDF Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an array with missing glyphs. **Notes:** See also GetMissingGlyphsString. See also GetMissingGlyphs function in DynaPDF manual.

70.34.407 GetMissingGlyphsString as String

MBS DynaPDF Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a string containing the missing glyphs characters.
70.34. CLASS DYNAPDFMBS

Notes:
This is a convenience function which builds a string from the array given by pdfGetMissingGlyphs.
See also GetMissingGlyphs.

70.34.408 GetMiterLimit as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function returns the current miter limit used to draw stroked vector graphics. See also GetMiterLimit function in DynaPDF manual.

70.34.409 GetMovieAction(index as Integer, Decompress as Boolean = false, ImageParseFlags as Integer = &h00000080) as DynaPDFFieldMBS

MBS DynaPDF Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Queries details for a movie action. Notes:
Index is from 0 to GetActionCount-1.
If Decompress is true, all file specification containing compressed data are uncompressed. And ImageParseFlags defines how GetImageObj is called internally to decompress image. Default is to only get image info, but you can pass other values to actually get image data. See also GetMovieAction function in DynaPDF manual.

70.34.410 GetNamedAction(index as Integer) as DynaPDFNamedActionMBS

MBS DynaPDF Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Queries details for a named action. Notes: Index is from 0 to GetActionCount-1. See also GetNamedAction function in DynaPDF manual.

70.34.411 GetNamedDest(index as Integer) as DynaPDFNamedDestMBS

MBS DynaPDF Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Queries information about the named destination with the given index. Notes:
70.34.412 GetNamedDestCount as Integer

MBS DynaPDF Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries number of named destination objects.

See also GetNamedDestCount function in DynaPDF manual.

70.34.413 GetNeedAppearance as boolean

MBS DynaPDF Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether appearance is needed.

See also GetNeedAppearance function in DynaPDF manual.

70.34.414 GetObjActionCount(ObjType as Integer, ObjHandle as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the number of actions used by an object.

70.34.415 GetObjActions(ObjType as Integer, ObjHandle as Integer, byref Actions as DynaPDFObjActionsMBS) as Integer

MBS DynaPDF Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries details for an object action.

**Notes:**

Index is from 0 to GetActionCount-1.

The function retrieves the first action and additional trigger events that should be executed when a specific event occurs.
If the object type is a page, then use the page number as handle.

Trigger events are supported by the global Catalog object (this is the document root), Pages, and Form Fields. All other objects do not support trigger events.
Actions are defined as a single linked list. That means one action can execute another action (if NextAction of that action is >= 0).
Note that an action can reference itself! The application must check whether an action is already in the
execution list before it will be executed.

If an error occurred, the plugin returns nil.
On success, we provide the DynaPDFObjActionsMBS object in Actions parameter.

Return values:

<0  An error occurred, e.g. due to an invalid handle.
0   The object contains no action or trigger event.
1   The object contains an action.
2   The object contains a trigger event.
3   The object contains an action and a trigger event.

See also GetObjActions function in DynaPDF manual.

70.34.416  GetOCG(Handle as UInt32) as DynaPDFOCGMBS

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns the properties of an OCG, also called layer.
Notes:
An OCG handle is a simple array index. You can loop over all available OCGs from 0 to GetOCGCount - 1.
If the member HaveContUsage is true, the OCG contains a Content Usage dictionary. The contents of this
dictionary can be accessed with the function GetOCGContUsage. A Content Usage dictionary contains
additional information about a layer or OCG.

If the OCG is also included in an application event, this is the case if AppEvent is non-zero, then the Content
Usage dictionary is used to control the visibility state of the layer. The member Categories specifies which
categories control the visibility state.

Returns nil on any error.
See also GetOCG function in DynaPDF manual.

70.34.417  GetOCGContUsage(Handle as UInt32) as DynaPDFOCGContUsageMBS

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns the properties of the Content Usage dictionary that is associated with an OCG or layer.
Notes:
If the OCG is not included in an application event, then the contents in this dictionary serves as pure information.
If the OCG is included in one or more application events, then these settings control also the visibility state of the OCG. The function GetOCG returns the events and categories which control the layer visibility.
If UserNamesCount is greater zero, the dictionary contains also user names. The user names can be accessed with GetOCGUsageUserName.

Returns nil on any error.
See also GetOCGContUsage function in DynaPDF manual.

70.34.418  GetOCGCount as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns the number of OCGs or layers which are available in document.
Notes: This function cannot fail, the return value is always greater or equal zero.
See also GetOCGCount function in DynaPDF manual.

70.34.419  GetOCGUsageUserName(Handle as UInt32, Index as UInt32, byref Name as String) as Boolean

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns a user name of a Content Usage dictionary that is associated with an OCG or layer.
Notes: The functions a pointer of the original string that is stored in the PDF file.
If the function succeeds the return value is true. If the function fails the return value is false.
See also GetOCGUsageUserName function in DynaPDF manual.

70.34.420  GetOCUINode(Node as Integer) as DynaPDFOCUINodeMBS

Function: Retrieves the most important properties of an Optional Content UI node (UI stands for User Interface).
Notes: If the PDF file was not already imported with ImportPDFFile() the function ImportOCPProperties() must be called to import the global Optional Content Properties.
UI nodes are part of a layer configuration. Therefore, a layer configuration must be loaded with LoadLayerConfig() before the function can be called.
Optional Content Groups (OCGs) which are returned by this function should be visible in the user interface of a viewer application. All other OCGs should not be shown by default.

UI nodes are stored in a single linked list. To get the pointer of the root node set the parameter Node to 0. The parameter OutNode will be ignored in this case but it is required otherwise.

The next node of the root is in the NextItem property. If no further node is available the return value will be 0.

Every node can contain one or more child nodes, an optional label, or a reference to an OCG.

### 70.34.421 GetOpacity as Double

**MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:** The function returns the opacity value used to draw the visible appearance of an annotation (requires Acrobat 5 or higher).

See also GetOpacity function in DynaPDF manual.

### 70.34.422 GetOrientation as Integer

**MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:** The function returns the orientation of the current open page if an open page was detected or the default orientation for newly created pages if no open page was detected.

See also GetOrientation function in DynaPDF manual.

### 70.34.423 GetOutputIntent(Index as Integer) as DynaPDFOutputIntentMBS

**MBS DynaPDF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:** Returns an output intent as well as the properties of it.

**Notes:**

An output intent is an ICC profile that describes the characteristics of the output device. The profile is mostly embedded but certain standards like PDF/X 4p, for example, allow also the usage of non-embedded profiles.

The parameter Index is the array index of the output intent. To determine the number of available intents call GetOutputIntentCount.

Returns nil in case of error.

See also GetOutputIntent function in DynaPDF manual.
70.34.424 GetOutputIntentCount as Integer

**Function:** Returns the number of available output intents.  
See also GetOutputIntentCount function in DynaPDF manual.

70.34.425 GetPage(PageNum as UInt32) as DynaPDFPageMBS

**Function:** Returns the page object for the given page number.  
**Notes:** If you like to open a page for editing, please use editpage function.

70.34.426 GetPageAnnot(index as Integer) as DynaPDFAnnotationMBS

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Retrieves the page annotation with the given index.  
**Deprecated:** This item is deprecated and should no longer be used. You can use GetPageAnnotEx instead.

70.34.427 GetPageAnnotCount as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Queries the page annotation count.  
See also GetPageAnnotCount function in DynaPDF manual.

70.34.428 GetPageAnnotEx(index as Integer) as DynaPDFAnnotationExMBS

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Queries an extended annotation with the given index.  
See also GetPageAnnotEx function in DynaPDF manual.

70.34.429 GetPageColorSpaces as DynaPDFColorSpaceMBS()

**Function:** Queries for current open page the color spaces used.  
**Notes:**  
Color spaces used for drawing colors (Stroke and Fill Color) and for image color space.  
The list may be empty if for example everything is drawn in standard color spaces like RGB.
70.34. CLASS DYNAPDFMBS

70.34.430 GetPageCoords as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries the page coordinate system setting.  
**Notes:** The native coordinate system of the Portable Document Format is bottom up.  
See also GetPageCoords function in DynaPDF manual.

70.34.431 GetPageCount as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the number of pages of the current PDF file if any.  
See also GetPageCount function in DynaPDF manual.

70.34.432 GetPageField(Index as Integer) as DynaPDFFieldMBS

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function retrieves the most important properties of a field.  
**Deprecated:** This item is deprecated and should no longer be used. You can use GetPageFieldEx instead.

70.34.433 GetPageFieldCount as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the number of fields used by a page.  
See also GetPageFieldCount function in DynaPDF manual.

70.34.434 GetPageFieldEx(Index as Integer) as DynaPDFFieldExMBS

MBS DynaPDF Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function retrieves the most important properties of a field.  
**Notes:** The parameter Index must be a valid index to the page’s field array. To enumerate the fields of a page execute the function in a loop from 0 to GetPageFieldCount - 1.  
See also GetPageFieldEx function in DynaPDF manual.

70.34.435 GetPageHeight as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the height of the currently open page.  
See also GetPageHeight function in DynaPDF manual.
70.34.436 GetPageLabel(index as Integer, byref Label as DynapdfPageLabelMBS) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function retrieves the properties of a page label. See also GetPageLabel function in DynaPDF manual.

70.34.437 GetPageLabelCount as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the number of page labels defined in the document. See also GetPageLabelCount function in DynaPDF manual.

70.34.438 GetPageLayout as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the page layout that is used when opening the document with Adobe's Acrobat. See also GetPageLayout function in DynaPDF manual.

70.34.439 GetPageMode as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the page mode that is used when opening the document with Adobe's Acrobat. See also GetPageMode function in DynaPDF manual.

70.34.440 GetPageNum as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the page number of the currently open page. See also GetPageNum function in DynaPDF manual.

70.34.441 GetPageText(stack as DynaPDFStackMBS) as boolean

MBS DynaPDF Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function can be used to extract the text of a page or template, or to find a specific text that should be replaced or deleted with the function ReplacePageText() or ReplacePageTextEx(). **Notes:**
InitStack must be called before you use GetPageText.

If you have problems with asian characters, please make sure you use SetCMapDir and load the CMAPs. Requires DynaPDF Pro license. See also GetPageText function in DynaPDF manual.

70.34.442 GetPageWidth as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function returns the width of the currently open page. See also GetPageWidth function in DynaPDF manual.

70.34.443 GetPDFVersion as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function returns the minor version of the output PDF file as Integer value. Notes: Zero stand for PDF 1.0, one for PDF 1.1 and so on. See also GetPDFVersion function in DynaPDF manual.

70.34.444 GetPNGVersion as String


70.34.445 GetPrintSettings as DynapdfPrintSettingsMBS

MBS DynaPDF Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Queries the print settings for the current document. Notes: This is a PDF 1.7 extension. See also GetPrintSettings function in DynaPDF manual.

70.34.446 GetResetAction(Handle as UInt32) as DynaPDFResetFormActionMBS

See also GetResetAction function in DynaPDF manual.

70.34.447 GetResolution as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the resolution in DPI (Dots per Inch), in which images are stored by DynaPDF. See also GetResolution function in DynaPDF manual.

70.34.448 GetSaveNewImageFormat as boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** If false, images are not downscaled if necessary. See also GetSaveNewImageFormat function in DynaPDF manual.

70.34.449 GetSeparationInfo(byref Colorant as string, byref ColorSpace as Integer) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the separation info stored in the current open page. See also GetSeparationInfo function in DynaPDF manual.

70.34.450 GetSpaceWidth(FontHandle as Integer, FontSize as Double) as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the width of the space character of the font depending on the font size. **Notes:**

If the font contains no space character a default size is used to compute the space width. The parameter FontHandle must be a valid pointer to a PDF font. Such a reference is returned by GetPageText, EnumDocFonts, or by the content parser (see ParseContent).

Returns: If the function succeeds the return value is the space width. If the function fails the return value is zero. This function does not use the exception handling of DynaPDF. No error message is set on failure. See also GetSpaceWidth function in DynaPDF manual.
70.34. **CLASS DYNAPDFMBS**

70.34.451 **GetStrokeColor as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the current stroke color. See also GetStrokeColor function in DynaPDF manual.

70.34.452 **GetSubmitAction(Handle as UInt32) as DynaPDFSubmitFormActionMBS**

MBS DynaPDF Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the properties of a Submit Form Action. **Notes:** Returns nil in case of an error. See also GetSubmitAction function in DynaPDF manual.

70.34.453 **GetSysFontInfo as DynaPDFSysFontMBS**

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the most important properties of a system font. **Example:**

```plaintext
// list all fonts
dim d as new DynaPDFMBS

dim f as DynaPDFSysFontMBS = d.GetSysFontInfo
while f<>nil
Listbox1.AddRow f.FamilyName
f = f.NextFont
wend
```

**Notes:**
The function returns the fonts in the current font search order. That means if the search order is `{ fbtTrueType, fbtOpenType, fbtType1, fbtStdFont }`, for example, then the function returns first all TrueType fonts sorted in ascending order, then all OpenType fonts, and so on. Since standard fonts are no system fonts, these fonts are not returned. See also GetSysFontInfo function in DynaPDF manual. See also:

- 70.34.454 **GetSysFontInfo(PostscriptName as String) as DynaPDFSysFontMBS**
70.34.454 GetSysFontInfo(ReactDOMName as String) as DynaPDFSysFontMBS

**Function:** Queries system font with given postscript name.  
**Example:**

```vbnet
    dim d as new DynaPDFMBS

    // find one font with postscript name
    dim font as DynaPDFSysFontMBS = d.GetSysFontInfo("Verdana-BoldItalic")

    // find all with family name
    dim fonts() as DynaPDFSysFontMBS = d.GetSysFontInfos("Verdana")
```

**Notes:** Returns nil if font is not found.  
See also GetSysFontInfo function in DynaPDF manual.  
See also:

- 70.34.453 GetSysFontInfo as DynaPDFSysFontMBS

70.34.455 GetSysFontInfos as DynaPDFSysFontMBS()

**Function:** Returns an array with the most important properties of system fonts.  
**Example:**

```vbnet
    dim pdf as new MyDynaPDFMBS

    // get all fonts
    dim fonts() as DynaPDFSysFontMBS = pdf.GetSysFontInfos

    // add one row for each font
    for each f as DynaPDFSysFontMBS in fonts
        dim name as string = f.FamilyName

        if f.BaseType = pdf.kfbtOpenType and f.CIDOrdering = "" then
            // This font cannot be used with Unicode
        else
            // Anything is ok
        end if

    next
```
Notes:
The function returns the fonts in the current font search order. That means if the search order is { fbttTrueType, fbttOpenType, fbttType1, fbttStdFont }, for example, then the function returns first all TrueType fonts sorted in ascending order, then all OpenType fonts, and so on. Since standard fonts are no system fonts, these fonts are not returned.
See also:

• 70.34.456 GetSysFontInfos(Name as String) as DynaPDFSysFontMBS() 11847

70.34.456 GetSysFontInfos(Name as String) as DynaPDFSysFontMBS()

MBS DynaPDF Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns an array with the most important properties of system fonts.
Example:

dim d as new DynaPDFMBS

// find one font with postscript name
dim font as DynaPDFSysFontMBS = d.GetSysFontInfo("Verdana-BoldItalic")

// find all with family name
dim fonts() as DynaPDFSysFontMBS = d.GetSysFontInfos("Verdana")

Break // see in debugger

Notes:
Matches fonts by family name, full name or Postscript name.

The function returns the fonts in the current font search order. That means if the search order is { fbttTrueType, fbttOpenType, fbttType1, fbttStdFont }, for example, then the function returns first all TrueType fonts sorted in ascending order, then all OpenType fonts, and so on. Since standard fonts are no system fonts, these fonts are not returned.
See also:

• 70.34.455 GetSysFontInfos as DynaPDFSysFontMBS() 11846

70.34.457 GetTabLen as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function returns the tabulator length in spaces that is used to emulate tabulators during text
formatting (see WriteFText() for further information).
See also GetTabLen function in DynaPDF manual.

70.34.458 GetTemplCount as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function returns the number of templates used by a page. See also GetTemplCount function in DynaPDF manual.

70.34.459 GetTemplHandle as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function returns the handle of the current open template or a negative error code on failure. See also GetTemplHandle function in DynaPDF manual.

70.34.460 GetTemplHeight(Handle as Integer) as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function returns the height of a template. See also GetTemplHeight function in DynaPDF manual.

70.34.461 GetTemplWidth(Handle as Integer) as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: A new function in dynapdf which is not documented. See also GetTemplWidth function in DynaPDF manual.

70.34.462 GetTextDrawMode as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function returns the text draw mode. Se draw modes are described in detail under SetTextDrawMode(). See also GetTextDrawMode function in DynaPDF manual.
70.34.463 GetTextFieldValue(Feature as Integer, byref Value as string, byref DefaultValue as string) as Boolean

MBS DynaPDF Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries the text of a field. **Notes:** The strings may be ANSI or Unicode encoded. See also GetTextFieldValue function in DynaPDF manual.

70.34.464 GetTextHeight(Align as Integer, aText as string) as Double

MBS DynaPDF Plugin, Plugin Version: 13.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function measures the height of a formatted text block. **Example:**

```vbnet
dim pdf as DynaPDMBS // your PDF instance

dim text as string = "Hello \ul# World"

dim h1 as Integer = pdf.GetTextHeight(pdf.ktaLeft, text)
dim h2 as Integer = pdf.GetTextHeight(pdf.ktaLeft, text)

dim h3 as Integer = pdf.GetTextHeightEx(150, pdf.ktaLeft, text)
dim h4 as Integer = pdf.GetTextHeightEx(150, pdf.ktaLeft, text)

// see different heights in debugger.
```

**Notes:**

GetTextHeight does escape backslashes so no formatting commands are taken from the string. The text parameter is converted to unicode.

70.34.465 GetTextHeightAnsi(Align as Integer, aText as string) as Double

MBS DynaPDF Plugin, Plugin Version: 13.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function measures the height of a formatted text block. **Notes:**

GetTextHeightAnsi does escape backslashes so no formatting commands are taken from the string. The text parameter is converted to ANSI.
70.34.466  

**GetTextHeightEx(Width as Double, Align as Integer, aText as string)** 
as Double

**Function:** The function measures the height of a formatted text block.
**Example:**

```vba
    dim pdf as new MyDynapdfMBS
    call pdf.CreateNewPDF nil
    call pdf.Append
    call pdf.SetFont("Helvetica", pdf.kfsnone, 12, true, pdf.kcpUnicode)
    dim h as Double = pdf.GetTextHeightEx(100, pdf.ktaLeft, "Hello World. Just a test string.")
    MsgBox "height: " +str(h)
    call pdf.EndPage
    call pdf.CloseFile
```

**Notes:**
GetTextHeightEx does escape backslashes so no formatting commands are taken from the string. The text parameter is converted to unicode.

70.34.467  

**GetTextHeightExAnsi(Width as Double, Align as Integer, aText as string)** 
as Double

**Function:** The function measures the height of a formatted text block.
**Notes:**
GetTextHeightExAnsi does escape backslashes so no formatting commands are taken from the string. The text parameter is converted to ANSI.

70.34.468  

**GetTextRect(byref PosX as Double, byref PosY as Double, byref Width as Double, byref Height as Double)** 
as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The function retrieves the bounding rectangle to output formatted text.  
See also GetTextRect function in DynaPDF manual.
70.34.469 GetTextRise as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the current text rise used to output text. See also GetTextRise function in DynaPDF manual.

70.34.470 GetTextScaling as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the current value of horizontal text scaling. See also GetTextScaling function in DynaPDF manual.

70.34.471 GetTextWidth(aText as string) as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function calculates the width of a string. **Notes:** The text parameter is converted to unicode. See also GetTextWidth function in DynaPDF manual. See also:

- 70.34.472 GetTextWidth(FontHandle as integer, Text as String, CharSpacing as Single, WordSpacing as Single, TextScale as Single) as double

70.34.472 GetTextWidth(FontHandle as integer, Text as String, CharSpacing as Single, WordSpacing as Single, TextScale as Single) as double

MBS DynaPDF Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calculates text width. **Notes:**

The function can be used to calculate the width of a sub string that was returned by the content parser (see ParseContent() for further information). The parameter FontHandle must be a valid handle of a font object that was provided in the SetFont event. Note that this function is optimized for speed and does not use the normal error handling of DynaPDF. The parameters CharSpacing, WordSpacing, and TextScale must be taken from the current graphics state.

If the function succeeds the return value is the string width measured in text space. If the parameter FontHandle is set 0 the return value is 0.0. See also GetTextWidth function in DynaPDF manual. See also:

- 70.34.471 GetTextWidth(aText as string) as Double
70.34.473 GetTextWidthAnsi(aText as string) as Double

MBS DynaPDF Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function calculates the width of a string. **Notes:** The text parameter is converted to ANSI.

70.34.474 GetTIFFVersion as String

MBS DynaPDF Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries version of tiff library. **Notes:** Should be 3.7.2 on plugins 17.1. Version is always same on Mac, Windows and Linux. If you notice a mismatch, something is wrong!

70.34.475 GetTransparentColor as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the transparent color value that is used for newly inserted images. See also GetTransparentColor function in DynaPDF manual.

70.34.476 GetTrapped as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the trapped key of the document. See also GetTrapped function in DynaPDF manual.

70.34.477 GetURIAction(index as Integer) as DynaPDFURIActionMBS

MBS DynaPDF Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries details for an URI action. **Notes:** Index is from 0 to GetActionCount-1. See also GetURIAction function in DynaPDF manual.
70.34.478 GetUseExactPwd as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** If the property UseExactPwd is false, an encrypted PDF file can always be decrypted, if either the open or owner password in the file is an empty string.
See also GetUseExactPwd function in DynaPDF manual.

70.34.479 GetUseGlobalImpFiles as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The property specifies whether import files should be loaded permanent into memory, e.g. to enable splitting of large PDF files.
See also GetUseGlobalImpFiles function in DynaPDF manual.

70.34.480 GetUserRights as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the encryption flags of an imported PDF file or -1 if the imported PDF file was not encrypted.
See also GetUserRights function in DynaPDF manual.

70.34.481 GetUserUnit as single

MBS DynaPDF Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the user unit of the current open page.
**Notes:**
A user unit acts like a scaling factor. The page format and all page coordinates are multiplied with this factor in a viewer application. The default size of a PDF unit is 1/72 inch and the default user unit is 1.0. User units can be useful if the page format would be too large to be expressed in standard PDF units. The largest page format in PDF is limited to 14400 units or 200 inches. This limit can be extended with the user unit.
The largest value that is supported is 75.0 which results in a maximum page format of 15,000 x 15,000 inches or 1,800,000 units.
See also GetUserUnit function in DynaPDF manual.

70.34.482 GetUseStdFonts as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns 1 (true) if the 14 standard fonts are enabled.
70.34.483 GetUsesTransparency(Page as Integer = -1) as Boolean

Function: Checks whether a page or the entire document uses transparency.
Notes:
This is no quick check as GetDocUsesTransparency() applies. The function parses the page or pages to
determine whether transparent objects are really used.
To check whether a specific page uses transparency set the parameter PageNum to the wished page number.
The first page is denoted by 1. To check the entire PDF file set PageNum to -1.

The return value is a bit mask on success (a positive integer value), or a negative error code on failure.
The following flags are defined:

- 0: The page or document uses no transparency.
- 1: The content stream of a page contains transparent objects.
- 2: A page defines the blending color space (Group dictionary).
- 4: A page contains transparent annotations or form fields.

The above values can occur in any combination. To check whether a specific flag was set use a binary and
operator: BitwiseAnd(value, flag)

70.34.484 GetUseSystemFonts as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The property specifies whether the % Windows% /Fonts directory should be added automatically to
the list of available font search paths.
See also GetUseSystemFonts function in DynaPDF manual.

70.34.485 GetUseTransparency as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The property specifies whether images should get a transparent background.
See also GetUseTransparency function in DynaPDF manual.
70.34.486 GetUseVisibleCoords as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The property specifies whether DynaPDF should consider the crop box to calculate to position of an object. See also GetUseVisibleCoords function in DynaPDF manual.

70.34.487 GetViewerPreferences(byref Preference as Integer, byref AddVal as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function retrieves the viewer preferences specified in the document. See also GetViewerPreferences function in DynaPDF manual.

70.34.488 GetViewport(Page as UInt32, index as Integer) as DynaPDFViewportMBS

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a viewport that is associated with a page. **Notes:**

A viewport is a rectangular region of a page, that specifies usually a measure coordinate system or points in a geospatial coordinate system. Since viewports might overlap, to determine the viewport to use for any point on a page, the viewports in the array shall be examined, starting with the last one and iterating in reverse, and the first one whose BBox entry contains the point shall be chosen. To determine how viewports and measure dictionaries can be used, please have a look into the PDF Reference 2.0, ISO/DIS 32000-2, Section Measurement properties. Returns nil on any error. See also GetViewport function in DynaPDF manual.

70.34.489 GetViewportCount(Page as UInt32) as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of viewports which are associated with a page. **Notes:**

The first page has the page number 1. If the function succeeds the return value is the number of viewports, a number greater or equal zero. If the function fails the return value is a negative error code. The function can only fail if the page number is invalid.
### 70.34.490 GetWMFDefExtent(byref width as Integer, byref height as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function retrieves the default size which is used to convert non portable WMF files to EMF. See also GetWMFDefExtent function in DynaPDF manual.

### 70.34.491 GetWMFPixelPerInch as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the default pixels per inch of the y-axis which are used to convert portable WMF files to EMF. See also GetWMFPixelPerInch function in DynaPDF manual.

### 70.34.492 GetWordSpacing as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns the current word spacing. See also GetWordSpacing function in DynaPDF manual.

### 70.34.493 GetXFAStream(Handle as UInt32) as DynaPDFXFAStreamMBS

MBS DynaPDF Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function returns an XFA stream. **Notes:**
The parameter Index is the array index. The function GetXFAStreamCount() returns the number of available streams.
An XFA form consist of several XML streams. The stream name must be used to determine which stream was returned.
If the function succeeds the return value is 1. If the function fails the return value is 0.
See also GetXFAStream function in DynaPDF manual.
70.34.494 GetXFAStreamCount as Integer

Function: Returns the number of available XFA streams.
Notes:
XFA streams are available after a PDF file was imported.
If the function succeeds the return value is the number of available XFA streams. If the function fails the return value is a negative error code.
See also GetXFAStreamCount function in DynaPDF manual.

70.34.495 GetZlibVersion as String

Function: Queries version of zlib library.
Notes:
Should be 1.2.7 on plugins 17.x.
Version is always same on Mac, Windows and Linux.
If you notice a mismatch, something is wrong!

70.34.496 GofRGB(RGB as Integer) as Integer

Function: Returns G of a RGB color value.
Example:
```vbs
    dim rgb as Integer = DynaPDFMBS.RGB(1,2,3)
    MsgBox str(DynaPDFMBS.GofRGB(rgb)) // shows 2
```

70.34.497 HaveOpenDoc as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: If an error occurred it is not always clear whether the PDF file was already deleted or if it is still in memory.
See also HaveOpenDoc function in DynaPDF manual.
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70.34.498 HaveOpenPage as Boolean

**Function:** Whether a page is open.  
See also HaveOpenPage function in DynaPDF manual.

70.34.499 HighlightAnnot(SubType as Integer, PosX as Double, PosY as Double, Width as Double, Height as Double, ColorValue as Integer, Author as string, Subject as string, Comment as string) as Integer

**Function:** Adds a highlight annotation with unicode text.  
**Notes:** See the dynapdf manual for details.  
See also HighlightAnnot function in DynaPDF manual.

70.34.500 HighlightAnnotAnsi(SubType as Integer, PosX as Double, PosY as Double, Width as Double, Height as Double, ColorValue as Integer, Author as string, Subject as string, Comment as string) as Integer

**Function:** Adds a highlight annotation with ANSI text.  
**Notes:** See the dynapdf manual for details.

70.34.501 HighlightOnAllPages(SearchText as string, ColorValue as Color, CaseInsensitive as boolean = false) as Integer

**Function:** Highlights text on all pages of the current document.  
**Notes:**  
If CaseInsensitive is true, the case of letters is ignored (also umlauts and accents)  
Searches on all pages in the document.  
Returns number of times the text was found.

70.34.502 HighlightOnCurrentPage(SearchText as string, ColorValue as Color, CaseInsensitive as boolean = false) as Integer

**Function:** Highlights text on all pages of the current page.
Notes:
If CaseInsensitive is true, the case of letters is ignored (also umlauts and accents)
Use EditPage function to open the page before you search on it.
Returns number of times the text was found.

70.34.503 ImportBookmarks as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function imports the outline tree of the currently opened import file (see OpenImportFile() or OpenImportBuffer()).
See also ImportBookmarks function in DynaPDF manual.

70.34.504 ImportCatalogObjects as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function imports global objects of the currently opened import file such as bookmarks, JavaScripts, embedded files, open actions, invisible page templates, rendering intents, the document info entries, and certain other global properties such as the page mode or page layout.
See also ImportCatalogObjects function in DynaPDF manual.

70.34.505 ImportDocInfo as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function imports the document info entries from the currently opened import file.
See also ImportDocInfo function in DynaPDF manual.

70.34.506 ImportEncryptionSettings as Boolean

MBS DynaPDF Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Imports the encryption settings from the currently open import file (see OpenImportFile() or OpenImportBuffer() for further information).
**Notes:**
If the PDF file is not encrypted, the function does nothing. To determine whether the open PDF file is encrypted call GetInIsEncrypted().
The encryption settings should be imported to make sure that the PDF file can be saved with the same settings after it was edited. The user rights should be considered if the file was opened with the open password, also if the password was just an empty string. See GetUserRights() for further information.
If the file was opened with the owner password, then all editing rights should be granted. The PDF file must
be closed with CloseFile() or CloseAndSignFile() for example. Don’t use CloseFileEx() for example since this function would override the encryption settings.

If the file should be saved unencrypted call ResetEncryptionSettings() before closing the file. Return values:
If the function succeeds the return value is true. If the function fails the return value is false.
See also `ImportEncryptionSettings` function in DynaPDF manual.

70.34.507  ImportOCProperties as Boolean

**Function:** Imports the global Optional Content Properties of the current open import file.
**Notes:**
OC properties are normally automatically imported by functions like ImportPDFFile() or when importing a page that contains layers. However, a viewer application must be able to access the OC properties right after the PDF file was opened so that the layer configuration and the layer tree can be loaded (see LoadLayerConfig() and GetOCUINode() for further information).
The function can be called multiple times without causing unwanted side effects.

If the function succeeds the return value is true. If the function fails the return value is false.

70.34.508  ImportPage(PageNum as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The function imports a page of an external PDF file and converts this page to a template.
**Notes:** Requires DynaPDF Pro license.
See also `ImportPage` function in DynaPDF manual.

70.34.509  ImportPageEx(PageNum as Integer, ScaleX as Double = 1.0, ScaleY as Double = 1.0) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The function imports a PDF page of an external PDF file incl. interactive objects such as annotations, form fields and so on, if any.
**Notes:** Requires DynaPDF Pro license.
See also `ImportPageEx` function in DynaPDF manual.
70.34. **CLASS DYNAPDFMBS**

### 70.34.510 ImportPDFFile(DestPage as Integer, ScaleX as Double = 1.0, ScaleY as Double = 1.0) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function imports an external PDF file incl. interactive objects such as annotations, bookmarks, form fields and so on.

**Notes:**

Scaling factor is ignored if importing as pages (not templates).

This function returns the page number of the last page imported. It does not return how many pages are imported. If you need number of imported pages, please use returned value minus DestPage.

See also ImportPDFFile function in DynaPDF manual.

### 70.34.511 ImportPDFPage(PageNum as Integer, ScaleX as Double = 1.0, ScaleY as Double = 1.0) as Integer

MBS DynaPDF Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Imports a PDF page.

**Notes:**

If a page is open, this function calls EndPage.

Than it appends a new page, calls ImportPageEx and Endpage.

On success the return value is zero. If the function fails the return value is a negative error code.

### 70.34.512 InitColorManagement(profiles as DynaPDFColorProfilesMBS, DestSpace as Integer, Flags as Integer) as boolean

MBS DynaPDF Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Initializes color management with the given default profiles.

**Notes:**

Pass nil for profiles to disable color management.

DestSpace can be kcsDeviceRGB, kcsDeviceCMYK or kcsDeviceGray.

Flags can be kicmDefault or kicmBPCompensation for:

Black point compensation preserves the black point when converting CMYK colors to different color spaces.

See also InitColorManagement function in DynaPDF manual.
70.34.513 **InitColorManagementEx** (profiles as DynaPDFColorProfilesExMBS, DestSpace as Integer, Flags as Integer) as boolean


**Function:** Initialize color management.

**Notes:**

The function enables color management in the functions RenderPage(), RenderPageEx(), RenderPageToImage(), and RenderPDFFile() exactly like InitColorManagement() but accepts ICC profile buffers instead of file paths. See InitColorManagement() for further information.

To disable color management set the parameter Profiles to nil.

Initializing the color management requires a considerable amount of processing time. It is strongly recommended to use one PDF instance as long as possible so that it must not be initialized again when another PDF file will be rendered.

The color management can be initialized right after the PDF instance was created.

Returns true on succes or false on failure.
See also **InitColorManagementEx** function in DynaPDF manual.

70.34.514 **InitStack** (byref stack as DynaPDFStackMBS) as boolean


**Function:** The function initializes the variable Stack with default values and prepares the editing of a content stream.

**Example:**

```
    dim s as DynaPDFStackMBS
    dim pdf as DynaPDFMBS  // get your DynaPDF object

    call pdf.InitStack(s)
```

**Notes:**

If stack is nil, a new one will be created and stored in the variable.

Return values:

If the function succeeds the return value is true. If the function fails the return value is false.

See also **InitStack** function in DynaPDF manual.
**Class DynaPDFMBS**

**70.34.515 InkAnnot(points() as DynapdfPointMBS, LineWidth as Double, ColorValue as UInt32, ColorSpace as Integer, Author as string, Subject as string, Content as string) as Integer**


**Function:** Creates an Ink annotation.

**Notes:**

An ink annotation (PDF 1.3) represents a freehand "scribble" composed of one or more disjoint paths. The parameter Points represents a stroked path. More paths can be added with AddInkList.

The points are interpreted in current user space. Any transformation that was applied on the coordinate system will be taken into account.

The points are connected with bezier curves to achieve a smooth transition between points. If the points should be connected with straight lines, then create a PolyLine annotation instead (see PolyLineAnnot).

This annotation type has an associated PopUp annotation that displays the string Content in a floating window. The initial window state of the associated PopUp annotation is closed by default but the state can be changed with SetAnnotOpenState() if necessary.

If the function succeeds the return value is the annotation handle, a value greater or equal zero. If the function fails the return value is a negative error code.

See also InkAnnot function in DynaPDF manual.

**70.34.516 InkAnnotAnsi(points() as DynapdfPointMBS, LineWidth as Double, ColorValue as UInt32, ColorSpace as Integer, Author as string, Subject as string, Content as string) as Integer**


**Function:** Creates an Ink annotation.

**Notes:**

An ink annotation (PDF 1.3) represents a freehand "scribble" composed of one or more disjoint paths. The parameter Points represents a stroked path. More paths can be added with AddInkList.

The points are interpreted in current user space. Any transformation that was applied on the coordinate system will be taken into account.

The points are connected with bezier curves to achieve a smooth transition between points. If the points should be connected with straight lines, then create a PolyLine annotation instead (see PolyLineAnnot).

This annotation type has an associated PopUp annotation that displays the string Content in a floating window. The initial window state of the associated PopUp annotation is closed by default but the state can be changed with SetAnnotOpenState() if necessary.

If the function succeeds the return value is the annotation handle, a value greater or equal zero. If the function fails the return value is a negative error code.
70.34.517  InsertBMPFromBuffer(PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double, Buffer as memoryblock) as Integer

Function: The function inserts a Device Independent Bitmap from a file buffer.
Deprecated: This item is deprecated and should no longer be used. You can use InsertImageFromBuffer instead. See also:

- 70.34.518 InsertBMPFromBuffer(PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double, Buffer as string) as Integer

- 70.34.519 InsertBMPFromBuffer(PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double, BufferAddress as Integer) as Integer

70.34.518  InsertBMPFromBuffer(PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double, Buffer as string) as Integer

Function: The function inserts a Device Independent Bitmap from a file buffer.
Deprecated: This item is deprecated and should no longer be used. You can use InsertImageFromBuffer instead. See also:

- 70.34.517 InsertBMPFromBuffer(PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double, Buffer as memoryblock) as Integer

- 70.34.519 InsertBMPFromBuffer(PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double, BufferAddress as Integer) as Integer

70.34.519  InsertBMPFromBuffer(PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double, BufferAddress as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The function inserts a Device Independent Bitmap from a file buffer.
Deprecated: This item is deprecated and should no longer be used. You can use InsertImageFromBuffer instead. See also:

- 70.34.517 InsertBMPFromBuffer(PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double, Buffer as memoryblock) as Integer

- 70.34.518 InsertBMPFromBuffer(PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double, Buffer as string) as Integer
70.34.520  InsertBMPFromHandle(PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double, hBitmap as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function inserts a bitmap in the same way as InsertImage() but accepts a HBITMAP handle as input. See also InsertBMPFromHandle function in DynaPDF manual.

70.34.521  InsertBookmark(title as String, parent as Integer, DestPage as Integer, Open as boolean, AddChildren as boolean) as Integer

MBS DynaPDF Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function inserts a bookmark to the global outline tree of the document. **Notes:** The title parameter is converted to unicode. See also InsertBookmark function in DynaPDF manual.

70.34.522  InsertBookmarkAnsi(title as String, parent as Integer, DestPage as Integer, Open as boolean, AddChildren as boolean) as Integer

MBS DynaPDF Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function inserts a bookmark to the global outline tree of the document. **Notes:** The title parameter is converted to ANSI.

70.34.523  InsertBookmarkEx(title as String, parent as Integer, NamedDest as Integer, Open as boolean, AddChildren as boolean) as Integer

MBS DynaPDF Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function inserts a bookmark to the global outline tree of the document. **Notes:** The title parameter is converted to unicode. See also InsertBookmarkEx function in DynaPDF manual.

70.34.524  InsertBookmarkExAnsi(title as String, parent as Integer, NamedDest as Integer, Open as boolean, AddChildren as boolean) as Integer

MBS DynaPDF Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function inserts a bookmark to the global outline tree of the document. **Notes:** The title parameter is converted to ANSI.
**70.34.525** InsertImage(PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double, File as folderitem) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The function inserts an image from a file.

**Example:**

```vbnet
dim pdf as DynaPDFMBS
// ... add page
// use transparency from image
call pdf.SetUseTransparency(False)
// max 300 dpi for recompressed images
call pdf.SetResolution(300)
// use JPEG when compressing new pictures
call pdf.SetCompressionFilter(pdf.kcfJPEG)
// pass through JPEGs if possible
call pdf.SetSaveNewImageFormat(False)
// insert image
dim source as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
call pdf.InsertImage(0, 0, 300, 200, source)
```

**Deprecated:** This item is deprecated and should no longer be used. You can use InsertImage instead.

**Notes:**

Please call SetUseTransparency(false) before inserting image if you don’t like one of the colors (default white) to become transparent.

DynaPDF 3.0 adds support for pictures with alpha channel for this function.

**70.34.526** InsertImageEx(PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double, File as folderitem, index as Integer = 1) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The function inserts an image from a file.

**Example:**

```vbnet
dim pdf as DynaPDFMBS
// ... add page
// use transparency from image
call pdf.SetUseTransparency(False)
// max 300 dpi for recompressed images
call pdf.SetResolution(300)
// use JPEG when compressing new pictures
call pdf.SetCompressionFilter(pdf.kcfJPEG)
// pass through JPEGs if possible
call pdf.SetSaveNewImageFormat(False)
// insert image
dim source as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
call pdf.InsertImage(0, 0, 300, 200, source)
```
dim pdf as DynaPDFMBS

// ... add page

// use transparency from image
call pdf.SetUseTransparency(False)

// max 300 dpi for recompressed images
call pdf.SetResolution(300)

// use JPEG when compressing new pictures
call pdf.SetCompressionFilter(pdf.kcfJPEG)

// pass through JPEGs if possible
call pdf.SetSaveNewImageFormat(False)

// insert image
dim source as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
call pdf.InsertImageEx(0, 0, 300, 200, source)

Notes:
Please call SetUseTransparency(false) before inserting image if you don’t like one of the colors (default white) to become transparent.

DynaPDF 3.0 adds support for pictures with alpha channel for this function.
See also InsertImageEx function in DynaPDF manual.

70.34.527 InsertImageFromBuffer(PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double, Buffer as Memoryblock, index as Integer = 1) as Integer

Function: The function inserts an image in exactly the same way as InsertImageEx(), but it accepts a file buffer as input.
Notes: Please call SetUseTransparency(false) before inserting image if you don’t like one of the colors (default white) to become transparent.

DynaPDF 3.0 adds support for pictures with alpha channel for this function.
Please pass position and size as doubles. If you use integers, Real Studio will give a compile error.
See also InsertImageFromBuffer function in DynaPDF manual.
See also:

- 70.34.528 InsertImageFromBuffer(PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double, Buffer as string, index as Integer = 1) as Integer

### 70.34.528 InsertImageFromBuffer(PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double, Buffer as string, index as Integer = 1) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function inserts an image in exactly the same way as InsertImageEx(), but it accepts a file buffer as input. **Notes:** Please call SetUseTransparency(false) before inserting image if you don’t like one of the colors (default white) to become transparent.

DynaPDF 3.0 adds support for pictures with alpha channel for this function.

Please pass position and size as doubles. If you use integers, Real Studio will give a compile error.

See also **InsertImageFromBuffer** function in DynaPDF manual.

See also:

- 70.34.527 InsertImageFromBuffer(PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double, Buffer as Memoryblock, index as Integer = 1) as Integer

### 70.34.529 InsertMetafile(FileName as folderitem, PosX as Double, PosY as Double, Width as Double, Height as Double) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function converts an Enhanced Meta File (EMF) or Windows Meta File (WMF) to a native PDF vector graphic. **Notes:** Requires DynaPDF Lite license.

See also **InsertMetafile** function in DynaPDF manual.

### 70.34.530 InsertMetafileEx(Buffer as memoryblock, PosX as Double, PosY as Double, Width as Double, Height as Double) as Boolean

MBS DynaPDF Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function converts an Enhanced Meta File (EMF) or Windows Meta File (WMF) to a native PDF vector graphic in the same way as InsertMetafile(). **Notes:** Requires DynaPDF Lite license.

See also **InsertMetafileEx** function in DynaPDF manual.

See also:
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- 70.34.531 InsertMetafileEx( Buffer as string, PosX as Double, PosY as Double, Width as Double, Height as Double) as Boolean

### 70.34.531 InsertMetafileEx( Buffer as string, PosX as Double, PosY as Double, Width as Double, Height as Double) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function converts an Enhanced Meta File (EMF) or Windows Meta File (WMF) to a native PDF vector graphic in the same way as InsertMetafile().

**Notes:** Requires DynaPDF Lite license.

See also InsertMetafileEx function in DynaPDF manual.

See also:

- 70.34.530 InsertMetafileEx( Buffer as memoryblock, PosX as Double, PosY as Double, Width as Double, Height as Double) as Boolean

### 70.34.532 InsertMetafileExt( FileName as folderitem, View as DynapdfRectMBS, PosX as Double, PosY as Double, Width as Double, Height as Double) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function converts an Enhanced Meta File (EMF) or Windows Meta File (WMF) to a native PDF vector graphic in the same way as InsertMetafile().

**Notes:** Requires DynaPDF Lite license.

See also InsertMetafileExt function in DynaPDF manual.

### 70.34.533 InsertMetafileExtEx( Buffer as Memoryblock, View as DynaPDFRectMBS, PosX as Double, PosY as Double, Width as Double, Height as Double) as Boolean

MBS DynaPDF Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function converts an Enhanced Meta File (EMF) or Windows Meta File (WMF) to a native PDF vector graphic in the same way as InsertMetafileEx().

**Notes:** Requires DynaPDF Lite license.

See also InsertMetafileExtEx function in DynaPDF manual.

See also:

- 70.34.534 InsertMetafileExtEx( Buffer as String, View as DynaPDFRectMBS, PosX as Double, PosY as Double, Width as Double, Height as Double) as Boolean
**70.34.534** InsertMetafileExtEx(Buffer as String, View as DynaPDFRectMBS,PosX as Double, PosY as Double, Width as Double, Height as Double) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function converts an Enhanced Meta File (EMF) or Windows Meta File (WMF) to a native PDF vector graphic in the same way as InsertMetafileExt(). **Notes:** Requires DynaPDF Lite license. See also InsertMetafileExtEx function in DynaPDF manual. See also:

* 70.34.533 InsertMetafileExtEx(Buffer as Memoryblock, View as DynaPDFRectMBS, PosX as Double, PosY as Double, Width as Double, Height as Double) as Boolean

**70.34.535** InsertMetafileFromHandle(hEnhMetafileHandle as Integer, PosX as Double, PosY as Double, Width as Double, Height as Double) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function inserts an Enhanced Metafile exactly in the same way as InsertMetafile() but accepts a HENHMETAFILE handle as input. **Notes:** Requires DynaPDF Lite license. See also InsertMetafileFromHandle function in DynaPDF manual.

**70.34.536** InsertMetafileFromHandleEx(hEnhMetafileHandle as Integer, View as DynapdfRectMBS, PosX as Double, PosY as Double, Width as Double, Height as Double) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function inserts an Enhanced Metafile exactly in the same way as InsertMetafileExt() but accepts a HENHMETAFILE handle as input. **Notes:** Requires DynaPDF Lite license. See also InsertMetafileFromHandleEx function in DynaPDF manual.

**70.34.537** InsertPicture(pic as picture, mask as picture, PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double) as Integer

MBS DynaPDF Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Takes a REALbasic picture with a mask and adds it to the PDF. **Example:**
// insert MBS Logo with round Mask
dim d as new MyDynapdfMBS
dim file as FolderItem = SpecialFolder.Desktop.Child("test.pdf")

call d.CreateNewPDF file
call d.Append

// get picture
dim p as Picture = LogoMBS(500)

// get mask
dim m as new Picture(500, 500, 32)
m.Graphics.ForeColor = & c FFFFFF
m.Graphics.FillRect 0,0,500,500
m.Graphics.ForeColor = & c 000000
m.Graphics.FillOval 0,0,500,500

// add image to pdf
call d.InsertPicture(p, m, 50, 150, 500, 500)

call d.EndPage
call d.CloseFile

Notes:
Please call SetUseTransparency(false) before inserting image if you don’t like one of the colors (default white) to become transparent.
This is a convenience function to handle picture with mask. With DynaPDF 3 the mask is used while we used a keycolor in DynaPDF 2.x.

Internally this calls pdfInsertRawImage so check the documentation on this function in the dynapdf manual. Does not work with alpha channel pictures.

PosX and PosY are the destination position and ScaledWidth and ScaledHeight is the new size of the image. See also:

• 70.34.538 InsertPicture(pic as picture,PosX as Double,PosY as Double,ScaleWidth as Double,ScaleHeight as Double) as Integer

70.34.538 InsertPicture(pic as picture,PosX as Double,PosY as Double,ScaleWidth as Double,ScaleHeight as Double) as Integer

Function: Takes a REALbasic picture and adds it to the PDF.
Notes:

Please call SetUseTransparency(false) before inserting image if you don’t like one of the colors (default white) to become transparent.

Internally this calls pdfInsertRawImage so check the documentation on this function in the dynapdf manual. Does not work with alpha channel or masked pictures.

PosX and PosY are the destination position and ScaledWidth and ScaledHeight is the new size of the image. See also:

- 70.34.537 InsertPicture(pic as picture, mask as picture, PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double) as Integer

70.34.539 InsertRawImage(Data as String, BitsPerPixel as Integer, ColorCount as Integer, ImgWidth as Integer, ImgHeight as Integer, PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double) as Integer


**Function:** The function inserts an image from a raw image buffer which contains no image header.

See also InsertRawImage function in DynaPDF manual.

See also:

- 70.34.540 InsertRawImage(Memory as MemoryBlock, BitsPerPixel as Integer, ColorCount as Integer, ImgWidth as Integer, ImgHeight as Integer, PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double) as Integer

70.34.540 InsertRawImage(Memory as MemoryBlock, BitsPerPixel as Integer, ColorCount as Integer, ImgWidth as Integer, ImgHeight as Integer, PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The function inserts an image from a raw image buffer which contains no image header.

See also InsertRawImage function in DynaPDF manual.

See also:

- 70.34.539 InsertRawImage(Data as String, BitsPerPixel as Integer, ColorCount as Integer, ImgWidth as Integer, ImgHeight as Integer, PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double) as Integer
70.34.541 InsertRawImageEx(PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double, Image as DynaPDFRawImageMBS) as Integer

Notes:
See also InsertRawImageEx in dynapdf_help.pdf manual file.
Returns false if image parameter has invalid values.
See also InsertRawImageEx function in DynaPDF manual.

70.34.542 IsBidiText(Text as string) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function returns the position of the first bidirectional character that can be found in the string or -1 if no such character can be found.
Notes: The text parameter is converted to unicode.
See also IsBidiText function in DynaPDF manual.

70.34.543 IsColorPage(GrayIsColor as Boolean) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This function checks whether a page is a color page or if all graphic elements of the page use black & white only.
Notes: Value is 0 for false, 1 for true or negative for an error.
See also IsColorPage function in DynaPDF manual.

70.34.544 IsEmptyPage as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function checks whether a page is empty.
Notes: Value is 0 for false, 1 for true or negative for an error.
See also IsEmptyPage function in DynaPDF manual.

70.34.545 IsWrongPwd(errCode as Integer) as boolean

Notes: We have several error codes which result from different password protections and this function considers them all. See also IsWrongPwd function in DynaPDF manual.

### 70.34.546 KofCMYK(CMYK as UInt32) as Integer

**Function:** Returns K of a CMYK color value.  
**Example:**

```vba
dim cmyk as Integer = DynaPDFMBS.CMYK(1,2,3,4)
MsgBox str(DynaPDFMBS.KofCMYK(cmyk)) // shows 4
```

Notes: Returns different values on BigEndian and LittleEndian systems.

### 70.34.547 LAB(L as Integer, A as Integer, B as Integer) as Integer

**Function:** Builds a LAB color value based on the given component values.  
**Example:**

```vba
dim lab as Integer = DynaPDFMBS.LAB(1,2,3)
MsgBox hex(lab)
```

### 70.34.548 LineAnnot(x1 as Double, y1 as Double, x2 as Double, y2 as Double, LineWidth as Double, StartLineEndStyle as Integer, EndLineEndStyle as Integer, FillColor as UInt32, StrokeColor as UInt32, ColorSpace as Integer, Author as string, Subject as string, Content as string) as Integer

**Function:** Adds a line annotation.  
See also LineAnnot function in DynaPDF manual.
**70.34.549** LineAnnotAnsi(x1 as Double, y1 as Double, x2 as Double, y2 as Double, LineWidth as Double, StartLineEndStyle as Integer, EndLineEndStyle as Integer, FillColor as UInt32, StrokeColor as UInt32, ColorSpace as Integer, Author as string, Subject as string, Content as string) as Integer

**Function:** Adds a line annotation.

**70.34.550** LineTo(PosX as Double, PosY as Double) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The function draws a path from the current position up to the specified point.
**Example:**

```pascal
dim pdf as new DynaPDFMBS
dim f as FolderItem = SpecialFolder.Desktop.Child("Create PDF with Line.pdf")

pdf.SetLicenseKey "Starter" // For this example you can use a Starter, Lite, Pro or Enterprise License

// Create a new PDF
 call pdf.CreateNewPDF f

// We want to use top-down coordinates
 call pdf.SetPageCoords pdf.kpcTopDown

// Add a page
 call pdf.Append

// black
 call pdf.SetStrokeColor 0

// line down
 call pdf.MoveTo(100,100)
call pdf.LineTo(200,200)
call pdf.StrokePath

// line up
 call pdf.MoveTo(200,200)
call pdf.LineTo(300,100)
call pdf.StrokePath

// end page
 call pdf.EndPage
```
// Close page
call pdf.CloseFile

// Open PDF
f.Launch

See also LineTo function in DynaPDF manual.

70.34.551  LoadCMap(CMapName as string, Embed as Boolean) as Integer

**Function:** Loads a character map.  
See also LoadCMap function in DynaPDF manual.

70.34.552  LoadError as String

**Function:** The last error message from LoadLibrary call.  
**Example:**

dim f as FolderItem = SpecialFolder.Desktop.Child(“test.dylib”)  
if DynaPDFMBS.LoadLibrary(f) then
    MsgBox “OK”
else
    MsgBox DynaPDFMBS.LoadError
end if

70.34.553  LoadFDFData(FileName as folderitem, Password as string, Flags as Integer) as Boolean

**Function:** Loads PDF form data from the given PDF file.  
See also LoadFDFData function in DynaPDF manual.
70.34.554  LoadFDFDataEx(Buffer as memoryblock, Password as string, Flags as Integer) as Boolean

Function: Loads PDF form data from the given PDF file in the buffer.
See also LoadFDFDataEx function in DynaPDF manual.
See also:
• 70.34.555 LoadFDFDataEx(Buffer as string, Password as string, Flags as Integer) as Boolean 11877

70.34.555  LoadFDFDataEx(Buffer as string, Password as string, Flags as Integer) as Boolean

Function: Loads PDF form data from the given PDF file in the buffer.
See also LoadFDFDataEx function in DynaPDF manual.
See also:
• 70.34.554 LoadFDFDataEx(Buffer as memoryblock, Password as string, Flags as Integer) as Boolean 11877

70.34.556  LoadFont(Buffer as memoryblock, Style as Integer, size as Double, Embed as Boolean = false, CodePage as Integer = 2, CollectionIndex as UInt32 = 0) as Integer

Function: The function loads a font from a file buffer.
Notes: Added CollectionIndex parameter in 12.1 plugin version.
See also LoadFont function in DynaPDF manual.
See also:
• 70.34.557 LoadFont(Buffer as string, Style as Integer, size as Double, Embed as Boolean = false, CodePage as Integer = 2, CollectionIndex as UInt32 = 0) as Integer 11877

70.34.557  LoadFont(Buffer as string, Style as Integer, size as Double, Embed as Boolean = false, CodePage as Integer = 2, CollectionIndex as UInt32 = 0) as Integer

Function: The function loads a font from a file buffer.
Notes: Added CollectionIndex parameter in 12.1 plugin version.
See also LoadFont function in DynaPDF manual.
See also:
• 70.34.556 LoadFont(Buffer as memoryblock, Style as Integer, size as Double, Embed as Boolean = false, CodePage as Integer = 2, CollectionIndex as UInt32 = 0) as Integer

70.34.558 LoadFontEx(File as folderitem, Style as Integer, size as Double, Embed as Boolean = false, CodePage as Integer = 2, CollectionIndex as UInt32 = 0) as Integer


**Function:** The function loads a font from a font file and activates it in the graphics state if the function was called within an open page or template.

See also `LoadFontEx` function in DynaPDF manual.

See also:

• 70.34.559 LoadFontEx(Filepath as string, Style as Integer, size as Double, Embed as Boolean = false, CodePage as Integer = 2, CollectionIndex as UInt32 = 0) as Integer

70.34.559 LoadFontEx(Filepath as string, Style as Integer, size as Double, Embed as Boolean = false, CodePage as Integer = 2, CollectionIndex as UInt32 = 0) as Integer


**Function:** The function loads a font from a font file and activates it in the graphics state if the function was called within an open page or template.

See also `LoadFontEx` function in DynaPDF manual.

See also:

• 70.34.558 LoadFontEx(File as folderitem, Style as Integer, size as Double, Embed as Boolean = false, CodePage as Integer = 2, CollectionIndex as UInt32 = 0) as Integer

70.34.560 LoadLayerConfig(Index as Integer) as Boolean


**Function:** Loads the specified layer configuration.

**Notes:**

A PDF file that contains layers (Optional Content Groups in PDF syntax) contains usually at least a default configuration dictionary. This configuration is loaded by default when the visibility state of a layer or optional content group must be determined, e.g. when rendering a page.

Use this function to load another configuration if available. To determine the number of available configurations call `GetLayerConfigCount()`.

The parameter `Index` can be one of the following:

• -1: Load the default configuration.
• -2: If a configuration was already loaded, leave it unchanged. Load
• the default configuration otherwise.
• 0..Count -1: Load the specified configuration.

If the function succeeds the return value is true. If the function fails the return value is false.

70.34.561  LoadLibrary(File as FolderItem) as boolean

Function: Loads the dynapdf library file.
Example:
MsgBox "Version before: " +DynaPDFMBS.DynaPDFVersion

    dim f as FolderItem = SpecialFolder.Desktop.Child("dynapdf.dylib")
    if DynaPDFMBS.LoadLibrary(f) then
        MsgBox "Version after: " +DynaPDFMBS.DynaPDFVersion
    else
        MsgBox DynaPDFMBS.LoadError
    end if

Notes:
Returns true on success or false on failure.

While the plugin comes with an internal dynapdf library, you can use this method to load a different version of the library.
See also:

• 70.34.562 LoadLibrary(Path as string) as boolean

70.34.562  LoadLibrary(Path as string) as boolean

Function: Loads the dynapdf library file.
Notes:
Returns true on success or false on failure.

While the plugin comes with an internal dynapdf library, you can use this method to load a different version of the library.
See also:

- 70.34.561 LoadLibrary(File as FolderItem) as boolean

### 70.34.563 LockLayer(layer as UInt32) as boolean

MBS DynaPDF Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Unlocks a layer. See also LockLayer function in DynaPDF manual.

### 70.34.564 LofLAB(LAB as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns L of a LAB color value. **Example:**

```vbnet
dim lab as Integer = DynaPDFMBS.LAB(1,2,3)
MsgBox str(DynaPDFMBS.LofLAB(lab)) // shows 1
```

### 70.34.565 MofCMYK(CMYK as UInt32) as Integer

MBS DynaPDF Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns M of a CMYK color value. **Example:**

```vbnet
dim cmyk as Integer = DynaPDFMBS.CMYK(1,2,3,4)
MsgBox str(DynaPDFMBS.MofCMYK(cmyk)) // shows 2
```

**Notes:** Returns different values on BigEndian and LittleEndian systems.

### 70.34.566 MovePage(source as Integer, dest as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function moves a page to another position in the document. See also MovePage function in DynaPDF manual.
MoveTo(PosX as Double, PosY as Double) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The function moves the current position to the point specified by PosX, PosY.

**Example:**

```plaintext
dim pdf as new DynaPDFMBS
dim f as FolderItem = SpecialFolder.Desktop.Child("Create PDF with Line.pdf")

pdf.SetLicenseKey "Starter" // For this example you can use a Starter, Lite, Pro or Enterprise License

// Create a new PDF
call pdf.CreateNewPDF f

// We want to use top-down coordinates
call pdf.SetPageCoords pdf.kpcTopDown

// Add a page
call pdf.Append

// black
call pdf.SetStrokeColor 0

// line down
call pdf.MoveTo(100,100)
call pdf.LineTo(200,200)
call pdf.StrokePath

// line up
call pdf.MoveTo(200,200)
call pdf.LineTo(300,100)
call pdf.StrokePath

// end page
call pdf.EndPage

// Close page
call pdf.CloseFile

// Open PDF
f.Launch
```

See also MoveTo function in DynaPDF manual.
**70.34.568 MultiplyMatrix(M1 as DynapdfMatrixMBS, M2 as DynapdfMatrixMBS, NewMatrix as DynapdfMatrixMBS) as boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function multiplies two transformation matrices and stores the result in the parameter NewMatrix. **Notes:** You must pass three non nil matrix references into the function. See also MultiplyMatrix function in DynaPDF manual.

**70.34.569 OpenImportBuffer(Buffer as Memoryblock, PwdType as Integer = 0, Password as string = "") as Integer**

MBS DynaPDF Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function reads an external PDF from a file buffer so that it can be imported entirely or parts of it. **Notes:** Requires DynaPDF Lite license. See also OpenImportBuffer function in DynaPDF manual. See also:

- 70.34.570 OpenImportBuffer(Buffer as string, PwdType as Integer = 0, Password as string = "") as Integer

**70.34.570 OpenImportBuffer(Buffer as string, PwdType as Integer = 0, Password as string = "") as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function reads an external PDF from a file buffer so that it can be imported entirely or parts of it. **Notes:** Requires DynaPDF Lite license. See also OpenImportBuffer function in DynaPDF manual. See also:

- 70.34.569 OpenImportBuffer(Buffer as Memoryblock, PwdType as Integer = 0, Password as string = "") as Integer

**70.34.571 OpenImportFile(File as folderitem, PwdType as Integer = 0, Password as string = "") as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function opens an external PDF file so that it can be imported entirely or parts of it. **Notes:** Also check the dynapdf manual on the pdfOpenImportFileA function (pdfOpenImportFileW on Windows). Requires DynaPDF Lite license.
70.34.572 OpenOutputFile(File as folderitem) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function opens the output file into which the PDF file should be written.

**Notes:** Also check the dynapdf manual on the pdfOpenOutputFileA function (pdfOpenOutputFileW on Windows).

See also OpenOutputFile function in DynaPDF manual.

70.34.573 OpenOutputFileEncrypted(File as folderitem, OpenPwd as string, OwnerPwd as string, KeyLen as Integer, Restrict as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Opens the output file and sets the encryption parameters.

**Remarks:**

**Notes:**

This function enables in combination with FlushPages the creation of very large encrypted PDF files with minimal memory usage.

The function can be called in a while statement, e.g. to display an open file dialog if the file could not be opened. Once the function succeeds the PDF file can be finished with CloseFile.

If the function succeeds the return value is true. If the function fails the return value is false.

See also OpenOutputFileEncrypted function in DynaPDF manual.

70.34.574 OpenTag(Tag as Integer, Lang as string, AltText as string, Expansion as string) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Opens a tag.

See also OpenTag function in DynaPDF manual.
70.34.575 OpenTagAnsi(Tag as Integer, Lang as string, AltText as string, Expansion as string) as boolean


70.34.576 Optimize(Flags as Integer, Params as DynaPDFOptimizeParamsMBS = nil) as boolean


70.34.577 PageLink(PosX as Double, PosY as Double, Width as Double, Height as Double, DestPage as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function inserts a page link onto the current open page. See also PageLink function in DynaPDF manual.

70.34.578 PageLink2(PosX as Double, PosY as Double, Width as Double, Height as Double, NamedDest as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function inserts a page link onto the current open page by using a named destination as target. See also PageLink2 function in DynaPDF manual.

70.34.579 PageLink3(PosX as Double, PosY as Double, Width as Double, Height as Double, NamedDest as string) as Integer

MBS DynaPDF Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function adds a page link to the current open page by using a named destination as target. Notes: The difference in comparison to PageLink2() is that the named destination can be defined as string. This makes it possible to create the link, also if you don’t have the required information to create the named destination at this point. If the named destination does not exist when the file is closed then the link does
nothing. See also, CreateNamedDest().

Return values:
If the function succeeds the return value is the annotation handle, a value greater or equal zero. If the function fails the return value is a negative error code.

See also PageLink3 function in DynaPDF manual.

70.34.580 PageLinkEx(PosX as Double, PosY as Double, Width as Double, Height as Double, DestType as Integer, DestPage as Integer, a as Double, b as Double, c as Double, d as Double) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function inserts a page link onto the current open page. See also PageLinkEx function in DynaPDF manual.

70.34.581 PageStatistic(page as Integer = -1) as DynaPDFPageStatisticMBS

MBS DynaPDF Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Queries statistics from a page. Notes: If page is -1 the current open page is used. Else the plugin uses editpage(page) to open the page and run the statistics on that. Returns nil on any error or statistic value.

70.34.582 ParseContent(ParseInterface as DynaPDFParseInterfaceMBS, flags as Integer) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Parses the content of a page. Notes: Requires DynaPDF Pro license. See also ParseContent function in DynaPDF manual.
**70.34.583** ** PlaceImage(ImgHandle as Integer, PosX as Double, PosY as Double, Width as Double, Height as Double) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Images can be used multiple times on different positions and with different sizes. This function places an image onto a page or template that was already inserted beforehand by an image function. See also PlaceImage function in DynaPDF manual.

**70.34.584** ** PlaceSigFieldValidateIcon(SigField as Integer, PosX as Double, PosY as Double, Width as Double, Height as Double) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function places the validation icon in a signature field to the wished position. See also PlaceSigFieldValidateIcon function in DynaPDF manual.

**70.34.585** ** PlaceTemplate(TmplHandle as Integer, PosX as Double, PosY as Double, Width as Double, Height as Double) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function places a template onto a page, another open template, or pattern. See also PlaceTemplate function in DynaPDF manual.

**70.34.586** ** PlaceTemplateEx(TmplHandle as Integer, PosX as Double, PosY as Double, ScaleWidth as Double, ScaleHeight as Double) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Places a template. See also PlaceTemplateEx function in DynaPDF manual.

**70.34.587** ** PolygonAnnot(Vertices() as DynapdfPointMBS, LineWidth as Double, FillColor as UInt32, StrokeColor as UInt32, ColorSpace as Integer, Author as string, Subject as string, Content as string) as Integer**

MBS DynaPDF Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function creates a Polygon Annotation. **Notes:** The vertices are connected by straight lines. The path is always closed before it will be drawn. It is not required to close the path explicitly. At least two vertices must be provided.
The coordinates of the vertices are interpreted in current user space. Any transformation that was applied on the coordinate system will be taken into account. The stroke or fill color can be set to the special constant kNO_COLOR to fill or stroke the polygon. It is not allowed to set both colors to kNO_COLOR since this would result in an invisible annotation. This annotation type has an associated PopUp annotation that displays the string Content in a floating window. The initial window state of the associated PopUp annotation is closed by default but the state can be changed with SetAnnotOpenState if necessary.

If the function succeeds the return value is the annotation handle, a value greater or equal zero. If the function fails the return value is a negative error code. 

See also PolygonAnnot function in DynaPDF manual.

70.34.588 PolygonAnnotAnsi(Vertices() as DynapdfPointMBS, LineWidth as Double, FillColor as UInt32, StrokeColor as UInt32, ColorSpace as Integer, Author as string, Subject as string, Content as string) as Integer
70.34.589 PolyLineAnnot(Vertices() as DynapdfPointMBS, LineWidth as Double, StartLineEndStyle as Integer, EndLineEndStyle as Integer, FillColor as UInt32, StrokeColor as UInt32, ColorSpace as Integer, Author as string, Subject as string, Content as string) as Integer


Function: The function creates a PolyLine Annotation.

Notes:

The vertices are connected by straight lines. At least two vertices must be provided.
The coordinates of the vertices are interpreted in current user space. Any transformation that was applied
on the coordinate system will be taken into account.
The parameter FillColor is only used if the line end style of the start or end point has an interior that can
be filled. The special constant kNO_COLOR represents a transparent interior.
The stroke color is required and must not be set to kNO_COLOR.

This annotation type has an associated PopUp annotation that displays the string Content in a floating
window. The initial window state of the associated PopUp annotation is closed by default but the state can
be changed with SetAnnotOpenState if necessary.
The parameter LineWidth must be in the range 0 through 12 units. Values outside the valid range will be
adjusted to the nearest allowed value. A zero line width produces a 1 pixel wide line.
The line end styles can be changed if necessary with SetAnnotLineEndStyle.

If the function succeeds the return value is the annotation handle, a value greater or equal zero. If the
function fails the return value is a negative error code.
See also PolyLineAnnot function in DynaPDF manual.

70.34.590 PolyLineAnnotAnsi(Vertices() as DynapdfPointMBS, LineWidth as Double, StartLineEndStyle as Integer, EndLineEndStyle as Integer, FillColor as UInt32, StrokeColor as UInt32, ColorSpace as Integer, Author as string, Subject as string, Content as string) as Integer


Function: The function creates a PolyLine Annotation.

Notes:

The vertices are connected by straight lines. At least two vertices must be provided.
The coordinates of the vertices are interpreted in current user space. Any transformation that was applied
on the coordinate system will be taken into account.
The parameter FillColor is only used if the line end style of the start or end point has an interior that can
be filled. The special constant kNO_COLOR represents a transparent interior.
The stroke color is required and must not be set to kNO_COLOR.

This annotation type has an associated PopUp annotation that displays the string Content in a floating
window. The initial window state of the associated PopUp annotation is closed by default but the state can be changed with SetAnnotOpenState if necessary.
The parameter LineWidth must be in the range 0 through 12 units. Values outside the valid range will be adjusted to the nearest allowed value. A zero line width produces a 1 pixel wide line.
The line end styles can be changed if necessary with SetAnnotLineEndStyle.

If the function succeeds the return value is the annotation handle, a value greater or equal zero. If the function fails the return value is a negative error code.

70.34.591 PrintGetDevMode as String

Function: Queries last print dev mode.
Notes:
You can store this in a preferences file for next printing.
This is same data structure as in WindowsDeviceModeMBS class.

70.34.592 PrintGetDevNames(byref Driver as String, byref Device as String, byref Output as String, byref DefaultFlag as Integer) as Boolean

Function: Queries printer device names.
Notes:
Driver: File name (without the extension) of the device driver.
Device: Name of the device.
Output: Device name for the physical output medium (output port).
DefaultFlag: 1 if the selected printer is the default one.

Returns true on success or false on failure.

70.34.593 PrintPDFFile(TmpDir as FolderItem, DocName as string, DCHandle as integer, Flags as Integer = 0, Margin as DynaPDFRectMBS = nil, PrintParams as DynaPDFPrintParamsMBS = nil) as Boolean

MBS DynaPDF Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.
Function: Prints current PDF file.
Notes:
Returns true on success and false on failure.
Flags can be a combination of the flag values kpffPrintAsImage, kpffDefault, kpffColor, kpffAutoRotateAndCenter and kpff1Bit.
Margin can be nil. If not nil, specifies the margins to use.
DCHandle is the handle of the graphics context.

If you only want to print a selection of pages, please only import those pages via ImportPDFPage function. Or use DeletePage to remove the pages you don’t want to print.

Does not work with a graphics handle from Xojo 2016r4 and newer due to switch to DirectDraw APIs. Or in other words, you can use a HDC handle from graphics class in Xojo 2016r3 and older to print PDF. See also PrintPDFFile function in DynaPDF manual.
See also:

- 70.34.594 PrintPDFFile(TmpDir as FolderItem, DocName as string, PrinterName as String, Flags as Integer = 0, Margin as DynaPDFRectMBS = nil, PrintParams as DynaPDFPrintParamsMBS = nil) as Boolean

70.34.594 PrintPDFFile(TmpDir as FolderItem, DocName as string, PrinterName as String, Flags as Integer = 0, Margin as DynaPDFRectMBS = nil, PrintParams as DynaPDFPrintParamsMBS = nil) as Boolean

Function: Prints current PDF file.
Notes:
Returns true on success and false on failure.
Flags can be a combination of the flag values kpffPrintAsImage, kpffDefault, kpffColor, kpffAutoRotateAndCenter and kpff1Bit.
Margin can be nil. If not nil, specifies the margins to use.
PrinterName is the name of the printer to use. The plugin will open the printer and print PDF there with default settings.

If you only want to print a selection of pages, please only import those pages via ImportPDFPage function. Or use DeletePage to remove the pages you don’t want to print.
See also PrintPDFFile function in DynaPDF manual.
See also:

- 70.34.593 PrintPDFFile(TmpDir as FolderItem, DocName as string, DCHandle as integer, Flags as Integer = 0, Margin as DynaPDFRectMBS = nil, PrintParams as DynaPDFPrintParamsMBS = nil) as Boolean
70.34.595  PrintPDFFileWithDialog(TmpDir as FolderItem, DocName as string, Flags as Integer = 0, Margin as DynaPDFRectMBS = nil, PrintParams as DynaPDFPrintParamsMBS = nil, parentWindow as Window = nil) as Boolean


Function: Prints current PDF file with dialog.

Notes:

Returns true on success and false on failure.
Flags can be a combination of the flag values kpffPrintAsImage, kpffDefault, kpffColor, kpffAutoRotateAndCenter and kpff1Bit.
Margin can be nil. If not nil, specifies the margins to use.
Shows print dialog and allows user to set printer.

If you only want to print a selection of pages, please only import those pages via ImportPDFPage function. Or use DeletePage to remove the pages you don’t want to print.

After this call you can use PrintGetDevNames and PrintGetDevMode to get printer settings.
And before this call you can use PrintSetDevMode and PrintSetDevNames to restore printer settings.

70.34.596  PrintPDFPage(PageNum as Integer, DocName as string, DCHandle as integer, Flags as Integer = 0, Margin as DynaPDFRectMBS = nil, PrintParams as DynaPDFPrintParamsMBS = nil) as Boolean


Function: Prints a page.

Notes: See PrintPDFFile for details and options.

See also:

- 70.34.597 PrintPDFPage(PageNum as Integer, DocName as string, PrinterName as String, Flags as Integer = 0, Margin as DynaPDFRectMBS = nil, PrintParams as DynaPDFPrintParamsMBS = nil) as Boolean

70.34.597  PrintPDFPage(PageNum as Integer, DocName as string, PrinterName as String, Flags as Integer = 0, Margin as DynaPDFRectMBS = nil, PrintParams as DynaPDFPrintParamsMBS = nil) as Boolean


Function: Prints a page.

Notes: See PrintPDFFile for details and options.

See also:
70.34.596 PrintPDFPage(PageNum as Integer, DocName as string, DCHandle as integer, Flags as Integer = 0, Margin as DynaPDFRectMBS = nil, PrintParams as DynaPDFPrintParamsMBS = nil) as Boolean

70.34.598 PrintPDFPageWithDialog(PageNum as Integer, DocName as string, Flags as Integer = 0, Margin as DynaPDFRectMBS = nil, PrintParams as DynaPDFPrintParamsMBS = nil, parentWindow as Window = nil) as Boolean


70.34.599 PrintSetDevMode(data as String) as Boolean

MBS DynaPDF Plugin, Plugin Version: 17.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: Set last print dev mode. Notes: Returns true on success. This is same data structure as in WindowsDeviceModeMBS class.

70.34.600 PrintSetDevNames(Driver as String, Device as String, Output as String, DefaultFlag as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 17.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: Sets printer device names. Notes: Driver: File name (without the extension) of the device driver. Device: Name of the device. Output: Device name for the physical output medium (output port). DefaultFlag: 1 if the selected printer is the default one. Returns true on success or false on failure.
70.34.601  ReadImageFormat(FileName as folderitem, byref Width as Integer, byref Height as Integer, byref BitsPerPixel as Integer, byref UseZip as Boolean) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function retrieves the most important properties of an image file.

70.34.602  ReadImageFormat2(FileName as folderitem, Index as Integer, byref Width as Integer, byref Height as Integer, byref BitsPerPixel as Integer, byref UseZip as Boolean) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function retrieves the most important properties of an image file.

**Example:**

```pascal
// read image format and resolution and calculate physical size
dim bits as integer
dim useZip as Boolean
dim resX as integer = 0
dim resY as integer = 0
dim physHeight as integer
dim physWidth as integer
dim w as integer
dim h as integer

call pdf.ReadImageFormat2(Source, 1, w, h, bits, useZip)
call pdf.ReadImageResolution(Source, 1, resX, resY)

if (resX <> resY and resX > 0 and resY > 0) then
  if (resX > resY) then
    physWidth = w
    physHeight = h \ (resX \ resY)
  else
    physWidth = w \ (resY \ resX)
    physHeight = h
  end if
else
  physHeight = h
  physWidth = w
end if
```

See also ReadImageFormat2 function in DynaPDF manual.
70.34.603  ReadImageFormatEx(hBitmap as Integer, byref Width as Integer, 
byref Height as Integer, byref BitsPerPixel as Integer, byref UseZip as 
Boolean) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function retrieves the most important properties of a memory bitmap. See also ReadImageFormatEx function in DynaPDF manual.

70.34.604  ReadImageFormatFromBuffer(Buffer as memoryblock, Index as Integer, byref Width as Integer, byref Height as Integer, byref BitsPerPixel as Integer, byref UseZip as Boolean) as Boolean

MBS DynaPDF Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function retrieves the most important properties of an image in the same way as ReadImageFormat2(), but accepts an image buffer as input. See also ReadImageFormatFromBuffer function in DynaPDF manual. See also:

- 70.34.605 ReadImageFormatFromBuffer(Buffer as string, Index as Integer, byref Width as Integer, byref Height as Integer, byref BitsPerPixel as Integer, byref UseZip as Boolean) as Boolean

70.34.605  ReadImageFormatFromBuffer(Buffer as string, Index as Integer, byref 
Width as Integer, byref Height as Integer, byref BitsPerPixel as Integer, 
byref UseZip as Boolean) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function retrieves the most important properties of an image in the same way as ReadImageFormat2(), but accepts an image buffer as input. See also ReadImageFormatFromBuffer function in DynaPDF manual. See also:

- 70.34.604 ReadImageFormatFromBuffer(Buffer as memoryblock, Index as Integer, byref Width as Integer, byref Height as Integer, byref BitsPerPixel as Integer, byref UseZip as Boolean) as Boolean

70.34.606  ReadImageResolution(FileName as folderitem, Index as Integer, byref 
ResX as Integer, byref ResY as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function retrieves the horizontal and vertical resolution of an image file. **Example:**
// read image format and resolution and calculate physical size

dim bits as integer

dim useZip as Boolean

dim resX as integer = 0

dim resY as integer = 0

dim physHeight as integer

dim physWidth as integer

dim w as integer

dim h as integer

call pdf.ReadImageFormat2(Source, 1, w, h, bits, useZip)
call pdf.ReadImageResolution(Source, 1, resX, resY)

if (resX < resY and resX > 0 and resY > 0) then
  if (resX > resY) then
    physWidth = w
    physHeight = h \ (resX \ resY)
  else
    physWidth = w \ (resY \ resX)
  end if
else
  physHeight = h
  physWidth = w
end if

See also ReadImageResolution function in DynaPDF manual.

70.34.607 ReadImageResolutionEx(Buffer as Memoryblock, Index as Integer, byref ResX as Integer, byref ResY as Integer) as Boolean

Function: The function retrieves the horizontal and vertical resolution of an image file in the same way as ReadImageResolution() but accepts an image buffer as input.
See also ReadImageResolutionEx function in DynaPDF manual. 
See also:

• 70.34.608 ReadImageResolutionEx(Buffer as string, Index as Integer, byref ResX as Integer, byref ResY as Integer) as Boolean
70.34.608 ReadImageResolutionEx(Buffer as string, Index as Integer, byref ResX as Integer, byref ResY as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** The function retrieves the horizontal and vertical resolution of an image file in the same way as ReadImageResolution() but accepts an image buffer as input.
See also ReadImageResolutionEx function in DynaPDF manual.
See also:

- 70.34.607 ReadImageResolutionEx(Buffer as Memoryblock, Index as Integer, byref ResX as Integer, byref ResY as Integer) as Boolean

70.34.609 Rectangle(PosX as Double, PosY as Double, Width as Double, Height as Double, FillMode as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** This function draws a rectangle.
See also Rectangle function in DynaPDF manual.

70.34.610 ReEncryptPDF(File as folderitem, PwdType as Integer, InPwd as string, OpenPwd as string, OwnerPwd as string, KeyLen as Integer, Restrict as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** This function encrypts an already encrypted or unencrypted PDF file.
**Notes:** Also check the dynapdf manual on the pdfReEncryptPDF function (pdfReEncryptPDFW on Windows).
See also ReEncryptPDF function in DynaPDF manual.

70.34.611 ReEncryptPDFAnsi(Path as string, PwdType as Integer, InPwd as string, OpenPwd as string, OwnerPwd as string, KeyLen as Integer, Restrict as Integer) as Integer

**Function:** This function encrypts an already encrypted or unencrypted PDF file.
**Notes:** Same as ReEncryptPDF, but takes path name in Windows ANSI encoding.
70.34. **CLASS DYNAPDFMBS**

### 70.34.612 RenamedSpotColor(Colorant as string, NewName as string) as Integer


**Function:** Renames a colorant.

**Example:**

```vbnet
// your instance
dim pdf as DynaPDFMBS

// rename the color
call pdf.RenameSpotColor("Magenta", "Magenta2")
```

**Notes:** Strings are converted to UTF-8.
See also **RenameSpotColor** function in DynaPDF manual.

### 70.34.613 RenderAnnotOrField(Handle as UInt32, IsAnnot as boolean, State as Integer, Matrix as DynapdfMatrixMBS, Flags as Integer, PixFmt as Integer, Filter as Integer, byref Out as DynaPDFBitmapMBS) as Integer


**Function:** The function renders an annotation or field independent of the page.

**Notes:**
Please check dynapdf_help.pdf for details on RenderAnnotOrField function.
Plugin will fill out parameter only if result is zero.
Requires DynaPDF Pro license.
See also **RenderAnnotOrField** function in DynaPDF manual.

### 70.34.614 RenderPagePicture(PageNum as Integer) as picture


**Function:** Renders a picture for the page with the given page number.

**Example:**

```vbnet
dim pdf as new MyDynapdfMBS

// For this example you can use a Pro or Enterprise License
pdf.SetLicenseKey "Pro"

// create in memory
call pdf.CreateNewPDF nil
```
// set import flags
call pdf.SetImportFlags pdf.kifImportAsPage

// open the PDF file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
call pdf.OpenImportFile(f, 0, "")

// import all the pages
call pdf.ImportPDFFile(1, 1.0, 1.0)

// and render first page
dim out as Picture = pdf.RenderPagePicture(1)

// display in window
Backdrop = out

Notes:

Please note that for most cases RenderPageToImage and RenderPDFFile are better choices for rendering. Especially if you plan to compress images later anyway. And you avoid trouble with color matching. For this function to work correct you have to initialize DynaPDF with right color space for screen (Generic RGB on Mac and screen profile for Windows).

The picture size is set to the Cropbox. If no crop box is defined, it uses the media box.

Returns nil on any error.

If you render a lot of pages from the same PDF, consider using DynaPDFRasterizerMBS class as it’s faster when you reuse the rasterizer.

Currently not available for Linux Desktop apps.
Requires DynaPDF Pro license.
See also:

- 70.34.615 RenderPagePicture(PageNum as Integer, Width as Integer, Height as Integer, DefScale as Integer = 2, matrix as DynapdfMatrixMBS = nil) as picture

70.34.615 RenderPagePicture(PageNum as Integer, Width as Integer, Height as Integer, DefScale as Integer = 2, matrix as DynapdfMatrixMBS = nil) as picture

Function: Renders a picture for the page with the given page number.
Example:

```vba
dim pdf as new MyDynapdMBS

// For this example you can use a Pro or Enterprise License
df.SetLicenseKey "Pro"

// create in memory
call pdf.CreateNewPDF nil

// set import flags
call pdf.SetImportFlags pdf.kifImportAsPage

// open the PDF file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
call pdf.OpenImportFile(f, 0, "")

// import all the pages
call pdf.ImportPDFFile(1, 1.0, 1.0)

// and render first page with window size
dim out as Picture = pdf.RenderPagePicture(1, Width, Height)

// display in window
Backdrop = out
```

Notes:

Please note that for most cases RenderPageToImage and RenderPDFFile are better choices for rendering. Especially if you plan to compress images later anyway. And you avoid trouble with color matching. For this function to work correct you have to initialize DynaPDF with right color space for screen (Generic RGB on Mac and screen profile for Windows).

The picture is created with the given size. The PDF page is scaled to fit size. You can use the constants kpsFitBest, kpsFitHeight or kpsFitWidth for the DefScale parameter. The matrix allows you to move, rotate or scale the PDF inside the picture.

Returns nil on any error.

If you render a lot of pages from the same PDF, consider using DynaPDFRasterizerMBS class as it’s faster when you reuse the rasterizer.

Currently not available for Linux Desktop apps.
Requires DynaPDF Pro license.
See also:
70.34.616  RenderPageToImage(PageNumber as UInt32, OutFile as folderitem, Resolution as UInt32, Width as UInt32, Height as UInt32, Flags as(UInt32, PixFmt as UInt32, Filter as UInt32, Format as UInt32) as boolean


**Function:** The function renders a PDF page into an image.

**Example:**

```vba
dim pdf as new MyDynapdfMBS ' your DynaPDF subclass with Error event filled

' where to get PDF page
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")

' where to write
dim t as FolderItem = SpecialFolder.Desktop.Child("test.jpg")

pdf.SetLicenseKey "Pro" ' For this example you can use a Pro or Enterprise License

call pdf.CreateNewPDF nil
call pdf.SetImportFlags(pdf.kifImportAll + pdf.kifImportAsPage)

' open file
call pdf.OpenImportFile(f,0,"")

' add page
call pdf.Append

' import the page
call pdf.ImportPageEx(1,1.0,1.0)
call pdf.EndPage

' render the page
call pdf.RenderPageToImage(1, t, 72, ImageView1.Width, ImageView1.Height, DynaPDFRasterImageMBS.krfDefault, DynaPDFRasterizerMBS.kpxfRGB, DynaPDFMBS.kcfJPEG, DynaPDFMBS.kifmJPEG)
```

**Notes:**

PixFmt: pass kpxf* constants like DynaPDFRasterizerMBS.kpxfRGB.
Filter: Pass kcf* constants like DynaPDFMBS.kcfJPEG.
Format: pass kifm* constants like DynaPDFMBS.kifmJPEG.

The page that should be rendered must be closed (Append() or EditPage()) open a page and EndPage()
If the parameter OutFile is set to nil the image is created in memory. In this case call GetImageBuffer() to retrieve the image buffer and finally FreeImageBuffer() to release it.

The output image size can be calculated in different ways:

- If Resolution is >0 the image width and height is calculated according to the specified resolution. On a 32 bit machine it is possible to render pages in up to 1200 DPI depending on the page format. Larger resolutions require special techniques like banding to restrict the memory usage. However, no such feature is available in DynaPDF.

- If Width >0 and if Height == 0 the image height is calculated according to the given width to archive an image with exact proportions.

- If Width == 0 and if Height >0 then image width is calculated according to the given height to archive an image with exact proportions.

- If Width >0 and if Height >0 the image is scaled to the width and height.

The pixel format and the output image format must be compatible. Because TIFF is the only image format that supports different compression filters, the parameter Filter will be ignored for all other output formats. If the function succeeds the return value is true. If the function fails the return value is false.

Requires DynaPDF Pro license.
• If Resolution is >0 the image width and height is calculated according to the specified resolution. On a 32 bit machine it is possible to render pages in up to 1200 DPI depending on the page format. Larger resolutions require special techniques like banding to restrict the memory usage. However, no such feature is available in DynaPDF.

• If Width >0 and if Height == 0 the image height is calculated according to the given width to archive an image with exact proportions.

• If Width == 0 and if Height >0 then image width is calculated according to the given height to archive an image with exact proportions.

• If Width >0 and if Height >0 the image is scaled to the width and height.

The pixel format and the output image format must be compatible. Because TIFF is the only image format that supports different compression filters, the parameter Filter will be ignored for all other output formats. If the function succeeds the return value is true. If the function fails the return value is false.

Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.
Requires DynaPDF Pro license.

70.34.618 RenderPageToPicture(PageNum as Integer, pic as picture, DefScale as Integer = 2, matrix as DynapdfMatrixMBS = nil) as boolean

Function: Renders the page into the given picture.
Example:

dim pdf as new MyDynapdfMBS

    // For this example you can use a Pro or Enterprise License
    pdf.SetLicenseKey "Pro"

    // create in memory
    call pdf.CreateNewPDF nil

    // set import flags
    call pdf.SetImportFlags pdf.kifImportAsPage

    // open the PDF file
    dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
    call pdf.OpenImportFile(f, 0, "")

    // import all the pages
    call pdf.ImportPDFFile(1, 1.0, 1.0)
// create picture
    dim out as new Picture(800, 600, 32)

// render first page in the existing picture
    call pdf.RenderPageToPicture(1, out)

// display in window
    Backdrop = out

Notes:

Please note that for most cases RenderPageToImage and RenderPDFFile are better choices for rendering. Especially if you plan to compress images later anyway. And you avoid trouble with color matching. For this function to work correct you have to initialize DynaPDF with right color space for screen (Generic RGB on Mac and screen profile for Windows).

This method draws into an existing picture. The PDF page is scaled to fit size. You can use the constants kpsFitBest, kpsFitHeight or kpsFitWidth for the DefScale parameter. The matrix allows you to move, rotate or scale the PDF inside the picture.

Returns nil on any error.

This does not work on Linux desktop targets as the plugin can’t write into a picture there.

If you render a lot of pages from the same PDF, consider using DynaPDFRasterizerMBS class as it’s faster when you reuse the rasterizer.

Requires DynaPDF Pro license.

70.34.619 RenderPDFFile(OutFile as folderitem, Resolution as UInt32, Flags as UInt32, PixFmt as UInt32, Filter as UInt32, Format as UInt32) as boolean


Function: The function renders all PDF pages which are currently in memory and stores the result in a proprietary image format.

Example:

dim file as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim pdf as new MyDynapdfMBS

call pdf.CreateNewPDF nil
call pdf.OpenImportFile(file, 0, "")
call pdf.ImportPDFFile(1, 1.0, 1.0)

// create a TIFF file:

dim outfile as FolderItem = SpecialFolder.Desktop.Child("test.tif")

dim Flags as Integer = DynaPDFRasterImageMBS.krfDefault
dim PixFmt as Integer = DynaPDFRasterizerMBS.kpxfRGB
dim Format as Integer = DynaPDFMBS.kifmTIFF // use kifm* constants
dim Filter as Integer = DynaPDFMBS.kcfLZW // pick a compression scheme for the file format

call pdf.RenderPDFFile(outfile, 300, Flags, PixFmt, Filter, Format)

// create a folder of JPEG file:

dim outfolder as FolderItem = SpecialFolder.Desktop.Child("test files")
outfolder.CreateAsFolder

Flags = DynaPDFRasterImageMBS.krfDefault
PixFmt = DynaPDFRasterizerMBS.kpxfRGB
Format = DynaPDFMBS.kifmJPEG // use kifm* constants
Filter = DynaPDFMBS.kcfJPEG

call pdf.RenderPDFFile(outfolder, 300, Flags, PixFmt, Filter, Format)

**Notes:** Also check the dynapdf manual on the pdfRenderPDFFileA function (pdfRenderPDFFileW on Windows).

### 70.34.620  RenderPDFFileEx(OutFile as folderitem, Resolution as UInt32, Width as Integer, Height as Integer, Flags as UInt32, PixFmt as UInt32, Filter as UInt32, Format as UInt32) as boolean

**Function:** Renders all PDF pages which are currently in memory and stores the result in a proprietary image format.  
**Notes:**  
The pages in memory could be imported from one or more external PDF files, e.g. with ImportPDFFile(), created with DynaPDF functions, or a combination of both.

The parameter OutFile can be a path to an existing directory or the file name of the output image. The latter type can be used with TIFF images because this format supports multi-page output. When a file path is used with a single page image format only the first page will be rendered.
The function checks whether the path is a directory or a file name. The function can render pages in a specific resolution, or scale them to a given width or height.

Depending on which parameters are set the image size is calculated as follows:

- Resolution >0 and Width == 0 and Height == 0: Pages are rendered according to the given resolution. Note that PDF pages can be very large. Therefore, it is maybe not possible to render all pages in the wished resolution.

- Resolution >0 and Width <0 and or Height <0: Pages are rendered according to the given resolution. Negative values of Width and Height are interpreted as maximum width or height if Resolution is greater zero. Since PDF pages can be very large, it is recommended to set the maximum width and height to a value that is low enough so that no out of memory exception occurs, e.g. 5000 x 5000 pixels.

- Resolution == 0 and Width >0 or Height >0: Pages are scaled to the given Width or Height. If Width and Height are greater zero then pages are scaled to that size independent of the original page format (not recommended). It is usually best to set the width or height to zero so that the function can calculate the missing value to preserve the aspect ratio.

On a 32 bit system it is possible to render PDF pages in RGB with up to around 1200 DPI, depending on the page format and available memory. The resolution of gray images can be higher but the encoder must be able to handle such large images. The PNG and bitmap encoders accept images in almost arbitrary resolutions but all other encoders can fail when the resolution is larger than about 2000 DPI.

The function calls the progress events. Returns true on success or false on failure.

70.34.621 RenderPDFFileExMT(OutFile as folderitem, Resolution as UInt32, Width as Integer, Height as Integer, Flags as UInt32, PixFmt as UInt32, Filter as UInt32, Format as UInt32) as boolean

MBS DynaPDF Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Renders all PDF pages which are currently in memory and stores the result in a proprietary image format.

**Notes:**

The pages in memory could be imported from one or more external PDF files, e.g. with ImportPDFFile(), created with DynaPDF functions, or a combination of both.

The parameter OutFile can be a path to an existing directory or the file name of the output image. The latter type can be used with TIFF images because this format supports multi-page output. When a file path is used with a single page image format only the first page will be rendered.
The function checks whether the path is a directory or a file name.
The function can render pages in a specific resolution, or scale them to a given width or height.

Depending on which parameters are set the image size is calculated as follows:

- **Resolution >0 and Width == 0 and Height == 0:** Pages are rendered according to the given resolution. Note that PDF pages can be very large. Therefore, it is maybe not possible to render all pages in the wished resolution.

- **Resolution >0 and Width <0 and or Height <0:** Pages are rendered according to the given resolution. Negative values of Width and Height are interpreted as maximum width or height if Resolution is greater zero. Since PDF pages can be very large, it is recommended to set the maximum width and height to a value that is low enough so that no out of memory exception occurs, e.g. 5000 x 5000 pixels.

- **Resolution == 0 and Width >0 or Height >0:** Pages are scaled to the given Width or Height. If Width and Height are greater zero then pages are scaled to that size independent of the original page format (not recommended). It is usually best to set the width or height to zero so that the function can calculate the missing value to preserve the aspect ratio.

On a 32 bit system it is possible to render PDF pages in RGB with up to around 1200 DPI, depending on the page format and available memory. The resolution of gray images can be higher but the encoder must be able to handle such large images. The PNG and bitmap encoders accept images in almost arbitrary resolutions but all other encoders can fail when the resolution is larger than about 2000 DPI.

The function calls the progress events.
Returns true on success or false on failure.

Same as RenderPDFFile, but multithreaded.

Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.
Requires DynaPDF Pro license.

**70.34.622 RenderPDFFileMT(OutFile as folderitem, Resolution as UInt32, Flags as UInt32, PixFmt as UInt32, Filter as UInt32, Format as UInt32) as boolean**

**Function:** The function renders all PDF pages which are currently in memory and stores the result in a proprietary image format.

**Notes:**
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Same as RenderPDFFile, but multithreaded.
Also check the dynapdf manual on the pdfRenderPDFFileA function (pdfRenderPDFFileW on Windows).

Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.
Requires DynaPDF Pro license.

70.34.623  ReOpenImportFile(Handle as Integer) as boolean

Function: The function re-opens a PDF file so that further contents can be imported from it.
Notes:
The parameter Handle must be a valid file handle that OpenImportFile() or OpenImportBuffer() returned.
When the file is no longer needed close the parser instance with CloseImportFileEx().
If the function succeeds the return value is true. If the function fails the return value is false.
See also ReOpenImportFile function in DynaPDF manual.

70.34.624  ReplaceFont(PDFFontRef as Integer, Name as string, Style as integer = 0, NameIsFamilyName as boolean = true) as integer

Function: Replaces a PDF font with another one.
Notes:
The function can be called in the OnFontNotFound event of the function CheckConformance(). The return value of the event should be the return value of this function. The parameter PDFFontRef is a parameter of the event. The font reference is required and must be passed unchanged to the function.

On Linux or Unix system fonts must be loaded with AddFontSearchPath() before this function can be called. This should be done before the first PDF file is imported.

If the function succeeds the return value is zero. If the function fails the return value is a negative error code.
See also ReplaceFont function in DynaPDF manual.
70.34.625 ReplaceFontAnsi(PDFFontRef as Integer, Name as string, Style as integer = 0, NameIsFamilyName as boolean = true) as integer

Function: Replaces a PDF font with another one.
Notes:
The function can be called in the OnFontNotFound event of the function CheckConformance(). The return value of the event should be the return value of this function. The parameter PDFFontRef is a parameter of the event. The font reference is required and must be passed unchanged to the function.

On Linux or Unix system fonts must be loaded with AddFontSearchPath() before this function can be called. This should be done before the first PDF file is imported.

If the function succeeds the return value is zero. If the function fails the return value is a negative error code.

70.34.626 ReplaceFontEx(PDFFontRef as Integer, FontFile as FolderItem, Embed as boolean = true) as integer

Function: Replaces a PDF font with another one.
Notes:
The font file can be loaded directly. It is not required to install the font on the system. The function can be called in the OnFontNotFound event of the function CheckConformance(). The return value of the event should be the return value of this function. The parameter PDFFontRef is a parameter of the event. The font reference is required and must be passed unchanged to the function.

If the function succeeds the return value is zero. If the function fails the return value is a negative error code.
See also ReplaceFontEx function in DynaPDF manual.
See also:

• 70.34.627 ReplaceFontEx(PDFFontRef as Integer, FontFilePath as string, Embed as boolean = true) as integer

70.34.627 ReplaceFontEx(PDFFontRef as Integer, FontFilePath as string, Embed as boolean = true) as integer

Function: Replaces a PDF font with another one.
Notes:
The font file can be loaded directly. It is not required to install the font on the system. The function can be called in the OnFontNotFound event of the function CheckConformance(). The return value of the event should be the return value of this function. The parameter PDFFontRef is a parameter of the event. The font reference is required and must be passed unchanged to the function.

If the function succeeds the return value is zero. If the function fails the return value is a negative error code.

See also ReplaceFontEx function in DynaPDF manual.

See also:

- 70.34.626 ReplaceFontEx(PDFFontRef as Integer, FontFile as FolderItem, Embed as boolean = true) as integer

70.34.628 ReplaceFontExAnsi(PDFFontRef as Integer, FontFilePath as string, Embed as boolean = true) as integer


Function: Replaces a PDF font with another one.

Notes:

The font file can be loaded directly. It is not required to install the font on the system. The function can be called in the OnFontNotFound event of the function CheckConformance(). The return value of the event should be the return value of this function. The parameter PDFFontRef is a parameter of the event. The font reference is required and must be passed unchanged to the function.

If the function succeeds the return value is zero. If the function fails the return value is a negative error code.

70.34.629 ReplaceICCProfile(ColorSpace as Integer, ICCFile as folderitem) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: This function is used to dynamically create ICC based color spaces within the callback function OnReplaceICCProfile of CheckConformance().

Notes: Also check the dynapdf manual on the pdfReplaceICCProfileA function (pdfReplaceICCProfileW on Windows).

See also ReplaceICCProfile function in DynaPDF manual.

70.34.630 ReplaceICCProfileEx(ColorSpace as integer, ICCFileData as MemoryBlock) as integer


Function: Replaces an ICC profile exactly in the same way as ReplaceICCProfile() but accepts a file buffer
as input.

**Notes:** If the function succeeds the return value is zero. If the function fails the return value is a negative error code.

See also:

- 70.34.631 ReplaceICCProfileEx(ColorSpace as integer, ICCFileData as String) as integer 11910

### 70.34.631 ReplaceICCProfileEx(ColorSpace as integer, ICCFileData as String) as integer


**Function:** Replaces an ICC profile exactly in the same way as ReplaceICCProfile() but accepts a file buffer as input.

**Notes:** If the function succeeds the return value is zero. If the function fails the return value is a negative error code.

See also:

- 70.34.630 ReplaceICCProfileEx(ColorSpace as integer, ICCFileData as MemoryBlock) as integer 11909

### 70.34.632 ReplaceImage(ImageToReplace as DynaPDFImageMBS, ImageFile as FolderItem, Index as Integer = 1, ColorSpace as Integer = 0, CSHandle as Integer = -1, Flags as Integer = 0) as Boolean


**Function:** Replaces an image with another image.

**Notes:**

The parameter ImageToReplace must be a valid pointer of an image object which is retrieved by functions like GetImageObj() or ParseContent().

The resolution, aspect ratio, color space and so on can be freely chosen. However, note that this function does not change the output position or size. If the aspect ratio of the new image is different, then it will be stretched or shrunk to fit into the output rectangle.

The parameter ColorSpace specifies the destination color space into which the image should be converted or saved, if the image is already defined in that color space. CSHandle must be the handle of that color space if a non-device space is used. The will be ignored for devices spaces.

The function works in the very same way as InsertImageEx() with the following differences:

The color of an image mask cannot be set or changed because this would require changes on the content stream in which the image is used. An image mask will be created if the image color depth is 1 bit and if color key masking is enabled (see SetUseTransparency()). SetUseTransparency() should normally be set to false before calling this function.

The image will never be downscaled, independent of the current resolution, because the size of the output rectangle is not known.
If the image that should be replaced is a soft mask of another base image, then make sure that the destination color space is set to kesDeviceGray, kesCalGray, or to a one channel ICC based color space because a soft mask must not contain more than one color channel.
The flags kgfUseImageColorSpace, kgfIgnoreICCProfiles, kgfRealPassThrough, and kfNoBitmapAlpha are all supported. See SetGStateFlags() for further information.

If the function succeeds the return value is true. If the function fails the return value is false.

70.34.633 ReplaceImageEx(ImageToReplace as DynaPDFImageMBS, ImageData as MemoryBlock, Index as Integer = 1, ColorSpace as Integer = 0, CSHandle as Integer = -1, Flags as Integer = 0) as Boolean

Function: Replaces an image with a new image exactly like ReplaceImage() but accepts a file buffer as input.
Notes: See ReplaceImage() for further information.

If the function succeeds the return value is 1. If the function fails the return value is 0.
See also:

• 70.34.634 ReplaceImageEx(ImageToReplace as DynaPDFImageMBS, ImageData as String, Index as Integer = 1, ColorSpace as Integer = 0, CSHandle as Integer = -1, Flags as Integer = 0) as Boolean

70.34.634 ReplaceImageEx(ImageToReplace as DynaPDFImageMBS, ImageData as String, Index as Integer = 1, ColorSpace as Integer = 0, CSHandle as Integer = -1, Flags as Integer = 0) as Boolean

Function: Replaces an image with a new image exactly like ReplaceImage() but accepts a file buffer as input.
Notes: See ReplaceImage() for further information.

If the function succeeds the return value is 1. If the function fails the return value is 0.
See also:

• 70.34.633 ReplaceImageEx(ImageToReplace as DynaPDFImageMBS, ImageData as MemoryBlock, Index as Integer = 1, ColorSpace as Integer = 0, CSHandle as Integer = -1, Flags as Integer = 0) as Boolean
**70.34.635** ReplacePageText(text as string, stack as DynaPDFStackMBS) as boolean


**Function:** The function deletes or replaces a text string of a content stream that was found by the function GetPageText() beforehand.

**Notes:**

Be aware that ReplacePageText can’t always replace text as encoding must match and fonts may not have the characters for the new text. For that better use ReplacePageTextEx.

If you have problems with asian characters, please make sure you use SetCMapDir and load the CMAPs. Requires DynaPDF Pro license.

See also ReplacePageText function in DynaPDF manual.

**70.34.636** ReplacePageTextEx(text as string, stack as DynaPDFStackMBS) as boolean


**Function:** The function deletes or replaces a text string of a content stream that was found by the function GetPageText() beforehand.

**Notes:**

The text parameter is converted to unicode.

If you have problems with asian characters, please make sure you use SetCMapDir and load the CMAPs. Requires DynaPDF Pro license.

See also ReplacePageTextEx function in DynaPDF manual.

**70.34.637** ReplacePageTextExAnsi(text as string, stack as DynaPDFStackMBS) as boolean


**Function:** The function deletes or replaces a text string of a content stream that was found by the function GetPageText() beforehand.

**Notes:**

The text parameter is converted to ANSI.

Requires DynaPDF Pro license.
70.34.638  ResetEncryptionSettings as Boolean

MBS DynaPDF Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Resets the encryption settings which were imported from an external PDF file so that the PDF file in memory can be saved unencrypted. **Notes:** If the function succeeds the return value is true. If the function fails the return value is false. See also ResetEncryptionSettings function in DynaPDF manual.

70.34.639  ResetLineDashPattern as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function resets a previously defined line dash pattern to its default value (straight line). See also ResetLineDashPattern function in DynaPDF manual.

70.34.640  RestoreGraphicState as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function restores a previously saved graphics state. See also RestoreGraphicState function in DynaPDF manual.

70.34.641  RGB(R as Integer, G as Integer, B as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Builds a RGB color value based on the given component values. **Example:**

```vbs
dim rgb as Integer = DynaPDFMBS.RGB(1,2,3)
MsgBox hex(rgb)
```

70.34.642  RofRGB(RGB as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns R of a RGB color value. **Example:**

```vbs
dim rgb as Integer = DynaPDFMBS.RGB(1,2,3)
MsgBox str(DynaPDFMBS.RofRGB(rgb)) // shows 1
```
**70.34.643 RotateCoords(alpha as Double, OriginX as Double, OriginY as Double) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function rotates the coordinate system at the point OriginX, OriginY by applying a transformation matrix. **Notes:** Please do not try to scale/skew/translate back later. Use SaveGraphicState and RestoreGraphicState. See also RotateCoords function in DynaPDF manual.

**70.34.644 RotateTemplate(OldTemplate as Integer, Rotation as Integer) as Integer**

MBS DynaPDF Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Rotates a template. **Notes:** Returns a new template handle. This is a convenience function which creates a new template and draws the existing template there with rotation. Returns negative number for errors. The plugin uses -1 for plugin errors like wrong rotation angle.

**70.34.645 RoundRect(PosX as Double, PosY as Double, Width as Double, Height as Double, Radius as Double, FillMode as Integer) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function draws a rectangle with rounded corners. **Example:**

```vbnet
dim pdf as new DynaPDFMBS
dim f as FolderItem = SpecialFolder.Desktop.Child("Create PDF with Round Rectangles.pdf")
pdf.SetLicenseKey "Starter" // For this example you can use a Starter, Lite, Pro or Enterprise License

call pdf.CreateNewPDF f
call pdf.Append

dim PosX as Double = 100.0
dim PosY as Double = 100.0
dim Width as Double = 100.0
dim Height as Double = 100.0
dim Radius as Double = 20.0
dim FillMode as Integer = pdf.kfmFill
```
70.34. CLASS DYNAPDFMBS

call pdf.RoundRect(PosX, PosY, Width, Height, Radius, FillMode)

PosX = 300.0
dim RadiusX as Double = 30.0
dim RadiusY as Double = 30.0

call pdf.RoundRectEx(PosX, PosY, Width, Height, RadiusX, RadiusY, FillMode)

call pdf.EndPage
call pdf.CloseFile

f.Launch

See also RoundRect function in DynaPDF manual.

70.34.646 RoundRectEx(PosX as Double, PosY as Double, Width as Double, Height as Double, rWidth as Double, rHeight as Double, FillMode as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function draws a rectangle with elliptical corners. Example:

dim pdf as new DynaPDFMBS
dim f as FolderItem = SpecialFolder.Desktop.Child("Create PDF with Round Rectangles.pdf")

pdf.SetLicenseKey "Starter" // For this example you can use a Starter, Lite, Pro or Enterprise License

call pdf.CreateNewPDF f
call pdf.Append

dim PosX as Double = 100.0
dim PosY as Double = 100.0
dim Width as Double = 100.0
dim Height as Double = 100.0
dim Radius as Double = 20.0
dim FillMode as Integer = pdf.kfmFill

call pdf.RoundRect(PosX, PosY, Width, Height, Radius, FillMode)

PosX = 300.0
dim RadiusX as Double = 30.0
dim RadiusY as Double = 30.0
call pdf.RoundRectEx(PosX, PosY, Width, Height, RadiusX, RadiusY, FillMode)
call pdf.EndPage
call pdf.CloseFile
f.Launch

See also RoundRectEx function in DynaPDF manual.

70.34.647  SaveGraphicState as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function saves the current graphics state.
See also SaveGraphicState function in DynaPDF manual.

70.34.648  ScaleCoords(sx as Double, sy as Double) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function scales the coordinate system by applying a transformation matrix.
**Notes:** Please do not try to scale/skew/translate back later. use SaveGraphicState and RestoreGraphicState.
See also ScaleCoords function in DynaPDF manual.

70.34.649  SelfTest as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function checks the size of all required data types and checks whether the endian configuration of the library is correct.
See also SelfTest function in DynaPDF manual.

70.34.650  Set3DAnnotProps(Annot as Integer, ActType as Integer, DeActType as Integer, InstType as Integer, DeInstType as Integer, DisplayToolbar as boolean, DisplayModelTree as boolean) as boolean

MBS DynaPDF Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the properties of a 3D Annotation.
See also Set3DAnnotProps function in DynaPDF manual.
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70.34.651 **Set3DAnnotScriptAnsi(Annot as Integer, Value as string) as boolean**

MBS DynaPDF Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the 3D Annotation Script.

70.34.652 **SetAllocBy(Value as Integer) as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets the size of the memory blocks in kilo bytes, which will be allocated if memory must be allocated for page content streams. See also SetAllocBy function in DynaPDF manual.

70.34.653 **SetAnnotBorderEffect(Handle as Integer, BorderEffect as Integer) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the border effect for an annotation. **Notes:** Returns true on success. Handle is in range of 0 to number of annotations - 1. See also SetAnnotBorderEffect function in DynaPDF manual.

70.34.654 **SetAnnotBorderStyle(Handle as Integer, BorderStyle as Integer) as boolean**

MBS DynaPDF Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the annotation border style. See also SetAnnotBorderStyle function in DynaPDF manual.

70.34.655 **SetAnnotBorderWidth(Handle as Integer, LineWidth as Double) as boolean**

MBS DynaPDF Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the annotation border width. See also SetAnnotBorderWidth function in DynaPDF manual.
70.34.656 SetAnnotColor(Handle as Integer, ColorType as Integer, PDFColorSpace as Integer, ColorValue as Integer) as boolean

MBS DynaPDF Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the annotation color. See also SetAnnotColor function in DynaPDF manual.

70.34.657 SetAnnotFlags(Flags as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets the default flags used for newly created annotations. See also SetAnnotFlags function in DynaPDF manual.

70.34.658 SetAnnotFlagsEx(Handle as Integer, Flags as Integer) as boolean

MBS DynaPDF Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the annotation flags. See also SetAnnotFlagsEx function in DynaPDF manual.

70.34.659 SetAnnotHighlightMode(Handle as Integer, HighlightMode as Integer) as boolean

MBS DynaPDF Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the annotation highlight mode. See also SetAnnotHighlightMode function in DynaPDF manual.

70.34.660 SetAnnotIcon(Handle as Integer, AnnotIcon as Integer) as boolean

MBS DynaPDF Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the annotation icon. See also SetAnnotIcon function in DynaPDF manual.

70.34.661 SetAnnotLineDashPattern(Handle as UInt32, dash as memoryblock, NumValues as integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets or deletes the line dash pattern of an annotation.
Notes:
The following annotation types support line dash patterns:

- atCircle
- atInk
- atLine
- atPolygon
- atPolyLine
- atSquare

Memoryblock must contain floating point values (Single).
Returns true on success.

If array is nil, the pattern is removed.
See also SetAnnotLineDashPattern function in DynaPDF manual.
See also:

- 70.34.662 SetAnnotLineDashPattern(Handle as UInt32, dash() as single) as Boolean

70.34.662 SetAnnotLineDashPattern(Handle as UInt32, dash() as single) as Boolean

Function: Sets or deletes the line dash pattern of an annotation.
Notes:
The following annotation types support line dash patterns:

- atCircle
- atInk
- atLine
- atPolygon
- atPolyLine
- atSquare
Returns true on success.

If array is nil, the pattern is removed.
See also SetAnnotLineDashPattern function in DynaPDF manual.
See also:

- 70.34.661 SetAnnotLineDashPattern(Handle as UInt32, dash as memoryblock, NumValues as integer) as Boolean

70.34.663 SetAnnotLineEndStyle(Handle as UInt32, StartLineStyle as Integer, EndLineStyle as Integer) as boolean

Function: The function sets or changes the line end styles of a Line or PolyLine Annotation.
Notes: If the function succeeds the return value is true. If the function fails the return value is false.
See also SetAnnotLineEndStyle function in DynaPDF manual.

70.34.664 SetAnnotMigrationState(Handle as Integer, State as Integer, Name as string) as Integer

MBS DynaPDF Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Adds a migration state to a markup annotation.
Notes:

All annotation types with exception of 3D, Link, Movie, Screen, PrinterMark, TrapNet, and Watermark are
markup annotations.
Migration states are stored in text annotations as reply to the base annotation. Further states are stored as
reply to the last reply; the result is a single linked list. Because the base annotation contains no reference to
the last reply or migration state the function must search for it. To speed up processing the function returns
the handle of the text annotation so that the next state can directly be added to this annotation.

The migration state is defined since PDF 1.5. The function adjusts the PDF version automatically if it is
lower than PDF 1.5.

If the function succeeds the return value is the handle of the text annotation, a value greater or equal zero.
If the function fails the return value is a negative error code.

State can be kasNone, kasAccepted, kasRejected, kasCancelled, kasCompleted.
See also SetAnnotMigrationState function in DynaPDF manual.
70.34.665  SetAnnotMigrationStateAnsi(Handle as Integer, State as Integer, Name as string) as Integer

MBS DynaPDF Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Adds a migration state to a markup annotation.
Notes: All annotation types with exception of 3D, Link, Movie, Screen, PrinterMark, TrapNet, and Watermark are markup annotations. Migration states are stored in text annotations as reply to the base annotation. Further states are stored as reply to the last reply; the result is a single linked list. Because the base annotation contains no reference to the last reply or migration state the function must search for it. To speed up processing the function returns the handle of the text annotation so that the next state can directly be added to this annotation.

The migration state is defined since PDF 1.5. The function adjusts the PDF version automatically if it is lower than PDF 1.5.

If the function succeeds the return value is the handle of the text annotation, a value greater or equal zero. If the function fails the return value is a negative error code.

State can be kasNone, kasAccepted, kasRejected, kasCancelled, kasCompleted.

70.34.666  SetAnnotOpacity(Handle as Integer, opacity as Double) as Boolean

Function: The function changes the opacity of a markup annotation.
Notes: The function GetAnnotEx() or GetPageAnnotEx() can be used to determine whether an annotation is a markup annotation.

Returns true on succes or false on failure.
See also SetAnnotOpacity function in DynaPDF manual.

70.34.667  SetAnnotOpenState(Handle as Integer, Open as Boolean) as boolean

Function: Sets the annotation open state.
See also SetAnnotOpenState function in DynaPDF manual.
70.34.668  SetAnnotOrFieldDate(CSHandle as UInt32, IsField as Boolean, Type as Integer, DateTime as UInt32) as boolean


**Function:** The function sets or changes the creation or modification date of an annotation or form field.

**Notes:**

If the parameter IsField is set to true, a valid field handle must be passed to the parameter Handle. An annotation handle is expected otherwise.

Annotations and form fields support a modification date but a creation date is supported by markup annotations only.

The following annotation types are markup annotations:

- Care
- Circle
- FileAttach
- FreeText
- Highlight, Squiggly, Strikeout, Underline
- Ink
- Line
- Polygon
- Projection
- Redact
- Sound
- Square
- Stamp
- Text

The function GetAnnotEx() or GetPageAnnotEx() can also be used to determine whether an annotation is a markup annotation.

If the function succeeds the return value is 1. If the function fails the return value is 0.

See also SetAnnotOrFieldDate function in DynaPDF manual.
70.34.669  SetAnnotQuadPoints(Handle as UInt32, points() as DynapdfPointMBS) as boolean


Function: Sets or changes the quad points definition of a Highlight, Link, Redakt, Squiggly, atStrikeOut, or Underline annotation.

Notes:
The function must be called within an open page.
Independent of the used coordinate system (bottom up or top down), the points must be defined in the following order:
\[ x_1, y_1 \quad x_3, y_3 \]
\[ x_2, y_2 \quad x_4, y_4 \]
The coordinates of the vertices are interpreted in current user space. Any transformation that was applied on the coordinate system will be taken into account.
The number of points must be 4 or a multiple of 4.

Returns true on success.
See also SetAnnotQuadPoints function in DynaPDF manual.

70.34.670  SetAnnotString(Handle as Integer, StringType as Integer, Value as string) as boolean


Function: Creates a stamp annotation.
See also SetAnnotString function in DynaPDF manual.

70.34.671  SetAnnotStringAnsi(Handle as Integer, StringType as Integer, Value as string) as boolean


Function: Creates a stamp annotation.

70.34.672  SetAnnotSubject(Handle as Integer, Value as string) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: The function sets or changes the optional subject string of an annotation.
Notes: The value parameter is converted to unicode.
See also SetAnnotSubject function in DynaPDF manual.
70.34.673 SetAnnotSubjectAnsi(Handle as Integer, Value as string) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets or changes the optional subject string of an annotation. **Notes:** The value parameter is converted to ANSI.

70.34.674 SetBBox(Boundary as Integer, LeftX as Double, LeftY as Double, RightX as Double, RightY as Double) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets a specific bounding box of the current open PDF page. **See also** SetBBox function in DynaPDF manual.

70.34.675 SetBidiMode(BidiMode as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets or changes the bidirectional mode. **See also** SetBidiMode function in DynaPDF manual.

70.34.676 SetBookmarkDest(ABmk as Integer, DestType as Integer, a as Double, b as Double, c as Double, d as Double) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets or changes the destination of a bookmark. **See also** SetBookmarkDest function in DynaPDF manual.

70.34.677 SetBookmarkStyle(ABmk as Integer, Style as Integer, RGBColor as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the bookmark style. **See also** SetBookmarkStyle function in DynaPDF manual.

70.34.678 SetBorderStyle(Style as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function set the global border style which is used for newly created form fields.
70.34.679 SetCharacterSpacing(value as Double) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets the current character spacing. The function requires an open page, template or pattern. See also SetCharacterSpacing function in DynaPDF manual.

70.34.680 SetCheckBoxChar(CheckBoxChar as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets the character which should be used for newly created check boxes. See also SetCheckBoxChar function in DynaPDF manual.

70.34.681 SetCheckBoxDefState(Field as Integer, Checked as Boolean) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function changes the default state of a check box; it can differ from the current visible state of the check box. See also SetCheckBoxDefState function in DynaPDF manual.

70.34.682 SetCheckBoxState(Field as Integer, Checked as Boolean) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function changes the state of a check box. The parameter Field must be a valid check box handle. See also SetCheckBoxState function in DynaPDF manual.

70.34.683 SetCIDFont(CMapHandle as Integer, Name as string, Style as Integer, Size as Double, Embed as boolean) as Integer

MBS DynaPDF Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets a CID Font. See also SetCIDFont function in DynaPDF manual.
70.34.684  SetCMapDir(path as folderitem, flags as Integer) as Integer

**Function:** Sets the character map directory.  
**Example:**
```
dim pdf as DynaPDFMBS // your dynapdf instance
```

**Notes:**
Takes an integer instead of a boolean starting with plugin version 11.2pr6.  
See klcmDefault, klcmDelayed and klcmRecursive constants.  
Requires DynaPDF Pro license.  
See also SetCMapDir function in DynaPDF manual.  
See also:
- 70.34.685 SetCMapDir(path as string, flags as Integer) as Integer

70.34.685  SetCMapDir(path as string, flags as Integer) as Integer

**Function:** Sets the character map directory.  
**Example:**
```
dim pdf as DynaPDFMBS // your dynapdf instance
```

**Notes:**
Takes an integer instead of a boolean starting with plugin version 11.2pr6.  
See klcmDefault, klcmDelayed and klcmRecursive constants.  
Requires DynaPDF Pro license.  
See also SetCMapDir function in DynaPDF manual.  
See also:
- 70.34.684 SetCMapDir(path as folderitem, flags as Integer) as Integer

70.34.686  SetColDefFile(EmbFile as Integer) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The function sets the initial document of a portable collection that should be opened in the viewer application. See also CreateCollection().
SetColorMask(ImageHandle as Integer, Mask as Ptr, Count as UInt32) as boolean

Function: The functions sets or overrides the color mask of an image.

Notes: See also SetColorMask function in DynaPDF manual.

See also:
- 70.34.688 SetColorMask(ImageHandle as Integer, Mask() as Integer) as boolean

SetColorMask(ImageHandle as Integer, Mask() as Integer) as boolean

Function: The functions sets or overrides the color mask of an image.

Notes: Same as other SetColorMask function, but values are taken from array.

See also:
- 70.34.687 SetColorMask(ImageHandle as Integer, Mask as Ptr, Count as UInt32) as boolean

SetColors(ColorValue as Integer) as Boolean

Function: The function sets the fill and stroke color.

Example:
```vba
dim pdf as DynaPDFMBS // your DynaPDF object
dim bBool as Boolean

// get the colorspace of the image file
```
const DP csDeviceRGB=0
const DP csDeviceCMYK=1
const DP csDeviceGray=2

dim iColorSpace as Integer

iColorSpace=DP.csDeviceRGB

// define color space
bBool=pdf.SetColorSpace(iColorSpace)

See also SetColorSpace function in DynaPDF manual.

70.34.691 SetColSortField(ColField as Integer, AscendingOrder as boolean) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function sets the collection field that should be used to sort the list of embedded files. See also SetColSortField function in DynaPDF manual.

70.34.692 SetCompressionFilter(Filter as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function sets the compression filter which is used to compress images. Example:

dim pdf as DynaPDFMBS // your DynaPDF object
dim bBool as Boolean

// set compression filter
bBool = pdf.SetCompressionFilter(pdf.kcfJPEG)

Notes: Use kcfCCITT3, kcfCCITT4, kcfFlate, kcfFlateBW, kcfJP2K, kcfJPEG or kcfLZW constants. See also SetCompressionFilter function in DynaPDF manual.
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70.34.693 SetCompressionLevel(CompressLevel as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function sets the current compression level. See also SetCompressionLevel function in DynaPDF manual.

70.34.694 SetContent(buffer as memoryblock) as Boolean

MBS DynaPDF Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This function replaces the content stream of the currently open page or template with a new one. See also SetContent function in DynaPDF manual. See also:

- 70.34.695 SetContent(buffer as string) as Boolean

70.34.695 SetContent(buffer as string) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This function replaces the content stream of the currently open page or template with a new one. See also SetContent function in DynaPDF manual. See also:

- 70.34.694 SetContent(buffer as memoryblock) as Boolean

70.34.696 SetDateTimeFormat(TxtField as Integer, Fmt as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function restricts the allowed value of a text field to a date time format and applies this format if the value was valid. See also SetDateTimeFormat function in DynaPDF manual.

70.34.697 SetDefBitsPerPixel(value as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function sets the default color depth in bits per pixel, which determines whether images should be downsampled. See also SetDefBitsPerex function in DynaPDF manual.
70.34.698  SetDocInfo(DInfo as Integer, Text as string) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The function set or changes a document info entry.
Example:

```vba
dim pdf as DynaPDFMBS // your DynaPDF object
dim bBool as Boolean
dim source as FolderItem // source pdf file?

const diAuthor=0
const diCreator=1
const diKeywords=2
const diProducer=3
const diSubject=4
const diTitle=5

// Define some pdf properties:
bBool=pdf.SetDocInfo(diAuthor, SystemInformationMBS.Username)
bBool=pdf.SetDocInfo(diCreator, "SysProgName" + " - " + "MetSysProgVer")
bBool=pdf.SetDocInfo(diKeywords, "")
bBool=pdf.SetDocInfo(diProducer, "SysProgName" + " - " + "MetSysProgVer")
bBool=pdf.SetDocInfo(diSubject, "")
bBool=pdf.SetDocInfo(diTitle, source.name)
```

Notes: The text parameter is converted to unicode.
See also SetDocInfo function in DynaPDF manual.

70.34.699  SetDocInfoAnsi(DInfo as Integer, Text as string) as Boolean

Function: The function set or changes a document info entry.
Example:

```vba
dim pdf as DynaPDFMBS // your DynaPDF object
dim bBool as Boolean
dim source as FolderItem // source pdf file?

const diAuthor=0
const diCreator=1
const diKeywords=2
const diProducer=3
const diSubject=4
```

const diTitle=5

// Define some pdf properties:
bBool=pdf.SetDocInfoAnsi(diAuthor, SystemInformationMBS.Username)
bBool=pdf.SetDocInfoAnsi(diCreator, "SysProgName" + " - " + "MetSysProgVer")
bBool=pdf.SetDocInfoAnsi(diKeywords, "")
bBool=pdf.SetDocInfoAnsi(diProducer, "SysProgName" + " - " + "MetSysProgVer")
bBool=pdf.SetDocInfoAnsi(diSubject, "")
bBool=pdf.SetDocInfoAnsi(diTitle, source.name)

Notes: The text parameter is converted to ANSI.

70.34.700 SetDocInfoEx(DInfo as Integer, Key as string, Text as string) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function set or changes a document info entry. Notes: The Text parameter is converted to unicode. See also SetDocInfoEx function in DynaPDF manual.

70.34.701 SetDocInfoExAnsi(DInfo as Integer, Key as string, Text as string) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function set or changes a document info entry. Notes: The Text parameter is converted to ANSI.

70.34.702 SetDrawDirection(Direction as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function sets the draw direction of closed vector graphics such as rectangles, ellipses, triangles and so on. See also SetDrawDirection function in DynaPDF manual.
70.34.703 SetEMFFrameDPI(DPIX as Integer, DPIY as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This function can be used to adjust DPI value which is used to calculate the picture size of an EMF file. See also SetEMFFrameDPI function in DynaPDF manual.

70.34.704 SetEMFPatternDistance(value as Double) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function changes the default distance between lines of standard patterns during EMF conversion. See also SetEMFPatternDistance function in DynaPDF manual.

70.34.705 SetErrorMode(ErrMode as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The error mode specifies which error types should be treated as fatal error. See also SetErrorMode function in DynaPDF manual.

70.34.706 SetExtColorSpace(Handle as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function activates an extended color space in the graphics state. Notes: Requires DynaPDF Pro license. See also SetExtColorSpace function in DynaPDF manual.

70.34.707 SetExtFillColorSpace(Handle as UInt32) as boolean

**70.34.708 SetExtGState(Handle as Integer) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function applies an extended graphics state.
See also SetExtGState function in DynaPDF manual.

**70.34.709 SetExtStrokeColorSpace(Handle as UInt32) as boolean**

MBS DynaPDF Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set the colorspace for filling.
**Notes:**
Pass Colorspace handle like for SetExtColorSpace.
Requires DynaPDF Pro license.
See also SetExtStrokeColorSpace function in DynaPDF manual.

**70.34.710 SetFieldBackColor(ColorValue as Integer) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets the background color used for newly created interactive form fields and annotations.
See also SetFieldBackColor function in DynaPDF manual.

**70.34.711 SetFieldBBox(Handle as Integer, rect as DynaPDFRectMBS) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function changes the bounding box of a field.
See also SetFieldBBox function in DynaPDF manual.

**70.34.712 SetFieldBorderColor(ColorValue as Integer) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets the border color used for newly created interactive form fields and annotations.
See also SetFieldBorderColor function in DynaPDF manual.

**70.34.713 SetFieldBorderStyle(Field as Integer, Style as Integer) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function changes the border style of a specific Interactive Form field.
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See also SetFieldBorderStyle function in DynaPDF manual.

70.34.714  SetFieldBorderWidth(Field as Integer, LineWidth as Double) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function can be used to change the border width of a field. See also SetFieldBorderWidth function in DynaPDF manual.

70.34.715  SetFieldColor(Field as Integer, ColorType as Integer, ColorSpace as Integer, ColorValue as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets a specific color of an interactive form field. See also SetFieldColor function in DynaPDF manual.

70.34.716  SetFieldExpValue(Field as Integer, ValIndex as Integer, Value as string, ExpValue as string, Selected as boolean) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function can be used to change the choice values of a combo box, list box, or radio button. See also SetFieldExpValue function in DynaPDF manual.

70.34.717  SetFieldExpValueAnsi(Field as Integer, ValIndex as Integer, Value as string, ExpValue as string, Selected as boolean) as Boolean

MBS DynaPDF Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function can be used to change the choice values of a combo box, list box, or radio button.

70.34.718  SetFieldExpValueEx(Field as Integer, ValIndex as Integer, Selected as boolean, DefSelected as boolean) as Boolean

MBS DynaPDF Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function marks a choice value of a combo or list box as selected or unselected. **Notes:** It can also be used to change the state of check boxes or the children of a radio button. The parameter ValIndex will be ignored if the field is a normal check box (no child of a radio button or field group).
To enumerate the choice values of a combo box, list box or radio button use the function GetFieldExpValueEx().

Return value:
If the function succeeds the return value is true. If the function fails the return value is false.

See also SetFieldExpValueEx function in DynaPDF manual.

**70.34.719** SetFieldFlags(Field as Integer, Flags as Integer, Reset as boolean) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets the flags of a specific interactive form field.

See also SetFieldFlags function in DynaPDF manual.

**70.34.720** SetFieldFont(Field as Integer, Name as string, Style as Integer, Size as Double, Embed as Boolean, CodePage as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets or changes the font of a form field.

**Notes:** See documentation of SetFieldFont function in dynapdf help manual file for details.

See also SetFieldFont function in DynaPDF manual.

**70.34.721** SetFieldFontAnsi(Field as Integer, Name as string, Style as Integer, Size as Double, Embed as Boolean, CodePage as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets or changes the font of a form field.

**Notes:** See documentation of SetFieldFont function in dynapdf help manual file for details.

**70.34.722** SetFieldFontEx(Field as UInt32, Handle as UInt32, FontSize as Double) as Boolean

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets or replaces the font of a field.

**Notes:** The function requires a font handle that was returned by SetFieldFont.
Returns true on success and false on failure.
See also SetFieldFontEx function in DynaPDF manual.

70.34.723  SetFieldFontSize(aField as Integer, FontSize as Double) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:**  The function changes the font size of a specific field.
See also SetFieldFontSize function in DynaPDF manual.

70.34.724  SetFieldHighlightMode(Field as Integer, HighlightMode as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:**  The function changes the highlight mode of a specific field.
See also SetFieldHighlightMode function in DynaPDF manual.

70.34.725  SetFieldIndex(Field as Integer, Index as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:**  This function can be used to set the tab order of interactive form fields.
See also SetFieldIndex function in DynaPDF manual.

70.34.726  SetFieldMapName(Field as Integer, Name as string) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:**  The function sets or changes the mapping name of a field.  
**Notes:**  The parameter name is converted to unicode.
See also SetFieldMapName function in DynaPDF manual.

70.34.727  SetFieldMapNameAnsi(Field as Integer, Name as string) as Boolean

**Function:**  The function sets or changes the mapping name of a field.  
**Notes:**  The parameter name is converted to ANSI.
70.34.728  SetFieldName(Field as Integer, NewName as string) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function changes the name of an interactive form field. See also SetFieldName function in DynaPDF manual.

70.34.729  SetFieldNameAnsi(Field as Integer, NewName as string) as Boolean

MBS DynaPDF Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function changes the name of an interactive form field. Notes: The text parameter is converted to ANSI.

70.34.730  SetFieldOrientation(Field as Integer, Value as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function sets or changes the orientation of a field. See also SetFieldOrientation function in DynaPDF manual.

70.34.731  SetFieldTextAlign(Field as Integer, Align as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function set or changes the text alignment of a text or button field. See also SetFieldTextAlign function in DynaPDF manual.

70.34.732  SetFieldTextColor(ColorValue as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function sets the text color which is used for newly created interactive form fields. See also SetFieldTextColor function in DynaPDF manual.

70.34.733  SetFieldToolTip(Field as Integer, Value as string) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function set or changes the tool tip or description string of an interactive form field. Notes: The value parameter is converted to unicode. See also SetFieldToolTip function in DynaPDF manual.
70.34.734  SetFieldToolTipAnsi(Field as Integer, Value as string) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function set or changes the tool tip or description string of an interactive form field. **Notes:** The value parameter is converted to ANSI.

70.34.735  SetFillColor(ColorValue as Color) as Boolean

MBS DynaPDF Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets the fill color. **Notes:** Raises an exception if current color space is CMYK or Gray and not RGB. The parameter Color must be defined in the current color space. See also SetFillColor function in DynaPDF manual. See also:

- 70.34.736 SetFillColor(ColorValue as Integer) as Boolean
- 70.34.737 SetFillColor(values() as Double) as boolean
- 70.34.738 SetFillColor(values() as single) as boolean

70.34.736  SetFillColor(ColorValue as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets the fill color. **Example:**

```java
// new DynaPDF Object. Use your own subclass to catch errors in error event
dim pdf as new DynaPDFMBS

// For this example you can use a Starter, Lite, Pro or Enterprise License
pdf.SetLicenseKey ”Starter”

// destination pdf file
dim f as FolderItem = SpecialFolder.Desktop.Child(”test.pdf”)

// create new pdf document
call pdf.CreateNewPDF f

// add new page
call pdf.append

// set red text color
call pdf.SetFillColor pdf.RGB(255,0,0)
```
// set font
call pdf.SetFont "Times", pdf.kfsItalic, 40.0, true, pdf.kcp1252

// write some text
call pdf.WriteFText pdf.ktaCenter, "My first PDF!"

// close page
call pdf.EndPage

// close file
call pdf.CloseFile

// open in users preferred PDF viewer application
f.Launch

Notes: The parameter Color must be defined in the current color space.
See also SetFillColor function in DynaPDF manual.
See also:

• 70.34.735 SetFillColor(ColorValue as Color) as Boolean
• 70.34.737 SetFillColor(values() as Double) as boolean
• 70.34.738 SetFillColor(values() as single) as boolean

70.34.737 SetFillColor(values() as Double) as boolean

Function: Sets fill color based on an array of floats.
Example:

// new DynaPDF Object. Use your own subclass to catch errors in error event
dim pdf as new DynaPDFMBS

// For this example you can use a Starter, Lite, Pro or Enterprise License
pdf.SetLicenseKey "Starter"

// destination pdf file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")

// create new pdf document
call pdf.CreateNewPDF f

// add new page
call pdf.append
// set blue text color with values in memoryblock
dim colorvalues() as Double = array(0.0, 1.0, 0.0)
call pdf.SetFillColor colorvalues

// set font
call pdf.SetFont "Times", pdf.kfsItalic, 40.0, true, pdf.kcp1252

// write some text
call pdf.WriteFText pdf.ktaCenter, "My first PDF!"

// close page
call pdf.EndPage

// close file
call pdf.CloseFile

// open in users preferred PDF viewer application
f.Launch

Notes: The number of components must match.
See also SetFillColor function in DynaPDF manual.
See also:

- 70.34.735 SetFillColor(ColorValue as Color) as Boolean 11938
- 70.34.736 SetFillColor(ColorValue as Integer) as Boolean 11938
- 70.34.738 SetFillColor(values() as single) as boolean 11940

70.34.738 SetFillColor(values() as single) as boolean

Function: Sets fill color based on an array of floats.
Notes: The number of components must match.
See also SetFillColor function in DynaPDF manual.
See also:

- 70.34.735 SetFillColor(ColorValue as Color) as Boolean 11938
- 70.34.736 SetFillColor(ColorValue as Integer) as Boolean 11938
- 70.34.737 SetFillColor(values() as Double) as boolean 11939

**Function:** Sets the fill color using the values in parameters.

**Example:**

```vba
// new DynaPDF Object. Use your own subclass to catch errors in error event
dim pdf as new DynaPDFMBS

// For this example you can use a Starter, Lite, Pro or Enterprise License
pdf.SetLicenseKey "Starter"

// destination pdf file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")

// create new pdf document
call pdf.CreateNewPDF f

call pdf.SetFont "Times", pdf.kfsItalic, 40.0, true, pdf.kcp1252

// write some text
call pdf.WriteFText pdf.ktaCenter, "My first PDF!"

call pdf.EndPage

call pdf.CloseFile

f.Launch
```

**Notes:** Pass as many color values as needed for the current color space. 3 for RGB, 4 for CMYK. All values must be in the range of 0 to 255.

See also **SetFillColorEx** function in DynaPDF manual.

See also:
70.34.740  SetFillColorEx(ParamArray colorvalue as Integer) as Boolean


Function: Sets the fill color using the values in parameters.

Example:

```vba
// new DynaPDF Object. Use your own subclass to catch errors in error event
dim pdf as new DynaPDFMBS

// For this example you can use a Starter, Lite, Pro or Enterprise License
pdf.SetLicenseKey "Starter"

// destination pdf file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")

// create new pdf document
call pdf.CreateNewPDF f

// add new page
call pdf.append

// set red text color
call pdf.SetFillColorEx 255,0,0

// set font
call pdf.SetFont "Times", pdf.kfsItalic, 40.0, true, pdf.kcp1252

// write some text
call pdf.WriteFText pdf.ktaCenter, "My first PDF!"

// close page
call pdf.EndPage

// close file
call pdf.CloseFile

// open in users preferred PDF viewer application
f.Launch
```

Notes: Pass as many color values as needed for the current color space. 3 for RGB, 4 for CMYK. All values must be in the range of 0 to 255.

See also SetFillColorEx function in DynaPDF manual.

See also:
70.34.741  SetFillColorSpace(Colorsaspace as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function changes the fill color space.
See also SetFillColorSpace function in DynaPDF manual.

70.34.742  SetFloatPrecision(NumTextDecDigits as UInt32, NumVectDecDigits as UInt32) as boolean

MBS DynaPDF Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function changes the output precision of text and vector coordinates.
**Notes:**
The default precision for text and vector graphics is two decimal digits. This corresponds to 7200 DPI. The output precision of bezier curves is one higher as for vector graphics. The maximum output precision is 5 decimal digits.
Note that higher values increase the resulting file size.

NumTextDecDigits: Number decimal digits for text object.
NumVectDecDigits: Number of decimal digits for vector objects.

Returns boolean, true for success.
See also SetFloatPrecision function in DynaPDF manual.

70.34.743  SetFont(Name as string, Style as Integer = 0, Size as Double = 12, Embed as boolean = true, CP as Integer = & h27) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function loads a font that can be used for text output and interactive form fields.
**Notes:**
The name parameter is converted to unicode.

If font is not found by name, please check SetFontSelMode function.
See also SetFont function in DynaPDF manual.
70.34.744  SetFontAnsi(Name as string, Style as Integer = 0, Size as Double = 12, Embed as boolean = true, CP as Integer = & h27) as Integer


Function: The function loads a font that can be used for text output and interactive form fields.
Example:

```pascal
dim pdf as DynaPDFMBS // your PDF object
call pdf.SetFontAnsi("Helvetica", pdf.kfsNone, 10.0, true, pdf.kcp1252)
```

Notes:
The name parameter is converted to ANSI.

If font is not found by name, please check SetFontSelMode function.

70.34.745  SetFontEx(Name as string, Style as Integer = 0, Size as Double = 12, Embed as boolean = true, CP as Integer = & h27) as Integer


Function: The function loads a font that can be used for text output and interactive form fields.
Notes:
The name parameter is converted to unicode.

If font is not found by name, please check SetFontSelMode function.
See also SetFontEx function in DynaPDF manual.

70.34.746  SetFontExAnsi(Name as string, Style as Integer = 0, Size as Double = 12, Embed as boolean = true, CP as Integer = & h27) as Integer


Function: The function loads a font that can be used for text output and interactive form fields.
Notes:
The name parameter is converted to ANSI.

If font is not found by name, please check SetFontSelMode function.
70.34. **SetFontOrigin(Origin as Integer) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets the current font origin that is used to position text strings. See also SetFontOrigin function in DynaPDF manual.

**70.34.748 SetFontSearchOrder(Order() as Integer)**

MBS DynaPDF Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the font search order. **Notes:**

The values in the array use this constants:

- kfbfTrueType: TrueType, TrueType Collections, or OpenType fonts with TrueType outlines
- kfbfType1: Type1 font
- kfbfOpenType: OpenType font with Postscript outlines
- kfbfStdFont: PDF Standard font
- kfbfDisabled: This value can be used to disable a specific font format.

The array has 4 values. See also SetFontSearchOrder function in DynaPDF manual.

**70.34.749 SetFontSearchOrderEx(Order1 as Integer, Order2 as Integer, Order3 as Integer, Order4 as Integer)**

MBS DynaPDF Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function changes the font search order in the same way as SetFontSearchOrder() but it does not use an array to set the search order to improve compatibility to programming languages with limited array support. **Notes:** use the font base constants. See also SetFontSearchOrderEx function in DynaPDF manual.

**70.34.750 SetFontSelMode(Mode as Integer) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function changes the font selection mode. See also SetFontSelMode function in DynaPDF manual.
70.34.751  SetFontWeight(Weight as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The font weight specifies the thickness or boldness of a font. See also SetFontWeight function in DynaPDF manual.

70.34.752  SetGStateFlags(Flags as Integer, Reset as boolean)

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets optional flags affecting the graphics state and coordinate handling. See also SetGStateFlags function in DynaPDF manual.

70.34.753  SetIconColor(ColorValue as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The icon color is used for the closed state of a text annotation. See also SetIconColor function in DynaPDF manual.

70.34.754  SetImportFlags(Flags as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets optional flags to control the import of external PDF files. See also SetImportFlags function in DynaPDF manual.

70.34.755  SetImportFlags2(Flags as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets optional flags to control the import of external PDF files. See also SetImportFlags2 function in DynaPDF manual.

70.34.756  SetItalicAngle(value as Double) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The property ItalicAngle is used to emulate an italic font if the font is not available in an italic style. See also SetItalicAngle function in DynaPDF manual.
### 70.34.757 SetJPEGQuality(Value as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets the quality of JPEG compressed images in percent if JPEG compression is used. See also SetJPEGQuality function in DynaPDF manual.

### 70.34.758 SetLanguage(ISOTag as string) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The property specifies the language of the document. See also SetLanguage function in DynaPDF manual.

### 70.34.759 SetLeading(value as Double) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets the leading that will be used by the functions AddContinueText() and WriteFText() to calculate the distance between two text lines. **Notes:** This is for setting the line height. See also SetLeading function in DynaPDF manual.

### 70.34.760 SetLicenseKey(Value as string)

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Use this function to enter your license key. **Example:**
```
    dim pdf as DynaPDFMBS // your DynaPDF object
    pdf.SetLicenseKey("1234567890") // enter your code here
```

**Notes:**
If the value represents a correct license key the demo string does not longer appear on PDF pages. Once a correct key was set, it will be active until the library is unloaded or the current PDF object is released. Note that the key must be entered for each PDF object or process of a multi-threading application separately.

The license key must not be stored in the registry or other files in an unencrypted form.

You need to buy a license key from MBS.
The key will unlock the library to not run in demo mode.
Pro license is required for the following functions:

- BeginTransparencyGroup
- ConvertColors
- Create3DAnnot
- CreateSoftMask
- FlattenForm
- GetPageText
- ImportPage and ImportPageEx
- ParseContent
- RenderAnnotOrField
- RenderPage
- SetCMapDir
- SetExtColorSpace, SetExtFillColorSpace and SetExtStrokeColorSpace.
- SetUseGlobalImpFiles

Lite is required for:

- AddRenderingIntent and AddRenderingIntentEx
- CreateFormFields
- CloseFileEx
- ConvertEMFSpool
- CreateCollection
- CreateExtGState
- InsertMetafile and InsertMetafileEx
- OpenImportBuffer, OpenImportFile and OpenImportStream
- SetPDFVersion for PDF/A and PDF/X

And all functions relaying on those functions internally.
See also SetLicenseKey function in DynaPDF manual.
70.34.761  SetLicenseKeyGlobal(Value as string)

Function: Use this function to enter your license key.
Notes: This method stores the key for later use. The constructor uses than this key to call SetLicenseKey for any new instance of the DynaPDFMBS class. This way you can register in the app.open event for your whole application.

70.34.762  SetLineAnnotParms(Handle as UInt32, FontHandle as Integer, FontSize as Double, Params as DynaPDFLineAnnotParameterMBS) as boolean

Function: The function sets or changes the properties of a line annotation relating to measure lines.
Notes:
The parameter Params can be set to nil to delete all measure line specific values. The parameters FontHandle and FontSize will be ignored in this case.
The member Caption specifies whether the parameter Content of the function LineAnnot should be used as caption of the measure line. Although a measure line can display the string in a PopUp annotation like ordinary line annotations, this is not recommended and not fully supported in Adobe’s Acrobat or Reader. If Caption is true (recommended), the caption is drawn horizontally centered either on top or inside the measure line. The text position can be changed from its normal position with the members CaptionOffsetX and CaptionOffsetY.
The parameter FontHandle can be used to specify an arbitrary font that should be used to draw the caption. Although it is possible to use any font or font size greater 0 with DynaPDF, a PDF viewer will change the font and font size to it’s default values when the annotation will be edited since line annotations support no property to specify the font or font size.
Function Reference

The default font to draw the caption is Helvetica and the default font size is 9 units. In order to use the default font set the parameter FontHandle to -1. The default font size is used if the parameter FontSize is set to zero.

Returns true on success or false on failure.
See also SetLineAnnotParms function in DynaPDF manual.

70.34.763  SetLineCapStyle(Style as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The function sets the line cap style that specifies how the endpoint of a line will be drawn.
See also SetLineCapStyle function in DynaPDF manual.
70.34.764  **SetLineDashPattern(Dash as string, Phase as Integer) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The line dash pattern controls the pattern of dashes and gaps used to stroke paths. See also *SetLineDashPattern* function in DynaPDF manual.

70.34.765  **SetLineDashPatternEx(dash as memoryblock, NumValues as Integer, Phase as Integer) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets a line dash pattern in the same way as *SetLineDashPattern()*. **Notes:** dash is a memoryblock with doubles. So dash.size=NumValues*8. See also *SetLineDashPatternEx* function in DynaPDF manual. See also:

- 70.34.766  **SetLineDashPatternEx(dash() as double, Phase as integer) as Boolean**

70.34.766  **SetLineDashPatternEx(dash() as double, Phase as integer) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets a line dash pattern with a given array. **Notes:** However, this version accepts an array of doubles instead of a string value. Returns true on success. See *SetLineDashPattern* for more details. If array is nil, the pattern is removed. See also *SetLineDashPatternEx* function in DynaPDF manual. See also:

- 70.34.765  **SetLineDashPatternEx(dash as memoryblock, NumValues as Integer, Phase as Integer) as Boolean**

70.34.767  **SetLineJoinStyle(Style as Integer) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets the line join style which specifies how two line segments are connected.
70.34. **CLASS DYNAPDFMBS**

See also SetLineJoinStyle function in DynaPDF manual.

70.34.768  **SetLineWidth(value as Double) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets the line width used to stroke paths. See also SetLineWidth function in DynaPDF manual.

70.34.769  **SetLinkHighlightMode(Mode as Integer) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets the highlight mode that is used by link annotations. See also SetLinkHighlightMode function in DynaPDF manual.

70.34.770  **SetListFont(Handle as Integer) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function marks an arbitrary font as list font. See also SetListFont function in DynaPDF manual.

70.34.771  **SetMatrix(Matrix as DynapdfMatrixMBS) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function left multiplies the current transformation matrix with the new one. See also SetMatrix function in DynaPDF manual.

70.34.772  **SetMaxErrLogMsgCount(value as Integer)**

MBS DynaPDF Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the maximum number of error log messages kept in memory. See also SetMaxErrLogMsgCount function in DynaPDF manual.

70.34.773  **SetMaxFieldLen(TxtField as Integer, MaxLen as Integer) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function changes the maximum count of characters which can be entered into a text field.
Notes:

A value of zero determines that the string length should not be restricted.

See also `SetMaxFieldLen` function in DynaPDF manual.

70.34.774 `SetMetaConvFlags(Flags as Integer) as Boolean`

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** The function sets specific flags to control the conversion of metafiles.
See also `SetMetaConvFlags` function in DynaPDF manual.

70.34.775 `SetMetadata(ObjType as Integer, Handle as Integer, Memoryblock) as Boolean`

MBS DynaPDF Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** The function sets or replaces the XMP metadata stream of a specific object.
**Notes:**
The function deletes the XMP stream if empty buffer will be provided.

If the global XMP stream of the Catalog object should be replaced then proceed as follows:

- Set the wished output PDF version with `SetPDFVersion`.
- Get a preview of the XMP stream with `GetMetadata`.
- Modify the returned stream as needed and save it with `SetMetadata`, finished!

The above steps make sure that the XMP metadata and document info contain the same values. This is especially important for PDF standards like PDF/A or PDF/X. DynaPDF makes sure that the creation and modification date will not be changed when closing the file.

Returns true on success and false on failure.
See also `SetMetadata` function in DynaPDF manual.
See also:
- 70.34.776 `SetMetadata(ObjType as Integer, Handle as Integer, Buffer as String) as Boolean`
70.34.776  SetMetadata(ObjType as Integer, Handle as Integer, Buffer as String) as Boolean

MBS DynaPDF Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** The function sets or replaces the XMP metadata stream of a specific object.
**Notes:**
The function deletes the XMP stream if empty buffer will be provided.

If the global XMP stream of the Catalog object should be replaced then proceed as follows:

- Set the wished output PDF version with SetPDFVersion.
- Get a preview of the XMP stream with GetMetadata.
- Modify the returned stream as needed and save it with SetMetadata, finished!

The above steps make sure that the XMP metadata and document info contain the same values. This is especially important for PDF standards like PDF/A or PDF/X. DynaPDF makes sure that the creation and modification date will not be changed when closing the file.

Returns true on success and false on failure.
See also SetMetadata function in DynaPDF manual.
See also:
- 70.34.775 SetMetadata(ObjType as Integer, Handle as Integer, Buffer as Memoryblock) as Boolean

70.34.777  SetMiterLimit(value as Double) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Sets the miter limit.
See also SetMiterLimit function in DynaPDF manual.

70.34.778  SetNeedAppearance(value as boolean)

**Function:** Sets the appearance flag.
See also SetNeedAppearance function in DynaPDF manual.
70.34.779  **SetNumberFormat**(TxtField as Integer, Sep as Integer, DecPlaces as Integer, NegStyle as Integer, CurrStr as string, Prepend as boolean) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function restricts the allowed input characters of a text field to numbers and formats the resulting string as specified. See also SetNumberFormat function in DynaPDF manual.

70.34.780  **SetOCGContUsage**(Handle as UInt32, Value as DynaPDFOCGContentUsageMBS) as Boolean

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates or changes the Content Usage dictionary of an OCG. **Notes:**

See dynapdf_help.pdf manual for details.
If the function succeeds the return value is true. If the function fails the return value is false.
See also SetOCGContUsage function in DynaPDF manual.

70.34.781  **SetOCGState**(Handle as UInt32, On as Boolean, SaveState as Boolean) as Boolean

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Changes the visibility state of an OCG or layer. **Notes:**

If the parameter SaveState is true, the new state is also saved in the PDF file. Otherwise, the state is only changed temporarily so that the wished state can be rendered with RenderPage or RenderPageToImage for example.
Note that only the new state of the current OCG will be be saved. If the state of other OCGs were changed beforehand, while SaveState was set to false, then these changes will not be considered.

If the function succeeds the return value is true. If the function fails the return value is false.
See also SetOCGState function in DynaPDF manual.

70.34.782  **SetOpacity**(value as Double) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets the opacity value which is used to render the appearance of a text annotation.
**70.34.783 SetOrientation(Value as Integer) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets the orientation of a page.
See also SetOrientation function in DynaPDF manual.

**70.34.784 SetOrientationEx(Value as Integer) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function changes the orientation of a page, incl. important page properties such as the width and height, and the coordinate system.
See also SetOrientationEx function in DynaPDF manual.

**70.34.785 SetPageCoords(PageCoords as Integer) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The native coordinate system of the Portable Document Format is bottom up.
**Notes:** Value can be kpcTopDown or kpcBottomUp. Default is kpcBottomUp.
See also SetPageCoords function in DynaPDF manual.

**70.34.786 SetPageFormat(Value as Integer) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets a predefined page or paper format.
**Notes:**
Common paper formats and sizes in points:

See also SetPageFormat function in DynaPDF manual.

**70.34.787 SetPageHeight(value as Double) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function changes the height of the currently open page if any, or the default height for newly created pages.
**Example:**
Format | Size in units (Width x Height)
---|---
DIN A3 | 842.0 x 1191.0
DIN A4 | 595.0 x 842.0
DIN A5 | 419.0 x 595.0
DIN B4 | 709.0 x 1001.0
DIN B5 | 499.0 x 709.0
DIN B6 | 354.0 x 499.0
DIN C3 | 918.0 x 1298.0
DIN C4 | 649.0 x 918.0
DIN C5 | 459.0 x 649.0
DIN C6 | 323.0 x 459.0
DIN C65 | 323.0 x 649.0
DIN DL | 312.0 x 624.0
DIN E4 | 623.0 x 879.0
DIN E5 | 439.0 x 624.0
DIN E6 | 312.0 x 439.0
DIN E65 | 312.0 x 624.0
DIN M5 | 439.0 x 632.0
DIN M65 | 317.0 x 632.0
US Legal | 612.0 x 1008.0
US Letter | 612.0 x 792.0

```dim pdf as DynaPDFMBS // your DynaPDF object
dim bBool as Boolean
dim dWidth as Double = 800 // new width
dim dHeight as Double = 600 // new height

// define page size
bBool=pdf.SetPageWidth(dWidth)
bBool=pdf.SetPageHeight(dHeight)
```

**Notes:**

Common paper formats and sizes in points:

See also `SetPageHeight` function in DynaPDF manual.
70.34. CLASS DYNAPDFMBS

<table>
<thead>
<tr>
<th>Format</th>
<th>Size in units (Width x Height)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIN A3</td>
<td>842.0 x 1191.0</td>
</tr>
<tr>
<td>DIN A4</td>
<td>595.0 x 842.0</td>
</tr>
<tr>
<td>DIN A5</td>
<td>419.0 x 595.0</td>
</tr>
<tr>
<td>DIN B4</td>
<td>709.0 x 1001.0</td>
</tr>
<tr>
<td>DIN B5</td>
<td>499.0 x 709.0</td>
</tr>
<tr>
<td>DIN B6</td>
<td>354.0 x 499.0</td>
</tr>
<tr>
<td>DIN C3</td>
<td>918.0 x 1298.0</td>
</tr>
<tr>
<td>DIN C4</td>
<td>649.0 x 918.0</td>
</tr>
<tr>
<td>DIN C5</td>
<td>459.0 x 649.0</td>
</tr>
<tr>
<td>DIN C6</td>
<td>323.0 x 459.0</td>
</tr>
<tr>
<td>DIN C65</td>
<td>323.0 x 649.0</td>
</tr>
<tr>
<td>DIN DL</td>
<td>312.0 x 624.0</td>
</tr>
<tr>
<td>DIN E4</td>
<td>623.0 x 879.0</td>
</tr>
<tr>
<td>DIN E5</td>
<td>439.0 x 624.0</td>
</tr>
<tr>
<td>DIN E6</td>
<td>312.0 x 439.0</td>
</tr>
<tr>
<td>DIN E65</td>
<td>312.0 x 624.0</td>
</tr>
<tr>
<td>DIN M5</td>
<td>439.0 x 632.0</td>
</tr>
<tr>
<td>DIN M65</td>
<td>317.0 x 632.0</td>
</tr>
<tr>
<td>US Legal</td>
<td>612.0 x 1008.0</td>
</tr>
<tr>
<td>US Letter</td>
<td>612.0 x 792.0</td>
</tr>
</tbody>
</table>

70.34.788 SetPageLayout(Layout as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The function sets the page layout that is used when opening the document with Adobe’s Acrobat.
Example:

```vba
dim pdf as DynaPDFMBS // your DynaPDF object
dim bBool as Boolean

// define page view
'plSinglePage = 0, // Show one page at time
'plOneColumn = 1, // Show the pages continous
'plTwoColumnLeft = 2, // Two columns, start with left column
'plTwoColumnRight = 3 // Two columns, start with right column
bBool=pdf.SetPageLayout(0)
```

See also SetPageLayout function in DynaPDF manual.
70.34.789 SetPageMode(Mode as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The function sets the page mode that is used when opening the document with Adobe’s Acrobat.

**Example:**

```vbscript
dim pdf as DynaPDFMBS // your DynaPDF object
dim bBool as Boolean

// define page mode
'pmUseNone = 0, // Default
'pmUseOutlines = 1, // Show the outline tree
'pmUseThumbs = 2, // Show the thumb nails
'pmFullScreen = 3 // Open the document in full-screen mode
bBool=pdf.SetPageMode(0)
```

See also `SetPageMode` function in DynaPDF manual.

70.34.790 SetPageWidth(value as Double) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The function changes the width of the currently open page if any, or the default width for newly created pages.

**Example:**

```vbscript
dim pdf as DynaPDFMBS // your DynaPDF object
dim bBool as Boolean
dim dWidth as Double = 800 // new width
dim dHeight as Double = 600 // new heihht

// define page size
bBool=pdf.SetPageWidth(dWidth)
bBool=pdf.SetPageHeight(dHeight)
```

**Notes:**

Common paper formats and sizes in points:

See also `SetPageWidth` function in DynaPDF manual.
70.34. CLASS DYNAPDFMBS

Format | Size in units (Width x Height)
---|---
DIN A3 | 842.0 x 1191.0
DIN A4 | 595.0 x 842.0
DIN A5 | 419.0 x 595.0
DIN B4 | 709.0 x 1001.0
DIN B5 | 499.0 x 709.0
DIN B6 | 354.0 x 499.0
DIN C3 | 918.0 x 1298.0
DIN C4 | 649.0 x 918.0
DIN C5 | 459.0 x 649.0
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DIN DL | 312.0 x 624.0
DIN E4 | 623.0 x 879.0
DIN E5 | 439.0 x 624.0
DIN E6 | 312.0 x 439.0
DIN E65 | 312.0 x 624.0
DIN M5 | 439.0 x 632.0
DIN M65 | 317.0 x 632.0
US Legal | 612.0 x 1008.0
US Letter | 612.0 x 792.0

70.34.791 SetPDFVersion(Version as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The function changes the output PDF file version.

**Example:**

```plaintext
const pvPDF_1_3=3

dim pdf as DynaPDFMBS // your DynaPDF object
dim bBool as Boolean

// ask to create a pdf in version 1.3
bBool=pdf.SetPDFVersion(DynapdfMBS.kpvPDFA_2005)
```

**Notes:** Requires DynaPDF Lite license for PDF/A and PDF/X versions. See also SetPDFVersion function in DynaPDF manual.
70.34.792  SetPrintSettings(Mode as Integer, PickTrayByPDFSize as Integer, NumCopies as Integer, PrintScaling as Integer, PrintRanges() as Integer) as boolean

Function: Sets the print settings.
Notes:
This is a PDF 1.7 extension.

For the Mode use the kdpm* constants.
For the PrintScaling use the kps* constants.
See also SetPrintSettings function in DynaPDF manual.

70.34.793  SetResolution(Value as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The function sets the resolution in DPI (Dots per Inch), in which images are stored by DynaPDF.
Example:

```vbnet
dim pdf as DynaPDFMBS // your DynaPDF object
dim bBool as Boolean

// set maximum resolution
bBool = pdf.SetResolution(150)
```

See also SetResolution function in DynaPDF manual.

70.34.794  SetSaveNewImageFormat(value as Boolean) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The property SaveNewImageFormat specifies whether images should be downscaled if the original resolution of the image is higher than the value of the property resolution (see also SetResolution()).
Example:

```vbnet
dim pdf as DynaPDFMBS // your DynaPDF object
dim bBool as Boolean

// whether you want image to be recompressed
bBool = pdf.SetSaveNewImageFormat(False)
```
70.34. CLASS DYNAPDFMBS

See also SetSaveNewImageFormat function in DynaPDF manual.

70.34.795 SetSeparationInfo(Handle as Integer) as boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function sets the separation info of the current open page. See also SetSeparationInfo function in DynaPDF manual.

70.34.796 SetStrokeColor(ColorValue as color) as Boolean

MBS DynaPDF Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function sets the color used for stroked graphics objects. Notes: Raises an exception if current color space is CMYK or Gray and not RGB. See also SetStrokeColor function in DynaPDF manual. See also:

- 70.34.797 SetStrokeColor(ColorValue as Integer) as Boolean
- 70.34.798 SetStrokeColor(values() as Double) as boolean
- 70.34.799 SetStrokeColor(values() as single) as boolean

70.34.797 SetStrokeColor(ColorValue as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function sets the color used for stroked graphics objects. See also SetStrokeColor function in DynaPDF manual. See also:

- 70.34.796 SetStrokeColor(ColorValue as color) as Boolean
- 70.34.798 SetStrokeColor(values() as Double) as boolean
- 70.34.799 SetStrokeColor(values() as single) as boolean

70.34.798 SetStrokeColor(values() as Double) as boolean

MBS DynaPDF Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Sets stroke color based on an array of floats. Notes: The number of components must match. See also SetStrokeColor function in DynaPDF manual. See also:
70.34.799  SetStrokeColor(values() as single) as boolean

Function: Sets stroke color based on an array of floats.
Notes: The number of components must match.
See also SetStrokeColor function in DynaPDF manual.
See also:

- 70.34.796 SetStrokeColor(ColorValue as color) as Boolean
- 70.34.797 SetStrokeColor(ColorValue as Integer) as Boolean
- 70.34.798 SetStrokeColor(values() as Double) as boolean

70.34.800  SetStrokeColorEx(colorvalues as memoryblock, count as Integer) as Boolean

Function: Sets the stroke color using the values in parameters.
Example:

```java
dim p as DynaPDFMBS // get a pdf object

dim colorvalues as memoryblock

colorvalues=NewMemoryBlock(3)
colorvalues.Byte(0)=255
colorvalues.Byte(1)=128
colorvalues.Byte(2)=0

if p.SetStrokeColorEx(colorvalues, 3) then
  ' ok
else
  ' failed
end if
```

Notes: Pass as many color values as needed for the current color space. 3 for RGB, 4 for CMYK. All values must be in the range of 0 to 255.
See also SetStrokeColorEx function in DynaPDF manual.
See also:
70.34.801  SetStrokeColorEx(ParamArray colorvalue as Integer) as Boolean


Example:

```vba
   dim p as DynaPDFMBS  // get a pdf object
   if p.SetStrokeColorEx(255,128,0) then  
     ' ok
   else  
     ' failed
   end if
```

Notes: Pass as many color values as needed for the current color space. 3 for RGB, 4 for CMYK. All values must be in the range of 0 to 255.

See also SetStrokeColorEx function in DynaPDF manual.

See also:

- 70.34.800 SetStrokeColorEx(colorvalues as memoryblock, count as Integer) as Boolean

70.34.802  SetStrokeColorSpace(Colorspace as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function changes the stroke color space. In PDF, fill and stroke colors use both their own color spaces.

See also SetStrokeColorSpace function in DynaPDF manual.

70.34.803  SetTabLen(TabLen as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function sets the tabulator length, specified in number of spaces, which will be used to emulate tabulators during text formatting (see WriteFText() for further information).

See also SetTabLen function in DynaPDF manual.

70.34.804  SetTextDrawMode(Mode as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The text draw mode specifies how text should be rendered.
See also SetTextDrawMode function in DynaPDF manual.

70.34.805 SetTextFieldValue(\text{Field as Integer, Value as string, DefValue as string, Align as Integer}) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. \textbf{Function:} The function sets or changes the value and default value of a text field. \textbf{Notes:} The Value and the DefValue strings are converted to unicode. See also SetTextFieldValue function in DynaPDF manual.

70.34.806 SetTextFieldValueAnsi(\text{Field as Integer, Value as string, DefValue as string, Align as Integer}) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. \textbf{Function:} The function sets or changes the value and default value of a text field. \textbf{Notes:} The Value and the DefValue strings are converted to ANSI.

70.34.807 SetTextFieldValueAnsiEx(\text{Field as Integer, Value as string}) as Boolean


70.34.808 SetTextFieldValueEx(\text{Field as Integer, Value as string}) as Boolean

MBS DynaPDF Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. \textbf{Function:} Sets the text field value. See also SetTextFieldValueEx function in DynaPDF manual.

70.34.809 SetTextRect(\text{PosX as Double, PosY as Double, Width as Double, Height as Double}) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. \textbf{Function:} The function defines the output rectangle that is used to output formatted text by the function WriteFText(). See also SetTextRect function in DynaPDF manual.
**70.34.810  SetTextRise(value as Double) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Text rise specifies the distance, to move the baseline up or down from its default location. See also SetTextRise function in DynaPDF manual.

**70.34.811  SetTextScaling(value as Double) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The scaling value adjusts the width of glyphs by stretching or compressing them in the horizontal direction. See also SetTextScaling function in DynaPDF manual.

**70.34.812  SetTransparentColor(ColorValue as Integer) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets the transparent color which is used for newly inserted images. See also SetTransparentColor function in DynaPDF manual.

**70.34.813  SetTrapped(value as boolean)**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets the trapped key of the document. See also SetTrapped function in DynaPDF manual.

**70.34.814  SetUseExactPwd(value as Boolean) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** If the property UseExactPwd is false, an encrypted PDF file can always be decrypted, if either the open or owner password in the file is an empty string. See also SetUseExactPwd function in DynaPDF manual.

**70.34.815  SetUseGlobalImpFiles(value as Boolean) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The property can be used to load an external PDF file permanent into memory, e.g. to split a large PDF file into smaller pieces.
Notes: Requires DynaPDF Pro license.
See also SetUseGlobalImpFiles function in DynaPDF manual.

70.34.816 SetUseImageInterpolation(Index as Integer, Value as Boolean) as Boolean

Function: Enables or disables image interpolation explicitly for a given image.
Notes:
If nothing was specified (this is the default), a viewer applications can only use a heuristic to determine whether image interpolation should be enabled or not. The result is then of course application specific.
The parameter Handle must be a valid image handle that was returned by a DynaPDF function like InsertImage(), InsertImageEx(), or InsertImageFromBuffer(), for example.

If the function succeeds the return value is true. If the function fails the return value is false.

70.34.817 SetUserUnit(value as single) as boolean

Function: The function sets the user unit of the current open page.
Notes:
A user unit acts like a scaling factor. The page format and all page coordinates are multiplied with this factor in a viewer application. The default size of a PDF unit is 1/72 inch. User units can be useful if the page format would be too large to be expressed in standard PDF units. The largest page format in PDF is limited to 14400 units or 200 inches. This limit can be extended with the user unit.
The largest value that is supported is 75.0 which results in a maximum page format of 15,000 x 15,000 inches or 1,800,000 units. Note that all functions which return page coordinates or page properties do not consider the user unit.
The page format must still be in the range 3..14400 units. It is also strongly recommended to set the user unit only if necessary. This is only the case if the required page format is larger 14400 units.
Default value = 1.0

Return values:
If the function succeeds the return value is true. If the function fails the return value is false.
See also SetUserUnit function in DynaPDF manual.
70.34.818  SetUseStdFonts(value as Boolean) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function can be used to disable the 14 standard fonts temporarily. See also `SetUseStdFonts` function in DynaPDF manual.

Example:

```vbnet
    dim pdf as DynaPDFMBS ' your DynaPDF object
    ' define a swap file in case memory is low
    dim b as Boolean=pdf.SetUseSwapFile(False, 256*1024*1024)
    if b=False then
        MsgBox "Failed to create swap file."
        Return
    end if
```

**Deprecated:** This item is deprecated and should no longer be used. **Notes:**

Do not use `FlushPages` and `SetUseSwapFile` together. Use one function.

70.34.819  SetUseSwapFile(SwapContents as Boolean, SwapLimit as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** When creating large PDF files with many or large images it is sometimes recommended to page out large objects to a temp file to restrict the memory usage.

Example:

```vbnet
    dim pdf as DynaPDFMBS ' your DynaPDF object
    // define a swap file in case memory is low
    dim b as Boolean=pdf.SetUseSwapFile(False, 256*1024*1024)
    if b=False then
        MsgBox "Failed to create swap file."
        Return
    end if
```

**Deprecated:** This item is deprecated and should no longer be used. **Notes:**

Do not use `FlushPages` and `SetUseSwapFile` together. Use one function.

70.34.820  SetUseSwapFileEx(SwapContents as Boolean, SwapLimit as Integer, SwapDir as FolderItem) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function enables paging out of large objects to restrict the memory usage in the same way as `SetUseSwapFile()`.

**Deprecated:** This item is deprecated and should no longer be used.

70.34.821  SetUseSystemFonts(value as Boolean) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The property specifies whether the Windows/Fonts directory should be added automatically to the list of available font search paths. See also `SetUseSystemFonts` function in DynaPDF manual.
70.34.822  SetUseTransparency(value as Boolean) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The property specifies whether images should get a transparent background.  
**Example:**

```vbnet
dim pdf as DynaPDFMBS // your DynaPDF object  
dim bBool as Boolean  

// allow transparency for images  
bBool=pdf.SetUseTransparency(False)
```

See also SetUseTransparency function in DynaPDF manual.

70.34.823  SetUseVisibleCoords(value as Boolean) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The property specifies whether DynaPDF should consider the crop box to calculate to position of an object.  
See also SetUseVisibleCoords function in DynaPDF manual.

70.34.824  SetViewerPreferences(Value as Integer, AddVal as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The function sets the viewer preferences which can be used to control a few parameter of Adobe’s Acrobat, such as hide the toolbar or men bar.  
See also SetViewerPreferences function in DynaPDF manual.

70.34.825  SetWMFDefExtent(Width as Integer, Height as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The function sets the default size which is used to convert non-portable WMF files to EMF. See InsertMetafile() for further information.  
See also SetWMFDefExtent function in DynaPDF manual.
70.34. CLASS DYNAPDFMBS

70.34.826 SetWMFPixelPerInch(Value as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets the default pixels per inch of the y-axis which are used to convert portable WMF files to EMF.
See also SetWMFPixelPerInch function in DynaPDF manual.

70.34.827 SetWordSpacing(value as Double) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sets the word spacing.
See also SetWordSpacing function in DynaPDF manual.

70.34.828 ShowDifferences(PageIndex1 as Integer, OtherPDF as DynaPDFMBS, PageIndex2 as Integer, CheckMoving as boolean, HighlightColor as UInt32 = & hFFFF, ScaleFactor as Integer = 1, ColorTolerance as Integer = 3, debug as boolean = false) as Integer

MBS DynaPDF Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Shows differences on two PDF pages by adding highlight annotations.
**Notes:**
Please pass page indexes for both pages. OtherPDF can be same as the current instance you call this method on.

CheckMoving: Whether to check for moving parts, e.g. the big part of the page shifted up one line.

Returns number of annotations on success which means that highlight annotations have been added to both pages.
Or returns negative value in case of error.
You can then render a page to show differences to user.
Requires a DynaPDF Pro license. Without a license, the DynaPDF watermark will reduce the accuracy.

Scale: When comparison, scales up the pictures used for comparison. Default is 1 for 72dpi, but you can use 2 for double.
ColorTolerance: The tolerance for color comparison.
Colors where red, green or blue components are within given tolerance are considered equal. So FFFFFF and FFFFFD are equal.
Default is 3.

Debug Parameter: Whether to write debug images to temp folder.
If true, we write png files to temp folder. One image is before the check, one with all similar lines removed and one with result of comparison. Red pixels show you the raster, green equal pixels.

70.34.829  **SkewCoords(alpha as Double, beta as Double, OriginX as Double, OriginY as Double) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function skewes the coordinate system and sets the coordinate origin to the point OriginX, OriginY. **Notes:** Please do not try to scale/skew/translate back later. use SaveGraphicState and RestoreGraphicState. See also SkewCoords function in DynaPDF manual.

70.34.830  **SortFieldsByIndex as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sorts the interactive form fields of a page by comparing the internal indices which can be set for each field separately (see SetFieldIndex() for further information). See also SortFieldsByIndex function in DynaPDF manual.

70.34.831  **SortFieldsByName as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function sorts the interactive form fields of a page in ascending order by field name. See also SortFieldsByName function in DynaPDF manual.

70.34.832  **SquareAnnot(PosX as Double,PosY as Double, Width as Double, Height as Double, LineWidth as Double, FillColor as UInt32, StrokeColor as UInt32, ColorSpace as Integer, Author as string, Subject as string, Comment as string) as Integer**

MBS DynaPDF Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function draws a square annotation on the current open page. **Notes:**
- If the parameters Width and Height are equal the function draws a square, a rectangle otherwise. If the annotation should be drawn without a border, set the parameter LineWidth to zero or StrokeColor to the special constant kNO_COLOR.
- If the interior should be transparent set FillColor to the special constant kNO_COLOR.
- Although the line width can be set to any positive floating point value, Adobe’s Acrobat or Reader restrict
the line width to 0 through 12 units. The line width should be restricted in the same way to avoid issues in Adobe viewer products.

If the function succeeds the return value is the annotation handle, a value greater or equal zero. If the function fails, the return value is a negative error code.

See also SquareAnnot function in DynaPDF manual.

**SquareAnnotAnsi**

70.34.833  
SquareAnnotAnsi(PosX as Double, PosY as Double, Width as Double, Height as Double, LineWidth as Double, FillColor as UInt32, StrokeColor as UInt32, ColorSpace as Integer, Author as string, Subject as string, Comment as string) as Integer

**Function:** The function draws a square annotation on the current open page.  
**Notes:**
If the parameters Width and Height are equal the function draws a square, a rectangle otherwise. If the annotation should be drawn without a border, set the parameter LineWidth to zero or StrokeColor to the special constant kNO_COLOR.  
If the interior should be transparent set FillColor to the special constant kNO_COLOR.  
Although the line width can be set to any positive floating point value, Adobe's Acrobat or Reader restrict the line width to 0 through 12 units. The line width should be restricted in the same way to avoid issues in Adobe viewer products.

If the function succeeds the return value is the annotation handle, a value greater or equal zero. If the function fails, the return value is a negative error code.

**StampAnnot**

70.34.834  
StampAnnot(SubType as Integer, PosX as Double, PosY as Double, Width as Double, Height as Double, Author as string, Subject as string, Comment as string) as Integer

**Function:** Creates a stamp annotation.  
See also StampAnnot function in DynaPDF manual.
70.34.835  **StampAnnotAnsi(SubType as Integer, PosX as Double, PosY as Double, Width as Double, Height as Double, Author as string, Subject as string, Comment as string) as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a stamp annotation with ANSI encoded texts.

70.34.836  **StrokePath as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function strokes the current path without closing it.  See also StrokePath function in DynaPDF manual.

70.34.837  **TestGlyphs(FontHandle as Integer, Text as string) as Integer**

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function checks whether all glyphs of the text are available in the specified font.  **Example:**

```vbnet
// create dummy PDF with one page
dim d as new myDynaPDFMBS

call d.CreateNewPDF

call d.Append

// check this text
dim x as string = "" "Hello in Chinese"

// load 2 fonts to check
dim FontHandle1 as Integer = d.SetFont("Times", 12)
dim FontHandle2 as Integer = d.SetFont("Arial Unicode MS", 12)

dim r1 as Integer = d.TestGlyphs(FontHandle1, x)

if r1 = -1 then
    MsgBox "Times supports chinese characters"
else
    MsgBox "Times does not support chinese characters"
end if

dim r2 as Integer = d.TestGlyphs(FontHandle2, x)

if r2 = -1 then
    MsgBox "Arial Unicode MS supports chinese characters"
```
else
    MsgBox "Arial Unicode MS does not support chinese characters"
end if

Notes:
The return value is the position of the first missing glyph, or -1 if all glyphs are available. If the font uses a mixed 8/16 bit CJK code page that requires a conversion to Unicode (a code page that ends with ",Uni"), then the return value corresponds to the converted Unicode string and not to the CJK input string. See also TestGlyphs function in DynaPDF manual.

70.34.838  **TestGlyphsAnsi**(FontHandle as Integer, Text as string) as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function checks whether all glyphs of the text are available in the specified font. **Notes:** The return value is the position of the first missing glyph, or -1 if all glyphs are available. If the font uses a mixed 8/16 bit CJK code page that requires a conversion to Unicode (a code page that ends with ",Uni"), then the return value corresponds to the converted Unicode string and not to the CJK input string. The text parameter is converted to ANSI.

70.34.839  **TextAnnot**(PosX as Double, PosY as Double, Width as Double, Height as Double, Author as string, Text as string, Icon as Integer, Open as boolean) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function creates a text annotation. **Notes:** The text and the author parameters are converted to unicode. See also TextAnnot function in DynaPDF manual.

70.34.840  **TextAnnotAnsi**(PosX as Double, PosY as Double, Width as Double, Height as Double, Author as string, Text as string, Icon as Integer, Open as boolean) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function creates a text annotation. **Notes:** The text and the author parameters are converted to ANSI.
70.34.841  TranslateCoords(OriginX as Double, OriginY as Double) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function translates the coordinate system to the new origin OriginX, OriginY.
See also TranslateCoords function in DynaPDF manual.

70.34.842  TranslateRawCode(IFont as Integer, text as string, byref Width as Double, byref Decoded as boolean, CharSpacing as Double, WordSpacing as Double, TextScale as Double) as string

MBS DynaPDF Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Translates a raw code.
**Notes:** Deprecated. Please use other variant with more parameters.
See also:
- 70.34.843 TranslateRawCode(IFont as integer, text as string, textOffset as Integer, byref Width as double, byref Decoded as boolean, CharSpacing as double, WordSpacing as double, TextScale as double, byref count as integer) as string

70.34.843  TranslateRawCode(IFont as integer, text as string, textOffset as Integer, byref Width as double, byref Decoded as boolean, CharSpacing as double, WordSpacing as double, TextScale as double, byref count as integer) as string

MBS DynaPDF Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function converts a source character to Unicode.
**Notes:**
The code length of a character depends on the font’s encoding. PDF supports encodings with fixed and variable code lengths from one through four bytes per character. The Count parameter provides the number of bytes which were consumed to convert the character to Unicode; this value must be used to increment the textOffset parameter for further calls.
The resulting Unicode character or sequence is returned in function result. The width parameter is used to return the character width.
The parameter Decoded is set to true if the source character could be successfully converted to Unicode. If Decoded is false the output string and character width contain no meaningful values.
The function can only fail when processing strings of CID fonts, e.g. if the font depends on an external CMap that could not be loaded, or if the font uses a damaged CMap. The search path(s) to external CMaps should always be set before extracting text from PDF files with SetCMapDir().
Passing an invalid or undefined code sequence to the function does not result in an error. In this case the notdef character is added to the output string (this is usually 0 or 0xFFFD if the font contains a ToUnicode
Notice:
To improve processing speed the function does not check whether the parameters are valid.
Remarks:
This function was designed to convert raw strings on a per character basis to Unicode which were returned
by ParseContent() or GetPageText(). The parameters CharSpacing, WordSpacing, and TextScale must be
taken from the current graphics state or from the structure DynaPDFStackMBS.
Return values:
The count value of this function is always greater or equal to one. Check the parameter Decoded to determine
whether the function succeed.
See also:

- 70.34.842 TranslateRawCode(IFont as Integer, text as string, byref Width as Double, byref Decoded
  as boolean, CharSpacing as Double, WordSpacing as Double, TextScale as Double) as string

70.34.844 TranslateString(IFont as Integer, text as string, flags as Integer) as string

Function: Translates a string.
See also:

- 70.34.845 TranslateString(stack as DynaPDFStackMBS, flags as Integer) as string

70.34.845 TranslateString(stack as DynaPDFStackMBS, flags as Integer) as string

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The function translates a binary string returned by GetPageText() to Unicode.
See also:

- 70.34.844 TranslateString(IFont as Integer, text as string, flags as Integer) as string

70.34.846 Triangle(x1 as Double, y1 as Double, x2 as Double, y2 as Double, x3
  as Double, y3 as Double, FillMode as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The function draws a triangle.
See also Triangle function in DynaPDF manual.
70.34.847  **UnLockLayer(layer as UInt32) as boolean**

**Function:** Locks a layer.  
See also UnLockLayer function in DynaPDF manual.

70.34.848  **WatermarkAnnot(PosX as Double, PosY as Double, Width as Double, Height as Double) as Integer**

**Function:** Creates a Watermark annotation.  
**Notes:**  
Watermark annotations have no interactive elements like other annotation types. This property is useful in many cases because it is usually not possible to select or change the contents of a watermark annotation in viewer applications.  
The annotation has no appearance after it was created. Call CreateAnnotAP to create an appearance template for the annotation. After the appearance template was created you can draw text, images or vector graphics into it. The template must be closed with EndTemplate when finished. It is also possible to import an external page or EMF contents into the template.  
Watermark annotations can be shared on multiple pages. To place the annotation on other pages call AddAnnotToPage.  
If the function succeeds the return value is the annotation handle, a value greater or equal zero. If the function fails the return value is a negative error code.  
See also WatermarkAnnot function in DynaPDF manual.

70.34.849  **WebLink(PosX as Double, PosY as Double, Width as Double, Height as Double, aText as string) as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The function inserts a web link onto the current open page.  
**Notes:** The text parameter is converted to unicode.  
See also WebLink function in DynaPDF manual.

70.34.850  **WebLinkAnsi(PosX as Double, PosY as Double, Width as Double, Height as Double, aText as string) as Integer**

**Function:** The function inserts a web link onto the current open page.
70.34.851 WeightFromStyle(s as Integer) as Integer

**Function:** Converts a style value to a weight value.

70.34.852 WeightToStyle(s as Integer) as Integer

**Function:** Converts a weight value to a style value.

70.34.853 WidthFromStyle(s as Integer) as Integer

**Function:** Converts a style constant to the width value.

70.34.854 WidthToStyle(s as Integer) as Integer

**Function:** Converts a width value to a style value.

70.34.855 WriteAngleText(aText as string, Angle as Double, PosX as Double, PosY as Double, Radius as Double, YOrigin as Double) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The function prints a string in a user defined angle around a radius.
**Notes:** The text parameter is converted to unicode.
See also WriteAngleText function in DynaPDF manual.
See also:

- 70.34.856 WriteAngleText(glyphs() as Integer, Angle as Double, PosX as Double, PosY as Double, Radius as Double, YOrigin as Double) as Boolean
70.34.856  WriteAngleText(glyphs() as Integer, Angle as Double, PosX as Double, PosY as Double, Radius as Double, YOrigin as Double) as Boolean

**Function:** The function prints a string in a user defined angle around a radius. 
**Notes:** This version takes an array of integers. So if you are using the kcpUnicode on SetFont, please pass an array of unicode codepoints. If you use kcpGlyphIndexes, please pass an array of glyph values.

See also WriteAngleText function in DynaPDF manual.
See also:

- 70.34.855 WriteAngleText(aText as string, Angle as Double, PosX as Double, PosY as Double, Radius as Double, YOrigin as Double) as Boolean

70.34.857  WriteAngleTextAnsi(aText as string, Angle as Double, PosX as Double, PosY as Double, Radius as Double, YOrigin as Double) as Boolean

**Function:** The function prints a string in a user defined angle around a radius. 
**Notes:** The text parameter is converted to ANSI, so use only with SetFont with kcp1252.

70.34.858  WriteAngleTextDirect(aText as string, Angle as Double, PosX as Double, PosY as Double, Radius as Double, YOrigin as Double) as Boolean

**Function:** The function prints a string in a user defined angle around a radius. 
**Notes:** The text parameter is not converted, so pass a string in the right encoding.
See also:

- 70.34.859 WriteAngleTextDirect(glyphs() as Integer, Angle as Double, PosX as Double, PosY as Double, Radius as Double, YOrigin as Double) as Boolean
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**70.34.859** WriteAngleTextDirect(glyphs() as Integer, Angle as Double, PosX as Double, PosY as Double, Radius as Double, YOrigin as Double) as Boolean


**Function:** The function prints a string in a user defined angle around a radius.

**Notes:**
This version takes an array of integers. So pass in values in the encoding you are using. This can be glyph values or bytes in any encoding you selected in the SetFont method.

See also:

- 70.34.858 WriteAngleTextDirect(aText as string, Angle as Double, PosX as Double, PosY as Double, Radius as Double, YOrigin as Double) as Boolean

**70.34.860** WriteFText(Align as Integer, aText as string) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Instead of printing text on a line by line basis it is also possible to output text into a rectangle by applying a formatting algorithm.

**Notes:**
The text parameter is converted to unicode.

The PageBreak event is called when needed by the plugin.

See also WriteFText function in DynaPDF manual.

See also:

- 70.34.861 WriteFText(Align as Integer, glyphs() as Integer) as Boolean

**70.34.861** WriteFText(Align as Integer, glyphs() as Integer) as Boolean


**Function:** Instead of printing text on a line by line basis it is also possible to output text into a rectangle by applying a formatting algorithm.

**Notes:**
This version takes an array of integers. So if you are using the kcpUnicode on SetFont, please pass an array of unicode codepoints. If you use kcpGlyphIndexes, please pass an array of glyph values.

The PageBreak event is called when needed by the plugin.

See also WriteFText function in DynaPDF manual.

See also:
70.34.862 WriteFTextAnsi(Align as Integer, aText as string) as Boolean


Function: Instead of printing text on a line by line basis it is also possible to output text into a rectangle by applying a formatting algorithm.

Notes:

The text parameter is converted to ANSI, so use only with SetFont with kcp1252.

The PageBreak event is called when needed by the plugin.

70.34.863 WriteFTextDirect(Align as Integer, aText as string) as Boolean


Function: Instead of printing text on a line by line basis it is also possible to output text into a rectangle by applying a formatting algorithm.

Notes:

The text parameter is not converted, so pass a string in the right encoding.

The PageBreak event is called when needed by the plugin.

See also:

- 70.34.864 WriteFTextDirect(Align as Integer, glyphs() as Integer) as Boolean

70.34.864 WriteFTextDirect(Align as Integer, glyphs() as Integer) as Boolean


Function: Instead of printing text on a line by line basis it is also possible to output text into a rectangle by applying a formatting algorithm.

Notes:

This version takes an array of integers. So pass in values in the encoding you are using. This can be glyph values or bytes in any encoding you selected in the SetFont method.

The PageBreak event is called when needed by the plugin.

See also:

- 70.34.863 WriteFTextDirect(Align as Integer, aText as string) as Boolean
70.34. CLASS DYNAPDFMBS

70.34.865 WriteFTextEx(PosX as Double, PosY as Double, Width as Double, Height as Double, Align as Integer, aText as string) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The function prints a formatted text exactly in the same way as WriteFText().
Notes:
The text parameter is converted to unicode.

The PageBreak event is called when needed by the plugin.
See also WriteFTextEx function in DynaPDF manual.
See also:
- 70.34.866 WriteFTextEx(PosX as Double, PosY as Double, Width as Double, Height as Double, Align as Integer, glyphs() as Integer) as Boolean

70.34.866 WriteFTextEx(PosX as Double, PosY as Double, Width as Double, Height as Double, Align as Integer, glyphs() as Integer) as Boolean

Function: The function prints a formatted text exactly in the same way as WriteFText().
Notes:
This version takes an array of integers. So if you are using the kcpUnicode on SetFont, please pass an array of unicode codepoints. If you use kcpGlyphIndexes, please pass an array of glyph values.

The PageBreak event is called when needed by the plugin.
See also WriteFTextEx function in DynaPDF manual.
See also:
- 70.34.866 WriteFTextEx(PosX as Double, PosY as Double, Width as Double, Height as Double, Align as Integer, glyphs() as Integer) as Boolean

70.34.867 WriteFTextExAnsi(PosX as Double, PosY as Double, Width as Double, Height as Double, Align as Integer, aText as string) as Boolean

Function: The function prints a formatted text exactly in the same way as WriteFText().
Notes:
The text parameter is converted to ANSI, so use only with SetFont with kcp1252.

The PageBreak event is called when needed by the plugin.
70.34.868  WriteFTextExDirect(PosX as Double, PosY as Double, Width as Double, Height as Double, Align as Integer, aText as string) as Boolean

**Function:** The function prints a formatted text exactly in the same way as WriteFText().  
**Notes:**  
The text parameter is not converted, so pass a string in the right encoding.  
The PageBreak event is called when needed by the plugin.  
See also:

- 70.34.869 WriteFTextExDirect(PosX as Double, PosY as Double, Width as Double, Height as Double, Align as Integer, glyphs() as Integer) as Boolean

70.34.869  WriteFTextExDirect(PosX as Double, PosY as Double, Width as Double, Height as Double, Align as Integer, glyphs() as Integer) as Boolean

**Function:** The function prints a formatted text exactly in the same way as WriteFText().  
**Notes:**  
This version takes an array of integers. So pass in values in the encoding you are using. This can be glyph values or bytes in any encoding you selected in the SetFont method.  
The PageBreak event is called when needed by the plugin.  
See also:

- 70.34.868 WriteFTextExDirect(PosX as Double, PosY as Double, Width as Double, Height as Double, Align as Integer, aText as string) as Boolean

70.34.870  WriteStyledText(Align as Integer, StyledText as StyledText) as Boolean

**Function:** Writes styled text.  
**Notes:** Same as WriteFText, but calls ConvertStyledText for you to convert the styled text to formatting commands.  
See also:

- 70.34.871 WriteStyledText(Align as Integer, TextArea as TextArea) as Boolean
70.34. CLASS DYNAPDFMBS

70.34.871 WriteStyledText(Align as Integer, TextArea as TextArea) as Boolean

Function: Writes styled text from TextArea.
Notes: Same as WriteFText, but calls ConvertStyledText for you to convert the styled text to formatting commands.
See also:

- 70.34.870 WriteStyledText(Align as Integer, StyledText as StyledText) as Boolean

70.34.872 WriteStyledTextEx(PosX as Double, PosY as Double, Width as Double, Height as Double, Align as Integer, StyledText as StyledText) as Boolean

Function: Writes styled text.
Notes: Same as WriteFTextEx, but calls ConvertStyledText for you to convert the styled text to formatting commands.
See also:

- 70.34.873 WriteStyledTextEx(PosX as Double, PosY as Double, Width as Double, Height as Double, Align as Integer, TextArea as TextArea) as Boolean

70.34.873 WriteStyledTextEx(PosX as Double, PosY as Double, Width as Double, Height as Double, Align as Integer, TextArea as TextArea) as Boolean

Function: Writes styled text from TextArea.
Notes: Same as WriteFTextEx, but calls ConvertStyledText for you to convert the styled text to formatting commands.
See also:

- 70.34.872 WriteStyledTextEx(PosX as Double, PosY as Double, Width as Double, Height as Double, Align as Integer, StyledText as StyledText) as Boolean

70.34.874 WriteText(PosX as Double, PosY as Double, aText as string) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The function prints a text onto the current open page, template, or pattern.
Notes: The text parameter is converted to unicode.
See also WriteText function in DynaPDF manual.
See also:
70.34.875  **WriteText(PosX as Double, PosY as Double, glyphs() as Integer) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function prints a text onto the current open page, template, or pattern. **Notes:** This version takes an array of integers. So if you are using the kcpUnicode on SetFont, please pass an array of unicode codepoints. If you use kcpGlyphIndexes, please pass an array of glyph values.

See also **WriteText** function in DynaPDF manual.

See also:

- 70.34.874  **WriteText(PosX as Double, PosY as Double, aText as string) as Boolean**

70.34.876  **WriteTextAnsi(PosX as Double, PosY as Double, aText as string) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function prints a text onto the current open page, template, or pattern. **Notes:** The text parameter is converted to ANSI, so use only with SetFont with kcp1252.

70.34.877  **WriteTextDirect(PosX as Double, PosY as Double, aText as string) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function prints a text onto the current open page, template, or pattern. **Notes:** The text parameter is not converted, so pass a string in the right encoding.

See also:

- 70.34.878  **WriteTextDirect(PosX as Double, PosY as Double, glyphs() as Integer) as Boolean**

70.34.878  **WriteTextDirect(PosX as Double, PosY as Double, glyphs() as Integer) as Boolean**

MBS DynaPDF Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function prints a text onto the current open page, template, or pattern. **Notes:**
This version takes an array of integers. So pass in values in the encoding you are using. This can be glyph values or bytes in any encoding you selected in the SetFont method.

See also:

- 70.34.877 WriteTextDirect(PosX as Double, PosY as Double, aText as string) as Boolean

70.34.879 WriteTextMatrix(Matrix as DynapdfMatrixMBS, glyphs() as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function prints a text onto the current open page, template, or pattern by using a transformation matrix to calculate the position of the string.

**Notes:**

This version takes an array of integers. So if you are using the kcpUnicode on SetFont, please pass an array of unicode codepoints. If you use kcpGlyphIndexes, please pass an array of glyph values.

See also WriteTextMatrix function in DynaPDF manual.

See also:

- 70.34.880 WriteTextMatrix(Matrix as DynapdfMatrixMBS, Text as string) as Boolean

70.34.880 WriteTextMatrix(Matrix as DynapdfMatrixMBS, Text as string) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function prints a text onto the current open page, template, or pattern by using a transformation matrix to calculate the position of the string.

**Notes:** The text parameter is converted to unicode.

See also WriteTextMatrix function in DynaPDF manual.

See also:

- 70.34.879 WriteTextMatrix(Matrix as DynapdfMatrixMBS, glyphs() as Integer) as Boolean

70.34.881 WriteTextMatrixAnsi(Matrix as DynapdfMatrixMBS, Text as string) as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The function prints a text onto the current open page, template, or pattern by using a transformation matrix to calculate the position of the string.

**Notes:** The text parameter is converted to ANSI, so use only with SetFont with kcp1252.
CHAPTER 70. DYNAPDF

70.34.882  WriteTextMatrixDirect(Matrix as DynapdfMatrixMBS, glyphs() as Integer) as Boolean

MBS DynaPDF Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function prints a text onto the current open page, template, or pattern by using a transformation matrix to calculate the position of the string.
Notes: This version takes an array of integers. So pass in values in the encoding you are using. This can be glyph values or bytes in any encoding you selected in the SetFont method.

See also:

- 70.34.883 WriteTextMatrixDirect(Matrix as DynapdfMatrixMBS, Text as string) as Boolean

70.34.883  WriteTextMatrixDirect(Matrix as DynapdfMatrixMBS, Text as string) as Boolean

MBS DynaPDF Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The function prints a text onto the current open page, template, or pattern by using a transformation matrix to calculate the position of the string.
Notes: The text parameter is not converted, so pass a string in the right encoding.

See also:

- 70.34.882 WriteTextMatrixDirect(Matrix as DynapdfMatrixMBS, glyphs() as Integer) as Boolean

70.34.884  YofCMYK(CMYK as UInt32) as Integer

Example:

dim cmyk as Integer = DynaPDFMBS.CMYK(1,2,3,4)
MsgBox str(DynaPDFMBS.YofCMYK(cmyk))  // shows 3

Notes: Returns different values on BigEndian and LittleEndian systems.
70.34.885  Properties

70.34.886  DynaPDFVersion as String
Function: The DynaPDF version text.
Notes: (Read only property)

70.34.887  Handle as Integer
MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The IPDF handle passed to each API function.
Notes:
The constructor fills this handle and the destructor frees it.
(Read only property)

70.34.888  ImportFlags as Integer
Function: Get/Set import flags.
Notes:
Same as using GetImportFlags and SetImportFlags.
(Read and Write property)

70.34.889  ImportFlags2 as Integer
Function: Get/Set import flags 2.
Notes:
Same as using GetImportFlags2 and SetImportFlags2.
(Read and Write property)

70.34.890  PageCoords as Integer
Function: The page coordinate system setting.
Notes:
The native coordinate system of the Portable Document Format is bottom up. Also check the dynapdf manual on the pdfGetPageCoords and pdfSetPageCoords functions. Value can be kpcTopDown or kpcBottomUp. Default is kpcBottomUp. (Read and Write property)

### 70.34.891 TraceFile as Folderitem

**Function:** The trace file.
**Notes:**
The plugin writes debug messages to this file so you can check what functions you called. Not all functions are supported for this. Improved with 16.2 plugin to really cover over 99% of all calls with parameters and result. Please report if you miss something.
(Read and Write property)

### 70.34.892 TraceHandle as Integer

**Function:** The internal file handle for the trace file.
**Notes:**
If this is not zero, the tracing option is turned on. You can set this value indirectly by using the TraceFile property.
(Read only property)

### 70.34.893 ValidateTextEncodings as Boolean

**Function:** Whether to validate text encodings.
**Example:**
```plaintext
dim pdf as new DynaPDFMBS

call pdf.CreateNewPDF nil
call pdf.Append

// enable validating
pdf.ValidateTextEncodings = true

// make text without text encoding
dim s as string = "Hello World"
```
s = DefineEncoding(s, nil) // remove encoding

call pdf.SetFont "Times", pdf.kfsItalic, 20.0, true, pdf.kcp1252
// now cause exception
call pdf.WriteText 50.0, 580.0, s

call pdf.EndPage
call pdf.CloseFile

Notes:
You should enable this for debugging to find bugs with text encodings.
(Read and Write property)

70.34.894 Events

70.34.895 EnumDocFont(Font as DynaPDFFontMBS, FontInfo as DynaPDF-FontInfoMBS, Type as Integer, BaseFont as string, Fontname as string, Embedded as boolean, IsFormFont as boolean, Flags as Integer, FontRef as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes.
Function: The event being called if you use the EnumDocFonts function.
Notes:
Font is deprecated. FontRef is the internal reference to the font.
FontInfo is the new property to use for font details.

70.34.896 EnumHostFont(FamilyName as string, PostScriptName as string, Style as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes.
Function: The event called by EnumHostFonts.

70.34.897 EnumHostFontEx(FamilyName as string, PostScriptName as string, Style as Integer, BaseType as Integer, Embeddable as boolean, Flags as Integer, FilePath as string) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes.
Function: The event called by EnumHostFontsEx.
70.34.898 Error(ErrorCode as Integer, ErrorMessage as string, ErrorType as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes.

Function: The error callback.

Notes:
ErrCode is a positive error number starting at zero; it is an index into the array of error messages. ErrType is a bitmask to determine what kind of error occurred. The following constants are defined:

const E_WARNING = & h02000000
const E_SYNTAX_ERROR = & h04000000
const E_VALUE_ERROR = & h08000000
const E_FONT_ERROR = & h10000000
const E_FATAL_ERROR = & h20000000
const E_FILE_ERROR = & h40000000

At time of publication only one flag is set at any one time. Future versions may be set multiple flags, e.g. E_SYNTAX_ERROR and E_WARNING. Because of this, it is recommended to mask out the error type with a bitwise and operator.
If the callback function returns a value other than zero (0), processing stops immediately.

70.34.899 InitProgress(ProgType as Integer, MaxCount as Integer)

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes.

Function: Called when a progress ist starting.

Notes:
The return value of the progress callback function must be 0, any other return value breaks processing.

See pt* constants for ProgType.

70.34.900 OnFontNotFound(PDFFontRef as Integer, FontName as string, Style as Integer, StdFontIndex as Integer, IsSymbolFont as boolean) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes.

Function: The events called when a font is not found.
Notes:
Please call one of the ReplaceFont functions here and return their return code from the callback.
Or return -1 if your code has an error.
See also OnFontNotFound function in DynaPDF manual.

70.34.901  OnReplaceICCProfile(Type as Integer, ColorSpace as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: The event called when an ICC profile is replaced.
See also OnReplaceICCProfile function in DynaPDF manual.

70.34.902  PageBreak(LastPosX as Double, LastPosY as Double, PageBreak as boolean) as Integer

Notes:
Some things are set by WriteFText.
For example SetFont may fail if you try normal font family names. That is because SetFontSelMode is used with postscript names and you may want to set it to ksmPostScriptName using SetFontSelMode for SetFont to accept family names.
Coordinate system may be switched to bottom up.

70.34.903  Progress(ActivePage as Integer) as Integer

Notes: The return value of the progress callback function must be 0, any other return value breaks processing.
CHAPTER 70. DYNAPDF

70.34.904  RasterShowText(MatrixBefore as DynapdfMatrixMBS, MatrixAfter as DynapdfMatrixMBS, TextBuffers() as DynaPDFTextRecordAMBS, Texts() as String, Width as Double, Vertical as boolean, FontRef as Integer, textScaling as Double)


Function: Rastering draws text.

Notes:
This is experimental and will be replaced later with a better API in a future DynaPDF release. Works only if you have a plugin where this is enabled by us.

If you implement this event, you get an event whenever one of the rasterizers draws some text on a page. MatrixBefore tells you start position, MatrixAfter end position. TextBuffers provide raw text data. Texts array the matching unicode text. Width is length of text in points. Vertical is true for vertical text. FontRef is the internal font reference. You can query fonts with EnumDocFont before to get a list of all fonts and find it in the array. Do not use font functions in the event as that can confuse the rasterizer.

Do not use with MT methods, please.

70.34.905  Constants

70.34.906  kadAnnotation = 0

MBS DynaPDF Plugin, Plugin Version: 13.5.

Function: One of the destination object types.

Notes: Destination is annotation handle.

70.34.907  kadCatalog = 1

MBS DynaPDF Plugin, Plugin Version: 13.5.

Function: One of the destination object types.

Notes: Destination is root object of document (no handle).

70.34.908  kadField = 2

MBS DynaPDF Plugin, Plugin Version: 13.5.

Function: One of the destination object types.

Notes: Destination is field handle.
MBS DynaPDF Plugin, Plugin Version: 13.5. **Function:** One of the destination object types.  
**Notes:** Destination is image handle.

MBS DynaPDF Plugin, Plugin Version: 13.5. **Function:** One of the destination object types.  
**Notes:** Destination is page handle.

MBS DynaPDF Plugin, Plugin Version: 13.5. **Function:** One of the destination object types.  
**Notes:** Destination is template handle.

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the application event constants.  
**Notes:** Export

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the application event constants.  
**Notes:** Print

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the application event constants.  
**Notes:** View

MBS DynaPDF Plugin, Plugin Version: 8.6. **Function:** One of the annotation flatten flags.  
**Notes:** If set, markup annotations are flattened only. Link, Sound, or FileAttach annotations are no markup annotations. These types will be left intact.
70.34.916  kaffNone = 0

MBS DynaPDF Plugin, Plugin Version: 8.6. **Function:** One of the annotation flatten flags.  
**Notes:**  
Printable annotations independent of the type.  
By default all annotations which have an appearance stream and which have the print flag set are flattened.  
All annotations are deleted when the function returns with the exception of file attachment annotations.  
If you want to flatten the view state then set the flag affUseViewState.

70.34.917  kaffUseViewState = 1

MBS DynaPDF Plugin, Plugin Version: 8.6. **Function:** One of the annotation flatten flags.  
**Notes:** If set, annotations which are visible in a viewer become flattened.

70.34.918  kafHidden = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF annotation flags constants for SetAnnotFlags.  
**Notes:** One of the three options to hide the annotation (see dynapdf manual)

70.34.919  kafInvisible = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF annotation flags constants for SetAnnotFlags.  
**Notes:** One of the three options to hide the annotation (see dynapdf manual)

70.34.920  kafLocked = & h00000080

MBS DynaPDF Plugin, Plugin Version: 15.3. **Function:** One of the DynaPDF annotation flags constants for SetAnnotFlags.  
**Notes:** (PDF 1.4) If set, do not allow the annotation to be deleted or its properties (including position and size) to be modified by the user. However, this flag does not restrict changes to the annotations contents.

70.34.921  kafLockedContents = & h00000200

MBS DynaPDF Plugin, Plugin Version: 15.3. **Function:** One of the DynaPDF annotation flags constants for SetAnnotFlags.
**Notes:** (PDF 1.7) If set, do not allow the contents of the annotation to be modified by the user. This flag does not restrict deletion of the annotation or changes to other annotation properties, such as position and size.

### 70.34.922 kafNone = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF annotation flags constants for SetAnnotFlags.  
**Notes:** No flags are set

### 70.34.923 kafNoRotate = & h00000010

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF annotation flags constants for SetAnnotFlags.  
**Notes:** Do not rotate the annotation

### 70.34.924 kafNoView = & h00000020

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF annotation flags constants for SetAnnotFlags.  
**Notes:** One of the three options to hide the annotation (see dynapdf manual)

### 70.34.925 kafNoZoom = 8

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF annotation flags constants for SetAnnotFlags.  
**Notes:** Do not zoom the annotation

### 70.34.926 kafPrint = 4

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF annotation flags constants for SetAnnotFlags.  
**Notes:** Annotation is printable
70.34.927  \texttt{kafReadOnly} = \& \texttt{h00000040}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the DynaPDF annotation flags constants for SetAnnotFlags.
\textbf{Notes}: Changes are not allowed.

70.34.928  \texttt{kafToggleNoView} = \& \texttt{h00000100}

MBS DynaPDF Plugin, Plugin Version: 15.3. \textbf{Function}: One of the DynaPDF annotation flags constants for SetAnnotFlags.
\textbf{Notes}: (PDF 1.5) If set, invert the interpretation of the NoView flag for certain events.

70.34.929  \texttt{kaiComment} = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the DynaPDF constants for annotation icons.

70.34.930  \texttt{kaiHelp} = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the DynaPDF constants for annotation icons.

70.34.931  \texttt{kaiInsert} = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the DynaPDF constants for annotation icons.

70.34.932  \texttt{kaiKey} = 3

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the DynaPDF constants for annotation icons.

70.34.933  \texttt{kaiNewParagraph} = 4

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the DynaPDF constants for annotation icons.
70.34.934  kaiNote = 5

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for annotation icons.

70.34.935  kaiParagraph = 6

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for annotation icons.

70.34.936  karAlternative = 4

MBS DynaPDF Plugin, Plugin Version: 14.3. **Function:** One of the relationship constants. **Notes:** This key must be used for ZUGFeRD compatible invoices

70.34.937  karAssociated = 0

MBS DynaPDF Plugin, Plugin Version: 13.5. **Function:** One of the relationship constants.

70.34.938  karData = 1

MBS DynaPDF Plugin, Plugin Version: 13.5. **Function:** One of the relationship constants.

70.34.939  karSource = 2

MBS DynaPDF Plugin, Plugin Version: 13.5. **Function:** One of the relationship constants.

70.34.940  karSupplement = 3

MBS DynaPDF Plugin, Plugin Version: 13.5. **Function:** One of the relationship constants.

70.34.941  kasAccepted = 1

MBS DynaPDF Plugin, Plugin Version: 15.4. **Function:** One of the annotation migration state constants. **Notes:** Accepted
70.34.942  \textit{kasAuthor} = 0

MBS DynaPDF Plugin, Plugin Version: 9.7. \textbf{Function}: One of the annotation string type constants for \texttt{SetAnnotString}.
\textbf{Notes}: Author

70.34.943  \textit{kasCancelled} = 3

MBS DynaPDF Plugin, Plugin Version: 15.4. \textbf{Function}: One of the annotation migration state constants.
\textbf{Notes}: Cancelled

70.34.944  \textit{kasCompleted} = 4

MBS DynaPDF Plugin, Plugin Version: 15.4. \textbf{Function}: One of the annotation migration state constants.
\textbf{Notes}: Completed

70.34.945  \textit{kasContent} = 1

MBS DynaPDF Plugin, Plugin Version: 9.7. \textbf{Function}: One of the annotation string type constants for \texttt{SetAnnotString}.
\textbf{Notes}: Content

70.34.946  \textit{kasCreateReply} = 5

MBS DynaPDF Plugin, Plugin Version: 15.4. \textbf{Function}: One of the annotation migration state constants.
\textbf{Notes}: Don’t add a migration state, create a reply instead. Set the contents of the reply with \texttt{SetAnnotString}.

70.34.947  \textit{kasName} = 2

MBS DynaPDF Plugin, Plugin Version: 9.7. \textbf{Function}: One of the annotation string type constants for \texttt{SetAnnotString}.
\textbf{Notes}: Name
70.34.948   \texttt{kasNone} = 0

MBS DynaPDF Plugin, Plugin Version: 15.4. \textbf{Function}: One of the annotation migration state constants. 
\textbf{Notes}: Undefined

70.34.949   \texttt{kasRejected} = 2

MBS DynaPDF Plugin, Plugin Version: 15.4. \textbf{Function}: One of the annotation migration state constants. 
\textbf{Notes}: Rejected

70.34.950   \texttt{kasRichStyle} = 4

MBS DynaPDF Plugin, Plugin Version: 15.3. \textbf{Function}: One of the annotation string type constants for \texttt{SetAnnotString}. 
\textbf{Notes}: Default style string. ->FreeText annotations only.

70.34.951   \texttt{kasRichText} = 5

MBS DynaPDF Plugin, Plugin Version: 15.3. \textbf{Function}: One of the annotation string type constants for \texttt{SetAnnotString}. 
\textbf{Notes}: Rich text string. ->Supported by markup annotations.

70.34.952   \texttt{kasSubject} = 3

MBS DynaPDF Plugin, Plugin Version: 9.7. \textbf{Function}: One of the annotation string type constants for \texttt{SetAnnotString}. 
\textbf{Notes}: Subject

70.34.953   \texttt{kat3D} = \&h00000013

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the constants for annotation types. 
\textbf{Notes}: PDF 1.6
70.34.954  kat3D_AppDefault = 0

MBS DynaPDF Plugin, Plugin Version: 9.8. **Function**: One of the 3D Activation Type constants.  
**Notes**: Default.

70.34.955  kat3D_Explicit = 3

MBS DynaPDF Plugin, Plugin Version: 9.8. **Function**: One of the 3D Activation Type constants.  
**Notes**: The annotation should remain inactive until explicitly activated by a script or action (default).

70.34.956  kat3D_PageOpen = 1

MBS DynaPDF Plugin, Plugin Version: 9.8. **Function**: One of the 3D Activation Type constants.  
**Notes**: The annotation should be activated when the page is opened.

70.34.957  kat3D_PageVisible = 2

MBS DynaPDF Plugin, Plugin Version: 9.8. **Function**: One of the 3D Activation Type constants.  
**Notes**: The annotation should be activated when the page becomes visible.

70.34.958  katCaret = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the constants for annotation types.

70.34.959  katCircle = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the constants for annotation types.

70.34.960  katFileAttach = & h00000015

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the constants for annotation types.  
**Notes**: PDF 1.3
70.34. CLASS DYNAPDFMBS

70.34.961  katFileLink = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the constants for annotation types.

70.34.962  katFreeText = 3

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the constants for annotation types.

70.34.963  katGoTo = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the constants for action types.

70.34.964  katGoTo3DView = & h00000010

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the constants for action types.  
**Notes**: PDF 1.6

70.34.965  katGoToE = & h00000011

MBS DynaPDF Plugin, Plugin Version: 9.3. **Function**: Like katGoToR but refers to an embedded PDF file.  
**Notes**: PDF 1.6 Like atGoToR but refers to an embedded PDF file.

70.34.966  katGoToR = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the constants for action types.

70.34.967  katHide = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the constants for action types.
70.34.968  katHighlight = 4

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for annotation types.

70.34.969  katImportData = 3

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for action types.

70.34.970  katInk = 5

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for annotation types.

70.34.971  katJavaScript = 4

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for action types.

70.34.972  katLaunch = 5

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for action types.

70.34.973  katLine = 6

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for annotation types.

70.34.974  katMovie = 6

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for action types.

70.34.975  katMovieAnnot = \& h00000019

MBS DynaPDF Plugin, Plugin Version: 11.1. **Function:** One of the constants for annotation types.  
**Notes:** PDF 1.2
70.34. **CLASS DYNAPDFMBS**

**70.34.976**  
katNamed = 7

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for action types.

**70.34.977**  
katPageLink = 7

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for annotation types.

**70.34.978**  
katPolygon = 8

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for annotation types.

**70.34.979**  
katPolyLine = 9

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for annotation types.

**70.34.980**  
katPopUp = & h000000A

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for annotation types.

**70.34.981**  
katPrinterMark = & h000001A

MBS DynaPDF Plugin, Plugin Version: 11.1. **Function:** One of the constants for annotation types.  
**Notes:** PDF 1.4

**70.34.982**  
katProjection = & h000001B

MBS DynaPDF Plugin, Plugin Version: 11.1. **Function:** One of the constants for annotation types.  
**Notes:** PDF 1.7 Extension Level 3

**70.34.983**  
katRedact = & h0000016

MBS DynaPDF Plugin, Plugin Version: 10.5. **Function:** One of the constants for annotation types.  
**Notes:** PDF 1.7
70.34.984 kRendition = 8

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the constants for action types.
Notes: PDF 1.5

70.34.985 kReset = 9

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the constants for action types.
Notes: Reset Form

70.34.986 kRichMedia = & h0000001C

MBS DynaPDF Plugin, Plugin Version: 11.1. Function: One of the constants for annotation types.
Notes: PDF 1.7 Extension Level 3

70.34.987 kRichMediaExec = & h00000012

MBS DynaPDF Plugin, Plugin Version: 11.1. Function: One of the constants for action types.
Notes: PDF 1.7 Extension Level 3

70.34.988 kScreen = & h0000001D

MBS DynaPDF Plugin, Plugin Version: 11.1. Function: One of the constants for annotation types.
Notes: PDF 1.5

70.34.989 kSetOCGState = & h0000000A

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the constants for action types.
Notes: PDF 1.5
70.34.990  \textbf{katSound} = \& h0000000B

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the constants for action types.

70.34.991  \textbf{katSoundAnnot} = \& h00000014

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the constants for annotation types. \textbf{Notes}: PDF 1.2

70.34.992  \textbf{katSquare} = \& h0000000B

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the constants for annotation types.

70.34.993  \textbf{katSquiggly} = \& h0000000C

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the constants for annotation types. \textbf{Notes}: Highlight annotation

70.34.994  \textbf{katStamp} = \& h0000000D

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the constants for annotation types.

70.34.995  \textbf{katStrikeOut} = \& h0000000E

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the constants for annotation types. \textbf{Notes}: Highlight annotation

70.34.996  \textbf{katSubmit} = \& h0000000C

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the constants for action types. \textbf{Notes}: Submit Form
70.34.997  \texttt{katText = \& h0000000F}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the constants for annotation types.  
\textbf{Notes}: Also used as container to store the State Model

70.34.998  \texttt{katThread = \& h0000000D}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the constants for action types.

70.34.999  \texttt{katTransition = \& h0000000E}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the constants for action types.

70.34.1000  \texttt{katTrapNet = \& h0000001E}

MBS DynaPDF Plugin, Plugin Version: 11.1. \textbf{Function}: One of the constants for annotation types.  
\textbf{Notes}: PDF 1.3

70.34.1001  \texttt{katUnderline = \& h00000010}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the constants for annotation types.  
\textbf{Notes}: Highlight annotation

70.34.1002  \texttt{katUnknown = \& h00000018}

MBS DynaPDF Plugin, Plugin Version: 10.5. \textbf{Function}: One of the constants for annotation types.  
\textbf{Notes}: Unknown annotation type

70.34.1003  \texttt{katURI = \& h0000000F}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the constants for action types.
70.34.1004  katWatermark = & h00000017

MBS DynaPDF Plugin, Plugin Version: 10.5. **Function:** One of the constants for annotation types.  
**Notes:** PDF 1.6

70.34.1005  katWebLink = & h00000011

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for annotation types.  
**Notes:** A Link annotation with an associated URI action

70.34.1006  katWidget = & h00000012

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for annotation types.  
**Notes:** Form Fields are handled separately

70.34.1007  kavDirectionL2R = 8

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for parameter of the viewer preference.

70.34.1008  kavDirectionR2L = & h00000010

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for parameter of the viewer preference.

70.34.1009  kavNone = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for parameter of the viewer preference.

70.34.1010  kavNonFullScrUseNone = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for parameter of the viewer preference.
70.34.1011  \textit{kavNonFullScrUseOC} = \& \texttt{h00000400}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the constants for parameter of the viewer preference.

70.34.1012  \textit{kavNonFullScrUseOutlines} = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the constants for parameter of the viewer preference.

70.34.1013  \textit{kavNonFullScrUseThumbs} = 4

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the constants for parameter of the viewer preference.

70.34.1014  \textit{kavViewPrintArtBox} = \& \texttt{h00000020}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the constants for parameter of the viewer preference.

70.34.1015  \textit{kavViewPrintBleedBox} = \& \texttt{h00000040}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the constants for parameter of the viewer preference.

70.34.1016  \textit{kavViewPrintCropBox} = \& \texttt{h00000080}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the constants for parameter of the viewer preference.

70.34.1017  \textit{kavViewPrintMediaBox} = \& \texttt{h00000100}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the constants for parameter of the viewer preference.
70.34. CLASS DYNAPDFMBS

70.34.1018 kavViewPrintTrimBox = & h00000200

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the constants for parameter of the viewer preference.

70.34.1019 kAV_DIRECTION_MASK = & h00000018

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the DynaPDF constants.

70.34.1020 kAV_NON_FULL_SRC_MASK = 5

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the DynaPDF constants.

70.34.1021 kAV_VIEW_PRINT_MASK = & h000003E0

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the DynaPDF constants.

70.34.1022 kbcpCaptionAbove = 3

MBS DynaPDF Plugin, Plugin Version: 14.0. Function: One of the button caption constants. Notes: Caption above the image

70.34.1023 kbcpCaptionBelow = 2

MBS DynaPDF Plugin, Plugin Version: 14.0. Function: One of the button caption constants. Notes: Caption below the image

70.34.1024 kbcpCaptionLeft = 5

MBS DynaPDF Plugin, Plugin Version: 14.0. Function: One of the button caption constants. Notes: Caption on the left of the image
70.34.1025  \text{kbcpCaptionOnly} = 0 \\
MBS DynaPDF Plugin, Plugin Version: 14.0. \textbf{Function:} One of the button caption constants. 
\textbf{Notes:} Default

70.34.1026  \text{kbcpCaptionOver} = 6 \\
MBS DynaPDF Plugin, Plugin Version: 14.0. \textbf{Function:} One of the button caption constants. 
\textbf{Notes:} Caption overlaid directly on the image

70.34.1027  \text{kbcpCaptionRight} = 4 \\
MBS DynaPDF Plugin, Plugin Version: 14.0. \textbf{Function:} One of the button caption constants. 
\textbf{Notes:} Caption on the right of the image

70.34.1028  \text{kbcpImageOnly} = 1 \\
MBS DynaPDF Plugin, Plugin Version: 14.0. \textbf{Function:} One of the button caption constants. 
\textbf{Notes:} No caption; image only

70.34.1029  \text{kbeCloudy1} = 1 \\
MBS DynaPDF Plugin, Plugin Version: 15.2. \textbf{Function:} One of the annotation border effect values. 
\textbf{Notes:} Circle diameter 9 units

70.34.1030  \text{kbeCloudy2} = 2 \\
MBS DynaPDF Plugin, Plugin Version: 15.2. \textbf{Function:} One of the annotation border effect values. 
\textbf{Notes:} Circle diameter 17 units

70.34.1031  \text{kbeMacExpert} = 2 \\
MBS DynaPDF Plugin, Plugin Version: 14.3. \textbf{Function:} One of the font base encoding constants. 
\textbf{Notes:} Mac Expert encoding.
70.34. CLASS DYNAPDFMBS

70.34.1032  kbeMacRoman = 1
MBS DynaPDF Plugin, Plugin Version: 14.3. **Function:** One of the font base encoding constants.  
**Notes:** Mac Roman encoding.

70.34.1033  kbeSolid = 0
MBS DynaPDF Plugin, Plugin Version: 15.2. **Function:** One of the annotation border effect values.  
**Notes:** Default

70.34.1034  kbeStandard = 3
MBS DynaPDF Plugin, Plugin Version: 14.3. **Function:** One of the font base encoding constants.  
**Notes:** Standard encoding is a special encoding for Type1 fonts.

70.34.1035  kbeWinAnsi = 0
MBS DynaPDF Plugin, Plugin Version: 14.3. **Function:** One of the font base encoding constants.  
**Notes:** This represents the Windows code page 1252.

70.34.1036  kbmColor = 2
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for blend modes.  
**Notes:** Color

70.34.1037  kbmColorBurn = 3
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for blend modes.  
**Notes:** Color Burn

70.34.1038  kbmColorDodge = 4
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for blend modes.  
**Notes:** Color Dodge
70.34.1039  kbmDarken = 5

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for blend modes. **Notes:** Darken

70.34.1040  kbmDifference = 6

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for blend modes. **Notes:** Difference

70.34.1041  kbmExclusion = 7

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for blend modes. **Notes:** Exclusion

70.34.1042  kbmHardLight = 8

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for blend modes. **Notes:** Hard Light

70.34.1043  kbmHue = 9

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for blend modes. **Notes:** Hue

70.34.1044  kBMK_ADD_CHILDREN = & h40000000

MBS DynaPDF Plugin, Plugin Version: 11.2. **Function:** Special flag for bookmark values.

70.34.1045  kBMK_INSERT = & h20000000

MBS DynaPDF Plugin, Plugin Version: 11.2. **Function:** Special flag for bookmark values.
**70.34.1046**  \( \text{kbmLeftToRight} = 0 \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for bidirectional mode. **Notes:** Apply the bidi algorithm on Unicode strings in Left to Right layout.

**70.34.1047**  \( \text{kbmLighten} = \& h0000000A \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for blend modes. **Notes:** Lighten

**70.34.1048**  \( \text{kbmLuminosity} = \& h0000000B \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for blend modes. **Notes:** Luminosity

**70.34.1049**  \( \text{kbmMultiply} = \& h0000000C \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for blend modes. **Notes:** Multiply

**70.34.1050**  \( \text{kbmNone} = 2 \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for bidirectional mode. **Notes:** Default -&gt; do not apply the bidi algorithm.

**70.34.1051**  \( \text{kbmNormal} = 1 \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for blend modes. **Notes:** Normal

**70.34.1052**  \( \text{kbmNotSet} = 0 \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for blend modes. **Notes:** Non Set.
70.34.1053 \( \text{kbmOverlay} = \& h0000000D \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for blend modes.  
**Notes:** Overlay

70.34.1054 \( \text{kbmRightToLeft} = 1 \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for bidirectional mode.  
**Notes:** Apply the bidi algorithm on Unicode strings in Right to Left layout.

70.34.1055 \( \text{kbmSaturation} = \& h0000000E \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for blend modes.  
**Notes:** Saturation

70.34.1056 \( \text{kbmsBold} = 2 \)

MBS DynaPDF Plugin, Plugin Version: 11.3. **Function:** One of the constants for use with DynaPDFBookMarkMBS class’ text style property.  
**Notes:** Bold

70.34.1057 \( \text{kbmScreen} = \& h0000000F \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for blend modes.  
**Notes:** Screen

70.34.1058 \( \text{kbmsItalic} = 1 \)

MBS DynaPDF Plugin, Plugin Version: 11.3. **Function:** One of the constants for use with DynaPDFBookMarkMBS class’ text style property.  
**Notes:** Italic

70.34.1059 \( \text{kbmsNormal} = 0 \)

MBS DynaPDF Plugin, Plugin Version: 11.3. **Function:** One of the constants for use with DynaPDFBookMarkMBS class’ text style property.
70.34.1060  kbmSoftLight = & h00000010

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for blend modes. **Notes:** Soft Light.

70.34.1061  kbsBevelled = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for border styles.

70.34.1062  kbsDashed = 4

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for border styles.

70.34.1063  kbsDown = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for button states.

70.34.1064  kbsInset = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for border styles.

70.34.1065  kbsRollOver = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for button states.

70.34.1066  kbsSolid = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for border styles.
70.34.1067  kbsUnderline = 3

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for border styles.

70.34.1068  kbsUp = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for button states.

70.34.1069  kbtAnnot = 2

MBS DynaPDF Plugin, Plugin Version: 8.1. **Function:** One of the PDF base tag constants. **Notes:** An annotation must be inserted to finish the tag!

70.34.1070  kbtArt = 0

MBS DynaPDF Plugin, Plugin Version: 8.1. **Function:** One of the PDF base tag constants.

70.34.1071  kbtArtifact = 1

MBS DynaPDF Plugin, Plugin Version: 8.1. **Function:** One of the PDF base tag constants.

70.34.1072  kbtBibEntry = 3

MBS DynaPDF Plugin, Plugin Version: 8.1. **Function:** One of the PDF base tag constants. **Notes:** BibEntry -> Bibliography entry

70.34.1073  kbtBlockQuote = 4

MBS DynaPDF Plugin, Plugin Version: 8.1. **Function:** One of the PDF base tag constants.

70.34.1074  kbtCaption = 5

MBS DynaPDF Plugin, Plugin Version: 8.1. **Function:** One of the PDF base tag constants.
70.34. CLASS DYNAPDFMBS

70.34.1075  kbtCode = 6

MBS DynaPDF Plugin, Plugin Version: 8.1. **Function:** One of the PDF base tag constants.

70.34.1076  kbtDiv = 7

MBS DynaPDF Plugin, Plugin Version: 8.1. **Function:** One of the PDF base tag constants.

70.34.1077  kbtDocument = 8

MBS DynaPDF Plugin, Plugin Version: 8.1. **Function:** One of the PDF base tag constants.

70.34.1078  kbtFigure = 9

MBS DynaPDF Plugin, Plugin Version: 8.1. **Function:** One of the PDF base tag constants.

70.34.1079  kbtForm = & h000000A

MBS DynaPDF Plugin, Plugin Version: 8.1. **Function:** One of the PDF base tag constants. **Notes:** A form field must be inserted to finish the tag!

70.34.1080  kbtFormula = & h000000B

MBS DynaPDF Plugin, Plugin Version: 8.1. **Function:** One of the PDF base tag constants.

70.34.1081  kbtH = & h000000C

MBS DynaPDF Plugin, Plugin Version: 8.1. **Function:** One of the PDF base tag constants.

70.34.1082  kbtH1 = & h000000D

MBS DynaPDF Plugin, Plugin Version: 8.1. **Function:** One of the PDF base tag constants.
70.34.1083 \( \text{kbtH2} = \& \text{h0000000E} \)
MBS DynaPDF Plugin, Plugin Version: 8.1. **Function**: One of the PDF base tag constants.

70.34.1084 \( \text{kbtH3} = \& \text{h0000000F} \)
MBS DynaPDF Plugin, Plugin Version: 8.1. **Function**: One of the PDF base tag constants.

70.34.1085 \( \text{kbtH4} = \& \text{h00000010} \)
MBS DynaPDF Plugin, Plugin Version: 8.1. **Function**: One of the PDF base tag constants.

70.34.1086 \( \text{kbtH5} = \& \text{h00000011} \)
MBS DynaPDF Plugin, Plugin Version: 8.1. **Function**: One of the PDF base tag constants.

70.34.1087 \( \text{kbtH6} = \& \text{h00000012} \)
MBS DynaPDF Plugin, Plugin Version: 8.1. **Function**: One of the PDF base tag constants.

70.34.1088 \( \text{kbtIndex} = \& \text{h00000013} \)
MBS DynaPDF Plugin, Plugin Version: 8.1. **Function**: One of the PDF base tag constants.

70.34.1089 \( \text{kbtLink} = \& \text{h00000014} \)
MBS DynaPDF Plugin, Plugin Version: 8.1. **Function**: One of the PDF base tag constants.
**Notes**: A link annotation must be inserted to finish the tag (FileLink(), PageLink(), or WebLink())!

70.34.1090 \( \text{kbtList} = \& \text{h00000015} \)
MBS DynaPDF Plugin, Plugin Version: 8.1. **Function**: One of the PDF base tag constants.
**Notes**: L
70.34. CLASS DYNAPDFMBS

70.34.1091  kbtListElem = & h00000016

MBS DynaPDF Plugin, Plugin Version: 8.1. Function: One of the PDF base tag constants.
Notes: LI, ->Correct nesting: btList/btListElem

70.34.1092  kbtListText = & h00000017

MBS DynaPDF Plugin, Plugin Version: 8.1. Function: One of the PDF base tag constants.
Notes: LBody ->Correct nesting: btList/btListElem/btListText

70.34.1093  kbtNote = & h00000018

MBS DynaPDF Plugin, Plugin Version: 8.1. Function: One of the PDF base tag constants.

70.34.1094  kbtP = & h00000019

MBS DynaPDF Plugin, Plugin Version: 8.1. Function: One of the PDF base tag constants.

70.34.1095  kbtPart = & h0000001A

MBS DynaPDF Plugin, Plugin Version: 8.1. Function: One of the PDF base tag constants.

70.34.1096  kbtQuote = & h0000001B

MBS DynaPDF Plugin, Plugin Version: 8.1. Function: One of the PDF base tag constants.

70.34.1097  kbtReference = & h0000001C

MBS DynaPDF Plugin, Plugin Version: 8.1. Function: One of the PDF base tag constants.

70.34.1098  kbtSection = & h0000001D

MBS DynaPDF Plugin, Plugin Version: 8.1. Function: One of the PDF base tag constants.
Notes: Sect
70.34.1099  kbtSpan = & h0000001E
MBS DynaPDF Plugin, Plugin Version: 8.1. Function: One of the PDF base tag constants.

70.34.1100  kbtTable = & h0000001F
MBS DynaPDF Plugin, Plugin Version: 8.1. Function: One of the PDF base tag constants.

70.34.1101  kbtTableDataCell = & h00000020
MBS DynaPDF Plugin, Plugin Version: 8.1. Function: One of the PDF base tag constants.
Notes: TD

70.34.1102  kbtTableHeader = & h00000021
MBS DynaPDF Plugin, Plugin Version: 8.1. Function: One of the PDF base tag constants.
Notes: TH

70.34.1103  kbtTableRow = & h00000022
MBS DynaPDF Plugin, Plugin Version: 8.1. Function: One of the PDF base tag constants.
Notes: TR

70.34.1104  kbtTOC = & h00000023
MBS DynaPDF Plugin, Plugin Version: 8.1. Function: One of the PDF base tag constants.

70.34.1105  kbtTOCEntry = & h00000024
MBS DynaPDF Plugin, Plugin Version: 8.1. Function: One of the PDF base tag constants.
Notes: TOCI
70.34.  CLASS DYNAPDFMBS

70.34.1106  kcbChecked = 1

MBS DynaPDF Plugin, Plugin Version: 10.1. **Function:** One of the checkbox state constants.

70.34.1107  kcbfIgnoreWhiteAreas = 1

MBS DynaPDF Plugin, Plugin Version: 8.1. **Function:** One of the flag constants for ComputeBBox. **Notes:** Ignore white vector graphics or text.

70.34.1108  kcbfNone = 0

MBS DynaPDF Plugin, Plugin Version: 8.1. **Function:** One of the flag constants for ComputeBBox.

70.34.1109  kcbfParse1BitImages = 2

MBS DynaPDF Plugin, Plugin Version: 8.1. **Function:** One of the flag constants for ComputeBBox. **Notes:** Find the visible area in 1 bit images. This is the most important case since scanned faxes are usually 1 bit images.

70.34.1110  kcbfParseAllImages = & h0000000E

MBS DynaPDF Plugin, Plugin Version: 8.1. **Function:** One of the flag constants for ComputeBBox. **Notes:** Find the visible area in all images.

70.34.1111  kcbfParseColorImages = 8

MBS DynaPDF Plugin, Plugin Version: 8.1. **Function:** One of the flag constants for ComputeBBox. **Notes:** Find the visible area in color images. This is usually not required and slows down processing a lot.

70.34.1112  kcbfParseGrayImages = 4

MBS DynaPDF Plugin, Plugin Version: 8.1. **Function:** One of the flag constants for ComputeBBox. **Notes:** Find the visible area in gray images.
70.34.1113  \texttt{kcbUnChecked} = 2

MBS DynaPDF Plugin, Plugin Version: 10.1. \textbf{Function}: One of the checkbox state constants.

70.34.1114  \texttt{kcbUnknown} = 0

MBS DynaPDF Plugin, Plugin Version: 10.1. \textbf{Function}: One of the checkbox state constants.

70.34.1115  \texttt{kccCheck} = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the checkbox character constants.

70.34.1116  \texttt{kccCircle} = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the checkbox character constants.

70.34.1117  \texttt{kccCross1} = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the checkbox character constants.

70.34.1118  \texttt{kccCross2} = 3

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the checkbox character constants.

70.34.1119  \texttt{kccCross3} = 4

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the checkbox character constants.

70.34.1120  \texttt{kccCross4} = 5

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the checkbox character constants.
70.34. CLASS DYNAPDFMBS

70.34.1121  kccDiamond = 6

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the checkbox character constants.

70.34.1122  kccfBW_To_Gray = 0

MBS DynaPDF Plugin, Plugin Version: 8.6. **Function:** One of the flag constants for color conversion. **Notes:** Default, RGB Black and White set with rg or RG inline operators are converted to gray

70.34.1123  kccfRGB_To_Gray = 1

MBS DynaPDF Plugin, Plugin Version: 8.6. **Function:** One of the flag constants for color conversion. **Notes:** If set, inline color operators rg and RG are converted to gray

70.34.1124  kccfToGrayAdjust = 2

MBS DynaPDF Plugin, Plugin Version: 12.4. **Function:** One of the flag constants for color conversion. **Notes:** Converts RGB and gray inline operators to gray and allows to darken or lighten the colors.

70.34.1125  kccSquare = 7

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the checkbox character constants.

70.34.1126  kccStar = 8

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the checkbox character constants.

70.34.1127  kcfCCITT3 = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for compression filter. **Notes:** PDF or TIFF output -> B&W CCITT Fax G3 compression -> fast but less compression ratio
70.34.1128 kcfCCITT4 = 3

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for compression filter.  
**Notes:** PDF or TIFF output -&gt; B&amp; W CCITT Fax G4 compression -&gt; slower but higher compression ratio

70.34.1129 kcfConvGrayToOtsu = &amp; h00002000

MBS DynaPDF Plugin, Plugin Version: 18.1. **Function:** One of the DynaPDF constants for compression filter.  
**Notes:** The Otsu filter is a special filter to produce black &amp; white images. It is very useful if an OCR scan should be applied on the resulting 1 bit image. The flag is considered in AddRasImage(), RenderPDFFile(), and RenderPageToImage() if the pixel format was set to pxfGray.

70.34.1130 kcfDitherFloydSteinberg = &amp; h00001000

MBS DynaPDF Plugin, Plugin Version: 18.1. **Function:** One of the DynaPDF constants for compression filter.  
**Notes:** Floyd Steinberg dithering. Special flags for AddRasImage(). These flags can be combined with the filters cfFlate, cfCCITT3, cfCCITT4, and LZW.

70.34.1131 kcfFlate = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for compression filter.  
**Notes:** PDF or TIFF output

70.34.1132 kcfFlateBW = 6

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for compression filter.  
**Notes:** TIFF, PNG, or BMP output -&gt; Dithered black &amp; white output. The resulting image will be compressed with Flate or left uncompressed if the output image format is a bitmap. If you want to use CCITT Fax 4 compression (TIFF only) set the flag icUseCCITT4 in the AddImage() function call. Note that this filter is not supported for PDF creation!
70.34. CLASS DYNAPDFMBS

70.34.1133 kcfJP2K = 7

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for compression filter.
**Notes:** PDF or JPEG2000 output

70.34.1134 kcfJPEG = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for compression filter.
**Notes:** PDF, JPEG, or TIFF output

70.34.1135 kcfLZW = 4

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for compression filter.
**Notes:** TIFF or GIF output -> Very fast but less compression ratios than flate

70.34.1136 kcfLZWBB = 5

MBS DynaPDF Plugin, Plugin Version: 13.1. **Function:** One of the DynaPDF constants for compression filter.
**Notes:** TIFF output -> Very fast but less compression ratios than flate. For black and white.

70.34.1137 kcisCompressedSize = 8

MBS DynaPDF Plugin, Plugin Version: 11.0. **Function:** One of the DynaPDF constants for user defined columns is stored in collection items.
**Notes:**
The compressed file size.
Data value comes from the embedded file.

70.34.1138 kcisCreationDate = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for user defined columns is stored in collection items.
**Notes:**
The creation date of this file.
Data value comes from the embedded file.

**70.34.1139  kcisCustomDate = 5**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for user defined columns is stored in collection items.
**Notes:** User defined date.

**70.34.1140  kcisCustomNumber = 6**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for user defined columns is stored in collection items.
**Notes:** User defined number.

**70.34.1141  kcisCustomString = 7**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for user defined columns is stored in collection items.
**Notes:** User defined string.

**70.34.1142  kcisDescription = 1**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for user defined columns is stored in collection items.
**Notes:**
The description of the file.
Data value comes from the embedded file.

**70.34.1143  kcisFileName = 2**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for user defined columns is stored in collection items.
**Notes:**
The file name.
Data value comes from the embedded file.
70.34.1144  

**kcisModDate = 3**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for user defined columns is stored in collection items.  
**Notes:**  
The modification date.  
Data value comes from the embedded file.

70.34.1145  

**kcisSize = 4**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for user defined columns is stored in collection items.  
**Notes:**  
The file size.  
Data value comes from the embedded file.

70.34.1146  

**kcivCustom = 4**

MBS DynaPDF Plugin, Plugin Version: 11.1. **Function:** One of the DynaPDF constants for specifying how a file collection is shown.  
**Notes:** Custom: PDF 1.7 Extension Level 3, the collection view is presented by a SWF file.

70.34.1147  

**kcivDetails = 1**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for specifying how a file collection is shown.  
**Notes:** Details.

70.34.1148  

**kcivHidden = 3**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for specifying how a file collection is shown.  
**Notes:** Hidden.
70.34.1149  kcivNotSet = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for specifying how a file collection is shown.  
**Notes:** Not set.

70.34.1150  kcivTile = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for specifying how a file collection is shown.  
**Notes:** Title.

70.34.1151  kclDefault = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for compression level.

70.34.1152  kclFastest = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for compression level.

70.34.1153  kclMax = 3

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for compression level.

70.34.1154  kclNone = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for compression level.

70.34.1155  kcmEvenOdd = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for clipping mode.
70.34. CLASS DYNAPDFMBS

70.34.1156 kcmFill = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for color modes.

70.34.1157 kcmFillStroke = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for color modes.

70.34.1158 kcmStroke = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for color modes.

70.34.1159 kcmWinding = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for clipping mode.

70.34.1160 kcoAllowDeviceSpaces = & h40000000

MBS DynaPDF Plugin, Plugin Version: 16.1. **Function:** One of the check flag constants for CheckConformance.

**Notes:** If set, device color spaces will not be replaced with ICC based color spaces. This flag is meaningful for normalization only.

70.34.1161 kcoApplyExportState = & h00020000

MBS DynaPDF Plugin, Plugin Version: 16.0. **Function:** One of the check flag constants for CheckConformance.

**Notes:** Meaningful only if coDeleteAppEvents is set. Apply the export state.

70.34.1162 kcoApplyPrintState = & h00040000

MBS DynaPDF Plugin, Plugin Version: 16.0. **Function:** One of the check flag constants for CheckConformance.

**Notes:** Meaningful only if coDeleteAppEvents is set. Apply the print state.
**70.34.1163**  \( \text{kc} \text{CheckImages} = \& \text{h}00800000 \)

MBS DynaPDF Plugin, Plugin Version: 18.2. **Function:** One of the check flag constants for CheckConformance.
**Notes:** Images will be decompressed to identify damages.

**70.34.1164**  \( \text{kc} \text{Default} = \& \text{h}0010FFFF \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the check flag constants for CheckConformance.
**Notes:** Default flags

**70.34.1165**  \( \text{kc} \text{DeleteActionsAndScripts} = 8 \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the check flag constants for CheckConformance.
**Notes:** Delete actions and scripts. Imported files only.

**70.34.1166**  \( \text{kc} \text{DeleteAlternateImages} = \& \text{h}00008000 \)

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the check flag constants for CheckConformance.
**Notes:**
Delete alternate images.
Alternate images are seldom used and prohibited in PDF/A.

**70.34.1167**  \( \text{kc} \text{DeleteAppEvents} = \& \text{h}00008000 \)

MBS DynaPDF Plugin, Plugin Version: 16.0. **Function:** One of the check flag constants for CheckConformance.
**Notes:** PDF/A 2 and 3. Application events are prohibited in PDF/A. The view state will be applied.

**70.34.1168**  \( \text{kc} \text{DeleteDamagedImages} = \& \text{h}01000000 \)

MBS DynaPDF Plugin, Plugin Version: 18.2. **Function:** One of the check flag constants for CheckConformance.
70.34.1169  kcoDeleteEmbeddedFiles = & h00000080

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the check flag constants for CheckConformance.
**Notes:** Delete embedded files. Imported files only

70.34.1170  kcoDeleteHalftones = & h00100000

MBS DynaPDF Plugin, Plugin Version: 16.0. **Function:** One of the check flag constants for CheckConformance.
**Notes:** Delete halftone screens.

70.34.1171  kcoDeleteInvRenderingIntent = & h00000010

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the check flag constants for CheckConformance.
**Notes:** Delete rendering intent. Imported files only

70.34.1172  kcoDeleteMultiMediaContents = 4

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the check flag constants for CheckConformance.
**Notes:** Delete multimedia content. Imported files only.

70.34.1173  kcoDeleteOPIComments = & h00000100

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the check flag constants for CheckConformance.
**Notes:** Delete OPI comments. Imported files only

70.34.1174  kcoDeletePostscript = & h00000400

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the check flag constants for CheckConformance.
CHAPTER 70. DYNAPDF

Notes: Delete Postscript XObjects.

70.34.1175  kcoDeletePresentation = & h00400000

MBS DynaPDF Plugin, Plugin Version: 16.1. Function: One of the check flag constants for CheckConformance.
Notes: Presentations are prohibited in PDF/A 2 and 3.

70.34.1176  kcoDeleteReplies = & h00080000

MBS DynaPDF Plugin, Plugin Version: 16.0. Function: One of the check flag constants for CheckConformance.
Notes: Delete annotation replies. If absent, replies will be converted to regular text annotations.

70.34.1177  kcoDeleteSignatures = & h00000200

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the check flag constants for CheckConformance.
Notes: Delete signatures. Imported files only

70.34.1178  kcoDeleteTransferFuncs = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the check flag constants for CheckConformance.
Notes: Delete transfer functions. Imported files only

70.34.1179  kcoEmbedSubsets = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the check flag constants for CheckConformance.
Notes: Already done.

70.34.1180  kcoFlattenFormFields = & h00000020

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the check flag constants for CheckConformance.
70.34. **CLASS DYNAPDFMBS**

**Notes:** Flatten form fields.

### 70.34.1181 kcoFlattenLayers = & h00200000

MBS DynaPDF Plugin, Plugin Version: 16.1. **Function:** One of the check flag constants for CheckConformance.

**Notes:** PDF/A 1b only. Flatten layers if any.

### 70.34.1182 kcoFlushPages = & h20000000

MBS DynaPDF Plugin, Plugin Version: 16.0. **Function:** One of the check flag constants for CheckConformance.

**Notes:** Write converted pages directly into the output file to reduce the memory usage.

### 70.34.1183 kcoMakeLayerVisible = & h00004000

MBS DynaPDF Plugin, Plugin Version: 16.4. **Function:** One of the check flag constants for CheckConformance.

**Notes:** PDF/A 2 and 3 prohibit invisible layers. Layers can also be flattened if this is no option.

### 70.34.1184 kcoNoFontEmbedding = & h10000000

MBS DynaPDF Plugin, Plugin Version: 7.7. **Function:** One of the check flag constants for CheckConformance.

**Notes:**
Normalization only.
If this flag is set not PDF/A file will be produced!

### 70.34.1185 kcoReComprJPEG2000Images = & h00001000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the check flag constants for CheckConformance.

**Notes:**
Recompresses JPEG 2000 as flate images. Recompression results in lower quality and usually in larger images. It is often better to keep such files as is.
CHAPTER 70. DYNAPDF

70.34.1186  kcoRepairDamagedImages = & h02000000

MBS DynaPDF Plugin, Plugin Version: 18.2. **Function:** One of the check flag constants for CheckConformance.

**Notes:** Meaningful only if coCheckImages is set. If set, try to recompress a damaged image. The new image is maybe incomplete but error free. This flag can be combined with coDeleteDamagedImages to delete the image if recompression fails.

70.34.1187  kcoReplaceV4ICCProfiles = & h00000040

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the check flag constants for CheckConformance.

**Notes:** Replace V4 ICC Profiles. Imported files only

70.34.1188  kcoReplCCITTFaxWithFlate = & h00010000

MBS DynaPDF Plugin, Plugin Version: 10.3. **Function:** One of the check flag constants for CheckConformance.

**Notes:** Replace CCITT Fax compression with Flate.

70.34.1189  kcoResolveOverprint = & h00002000

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the check flag constants for CheckConformance.

**Notes:** PDF/A 2 and 3. Set the overprint mode to 0 if the overprint mode = 1 and if overprinting for fill or stroke is true and if a ICCBased CMYK color space is used. Note that DeviceCMYK is treated as ICCBased color space due to implicit color conversion rules.

70.34.1190  kcp1250 = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for 8 bit code pages.

70.34.1191  kcp1251 = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for 8 bit code pages.
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for 8 bit code pages.

### 70.34.1192  \( kcp1252 = 2 \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for 8 bit code pages.

### 70.34.1193  \( kcp1253 = 3 \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for 8 bit code pages.

### 70.34.1194  \( kcp1254 = 4 \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for 8 bit code pages.

### 70.34.1195  \( kcp1255 = 5 \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for 8 bit code pages.

### 70.34.1196  \( kcp1256 = 6 \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for 8 bit code pages.

### 70.34.1197  \( kcp1257 = 7 \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for 8 bit code pages.

### 70.34.1198  \( kcp1258 = 8 \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for 8 bit code pages.

### 70.34.1199  \( kcp437 = \&h00000017 \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for 8 bit code pages.
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70.34.1200  kcp737 = & h00000018

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the DynaPDF constants for 8 bit code pages.

70.34.1201  kcp775 = & h00000019

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the DynaPDF constants for 8 bit code pages.

70.34.1202  kcp850 = & h0000001A

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the DynaPDF constants for 8 bit code pages.

70.34.1203  kcp852 = & h0000001B

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the DynaPDF constants for 8 bit code pages.

70.34.1204  kcp855 = & h0000001C

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the DynaPDF constants for 8 bit code pages.

70.34.1205  kcp857 = & h0000001D

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the DynaPDF constants for 8 bit code pages.

70.34.1206  kcp860 = & h0000001E

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the DynaPDF constants for 8 bit code pages.

70.34.1207  kcp861 = & h0000001F

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the DynaPDF constants for 8 bit code pages.
70.34. CLASS DYNAPDFMBS

70.34.1208  \textit{kcp862} = \& h00000020

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the DynaPDF constants for 8 bit code pages.

70.34.1209  \textit{kcp863} = \& h00000021

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the DynaPDF constants for 8 bit code pages.

70.34.1210  \textit{kcp864} = \& h00000022

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the DynaPDF constants for 8 bit code pages.

70.34.1211  \textit{kcp865} = \& h00000023

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the DynaPDF constants for 8 bit code pages.

70.34.1212  \textit{kcp866} = \& h00000024

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the DynaPDF constants for 8 bit code pages.

70.34.1213  \textit{kcp869} = \& h00000025

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the DynaPDF constants for 8 bit code pages.

70.34.1214  \textit{kcp874} = \& h00000026

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the DynaPDF constants for 8 bit code pages.

70.34.1215  \textit{kcp8859\_10} = \& h00000011

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the DynaPDF constants for 8 bit code pages.
70.34.1216  \texttt{kcp8859\_13} = \& \texttt{h00000012}

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for 8 bit code pages.

70.34.1217  \texttt{kcp8859\_14} = \& \texttt{h00000013}

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for 8 bit code pages.

70.34.1218  \texttt{kcp8859\_15} = \& \texttt{h00000014}

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for 8 bit code pages.

70.34.1219  \texttt{kcp8859\_16} = \& \texttt{h00000015}

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for 8 bit code pages.

70.34.1220  \texttt{kcp8859\_2} = 9

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for 8 bit code pages.

70.34.1221  \texttt{kcp8859\_3} = \& \texttt{h0000000A}

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for 8 bit code pages.

70.34.1222  \texttt{kcp8859\_4} = \& \texttt{h0000000B}

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for 8 bit code pages.

70.34.1223  \texttt{kcp8859\_5} = \& \texttt{h0000000C}

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for 8 bit code pages.
70.34. CLASS DYNA PDFMBS

70.34.1224 kcp8859_6 = & h0000000D
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for 8 bit code pages.

70.34.1225 kcp8859_7 = & h0000000E
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for 8 bit code pages.

70.34.1226 kcp8859_8 = & h0000000F
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for 8 bit code pages.

70.34.1227 kcp8859_9 = & h00000010
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for 8 bit code pages.

70.34.1228 kcpAdobeStd = & h0000003F
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for code pages. **Notes:** Internal -> not usable

70.34.1229 kcpBig5 = & h0000003A
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for code pages. **Notes:** Big5 plus HKSCS extension.

70.34.1230 kcpCJK_2022_CN_Uni = & h0000002F
70.34.1231 kcpCJK_2022_JP_Uni = & h00000030

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for Chinese, Japanese, and Korean codepages.  
**Notes:** ISO-2022-JP.

70.34.1232 kcpCJK_2022_KR_Uni = & h00000031

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for Chinese, Japanese, and Korean codepages.  
**Notes:** ISO-2022-KR.

70.34.1233 kcpCJK_646_CN_Uni = & h00000032

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for Chinese, Japanese, and Korean codepages.  
**Notes:** ISO-646-CN (GB-1988-80).

70.34.1234 kcpCJK_646_JP_Uni = & h00000033

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for Chinese, Japanese, and Korean codepages.  

70.34.1235 kcpCJK_932_Uni = & h00000035

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for Chinese, Japanese, and Korean codepages.  
**Notes:** Microsoft extended version of SHIFT_JIS.

70.34.1236 kcpCJK_949_Uni = & h00000036

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for Chinese, Japanese, and Korean codepages.  
**Notes:** EUC-KR extended with UHC (Unified Hangul Codes).
70.34.1237  kcpCJK_950_Uni = & h00000037


70.34.1238  kcpCJK_Big5_Uni = & h00000028


70.34.1239  kcpCJK_EUC_JP_Uni = & h00000029


70.34.1240  kcpCJK_EUC_KR_Uni = & h0000002A


70.34.1241  kcpCJK_EUC_TW_Uni = & h0000002B


70.34.1242  kcpCJK_GB12345_Uni = & h0000002D

70.34.1243  \texttt{kcpCJK\_GBK\_Uni = & h0000002C}

\textbf{Notes}: GBK is the Microsoft code page 936 (GB2312, EUC-CN plus GBK extension).

70.34.1244  \texttt{kcpCJK\_HZ\_Uni = & h0000002E}

\textbf{Notes}: Mixed ASCII / GB-2312 encoding

70.34.1245  \texttt{kcpCJK\_IR\_165\_Uni = & h00000034}

\textbf{Notes}: ISO-IR-165 (extended version of GB-2312).

70.34.1246  \texttt{kcpCJK\_JOHAB\_Uni = & h00000038}

\textbf{Notes}: JOHAB.

70.34.1247  \texttt{kcpDingbats = & h00000044}

MBS DynaPDF Plugin, Plugin Version: 10.1. \textbf{Function}: One of the code page constants. 
\textbf{Notes}: Internal ->Special encoding for ZapfDingbats

70.34.1248  \texttt{kcpExtCMap = & h00000043}

MBS DynaPDF Plugin, Plugin Version: 10.1. \textbf{Function}: One of the code page constants. 
\textbf{Notes}: Internal ->not usable. This code page is set when a font was loaded with an external cmap.
70.34. CLASS DYNAPDFMBS

70.34.1249  kcpGB2312 = & h0000003B

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for code pages. **Notes:** GB2312 charset plus GBK and cp936 extension.

70.34.1250  kcpGlyphIndexes = & h00000041

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for code pages. **Notes:** Internal ->not usable

70.34.1251  kcpInline = 0

MBS DynaPDF Plugin, Plugin Version: 14.0. **Function:** One of the flags for the Line Caption Positions. **Notes:** The caption is centered inside the line.

70.34.1252  kcpJohab = & h0000003D

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for code pages. **Notes:** The Johab text encoding.

70.34.1253  kcpMacRoman = & h0000003E

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for code pages. **Notes:** The Mac Roman text encoding.

70.34.1254  kcpRoman8 = & h00000046

MBS DynaPDF Plugin, Plugin Version: 12.5. **Function:** One of the code page constants. **Notes:** This is a standard PCL 5/6 code page.

70.34.1255  kcpShiftJIS = & h00000039

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for code pages. **Notes:** ShiftJIS charset plus code page 932 extension.
**70.34.1256**  
*kcpSymbol = \& h00000016*

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for 8 bit code pages.

**70.34.1257**  
*kcpTop = 1*

MBS DynaPDF Plugin, Plugin Version: 14.0. **Function:** One of the flags for the Line Caption Positions.  
**Notes:** The caption is drawn on top of the line.

**70.34.1258**  
*kcpUnicode = \& h00000027*

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for unicode code-page.

**70.34.1259**  
*kcpWansung = \& h0000003C*

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for code pages.  
**Notes:** The Wansung encoding.

**70.34.1260**  
*kcsButtCap = 0*

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for line cap styles.  
**Notes:** Butt cap.

**70.34.1261**  
*kcsDeviceCMYK = 1*

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF colorspace constants.

**70.34.1262**  
*kcsDeviceGray = 2*

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF colorspace constants.
70.34.1263 kcsDeviceRGB = 0
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF colorspace constants.

70.34.1264 kcsRoundCap = 1
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for line cap styles. **Notes:** Round cap.

70.34.1265 kcsSquareCap = 2
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for line cap styles. **Notes:** Square cap.

70.34.1266 kctNormalize = 1
MBS DynaPDF Plugin, Plugin Version: 10.3. **Function:** One of the conformance type constants. **Notes:** Check the file for errors, rebuild all embedded fonts plus options.

70.34.1267 kctPDFA_1b_2005 = 0
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the conformance type constants. **Notes:** Convert the file to PDF/A if possible.

70.34.1268 kctPDFA_2b = 2
MBS DynaPDF Plugin, Plugin Version: 14.4. **Function:** One of the conformance type constants. **Notes:** Convert the file to PDF/A 2b if possible.

70.34.1269 kctPDFA_3b = 3
MBS DynaPDF Plugin, Plugin Version: 14.4. **Function:** One of the conformance type constants. **Notes:** Convert the file to PDF/A 3b if possible.
70.34.1270  kctZUGFeRD_Basic = 4

MBS DynaPDF Plugin, Plugin Version: 16.3. **Function:** One of the conformance type constants.  
**Notes:**
Set the ZUGFeRD conformance level to Basic
This constant convert the file to PDF/A 3b and set the wished ZUGFeRD conformance level in the XMP metadata. CheckConformance() does not validate the XML invoice but it checks whether it is present. Setting the correct ZUGFeRD conformance level is very important since this value defines which fields must be present in the XML invoice.

70.34.1271  kctZUGFeRD_Comfort = 5

MBS DynaPDF Plugin, Plugin Version: 16.3. **Function:** One of the conformance type constants.  
**Notes:**
Set the ZUGFeRD conformance level to Comfort
This constant convert the file to PDF/A 3b and set the wished ZUGFeRD conformance level in the XMP metadata. CheckConformance() does not validate the XML invoice but it checks whether it is present. Setting the correct ZUGFeRD conformance level is very important since this value defines which fields must be present in the XML invoice.

70.34.1272  kctZUGFeRD_Extended = 6

MBS DynaPDF Plugin, Plugin Version: 16.3. **Function:** One of the conformance type constants.  
**Notes:**
Set the ZUGFeRD conformance level to Extended
This constant convert the file to PDF/A 3b and set the wished ZUGFeRD conformance level in the XMP metadata. CheckConformance() does not validate the XML invoice but it checks whether it is present. Setting the correct ZUGFeRD conformance level is very important since this value defines which fields must be present in the XML invoice.

70.34.1273  kddClockwise = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for draw direction.  
**Notes:** Clockwise.
70.34. **CLASS DYNAPDFMBS**

70.34.1274 **kddCounterClockwise = 0**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for draw direction.  **Notes:** Counter Clockwise.

70.34.1275 **kDEFAULT_LIST_CHAR = & h0000009F**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** Default character index of the font Wingdings-Regular to create a list (see WriteFText())

70.34.1276 **kdf12HR_MM = & h0000000F**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the date/time constants.  **Notes:** e.g. 2pm:59

70.34.1277 **kdf12HR_MM_SS = & h00000011**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the date/time constants.  **Notes:** e.g. 2pm:59:59

70.34.1278 **kdf24HR_MM = & h0000000E**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the date/time constants.  **Notes:** e.g. 14:59

70.34.1279 **kdf24HR_MM_SS = & h00000010**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the date/time constants.  **Notes:** e.g. 14:59:59

70.34.1280 **kdfASCII85Decode = 1**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the Decode Filter constants.
CHAPTER 70. DYNAPDF

70.34.1281  *kdfASCIIHexDecode = 2*

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the Decode Filter constants.

70.34.1282  *kdfCCITTFaxDecode = 3*

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the Decode Filter constants.

70.34.1283  *kdfDCTDecode = 4*

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the Decode Filter constants.

70.34.1284  *kdfDD_MMM_YY = 6*

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the date/time constants.  
**Notes:** e.g. 24 Dec 99

70.34.1285  *kdfD_MMM = 4*

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the date/time constants.  
**Notes:** e.g. 24 Dec

70.34.1286  *kdfD_MMM_YY = 5*

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the date/time constants.  
**Notes:** e.g. 24 Dec 99

70.34.1287  *kdfFlateDecode = 5*

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the Decode Filter constants.
70.34. CLASS DYNAPDFMBS

70.34.1288  kdfJBIG2Decode = 6

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the Decode Filter constants.

70.34.1289  kdfJPXDecode = 7

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the Decode Filter constants.

70.34.1290  kdfLZWDecode = 8

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the Decode Filter constants.

70.34.1291  kdfMMMM_D_YYYY = & h0000000B

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the date/time constants.
**Notes**: e.g. December 24 1999

70.34.1292  kdfMMMM_YY = 9

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the date/time constants.
**Notes**: e.g. December 99

70.34.1293  kdfMMMM_D_YYYY = & h0000000A

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the date/time constants.
**Notes**: e.g. Dec 24 1999

70.34.1294  kdfMMM_YY = 8

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the date/time constants.
**Notes**: e.g. Dec 99
70.34.1295  kdfMM_D = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the date/time constants.  
**Notes:** e.g. 12/24

70.34.1296  kdfMM_DD_YY = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the date/time constants.  
**Notes:** e.g. 12/24/99

70.34.1297  kdfMM_YY = 3

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the date/time constants.  
**Notes:** e.g. 12 99

70.34.1298  kdfM_D_YY = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the date/time constants.  
**Notes:** e.g. 12 24 99

70.34.1299  kdfM_D_YY_HH_MM = & h000000D

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the date/time constants.  
**Notes:** e.g. 12/24/99 14:59

70.34.1300  kdfM_D_YY_H_MM_TT = & h000000C

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the date/time constants.  
**Notes:** e.g. 12/24/99 14:59:59

70.34.1301  kdfNone = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the Decode Filter constants.
70.34. CLASS DYNAPDFMBS

70.34.1302  kdfRunLengthDecode = 9

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the Decode Filter constants.

70.34.1303  kdfYY.MM_DD = 7

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the date/time constants.  
**Notes:** e.g. 99.12.24

70.34.1304  kdi3D_AppDefault = 0

MBS DynaPDF Plugin, Plugin Version: 9.8. **Function:** One of the De-instantiation type constants for Set3DAnnotProps.

70.34.1305  kdi3D_Instantiated = 2

MBS DynaPDF Plugin, Plugin Version: 9.8. **Function:** One of the De-instantiation type constants for Set3DAnnotProps.  
**Notes:** The annotation will be instantiated but animations are disabled.

70.34.1306  kdi3D_Live = 3

MBS DynaPDF Plugin, Plugin Version: 9.8. **Function:** One of the De-instantiation type constants for Set3DAnnotProps.  
**Notes:** The annotation will be instantiated and animations are enabled (default).

70.34.1307  kdi3D_UnInstantiated = 1

MBS DynaPDF Plugin, Plugin Version: 9.8. **Function:** One of the De-instantiation type constants for Set3DAnnotProps.  
**Notes:** The annotation will be uninstantiated (default)

70.34.1308  kdiAuthor = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for document information.
70.34.1309  kdiCompany = 6

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for document information.  
**Notes:** Company Name

70.34.1310  kdiCreationDate = & h0000000A

MBS DynaPDF Plugin, Plugin Version: 11.1. **Function:** One of the DynaPDF constants for document information.  
**Notes:** Creation Date

70.34.1311  kdiCreator = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for document information.  
**Notes:** Creator Name

70.34.1312  kdiCustom = 8

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for document information.  
**Notes:** User defined key

70.34.1313  kdiKeywords = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for document information.  
**Notes:** Keywords

70.34.1314  kdiModDate = & h0000000B

MBS DynaPDF Plugin, Plugin Version: 11.1. **Function:** One of the DynaPDF constants for document information.
70.34.1315  \texttt{kdiPDFX\_Conf} = 9


70.34.1316  \texttt{kdiPDFX\_Ver} = 7

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the DynaPDF constants for document information.
\textbf{Notes:} GetInDocInfo() only - > The PDF/X version is set by SetPDFVersion().

70.34.1317  \texttt{kdiProducer} = 3

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the DynaPDF constants for document information.
\textbf{Example:}

\begin{verbatim}
dim pdf as DynaPDFMBS // your dynapdf instance
call pdf.SetDocInfo pdf.kdiProducer, "Realbasic test application"
\end{verbatim}

\textbf{Notes:} Producer Name

70.34.1318  \texttt{kdiSubject} = 4

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the DynaPDF constants for document information.
\textbf{Example:}

\begin{verbatim}
dim pdf as DynaPDFMBS // your dynapdf instance
call pdf.SetDocInfo pdf.kdiSubject, "My first Realbasic output"
\end{verbatim}

\textbf{Notes:} Subject line
70.34.1319  kdiTitle = 5

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for document information.

**Example:**

```realbasic
dim pdf as DynaPDFMBS // your dynapdf instance
call pdf.SetDocInfo pdf.kdiTitle, "My first Realbasic output"
```

**Notes:** Title tag.

70.34.1320  kdmClipping = 7

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for draw modes.

70.34.1321  kdmFillClip = 4

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for draw modes.

70.34.1322  kdmFillStroke = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for draw modes.

70.34.1323  kdmFillStrokeClip = 6

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for draw modes.

70.34.1324  kdmInvisible = 3

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for draw modes.
70.34.1325  \texttt{kdmNormal} = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the DynaPDF constants for draw modes.

70.34.1326  \texttt{kdmStroke} = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the DynaPDF constants for draw modes.

70.34.1327  \texttt{kdmStrokeClip} = 5

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the DynaPDF constants for draw modes.

70.34.1328  \texttt{kdpmFlipLongEdge} = 3

MBS DynaPDF Plugin, Plugin Version: 8.7. \textbf{Function}: One of the duplex mode constants for the print settings.
\textbf{Notes}: flip long edge

70.34.1329  \texttt{kdpmFlipShortEdge} = 2

MBS DynaPDF Plugin, Plugin Version: 8.7. \textbf{Function}: One of the duplex mode constants for the print settings.
\textbf{Notes}: flip short edge

70.34.1330  \texttt{kdpmNone} = 0

MBS DynaPDF Plugin, Plugin Version: 8.7. \textbf{Function}: One of the duplex mode constants for the print settings.
\textbf{Notes}: Use the default value of the viewer

70.34.1331  \texttt{kdpmSimplex} = 1

MBS DynaPDF Plugin, Plugin Version: 8.7. \textbf{Function}: One of the duplex mode constants for the print settings.
\textbf{Notes}: Simplex
70.34.1332  kDRV_FLOAT_PRECISION = 5

MBS DynaPDF Plugin, Plugin Version: 8.6. **Function:** The precision used for float values.

70.34.1333  kdsCommaDot = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for thousand and decimal separators.
**Notes:** 1,234.56

70.34.1334  kdsDotComma = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for thousand and decimal separators.
**Notes:** 1.234,56

70.34.1335  kdsNoneComma = 3

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for thousand and decimal separators.
**Notes:** 1234,56

70.34.1336  kdsNoneDot = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for thousand and decimal separators.
**Notes:** 1234.56

70.34.1337  kdt3D_AppDefault = 0

MBS DynaPDF Plugin, Plugin Version: 9.8. **Function:** One of the 3D DeActivateType constants.

70.34.1338  kdt3D_Explicit = 3

MBS DynaPDF Plugin, Plugin Version: 9.8. **Function:** One of the 3D DeActivateType constants.
**Notes:** The annotation should remain active until explicitly deactivated by a script or action.
70.34.1339  kdt3D_PageClosed = 1

MBS DynaPDF Plugin, Plugin Version: 9.8. **Function:** One of the 3D DeActivateType constants.  
**Notes:** The annotation should be deactivated as soon as the page is closed.

70.34.1340  kdt3D_PageInvisible = 2

MBS DynaPDF Plugin, Plugin Version: 9.8. **Function:** One of the 3D DeActivateType constants.  
**Notes:** The annotation should be deactivated as soon as the page becomes invisible (default).

70.34.1341  kdtCreationDate = 0

MBS DynaPDF Plugin, Plugin Version: 13.5. **Function:** One of the date types.  
**Notes:** Creation Date, Markup annotations only.

70.34.1342  kdtFit = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the destination type constants for a link.  
**Notes:** no parameters

70.34.1343  kdtFitB = 5

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the destination type constants for a link.  
**Notes:** no parameters

70.34.1344  kdtFitBH_Top = 6

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the destination type constants for a link.  
**Notes:** one parameter (a)
**70.34.1345 kdtFitBV_Left = 7**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the destination type constants for a link.  
**Notes:** one parameter (a)

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**70.34.1346 kdtFitH_Top = 2**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the destination type constants for a link.  
**Notes:** one parameter

---

**70.34.1347 kdtFitV_Left = 3**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the destination type constants for a link.  
**Notes:** one parameter (a)

---

**70.34.1348 kdtFit_Rect = 4**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the destination type constants for a link.  
**Notes:** four parameters (a, b, c, d) ->(left, bottom, right, top)

---

**70.34.1349 kdtModDate = 1**

MBS DynaPDF Plugin, Plugin Version: 13.5. **Function:** One of the date types.  
**Notes:** Modification Date, Annotations or form fields.

---

**70.34.1350 kdtXY_Zoom = 0**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the destination type constants for a link.  
**Notes:** Three parameters (a, b, c) ->(X, Y, Zoom)

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**70.34.1351 kDYNAPDF_REVISION = ”$ Rev: 249 $”**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** The version of the dynapdf library.
70.34.1352  kDYNAPDF_VERSIONSTRING = ”4.0.19.50”

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** The version of the dynapdf library.

70.34.1353  keflChild = 0

MBS DynaPDF Plugin, Plugin Version: 13.2. **Function:** One of the possible values for embedded file location.
**Notes:** The file is an embedded file in the current document.

70.34.1354  keflChildAnnot = 1

MBS DynaPDF Plugin, Plugin Version: 13.2. **Function:** One of the possible values for embedded file location.
**Notes:** The file is located in a file attachment annotation in the current document.

70.34.1355  keflExternal = 2

MBS DynaPDF Plugin, Plugin Version: 13.2. **Function:** One of the possible values for embedded file location.
**Notes:** The file is an embedded file in an external document.

70.34.1356  keflExternalAnnot = 3

MBS DynaPDF Plugin, Plugin Version: 13.2. **Function:** One of the possible values for embedded file location.
**Notes:** The file is located in a file attachment annotation in an external document.

70.34.1357  keflParent = 4

MBS DynaPDF Plugin, Plugin Version: 13.2. **Function:** One of the possible values for embedded file location.
**Notes:** The file is located in the parent document.
70.34.1358  \textbf{keflParentAnnot} = 5

MBS DynaPDF Plugin, Plugin Version: 13.2. \textbf{Function}: One of the possible values for embedded file location.  
\textbf{Notes}: The file is located in a file attachment annotation in the parent document.

70.34.1359  \textbf{kefpAnsiPath} = 0

MBS DynaPDF Plugin, Plugin Version: 11.3. \textbf{Function}: One of the flags for the EnumHostFontEx event.  
\textbf{Notes}: Code page 1252 on Windows, UTF-8 otherwise. The font has embedding rights.

70.34.1360  \textbf{kefpEditable} = 4

MBS DynaPDF Plugin, Plugin Version: 14.0. \textbf{Function}: One of the flags for the EnumHostFontEx event.  
\textbf{Notes}: If set, the font has editing rights (important for form fields).

70.34.1361  \textbf{kefpEmbeddable} = 2

MBS DynaPDF Plugin, Plugin Version: 11.3. \textbf{Function}: One of the flags for the EnumHostFontEx event.  
\textbf{Notes}: The font has embedding rights.

70.34.1362  \textbf{kefpUnicodePath} = 1

MBS DynaPDF Plugin, Plugin Version: 11.3. \textbf{Function}: One of the flags for the EnumHostFontEx event.  
\textbf{Notes}: FilePath is in Unicode format. Make a typecast to (UI16*) in this case. The plugin handles that for you.

70.34.1363  \textbf{kemAllErrors} = \& h0000FFFF

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the error mode constants.  
\textbf{Notes}: All errors

70.34.1364  \textbf{kemFileError} = 8

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the error mode constants.  
\textbf{Notes}: File Error
70.34.1365  kemFontError = & h00000010

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the error mode constants.  
**Notes:** Font Error

70.34.1366  kemIgnoreAll = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the error mode constants.  
**Notes:** Ignore All

70.34.1367  kemNoFuncNames = & h10000000

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the error mode constants.  
**Notes:** Do not print function names in error messages

70.34.1368  kemSyntaxError = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the error mode constants.  
**Notes:** Syntax Error

70.34.1369  kemUseErrLog = & h20000000

MBS DynaPDF Plugin, Plugin Version: 11.3. **Function:** One of the error mode constants.  
**Notes:** Redirect all error messages to the error log.

70.34.1370  kemValueError = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the error mode constants.  
**Notes:** Value Error
70.34.1371  kemWarning = 4

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the error mode constants.  
**Notes:** Warning

70.34.1372  kesCalGray = 3

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the extended color space constants.  
**Notes:** CIE-based color space

70.34.1373  kesCalRGB = 4

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the extended color space constants.  
**Notes:** CIE-based color space

70.34.1374  kesDeviceCMYK = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the extended color space constants.  
**Notes:** Device color space

70.34.1375  kesDeviceGray = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the extended color space constants.  
**Notes:** Device color space

70.34.1376  kesDeviceN = & h0000000A

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the extended color space constants.  
**Notes:** Special color space

70.34.1377  kesDeviceRGB = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the extended color space constants.  
**Notes:** Device color space
70.34.1378  **kesICCBased = 6**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the extended color space constants.  
**Notes:** CIE-based color space -> contains an ICC profile

70.34.1379  **kesIndexed = 8**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the extended color space constants.  
**Notes:** Special color space

70.34.1380  **kesLab = 5**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the extended color space constants.  
**Notes:** CIE-based color space

70.34.1381  **kesNChannel = & h0000000B**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the extended color space constants.  
**Notes:** Special color space

70.34.1382  **kesPattern = 7**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the extended color space constants.  
**Notes:** Special color space

70.34.1383  **kesSeparation = 9**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the extended color space constants.  
**Notes:** Special color space

70.34.1384  **kE_FATAL_ERROR = & h20000000**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for error types.  
**Notes:**
Note that error codes are negative; to determine the error type use the absolute value:

// if bitwiseand(-errCode,E_FATAL_ERROR)=E_FATAL_ERROR then msgbox "A fatal error occurred!"

**70.34.1385  kE_FILE_ERROR = & h40000000**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for error types. **Notes:**

Note that error codes are negative; to determine the error type use the absolute value:

// if bitwiseand(-errCode,E_FILE_ERROR)=E_FILE_ERROR then msgbox "A fatal error occurred!"

**70.34.1386  kE_FONT_ERROR = & h10000000**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for error types. **Notes:**

Note that error codes are negative; to determine the error type use the absolute value:

// if bitwiseand(-errCode,E_FONT_ERROR)=E_FONT_ERROR then msgbox "A fatal error occurred!"

**70.34.1387  kE_SYNTAX_ERROR = & h04000000**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for error types. **Notes:**

Note that error codes are negative; to determine the error type use the absolute value:

// if bitwiseand(-errCode,E_SYNTAX_ERROR)=E_SYNTAX_ERROR then msgbox "A fatal error occurred!"

**70.34.1388  kE_VALUE_ERROR = & h08000000**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for error types. **Notes:**

Note that error codes are negative; to determine the error type use the absolute value:
// if bitwiseand(-errCode,E\_VALUE\_ERROR)=E\_VALUE\_ERROR then msgbox "A fatal error occurred!"

70.34.1389  kE\_WARNING = & h02000000

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for error types.  
**Notes:**  
Note that error codes are negative; to determine the error type use the absolute value:

// if bitwiseand(-errCode,E\_WARNING)=E\_WARNING then msgbox "A fatal error occurred!"

70.34.1390  kfaiGraph = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the file attach icon constants.  
**Notes:** Graph.

70.34.1391  kfaiPaperClip = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the file attach icon constants.  
**Notes:** Paper Clip

70.34.1392  kfaiPushPin = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the file attach icon constants.  
**Notes:** Push Pin

70.34.1393  kfaiTag = 3

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the file attach icon constants.  
**Notes:** Tag

70.34.1394  kfbtDisabled = 4

MBS DynaPDF Plugin, Plugin Version: 10.1. **Function:** One of the font base type constants.  
**Notes:** This value can be used to disable a specific font format. See SetFontSearchOrder() for further
70.34.1395  kfbtOpenType = 2

MBS DynaPDF Plugin, Plugin Version: 10.1. **Function:** One of the font base type constants. **Notes:** OpenType font with Postscript outlines

70.34.1396  kfbtStdFont = 3

MBS DynaPDF Plugin, Plugin Version: 10.1. **Function:** One of the font base type constants. **Notes:** PDF Standard font

70.34.1397  kfbtTrueType = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the font base type constants. **Notes:** TrueType, TrueType Collections, or OpenType fonts with TrueType outlines

70.34.1398  kfbtType1 = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the font base type constants. **Notes:** Type1 font

70.34.1399  kfcBackColor = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for field or annotation colors.

70.34.1400  kfcBorderColor = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for field or annotation colors.

70.34.1401  kfcTextColor = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for field or annotation colors.
70.34. CLASS DYNA PDFMBS

70.34.1402  kffComb = & h01000000

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the field flags constants.  
**Notes:** PDF 1.5 Text fields only

70.34.1403  kffCommitOnSelCh = & h04000000

MBS DynaPDF Plugin, Plugin Version: 9.3. **Function:** One of the field flags constants.  
**Notes:** (PDF 1.5) If set, the new value is committed as soon as a selection is made with the pointing device. This allows applications to perform an action once a selection is made, without requiring the user to exit the field. If clear, the new value is not committed until the user exits the field. Supported by combo boxes and list boxes only.

70.34.1404  kffDoNotScroll = & h00800000

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the field flags constants.  
**Notes:** PDF 1.4 Text fields only

70.34.1405  kffDoNotSpellCheck = & h00400000

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the field flags constants.  
**Notes:** PDF 1.4 Text fields, combo boxes. If the field is a combo box, this flag is meaningful only if ffEdit is also set.

70.34.1406  kffEdit = & h00040000

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the field flags constants.  
**Notes:** Combo boxes only

70.34.1407  kffFileSelect = & h00100000

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the field flags constants.  
**Notes:** PDF 1.4 Text fields only
70.34.1408 kffHidden = & h00000010

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the field flags constants.

70.34.1409 kffInvisible = 8

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the field flags constants.

70.34.1410 kffMultiline = & h00001000

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the field flags constants. **Notes:** Text fields only

70.34.1411 kffMultiSelect = & h00200000

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the field flags constants. **Notes:** PDF 1.4 List boxes only

70.34.1412 kffNoExport = 4

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the field flags constants.

70.34.1413 kffNoRotate = & h00000080

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the field flags constants.

70.34.1414 kffNoToggleToOff = & h00004000

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the field flags constants. **Notes:** Radio buttons
70.34. CLASS DYNAPDFMBS

70.34.1415 kffNoView = & h00000100

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the field flags constants.

70.34.1416 kffNoZoom = & h00000040

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the field flags constants.

70.34.1417 kffPassword = & h00002000

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the field flags constants. **Notes:** Text fields only

70.34.1418 kffPrint = & h00000020

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the field flags constants.

70.34.1419 kffRadioIsUnion = & h02000000

MBS DynaPDF Plugin, Plugin Version: 9.3. **Function:** One of the field flags constants. **Notes:** PDF-1.5 check boxes of a radio button field only

70.34.1420 kffReadOnly = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the field flags constants.

70.34.1421 kffRequired = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the field flags constants.

70.34.1422 kffsCIDFontType0C = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for font file sub types.
70.34.1423  \text{kffsCIDFontType2} = 4

MBS DynaPDF Plugin, Plugin Version: 10.1. \textbf{Function}: One of the font file type constants. 
\textbf{Notes}: TrueType based CID Font

70.34.1424  \text{kffsNoSubtype} = 9

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the DynaPDF constants for font file sub types. 
\textbf{Notes}: The font file is in the format of FontType

70.34.1425  \text{kffsOpenType} = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the DynaPDF constants for font file sub types. 
\textbf{Notes}: TrueType based OpenType font

70.34.1426  \text{kffsOpenTypeC} = 3

MBS DynaPDF Plugin, Plugin Version: 10.1. \textbf{Function}: One of the font file type constants. 
\textbf{Notes}: CFF based OpenType font

70.34.1427  \text{kffSorted} = \& h00080000

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the field flags constants. 
\textbf{Notes}: Use this flag to change the sort flag of combo boxes or list boxes

70.34.1428  \text{kffsType1C} = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the DynaPDF constants for font file sub types. 
\textbf{Notes}: CFF based Type1 font.
70.34. CLASS DYNAPDFMBS

70.34.1429  kfmClose = & h0000000B

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for the fill mode. **Notes:** Close the path, but do not fill or stroke it. More vertices are required or stroke the path in a separate step.

70.34.1430  kfmFill = 3

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for the fill mode. **Notes:** Fill path.

70.34.1431  kfmFillEvOdd = 6

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for the fill mode. **Notes:** Fill even odd.

70.34.1432  kfmFillEvOddNoClose = 8

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for the fill mode. **Notes:** Fill even odd and no close.

70.34.1433  kfmFillNoClose = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for the fill mode. **Notes:** Fill, but don’t close.

70.34.1434  kfmFillStroke = 5

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for the fill mode. **Notes:** Fill and stroke.

70.34.1435  kfmFillStrokeEvOdd = 7

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for the fill mode. **Notes:** Fill and stroke even odd.
70.34.1436  kfmFillStrokeEvOddNoClose = 9

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for the fill mode.  
**Notes:** Fill and stroke even odd, no close.

70.34.1437  kfmFillStrokeNoClose = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for the fill mode.  
**Notes:** Fill, Stroke, but don’t close.

70.34.1438  kfmNoFill = & h0000000A

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for the fill mode.  
**Notes:** Don’t fill.

70.34.1439  kfmStroke = 4

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for the fill mode.  
**Notes:** Stroke path.

70.34.1440  kfmStrokeNoClose = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for the fill mode.  
**Notes:** Stroke, but do not close.

70.34.1441  kfoOpen = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for file operation for use with CreateLaunchAction function.  
**Notes:** Open file.

70.34.1442  kfoPrint = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for file operation for use with CreateLaunchAction function.
70.34.1443  \texttt{kfpfDefault} = 0

MBS DynaPDF Plugin, Plugin Version: 11.1. \textbf{Function}: One of the flush constants for \texttt{Flush} method.  
\textbf{Notes}: Write anything to the file that is possible.

70.34.1444  \texttt{kfpfExclLastPage} = 2

MBS DynaPDF Plugin, Plugin Version: 11.1. \textbf{Function}: One of the flush constants for \texttt{Flush} method.  
\textbf{Notes}: If set, the last page is not flushed.

70.34.1445  \texttt{kfpfImagesOnly} = 1

MBS DynaPDF Plugin, Plugin Version: 11.1. \textbf{Function}: One of the flush constants for \texttt{Flush} method.  
\textbf{Notes}: If set, only images are written to the file. The pages are still in memory and can be modified with \texttt{EditPage()}. Flushed images can still be referenced in other pages. The image handles remain valid.

70.34.1446  \texttt{kfsBlack} = \& h38400000

MBS DynaPDF Plugin, Plugin Version: 10.1. \textbf{Function}: One of the font style constants for the weight class.

70.34.1447  \texttt{kfsBold} = \& h2BC00000

MBS DynaPDF Plugin, Plugin Version: 10.1. \textbf{Function}: One of the font style constants for the weight class.  
\textbf{Notes}: The old constant 2 is still supported to preserve backward compatibility

70.34.1448  \texttt{kfsCondensed} = \& h00000300

MBS DynaPDF Plugin, Plugin Version: 10.1. \textbf{Function}: One of the font style constants for the width class.
70.34.1449  \texttt{kfsDemiBold} = \& \texttt{h25800000} \\
MBS DynaPDF Plugin, Plugin Version: 10.1. \textbf{Function}: One of the font style constants for the weight class.

70.34.1450  \texttt{kfsExpanded} = \& \texttt{h00000700} \\
MBS DynaPDF Plugin, Plugin Version: 10.1. \textbf{Function}: One of the font style constants for the width class.

70.34.1451  \texttt{kfsExtraBold} = \& \texttt{h32000000} \\
MBS DynaPDF Plugin, Plugin Version: 10.1. \textbf{Function}: One of the font style constants for the weight class.

70.34.1452  \texttt{kfsExtraCondensed} = \& \texttt{h00000200} \\
MBS DynaPDF Plugin, Plugin Version: 10.1. \textbf{Function}: One of the font style constants for the width class.

70.34.1453  \texttt{kfsExtraExpanded} = \& \texttt{h00000800} \\
MBS DynaPDF Plugin, Plugin Version: 10.1. \textbf{Function}: One of the font style constants for the width class.

70.34.1454  \texttt{kfsExtraLight} = \& \texttt{h0C800000} \\
MBS DynaPDF Plugin, Plugin Version: 10.1. \textbf{Function}: One of the font style constants for the weight class.

70.34.1455  \texttt{kfsItalic} = 1 \\
MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the constants for font style.

70.34.1456  \texttt{kfsLight} = \& \texttt{h12C00000} \\
MBS DynaPDF Plugin, Plugin Version: 10.1. \textbf{Function}: One of the font style constants for the weight class.
70.34. CLASS DYNAPDFMBS

70.34.1457  kfsMedium = & h1F400000

MBS DynaPDF Plugin, Plugin Version: 10.1. **Function:** One of the font style constants for the weight class.

70.34.1458  kfsNone = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for font style.

70.34.1459  kfsNormal = & h00000500

MBS DynaPDF Plugin, Plugin Version: 10.1. **Function:** One of the font style constants for the width class.

70.34.1460  kfsRegular = & h19000000

MBS DynaPDF Plugin, Plugin Version: 10.1. **Function:** One of the font style constants for the weight class.

**Notes:** Same as fsNone

70.34.1461  kfsSemiCondensed = & h00000400

MBS DynaPDF Plugin, Plugin Version: 10.1. **Function:** One of the font style constants for the width class.

70.34.1462  kfsSemiExpanded = & h00000600

MBS DynaPDF Plugin, Plugin Version: 10.1. **Function:** One of the font style constants for the width class.

70.34.1463  kfsStriked = 8

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for font style.

70.34.1464  kfsThin = & h06400000

MBS DynaPDF Plugin, Plugin Version: 10.1. **Function:** One of the font style constants for the weight class.
70.34.1465 \texttt{kfsUltraBlack = \& h3E800000}

MBS DynaPDF Plugin, Plugin Version: 10.1. \textbf{Function:} One of the font style constants for the weight class.

70.34.1466 \texttt{kfsUltraCondensed = \& h00000100}

MBS DynaPDF Plugin, Plugin Version: 10.1. \textbf{Function:} One of the font style constants for the width class.

70.34.1467 \texttt{kfsUltraExpanded = \& h00000900}

MBS DynaPDF Plugin, Plugin Version: 10.1. \textbf{Function:} One of the font style constants for the width class.

70.34.1468 \texttt{kfsUnderlined = 4}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the constants for font style.

70.34.1469 \texttt{kfsVerticalMode = \& h00000010}

MBS DynaPDF Plugin, Plugin Version: 10.1. \textbf{Function:} One of the constants for font style. 
\textbf{Notes:} Not considered at this time (v2.5)

70.34.1470 \texttt{kftButton = 0}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the field type constants. 
\textbf{Notes:} Button

70.34.1471 \texttt{kftCheckBox = 1}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the DynaPDF constants. 
\textbf{Notes:} Checkbox
70.34. CLASS DYNAPDFMBS

70.34.1472 kftComboBox = 3
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants. **Notes:** Combobox

70.34.1473 kftGroup = 7
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants. **Notes:** This is not a real field type, it is just an array of fields.

70.34.1474 kftListBox = 4
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants. **Notes:** Listbox

70.34.1475 kftMMType1 = 0
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for font types. **Notes:** Multiple Master

70.34.1476 kftRadioBtn = 2
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants. **Notes:** Radio Button

70.34.1477 kftSignature = 6
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants. **Notes:** Signature

70.34.1478 kftText = 5
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants. **Notes:** Text.
**70.34.1479** \( \text{kftTrueType} = 1 \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for font types.  
**Notes:** TrueType font

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**70.34.1480** \( \text{kftType0} = 2 \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for font types.  
**Notes:** CID font - the descendant font can be a TrueType, Type1 (CFF), or OpenType font

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**70.34.1481** \( \text{kftType1} = 3 \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for font types.  
**Notes:** Type1 font

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**70.34.1482** \( \text{kftType3} = 4 \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for font types.  
**Notes:** Type3 font

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**70.34.1483** \( \text{kgfAnsiStringIsUTF8} = \& \text{h00000020} \)

MBS DynaPDF Plugin, Plugin Version: 12.4. **Function:** One of the graphics state flag constants.  
**Notes:**  
If set, single byte strings in Ansi functions are treated as UTF-8 encoded Unicode strings.  
Currently not useable with plugins.

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**70.34.1484** \( \text{kgfCompatible} = 0 \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the graphics state flag constants.  
**Notes:** Compatible graphics state to earlier DynaPDF versions - default
70.34. CLASS DYNAPDFMBS

### 70.34.1485 kgfIgnoreICCProfiles = & h00000010

MBS DynaPDF Plugin, Plugin Version: 9.3. **Function:** One of the graphics state flag constants.  
**Notes:** Meaningful only if the flag gfUseImageColorSpace is set. If set, an embedded profile is not used to create an ICCBased color space for the image. The image is inserted in the corresponding device color space instead.

### 70.34.1486 kgfNativeBlackWhite = 4

MBS DynaPDF Plugin, Plugin Version: 8.1. **Function:** One of the graphics state flag constants.  
**Notes:** Do not convert RGB black or white to DeviceGray

### 70.34.1487 kgfNoBitmapAlpha = & h00000080

MBS DynaPDF Plugin, Plugin Version: 14.3. **Function:** One of the graphics state flag constants.  
**Notes:** If set, the alpha channel in 32 bit bitmaps will be ignored. Useful for bitmaps with an invalid alpha channel.

### 70.34.1488 kgfNoImageDuplCheck = & h00000100

MBS DynaPDF Plugin, Plugin Version: 14.3. **Function:** One of the graphics state flag constants.  
**Notes:** Disables duplicate check for images.

### 70.34.1489 kgfNoObjCompression = & h00000200

MBS DynaPDF Plugin, Plugin Version: 16.1. **Function:** One of the graphics state flag constants.  
**Notes:** If set, object compression will be disabled.

### 70.34.1490 kgfRealPassThrough = & h00000040

MBS DynaPDF Plugin, Plugin Version: 14.3. **Function:** One of the graphics state flag constants.  
**Notes:** If set, JPEG images are inserted as is. JPEG images are normally rebuild, also in pass-through mode, to avoid issues with certain malformed JPEG images which cannot be displayed in Adobes Acrobat or Reader. If you know that your JPEG images work then set this flag to avoid unnecessary processing time.
70.34.1491 \textbf{kgfRealTopDownCoords} = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the graphics state flag constants. 
\textbf{Notes}: If set, the page coordinate system is not reset to bottom-up when transforming the coordinate system. However, real top-down coordinates require a large internal overhead and where never fully implemented. The usage of this flag should be avoided if possible.

70.34.1492 \textbf{kgfRestorePageCoords} = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the graphics state flag constants. 
\textbf{Notes}: Restore the coordinate system with the graphics state (the value of PageCoords, see SetPageCoords())

70.34.1493 \textbf{kgfUseImageColorSpace} = 8

MBS DynaPDF Plugin, Plugin Version: 9.3. \textbf{Function}: One of the graphics state flag constants. 
\textbf{Notes}: If set, the active color space is ignored when inserting an image. The color space is taken from the image file instead.

70.34.1494 \textbf{khmInvert} = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the Highlight Mode Constants.

70.34.1495 \textbf{khmNone} = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the Highlight Mode Constants.

70.34.1496 \textbf{khmOutline} = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the Highlight Mode Constants.

70.34.1497 \textbf{khmPush} = 3

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the Highlight Mode Constants.
70.34.1498  \textit{khmPushUpd} = 4

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the Highlight Mode Constants. 
\textbf{Notes:} Update appearance stream on changes.

70.34.1499  \textit{khtDetached} = 0

MBS DynaPDF Plugin, Plugin Version: 10.2. \textbf{Function:} One of the constants for CloseAndSignFileExt. 
\textbf{Notes:} Returns the byte ranges of the finish PDF buffer to create a detached signature.

70.34.1500  \textit{khtSHA1} = 1

MBS DynaPDF Plugin, Plugin Version: 10.2. \textbf{Function:} One of the constants for CloseAndSignFileExt. 
\textbf{Notes:} Returns the SHA1 hash of the PDF file so that it can be signed.

70.34.1501  \textit{kicfDefault} = 0

MBS DynaPDF Plugin, Plugin Version: 11.2. \textbf{Function:} One of the cache initialization flags.

70.34.1502  \textit{kicfIgnoreOpenAction} = 1

MBS DynaPDF Plugin, Plugin Version: 11.2. \textbf{Function:} One of the cache initialization flags.

70.34.1503  \textit{kicfIgnorePageLayout} = 2

MBS DynaPDF Plugin, Plugin Version: 11.2. \textbf{Function:} One of the cache initialization flags.

70.34.1504  \textit{kcmbBPCompensation} = 1

MBS DynaPDF Plugin, Plugin Version: 11.3. \textbf{Function:} One of the flags to pass to InitColorManagement function. 
\textbf{Notes:} Black point compensation preserves the black point when converting CMYK colors to different color spaces.
70.34.1505  kicmCheckBlackPoint = 2

MBS DynaPDF Plugin, Plugin Version: 14.2. **Function:** One of the flags to pass to InitColorManagement function.  
**Notes:** If set, soft proofing will be disabled if the black point of the output intent is probably invalid.

70.34.1506  kicmDefault = 0

MBS DynaPDF Plugin, Plugin Version: 11.3. **Function:** One of the flags to pass to InitColorManagement function.  
**Notes:** Default rules.

70.34.1507  kicNone = 0

MBS DynaPDF Plugin, Plugin Version: 7.7. **Function:** One of the image conversion flag constants.  
**Notes:** Default value.

70.34.1508  kictCMYK = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for ICC profile types.

70.34.1509  kictGray = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for ICC profile types.

70.34.1510  kictLab = 3

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for ICC profile types.

70.34.1511  kictRGB = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for ICC profile types.
70.34.1512  kicUseCCITT4 = 1

MBS DynaPDF Plugin, Plugin Version: 7.7. **Function:** One of the image conversion flag constants. **Notes:** Use CCITT Fax 4 compression instead of Flate for dithered images.

70.34.1513  kif2CopyEncryptDict = & h00000040

MBS DynaPDF Plugin, Plugin Version: 17.0. **Function:** One of the constants for ImportFlags2. **Notes:**
If set, the encryption settings of an encrypted PDF file are copied to the new PDF file. The flag does nothing if the file is not encrypted.

70.34.1514  kif2DuplicateCheck = & h00000010

MBS DynaPDF Plugin, Plugin Version: 12.4. **Function:** One of the constants for ImportFlags2. **Notes:** Perform a duplicate check on color spaces, fonts, images, patterns, and templates when merging PDF files.

70.34.1515  kif2MergeLayers = 1

MBS DynaPDF Plugin, Plugin Version: 8.1. **Function:** One of the constants for ImportFlags2. **Notes:** If set, layers with identical name are merged. If this flag is absent DynaPDF imports such layers separately so that each layer refers still to the pages where it was originally used.

70.34.1516  kif2NoMetadata = 8

MBS DynaPDF Plugin, Plugin Version: 11.3. **Function:** One of the constants for ImportFlags2. **Notes:** Ignore metadata streams which are attached to fonts, pages, images, and so on.

70.34.1517  kif2NoResNameCheck = & h00000020

MBS DynaPDF Plugin, Plugin Version: 16.5. **Function:** One of the constants for ImportFlags2. **Notes:** Useful in viewer applications.
70.34.1518  kif2Normalize = 2

MBS DynaPDF Plugin, Plugin Version: 10.3. **Function:** One of the constants for ImportFlags2. **Notes:** Replace LZW compression with Flate, apply limit checks, repair errors if possible.

70.34.1519  kif2UseProxy = 4

MBS DynaPDF Plugin, Plugin Version: 11.3. **Function:** One of the constants for ImportFlags2. **Notes:** Not meaningful for PDF files which are loaded from a memory buffer. If set, all streams are loaded from the file on demand but they are never held in memory. This reduces drastically the memory usage and enables the processing of almost arbitrary large PDF files with minimal memory usage. The corresponding PDF file must not be deleted before CloseFile() or CloseFileEx() was called.

70.34.1520  kif3DAnnot = & h00100000

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for import flags.

70.34.1521  kifAllAnnots = & h009F0000

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for import flags.

70.34.1522  kifAllPageObjects = & h40000000

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for import flags.

70.34.1523  kifArticles = & h00000010

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for import flags.

70.34.1524  kifBookmarks = 8

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for import flags.
70.34.1525  kifBoxColorInfo = & h00000200

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the constants for import flags.

70.34.1526  kifCatalogAction = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the constants for import flags.

70.34.1527  kifContentOnly = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the constants for import flags.

70.34.1528  kifDocInfo = & h00008000

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the constants for import flags.

70.34.1529  kifEmbeddedFiles = & h00200000

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the constants for import flags.

70.34.1530  kifEnumFonts = & h20000000

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the constants for import flags.

70.34.1531  kifFileCollections = & h00400000

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the constants for import flags.

70.34.1532  kifFormFields = & h01000000

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the constants for import flags.
70.34.1533  kifFreeText = & h00010000

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for import flags.

70.34.1534  kifImportAll = & h0FFFFFFFE

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for import flags.

70.34.1535  kifImportAsPage = & h80000000

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for import flags.

70.34.1536  kifJavaScript = & h00002000

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for import flags.

70.34.1537  kifJSActions = & h00004000

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for import flags.

70.34.1538  kifLink = & h00040000

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for import flags.

70.34.1539  kifmBMP = 4

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the image format constants. **Notes:** BMP: DeviceGray, DeviceRGB, Black & White -> Uncompressed.

70.34.1540  kifmJPC = 5

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the image format constants. **Notes:** JPEG 2000: DeviceRGB, DeviceCMYK, DeviceGray -> JPEG2000 compression.
70.34.1541  kifmJPEG = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the image format constants. **Notes:** JPEG: DeviceRGB, DeviceCMYK, DeviceGray -> JPEG compression.

70.34.1542  kifmPNG = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the image format constants. **Notes:** PNG: DeviceGray, DeviceRGB, Black & White -> Flate compression.

70.34.1543  kifmTIFF = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the image format constants. **Notes:** TIFF: DeviceRGB, DeviceCMYK, DeviceGray, Black & White -> CCITT Fax Group 3/4, JPEG, Flate, LZW.

70.34.1544  kifNoContent = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for import flags.

70.34.1545  kifOtherAnnots = & h00800000

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for import flags.

70.34.1546  kifPageActions = 4

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for import flags.

70.34.1547  kifPageLabels = & h00000020

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for import flags.
70.34.1548 kifPieceInfo = & h02000000
MBS DynaPDF Plugin, Plugin Version: 16.5. **Function:** One of the constants for import flags.
**Notes:** The PieceInfo dictionary contains arbitrary application defined data. The data in this dictionary is meaningful only for the application that created the data.

70.34.1549 kifPrepareForPDFA = & h10000000
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for import flags.

70.34.1550 kifSearchIndex = & h00001000
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for import flags.

70.34.1551 kifSeparationInfo = & h00000100
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for import flags.
**Notes:** Separation info

70.34.1552 kifStamp = & h00080000
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for import flags.

70.34.1553 kifStructureTree = & h00000400
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for import flags.

70.34.1554 kifTextAnnot = & h00020000
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for import flags.
70.34. **CLASS DYNAPDFMBS**

**70.34.1555**  
_kifThumbs = & h00000040_

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for import flags.

**70.34.1556**  
_kifTransition = & h00000800_

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for import flags.

**70.34.1557**  
_kifTranspGroups = & h00000080_

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for import flags.

**70.34.1558**  
_kit3D_AppDefault = 0_

MBS DynaPDF Plugin, Plugin Version: 9.8. **Function:** One of the Instantiation type constants for Set3DAnnotProps.  
**Notes:** Default

**70.34.1559**  
_kit3D_Instantiated = 1_

MBS DynaPDF Plugin, Plugin Version: 9.8. **Function:** One of the Instantiation type constants for Set3DAnnotProps.  
**Notes:** The annotation will be instantiated but animations are disabled.

**70.34.1560**  
_kit3D_Live = 2_

MBS DynaPDF Plugin, Plugin Version: 9.8. **Function:** One of the Instantiation type constants for Set3DAnnotProps.  
**Notes:** The annotation will be instantiated and animations are enabled (default).

**70.34.1561**  
_kjsBevelJoin = 2_

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for line join styles.  
**Notes:** Bevel Join
70.34.1562  kjsMiterJoin = 0
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for line join styles. 
**Notes:** Miter Join

70.34.1563  kjsRoundJoin = 1
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for line join styles. 
**Notes:** Round Join

70.34.1564  kkl128bit = 1
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for key length. 
**Notes:** RC4 Encryption -> Acrobat 5 or higher

70.34.1565  kkl128bitEx = 2
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for key length. 
**Notes:** RC4 Encryption -> Acrobat 6 or higher

70.34.1566  kkl40bit = 0
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for key length. 
**Notes:** RC4 Encryption -> Acrobat 3 or higher

70.34.1567  kklAES128 = 3
MBS DynaPDF Plugin, Plugin Version: 9.1. **Function:** One of the DynaPDF constants for key length. 
**Notes:** AES Encryption -> Acrobat 7 or higher

70.34.1568  kklAES256 = 4
MBS DynaPDF Plugin, Plugin Version: 9.1. **Function:** One of the DynaPDF constants for key length. 
**Notes:** AES Encryption -> Acrobat 9 or higher
70.34. CLASS DYNAPDFMBS

70.34.1569  kklAESRev6 = 5

MBS DynaPDF Plugin, Plugin Version: 15.4. **Function:** One of the DynaPDF constants for key length.
**Notes:** AES Encryption ->PDF 2.0, Acrobat X or higher

70.34.1570  klcDefault = 0

MBS DynaPDF Plugin, Plugin Version: 11.2. **Function:** One of the constants for flags to SetCMapDir function
**Notes:** Load the cmaps in the directory now.

70.34.1571  klcDelayed = 2

MBS DynaPDF Plugin, Plugin Version: 11.2. **Function:** One of the constants for flags to SetCMapDir function
**Notes:** Load the cmap files only when a font requires an external cmap.

70.34.1572  klcRecursive = 1

MBS DynaPDF Plugin, Plugin Version: 11.2. **Function:** One of the constants for flags to SetCMapDir function
**Notes:** Load sub directories recursively.

70.34.1573  kleButt = 1

MBS DynaPDF Plugin, Plugin Version: 14.0. **Function:** One of the flags for the line end style.
**Notes:** Butt

70.34.1574  kleCircle = 2

MBS DynaPDF Plugin, Plugin Version: 14.0. **Function:** One of the flags for the line end style.
**Notes:** Circle
70.34.1575  kleClosedArrow = 3

MBS DynaPDF Plugin, Plugin Version: 14.0. **Function:** One of the flags for the line end style.  
**Notes:** Left Close Arrow

70.34.1576  kleDiamond = 4

MBS DynaPDF Plugin, Plugin Version: 14.0. **Function:** One of the flags for the line end style.  
**Notes:** Diamond

70.34.1577  kleNone = 0

MBS DynaPDF Plugin, Plugin Version: 14.0. **Function:** One of the flags for the line end style.  
**Notes:** No end

70.34.1578  kleOpenArrow = 5

MBS DynaPDF Plugin, Plugin Version: 14.0. **Function:** One of the flags for the line end style.  
**Notes:** Left Open Arrow

70.34.1579  kleRClosedArrow = 6

MBS DynaPDF Plugin, Plugin Version: 14.0. **Function:** One of the flags for the line end style.  
**Notes:** Right Close Arrow

70.34.1580  kleROpenArrow = 7

MBS DynaPDF Plugin, Plugin Version: 14.0. **Function:** One of the flags for the line end style.  
**Notes:** Right Open Arrow

70.34.1581  kleSlash = 8

MBS DynaPDF Plugin, Plugin Version: 14.0. **Function:** One of the flags for the line end style.  
**Notes:** Slash
70.34.1582 klsSquare = 9

MBS DynaPDF Plugin, Plugin Version: 14.0. **Function:** One of the flags for the line end style. **Notes:** Square

70.34.1583 klsArtwork = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for a 3D Rendering mode for Create3DView. **Notes:** Lights from file lsBlue,

70.34.1584 klsBlue = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for a 3D Rendering mode for Create3DView.

70.34.1585 klsCAD = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for a 3D Rendering mode for Create3DView.

70.34.1586 klsCube = 3

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for a 3D Rendering mode for Create3DView.

70.34.1587 klsDay = 4

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for a 3D Rendering mode for Create3DView.

70.34.1588 klsHard = 5

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for a 3D Rendering mode for Create3DView.
70.34.1589  
\textbf{klsHeadlamp} = 6

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the constants for a 3D Rendering mode for Create3DView.

70.34.1590  
\textbf{klsNight} = 7

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the constants for a 3D Rendering mode for Create3DView.

70.34.1591  
\textbf{klsNoLights} = 8

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the constants for a 3D Rendering mode for Create3DView.

70.34.1592  
\textbf{klsNotSet} = \& \textbf{h0000000C}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the constants for a 3D Rendering mode for Create3DView.

70.34.1593  
\textbf{klsPrimary} = 9

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the constants for a 3D Rendering mode for Create3DView.

70.34.1594  
\textbf{klsRed} = \& \textbf{h0000000A}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the constants for a 3D Rendering mode for Create3DView.

70.34.1595  
\textbf{klsWhite} = \& \textbf{h0000000B}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the constants for a 3D Rendering mode for Create3DView.
70.34. CLASS DYNAPDFMBS

70.34.1596 kmdoCatalog = 0

MBS DynaPDF Plugin, Plugin Version: 14.0. **Function:** One of the metadata object contants.  
**Notes:** The global XMP stream of the document (no handle needed)

70.34.1597 kmdoFont = 1

MBS DynaPDF Plugin, Plugin Version: 14.0. **Function:** One of the metadata object contants.  
**Notes:** Parameter Handle must be a font handle.

70.34.1598 kmdoImage = 2

MBS DynaPDF Plugin, Plugin Version: 14.0. **Function:** One of the metadata object contants.  
**Notes:** Parameter Handle must be an image handle.

70.34.1599 kmdoPage = 3

MBS DynaPDF Plugin, Plugin Version: 14.0. **Function:** One of the metadata object contants.  
**Notes:** Parameter Handle must be a page number.

70.34.1600 kmdoTemplate = 4

MBS DynaPDF Plugin, Plugin Version: 14.0. **Function:** One of the metadata object contants.  
**Notes:** Parameter Handle must be a template handle.

70.34.1601 kmfApplyBidiAlgo = & h00080000

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the meta flag constants.  
**Notes:** Apply the bidirectional algorithm on Unicode strings

70.34.1602 kmfClipRclBounds = & h01000000

MBS DynaPDF Plugin, Plugin Version: 8.5. **Function:** One of the metaflags constants.  
**Notes:**
If set, the graphic is drawn into a clipping path with the size of rclBounds. This flag is useful if the graphic contains content outside of its bounding box.

### 70.34.1603  kmfClipView = 8

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the meta flag constants. **Notes:** Draw the file into a clipping rectangle

### 70.34.1604  kmfDebug = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the meta flag constants. **Notes:** Write debug information into the content stream.

### 70.34.1605  kmfDefault = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the meta flag constants. **Notes:** Default conversion

### 70.34.1606  kmfDefBkModeTransp = & h00040000

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the meta flag constants. **Notes:** Initialize the background mode to transparent (SetBkMode() overrides this state).

### 70.34.1607  kmfDisableRasterEMF = & h02000000

MBS DynaPDF Plugin, Plugin Version: 8.7. **Function:** One of the metaflags constants. **Notes:** If set, EMF files which use unsupported ROP codes are not rastered.

### 70.34.1608  kmfFullScale = & h00010000

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the meta flag constants. **Notes:** Recommended if 32 bit coordinates are used
70.34.1609 kmfGDIFontSelection = & h00100000
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the meta flag constants. **Notes:** Use the GDI to select fonts

70.34.1610 kmfIgnoreEmbFonts = & h08000000
MBS DynaPDF Plugin, Plugin Version: 13.4. **Function:** One of the meta flag constants. **Notes:** If set, embedded fonts in GDIComment records will be ignored. This flag must be set if the fonts of an EMF spool file were pre-loaded with ConvertEMFSpool(). Spool fonts must always be loaded in a pre-processing step since required fonts are not necessarily embedded in the EMF files.

70.34.1611 kmfIntersectClipRect = & h00002000
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the meta flag constants. **Notes:** enabled by default - can be disabled with mfNoClippingRgn

70.34.1612 kmfNoBBoxCheck = & h04000000
MBS DynaPDF Plugin, Plugin Version: 13.3. **Function:** One of the meta flag constants. **Notes:** Disable the bbox check.

70.34.1613 kmfNoBmpPatterns = & h00000400
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the meta flag constants. **Notes:** Ignore bitmap patterns

70.34.1614 kmfNoClippingRgn = & h00000040
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the meta flag constants. **Notes:** Disables SelectClippingRegion, IntersectClipRect, and SelectClipPath

70.34.1615 kmfNoFontEmbedding = & h00000080
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the meta flag constants. **Notes:** Do not embed fonts - Fonts should be embedded!!!
70.34.1616 kmfNoImages = & h00000100

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the meta flag constants.
**Notes:** Ignore image records

70.34.1617 kmfNoStdPatterns = & h00000200

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the meta flag constants.
**Notes:** Ignore standard patterns

70.34.1618 kmfNoText = & h00000800

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the meta flag constants.
**Notes:** Ignore text records

70.34.1619 kmfNoTextClipping = & h00400000

MBS DynaPDF Plugin, Plugin Version: 8.5. **Function:** One of the metaflags constants.
**Notes:** If set, the ETO_CLIPPED flag in text records is ignored.

70.34.1620 kmfNoTextScaling = 4

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the meta flag constants.
**Notes:** Do not scale text

70.34.1621 kmfNoUnicode = & h00008000

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the meta flag constants.
**Notes:** Avoid usage of Unicode fonts - recommended to enable PDF 1.2 compability
70.34.1622  kmfRclFrameEx = \& h00200000

MBS DynaPDF Plugin, Plugin Version: 8.1. **Function:** One of the DynaPDF constants.

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70.34.1623  kmfShowBounds = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the meta flag constants.  
**Notes:** Show the bounding boxes of text strings

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70.34.1624  kmfSrcCopy_Only = \& h00800000

MBS DynaPDF Plugin, Plugin Version: 8.5. **Function:** One of the metaflags constants.  
**Notes:** If set, images which use a ROP code other than SRCCOPY are ignored. This is useful when processing Excel 2007 spool files.

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70.34.1625  kmfUseRclBounds = \& h0000010

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the meta flag constants.  
**Notes:** Use rclBounds instead of rclFrame

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70.34.1626  kmfUseRclFrame = \& h00020000

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the meta flag constants.  
**Notes:** This flag should be set if the rclFrame rectangle is properly set

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70.34.1627  kmfUseSpacingArray = \& h0000020

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the meta flag constants.  
**Notes:** enabled by default ->can be disabled with mfUseTextScaling

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70.34.1628  kmfUseTextScaling = \& h00004000

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the meta flag constants.  
**Notes:** Scale text instead of using the intercharacter spacing array
70.34.1629  kmfUseUnicode = & h00001000

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the meta flag constants.  
**Notes:** Ignore ANSI_CHARSET

70.34.1630  knaDefault = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for a 3D named action.

70.34.1631  knaDeletePages = & h0000000D

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the named action constants.

70.34.1632  knaFirst = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for a 3D named action.

70.34.1633  knaFirstPage = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the named action constants.

70.34.1634  knaFitPage = & h0000000B

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the named action constants.

70.34.1635  knaFontsInfo = 8

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the named action constants.
70.34.1636 knaFullScreen = & h0000000C

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the named action constants.

70.34.1637 knaGeneralInfo = 7

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the named action constants.

70.34.1638 knaGoBack = 4

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the named action constants.

70.34.1639 knaLast = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for a 3D named action.

70.34.1640 knaLastPage = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the named action constants.

70.34.1641 knaNext = 3

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for a 3D named action.

70.34.1642 knaNextPage = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the named action constants.

70.34.1643 knaOpenDlg = 5

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the named action constants.
**70.34.1644 knaPrevious = 4**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for a 3D named action.

**70.34.1645 knaPrevPage = 3**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the named action constants.

**70.34.1646 knaPrintDlg = 6**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the named action constants.

**70.34.1647 knaQuit = & h0000000E**

MBS DynaPDF Plugin, Plugin Version: 9.8. **Function:** One of the named action constants.

**70.34.1648 knaSaveAs = 9**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the named action constants.

**70.34.1649 knaSecurityInfo = & h0000000A**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the named action constants.

**70.34.1650 kNEW_ALIGN_CENTER = 3**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants.

**70.34.1651 kNEW_ALIGN_JUSTIFY = 4**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants.
70.34. CLASS DYNAPDFMBS

70.34.1652  **kNEW_ALIGN_LEFT** = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants.

70.34.1653  **kNEW_ALIGN_RIGHT** = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants.

70.34.1654  **kNO_COLOR** = & hFFFFFFF1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the RGB color constants.
**Notes:**
This value can be used for form fields, annotations and standard patterns to determine that the specific color is not set.
For example, when a form field should have a transparent background, set the field background color to NO_COLOR. The background appears then transparent.

70.34.1655  **knsMinusBlack** = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the negative number format constants for SetNumberFormat.
**Notes:** The number is colored black with a minus sign.

70.34.1656  **knsParensBlack** = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the negative number format constants for SetNumberFormat.
**Notes:** The number is colored black with parenthesis.

70.34.1657  **knsParensRed** = 3

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the negative number format constants for SetNumberFormat.
**Notes:** The number is colored red with parenthesis.
**70.34.1658**  \( \text{knsRed} = 1 \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the negative number format constants for `SetNumberFormat`.  
**Notes:** The number is colored red.

**70.34.1659**  \( \text{koeOnAfterPrinting} = & \text{h}00000015 \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants.  
**Notes:** PDF 1.4 -> Catalog only

**70.34.1660**  \( \text{koeOnAfterSaving} = & \text{h}00000013 \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants.  
**Notes:** PDF 1.4 -> Catalog only

**70.34.1661**  \( \text{koeOnBeforeClosing} = & \text{h}00000011 \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants.  
**Notes:** PDF 1.4 -> Catalog only.

**70.34.1662**  \( \text{koeOnBeforePrinting} = & \text{h}00000014 \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants.  
**Notes:** PDF 1.4 -> Catalog only.

**70.34.1663**  \( \text{koeOnBeforeSaving} = & \text{h}00000012 \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants.  
**Notes:** PDF 1.4 -> Catalog only.

**70.34.1664**  \( \text{koeOnBlur} = 8 \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants.  
**Notes:** Form fields only
70.34. CLASS DYNAPDFMBS

70.34.1665  koeOnCalc = &h0000000B

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the DynaPDF constants. Notes: Form fields only.

70.34.1666  koeOnClose = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the DynaPDF constants. Notes: Pages only.

70.34.1667  koeOnFocus = 7

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the DynaPDF constants. Notes: Form fields only.

70.34.1668  koeOnFormat = &h0000000A

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the DynaPDF constants. Notes: Form fields only.

70.34.1669  koeOnKeyStroke = 9

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the DynaPDF constants. Notes: Form fields only.

70.34.1670  koeOnMouseDown = 6

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the DynaPDF constants. Notes: Form fields only.

70.34.1671  koeOnMouseEnter = 4

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the DynaPDF constants. Notes: Form fields only.
70.34.1672  koeOnMouseExit = 5

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants.  
**Notes:** Form fields only

70.34.1673  koeOnMouseUp = 3

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants.  
**Notes:** All fields, page link annotations, bookmarks

70.34.1674  koeOnOpen = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants.  
**Notes:** Catalog, Pages

70.34.1675  koeOnPageClose = \& h00000010

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants.  
**Notes:** PDF 1.5 - Form fields only

70.34.1676  koeOnPageInVisible = \& h000000E

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants.  
**Notes:** PDF 1.5 - Form fields only

70.34.1677  koeOnPageOpen = \& h0000009F

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants.  
**Notes:** PDF 1.5 - Form fields only

70.34.1678  koeOnPageVisible = \& h000000D

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants.  
**Notes:** PDF 1.5 - Form fields only
70.34. CLASS DYNAPDFMBS

70.34.1679  koeOnValidate = & h0000000C

MBS DynaPDF Plugin, Plugin Version: 8.0.  **Function:** One of the DynaPDF constants.  
**Notes:** All form fields, except buttons

70.34.1680  kofAdjZeroLineWidthOnly = & h00002000

MBS DynaPDF Plugin, Plugin Version: 17.0.  **Function:** One of the constants for the Optimize function.  
**Notes:** Meaningful only if the parameter MinLineWidth of the optimize parameters is greater zero. If set, change the line width of real hairlines only (a hairline is a one pixel width line ->LineWidth = 0).

70.34.1681  kofConvertAllColors = 2

MBS DynaPDF Plugin, Plugin Version: 14.2.  **Function:** One of the constants for the Optimize function.  
**Notes:** If set, Separation, DeviceN, and NChannel color spaces will be converted to the device space.

70.34.1682  kofDefault = 0

MBS DynaPDF Plugin, Plugin Version: 16.4.  **Function:** One of the constants for the Optimize function.  
**Notes:** Just rebuild the content streams.

70.34.1683  kofDeleteAlternateImages = & h00000400

MBS DynaPDF Plugin, Plugin Version: 16.4.  **Function:** One of the constants for the Optimize function.  
**Notes:** If set, alternate images will be deleted.

70.34.1684  kofDeleteInvPaths = & h00000040

MBS DynaPDF Plugin, Plugin Version: 16.1.  **Function:** One of the constants for the Optimize function.  
**Notes:** Delete invisible paths. An invisible path is a path that was finished with the no-op operator "n".

70.34.1685  kofDeletePrivateData = & h00000100

MBS DynaPDF Plugin, Plugin Version: 16.4.  **Function:** One of the constants for the Optimize function.  
**Notes:**
Delete private data objects from pages, templates, and images. For example, Indesign may store the original Photoshop image within the PDF file.

70.34.1686  *kofDeleteThumbnails = & h00000200*

MBS DynaPDF Plugin, Plugin Version: 16.4. **Function:** One of the constants for the Optimize function. **Notes:** Thumbnails can be deleted since PDF viewers can create thumbnails easily on demand.

70.34.1687  *kofFlattenLayers = & h00000080*

MBS DynaPDF Plugin, Plugin Version: 16.1. **Function:** One of the constants for the Optimize function. **Notes:** Flatten layers if any.

70.34.1688  *kofIgnoreICCBased = 4*

MBS DynaPDF Plugin, Plugin Version: 16.2. **Function:** One of the constants for the Optimize function. **Notes:** If set, ICCBased color spaces will be left unchanged.

70.34.1689  *kofIgnoreZeroLineWidth = & h00001000*

MBS DynaPDF Plugin, Plugin Version: 16.4. **Function:** One of the constants for the Optimize function. **Notes:** Meaningful only if the parameter MinLineWidth of the DynaPDFOptimizeParamsMBS class is greater zero. If set, ignore line width operators with a value of zero (zero means one device unit).

70.34.1690  *kofInMemory = 1*

MBS DynaPDF Plugin, Plugin Version: 16.1. **Function:** One of the constants for the Optimize function. **Notes:** Optimize the file fully in memory. Only useful for small PDF files.

70.34.1691  *kofNewLinkNames = & h00000020*

MBS DynaPDF Plugin, Plugin Version: 16.1. **Function:** One of the constants for the Optimize function. **Notes:** If set, rename all object links to short names like F1, F2 etc.
70.34.1692  kofNoImageSizeCheck = & h00000800

MBS DynaPDF Plugin, Plugin Version: 16.4. **Function:** One of the constants for the Optimize function. **Notes:** Meaningful only if ofScaleImages is set. If set, do not check whether the scaled image is smaller as the original image.

70.34.1693  kofScaleImages = 8

MBS DynaPDF Plugin, Plugin Version: 14.2. **Function:** One of the constants for the Optimize function. **Notes:** Scale images as specified in the DynaPDFOptimizeParamsMBS class.

70.34.1694  kofSkipMaskedImages = & h00000010

MBS DynaPDF Plugin, Plugin Version: 16.4. **Function:** One of the constants for the Optimize function. **Notes:** Meaningful only if ofScaleImages is set. If set, don’t scale images with a color mask.

70.34.1695  koiAll = 8

MBS DynaPDF Plugin, Plugin Version: 10.5. **Function:** One of the object intent constants for CreateOCG.

70.34.1696  koiDesign = 2

MBS DynaPDF Plugin, Plugin Version: 10.5. **Function:** One of the object intent constants for CreateOCG.

70.34.1697  koiEmpty = & h00000010

MBS DynaPDF Plugin, Plugin Version: 10.5. **Function:** One of the object intent constants for CreateOCG. **Notes:** Internal (refers to koiView if used)

70.34.1698  koiView = 4

MBS DynaPDF Plugin, Plugin Version: 10.5. **Function:** One of the object intent constants for CreateOCG. **Notes:** Default.
70.34.1699  koiVisible = & h00000020

MBS DynaPDF Plugin, Plugin Version: 15.0. Function: One of the object intent constants for CreateOCG. Notes: Visible

70.34.1700  kooAnnotation = 0

MBS DynaPDF Plugin, Plugin Version: 10.5. Function: One of the object type constants for AddObject-ToLayer. Notes: Handle is an annotation handle.

70.34.1701  kooField = 1

MBS DynaPDF Plugin, Plugin Version: 10.5. Function: One of the object type constants for AddObject-ToLayer. Notes: Handle is a field handle.

70.34.1702  kooImage = 2

MBS DynaPDF Plugin, Plugin Version: 10.5. Function: One of the object type constants for AddObject-ToLayer. Notes: Handle is an image handle.

70.34.1703  kooTemplate = 3

MBS DynaPDF Plugin, Plugin Version: 10.5. Function: One of the object type constants for AddObject-ToLayer. Notes: Handle is a template handle.

70.34.1704  korDownLeft = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the origin constants.
70.34.1705  korTopLeft = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the origin constants.

70.34.1706  kotAction = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the object type constants.
**Notes:** Action

70.34.1707  kotAnnotation = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the object type constants.
**Notes:** Annotation

70.34.1708  kotBookmark = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the object type constants.
**Notes:** Bookmark

70.34.1709  kotCatalog = 3

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the object type constants.
**Notes:** Catalog. PDF 1.4

70.34.1710  kotField = 4

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the object type constants.
**Notes:** Field

70.34.1711  kotPage = 5

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the object type constants.
**Notes:** Page
**70.34.1712 kotPageLink = 6**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the object type constants.  
**Notes:** Page Link.

**70.34.1713 koucExport = 1**

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the usage Categories which control the layer state.  
**Notes:** Export

**70.34.1714 koucLanguage = 2**

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the usage Categories which control the layer state.  
**Notes:** Language

**70.34.1715 koucNone = 0**

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the usage Categories which control the layer state.

**70.34.1716 koucPrint = 4**

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the usage Categories which control the layer state.  
**Notes:** Print

**70.34.1717 koucUser = 8**

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the usage Categories which control the layer state.  
**Notes:** User
70.34. **CLASS DYNAPDFMBS**

**70.34.1718**  
**koucView = & h00000010**

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the usage Categories which control the layer state.  
**Notes:** View

**70.34.1719**  
**koucZoom = & h00000020**

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the usage Categories which control the layer state.  
**Notes:** Zoom

**70.34.1720**  
**kovAllOff = 0**

MBS DynaPDF Plugin, Plugin Version: 10.5. **Function:** One of the visibility constants for CreateOCMD.  
**Notes:** All Off

**70.34.1721**  
**kovAllOn = 1**

MBS DynaPDF Plugin, Plugin Version: 10.5. **Function:** One of the visibility constants for CreateOCMD.  
**Notes:** All On

**70.34.1722**  
**kovAnyOff = 2**

MBS DynaPDF Plugin, Plugin Version: 10.5. **Function:** One of the visibility constants for CreateOCMD.  
**Notes:** Any Off

**70.34.1723**  
**kovAnyOn = 3**

MBS DynaPDF Plugin, Plugin Version: 10.5. **Function:** One of the visibility constants for CreateOCMD.  
**Notes:** Any On

**70.34.1724**  
**kovNotSet = 4**

MBS DynaPDF Plugin, Plugin Version: 10.5. **Function:** One of the visibility constants for CreateOCMD.  
**Notes:** Not Set
70.34.1725  kpbArtBox = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the PDF box constants. **Notes:** Art box.

70.34.1726  kpbBleedBox = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the PDF box constants. **Notes:** Bleed box.

70.34.1727  kpbCropBox = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the PDF box constants. **Notes:** Crop Box.

70.34.1728  kpbMediaBox = 4

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the PDF box constants. **Notes:** Media Box.

70.34.1729  kpbTrimBox = 3

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the PDF box constants. **Notes:** Trim Box.

70.34.1730  kpcBottomUp = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for the page coordinates.
70.34. \textit{CLASS DYNAPDFMBS}

70.34.1731 \hspace{1em} \texttt{kpcrHandClosed} = 1

MBS DynaPDF Plugin, Plugin Version: 11.3. \textbf{Function:} One of the cursor constants.

70.34.1732 \hspace{1em} \texttt{kpcrHandNormal} = 0

MBS DynaPDF Plugin, Plugin Version: 11.3. \textbf{Function:} One of the cursor constants.

70.34.1733 \hspace{1em} \texttt{kpcrHandPoint} = 2

MBS DynaPDF Plugin, Plugin Version: 11.3. \textbf{Function:} One of the cursor constants.

70.34.1734 \hspace{1em} \texttt{kpcrIBeam} = 3

MBS DynaPDF Plugin, Plugin Version: 11.3. \textbf{Function:} One of the cursor constants.

70.34.1735 \hspace{1em} \texttt{kpcTopDown} = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the DynaPDF constants for the page coordinates.

70.34.1736 \hspace{1em} \texttt{kPDFANNOTINDEX} = \& \texttt{h40000000}

MBS DynaPDF Plugin, Plugin Version: 11.1. \textbf{Function:} Special flag for GetPageFieldEx() to indicate that an annotation index was passed to the function. 
\textbf{Notes:} See GetPageFieldEx() for further information.

70.34.1737 \hspace{1em} \texttt{kPDF_AQUA} = \& \texttt{h00FFFF00}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the constants for basic RGB colors. 
\textbf{Notes:} aqua
70.34.1738  \texttt{kPDF\_BLACK} = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the constants for basic RGB colors.  
\textbf{Notes}: black

70.34.1739  \texttt{kPDF\_BLUE} = & \texttt{h00FF0000}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the constants for basic RGB colors.  
\textbf{Notes}: blue

70.34.1740  \texttt{kPDF\_CREAM} = & \texttt{h00F0FBFF}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the constants for basic RGB colors.  
\textbf{Notes}: cream

70.34.1741  \texttt{kPDF\_DKGRAY} = & \texttt{h00808080}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the constants for basic RGB colors.  
\textbf{Notes}: dark gray

70.34.1742  \texttt{kPDF\_FUCHSIA} = & \texttt{h00FF00FF}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the constants for basic RGB colors.  
\textbf{Notes}: fuchsia

70.34.1743  \texttt{kPDF\_GRAY} = & \texttt{h00808080}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the constants for basic RGB colors.  
\textbf{Notes}: gray

70.34.1744  \texttt{kPDF\_GREEN} = & \texttt{h00008000}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the constants for basic RGB colors.  
\textbf{Notes}: green
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for basic RGB colors. **Notes:** lime

70.34.1746  **kPDF_LIST_FONT = "Wingdings-Regular"**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** Default font to display the list symbol - can be changed with SetListFont()

70.34.1747  **kPDF_LIST_SEP_WIDTH = & h0000000A**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** Default width between the list symbol and text (see WriteFText() in the help file for further information)

70.34.1748  **kPDF_LTGRAY = & h00C0C0C0**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for basic RGB colors. **Notes:** light gray

70.34.1749  **kPDF_MAROON = & h00000080**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for basic RGB colors. **Notes:** maroon

70.34.1750  **kPDF_MAX_INT = & h7FFFFFFF**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** The maximum integer value.

70.34.1751  **kPDF_MAX_LIST_COUNT = 6**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** Maximum count of nested list levels (WriteFText())
CHAPTER 70. DYNAPDF

70.34.1752  **kPDF_MEDGRAY** = & h00A4A0A0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the constants for basic RGB colors.  
**Notes**: medium gray

70.34.1753  **kPDF_MOGREEN** = & h00C0DCC0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the constants for basic RGB colors.  
**Notes**: mogreen

70.34.1754  **kPDF_NAVY** = & h00800000

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the constants for basic RGB colors.  
**Notes**: navy

70.34.1755  **kPDF_Olive** = & h00008080

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the constants for basic RGB colors.  
**Notes**: olive

70.34.1756  **kPDF_PURPLE** = & h00800080

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the constants for basic RGB colors.  
**Notes**: purple

70.34.1757  **kPDF_RED** = & h000000FF

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the constants for basic RGB colors.  
**Notes**: red

70.34.1758  **kPDF_SILVER** = & h00C0C0C0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the constants for basic RGB colors.  
**Notes**: silver
70.34.1759  kPDF_SKYBLUE = & h00F0CAA6

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for basic RGB colors.  
**Notes:** skyblue

70.34.1760  kPDF_TABLEN = 3

MBS DynaPDF Plugin, Plugin Version: 8.6. **Function:** The default tab length.

70.34.1761  kPDF_TEAL = & h00808000

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for basic RGB colors.  
**Notes:** teal

70.34.1762  kPDF_WHITE = & h00FFFFFF

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for basic RGB colors.  
**Notes:** white

70.34.1763  kPDF_YELLOW = & h0000FFFF

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for basic RGB colors.  
**Notes:** yellow

70.34.1764  kpeBackgroundImage = 0

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the possible pagination artefact for an optional content group.  
**Notes:** Background image.

70.34.1765  kpeForegroundImage = 1

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the possible pagination artefact for an optional content group.  
**Notes:** Foreground Image.
70.34.1766  kpeHeaderFooter = 2

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the possible pagination artefact for an optional content group.
**Notes:** Header or Footer

70.34.1767  kpeLogo = 3

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the possible pagination artefact for an optional content group.
**Notes:** Logo

70.34.1768  kpeNone = 4

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the possible pagination artefact for an optional content group.

70.34.1769  kpfConvImagesToCMYK = &h00000040

MBS DynaPDF Plugin, Plugin Version: 7.7. **Function:** One of the PDF Parser constants.
**Notes:** Convert images to CMYK.

70.34.1770  kpfConvImagesToGray = &h00000010

MBS DynaPDF Plugin, Plugin Version: 7.7. **Function:** One of the PDF Parser constants.
**Notes:** Convert images to grayscale.

70.34.1771  kpfConvImagesToRGB = &h00000020

MBS DynaPDF Plugin, Plugin Version: 7.7. **Function:** One of the PDF Parser constants.
**Notes:** Convert images to RGB.

70.34.1772  kpfDecomprAllImages = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the parser flags.
**Notes:** This flag causes that all image formats will be decompressed with the exception of JBIG2 compressed
images. If this flag is not set, images which are already stored in a valid image file format are returned as is. This is the case for RGB JPEG and JPEG2000 compressed images. If you want to extract the images of a PDF file this flag should be absent!

70.34.1773  \texttt{kpfDIN\_A3 = 0}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the DynaPDF page format constants for \texttt{SetPageFormat}.
\textbf{Notes:} DIN A3

70.34.1774  \texttt{kpfDIN\_A4 = 1}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the DynaPDF page format constants for \texttt{SetPageFormat}.
\textbf{Notes:} DIN A4

70.34.1775  \texttt{kpfDIN\_A5 = 2}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the DynaPDF page format constants for \texttt{SetPageFormat}.
\textbf{Notes:} DIN A5

70.34.1776  \texttt{kpfDIN\_B4 = 3}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the DynaPDF page format constants for \texttt{SetPageFormat}.
\textbf{Notes:} DIN B4

70.34.1777  \texttt{kpfDIN\_B5 = 4}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the DynaPDF page format constants for \texttt{SetPageFormat}.
\textbf{Notes:} DIN B5
70.34.1778 \( \text{kpfDIN}_B6 = 5 \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF page format constants for SetPageFormat.
**Notes:** DIN B6

70.34.1779 \( \text{kpfDIN}_C3 = 6 \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF page format constants for SetPageFormat.
**Notes:** DIN C3

70.34.1780 \( \text{kpfDIN}_C4 = 7 \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF page format constants for SetPageFormat.
**Notes:** DIN C4

70.34.1781 \( \text{kpfDIN}_C5 = 8 \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF page format constants for SetPageFormat.
**Notes:** DIN C5

70.34.1782 \( \text{kpfDIN}_C6 = 9 \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF page format constants for SetPageFormat.
**Notes:** DIN C6

70.34.1783 \( \text{kpfDIN}_C65 = \& \text{h0000000A} \)

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF page format constants for SetPageFormat.
**Notes:** DIN C65
70.34. **CLASS DYNAPDFMBS**

### 70.34.1784 kpfDIN_DL = & h0000000B

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF page format constants for SetPageFormat.  
**Notes:** DIN DL

### 70.34.1785 kpfDIN_E4 = & h0000000C

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF page format constants for SetPageFormat.  
**Notes:** DIN E4

### 70.34.1786 kpfDIN_E5 = & h0000000D

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF page format constants for SetPageFormat.  
**Notes:** DIN E5

### 70.34.1787 kpfDIN_E6 = & h0000000E

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF page format constants for SetPageFormat.  
**Notes:** DIN E6

### 70.34.1788 kpfDIN_E65 = & h0000000F

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF page format constants for SetPageFormat.  
**Notes:** DIN E65

### 70.34.1789 kpfDIN_M5 = & h00000010

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF page format constants for SetPageFormat.  
**Notes:** DIN M5
**70.34.1790  kpfDIN_M65 = & h00000011**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF page format constants for SetPageFormat.
**Notes:** DIN M65

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**70.34.1791  kpfDitherImagesToBW = 8**

MBS DynaPDF Plugin, Plugin Version: 7.7. **Function:** One of the PDF Parser constants.
**Notes:** Floyd-Steinberg dithering.

---

**70.34.1792  kpff1Bit = 1**

MBS DynaPDF Plugin, Plugin Version: 15.1. **Function:** One of the printing flags.
**Notes:** Print with 1 bit in black and white.

---

**70.34.1793  kpffAutoRotateAndCenter = 4**

MBS DynaPDF Plugin, Plugin Version: 15.1. **Function:** One of the printing flags.
**Notes:** Automatically rotate and scale the page to match printer context.

---

**70.34.1794  kpffColor = 2**

MBS DynaPDF Plugin, Plugin Version: 15.1. **Function:** One of the printing flags.
**Notes:** Print in color.

---

**70.34.1795  kpffDefault = 0**

MBS DynaPDF Plugin, Plugin Version: 15.1. **Function:** One of the printing flags.
**Notes:** Default print settings.

---

**70.34.1796  kpffNoEndDoc = & h00000080**

MBS DynaPDF Plugin, Plugin Version: 15.2. **Function:** One of the printing flags.
**Notes:** Do not call EndDoc on Windows
70.34.1797  kpffNoStartDoc = & h00000020

MBS DynaPDF Plugin, Plugin Version: 15.2. **Function:** One of the printing flags.  
**Notes:** Do not call StartDoc on Windows

70.34.1798  kpffNoStartPage = & h00000040

MBS DynaPDF Plugin, Plugin Version: 15.2. **Function:** One of the printing flags.  
**Notes:** Do not call StartPage on Windows

70.34.1799  kpffPrintAsImage = 8

MBS DynaPDF Plugin, Plugin Version: 15.1. **Function:** One of the printing flags.  
**Notes:** Print by rendering each page as image and drawing it in the graphics context.

70.34.1800  kpffPrintPageAsIs = & h00000100

MBS DynaPDF Plugin, Plugin Version: 17.2. **Function:** One of the printing flags.  
**Notes:** If set, do not scale or rotate a page to fit into the printable area.

70.34.1801  kpffShrinkToPrintArea = & h00000010

MBS DynaPDF Plugin, Plugin Version: 15.1. **Function:** One of the printing flags.  
**Notes:** Shrink PDF to print area.

70.34.1802  kpffImageInfoOnly = & h00000080

MBS DynaPDF Plugin, Plugin Version: 8.2. **Function:** One of the image import flags.  
**Notes:** If set, images are not decompressed. This flag is useful if you want to enumerate the images of a  
PDF file or if you want to determine how many images are stored in it. Note that images can be compressed  
with multiple filters. The member Filter of the structure TPDFImage contains only the last filter with which  
the image was compressed. There is no indication whether multiple decode filters are required to decompress  
the image buffer. So, it makes no sense to set this flag if you want to try to decompress the image buffer  
manually with your own decode filters.
70.34.1803  kpfNoJPXDecode = 4

MBS DynaPDF Plugin, Plugin Version: 7.7. **Function:** One of the PDF Parser constants.  
**Notes:** Meaningful only if the flag pfDecomprAllImages is set. If set, JPEG2000 images are returned as is so that you can use your own library to decompress such images since the the entire JPEG2000 codec is still marked as experimental. If we find an alternative to the currently used Jasper library then we will replace it immediatly with another one...

70.34.1804  kpfNone = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the PDF Parser constants.

70.34.1805  kpfUS_Legal = & h00000012

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF page format constants for SetPageFormat.  
**Notes:** US Legal

70.34.1806  kpfUS_Letter = & h00000013

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF page format constants for SetPageFormat.  
**Notes:** US Letter

70.34.1807  kplDefault = 6

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the page layout constants.  
**Notes:** Use viewer’s default settings

70.34.1808  kplfDecimalArabic = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the Page Label Format constants.  
**Notes:** 1,2,3,4...
70.34.1809  kplfLowercaseLetters = 4

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the Page Label Format constants.  
**Notes:** a,b,c,d...

70.34.1810  kplfLowercaseRoman = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the Page Label Format constants.  
**Notes:** i,ii,iii,iv...

70.34.1811  kplfNone = 5

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the Page Label Format constants.

70.34.1812  kplfUppercaseLetters = 3

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the Page Label Format constants.  
**Notes:** A,B,C,D...

70.34.1813  kplfUppercaseRoman = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the Page Label Format constants.  
**Notes:** I,II,III,IV...

70.34.1814  kplOneColumn = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the page layout constants.

70.34.1815  kplSinglePage = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the page layout constants.
70.34.1816  kplTwoColumnLeft = 2
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the page layout constants.

70.34.1817  kplTwoColumnRight = 3
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the page layout constants.

70.34.1818  kplTwoPageLeft = 4
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the page layout constants.
**Notes:** PDF 1.5

70.34.1819  kplTwoPageRight = 5
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the page layout constants.
**Notes:** PDF 1.5

70.34.1820  kpmFullScreen = 3
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the page mode constants.

70.34.1821  kpmUseAttachments = 5
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the page mode constants.
**Notes:** PDF 1.6

70.34.1822  kpmUseNone = 0
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the page mode constants.
70.34.1823  \texttt{kpmUseOC} = 4

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the page mode constants.  
\textbf{Notes:} PDF 1.5

70.34.1824  \texttt{kpmUseOutlines} = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the page mode constants.

70.34.1825  \texttt{kpmUseThumbs} = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the page mode constants.

70.34.1826  \texttt{kpsAppDefault} = 0

MBS DynaPDF Plugin, Plugin Version: 8.7. \textbf{Function:} One of the print scaling flag constants.

70.34.1827  \texttt{kpsFitBest} = 2

MBS DynaPDF Plugin, Plugin Version: 11.1. \textbf{Function:} One of the constants to specify how the page should be scaled into the image buffer.  
\textbf{Notes:} Scale the page so that it fits fully into the image buffer.

70.34.1828  \texttt{kpsFitHeight} = 1

MBS DynaPDF Plugin, Plugin Version: 11.1. \textbf{Function:} One of the constants to specify how the page should be scaled into the image buffer.  
\textbf{Notes:} Scale the page to the height of the image buffer.

70.34.1829  \texttt{kpsFitWidth} = 0

MBS DynaPDF Plugin, Plugin Version: 11.1. \textbf{Function:} One of the constants to specify how the page should be scaled into the image buffer.  
\textbf{Notes:} Scale the page to the width of the image buffer.
70.34.1830 kpsFitZoom = 3

MBS DynaPDF Plugin, Plugin Version: 11.3. **Function:** One of the constants to specify how the page should be scaled into the image buffer. **Notes:** This mode must be used if the scaling factors of the transformation matrix are <>1.0

70.34.1831 kpsNone = 1

MBS DynaPDF Plugin, Plugin Version: 8.7. **Function:** One of the print scaling flag constants.

70.34.1832 kpt3DOrthographic = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for 3D projection types. **Notes:** Orthographic

70.34.1833 kpt3DPerspective = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for 3D projection types. **Notes:** Perspective

70.34.1834 kptColored = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the pattern type constants.

70.34.1835 kptDontCopyBuf = 4

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for password type to pass when opening files. **Notes:** If set, OpenImportBuffer() does not copy the PDF buffer to an internal buffer. This increases the processing speed and reduces the memory usage. The PDF buffer must not be released until CloseImportFile() or CloseFile() was called.

70.34.1836 kptForceRepair = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for password type to pass when opening files.
**70.34. CLASS DYNAPDFMBS**

**Notes:** Meaningful only when opening a PDF file with OpenImportFile() or OpenImportBuffer(). If set, the PDF parser rebuilds the cross-reference table by scanning all the objects in the file. This can be useful if the cross-reference table contains damages while the top level objects are intact. Setting this flag makes only sense if the file was already previously opened in normal mode and if errors occured when importing pages of it.

---

**70.34.1837  kptImportPage = 0**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for the progtype parameter in the progress event.

**Notes:** This value is for: Start page import

---

**70.34.1838  kptOpen = 0**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for password type to pass when opening files.

**Notes:** No password.

---

**70.34.1839  kptOwner = 1**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for password type to pass when opening files.

**Notes:** Owner password provided.

---

**70.34.1840  kptPrintPage = 2**

MBS DynaPDF Plugin, Plugin Version: 15.2. **Function:** One of the DynaPDF constants for the progtype parameter in the progress event.

**Notes:** Progress for printing a page.

---

**70.34.1841  kptShadingPattern = 2**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the pattern type constants.
70.34.1842  kptUnColored = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the pattern type constants.

70.34.1843  kptWritePage = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for the progtype parameter in the progress event.
**Notes:** This value is for: Start writing a page to file or buffer

70.34.1844  kpvPDFA_1a = & h00000010

MBS DynaPDF Plugin, Plugin Version: 13.1. **Function:** One of the PDF Version constants.
**Notes:** PDF/A 1a

70.34.1845  kpvPDFA_2005 = & h0000000E

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the PDF Version constants.
**Notes:** PDF/A-1b 2005

70.34.1846  kpvPDFA_2a = & h00000011

MBS DynaPDF Plugin, Plugin Version: 13.1. **Function:** One of the PDF Version constants.
**Notes:** PDF/A 2a

70.34.1847  kpvPDFA_2b = & h00000012

MBS DynaPDF Plugin, Plugin Version: 13.1. **Function:** One of the PDF Version constants.
**Notes:** PDF/A 2b

70.34.1848  kpvPDFA_2u = & h00000013

MBS DynaPDF Plugin, Plugin Version: 13.1. **Function:** One of the PDF Version constants.
**Notes:** PDF/A 2u
70.34. CLASS DYNAPDFMBS

70.34.1849  kpvPDFA_3a = & h00000014

MBS DynaPDF Plugin, Plugin Version: 13.1. **Function:** One of the PDF Version constants.  
**Notes:** PDF/A 3a

70.34.1850  kpvPDFA_3b = & h00000015

MBS DynaPDF Plugin, Plugin Version: 13.1. **Function:** One of the PDF Version constants.  
**Notes:** PDF/A 3b

70.34.1851  kpvPDFA_3u = & h00000016

MBS DynaPDF Plugin, Plugin Version: 13.1. **Function:** One of the PDF Version constants.  
**Notes:** PDF/A 3u

70.34.1852  kpvPDFX1a_2001 = & h0000000A

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the PDF Version constants.  
**Notes:** PDF/X-1a:2001

70.34.1853  kpvPDFX1a_2003 = & h0000000B

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the PDF Version constants.  
**Notes:** PDF/X-1a:2003

70.34.1854  kpvPDFX3_2002 = & h0000000C

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the PDF Version constants.  
**Notes:** PDF/X-3:2002

70.34.1855  kpvPDFX3_2003 = & h0000000D

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the PDF Version constants.  
**Notes:** PDF/X-3:2003
70.34.1856  \texttt{kpvPDFX\_4} = \& ~ \texttt{h0000000F}

MBS DynaPDF Plugin, Plugin Version: 13.0. \textbf{Function}: One of the PDF Version constants.  
\textbf{Notes}: PDF/X-4

70.34.1857  \texttt{kpvPDF\_1\_0} = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the PDF Version constants.  
\textbf{Notes}: PDF 1.0

70.34.1858  \texttt{kpvPDF\_1\_1} = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the PDF Version constants.  
\textbf{Notes}: PDF 1.1

70.34.1859  \texttt{kpvPDF\_1\_2} = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the PDF Version constants.  
\textbf{Notes}: PDF 1.2

70.34.1860  \texttt{kpvPDF\_1\_3} = 3

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the PDF Version constants.  
\textbf{Notes}: PDF 1.3

70.34.1861  \texttt{kpvPDF\_1\_4} = 4

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the PDF Version constants.  
\textbf{Notes}: PDF 1.4

70.34.1862  \texttt{kpvPDF\_1\_5} = 5

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the PDF Version constants.  
\textbf{Notes}: PDF 1.5
70.34.1863 \texttt{kpvPDF\_1\_6 = 6}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the PDF Version constants.
\textbf{Notes:} PDF 1.6

70.34.1864 \texttt{kpvPDF\_1\_7 = 7}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the PDF Version constants.
\textbf{Notes:} PDF 1.7

70.34.1865 \texttt{kpvPDF\_2\_0 = 8}

MBS DynaPDF Plugin, Plugin Version: 13.0. \textbf{Function:} One of the PDF Version constants.
\textbf{Notes:} PDF 2.0

70.34.1866 \texttt{kpvZUGFeRD\_Basic = \& h00010000}

\textbf{Notes:}
ZUGFeRD Basic level.
This constant are flags which can be combined with kpvPDFA\_3a, kpvPDFA\_3b, and kpvPDFA\_3u. If used stand alone PDF/A 3b with the correspondig ZUGFeRD metadata will be created.

70.34.1867 \texttt{kpvZUGFeRD\_Comfort = \& h00020000}

\textbf{Notes:}
ZUGFeRD Comfort level.
This constant are flags which can be combined with kpvPDFA\_3a, kpvPDFA\_3b, and kpvPDFA\_3u. If used stand alone PDF/A 3b with the correspondig ZUGFeRD metadata will be created.

70.34.1868 \texttt{kpvZUGFeRD\_Extended = \& h00040000}

\textbf{Notes:}
CHAPTER 70. DYNAPDF

ZUGFeRD Extended level.
This constant are flags which can be combined with kpvpDFA\textsubscript{3a}, kpvpDFA\textsubscript{3b}, and kpvpDFA\textsubscript{3u}. If used stand alone PDF/A 3b with the correspondig ZUGFeRD metadata will be created.

70.34.1869 \hspace{1em} kp\textsubscript{vZUGFeRD}\textsubscript{M}ask = \& h00070000

\textbf{Notes:} The mask to bitwise AND the value and get the ZUGFeRD part.

70.34.1870 \hspace{1em} kp\textsubscript{xf1Bit} = 0

MBS DynaPDF Plugin, Plugin Version: 12.2. \textbf{Function:} One of the pixel format constants.
\textbf{Notes:} 1 bit per pixel black and white.

70.34.1871 \hspace{1em} kp\textsubscript{xfABGR} = 7

MBS DynaPDF Plugin, Plugin Version: 12.2. \textbf{Function:} One of the pixel format constants.
\textbf{Notes:} ABGR.

70.34.1872 \hspace{1em} kp\textsubscript{xfARGB} = 6

MBS DynaPDF Plugin, Plugin Version: 12.2. \textbf{Function:} One of the pixel format constants.
\textbf{Notes:} ARGB

70.34.1873 \hspace{1em} kp\textsubscript{xfBGR} = 3

MBS DynaPDF Plugin, Plugin Version: 12.2. \textbf{Function:} One of the pixel format constants.
\textbf{Notes:} BGR

70.34.1874 \hspace{1em} kp\textsubscript{xfBGRA} = 5

MBS DynaPDF Plugin, Plugin Version: 12.2. \textbf{Function:} One of the pixel format constants.
\textbf{Notes:} BGRA
MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the pixel format constants. **Notes:** CMYK without alpha

**70.34.1876**  \( \text{kpfxCMYKA} = \& \text{h}0000000A \)

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the pixel format constants. **Notes:** CMYK with alpha

**70.34.1877**  \( \text{kpfxGray} = 1 \)

MBS DynaPDF Plugin, Plugin Version: 12.2. **Function:** One of the pixel format constants. **Notes:** 8 bit grayscale.

**70.34.1878**  \( \text{kpfxGrayA} = 8 \)

MBS DynaPDF Plugin, Plugin Version: 11.2. **Function:** One of the pixel format constants. **Notes:** 8 bit grayscale with alpha.

**70.34.1879**  \( \text{kpfxRGB} = 2 \)

MBS DynaPDF Plugin, Plugin Version: 12.2. **Function:** One of the pixel format constants. **Notes:** RGB

**70.34.1880**  \( \text{kpfxRGBA} = 4 \)

MBS DynaPDF Plugin, Plugin Version: 12.2. **Function:** One of the pixel format constants. **Notes:** RGBA

**70.34.1881**  \( \text{krfClipBoxMask} = \& \text{h}0000001C \)

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the raster flag constants. **Notes:** The mask for Clip flags.
**70.34.1882** \( \text{krfClipToArtBox} = 4 \)

MBS DynaPDF Plugin, Plugin Version: 12.2. **Function:** One of the raster flag constants.  
**Notes:**
Clip the page to the art box if any.

Only one of these clip flags must be set at time!

**70.34.1883** \( \text{krfClipToBleedBox} = 8 \)

MBS DynaPDF Plugin, Plugin Version: 12.2. **Function:** One of the raster flag constants.  
**Notes:**
Clip the page to the bleed box if any.

Only one of these clip flags must be set at time!

**70.34.1884** \( \text{krfClipToTrimBox} = \& \text{h00000010} \)

MBS DynaPDF Plugin, Plugin Version: 12.2. **Function:** One of the raster flag constants.  
**Notes:**
Clip the page to the bleed box if any.

Only one of these clip flags must be set at time!

**70.34.1885** \( \text{krfCompositeWhite} = \& \text{h00001000} \)

MBS DynaPDF Plugin, Plugin Version: 13.1. **Function:** One of the raster flag constants.  
**Notes:** Composite pixel formats with an alpha channel finally with a white background. The alpha channel is 255 everywhere after composition. This flag is mainly provided for debug purposes but it can also be useful if the image must be copied on screen with a function that doesn't support alpha blending.

**70.34.1886** \( \text{krfDefault} = 0 \)

MBS DynaPDF Plugin, Plugin Version: 12.2. **Function:** One of the raster flag constants.  
**Notes:** Render the page as usual
70.34.1887  krfDisableAAClipping = & h00200000
MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the raster flag constants.
**Notes:** Disable Anti-Aliasing for clipping paths. This flag is the most important one since clipping paths cause often visible artefacts in PDF files with flattened transparency.

70.34.1888  krfDisableAAText = & h00400000
MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the raster flag constants.
**Notes:** Disable Anti-Aliasing for text.

70.34.1889  krfDisableAAVector = & h00800000
MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the raster flag constants.
**Notes:** Disable Anti-Aliasing for vector graphics.

70.34.1890  krfDisableAntiAliasing = & h00E00000
MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the raster flag constants.
**Notes:** Combination of krfDisableAAVector, krfDisableAAText and krfDisableAAClipping.

70.34.1891  krfDisableBiLinearFilter = & h01000000
MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the raster flag constants.
**Notes:** Disable the BiLevel filter for images. Sometimes useful if sharp images are needed, e.g. for barcodes.

70.34.1892  krfExclAnnotations = & h00000020
MBS DynaPDF Plugin, Plugin Version: 12.2. **Function:** One of the raster flag constants.
**Notes:** Don’t render annotations.

70.34.1893  krfExclButtons = & h00004000
MBS DynaPDF Plugin, Plugin Version: 14.4. **Function:** One of the raster flag constants.
**Notes:**
If you want to render specific field types with `RenderAnnotOrField()` then use this flag to exclude buttons. If all fields should be skipped then set the flag `rfExclFormFields` instead.

70.34.1894 krfExclCheckBoxes = & h00008000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the raster flag constants. **Notes:**
If you want to render specific field types with `RenderAnnotOrField()` then use this flag to exclude checkboxes. If all fields should be skipped then set the flag `rfExclFormFields` instead.

70.34.1895 krfExclComboBoxes = & h00010000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the raster flag constants. **Notes:**
If you want to render specific field types with `RenderAnnotOrField()` then use this flag to exclude combobox. If all fields should be skipped then set the flag `rfExclFormFields` instead.

70.34.1896 krfExclFormFields = & h00000040

MBS DynaPDF Plugin, Plugin Version: 12.2. **Function:** One of the raster flag constants. **Notes:** Don’t render form fields.

70.34.1897 krfExclListBoxes = & h00020000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the raster flag constants. **Notes:**
If you want to render specific field types with `RenderAnnotOrField()` then use this flag to exclude listbox. If all fields should be skipped then set the flag `rfExclFormFields` instead.

70.34.1898 krfExclPageContent = & h00002000

MBS DynaPDF Plugin, Plugin Version: 14.4. **Function:** One of the raster flag constants. **Notes:** If set, only annotations and form fields will be rendered (if any).
70.34. **CLASS DYNAPDFMBS**

70.34.1899  **krfExclSigFields = & h00080000**

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the raster flag constants. **Notes:**
If you want to render specific field types with RenderAnnotOrField() then use this flag to exclude signature fields. If all fields should be skipped then set the flag rfExclFormFields instead.

70.34.1900  **krfExclTextFields = & h00040000**

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the raster flag constants. **Notes:**
If you want to render specific field types with RenderAnnotOrField() then use this flag to exclude text fields. If all fields should be skipped then set the flag rfExclFormFields instead.

70.34.1901  **krfIgnoreCropBox = 2**

MBS DynaPDF Plugin, Plugin Version: 12.2. **Function:** One of the raster flag constants. **Notes:** Ignore the crop box and render anything inside the media box without clipping.

70.34.1902  **krfInitBlack = & h00008000**

MBS DynaPDF Plugin, Plugin Version: 13.1. **Function:** One of the raster flag constants. **Notes:** Initialize the image buffer to black before rendering (RGBA or GrayA must be initialized to black)

70.34.1903  **krfRenderInvisibleText = & h02000000**

MBS DynaPDF Plugin, Plugin Version: 18.2. **Function:** One of the raster flag constants. **Notes:** If set, treat text rendering mode Invisible as Normal.

70.34.1904  **krfRotate180 = & h00002000**

MBS DynaPDF Plugin, Plugin Version: 12.2. **Function:** One of the raster flag constants. **Notes:** Rotate the page 180 degress.
70.34.1905  krfRotate270 = \& h00000400

MBS DynaPDF Plugin, Plugin Version: 12.2. **Function:** One of the raster flag constants.  
**Notes:** Rotate the page 270 degrees.

70.34.1906  krfRotate90 = \& h00000100

MBS DynaPDF Plugin, Plugin Version: 12.2. **Function:** One of the raster flag constants.  
**Example:**

```vbs
dim pdf as new DynaPDFMBS // make subclass to catch error event

dim f as FolderItem = SpecialFolder.Desktop.Child("dynapdf_help.pdf")

// create PDF
call pdf.CreateNewPDF(nil)
// set import flags
call pdf.SetImportFlags(pdf.kifImportAll + pdf.kifImportAsPage)

// open import file
call pdf.OpenImportFile(f, 0, "")

// import all pdf pages
call pdf.ImportPDFFile(1, 1.0, 1.0)

dim PageCount as Integer = pdf.GetPageCount

// create rasterizer.
dim r as new DynaPDFRasterizerMBS(pdf, 1000, 1000)

// create options
dim o as new DynaPDFRasterImageMBS

// fill white
o.InitWhite = true

// scale to fit
o.DefScale = o.kpsFitBest

// rotate
o.Flags = o.krfRotate90

// render all pages
for i as Integer = 1 to PageCount

dim p as DynaPDFPageMBS = pdf.GetPage(i)
```
if r.RenderPage(p, o) then
    // save to disc
    dim outfile as FolderItem = SpecialFolder.Desktop.Child("page " + Format(i,"0") + ".jpg")
    call outfile.SaveAsJPEGMBS(r.pic, 75)
end
next

Notes: Rotate the page 90 degrees.

70.34.1907  krfScaleToBBox = & h00100000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the raster flag constants.  
**Notes:** Meaningful only, if rfClipToArtBox, rfClipToBleedBox, or rfClipToTrimBox is set. If set, the picture size is set to the size of the wished bounding box.

70.34.1908  krfScaleToMediaBox = 1

MBS DynaPDF Plugin, Plugin Version: 12.2. **Function:** One of the raster flag constants.  
**Notes:** Render the real paper format. Contents outside the crop box is clipped.

70.34.1909  krfSkipUpdateBG = & h00000080

MBS DynaPDF Plugin, Plugin Version: 12.2. **Function:** One of the raster flag constants.  
**Notes:** Don’t generate an update event after initializing the background to white.

70.34.1910  kriAbsoluteColorimetric = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the rendering intent constants.

70.34.1911  krifByteAligned = & h00001000

MBS DynaPDF Plugin, Plugin Version: 10.1. **Function:** One of the flags for adding raw images.
70.34.1912  krifCMYKData = & h00004000

MBS DynaPDF Plugin, Plugin Version: 10.1. **Function:** One of the flags for adding raw images.

70.34.1913  krifRGBData = & h00002000

MBS DynaPDF Plugin, Plugin Version: 10.1. **Function:** One of the flags for adding raw images.

70.34.1914  kriPerceptual = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the rendering intent constants.

70.34.1915  kriRelativeColorimetric = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the rendering intent constants.

70.34.1916  kriSaturation = 3

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the rendering intent constants.

70.34.1917  krmBoundingBox = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for a 3D rendering mode.

70.34.1918  krmHiddenWireframe = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for a 3D rendering mode.

70.34.1919  krmIllustration = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for a 3D rendering mode.
70.34.1920  \texttt{krmNotSet = \& h0000000F}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the DynaPDF constants for a 3D rendering mode.

70.34.1921  \texttt{krmShadedIllustration = 3}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the DynaPDF constants for a 3D rendering mode.

70.34.1922  \texttt{krmShadedVertices = 4}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the DynaPDF constants for a 3D rendering mode.

70.34.1923  \texttt{krmShadedWireframe = 5}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the DynaPDF constants for a 3D rendering mode.

70.34.1924  \texttt{krmSolid = 6}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the DynaPDF constants for a 3D rendering mode.

70.34.1925  \texttt{krmSolidOutline = 7}

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function}: One of the DynaPDF constants for a 3D rendering mode.
70.34.1926  `krmSolidWireframe = 8`

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for a 3D rendering mode.

70.34.1927  `krmTransparent = 9`

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for a 3D rendering mode.

70.34.1928  `krmTranspBBox = & h0000000A`

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for a 3D rendering mode.

70.34.1929  `krmTranspBBoxOutline = & h0000000B`

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for a 3D rendering mode.

70.34.1930  `krmTranspWireframe = & h0000000C`

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for a 3D rendering mode.

70.34.1931  `krmVertices = & h0000000D`

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for a 3D rendering mode.

70.34.1932  `krmWireframe = & h0000000E`

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for a 3D rendering mode.
70.34.1933  krsAddObj = & h0000020

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF restriction constants.

70.34.1934  krsApproved = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the rubber stamp constants for StampAnnotation.

70.34.1935  krsAsIs = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the rubber stamp constants for StampAnnotation.

70.34.1936  krsAssemble = & h00000400

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF restriction constants. **Notes:** This flag is only used for 128 bit encryption. So this flag is ignored if 40 bit encryption is used.

70.34.1937  krsConfidential = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the rubber stamp constants for StampAnnotation.

70.34.1938  krsCopyObj = & h0000010

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF restriction constants.

70.34.1939  krsDenyAll = & h00000F3C

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF restriction constants.
70.34.1940  krsDenyNothing = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF restriction constants.

70.34.1941  krsDepartmental = 3

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the rubber stamp constants for StampAnnotation.

70.34.1942  krsDraft = 4

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the rubber stamp constants for StampAnnotation.

70.34.1943  krsEmbFilesOnly = & h00002000

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF restriction constants. **Notes:**
This flag is only used for 128 bit encryption. So this flag is ignored if 40 bit encryption is used. PDF 1.6 Encrypt embedded files only - Requires AES encryption.

70.34.1944  krsExlMetadata = & h00001000

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF restriction constants. **Notes:**
This flag is only used for 128 bit encryption. So this flag is ignored if 40 bit encryption is used. PDF 1.5 Exclude metadata streams - >128/256 bit encryption bit only.

70.34.1945  krsExperimental = 5

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the rubber stamp constants for StampAnnotation.
70.34.1946 krsExpired = 6
MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the rubber stamp constants for StampAnnotation.

70.34.1947 krsExtractObj = & h00000200
MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the DynaPDF restriction constants. Notes: This flag is only used for 128 bit encryption. So this flag is ignored if 40 bit encryption is used.

70.34.1948 krsFillInFormFields = & h00000100
MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the DynaPDF restriction constants. Notes: This flag is only used for 128 bit encryption. So this flag is ignored if 40 bit encryption is used.

70.34.1949 krsFinal = 7
MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the rubber stamp constants for StampAnnotation.

70.34.1950 krsForComment = 8
MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the rubber stamp constants for StampAnnotation.

70.34.1951 krsForPublicRelease = 9
MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the rubber stamp constants for StampAnnotation.

70.34.1952 krsModify = 8
MBS DynaPDF Plugin, Plugin Version: 8.0. Function: One of the DynaPDF restriction constants.
70.34.1953  krsNotApproved = & h0000000A

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the rubber stamp constants for StampAnnotation.

70.34.1954  krsNotForPublicRelease = & h0000000B

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the rubber stamp constants for StampAnnotation.

70.34.1955  krsPrint = 4

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF restriction constants.

70.34.1956  krsPrintHighRes = & h00000800

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF restriction constants. **Notes:** This flag is only used for 128 bit encryption. So this flag is ignored if 40 bit encryption is used.

70.34.1957  krsSold = & h0000000C

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the rubber stamp constants for StampAnnotation.

70.34.1958  krsTopSecret = & h0000000D

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the rubber stamp constants for StampAnnotation.

70.34.1959  krsUserDefined = & h0000000E

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the rubber stamp constants for StampAnnotation.
70.34.1960  ksfCanonicalFormat = & h00000200

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the submit flag constants for CreateSubmitAction.

70.34.1961  ksfEmbedForm = & h00002000

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the submit flag constants for CreateSubmitAction. **Notes:** PDF 1.5 embed the entire form into a file stream inside the FDF file -> requires the full version of Adobe’s Acrobat.

70.34.1962  ksfExlFKey = & h00000800

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the submit flag constants for CreateSubmitAction.

70.34.1963  ksfExlNonUserAnnots = & h00000400

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the submit flag constants for CreateSubmitAction.

70.34.1964  ksfExlude = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the submit flag constants for CreateSubmitAction. **Notes:** If set, the fields in a submit form action are excluded if any.

70.34.1965  ksfGetMethod = 8

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the submit flag constants for CreateSubmitAction.
70.34.1966  ksfHTML = 4

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the submit flag constants for CreateSubmitAction.

70.34.1967  ksfInclAnnots = & h00000080

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the submit flag constants for CreateSubmitAction.

70.34.1968  ksfInclAppSaves = & h00000040

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the submit flag constants for CreateSubmitAction.
**Notes:** Requires the full version of Adobe’s Acrobat

70.34.1969  ksfInclNoValFields = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the submit flag constants for CreateSubmitAction.

70.34.1970  ksfNone = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the submit flag constants for CreateSubmitAction.
**Notes:** The default export format is FDF

70.34.1971  ksfPDF = & h00000100

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the submit flag constants for CreateSubmitAction.
**Notes:** Submit the entire PDF file -> requires the full version of Adobe’s Acrobat.
**70.34.1972**  
ksfSubmCoords = & h00000010

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the submit flag constants for CreateSubmitAction.

**70.34.1973**  
ksfXML = & h00000024

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the submit flag constants for CreateSubmitAction.

**70.34.1974**  
ksmFamilyName = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for font selection modes.

**70.34.1975**  
ksmFullName = 2

MBS DynaPDF Plugin, Plugin Version: 11.3. **Function:** One of the DynaPDF constants for font selection modes.  
**Notes:** Full name.

**70.34.1976**  
ksmPostScriptName = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the DynaPDF constants for font selection modes.  
**Notes:**  
If font selection mode is set to smPostScriptName the font styles fsItalic or fsBold are ignored. The PostScriptName is already a unique font name incl. style information.

**70.34.1977**  
ksmtAlpha = 0

MBS DynaPDF Plugin, Plugin Version: 11.3. **Function:** One of the soft mask constants.  
**Notes:** Alpha mode.
**70.34.1978**  
\texttt{ksmtLuminosity} = 1

MBS DynaPDF Plugin, Plugin Version: 11.3. **Function:** One of the soft mask constants.  
**Notes:** Luminosity mode.

**70.34.1979**  
\texttt{kspcDefault} = 0

MBS DynaPDF Plugin, Plugin Version: 13.4. **Function:** One of the constants for ConvertEMFSpool.  
**Notes:** Default flags.

**70.34.1980**  
\texttt{kspcDontAddMargins} = 2

MBS DynaPDF Plugin, Plugin Version: 13.4. **Function:** One of the constants for ConvertEMFSpool.  
**Notes:** If set, the page format is calculated from the EMF files as is. The current page format is not used to calculate margins which are maybe required. Note that the parameters LeftMargin and TopMargin will still be considered.

**70.34.1981**  
\texttt{kspcFlushPages} = 8

MBS DynaPDF Plugin, Plugin Version: 13.4. **Function:** One of the constants for ConvertEMFSpool.  
**Notes:** If set, the function writes every finish page directly to the output file to reduce the memory usage. This flag is meaningful only if the PDF file is not created in memory. Note also that it is not possible to access already flushed pages again with EditPage().

**70.34.1982**  
\texttt{kspcIgnorePaperFormat} = 1

MBS DynaPDF Plugin, Plugin Version: 13.4. **Function:** One of the constants for ConvertEMFSpool.  
**Notes:** If set, the current page format is used as is for the entire spool file.

**70.34.1983**  
\texttt{kspcLoadSpoolFontsOnly} = 4

MBS DynaPDF Plugin, Plugin Version: 13.4. **Function:** One of the constants for ConvertEMFSpool.  
**Notes:** If set, only embedded fonts will be loaded. The EMF files must be converted with the flag \texttt{mIgnoreEmbFonts} in this case. This flag can be useful if you want to use your own code to convert the EMF files of the spool file.
70.34.1984  kspCross = 4
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the Standard Pattern Constants.

70.34.1985  kspDiaCross = 5
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the Standard Pattern Constants.

70.34.1986  kspHorizontal = 0
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the Standard Pattern Constants.

70.34.1987  kspLDiagonal = 3
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the Standard Pattern Constants.

70.34.1988  kspRDiagonal = 2
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the Standard Pattern Constants.

70.34.1989  kspVertical = 1
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the Standard Pattern Constants.

70.34.1990  kst3DHeight = 2
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the DynaPDF constants for a 3D scale type.

70.34.1991  kst3DMax = 4
MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the DynaPDF constants for a 3D scale type.
70.34.1992  \texttt{kst3DMin} = 3

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the DynaPDF constants for a 3D scale type.

70.34.1993  \texttt{kst3DValue} = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the DynaPDF constants for a 3D scale type.

70.34.1994  \texttt{kst3DWidth} = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the DynaPDF constants for a 3D scale type.

70.34.1995  \texttt{kstAxial} = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the shading type constants.

70.34.1996  \texttt{kstCoonsPatch} = 6

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the shading type constants.

70.34.1997  \texttt{kstFreeFormGouraud} = 4

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the shading type constants.

70.34.1998  \texttt{kstFunctionBased} = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the shading type constants.

70.34.1999  \texttt{kstLatticeFormGouraud} = 5

MBS DynaPDF Plugin, Plugin Version: 8.0. \textbf{Function:} One of the shading type constants.
70.34.  **CLASS DYNAPDFMBS**

70.34.2000  **kstRadial = 3**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the shading type constants.

70.34.2001  **kstTensorProduct = 7**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the shading type constants.

70.34.2002  **ktaCenter = 1**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for the text alignment.  
**Notes:** Center

70.34.2003  **ktaJustify = 3**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for the text alignment.  
**Notes:** Justify

70.34.2004  **ktaLeft = 0**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for the text alignment.  
**Notes:** Left

70.34.2005  **ktaRight = 2**

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for the text alignment.  
**Notes:** Right

70.34.2006  **ktefDefault = 0**

MBS DynaPDF Plugin, Plugin Version: 18.0. **Function:** One of the text extraction flags.  
**Notes:** Create text lines in the original order.
70.34.2007  ktefDeleteOverlappingText = 4

MBS DynaPDF Plugin, Plugin Version: 18.0. **Function:** One of the text extraction flags.  
**Notes:** Delete duplicate text records on same position.

70.34.2008  ktefSortTextX = 1

MBS DynaPDF Plugin, Plugin Version: 18.0. **Function:** One of the text extraction flags.  
**Notes:** Sort text records in x-direction.

70.34.2009  ktefSortTextXY = 3

MBS DynaPDF Plugin, Plugin Version: 18.0. **Function:** One of the text extraction flags.  
**Notes:** Sort text records in x and y-direction.

70.34.2010  ktefSortTextY = 2

MBS DynaPDF Plugin, Plugin Version: 18.0. **Function:** One of the text extraction flags.  
**Notes:** Sort text records in y-direction.

70.34.2011  ktoAnnots = 4

MBS DynaPDF Plugin, Plugin Version: 11.1. **Function:** One of the Tab Order constants.  
**Notes:** Annotation order ->PDF 1.7 Extension Level 3

70.34.2012  ktoColumn = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the Tab Order constants.  
**Notes:** Column.

70.34.2013  ktoFields = 5

MBS DynaPDF Plugin, Plugin Version: 11.1. **Function:** One of the Tab Order constants.  
**Notes:** Widget order (Form Fields) ->PDF 1.7 Extension Level 3.
70.34.2014  ktoNone = 3

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the Tab Order constants.

70.34.2015  ktoRow = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the Tab Order constants.  
**Notes:** Row.

70.34.2016  ktoStructure = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the constants for the tab order.  
**Notes:** Structure

70.34.2017  kTRANSP_3D_ANNOT = & h40000000

MBS DynaPDF Plugin, Plugin Version: 11.1. **Function:** One of the annotation flags.  
**Notes:**
This flag can be combined with the annotation handle in Set3DAnnotProps().
3D Annotations with a transparent background are supported since PDF 1.7, Extension Level 3

70.34.2018  kttConstSpacing = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the Tiling Type Constants.

70.34.2019  kttFastConstSpacing = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the Tiling Type Constants.

70.34.2020  kttNoDistortion = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the Tiling Type Constants.
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70.34.2021 kusbCursorHandClosed = & h00000020

MBS DynaPDF Plugin, Plugin Version: 11.3. **Function:** One of the scrollbar update constants.
**Notes:**
Occurs when the cursor leaves an action field and if the left mouse button is pressed.
The cursor constants are set by MouseMove. Since we have only one cursor there is never more than one constant set.

70.34.2022 kusbCursorHandNormal = & h00000010

MBS DynaPDF Plugin, Plugin Version: 11.3. **Function:** One of the scrollbar update constants.
**Notes:**
This is the default if the left mouse button is not pressed and if we are not over an action field.
The cursor constants are set by MouseMove. Since we have only one cursor there is never more than one constant set.

70.34.2023 kusbCursorHandPoint = & h00000040

MBS DynaPDF Plugin, Plugin Version: 11.3. **Function:** One of the scrollbar update constants.
**Notes:**
Occurs when we enter link or button field.
The cursor constants are set by MouseMove. Since we have only one cursor there is never more than one constant set.

70.34.2024 kusbCursorIBeam = & h00000080

MBS DynaPDF Plugin, Plugin Version: 11.3. **Function:** One of the scrollbar update constants.
**Notes:**
Occurs when we enter an action field that accepts text input.
The cursor constants are set by MouseMove. Since we have only one cursor there is never more than one constant set.

70.34.2025 kusbCursorMask = & h000000F0

MBS DynaPDF Plugin, Plugin Version: 11.3. **Function:** One of the scrollbar update constants.
**Notes:** Bitmask to mask out the cursor constants.
70.34.2026  kusbHorzRange = 4

MBS DynaPDF Plugin, Plugin Version: 11.3. **Function:** One of the scrollbar update constants.  
**Notes:** Update the horizontal scroll range.

70.34.2027  kusbHorzScrollPos = 8

MBS DynaPDF Plugin, Plugin Version: 11.3. **Function:** One of the scrollbar update constants.  
**Notes:** Update the horizontal scroll position.

70.34.2028  kusbNoUpdate = 0

MBS DynaPDF Plugin, Plugin Version: 11.3. **Function:** One of the scrollbar update constants.  
**Notes:** Nothing to do.

70.34.2029  kusbUpdateAll = & h0000000F

MBS DynaPDF Plugin, Plugin Version: 11.3. **Function:** One of the scrollbar update constants.  
**Notes:** Update both scroll ranges and the scroll positions.

70.34.2030  kusbVertRange = 1

MBS DynaPDF Plugin, Plugin Version: 11.3. **Function:** One of the scrollbar update constants.  
**Notes:** Update the vertical scroll range.

70.34.2031  kusbVertScrollPos = 2

MBS DynaPDF Plugin, Plugin Version: 11.3. **Function:** One of the scrollbar update constants.  
**Notes:** Update the vertical scroll position.

70.34.2032  kvpCenterWindow = & h00000010

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the viewer preference constants.
70.34.2033  kvpDirection = & h00000080

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the viewer preference constants.

70.34.2034  kvpDisplayDocTitle = & h00000020

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the viewer preference constants.

70.34.2035  kvpFitWindow = 8

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the viewer preference constants.

70.34.2036  kvpHideMenuBar = 2

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the viewer preference constants.

70.34.2037  kvpHideToolBar = 1

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the viewer preference constants.

70.34.2038  kvpHideWindowUI = 4

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the viewer preference constants.

70.34.2039  kvpNonFullScrPageMode = & h00000040

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the viewer preference constants.

70.34.2040  kvpPrintArea = & h000000400

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function:** One of the viewer preference constants.
70.34. CLASS DYNAPDFMBS

70.34.2041  kvpPrintClip = & h00000800

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the viewer preference constants.

70.34.2042  kvpUseNone = 0

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the viewer preference constants.

70.34.2043  kvpViewArea = & h00000100

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the viewer preference constants.

70.34.2044  kvpViewClip = & h00000200

MBS DynaPDF Plugin, Plugin Version: 8.0. **Function**: One of the viewer preference constants.
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70.34.2045 Screenshots

70.34.2046 DynaPDF1.jpg

Function: A PDF file created with the unregistered DynaPDF plugin.
Function: A PDF file created with the unregistered DynaPDF plugin showing an embedded picture and a blue triangle on top.
Function: A PDF file created with the unregistered DynaPDF plugin showing an embedded PDF.
70.35. **CLASS DYNAPDFMEASUREMBS**

70.35  class DynaPDFMeasureMBS

70.35.1  class DynaPDFMeasureMBS

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function**: The class for a measure dictionary. **Notes**: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.35.2  Methods

70.35.3  Angles as DynaPDFNumberFormatMBS()

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function**: Number format array to measure angles.

70.35.4  Area as DynaPDFNumberFormatMBS()

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function**: Number format array to measure areas.

70.35.5  Bounds as Single()

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function**: Array of numbers taken pairwise to describe the bounds for which geospatial transforms are valid.

70.35.6  Constructor

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function**: The private constructor.

70.35.7  Distance as DynaPDFNumberFormatMBS()

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function**: Number format array to measure distances.
70.35.8  GPTS as Single()

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Required, an array of numbers that shall be taken pairwise, defining points in geographic space as degrees of latitude and longitude, respectively.

70.35.9  LPTS as Single()

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Optional, an array of numbers that shall be taken pairwise to define points in a 2D unit square.

70.35.10  Slope as DynaPDFNumberFormatMBS()

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Number format array for measurement of the slope of a line.

70.35.11  X as DynaPDFNumberFormatMBS()

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Number format array for measurement of change along the x-axis and, if Y is not present, along the y-axis as well.

70.35.12  Y as DynaPDFNumberFormatMBS()

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Number format array for measurement of change along the y-axis.

70.35.13  Properties

70.35.14  AnglesCount as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Number of objects in the array.
Notes: (Read and Write property)
70.35. **CLASS DYNAPDFMEASUREMBS**

### 70.35.15 AreaCount as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Number of objects in the array.
**Notes:** (Read and Write property)

### 70.35.16 BoundCount as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Number of values in the array.
**Notes:**
- Should be a multiple of two.
  - (Read and Write property)

### 70.35.17 CXY as Single

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Optional, meaningful only when Y is present.
**Notes:** (Read and Write property)

### 70.35.18 DCS_EPSG as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Optional, either EPSG or WKT is set.
**Notes:** (Read and Write property)

### 70.35.19 DCS_IsSet as Boolean

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** If true, the DCS members are set.
**Notes:** (Read and Write property)

### 70.35.20 DCS_Projected as Boolean

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** If true, the DCS values contains a projected coordinate system.
70.35.21 DCS_WKT as String

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Optional ASCII string.
Notes: (Read and Write property)

70.35.22 DistanceCount as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Number of objects in the array.
Notes: (Read and Write property)

70.35.23 GCS_EPSG as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Optional, either EPSG or WKT is set.
Notes: (Read and Write property)

70.35.24 GCS_Projected as Boolean

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: If true, the GCS values contains a pojected coordinate system.
Notes: (Read and Write property)

70.35.25 GCS_WKT as String

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Optional ASCII string.
Notes: (Read and Write property)

70.35.26 GPTSCount as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Number of values in the array.
70.35. **CLASS DYNAPDFMEASUREMBS**

**Notes:** (Read and Write property)

---

### 70.35.27 IsRectilinear as Boolean

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** If true, the members of the rectilinear measure dictionary are set.  
**Notes:**  
The geospatial members otherwise.  
(Read and Write property)

---

### 70.35.28 LPTSCount as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Number of values in the array.  
**Notes:** (Read and Write property)

---

### 70.35.29 OriginX as Single

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Origin of the measurement coordinate system.  
**Notes:** (Read and Write property)

---

### 70.35.30 OriginY as Single

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Origin of the measurement coordinate system.  
**Notes:** (Read and Write property)

---

### 70.35.31 PDU1 as String

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Optional preferred linear display units.  
**Notes:** (Read and Write property)
70.35.32 PDU2 as String

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Optional preferred area display units.
**Notes:** (Read and Write property)

70.35.33 PDU3 as String

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Optional preferred angular display units.
**Notes:** (Read and Write property)

70.35.34 R as String

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** A text string expressing the scale ratio of the drawing.
**Notes:** (Read and Write property)

70.35.35 SlopeCount as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Number of objects in the array.
**Notes:** (Read and Write property)

70.35.36 XCount as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Number of objects in the array.
**Notes:** (Read and Write property)

70.35.37 YCount as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Number of objects in the array.
**Notes:** (Read and Write property)
70.36  class DynaPDFMovieActionMBS

70.36.1  class DynaPDFMovieActionMBS

Function: The class for a movie action.
Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

70.36.2  Methods

70.36.3  Constructor

Function: The private constructor.

70.36.4  FWPosition(index as Integer) as Single

Function: The position.
Notes: Index from 0 to 1.

70.36.5  FWScale(index as Integer) as Single

Function: The scaling.
Notes: Index from 0 to 1.

70.36.6  Properties

70.36.7  Annot as Integer

Function: Optional. The movie annotation handle identifying the movie that shall be played.
Notes:
Either Annot or Title should be set, but not both.
(Read only property)
70.36.8 Mode as String

Function: The mode.
Notes: (Read only property)

70.36.9 NextAction as Integer

Function: The handle to the next action.
Notes:
-1 or next action handle to be executed if any
(Read only property)

70.36.10 NextActionType as Integer

Function: The type of the next action.
Notes:
Only set if NextAction is >= 0.
(Read only property)

70.36.11 Operation as String

Function: The Operation.
Notes: (Read only property)

70.36.12 Rate as Single

Function: The playback rate.
Notes: (Read only property)
70.36. Class DynaPDFMovieActionMBS

70.36.13 ShowControls as Boolean

Function: Whether to show controls.
Notes: (Read only property)

70.36.14 Synchronous as Boolean

Function: Synchronous flag.
Notes: (Read only property)

70.36.15 Title as String

Function: The title of a movie annotation that shall be played.
Notes:
Either Annot or Title should be set, but not both.
(Read only property)

70.36.16 Volume as Single

Function: The volume.
Notes: (Read only property)
70.37  class DynaPDFNamedActionMBS

70.37.1  class DynaPDFNamedActionMBS

Function: The class for a named action.
Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.37.2  Methods

70.37.3  Constructor

Function: The private constructor.

70.37.4  Properties

70.37.5  Name as String

Function: The name of the action.
Notes:
Only set if Type = knaUserDefined.
(Read only property)

70.37.6  NewWindow as Integer

Function: Whether to show in a new window or not.
Notes:
-1 = viewer default, 0 = false, 1 = true.
(Read only property)
70.37. **CLASS DYNAPDFNAMEDACTIONMBS**

### 70.37.7 **NextAction as Integer**


**Function:** The handle to the next action.

**Notes:**

-1 or next action handle to be executed if any  
(Read only property)

### 70.37.8 **NextActionType as Integer**


**Function:** The type of the next action.

**Notes:**

Only set if NextAction is >= 0.  
(Read only property)

### 70.37.9 **Type as Integer**


**Function:** Known pre-defined actions.

**Notes:**

See kna* constants.  
(Read only property)
70.38.1 class DynaPDFNamedDestMBS

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 

Function: A class for the Named Destination.

70.38.2 Properties

70.38.3 DestFile as String


Function: The destination file.
Notes: (Read only property)

70.38.4 DestPage as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 

Function: The destination page.
Notes: (Read only property)

70.38.5 DestPos as DynaPDFRectMBS

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 

Function: The destination position.
Notes: (Read only property)

70.38.6 DestType as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 

Function: The destination type.
Notes: 
Values can be a kdt* constant.
(Read only property)
70.38. Name as String

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: The name of that destination.

Notes: This string is either Unicode or ANSI encoded. (Read only property)
70.39 class DynapdfNotInitializedExceptionMBS

70.39.1 class DynapdfNotInitializedExceptionMBS

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: An exception for the case a function is called and the library is not initialized.

Notes:
Should only happen on the unsupported platforms.
Subclass of the RuntimeException class.
70.40.  CLASS DYNAPDFNUMBERFORMATMBS

70.40  class DynaPDFNumberFormatMBS

70.40.1  class DynaPDFNumberFormatMBS

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
Function: The class for a number format.  
Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.40.2  Methods

70.40.3  Constructor

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
Function: The private constructor.

70.40.4  Properties

70.40.5  C as Single

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
Function: The conversion factor used to multiply a value in partial units.  
Notes: (Read and Write property)

70.40.6  D as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
Function: A positive integer that shall specify the precision or denominator of a fractional amount.  
Notes: (Read and Write property)

70.40.7  F as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
Function: The number format.  
Notes: 

    can be kmnfDecimal, kmnfFractional, kmnfRound or kmnfTruncate.  
(Read and Write property)
70.40.8  FD as Boolean

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** If true, a fractional value formatted according to the D entry may not have its denominator reduced or low-order zeros truncated.  
**Notes:** (Read and Write property)

70.40.9  O as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The label position.  
**Notes:**  
Can be kmlpSuffix or kmlpPrefix.  
(Read and Write property)

70.40.10  PS as String

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Text to be concatenated to the left of the label specified by U.  
**Notes:** (Read and Write property)

70.40.11  RD as String

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Text for the decimal position in displaying numerical values.  
**Notes:** (Read and Write property)

70.40.12  RT as String

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Text to be used between orders of thousands in display of numerical values.  
**Notes:** (Read and Write property)

70.40.13  SS as String

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Text that shall be concatenated after the label specified by U.
70.40.14 U as String

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Label, should be a universally recognized abbreviation. **Notes:** (Read and Write property)

70.40.15 Constants

70.40.16 kmlpPrefix = 1

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the label position constants. **Notes:** Prefix

70.40.17 kmlpSuffix = 0

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the label position constants. **Notes:** Suffix

70.40.18 kmnfDecimal = 0

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the number formats. **Notes:** Decimal

70.40.19 kmnfFractional = 1

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the number formats. **Notes:** Fractional

70.40.20 kmnfRound = 2

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the number formats. **Notes:** Round
70.40.21 \ kmnfTruncate = 3

MBS DynaPDF Plugin, Plugin Version: 15.0. \textbf{Function:} One of the number formats. \textbf{Notes:} Truncate
70.41. class DynaPDFObjActionsMBS

70.41.1. class DynaPDFObjActionsMBS

Function: The class for an object action.
Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.41.2. Methods

70.41.3. Constructor

Function: The private constructor.

70.41.4. Properties

70.41.5. Action as Integer

Function: The handle to the action.
Notes: -1 or action handle to be executed if any
(Read only property)

70.41.6. ActionType as Integer

Function: The type of the action.
Notes: Only set if Action is $\geq 0$.
(Read only property)
70.41.7 Events as DynaPDFObjEventMBS

Function: Additional events if any.
Notes: (Read only property)
70.42. **CLASS DYNAPDOBJEVENTMBS**

70.42   **class DynaPDFObjEventMBS**

70.42.1   **class DynaPDFObjEventMBS**

**Function:** The class with information about an object event.
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.42.2   **Methods**

70.42.3   **Constructor**

**Function:** The private constructor.

70.42.4   **Properties**

70.42.5   **Action as Integer**

**Function:** Action to be executed.
**Notes:** (Read only property)

70.42.6   **ActionType as Integer**

**Function:** The type of the action.
**Notes:**
See kat* constants.
(Read only property)

70.42.7   **NextObject as DynaPDFObjEventMBS**

**Function:** Pointer to the next event if any.
**Notes:** (Read only property)
70.42.8 ObjEvent as Integer


Function: The event when the action should be executed.

Notes:

See koe* constants.
(Read only property)
70.43. class DynaPDFOCGContUsageMBS

70.43.1 class DynaPDFOCGContUsageMBS

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The class for content usage properties of an optional layer.
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.43.2 Methods

70.43.3 Constructor

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The private constructor.

70.43.4 Properties

70.43.5 ExportState as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The export state.
**Notes:**
0 = Off, 1 = On, PDF_MAX_INT = not set (2147483647)
(Read and Write property)

70.43.6 InfoCreator as String

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The application that created the group.
**Notes:** (Read and Write property)

70.43.7 InfoSubtype as String

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** A name defining the type of content, e.g. Artwork, Technical etc.
**Notes:** (Read and Write property)
70.43.8  LangPreferred as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The preferred state if there is a partial but no exact match of the lang id.
**Notes:**
0 = Off, 1 = On, PDF_MAX_INT (2147483647) = not set.
(Read and Write property)

70.43.9  Language as String

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** A language code as described at DynaPDFMBS.SetLanguage.
**Notes:** (Read and Write property)

70.43.10  PageElement as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** If the group contains a pagination artefact.
**Notes:** (Read and Write property)

70.43.11  PrintState as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The print state.
**Notes:**
0 = Off, 1 = On, PDF_MAX_INT = not set (2147483647).
(Read and Write property)

70.43.12  PrintSubtype as String

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The type of content that is controlled by the OCG, e.g. Trapping, PrintersMarks or Watermark.
**Notes:** (Read and Write property)
70.43. **CLASS DYNAPDFOCGCONTUSAGEMBS**

### 70.43.13 UserNamesCount as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The user names can be accessed with GetOCGUsageUserName.  
**Notes:** (Read and Write property)

### 70.43.14 UserType as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The user for whom the OCG is primarily intended.  
**Notes:**  
Can be KutIndividual, KutOrganization, KutTitle or KutNotSet. (constants defined in DynaPDFMBS)  
(Read and Write property)

### 70.43.15 ViewState as Integer

**Function:** The view state.  
**Notes:**  
0 = Off, 1 = On, PDF_MAX_INT (2147483647) = not set  
(Read and Write property)

### 70.43.16 ZoomMax as Single

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Maximum zoom factor at which the OCG should be On.  
**Notes:**  
-1 = not set  
(Read and Write property)

### 70.43.17 ZoomMin as Single

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Minimum zoom factor at which the OCG should be On.  
**Notes:**  
-1 = not set  
(Read and Write property)
70.44. CLASS DYNAPDOCGMBS

70.44  class DynaPDFOCGMBS

70.44.1  class DynaPDFOCGMBS

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The class for details of OCG layers.
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.44.2  Methods

70.44.3  Constructor

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The private constructor.

70.44.4  Properties

70.44.5  AppEvents as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** If non-zero, the layer is included in one or more app events which control the layer state.
**Notes:** Only valid if HaveContUsage is true.
see TOCAppEvent constants: kaeExport, kaePrint and kaeView. (constants defined in DynaPDFMBS)
(Read and Write property)

70.44.6  Categories as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The Usage Categories which control the layer state.
**Notes:** Only valid if HaveContUsage is true.
See UsageCategory constants: koucNone, koucExport, koucLanguage, koucPrint, koucUser, koucView or koucZoom. (constants defined in DynaPDFMBS)
(Read and Write property)
70.44.7 Handle as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The internal object reference.  
**Notes:** (Read and Write property)

70.44.8 HaveContUsage as Boolean

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Whether the layer contains a Content Usage dictionary.  
**Notes:**  
see GetOCGContUsage function.  
(Read and Write property)

70.44.9 Intent as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The intent.  
**Notes:**  
See intent enumeration. Can be koiDesign, koiView, koiAll or koiEmpty. (constants defined in DynaPDFMBS)  
(Read and Write property)

70.44.10 IsAll as Boolean

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** An accessor for intent state koiAll.  
**Notes:** (Read only property)

70.44.11 IsDesign as Boolean

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** An accessor for intent state koiDesign.  
**Notes:** (Read only property)
70.44. **CLASS DYNAPDFOCGMBS**

### 70.44.12 IsEmpty as Boolean

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** An accessor for intent state koiEmpty.  
**Notes:** (Read only property)

### 70.44.13 IsView as Boolean

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** An accessor for intent state koiView.  
**Notes:** (Read only property)

### 70.44.14 IsVisible as Boolean

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** An accessor for intent state koiVisible.  
**Notes:** (Read only property)

### 70.44.15 Name as String

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The layer name.  
**Notes:** (Read and Write property)
70.45  class DynaPDFOCLayerConfigMBS

70.45.1  class DynaPDFOCLayerConfigMBS

**Function:** The class for an optional content layer configuration.
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.45.2  Methods

70.45.3  Constructor

**Function:** The private constructor.

70.45.4  Properties

70.45.5  Intent as Integer

**Function:** The object intent.
**Notes:**
Possible values koiDesign, koiView, or koiAll.
(Read only property)

70.45.6  IsDefault as Boolean

**Function:** If true, this is the default configuration.
**Notes:** (Read only property)

70.45.7  Name as String

**Function:** Optional configuration name.
**Notes:** (Read only property)
70.45.8 NameLen as Integer


**Function:** Length in characters.

**Notes:** (Read only property)
70.46  class DynaPDFOCUINodeMBS

70.46.1  class DynaPDFOCUINodeMBS

Function: The class for an optional content user interface node.
Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.46.2  Methods

70.46.3  Constructor

Function: The private constructor.

70.46.4  Properties

70.46.5  Label as String

Function: Optional label.
Notes: (Read only property)

70.46.6  LabelLength as Integer

Function: Label Length in characters.
Notes: (Read only property)

70.46.7  NewNode as Boolean

Function: If true, a new child node must be created.
Notes: (Read only property)
**70.46.8 NextChild as Integer**

**Function:** If set, the next child node that must be loaded.  
**Notes:** (Read only property)

**70.46.9 NextItem as Integer**

**Function:** The next item handle in the list.  
**Notes:** (Read only property)

**70.46.10 OCG as Integer**

**Function:** Optional OCG handle.  
**Notes:**  
-1 if not set. See GetOCG method.  
(Read only property)
70.47 class DynaPDFOptimizeParamsMBS

70.47.1 class DynaPDFOptimizeParamsMBS

Function: The class for optimize parameters.

70.47.2 Methods

70.47.3 Constructor

Function: The constructor.

70.47.4 Properties

70.47.5 Filter1Bit as Integer

Function: Filter for black & white images.
Notes:
See kcf* constants. Default is kcfJPEG.
(Read and Write property)

70.47.6 FilterColor as Integer

Function: Filter for multi-channel images.
Notes:
See kcf* constants. Default is kcfJPEG.
(Read and Write property)

70.47.7 FilterGray as Integer

Function: The filter for gray image compression.
Notes:
See kcf* constants. Default is kcfJPEG.
(Read and Write property)

### 70.47.8 JP2KQuality as Integer

**Function:** The JPEG 2000 quality.  
**Notes:**  
Default is 80.  
(Read and Write property)

### 70.47.9 JPEGQuality as Integer

**Function:** The JPEG quality.  
**Notes:**  
Default is 80.  
(Read and Write property)

### 70.47.10 Min1BitRes as Integer

**Function:** Minimum resolution before scaling for one bit images.  
**Notes:**  
Default is 100.  
Can be zero to disable.  
(Read and Write property)

### 70.47.11 MinColorRes as Integer

**Function:** Minimum resolution before scaling for color images.  
**Notes:**  
Default is 100.  
Can be zero to disable.  
(Read and Write property)
70.47.12 MinGrayRes as Integer

Function: Minimum resolution before scaling for gray images.
Notes:
Default is 100 dpi.
Can be zero to disable.
(Read and Write property)

70.47.13 MinLineWidth as Single

Function: Minimum line width for lines.
Notes:
Zero means no hair line removal.
(Read and Write property)

70.47.14 Res1BitImages as Integer

Function: Resolution for 1 bit black & white images.
Notes:
Default is 150.
Can be zero to disable.
(Read and Write property)

70.47.15 ResColorImages as Integer

Function: Resolution for images with more than one color channel.
Notes:
Default is 150.
Can be zero to disable.
(Read and Write property)
70.47.16 ResGrayImages as Integer


Function: Resolution for Gray images.

Notes:

Default is 150.
Can be zero to disable.
(Read and Write property)
70.48 class DynaPDFOutputIntentMBS

70.48.1 class DynaPDFOutputIntentMBS

**Function:** The class for details on an output intent.
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.48.2 Methods

70.48.3 Constructor

**Function:** Private constructor.

70.48.4 Properties

70.48.5 Buffer as String

**Function:** ICC profile buffer (optional)
**Notes:** (Read and Write property)

70.48.6 BufferSize as Integer

**Function:** Buffer size in bytes.
**Notes:** (Read and Write property)

70.48.7 Info as String

**Function:** Info string or name of the ICC profile.
**Notes:** (Read and Write property)
70.48.8 NumComponents as Integer

Function: Number of components.
Notes: (Read and Write property)

70.48.9 OutputCondition as String

Function: Description of the output device.
Notes: (Read and Write property)

70.48.10 OutputConditionID as String

Function: Description of the output device.
Notes: (Read and Write property)

70.48.11 RegistryName as String

Function: The registry in which OutputConditionID is defined.
Notes: (Read and Write property)

70.48.12 SubType as String

Function: The sub type.
Notes:
GTS_PDFX, GTS_PDFA1, or ISO_PDFE1
(Read and Write property)
70.49 class DynapdfPageLabelMBS

70.49.1 class DynapdfPageLabelMBS

Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.49.2 Methods

70.49.3 Constructor


70.49.4 Properties

70.49.5 FirstPageNum as Integer

Notes:
Subsequent pages are numbered sequentially from this value.
(Read only property)

70.49.6 Format as Integer

Notes: (Read only property)

70.49.7 Prefix as String

Notes:
This string is either an unicode encoded string or an ASCII encoded string.
(Read only property)

70.49.8 PrefixLen as Integer

Notes: (Read only property)

70.49.9 PrefixUni as Boolean

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Whether the prefix is in unicode.
Notes: (Read only property)

70.49.10 StartRange as Integer

Notes: (Read only property)
70.50  class DynaPDFPageMBS

70.50.1  class DynaPDFPageMBS

Function: The class for a DynaPDF page.
Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.50.2  Methods

70.50.3  BBox(type as Integer) as DynaPDFRectMBS

Function: Returns the requested bounding box.
Notes: use the constants kpbArtBox, kpbBleedBox, kpbCropBox, kpbMediaBox or kpbTrimBox.
If orientation gives you 90, 270, -90 or -270, you may want to swap width and height of the rectangle.

70.50.4  CalcPagePixelSize(DefScale as UInt32, Scale as single, FrameWidth as UInt32, FrameHeight as UInt32, Flags as UInt32, byref Width as UInt32, byref Height as UInt32)

Function: The function calculates the image size of a page exactly in the way as RenderPage() does, if called with the same parameters.
Example:

// your PDF environment
dim pdf as new DynaPDFMBS

// some PDF
dim file as FolderItem = SpecialFolder.Desktop.Child(“test.pdf”)

call pdf.CreateNewPDF(nil)

// We import all pages
call pdf.SetImportFlags(pdf.kifImportAsPage)
call pdf.OpenImportFile(file, 0, ””)
call pdf.ImportPDFFile(1,1.0,1.0)
// get first page
Dim p As DynaPDFPageMBS = pdf.GetPage(1)

// and calculate how big it would be:
Dim PageWidth, PageHeight As UInt32

Dim DefScale As UInt32 = DynaPDFMBS.kpsFitBest
Dim Scale As Single = 1.0
Dim Flags As Uint32 = DynaPDFRasterImageMBS.krfDefault

p.CalcPagePixelSize(DefScale, Scale, window1.Width, window1.Height, Flags, PageWidth, PageHeight)

MsgBox "PageWidth: " + Str(PageWidth) + vbCrLf + "PageHeight: " + Str(PageHeight)

Notes:
This makes it possible to create the image in the required size so that it can be rendered without a border.

70.50.5 Constructor

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The private constructor.

70.50.6 GetWidthHeight(Flags as UInt32, byref Width as Single, byref Height as Single, Rotate as Integer = 0) as DynaPDFRectMBS

Function: Calculates page width and height.

70.50.7 Orientation as Integer

Function: Returns the page orientation.

70.50.8 SetBBox(type as integer, BBox as DynaPDFRectMBS) as Boolean

Function: Sets or changes the bounding box of a page.
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Notes:
This function is intended to be fast as possible. It requires no open page like DynaPDFMBS.SetBBox(), it
does not change the default media or crop box, and it does not adjust the current coordinate system if the
media box will be changed.

The function is useful if only one or more bounding boxes must be changed, without editing a page, or
when a specific area of a page should be rendered. In the latter case change the crop box and restore it to
the previous value when finish.
To delete a bounding box set the bounding box to 0, 0, 0, 0. The parameter BBox is required to be present,
it cannot be nil.

If the function succeeds the return value is true. If the function fails the return value is false.

70.50.9 Properties

70.50.10 Handle as Integer

Function: The internal object reference.
Notes: (Read only property)

70.50.11 Page as Integer

Function: The original page number used to query this page.
Notes: (Read only property)

70.50.12 PDF as DynaPDFMBS

Function: The reference back to parent dynaPDF object.
Notes: (Read only property)
70.50. **CLASS DYNAPDFPAGEMBS**

### 70.50.13 Constants

#### 70.50.14 kpbArtBox = 0

MBS DynaPDF Plugin, Plugin Version: 11.1. **Function:** One of the PDF box constants. **Notes:** Art box.

#### 70.50.15 kpbBleedBox = 1

MBS DynaPDF Plugin, Plugin Version: 11.1. **Function:** One of the PDF box constants. **Notes:** Bleed box.

#### 70.50.16 kpbCropBox = 2

MBS DynaPDF Plugin, Plugin Version: 11.1. **Function:** One of the PDF box constants. **Notes:** Crop Box.

#### 70.50.17 kpbMediaBox = 4

MBS DynaPDF Plugin, Plugin Version: 11.1. **Function:** One of the PDF box constants. **Notes:** Media Box.

#### 70.50.18 kpbTrimBox = 3

MBS DynaPDF Plugin, Plugin Version: 11.1. **Function:** One of the PDF box constants. **Notes:** Trim Box.
70.51  class DynaPDFPageStatisticMBS

70.51.1  class DynaPDFPageStatisticMBS

Function: A class for page statistics.
Notes:
You could count yourself with DynaPDFParseInterfaceMBS class and using the events.
This is just a convenience way to learn about whether for example there is an image on the page.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.51.2  Methods

70.51.3  Constructor

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The private constructor.

70.51.4  Properties

70.51.5  BezierCount as Integer

Function: The number of bezier curves.
Notes: (Read and Write property)

70.51.6  ClipPathCount as Integer

Function: The number of path clippings.
Notes: (Read and Write property)

70.51.7  ClosePathCount as Integer

Function: The number of paths closed.
Notes: (Read and Write property)
70.51. **CLASS DYNAPDFPAGESTATISTICMBS**

70.51.8 **DrawShadingCount as Integer**


**Function:** The number of shading drawings.
**Notes:** (Read and Write property)

70.51.9 **FontCount as Integer**


**Function:** The number of fonts used.
**Notes:** (Read and Write property)

70.51.10 **ImageCount as Integer**


**Function:** The number of images used.
**Notes:** (Read and Write property)

70.51.11 **LayerCount as Integer**


**Function:** The number of layers used.
**Notes:** (Read and Write property)

70.51.12 **LineCount as Integer**


**Function:** The number of lines.
**Notes:** (Read and Write property)

70.51.13 **PatternCount as Integer**


**Function:** The number of patterns used.
**Notes:** (Read and Write property)
70.51.14 RectangleCount as Integer

Function: The number of rectangles.
Notes: (Read and Write property)

70.51.15 TemplateCount as Integer

Function: The number of templates.
Notes: (Read and Write property)

70.51.16 TextCount as Integer

Function: The number of text fragments.
Notes: (Read and Write property)

70.51.17 TextLength as Integer

Function: The length in characters of the text on the page.
Notes: (Read and Write property)
70.52. **CLASS DYNAPDFPARSEINTERFACEMBS**

70.52** class DynaPDFParseInterfaceMBS**

70.52.1 **class DynaPDFParseInterfaceMBS**

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class for parsing pdf content. **Notes:** You need to implement the BeginTemplate event in order to get events for images, vector graphics and text on the templates used on the page.

70.52.2 **Events**

70.52.3 **ApplyPattern(ObjectPtr as Integer, Type as Integer, PatternPtr as Integer) as Integer**

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the parser events. **Notes:**

Type is one of the following constants:

- kptColored = 0
- kptUnColored = 1
- kptShadingPattern = 2

70.52.4 **BeginLayer(OCHandle as Integer, InVisible as boolean) as Integer**

MBS DynaPDF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Called when the PDF parser found a begin layer command. **Notes:**

The plugin will process the OCG object for you. So if handle is -1, there is no layer handle. If it is >= 0, you have a handle. If it is <0, something failed.

70.52.5 **BeginPattern(ObjectPtr as Integer, Fill as Boolean, PatternType as Integer, BBox as DynaPDFRectMBS, Matrix as DynapdfMatrixMBS, XStep as Double, YStep as Double) as Integer**

MBS DynaPDF Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the parser events. **Notes:**
PatternType is one of the following constants:

- `kptColored` = 0
- `kptUnColored` = 1
- `kptShadingPattern` = 2

### 70.52.6 BeginTemplate(ObjectPtr as Integer, Handle as Integer, BBox as DynaPDFRectMBS, Matrix as DynapdfMatrixMBS) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the parser events. **Notes:** You need to implement this event in order to get text, images and vector graphics from inside templates.

### 70.52.7 BezierTo1(ObjectPtr as Integer, x1 as Double, y1 as Double, x3 as Double, y3 as Double) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the parser events.

### 70.52.8 BezierTo2(ObjectPtr as Integer, x2 as Double, y2 as Double, x3 as Double, y3 as Double) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the parser events.

### 70.52.9 BezierTo3(ObjectPtr as Integer, x1 as Double, y1 as Double, x2 as Double, y2 as Double, x3 as Double, y3 as Double) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the parser events.
70.52.10  ClipPath(ObjectPtr as Integer, EvenOdd as boolean, Mode as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the parser events.
**Notes:** For the Mode parameter, the kfm* constants are used.

70.52.11  ClosePath(ObjectPtr as Integer, Mode as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the parser events.
**Notes:** For the Mode parameter, the kfm* constants are used.

70.52.12  DrawShading(ObjectPtr as Integer, Type as Integer, Shading as Integer) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the parser events.
**Notes:**
For the type parameter you use the kst* constants.

70.52.13  EndLayer(OCHandle as Integer, InVisible as boolean)

MBS DynaPDF Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Called when the PDF parser found an end layer command.

70.52.14  EndPattern

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the parser events.

70.52.15  EndTemplate

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the parser events.
70.52.16 InsertImage(image as DynaPDFImageMBS) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: One of the parser events.
Notes: You can return zero on success or 1 to stop processing.

70.52.17 LineTo(ObjectPtr as Integer, x as Double, y as Double) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: One of the parser events.

70.52.18 MoveTo(ObjectPtr as Integer, x as Double, y as Double) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: One of the parser events.

70.52.19 MulMatrix(ObjectPtr as Integer, matrix as DynapdfMatrixMBS)

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: A matrix multiplication was found.

70.52.20 Rectangle(ObjectPtr as Integer, x as Double, y as Double, w as Double, h as Double) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: The parser found a rectangle.

70.52.21 RestoreGraphicState as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: One of the parser events.

70.52.22 SaveGraphicState as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: One of the parser events.
70.52.23  SetCharSpacing(ObjectPtr as Integer, Value as Double)

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the parser events.

70.52.24  SetExtGState(ObjectPtr as Integer, GS as DynapdfExtGState2MBS)

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the parser events.

70.52.25  SetFillColor(ObjectPtr as Integer, NumComps as Integer, Color1 as Double, Color2 as Double, Color3 as Double, Color4 as Double, Colors() as Double, ColorspaceType as Integer, ColorSpace as DynaPDF-ColorSpaceMBS)

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the parser events. **Notes:**

Colors array contains NumComps color values. First four values are provided directly with Color1, Color2, Color3 and Color4 parameters.

ColorSpaceType uses the kes* constants.

You can use ConvColor to convert colors to RGB or CMYK if needed.

70.52.26  SetFont(ObjectPtr as Integer, fontType as Integer, Embedded as boolean, FontName as string, Style as Integer, FontSize as Double, FontHandle as Integer, FontInfo as DynaPDFFontInfoMBS)

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the parser events.

70.52.27  SetLeading(ObjectPtr as Integer, Value as Double)

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the parser events.
70.52.28 **SetLineCapStyle(ObjectPtr as Integer, Style as Integer)**

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function**: One of the parser events.

70.52.29 **SetLineDashPattern(ObjectPtr as Integer, dash as memoryblock, NumValues as Integer, Phase as Integer)**

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function**: One of the parser events.

70.52.30 **SetLineJoinStyle(ObjectPtr as Integer, Style as Integer)**

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function**: One of the parser events.

70.52.31 **SetLineWidth(ObjectPtr as Integer, Value as Double)**

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function**: One of the parser events.

70.52.32 **SetMiterLimit(ObjectPtr as Integer, Value as Double)**

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function**: One of the parser events.

70.52.33 **SetStrokeColor(ObjectPtr as Integer, NumComps as Integer, Color1 as Double, Color2 as Double, Color3 as Double, Color4 as Double, Colors() as Double, ColorspaceType as Integer, ColorSpace as DynaPDFColorSpaceMBS)**

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function**: One of the parser events.

**Notes:**
Colors array contains NumComps color values. First four values are provided directly with Color1, Color2, Color3 and Color4 parameters.
ColorSpaceType uses the kes* constants.
You can use ConvColor to convert colors to RGB or CMYK if needed.

70.52.34  SetTextDrawMode(ObjectPtr as Integer, Mode as Integer)

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the parser events.

70.52.35  SetTextScale(ObjectPtr as Integer, Value as Double)

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the parser events.

70.52.36  SetWordSpacing(ObjectPtr as Integer, Value as Double)

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the parser events.

70.52.37  ShowTextArrayA(ObjectPtr as Integer, Matrix as DynapdfMatrixMBS, Kerning() as DynapdfTextRecordAMBS, Count as Integer, Width as Double) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the parser events.

70.52.38  ShowTextArrayW(Source() as DynapdfTextRecordAMBS, Matrix as DynapdfMatrixMBS, Kerning() as DynapdfTextRecordWMBS, Count as Integer, Width as Double, Decoded as boolean) as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the parser events.
70.53 class DynaPDFPointDataDictionaryMBS

70.53.1 class DynaPDFPointDataDictionaryMBS

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The class for a dictionary with point data.
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.53.2 Methods

70.53.3 Arrays as DynaPDFPointDataMBS()

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The array of entries in the point data dictionary.

70.53.4 Constructor

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The private constructor.

70.53.5 Properties

70.53.6 Count as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Number of point data arrays  
**Notes:** (Read and Write property)

70.53.7 Subtype as String

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The sub type for the point data.  
**Notes:**  
Should be Cloud.  
(Read and Write property)
70.54 class DynaPDFPointDataMBS

70.54.1 class DynaPDFPointDataMBS

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The data class for point data dictionary entries.
Notes:
A point data dictionary specifies points in 2D space for geospatial measures. The parameter DataType specifies the type of points, such as LAT for latitude in degrees, LON for longitude in degrees, or ALT for altitude in metres.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.54.2 Methods

70.54.3 Constructor

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The private constructor.

70.54.4 values as Single()

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Array with values.

70.54.5 Properties

70.54.6 DataType as String

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Data type as string.
Notes:
Specifies the type of points, such as LAT for latitude in degrees, LON for longitude in degrees, or ALT for altitude in metres.
(Read and Write property)
70.54.7 Index as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The index in the dictionary.
**Notes:** (Read and Write property)

70.54.8 ValCount as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Number of values in the array.
**Notes:** (Read and Write property)
70.55. **CLASS DYNAPDFPOINTMBS**

70.55  **class DynapdfPointMBS**

70.55.1  **class DynapdfPointMBS**

**Function:** The class for a point.

70.55.2  **Methods**

70.55.3  **Constructor**(x as Double = 0.0, y as Double = 0.0)

**Function:** The constructor.

70.55.4  **Properties**

70.55.5  **X as Double**

**Function:** The X value.
**Notes:** (Read and Write property)

70.55.6  **Y as Double**

**Function:** The Y value.
**Notes:** (Read and Write property)
70.56 class DynaPDFPrintParamsMBS

70.56.1 class DynaPDFPrintParamsMBS


Function: The class for additional print parameters.

70.56.2 Properties

70.56.3 Compress as Boolean


Function: Whether to compress images sent to printer.

Notes: Meaningful only for image output. If true, compressed images are send to the printer.
(Read and Write property)

70.56.4 FilterColor as Integer


Function: Compression filter to use for color images.

Notes: Meaningful only for image output. Supported filters on Windows: kcfFlate and kcfJPEG.
(Read and Write property)

70.56.5 FilterGray as Integer


Function: Compression filter to use for grayscale images.

Notes: Meaningful only for image output. Supported filters on Windows: kcfFlate and kcfJPEG.
(Read and Write property)

70.56.6 IgnoreDCSize as Boolean


Function: If true, PageSize is used to calculate the output format.
70.56. CLASS DYNAPDFPRINTPARAMSMB

Notes: (Read and Write property)

70.56.7 JPEGQuality as Integer

Function: JPEG Quality in percent (1..100).
Notes:
Zero means Default, which is 60%.
(Read and Write property)

70.56.8 MaxRes as Integer

Function: Maximum print resolution.
Notes:
Zero means Default, which is 600 DPI.
(Read and Write property)

70.56.9 PageSize as DynaPDFRectMBS

Function: The page size to use.
Notes:
Considered only, if IgnoreDCSize is set to true.
(Read and Write property)
70.57 class DynapdfPrintSettingsMBS

70.57.1 class DynapdfPrintSettingsMBS

Notes: This requires PDF 1.7.

70.57.2 Methods

70.57.3 PrintRanges(index as Integer) as Integer

Notes: If set, the array contains PrintRangesCount * 2 values. Each pair consists of the first and last pages in the sub-range. The first page in the PDF file is denoted by 0.

70.57.4 Properties

70.57.5 DuplexMode as Integer

Notes:
Use the kdpm* constants.
(Read only property)

70.57.6 NumCopies as Integer

Notes:
-1 means not set. Values larger than 5 are ignored in viewer applications.
(Read only property)
70.57.7 PickTrayByPDFSize as Integer

Function: The setting for picking the tray by the PDF size.
Notes: 
-1 means not set. 0 = false, 1 = true.
(Read only property)

70.57.8 PrintRangesCount as Integer

Notes: (Read only property)

70.57.9 PrintScaling as Integer

Function: The print scaling setting.
Notes: 
kdpmsNone means not set.
(Read only property)
70.58 class DynaPDFRasterImageMBS

70.58.1 class DynaPDFRasterImageMBS


**Function:** The class for advanced rendering options.

**Example:**

```plaintext
dim pdf as new DynaPDFMBS // make subclass to catch error event

dim f as FolderItem = SpecialFolder.Desktop.Child("dynapdf_help.pdf")

// create PDF
call pdf.CreateNewPDF(nil)

// set import flags
call pdf.SetImportFlags(pdf.kifImportAll + pdf.kifImportAsPage)

// open import file
call pdf.OpenImportFile(f, 0, ",")

// import all pdf pages
call pdf.ImportPDFFile(1, 1.0, 1.0)

dim PageCount as Integer = pdf.GetPageCount

// create rasterizer.
dim r as new DynaPDFRasterizerMBS(pdf, 1000,1000)

// create options
dim o as new DynaPDFRasterImageMBS

// fill white
o.InitWhite = true

// scale to fit
o.DefScale = o.kpsFitBest

// rotate
o.Flags = o.krfRotate90

// render all pages
for i as Integer = 1 to PageCount

dim p as DynaPDFPageMBS = pdf.GetPage(i)
if r.RenderPage(p, o) then

// save to disc
dim outfile as FolderItem = SpecialFolder.Desktop.Child("page " + Format(i,"0") + ".jpg")
call outfile.SaveAsJPEGMBS(r.Pic, 75)
```
Notes: This class is named RasterImage due to the name in the underlying DynaPDF library. A better name would be RasterizerOptions as it includes options for the rasterizer engine.

### 70.58.2 Properties

#### 70.58.3 ClipRect as DynaPDFRectMBS


**Function:** Optional clipping rectangle defined in device coordinates (Pixels)

**Notes:** (Read and Write property)

#### 70.58.4 DefScale as Integer


**Function:** Specifies how the page should be scaled into the image buffer.

**Notes:**

can be kpsFitBest, kpsFitHeight or kpsFitWidth.

(Read and Write property)

#### 70.58.5 DrawFrameRect as Boolean


**Function:** If true, the area outside the page’s bounding box is filled with the frame color.

**Notes:**

InitWhite can still be used, with or without a clipping rectangle.

(Read and Write property)

#### 70.58.6 Flags as Integer


**Function:** Flags for the raster operation.

**Notes:**
This is a bit mask. Flags can be combined with a binary or operator.
Use a combination of krf* constants.
(Read and Write property)

### 70.58.7 FrameColor as Integer

**Function:** The color for drawing the frame.
**Notes:**
Must be defined in the color space of the pixel format but in the natural component order, e.g. RGB.
(Read and Write property)

### 70.58.8 InitWhite as Boolean

**Function:** Whether to clear the buffer first.
**Notes:**
If true, the buffer is initialized with white color (default).
Must be set to false if you want to raster the page over an existing image.

When a clipping rectangle is set, only the area inside the clipping rectangle is initialized to white.
(Read and Write property)

### 70.58.9 Matrix as DynapdfMatrixMBS

**Function:** Optional transformation matrix.
**Notes:**
The matrix can be used to zoom into the page or to move the picture to a specific area in the image buffer.
(Read and Write property)

### 70.58.10 NumAnnots as Integer

**Function:** Number of rendered form annotations (excluding invisible annotation but annotations with no appearance are included)
70.58.11 NumBezierCurves as Integer


**Function:** Number of bezier curves which where rendered. Glyph outlines are not taken into account.

**Notes:** (Read and Write property)

70.58.12 NumClipPaths as Integer


**Function:** Number of clipping paths used in the page. Should be small as possible!

**Notes:** (Read and Write property)

70.58.13 NumFormFields as Integer


**Function:** Number of rendered form fields (excluding invisible fields but fields with no appearance are included)

**Notes:** (Read and Write property)

70.58.14 NumGlyphs as Integer


**Function:** When the number of glyphs equals NumTextRecords then there is probably some room for optimization...

**Notes:** (Read and Write property)

70.58.15 NumImages as Integer


**Function:** Number of images that were rendered.

**Notes:** (Read and Write property)
70.58.16  **NumLineTo as Integer**

**Function:** Number of LineTo operators.
**Notes:** (Read and Write property)

70.58.17  **NumPaths as Integer**

**Function:** Number of paths which were processed.
**Notes:** (Read and Write property)

70.58.18  **NumPatterns as Integer**

**Function:** Number of pattern which were processed.
**Notes:** (Read and Write property)

70.58.19  **NumRectangles as Integer**

**Function:** Number of rectangle operators.
**Notes:** (Read and Write property)

70.58.20  **NumRestoreGState as Integer**

**Function:** Should be equal to NumSaveGraphicStates.
**Notes:** (Read and Write property)

70.58.21  **NumSaveGState as Integer**

**Function:** The number of save graphics state operators.
**Notes:** (Read and Write property)
70.58. **CLASS DYNAPDFRASTERIMAGEMBS**

### 70.58.22 NumShadings as Integer

- **MBS DynaPDF Plugin**, **Plugin Version**: 11.2, **Console & Web**: Yes, **Mac**: Yes, **Win**: Yes, **Linux**: Yes.  
  **Function**: Number of shadings.  
  **Notes**: (Read and Write property)

### 70.58.23 NumSoftMasks as Integer

- **MBS DynaPDF Plugin**, **Plugin Version**: 11.1, **Console & Web**: Yes, **Mac**: Yes, **Win**: Yes, **Linux**: Yes.  
  **Function**: Number of soft masks that were processed.  
  **Notes**:  
  Alpha channels of images are not taken into account.  
  (Read and Write property)

### 70.58.24 NumTextRecords as Integer

- **MBS DynaPDF Plugin**, **Plugin Version**: 11.1, **Console & Web**: Yes, **Mac**: Yes, **Win**: Yes, **Linux**: Yes.  
  **Function**: Number of independent text records which were rendered.  
  **Notes**: (Read and Write property)

### 70.58.25 PageSpace as DynapdfMatrixMBS

- **MBS DynaPDF Plugin**, **Plugin Version**: 11.1, **Console & Web**: Yes, **Mac**: Yes, **Win**: Yes, **Linux**: Yes.  
  **Function**: The matrix represents the mapping from page space to device space.  
  **Notes**:  
  Output parameter.  
  This matrix is required when further objects should be drawn on the page, e.g. the bounding boxes.  
  (Read and Write property)

### 70.58.26 UpdateOnImageCoverage as Single

- **MBS DynaPDF Plugin**, **Plugin Version**: 11.1, **Console & Web**: Yes, **Mac**: Yes, **Win**: Yes, **Linux**: Yes.  
  **Function**: DynaPDF multiplies the output image area with this factor to determine when the window should be updated.  
  **Notes**:  
  The factor should be around 0.5 through 5.0. Larger values cause less frequently update events.  
  (Read and Write property)
70.58.27 UpdateOnPathCount as Integer

Function: Call OnUpdateWindow event when the UpdateOnPathCount limit was reached.
Notes:
Clipping paths increment the number too.
Only full paths are considered, independent of the number of vertices they contain. The value should be
larger than 50 and smaller than 10000.
(Read and Write property)

70.58.28 Yield as Boolean

Function: Whether to yield time to other threads.
Notes:
Set to true if you render page in a thread, so time is given to other threads.
(Read and Write property)

70.58.29 Events

70.58.30 UpdateWindow(r as DynaPDFRectMBS, pic as Variant) as Integer

Function: This event is called regularly so you can update your GUI.
Notes:
Please set UpdateOnPathCount and UpdateOnImageCoverage to use this event.
If you draw to a picture, the picture is passed as parameter for your convenience.
Pic is a variant so the plugin compiles in older Real Studio versions for console targets.

Returns -1 to stop the processing.

70.58.31 Constants

70.58.32 kpsFitBest = 2

MBS DynaPDF Plugin, Plugin Version: 11.1. Function: One of the constants to specify how the page
should be scaled into the image buffer.
70.58. CLASS DYNAPDFRASTERIMAGEMBS

Notes: Scale the page so that it fits fully into the image buffer.

70.58.33  kpsFitHeight = 1

MBS DynaPDF Plugin, Plugin Version: 11.1. Function: One of the constants to specify how the page should be scaled into the image buffer. Notes: Scale the page to the height of the image buffer.

70.58.34  kpsFitWidth = 0

MBS DynaPDF Plugin, Plugin Version: 11.1. Function: One of the constants to specify how the page should be scaled into the image buffer. Notes: Scale the page to the width of the image buffer.

70.58.35  krfClipToArtBox = 4

MBS DynaPDF Plugin, Plugin Version: 11.1. Function: One of the raster flag constants. Notes: Clip the page to the art box if any.

Only one of these clip flags must be set at time!

70.58.36  krfClipToBleedBox = 8

MBS DynaPDF Plugin, Plugin Version: 11.1. Function: One of the raster flag constants. Notes: Clip the page to the bleed box if any.

Only one of these clip flags must be set at time!

70.58.37  krfClipToTrimBox = &h00000010

MBS DynaPDF Plugin, Plugin Version: 11.1. Function: One of the raster flag constants. Notes:
Clip the page to the bleed box if any.

Only one of these clip flags must be set at time!

**70.58.38  krfCompositeWhite = & h00001000**

MBS DynaPDF Plugin, Plugin Version: 13.1. **Function:** One of the raster flag constants. **Notes:** Composite pixel formats with an alpha channel finally with a white background. The alpha channel is 255 everywhere after composition. This flag is mainly provided for debug purposes but it can also be useful if the image must be copied on screen with a function that doesn’t support alpha blending.

**70.58.39  krfDefault = 0**

MBS DynaPDF Plugin, Plugin Version: 11.1. **Function:** One of the raster flag constants. **Notes:** Render the page as usual

**70.58.40  krfDisableAAClipping = & h00200000**

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the raster flag constants. **Notes:** Disable Anti-Aliasing for clipping paths. This flag is the most important one since clipping paths cause often visible artefacts in PDF files with flattened transparency.

**70.58.41  krfDisableAAText = & h00400000**

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the raster flag constants. **Notes:** Disable Anti-Aliasing for text.

**70.58.42  krfDisableAAVector = & h00800000**

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the raster flag constants. **Notes:** Disable Anti-Aliasing for vector graphics.
70.58.43  krfDisableAntiAliasing = & h00E00000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the raster flag constants. **Notes:** Fully disable Anti-Aliasing.

70.58.44  krfDisableBiLinearFilter = & h01000000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the raster flag constants. **Notes:** Disable the BiLevel filter for images. Sometimes useful if sharp images are needed, e.g. for bar-codes.

70.58.45  krfExclAnnotations = & h00000020

MBS DynaPDF Plugin, Plugin Version: 11.1. **Function:** One of the raster flag constants. **Notes:** Don’t render annotations.

70.58.46  krfExclButtons = & h00004000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the raster flag constants. **Notes:**

If you want to render specific field types with RenderAnnotOrField() then use this flag to exclude buttons. If all fields should be skipped then set the flag rfExclFormFields instead.

70.58.47  krfExclCheckBoxes = & h00008000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the raster flag constants. **Notes:**

Exclude check boxes.
If you want to render specific field types with RenderAnnotOrField() then use this flag to exclude checkboxes. If all fields should be skipped then set the flag rfExclFormFields instead.

70.58.48  krfExclComboBoxes = & h00010000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the raster flag constants. **Notes:**
Exclude combo boxes.
If you want to render specific field types with RenderAnnotOrField() then use this flag to exclude combobox.
If all fields should be skipped then set the flag rfExclFormFields instead.

70.58.49 krfExclFormFields = & h00000040


70.58.50 krfExclListBoxes = & h00020000

MBS DynaPDF Plugin, Plugin Version: 15.0. Function: One of the raster flag constants. Notes:
Exclude listbox fields.
If you want to render specific field types with RenderAnnotOrField() then use this flag to exclude listbox.
If all fields should be skipped then set the flag rfExclFormFields instead.

70.58.51 krfExclPageContent = & h00002000

MBS DynaPDF Plugin, Plugin Version: 14.4. Function: One of the raster flag constants. Notes: If set, only annotations and form fields will be rendered (if any).

70.58.52 krfExclSigFields = & h00080000

MBS DynaPDF Plugin, Plugin Version: 15.0. Function: One of the raster flag constants. Notes:
Exclude signature fields.
If you want to render specific field types with RenderAnnotOrField() then use this flag to exclude signature fields.
If all fields should be skipped then set the flag rfExclFormFields instead.

70.58.53 krfExclTextFields = & h00040000

MBS DynaPDF Plugin, Plugin Version: 15.0. Function: One of the raster flag constants. Notes:
Exclude text fields.
If you want to render specific field types with RenderAnnotOrField() then use this flag to exclude text fields.
If all fields should be skipped then set the flag rfExclFormFields instead.

**70.58.54  krfIgnoreCropBox = 2**

MBS DynaPDF Plugin, Plugin Version: 11.1. **Function:** One of the raster flag constants.
**Notes:** Ignore the crop box and render anything inside the media box without clipping.

**70.58.55  krfInitBlack = & h00000800**

MBS DynaPDF Plugin, Plugin Version: 13.1. **Function:** One of the raster flag constants.
**Notes:** Initialize the image buffer to black before rendering (RGBA or GrayA must be initialized to black)

**70.58.56  krfRenderInvisibleText = & h02000000**

MBS DynaPDF Plugin, Plugin Version: 18.2. **Function:** One of the raster flag constants.
**Notes:** If set, treat text rendering mode Invisible as Normal.

**70.58.57  krfRotate180 = & h00000200**

MBS DynaPDF Plugin, Plugin Version: 11.3. **Function:** One of the raster flag constants.
**Notes:** Rotate the page 180 degrees.

**70.58.58  krfRotate270 = & h00000400**

MBS DynaPDF Plugin, Plugin Version: 11.3. **Function:** One of the raster flag constants.
**Notes:** Rotate the page 270 degrees.

**70.58.59  krfRotate90 = & h00000100**

MBS DynaPDF Plugin, Plugin Version: 11.3. **Function:** One of the raster flag constants.
**Example:**

```plaintext
dim pdf as new DynaPDFMBS // make subclass to catch error event
```
dim f as FolderItem = SpecialFolder.Desktop.Child("dynapdf_help.pdf")

    // create PDF
    call pdf.CreateNewPDF(nil)
    // set import flags
    call pdf.SetImportFlags(pdf.kifImportAll + pdf.kifImportAsPage)

    // open import file
    call pdf.OpenImportFile(f, 0, "")

    // import all pdf pages
    call pdf.ImportPDFFile(1, 1.0, 1.0)

dim PageCount as Integer = pdf.GetPageCount

    // create rasterizer.
    dim r as new DynaPDFRasterizerMBS(pdf, 1000,1000)

    // create options
    dim o as new DynaPDFRasterImageMBS

    // fill white
    o.InitWhite = true

    // scale to fit
    o.DefScale = o.kpsFitBest

    // rotate
    o.Flags = o.krfRotate90

    // render all pages
    for i as Integer = 1 to PageCount
        dim p as DynaPDFPageMBS = pdf.GetPage(i)
        if r.RenderPage(p, o) then
            // save to disc
            dim outfile as FolderItem = SpecialFolder.Desktop.Child("page " + Format(i,"0") + ".jpg")
            call outfile.SaveAsJPEGMBS(r.Pic, 75)
        end
    next

Notes: Rotate the page 90 degress.
70.58.60  krfScaleToBBox = & h00100000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the raster flag constants. **Notes:**
Considered only, if the flag rfClipToArtBox, rfClipToBleedBox, or rfClipToTrimBox is set. If set, the picture size is set to the size of the wished bounding box.

70.58.61  krfScaleToMediaBox = 1

MBS DynaPDF Plugin, Plugin Version: 11.1. **Function:** One of the raster flag constants. **Notes:** Render the real paper format. Contents outside the crop box is clipped.

70.58.62  krfSkipUpdateBG = & h00000080

MBS DynaPDF Plugin, Plugin Version: 11.3. **Function:** One of the raster flag constants. **Notes:** Don’t generate an update event after initializing the background to white.
70.59 class DynaPDFRasterizerMBS

70.59.1 class DynaPDFRasterizerMBS

Function: The class for the rasterizer interface.

70.59.2 Methods

70.59.3 Abort

Function: Aborts raster process.
Notes: Stops the function RenderPage as soon as possible when RenderPage() is running in a separate thread.

70.59.4 AddRasImage(Filter as Integer) as boolean

Function: The function adds an image from the rasterizer to the current open image file.
Notes: The output image must be opened with CreateImage() beforehand.

70.59.5 AttachImageBuffer(Pic as Picture) as boolean

Function: Attaches a new image buffer of the same pixelformat.
Notes: Returns true on success.
See also:

- 70.59.6 AttachImageBuffer(Rows as Memoryblock, Buffer as Memoryblock, Width as UInt32, Height as UInt32, ScanlineLen as Int32, PixelFormat as UInt32) as boolean

70.59.6 AttachImageBuffer(Rows as Memoryblock, Buffer as Memoryblock, Width as UInt32, Height as UInt32, ScanlineLen as Int32, PixelFormat as UInt32) as boolean

Function: Attaches a new image buffer of the same pixelformat.
Notes:
70.59. **CLASS DYNAPDFRASTERIZERMBS**

For Pixelformat pass one of the kpx* constants.
You can pass Rows or Buffer, but the other memoryblock should be nil.
Returns true on success.
See also:

- 70.59.5 AttachImageBuffer(Pic as Picture) as boolean

### 70.59.7 Constructor(PDF as DynaPDFMBS, DeviceContextHandle as Integer, Width as UInt32, Height as UInt32, PixFmt as UInt32)

**Function:** Initializes rasterizer targeting a device context.
**Notes:**
Special version to simplify rendering into a device context. It creates a DIB Section into which pages can be rendered.

See also:

- 70.59.8 Constructor(PDF as DynaPDFMBS, Pic as Picture)
- 70.59.9 Constructor(PDF as DynaPDFMBS, Rows as Memoryblock, Buffer as Memoryblock, Width as UInt32, Height as UInt32, ScanlineLen as Int32, PixelFormat as UInt32)
- 70.59.10 Constructor(PDF as DynaPDFMBS, Width as Integer, Height as Integer)

### 70.59.8 Constructor(PDF as DynaPDFMBS, Pic as Picture)

**Function:** Creates a new rasterizer object targeting the given picture.

See also:

- 70.59.7 Constructor(PDF as DynaPDFMBS, DeviceContextHandle as Integer, Width as UInt32, Height as UInt32, PixFmt as UInt32)
- 70.59.9 Constructor(PDF as DynaPDFMBS, Rows as Memoryblock, Buffer as Memoryblock, Width as UInt32, Height as UInt32, ScanlineLen as Int32, PixelFormat as UInt32)
- 70.59.10 Constructor(PDF as DynaPDFMBS, Width as Integer, Height as Integer)

### 70.59.9 Constructor(PDF as DynaPDFMBS, Rows as Memoryblock, Buffer as Memoryblock, Width as UInt32, Height as UInt32, ScanlineLen as Int32, PixelFormat as UInt32)

**Function:** Creates a new rasterizer object targeting the given memory area.
For Pixelformat pass one of the kpx* constants.
You can pass Rows or Buffer, but the other memoryblock should be nil.
See also:

- 70.59.7 Constructor(PDF as DynaPDFMBS, DeviceContextHandle as Integer, Width as UInt32, Height as UInt32, PixFmt as UInt32) 12245
- 70.59.8 Constructor(PDF as DynaPDFMBS, Pic as Picture) 12245
- 70.59.10 Constructor(PDF as DynaPDFMBS, Width as Integer, Height as Integer) 12246

70.59.10 Constructor(PDF as DynaPDFMBS, Width as Integer, Height as Integer)

Function: The constructor.
Notes:
Creates a new picture as buffer for you with the given size.
PDF must not be nil and point to a valid DynaPDF context.
See also:

- 70.59.7 Constructor(PDF as DynaPDFMBS, DeviceContextHandle as Integer, Width as UInt32, Height as UInt32, PixFmt as UInt32) 12245
- 70.59.8 Constructor(PDF as DynaPDFMBS, Pic as Picture) 12245
- 70.59.9 Constructor(PDF as DynaPDFMBS, Rows as Memoryblock, Buffer as Memoryblock, Width as UInt32, Height as UInt32, ScanlineLen as Int32, PixelFormat as UInt32) 12245

70.59.11 Redraw(DeviceContextHandle as Integer, DestX as Integer, DestY as Integer)

Function: Because there is no direct access to the internal DIB Sesction when rendering into a device context, this function can be used to redraw the bitmap on the device context.
Notes:
If RenderPageEx() was called in a separate thread then this function can be called after the thread returned.
While the thread is running you can change the position by directly manipulating the coordinate variables which were passed to RenderPageEx().
The function calls the system function SetDIBitsToDevice() to copy the image into the device context.
**70.59.12 RenderPage(page as DynaPDFPageMBS, options as DynaPDFRasterImageMBS) as boolean**

**Function:** Renders a page of a PDF Document with the given options.
**Notes:** Returns true on success and false on failure.

**70.59.13 RenderPageEx(DeviceContextHandle as Integer, byref DestX as Integer, byref DestY as Integer, page as DynaPDFPageMBS, options as DynaPDFRasterImageMBS) as boolean**

**Function:** Renders a page into a device context.
**Notes:**
Only valid if you called Constructor with DeviceContextHandle.
Returns true on success.

**70.59.14 RenderPageMT(page as DynaPDFPageMBS, options as DynaPDFRasterImageMBS) as boolean**

**Function:** Renders a page of a PDF Document with the given options.
**Notes:**
Returns true on success and false on failure.

Same as RenderPage, but with additional multithreading.
Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.

As the actual transfer runs on a preemptive thread, the event UpdateWindow is called asynchronously and run a few milliseconds later.

Do not call other functions on this DynaPDFRasterizerMBS instance while RenderPageMT is running!
70.59.15 **ResizeBitmap(DeviceContextHandle as Integer, Width as Integer, Height as Integer) as boolean**

**Function:** Changes the size of the DIB Section.
**Notes:**
Only valid if you called Constructor with DeviceContextHandle.
Returns true on success.

70.59.16 **Properties**

70.59.17 **Handle as Integer**

**Function:** The internal object reference to the rasterizer object.
**Notes:**
If the constructor is successful, this value is not zero.
(Read only property)

70.59.18 **PDF as DynaPDFMBS**

**Function:** The reference back to parent dynaPDF object.
**Notes:** (Read only property)

70.59.19 **Pic as Picture**

**Function:** The target picture.
**Notes:** (Read only property)

70.59.20 **Constants**

70.59.21 **kpxf1Bit = 0**

MBS DynaPDF Plugin, Plugin Version: 11.1. **Function:** One of the pixel format constants.
**Notes:** 1 bit per pixel black and white.
70.59.22  kpxfABGR = 7

MBS DynaPDF Plugin, Plugin Version: 11.1. **Function:** One of the pixel format constants.  
**Notes:** ABGR.

70.59.23  kpxfARGB = 6

MBS DynaPDF Plugin, Plugin Version: 11.1. **Function:** One of the pixel format constants.  
**Notes:** ARGB

70.59.24  kpxfBGR = 3

MBS DynaPDF Plugin, Plugin Version: 11.1. **Function:** One of the pixel format constants.  
**Notes:** BGR

70.59.25  kpxfBGRA = 5

MBS DynaPDF Plugin, Plugin Version: 11.1. **Function:** One of the pixel format constants.  
**Notes:** BGRA

70.59.26  kpxfCMYK = 9

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the pixel format constants.  
**Notes:** CMYK without alpha

70.59.27  kpxfCMYKA = & h000000A

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the pixel format constants.  
**Notes:** CMYK with alpha

70.59.28  kpxfGray = 1

MBS DynaPDF Plugin, Plugin Version: 11.1. **Function:** One of the pixel format constants.  
**Notes:** 8 bit grayscale.
70.59.29  kpxfGrayA = 8

MBS DynaPDF Plugin, Plugin Version: 11.2. **Function:** One of the pixel format constants. **Notes:** 8 bit grayscale with alpha.

70.59.30  kpxfRGB = 2

MBS DynaPDF Plugin, Plugin Version: 11.1. **Function:** One of the pixel format constants. **Notes:** RGB

70.59.31  kpxfRGBA = 4

MBS DynaPDF Plugin, Plugin Version: 11.1. **Function:** One of the pixel format constants. **Notes:** RGBA

**Function:** The class to hold information about a raw image.

**Notes:** Used with InsertRawImageEx.

### 70.60.2 Methods

#### 70.60.3 setBuffer(data as MemoryBlock)


**Function:** Sets the buffer to point to the bytes in the memoryblock.

**Notes:** Size is optional. Some memoryblocks have no known size and there you need to specify one.

See also:

- 70.60.4 setBuffer(data as MemoryBlock, size as Int64)
- 70.60.5 setBuffer(data as Ptr)
- 70.60.6 setBuffer(data as Ptr, size as Int64)
- 70.60.7 setBuffer(data as string)
- 70.60.8 setBuffer(data as string, size as Int64)

#### 70.60.4 setBuffer(data as MemoryBlock, size as Int64)


**Function:** Sets the buffer to point to the bytes in the memoryblock.

**Notes:** Size is optional. Some memoryblocks have no known size and there you need to specify one.

See also:

- 70.60.3 setBuffer(data as MemoryBlock)
- 70.60.5 setBuffer(data as Ptr)
- 70.60.6 setBuffer(data as Ptr, size as Int64)
- 70.60.7 setBuffer(data as string)
- 70.60.8 setBuffer(data as string, size as Int64)
70.60.5  setBuffer(data as Ptr)

**Function:** Private method to set the buffer using a pointer to some memory.
**Notes:** This is a private method to make sure nobody passes a ptr instead of memoryblock or ptr+size.
See also:
- 70.60.3 setBuffer(data as MemoryBlock)
- 70.60.4 setBuffer(data as MemoryBlock, size as Int64)
- 70.60.6 setBuffer(data as Ptr, size as Int64)
- 70.60.7 setBuffer(data as string)
- 70.60.8 setBuffer(data as string, size as Int64)

70.60.6  setBuffer(data as Ptr, size as Int64)

**Function:** Sets the buffer using a pointer to some memory.
**Notes:** Please provide the right size.
See also:
- 70.60.3 setBuffer(data as MemoryBlock)
- 70.60.4 setBuffer(data as MemoryBlock, size as Int64)
- 70.60.5 setBuffer(data as Ptr)
- 70.60.7 setBuffer(data as string)
- 70.60.8 setBuffer(data as string, size as Int64)

70.60.7  setBuffer(data as string)

**Function:** Sets buffer to point to contents of this string.
**Notes:** If you specify a size, the size can be smaller than thing length to use only first part.
See also:
- 70.60.3 setBuffer(data as MemoryBlock)
- 70.60.4 setBuffer(data as MemoryBlock, size as Int64)
- 70.60.5 setBuffer(data as Ptr)
- 70.60.6 setBuffer(data as Ptr, size as Int64)
- 70.60.8 setBuffer(data as string, size as Int64)
70.60.8  setBuffer(data as string, size as Int64)

**Function:** Sets buffer to point to contents of this string.  
**Notes:** If you specify a size, the size can be smaller than thing length to use only first part.  
See also:

- 70.60.3 setBuffer(data as MemoryBlock)  
- 70.60.4 setBuffer(data as MemoryBlock, size as Int64)  
- 70.60.5 setBuffer(data as Ptr)  
- 70.60.6 setBuffer(data as Ptr, size as Int64)  
- 70.60.7 setBuffer(data as string)  

70.60.9  Properties

70.60.10  BitsPerComponent as Integer

**Function:** Bits per component.  
**Notes:**  
For example 8 for the usual RGB images.  
(Read and Write property)

70.60.11  Buffer as Ptr

**Function:** The buffer as pointer.  
**Notes:**  
Please use setBuffer methods to set this.  
(Read only property)

70.60.12  BufSize as Int64

**Function:** The buffer size.  
**Notes:** (Read only property)
70.60.13 CS as Integer

Function: Image color space.
Notes: (Read and Write property)

70.60.14 CSHandle as Integer

Function: Color space handle or -1.
Notes: (Read and Write property)

70.60.15 HasAlpha as Boolean

Function: The image has an alpha channel?
Notes: (Read and Write property)

70.60.16 Height as Integer

Function: Height in pixels.
Notes: (Read and Write property)

70.60.17 IsBGR as Boolean

Function: Windows bitmap format?
Notes: (Read and Write property)

70.60.18 Memory as MemoryBlock

Function: The memoryblock used with setBuffer.
Notes: (Read only property)
70.60.19 **MinIsWhite as Boolean**


**Function:** Whether image has value zero for white instead of black.

**Notes:**
- One bit images only.
- (Read and Write property)

70.60.20 **NumComponents as Integer**


**Function:** Number of components.

**Notes:**
- Maximum is 32 for DynaPDF.
- (Read and Write property)

70.60.21 **Stride as Integer**


**Function:** The number of bytes per row.

**Notes:**
- A negative value mirrors the image.
- (Read and Write property)

70.60.22 **String as String**


**Function:** The String used with setBuffer.

**Notes:** (Read only property)

70.60.23 **Width as Integer**


**Function:** Width in pixels.

**Notes:** (Read and Write property)
70.61 class DynapdfRectMBS

70.61.1 class DynapdfRectMBS


70.61.2 Methods

70.61.3 Constructor(left as Double = 0.0, top as Double = 0.0, right as Double = 0.0, bottom as Double = 0.0)


70.61.4 Properties

70.61.5 Bottom as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The bottom coordinate. Notes: (Read and Write property)

70.61.6 Left as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The left coordinate. Notes: (Read and Write property)

70.61.7 Right as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The right coordinate. Notes: (Read and Write property)
70.61.8 Top as Double

MBS DynaPDF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The top coordinate.  
**Notes:** (Read and Write property)

70.61.9 Width as Double

MBS DynaPDF Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The width of the rectangle.  
**Notes:**

This is the difference between right and left.

Height property is missing as it depends on the coordinate origin. For top-down coordinates you would calculate bottom - top while for bottom-up coordinates you calculate top - bottom.  
(Read and Write property)
70.62 class DynaPDFRelFileNodeMBS

70.62.1 class DynaPDFRelFileNodeMBS

Function: The information on a related file node.
Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.62.2 Methods

70.62.3 Constructor

Function: The private constructor.

70.62.4 Properties

70.62.5 EF as DynaPDFFileSpecMBS

Function: Embedded file.
Notes: (Read only property)

70.62.6 Name as String

Function: Name of this file specification.
Notes: (Read only property)

70.62.7 NextNode as DynaPDFRelFileNodeMBS

Function: Next node if any.
Notes: (Read only property)
70.63. class DynaPDFResetFormActionMBS

70.63.1. class DynaPDFResetFormActionMBS


Function: The class for reset form action.

Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.63.2. Methods

70.63.3. Constructor


Function: The private constructor.

70.63.4. Fields(index as Integer) as DynaPDFFieldExMBS


Function: Queries array of fields.

Notes: Index is from 0 to FieldsCount-1.

70.63.5. Properties

70.63.6. FieldsCount as Integer


Function: Number of fields in the array.

Notes: (Read only property)

70.63.7. Include as Boolean


Function: Include or exclude given fields?

Notes:

If true, the fields in the array must be reset. If false, these fields must be excluded.
(Read only property)
70.63.8 NextAction as Integer

Function: The next action.
Notes:
-1 or next action handle to be executed if any.
(Read only property)

70.63.9 NextActionType as Integer

Function: The type of the next action.
Notes:
See kat* constants.
(Read only property)
class DynaPDFSigDictMBS

**Function:** The class for details on signature fields.

### Properties

#### Cert as String

**Function:** X.509 Certificate when SubFilter is adbe.x509.rsa_sha1.
**Notes:** (Read and Write property)

#### ContactInfo as String

**Function:** Optional contact info string, e.g. an email address
**Notes:** (Read and Write property)

#### Contents as String

**Function:** The signature.
**Notes:**
This is either a DER encoded PKCS# 1 binary data object or a DER-encoded PKCS# 7 binary data object depending on the used SubFilter.
(Read and Write property)

#### Filter as String

**Function:** The name of the security handler, usually Adobe.PPKLite.
**Notes:** (Read and Write property)
70.64.7 Location as String

Function: Optional location of the signer.
Notes: (Read and Write property)

70.64.8 Name as String

Function: Optional signers name.
Notes: (Read and Write property)

70.64.9 PropAuthTime as Integer

Function: Optional. The number of seconds since the signer was last authenticated.
Notes: (Read and Write property)

70.64.10 PropAuthType as String

Function: Optional. The method that shall be used to authenticate the signer.
Notes: Valid values are PIN, Password, and Fingerprint.
(Read and Write property)

70.64.11 Reason as String

Function: Optional reason.
Notes: (Read and Write property)

70.64.12 Revision as Integer

Function: Optional, The version of the signature handler that was used to create the signature.
70.64.13 SignTime as String

Function: Date/Time string.
Notes: (Read and Write property)

70.64.14 SubFilter as String

Function: A name that describes the encoding of the signature value.
Notes: Should be adbe.x509.rsa.sha1, adbe.pkcs7.detached, or adbe.pkcs7.sha1.
(Read and Write property)

70.64.15 Version as Integer

Function: The version of the signature dictionary format.
Notes: (Read and Write property)
70.65 class DynaPDFSigParmsMBS

70.65.1 class DynaPDFSigParmsMBS

Function: The class for PDF signature parameters.

70.65.2 Properties

70.65.3 ContactInfo as String

Function: Optional, e.g. an email address.
Notes:
Internally this string is converted to ANSI or Unicode encoding.
(Read and Write property)

70.65.4 Encrypt as Boolean

Function: If true, the file will be encrypted.
Notes: (Read and Write property)

70.65.5 HashType as Integer

Function: The hash type: khtDetached or khtSHA1.
Notes: (Read and Write property)

70.65.6 KeyLen as Integer

Function: Key length to encrypt the file.
Notes:
This value is ignored if Encrypt is set to false.
On of the kkl* constants like kkl128bit.
(Read and Write property)
70.65. **Location as String**

**Function:** Optional location of the signer.
**Notes:**
Internally this string is converted to ANSI or Unicode encoding.
(Read and Write property)

70.65. **OpenPwd as String**

**Function:** Optional open password.
**Notes:**
This value is ignored if Encrypt is set to false.
(Read and Write property)

70.65. **OwnerPwd as String**

**Function:** Optional owner password.
**Notes:**
This value is ignored if Encrypt is set to false.
(Read and Write property)

70.65. **PKCS7ObjLen as Integer**

**Function:** Max length of the signed PKCS# 7 object.
**Notes:** (Read and Write property)

70.65. **Range1 as String**

**Function:** Hash or byte range.
**Notes:** (Read and Write property)
70.65.12 Range1Length as Integer

**Function:** Length of the buffer Range1.
**Notes:** (Read and Write property)

70.65.13 Range2 as String

**Function:** Second range value.
**Notes:**
Set only if HashType = htDetached.
(Read and Write property)

70.65.14 Range2Length as Integer

**Function:** Length of buffer Range2.
**Notes:** (Read and Write property)

70.65.15 Reason as String

**Function:** Optional reason why the file was signed.
**Notes:**
Internally this string is converted to ANSI or Unicode encoding.
(Read and Write property)

70.65.16 Restrict as Integer

**Function:** What should be restricted?
**Notes:**
This value is ignored if Encrypt is set to false.
A combination of krs* constants.
(Read and Write property)
70.65.17 Signer as String


Function: Optional, see manual.

Notes:

Internally this string is converted to ANSI or Unicode encoding.
(Read and Write property)
70.66 class DynaPDFStackMBS

70.66.1 class DynaPDFStackMBS

Notes: Before you can use it, call InitStack.

70.66.2 Methods

70.66.3 KerningAdvance(index as UInt32) as Double

MBS DynaPDF Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Negative values move the cursor to the right.

70.66.4 KerningLength(index as UInt32) as Integer


70.66.5 KerningText(index as UInt32) as string

Notes:
May contain chr(0) characters.
Encoding is UTF8.

70.66.6 KerningWidth(index as UInt32) as Double

70.66.7  RawKernAdvance(index as UInt32) as Double

MBS DynaPDF Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Negative values move the cursor to the right.

70.66.8  RawKernLength(index as UInt32) as Integer


70.66.9  RawKernText(index as UInt32) as string


70.66.10 Properties

70.66.11 CharSP as Double

Notes: (Read only property)

70.66.12 CIDFont as Boolean

MBS DynaPDF Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: If true, a CID font is used to render the text.
Notes: It is not possible to replace a text with ReplacePageText() in this case. However, it is still possible to delete the text. If the text should be replaced use either ReplacePageTextEx() or WriteTextMatrixEx(). (Read only property)

70.66.13 ConvColors as Boolean

MBS DynaPDF Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
If true (default), all colors are converted to the destination color space DestSpace.

**Notes:**

The default color space is DeviceRGB. This variable can be changed after the structure has been initialized with InitStack(). If set to false, colors of complex color spaces are still converted into the alternate color space but the color space can then be changed arbitrary often. See also the description of FillCS.

(Read and Write property)

### 70.66.14 ctm as DynapdfMatrixMBS


**Function:** The transformation matrix.

**Notes:**

Pre-multiplied global transformation matrix.

(Read only property)

### 70.66.15 DeleteKerningAt as Integer


**Function:** This member can be used in combination with ReplacePageText().

**Notes:**

ReplacePageText() deletes or replaces normally always a complete text record but this is often not required especially if a text must be deleted or replaced in the middle or end of a kerning array. To make text replacement easier it is possible to preserve an arbitrary number of kerning records from deletion. The value of DeleteKerningAt represents the first array index which should be deleted. All kerning records above this index will be deleted too. Take a look into the demo examples/edit_text which is delivered with DynaPDF to determine how this member can be used.

(Read and Write property)

### 70.66.16 DestSpace as Integer


**Function:** The destination color space in which all colors should be converted.

**Notes:**

If ConvColor is set to false, the value of this member is ignored. If the destination color space should be DeviceCMYK initialize the members FillColor and StrokeColor with PDF_CMYK(0,0,0,255); which represents black.

(Read and Write property)
70.66.17 DrawMode as Integer

**Function:** The draw mode used to render the text.
**Notes:**
See SetTextDrawMode() for further information.
(Read only property)

70.66.18 Embedded as Boolean

**Function:** If true, the font is embedded.
**Notes:**
This information is very important if the text should be replaced. The function ReplacePageText() can be used if the font is not embedded and if the member CIDFont is false. Otherwise, the function ReplacePageTextEx() or WriteTextMatrixEx() must be used to replace the text, see the examples on the following pages for further information.
(Read only property)

70.66.19 FillColor as Integer

**Function:** The fill color represents the text color if the text draw mode is dmNormal.
**Notes:**
Depending on the draw mode the fill and stroke color can be invoked to render the text.
(Read only property)

70.66.20 FillCS as Integer

**Function:**
This is the current color space in which the color value of FillColor is defined.
**Notes:**
If ConvColor is set to true (default) the value is always equal to DestSpace. If ConvColor is set to false the fill color is still returned in a device color space but the color space can be changed arbitrary often. Colors of complex color spaces, such as Separation or DeviceN, are always converted into the alternate color space. If the original or alternate color space is an ICC based color space the color value is returned as is and the color space is set depending on the number of components. The ICC profile is not invoked to calculate the color value in the device color space. Future versions of DynaPDF maybe use the ICC profile to convert the color into device color space.

(Read only property)

**70.66.21 Font as DynaPDFFontMBS**

**Function:** Font object used to print the string. 
**Notes:**
Deprecated. Better use FontInfo property.

Reading this property creates a new object each time. 
Please put object in local variable and avoid querying the property value several times.
(Read only property)

**70.66.22 FontFlags as Integer**

**Function:** The PDF font flags. 
**Notes:** (Read and Write property)

**70.66.23 FontHandle as Integer**

**Function:** The internal font object handle. 
**Notes:**
In DynaPDF documentation named IFont, a pointer to the C object for the font.
(Read only property)
**CLASS DYNAPDFSTACKMBS**

### 70.66.24 FontInfo as DynaPDFFontInfoMBS

MBS DynaPDF Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Font object used to print the string. **Notes:** Reading this property creates a new object each time. Please put object in local variable and avoid querying the property value several times. (Read only property)

### 70.66.25 FontSize as Double

MBS DynaPDF Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The font size used to display the text. **Notes:** (Read only property)

### 70.66.26 HScale as Double

MBS DynaPDF Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Current horizontal scaling, info only. **Notes:** (Read only property)

### 70.66.27 KerningCount as Integer

MBS DynaPDF Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of kerning records. **Notes:** RawKern and Kerning contain always the same number of records. (Read only property)

### 70.66.28 Leading as Double

MBS DynaPDF Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The leading is already included in the text transformation matrix tm. **Notes:** The value of leading must not be considered to calculate the text position. (Read only property)
70.66.29 LineWidth as Double

MBS DynaPDF Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:** The current line width; it can be ignored if the text is not stroked.  
**Notes:** (Read only property)

70.66.30 SpaceWidth as Double

MBS DynaPDF Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:** The space width.  
**Notes:**
The space width can be used to determine whether a space character is emulated at a given position. A default space width is set if the font does not contain a space character. Note that many documents emulate spaces with kerning space. Such documents contain usually no space character. It is usually best to use the half space width to determine whether a space character is emulated. This is especially important if a document uses condensed fonts which contain no space character.  
(Read only property)

70.66.31 StrokeColor as Integer

MBS DynaPDF Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:** The stoke color.  
**Notes:**
The stroke color can be ignored if the text draw mode is not dmStroke, dmFillStroke, dmStrokeClip or dmFillStrokeClip since it is then not used to render the text.  
(Read only property)

70.66.32 StrokeCS as Integer

MBS DynaPDF Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:** This is the current color space in which the color value of StrokeColor is defined.  
**Notes:**
The color space is set in an identical manner like FillCS.  
(Read only property)
70.66.33  Text as String

**Function:** The raw text line that was found in the content stream.
**Notes:**
This string can contain single or multi-byte characters. This member should no longer be used to extract or replace text. Use the Kerning array instead.
(Read only property)

70.66.34  TextLen as Integer

**Function:** The string length in bytes, not characters!
**Notes:**
If TextLen is zero no text was found or an error occurred.
(Read only property)

70.66.35  TextRise as Double

**Function:** The text rise is already included in the text transformation matrix tm.
**Notes:**
The value is always 0.0.
(Read only property)

70.66.36  TextWidth as Double

**Function:** The text width measured in text space.
**Notes:**
This is the width of the entire kerning array incl. kerning space.
(Read only property)
70.66.37  \( \text{tm as DynapdfMatrixMBS} \)

**Function:** The transformation matrix.  
**Notes:**  
Pre-multiplied text transformation matrix.  
(Read only property)

70.66.38  \( \text{WordSP as Double} \)

**Function:** Current word spacing, info only.  
**Notes:** (Read only property)

70.66.39  \( \text{x as Double} \)

**Function:** The position.  
**Notes:**  
These members are no longer used. All positioning operators are already included in the text transformation matrix \( \text{tm} \).  
(Read only property)

70.66.40  \( \text{y as Double} \)

**Function:** The position.  
**Notes:**  
These members are no longer used. All positioning operators are already included in the text transformation matrix \( \text{tm} \).  
(Read only property)
70.67. **class DynaPDFSubmitFormActionMBS**

70.67.1 **class DynaPDFSubmitFormActionMBS**


**Function:** The class for submit form action details.

**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.67.2 **Methods**

70.67.3 **Constructor**


**Function:** The private constructor.

70.67.4 **Fields(index as Integer) as DynaPDFFieldExMBS**


**Function:** Queries array of field.

**Notes:** Index is from 0 to FieldCount-1.

70.67.5 **Properties**

70.67.6 **CharSet as String**


**Function:** Optional charset in which the form should be submitted.

**Notes:** (Read only property)

70.67.7 **FieldsCount as Integer**


**Function:** Number of fields in the array.

**Notes:** (Read only property)
70.67.8 Flags as Integer

Function: Various flags.
Notes:
See CreateSubmitAction() for further information.
(Read only property)

70.67.9 NextAction as Integer

Function: The next action.
Notes:
-1 or next action handle to be executed if any.
(Read only property)

70.67.10 NextActionType as Integer

Function: The type of the next action.
Notes:
See kat* constants.
(Read only property)

70.67.11 URL as String

Function: The URL of the script at the Web server that will process the submission.
Notes: (Read only property)
70.68 class DynaPDFSysFontMBS

70.68.1 class DynaPDFSysFontMBS

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The class for system font info.
Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.68.2 Methods

70.68.3 Constructor

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The private constructor.

70.68.4 NextFont as DynaPDFSysFontMBS

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Queries next font in the chain of fonts.
Notes: Returns nil on the end of list.

70.68.5 Properties

70.68.6 BaseType as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Font type.
Notes:
Can be kfbtTrueType, kfbtType1, kfbtOpenType or kfbtStdFont.
(Read and Write property)

70.68.7 CIDOrdering as String

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: CID Ordering.
Notes:
OpenType CID fonts only.  
(Read and Write property)

### 70.68.8 CIDRegistry as String

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The CID Registry.  
**Notes:**  
OpenType CID fonts only  
(Read and Write property)

### 70.68.9 CIDSupplement as UInt32

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The CID Supplement.  
**Notes:**  
OpenType CID fonts only  
(Read and Write property)

### 70.68.10 DataOffset as UInt32

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Data offset.  
**Notes:**  
(Read and Write property)

### 70.68.11 FamilyName as String

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Family name.  
**Notes:**  
(Read and Write property)

### 70.68.12 FilePath as String

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Font file path.  
**Notes:**  
(Read and Write property)
70.68.13  FileSize as UInt32

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: File size in bytes.
Notes: (Read and Write property)

70.68.14  Flags as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The flags.
Notes: Can be combination of kefpAnsiPath, kefpUnicodePath, kefpEmbeddable and kefpEditable.
(Read and Write property)

70.68.15  FullName as String

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The Full name.
Notes: (Read and Write property)

70.68.16  Index as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Zero based font index if stored in a TrueType collection.
Notes: (Read and Write property)

70.68.17  IsFixedPitch as Boolean

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: If true, the font is a fixed pitch font.
Notes: (Read and Write property)

70.68.18  Length1 as UInt32

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Length of the clear text portion of a Type1 font.
70.68.19 Length2 as UInt32

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Length of the eexec encrypted binary portion of a Type1 font.
**Notes:** (Read and Write property)

70.68.20 PostScriptName as String

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The Postscript name.
**Notes:** (Read and Write property)

70.68.21 Style as Integer

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Font style.
**Notes:**
See kfs* constants.
(Read and Write property)

70.68.22 UnicodeRange1 as UInt32

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Supported unicode ranges, part 1.
**Notes:** (Read and Write property)

70.68.23 UnicodeRange2 as UInt32

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Supported unicode ranges, part 2.
**Notes:** (Read and Write property)
70.68. CLASS DYNAPDFSYSFONTMBS

70.68.24 UnicodeRange3 as UInt32

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Supported unicode ranges, part 3.  
**Notes:** (Read and Write property)

70.68.25 UnicodeRange4 as UInt32

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Supported unicode ranges, part 4.  
**Notes:** (Read and Write property)

70.68.26 Constants

70.68.27 kurAlphabeticPresentationForms = & h40000000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.28 kurAncientGreekNumbers = & h00000040

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.29 kurAncientSymbols = & h00800000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.30 kurArabic = & h00002000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.31 kurArabicPresentationFormsA = & h80000000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.
70.68.32 kurArabicPresentationFormsB = 8

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.33 kurArmenian = \& h00000400

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.34 kurArrows = \& h00000020

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.35 kurBalinese = \& h08000000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.36 kurBasicLatin = 1

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.37 kurBengali = \& h00010000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.38 kurBlockElements = \& h00001000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.39 kurBopomofo = \& h00080000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.
70.68.40  kurBoxDrawing = & h00000800

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.41  kurBraillePatterns = & h00040000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.42  kurBuginese = 1

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.43  kurCarian = & h02000000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.44  kurCham = & h00400000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.45  kurCherokee = & h00001000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.46  kurCJKCompatibility = & h00800000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.47  kurCJKStrokes = & h20000000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.
70.68.48  \texttt{kurCJKSymbolsAndPunctuation = \& h00010000}

MBS DynaPDF Plugin, Plugin Version: 15.0. \textbf{Function:} One of the unicode range constants.

70.68.49  \texttt{kurCJKUnifiedIdeographs = \& h08000000}

MBS DynaPDF Plugin, Plugin Version: 15.0. \textbf{Function:} One of the unicode range constants.

70.68.50  \texttt{kurCombDiacritMarksForSymbols = 4}

MBS DynaPDF Plugin, Plugin Version: 15.0. \textbf{Function:} One of the unicode range constants.

70.68.51  \texttt{kurCombiningDiacriticalMarks = \& h0000040}

MBS DynaPDF Plugin, Plugin Version: 15.0. \textbf{Function:} One of the unicode range constants.

70.68.52  \texttt{kurCombiningHalfMarks = 1}

MBS DynaPDF Plugin, Plugin Version: 15.0. \textbf{Function:} One of the unicode range constants.

70.68.53  \texttt{kurControlPictures = \& h0000100}

MBS DynaPDF Plugin, Plugin Version: 15.0. \textbf{Function:} One of the unicode range constants.

70.68.54  \texttt{kurCoptic = \& h0000100}

MBS DynaPDF Plugin, Plugin Version: 15.0. \textbf{Function:} One of the unicode range constants.

70.68.55  \texttt{kurCountingRodNumerals = \& h00008000}

MBS DynaPDF Plugin, Plugin Version: 15.0. \textbf{Function:} One of the unicode range constants.
70.68.56  kurCuneiform = & h00004000

MBS DynaPDF Plugin, Plugin Version: 15.0. Function: One of the unicode range constants.

70.68.57  kurCurrencySymbols = 2

MBS DynaPDF Plugin, Plugin Version: 15.0. Function: One of the unicode range constants.

70.68.58  kurCypriotSyllabary = & h00000800

MBS DynaPDF Plugin, Plugin Version: 15.0. Function: One of the unicode range constants.

70.68.59  kurCyrillic = & h00000200

MBS DynaPDF Plugin, Plugin Version: 15.0. Function: One of the unicode range constants.

70.68.60  kurDeseret = & h00800000

MBS DynaPDF Plugin, Plugin Version: 15.0. Function: One of the unicode range constants.

70.68.61  kurDevanagari = & h00008000

MBS DynaPDF Plugin, Plugin Version: 15.0. Function: One of the unicode range constants.

70.68.62  kurDingbats = & h00008000

MBS DynaPDF Plugin, Plugin Version: 15.0. Function: One of the unicode range constants.

70.68.63  kurDominoTiles = & h04000000

MBS DynaPDF Plugin, Plugin Version: 15.0. Function: One of the unicode range constants.
70.68.64 kurEnclosedAlphanumerics = \& h00000400

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.65 kurEnclosedCJKLettersAndMonths = \& h00400000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.66 kurEthiopic = \& h00000800

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.67 kurGeneralPunctuation = \& h80000000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.68 kurGeometricShapes = \& h00002000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.69 kurGeorgian = \& h04000000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.70 kurGlagolitic = 2

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.71 kurGothic = \& h00400000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.
70.68.72  \textit{kurGreekandCoptic} = \& \texttt{h00000080}

MBS DynaPDF Plugin, Plugin Version: 15.0. \textbf{Function}: One of the unicode range constants.

70.68.73  \textit{kurGreekExtended} = \& \texttt{h40000000}

MBS DynaPDF Plugin, Plugin Version: 15.0. \textbf{Function}: One of the unicode range constants.

70.68.74  \textit{kurGujarati} = \& \texttt{h00040000}

MBS DynaPDF Plugin, Plugin Version: 15.0. \textbf{Function}: One of the unicode range constants.

70.68.75  \textit{kurGurmukhi} = \& \texttt{h00020000}

MBS DynaPDF Plugin, Plugin Version: 15.0. \textbf{Function}: One of the unicode range constants.

70.68.76  \textit{kurHalfwidthAndFullwidthForms} = \& \texttt{h00000010}

MBS DynaPDF Plugin, Plugin Version: 15.0. \textbf{Function}: One of the unicode range constants.

70.68.77  \textit{kurHangulCompatibilityJamo} = \& \texttt{h00100000}

MBS DynaPDF Plugin, Plugin Version: 15.0. \textbf{Function}: One of the unicode range constants.

70.68.78  \textit{kurHangulJamo} = \& \texttt{h10000000}

MBS DynaPDF Plugin, Plugin Version: 15.0. \textbf{Function}: One of the unicode range constants.

70.68.79  \textit{kurHangulSyllables} = \& \texttt{h01000000}

MBS DynaPDF Plugin, Plugin Version: 15.0. \textbf{Function}: One of the unicode range constants.
70.68.80  \texttt{kurHebrew} = \& h00000800

MBS DynaPDF Plugin, Plugin Version: 15.0. \textbf{Function:} One of the unicode range constants.

70.68.81  \texttt{kurHiragana} = \& h00020000

MBS DynaPDF Plugin, Plugin Version: 15.0. \textbf{Function:} One of the unicode range constants.

70.68.82  \texttt{kurIPAExtensions} = \& h00000010

MBS DynaPDF Plugin, Plugin Version: 15.0. \textbf{Function:} One of the unicode range constants.

70.68.83  \texttt{kurKannada} = \& h00400000

MBS DynaPDF Plugin, Plugin Version: 15.0. \textbf{Function:} One of the unicode range constants.

70.68.84  \texttt{kurKatakana} = \& h00040000

MBS DynaPDF Plugin, Plugin Version: 15.0. \textbf{Function:} One of the unicode range constants.

70.68.85  \texttt{kurKayahLi} = \& h00100000

MBS DynaPDF Plugin, Plugin Version: 15.0. \textbf{Function:} One of the unicode range constants.

70.68.86  \texttt{kurKharoshthi} = \& h00001000

MBS DynaPDF Plugin, Plugin Version: 15.0. \textbf{Function:} One of the unicode range constants.

70.68.87  \texttt{kurKhmer} = \& h00010000

MBS DynaPDF Plugin, Plugin Version: 15.0. \textbf{Function:} One of the unicode range constants.
kurLao = \& h02000000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

kurLatin1Supplement = 2

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

kurLatinExtendedA = 4

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

kurLatinExtendedAdditional = \& h20000000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

kurLatinExtendedB = 8

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

kurLepcha = \& h00020000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

kurLetterlikeSymbols = 8

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

kurLimbu = \& h20000000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.
70.68.96 kurLinearBSyllabary = & h00000020

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.97 kurMalayalam = & h00800000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.98 kurMathematicalAlphanumeric = & h02000000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.99 kurMathematicalOperators = & h00000040

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.100 kurMiscellaneousSymbols = & h00004000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.101 kurMiscellaneousTechnical = & h00000080

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.102 kurMongolian = & h00020000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.103 kurMusicalSymbols = & h01000000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.
MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.
70.68.105 kurNewTaiLue = & h80000000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.106 kurNKo = & h00004000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.107 kurNonPlane0 = & h02000000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.108 kurNumberForms = & h00000010

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.109 kurOgham = & h00004000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.110 kurOlChiki = & h00040000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.111 kurOldItalic = & h00200000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.112 kurOldPersian = & h00000100

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.
70.68.113  kurOpticalCharacterRecognition = & h00000200

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.114  kurOriya = & h00080000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.115  kurOsmanya = & h00000400

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.116  kurPhagsPa = & h00200000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.117  kurPhaistosDisc = & h01000000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.118  kurPhoenician = & h04000000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.119  kurPrivateUseAreaPlane0 = & h10000000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.120  kurPrivateUsePlane15 = & h04000000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.
70.68.121  \texttt{kurRejang} = \& h00200000

MBS DynaPDF Plugin, Plugin Version: 15.0. \textbf{Function:} One of the unicode range constants.

70.68.122  \texttt{kurRunic} = \& h00008000

MBS DynaPDF Plugin, Plugin Version: 15.0. \textbf{Function:} One of the unicode range constants.

70.68.123  \texttt{kurSaurashtra} = \& h00080000

MBS DynaPDF Plugin, Plugin Version: 15.0. \textbf{Function:} One of the unicode range constants.

70.68.124  \texttt{kurShavian} = \& h00002000

MBS DynaPDF Plugin, Plugin Version: 15.0. \textbf{Function:} One of the unicode range constants.

70.68.125  \texttt{kurSinhala} = \& h00002000

MBS DynaPDF Plugin, Plugin Version: 15.0. \textbf{Function:} One of the unicode range constants.

70.68.126  \texttt{kurSmallFormVariants} = 4

MBS DynaPDF Plugin, Plugin Version: 15.0. \textbf{Function:} One of the unicode range constants.

70.68.127  \texttt{kurSpacingModifierLetters} = \& h00000200

MBS DynaPDF Plugin, Plugin Version: 15.0. \textbf{Function:} One of the unicode range constants.

70.68.128  \texttt{kurSpecials} = \& h00000200

MBS DynaPDF Plugin, Plugin Version: 15.0. \textbf{Function:} One of the unicode range constants.
70.68. CLASS DYNAPDFSYSFONTMBS

70.68.129 kurSundanese = & h00010000

MBS DynaPDF Plugin, Plugin Version: 15.0. Function: One of the unicode range constants.

70.68.130 kurSuperscriptsAndSubscripts = 1

MBS DynaPDF Plugin, Plugin Version: 15.0. Function: One of the unicode range constants.

70.68.131 kurSylotiNagri = & h00000010

MBS DynaPDF Plugin, Plugin Version: 15.0. Function: One of the unicode range constants.

70.68.132 kurSyriac = & h00000080

MBS DynaPDF Plugin, Plugin Version: 15.0. Function: One of the unicode range constants.

70.68.133 kurTagalog = & h00100000

MBS DynaPDF Plugin, Plugin Version: 15.0. Function: One of the unicode range constants.

70.68.134 kurTags = & h10000000

MBS DynaPDF Plugin, Plugin Version: 15.0. Function: One of the unicode range constants.

70.68.135 kurTaiLe = & h40000000

MBS DynaPDF Plugin, Plugin Version: 15.0. Function: One of the unicode range constants.

70.68.136 kurTaiXuanJingSymbols = & h00002000

MBS DynaPDF Plugin, Plugin Version: 15.0. Function: One of the unicode range constants.
70.68.137  kurTamil = & h00100000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.138  kurTelugu = & h00200000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.139  kurThaana = & h00000100

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.140  kurThai = & h01000000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.141  kurTibetan = & h00000040

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.142  kurTifinagh = 4

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.143  kurUgaritic = & h00000080

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.144  kurUnifiedCanadianAboriginal = & h00002000

MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.
70.68. CLASS DYNAPDFSYSFONTMBS

70.68.145 kurVai = & h00001000
MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.146 kurVariationSelectors = & h08000000
MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.147 kurVerticalForms = 2
MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.148 kurYijingHexagramSymbols = 8
MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.

70.68.149 kurYiSyllables = & h00080000
MBS DynaPDF Plugin, Plugin Version: 15.0. **Function:** One of the unicode range constants.
70.69 class DynaPDFTableMBS

70.69.1 class DynaPDFTableMBS

**Function:** The class for a table in DynaPDF.  
**Notes:**  
This tables are more for doing a layout, but can also be used to show a list or a worksheet like in Excel.  
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.69.2 Methods

70.69.3 AddColumn(left as boolean, width as Double) as Integer

**Function:** Adds a column to the table.  
See also AddColumn function in DynaPDF manual.

70.69.4 AddRow(height as Double = 0.0) as Integer

**Function:** Adds a row with given height.  
See also AddRow function in DynaPDF manual.

70.69.5 AddRows(count as UInt32, height as Double) as Integer

**Function:** Adds a couple of rows with given height.  
See also AddRows function in DynaPDF manual.

70.69.6 ClearColumn(Col as Integer, Types as Integer)

**Function:** The function deletes the content in the specified column in all rows.  
**Notes:** The parameter Types is described in ClearContent() below.  
See also ClearColumn function in DynaPDF manual.
70.69.7 ClearContent(Types as Integer)

**Function:** Clears content of table.
**Notes:** See kdc constants for possible flags.
See also ClearContent function in DynaPDF manual.

70.69.8 ClearRow(Row as Integer, Types as Integer)

**Function:** The function deletes the content in the specified row.
**Notes:** The parameter Types is described in ClearContent().
See also ClearRow function in DynaPDF manual.

70.69.9 Constructor

**Function:** The private constructor.

70.69.10 DeleteColumn(column as UInt32)

**Function:** Deletes the column.

70.69.11 DeleteRow(row as UInt32)

**Function:** Deletes the row with the given index.
See also DeleteRow function in DynaPDF manual.

70.69.12 DeleteRows

**Function:** Deletes all rows.
See also DeleteRows function in DynaPDF manual.
70.69.13  **DrawTable(x as Double, y as Double, MaxHeight as Double = 0.0) as Double**

**Function:** Draws the table at the given position into the PDF:  
See also `DrawTable` function in DynaPDF manual.

70.69.14  **GetFirstRow as Integer**

**Function:** Queries first row from last draw operation.  
See also `GetFirstRow` function in DynaPDF manual.

70.69.15  **GetFlags(Row as Integer, Column as Integer) as Integer**

**Function:** Queries flag for a cell, a column or a row.  
**Notes:** If Row is -1, only column flags are returned. If Column is -1, the row flags are returned for given row.  
See also `GetFlags` function in DynaPDF manual.

70.69.16  **GetNextHeight(MaxHeight as Double, byref NextRow as Integer) as Double**

**Function:** Queries the next row.  
**Example:**

```vba
dim pdf as new DynaPDFMBS  
call pdf.CreateNewPDF(nil)  
call pdf.Append  
// create dummy table with 20 rows, 1 column and 500 points width. 20 points per row by default.  
dim table as DynaPDFTableMBS = pdf.CreateTable(20, 1, 500.0, 20.0)  
// fill in dummy data  
for i as Integer = 1 to 20  
dim rowNum as Integer = table.AddRow  
call table.SetCellText(rowNum, 0, pdf.ktaLeft, table.kcoCenter, str(i))  
next  
// and do some calculations
```
dim nextrow as Integer  
dim h as Double = table.GetNextHeight(0, nextrow)  
MsgBox str(h)+” with no limit.”  

dim h2 as Double = table.GetNextHeight(200, nextrow)  
MsgBox str(h2)+” with limit of 200 and rows till ”+str(nextrow-1)  
break

Notes:
If MaxHeight is zero, returns the height of table.
If MaxHeight is the height of space available, plugin calculates the effective height of table and which row would be the next one.
Returns negative number on error.
See also GetNextHeight function in DynaPDF manual.

70.69.17 GetNextRow as Integer

**Function:** Queries next row of last draw operation.
See also GetNextRow function in DynaPDF manual.

70.69.18 GetNumCols as Integer

**Function:** Queries number of columns of last draw operation.
See also GetNumCols function in DynaPDF manual.

70.69.19 GetNumRows as Integer

**Function:** Queries number of rows of last draw operation.
See also GetNumRows function in DynaPDF manual.
70.69.20 GetTableHeight as Double

Function: Queries the table height.
See also GetTableHeight function in DynaPDF manual.

70.69.21 GetTableWidth as Double

Function: Calculates table width.
See also GetTableWidth function in DynaPDF manual.

70.69.22 HaveMore as boolean

Function: Whether there are more rows to draw.
Notes: If you draw a table, you can loop and fill pages until the whole table is drawn.
See also HaveMore function in DynaPDF manual.

70.69.23 SetBackColor(Row as Integer, Column as Integer, channels() as Integer, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean

Function: Sets the back color of the table, a row or cells.
Example:

dim pdf as DynaPDFMBS // your PDF environment
dim tbl as DynaPDFTableMBS = pdf.CreateTable(3, 3, 500.0, 20.0) // make some table

const allRows = -1
const allColumns = -1

// add a few rows
rowNum = tbl.AddRow(-1.0)
rowNum = tbl.AddRow(-1.0)
rowNum = tbl.AddRow(-1.0)
rowNum = tbl.AddRow(-1.0)

// row 0 in 100% Cyan
call tbl.SetBackColor(0, allColumns, array(255,0,0,0), pdf.kcsDeviceCMYK)
// row 1 in 100% Cyan
call tbl.SetBackColor(1, allColumns, array(0, 255, 0, 0), pdf.kcsDeviceCMYK)  
  // row 2 in 100% Cyan
call tbl.SetBackColor(2, allColumns, array(0, 0, 255, 0), pdf.kcsDeviceCMYK)  
  // row 3 in RGB red with 50% transparency
call tbl.SetBackColor(3, allColumns, array(255, 0, 0))

Notes:
Default is none (transparent)
If Row is -1, all rows are modified. If Column is -1, all columns are modified.

Pass an integer for each channel with 0 to 255.
See also:

- 70.69.24 SetBackColor(Row as Integer, Column as Integer, paramarray channels as Integer) as boolean

70.69.24 SetBackColor(Row as Integer, Column as Integer, paramarray channels as Integer) as boolean

Function: Sets the back color of the table, a row or cells.
Example:

dim pdf as DynaPDFMBS  // your PDF environment
dim tbl as DynaPDFTableMBS = pdf.CreateTable(3, 3, 500.0, 20.0)  // make some table

// now fill all rows and columns with RGB red specified by integer values
const allRows = -1
const allColumns = -1
call tbl.SetBackColor(allRows, allColumns, 255, 0, 0)

Notes:
Default is none (transparent)
If Row is -1, all rows are modified. If Column is -1, all columns are modified.

Pass an integer for each channel with 0 to 255.
See also:

- 70.69.23 SetBackColor(Row as Integer, Column as Integer, channels() as Integer, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean
**70.69.25** SetBackColorFloat(Row as Integer, Column as Integer, channels() as Double, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean

MBS DynaPDF Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the back color of the table, a row or cells. **Example:**

```vbnet
dim pdf as DynaPDFMBS // your PDF environment
dim tbl as DynaPDFTableMBS = pdf.CreateTable(3, 3, 500.0, 100.0) // make some table

const allRows = -1
const allColumns = -1

// add a few rows
rowNum = tbl.AddRow(-1.0)
rowNum = tbl.AddRow(-1.0)
rowNum = tbl.AddRow(-1.0)
rowNum = tbl.AddRow(-1.0)

// row 0 in 100% Cyan
call tbl.SetBackColorFloat(0, allColumns, array(1.0, 0.0, 0.0, 0.0), pdf.kcsDeviceCMYK)
// row 1 in 100% Cyan
call tbl.SetBackColorFloat(1, allColumns, array(0.0, 1.0, 0.0, 0.0), pdf.kcsDeviceCMYK)
// row 2 in 100% Cyan
call tbl.SetBackColorFloat(2, allColumns, array(0.0, 0.0, 1.0, 0.0), pdf.kcsDeviceCMYK)
// row 3 in RGB red
call tbl.SetBackColorFloat(3, allColumns, array(1.0, 0.0, 0.0))
```

**Notes:**

Default is none (transparent)
If Row is -1, all rows are modified. If Column is -1, all columns are modified.

Pass a double value for each channel with range 0.0 to 1.0.
See also:

- **70.69.26** SetBackColorFloat(Row as Integer, Column as Integer, paramarray channels as Double) as boolean

**70.69.26** SetBackColorFloat(Row as Integer, Column as Integer, paramarray channels as Double) as boolean

MBS DynaPDF Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the back color of the table, a row or cells.
Example:

dim pdf as DynaPDFMBS // your PDF environment
dim tbl as DynaPDFTableMBS = pdf.CreateTable(3, 3, 500.0, 20.0) // make some table

// now fill all rows and columns with RGB red specified by double values
const allRows = -1
const allColumns = -1
call tbl.SetBackColorFloat(allRows, allColumns, 1.0, 0.0, 0.0)

Notes:
Default is none (transparent)
If Row is -1, all rows are modified. If Column is -1, all columns are modified.

Pass a double value for each channel with range 0.0 to 1.0.
See also:

- 70.69.25 SetBackColorFloat(Row as Integer, Column as Integer, channels() as Double, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean

70.69.27 SetBackColorValue(Row as Integer, Column as Integer, TPDFColorSpace as Integer, ColorValue as UInt32) as boolean

Function: Sets the back color of the table, a row or cells.
Example:

dim pdf as DynaPDFMBS // your PDF environment
dim tbl as DynaPDFTableMBS = pdf.CreateTable(3, 3, 500.0, 20.0) // make some table

// now fill all rows and columns with RGB red specified by RGB() call
const allRows = -1
const allColumns = -1

dim c as Integer = DynaPDFMBS.RGB(255, 0, 0)
call tbl.SetBackColorValue(allRows, allColumns, DynapdfMBS.kcsDeviceRGB, c)

Notes:
Default is none (transparent)
If Row is -1, all rows are modified. If Column is -1, all columns are modified.

Pass a color space and a matching color value.
For example kcsDeviceRGB and RGB(r,g,b), kcsDeviceCMYK and CMYK(c,m,y,k) or kcsDeviceGray with gray color.

### 70.69.28 SetBorderColor

**SetBorderColor(Row as Integer, Column as Integer, channels() as Integer, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean**

**Function:** Sets the border color of the table, a row or cells.
**Notes:**
Default is black.
If Row is -1, all rows are modified. If Column is -1, all columns are modified.

Pass an integer for each channel with 0 to 255.
See also:
- 70.69.29 SetBorderColor(Row as Integer, Column as Integer, paramarray channels as Integer) as boolean

### 70.69.29 SetBorderColor

**SetBorderColor(Row as Integer, Column as Integer, paramarray channels as Integer) as boolean**

**Function:** Sets the border color of the table, a row or cells.
**Notes:**
Default is black.
If Row is -1, all rows are modified. If Column is -1, all columns are modified.

Pass an integer for each channel with 0 to 255.
See also:
- 70.69.28 SetBorderColor(Row as Integer, Column as Integer, channels() as Integer, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean

### 70.69.30 SetBorderColorFloat

**SetBorderColorFloat(Row as Integer, Column as Integer, channels() as Double, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean**

**Function:** Sets the border color of the table, a row or cells.
**Notes:**
Default is black.
If Row is -1, all rows are modified. If Column is -1, all columns are modified.

Pass a double value for each channel with range 0.0 to 1.0.
See also:

- 70.69.31 SetBorderColorFloat(Row as Integer, Column as Integer, paramarray channels as Double) as boolean

70.69.31 SetBorderColorFloat(Row as Integer, Column as Integer, paramarray channels as Double) as boolean

Function: Sets the border color of the table, a row or cells.
Notes:
Default is black.
If Row is -1, all rows are modified. If Column is -1, all columns are modified.

Pass a double value for each channel with range 0.0 to 1.0.
See also:

- 70.69.30 SetBorderColorFloat(Row as Integer, Column as Integer, channels() as Double, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean

70.69.32 SetBorderColorValue(Row as Integer, Column as Integer, TPDFColorSpace as Integer, ColorValue as UInt32) as boolean

Function: Sets the border color of the table, a row or cells.
Notes:
Default is black.
If Row is -1, all rows are modified. If Column is -1, all columns are modified.

Pass a color space and a matching color value.
For example kcsDeviceRGB and RGB(r,g,b), kcsDeviceCMYK and CMYK(c,m,y,k) or kcsDeviceGray with gray color.
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70.69.33 SetBorderWidth(Row as Integer, Column as Integer, left as Double, top as Double, right as Double, bottom as Double) as boolean


Function: Sets the border width of the table, a row or cells.

Notes:
Default value is 0.
If Row is -1, all rows are modified. If Column is -1, all columns are modified.

70.69.34 SetCellImage(Row as Integer, Column as Integer, ForeGround as boolean, HAlign as Integer, VAlign as Integer, Width as Double, Height as Double, path as FolderItem, index as Integer = 0) as boolean


Function: Sets the cell image.
See also SetCellImage function in DynaPDF manual.
See also:
• 70.69.35 SetCellImage(Row as Integer, Column as Integer, ForeGround as boolean, HAlign as Integer, VAlign as Integer, Width as Double, Height as Double, path as string, index as Integer = 0) as boolean

70.69.35 SetCellImage(Row as Integer, Column as Integer, ForeGround as boolean, HAlign as Integer, VAlign as Integer, Width as Double, Height as Double, path as string, index as Integer = 0) as boolean


Function: Sets the cell image.
See also SetCellImage function in DynaPDF manual.
See also:
• 70.69.34 SetCellImage(Row as Integer, Column as Integer, ForeGround as boolean, HAlign as Integer, VAlign as Integer, Width as Double, Height as Double, path as FolderItem, index as Integer = 0) as boolean

70.69.36 SetCellImageAnsi(Row as Integer, Column as Integer, ForeGround as boolean, HAlign as Integer, VAlign as Integer, Width as Double, Height as Double, path as string, index as Integer = 0) as boolean


Function: Sets cell image.
70.69.37 SetCellImageData(Row as Integer, Column as Integer, ForeGround as boolean, HAlign as Integer, VAlign as Integer, Width as Double, Height as Double, ImageData as MemoryBlock, index as Integer = 0) as boolean

Function: Sets cell image.
Example:

    dim PictureData as memoryblock // from database maybe?
    dim w as Double = 300 // destination size
    dim h as Double = 200
    dim row as Integer
    dim column as Integer
    
    dim table as DynaPDFTableMBS // your table
    
    call table.SetCellImageData(row, column, true, table.kcoCenter, table.kcoCenter, w, h, PictureData, 0)

See also:

- 70.69.38 SetCellImageData(Row as Integer, Column as Integer, ForeGround as boolean, HAlign as Integer, VAlign as Integer, Width as Double, Height as Double, ImageData as string, index as Integer = 0) as boolean

70.69.38 SetCellImageData(Row as Integer, Column as Integer, ForeGround as boolean, HAlign as Integer, VAlign as Integer, Width as Double, Height as Double, ImageData as string, index as Integer = 0) as boolean

Function: Sets cell image.
Example:

    dim PictureData as string // from database maybe?
    dim w as Double = 300 // destination size
    dim h as Double = 200
    dim row as Integer
    dim column as Integer
    
    dim table as DynaPDFTableMBS // your table
    
    call table.SetCellImageData(row, column, true, table.kcoCenter, table.kcoCenter, w, h, PictureData, 0)
See also:

- 70.69.37 `SetCellImageData(Row as Integer, Column as Integer, ForeGround as boolean, HAlign as Integer, VAlign as Integer, Width as Double, Height as Double, ImageData as MemoryBlock, index as Integer = 0) as boolean`

### 70.69.39 `SetCellOrientation(Row as Integer, Column as Integer, Orientation as Integer) as boolean`

**Function:** The function sets the cell orientation.
**Notes:** See dynapdf_help.pdf for details.
See also `SetCellOrientation` function in DynaPDF manual.

### 70.69.40 `SetCellPadding(Row as Integer, Column as Integer, left as Double, top as Double, right as Double, bottom as Double) as boolean`

**Function:** Sets the cell padding of the table, a row or cells.
**Notes:**
Default is zero.
If Row is -1, all rows are modified. If Column is -1, all columns are modified.

### 70.69.41 `SetCellSpacing(Row as Integer, Column as Integer, left as Double, top as Double, right as Double, bottom as Double) as boolean`

**Function:** Sets the cell spacing of the table, a row or cells.
**Notes:**
Default is zero.
If Row is -1, all rows are modified. If Column is -1, all columns are modified.

### 70.69.42 `SetCellTable(Row as Integer, Column as Integer, HAlign as Integer, VAlign as Integer, SubTable as DynaPDFTableMBS) as boolean`

**Function:** The function inserts a sub table into the specified cell.
**Notes:**
A sub table is always a foreground object that has a strong width and height. That means, if the cell is not large enough then it will be expanded.

Note that the function creates no copy of the table. Do not delete the sub table when it is used by another table.

In programming languages which use reference counting like Xojo, it is important to delete the tables in right order. Delete first the tables which contain references to sub tables. Finally, delete the sub tables.

If the function succeeds the return value is true. If the function fails the return value is false.

See dynapdf_help.pdf for details.

See also SetCellTable function in DynaPDF manual.

---

**`SetCellTemplate(Row as Integer, Column as Integer, ForeGround as boolean, HAlign as Integer, VAlign as Integer, TmplHandle as Integer, Width as Double = 0, Height as Double = 0) as boolean`**


**Function:** The function inserts a template into the specified cell.

**Notes:** See dynapdf_help.pdf for details.

See also SetCellTemplate function in DynaPDF manual.

---

**`SetCellText(Row as Integer, Column as Integer, HAlign as Integer, VAlign as Integer, text as string) as boolean`**


**Function:** Sets the text of a cell.

See also SetCellText function in DynaPDF manual.

---

**`SetCellTextAnsi(Row as Integer, Column as Integer, HAlign as Integer, VAlign as Integer, text as string) as boolean`**


**Function:** Sets the text of a cell with ANSI text.

---

**`SetColWidth(column as UInt32, Width as Double, ExtTable as Boolean) as boolean`**


**Function:** Sets the column width for a column.
See also SetColWidth function in DynaPDF manual.

### 70.69.47 SetFlags(Row as Integer, Column as Integer, Flags as Integer) as boolean

**Function:** Sets the flags for a cell.
**Notes:** If Row is -1, all rows are modified. If Column is -1, all columns are modified.
See also SetFlags function in DynaPDF manual.

### 70.69.48 SetFont(Row as Integer, Column as Integer, name as string, Style as Integer, Embed as Boolean, CodePage as Integer) as boolean

**Function:** Sets the font of the table, a row or cells.
**Example:**
```vbnet
dim tbl as DynaPDFTableMBS // your table

    // set font for all cells
    call tbl.SetFont -1, -1, "Helvetica", pdf.kfsNone, true, pdf.kcpUnicode
    // set bold font for a special cell
    call tbl.SetFont rowNum, 2, "Helvetica", pdf.kfsBold, true, pdf.kcpUnicode
```

**Notes:**
Default is Helvetica, Code page 1252, Embed false.
If Row is -1, all rows are modified. If Column is -1, all columns are modified.
See also SetFont function in DynaPDF manual.

### 70.69.49 SetFontAnsi(Row as Integer, Column as Integer, name as string, Style as Integer, Embed as Boolean, CodePage as Integer) as boolean

**Function:** Sets the font of the table, a row or cells.
**Notes:**
Default is Helvetica, Code page 1252, Embed false.
If Row is -1, all rows are modified. If Column is -1, all columns are modified.
70.69.00  **SetFontSelMode(Row as Integer, Column as Integer, value as Int32) as boolean**

**Function:** Sets the font selection mode of the table, a row or cells.
**Notes:**
Default is ksmFamilyName.
If Row is -1, all rows are modified. If Column is -1, all columns are modified.
See also SetFontSelMode function in DynaPDF manual.

70.69.01  **SetFontSize(Row as Integer, Column as Integer, size as Double) as boolean**

**Function:** Sets the font size of the table, a row or cells.
**Notes:**
Default is 10.
If Row is -1, all rows are modified. If Column is -1, all columns are modified.
See also SetFontSize function in DynaPDF manual.

70.69.02  **SetGridHorizontalColor(channels() as Integer, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean**

**Function:** Sets the horizontal grid color.
**Notes:**
Default is black.
If Row is -1, all rows are modified. If Column is -1, all columns are modified.
Pass an integer for each channel with 0 to 255.
See also:
- 70.69.03 SetGridHorizontalColor(paramarray channels as Integer) as boolean

70.69.03  **SetGridHorizontalColor(paramarray channels as Integer) as boolean**

**Function:** Sets the horizontal grid color.
**Notes:**
Default is black.
If Row is -1, all rows are modified. If Column is -1, all columns are modified.

Pass an integer for each channel with 0 to 255.
See also:

- 70.69.52 SetGridHorizontalColor(channels() as Integer, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean

70.69.54 SetGridHorizontalColorFloat(channels() as Double, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean

Function: Sets the horizontal grid color.
Notes:
Default is black.
If Row is -1, all rows are modified. If Column is -1, all columns are modified.

Pass a double value for each channel with range 0.0 to 1.0.
See also:

- 70.69.55 SetGridHorizontalColorFloat(paramarray channels as Double) as boolean

70.69.55 SetGridHorizontalColorFloat(paramarray channels as Double) as boolean

Function: Sets the horizontal grid color.
Notes:
Default is black.
If Row is -1, all rows are modified. If Column is -1, all columns are modified.

Pass a double value for each channel with range 0.0 to 1.0.
See also:

- 70.69.54 SetGridHorizontalColorFloat(channels() as Double, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean

70.69.56 SetGridHorizontalColorValue(TPDFColorSpace as Integer, ColorValue as UInt32) as boolean

Function: Sets the horizontal grid color.
Notes:
Default is black.
If Row is -1, all rows are modified. If Column is -1, all columns are modified.

Pass a color space and a matching color value.
For example kcsDeviceRGB and RGB(r,g,b), kcsDeviceCMYK and CMYK(c,m,y,k) or kcsDeviceGray with gray color.

70.69.57 SetGridVerticalColor(channels() as Integer, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean

Function: Sets the vertical grid color.
Notes:
Default is black.
If Row is -1, all rows are modified. If Column is -1, all columns are modified.

Pass an integer for each channel with 0 to 255.
See also:

- 70.69.58 SetGridVerticalColor(paramarray channels as Integer) as boolean

70.69.58 SetGridVerticalColor(paramarray channels as Integer) as boolean

Function: Sets the vertical grid color.
Notes:
Default is black.
If Row is -1, all rows are modified. If Column is -1, all columns are modified.

Pass an integer for each channel with 0 to 255.
See also:

- 70.69.57 SetGridVerticalColor(channels() as Integer, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean
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70.69.59  SetGridVerticalColorFloat(channels() as Double, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean

Function: Sets the vertical grid color.
Notes:
Default is black.
If Row is -1, all rows are modified. If Column is -1, all columns are modified.

Pass a double value for each channel with range 0.0 to 1.0.
See also:

• 70.69.60 SetGridVerticalColorFloat(paramarray channels as Double) as boolean

70.69.60  SetGridVerticalColorFloat(paramarray channels as Double) as boolean

Function: Sets the vertical grid color.
Notes:
Default is black.
If Row is -1, all rows are modified. If Column is -1, all columns are modified.

Pass a double value for each channel with range 0.0 to 1.0.
See also:

• 70.69.59 SetGridVerticalColorFloat(channels() as Double, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean

70.69.61  SetGridVerticalColorValue(TPDFColorSpace as Integer, ColorValue as UInt32) as boolean

Function: Sets the vertical grid color.
Notes:
Default is black.

Pass a color space and a matching color value.
For example kcsDeviceRGB and RGB(r,g,b), kcsDeviceCMYK and CMYK(c,m,y,k) or kcsDeviceGray with gray color.
70.69.62 SetGridWidth(h as Double, v as Double) as boolean

**Function:** Sets the grid width.
**Notes:**
Default is 0.
If Row is -1, all rows are modified. If Column is -1, all columns are modified.
See also SetGridWidth function in DynaPDF manual.

70.69.63 SetImageColor(Row as Integer, Column as Integer, channels() as Integer, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean

**Function:** Sets the image color of the table, a row or cells.
**Notes:**
Default is black.
If Row is -1, all rows are modified. If Column is -1, all columns are modified.
Pass an integer for each channel with 0 to 255.
See also:

- 70.69.64 SetImageColor(Row as Integer, Column as Integer, paramarray channels as Integer) as boolean

70.69.64 SetImageColor(Row as Integer, Column as Integer, paramarray channels as Integer) as boolean

**Function:** Sets the image color of the table, a row or cells.
**Notes:**
Default is black.
If Row is -1, all rows are modified. If Column is -1, all columns are modified.
Pass an integer for each channel with 0 to 255.
See also:

- 70.69.63 SetImageColor(Row as Integer, Column as Integer, channels() as Integer, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean
70.69.65  SetImageColorFloat(Row as Integer, Column as Integer, channels() as Double, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean


**Function:** Sets the image color of the table, a row or cells.

**Notes:**
Default is black.
If Row is -1, all rows are modified. If Column is -1, all columns are modified.
Pass a double value for each channel with range 0.0 to 1.0.
See also:
- 70.69.66 SetImageColorFloat(Row as Integer, Column as Integer, paramarray channels as Double) as boolean

70.69.66  SetImageColorFloat(Row as Integer, Column as Integer, paramarray channels as Double) as boolean


**Function:** Sets the image color of the table, a row or cells.

**Notes:**
Default is black.
If Row is -1, all rows are modified. If Column is -1, all columns are modified.
Pass a double value for each channel with range 0.0 to 1.0.
See also:
- 70.69.65 SetImageColorFloat(Row as Integer, Column as Integer, channels() as Double, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean

70.69.67  SetImageColorValue(Row as Integer, Column as Integer, TPDFColorSpace as Integer, ColorValue as UInt32) as boolean


**Function:** Sets the image color.

**Notes:**
Default is black.
If Row is -1, all rows are modified. If Column is -1, all columns are modified.
Pass a color space and a matching color value.
For example kcsDeviceRGB and RGB(r,g,b), kcsDeviceCMYK and CMYK(c,m,y,k) or kcsDeviceGray with
gray color.

70.69.68  **SetPDF(pdf as DynaPDFMBS)**

**Function:** Sets the target PDF for this table.

70.69.69  **SetRowHeight(Row as Integer, value as Double) as boolean**

**Function:** Sets the row height of a row.  
See also **SetRowHeight** function in DynaPDF manual.

70.69.70  **SetTableWidth(Value as single, AdjustType as Integer, MinColWidth as single)**

**Function:** The function changes the width of the table.  
**Notes:**

At least one column must be modified when the width will be changed. The parameter AdjustType specifies how the column width should be modified. If the new width is larger, then the difference can be added to the left or right column, or all columns can get a unique width (TableWidth / NumColumns). The parameter MinColWidth is ignored in this case.

If the new width is smaller then the difference must be subtracted from the columns. The parameter MinColWidth specifies in this case the minimum width of columns that must be adjusted. It is only used if AdjustType is not set to kcoaUniqueWidth. The column widths are adjusted starting from the left or right side as specified. If the width of the first column is not large enough to subtract the difference, then the minimum column width is set to the column. This adjustment continues until the gap is zero. If the new table width is smaller as MinColWidth * NumColumns then the widths of the remaining columns will be set to zero. Such cases should be avoided since the column widths must be adjusted again when the table is drawn.

- kcoaUniqueWidth: Set the column widths to TableWidth / NumColumns
- kcoaAdjLeft: Adjust the widths starting from the left side
- kcoaAdjRight: Adjust the widths starting from the right side

See dynapdf_help manual for details.  
Returns true on success or false on failure.
See also SetTableWidth function in DynaPDF manual.

70.69.71 SetTextColor(Row as Integer, Column as Integer, channels() as Integer, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean

Function: Sets the text color of the table, a row or cells.  
Notes:  
Default is black.  
If Row is -1, all rows are modified. If Column is -1, all columns are modified.

Pass an integer for each channel with 0 to 255.  
See also:

- 70.69.72 SetTextColor(Row as Integer, Column as Integer, paramarray channels as Integer) as boolean

70.69.72 SetTextColor(Row as Integer, Column as Integer, paramarray channels as Integer) as boolean

Function: Sets the text color of the table, a row or cells.  
Notes:  
Default is black.  
If Row is -1, all rows are modified. If Column is -1, all columns are modified.

Pass an integer for each channel with 0 to 255.  
See also:

- 70.69.71 SetTextColor(Row as Integer, Column as Integer, channels() as Integer, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean

70.69.73 SetTextColorFloat(Row as Integer, Column as Integer, channels() as Double, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean

Function: Sets the text color of the table, a row or cells.  
Notes:
Default is black.
If Row is -1, all rows are modified. If Column is -1, all columns are modified.

Pass a double value for each channel with range 0.0 to 1.0.
See also:

- 70.69.74 SetTextColorFloat(Row as Integer, Column as Integer, paramarray channels as Double) as boolean

70.69.74 SetTextColorFloat(Row as Integer, Column as Integer, paramarray channels as Double) as boolean

**Function:** Sets the text color of the table, a row or cells.
**Notes:**
Default is black.
If Row is -1, all rows are modified. If Column is -1, all columns are modified.

Pass a double value for each channel with range 0.0 to 1.0.
See also:

- 70.69.73 SetTextColorFloat(Row as Integer, Column as Integer, channels() as Double, ExtColorSpace as Integer = 0, ColorSpaceHandle as Integer = 0) as boolean

70.69.75 SetTextColorValue(Row as Integer, Column as Integer, TPDFColorSpace as Integer, ColorValue as UInt32) as boolean

**Function:** Sets the horizontal grid color.
**Notes:**
Default is black.
If Row is -1, all rows are modified. If Column is -1, all columns are modified.

Pass a color space and a matching color value.
For example kcsDeviceRGB and RGB(r,g,b), kcsDeviceCMYK and CMYK(c,m,y,k) or kcsDeviceGray with gray color.
70.69.76 Properties

70.69.77 Parent as Variant

Function: Reference to parent object.  
Notes: (Read only property)

70.69.78 PDF as DynaPDFMBS

Function: Reference to parent PDF object.  
Notes: (Read only property)

70.69.79 Constants

70.69.80 kcctImage = 1

MBS DynaPDF Plugin, Plugin Version: 12.4. Function: One of the cell content type constants.  
Notes: Image.

70.69.81 kcctTable = 2

MBS DynaPDF Plugin, Plugin Version: 12.4. Function: One of the cell content type constants.  
Notes: Table.

70.69.82 kcctTemplate = 3

MBS DynaPDF Plugin, Plugin Version: 13.2. Function: One of the cell content type constants.  
Notes: Template.

70.69.83 kcctText = 0

MBS DynaPDF Plugin, Plugin Version: 12.4. Function: One of the cell content type constants.  
Notes: Text
70.69.84  kcoaAdjLeft = 1

MBS DynaPDF Plugin, Plugin Version: 13.2. **Function:** One of the column adjustment constants.  
**Notes:** Adjust the widths starting from the left side.

70.69.85  kcoaAdjRight = 2

MBS DynaPDF Plugin, Plugin Version: 13.2. **Function:** One of the column adjustment constants.  
**Notes:** Adjust the widths starting from the right side.

70.69.86  kcoaUniqueWidth = 0

MBS DynaPDF Plugin, Plugin Version: 13.2. **Function:** One of the column adjustment constants.  
**Notes:** Set the column widths to TableWidth / NumColumns.

70.69.87  kcoBottom = 1

MBS DynaPDF Plugin, Plugin Version: 12.4. **Function:** One of the cell orientation constants.  
**Notes:** Bottom

70.69.88  kcoCenter = 2

MBS DynaPDF Plugin, Plugin Version: 12.4. **Function:** One of the cell orientation constants.  
**Notes:** Center

70.69.89  kcoLeft = 0

MBS DynaPDF Plugin, Plugin Version: 12.4. **Function:** One of the cell orientation constants.  
**Notes:** Left

70.69.90  kcoRight = 1

MBS DynaPDF Plugin, Plugin Version: 12.4. **Function:** One of the cell orientation constants.  
**Notes:** Right
70.69.91 kcoTop = 0

MBS DynaPDF Plugin, Plugin Version: 12.4. **Function:** One of the cell orientation constants.  
**Notes:** Top

70.69.92 kdcAllCont = & h0000001F

MBS DynaPDF Plugin, Plugin Version: 12.4. **Function:** One of the delete option flags for ClearContent function.  
**Notes:** Delete all content types

70.69.93 kdcBackGround = & h20000000

MBS DynaPDF Plugin, Plugin Version: 12.4. **Function:** One of the delete option flags for ClearContent function.  
**Notes:** Delete background objects

70.69.94 kdcBoth = & h30000000

MBS DynaPDF Plugin, Plugin Version: 12.4. **Function:** One of the delete option flags for ClearContent function.  
**Notes:** Delete both foreground and background objects

70.69.95 kdcForeGround = & h10000000

MBS DynaPDF Plugin, Plugin Version: 12.4. **Function:** One of the delete option flags for ClearContent function.  
**Notes:** Delete foreground objects

70.69.96 kdcImage = 2

MBS DynaPDF Plugin, Plugin Version: 12.4. **Function:** One of the delete option flags for ClearContent function.  
**Notes:** Delete image.
70.69. **CLASS DYNAPDFTABLEMBS**

**70.69.97**  \( \text{kdcTable} = 8 \)

MBS DynaPDF Plugin, Plugin Version: 12.4. **Function:** One of the delete option flags for ClearContent function.
**Notes:** Delete table.

**70.69.98**  \( \text{kdcTemplate} = 4 \)

MBS DynaPDF Plugin, Plugin Version: 13.2. **Function:** One of the delete option flags for ClearContent function.
**Notes:** Template table.

**70.69.99**  \( \text{kdcText} = 1 \)

MBS DynaPDF Plugin, Plugin Version: 12.4. **Function:** One of the delete option flags for ClearContent function.
**Notes:**
Delete text.
Text is always a foreground object

**70.69.100**  \( \text{ktfAddFlags} = \& \text{h00000020} \)

MBS DynaPDF Plugin, Plugin Version: 15.2. **Function:** One of the cell flags.
**Notes:**
If used when setting flags, the flags are not replacing existing values, but added.
This way a call can set one flag and later another call can add a second flag without clearing first one.

**70.69.101**  \( \text{ktfDefault} = 0 \)

MBS DynaPDF Plugin, Plugin Version: 12.5. **Function:** One of the cell flags.
**Notes:** Default flag.

**70.69.102**  \( \text{ktfHeaderRow} = 2 \)

MBS DynaPDF Plugin, Plugin Version: 13.1. **Function:** One of the cell flags.
**Notes:** Header rows are drawn first after a page break occurred
70.69.103  ktfNoLineBreak = 4

MBS DynaPDF Plugin, Plugin Version: 13.2. **Function:** One of the cell flags.
**Notes:** Prohibit line breaks in cells with text. Can be set to the entire table, columns, rows, and cells.

70.69.104  ktfScaleToRect = 8

MBS DynaPDF Plugin, Plugin Version: 13.2. **Function:** One of the cell flags.
**Notes:**
If set, the specified output width and height represents the maximum size of the image or template. The image or template is scaled into this rectangle without changing the aspect ratio.
70.69.105  ktfStatic = 1

MBS DynaPDF Plugin, Plugin Version: 12.5. **Function:** One of the cell flags. **Notes:** This flag marks a row, column, or cell as static to avoid the deletion of the content with ClearContent().

70.69.106  ktfUseImageCS = & h00000010

MBS DynaPDF Plugin, Plugin Version: 13.2. **Function:** One of the cell flags. **Notes:** If set, images are inserted in the native image color space.
70.70 class DynapdfTextRecordAMBS

70.70.1 class DynapdfTextRecordAMBS


70.70.2 Properties

70.70.3 Advance as Single

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The advance value for this text.
Notes: Negative values move the cursor the right, positive to the left

(Read only property)

70.70.4 Length as Integer

Notes: (Read and Write property)

70.70.5 Text as String

Notes: (Read and Write property)
70.71. Class DynapdfTextRecordWMBS

70.71.1 Class DynapdfTextRecordWMBS

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for an unicode text.

70.71.2 Properties

70.71.3 Advance as Single

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The advance value for this text.
**Notes:**
Negative values move the cursor the right, positive to the left

(Read only property)

70.71.4 Length as Integer

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Length in characters.
**Notes:** (Read and Write property)

70.71.5 Text as String

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Already translated Unicode string.
**Notes:** (Read and Write property)

70.71.6 Width as Single

MBS DynaPDF Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** String width measured in text space.
**Notes:** (Read only property)
70.72 class DynaPDFURIActionMBS

70.72.1 class DynaPDFURIActionMBS

Function: The class for an URL action.
Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.72.2 Methods

70.72.3 Constructor

Function: The private constructor.

70.72.4 Properties

70.72.5 BaseURL as String

Function: Optional, if defined in the Catalog object.
Notes: (Read only property)

70.72.6 IsMap as Boolean

Function: A flag specifying whether to track the mouse position when the URI is resolved.
Notes: e.g. http://test.org?50,70.
(Read only property)

70.72.7 NextAction as Integer

Function: The handle to the next action.
Notes:
-1 or next action handle to be executed if any
(Read only property)

### 70.72.8 NextActionType as Integer

**Function:** The type of the next action.
**Notes:**
Only set if NextAction is >= 0.
(Read only property)

### 70.72.9 URI as String

**Function:** Uniform Resource Identifier.
**Notes:** (Read only property)
70.73 class DynaPDFViewportMBS

70.73.1 class DynaPDFViewportMBS

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The viewport details class.
Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

70.73.2 Methods

70.73.3 Constructor

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The private constructor.

70.73.4 Properties

70.73.5 BBox as DynaPDFRectMBS

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The Bounding box.
Notes: (Read and Write property)

70.73.6 Measure as DynaPDFMeasureMBS

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Optional measure dictionary.
Notes: (Read and Write property)

70.73.7 Name as String

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Optional name.
Notes: (Read and Write property)
70.73. **CLASS DYNAPDFVIEWPORTMBS**

70.73.8 **PtData as DynaPDFPointDataDictionaryMBS**

MBS DynaPDF Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The Point Data dictionary.

**Notes:** (Read and Write property)
70.74 class DynaPDFXFAStreamMBS

70.74.1 class DynaPDFXFAStreamMBS

Function: The class for a XFA stream.
Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

70.74.2 Methods

70.74.3 Constructor

Function: The private constructor.

70.74.4 Properties

70.74.5 Buffer as String

Function: XML Stream.
Notes: (Read and Write property)

70.74.6 Index as Integer

Function: The stream index.
Notes: (Read and Write property)

70.74.7 Name as String

Function: Stream name.
Notes: (Read and Write property)
70.74. **CLASS DYNAPDFXFASTREAMEMBS**

### 70.74.8 Size as Integer


**Function:** Buffer size in bytes.

**Notes:** (Read and Write property)
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EmailParser

71.1 class MimeAddressListMBS

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for a list of addresses.

71.1.2 Methods

71.1.3 Addresses as MimeAddressMBS()

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The array of addresses.
See also:

- 71.1.4 Addresses(index as Integer) as MimeAddressMBS

71.1.4 Addresses(index as Integer) as MimeAddressMBS

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Queries address by index.
**Notes:** Index is zero based.
See also:

- 71.1.3 Addresses as MimeAddressMBS()
71.1.5 Constructor(TextToParse as String)

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Parses a text with addresses.

71.1.6 Properties

71.1.7 AddressesVariant as Variant

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The array of addresses.

**Notes:**
This property is only to see array in debugger.
(Read only property)

71.1.8 Count as Integer

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of addresses in this list.

**Notes:** (Read only property)

71.1.9 StringValue as String

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The address list as a string.

**Notes:** (Read only property)
71.2. **CLASS MIMEADDRESSMBS**

### 71.2.1 class MimeAddressMBS

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for an address which can be an email or a group.

### 71.2.2 Methods

#### 71.2.3 Constructor(TextToParse as String)

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Parses an address from text.
**Example:**
```vba
    dim m as new MimeAddressMBS("=?utf-8?Q?M=C3BCller?= <zivi@mac.com>")
    MsgBox m.Mailbox.LabelDecoded
```

### 71.2.4 Properties

#### 71.2.5 Group as MimeGroupMBS

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The group for this address.
**Notes:** (Read only property)

#### 71.2.6 isGroup as Boolean

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether this address is a group.
**Notes:** (Read only property)

#### 71.2.7 Mailbox as MimeMailboxMBS

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The mailbox for this address.
**Notes:** (Read only property)
71.2.8 StringValue as String

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The address as a string.
**Notes:** (Read only property)
71.3.  CLASS MIMEATTACHMENTMBS

71.3  class MimeAttachmentMBS

71.3.1  class MimeAttachmentMBS

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**
The class for an attachment.
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin
functions.

71.3.2  Methods

71.3.3  Constructor

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**
The private constructor.

71.3.4  Properties

71.3.5  Body as MimeBodyMBS

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**
The reference to the body of this attachment.
**Notes:**
The StringValue of the body has the attachment’s encoded data.
(Read and Write property)

71.3.6  ContentDescription as String

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**
The content description.
**Notes:** (Read and Write property)

71.3.7  ContentDisposition as String

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**
The content disposition.
**Notes:**
71.3.8 contentId as String

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The content ID for inline graphics.

**Notes:**
e.g. c1441531740.48804.1@MacbookPro-Christian.local
(Read and Write property)

71.3.9 ContentTransferEncoding as String

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The content transfer encoding.

**Notes:**
e.g. base64
(Read and Write property)

71.3.10 ContentType as String

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The content type.

**Notes:**
e.g. text/plain, charset=utf-8 or application/pdf; name="agb.pdf"
(Read and Write property)

71.3.11 Data as String

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The data for this attachment.

**Notes:**
Decoded for your convenience.
(Read and Write property)
71.3. CLASS MIMEATTACHMENTMBS

71.3.12 Filename as String

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The filename for this attachment.

**Notes:**
The class pulls this from various header fields and decodes it if necessary.
The file name may contain invalid characters for your platform.
Like double colons for OS X or backslash for Windows.
(Read and Write property)

71.3.13 Header as MimeHeaderMBS

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The header details for this attachment.

**Notes:** (Read and Write property)

71.3.14 MimeType as String

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The mime type of the attachment.

**Notes:**
e.g. "application/pdf" for a PDF file
See also MimeTypeToFileExtensionMBS function.
(Read and Write property)

71.3.15 MimeVersion as String

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The mime version of the attachment.

**Notes:**
e.g. "1.0"
(Read and Write property)
71.4  class MimeBodyMBS

71.4.1  class MimeBodyMBS

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for a body of a mime entity.  
**Notes:** This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

71.4.2  Methods

71.4.3  Constructor

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The private constructor.

71.4.4  Parts as MimeEntityMBS()

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The array of parts.  
**Notes:** Mime Entities are organized often in a tree. The email is an entity and has sub entities for html, plain text and attachments.  
See also:

- 71.4.5 Parts(index as Integer) as MimeEntityMBS

71.4.5  Parts(index as Integer) as MimeEntityMBS

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries part by index.  
**Notes:** Index is zero based.  
See also:

- 71.4.4 Parts as MimeEntityMBS()

71.4.6  Properties

71.4.7  epilogue as String

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The epilogue of the body.
71.4. CLASS MIMEBODYMBS

Notes: (Read only property)

71.4.8 PartsVariant as Variant

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
The array of parts.
Notes:
Mime Entities are organized often in a tree. The email is an entity and has sub entities for html, plain text and attachments.
This property is only to see array in debugger.
(Read only property)

71.4.9 preamble as String

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
The preamble of the body.
Notes:
This is sometimes a message like: "This is a MIME encoded message."
(Read only property)

71.4.10 StringValue as String

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
The string value of the body.
Notes: (Read only property)
71.5 class MimeEmailMBS

71.5.1 class MimeEmailMBS

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for an email.
**Notes:** Subclass of the MimeEntityMBS class.

71.5.2 Methods

71.5.3 Attachments as MimeAttachmentMBS()

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The array of attachments.
**Example:**
```vbscript
dim f as FolderItem = SpecialFolder.Desktop.Child("test.eml")
dim m as new MimeEmailMBS(f)

MsgBox str(m.Attachments.Ubound+1)+" attachments and "+str(m.Inlines.Ubound+1)+" inlines"
for each a as MimeAttachmentMBS in m.Inlines
  MsgBox "Inline: " + a.Filename
next
```

See also:

- 71.5.4 Attachments(index as Integer) as MimeAttachmentMBS

71.5.4 Attachments(index as Integer) as MimeAttachmentMBS

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Queries attachment by index.
**Notes:** Index is zero based.
See also:

- 71.5.3 Attachments as MimeAttachmentMBS()

71.5.5 Constructor(Content as MemoryBlock)

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Parses an email from a memoryblock.
71.5. CLASS MIMEEMAILMBS

See also:

- 71.5.6 Constructor(Content as string)
- 71.5.7 Constructor(File as FolderItem)

71.5.6 Constructor(Content as string)

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Parses an email from a string.

**Example:**

```vbscript
dim f as FolderItem = SpecialFolder.Desktop.Child("test.eml")
dim b as BinaryStream = BinaryStream.Open(f)
dim s as string = b.Read(b.Length)
dim m as new MimeEmailMBS(s)

MsgBox m.Subject
```

See also:

- 71.5.5 Constructor(Content as MemoryBlock)
- 71.5.7 Constructor(File as FolderItem)

71.5.7 Constructor(File as FolderItem)

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Parses an email from a text file.

**Example:**

```vbscript
dim f as FolderItem = SpecialFolder.Desktop.Child("test.eml")
dim m as new MimeEmailMBS(f)

MsgBox m.Subject
```

See also:

- 71.5.5 Constructor(Content as MemoryBlock)
- 71.5.6 Constructor(Content as string)
71.5.8 DecodeInline(Text as String) as String

MBS CURL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Decodes a text with inline encoded text.

**Example:**

```vba
dim e,s as string
e = MimeEmailMBS.DecodeInline(s)
MsgBox e
```

**Notes:**
This is the function our plugin uses to decode names and subject in the email. You don’t need to use it unless you got subject/name encoded from somewhere else.

71.5.9 HTMLToPlainText(HTMLText as String) as String

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Converts html to plain text.

**Notes:**
This is the function our plugin uses internally to fill PlainText field for html only email. Removes HTML tags, decodes entities and adds returns where appropriated.

71.5.10 Inlines as MimeAttachmentMBS()

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The array of inline items.

**Example:**

```vba
dim f as FolderItem = SpecialFolder.Desktop.Child("test.eml")
dim m as new MimeEmailMBS(f)
MsgBox str(m.Attachments.Ubound+1)+" attachments and "+str(m.Inlines.Ubound+1)+" inlines"
for each a as MimeAttachmentMBS in m.Inlines
MsgBox "Inline: " + a.Filename
next
```
**71.5. CLASS MIMEEMAILMBS**

**Notes:** Inline items are like attachments, but shown in the email and normally referenced by ID from the html text.
See also:

- 71.5.11 Inlines(index as Integer) as MimeAttachmentMBS

**71.5.11 Inlines(index as Integer) as MimeAttachmentMBS**

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries inline by index.
**Notes:** Index is zero based.
See also:

- 71.5.10 Inlines as MimeAttachmentMBS()

**71.5.12 Properties**

**71.5.13 AttachmentsVariant as Variant**

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The array of attachments.
**Notes:**
This property is only to see array in debugger.
(Read only property)

**71.5.14 Date as Date**

MBS CURL Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries the sent date of the email.
**Notes:**
Can be undefined and return nil.
The plugin looks in email headers for a Date: header and parses the date.
The returned date is normalized to current time zone.
(Read only property)

**71.5.15 HTMLText as String**

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The html text of the email.
**Example:**
dim f as FolderItem = SpecialFolder.Desktop.Child("test.eml")
dim m as new MimeEmailMBS(f)

MsgBox m.HTMLText

**Notes:**
Decoded for your convenience.
You may want to use ReplaceLineEndings to make sure the line endings are what you need them to be.
(Read only property)

### 71.5.16 InlinesVariant as Variant

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The array of inline items.
**Notes:**
Inline items are like attachments, but shown in the email and normally referenced by ID from the html text.
This property is only to see array in debugger.
(Read only property)

### 71.5.17 PlainText as String

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The plain text of the email.
**Example:**
```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.eml")
dim m as new MimeEmailMBS(f)
MsgBox m.PlainText
```

**Notes:**
Decoded for your convenience.
You may want to use ReplaceLineEndings to make sure the line endings are what you need them to be.
(Read only property)
71.5.18  **RaiseUnknownFormatException** as Boolean

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to raise an exception when plugin finds encoding in email which is not in list of known encodings. **Notes:**

Used to find unknown encodings.  
(Read and Write property)

71.5.19  **ReceivedDate** as Date

MBS CURL Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries the receive date of the email. **Notes:**

Can be undefined and return nil.  
The plugin looks in email headers for a Receive: header and parses the date.  
The returned date is normalized to current time zone.  
(Read only property)

71.5.20  **Source** as String

MBS CURL Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The source code of the email parsed. **Notes:** (Read only property)

71.5.21  **Subject** as String

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The decoded subject line of the email. **Notes:** (Read only property)
71.6 class MimeEntityMBS

71.6.1 class MimeEntityMBS

Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

71.6.2 Methods

71.6.3 Constructor


71.6.4 Properties

71.6.5 Body as MimeBodyMBS

Notes: This may be quoted printable, base64 or otherwise encoded.
(Read only property)

71.6.6 BodyDecoded as String

Notes: (Read only property)

71.6.7 Header as MimeHeaderMBS

Notes:
71.6. CLASS MIMEENTITYMBS

The email itself has headers, but each entity in the mime tree has also headers.
(Read only property)
71.7 class MimeFieldMBS

71.7.1 class MimeFieldMBS

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for a header field.

71.7.2 Methods

71.7.3 Constructor(TextToParse as String)

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Parses the text in a field.

71.7.4 Properties

71.7.5 Name as String

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The field name.
**Notes:** (Read only property)

71.7.6 Value as String

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The field value.
**Notes:** (Read only property)
71.8. CLASS MIMEGROUPMBS

71.8. class MimeGroupMBS

71.8.1 class MimeGroupMBS

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for an email group.

**Example:**

```vbs
MsgBox g.NameDecoded+" "+str(g.Count)
MsgBox g.Mailboxes(0).LabelDecoded
MsgBox g.Mailboxes(1).LabelDecoded
```

71.8.2 Methods

71.8.3 Constructor(TextToParse as String)

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Parses a group.

**Example:**

```vbs
MsgBox g.NameDecoded+" "+str(g.Count)
```

71.8.4 Mailboxes as MimeMailboxMBS()

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The array of mailboxes in this group.

See also:

- 71.8.5 Mailboxes(index as Integer) as MimeMailboxMBS

71.8.5 Mailboxes(index as Integer) as MimeMailboxMBS

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries a mailbox in the group.

**Example:**
```vbs```
```

MsgBox g.Mailboxes(0).LabelDecoded
MsgBox g.Mailboxes(1).LabelDecoded

See also:

- 71.8.4 Mailboxes as MimeMailboxMBS()

### 71.8.6 Properties

#### 71.8.7 Count as Integer

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of emails in this group. **Notes:** (Read only property)

#### 71.8.8 MailboxesVariant as Variant

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The array of mailboxes in this group. **Notes:** This property is only to see array in debugger. (Read only property)

#### 71.8.9 Name as String

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The name of the group. **Notes:** The name property has the raw name while the NameDecoded property has the decoded version for displaying to user. (Read only property)
71.8.10 NameDecoded as String

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The name of the group.
**Notes:**
The name property has the raw name while the NameDecoded property has the decoded version for displaying to user.
(Read only property)

71.8.11 StringValue as String

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The group as a string.
**Notes:** (Read only property)
71.9  class MimeHeaderMBS

71.9.1  class MimeHeaderMBS

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for headers of a mime entity.
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin
functions.

71.9.2  Methods

71.9.3  Constructor

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

71.9.4  FieldByName(name as string) as MimeFieldMBS

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Finds a field by name.
**Example:**

```vba
    dim f as FolderItem = SpecialFolder.Desktop.Child("test.eml")
    dim m as new MimeEmailMBS(f)

    dim h as MimeHeaderMBS = m.Header
    MsgBox h.FieldByName("Date").Value
```

**Notes:** e.g. "Sat, 5 Sep 2015 23:52:13 +0200" for the date field.

71.9.5  Fields as MimeFieldMBS()

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The array of fields in this header.
**See also:**

- 71.9.6 Fields(index as Integer) as MimeFieldMBS
71.9. **CLASS MIMEHEADERMBS**

### 71.9.6 Fields(index as Integer) as MimeFieldMBS

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries field by index.  
**Notes:** Index is zero based.  
See also:

- 71.9.5 Fields as MimeFieldMBS()

### 71.9.7 hasField(name as string) as boolean

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether a certain field exists.  
**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.eml")
dim m as new MimeEmailMBS(f)

dim h as MimeHeaderMBS = m.Header
if h.hasField("Date") then
    MsgBox "Has date: " + h.FieldByName("Date").Value
end if
```

### 71.9.8 Properties

### 71.9.9 bcc as MimeAddressListMBS

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The BCC address list.  
**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.eml")
dim m as new MimeEmailMBS(f)

dim h as MimeHeaderMBS = m.Header
    // get BCC
    dim l as MimeAddressListMBS = h.BCC
    // get addresses
    dim a() as MimeAddressMBS = l.Addresses
    // get first one
    dim b as MimeAddressMBS = a(0)
    // assume it's an email and get it
    dim x as MimeMailboxMBS = b.Mailbox
    // and show to user with name and email
```
MsgBox x.LabelDecoded +" " + x.Email

**Notes:** (Read only property)

### 71.9.10 cc as MimeAddressListMBS

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The CC address list.
**Example:**
```vba
dim f as FolderItem = SpecialFolder.Desktop.Child("test.eml")
dim m as new MimeEmailMBS(f)

dim h as MimeHeaderMBS = m.Header
// get CC
dim l as MimeAddressListMBS = h.CC
// get addresses
dim a() as MimeAddressMBS = l.Addresses
// get first one
dim b as MimeAddressMBS = a(0)
// assume it’s an email and get it
dim x as MimeMailboxMBS = b.Mailbox
// and show to user with name and email
MsgBox x.LabelDecoded +" " + x.Email
```

**Notes:** (Read only property)

### 71.9.11 ContentDescription as String

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The content description.
**Notes:** (Read only property)

### 71.9.12 ContentDisposition as String

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The content disposition.
**Notes:** (Read only property)
71.9. **CLASS MIMEHEADERMBS**

### 71.9.13 `contentId` as String

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The content ID for an inline graphic.

**Example:**
```vba
dim f as FolderItem = SpecialFolder.Desktop.Child("test.eml")
dim m as new MimeEmailMBS(f)

dim h as MimeHeaderMBS = m.Header
MsgBox h.contentId
```

**Notes:** (Read only property)

### 71.9.14 `ContentTransferEncoding` as String

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The content transfer encoding.

**Notes:**
- e.g. `base64`
  (Read only property)

### 71.9.15 `ContentTransferEncodingMechanism` as String

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The content transfer encoding mechanism.

**Notes:**
- base64
  (Read only property)

### 71.9.16 `ContentType` as String

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The content type.

**Notes:**
- e.g. "multipart/alternative; boundary="Apple-Mail=._F9738882-571C-4469-8349-574115CE32F4"
  (Read only property)
71.9.17  from as MimeMailboxListMBS

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The from address list.

**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.eml")
dim m as new MimeEmailMBS(f)

dim h as MimeHeaderMBS = m.Header
// get from
dim l as MimeMailboxListMBS = h.from
// get mailboxes
dim a() as MimeMailboxMBS = l.Mailboxes
// get first one
dim b as MimeMailboxMBS = a(0)
// and show to user with name and email
MsgBox b.LabelDecoded + " " + b.Email
```

**Notes:** (Read only property)

71.9.18  messageid as String

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The message ID for this email.

**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.eml")
dim m as new MimeEmailMBS(f)

dim h as MimeHeaderMBS = m.Header
MsgBox h.messageid
```

**Notes:**

e.g. "<599782DA-09A0-4461-8474-2BE9F3197CAF@macsw.de>"
(Read only property)

71.9.19  MimeVersion as String

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The mime version.
Example:

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.eml")
dim m as new MimeEmailMBS(f)

dim h as MimeHeaderMBS = m.Header
MsgBox h.MimeVersion
```

Notes:

e.g. "1.0"
(Read only property)

### 71.9.20 replyto as MimeAddressListMBS

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The replyto address field.

**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.eml")
dim m as new MimeEmailMBS(f)

dim h as MimeHeaderMBS = m.Header
   // get replyto
dim l as MimeAddressListMBS = h.replyto
   // get addresses
dim a() as MimeAddressMBS = l.Addresses
   // get first one
dim b as MimeAddressMBS = a(0)
   // assume it's an email and get it
dim x as MimeMailboxMBS = b.Mailbox
   // and show to user with name and email
MsgBox x.LabelDecoded + " " + x.Email
```

Notes: (Read only property)

### 71.9.21 sender as MimeMailboxMBS

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The sender of the email.

**Example:**
dim f as FolderItem = SpecialFolder.Desktop.Child("test.eml")
dim m as new MimeEmailMBS(f)

dim h as MimeHeaderMBS = m.Header
dim b as MimeMailboxMBS = h.sender
MsgBox b.Email

Notes:
May be different from "from" field.
(Read only property)

71.9.22 subject as String

Example:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.eml")
dim m as new MimeEmailMBS(f)

dim h as MimeHeaderMBS = m.Header
MsgBox h.subject

Notes:
The subject property has the original subject line while the plugin provides the decoded subjected line in the subjectDecoded for display to user.
(Read only property)

71.9.23 subjectDecoded as String

Example:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.eml")
dim m as new MimeEmailMBS(f)

dim h as MimeHeaderMBS = m.Header
MsgBox h.subjectDecoded
Notes:

The subject property has the original subject line while the plugin provides the decoded subjected line in the subjectDecoded for display to user.
(Read only property)

71.9.24 too as MimeAddressListMBS

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The TO receivers.

**Example:**

```vba
    dim f as FolderItem = SpecialFolder.Desktop.Child("test.eml")
    dim m as new MimeEmailMBS(f)

    dim h as MimeHeaderMBS = m.Header
    // get to
    dim l as MimeAddressListMBS = h.too
    // get addresses
    dim a() as MimeAddressMBS = l.Addresses
    // get first one
    dim b as MimeAddressMBS = a(0)
    // assume it’s an email and get it
    dim x as MimeMailboxMBS = b.Mailbox
    // and show to user with name and email
    MsgBox x.LabelDecoded + " " + x.Email
```

Notes:

Named "too" in this class as "to" is a reserved word.
(Read only property)
71.10 class MimeMailboxListMBS

71.10.1 class MimeMailboxListMBS


71.10.2 Methods

71.10.3 Constructor(TextToParse as String)


Example:

```vba
dim m as new MimeMailboxListMBS("=?utf-8?Q?M=C3=BCller?= <zivi@mac.com>")
MsgBox str(m.Count)
```

71.10.4 Mailboxes as MimeMailboxMBS()


See also:

- 71.10.5 Mailboxes(index as Integer) as MimeMailboxMBS

71.10.5 Mailboxes(index as Integer) as MimeMailboxMBS


Notes: Index is zero based.

See also:

- 71.10.4 Mailboxes as MimeMailboxMBS()
71.10. **CLASS MIMEMAILBOXLISTMBS**

71.10.6  **Properties**

71.10.7  **Count as Integer**

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries number of mailboxes in list.

**Example:**

```vba
dim m as new MimeMailboxListMBS(“=?utf-8?Q?M=C3=B1ller?= <zivi@mac.com>”)
MsgBox str(m.Count)
```

**Notes:** (Read only property)

71.10.8  **MailboxesVariant as Variant**

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The array of mailboxes.

**Notes:**

This property is only to see array in debugger.
(Read only property)

71.10.9  **StringValue as String**

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The content of this list as a string.

**Notes:** (Read only property)
71.11 class MimeMailboxMBS

71.11.1 class MimeMailboxMBS

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for an email address.

**Example:**

dim m as new MimeMailboxMBS(“=?utf-8?Q?M=C3=BCller?= <zivi@mac.com>”)
MsgBox m.LabelDecoded+” ”+m.Email

71.11.2 Methods

71.11.3 Constructor(TextToParse as String)

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Parses an email address.

**Example:**

dim m as new MimeMailboxMBS(“=?utf-8?Q?M=C3=BCller?= <zivi@mac.com>”)
MsgBox m.LabelDecoded+” ”+m.Email

71.11.4 Properties

71.11.5 Domain as String

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The domain name of the email address.

**Notes:** (Read only property)

71.11.6 Email as String

MBS CURL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The email address.

**Notes:**
Mailbox and Domain together.
(Read only property)
71.11. Class MIME\EMAILBOXMBS

71.11.7 Label as String

Notes:
Label is the raw value and LabelDecoded is the decoded value.
So please use LabelDecoded for display.
(Read only property)

71.11.8 LabelDecoded as String

Notes:
Label is the raw value and LabelDecoded is the decoded value.
So please use LabelDecoded for display.
(Read only property)

71.11.9 Mailbox as String

Notes: (Read only property)

71.11.10 Sourceroute as String

Notes: (Read only property)

71.11.11 StringValue as String

Notes: (Read only property)
Chapter 72

Encryption and Hash

72.1  class AESMBS

72.1.1  class AESMBS


Function: A class for AES encryption.

Example:

dim a as AESMBS
dim key as MemoryBlock
dim data as MemoryBlock

key=NewMemoryBlock(20)
key.CString(0)="Hello World!1234"  // 16 byte key for 128bit

a=new AESMBS

if a.SetKey(key, 128) then

data=NewMemoryBlock(20)
data.StringValue(0,16)="Hello World!"
MsgBox "Before: "+data.StringValue(0,16)
a.Encrypt(data)
MsgBox "After encryption: "+data.StringValue(0,16)
a.Decrypt(data)
MsgBox "After decryption: "+data.StringValue(0,16)
else
MsgBox "Failed"
end if
Notes:
For newer projects we recommend switching to CipherMBS class.

This class has low level functions like Encrypt. It also has mid level functions like EncryptCFB/CBC. For your convenience, we also have high level functions like EncryptString.

72.1.2 Methods

72.1.3 Decrypt(idata as memoryblock, odata as memoryblock=nil, iOffset as Integer=0, oOffset as Integer=0)

Function: Decryptes the first 16 bytes in the input memoryblock at the given offset and stores the result in the output memoryblock at the given offset.
Notes:
If odata is nil, idata is used for output.
This is ECB mode.

72.1.4 DecryptCBC(idata as memoryblock, LengthBytes as Integer, IVector as memoryblock=nil, odata as memoryblock=nil, iOffset as Integer=0, oOffset as Integer=0)

Function: Decryptes the 16 byte data blocks within LengthBytes bytes in the data.
Notes:
If odata is nil, idata is used for output.
If IVector is nil, a vector filled with zeros is used.

72.1.5 DecryptCFB1(idata as memoryblock, LengthBytes as Integer, byref IVectorOffset as Integer, IVector as memoryblock=nil, odata as memoryblock=nil, iOffset as Integer=0, oOffset as Integer=0)

Function: Decryptes the data in CFB1 mode.
Notes:
If odata is nil, idata is used for output.
If IVector is nil, a vector filled with zeros is used. 
IVectorOffset saves the position in the IVector for the next call to this method. 
iOffset: offset in idata. 
oOffset: offset in odata. 
LengthBytes: Length of data in idata and odata. 

See also:

• 72.1.6 DecryptCFB1(idata as string, IVector as memoryblock=nil) as string

72.1.6 DecryptCFB1(idata as string, IVector as memoryblock=nil) as string

Function: Decrypts the data in CFB1 mode. 
Example:

dim a as new AESMBS

if a.SetKey("Hello World") then 
dim input as string = "Hello World"
dim encrypted as string = a.EncryptCFB1(input)

if a.SetKey("Hello World") then 
dim decrypted as string = a.DecryptCFB1(encrypted)

decrypted = DefineEncoding(decrypted, Encodings.ASCII)

if decrypted = input then 
MsgBox "OK"
end if
end if
end if

Notes: If IVector is nil, a vector filled with zeros is used. 
See also:

• 72.1.5 DecryptCFB1(idata as memoryblock, LengthBytes as Integer, byref IVectorOffset as Integer, IVector as memoryblock=nil, odata as memoryblock=nil, iOffset as Integer=0, oOffset as Integer=0)
72.1.7 DecryptCFB128(idata as memoryblock, LengthBytes as Integer, byref IVectorOffset as Integer, IVector as memoryblock=nil, odata as memoryblock=nil, iOffset as Integer=0, oOffset as Integer=0)

**Function:** Decrypts the data in CFB128 mode. 
**Notes:**
- If odata is nil, idata is used for output.
- If IVector is nil, a vector filled with zeros is used.
- IVectorOffset saves the position in the IVector for the next call to this method.
- iOffset: offset in idata.
- oOffset: offset in odata.
- LengthBytes: Length of data in idata and odata.

Older plugin version had problems that they didn’t use key at all. So if you want to read old data encrypted with them, you need simply to decrypt without setting key.

See also:

- 72.1.8 DecryptCFB128(idata as string, IVector as memoryblock=nil) as string

72.1.8 DecryptCFB128(idata as string, IVector as memoryblock=nil) as string

**Function:** Decrypts the data in CFB128 mode. 
**Example:**

```plaintext
dim a as new AESMBS
if a.SetKey("Hello World") then
dim input as string = "Hello World"
dim encrypted as string = a.EncryptCFB128(input)

if a.SetKey("Hello World") then
dim decrypted as string = a.DecryptCFB128(encrypted)
decrypted = DefineEncoding(decrypted, Encodings.ASCII)

if decrypted = input then
MsgBox "OK"
end if
end if
end if
```

**Notes:**
If IVector is nil, a vector filled with zeros is used.

Older plugin version had problems that they didn’t use key at all. So if you want to read old data encrypted with them, you need simply to decrypt without setting key.

See also:

- 72.1.7 DecryptCFB128(idata as memoryblock, LengthBytes as Integer, byref IVectorOffset as Integer, IVector as memoryblock=nil, odata as memoryblock=nil, iOffset as Integer=0, oOffset as Integer=0)

72.1.9 DecryptCFB8(idata as memoryblock, LengthBytes as Integer, byref IVectorOffset as Integer, IVector as memoryblock=nil, odata as memoryblock=nil, iOffset as Integer=0, oOffset as Integer=0)


**Function:** Decrypts the data in CFB8 mode.

**Notes:**

If odata is nil, idata is used for output.
If IVector is nil, a vector filled with zeros is used.
IVectorOffset safes the position in the IVector for the next call to this method.
iOffset: offset in idata.
oOffset: offset in odata.
LengthBytes: Length of data in idata and odata.

See also:

- 72.1.10 DecryptCFB8(idata as string, IVector as memoryblock=nil) as string

72.1.10 DecryptCFB8(idata as string, IVector as memoryblock=nil) as string


**Function:** Decrypts the data in CFB8 mode.

**Example:**

```vb
    dim a as new AESMBS

    if a.SetKey("Hello World") then
        dim input as string = "Hello World"
        dim encrypted as string = a.EncryptCFB8(input)

    if a.SetKey("Hello World") then
        dim decrypted as string = a.DecryptCFB8(encrypted)

    decrypted = DefineEncoding(decrypted, Encodings.ASCII)
```
if decrypted = input then
MsgBox "OK"
end if
end if
end if

Notes: If IVector is nil, a vector filled with zeros is used.
See also:

- 72.1.9 DecryptCFB8(idata as memoryblock, LengthBytes as Integer, byref IVectorOffset as Integer, IVector as memoryblock=nil, odata as memoryblock=nil, iOffset as Integer=0, oOffset as Integer=0)

72.1.11 DecryptECB(idata as memoryblock, odata as memoryblock=nil, iOffset as Integer=0, oOffset as Integer=0)

Function: Decrypts the 16 byte data block in the data.
Notes: If odata is nil, idata is used for output.

72.1.12 Encrypt(idata as memoryblock, odata as memoryblock=nil, iOffset as Integer=0, oOffset as Integer=0)

Function: Encryptes the first 16 bytes in the input memoryblock at the given offset and stores the result in the output memoryblock at the given offset.
Notes:
If odata is nil, idata is used for output.
This is ECB mode.

72.1.13 EncryptCBC(idata as memoryblock, LengthBytes as Integer, IVector as memoryblock=nil, odata as memoryblock=nil, iOffset as Integer=0, oOffset as Integer=0)

Function: Encryptes the 16 byte data blocks within LengthBytes bytes in the data.
Notes:
If odata is nil, idata is used for output.
If IVector is nil, a vector filled with zeros is used.
72.1.14 EncryptCFB1(idata as memoryblock, LengthBytes as Integer, byref IVectorOffset as Integer, IVector as memoryblock=nil, odata as memoryblock=nil, iOffset as Integer=0, oOffset as Integer=0)

Function: Encryptes the data in CFB1 mode.
Notes:
If odata is nil, idata is used for output.
If IVector is nil, a vector filled with zeros is used.
IVectorOffset safes the position in the IVector for the next call to this method.
iOffset: offset in idata.
oOffset: offset in odata.
LengthBytes: Length of data in idata and odata.

See also:

- 72.1.15 EncryptCFB1(idata as string, IVector as memoryblock=nil) as string

72.1.15 EncryptCFB1(idata as string, IVector as memoryblock=nil) as string

Function: Encryptes the data in CFB1 mode.
Example:

```vba
dim a as new AESMBS

if a.SetKey("Hello World") then
dim input as string = "Hello World"
dim encrypted as string = a.EncryptCFB1(input)

if a.SetKey("Hello World") then
dim decrypted as string = a.DecryptCFB1(encrypted)

decrypted = DefineEncoding(decrypted, Encodings.ASCII)

if decrypted = input then
MsgBox "OK"
end if
end if
end if
```

Notes:
CHAPTER 72. ENCRYPTION AND HASH

If IVector is nil, a vector filled with zeros is used.

Returned string does not contain text, but binary data.
Please do not store in text fields in database without using EncodeHex or EncodeBase64 to make it a text string.
See also:

- 72.1.14 EncryptCFB1(idata as memoryblock, LengthBytes as Integer, byref IVectorOffset as Integer, IVector as memoryblock=nil, odata as memoryblock=nil, iOffset as Integer=0, oOffset as Integer=0)

72.1.16 EncryptCFB128(idata as memoryblock, LengthBytes as Integer, byref IVectorOffset as Integer, IVector as memoryblock=nil, odata as memoryblock=nil, iOffset as Integer=0, oOffset as Integer=0)

Function: Encrypts the data in CFB128 mode.
Notes:
If odata is nil, idata is used for output.
If IVector is nil, a vector filled with zeros is used.
IVectorOffset saves the position in the IVector for the next call to this method.
iOffset: offset in idata.
oOffset: offset in odata.
LengthBytes: Length of data in idata and odata.
See also:

- 72.1.17 EncryptCFB128(idata as string, IVector as memoryblock=nil) as string

72.1.17 EncryptCFB128(idata as string, IVector as memoryblock=nil) as string

Function: Encrypts the data in CFB128 mode.
Example:

```vbnet
dim a as new AESMBS

if a.SetKey("Hello World") then
dim input as string = "Hello World"
dim encrypted as string = a.EncryptCFB128(input)

if a.SetKey("Hello World") then
dim decrypted as string = a.DecryptCFB128(encrypted)

decrypted = DefineEncoding(decrypted, Encodings.ASCII)
```
if decrypted = input then
MsgBox "OK"
end if
end if
end if

Notes:
If IVector is nil, a vector filled with zeros is used.

Returned string does not contain text, but binary data.
Please do not store in text fields in database without using EncodeHex or EncodeBase64 to make it a text string.
See also:

- 72.1.16 EncryptCFB128(idata as memoryblock, LengthBytes as Integer, byref IVectorOffset as Integer, IVector as memoryblock=nil, odata as memoryblock=nil, iOffset as Integer=0, oOffset as Integer=0)

72.1.18 EncryptCFB8(idata as memoryblock, LengthBytes as Integer, byref IVectorOffset as Integer, IVector as memoryblock=nil, odata as memoryblock=nil, iOffset as Integer=0, oOffset as Integer=0)

Function: Encryptes the data in CFB8 mode.
Notes:
If odata is nil, idata is used for output.
If IVector is nil, a vector filled with zeros is used.
IVectorOffset safes the position in the IVector for the next call to this method.
iOffset: offset in idata.
oOffset: offset in odata.
LengthBytes: Length of data in idata and odata.
See also:

- 72.1.19 EncryptCFB8(idata as string, IVector as memoryblock=nil) as string

72.1.19 EncryptCFB8(idata as string, IVector as memoryblock=nil) as string

Function: Encryptes the data in CFB8 mode.
Example:
12382

CHAPTER 72. ENCRYPTION AND HASH

```
dim a as new AESMBS
if a.SetKey("Hello World") then
    dim input as string = "Hello World"
    dim encrypted as string = a.EncryptCFB8(input)
if a.SetKey("Hello World") then
    dim decrypted as string = a.DecryptCFB8(encrypted)
decrypted = DefineEncoding(decrypted, Encodings.ASCII)
if decrypted = input then
    MsgBox "OK"
end if
end if

Notes:
If IVector is nil, a vector filled with zeros is used.

Returned string does not contain text, but binary data.
Please do not store in text fields in database without using EncodeHex or EncodeBase64 to make it a text string.
See also:

- 72.1.18 EncryptCFB8(idata as memoryblock, LengthBytes as Integer, byref IVectorOffset as Integer, IVector as memoryblock=nil, odata as memoryblock=nil, iOffset as Integer=0, oOffset as Integer=0)

12381

72.1.20 EncryptECB(idata as memoryblock, odata as memoryblock=nil, iOffset as Integer=0, oOffset as Integer=0)

Function: Encryptes the 16 byte data block in the data.
Notes: If odata is nil, idata is used for output.

72.1.21 EncryptOFB(idata as memoryblock, LengthBytes as Integer, byref IVectorOffset as Integer, IVector as memoryblock=nil, odata as memoryblock=nil, iOffset as Integer=0, oOffset as Integer=0)

Function: Encryptes the data in OFB mode.
```
72.1. CLASS AESMBS

Notes:
If odata is nil, idata is used for output.
If IVector is nil, a vector filled with zeros is used.
IVectorOffset safes the position in the IVector for the next call to this method.
iOffset: offset in idata.
oOffset: offset in odata.
LengthBytes: Length of data in idata and odata.

72.1.22  SetKey(key as memoryblock, nBits as Integer) as boolean

Function: Sets the key.
Notes:
possible values for the bitcount:

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>128</td>
<td>key is 16 bytes long</td>
</tr>
<tr>
<td>192</td>
<td>key is 24 bytes long</td>
</tr>
<tr>
<td>256</td>
<td>key is 32 bytes long</td>
</tr>
</tbody>
</table>

Plugin version 13.4 and newer pads this memoryblock with 00 bytes if string is shorter.
See also:

- 86.3.1 SetKey(key as string) as boolean

72.1.23  SetKey(key as string) as boolean

Function: Sets the key.
Example:

dim x,u,s as string
dim iv as MemoryBlock

s="Hello World"

// encrypt
s=ConvertEncoding(s,encodings.UTF8)

dim a as new AESMBS
call a.SetKey("1234567890123456")
iv = NewMemoryBlock(16)
x = a.EncryptCFB128(s, iv)

MsgBox x

// decrypt

iv = NewMemoryBlock(16)
u = a.DecryptCFB128(x, iv)

u = DefineEncoding(u, encodings.UTF8)

MsgBox u

Notes:
Please use 16, 24 or 32 byte long key strings.
Plugin version 13.4 and newer pads this string with 00 bytes if string is shorter.
See also:

- 72.1.22 SetKey(key as memoryblock, nBits as Integer) as boolean
72.2. class Argon2MBS

72.2.1 class Argon2MBS


**Function:** The class to calculate hashes using Argon2.

**Example:**

```plaintext
dim a as new Argon2MBS

a.OutputLength = 24
a.Password = "password"
a.Salt = "somesalt"
a.cost = 2
a.MemoryCost = 65536 // 64 Megabytes
a.Lanes = 4
a.Threads = 4

dim hash as string = a.Calc(a.kTypeI)
dim t as string = EncodeHex(hash)

if t = "45d7ac72e76f242b20b77b9bf9d5915894e669a24e6c6" then
  // ok
else
  Break // failed
end if
```

**Notes:**

You can use this class to calculate password hashes. Due to the cost associated to calculate it, the hash is difficult to brute force.

See

https://github.com/p-h-c/phc-winner-argon2

72.2.2 Methods

72.2.3 Calc(type as Integer = 0) as String


**Function:** Function that performs memory-hard hashing with certain degree of parallelism.

**Example:**
dim a as new Argon2MBS

a.OutputLength = 24
a.Password = "password"
a.Salt = "somesalt"
a.cost = 2
a.MemoryCost = 65536 // 64 Megabytes
a.Lanes = 4
a.Threads = 4

dim hash as string = a.Calc(a.kTypeI)
dim t as string = EncodeHex(hash)

if t = "45d7ac72e76f242b20b77b9bf9d5915894e669a24e6c6" then
  // ok
else
  Break // failed
end if

Notes:

Returns hash on success or empty string in case of error.
Lasterror is set.

72.2.4 Constructor

Function: The constructor.

72.2.5 Destructor

Function: Destructor.

72.2.6 Verify(Hash as String, type as Integer = 0) as boolean

Function: Verifies a password hash.
Example:
72.2. CLASS ARGON2MBS

```vbs
dim a as new Argon2MBS

a.OutputLength = 24
a.Password = "password"
a.Salt = "somesalt"
a.cost = 2
a.MemoryCost = 65536
a.Lanes = 4
a.Threads = 4

dim h as string = DecodeHex("45d7ac72e76f242b20b77b9bf9bf9d5915894e669a24e6c6")
if a.Verify(h, a.kTypeI) then
  // ok
  break
else
  // failed
  break
end if
```

### Notes:
- Returns true on success.
- Lasterror is set.

#### 72.2.7 Properties

#### 72.2.8 AssociatedData as String

**Function:** The associated data.
**Notes:** (Read and Write property)

#### 72.2.9 Cost as Integer

**Function:** The number of passes.
**Notes:** (Read and Write property)
72.2.10 Flags as Integer

Function: The flags.
Notes: (Read and Write property)

72.2.11 Lanes as Integer

Function: Number of lanes.
Notes: (Read and Write property)

72.2.12 LastError as Integer

Function: The last error code.
Notes: (Read and Write property)

72.2.13 LastErrorMessage as String

Function: The last error message.
Notes: (Read and Write property)

72.2.14 MemoryCost as Integer

Function: Amount of memory requested (KB).
Notes: In kilo bytes. Default is 1 MB.
(Read and Write property)

72.2.15 OutputLength as Integer

Function: The length of the hash.
72.2. **CLASS ARGON2MBS**

Notes: (Read and Write property)

---

### 72.2.16 Password as String


**Function:** The password to hash.
**Notes:** (Read and Write property)

---

### 72.2.17 Salt as String


**Function:** The salt.
**Notes:** (Read and Write property)

---

### 72.2.18 Secret as String


**Function:** The secret.
**Notes:** (Read and Write property)

---

### 72.2.19 Threads as Integer


**Function:** Maximum number of threads.
**Notes:** (Read and Write property)

---

### 72.2.20 Version as Integer


**Function:** The version of argon to use.
**Notes:**
Can be kVersion10 or kVersion13.
(Read and Write property)
72.2.21 Constants

72.2.22 kErrorAdPtrMismatch = -21

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** One of the error constants. **Notes:** AssociatedData ptr is nil, but size > 0.

72.2.23 kErrorAdTooLong = -9

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** One of the error constants. **Notes:** AssociatedData too long.

72.2.24 kErrorAdTooShort = -8

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** One of the error constants. **Notes:** AssociatedData too short.

72.2.25 kErrorAllocateMemoryCbkNull = -24

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** One of the error constants. **Notes:** Allocation failed.

72.2.26 kErrorDecodingFail = -32

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** One of the error constants. **Notes:** Decoding failed.

72.2.27 kErrorDecodingLengthFail = -34

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** One of the error constants. **Notes:** Decoding length failed.
72.2. CLASS ARGON2MBS

72.2.28 kErrorEncodingFail = -31


72.2.29 kErrorFreeMemoryCbkNull = -23


72.2.30 kErrorIncorrectParameter = -25


72.2.31 kErrorIncorrectType = -26


72.2.32 kErrorLanesTooFew = -16


72.2.33 kErrorLanesTooMany = -17


72.2.34 kErrorMemoryAllocationError = -22

72.2.35  kErrorMemoryTooLittle = -14

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** One of the error constants.
**Notes:** Memory too little.

72.2.36  kErrorMemoryTooMuch = -15

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** One of the error constants.
**Notes:** Memory too big.

72.2.37  kErrorMissingArgs = -30

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** One of the error constants.
**Notes:** Missing Argument.

72.2.38  kErrorOk = 0

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** One of the error constants.
**Notes:** Okay.

72.2.39  kErrorOutPtrMismatch = -27

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** One of the error constants.
**Notes:** Output ptr is nil, but size >0.

72.2.40  kErrorOutputPtrNull = -1

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** One of the error constants.
**Notes:** Output Ptr is nil.

72.2.41  kErrorOutputTooLong = -3

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** One of the error constants.
**Notes:** Output too long.
72.2. CLASS ARGON2MBS

72.2.42 kErrorOutputTooShort = -2

72.2.43 kErrorPwdPtrMismatch = -18
MBS Encryption Plugin, Plugin Version: 16.4. Function: One of the error constants. Notes: Password ptr is nil, but size >0.

72.2.44 kErrorPwdTooLong = -5

72.2.45 kErrorPwdTooShort = -4

72.2.46 kErrorSaltPtrMismatch = -19
MBS Encryption Plugin, Plugin Version: 16.4. Function: One of the error constants. Notes: Salt ptr is nil, but size >0.

72.2.47 kErrorSaltTooLong = -7

72.2.48 kErrorSaltTooShort = -6
72.2.49 kErrorSecretPtrMismatch = -20

MBS Encryption Plugin, Plugin Version: 16.4. Function: One of the error constants. Notes: Secret ptr is nil, but size >0.

72.2.50 kErrorSecretTooLong = -11


72.2.51 kErrorSecretTooShort = -10


72.2.52 kErrorThreadFail = -33


72.2.53 kErrorThreadsTooFew = -28


72.2.54 kErrorThreadsTooMany = -29


72.2.55 kErrorTimeTooLarge = -13

72.2. **CLASS ARGON2MBS**

### 72.2.56 kErrorTimeTooSmall = -12

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** One of the error constants.  
**Notes:** Time too small.

### 72.2.57 kErrorVerifyMismatch = -35

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** One of the error constants.  
**Notes:** Verify Mismatch

### 72.2.58 kFlagClearMemory = 4

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** One of the possible flags.  
**Notes:** Clear memory.

### 72.2.59 kFlagClearPassword = 1

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** One of the possible flags.  
**Notes:** Clear password.

### 72.2.60 kFlagClearSecret = 2

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** One of the possible flags.  
**Notes:** Clear Secret after hashing.

### 72.2.61 kFlagDefault = 4

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** One of the possible flags.  
**Notes:** Default flags.

### 72.2.62 kMaxAssociatedDataLength = & hFFFFFFFF

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** Maximum associated data length in bytes.
72.2.63 \text{kMaxLanes} = \& \text{hFFFFFFFF}

MBS Encryption Plugin, Plugin Version: 16.4. \textbf{Function}: Maximum number of lanes (degree of parallelism)

72.2.64 \text{kMaxMemory} = \& \text{hFFFFFFFF}


72.2.65 \text{kMaxOutputLength} = \& \text{hFFFFFFFF}


72.2.66 \text{kMaxPasswordLength} = \& \text{hFFFFFFFF}


72.2.67 \text{kMaxSaltLength} = \& \text{hFFFFFFFF}

MBS Encryption Plugin, Plugin Version: 16.4. \textbf{Function}: Maximum salt length in bytes

72.2.68 \text{kMaxSecretLength} = \& \text{hFFFFFFFF}


72.2.69 \text{kMaxThreads} = \& \text{hFFFFFFFF}


72.2.70 \text{kMaxTime} = \& \text{hFFFFFFFF}

### 72.2.71 kMinAssociatedDataLength = 0

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** Minimum associated data length in bytes.

### 72.2.72 kMinLanes = 1

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** Minimum number of lanes (degree of parallelism)

### 72.2.73 kMinMemory = 8

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** Minimum and maximum number of memory blocks (each of BLOCK_SIZE bytes)

### 72.2.74 kMinOutputLength = 4

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** Minimum digest size in bytes.

### 72.2.75 kMinPasswordLength = 0

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** Minimum password length in bytes.

### 72.2.76 kMinSaltLength = 0

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** Minimum salt length in bytes

### 72.2.77 kMinSecretLength = 0

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** Minimum key length in bytes.

### 72.2.78 kMinThreads = 1

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** Minimum number of threads.
72.2.79 \( k\text{MinTime} = 1 \)

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** Minimum number of passes.

72.2.80 \( k\text{SyncPoints} = 4 \)

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** Number of synchronization points between lanes per pass.

72.2.81 \( k\text{TypeD} = 0 \)

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** One of the types.
**Notes:** Argon2d is faster and uses data-depending memory access, which makes it highly resistant against GPU cracking attacks and suitable for applications with no threats from side-channel timing attacks (e.g. cryptocurrencies).

72.2.82 \( k\text{TypeI} = 1 \)

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** One of the types.
**Notes:** Argon2i instead uses data-independent memory access, which is preferred for password hashing and password-based key derivation, but it is slower as it makes more passes over the memory to protect from tradeoff attacks.

72.2.83 \( k\text{Version10} = \& \text{h10} \)

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** One of the version numbers.
**Notes:** Version 1.0

72.2.84 \( k\text{Version13} = \& \text{h13} \)

MBS Encryption Plugin, Plugin Version: 16.4. **Function:** One of the version numbers.
**Notes:** Version 1.3
72.3. CLASS BLOWFISHMBS

72.3  class BlowfishMBS

72.3.1  class BlowfishMBS

**Function:** A class for blowfish encryption.

**Example:**

dim s as string

    // create string with known encoding so we can later define encoding after decryption!
    s=ConvertEncoding("Hello",Encodings.UTF8)

    // encrypt with a key
    s=BlowfishMBS.Encrypt("MyKey",s)

    // encoding is not set for the result string, still RB can guess the encoding when displaying
    MsgBox s

    // decrypt with same key
    s=BlowfishMBS.Decrypt("MyKey",s)

    // encoding is not set for the result string, so change it back:
    s=DefineEncoding(s,encodings.UTF8)

    // show original Hello
    MsgBox s

**Notes:** For newer projects we recommend switching to CipherMBS class.

72.3.2  Methods

72.3.3  Decrypt(iodata as memoryblock)

**Function:** Lowest level function to decrypt data in a memoryblock.

**Notes:**
- input and output are in host endian format.
- memoryblock must be not nil and has a size of 8 bytes.

See also:

- 72.3.4 Decrypt(key as string, data as string) as string
72.3.4 Decrypt(key as string, data as string) as string


Function: Decrypts the data using blowfish and the given key.

Example:

dim s as string

// create string with known encoding so we can later define encoding after decryption!
s=ConvertEncoding("Hello",Encodings.UTF8)

// encrypt with a key
s=BlowfishMBS.Encrypt("MyKey",s)

// encoding is not set for the result string, still RB can guess the encoding when displaying
MsgBox s

// decrypt with same key
s=BlowfishMBS.Decrypt("MyKey",s)

// encoding is not set for the result string, so change it back:
s=DefineEncoding(s,encodings.UTF8)

// show original Hello
MsgBox s

Notes:

This is our convenience function to encode a string quickly. Using CFB64 mode and an all zero initializing vector.
If the lenb(result) is zero and lenb(data) is not zero, the memory was not sufficient.

Key can have any length, but 32 bytes (256 bits) are quite good.
The length of data is limited by the amount of available memory.
See also:

- 72.3.3 Decrypt(iodata as memoryblock)

72.3.5 DecryptCBC(data as string, byref temp as memoryblock) as string


Function: The continuing Blowfish decryption function.

Example:

dim b as new BlowfishMBS
72.3. CLASS BLOWFISHMBS

dim s as string = "UTYbBEZSMLfa0kvNDSla/n/GSUcA/545gp7LcA330Nw=="
dim x as string = DecodeBase64(s)

dim m as MemoryBlock = nil
b = new BlowfishMBS
b.SetKey "geheim"
dim t1 as string = b.DecryptCBC(x,m)

// shows SD10003$ $ 2012.03.16 11:00
MsgBox t1

Notes:
data: data to be decrypted
temp: memoryblock for temporary data. Is created when called with nil value. Pass on following calls to
allow data to be shared between function calls.

Returns "" on invalid input.
You can create yourself an eight byte memoryblock with a starting value you want.
Be aware that this CBC method works with data in 8 byte blocks, so you need to unpad data if needed.
See also:

- 72.3.6 DecryptCBC(idata as memoryblock, odata as memoryblock, offset as Integer, length as Integer,
  ivec as memoryblock)

72.3.6 DecryptCBC(idata as memoryblock, odata as memoryblock, offset as Integer, length as Integer, ivec as memoryblock)

Function: The continuing Blowfish decryption function.
Notes:

idata: memoryblock for input data, 8 bytes in size and not nil.
odata: memoryblock for output data, 8 bytes in size and not nil.
offset: offset in input and output memoryblocks
length: length of data in memoryblock in bytes. Multiply of 8.
ivec: memoryblock for temporary data, 8 bytes in size and not nil.

ivec should be a memoryblock of 8 bytes size which you create before calling the function for the first time.
On the next time you passed the same block, so the function can store data inside this memoryblock between
function calls.
Be aware that this CBC method works with data in 8 byte blocks, so you need to unpad data if needed.
See also:

- 72.3.5 DecryptCBC(data as string, byref temp as memoryblock) as string
72.3.7 DecryptCFB64(data as string, byref temp as memoryblock) as string


**Function:** The continuing Blowfish decryption function.

**Notes:**

- data: data to be decrypted
- temp: memoryblock for temporary data. Is created when called with nil value. Pass on following calls to allow data to be shared between function calls.

Returns "" on invalid input.

You can create yourself a twelve byte memoryblock with a starting value you want. First four bytes are position and next 8 bytes the current vector.

See also:

- 72.3.8 DecryptCFB64(idata as memoryblock, odata as memoryblock, offset as Integer, length as Integer, ivec as memoryblock, byref num as Integer)

72.3.8 DecryptCFB64(idata as memoryblock, odata as memoryblock, offset as Integer, length as Integer, ivec as memoryblock, byref num as Integer)


**Function:** The continuing Blowfish decryption function.

**Example:**

```vbnet
dim b as BlowfishMBS
b=new BlowfishMBS
b.SetKey "Key"
dim temp as MemoryBlock
dim s as string
s=b.EncryptCFB64("Hello World",temp)
MsgBox s
temp=nil // reset
s=b.DecryptCFB64(s,temp)
MsgBox s
```

**Notes:**

- idata: memoryblock for input data, 8 bytes in size and not nil.
72.3. **CLASS BLOWFISHMBS**

odata: memoryblock for output data, 8 bytes in size and not nil.
offset: offset in input and output memoryblocks
length: length of data in memoryblock in bytes. Multiply of 8.
ivec: memoryblock for temporary data, 8 bytes in size and not nil.
um: current position in ivec. Pass 0 as start value and pass the value you get back to the next function call.

Returns "" on invalid input.
You can create yourself a twelve byte memoryblock with a starting value you want. First four bytes are position and next 8 bytes the current vector.
See also:

- 72.3.7 DecryptCFB64(data as string, byref temp as memoryblock) as string

72.3.9 **DecryptECB(data as string) as string**

**Function:** The basic Blowfish decryption function.
**Notes:**
This function decrypts only 8 bytes. For more, please use other functions!

data: data to be decrypted
Returns "" on invalid input.
See also:

- 72.3.10 DecryptECB(idata as memoryblock, odata as memoryblock, offset as Integer)

72.3.10 **DecryptECB(idata as memoryblock, odata as memoryblock, offset as Integer)**

**Function:** The basic Blowfish encryption function.
**Notes:**
idata: memoryblock for input data, 8 bytes in size and not nil.
odata: memoryblock for output data, 8 bytes in size and not nil.
offset: offset in input and output memoryblocks
See also:

- 72.3.9 DecryptECB(data as string) as string
72.3.11 DecryptOFB64(data as string, byref temp as memoryblock) as string

Function: The continuing Blowfish decryption function.
Notes:

- data: data to be decrypted
- temp: memoryblock for temporary data. Is created when called with nil value. Pass on following calls to allow data to be shared between function calls.

Returns "" on invalid input.
You can create yourself a twelve byte memoryblock with a starting value you want. First four bytes are position and next 8 bytes the current vector.

This is output feedback mode. Encryption is the same a decryption.
See also:

- 72.3.12 DecryptOFB64(idata as memoryblock, odata as memoryblock, offset as Integer, length as Integer, ivec as memoryblock, byref num as Integer)

72.3.12 DecryptOFB64(idata as memoryblock, odata as memoryblock, offset as Integer, length as Integer, ivec as memoryblock, byref num as Integer)

Function: The continuing Blowfish decryption function.
Example:

dim b as BlowfishMBS

b=new BlowfishMBS
b.SetKey "Key"

dim temp as MemoryBlock
dim s as string

s=b.EncryptCFB64("Hello World",temp)

MsgBox s

temp=nil // reset
s=b.DecryptCFB64(s,temp)

MsgBox s
72.3. **CLASS BLOWFISHMBS**

**Notes:**

idata: memoryblock for input data, 8 bytes in size and not nil.
odata: memoryblock for output data, 8 bytes in size and not nil.
offset: offset in input and output memoryblocks
length: length of data in memoryblock in bytes. Multiply of 8.
ivec: memoryblock for temporary data, 8 bytes in size and not nil.
um: current position in ivec. Pass 0 as start value and pass the value you get back to the next function call.

Returns "" on invalid input.
You can create yourself a twelve byte memoryblock with a starting value you want. First four bytes are position and next 8 bytes the current vector.

This is output feedback mode. Encryption is the same a decryption.
See also:

- 72.3.11 DecryptOFB64(data as string, byref temp as memoryblock) as string

72.3.13 **Encrypt(iodata as memoryblock)**

**Function:** Lowest level function to encrypt data in a memoryblock.
**Notes:**

input and output are in host endian format.
memoryblock must be not nil and has a size of 8 bytes.
See also:

- 72.3.14 Encrypt(key as string, data as string) as string

72.3.14 **Encrypt(key as string, data as string) as string**

**Function:** Encrypts the data using blowfish and the given key.
**Example:**

```vba
dim v as string = "Hello World, this is just a test string"

// encrypt CFB64 with BlowfishMBS
dim b as new BlowfishMBS
dim Key as string = "1234567812345678"
dim r as string = b.Encrypt( key , v )
dim h as string = EncodeHex( r )
```

// and decrypt with OpenSSL
dim c as CipherMBS = CipherMBS.bf_cfb64

c.DecryptInit key

    dim d as string = c.ProcessString(r)
    d = d + c.FinalizeAsString

Break // see in debugger, v and d have same content

Notes:
This is our convenience function to decode a string quickly. Using CFB64 mode and an all zero initializing vector.
If the lenb(result) is zero and lenb(data) is not zero, the memory was not sufficient.

Key can have any length, but 32 bytes (256 bits) are quite good.
The length of data is limited by the amount of available memory.

Returned string does not contain text, but binary data.
Please do not store in text fields in database without using EncodeHex or EncodeBase64 to make it a text string.
See also:

- 72.3.13 Encrypt(iodata as memoryblock)

72.3.15 EncryptCBC(data as string, byref temp as memoryblock) as string

Function: The continuing Blowfish encryption function.
Example:

dim m as memoryblock // temporary storage of current state
dim b as blowfishmbs
dim s as string

b=new blowfishmbs
b.SetKey "EinKey1234567890" // some key

s=b.EncryptCBC("Hallo",m)
s=s+b.EncryptCBC(" ",m)
s=s+b.EncryptCBC("Leute",m)
s=s+b.EncryptCBC("!",m)

Notes:
72.3. CLASS BLOWFISHMBS

data: data to be encrypted
temp: memoryblock for temporary data. Is created when called with nil value. Pass on following calls to allow data to be shared between function calls.

Returns "" on invalid input.
You can create yourself an eight byte memoryblock with a starting value you want.
Be aware that this CBC method works with data in 8 byte blocks, so you need to pad data if needed.

Returned string does not contain text, but binary data.
Please do not store in text fields in database without using EncodeHex or EncodeBase64 to make it a text string.
See also:

• 72.3.16 EncryptCBC(idata as memoryblock, odata as memoryblock, offset as Integer, length as Integer, ivec as memoryblock)

72.3.16 EncryptCBC(idata as memoryblock, odata as memoryblock, offset as Integer, length as Integer, ivec as memoryblock)

Function: The continuing Blowfish encryption function.
Notes:
idata: memoryblock for input data, at least 8 bytes in size and not nil.
odata: memoryblock for output data, at least 8 bytes in size and not nil.
offset: offset in input and output memoryblocks
length: length of data in memoryblock in bytes. Multiply of 8.
ivec: memoryblock for temporary data, 8 bytes in size and not nil.

ivec should be a memoryblock of 8 bytes size which you create before calling the function for the first time.
On the next time you passed the same block, so the function can store data inside this memoryblock between function calls.
Be aware that this CBC method works with data in 8 byte blocks, so you need to pad data if needed.
See also:

• 72.3.15 EncryptCBC(data as string, byref temp as memoryblock) as string

72.3.17 EncryptCFB64(data as string, byref temp as memoryblock) as string

Function: The continuing Blowfish encryption function.
Notes:
data: data to be encrypted
temp: memoryblock for temporary data. Is created when called with nil value. Pass on following calls to
allow data to be shared between function calls.

Returns "" on invalid input.
You can create yourself a twelve byte memoryblock with a starting value you want. First four bytes are position and next 8 bytes the current vector.

Returned string does not contain text, but binary data.
Please do not store in text fields in database without using EncodeHex or EncodeBase64 to make it a text string.
See also:

- 72.3.18 EncryptCFB64(idata as memoryblock, odata as memoryblock, offset as Integer, length as Integer, ivec as memoryblock, byref num as Integer)

72.3.18  EncryptCFB64(idata as memoryblock, odata as memoryblock, offset as Integer, length as Integer, ivec as memoryblock, byref num as Integer)

Function: The continuing Blowfish encryption function.
Notes:

idata: memoryblock for input data, 8 bytes in size and not nil.
oata: memoryblock for output data, 8 bytes in size and not nil.
offset: offset in input and output memoryblocks
length: length of data in memoryblock in bytes. Multiply of 8.
ivec: memoryblock for temporary data, 8 bytes in size and not nil.
num: current position in ivec. Pass 0 as start value and pass the value you get back to the next function call.

Returns "" on invalid input.
You can create yourself a twelve byte memoryblock with a starting value you want. First four bytes are position and next 8 bytes the current vector.
See also:

- 72.3.17 EncryptCFB64(data as string, byref temp as memoryblock) as string

72.3.19  EncryptECB(data as string) as string

Function: The basic Blowfish encryption function.
Notes:

This function encrypts only 8 bytes. For more, please use other functions!
72.3. **CLASS BLOWFISHMBS**

data: data to be encrypted
Returns "" on invalid input.

Returned string does not contain text, but binary data.
Please do not store in text fields in database without using EncodeHex or EncodeBase64 to make it a text string.
See also:

- 72.3.20 EncryptECB(idata as memoryblock, odata as memoryblock, offset as Integer)

### 72.3.20 EncryptECB(idata as memoryblock, odata as memoryblock, offset as Integer)

**Function:** The basic Blowfish decryption function.
**Notes:**
This function encrypts only 8 bytes. For more, please use other functions!

idata: memoryblock for input data, 8 bytes in size and not nil.
odata: memoryblock for output data, 8 bytes in size and not nil.
offset: offset in input and output memoryblocks
length: length of data in memoryblock in bytes. Multiply of 8.
See also:

- 72.3.19 EncryptECB(data as string) as string

### 72.3.21 EncryptOFB64(data as string, byref temp as memoryblock) as string

**Function:** The continuing Blowfish encryption function.
**Notes:**
data: data to be encrypted
temp: memoryblock for temporary data. Is created when called with nil value. Pass on following calls to allow data to be shared between function calls.

Returns "" on invalid input.
You can create yourself a twelve byte memoryblock with a starting value you want. First four bytes are position and next 8 bytes the current vector.

This is output feedback mode. Encryption is the same a decryption.
Returned string does not contain text, but binary data.
Please do not store in text fields in database without using EncodeHex or EncodeBase64 to make it a text string.
See also:

- **72.3.22 EncryptOFB64(idata as memoryblock, odata as memoryblock, offset as Integer, length as Integer, ivec as memoryblock, byref num as Integer)**

**72.3.22 EncryptOFB64(idata as memoryblock, odata as memoryblock, offset as Integer, length as Integer, ivec as memoryblock, byref num as Integer)**


**Function:** The continuing Blowfish encryption function.

**Notes:**
- idata: memoryblock for input data, 8 bytes in size and not nil.
- odata: memoryblock for output data, 8 bytes in size and not nil.
- offset: offset in input and output memoryblocks
- length: length of data in memoryblock in bytes. Multiply of 8.
- ivec: memoryblock for temporary data, 8 bytes in size and not nil.
- num: current position in ivec. Pass 0 as start value and pass the value you get back to the next function call.

Returns "" on invalid input.

You can create yourself a twelve byte memoryblock with a starting value you want. First four bytes are position and next 8 bytes the current vector.

This is output feedback mode. Encryption is the same a decryption.

See also:

- **72.3.21 EncryptOFB64(data as string, byref temp as memoryblock) as string**

**72.3.23 SetKey(key as string)**


**Function:** Sets the key to be used.

**Notes:** The longer the key, the better. Suggested is at least 16 bytes.
72.4.1 CalculateCRC16MemoryMBS(data as MemoryBlock, Start as UInt16 = 65535, Polynomial as UInt16 = &h1021, FinalXOR as UInt16 = 0, ReflectInput as boolean = false, ReflectOutput as boolean = false) as UInt16

MBS Util Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calculates a 16bit Checksum about the provided memoryblock. **Notes:**

- Start is the start value.
- Polynomial is what is xored to the value in each round.
- FinalXOR is an XOR we do on the end.
- If ReflectInput is true, we swap bits in input.
- If ReflectOutput is true, we swap bits in output (before final XOR).

Returns CRC value.

72.4.2 CalculateCRC16StringMBS(data as string, Start as UInt16 = 65535, Polynomial as UInt16 = &h1021, FinalXOR as UInt16 = 0, ReflectInput as boolean = false, ReflectOutput as boolean = false) as UInt16

MBS Util Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calculates a 16bit Checksum about the provided string. **Example:**

```vbnet
dim c as string = DecodeHex("3E440026201000D")
dim p as UInt16 = CalculateCRC16StringMBS(c, &hFFFF, &h1021, 0, true, true)
MsgBox hex(p)+" = 3E5A"
```

**Notes:**

- Start is the start value.
- Polynomial is what is xored to the value in each round.
- FinalXOR is an XOR we do on the end.
- If ReflectInput is true, we swap bits in input.
- If ReflectOutput is true, we swap bits in output (before final XOR).

Returns CRC value.
72.4.3 Adler32MemoryMBS(adler as UInt32, buf as memoryblock, offset as Integer, length as Integer) as UInt32

MBS Compression Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The adler32 hash function from the zlib library.
Notes:
Offset and length must be correct for your memory block or you will crash your application!

Update a running Adler-32 checksum with the bytes and return the updated checksum. If buf is nil, this function returns the required initial value for the checksum.
An Adler-32 checksum is almost as reliable as a CRC32 but can be computed much faster.

72.4.4 Adler32StringMBS(adler as UInt32, buf as string) as UInt32

MBS Compression Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The adler32 hash function from the zlib library.
Example:

```vbnet
dim b as binarystream // some stream
dim adler as Integer
dim data as string
dim originalAdler as Integer = 12345
adler=Adler32MemoryMBS(0,nil,0,0)
data=b.read(10000)
while data<>"
    adler=Adler32StringMBS(adler, data)
data=b.read(10000)
wend
if adler <>originalAdler then msgbox "Error in checksum!"
```

Notes:
Update a running Adler-32 checksum with the bytes and return the updated checksum. If buf is nil, this function returns the required initial value for the checksum.
An Adler-32 checksum is almost as reliable as a CRC32 but can be computed much faster.
72.4.5 **CRC32MemoryMBS(crc as UInt32, buf as memoryblock, offset as Integer, length as Integer) as UInt32**

MBS Compression Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The crc32 hash function from the zlib library. **Notes:**

Offset and length must be correct for your memoryblock or you will crash your application!

Update a running crc with the bytes and return the updated crc. If buf is nil, this function returns the required initial value for the crc. Pre- and post-conditioning (one’s complement) is performed within this function so it shouldn’t be done by the application.

72.4.6 **CRC32StringMBS(crc as UInt32, buf as string) as UInt32**

MBS Compression Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The crc32 hash function from the zlib library. **Example:**

```plaintext
dim originalCrc as Integer // original CRC
dim crc as Integer // new crc
dim data as string
dim b as binarystream

crc=0

data=b.read(10000)
while data<>””
  crc=CRC32StringMBS(crc, data)
data=b.read(10000)
wend

if crc <>originalCrc then msgbox "Error in checksum!"
```

**Notes:** Update a running crc with the bytes and return the updated crc. If buf is nil, this function returns the required initial value for the crc. Pre- and post-conditioning (one’s complement) is performed within this function so it shouldn’t be done by the application.

72.4.7 **CRC16MBS(data as string) as UInt16**

MBS Util Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calculates a 16bit Checksum about the provided string.
Example:

```vba
dim n1 as Integer = CRC16MBS("Hello World")
dim n2 as Integer = CRC16MBS("Hallo World")
```

MsgBox str(n1)+" "+str(n2)

Notes: Please note: Different CRC functions give different result. This is one specific 16 bit CRC function which may be or not be the one you need for your application.

### 72.4.8 CRC\_32InMemContMBS(address as Ptr, length as Integer, prevCRC as UInt32) as UInt32

MBS Util Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calculates a 32bit Checksum about the provided memory address.

### 72.4.9 CRC\_32InMemMBS(address as Ptr, length as Integer) as UInt32

MBS Util Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calculates a 32bit Checksum about the provided memory address.

### 72.4.10 CRC\_32OfStrContMBS(s as String, prevCRC as UInt32) as UInt32

MBS Util Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calculates a 32bit Checksum about the provided block of data.

### 72.4.11 CRC\_32OfStrMBS(s as String) as UInt32

MBS Util Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calculates a 32bit Checksum about the provided string.

Example:

```vba
dim n as Integer
n=CRC\_32OfStrMBS("Hello World")
' n is now 1243066710
```

Notes:
See the text "About-CRC" for details about this Checksum things. This function is also available as part of the memoryblock class.

About Checksums:

These functions calculate CRCs over a range of bytes in a MemoryBlock or in a String.

There are three versions of CRC calculation: One for 16 Bit, one for 32 Bit and one for 16 to 64 Bit wide checksums. If you are free to choose, I suggest that you use the 32 Bit version because of its accuracy and performance.

Some background on using checksums/CRCs: Checksums, such as CRCs, are used to quickly verify that a chunk of data has not been modified somehow without your control. To use it, you'd calculate the checksum (CRC) of your data, then store that checksum value (which only needs 2 to 8 bytes of storage) somewhere. Later, when retrieving your data, you calculate its checksum again and compare its value with the previously stored value. If it does not match, the data got somehow corrupted. If it matches, that it is quite likely, although not 100% sure, that the data is still in its original state.

There are 3 different CRC algorithms available:

- CRC.CCITT...() as Integer
- CRC.32...() as Integer
- CRC.Dillon...(bitWidth as Integer, ...) as String

The CCITT version calculates a rather classic 16 bit CRC. Unless you need that CRC for legacy data, I recommend not to use it, but rather use the CRC.32 version.

CRC.32 is the most common used algorithm for 32 bit wide CRCs. Be aware there are theoretically many other ways to calculate a CRC 32, however.

The Dillon algorithm is a smart routine to calculate CRCs in any width between 16 and 64 bit. This one is only useful if you find that a 32 bit CRC is not sufficient for your needs. If you can live with a plain 32 bit CRC, you should prefer the CRC.32 routines, because they are faster than the Dillon code.

The result, since it can be up to 64 bit in size, cannot be returned in an Integer (they can only hold 32 bit). Instead, the result is returned as a 8 byte value, stored in a 8 byte long string. To get the value of that string, you can copy the string into a MemoryBlock, and then access the parts of the 8 byte long value there. The demo project shows how to accomplish this.
The CRC code was developed and published by Matthew Dillon. Here's his web page with more information about it:
http://www.backplane.com/diablo/crc64.html

72.4.12 CRC_CCITTInMemContMBS(address as Ptr, length as Integer, prevCRC as UInt32) as UInt32

MBS Util Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:**
Calculates a 16bit Checksum about the provided memory address.

72.4.13 CRC_CCITTInMemMBS(address as Ptr, length as Integer) as UInt32

MBS Util Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:**
Calculates a 16bit Checksum about the provided memory address.

72.4.14 CRC_CCITTOfStrContMBS(s as String, prevCRC as UInt32) as UInt32

MBS Util Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:**
Calculates a 16bit Checksum about the provided string.

72.4.15 CRC_CCITTOfStrMBS(s as String) as UInt32

MBS Util Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:**
Calculates a 16bit Checksum about the provided string.

**Example:**

```vba
dim n as Integer
n=CRC_CCITTOfStrMBS(“Hello World”)
’ n is now 39210
```

72.4.16 CRC_DillonInMemMBS(bitWidth as Integer, address as Ptr, length as Integer) as String

MBS Util Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:**
Calculates a 16 to 64bit Checksum about the provided memory address.
72.4.17 CRC_DillonOfStrMBS(bitWidth as Integer, s as String) as String

MBS Util Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calculates a 16 to 64bit Checksum about the provided string. **Example:**

```vba
    dim s as string
    s=CRC_DillonOfStrMBS(64,"Hello World")
    ' s has now the 64bit checksum inside an 8 byte binary string
```

72.4.18 CRC_DillonUInt64InMemMBS(bitWidth as Integer, address as Ptr, length as Integer) as UInt64

MBS Util Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calculates a 16 to 64bit Checksum about the provided memory address.

72.4.19 CRC_DillonUInt64OfStrMBS(bitWidth as Integer, s as String) as UInt64

MBS Util Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calculates a 16 to 64bit Checksum about the provided string.

72.4.20 GetHash32MBS(s as string) as UInt32

MBS Util Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calculates some special Hash value. **Example:**

```vba
    MsgBox hex(GetHash32MBS("xskin-b013fafit_01-PELVIS-BODY.skn"))  // should show 67A53A4D
```

**Notes:**

The 255 char limit was in the original C function, but should be resolved for this plugin, so string longer than 255 chars will work. The original C code looks like this:

```c
    static UInt32 GetHash32 (StringPtr inString)
    {
        for (i = 1; i <= length; i++)
```
```c
int length = inString[0];
UInt32 hash = length + 1;
int i;
{
    hash = rlwinm(hash, 3, 0, 31) ^ tolower(inString[i]);
}
return hash;
}

Originally this was added for Cherie Benoit, which describes it like this:

"GetHash32MBS" duplicates the hashing function of Westlake Interactive's "Namer" application which creates LFN-style short filenames for use with the Macintosh version of "The Sims."

### 72.4.21 ModBusCalculateRTUMessageCRCMBS(data as string) as UInt16

**Example:**

```vbnet
dim m as new MemoryBlock(9)
m.UInt8Value(0) = 1 // start of package
m.UInt8Value(1) = 6 // command code
m.UInt8Value(2) = 0 // some data...
m.UInt8Value(3) = 0
m.UInt8Value(4) = 0
m.UInt8Value(5) = &h21
m.UInt8Value(6) = 0 // checksum comes here
m.UInt8Value(7) = 0
m.UInt8Value(8) = 4 // end of package

dim Data as string = m.StringValue(0,6)
dim CheckSum as Int16 = ModBusCalculateRTUMessageCRCMBS(data)
m.UInt16Value(6) = checksum

MsgBox EncodeHex(m)
```
72.4.22 MD5MBS(data as memoryblock) as string

MBS Encryption Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the MD5 message digest value of a memoryblock as 16 byte string.

72.4.23 MD5StringMBS(data as memoryblock) as string

MBS Encryption Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the MD5 message digest value of a string as hex string.

72.4.24 ValidateUUIDMBS(UUID as string, mode as Integer = 0, required- Version as Integer = 0) as string

MBS Util Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Validates the given UUID/GUID. **Example:**

// wrong
dim w1 as string = ValidateUUIDMBS("hello") // wrong due to missing {  
dim w2 as string = ValidateUUIDMBS("550e8400-e29b-11d4-a716-446655440000",1) // wrong with, with z  
dim w3 as string = ValidateUUIDMBS(" { 550e8400-e29b-11d40716-446655440000 } ") // wrong with missing minus  
dim w4 as string = ValidateUUIDMBS(" { 550e8400-e29b-11d4-a716-446655440000 } ") // wrong with being too short  
dim w5 as string = ValidateUUIDMBS(" { 550e8400-e29b-11d4-a716-446655440000 } dssdsd",1) // wrong as it has extra chars on end  
dim w6 as string = ValidateUUIDMBS("550e8400-e29b-11d4-a716-446655440000",1,4) // wrong as not version 4  
dim w7 as string = ValidateUUIDMBS("6a12a4d5-e9e6-4568-ffcc-34c70b24a668",1,4) // wrong as not version 4

// okay
dim o1 as string = ValidateUUIDMBS("550e8400-e29b-11d4-a716-446655440000",1)  
dim o2 as string = ValidateUUIDMBS(" { 550e8400-e29b-11d4-a716-446655440000 } ")  
dim o3 as string = ValidateUUIDMBS("6a12a4d5-e9e6-4568-afcc-34c70b24a668",1)  
dim o4 as string = ValidateUUIDMBS("6a12a4d5-e9e6-4568-afcc-34c70b24a668",3)  
dim o5 as string = ValidateUUIDMBS(" { 550e8400-e29b-11d4-a716-446655440000 } ", 2)  
dim o6 as string = ValidateUUIDMBS(" { 550e8400-e29b-11d4-a716-446655440000 } ", 2)  
dim o7 as string = ValidateUUIDMBS(" { 550e8400-e29b-11d40716-446655440000 } ",4) // wrong with missing minus, but fixed  
dim o8 as string = ValidateUUIDMBS("550e8400-e29b-11d40716-446655440000 ",4) // wrong with missing { , but fixed  
dim o9 as string = ValidateUUIDMBS("6a12a4d5-e9e6-4568-afcc-34c70b24a668",4,4) // is version 4  
dim o10 as string = ValidateUUIDMBS("6a12a4d5-e9e6-1568-afcc-34c70b24a668",4,1) // is version 1
dim o11 as string = ValidateUUIDMBS(" { 550e8400-e29b-11d4-a716-446655440000 } dssdsd",1+4) // wrong as it has extra chars on end, but fixed

break // check in debugger

Notes:
If the UUID is valid, you get it back.
If the UUID is invalid, you get an empty string back.

Pass 1 in mode to not require braces around UUID. Pass 2 to ignore minus characters. Pass 3 to combine those two.
You can add 4 to have the GUID fixed a bit like adding braces and minus chars if missing.
The requiredVersion parameter can be 1 to 5 to indicate the required GUID version you want to have.

72.4.25  MD5MBS(data as string) as string

Function: Returns the MD5 message digest value of a string.
Example:
// Compare RB5 MD5 to the one from MBS

dim a,b as String

a=MD5("Hallo")

b=MD5MBS("Hallo")

msgbox str(StrComp(a,b,0))

Notes: Same as the MD5 function in RB5.

72.4.26  MD5StringMBS(data as string) as string

Function: Returns the MD5 message digest value of a string as hex string.
Example:
// Compare RB5 MD5 to the one from MBS
72.5. **CLASS CCCRYPTORMBS**

```vbnet
dim a,b as String
a=EncodingToHexMBS(MD5("Franz jagt im komplett verwahrlosten Taxi quer durch Bayern"))
b=MD5StringMBS("Franz jagt im komplett verwahrlosten Taxi quer durch Bayern")
msgbox a+EndOfLine+b+EndOfLine+str(StrComp(a,b,0))
```

72.4.27 **CRC_DillonUInt64MBS**

```vbnet
DillonUInt64MBS(extends mem as memoryblock, bitWidth as Integer, offset as Integer, numBytes as Integer) as UInt64
```

MBS Util Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calculates a 16 to 64bit Checksum about the provided memory address. **Notes:** The 64bit integer version for RB 2006r4 and newer.

### 72.5 class CCCryptorMBS

#### 72.5.1 class CCCryptorMBS

MBS MacOSX Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Generic interface for symmetric encryption. **Example:**

```vbnet
// initialize
dim h as new CCCryptorMBS(CCCryptorMBS.kCCEncrypt, CCCryptorMBS.kCCAlgorithmAES128, 0,"Hello12312345678")
if h.Lasterror<>0 then break

// destination memoryblock
dim m as new MemoryBlock(100)
dim Position as UInt64 = 0
dim BytesLeft as UInt64 = m.Size

// add a few bytes
dim q as UInt64 = 0
h.Update "Hello World!!1234", m, BytesLeft, q
if h.Lasterror<>0 then break
Position = Position + q
BytesLeft = BytesLeft - q
```
// now finalize:
q = 0

dim dp as ptr = m.AddressPtrMBS(Position)

h.Final dp, BytesLeft, q
if h.Lasterror<>0 then break

Position = Position + q
BytesLeft = BytesLeft - q

// and show result
dim d as string = m.StringValue(0, Position)
MsgBox EncodingToHexMBS(d)

Notes:

This interface provides access to a number of symmetric encryption algorithms. Symmetric encryption algorithms come in two "flavors" - block ciphers, and stream ciphers. Block ciphers process data (while both encrypting and decrypting) in discrete chunks of data called blocks; stream ciphers operate on arbitrary sized data.

The object declared in this interface, CCCryptorMBS, provides access to both block ciphers and stream ciphers with the same API; however some options are available for block ciphers that do not apply to stream ciphers.

The general operation of a CCCryptor is: initialize it with raw key data and other optional fields with Constructor(); process input data via one or more calls to Update(), each of which may result in output data being written to caller-supplied memory; and obtain possible remaining output data with Final(). The CCCryptor is disposed of via Destructor(), or it can be reused (with the same key data as provided to Constructor()) by calling Reset().

One option for block ciphers is padding, as defined in PKCS7; when padding is enabled, the total amount of data encrypted does not have to be an even multiple of the block size, and the actual length of plaintext is calculated during decryption.

Another option for block ciphers is Cipher Block Chaining, known as CBC mode. When using CBC mode, an Initialization Vector (IV) is provided along with the key when starting an encrypt or decrypt operation. If CBC mode is selected and no IV is provided, an IV of all zeroes will be used.

CCCryptorMBS also implements block bufferring, so that individual calls to Update() do not have to provide data whose length is aligned to the block size. (If padding is disabled, encrypting with block ciphers does require that the *total* length of data input to Update() call(s) be aligned to the block size.)
A given CCCryptorMBS can only be used by one thread at a time; multiple threads can use safely different CCCryptors at the same time.

This class uses the CommonCrypto interface which is available on Mac OS X 10.5 or newer and also on iOS. So you can use it to get the same results on both operation systems. Also as you simply use Apple provided encryption, you don’t need to apply for an export license for this classes here.

### 72.5.2 Methods

#### 72.5.3 Constructor(operation as Integer, Algorithm as Integer, options as Integer, key as Ptr, keyLength as UInt64, iv as Ptr = nil)

MBS MacOSX Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create a cryptographic context.  
**Notes:**

- **operation:** Defines the basic operation: kCCEncrypt or kCCDecrypt.  
- **Algorithm:** Defines the algorithm.  
- **options:** A word of flags defining options.  
- **key:** Raw key material, length keyLength bytes.  

- **keyLength:** Length of key material. Must be appropriate for the selected operation and algorithm. Some algorithms provide for varying key lengths.

- **iv:** Initialization vector, optional. Used by block ciphers when Cipher Block Chaining (CBC) mode is enabled. If present, must be the same length as the selected algorithm’s block size. If CBC mode is selected (by the absence of the kCCOptionECBMode bit in the options flags) and no IV is present, a NULL (all zeroes) IV will be used. This parameter is ignored if ECB mode is used or if a stream cipher algorithm is selected.

Possible error is lasterror are kCCParamError and kCCMemoryFailure.  
See also:

- 72.5.4 Constructor(operation as Integer, Algorithm as Integer, options as Integer, key as String, iv as Ptr = nil)

#### 72.5.4 Constructor(operation as Integer, Algorithm as Integer, options as Integer, key as String, iv as Ptr = nil)

MBS MacOSX Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create a cryptographic context.  
**Example:**
// key length must be 16 bytes for AES128
dim key as string = "1234567890123456"

dim h as new CCCryptorMBS(CCCryptorMBS.kCCEncrypt, CCCryptorMBS.kCCAlgorithmAES128, 0, key)

if h.Lasterror<>0 then
    MsgBox "error: " + str(h.Lasterror)
else
    MsgBox "OK"
end if

Notes:

operation: Defines the basic operation: kCCEncrypt or kCCDecrypt.
Algorithm: Defines the algorithm.
options: A word of flags defining options.
key: Raw key material, length keyLength bytes.

keyLength: Length of key material. Must be appropriate for the selected operation and algorithm. Some algorithms provide for varying key lengths.

iv: Initialization vector, optional. Used by block ciphers when Cipher Block Chaining (CBC) mode is enabled. If present, must be the same length as the selected algorithm’s block size. If CBC mode is selected (by the absence of the kCCOptionECBMode bit in the options flags) and no IV is present, a NULL (all zeroes) IV will be used. This parameter is ignored if ECB mode is used or if a stream cipher algorithm is selected.

Possible error is lasterror are kCCParamError and kCCMemoryFailure.
See also:

- 72.5.3 Constructor(operation as Integer, Algorithm as Integer, options as Integer, key as Ptr, keyLength as UInt64, iv as Ptr = nil)

72.5.5  Crypt(Operation as Integer, Algorithm as Integer, Options as Integer, key as Ptr, KeyLength as UInt64, IV as Ptr, DataIn as Ptr, DataInLength as UInt64, DataOut as Ptr, DataOutAvailable as UInt64, byref DataOutMoved as UInt64) as Integer

Example:
dim KeyString as string = "Hello12312345678"
dim InputString as string = "Hello World!1234"

dim InputMemory as MemoryBlock = InputString
dim KeyMemory as MemoryBlock = KeyString
dim IV as ptr = nil // default to zeros
dim OutputMemory as new MemoryBlock(100)
dim Size as UInt64 = 0

dim e as Integer = CCCryptorMBS.Crypt(CCCryptorMBS.kCCEncrypt, CCCryptorMBS.kCCAlgorithmAES128, 0, KeyMemory, KeyMemory.size, IV, InputMemory, InputMemory.size, OutputMemory, OutputMemory.size, size)

if e = CCCryptorMBS.kCCSuccess then
dim result as string = OutputMemory.StringValue(0, size)
MsgBox EncodingToHexMBS(result)
else
MsgBox "Error: " + str(e)
end if

Notes:
This basically performs a sequence of Constructor, Update, Final and Destructor.

Parameters:

Possible errors in lasterror:
kCCBufferTooSmall indicates insufficient space in the dataOut buffer. In this case, the dataOutMoved parameter will indicate the size of the buffer needed to complete the operation. The operation can be retried with minimal runtime penalty.
kCCAlignmentError indicates that dataInLength was not properly aligned. This can only be returned for block ciphers, and then only when decrypting or when encrypting with block with padding disabled.

See also:
• 72.5.6 Crypt(Operation as Integer, Algorithm as Integer, Options as Integer, key as string, IV as Ptr, DataIn as string, byref DataOut as string) as Integer

72.5.6 Crypt(Operation as Integer, Algorithm as Integer, Options as Integer, key as string, IV as Ptr, DataIn as string, byref DataOut as string) as Integer

Operation Defines the basic operation: kCCEncrypt or kCCDecrypt.
Algorithm Defines the encryption algorithm.
Options A word of flags defining options. See kCCOption constants.
Key Raw key material, length keyLength bytes.
keyLength Length of key material. Must be appropriate for the select algorithm. Some algorithms may provide for varying key lengths.
IV Initialization vector, optional. Used for Cipher Block Chaining (CBC) mode. If present, must be the same length as the selected algorithm’s block size. If CBC mode is selected (by the absence of any mode bits in the options flags) and no IV is present, a nil (all zeroes) IV will be used. This is ignored if ECB mode is used or if a stream cipher algorithm is selected.
dataIn Data to encrypt or decrypt, length dataInLength bytes.
dataInLength Length of data to encrypt or decrypt.
dataOut Result is written here. Allocated by caller. Encryption and decryption can be performed ”in-place”, with the same buffer used for input and output.
dataOutAvailable The size of the dataOut buffer in bytes.
dataOutMoved On successful return, the number of bytes written to dataOut. If kCCBufferTooSmall is returned as a result of insufficient buffer space being provided, the required buffer space is returned here.
kCCDecodeError Indicates improperly formatted ciphertext or a ”wrong key” error; occurs only during decrypt operations.

Example:

dim KeyString as string = "Hello12312345678"
dim InputString as string = "Hello World!1234"
dim IV as ptr = nil // default to zeros
dim Output as string = ""
dim e as Integer = CCCryptorMBS.Crypt(CCCryptorMBS.kCCEncrypt, CCCryptorMBS.kCCAlgorithmAES128, 0, KeyString, IV, InputString, Output)

if e = CCCryptorMBS.kCCSuccess then
MsgBox EncodingToHexMBS(Output)
else
MsgBox "Error: " + str(e)
end if

Notes:
This basically performs a sequence of Constructor, Update, Final and Destructor. This is the convenience function for Real Studio with using strings instead of data pointers.
Parameters:

- **Operation**: Defines the basic operation: kCCEncrypt or kCCDecrypt.
- **Algorithm**: Defines the encryption algorithm.
- **Options**: A word of flags defining options. See kCCOption constants.
- **Key**: Raw Key.
- **IV**: Initialization vector, optional. Used for Cipher Block Chaining (CBC) mode. If present, must be the same length as the selected algorithm’s block size. If CBC mode is selected (by the absence of any mode bits in the options flags) and no IV is present, a nil (all zeroes) IV will be used. This is ignored if ECB mode is used or if a stream cipher algorithm is selected.
- **dataIn**: Data to encrypt or decrypt.
- **dataOut**: Result is written here.

Possible errors in lasterror:
- kCCBufferTooSmall indicates insufficient space in the dataOut buffer. In this case, the dataOutMoved parameter will indicate the size of the buffer needed to complete the operation. The operation can be retried with minimal runtime penalty.
- kCCAlignmentError indicates that dataInLength was not properly aligned. This can only be returned for block ciphers, and then only when decrypting or when encrypting with block with padding disabled.

- kCCDecodeError Indicates improperly formatted ciphertext or a ”wrong key” error; occurs only during decrypt operations.

See also:

- 72.5.5 Crypt(Operation as Integer, Algorithm as Integer, Options as Integer, key as Ptr, KeyLength as UInt64, IV as Ptr, DataIn as Ptr, DataInLength as UInt64, DataOut as Ptr, DataOutAvailable as UInt64, byref DataOutMoved as UInt64) as Integer

### 72.5.7 Final(DataOut as Ptr, dataOutAvailable as UInt64, byref dataOutMoved as UInt64)

MBS MacOSX Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Finish an encrypt or decrypt operation, and obtain the (possible) final data output.

**Notes:**
- dataOut: Result is written here. Allocated by caller. Pass a memory block of right size.
- dataOutAvailable: The size of the dataOut buffer in bytes.
dataOutMoved: On successful return, the number of bytes written to dataOut.

LastError is set to:
- kCCBufferTooSmall indicates insufficient space in the dataOut buffer. The caller can use GetOutputLength() to determine the required output buffer size in this case. The operation can be retried; no state is lost when this is returned.
- kCCAlignmentError When decrypting, or when encrypting with a block cipher with padding disabled, kCCAlignmentError will be returned if the total number of bytes provided to Update() is not an integral multiple of the current algorithm’s block size.
- kCCDecodeError Indicates garbled ciphertext or the wrong key during decryption. This can only be returned while decrypting with padding enabled.

Except when kCCBufferTooSmall is returned, the CCCryptorMBS can no longer be used for subsequent operations unless Reset() is called on it.
It is not necessary to call Final() when performing symmetric encryption or decryption if padding is disabled, or when using a stream cipher.

### 72.5.8 GetOutputLength(inputLength as UInt64, Final as Boolean = true) as UInt64

MBS MacOSX Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Determine output buffer size required to process a given input size.

**Example:**
```
Dim h as new CCCryptorMBS(CCCryptorMBS.kCCEncrypt, CCCryptorMBS.kCCAlgorithmAES128, 0, 
"Hello12312345678")
MsgBox Str(h.GetOutputLength(1000))
```

**Notes:**

- **inputLength:** The length of data which will be provided to Update().

  - **Final:** If false, the returned value will indicate the output buffer space needed when `inputLength` bytes are provided to CCCryptorMBS.Update(). When `Final` is true, the returned value will indicate the total combined buffer space needed when `inputLength` bytes are provided to CCCryptorMBS.Update() and then CCCryptorMBS.Final() is called.

  Returns the maximum buffer space need to perform CCCryptorMBS.Update() and optionally CCCryptorMBS.Final().

Some general rules apply that allow clients of this module to know a priori how much output buffer space will be required in a given situation. For stream ciphers, the output size is always equal to the input size, and CCCryptorMBS.Final() never produces any data. For block ciphers, the output size will always be less than
72.5. CLASS CCCRYPTORMBS

or equal to the input size plus the size of one block. For block ciphers, if the input size provided to each call to CCCryptorMBS.Update() is an integral multiple of the block size, then the output size for each call to CCCryptorMBS.Update() is less than or equal to the input size for that call to CCCryptorMBS.Update(). CCCryptorMBS.Final() only produces output when using a block cipher with padding enabled.

72.5.9 Reset(iv as Ptr = nil)

MBS MacOSX Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Reinitializes an existing CCCryptorRef with a (possibly) new initialization vector. Notes:
The key is unchanged. Not implemented for stream ciphers.

iv: Optional initialization vector; if present, must be the same size as the current algorithm’s block size.

The only possible errors are kCCParamError and kCCUnimplemented.
This can be called on a CCCryptorMBS with data pending (i.e. in a padded mode operation before Final is called); however any pending data will be lost in that case.

72.5.10 Update(dataIn as Ptr, dataInLength as UInt64, dataOut as Ptr, dataOutAvailable as UInt64, byref dataOutMoved as UInt64)

The result, if any, is written to a caller-provided buffer.

Parameters:

- dataIn: Data to process, length dataInLength bytes.
- dataInLength: Length of data to process.
- dataOut: Result is written here. Allocated by caller. Encryption and decryption can be performed ”in-place”, with the same buffer used for input and output.

- dataOutAvailable: The size of the dataOut buffer in bytes.

- dataOutMoved: On successful return, the number of bytes written to dataOut.
Possible error codes:
kCCBufferTooSmall indicates insufficient space in the dataOut buffer. The caller can use CCCryptorMBS.GetOutputLength() to determine the required output buffer size in this case. The operation can be retried; no state is lost when this is returned.

This routine can be called multiple times. The caller does not need to align input data lengths to block sizes; input is buffered as necessary for block ciphers. When performing symmetric encryption with block ciphers, and padding is enabled via kCCOptionPKCS7Padding, the total number of bytes provided by all the calls to this function when encrypting can be arbitrary (i.e., the total number of bytes does not have to be block aligned). However if padding is disabled, or when decrypting, the total number of bytes does have to be aligned to the block size; otherwise CCCryptMBS.Final() will return kCCAlignmentError. A general rule for the size of the output buffer which must be provided by the caller is that for block ciphers, the output length is never larger than the input length plus the block size. For stream ciphers, the output length is always exactly the same as the input length. See the discussion for CCCryptMBS.GetOutputLength() for more information on this topic. Generally, when all data has been processed, call CCCryptorMBS.Final(). In the following cases, the CCCryptorMBS.Final() is superfluous as it will not yield any data nor return an error:
1. Encrypting or decrypting with a block cipher with padding disabled, when the total amount of data provided to CCCryptorMBS.Update() is an integral multiple of the block size.
2. Encrypting or decrypting with a stream cipher.

See also:

• 72.5.11 Update(dataIn as String, dataOut as Ptr, dataOutAvailable as UInt64, byref dataOutMoved as UInt64)

72.5.11 Update(dataIn as String, dataOut as Ptr, dataOutAvailable as UInt64, byref dataOutMoved as UInt64)

Notes:
The result, if any, is written to a caller-provided buffer.

Parameters:

- **dataIn** Data to process, length dataInLength bytes.
- **dataInLength** Length of data to process.
- **dataOut** Result is written here. Allocated by caller. Encryption and decryption can be performed “in-place”, with the same buffer used for input and output.

- **dataOutAvailable** The size of the dataOut buffer in bytes.
dataOutMoved  On successful return, the number of bytes written to dataOut.

Possible error codes:
kCCBufferTooSmall indicates insufficient space in the dataOut buffer. The caller can use CCCryptorMBS.GetOutputLength() to determine the required output buffer size in this case. The operation can be retried; no state is lost when this is returned.

This routine can be called multiple times. The caller does not need to align input data lengths to block sizes; input is buffered as necessary for block ciphers. When performing symmetric encryption with block ciphers, and padding is enabled via kCCOptionPKCS7Padding, the total number of bytes provided by all the calls to this function when encrypting can be arbitrary (i.e., the total number of bytes does not have to be block aligned). However if padding is disabled, or when decrypting, the total number of bytes does have to be aligned to the block size; otherwise CCCryptorMBS.Final() will return kCCAlignmentError. A general rule for the size of the output buffer which must be provided by the caller is that for block ciphers, the output length is never larger than the input length plus the block size. For stream ciphers, the output length is always exactly the same as the input length. See the discussion for CCCryptorMBS.GetOutputLength() for more information on this topic. Generally, when all data has been processed, call CCCryptorMBS.Final().

In the following cases, the CCCryptorMBS.Final() is superfluous as it will not yield any data nor return an error:
1. Encrypting or decrypting with a block cipher with padding disabled, when the total amount of data provided to CCCryptorMBS.Update() is an integral multiple of the block size.
2. Encrypting or decrypting with a stream cipher.

See also:

* 72.5.10 Update(dataIn as Ptr, dataInLength as UInt64, dataOut as Ptr, dataOutAvailable as UInt64, byref dataOutMoved as UInt64)

### 72.5.12 Properties

#### 72.5.13 Handle as Integer

MBS MacOSX Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal handle for the crypter instance.

**Notes:** (Read and Write property)

#### 72.5.14 Lasterror as Integer

MBS MacOSX Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Last error code.

**Notes:** (Read and Write property)
72.5.15 Constants

72.5.16 kCCAlgorithm3DES = 2

MBS MacOSX Plugin, Plugin Version: 11.3. Function: One of the encryption algorithms constants. Notes: Triple-DES, three key, EDE configuration

72.5.17 kCCAlgorithmAES128 = 0

MBS MacOSX Plugin, Plugin Version: 11.3. Function: One of the encryption algorithms constants. Notes: Advanced Encryption Standard, 128-bit block

72.5.18 kCCAlgorithmCAST = 3

MBS MacOSX Plugin, Plugin Version: 11.3. Function: One of the encryption algorithms constants. Notes: CAST

72.5.19 kCCAlgorithmDES = 1

MBS MacOSX Plugin, Plugin Version: 11.3. Function: One of the encryption algorithms constants. Notes: Data Encryption Standard

72.5.20 kCCAlgorithmRC2 = 5

MBS MacOSX Plugin, Plugin Version: 11.3. Function: One of the encryption algorithms constants. Notes: RC2 stream cipher

72.5.21 kCCAlgorithmRC4 = 4

MBS MacOSX Plugin, Plugin Version: 11.3. Function: One of the encryption algorithms constants. Notes: RC4 stream cipher
72.5.22  kCCAlignmentError = -4303

MBS MacOSX Plugin, Plugin Version: 11.3. **Function:** One of the error constants.  
**Notes:** Input size was not aligned properly.

72.5.23  kCCBlockSize3DES = 8

MBS MacOSX Plugin, Plugin Version: 11.3. **Function:** One of the block size constants.  
**Notes:** Triple DES block size.

72.5.24  kCCBlockSizeAES128 = 16

MBS MacOSX Plugin, Plugin Version: 11.3. **Function:** One of the block size constants.  
**Notes:** AES block size (currently, only 128-bit blocks are supported).

72.5.25  kCCBlockSizeCAST = 8

MBS MacOSX Plugin, Plugin Version: 11.3. **Function:** One of the block size constants.  
**Notes:** CAST block size.

72.5.26  kCCBlockSizeDES = 8

MBS MacOSX Plugin, Plugin Version: 11.3. **Function:** One of the block size constants.  
**Notes:** DES block size.

72.5.27  kCCBlockSizeRC2 = 8

MBS MacOSX Plugin, Plugin Version: 11.3. **Function:** One of the block size constants.  
**Notes:** RC2 block size.

72.5.28  kCCBufferTooSmall = -4301

MBS MacOSX Plugin, Plugin Version: 11.3. **Function:** One of the error constants.  
**Notes:** Insufficient buffer provided for specified operation.
72.5.29  kCCDecodeError = -4304

MBS MacOSX Plugin, Plugin Version: 11.3. **Function:** One of the error constants.  
**Notes:** Input data did not decode or decrypt properly.

72.5.30  kCCDecrypt = 1

MBS MacOSX Plugin, Plugin Version: 11.3. **Function:** One of the operation modes.  
**Notes:** Symmetric decryption.

72.5.31  kCCEncrypt = 0

MBS MacOSX Plugin, Plugin Version: 11.3. **Function:** One of the operation modes.  
**Notes:** Symmetric encryption.

72.5.32  kCCKeySize3DES = 24

MBS MacOSX Plugin, Plugin Version: 11.3. **Function:** One of the key size constants.  
**Notes:**  
Triple DES key size.  
DES and TripleDES have fixed key sizes.

72.5.33  kCCKeySizeAES128 = 16

MBS MacOSX Plugin, Plugin Version: 11.3. **Function:** One of the key size constants.  
**Notes:**  
128 bit AES key size.  
AES has three discrete key sizes.

72.5.34  kCCKeySizeAES192 = 24

MBS MacOSX Plugin, Plugin Version: 11.3. **Function:** One of the key size constants.  
**Notes:**  
192 bit AES key size.  
AES has three discrete key sizes.
72.5. **CLASS CCCRYPTORMBS**

72.5.35  **kCCKeySizeAES256 = 32**

MBS MacOSX Plugin, Plugin Version: 11.3. **Function:** One of the key size constants.

**Notes:**

256 bit AES key size.
AES has three discrete key sizes.

72.5.36  **kCCKeySizeDES = 8**

MBS MacOSX Plugin, Plugin Version: 11.3. **Function:** One of the key size constants.

**Notes:**

DES key size.
DES and TripleDES have fixed key sizes.

72.5.37  **kCCKeySizeMaxCAST = 16**

MBS MacOSX Plugin, Plugin Version: 11.3. **Function:** One of the key size constants.

**Notes:**

CAST maximum key size.
CAST and RC4 have variable key sizes.

72.5.38  **kCCKeySizeMaxRC2 = 128**

MBS MacOSX Plugin, Plugin Version: 11.3. **Function:** One of the key size constants.

**Notes:**

RC2 maximum key size.
CAST and RC4 have variable key sizes.

72.5.39  **kCCKeySizeMaxRC4 = 512**

MBS MacOSX Plugin, Plugin Version: 11.3. **Function:** One of the key size constants.

**Notes:**

RC4 maximum key size.
CAST and RC4 have variable key sizes.
72.5.40  \text{kCCKeySizeMinCAST} = 5

MBS MacOSX Plugin, Plugin Version: 11.3. \textbf{Function}: One of the key size constants.  
\textbf{Notes}: 
CAST minimum key size. 
CAST and RC4 have variable key sizes.

72.5.41  \text{kCCKeySizeMinRC2} = 1

MBS MacOSX Plugin, Plugin Version: 11.3. \textbf{Function}: One of the key size constants.  
\textbf{Notes}: 
RC2 minimum key size. 
CAST and RC4 have variable key sizes.

72.5.42  \text{kCCKeySizeMinRC4} = 1

MBS MacOSX Plugin, Plugin Version: 11.3. \textbf{Function}: One of the key size constants.  
\textbf{Notes}: 
RC4 minimum key size. 
CAST and RC4 have variable key sizes.

72.5.43  \text{kCCMemoryFailure} = -4302

MBS MacOSX Plugin, Plugin Version: 11.3. \textbf{Function}: One of the error constants.  
\textbf{Notes}: Memory allocation failure.

72.5.44  \text{kCCOptionECBMode} = 2

MBS MacOSX Plugin, Plugin Version: 11.3. \textbf{Function}: One of the option constants.  
\textbf{Notes}: 
Electronic Code Book Mode. Default is CBC. 
Stream ciphers currently have no options
72.5.  CLASS CCCRYPTORMBS

72.5.45  kCCOptionPKCS7Padding = 1

MBS MacOSX Plugin, Plugin Version: 11.3. **Function:** One of the option constants.

**Example:**

```vbnet
// initialize
dim h as new CCCryptorMBS(CCCryptorMBS.kCCEncrypt, CCCryptorMBS.kCCAlgorithmAES128, CCCryptorMBS.kCCOptionPKCS7Padding, "Hello12312345678")
if h.Lasterror<>0 then break

// destination memoryblock

dim m as new MemoryBlock(100)
dim Position as UInt64 = 0
dim BytesLeft as UInt64 = m.Size

// add a few bytes
dim q as UInt64 = 0

// due to padding, we don’t need to pass a multiple of block size
h.Update "Hello World!", m, BytesLeft, q
if h.Lasterror<>0 then break

Position = Position + q
BytesLeft = BytesLeft - q

// now finalize:
q = 0

dim dp as ptr = m.AddressPtrMBS(Position)

h.Final dp, BytesLeft, q
if h.Lasterror<>0 then break

Position = Position + q
BytesLeft = BytesLeft - q

// and show result
dim d as string = m.StringValue(0, Position)
MsgBox EncodingToHexMBS(d)
```

**Notes:**

Perform PKCS7 padding.
Stream ciphers currently have no options.
72.5.46  \textbf{kCCParamError} = -4300

MBS MacOSX Plugin, Plugin Version: 11.3. \textbf{Function}: One of the error constants. \textbf{Notes}: Illegal parameter value.

72.5.47  \textbf{kCCSuccess} = 0

MBS MacOSX Plugin, Plugin Version: 11.3. \textbf{Function}: One of the error constants. \textbf{Notes}: Operation completed normally.

72.5.48  \textbf{kCCUnimplemented} = -4305

MBS MacOSX Plugin, Plugin Version: 11.3. \textbf{Function}: One of the error constants. \textbf{Notes}: Function not implemented for the current algorithm.
72.6. CLASS CCHMACMBS

72.6 class CCHMacMBS

72.6.1 class CCHMacMBS

Example:

```vba
dim h as new CCHMacMBS(CCHMacMBS.kCCHmacAlgSHA1, "Hello")
h.Update "Hello World!"
dim m as MemoryBlock = h.Finalize
MsgBox EncodingToHexMBS(m)
```

Notes: This class uses the CommonCrypto interface which is available on Mac OS X 10.5 or newer and also on iOS. So you can use it to get the same results on both operation systems. Also as you simply use Apple provided encryption, you don’t need to apply for an export license for this classes here.

72.6.2 Methods

72.6.3 Constructor(algorithm as Integer, key as memoryblock)

See also:

- 72.6.4 Constructor(algorithm as Integer, key as Ptr, keyLength as Uint64) 12439
- 72.6.5 Constructor(algorithm as Integer, key as string) 12439

72.6.4 Constructor(algorithm as Integer, key as Ptr, keyLength asUint64)

See also:

- 72.6.3 Constructor(algorithm as Integer, key as memoryblock) 12439
- 72.6.5 Constructor(algorithm as Integer, key as string) 12439

72.6.5 Constructor(algorithm as Integer, key as string)

Example:

```vbnet
dim h as new CCHMacMBS(CCHMacMBS.kCCHmacAlgMD5, "Hello")
h.Update "Hello World!"
dim m as MemoryBlock = h.Finalize
MsgBox EncodingToHexMBS(m)
```

See also:

- 72.6.3 Constructor(algorithm as Integer, key as memoryblock) 12439
- 72.6.4 Constructor(algorithm as Integer, key as Ptr, keyLength as U1nt64) 12439

### 72.6.6 Final(macOut as Ptr)


**Notes:**

Writes mac to given pointer.

Please pass a memoryblock with 16 bytes for MD5 and 20 bytes for SHA1.

### 72.6.7 Finalize as Memoryblock


**Notes:** Returns digest. 16 bytes for MD5 and 20 bytes for SHA1.

### 72.6.8 Hmac(algorithm as Integer, key as Ptr, keyLength as Integer, data as Ptr, dataLength as Integer, MacOut as Ptr)

MBS MacOSX Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Stateless, one-shot HMAC function.

**Notes:**

Make sure your memoryblock for key, data and macout have the right size and are not nil!
keyLength and dataLength are the size of key and data in bytes.

See also:

- 72.6.9 Hmac(algorithm as Integer, key as String, data as String) as String 12441
72.6. CLASS CCHMACMBS

72.6.9 Hmac(algorithm as Integer, key as String, data as String) as String

**Function:** Stateless, one-shot HMAC function.  
See also:

- 72.6.8 Hmac(algorithm as Integer, key as Ptr, keyLength as Integer, data as Ptr, dataLength as Integer,  
  MacOut as Ptr) 12440

72.6.10 Update(data as memoryblock)

**Function:** Process some data.  
**Notes:** Takes bytes in memoryblock.  
See also:

- 72.6.11 Update(data as Ptr, dataLength as UInt64) 12441  
- 72.6.12 Update(data as string) 12441

72.6.11 Update(data as Ptr, dataLength as UInt64)

**Function:** Process some data.  
**Notes:** Takes given bytes from pointer. You can pass a memoryblock there and pass the size of the memoryblock as length.  
See also:

- 72.6.10 Update(data as memoryblock) 12441  
- 72.6.12 Update(data as string) 12441

72.6.12 Update(data as string)

**Function:** Process some data.  
**Notes:** Takes bytes in string.  
See also:

- 72.6.10 Update(data as memoryblock) 12441  
- 72.6.11 Update(data as Ptr, dataLength as UInt64) 12441
72.6.13 Properties

72.6.14 Algorithm as Integer

MBS MacOSX Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The algorithm passed in the constructor.

**Notes:**
see kCCHmacAlg* constants.
(Read and Write property)

72.6.15 Constants

72.6.16 kCCHmacAlgMD5 = 1

MBS MacOSX Plugin, Plugin Version: 11.3. **Function:** One of the Algorithms selector constants.

72.6.17 kCCHmacAlgSHA1 = 0

MBS MacOSX Plugin, Plugin Version: 11.3. **Function:** One of the Algorithms selector constants.

72.6.18 kCCHmacAlgSHA224 = 5

MBS MacOSX Plugin, Plugin Version: 11.3. **Function:** One of the Algorithms selector constants.

72.6.19 kCCHmacAlgSHA256 = 2

MBS MacOSX Plugin, Plugin Version: 11.3. **Function:** One of the Algorithms selector constants.

72.6.20 kCCHmacAlgSHA384 = 3

MBS MacOSX Plugin, Plugin Version: 11.3. **Function:** One of the Algorithms selector constants.
72.6. CLASS CCHMACMBS

72.6.21 kCCHmacAlgSHA512 = 4

MBS MacOSX Plugin, Plugin Version: 11.3. **Function:** One of the Algorithms selector constants.

72.6.22 kCCMD5DigestLength = 16

MBS MacOSX Plugin, Plugin Version: 11.3. **Function:** The length of the SHA1 digest in bytes.

72.6.23 kCCSHA1DigestLength = 20

MBS MacOSX Plugin, Plugin Version: 11.3. **Function:** The length of the SHA1 digest in bytes.
72.7 class CCMD2MBS

72.7.1 class CCMD2MBS

Example:

```
dim s as new CCMD2MBS
s.Update "The quick brown fox jumps over the lazy dog"
```

```
dim m as MemoryBlock = s.Finalize
MsgBox EncodingToHexMBS(m)
```

Notes: This class uses the CommonCrypto interface which is available on Mac OS X 10.4 or newer and also on iOS. So you can use it to get the same results on both operation systems. Also as you simply use Apple provided encryption, you don’t need to apply for an export license for this classes here.

72.7.2 Methods

72.7.3 Constructor


72.7.4 Finalize as Memoryblock

Notes: If you want to show the value to a human, please use EncodingToHexMBS function.

72.7.5 MD2(data as Ptr, dataLength as Integer) as Memoryblock

Notes: Simply pass in a memoryblock with data and the size in bytes and receive digest as memoryblock. If you need to show digest to human, please use EncodingToHexMBS function.
See also:

• 72.7.6 MD2(data as String) as Memoryblock
72.7. **CLASS CCMD2MBS**

### 72.7.6 MD2(data as String) as Memoryblock

MBS MacOSX Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One-shot hash calculation with MD2.  
**Example:**

```vbs
dim m as MemoryBlock = CCMD2MBS.MD2("The quick brown fox jumps over the lazy dog")
MsgBox EncodingToHexMBS(m)
```

**Notes:** Simply pass in a string and receive digest as memoryblock. If you need to show digest to human, please use EncodingToHexMBS function.  
See also:

- 72.7.5 MD2(data as Ptr, dataLength as Integer) as Memoryblock

### 72.7.7 Update(data as Ptr, dataLength as UInt64)

MBS MacOSX Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Processes some data.  
**Notes:** Pass memoryblock and data length in bytes.  
See also:

- 72.7.8 Update(data as string)

### 72.7.8 Update(data as string)

MBS MacOSX Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Processes some data.  
**Notes:** Pass string with data.  
See also:

- 72.7.7 Update(data as Ptr, dataLength as UInt64)
72.8 class CCMD4MBS

72.8.1 class CCMD4MBS

MBS MacOSX Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for MD4 hash.

**Example:**

```vbscript
dim s as new CCMD4MBS
s.Update "The quick brown fox jumps over the lazy dog"

dim m as MemoryBlock = s.Finalize
MsgBox EncodingToHexMBS(m)
```

**Notes:** This class uses the CommonCrypto interface which is available on Mac OS X 10.4 or newer and also on iOS. So you can use it to get the same results on both operation systems. Also as you simply use Apple provided encryption, you don’t need to apply for an export license for this classes here.

72.8.2 Methods

72.8.3 Constructor

MBS MacOSX Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes the hash engine.

72.8.4 Finalize as Memoryblock

MBS MacOSX Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Finalizes hash and returns digest as memoryblock.

**Notes:** If you want to show the value to a human, please use EncodingToHexMBS function.

72.8.5 MD4(data as Ptr, dataLength as Integer) as Memoryblock


**Notes:** Simply pass in a memoryblock with data and the size in bytes and receive digest as memoryblock. If you need to show digest to human, please use EncodingToHexMBS function.

See also:

- 72.8.6 MD4(data as String) as Memoryblock
72.8.   CLASS CCMD4MBS

72.8.6   MD4(data as String) as Memoryblock


**Example:**

dim m as MemoryBlock = CCMD4MBS.MD4("The quick brown fox jumps over the lazy dog")
MsgBox EncodingToHexMBS(m)

**Notes:** Simply pass in a string and receive digest as memoryblock. If you need to show digest to human, please use EncodingToHexMBS function.
See also:

- 72.8.5 MD4(data as Ptr, dataLength as Integer) as Memoryblock

72.8.7   Update(data as Ptr, dataLength as UInt64)

MBS MacOSX Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Processes some data.

**Notes:** Pass memoryblock and data length in bytes.
See also:

- 72.8.8 Update(data as string)

72.8.8   Update(data as string)

MBS MacOSX Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Processes some data.

**Notes:** Pass string with data.
See also:

- 72.8.7 Update(data as Ptr, dataLength as UInt64)
72.9  class CCMD5MBS

72.9.1  class CCMD5MBS


Example:

```vbs
dim s as new CCMD5MBS
s.Update "The quick brown fox jumps over the lazy dog"

dim m as MemoryBlock = s.Finalize
MsgBox EncodingToHexMBS(m)
```

Notes: This class uses the CommonCrypto interface which is available on Mac OS X 10.4 or newer and also on iOS. So you can use it to get the same results on both operation systems. Also as you simply use Apple provided encryption, you don’t need to apply for an export license for this classes here.

72.9.2  Methods

72.9.3  Constructor


72.9.4  Finalize as Memoryblock


Notes: If you want to show the value to a human, please use EncodingToHexMBS function.

72.9.5  MD5(data as Ptr, dataLength as Integer) as Memoryblock


Notes: Simply pass in a memoryblock with data and the size in bytes and receive digest as memoryblock. If you need to show digest to human, please use EncodingToHexMBS function.

See also:

* 72.9.6 MD5(data as String) as Memoryblock
72.9.6 MD5(data as String) as Memoryblock

MBS MacOSX Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One-shot hash calculation with MD5.

**Example:**
```vbnet
dim m as MemoryBlock = CCMD5MBS.MD5("The quick brown fox jumps over the lazy dog")
MsgBox EncodingToHexMBS(m)
```

**Notes:** Simply pass in a string and receive digest as memoryblock. If you need to show digest to human, please use EncodingToHexMBS function.

See also:
- 72.9.5 MD5(data as Ptr, dataLength as Integer) as Memoryblock

72.9.7 Update(data as Ptr, dataLength as UInt64)

MBS MacOSX Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Processes some data.

**Notes:** Pass memoryblock and data length in bytes.

See also:
- 72.9.8 Update(data as string)

72.9.8 Update(data as string)

MBS MacOSX Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Processes some data.

**Notes:** Pass string with data.

See also:
- 72.9.7 Update(data as Ptr, dataLength as UInt64)
72.10 class CCSHA1MBS

72.10.1 class CCSHA1MBS

MBS MacOSX Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for SHA-1 hash.  
**Example:**

```vbscript
dim s as new CCSHA1MBS  
s.Update "The quick brown fox jumps over the lazy dog"

dim m as MemoryBlock = s.Finalize  
MsgBox EncodingToHexMBS(m)
```

**Notes:** This class uses the CommonCrypto interface which is available on Mac OS X 10.4 or newer and also on iOS. So you can use it to get the same results on both operation systems. Also as you simply use Apple provided encryption, you don’t need to apply for an export license for this classes here.

72.10.2 Methods

72.10.3 Constructor

MBS MacOSX Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes the hash engine.

72.10.4 Finalize as Memoryblock

MBS MacOSX Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Finalizes hash and returns digest as memoryblock.  
**Notes:** If you want to show the value to a human, please use EncodingToHexMBS function.

72.10.5 SHA1(data as Ptr, dataLength as Integer) as Memoryblock

**Notes:** Simply pass in a memoryblock with data and the size in bytes and receive digest as memoryblock.  
If you need to show digest to human, please use EncodingToHexMBS function.  
See also:

- 72.10.6 SHA1(data as String) as Memoryblock
72.10. CLASS CCSHA1MBS

72.10.6 SHA1(data as String) as Memoryblock


Example:

```vba
dim m as MemoryBlock = CCSHA1MBS.SHA1("The quick brown fox jumps over the lazy dog")
MsgBox EncodingToHexMBS(m)
```

Notes: Simply pass in a string and receive digest as memoryblock. If you need to show digest to human, please use EncodingToHexMBS function.

See also:

- 72.10.5 SHA1(data as Ptr, dataLength as Integer) as Memoryblock

72.10.7 Update(data as Ptr, dataLength as UInt64)


Notes: Pass memoryblock and data length in bytes.

See also:

- 72.10.8 Update(data as string)

72.10.8 Update(data as string)


Notes: Pass string with data.

See also:

- 72.10.7 Update(data as Ptr, dataLength as UInt64)
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72.11 class CCSHA224MBS

72.11.1 class CCSHA224MBS

Example:

dim s as new CCSHA224MBS
s.Update "The quick brown fox jumps over the lazy dog"

dim m as MemoryBlock = s.Finalize
MsgBox EncodingToHexMBS(m)

Notes: This class uses the CommonCrypto interface which is available on Mac OS X 10.5 or newer and also on iOS. So you can use it to get the same results on both operation systems. Also as you simply use Apple provided encryption, you don’t need to apply for an export license for this classes here.

72.11.2 Methods

72.11.3 Constructor


72.11.4 Finalize as Memoryblock

Notes: If you want to show the value to a human, please use EncodingToHexMBS function.

72.11.5 SHA224(data as Ptr, dataLength as Integer) as Memoryblock

Notes: Simply pass in a memoryblock with data and the size in bytes and receive digest as memoryblock. If you need to show digest to human, please use EncodingToHexMBS function.
See also:

- 72.11.6 SHA224(data as String) as Memoryblock
72.11.  CLASS CCSHA224MBS

72.11.6  SHA224(data as String) as Memoryblock


**Example:**

```vbnet
dim m as MemoryBlock = CCSHA224MBS.SHA224("The quick brown fox jumps over the lazy dog")
MsgBox EncodingToHexMBS(m)
```

**Notes:** Simply pass in a string and receive digest as memoryblock. If you need to show digest to human, please use EncodingToHexMBS function.

See also:

- 72.11.5 SHA224(data as Ptr, dataLength as Integer) as Memoryblock

72.11.7  Update(data as Ptr, dataLength as UInt64)

MBS MacOSX Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Processes some data.

**Notes:** Pass memoryblock and data length in bytes.

See also:

- 72.11.8 Update(data as string)

72.11.8  Update(data as string)

MBS MacOSX Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Processes some data.

**Notes:** Pass string with data.

See also:

- 72.11.7 Update(data as Ptr, dataLength as UInt64)
72.12 class CCSHA256MBS

72.12.1 class CCSHA256MBS


Example:

```vbnet
dim s as new CCSHA256MBS
s.Update "The quick brown fox jumps over the lazy dog"

dim m as MemoryBlock = s.Finalize
MsgBox EncodingToHexMBS(m)
```

Notes: This class uses the CommonCrypto interface which is available on Mac OS X 10.4 or newer and also on iOS. So you can use it to get the same results on both operation systems. Also as you simply use Apple provided encryption, you don’t need to apply for an export license for this classes here.

72.12.2 Methods

72.12.3 Constructor


72.12.4 Finalize as Memoryblock


Notes: If you want to show the value to a human, please use EncodingToHexMBS function.

72.12.5 SHA256(data as Ptr, dataLength as Integer) as Memoryblock


Notes: Simply pass in a memoryblock with data and the size in bytes and receive digest as memoryblock. If you need to show digest to human, please use EncodingToHexMBS function.

See also:

- 72.12.6 SHA256(data as String) as Memoryblock
72.12. CLASS CCSHA256MBS

72.12.6 SHA256(data as String) as Memoryblock

MBS MacOSX Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One-shot hash calculation with SHA-256.

**Example:**

```vba
Dim m As MemoryBlock = CCSHA256MBS.SHA256("The quick brown fox jumps over the lazy dog")
MsgBox EncodingToHexMBS(m)
```

**Notes:** Simply pass in a string and receive digest as memoryblock. If you need to show digest to human, please use EncodingToHexMBS function.

See also:

- 72.12.5 SHA256(data as Ptr, dataLength as Integer) as Memoryblock

72.12.7 Update(data as Ptr, dataLength as UInt64)

MBS MacOSX Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Processes some data.

**Notes:** Pass memoryblock and data length in bytes.

See also:

- 72.12.8 Update(data as string)

72.12.8 Update(data as string)

MBS MacOSX Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Processes some data.

**Notes:** Pass string with data.

See also:

- 72.12.7 Update(data as Ptr, dataLength as UInt64)
72.13 class CCSHA384MBS

72.13.1 class CCSHA384MBS

Example:

```
dim s as new CCSHA384MBS
s.Update "The quick brown fox jumps over the lazy dog"
```

```
dim m as MemoryBlock = s.Finalize
MsgBox EncodingToHexMBS(m)
```

Notes: This class uses the CommonCrypto interface which is available on Mac OS X 10.4 or newer and also on iOS. So you can use it to get the same results on both operation systems. Also as you simply use Apple provided encryption, you don’t need to apply for an export license for this classes here.

72.13.2 Methods

72.13.3 Constructor


72.13.4 Finalize as Memoryblock

Notes: If you want to show the value to a human, please use EncodingToHexMBS function.

72.13.5 SHA384(data as Ptr, dataLength as Integer) as Memoryblock

Notes: Simply pass in a memoryblock with data and the size in bytes and receive digest as memoryblock. If you need to show digest to human, please use EncodingToHexMBS function.

See also:
- 72.13.6 SHA384(data as String) as Memoryblock
72.13. CLASS CCSHA384MBS

72.13.6 SHA384(data as String) as Memoryblock


Example:

```pascal
dim m as MemoryBlock = CCSHA384MBS.SHA384("The quick brown fox jumps over the lazy dog")
MsgBox EncodingToHexMBS(m)
```

Notes: Simply pass in a string and receive digest as memoryblock. If you need to show digest to human, please use EncodingToHexMBS function.

See also:

- 72.13.5 SHA384(data as Ptr, dataLength as Integer) as Memoryblock

72.13.7 Update(data as Ptr, dataLength as UInt64)


Notes: Pass memoryblock and data length in bytes.

See also:

- 72.13.8 Update(data as string)

72.13.8 Update(data as string)


Notes: Pass string with data.

See also:

- 72.13.7 Update(data as Ptr, dataLength as UInt64)
72.14 class CCSHA512MBS

72.14.1 class CCSHA512MBS

Example:

dim s as new CCSHA512MBS
s.Update "The quick brown fox jumps over the lazy dog"

dim m as MemoryBlock = s.Finalize
MsgBox EncodingToHexMBS(m)

Notes: This class uses the CommonCrypto interface which is available on Mac OS X 10.4 or newer and also on iOS. So you can use it to get the same results on both operation systems. Also as you simply use Apple provided encryption, you don’t need to apply for an export license for this classes here.

72.14.2 Methods

72.14.3 Constructor


72.14.4 Finalize as Memoryblock

Notes: If you want to show the value to a human, please use EncodingToHexMBS function.

72.14.5 SHA512(data as Ptr, dataLength as Integer) as Memoryblock

Notes: Simply pass in a memoryblock with data and the size in bytes and receive digest as memoryblock. If you need to show digest to human, please use EncodingToHexMBS function.
See also:

- 72.14.6 SHA512(data as String) as Memoryblock
72.14. CLASS CCSHA512MBS

72.14.6 SHA512(data as String) as Memoryblock

Example:

```vbs
dim m as MemoryBlock = CCSHA512MBS.SHA512(“The quick brown fox jumps over the lazy dog”) MsgBox EncodingToHexMBS(m)
```

Notes: Simply pass in a string and receive digest as memoryblock. If you need to show digest to human, please use EncodingToHexMBS function.
See also:

- 72.14.5 SHA512(data as Ptr, dataLength as Integer) as Memoryblock

72.14.7 Update(data as Ptr, dataLength as UInt64)

Notes: Pass memoryblock and data length in bytes.
See also:

- 72.14.8 Update(data as string)

72.14.8 Update(data as string)

Notes: Pass string with data.
See also:

- 72.14.7 Update(data as Ptr, dataLength as UInt64)
72.15  class CipherMBS

72.15.1  class CipherMBS

**Function:** The high level cipher class using OpenSSL encryption.  
**Example:**

```vbnet
dim c as CipherMBS = CipherMBS.aes_128_cfb128
dim CKey as MemoryBlock = "1234567812345678"
dim CIV as MemoryBlock
dim data as string = "Hello World. Just a test!"

call c.EncryptInit Ckey, CIV

dim output1 as string = c.ProcessString(data)
output1 = output1 + c.FinalizeAsString

dim a as new AESMBS

call a.SetKey CKey, 128

dim output2 as string = a.EncryptCFB128(data, CIV)

MsgBox EncodeHex(output1)+EndOfLine+EncodeHex(output2)
```

**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

72.15.2  Methods

72.15.3  aes_128_cbc as CipherMBS

**Function:** Returns the cipher.  
**Example:**

```vbnet
dim key as string = ”mysecretkey”
dim encrypted as string = ”6IcB9bpDwOjjONErhYQ6c7+Fb4qszsUNZVU0iThLYqOu7chJ7MG2nwSpRBuY0ZC3”

encrypted = DecodeBase64(encrypted)

dim c as CipherMBS = CipherMBS.aes_128_cbc
call c.DecryptInit key
```
dim s as string = c.ProcessString(Encrypted)+c.FinalizeAsString

Break // "In welcher Stadt steht das Bundeshaus?" is now in s.

72.15.4  aes_128_ccm as CipherMBS

Function: Returns the cipher.

72.15.5  aes_128_cfb1 as CipherMBS

Function: Returns the cipher.

72.15.6  aes_128_cfb128 as CipherMBS

Function: Returns the cipher.
Example:

dim c as CipherMBS = CipherMBS.aes_128_cfb128
dim CKey as MemoryBlock = "1234567812345678"
dim CIV as MemoryBlock
dim data as string = "Hello World. Just a test!"
call c.EncryptInit Ckey, CIV

dim output1 as string = c.ProcessString(data)
output1 = output1 + c.FinalizeAsString

dim a as new AESMBS
call a.SetKey CKey, 128
dim output2 as string = a.EncryptCFB128(data, CIV)

MsgBox EncodeHex(output1)+EndOfLine+EncodeHex(output2)
72.15.7  aes_128_cfb8 as CipherMBS

Function: Returns the cipher.

72.15.8  aes_128_ctr as CipherMBS

Function: Returns the cipher.

72.15.9  aes_128_ecb as CipherMBS

Function: Returns the cipher.

72.15.10 aes_128_gcm as CipherMBS

Function: Returns the cipher.

72.15.11 aes_128_ofb as CipherMBS

Function: Returns the cipher.

72.15.12 aes_128_xts as CipherMBS

Function: Returns the cipher.
Example:

dim CKey as MemoryBlock = "1234567812345678"
dim CIV as MemoryBlock
dim data as string = "Hello World. Just a test!"

dim c as CipherMBS = CipherMBS.aes_128_xts
call c.EncryptInit Ckey, CIV
72.15. CLASS CIPHERMBS

dim output1 as string = c.ProcessString(data)
output1 = output1 + c.FinalizeAsString

CIV = nil
c = CipherMBS.aes_128_xts
call c.DecryptInit Ckey, CIV

dim output2 as string = c.ProcessString(output1)
output2 = output2 + c.FinalizeAsString

MsgBox "Encrypted via " + c.Name + " as hex: " + EncodeHex(output1) + EndOfLine + "Decrypted: " + output2

72.15.13  aes_192_cbc as CipherMBS

**Function:** Returns the cipher.

72.15.14  aes_192_ccm as CipherMBS

**Function:** Returns the cipher.

72.15.15  aes_192_cfb1 as CipherMBS

**Function:** Returns the cipher.

72.15.16  aes_192_cfb128 as CipherMBS

**Function:** Returns the cipher.

72.15.17  aes_192_cfb8 as CipherMBS

**Function:** Returns the cipher.
72.15.18  aes_192_ctr as CipherMBS

Function: Returns the cipher.

72.15.19  aes_192_ecb as CipherMBS

Function: Returns the cipher.

72.15.20  aes_192_gcm as CipherMBS

Function: Returns the cipher.

72.15.21  aes_192_ofb as CipherMBS

Function: Returns the cipher.

72.15.22  aes_256_cbc as CipherMBS

Function: Returns the cipher.
Example:

    dim CKey as MemoryBlock = "1234567812345678"
    dim CIV as MemoryBlock
    dim data as string = "Hello World. Just a test!"

    dim c as CipherMBS = CipherMBS.aes_256_cbc
    call c.EncryptInit Ckey, CIV

    dim output1 as string = c.ProcessString(data)
    output1 = output1 + c.FinalizeAsString

    CIV = nil
72.15. **CLASS CIPHERMBS**

c = CipherMBS.aes_256_cbc

call c.DecryptInit Ckey, CIV

dim output2 as string = c.ProcessString(output1)
output2 = output2 + c.FinalizeAsString

MsgBox "Encrypted via " + c.Name + " as hex: " + EncodeHex(output1) + EndOfLine + "Decrypted: " + output2

### 72.15.23 **aes_256_ccm as CipherMBS**


**Function:** Returns the cipher.

### 72.15.24 **aes_256_cfb1 as CipherMBS**


**Function:** Returns the cipher.

### 72.15.25 **aes_256_cfb128 as CipherMBS**


**Function:** Returns the cipher.

**Example:**

dim CKey as MemoryBlock = "1234567812345678"
dim CIV as MemoryBlock
dim data as string = "Hello World. Just a test!"

dim c as CipherMBS = CipherMBS.aes_256_cfb128
call c.EncryptInit Ckey, CIV

dim output1 as string = c.ProcessString(data)
output1 = output1 + c.FinalizeAsString

CIV = nil
c = CipherMBS.aes_256_cfb128
call c.DecryptInit Ckey, CIV

dim output2 as string = c.ProcessString(output1)
output2 = output2 + c.FinalizeAsString
CHAPTER 72.  ENCRYPTION AND HASH

MsgBox "Encrypted via " + c.Name + " as hex: " + EncodeHex(output1) + EndOfLine + "Decrypted: " + output2

72.15.26 aes_256_cfb8 as CipherMBS

Function: Returns the cipher.

72.15.27 aes_256_ctr as CipherMBS

Function: Returns the cipher.

72.15.28 aes_256_ecb as CipherMBS

Function: Returns the cipher.
Example:

```vbs
Dim c As CipherMBS = CipherMBS.aes_256_ecb
Dim CKey As MemoryBlock = "1234567812345678"
Dim CIV As MemoryBlock
Dim data As String = "Hello World. Just a test!"

Call c.EncryptInit Ckey, CIV

Dim output1 As String = c.ProcessString(data)
output1 = output1 + c.FinalizeAsString

C = CipherMBS.aes_256_ecb
CIV = nil

Call c.DecryptInit Ckey, CIV

Dim output2 As String = c.ProcessString(output1)
output2 = output2 + c.FinalizeAsString

MsgBox "Encrypted as hex: " + EncodeHex(output1) + EndOfLine + "Decrypted: " + output2
```
72.15. **CLASS CIPHERMBS**

72.15.29  **aes_256_gcm as CipherMBS**

**Function:** Returns the cipher.

72.15.30  **aes_256_ofb as CipherMBS**

**Function:** Returns the cipher.

72.15.31  **aes_256_xts as CipherMBS**

**Function:** Returns the cipher.

72.15.32  **bf_cbc as CipherMBS**

**Function:** Returns the cipher for Blowfish with CBC mode.

72.15.33  **bf_cfb64 as CipherMBS**

**Function:** Returns the cipher for Blowfish with CFB64 mode.

**Example:**

```vbscript
dim CKey as MemoryBlock = "1234567812345678"
dim CIV as MemoryBlock
dim data as string = "Hello World. Just a test!"

dim c as CipherMBS = CipherMBS.bf_cfb64
call c.EncryptInit Ckey, CIV

dim output1 as string = c.ProcessString(data)
output1 = output1 + c.FinalizeAsString

CIV = nil
c = CipherMBS.bf_cfb64
call c.DecryptInit Ckey, CIV
```
dim output2 as string = c.ProcessString(output1)
output2 = output2 + c.FinalizeAsString

MsgBox "Encrypred via "+c.Name+" as hex: "+EncodeHex(output1)+EndOfLine+"Decrypted: "+output2

### 72.15.34 bf_ecb as CipherMBS

**Function:** Returns the cipher for Blowfish with ECB mode.

### 72.15.35 bf_ofb as CipherMBS

**Function:** Returns the cipher for Blowfish with OFB mode.

### 72.15.36 BytesToKey(cipher as CipherMBS, digest as DigestMBS, Salt as MemoryBlock, InputKey as Memoryblock, IterationCount as Integer, byref OutputKey as memoryblock, byref IV as memoryblock) as boolean

**Function:** Derives a key and IV from a given input data.
**Notes:**
Returns true on success or false on failure.

BytesToKey() derives a key and IV from various parameters. type is the cipher to derive the key and IV for. md is the message digest to use. The salt parameter is used as a salt in the derivation: it should point to an 8 byte buffer or nil if no salt is used. data is a buffer containing datal bytes which is used to derive the keying data. count is the iteration count to use. The derived key and IV will be written to key and iv respectively.

A typical application of this function is to derive keying material for an encryption algorithm from a password in the data parameter.

Increasing the count parameter slows down the algorithm which makes it harder for an attacker to perform a brute force attack using a large number of candidate passwords.

If the total key and IV length is less than the digest length and MD5 is used then the derivation algorithm
is compatible with PKCS# 5 v1.5 otherwise a non standard extension is used to derive the extra data.

Newer applications should use more standard algorithms such as PBKDF2 as defined in PKCS# 5v2.1 for key derivation.

**Key Derivation Algorithm**

The key and IV is derived by concatenating D_1, D_2, etc until enough data is available for the key and IV. D_i is defined as:

\[
D_i = \text{HASH}^{\text{count}}(D_{i-1} \| \text{data} \| \text{salt})
\]

where \( \| \) denotes concatenation, D_0 is empty, HASH is the digest algorithm in use, HASH^1(data) is simply HASH(data), HASH^2(data) is HASH(HASH(data)) and so on.

The initial bytes are used for the key and the subsequent bytes for the IV.

**72.15.37 camellia_128_cbc as CipherMBS**


**72.15.38 camellia_128_cfb1 as CipherMBS**


**72.15.39 camellia_128_cfb128 as CipherMBS**


**72.15.40 camellia_128_cfb8 as CipherMBS**

72.15.41 camellia_128_ecb as CipherMBS

Function: Returns the cipher.

72.15.42 camellia_128_ofb as CipherMBS

Function: Returns the cipher.

72.15.43 camellia_192_cbc as CipherMBS

Function: Returns the cipher.

72.15.44 camellia_192_cfb1 as CipherMBS

Function: Returns the cipher.

72.15.45 camellia_192_cfb128 as CipherMBS

Function: Returns the cipher.

72.15.46 camellia_192_cfb8 as CipherMBS

Function: Returns the cipher.
72.15. **CLASS CIPHERMBS**

72.15.47 **camellia_192_ecb as CipherMBS**

**Function:** Returns the cipher.

72.15.48 **camellia_192_ofb as CipherMBS**

**Function:** Returns the cipher.

72.15.49 **camellia_256_cbc as CipherMBS**

**Function:** Returns the cipher.  
**Example:**

```vba
dim CKey as MemoryBlock = "1234567812345678"
dim CIV as MemoryBlock
dim data as string = "Hello World. Just a test!"

dim c as CipherMBS = CipherMBS.camellia_256_cbc
call c.EncryptInit Ckey, CIV

dim output1 as string = c.ProcessString(data)
output1 = output1 + c.FinalizeAsString

CIV = nil
c = CipherMBS.camellia_256_cbc
call c.DecryptInit Ckey, CIV

dim output2 as string = c.ProcessString(output1)
output2 = output2 + c.FinalizeAsString

MsgBox "Encrypted via " + c.Name +" as hex:" + EncodeHex(output1) + EndOfLine + "Decrypted: " + output2
```

72.15.50 **camellia_256_cfb1 as CipherMBS**

**Function:** Returns the cipher.
72.15.51 camellia_256_cfb128 as CipherMBS

**Function:** Returns the cipher.

72.15.52 camellia_256_cfb8 as CipherMBS

**Function:** Returns the cipher.

72.15.53 camellia_256_ecb as CipherMBS

**Function:** Returns the cipher.

72.15.54 camellia_256_ofb as CipherMBS

**Function:** Returns the cipher.

72.15.55 cast5_cbc as CipherMBS

**Function:** Returns the cipher.

72.15.56 cast5_cfb64 as CipherMBS

**Function:** Returns the cipher.

72.15.57 cast5_ecb as CipherMBS

**Function:** Returns the cipher.
72.15. CLASS CIPHERMBS

72.15.58 cast5_ofb as CipherMBS

**Function:** Returns the cipher.

72.15.59 CipherByName(name as string) as CipherMBS

**Function:** Finds a cipher by name.
**Notes:**
Possible names:

72.15.60 CipherInit(key as memoryblock, IV as memoryblock, Encrypt as boolean) as Boolean

**Function:** Initializes the cipher for encryption or decryption.
**Notes:**
We added for 17.3 a new boolean result:

Returns true in case of success and key length is okay.
Returns false in case of failures like out of memory, wrong key length.

Even if key length is wrong, we initialize (as with older versions before) but may crop the key length to default length.
AES 128 uses 16 byte key length, AES 256 uses 32 byte key length.
Key and IV are both filled with zeros to reach the minimum length.
key: The key to use.
IV: Optional, the initial vector.

You can use IVLength and KeyLength properties to learn how long those should be.

### 72.15.61 Clear

**Function:** Clears the current state.

### 72.15.62 Constructor

**Function:** The private constructor.

### 72.15.63 DecryptInit(key as memoryblock, IV as memoryblock = nil) as Boolean

**Function:** Initializes the cipher for decrypting.

**Example:**

```vbnet
dim key as string = "mysecretkey"
dim encrypted as string = "6IcB9bpDwOjjONErhYQ6c7+Fb4qszsUNZVU0iTlHYqOu7chJ7MG2nwSpRBuY0ZC3"
encrypted = DecodeBase64(encrypted)
dim c as CipherMBS = CipherMBS.aes_128_cbc
call c.DecryptInit key
dim s as string = c.ProcessString(Encrypted)+c.FinalizeAsString
```

Break // "In welcher Stadt steht das Bundestag?" is now in `s`.

**Notes:**

We added for 17.3 a new boolean result:

Returns true in case of success and key length is okay.
72.15. **CLASS CIPHERMBS**

Returns false in case of failures like out of memory, wrong key length.

Even if key length is wrong, we initialize (as with older versions before) but may crop the key length to default length.

AES 128 uses 16 byte key length, AES 256 uses 32 byte key length.

Key and IV are both filled with zeros to reach the minimum length.

**key**: The key to use.

**IV**: Optional, the initial vector.

You can use IVLength and KeyLength properties to learn how long those should be.

### 72.15.64 **desx_cbc as CipherMBS**


**Function**: Returns the cipher for DESX algorithm in CBC mode.

### 72.15.65 **des_cbc as CipherMBS**


**Function**: Returns the cipher for DES in CBC.

### 72.15.66 **des_cfb1 as CipherMBS**


**Function**: Returns the cipher for DES in CFB.

### 72.15.67 **des_cfb64 as CipherMBS**


**Function**: Returns the cipher for DES in CFB.

### 72.15.68 **des_cfb8 as CipherMBS**


**Function**: Returns the cipher for DES in CFB.
72.15.69 des_ecb as CipherMBS

**Function:** Returns the cipher for DES in ECB.

72.15.70 des_ede as CipherMBS

**Function:** Returns the cipher.

72.15.71 des_ede3 as CipherMBS

**Function:** Returns the cipher.

72.15.72 des_ede3_cbc as CipherMBS

**Function:** Returns the cipher.

72.15.73 des_ede3_cfb1 as CipherMBS

**Function:** Returns the cipher.

72.15.74 des_ede3_cfb64 as CipherMBS

**Function:** Returns the cipher.
72.15.75  desede3_cfb8 as CipherMBS

Function: Returns the cipher.

72.15.76  desede3_ecb as CipherMBS

Function: Returns the cipher.

72.15.77  desede3_ofb as CipherMBS

Function: Returns the cipher.

72.15.78  desede_cbc as CipherMBS

Function: Returns the cipher.

72.15.79  desede_cfb64 as CipherMBS

Function: Returns the cipher.

72.15.80  desede_ecb as CipherMBS

Function: Returns the cipher.

72.15.81  desede_ofb as CipherMBS

Function: Returns the cipher.
72.15.82 des_ofb as CipherMBS

**Function:** Returns the cipher for DES in OFB.

72.15.83 EncryptInit(key as memoryblock, IV as memoryblock = nil) as Boolean

**Function:** Initializes the cipher for encrypting.

**Example:**
```vba
dim c as CipherMBS = CipherMBS.aes_128_cfb128
dim CKey as MemoryBlock = "1234567812345678"
dim CIV as MemoryBlock
dim data as string = "Hello World. Just a test!"

call c.EncryptInit Ckey, CIV

dim output as string = c.ProcessString(data)
output = output + c.FinalizeAsString

MsgBox EncodeHex(output)
```

**Notes:**
We added for 17.3 a new boolean result:

- Returns true in case of success and key length is okay.
- Returns false in case of failures like out of memory, wrong key length.

Even if key length is wrong, we initialize (as with older versions before) but may crop the key length to default length.
AES 128 uses 16 byte key length, AES 256 uses 32 byte key length.
Key and IV are both filled with zeros to reach the minimum length.

- key: The key to use.
- IV: Optional, the initial vector.

You can use IVLength and KeyLength properties to learn how long those should be.
72.15.84 FinalizeAsMemory as memoryblock

Function: Finalizes en/decryption and returns last data.

72.15.85 FinalizeAsString as String

Function: Finalizes en/decryption and returns last data.
Example:

```vbs
dim c as CipherMBS = CipherMBS.aes_128_cfb128
dim CKey as MemoryBlock = "1234567812345678"
dim CIV as MemoryBlock
dim data as string = "Hello World. Just a test!"
call c.EncryptInit Ckey, CIV

dim output as string = c.ProcessString(data)
output = output + c.FinalizeAsString
MsgBox EncodeHex(output)
```

Notes:
Returned string does not contain text, but binary data.
Please do not store in text fields in database without using EncodeHex or EncodeBase64 to make it a text string.

72.15.86 idea_cbc as CipherMBS

Function: Returns the cipher for IDEA encryption algorithm in CBC.

72.15.87 idea_cfb64 as CipherMBS

Function: Returns the cipher for IDEA encryption algorithm in CFB.
72.15.88 idea_ecb as CipherMBS

Function: Returns the cipher for IDEA encryption algorithm in ECB.

72.15.89 idea_ofb as CipherMBS

Function: Returns the cipher for IDEA encryption algorithm in OFB.

72.15.90 MaxBlockLength as Integer

Function: Maximum possible block length size for any cipher.

72.15.91 MaxIVLength as Integer

Function: Maximum possible IV vector size for any cipher.

72.15.92 MaxKeyLength as Integer

Function: Maximum possible key length size for any cipher.

72.15.93 ProcessFile(InputFile as FolderItem, OutputFile as FolderItem) as boolean

Function: Processes content of file.
Notes:
Plugin will start a preemptive thread to read in file and process all data in chunks and write to output file. Returns true on success or false on failure. May raise OutOfMemoryException or IOException. This function works best if called from a thread.
72.15. CLASS CIPHERMBS

72.15.94 ProcessMemory(data as memoryblock) as MemoryBlock

**Function:** Processes data in a memory block.
**Notes:** due to block sizes, the result may be longer or shorter than the input size.

72.15.95 ProcessString(data as String) as string

**Function:** Processes data in a string.
**Example:**
```vba
dim key as string = "mysecretkey"
dim encrypted as string = "6IcB9bpDwOjjONErhYQ6c7+Fb4qszsUNZVU0iThLYqOu7chJ7MG2nwSpRBUY0ZC3"
encrypted = DecodeBase64(encrypted)
dim c as CipherMBS = CipherMBS.aes_128_cbc
call c.DecryptInit key
dim s as string = c.ProcessString(Encrypted)+c.FinalizeAsString
Break // "In welcher Stadt steht das Bundeshaus?" is now in s.
```
**Notes:**
due to block sizes, the result may be longer or shorter than the input size.

Returned string does not contain text, but binary data.
Please do not store in text fields in database without using EncodeHex or EncodeBase64 to make it a text string.

72.15.96 rc2_40_cbc as CipherMBS

**Function:** Returns the cipher.
72.15.97  rc2_64_cbc as CipherMBS

**Function:** Returns the cipher.

```vbscript
Dim CKey As MemoryBlock = "1234567812345678"
Dim CIV As MemoryBlock
Dim data As String = "Hello World. Just a test!"
Dim c As CipherMBS = CipherMBS.rc2_64_cbc
Call c.EncryptInit Ckey, CIV
Dim output1 As String = c.ProcessString(data)
output1 = output1 + c.FinalizeAsString
CIV = Nothing
C = CipherMBS.rc2_64_cbc
Call c.DecryptInit Ckey, CIV
Dim output2 As String = c.ProcessString(output1)
output2 = output2 + c.FinalizeAsString
MsgBox "Encrypted as hex: " + EncodeHex(output1) + vbCrLf + "Decrypted: " + output2
```

72.15.98  rc2_cbc as CipherMBS

**Function:** Returns the cipher.
**Example:**
```vbscript
Dim CKey As MemoryBlock = "1234567812345678"
Dim CIV As MemoryBlock
Dim data As String = "Hello World. Just a test!"
Dim c As CipherMBS = CipherMBS.rc2_cbc
Call c.EncryptInit Ckey, CIV
Dim output1 As String = c.ProcessString(data)
output1 = output1 + c.FinalizeAsString
CIV = Nothing
C = CipherMBS.rc2_cbc
Call c.DecryptInit Ckey, CIV
Dim output2 As String = c.ProcessString(output1)
output2 = output2 + c.FinalizeAsString
MsgBox "Encrypted as hex: " + EncodeHex(output1) + vbCrLf + "Decrypted: " + output2
```

72.15.99  rc2_cfb64 as CipherMBS

**Function:** Returns the cipher.
**Example:**
```vbscript
Dim CKey As MemoryBlock = "1234567812345678"
Dim CIV As MemoryBlock
Dim data As String = "Hello World. Just a test!"
Dim c As CipherMBS = CipherMBS.rc2_cfb64
Call c.EncryptInit Ckey, CIV
```
72.15. CLASS CIPHERMBS

dim output1 as string = c.ProcessString(data)
output1 = output1 + c.FinalizeAsString

CIV = nil
c = CipherMBS.rc2_cfb64
call c.DecryptInit Ckey, CIV

dim output2 as string = c.ProcessString(output1)
output2 = output2 + c.FinalizeAsString

MsgBox "Encrypted as hex: " + EncodeHex(output1) + EndOfLine + "Decrypted: " + output2

72.15.100 rc2_ecb as CipherMBS

Function: Returns the cipher.
Example:

dim CKey as MemoryBlock = "1234567812345678"
dim CIV as MemoryBlock
dim data as string = "Hello World. Just a test!"

dim c as CipherMBS = CipherMBS.rc2_ecb
call c.EncryptInit Ckey, CIV

dim output1 as string = c.ProcessString(data)
output1 = output1 + c.FinalizeAsString

CIV = nil
c = CipherMBS.rc2_ecb
call c.DecryptInit Ckey, CIV

dim output2 as string = c.ProcessString(output1)
output2 = output2 + c.FinalizeAsString

MsgBox "Encrypted as hex: " + EncodeHex(output1) + EndOfLine + "Decrypted: " + output2

72.15.101 rc2_ofb as CipherMBS

Function: Returns the cipher.
Example:
CHAPTER 72. ENCRYPTION AND HASH

72.15.102  rc4 as CipherMBS

Function: Returns the cipher.
Example:

dim c as CipherMBS = CipherMBS.rc4
dim CKey as MemoryBlock = "1234567812345678"
dim CIV as MemoryBlock
dim data as string = "Hello World. Just a test!"
call c.EncryptInit Ckey, CIV
dim output1 as string = c.ProcessString(data)
output1 = output1 + c.FinalizeAsString
MsgBox "Encrypted as hex: " + EncodeHex(output1)
c = CipherMBS.rc4
CIV = nil
call c.DecryptInit Ckey, CIV
dim output2 as string = c.ProcessString(output1)
output2 = output2 + c.FinalizeAsString
MsgBox "Decrypted: " + output2
72.15. CLASS CIPHERMBS

dim output2 as string = c.ProcessString(output1)
output2 = output2 + c.FinalizeAsString

MsgBox "Decrypted: " + output2
**72.15.103  rc4_40 as CipherMBS**


**Function:** Returns the cipher.

**Example:**

```vba
dim c as CipherMBS = CipherMBS.rc4_40
dim CKey as MemoryBlock = "1234567812345678"
dim CIV as MemoryBlock
dim data as string = "Hello World. Just a test!"

call c.EncryptInit Ckey, CIV

dim output1 as string = c.ProcessString(data)
output1 = output1 + c.FinalizeAsString

MsgBox "Encrypted as hex: " + EncodeHex(output1)

c = CipherMBS.rc4_40
CIV = nil

call c.DecryptInit Ckey, CIV

dim output2 as string = c.ProcessString(output1)
output2 = output2 + c.FinalizeAsString

MsgBox "Decrypted: " + output2
```

---

**72.15.104  rc4_hmac_md5 as CipherMBS**


**Function:** Returns the cipher.

**Example:**

```vba
dim c as CipherMBS = CipherMBS.rc4_hmac_md5
dim CKey as MemoryBlock = "1234567812345678"
dim CIV as MemoryBlock
dim data as string = "Hello World. Just a test!"

call c.EncryptInit Ckey, CIV

dim output1 as string = c.ProcessString(data)
output1 = output1 + c.FinalizeAsString

MsgBox "Encrypted as hex: " + EncodeHex(output1)
```
72.15. CLASS CIPHERMBS

\[
c = \text{CipherMBS.}rc4\_hmac\_md5
\]
\[
\text{CIV} \,= \, \text{nil}
\]
\[
\text{call} \, \text{c.}\text{DecryptInit Ckey, CIV}
\]
\[
\begin{align*}
\text{dim} \, \text{output2 as string} & = \text{c.}\text{ProcessString(output1)} \\
\text{output2} & = \text{output2} + \text{c.}\text{FinalizeAsString}
\end{align*}
\]
\[
\text{MsgBox "Decrypted: "} + \text{output2}
\]

---

72.15.105 rc5\_32\_12\_16\_cbc as CipherMBS


**Function:** Returns the cipher.

**Example:**

\[
\begin{align*}
\text{dim} \, \text{c as CipherMBS} & = \text{CipherMBS.}rc5\_32\_12\_16\_cbc \\
\text{dim} \, \text{CKey as MemoryBlock} & = \text{"1234567812345678"} \\
\text{dim} \, \text{CIV as MemoryBlock} \\
\text{dim} \, \text{data as string} & = \text{"Hello World. Just a test!"}
\end{align*}
\]
\[
\text{call} \, \text{c.}\text{EncryptInit Ckey, CIV}
\]
\[
\begin{align*}
\text{dim} \, \text{output1 as string} & = \text{c.}\text{ProcessString(data)} \\
\text{output1} & = \text{output1} + \text{c.}\text{FinalizeAsString}
\end{align*}
\]
\[
\text{MsgBox "Encrypted as hex: "} + \text{EncodeHex(output1)}
\]
\[
\begin{align*}
\text{c} & = \text{CipherMBS.}rc5\_32\_12\_16\_cbc \\
\text{CIV} & = \text{nil}
\end{align*}
\]
\[
\text{call} \, \text{c.}\text{DecryptInit Ckey, CIV}
\]
\[
\begin{align*}
\text{dim} \, \text{output2 as string} & = \text{c.}\text{ProcessString(output1)} \\
\text{output2} & = \text{output2} + \text{c.}\text{FinalizeAsString}
\end{align*}
\]
\[
\text{MsgBox "Decrypted: "} + \text{output2}
\]

**Notes:** RC5 with CBC. 32 bit word size, 12 rounds, 16 byte key.
72.15.106  rc5_32_12_16_cfb64 as CipherMBS


Function: Returns the cipher.

Example:

dim c as CipherMBS = CipherMBS.rc5_32_12_16_cfb64
dim CKey as MemoryBlock = "1234567812345678"

dim CIV as MemoryBlock

dim data as string = "Hello World. Just a test!"

call c.EncryptInit Ckey, CIV

dim output1 as string = c.ProcessString(data)
output1 = output1 + c.FinalizeAsString

MsgBox "Encrypted as hex: " + EncodeHex(output1)

c = CipherMBS.rc5_32_12_16_cfb64
CIV = nil

call c.DecryptInit Ckey, CIV

dim output2 as string = c.ProcessString(output1)
output2 = output2 + c.FinalizeAsString

MsgBox "Decrypted: " + output2

Notes: RC5 with CFB64. 32 bit word size, 12 rounds, 16 byte key.

72.15.107  rc5_32_12_16_ecb as CipherMBS


Function: Returns the cipher.

Example:

dim c as CipherMBS = CipherMBS.rc5_32_12_16_ecb

dim CKey as MemoryBlock = "1234567812345678"

dim CIV as MemoryBlock

dim data as string = "Hello World. Just a test!"

call c.EncryptInit Ckey, CIV

dim output1 as string = c.ProcessString(data)
output1 = output1 + c.FinalizeAsString
MsgBox "Encrypted as hex: " + EncodeHex(output1)

c = CipherMBS.rc5_32_12_16_ecb
CIV = nil

call c.DecryptInit Ckey, CIV

dim output2 as string = c.ProcessString(output1)
output2 = output2 + c.FinalizeAsString

MsgBox "Decrypted: " + output2

**Notes:** RC5 with ECB. 32 bit word size, 12 rounds, 16 byte key.

### 72.15.108 rc5_32_12_16_ofb as CipherMBS


**Function:** Returns the cipher.

**Example:**

dim c as CipherMBS = CipherMBS.rc5_32_12_16_ofb
dim CKey as MemoryBlock = "1234567812345678"
dim CIV as MemoryBlock
dim data as string = "Hello World. Just a test!"

call c.EncryptInit Ckey, CIV

dim output1 as string = c.ProcessString(data)
output1 = output1 + c.FinalizeAsString

MsgBox "Encrypted as hex: " + EncodeHex(output1)

c = CipherMBS.rc5_32_12_16_ofb
CIV = nil

call c.DecryptInit Ckey, CIV

dim output2 as string = c.ProcessString(output1)
output2 = output2 + c.FinalizeAsString

MsgBox "Decrypted: " + output2
Notes: RC5 with OFB. 32 bit word size, 12 rounds, 16 byte key.

72.15.109 seed_cbc as CipherMBS

Function: The cipher for a Seed CBC.

72.15.110 seed_cfb128 as CipherMBS

Function: Seed cipher for CFB128 mode.

72.15.111 seed_ecb as CipherMBS

Function: Cipher for seed ECB.

72.15.112 seed_ofb as CipherMBS

Function: Seed cipher for OFB mode.

72.15.113 SetPadding(padding as boolean)

Function: Enables padding.
Notes: On by default.

72.15.114 Properties

72.15.115 BlockSize as Integer

Function: Queries the block size for this cipher.
Notes: (Read only property)
72.15. CLASS CIPHERMBS

72.15.116 Encrypting as Boolean

**Function:** Whether the class is encrypting or decrypting.  
**Notes:**  
True if encrypting or false for decrypting.  
(Read only property)

72.15.117 Flags as Integer

**Function:** Queries the flags for the cipher.  
**Notes:** (Read only property)

72.15.118 IVLength as Integer

**Function:** Queries the size of the initialization vector.  
**Notes:** (Read only property)

72.15.119 KeyLength as Integer

**Function:** The key length.  
**Notes:** (Read and Write property)

72.15.120 Mode as Integer

**Function:** Queries cipher mode.  
**Notes:** (Read only property)

72.15.121 Name as String

**Function:** The name of the cipher engine.
72.15.122 Padding as Boolean

**Function:** Whether to apply padding or not.
**Example:**

```vbnet
dim c as CipherMBS = CipherMBS.aes_256_ctr

c.EncryptInit "Hello"

MsgBox "default: " + str(c.Padding)
c.Padding = false

MsgBox "set to false: " + str(c.Padding)
c.Padding = true

MsgBox "set to true: " + str(c.Padding)
```

**Notes:**
On by default.
(Read and Write property)

72.15.123 RC2KeyBits as Integer

**Function:** The number of bits for RC2.
**Notes:** (Read and Write property)

72.15.124 RC5Rounds as Integer

**Function:** The number of rounds for RC5.
**Notes:** (Read and Write property)
72.16. **CLASS DIGESTMBS**

72.16  **class DigestMBS**

72.16.1  **class DigestMBS**

**Function:** The OpenSSL class for calculating hashes.
**Example:**

```vbnet
dim d as DigestMBS = DigestMBS.MD5
d.Process "Hello World"
dim result as string = EncodeHex(d.Final)
MsgBox result
```

**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

72.16.2  **Methods**

72.16.3  **Clear**

**Function:** Clears the current state.

72.16.4  **Constructor**

**Function:** The private constructor.

72.16.5  **DigestByName(name as string) as DigestMBS**

**Function:** Queries a digest by name.
**Example:**

```vbnet
dim d as DigestMBS = DigestMBS.DigestByName("md5")
MsgBox str(d.Size)
```

**Notes:**
Returns nil if name is not registered.
May need string to be in upper case.

### 72.16.6 Final as memoryblock

**Function:** Finalizes the hash and returns it.

### 72.16.7 FinalText as String

**Function:** Finalizes the hash and returns it.
**Notes:** Returns text with hex encoding.

### 72.16.8 MD5 as DigestMBS

**Function:** Returns the cipher for MD5.
**Example:**
```
dim d as DigestMBS = DigestMBS.MD5
d.Process "Hello World"
dim result as string = EncodeHex(d.Final)
MsgBox result
```

### 72.16.9 MDC2 as DigestMBS

**Function:** Returns the cipher for MDC2.
**Example:**
```
dim d as DigestMBS = DigestMBS.MDC2
d.Process "Hello World"
dim result as string = EncodeHex(d.Final)
MsgBox result
```
72.16. CLASS DIGESTMBS

72.16.10 Process(data as memoryblock)

Function: Adds more data to the hash.
See also:
- 72.16.11 Process(data as string) 12495
- 72.16.12 Process(file as FolderItem) as boolean 12495

72.16.11 Process(data as string)

Function: Adds more data to the hash.
See also:
- 72.16.10 Process(data as memoryblock) 12495
- 72.16.12 Process(file as FolderItem) as boolean 12495

72.16.12 Process(file as FolderItem) as boolean

Function: Processes content of file.
Notes:
Plugin will start a preemptive thread to read in file and process all data in chunks.
Returns true on success or false on failure. May raise OutOfMemoryException or IOException.
This function works best if called from a thread.
See also:
- 72.16.10 Process(data as memoryblock) 12495
- 72.16.11 Process(data as string) 12495

72.16.13 RipeMD160 as DigestMBS

Function: Returns the cipher for RipeMD160.
Example:

dim d as DigestMBS = DigestMBS.RipeMD160
d.Process ”Hello World”
dim result as string = EncodeHex(d.Final)
MsgBox result
72.16.14  SHA1 as DigestMBS

Function: Returns the cipher for SHA 1.
Example:

```vba
dim d as DigestMBS = DigestMBS.SHA1
d.Process "Hello World"
dim result as string = EncodeHex(d.Final)
MsgBox result
```

72.16.15  SHA224 as DigestMBS

Function: Returns the cipher for SHA 224.
Example:

```vba
dim d as DigestMBS = DigestMBS.SHA224
d.Process "Hello World"
dim result as string = EncodeHex(d.Final)
MsgBox result
```

72.16.16  SHA256 as DigestMBS

Function: Returns the cipher for SHA 256.
Example:

```vba
dim d as DigestMBS = DigestMBS.SHA256
d.Process "Hello World"
dim result as string = EncodeHex(d.Final)
MsgBox result
```

72.16.17  SHA384 as DigestMBS

Function: Returns the cipher for SHA 384.
Example:
72.16. CLASS DIGESTMBS

```vbnet
dim d as DigestMBS = DigestMBS.SHA384
d.Process "Hello World"
dim result as string = EncodeHex(d.Final)
MsgBox result
```

72.16.18 SHA512 as DigestMBS

**Function:** Returns the cipher for SHA512.
**Example:**
```vbnet
dim d as DigestMBS = DigestMBS.SHA512
d.Process "Hello World"
dim result as string = EncodeHex(d.Final)
MsgBox result
```

72.16.19 Properties

72.16.20 BlockSize as Integer

**Function:** Queries block size.
**Example:**
```vbnet
dim d as DigestMBS = DigestMBS.DigestByName("md5")
MsgBox str(d.BlockSize)
```

**Notes:** (Read only property)

72.16.21 Name as String

**Function:** The name of the digest engine.
**Notes:** (Read only property)
72.16.22  Size as Integer

**Function:** Queries size of digest.
**Example:**
```vbnet
dim d as DigestMBS = DigestMBS_SHA512
MsgBox str(d.Size)
```

**Notes:** (Read only property)
72.17. CLASS ECDHEMBS

72.17   class ECDHEMBS

72.17.1   class ECDHEMBS

Function: The class for ECDH key creation.
Notes:

Elliptic Curve Diffie Hellman (ECDH) is an Elliptic Curve variant of the standard Diffie Hellman algorithm. See Elliptic Curve Cryptography for an overview of the basic concepts behind Elliptic Curve algorithms. ECDH is used for the purposes of key agreement.

Constructor to create and map functions into the struct.
EC_Curve_NID An Elliptical Curve ID specified in the openssl header <openssl/obj_mac.h>. (e.g. NID_X9_62_prime256v1)

72.17.2   Methods

72.17.3   Constructor(CurveID as Integer)

Function: The constructor.
Notes: Creates a new key with the given CurveID, e.g. NID_X9_62_prime256v1.

72.17.4   DeriveSecretKey(peerKey as string) as string

Function: After receiving a public key from your peer, derive the secret key by combining the peer key with yours.
Notes: Returns a string (i.e. shared secret) that is the result of the EC DHE secret derivation. Never use a derived secret directly. Typically it is passed through some hash function to produce a key (e.g. SHA512).
peerKey: A string containing the peer’s public key.

72.17.5   Destructor

Function: The destructor.
Notes: Public keys and shared secrets should be copied before freeing memory as ecdhe owns the public
key and shared secret.

72.17.6 LastError as String

Function: The last error string.

72.17.7 PublicKey as string

Function: Queries the public key.
Example:
```
dim EC_Curve_ID as Integer = 415 // NID_X9_62_prime256v1
dim ec_dhe as new ECDHEMBS(EC_Curve_ID)
dim publicKey as string = ec_dhe.PublicKey
```
MsgBox publicKey

Notes: Returns a string (i.e. public key) to be shared with your peer; this can be accomplished over the network or by file.

72.17.8 Properties

72.17.9 CurveID as Integer

Function: The Curve ID used in constructor.
Notes: (Read only property)

72.17.10 CurveIDName as String

Function: The textual name of the used curve ID.
Notes: (Read only property)
**72.17. CLASS ECDHEMBS**

### 72.17.11 ParamsInfo as String

**Function:** Debug Information on the parameters used.
**Notes:** (Read only property)

### 72.17.12 PeerKeyInfo as String

**Function:** Debug Information on the peer key used.
**Notes:** (Read only property)

### 72.17.13 PrivateKeyInfo as String

**Function:** Debug Information on the private key used.
**Notes:** (Read only property)

### 72.17.14 Constants

#### 72.17.15 NID_secp112r1 = 704

MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.

#### 72.17.16 NID_secp112r2 = 705

MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.

#### 72.17.17 NID_secp128r1 = 706

MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.
72.17.18  NID\_secp128r2 = 707

MBS Encryption Plugin, Plugin Version: 13.4. \textbf{Function:} One of the curve constants.

72.17.19  NID\_secp160k1 = 708

MBS Encryption Plugin, Plugin Version: 13.4. \textbf{Function:} One of the curve constants.

72.17.20  NID\_secp160r1 = 709

MBS Encryption Plugin, Plugin Version: 13.4. \textbf{Function:} One of the curve constants.

72.17.21  NID\_secp160r2 = 710

MBS Encryption Plugin, Plugin Version: 13.4. \textbf{Function:} One of the curve constants.

72.17.22  NID\_secp192k1 = 711

MBS Encryption Plugin, Plugin Version: 13.4. \textbf{Function:} One of the curve constants.

72.17.23  NID\_secp224k1 = 712

MBS Encryption Plugin, Plugin Version: 13.4. \textbf{Function:} One of the curve constants.

72.17.24  NID\_secp224r1 = 713

MBS Encryption Plugin, Plugin Version: 13.4. \textbf{Function:} One of the curve constants.

72.17.25  NID\_secp256k1 = 714

MBS Encryption Plugin, Plugin Version: 13.4. \textbf{Function:} One of the curve constants.
72.17. CLASS ECDHEMBS

72.17.26 NID_secp384r1 = 715
MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.

72.17.27 NID_secp521r1 = 716
MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.

72.17.28 NID_sect113r1 = 717
MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.

72.17.29 NID_sect113r2 = 718
MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.

72.17.30 NID_sect131r1 = 719
MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.

72.17.31 NID_sect131r2 = 720
MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.

72.17.32 NID_sect163k1 = 721
MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.

72.17.33 NID_sect163r1 = 722
MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.
72.17.34 \text{ NID} \text{ sect163r2} = 723

MBS Encryption Plugin, Plugin Version: 13.4. \textbf{Function:} One of the curve constants.

72.17.35 \text{ NID} \text{ sect193r1} = 724

MBS Encryption Plugin, Plugin Version: 13.4. \textbf{Function:} One of the curve constants.

72.17.36 \text{ NID} \text{ sect193r2} = 725

MBS Encryption Plugin, Plugin Version: 13.4. \textbf{Function:} One of the curve constants.

72.17.37 \text{ NID} \text{ sect233k1} = 726

MBS Encryption Plugin, Plugin Version: 13.4. \textbf{Function:} One of the curve constants.

72.17.38 \text{ NID} \text{ sect233r1} = 727

MBS Encryption Plugin, Plugin Version: 13.4. \textbf{Function:} One of the curve constants.

72.17.39 \text{ NID} \text{ sect239k1} = 728

MBS Encryption Plugin, Plugin Version: 13.4. \textbf{Function:} One of the curve constants.

72.17.40 \text{ NID} \text{ sect283k1} = 729

MBS Encryption Plugin, Plugin Version: 13.4. \textbf{Function:} One of the curve constants.

72.17.41 \text{ NID} \text{ sect283r1} = 730

MBS Encryption Plugin, Plugin Version: 13.4. \textbf{Function:} One of the curve constants.
72.17. CLASS ECDHEMBS

72.17.42  NID\_sect409k1 = 731

MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.

72.17.43  NID\_sect409r1 = 732

MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.

72.17.44  NID\_sect571k1 = 733

MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.

72.17.45  NID\_sect571r1 = 734

MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.

72.17.46  NID\_wap\_wsg\_idm\_ecid\_wtls1 = 735

MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.

72.17.47  NID\_wap\_wsg\_idm\_ecid\_wtls10 = 743

MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.

72.17.48  NID\_wap\_wsg\_idm\_ecid\_wtls11 = 744

MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.

72.17.49  NID\_wap\_wsg\_idm\_ecid\_wtls12 = 745

MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.
72.17.50  NID_wap_wsg_idm_ecid_wtls3 = 736

MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.

72.17.51  NID_wap_wsg_idm_ecid_wtls4 = 737

MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.

72.17.52  NID_wap_wsg_idm_ecid_wtls5 = 738

MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.

72.17.53  NID_wap_wsg_idm_ecid_wtls7 = 740

MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.

72.17.54  NID_wap_wsg_idm_ecid_wtls8 = 741

MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.

72.17.55  NID_wap_wsg_idm_ecid_wtls9 = 742

MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.

72.17.56  NID_X9_62_c2pnb163v1 = 684

MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.

72.17.57  NID_X9_62_c2pnb163v2 = 685

MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.
72.17. CLASS ECDHEMBS

72.17.58  NID_X9_62_c2pnb163v3 = 686

MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.

72.17.59  NID_X9_62_c2pnb176v1 = 687

MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.

72.17.60  NID_X9_62_c2pnb208w1 = 693

MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.

72.17.61  NID_X9_62_c2pnb272w1 = 699

MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.

72.17.62  NID_X9_62_c2pnb304w1 = 700

MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.

72.17.63  NID_X9_62_c2pnb368w1 = 702

MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.

72.17.64  NID_X9_62_c2tnb191v1 = 688

MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.

72.17.65  NID_X9_62_c2tnb191v2 = 689

MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the curve constants.
72.17.66 NID_X9_62_c2tnb191v3 = 690


72.17.67 NID_X9_62_c2tnb239v1 = 694


72.17.68 NID_X9_62_c2tnb239v2 = 695


72.17.69 NID_X9_62_c2tnb239v3 = 696


72.17.70 NID_X9_62_c2tnb359v1 = 701


72.17.71 NID_X9_62_c2tnb431r1 = 703


72.17.72 NID_X9_62_prime256v1 = 415

72.18 class ECKeyMBS

72.18.1 class ECKeyMBS

Function: The class for Elliptic Curve Digital Signature Algorithm.
Example:

const NID secp192k1 = 711
dim key as ECKeyMBS = ECKeyMBS.KeyByCurveName(NID secp192k1)

MsgBox key.Description

72.18.2 Methods

72.18.3 BuiltInCurves as Dictionary

Function: Queries built in curves.
Example:

// show curve IDs with description in listbox
dim d as Dictionary = ECKeyMBS.BuiltInCurves

for each key as Variant in d.keys
Listbox1.AddRow key, d.Value(key)
next

Notes:
The dictionary returned has as key the ID and the description as value.
The list looks like this:

72.18.4 Constructor

Function: The constructor.
72.18.5 Copy as ECKeyMBS

Function: Creates a copy of the key.

72.18.6 KeyByCurveName(CurveID as Integer) as ECKeyMBS

Function: Generates a new pair of private and public keys.
Example:
```
const NID_secp192k1 = 711
dim key as ECKeyMBS = ECKeyMBS.KeyByCurveName(NID_secp192k1)
```

MsgBox key.Description

Notes: You can use ReadPrivateKey and ReadPublicKey functions to get the keys.

72.18.7 OpenPrivateKey(Data as String) as ECKeyMBS

Function: Opens a private key.
Example:
```
const NID_secp192k1 = 711
dim key as ECKeyMBS = ECKeyMBS.KeyByCurveName(NID_secp192k1)
dim PrivateKeyData as string = key.PrivateKey

// read again
dim pub as ECKeyMBS = ECKeyMBS.OpenPrivateKey(PrivateKeyData)
MsgBox pub.Description
```

72.18.8 OpenPublicKey(Data as String, CurveID as Integer) as ECKeyMBS

Function: Opens a public key.
Example:
```
const NID_secp192k1 = 711
dim key as ECKeyMBS = ECKeyMBS.KeyByCurveName(NID_secp192k1)
```
72.18.  CLASS ECKEYMBS

dim pubKeyData as string = key.PublicKey

    // read again
    dim pub as ECKeyMBS = ECKeypMBS.OpenPublicKey(pubKeyData, NID_secp192k1)
    MsgBox pub.Description

72.18.9  PrivateKey as String

Function: Queries the private key.
Example:

    const NID_secp192k1 = 711
    dim key as ECKeyMBS = ECKeypMBS.KeyByCurveName(NID_secp192k1)
    dim Data as string = key.PrivateKey
    MsgBox EncodeBase64(data)

72.18.10  PublicKey as String

Function: Queries the public key.
Example:

    const NID_secp192k1 = 711
    dim key as ECKeyMBS = ECKeypMBS.KeyByCurveName(NID_secp192k1)
    dim Data as string = key.PublicKey
    MsgBox EncodeBase64(data)

72.18.11  Sign(Data as String) as String

Function: Signs the given data.
Example:

    const NID_secp192k1 = 711
    dim key as ECKeyMBS = ECKeypMBS.KeyByCurveName(NID_secp192k1)
    dim text as string = "Hello World"
    dim data as string = SHA512MBS.Hash(text)
    dim sig as string = key.Sign(data)
if key.Verify(data, sig) then
    MsgBox "Signature ok"
end if

Notes:
We highly recommend to use a hash like SHA-512 to preprocess the data.
Returns the signature as string on success.

72.18.12 Verify(SignatureData as String, Data as String) as Boolean

Function: Verifies the digital signature.
Example:
const NID secp192k1 = 711
dim key as ECKeyMBS = ECKeyMBS.KeyByCurveName(NID secp192k1)
dim text as string = "Hello World"
dim data as string = SHA512MBS.Hash(text)
dim sig as string = key.Sign(data)
if key.Verify(data, sig) then
    MsgBox "Signature ok"
end if

Notes:
Returns true on success. Returns false if data, signature and public key don’t belong together.
We highly recommend to use a hash like SHA-512 to preprocess the data.

72.18.13 Properties

72.18.14 Description as String

Function: Returns an user readable description text for the current key.
Example:
const NID secp192k1 = 711
dim key as ECKeyMBS = ECKeyMBS.KeyByCurveName(NID secp192k1)
MsgBox key.Description
Notes: (Read only property)

### 72.18.15 Flags as Integer


**Function:** The flag field.

**Notes:**

see OpenSSL for details.
(Read and Write property)

### 72.18.16 Size as Integer


**Function:** Returns size of key.

**Notes:** (Read only property)
SECG/WTLS curve over a 112 bit prime field
SECG curve over a 112 bit prime field
SECG curve over a 128 bit prime field
SECG curve over a 128 bit prime field
SECG curve over a 160 bit prime field
SECG curve over a 160 bit prime field
SECG/WTLS curve over a 160 bit prime field
SECG curve over a 192 bit prime field
SECG curve over a 224 bit prime field
NIST/SECG curve over a 224 bit prime field
SECG curve over a 256 bit prime field
NIST/SECG curve over a 384 bit prime field
NIST/SECG curve over a 521 bit prime field
NIST/X9.62/SECG curve over a 192 bit prime field
X9.62 curve over a 192 bit prime field
X9.62 curve over a 239 bit prime field
X9.62 curve over a 239 bit prime field
X9.62 curve over a 239 bit prime field
X9.62/SECG curve over a 256 bit prime field
SECG curve over a 113 bit binary field
SECG curve over a 113 bit binary field
SECG/WTLS curve over a 131 bit binary field
SECG curve over a 131 bit binary field
NIST/SECG/WTLS curve over a 163 bit binary field
SECG curve over a 163 bit binary field
NIST/SECG curve over a 163 bit binary field
SECG curve over a 193 bit binary field
SECG curve over a 193 bit binary field
NIST/SECG/WTLS curve over a 233 bit binary field
NIST/SECG/WTLS curve over a 233 bit binary field
SECG curve over a 239 bit binary field
NIST/SECG curve over a 283 bit binary field
NIST/SECG curve over a 283 bit binary field
NIST/SECG curve over a 409 bit binary field
NIST/SECG curve over a 409 bit binary field
NIST/SECG curve over a 571 bit binary field
NIST/SECG curve over a 571 bit binary field
X9.62 curve over a 163 bit binary field
X9.62 curve over a 163 bit binary field
X9.62 curve over a 176 bit binary field
X9.62 curve over a 191 bit binary field
X9.62 curve over a 191 bit binary field
X9.62 curve over a 208 bit binary field
X9.62 curve over a 239 bit binary field
X9.62 curve over a 239 bit binary field
X9.62 curve over a 283 bit binary field
X9.62 curve over a 304 bit binary field
X9.62 curve over a 359 bit binary field
X9.62 curve over a 368 bit binary field
X9.62 curve over a 431 bit binary field
NIST/SECG/WTLS curve over a 112 bit prime field
NIST/SECG/WTLS curve over a 160 bit prime field
WTLS curve over a 112 bit prime field
WTLS curve over a 160 bit prime field
NIST/SECG/WTLS curve over a 233 bit binary field
NIST/SECG/WTLS curve over a 233 bit binary field
WTLS curve over a 224 bit prime field
RFC 5639 curve over a 160 bit prime field
RFC 5639 curve over a 160 bit prime field
RFC 5639 curve over a 192 bit prime field
RFC 5639 curve over a 192 bit prime field
RFC 5639 curve over a 224 bit prime field
RFC 5639 curve over a 224 bit prime field
RFC 5639 curve over a 256 bit prime field
RFC 5639 curve over a 256 bit prime field
RFC 5639 curve over a 320 bit prime field
RFC 5639 curve over a 384 bit prime field
RFC 5639 curve over a 512 bit prime field
72.19  class EncryptMBS

72.19.1  class EncryptMBS

MBS Encryption Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This class does an encryption using a 104 Byte Key. **Deprecated:** This item is deprecated and should no longer be used. You can use CipherMBS instead. **Notes:**

Fixed with version 8.1 to work on 64-bit.

This class is kept for compatibility. On new projects please use the blowfishMBS class which offers more options. And two easy usable shared methods to quickly encrypt and decrypt.

Create a EncryptMBS Object using "e=new EncryptMBS". Then initialize it with your password using "e.init(password)". Now you can call Encode and Decode to get your data encrypted. The GetKey function is only for you to verify if it is working correctly. For the same password, you should always get the same key and the same result for the same data. **Known issues:**

The data length must be aligned to 8 bytes for best results. e.g. "Hello World!" has a length of 12 bytes and the encode function will only do the first 8 bytes.

The result on Mac and Windows is not the same! See also AESMBS class and BlowfishMBS class.

72.19.2  Methods

72.19.3  Decode(data as string) as string

MBS Encryption Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Decodes the string using the key. **Example:**

```vbs
dim e as new EncryptMBS

e.Init "password"
dim encoded as string = e.encode("Hello World")
MsgBox e.Decode(encoded)
```

**Notes:**

Does nothing without you calling Init before to generate a key. The result is not the same for BigEndian and LittleEndian CPUs.
The strings returned are marked to have the encoding Binary.

**72.19.4 Encode(data as string) as string**

MBS Encryption Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Encodes the string using the key.

**Example:**

```vbs
dim e as new EncryptMBS

e.Init "password"

msgbox e.encode("Hello World")
```

**Notes:**

Does nothing without you calling Init before to generate a key.
The result is a binary string which can contain any ASCII value and may not be printable.
The result is not the same for BigEndian and LittleEndian CPUs.
The strings returned are marked to have the encoding Binary.

Returned string does not contain text, but binary data. Please do not store in text fields in database without using EncodeHex or EncodeBase64 to make it a text string.

**72.19.5 Init(password as string)**

MBS Encryption Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Generates the key needed for encryption based on the provided keyword.

**Example:**

```vbs
dim e as new EncryptMBS
e.init("mypassword")
```

**72.19.6 Key as string**

MBS Encryption Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the key used inside the encryption object.

**Example:**
dim e as new EncryptMBS
e.Init "Hello"
msgbox e.key

Notes: Call Init to generate this key before.
72.20 class MD5DigestMBS

72.20.1 class MD5DigestMBS


Notes:
Same class as the one in RB5, so the same documentation:

The MD5Digest class enables you to process a string in segments. Pass each string segment to the Process method. The value property contains the current message digest and the clear method clears the MD5Digest object so that you can repeat the process.

The MD5 message digest algorithm takes a message of any length and produces a 128-bit "fingerprint" or message digest of the input string. The MD5 algorithm is useful for digital signature applications, where a large file must be processed in a secure manner before being encrypted with a secret key under a system such as RSA.

72.20.2 Methods

72.20.3 clear

MBS Encryption Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Resets the MD5Digest object so that you can start with a new data stream.

72.20.4 HashFile(file as FolderItem, Hex as boolean = true) as string


Notes:
Plugin will start a preemptive thread to read in file and process all data in chunks. Returns hash on success or empty string on failure. May raise OutOfMemoryException or IOException. This function works best if called from a thread. If hex is true, the result is encoded as hex string.
72.20. CLASS MD5DIGESTMBS

72.20.5 HMAC(key as string, data as string) as string

Function: Returns the a specific HASH based on the key and the data string.

72.20.6 MD5(data as memoryblock) as string

Function: Returns the MD5 message digest value of a string.
See also:
- 72.20.7 MD5(data as string) as string

72.20.7 MD5(data as string) as string

Function: Returns the MD5 message digest value of a string.
Example:
// Compare RB5 MD5 to the one from MBS

dim a,b as String

a=MD5("Hallo")
b=MD5DigestMBS.MD5("Hallo")

msgbox str(StrComp(a,b,0))

Notes: Same as the MD5 function in RB5.
See also:
- 72.20.6 MD5(data as memoryblock) as string

72.20.8 MD5String(data as memoryblock) as string

Function: Returns the MD5 message digest value of a memoryblock as hex string.
See also:
- 72.20.9 MD5String(data as string) as string
72.20.9  MD5String(data as string) as string

Function: Returns the MD5 message digest value of a string as hex string.
Example:

// Compare RB5 MD5 to the one from MBS

dim a,b as String

a=EncodingToHexMBS(MD5("Franz jagt im komplett verwahrlosten Taxi quer durch Bayern"))
b=MD5DigestMBS.MD5String("Franz jagt im komplett verwahrlosten Taxi quer durch Bayern")

msgbox a+EndOfLine+b+EndOfLine+str(StrComp(a,b,0))

See also:

• 72.20.8 MD5String(data as memoryblock) as string

72.20.10  Process(data as memoryblock)

Function: Processes the given data.
See also:

• 72.20.11 Process(Data as string)

72.20.11  Process(Data as string)

Function: Processes the given data.
Example:

dim f as FolderItem
dim b as BinaryStream
dim s as string
dim m as new MD5DigestMBS
dim lines(-1) as string

// process file part by part (big files)

f=SpecialFolder.Desktop.Child("test.jpg")
b=f.OpenAsBinaryFile(False)

while not b.eof
72.20. CLASS MD5DIGESTMBS

```
s=b.Read(1000000)
m.Process s
wend

lines.append EncodingToHexMBS(m.Value) + " using plugin with MD5DigestMBS"

dim d as new MD5Digest

f=SpecialFolder.Desktop.Child("test.jpg")
b=f.OpenAsBinaryFile(False)

while not b.eof
s=b.Read(1000000)
d.Process s
wend

lines.append EncodingToHexMBS(d.Value) + " using RB with MD5Digest"

// process file in one chunk (small files)

f=SpecialFolder.Desktop.Child("test.jpg")
b=f.OpenAsBinaryFile(False)

s=b.Read(b.Length)

lines.append EncodingToHexMBS(MD5MBS(s)) + " using plugin with MD5MBS()"

f=SpecialFolder.Desktop.Child("test.jpg")
b=f.OpenAsBinaryFile(False)

s=b.Read(b.length)

lines.append EncodingToHexMBS(MD5(s)) + " using RB with MD5()"

MsgBox Join(lines,EndOfLine)
```

See also:

- 72.20.10 Process(data as memoryblock)
72.20.12 Properties

72.20.13 Value as string

MBS Encryption Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Contains the current message digest. Notes: (Read only property)
72.21.1 class OldAESMBS

MBS Encryption Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class for AES encryption.

**Example:**

```vbscript
    dim a as OldAESMBS
    dim key as MemoryBlock
    dim data as MemoryBlock

    key=NewMemoryBlock(20)
    key.CString(0)="Hello World!1234" // 16 byte key for 128bit

    a=new OldAESMBS
    if a.SetKey(key, 128) then

        data=NewMemoryBlock(20)
        data.StringValue(0,16)="Hello World!"
        MsgBox "Before: "+data.StringValue(0,16)
        a.Encrypt(data)
        MsgBox "After encryption: "+data.StringValue(0,16)
        a.Decrypt(data)
        MsgBox "After decryption: "+data.StringValue(0,16)
    else
        MsgBox "Failed"
    end if
```

**Deprecated:** This item is deprecated and should no longer be used. You can use AESMBS instead. **Notes:**

Please don’t use this class. This class is deprecated and just kept for compatibility. This class will not be available in 64bit.

This class has low level functions like Encrypt. It also has mid level functions like EncryptCFB/CBC. For your convenience, we also have high level functions like EncryptString.
72.21.2 Methods

72.21.3 Decrypt(idata as memoryblock, odata as memoryblock=nil, iOffset as Integer=0, oOffset as Integer=0)

Function: Decrypts the first 16 bytes in the input memoryblock at the given offset and stores the result in the output memoryblock at the given offset.
Notes:
If odata is nil, idata is used for output.
This is ECB mode.

72.21.4 DecryptCBC(idata as memoryblock, LengthBytes as Integer, IVector as memoryblock=nil, odata as memoryblock=nil, iOffset as Integer=0, oOffset as Integer=0)

Function: Decrypts the 16 byte data blocks within LengthBytes bytes in the data.
Notes:
If odata is nil, idata is used for output.
If IVector is nil, a vector filled with zeros is used.

72.21.5 DecryptCFB(idata as memoryblock, LengthBytes as Integer, byref IVectorOffset as Integer, IVector as memoryblock=nil, odata as memoryblock=nil, iOffset as Integer=0, oOffset as Integer=0)

Function: Decrypts the data in CFB128 mode.
Notes:
If odata is nil, idata is used for output.
If IVector is nil, a vector filled with zeros is used.
IVectorOffset saves the position in the IVector for the next call to this method.
iOffset: offset in idata.
oOffset: offset in odata.
LengthBytes: Length of data in idata and odata.

The old code until plugin version 9.4 had a bug in the CFB method. This was fixed for 9.5. But the old behavior is still accessible using the methods with the Old suffix.
72.21.6 DecryptCFBOld(idata as memoryblock, LengthBytes as Integer, byref IVectorOffset as Integer, IVector as memoryblock=nil, odata as memoryblock=nil, iOffset as Integer=0, oOffset as Integer=0)

Function: Decrypts the data in CFB128 mode.
Notes:
If odata is nil, idata is used for output.
If IVector is nil, a vector filled with zeros is used.
IVectorOffset saves the position in the IVector for the next call to this method.
iOffset: offset in idata.
oOffset: offset in odata.
LengthBytes: Length of data in idata and odata.

The old code until plugin version 9.4 had a bug in the CFB method. This was fixed for 9.5. But the old behavior is still accessible using the methods with the Old suffix.

72.21.7 DecryptString(idata as string, IVector as memoryblock=nil) as string

Function: Decrypts a string in CFB128 mode.
Example:

```
dim x,u,s as string
dim iv as MemoryBlock

s="Hello World"

// encrypt
s=ConvertEncoding(s,encodings.UTF8)

dim a as new OldAESMBS

call a.SetKey("1234567890123456")

iv=NewMemoryBlock(16)
x=a.EncryptString(s,iv)

MsgBox x

// decrypt

iv=NewMemoryBlock(16)
u=a.DecryptString(x,iv)
```
u=DefineEncoding(u,encodings.UTF8)

MsgBox u

Notes:
If IVector is nil, a vector filled with zeros is used.
The bytes from the string are read without checking the text encoding and the result string has no text
encoding assigned.

The old code until plugin version 9.4 had a bug in the CFB method. This was fixed for 9.5. But the old
behavior is still accessible using the methods with the Old suffix.

72.21.8 DecryptStringOld(idata as string, IVector as memoryblock=nil) as string

Function: Decrypts a string in CFB128 mode.
Example:

    dim x,u,s as string
    dim iv as MemoryBlock

    s="Hello World"
    // encrypt
    s=ConvertEncoding(s,encodings.UTF8)

    dim a as new OldAESMBS
    call a.SetKey("1234567890123456")

    iv=NewMemoryBlock(16)
    x=a.EncryptString(s,iv)

    MsgBox x
    // decrypt

    iv=NewMemoryBlock(16)
    u=a.DecryptString(x,iv)

    u=DefineEncoding(u,encodings.UTF8)

    MsgBox u
Notes:

If IVector is nil, a vector filled with zeros is used. The bytes from the string are read without checking the text encoding and the result string has no text encoding assigned.

The old code until plugin version 9.4 had a bug in the CFB method. This was fixed for 9.5. But the old behavior is still accessible using the methods with the Old suffix.

72.21.9  Encrypt(idata as memoryblock, odata as memoryblock=nil, iOffset as Integer=0, oOffset as Integer=0)


Function: Encrypts the first 16 bytes in the input memoryblock at the given offset and stores the result in the output memoryblock at the given offset.

Notes:

If odata is nil, idata is used for output.
This is ECB mode.

72.21.10 EncryptCBC(idata as memoryblock, LengthBytes as Integer, IVector as memoryblock=nil, odata as memoryblock=nil, iOffset as Integer=0, oOffset as Integer=0)


Function: Encrypts the 16 byte data blocks within LengthBytes bytes in the data.

Notes:

If odata is nil, idata is used for output.
If IVector is nil, a vector filled with zeros is used.

72.21.11 EncryptCFB(idata as memoryblock, LengthBytes as Integer, byref IVectorOffset as Integer, IVector as memoryblock=nil, odata as memoryblock=nil, iOffset as Integer=0, oOffset as Integer=0)


Function: Encrypts the data in CFB128 mode.

Notes:
If odata is nil, idata is used for output.
If IVector is nil, a vector filled with zeros is used.
IVectorOffset safes the position in the IVector for the next call to this method.
iOffset: offset in idata.
oOffset: offset in odata.
LengthBytes: Length of data in idata and odata.

The old code until plugin version 9.4 had a bug in the CFB method. This was fixed for 9.5. But the old behavior is still accessible using the methods with the Old suffix.

72.21.12 EncryptCFBOld(idata as memoryblock, LengthBytes as Integer, byref IVectorOffset as Integer, IVector as memoryblock=nil, odata as memoryblock=nil, iOffset as Integer=0, oOffset as Integer=0)

Function: Encrypts the data in CFB128 mode.
Notes:
If odata is nil, idata is used for output.
If IVector is nil, a vector filled with zeros is used.
IVectorOffset safes the position in the IVector for the next call to this method.
iOffset: offset in idata.
oOffset: offset in odata.
LengthBytes: Length of data in idata and odata.

The old code until plugin version 9.4 had a bug in the CFB method. This was fixed for 9.5. But the old behavior is still accessible using the methods with the Old suffix.

72.21.13 EncryptString(idata as string, IVector as memoryblock=nil) as string

Function: Encrypts a string in CFB128 mode.
Example:

```
dim x,u,s as string

dim iv as MemoryBlock

s="Hello World"

// encrypt
s=ConvertEncoding(s,encodings.UTF8)

dim a as new OldAESMBS
```
call a. SetKey("1234567890123456")

iv=NewMemoryBlock(16)
x=a.EncryptString(s,iv)

MsgBox x

// decrypt

iv=NewMemoryBlock(16)
u=a.DecryptString(x,iv)
u=DefineEncoding(u,encodings.UTF8)

MsgBox u

Notes:
If IVector is nil, a vector filled with zeros is used.
The bytes from the string are read without checking the text encoding and the result string has no text encoding assigned.

The old code until plugin version 9.4 had a bug in the CFB method. This was fixed for 9.5. But the old behavior is still accessible using the methods with the Old suffix.

72.21.14 EncryptStringOld(idata as string, IVector as memoryblock=nil) as string

Function: Encrypts a string in CFB128 mode.
Example:

dim x,u,s as string
dim iv as MemoryBlock

s="Hello World"

// encrypt
s=ConvertEncoding(s,encodings.UTF8)

dim a as new OldAESMBS
call a.SetKey("1234567890123456")
iv=NewMemoryBlock(16)
x=a.EncryptString(s,iv)

MsgBox x

// decrypt
iv=NewMemoryBlock(16)
u=a.DecryptString(x,iv)

u=DefineEncoding(u,encodings.UTF8)

MsgBox u

Notes:
If IVector is nil, a vector filled with zeros is used.
The bytes from the string are read without checking the text encoding and the result string has no text encoding assigned.

The old code until plugin version 9.4 had a bug in the CFB method. This was fixed for 9.5. But the old behavior is still accessible using the methods with the Old suffix.

72.21.15 SetKey(key as memoryblock, nBits as Integer) as boolean

Function: Sets the key.
Notes:
possible values for the bitcount:

128 key is 16 bytes long
192 key is 24 bytes long
256 key is 32 bytes long

See also:

• 72.21.16 SetKey(key as string) as boolean
72.21. CLASS OLDAESMBS

72.21.16 SetKey(key as string) as boolean


Function: Sets the key.

Example:

dim x,u,s as string
dim iv as MemoryBlock

s="Hello World"

// encrypt
s=ConvertEncoding(s, encodings.UTF8)

dim a as new OldAESMBS

call a.SetKey("1234567890123456")

iv=NewMemoryBlock(16)
x=a.EncryptString(s, iv)

MsgBox x

// decrypt

iv=NewMemoryBlock(16)
u=a.DecryptString(x, iv)
u=DefineEncoding(u, encodings.UTF8)

MsgBox u

Notes:

Please make sure the key has right text encoding to avoid unexpected results.
Please use 16, 24 or 32 byte long key strings.
See also:

- 72.21.15 SetKey(key as memoryblock, nBits as Integer) as boolean
72.22 class OpenSSLExceptionMBS

72.22.1 class OpenSSLExceptionMBS


**Function:** The OpenSSL class for error exceptions.

**Notes:** Subclass of the RuntimeException class.
72.23 module OpenSSLMBS

72.23.1 module OpenSSLMBS

Function: A module for OpenSSL functions.
Notes: Please request what you miss here.

72.23.2 Methods

72.23.3 ErrorString(ErrorCode as Integer) as string

Function: Queries the human readable error string for an OpenSSL error.
Example:

MsgBox OpenSSLMBS>ErrorString(336109761)

72.23.4 GeneratePrivateKey(Bits as Integer = 4096, Exp as Integer = 65537,
Password as string = ", Algorithm as string = "") as string

Function: Generates a new private key.
Example:

dim privateKey as string = OpenSSLMBS.GeneratePrivateKey
dim publicKey as string = OpenSSLMBS.GetPublicKey(privateKey)
break // got key pair

Notes:

Bit size of key should be high.
See RSA key documentation on the web about details.

In Plugin version 16.2 and later this function yields time to other Xojo threads.
Algorithm specifies the encryption algorithm for key encryption. See CipherMBS for cipher names, e.g.
"AES-128-CBC". (new in 17.5)
CHAPTER 72. ENCRYPTION AND HASH

72.23.5 GetPublicKey(PrivateKey as String, PrivateKeyPassword as string = "") as string

Function: Extracts public key from private key.
Example:

```
dim privateKey as string = OpenSSLMBS.GeneratePrivateKey
dim publicKey as string = OpenSSLMBS.GetPublicKey(privateKey)

break // got key pair
```

Notes: Optionally you can define a password for private key.

72.23.6 OpenSSLVersion as String

Function: Queries version of OpenSSL version.
Example:

```
MsgBox OpenSSLMBS.OpenSSLVersion
```

72.23.7 PKCS7Sign(flags as Integer, InputData as string, SignKey as string, PrivateKey as String, PrivateKeyPassword as string, intermediaCertsData() as string, OutputBinary as boolean) as string

Function: Signs with SMIME.
Example:

```
dim testPrivKey as string = ReadFile("passkey.pem")
dim testCertificate as string = ReadFile("passcertificate.pem")
dim data as string = ReadFile("test.txt")
dim privKeyPassword as string = "12345"

dim intermediateCertificates() as string
intermediateCertificates.Append ReadFile("WWDR.pem")
dim Sign as string = OpenSSLMBS.PKCS7Sign(0, data, testCertificate, testPrivKey, privKeyPassword, intermediateCertificates, true)

// write result
dim f as FolderItem = SpecialFolder.Desktop.Child("output")
```
72.23. MODULE OPENSSLMBS

dim b as BinaryStream = BinaryStream.Create(f, true)
b.Write sign

Notes:
Returns the signature. If OutputBinary is true, we use DER output, else text based output. intermediaCertsData array can be empty if you have no intermediate certificates.

72.23.8 PKCS7SignData(signcert as X509MBS, PrivateKey as PKeyMBS, certs() as X509MBS = nil, data as string, flags as Integer = 0) as string

Function: Signs with PKCS7.
Notes:
Returns the signature (binary format = DER).
intermediaCertsData array can be empty or nil if you have no intermediate certificates.

72.23.9 RSAPrivateDecrypt(data as string, PrivateKey as string, padding as Integer = 1, Password as string = "") as String

Function: Decrypts data using private key.
Example:

// encrypt with public, decrypt with private key

dim f1 as FolderItem = GetFolderItem("test.pem")
dim b1 as BinaryStream = BinaryStream.Open(f1)
dim PrivKey as string = B1.Read(b1.Length)

dim f2 as FolderItem = GetFolderItem("test.pub")
dim b2 as BinaryStream = BinaryStream.Open(f2)
dim PubKey as string = B2.Read(b2.Length)

dim UnencryptedData as string = "Hello World. This is just a test."
dim EncryptedData as string = OpenSSLMBS.RSAPublicEncrypt(UnencryptedData, PubKey)
dim decryptedData as string = OpenSSLMBS.RSAPrivateDecrypt(EncryptedData, PrivKey)

Break // check in debugger
CHAPTER 72. ENCRYPTION AND HASH

Notes:
See kPadding constants for Padding parameter.
Password is optional for decrypting encrypted keys.
Returns empty string on failure or raises exceptions.

RSA can only decrypt data if it’s <= length of key.

72.23.10  RSAPrivateEncrypt(data as string, PrivateKey as string, padding as 
Integer = 1, Password as string = ””) as String

Function: Encrypts data using private key.
Example:
// encrypt with private, decrypt with public key

dim f1 as FolderItem = GetFolderItem(”test.pem”)  
dim b1 as BinaryStream = BinaryStream.Open(f1)  
dim PrivKey as string = B1.Read(b1.Length)  


dim f2 as FolderItem = GetFolderItem(”test.pub”)  
dim b2 as BinaryStream = BinaryStream.Open(f2)  
dim PubKey as string = B2.Read(b2.Length)


dim UnencryptedData as string = ”Hello World. This is just a test.”
dim EncryptedData as string = OpenSSLMBS.RSAPrivateEncrypt(UnencryptedData, PrivKey)
dim decryptedData as string = OpenSSLMBS.RSAPublicDecrypt(EncryptedData, PubKey)

Break // check in debugger

Notes:
See kPadding constants for Padding parameter.
Password is optional for decrypting encrypted keys.
Returns empty string on failure or raises exceptions.

RSA can only encrypt data if it’s <= length of key.
**RSAPublicDecrypt**(data as string, PublicKey as string, padding as Integer = 1, Password as string = ””) as String


**Function:** Decrypts data using public key.

**Example:**

```vbnet
// encrypt with private, decrypt with public key

dim f1 as FolderItem = GetFolderItem(“test.pem”)  
dim b1 as BinaryStream = BinaryStream.Open(f1)  
dim PrivKey as string = B1.Read(b1.Length)

dim f2 as FolderItem = GetFolderItem(“test.pub”)  
dim b2 as BinaryStream = BinaryStream.Open(f2)  
dim PubKey as string = B2.Read(b2.Length)

dim UnencryptedData as string = ”Hello World. This is just a test.”
dim EncryptedData as string = OpenSSLMBS.RSAPrivateEncrypt(UnencryptedData, PrivKey)  
dim decryptedData as string = OpenSSLMBS.RSAPublicDecrypt(EncryptedData, PubKey)

Break // check in debugger
```

**Notes:**

See kPadding constants for Padding parameter.
Password is optional for decrypting encrypted keys.
Returns empty string on failure or raises exceptions.

RSA can only decrypt data if it’s \(<=\) length of key.

**RSAPublicEncrypt**(data as string, PublicKey as string, padding as Integer = 1, Password as string = ””) as String


**Function:** Encrypts data using public key.

**Example:**

```vbnet
// encrypt with public, decrypt with private key

dim f1 as FolderItem = GetFolderItem(“test.pem”)  
dim b1 as BinaryStream = BinaryStream.Open(f1)  
dim PrivKey as string = B1.Read(b1.Length)
```
dim f2 as FolderItem = GetFolderItem("test.pub")
dim b2 as BinaryStream = BinaryStream.Open(f2)
dim PubKey as string = B2.Read(b2.Length)

dim UnencryptedData as string = "Hello World. This is just a test."
dim EncryptedData as string = OpenSSLMBS.RSAPublicEncrypt(UnencryptedData, PubKey)
dim decryptedData as string = OpenSSLMBS.RSAPrivateDecrypt(EncryptedData, PrivKey)

Break // check in debugger

Notes:

See kPadding constants for Padding parameter.
Password is optional for decrypting encrypted keys.
Returns empty string on failure or raises exceptions.

RSA can only encrypt data if it’s <= length of key.

72.23.13 SignData(data as string, key as string, Password as string = "") as string

Function: Signs a piece of data with a given private key.
Example:

dim data as string // some data
dim test as string // the private key PEM file content
dim Signature as string = OpenSSLMBS.SignData(data, test)
msgbox EncodeHex(Signature)

Notes:

Returns signature. Use EncodeHex or EncodeBase64 to make a text representation.

Internally we make a SHA1 hash of the data, open the private RSA key and do a RSA sign operation. We return the raw key as a string bytes.
On any error, we return an empty string.
Optional you can pass a password to read password protected keys.
See also:

- 72.23.14 SignData(data as string, key as string, Password as string = ", Algorithm as Integer) as string
72.23.14 SignData(data as string, key as string, Password as string = "", Algorithm as Integer) as string

Function: Signs a piece of data with a given private key.
Example:

    dim test_pem as string = ReadFile("test.pem")
    dim test_pub as string = ReadFile("test.pub")
    dim data as string = ReadFile("Create Keys.rtf") // some data file
    dim signature as string

    // create signature
    Signature = OpenSSLMBS.SignData(data, test_pem, OpenSSLMBS.kAlgorithmSHA512)
    if Signature = "" then
        // failed
        break
    end if

    // verify with private key
    dim r1 as Boolean = OpenSSLMBS.VerifyData(data, signature, test_pem, OpenSSLMBS.kAlgorithmSHA256)

    // verify with public key
    dim r2 as Boolean = OpenSSLMBS.VerifyData(data, signature, test_pub, OpenSSLMBS.kAlgorithmSHA256)

Notes:
Returns signature. Use EncodeHex or EncodeBase64 to make a text representation.

Internally we make a hash of the data with given algorithm, open the private RSA key and do a RSA sign operation. We return the raw signature as a string bytes.
On any error, we return an empty string.
Optional you can pass a password to read password protected keys.
See also:
  • 72.23.13 SignData(data as string, key as string, Password as string = "") as string

72.23.15 VerifyData(data as string, Signature as string, Key as string, Password as string = "") as boolean

Function: Verifies a signature with given data and public key.
Notes:
Key can be the public or private key, but of course normally you use the public key.
Data is the raw data to compare against. A SHA1 hash is performed and verified with the signature.
Signature must be the string returned like from SignData function. If you used EncodeHex on it, you now
need to do DecodeHex.
Returns true if signature is valid and false on any other error.
Optional you can pass a password to read password protected keys.
See also:

- 72.23.16 VerifyData(data as string, Signature as string, Key as string, Password as string = "", Algorithm as Integer) as boolean

### 72.23.16 VerifyData(data as string, Signature as string, Key as string, Password as string = "", Algorithm as Integer) as boolean

**Function:** Verifies a signature with given data and public key.
**Example:**

```plaintext
dim test_pem as string = ReadFile("test.pem")
dim test_pub as string = ReadFile("test.pub")
dim data as string = ReadFile("Create Keys.rtf") // some data file
dim signature as string

// create signature
Signature = OpenSSLMBS.SignData(data, test_pem, OpenSSLMBS.kAlgorithmSHA512)
if Signature = "" then
    // failed
    break
end if

// verify with private key
dim r1 as Boolean = OpenSSLMBS.VerifyData(data, signature, test_pem, OpenSSLMBS.kAlgorithmSHA512)

// verify with public key
dim r2 as Boolean = OpenSSLMBS.VerifyData(data, signature, test_pub, OpenSSLMBS.kAlgorithmSHA512)
```

**Notes:**

Key can be the public or private key, but of course normally you use the public key.
Data is the raw data to compare against. A hash is performed with given algorithm and verified with the signature.
Signature must be the string returned like from SignData function. If you used EncodeHex on it, you now
need to do DecodeHex.
Returns true if signature is valid and false on any other error.
Optional you can pass a password to read password protected keys.
72.23. MODULE OPENSSLMBS

See also:

- 72.23.15 VerifyData(data as string, Signature as string, Key as string, Password as string = ") as boolean

72.23.17 Constants

72.23.18 kAlgorithmSHA1 = 1

MBS Encryption Plugin, Plugin Version: 16.0. **Function:** One of the hash algorithms. **Notes:** SHA 1.

72.23.19 kAlgorithmSHA224 = 2

MBS Encryption Plugin, Plugin Version: 16.0. **Function:** One of the hash algorithms. **Notes:** SHA 2 with 224bit.

72.23.20 kAlgorithmSHA256 = 3

MBS Encryption Plugin, Plugin Version: 16.0. **Function:** One of the hash algorithms. **Notes:** SHA 2 with 256bit.

72.23.21 kAlgorithmSHA384 = 4

MBS Encryption Plugin, Plugin Version: 16.0. **Function:** One of the hash algorithms. **Notes:** SHA 2 with 384bit.

72.23.22 kAlgorithmSHA512 = 5

MBS Encryption Plugin, Plugin Version: 16.0. **Function:** One of the hash algorithms. **Notes:** SHA 2 with 512bit.

72.23.23 kPaddingNone = 3

MBS Encryption Plugin, Plugin Version: 16.2. **Function:** One of the padding options for RSA encryption. **Notes:** Raw RSA encryption. This mode should only be used to implement cryptographically sound padding.
modes in the application code. Encrypting user data directly with RSA is insecure.

72.23.24 kPaddingPKCS1 = 1

MBS Encryption Plugin, Plugin Version: 16.2. **Function:** One of the padding options for RSA encryption. **Notes:** PKCS #1 v1.5 padding. This currently is the most widely used mode.

72.23.25 kPaddingPKCS1OAEP = 4

MBS Encryption Plugin, Plugin Version: 16.2. **Function:** One of the padding options for RSA encryption. **Notes:** EME-OAEP as defined in PKCS #1 v2.0 with SHA-1, MGF1 and an empty encoding parameter. This mode is recommended for all new applications.

72.23.26 kPaddingSSLv23 = 2

MBS Encryption Plugin, Plugin Version: 16.2. **Function:** One of the padding options for RSA encryption. **Notes:** PKCS #1 v1.5 padding with an SSL-specific modification that denotes that the server is SSL3 capable.

72.23.27 kPaddingX931 = 5

MBS Encryption Plugin, Plugin Version: 16.2. **Function:** One of the padding options for RSA encryption. **Notes:** X931 padding.
**72.24. MODULE PASSSIGNERMBS**

**72.24 module PassSignerMBS**

**72.24.1 module PassSignerMBS**

MBS MacExtras Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The module to sign iOS passes from a Mac app.  

**72.24.2 Methods**

**72.24.3 signPass(Pass as folderitem, CertSuffix as String, Output as folderitem, Zip as boolean = true) as boolean**

MBS MacExtras Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Sign a pass.  
**Notes:**  
Pass: Input folder with pass files.  
CertSuffix: The certificate suffix.  
Output: Where to store the new pass.  
Zip: If true, we do the last step to zip the pass.  
Returns true if signed or false if failed.  

**72.24.4 verifyPassSignature(pass as folderitem) as Boolean**

MBS MacExtras Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Verify a pass.  
**Notes:**  
Pass must point to the pass file (a zip archive).  
Returns true if verified and false if failed.
class PKeyMBS

class PKeyMBS

Function: The class for a public/private key.
Notes: Currently this class only implements a part of the PKey functionality of OpenSSL. If needed, we could add more. This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

Methods

Constructor

Function: The private constructor.
Notes: Creates a new empty key. This constructor is private to make sure you don’t create an object from this class by error. Please use designated functions to create objects.

Copy as PKeyMBS

Function: Creates a copy of the key.

PrivateKeyData as String

Function: The key as binary representation.
Notes: You can write this to a pem file.

PublicKeyData as String

Function: The key as binary representation.
72.25. CLASS PKEYMBS

Notes: You can write this to a pem file.

72.25.7 Properties

72.25.8 Bits as Integer

Function: Number of bits of key.  
Notes: (Read only property)

72.25.9 DescriptionParams as String

Function: The description of the parameters.  
Notes:  
This is only for human to read.  
(Read only property)

72.25.10 DescriptionPrivateKey as String

Function: The description of private/public key.  
Notes:  
If no private key is there, you only get the public key part here.  
This is only for human to read.  
(Read only property)

72.25.11 DescriptionPublicKey as String

Function: The description of public key.  
Notes:  
This is only for human to read.  
(Read only property)
72.25.12 Handle as Integer

**Function:** The handle to the key.
**Notes:** (Read and Write property)

72.25.13 ID as Integer

**Function:** The ID (type) of the key.
**Notes:** (Read only property)

72.25.14 PrivateKey as String

**Function:** Extracts the private key.
**Notes:**
This is the binary representation.
(Read only property)

72.25.15 PublicKey as String

**Function:** Extracts the public key.
**Notes:**
This is the binary representation.
(Read only property)

72.25.16 Size as Integer

**Function:** The size of the key in bytes.
**Notes:** (Read only property)
72.25  CLASS PKEYMBS

72.25.17  Type as Integer

**Function:** The type of key.
**Notes:** (Read only property)

72.25.18  TypeString as String

**Function:** The type of key as string.
**Notes:**
EC, DSA, RSA or DH.
(Read only property)
72.26 class RC4MBS

72.26.1 class RC4MBS


**Function:** An implementation of the RC4 algorithm.

**Example:**

```vbnet
dim r as RC4MBS

// Encrypt:
r = new RC4MBS("Key")

dim OriginalData as string = ConvertEncoding("Hello World!", encodings.UTF8)
dim EncryptedData as string = r.Crypt(OriginalData)
MsgBox EncodeHex(EncryptedData)

// Same for decrypt:
r = new RC4MBS("Key")

dim UnencryptedData as string = r.Crypt(EncryptedData)
UnencryptedData = DefineEncoding(UnencryptedData, encodings.UTF8)
MsgBox UnencryptedData
```

**Notes:**

The source in RB is in the examples folder (see Crypto 1.5 via RB). This implementation inside the plugin is only to make the calculation faster.

In case RS will improve RB more to produce faster code, the plugin may be no longer needed.

72.26.2 Methods

72.26.3 Constructor(key as MemoryBlock)


**Function:** Initializes the class with the given key.

See also:

- 72.26.4 Constructor(key as string)
72.26. CLASS RC4MBS

72.26.4 Constructor(key as string)

Function: Initializes the class with the given key.
Example:

dim r as new RC4MBS("MyKey")
dim s as string = r.Crypt("MyData")

MsgBox EncodeHex(s)

Notes: Please make sure the key has right text encoding to avoid unexpected results.
See also:

• 72.26.3 Constructor(key as MemoryBlock)

72.26.5 Crypt(data as Memoryblock) as Memoryblock

Function: Encrypts or decrypts the given Memoryblock.
See also:

• 72.26.6 Crypt(data as string) as string

72.26.6 Crypt(data as string) as string

Function: Encrypts or decrypts the given string.
Example:

dim r as RC4MBS

// Encrypt:
r = new RC4MBS("Key")

dim OriginalData as string = ConvertEncoding("Hello World!", encodings.UTF8)
dim EncryptedData as string = r.Crypt(OriginalData)
MsgBox EncodeHex(EncryptedData)

// Same for decrypt:
r = new RC4MBS("Key")

dim UnencryptedData as string = r.Crypt(EncryptedData)
UnencryptedData = DefineEncoding(UnencryptedData, encodings.UTF8)
MsgBox UnencryptedData
Notes:

Returned string does not contain text, but binary data.
Please do not store in text fields in database without using EncodeHex or EncodeBase64 to make it a text string.
See also:

- 72.26.5 Crypt(data as Memoryblock) as Memoryblock
72.27. CLASS RC5MBS

72.27  class RC5MBS

72.27.1  class RC5MBS

Function: The class for RC5 encryption.
Example:

dim r as RC5MBS

// Encrypt:
r = new RC5MBS("Key")

dim iv as MemoryBlock
dim num as Integer
dim OriginalData as string = ConvertEncoding("Hello World!", encodings.UTF8)
dim EncryptedData as string = r.encryptCFB64(OriginalData, iv, num)
MsgBox EncodeHex(EncryptedData)

// Same for decrypt:
r = new RC5MBS("Key")

iv = nil
num = 0
dim UnencryptedData as string = r.decryptCFB64(EncryptedData, iv, num)
UnencryptedData = DefineEncoding(UnencryptedData, encodings.UTF8)
MsgBox UnencryptedData

Notes:
Do use to read existing RC5 encrypted things.
New projects may better use a better encryption.

72.27.2  Methods

72.27.3  Constructor(key as MemoryBlock, rounds as Integer = 16)

Function: The constructor.
Example:

dim r as new RC5MBS("MyKey")
dim s as string = r.Encrypt("MyData")
CHAPTER 72. ENCRYPTION AND HASH

MsgBox EncodeHex(s)

See also:

- 72.27.4 Constructor(key as string, rounds as Integer = 16)

72.27.4 Constructor(key as string, rounds as Integer = 16)

Function: The constructor.
Example:

```vbnet
dim r as new RC5MBS("MyKey")
dim s as string = r.Encrypt("MyData")
```

MsgBox EncodeHex(s)

Notes: Please make sure the key has right text encoding to avoid unexpected results.
See also:

- 72.27.3 Constructor(key as MemoryBlock, rounds as Integer = 16)

72.27.5 decrypt(data as Memoryblock) as Memoryblock

Function: Decrypts some data.
Notes: Low level variant without any block mode.
See also:

- 72.27.6 decrypt(data as string) as string

72.27.6 decrypt(data as string) as string

Function: Decrypts some data.
Notes:
Please make sure the key has right text encoding to avoid unexpected results.
Low level variant without any block mode.
See also:

- 72.27.5 decrypt(data as Memoryblock) as Memoryblock
72.27. **CLASS RC5MBS**

#### 72.27.7 `decryptCBC(data as Memoryblock, iv as memoryblock = nil) as Memoryblock`


**Function:** Decrypts some data.

**Notes:** With Cipher Block Chaining mode.

See also:

- 72.27.8 `decryptCBC(data as string, iv as memoryblock = nil) as string`

#### 72.27.8 `decryptCBC(data as string, iv as memoryblock = nil) as string`


**Function:** Decrypts some data.

**Notes:**

Please make sure the key has right text encoding to avoid unexpected results.

With Cipher Block Chaining mode.

See also:

- 72.27.7 `decryptCBC(data as Memoryblock, iv as memoryblock = nil) as Memoryblock`

#### 72.27.9 `decryptCFB64(data as Memoryblock, iv as memoryblock, byref num as Integer) as Memoryblock`


**Function:** Decrypts some data.

**Example:**

```plaintext
dim r as RC5MBS

// Encrypt:
r = new RC5MBS("Key")

dim iv as MemoryBlock
dim num as Integer
dim OriginalData as string = ConvertEncoding("Hello World!", encodings.UTF8)
dim EncryptedData as string = r.encryptCFB64(OriginalData, iv, num)
MsgBox EncodeHex(EncryptedData)

// Same for decrypt:
r = new RC5MBS("Key")

iv = nil
num = 0
dim UnencryptedData as string = r.decryptCFB64(EncryptedData, iv, num)
```
UnencryptedData = DefineEncoding(UnencryptedData, encodings.UTF8)
MsgBox UnencryptedData

**Notes:** with Cipher Feedback mode.
See also:

- 72.27.10 decryptCFB64(data as string, iv as memoryblock, byref num as Integer) as string

### 72.27.10 decryptCFB64(data as string, iv as memoryblock, byref num as Integer) as string

**Function:** Decrypts some data.
**Notes:**
Please make sure the key has right text encoding to avoid unexpected results.
with Cipher Feedback mode.
See also:

- 72.27.9 decryptCFB64(data as Memoryblock, iv as memoryblock, byref num as Integer) as Memoryblock

### 72.27.11 encrypt(data as Memoryblock) as Memoryblock

**Function:** Encrypts some data.
**Notes:** Low level variant without any block mode.
See also:

- 72.27.12 encrypt(data as string) as string

### 72.27.12 encrypt(data as string) as string

**Function:** Encrypts some data.
**Notes:**
Please make sure the key has right text encoding to avoid unexpected results.
Low level variant without any block mode.
See also:

- 72.27.11 encrypt(data as Memoryblock) as Memoryblock
72.27. CLASS RC5MBS

72.27.13 encryptCBC(data as Memoryblock, iv as memoryblock = nil) as Memoryblock

Function: Encrypts some data.
Notes: With Cipher Block Chaining mode.
See also:

- 72.27.14 encryptCBC(data as string, iv as memoryblock = nil) as string

72.27.14 encryptCBC(data as string, iv as memoryblock = nil) as string

Function: Encrypts some data.
Notes:
Please make sure the key has right text encoding to avoid unexpected results.
With Cipher Block Chaining mode.
See also:

- 72.27.13 encryptCBC(data as Memoryblock, iv as memoryblock = nil) as Memoryblock

72.27.15 encryptCFB64(data as Memoryblock, iv as memoryblock, byref num as Integer) as Memoryblock

Function: Encrypts some data.
Example:

dim r as RC5MBS

    // Encrypt:
    r = new RC5MBS("Key")

dim iv as MemoryBlock
dim num as Integer
dim OriginalData as string = ConvertEncoding("Hello World!", encodings.UTF8)
dim EncryptedData as string = r.encryptCFB64(OriginalData, iv, num)
MsgBox EncodeHex(EncryptedData)

    // Same for decrypt:
    r = new RC5MBS("Key")

    iv = nil
    num = 0
dim UnencryptedData as string = r.decryptCFB64(EncryptedData, iv, num)
UnencryptedData = DefineEncoding(UnencryptedData, encodings.UTF8)
MsgBox UnencryptedData

Notes: with Cipher Feedback mode.
See also:

- 72.27.16 encryptCFB64(data as string, iv as memoryblock, byref num as Integer) as string 12556

72.27.16 encryptCFB64(data as string, iv as memoryblock, byref num as Integer) as string

Function: Encrypts some data.
Notes:
Please make sure the key has right text encoding to avoid unexpected results.
with Cipher Feedback mode.
See also:

- 72.27.15 encryptCFB64(data as Memoryblock, iv as memoryblock, byref num as Integer) as Memoryblock 12555

72.27.17 encryptOFB64(data as Memoryblock, iv as memoryblock, byref num as Integer) as Memoryblock

Function: Encrypts some data.
Notes: with Output Feedback mode.
See also:

- 72.27.18 encryptOFB64(data as string, iv as memoryblock, byref num as Integer) as string 12556

72.27.18 encryptOFB64(data as string, iv as memoryblock, byref num as Integer) as string

Function: Encrypts some data.
Notes:
Please make sure the key has right text encoding to avoid unexpected results.
with Output Feedback mode.
See also:
72.27. CLASS RC5MBS

- 72.27.17 encryptOFB64(data as Memoryblock, iv as memoryblock, byref num as Integer) as Memoryblock
72.28 class SHA1MBS

72.28.1 class SHA1MBS


**Function:** An implementation of the SHA1 algorithm to calculate hash values.

**Example:**

```vbs
Dim f As FolderItem
Dim b As BinaryStream
Dim s As String
Dim m As New SHA1MBS

// process file part by part (big files)

f = SpecialFolder.Desktop.Child("test.jpg")
b = f.OpenAsBinaryFile(False)

While Not b.EOF
    s = b.Read(1000000)
    m.Add s
    WEnd

MsgBox EncodingToHexMBS(m.Result) + " using plugin with SHA1MBS"
```

**Notes:**
The source in RB is in the examples folder (see Crypto 1.5 via RB). This implementation inside the plugin is only to make the calculation faster.
In case RS will improve RB more to produce faster code, the plugin may be no longer needed.

72.28.2 Methods

72.28.3 Add(data as string)


**Function:** Adds more input bytes to the current hash.

**Example:**

```vbs
Dim s As New SHA1MBS
s.Reset
```
s.Add "Hello"
s.Add "World"
dim e as string=s.Result

Notes: Lasterror is set.

### 72.28.4 Hash(data as string) as string

**Function:** Returns the hash string for the given key.
**Example:**
MsgBox EncodeHex(SHA1MBS.Hash("Hello World"))

Notes:
The string returned is 20 bytes long (if successful) and has the 5 integer properties stored inside (in big endian format) which make up the key.
Does change the current hash value stored in the class itself.

### 72.28.5 HashFile(file as FolderItem, Hex as boolean = true) as string

**Function:** Calculates hash from whole file.
**Notes:**
Plugin will start a preemptive thread to read in file and process all data in chunks.
Returns hash on success or empty string on failure. May raise OutOfMemoryException or IOException.
This function works best if called from a thread.
If hex is true, the result is encoded as hex string.

### 72.28.6 HashText(data as string) as string

**Function:** Returns the hash string for the given key.
**Example:**
MsgBox EncodeHex(SHA1MBS.Hash("Hello World"))
Notes:
The string returned is 20 bytes long (if successful) and has the 5 integer properties stored inside (in big endian format) which make up the key.
Does change the current hash value stored in the class itself.
Returns the digest as text string with hexadecimal digits.

### 72.28.7 HMAC(key as string, data as string) as string

**Function:** Returns the a specific HASH based on the key and the data string.

**Example:**

```vbnet
Function HMAC(key as string, data as string) As string
    // Implementation by Matthijs van Duin
    # pragma DisableBackgroundTasks

    dim ikey, okey, k as string
    dim temp, i as Integer

    if (lenB(key) > 64) then
        k = Hash(key)
    else
        k = key
    end if

    for i = 1 to 64
        temp = ascB(midB(k, i, 1))
        ikey = ikey + chrB(BitwiseXor(temp, & h36))
        okey = okey + chrB(BitwiseXor(temp, & h5C))
    next

    return Hash(okey + Hash(ikey + data))
End Function
```

// test code:

```vbnet
// de7c9b85b8b78aa6be8a7a36f70a90701c9db4d9
dim s as string = SHA1MBS.HMAC("key", "The quick brown fox jumps over the lazy dog")
MsgBox EncodeHex(s)

// fbdb1d1b18aa6c08324b7d64b71fb76370690e1d
s = SHA1MBS.HMAC("", ")
MsgBox EncodeHex(s)
```
72.28. CLASS SHA1MBS

Notes: Above is the source code of this function.

72.28.8 Reset

MBS Encryption Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Resets the current hash value.

72.28.9 Result as string

MBS Encryption Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the current hash value. **Notes:**
- Returns "" on any error.
- Lasterror is set.

72.28.10 ResultText as string

MBS Encryption Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the current hash value. **Notes:**
- Returns the digest as text string with hexadecimal digits.
- Returns "" on any error.
- Lasterror is set.
72.29 class SHA256MBS

72.29.1 class SHA256MBS


Function: A class to calculate SHA-256 hashes.

Example:

```vba
dim s3 as string = SHA256MBS.Hash("")
dim e3 as string = EncodingToHexMBS(s3)
dim e4 as string = SHA256MBS.HashText("")

if e3 <> "e3b0c44298fc1c149afbf4c8996fb92427ae41e4649b934ca495991b7852b855" then
    break
else if e3 <> e4 then
    break
else
    MsgBox "OK"
end if
```

72.29.2 Methods

72.29.3 Add(data as string)


Function: Adds data to the hash calculation.

Example:

```vba
dim s as new SHA256MBS

s.Add "Franz jagt im komplett"
s.Add " verwahrlosten Taxi quer"
s.Add " durch Bayern"

dim r as string = s.ResultText
if r = "d32b568cd1b96d459e7291ebf4b25d007f275c9f13149beeb782fac0716613f8" then
    MsgBox "OK"
else
    MsgBox "Failed"
end if
```

Notes: Using this method you can process huge amounts of data by passing them in small portions.
72.29.4 Hash(data as string) as string

Function: Convenience function to quickly create a hash for a given string.
Example:

```vbnet
dim s2 as string = SHA256MBS.Hash("Frank jagt im komplett verwahrlosten Taxi quer durch Bayern")
dim e2 as string = EncodingToHexMBS(s2)
if e2 = "78206a866dbb2bf017d8e34274aed01a8ce405b69d45db30bafa00f5eecd7d5e" then
    MsgBox "OK"
else
    MessageBox "Failed"
end if
```

Notes:

Returns the digest as binary string.
Before you show it to the user, pass it through EncodingToHexMBS.

72.29.5 HashFile(file as FolderItem, Hex as boolean = true) as string

Function: Calculates hash from whole file.
Notes:

Plugin will start a preemptive thread to read in file and process all data in chunks.
Returns hash on success or empty string on failure. May raise OutOfMemoryException or IOException.
This function works best if called from a thread.
If hex is true, the result is encoded as hex string.

72.29.6 HashText(data as string) as string

Function: Convenience function to quickly create a hash for a given string.
Example:

```vbnet
dim s1 as string = SHA256MBS.HashText("Franz jagt im komplett verwahrlosten Taxi quer durch Bayern")
if s1 = "d32b568cd1b96d459e7291ebf4b25d007f275c9f13149beeb782fac0716613f8" then
    MsgBox "OK"
else
    MessageBox "Failed"
end if
```
Notes: Returns the digest as text string with hexadecimal digits.

### 72.29.7 HMAC(key as string, data as string) as string

**Function:** Returns the a specific HASH based on the key and the data string.

### 72.29.8 Reset

**Function:** Resets the hash class so you can reuse it for the SHA-256 hash.

### 72.29.9 Result as string

**Function:** The final hash.
**Notes:**
Returns the digest as binary string.
Before you show it to the user, pass it through EncodingToHexMBS.

### 72.29.10 ResultText as string

**Function:** The final hash.
**Notes:** Returns the digest as text string with hexadecimal digits.
72.30 class SHA3MBS

72.30.1 class SHA3MBS

Function: A class to calculate SHA-3 hashes.
Example:

```vbs```
dim t as string = "The quick brown fox jumps over the lazy dog"
dim s as new SHA3MBS(1088, 512)
s.Add t
dim h as string = s.ResultText(32)
```

// shows 4d741b6f1eb29eb2a9b9911e82f56fb8d73b04959d3d9d222895df602b28aa15
MsgBox h

72.30.2 Methods

72.30.3 Add(data as memoryblock)

Function: Adds data to the hash calculation.
Notes: Using this method you can process huge amounts of data by passing them in small portions.
See also:

- 72.30.4 Add(data as string)

72.30.4 Add(data as string)

Function: Adds data to the hash calculation.
Notes: Using this method you can process huge amounts of data by passing them in small portions.
See also:

- 72.30.3 Add(data as memoryblock)

72.30.5 Constructor(Rate as UInt32, capacity as UInt32)

Function: The constructor.
Example:
dim s as new SHA3MBS(1088, 512) // 256 bit
s.Add "Compute Me"
s.Add "Me too"
dim h as string = s.ResultText(256/8)

Notes: See example project or SHA-3 documentation for useful values for Rate and Capacity.

72.30.6 Hash(data as string, Rate as UInt32, capacity as UInt32, outputLength as Integer) as string

Function: Convenience function to quickly create a hash for a given string.
Example:

dim t as string = "The quick brown fox jumps over the lazy dog"
dim h as string = SHA3MBS.Hash(t, 1088, 512, 32)

// encode as text to display
h = EncodeHex(h)
// shows 4d741b6f1eb29cb2a9b9911c82f56fa8d73b04959d3d9d222895df6c0b28aa15
MsgBox h

Notes:
Returns the digest as text string with hexadecimal digits.
Or empty string in case of any error.
Before you show it to the user, pass it through EncodingToHexMBS.

72.30.7 HashText(data as string, Rate as UInt32, capacity as UInt32, outputLength as Integer) as string

Function: Convenience function to quickly create a hash for a given string.
Example:

dim t as string = "The quick brown fox jumps over the lazy dog"
dim h as string = SHA3MBS.HashText(t, 1088, 512, 32)
72.30. **CLASS SHA3MBS**

// shows 4d741b6f1eb29cb2a9b9911c82f56fa8d73b04959d3d9d222895df6c0b28aa15
MsgBox h

**Notes:**

Returns the digest as text string with hexadecimal digits.
Or empty string in case of any error.

**72.30.8  Reset(Rate as UInt32, capacity as UInt32)**

**Function:** Resets the hash class so you can reuse it for another SHA-3 hash.

**72.30.9  Result(outputLength as Integer) as string**

**Function:** The final hash in the requested length.
**Notes:**

Returns the digest as binary string.
Before you show it to the user, pass it through EncodingToHexMBS.

**72.30.10 ResultText(outputLength as Integer) as string**

**Function:** The final hash in the requested length.
**Example:**

```vbnet
dim t as string = "The quick brown fox jumps over the lazy dog"
dim s as new SHA3MBS(1088, 512)
```

`s.Add t`

```vbnet
dim h as string = s.ResultText(32)
```

// shows 4d741b6f1eb29cb2a9b9911c82f56fa8d73b04959d3d9d222895df6c0b28aa15
MsgBox h

**Notes:** Returns the digest as text string with hexadecimal digits.
CHAPTER 72. ENCRYPTION AND HASH

72.31 class SHA512MBS

72.31.1 class SHA512MBS


**Function:** A class to calculate SHA-512 hashes.

**Example:**

```vba
dim s3 as string = SHA512MBS.Hash("")
dim e3 as string = EncodingToHexMBS(s3)

if e3 = "CF83E1357EEFB8BDF1542850D66D8007D620E4050B5715DC83F4A921D36CE9CE47D0D13C5D85F2B0FF8318D2E"
then
    MsgBox "OK"
else
    MsgBox "Failed"
end if
```

**Notes:** Using this method you can process huge amounts of data by passing them in small portions.

72.31.2 Methods

72.31.3 Add(data as string)


**Function:** Adds data to the hash calculation.

**Example:**

```vba
dim s as new SHA512MBS

s.Add "Franz jagt im komplett"
s.Add " verwahrlosten Taxi quer"
s.Add " durch Bayern"

dim r as string = s.ResultText

if r = "AF9ED2DE700433B803240A552B41B5A472A6EF3F1431A722B2063C75E9F07451F67A28E37D09CDE769424C96A"
then
    MsgBox "OK"
else
    MsgBox "Failed"
end if
```

**Notes:** Using this method you can process huge amounts of data by passing them in small portions.
72.31.4 Hash(data as string) as string

**Function:** Convenience function to quickly create a hash for a given string.
**Example:**

```vbs
dim s2 as string = SHA512MBS.Hash("Frank jagt im komplett verwahrlosten Taxi quer durch Bayern")
dim e2 as string = EncodingToHexMBS(s2)

if e2 = "90B30EF9902AE4C4691D2D78C2F8FA0AA785AFBC5545286B310F68E91DD2299C84A2484F0419FC5EAA7DE56B4F8D8C944CEB5F8EEA0A9EEFF918300B019C92"
then
    MsgBox "OK"
else
    MsgBox "Failed"
end if
```

**Notes:**
- Returns the digest as binary string.
- Before you show it to the user, pass it through EncodingToHexMBS.

72.31.5 HashFile(file as FolderItem, Hex as boolean = true) as string

**Function:** Calculates hash from whole file.
**Notes:**
- Plugin will start a preemptive thread to read in file and process all data in chunks.
- Returns hash on success or empty string on failure. May raise OutOfMemoryException or IOException.
- This function works best if called from a thread.
- If hex is true, the result is encoded as hex string.

72.31.6 HashText(data as string) as string

**Function:** Convenience function to quickly create a hash for a given string.
**Example:**

```vbs
dim s1 as string = SHA512MBS.HashText("Franz jagt im komplett verwahrlosten Taxi quer durch Bayern")

if s1 = "AF9ED2DE700433B803240A552B41B5A472A6EF3FE1431A722B2063C75E9F07451F67A28E37D09CDE769424C96268E90E06B0008A0A9E99A5B8C92"
then
    MsgBox "OK"
else
end if
```
Notes: Returns the digest as text string with hexadecimal digits.

72.31.7  Reset

Function: Resets the hash class so you can reuse it for the SHA-256 hash.

72.31.8  Result as string

Function: The final hash.
Notes:
Returns the digest as binary string.
Before you show it to the user, pass it through EncodingToHexMBS.

72.31.9  ResultText as string

Function: The final hash.
Notes: Returns the digest as text string with hexadecimal digits.
72.32. **MODULE TWOFIGSMB**

72.32 **module TwofishMBS**

72.32.1 **module TwofishMBS**

**Function:** The module for Twofish encryption.
**Notes:** You can use this class for compatibility to PHP.

72.32.2 **Methods**

72.32.3 **DecryptCBC(Key as MemoryBlock, InputData as MemoryBlock, IV as MemoryBlock) as MemoryBlock**

**Function:** Decrypts with CBC mode and memoryblocks.
**Example:**
```
// key is 16 bytes, so 128 bit
dim key as MemoryBlock = "Hello World 1234"
dim IV as MemoryBlock = "1234567812345678" // 16 byte IV

// some UTF-8 input
dim InputText as string = "Just a test."
dim InputData as MemoryBlock = ConvertEncoding(InputText, encodings.UTF8)

dim EncryptedData as MemoryBlock = TwofishMBS.EncryptCBC(key, InputData, IV)
dim DecryptedData as MemoryBlock = TwofishMBS.DecryptCBC(key, encryptedData, IV)

// restore encoding
dim Decryptedtext as String = DefineEncoding(DecryptedData, encodings.UTF8)

// remove trailing zeros
dim p as Integer = instrb(Decryptedtext, chrb(0))
if p >0 then
    Decryptedtext = leftb(Decryptedtext, p-1)
end if

// check
if Decryptedtext = InputText then
    MsgBox "OK"
else
    MsgBox "Failed"
end if
```
CHAPTER 72. ENCRYPTION AND HASH

Notes:

IV can be nil for using zeros.
IV size should be 16 bytes.
Key length should be 16 for 128 bit, 24 for 192 bit or 32 for 256 bit.
InputData should be aligned to 16 byte size. Else the plugin will fill up with zero bytes.
See also:

- 72.32.4 DecryptCBC(Key as String, InputData as String, IV as String) as String

72.32.4 DecryptCBC(Key as String, InputData as String, IV as String) as String


Function: Decrypts with CBC mode and strings.

Example:

// key is 16 bytes, so 128 bit
dim key as String = "Hello World 1234"
dim IV as String = "1234567812345678" // 16 byte IV

// some UTF-8 input
dim InputText as string = "Just a test. "
dim InputData as String = ConvertEncoding(InputText, encodings.UTF8)

dim EncryptedData as String = TwofishMBS.EncryptCBC(key, InputData, IV)
dim DecryptedData as String = TwofishMBS.DecryptCBC(key, encryptedData, IV)

// restore encoding
dim Decryptedtext as String = DefineEncoding(DecryptedData, encodings.UTF8)

// remove trailing zeros

dim p as Integer = instrb(Decryptedtext, chrb(0))
if p > 0 then
    Decryptedtext = leftb(Decryptedtext, p-1)
end if

// check
if Decryptedtext = InputText then
    MsgBox "OK"
else
    MsgBox "Failed"
end if
72.32. MODULE TWOFSHMB2S

IV can be empty for using zeros.
IV size should be 16 bytes.
Key length should be 16 for 128bit, 24 for 192 bit or 32 for 256 bit.
InputData should be aligned to 16byte size. Else the plugin will fill up with zero bytes.
See also:

• 72.32.3 DecryptCBC(Key as MemoryBlock, InputData as MemoryBlock, IV as MemoryBlock) as MemoryBlock

72.32.5 DecryptECB(Key as MemoryBlock, InputData as MemoryBlock) as MemoryBlock

Function: Decrypts with ECB mode and memoryblocks.
Example:

// key is 16 bytes, so 128 bit
dim key as MemoryBlock = "Hello World 1234"

// some UTF-8 input
dim InputText as string = "Just a test. 

dim InputData as MemoryBlock = ConvertEncoding(InputText, encodings.UTF8)

dim EncryptedData as MemoryBlock = TwofishMBS.EncryptECB(key, InputData)

dim DecryptedData as MemoryBlock = TwofishMBS.DecryptECB(key, encryptedData)

// restore encoding
dim Decryptedtext as String = DefineEncoding(DecryptedData, encodings.UTF8)

// remove training zeros

dim p as Integer = instrb(Decryptedtext, chrb(0))
if p > 0 then
    Decryptedtext = leftb(Decryptedtext, p-1)
end if

// check
if Decryptedtext = InputText then
    MsgBox "OK"
else
    MsgBox "Failed"
end if

Notes:

Key length should be 16 for 128bit, 24 for 192 bit or 32 for 256 bit.
InputData should be aligned to 16byte size. Else the plugin will fill up with zero bytes.
72.32.6  DecryptECB(Key as String, InputData as String) as String

**Function:** Decrypts with ECB mode and strings.  
**Example:**

// key is 16 bytes, so 128 bit  
dim key as string = "Hello World 1234"

// some UTF-8 input  
dim InputData as string = "Just a test. "  
InputData = ConvertEncoding(InputData, encodings.UTF8)

dim Encrypted as string = TwofishMBS.EncryptECB(key, InputData)  
dim Decrypted as string = TwofishMBS.DecryptECB(key, encrypted)

// restore encoding  
Decrypted = DefineEncoding(Decrypted, encodings.UTF8)

// remove trailing zeros  
dim p as Integer = instrb(Decrypted, chrb(0))  
if p >0 then  
Decrypted = leftb(Decrypted, p-1)  
end if

// check  
if Decrypted = InputData then  
MsgBox "OK"  
else  
MsgBox "Failed"  
end if

**Notes:**

Key length should be 16 for 128bit, 24 for 192 bit or 32 for 256 bit.  
InputData should be aligned to 16byte size. Else the plugin will fill up with zero bytes.  
See also:

- 72.32.5 DecryptECB(Key as MemoryBlock, InputData as MemoryBlock) as MemoryBlock
72.32. MODULE TWOFOISHMBS

72.32.7 EncryptCBC(Key as MemoryBlock, InputData as MemoryBlock, IV as MemoryBlock) as MemoryBlock


**Example:**

```vba
// key is 16 bytes, so 128 bit
dim key as MemoryBlock = "Hello World 1234"
dim IV as MemoryBlock = "1234567812345678" // 16 byte IV

// some UTF-8 input
dim InputText as string = "Just a test."
dim InputData as MemoryBlock = ConvertEncoding(InputText, encodings.UTF8)

dim EncryptedData as MemoryBlock = TwofishMBS.EncryptCBC(key, InputData, IV)
dim DecryptedData as MemoryBlock = TwofishMBS.DecryptCBC(key, encryptedData, IV)

// restore encoding
dim DecryptedText as String = DefineEncoding(DecryptedData, encodings.UTF8)

// remove training zeros
dim p as Integer = instrb(DecryptedText, chrb(0))
if p > 0 then
    DecryptedText = leftb(DecryptedText, p-1)
end if

// check
if DecryptedText = InputText then
    MsgBox "OK"
else
    MsgBox "Failed"
end if
```

**Notes:**

IV can be nil for using zeros.
IV size should be 16 bytes.
Key length should be 16 for 128bit, 24 for 192 bit or 32 for 256 bit.
InputData should be aligned to 16byte size. Else the plugin will fill up with zero bytes.
See also:

- 72.32.8 EncryptCBC(Key as String, InputData as String, IV as String) as String
72.32.8 EncryptCBC(Key as String, InputData as String, IV as String) as String

Function: Encrypts with CBC mode and string.
Example:

// key is 16 bytes, so 128 bit
dim key as String = "Hello World 1234"
dim IV as String = "1234567812345678" // 16 byte IV

// some UTF-8 input
dim InputText as string = "Just a test. "
dim InputData as String = ConvertEncoding(InputText, encodings.UTF8)

dim EncryptedData as String = TwofishMBS.EncryptCBC(key, InputData, IV)
dim DecryptedData as String = TwofishMBS.DecryptCBC(key, encryptedData, IV)

// restore encoding
dim Decryptedtext as String = DefineEncoding(DecryptedData, encodings.UTF8)

// remove training zeros
dim p as Integer = instrb(Decryptedtext, chrb(0))
if p >0 then
Decryptedtext = leftb(Decryptedtext, p-1)
end if

// check
if Decryptedtext = InputText then
MsgBox "OK"
else
MsgBox "Failed"
end if

Notes:
IV can be empty for using zeros.
IV size should be 16 bytes.
Key length should be 16 for 128bit, 24 for 192 bit or 32 for 256 bit.
InputData should be aligned to 16byte size. Else the plugin will fill up with zero bytes.
See also:

- 72.32.7 EncryptCBC(Key as MemoryBlock, InputData as MemoryBlock, IV as MemoryBlock) as MemoryBlock
72.32. MODULE TWOFISHMBS

72.32.9 EncryptECB(Key as MemoryBlock, InputData as MemoryBlock) as MemoryBlock

Function: Encrypts with ECB mode and memoryblocks.
Example:

```vba
// key is 16 bytes, so 128 bit
dim key as MemoryBlock = "Hello World 1234"

// some UTF-8 input
dim InputText as string = "Just a test. 

dim InputData as MemoryBlock = ConvertEncoding(InputText, encodings.UTF8)

dim EncryptedData as MemoryBlock = TwofishMBS.EncryptECB(key, InputData)
dim DecryptedData as MemoryBlock = TwofishMBS.DecryptECB(key, encryptedData)

// restore encoding
dim DecryptedText as String = DefineEncoding(DecryptedData, encodings.UTF8)

// remove training zeros
dim p as Integer = instrb(DecryptedText, chrb(0))
if p >0 then
DecryptedText = leftb(DecryptedText, p-1)
end if

// check
if DecryptedText = InputText then
MsgBox "OK"
else
MsgBox "Failed"
end if
```

Notes:

Key length should be 16 for 128bit, 24 for 192 bit or 32 for 256 bit.
InputData should be aligned to 16byte size. Else the plugin will fill up with zero bytes.
See also:

- 72.32.10 EncryptECB(Key as String, InputData as String) as String

72.32.10 EncryptECB(Key as String, InputData as String) as String

Function: Encrypts with ECB mode and strings.
Example:
// key is 16 bytes, so 128 bit
dim key as string = "Hello World 1234"

// some UTF-8 input
dim InputData as string = "Just a test. "
InputData = ConvertEncoding(InputData, enodings.UTF8)

dim Encrypted as string = TwofishMBS.EncryptECB(key, InputData)
dim Decrypted as string = TwofishMBS.DecryptECB(key, encrypted)

// restore encoding
Decrypted = DefineEncoding(Decrypted, enodings.UTF8)

// remove training zeros
dim p as Integer = instrb(Decrypted, chrb(0))
if p > 0 then
Decrypted = leftb(Decrypted, p-1)
end if

// check
if Decrypted = InputData then
MsgBox "OK"
else
MsgBox "Failed"
end if

Notes:

Key length should be 16 for 128 bit, 24 for 192 bit or 32 for 256 bit.
InputData should be aligned to 16 byte size. Else the plugin will fill up with zero bytes.
See also:

- 72.32.9 EncryptECB(Key as MemoryBlock, InputData as MemoryBlock) as MemoryBlock
72.33. **CLASS UUIDMBS**

### 72.33 class UUIDMBS

**72.33.1 class UUIDMBS**

MBS Util Plugin, Plugin Version: 6.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class to create Universally Unique Identifier.

**Example:**

```vbscript
dim u as UUIDMBS
u=new UUIDMBS
MsgBox EncodingToHexMBS(u.ValueString)
```

**Notes:**

This class creates a 128 bit UUID (or UID or GUID) which is random.

On Mac OS X: Uses CoreFoundation system functions from Mac OS X 10.3.
On Linux: Uses unix system functions (libuuid).
On Windows: Uses UUID functions from RPC functions (Rpcrt4.dll).

If you need to validate a GUID or UUID, please check the Validate function.

### 72.33.2 Methods

**72.33.3 randomUUID as UUIDMBS**

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a random v4 GUID.

**Example:**

```vbscript
for i as Integer = 1 to 20
Listbox1.AddRow UUIDMBS.randomUUID.ValueFormattedString
next
```

**Notes:**

This is using random numbers.
It is unlikely, but possible to have duplicates.
The UUID function checks for that.
CHAPTER 72. ENCRYPTION AND HASH

72.33.4 UUID as UUIDMBS

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Creates a new UUID with system functions.

Notes:
On Mac OS X: Uses CoreFoundation system functions from Mac OS X 10.3.
On Linux: Uses unix system functions (libuuid).
On Windows: Uses UUID functions from RPC functions (Rpcrt4.dll).

72.33.5 Validate(UUID as string, mode as Integer = 0, requiredVersion as Integer = 0) as string

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Validates the given UUID/GUID.

Example:

// wrong
dim w1 as string = UUIDMBS.Validate("hello") // wrong due to missing {

dim w2 as string = UUIDMBS.Validate("550e8400-e29b-11d4-a716-446655440000",1) // wrong with, with z

dim w3 as string = UUIDMBS.Validate(" { 550e8400-e29b-11d40716-446655440000 } " )// wrong with missing minus

dim w4 as string = UUIDMBS.Validate(" { 550e8400-e29b-11d4-a716-446655440000 } " )// wrong with being too short

dim w5 as string = UUIDMBS.Validate(" { 550e8400-e29b-11d4-a716-446655440000 } dssdsd",1) // wrong as it has extra chars on end

dim w6 as string = UUIDMBS.Validate("550e8400-e29b-11d4-a716-446655440000",1,4) // wrong as not version 4

dim w7 as string = UUIDMBS.Validate("6a12a4d5-e9e6-4568-afcc-34c70b24a668",1,4) // wrong as not version 4

// okay

dim o1 as string = UUIDMBS.Validate("550e8400-e29b-11d4-a716-446655440000",1)

dim o2 as string = UUIDMBS.Validate(" { 550e8400-e29b-11d4-a716-446655440000 } ")

dim o3 as string = UUIDMBS.Validate("6a12a4d5-e9e6-4568-afcc-34c70b24a668", 1)

dim o4 as string = UUIDMBS.Validate("6a12a4d5-e9e6-4568-afcc-34c70b24a668", 3)

dim o5 as string = UUIDMBS.Validate(" { 550e8400-e29b-11d4-a716-446655440000 } ", 2)

dim o6 as string = UUIDMBS.Validate(" { 550e8400e29b11d4a716446655440000 } ", 2)

dim o7 as string = UUIDMBS.Validate(" { 550e8400-e29b-11d40716-446655440000 } ",4) // wrong with missing minus, but fixed

dim o8 as string = UUIDMBS.Validate("550e8400-e29b-11d40716-446655440000 ",4) // wrong with missing { , but fixed

dim o9 as string = UUIDMBS.Validate("6a12a4d5-e9e6-4568-afcc-34c70b24a668", 4, 4) // is version 4

dim o10 as string = UUIDMBS.Validate("6a12a4d5-e9e6-1568-afcc-34c70b24a668", 4, 1) // is version 1

dim o11 as string = UUIDMBS.Validate(" { 550e8400-e29b-11d4-a716-446655440000 } dssdsd",1+4) // wrong as it has extra chars on end, but fixed
break // check in debugger

Notes:
If the UUID is valid, you get it back.
If the UUID is invalid, you get an empty string back.

Pass 1 in mode to not require braces around UUID. Pass 2 to ignore minus characters. Pass 3 to combine those two.
You can add 4 to have the GUID fixed a bit like adding braces and minus chars if missing.
The requiredVersion parameter can be 1 to 5 to indicate the required GUID version you want to have.

72.33.6 ValueFormattedString as String

MBS Util Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The UUID as a 38 character formatted hex string.
**Example:**
```
    dim u as new UUIDMBS
    MsgBox u.ValueFormattedString
```

**Notes:** example output: { D3ED4292-FC09-11DF-8AC5-7C6D628C4C29 }

72.33.7 ValueHexString as String

MBS Util Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The UUID as a 32 character long hex string.
**Example:**
```
    dim u as new UUIDMBS
    MsgBox u.ValueHexString
```

**Notes:** example output: DCACAF4EFC0911DF92E37C6D628C4C29
72.33.8 ValueMemory as Memoryblock


72.33.9 ValueString as String


**Example:**

```vbnet
Dim u As New UUIDMBS
MsgBox u.ValueString
```

**Notes:** This string is not for user display as it contains unreadable characters.

72.33.10 Properties

72.33.11 Lasterror as Integer


**Notes:**

-1 is for failure, 0 for okay.
Windows or Mac OS error codes else.
(Read and Write property)

72.33.12 Valid as Boolean

MBS Util Plugin, Plugin Version: 6.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the constructor was able to create an UUID.

**Notes:** (Read and Write property)
72.34  class X509MBS

72.34.1  class X509MBS

Function: The class for a X509 certificate.
Notes: Currently this class only implements a part of the X509 functionality of OpenSSL. If needed, we could add more.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

72.34.2  Methods

72.34.3  Constructor

Function: The private constructor.

72.34.4  Copy as X509MBS

Function: Creates a copy of the certificate.

72.34.5  Data as String

Function: The data of the certificate.
Notes: You can write this to a PEM file.

72.34.6  Open(Data as MemoryBlock) as X509MBS

Function: Opens a X509 PEM file.
Notes: Line endings must be LF, not CR.
See also:

- 72.34.7 Open(Data as String) as X509MBS
72.34.7  **Open(Data as String) as X509MBS**

**Function:** Opens a X509 PEM file.
**Notes:**
Please read file via binarystream and pass here as string.
Line endings must be LF, not CR.
See also:

- 72.34.6 Open(Data as MemoryBlock) as X509MBS

72.34.8  **ReadFromPkcs12(Data as String, Pass as String, byref PKey as PKeyMBS, byref Cert as X509MBS, byref certs() as X509MBS) as Boolean**

**Function:** Reads certificate and private key from a PKCS12 file.
**Example:**

```vbnet
dim f as FolderItem = FindFile("test.p12")
dim b as BinaryStream = BinaryStream.Open(f)
dim s as string = b.Read(b.Length)
dim c as X509MBS
dim p as PKeyMBS
dim others() as X509MBS
if X509MBS.ReadFromPkcs12(s, "HelloWorld", p, c, others) then
    MsgBox c.Name
end if
```

**Notes:**
Data is the content of the PKCS12 file.
Returns true on success or false on failure.

72.34.9  **Properties**

72.34.10  **Description as String**

**Function:** The textual description of the certificate.
**Notes:**
This is only for human to read.
72.34. **CLASS X509MBS**

(Read only property)

### 72.34.11 Handle as Integer

**Function:** The internal object reference.
**Notes:** (Read and Write property)

### 72.34.12 IssuerName as Dictionary

**Function:** The issuer name.
**Notes:** (Read only property)

### 72.34.13 Name as String

**Function:** The name of the certificate.
**Notes:** (Read only property)

### 72.34.14 PublicKey as PKeyMBS

**Function:** Extracts public key.
**Notes:** (Read only property)

### 72.34.15 SerialNumber as String

**Function:** The serial number as text.
**Notes:** (Read only property)

### 72.34.16 SubjectName as Dictionary

**Function:** The subject name.
Notes: (Read only property)

### 72.34.17 Version as Integer


**Function:** The version of the file.

**Notes:**
Currently usually 2 for version 3.
(Read only property)
Chapter 73

Endian

73.1 Globals

73.1.1 EndianS16_BtoLMBS(n as Int16) as Int16

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.

**Notes:**

e.g.:
EndianS32_BtoNMBS(n as Integer) as Integer
EndianU16_LtoBMBS(n as Integer) as Integer

Details:
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

73.1.2 EndianS16_BtoNMBS(n as Int16) as Int16

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.

**Notes:**

e.g.:
EndianS32_BtoNMBS(n as Integer) as Integer
EndianU16_LtoBMBS(n as Integer) as Integer

Details:
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

### 73.1.3 EndianS16_LtoBMBS(n as Int16) as Int16

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.

**Notes:**

e.g.:
EndianS32_BtoNMBS(n as Integer) as Integer
EndianU16_LtoBMBS(n as Integer) as Integer

**Details:**
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

### 73.1.4 EndianS16_LtoNMBS(n as Int16) as Int16

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.

**Notes:**

e.g.:
EndianS32_BtoNMBS(n as Integer) as Integer
EndianU16_LtoBMBS(n as Integer) as Integer

**Details:**
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

### 73.1.5 EndianS16_NtoBMBS(n as Int16) as Int16

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.

**Notes:**

e.g.:
EndianS32_BtoNMBS(n as Integer) as Integer
73.1. **GLOBALS**

EndianU16.LtoBMBS(n as Integer) as Integer

Details:
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

### 73.1.6 **EndianS16_NtoLMBS(n as Int16) as Int16**

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.

**Notes:**

e.g.:
EndianS32_BtoNMBS(n as Integer) as Integer
EndianU16.LtoBMBS(n as Integer) as Integer

Details:
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

### 73.1.7 **EndianS32_BtoLMBS(n as Int32) as Int32**

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.

**Notes:**

e.g.:
EndianS32_BtoNMBS(n as Integer) as Integer
EndianU16.LtoBMBS(n as Integer) as Integer

Details:
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

### 73.1.8 **EndianS32_BtoNMBS(n as Int32) as Int32**

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.
Notes:

- **EndianS32_BtoNMBS(n as Integer) as Integer**
- **EndianU16_LtoBMBS(n as Integer) as Integer**

Details:
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

---

**73.1.9 EndianS32_LtoBMBS(n as Int32) as Int32**

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding. **Notes:**

- **EndianS32_BtoNMBS(n as Integer) as Integer**
- **EndianU16_LtoBMBS(n as Integer) as Integer**

Details:
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

---

**73.1.10 EndianS32_LtoNMBS(n as Int32) as Int32**

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding. **Notes:**

- **EndianS32_BtoNMBS(n as Integer) as Integer**
- **EndianU16_LtoBMBS(n as Integer) as Integer**

Details:
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.
73.1.11 **EndianS32_NtoBMBS(n as Int32) as Int32**

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.  
**Notes:**

e.g.:   
EndianS32_BtoNMBS(n as Integer) as Integer  
EndianU16_LtoBMBS(n as Integer) as Integer

Details:  
S for signed or U for unsigned.  
16 for short and 32 for integer.  
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

73.1.12 **EndianS32_NtoLMBS(n as Int32) as Int32**

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.  
**Notes:**

e.g.:   
EndianS32_BtoNMBS(n as Integer) as Integer  
EndianU16_LtoBMBS(n as Integer) as Integer

Details:  
S for signed or U for unsigned.  
16 for short and 32 for integer.  
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

73.1.13 **EndianSwap16MBS(n as UInt16) as UInt16**

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Swaps a 16 bit integer.

73.1.14 **EndianSwap32MBS(n as UInt32) as UInt32**

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Swaps a 32 bit integer.
73.1.15  EndianU16_BtoLMBS(n as UInt16) as UInt16

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.

**Notes:**

e.g.:
EndianS32_BtoNMBS(n as Integer) as Integer
EndianU16_LtoBMBS(n as Integer) as Integer

Details:
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

73.1.16  EndianU16_BtoNMBS(n as UInt16) as UInt16

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.

**Notes:**

e.g.:
EndianS32_BtoNMBS(n as Integer) as Integer
EndianU16_LtoBMBS(n as Integer) as Integer

Details:
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

73.1.17  EndianU16_LtoBMBS(n as UInt16) as UInt16

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.

**Notes:**

e.g.:
EndianS32_BtoNMBS(n as Integer) as Integer
EndianU16_LtoBMBS(n as Integer) as Integer

Details:
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

**73.1.18 EndianU16_LtoNMBS(n as UInt16) as UInt16**

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding. 
**Notes:**

e.g.:
EndianS32_BtoNMBS(n as Integer) as Integer
EndianU16_LtoBMBS(n as Integer) as Integer

Details:
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

**73.1.19 EndianU16_NtoBMBS(n as UInt16) as UInt16**

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding. 
**Notes:**

e.g.:
EndianS32_BtoNMBS(n as Integer) as Integer
EndianU16_LtoBMBS(n as Integer) as Integer

Details:
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

**73.1.20 EndianU16_NtoLMBS(n as UInt16) as UInt16**

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding. 
**Notes:**

e.g.:
EndianS32_BtoNMBS(n as Integer) as Integer
EndianU16_LtoBMBS(n as Integer) as Integer
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Details:
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

### 73.1.21 EndianU32_BtoLMBS(n as UInt32) as UInt32

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.

**Notes:**

e.g.:
EndianS32_BtoNMBS(n as Integer) as Integer
EndianU16_LtoBMBS(n as Integer) as Integer

Details:
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

### 73.1.22 EndianU32_BtoNMBS(n as UInt32) as UInt32

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.

**Notes:**

e.g.:
EndianS32_BtoNMBS(n as Integer) as Integer
EndianU16_LtoBMBS(n as Integer) as Integer

Details:
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

### 73.1.23 EndianU32_LtoBMBS(n as UInt32) as UInt32

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.

**Notes:**

e.g.:
73.1. GLOBALS

EndianS32_BtoNMBS(n as Integer) as Integer
EndianU16_LtoBMBS(n as Integer) as Integer

Details:
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

73.1.24  EndianU32_LtoNMBS(n as UInt32) as UInt32

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.
**Notes:**

e.g.:
EndianS32_BtoNMBS(n as Int32) as Int32
EndianU16_LtoBMBS(n as Integer) as Integer

Details:
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

73.1.25  EndianU32_NtoBMBS(n as UInt32) as UInt32

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.
**Notes:**

e.g.:
EndianS32_BtoNMBS(n as Integer) as Integer
EndianU16_LtoBMBS(n as Integer) as Integer

Details:
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.
73.1.26  **EndianU32_NtoLMBS(n as UInt32) as UInt32**

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No.  **Function:** Converts between BigEndian, LowEndian and Native byte encoding.

**Notes:**

e.g.:
EndianS32_BtoNMBS(n as Integer) as Integer
EndianU16_LtoBMBS(n as Integer) as Integer

**Details:**
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.
Chapter 74

Filemapping and Shared Memory

74.1  class FileMappingMBS

74.1.1  class FileMappingMBS

Function: 
The class for file mapping and shared memory access.

Notes: 
FilemappingMBS is a clever way to map the content of a file into memory without loading it. 
All applications are today loaded via mapping using the virtual memory manager. So your data is inside the file but some memory is used to cache it and you can access it as a memory block.

You can use this class in several ways:

1. file mapping read/write: Call the constructor with a file, open the file mapping and map memory in your process to read or write a file.
2. file mapping read/write with temporary files: You can create (multi gigabyte) temporary memory storage to store data too big for your application own address space.
3. a variant of 2 is to pass nil to the constructor on Windows to have the data stored in the swap files.
4. use Constructor without parameters and call CreateSharedMemory to create a shared memory object.
5. use Constructor without parameters and call OpenSharedMemory to access a shared memory object from another process.

For shared memory objects, be careful how you design it. Your shared memory should have a flag for editing, so one app does not edit while another app edits. Add a version value to check your application versions. Also add a value for the revision of the content so your apps can see modifications. Finally your app should handle the possibility that the application crashes while writing data. So the data can be in a bad state.
74.1.2 Methods

74.1.3 CloseFile


74.1.4 CloseFileMapping

MBS Util Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Closes the file mapping. Notes: Called by the destructor automatically. You close all views, than you close the file mapping and finally the file.

74.1.5 Constructor

MBS Util Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The dummy constructor used if you create a shared memory object. Notes: Use this constructor if you continue with OpenSharedMemory or CreateSharedMemory. See also:

- 74.1.6 Constructor(file as folderitem, write as boolean = false)

74.1.6 Constructor(file as folderitem, write as boolean = false)

MBS Util Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Opens or creates a file for file mapping. Notes: On Windows you can pass nil for the file parameter in order to have a file mapping using the swap files for back storage.

If write is true, the file is opened/created for write access. See also:

- 74.1.5 Constructor
74.1.7 CreateSharedMemory(name as string, Size as Int64) as boolean

MBS Util Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Creates a shared memory object with the given name.
Notes:
Returns true on success and false on failure. The name must be unique on the whole PC.

On success, you can call MapView to access memory.
isWriteable is set to true as shared memory objects are always read and write.

Fails if the shared memory object does exist. In this case, call OpenSharedMemory.
If your application crashes, on the next run the object will still exist on Mac OS X and Linux, so you need
  to open or delete & create it.

The Size should be a multiply of the page size (4096).
Sets DeleteSharedMemory to true so the object is deleted by the destructor. Set it to false if you don’t want
that behavior.

74.1.8 DeleteSharedMemory(name as string) as boolean

MBS Util Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. Function:
Deletes the shared memory object.
Notes:
Returns true on success and false on failure.
Called by the destructor if DeleteSharedMemory property is true.
See also:
  • 74.1.17 DeleteSharedMemory as Boolean

74.1.9 EnlargeFile(Size as Int64)

MBS Util Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Resizes the file to the given size.
Notes: This is for file mappings used as temporary storage with a temporary file. You use the Constructor
to create a temporary file. This file is enlarged to the size you need. Next you call OpenFileMapping and
MapView. To cleanup, you close all views and the file mapping. Now before you close the file, you should
call ShrinkFile. ShrinkFile reduces the file size to zero so the operation system doesn’t start flushing the
shared memory to the file. You can get this automatically if you set ShrinkFileOnClose to true.
74.1.10 MapView(mem as MemoryBlock, offset as Int64, Size as Int32) as FileMappingViewMBS

MBS Util Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Maps a portion of the file mapping or shared memory object into your application’s address space. **Notes:**

Returns nil on any error.
Using invalid offset/size values can lead into a bad mapping.
Here you can pass your own memory block for back storage.
Make sure your memory is 4 or 64 KB aligned, depending on platform.
(Windows need 64 KB, Mac only 4 KB)
See also:

- 74.1.11 MapView(offset as Int64, Size as Int32) as FileMappingViewMBS

74.1.11 MapView(offset as Int64, Size as Int32) as FileMappingViewMBS

MBS Util Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Maps a portion of the file mapping or shared memory object into your application’s address space. **Notes:**

Returns nil on any error.
Using invalid offset/size values can lead into a bad mapping.
(Windows need 64 KB, Mac only 4 KB)
See also:

- 74.1.10 MapView(mem as MemoryBlock, offset as Int64, Size as Int32) as FileMappingViewMBS

74.1.12 OpenFileMapping(MaxSize as Int64 = 0) as boolean

MBS Util Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Opens a file mapping. **Notes:**

If MaxSize is zero, the file size is used for creating the mapping.
The Size should be a multiple of the page size (4096).

Returns true on success.
Do not call after using OpenSharedMemory or CreateSharedMemory as they open the file mapping for you.
74.1. CLASS FILEMAPPING MBS

74.1.13 OpenSharedMemory(name as string) as boolean

MBS Util Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Opens a shared memory object with the given name.
**Notes:**
Returns true on success and false on failure.

On success, you can call MapView to access memory.
isWriteable is set to true as shared memory objects are always read and write.

Fails if the shared memory object does not exist. In this case, call CreateSharedMemory.

74.1.14 ShrinkFile

MBS Util Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Resizes the file to be empty.
**Notes:** Useful if you used EnlargeFile before.

74.1.15 Properties

74.1.16 DeleteFileOnClose as Boolean

MBS Util Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether to delete the file in the destructor.
**Notes:**
Useful if a temporary file is used as backstore.
(Read and Write property)

74.1.17 DeleteSharedMemory as Boolean

MBS Util Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:**
Whether to delete the shared memory object on closing.
**Notes:**
True by default after creating a shared memory object.

On Windows the shared memory objects exist as long as someone uses them.
On Mac OS X they live until you kill them even if your application is not running.
(Read and Write property)
See also:

- 74.1.8 DeleteSharedMemory(name as string) as boolean

74.1.18 File as FolderItem

MBS Util Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The file reference used for the backstore.
**Notes:** (Read only property)

74.1.19 isWriteable as Boolean

MBS Util Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether opened/created the file mapping with write permission.
**Notes:**
Opening files for reading only in order to read inside gives the operation system some optimization possibilities.
(Read only property)

74.1.20 Lasterror as Integer

MBS Util Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The last error code.
**Notes:**
On Windows typically a Windows error code.
On Linux and Mac OS X typically 0 for success and other values for errors.
(Read and Write property)

74.1.21 LasterrorString as String

MBS Util Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The string for the last error code.
**Notes:**
Only implemented for Windows.
Returns "" on any error.
(Read only property)
74.1.22 Name as String

MBS Util Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The name used for a named shared memory object. **Notes:** (Read only property)

74.1.23 ShrinkFileOnClose as Boolean

MBS Util Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to call ShrinkFile automatically from the destructor. **Notes:**
Default false.
(Read and Write property)
74.2 class FileMappingViewMBS

74.2.1 class FileMappingViewMBS

MBS Util Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for a file mapping view.
**Notes:** You can using file mapping with a 10 GB bit file. Your application has only 4 GB of address space
and effectively you can only use 2 GB. So you can try to map in a few hundred mega bytes at a given time.
But you can move this view on the large file to read the whole file. But remember: File mapping is only
efficient if you read a little data form the file and jump a lot. For reading the whole file, use a binarystream.

74.2.2 Methods

74.2.3 FlushView

MBS Util Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Flushes all data to the backstore.
**Notes:** For file mappings, the modified pages are written back to the file now. Normally you won’t call this
and let the operation system decide when to write the data to the file.

74.2.4 UnmapView

MBS Util Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Frees the memory allocated by the view.
**Notes:** Called automaticaly be the destructor.

74.2.5 Properties

74.2.6 FlushOnClose as Boolean

MBS Util Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether to call FlushView for you in the destructor.
**Notes:** (Read and Write property)

74.2.7 Memory as Memoryblock

MBS Util Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The memoryblock for this view.
Example:

```vbnet
dim v as FileMappingViewMBS // your view
v.memory.cstring(0)="Hello World"
```

Notes:
The memoryblock has no known size and it becomes invalid once this view object is destroyed. So keep a reference around as long as you use the memoryblock.
(Read only property)

### 74.2.8 Offset as Int64

MBS Util Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The offset used to create this view.
**Notes:** (Read only property)

### 74.2.9 Parent as FileMappingMBS

**Notes:** (Read only property)

### 74.2.10 Size as Integer

MBS Util Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The size in bytes of this view.
**Notes:** (Read only property)
Chapter 75

Files

75.1 class ACLEntryMBS

75.1.1 class ACLEntryMBS

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The class for an ACL entry. Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

75.1.2 Methods

75.1.3 Constructor


75.1.4 Copy(dest as ACLEntryMBS)

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Copy an ACL entry to another ACL entry. Notes: see also acl_copy_entry man page.
75.1.5 **GIDtoUUID(GID as Integer) as memoryblock**

MBS MacOSX Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries the UUID for a group id.  
**Notes:** Returns nil on any error.

75.1.6 **GroupFromGID(GID as Integer) as string**

MBS MacOSX Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries the group name for a Group ID.

75.1.7 **MaximalPermsetMask as UInt64**

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The maximal permset mask.  
**Notes:** see also acl_maximal_permset_mask_np man page.

75.1.8 **UIDtoUUID(UID as Integer) as memoryblock**

MBS MacOSX Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries the UUID for an user id.  
**Notes:** Returns nil on any error.

75.1.9 **UserFromUID(UID as Integer) as string**

MBS MacOSX Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries the user name for a UID.

75.1.10 **UUIDtoID(UUID as memoryblock, byref ID as Integer, byref Type as Integer) as boolean**

MBS MacOSX Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries the GID/UID for an UUID.  
**Notes:**  
Type is 0 for user and 1 for group.  
Returns true on success.
75.1.11 Properties

75.1.12 Handle as Integer

**Notes:** (Read only property)

75.1.13 Lasterror as Integer

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last error code.  
**Notes:** (Read and Write property)

75.1.14 Parent as Variant

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The parent object.  
**Notes:** (Read only property)

75.1.15 FlagSet as ACLFlagSetMBS

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Get or Set the flag set.  
**Notes:**  
see also acl_get_flagset_np/acl_set_flagset_np man page.  
(Read and Write computed property)

75.1.16 PermSet as ACLPermSetMBS

**Notes:**  
see also acl_get_permset/acl_set_permset man page.  
(Read and Write computed property)
75.1.17 PermSetMask as UInt64

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Get/Set the permission set mask.  
**Notes:**
see also acl_get_permset_mask_np/acl_set_permset_mask_np man page.  
(Read and Write computed property)

75.1.18 Qualifier as Memoryblock

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Get/Set the qualifier.  
**Notes:**
Value is a 16byte big GUID as memoryblock.  
see also acl_set_qualifier/acl_get_qualifier man page.  
(Read and Write computed property)

75.1.19 TagType as Integer

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets or gets the the tag type.  
**Notes:**
see also acl_get_tag_type/acl_set_tag_type man page.  
(Read and Write computed property)

75.1.20 Constants

75.1.21 kACLExtendedAllow = 1

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the ACL entry tag type bits.

75.1.22 kACLExtendedDeny = 2

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the ACL entry tag type bits.
75.1.23  kACLUndefinedTag = 0

MBS MacOSX Plugin, Plugin Version: 13.5.  **Function:** One of the ACL entry tag type bits.
75.2  class ACLFlagSetMBS

75.2.1  class ACLFlagSetMBS

Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

75.2.2  Methods

75.2.3  Add(flag as Integer)

Notes: see also acl_add_flag_np man page.

75.2.4  Clear

Notes: see also acl_clear_flags_np man page.

75.2.5  Constructor


75.2.6  Delete(flag as Integer)

Notes: see also acl_delete_flag_np man page.
75.2. CLASS ACLFLAGSETMBS

75.2.7 HasFlag(flag as Integer) as Boolean

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Checks if a flag is set in this flag set. **Notes:** see also acl_get_flag_np man page.

75.2.8 Properties

75.2.9 Handle as Integer

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference. **Notes:** (Read only property)

75.2.10 Lasterror as Integer

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last error code. **Notes:** (Read and Write property)

75.2.11 Parent as Variant

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The parent object. **Notes:** (Read only property)

75.2.12 Constants

75.2.13 kACLEntryDirectoryInherit = 64

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the flag constants.

75.2.14 kACLEntryFileInherit = 32

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the flag constants.
75.2.15 kACLEntryInherited = 16

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the flag constants.

75.2.16 kACLEntryLimitInherit = 128

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the flag constants.

75.2.17 kACLEntryOnlyInherit = 256

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the flag constants.

75.2.18 kACLFlagDeferInherit = 1

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the flag constants.

75.2.19 kACLFlagNoInherit = 131072

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the flag constants.
75.3. class ACLPermSetMBS

75.3.1 class ACLPermSetMBS

Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

75.3.2 Methods

75.3.3 Add(perm as Integer)

Notes: see also acl_add_perm man page.

75.3.4 Clear

Notes: see also acl_clear_perms man page.

75.3.5 Constructor


75.3.6 Delete(perm as Integer)

Notes: see also acl_delete_perm man page.
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75.3.7 HasPerm(perm as Integer) as Boolean

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Checks if permissions is included in this permission set. **Notes:** see also acl_get_perm_np man page.

75.3.8 Properties

75.3.9 Handle as Integer

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference. **Notes:** (Read only property)

75.3.10 Lasterror as Integer

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last error code. **Notes:** (Read and Write property)

75.3.11 Parent as Variant

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The parent object. **Notes:** (Read only property)

75.3.12 Constants

75.3.13 kACLAddFile = 4

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the individual object access permissions.

75.3.14 kACLAddSubDirectory = 32

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the individual object access permissions.
75.3. CLASS ACLPERMSETMBS

75.3.15  kACLAppendData = 32

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the individual object access permissions.

75.3.16  kACLChangeOwner = 8192

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the individual object access permissions.

75.3.17  kACLDelete = 16

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the individual object access permissions.

75.3.18  kACLDeleteChild = 64

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the individual object access permissions.

75.3.19  kACLExecute = 8

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the individual object access permissions.

75.3.20  kACLListDirectory = 2

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the individual object access permissions.

75.3.21  kACLMaxEntries = 128

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** Maximum number of entries.

75.3.22  kACLReadAttributes = 128

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the individual object access permissions.
75.3.23 kACLReadData = 2

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the individual object access permissions.

75.3.24 kACLReadExtraAttributes = 512

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the individual object access permissions.

75.3.25 kACLReadSecurity = 2048

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the individual object access permissions.

75.3.26 kACLSearch = 8

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the individual object access permissions.

75.3.27 kACLWriteAttributes = 256

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the individual object access permissions.

75.3.28 kACLWriteData = 4

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the individual object access permissions.

75.3.29 kACLWriteExtraAttributes = 1024

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the individual object access permissions.

75.3.30 kACLWriteSecurity = 4096

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the individual object access permissions.
75.4. CLASS ACLRIGHTMBS

75.4 class ACLRightMBS

75.4.1 class ACLRightMBS

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for ACL rights.

75.4.2 Methods

75.4.3 Constructor(count as Integer)

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Allocates and initializes the working storage for an ACL of at least count ACL entries. **Notes:** see also acl_init man page.

See also:

- 75.4.4 Constructor(text as string)

75.4.4 Constructor(text as string)

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates new ACL from text representation. **Notes:** see also acl_from_text man page.

See also:

- 75.4.3 Constructor(count as Integer)

75.4.5 CopyData(Native as boolean = false) as String

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates external representation. **Notes:** see also acl_copy_int man page.

75.4.6 CreateEntry as ACLEntryMBS

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new entry. **Notes:** see also acl_create_entry man page.

See also:

- 75.4.7 CreateEntry(entryIndex as Integer, tag_type as Integer = 1) as ACLEntryMBS
75.4.7 CreateEntry(entryIndex as Integer, tag_type as Integer = 1) as ACLEntryMBS

**Notes:** see also acl_create_entry man page.  
See also:
- 75.4.6 CreateEntry as ACLEntryMBS

75.4.8 DeleteEntry(entry as ACLEntryMBS)

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Deletes an entry.  
**Notes:** see also acl_delete_entry man page.

75.4.9 Duplicate as ACLRightMBS

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a duplicate of this right set.  
**Notes:** see also acl_dup man page.

75.4.10 Entries as ACLEntryMBS()

MBS MacOSX Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries array with all entries in this ACL.  
**Notes:**  
Lasterror is set.  
see also acl_get_entry man page.

75.4.11 Entry(entryIndex as Integer) as ACLEntryMBS

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries entry with given index.  
**Notes:**  
You can use constants kACLFirstEntry, kACLLastEntry or kACLNextEntry.  
see also acl_get_entry man page.
75.4. CLASS ACLRIGHTMBS

75.4.12 NewACL(count as Integer) as ACLRightMBS

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Allocates and initializes the working storage for an ACL of at least count ACL entries. **Notes:** see also acl_init man page.

75.4.13 NewACLFromExternal(data as string, native as boolean = false) as ACLRightMBS

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates new ACL object from external representation. **Notes:** see also acl_copy_ext man page.

75.4.14 NewACLFromFile(file as folderitem, type as Integer) as ACLRightMBS

MBS MacOSX Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates ACL object from file. **Notes:** see also acl_get_file man page.

See also:
- 75.4.15 NewACLFromFile(path as string, type as Integer) as ACLRightMBS

75.4.15 NewACLFromFile(path as string, type as Integer) as ACLRightMBS

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates ACL object from file. **Notes:** see also acl_get_file man page.

See also:
- 75.4.14 NewACLFromFile(file as folderitem, type as Integer) as ACLRightMBS

75.4.16 NewACLFromFilePointer(FilePointer as Integer) as ACLRightMBS

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates ACL object from FilePointer. **Notes:** see also acl_get_fd man page.

See also:
- 75.4.17 NewACLFromFilePointer(FilePointer as Integer, type as Integer) as ACLRightMBS
75.4.17 NewACLFromFilePointer(FilePointer as Integer, type as Integer) as ACLRightMBS


See also:

- 75.4.16 NewACLFromFilePointer(FilePointer as Integer) as ACLRightMBS

75.4.18 NewACLFromLink(path as string, type as Integer) as ACLRightMBS

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creates ACL object from link. Notes: see also acl_get_link_up man page.

75.4.19 NewACLFromText(text as string) as ACLRightMBS


75.4.20 SetFile(Path as string, type as Integer) as boolean


75.4.21 SetFilePointer(FilePointer as Integer) as boolean


See also:

- 75.4.22 SetFilePointer(FilePointer as Integer, type as Integer) as boolean
75.4. CLASS ACLRIGHTMBS

75.4.22 SetFilePointer(FilePointer as Integer, type as Integer) as boolean

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Applies this ACL to a file pointer. **Notes:** see also acl_set_fd_np man page.

See also:
- 75.4.21 SetFilePointer(FilePointer as Integer) as boolean

75.4.23 SetLink(Path as string, type as Integer) as boolean

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Applies this ACL to a link file. **Notes:** see also acl_set_link_np man page.

75.4.24 Size as Int64

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries size of binary representation. **Notes:** see also acl_size man page.

75.4.25 Text as String

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries text representation of this ACL. **Notes:** see also acl_to_text man page.

75.4.26 Valid as boolean

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Checks if ACL is valid in general. **Notes:** see also acl_valid man page.

75.4.27 ValidFile(Path as string, type as Integer) as boolean

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Checks if ACL is valid for this file. **Notes:** see also acl_valid_file_np man page.
75.4.28 ValidFilePointer(FilePointer as Integer, type as Integer) as boolean

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Checks if ACL is valid for this file pointer. **Notes:** see also acl_valid_fd_np man page.

---

75.4.29 Properties

75.4.30 Handle as Integer

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference. **Notes:** (Read only property)

---

75.4.31 Lasterror as Integer

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last error code. **Notes:** (Read and Write property)

---

75.4.32 FlagSet as ACLFlagSetMBS

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Get/Set the flag set. **Notes:** see also acl_get_flagset_np/acl_set_flagset_np man page. (Read and Write computed property)

---

75.4.33 Constants

75.4.34 kACLFirstEntry = 0

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the ACL Entry constants. **Notes:** Next entry.
75.4.35  kACLLastEntry = -2

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the ACL Entry constants.
**Notes:** Last entry.

75.4.36  kACLNextEntry = -1

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the ACL Entry constants.
**Notes:** Next entry.

75.4.37  kACLTypeAccess = 0

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the ACL types.
**Notes:** Posix 1003.1e type, not supported.

75.4.38  kACLTypeAFS = 2

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the ACL types.
**Notes:** No supported on Mac OS X, only for Linux/FreeBSD.

75.4.39  kACLTypeCODA = 3

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the ACL types.
**Notes:** No supported on Mac OS X, only for Linux/FreeBSD.

75.4.40  kACLTypeDefault = 1

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the ACL types.
**Notes:** Posix 1003.1e type, not supported.

75.4.41  kACLTypeExtended = 256

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the ACL types.
**Notes:** Extended ACL.
75.4.42 kACLTypeNTFS = 4

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the ACL types. **Notes:** No supported on Mac OS X, only for Linux/FreeBSD.

75.4.43 kACLTypeNWFS = 5

MBS MacOSX Plugin, Plugin Version: 13.5. **Function:** One of the ACL types. **Notes:** No supported on Mac OS X, only for Linux/FreeBSD.
75.5.1 ConsoleExecuteMBS(path as folderitem, arguments() as string, environment() as string) as Integer

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:**
Executes a new application.

**Notes:**
Use WindowsShellExecuteMBS on Windows.

Launch GUI tools on Mac OS X using /bin/open.
Returned value is the PID of the new process.
If the execution fails you still get a PID, but this process is terminated in a few milliseconds.

- arguments must have at least one member.
- See also:
  - 75.5.2 ConsoleExecuteMBS(path as string, arguments() as string, environment() as string) as Integer

75.5.2 ConsoleExecuteMBS(path as string, arguments() as string, environment() as string) as Integer

MBS Util Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:**
Executes a new application.

**Example:**

```plaintext
// launch an app using open

const sShellPath="/usr/bin/open"

dim a(1) as string
    dim e(-1) as string

    a(0)="open"  // must be the application name
    a(1)="/Applications/TextEdit.app"  // first parameter

    print str(ConsoleExecuteMBS(sShellPath,a,e))

// Launch app binary directly:

    dim aa(1) as string
    dim ee(-1) as string
```
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```vbnet
dim f as FolderItem

f=GetFolderItem("test.app").Child("Contents").Child("MacOS").Child("test")

aa(0)=f.ShellPath

print str(ConsoleExecuteMBS(f.ShellPath,aa,ee))
```

**Notes:**

Use WindowsShellExecuteMBS on Windows.

Launch GUI tools on Mac OS X using /bin/open.
Returned value is the PID of the new process.
If the execution fails you still get a PID, but this process is terminated in a few milliseconds.

Arguments must have at least one member.
See also:

- 75.5.1 ConsoleExecuteMBS(path as folderitem, arguments() as string, environment() as string) as Integer

**75.5.3 WindowsEjectVolumeMBS(driveLetter as string, byref status as Integer) as boolean**

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Unmounts and ejects the given drive.

**Example:**

```vbnet
// editField1 has the drive letter

dim status as Integer
dim b as Boolean = WindowsEjectVolumeMBS(EditField1.text, status)

if b then
    Select case status
        case 1
            MsgBox "Media in Drive " + EditField1.text + " has been ejected safely."
        case 2
            MsgBox "Media in Drive " + EditField1.text + " can be safely removed."
        else
            MsgBox "Failed?"
    end Select
else
    MsgBox "Failed."
```
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end if

Notes:
Status is set to 1 after an eject or 2 after an unmount without eject.
Returns true on success and false on failure.

75.5.4 ExchangeFilesMBS(first as folderitem, second as folderitem) as Integer

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. Function:
Exchanges two files.
Example:

```vbs
dim f1 as FolderItem = SpecialFolder.Desktop.Child("some picture.jpg")
dim f2 as FolderItem = SpecialFolder.Desktop.Child("another picture.jpg")

dim e as Integer = ExchangeFilesMBS(f1,f2)

MsgBox str(e) ' show error code (0=no error)
```

Notes:
On Mac swaps the contents of two files:

The ExchangeFilesMBS function allows programs to implement a "safe save" operation by creating and
writing a complete new file and swapping the contents. An folderitem, alias, FSSpec, or FSRef that refers
to the old file will now access the new data. The corresponding information in in-memory data structures
are also exchanged.

Either or both files may have open access paths. After the exchange, the access path will refer to the opposite
file’s data (that is, to the same data it originally referred, which is now part of the other file).

On Windows files are renamed so they exchange their paths.

PS: Real Studio does not notice the change, so the folderitems you pass should no longer be used. To access
the file, please make new folderitem with parent.truechild(filename).
75.5.5 **FolderItemToPathMBS(file as folderitem) as string**

MBS MacOSX Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a unix path for the given folderitem.

**Notes:**
Works only on Mac OS X.
This function is not very good, as Apple doesn’t document for FSRefMakePath what path it returns, which encoding the path uses (maybe UTF8) and when it fails.
(e.g. it currently doesn’t work for volumes)

75.5.6 **NewFolderItemFSRefMBS(fsref as memoryblock) as FolderItem**

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a FolderItem from a specified FSRef.

**Example:**
```
dim f,g as folderItem
dim m as memoryBlock

f=getfolderItem(""")

m=f.FSRefMBS

g=NewFolderItemFSRefMBS(m)
msgBox g.absolutePath // same path as f
```

**Notes:** Only useful for toolbox calls and on Mac OS 9 and later.

75.5.7 **NewFolderItemFSRefNameMBS(fsref as memoryblock,name as string) as FolderItem**

MBS Util Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a FolderItem from a specified FSRef.

**Notes:** Only useful for toolbox calls and on Mac OS 9 and later.

75.5.8 **NewFolderItemMBS(vRefNum as Integer, parID as Integer, name as String) as FolderItem**

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a FolderItem from a specified volume, the item’s directory ID and its name.
Notes: The vRefNum with value -1 is the boot volume on Mac OS.

75.5.9 NewVolumeFolderItemMBS(vRefNum as Integer) as FolderItem

Example:

```vba
dim f as folderItem
f=NewVolumeFolderItemMBS(-1)
msgBox f.absolutePath
```

Notes:
The vRefNum with value -1 is the boot volume on Mac OS.
Pass in the vRefNum of any mounted volume and it returns the Volume as a FolderItem.
Returns nil if the vRefNum was invalid.

75.5.10 PathToFolderItemMBS(path as string) as folderitem

MBS MacOSX Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem for the given unix path.
Notes:
Works only on Mac OS X.
This function is not very good, as Apple doesn't document which path is expected, which encoding the path should use (maybe UTF8) and when it fails.
(e.g. it currently doesn’t work for paths with "textasciitilde " inside)

75.5.11 VolResolveIDMBS(volume as FolderItem, id as Integer) as FolderItem

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
return a FolderItem for a passed FileID or DirID. If the item can not be resolved, nil is returned instead.
The first parameter specified the volume where you want to resolve the ID on.
Example:

```vba
dim f,g as folderItem
f=SpecialFolder.Desktop
```
g=VolResolveIDMBS(f,f.MacDirID)
msgBox f.absolutePath

**Notes:** This function returns a FolderItem for a passed FileID or DirID. If the item can not be resolved, nil is returned instead.
See also:

- 75.5.12 VolResolveIDMBS(vRefNum as Integer, id as Integer) as FolderItem

### 75.5.12 VolResolveIDMBS(vRefNum as Integer, id as Integer) as FolderItem

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
return a FolderItem for a passed FileID or DirID. If the item can not be resolved, nil is returned instead.
The first parameter specified the volume where you want to resolve the ID on.
**Example:**
```
Dim f,g as folderItem
f=SpecialFolder.Desktop
f=VolResolveIDMBS(f.macVRefNum,f.MacDirID)
msgBox f.absolutePath
```

**Notes:**
This function returns a FolderItem for a passed FileID or DirID. If the item can not be resolved, nil is returned instead.
The first parameter specified the volume where you want to resolve the ID on. There is a bug in RB which may say "type mismatch error" in RB. Than use the other variant of that function.
See also:

- 75.5.11 VolResolveIDMBS(volume as FolderItem, id as Integer) as FolderItem

### 75.5.13 AdminToolsMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Returns a folderitem to the admin tools folder on Windows.
**Notes:** Returns on Windows the common admin tools folder for domain = -32766 and user's admin tools folder if domain = -32763.
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### 75.5.14 CookiesMBS as folderitem

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns a folderitem to the Cookie folder on Windows.

### 75.5.15 HistoryMBS as folderitem

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns a folderitem to the history folder on Windows.

### 75.5.16 InternetCacheMBS as folderitem

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns a folderitem to the Internet Cache folder on Windows.

### 75.5.17 WindowsStartMenuMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns a folderitem to the start menu folder on Windows.

### 75.5.18 SetCurrentWorkingDirectoryMBS(path as folderitem) as boolean

MBS Util Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the current working directory for the application. **Example:**

```plaintext
MsgBox SpecialFolder.CurrentWorkingDirectory.AbsolutePath
call SetCurrentWorkingDirectoryMBS(SpecialFolder.Desktop)
MsgBox SpecialFolder.CurrentWorkingDirectory.AbsolutePath
```

**Notes:**

This is sometimes needed if some library references files relative to this current working directory. Returns true on success and false on failure.
75.5.19 GetDriveTypeMBS(path as string) as Integer

MBS Win Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Determines whether a disk drive is a removable, fixed, CD-ROM, RAM disk, or network drive.

**Example:**

```plaintext
if GetDriveTypeMBS("E:" ) = 4 then
  msgbox "network drive"
end if
```

**Notes:**

Path: The root directory for the drive.

Possible values:

- **0** Unknown: The drive type cannot be determined.
- **1** Error: The root path is invalid; for example, there is no volume mounted at the specified path.
- **2** Removable: The drive has removable media; for example, a floppy drive, thumb drive, or flash card reader.
- **3** Fixed: The drive has fixed media; for example, a hard disk drive or flash drive.
- **4** Remote: The drive is a remote (network) drive.
- **5** CD-ROM: The drive is a CD-ROM drive.
- **6** RAM Disk: The drive is a RAM disk.

---

75.6 class DADiskMBS

75.6.1 class DADiskMBS

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for a disk in Disk Arbitration.

**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.
75.6. CLASS DADISKMBS

75.6.2 Methods

75.6.3 BSDName as string

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Obtains the BSD device name for the specified disk.

**Example:**
```vba
dim session as new DASessionMBS
dim d as DADiskMBS = DADiskMBS.CreateFromVolume(session,volume(0))
MsgBox d.BSDName
```

75.6.4 Constructor


75.6.5 CreateFromBSDName(session as DASessionMBS, name as string) as DADiskMBS


**Notes:**
- session: The DASession in which to contact Disk Arbitration.
- name: The BSD device name.

Returns a reference to a new DADisk.

75.6.6 CreateFromVolume(session as DASessionMBS, volume as folderitem) as DADiskMBS


**Notes:** Creates a new disk object.
75.6.7 **CreateFromVolumePath**(session as DASessionMBS, path as string) as DADiskMBS


**Notes:**

- session: The DASession in which to contact Disk Arbitration.
- path: The BSD mount point.

Available in OS X v10.7 and later.

75.6.8 **Description as dictionary**


**Example:**

```vbnet
dim session as new DASessionMBS
dim d as DADiskMBS = DADiskMBS.CreateFromVolume(session,volume(0))
dim dic as Dictionary = d.Description
MsgBox dic.Value(d.kDADiskDescriptionVolumeNameKey)
```

**Notes:**

This function will contact Disk Arbitration to acquire the latest description of the specified disk, unless this function is called on a disk object passed within the context of an event, in which case the description is current as of that event.

Available in OS X v10.4 and later.

75.6.9 **kDADiskDescriptionBusNameKey** as string

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the description dictionary.

**Notes:** The value in the dictionary for this key is a String.

75.6.10 **kDADiskDescriptionBusPathKey** as string

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the description dictionary.
Notes: The value in the dictionary for this key is a String.

75.6.11 kDADiskDescriptionDeviceGUIDKey as string

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the keys for the description dictionary. Notes: The value in the dictionary for this key is a memoryblock.

75.6.12 kDADiskDescriptionDeviceInternalKey as string

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the keys for the description dictionary. Notes: The value in the dictionary for this key is a Boolean.

75.6.13 kDADiskDescriptionDeviceModelKey as string

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the keys for the description dictionary. Notes: The value in the dictionary for this key is a String.

75.6.14 kDADiskDescriptionDevicePathKey as string

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the keys for the description dictionary. Notes: The value in the dictionary for this key is a String.

75.6.15 kDADiskDescriptionDeviceProtocolKey as string

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the keys for the description dictionary. Notes: The value in the dictionary for this key is a String.

75.6.16 kDADiskDescriptionDeviceRevisionKey as string

75.6.17  kDADiskDescriptionDeviceUnitKey as string

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the keys for the description dictionary. Notes: The value in the dictionary for this key is a Number.

75.6.18  kDADiskDescriptionDeviceVendorKey as string

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the keys for the description dictionary. Notes: The value in the dictionary for this key is a String.

75.6.19  kDADiskDescriptionMediaBlockSizeKey as string

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the keys for the description dictionary. Notes: The value in the dictionary for this key is a Number.

75.6.20  kDADiskDescriptionMediaBSDMajorKey as string

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the keys for the description dictionary. Notes: The value in the dictionary for this key is a Number.

75.6.21  kDADiskDescriptionMediaBSDMinorKey as string

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the keys for the description dictionary. Notes: The value in the dictionary for this key is a Number.

75.6.22  kDADiskDescriptionMediaBSDNameKey as string

75.6. **CLASS DADISKMBS**

Notes: The value in the dictionary for this key is a String.

75.6.23  **kDADiskDescriptionMediaBSDUnitKey as string**

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the description dictionary.
Notes: The value in the dictionary for this key is a Number.

75.6.24  **kDADiskDescriptionMediaContentKey as string**

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the description dictionary.
Notes: The value in the dictionary for this key is a String.

75.6.25  **kDADiskDescriptionMediaEjectableKey as string**

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the description dictionary.
Notes: The value in the dictionary for this key is a Boolean.

75.6.26  **kDADiskDescriptionMediaIconKey as string**

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the description dictionary.
Notes: The value in the dictionary for this key is a Dictionary.

75.6.27  **kDADiskDescriptionMediaKindKey as string**

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the description dictionary.
Notes: The value in the dictionary for this key is a String.

75.6.28  **kDADiskDescriptionMediaLeafKey as string**

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the description dictionary.
Notes: The value in the dictionary for this key is a Boolean.

75.6.29 kDADiskDescriptionMediaNameKey as string

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the keys for the description dictionary. Notes: The value in the dictionary for this key is a String.

75.6.30 kDADiskDescriptionMediaPathKey as string

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the keys for the description dictionary. Notes: The value in the dictionary for this key is a String.

75.6.31 kDADiskDescriptionMediaRemovableKey as string

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the keys for the description dictionary. Notes: The value in the dictionary for this key is a Boolean.

75.6.32 kDADiskDescriptionMediaSizeKey as string

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the keys for the description dictionary. Notes: The value in the dictionary for this key is a Number.

75.6.33 kDADiskDescriptionMediaTypeKey as string

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the keys for the description dictionary. Notes: The value in the dictionary for this key is a String.

75.6.34 kDADiskDescriptionMediaUUIDKey as string

75.6.35  kDADiskDescriptionMediaWholeKey as string

Notes: The value in the dictionary for this key is a Boolean.

75.6.36  kDADiskDescriptionMediaWritableKey as string

Notes: The value in the dictionary for this key is a Boolean.

75.6.37  kDADiskDescriptionVolumeKindKey as string

Notes: The value in the dictionary for this key is a String.

75.6.38  kDADiskDescriptionVolumeMountableKey as string

Notes: The value in the dictionary for this key is a Boolean.

75.6.39  kDADiskDescriptionVolumeNameKey as string

Notes: The value in the dictionary for this key is a String.

75.6.40  kDADiskDescriptionVolumeNetworkKey as string

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Notes: The value in the dictionary for this key is a Boolean.

75.6.41 kDADiskDescriptionVolumePathKey as string

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the keys for the description dictionary. Notes: The value in the dictionary for this key is a folderitem.

75.6.42 kDADiskDescriptionVolumeUUIDKey as string

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the keys for the description dictionary. Notes: The value in the dictionary for this key is a CFUUIDMBS.

75.6.43 Options as Integer


75.6.44 SetOptions(options as Integer, value as boolean) as Integer

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Sets the options for the specified disk. Notes:

options: The options to set or clear.
value: Pass true to set options; otherwise pass false to clear options.
Returns result code.

75.6.45 WholeDisk as DADiskMBS


75.6.46 Properties

75.6.47 Handle as Integer

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference. **Notes:** (Read and Write property)
75.7 class DADissenterMBS

75.7.1 class DADissenterMBS

**Example:**
```
dim d as new DADissenterMBS(11, "Write Error")
```
MsgBox str(d.Status)+" "+d.StatusString

75.7.2 Methods

75.7.3 Constructor(status as Integer, s as string)

**Example:**
```
dim d as new DADissenterMBS(11, "Write Error")
```
MsgBox str(d.Status)+" "+d.StatusString

**Notes:**
status: The return code.
s: The return code string. Pass empty string for no reason.

75.7.4 Properties

75.7.5 Handle as Integer

**Notes:** (Read and Write property)
75.7.6 Status as Integer

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Obtains the return code. **Notes:** (Read only property)

75.7.7 StatusString as String

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Obtains the return code string. **Notes:** (Read only property)

75.7.8 Constants

75.7.9 kDAReturnBadArgument = & hF8DA0003

MBS MacOSX Plugin, Plugin Version: 13.2. **Function:** One of the error constants. **Notes:** Bad Argument

75.7.10 kDAReturnBusy = & hF8DA0002

MBS MacOSX Plugin, Plugin Version: 13.2. **Function:** One of the error constants. **Notes:** Busy

75.7.11 kDAReturnError = & hF8DA0001

MBS MacOSX Plugin, Plugin Version: 13.2. **Function:** One of the error constants. **Notes:** Error

75.7.12 kDAReturnExclusiveAccess = & hF8DA0004

MBS MacOSX Plugin, Plugin Version: 13.2. **Function:** One of the error constants. **Notes:** Exclusive Access
75.7.13 kDAReturnNoResources = & hF8DA0005

MBS MacOSX Plugin, Plugin Version: 13.2. **Function:** One of the error constants.  
**Notes:** No Resources

75.7.14 kDAReturnNotFound = & hF8DA0006

MBS MacOSX Plugin, Plugin Version: 13.2. **Function:** One of the error constants.  
**Notes:** Not found

75.7.15 kDAReturnNotMounted = & hF8DA0007

MBS MacOSX Plugin, Plugin Version: 13.2. **Function:** One of the error constants.  
**Notes:** Not mounted

75.7.16 kDAReturnNotPermitted = & hF8DA0008

MBS MacOSX Plugin, Plugin Version: 13.2. **Function:** One of the error constants.  
**Notes:** Not permitted

75.7.17 kDAReturnNotPrivileged = & hF8DA0009

MBS MacOSX Plugin, Plugin Version: 13.2. **Function:** One of the error constants.  
**Notes:** Not privileged

75.7.18 kDAReturnNotReady = & hF8DA000A

MBS MacOSX Plugin, Plugin Version: 13.2. **Function:** One of the error constants.  
**Notes:** Not ready

75.7.19 kDAReturnNotWritable = & hF8DA000B

MBS MacOSX Plugin, Plugin Version: 13.2. **Function:** One of the error constants.  
**Notes:** Not writable
75.7. **CLASS DADISSENTERMBS**

### 75.7.20 kDAReturnSuccess = 0

MBS MacOSX Plugin, Plugin Version: 13.2. **Function:** One of the error constants. **Notes:** Success

### 75.7.21 kDAReturnUnsupported = & hF8DA000C

MBS MacOSX Plugin, Plugin Version: 13.2. **Function:** One of the error constants. **Notes:** Unsupported
75.8 class DarwinChmodMBS

75.8.1 class DarwinChmodMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class to change the owner or mode of a file on Mac OS X.

**Example:**
```
dim c as DarwinChmodMBS
dim userfolder as FolderItem
dim darwinResult as Integer
dim s as string

C=new DarwinChmodMBS
userFolder=SpecialFolder.Desktop.Child("chmod.rb")
s=userFolder.unixpathMBS

darwinResult = c.chmod( s, & B111111111 ) // all rwx
// 1 = ———x
// 2 = ——–wx
// 7 = ——-rwx
// 8 = ——x—

darwinResult=c.lstat(s)

MsgBox s+""+str(darwinResult)+""+str(c.error)
```

75.8.2 Methods

75.8.3 chflags(path as string, flags as Integer) as Integer

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The file whose name is given by path has its flags changed to flags.

**Notes:**
The flags specified are formed by or'ing the following values

- **UF_NODUMP** 0x00000001 Do not dump the file.
- **UF_IMMUTABLE** 0x00000002 The file may not be changed.
- **UF_APPEND** 0x00000004 The file may only be appended to.
- **UF_OPAQUE** 0x00000008 Directory is opaque wrt. union
The "UF_IMMUTABLE" and "UF_APPEND" flags may be set or unset by either the owner of a file or the super-user.

The "SF_IMMUTABLE" and "SF_APPEND" flags may only be set or unset by the super-user. They may be set at any time, but normally may only be unset when the system is in single-user mode.

You can type "man 2 chflags" on the Mac OS X terminal for more details.

Upon successful completion, a value of 0 is returned. Otherwise, -1 is returned. Returns -2 on bad parameter or if function is not available.

Chflags() will fail if:

- ENOTDIR  A component of the path prefix is not a directory.
- ENAMETOOLONG  A component of a pathname exceeded \{ NAME_MAX \} characters, or an entire path name exceeded \{ PATH_MAX \} characters.
- ENOENT  The named file does not exist.
- EACCES  Search permission is denied for a component of the path prefix.
- ELOOP  Too many symbolic links were encountered in translating the pathname.
- EPERM  The effective user ID does not match the owner of the file and the effective user ID is not the super-user.
- EROFS  The named file resides on a read-only file system.
-EFAULT  Path points outside the process’s allocated address space.
- EIO  An I/O error occurred while reading from or writing to the file system.

75.8.4  chmod(path as string, mode as Integer) as Integer

Sets the file permission bits of the file specified by the pathname path to mode.

Example:

```dim f as FolderItem
dim g as FolderItem

f=SpecialFolder.Desktop.Child("test1")
g=SpecialFolder.Desktop.Child("test2")

dim d as DarwinChmodMBS
d=new DarwinChmodMBS
if d.stat(f.UnixpathMBS)=0 then // read mode```
if d.chmod(g.UnixpathMBS,d.mode)=0 then // set mode  
// worked  
end if  
end if

Notes:
Chmod() verifies that the process owner (user) either owns the file specified by path (or fd), or is the super-user. A mode is created from or’d permission bit masks like this:

<table>
<thead>
<tr>
<th>Bit</th>
<th>Description</th>
<th>Mask</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRWXU</td>
<td>RWX mask for owner</td>
<td>&amp; o0000700</td>
</tr>
<tr>
<td>IRUSR</td>
<td>R for owner</td>
<td>&amp; o0000400</td>
</tr>
<tr>
<td>IWUSR</td>
<td>W for owner</td>
<td>&amp; o0000200</td>
</tr>
<tr>
<td>IXUSR</td>
<td>X for owner</td>
<td>&amp; o0000100</td>
</tr>
<tr>
<td>IRWXG</td>
<td>RWX mask for group</td>
<td>&amp; o0000070</td>
</tr>
<tr>
<td>IRGRP</td>
<td>R for group</td>
<td>&amp; o0000040</td>
</tr>
<tr>
<td>IWGRP</td>
<td>W for group</td>
<td>&amp; o0000020</td>
</tr>
<tr>
<td>IXGRP</td>
<td>X for group</td>
<td>&amp; o0000010</td>
</tr>
<tr>
<td>IRWXO</td>
<td>RWX mask for other</td>
<td>&amp; o0000007</td>
</tr>
<tr>
<td>IROTH</td>
<td>R for other</td>
<td>&amp; o0000004</td>
</tr>
<tr>
<td>IWOTH</td>
<td>W for other</td>
<td>&amp; o0000002</td>
</tr>
<tr>
<td>IXOTH</td>
<td>X for other</td>
<td>&amp; o0000001</td>
</tr>
<tr>
<td>ISUID</td>
<td>set user id on execution</td>
<td>&amp; o0004000</td>
</tr>
<tr>
<td>ISGID</td>
<td>set group id on execution</td>
<td>&amp; o0002000</td>
</tr>
<tr>
<td>ISVTX</td>
<td>save swapped text even after use</td>
<td>&amp; o0001000</td>
</tr>
</tbody>
</table>

The ISVTX (the sticky bit) indicates to the system which executable files are shareable (the default) and the system maintains the program text of the files in the swap area. The sticky bit may only be set by the super user on shareable executable files.

If mode ISVTX (the 'sticky bit') is set on a directory, an unprivileged user may not delete or rename files of other users in that directory. The sticky bit may be set by any user on a directory which the user owns or has appropriate permissions. For more details of the properties of the sticky bit, see sticky(8).

Writing or changing the owner of a file turns off the set-user-id and set-group-id bits unless the user is the super-user. This makes the system somewhat more secure by protecting set-user-id (set-group-id) files from remaining set-user-id (set-group-id) if they are modified, at the expense of a degree of compatibility.

You can type ”man 2 chmod” on the Mac OS X terminal for more details.

Upon successful completion, a value of 0 is returned. Otherwise, -1 is returned. Returns -2 on bad parameter or if function is not available.
Chmod() will fail and the file mode will be unchanged if:

- **ENOTDIR**: A component of the path prefix is not a directory.
- **ENAMETOOLONG**: A component of a pathname exceeded \{NAME_MAX\} characters, or an entire path name exceeded \{PATH_MAX\} characters.
- **ENOENT**: The named file does not exist.
- **EACCES**: Search permission is denied for a component of the path prefix.
- **ELOOP**: Too many symbolic links were encountered in translating the pathname.
- **EPERM**: The effective user ID does not match the owner of the file and the effective user ID is not the super-user.
- **EROFS**: The named file resides on a read-only file system.
- **EFAULT**: Path points outside the process’s allocated address space.
- **EIO**: An I/O error occurred while reading from or writing to the file system.

### 75.8.5 chown(path as string, uid as Integer, gid as Integer) as Integer

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The owner ID and group ID of the file (or link) named by path is changed as specified by the arguments owner (uid) and group (gid).

**Notes:**
The owner of a file may change the group to a group of which he or she is a member, but the change owner capability is restricted to the superuser.

Chown() clears the set-user-id and set-group-id bits on the file to prevent accidental or mischievous creation of set-user-id and set-group-id programs.

You can type "man 2 chmod" on the Mac OS X terminal for more details.

Upon successful completion, a value of 0 is returned. Otherwise, -1 is returned. Returns -2 on bad parameter or if function is not available.

Chown() will fail and the file or link will be unchanged if:

### 75.8.6 error as Integer

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the error code from the last operation.

**Notes:**
CHAPTER 75. FILES

ENOTDIR A component of the path prefix is not a directory.
ENAMETOOLONG A component of a pathname exceeded \{ NAME_MAX \} characters, or an entire path name exceeded \{ PATH_MAX \} characters.
ENOENT The named file does not exist.
EACCES Search permission is denied for a component of the path prefix.
ELOOP Too many symbolic links were encountered in translating the pathname.
EPERM The effective user ID is not the super-user.
EROFS The named file resides on a read-only file system.
EFAULT Path points outside the process’s allocated addressspace.
EIO An I/O error occurred while reading from or writing to the file system.

This function asks the operation system. It’s not a property like in other classes.

Error codes:

Returns -2 if function is not available.

75.8.7 lstat(path as string) as Integer

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The stat function obtains information about the file pointed to by path.
Example:

// we use truechild to not resolve the symbol link
dim f as FolderItem = SpecialFolder.Desktop.trueChild("test.rtf")

dim c as new DarwinChmodMBS
if c.lstat(f.UnixpathMBS) = 0 then
    // ok
    Break // see values in debugger
else
    MsgBox "failed"
end if

Notes: See stat for details.
75.8. **CLASS DARWINCHMODMBS**

75.8.8 **stat(path as string) as Integer**

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The stat function obtains information about the file pointed to by path.

**Example:**
```vbscript
dim d as DarwinChmodMBS
dim f as FolderItem

f=SpecialFolder.Desktop.Child("test")
d=new DarwinChmodMBS

if d.stat(f.UnixpathMBS)=0 then
    MsgBox hex(d.mode)
end if
```

**Notes:**
Read, write or execute permission of the named file is not required, but all directories listed in the path name leading to the file must be searchable.

Lstat() is like stat() except in the case where the named file is a symbolic link, in which case lstat() returns information about the link, while stat() returns information about the file the link references. Unlike other filesystem objects, symbolic links do not have an owner, group, access mode, times, etc. Instead, these attributes are taken from the directory that contains the link. The only attributes returned from an lstat() that refer to the symbolic link itself are the file type (S_IFLNK), size, blocks, and link count (always 1).

Information about the file is stored directly into the fields of the class if the function is successfull.

You can type "man 2 stat" on the Mac OS X terminal for more details.

Upon successful completion, a value of 0 is returned. Otherwise, -1 is returned. Returns -2 on bad parameter or if function is not available.

**75.8.9  Properties**

**75.8.10  blocks as Double**

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Number of blocks allocated for the file.
Notes:
The actual number of blocks allocated for the file in 512-byte units. As short symbolic links are stored in
the inode, this number may be zero.

Set by the stat and lstat function if it was successful.
(Read and Write property)

75.8.11 blocksize as Integer

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The optimal I/O block size for the file.
Notes:
Set by the stat and lstat function if it was successful.
(Read and Write property)

75.8.12 dev as Integer

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The device inode where the file resides on.
Notes:
Set by the stat and lstat function if it was successful.
(Read and Write property)

75.8.13 flags as Integer

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
User defined flags for the file.
Notes:
Set by the stat and lstat function if it was successful.
(Read and Write property)

75.8.14 gen as Integer

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The file generation number.
Notes:
Set by the stat and lstat function if it was successful. (Read and Write property)

### 75.8.15  **gid as Integer**

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The group-id of the owner of the file. **Notes:** Set by the stat and lstat function if it was successful. (Read and Write property)

### 75.8.16  **ino as Integer**

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The inode's number of the file. **Notes:** Set by the stat and lstat function if it was successful. (Read and Write property)

### 75.8.17  **mode as Integer**

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The inode protection mode of the file. **Notes:** Set by the stat and lstat function if it was successful.

Some Constants:

(Read and Write property)

### 75.8.18  **nlink as Integer**

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number or hard links to the file. **Notes:** Set by the stat and lstat function if it was successful.
75.8.19 rdev as Integer

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The device type, for special file inode.

**Notes:**
Set by the stat and lstat function if it was successful.
(Read and Write property)

75.8.20 size as Double

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The file size, in bytes.

**Notes:**
Set by the stat and lstat function if it was successful.
(Read and Write property)

75.8.21 uid as Integer

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The user-id of the owner of the file.

**Notes:**
Set by the stat and lstat function if it was successful.
(Read and Write property)
### Error Code Details

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPERM</td>
<td>Operation not permitted</td>
</tr>
<tr>
<td>ENOENT</td>
<td>No such file or directory</td>
</tr>
<tr>
<td>ESRCH</td>
<td>No such process</td>
</tr>
<tr>
<td>EINTR</td>
<td>Interrupted system call</td>
</tr>
<tr>
<td>EIO</td>
<td>Input/output error</td>
</tr>
<tr>
<td>ENXIO</td>
<td>Device not configured</td>
</tr>
<tr>
<td>E2BIG</td>
<td>Argument list too long</td>
</tr>
<tr>
<td>ENOEXEC</td>
<td>Exec format error</td>
</tr>
<tr>
<td>EBADF</td>
<td>Bad file descriptor</td>
</tr>
<tr>
<td>ECHILD</td>
<td>No child processes</td>
</tr>
<tr>
<td>EDEADLK</td>
<td>Resource deadlock avoided (11 was EAGAIN)</td>
</tr>
<tr>
<td>ENOMEM</td>
<td>Cannot allocate memory</td>
</tr>
<tr>
<td>EACCES</td>
<td>Permission denied</td>
</tr>
<tr>
<td>ENOBLK</td>
<td>Block device required</td>
</tr>
<tr>
<td>EBUSY</td>
<td>Device busy</td>
</tr>
<tr>
<td>EXIST</td>
<td>File exists</td>
</tr>
<tr>
<td>EXDEV</td>
<td>Cross-device link</td>
</tr>
<tr>
<td>ENODEV</td>
<td>Operation not supported by device</td>
</tr>
<tr>
<td>ENOTDIR</td>
<td>Not a directory</td>
</tr>
<tr>
<td>EISDIR</td>
<td>Is a directory</td>
</tr>
<tr>
<td>EINVAL</td>
<td>Invalid argument</td>
</tr>
<tr>
<td>ENFILE</td>
<td>Too many open files in system</td>
</tr>
<tr>
<td>EMFILE</td>
<td>Too many open files</td>
</tr>
<tr>
<td>ENOTTY</td>
<td>Inappropriate ioctl for device</td>
</tr>
<tr>
<td>ENOTBOS</td>
<td>Text file busy</td>
</tr>
<tr>
<td>EFBIG</td>
<td>File too large</td>
</tr>
<tr>
<td>ENOSPC</td>
<td>No space left on device</td>
</tr>
<tr>
<td>ESPIPE</td>
<td>Illegal seek</td>
</tr>
<tr>
<td>EPROF</td>
<td>Read-only file system</td>
</tr>
<tr>
<td>ENOTSOCK</td>
<td>Socket operation on non-socket</td>
</tr>
<tr>
<td>EDESTADDRREQ</td>
<td>Destination address required</td>
</tr>
<tr>
<td>EMSIZE</td>
<td>Message too long</td>
</tr>
<tr>
<td>EPROT</td>
<td>Protocol wrong type for socket</td>
</tr>
<tr>
<td>ENOPROTOOPT</td>
<td>Protocol not available</td>
</tr>
<tr>
<td>EPRTIONOSUPPORT</td>
<td>Protocol not supported</td>
</tr>
<tr>
<td>ESOCKTNOSUPPORT</td>
<td>Socket type not supported</td>
</tr>
<tr>
<td>EHOSTUNREACH</td>
<td>Operation supported by protocol family</td>
</tr>
<tr>
<td>ENOTSUP</td>
<td>Operation supported by protocol family</td>
</tr>
<tr>
<td>EPROCLIM</td>
<td>Operation already in progress</td>
</tr>
<tr>
<td>ENOSPC</td>
<td>No buffer space available</td>
</tr>
<tr>
<td>ENOTCONN</td>
<td>Socket is already connected</td>
</tr>
<tr>
<td>ESHUTDOWN</td>
<td>Operation already in use</td>
</tr>
<tr>
<td>EADDRINUSE</td>
<td>Operation supported by protocol family</td>
</tr>
<tr>
<td>EADDRNOTAVAIL</td>
<td>Can’t assign requested address</td>
</tr>
<tr>
<td>inetsoftware – argument errors</td>
<td></td>
</tr>
<tr>
<td>ENOSOP</td>
<td>Operation would block</td>
</tr>
<tr>
<td>EINVAL</td>
<td>Operation now in progress</td>
</tr>
<tr>
<td>ENOSPC</td>
<td>Operation already in progress</td>
</tr>
<tr>
<td>EPROTOCOL</td>
<td>Protocol family not supported</td>
</tr>
<tr>
<td>EHOSTUNREACH</td>
<td>Address family not supported by protocol family</td>
</tr>
<tr>
<td>ENOTCONN</td>
<td>Address already in use</td>
</tr>
<tr>
<td>ENETDOWN</td>
<td>Network is down</td>
</tr>
<tr>
<td>ENETUNREACH</td>
<td>Network is unreachable</td>
</tr>
<tr>
<td>ENETRESET</td>
<td>Network dropped connection on reset</td>
</tr>
<tr>
<td>ECONNABORTED</td>
<td>Software caused connection abort</td>
</tr>
<tr>
<td>ECONNRESET</td>
<td>Connection reset by peer</td>
</tr>
<tr>
<td>ENOSPC</td>
<td>Connection refused</td>
</tr>
<tr>
<td>ENOBUFS</td>
<td>No buffer space available</td>
</tr>
<tr>
<td>EISCONN</td>
<td>Socket is already connected</td>
</tr>
<tr>
<td>ENOTCONN</td>
<td>Socket is not connected</td>
</tr>
<tr>
<td>ESHUTDOWN</td>
<td>Can’t send after socket shutdown</td>
</tr>
<tr>
<td>ETOOMANYREFS</td>
<td>Too many references: can’t splice</td>
</tr>
<tr>
<td>ETIMEDOUT</td>
<td>Operation timed out</td>
</tr>
<tr>
<td>ECONNREFUSED</td>
<td>Connection refused</td>
</tr>
<tr>
<td>ELOOP</td>
<td>Too many levels of symbolic links</td>
</tr>
<tr>
<td>ENAMETOOLONG</td>
<td>File name too long</td>
</tr>
</tbody>
</table>

---

**Note:** The error codes should be rearranged based on their severity and type.
ENOTDIR  A component of the path prefix is not a directory.
ENAMETOOLONG  A component of a pathname exceeded \{ NAME_MAX \} characters, or an entire path name exceeded \{ PATH_MAX \} characters.
ENOENT  The named file does not exist.
EACCES  Search permission is denied for a component of the path prefix.
ELOOP  Too many symbolic links were encountered in translating the pathname.
EFAULT  Sb or name points to an invalid address.
EIO  An I/O error occurred while reading from or writing to the file system.

ISUID  0004000  set user id on execution
ISGID  0002000  set group id on execution
ISTXT  0001000  sticky bit

IRWXU  0000700  RWX mask for owner
IRUSR  0000400  R for owner
IWUSR  0000200  W for owner
IXUSR  0000100  X for owner

IRWXG  0000070  RWX mask for group
IRGRP  0000040  R for group
IWGRP  0000020  W for group
IXGRP  0000010  X for group

IRWKO  0000007  RWX mask for other
IROTH  0000004  R for other
IWOTh  0000002  W for other
IXOTH  0000001  X for other
75.9. **CLASS DARWINIFSTATINTERFACEMBS**

75.9 **class DarwinIFStatInterfaceMBS**

75.9.1 **class DarwinIFStatInterfaceMBS**

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class for the statistics of one interface.

**Example:**
```plaintext
dim d as new DarwinIFStatMBS
call d.Update
dim it as DarwinIFStatInterfaceMBS = d.Item(0)
MsgBox it.name
```

**Notes:**
All this integer properties are internally unsigned and they may overflow.
Your application may need to take care for this.

75.9.2 **Properties**

75.9.3 **Baudrate as UInt32**

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The linespeed.

**Example:**
```plaintext
dim d as new DarwinIFStatMBS
call d.Update
dim it as DarwinIFStatInterfaceMBS = d.Item(0)
MsgBox str(it.Baudrate)
```

**Notes:** (Read only property)

75.9.4 **Collisions as UInt64**

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The number of collisions on csma interfaces.

**Example:**
```plaintext
dim d as new DarwinIFStatMBS
call d.Update
```
dim it as DarwinIFStatInterfaceMBS = d.Item(0)
MsgBox str(it.Collisions)

Notes: (Read only property)

75.9.5 InputBytes as UInt64

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Total number of octets received.
Example:
dim d as new DarwinIFStatMBS
call d.Update
dim it as DarwinIFStatInterfaceMBS = d.Item(0)
MsgBox str(it.InputBytes)

Notes: (Read only property)

75.9.6 InputErrors as UInt64

Example:
dim d as new DarwinIFStatMBS
call d.Update
dim it as DarwinIFStatInterfaceMBS = d.Item(0)
MsgBox str(it.InputErrors)

Notes: (Read only property)

75.9.7 InputMulticasts as UInt64

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The number of packets received via multicast.
Example:
75.9.  CLASS DARWINIFSTATINTERFACEMBS

```
dim d as new DarwinIFStatMBS
call d.Update
dim it as DarwinIFStatInterfaceMBS = d.Item(0)
MsgBox str(it.InputMulticasts)
```

Notes: (Read only property)

75.9.8  **InputPackets as UInt64**

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The number of packets received.
**Example:**
```
dim d as new DarwinIFStatMBS
call d.Update
dim it as DarwinIFStatInterfaceMBS = d.Item(0)
MsgBox str(it.InputPackets)
```

Notes: (Read only property)

75.9.9  **MTU as UInt32**

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The maximum transmission unit.
**Example:**
```
dim d as new DarwinIFStatMBS
call d.Update
dim it as DarwinIFStatInterfaceMBS = d.Item(0)
MsgBox str(it.MTU)
```

Notes:
Maximum size of a packet.
75.9.10  Name as String

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of the interface.

**Example:**

```vbnet
dim d as new DarwinIFStatMBS
call d.Update
dim it as DarwinIFStatInterfaceMBS = d.Item(0)
MsgBox it.Name
```

**Notes:**

e.g. lo0 for localhost, en0 for the first ethernet interface, fw0 for the first firewire interface, etc.

(Read and Write property)

75.9.11  OutputBytes as UInt64

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Total number of octets sent.

**Example:**

```vbnet
dim d as new DarwinIFStatMBS
call d.Update
dim it as DarwinIFStatInterfaceMBS = d.Item(0)
MsgBox str(it.OutputBytes)
```

**Notes:** (Read only property)

75.9.12  OutputErrors as UInt64

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of output errors.

**Example:**

```vbnet
dim d as new DarwinIFStatMBS
call d.Update
dim it as DarwinIFStatInterfaceMBS = d.Item(0)
MsgBox str(it.OutputErrors)
```
75.9. **CLASS** DARWINIFSTATINTERFACEMBS

**Notes:** (Read only property)

---

### 75.9.13 OutputMulticasts as UInt64

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of packets sent via multicast.

**Example:**

```vbs
dim d as new DarwinIFStatMBS
call d.Update
dim it as DarwinIFStatInterfaceMBS = d.Item(0)
MsgBox str(it.OutputMulticasts)
```

**Notes:** (Read only property)

---

### 75.9.14 OutputPackets as UInt64

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of packets sent.

**Example:**

```vbs
dim d as new DarwinIFStatMBS
call d.Update
dim it as DarwinIFStatInterfaceMBS = d.Item(0)
MsgBox str(it.OutputPackets)
```

**Notes:** (Read only property)

---

### 75.9.15 PhysicalType as Integer

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The physical network type.

**Example:**

```vbs
dim d as new DarwinIFStatMBS
call d.Update
dim it as DarwinIFStatInterfaceMBS = d.Item(0)
MsgBox str(it.PhysicalType)
```
75.9.16 Type as Integer

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The network type.

**Example:**

dim d as new DarwinIFStatMBS
call d.Update
dim it as DarwinIFStatInterfaceMBS = d.Item(0)
MsgBox str(it.type)

**Notes:**

e.g. ethernet, tokenring, etc

from if_types.h:

Interface types for benefit of parsing media address headers.
This list is derived from the SNMP list of ifTypes, currently documented in RFC1573.

(Read and Write property)
IFT,OTHER & h1 none of the following
IFT,1822 & h2 old-style arpanet imp
IFT,HDH1822 & h3 HDH arpanet imp
IFT,X25DDN & h4 X25 to imp
IFT,X25 & h5 PDN X25 interface (RFC877)
IFT,ETHER & h6 Ethernet CSMACD
IFT,ISO88023 & h7 CMSA CD
IFT,ISO88024 & h8 Token Bus
IFT,ISO88025 & h9 Token Ring
IFT,ISO88026 & ha MAN
IFT,STARLAN & hb
IFT,P10 & hc Proteon 10MBit ring
IFT,P80 & hd Proteon 80MBit ring
IFT,HY & he Hyperchannel
IFT,FDDI & hf
IFT,LAPB & h10
IFT,SDLC & h11
IFT,T1 & h12
IFT,CEPT & h13 E1 - european T1
IFT,ISDNBASIC & h14
IFT,ISDNPRIMARY & h15
IFT,PTPSERIAL & h16 Proprietary PTP serial
IFT,PPP & h17 RFC 1331
IFT,LOOP & h18 loopback
IFT,EON & h19 ISO over IP
IFT,XETHER & h1a obsolete 3MB experimental ethernet
IFT,NSIP & h1b XNS over IP
IFT,SLIP & h1c IP over generic TTY
IFT,ULTRA & h1d Ultra Technologies
IFT,DS3 & h1e Generic T3
IFT,SIP & h1f SMDS
IFT,FRELAY & h20 Frame Relay DTE only
IFT,RS232 & h21
IFT,PARA & h22 parallel-port
IFT,ARCNET & h23
IFT,ARCNETPLUS & h24
IFT,ATM & h25 ATM cells
IFT,MIOX25 & h26
IFT,SONET & h27 SONET or SDH
IFT,X25PLE & h28
IFT,ISO88022LLC & h29
IFT,LOCALTALK & h2a
IFT,SDMSDXI & h2b
IFT,FRELAYDCE & h2c Frame Relay DCE
IFT,V35 & h2d
IFT,HSSI & h2e
IFT,HIPPI & h2f
IFT,MODEM & h30 Generic Modem
IFT,AAL5 & h31 AAL5 over ATM
IFT,SONETPATH & h32
IFT,SONETVT & h33
IFT,SMDSICIP & h34 SMDS InterCarrier Interface
IFT,PROPVIRTUAL & h35 Proprietary Virtual/internal
IFT,PROPMUX & h36 Proprietary Multiplexing
IFT,GIF & h37
IFT,FAITH & h38
IFT,STF & h39
IFT,L2VLAN & h87 Layer 2 Virtual LAN using 802.1Q
IFT,IEEE1394 & h90 IEEE1394 High Performance SerialBus*
75.10  class DarwinIFStatMBS

75.10.1  class DarwinIFStatMBS

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for network interface throughput statistics.

**Example:**
```
dim d as new DarwinIFStatMBS
call d.Update
MsgBox str(d.Count)
```

75.10.2  Methods

75.10.3  Item(index as Integer) as DarwinIFStatInterfaceMBS

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the statistics for the given interface.

**Example:**
```
dim d as new DarwinIFStatMBS
call d.Update
MsgBox str(d.Item(0).InputBytes)
```

**Notes:** Index goes from 0 to count-1.

75.10.4  Update as boolean

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Asks the system for new statistics.

**Example:**
```
dim d as new DarwinIFStatMBS
call d.Update
MsgBox str(d.Count)
```

**Notes:** Returns true on success.
75.10.5 Properties

75.10.6 Count as Integer

MBS MacOSX Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The number of interfaces in the item array.

**Example:**
```plaintext
dim d as new DarwinIFStatMBS
call d.Update
MsgBox str(d.Count)
```

**Notes:** (Read only property)
CHAPTER 75. FILES

75.11 class DASessionMBS

75.11.1 class DASessionMBS

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The disk arbitration session class from Mac OS X. Notes: The session manages all the events and operations you may do on disks using Apple’s Disk Arbitration framework.

75.11.2 Methods

75.11.3 Constructor


75.11.4 Eject(disk as DADiskMBS, options as Integer = 0)


- disk: The disk object.
- options: The eject options.
- Calls Ejected event later with result.

75.11.5 IsClaimed(disk as DADiskMBS) as boolean

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Reports whether or not the disk is claimed. Notes:

- disk: The disk object.
- Returns true if the disk is claimed, otherwise false.

75.11.6 Mount(disk as DADiskMBS, path as string, options as Integer = 0)

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Mounts the volume at the specified disk object. Notes:
75.11. CLASS DASESSIONMBS

disk: The disk object.
path: The mount path. Pass empty string for a "standard" mount path.
options: The mount options.
Calls Mounted event later.

75.11.7 MountWithArguments(disk as DADiskMBS, path as string, arguments() as string, options as Integer = 0)

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Mounts the volume at the specified disk object, with the specified mount options. **Notes:**
disk: The disk object.
path: The mount path. Pass empty string for a "standard" mount path.
options: The mount options.
arguments: The list of mount options to pass to /sbin/mount -o.

75.11.8 Rename(disk as DADiskMBS, name as string, options as Integer = 0)

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Renames the volume at the specified disk object. **Notes:**
disk: The disk object.
options: The rename options.
Calls later the Renamed event with result.

75.11.9 Unclaim(disk as DADiskMBS)

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Unclaims the specified disk object.

75.11.10 Unmount(disk as DADiskMBS, options as Integer = 0)

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Unmounts the volume at the specified disk object. **Notes:**
disk: The disk object.
options: The unmount options.
75.11.11 Properties

75.11.12 Handle as Integer

**Notes:** (Read and Write property)

75.11.13 Events

75.11.14 Appeared(disk as DADiskMBS)

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event called when a disk appears.  
**Notes:** disk: A disk object.

75.11.15 DescriptionChanged(disk as DADiskMBS, keys() as string)

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event called whenever a disk description has changed.  
**Notes:**  
disk: A disk object.  
keys: A list of changed keys.

75.11.16 Disappeared(disk as DADiskMBS)

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event called whenever a disk has disappeared.

75.11.17 Ejected(disk as DADiskMBS, dissenter as DADissenterMBS)

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Event called after eject operation finished.  
**Notes:**
Disk: The disk object.

dissenter: A dissenter object on failure or nil on success.

### 75.11.18 Mounted(disk as DADiskMBS, dissenter as DADissenterMBS)

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Event called after mount operation finished.

**Notes:**
disk: The disk object.
dissenter: A dissenter object on failure or nil on success.

### 75.11.19 Peek(disk as DADiskMBS)

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** A disk has been peeked.

### 75.11.20 Renamed(disk as DADiskMBS, dissenter as DADissenterMBS)

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called after the rename operation finished.

**Notes:**
disk: The disk object.
dissenter: A dissenter object on failure or nil on success.

### 75.11.21 Unmounted(disk as DADiskMBS, dissenter as DADissenterMBS)

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called after unmount operation finished.

**Notes:**
disk: The disk object.
dissenter: A dissenter object on failure or nil on success.
75.11.22  Constants

75.11.23  kDADiskClaimOptionDefault = 0

MBS MacOSX Plugin, Plugin Version: 13.2. Function: One of the claim option constants.
Notes: Default

75.11.24  kDADiskEjectOptionDefault = 0

MBS MacOSX Plugin, Plugin Version: 13.2. Function: One of the eject option constants.
Notes: Default

75.11.25  kDADiskMountOptionDefault = 0

Notes: Default

75.11.26  kDADiskMountOptionWhole = 1

Notes: Mount the volumes tied to the whole disk object.

75.11.27  kDADiskOptionDefault = 0

MBS MacOSX Plugin, Plugin Version: 13.2. Function: One of the options for disks.
Notes: Default

75.11.28  kDADiskOptionEjectUponLogout = 1

MBS MacOSX Plugin, Plugin Version: 13.2. Function: One of the options for disks.
Notes: Eject the disk upon logout.
75.11.29  kDADiskOptionMountAutomatic = 16
MBS MacOSX Plugin, Plugin Version: 13.2. **Function:** One of the options for disks. **Notes:** Mount the disk upon appearance.

75.11.30  kDADiskOptionMountAutomaticNoDefer = 32
MBS MacOSX Plugin, Plugin Version: 13.2. **Function:** One of the options for disks. **Notes:** Mount the disk upon appearance, even if no login.

75.11.31  kDADiskOptionPrivate = 256
MBS MacOSX Plugin, Plugin Version: 13.2. **Function:** One of the options for disks. **Notes:** Hides the disk from callbacks.

75.11.32  kDADiskRenameOptionDefault = 0
MBS MacOSX Plugin, Plugin Version: 13.2. **Function:** Options for renaming. **Notes:** Default

75.11.33  kDADiskUnmountOptionDefault = 0
MBS MacOSX Plugin, Plugin Version: 13.2. **Function:** One of the options for unmounting. **Notes:** Default

75.11.34  kDADiskUnmountOptionForce = & h00080000
MBS MacOSX Plugin, Plugin Version: 13.2. **Function:** One of the options for unmounting. **Notes:** Unmount the volume even if files are still active.

75.11.35  kDADiskUnmountOptionWhole = 0
MBS MacOSX Plugin, Plugin Version: 13.2. **Function:** One of the options for unmounting. **Notes:** Unmount the volumes tied to the whole disk object.
75.12 class DirectorySizeMBS

75.12.1 class DirectorySizeMBS

MBS Util Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class for size information about a folder.

**Example:**

```vba
// chose a folder
dim f as FolderItem = SelectFolder

// calculate
dim d as DirectorySizeMBS = f.CalculateDirectorySizeMBS(True,0)

// display
MsgBox str(d.FilesCount)+” files in ”+str(d.FolderCount)+” folder”
```

75.12.2 Methods

75.12.3 Add(d as DirectorySizeMBS)

MBS Util Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds the values of the given directory size object to the current one.

**Notes:**

Passing nil is okay and will be ignored.
This method was added to support counting several folders and adding the results to one central object.

75.12.4 close

MBS Util Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The destructor.

**Notes:**

There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)
75.12. **CLASS DIRECTORYSIZEMBS**

**75.12.5 Constructor**

MBS Util Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor.

**75.12.6 Update(folder as folderitem, recursive as boolean, ticks as Integer) as boolean**

MBS Util Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Updates the class. **Example:**

```vba
// chose a folder
dim f as FolderItem = SpecialFolder.Applications

// calculate
dim d as new DirectorySizeMBS

// update object
call d.Update(f, true, 0)

// display
MsgBox str(d.FilesCount) + " files and " + str(d.FolderCount) + " folders"
```

**Notes:**
The folder specified is searched for files and folders. Normally you’d better use CalculateDirectorySizeMBS.

Ticks is the count of ticks (1/60th second) which must pass till time is given to other threads. (e.g. 10)

Returns true if successfull.

If you call this function in a thread you can set the cancel property in a pushbutton event handler to stop this function.

**75.12.7 Properties**

**75.12.8 Cancel as Boolean**

MBS Util Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the Update function should stop as soon as possible. **Notes:** (Read and Write property)
75.12.9 CompressedSize as UInt64

MBS Util Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The size in bytes of all files.
**Notes:**
If a file is compressed, we add here the compressed size.
If a file is not compressed, we add the normal logical size.
Only used on Windows and only with QueryCompressedSizes = true.
(Read only property)

75.12.10 CountBundlesAsItem as Boolean

MBS Util Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Whether to count bundles as files.
**Example:**
```
// chose a folder
dim f as FolderItem = SpecialFolder.Applications

// calculate
dim d1 as new DirectorySizeMBS
d1.CountBundlesAsItem = true

call d1.Update(f, true, 0)

dim d2 as new DirectorySizeMBS
d2.CountBundlesAsItem = false

call d2.Update(f, true, 0)

// display
MsgBox "Normal count: " +str(D2.FilesCount)+" files and "+str(d2.FolderCount)+" folders"+EndOfLine+_
"With bundles as files: "+str(D1.FilesCount)+" files and "+str(d1.FolderCount)+" folders"
```

**Notes:**
Bundles like applications are counted as a single file if this property is true or as a folder with files inside if this property is false.
Default is false.
(Read and Write property)
75.12. **CLASS DIRECTORYSIZEMBS**

### 75.12.11 Directory as FolderItem

MBS Util Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The folder which was searched.  
**Notes:** (Read and Write property)

### 75.12.12 FilesCount as UInt64

MBS Util Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of files counted.  
**Example:**
```vba
dim f as FolderItem = SpecialFolder.desktop
dim d as DirectorySizeMBS = f.CalculateDirectorySizeMBS(True,0)
MsgBox str(d.FilesCount) + " files"
```

**Notes:**  
FilesCount=VisibleFilesCount+HiddenFilesCount  
(Read only property)

### 75.12.13 FolderCount as UInt64

MBS Util Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of folders counted.  
**Example:**
```vba
dim f as FolderItem = SpecialFolder.desktop
dim d as DirectorySizeMBS = f.CalculateDirectorySizeMBS(True,0)
MsgBox str(d.FolderCount) + " folder"
```

**Notes:**  
FolderCount=VisibleFolderCount+HiddenFolderCount  
(Read only property)

### 75.12.14 HiddenCompressedSize as UInt64

MBS Util Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The size in bytes of all hidden files.
Notes:
If a file is compressed, we add here the compressed size.
If a file is not compressed, we add the normal logical size.
Only used on Windows and only with QueryCompressedSizes = true.
(Read only property)

75.12.15  HiddenFilesCount as Integer

MBS Util Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The number of hidden files counted.
**Example:**
```vbs
Dim f As FolderItem = SpecialFolder.desktop
Dim d As DirectorySizeMBS = f.CalculateDirectorySizeMBS(True,0)
MsgBox str(d.HiddenFilesCount) + " hidden files"
```

Notes:
A file is invisible if the Invisible flag is set for this file.
(Read and Write property)

75.12.16  HiddenFolderCount as Integer

MBS Util Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The number of folders.
**Example:**
```vbs
Dim f As FolderItem = SpecialFolder.desktop
Dim d As DirectorySizeMBS = f.CalculateDirectorySizeMBS(True,0)
MsgBox str(d.HiddenFolderCount) + " hidden folders"
```

Notes:
A file is invisible if the Invisible flag is set for this file.
(Read and Write property)

75.12.17  HiddenItemCount as UInt64

MBS Util Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The number of invisible items.
**Example:**

```vbs
  dim f as FolderItem = SpecialFolder.desktop
  dim d as DirectorySizeMBS = f.CalculateDirectorySizeMBS(True,0)
  MsgBox str(d_HIDDENItemCount)+" hidden items"
```

**Notes:**

An item is invisible if the Invisible flag is set for this file.
HiddenItemCount=HiddenFolderCount+HiddenFilesCount
(Read only property)

---

**75.12.18 HiddenLogicalDataForkSize as UInt64**

MBS Util Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The logical size of the data forks of all hidden file in Bytes.

**Example:**

```vbs
  dim f as FolderItem = SpecialFolder.desktop
  dim d as DirectorySizeMBS = f.CalculateDirectorySizeMBS(True,0)
  MsgBox "Logical data fork size of hidden files: "+Format(d_HIDDENLogicalDataForkSize/1000000,"0")+" MB"
```

**Notes:** (Read and Write property)

---

**75.12.19 HiddenLogicalResourceForkSize as UInt64**

MBS Util Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The logical size of the resource forks of all hidden file in Bytes.

**Example:**

```vbs
  dim f as FolderItem = SpecialFolder.desktop
  dim d as DirectorySizeMBS = f.CalculateDirectorySizeMBS(True,0)
  MsgBox "Logical resource fork size of hidden files: "+Format(d_HIDDENLogicalResourceForkSize/1000000,"0")+" MB"
```

**Notes:** (Read and Write property)
75.12.20  **HiddenLogicalTotalSize as UInt64**

MBS Util Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The logical size of the all forks of all hidden file in Bytes.

**Example:**
```vbnet
dim f as FolderItem = SpecialFolder.desktop
dim d as DirectorySizeMBS = f.CalculateDirectorySizeMBS(True,0)
MsgBox "Logical total size of hidden files: " + Format(d.HiddenLogicalTotalSize/1000000,"0") + " MB"
```

**Notes:** (Read only property)

75.12.21  **HiddenPhysicalDataForkSize as UInt64**

MBS Util Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The physical size of the data forks of all hidden file in Bytes.

**Example:**
```vbnet
dim f as FolderItem = SpecialFolder.desktop
dim d as DirectorySizeMBS = f.CalculateDirectorySizeMBS(True,0)
MsgBox "Physical data fork size of hidden files: " + Format(d.HiddenPhysicalDataForkSize/1000000,"0") + " MB"
```

**Notes:** (Read and Write property)

75.12.22  **HiddenPhysicalResourceForkSize as UInt64**

MBS Util Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The physical size of the resource forks of all hidden file in Bytes.

**Example:**
```vbnet
dim f as FolderItem = SpecialFolder.desktop
dim d as DirectorySizeMBS = f.CalculateDirectorySizeMBS(True,0)
MsgBox "Physical resource fork size of hidden files: " + Format(d.HiddenPhysicalResourceForkSize/1000000,"0") + " MB"
```

**Notes:** (Read and Write property)
75.12. **CLASS DIRECTORYSZEMBS**

75.12.23 **HiddenPhysicalTotalSize as UInt64**

MBS Util Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The physical size of the both forks of all hidden file in Bytes.

**Example:**

```vbs
Dim f As FolderItem = SpecialFolder.desktop
Dim d As DirectorySizeMBS = f.CalculateDirectorySizeMBS(True,0)
MsgBox "Physical total size of hidden files: "+Format(d.HiddenPhysicalTotalSize/1000000,"0")+" MB"
```

**Notes:** (Read only property)

75.12.24 **IgnoreHiddenFolderContent as Boolean**

MBS Util Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** If this flag is set, the Update method will not count invisible files.

**Notes:** (Read and Write property)

75.12.25 **ItemCount as UInt64**

MBS Util Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of items counted.

**Example:**

```vbs
// chose a folder
Dim f As FolderItem = SpecialFolder.Music
// calculate size
Dim d As DirectorySizeMBS = f.CalculateDirectorySizeMBS(True,0)
// show number of files
MsgBox str(d.ItemCount)
```

**Notes:**

ItemCount=VisibleItemCount+HiddenItemCount

(Read only property)
75.12.26 LogicalDataForkSize as UInt64

MBS Util Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The logical data fork size in Bytes.

**Example:**
```
dim f as FolderItem = SpecialFolder.desktop
dim d as DirectorySizeMBS = f.CalculateDirectorySizeMBS(True,0)
MsgBox "Logical data fork size of all files: " + Format(d.LogicalDataForkSize/1000000,"0") + " MB"
```

**Notes:** (Read only property)

75.12.27 LogicalResourceForkSize as UInt64

MBS Util Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The logical resource fork size in Bytes.

**Notes:**
```
dim f as FolderItem = SpecialFolder.desktop
dim d as DirectorySizeMBS = f.CalculateDirectorySizeMBS(True,0)
MsgBox "Logical resource fork size of all files: " + Format(d.LogicalResourceForkSize/1000000,"0") + " MB"
```
(Read only property)

75.12.28 LogicalTotalSize as UInt64

MBS Util Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The logical total size in Bytes.

**Example:**
```
dim f as FolderItem = SpecialFolder.desktop
dim d as DirectorySizeMBS = f.CalculateDirectorySizeMBS(True,0)
MsgBox "Logical total size of all files: " + Format(d.LogicalTotalSize/1000000,"0") + " MB"
```

**Notes:**
(Read only property)
75.12. CLASS DIRECTORIESIZEMBS

75.12.29 PhysicalDataForkSize as UInt64

MBS Util Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The physical data fork size in Bytes.  
**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.desktop
dim d as DirectorySizeMBS = f.CalculateDirectorySizeMBS(True,0)
MsgBox "Physical data fork size of all files: " + Format(d.PhysicalDataForkSize/1000000,"0") + " MB""
```

**Notes:** (Read only property)

75.12.30 PhysicalResourceForkSize as UInt64

MBS Util Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The physical resource fork size in Bytes.  
**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.desktop
dim d as DirectorySizeMBS = f.CalculateDirectorySizeMBS(True,0)
MsgBox "Physical resource fork size of all files: " + Format(d.PhysicalResourceForkSize/1000000,"0") + " MB""
```

**Notes:** (Read only property)

75.12.31 PhysicalTotalSize as UInt64

MBS Util Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The physical total file size in Bytes.  
**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.desktop
dim d as DirectorySizeMBS = f.CalculateDirectorySizeMBS(True,0)
MsgBox "Physical total size of all files: " + Format(d.VisiblePhysicalTotalSize/1000000,"0") + " MB"
```

**Notes:**

(Read only property)  
That’s what the Finder shows you.
### 75.12.32 QueryCompressedSizes as Boolean

MBS Util Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to query compressed file sizes on Windows. **Notes:** (Read and Write property)

### 75.12.33 RecursionLimit as Integer

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: Yes. **Function:** The limit for recursion. **Notes:**
Default is -1 for no limit.
Zero means we do not recurse into subfolders.
Other values define how many recursion levels are allowed.
(Read and Write property)

### 75.12.34 RecursionMaxLevel as Integer

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: Yes. **Function:** The maximum levels of recursions we had for searching this folder. **Notes:** (Read and Write property)

### 75.12.35 VisibleCompressedSize as UInt64

MBS Util Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The size in bytes of all visible files. **Notes:**
If a file is compressed, we add here the compressed size.
If a file is not compressed, we add the normal logical size.
Only used on Windows and only with QueryCompressedSizes = true.
(Read only property)

### 75.12.36 VisibleFilesCount as Integer

MBS Util Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of visible files.
Example:

```vba
dim f as FolderItem = SpecialFolder.desktop
dim d as DirectorySizeMBS = f.CalculateDirectorySizeMBS(True,0)
MsgBox str(d.VisibleFilesCount)+” visible files"
```

Notes: (Read and Write property)

### 75.12.37 VisibleFolderCount as Integer

MBS Util Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of visible folders.

Example:

```vba
dim f as FolderItem = SpecialFolder.desktop
dim d as DirectorySizeMBS = f.CalculateDirectorySizeMBS(True,0)
MsgBox str(d.VisibleFolderCount)+” visible folders"
```

Notes: (Read and Write property)

### 75.12.38 VisibleItemCount as UInt64

MBS Util Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of visible items.

Example:

```vba
dim f as FolderItem = SpecialFolder.desktop
dim d as DirectorySizeMBS = f.CalculateDirectorySizeMBS(True,0)
MsgBox str(d.VisibleItemCount)+” visible items"
```

Notes:

Items are folders or files.
VisibleItemCount=VisibleFolderCount+VisibleFilesCount
(Read only property)
**75.12.39 VisibleLogicalDataForkSize as UInt64**

**Function:**  
The logical size of the data forks of all visible file in Bytes.  
**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.desktop  
dim d as DirectorySizeMBS = f.CalculateDirectorySizeMBS(True,0)  
MsgBox "Logical data fork size of visible files: " + Format(d.VisibleLogicalDataForkSize/1000000,"0") + " MB"
```

**Notes:** (Read and Write property)

---

**75.12.40 VisibleLogicalResourceForkSize as UInt64**

**Function:**  
The logical size of the resource forks of all visible file in Bytes.  
**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.desktop  
dim d as DirectorySizeMBS = f.CalculateDirectorySizeMBS(True,0)  
MsgBox "Logical resource fork size of visible files: " + Format(d.VisibleLogicalResourceForkSize/1000000,"0") + " MB"
```

**Notes:** (Read and Write property)

---

**75.12.41 VisibleLogicalTotalSize as UInt64**

**Function:**  
The logical size of both forks of all visible file in Bytes.  
**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.desktop  
dim d as DirectorySizeMBS = f.CalculateDirectorySizeMBS(True,0)  
MsgBox "Logical total size of visible files: " + Format(d.VisibleLogicalTotalSize/1000000,"0") + " MB"
```

**Notes:** (Read only property)
75.12.42 VisiblePhysicalDataForkSize as UInt64

MBS Util Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The physical size of the data forks of all visible file in Bytes.
**Example:**
```vbnet
dim f as FolderItem = SpecialFolder.desktop
dim d as DirectorySizeMBS = f.CalculateDirectorySizeMBS(True,0)
MsgBox "Physical data fork size of visible files: " + Format(d.VisiblePhysicalDataForkSize/1000000,"0") + " MB"
```
**Notes:** (Read and Write property)

75.12.43 VisiblePhysicalResourceForkSize as UInt64

MBS Util Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The physical size of the resource forks of all visible file in Bytes.
**Example:**
```vbnet
dim f as FolderItem = SpecialFolder.desktop
dim d as DirectorySizeMBS = f.CalculateDirectorySizeMBS(True,0)
MsgBox "Physical resource fork size of visible files: " + Format(d.VisiblePhysicalResourceForkSize/1000000,"0") + " MB"
```
**Notes:** (Read and Write property)

75.12.44 VisiblePhysicalTotalSize as UInt64

MBS Util Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The physical size of the both forks of all visible file in Bytes.
**Example:**
```vbnet
dim f as FolderItem = SpecialFolder.desktop
dim d as DirectorySizeMBS = f.CalculateDirectorySizeMBS(True,0)
MsgBox "Physical total size of visible files: " + Format(d.VisiblePhysicalTotalSize/1000000,"0") + " MB"
```
**Notes:** (Read only property)
75.12.45 YieldTicks as Integer

MBS Util Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** How much time is given back to REALbasic for other ticks.

**Example:**

```plaintext
dim d as DirectorySizeMBS // your DirectorySizeMBS object
d.YieldTicks=6 // only use 1/10th of a second
```

**Notes:**

If value is greater than zero, the application will yield to another RB thread after the given number of ticks have passed. 60 ticks are one second. Using a small value can slow down processing a lot while a big value keeps your application not responding to mouse clicks.

If you use this property with e.g. 6 as the value, you may also want to use this method in a thread so you can handle mouse events or let REALbasic redraw a progressbar.

(Read and Write property)
75.13.1 module ExtendedAttributesMBS


Function: The module for working with extended attributes.

Example:

```vbs
Dim f As FolderItem = SpecialFolder.Desktop.Child("test.rtf")

' keys starting with "com.apple.metadata:" are indexed by Spotlight
Call ExtendedAttributesMBS.SetAttribute(f, "com.apple.metadata:test", "testvalue")
```

Notes:

Linux support added for plugin version 16.4.
For Windows, please use LargeBinaryStreamMBS class to read/write streams.

75.13.2 Methods

75.13.3 Available as boolean


Function: Returns true if extended attribute functions are available.

75.13.4 GetAttribute(path as folderitem, name as string, options as Integer = 0) as Variant


Function: Get an extended attribute value.

Example:

```vbs
Dim f As FolderItem = SpecialFolder.Desktop.Child("test.rtf")
Dim v As Variant = ExtendedAttributesMBS.GetAttribute(f, ExtendedAttributesMBS.kAttributeNameFinderComment)
Break // see comment string in debugger
```

Notes:

On Mac the extended attributes are normally formatted property lists, so please use the high level functions SetAttribute/GetAttribute. Raw functions are better for things like resourcefork or FinderInfo.
Extended attributes extend the basic attributes of files and directories in the file system. They are stored as name:data pairs associated with file system objects (files, directories, symlinks, etc).

The GetAttribute function retrieves all bytes of data from the extended attribute identified by name associated with path.

An extended attribute’s name is a simple UTF-8 string. position specifies an offset within the extended attribute. In the current implementation, this argument is only used with the resource fork attribute. For all other extended attributes, this parameter is reserved and should be zero.

On success, returns the data associated with name.

Options specify options for retrieving extended attributes:

- **kNoFollow** Do not follow symbolic links. getxattr() normally returns information from the target of path if it is a symbolic link. With this option, GetAttribute will return extended attribute data from the symbolic link instead.

- **kShowCompression**: GetAttribute will return HFS Plus Compression extended attribute name (if present) for the file referred to by path or fd.

On success, the value is returned. On failure, nil is returned and lasterror is set.

See also:

- 75.13.5 GetAttribute(path as string, name as string, options as Integer = 0) as Variant

### 75.13.5 GetAttribute(path as string, name as string, options as Integer = 0) as Variant

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Get an extended attribute value.

**Notes:**

On Mac the extended attributes are normally formatted property lists, so please use the high level functions SetAttribute/GetAttribute. Raw functions are better for things like resourcefork or FinderInfo.

Extended attributes extend the basic attributes of files and directories in the file system. They are stored as name:data pairs associated with file system objects (files, directories, symlinks, etc).
The GetAttribute function retrieves all bytes of data from the extended attribute identified by name associated with path.

An extended attribute’s name is a simple UTF-8 string. position specifies an offset within the extended attribute. In the current implementation, this argument is only used with the resource fork attribute. For all other extended attributes, this parameter is reserved and should be zero.

On success, returns the data associated with name.

Options specify options for retrieving extended attributes:

- kNoFollow: Do not follow symbolic links. getxattr() normally returns information from the target of path if it is a symbolic link. With this option, GetAttribute will return extended attribute data from the symbolic link instead.

- kShowCompression: GetAttribute will return HFS Plus Compression extended attribute name (if present) for the file referred to by path or fd.

On success, the value is returned. On failure, nil is returned and lasterror is set.

See also:
- 75.13.4 GetAttribute(path as folderitem, name as string, options as Integer = 0) as Variant

75.13.6 GetRawAttribute(path as folderitem, name as string, options as Integer = 0) as memoryblock


Function: Get an extended attribute value.

Example:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.rtf")
dim value as MemoryBlock = ExtendedAttributesMBS.GetRawAttribute(f, ExtendedAttributesMBS.kAttributeFinderInfo)
break // see in debugger

Notes:

On Mac the extended attributes are normally formatted property lists, so please use the high level functions SetAttribute/GetAttribute. Raw functions are better for things like resourcefork or FinderInfo.
Extended attributes extend the basic attributes of files and directories in the file system. They are stored as name:data pairs associated with file system objects (files, directories, symlinks, etc).

The GetRawAttribute function retrieves all bytes of data from the extended attribute identified by name associated with path.

An extended attribute’s name is a simple UTF-8 string. position specifies an offset within the extended attribute. In the current implementation, this argument is only used with the resource fork attribute. For all other extended attributes, this parameter is reserved and should be zero.

On success, returns the data associated with name.

Options specify options for retrieving extended attributes:

- kNoFollow: Do not follow symbolic links. getxattr() normally returns information from the target of path if it is a symbolic link. With this option, GetRawAttribute will return extended attribute data from the symbolic link instead.

- kShowCompression: GetRawAttribute will return HFS Plus Compression extended attribute name (if present) for the file referred to by path or fd.

On success, the value is returned. On failure, nil is returned and lasterror is set.

See also:

- 75.13.7 GetRawAttribute(path as string, name as string, options as Integer = 0) as memoryblock

75.13.7 GetRawAttribute(path as string, name as string, options as Integer = 0) as memoryblock


Function: Get an extended attribute value.

Notes:

On Mac the extended attributes are normally formatted property lists, so please use the high level functions SetAttribute/GetAttribute. Raw functions are better for things like resourcefork or FinderInfo.

Extended attributes extend the basic attributes of files and directories in the file system. They are stored as name:data pairs associated with file system objects (files, directories, symlinks, etc).

The GetRawAttribute function retrieves all bytes of data from the extended attribute identified by name
An extended attribute’s name is a simple UTF-8 string. position specifies an offset within the extended attribute. In the current implementation, this argument is only used with the resource fork attribute. For all other extended attributes, this parameter is reserved and should be zero.

On success, returns the data associated with name.

Options specify options for retrieving extended attributes:

- **kNoFollow** Do not follow symbolic links. `getattr()` normally returns information from the target of path if it is a symbolic link. With this option, GetRawAttribute will return extended attribute data from the symbolic link instead.

- **kShowCompression**: GetRawAttribute will return HFS Plus Compression extended attribute name (if present) for the file referred to by path or fd.

On success, the value is returned. On failure, nil is returned and lasterror is set.

See also:

- 75.13.6 GetRawAttribute(path as folderitem, name as string, options as Integer = 0) as memoryblock

### 75.13.8 LastError as Integer

**Function:** The last error code.

**Notes:**

Possible error values:

### 75.13.9 LastErrorMessage as string

**Function:** The error message for the last error.
CHAPTER 75. FILES

EPERM 1 Attributes cannot be associated with this type of object. For example, attributes are not allowed for resource forks.
EIO 5 An I/O error occurred while reading from or writing to the file system.
E2BIG 7 The data size of the extended attribute is too large.
EACCES 13 Permissions denied
EFAULT 14 path or name points to an invalid address.
EEXIST 17 options contains XATTR_CREATE and the named attribute already exists.
ENOTDIR 20 A component of path’s prefix is not a directory.
EINVAL 22 name or options is invalid. name must be valid UTF-8 and options must make sense.
ENOSPC 28 Not enough space left on the file system.
ERANGE 34 The data size of the attribute is out of range (some attributes have size restrictions).
ENOTSUP 45 The file system does not support extended attributes or has the feature disabled.
ELOOP 62 Too many symbolic links were encountered resolving path.
ENOMEMETOOLONG 63 Name exceeded XATTR_MAXNAMELEN UTF-8 bytes, or a component of path exceeded NAME_MAX characters, or the entire path exceeded PATH_MAX characters.
ENOATTR 93 options is set to kReplace and the named attribute does not exist.

75.13.10 ListAttributes(path as folderitem, Options as Integer = 0) as string()


Function: List extended attribute names.

Example:

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.rtf")
dim names() as string = ExtendedAttributesMBS.ListAttributes(f, ExtendedAttributesMBS.kNoFollow+ExtendedAttributesMBS.kShowCompression)
MsgBox Join(names, EndOfLine)
```

Notes:

Extended attributes extend the basic attributes associated with files and directories in the file system. They are stored as name:data pairs associated with file system objects (files, directories, symlinks, etc).

ListAttributes retrieves a list of names of extended attributes associated with the given path in the file system. The list will only include names of extended attributes to which the calling process has access.

Options controls how the attribute list is generated:
**75.13. MODULE EXTENDEDATTRIBUTESMBS**

kNoFollow: Do not follow symbolic links. ListAttributes normally lists attributes of the target of path if it is a symbolic link. With this option, ListAttributes will list attributes of the link itself.

kShowCompression: ListAttributes will list HFS Plus Compression extended attribute(s) (if present) for the file referred to by path.

On success returns array with names. If no accessible extended attributes are associated with the given path, the function returns empty array. Lasterror is set.

See also:

- 75.13.11 ListAttributes(path as string, Options as Integer = 0) as string()

**75.13.11 ListAttributes(path as string, Options as Integer = 0) as string()**


**Function:** List extended attribute names.

**Notes:**

Extended attributes extend the basic attributes associated with files and directories in the file system. They are stored as name:data pairs associated with file system objects (files, directories, symlinks, etc).

ListAttributes retrieves a list of names of extended attributes associated with the given path in the file system. The list will only include names of extended attributes to which the calling process has access.

Options controls how the attribute list is generated:

- kNoFollow: Do not follow symbolic links. ListAttributes normally lists attributes of the target of path if it is a symbolic link. With this option, ListAttributes will list attributes of the link itself.
- kShowCompression: ListAttributes will list HFS Plus Compression extended attribute(s) (if present) for the file referred to by path.

On success returns array with names. If no accessible extended attributes are associated with the given path, the function returns empty array. Lasterror is set.

See also:

- 75.13.10 ListAttributes(path as folderitem, Options as Integer = 0) as string()

**75.13.12 RemoveAttribute(path as folderitem, name as string, options as Integer = 0) as boolean**


**Function:** Remove an extended attribute value.

**Notes:**
Extended attributes extend the basic attributes associated with files and directories in the file system. They are stored as name:data pairs associated with file system objects (files, directories, symlinks, etc).

RemoveAttribute deletes the extended attribute name associated with path.

An extended attribute’s name is a simple UTF-8 string. Options is a bit mask specifying various options:

- **kNoFollow**: Do not follow symbolic links. Normally, removexattr() acts on the target of path if it is a symbolic link. With this option, RemoveAttribute will act on the link itself.

- **kShowCompression**: RemoveAttribute will remove HFS Plus Compression extended attribute name (if present) for the file referred to by path or fd.

On success, true is returned. On failure, false is returned and the lasterror value is set. See also:

- 75.13.13 RemoveAttribute(path as string, name as string, options as Integer = 0) as boolean

### 75.13.13 RemoveAttribute(path as string, name as string, options as Integer = 0) as boolean


**Function**: Remove an extended attribute value.

**Notes**:

Extended attributes extend the basic attributes associated with files and directories in the file system. They are stored as name:data pairs associated with file system objects (files, directories, symlinks, etc).

RemoveAttribute deletes the extended attribute name associated with path.

An extended attribute’s name is a simple UTF-8 string. Options is a bit mask specifying various options:

- **kNoFollow**: Do not follow symbolic links. Normally, removexattr() acts on the target of path if it is a symbolic link. With this option, RemoveAttribute will act on the link itself.

- **kShowCompression**: RemoveAttribute will remove HFS Plus Compression extended attribute name (if present) for the file referred to by path or fd.
On success, true is returned. On failure, false is returned and the lasterror value is set.

See also:
- 75.13.12 RemoveAttribute(path as folderitem, name as string, options as Integer = 0) as boolean

**75.13.14 SetAttribute(path as folderitem, name as string, data as Variant, options as Integer = 0) as boolean**

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Set an extended attribute value.

**Example:**
```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.txt")
call ExtendedAttributesMBS.SetAttribute(f, ExtendedAttributesMBS.kAttributeNameFinderComment, "Test Comment")
```

**Notes:**
On Mac the extended attributes are normally formatted property lists, so please use the high level functions SetAttribute/GetAttribute. Raw functions are better for things like resourcefork or FinderInfo.

Extended attributes extend the basic attributes associated with files and directories in the file system. They are stored as name:data pairs associated with file system objects (files, directories, symlinks, etc).

SetAttribute associates name and data together as an attribute of path.

An extended attribute’s name is a simple UTF-8 string. Data is a memoryblock with the data and contains textual or binary data to be associated with the extended attribute. Position specifies the offset within the extended attribute. In the current implementation, only the resource fork extended attribute makes use of this argument. For all others, position is reserved and should be set to zero.

Options controls how the attribute is set:

- **kNoFollow** Do not follow symbolic links. SetAttribute normally sets attributes on the target of path if it is a symbolic link. With this option, SetAttribute will act on the link itself.
- **kCreate** Fail if the named attribute already exists.
- **kReplace** Fail if the named attribute does not exist. Failure to specify kReplace or kCreate allows creation and replacement.

On some filesystems, such as HFS+, setting the extended attribute com.apple.ResourceFork will update the
modification time of the file.

Returns true on success and false on failure. Lasterror is set.
You may need to inform other applications like Finder that file changed and attributes need to be read.
See also:

- 75.13.15 SetAttribute(path as string, name as string, data as Variant, options as Integer = 0) as boolean

**75.13.15 SetAttribute(path as string, name as string, data as Variant, options as Integer = 0) as boolean**

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Set an extended attribute value.
**Notes:**
On Mac the extended attributes are normally formatted property lists, so please use the high level functions SetAttribute/GetAttribute. Raw functions are better for things like resourcefork or FinderInfo.

Extended attributes extend the basic attributes associated with files and directories in the file system. They are stored as name: data pairs associated with file system objects (files, directories, symlinks, etc).

SetAttribute associates name and data together as an attribute of path.

An extended attribute’s name is a simple UTF-8 string. Data is a memoryblock with the data and contains textual or binary data to be associated with the extended attribute. Position specifies the offset within the extended attribute. In the current implementation, only the resource fork extended attribute makes use of this argument. For all others, position is reserved and should be set to zero.

Options controls how the attribute is set:

- kNoFollow  Do not follow symbolic links. SetAttribute normally sets attributes on the target of path if it is a symbolic link. With this option, SetAttribute will act on the link itself.
- kCreate Fail if the named attribute already exists.
- kReplace Fail if the named attribute does not exist. Failure to specify kReplace or kCreate allows creation and replacement.

On some filesystems, such as HFS+, setting the extended attribute com.apple.ResourceFork will update the modification time of the file.
Returns true on success and false on failure. Lasterror is set.
You may need to inform other applications like Finder that file changed and attributes need to be read.
See also:

- 75.13.14 SetAttribute(path as folderitem, name as string, data as Variant, options as Integer = 0) as boolean

75.13.16 SetRawAttribute(path as folderitem, name as string, data as memoryblock, options as Integer = 0) as boolean

Function: Set an extended attribute value.
Notes:
On Mac the extended attributes are normally formatted property lists, so please use the high level functions SetAttribute/GetAttribute. Raw functions are better for things like resourcefork or FinderInfo.

Extended attributes extend the basic attributes associated with files and directories in the file system. They are stored as name:data pairs associated with file system objects (files, directories, symlinks, etc).

SetRawAttribute associates name and data together as an attribute of path.

An extended attribute's name is a simple UTF-8 string. Data is a memoryblock with the data and contains textual or binary data to be associated with the extended attribute. Position specifies the offset within the extended attribute. In the current implementation, only the resource fork extended attribute makes use of this argument. For all others, position is reserved and should be set to zero.

Options controls how the attribute is set:

kNoFollow  Do not follow symbolic links. SetRawAttribute normally sets attributes on the target of path if it is a symbolic link. With this option, SetRawAttribute will act on the link itself.
kCreate    Fail if the named attribute already exists.
kReplace   Fail if the named attribute does not exist. Failure to specify kReplace or kCreate allows creation and replacement.

On some filesystems, such as HFS+, setting the extended attribute com.apple.ResourceFork will update the modification time of the file.

Returns true on success and false on failure. Lasterror is set.
You may need to inform other applications like Finder that file changed and attributes need to be read.
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See also:

• 75.13.17 SetRawAttribute(path as string, name as string, data as memoryblock, options as Integer = 0) as boolean

75.13.17 SetRawAttribute(path as string, name as string, data as memoryblock, options as Integer = 0) as boolean


Function: Set an extended attribute value.

Notes:

On Mac the extended attributes are normally formatted property lists, so please use the high level functions SetAttribute/GetAttribute. Raw functions are better for things like resourcefork or FinderInfo.

Extended attributes extend the basic attributes associated with files and directories in the file system. They are stored as name:data pairs associated with file system objects (files, directories, symlinks, etc).

SetRawAttribute associates name and data together as an attribute of path.

An extended attribute’s name is a simple UTF-8 string. Data is a memoryblock with the data and contains textual or binary data to be associated with the extended attribute. Position specifies the offset within the extended attribute. In the current implementation, only the resource fork extended attribute makes use of this argument. For all others, position is reserved and should be set to zero.

Options controls how the attribute is set:

kNoFollow  Do not follow symbolic links. SetRawAttribute normally sets attributes on the target of path if it is a symbolic link. With this option, SetRawAttribute will act on the link itself.

kCreate  Fail if the named attribute already exists.

kReplace  Fail if the named attribute does not exist. Failure to specify kReplace or kCreate allows creation and replacement.

On some filesystems, such as HFS+, setting the extended attribute com.apple.ResourceFork will update the modification time of the file.

Returns true on success and false on failure. Lasterror is set.

You may need to inform other applications like Finder that file changed and attributes need to be read.

See also:
75.13.18 Constants

75.13.19 kAttributeNameFinderComment = ”com.apple.metadata:kMDItemFinderComment”
MBS MacOSX Plugin, Plugin Version: 12.5. Function: The attribute name for the Finder Comment.

75.13.20 kAttributeNameFinderInfo = ”com.apple.FinderInfo”
MBS MacOSX Plugin, Plugin Version: 12.5. Function: The attribute name for the Finder Info.

75.13.21 kAttributeNameResourceFork = ”com.apple.ResourceFork”
MBS MacOSX Plugin, Plugin Version: 12.5. Function: The attribute name for the resource fork.

75.13.22 kCreate = 2
MBS MacOSX Plugin, Plugin Version: 12.5. Function: One of the option flags. Notes: Fail if the named attribute already exists.

75.13.23 kNoDefault = 16
MBS MacOSX Plugin, Plugin Version: 12.5. Function: One of the option flags.

75.13.24 kNoFollow = 1
MBS MacOSX Plugin, Plugin Version: 12.5. Function: One of the option flags. Notes: Do not follow symbolic links. ListAttributes normally lists attributes of the target of path if it is a symbolic link. With this option, ListAttributes will list attributes of the link itself.
75.13.25  kNoSecurity = 8

MBS MacOSX Plugin, Plugin Version: 12.5. **Function:** One of the option flags.

75.13.26  kReplace = 4

MBS MacOSX Plugin, Plugin Version: 12.5. **Function:** One of the option flags.  
**Notes:** Fail if the named attribute does not exist. Failure to specify kReplace or kCreate allows creation and replacement.

75.13.27  kShowCompression = 32

MBS MacOSX Plugin, Plugin Version: 12.5. **Function:** One of the option flags.  
**Notes:** ListAttributes will list HFS Plus Compression extended attribute(s) (if present) for the file referred to by path.
75.14. CLASS FILELISTMBS

75.14 class FileListMBS

75.14.1 class FileListMBS

MBS Util Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class for a list of files. **Notes:** This class is made to get a list of files in a folder faster than by using a folderitem.

75.14.2 Methods

75.14.3 AttributeModificationDate(index as Integer) as Double

MBS Util Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attribute modification date of this file or directory. **Notes:** On Mac OS the UTC date (+0 time zone) Raises an exception if index is out of bounds. Index is zero based. See also:

- 75.14.4 AttributeModificationDate(index as Integer, UTC as boolean) as Date

75.14.4 AttributeModificationDate(index as Integer, UTC as boolean) as Date

MBS Util Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The attribute modification date of this file or directory. **Notes:** Either in UTC time zone or in local time zone. Raises an exception if index is out of bounds. Index is zero based. See also:

- 75.14.3 AttributeModificationDate(index as Integer) as Double

75.14.5 BackupDate(index as Integer) as Double

MBS Util Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The backup date of this file or directory. **Notes:** On Mac OS the UTC date (+0 time zone) See also:

- 75.14.6 BackupDate(index as Integer, UTC as boolean) as Date
75.14.6 BackupDate(index as Integer, UTC as boolean) as Date

MBS Util Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The backup date of this file or directory.

**Notes:**

Either in UTC time zone or in local time zone.
Raises an exception if index is out of bounds. Index is zero based.
See also:

- 75.14.5 BackupDate(index as Integer) as Double

75.14.7 Close

MBS Util Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The destructor.

**Notes:**

There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

75.14.8 Constructor

MBS Util Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** A dummy constructor used only for automatic plugin testing.

See also:

- 75.14.9 Constructor(filelist as FileListMBS, index as Integer, WinFilter as string = ””)
- 75.14.10 Constructor(folder as folderitem, WinFilter as string = ””)
- 75.14.11 Constructor(Path as String, WinFilter as string = ””)

75.14.9 Constructor(filelist as FileListMBS, index as Integer, WinFilter as string = ””)

MBS Util Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor which creates a new file list based on item in a given file list.

**Example:**

```
dim f1 as new FileListMBS(SpecialFolder.UserHome)
'MMsgBox f1.path

// search first index of a visible folder
```
75.14. CLASS FILELISTMBS

```vbnet
dim IndexOfDirectory as integer = 0
while f1.Directory(IndexOfDirectory) = false or f1.Visible(IndexOfDirectory) = false
    IndexOfDirectory = IndexOfDirectory + 1
wend

// list that folder
dim f2 as new FileListMBS(f1, IndexOfDirectory)
'MsgBox f2.path

// show first file and path
MsgBox f2.Name(0)+EndOfLine+f2.ItemPath(0)
```

Notes:

If count is 0 after the constructor the folder is invalid or empty.
On Windows the WinFilter allows you to pass a custom filter like "*.txt" to only find some files there.
See also:

- 75.14.8 Constructor
- 75.14.10 Constructor(folder as folderitem, WinFilter as string = "")
- 75.14.11 Constructor(Path as String, WinFilter as string = "")

75.14.10 Constructor(folder as folderitem, WinFilter as string = "")

MBS Util Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The constructor which creates a new file list based on the folder.

Notes:

If count is 0 after the constructor the folder is invalid or empty.
On Windows the WinFilter allows you to pass a custom filter like "*.txt" to only find some files there.
See also:

- 75.14.8 Constructor
- 75.14.9 Constructor(filelist as FileListMBS, index as Integer, WinFilter as string = "")
- 75.14.11 Constructor(Path as String, WinFilter as string = "")

75.14.11 Constructor(Path as String, WinFilter as string = ")


Notes:
If count is 0 after the constructor the directory path is invalid or empty.
On Windows the WinFilter allows you to pass a custom filter like “*.txt” to only find some files there.
See also:

- 75.14.8 Constructor
- 75.14.9 Constructor(filelist as FileListMBS, index as Integer, WinFilter as string = "")
- 75.14.10 Constructor(folder as folderitem, WinFilter as string = "")

75.14.12 CreationDate(index as Integer) as Double

MBS Util Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:**
The creation date.
**Notes:**
On Mac OS the UTC date (+0 time zone)
On Windows looks like local timezone.
See also:

- 75.14.13 CreationDate(index as Integer, UTC as boolean) as Date

75.14.13 CreationDate(index as Integer, UTC as boolean) as Date

MBS Util Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:**
The creation date.
**Notes:**
Either in UTC time zone or in local time zone.
Raises an exception if index is out of bounds. Index is zero based.
See also:

- 75.14.12 CreationDate(index as Integer) as Double

75.14.14 Creator(index as Integer) as string

MBS Util Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:**
The Mac Creator code of the item with the given index.
**Notes:**
Always "" on Windows and Linux.
Raises an exception if index is out of bounds. Index is zero based.
75.14. **CLASS FILELISTMBS**

### 75.14.15 `Directory(index as Integer) as boolean`

MBS Util Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the item with the given index is a folder.

**Notes:**

True if it is a folder and false if it is a file.

Raises an exception if index is out of bounds. Index is zero based.

### 75.14.16 `DisplayName(index as Integer) as string`

MBS Util Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The display name of the item with the given index.

**Notes:**

Asks the System for the display name of the item. Returns the normal name on any error.

As this call may cost quite some CPU time you may cache the value if you need it more often.

May return a Unicode string, so be careful with encoding.

Returns "" on any error.

Raises an exception if index is out of bounds. Index is zero based.

### 75.14.17 `FinderFlags(index as Integer) as Integer`

MBS Util Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The Finder flags from Mac OS.

**Notes:**

On Windows and Linux value is 0.

The flag value is a set of bits with the following meaning:

### 75.14.18 `FSRef(index as Integer) as memoryblock`

MBS Util Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The FSRef used for this item.

**Notes:**

Returns nil if no FSRef is kept for this item.
On Mac OS there is a FSSpec or (FSRef and HFSUniStr255). Raises an exception if index is out of bounds. Index is zero based.

75.14.19  HFSUniStr255(index as Integer) as memoryblock

MBS Util Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The HFSUniStr255 used for this item. **Notes:** Returns nil if no HFSUniStr255 is kept for this item. On Mac OS there is a FSSpec or (FSRef and HFSUniStr255). Raises an exception if index is out of bounds. Index is zero based.

75.14.20  IsBundle(index as Integer) as Boolean

MBS Util Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Queries using LaunchServices whether this item is a folder and the root of a bundle. **Example:**

Protected Sub Dir(f as FolderItem)
    dim l as FileListMBS
    dim i,c as Integer

    // search subfolders and find bundles

    l=new FileListMBS(f)
    c=l.Count-1
    for i=0 to c
        // if bundle, show it in listbox
        if l.IsBundle(i) then
            ListBox1.AddRow l.Item(i).AbsolutePath
        elseif l.Directory(i) then

    end if
end Sub
// if sub folder, browse it
dir l.Item(i)
end if
next
End Sub

Notes: On Windows, Linux and Mac OS Classic always false.

75.14.21  **IsHardLinked(index as Integer) as boolean**

MBS Util Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:**
Whether the file is a hard link.
**Notes:**
If two directory entries point to the same hard disc space, you have a file which has two directory entries, but only one storage.

This function returns true for files in a Time Machine backup which did not change since the last backup and share their disc space with the other backups.

Raises an exception if index is out of bounds. Index is zero based.

75.14.22  **Item(index as Integer) as folderitem**

MBS Util Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a folderitem for the item with the given index.
**Notes:**
Returns nil on any error.
The reason why you use this class is to avoid making folderitems which is slow, so don’t use this function too often.
Raises an exception if index is out of bounds. Index is zero based.
On Mac OS X you always get TrueItem behavior as the plugin doesn’t resolve aliases.

75.14.23  **ItemPath(index as Integer) as string**

MBS Util Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The native file path for an item.
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75.14.24 LastAccessDate(index as Integer) as Double

MBS Util Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last access date of this file or directory. **Notes:**

On Mac OS the UTC date (+0 time zone)
Raising an exception if index is out of bounds. Index is zero based.

To query Spotlight’s Last Open day, please check the FAQ for sample code.
See also:

- 75.14.25 LastAccessDate(index as Integer, UTC as boolean) as Date

75.14.25 LastAccessDate(index as Integer, UTC as boolean) as Date

MBS Util Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last access date of this file or directory. **Notes:**

Either in UTC time zone or in local time zone.
Raising an exception if index is out of bounds. Index is zero based.
To query Spotlight’s Last Open day, please check the FAQ for sample code.
See also:

- 75.14.24 LastAccessDate(index as Integer) as Double

75.14.26 LogicalDataLength(index as Integer) as Int64

MBS Util Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The logical file data length for the item with the given index. **Notes:**

Same value as folderitem.length, but works with files >2GB.
Raising an exception if index is out of bounds. Index is zero based.

75.14.27 LogicalResourceLength(index as Integer) as Int64

MBS Util Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The logical resource length of the item with the given index. **Notes:**

Raising an exception if index is out of bounds. Index is zero based.
75.14. CLASS FILELISTMBS

75.14.28  ModificationDate(index as Integer) as Double

Notes:
On Mac OS the UTC date (+0 time zone)
On Windows looks like local timezone.
Raises an exception if index is out of bounds. Index is zero based.
See also:

- 75.14.29 ModificationDate(index as Integer, UTC as boolean) as Date

75.14.29  ModificationDate(index as Integer, UTC as boolean) as Date

Notes:
Either in UTC time zone or in local time zone.
Raises an exception if index is out of bounds. Index is zero based.
See also:

- 75.14.28 ModificationDate(index as Integer) as Double

75.14.30  Name(index as Integer) as string

MBS Util Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The name of the item with the given index.
Notes:
May return a Unicode string, so be careful with encoding.
Returns "" on any error.
Raises an exception if index is out of bounds. Index is zero based.

75.14.31  NodeID(index as Integer) as Integer

Notes:
The node id is zero on Windows and Linux.
Raises an exception if index is out of bounds. Index is zero based.
75.14.32 ParentDirectoryID(index as Integer) as Integer

MBS Util Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** The Mac ID for the parent directory. **Notes:** Parent Directory ID is zero on Windows and Linux. Raises an exception if index is out of bounds. Index is zero based.

75.14.33 PhysicalDataLength(index as Integer) as Int64

MBS Util Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The physical data length of the item with the given index. **Notes:** Returns 0 on any error. Raises an exception if index is out of bounds. Index is zero based.

75.14.34 PhysicalResourceLength(index as Integer) as Int64

MBS Util Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The physical resource length of the item with the given index. **Notes:** Value is always 0 on Windows. Returns 0 on any error. Raises an exception if index is out of bounds. Index is zero based.

75.14.35 SortByCreationDate

MBS Util Plugin, Plugin Version: 6.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sorts items in list by creation date.

75.14.36 SortByModificationDate

MBS Util Plugin, Plugin Version: 6.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sorts items in list by modification date.
75.14.37 TrueItem(index as Integer) as folderitem

MBS Util Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a folderitem for the item with the given index.

**Notes:**

Returns nil on any error.
The reason why you use this class is to avoid making folderitems which is slow, so don’t use this function too often.

TrueItem will on Windows use GetTrueFolderItem instead of GetFolderItem so the link files are not resolved by Realbasic.

75.14.38 Type(index as Integer) as string

MBS Util Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** The Mac Type code of the item with the given index.

**Notes:**

Always "" on Windows and Linux.
Raises an exception if index is out of bounds. Index is zero based.

75.14.39 Visible(index as Integer) as boolean

MBS Util Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the item with the given index is visible.

**Notes:**

On Mac OS X, files with name starting with "." are considered to be invisible.
False on any error.
Raises an exception if index is out of bounds. Index is zero based.

75.14.40 WinFileAttributes(index as Integer) as Integer

MBS Util Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The file attributes for this file on Windows.

**Notes:**

Value is 0 on other platforms.
Raises an exception if index is out of bounds. Index is zero based.
75.14.41 Properties

75.14.42 Count as Integer

MBS Util Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of items found. **Notes:** So index goes from 0 to count-1 in all functions. (Read and Write property)

75.14.43 Folder as Folderitem

MBS Util Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The folderitem used in the constructor. **Notes:** (Read and Write property)

75.14.44 OK as Boolean

MBS Util Plugin, Plugin Version: 6.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the process of reading the directory content in the constructor was successful. **Notes:** Should be true on success. (Read and Write property)

75.14.45 Path as String

MBS Util Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The file path for the folder. **Notes:** The plugin makes sure it ends with slash or backslash. (Read and Write property)

75.14.46 TotalLogicalDataLength as Int64

MBS Util Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The sum of logical dats length for all items. **Notes:** (Read only property)
75.14.47  TotalLogicalResourceLength as Int64

MBS Util Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The sum of logical resource length for all items. **Notes:** (Read only property)

75.14.48  TotalPhysicalDataLength as Int64

MBS Util Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The sum of physical data length for all items. **Notes:** (Read only property)

75.14.49  TotalPhysicalResourceLength as Int64

MBS Util Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The sum of physical resource length for all items. **Notes:** (Read only property)
75.15 class FinderSelectionMBS

75.15.1 class FinderSelectionMBS


**Function:** A class to query the Finder for the current selection.

**Example:**

```vbnet
dim f as new FinderSelectionMBS
dim i,n as Integer
dim a(-1) as String
dim g as FolderItem

f.GetSelection
if f.LastError=0 then
    n=f.CountItems
    for i=1 to n
        g=f.Item(i)
        if g<>nil then
            a.Append g.DisplayName
        end if
    next
end if
MsgBox Join(a,EndOfLine)
```

75.15.2 Methods

75.15.3 CountItems as Integer


**Function:** Returns the number of items in the Finder selection.

**Example:**

```vbnet
dim f as new FinderSelectionMBS

f.GetSelection
MsgBox str(F.CountItems)
```

**Notes:** Returns 0 on any error.
75.15.4 GetSelection

Function: Asks the Finder for the current selection.
Example:

```vbnet
dim f as new FinderSelectionMBS
f.GetSelection
```

Notes: Lasterror is set.

75.15.5 Item(index as Integer) as folderitem

Function: Returns the item with the given index.
Example:

```vbnet
dim f as new FinderSelectionMBS
f.GetSelection
MsgBox f.Item(1).DisplayName ' display first item’s name
```

Notes:
Index is from 1 to count.
Lasterror is set.

75.15.6 Properties

75.15.7 LastError as Integer

Function: The last error code reported.
Example:

```vbnet
dim f as new FinderSelectionMBS
f.GetSelection
MsgBox str(F.LastError)
```
Notes:

A Mac OS error code.
(Read and Write property)
75.16  class FolderItem

75.16.1  class FolderItem

Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of Realbasic’s base classes.  
**Notes:** Handles access to files.

75.16.2  Methods

75.16.3  AddCustomIconMBS(icon as IconFamilyMBS, Compat as boolean) as Integer

MBS Picture Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds a custom icon to a file.  
**Example:**

dim fo as FolderItem  
dim g as IconFamilyMBS  
dim p,m as Picture  
fo=SpecialFolder.Desktop.Child(“test.jpg”)  
// get some picture  
p=fo.OpenAsPicture  
  
// make a mask  
m=NewPicture(p.Width,p.Height,1)  
m.Graphics.ForeColor=rgb(0,0,0)  
m.Graphics.fillrect 0,0,m.Width,m.Height  
// You may prefer to make a picture and a mask centered within a quadratic picture  
g=newIconFamilyMBS // new family  
  
// Add icons  
g.Thumbnail32BitData=p  
g.Thumbnail8BitMask=m  
g.Large1BitData=p  
g.Large1BitMask=m  
g.Large32BitData=p  
g.Large4BitData=p  
g.Large8BitData=p  
g.Large8BitMask=m
g.Huge1BitData=p
g.Huge1BitMask=m
g.Huge32BitData=p
g.Huge4BitData=p
g.Huge8BitData=p
g.Huge8BitMask=m

g.Small1BitData=p
g.Small1BitMask=m
g.Small32BitData=p
g.Small4BitData=p
g.Small8BitData=p
g.Small8BitMask=m

// Save to file
MsgBox str(fo.AddCustomIconMBS(g, true))

Notes:
Requires Mac OS 8.5 or newer.
Returns a Mac OS error code, with 0 for no error and -1 for parameter error (Icon=nil or invalid folderitem).
If Compat=true then the old icon resources for Mac OS 7/8 will be generated.
For folders, please create an invisible file called "icon" inside the folder and add the icon to this file.
To change the icon, just add it a second time. This will overwrite the first icon.

Before setting icon, make sure you close all Binarystream, Textoutputstream or other classes which may have the file open.

Please use NSWorkspaceMBS.setIcon for newer projects.

75.16.4  AddedToDirectoryDateMBS as date

MBS Util Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the date the file was added to the folder.
**Notes:** Requires OS X 10.10 or newer.

75.16.5  AliasInfoMBS as AliasInfoMBS

MBS MacClassic Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Alias information about the folderitem if it is an alias file.
**Example:**
// select an alias file. use TrueChild so it’s not resolved
dim f as FolderItem = SpecialFolder.Desktop.TrueChild("Development")

// get alias info
dim a as AliasInfoMBS = f.AliasInfoMBS

// show info
MsgBox "alias points to " + a.TargetName + " in path " + a.PathString + " of volume " + a.VolumeName

Notes: Returns nil on any error.

75.16.6 BackupIsItemExcludedMBS(byref excludeByPath as boolean) as boolean

Function: Report whether or not an item is being excluded from backup.
Notes:
excludeByPath: pass a boolean variable to determine whether or not the given item is excluded as an absolute path or whether it is sticky to the item.

Returns true if the item or any of its ancestors are excluded from backup, false otherwise.

Require Mac OS X 10.5.

75.16.7 BackupSetItemExcludedMBS(exclude as boolean, excludeByPath as boolean) as Integer

Function: Add or remove an item from the list of items excluded from backup.
Notes:
When backing up, the backup daemon skips items marked by this call. If a folder is marked for exclusion, it and its contents are excluded from backup. When specifying by path, it is OK to pass a URL of an item/folder that does not exist yet.

Returns the error code. -1 is the error code in case the function is not available.
Require Mac OS X 10.5.
75.16.8 CalculateDirectorySizeMBS(recursive as boolean = false, ticks as Integer = 0, QueryCompressedSizes as boolean = false, RecursionLimit as Integer = -1) as DirectorySizeMBS

Example:

```
// chose a folder
dim f as FolderItem = SelectFolder

// calculate
dim d as DirectorySizeMBS = f.CalculateDirectorySizeMBS(True,0)

// display
MsgBox str(d.FilesCount)+” files in ”+str(d.FolderCount)+” folder”
```

Notes:

recursive: Whether to count items in the subfolders.
ticks: Whether to yield time to other threads. (See YieldTicks property)
QueryCompressedSizes: Whether to query compressed file sizes on Windows.
RecursionLimit: If positive, the recursion limit.

Returns nil on any error.

75.16.9 ColorSyncCountImageProfilesMBS as Integer

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Use this function to obtain a count of the number of embeded profiles for a given image.
Notes:

Returns 0 if the function fails for any reason.
Requires ColorSync 2.6 or newer.

75.16.10 ColorSyncEmbedImageMBS(target as folderItem,replace as boolean,Profile as ColorSyncProfileMBS) as boolean

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: This function will embed an image with an ICC profile.
Notes:

If target is a file, it specifies the resulting image. If this parameter is a folder, it specifies the location of the
resulting image which will have the same name as the original file. If this parameter is nil, the original file is modified.
If a file with the same name already exists, it will be replaced if this parameter replace is set to true.
Returns false if the function fails for any reason.
Requires ColorSync 2.6 or newer.

75.16.11 ColorSyncGetImageProfileMBS(index as Integer) as ColorSyncProfileMBS

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Use this function to obtain a specific embedded profile for a given image.
**Notes:**
Returns nil if the function fails for any reason.
Requires ColorSync 2.6 or newer.

75.16.12 ColorSyncImageColorSpaceMBS as string

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** What color space does this picture use?
**Example:**
```vbs
dim file as FolderItem
msgbox file.ColorSyncImageColorSpaceMBS
```

**Notes:**
Possible values:

Other values without a definition from Apple:

"3CLR", "4CLR", "5CLR", "6CLR", "7CLR", "8CLR", "NAME", "9CLR", "ACLR", "BCLR", "CCLR", "DCLR", "ECLR", "FCLR".

Requires ColorSync 2.6 or newer.
"XYZ"  The XYZ data color space.
"Lab"  The L*a*b* data color space.
"Luv"  The L*u*v* data color space.
"Yxy"  The Yxy data color space.
"RGB"  The RGB data color space.
"sRGB" The RGB data color space.
"GRAY" The Gray data color space.
"HSV"  The HSV data color space.
"HLS"  The HLS data color space.
"CMYK" The CMYK data color space.
"CMY"  The CMY data color space.
"MCH5" The five-channel multichannel (HiFi) data color space.
"MCH6" The six-channel multichannel (HiFi) data color space.
"MCH7" The seven-channel multichannel (HiFi) data color space.
"MCH8" The eight-channel multichannel (HiFi) data color space.

75.16.13 ColorSyncLinkImageMBS(target as folderitem,replace as boolean,quality as Integer,linkprofile as ColorSyncProfileMBS,linkintent as Integer) as boolean

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Use this function to match an image file with a device link profile. 

**Notes:**

If target is a file, it specifies the resulting image. If this parameter is a folder, it specifies the location of the resulting image which will have the same name as the original file. If this parameter is nil, the original file is modified. 

If a file with the same name already exists, it will be replaced if this parameter replace is set to true. 

Returns false if the function fails for any reason. 

**Quality values:**

<table>
<thead>
<tr>
<th>Code</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cmNormalMode</td>
<td>0</td>
<td>This is the default setting. Normal mode indicates that the CMM should use its default method to compromise between performance and resource requirements.</td>
</tr>
<tr>
<td>cmDraftMode</td>
<td>1</td>
<td>Draft mode indicates that the CMM should sacrifice quality, if necessary, to minimize resource requirements. Note that the default CMM currently produces the same results for both normal and draft mode.</td>
</tr>
<tr>
<td>cmBestMode</td>
<td>2</td>
<td>Best mode indicates that the CMM should maximize resource usage to ensure the highest possible quality.</td>
</tr>
</tbody>
</table>
Intent values:

- **cmPerceptual** 0: All the colors of a given gamut can be scaled to fit within another gamut. This intent is best suited to realistic images, such as photographic images.
- **cmRelativeColorimetric** 1: The colors that fall within the gamuts of both devices are left unchanged. This intent is best suited to logo images.
- **cmSaturation** 2: The relative saturation of colors is maintained from gamut to gamut. This intent is best suited to bar graphs and pie charts in which the actual color displayed is less important than its vividness.
- **cmAbsoluteColorimetric** 3: This approach is based on a device-independent color space in which the result is an idealized print viewed on a ideal type of paper having a large dynamic range and color gamut.

Requires ColorSync 2.6 or newer.

### 75.16.14 ColorSyncMatchImageMBS(target as folderitem,replace as boolean,quality as Integer,sourceprofile as ColorSyncProfileMBS,sourceintent as Integer,destprofile as ColorSyncProfileMBS) as boolean

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Use this function to color match an image file.

**Example:**

```vbnet
dim f, gg as FolderItem
dim fo, fi as FolderItem
dim ip, op as ColorSyncProfileMBS
dim cw as ColorSyncWorldMBS
dim b as Boolean

gg = SpecialFolder.Desktop.truechild("aaa")
f = SpecialFolder.Desktop.Child("mdchen2.tif")

fo = GetFolderItem("Generic RGB Profile.icc")
fi = GetFolderItem("Generic CMYK Profile.icc")

ip = fi.OpenAsColorSyncProfileMBS
op = fo.OpenAsColorSyncProfileMBS

cw = new ColorSyncWorldMBS(ip, op)

b = f.ColorSyncMatchImageMBS(gg, true, 0, ip, 0, op)

window1.backdrop = gg.openaspicture
```
Notes:
If target is a file, it specifies the resulting image. If this parameter is a folder, it specifies the location of the resulting image which will have the same name as the original file. If this parameter is nil, the original file is modified.
If a file with the same name already exists, it will be replaced if this parameter replace is set to true.
Returns false if the function fails for any reason.

Quality values:

- **cmNormalMode**: 0  This is the default setting. Normal mode indicates that the CMM should use its default method to compromise between performance and resource requirements.
- **cmDraftMode**: 1  Draft mode indicates that the CMM should sacrifice quality, if necessary, to minimize resource requirements. Note that the default CMM currently produces the same results for both normal and draft mode.
- **cmBestMode**: 2  Best mode indicates that the CMM should maximize resource usage to ensure the highest possible quality.

Intent values:

- **cmPerceptual**: 0  All the colors of a given gamut can be scaled to fit within another gamut. This intent is best suited to realistic images, such as photographic images.
- **cmRelativeColorimetric**: 1  The colors that fall within the gamuts of both devices are left unchanged. This intent is best suited to logo images.
- **cmSaturation**: 2  The relative saturation of colors is maintained from gamut to gamut. This intent is best suited to bar graphs and pie charts in which the actual color displayed is less important than its vividness.
- **cmAbsoluteColorimetric**: 3  This approach is based on a device-independent color space in which the result is an idealized print viewed on a ideal type of paper having a large dynamic range and color gamut.

Requires ColorSync 2.6 or newer.

75.16.15 **ColorSyncProofImageMBS**(target as folderitem,replace as boolean,quality as Integer,sourceprofile as ColorSyncProfileMBS,sourceintent as Integer,destprofile as ColorSyncProfileMBS,proofprofile as ColorSyncProfileMBS) as boolean

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function**: Use this function to proof an image file.

Notes:
If target is a file, it specifies the resulting image. If this parameter is a folder, it specifies the location of the resulting image which will have the same name as the original file. If this parameter is nil, the original file is modified. If a file with the same name already exists, it will be replaced if this parameter replace is set to true. Returns false if the function fails for any reason.

Quality values:

- **cmNormalMode** 0: This is the default setting. Normal mode indicates that the CMM should use its default method to compromise between performance and resource requirements.
- **cmDraftMode** 1: Draft mode indicates that the CMM should sacrifice quality, if necessary, to minimize resource requirements. Note that the default CMM currently produces the same results for both normal and draft mode.
- **cmBestMode** 2: Best mode indicates that the CMM should maximize resource usage to ensure the highest possible quality.

Intent values:

- **cmPerceptual** 0: All the colors of a given gamut can be scaled to fit within another gamut. This intent is best suited to realistic images, such as photographic images.
- **cmRelativeColorimetric** 1: The colors that fall within the gamuts of both devices are left unchanged. This intent is best suited to logo images.
- **cmSaturation** 2: The relative saturation of colors is maintained from gamut to gamut. This intent is best suited to bar graphs and pie charts in which the actual color displayed is less important than its vividness.
- **cmAbsoluteColorimetric** 3: This approach is based on a device-independent color space in which the result is an idealized print viewed on an ideal type of paper having a large dynamic range and color gamut.

Requires ColorSync 2.6 or newer.

75.16.16 ColorSyncSetImageProfileMBS(target as folderitem,replace as boolean,index as Integer/profile as ColorSyncProfileMBS) as boolean

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Use this function to set a specific embedded profile for a given image. **Notes:**

If target is a file, it specifies the resulting image. If this parameter is a folder, it specifies the location of the resulting image which will have the same name as the original file. If this parameter is nil, the original file is modified.
If a file with the same name already exists, it will be replaced if this parameter replace is set to true. Returns false if the function fails for any reason. Requires ColorSync 2.6 or newer.

### 75.16.17 ColorSyncUnembedImageMBS(target as folderitem, replace as boolean)

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** This function will remove any ICC profiles embedded in an image. **Notes:**

If target is a file, it specifies the resulting image. If this parameter is a folder, it specifies the location of the resulting image which will have the same name as the original file. If this parameter is nil, the original file is modified. If a file with the same name already exists, it will be replaced if this parameter replace is set to true. Returns false if the function fails for any reason. Requires ColorSync 2.6 or newer.

### 75.16.18 ColorSyncValidImageMBS as Integer

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Is this a valid image for ColorSync? **Notes:**

Return values:

- 0 Windows
- 1 No ColorSync 2.6 or newer
- 2 Not valid
- 3 Valid

You can look in the folder ColorSyncScriptingFolder which picture formats are supported. In Mac OS X 10.1.5 there are TIFF, JPEG and GIF.

(The ColorSyncScriptingFolder function is part of the MBS Plugin)

Requires ColorSync 2.6 or newer.
75.16. **CLASS FOLDERITEM**

### 75.16.19 **CompressedFileLengthMBS as int64**

MBS Util Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the length of the compressed file on disk.

**Example:**

```plaintext
filesize.text=format(file.CompressedFileLengthMBS,"0")
```

**Notes:** On Windows files can be compressed and this function returns the size of the compressed file. On Mac and for non compressed files on Windows this function returns the uncompressed size.

### 75.16.20 **CountMBS as Integer**

MBS MacClassic Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns the number of items in this folder.

**Example:**

```plaintext
dim f as FolderItem = SpecialFolder.Desktop
MsgBox str(F.Count)+" vs. "+str(F.CountMBS)
```

**Deprecated:** This item is deprecated and should no longer be used. You can use folderitem.Count instead.

**Notes:**
The count property of the REALbasic folderitem class is cached.
So if you create a file, the count property may not update.

If you need a more up to date value, you can use the CountMBS function to return the value the Mac OS system software returns.
On any error (e.g. invalid folderitem) the function returns 0.

Windows support added in 4.2dr2.

### 75.16.21 **CreateLargeBinaryStreamMBS(MacType as string, MacCreator as string) as LargeBinaryStreamMBS**

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a file as a LargeBinaryStreamMBS.

**Example:**

```plaintext
dim f as FolderItem // your file
dim l as LargeBinaryStreamMBS
```
l=f.CreateLargeBinaryStreamMBS("TEXT","ttxt")

Notes:
If there is already a file, it is deleted.
On Windows the parameters are ignored.
Returns nil on any error.

75.16.22 CreateResStreamMBS(MacType as string, MacCreator as string) as ResStreamMBS

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creates a new ResStreamMBS.
Notes:
If there is already a file, it is deleted.
If the file could not be created it is deleted.
Returns nil on any error.

75.16.23 CreatorAppMBS as FolderItem

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the application that would be launched if you’d call the above Launch method, or NIL if no appropriate app can be located.
Example:

```vba
dim docfile as folderitem // your document file
dim appfile as folderitem
appfile=docfile.CreatorAppMBS
```

Notes:
This function doesn’t work with bundles and should be only used on Mac OS 9.
Use Launch service functions on Mac OS X.
See also:

- 75.16.24 CreatorAppMBS(creatorCode as String) as FolderItem
75.16.24 CreatorAppMBS(creatorCode as String) as FolderItem

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to the Application which created this file for the given creator code on the volume of the folderitem.

**Example:**

```
dim myvolume as folderitem // your volume
dim theFile as folderitem // your file
dim appfile as folderitem
dim ok as boolean
dim inFront as Boolean

appfile=myvolume.CreatorAppMBS("iCAB")
' or
ok = theFile.OpenWithAppMBS(myvolume.CreatorAppMBS("RSED"), inFront)
```

**Notes:**

Returns the application that would be launched if you’d call the above Launch method and if the file had the specified creator code. Returns NIL if no appropriate app can be located.

This method allows you to open a document with a creator code that you specify instead of having to locate the application by your own. Here’s an example on how to open any file with ResEdit (whose creator code is 'RSED'):

```
This function doesn’t work with bundles and should be only used on Mac OS 9.
Use Launch service functions on Mac OS X.
See also:
- 75.16.23 CreatorAppMBS as FolderItem
```

75.16.25 DarwinMediaClassMBS as string

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the class of the media.

**Example:**

```
dim f as FolderItem = SpecialFolder.Desktop

MsgBox f.DarwinMediaClassMBS
```

**Notes:**
Returns nil on any problem.

Possible values:

- kIODEMClass "IODEM"
- kIODVDMediaClass "IODVDMedia"
- kIOMediaClass "IOMedia"

### 75.16.26 DarwinMediaInfoMBS as CFDictionaryMBS

MBS MacCF Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the info dictionary of the media.

**Example:**

```plaintext
// info for boot volume
dim info as CFDictionaryMBS = volume(0).DarwinMediaInfoMBS
if info = nil then
    beep // error
else
    CFSHOWMBS info // show in console

    dim RemovableKey as CFStringMBS = NewCFStringMBS("Removable")
    dim RemovableCFO as CFOBJECTMBS = info.Value(RemovableKey)
    dim RemovableCFB as CFbooleanMBS = CFbooleanMBS(RemovableCFO)
    dim Removable as Boolean = RemovableCFB.Value
    MsgBox "Removable: " + str(Removable)

    dim EjectableKey as CFStringMBS = NewCFStringMBS("Ejectable")
    dim EjectableCFO as CFOBJECTMBS = info.Value(EjectableKey)
    dim EjectableCFB as CFbooleanMBS = CFbooleanMBS(EjectableCFO)
    dim Ejectable as Boolean = EjectableCFB.Value
    MsgBox "Ejectable: " + str(Ejectable)

    dim SizeKey as CFStringMBS = NewCFStringMBS("Size")
    dim SizeCFO as CFOBJECTMBS = info.Value(SizeKey)
    dim SizeCFN as CFNumberMBS = CFNumberMBS(SizeCFO)
    dim Size as Double = SizeCFN.doubleValue / 1000000000.0
    MsgBox "Size: " + str(Size, "0.0") + " GB"
end if
```
Notes:

Returns nil on any problem.

example output for the example code above:

```latex
<CFDictionary 0x7d60510 [ 0xa01900e0 ] >{ type = fixed-mutable, count = 14, capacity = 14, pairs = (0 : <CFString 0x7d5ffe0 [ 0xa01900e0 ] >{ contents = "Leaf" } = <CFBoolean 0xa0190b98 [ 0xa01900e0 ] >{ value = false } 1 : <CFString 0x7d60160 [ 0xa01900e0 ] >{ contents = "Writable" } = <CFBoolean 0xa0190b90 [ 0xa01900e0 ] >{ value = true } 2 : <CFString 0x7d60310 [ 0xa01900e0 ] >{ contents = "BSD Minor" } = <CFNumber 0x7d60300 [ 0xa01900e0 ] >{ value = +0, type = kCFNumberSInt32Type } 6 : <CFString 0x7d60040 [ 0xa01900e0 ] >{ contents = "Preferred Block Size" } = <CFNumber 0x7d600b0 [ 0xa01900e0 ] >{ value = +512, type = kCFNumberSInt64Type } 11 : <CFString 0x7d604c0 [ 0xa01900e0 ] >{ contents = "BSD Major" } = <CFNumber 0x7d604b0 [ 0xa01900e0 ] >{ value = +14, type = kCFNumberSInt32Type } 13 : <CFString 0x7d603b0 [ 0xa01900e0 ] >{ contents = "BSD Name" } = <CFString 0x7d60110 [ 0xa01900e0 ] >{ contents = "disk0" } 14 : <CFString 0x7d600d0 [ 0xa01900e0 ] >{ contents = "Size" } = <CFNumber 0x7d60090 [ 0xa01900e0 ] >{ value = +163928604672, type = kCFNumberSInt64Type } 15 : <CFString 0x7d603f0 [ 0xa01900e0 ] >{ contents = "Content Hint" } = <CFString 0x7d5fe90 [ 0xa01900e0 ] >{ contents = "Internal.icns" } 16 : <CFString 0x7d60250 [ 0xa01900e0 ] >{ contents = "IOBundleResourceFile" } = <CFDictionary 0x7d60230 [ 0xa01900e0 ] >{ contents = "Apple_partition_scheme" } 17 : <CFString 0x7d601b0 [ 0xa01900e0 ] >{ contents = "IOMediaIcon" } = <CFDictionary 0x7d60120 [ 0xa01900e0 ] >{ contents = "Whole" } 19 : <CFString 0x7d603d0 [ 0xa01900e0 ] >{ contents = "BSD Unit" } = <CFNumber 0x7d603c0 [ 0xa01900e0 ] >{ value = +0, type = kCFNumberSInt32Type } 20 : <CFString 0x7d60200 [ 0xa01900e0 ] >{ contents = "Ejectable" } = <CFBoolean 0xa0190b98 [ 0xa01900e0 ] >{ value = false } 21 : <CFString 0x7d601a0 [ 0xa01900e0 ] >{ contents = "Content" } = <CFString 0x7d60190 [ 0xa01900e0 ] >{ contents = "" } 22 : <CFString 0x7d60120 [ 0xa01900e0 ] >{ contents = "" } )

If you don’t like all the CFDictionaryMBS methods, than use Dictionary function it to get a Xojo dictionary.
75.16.27 DarwinVolumeNameMBS as string

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the name of the volume from the BSD part of Mac OS X.
Example:
MsgBox Volume(0).DarwinVolumeNameMBS // shows here disk1s10

Notes:
Returns "" on any error.
The returned string is encoded as ASCII.

75.16.28 DeleteDataForkMBS

Notes:
Equal to open the file using a binarystream and setting the length property to 0.
On Mac OS a file can exist without a datafork, with a resource fork or even without any fork.

75.16.29 DeleteResourceForkMBS

Notes:
Equal to open the file using a ResStreamMBS and setting the length property to 0.
On Mac OS a file can exist without a datafork, with a resource fork or even without any fork.

75.16.30 DisplayPathMBS(delimiter as string = "/") as string

Example:

// Sample values in German:

// SnowLeopard/Programme/Dienstprogramme/Konsole

MsgBox SpecialFolder.Applications.Child("Utilities").Child("Console.app").DisplayPathMBS("/"
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// SnowLeopard/Benutzer/cs/Schreibtisch
MsgBox SpecialFolder.Desktop.DisplayPathMBS("/")

// SnowLeopard Programme Dienstprogramme Konsole
MsgBox SpecialFolder.Applications.Child("Utilities").Child("Console.app").DisplayPathMBS(" ")

// SnowLeopard Benutzer cs Schreibtisch
MsgBox SpecialFolder.Desktop.DisplayPathMBS(" ")

Notes: You can pass any string for delimiter. Good looks an arrow or just a slash.

75.16.31 DrawIconMBS(g as Graphics,x as Integer,y as Integer)

MBS Picture Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Draws the icon of the folderitem on the position x/y inside the graphics object.

**Example:**
SpecialFolder.System.DrawIconMBS canvas1.graphics,0,0

Notes:
The works with masks.
For every other size than 32 pixels use DrawWideIcon.

75.16.32 DrawWideIconMBS(g as Graphics,x as Integer,y as Integer,width as Integer)

MBS Picture Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Draws the icon of the folderitem on the position x/y inside the graphics object with the given width.

**Example:**
app.applicationfileMBS.DrawWideIconMBS(canvas1.graphics,0,0,128) 'for the nice OSX icons

Notes:
The works with masks.
Works even wonderfull with OSX Icons.
See also:

- 75.16.33 DrawWideIconMBS(g as Graphics,x as Integer,y as Integer,width as Integer, WindowsIconIndex as Integer)

75.16.33 DrawWideIconMBS(g as Graphics,x as Integer,y as Integer,width as Integer, WindowsIconIndex as Integer)

MBS Picture Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:**
Draws the icon of the folderitem on the position x/y inside the graphics object with the given width.
**Example:**

```pascal
app.applicationfileMBS.DrawWideIconMBS(canvas1.graphics,0,0,128,0) 'for the nice OSX icons
```

**Notes:**
The works with masks.
Works even wonderfull with OSX Icons.
The WindowsIconIndex parameter is only for Windows and specifies which icon from inside the file is picked.

If you draw this in a listbox cellbackground, you need to draw on the correct position:

```pascal
dim f as FolderItem
f=SpecialFolder.Desktop
f.DrawWideIconMBS(g,me.left,me.top+row*20,16)
Return true
```

try this in a listbox. The Graphics object there has a cliping and an offset which the plugin doesn’t know about.

Not supported for Cocoa target.
See also:

- 75.16.32 DrawWideIconMBS(g as Graphics,x as Integer,y as Integer,width as Integer)

75.16.34 EjectVolumeMBS(force as boolean, byref dissenterPID as Integer) as Integer

MBS MacClassic Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This routine ejects the volume specified by folderitem.
**Example:**
dim disk as FolderItem

dim c as Integer = VolumeCount - 1
for i as Integer = 0 to c
    dim v as FolderItem = volume(i)
    if v.Name = "testvolume" then
        disk = v
        exit
    end if
next

if disk = nil then
    MsgBox "Please change the name in this code."
else
    dim pid as Integer
    dim e as Integer = disk.EjectVolumeMBS(false, pid)

    if e=0 then
        MsgBox "Volume unmounted."
    else
        if pid=0 then
            MsgBox "Failed to unmount with error: " + str(e)
        else
            dim name as string
            dim p as new ProcessMBS // from Util plugin
            p.GetFirstProcess

            do
                if p.ProcessID = pid then
                    name = p.Name
                end if
            loop until not p.GetNextProcess

            if len(name) > 0 then
                MsgBox "Failed to unmount with error: " + str(e)
            else
                MsgBox "Failed to unmount.\n" + EndOfLine + EndOfLine + \"The application\" + name + \" is still using this volume.\n" + EndOfLine + \"Error: \" + str(e)
            end if
        end if
    end if
end if
end if
Notes:
If the volume cannot be ejected the pid of the process which denied the unmount will be returned in the
dissenter parameter. This routine returns after the eject is complete. Ejecting a volume will result in the
unmounting of other volumes on the same device.

force: Specify true if you want the volume forcibly unmounted. Force unmounting a volume will very likely
result in data loss since the volume will be ejected even if there are open files on it. This option should be
reserved for situations such as the backing store for a volume is gone (so the data is lost regardless).
dissenterPID: Optionally, pid of the process which denied the unmount if the unmount is denied.

Returns a Mac OS error code. 0 means no error and -1 is a plugin error if the function can’t be called. -47
is returned if the disc is in use.

PS: Seems like on my tests the pid is not set by Apple.

75.16.35 FilesMBS as FolderItem()

MBS Util Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns array of files in the given folder.

Example:
```
dim folder as FolderItem = SpecialFolder.Desktop
dim files() as FolderItem = folder.FilesMBS
MsgBox str(UBound(files)+1)+” files”
```

Notes: Similar to item() function, but returns all files with one call.

75.16.36 FinderUpdateMBS as Integer

MBS Picture Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Updates the file or
folder in the Finder.

Notes:
Returns 0 for successfull and any Mac OS error code on a problem.
Returns -1 on Windows.
This function is called automatically when adding or removing an icon.
If you add a folder icon, use this function to update the Finder to display it.
75.16.37  FlushVolumeMBS as Integer

MBS MacClassic Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Asks the Mac OS to flush all write buffers to the disc.

75.16.38  FoldersMBS as FolderItem()

MBS Util Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns array of folders in the given folder.

**Example:**
```vba
dim folder as FolderItem = SpecialFolder.Desktop
dim folders() as FolderItem = folder.FoldersMBS
MsgBox str(UBound(folders)+1)+" folders"
```

**Notes:** Similar to item() function, but returns all folders with one call.

75.16.39  FontActivateMBS(OnlyLocal as boolean) as Integer

MBS Util Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Activates one font.

**Example:**
```vba
dim f as folderitem
dim e as Integer
f=SpecialFolder.Desktop.child(“MyWonderfulFont.dfont”)
e=f.FontActivateMBS(true)
```

```vba
select case e
case 0
 msgbox ”No error”
case -1
 MsgBox ”Parameter error. (Plugin)”
case 1 // Windows error
 MsgBox ”Parameter error. (System)”
case -43 // Mac error
 MsgBox ”File not found.”
case -50 // Mac error
 MsgBox ”Parameter error. (System)”
case -108 // Mac error
 MsgBox ”File is not a font file.”
else
```
MsgBox "Error: " + str(e)
end Select

Notes:
The folder item used here points to a font file.
If you want the Font Manager to make fonts not visible to all applications installed on the system, use the OnlyLocal property.

Requires Mac OS 9.0 or newer.
Returns -1 if this FontManager function was not found. 0 on success.

Some error codes for Mac:

0  No error.
-43 File not found.
-45 File locked.
-108 Out of memory.
-105 Already registered.

Fails in Xojo 2017 on Windows due to changes in Xojo’s way to handle fonts. The plugin still activates them, but Xojo doesn’t allow you to use fonts which haven’t been there earlier. See feedback case 46596.

\textbf{75.16.40} \texttt{FontDeactivateMBS(OnlyLocal as boolean) as Integer}


\textbf{Notes:}
The folder item used here points to font file.
The OnlyLocal must match the value which was used on registration.

Requires Mac OS 9.0 or newer, Windows 2000/XP.
Returns -1 if this FontManager function was not found. 0 on success.

An user reported that this does not work on Mac OS X 10.4.

Some error codes for Mac:
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0 No error.
-43 File not found.
-45 File locked.
-108 Out of memory.

On Windows you may need to call this function several times until all references of the file are freed.

75.16.41 FSRefMBS as memoryblock

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the FSRef to this folderitem as a memoryblock.
Notes:
Only useful for toolbox calls.
Requires Mac OS X or Mac OS 9.
If the folderitem’s file doesn’t exist, you get the parent folder’s FSRef.

75.16.42 FSRefNameMBS(byref name as string) as memoryblock

MBS Util Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the FSRef to this folderitem as a memoryblock.
Notes:
Only useful for toolbox calls.
Requires Mac OS X or Mac OS 9.
If the folderitem’s file doesn’t exist, you get the parent folder’s FSRef.
The name will be filled with the name of the item.

75.16.43 GetFileAttributeMBS as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: No, Win: No, Linux: No. Function: Get the file attributes for the folderitem to the given value. Returns a negative if there is an error.
Notes:
Returns the flAttrib of a file. If you pass in a non-existing file or a folder, a negative error code is returned instead.
The flAttrib is a set of bits with the following meaning:

(See GetFileFlags for an example on how to check the bits)
bit 0, value 1  file is locked
bit 2, value 4  resource fork is open
bit 3, value 8  data fork is open
bit 4, value 16 item is a directory
bit 7, value 128 file (one or both forks) is open

On Mac OS X the information whether a file is open is not available.

75.16.44  GetFileFlagsMBS as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Get the file flags for a folderitem.

**Example:**

```lisp
// For example, testing for a file being invible works like this:
dim fdFlags as Integer
dim fileIsInvisible as boolean
dim f as FolderItem  // file

fdFlags = f.GetFileFlagsMBS
if fdFlags < 0 then
    ’ ... oops, an error occurred
else
    fileIsInvisible = BitwiseAnd (fdFlags, & H4000) <> 0
end
```

**Notes:**

Returns the fdFlags of a file. If you pass in a non-existing file or a folder, a negative error code is returned instead.

The fdFlags is a set of bits with the following meaning:

75.16.45  GetFolderFlagsMBS as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Get the folder flags for the folderitem to the given value. Returns a negative if there is an error.

**Notes:**

Returns the frFlags of a folder. If you pass in a non-existing folder, a negative error code is returned instead. The frFlags are similar to the fdFlags (see GetFileFlags), but only a subset of them is used with folders.
75.16. **CLASS FOLDERITEM**

<table>
<thead>
<tr>
<th>bit</th>
<th>value &amp; H</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>H8000</td>
<td>isAlias</td>
</tr>
<tr>
<td>14</td>
<td>H4000</td>
<td>isInvisible</td>
</tr>
<tr>
<td>13</td>
<td>H2000</td>
<td>hasBundle (has a BNDL resource)</td>
</tr>
<tr>
<td>12</td>
<td>H1000</td>
<td>nameLocked</td>
</tr>
<tr>
<td>11</td>
<td>H0800</td>
<td>isStationary</td>
</tr>
<tr>
<td>10</td>
<td>H0400</td>
<td>hasCustomIcon</td>
</tr>
<tr>
<td>8</td>
<td>H0100</td>
<td>hasBeenInited (Finder has seen the file since it has been created)</td>
</tr>
<tr>
<td>7</td>
<td>H0080</td>
<td>hasNoINITs (there is no INIT rsrc in the Extension file)</td>
</tr>
<tr>
<td>6</td>
<td>H0040</td>
<td>isShared</td>
</tr>
<tr>
<td>1-3</td>
<td>H000E</td>
<td>color (as a 3-bit value from 0-7)</td>
</tr>
</tbody>
</table>

75.16.46  **GetVolumeRefMBS as Integer**

MBS MacClassic Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the volume reference number. **Notes:** Returns zero in case of error.

75.16.47  **HasUnresolvedConflictsMBS as boolean**

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the iCloud file properties. **Notes:**

A boolean that contains true if this item has conflicts outstanding, false otherwise. Available in Mac OS X v10.7 and later.

75.16.48  **IconImageMBS(width as Integer, WindowsFlags as Integer=0) as picture**

MBS Picture Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns an picture with the icon image of a Folderitem. **Example:**

Backdrop=SpecialFolder.Desktop.IconImageMBS(512)

**Notes:**

May return a picture which is smaller as requested if the given picture size is not available. (Changed in v5.3 to return the requested size)
On Windows the icon picture is scaled to the requested size. (Actually the plugin can only get 32bit pixels wide icons on Windows as maximum)
Good sizes on Mac OS are 16, 32, 48 and 128 pixels.
Returns nil on low memory.

Version 8.6: Now reads the 32bit image data if possible.

You can pass flags for Windows options:

<table>
<thead>
<tr>
<th>Flag</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHGFIADDOVERLAYS</td>
<td>&amp; h20</td>
<td>Apply the appropriate overlays to the file’s icon.</td>
</tr>
<tr>
<td>SHGFI_LINKOVERLAY</td>
<td>&amp; h8000</td>
<td>Adds the link overlay to the file’s icon.</td>
</tr>
<tr>
<td>SHGFIOPENICON</td>
<td>2</td>
<td>Retrieve the file’s open icon.</td>
</tr>
<tr>
<td>SHGFISELECTED</td>
<td>&amp; h10000</td>
<td>Blend the file’s icon with the system highlight color.</td>
</tr>
</tbody>
</table>

This function can fail if the file does not exist.
Added 1024 pixel support in 12.3 plugins.

On Windows, it may be that you get a 256 pixel icon with small icon on top left. This is simply how windows handles the case when no big icon is available.

### 75.16.49 IconMaskMBS(width as Integer, WindowsFlags as Integer=0) as picture

MBS Picture Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns an picture with the icon mask of a FolderItem.

**Example:**

Backdrop=SpecialFolder.Desktop.IconMaskMBS(512)

**Notes:**

May return a picture which is smaller as requested if the given picture size is not available. (Changed in v5.3 to return the requested size)
On Windows the icon picture is scaled to the requested size. (Actually the plugin can only get 32bit pixels wide icons on Windows as maximum)
Good sizes on Mac OS are 16, 32, 48 and 128 pixels.
Returns nil on low memory.

Please use with IconImageMBS and not with IconMBS function.
Version 8.6: Now reads the 8 bit alpha values if possible.
You can pass flags for Windows options:

- `SHGFI_ADDOVERLAYS = &h20` Apply the appropriate overlays to the file's icon.
- `SHGFI_LINKOVERLAY = &h8000` Adds the link overlay to the file’s icon.
- `SHGFI_OPENICON = 2` Retrieve the file’s open icon
- `SHGFI_SELECTED = &h10000` Blend the file’s icon with the system highlight color.

This function can fail if the file does not exist.
Added 1024 pixel support in 12.3 plugins.

On Windows, it may be that you get a 256 pixel icon with small icon on top left. This is simply how windows handles the case when no big icon is available.

### 75.16.50 IconMBS(width as Integer, WindowsFlags as Integer=0) as picture

MBS Picture Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns a picture with the icon of a Folderitem for the given iconsiz.

**Example:**

Backdrop=SpecialFolder.Desktop.IconMBS(512)

// newer way for Mac apps:

// get image
dim n as NSImageMBS = NSWorkspaceMBS.iconForFile(SpecialFolder.desktop)
// set the size we want
n.setSize 512,512
// make a copy as picture
Backdrop = n.CopyPictureWithMask

**Notes:**

Changed in plugin version 7.7 to return a picture with mask of the given size.

On Windows the icon picture is scaled to the requested size. (Actually the plugin can only get 32bit pixels wide icons on Windows as maximum)

Version 8.6: Now reads the 32bit image data with 8 bit alpha values if possible.

You can pass flags for Windows options:
SHGFI_ADDOVERLAYS = & h20  Apply the appropriate overlays to the file’s icon.
SHGFI_LINKOVERLAY = & h8000  Adds the link overlay to the file’s icon.
SHGFI_OPENICON = 2  Retrieve the file’s open icon
SHGFI_SELECTED = & h10000  Blend the file’s icon with the system highlight color.

This function can fail if the file does not exist.
Please note that icons on alias files takes much longer to get than normal files.
Added 1024 pixel support in 12.3 plugins.

On Windows, it may be that you get a 256 pixel icon with small icon on top left. This is simply how windows handles the case when no big icon is available.

75.16.51  isApplicationMBS as boolean

MBS MacOSX Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  Function:  Whether the folderitem points to an application.
Example:

// try an application
dim file1 as FolderItem = SpecialFolder.Applications.Child("iTunes.app")
MsgBox "Bundle: " +str(file1.isBundleMBS)+EndOfLine+"Application: " +str(file1.isApplicationMBS)

// try some other file
dim file2 as FolderItem = SpecialFolder.Preferences.Child("com.apple.itunes.plist")
MsgBox "Bundle: " +str(file2.isBundleMBS)+EndOfLine+"Application: " +str(file2.isApplicationMBS)

Notes: Returns true if the folderitem points to an application on Mac.

75.16.52  isBundleMBS as boolean

Example:

// try an application
dim file1 as FolderItem = SpecialFolder.Applications.Child("iTunes.app")
MsgBox "Bundle: " +str(file1.isBundleMBS)+EndOfLine+"Application: " +str(file1.isApplicationMBS)

// try some other file
dim file2 as FolderItem = SpecialFolder.Preferences.Child("com.apple.itunes.plist")
MsgBox "Bundle: " +str(file2.isBundleMBS)+EndOfLine+"Application: " +str(file2.isApplicationMBS)
75.16. Notes:
Returns true if the folderitem points to a directory which is a bundle/package.
For example an application package (.app).

75.16.53 IsCompressedFileMBS as Boolean

MBS Util Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Is this file a compressed one?
**Notes:** On Windows you can compress individual files to double your harddisk, but no application may note, because this compression is transparent.

75.16.54 IsDownloadedMBS as boolean

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the iCloud file properties.
**Notes:**
A boolean that contains true if a local copy of this item exists, false otherwise.
Available in Mac OS X v10.7 and later.

75.16.55 IsDownloadingMBS as boolean

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the iCloud file properties.
**Notes:**
A boolean that contains true if a local copy of this item is currently being downloaded, false otherwise.
Available in Mac OS X v10.7 and later.

75.16.56 IsEjectableVolumeMBS as Boolean

MBS MacClassic Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if the file is on a ejectable volume.
**Example:**
```dim bool as Boolean
dim f as FolderItem = volume(0)```
bool=f.IsEjectableVolumeMBS

Notes:
If false is returned it may also be possible that the function is not available (on Mac OS X 10.2) or doesn’t make sense. So the volume may be ejectable even if false is returned.

For remote volumes, the eject flag is not set from Apple. That makes sense as those volume are not physically ejected, but just unmounted. So check IsOnRemoteVolumeMBS, too.

75.16.57 IsEncryptedFileMBS as Boolean

MBS Util Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Is this file an encrypted one?
**Notes:** On Windows you can encrypted individual files to secure your harddisk, but no application may note, because this encryption is transparent to them.

75.16.58 IsFileDataForkOpenReadWriteMBS as boolean

MBS Util Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Test whether a file is currently opened for read and write by an application.
**Notes:** This method tries to open the file with exclusive access. If this fails for access/permission errors, the function returns true.

75.16.59 IsFileResourceForkOpenReadWriteMBS as boolean

MBS Util Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Test whether a file is currently opened for read and write by an application.
**Notes:**
This method tries to open the file with exclusive access. If this fails for access/permission errors, the function returns true.
On Windows, the function result is always false.

75.16.60 IsOnRemoteVolumeMBS as Boolean

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if the file is on a remote volume.
75.16.61  IsUbiquitousItemMBS as boolean

Function: One of the iCloud file properties.
Example:
```vba
    dim f as FolderItem = SpecialFolder.Desktop.Child("test.rtf")
    MsgBox "IsUbiquitousItemMBS: " + str(f.IsUbiquitousItemMBS)
```

Notes:
A boolean that contains true if this item is synchronized to cloud-based storage, false otherwise. Available in Mac OS X v10.7 and later.

75.16.62  IsUploadedMBS as boolean

Function: One of the iCloud file properties.
Notes:
A boolean that contains true if a copy of this item exists in cloud-based storage, false otherwise. Available in Mac OS X v10.7 and later.

75.16.63  IsUploadingMBS as boolean

Function: One of the iCloud file properties.
Notes:
A boolean that contains true if a local copy of this item is currently being uploaded, false otherwise. Available in Mac OS X v10.7 and later.

75.16.64  ItemsMBS as Folderitem()

Function: Returns array of items in the given folder.
Example:
dim folder as FolderItem = SpecialFolder.Desktop
dim Items() as FolderItem = folder.ItemsMBS
MsgBox str(UBound(Items)+1)+" items"

**Notes:** Similar to item() function, but returns all items with one call.

### 75.16.65 KindMBS as string

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns a string about the kind of the document.

**Example:**

```vba
dim s as string
dim file as FolderItem = SpecialFolder.Desktop
s=file.KindMBS
MsgBox s
```

**Notes:**

e.g. for a Realbasic document on Mac OS X "REALbasic Document" or on Mac OS 9 something like "REALbasic 4.0.2fc6 Mac OS X Document".

This text may be localized.
Added Windows support in 12.4 plugins.

### 75.16.66 LaunchMBS(inFront as Boolean) as Boolean

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Launches a file.

**Notes:**

In Realbasic 4.5 Realsoftware introduces a new Launch variant: "Launch(inFront)". To be compatible I renamed the old Launch method to MBSLaunch and added a Launch method which is compatible to Realbasic's.

The return value is true if no immediate error occurred. It would be false, for instance, if the FolderItem object does not exists, is a folder, or is not allowed to be opened (can happen with files on network volumes, as well as in Mac OS X environments).
Added Windows support in version 3.4.
75.16. CLASS FOLDERITEM

75.16.67 LaunchServicesApplicationForItemMBS(role as Integer) as folderitem

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return the application used to open an item.

**Example:**

dim f as FolderItem

f = GetFolderItem("itunes.tiff")

MsgBox f.LaunchServicesApplicationForItemMBS(-1).name

**Notes:**

Consults the binding tables to return the application that would be used to open the folderitem if it were double-clicked in the Finder. This application will be the user-specified override if appropriate or the default otherwise. If no application is known to LaunchServices suitable for opening this item, nil (kLSApplicationNotFoundErr) will be returned.

Constants you can use for the role parameter:

- kLSRolesNone = 1 no claim is made about support for this type/scheme
- kLSRolesViewer = 2 claim to be able to view this type/scheme
- kLSRolesEditor = 4 claim to be able to edit this type/scheme
- kLSRolesAll = -1 claim to do it all

75.16.68 LaunchServicesApplicationsForItemMBS(role as Integer) as LaunchServicesApplicationListMBS

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a list of folderitems to applications that offer the requested role(s) for the input item.

**Example:**

dim l as LaunchServicesApplicationListMBS
dim f as FolderItem

f = GetFolderItem("text file")
l = f.LaunchServicesApplicationsForItemMBS(4)

if l<>nil then
    MsgBox str(l.Count)
    MsgBox l.Item(0).AbsolutePath
end if
Notes:
Requires Mac OS X 10.3.

If the folderitem is a file reference, it is treated as a document, and applications are selected based on the document’s type information. Otherwise, applications are selected based on the folderitem’s scheme.

Role:
The role(s) which must intersect with the role provided by an application for the specified item in order for the application to be included in the result. Pass kLSRolesAll if any role is acceptable.

Constants you can use for the role parameter:

- kLSRolesNone = 1 no claim is made about support for this type/scheme
- kLSRolesViewer = 2 claim to be able to view this type/scheme
- kLSRolesEditor = 4 claim to be able to edit this type/scheme
- kLSRolesAll = -1 claim to do it all

### 75.16.69  LaunchServicesCanApplicationAcceptItemMBS(TargetApp as folderitem, role as Integer, flags as Integer) as boolean

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Determine whether an item can accept another item.

**Example:**

```vba
dim appl,item as FolderItem

appl=LaunchServicesApplicationForInfoMBS("","","rb",-1)
item=GetFolderItem("file.rb")

MsgBox appl.Name

if item.LaunchServicesCanApplicationAcceptItemMBS(appl,-1,1) then
    MsgBox "accept"
else
    MsgBox "not accepted"
end if
```

Notes:
Returns whether TargetApp can accept this folderitem as in a drag and drop operation. If role is other than kLSRolesAll then make sure TargetApp claims to fulfill the requested role.

Constants you can use for the role parameter:

- kLSRolesNone = 1 no claim is made about support for this type/scheme
- kLSRolesViewer = 2 claim to be able to view this type/scheme
- kLSRolesEditor = 4 claim to be able to edit this type/scheme
- kLSRolesAll = -1 claim to do it all

Values for the flags:

- kLSAcceptDefault = 1
- kLSAcceptAllowLoginUI = 2 show UI to log in if necessary

75.16.70 LaunchServicesDisplayNameMBS as string

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Get the display name for a folderitem. Notes: Return a copy of the display name for a folderitem. Takes into consideration whether this item has a hidden extension or not.

75.16.71 LaunchServicesItemInfoMBS(WhichInfo as Integer) as LaunchServicesItemInfoMBS

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Return information about an item. Example:

```vba
Dim l As LaunchServicesItemInfoMBS
Dim f As FolderItem
f = SpecialFolder.Applications.Child("Mail.app")
l = f.LaunchServicesItemInfoMBS(-1)
If l.IsApplication Then // True for mail.app
    MsgBox "is Application"
End If
If l.IsContainer Then // True for mail.app
```
MsgBox "is Container"
end if

if l.IsPackage then  // True for mail.app
    MsgBox "is Package"
end if

Notes:

Returns as much or as little information as requested about the folderitem. Some information is available in a thread-safe manner, some is not.

Possible values you can combine for the WhichInfo parameter:

- kLSRequestExtension = & h01 Requests the item’s filename extension.
- kLSRequestTypeCreator = & h02 Requests the item’s file type and creator signature.
- kLSRequestBasicFlagsOnly = & h04 Requests all item-information flags that are not application-specific: that is, all except IsNativeApp, IsClassicApp, AppPrefersNative, AppPrefersClassic and AppIsScriptable.
- kLSRequestAppTypeFlags = & h08 Requests all application-specific item-information flags: that is, IsNativeApp, IsClassicApp, AppPrefersNative, AppPrefersClassic and AppIsScriptable.
- kLSRequestAllFlags = & h10 Requests all item-information flags.
- kLSRequestIconAndKind = & h20 Not used.
- kLSRequestExtensionFlagsOnly = & h40 Requests only the kLSItemInfoExtensionIsHidden item-information flag.
- kLSRequestAllInfo = -1

75.16.72 LaunchServicesKindStringMBS as string

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Get the kind string for an item.
**Notes:** Returns the kind string as used in the Finder and elsewhere for the given folderitem.

75.16.73 LaunchServicesOpenMBS as folderitem

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Launches the given item.
**Notes:** Returns the file or folder which was launched, e.g. the application for a file.
75.16.74 LaunchServicesRegisterMBS(update as boolean) as Integer

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
If the specified folderitem refers to an application or other bundle claiming to handle documents or URLs, add the bundle’s document and URL claims to the Launch Services database.

**Notes:**
Requires Mac OS X 10.3.

Update: When false, LaunchServicesRegisterMBS does not register the item if it has already been registered and the current modification date of the item has not changed from when it was last registered. When true, the item’s registered info is updated, even if the modification has not changed.

Returns an error code:
An OSStatus value: noErr (0) - Success kLSNoRegistrationInfoErr (-10824) - The item does not contain info requiring registration kLSDataErr (-10817) - The item’s property list info is malformed. Returns -1 if the function is not available.

75.16.75 LogicalFileDataLengthMBS as int64

MBS Util Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the length of the logical disk space used for this file’s data fork.

**Example:**

dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")

dim lines(-1) as string

lines.Append "Length: "+str(F.Length)
lines.Append "ResourceForkLength: "+str(F.ResourceForkLength)
lines.Append "LogicalFileDataLengthMBS: "+str(F.LogicalFileDataLengthMBS)
lines.Append "LogicalFileResLengthMBS: "+str(F.LogicalFileResLengthMBS)
lines.Append "LogicalFileTotalLengthMBS: "+str(F.LogicalFileTotalLengthMBS)
lines.Append "PhysicalFileDataLengthMBS: "+str(F.PhysicalFileDataLengthMBS)
lines.Append "PhysicalFileTotalLengthMBS: "+str(F.PhysicalFileTotalLengthMBS)

MsgBox Join(lines,EndOfString)

**Notes:**
This function works for files bigger than 2 GB which RB’s built in functions don’t. On Windows the physical size reported is equal to the logical size, because there is no function for the physical size.
75.16.76  LogicalFileResLengthMBS as int64

MBS Util Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the length of the logical disk space used for this file's resourcefork.

**Example:**

filesize.text=format(file.LogicalFileResLengthMBS,"0")

**Notes:**
This function works for files bigger than 2 GB which RB's built in functions don't.
On Windows the physical size reported is equal to the logical size, because there is no function for the physical size.

75.16.77  LogicalFileTotalLengthMBS as int64

MBS Util Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the length of the logical disk space used for this file's datafork.

**Example:**

filesize.text=format(file.LogicalFileTotalLengthMBS,"0")

**Notes:**
This function works for files bigger than 2 GB which RB's built in functions don't.
On Windows the physical size reported is equal to the logical size, because there is no function for the physical size.

75.16.78  LongPathMBS as string

MBS Win Plugin, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Returns the long path for the file.

**Example:**

dim f as folderitem = specialfolder.desktop.child("test.file")
msgbox f.longpathMBS

**Notes:**
75.16. CLASS FOLDERITEM

Should be the same as f.absolutepath
Works with Windows NT 4 or newer.

75.16.79 MacCopyObjectMBS(DestinationFolder as folderitem, DestinationName as string, byref Result as folderitem, Options as Integer) as Integer


Function: This routine will copy the source object into the destination directory.

Notes:
The source object can be a file or directory.

self: The source object to copy.
DestinationFolder: The destination directory for the copy.
DestinationName: The name for the new object in the destination directory. Pass "" to use the source object name.
result: Upon successful completion a ref to the newly created object. If source is a directory then target will be the corresponding object in the destination directory.
options: One or more FSFileOperation flags

Requires Mac OS X 10.4.

Use this constants:

kFSFileOperationDefaultOptions 0 Use the default options - no overwrite, fail if any source item cannot be read, cross volume moves OK.
kFSFileOperationOverwrite 1 Replace an item in the destDir that has the same name as an item being moved/copied there.
kFSFileOperationSkipSourcePermissionErrors 2 Skip items that cannot be read and continue copying/moving instead of failing the operation.
kFSFileOperationDoNotMoveAcrossVolumes 4 Do not perform a copy/delete to move an item across volume boundaries - fail the operation instead.
kFSFileOperationSkipPreflight 8 Skip the preflight for a directory move/copy. This will limit the status information that can be returned since the totals will not be calculated.

Returns a Mac OS error code. Error code -1 is from the plugin for invalid parameters or the function not being available.

75.16.80 MacIsHardLinkedMBS as boolean


Function: Whether the file is a hard link.

Notes:
If two directory entries point to the same hard disc space, you have a file which has two directory entries, but only one storage.

This function returns true for files in a Time Machine backup which did not change since the last backup and share their disc space with the other backups.

75.16.81 MacMoveObjectMBS(DestinationFolder as folderitem, DestinationName as string, byref Result as folderitem, Options as Integer) as Integer


**Function:** This routine will move the source object into the destination directory.

**Notes:**

The source object can be a file or directory. If a destName is provided then the object will be renamed as well as moved. By default a move across volumes will result in a copy and deletion of the original source. The kFSFileOperationDoNotMoveAcrossVolumes flag will cause cross volume moves to do nothing and return an error.

**self:** The source object to copy.
**DestinationFolder:** The destination directory for the copy.
**DestinationName:** The name for the new object in the destination directory. Pass ”” to use the source object name.
**result:** Upon successful completion a ref to the newly created object. If source is a directory then target will be the corresponding object in the destination directory.
**options:** One or more FSFileOperation flags

Requires Mac OS X 10.4.

Use this constants:

- **kFSFileOperationDefaultOptions** 0 Use the default options - no overwrite, fail if any source item cannot be read, cross volume moves OK.
- **kFSFileOperationOverwrite** 1 Replace an item in the destDir that has the same name as an item being moved/copied there.
- **kFSFileOperationSkipSourcePermissionErrors** 2 Skip items that cannot be read and continue copying/moving instead of failing the operation.
- **kFSFileOperationDoNotMoveAcrossVolumes** 4 Do not perform a copy/delete to move an item across volume boundaries - fail the operation instead.
- **kFSFileOperationSkipPreflight** 8 Skip the preflight for a directory move/copy. This will limit the status information that can be returned since the totals will not be calculated.

Returns a Mac OS error code. Error code -1 is from the plugin for invalid parameters or the function not being available.
75.16.82 MacMoveObjectToTrashMBS(byref Result as folderitem, Options as Integer) as Integer


**Function:**
This routine will move the source object into the trash.

**Notes:**
The source object can be a file or directory. If the volume the source object resides on does not support a trash folder then this call will return an error (this is the same circumstance that triggers the delete immediately behavior in the Finder).

**self:** The source object to move to the trash.

**result:** Upon successful completion a ref the object in the trash. If source is a directory then target will be the corresponding object in the destination directory.

**options:** One or more FSFileOperation flags

Requires Mac OS X 10.5.

Use this constants:

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kFSFileOperationDefaultOptions</td>
<td>0</td>
<td>Use the default options - no overwrite, fail if any source item cannot be read, cross volume moves OK.</td>
</tr>
<tr>
<td>kFSFileOperationOverwrite</td>
<td>1</td>
<td>Replace an item in the destDir that has the same name as an item being moved/copied there.</td>
</tr>
<tr>
<td>kFSFileOperationSkipSourcePermissionErrors</td>
<td>2</td>
<td>Skip items that cannot be read and continue copying/moving instead of failing the operation.</td>
</tr>
<tr>
<td>kFSFileOperationDoNotMoveAcrossVolumes</td>
<td>4</td>
<td>Do not perform a copy/delete to move an item across volume boundaries - fail the operation instead.</td>
</tr>
<tr>
<td>kFSFileOperationSkipPreflight</td>
<td>8</td>
<td>Skip the preflight for a directory move/copy. This will limit the status information that can be returned since the totals will not be calculated.</td>
</tr>
</tbody>
</table>

Returns a Mac OS error code. Error code -1 is from the plugin for invalid parameters or the function not being available.

75.16.83 MacNodeIDMBS as UInt32


**Function:**
The node ID for this file or folder.
75.16.84 **MacParentDirectoryIDMBS as UInt32**


75.16.85 **MacResolveNodeIDMBS(NodeID as UInt32) as folderitem**


*Example:*

```
// get a volume
dim f as FolderItem = volume(0)

// test with desktop
dim d as FolderItem = SpecialFolder.Desktop

// query node
dim NodeID as UInt32 = d.MacNodeIDMBS

// and search back
dim dest as FolderItem = f.MacResolveNodeIDMBS(nodeid)

MsgBox dest.AbsolutePath
```

*Notes:*

NodeIDs may not be supported on all volumes.
Returns nil on any error.

75.16.86 **NameExtensionMBS as string**


*Example:*

```
dim f as folderitem = SpecialFolder.desktop

MsgBox "Name: " + f.Name + EndOfLine + "Name extension: " + f.NameExtensionMBS + EndOfLine + "Name without extension: " + f.NameWithoutExtensionMBS

dim g as FolderItem = SpecialFolder.Desktop.Child("test.rbp")
```
MsgBox "Name: "+g.Name+EndOfLine+"Name extension: "+g.NameExtensionMBS+EndOfLine+"Name without extension: "+g.NameWithoutExtensionMBS

Notes:
If there is no extension, this string is empty.
The extension does not include the dot.

75.16.87 NameWithoutExtensionMBS as string

Example:

dim f as folderitem = SpecialFolder.desktop

MsgBox "Name: "+f.Name+EndOfLine+"Name extension: "+f.NameExtensionMBS+EndOfLine+"Name without extension: "+f.NameWithoutExtensionMBS

dim g as FolderItem = SpecialFolder.Desktop.Child("test.rbp")

MsgBox "Name: "+g.Name+EndOfLine+"Name extension: "+g.NameExtensionMBS+EndOfLine+"Name without extension: "+g.NameWithoutExtensionMBS

Notes: If there is no extension, the whole name is returned.

75.16.88 NewCGPDFDocumentMBS(MediaBox as CGRectMBS, title as string, author as string, creator as string) as CGPDFContextMBS

Example:

// create pdf
dim file as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim r as new CGRectMBS(0,0,500,500)
dim c as CGContextMBS = file.NewCGPDFDocumentMBS(r, "My Title", "My Author", "My Creator")
if c<>Nil then

// create page
c.BeginPage r
// draw something
c.SetRGBFillColor(1.0, 0.0, 0.0, 1.0)
c.FillRect CGMakeRectMBS(100,100,100,100)

// close page
c.EndPage

// flush and show in PDF viewer
c = nil
file.Launch
end if

Notes:

Title, author and creator are all optional.
RB 4.5 should do this perfectly, but older RB versions may have problems.
(seems like the file must exist before calling this function)
Requires Mac OS X to work.

See also:

- 75.16.89 NewCGPDFDocumentMBS(MediaBox as CGRectMBS, title as string, author as string, creator as string, subject as string, keywords as string, OwnerPassword as string, UserPassword as string, AllowsPrinting as boolean, AllowsCopy as boolean) as CGPDFContextMBS

- 75.16.90 NewCGPDFDocumentMBS(MediaBox as CGRectMBS, title as string, author as string, creator as string, subject as string, keywords as string, OwnerPassword as string, UserPassword as string, AllowsPrinting as boolean, AllowsCopy as boolean, KeyLength as Integer) as CGPDFContextMBS

75.16.89 NewCGPDFDocumentMBS(MediaBox as CGRectMBS, title as string, author as string, creator as string, subject as string, keywords as string, OwnerPassword as string, UserPassword as string, AllowsPrinting as boolean, AllowsCopy as boolean) as CGPDFContextMBS

MBS MacCG Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a PDF document.

**Example:**

// create pdf
dim file as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim r as new CGRectMBS(0,0,500,500)
dim c as CGContextMBS = file.NewCGPDFDocumentMBS(r, "My Title", "My Author", "My Creator", "My Subject", "test.pdf.mac", "", "", true, true)

if c<>Nil then
// create page
c.BeginPage

// draw something
// SetRGBFillColor(1.0, 0.0, 0.0, 1.0)
c.SetRGBFillColor(1.0, 0.0, 0.0, 1.0)
c.FillRect CGMakeRectMBS(100,100,100,100)

// close page
// flush and show in PDF viewer
// nil

Notes:
Title, Author, Creator, Subject and Keywords parameters can be empty.

If OwnerPassword and UserPassword are filled in the PDF is encrypted and AllowsPrinting/AllowsCopy define what the user can do after he entered his password.

Requires Mac OS X to work.

See also:

- 75.16.88 NewCGPDFDocumentMBS(MediaBox as CGRectMBS, title as string, author as string, creator as string) as CGPDFContextMBS

- 75.16.90 NewCGPDFDocumentMBS(MediaBox as CGRectMBS, title as string, author as string, creator as string, subject as string, keywords as string, OwnerPassword as string, UserPassword as string, AllowsPrinting as boolean, AllowsCopy as boolean, KeyLength as Integer) as CGPDFContextMBS

75.16.90 NewCGPDFDocumentMBS(MediaBox as CGRectMBS, title as string, author as string, creator as string, subject as string, keywords as string, OwnerPassword as string, UserPassword as string, AllowsPrinting as boolean, AllowsCopy as boolean, KeyLength as Integer) as CGPDFContextMBS


**Function:**
Creates a PDF document.

**Example:**
/ create pdf
dim file as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim r as new CGRectMBS(0,0,500,500)
dim c as CGContextMBS = file.NewCGPDFDocumentMBS(r, "My Title", "My Author", "My Creator", "My Subject", "test.pdf,mac", "owner", "user", false, false, 128)
if c<>Nil then

// create page
c.BeginPage r

// draw something
c.SetRGBFillColor(1.0, 0.0, 0.0, 1.0)
c.FillRect CGMakeRectMBS(100,100,100,100)

// close page
c.EndPage

// flush and show in PDF viewer
c = nil
file.Launch
end if

Notes:
Title, Author, Creator, Subject and Keywords parameters can be empty.

If OwnerPassword and UserPassword are filled in the PDF is encrypted and AllowsPrinting/AllowsCopy define what the user can do after he entered his password.

Keylength must be a value between 48 bit and 128 bit in 8 bit steps. 0 uses default value.

Requires Mac OS X to work.
See also:

- 75.16.88 NewCGPDFDocumentMBS(MediaBox as CGRectMBS, title as string, author as string, creator as string) as CGPDFContextMBS

- 75.16.89 NewCGPDFDocumentMBS(MediaBox as CGRectMBS, title as string, author as string, creator as string, subject as string, keywords as string, OwnerPassword as string, UserPassword as string, AllowsPrinting as boolean, AllowsCopy as boolean) as CGPDFContextMBS
**75.16. CLASS FOLDERITEM**

**75.16.91 NewCGPDFDocumentWithInfoMBS(MediaBox as CGRectMBS, info as object) as CGPDFContextMBS**

MBS MacCG Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a PDF document.

**Example:**

```vbnet
// create pdf
dim file as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim r as new CGRectMBS(0,0,500,500)

dim d as new CFMutableDictionaryMBS

d.Add NewCFStringMBS("kCGPDFContextTitle"), NewCFStringMBS("My Title")
d.Add NewCFStringMBS("kCGPDFContextAuthor"), NewCFStringMBS("My Author")
d.Add NewCFStringMBS("kCGPDFContextCreator"). NewCFStringMBS("My Creator")
d.Add NewCFStringMBS("kCGPDFContextSubject"). NewCFStringMBS("My Subject")
d.Add NewCFStringMBS("kCGPDFContextKeywords"). NewCFStringMBS("keyword,mac,pdf")

dim c as CGContextMBS = file.NewCGPDFDocumentWithInfoMBS(r, d)

if c<>Nil then
    // create page
    c.BeginPage r

    // draw something
    c.SetRGBFillColor(1.0, 0.0, 0.0, 1.0)
    c.FillRect CGMakeRectMBS(100,100,100,100)

    // close page
    c.EndPage

    // flush and show in PDF viewer
    c = nil
    file.Launch
end if
```

**Notes:**

The optional info parameter is a CFDictionaryMBS object and contains some information about the PDF file.

Keys for auxiliary info dictionary:

NewCFStringMBS("kCGPDFContextTitle")
The document’s title. Optional; if present, the value must be a CFString.
NewCFStringMBS("kCGPDFContextAuthor")
The name of the person who created this document. Optional; if present, the value must be a CFString.

NewCFStringMBS("kCGPDFContextCreator")
The name of the application that created the original data used to create this document. Optional; if present, the value must be a CFString.

NewCFStringMBS("kCGPDFContextOutputIntent")
The document’s output intent. Optional; if present, the value must be a CFDictionaryMBS. The dictionary is added to the PDF document in the /OutputIntents entry in the PDF file’s document catalog. The keys and values contained in the dictionary must match those specified in section 9.10.4 of the PDF 1.4 specification, ISO/DIS 15930-3 document published by ISO/TC 130, and Adobe Technical Note # 5413.

The following keys are supported:

"S" - The output intent subtype. This key is required; the value must be a CFString equal to "GTS_PDFX"; otherwise, the dictionary is ignored.

"OutputConditionIdentifier" - A string identifying the intended output device or production condition in a human- or machine-readable form. This key is required; the value must be a CFString. For best results, the string should be representable losslessly in ASCII encoding.

"OutputCondition" - A text string identifying the intended output device or production condition in a human-readable form. This key is optional; if present, the value must be a CFString.

"RegistryName" - A string identifying the registry in which the condition designated by "OutputConditionIdentifier" is defined. This key is optional; if present, the value must be a CFString. For best results, the string should be representable losslessly in ASCII encoding.

"Info" - A human-readable text string containing additional information or comments about the intended target device or production condition. This key is required if "OutputConditionIdentifier" does not specify a standard production condition; it is optional otherwise. If present, the value must be a CFString.

"DestOutputProfile" - An ICC profile stream defined the transformation from the PDF document’s source colors to output device colorants. This key is required if "OutputConditionIdentifier" does not specify a standard production condition; it is optional otherwise. If present, the value must be a ICC-based CGColorSpaceMBS.

NewCFStringMBS("kCGPDFContextOutputIntents")
The document’s output intents. Optional; if present, the value must be a CFArrayMBS containing one or
more CFDictionaryMBSs. The array is added to the PDF document in the /OutputIntents entry in the
PDF file’s document catalog. Each dictionary in the array must be of form specified above for the "kCG-
PDFContextOutputIntent" key, except that only the first dictionary in the array is required to contain the
"S" key with a value of "GTS_PDFX". If both the "kCGPDFContextOutputIntent" and "kCGPDFCon-
textOutputIntents" keys are specified, the former will be ignored.

More keys in CGPDFContext.h coming with Xcode.

75.16.92 OpenAsCGPDFDocumentMBS as CGPDFDocumentMBS

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Opens a PDF document.
Notes:
RB 4.5 should do this perfectly, but older RB versions may have problems with longer file names.
Requires Mac OS X to work.

75.16.93 OpenAsColorSyncProfileMBS as ColorSyncProfileMBS

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Opens the file
as a ColorSync profile.

75.16.94 OpenAsGIFMBS as GIFMBS

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Opens a GIF file.
Notes:
Returns nil on any error.
QuickTime is not required!

75.16.95 OpenAsIconFamilyMBS as IconFamilyMBS

Notes:
Requires Mac OS 9 or newer.
This function is deprecated. Better you move to OpenAsIconsFamilyMBS.
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75.16.96 OpenAsIconsFamilyMBS as IconFamilyMBS

MBS Picture Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Opens an icon file. **Notes:** Requires Mac OS 8.5 or newer.

75.16.97 OpenAsJPEGMBS as picture

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads a picture from a JPEG file. **Notes:** A short version of OpenAsJPEG with fileposition=0 and allowdamage=false. See also:

- 75.16.98 OpenAsJPEGMBS(allowdamaged as Boolean) as picture
- 75.16.99 OpenAsJPEGMBS(allowdamaged as Boolean,fileposition as Integer) as picture

75.16.98 OpenAsJPEGMBS(allowdamaged as Boolean) as picture

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads a picture from a JPEG file. **Notes:** A short version of OpenAsJPEG with fileposition=0. See also:

- 75.16.97 OpenAsJPEGMBS as picture
- 75.16.99 OpenAsJPEGMBS(allowdamaged as Boolean,fileposition as Integer) as picture

75.16.99 OpenAsJPEGMBS(allowdamaged as Boolean,fileposition as Integer) as picture

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads a picture from a JPEG file. **Example:**

```vbnet
dim f as folderitem
f=SpecialFolder.Desktop.child("a great jpeg picture.jpg")
window1.backdrop=f.openasjpegMBS
```

**Notes:**

This method should read all JPEG files you can get, but I’ve only tested it for 32 bit color and 8 bit grayscale.
This method is not depending on any library! It works without QuickTime even on System 7, but as it contains everything needed this method is around 120 KB big!

(REALbasic’s OpenAsPicture depends on QuickTime)

I wrote it mainly because Realbasic’s built in OpenAsJPEG code crashes badly if your picture is not full downloaded. For example if you have a webbrowser you can now show JPEGs while you download them. Normally you can see a good picture already with 50% of the data.

REALbasic’s OpenAsPicture in contrast crashes if the picture is not 100% downloaded or instead of a crash you get a white picture.

See the folder "jpeg load crashtest" in the examples.

The two parameters are both optional. The second is to give a file position to start reading. This way you can load several JPEGs from different file position from one file.

See also:

- 75.16.97 OpenAsJPEGMBS as picture
- 75.16.98 OpenAsJPEGMBS(allowdamaged as Boolean) as picture

**75.16.100  OpenAsLargeBinaryStreamMBS(write as Boolean) as LargeBinaryStreamMBS**

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Opens a file as a LargeBinaryStreamMBS.

**Example:**

```
dim l as LargeBinaryStreamMBS
dim f as FolderItem = SpecialFolder.Desktop.Child("testfile")
l = f.OpenAsLargeBinaryStreamMBS(true)
```

**Notes:** Returns nil on any error.

**75.16.101  OpenAsPNGMBS(gamma as single = 0.0, AllowDamaged as Boolean = false) as PNGPictureMBS**


**Example:**

...
dim f as folderitem
f = SpecialFolder.Desktop.child("a great picture.png")
window1.backdrop = f.OpenAsPNGMBS(0).pict

Notes:
This methods should read all PNG files you can get.

This method is not depending on any library! It works without QuickTime even on System 7, but as it contains everything needed this method is around 130 KB big!
(REALbasic’s OpenAsPicture depends on QuickTime)

The gamma parameter defines what gamma correction is applied:
positive value: use the value as the gamma correction
zero: use default value (or value saved in file itself)
negative value: do not correct gamma
A bad gamma value can give you a black image.

AllowDamaged: Whether to allow damaged PNG files to return a part of the image as picture.

75.16.102 OpenAsResStreamMBS(write as Boolean) as ResStreamMBS

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Opens a file’s resource-fork as a ResStreamMBS.
Notes: Returns nil on any error.
75.16. CLASS FOLDERITEM

75.16.103  OpenAsTiffMBS(HeaderOnly as boolean=false) as TiffPictureMBS


**Example:**

```basic
    dim f as FolderItem
    dim t as TiffPictureMBS

    f=SpecialFolder.Desktop.Child("008.tiff")
    t=f.OpenAsTiffMBS(true)

    if t<>Nil then
        messagebox str(t.width)+" x "+str(t.height)
    else
        MsgBox "Problem?"
    end if
```

**Notes:**

This method is not depending on any library! It works without QuickTime even on System 7, but as it contains everything needed this method is around 270 KB big! (REALbasic’s OpenAsPicture depends on QuickTime). The plugin supports even more stuff like zlib compressed picture data or JPEGs embedded into TIFFs.

If the function returns nil, you can use a TiffPictureMBS subclass and use the methods there so you get error messages in the error event.

Setting HeaderOnly to true will ignore the actual picture data and load only the header data.

This function works with most Tiff formats, but has problems with some like 16 bit CMYK.

75.16.104  OpenWithAppMBS(TheApplication as FolderItem, inFront as Boolean) as Boolean

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No.  **Function:** Opens a file using the given application.

**Notes:**

Similar to Launch (see FolderItem.Launch), with the additional option to specify the application that should be used to open the FolderItem object. Passing nil in the app parameter is functionally identical to calling Launch.
Works with Graphicconverter, but not with Preview!?
Added Windows support in version 3.4.

75.16.105  ParentVolumeMBS as folderitem

MBS Util Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the folderitem for the volume the folderitem is pointing to.

75.16.106  PercentDownloadedMBS as Double

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the iCloud file properties. **Notes:**
An Number in the range 0-100 that tells what percentage of the file has been downloaded. Available in Mac OS X v10.7 and later.

75.16.107  PercentUploadedMBS as Double

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the iCloud file properties. **Notes:**
An Number in the range 0-100 that tells what percentage of the file has been uploaded. Available in Mac OS X v10.7 and later.

75.16.108  PermissionsMBS(OldWay as boolean) as PermissionsMBS

MBS MacOSX Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an object for the Permissions of a file. **Example:**
```dim f as FolderItem
dim p as PermissionsMBS

f=GetOpenFolderItem(“special/any”)
if f<>nil then
p=f.PermissionsMBS(true)
if p<>nil then // requires Mac OS X```
p.Access=& H6

if 0=p.SetPermissions(true) then
    MsgBox "Permissions set"
else
    MsgBox "Permissions could not be set"
end if

else
    MsgBox "We require Mac OS X"
end if

else
    ' nothing selected
end if

Notes:
You can use old API if you set Oldway=true. Than you set access value like in older version of the plugin.
If you set Oldway = false, you use the newer API which set unix permissions, but not the old ones.
The old way is not supported for 64bit.

75.16.109  PhysicalFileDataLengthMBS as int64

**Function:**
Returns the length of the physical disk space used for this file’s data fork.
**Example:**
```plaintext
filesize.text=format(file.PhysicalFileDataLengthMBS,"0")
```

Notes:
This function works for files bigger than 2 GB which RB’s built in functions don’t.
On Windows the physical size reported is equal to the logical size, because there is no function for the physical size.

75.16.110  PhysicalFileResLengthMBS as int64

**Function:**
Returns the length of the physical disk space used for this file’s resourcefork.
Example:
filesize.text=format(file.PhysicalFileResLengthMBS,"0")

Notes:
This function works for files bigger than 2 GB which RB’s built in functions don’t.
On Windows the physical size reported is equal to the logical size, because there is no function for the physical size.

75.16.111 PhysicalFileTotalLengthMBS as int64

MBS Util Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the length of the physical disk space used for this file.

**Example:**
filesize.text=format(file.PhysicalFileTotalLengthMBS,"0")

Notes:
This function works for files bigger than 2 GB which RB’s built in functions don’t.
On Windows the physical size reported is equal to the logical size, because there is no function for the physical size.

75.16.112 QuickLookMBS(MaxWidth as Integer = 500, MaxHeight as Integer = 500, IconMode as Boolean = false, ScaleFactor as Double = 1.0) as picture


**Example:**
dim f as FolderItem
f=SpecialFolder.Desktop.Child(”test.jpg”)

// shows the icon in 128x128 scaled by factor 4:
Backdrop=f.QuickLookMBS(128,128,true,4)

// shows the icon in default size:
Backdrop=f.QuickLookMBS(128,128,true,0)
// shows preview of image in 128x128 pixels.
Backdrop=f.QuickLookMBS(128,128,false,0)

// shows preview of image in 512x512 pixels.
Backdrop=f.QuickLookMBS(128,128,false,4)

// shows preview of image in 512x512 pixels.
Backdrop=f.QuickLookMBS(512,512,false,0)

// use Icon function in case no preview is available:
Backdrop=f.iconmbs(512)

Notes:

Returns nil if Quick Look does not support this file type. In that case you may use folderitem.Icon() with the given size.

MaxWidth and MacHeight specify the maximum desired size.
If ScaleFactor is bigger than zero, it is used. Else the default value is used.
If IconMode is true, QL will produce an icon (ie a thumbnail and all the icon decor, like shadows, curled corner, etc.).

If you look for a control to show quicklook preview like the finder, please check the QLPreviewPanelMBS window and the QLPreviewViewMBS control.

QuickLook does not provide images for items in special folders like temporary folders.

75.16.113 QuickLookMTMBS(MaxWidth as Integer = 500, MaxHeight as Integer = 500, IconMode as Boolean = false, ScaleFactor as Double = 1.0) as picture

Function: Creates a thumbnail for the designated file.
Notes:
Same as QuickLookMBS, but thread friendly.
Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.

QuickLook does not provide images for items in special folders like temporary folders.
75.16.114  RemoveCustomIconFromFileMBS as Integer

MBS Picture Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes a custom icon from a file.

**Notes:**

Requires Mac OS 8.5 or newer.
Returns a Mac OS error code, with 0 for no error and -1 for parameter error (e.g. invalid folderitem).

75.16.115  SaveAs8BitAlphaPNGMBS(pic as picture, colors() as color, alphas() as Integer, gamma as single = 0.0) as boolean

MBS Images Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Saves a palette based RGB picture as a PNG file with alpha.

**Notes:**

Pic should have no mask.
Colors must be an array with 256 values defining the palette.
Alphas must be an array with 256 values specifying the alpha value for each palette entry. 255 is opaque and 0 is transparent.

Returns true on success and false on failure.

The gamma parameter defines what gamma correction is applied:
positive value: use the value as the gamma correction
zero: use default value (or value saved in file itself)
negative value: do not correct gamma

See also:

- 75.16.116 SaveAs8BitAlphaPNGMBS(pic as picture, colors() as color, alphas() as Integer, gamma as single, Interlace as Boolean, FilterType as Integer) as boolean

75.16.116  SaveAs8BitAlphaPNGMBS(pic as picture, colors() as color, alphas() as Integer, gamma as single, Interlace as Boolean, FilterType as Integer) as boolean

MBS Images Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Saves a palette based RGB picture as a PNG file with alpha.

**Notes:**

Pic should have no mask.
Colors must be an array with 256 values defining the palette.
Alphas must be an array with 256 values specifying the alpha value for each palette entry. 255 is opaque and 0 is transparent.
Returns true on success and false on failure.

The gamma parameter defines what gamma correction is applied:
- positive value: use the value as the gamma correction
- zero: use default value (or value saved in file itself)
- negative value: do not correct gamma

If Interlace is true the Adam7 interlacing is used.
FilterType specifies the filter:

```plaintext
const PNG_NO_FILTERS = 0
const PNG_FILTER_NONE = 8
const PNG_FILTER_SUB = 16
const PNG_FILTER_UP = 32
const PNG_FILTER_AVG = 64
const PNG_FILTER_PAETH = 128
const PNG_FILTER_ALL = 248
```

See also:

- 75.16.115 SaveAs8BitAlphaPNGMBS(pic as picture, colors() as color, alphas() as Integer, gamma as single = 0.0) as boolean

### 75.16.117 SaveAs8BitPNGMBS(pic as picture, colors() as color, gamma as single = 0.0) as boolean

MBS Images Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Saves a palette based RGB picture as a PNG file.

**Notes:**
- Pic should have no mask.
- Colors must be an array with 256 values defining the palette.

Returns true on success and false on failure.

The gamma parameter defines what gamma correction is applied:
- positive value: use the value as the gamma correction
- zero: use default value (or value saved in file itself)
- negative value: do not correct gamma

See also:

- 75.16.118 SaveAs8BitPNGMBS(pic as picture, colors() as color, gamma as single, Interlace as Boolean,
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75.16.118 SaveAs8BitPNGMBS(pic as picture, colors() as color, gamma as single, Interlace as Boolean, FilterType as Integer) as boolean


Notes:

Pic should have no mask.
Colors must be an array with 256 values defining the palette.

Returns true on success and false on failure.

The gamma parameter defines what gamma correction is applied:
positive value: use the value as the gamma correction
zero: use default value (or value saved in file itself)
negative value: do not correct gamma

If Interlace is true the Adam7 interlacing is used.
FilterType specifies the filter:

const PNG_NO_FILTERS = 0
const PNG_FILTER_NONE = 8
const PNG_FILTER_SUB = 16
const PNG_FILTER_UP = 32
const PNG_FILTER_AVG = 64
const PNG_FILTER_PAETH = 128
const PNG_FILTER_ALL = 248

See also:

• 75.16.117 SaveAs8BitPNGMBS(pic as picture, colors() as color, gamma as single = 0.0) as boolean

75.16.119 SaveAsGIFMBS(data as GIFMBS) as boolean


Notes:

Returns true on success and false on any error.
QuickTime is not required!
Please check for the lzw patent in your country before using this function as you may need to pay license fees.

### 75.16.120 SaveAsJPEGMBS(pic as picture, quality as Integer = 80) as boolean

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Saves a picture into a file using JPEG compression.  
**Example:**

```vbnet
dim pic as Picture = LogoMBS(500)
dim f as folderitem
f = SpecialFolder.Desktop.child("a great jpeg picture.jpg")
if f.SaveAsJPEGMBS(pic,75) then
    msgbox "Picture saved."
end if
```

**Notes:**

This method saves 32bit pictures to a file using JPEG Compression. Using the parameter you can specify the quality in range between 25 and 100%

This method is not depending on any library! It works without QuickTime even on System 7, but as it contains everything needed this method is around 100 KB big!  
(REALbasic’s SaveAsJPEG depends on QuickTime)

See the "SaveJPEG without QuickTime" example.

As JPEG does not support alpha channel or mask, those are ignored.  
The second parameter is optional. There you can give a file position where to start writing. This way you can save several JPEGs to different file position inside one file.  
Use the JPEGExporterMBS class for more options.

### 75.16.121 SaveAsPNGMBS(pic as picture, gamma as single = 0.0) as boolean

**Notes:**

If pic has a mask, it is written to the file as alpha channel.

Returns true on success and false on failure.
The gamma parameter defines what gamma correction is applied:
positive value: use the value as the gamma correction
zero: use default value (or value saved in file itself)
negative value: do not correct gamma
See also:

- 75.16.122 SaveAsPNGMBS(pic as picture, gamma as single, Interlace as Boolean, FilterType as Integer) as boolean
- 75.16.123 SaveAsPNGMBS(pic as picture, mask as picture, gamma as single = 0.0) as boolean
- 75.16.124 SaveAsPNGMBS(pic as picture, mask as picture, gamma as single, Interlace as Boolean, FilterType as Integer) as boolean

75.16.122  SaveAsPNGMBS(pic as picture, gamma as single, Interlace as Boolean, FilterType as Integer) as boolean


**Notes:**
If pic has a mask, it is written to the file as alpha channel.

Returns true on success and false on failure.

The gamma parameter defines what gamma correction is applied:
positive value: use the value as the gamma correction
zero: use default value (or value saved in file itself)
negative value: do not correct gamma

If Interlace is true the Adam7 interlacing is used.
FilterType specifies the filter:

```c
const PNG_NO_FILTERS     = 0
const PNG_FILTER_NONE    = 8
const PNG_FILTER_SUB     = 16
const PNG_FILTER_UP      = 32
const PNG_FILTER_AVG     = 64
const PNG_FILTER_PAETH   = 128
const PNG_FILTER_ALL     = 248
```

See also:

- 75.16.121 SaveAsPNGMBS(pic as picture, gamma as single = 0.0) as boolean
75.16. CLASS FOLDERITEM

- 75.16.123 SaveAsPNGMBS(pic as picture, mask as picture, gamma as single = 0.0) as boolean

- 75.16.124 SaveAsPNGMBS(pic as picture, mask as picture, gamma as single, Interlace as Boolean, FilterType as Integer) as boolean

75.16.123 SaveAsPNGMBS(pic as picture, mask as picture, gamma as single = 0.0) as boolean


**Example:**

```vba
// load
dim f as FolderItem = SpecialFolder.Desktop.Child("test.png")
dim p as PNGPictureMBS = f.OpenAsPNGMBS

// save
dim g as FolderItem = SpecialFolder.Desktop.Child("output.png")
if g.SaveAsPNGMBS(p.Pict, p.Mask) then
    MsgBox "OK"
else
    MsgBox "Failed"
end if
```

**Notes:**

If mask is nil no alpha channel is written to the file.

Returns true on success and false on failure.

The gamma parameter defines what gamma correction is applied:
- positive value: use the value as the gamma correction
- zero: use default value (or value saved in file itself)
- negative value: do not correct gamma

See also:

- 75.16.121 SaveAsPNGMBS(pic as picture, gamma as single = 0.0) as boolean
- 75.16.122 SaveAsPNGMBS(pic as picture, gamma as single, Interlace as Boolean, FilterType as Integer) as boolean
- 75.16.124 SaveAsPNGMBS(pic as picture, mask as picture, gamma as single, Interlace as Boolean, FilterType as Integer) as boolean
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75.16.124 SaveAsPNGMBS(pic as picture, mask as picture, gamma as single, Interlace as Boolean, FilterType as Integer) as boolean


**Notes:**

If mask is nil no alpha channel is written to the file.

Returns true on success and false on failure.

The gamma parameter defines what gamma correction is applied:

- positive value: use the value as the gamma correction
- zero: use default value (or value saved in file itself)
- negative value: do not correct gamma

If Interlace is true the Adam7 interlacing is used.

**FilterType** specifies the filter:

```plaintext
const PNG_NO_FILTERS = 0
const PNG_FILTER_NONE = 8
const PNG_FILTER_SUB = 16
const PNG_FILTER_UP = 32
const PNG_FILTER_AVD = 64
const PNG_FILTER_PAETH = 128
const PNG_FILTER_ALL = 248
```

See also:

- 75.16.121 SaveAsPNGMBS(pic as picture, gamma as single = 0.0) as boolean 12779
- 75.16.122 SaveAsPNGMBS(pic as picture, gamma as single, Interlace as Boolean, FilterType as Integer) as boolean 12780
- 75.16.123 SaveAsPNGMBS(pic as picture, mask as picture, gamma as single = 0.0) as boolean 12781

75.16.125 SetDesktopPictureMBS as Integer

MBS Picture Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Asks the Finder/Explorer to change the desktop picture.

**Notes:**

File must be a valid folderitem for an existing file.

Returns a Mac OS or Windows error code or -1 if the function is not available.
75.16. CLASS FOLDERITEM

75.16.126  SetFileFlagsMBS(flags as Integer) as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Set the file flags for the folderitem to the given value. Returns 0 if okay.

**Example:**

```vbs
dim f as FolderItem
dim err, fdFlags as Integer

// For example, clearing a file's hasCustomIcon flag works like this:
fldflags = f.GetFileFlagsMBS
if fdflags >= 0 then
    err = f.SetFileFlagsMBS(BitExclMBS(fdflags, 10))
    if err <> 0 then
        // ... oops, an error occurred
        // (for instance, the disk could be write protected)
    end
end
```

**Notes:**

Sets the fdFlags of a file. Returns an error code (or zero if no error occurred). Possible error conditions include "disk is write protected" and "file not found".

When changing flags of a file, use GetFileFlags to get the original flags, then clear or set the flags by using BitwiseAnd and BitwiseOr and call SetFileFlags to set the new flags.

75.16.127  SetFolderFlagsMBS(flags as Integer) as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Set the folder flags for the folderitem to the given value. Returns 0 if okay.

**Example:**

```vbs
Dim f As FolderItem = GetFolderItem("test") // some folder
If f.SetFolderFlagsMBS(BitwiseOr(f.GetFolderFlagsMBS, 4)) <> 0 Then
    MsgBox "Can’t set label to green."
End If
```

**Notes:**

Sets the frFlags of a folder. Returns an error code (or zero if no error occurred). Possible error conditions include "disk is write protected" and "folder not found".

When changing flags of a folder, use GetFolderFlags to get the original flags, then clear or set the flags by using BitwiseAnd and BitwiseOr and call SetFolderFlags to set the new flags.
with values 2, 4 and 8 in the flags, you control the label color in Finder. Example code above uses 4 which is green by default.

### 75.16.128 SetTagNamesMBS(tags() as string) as Integer


**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child(“test.xojo_binary_project”)  
dim Tags() as string = Array(“Hello”, ”World”)  
dim e as Integer = f.SetTagNamesMBS(tags)  
MsgBox ”SetTagNamesMBS: ”+str(e)
```

**Notes:**

- tags() is array with new tag names.
- Provides error code as return value and details about error in CFErrorMBS object.
- Requires Mac OS X 10.9 or newer.
- Please note that some tags may include chr(10) followed by a number to indicate which label color is used for compatibility to older OS X versions.

See also:

- 75.16.129 SetTagNamesMBS(tags() as string, byref e as CFErrorMBS) as Integer

### 75.16.129 SetTagNamesMBS(tags() as string, byref e as CFErrorMBS) as Integer


**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child(”test.xojo_binary_project”)  
dim Tags() as string = Array(”Hello”, ”World”)  
dim ce as CFErrorMBS  
dim e as Integer = f.SetTagNamesMBS(tags, ce)  
if ce <> nil then  
MsgBox ”SetTagNamesMBS: ”+str(e)+EndOfLine+ce.Description  
else  
MsgBox ”SetTagNamesMBS: ”+str(e)
```
**75.16. CLASS FOLDERITEM**

end if

**Notes:**

tags() is array with new tag names.
Provides error code as return value and details about error in CFErrorMBS object.
Requires Mac OS X 10.9 or newer.
Please note that some tags may include chr(10) followed by a number to indicate which label color is used for compatibility to older OS X versions.
See also:

- **75.16.128 SetTagNamesMBS(tags() as string) as Integer**

**75.16.130 ShortPathMBS as string**

MBS Win Plugin, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Returns the short path for the file.

**Example:**

```vba
dim f as folderitem = specialfolder.desktop.child("test.file")
msgbox f.ShortPathMBS
```

**Notes:**

In contrast to long path this is the short 8.3 path for Windows.
You need this for the WindowsMCI object.
Works with Windows NT 4 or newer.

**75.16.131 SpotLightFileInfoMBS(uti as string = "") as dictionary**

MBS MacOSX Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Runs the spotlight metadata importer for this file and returns the dictionary with the metadata found in the file.

**Example:**

```vba
dim f as FolderItem = SpecialFolder.Desktop.Child("test.numbers")
dim d as Dictionary = f.SpotLightFileInfoMBS
MsgBox "Title: " +d.Value("kMDItemTitle")
MsgBox "Text Content: " +d.Value("kMDItemTextContent")
```

**Notes:**
Returns nil on any error.
Works well with PDF, AppleWorks, Pages, Numbers, Word, Excel, Powerpoint and all other files, where you have an importer.
Does currently not find importers inside an application.

75.16.132  SpotLightLoadMDImporterMBS as boolean

MBS MacOSX Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**Loads another MDImporter.
**Example:**

```vbnet
dim f as FolderItem = GetFolderItem("/Developer/Applications/Xcode.app/Contents/Library/Spotlight/Source-Code.mdimporter", FolderItem.PathTypeShell)

if f.SpotLightLoadMDImporterMBS then
    MsgBox "Loaded SourceCode importer."
end if
```

**Notes:**
By default importers are loaded from /Library/Spotlight, textasciitilde /Library/Spotlight and /System/Library/Spotlight. You can load another importers using this method.
Returns true on success and false on failure.

75.16.133  SpotLightTextContentMBS(uti as string = ") as string

MBS MacOSX Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Runs the spotlight metadata importer for this file and returns the text content string for the file.
**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.rtf")
MsgBox f.SpotLightTextContentMBS
```

**Notes:**
Returns an empty string on any error.
Works well with PDF, AppleWorks, Pages, Numbers, Word, Excel, Powerpoint and all other files, where you have an importer.
Does currently not find importers inside an application.
75.16.134  TagNamesMBS as string()

MBS MacCF Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries tag names for a file or folder.

**Example:**

```vba
dim f as FolderItem = SpecialFolder.Desktop.Child("test.xojo_binary_project")
dim Tags() as string = f.TagNamesMBS
MsgBox "Tags: " +Join(tags, EndOfLine)
```

**Notes:**

Requires Mac OS X 10.9 or newer.
Optionally provides error information in CFErrorMBS object.
Please note that some tags may include chr(10) followed by a number to indicate which label color is used for compatibility to older OS X versions.

See also:

- 75.16.135 TagNamesMBS(byref e as CFErrorMBS) as string()

75.16.135  TagNamesMBS(byref e as CFErrorMBS) as string()

MBS MacCF Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries tag names for a file or folder.

**Example:**

```vba
dim f as FolderItem = SpecialFolder.Desktop.Child("test.xojo_binary_project")
dim ce as CFErrorMBS
dim Tags() as string = f.TagNamesMBS(ce)
if ce <>nil then
    MsgBox "Failed: "+ce.Description
else
    MsgBox "Tags: "+Join(tags, EndOfLine)
end if
```

**Notes:**

Requires Mac OS X 10.9 or newer.
Optionally provides error information in CFErrorMBS object.
Please note that some tags may include chr(10) followed by a number to indicate which label color is used for compatibility to older OS X versions.

See also:
75.16.136  **TrueFilesMBS as FolderItem()**

MBS Util Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns array of files in the given folder.
**Example:**
```
dim folder as FolderItem = SpecialFolder.Desktop
dim files() as FolderItem = folder.TrueFilesMBS
MsgBox str(UBound(files)+1)+" files"
```

**Notes:** Similar to trueitem() function, but returns all files with one call.

75.16.137  **TrueFoldersMBS as FolderItem()**

MBS Util Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns array of folders in the given folder.
**Example:**
```
dim folder as FolderItem = SpecialFolder.Desktop
dim folders() as FolderItem = folder.TrueFoldersMBS
MsgBox str(UBound(folders)+1)+" folders"
```

**Notes:** Similar to trueitem() function, but returns all folders with one call.

75.16.138  **TrueItemsMBS as FolderItem()**

MBS Util Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns array of items in the given folder.
**Example:**
```
dim folder as FolderItem = SpecialFolder.Desktop
dim Items() as FolderItem = folder.TrueItemsMBS
MsgBox str(UBound(Items)+1)+" items"
```

**Notes:** Similar to trueitem() function, but returns all items with one call.
**75.16. CLASS FOLDERITEM**

### 75.16.139 UnixpathMBS as string

MBS MacOSX Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns the native path for the file.

**Example:**

```vbscript
dim sh as Shell
dim fi as FolderItem
dim s as String
dim t as TextConverter

sh = new Shell
fi = getfolderitem("test ") // or try some other file name

if fi = nil or fi.exists = false then
  beep
  return
end if

s="ls -al "" + fi.Unixpathmbs + ""

sh.Execute s
MsgBox sh.Result
```

**Notes:**

- test on the Desktop could be this:
  - On Mac OS X: /Users/cs/Desktop/test
  - On Mac OS 9: Mac OS 9:Desktop folder:test
  - On Windows: c:\windows\desktop\test

This function will return an empty string if the path can not be encoded in a Realbasic String. For my tests ICQ’s path which is includes the folder name ”ICQ 3.0 “ can not be converted to MacRoman for some reason.

On Mac OS X this function returns the posix path. So if you are looking for POSIXPathMBS or PosixPath this method is it.
This function should do the same as NativePath in Real Studio 2013r1.

### 75.16.140 UnMountVolumeMBS(force as boolean = false) as Integer

MBS MacClassic Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This routine unmounts the volume specified by the folderitem.

**Example:**
dim disk as FolderItem

dim c as Integer = VolumeCount - 1
for i as Integer = 0 to c
    dim v as FolderItem = volume(i)
    if v.Name = "monikajuchmes" then
        disk = v
        exit
    end if
next

if disk = nil then
    MsgBox "Please change the name in this code."
else
    dim e as Integer = disk.UnMountVolumeMBS

    if e=0 then
        MsgBox "Volume unmounted."
    else
        MsgBox "There was an error!"
    end if
end if

Notes:

If the volume cannot be unmounted the pid of the process which denied the unmount will be returned in the dissenterPID parameter.
This routine returns after the unmount is complete.

force: Specify true if you want the volume forcibly unmounted. Force unmounting a volume will very likely result in data loss since the volume will be ejected even if there are open files on it. This option should be reserved for situations such as the backing store for a volume is gone (so the data is lost regardless).

dissenterPID: Optionally, pid of the process which denied the unmount if the unmount is denied.

Returns a Mac OS error code. 0 means no error and -1 is a plugin error if the function can’t be called. -47 is returned if the disc is in use.

See also:

• 75.16.141 UnMountVolumeMBS(force as boolean, byref dissenterPID as Integer) as Integer
75.16.141  **UnmountVolumeMBS** (force as boolean, byref dissenterPID as Integer) as Integer

**Function:** This routine unmounts the volume specified by the folderitem.  
**Example:**

```vbs
    dim disk as FolderItem
    dim c as Integer = VolumeCount-1
    for i as Integer = 0 to c
        dim v as FolderItem = volume(i)
        if v.Name = "testvolume" then
            disk = v
            exit
        end if
    next

    if disk = nil then
        MsgBox "Please change the name in this code."
    else
        dim pid as Integer
        dim e as Integer = disk.UnMountVolumeMBS(false, pid)
        if e=0 then
            MsgBox "Volume unmounted."
        else
            if pid=0 then
                MsgBox "Failed to unmount with error: "+str(e)
            else
                dim name as string
                dim p as new ProcessMBS ' from Util plugin
                p.GetFirstProcess
                do
                    if p.ProcessID = pid then
                        name = p.Name
                    end if
                loop until not p.GetNextProcess
                if len(name)>0 then
                    MsgBox "Failed to unmount with error: "+str(e)
                else
                    MsgBox "Failed to unmount."+EndOfLine+"The application "+name++" is still using this volume."+EndOfLine+"Error: "+str(e)
                end if
```
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Notes:
If the volume cannot be unmounted the pid of the process which denied the unmount will be returned in
the dissenterPID parameter.
This routine returns after the unmount is complete.

force: Specify true if you want the volume forcibly unmounted. Force unmounting a volume will very likely
result in data loss since the volume will be ejected even if there are open files on it. This option should be
reserved for situations such as the backing store for a volume is gone (so the data is lost regardless).
dissenterPID: Optionally, pid of the process which denied the unmount if the unmount is denied.

Returns a Mac OS error code. 0 means no error and -1 is a plugin error if the function can’t be called. -47
is returned if the disc is in use.

PS: Seems like on my tests the pid is not set by Apple.
See also:

- 75.16.140 UnMountVolumeMBS(force as boolean = false) as Integer

75.16.142 VolGetFolderItemIDMBS(createFileIDs as Boolean = true) as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the
unique FileID or DirID of a FolderItem.
Notes:
Returns the unique FileID or DirID of a FolderItem. This ID is unique over all items on the same volume.
The value 2 always identifies the root directory, all negative values and positive ones above 15 are used for
user-created files and folders, while the values 3-15 are used internally by the File System (for the Desktop
Database, for example).
If the item does not exists, 0 (zero) is returned instead.

IDs for Folders can always be resolved back to a FolderItem using VolResolveID, while resolving FileIDs
only works when they’ve previously been created explicitly. To create a resolvable FileID, pass true to the
createFileIDs parameter. But be aware that if the FileID can not be created (because the disk is locked or
because the File System Format does not support it), the call will fail and a zero will be returned!

So, if you are just interested in reading the FileID, pass false to the second parameter. This will not fail
even there hasn’t been created a resolvable ID for that file yet.
75.16.143 VolSupportsCatSearchMBS as Boolean

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if this volume supports Catalog Search which only HFS(+) volumes does for now.

**Example:**

```vbs
dim v as folderitem
v=volume(0) 'boot volume
if v.VolSupportsCatSearchMBS then
  msgbox "CatSearchMBS class will be fast!"
end if
```

**Notes:** Returns true if the volume is valid and supports the CatSearchMBS functions. Returns false otherwise. From this you can tell whether a search will be fast or slow when using CatSearchOpen with the "allowRecursiveSearch" parameter set to true.

75.16.144 VolumeFreeSizeKBMBS as Int64

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns the size on the free space on volume which the folderitem objects points to.

**Example:**

```vbs
msgBox "The volume with your system folder has "+str(specialfolder.system.volumeFreeSizeKBMBS)+" KBytes free."
```

**Deprecated:** This item is deprecated and should no longer be used. You can use VolumeFreeSizeMBS instead. **Notes:**

This can’t work with anything bigger than 2048 Gigabytes (until version 10.0).

Return value changed in version 10.0 from integer to SInt64.

Added Linux support in version 16.0.

75.16.145 VolumeFreeSizeMBS as Int64

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns the size of the free space of the volume which the folderitem objects points to.

**Example:**
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// 1. a short:
msgBox "The volume with your system folder has " + str(specialfolder.system.VolumeFreeSizeMBS) + " Bytes free."

// 2. a nicer:
dim d as Double
dim s as string

d = specialfolder.system.VolumeFreeSizeMBS

if d > 10000.0 then
    if d > 10000000.0 then
        if d > 10000000000.0 then
            s = format(d / 1024.0 / 1024.0 / 1024.0, "0") + " GigaBytes"
        else
            s = format(d / 1024.0 / 1024.0, "0") + " MegaBytes"
        end if
    else
        s = format(d / 1024.0, "0") + " KiloBytes"
    end if
else
    s = format(d, "0") + " Bytes"
end if

msgBox "On your drive with the system folder you have " + s + " free."

Notes:

This should be used to handle any volume size.
Return value changed in version 10.0 from double to SInt64.

Added Linux support in version 16.0.

75.16.146 VolumeInformationMBS as VolumeInformationMBS

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a VolumeInformationMBS object with detailed information about the volume where the folderitem’s file is located on.

**Notes:** May return nil on errors.
75.16. CLASS FOLDERITEM

75.16.147 VolumeSizeKBMBS as Int64

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns the Size on the volume which the folderitem objects points to.

**Example:**

```
msgBox "The volume with your system folder is " + str(specialfolder.system.volumeSizeKBMBS) + " KB big."
```

**Deprecated:** This item is deprecated and should no longer be used. You can use VolumeSizeMBS instead.

**Notes:**
This can’t work with anything bigger than 2048 Gigabytes (until plugin version 10.0).
Return value changed in version 10.0 from integer to SInt64.

Added Linux support in version 16.0.

75.16.148 VolumeSizeMBS as Int64

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns the size on the volume which the folderitem objects points to.

**Example:**

```
// 1. a short:
msgBox "The volume with your system folder is " + str(specialfolder.system.volumeSizeMBS) + " big."
// 2. a nicer:
dim d as Double
dim s as string
d=SpecialFolder.System.volumesizeMBS
if d>10000.0 then
    if d>1000000.0 then
        if d>1000000000.0 then
            s=format(d/1024.0/1024.0/1024.0,"0")+" GigaBytes"
        else
            s=format(d/1024.0/1024.0,"0")+" MegaBytes"
        end if
    else
        s=format(d/1024.0,"0")+" KiloBytes"
    end if
else
    s=format(d,"0")+" Bytes"
end if
msgBox "Your drive with the system folder is "+s+" big."
```
Notes:
This should be used to handle any volume size.
Return value changed in version 10.0 from double to SInt64.

Added Linux support in version 16.0.

75.16.149 VolumeSupportsHugeFilesMBS as Integer

Notes:
Some volumes only support 2 GB or 4 GB file size. Some can handle more than that up to 2 TB. Returns 0 if not supported, 1 if supported and -1 if unknown.

75.16.150 VolumeUUIDMBS as string

Notes: Requires Mac OS X 10.7 or newer.

75.16.151 WinThumbnailMBS(preferredSize as Integer = 512) as picture

Example:
```pascal
dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
Backdrop = f.WinThumbnailMBS
```
Notes:
preferredSize is the size you’d like to have. Resulting image can be smaller or bigger. Returns nil on any error. If user disabled thumbnails for explorer, the shell also provides none for us, just icons. Requires Windows Vista or newer.
75.16.152 Properties

75.16.153 AccessDateMBS(UTC as boolean = false) as date

MBS Util Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The access date of the file or folder.

**Example:**
```vbs
dim f as FolderItem = SpecialFolder.Desktop.Child("test.txt")
dim xd as date = f.AccessDateMBS
MsgBox xd.LongDate + " " + xd.LongTime
```

**Notes:**

Setting this value is not supported on Linux currently.

To query Spotlight’s Last Open day, please check the FAQ for sample code.
If UTC is true, you get/set date object where time is UTC.
(Read and Write computed property)

75.16.154 AttributeModificationDateMBS(UTC as boolean = false) as date

MBS Util Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The attribute modification date of the file or folder.

**Example:**
```vbs
dim f as FolderItem = SpecialFolder.Desktop.Child("test.txt")
dim xd as date = f.AttributeModificationDateMBS
MsgBox xd.LongDate + " " + xd.LongTime
```

**Notes:**

Attribute Modification dates are supported only on Mac OS X currently.
If UTC is true, you get/set date object where time is UTC.
(Read and Write computed property)

75.16.155 BackupDateMBS(UTC as boolean = false) as date

MBS Util Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The backup date of the file or folder.

**Example:**
```vbs
```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.txt")
dim xd as date = f.BackupDateMBS
MsgBox xd.LongDate+" "+xd.LongTime

Notes:
Backup dates are supported only on Mac OS X currently.
If UTC is true, you get/set date object where time is UTC.
(Read and Write computed property)

75.16.156 BackupItemExcludedMBS as boolean

Function: Whether or not an item is being excluded from backup.
Notes:
This is the easy method to just query whether a file is marked as being excluded from backup. You can
assign a boolean value to exclude (true) or include (false) the file.

Require Mac OS X 10.5. Returns false on all other operation systems.
(Read and Write computed property)

75.16.157 CommentMBS as string

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 
Function: The comment for that file.
Example:
dim f as folderitem // your file
f.CommentMBS="Hello world!"

Notes:
The comment is limited in Mac OS 9 to 200 chars. (The actual length depends on the file system.)
(Starting with plugin version 3.4 the Carbon code also reads and writes the Classic comment.)
On Realbasic 5.x the plugin version 3.4 converts the string to MacRoman encoding for the Classic comment.
This function sends an AppleEvent to the Finder. It may take some milliseconds.
(on Mac OS X)

Querying comment is not thread safe.
(Read and Write computed property)
75.16.158  CreationDateMBS(UTC as boolean = false) as date

MBS Util Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The creation date of the file or folder.

**Example:**

```vbs
dim f as FolderItem = SpecialFolder.Desktop.Child("test.txt")
dim xd as date = f.CreationDateMBS
MsgBox xd.LongDate+" "+xd.LongTime
```

**Notes:**
- Setting this value is not supported on Linux currently.
- If UTC is true, you get/set date object where time is UTC.
- (Read and Write computed property)

75.16.159  FinderLabelMBS as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the color code for the file.

**Example:**

```vbs
file.FinderLabelMBS=2
```

**Notes:**
- The file label is a number between 0 and 7 to give the file a color.
- Used in the Classic Finder for labels (and on Mac OS X for Finder replacement or Finder extending utilities)
- On reading the value you can get negative values like -43 if the file is not found.

To know labels and colors, please use NSWorkspaceMBS.fileLabelColors and NSWorkspaceMBS.fileLabels methods.
- (Read and Write computed property)

75.16.160  MacQuarantinePropertiesMBS as MacQuarantinePropertiesMBS

MBS MacFrameworks Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Gets or sets the quarantine options for a file.

**Example:**
```vbscript
dim f as FolderItem = SpecialFolder.Desktop.Child("test.app")

    // read value
    dim q as MacQuarantinePropertiesMBS = f.MacQuarantinePropertiesMBS
    MsgBox q.AgentName

    // set value
    q = new MacQuarantinePropertiesMBS
    q.AgentBundleIdentifier = "test.test"
    q.AgentName = "testing app"
    q.DataURL="http://www.monkeybreadsoftware.de/test.dmg"
    q.OriginURL="http://www.monkeybreadsoftware.de/"
    q.Type=q.kTypeWebDownload
    f.MacQuarantinePropertiesMBS = q

    // clear
    f.MacQuarantinePropertiesMBS = nil
```

**Notes:**
Requires Mac OS X 10.5.
(Read and Write computed property)

---

### 75.16.161 ModificationDateMBS(UTC as boolean = false) as date

MBS Util Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The modification date of the file or folder.

**Example:**
```vbscript
dim f as FolderItem = SpecialFolder.Desktop.Child("test.txt")
dim xd as date = f.ModificationDateMBS
MsgBox xd.LongDate+" "+xd.LongTime
```

**Notes:**
Setting this value is not supported on Linux currently.
If UTC is true, you get/set date object where time is UTC.
(Read and Write computed property)
75.17.  CLASS LARGEBINARYSTREAMMBS

75.17  class LargeBinaryStreamMBS

75.17.1  class LargeBinaryStreamMBS

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Allows you to access files with more than 2GB in size.

75.17.2  Methods

75.17.3  Allocate(count as int64, flags as Integer) as int64

MBS Util Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Allocates disk space for this file.

**Example:**
```pascal
dim l as LargeBinaryStreamMBS // your stream
dim d as int64

d=l.Allocate(1024*1024*1024,2) // 1 GB
```

**Notes:**
Only for Mac OS.
The flags can be like this:

<table>
<thead>
<tr>
<th>Flag Name</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AllocDefaultFlags</td>
<td>0</td>
<td>as much as possible, not contiguous</td>
</tr>
<tr>
<td>AllocAllOrNothingMask</td>
<td>1</td>
<td>allocate all of the space, or nothing</td>
</tr>
<tr>
<td>AllocContiguousMask</td>
<td>2</td>
<td>new space must be one contiguous piece</td>
</tr>
<tr>
<td>AllocNoRoundUpMask</td>
<td>4</td>
<td>don’t round up allocation to clump size</td>
</tr>
</tbody>
</table>

Note that the length property is not changed because the space is not used.

75.17.4  close

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The destructor.

**Notes:**
There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)
75.17.5 Create(file as FolderItem, MacType as string, MacCreator as string) as LargeBinaryStreamMBS

MBS Util Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a file as a LargeBinaryStreamMBS.

**Example:**

```vba
dim f as FolderItem // your file
dim l as LargeBinaryStreamMBS
l = LargeBinaryStreamMBS.Create(f, "TEXT", "ttxt")
```

**Notes:**

If there is already a file, it is deleted.
On Windows the parameters are ignored.
Returns nil on any error.

See also:

- 75.17.6 Create(path as string, MacType as string, MacCreator as string, WinShareMode as Integer = 0) as LargeBinaryStreamMBS

75.17.6 Create(path as string, MacType as string, MacCreator as string, WinShareMode as Integer = 0) as LargeBinaryStreamMBS

MBS Util Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a file as a LargeBinaryStreamMBS.

**Example:**

```vba
dim l as LargeBinaryStreamMBS
l = LargeBinaryStreamMBS.Create("C:\test.txt", "", ")
```

**Notes:**

If there is already a file, it is deleted.
On Windows the parameters are ignored.
Returns nil on any error.

See also:

- 75.17.5 Create(file as FolderItem, MacType as string, MacCreator as string) as LargeBinaryStreamMBS
75.17. CLASS LARGEBINARYSTREAMMBS

75.17.7 CreateResStream(file as folderitem, MacType as string, MacCreator as string) as ResStreamMBS

MBS Util Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new ResStreamMBS.

**Notes:**
- If there is already a file, it is deleted.
- If the file could not be created it is deleted.
- Returns nil on any error.

See also:
- 75.17.8 CreateResStream(path as string, MacType as string, MacCreator as string) as ResStreamMBS

75.17.8 CreateResStream(path as string, MacType as string, MacCreator as string) as ResStreamMBS

MBS Util Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new ResStreamMBS.

**Notes:**
- If there is already a file, it is deleted.
- If the file could not be created it is deleted.
- Returns nil on any error.

See also:
- 75.17.7 CreateResStream(file as folderitem, MacType as string, MacCreator as string) as ResStreamMBS

75.17.9 DeleteDataFork(file as folderitem)

MBS Util Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Deletes the data fork of a file.

**Notes:**
- Equal to open the file using a binarystream and setting the length property to 0.
- On Mac OS a file can exist without a datafork, with a resource fork or even without any fork.

75.17.10 DeleteResourceFork(file as folderitem)


**Notes:**
Equal to open the file using a ResStreamMBS and setting the length property to 0.
On Mac OS a file can exist without a datafork, with a resource fork or even without any fork.

75.17.11  Flush

MBS Util Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:**
Makes sure every bit of the stream is written to disc.
**Notes:** Only for Mac OS X.

75.17.12  LockFileExclusive as boolean

MBS Util Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Locks the file so no other app can access it.
**Notes:**
Returns true on success.
It may be possible that there is still a way around the lock.

75.17.13  Open(file as folderitem, write as Boolean) as LargeBinaryStreamMBS

MBS Util Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Opens a file as a LargeBinaryStreamMBS.
**Example:**
```dim l as LargeBinaryStreamMBS
dim f as FolderItem = SpecialFolder.Desktop.Child("testfile")
l = LargeBinaryStreamMBS.Open(f, true)
```

**Notes:** Returns nil on any error.
See also:
- 75.17.14 Open(path as string, write as Boolean, WinShareMode as Integer = 0) as LargeBinaryStreamMBS

75.17.14  Open(path as string, write as Boolean, WinShareMode as Integer = 0) as LargeBinaryStreamMBS

MBS Util Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Opens a file as a LargeBinaryStreamMBS.
75.17. CLASS LARGEBINARYSTREAMMBS

Example:

```csharp
// write to parallel port:
Dim b As LargeBinaryStreamMBS = LargeBinaryStreamMBS.Open("LPT1", true, 3)
b.Write "Hello World"
b.Close
```

Notes:

Returns nil on any error.
For special cases, you may need to allow Shared Read or Write and for that case, we have WinShareMode parameter.
For WinShareMode, you can pass 1 for shared reading, 2 for shared writing, 4 for shared deletion. Or combine those. Passing zero prevents sharing.
See also:

- 75.17.13 Open(file as folderitem, write as Boolean) as LargeBinaryStreamMBS

75.17.15 OpenAsResStream(file as folderitem, write as Boolean) as ResStreamMBS

MBS Util Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Opens a file’s resourcefork as a ResStreamMBS.
Notes: Returns nil on any error.
See also:

- 75.17.16 OpenAsResStream(path as string, write as Boolean) as ResStreamMBS

75.17.16 OpenAsResStream(path as string, write as Boolean) as ResStreamMBS

MBS Util Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Opens a file’s resourcefork as a ResStreamMBS.
Notes: Returns nil on any error.
See also:

- 75.17.15 OpenAsResStream(file as folderitem, write as Boolean) as ResStreamMBS

75.17.17 QueryDiskGeometry(byref Cylinders as Int64, byref MediaType as Integer, byref TracksPerCylinder as Integer, byref SectorsPerTrack as Integer, byref BytesPerSector as Integer) as boolean

MBS Util Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Queries disk size on Windows.
Notes:
This function is only useful on Windows and only if you opened a physical disc. Returns true on success.

### 75.17.18 Read(count as Integer) as string

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads bytes into a string. 
**Example:**
```
    dim b as LargeBinaryStreamMBS // your stream
    dim s as string

    s=b.read(5)
```

### 75.17.19 ReadBlock(count as Integer) as memoryblock

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads bytes into a memoryblock. 
**Example:**
```
    dim b as LargeBinaryStreamMBS // your stream
    dim s as memoryblock

    s=b.read(5)
```

### 75.17.20 Readbyte as Integer

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads an 8bit Byte from the stream. 
**Example:**
```
    dim b as LargeBinaryStreamMBS // your stream
    dim i as Integer

    i=B.readbyte
```
75.17.21 ReadLong as Integer

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads a signed 32bit Integer from the stream.

**Example:**
```vba
dim b as LargeBinaryStreamMBS '// your stream
dim i as Integer

i=B.readlong
```

**Notes:** This function is affected by the LittleEndian Setting.

---

75.17.22 ReadShort as Integer

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads a signed 16bit Integer from the stream.

**Example:**
```vba
dim b as LargeBinaryStreamMBS '// your stream
dim i as Integer

i=B.readshort
```

**Notes:** This function is affected by the LittleEndian Setting.

---

75.17.23 UnlockFileExclusive as boolean

MBS Util Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Unlocks the file so other applications can possibly access it.

**Notes:** Returns true on success.

---

75.17.24 WinCreateStream(file as folderitem, StreamName as String, Win-ShareMode as Integer = 0) as LargeBinaryStreamMBS


**Example:**
dim f as FolderItem = SpecialFolder.Desktop.Child("test.txt")
dim l as LargeBinaryStreamMBS = LargeBinaryStreamMBS.WinCreateStream(f, "test")
if l = nil then
    MsgBox "Error"
else
    l.Write "Hello"
    l.close
end if

Notes: Returns nil in case of error.

75.17.25 WinDeleteStream(file as folderitem, StreamName as String) as boolean

Example:
    dim f as FolderItem = SpecialFolder.Desktop.Child("test.txt")
    if LargeBinaryStreamMBS.WinDeleteStream(f) then
        MsgBox "OK"
    else
        MsgBox "Error"
    end if

Notes: Returns true on success.

75.17.26 WinOpenStream(file as folderitem, StreamName as String, write as Boolean, WinShareMode as Integer = 0) as LargeBinaryStreamMBS

Example:
    dim f as FolderItem = SpecialFolder.Desktop.Child("test.txt")
    dim l as LargeBinaryStreamMBS = LargeBinaryStreamMBS.WinOpenStream(f, "test", false)
    if l = nil then
        MsgBox "Error"
    else
        MsgBox l.Read(l.Length)
    end if
75.17. Notes: Returns nil in case of error.

75.17.27 Write(data as string)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes bytes from a string to file.

75.17.28 WriteBlock(data as memoryblock, count as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes count bytes from a memoryblock to file.
**Example:**
```
dim b as LargeBinaryStreamMBS // your stream
dim m as memoryblock
b.writeblock m, m.size
```

75.17.29 WriteByte(data as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes a byte to file.

75.17.30 WriteLong(data as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes an 32bit integer to file.
**Notes:** This method is affected by the LittleEndian Setting.

75.17.31 WriteShort(data as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes an 16bit integer to file.
**Notes:** This method is affected by the LittleEndian Setting.
75.17.32 Properties

75.17.33 CanWrite as boolean

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if you are allowed to write.

**Notes:**
Even if you open a file for write you may still not be allowed to write if the permissions of the file don’t allow you to write.
(Read only property)

75.17.34 EOF as boolean

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if you are at the end of the stream.

**Notes:**
You can set this property to truncate the file.
(Read only property)

75.17.35 Lasterror as Integer

MBS Util Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last error code.

**Notes:**
The values are platform dependent, but zero is no error everywhere.
(Read and Write property)

75.17.36 Length as Int64

MBS Util Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the current length of the file.

**Notes:**
You can truncate the stream by setting this property.
Can’t be set on Linux currently.
(Read and Write property)
75.17.37  LittleEndian as boolean

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:** Specifies if Integers and Shorts shall be converted in their endianness when read or written.

**Notes:**
See Realbasics binarystream for more details.
For native platform you may set "littleendian=targetwin32".
(Read and Write property)

75.17.38  Position as Int64


**Notes:**
You can set the current file stream position using this property.
(Read and Write property)

75.17.39  Yield as Boolean

MBS Util Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether time should be given to other threads.

**Notes:**
If true on Mac OS X CPU time will be given to other threads while read or write operations are pending.
To have an effect you need to call read/write methods in a thread.
(Read and Write property)
75.18 class MacFileOperationMBS

75.18.1 class MacFileOperationMBS

MBS MacClassic Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This class allows you to perform asynchronous file operations on Mac OS X 10.4 like copy and move. **Notes:** Available in Mac OS X 10.4.

75.18.2 Methods

75.18.3 Cancel

MBS MacClassic Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Cancels the specified FSFileOperation. **Notes:** Lasterror is set.

75.18.4 CopyObject(Item as folderitem, DestinationFolder as folderitem, DestinationName as string, Options as Integer, statusChangeInterval as Double)

MBS MacClassic Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This routine will start an asynchronous copy of the object specified by Item to the directory specified by DestinationFolder. **Notes:**

If DestinationName is provided then the new object will be renamed to DestinationName. If DestinationName is empty then the name of the source object will be used.

You will receive StatusChanged events.

Options: One or more FSFileOperation flags
statusChangeInterval: The minimum time between callbacks within a single stage of an operation in seconds.

75.18.5 CopyObjectSync(SourceItem as folderitem, DestinationFolder as folderitem, DestinationName as string, byref Result as folderitem, Options as Integer) as Integer

MBS MacClassic Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This routine will copy the source object into the destination directory.
Notes:

The source object can be a file or directory.

self: The source object to copy.
DestinationFolder: The destination directory for the copy.
DestinationName: The name for the new object in the destination directory. Pass "" to use the source object name.
result: Upon successful completion a ref to the newly created object. If source is a directory then target will be the corresponding object in the destination directory.
options: One or more FSFileOperation flags

Requires Mac OS X 10.4.

Use this constants:

<table>
<thead>
<tr>
<th>Constant</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kFSFileOperationDefaultOptions</td>
<td>0 Use the default options - no overwrite, fail if any source item cannot be read, cross volume moves OK.</td>
</tr>
<tr>
<td>kFSFileOperationOverwrite</td>
<td>1 Replace an item in the destDir that has the same name as an item being moved/copied there.</td>
</tr>
<tr>
<td>kFSFileOperationSkipSourcePermissionErrors</td>
<td>2 Skip items that cannot be read and continue copying/moving instead of failing the operation.</td>
</tr>
<tr>
<td>kFSFileOperationDoNotMoveAcrossVolumes</td>
<td>4 Do not perform a copy/delete to move an item across volume boundries - fail the operation instead.</td>
</tr>
<tr>
<td>kFSFileOperationSkipPreflight</td>
<td>8 Skip the preflight for a directory move/copy. This will limit the status information that can be returned since the totals will not be calculated.</td>
</tr>
</tbody>
</table>

Returns a Mac OS error code. Error code -1 is from the plugin for invalid parameters or the function not being available.

75.18.6 MoveObject(Item as folderitem, DestinationFolder as folderitem, DestinationName as string, Options as Integer, statusChangeInterval as Double)


Function: This routine will start an asynchronous move of the object specified by source to the directory specified by DestinationFolder.

Notes:

If DestinationName is provided then the new object will be renamed to destName. If DestinationName is empty then the name of the source object will be used.

By default a move across volumes will result in a copy and deletion of the original source. The kFSFileOperationDoNotMoveAcrossVolumes flag will cause cross volume moves to do nothing and return an error.
Options: One or more FSFileOperation flags
statusChangeInterval: The minimum time between callbacks within a single stage of an operation in seconds.

**75.18.7** MoveObjectSync(SourceItem as folderitem, DestinationFolder as folderitem, DestinationName as string, byref Result as folderitem, Options as Integer) as Integer


**Function:** This routine will move the source object into the destination directory.

**Notes:**

The source object can be a file or directory. If a destName is provided then the object will be renamed as well as moved. By default a move across volumes will result in a copy and deletion of the original source. The kFSFileOperationDoNotMoveAcrossVolumes flag will cause cross volume moves to do nothing and return an error.

- **self:** The source object to copy.
- **DestinationFolder:** The destination directory for the copy.
- **DestinationName:** The name for the new object in the destination directory. Pass "" to use the source object name.
- **result:** Upon successful completion a ref to the newly created object. If source is a directory then target will be the corresponding object in the destination directory.
- **options:** One or more FSFileOperation flags

Requires Mac OS X 10.4.

Use this constants:

- **kFSFileOperationDefaultOptions** 0 Use the default options - no overwrite, fail if any source item cannot be read, cross volume moves OK.
- **kFSFileOperationOverwrite** 1 Replace an item in the destDir that has the same name as an item being moved/copied there.
- **kFSFileOperationSkipSourcePermissionErrors** 2 Skip items that cannot be read and continue copying/moving instead of failing the operation.
- **kFSFileOperationDoNotMoveAcrossVolumes** 4 Do not perform a copy/delete to move an item across volume boundaries - fail the operation instead.
- **kFSFileOperationSkipPreflight** 8 Skip the preflight for a directory move/copy. This will limit the status information that can be returned since the totals will not be calculated.

Returns a Mac OS error code. Error code -1 is from the plugin for invalid parameters or the function not being available.
75.18. CLASS MACFILEOPERATIONMBS

75.18.8 MoveObjectToTrash(Item as folderitem, Options as Integer, statusChangeInterval as Double)

Function: This routine will start an asynchronous move of the object specified by source to the trash.
Notes:
If the volume the source object resides on does not support a trash folder then the operation will return an error (this is the same circumstance that triggers the delete immediately behavior in the Finder).
Options: One or more FSFileOperation flags
statusChangeInterval: The minimum time between callbacks within a single stage of an operation in seconds.

75.18.9 MoveObjectToTrashSync(SourceItem as folderitem, byref Result as folderitem, Options as Integer) as Integer

Function: This routine will move the source object into the trash.
Notes:
The source object can be a file or directory. If the volume the source object resides on does not support a trash folder then this call will return an error (this is the same circumstance that triggers the delete immediately behavior in the Finder).
self: The source object to move to the trash.
result: Upon successful completion a ref the object in the trash. If source is a directory then target will be the corresponding object in the destination directory.
options: One or more FSFileOperation flags
Requires Mac OS X 10.5.

Use this constants:

<table>
<thead>
<tr>
<th>Constant</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kFSFileOperationDefaultOptions</td>
<td>0 Use the default options - no overwrite, fail if any source item cannot be read, cross volume moves OK.</td>
</tr>
<tr>
<td>kFSFileOperationOverwrite</td>
<td>1 Replace an item in the destDir that has the same name as an item being moved/copied there.</td>
</tr>
<tr>
<td>kFSFileOperationSkipSourcePermissionErrors</td>
<td>2 Skip items that cannot be read and continue copying/moving instead of failing the operation.</td>
</tr>
<tr>
<td>kFSFileOperationDoNotMoveAcrossVolumes</td>
<td>4 Do not perform a copy/delete to move an item across volume boundries - fail the operation instead.</td>
</tr>
<tr>
<td>kFSFileOperationSkipPreflight</td>
<td>8 Skip the preflight for a directory move/copy. This will limit the status information that can be returned since the totals will not be calculated.</td>
</tr>
</tbody>
</table>
Returns a Mac OS error code. Error code -1 is from the plugin for invalid parameters or the function not being available.

See WindowsFileCopyMBS for similar function for Windows.

### 75.18.10 Status as MacFileOperationStatusMBS

MBS MacClassic Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This routine returns the current status of an FileOperation.  
**Notes:**  
Lasterror is set.  
Returns nil on any error.

### 75.18.11 Properties

#### 75.18.12 Handle as Integer

**Notes:** (Read and Write property)

#### 75.18.13 LastError as Integer

**Notes:**  
Users report that you get error -50 (parameter error) if you reuse a file operation object for a new operation. So maybe create a new instance for each operation?  
(Read and Write property)

### 75.18.14 Events

#### 75.18.15 StatusChanged(status as MacFileOperationStatusMBS)

MBS MacClassic Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** This event is called whenever the status changed.
75.18.16 Constants

75.18.17 kFSFileOperationDefaultOptions=0

Notes: Use the default options - no overwrite, fail if any source item cannot be read, cross volume moves OK.

75.18.18 kFSFileOperationDoNotMoveAcrossVolumes=4

Notes: Do not perform a copy/delete to move an item across volume boundaries - fail the operation instead.

75.18.19 kFSFileOperationOverwrite=1

Notes: Replace an item in the destDir that has the same name as an item being moved/copied there.

75.18.20 kFSFileOperationSkipPreflight=8

Notes: Skip the preflight for a directory move/copy. This will limit the status information that can be returned since the totals will not be calculated.

75.18.21 kFSFileOperationSkipSourcePermissionErrors=2

Notes: Skip items that cannot be read and continue copying/moving instead of failing the operation.

75.18.22 kFSOperationStageComplete=3

MBS MacClassic Plugin, Plugin Version: 9.2. Function: One of the constants for the stage.
Notes: Operation is done.
75.18.23  kFSOperationStagePreflighting=1

MBS MacClassic Plugin, Plugin Version: 9.2. **Function:** One of the constants for the stage. **Notes:** Operation is calculating sizes and number of items involved in the operation.

75.18.24  kFSOperationStageRunning=2

MBS MacClassic Plugin, Plugin Version: 9.2. **Function:** One of the constants for the stage. **Notes:** Operation is in progress.

75.18.25  kFSOperationStageUndefined=0

MBS MacClassic Plugin, Plugin Version: 9.2. **Function:** One of the constants for the stage. **Notes:** Operation has not started yet.
75.19.  CLASS MACFILEOPERATIONSTATUSMBS

75.19  class MacFileOperationStatusMBS

75.19.1  class MacFileOperationStatusMBS

**Function:** This class represents the status of a file operation.  
**Notes:** Available in Mac OS X 10.4.

75.19.2  Properties

75.19.3  BytesComplete as Int64

**Function:** The number of bytes that have been moved/copied by this operation at the time the status call was made.  
**Notes:**  
During the preflight stage this value represents the currently known number of bytes that will be copied/moved.  
Value is -1 if undefined.  
(Read only property)

75.19.4  BytesRemaining as Int64

**Function:** The number of bytes that remain to be moved/copied by this operation at the time the status call was made.  
**Notes:**  
Value is -1 if undefined.  
This value is not available for a directory operation if kFSFileOperationSkipPreflight was specified.  
(Read only property)

75.19.5  CurrentItem as FolderItem

**Function:** A folderitem to item operation is currently processing.  
**Notes:**  
If the operation is complete then currentItem refers to the target item (the new item corresponding to the source item in the destination directory).  
(Read and Write property)
75.19.6  Error as Integer

Function: The error code.
Notes:
Either noErr (0) or an error value which caused the operation to fail.
(Read and Write property)

75.19.7  Handle as Integer

Function: Queries internal object reference.
Example:
```java
dim status as MacFileOperationStatusMBS // your status object
dim d as CFDictionaryMBS = CFDictionaryMBS.dictionaryWithHandle(status.Handle)
dim dd as Dictionary = d.Dictionary
```
Notes:
Value is a CFDictionaryRef reference.
(Read and Write property)

75.19.8  ObjectsComplete as Int64

Function: The number of objects that have been moved/copied by this operation at the time the status call was made.
Notes:
Value is -1 if undefined.
During the preflight stage this value represents the currently known number of objects that will be copied/moved.
(Read only property)

75.19.9  ObjectsRemaining as Int64

Function: The number of objects that remain to be moved/copied by this operation at the time the status call was made.
Notes:
Value is -1 if undefined.

This value is not available for a directory operation if kFSFileOperationSkipPreflight was specified.
(Read only property)

75.19.10 Stage as Integer

Function: Current stage of the operation.
Notes:
See this constants for possible values:
kFSOperationStageComplete
kFSOperationStagePreflighting
kFSOperationStageRunning
kFSOperationStageUndefined
(Read and Write property)

75.19.11 Throughput as Int64

Function: The current throughput for the operation in bytes per second.
Notes:
Value is -1 if undefined.
(Read only property)

75.19.12 TotalBytes as Int64

Function: The total number of bytes that will be moved/copied by this operation.
Notes:
This value is not available for a directory operation if kFSFileOperationSkipPreflight was specified.
Value is -1 if undefined.
(Read only property)
75.19.13  **TotalObjects as Int64**


**Function:** The total number of objects that will be moved/copied by this operation.

**Notes:**
- Value is -1 if undefined.
- This value is not available for a directory operation if kFSFileOperationSkipPreflight was specified.

(Read only property)

75.19.14  **TotalUserVisibleObjects as Int64**


**Function:** The total number of user visible objects that will be moved/copied by this operation.

**Notes:**
- Value is -1 if undefined.
- This value is not available for a directory operation if kFSFileOperationSkipPreflight was specified. A packaged application is one user visible object even though it is made up of multiple files and directories.

(Read only property)

75.19.15  **UserVisibleObjectsComplete as Int64**


**Function:** The number of user visible objects that have been moved/copied by this operation at the time the status call was made.

**Notes:**
- Value is -1 if undefined.
- During the preflight stage this value represents the currently known number of objects that will be copied/moved. A packaged application is one user visible object even though it is made up of multiple files and directories.

(Read only property)

75.19.16  **UserVisibleObjectsRemaining as Int64**


**Function:** The number of user visible objects that remain to be moved/copied by this operation at the time the status call was made.

**Notes:**
Value is -1 if undefined.

This value is not available for a directory operation if kFSFileOperationSkipPreflight was specified. A pack-
aged application is one user visible object even though it is made up of multiple files and directories.
(Read only property)
75.20  class MacQuarantinePropertiesMBS

75.20.1  class MacQuarantinePropertiesMBS

Function: The class for quarantine options.
Example:

```vbscript
dim f as FolderItem = SpecialFolder.Desktop.Child(“test.app”)

// read value
dim q as MacQuarantinePropertiesMBS = f.MacQuarantinePropertiesMBS
MsgBox q.AgentName

// set value
q = new MacQuarantinePropertiesMBS
  q.AgentBundleIdentifier = ”test.test”
  q.AgentName = ”testing app”
  q.DataURL=”http://www.monkeybreadsoftware.de/test.dmg”
  q.OriginURL=”http://www.monkeybreadsoftware.de/”
  q.Type=q.kTypeWebDownload

f.MacQuarantinePropertiesMBS = q

// clear
f.MacQuarantinePropertiesMBS = nil
```

Notes: Requires Mac OS X 10.5.

75.20.2  Properties

75.20.3  AgentBundleIdentifier as String

Function: The bundle identifier of the quarantining agent, if available.
Example:

```vbscript
dim f as FolderItem = SpecialFolder.Desktop.Child(“test.app”)
dim q as MacQuarantinePropertiesMBS = f.MacQuarantinePropertiesMBS
MsgBox q.AgentBundleIdentifier
```
75.20. **CLASS MACQUARANTINEPROPERTIESMBS**

Notes:
When setting quarantine properties, this value is set automatically if the it is undefined. The automatic value is the main bundle identifier of the current process.
(Read and Write property)

### 75.20.4 AgentName as String

**Function:** The name of the quarantining agent (application or program).
**Example:**

```vbs
    Dim f As FolderItem = SpecialFolder.Desktop.Child("test.app")
    Dim q As MacQuarantinePropertiesMBS = f.MacQuarantinePropertiesMBS
    MsgBox q.AgentName
```

Notes:
When setting quarantine properties, this value is set automatically to the current process name if this value is not defined.
(Read and Write property)

### 75.20.5 DataURL as String

**Function:** The URL from which the data for the quarantined item data was actually streamed or downloaded, if available.
**Notes:**

```vbs
    Dim f As FolderItem = SpecialFolder.Desktop.Child("test.app")
    Dim q As MacQuarantinePropertiesMBS = f.MacQuarantinePropertiesMBS
    MsgBox q.DataURL
```

(Read and Write property)

### 75.20.6 Dic as Variant

**Function:** The original dictionary from Mac OS X.
**Notes:**
This is a CFDictionaryMBS object which we provide for debugging.
You can pass it to CFShowMBS to print on console.
75.20.7 **OriginURL as String**


**Function:** The URL of the resource originally hosting the quarantined item, from the user’s point of view.

**Example:**
```vba
    dim f as FolderItem = SpecialFolder.Desktop.Child("test.app")
    dim q as MacQuarantinePropertiesMBS = f.MacQuarantinePropertiesMBS
    MsgBox q.OriginURL
```

**Notes:**
For web downloads, this property is the URL of the web page on which the user initiated the download. For attachments, this property is the URL of the resource to which the quarantined item was attached (e.g. the email message, calendar event, etc.). The origin URL may be a file URL for local resources, or a custom URL to which the quarantining application will respond when asked to open it. The quarantining application should respond by displaying the resource to the user. Note: The origin URL should not be set to the data URL, or the quarantining application may start downloading the file again if the user choses to view the origin URL while resolving a quarantine warning.

(Read and Write property)

75.20.8 **TimeStamp as Date**


**Function:** The date and time the item was quarantined.

**Example:**
```vba
    dim f as FolderItem = SpecialFolder.Desktop.Child("test.app")
    dim q as MacQuarantinePropertiesMBS = f.MacQuarantinePropertiesMBS
    MsgBox q.TimeStamp.LongDate+ " "+q.TimeStamp.LongTime
```

**Notes:**
When setting quarantine properties, this property is set automatically to the current date and time if this value is not set.

(Read and Write property)
75.20. **CLASS MACQUARANTINEPROPERTIESMBS**

### 75.20.9 Type as String

**Function:** A symbolic string identifying the why the item is quarantined, if available.  
**Example:**
```vbscript
dim f as FolderItem = SpecialFolder.Desktop.Child("test.app")
dim q as MacQuarantinePropertiesMBS = f.MacQuarantinePropertiesMBS
MsgBox q.Type
```

**Notes:** (Read and Write property)

### 75.20.10 Constants

#### 75.20.11 kTypeCalendarEventAttachment = ”LSQuarantineTypeCalendarEventAttachment”

MBS MacFrameworks Plugin, Plugin Version: 9.8. **Function:** One of the type constants.

#### 75.20.12 kTypeEmailAttachment = ”LSQuarantineTypeEmailAttachment”

MBS MacFrameworks Plugin, Plugin Version: 9.8. **Function:** One of the type constants.

#### 75.20.13 kTypeInstantMessageAttachment = ”LSQuarantineTypeInstantMessageAttachment”

MBS MacFrameworks Plugin, Plugin Version: 9.8. **Function:** One of the type constants.

#### 75.20.14 kTypeOtherAttachment = ”LSQuarantineTypeOtherAttachment”

MBS MacFrameworks Plugin, Plugin Version: 9.8. **Function:** One of the type constants.

#### 75.20.15 kTypeOtherDownload = ”LSQuarantineTypeOtherDownload”

MBS MacFrameworks Plugin, Plugin Version: 9.8. **Function:** One of the type constants.
75.20.16 kTypeWebDownload = "LSQuarantineTypeWebDownload"

MBS MacFrameworks Plugin, Plugin Version: 9.8. **Function:** One of the type constants.
75.21. CLASS PERMISSIONSMBS

75.21   class PermissionsMBS

75.21.1   class PermissionsMBS

MBS MacOSX Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Gives access to the current Permissions of a file.

**Example:**

dim p as PermissionsMBS
p=file.PermissionsMBS(false)

75.21.2   Methods

75.21.3   SetPermissions(OldWay as boolean) as Integer

MBS MacOSX Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the Permissions.

**Notes:**

Returns -1 if function is not available.

Any other value is a Mac OS error code including 0 for success. You can use the MacErrorString function to get some details on the error code.

You may not have enough Permissions to set Permissions!

You can use old API if you set Oldway=true. Than you read access value like in older version of the plugin.

If you set Oldway = false, you use the newer API which read unix permissions, but not the old ones.

The old way is not supported for 64bit.

75.21.4   Properties

75.21.5   Access as Integer

MBS MacOSX Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The access mode for this file.

**Notes:**

Only set if you use older API.

Some constants:

(Read and Write property)
AccessOwner & h80000000 User is owner of directory
AccessBlankAccess & h10000000 Directory has blank access privileges
AccessUserWrite & h04000000 User has write privileges
AccessUserRead & h02000000 User has read privileges
AccessUserSearch & h01000000 User has search privileges
AccessEveryoneWrite & h00040000 Everyone has write privileges
AccessEveryoneRead & h00020000 Everyone has read privileges
AccessEveryoneSearch & h00010000 Everyone has search privileges
AccessGroupWrite & h00000400 Group has write privileges
AccessGroupRead & h00000200 Group has read privileges
AccessGroupSearch & h00000100 Group has search privileges
AccessOwnerWrite & h00000004 Owner has write privileges
AccessOwnerRead & h00000002 Owner has read privileges
AccessOwnerSearch & h00000001 Owner has search privileges

75.21.6 GroupID as Integer

MBS MacOSX Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** The Group ID for this file.
**Notes:**
costants:

knoGroup 0

(Read and Write property)

75.21.7 Mode as Integer

MBS MacOSX Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:** The unix file mode.
**Notes:**
Only set if you use newer API.
(Read and Write property)

75.21.8 UserID as Integer

MBS MacOSX Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** The User ID for this file.
**Example:**
75.21.  CLASS PERMISSIONSMBS

dim f as FolderItem

f=SpecialFolder.Desktop

MsgBox str(f.PermissionsMBS(true).UserID) ' 501

Notes:

e.g. User 501 is normally the first user.

constants:

    knoUser     0,
    kadministratorUser  1

(Read and Write property)
class ResourceForkMBS

class ResourceForkMBS


Function: This class is for reading/writing resource forks on Mac.

Example:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.rsrc")
dim r as ResourceForkMBS = ResourceForkMBS.Create(f)

r.AddResource "Hello World", "TEXT", 128, "just a test"

Notes:

It is a replacement for ResourceFork class in Real Studio which has been removed for Cocoa and Console targets in Real Studio version 2012r2.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

Methods

AddResource(Data as Memoryblock, ResourceType as String, ID as Integer, Name as String)


Function: Adds a resource of the Type specified, using the Name and ID specified and fills it with the Data specified.

Notes: We added this method to avoid extra conversion from memoryblock to string when adding data.
See also:

• 75.22.4 AddResource(Data as String, ResourceType as String, ID as Integer, Name as String)

AddResource(Data as String, ResourceType as String, ID as Integer, Name as String)


Function: Adds a resource of the Type specified, using the Name and ID specified and fills it with the Data specified.

Example:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.rsrc")
dim r as ResourceForkMBS = ResourceForkMBS.Create(f)
75.22. CLASS RESOURCEFORKMBS

r.AddResource "Hello World", "TEXT", 128, "just a test"

See also:

- 75.22.3 AddResource(Data as Memoryblock, ResourceType as String, ID as Integer, Name as String)

75.22.5 Close

MBS MacClassic Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Closes the open resource fork. **Notes:** The resource fork will be closed automatically when the instance is destroyed.

75.22.6 Constructor


75.22.7 Create(file as folderitem, UseDataFork as boolean = false) as ResourceForkMBS

MBS MacClassic Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new ResourceFork. **Example:**

```pascal
dim f as FolderItem = SpecialFolder.Desktop.Child("test.rs"c)
dim r as ResourceForkMBS = ResourceForkMBS.Create(f)
r.AddResource "Hello World", "TEXT", 128, "just a test"
```

**Notes:**

If the file has a resource fork, it is deleted first.
If the file does not exist, it is created.
Returns nil on any error.
If UseDataFork is true, the resources are read/write from data fork.
75.22.8 GetIndResource(ResourceType as String, index as Integer) As String

Function: Returns the specified resource as a string.
Example:

```vbs
Dim f As FolderItem = SpecialFolder.Desktop.Child("test.rsrc")
Dim r As ResourceForkMBS = ResourceForkMBS.create(f)
r.AddResource "Hello World", "TEXT", 128, "just a test"
Dim s As String = r.GetIndResource("TEXT", 0)
MsgBox s
```

Notes: Index is zero based.

75.22.9 GetNamedResource(ResourceType as String, Name as String) As String

Function: Returns the specified resource as a string.
Example:

```vbs
Dim f As FolderItem = SpecialFolder.Desktop.Child("test.rsrc")
Dim r As ResourceForkMBS = ResourceForkMBS.create(f)
r.AddResource "Hello World", "TEXT", 128, "just a test"
Dim s As String = r.GetNamedResource("TEXT", "just a test")
MsgBox s
```

75.22.10 GetResource(ResourceType as String, ID as Integer) As String

Function: Returns the specified resource as a string.
Example:

```vbs
Dim f As FolderItem = SpecialFolder.Desktop.Child("test.rsrc")
Dim r As ResourceForkMBS = ResourceForkMBS.create(f)
r.AddResource "Hello World", "TEXT", 128, "just a test"
Dim s As String = r.GetResource("TEXT", 128)
```
75.22.11 GetResourceMemory(ResourceType as String, ID as Integer) As Memoryblock

**Function:** Returns the specified resource as a Memoryblock.
**Example:**
```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child(“test.rsrc”)
dim r as ResourceForkMBS = ResourceForkMBS.create(f)
r.AddResource “Hello World”, ”TEXT”, 128, ”just a test”
dim s as MemoryBlock = r.GetResourceMemory(”TEXT”, 128)
MsgBox s
```

75.22.12 Open(file as folderitem, Write as boolean, UseDataFork as boolean = false) as ResourceForkMBS

**Function:** Opens the resource fork of the FolderItem.
**Example:**
```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child(“test.rsrc”)
dim r as ResourceForkMBS = ResourceForkMBS.Open(f, false)
MsgBox str(r.TypeCount)+” types in file”
```

**Notes:**
If the FolderItem has no resource fork, OpenResourceFork returns Nil.
Access to the resourcefork is supported only on Macintosh.
If UseDataFork is true, the resources are read/write from data fork.

75.22.13 RemoveResource(ResourceType as String, ID as Integer)

**Function:** Removes the specified resource from the resource fork.
**Example:**
75.22.14 ResourceCount(ResourceType as String) as Integer

Function: Returns the number of resources of the specified type.
Example:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.rsrc")
dim r as ResourceForkMBS = ResourceForkMBS.Create(f)

r.AddResource "Hello World", "TEXT", 128, "just a test"
MsgBox str(r.TypeCount) + " resources"
r.RemoveResource "TEXT", 128
MsgBox str(r.TypeCount) + " resources"

75.22.15 ResourceID(ResourceType as String, index as Integer) as Integer

Function: Returns the resource ID as an Integer based on the Type and Index passed.
Example:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.rsrc")
dim r as ResourceForkMBS = ResourceForkMBS.Create(f)

r.AddResource "Hello World", "TEXT", 128, "just a test"

MsgBox str(r.ResourceID("TEXT", 0)) // shows 128

Notes: This list is zero-based.
75.22. CLASS RESOURCEFORKMBS

75.22.16 ResourceName(ResourceType as String, index as Integer) As String

Function: Returns the resource name as a string based on the Type and the zero-based index to that type.
Example:

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.rsrc")
dim r as ResourceForkMBS = ResourceForkMBS.Create(f)
r.AddResource "Hello World", "TEXT", 128, "just a test"
MsgBox r.ResourceName("TEXT", 0)
```

75.22.17 ResourceSizeOnDisk(ResourceType as String, ID as Integer) as Integer

Function: Queries the size on disk for a given resource.
Example:

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.rsrc")
dim r as ResourceForkMBS = ResourceForkMBS.Create(f)
r.AddResource "Hello World", "TEXT", 128, "just a test"
MsgBox str(r.ResourceSizeOnDisk("TEXT", 128)) + " bytes"
```

75.22.18 ResourceType(index as Integer) As String

Function: Returns the resource type as a string based on the Index passed.
Example:

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.rsrc")
dim r as ResourceForkMBS = ResourceForkMBS.Create(f)
r.AddResource "Hello World", "TEXT", 128, "just a test"
MsgBox r_RESOURCETYPE(0)
```

Notes: This list is zero-based.
**75.22.19  UniqueID(RESOURCE as String) as Integer**

MBS MacClassic Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Finds an unique ID for a given resource type.
**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.rsrc")
dim r as ResourceForkMBS = ResourceForkMBS.create(f)
MsgBox str(R.UniqueID("TEXT"))
```

**75.22.20  Properties**

**75.22.21  Handle as Integer**

MBS MacClassic Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal handle to the resource fork.
**Notes:** (Read only property)

**75.22.22  LastError as Integer**

MBS MacClassic Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last error code.
**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.rsrc")
dim r as ResourceForkMBS = ResourceForkMBS.Open(f, false) // open read only
r.AddResource "Hello World", "TEXT", 128, "just a test"
MsgBox str(R.LastError) // shows -61, write permission error
```

**Notes:**

All methods set this property.
(Read and Write property)

**75.22.23  Modified as Boolean**

MBS MacClassic Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the resource fork has been modified by you.
75.22. CLASS RESOURCEFORKMBS

Notes: (Read only property)

75.22.24 TypeCount as Integer


Example:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.rsrc")
dim r as ResourceForkMBS = ResourceForkMBS.create(f)

r.AddResource "Hello World", "TEXT", 128, "just a test"

MsgBox str(r.TypeCount) // shows 1

Notes: (Read only property)

75.22.25 Writable as Boolean

MBS MacClassic Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether the resourcefork was opened writable.

Notes: (Read only property)

75.22.26 ResourceAttributes(ResourceType as String, ID as Integer) as Integer


Example:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.rsrc")
dim r as ResourceForkMBS = ResourceForkMBS.create(f)

r.AddResource "Hello World", "TEXT", 128, "just a test"

MsgBox str(r.ResourceAttributes("TEXT", 128))
// shows 2 which means it has been changed and need to be written to disk soon

Notes: (Read and Write computed property)
75.22.27 ResourceLocked(ResourceType as String, ID as Integer) as boolean

MBS MacClassic Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Used to get and set the locked attribute of the resource. **Notes:** (Read and Write computed property)

75.22.28 ResourcePreload(ResourceType as String, ID as Integer) as boolean

MBS MacClassic Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Used to get and set the Preload attribute of the resource. **Notes:** (Read and Write computed property)

75.22.29 ResourceProtected(ResourceType as String, ID as Integer) as boolean

MBS MacClassic Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Used to get and set the Protected attribute of the resource. **Notes:** (Read and Write computed property)

75.22.30 ResourcePurgeable(ResourceType as String, ID as Integer) as boolean

MBS MacClassic Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Used to get and set the Purgeable attribute of the resource. **Notes:** (Read and Write computed property)

75.22.31 ResourceSysHeap(ResourceType as String, ID as Integer) as boolean

MBS MacClassic Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Used to get and set the SysHeap attribute of the resource. **Notes:** (Read and Write computed property)
75.23. CLASS ResStreamMBS

75.23  class ResStreamMBS

75.23.1  class ResStreamMBS

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Allows you to access a resourcefork in its binary representation.

**Notes:**

Useful to copy the resourcefork faster from one file to another.

Subclass of the LargeBinaryStreamMBS class.
75.24 class StdinMBS

75.24.1 class StdinMBS

MBS Util Plugin, Plugin Version: 6.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A class to read from stdin.

**Example:**

```plaintext
dim s as new StdoutMBS
dim r as new StdinMBS
dim v,n as Integer

s.Write "Integer: ",
n=r.ReadInteger(v)
print "integer read: " + str(v)
print "integer count: " + str(n)

dim d as Double

s.Write "Double: ",
n=r.ReadDouble(d)
print "double read: " + str(d)
print "double count: " + str(n)

dim t as string

s.Write "String: ",
n=r.ReadString(t)
print "string read: " + t
print "string count: " + str(n)

do
s.Write "Character (type a and return to end): ",
n=r.GetCharacter
print "got character: " + str(n)
loop until n=65 or n=97
```
75.24.2 Methods

75.24.3 AttachConsole(ProcessID as Integer = -1) as Integer

MBS Util Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Attaches the calling process to the console of the specified process.

**Notes:**
ProcessId: The identifier of the process whose console is to be used. This parameter can be one of the following values.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>pid</td>
<td>Use the console of the specified process.</td>
</tr>
<tr>
<td>-1</td>
<td>Use the console of the parent of the current process.</td>
</tr>
</tbody>
</table>

Returns Windows error code or zero for success.

A process can be attached to at most one console. If the calling process is already attached to a console, the error code returned is ERROR_ACCESS_DENIED (5). If the specified process does not have a console, the error code returned is ERROR_INVALID_HANDLE (6). If the specified process does not exist, the error code returned is ERROR_GEN_FAILURE (31).

75.24.4 Flush


75.24.5 FreeConsole as Integer

MBS Util Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Detaches the calling process from its console.

**Notes:**
Returns Windows error code or zero for success.

A process can be attached to at most one console. If the calling process is not already attached to a console, the error code returned is ERROR_INVALID_PARAMETER (87). A process can use the FreeConsole function to detach itself from its console. If other processes share the console, the console is not destroyed, but the process that called FreeConsole cannot refer to it. A console is closed when the last process attached to it terminates or calls FreeConsole.
it can call the AllocConsole function to create a new console or AttachConsole to attach to another console.

### 75.24.6 GetCharacter as Integer

MBS Util Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:**
Reads in one character and returns the ASCII code.
**Notes:** Returns one if a value was read and 0 if not.

### 75.24.7 Read(count as Integer) as string

MBS Util Plugin, Plugin Version: 6.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Reads data from stdin.
**Notes:** Data is returned in binary encoding.

### 75.24.8 ReadDouble(byref value as Double) as Integer

MBS Util Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Reads a double from the console.
**Notes:** Returns one if a value was read and 0 if not.

### 75.24.9 ReadInteger(byref value as Integer) as Integer

MBS Util Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Reads an integer from the console.
**Notes:** Returns one if a value was read and 0 if not.

### 75.24.10 ReadString(byref value as string) as Integer

MBS Util Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Reads a string from the console.
**Notes:**
This string is limited to 4095 characters.
Returns one if a value was read and 0 if not.
75.24.11 Properties

75.24.12 Echo as Boolean


Example:

// try this on Mac/Linux GUI/Console app with the app launched from Terminal, 
// or in console app on Windows launched from command prompt

dim s as new StdoutMBS
s.Write "Hello World"+chr(10)

dim t as string

dim n as integer = StdinMBS.ReadString(t)
s.Write chr(10)
s.Write "Read with echo: "+t+chr(10)

StdinMBS.Echo = false

n = StdinMBS.ReadString(t)
s.Write chr(10)
s.Write "Read without echo: "+t+chr(10)

StdinMBS.Echo = true

Notes:

You can disable echo for password input.
By default it is enabled.
(Read and Write property)

75.24.13 IsReady as boolean

MBS Util Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. Function: Checks whether there is data waiting in input buffer to be read.

Notes:

If IsReady returns false and you would call ReadString method, the app could be blocked until user types something on console.
(Read only property)
75.25  class StdoutMBS

75.25.1  class StdoutMBS

MBS Util Plugin, Plugin Version: 6.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A class to write to stdout.

**Example:**

```vbs
dim s as new StdoutMBS
dim r as new StdinMBS
dim v,n as Integer

s.Write "Integer: 

n=r.ReadInteger(v)

print "integer read: "+str(v)
print "integer count: "+str(n)

dim d as Double

s.Write "Double: 

n=r.ReadDouble(d)

print "double read: "+str(d)
print "double count: "+str(n)

dim t as string

s.Write "String: 

n=r.ReadString(t)

print "string read: "+t
print "string count: "+str(n)

do
s.Write "Character (type a and return to end): 

n=r.GetCharacter

print "got character: "+str(n)
loop until n=65 or n=97
```
75.25.2 Methods

75.25.3 AttachConsole(ProcessID as Integer = -1) as Integer

MBS Util Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Attaches the calling process to the console of the specified process.

**Notes:**
ProcessId: The identifier of the process whose console is to be used. This parameter can be one of the following values.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>pid</td>
<td>Use the console of the specified process.</td>
</tr>
<tr>
<td>-1</td>
<td>Use the console of the parent of the current process.</td>
</tr>
</tbody>
</table>

Returns Windows error code or zero for success.

A process can be attached to at most one console. If the calling process is already attached to a console, the error code returned is ERROR_ACCESS_DENIED (5). If the specified process does not have a console, the error code returned is ERROR_INVALID_HANDLE (6). If the specified process does not exist, the error code returned is ERROR_GEN_FAILURE (31).

75.25.4 Flush

MBS Util Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:**
Makes sure that all data written using Write is already on the console.

75.25.5 FreeConsole as Integer

MBS Util Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Detaches the calling process from its console.

**Notes:**
Returns Windows error code or zero for success.

A process can be attached to at most one console. If the calling process is not already attached to a console, the error code returned is ERROR_INVALID_PARAMETER (87). A process can use the FreeConsole function to detach itself from its console. If other processes share the console, the console is not destroyed, but the process that called FreeConsole cannot refer to it. A console is closed when the last process attached to it terminates or calls FreeConsole. After a process calls FreeConsole,
it can call the AllocConsole function to create a new console or AttachConsole to attach to another console.

75.25.6 Write(data as string)

MBS Util Plugin, Plugin Version: 6.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Writes data to stdout.
**Notes:** You have to make sure your data is in good text encoding.
75.26  class VolumeInformationMBS

75.26.1  class VolumeInformationMBS

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Detailed information on Mac volumes.
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

75.26.2  Methods

75.26.3  Constructor


75.26.4  Properties

75.26.5  Blocksize as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The size of an allocation block, in bytes.
**Notes:**
This field is only appropriate for volume formats (such as HFS and HFS Plus) that allocate space in fixed-size pieces; other volume formats may not have a similar concept, and may set this field to zero.
(Read only property)

75.26.6  DataForkClumpSize as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Default data fork clump size.
**Notes:**
When a fork is automatically grown as it is written, the File Manager attempts to allocate space that is a multiple of the clump size. This field is zero for volume formats that don’t support the notion of a clump size.
(Read only property)
75.26.7 DefaultVolume as boolean

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Is this the default volume?
**Notes:**
Not supported if LimitedInformation is false.
(This property requires Mac OS 9 or newer)
(Read only property)

75.26.8 DriveNumber as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The drive number for the drive (drive queue element) associated with the volume.
**Notes:** (Read only property)

75.26.9 DriverRefNum as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The driver reference number for the drive (drive queue element) associated with the volume.
**Notes:** (Read only property)

75.26.10 FileCount as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The total number of files on the volume, or 0 if unknown.
**Notes:** (Read only property)

75.26.11 FilesOpen as boolean

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Are there files open on this volume?
**Notes:**
For the boot volume false!
Not supported if LimitedInformation is false.
(This property requires Mac OS 9 or newer)
(Read only property)
75.26. CLASS VOLUMEINFORMATIONMBS

75.26.12 FileSystemID as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Identifies the filesystem implementation that is handling the volume; this is zero for HFS and HFS Plus volumes.

**Notes:** (Read only property)

75.26.13 FolderCount as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The total number of folders on the volume, or 0 if unknown. Note that no root directory counts.

**Notes:** (Read only property)

75.26.14 freeBlocks as Int64

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of unused allocation blocks on the volume.

**Notes:**
This field is only appropriate for volume formats (such as HFS and HFS Plus) that allocate space in fixed-size pieces; other volume formats may not have a similar concept, and may set this field to zero.
(Read only property)

75.26.15 Freebytes as Int64

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of bytes of free space on the volume.

**Notes:**
On Mac OS versions before 9.0, this returns never a number bigger than 2 GBytes, even if the disc is bigger.
(Read only property)

75.26.16 HardwareLocked as boolean

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** is the volume locked by hardware?

**Notes:**
Not supported if LimitedInformation is false.
(This property requires Mac OS 9 or newer)
(Read only property)
75.26.17 LimitedInformation as boolean

**Function:** True if some properties are not filled.
**Notes:**
Not all values are supported on Mac OS 8.6
(Read only property)

75.26.18 Name as String

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 
**Function:** The name of the volume.
**Notes:**
The name is returned in 16bit Unicode.
RB 4.5 should know how to handle that.
(Read only property)

75.26.19 NextAllocation as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 
**Function:** A hint for where to start searching for free space during an allocation.
**Notes:**
This field is only appropriate for volume formats (such as HFS and HFS Plus) that allocate space in fixed-size pieces; other volume formats may not have a similar concept, and may set this field to zero.
(Read only property)

75.26.20 NextCatalogID as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 
**Function:** The next unused catalog node ID.
**Notes:**
Some volume formats (such as HFS and HFS Plus) use a monotonically increasing number for the catalog node ID (i.e. File ID or Directory ID) of newly created files and directories. For those volume formats, the nextCatalogID is the next file/directory ID that will be assigned. For other volume formats, this field will be zero.
(Read only property)
75.26.21 ResourceForkClumpSize as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Default resource fork clump size.

**Notes:**
When a fork is automatically grown as it is written, the File Manager attempts to allocate space that is a multiple of the clump size. This field is zero for volume formats that don’t support the notion of a clump size.

(Read only property)

75.26.22 Root as Folderitem

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A folderitem to the root of this volume.

**Notes:**
Not supported if LimitedInformation is false.
(This property requires Mac OS 9 or newer)
(Read only property)

75.26.23 RootFSRef as memoryblock

MBS MacClassic Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The root folderitem as FSRef packed into a memoryblock.

**Notes:** (Read only property)

75.26.24 Signature as Integer

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This field is used to distinguish between volume formats supported by a single filesystem implementation.

**Notes:**
Example values:

<table>
<thead>
<tr>
<th>Format</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>HFS</td>
<td>h4244 &quot;BD&quot;</td>
</tr>
<tr>
<td>HFS+</td>
<td>h482B &quot;H+&quot;</td>
</tr>
</tbody>
</table>

(Read only property)
75.26.25 SoftwareLocked as boolean

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** is the volume locked by software?
**Notes:**
Not supported if LimitedInformation is false.
(This property requires Mac OS 9 or newer)
(Read only property)

75.26.26 Totalblocks as Int64

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The total number of allocation blocks on the volume.
**Notes:**
This field is only appropriate for volume formats (such as HFS and HFS Plus) that allocate space in fixed-size pieces; other volume formats may not have a similar concept, and may set this field to zero.
(Read only property)

75.26.27 Totalbytes as Int64

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The size of the volume in bytes.
**Notes:**
On Mac OS versions before 9.0, this returns never a number bigger than 2 GBytes, even if the disc is bigger.
(Read only property)
5.27.1 class WindowsDiskChangeMBS

MBS Win Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The class to get events for media or devices being added/inserted or removed.

5.27.2 Methods

5.27.3 Constructor

MBS Win Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The constructor.

5.27.4 Properties

5.27.5 Valid as Boolean

MBS Win Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether the constructor registered the events successfully. **Notes:** (Read and Write property)

5.27.6 Events

5.27.7 DriveAdded(Path as string)

MBS Win Plugin, Plugin Version: 13.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The event to notify you about drive being added.

5.27.8 DriveRemoved(Path as string)

MBS Win Plugin, Plugin Version: 13.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The event to notify you about drive being removed.
CHAPTER 75. FILES

75.27.9 MediaInserted(Path as string)

MBS Win Plugin, Plugin Version: 13.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The event to notify you about media being added.

75.27.10 MediaRemoved(Path as string)

MBS Win Plugin, Plugin Version: 13.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The event to notify you about media being removed. **Notes:** You may get the event multiple times.
75.28. **CLASS WINDOWSDRIVENOTIFICATIONMBS**

75.28. **class WindowsDriveNotificationMBS**

75.28.1 **class WindowsDriveNotificationMBS**

MBS Win Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The class to detect devices being mounted/unmounted in Windows.

75.28.2 **Events**

75.28.3 **DeviceArrival(Path as string)**

MBS Win Plugin, Plugin Version: 15.0, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** A device arrived. **Notes:** Path may be path to USB device or path to mount point. For USB sticks you get both.

75.28.4 **DeviceRemoved(Path as string)**

MBS Win Plugin, Plugin Version: 15.0, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** A device was removed. **Notes:** Path may be path to USB device or path to mount point. For USB sticks you get both.
module WindowsJunctionMBS

module WindowsJunctionMBS

MBS Win Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: This module implements various functions for links. Notes: Symbol links (link files), Hard links (several directory entries for one file on disc) and junctions (show content of one folder inside another folder). Some operations need Administrator permissions. Check lasterror in case of trouble. Error 1314 for example is permissions problem. See also WindowsShortCutMBS and WindowsInternetShortCutMBS classes. For Mac see also CFBookmarkMBS and MacAliasMBS classes.

Methods

CreateHardLink(NewFile as folderitem, TargetFile as folderitem) as boolean

MBS Win Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: Establishes a hard link between an existing file and a new file. Example:

dim file as FolderItem = SpecialFolder.Desktop.Child("test.exe")
dim nfile as FolderItem = SpecialFolder.Desktop.Child("hello.exe")

if WindowsJunctionMBS.CreateHardLink(nfile, file) then
    MsgBox "OK"
end if

Notes:
This function is only supported on the NTFS file system, and only for files, not directories.

NewFile: The name of the new file. Function fails if NewFile exists already. This parameter cannot specify the name of a directory.
TargetFile: The name of the existing file. This parameter cannot specify the name of a directory.
Returns true on success. Lasterror is set.

The maximum number of hard links that can be created with this function is 1023 per file. If more than 1023 links are created for a file, an error results.

Any directory entry for a file that is created with CreateFile or CreateHardLink is a hard link to an associated file. An additional hard link that is created with the CreateHardLink function allows you to have multiple directory entries for a file, that is, multiple hard links to the same file, which can be different names in the same directory, or the same or different names in different directories. However, all hard links to a file must be on the same volume.

Because hard links are only directory entries for a file, many changes to that file are instantly visible to applications that access it through the hard links that reference it. However, the directory entry size and attribute information is updated only for the link through which the change was made.

The security descriptor belongs to the file to which a hard link points. The link itself is only a directory entry, and does not have a security descriptor. Therefore, when you change the security descriptor of a hard link, you change the security descriptor of the underlying file, and all hard links that point to the file allow the newly specified access. You cannot give a file different security descriptors on a per-hard-link basis.

Use DeleteFile to delete hard links (folderitem.delete in Real Studio). You can delete them in any order regardless of the order in which they are created.

Flags, attributes, access, and sharing that are specified in CreateFile operate on a per-file basis. That is, if you open a file that does not allow sharing, another application cannot share the file by creating a new hard link to the file.

When you create a hard link on the NTFS file system, the file attribute information in the directory entry is refreshed only when the file is opened, or when GetFileInformationByHandle is called with the handle of a specific file.

Symbolic link behaviorIf the path points to a symbolic link, the function creates a hard link to the target.

Lasterror is set. Returns true on success.

---

75.29.4 CreateJunction(JunctionDir as folderitem, TargetDir as folderitem) as boolean


**Example:**

```vbs
dim file as FolderItem = SpecialFolder.Desktop.Child("test")
dim nfile as FolderItem = SpecialFolder.System

if WindowsJunctionMBS.CreateJunction(file, nfile) then
    MsgBox "OK"
else
    MsgBox "Error"
end if
```

---
**Notes:** Lasterror is set. Returns true on success.

### 75.29.5 CreateSymbolicLink(NewFile as folderitem, TargetFile as folderitem) as boolean

MBS Win Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Creates a symbolic link.

**Example:**

```vbnet
dim file as FolderItem = SpecialFolder.Desktop.Child("test.lnk")
dim nfile as FolderItem = SpecialFolder.Desktop.Child("test.txt")

if WindowsJunctionMBS.CreateSymbolicLink(file, nfile) then
    MsgBox "Ok"
end if
```

**Notes:**

- **NewFile:** The symbolic link to be created.
- **TargetFile:** The name of the target for the symbolic link to be created. If TargetFile has a device name associated with it, the link is treated as an absolute link; otherwise, the link is treated as a relative link.
- **TargetIsDirectory:** Indicates whether the link target, TargetFile, is a directory. (Pass true for a directory).

Returns true on success. False on failure. Lasterror is set.

If the function fails, the return value is zero. To get extended error information, call GetLastError.

Symbolic links can either be absolute or relative links. Absolute links are links that specify each portion of the path name; relative links are determined relative to where relativelink specifiers are in a specified path. Relative links are specified using the following conventions:

- **Dot (. and ..) conventions** for example, ".\..\" resolves the path relative to the parent directory.
- **Names with no slashes (\) for example, "tmp" resolves the path relative to the current directory.**
- **Root relative** for example, "\Windows\System32" resolves to "current drive:\Windows\System32".
- **Current working directory relative** for example, if the current working directory is C:\Windows\System32, "C:File.txt" resolves to "C:\Windows\System32\File.txt".

If you specify a current working directory relative link, it is created as an absolute link, due to the way the
current working directory is processed based on the user and the thread.

This function can fail due to missing permissions.
See also:

- 75.29.6 CreateSymbolicLink(NewFile as folderitem, TargetFile as string, TargetIsDirectory as Boolean) as boolean

75.29.6 CreateSymbolicLink(NewFile as folderitem, TargetFile as string, TargetIsDirectory as Boolean) as boolean

MBS Win Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Creates a symbolic link.

**Notes:**

NewFile: The symbolic link to be created.
TargetFile: The name of the target for the symbolic link to be created. If TargetFile has a device name
associated with it, the link is treated as an absolute link; otherwise, the link is treated as a relative link.
TargetIsDirectory: Indicates whether the link target, TargetFile, is a directory. (Pass true for a directory).

Returns true on success. False on failure. Lasterror is set.

If the function fails, the return value is zero. To get extended error information, call GetLastError.

Symbolic links can either be absolute or relative links. Absolute links are links that specify each portion of
the path name; relative links are determined relative to where relativelink specifiers are in a specified path.
Relative links are specified using the following conventions:

- Dot (. and ..) conventions for example, "..\" resolves the path relative to the parent directory.
- Names with no slashes (\) for example, "tmp" resolves the path relative to the current directory.
- Root relative for example, "\Windows\System32" resolves to "current drive:\Windows\System32".
- Current working directory relative for example, if the current working directory is C:\Windows\System32,"C:File.txt" resolves to "C:\Windows\System32\File.txt".

If you specify a current working directory relative link, it is created as an absolute link, due to the way the
current working directory is processed based on the user and the thread.

This function can fail due to missing permissions.
See also:

- 75.29.5 CreateSymbolicLink(NewFile as folderitem, TargetFile as folderitem) as boolean
75.29.7 DeleteJunction(JunctionDir as folderitem) as boolean

MBS Win Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Deletes the junction.

**Example:**

```vbscript
dim file as FolderItem = SpecialFolder.Desktop.Child("test")
if WindowsJunctionMBS.DeleteJunction(file) then
    MsgBox "Ok"
end if
```

**Notes:** Folder is not deleted.

75.29.8 GetJunctionTarget(JunctionDir as folderitem) as string

MBS Win Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Checks whether a directory is a directory junction.

**Example:**

```vbscript
dim file as FolderItem = SpecialFolder.Desktop.Child("test")
msgbox WindowsJunctionMBS.GetJunctionTarget(file)
```

**Notes:** Lasterror is set. Returns path of junction target.

75.29.9 IsDirectoryJunction(JunctionDir as folderitem) as boolean

MBS Win Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Checks whether a directory is a directory junction.

**Example:**

```vbscript
dim file as FolderItem = SpecialFolder.Desktop.Child("test")
if WindowsJunctionMBS.IsDirectoryJunction(file) then
    MsgBox "Is junction."
else
    MsgBox "Is no junction."
end if
```
Notes:

Returns true if this file is a junction.
Lasterror is set.

75.29.10 Lasterror as Integer

Notes:

Value is 0 for no error
-1 for some parameter error or not implemented inside plugin.
other values are windows error codes.
75.30  class WindowsVolumeInformationMBS

75.30.1  class WindowsVolumeInformationMBS

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Detailed information on Windows volumes.

75.30.2  Methods

75.30.3  Constructor

MBS Win Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A dummy constructor used only for automatic plugin testing. **Notes:** Uses "C:" as path and does the same as the other constructor. See also:

- 75.30.4 Constructor(path as string)

75.30.4  Constructor(path as string)

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Fills the class with information about the given volume. **Example:**

Function Window1.ToString(v as Variant) As string
return v
End Function

Sub Window1.Open
    dim w as WindowsVolumeInformationMBS
    w=new WindowsVolumeInformationMBS("C:\")
    pname.text=w.name
    pfsName.text=w.FileSystemName
    pmaxLen.text=toString(w.maxNameLength)
    pcasePres.text=toString(w.CaseIsPreserved)
    pcaseSens.text=toString(w.caseSensitive)
    punicode.text=toString(w.SupportsUnicodeFilenames)
    pcompressed.text=toString(w.IsCompressedVolume)
    pfileCompress.text=toString(w.SupportsFileCompression)
    pfileEncrypt.text=toString(w.SupportsFileEncryption)
    pserial.text=hex(w.serial)
End Sub
Notes: Path must something like "C:\" or "\MyServer\MyShare\".
See also:

- 75.30.3 Constructor

75.30.5 Properties

75.30.6 CaseIsPreserved as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The file system preserves the case of filenames when it places a name on disk.
Notes: (Read only property)

75.30.7 CaseSensitive as boolean

Notes: (Read only property)

75.30.8 FileSystemName as string

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The name of the filesystem.
Notes:
For example "FAT" or "NTFS".
(Read only property)

75.30.9 IsCompressedVolume as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The specified volume is a compressed volume; for example a DoubleSpace volume.
Notes:
A volume is only SupportsFileCompression or IsCompressedVolume, but never both together.
(Read only property)
75.30.10 MaxNameLength as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The maximum length of a file name on this volume.

**Notes:**
Should be 255 on normal Windows disks.
(Read only property)

75.30.11 Name as string

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The volume name if the volume is named.

**Notes:** (Read only property)

75.30.12 Path as string

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The path used in the constructor.

**Notes:** (Read only property)

75.30.13 Serial as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The volume serial number.

**Example:**

```vbnet
dim w as WindowsVolumeInformationMBS
w=new WindowsVolumeInformationMBS("C:\")
MsgBox hex(w.Serial)
```

**Notes:**
This serial is set to a random name on formatting and can be changed later using some special tools.
(Read only property)
75.30.14 SupportsFileCompression as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The file system supports file-based compression.
**Notes:**
A volume is only SupportsFileCompression or IsCompressedVolume, but never both together.
(Read only property)

75.30.15 SupportsFileEncryption as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The file system supports the Encrypted File System (EPS).
**Notes:** (Read only property)

75.30.16 SupportsUnicodeFilenames as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The file system supports Unicode in filenames as they appear on disk.
**Notes:** (Read only property)

75.30.17 Valid as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Was the constructor successful?
**Notes:**
May fail on bad file paths.
(Read only property)
Chapter 76

Folder Change Watching

76.1 class FolderChangedNotificationMBS

76.1.1 class FolderChangedNotificationMBS

MBS MacOSX Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class to receive notifications

**Deprecation:** This item is deprecated and should no longer be used. You can use FSEventsMBS instead.

**Notes:**
It’s only for Mac OS X!
And not every application does send notifications around.
Please use FSEventsMBS for getting better results. This class is deprecated.

76.1.2 Methods

76.1.3 Directory as folderitem

MBS MacOSX Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem for the directory observed.

**Notes:**
Returns nil on any error.
Lasterror is set.
76.1.4 Notify(dir as folderitem)

MBS MacOSX Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Notifies the system about a modification you made in the given directory.
Notes: Lasterror is set.

76.1.5 NotifyAll

MBS MacOSX Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Notifies the system about a modification you made on several directories.
Notes:
Used by installers which may change hundreds of directories.
Lasterror is set.

76.1.6 NotifyByPath(path as string)

MBS MacOSX Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Notifies the system about a modification you made in the given directory.
Notes:
Path should be a valid Mac OS X path.
Lasterror is set.

76.1.7 Subscribe(dir as folderitem)

MBS MacOSX Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Subscribes the class to observe a specified directory.
Notes: Lasterror is set.
See also:

- 76.1.8 Subscribe(dir as folderitem, flags as Integer)

76.1.8 Subscribe(dir as folderitem, flags as Integer)

MBS MacOSX Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Subscribes the class to observe a specified directory.
Notes:
Lasterror is set.
76.1. CLASS FOLDERCHANGEDNOTIFICATIONMBS

Constants for the flags parameter:

- kFNNoImplicitAllSubscription 1 Specify this option if you do not want to receive notifications on this subscription when FNNotifyAll is called; by default any subscription is also implicitly a subscription to wildcard notifications.
- kFNNotifyInBackground 2 Specify this option if you want to receive notifications on this subscription when your application is in background. By default notifications will be coalesced and delivered when your application becomes foreground.

See also:

- 76.1.7 Subscribe(dir as folderitem)

76.1.9 SubscribeByPath(path as string)

MBS MacOSX Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Subscribes the class to observe a specified directory.

**Notes:**
Lasterror is set.
Path must be a valid Mac OS X path.
See also:

- 76.1.10 SubscribeByPath(path as string, flags as Integer)

76.1.10 SubscribeByPath(path as string, flags as Integer)

MBS MacOSX Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Subscribes the class to observe a specified directory.

**Notes:**
Lasterror is set.
Path must be a valid Mac OS X path.

Constants for the flags parameter:

- kFNNoImplicitAllSubscription 1 Specify this option if you do not want to receive notifications on this subscription when FNNotifyAll is called; by default any subscription is also implicitly a subscription to wildcard notifications.
- kFNNotifyInBackground 2 Specify this option if you want to receive notifications on this subscription when your application is in background. By default notifications will be coalesced and delivered when your application becomes foreground.

See also:
76.1.11 Unsubscribe

MBS MacOSX Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Unsubscribes the current directory.

**Notes:**
Lasterror is set.
This method is called for you by the destructor of the class.

76.1.12 Properties

76.1.13 Handle as Integer

MBS MacOSX Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle to the notification object.

**Notes:**
For toolbox development: It’s a FNSubscriptionRef.
(Read and Write property)

76.1.14 Lasterror as Integer

MBS MacOSX Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last error code reported.

**Notes:**
0 if successful, -1 if the function is not available or parameters are bad.
Else a Mac OS error code.
(Read and Write property)

76.1.15 Events

76.1.16 DirectoryChanged(message as Integer, flags as Integer)

MBS MacOSX Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Out directory changed or some directories changed.

**Notes:**
An installer application may send a notification without a specified directory. In this case the event is called and the observed directory may not be changed!
message: An indication of what happened
flags: Options about delivery of the notification (typically 0)

Only one message value is defined:
const kFNDirectoryModifiedMessage = 1
CHAPTER 76. FOLDER CHANGE WATCHING

76.2 class FSEventsMBS

76.2.1 class FSEventsMBS


Function: A class for the Mac OS X 10.5 feature called FSEvents which can be used to monitor a folder hierarchy for changes.

Notes:

The text below is from the Apple documentation (With some plugin related modifications). The plugin does currently not support the device related functions, but that can be added later if you need it.

This class provides a mechanism to notify clients about directories they ought to re-scan in order to keep their internal data structures up-to-date with respect to the true state of the file system. (For example, when files or directories are created, modified, or removed.) It sends these notifications "in bulk", possibly notifying the client of changes to several directories in a single callback. By using the API, clients can notice such changes quickly, without needing to resort to recursive polling/scanning of the file system.

Much like kqueues, the FSEvents API allows an application to find near-immediately when the contents of a particular directory has changed. However, unlike kqueues, the FSEvents API allows the application to monitor the whole file system hierarchy rooted at a specified directory (and still get precise per-directory notifications) – to do this with the kqueues API would require the client to monitor each directory individually.

Clients can register interest in a chunk of the filesystem hierarchy and will receive callbacks from their runloop whenever an event occurs that modifies the filesystem therein. The callback will indicate the exact directory in which the event occurred, so the client only has to scan that directory for updated info, not all its children. Clients can supply a "latency" parameter that tells how long to wait after an event occurs before forwarding it; this reduces the volume of events and reduces the chance that the client will see an "intermediate" state, like those that arise when doing a "safe save" of a file, creating a package, or downloading a file via Safari.

The lifecycle of an FSEventStream consists of these stages:

1. new FSEventsMBS(...) -> Creates an FSEventStream.

2. Start() -> Starts receiving events and servicing them from the client’s runloop(s) using the callback supplied by the client when the stream was created. If a value was supplied for the sinceWhen parameter then "historical" events will be sent via your callback first, then a HistoryDone event, then "contemporary" events will be sent on an ongoing basis (as though you had supplied kFSEventStreamEventIdSinceNow for sinceWhen).

3. Stop() -> Stops the stream, ensuring the client’s callback will not be called again for this stream. After stopping the stream, it can be restarted seamlessly via Start() without missing any events.
Once the event stream has been started, the following calls can be used:

GetLatestEventId() - Initially, this returns the sinceWhen value supplied when the stream was created; thereafter, it is updated with the highest-numbered event ID mentioned in the current batch of events just before invoking the client’s callback. Clients can store this value persistently as long as they also store the UUID for the device (obtained via CopyUUIDForDevice()). Clients can then later supply this event ID as the sinceWhen parameter to CreateRelativeToDevice(), as long as its UUID matches what you stored. This works because the FSEvents service stores events in a persistent, per-volume database. In this regard, the stream of event IDs acts like a global, system-wide clock, but bears no relation to any particular timebase.

FlushAsync() - Requests that the fseventsd daemon send any events it has already buffered (via the latency parameter to one of the constructors). This occurs asynchronously; clients will not have received all the callbacks by the time this call returns to them.

FlushSync() - Requests that the fseventsd daemon send any events it has already buffered (via the latency parameter to one of the constructors). Then runs the runloop in its private mode till all events that have occurred have been reported (via the clients callback). This occurs synchronously; clients will have received all the callbacks by the time this call returns to them.

GetDeviceBeingWatched() - Gets the dev.t value supplied when the stream was created with CreateRelativeToDevice(), otherwise 0.

CopyPathsBeingWatched() - Gets the paths supplied when the stream was created with one of the constructors.

Calls that can be made without a stream:

CopyUUIDForDevice() - Gets a UUID that uniquely identifies the FSEvents database for that volume. If the database gets discarded then its replacement will have a different UUID so that clients will be able to detect this situation and avoid trying to use event IDs that they stored as the sinceWhen parameter to the FSEventStreamCreate...() functions.

GetCurrentEventId() - Gets the most recently generated event ID, system-wide (not just for one stream).

GetLastEventIdForDeviceBeforeTime() - Gets the last event ID for the given device that was returned before the given time. This is conservative in the sense that if you then use the returned event ID as the sinceWhen parameter of CreateRelativeToDevice() that you will not miss any events that happened since that time. On the other hand, you might receive some (harmless) extra events.

PurgeEventsForDeviceUpToEventId() - Purges old events from the persistent per-volume database main-
CHAPTER 76. FOLDER CHANGE WATCHING

tained by the service. You can combine this with GetLastEventIdForDeviceBeforeTime(). Can only be called by the root user.

For Windows, you can use WindowsDirectoryWatcherMBS class.

76.2.2 Methods

76.2.3 Available as Boolean

Function: Whether the FSEvent functions are working.
Example:

if FSEventMBS.Available then
   MsgBox "available"
else
   MsgBox "not available"
end if

Notes: True on Mac OS X 10.5 and false on other versions and operation systems.

76.2.4 Constructor(DeviceToWatch as Integer, path as string, sinceWhen as UInt64, latency as Double, flags as Integer)

Function: Creates a new FS event stream object for a particular device with the given parameters.
Notes:
In order to start receiving callbacks you must also call Start().

deviceToWatch:
A dev_t corresponding to the device which you want to receive notifications from. Use GetDeviceID to get such a device ID.

pathsToWatchRelativeToDevice:
A string, specifying a relative path to a directory on the device identified by the dev parameter. The path should be relative to the root of the device. For example, if a volume "MyData" is mounted at "/Volumes/MyData" and you want to watch "/Volumes/MyData/Pictures/July", specify a path string of "Pictures/July". To watch the root of a volume pass a path of "" (the empty string).
sinceWhen:
The service will supply events that have happened after the given event ID. To ask for events "since now" pass the constant kFSEventStreamEventIdSinceNow. Often, clients will supply the highest-numbered FSEventStreamEventId they have received in a callback, which they can obtain via the GetLatestEventId() accessor. Do not pass zero for sinceWhen, unless you want to receive events for every directory modified since "the beginning of time" – an unlikely scenario.

latency:
The number of seconds the service should wait after hearing about an event from the kernel before passing it along to the client via its event. Specifying a larger value may result in more effective temporal coalescing, resulting in fewer callbacks.

flags:
Flags that modify the behavior of the stream being created.

On success the handle property is not 0.
See also:

- 76.2.5 Constructor(DeviceToWatch as Integer, paths() as string, sinceWhen as UInt64, latency as Double, flags as Integer) 12877
- 76.2.6 Constructor(path as folderitem, sinceWhen as UInt64, latency as Double, flags as Integer) 12878
- 76.2.7 Constructor(path as string, sinceWhen as UInt64, latency as Double, flags as Integer) 12879
- 76.2.8 Constructor(paths() as folderitem, sinceWhen as UInt64, latency as Double, flags as Integer) 12880
- 76.2.9 Constructor(paths() as string, sinceWhen as UInt64, latency as Double, flags as Integer) 12880

76.2.5 Constructor(DeviceToWatch as Integer, paths() as string, sinceWhen as UInt64, latency as Double, flags as Integer)

Function: Creates a new FS event stream object with the given parameters.
Notes:
In order to start receiving callbacks you must also call Start.

paths: The folders you want to watch. (more exactly the root folders of the folder hierarchies you want to watch)

sinceWhen: The service will supply events that have happened after the given event ID. To ask for events "since now" pass the constant kFSEventStreamEventIdSinceNow. Often, clients will supply the highest-numbered FSEventStreamEventId they have received in a callback, which they can obtain via the GetLatestEventId() accessor. Do not pass zero for sinceWhen, unless you want to receive events for every directory modified since "the beginning of time" – an unlikely scenario.
latency: The number of seconds the service should wait after hearing about an event from the kernel before passing it along to the client via its callback. Specifying a larger value may result in more effective temporal coalescing, resulting in fewer callbacks and greater overall efficiency.

flags: Flags that modify the behavior of the stream being created.

See also:

- 76.2.4 Constructor(DeviceToWatch as Integer, path as string, sinceWhen as UInt64, latency as Double, flags as Integer) 12876
- 76.2.6 Constructor(path as folderitem, sinceWhen as UInt64, latency as Double, flags as Integer) 12878
- 76.2.7 Constructor(path as string, sinceWhen as UInt64, latency as Double, flags as Integer) 12879
- 76.2.8 Constructor(paths() as folderitem, sinceWhen as UInt64, latency as Double, flags as Integer) 12879
- 76.2.9 Constructor(paths() as string, sinceWhen as UInt64, latency as Double, flags as Integer) 12880

76.2.6 Constructor(path as folderitem, sinceWhen as UInt64, latency as Double, flags as Integer)


Function: Creates a new FS event stream object with the given parameters.

Notes:
In order to start receiving callbacks you must also call Start.

path: The folder you want to watch. (more exactly the root folder of the folder hierarchie you want to watch)

sinceWhen: The service will supply events that have happened after the given event ID. To ask for events ”since now” pass the constant kFSEventStreamEventIdSinceNow. Often, clients will supply the highest-numbered FSEventStreamEventId they have received in a callback, which they can obtain via the GetLatestEventId() accessor. Do not pass zero for sinceWhen, unless you want to receive events for every directory modified since ”the beginning of time” – an unlikely scenario.

latency: The number of seconds the service should wait after hearing about an event from the kernel before passing it along to the client via its callback. Specifying a larger value may result in more effective temporal coalescing, resulting in fewer callbacks and greater overall efficiency.

flags: Flags that modify the behavior of the stream being created.

See also:

- 76.2.4 Constructor(DeviceToWatch as Integer, path as string, sinceWhen as UInt64, latency as Double, flags as Integer) 12876
- 76.2.5 Constructor(DeviceToWatch as Integer, paths() as string, sinceWhen as UInt64, latency as Double, flags as Integer) 12877
- 76.2.7 Constructor(path as string, sinceWhen as UInt64, latency as Double, flags as Integer) 12879
76.2. CLASS FSEVENTSMBS

- 76.2.8 Constructor(paths() as folderitem, sinceWhen as UInt64, latency as Double, flags as Integer) 12879
- 76.2.9 Constructor(paths() as string, sinceWhen as UInt64, latency as Double, flags as Integer) 12880

76.2.7 Constructor(path as string, sinceWhen as UInt64, latency as Double, flags as Integer)

Function: Creates a new FS event stream object with the given parameters.
Notes:
In order to start receiving callbacks you must also call Start.

path: The folder you want to watch. (more exactly the root folder of the folder hierarchy you want to watch)
sinceWhen: The service will supply events that have happened after the given event ID. To ask for events "since now" pass the constant kFSEventStreamEventIdSinceNow. Often, clients will supply the highest-numbered FSEventStreamEventId they have received in a callback, which they can obtain via the GetLatestEventId() accessor. Do not pass zero for sinceWhen, unless you want to receive events for every directory modified since "the beginning of time" – an unlikely scenario.
latency: The number of seconds the service should wait after hearing about an event from the kernel before passing it along to the client via its callback. Specifying a larger value may result in more effective temporal coalescing, resulting in fewer callbacks and greater overall efficiency.
flags: Flags that modify the behavior of the stream being created.
See also:
- 76.2.4 Constructor(DeviceToWatch as Integer, path as string, sinceWhen as UInt64, latency as Double, flags as Integer) 12876
- 76.2.5 Constructor(DeviceToWatch as Integer, paths() as string, sinceWhen as UInt64, latency as Double, flags as Integer) 12877
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- 76.2.9 Constructor(paths() as string, sinceWhen as UInt64, latency as Double, flags as Integer) 12880

76.2.8 Constructor(paths() as folderitem, sinceWhen as UInt64, latency as Double, flags as Integer)

Function: Creates a new FS event stream object with the given parameters.
Notes:
In order to start receiving callbacks you must also call Start.

paths: The folders you want to watch. (more exactly the root folders of the folder hierarchies you want to watch)
sinceWhen: The service will supply events that have happened after the given event ID. To ask for events "since now" pass the constant kFSEventStreamEventIdSinceNow. Often, clients will supply the highest-numbered FSEventStreamEventId they have received in a callback, which they can obtain via the GetLatestEventId() accessor. Do not pass zero for sinceWhen, unless you want to receive events for every directory modified since "the beginning of time" – an unlikely scenario.
latency: The number of seconds the service should wait after hearing about an event from the kernel before passing it along to the client via its callback. Specifying a larger value may result in more effective temporal coalescing, resulting in fewer callbacks and greater overall efficiency.
flags: Flags that modify the behavior of the stream being created.

See also:

- 76.2.4 Constructor(DeviceToWatch as Integer, path as string, sinceWhen as UInt64, latency as Double, flags as Integer) 12876
- 76.2.5 Constructor(DeviceToWatch as Integer, paths() as string, sinceWhen as UInt64, latency as Double, flags as Integer) 12877
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- 76.2.7 Constructor(path as string, sinceWhen as UInt64, latency as Double, flags as Integer) 12879
- 76.2.9 Constructor(paths() as string, sinceWhen as UInt64, latency as Double, flags as Integer) 12880

76.2.9 Constructor(paths() as string, sinceWhen as UInt64, latency as Double, flags as Integer)

Function: Creates a new FS event stream object for a particular device with the given parameters.  
Notes:  
In order to start receiving callbacks you must also call Start().  

deviceToWatch:  
A dev_t corresponding to the device which you want to receive notifications from. Use GetDeviceID to get such a device ID.

pathsToWatchRelativeToDevice:  
An array of strings, each specifying a relative path to a directory on the device identified by the dev parameter. The paths should be relative to the root of the device. For example, if a volume "MyData" is mounted at "/Volumes/MyData" and you want to watch "/Volumes/MyData/Pictures/July", specify a path string of "Pictures/July". To watch the root of a volume pass a path of "" (the empty string).
sinceWhen:
The service will supply events that have happened after the given event ID. To ask for events "since now" pass the constant kFSEventStreamEventIdSinceNow. Often, clients will supply the highest-numbered FSEventStreamEventId they have received in a callback, which they can obtain via the GetLatestEventId() accessor. Do not pass zero for sinceWhen, unless you want to receive events for every directory modified since "the beginning of time" – an unlikely scenario.

latency:
The number of seconds the service should wait after hearing about an event from the kernel before passing it along to the client via its event. Specifying a larger value may result in more effective temporal coalescing, resulting in fewer callbacks.

flags:
Flags that modify the behavior of the stream being created.

On success the handle property is not 0.

See also:

- 76.2.4 Constructor(DeviceToWatch as Integer, path as string, sinceWhen as UINT64, latency as Double, flags as Integer) 12876
- 76.2.5 Constructor(DeviceToWatch as Integer, paths() as string, sinceWhen as UINT64, latency as Double, flags as Integer) 12877
- 76.2.6 Constructor(path as folderitem, sinceWhen as UINT64, latency as Double, flags as Integer) 12878
- 76.2.7 Constructor(path as string, sinceWhen as UINT64, latency as Double, flags as Integer) 12879
- 76.2.8 Constructor(paths() as folderitem, sinceWhen as UINT64, latency as Double, flags as Integer) 12879

### 76.2.10 Description as string

MBS MacFrameworks Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a string containing the description of the stream. **Notes:** For debugging only.

### 76.2.11 DeviceBeingWatched as Integer

MBS MacFrameworks Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Fetches the dev_t supplied when the stream was created using a Device ID. **Notes:** Returns 0 if there was an error.
76.2.12 ExclusionPaths as String()

Function: Queries exclusion paths.

76.2.13 FlushAsync as UInt64

Function: Flushes all events.
Notes:
Asks the FS Events service to flush out any events that have occurred but have not yet been delivered, due to the latency parameter that was supplied when the stream was created. This flushing occurs asynchronously – do not expect the events to have already been delivered by the time this call returns. FlushAsync() can only be called after the stream has been started, via Start().

Returns The largest event id of any event ever queued for this stream, otherwise zero if no events have been queued for this stream.

76.2.14 FlushSync

Function: Flushes all events.
Notes: Asks the FS Events service to flush out any events that have occurred but have not yet been delivered, due to the latency parameter that was supplied when the stream was created. This flushing occurs synchronously – by the time this call returns, your callback will have been invoked for every event that had already occurred at the time you made this call. FlushSync() can only be called after the stream has been started, via Start().

76.2.15 GetAbsoluteTime(theDate as date) as Double

Function: Creates an absolute time value based on the system time zone and the values in the date object.
Example:

```
dim d as new date
MsgBox str(FSEventsMBS.GetAbsoluteTime(d))
```

Notes: Returns 0 if the date parameter is nil or invalid.
76.2.16 GetCurrentEventId as UInt64

Function: Fetches the most recently generated event ID, system-wide (not just for one stream).
Notes: By the time it is returned to your application even newer events may have already been generated.

76.2.17 GetDeviceID(volume as folderitem) as Integer

Function: Returns the device ID for the volume the folderitem points to.
Example:

```v
dim v as FolderItem
v=volume(0)
MsgBox str(FSEventsMBS.GetDeviceID(v))
```

Notes: Returns 0 on any error.

76.2.18 GetLastEventIdForDeviceBeforeTime(DeviceID as Integer, theTime as Double) as UInt64

Function: Gets the last event ID for the given device that was returned before the given time.
Example:

```v
dim d as new date
MsgBox str(FSEventsMBS.GetLastEventIdForDeviceBeforeTime(1,d.TotalSeconds))
```

Notes: This is conservative in the sense that if you then use the returned event ID as the sinceWhen parameter of the constructor that you will not miss any events that happened since that time. On the other hand, you might receive some (harmless) extra events. Beware: there are things that can cause this to fail to be accurate. For example, someone might change the system’s clock (either backwards or forwards). Or an external drive might be used on different systems without perfectly synchronized clocks.
76.2.19 GetLatestEventId as UInt64

**Function:** Fetches the sinceWhen property of the stream.
**Notes:** Upon receiving an event (and just before invoking the client's callback) this attribute is updated to the highest-numbered event ID mentioned in the event.

76.2.20 kFSEventStreamEventIdSinceNow as UInt64

**Function:** A special value to pass in if you mean the event ID for now.
**Notes:** Returns & hFFFFFFFFFFFFFFF.

76.2.21 PathsBeingWatched as String()

**Function:** Returns an array with the paths being watched.
**Notes:** Works only on the RB Versions which support arry creation in plugins.

76.2.22 PurgeEventsForDeviceUpToEventId(DeviceID as Integer, EventID as UInt64) as boolean

**Function:** Purges old events from the persistent per-volume database maintained by the service.
**Notes:** Can only be called by the root user.

76.2.23 SetExclusionPaths(paths() as String) as boolean

**Function:** Sets the exclusion paths.
**Notes:**
Sets directories to be filtered from the EventStream.
A maximum of 8 directories maybe specified.

Requires OS X 10.9 or newer.
Returns true on success or false on failure.
76.2. CLASS FSEVENTSMBS

76.2.24 Show

Function: Prints a description of the supplied stream to stderr.
Notes: For debugging only.

76.2.25 Start as boolean

Function: Attempts to register with the FS Events service to receive events per the parameters in the stream.
Notes:
Once started, the stream can be stopped via Stop().

Returns true if it succeeds, otherwise False if it fails. It ought to always succeed, but in the event it does not then your code should fall back to performing recursive scans of the directories of interest as appropriate.

76.2.26 Stop

Function: Unregisters with the FS Events service.
Notes: The client callback will not be called for this stream while it is stopped. Stop() can only be called if the stream has been started, via Start(). Once stopped, the stream can be restarted via Start(), at which point it will resume receiving events from where it left off ("sinceWhen").

76.2.27 UUIDForDevice(DeviceID as Integer) as memoryblock

Function: Gets the UUID associated with a device, or nil if not possible (for example, on read-only device).
Notes: A (non-nil) UUID uniquely identifies a given stream of FSEvents. If this (non-nil) UUID is different than one that you stored from a previous run then the event stream is different (for example, because FSEvents were purged, because the disk was erased, or because the event ID counter wrapped around back to zero). A nil return value indicates that "historical" events are not available, i.e., you should not supply a "sinceWhen" value to the constructor other than kFSEventStreamEventIdSinceNow.
76.2.28 Properties

76.2.29 Handle as Integer

**Function:** The internal stream handle used.
**Notes:** (Read only property)

76.2.30 Running as Boolean

**Function:** Whether this object has been started.
**Notes:**
This is set to true when you call Start and set to false when you call Stop.
(Read only property)

76.2.31 Events

76.2.32 Callback(index as Integer, count as Integer, path as string, flags as Integer, eventID as UInt64)

**Function:** The callback received when something changed.
**Notes:**
The plugin receives count events. This event is called count times with index going from 0 to count-1.
Path is the unix file path for the folder. A path might be "/" if either of these flags is set for the event:
kFSEventStreamEventFlagUserDropped, kFSEventStreamEventFlagKernelDropped.
Flags: Flags to specify why the event was called. If no flags are set, then there was some change in the
directory at the specific path supplied in this event.
eventID: The event ID for this change. Each event ID comes from the most recent event being reported in the
corresponding directory named in the path parameter. Event IDs all come from a single global source. They
are guaranteed to always be increasing, usually in leaps and bounds, even across system reboots and moving
drives from one machine to another. Just before invoking your callback your stream is updated so that calling
the accessor GetLatestEventId() will return the largest of the values passed in the eventIds parameter; if you
were to stop processing events from this stream after this callback and resume processing them later from
a newly-created FSEventStream, this is the value you would pass for the sinceWhen parameter to constructor.
76.2.33 Constants

76.2.34 kFSEventStreamCreateFlagFileEvents = 16

MBS MacFrameworks Plugin, Plugin Version: 11.3. **Function:** One of the constants used to create a stream. **Notes:**
Request file-level notifications. Your stream will receive events about individual files in the hierarchy you’re watching instead of only receiving directory level notifications. Use this flag with care as it will generate significantly more events than without it.

Available in Mac OS X 10.7 or newer.

76.2.35 kFSEventStreamCreateFlagIgnoreSelf = 8

MBS MacFrameworks Plugin, Plugin Version: 11.3. **Function:** One of the constants used to create a stream. **Notes:**
Don’t send events that were triggered by the current process. This is useful for reducing the volume of events that are sent. It is only useful if your process might modify the file system hierarchy beneath the path(s) being monitored. Note: this has no effect on historical events, i.e., those delivered before the HistoryDone sentinel event.

Available in Mac OS X 10.7 or newer.

76.2.36 kFSEventStreamCreateFlagMarkSelf = 32

MBS MacFrameworks Plugin, Plugin Version: 16.0. **Function:** One of the constants used to create a stream. **Notes:** Tag events that were triggered by the current process with the “OwnEvent” flag. This is only useful if your process might modify the file system hierarchy beneath the path(s) being monitored and you wish to know which events were triggered by your process. Note: this has no effect on historical events, i.e., those delivered before the HistoryDone sentinel event.

76.2.37 kFSEventStreamCreateFlagNoDefer = 2

MBS MacFrameworks Plugin, Plugin Version: 8.1. **Function:** One of the constants used to create a stream. **Notes:** Affects the meaning of the latency parameter. If you specify this flag and more than latency seconds have elapsed since the last event, your app will receive the event immediately. The delivery of the event resets the latency timer and any further events will be delivered after latency seconds have elapsed. This flag is useful for apps that are interactive and want to react immediately to changes but avoid getting swamped by notifications when changes are occurring in rapid succession. If you do not specify this flag,
then when an event occurs after a period of no events, the latency timer is started. Any events that occur during the next latency seconds will be delivered as one group (including that first event). The delivery of the group of events resets the latency timer and any further events will be delivered after latency seconds. This is the default behavior and is more appropriate for background, daemon or batch processing apps.

76.2.38 kFSEventStreamCreateFlagNone = 0

MBS MacFrameworks Plugin, Plugin Version: 8.1. Function: One of the constants used to create a stream.

76.2.39 kFSEventStreamCreateFlagUseCFTypes = 1

MBS MacFrameworks Plugin, Plugin Version: 8.1. Function: One of the constants used to create a stream. Notes: The plugin uses this one internally.

76.2.40 kFSEventStreamCreateFlagUseExtendedData = 64

MBS MacFrameworks Plugin, Plugin Version: 17.4. Function: One of the constants used to create a stream. Notes:
Requires kFSEventStreamCreateFlagUseCFTypes and instructs the framework to invoke your callback function with CF types but, instead of passing it a CFArrayMBS of CFStringMBSs, a CFArrayMBS of CFDictionaryMBSs is passed. Each dictionary will contain the event path and possibly other "extended data" about the event. See the kFSEventStreamEventExtendedData*Key definitions for the set of keys that may be set in the dictionary.
For macOS 10.13 or newer.

76.2.41 kFSEventStreamCreateFlagWatchRoot = 4

MBS MacFrameworks Plugin, Plugin Version: 8.1. Function: One of the constants used to create a stream. Notes: Request notifications of changes along the path to the path(s) you’re watching. For example, with this flag, if you watch "/foo/bar" and it is renamed to "/foo/bar.old", you would receive a RootChanged event. The same is true if the directory "/foo" were renamed. The event you receive is a special event: the path for the event is the original path you specified, the flag kFSEventStreamEventFlagRootChanged is set and event ID is zero. RootChanged events are useful to indicate that you should rescan a particular hierarchy because it changed completely (as opposed to the things inside of it changing). If you want to track the current location of a directory, it is best to open the directory before creating the stream so that you have a file descriptor for it and can issue an F_GETPATH fcntl() to find the current path.
76.2.42  kFSEventStreamEventFlagEventIdsWrapped = 8

MBS MacFrameworks Plugin, Plugin Version: 8.1.  **Function:** One of the flag values you can get on the callback event.  
**Notes:** If kFSEventStreamEventFlagEventIdsWrapped is set, it means the 64-bit event ID counter wrapped around. As a result, previously-issued event ID's are no longer valid arguments for the sinceWhen parameter of the constructors.

76.2.43  kFSEventStreamEventFlagHistoryDone = 16

MBS MacFrameworks Plugin, Plugin Version: 8.1.  **Function:** One of the flag values you can get on the callback event.  
**Notes:** Denotes a sentinel event sent to mark the end of the "historical" events sent as a result of specifying a sinceWhen value in the constructor call that created this event stream. (It will not be sent if kFSEventStreamEventIdSinceNow was passed for sinceWhen.) After invoking the client’s callback with all the "historical" events that occurred before now, the client’s callback will be invoked with an event where the kFSEventStreamEventFlagHistoryDone flag is set. The client should ignore the path supplied in this callback.

76.2.44  kFSEventStreamEventFlagItemChangeOwner = & h00004000

MBS MacFrameworks Plugin, Plugin Version: 11.3.  **Function:** One of the flags passed when you use FileEvents and a file changes.  
**Notes:** File changed owner.

76.2.45  kFSEventStreamEventFlagItemCloned = & h00400000

MBS MacFrameworks Plugin, Plugin Version: 17.4.  **Function:** One of the flags passed when you use FileEvents and a file changes.  
**Notes:**  
The file system object at the specific path supplied in this event is a clone or was cloned.  
(This flag is only ever set if you specified the FileEvents flag when creating the stream.)

76.2.46  kFSEventStreamEventFlagItemCreated = & h00000100

MBS MacFrameworks Plugin, Plugin Version: 11.3.  **Function:** One of the flags passed when you use FileEvents and a file changes.  
**Notes:** File created.
76.2.47  kFSEventStreamEventFlagItemFinderInfoMod = & h00002000

MBS MacFrameworks Plugin, Plugin Version: 11.3. **Function:** One of the flags passed when you use FileEvents and a file changes.  
**Notes:** File meta data in Finder info have changed.

76.2.48  kFSEventStreamEventFlagItemInodeMetaMod = & h00000400

MBS MacFrameworks Plugin, Plugin Version: 11.3. **Function:** One of the flags passed when you use FileEvents and a file changes.  
**Notes:** File meta data in inode have changed.

76.2.49  kFSEventStreamEventFlagItemIsDir = & h00020000

MBS MacFrameworks Plugin, Plugin Version: 11.3. **Function:** One of the flags passed when you use FileEvents and a file changes.  
**Notes:** File is a folder.

76.2.50  kFSEventStreamEventFlagItemIsFile = & h00010000

MBS MacFrameworks Plugin, Plugin Version: 11.3. **Function:** One of the flags passed when you use FileEvents and a file changes.  
**Notes:** File is a regular file.

76.2.51  kFSEventStreamEventFlagItemIsHardlink = & h00100000

MBS MacFrameworks Plugin, Plugin Version: 16.0. **Function:** One of the flags passed when you use FileEvents and a file changes.  
**Notes:**
Indicates the object at the specified path supplied in this event is a hard link.  
(This flag is only ever set if you specified the FileEvents flag when creating the stream.)

76.2.52  kFSEventStreamEventFlagItemIsLastHardlink = & h00200000

MBS MacFrameworks Plugin, Plugin Version: 16.0. **Function:** One of the flags passed when you use FileEvents and a file changes.  
**Notes:**
76.2. CLASS FSEVENTSMBS

Indicates the object at the specific path supplied in this event was the last hard link. (This flag is only ever set if you specified the FileEvents flag when creating the stream.)

76.2.53 kFSEventStreamEventFlagItemIsSymlink = & h00040000

MBS MacFrameworks Plugin, Plugin Version: 11.3. **Function:** One of the flags passed when you use FileEvents and a file changes. **Notes:** File is a symlink.

76.2.54 kFSEventStreamEventFlagItemModified = & h00001000

MBS MacFrameworks Plugin, Plugin Version: 11.3. **Function:** One of the flags passed when you use FileEvents and a file changes. **Notes:** File modified.

76.2.55 kFSEventStreamEventFlagItemRemoved = & h00000200

MBS MacFrameworks Plugin, Plugin Version: 11.3. **Function:** One of the flags passed when you use FileEvents and a file changes. **Notes:** File deleted.

76.2.56 kFSEventStreamEventFlagItemRenamed = & h00000800

MBS MacFrameworks Plugin, Plugin Version: 11.3. **Function:** One of the flags passed when you use FileEvents and a file changes. **Notes:** File renamed.

76.2.57 kFSEventStreamEventFlagItemXattrMod = & h00008000

MBS MacFrameworks Plugin, Plugin Version: 11.3. **Function:** One of the flags passed when you use FileEvents and a file changes. **Notes:** Extended attributes changed.
CHAPTER 76. FOLDER CHANGE WATCHING

76.2.58  kFSEventStreamEventFlagKernelDropped = 4

MBS MacFrameworks Plugin, Plugin Version: 8.1. **Function:** One of the flag values you can get on the callback event.

**Notes:** The kFSEventStreamEventFlagUserDropped or kFSEventStreamEventFlagKernelDropped flags may be set in addition to the kFSEventStreamEventFlagMustScanSubDirs flag to indicate that a problem occurred in buffering the events (the particular flag set indicates where the problem occurred) and that the client must do a full scan of any directories (and their subdirectories, recursively) being monitored by this stream. If you asked to monitor multiple paths with this stream then you will be notified about all of them. Your code need only check for the kFSEventStreamEventFlagMustScanSubDirs flag; these flags (if present) only provide information to help you diagnose the problem.

76.2.59  kFSEventStreamEventFlagMount = 64

MBS MacFrameworks Plugin, Plugin Version: 8.1. **Function:** One of the flag values you can get on the callback event.

**Notes:** Denotes a special event sent when a volume is mounted. The path in the event is the path to the newly-mounted volume. You will receive one of these notifications for every volume mount event inside the kernel (independent of DiskArbitration). Beware that a newly-mounted volume could contain an arbitrarily large directory hierarchy. Avoid pitfalls like triggering a recursive scan of a non-local filesystem, which you can detect by checking for the absence of the MNT_LOCAL flag in the fflags returned by statfs(). Also be aware of the MNT_DONTBROWSE flag that is set for volumes which should not be displayed by user interface elements.

76.2.60  kFSEventStreamEventFlagMustScanSubDirs = 1

MBS MacFrameworks Plugin, Plugin Version: 8.1. **Function:** One of the flag values you can get on the callback event.

**Notes:** Your application must rescan not just the directory given in the event, but all its children, recursively. This can happen if there was a problem whereby events were coalesced hierarchically. For example, an event in /Users/jsmith/Music and an event in /Users/jsmith/Pictures might be coalesced into an event with this flag set and path=/Users/jsmith. If this flag is set you may be able to get an idea of whether the bottleneck happened in the kernel (less likely) or in your client (more likely) by checking for the presence of the informational flags kFSEventStreamEventFlagUserDropped or kFSEventStreamEventFlagKernelDropped.

76.2.61  kFSEventStreamEventFlagNone = 0

MBS MacFrameworks Plugin, Plugin Version: 8.1. **Function:** The constant to specify that no flags are used.
76.2.62  kFSEventStreamEventFlagOwnEvent = & h00080000

MBS MacFrameworks Plugin, Plugin Version: 16.0. **Function:** One of the flags passed when you use FileEvents and a file changes. **Notes:** Indicates the event was triggered by the current process. (This flag is only ever set if you specified the MarkSelf flag when creating the stream.)

76.2.63  kFSEventStreamEventFlagRootChanged = 32

MBS MacFrameworks Plugin, Plugin Version: 8.1. **Function:** One of the flag values you can get on the callback event. **Notes:** Denotes a special event sent when there is a change to one of the directories along the path to one of the directories you asked to watch. When this flag is set, the event ID is zero and the path corresponds to one of the paths you asked to watch (specifically, the one that changed). The path may no longer exist because it or one of its parents was deleted or renamed. Events with this flag set will only be sent if you passed the flag kFSEventStreamCreateFlagWatchRoot to the constructor when you created the stream.

76.2.64  kFSEventStreamEventFlagUnmount = 128

MBS MacFrameworks Plugin, Plugin Version: 8.1. **Function:** One of the flag values you can get on the callback event. **Notes:** Denotes a special event sent when a volume is unmounted. The path in the event is the path to the directory from which the volume was unmounted. You will receive one of these notifications for every volume unmount event inside the kernel. This is not a substitute for the notifications provided by the DiskArbitration framework; you only get notified after the unmount has occurred. Beware that unmounting a volume could uncover an arbitrarily large directory hierarchy, although Mac OS X never does that.

76.2.65  kFSEventStreamEventFlagUserDropped = 2

MBS MacFrameworks Plugin, Plugin Version: 8.1. **Function:** One of the flag values you can get on the callback event. **Notes:** The kFSEventStreamEventFlagUserDropped or kFSEventStreamEventFlagKernelDropped flags may be set in addition to the kFSEventStreamEventFlagMustScanSubDirs flag to indicate that a problem occurred in buffering the events (the particular flag set indicates where the problem occurred) and that the client must do a full scan of any directories (and their subdirectories, recursively) being monitored by this stream. If you asked to monitor multiple paths with this stream then you will be notified about all of them. Your code need only check for the kFSEventStreamEventFlagMustScanSubDirs flag; these flags (if present) only provide information to help you diagnose the problem.
76.3  class WindowsDirectoryChangeMBS

76.3.1  class WindowsDirectoryChangeMBS

MBS Win Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The class for directory change information. **Notes:** For Mac, you can use FSEventsMBS class.

76.3.2  Properties

76.3.3  Action as Integer

MBS Win Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The type of change that has occurred. **Notes:** See kAction constants. (Read and Write property)

76.3.4  Filename as String

MBS Win Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The file path. **Notes:** For speed reasons we give you string, not folderitem. (Read and Write property)

76.3.5  Constants

76.3.6  kActionAdded = 1

MBS Win Plugin, Plugin Version: 12.0. **Function:** One of the type constants. **Notes:** The file was added to the directory.

76.3.7  kActionModified = 3

MBS Win Plugin, Plugin Version: 12.0. **Function:** One of the type constants. **Notes:** The file was modified. This can be a change in the time stamp or attributes.
76.3.8  **kActionRemoved = 2**

MBS Win Plugin, Plugin Version: 12.0. **Function:** One of the type constants.  
**Notes:** The file was removed from the directory.

76.3.9  **kActionRenamedNewName = 5**

MBS Win Plugin, Plugin Version: 12.0. **Function:** One of the type constants.  
**Notes:** The file was renamed and this is the new name.

76.3.10 **kActionRenamedOldName = 4**

MBS Win Plugin, Plugin Version: 12.0. **Function:** One of the type constants.  
**Notes:** The file was renamed and this is the old name.
CHAPTER 76. FOLDER CHANGE WATCHING

76.4 class WindowsDirectoryWatcherMBS

76.4.1 class WindowsDirectoryWatcherMBS

MBS Win Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The class for watching folders on Windows for changes.
**Notes:** Create an object, add a few directories you want to watch and wait for changes being reported by NextChange method.

76.4.2 Methods

76.4.3 AddDirectory(path as folderitem, Recursive as boolean, Flags as Integer) as Boolean

MBS Win Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Schedules a directory for watching.
**Notes:**
- path: Path to folder to watch.
- Recursive: Whether to watch subdirectories.
- Flags: What to watch for. Please combine kNotifyChange* constants with bitwiseOr.

Returns false on error and true on success.
You can add several directories to a watcher.
See also:

- 76.4.4 AddDirectory(path as string, Recursive as boolean, Flags as Integer) as Boolean

76.4.4 AddDirectory(path as string, Recursive as boolean, Flags as Integer) as Boolean

MBS Win Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Schedules a directory for watching.
**Notes:**
- path: Path to folder to watch.
- Recursive: Whether to watch subdirectories.
- Flags: What to watch for. Please combine kNotifyChange* constants with bitwiseOr.

Returns false on error and true on success.
You can add several directories to a watcher.
See also:
76.4. AddDirectory(path as folderitem, Recursive as boolean, Flags as Integer) as Boolean

76.4.5 Constructor


76.4.6 NextChange as WindowsDirectoryChangeMBS

Notes: Call this method in a loop in a timer until it returns nil. This way you can get all the changes.

76.4.7 Constants

76.4.8 kNotifyChangeAttributes = 4

MBS Win Plugin, Plugin Version: 12.0. Function: One of the flag constants. Notes: Any attribute change in the watched directory or subtree causes a change notification wait operation to return.

76.4.9 kNotifyChangeCreation = 64

MBS Win Plugin, Plugin Version: 12.0. Function: One of the flag constants. Notes: Any change to the creation time of files in the watched directory or subtree causes a change notification wait operation to return.

76.4.10 kNotifyChangeDirName = 2

MBS Win Plugin, Plugin Version: 12.0. Function: One of the flag constants. Notes: Any directory-name change in the watched directory or subtree causes a change notification wait operation to return. Changes include creating or deleting a directory.
76.4.11 \textit{kNotifyChangeFilename} = 1

MBS Win Plugin, Plugin Version: 12.0. \textbf{Function:} One of the flag constants. 
\textbf{Notes:} Any file name change in the watched directory or subtree causes a change notification wait operation to return. Changes include renaming, creating, or deleting a file.

76.4.12 \textit{kNotifyChangeLastAccess} = 32

MBS Win Plugin, Plugin Version: 12.0. \textbf{Function:} One of the flag constants. 
\textbf{Notes:} Any change to the last access time of files in the watched directory or subtree causes a change notification wait operation to return. 

Be careful: This flag is very performance consuming as you get a lot of events!

76.4.13 \textit{kNotifyChangeLastWrite} = 16

MBS Win Plugin, Plugin Version: 12.0. \textbf{Function:} One of the flag constants. 
\textbf{Notes:} Any change to the last write-time of files in the watched directory or subtree causes a change notification wait operation to return. The operating system detects a change to the last write-time only when the file is written to the disk. For operating systems that use extensive caching, detection occurs only when the cache is sufficiently flushed.

76.4.14 \textit{kNotifyChangeSecurity} = 256

MBS Win Plugin, Plugin Version: 12.0. \textbf{Function:} One of the flag constants. 
\textbf{Notes:} Any security-descriptor change in the watched directory or subtree causes a change notification wait operation to return.

76.4.15 \textit{kNotifyChangeSize} = 8

MBS Win Plugin, Plugin Version: 12.0. \textbf{Function:} One of the flag constants. 
\textbf{Notes:} Any file-size change in the watched directory or subtree causes a change notification wait operation to return. The operating system detects a change in file size only when the file is written to the disk. For operating systems that use extensive caching, detection occurs only when the cache is sufficiently flushed.
76.5.  CLASS WINDOWS FOLDER CHANGEMBS

76.5  class WindowsFolderChangeMBS

76.5.1  class WindowsFolderChangeMBS

MBS Win Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The class to get notifications for folder changes on Windows.
**Notes:** On Mac OS X 10.5 you can use the FSEventsMBS class and on older Mac OS X the class Folder-
ChangedNotificationMBS.

76.5.2  Methods

76.5.3  Constructor(path as folderitem, subtree as boolean, FilterFlags as Integer)

MBS Win Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The constructor to start the notification service.
**Notes:**
path: The full path of the directory to be watched.
subtree: If this parameter is true, the function monitors the directory tree rooted at the specified directory;
if it is false, it monitors only the specified directory.
FilterFlags: The filter conditions that satisfy a change notification wait. This parameter can be one or more
of the constants in this class.

Requires Windows 2000.

76.5.4  Properties

76.5.5  ChangeCount as Integer

MBS Win Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The number of calls to the Changed event.
**Notes:** (Read and Write property)

76.5.6  Handle as Integer

MBS Win Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The internal handle of the notification.
**Notes:** (Read and Write property)
76.5.7 Events

76.5.8 Changed

MBS Win Plugin, Plugin Version: 8.5. Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Something has changed in the given folder.

76.5.9 Constants

76.5.10 ChangeAttribute=4

MBS Win Plugin, Plugin Version: 8.5. **Function:** One of the flags for the constructor. **Notes:** Any attribute change in the watched directory or subtree causes a change notification wait operation to return.

76.5.11 ChangeDir=2

MBS Win Plugin, Plugin Version: 8.5. **Function:** One of the flags for the constructor. **Notes:** Any directory-name change in the watched directory or subtree causes a change notification wait operation to return. Changes include creating or deleting a directory.

76.5.12 ChangeFile=1

MBS Win Plugin, Plugin Version: 8.5. **Function:** One of the flags for the constructor. **Notes:** Any file name change in the watched directory or subtree causes a change notification wait operation to return. Changes include renaming, creating, or deleting a file name.

76.5.13 ChangeSecurity=256

MBS Win Plugin, Plugin Version: 8.5. **Function:** One of the flags for the constructor. **Notes:** Any security-descriptor change in the watched directory or subtree causes a change notification wait operation to return.

76.5.14 ChangeSize=8

MBS Win Plugin, Plugin Version: 8.5. **Function:** One of the flags for the constructor. **Notes:** Any file-size change in the watched directory or subtree causes a change notification wait opera-
tion to return. The operating system detects a change in file size only when the file is written to the disk. For operating systems that use extensive caching, detection occurs only when the cache is sufficiently flushed.

76.5.15 ChangeWrite=16

MBS Win Plugin, Plugin Version: 8.5. **Function:** One of the flags for the constructor. **Notes:** Any change to the last write-time of files in the watched directory or subtree causes a change notification wait operation to return. The operating system detects a change to the last write-time only when the file is written to the disk. For operating systems that use extensive caching, detection occurs only when the cache is sufficiently flushed.
Chapter 77

Fonts

77.1 class FontFamilyFontIteratorMBS

77.1.1 class FontFamilyFontIteratorMBS

MBS MacCF Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** A class to list all Fonts inside a font family.

**Notes:**

Requires Mac OS 9.0 or newer.
This class has been deprecated. Future plugins will offer CoreText classes for similar functions.
Deprecated: Please move to NSFontMBS class.

77.1.2 Methods

77.1.3 close

MBS MacCF Plugin, Plugin Version: 4.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The destructor.

**Notes:**

There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)
CHAPTER 77. FONTS

77.1.4 NextFont as FontMBS

MBS MacCF Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the next font. **Notes:** Requires Mac OS 9.0 or newer. See also:

- 77.1.5 NextFont(byref style as Integer, byref size as Integer) as FontMBS

77.1.5 NextFont(byref style as Integer, byref size as Integer) as FontMBS

MBS MacCF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the next font and reports the style and size of the font. **Notes:** Requires Mac OS 9.0 or newer.

Font Style constants:

- normal = 0
- bold = 1
- italic = 2
- underline = 4
- outline = 8
- shadow = 16
- condense = 32
- extend = 64

If size=0 the font is a vector based font. See also:

- 77.1.4 NextFont as FontMBS

77.1.6 Reset

MBS MacCF Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Resets this object to return the first font family on the next call to NextFont. **Notes:** Requires Mac OS 9.0 or newer.
77.2. **CLASS FONTFAMILYITERATORMBS**

**77.2 class FontFamilyIteratorMBS**

**77.2.1 class FontFamilyIteratorMBS**

MBS MacCF Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** A class to list all Font Families.

**Notes:**

Requires Mac OS 9.0 or newer. This class has been deprecated. Future plugins will offer CoreText classes for similar functions. Deprecated: Please move to NSFontMBS class.

**77.2.2 Methods**

**77.2.3 close**

MBS MacCF Plugin, Plugin Version: 4.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The destructor.

**Notes:**

There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you. (e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

**77.2.4 NextFontFamily as FontFamilyMBS**

MBS MacCF Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the next font family.

**Notes:** Requires Mac OS 9.0 or newer.

**77.2.5 Reset**

MBS MacCF Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Resets this object to return the first font family on the next call to NextFontFamily.

**Notes:** Requires Mac OS 9.0 or newer.
77.3 class FontFamilyMBS

77.3.1 class FontFamilyMBS

MBS MacCF Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** A class to get detailed information about a font family.

**Notes:**

Requires Mac OS 9.0 or newer.
This class has been deprecated. Future plugins will offer CoreText classes for similar functions.
Deprecated: Please move to NSFontMBS class.

77.3.2 Methods

77.3.3 Encoding as Integer

MBS MacCF Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The text encoding of this font family.

**Notes:**

Requires Mac OS 9.0 or newer.

Some example values for common encodings:

- MacRoman 0 Also sometimes for ASCII or binary data used.
- WindowsLatin1 & h0500 ANSI codepage 1252
- 7bit ASCII & h0600 ASCII
- ISOLatin1 & h0201 ISO 8859-1
- NextStepLatin & h0B01 NextStep encoding
- Unicode & h0100 16 bit Unicode
- UTF8 & h08000100 8 bit Unicode

77.3.4 Font(Style as Integer) as FontMBS

MBS MacCF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Queries the font used for this font family which has the given style.

**Notes:**

Returns nil on any error.

Font Style constants:
77.3. **CLASS FONTFAMILYMBS**

normal = 0
bold = 1
italic = 2
underline = 4
outline = 8
shadow = 16
condense = 32
extend = 64

See also:

- 77.3.5 Font(Style as Integer, byref IntrinsicStyle as Integer) as FontMBS

---

**77.3.5 Font(Style as Integer, byref IntrinsicStyle as Integer) as FontMBS**

MBS MacCF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Queries the font used for this font family which has the given style. **Notes:**

IntrinsicStyle returns the effective style.
Returns nil on any error.

Font Style constants:

normal = 0
bold = 1
italic = 2
underline = 4
outline = 8
shadow = 16
condense = 32
extend = 64

See also:

- 77.3.4 Font(Style as Integer) as FontMBS
77.3.6  FontContainer(Style as Integer, Size as Integer) as folderitem

MBS MacCF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Obtains the font container associated with a font family instance.

**Example:**

```vbscript
dim f as new FontFamilyIteratorMBS
dim fo as FontFamilyMBS
dim file as FolderItem

fo=f.NextFontFamily

// shows name of first font family
MsgBox fo.Name

// style: 0 (normal)
// size: 0
file=fo.FontContainer(0, 0)

// shows file for font family
MsgBox file.AbsolutePath
```

**Notes:** You need to pass in a valid style and size.

77.3.7  FontFamilyResource(Style as Integer, Size as Integer) as string

MBS MacCF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Obtains the font family resource for a font family.

**Notes:** You need to pass in a valid style and size.

77.3.8  Fonts as FontFamilyFontIteratorMBS

MBS MacCF Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns an Interator to list all fonts of this font family.

**Notes:** Requires Mac OS 9.0 or newer.
77.3. **CLASS FONTFAMILYMBS**

### 77.3.9 GenerationCount as Integer

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
If the font family changes this generation count is updated.

**Notes:**
You can use this function in conjunction with the iteration functions to identify changes made to the font database.

Requires Mac OS 9.0 or newer.

### 77.3.10 Name as string

MBS MacCF Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The name of this font family.

**Notes:**
On RB 4.5 the encoding is set. For older RB versions you need to set the encoding yourself using the encoding function of this class.
Requires Mac OS 9.0 or newer.

### 77.3.11 Properties

#### 77.3.12 Handle as Integer

MBS MacCF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The internal fontfamily handle for this object.

**Notes:** (Read only property)
CHAPTER 77. FONTS

77.4 class FontIteratorMBS

77.4.1 class FontIteratorMBS

MBS MacCF Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** A class to list all Font Families.

**Notes:**

Requires Mac OS 9.0 or newer.

This class has been deprecated. Future plugins will offer CoreText classes for similar functions.

Deprecated: Please move to NSFontMBS class.

77.4.2 Methods

77.4.3 close

MBS MacCF Plugin, Plugin Version: 4.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The destructor.

**Notes:**

There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.

(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

77.4.4 NextFont as FontMBS

MBS MacCF Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the next font family.

**Notes:** Requires Mac OS 9.0 or newer.

77.4.5 Reset

MBS MacCF Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Resets this object to return the first font family on the next call to NextFont.

**Notes:** Requires Mac OS 9.0 or newer.
77.5.  CLASS FONTMBS

77.5  class FontMBS

77.5.1  class FontMBS

MBS MacCF Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: A class to get detailed information about a Font.
Notes:
Requires Mac OS 9.0 or newer.
This class has been deprecated. Future plugins will offer CoreText classes for similar functions.
Deprecated: Please move to NSFontMBS class.

77.5.2  Methods

77.5.3  FontFamily as FontFamilyMBS

Notes:
Returns nil on any error.
The optional style parameter returns which style this font has related to the font family. (normal QuickDraw constants apply like: bold=1 and italic=2)
See also:

• 77.5.4 FontFamily(byref style as Integer) as FontFamilyMBS

77.5.4  FontFamily(byref style as Integer) as FontFamilyMBS

Notes:
Returns nil on any error.
The optional style parameter returns which style this font has related to the font family. (normal QuickDraw constants apply like: bold=1 and italic=2)
See also:

• 77.5.3 FontFamily as FontFamilyMBS

77.5.5  GenerationCount as Integer

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: If the font changes this generation count is updated.
Notes:

You can use this function in conjunction with the iteration functions to identify changes made to the font database.

Requires Mac OS 9.0 or newer.

77.5.6 GetApplicationFont as Integer

MBS MacCF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
The GetApplicationFont function returns the font family ID of the current application font.
Notes: The GetApplicationFont function returns the current value of the global variable ApFontID, which
is the font family ID of the current application font. This is the font family ID that has been mapped to 1
by the system software.

77.5.7 GetApplicationFontName as string

MBS MacCF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
Returns the family name of the application font.
Notes:
Returns "" on any error.

The font name has MacRoman encoding as the plugin doesn’t know it better. This assumption will fail on
asian computers, so take the ID from GetApplicationFont and lookup the right name with the font family
classes in our plugins.

77.5.8 GetFontName(FontNumber as Integer) as string

MBS MacCF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
The GetFontName function returns the name of a font family that has a specified family ID number.
Example:
// shows system font name:
'M MsgBox FontMBS.GetFontName(0) // RB 5.5
MsgBox FontMBS.GetFontName(0) // RB 2008

Notes:
Returns "" on any error.

The font name has MacRoman encoding as the plugin doesn’t know it better. This assumption will fail on asian computers, so take the ID and lookup the right name with the font family classes in our plugins.

### 77.5.9 GetFontNumber(Name as string) as Integer

MBS MacCF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the font family ID for a specified font family name.

**Notes:**
Given a font name, the GetFontNumber function returns the font family ID for the font family. If the font specified in the parameter name does not exist, it returns 0.

Returns 0 on any error.

### 77.5.10 GetSystemFont as Integer

MBS MacCF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The GetSystemFont function determines the font family ID of the current system font.

**Notes:**
The GetSysFont function returns the current value of the global variable SysFontFam, which is the font family ID of the current system font. This is the font family ID that has been mapped to 0 by the system software.

Returns 0 on any error.

### 77.5.11 GetSystemFontName as string

MBS MacCF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the system font name.

**Notes:**
Returns "" on any error.

The font name has MacRoman encoding as the plugin doesn’t know it better. This assumption will fail on asian computers, so take the ID from GetSystemFont and lookup the right name with the font family classes in our plugins.
77.5.12 Properties

77.5.13 File as Folderitem

MBS MacCF Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The location of the Font’s file.
**Notes:**
The property file provides a reference to the Font suitcase rather than the PostScript outline file for ‘LWFN’ class fonts. This means that there is no single function implemented to obtain the data stored in the PostScript outline file.
Requires Mac OS 9.0 or newer.
(Read only property)

77.5.14 Format as string

MBS MacCF Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The Font file format.
**Notes:**
**Results:**

"true"   TrueType Font
"typ1"   PostScript Font
"LWFN"   PostScript Type 1 Font
"OTTO"   PostScript compact Font format (CFF) Font

Requires Mac OS 9.0 or newer.
(Read only property)

77.5.15 Handle as Integer

MBS MacCF Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The internal font handle for this object.
**Notes:** (Read only property)
77.6. **GLOBALS**

77.6  Globals

77.6.1  **FontGenerationCountMBS as Integer**

MBS MacCF Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Any operation that adds, deletes, or modifies one or more font families or fonts triggers an update of the global generation count.

**Notes:**
You can use this function in conjunction with the iteration functions to identify changes made to the font database.

Requires Mac OS 9.0 or newer.

77.6.2  **GetFontFamilyMBS(name as string) as FontFamilyMBS**

MBS MacCF Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the FontFamily with the given name.

**Notes:**
Requires Mac OS 9.0 or newer.
Returns nil on any error.

Renamed in plugin version 3.3 to GetFontFamilyMBS instead of FontFamilyMBS.
Deprecated: Please move to NSFontMBS class.

77.7  class **WindowsFontDialogMBS**

77.7.1  class **WindowsFontDialogMBS**

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The class for the standard font dialog for Windows.

**Notes:**
Creates a Font dialog box that enables the user to choose attributes for a logical font. These attributes include a font family and associated font style, a point size, effects (underline, strikeout, and text color), and a script (or character set).

see also
77.7.2 Methods

77.7.3 ChooseFont as Boolean

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Creates a Font dialog box that enables the user to choose attributes for a logical font.
**Notes:**
- Returns true if user pressed OK button.
- Lasterror is set.
- Returns false or sets lasterror to zero for cancel.

77.7.4 CloseDialog

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Close the dialog.
**Notes:** Can be called from various events to close the dialog programmatically.

77.7.5 Query

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Queries current dialog values into properties.

77.7.6 Update

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Updates dialog with current properties.

77.7.7 Properties

77.7.8 Bold as Boolean

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The bold value.
**Notes:** (Read and Write property)
77.7.9 CurrentFont as WindowsFontFamilyMBS


**Notes:**
You may need to call Query to get current state from dialog.
This returns a copy, so changes to the font object are not going back.
(Read only property)

77.7.10 DialogHandle as Integer

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Internal window handle for dialog.

**Notes:** (Read and Write property)

77.7.11 Effects as Boolean

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Wether to show text effect controls.

**Notes:**
Causes the dialog box to display the controls that allow the user to specify strikeout, underline, and text color options. If this flag is set, you can use the textColor member to specify the initial text color. You can use the StrikeThrough and Underline members to specify the initial settings of the strikeout and underline check boxes. ChooseFont can use these members to return the user’s selections.
(Read and Write property)

77.7.12 FontName as String

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The font name of current font.

**Notes:** (Read and Write property)

77.7.13 FontType as Integer

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The type of the selected font when ChooseFont returns.

**Notes:**
This member can be one or more of the following values:
FontTypeBold, FontTypeItalic, FontTypePrinter, FontTypeRegular, FontTypeScreen and FontTypeSimulator.
(Read and Write property)

77.7.14  ForceFontExist as Boolean

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Wether to only allow existing fonts.

**Notes:**
ChooseFont should indicate an error condition if the user attempts to select a font or style that is not listed in the dialog box.
(Read and Write property)

77.7.15  Height as Integer

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The height, in logical units, of the font’s character cell or character.

**Notes:**
The character height value (also known as the em height) is the character cell height value minus the internal-leading value. The font mapper interprets the value specified in lfHeight in the following manner.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;0</td>
<td>The font mapper transforms this value into device units and matches it against the cell height of the available fonts.</td>
</tr>
<tr>
<td>0</td>
<td>The font mapper uses a default height value when it searches for a match.</td>
</tr>
<tr>
<td>&lt;0</td>
<td>The font mapper transforms this value into device units and matches its absolute value against the character height of the available fonts.</td>
</tr>
</tbody>
</table>

For all height comparisons, the font mapper looks for the largest font that does not exceed the requested size.
This mapping occurs when the font is used for the first time.
(Read and Write property)

77.7.16  Italic as Boolean

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Wether font is italic.
77.7. **Last**Error as Integer

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The last error code.
**Notes:** (Read and Write property)

77.7.18 **Limit**Size as Boolean

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Wether to limit font sizes.
**Notes:**
ChooseFont should select only font sizes within the range specified by the MinSize and MaxSize members.
(Read and Write property)

77.7.19 **Max**Size as Integer

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The maximum allowed font size.
**Notes:**
Setting this also sets LimitSize to true.
(Read and Write property)

77.7.20 **Min**Size as Integer

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The minimum allowed font size.
**Notes:**
Setting this also sets LimitSize to true.
(Read and Write property)

77.7.21 **No**FontSimulations as Boolean

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Wether ChooseFont should not display or allow selection of font simulations.
77.7.22  NoInitialFaceSelection as Boolean

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No.  **Function:**
Wether to show initial font selection.

**Notes:**
When initializing the dialog box controls, use this flag to prevent the dialog box from displaying an initial
selection for the font name combo box. This is useful when there is no single font name that applies to the
text selection.
(Read and Write property)

77.7.23  NoInitialSizeSelection as Boolean

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No.  **Function:**
Wether to show initialize size.

**Notes:**
When initializing the dialog box controls, use this flag to prevent the dialog box from displaying an initial
selection for the Font Size combo box. This is useful when there is no single font size that applies to the
text selection.
(Read and Write property)

77.7.24  NoInitialStyleSelection as Boolean

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No.  **Function:**
Whether to show initial style options.

**Notes:**
When initializing the dialog box controls, use this flag to prevent the dialog box from displaying an initial
selection for the Font Style combo box. This is useful when there is no single font style that applies to the
text selection.
(Read and Write property)

77.7.25  NoVectorFonts as Boolean

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No.  **Function:**
Wether ChooseFont should not allow vector font selections.
**Notes:** (Read and Write property)
77.7.26 NoVerticalFonts as Boolean

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Whether the Font dialog box lists only horizontally oriented fonts. **Notes:** (Read and Write property)

77.7.27 OnlyFixedPitchFonts as Boolean

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Whether ChooseFont should enumerate and allow selection of only fixed-pitch fonts. **Notes:** (Read and Write property)

77.7.28 OnlyTrueTypeFonts as Boolean

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Whether ChooseFont should only enumerate and allow the selection of TrueType fonts. **Notes:** (Read and Write property)

77.7.29 Parent as Window

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The parent window. **Notes:** The window that owns the dialog box. This member can be any valid window, or it can be nil if the dialog box has no owner. (Read and Write property)

77.7.30 ScalableFontsOnly as Boolean

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Whether to only allow scalable fonts. **Notes:** Specifies that ChooseFont should allow only the selection of scalable fonts. Scalable fonts include vector fonts, scalable printer fonts, TrueType fonts, and fonts scaled by other technologies. (Read and Write property)
77.7.31  ShowApply as Boolean

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Wether to show Apply button.
**Notes:**
Causes the dialog box to display the Apply button.
Clicking Apply button does trigger Apply event.
(Read and Write property)

77.7.32  ShowInactiveFonts as Boolean

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Wether to display hidden fonts.
**Notes:**
ChooseFont can additionally display fonts that are set to Hide in Fonts Control Panel.
(Read and Write property)

77.7.33  Size as Double

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The size of the font.
**Notes:** (Read and Write property)

77.7.34  Strikethrough as Boolean

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Wether font is stroke through.
**Notes:** (Read and Write property)

77.7.35  TextColor as Color

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The text color for the font.
**Notes:**
Only used if Effects is true.
(Read and Write property)
77.7.40  Underline as Boolean

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Wether font is underlined.
**Notes:** (Read and Write property)

77.7.41  Weight as Integer

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The weight of the font in the range 0 through 1000.
**Notes:**
For example, 400 is normal and 700 is bold. If this value is zero, a default weight is used.

The following values are defined for convenience.

<table>
<thead>
<tr>
<th>Value</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>FW_DONTCARE</td>
<td>0</td>
</tr>
<tr>
<td>FW_THIN</td>
<td>100</td>
</tr>
<tr>
<td>FW_EXTRALIGHT</td>
<td>200</td>
</tr>
<tr>
<td>FW_ULTRALIGHT</td>
<td>200</td>
</tr>
<tr>
<td>FW_LIGHT</td>
<td>300</td>
</tr>
<tr>
<td>FW_NORMAL</td>
<td>400</td>
</tr>
<tr>
<td>FW_REGULAR</td>
<td>400</td>
</tr>
<tr>
<td>FW_MEDIUM</td>
<td>500</td>
</tr>
<tr>
<td>FW_SEMIBOLD</td>
<td>600</td>
</tr>
<tr>
<td>FW_DEMIBOLD</td>
<td>600</td>
</tr>
<tr>
<td>FW_BOLD</td>
<td>700</td>
</tr>
<tr>
<td>FW_EXTRABOLD</td>
<td>800</td>
</tr>
<tr>
<td>FW_ULTRABOLD</td>
<td>800</td>
</tr>
<tr>
<td>FW_HEAVY</td>
<td>900</td>
</tr>
<tr>
<td>FW_BLACK</td>
<td>900</td>
</tr>
</tbody>
</table>

(Read and Write property)

77.7.42  Events

77.7.43  Apply

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The user pressed apply.
Notes: Our plugin automatically calls query for you to get current values from dialog into properties.

77.7.40 BoundsChanged

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The bounds changed.

77.7.41 BoundsChanging

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The bounds are changing.

77.7.42 GotFocus

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The window got focus.

77.7.43 Hide

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The window is hidden.

77.7.44 Init

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The dialog initialized.
**Notes:** You can work with dialog via DialogHandle property.

77.7.45 LostFocus

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The window lost focus.
77.7.46 Show

MBS Win Plugin, Plugin Version: 17.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The window is shown.

77.7.47 Constants

77.7.48 **FontTypeBold = & h100**

MBS Win Plugin, Plugin Version: 17.3. **Function:** One of the font type constants. **Notes:** The font weight is bold.

77.7.49 **FontTypeItalic = & h200**

MBS Win Plugin, Plugin Version: 17.3. **Function:** One of the font type constants. **Notes:** The italic font attribute is set.

77.7.50 **FontTypePrinter = & h4000**

MBS Win Plugin, Plugin Version: 17.3. **Function:** One of the font type constants. **Notes:** The font is a printer font.

77.7.51 **FontTypeRegular = & h400**

MBS Win Plugin, Plugin Version: 17.3. **Function:** One of the font type constants. **Notes:** The font weight is normal.

77.7.52 **FontTypeScreen = & h2000**

MBS Win Plugin, Plugin Version: 17.3. **Function:** One of the font type constants. **Notes:** The font is a screen font.
77.7.53  FontTypeSimulator = & h8000

MBS Win Plugin, Plugin Version: 17.3. **Function:** One of the font type constants.  
**Notes:** The font is simulated by the graphics device interface (GDI).
77.8. **CLASS WINDOWSFONTFAMILYMBS**

### 77.8.1 class WindowsFontFamilyMBS

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The class for details on Windows fonts.

**Example:**

```vbnet
dim lines(-1) as string

for each f as WindowsFontFamilyMBS in WindowsFontFamilyMBS.AllFonts
    lines.append f.LogFontFullName
next

MsgBox Join(lines, EndOfLine)
```

**Notes:** The font list is the same as font() function in Real Studio as far as we see.

### 77.8.2 Methods

#### 77.8.3 AllFonts as WindowsFontFamilyMBS()

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Queries all fonts on this windows machine.

**Example:**

```vbnet
dim lines(-1) as string

for each f as WindowsFontFamilyMBS in WindowsFontFamilyMBS.AllFonts
    lines.append f.LogFontFullName
next

MsgBox Join(lines, EndOfLine)
```

See also:

- 77.8.4 AllFonts(fonts() as WindowsFontFamilyMBS) as Integer
CHAPTER 77. FONTS

77.8.4 AllFonts(fonts() as WindowsFontFamilyMBS) as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
Queries all fonts on this windows machine.
Notes:
Returns the number of fonts found and sets the font objects in the array.
if the array is too short, you get the first ubound(fonts)+1 fonts set there.
See also:
  • 77.8.3 AllFonts as WindowsFontFamilyMBS()

77.8.5 AxisMaxValue(index as Integer) as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
The maximum value for this axis.
Notes:
Index is from zero to NumberOfAxes-1.
Only available for truetype fonts.

77.8.6 AxisMinValue(index as Integer) as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
The minimum value for this axis.
Notes:
Index is from zero to NumberOfAxes-1.
Only available for truetype fonts.

77.8.7 AxisName(index as Integer) as string

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
The name of the axis.
Notes:
Index is from zero to NumberOfAxes-1.
Only available for truetype fonts.
77.8.8 DesignVectorValues(index as Integer) as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
An array specifying the values of the axes of a multiple master OpenType font.
**Notes:** This array corresponds to the axes* arrays.

77.8.9 FontsOfFamily(family as string) as WindowsFontFamilyMBS()

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Queries all fonts of the given font family on this windows machine.
See also:
- 77.8.10 FontsOfFamily(family as string, fonts() as WindowsFontFamilyMBS) as Integer

77.8.10 FontsOfFamily(family as string, fonts() as WindowsFontFamilyMBS) as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Queries all fonts of the given font family on this windows machine.
**Notes:**
Returns the number of fonts found and sets the font objects in the array.
if the array is too short, you get the first ubound(fonts)+1 fonts set there.
See also:
- 77.8.9 FontsOfFamily(family as string) as WindowsFontFamilyMBS()

77.8.11 Properties

77.8.12 CodepageBitfield as MemoryBlock

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
A 64-bit, code-page bitfield (CPB) that identifies a specific character set or code page. #
**Notes:**
Code pages are in the lower 32 bits of this bitfield. The high 32 are used for non-Windows code pages. For more information, see Code Page Bitfields.

Only available for truetype fonts.
(Read only property)


**CHAPTER 77. FONTS**

### 77.8.13 FontType as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The type of the font.  
**Notes:**  
This parameter can be a combination of these values:

- DEVICE_FONTTYPE
- RASTER_FONTTYPE
- TRUETYPE_FONTTYPE

(Read only property)

### 77.8.14 LogFontBold as Boolean

MBS Win Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether font is bold.  
**Notes:**  
Setting to false, will set Weight to 400, setting to true will set Weight to 700. Returns true if Weight is equal or more than 700.  
(Read only property)

### 77.8.15 LogFontCharSet as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The character set. The following values are predefined.  
**Notes:**  
The following values are predefined.

- ANSI_CHARSET
- BALTIC_CHARSET
- CHINESEBIG5_CHARSET
- DEFAULT_CHARSET
- EASTEUROPE_CHARSET
- GB2312_CHARSET
- GREEK_CHARSET
- HANGUL_CHARSET
- MAC_CHARSET
- OEM_CHARSET
- RUSSIAN_CHARSET
- SHIFTJIS_CHARSET
- SYMBOL_CHARSET
Korean language edition of Windows:

JOHAB_CHARSET

Middle East language edition of Windows:

ARABIC_CHARSET
HEBREW_CHARSET

Thai language edition of Windows:

THAI_CHARSET

The OEM_CHARSET value specifies a character set that is operating-system dependent.

DEFAULT_CHARSET is set to a value based on the current system locale. For example, when the system locale is English (United States), it is set as ANSI_CHARSET.

Fonts with other character sets may exist in the operating system. If an application uses a font with an unknown character set, it should not attempt to translate or interpret strings that are rendered with that font.

This parameter is important in the font mapping process. To ensure consistent results, specify a specific character set. If you specify a typeface name in the lfFaceName member, make sure that the lfCharSet value matches the character set of the typeface specified in lfFaceName.
(Read only property)

77.8.16 LogFontClipPrecision as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The clipping precision.

**Notes:**
The clipping precision defines how to clip characters that are partially outside the clipping region. It can be one or more of the following values.

For more information about the orientation of coordinate systems, see the description of the nOrientation parameter.
<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLIP_CHARACTER_PRECIS</td>
<td>Not used.</td>
</tr>
<tr>
<td>CLIP_DEFAULT_PRECIS</td>
<td>Specifies default clipping behavior.</td>
</tr>
<tr>
<td>CLIP_DFA_DISABLE</td>
<td>Windows XP SP1: Turns off font association for the font. Note that this flag is not guaranteed to have any effect on any platform after Windows Server 2003.</td>
</tr>
<tr>
<td>CLIP_EMBEDDED</td>
<td>You must specify this flag to use an embedded read-only font.</td>
</tr>
<tr>
<td>CLIP_LHANGLES</td>
<td>When this value is used, the rotation for all fonts depends on whether the orientation of the coordinate system is left-handed or right-handed. If not used, device fonts always rotate counterclockwise, but the rotation of other fonts is dependent on the orientation of the coordinate system.</td>
</tr>
<tr>
<td>CLIP_MASK</td>
<td>Not used.</td>
</tr>
<tr>
<td>CLIP_DFA_OVERRIDE</td>
<td>Turns off font association for the font. This is identical to CLIP_DFA_DISABLE, but it can have problems in some situations; the recommended flag to use is CLIP_DFA_DISABLE.</td>
</tr>
<tr>
<td>CLIP_STROKE_PRECIS</td>
<td>Not used by the font mapper, but is returned when raster, vector, or TrueType fonts are enumerated. For compatibility, this value is always returned when enumerating fonts.</td>
</tr>
</tbody>
</table>

(Read only property)

### 77.8.17 LogFontEscapement as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The angle, in tenths of degrees, between the escapement vector and the x-axis of the device. **Notes:** The escapement vector is parallel to the base line of a row of text.

When the graphics mode is set to GM_ADVANCED, you can specify the escapement angle of the string independently of the orientation angle of the string’s characters.

When the graphics mode is set to GM_COMPATIBLE, LogFontEscapement specifies both the escapement and orientation. You should set LogFontEscapement and LogFontOrientation to the same value.

(Read only property)

### 77.8.18 LogFontFaceName as String

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A string that specifies the typeface name of the font. **Notes:** (Read only property)
77.8.19  LogFontFullName as String

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The unique name of the font.
**Notes:**
For example, ABC Font Company TrueType Bold Italic Sans Serif.
(Read only property)

77.8.20  LogFontHeight as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The height, in logical units, of the font’s character cell or character.
**Notes:**
The character height value (also known as the em height) is the character cell height value minus the internal-leading value. The font mapper interprets the value specified in lfHeight in the following manner.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;0</td>
<td>The font mapper transforms this value into device units and matches it against the cell height of the available fonts.</td>
</tr>
<tr>
<td>0</td>
<td>The font mapper uses a default height value when it searches for a match.</td>
</tr>
<tr>
<td>&lt;0</td>
<td>The font mapper transforms this value into device units and matches its absolute value against the character height of the available fonts.</td>
</tr>
</tbody>
</table>

For all height comparisons, the font mapper looks for the largest font that does not exceed the requested size.
This mapping occurs when the font is used for the first time.
(Read only property)

77.8.21  LogFontItalic as Boolean

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
An italic font if set to true.
**Notes:** (Read only property)
77.8.22 LogFontOrientation as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The angle, in tenths of degrees, between each character’s base line and the x-axis of the device.
**Notes:** (Read only property)

77.8.23 LogFontOutPrecision as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The output precision.
**Notes:**
The output precision defines how closely the output must match the requested font’s height, width, character orientation, escapement, pitch, and font type. It can be one of the following values.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>OUT_CHARACTER_PRECIS</td>
<td>Not used.</td>
</tr>
<tr>
<td>OUT_DEFAULT_PRECIS</td>
<td>Specifies the default font mapper behavior.</td>
</tr>
<tr>
<td>OUTDEVICE_PRECIS</td>
<td>Instructs the font mapper to choose a Device font when the system contains multiple fonts with the same name.</td>
</tr>
<tr>
<td>OUTOUTLINE_PRECIS</td>
<td>This value instructs the font mapper to choose from TrueType and other outline-based fonts.</td>
</tr>
<tr>
<td>OUTPS_ONLY_PRECIS</td>
<td>Instructs the font mapper to choose from only PostScript fonts. If there are no PostScript fonts installed in the system, the font mapper returns to default behavior.</td>
</tr>
<tr>
<td>OUTRASTER_PRECIS</td>
<td>Instructs the font mapper to choose a raster font when the system contains multiple fonts with the same name.</td>
</tr>
<tr>
<td>OUTSTRING_PRECIS</td>
<td>This value is not used by the font mapper, but it is returned when raster fonts are enumerated.</td>
</tr>
<tr>
<td>OUTSTROKE_PRECIS</td>
<td>This value is not used by the font mapper, but it is returned when TrueType, other outline-based fonts, and vector fonts are enumerated.</td>
</tr>
<tr>
<td>OUTTT_ONLY_PRECIS</td>
<td>Instructs the font mapper to choose from only TrueType fonts. If there are no TrueType fonts installed in the system, the font mapper returns to default behavior.</td>
</tr>
<tr>
<td>OUTTT_PRECIS</td>
<td>Instructs the font mapper to choose a TrueType font when the system contains multiple fonts with the same name.</td>
</tr>
</tbody>
</table>

Applications can use the OUTDEVICE_PRECIS, OUTRASTER_PRECIS, OUTTT_PRECIS, and OUTPS_ONLY_PRECIS values to control how the font mapper chooses a font when the operating system contains more than one font with a specified name. For example, if an operating system contains a font named Symbol in raster and TrueType form, specifying OUTTT_PRECIS forces the font mapper to choose the TrueType version. Specifying OUTTT_ONLY_PRECIS forces the font mapper to choose a TrueType font, even if it must substitute a TrueType font of another name.
(Read only property)
77.8.24 LogFontPitchAndFamily as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The pitch and family of the font.

**Notes:**
The two low-order bits specify the pitch of the font and can be one of the following values.

- DEFAULT_PITCH
- FIXED_PITCH
- VARIABLE_PITCH

Bits 4 through 7 of the member specify the font family and can be one of the following values.

- FF_DECORATIVE
- FF_DONTCARE
- FF_MODERN
- FF_ROMAN
- FF_SCRIPT
- FF_SWISS

The proper value can be obtained by using the Boolean OR operator to join one pitch constant with one family constant.

Font families describe the look of a font in a general way. They are intended for specifying fonts when the exact typeface desired is not available. The values for font families are as follows.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>FF_DECORATIVE</td>
<td>Novelty fonts. Old English is an example.</td>
</tr>
<tr>
<td>FF_DONTCARE</td>
<td>Use default font.</td>
</tr>
<tr>
<td>FF_MODERN</td>
<td>Fonts with constant stroke width (monospace), with or without serifs. Monospace fonts are usually modern. Pica, Elite, and CourierNew are examples.</td>
</tr>
<tr>
<td>FF_ROMAN</td>
<td>Fonts with variable stroke width (proportional) and with serifs. MS Serif is an example.</td>
</tr>
<tr>
<td>FF_SCRIPT</td>
<td>Fonts designed to look like handwriting. Script and Cursive are examples.</td>
</tr>
<tr>
<td>FF_SWISS</td>
<td>Fonts with variable stroke width (proportional) and without serifs. MS Sans Serif is an example.</td>
</tr>
</tbody>
</table>

(Read only property)
77.8.25 LogFontQuality as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The output quality. **Notes:**
The output quality defines how carefully the graphics device interface (GDI) must attempt to match the logical-font attributes to those of an actual physical font. It can be one of the following values.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTIALIASED_QUALITY</td>
<td>Font is always antialiased if the font supports it and the size of the font is not too small or too large.</td>
</tr>
<tr>
<td>CLEARTYPE_QUALITY</td>
<td>If set, text is rendered (when possible) using ClearType antialiasing method. See Remarks for more information.</td>
</tr>
<tr>
<td>DEFAULT_QUALITY</td>
<td>Appearance of the font does not matter.</td>
</tr>
<tr>
<td>DRAFT_QUALITY</td>
<td>Appearance of the font is less important than when PROOF_QUALITY is used. For GDI raster fonts, scaling is enabled, which means that more font sizes are available, but the quality may be lower. Bold, italic, underline, and strikeout fonts are synthesized if necessary.</td>
</tr>
<tr>
<td>NONANTIALIASED_QUALITY</td>
<td>Font is never antialiased.</td>
</tr>
<tr>
<td>PROOF_QUALITY</td>
<td>Character quality of the font is more important than exact matching of the logical-font attributes. For GDI raster fonts, scaling is disabled and the font closest in size is chosen. Although the chosen font size may not be mapped exactly when PROOF_QUALITY is used, the quality of the font is high and there is no distortion of appearance. Bold, italic, underline, and strikeout fonts are synthesized if necessary.</td>
</tr>
</tbody>
</table>

(Read only property)

77.8.26 LogFontScript as String

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The script, that is, the character set, of the font. For example, Cyrillic. **Notes:** (Read only property)

77.8.27 LogFontStrikeOut as Boolean

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
A strikeout font if set to true. **Notes:** (Read only property)
77.8.28 LogFontStyle as String

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The style of the font. For example, Bold Italic.
**Notes:** (Read only property)

77.8.29 LogFontUnderline as Boolean

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
An underlined font if set to true.
**Notes:** (Read only property)

77.8.30 LogFontWeight as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The weight of the font in the range 0 through 1000.
**Notes:**
For example, 400 is normal and 700 is bold. If this value is zero, a default weight is used.

The following values are defined for convenience.

<table>
<thead>
<tr>
<th>Value</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>FW_DONTCARE</td>
<td>0</td>
</tr>
<tr>
<td>FW_THIN</td>
<td>100</td>
</tr>
<tr>
<td>FW_EXTRALIGHT</td>
<td>200</td>
</tr>
<tr>
<td>FW_ULTRALIGHT</td>
<td>200</td>
</tr>
<tr>
<td>FW_LIGHT</td>
<td>300</td>
</tr>
<tr>
<td>FW_NORMAL</td>
<td>400</td>
</tr>
<tr>
<td>FW_REGULAR</td>
<td>400</td>
</tr>
<tr>
<td>FW_MEDIUM</td>
<td>500</td>
</tr>
<tr>
<td>FW_SEMIBOLD</td>
<td>600</td>
</tr>
<tr>
<td>FW_DEMIBOLD</td>
<td>600</td>
</tr>
<tr>
<td>FW_BOLD</td>
<td>700</td>
</tr>
<tr>
<td>FW_EXTRABOLD</td>
<td>800</td>
</tr>
<tr>
<td>FW_ULTRABOLD</td>
<td>800</td>
</tr>
<tr>
<td>FW_HEAVY</td>
<td>900</td>
</tr>
<tr>
<td>FW_BLACK</td>
<td>900</td>
</tr>
</tbody>
</table>

(Read only property)
77.8.31 LogFontWidth as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The average width, in logical units, of characters in the font.
**Notes:**
If LogFontWidth is zero, the aspect ratio of the device is matched against the digitization aspect ratio of
the available fonts to find the closest match, determined by the absolute value of the difference.
(Read only property)

77.8.32 NumberOfAxes as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Number of axes for a specified multiple master font.
**Notes:**
The axes arrays contains information on all the axes of a multiple master font.
Only available for truetype fonts.
(Read only property)

77.8.33 NumberOfDesignVectors as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The design vectors are used by an application to specify values for the axes of a multiple master font.
**Notes:**  (Read only property)

77.8.34 TextMetricAscent as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The ascent (units above the base line) of characters.
**Notes:** (Read only property)

77.8.35 TextMetricAverageCharWidth as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The average width of characters in the font (generally defined as the width of the letter x).
**Notes:**
This value does not include overhang required for bold or italic characters.
(Read only property)
### 77.8.36 TextMetricAverageWidth as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The average width of characters in the font, in notional units.
**Notes:**
This value should be compared with the value of the TextMetricSizeEM member.
Only available for truetype fonts.
(Read only property)

### 77.8.37 TextMetricBreakChar as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The value of the character to be used to define word breaks for text justification.
**Notes:** (Read only property)

### 77.8.38 TextMetricCellHeight as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The height, in notional units, of the font.
**Notes:**
This value should be compared with the value of the TextMetricSizeEM member.
Only available for truetype fonts.
(Read only property)

### 77.8.39 TextMetricCharSet as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The character set of the font.
**Notes:** (Read only property)

### 77.8.40 TextMetricDefaultChar as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The value of the character to be substituted for characters that are not in the font.
**Notes:** (Read only property)
77.8.41 TextMetricDescent as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The descent (units below the base line) of characters.
**Notes:** (Read only property)

77.8.42 TextMetricDigitizedAspectX as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The horizontal aspect of the device for which the font was designed.
**Notes:** (Read only property)

77.8.43 TextMetricDigitized AspectY as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The vertical aspect of the device for which the font was designed.
**Notes:**
The ratio of the tmDigitizedAspectX and tmDigitizedAspectY members is the aspect ratio of the device for which the font was designed.
(Read only property)

77.8.44 TextMetricExternalLeading as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The amount of extra leading (space) that the application adds between rows.
**Notes:**
Since this area is outside the font, it contains no marks and is not altered by text output calls in either OPAQUE or TRANSPARENT mode. The designer may set this member to zero.
(Read only property)

77.8.45 TextMetricFirstChar as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The value of the first character defined in the font.
**Notes:** (Read only property)
77.8.46 TextMetricFlags as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Specifies whether the font is italic, underscored, outlined, bold, and so forth. **Notes:**

May be any reasonable combination of the following values.

<table>
<thead>
<tr>
<th>Bit</th>
<th>Name</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>NTMITALIC</td>
<td>italic</td>
</tr>
<tr>
<td>5</td>
<td>NTM_BOLD</td>
<td>bold</td>
</tr>
<tr>
<td>8</td>
<td>NTM_REGULAR</td>
<td>regular</td>
</tr>
<tr>
<td>16</td>
<td>NTM_NONNEGATIVE_AC</td>
<td>no glyph in a font at any size has a negative A or C space.</td>
</tr>
<tr>
<td>17</td>
<td>NTM_PS_OPENTYPE</td>
<td>PostScript OpenType font</td>
</tr>
<tr>
<td>18</td>
<td>NTM TT_OPENTYPE</td>
<td>TrueType OpenType font</td>
</tr>
<tr>
<td>19</td>
<td>NTM_MULTIPLEMASTER</td>
<td>multiple master font</td>
</tr>
<tr>
<td>20</td>
<td>NTM_TYPE1</td>
<td>Type 1 font</td>
</tr>
<tr>
<td>21</td>
<td>NTM_DSIG</td>
<td>font with a digital signature. This allows traceability and ensures that the font has been tested and is not corrupted</td>
</tr>
</tbody>
</table>

Only available for truetype fonts. (Read only property)

77.8.47 TextMetricHeight as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The height (ascent + descent) of characters. **Notes:** (Read only property)

77.8.48 TextMetricInternalLeading as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The amount of leading (space) inside the bounds set by the tmHeight member. **Notes:**

Accent marks and other diacritical characters may occur in this area. The designer may set this member to zero. (Read only property)
77.8.49  **TextMetricItalic as Boolean**

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** An italic font if set to true.
**Notes:** (Read only property)

77.8.50  **TextMetricLastChar as Integer**

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The value of the last character defined in the font.
**Notes:** (Read only property)

77.8.51  **TextMetricMaxCharWidth as Integer**

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The width of the widest character in the font.
**Notes:** (Read only property)

77.8.52  **TextMetricOverhang as Integer**

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The extra width per string that may be added to some synthesized fonts.
**Notes:**

When synthesizing some attributes, such as bold or italic, graphics device interface (GDI) or a device may have to add width to a string on both a per-character and per-string basis. For example, GDI makes a string bold by expanding the spacing of each character and overstriking by an offset value; it italicizes a font by shearing the string. In either case, there is an overhang past the basic string. For bold strings, the overhang is the distance by which the overstrike is offset. For italic strings, the overhang is the amount the top of the font is sheared past the bottom of the font.

The TextMetricOverhang member enables the application to determine how much of the character width returned by a GetTextExtentPoint32 function call on a single character is the actual character width and how much is the per-string extra width. The actual width is the extent minus the overhang.
**Notes:** (Read only property)
77.8.53  **TextMetricPitchAndFamily as Integer**

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The pitch and family of the selected font.

**Notes:**

The low-order bit (bit 0) specifies the pitch of the font. If it is 1, the font is variable pitch (or proportional). If it is 0, the font is fixed pitch (or monospace). Bits 1 and 2 specify the font type. If both bits are 0, the font is a raster font; if bit 1 is 1 and bit 2 is 0, the font is a vector font; if bit 1 is 0 and bit 2 is set, or if both bits are 1, the font is some other type. Bit 3 is 1 if the font is a device font; otherwise, it is 0.

The four high-order bits designate the font family. The TextMetricPitchAndFamily member can be combined with the hexadecimal value 0xF0 by using the bitwise AND operator and can then be compared with the font family names for an identical match. For more information about the font families, see LogFontPitchAndFamily.

(Read only property)

77.8.54  **TextMetricSizeEM as Integer**

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The size of the em square for the font.

**Notes:**

This value is in notional units (that is, the units for which the font was designed). Only available for truetype fonts.

(Read only property)

77.8.55  **TextMetricStruckOut as Boolean**

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** An strikeout font if set to true.

**Notes:** (Read only property)

77.8.56  **TextMetricUnderlined as Boolean**

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** An underline font if set to true.

**Notes:** (Read only property)
77.8.57 TextMetricWeight as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The weight of the font. Notes: (Read only property)

77.8.58 UnicodeSubsetBitfield as MemoryBlock

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: A 128-bit Unicode subset bitfield (USB) identifying up to 126 Unicode subranges. Notes: Each bit, except the two most significant bits, represents a single subrange. The most significant bit is always 1 and identifies the bitfield as a font signature; the second most significant bit is reserved and must be 0. Unicode subranges are numbered in accordance with the ISO 10646 standard. For more information, see Unicode Subset Bitfields. http://msdn.microsoft.com/en-us/library/dd374090(v=vs.85).aspx

Only available for truetype fonts. (Read only property)

77.8.59 Constants

77.8.60 ANSI_CHARSET = 0

MBS Win Plugin, Plugin Version: 11.0. Function: One of the constants for the LogFontCharSet property.

77.8.61 ANTIALIASED_QUALITY = 4

MBS Win Plugin, Plugin Version: 11.0. Function: One of the constants for the LogFontQuality property. Notes: Enables antialiasing for the font. The display driver must support antialiased text for this setting to work.

77.8.62 ARABIC_CHARSET = 178

MBS Win Plugin, Plugin Version: 11.0. Function: One of the constants for the LogFontCharSet property.
77.8.3  **BALTIC_CHARSET = 186**

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontCharSet property.

77.8.4  **CHINESEBIG5_CHARSET = 136**

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontCharSet property.

77.8.5  **CLIP_CHARACTER_PRECIS = 1**

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontClipPrecision property.
**Notes:** Not used.

77.8.6  **CLIP_DEFAULT_PRECIS = 0**

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontClipPrecision property.
**Notes:** Specifies default clipping behavior.

77.8.7  **CLIP_EMBEDDED = 128**

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the clip constants.

77.8.8  **CLIP_LHANGLES = 16**

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the clip constants.

77.8.9  **CLIP_MASK = & h15**

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the clip constants.
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77.8.70 CLIP_STROKE_PRECIS = 2

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontClipPrecision property.  
**Notes:** Not used by the font mapper, but is returned when raster, vector, or TrueType fonts are enumerated.

77.8.71 CLIP_TT_ALW AYS = 32

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the clip constants.

77.8.72 DEFAULT_CHARSET = 1

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontCharSet property.

77.8.73 DEFAULT_PITCH = 0

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the pitch constants.

77.8.74 DEFAULT_QUALITY = 0

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontQuality property.  
**Notes:** Appearance of the font does not matter.

77.8.75 DEVICE_FONTTYPE = &h002

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the FontType property.

77.8.76 DRAFT_QUALITY = 1

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontQuality property.  
**Notes:** For GDI raster fonts, scaling is enabled, which means that more font sizes are available, but the quality may be lower. Bold, italic, underline, and strikeout fonts are synthesized if necessary.
77.8. EASTEUROPE_CHARSET = 238

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontCharSet property.

77.8.78 **FF_DECORATIVE = 80**

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontPitchAndFamily property.
**Notes:** Novelty fonts, for example, Old English.

77.8.79 **FF_DONTCARE = 0**

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontPitchAndFamily property.
**Notes:** Do not care or do not know.

77.8.80 **FF_MODERN = 48**

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontPitchAndFamily property.
**Notes:** Fonts with constant stroke width (monospace), with or without serifs. Monospace fonts are usually modern, for example, Pica, Elite, and Courier New.

77.8.81 **FF_ROMAN = 16**

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontPitchAndFamily property.
**Notes:** Fonts with variable stroke width (proportional) and with serifs, for example, Serif.

77.8.82 **FF_SCRIPT = 64**

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontPitchAndFamily property.
**Notes:** Fonts designed to look like handwriting, for example, Script and Cursive.
77.8.83  **FF_SWISS = 32**

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontPitchAndFamily property.
**Notes:** Fonts with variable stroke width (proportional) and without serifs, for example, Sans Serif.

77.8.84  **FIXED_PITCH = 1**

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the pitch constants.

77.8.85  **FW_BLACK = 900**

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontWeight property.

77.8.86  **FW_BOLD = 700**

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontWeight property.

77.8.87  **FW_DEMIBOLD = 600**

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontWeight property.

77.8.88  **FW_DONTCARE = 0**

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontWeight property.

77.8.89  **FW_EXTRABOLD = 800**

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontWeight property.

77.8.90  **FW_EXTRALIGHT = 200**

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontWeight property.
77.8.1 FW_HEAVY = 900
MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontWeight property.

77.8.2 FW_LIGHT = 300
MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontWeight property.

77.8.3 FW_MEDIUM = 500
MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontWeight property.

77.8.4 FW_NORMAL = 400
MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontWeight property.

77.8.5 FW_REGULAR = 400
MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontWeight property.

77.8.6 FW_SEMI_BOLD = 600
MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontWeight property.

77.8.7 FW_THIN = 100
MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontWeight property.

77.8.8 FW_ULTRABOLD = 800
MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontWeight property.
**77.8.99**  FW_ULTRALIGHT = 200

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontWeight property.

**77.8.100**  GB2312_CHARSET = 134

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontCharSet property.

**77.8.101**  GREEK_CHARSET = 161

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontCharSet property.

**77.8.102**  HANGEUL_CHARSET = 129

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontCharSet property.

**77.8.103**  HANGUL_CHARSET = 129

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontCharSet property.

**77.8.104**  HEBREW_CHARSET = 177

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontCharSet property.
77.8.105  **JOHAB_CHARSET = 130**

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontCharSet property.

77.8.106  **MAC_CHARSET = 77**

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontCharSet property.

77.8.107  **MONO_FONT = 8**

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the pitch constants.

77.8.108  **NONANTIALIASED_QUALITY = 3**

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontQuality property. **Notes:** Forces use of draft quality when the HKEY_LOCAL_MACHINE\System\GDI\Fontsmeoothing registry key is present.

77.8.109  **NTM_BOLD = & h00000020**

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the flag constants for the TextMetricFlags property. **Notes:** bold

77.8.110  **NTM_DSIG = & h00200000**

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the flag constants for the TextMetricFlags property. **Notes:** Font with a digital signature. This allows traceability and ensures that the font has been tested and is not corrupted.

77.8.111  **NTM_ITALIC = & h00000001**

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the flag constants for the TextMetricFlags property.
77.8.112  NTM_MULTIPLEMESTER = & h00080000

MBS Win Plugin, Plugin Version: 11.0. Function: One of the flag constants for the TextMetricFlags property.
Notes: multiple master font

77.8.113  NTM_NONNEGATIVE_AC = & h00010000

MBS Win Plugin, Plugin Version: 11.0. Function: One of the flag constants for the TextMetricFlags property.
Notes: no glyph in a font at any size has a negative A or C space.

77.8.114  NTM_PS_OPENTYPE = & h00020000

MBS Win Plugin, Plugin Version: 11.0. Function: One of the flag constants for the TextMetricFlags property.
Notes: PostScript OpenType font

77.8.115  NTM_REGULAR = & h0000040

MBS Win Plugin, Plugin Version: 11.0. Function: One of the flag constants for the TextMetricFlags property.
Notes: regular

77.8.116  NTM_TT_OPENTYPE = & h00040000

MBS Win Plugin, Plugin Version: 11.0. Function: One of the flag constants for the TextMetricFlags property.
Notes: TrueType OpenType font

77.8.117  NTM_TYPE1 = & h00100000

MBS Win Plugin, Plugin Version: 11.0. Function: One of the flag constants for the TextMetricFlags property.
Notes: Type 1 font

77.8.118   OEM_CHARSET = 255

MBS Win Plugin, Plugin Version: 11.0. Function: One of the constants for the LogFontCharSet property.

77.8.119   OUT_CHARACTER_PRECIS = 2

MBS Win Plugin, Plugin Version: 11.0. Function: One of the constants for the LogFontOutPrecision property.

77.8.120   OUT_DEFAULT_PRECIS = 0

MBS Win Plugin, Plugin Version: 11.0. Function: One of the constants for the LogFontOutPrecision property.
   Notes: Specifies the default font mapper behavior.

77.8.121   OUT_DEVICE_PRECIS = 5

MBS Win Plugin, Plugin Version: 11.0. Function: One of the constants for the LogFontOutPrecision property.

77.8.122   OUT_OUTLINE_PRECIS = 8

MBS Win Plugin, Plugin Version: 11.0. Function: One of the constants for the LogFontOutPrecision property.

77.8.123   OUT_PS_ONLY_PRECIS = 10

MBS Win Plugin, Plugin Version: 11.0. Function: One of the constants for the LogFontOutPrecision property.
77.8.124 OUT_RASTER_PRECIS = 6

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontOutPrecision property.
**Notes:** Instructs the font mapper to choose a raster font when the system contains multiple fonts with the same name.

77.8.125 OUT_SCREEN_OUTLINE_PRECIS = 9

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontOutPrecision property.

77.8.126 OUT_STRING_PRECIS = 1

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontOutPrecision property.
**Notes:** This value is not used by the font mapper, but it is returned when raster fonts are enumerated.

77.8.127 OUT_STROKE_PRECIS = 3

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontOutPrecision property.

77.8.128 OUT_TT_ONLY_PRECIS = 7

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontOutPrecision property.

77.8.129 OUT_TT_PRECIS = 4

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontOutPrecision property.
77.8.130  PROOF_QUALITY = 2

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontQuality property.

77.8.131  RASTER_FONTTYPE = & h0001

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the FontType property.

77.8.132  RUSSIAN_CHARSET = 204

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontCharSet property.

77.8.133  SHIFTJIS_CHARSET = 128

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontCharSet property.

77.8.134  SYMBOL_CHARSET = 2

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontCharSet property.

77.8.135  THAI_CHARSET = 222

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontCharSet property.

77.8.136  TRUETYPE_FONTTYPE = & h004

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the FontType property.

77.8.137  TURKISH_CHARSET = 162

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontCharSet property.
77.8.138   VARIABLE_PITCH = 2

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the pitch constants.

77.8.139   VIETNAMESE_CHARSET = 163

MBS Win Plugin, Plugin Version: 11.0. **Function:** One of the constants for the LogFontCharSet property.
Chapter 78

GameKit

78.1 class GameKitMBS

78.1.1 class GameKitMBS


**Function:** The central plugin class for GameKit.

**Notes:**

Events from various objects end here, so you can implement them in a central subclass of GameKitMBS.
For most events, we carry a "tag as Variant" parameter, so you can pass a window, some object or whatever value you need.

Also we defined that matchdata is a dictionary. This way you can store various values inside including arrays (e.g. array of variant). As data is serialized over the network, you can’t pass Real Studio objects.

The plugin makes sure that all events run on the main thread, so please make sure you don’t block main thread.
Please create only one instance of your GameKitMBS subclass.

GameKit classes are available in OS X v10.8 and later.
Please review Apple’s documentation for more details and a guide.
78.1.2 Methods

78.1.3 Available as boolean

 Function:  True if the class is available.
 Notes:  Should always be true on Mac OS X 10.8 and newer.

78.1.4 GKErrorDomain as string

 Function:  The Game Kit framework error domain.
 Notes:  For NSErrorMBS.

78.1.5 showBannerWithTitle(title as string, message as string, duration as Double, tag as Variant)

 Function:  Displays a banner to the player for a specified period of time.
 Notes:  
 title:  The title of the banner.
 message:  A secondary message to be displayed.
 duration:  The amount of time that the banner should be displayed to the player.

When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls GameKitMBS.Notification-BannerCompleted event.

See also:
  • 78.1.6 showBannerWithTitle(title as string, message as string, tag as Variant)

78.1.6 showBannerWithTitle(title as string, message as string, tag as Variant)

 Function:  Displays a banner to the player.
 Notes:  
 title:  The title of the banner.
 message:  A secondary message to be displayed.
When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls GameKitMBS.NotificationBannerCompleted event.

See also:

- 78.1.5 showBannerWithTitle(title as string, message as string, duration as Double, tag as Variant)

78.1.7 Events

78.1.8 acceptInviteCompleted(match as GKTurnBasedMatchMBS, error as NSErrorMBS, tag as Variant)

Function: The event to be called after the match is successfully created.
Notes:

match: A newly initialized match object that contains a list of players for the match. If an error occurred, this value is nil.
error: If an error occurred, this error object describes the error. If the operation was completed successfully, the value is nil.

Called by GKTurnBasedMatchMBS.acceptInvite.
Available on Mac OS X 10.8.2 and newer.

78.1.9 achievementViewControllerDidFinish(viewController as Variant)

Function: Called when the user dismisses the achievements screen. (required)
Notes:

viewController: The achievement view controller whose interface was dismissed by the player. (GKAchievementViewControllerMBS)

Your should dismiss the view controller. If your game paused any gameplay or other activities, it can restart those services in this method.
78.1.10 `addPlayersToMatchCompleted(MatchMaker as GKMatchmakerMBS, match as GKMatchMBS, matchRequest as GKMatchRequestMBS, error as NSErrorMBS, tag as Variant)`

Function: Called by GKMatchmakerMBS.addPlayersToMatch when matchmaking completes.
Notes: error: If matchmaking was successful, this parameter contains nil. Otherwise, this parameter holds an error object that describes the error that occurred.

78.1.11 `authenticateCompleted(localPlayer as GKLocalPlayerMBS, error as NSErrorMBS, tag as Variant)`

Function: Called by GKLocalPlayerMBS.authenticate when the player has authenticated or when an error occurs.
Notes: error: This parameter is nil if the player successfully authenticated. Otherwise, it contains an error object that describes the error that occurred.

78.1.12 `authenticateHandler(LocalPlayer as GKLocalPlayerMBS, viewController as NSViewControllerMBS, error as NSErrorMBS, tag as Variant, viewControllerHandle as Integer)`

Function: The event called when game center needs authentication.
Notes:

viewController: This parameter is nil if the authentication process is complete. Otherwise, it contains a view controller that your game should display to the player.
error: This parameter contains an error object that describes any error that occurred.

Your game should authenticate the player as early as possible after launching, ideally as soon as you can present a user interface to the player. For example, your game may be launched because the player accepted an invitation to join a match or to take a turn in a turn-based match, so you want your game to authenticate the player and process the match invitation as quickly as possible. After you set a handler, authentication begins automatically and is repeated when your game moves to the background and then back to the foreground.

During the authentication process, Game Kit calls your handler one or more times to handle specific authentication events. Your handler must handle three kinds of events:

- If the device does not have an authenticated player, Game Kit passes a view controller to your authenticate handler. When presented, this view controller displays the authentication user interface. Your
game should pause other activities that require user interaction (such as your game loop), present this view controller and then return. When the player finishes interacting with it, the view controller is dismissed automatically.

- If the authentication process succeeded, the GKLocalPlayer singleton object’s authenticated property is set to true and the object’s other properties are set to match those of the connected player.

- If the authentication process failed, the GKLocalPlayer singleton object’s authenticated property is set to false and the object’s other properties are cleared.

Each time the authentication handler is called, the data stored in the local player singleton object may have changed. A new player may have logged into the device or the player may have simply logged out from Game Center. Because of both of these possibilities, your authentication handler must be prepared to update any other objects that assume that a particular player is logged in. For more information, see "Authenticating the Local Player in a Multitasking Application" in Game Center Programming Guide.

Available on Mac OS X 10.8.2 and newer.

**78.1.13 challengesViewControllerDidFinish**(viewController as Variant)

Function: The challengesViewController did finish.
Notes:
Called by GKChallengesViewControllerMBS if needed.
Available on Mac OS X 10.8.2 and newer.

**78.1.14 chooseBestHostPlayerCompleted**(match as GKMatchMBS, playerID as string, tag as Variant)

Function: Called when GKMatchMBS.chooseBestHostPlayer completes.
Notes:
playerID: The player identifier for the player with the best estimated network performance, or nil if a player could not currently be determined.

Available on Mac OS X 10.8.2 and newer.
78.1.15 `declineInviteCompleted(match as GKTurnBasedMatchMBS, error as NSErrorMBS, tag as Variant)`


**Function:** The event to be called after the match is successfully created.

**Notes:**

error: If an error occurred, this error object describes the error. If the operation was completed successfully, the value is nil.

Called by GKTurnBasedMatchMBS.declineInvite.
Available on Mac OS X 10.8.2 and newer.

78.1.16 `didRequestMatchWithOtherPlayers(players() as GKPlayerMBS)`

MBS MacFrameworks Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.

**Function:** Initiates a match from Game Center with the requested players. (required)

**Notes:**

player: The GKPlayer object containing the current players information.
playersToInvite: An array of GKPlayer objects containing the player identifiers to invite to the match.

When this method is called, you should create a new match using the player identifiers provided and present a GKTurnBasedMatchmakerViewController.

Available in OS X v10.10 and later.

78.1.17 `endMatchInTurnWithMatchDataCompleted(match as GKTurnBasedMatchMBS, matchData as Dictionary, error as NSErrorMBS, tag as Variant)`


**Function:** Called by GKTurnBasedMatchMBS.endMatchInTurnWithMatchData after the match is successfully ended.

**Notes:** If an error occurred, this error object describes the error. If the operation was completed successfully, the value is nil.
78.1.18  **endTurnWithNextParticipant** (match as GKTurnBasedMatchMBS, nextParticipant as GKTurnBasedParticipantMBS, matchData as Dictionary, error as NSErrorMBS, tag as Variant)

**Function:** Called by GKTurnBasedMatchMBS.endTurnWithNextParticipant after the data is uploaded to Game Center.  
**Notes:** If an error occurred, this error object describes the error. If the operation was completed successfully, the value is nil.

78.1.19  **endTurnWithNextParticipantsCompleted** (match as GKTurnBasedMatchMBS, nextParticipants() as GKTurnBasedParticipantMBS, timeout as Double, matchData as Dictionary, error as NSErrorMBS, tag as Variant)

**Function:** The event to be called after the data is uploaded to the server.  
**Notes:**  
Called by GKTurnBasedMatchMBS.participantQuitInTurnWithOutcome.

error: If an error occurred, this error object describes the error. If the operation was completed successfully, the value is nil.

Available on Mac OS X 10.8.2 and newer.

78.1.20  **findMatchForRequestCompleted** (MatchMaker as GKMatchmakerMBS, request as GKMatchRequestMBS, match as GKMatchMBS, TurnBasedMatch as GKTurnBasedMatchMBS, error as NSErrorMBS, tag as Variant)

**Function:** Called when the match has been created.  
**Notes:**  
This is either called by GKMatchmakerMBS.findMatchForRequest or GKTurnBasedMatchMBS.findMatchForRequest.

match: If matchmaking was successful, this parameter contains the created match. Otherwise, this parameter is nil.  
error: If matchmaking was successful, this parameter contains nil. Otherwise, this parameter holds an error object that describes the error that occurred.
78.1.21  findPlayersForHostedMatchRequestCompleted(MatchMaker as GKMatchmakerMBS, request as GKMatchRequestMBS, playerIDs() as string, error as NSErrorMBS, tag as Variant)

Function: Called by GKMatchmakerMBS.findPlayersForHostedMatchRequest when the match has been created.  
Notes:  
players: If matchmaking was successful, this parameter contains an array of players to connect into the match. Otherwise, this parameter is nil.  
error: If matchmaking was successful, this parameter contains nil. Otherwise, this parameter holds an error object that describes the error that occurred.

78.1.22  friendRequestComposeViewControllerDidFinish(viewController as Variant)

Function: The compose view has finished.  
Notes: viewController: The GKFriendRequestComposeViewControllerMBS object.

78.1.23  gameCenterViewControllerDidFinish(gameCenterViewController as Variant)

Function: Called when gameCenterViewController did finish.  
Notes: Available on Mac OS X 10.8.2 and newer.

78.1.24  handleInviteFromGameCenter(playersToInvite() as string)

Function: Sent when the local player receives an invitation to join a new turn-based match.  
Notes:  
playersToInvite: An array of player identifiers for the players to initially invite to the game.

When you receive this message, your game should create a new GKMatchRequestMBS object and assign the playersToInvite parameter to the match request’s playersToInvite property. Then, your game can either call the GKTurnBasedMatchMBS class method findMatchForRequest to find a match programatically or it can use the request to instantiate a new GKTurnBasedMatchmakerViewControllerMBS object to show a
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user interface to the player.

78.1.25 handleMatchEnded(match as GKTurnBasedMatchMBS)

Function: Sent when a match the local player is participating in has ended.
Notes:

match: The match that just ended.

When you receive this message, it should display the match’s final results to the player and allow the player the option of saving or removing the match data from Game Center.

78.1.26 handleTurnEventForMatch(match as GKTurnBasedMatchMBS, didBecomeActive as boolean)

Function: Sent when it is the local player’s turn to act in a turn-based match.
Notes:

match: A match object containing the current state of the match.

didBecomeActive: New parameter valid on Mac OS X 10.8.2 and newer.

78.1.27 Invited(MatchMaker as GKMatchmakerMBS, acceptedInvite as GKInviteMBS, playersToInvite() as string)

Function: Called by GKMatchmakerMBS when an invitation is received from another player.
Notes:

acceptedInvite: The invitation accepted by the player.
playersToInvite: A list of player identifiers for additional players to invite into the game.

An game responds to an invitation by allocating and initializing a GKMatchmakerViewControllerMBS ob-
ject, passing the invitation object and the list of player identifiers as parameters. For more information, see Game Kit Programming Guide.

If your game receives an invitation while your game is running, it should clean up any existing gameplay (including disconnecting from any current matches) and then process the invitation.

78.1.28 inviteeResponseHandler(MatchRequest as GKMatchRequestMBS, PlayerID as string, response as Integer, tag as Variant)

Function: The event called when an response from an invited player is returned to your game.
Notes:
playerID: The identifier for the player.
response: The nature of the response. See GKInviteeResponse* constants.

Available on Mac OS X 10.8.2 and newer.

78.1.29 leaderboardViewControllerDidFinish(viewController as Variant)

Function: The leaderboard view has finished.
Notes: viewController: The GKLeaderboardViewControllerMBS object.

78.1.30 loadAchievementDescriptionsCompleted(achievements() as GKAchievementDescriptionMBS, error as NSErrorMBS, tag as Variant)

Function: Called by GKAchievementDescriptionMBS.loadAchievementDescriptions when the download is completed.
Notes:
descriptions: An array of description objects for the achievements in your game. If an error occurred, this value may be non-empty. In this case, the array holds whatever descriptions were downloaded by Game Kit before the error occurred.
error: If an error occurred, this error object describes the error. If the operation completed successfully, this value is nil.
78.1.31 loadAchievementsCompleted(achievements() as GKAchievementMBS, error as NSErrorMBS, tag as Variant)

**Function:** Called by GKAchievementMBS.loadAchievements when the download is completed.
**Notes:**
- achievements: An array of achievement objects that represents all progress reported to Game Center for the local player. If an error occurred, this parameter may be non-empty, in which case the array holds whatever achievement information Game Kit was able to fetch.
- error: If an error occurred, this object describes the error. If the operation completed successfully, this value is nil.

78.1.32 loadCategoriesCompleted(categories() as string, titles() as string, error as NSErrorMBS, tag as Variant)

**Function:** Called by GKLeaderboardMBS.loadCategories when the categories have been retrieved from the server.
**Notes:**
- categories: An array of strings that provides the categories to your game. If an error occurred, this value may be non-empty. In this case, the array holds whatever data Game Kit was able to download before the error occurred.
- titles: An array of strings that provides localized titles for each category. If an error occurred, this value may be non-empty. In this case, the array holds whatever data Game Kit was able to download before the error occurred.
- error: If an error occurred, this error object describes the error. If the operation completed successfully, the value is nil.

78.1.33 loadDefaultLeaderboardCategoryIDCompleted(LocalPlayer as GKLocalPlayerMBS, categoryID as string, error as NSErrorMBS, tag as Variant)

**Function:** The loadDefaultLeaderboardCategoryID method completed.
**Notes:**
- categoryID: The category ID string for the local player’s default leaderboard.
- error: If an error occurred, this parameter holds an error object that explains the error. Otherwise, the value of this parameter is nil.

Available on Mac OS X 10.8.2 and newer.
78.1.34  loadFriendPlayersCompleted(localPlayer as GKLocalPlayerMBS, friendPlayers() as GKPlayerMBS, error as NSErrorMBS, tag as Variant)

MBS MacFrameworks Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The event called by GKLocalPlayerMBS.loadFriendPlayers.
Notes: friendPlayers: An array of GKPlayer objects containing the player identifiers for the players that are friends of the local player. If an error occurred, this value can be non-nil. In that case, the array contains the data that Game Kit was able to download before the error occurred.
error: If an error occurred, this parameter holds an error object that explains the error. Otherwise, the value of this parameter is nil.

78.1.35  loadFriendsCompleted(localPlayer as GKLocalPlayerMBS, friends() as string, error as NSErrorMBS, tag as Variant)

Function: Called by GKLocalPlayerMBS.loadFriends when the request completes.
Notes: friends: An array of player identifiers for the players that are friends of the local player. If an error occurred, this value can be non-empty. In that case, the array contains the data that Game Kit was able to download before the error occurred.
error: If an error occurred, this parameter holds an error object that explains the error. Otherwise, the value of this parameter is nil.

78.1.36  loadImageCompleted(description as GKAchievementDescriptionMBS, image as NSImageMBS, error as NSErrorMBS, tag as Variant)

Function: Called by GKAchievementDescriptionMBS.loadImage when the download is completed.
Notes: image: The downloaded image. If an error occurred, this value is nil.
error: If an error occurred, this error object describes the error. If the operation completed successfully, this value is nil.

78.1.37  loadLeaderboardsCompleted(Leaderboards() as GKLeaderboardMBS, error as NSErrorMBS, tag as Variant)

Function: Leaderboards have been loaded.
Notes: Available on Mac OS X 10.8.2 and newer.

78.1.38  loadMatchDataCompleted(match as GKTurnBasedMatchMBS, matchData as Dictionary, error as NSErrorMBS, tag as Variant)

Function: Called by GKTurnBasedMatchMBS.loadMatchData after the match data has been retrieved from the server.
Notes:
matchData: The data stored on Game Center that reflects the current state of the match. If an error occurred, this value is nil.
error: If an error occurred, this error object describes the error. If the operation was completed successfully, the value is nil.

78.1.39  loadMatchesCompleted(matches() as GKTurnBasedMatchMBS, error as NSErrorMBS, tag as Variant)

Function: Called by GKTurnBasedMatchMBS.loadMatches after the matches are retrieved from the server.
Notes:
matches: An array of match objects that hold the requested matches. If an error occurred, this value may be non-empty. In this case, the array holds whatever match data could be retrieved from Game Center before the error occurred.
error: If an error occurred, this error object describes the error. If the operation was completed successfully, the value is nil.

78.1.40  loadMatchWithIDCompleted(TurnBasedMatch as GKTurnBasedMatchMBS, matchID as string, error as NSErrorMBS, tag as Variant)

Function: The event to be called after the match is retrieved from the server.
Notes:
Called when GKTurnBasedMatchMBS.loadMatchWithID finishes.
matchID: The identifier for the turn-based match.
match: If the operation completed successfully, this parameter holds the match. If an error occurred, the value is nil.
error: If an error occurred, this error object describes the error. If the operation was completed successfully,
the value is nil.

Available on Mac OS X 10.8.2 and newer.

78.1.41  loadPhotoForSizeCompleted(player as GKPlayerMBS, size as Integer, photo as NSImageMBS, error as NSErrorMBS, tag as Variant)

Function: Called by GKPlayerMBS.loadPhotoForSize when the player data is retrieved from Game Center.
Notes:
photo: An image for the player. If an error occurred, this may still be non-nil. In this case, the image reflects an image cached by Game Kit on the device.
error: If an error occurred, this error object describes the error. If the operation completed successfully, this is nil.

78.1.42  loadPlayersForIdentifiersCompleted(identifiers() as string, players() as GKPlayerMBS, error as NSErrorMBS, tag as Variant)

Function: Called by GKPlayerMBS.loadPlayersForIdentifiers when the player data is retrieved from Game Center.
Notes:
players: An array of GKPlayer objects, one per identifier. If an error occurred, this may be non-empty. In that case, the array holds whatever data Game Kit was able to retrieve for the requested players.
error: If an error occurred, this error object describes the error. If the operation completed successfully, this is nil.

78.1.43  loadReceivedChallengesCompleted(challenges() as GKChallengeMBS, error as NSErrorMBS, tag as Variant)

Function: Called when loadReceivedChallenges finished.
Notes:
challenges: An array of challenge objects that represents all challenges made to the local player. If an error occurred, this parameter may be non-nil, in which case the array holds whatever challenge information Game Kit was able to fetch.
error: If an error occurred, this object describes the error. If the operation completed successfully, this value is nil.
Available on Mac OS X 10.8.2 and newer.

78.1.44  **loadScoresCompleted(Leaderboard as GKLeaderboardMBS, scores() as GKScoreMBS, error as NSErrorMBS, tag as Variant)**

**Function:** Called by GKLeaderboardMBS.loadScores after the scores are retrieved from the server.  
**Notes:**

- **scores:** An array of score objects that hold the requested scores. If an error occurred, this value may be non-nil. In this case, the array holds whatever score data could be retrieved from Game Center before the error occurred.  
- **error:** If an error occurred, this error object describes the error. If the operation was completed successfully, the value is nil.

78.1.45  **localPlayerDidCompleteChallenge(challenge as GKChallengeMBS)**

**Function:** Called when the local player has completed one of their challenges, triggered by a push notification from the server.  
**Notes:**

Received only while the game is running.  
Available on Mac OS X 10.8.2 and newer.

78.1.46  **localPlayerDidReceiveChallenge(challenge as GKChallengeMBS)**

**Function:** Called when the local player has received a challenge, triggered by a push notification from the server.  
**Notes:**

Received only while the game is running.  
Available on Mac OS X 10.8.2 and newer.

78.1.47  **localPlayerDidSelectChallenge(challenge as GKChallengeMBS)**

**Function:** Called when the user clicks a challenge notification banner or the "Play Now" button for a challenge inside Game Center, causing the game to launch.  
**Notes:**
Also called when the user clicks a challenge banner inside the game.
Available on Mac OS X 10.8.2 and newer.

### 78.1.48 `matchConnectionWithPlayerFailed(match as GKMatchMBS, playerID as string, error as NSErrorMBS)`

**Function:** Called when the match fails to connect to a player.
**Notes:**
- `match`: The match that received the error.
- `player`: The identifier for the player whose connection failed.
- `error`: The error that occurred.

This method is called if the match was unable to send a transmission to another player in the match.

### 78.1.49 `matchDidChangeState(match as GKMatchMBS, playerID as string, state as Integer)`

**Function:** Called when a player connects to or disconnects from the match.
**Notes:**
- `match`: The match that the player is connected to.
- `player`: The identifier for the player whose state changed.
- `state`: The state the player moved to. (see constants in GKMatchMBS)

Your game implements this method to be notified when players connect to or disconnect from the match.

### 78.1.50 `matchDidFailWithError(match as GKMatchMBS, error as NSErrorMBS)`

**Function:** Called when the match cannot connect to any other players.
**Notes:**
- `match`: The match that received the error.
- `error`: The error that occurred.

This method is called if the match cannot connect to any other players associated with the match. It usually means a serious networking error has occurred.
78.1.51  **matchDidReceiveData**(match as GKMatchMBS, data as Dictionary, playerID as string)

**Function:** Called when data is received from a player. (required)
**Notes:**
match: The match that received the data.
data: The data sent by the player.
player: The string identifier for the player that sent the data.

Important: Data received from other players should be treated as untrusted data. Be sure to validate the data you receive from the match and write your code carefully to avoid security vulnerabilities. See the Secure Coding Guide for more information.

78.1.52  **matchEnded**(player as GKPlayerMBS, match as GKTurnBasedMatchMBS)

MBS MacFrameworks Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
**Function:** Called when the match has ended. (required)
**Notes:**
player: The GKPlayer object containing the current players information.
match: The GKTurnBasedMatch object containing the current game data.

Available in OS X v10.10 and later.

78.1.53  **matchForInviteCompleted**(Matchmaker as GKMatchmakerMBS, invite as GKInviteMBS, match as GKMatchMBS, error as NSErrorMBS, tag as Variant)

**Function:** Called by matchForInvite on completion.
**Notes:**
Match provides the new match object on success.

Possible reasons for error:
1. Communications failure.
2. Invite cancelled.
Available on Mac OS X 10.8.2 and newer.
78.1.54 matchmakerViewControllerDidFailWithError(viewController as Variant, error as NSErrorMBS)

Function: Called when the view controller encounters an unrecoverable error. (required)
Notes:
viewController: The view controller that received the error. (GKMatchmakerViewControllerMBS)
error: An error object that describes the error.

78.1.55 matchmakerViewControllerDidFindMatch(viewController as Variant, match as GKMatchMBS)

Function: Called when a peer-to-peer match is found.
Notes:
viewController: The view controller that performed the matchmaking. (GKMatchmakerViewControllerMBS)
match: A completed match.

This method is called when the view controller’s hosted property is false. Although optional in the protocol, if your game attaches a delegate to the view controller for a peer-to-peer match, the view controller expects your game to provide an implementation of this method.

78.1.56 matchmakerViewControllerDidFindPlayers(viewController as Variant, playerIDs() as string)

Function: Called when a hosted match is found.
Notes:
viewController: The view controller that performed the matchmaking. (GKMatchmakerViewControllerMBS)
players: An array of identifier strings for the matched players.

This method is called when the view controller’s hosted property is true. Although optional in the protocol, if your game attaches a delegate to the view controller for a hosted match, the view controller expects your game to provide an implementation of this method.

The view controller returns the list of players to your game by calling this method. Your game is responsible for connecting these players to your own server and then using that server to relay messages between the players.
78.1.57  `matchmakerViewControllerDidReceiveAcceptFromHostedPlayer(viewController as Variant, playerID as string)`


**Function:** Called when a player in a hosted match accepts the invitation.

**Notes:**

`viewController`: The view controller that accepted the invitation. (GKMatchmakerViewControllerMBS)

`playerID`: The identifier of the accepting player.

After a player accepts an invitation, that player’s device should connect to your server. Once the connection is established, your game should call the view controller’s `setHostedPlayer` method to update the player’s connection status.

78.1.58  `matchmakerViewControllerWasCancelled(viewController as Variant)`


**Function:** Called when the user cancels the matchmaking request (required)

**Notes:**

`viewController`: The view controller that received the cancellation. (GKMatchmakerViewControllerMBS)

78.1.59  `matchShouldReinvitePlayer(match as GKMatchMBS, playerID as string) as boolean`


**Function:** Called when a player in a two-player match was disconnected.

**Notes:**

`match`: The match that lost the player.

`playerID`: The identifier for the player whose connection failed.

Your game should return true if it wants Game Kit to attempt to reconnect the player, false if it wants to terminate the match.

Occasionally, players may get disconnected from a match. If your game implements this method in the match delegate and the match only contains two players, Game Kit calls this method after a player gets disconnected. If your delegate allows Game Kit to reconnect to the other player, it reconnects the other player. Your `matchDidChangeState` event is called when the other player is reconnected.
78.1.60 NotificationBannerCompleted(title as string, message as string, duration as Double, tag as Variant)

Function: Called by GameKitMBS.showBannerWithTitle after the banner is reported.
Notes: Duration is only passed if it was sent with the newer method on Mac OS X 10.8.2 and newer.

78.1.61 participantQuitInTurnWithOutcomeCompleted(match as GKTurnBasedMatchMBS, matchOutcome as Integer, nextParticipant as GKTurnBasedParticipantMBS, nextParticipants() as GKTurnBasedParticipantMBS, timeout as Double, matchData as Dictionary, error as NSErrorMBS, tag as Variant)

Function: The event to be called after the data is uploaded to the server.
Notes:
Called by GKTurnBasedMatchMBS.participantQuitInTurnWithOutcome.
error: If an error occurred, this error object describes the error. If the operation was completed successfully, the value is nil.
Available on Mac OS X 10.8.2 and newer.

78.1.62 participantQuitOutOfTurnWithOutcomeCompleted(match as GKTurnBasedMatchMBS, matchOutcome as Integer, error as NSErrorMBS, tag as Variant)

Function: Called by GKTurnBasedMatchMBS.participantQuitOutOfTurnWithOutcome called after the data is uploaded to the server.
Notes: If an error occurred, this error object describes the error. If the operation was completed successfully, the value is nil.

78.1.63 PlayerAuthenticationDidChange(player as GKPlayerMBS)

Function: Player’s authentication changed.
78.1.64 playerChanged(player as GKPlayerMBS)

**Function:** The player changed.

78.1.65 playerStateUpdate(playerID as string, state as Integer, tag as Variant)

**Function:** Called when the state of any participant in the chat changes (including the local player).
**Notes:**
- player: The player identifier for the player whose status changed.
- state: The new state of the player.
  You need to call enablePlayerStateUpdate to receive events.

78.1.66 queryActivityCompleted(MatchMaker as GKMatchmakerMBS, activity as Integer, error as NSErrorMBS, tag as Variant)

**Function:** Called by GKMatchmakerMBS.queryActivity when query is done.
**Notes:**
- activity: The amount of activity in the player group.
- error: If the search completed successfully, this parameter is nil; otherwise, this parameter holds an error object that describes the error that occurred.

78.1.67 queryPlayerGroupActivityCompleted(MatchMaker as GKMatchmakerMBS, playerGroup as Integer, activity as Integer, error as NSErrorMBS, tag as Variant)

**Function:** Called by GKMatchmakerMBS.queryPlayerGroupActivity when the search completes.
**Notes:**
- activity: The amount of activity in the player group.
- error: If the search completed successfully, this parameter is nil; otherwise, this parameter holds an error object that describes the error that occurred.
78.1.68 receivedTurnEventForMatch(player as GKPlayerMBS, match as GKTurnBasedMatchMBS, didBecomeActive as boolean)

MBS MacFrameworks Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Activates the players turn. (required)
Notes:
This method is called when the it becomes the players turn. It is also called when any of the following events happen:

- The current turn has a time-out associated with it and the turn is about to expire.
- Player accepts an invite from another player.
- Turn was passed to another player. In this case, didBecomeActive is false.
- Match data is saved by another player.
- Player receives a reminder.

Available in OS X v10.10 and later.

78.1.69 recipientResponseHandler(MatchRequest as GKMatchRequestMBS, Player as GKPlayerMBS, response as Integer, tag as Variant)

MBS MacFrameworks Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: This event is called whenever you programmatically invite specific players to join a match.
Notes:
It is called once for each player invited to the match. Typically, your game uses the responses to update the custom user interface. For example, you want the player to be able to perform any of the following tasks:

- Start the match.
- Invite an additional set of specific players.
- Use matchmaking to fill the remaining match slots.

Available in OS X v10.10 and later.
78.1.70 remakeCompleted(TurnMatch as GKTurnBasedMatchMBS, match as GKMatchMBS, error as NSErrorMBS, tag as Variant)

Function: Called when GKMatchMBS.rematch completes.
Notes:
match: The new match. If an error occurred, this parameter’s value is nil.
error: If an error occurred, this parameter holds an error object that describes the problem. If the match
was successfully recreated, this parameter’s value is nil.

Available on Mac OS X 10.8.2 and newer.

78.1.71 remotePlayerDidCompleteChallenge(challenge as GKChallengeMBS)

Function: Called when a non-local player has completed a challenge issued by the local player.
Notes:
Triggered by a push notification from the server. Received when a challenge notification banner is clicked,
or while the game is running.
Available on Mac OS X 10.8.2 and newer.

78.1.72 removeCompleted(match as GKTurnBasedMatchMBS, error as NSErrorMBS, tag as Variant)

Function: Called by GKTurnBasedMatchMBS.remove on completion.
Notes:
If an error occurred, this error object describes the error. If the operation was completed successfully, the
value is nil.
Tag is the parameter you passed to remove method.

78.1.73 reportAchievementCompleted(score as GKAchievementMBS, error as NSErrorMBS, tag as Variant)

Function: Called by GKAchievementMBS.reportAchievement after the operation completes.
Notes: error: If the operation was successful, this value is nil; otherwise, this parameter holds an object
that describes the problem that occurred.
78.1.74 reportAchievementsCompleted(achievements() as GKAchievementMBS, error as NSErrorMBS, tag as Variant)

Function: Called when GKAchievementMBS.reportAchievements completes.
Notes: Available on Mac OS X 10.8.2 and newer.

78.1.75 reportScoreCompleted(score as GKScoreMBS, error as NSErrorMBS, tag as Variant)

Function: Called by GKScoreMBS.reportScore after the score is reported.
Notes: error: If an error occurred, this parameter holds an error object that describes the problem. If the score was successfully reported, this parameter’s value is nil.

78.1.76 reportScoresCompleted(Scores() as GKScoreMBS, error as NSErrorMBS, tag as Variant)

Function: Reporting scores completed.
Notes:
scores: An array of score objects to report to Game Center.
error: If an error occurred, this parameter holds an error object that describes the problem. If the score was successfully reported, this parameter’s value is nil.

Available on Mac OS X 10.8.2 and newer.

78.1.77 resetAchievementsCompleted(error as NSErrorMBS, tag as Variant)

Function: Called by GKAchievementMBS.resetAchievements when the reset action is completed.
Notes: error: If the operation was successful, this value is nil; otherwise, this parameter holds an object that describes the problem that occurred.
**78.1.78** `saveCurrentTurnWithMatchDataCompleted(match as GKTurnBasedMatchMBS, matchData as Dictionary, error as NSErrorMBS, tag as Variant)`


**Function:** The event to be called after the data is uploaded to Game Center.

**Notes:**
- error: If an error occurred, this error object describes the error. If the operation was completed successfully, the value is nil.
- matchData: The game-specific state for the match.

Available on Mac OS X 10.8.2 and newer.

**78.1.79** `selectChallengeablePlayerIDsCompleted(Achievement as GKAchievementMBS, playerIDs() as string, challengeablePlayerIDs() as string, error as NSErrorMBS, tag as Variant)`


**Function:** Called by GKAchievementMBS.selectChallengeablePlayerIDs on completion.

**Notes:** Available on Mac OS X 10.8.2 and newer.

**78.1.80** `setDefaultLeaderboardCategoryIDCompleted(LocalPlayer as GKLocalPlayerMBS, categoryID as string, error as NSErrorMBS, tag as Variant)`


**Function:** Called by GKLocalPlayerMBS.setDefaultLeaderboardCategoryID when completed.

**Notes:** Available on Mac OS X 10.8.2 and newer.

**78.1.81** `setDefaultLeaderboardCompleted(categoryID as string, error as NSErrorMBS, tag as Variant)`


**Function:** Called by GKLeaderboardMBS.setDefaultLeaderboard after the scores are retrieved from the server.

**Notes:**
- error: If an error occurred, this error object describes the error. If the operation was completed successfully, the value is nil.
78.1.82 shouldShowBannerForLocallyCompletedChallenge(challenge as GKChallengeMBS) as boolean

Function: Whether to show banner for locally completed challenge.
Notes:
If the method returns true, a challenge banner (like an achievement or welcome banner – not a notification center banner) is displayed. If false, then no banner is displayed. Default behavior for non-implementing apps is true.
Available on Mac OS X 10.8.2 and newer.

78.1.83 shouldShowBannerForLocallyReceivedChallenge(challenge as GKChallengeMBS) as boolean

Function: Whether to show banner for locally received challenge.
Notes:
If the method returns true, a challenge banner (like an achievement or welcome banner – not a notification center banner) is displayed when a challenge is received in-game for the local player. If false, then no banner is displayed, and localPlayerDidSelectChallenge will not be called for that challenge. Default behavior for non-implementing apps is true.
Available on Mac OS X 10.8.2 and newer.

78.1.84 shouldShowBannerForRemotelyCompletedChallenge(challenge as GKChallengeMBS) as boolean

Function: Whether to show banner for remotely completed challenge.
Notes:
If the method returns true, a challenge banner (like an achievement or welcome banner – not a notification center banner) is displayed. If false, then no banner is displayed. Default behavior for non-implementing apps is true.
Available on Mac OS X 10.8.2 and newer.
78.1. startBrowsingForNearbyPlayersCompleted(Matchmaker as GKMatchmakerMBS, playerID as string, reachable as boolean, tag as Variant)

Function: Called when startBrowsingForNearbyPlayers method found a player.
Notes: Available on Mac OS X 10.8.2 and newer.

78.1. turnBasedMatchmakerViewControllerDidFailWithError(viewController as Variant, error as NSErrorMBS)

Function: Called when an error occurs. (required)
Notes:
viewController: The view controller that received an error. (GKTurnBasedMatchmakerViewControllerMBS)
error: An error object that describes the error.

Your game should dismiss the view controller.

78.1. turnBasedMatchmakerViewControllerDidFindMatch(viewController as Variant, match as GKTurnBasedMatchMBS)

Function: Called when the player selected a match to view. (required)
Notes:
viewController: The view controller that found a match. (GKTurnBasedMatchmakerViewControllerMBS)
match: The match that the player selected.

Your game should dismiss the view controller and use the match object to show the current state of the match to the player.

78.1. turnBasedMatchmakerViewControllerPlayerQuitForMatch(viewController as Variant, match as GKTurnBasedMatchMBS)

Function: Called when a player chooses to quit the match. (required)
Notes:
viewController: The view controller that the player interacted with. (GKTurnBasedMatchmakerViewControllerMBS)
match: The match the player has chosen to quit.

When this method is called, the player is the current participant in the match, but that player has chosen to resign the match instead of taking a turn. Your game should dismiss the view controller, set an outcome for the player, and then call the match’s `participantQuitInTurnWithOutcome` method.

### 78.1.89 `turnBasedMatchmakerViewControllerWasCancelled(viewController as Variant)`


**Function:** Called when the player cancels matchmaking. (required)

**Notes:**

`viewController`: The view controller that the player canceled. (GKTurnBasedMatchmakerViewControllerMBS)

Your game should dismiss the view controller.

### 78.1.90 Constants

#### 78.1.91 `GKErrorAuthenticationInProgress = 7`

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the GameKit error constants.

**Notes:** The local player is currently authenticating.

#### 78.1.92 `GKErrorCancelled = 2`

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the GameKit error constants.

**Notes:** The requested operation was canceled.

#### 78.1.93 `GKErrorChallengeInvalid = 19`

MBS MacFrameworks Plugin, Plugin Version: 13.0. **Function:** One of the GameKit error constants.

**Notes:**

The challenge was invalid.

Available on Mac OS X 10.8.2 and newer.
78.1.94  **GKErrorCommunicationsFailure = 3**

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the GameKit error constants.  
**Notes:** An error occurred when communicating with Game Center.

78.1.95  **GKErrorGameUnrecognized = 15**

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the GameKit error constants.  
**Notes:** Game Center does not recognize the application that made the request. Make sure the bundle identifier is set properly for the application.

78.1.96  **GKErrorInvalidCredentials = 5**

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the GameKit error constants.  
**Notes:** The operation failed because the player’s user name or password or both are incorrect.

78.1.97  **GKErrorInvalidParameter = 17**

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the GameKit error constants.  
**Notes:** One or more of the parameters was incorrect.  
For example, this error code may be returned if your application attempts to post a score and provides a category string that does not match a category you configured for your leaderboards on iTunes Connect.

78.1.98  **GKErrorInvalidPlayer = 8**

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the GameKit error constants.  
**Notes:** A player object or identifier is invalid.

78.1.99  **GKErrorMatchRequestInvalid = 13**

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the GameKit error constants.  
**Notes:** The match request’s properties are impossible to fulfill. For example, the minimum number of players cannot be larger than the maximum number of players.
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78.1.100 GKErrorNotAuthenticated = 6

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the GameKit error constants. **Notes:** The local player has not been authenticated.

78.1.101 GKErrorNotSupported = 16

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the GameKit error constants. **Notes:** The device does not support Game Center.

78.1.102 GKErrorOffline = 25

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the GameKit error constants. **Notes:** The user went offline.
In Mac OS X 10.8.2 and newer this constant has value 25. In older versions it has value 19.

78.1.103 GKErrorParentalControlsBlocked = 10

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the GameKit error constants.  **Notes:** The feature has been blocked by the user.

78.1.104 GKErrorScoreNotSet = 9

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the GameKit error constants. **Notes:** A score value was not set before attempting to post the score.
78.1.105  **GKErrorTurnBasedInvalidParticipant = 22**

MBS MacFrameworks Plugin, Plugin Version: 13.0. **Function:** One of the GameKit error constants. **Notes:**

One of the participant objects you provided was invalid.
Available on Mac OS X 10.8.2 and newer.

78.1.106  **GKErrorTurnBasedInvalidState = 24**

MBS MacFrameworks Plugin, Plugin Version: 13.0. **Function:** One of the GameKit error constants. **Notes:**

The requested operation could not be completed because the session is in an invalid state.
Available on Mac OS X 10.8.2 and newer.

78.1.107  **GKErrorTurnBasedInvalidTurn = 23**

MBS MacFrameworks Plugin, Plugin Version: 13.0. **Function:** One of the GameKit error constants. **Notes:**

The requested operation could not be completed because the specified participant does not have the required turn state.
Available on Mac OS X 10.8.2 and newer.

78.1.108  **GKErrorTurnBasedMatchDataTooLarge = 20**

MBS MacFrameworks Plugin, Plugin Version: 13.0. **Function:** One of the GameKit error constants. **Notes:**

Your game submitted data that exceeded the maximum size that Game Center permits for a turn-based game.
Available on Mac OS X 10.8.2 and newer.

78.1.109  **GKErrorTurnBasedTooManySessions = 21**

MBS MacFrameworks Plugin, Plugin Version: 13.0. **Function:** One of the GameKit error constants. **Notes:**

The requested operation could not be completed because it would exceed the maximum number of sessions.
Available on Mac OS X 10.8.2 and newer.
78.1.110  GKErrorUnderage = 14

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the GameKit error constants.  
**Notes:** The feature is disabled because the local player is underage.

78.1.111  GKErrorUnexpectedConnection = 18

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the GameKit error constants.  
**Notes:** An unexpected player has connected to a match.

78.1.112  GKErrorUnknown = 1

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the GameKit error constants.  
**Notes:** An unexpected error occurred.

78.1.113  GKErrorUserDenied = 4

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the GameKit error constants.  
**Notes:** The operation was denied by the user.

78.1.114  GKInviteeResponseAccepted = 0

MBS MacFrameworks Plugin, Plugin Version: 13.0. **Function:** One of the possible responses from an invitation to a remote player. 
**Notes:**

The player accepted the invitation.

Available on Mac OS X 10.8.2 and newer.

78.1.115  GKInviteeResponseDeclined = 1

MBS MacFrameworks Plugin, Plugin Version: 13.0. **Function:** One of the possible responses from an invitation to a remote player. 
**Notes:**

The player rejected the invitation.

Available on Mac OS X 10.8.2 and newer.
78.1.116  GKInviteeResponseFailed = 2

MBS MacFrameworks Plugin, Plugin Version: 13.0. **Function:** One of the possible responses from an invitation to a remote player.
**Notes:**
The invitation was unable to be delivered.
Available on Mac OS X 10.8.2 and newer.

78.1.117  GKInviteeResponseIncompatible = 3

MBS MacFrameworks Plugin, Plugin Version: 13.0. **Function:** One of the possible responses from an invitation to a remote player.
**Notes:**
The invitee is not running a compatible version of your game.
Available on Mac OS X 10.8.2 and newer.

78.1.118  GKInviteeResponseNoAnswer = 5

MBS MacFrameworks Plugin, Plugin Version: 13.0. **Function:** One of the possible responses from an invitation to a remote player.
**Notes:**
The invitation timed out without an answer.
Available on Mac OS X 10.8.2 and newer.

78.1.119  GKInviteeResponseUnableToConnect = 4

MBS MacFrameworks Plugin, Plugin Version: 13.0. **Function:** One of the possible responses from an invitation to a remote player.
**Notes:**
The invitee could not be contacted.
Available on Mac OS X 10.8.2 and newer.

78.1.120  GKInviteRecipientResponseAccepted = 0

MBS MacFrameworks Plugin, Plugin Version: 15.0. **Function:** One of the possible responses from an invitation to a remote player.
**Notes:**
The player accepted the invitation.
Available in OS X v10.10 and later.

78.1.121 GKInviteRecipientResponseDeclined = 1

MBS MacFrameworks Plugin, Plugin Version: 15.0. **Function:** One of the possible responses from an invitation to a remote player.

**Notes:**
The player rejected the invitation.
Available in OS X v10.10 and later.

78.1.122 GKInviteRecipientResponseFailed = 2

MBS MacFrameworks Plugin, Plugin Version: 15.0. **Function:** One of the possible responses from an invitation to a remote player.

**Notes:**
The invitation was unable to be delivered.
Available in OS X v10.10 and later.

78.1.123 GKInviteRecipientResponseIncompatible = 3

MBS MacFrameworks Plugin, Plugin Version: 15.0. **Function:** One of the possible responses from an invitation to a remote player.

**Notes:**
The invitee is not running a compatible version of your game.
Available in OS X v10.10 and later.

78.1.124 GKInviteRecipientResponseNoAnswer = 5

MBS MacFrameworks Plugin, Plugin Version: 15.0. **Function:** One of the possible responses from an invitation to a remote player.

**Notes:**
The invitation timed out without an answer.
Available in OS X v10.10 and later.
78.1.125  GKInviteRecipientResponseUnableToConnect = 4

MBS MacFrameworks Plugin, Plugin Version: 15.0. **Function:** One of the possible responses from an invitation to a remote player.  
**Notes:**

The invitee could not be contacted.  
Available in OS X v10.10 and later.
78.2 class GKAchievementChallengeMBS

78.2.1 class GKAchievementChallengeMBS

Function: A GKAchievementChallenge is a challenge to a player to complete a specific achievement.
Notes:
Subclass of the GKChallengeMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

78.2.2 Methods

78.2.3 achievement as GKAchievementMBS

Function: The achievement the player must complete.
Notes: (read-only)

78.2.4 Constructor

Function: The private constructor.
78.3. class GKAchievementDescriptionMBS

78.3.1 class GKAchievementDescriptionMBS

Function: An GK AchievementDescription object holds text and images used to display an achievement to
the player.
Notes:
During development, you create achievement descriptions by editing them in iTunes Connect. At runtime,
your game retrieve these descriptions from Game Center. Usually, your game only needs to download achieve-
ment descriptions when it wants to present a custom achievement user interface to the player.

see also
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

78.3.2 Methods

78.3.3 achievedDescription as string

Function: A localized description of the completed achievement. (read-only)

78.3.4 Available as boolean

Function: True if the class is available.
Notes: Should always be true on Mac OS X 10.8 and newer.

78.3.5 Constructor

Function: The private constructor.

78.3.6 groupIdentifier as string

Function: The group identifier for the achievement, if one exists.
78.3.7  identifier as string

Function: A unique string used to identify the achievement. (read-only)
Notes: The GKAchievementDescription property holds the identifier string you created for the achievement on iTunes Connect.

78.3.8  image as NSImageMBS

Function: An image to display for the completed achievement. (read-only)
Notes: The value of this property is undefined until after the image is loaded. See loadImage.

78.3.9  incompleteAchievementImage as NSImageMBS

Function: A common image for incomplete achievements.

78.3.10  isHidden as boolean

Function: A Boolean value that states whether this achievement should be visible to players. (read-only)
Notes: If the value of this property is false, this achievement is always visible to the user. If true, the achievement is not displayed in any of the standard achievement user interface screens. It remains hidden until the first time your game reports progress towards completing this achievement.

78.3.11  isReplayable as boolean

Function: Whether or not the achievement will be reported by the game when the user earns it again.
Notes:
This allows the achievement to be used for challenges when the recipient has previously earned it. Available on Mac OS X 10.8.2 and newer.
78.3.12  **loadAchievementDescriptions(tag as Variant = nil)**


**Function:** Downloads the achievement descriptions from Game Center.

**Notes:** When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls GameKitMBS.loadAchievementDescriptionsCompleted event.

---

78.3.13  **loadImage(tag as Variant = nil)**


**Function:** Loads the image property for a completed achievement.

**Notes:**
Your game should call loadImage for each achievement the user has completed. Your game should display the placeholder image until the image is successfully downloaded. After the event is called, the description’s image property holds the same image object that is returned to the event.

When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls GameKitMBS.loadImageCompleted event.

---

78.3.14  **maximumPoints as Integer**


**Function:** The number of points earned by completing this achievement. (read-only)

---

78.3.15  **placeholderCompletedAchievementImage as NSImageMBS**


**Function:** A common image for completed achievements.

**Notes:** When an achievement is completed, your game can display this image until the custom image for an achievement finishes loading.

---

78.3.16  **title as string**


**Function:** A localized title for the achievement. (read-only)
78.3.17  **unachievedDescription as string**

**Function:** A localized description of the achievement, to be used when the achievement has not been completed. (read-only)

78.3.18  **Properties**

78.3.19  **Handle as Integer**

**Function:** The internal object reference.
**Notes:** (Read and Write property)
78.4  class GKAchievementMBS

78.4.1  class GKAchievementMBS

Function: Your game uses a GKAchievement object to communicate with Game Center about a local
player’s progress towards completing an achievement.
Notes:
see also

78.4.2  Methods

78.4.3  Available as boolean

Function: True if the class is available.
Notes: Should always be true on Mac OS X 10.8 and newer.

78.4.4  Constructor(identifier as string)

Function: Initializes a new achievement object.
Notes:
identifier: A string that identifies the achievement you want to update.

Your game initializes a new achievement object only when it has not previously reported progress for that
achievement. If your game has previously reported progress on an achievement, you should retrieve the
achievement object by calling the loadAchievementsWithCompletionHandler class method and update the
progress on that object instead.

78.4.5  isCompleted as boolean

Function: A Boolean value that states whether the player has completed the achievement. (read-only)
Notes: The value of this property is true if the percentComplete property is equal to 100.0; otherwise, it is false.
78.4.6 isHidden as boolean


**Function:** A Boolean value that states whether this achievement is normally kept secret from the player. (read-only)

**Notes:** On a newly initialized achievement object, the property’s value is invalid. If the achievement object was returned to your game by the loadAchievementsWithCompletionHandler class method, the value of this property matches the value you set in iTunes Connect for that achievement. The value in this property is identical to the value found in the hidden property for an GKAchievementDescriptionMBS object that shares the same achievement identifier.

78.4.7 issueChallengeToPlayers(playerIDs() as string, message as string)


**Function:** Use this method to issue GKScoreChallenges and GKAchievementChallenges to an array of playerIDs.

**Notes:**

Players may not issue challenges to themselves nor to non-friends. Please see the GameKit reference documentation for further details on these methods.

Available on Mac OS X 10.8.2 and newer.

78.4.8 lastReportedDate as date


**Function:** The last time that the achievement was successfully reported to Game Center. (read-only)

**Notes:** On a newly initialized achievement object, this property holds the current date.

78.4.9 loadAchievements(tag as Variant = nil)


**Function:** Retrieves previously submitted achievement progress from Game Center.

**Notes:** When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls GameKitMBS.loadAchievementsCompleted event.

78.4.10 reportAchievement(tag as Variant = nil)


**Function:** Reports the player’s progress to Game Center.
When the player makes progress towards completing an achievement, your game should communicate the player’s progress to Game Center by calling this method. An achievement object is implicitly tied to the local player that was authenticated when the object was created; your game should only report progress when the same local player is still authenticated on the device.

Note: To avoid using network bandwidth unnecessarily, only report an achievement when the user has actually advanced the progress they have made towards completing it.

When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls GameKitMBS.reportAchievementCompleted.

When the progress is successfully reported, the achievement is made visible if it was previously hidden. The percent_complete and last_reported_date property values stored on Game Center are updated if the new percent_complete value is greater than the value previously stored on Game Center. If the value of the percent_complete property was equal to 100.0, then the achievement is marked as completed and a banner may be shown to the player.

If the error is a network error and your game is running on iOS 4.3 or earlier, your game should periodically attempt to report the progress until the achievement is successfully reported. On iOS 5.0 and later and on OS X, the background reporting task automatically handles network errors on your game’s behalf.

### 78.4.11 `reportAchievements(achievements() as GKAchievementMBS, tag as Variant = nil)`


**Function:** Report an array of achievements to the server.

**Notes:**

Percent complete is required. Points, completed state are set based on percent_complete. isHidden is set to false anytime this method is invoqued. Date is optional. Error will be nil on success.

Possible reasons for error:
1. Local player not authenticated.
2. Communications failure.
3. Reported Achievement does not exist.

Later calls GameKitMBS.reportAchievementsCompleted event.
Available on Mac OS X 10.8.2 and newer.
### resetAchievements(tag as Variant = nil)

**Function:** Resets all achievement progress for the local player.  
**Notes:**  
Calling this class method deletes all progress towards achievements previously reported for the local player. Hidden achievements that were previously visible are now hidden again.

When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls GameKitMBS.resetAchievementsCompleted event.

### selectChallengeablePlayerIDs(playerIDs() as string, tag as Variant = nil)

**Function:** Given a list of playerIDs, return a subset of that list containing only playerIDs that are eligible to receive a challenge for the achievement.  
**Notes:**  
Available on Mac OS X 10.8.2 and newer.  
Calls later GameKitMBS.selectChallengeablePlayerIDsCompleted event when completed.

### Properties

#### Handle as Integer

**Function:** The internal object reference.  
**Notes:** (Read and Write property)

#### identifier as string

**Function:** A string used to uniquely identify the specific achievement the object refers to.  
**Notes:**  
The identifier property must match the identifier string for an achievement you created for your game on iTunes Connect.  
(Read and Write computed property)
78.4. CLASS GKACHIEVEMENTMBS

78.4.17 percentComplete as Double


Function: A percentage value that states how far the player has progressed on this achievement.

Notes:
The default value for a newly initialized achievement object is 0.0. The range of legal values is between 0.0 and 100.0, inclusive.
(Read and Write computed property)

78.4.18 showsCompletionBanner as boolean


Function: A Boolean value that states whether a banner is displayed when the achievement is completed.

Notes:
When an achievement is completed and the value of this property is true, a notification banner is displayed to the player to inform them of the completed achievement. If the value of this property is false, there is no visual indication that the achievement is completed. Your game should set this property to false only when it wants to provide its own visual indicator that the achievement was earned. The default value is false.
(Read and Write computed property)
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78.5 class GKAchievementViewControllerMBS

78.5.1 class GKAchievementViewControllerMBS

MBS MacFrameworks Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An GKAchievementViewController object provides a standard user interface to display achievement progress for the local player.

**Notes:**

see also


Subclass of the NSViewControllerMBS class.

78.5.2 Methods

78.5.3 Constructor

MBS MacFrameworks Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
78.6. CLASS GKCHALLENGEMBS

78.6 class GKChallengeMBS

78.6.1 class GKChallengeMBS


Function: A GKChallenge object represents a challenge issued by a player to another player.

Notes:

Important: Your game must authenticate a local player before you can use any Game Center classes. If there is no authenticated player, your game receives a GKErrorNotAuthenticated error. For more information on authentication see Game Center Programming Guide.

Players use the Game Center app to issue and view challenges. However, your game can also customize its challenge behaviors in a number of ways:

- You can load the list of challenges issued to the local player by calling the loadReceivedChallenges shared method. For example, you might do this to display the challenges in your game’s user interface.

- Your app can issue challenges using a GKScoreMBS or GKAchievementMBS object. Your game should only issue challenges when the local player initiates the action in your user interface.

- Your game can be notified when new challenge events are received. See GameKitMBS events.

You never subclass the GKChallengeMBS class directly. However, subclasses of GKChallengeMBS represent specific kinds of challenges. Two challenge types exist:

A GKScoreChallengeMBS is a challenge to beat a score the local player earned in a leaderboard.
A GKAchievementChallengeMBS is a challenge to complete an achievement that the local player has already completed.

Available on Mac OS X 10.8.2 and newer.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

78.6.2 Methods

78.6.3 Available as boolean


Function: Whether this class is available.
Notes: Returns true on Mac OS X 10.8.2 and newer.
78.6.4 completionDate as date

Function: The date the challenge was completed. (read-only).
Notes:
If the challenge is not complete, this value is nil.
Available on Mac OS X 10.8.2 and newer.

78.6.5 Constructor

Function: The private constructor.
Notes:
Available on Mac OS X 10.8.2 and newer.
This constructor is private to make sure you don’t create an object from this class by error. Please use
designated functions to create objects.

78.6.6 decline

Function: Declines a challenge.
Notes:
If your game implements a custom user interface to display challenges, it should include controls that allow
a player to decline a challenge. If the player uses your user interface to decline a challenge, call this method.
Available on Mac OS X 10.8.2 and newer.

78.6.7 issueDate as date

Function: The date the challenge was issued. (read-only).
Notes: Available on Mac OS X 10.8.2 and newer.

78.6.8 issuingPlayerID as string

Function: The player identifier for the player who issued the challenge. (read-only).
78.6.9  loadReceivedChallenges(tag as Variant = nil)

Function: Loads the list of outstanding challenges.
Notes:
Available on Mac OS X 10.8.2 and newer.

When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls GameKit.loadReceivedChallengesCompleted event.

78.6.10  message as string

Function: A text message that describes the challenge. (read-only).
Notes: Available on Mac OS X 10.8.2 and newer.

78.6.11  receivingPlayerID as string

Function: The player identifier for the player who received the challenge. (read-only).
Notes: Available on Mac OS X 10.8.2 and newer.

78.6.12  state as Integer

Function: The current state of the challenge. (read-only).
Notes:
See GKChallengeState* constants.
Available on Mac OS X 10.8.2 and newer.
78.6.13 Properties

78.6.14 Handle as Integer

Function: The internal object reference.  
Notes:  
Available on Mac OS X 10.8.2 and newer.  
(Read and Write property)

78.6.15 Constants

78.6.16 GKChallengeStateCompleted = 2

MBS MacFrameworks Plugin, Plugin Version: 13.0.  
Function: Possible states that a challenge can live in.  
Notes:  
The receiving player successfully completed the challenge.  
Available on Mac OS X 10.8.2 and newer.

78.6.17 GKChallengeStateDeclined = 3

MBS MacFrameworks Plugin, Plugin Version: 13.0.  
Function: Possible states that a challenge can live in.  
Notes:  
The receiving player declined the challenge.  
Available on Mac OS X 10.8.2 and newer.

78.6.18 GKChallengeStateInvalid = 0

MBS MacFrameworks Plugin, Plugin Version: 13.0.  
Function: Possible states that a challenge can live in.  
Notes:  
An error occurred. The state of this challenge is not valid.  
Available on Mac OS X 10.8.2 and newer.

78.6.19 GKChallengeStatePending = 1

MBS MacFrameworks Plugin, Plugin Version: 13.0.  
Function: Possible states that a challenge can live in.  
Notes:
The challenge has been issued, but is not yet completed nor declined. Available on Mac OS X 10.8.2 and newer.
78.7 class GKChallengesViewControllerMBS

78.7.1 class GKChallengesViewControllerMBS

**Function:** View controller that provides the standard user interface for challenges.

**Notes:**

Present modally from the top view controller.
Calls GameKit.challengesViewControllerDidFinish if needed.
Available on Mac OS X 10.8.2 and newer.
Subclass of the NSViewControllerMBS class.

78.7.2 Methods

78.7.3 Constructor

**Function:** The constructor.
78.8. class GKDialogControllerMBS

78.8.1 class GKDialogControllerMBS

Function: The GKDialogController class provides the ability to present Game Center view controller classes on OS X.
Notes:
To present a view controller, instantiate a new GKDialogControllerMBS object or use the singleton object provided by the sharedDialogController class method. Set the parentWindow property of the dialog controller to the window that should display the view controller’s contents. Then, call the dialog controller’s presentViewController* methods, passing in the view controller object to be presented. Later, when the view controller’s contents should be hidden, call the dialog controller’s dismiss method.

see also
Subclass of the NSResponderMBS class.

78.8.2 Methods

78.8.3 Constructor

Function: The constructor.

78.8.4 dismiss

Function: Dismisses the currently displayed view controller.

78.8.5 parentWindow as NSWindowMBS

Function: The window that view controllers presented by the dialog controller are displayed in.
Notes: Your app must set this property before presenting a view controller. The window must be at least 800 x 600.
CHAPTER 78. GAMEKIT

78.8.6 presentViewController(GKViewController as NSViewControllerMBS) as boolean

Function: Presents a view controller in the dialog controller’s window.
Notes:
viewController: A Game Center view controller.

Returns true if the view controller was presented, false if an error occurred.
The contents of the window are covered by the view controller’s contents until the view controller is dismissed.

78.8.7 setParentWindow(parentWindow as NSWindowMBS)

Function: Sets the parent window.
See also:
• 78.8.8 setParentWindow(parentWindow as Window)

78.8.8 setParentWindow(parentWindow as Window)

Function: Sets the parent window to the given Real Studio Window.
Notes: Should work fine in Cocoa, but may fail in Carbon.
See also:
• 78.8.7 setParentWindow(parentWindow as NSWindowMBS)

78.8.9 sharedDialogController as GKDialogControllerMBS

Function: Retrieves the shared instance of the dialog controller.
Notes: Game Kit provides the shared dialog controller as a convenience. Your game can either use the
shared dialog controller provided by this method, or it can instantiate its own GKDialogController object
and configure it. You might create multiple GKDialogController objects when each should be presented in
its own window.
78.9. CLASS GKRIENDREQUESTCOMPOSEVIEWCONTROLLERMBS

78.9 class GKFriendRequestComposeViewControllerMBS

78.9.1 class GKFriendRequestComposeViewControllerMBS

**Function:** Your game uses the GKFriendRequestComposeViewController class to present a screen that allows the local player to send friend requests to other players.  
**Notes:**

see also


Subclass of the NSViewControllerMBS class.

78.9.2 Methods

78.9.3 addRecipientsWithEmailAddresses(playerIDs() as string)

**Function:** Add recipients to the request.  
**Notes:**

If you don’t specify at least one recipient before presenting the view, the recipients field will be made firstResponder, to encourage the user to add some.

If you add more than maxNumberOfRecipients recipients, these methods will throw an exception.

78.9.4 addRecipientsWithPlayerIDs(playerIDs() as string)

**Function:** Add recipients to the request.  
**Notes:**

If you don’t specify at least one recipient before presenting the view, the recipients field will be made firstResponder, to encourage the user to add some.

If you add more than maxNumberOfRecipients recipients, these methods will throw an exception.

78.9.5 Constructor

**Function:** The constructor.
78.9.6 maxNumberOfRecipients as UInt64

**Function:** Get the maximum number of recipients permitted.

78.9.7 setMessage(message as string)

**Function:** Specify the message sent to the invitee. A default message will be used if you don’t specify one.
class GKGameCenterViewControllerMBS


**Function:** The GKGameCenterViewControllerMBS class aggregates many common Game Center features into a single user interface.

**Notes:**
It replaces GKAchievementViewControllerMBS and GKLeaderboardViewControllerMBS as the preferred way to show Game Center content in your game.

Important: Your application must authenticate a local player before you can use any Game Center classes. If there is no authenticated player, your application receives a GKErrorNotAuthenticated error. For more information on authentication, see Game Center Programming Guide.

To display the Game Center screen, initialize a new GKGameCenterViewController object and set its delegate. Optionally, you can choose to configure the view controller further to specify which content is initially displayed. Then present the view controller. Your delegate is called when the user dismisses the screen.

Your game should pause other activities before presenting the Game Center user interface.

Available on Mac OS X 10.8.2 and newer.
Subclass of the NSViewControllerMBS class.

### 78.10.2 Methods

#### 78.10.3 Constructor


**Function:** The constructor.

**Notes:** Available on Mac OS X 10.8.2 and newer.

### 78.10.4 Properties

#### 78.10.5 leaderboardCategory as string


**Function:** The named leaderboard that is displayed by the view controller.

**Notes:**

The category property must either be empty or it must match a category identifier you defined when you created your leaderboards on iTunes Connect. If empty, the view displays scores for the aggregate leaderboard. Default is empty.

When the leaderboard is presented, the value of this property determines which leaderboard content is displayed to the player. As the player changes which leaderboard content they view, the leaderboardCategory property is automatically updated. For example, to preserve the player’s selections, you can read the leaderboardCategory property after the screen is dismissed, and set that value the next time you initialize the view controller.

Available on Mac OS X 10.8.2 and newer.
(Read and Write computed property)

78.10.6  leaderboardTimeScope as Integer

Function: A time filter used to restrict which scores are displayed to the player.
Notes:
This property determines which view of the summary screen is displayed to the player. The default value is GKLeaderboardTimeScopeAllTime, which shows the best score each player has earned. For more information on time scopes, see GKLeaderboardMBS Class.

When the leaderboard is presented, the value of this property determines the initial tab that is displayed to the player. As the player changes which tab they view, the leaderboardTimeScope property is automatically updated. For example, to preserve the player’s selections, you can read the leaderboardTimeScope property after the screen is dismissed, and set that value the next time you initialize the view controller.

Available on Mac OS X 10.8.2 and newer.
(Read and Write computed property)

78.10.7  viewState as Integer

Function: The content displayed by the Game Center controller.
Notes:
See State* constants for possible values. When you first present the Game Center view controller, the content displayed by the view controller is determined by this property. If the player navigates to different content, the view state is automatically updated. For example, to preserve the player’s selections, you can read the viewState property after the screen is dismissed, and set that value the next time you initialize the view controller.
Available on Mac OS X 10.8.2 and newer.
(Read and Write computed property)

78.10.8 Constants

78.10.9 StateAchievements = 1

MBS MacFrameworks Plugin, Plugin Version: 13.0. **Function:** Possible values for the viewState property.  
**Notes:**
Indicates that the view controller presents achievements content.
Available on Mac OS X 10.8.2 and newer.

78.10.10 StateChallenges = 2

MBS MacFrameworks Plugin, Plugin Version: 13.0. **Function:** Possible values for the viewState property.  
**Notes:**
Indicates that the view controller presents challenges content.
Available on Mac OS X 10.8.2 and newer.

78.10.11 StateDefault = -1

MBS MacFrameworks Plugin, Plugin Version: 13.0. **Function:** Possible values for the viewState property.  
**Notes:**
Indicates that the view controller should present the default screen.
Available on Mac OS X 10.8.2 and newer.

78.10.12 StateLeaderboards = 0

MBS MacFrameworks Plugin, Plugin Version: 13.0. **Function:** Possible values for the viewState property.  
**Notes:**
Indicates that the view controller presents leaderboard content. The leaderboardCategory and leaderboard- 
TimeScope properties affect the appearance of this view state.
Available on Mac OS X 10.8.2 and newer.
78.11  class GKInviteMBS

78.11.1  class GKInviteMBS

Function: Your game receives invitations from other players through the GKInvite class.
Notes:
Your game never directly creates GKInvite objects. Instead, invitations are created by Game Kit and delivered to your game. To receive invitations from Game Center, your game sets an invitation handler.

The properties of the invitation object describe the match the local player is being invited to join.

78.11.2  Methods

78.11.3  Available as boolean

Function: True if the class is available.
Notes: Should always be true on Mac OS X 10.8 and newer.

78.11.4  Constructor

Function: The constructor.

78.11.5  inviter as string

Function: The identifier for the player who invited the local user to join a match. (read-only)

78.11.6  isHosted as boolean

Function: A Boolean value that states whether the game is hosted. (read-only)
Notes: If the value of the hosted property is true, this is a hosted match. If the value is false, this is a peer-to-peer match. The default is false.
78.11.7 playerAttributes as UInt32

Function: Player attributes from inviter’s match request.
Notes: Available on Mac OS X 10.8.2 and newer.

78.11.8 playerGroup as Integer

Function: Player group from inviter’s match request.
Notes: Available on Mac OS X 10.8.2 and newer.

78.11.9 Properties

78.11.10 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)
78.12 class GKLeaderboardMBS

78.12.1 class GKLeaderboardMBS


Function: A GKLeaderboard object represents a programmatic query to retrieve scores from Game Center.

Notes:
Your game uses GKLeaderboard objects when it wants to analyze scoring information or when it wants to create its own custom leaderboard screens.

see also

78.12.2 Methods

78.12.3 Available as boolean


Function: True if the class is available.

Notes: Should always be true on Mac OS X 10.8 and newer.

78.12.4 Constructor


Function: Initializes a default leaderboard request.

Notes: A leaderboard object initialized with this method uses the playerScope, timeScope, and range properties to search Game Center for scores.

See also:
• 78.12.5 Constructor(playerIDs() as string)

78.12.5 Constructor(playerIDs() as string)


Function: Initializes a leaderboard request to retrieve the scores of a specific group of players.

Notes:
playerIDs: An array of strings that holds the player identifier strings of the players to retrieve.

A leaderboard object initialized with this method ignores the playerScope and range properties. Instead, it
retrieves scores for the specific list of players whose IDs are included in the playerIDs parameter. See also:

- 78.12.4 Constructor

### 78.12.6 `groupIdentifier` as string


**Function:** Set when leaderboards have been designated a game group; set when loadLeaderboards has been called for leaderboards that support game groups.

**Notes:** Available on Mac OS X 10.8.2 and newer.

### 78.12.7 `isLoading` as boolean


**Function:** A Boolean value that indicates whether the leaderboard object is retrieving scores. (read-only)

**Notes:** The value of the loading property is true if the leaderboard object has any pending requests for scores.

### 78.12.8 `loadCategories(tag as Variant = nil)`


**Function:** Loads the list of leaderboard categories along with their corresponding localized titles.

**Notes:**

You use this class method to retrieve the category identifiers and titles you configured for your leaderboards on iTunes Connect. To create a leaderboard query that targets a particular category, set the category property to one of the strings returned by this method.

When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls GameKitMBS.loadCategoriesCompleted event.

### 78.12.9 `loadLeaderboards(tag as Variant = nil)`


**Function:** Loads the leaderboards.

**Notes:**

Calls GameKitMBS.loadLeaderboardsCompleted later when completed.

Available on Mac OS X 10.8.2 and newer.
78.12.10  **loadScores(tag as Variant = nil)**


**Function:** Retrieves a set of scores from Game Center.

**Notes:**

When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls GameKitMBS.loadScoresCompleted event.

You can call this method multiple times; each call represents a different query against the scores stored on Game Center. If you post multiple load operations using the same leaderboard object, any properties that are updated by loading scores reflect the last query that completed. The order that achievement queries are processed is arbitrary.

78.12.11  **localPlayerScore as GKScoreMBS**


**Function:** The score earned by the local player. (read-only)

**Notes:** This property is invalid until a call to loadScores is completed. Afterward, it contains a score object representing the local player’s score on the leaderboard.

78.12.12  **maxRange as Integer**


**Function:** The size of the leaderboard. (read-only)

**Notes:** This property is invalid until a call to loadScores is completed. Afterward, it contains the total number of entries available to return to your game given the filters you applied to the query.

78.12.13  **scores as GKScoreMBS()**


**Function:** The list of scores returned by the search. (read-only)

**Notes:** This property is invalid until a call to loadScores is complete. Afterward, it contains the same score objects that were returned to the completion handler.
setDefaultLeaderboard(categoryID as string, tag as Variant = nil)

Function: Sets the default leaderboard for the local player.
Notes:
categoryID: The named leaderboard that should be the new default leaderboard for the local player.

The default leaderboard is used whenever your game uses a GKScore object to report a score to Game Center without explicitly setting the score object’s category property. The default leaderboard is normally set in iTunes Connect when you configure your game. However, your game can use this class method to override the default leaderboard that appears for the local player.

When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls GameKitMBS.setDefaultLeaderboardCompleted event.

If an error occurs and was a network error, your game should periodically resend the request until it completes.

title as string

Function: The localized title for the leaderboard. (read-only)
Notes: This property is invalid until a call to loadScores is complete. Afterward, it contains the localized title that matches the category property of the leaderboard object.

Properties

Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

category as string

Function: The named leaderboard to retrieve information from.
Notes:
If non-empty, Game Center only returns scores with a matching category value. If empty, this property is ignored. Default is empty.
(Read and Write computed property)

### 78.12.19 playerScope as Integer

*Function:* A filter used to restrict the search to a subset of the players on Game Center.

*Notes:* The playerScope property is ignored if the leaderboard request was initialized using the Constructor method. Otherwise, the playerScope property determines which players are included in the request for high scores. The default is GKLeaderboardPlayerScopeGlobal. See Leaderboard Player Scope constants for more information.
(Read and Write computed property)

### 78.12.20 range as NSRangeMBS

*Function:* The numerical score rankings to return from the search.

*Notes:* The range property is ignored if the leaderboard request was initialized using the Constructor method. Otherwise, the range property is used to filter which scores are returned to your game. For example, if you specified a range of [1,10], after the search is complete, your game receives the top ten scores. The default range is [1,25].

The minimum index is 1. The maximum length is 100.
(Read and Write computed property)

### 78.12.21 timeScope as Integer

*Function:* A filter used to restrict the search to scores that were posted within a specific period of time.

*Notes:* This property determines how far back in time the search looks for scores. The default value is GKLeaderboardTimeScopeAllTime. See Leaderboard Time Scope for more information.
(Read and Write computed property)
78.12.22 Constants

78.12.23 GKLeaderboardPlayerScopeFriendsOnly = 1

MBS MacFrameworks Plugin, Plugin Version: 12.3. Function: One for the constants for the scope of players to be searched for scores. Notes: Only friends of the local player should be considered when generating the list of scores.

78.12.24 GKLeaderboardPlayerScopeGlobal = 0

MBS MacFrameworks Plugin, Plugin Version: 12.3. Function: One for the constants for the scope of players to be searched for scores. Notes: All players on Game Center should be considered when generating the list of scores.

78.12.25 GKLeaderboardTimeScopeAllTime = 2

MBS MacFrameworks Plugin, Plugin Version: 12.3. Function: One of the constants for period of time to which a player’s best score is restricted. Notes: Each player’s best score is returned.

78.12.26 GKLeaderboardTimeScopeToday = 0

MBS MacFrameworks Plugin, Plugin Version: 12.3. Function: One of the constants for period of time to which a player’s best score is restricted. Notes: Each player is restricted to scores recorded in the past 24 hours.

78.12.27 GKLeaderboardTimeScopeWeek = 1

MBS MacFrameworks Plugin, Plugin Version: 12.3. Function: One of the constants for period of time to which a player’s best score is restricted. Notes: Each player is restricted to scores recorded in the past week.
78.13 class GKLeaderboardViewControllerMBS

78.13.1 class GKLeaderboardViewControllerMBS


**Function:** The GKLeaderboardViewController class provides a standard user interface that displays high scores to the player.

**Notes:**

see also


Subclass of the NSViewControllerMBS class.

78.13.2 Methods

78.13.3 Constructor


**Function:** The constructor.

78.13.4 Properties

78.13.5 category as string


**Function:** The category.

**Notes:** (Read and Write computed property)

78.13.6 timeScope as Integer


**Function:** The time scope.

**Notes:** (Read and Write computed property)
78.14. class GKLocalPlayerMBS

78.14.1 class GKLocalPlayerMBS


**Function:** The GKLocalPlayer class is a special subclass of GKPlayer that represents the authenticated player running your game on the local device.

**Notes:**
At any given time, only one player may be authenticated on the device; this player must log out before another player can log in.

Your game must authenticate the local player before using any Game Center features. Authenticating the player ensures that the player has created an account and is connected to Game Center. To authenticate the local player, retrieve the shared instance of the local player by calling the localPlayer class method, and then call the authenticateWithCompletionHandler: method.

You can see whether the local player is authenticated by reading the local player’s authenticated property. If authenticated is true, then the local player’s other properties are valid, and you can call other Game Center methods.

Call the loadFriendsWithCompletionHandler: method to retrieve the player identifiers for the local player’s friends.

Subclass of the GKPlayerMBS class.

78.14.2 Methods

78.14.3 authenticate(tag as Variant = nil)


**Function:** Prompts the player to confirm their identity.

**Deprecated:** This item is deprecated and should no longer be used. You can use SetAuthenticateHandler instead.

**Notes:**
When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls GameKitMBS.authenticate-Completed event.

Your game should authenticate the player as early as possible after launching, ideally as soon as you can present a user interface to the player. For example, your game may be launched because the player accepted an invitation to join a match or to take a turn in a turn-based match, so you want your game to authenticate the player and process the match invitation as quickly as possible.
If there is not an authenticated player on the device when your game calls this method, Game Kit displays a user interface that allows the player to sign in with their credentials (or to create a new account if he or she has never used Game Center). Your game should pause other activities that require user interaction (such as a real time game loop) before attempting to authenticate the local player.

Each time the completion handler is called, the data stored in the the GKLocalPlayer singleton object may have changed. A new player may have logged into the device or the player may have simply logged out from Game Center. Because of both of these possibilities, your completion handler must be prepared update any state of the game that assumes that a particular player is logged in if it discovers that the local player has changed. For more information, see "Authenticating the Local Player in a Multitasking Application" in Game Kit Programming Guide.

Deprecated in Mac OS X 10.9.

### 78.14.4 Constructor

**MBS MacFrameworks Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Creates new object pointing to the shared instance of the local player.

### 78.14.5 friends as string()

**MBS MacFrameworks Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** A list of player identifiers for the local player’s friends. (read-only)

**Notes:** This property is invalid until a call to loadFriends succeeds.

### 78.14.6 GKPlayerAuthenticationDidChangeNotificationName as string

**MBS MacFrameworks Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** The notificartion name fo the notification to inform about an authentication change.

**Notes:** Posted after the authenticated property of the shared local player object changes.

### 78.14.7 loadDefaultLeaderboardCategoryID(tag as Variant = nil)

**MBS MacFrameworks Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Loads the category identifier for the local player’s default leaderboard.

**Notes:**

Calls later GameKitMBS.loadDefaultLeaderboardCategoryIDCompleted event.
When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls GameKitMBS.loadDefaultLeaderboardCategoryIDCompleted event.

Available on Mac OS X 10.8.2 and newer.

### 78.14.8 loadFriendPlayers(tag as Variant = nil)

MBS MacFrameworks Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** Retrieves a list of player identifiers for the local players friends.

**Notes:**

When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls your completion handler. The completion handler is always called on the main thread.

Available in OS X v10.10 and later.
Calls later loadFriendPlayersCompleted event in GameKitMBS class.

### 78.14.9 loadFriends(tag as Variant = nil)


**Function:** Retrieves a list of player identifiers for the local player’s friends.

**Notes:**

When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls GameKitMBS.loadFriendsCompleted.

Once this call is completed, the friends property is set to the same list of players returned in the completion event.

### 78.14.10 localPlayer as GKLocalPlayerMBS


**Function:** Retrieves the shared instance of the local player.

**Notes:** You never directly create a local player object. Instead, you retrieve the singleton object by calling this method.
78.14.11 SetAuthenticateHandler(tag as Variant = nil)

Function: Sets the handler called to process an authentication-related event with GameKitMBS.authenticateHandler.
Notes:
Calls later GameKitMBS.authenticateHandler.
Available on Mac OS X 10.8.2 and newer.

78.14.12 setDefaultLeaderboardCategoryID(categoryID as string, tag as Variant = nil)

Function: Sets the category identifier for the local player's default leaderboard.
Notes:
categoryID: The category ID string for one of your game's leaderboards.

When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls GameKitMBS.setDefaultLeaderboardCategoryIDCompleted event.

The default leaderboard is configured in iTunes Connect as part of configuring your game's leaderboards. All players normally start with this leaderboard as the default leaderboard. Calling this method changes the default leaderboard only for the local player.

Available on Mac OS X 10.8.2 and newer.

78.14.13 Properties

78.14.14 isAuthenticated as boolean

Function: A Boolean value that indicates whether a local player is currently signed in to Game Center.
(read-only)
Notes:
Before using other Game Center features, your game must authenticate the local player. Your game can read this property elsewhere in your game to confirm that the local player is authenticated.

Important Even after the local player has successfully authenticated their credentials, the value of this prop-
erty can change. For example, if your game is switched into the background, the player could launch the Game Center game and sign out of Game Center. To be notified when the value of this property changes, your game should register to receive the GKPlayerAuthenticationDidChangeNotificationName notification (or use GameKitMBS.PlayerAuthenticationDidChange event).
(Read only property)

78.14.15 isUnderage as boolean

Function: A Boolean value that declares whether the local player is underage. (read-only)
Notes: Some Game Center features are disabled if the local player is underage. Your game can test this property if it wants to disable some of its own features based on the player’s age.
(Read only property)
78.15 class GKMatchmakerMBS

78.15.1 class GKMatchmakerMBS

Function: The GKMatchmaker class is used to programmatically create matches to other players and to receive match invitations sent by other players.
Notes:

78.15.2 Methods

78.15.3 addPlayersToMatch(match as GKMatchMBS, matchRequest as GKMatchRequestMBS, tag as Variant = nil)

Function: Adds players to an existing match.
Notes:
mismatch: A previously created match.
mismatchRequest: The parameters for the new match request.
This method updates an existing match object by adding additional players.
When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls GameKitMBS.addPlayersToMatchCompleted event.

78.15.4 Available as boolean

Function: True if the class is available.
Notes: Should always be true on Mac OS X 10.8 and newer.

78.15.5 cancel

Function: Cancels a pending matchmaking request.
78.15. **CLASS GKMATCHMAKERMBS**

Notes: The completion event receives a callback with a GKErrorCancelled error.

### 78.15.6 cancelInviteToPlayer(playerID as string)

**Function:** Cancel a pending invitation to a player.
**Notes:** Available on Mac OS X 10.8.2 and newer.

### 78.15.7 Constructor

**Function:** The constructor.

### 78.15.8 Destructor

**Function:** The destructor.

### 78.15.9 findMatchForRequest(request as GKMatchRequestMBS, tag as Variant = nil)

**Function:** Initiates a request to find players for a peer-to-peer match.
**Notes:**
When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls GameKitMBS.findMatchForRequestCompleted event.

The match request’s playersToInvite property is ignored; to invite a specific set of players to the match, you must display the standard user interface.

### 78.15.10 findPlayersForHostedMatchRequest(request as GKMatchRequestMBS, tag as Variant = nil)

**Function:** Initiates a request to find players for a hosted match.
request: The configuration for the desired match.

When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls GameKitMBS.findPlayersForHostedMatchRequestCompleted event. When the event is called, your game should connect those players to your own server.

The match request’s playersToInvite property is ignored; to invite a specific set of players to the match, you must display the standard user interface.

### 78.15.11 finishMatchmakingForMatch(match as GKMatchMBS)

**Function:** Call this when finished with all programmatic P2P invites/matchmaking, for compatibility with connected players using GKMatchmakerViewController.
**Notes:** Available on Mac OS X 10.8.2 and newer.

### 78.15.12 matchForInvite(invite as GKInviteMBS, tag as Variant = nil)

**Function:** Get a match for an accepted invite.
**Notes:**

Calls later GameKitMBS.matchForInviteCompleted event.

Possible reasons for error:
1. Communications failure.
2. Invite cancelled.

Available on Mac OS X 10.8.2 and newer.

### 78.15.13 maxPlayersAllowedForMatchOfType(type as Integer) as Integer

**Function:** To determine the maximum allowed players for each type of match supported.
**Notes:** Available on Mac OS X 10.8.2 and newer.
78.15. **CLASS GKMATCHMAKER MBS**

78.15.14  `queryActivity(tag as Variant = nil)`


**Function:** Initiates a search for activity in all player groups.

**Notes:**

A query allows your game to see how many players have recently searched for a match, across all player groups.

When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls GameKitMBS.queryActivityCompleted event.

78.15.15  `queryPlayerGroupActivity(playerGroup as Integer, tag as Variant = nil)`


**Function:** Queries Game Center for the activity in a player group.

**Notes:**

playerGroup: A number that uniquely identifies a subset of players of your game.

A query allows your game to see how many players have recently searched for a match. As a result, you can present a user interface that shows the relative activity in each player group. For example, if one group sees less activity than others, you might display a warning so that players are aware that finding a match may take longer.

When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls GameKitMBS.queryPlayerGroupActivityCompleted event.

78.15.16  `sharedMatchmaker as GKMatchmakerMBS`


**Function:** Returns the singleton matchmaker instance.

**Notes:** Games do not create a GKMatchmaker object. Instead, they retrieve the shared singleton by calling this method.
78.15.17  startBrowsingForNearbyPlayers(tag as Variant = nil)

**Function:** Start browsing for nearby players that can be invited to a match.
**Notes:**
The GameKitMBS.startBrowsingForNearbyPlayersCompleted event will be called for each player found with
a compatible game. It may be called more than once for the same player if that player ever becomes un-
reachable (e.g. moves out of range). You should call stopBrowsingForNearbyPlayers when finished browsing.

Available on Mac OS X 10.8.2 and newer.

78.15.18  stopBrowsingForNearbyPlayers

**Function:** Stop browsing for nearby players.
**Notes:** Available on Mac OS X 10.8.2 and newer.

78.15.19  Properties

78.15.20  Handle as Integer

**Function:** The internal object reference.
**Notes:** (Read and Write property)

78.15.21  Constants

78.15.22  GKMatchTypeHosted = 1

MBS MacFrameworks Plugin, Plugin Version: 13.0. **Function:** One of the match types.
**Notes:**
Hosted Match
Available on Mac OS X 10.8.2 and newer.
78.15.23  GKMatchTypePeerToPeer = 0

MBS MacFrameworks Plugin, Plugin Version: 13.0. **Function:** One of the match types. **Notes:**
Peer to Peer Match.
Available on Mac OS X 10.8.2 and newer.

78.15.24  GKMatchTypeTurnBased = 2

MBS MacFrameworks Plugin, Plugin Version: 13.0. **Function:** One of the match types. **Notes:**
Turn based match.
Available on Mac OS X 10.8.2 and newer.
78.16  **class GKMatchmakerViewControllerMBS**

78.16.1  **class GKMatchmakerViewControllerMBS**

**Function:** The GKMatchmakerViewController class is used to present a standard user interface to the player.
**Notes:**
This interface allows them to invite friends to a match or to allow Game Center to fill the remaining players needed for a match.

see also:
Subclass of the NSViewControllerMBS class.

78.16.2  **Methods**

78.16.3  **addPlayersToMatch(match as GKMatchMBS)**

**Function:** Adds a player to the match.
**Notes:**
match: An existing match that you want to add players to.

Your game calls this method prior to presenting the view controller to the player. Calling this method instructs the view controller to add new players to the provided match rather than creating a new match.

When called, this method sets the delegate on the match to nil and updates the view controller’s user interface to display the players already connected to the match.

Important Only one device connected to the match should call this method.

78.16.4  **Constructor**

**Function:** The private constructor.
See also:
78.16. **CLASS GKMATCHMAKERVIEWCONTROLLERMBS**

- 78.16.5 Constructor(invite as GKInviteMBS)
- 78.16.6 Constructor(request as GKMatchRequestMBS)

### 78.16.5 Constructor(invite as GKInviteMBS)

**Function:** Initializes a matchmaker view controller to respond to an invitation received from another player.

**Notes:**
- invite: The invitation received from the other player.

The user is allowed to join the match that the user was invited to, but is not allowed to invite others to the match.

See also:
- 78.16.4 Constructor
- 78.16.6 Constructor(request as GKMatchRequestMBS)

### 78.16.6 Constructor(request as GKMatchRequestMBS)

**Function:** Initializes a matchmaker view controller to create a new match.

**Notes:**
- request: A request containing the characteristics for the desired match.

Your game uses this Constructor when it wants the local user to create a new match.

See also:
- 78.16.4 Constructor
- 78.16.5 Constructor(invite as GKInviteMBS)

### 78.16.7 matchRequest as GKMatchRequestMBS

**Function:** The configuration for the desired match. (read-only)

### 78.16.8 setHostedPlayer(playerID as string, connected as boolean)

**Function:** Updates a player’s status on the view to show that the player has connected or disconnected
CHAPTER 78. GAMEKIT

from your server.

Notes:

playerID: The identifier string for a player that connected to the external server.
connected: Optional, a Boolean value that states whether the player is connected to the hosted match.

When setting up a hosted match, each device should instantiate a matchmaker view controller and display
it to the player. Then, when a new player connects to your server, your server should notify all participating
devices already connected to your server. Each participating device should then call this method to update
that player’s status in the matchmaking interface. Similarly, if a player disconnects from the server, your
server should inform each device so that the devices can update their user interface.

78.16.9 Properties

78.16.10 DefaultInvitationMessage as string

Function: The default invitation message used to initialize an invitation.
Notes:
Your game sets this property to change the default invitation text displayed when the local player creates a
new invitation. The local player may edit the text before sending the invitation.
(Read and Write computed property)

78.16.11 Hosted as boolean

Function: A Boolean value that indicates whether the match is hosted or peer-to-peer.
Notes:
The value of the hosted property determines which events of GameKitMBS are called when the match is
complete. If true, this is a hosted match, and the delegate’s matchmakerViewControllerDidFindPlayers
method is to provide the list of players to your game. If false, this is a peer-to-peer match, and matchmak-
erViewControllerDidCreateMatch is called with a GKMatch object. The default value is false.

Hosted matches require you to provide a server that hosts the participants in the match.
(Read and Write computed property)
78.17. class GKMatchMBS

78.17.1 class GKMatchMBS

MBS MacFrameworks Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A GKMatch object provides a peer-to-peer connection between a group of players that are connected through Game Center.

**Notes:**
Matches provide both data and voice services. Your application never directly allocates GKMatch objects. Instead, your application uses the GKMatchmaker class to programmatically find a match with other interested players or a GKMatchmakerViewController object to display a user interface to the player.

After your application receives a match object, you must set a delegate and then wait until the other participants are connected to the match. You can read the expectedPlayerCount property to determine how many players have not connected to the match.

Your application transmits data to other players by calling either the sendDataToAllPlayers method or the sendDataToPlayer method. To transmit and receive voice data, call voiceChatWithName to create one or more voice channels.

When you are finished with the match, call the match’s disconnect method.

78.17.2 Methods

78.17.3 Available as boolean

MBS MacFrameworks Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** True if the class is available.

**Notes:** Should always be true on Mac OS X 10.8 and newer.

78.17.4 chooseBestHostPlayer(tag as Variant = nil)

MBS MacFrameworks Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Determines the best player in the game to act as the server for a client-server match.

**Notes:**
Calling this method causes Game Kit to attempt to estimate which player has the best overall network connection using a variety of metrics such as bandwidth, latency and network reliability. Typically, you call this method when your game implements a client-server model on top of the match’s peer-to-peer connection. See "Designing Your Network Game" in Game Center Programming Guide.
When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls your GKMatchMBS.chooseBestHostPlayerCompleted event.

### 78.17.5 Constructor

**MBS MacFrameworks Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**  
**Function:** The constructor.

### 78.17.6 disconnect

**MBS MacFrameworks Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**  
**Function:** Disconnects the local player from the match.  
**Notes:** Your application should call disconnect before releasing the match object. Calling disconnect notifies other players that you have left the match.

### 78.17.7 expectedPlayerCount as Integer

**MBS MacFrameworks Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**  
**Function:** The remaining number of players who have not yet connected to the match. (read-only)  
**Notes:** The value of this property is decremented whenever a player connects to the match. When its value reaches zero, all expected players are connected, and your game can begin the match.

### 78.17.8 playerIDs as string()

**MBS MacFrameworks Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**  
**Function:** The player identifiers for the players in the match. (read-only)  
**Notes:** The playerIDs property initially includes the player identifiers for any players already connected to the match; the array may initially be empty. As each player connects to the match, that player’s player identifier is added to the array.

### 78.17.9 rematch(tag as Variant = nil)

**MBS MacFrameworks Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**  
**Function:** Create a new match with the list of players from an existing match.  
**Notes:**
Calling this method uses auto-matching to recreate a previous match. A new match with the same set of players is created and returned. If your game attempts to recreate matches using this method, each instance of your game on each device should call this method.

When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls GKGameKitMBS.rematch-Completed event.

### 78.17.10 sendDataToAllPlayers(data as Dictionary, mode as Integer, byref error as NSErrorMBS) as boolean


**Function:** Transmits data to all players connected to the match.

**Notes:**

- **data:** The game data to send.
- **mode:** The mechanism used to send the data.
- **error:** If the data could not be queued, on return, this parameter holds an NSError object describing the error.

Return true if the data was successfully queued for transmission; false if the match was unable to queue the data.

The match queues the data and transmits it when the network becomes available.

### 78.17.11 sendDataToPlayers(players() as string, data as Dictionary, mode as Integer, byref error as NSErrorMBS) as boolean


**Function:** Transmits data to a list of connected players.

**Notes:**

- **data:** The game data to be sent.
- **players:** An array containing the identifier strings for the list of players who should receive the data.
- **mode:** The mechanism used to send the data.
- **error:** If the data could not be queued, on return, this parameter holds an NSError object describing the error.

Returns true if the data was successfully queued for transmission; false if the match was unable to queue the data.

The match queues the data and transmits it when the network becomes available.
78.17.12 voiceChatWithName(name as string) as GKVoiceChatMBS

Function: Joins a voice channel.
Notes: Returns an voice chat object for the voice channel, or nil if an error occurred.

Calling this method joins a voice channel, creating it if necessary. Your application should retain the voice
chat object returned by this method. All participants who join a channel with the same name are connected
to each other.

A single match can have multiple voice chat channels, and any player in the match can join multiple channels
simultaneously. For example, a team-based game might create a channel for each team, and a single channel
that includes all of the players.

Voice chat objects are dependent on the network connection provided by the match. When the player dis-
connects from the match, all voice channels associated with that match stop working. Typically, you should
release any voice channels you joined before calling calling disconnect on the match.

Parental controls may prevent a player from joining a voice chat. If the player is not permitted to join the
voice channel, a nil object is returned to your application.

78.17.13 Properties

78.17.14 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

78.17.15 Constants

78.17.16 GKMatchSendDataReliable = 0

MBS MacFrameworks Plugin, Plugin Version: 12.3. Function: One of the mechanism constants used to
transmit data to other players.
Notes: The data is sent continuously until it is successfully received by the intended recipients or the connection
times out.
Reliable transmissions are delivered in the order they were sent. Use this when you need to guarantee delivery.

**78.17.17 GKMatchSendDataUnreliable = 1**

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the mechanism constants used to transmit data to other players.

**Notes:**
The data is sent once and is not sent again if a transmission error occurs. Data transmitted unreliably may be received out of order by recipients. Use this for small packets of data that must arrive quickly to be useful to the recipient.

**78.17.18 GKPlayerStateConnected = 1**

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the state constants.

**Notes:** Connected to the match.

**78.17.19 GKPlayerStateDisconnected = 2**

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the state constants.

**Notes:** Disconnected from the match.

**78.17.20 GKPlayerStateUnknown = 0**

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the state constants.

**Notes:** Initial player state.
78.18  class GKMatchRequestMBS

78.18.1  class GKMatchRequestMBS

Function: A GKMatchRequest object is used to specify the parameters for a new match.  
Notes: A GKMatchRequest object is passed to the GKMatchmaker object to programmatically search for 
other players, or to a GKMatchmakerViewController (GKMatchmakerPanel on OS X) object when your 
game wants to present the default user interface to the player.

78.18.2  Methods

78.18.3  Available as boolean

Function: True if the class is available.  
Notes: Should always be true on Mac OS X 10.8 and newer.

78.18.4  Constructor

Function: The constructor.

78.18.5  playersToInvite as string()

Function: A list of players to invite to the match.  
Notes: If empty (the default), no players are invited. If non-empty, Game Kit populates the match with 
the provided list of players.

78.18.6  recipients as GKPlayerMBS()

MBS MacFrameworks Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  
Function: A list of player identifiers for players to invite to the match.  
Notes:  
The property holds an array of GKPlayer objects, each of which contains an identifier for a player on Game 
Center. If the value of the property is non-nil, when you use the request to create a match, Game Center 
invites those players to the match. No automatching is done and the GKMatchRequestmaxPlayers and
minPlayers properties are ignored. If nil (the default), no players are invited. The exact behavior for matchmaking depends on the kind of match being created and the class used to create the match. For more information, see Game Center Programming Guide.

Available in OS X v10.10 and later.

### 78.18.7 SetInviteeResponseHandler(tag as Variant = nil)

**Function:** Sets the invitee response handler for this match request.
**Notes:**

An invitee response handler is called whenever you programmatically invite specific players to join a match. It is called once for each player invited to the match. Typically, your game uses the responses to update the custom user interface. For example, you want the player to be able to perform any of the following tasks:

- Start the match.
- Invite an additional set of specific players.
- Use matchmaking to fill the remaining match slots.

Available on Mac OS X 10.8.2 and newer.

### 78.18.8 setPlayersToInvite(playerIDs() as string)

**Function:** Sets the list of players to invite to the match.
**Notes:** If empty (the default), no players are invited. If non-empty, Game Kit populates the match with the provided list of players.

### 78.18.9 SetRecipientResponseHandler(tag as Variant = nil)

MBS MacFrameworks Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** Sets the event to be called when a response from an invited player is returned to your game.
**Notes:** Once event is installed, the plugin can call GameKitMBS.recipientResponseHandler event for this match request.
78.18.10 setRecipients(players() as GKPlayerMBS)

MBS MacFrameworks Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Sets the list of player identifiers for players to invite to the match.
Notes:
The property holds an array of GKPlayer objects, each of which contains an identifier for a player on Game Center. If the value of the property is non-nil, when you use the request to create a match, Game Center invites those players to the match. No automatching is done and the GKMatchRequestmaxPlayers and minPlayers properties are ignored. If nil (the default), no players are invited. The exact behavior for matchmaking depends on the kind of match being created and the class used to create the match. For more information, see Game Center Programming Guide.

Available in OS X v10.10 and later.

78.18.11 Properties

78.18.12 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

78.18.13 defaultNumberOfPlayers as Integer

Function: The default number of players for the match.
Notes:
If this property is not set, then the default number of players is equal to the value stored in the maxPlayers property. The default number of players determines the number of invitees shown in the standard matchmaking user interface. The player can choose to override this to add or remove slots.

Available on Mac OS X 10.8.2 and newer.
(Read and Write computed property)

78.18.14 inviteMessage as string

Function: Message sent to invited players, may be modified if using Game Center UI.
Notes:
78.18. CLASS GKMATCHREQUESTMBS

Available on Mac OS X 10.8.2 and newer.
(Read and Write computed property)

78.18.15 maxPlayers as Integer

Function: The maximum number of players to join the match.
Notes:
The maximum number of players must be equal or greater than the minimum number of players. The maximum number of players may be no more than 4 for a peer-to-peer match and no more than 16 for a hosted match.
(Read and Write computed property)

78.18.16 minPlayers as Integer

Function: The minimum number of players to join the match.
Notes:
The minimum number of players must be at least 2.
(Read and Write computed property)

78.18.17 playerAttributes as UInt32

Function: A mask that specifies the role that the local player would like to play in the game.
Notes:
If this value is 0 (the default), this property is ignored. If the value is nonzero, then automatching uses the value as a mask that restricts the role the player can play in the group. Automatching with player attributes follows two rules:

A new player can only be added to the match if the bitwise AND of that player’s mask and the mask of any player already in the match equals & h00000000.
Players are added to the match until the bitwise OR of the masks of all the players in the match equals & hFFFFFFFF.
(Read and Write computed property)
78.18.18 playerGroup as Integer


Function: A number identifying a subset of players allowed to join the match.

Notes:

If your game sets the playerGroup property, only players whose requests share the same playerGroup value are automatched by Game Center. You can use any values you want for player groups. For example, you could define different playerGroup values to implement any of the following filters:

- A game could restrict players based on skill level.
- A game that provides multiple games could use it to filter players into the specific game they want to play.
- A game with multiple victory conditions (for example, Capture-The-Flag, Survival) could match players to others interested in the same rules.
- A game that provides bonus content through in-app purchase could match players who own the same content with each other.

(Read and Write computed property)
78.19. **CLASS GKPLAYERMBS**

**78.19 class GKPlayerMBS**

**78.19.1 class GKPlayerMBS**

**Function:** GKPlayer objects provide information about a player connected to Game Center.
**Notes:**
see also
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

**78.19.2 Methods**

**78.19.3 Available as boolean**

**Function:** True if the class is available.
**Notes:** Should always be true on Mac OS X 10.8 and newer.

**78.19.4 Constructor**

**Function:** The private constructor.

**78.19.5 GKPlayerDidChangeNotificationName as string**

**Function:** The name of the notification posted when a player object’s data changes.
**Notes:** Used internally for GameKitMBS.playerChanged event.

**78.19.6 loadPhotoForSize(size as Integer, tag as Variant = nil)**

**Function:** Loads a photo depicting this player from Game Center.
**Notes:**
size: A constant that determines the size of the photo to load.
When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls GameKitMBS.loadPhotoForSizeCompleted.

Important The size of the image returned to your game is dependent on both the constant you provided in the initial request and the user interface idiom of the device your game is running on.

### 78.19.7 loadPlayersForIdentifiers(identifiers() as string, tag as Variant = nil)

**Function:** Loads information from Game Center about a list of players.  
**Notes:**

identifiers: An array of strings, each a unique identifier for a Game Center player.

When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls GameKitMBS.loadPlayersForIdentifiersCompleted event.

### 78.19.8 Properties

#### 78.19.9 alias as string

**Function:** A string chosen by the player to identify themselves to other players. (read-only)  
**Notes:**

Your game uses the alias property when it wants to display a user-visible string for a particular player.  
(Read only property)

#### 78.19.10 displayName as String

MBS MacFrameworks Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  
**Function:** A string to display for the player.  
**Notes:**

The display name for a player depends on whether the player is a friend of the local player authenticated on the device. If the player is a friend of the local player, then the display name is the actual name of the player. If the player is not a friend, then the display name is the players alias.  
Available in Mac OS X 10.8 and newer.  
(Read only property)
78.19.11  Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

78.19.12  isFriend as boolean

Function: A Boolean value that indicates whether the local player has identified this player as a friend.
(Read-only)
Notes:
The Game Center application allows players to declare other players as friends.
(Read only property)

78.19.13  playerID as string

Function: A string assigned by Game Center to uniquely identify a player. (Read-only)
Notes:
The player identifier should not be displayed to the user. Your game should use this string whenever it needs
to persistently store information for a specific player.

Do not make assumptions about the contents of the player identifier string. Its format and length are subject
to change.
(Read only property)

78.19.14  Constants

78.19.15  GKPhotoSizeNormal = 1

MBS MacFrameworks Plugin, Plugin Version: 12.3. Function: One of the size constants of a photo loaded
by Game Center.
Notes: Load a normal sized photo.
78.19.16  GKPhotoSizeSmall = 0

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the size constants of a photo loaded by Game Center.  
**Notes:** Load a small photo.
78.20. **CLASS GKSCORECHALLENGEMBS**

### 78.20 class GKScoreChallengeMBS

**MBS MacFrameworks Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** A GKScoreChallenge object represents a challenge based on a score in a leaderboard.

**Notes:**

To complete the challenge, the player must score an equal or better score than the score used to create the challenge. When a player beats a score challenge, a new score challenge is automatically issued to the player that issued the challenge unless there is already a pending score challenge that requires a better score.

Available on Mac OS X 10.8.2 and newer.

Subclass of the GKChallengeMBS class.

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

### 78.20.2 Methods

#### 78.20.3 Constructor

**MBS MacFrameworks Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** The private constructor.

**Notes:**

Available on Mac OS X 10.8.2 and newer.

This constructor is private to make sure you don’t create an object from this class by error. Please use designated functions to create objects.

#### 78.20.4 score as GKScoreMBS

**MBS MacFrameworks Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** The score to beat. (read-only)

**Notes:** Available on Mac OS X 10.8.2 and newer.
78.21 class GKScoreMBS

78.21.1 class GKScoreMBS

Function: A GKScore class holds information for a score that was earned by the player.
Notes:
Your game creates GKScore objects to post scores to a leaderboard on Game Center. When your game retrieves score information from a leaderboard those scores are returned as GKScore objects.

see also

78.21.2 Methods

78.21.3 Available as boolean

Function: True if the class is available.
Notes: Should always be true on Mac OS X 10.8 and newer.

78.21.4 Constructor(category as string)

Function: Initializes a score object.
Notes:
Category: A category identifier for a specific leaderboard you’ve configured on iTunes Connect. Must not be "".
Your game explicitly allocates and initializes a score object when it needs to report a new score to Game Center.

78.21.5 date as date

Function: The date and time when the score was earned. (read-only)
Notes: When you initialize the new score object, the date property is automatically set to the current date
78.21. **CLASS GKSCOREMBS**

and time.

### 78.21.6 `formattedValue as string`


**Function:** Returns the player’s score as a localized string. (read-only)

**Notes:**

This property is invalid on a newly initialized score object. On a score returned from Game Kit, it contains a formatted string based on the player’s score. You control the formatting of this string by configuring your leaderboards on iTunes Connect.

Never convert the value property into a string; always configure your leaderboard and call this method to receive the formatted string.

### 78.21.7 `issueChallengeToPlayers(playerIDs() as string, message as string)`


**Function:** Use this method to issue GKScoreChallenges and GKAchievementChallenges to an array of playerIDs.

**Notes:**

Players may not issue challenges to themselves nor to non-friends. Please see the GameKit reference documentation for further details on these methods.

Available on Mac OS X 10.8.2 and newer.

### 78.21.8 `playerID as string`


**Function:** The player identifier for the player that earned the score. (read-only)

**Notes:** When you initialize a new score object, the playerID property is set to the identifier for the local player. If you read the property on a score object retrieved from Game Center, playerID identifies the player who recorded that score.

### 78.21.9 `rank as Integer`


**Function:** The position of the score in the results of a leaderboard search. (read-only)

**Notes:** The value of this property is undefined on a newly initialized GKScore object. It is only valid on score objects received from Game Center. The rank property represents the position of the score in the
returned results, with 1 being the best score, 2 being the second best, and so on.

78.21.10  reportScore(tag as Variant = nil)

Function: Reports a score to Game Center.
Notes:
The value property must be set before calling this method.

When this method is called, it creates a new background task to handle the request. The method then returns
control to your game. Later, when the task is complete, Game Kit calls GameKitMBS.reportScoreCompleted.

If the score object successfully reports progress to Game Center, your game may release it. Otherwise, your
game should inspect the error. If the error is a network error and your game is running on iOS 4.3 or earlier,
your game should periodically attempt to report the progress until the score is successfully reported. On
iOS 5.0 and later and on OS X, the background reporting task automatically handles network errors on your
game’s behalf.

78.21.11  reportScores(scores() as GKScoreMBS, tag as Variant = nil)

Function: Reports a list of scores to Game Center.
Notes:
scores: An array of score objects to report to Game Center.

Calls later GameKitMBS.reportScoresCompleted on completion.

Use this class method whenever you need to submit multiple scores at the same time. Calling this method
reports each of the scores, exactly as if you called the reportScore method on each score object in the array.
However, the entire operation can typically be processed more efficiently using this method, and the com-
pletion handler is only called once.
Available on Mac OS X 10.8.2 and newer.
78.21. **CLASS GKSCOREMBS**

### 78.21.12 Properties

#### 78.21.13 Handle as Integer

**Function:** The internal object reference.
**Notes:** (Read and Write property)

#### 78.21.14 category as string

**Function:** The leaderboard that this score belongs to.
**Notes:**
The category string must match an identifier you created when you defined your leaderboards on iTunes Connect.
(Read and Write computed property)

#### 78.21.15 context as UInt64

**Function:** An integer value used by your game.
**Notes:**
The context property allows your game to associate an arbitrary 64-bit unsigned integer value with the score data reported to Game Center. You decide how this integer value is interpreted by your game. For example, your game might use the context property to store flags that provide game-specific details about a player’s score, or it might use the context as a key to some other data stored on the device or on your own server. In either case, your game typically uses this information when it displays a custom leaderboard to the player.
(Read and Write computed property)

#### 78.21.16 shouldSetDefaultLeaderboard as boolean

**Function:** A Boolean value that indicates whether this score should also update the default leaderboard.
**Notes:**
If the value of this property is true, when the score is reported to Game Center, Game Center also updates the default leaderboard to match the value stored in the category property of the score object. This matches the behavior of the GKLeaderboardMBS class’s setDefaultLeaderboard class method. If the value of this property is true, the default leaderboard is not changed by reporting the score. The default value of this property is false.
78.21.17  value as Int64

Function: The score earned by the player.
Notes:
You can use any algorithm you want to to calculate scores in your game. The value provided by a score
object must match the formatting string configured for your leaderboard on iTunes Connect. Your game
must set the value property before reporting a score, otherwise an error is returned.
(Read and Write computed property)
78.22. Class GKTurnBasedMatchmakerViewControllerMBS

78.22.1 Class GKTurnBasedMatchmakerViewControllerMBS

**Function:** The GKTurnBasedMatchmakerViewController class displays a user interface that allows players to manage the turn-based matches that they are participating in.  
**Notes:**  
see also https://developer.apple.com/library/mac/#documentation/GameKit/Reference/GKTurnBasedMatchmakerViewController_Ref/Reference/Reference.html

See also GameKitMBS.turnBasedMatchmakerViewController* events.  
Subclass of the NSViewControllerMBS class.

78.22.2 Methods

78.22.3 Constructor

**Function:** The private constructor.  
See also:

- 78.22.4 Constructor(request as GKMatchRequestMBS)

78.22.4 Constructor(request as GKMatchRequestMBS)

**Function:** Initializes a new matchmaker view controller.  
**Notes:** request: A match request with parameters for the match.  
See also:

- 78.22.3 Constructor

78.22.5 Properties

78.22.6 showExistingMatches as boolean

**Function:** A Boolean value that determines whether the view controller shows existing matches.  
**Notes:**
If the value of this property is true, the view controller shows matches that are already in progress. If the value of this property is false, the view controller only offers the ability to create new matches. The default value is true.
(Read and Write computed property)
78.23. class GKTurnBasedMatchMBS

78.23.1 class GKTurnBasedMatchMBS


**Function:** The GKTurnBasedMatch class allows your game to implement turn-based matches between sets of players on Game Center.

**Notes:**

A turn-based match uses a store-and-forward approach to share data between the participants. When a player participating in the match performs actions to advance the state of the match, your game uploads data to Game Center that defines the new state of the match and tells Game Center which player act next in the match. Later, when the next player launches your game, it downloads the match data from Game Center and continues the match. Players continue to take turns acting (based on whatever internal logic your game implements) until the match ends. A key advantage of turn-based matches is that a player may participate in multiple matches simultaneously.

see also

78.23.2 Methods

78.23.3 acceptInvite(tag as Variant = nil)


**Function:** Programmatically accept an invitation to a turn-based match.

**Notes:**

When this method is called, it creates a background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls your GameKitMBS.acceptInvite-Completed event.

Available on Mac OS X 10.8.2 and newer.

78.23.4 Available as boolean


**Function:** True if the class is available.

**Notes:** Should always be true on Mac OS X 10.8 and newer.
78.23.5 Constructor

Function: The constructor.

78.23.6 creationDate as date

Function: The date that the match was created. (read-only)

78.23.7 currentParticipant as GKTurnBasedParticipantMBS

Function: The participant whose turn it is to act next. (read-only)
Notes: After a match starts and until it ends, the current player is the one who needs to take action to
drive the match to completion. Other players are not allowed to change the state of the match.

78.23.8 declineInvite(tag as Variant = nil)

Function: Programmatically decline an invitation to a turn-based match.
Notes:
When this method is called, it creates a background task to handle the request. The method then returns
control to your game. Later, when the task is complete, Game Kit calls your GameKitMBS.declineInvite-
Completed event.

Available on Mac OS X 10.8.2 and newer.

78.23.9 endMatchInTurnWithMatchData(matchData as Dictionary, tag as Variant = nil)

Function: Ends the match.
Notes:
matchData: The end state for the match.
Calling this method ends the match for all players. This method may only be called by the current participant. Before your game calls this method, the matchOutcome property on each participant object stored in the participants property must have been set to a value other than GKTurnBasedMatchOutcomeNone.

When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls your GameKitMBS.endMatchInTurnWithMatchDataCompleted event.

78.23.10 endTurnWithNextParticipant(nextParticipant as GKTurnBasedParticipantMBS, matchData as Dictionary, tag as Variant = nil)

Function: Updates the data stored on Game Center for the current match.
Notes:
nextParticipant: The next player in the match who needs to take an action. It must be one of the object’s stored in the match’s participants property.
matchData: The game-specific state for the match.
completionHandler

When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls the GameKitMBS.endTurnWithNextParticipant event.

78.23.11 endTurnWithNextParticipants(nextParticipants() as GKTurnBasedParticipantMBS, timeout as Double, matchData as Dictionary, tag as Variant = nil)

Function: Updates the data stored on Game Center for the current match.
Notes:
nextParticipants: An array of participant objects reflecting the order in which the players should act next. Each object in the array must be one of the objects stored in the match’s participants property.
timeout: The length of time the next player has to complete their turn.
matchData: The game-specific state for the match.

If the next player to act does not take their turn in the specified interval, the next player in the array receives a notification to act. This process continues until a player takes a turn or the last player in the list is notified.

When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls your GameKitMBS.end-
TurnWithNextParticipantsCompleted event.

Available on Mac OS X 10.8.2 and newer.

78.23.12 findMatchForRequest(request as GKMatchRequestMBS, tag as Variant = nil)

**Function:** Programmatically searches for a new match to join.  
**Notes:**  
request: A match request that specifies the properties that the new match must fulfill.

When this method is called, it creates a background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls your GameKitMBS.findMatchForRequest2Completed event.

This method may either create a new match or it may place the player into an existing match that does not yet have its full complement of players and needs a new player to advance the match further. Regardless of how the player is placed in the match, the local player is always the current participant in the returned match. Your game should immediately display the match in its user interface and allow the player to take a turn.

78.23.13 loadMatchData(tag as Variant = nil)

**Function:** Loads the game-specific data associated with a match.  
**Notes:** When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls GameKitMBS.loadMatchDataCompleted event.

78.23.14 loadMatches(tag as Variant = nil)

**Function:** Loads the set of turn-based matches involving the local player and creates a match object for each match.  
**Notes:** When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls GameKitMBS.loadMatchesCompleted event.
78.23. **CLASS GKTURNBASEDMATCHMBS**

### 78.23.15 loadMatchWithID(matchID as string, tag as Variant = nil)

**Function:** Loads a specific match.

**Notes:**

matchID: The identifier for the turn-based match.

When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls your GameKitMBS.loadMatchWithIDCompleted event.

Available on Mac OS X 10.8.2 and newer.

### 78.23.16 matchData as Dictionary

**Function:** Game-specific data that reflects the details of the match. (read-only)

**Notes:**

Although Game Center knows who is participating in the match and who is expected to act next, it does not know anything about your game’s internal logic. Your game provides the match data and all the programming logic required to interpret it. This data should include the current state of the game and provide any necessary details about what actions the current player is expected to take. It can also be helpful for your game to record information about recent moves made by other players. The game can then replay those moves visually for the player to show exactly how the match reached the state it is in now.

Your game never directly updates the match state associated with this property. Instead, when the data is updated to reflect the actions of the current player, your game serializes the updated state into dictionary and calls one of the match’s instance methods that transmit the updated state to Game Center.

The value of this property is nil until after your game calls the loadMatchDataWithCompletionHandler: method and the load task is complete. After this task completes, the matchData property holds the data that the last player to act transmitted to Game Center.

### 78.23.17 matchDataMaximumSize as Integer

**Function:** Returns the limit the Game Center servers place on the size of the match data. (read-only)

**Notes:**

Game Kit returns an error if your game sends updated data larger than this value.
78.23.18 matchID as string

Function: A string that uniquely identifies the match. (read-only)
Notes: This string is not intended to be displayed to players. Your game should use this string whenever it needs to refer to a specific match. For example, if you want your game to store additional information on a device, it might store it in a database using the match ID as a key.

78.23.19 message as string

Function: A message displayed to all players in the match.
Notes:
The message property is displayed by the standard user interface; this allows your game to use the message to inform players of the current state of the match.

Important This property can be changed only by an instance of your game associated with the current player. If an instance of your game associated with another player in the match attempts to write to this property, an exception is thrown.

78.23.20 participantQuitInTurnWithOutcome(matchOutcome as Integer, nextParticipant as GKTurnBasedParticipantMBS, matchData as Dictionary, tag as Variant = nil)

Function: Resigns the current player from the match without ending the match.
Notes:
matchOutcome: The end outcome of the current player in the match.
nextParticipant: The next player in the match who needs to take an action. It must be one of the object's stored in the match's participants property.
matchData: A dictionary the game-specific state for the match.

Your game calls this method on an instance of your game that is processing the current player's turn, but that player has left the match. For example, the player may have willingly resigned from the match or that player may have been eliminated by the other players (based on your game's internal logic).
When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls GameKitMBS.participantQuitInTurnWithOutcome event.

See also:

- **78.23.21 participantQuitInTurnWithOutcome(matchOutcome as Integer, nextParticipants() as GKTurnBasedParticipantMBS, timeout as Double, matchData as Dictionary, tag as Variant = nil)**

```
78.23.21 participantQuitInTurnWithOutcome(matchOutcome as Integer, nextParticipants() as GKTurnBasedParticipantMBS, timeout as Double, matchData as Dictionary, tag as Variant = nil)
```


**Function:** Resigns the current player from the match without ending the match.

**Notes:**

- matchOutcome: The end outcome of the current player in the match.
- nextParticipants: An array of participant objects reflecting the order in which the players should act next. Each object in the array must be one of the objects stored in the match's participants property.
- timeout: The length of time the next player has to complete their turn.
- matchData: The game-specific state for the match.

Your game calls this method on an instance of your game that is processing the current player’s turn, but that player has left the match. For example, the player may have willingly resigned from the match or that player may have been eliminated by the other players (based on your game’s internal logic).

If the next player to act does not take their turn in the specified interval, the next player in the array receives a notification to act. This process continues until a player takes a turn or the last player in the list is notified.

When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls your GameKitMBS.participantQuitInTurnWithOutcomeCompleted event.

Available on Mac OS X 10.8.2 and newer.

See also:

- **78.23.20 participantQuitInTurnWithOutcome(matchOutcome as Integer, nextParticipant as GKTurnBasedParticipantMBS, matchData as Dictionary, tag as Variant = nil)**
78.23.22 participantQuitOutOfTurnWithOutcome(matchOutcome as Integer, tag as Variant = nil)

**Function:** Resigns the player from the match when that player is not the current player. This action does not end the match.
**Notes:**
matchOutcome: The end outcome of the current player in the match.
If the local player decided they wanted to resign from the match but is not the current participant in the match, your game calls this method.
When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls GameKitMBS.participantQuitOutOfTurnWithOutcomeCompleted event.

78.23.23 participants as GKTurnBasedParticipantMBS()

**Function:** Information about the players participating in the match. (read-only)
**Notes:**
The elements of this array are GKTurnBasedParticipantMBS objects representing each participant in the match. Your game uses these objects to retrieve more information about the participants in the match. Your game also uses one of the objects in this array as a parameter whenever it calls a method that sets a different participant to act in the match.
The size of the array and the order in which the participants appear in the array are set when the match is first created, and never changes. When a match is first created, some participants may not hold actual players yet. Game Center searches for a player to fill that spot in the match only after your game sets that participant as the current player.

78.23.24 rematch(tag as Variant = nil)

**Function:** Create a new match with the list of players from an existing match.
**Notes:**
Calling this method uses auto-matching to recreate a previous match. A new match with the same set of players is created and returned. If your game attempts to recreate matches using this method, each instance of your game on each device should call this method.
When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls GKGameKitMBS.rematchCompleted event.

### 78.23.25 remove(tag as Variant = nil)

**Function:** Programmatically removes a match from Game Center.  
**Notes:**  
Even after a player’s participation in a match ends, the data associated with the match continues to be stored on Game Center. Storing the data on Game Center allows the player to continue to watch the match’s progress, or even see the final state of the match when it ends. However, players may also want to delete matches that they have finished playing. If you choose not to use the standard matchmaker user interface, your game should offer the ability to delete a finished match from Game Center. When a player chooses to delete a match from Game Center, call this method. It is a programming error to call this method on a match that has the local player as an active participant.  

When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls GameKitMBS.removeCompleted event passing the tag. Keep in mind that the completion handler may be called on a thread other than the one originally used to invoke the method. This means that the code in your block needs to be thread-safe.  

When the task completes, the match is no longer visible to the local player whose device made the call. Other players involved in the match still see the match.

### 78.23.26 saveCurrentTurnWithMatchData(matchData as Dictionary, tag as Variant = nil)

**Function:** Update the match data without advancing the game to another player.  
**Notes:**  
Available on Mac OS X 10.8.2 and newer.  

matchData: The game-specific state for the match.  

This method updates the match data stored on Game Center. Call this method when the current player takes an action that advances the state of the match but does not end the player’s turn. For example, if your game has a fog-of-war mechanic, you might call this method when the player revealed new information on the map.
When this method is called, it creates a new background task to handle the request. The method then returns control to your game. Later, when the task is complete, Game Kit calls your GameKitMBS.saveCurrentTurnWithMatchDataCompleted event.

### 78.23.27 status as Integer

**Function:** The current state of the match. (read-only)

### 78.23.28 TimeoutDefault as Double

**Function:** Indicates that the player has one week to take a turn.  
**Example:**  
MsgBox str(GKTurnBasedMatchMBS.TimeoutDefault)

**Notes:**  
One of the common values for turn timeouts.  
Available on Mac OS X 10.8.2 and newer.  
Currently this function returns 604800 seconds (7 weeks), but this may change in the future.

### 78.23.29 TimeoutNone as Double

**Function:** Indicates that the player’s turn never times out.  
**Example:**  
MsgBox str(GKTurnBasedMatchMBS.TimeoutNone)

**Notes:**  
One of the common values for turn timeouts.  
Available on Mac OS X 10.8.2 and newer.  
Currently this function returns 0 seconds, but this may change in the future.
CLASS GKTURNBASEDMATCHMBS

Properties

Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

Constants

GKTurnBasedMatchStatusEnded = 2

MBS MacFrameworks Plugin, Plugin Version: 12.3. Function: One of the states a match can enter.
Notes: The match has been completed.

GKTurnBasedMatchStatusMatching = 3

MBS MacFrameworks Plugin, Plugin Version: 12.3. Function: One of the states a match can enter.
Notes: The match is currently being played.

GKTurnBasedMatchStatusOpen = 1

MBS MacFrameworks Plugin, Plugin Version: 12.3. Function: One of the states a match can enter.
Notes: Game Center is still searching for other players to join the match.

GKTurnBasedMatchStatusUnknown = 0

MBS MacFrameworks Plugin, Plugin Version: 12.3. Function: One of the states a match can enter.
Notes: The match is in an unexpected state.

GKTurnBasedParticipantStatusActive = 4

MBS MacFrameworks Plugin, Plugin Version: 12.3. Function: One of the states the participant is in during the match.
Notes: The participant has joined the match and is an active player in it.
78.23.38  **GKTurnBasedParticipantStatusDeclined = 2**

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the states the participant is in during the match.  
**Notes:** The participant declined the invitation to join the match. When any participant declines an invitation to join a match, the match is automatically terminated.

78.23.39  **GKTurnBasedParticipantStatusDone = 5**

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the states the participant is in during the match.  
**Notes:** The participant has exited the match. Your game sets the matchOutcome property to state why the participant left the match.

78.23.40  **GKTurnBasedParticipantStatusInvited = 1**

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the states the participant is in during the match.  
**Notes:** The participant was invited to the match, but has not responded to the invitation.

78.23.41  **GKTurnBasedParticipantStatusMatching = 3**

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the states the participant is in during the match.  
**Notes:** The participant is an unfilled position in the match that Game Center promises to fill when needed. When your game sets this participant as the current participant in the match, Game Center fills the position and updates the status and playerID properties.

78.23.42  **GKTurnBasedParticipantStatusUnknown = 0**

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the states the participant is in during the match.  
**Notes:** The participant is in an unexpected state.
78.24. **CLASS GKTURNBASEDPARTICIPANTMBS**

### 78.24 class GKTurnBasedParticipantMBS

**Function:** A GKTurnBasedParticipant object stores information for a participant in a turn-based match.  
**Notes:**
Your game never creates objects of this class directly; instead it retrieves an array of GKTurnBasedParticipant objects from an GKTurnBasedMatch object.

Most information stored by a GKTurnBasedParticipant object is read-only, and is provided by Game Kit to assist you in implementing your game logic. However, the matchOutcome property is quite important; before your game may end a match, it must set the matchOutcome property in every GKTurnBasedParticipant object associated with the match.

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

### 78.24.2 Methods

### 78.24.3 Constructor

**Function:** The private constructor.

### 78.24.4 Properties

#### 78.24.5 Handle as Integer

**Function:** The internal object reference.  
**Notes:** (Read and Write property)

#### 78.24.6 lastTurnDate as date

**Function:** The date and time that this participant last took a turn in the game. (read-only)  
**Notes:**
The value of this property is invalid until the participant first takes a turn in the match.  
(Read only property)
78.24.7 matchOutcome as Integer

Function: The end-state of this participant in the match.
Notes:
Initially, this property holds GKTurnBasedMatchOutcomeNone. Before your game can end a match, it
must set the match outcome to some other value that reflects the outcome of this participant when he or
she left the match. Your game must use any of the values provided in the "GKTurnBasedMatchOutcome"
enumerated type. Optionally, it may also use an OR operation to include a custom match outcome for
your specific game. Game Center does not use the custom value; it exists to allow your game to provide
additional information at the end of the match. The custom value must fit in the range provided by the
GKTurnBasedMatchOutcomeCustomRange constant.
(Read and Write property)

78.24.8 player as GKPlayerMBS

MBS MacFrameworks Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The GKPlayer object that identifies this participant. (read-only)
Notes:
The value of this property may be nil if this slot in the match has not yet been filled by an actual player.
Available in OS X v10.10 and later.
(Read only property)

78.24.9 playerID as string

Function: The player identifier for this participant. (read-only)
Notes:
The value of this property may be nil if this slot in the match has not been filled by an actual player.
(Read only property)

78.24.10 status as Integer

Function: The current status of the participant. (read-only)
Notes:
This property is updated by Game Kit to reflect the status of the participant.
(Read only property)
78.24. CLASS GKTURNBASEDPARTICIPANTMBS

78.24.11 timeoutDate as date

Function: The date and time that the participant’s turn times out. (read-only)
Notes:
If a timeout was set when the turn state was advanced, this property holds when the player’s turn expires. Otherwise, this property is nil.
Available on Mac OS X 10.8.2 and newer.
(Read only property)

78.24.12 Constants

78.24.13 GKTurnBasedMatchOutcomeCustomRange = & h00FF0000

MBS MacFrameworks Plugin, Plugin Version: 12.3. Function: One of the states the participant was in when they left the match.
Notes: A mask used to allow your game to provide its own custom outcome. Any custom value must fit inside the mask.

78.24.14 GKTurnBasedMatchOutcomeFirst = 6

MBS MacFrameworks Plugin, Plugin Version: 12.3. Function: One of the states the participant was in when they left the match.
Notes: The participant finished first.

78.24.15 GKTurnBasedMatchOutcomeFourth = 9

MBS MacFrameworks Plugin, Plugin Version: 12.3. Function: One of the states the participant was in when they left the match.
Notes: The participant finished fourth.

78.24.16 GKTurnBasedMatchOutcomeLost = 3

MBS MacFrameworks Plugin, Plugin Version: 12.3. Function: One of the states the participant was in when they left the match.
Notes: The participant lost the match.
78.24.17  GKTurnBasedMatchOutcomeNone = 0

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the states the participant was in when they left the match.  
**Notes:** The participant’s outcome has not been set yet (typically because the match is still in progress).

78.24.18  GKTurnBasedMatchOutcomeQuit = 1

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the states the participant was in when they left the match.  
**Notes:** The participant forfeited the match.

78.24.19  GKTurnBasedMatchOutcomeSecond = 7

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the states the participant was in when they left the match.  
**Notes:** The participant finished second.

78.24.20  GKTurnBasedMatchOutcomeThird = 8

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the states the participant was in when they left the match.  
**Notes:** The participant finished third.

78.24.21  GKTurnBasedMatchOutcomeTied = 4

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the states the participant was in when they left the match.  
**Notes:** The participant tied the match.

78.24.22  GKTurnBasedMatchOutcomeTimeExpired = 5

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the states the participant was in when they left the match.  
**Notes:** The participant was ejected from the match because he or she did not act in a timely fashion.
78.24.23  GKTurnBasedMatchOutcomeWon = 2

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the states the participant was in when they left the match.
**Notes:** The participant won the match.

78.24.24  GKTurnBasedParticipantStatusActive = 4

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the states the participant is in during the match.
**Notes:** The participant has joined the match and is an active player in it.

78.24.25  GKTurnBasedParticipantStatusDeclined = 2

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the states the participant is in during the match.
**Notes:** The participant declined the invitation to join the match. When any participant declines an invitation to join a match, the match is automatically terminated.

78.24.26  GKTurnBasedParticipantStatusDone = 5

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the states the participant is in during the match.
**Notes:** The participant has exited the match. Your game sets the matchOutcome property to state why the participant left the match.

78.24.27  GKTurnBasedParticipantStatusInvited = 1

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the states the participant is in during the match.
**Notes:** The participant was invited to the match, but has not responded to the invitation.

78.24.28  GKTurnBasedParticipantStatusMatching = 3

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the states the participant is in during the match.
**Notes:** The participant is an unfilled position in the match that Game Center promises to fill when needed.
When your game sets this participant as the current participant in the match, Game Center fills the position and updates the status and playerID properties.

78.24.29  GKTurnBasedParticipantStatusUnknown = 0

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the states the participant is in during the match.

**Notes:** The participant is in an unexpected state.
**78.25. CLASS GKVOICECHATMBS**

**78.25  class GKVoiceChatMBS**

**78.25.1  class GKVoiceChatMBS**


**Function:** A GKVoiceChat object provides a voice channel that allows a set of players in a match to speak with each other.

**Notes:**


Available in OS X v10.8 and later.

**78.25.2  Methods**

**78.25.3  Available as boolean**


**Function:** True if the class is available.

**Notes:** Should always be true on Mac OS X 10.8 and newer.

**78.25.4  Constructor**


**Function:** The constructor for a new voice chat.

**78.25.5  enablePlayerStateUpdate(tag as Variant = nil)**


**Function:** Enables player state update event in GameKitMBS class.

**Notes:**

You enable GameKit.playerStateUpdate event to be called when the state of any participant in the chat changes (including the local player). The event receives the following parameters:

player: The player identifier for the player whose status changed.
state: The new state of the player.
78.25.6 isVoIPAllowed as boolean

**Function:** Returns whether voice chat is allowed to be used on the device.
**Notes:**
True if voice chat is available to the game.

Some countries or phone carriers may restrict the availability of voice over IP services. Before retrieving a GKVoiceChat object, your game should first check to see whether voice over IP is permitted on the device.

78.25.7 name as string

**Function:** The name of the voice chat (read-only).

78.25.8 playerIDs as string()

**Function:** An array of player identifiers for the players connected to the channel. (read-only)

78.25.9 setMute(mute as boolean, playerID as string)

**Function:** Mutes a participant in the chat.
**Notes:**
isMuted: Determines whether the player is to be muted or not.
player: The player identifier string for a player in the match.

While a player is muted, the local player does not hear voice data transmitted by that player.

78.25.10 start

**Function:** Starts communication with other participants in the voice chat.
**Notes:**
When start is called, the voice chat connects to the channel and notifies other connected players that the local player joined the chat. When the voice chat object is connected, it plays voice data from other participants.
in the channel. It sends voice data to other participants when its active property is true.

A device only connects to the channel when the device has a microphone and is connected via wi-fi. However, your game may configure and start a voice chat channel when the device is not currently capable of using voice chat. If conditions change to allow voice chat for example, the device connects to a wi-fi network the GKVoiceChat object automatically connects to the channel.

### 78.25.11 stop


**Function:** Ends communication with other participants in the voice chat.

**Notes:** When stop is called, the voice chat object disconnects from the other players. You should call stop on a channel before releasing it.

### 78.25.12 Properties

#### 78.25.13 Handle as Integer


**Function:** The internal object reference.

**Notes:** (Read and Write property)

#### 78.25.14 active as boolean


**Function:** A Boolean value that states whether the channel is sampling the microphone.

**Notes:**

When active is true, the voice chat samples the microphone and transmits the voice data to other players connected to the channel. Default value is false.

Only one GKVoiceChat object is allowed to sample the microphone at any given time. When your game sets the active property to true on a voice chat object, the previous voice chat object that owned the microphone (if there was one) sets its active property to false.

Available in OS X v10.8 and later.

(Read and Write computed property)
78.25.15 volume as Double

Function: The volume level for the voice channel.
Notes:
All voice data received from other participants is mixed and then scaled by the volume property. The volume property has a range between 0.0 and 1.0, inclusive. A volume level of 0.0 means the entire channel is muted; a value of 1.0 plays voice samples at full volume. The default value is 1.0.
(Read and Write computed property)

78.25.16 Constants

78.25.17 GKVoiceChatPlayerConnected = 0

MBS MacFrameworks Plugin, Plugin Version: 12.3. Function: One of the states returned to your game about other players in a voice chat.
Notes: A new player connected to the chat.

78.25.18 GKVoiceChatPlayerConnecting = 4

MBS MacFrameworks Plugin, Plugin Version: 13.0. Function: One of the states returned to your game about other players in a voice chat.
Notes: A new player is connecting to the chat.

78.25.19 GKVoiceChatPlayerDisconnected = 1

MBS MacFrameworks Plugin, Plugin Version: 12.3. Function: One of the states returned to your game about other players in a voice chat.
Notes: A player left the chat.

78.25.20 GKVoiceChatPlayerSilent = 3

MBS MacFrameworks Plugin, Plugin Version: 12.3. Function: One of the states returned to your game about other players in a voice chat.
Notes: A player stopped speaking.
MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the states returned to your game about other players in a voice chat.
**Notes:** A player began speaking.
Chapter 79

GIF

79.1 Globals

79.1.1 GifStringToGifMBS(data as string) as GIFMBS

MBS Images Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Opens a Gif GIFPictureMBS from memory. **Notes:**

- Returns nil on any error.
- Else it should be identical to the folderitem function.

There is a link bug in RB. So if this function always returns nil, you may need a line like "dim g as new GifMBS" to fix it.

79.1.2 GifStringToPictureMBS(data as string) as Picture

MBS Images Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Opens a Gif picture from memory and returns first picture with mask. **Notes:**

- Returns nil on any error.
- Not always a mask is available.

There is a link bug in RB. So if this function always returns nil, you may need a line like "dim g as new GifMBS" to fix it.

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79.2 class GifBlockMBS

79.2.1 class GifBlockMBS

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class for a gif block. **Notes:** May have a GIFPictureMBS or an extension, but not both.

79.2.2 Methods

79.2.3 Clone as GifBlockMBS

MBS Images Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a clone of the object.

79.2.4 Properties

79.2.5 Extension as GifExtensionMBS

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The extension data of this gif block. **Notes:** (Read and Write property)

79.2.6 Intro as Integer

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The intro value of the gif block. **Notes:** The type of data. (Read and Write property)

79.2.7 Picture as GifPictureMBS

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The GIFPictureMBS data of this gif block. **Notes:**
Not all blocks have a picture, so this property can be nil.
(Read and Write property)
79.3 class GifDataMBS

79.3.1 class GifDataMBS


79.3.2 Methods

79.3.3 Clone as GifDataMBS

MBS Images Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a clone of the object.

79.3.4 Properties

79.3.5 DataMemory as Memoryblock

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The data as a memoryblock. **Notes:** (Read and Write property)

79.3.6 DataString as String

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The data as a string. **Notes:** (Read and Write property)

79.3.7 Length as Integer

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The length in bytes of this data. **Notes:** Returns 0 on any error. (Read only property)
79.4 class GifExtensionMBS

79.4.1 class GifExtensionMBS


79.4.2 Methods

79.4.3 Add(data as GifDataMBS)

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds a data object to this extension.

79.4.4 Clone as GifExtensionMBS

MBS Images Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a clone of the object.

79.4.5 Data(index as Integer) as GifDataMBS

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The data of this extension.
**Notes:** Index is 0 based.

79.4.6 Properties

79.4.7 Count as Integer

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of data objects attached to this extension.
**Notes:**
Returns 0 on any error.
(Read only property)
79.4.8 FirstData as GifDataMBS

MBS Images Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The first data.
**Notes:**
Same as calling Data(0), but this property is visible in the debugger which makes debugging easier.
(Read only property)

79.4.9 Marker as Integer

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The marker field of this extension.
**Notes:** (Read and Write property)
79.5. **CLASS GIFMBS**

### 79.5 class GIFMBS

*Function:* A class for reading or writing gif files.

**Notes:** There are patents on the lzw compression used in this class for writing gif files. This patents may be timeout out for some countries, but please check for your target countries.

#### 79.5.2 Methods

**79.5.3 Add(block as GifBlockMBS)**

*Function:* Adds a block to this gif object.

**79.5.4 Block(index as Integer) as GifBlockMBS**

*Function:* The blocks attached to this gif object.

**Notes:** Index is 0 based.

**79.5.5 Clone as GIFMBS**

*Function:* Creates a clone of the object.

**79.5.6 MakeFirstMask as picture**

*Function:* Searches the first picture in this gif object and returns the matching mask.

**Notes:** Returns nil on any error.

**79.5.7 MakeFirstPicture as picture**

*Function:* Searches the first picture in this gif object and returns this picture.
Notes:
Returns nil on any error.
There is not always a mask available!

79.5.8 MakeFirstPictureWithMask as picture

MBS Images Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Searches the first picture in this gif object and returns this picture with mask (if exists).

Notes:
Returns nil on any error.
There is not always a mask available!

79.5.9 Properties

79.5.10 Count as Integer

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Number of blocks attached to this gif object.

Notes:
Not every block has a picture attached, so this is not the picture count.
(Read only property)

79.5.11 FirstBlock as GifBlockMBS

MBS Images Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The first block.

Notes:
Same as calling Block(0), but this property is visible in the debugger which makes debugging easier.
(Read only property)

79.5.12 Header as String

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The header string for this gif object.

Notes:
e.g. ”GIF89a”
79.5. **CLASS GIFMBS**

(Read and Write property)

### 79.5.13 Screen as GifScreenMBS

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The screen object attached to this gif object.  
**Notes:** (Read and Write property)
79.6 class GifPaletteMBS

79.6.1 class GifPaletteMBS

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class for a color palette.

**Example:**

```vba
dim p as new GifPaletteMBS
p.Count = 256
p.Value(0)=& cFFEECC
MsgBox hex(p.red(0))+" "+hex(p.Green(0))+" "+hex(p.Blue(0))
```

**Notes:** Maximum 256 colors.

79.6.2 Methods

79.6.3 Clone as GifPaletteMBS

MBS Images Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a clone of the object.

79.6.4 Properties

79.6.5 Count as Integer

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of colors in this palette.

**Example:**

```vba
dim p as new GifPaletteMBS
p.Count = 256
```

**Notes:**

Value is 2, 4, 16 or 256.
79.6.6 Blue(index as Integer) as Integer

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The array of the blue color components in this color palette.

**Example:**
```vba
dim p as new GifPaletteMBS
p.Count = 1
p.Value(0)=& cFFEECC
MsgBox str(p.blue(0))
```

**Notes:**
Index from 0 to count-1. (ignores bad indexes)
Value from 0 to 255.
(Read and Write computed property)

79.6.7 Green(index as Integer) as Integer

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The array of the green color components in this color palette.

**Example:**
```vba
dim p as new GifPaletteMBS
p.Count = 1
p.Value(0)=& cFFEECC
MsgBox str(p.green(0))
```

**Notes:**
Index from 0 to count-1. (ignores bad indexes)
Value from 0 to 255.
(Read and Write computed property)
### 79.6.8 Red(index as Integer) as Integer

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The array of the red color components in this color palette.

**Example:**
```vba
Dim p As New GifPaletteMBS
p.Count = 1
p.Value(0) = &HFFEECC
MsgBox Str(p.red(0))
```

**Notes:**
- Index from 0 to count-1. (ignores bad indexes)
- Value from 0 to 255.
- (Read and Write computed property)

### 79.6.9 Value(index as Integer) as color

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The colors in this palette.

**Example:**
```vba
Dim p As New GifPaletteMBS
p.Count = 1
p.Value(0) = &HFFEECC
MsgBox Hex(p.value(0))
```

**Notes:**
- Index from 0 to count-1. (ignores bad indexes)
- (Read and Write computed property)
79.7. CLASS GIFPICTUREMBS

79.7  class GIFPictureMBS

79.7.1  class GIFPictureMBS

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A class for a gif GIFPictureMBS.

79.7.2  Methods

79.7.3  Clone as GifPictureMBS

MBS Images Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a clone of the object.

79.7.4  CopyData as memoryblock

MBS Images Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies the data of this picture object.
**Notes:** Returns a new memoryblock with a copy of the data so you can modify it.

79.7.5  MakeMask as picture

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Searches the matching mask for this picture and returns it as picture.
**Notes:** May return nil.
See also:

* 79.7.6 MakeMask(TransparentColorIndex as Integer) as picture

79.7.6  MakeMask(TransparentColorIndex as Integer) as picture

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a mask for this picture based on the current transparent color index.
**Notes:** Returns nil on low memory.
See also:

* 79.7.5 MakeMask as picture


## 79.7.7 MakePicture as picture

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Reads the picture and returns it.
**Notes:** Returns nil on any error.

## 79.7.8 PixelData(row as Integer) as memoryblock

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The raw Pixel data for a given row.
**Notes:**
Row is 0 based.
Returns nil on any error.

## 79.7.9 Properties

### 79.7.10 Data as Memoryblock

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The data of this GIFPictureMBS as a big memoryblock.
**Notes:** (Read and Write property)

### 79.7.11 HasPalette as Boolean

MBS Images Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether we have a color map (palette).
**Notes:**
This property was named HasCMap in older plugin versions.
(Read and Write property)

### 79.7.12 Height as Integer

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Height in pixels.
**Notes:** (Read and Write property)
79.7.13 Interlace as Boolean

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the GIFPictureMBS is interlaced.  
**Notes:** Interlacing makes GIFPictureMBS loading faster in a browser, but requires the newer GIF format 89a.  
(Read and Write property)

79.7.14 Left as Integer

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The x position of the GIFPictureMBS.  
**Notes:** On an animation gif each GIFPictureMBS may have it’s own position.  
(Read and Write property)

79.7.15 Palette as GifPaletteMBS

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The palette for this GIFPictureMBS.  
**Notes:** (Read and Write property)

79.7.16 PaletteDepth as Integer

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The depth of the palette of this GIFPictureMBS.  
**Notes:** Value should be 2, 4, 16 or 256.  
(Read and Write property)

79.7.17 Sorted as Boolean

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the color palette is sorted.  
**Notes:** (Read and Write property)
79.7.18  Top as Integer

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The y position of this GIFPictureMBS.
**Notes:**
On an animation gif each GIFPictureMBS may have it’s own position.
(Read and Write property)

79.7.19  Width as Integer

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The width of the GIFPictureMBS in pixels.
**Notes:** (Read and Write property)
79.8.  CLASS GIFSCREENMBS

79.8  class GifScreenMBS

79.8.1  class GifScreenMBS

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class for the gif screen information.

79.8.2  Methods

79.8.3  Clone as GifScreenMBS

MBS Images Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a clone of the object.

79.8.4  Properties

79.8.5  Aspect as Integer

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The aspect ration of this GIFPictureMBS.
**Notes:** (Read and Write property)

79.8.6  BackgroundColor as Integer

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Index of the background color for this GIFPictureMBS.
**Notes:** (Read and Write property)

79.8.7  ColorResolution as Integer

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The color resolution of the screen area.
**Notes:** (Read and Write property)
79.8.8 **HasPalette as Boolean**

MBS Images Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this screen defines a palette. **Notes:** (Read and Write property)

79.8.9 **Height as Integer**

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The height of the screen area used. **Notes:** (Read and Write property)

79.8.10 **Palette as GifPaletteMBS**

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The color palette to use for the screen area used. **Notes:** (Read and Write property)

79.8.11 **PaletteDepth as Integer**

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The palette depth of the screen area used. **Notes:** (Read and Write property)

79.8.12 **Sorted as Boolean**

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the color palette is sorted. **Notes:** (Read and Write property)

79.8.13 **Width as Integer**

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The width of the screen area used. **Notes:** (Read and Write property)
Chapter 80

Graphics & Pictures

80.1 class Graphics

80.1.1 class Graphics

Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Extends Xojo’s Graphics Class.

80.1.2 Methods

80.1.3 DrawCGImageMBS(image as CGImageMBS, r as CGRectMBS)

MBS MacCG Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Draws a CGImageMBS in a normal graphics object.

**Example:**

```vbnet
Sub Paint(g As Graphics)
    dim im as CGImageMBS
    dim f as FolderItem
    dim p as CGDataProviderMBS

    f=SpecialFolder.Desktop.Child(“picture017.jpg”)
    p=CGDataProviderMBS.CreateWithFile(f)
    im=CGCreateImageFromJPEGDataProviderMBS(p,nil,true,0)

    g.DrawCGImageMBS im,CGMakeRectMBS(0,0,im.Range,im.Range)
End Sub
```

**Deprecated:** This item is deprecated and should no longer be used. You can use CGContextMBS instead.
Notes: Note that the destination rectangle uses CG coordinates.

80.1.4 DrawCGImageXYMBS(image as CGImageMBS, x as Integer, y as Integer)

MBS MacCG Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Draws a CGImageMBS in a normal graphics object. Deprecated: This item is deprecated and should no longer be used. You can use CGContextMBS instead.
Notes: Note that the destination point uses CG coordinates.
See also:
- 80.1.5 DrawCGImageXYMBS(image as CGImageMBS, x as Integer, y as Integer, w as Integer, h as Integer)

80.1.5 DrawCGImageXYMBS(image as CGImageMBS, x as Integer, y as Integer, w as Integer, h as Integer)

MBS MacCG Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Draws a CGImageMBS in a normal graphics object. Deprecated: This item is deprecated and should no longer be used. You can use CGContextMBS instead.
Notes: Note that the destination point uses CG coordinates.
See also:
- 80.1.4 DrawCGImageXYMBS(image as CGImageMBS, x as Integer, y as Integer)

80.1.6 DrawCGPDFDocumentMBS(pdf as CGPDFDocumentMBS, r as CGRectMBS, page as Integer)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Draws a PDF on the graphics object inside the given rectangle.
Notes: Requires Mac OS X to work.

If destination is scaled page size, you need to also scale the rectangle here.
See also:
- 80.1.7 DrawCGPDFDocumentMBS(pdf as CGPDFDocumentMBS, r as CGRectMBS, page as Integer, InterpolationQuality as Integer, Antialias as boolean, FontSmoothing as Boolean)
80.1.7  **DrawCGPDFDocumentMBS**
(pdf as CGPDFDocumentMBS, r as CGRectMBS, page as Integer, InterpolationQuality as Integer, Antialias as boolean, FontSmoothing as Boolean)

MBS MacCG Plugin, Plugin Version: 12.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Draws a PDF on the graphics object inside the given rectangle. **Notes:** Requires Mac OS X to work.

You can pass for interpolation:

0  Let the context decide.
1  Never interpolate.
2  Low quality, fast interpolation.
4  Medium quality, slower than kCGInterpolationLow.
3  Highest quality, slower than kCGInterpolationMedium.

Set Antialias to true to allow anti aliasing and to false to disallow. Set FontSmoothing to true to allow font smoothing and false to disallow it.

If destination is scaled page size, you need to also scale the rectangle here. See also:

- 80.1.6 DrawCGPDFDocumentMBS(pdf as CGPDFDocumentMBS, r as CGRectMBS, page as Integer)

80.1.8  **DrawRotatedTextMBS**
(Rotation as Double, text as string, x as Integer, y as Integer, Center as Boolean = false, alpha as Double = 1.0, NoSwapY as boolean = false, FontWidth as Integer = 0)

MBS Util Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Draws rotated text. **Example:**

```vba
Sub Paint(g As Graphics)

g.DrawRotatedTextMBS 45, "Hello World", 100, 100

End Sub
```
Notes:

Rotation is the angle in degree.
Currently only supported for Mac OS X and Windows in GUI applications.

The plugin does not see the clipping offset for the graphics object. So for graphics objects from printer or canvas, you need to offset the position. Seems like with a Canvas the coordinates are relative to canvas in Cocoa, but relative to Windows in Carbon.

We have the optional parameter Center which tells the plugin to center the rotated text, so the rotation point is in the middle of the text.
The plugin queries Bold, Italic, Underline, ForeColor, TextUnit, TextSize or TextFont.

Alpha gives the alpha value for Mac OS X. Can be 1.0 (Full color) to 0.0 (no color).

On Mac targets the Y coordinate needs to be swapped internally from top down coordinates to bottom up coordinates. As this does not work 100% correct on printers (the plugin doesn’t know page margins), you can provide correct Y coordinate yourself and pass NoSwapY = true. (added in plugin version 13.1)
On Windows the OS function used (ExtTextOut) does not support multiple lines.

FontWidth is only for Windows to define the width of the font. Default is 0 to use default width.
The average width, in logical units, of characters in the font. If FontWidth is zero, the aspect ratio of the device is matched against the digitization aspect ratio of the available fonts to find the

On Windows for drawing in a picture, make sure the font size and font name are set. Else it may not draw.

80.1.9 DrawWindowsIconMBS(file as folderitem, IconID as Integer, x as Integer, y as Integer, w as Integer, h as Integer) as boolean

MBS Win Plugin, Plugin Version: 10.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function:
Draws a windows icon on the given rectangle.
Notes:
The folderitem should point to a file with icons (exe, dll, ico or something else). If IconID is zero, the first icon is used. Else IconID is the id of the icon.
If w or h is 0, the default size is used.
Returns true on success and false on failure.
80.1.10 MeasureRotatedTextMBS(text as string, byref Width as Double, byref Height as Double, FontWidth as Integer = 0) as Boolean

MBS Util Plugin, Plugin Version: 17.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Measure size of text.  
**Notes:**  
This is compatible to text drawing in DrawRotatedTextMBS, so you can use it to calculate the required space.  
No rotation is used for measurement.  
Returns true on success and false on failure.

80.1.11 PaintdesktopMBS

MBS Picture Plugin, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Draws on Windows the desktop into the current graphics port.  
**Notes:** May not draw a desktop picture.

80.1.12 StretchBltMBS(nXOriginDest as Integer, nYOriginDest as Integer, nWidthDest as Integer, nHeightDest as Integer, source as graphics, nXOriginSrc as Integer, nYOriginSrc as Integer, nWidthSrc as Integer, nHeightSrc as Integer, dwRop as Integer) as boolean

MBS Win Plugin, Plugin Version: 6.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The StretchBlt function copies a bitmap from a source rectangle into a destination rectangle, stretching or compressing the bitmap to fit the dimensions of the destination rectangle, if necessary.  
**Notes:**  
This is just a wrapper to the StretchBlt function from the Windows API.  

The system stretches or compresses the bitmap according to the stretching mode currently set in the destination device context.

**Parameters:**

**Return Values**

If the function succeeds, the return value is true.  
If the function fails, the return value is false.

**Possible operation modes:**
nXOriginDest  Specifies the x-coordinate, in logical units, of the upper-left corner of the destination rectangle.
nYOriginDest  Specifies the y-coordinate, in logical units, of the upper-left corner of the destination rectangle.
nWidthDest    Specifies the width, in logical units, of the destination rectangle.
nHeightDest   Specifies the height, in logical units, of the destination rectangle.
hdcSrc        The source device context.
nXOriginSrc   Specifies the x-coordinate, in logical units, of the upper-left corner of the source rectangle.
nYOriginSrc   Specifies the y-coordinate, in logical units, of the upper-left corner of the source rectangle.
nWidthSrc     Specifies the width, in logical units, of the source rectangle.
nHeightSrc    Specifies the height, in logical units, of the source rectangle.
dwRop         Specifies the raster operation to be performed. Raster operation codes define how the system combines colors in output operations that involve a brush, a source bitmap, and a destination bitmap. See BitBlt for a list of common raster operation codes (ROPs). Note that the CAPTUREBLT ROP generally cannot be used for printing device contexts.

80.1.13  StretchDIBitsMBS(XDest as Integer, YDest as Integer, DestWidth as Integer, DestHeight as Integer, XSource as Integer, YSource as Integer, SourceWidth as Integer, SourceHeight as Integer, Bits as memoryblock, ImageWidth as Integer, ImageHeight as Integer, ImageBitCount as Integer) as boolean

MBS Picture Plugin, Plugin Version: 10.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: The StretchDIBits function copies the color data for a rectangle of pixels in a DIB image to the specified destination rectangle.
Example:

```vbs
dim m as MemoryBlock
dim p,q as Picture

p=NewPicture(100,100,32)
p.Graphics.FillRect 0,0,100,100
// Make a new MemoryBlock
m=NewMemoryBlock(100*100*3) // 3 bytes per Pixel
// Copy RGB without alpha
```
SRCCOPY & h00CC0020 dest = source
SRCOPIA & h00EE0086 dest = source OR dest
SRCAND & h008800C6 dest = source AND dest
SRCINVERT & h00660046 dest = source XOR dest
SRCERASE & h00440328 dest = source AND (NOT dest)
NOTSRCCOPY & h00330008 dest = (NOT source)
NOTSRCERASE & h001100A6 dest = (NOT src) AND (NOT dest)
MERGECOPY & h00C800CA dest = (source AND pattern)
MERGEPAINT & h00B80226 dest = (NOT source) OR dest
PATCOPY & h00F00021 dest = pattern
PATPAINT & h00FBA0A9 dest = DPMono

PATINVERT & h005A0049 dest = pattern XOR dest

DSTINVERT & h00550009 dest = (NOT dest)
BLACKNESS & h00080042 dest = BLACK
WHITENESS & h00FF0062 dest = WHITE
NOMIRRORBITMAP & h80080000 Do not Mirror the bitmap in this call.
CAPTUREBLT & h40000000 Include layered windows.

Copies the source rectangle directly to the destination rectangle.
Combines the colors of the source and destination rectangles by using the Boolean OR operator.
Combines the colors of the source and destination rectangles by using the Boolean AND operator.
Combines the colors of the source and destination rectangles by using the Boolean AND operator.
Combines the colors of the source and destination rectangles by using the Boolean OR operator.
Copies the inverted source rectangle to the destination.
Copies the inverted source rectangle to the destination.
Copies the colors of the source and destination rectangles by using the Boolean OR operator and then inverts the resultant color.
Combines the colors of the source and destination rectangles by using the Boolean AND operator.
Merges the colors of the source rectangle with the brush currently selected in hdcDest, by using the Boolean AND operator.
Merges the colors of the inverted source rectangle with the colors of the destination rectangle by using the Boolean OR operator.
Copies the brush currently selected in hdcDest, into the destination bitmap.
Combines the colors of the brush currently selected in hdcDest, with the colors of the inverted source rectangle by using the Boolean OR operator. The result of this operation is combined with the colors of the destination rectangle by using the Boolean OR operator.
Combines the colors of the brush currently selected in hdcDest, with the colors of the destination rectangle by using the Boolean XOR operator.
Inverts the destination rectangle.
Fills the destination rectangle using the color associated with index 0 in the physical palette. (This color is black for the default physical palette.)
Fills the destination rectangle using the color associated with index 1 in the physical palette. (This color is white for the default physical palette.)
Prevents the bitmap from being mirrored.
Includes any windows that are layered on top of your window in the resulting image. By default, the image only contains your window. Note that this generally cannot be used for printing device contexts.

if p.CopyBGRtoMemoryblockMBS(m,0) then

dim XDest as Integer = 0
dim YDest as Integer = 0
dim DestWidth as Integer = 100
dim DestHeight as Integer = 100
dim XSource as Integer = 0
dim YSource as Integer = 0
dim SourceWidth as Integer = 100
dim SourceHeight as Integer = 100
dim Bits as memoryblock = m
dim ImageWidth as Integer = 100
dim ImageHeight as Integer = 100
dim ImageBitCount as Integer = 24

call g.StretchDIBitsMBS(XDest, YDest, DestWidth, DestHeight, XSource, YSource, SourceWidth, SourceHeight, bits, ImageWidth, ImageHeight, ImageBitCount)
end if

Notes:
If the destination rectangle is larger than the source rectangle, this function stretches the rows and columns
of color data to fit the destination rectangle. If the destination rectangle is smaller than the source rectangle, this function compresses the rows and columns by using the specified raster operation.

You specify the dest rectangle in the graphics object, the source rectangle in the picture, the memoryblock with the bits, the size of the image and the bit count of the image (24 or 32).

The origin of a bottom-up DIB is the bottom-left corner; the origin of a top-down DIB is the upper-left corner.

StretchDIBits creates a mirror image of a bitmap if the signs of the nSrcWidth and nDestWidth parameters, or if the nSrcHeight and nDestHeight parameters differ. If nSrcWidth and nDestWidth have different signs, the function creates a mirror image of the bitmap along the x-axis. If nSrcHeight and nDestHeight have different signs, the function creates a mirror image of the bitmap along the y-axis.

Returns true on success and false on failure.

80.1.14  WinApplyDevModeMBS(devmode as WindowsDeviceModeMBS) as boolean

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Updates the specified printer or plotter device context (graphics) using the specified information.

**Notes:**

Returns true on success.

This function cannot be used to change the driver name, device name, or the output port. When the user changes the port connection or device name, the application must delete the original graphics and create a new graphics object with the new information.

Windows seems not to allow changing graphics object for printer while a page is open, so use WinEndPageMBS to close page before changing settings.

80.1.15  WindowsGraphicsInfoMBS as WindowsGraphicsInfoMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Query information about graphics object on Windows.

**Notes:** Returns nil on any error.
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80.1.16 WinEndPageMBS as boolean

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function:
The EndPage function notifies the device that the application has finished writing to a page.
Notes:
This function is typically used to direct the device driver to advance to a new page.
Returns true on success.

This is a blocking or synchronous function and might not return immediately. How quickly this function
returns depends on run-time factors such as network status, print server configuration, and printer driver
implementation-factors that are difficult to predict when writing an application. Calling this function from a
thread that manages interaction with the user interface could make the application appear to be unresponsive.

Use the WinApplyDevModeMBS function to change the device mode, if necessary, after calling the EndPage
function. Note that a call to WinApplyDevModeMBS resets all device context attributes back to default val-
ues. Neither EndPage nor StartPage resets the device context attributes. Device context attributes remain
constant across subsequent pages. You do not need to re-select objects and set up the mapping mode again
before printing the next page; however, doing so will produce the same results and reduce code differences
between versions of Windows.

When a page in a spooled file exceeds approximately 350 MB, it may fail to print and not send an error
message. For example, this can occur when printing large EMF files. The page size limit depends on many
factors including the amount of virtual memory available, the amount of memory allocated by calling pro-
cesses, and the amount of fragmentation in the process heap.

80.1.17 WinStartPageMBS as boolean

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function:
The StartPage function prepares the printer driver to accept data.
Notes:
Returns true on success.

This is a blocking or synchronous function and might not return immediately. How quickly this function
returns depends on run-time factors such as network status, print server configuration, and printer driver
implementation-factors that are difficult to predict when writing an application. Calling this function from a
thread that manages interaction with the user interface could make the application appear to be unresponsive.

The system disables the WinApplyDevModeMBS function between calls to the StartPage and EndPage
functions. This means that you cannot change the device mode except at page boundaries. After calling
EndPage, you can call WinApplyDevModeMBS to change the device mode, if necessary. Note that a call to
WinApplyDevModeMBS resets all device context attributes back to default values.

Neither EndPage nor StartPage resets the device context attributes. Device context attributes remain constant across subsequent pages. You do not need to re-select objects and set up the mapping mode again before printing the next page; however, doing so will produce the same results and reduce code differences between versions of Windows.
80.2.1 NewPictureReaderMBS(pic as picture) as PictureReaderMBS


**Example:**

```vba
dim pic as Picture = LogoMBS(500)
dim p as PictureReaderMBS
dim m as MemoryBlock
dim r,g,b,rRow,gRow,bRow,h1,w1,x,y,bpp as Integer

// Create a new picture reader
p=NewPictureReaderMBS(pic)

h1=p.Height-1
w1=p.Width-1

bpp=p.BytesPerPixel
rRow=p.RedOffset
gRow=p.GreenOffset
bRow=p.BlueOffset
// in each row the red, blue and green channels have different offsets.
// but offsets are platform dependend

dim sum as Double

for y=0 to h1
    // Get data in memory. This Memoryblock has a size property of 0!
m=p.Data(y)
r=rRow
g=gRow
b=bRow

    for x=0 to w1
        sum = sum + m.UInt8Value(r)
        sum = sum + m.UInt8Value(g)
        sum = sum + m.UInt8Value(b)

        r=r+bpp
g=g+bpp
b=b+bpp
    next
next
```
// show the sum of all pixels:
MsgBox "Sum with plugin is: " + str(sum)

// now try same in RB code:

dim surface as RGBSurface = pic.RGBSurface
dim c as color

sum = 0.0

for y = 0 to h1
    for x = 0 to w1
        c = surface.Pixel(x, y)
        sum = sum + c.red
        sum = sum + c.Green
        sum = sum + c.Blue

    next

next

surface = nil

MsgBox "Sum with RB Code is: " + str(sum)
quit

Notes:
Returns nil on failure.
Please report if nil is returned as it should work always (except for low memory).

80.2.2 NewPictureWriterMBS(width as Integer, height as Integer, AlphaChannel as boolean = false) as PictureWriterMBS

MBS Picture Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Creates a new picture writer.
Example:

dim p as PictureWriterMBS
dim m as MemoryBlock
dim r,g,b,rRow,gRow,bRow,h1,w1,x,y,bpp as Integer

// Create a new picture writer
p=PictureWriterMBS(512,512)

h1=p.Height-1
w1=p.Width-1

bpp=p.BytesPerPixel
rRow=p.RedOffset
gRow=p.GreenOffset
bRow=p.BlueOffset
// in each row the red, blue and green channels have different offsets.
// but offsets are platform dependend

for y=0 to h1
  // Get data in memory. This Memoryblock has a size property of 0!
  m=p.Data(y)
  r=rRow
g=gRow
b=bRow

for x=0 to w1
  m.UInt8Value(r)=x\2
  m.UInt8Value(g)=y\2
  m.UInt8Value(b)=x*y\2

r=r+bpp
g=g+bpp
b=b+bpp
next
next

// Use Render to make a picture object
dim pic as Picture = p.Render
Backdrop = pic

Notes:
Returns nil on failure (low memory).
If alpha is requested, but not possible in the given version of Xojo (or Real Studio), we return a picture without.
CHAPTER 80. GRAPHICS & PICTURES

80.2.3 MemoryblockARGBtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer, LittleEndian as boolean) as picture


Example:

const kAlphaOffset=0 ' (BigEndian) and 3 (LittleEndian)
dim m as MemoryBlock
dim p,q,k as Picture

p=NewPicture(100,100,32)
p.Graphics.FillRect 0,0,100,100
p.mask.Graphics.FillRect 0,0,100,100

// Make a new MemoryBlock
m=NewMemoryBlock(100*100*4) // 4 bytes per Pixel

// copy RGB and leave room for alpha
if p.CopyARGBtoMemoryblockMBS(m,0,false,-1) then
    'MsgBox EncodingToHexMBS(m.StringValue(0,99))
end if

// copy green channel from mask image into Memoryblock
if p.mask.CopyGtoMemoryblockMBS(m,kAlphaOffset,4) then
    'MsgBox EncodingToHexMBS(m.StringValue(0,99))
end if

// make the picture from this Memoryblock
q=MemoryblockARGBtoPictureMBS(m,0,100,100,0)

// make the mask from this Memoryblock
k=MemoryblockGrayToPictureMBS(m,kAlphaOffset,100,100,4)

// combine picture and mask
q.Mask.Graphics.DrawPicture k,0,0
Backdrop=q

Notes:
Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.
The function will crash if the memoryblock is too small. Needs width*height*4 bytes in the memoryblock.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.

LittleEndian specifies whether the image is stored in ARGB (BigEndian) or BGRA (LittleEndian) mode.

80.2.4 MemoryblockRGBtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

Example:

```vbs
dim m as MemoryBlock
dim p,q as Picture

p=NewPicture(100,100,32)
p.Graphics.FillRect 0,0,100,100

// Make a new MemoryBlock
m=NewMemoryBlock(100*100*3) // 3 bytes per Pixel

// Copy RGB without alpha
if p.CopyRGBtoMemoryblockMBS(m,0) then

q=MemoryblockRGBtoPictureMBS(m,0,100,100)
Backdrop=q

end if
```

Notes:
Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs width*height*3 bytes in the memoryblock.
Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.

### 80.2.5 BlendPicturesMBS(source as picture, sourcpercent as Double, dest as picture, destpercent as Double) as picture


**Example:**

```plaintext
dim a,b,c as picture

a=newpicture(100,100,32)
b=newpicture(100,100,32)
' ... draw something in a and b
c=newpicture(100,100,32)
c=BlendPicturesMBS(a,0.5,b,0.5)
```

**Notes:**
Percent is in range from 0 to 1. Values out of this range may work, but you get strange results.

Reason for returning nil:
- One of the two pictures used is nil.
- One of the pictures is not a 32bit bitmap picture.
- The two parameter pictures have not the same size as the others.

### 80.2.6 BlendPicturesWithMaskMBS(source as picture, dest as picture, mask as picture) as picture


**Example:**

```plaintext
dim a,b,c,m as picture

a=newpicture(100,100,32)
b=newpicture(100,100,32)
m=newpicture(100,100,32)
' ... draw something in a and b
c=BlendPicturesWithMaskMBS(a,b,m)
```
Notes:
The mask defines how much from one picture is used.

Reason for returning false:
- One of the three pictures used is nil.
- One of the pictures is not a 32bit bitmap picture.
- The three parameter pictures have not the same size as the others.

80.2.7 CombinePicturesMBS(red as picture, blue as picture, green as picture) as picture

MBS Picture Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Combines the red, green and blue channels of three images into the a new one. **Notes:** Returns nil on any error.

80.2.8 MergePictureMBS(source1 as picture, source2 as picture) as picture

MBS Picture Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Merges the two pictures into one. **Example:**

```rb
// in RB this method would work like this:

dim i,j as Integer
dim col2 as color
dim r1,r2,g1,g2,b1,b2 as Integer
dim dest as Picture // destination
dim source1, source2 as Picture // source pictures

col2 = source1.graphics.pixel(i,j)
r1 = col2.red
g1 = col2.green
b1 = col2.blue

col2 = source2.graphics.pixel(i,j)
r2 = col2.red
g2 = col2.green
b2 = col2.blue

dest.graphics.pixel(i,j) = RGB(max(r1,r2), max(g1,g2), max(b1,b2))
```
Notes:
Masks are ignored.
Returns nil on low memory.
Both pictures must have the same size and not be nil.

80.2.9 NewPictureWithColorMBS(width as Integer, height as Integer, c as color) as picture

MBS Picture Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new picture and fills it with the given color.
**Example:**

```plaintext
window1.backdrop = NewPictureWithColorMBS(200, 200, & c3366CC)
```

Notes: This function is mostly to check if the picture writer code in our plugins work.

80.2.10 RenderSamplesMBS(Samples as memoryblock, SampleCount as Integer, Smooth as Integer, Width as Integer, Height as Integer, outlinewidth as Integer, BackColor as color=& c88B5C4, ForeColor as color=& c274C5A, OutLineColor as color=& c203F4E, Bits as Integer = 8, AutoScale as boolean = false) as Picture

MBS Picture Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Renders audio samples into a picture.
**Notes:**
Samples has one byte for each audio value and 2 bytes for each stereo sample.
SampleCount: Number of Samples. = Samples.size/2
Smooth: How smooth the samples should be made.
Width: Width of picture
Height: Height of picture
outlinewidth: The width of the outline (0=no outline)
BackColor: The back color.
ForeColor: the fore color.
OutLineColor: The color for the outline.
Bits: Pass 7 for signed bytes, 8 for unsigned bytes, 15 for signed shorts and 16 for unsigned short values. Pass -32 for Float32 and -64 for Float64.
AutoScale: Whether to scale automatically depending on highest values.
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80.2.11 TintPictureMBS(source as picture, GreyBase as color, SepiaBase as color) as picture

MBS Picture Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Tints the image.

**Example:**

// The code does the same thing as this Realbasic code:

```vbnet
Sub TintPicture(theImg as Picture, pGreyBase as Color, pSepiaBase as Color)
    Dim theRGBSurface as RGBSurface
    Dim theWidth, theHeight as Integer
    Dim pColor as Color
    Dim x, y as Integer
    Dim theGrey as Integer

    Dim SepiaBaseR as Double
    Dim SepiaBaseG as Double
    Dim SepiaBaseB as Double

    Dim GreyBaseR as Double
    Dim GreyBaseG as Double
    Dim GreyBaseB as Double

    SepiaBaseR = pSepiaBase.Red / 255.0
    SepiaBaseG = pSepiaBase.Green / 255.0
    SepiaBaseB = pSepiaBase.Blue / 255.0

    GreyBaseR = pGreyBase.Red / 255.0
    GreyBaseG = pGreyBase.Green / 255.0
    GreyBaseB = pGreyBase.Blue / 255.0

    theRGBSurface = theImg.RGBSurface

    theWidth = theImg.Width - 1
    theHeight = theImg.Height - 1

    For x = 0 to theWidth
        For y = 0 to theHeight
            pColor = theImg.RGBSurface.Pixel(x, y)
            theGrey = (GreyBaseR * pColor.Red) + (GreyBaseG * pColor.Green) + (GreyBaseB * pColor.Blue)
            theImg.RGBSurface.Pixel(x, y) = RGB(theGrey * SepiaBaseR, theGrey * SepiaBaseG, theGrey * SepiaBaseB)
        Next
    Next
End Sub
```
Notes:
You can use the code to do something like a Sepia effect.
Returns a new picture on success.

80.2.12 BlendPicturesMBS(result as picture, source as picture, sourcepercent as Double, dest as picture, destpercent as Double, x as Integer, y as Integer, width as Integer, height as Integer) as boolean


**Example:**
```plaintext
dim a,b,c as picture

a=newpicture(100,100,32)
b=newpicture(100,100,32)
' ... draw something in a and b
c=newpicture(100,100,32)
call BlendPicturesMBS(c, a,0.5,b,0.5, 0, 0, 100, 100)
```

Notes:
Percent is in range from 0 to 1. Values out of this range may work, but you get strange results.

Reason for returning false:
- One of the pictures used is nil.
- The result picture must be a 24 bit or a 32 bit picture.
- The two parameter pictures have not the same size as the others.

80.2.13 BlendPicturesWithMaskMBS(result as picture, source as picture, dest as picture, mask as picture, x as Integer, y as Integer, width as Integer, height as Integer) as boolean


**Example:**
```plaintext
dim a,b,c,m as picture
```
a=newpicture(100,100,32)
b=newpicture(100,100,32)
m=newpicture(100,100,32)
' ... draw something in a and b
call BlendPicturesWithMaskMBS(c,a,b,m,0,0,a.width,a.height)

Notes:
The mask defines how much from one picture is used.

Reason for returning false:
- One of the pictures used is nil.
- The result picture must be a 24 bit or a 32 bit picture.
- The three parameter pictures have not the same size as the others.

80.2.14 BlendPicturesWithMaskWithBackgroundMBS(SourceImage As Picture, DestImage As Picture, Mask As Picture, Result As Picture, X as Integer, Y as Integer, Width as Integer, Height as Integer) as boolean

Notes:
If DestImage is nil, white is used for the background.
If no mask is specified, a full black mask is used.
Result must be valid picture of right size.

Result must be a 24bit or 32bit picture.
See also:
- 80.2.15 BlendPicturesWithMaskWithBackgroundMBS(SourceImage As Picture, DestImage As Picture, Mask As Picture, Result As Picture, X as Integer, Y as Integer, Width as Integer, Height as Integer, BackgroundColour As Color) as boolean

80.2.15 BlendPicturesWithMaskWithBackgroundMBS(SourceImage As Picture, DestImage As Picture, Mask As Picture, Result As Picture, X as Integer, Y as Integer, Width as Integer, Height as Integer, BackgroundColour As Color) as boolean

Notes:
If DestImage is nil, BackgroundColour is used for the background.
If no mask is specified, a full black mask is used.
Result must be a valid picture of right size.

Result must be a 24bit or 32bit picture.
See also:

- 80.2.14 BlendPicturesWithMaskWithBackgroundMBS(SourceImage As Picture, DestImage As Picture, Mask As Picture, Result As Picture, X as Integer, Y as Integer, Width as Integer, Height as Integer) as boolean

80.2.16 DiffPicturesMBS(source as picture, dest as picture, square as boolean)
               as picture

Example:

    // our test Picture
    dim p as Picture = LogoMBS(500)

    // compress with JPEG and 10%
    dim d as string = PictureToJPEGStringMBS(p, 10)

    // decompress
    dim q as Picture = JPEGStringToPictureMBS(d, true)

    // compare them
    window1.Backdrop = DiffPicturesMBS(p, q, true)

Notes:
Source and dest pictures must have same size. If square, the error is squared, so you see it much better.

Returns nil in case not enough memory is available or pictures do not have same size or are nil.

If both pictures are equal, all pixels in the returned picture are black.
See also Picture.isBlackMBS, and Picture.CompareMBS.
80.2.17  ColorizePictureMBS(Pict As Picture, Mask As Picture, foreR as Double, foreG as Double, foreB as Double, foreA as Double, backR as Double, backG as Double, backB as Double, backA as Double) as boolean

MBS Picture Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:**
Colorizes a picture.

**Example:**

```vbs
Dim p As Picture = SpecialFolder.Pictures.Child("test2.tif").OpenAsPicture

If ColorizePictureMBS(p, p.mask, 1.0, 0.0, 0.0, 1.0, 0.0, 0.0, 1.0, 0.1) Then
  Backdrop = p
End If
```

**Notes:**
The given pictures are edited. As editing pictures works only on Mac and Windows if the pictures are 24 or 32 bit, this does not work on Linux. Returns true on success and false on failure.

80.2.18  PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean

MBS Picture Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Copies pixels from one picture into another picture with some options.

**Notes:**
Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the
image as the mask. If UseColours parameter is false black is used for this.

Parameters:
Image: the source picture, must not be nil.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.

See also:
• 80.2.19 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean
• 80.2.20 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean
• 80.2.21 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean
• 80.2.22 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean
• 80.2.23 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean
• 80.2.24 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean
• 80.2.25 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean
80.2.26 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean

80.2.27 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

**80.2.19 PictureCombineMBS**

MBS Picture Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Copies pixels from one picture into another picture with some options.

**Example:**

```vbnet
dim DestImage As Picture
dim Image As Picture
dim Mask As Picture
dim DestX as Integer=100
dim DestY as Integer=100
dim SourceX as Integer=0
dim SourceY as Integer=0
dim Width as Integer=500
dim Height as Integer=500

image=LogoMBS(500)
Mask=nil
DestImage=NewPicture(700,700,32)

if PictureCombineMBS(DestImage, image, Mask, DestX, DestY, SourceX, SourceY, Width, Height, true,&
    c777777, & c777777) then
    window1.Backdrop=DestImage
end if
```

**Notes:**

Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels are copied to the destination picture.
2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
Image: the source picture, must not be nil.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.

See also:
- 80.2.18 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean
- 80.2.20 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean
- 80.2.21 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean
- 80.2.22 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean
- 80.2.23 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean
80.2.24 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 13136

80.2.25 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 13138

80.2.26 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 13140

80.2.27 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 13142

80.2.20 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean

MBS Picture Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies pixels from one picture into another picture with some options.

**Notes:**

Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

**Parameters:**

- Image: the source picture, must not be nil.
- PreMultipliedSource: Optional parameter. If true the image must be premultiplied. Default is false.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.
See also:

- 80.2.18 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean
- 80.2.19 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean
- 80.2.21 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean
- 80.2.22 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean
- 80.2.23 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as color) as boolean
- 80.2.24 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as color) as boolean
- 80.2.25 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean
- 80.2.26 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean
80.2.27 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

80.2.21 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

MBS Picture Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Copies pixels from one picture into another picture with some options.

**Notes:**
Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels are copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

**Parameters:**
Image: the source picture, must not be nil.
PreMultipliedSource: Optional parameter. If true the image must be premultiplied. Default is false.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either
integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.

See also:

- 80.2.18 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean

- 80.2.19 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean

- 80.2.20 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean

- 80.2.22 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

- 80.2.23 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean

- 80.2.24 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean

- 80.2.25 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean

- 80.2.26 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean

- 80.2.27 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

80.2.22  PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

80.2.  GLOBALS

Example:

dim DestImage As Picture
dim Image As Picture
dim Mask As Picture
dim DestX as Integer=100
dim DestY as Integer=100
dim SourceX as Integer=0
dim SourceY as Integer=0
dim Width as Integer=500
dim Height as Integer=500

image=LogoMBS(500)
Mask=nil
DestImage=NewPicture(700,700,32)

if PictureCombineMBS(DestImage,image,Mask,DestX,DestY,SourceX,SourceY,Width,Height,true, & & h777777, & h777777) then
  window1Backdrop=DestImage
end if

Notes:

Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
Image: the source picture, must not be nil.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
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SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.

See also:

- 80.2.18 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean
- 80.2.19 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean
- 80.2.20 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean
- 80.2.21 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean
- 80.2.22 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean
- 80.2.23 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean
- 80.2.24 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean
- 80.2.25 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean
- 80.2.26 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean
- 80.2.27 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean
80.2.23 PictureCombineMBS(DestImage As Picture, Image As Picture, Pre-MultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean

MBS Picture Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies pixels from one picture into another picture with some options.

**Notes:**
Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

**Parameters:**
- **Image:** the source picture, must not be nil.
- **PreMultipliedSource:** Optional parameter. If true the image must be premultiplied. Default is false.
- **Mask:** the mask picture, can be nil.
- **DestX:** destination position
- **DestY:** destination position
- **SourceX:** source position
- **SourceY:** source position
- **Width:** width of the area to copy
- **Height:** height of the area to copy
- **UseColours:** whether to use the mask colour.
- **ForeColour:** the fore colour, optional, can be integer or color
- **MaskColour:** the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.

See also:
80.2.18 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean

80.2.19 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean

80.2.20 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean

80.2.21 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean

80.2.22 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean

80.2.24 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean

80.2.25 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean

80.2.26 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean

80.2.27 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean

80.2.24 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean

MBS Picture Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies pixels from one picture into another picture with some options. **Notes:** Returns true on success and false on failure.
This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels are copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the pixels are filled with the foreground color applying the mask.

4. As the last variation the pixels are copied and the foreground color, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
- Image: the source picture, must not be nil.
- PreMultipliedSource: Optional parameter. If true the image must be premultiplied. Default is false.
- Mask: the mask picture, can be nil.
- DestX: destination position
- DestY: destination position
- SourceX: source position
- SourceY: source position
- Width: width of the area to copy
- Height: height of the area to copy
- UseColours: whether to use the mask color.
- ForeColour: the foreground color, optional, can be integer or color
- MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.

See also:
- 80.2.18 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean
- 80.2.19 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean
- 80.2.20 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean
- 80.2.21 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as
Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean

- 80.2.22 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

- 80.2.23 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean

- 80.2.25 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as color, MaskColour as color) as boolean

- 80.2.26 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean

- 80.2.27 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

80.2.25 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as color, MaskColour as color) as boolean

MBS Picture Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies pixels from one picture into another picture with some options.

**Notes:**

Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.
4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
Image: the source picture, must not be nil.
PreMultipliedSource: Optional parameter. If true the image must be premultiplied. Default is false.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.

See also:

- 80.2.18 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean
- 80.2.19 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean
- 80.2.20 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean
- 80.2.21 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean
- 80.2.22 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean
- 80.2.23 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean
CHAPTER 80. GRAPHICS & PICTURES

- 80.2.24 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 13136

- 80.2.26 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 13140

- 80.2.27 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 13142

**80.2.26 PictureCombineMBS**

DestsImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

MBS Picture Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies pixels from one picture into another picture with some options.

**Notes:**

Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

**Parameters:**

Image: the source picture, must not be nil.
PreMultipliedSource: Optional parameter. If true the image must be premultiplied. Default is false.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
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SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.

See also:

• 80.2.18 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 13125

• 80.2.19 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 13127

• 80.2.20 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 13129

• 80.2.21 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 13131

• 80.2.22 PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 13132

• 80.2.23 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 13135

• 80.2.24 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 13136

• 80.2.25 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as color, MaskColour as color) as boolean 13138

• 80.2.27 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 13142
80.2.27 PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

MBS Picture Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies pixels from one picture into another picture with some options.

**Notes:**
Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

**Parameters:**
- **Image**: the source picture, must not be nil.
- **PreMultipliedSource**: Optional parameter. If true the image must be premultiplied. Default is false.
- **Mask**: the mask picture, can be nil.
- **DestX**: destination position
- **DestY**: destination position
- **SourceX**: source position
- **SourceY**: source position
- **Width**: width of the area to copy
- **Height**: height of the area to copy
- **UseColours**: whether to use the mask colour.
- **ForeColour**: the fore colour, optional, can be integer or color
- **MaskColour**: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.

See also:
80.2. **GLOBALS**

- 80.2.18 `PictureCombineMBS(DestImage As Picture, Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean`  

- 80.2.19 `PictureCombineMBS(DestImage As Picture, Image As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean`  

- 80.2.20 `PictureCombineMBS(DestImage As Picture, Image As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean`  

- 80.2.21 `PictureCombineMBS(DestImage As Picture, Image As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean`  

- 80.2.22 `PictureCombineMBS(DestImage As Picture, Image As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean`  

- 80.2.23 `PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean`  

- 80.2.24 `PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean`  

- 80.2.25 `PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean`  

- 80.2.26 `PictureCombineMBS(DestImage As Picture, Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean`  

80.2.28 `PictureCopyPixelFastMBS(DestImage As Picture, Source As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer) as boolean`

MBS Picture Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Copies pixels from one picture into another picture with some options. **Example:**

```plaintext
const x=100  // mouse coordinates for example
const y=100

dim p,logo as picture
```
logo=LogoMBS(500)

p=NewPicture(800,800,32)

p.Graphics.FillRect 0,0,p.Width,p.Height

if PictureCopyPixelFastMBS(p, logo, x-logo.Width/2, y-logo.Height/2, 0, 0, logo.Width, logo.Height) then
  ' ok
else
  beep
end if

window1.Backdrop=p

Notes:
Returns true on success and false on failure.

Parameters:
Source: the source picture, must not be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy

The destination image (self) can be either 24 bit or 32 bit.
The source image can have any bit depth and may be converted to 24 or 32 bit.

80.2.29 NewPictureEditorMBS(pic as picture) as PictureEditorMBS

MBS Picture Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Creates a new picture editor editing the given picture.
Example:

dim l as Picture = LogoMBS(500)
dim p as PictureEditorMBS

p = NewPictureEditorMBS(l)
80.2.30 NewPictureMBS(width as Integer, height as Integer, pixeltype as Integer, buffer as memoryblock, rowbytes as Integer) as picture

MBS Picture Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a picture from a memory block.

**Notes:**
This wraps the REALBuildPictureFromBuffer plugin function and copies the pixels.

rowbytes must be the number of bytes per row. Typical width*3 or width*4.

Pixeltype constants:

```
kRBPixelRGB24 = 1  3 bytes/pixel: Red, Green, Blue
kRBPixelBGR24 = 2  3 bytes/pixel: Blue, Green, Red
kRBPixelXRGB32 = 3  4 bytes/pixel: Unused, Red, Green, Blue
kRBPixelBGRX32 = 4  4 bytes/pixel: Blue, Green, Red, Unused
```

80.2.31 NewPictureWriterMBS(pic as picture, width as Integer, height as Integer) as PictureWriterMBS

MBS Picture Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new picture writer.

**Notes:**
Returns nil on failure (low memory).
If you provide an existing picture we reuse it if it has the right size. But you can pass nil to get a new one always.

80.2.32 GetMBfromPictureMBS(pic as picture, mask as picture, mode as string) as memoryblock

MBS Picture Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a memoryblock from the picture data with the given format.

**Example:**
dim p as Picture = LogoMBS(500)
dim m as MemoryBlock = GetMBfromPictureMBS(p, p.mask, "RGB32")

Notes:
Returns nil on any error.
Mode can be a string with the following strings: RGB16, ARGB16, RGB16_565, ARGB32, RGB32, RGB24 or MASK8.
See the example project "Picture To Memoryblock.rbp" for the RB code matching the plugin code.
See also:

80.2.33 GetMBfromPictureMBS(pic as picture, mode as string) as memoryblock

80.2.33 GetMBfromPictureMBS(pic as picture, mode as string) as memoryblock
MBS Picture Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Creates a memoryblock from the picture data with the given format.
Example:
dim p as Picture = LogoMBS(500)
dim m as MemoryBlock = GetMBfromPictureMBS(p, "RGB32")

Notes: Same as the other GetMBfromPictureMBS function, but takes the mask from the picture.
See also:

• 80.2.32 GetMBfromPictureMBS(pic as picture, mask as picture, mode as string) as memoryblock

80.2.34 MemoryblockABGRtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture
MBS Picture Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Copies image data from a memoryblock into a picture object.
Notes:
Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.
The function will crash if the memoryblock is too small. Needs width*height*4 bytes in the memoryblock.
In the dest picture parameter you can provide a picture to draw in. If the picture is no big enough or nil, a
new one is created.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 80.2.35 MemoryblockABGRtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

### 80.2.35 MemoryblockABGRtoPictureMBS

MBS Picture Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies image data from a memoryblock into a picture object.

**Example:**

```vba
// Create a picture with mask:
dim p as Picture = LogoMBS(200)
dim g as Graphics = p.mask.Graphics

    g.ForeColor = & c FFFFFF
    g.FillRect 0,0,g.Width,g.Height

    g.ForeColor = & c 000000
    g.Filloval 0,0,g.Width,g.Height

    // convert to memoryblock
    dim m as new MemoryBlock(4 * p.Width * p.Height)
    if p.CopyABGRtoMemoryblockMBS(m, 0, p.Mask) then
        // convert back
        Backdrop = MemoryblockABGRtoPictureMBS(m, 0, p.Width, p.Height)
    break // look into memoryblock with debugger
end if
```

**Notes:**

Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs width*height*4 bytes in the memoryblock.
Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 80.2.34 MemoryblockABGRtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

80.2.36 MemoryblockARGBtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

MBS Picture Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies image data from a memoryblock into a picture object.

**Example:**

```vbs
dim m as MemoryBlock
dim p,q as Picture

p=NewPicture(100,100,32)
p.Graphics.FillRect 0,0,100,100

// Make a new MemoryBlock
m=NewMemoryBlock(100*100*4) // 3 bytes per Pixel

// Copy RGB without alpha
if p.CopyARGBtoMemoryblockMBS(m,0,0) then

dim x as Picture = NewPicture(100,100,32)
q=MemoryblockARGBtoPictureMBS(x, m,0,100,100)
Backdrop=q
if x=q then
    window1.Title = "reused picture"
else
    window1.Title = "created new picture"
end if
end if
```

**Notes:**

Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.
The function will crash if the memoryblock is too small. Needs width*height*4 bytes in the memoryblock.

In the dest picture parameter you can provide a picture to draw in. If the picture is no big enough or nil, a new one is created.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 80.2.37 MemoryblockARGBtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

80.2.37 MemoryblockARGBtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

MBS Picture Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies image data from a memoryblock into a picture object.

**Example:**

```plaintext
// Create a picture with mask:
dim p as Picture = LogoMBS(200)
dim g as Graphics = p.mask.Graphics

g.ForeColor = & c FFFFFF
g.FillRect 0,0,g.Width,g.Height

g.ForeColor = & c 000000
g.Filloval 0,0,g.Width,g.Height

// convert to memoryblock
dim m as new MemoryBlock(4 * p.Width * p.Height)

if p.CopyARGBtoMemoryblockMBS(m, 0, p.Mask) then
  // convert back
  Backdrop = MemoryblockARGBtoPictureMBS(m, 0, p.Width, p.Height)
break // look into memoryblock with debugger
end if
```

**Notes:**

Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.
The function will crash if the memoryblock is too small. Needs width*height*4 bytes in the memoryblock.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 80.2.36 MemoryblockARGBtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

80.2.38 MemoryblockBGRAtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

MBS Picture Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Copies image data from a memoryblock into a picture object.
**Example:**

```
// Create a picture with mask:
dim p as Picture = LogoMBS(200)
dim g as Graphics = p.mask.Graphics

g.ForeColor = & c FFFFFF
g.FillRect 0,0,g.Width,g.Height

g.ForeColor = & c 000000
g.Filloval 0,0,g.Width,g.Height

// convert to memoryblock
dim m as new MemoryBlock(4 * p.Width * p.Height)
if p.CopyBGRAtoMemoryblockMBS(m, 0, p.Mask) then
  // convert back
  Backdrop = MemoryblockBGRAtoPictureMBS(nil, m, 0, p.Width, p.Height)
break // look into memoryblock with debugger
end if
```

**Notes:**
Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs width*height*4 bytes in the memoryblock.
In the dest picture parameter you can provide a picture to draw in. If the picture is no big enough or nil, a new one is created.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 80.2.39 MemoryblockBGRAtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

**80.2.39 MemoryblockBGRAtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture**

MBS Picture Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies image data from a memoryblock into a picture object.

**Example:**

```plaintext
// Create a picture with mask:
dim p as Picture = LogoMBS(200)
dim g as Graphics = p.mask.Graphics

g.ForeColor = & c FFFFFF
g.FillRect 0,0,g.Width,g.Height

g.ForeColor = & c 000000
g.Filloval 0,0,g.Width,g.Height

// convert to memoryblock
dim m as new MemoryBlock(4 * p.Width * p.Height)

if p.CopyBGRAtoMemoryblockMBS(m, 0, p.Mask) then
  // convert back
  Backdrop = MemoryblockBGRAtoPictureMBS(m, 0, p.Width, p.Height)
break // look into memoryblock with debugger
end if
```

**Notes:**

Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs width*height*4 bytes in the memoryblock.
Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 80.2.38 MemoryblockBGRAtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

80.2.40 MemoryblockBGRtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

MBS Picture Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies image data from a memoryblock into a picture object.

**Example:**

```vba
dim m as MemoryBlock
dim p,q as Picture

p=NewPicture(100,100,32)
p.Graphics.FillRect 0,0,100,100

// Make a new MemoryBlock
m=NewMemoryBlock(100*100*3) // 3 bytes per Pixel

// Copy RGB without alpha
if p.CopyBGRtoMemoryblockMBS(m,0) then

dim x as Picture = NewPicture(100,100,32)
q=MemoryblockBGRtoPictureMBS(x, m,0,100,100)

Backdrop=q

if x=q then
    window1.Title = "reused picture"
else
    window1.Title = "created new picture"
end if

end if
```

**Notes:**

Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.
The function will crash if the memoryblock is too small. Needs width*height*3 bytes in the memoryblock.

In the dest picture parameter you can provide a picture to draw in. If the picture is no big enough or nil, a new one is created.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.

See also:

- 80.2.41 MemoryblockBGRtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

80.2.41 MemoryblockBGRtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

MBS Picture Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies image data from a memoryblock into a picture object.

**Notes:**
Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs width*height*3 bytes in the memoryblock.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.

See also:

- 80.2.40 MemoryblockBGRtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

80.2.42 MemoryblockGrayToPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer) as picture


**Example:**

```plaintext
const kAlphaOffset=0 ' (BigEndian) and 3 (LittleEndian)
```

```plaintext
dim m as MemoryBlock
```
dim p,q,k as Picture

p=NewPicture(100,100,32)
p.Graphics.FillRect 0,0,100,100
p.mask.Graphics.FillRect 0,0,100,100

// Make a new MemoryBlock
m=NewMemoryBlock(100*100*4) // 4 bytes per Pixel

// copy RGB and leave room for alpha
if p.CopyARGBtoMemoryblockMBS(m,0,false,-1) then
  'MsgBox EncodingToHexMBS(m.StringValue(0,99))
end if

// copy green channel from mask image into Memoryblock
if p.mask.CopyGtoMemoryblockMBS(m,kAlphaOffset,4) then
  'MsgBox EncodingToHexMBS(m.StringValue(0,99))
end if

// make the picture from this Memoryblock
q=MemoryblockARGBtoPictureMBS(m,0,100,100,false)

// make the mask from this Memoryblock
k=MemoryblockGrayToPictureMBS(m,kAlphaOffset,100,100,4)

// combine picture and mask
q.Mask.Graphics.DrawPicture k,0,0

Backdrop=q

Notes:

Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs width*height*PixelByteSize bytes in the memoryblock.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 80.2.43 MemoryblockGrayToPictureMBS(source as memoryblock, offset as Integer, width as Integer,
80.2.43 MemoryblockGrayToPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer, Red as Integer, Blue as Integer, Green as Integer) as picture

MBS Picture Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies image data from a memoryblock into a picture object.

**Notes:**
This variation of this method Multiplies the gray value with Red, Blue and Green and divided by 256.

Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs width*height*PixelByteSize bytes in the memoryblock.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 80.2.42 MemoryblockGrayToPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer) as picture
- 80.2.44 MemoryblockGrayToPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer, Red() as Integer, Blue() as Integer, Green() as Integer) as picture

80.2.44 MemoryblockGrayToPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer, Red() as Integer, Blue() as Integer, Green() as Integer) as picture

MBS Picture Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies image data from a memoryblock into a picture object.

**Notes:**
This variation of this method lookups the Red, Green and Blue values for the next pixel by using the gray value as index.
The arrays should have 256 elements.

Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs width*height*PixelByteSize bytes in the memoryblock.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 80.2.42 MemoryblockGrayToPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer) as picture
- 80.2.43 MemoryblockGrayToPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer, Red as Integer, Blue as Integer, Green as Integer) as picture

**80.2.45 MemoryblockRGBAtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer, FlipVertically as boolean=false) as picture**

MBS Picture Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies image data from a memoryblock into a picture object.

**Example:**

```vbnet
// Create a picture with mask:
Dim p As Picture = LogoMBS(200)
Dim g As Graphics = p.mask.Graphics

g.ForeColor = & CHHFF
g.FillRect 0,0,g.Width,g.Height

g.ForeColor = & CHH000000
g.Filloval 0,0,g.Width,g.Height

// convert to memoryblock
Dim m As New MemoryBlock(4 * p.Width * p.Height)

If p.CopyRGBAtoMemoryblockMBS(m, 0, p.Mask) Then
    // convert back
    Backdrop = MemoryblockRGBAtoPictureMBS(m, 0, p.Width, p.Height)
```
break  // look into memoryblock with debugger
end if

Notes:

Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs width*height*4 bytes in the memoryblock.

In the dest picture parameter you can provide a picture to draw in. If the picture is no big enough or nil, a new one is created.

If FlipVertically is true the image is flipped. New in version 9.4.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 80.2.46 MemoryblockRGBAtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer, FlipVertically as boolean=false) as picture

80.2.46 MemoryblockRGBAtoPictureMBS(source as memoryblock, offset as Integer, width as Integer, height as Integer, FlipVertically as boolean=false) as picture

MBS Picture Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies image data from a memoryblock into a picture object.

**Example:**

// some memory with pixel data
dim m as MemoryBlock = NewMemoryBlock(100*100*32)

for i as Integer = 1 to 1000
  // place random pixels
  m.Int8Value(rnd*m.size) = rnd*256
next

// and make a picture
dim l as Picture = MemoryBlockRGBAtoPictureMBS(m, 0, 100, 100)
// display in window
window1.backdrop = 1

Notes:

Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs width*height*4 bytes in the memoryblock.

If FlipVertically is true the image is flipped. New in version 9.4.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

• 80.2.45 MemoryblockRGBAtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer, FlipVertically as boolean=false) as picture

80.2.47 MemoryblockRGBtoPictureMBS(dest as picture, source as memoryblock, offset as Integer, width as Integer, height as Integer) as picture

MBS Picture Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:

Copies image data from a memoryblock into a picture object.

Example:

dim m as MemoryBlock
dim p,q as Picture

p=NewPicture(100,100,32)
p.Graphics.FillRect 0,0,100,100

// Make a new MemoryBlock
m=NewMemoryBlock(100*100*3) // 3 bytes per Pixel

// Copy RGB without alpha
if p.CopyRGBtoMemoryblockMBS(m,0) then

dim x as Picture = NewPicture(100,100,32)

q=MemoryblockRGBtoPictureMBS(x, m,0,100,100)
80.2. GLOBALS

Backdrop=q

if x=q then
window1.Title = "reused picture"
else
window1.Title = "created new picture"
end if
end if

Notes:

Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

In the dest picture parameter you can provide a picture to draw in. If the picture is no big enough or nil, a new one is created.

The function will crash if the memoryblock is too small. Needs width*height*3 bytes in the memoryblock.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.

80.2.48  PtrABGRtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer) as picture


Notes:

Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the data the pointer points to.

The function will crash if the data is too small where the pointer points to. Needs width*height*4 bytes in the memory pointed to by pointer plus offset.

In the dest picture parameter you can provide a picture to draw in. If the picture is no big enough or nil, a new one is created.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.

See also:

- 80.2.49 PtrABGRtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

80.2.49  PtrABGRtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

MBS Picture Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies image data from a pointer into a picture object.

**Notes:**

Returns nil on any error.

source should not be nil.

offset should be 0 or bigger and is the start position in the data the pointer points to.

The function will crash if the data is too small where the pointer points to. Needs width*height*4 bytes in the memory pointed to by pointer plus offset.

Does not access the mask inside the image!

Data is copied from memory block to the new picture, not referenced.

See also:

- 80.2.48 PtrABGRtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

80.2.50  PtrARGBtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

MBS Picture Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies image data from a pointer into a picture object.

**Notes:**

Returns nil on any error.

source should not be nil.

offset should be 0 or bigger and is the start position in the data the pointer points to.

The function will crash if the data is too small where the pointer points to. Needs width*height*4 bytes in the memory pointed to by pointer plus offset.

In the dest picture parameter you can provide a picture to draw in. If the picture is no big enough or nil, a new one is created.
80.2. GLOBALS

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 80.2.51 PtrARGBtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer) as picture
- 80.2.52 PtrARGBtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, LittleEndian as boolean) as picture

80.2.51  PtrARGBtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

MBS Picture Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Copies image data from a pointer into a picture object.

**Notes:**

Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the data the pointer points to.

The function will crash if the data is too small where the pointer points to. Needs width*height*4 bytes in
the memory pointed to by pointer plus offset.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 80.2.50 PtrARGBtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer) as picture
- 80.2.52 PtrARGBtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, LittleEndian as boolean) as picture

80.2.52  PtrARGBtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, LittleEndian as boolean) as picture

MBS Picture Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Copies image data from a pointer into a picture object.

**Notes:**

Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the data the pointer points to.
The function will crash if the data is too small where the pointer points to. Needs width*height*4 bytes in the memory pointed to by pointer plus offset.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.

LittleEndian specifies whether the image is stored in ARGB (BigEndian) or BGRA (LittleEndian) mode.

See also:
- 80.2.50 PtrARGBtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer) as picture
- 80.2.51 PtrARGBtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

80.2.53  PtrBGRAtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer) as picture


Notes:
Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the data the pointer points to.

The function will crash if the data is too small where the pointer points to. Needs width*height*4 bytes in the memory pointed to by pointer plus offset.

In the dest picture parameter you can provide a picture to draw in. If the picture is no big enough or nil, a new one is created.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:
- 80.2.54 PtrBGRAtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

80.2.54  PtrBGRAtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

Notes:

Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the data the pointer points to.

The function will crash if the data is too small where the pointer points to. Needs width*height*4 bytes in the memory pointed to by pointer plus offset.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 80.2.53 PtrRGBAtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

80.2.55  PtrBGRtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

MBS Picture Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Copies image data from a pointer into a picture object.

Notes:

Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the data the pointer points to.

The function will crash if the data is too small where the pointer points to. Needs width*height*3 bytes in the memory pointed to by pointer plus offset.

In the dest picture parameter you can provide a picture to draw in. If the picture is no big enough or nil, a new one is created.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 80.2.56 PtrBGRtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer) as picture
80.2.56  **PtrBGRtoPictureMBS***(source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

MBS Picture Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies image data from a pointer into a picture object. **Notes:**

Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the data the pointer points to.

The function will crash if the data is too small where the pointer points to. Needs width*height*3 bytes in the memory pointed to by pointer plus offset.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.

See also:

- 80.2.55 **PtrBGRtoPictureMBS***(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer) as picture

80.2.57  **PtrGrayToPictureMBS***(source as Ptr, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer) as picture

MBS Picture Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies image data from a pointer into a picture object. **Notes:**

Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the data the pointer points to.

The function will crash if the data is too small where the pointer points to. Needs width*height*PixelByteSize bytes in the memory pointed to by pointer plus offset.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.

See also:

- 80.2.58 **PtrGrayToPictureMBS***(source as Ptr, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer, Red as Integer, Blue as Integer, Green as Integer) as picture

- 80.2.59 **PtrGrayToPictureMBS***(source as Ptr, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer, Red() as Integer, Blue() as Integer, Green() as Integer) as picture
80.2.58  

**PtrGrayToPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer, Red as Integer, Blue as Integer, Green as Integer) as picture**

MBS Picture Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies image data from a pointer into a picture object.

**Notes:**

This variation of this method multiplies the gray value with Red, Blue and Green and divided by 256.

Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the data the pointer points to.

The function will crash if the data is too small where the pointer points to. Needs width*height*PixelByteSize bytes in the memory pointed to by pointer plus offset.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.

See also:

- 80.2.57  **PtrGrayToPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer) as picture**

- 80.2.59  **PtrGrayToPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer, Red() as Integer, Blue() as Integer, Green() as Integer) as picture**

80.2.59  

**PtrGrayToPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer, Red() as Integer, Blue() as Integer, Green() as Integer) as picture**

MBS Picture Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies image data from a pointer into a picture object.

**Notes:**

This variation of this method lookups the Red, Green and Blue values for the next pixel by using the gray value as index.

The arrays should have 256 elements.

Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the data the pointer points to.
The function will crash if the data is too small where the pointer points to. Needs width*height*PixelByteSize bytes in the memory pointed to by pointer plus offset.

Does not access the mask inside the image!
Data is copied from memory block to the new picture, not referenced.
See also:

- 80.2.57 PtrGrayToPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer) as picture

- 80.2.58 PtrGrayToPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, PixelByteSize as Integer, Red as Integer, Blue as Integer, Green as Integer) as picture

80.2.60 PtrRGBAtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer, FlipVertically as boolean=false) as picture

MBS Picture Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies image data from a pointer into a picture object.

**Notes:**
Returns nil on any error.
source should not be nil.
offset should be 0 or bigger and is the start position in the data the pointer points to.

The function will crash if the data is too small where the pointer points to. Needs width*height*4 bytes in the memory pointed to by pointer plus offset.

In the dest picture parameter you can provide a picture to draw in. If the picture is no big enough or nil, a new one is created.

If FlipVertically is true the image is flipped. New in version 9.4.

Does not access the mask inside the image!
See also:

- 80.2.61 PtrRGBAtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, FlipVertically as boolean=false) as picture
80.2.61  

PtrRGBAtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer, FlipVertically as boolean=false) as picture


**Function:**  
Copies image data from a pointer into a picture object.  

**Notes:**  
- Returns nil on any error.  
- source should not be nil.  
- offset should be 0 or bigger and is the start position in the data the pointer points to.  

The function will crash if the data is too small where the pointer points to. Needs width*height*4 bytes in the memory pointed to by pointer plus offset.  

If FlipVertically is true the image is flipped. New in version 9.4.  

Does not access the mask inside the image!  
Data is copied from memory block to the new picture, not referenced.  

See also:  
- 80.2.60  

80.2.62  

PtrRGBtoPictureMBS(dest as picture, source as Ptr, offset as Integer, width as Integer, height as Integer) as picture


**Function:**  
Copies image data from a pointer into a picture object.  

**Notes:**  
- Returns nil on any error.  
- source should not be nil.  
- offset should be 0 or bigger and is the start position in the data the pointer points to.  

In the dest picture parameter you can provide a picture to draw in. If the picture is no big enough or nil, a new one is created.  

The function will crash if the data is too small where the pointer points to. Needs width*height*3 bytes in the memory pointed to by pointer plus offset.  

Does not access the mask inside the image!  
Data is copied from memory block to the new picture, not referenced.  

See also:
80.2.63  

**PtrRGBtoPictureMBS(source as Ptr, offset as Integer, width as Integer, height as Integer) as picture**

MBS Picture Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies image data from a pointer into a picture object. **Notes:**

- Returns nil on any error.
- source should not be nil.
- offset should be 0 or bigger and is the start position in the data the pointer points to.

The function will crash if the data is too small where the pointer points to. Needs width*height*3 bytes in the memory pointed to by pointer plus offset.

Does not access the mask inside the image!

Data is copied from memory block to the new picture, not referenced.

See also:

- 80.2.62  

80.2.64  

**MandelbrotSetMBS(Threading as Integer, width as Integer, height as Integer, fx as Double = 4.0, fy as Double = 4.0, dx as Double = -2.0, dy as Double = -2.0, dest as picture = nil) as picture**

MBS Picture Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calculates the mandelbrot picture. **Example:**

Backdrop = MandelbrotSetMBS(0, 300, 300)

**Notes:**

- Threaded parameter specifies how many threads you want to use:
- A negative value disables threading, zero will use one thread for each CPU core and a positive number specifies the thread count.

Width & Height specify the output image size.

fx and fy are the scale values and dx/dy specify the the position of the mandelbrot image.
You can pass destination picture. If dest is not nil and size matches, the plugin reuses the picture object which increases performance as no new picture is created.

### 80.2.65 BinaryStringtoPictureMBS(data as String) as Picture

MBS Picture Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates the picture back from the binary data inside the string.

**Example:**

```plaintext
dim pic as Picture = LogoMBS(500)

// encode
dim s as string = PicturetoBinaryStringMBS(pic)

// decode
Backdrop = BinaryStringtoPictureMBS(s)
```

**Notes:**

Deprecated. Please do not use for old projects and convert existing images into a new format, e.g. PNG.

The format of the binary encoded picture data:

- 0 Kenn, PPIC for Packed Picture
- 4 Length of whole block
- 8 Width (BigEndian)
- 12 Height (BigEndian)
- 16 Depth (BigEndian, 32 for 32bit)
- 20 Offset of the binary data. maybe 40.
- 24 Reserved for future use. Should be 0.
- 40 Pixel Data, packed R, G, B in one byte per Subpixel.

300x300 Pixels will make up 300*300+40 ->270040 Bytes.

This method does not require Quicktime or any other OS Service, but it does no compression.

May be a good way to store pictures crossplatform inside a database. As Valentina can do its own Zip based compression, this may be a wonderfull way to store pictures uncompressed (or lossless compressed) inside the database.

Does not handle mask or alpha channel.
80.2.66  PicturetoBinaryStringMBS(p as picture) as string

MBS Picture Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a string with the picture content for saving.

**Example:**

```vba
Dim s As String
Dim pic As Picture = LogoMBS(100)

s = PicturetoBinaryStringMBS(pic)
```

**Notes:**

Deprecated. Please do not use for old projects and convert existing images into a new format, e.g. PNG.

The format of the binary encoded picture data:

- + 0 Kenn, PPIC for Packed Picture
- + 4 Length of whole block
- + 8 Width (BigEndian)
- +12 Height (BigEndian)
- +16 Depth (BigEndian, 32 for 32bit)
- +20 Offset of the binary data. maybe 40.
- +24 Reserved for future use. Should be 0.
- +40 Pixel Data, packed R, G, B in one byte per Subpixel.

300x300 Pixels will make up 300*300+40 -> 270040 Bytes.

This method does not require Quicktime or any other OS Service, but it does no compression. Does not handle mask or alpha channel.

May be a good way to store pictures crossplatform inside a database. As Valentina can do its own Zip based compression, this may be a wonderfull way to store pictures uncompressed (or lossless compressed) inside the database.

The returned string has the encoding set to binary (no encoding). If you want to concat the string with another you should check the encoding. If you don’t handle that RB may convert the JPEG data to UTF8 (Unicode) which will destroy it.
80.3. CLASS PALETTECALCULATORMBS

80.2.67 WindowsDrawPictureIntoDeviceContextMBS(pic as picture, HDC as Integer, x as Integer, y as Integer, w as Integer, h as Integer, Transparent as boolean)

MBS Win Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Draws a Real Studio Picture into a HDC on Windows.

**Example:**

```
// get a picture
dim logo as Picture = LogoMBS(500)

// get HDC
dim h as Integer = g.Handle(g.HandleTypeHDC)

// and draw into it
WindowsDrawPictureIntoDeviceContextMBS(logo, h, 0, 0, 500, 500, false)
```

**Notes:**
Some SDKs from other companies give you sometimes HDC value to draw your stuff inside. You can prepare a Real Studio picture and copy it into the HDC. Specify rectangle and whether to use transparency.

80.3 class PaletteCalculatorMBS

80.3.1 class PaletteCalculatorMBS

MBS Picture Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This class allows you to calculate an 8 bit image from a RGB image and back.

**Notes:**
You can create the best matching palette for a given image. If you have several images which should share the same palette, you can draw them first on one big picture before calculating the

80.3.2 Methods

80.3.3 CountColors as Integer

MBS Picture Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Counts how many different colors are in the palette.
80.3.4 CreatePicturePalette(Pic as picture) as Integer

MBS Picture Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a picture palette based on the picture. **Notes:** This function checks which colors are very often used in the image and builds a palette which may be better for this image than the default system palette.

80.3.5 GetIndexOfColor(col as color) as Integer

MBS Picture Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Searches the index in the palette for the given color. **Notes:** Returns -1 if the color is not found. See also:

- 80.3.6 GetIndexOfColor(r as Integer, g as Integer, b as Integer) as Integer

80.3.6 GetIndexOfColor(r as Integer, g as Integer, b as Integer) as Integer

MBS Picture Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Searches the index in the palette for the given color. **Notes:** Returns -1 if the color is not found. See also:

- 80.3.5 GetIndexOfColor(col as color) as Integer

80.3.7 GetNearestIndexOfColor(col as color) as Integer

MBS Picture Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Searches the index in the palette for the best matching color. **Notes:** The best color is the color with the lowest value:

\[ \text{value} = (r - \text{col(index).red})^2 + (g - \text{col(index).green})^2 + (b - \text{col(index).blue})^2 \]

Returns -1 if the color is not found (should never happen). See also:

- 80.3.8 GetNearestIndexOfColor(r as Integer, g as Integer, b as Integer) as Integer
80.3. GetNearestIndexOfColor(r as Integer, g as Integer, b as Integer) as Integer

MBS Picture Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Searches the index in the palette for the best matching color. **Notes:**
The best color is the color with the lowest value:
value=(r-col(index).red)ˆ2+(g-col(index).green)ˆ2+(b-col(index).blue)ˆ2

Returns -1 if the color is not found (should never happen).
See also:
- 80.3.7 GetNearestIndexOfColor(col as color) as Integer

80.3.9 Transform(mem as memoryblock, width as Integer, height as Integer) as picture

MBS Picture Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Transforms a 8 bit picture to a RGB picture. **Notes:**
The memoryblock must have the 8 bit picture data inside with each row being width bytes big. The memoryblock must have at least width*height bytes.

Returns nil on any error.
See also:
- 80.3.10 Transform(Pic as picture) as memoryblock

80.3.10 Transform(Pic as picture) as memoryblock

MBS Picture Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a memoryblock with 8 bit picture data. **Notes:**
The resulting memoryblock has width*height bytes. Each RGB color in the picture is looked up in the palette and used to fill the memoryblock.
See also:
- 80.3.9 Transform(mem as memoryblock, width as Integer, height as Integer) as picture
80.3.11 TransformBetterDithering(Pic as picture) as memoryblock

MBS Picture Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function**: Creates a memoryblock with 8 bit picture data. **Notes**: The resulting memoryblock has width*height bytes. Each RGB color in the picture is looked up in the palette and used to fill the memoryblock. This method uses dithering to make the picture looking better than with a better transform using code like Floyd-Steinberg.

80.3.12 TransformFastDithering(Pic as picture) as memoryblock

MBS Picture Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function**: Creates a memoryblock with 8 bit picture data. **Notes**: The resulting memoryblock has width*height bytes. Each RGB color in the picture is looked up in the palette and used to fill the memoryblock. This method uses dithering to make the picture looking better than with a simple transform.

80.3.13 Properties

80.3.14 Count as Integer

MBS Picture Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function**: How many colors are inside this PaletteMBS. **Notes**: This property should be 2, 4, 16 or 256. Default is 256. (Read and Write property)

80.3.15 Col(i as Integer) as color

MBS Picture Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function**: The color array. **Notes**: Index goes from 0 to count-1. (Read and Write computed property)
80.4. **CLASS PICTURE**

### 80.4 class Picture

#### 80.4.1 class Picture

Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Extends Realbasic’s Picture Class.

#### 80.4.2 Methods

### 80.4.3 AddSteganographyMBS(flags as Integer, data as Memoryblock) as Picture


**Example:**

```vbnet
dim p as Picture = LogoMBS(500)
// this example uses chr(0) as end marker
dim s as string = “Hello World. This is just a test.” + chr(0)
dim pic as Picture = p.AddSteganographyMBS(1, s)

dim data as MemoryBlock = pic.SteganographyMBS(1)
dim d as string = data.CString(0)

MsgBox d
```

**Notes:**

Flags can be a combination of red (& h100), green (& h010) and blue (& h001). Returns a new picture or nil. The existing picture is not modified.

If you like to store data, please encrypt them and include some way that you find your data again, detect length of data, verify it’s okay via checksum and than decrypt your data. Please store image in a loss less format like PNG. Function does not handle mask or alpha channel.

### 80.4.4 AddSteganographyPictureMBS(flags as Integer, data as Picture) as Picture


**Example:**
const AllChannels = & h111

dim p as new Picture(500, 500, 32)

dim w as new window1
w.Title = "white"
w.Backdrop = p

dim l as Picture = LogoMBS(500)

w = new window1
w.Title = "Logo"
w.Backdrop = l

// adds picture. You will normally not see the modification
dim x as Picture = p.AddSteganographyPictureMBS(AllChannels, l)

w = new window1
w.Title = "Logo hidden in white picture"
w.Backdrop = x

// as we store in lowest bit, this picture will look strange
dim y as Picture = x.SteganographyPictureMBS(AllChannels)

w = new window1
w.Title = "Logo extracted"
w.Backdrop = y

Notes:

Flags can be a combination of red (& h100), green (& h010) and blue (& h001).
Returns a new picture or nil. The existing picture is not modified.

Function does not handle mask or alpha channel.

80.4.5 AutoLevelCopyMBS as picture

Applies auto levels on the picture.

Notes:

The histogram is built, white and back points are searched and all pixels adjusted.
Returns nil on any error.
Thanks to Jeff Thoman for his code.
This version of the method makes a copy of the picture so it works on any kind of picture.

Renamed in version 9.2 from AutoLevelMBS to AutoLevelCopyMBS.

### 80.4.6 AutoLevelMBS as boolean

MBS Picture Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Applies auto levels on the picture. **Notes:**
The histogram is built, white and back points are searched and all pixels adjusted. Returns true on success and false on any error.
Thanks to Jeff Thoman for his code.

This version of the method modifies the pixels on the picture. Works on 32bit and 24bit pictures.

If you get a type mismatch error on using this function, you may want to use AutoLevelCopyMBS which is the old behavior.

### 80.4.7 BitmapMBS as picture

MBS Picture Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the picture as a bitmap picture. **Example:**
```plaintext
dim p,r as picture
r=LogoMBS(500)
p=r.BitmapMBS
canvas1.backdrop=p
```

**Notes:**
A Realbasic picture object may contain an icon, a bitmap, a picture handle or something else what Realbasic will support as a picture in the future. The picture editing functions of this plugin can only work with bitmap pictures and this clone function creates such pictures for you. This function takes a look on the picture and returns it unchanged if it is already a bitmap, but if not, the picture is Cloned as a bitmap. If you prefer to get a copy of the picture as a bitmap picture, use clone instead.
app.resourceFork.getpicture(148) is the about picture of REALbasic in the 4.5 release. This may change in future releases, so you will get nil. But using this picture will make the plugin download smaller.

The Cloned picture does not have a mask.

80.4.8 BlueChannelMBS as picture

MBS Picture Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The blue channel of the picture copied into a new picture.
**Example:**
```c
dim p as Picture = LogoMBS(500)
Backdrop = p.BlueChannelMBS
```

80.4.9 BlurMBS(Radius as Double, yield as Integer = 0) as picture

MBS Picture Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Applies a blur effect to the image.
**Example:**
```c
dim p as Picture = LogoMBS(500)
window1.Backdrop = p.BlurMBS(2)
```

**Notes:**
This is not a gaussian blur, but a faster box blur.
Returns nil on any error.

80.4.10 BMPDataMBS(ResolutionValueDPI as Integer=72) as string

MBS Picture Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a String with the BMP File content for the given picture.
**Example:**
```c
// Make a picture
dim p as Picture = LogoMBS(100)

// Encode as BMP
dim s as string = p.BMPDataMBS
```
// display length in title
Title = str(lenb(s))

// and display picture
Backdrop= BMPStringtoPictureMBS(s)

Notes:
Does not handle masks.
Returns an empty string on any error.

80.4.11 CalcSteganographyMBS(flags as Integer) as Integer

MBS Picture Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calculates the steganography size.
**Example:**
```vbscript
dim p as Picture = LogoMBS(500)

dim size1 as Integer = p.CalcSteganographyMBS(& h100)
MsgBox "Red only: " +str(size1)

dim size2 as Integer = p.CalcSteganographyMBS(& h111)
MsgBox "RGB only: " +str(size2)
```

Notes:
Returns number of bytes that can be stored in an image of the size of this picture.
Flags can be a combination of red (& h100), green (& h010) and blue (& h001).

80.4.12 CGColorSpaceMBS as CGColorSpaceMBS

MBS MacCG Plugin, Plugin Version: 13.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Queries the colorspace profile for a picture.
**Example:**
```vbscript
dim p as new Picture(32,32,32)
dim c as CGColorSpaceMBS = p.CGColorSpaceMBS
MsgBox c.Name
```

Notes: Only for Cocoa targets.
80.4.13 ChangeBrightnessAbsoluteMBS(Brightness as Double) as picture

MBS Picture Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Changes the brightness of an image.

**Example:**

```// get test picture
dim p as Picture = LogoMBS(500)

dim n as Picture = p.ChangeBrightnessAbsoluteMBS(30)
```

```// show in window
window1.Backdrop = n```

**Notes:**

To every pixel component the value is added.
Returns nil if the picture is no bitmap picture.
See also:

- 80.4.14 ChangeBrightnessAbsoluteMBS(BrightnessRed as Double, BrightnessGreen as Double, BrightnessBlue as Double) as picture

80.4.14 ChangeBrightnessAbsoluteMBS(BrightnessRed as Double, BrightnessGreen as Double, BrightnessBlue as Double) as picture

MBS Picture Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Changes the brightness of an image.

**Example:**

```// get test picture
dim p as Picture = LogoMBS(500)

dim n as Picture = p.ChangeBrightnessAbsoluteMBS(10, 20, 30)
```

```// show in window
window1.Backdrop = n```

**Notes:**

To every pixel component the value is added.
Returns nil if the picture is no bitmap picture.
PS: This function may be optimized, if someone needs it to be faster.

Basicly Picture.ChangeBrightnessAbsoluteMBS does this:

for each pixel in picture
pixel.red = pixel.red + r
pixel.green = pixel.green + g
pixel.blue = pixel.blue + b
next

and it limits the pixel values to the range 0 to 255.

See also:

- 80.4.13 ChangeBrightnessAbsoluteMBS(Brightness as Double) as picture

80.4.15 ChangeBrightnessLinearMBS(Brightness as Double) as picture


Example:

```vba
// get test picture
dim p as Picture = LogoMBS(500)

dim n as Picture = p.ChangeBrightnessLinearMBS(30)

// show in window
window1.Backdrop = n
```

Notes:

Value is fraction of change. Range -255 to 255. For example 127 would move all colors half the way to white. Returns nil if the picture is no bitmap picture.

See also:

- 80.4.16 ChangeBrightnessLinearMBS(BrightnessRed as Double, BrightnessGreen as Double, BrightnessBlue as Double) as picture
80.4.16 ChangeBrightnessLinearMBS(BrightnessRed as Double, BrightnessGreen as Double, BrightnessBlue as Double) as picture

MBS Picture Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Changes the brightness of an image linear.

**Example:**
```vbnet
// get test picture
dim p as Picture = LogoMBS(500)

dim n as Picture = p.ChangeBrightnessLinearMBS(10,20,30)

// show in window
window1.Backdrop = n
```

**Notes:**
Returns nil if the picture is no bitmap picture.

PS: This function may be optimized, if someone needs it to be faster (e.g. using Altivec).

See also:
- 80.4.15 ChangeBrightnessLinearMBS(Brightness as Double) as picture

80.4.17 ChangeContrastBrightnessAbsoluteMBS(Contrast as Double, Brightness as Double) as picture

MBS Picture Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Changes the brightness and contrast of an image.

**Example:**
```vbnet
// get test picture
dim p as Picture = LogoMBS(500)

dim n as Picture = p.ChangeContrastBrightnessAbsoluteMBS(0.5,30)

// show in window
window1.Backdrop = n
```

**Notes:** Returns nil if the picture is no bitmap picture.

See also:
- 80.4.18 ChangeContrastBrightnessAbsoluteMBS(ContrastRed as Double, ContrastGreen as Double, ContrastBlue as Double, BrightnessRed as Double, BrightnessGreen as Double, BrightnessBlue as Double) as picture
80.4.18 ChangeContrastBrightnessAbsoluteMBS(ContrastRed as Double, ContrastGreen as Double, ContrastBlue as Double, BrightnessRed as Double, BrightnessGreen as Double, BrightnessBlue as Double) as picture

MBS Picture Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Changes the brightness and contrast of an image.

**Example:**

```vbscript
// get test picture
dim p as Picture = LogoMBS(500)

dim n as Picture = p.ChangeContrastBrightnessAbsoluteMBS(0.5, 0.5, 0.5, 10, 20, 30)

// show in window
window1.Backdrop = n
```

**Notes:** Returns nil if the picture is no bitmap picture.

See also:

- 80.4.17 ChangeContrastBrightnessAbsoluteMBS(Contrast as Double, Brightness as Double) as picture

80.4.19 ChangeContrastBrightnessLinearMBS(Contrast as Double, Brightness as Double) as picture

MBS Picture Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Changes the brightness and contrast of an image linear.

**Example:**

```vbscript
// get test picture
dim p as Picture = LogoMBS(500)

dim n as Picture = p.ChangeContrastBrightnessLinearMBS(0.5,30)

// show in window
window1.Backdrop = n
```

**Notes:**

Returns nil if the picture is no bitmap picture.

Contrast range is 0 to 1.0.
Brightness range is -255 to 255.

See also:
80.4.20  ChangeContrastBrightnessLinearMBS(ContrastRed as Double, ContrastGreen as Double, ContrastBlue as Double, BrightnessRed as Double, BrightnessGreen as Double, BrightnessBlue as Double) as picture


Example:

```vba
// get test picture
dim p as Picture = LogoMBS(500)

dim n as Picture = p.ChangeContrastBrightnessLinearMBS(0.5, 0.5, 0.5, 10, 20, 30)

// show in window
window1.Backdrop = n
```

Notes:

Returns nil if the picture is no bitmap picture.
Contrast range is 0 to 1.0.
Brightness range is -255 to 255.
See also:

- 80.4.19 ChangeContrastBrightnessLinearMBS(Contrast as Double, Brightness as Double) as picture

80.4.21  ChangeContrastMBS(Contrast as Double) as picture


Example:

```vba
// get test picture
dim p as Picture = LogoMBS(500)

dim n as Picture = p.ChangeContrastMBS(-0.5)

// show in window
window1.Backdrop = n
```
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Notes:

All three color channels are handled with the same contrast change. Returns a picture on success or nil on any error. Parameters can have any value.
(values >=0.0 will add contrast, values below 0.0 will reduce contrast till gray picture at -1.0, values below -1.0 will add contrast again and also invert the picture)
See also:

- 80.4.22 ChangeContrastMBS(ContrastRed as Double, ContrastGreen as Double, ContrastBlue as Double) as picture

80.4.22 ChangeContrastMBS(ContrastRed as Double, ContrastGreen as Double, ContrastBlue as Double) as picture

MBS Picture Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Changes the contrast of the picture.

**Example:**

```plaintext
// get test picture
dim p as Picture = LogoMBS(500)

dim n as Picture = p.ChangeContrastMBS(-0.5,0.0,0.5)

// show in window
window1Backdrop = n
```

Notes:

Three different values, one for each channel. Returns a picture on success or nil on any error. (values >=0.0 will add contrast, values below 0.0 will reduce contrast till gray picture at -1.0, values below -1.0 will add contrast again and also invert the picture)
See also:

- 80.4.21 ChangeContrastMBS(Contrast as Double) as picture

80.4.23 ChangeCustomMBS(a as Double, b as Double) as picture

MBS Picture Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Changes the picture with custom values.

**Notes:**

Uses this formula:

NewPixelComponent=OldPixelComponent*a+b

See also:
80.4.24  ChangeCustomMBS(Ra as Double, Rb as Double, Ga as Double, Gb as Double, Ba as Double, Bb as Double) as picture

MBS Picture Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Changes the picture with custom values.

**Notes:**

Uses this formula:
NewPixelComponent=OldPixelComponent*a+b

See also:

- 80.4.23 ChangeCustomMBS(a as Double, b as Double) as picture

80.4.25  ChangeSaturationMBS(Amount as Integer) as picture

MBS Picture Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a copy of the picture with a changed saturation.

**Notes:**

Range of amount is from -255 to 255.

Value 0 does nothing.

Value -255 returns a gray level picture.

80.4.26  cloneMBS as picture

MBS Picture Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Clones the picture as a bitmap.

**Example:**

```realbasic
dim p,r as picture
r=LogoMBS(500)
p=r.clonembs
canvas1.backdrop=p
```

**Notes:**

A Realbasic picture object may contain an icon, a bitmap, a picture handle or something else what Realbasic will support as a picture in the future.

The picture editing functions of this plugin can only work with bitmap pictures and this clone function
80.4. **CLASS PICTURE**

creates such pictures for you.
If a picture is a bitmap can be easily tested with the graphics property like this:

```vbnet
if p.graphics=nil then // if no bitmap
  p=p.cloneMBS // make one
end if
```

app.resourceFork.getpicture(148) is the about picture of REALbasic in the 4.5 release. This may change in future releases, so you will get nil. But using this picture will make the plugin download smaller.

The Cloned picture does not have a mask.
See FAQ entry "How to duplicate a picture with mask or alpha channel?" on how to duplicate with mask. See also:

- 80.4.27 CloneMBS(NewMask as Picture) as picture 13187
- 80.4.28 CloneMBS(NewMask as Picture, width as Integer, height as Integer) as picture 13187
- 80.4.29 CloneMBS(width as Integer, height as Integer) as picture 13188

### 80.4.27 CloneMBS(NewMask as Picture) as picture

MBS Picture Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Clones the picture as a bitmap. **Notes:** Same as CloneMBS, but adds the mask. See also:

- 80.4.26 cloneMBS as picture 13186
- 80.4.28 CloneMBS(NewMask as Picture, width as Integer, height as Integer) as picture 13187
- 80.4.29 CloneMBS(width as Integer, height as Integer) as picture 13188

### 80.4.28 CloneMBS(NewMask as Picture, width as Integer, height as Integer) as picture

MBS Picture Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Clones the picture as a bitmap. **Notes:** Same as CloneMBS, but adds the mask. See also:

- 80.4.26 cloneMBS as picture 13186
- 80.4.27 CloneMBS(NewMask as Picture) as picture 13187
- 80.4.29 CloneMBS(width as Integer, height as Integer) as picture 13188
80.4.29 CloneMBS(width as Integer, height as Integer) as picture

MBS Picture Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Clones the picture as a bitmap with given size.

**Example:**

```realbasic
dim p,r as picture
r=LogoMBS(500)
p=r.clonembs(100,100)
canvas1.backdrop=p
```

**Notes:**

A Realbasic picture object may contain an icon, a bitmap, a picture handle or something else what Realbasic will support as a picture in the future.
The picture editing functions of this plugin can only work with bitmap pictures and this clone function creates such pictures for you.
If a picture is a bitmap can be easily tested with the graphics property like this:

```realbasic
if p.graphics=nil then // if no bitmap
  p=p.clonembs // make one
end if
```

app.resourceFork.getpicture(148) is the about picture of REALbasic in the 4.5 release. This may change in future releases, so you will get nil. But using this picture will make the plugin download smaller.

The Cloned picture does not have a mask or alpha channel.
See FAQ entry "How to duplicate a picture with mask or alpha channel?" on how to duplicate with mask.
See also:

- 80.4.26 cloneMBS as picture
- 80.4.27 CloneMBS(NewMask as Picture) as picture
- 80.4.28 CloneMBS(NewMask as Picture, width as Integer, height as Integer) as picture

80.4.30 ColorizeMBS(hue as Double, sat as Double, light as Double) as picture

MBS Picture Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Colorizes a picture.

**Notes:**

Hue, Sat and Light in range 0.0 to 1.0 please.
Returns new picture.
80.4.31  **ColornessMBS**(threshold as Integer = 10) as Double

MBS Picture Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calculates the color coverage of the picture.

**Example:**

```vbscript
dim file as FolderItem = SpecialFolder.Desktop.Child("test.png")
dim pic as Picture = Picture.Open(file)
MsgBox str(pic.ColornessMBS)
```

**Notes:**
Counts how many pixels have color and returns percentage depending on a given threshold.
Changed in 12.3pr5 to ignore nearly black pictures when counting.

80.4.32  **CombineMBS**(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean

MBS Picture Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:**
Copies pixels from one picture into another picture with some options.

**Notes:**
Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

**Parameters:**
- Image: the source picture, must not be nil.
- Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.

See also:

- 80.4.33 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean
- 80.4.34 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean
- 80.4.35 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean
- 80.4.36 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean
- 80.4.37 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean
- 80.4.38 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean
- 80.4.39 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean
- 80.4.40 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean
- 80.4.41 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean
80.4. CombineMBS(Mode as Integer, SecondPicture As Picture, X as Integer = 0, Y as Integer = 0, Width as Integer = 0, Height as Integer = 0) as picture

80.4.33 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean

MBS Picture Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Copies pixels from one picture into another picture with some options.

**Example:**

```plaintext
dim DestImage As Picture
dim Image As Picture
dim Mask As Picture
dim DestX as Integer=100
dim DestY as Integer=100
dim SourceX as Integer=0
dim SourceY as Integer=0
dim Width as Integer=500
dim Height as Integer=500
dim UseColours as Boolean = true
dim ForeColour as color = & c FF0000

image=LogoMBS(500)
Mask=nil
DestImage=NewPicture(700,700,32)

if DestImage.CombineMBS(image,Mask,DestX,DestY,SourceX,SourceY,Width,Height,UseColours,ForeColour)
    window1.Backdrop=DestImage
end if
```

**Notes:**

Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.
3. If the mask color is not defined, the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
Image: the source picture, must not be nil.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.

See also:

- 80.4.32 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 13189
- 80.4.34 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 13193
- 80.4.35 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 13195
- 80.4.36 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 13196
- 80.4.37 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 13199
- 80.4.38 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 13200
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- 80.4.39 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean

- 80.4.40 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean

- 80.4.41 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

- 80.4.42 CombineMBS(Mode as Integer, SecondPicture As Picture, X as Integer = 0, Y as Integer = 0, Width as Integer = 0, Height as Integer = 0) as picture

80.4.34 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean

MBS Picture Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:**
Copies pixels from one picture into another picture with some options.

**Notes:**
Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

**Parameters:**
Image: the source picture, must not be nil.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.

See also:

- 80.4.32 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean
- 80.4.33 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Color) as boolean
- 80.4.35 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean
- 80.4.36 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As Color) as boolean
- 80.4.37 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As Integer, MaskColour As Integer) as boolean
- 80.4.40 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean
- 80.4.41 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean
- 80.4.42 CombineMBS(Mode as Integer, SecondPicture As Picture, X as Integer = 0, Y as Integer = 0, Width as Integer = 0, Height as Integer = 0) as Picture
80.4.35 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean

MBS Picture Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Copies pixels from one picture into another picture with some options.

**Notes:**

Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

**Parameters:**

- Image: the source picture, must not be nil.
- Mask: the mask picture, can be nil.
- DestX: destination position
- DestY: destination position
- SourceX: source position
- SourceY: source position
- Width: width of the area to copy
- Height: height of the area to copy
- UseColours: whether to use the mask colour.
- ForeColour: the fore colour, optional, can be integer or color
- MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.

See also:

- 80.4.32 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX
80.4.36 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

80.4.37 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Integer, ForeColour as Integer, MaskColour as Integer) as boolean

80.4.38 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As boolean, ForeColour As color) as boolean

80.4.39 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Integer, ForeColour as Integer, MaskColour as Integer) as boolean

80.4.40 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean

80.4.41 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

80.4.42 CombineMBS(Mode as Integer, SecondPicture As Picture, X as Integer = 0, Y as Integer = 0, Width as Integer = 0, Height as Integer = 0) as picture

For more details on these functions, including their usage and parameters, please refer to the documentation provided with your software or programming environment.
dim DestX as Integer=100
dim DestY as Integer=100
dim SourceX as Integer=0
dim SourceY as Integer=0
dim Width as Integer=500
dim Height as Integer=500

image=LogoMBS(500)
Mask=nil
DestImage=NewPicture(700,700,32)

if DestImage.CombineMBS(image,Mask,DestX,DestY,SourceX,SourceY,Width,Height,true,& h777777,& h777777) then
    window1.Backdrop=DestImage
end if

Notes:

Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
Image: the source picture, must not be nil.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.

See also:

- 80.4.32 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 13189
- 80.4.33 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 13191
- 80.4.34 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as color, MaskColour As color) as boolean 13193
- 80.4.35 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 13195
- 80.4.37 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 13199
- 80.4.38 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as color, MaskColour As color) as boolean 13200
- 80.4.39 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as color, MaskColour As color, SecondPicture As Picture) as picture 13207
80.4.37 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean

MBS Picture Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies pixels from one picture into another picture with some options.

**Notes:**
Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

**Parameters:**
Image: the source picture, must not be nil.
PreMultipliedSource: Optional parameter. If true the image must be premultiplied. Default is false.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.

See also:
• 80.4.32 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean

• 80.4.33 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean

• 80.4.34 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As Integer) as boolean

• 80.4.35 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean

• 80.4.36 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean

• 80.4.38 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean

• 80.4.39 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean

• 80.4.40 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean

• 80.4.41 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Integer, ForeColour as Integer, MaskColour as Integer) as boolean

• 80.4.42 CombineMBS(Mode as Integer, SecondPicture As Picture, X as Integer = 0, Y as Integer = 0, Width as Integer = 0, Height as Integer = 0) as picture

80.4.38 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean


Notes:
Returns true on success and false on failure.
This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
- **Image**: the source picture, must not be nil.
- **PreMultipliedSource**: Optional parameter. If true the image must be premultiplied. Default is false.
- **Mask**: the mask picture, can be nil.
- **DestX**: destination position
- **DestY**: destination position
- **SourceX**: source position
- **SourceY**: source position
- **Width**: width of the area to copy
- **Height**: height of the area to copy
- **UseColours**: whether to use the mask colour.
- **ForeColour**: the fore colour, optional, can be integer or color
- **MaskColour**: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.

See also:

- 80.4.32 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 13189
- 80.4.33 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 13191
- 80.4.34 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 13193
- 80.4.35 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 13193
as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean

80.4.36 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

80.4.37 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

80.4.39 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean

80.4.40 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean

80.4.41 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

80.4.42 CombineMBS(Mode as Integer, SecondPicture As Picture, X as Integer = 0, Y as Integer = 0, Width as Integer = 0, Height as Integer = 0) as picture

80.4.39 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean

MBS Picture Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Copies pixels from one picture into another picture with some options.

**Notes:**

Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.
4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
- **Image**: the source picture, must not be nil.
- **PreMultipliedSource**: Optional parameter. If true the image must be premultiplied. Default is false.
- **Mask**: the mask picture, can be nil.
- **DestX**: destination position
- **DestY**: destination position
- **SourceX**: source position
- **SourceY**: source position
- **Width**: width of the area to copy
- **Height**: height of the area to copy
- **UseColours**: whether to use the mask colour.
- **ForeColour**: the fore colour, optional, can be integer or color
- **MaskColour**: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.

See also:

- 80.4.32 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean
- 80.4.33 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean
- 80.4.34 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean
- 80.4.35 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean
- 80.4.36 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean
- 80.4.37 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean
80.4.38 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean

80.4.40 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean

80.4.41 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

80.4.42 CombineMBS(Mode as Integer, SecondPicture As Picture, X as Integer = 0, Y as Integer = 0, Width as Integer = 0, Height as Integer = 0) as picture

80.4.40 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean

MBS Picture Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies pixels from one picture into another picture with some options.

**Notes:**
Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

**Parameters:**
Image: the source picture, must not be nil.
PreMultipliedSource: Optional parameter. If true the image must be premultiplied. Default is false.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The destination image (self) can be either 24 bit or 32 bit.

See also:

- 80.4.32 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean
- 80.4.33 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean
- 80.4.34 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean
- 80.4.35 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean
- 80.4.36 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean
- 80.4.37 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean
- 80.4.38 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean
- 80.4.39 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean
- 80.4.41 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean
80.4.41 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

MBS Picture Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies pixels from one picture into another picture with some options.

**Notes:**
Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

**Parameters:**
- Image: the source picture, must not be nil.
- PreMultipliedSource: Optional parameter. If true the image must be premultiplied. Default is false.
- Mask: the mask picture, can be nil.
- DestX: destination position
- DestY: destination position
- SourceX: source position
- SourceY: source position
- Width: width of the area to copy
- Height: height of the area to copy
- UseColours: whether to use the mask colour.
- ForeColour: the fore colour, optional, can be integer or color
- MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.
The destination image (self) can be either 24 bit or 32 bit.

See also:

- 80.4.32 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 13189

- 80.4.33 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 13191

- 80.4.34 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 13193

- 80.4.35 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour As color) as boolean 13195

- 80.4.36 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 13197

- 80.4.37 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 13199

- 80.4.38 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 13200

- 80.4.39 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 13202

- 80.4.40 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 13204

- 80.4.42 CombineMBS(Mode as Integer, SecondPicture As Picture, X as Integer = 0, Y as Integer = 0, Width as Integer = 0, Height as Integer = 0) as picture 13207

**80.4.42 CombineMBS(Mode as Integer, SecondPicture As Picture, X as Integer = 0, Y as Integer = 0, Width as Integer = 0, Height as Integer = 0) as picture**

MBS Picture Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Combines pixels of two images with the given mode.

**Example:**
dim pic as picture // some picture
dim other as picture // some other picture
dim result as picture = pic.CombineMBS(1, other)

// effects are made like this. If you have a suggestion for a new effect,
// send your suggestion to MBS support:
Function Combine(x as Integer, y as Integer) as Integer
Return BitwiseXor(x,y)
End Function

Notes:
Each pixel is sent through an operation for each channel.
X, Y, Width and Height can limit effect of a certain portion of the source image.

Modes:

1   Bitwise XOR
2   Bitwise OR
3   Bitwise AND
4   Min
5   Max
6   AddPin (add with limit)
7   AddOver (add with overflow)
8   Difference
9   Difference squared (with limit 255)
10  Sub Pin (sub with limit)

See also:

- 80.4.32 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean
- 80.4.33 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean
- 80.4.34 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean
80.4.35 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean

80.4.36 CombineMBS(Image As Picture, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

80.4.37 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean

80.4.38 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as color) as boolean

80.4.39 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as color, MaskColour as color) as boolean

80.4.40 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean

80.4.41 CombineMBS(Image As Picture, PreMultipliedSource as boolean, Mask As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

80.4.43 CombinePixelMBS(Mode as Integer, SecondPicture As Picture) as picture

MBS Picture Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Combines pixels of two images with the given mode.

**Example:**

```vbs
dim pic as picture ' some picture
dim other as picture ' some other picture
dim result as picture = pic.CombinePixelMBS(1, other)

// effects are made like this. If you have a suggestion for a new effect,
// send your suggestion to MBS support:
Function Combine(x as color, y as color) As color
Return rgb(x.red+y.red, x.green+y.green, x.blue+y.blue)
End Function
```

**Notes:**

Each pixel is sent through an operation.
Modes:

1. Average (50% first and 50% second picture)
2. Gray
3. LighterPixel
4. DarkerPixel
5. Difference Max
6. Difference Max Squared

80.4.44 CompareBrightnessMBS(other as picture, mode as Integer, threshold as Integer) as Double

MBS Picture Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Compares two pictures in brightness.

**Example:**

```pascal
Dim p as Picture = NewPicture(100, 100, 32)
Dim q as Picture = NewPicture(100, 100, 32)

Dim diff as Double = p.CompareBrightnessMBS(q, 0, 0)
```

MsgBox str(Diff) // shows 0 = equal

**Notes:**

Returns the percent of difference: Number of pixels where the squared color difference is bigger than the threshold divided by the total number of pixels.

If width and height are not equal, the result is 1.0.

If you need to check the mask also, please call this method a second time for the masks.

Modes:

- 0: \( y = 0.33 \times R + 0.5 \times G + 0.16 \times B \) Faster version of 3
- 1: \( y = 0.375 \times R + 0.5 \times G + 0.125 \times B \) Faster version of 3
- 2: \( y = 0.2126 \times R + 0.7152 \times G + 0.0722 \times B \) Photometric/digital ITU-R
- 3: \( y = 0.299 \times R + 0.587 \times G + 0.114 \times B \) Digital CCIR601

Mode 2 and 3 uses doubles and mode 0 and 1 use integers so they should be faster.

Still Mode 0 and 1 are just approximation formulas which trade accuracy for performance.
Only compares raw pixels without checking mask or alpha channel.

### 80.4.45 CompareMBS(other as picture, threshold as Integer) as Double

MBS Picture Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Compresses two pictures.

**Example:**

```plaintext
dim p as picture = newPicture(100,100,32)
dim q as Picture = NewPicture(100,100,32)

dim diff as Double = p.CompareMBS(q, 0)
MsgBox str(Diff) // shows 0 = equal
p.Graphics.ForeColor = & c FF0000
p.Graphics.FillRect 0, 0, p.Width, p.Height
q.Graphics.ForeColor = & c FF0001
q.Graphics.FillRect 0, 0, q.Width, q.Height

dim diff1 as Double = p.CompareMBS(q, 0)
dim diff2 as Double = p.CompareMBS(q, 2)
MsgBox str(Diff1) + "+" + str(Diff2) // shows 1 (all pixels different) and shows 0 (all equal)
```

**Notes:**

Returns the percent of difference: Number of pixels where the squared color difference is bigger than the threshold divided by the total number of pixels.

If width and height are not equal, the result is 1.0.

If you need to check the mask also, please call this method a second time for the masks.

Only compares raw pixels without checking mask or alpha channel.

### 80.4.46 CopyABGRtoMemoryblockMBS(destination as memoryblock, offset as Integer, AlphaValue as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

MBS Picture Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Copies raw image data into a memoryblock.
Notes:

Returns true on success.
destination should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs picture.width*picture.height*4 bytes in the memoryblock.

Does not access the mask inside the image!

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

The X variant of this method does not touch the alpha channel in the memoryblock and the A variant changes the alpha value to the given value.

StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1. if Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line. See also:

- 80.4.47 CopyABGRtoMemoryblockMBS(destination as memoryblock, offset as Integer, MaskForAlpha as picture, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

80.4.47 CopyABGRtoMemoryblockMBS(destination as memoryblock, offset as Integer, MaskForAlpha as picture, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean


Example:

```vba
// Create a picture with mask:
dim p as Picture = LogoMBS(200)
dim g as Graphics = p.mask.Graphics

g.ForeColor = & c FFFFFF
g.FillRect 0,0,g.Width,g.Height
g.ForeColor = & c 000000
```
g.Filloval 0,0,g.Width,g.Height

// convert to memoryblock
dim m as new MemoryBlock(4 * p.Width * p.Height)

if p.CopyABGRtoMemoryblockMBS(m, 0, p.Mask) then
  // convert back
  Backdrop = MemoryblockABGRtoPictureMBS(m, 0, p.Width, p.Height)
break // look into memoryblock with debugger
endif

Notes:

Returns true on success.
destination should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.
MaskForAlpha should not be nil and be the mask for this image.

The function will crash if the memoryblock is too small. Needs picture.width*picture.height*4 bytes in the memoryblock. Mask and Picture must have equal size.
The mask is used to fill alpha channel.

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1. if Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line. See also:

- 80.4.46 CopyABGRtoMemoryblockMBS(destination as memoryblock, offset as Integer, AlphaValue as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

80.4.48 CopyARGBtoMemoryblockMBS(destination as memoryblock, offset as Integer, AlphaValue as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

MBS Picture Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies raw image data into a memoryblock.
Example:

```vbnet
dim m as MemoryBlock
dim p,q as Picture

p=NewPicture(100,100,32)
p.Graphics.FillRect 0,0,100,100

// Make a new MemoryBlock
m=NewMemoryBlock(100*100*4) // 3 bytes per Pixel

// Copy RGB without alpha
if p.CopyARGBtoMemoryblockMBS(m,0,0) then

dim x as Picture = NewPicture(100,100,32)
q=MemoryblockARGBtoPictureMBS(x, m,0,100,100)

Backdrop=q
if x=q then
  window1.Title = "reused picture"
else
  window1.Title = "created new picture"
end if
end if
```

Notes:

Returns true on success.
destination should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs picture.width*picture.height*4 bytes in the memoryblock.

Does not access the mask inside the image!

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

The X variant of this method does not touch the alpha channel in the memoryblock and the A variant changes the alpha value to the given value.
StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1. If Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line. See also:

- 80.4.49 CopyARGBtoMemoryblockMBS(destination as memoryblock, offset as Integer, LittleEndian as boolean, AlphaValue as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean
- 80.4.50 CopyARGBtoMemoryblockMBS(destination as memoryblock, offset as Integer, MaskForAlpha as picture, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

80.4.49 CopyARGBtoMemoryblockMBS(destination as memoryblock, offset as Integer, LittleEndian as boolean, AlphaValue as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

MBS Picture Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies raw image data into a memoryblock.

**Example:**

```vbnet
dim m as MemoryBlock
dim p as Picture

p=NewPicture(100,100,32)
p.Graphics.FillRect 0,0,100,100

// Make a new MemoryBlock
m=NewMemoryBlock(100*100*4) // 4 bytes per Pixel

// copy RGB and leave room for alpha
if p.CopyARGBtoMemoryblockMBS(m,0,false,-1) then
    MsgBox EncodingToHexMBS(m.StringValue(0,99))
end if
```

**Notes:**

Returns true on success.

destination should not be nil.

offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs picture.width*picture.height*4 bytes in the
memoryblock.

Does not access the mask inside the image!

LittleEndian specifies whether the image is stored in ARGB (BigEndian) or BGRA (LittleEndian) mode.

If Alphavalue is in range of 0 to 255 the alpha value of all pixel is set to this value. If the AlphaValue is outside this range the alpha value is not touched for all pixels.

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1. if Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line.

See also:

- 80.4.48 CopyARGBtoMemoryblockMBS(destination as memoryblock, offset as Integer, AlphaValue as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

- 80.4.50 CopyARGBtoMemoryblockMBS(destination as memoryblock, offset as Integer, MaskForAlpha as picture, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

80.4.50  CopyARGBtoMemoryblockMBS(destination as memoryblock, offset as Integer, MaskForAlpha as picture, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean


Example:

```vba
// Create a picture with mask:
dim p as Picture = LogoMBS(200)
dim g as Graphics = p.mask.Graphics

g.ForeColor = & c FFFFFF
g.FillRect 0,0,g.Width,g.Height

g.ForeColor = & c 000000
g.Filloval 0,0,g.Width,g.Height
```
// convert to memoryblock
dim m as new MemoryBlock(4 * p.Width * p.Height)

if p.CopyARGBtoMemoryblockMBS(m, 0, p.Mask) then
  // convert back
  Backdrop = MemoryblockARGBtoPictureMBS(m, 0, p.Width, p.Height)

break // look into memoryblock with debugger
end if

Notes:

Returns true on success.
destination should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.
MaskForAlpha should not be nil and be the mask for this image.

The function will crash if the memoryblock is too small. Needs picture.width*picture.height*4 bytes in the memoryblock. Mask and Picture must have equal size.
The mask is used to fill alpha channel.

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1. If Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield is > 0, we yield every yield/60th second to other threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line. See also:

- 80.4.48 CopyARGBtoMemoryblockMBS(destination as memoryblock, offset as Integer, AlphaValue as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

- 80.4.49 CopyARGBtoMemoryblockMBS(destination as memoryblock, offset as Integer, LittleEndian as boolean, AlphaValue as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean
CHAPTER 80. GRAPHICS & PICTURES

80.4.51 CopyBGRAtoMemoryblockMBS(destination as memoryblock, offset as Integer, AlphaValue as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

MBS Picture Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies raw image data into a memoryblock.

**Notes:**
- Returns true on success.
- destination should not be nil.
- offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs picture.width*picture.height*4 bytes in the memoryblock.

Does not access the mask inside the image!

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

The X variant of this method does not touch the alpha channel in the memoryblock and the A variant changes the alpha value to the given value.

StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1. if Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line. See also:

- 80.4.52 CopyBGRAtoMemoryblockMBS(destination as memoryblock, offset as Integer, MaskForAlpha as picture, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

80.4.52 CopyBGRAtoMemoryblockMBS(destination as memoryblock, offset as Integer, MaskForAlpha as picture, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

MBS Picture Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies raw image data into a memoryblock.

**Example:**
// Create a picture with mask:
dim p as Picture = LogoMBS(200)
dim g as Graphics = p.mask.Graphics

g.ForeColor = & c FFFFFF
g.FillRect 0,0,g.Width,g.Height

g.ForeColor = & c 000000
g.FillOval 0,0,g.Width,g.Height

// convert to memoryblock
dim m as new MemoryBlock(4 * p.Width * p.Height)
if p.CopyBGRAtoMemoryblockMBS(m, 0, p.Mask) then
    // convert back
    Backdrop = MemoryblockBGRAtoPictureMBS(m, 0, p.Width, p.Height)
break // look into memoryblock with debugger
end if

Notes:

Returns true on success.
destination should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.
MaskForAlpha should not be nil and be the mask for this image.

The function will crash if the memoryblock is too small. Needs picture.width*picture.height*4 bytes in the memoryblock. Mask and Picture must have equal size.
The mask is used to fill alpha channel.

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1. If Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line. See also:

- 80.4.51 CopyBGRAtoMemoryblockMBS(destination as memoryblock, offset as Integer, AlphaValue as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean
CHAPTER 80. GRAPHICS & PICTURES

80.4.53  CopyBGRtoMemoryblockMBS(destination as memoryblock, offset as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

MBS Picture Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Copies raw image data into a memoryblock. Notes:

Returns true on success.
destination should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs picture.width*picture.height*3 bytes in the memoryblock.

Does not access the mask inside the image!

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

StartLine and EndLine define the range of source lines from picture. Range is from 0 to picture.height-1. if Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line.

80.4.54  CopyBGRXtoMemoryblockMBS(destination as memoryblock, offset as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

MBS Picture Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Copies raw image data into a memoryblock. Notes:

Returns true on success.
destination should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs picture.width*picture.height*4 bytes in the memoryblock.

Does not access the mask inside the image!
This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

The X variant of this method does not touch the alpha channel in the memoryblock and the A variant changes the alpha value to the given value.

StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1. If Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield > 0, we yield every yield/60th second to other threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line.

**80.4.55 CopyBtoMemoryblockMBS(destination as memoryblock, offset as Integer, PixelByteSize as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean**

MBS Picture Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies raw image data into a memoryblock.

**Example:**

```vbs
const kAlphaOffset=0 ' (BigEndian) and 3 (LittleEndian)
dim m as MemoryBlock
dim p as Picture

p=NewPicture(100,100,32)
p.Graphics.FillRect 0,0,100,100
p.mask.Graphics.FillRect 0,0,100,100

// Make a new MemoryBlock
m=NewMemoryBlock(100*100*4) // 4 bytes per Pixel

// copy RGB and leave room for alpha
if p.CopyARGBtoMemoryblockMBS(m,0,false,-1) then
    MsgBox EncodingToHexMBS(m.StringValue(0,99))
end if

// copy Blue channel from mask image into Memoryblock
if p.mask.CopyBtoMemoryblockMBS(m,kAlphaOffset,4) then
    MsgBox EncodingToHexMBS(m.StringValue(0,99))
end if
```
Notes:

Returns true on success.
destination should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.
PixelByteSize is normally 4 for 32bit per Pixel.
By using a different offset you can have this function working correctly on non BigEndian platforms.
The function will crash if the memoryblock is too small. Needs picture.width*picture.height*PixelByteSize bytes in the memoryblock.
Mask images in RB are all gray so it does not matter which channel you copy to get the alpha channel. This function takes the blue channel from the source image.

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1.
if Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line.

80.4.56 CopyGtoMemoryblockMBS(destination as memoryblock, offset as Integer, PixelByteSize as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

MBS Picture Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Copies raw image data into a memoryblock.
Example:

const kAlphaOffset=0 ' (BigEndian) and 3 (LittleEndian)
dim m as MemoryBlock
dim p as Picture

p=NewPicture(100,100,32)
p.Graphics.FillRect 0,0,100,100
p.mask.Graphics.FillRect 0,0,100,100

// Make a new MemoryBlock
m=NewMemoryBlock(100*100*4) // 4 bytes per Pixel

// copy RGB and leave room for alpha
if p.CopyARGBtoMemoryblockMBS(m,0,false,-1) then
MsgBox EncodingToHexMBS(m.StringValue(0,99))
// copy green channel from mask image into Memoryblock
if p.mask.CopyGtoMemoryblockMBS(m,kAlphaOffset,4) then
    MsgBox EncodingToHexMBS(m.StringValue(0,99))
end if

Notes:

Returns true on success.
destination should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.
PixelByteSize is normally 4 for 32bit per Pixel.
By using a different offset you can have this function working correctly on non BigEndian platforms.
The function will crash if the memoryblock is too small. Needs picture.width*picture.height*PixelByteSize
bytes in the memoryblock.
Mask images in RB are all gray so it does not matter which channel you copy to get the alpha channel. This
function takes the green channel from the source image.

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse
memoryblocks for batch processing images as long as the memoryblock is big enough.

StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1.
if Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other
threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other
threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line.

80.4.57 CopyMaskMBS as picture

MBS Picture Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Copies the mask of the picture into a new and independend picture object.
Example:
    dim p as Picture

    p=NewPicture(300,300,32)
    p.Graphics.ForeColor=& cFF0000
    p.Graphics.FillRect 0,0,300,300
    p.mask.Graphics.FillRect 0,0,300,300
p.mask.Graphics.Filloval 0,0,300,300

Backdrop=p.CopyMaskMBS

**Notes:** Returns nil on low memory.

### 80.4.58 CopyPictureMBS as picture

MBS Picture Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a clone of picture. **Notes:** Can duplicate mask and alpha channel.

### 80.4.59 CopyPictureWithMaskMBS as picture

MBS Picture Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies the picture into a new and independent picture object with mask. **Example:**

```pascal
dim p as Picture

p=NewPicture(300,300,32)

p.Graphics.ForeColor=& cFF0000
p.Graphics.FillRect 0,0,300,300

p.mask.Graphics.FillRect 0,0,300,300

p.mask.Graphics.Filloval 0,0,300,300

Backdrop=p.CopyPictureWithMaskMBS
```

**Notes:** Returns nil on low memory.

### 80.4.60 CopyPictureWithoutMaskMBS as picture

MBS Picture Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies the picture into a new and independent picture object without the mask.
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Example:

dim p as Picture

p=NewPicture(300,300,32)

p.Graphics.ForeColor=& cFF0000
p.Graphics.FillRect 0,0,300,300

p.mask.Graphics.Fillrect 0,0,300,300

p.mask.Graphics.Filloval 0,0,300,300

Backdrop=p.CopyPictureWithoutMaskMBS

Notes: Returns nil on low memory.

80.4.61  CopyPixelFastMBS(Source As Picture, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer) as boolean


Example:

const x=100 // mouse coordinates for example
const y=100

dim p,logo as picture

logo=LogoMBS(500)

p=NewPicture(800,800,32)

p.Graphics.FillRect 0,0,p.Width,p.Height

if p.CopyPixelFastMBS(logo, x-logo.Width/2, y-logo.Height/2, 0, 0, logo.Width, logo.Height) then ' ok
else
beep
end if
Notes:

Returns true on success and false on failure.

Parameters:
Source: the source picture, must not be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy

The destination image (self) can be either 24 bit or 32 bit.
The source image can have any bit depth and may be converted to 24 or 32 bit.

80.4.62  CopyRGBAtoMemoryblockMBS(destination as memoryblock, offset as Integer, AlphaValue as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

MBS Picture Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Copies raw image data into a memoryblock.
Example:

```plaintext
// get some picture
dim pic as Picture = LogoMBS(500)
// and a memoryblock of 1000 by 1000 pixels with 4 bytes per pixel
dim m as new MemoryBlock(1000* 1000 *4)

// calculate some offset for the image with 50 rows from top and 60 pixels from left
dim Offset50Lines as Integer = 1000*4 *50 +60*4

// copy picture to memoryblock
if pic.CopyRGBAtoMemoryblockMBS(m, Offset50Lines, 127, 0, pic.Height-1, 0, 4*1000) then
  // show MemoryBlock content
  Backdrop = MemoryblockRGBAtoPictureMBS(nil, m, 0, 1000, 1000)
end if
```
Notes:

Returns true on success.
destination should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs picture.width*picture.height*4 bytes in the memoryblock.

Does not access the mask inside the image!

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

The X variant of this method does not touch the alpha channel in the memoryblock and the A variant changes the alpha value to the given value.

StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1. if Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line. See also:

- 80.4.63 CopyRGBAtoMemoryblockMBS(destination as memoryblock, offset as Integer, MaskForAlpha as picture, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

80.4.63 CopyRGBAtoMemoryblockMBS(destination as memoryblock, offset as Integer, MaskForAlpha as picture, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean


Example:

```// Create a picture with mask:
dim p as Picture = LogoMBS(200)
dim g as Graphics = p.mask.Graphics

g.ForeColor = & c FFFFFF
g.FillRect 0,0,g.Width,g.Height

g.ForeColor = & c 000000```


g.Filloval 0,0,g.Width,g.Height

// convert to memoryblock
dim m as new MemoryBlock(4 * p.Width * p.Height)

if p.CopyRGBAtoMemoryblockMBS(m, 0, p.Mask) then
    // convert back
    Backdrop = MemoryblockRGBAtoPictureMBS(m, 0, p.Width, p.Height)

break // look into memoryblock with debugger
end if

Notes:

Returns true on success.
destination should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.
MaskForAlpha should not be nil and be the mask for this image.

The function will crash if the memoryblock is too small. Needs picture.width*picture.height*4 bytes in the memoryblock. Mask and Picture must have equal size.
The mask is used to fill alpha channel.

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1. If Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line.

See also:

- 80.4.62 CopyRGBAtoMemoryblockMBS(destination as memoryblock, offset as Integer, AlphaValue as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

80.4.64 CopyRGBtoMemoryblockMBS(destination as memoryblock, offset as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean


Example:
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```vbscript
dim m as MemoryBlock
dim p as Picture

p=NewPicture(100,100,32)
p.Graphics.FillRect 0,0,100,100

// Make a new MemoryBlock
m=NewMemoryBlock(100*100*3) // 3 bytes per Pixel

// Copy RGB without alpha
if p.CopyRGBtoMemoryblockMBS(m,0) then
  MsgBox EncodingToHexMBS(m.StringValue(0,99))
end if
```

**Notes:**

- Returns true on success.
- Destination should not be nil.
- Offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs picture.width*picture.height*3 bytes in the memoryblock.

- Does not access the mask inside the image!

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

StartLine and EndLine define the range of source lines from picture. Range is from 0 to picture.height-1. If EndLine is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line.

**80.4.65 CopyRGBXtoMemoryblockMBS(destination as memoryblock, offset as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean**

MBS Picture Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies raw image data into a memoryblock.

**Notes:**
Returns true on success.
destination should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs picture.width*picture.height*4 bytes in the memoryblock.

Does not access the mask inside the image!

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

The X variant of this method does not touch the alpha channel in the memoryblock and the A variant changes the alpha value to the given value.

StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1.
if Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line.

80.4.66 CopyRtoMemoryblockMBS(destination as memoryblock, offset as Integer, PixelByteSize as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

Example:
const kAlphaOffset=0 ' (BigEndian) and 3 (LittleEndian)
dim m as MemoryBlock
dim p as Picture

p=NewPicture(100,100,32)
p.Graphics.FillRect 0,0,100,100
p.mask.Graphics.FillRect 0,0,100,100

// Make a new MemoryBlock
m=NewMemoryBlock(100*100*4) // 4 bytes per Pixel

// copy RGB and leave room for alpha
if p.CopyARGBtoMemoryblockMBS(m,0,false,-1) then
MsgBox EncodingToHexMBS(m.StringValue(0,99))
end if

// copy Red channel from mask image into Memoryblock
if p.mask.CopyRtoMemoryblockMBS(m,kAlphaOffset,4) then
MsgBox EncodingToHexMBS(m.StringValue(0,99))
end if

Notes:

Returns true on success.
destination should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.
PixelByteSize is normally 4 for 32bit per Pixel.
By using a different offset you can have this function working correctly on non BigEndian platforms.
The function will crash if the memoryblock is too small. Needs picture.width*picture.height*PixelByteSize
bytes in the memoryblock.
Mask images in RB are all gray so it does not matter which channel you copy to get the alpha channel. This
function takes the red channel from the source image.

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse
memoryblocks for batch processing images as long as the memoryblock is big enough.

StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1.
if Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other
threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other
threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line.

80.4.67  CopyXBGRtoMemoryblockMBS(destination as memoryblock, offset as
Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as
Integer = 0, DestRowBytes as Integer = 0) as boolean

MBS Picture Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Copies raw image data into a memoryblock.
Notes:

Returns true on success.
destination should not be nil.
offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs picture.width*picture.height*4 bytes in the
memoryblock.
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Does not access the mask inside the image!

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

The X variant of this method does not touch the alpha channel in the memoryblock and the A variant changes the alpha value to the given value.

StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1. If Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line.

80.4.68 CopyXRGBtoMemoryblockMBS(destination as memoryblock, offset as Integer, StartLine as Integer = 0, EndLine as Integer = -1, Yield as Integer = 0, DestRowBytes as Integer = 0) as boolean

MBS Picture Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies raw image data into a memoryblock.

**Notes:**

Returns true on success.

destination should not be nil.

offset should be 0 or bigger and is the start position in the memoryblock.

The function will crash if the memoryblock is too small. Needs picture.width*picture.height*4 bytes in the memoryblock.

Does not access the mask inside the image!

This method was written for speed, so the creation of the memoryblock is your part. You can of course reuse memoryblocks for batch processing images as long as the memoryblock is big enough.

The X variant of this method does not touch the alpha channel in the memoryblock and the A variant changes the alpha value to the given value.

StartLine and Endline define the range of source lines from picture. Range is from 0 to picture.height-1. If Endline is -1, we use picture.height-1 internally. Yield specifies how much CPU time is given to other threads. If yield = 0, we give no CPU time away. If yield is >0, we yield every yield/60th second to other
80.4. **CLASS PICTURE**

threads. If DestRowBytes is not zero, it specifies the bytes per row in the target memoryblock for each line.

---

**80.4.69  CountColorMBS(col as color) as Integer**

MBS Picture Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Counts the pixels with the given colors.

**Example:**

```vba
dim p as Picture
dim n1,n2 as Integer

p=NewPicture(300,300,32)

p.Graphics.ForeColor=&cFF0000
p.Graphics.FillRect 0,0,100,100

n1=p.CountColorMBS(&cFF0000)
n2=p.CountColorMBS(&cFFFFFF)

if n1=100*100 then
    if n2=300*300-100*100 then
        MsgBox "OK"
    else
        MsgBox "white failed"
    end if
else
    MsgBox "red failed"
end if
```

**Notes:** Returns the number of pixels found.

---

**80.4.70  CountColorsMBS(byref red as memoryblock, byref blue as memoryblock, byref green as memoryblock, byref count as Integer)**

MBS Picture Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Counts the color parts of each pixel.

**Notes:**

red, blue and green are filled with 1024 bytes big memoryblocks. One 4 byte integer for each color value possible.

Count is filled with the number of pixels processed.
80.4.71  **DrawPictureFMBS(pic as picture, x as Double, y as Double, alpha as Double = 1.0, yield as Integer = 0) as boolean**

**Notes:**  
Supports a mask on the picture.  
Returns true on success.

80.4.72  **ExtractColorMBS(SearchColor as color, ReplaceWithColor as color, BackGroundColor as color) as picture**

MBS Picture Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Searches the first color and writes matching pixels with the second color.  
**Example:**

```vba
dim p as Picture  
p=NewPicture(300,300,32)  
p.Graphics.ForeColor=& cFF0000  
p.Graphics.FillRect 000,100,100,100  
p.Graphics.ForeColor=& c00FF00  
p.Graphics.FillRect 100,100,100,100  
p.Graphics.ForeColor=& c0000FF  
p.Graphics.FillRect 200,100,100,100  
p.Graphics.ForeColor=& c777700  
p.Graphics.FillRect 100,200,100,100  
// shows just a violet box on the left  
backdrop=p.ExtractColorMBS(& cFF0000,& cFF00FF,& c000000)  
```

**Notes:**  
All pixels which do not match the search color are written to the new picture using the given background color.  
Returns nil on any error.
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80.4.73 ExtractColorRectangleMaskMBS as picture

MBS Picture Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a mask picture with all the rectangles marked visible which contain color.

**Example:**

```plaintext
dim invertedpic as picture
dim pic as Picture

pic=NewPicture(300,300,32)
pic.graphics.drawpicture LogoMBS(100), 150,50

Backdrop=pic.ExtractColorRectangleMaskMBS
// marks black where the logo is drawn
```

**Notes:**

If you have a picture which is mostly gray and you need to find a color picture inside, this method can be helpful.

In the returned picture all pixels are black which belong to a rectangle which contains color pixels in the original picture.

See also:

- 80.4.74 ExtractColorRectangleMaskMBS(left as Integer,top as Integer,width as Integer,height as Integer) as picture

80.4.74 ExtractColorRectangleMaskMBS(left as Integer,top as Integer,width as Integer,height as Integer) as picture

MBS Picture Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a mask picture with all the rectangles marked visible which contain color.

**Notes:**

If you have a picture which is mostly gray and you need to find a color picture inside, this method can be helpful.

In the returned picture all pixels are black which belong to a rectangle which contains color pixels in the original picture.

All pixel outside the rectangle specified will be white.

See also:

- 80.4.73 ExtractColorRectangleMaskMBS as picture
**80.4.75 FindPictureMBS**

FindPictureMBS(pic as picture, byref x as Integer, byref y as Integer, StartX as Integer = 0, StartY as Integer = 0, Tolerance as Integer = 3) as boolean

MBS Picture Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Finds the given picture inside the picture.

**Example:**

```plaintext
// this is search image
dim p as new Picture(20,20,32)
p.Graphics.ForeColor = & c0000FF
p.Graphics.FillRect 0, 0, 20, 20

// this is target image
dim q as new Picture(500, 500, 32)

// with some color at Random position
q.Graphics.ForeColor = & c0000FF
q.Graphics.FillRect rnd*480, rnd*480, 30, 30

// do a search
dim x, y as Integer
if q.FindPictureMBS(p, x,y) then
    // found image, so draw rectangle there
    q.Graphics.ForeColor = & cFF0000
end if

window1.Backdrop = q
```

**Notes:**

Returns true on success and fills x/y variables.
Pixels are compared exactly, so a little bit color correction and make the picture being not found.

StartX/StartY can give start position. Tolerance defines how much two pixel component values can differ and still be considered the same. This helps with color matching and other drawings which may alter pixels a little bit.
If function returns true, you can use x+1, y as the new start position and search again.
80.4.76 GetMaskMBS(create as boolean = true) as picture

MBS Picture Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the mask for that picture.

**Notes:**
Same as Picture.Mask in Real Studio, but over the Plugin API.
We added it to test for leaks in plugin API.

80.4.77 GrayScale2MBS(mode as Integer) as boolean

MBS Picture Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Turns picture into grayscale.

**Example:**
```
dim l as Picture = LogoMBS(500)
if l.GrayScale2MBS(0) then
    Backdrop = l
end if
```

**Notes:**
Returns true on success and false on failure.

**Modes:**

<table>
<thead>
<tr>
<th>Mode</th>
<th>Formula</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>$y = 0.33 * R + 0.5 * G + 0.16 * B$</td>
<td>Faster version of 3</td>
</tr>
<tr>
<td>1</td>
<td>$y = 0.375 * R + 0.5 * G + 0.125 * B$</td>
<td>Faster version of 3</td>
</tr>
<tr>
<td>2</td>
<td>$y = 0.2126 * R + 0.7152 * G + 0.0722 * B$</td>
<td>Photometric/digital ITU-R</td>
</tr>
<tr>
<td>3</td>
<td>$y = 0.299 * R + 0.587 * G + 0.114 * B$</td>
<td>Digital CCIR601</td>
</tr>
</tbody>
</table>

Mode 2 and 3 uses doubles and mode 0 and 1 use integers so they should be faster.
Still Mode 0 and 1 are just approximation formulas which trade accuracy for performace.

GrayScaleMBS makes a copy of the picture while GrayScale2MBS edits in-place.

80.4.78 GrayScaleMBS(mode as Integer) as picture

MBS Picture Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a grayscale copy of the picture.

**Example:**
dim l as Picture = LogoMBS(500)
Backdrop = l.GrayScaleMBS(0)

Notes:
If you have a mask on the picture, you need to draw that mask in the new picture’s mask if you want to keep it.

Modes:

<table>
<thead>
<tr>
<th>Mode</th>
<th>Formula</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>( y = 0.33 \times R + 0.5 \times G + 0.16 \times B )</td>
<td>Faster version of 3</td>
</tr>
<tr>
<td>1</td>
<td>( y = 0.375 \times R + 0.5 \times G + 0.125 \times B )</td>
<td>Faster version of 3</td>
</tr>
<tr>
<td>2</td>
<td>( y = 0.2126 \times R + 0.7152 \times G + 0.0722 \times B )</td>
<td>Photometric/digital ITU-R</td>
</tr>
<tr>
<td>3</td>
<td>( y = 0.299 \times R + 0.587 \times G + 0.114 \times B )</td>
<td>Digital CCIR601</td>
</tr>
</tbody>
</table>

Mode 2 and 3 uses doubles and mode 0 and 1 use integers so they should be faster.
Still Mode 0 and 1 are just approximation formulas which trade accuracy for performance.

GrayScaleMBS makes a copy of the picture while GrayScale2MBS edits in-place.

80.4.79 GreenChannelMBS as picture

MBS Picture Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The green channel of the picture copied into a new picture.

**Example:**

```dim p as Picture = LogoMBS(500)
Backdrop = p.GreenChannelMBS```

80.4.80 HashMBS as UInt32

MBS Picture Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calculates CRC 32 over all pixels.

**Example:**

```dim p as new Picture(100, 100, 32)
dim hash1 as UInt32 = p.HashMBS
// one black pixel
p.Graphics.Pixel(50, 50) = & c000000```
```
dim hash2 as UInt32 = p.HashMBS
MsgBox hex(hash1)+” ”+hex(hash2)
```

**Notes:**
You can use hash to see if two pictures have 100% identical pixel values. Changing just one pixel should give different number.
Does not include alpha channel or mask for the hash, but only RGB channels.

### 80.4.81 HasMaskMBS as boolean

MBS Picture Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this picture has a mask or not.
**Notes:** Returns true if yes or false if not.

### 80.4.82 HMirrorMBS as picture

MBS Picture Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Mirrors the picture horizontally (flip).
**Example:**
```
// load picture
dim f as FolderItem = SpecialFolder.Desktop.Child(“test.png”)
dim p as PNGPictureMBS = f.OpenAsPNGMBS

// get parts
dim pic as Picture = p.Pict.HMirrorMBS
dim mask as Picture = p.mask.HMirrorMBS

// save as png
dim g as FolderItem = SpecialFolder.Desktop.Child(“output.png”)
call g.SaveAsPNGLCMS(pic, mask, 0)

// now apply mask to show it
pic.Mask = mask
Backdrop = pic
```

**Notes:**
This method returns a copy of the picture mirrored.
80.4.83  **HMirrorPictureMBS as boolean**

MBS Picture Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Mirrors the picture horizontally (flip).  
**Example:**

```vbnet
if pic.HMirrorPictureMBS then // mirror picture
canvas1.backdrop=pic
else
canvas1.backdrop=pic.HMirrorMBS // mirror a copy
end if
```

**Notes:** This method mirrors the picture data itself. Returns true on success and false on failure. Only bitmap pictures can be mirrored this way.

80.4.84  **InvertGrayMBS as picture**

MBS Picture Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Inverts the gray pixels inside the picture.  
**Example:**

```vbnet
dim invertedpic as picture
dim pic as picture

pic=LogoMBS(500)
invertedpic=pic.InvertGrayMBS

Backdrop=invertedpic
```

**Notes:** Returns nil on any error.  
See also:

- 80.4.85 InvertGrayMBS(left as Integer,top as Integer,width as Integer,height as Integer) as picture
80.4. CLASS PICTURE

80.4.85 InvertGrayMBS(left as Integer,top as Integer,width as Integer,height as Integer) as picture


```vbnet
dim invertedpic as picture
dim pic as picture

pic=LogoMBS(500)
invertedpic=pic.InvertGrayMBS(0,0,250,250)

Backdrop=invertedpic
```

Notes:
Returns nil on any error.
The part of the picture which is not inverted will be all black.
See also:

- 80.4.84 InvertGrayMBS as picture

80.4.86 InvertMBS as picture

MBS Picture Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Inverts the whole picture. Example:

```vbnet
dim invertedpic as picture
dim pic as picture

pic=LogoMBS(500)
invertedpic=pic.InvertMBS

Backdrop=invertedpic
```

Notes: Returns nil on any error.
See also:

- 80.4.87 InvertMBS(left as Integer,top as Integer,width as Integer,height as Integer) as picture
**80.4.87 InvertMBS**(left as Integer, top as Integer, width as Integer, height as Integer) as picture

MBS Picture Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Inverts the picture.

**Example:**

```plaintext
dim invertedpic as picture
dim pic as picture

pic=LogoMBS(500)
invertedpic=pic.InvertMBS(0,0,250,250)
Backdrop=invertedpic
```

**Notes:**

- Returns nil on any error.
- The part of the picture which is not inverted will be all black.

See also:

- 80.4.86 InvertMBS as picture

---

**80.4.88 isBlackMBS** as boolean

MBS Picture Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if the picture has only black pixels.

**Example:**

```plaintext
dim p as Picture

// test white
p=NewPicture(100,100,32)
MsgBox "isBlackMBS: "+str(p.isBlackMBS)+EndOfLine+"isWhiteMBS: "+str(p.isWhiteMBS)

// test black
p.Graphics.ForeColor=& c000000
p.Graphics.FillRect 0,0,100,100
MsgBox "isBlackMBS: "+str(p.isBlackMBS)+EndOfLine+"isWhiteMBS: "+str(p.isWhiteMBS)

// test red
p.Graphics.ForeColor=& cFF0000
p.Graphics.FillRect 0,0,100,100
MsgBox "isBlackMBS: "+str(p.isBlackMBS)+EndOfLine+"isWhiteMBS: "+str(p.isWhiteMBS)
```
80.4. **CLASS PICTURE**

See also:

- 80.4.89 isBlackMBS(left as Integer, top as Integer, width as Integer, height as Integer) as boolean

80.4.89  **isBlackMBS(left as Integer, top as Integer, width as Integer, height as Integer) as boolean**

MBS Picture Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if the picture has only black pixels in the given rectangle.

See also:

- 80.4.88 isBlackMBS as boolean

80.4.90  **isGrayMBS(tolerance as Integer = 0) as boolean**

MBS Picture Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Checks if a picture has only shades of gray in all pixels.

**Example:**

```vbs
dim p as new Picture(100,100,32)

// 1. test white picture
if p.isGrayMBS then
    MsgBox "white picture is gray."
end if

// 2. test gray picture
dim g as Graphics = p.Graphics
g.ForeColor = & c777777
g.FillRect 0, 0, 100, 100
if p.isGrayMBS then
    MsgBox "gray picture is gray."
end if

// 3. test gray picture with tolerance
g.ForeColor = & c777778
g.FillRect 0, 0, 100, 100
if p.isGrayMBS(0) then
    MsgBox "gray (not correct)"
else
    MsgBox "not gray (correct)"
```
end if

if p.isGrayMBS(1) then
    MsgBox "gray (correct)"
else
    MsgBox "not gray (not correct)"
end if

// 4. test gray picture with over tolerance
g.ForeColor = & c777779
g.FillRect 0, 0, 100, 100

if p.isGrayMBS(0) then
    MsgBox "gray (not correct)"
else
    MsgBox "not gray (correct)"
end if

if p.isGrayMBS(1) then
    MsgBox "gray (not correct)"
else
    MsgBox "not gray (correct)"
end if

Notes:
Tolerance defines how big the difference between two channels can be. Typically a value smaller than 5.
Pass 0 if you need exact gray scales.
Like the difference between & c000000 and & c000001 is not visible to most people, it can be ignored often.
See also:

- 80.4.91 isGrayMBS(tolerance as Integer, left as Integer,top as Integer,width as Integer,height as Integer) as boolean

80.4.91  isGrayMBS(tolerance as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as boolean

MBS Picture Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Checks if a picture has only shades of gray in all pixels.

Notes:
Tolerance defines how big the difference between two channels can be. Typically a value smaller than 5.
Pass 0 if you need exact gray scales.
Like the difference between & c000000 and & c000001 is not visible to most people, it can be ignored often.
See also:
80.4.92  isWhiteMBS as boolean

MBS Picture Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if the picture has only white pixels.

**Example:**

```vba
dim p as Picture

// test white
p=NewPicture(100,100,32)
MsgBox "isBlackMBS: "+str(p.isBlackMBS)+EndOfLine+"isWhiteMBS: "+str(p.isWhiteMBS)

// test black
p.Graphics.ForeColor=& c000000
p.Graphics.FillRect 0,0,100,100
MsgBox "isBlackMBS: "+str(p.isBlackMBS)+EndOfLine+"isWhiteMBS: "+str(p.isWhiteMBS)

// test red
p.Graphics.ForeColor=& cFF0000
p.Graphics.FillRect 0,0,100,100
MsgBox "isBlackMBS: "+str(p.isBlackMBS)+EndOfLine+"isWhiteMBS: "+str(p.isWhiteMBS)
```

See also:

- 80.4.93 isWhiteMBS(left as Integer,top as Integer,width as Integer,height as Integer) as boolean 13245

80.4.93  isWhiteMBS(left as Integer,top as Integer,width as Integer,height as Integer) as boolean

MBS Picture Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if the picture has only white pixels in the given rectangle.

See also:

- 80.4.92 isWhiteMBS as boolean 13245

80.4.94  MakeHBITMAPMBS as Ptr

MBS Picture Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns a HBITMAP handle to the picture.

**Notes:**
Warning: This function works only right on HDIB pictures.

The picture is cloned but both pictures may use the same binary data in background.

You will have to free this handle with DeleteObject:
Declare Function DeleteObject Lib "gdi32" (hObject as Integer) as Integer

80.4.95  MirrorMBS as picture

MBS Picture Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Mirrors the picture vertically and horizontally.
**Example:**

```
canvas1.backdrop=pic.MirrorMBS
```

**Notes:**
Same as rotation by 180 degree.
This method returns a copy of the picture mirrored.
Returns nil on low memory.

80.4.96  MirrorPictureMBS as boolean

MBS Picture Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Mirrors the picture vertically and horizontally.
**Example:**

```
if pic.MirrorPictureMBS then // mirror picture
    canvas1.backdrop=pic
else
    canvas1.backdrop=pic.MirrorMBS // mirror a copy
end if
```

**Notes:**
Same as rotation by 180 degree.
This method mirrors the picture data itself. Returns true on success and false on failure. Only bitmap pictures can be mirrored this way.
80.4. CLASS PICTURE

80.4.97 RedChannelMBS as picture

MBS Picture Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The red channel of the picture copied into a new picture.

**Example:**

```vba
dim p as Picture = LogoMBS(500)
Backdrop = p.RedChannelMBS
```

80.4.98 ReplaceBlueChannelMBS(BlueChannel as picture) as picture

MBS Picture Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a copy of the picture with the blue channel replaced with the blue channel of the given picture.

**Notes:** Returns nil on low memory.

80.4.99 ReplaceColorMBS(SearchColor as color, ReplaceWithColor as color) as picture

MBS Picture Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Searchs the given color and replaces it with the second color.

**Example:**

```vba
dim p as Picture
p=NewPicture(300,300,32)
p.Graphics.ForeColor=& cFF0000
p.Graphics.FillRect 000,100,100,100
p.Graphics.ForeColor=& c00FF00
p.Graphics.FillRect 100,100,100,100
p.Graphics.ForeColor=& c0000FF
p.Graphics.FillRect 200,100,100,100
p.Graphics.ForeColor=& c777700
p.Graphics.FillRect 100,200,100,100

// shows a violet box on the left. Other pixels unchanged
backdrop=p.ReplaceColorMBS(& c FF0000,& c FF00FF)
```

**Notes:**
All other pixels are copied to the new picture.
Returns nil on any error.

80.4.100 ReplaceGreenChannelMBS(GreenChannel as picture) as picture

MBS Picture Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a copy of the picture with the green channel replaced with the green channel of the given picture. **Notes:** Returns nil on low memory.

80.4.101 ReplaceRedChannelMBS(RedChannel as picture) as picture

MBS Picture Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a copy of the picture with the red channel replaced with the red channel of the given picture. **Notes:** Returns nil on low memory.

80.4.102 Rotate180MBS as picture

MBS Picture Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Rotates the picture by 180 counter clockwise. **Example:**

```vbnet
dim p,r as picture
r=LogoMBS(500)
p=r.cloneMBS
canvas1.backdrop=p.Rotate180MBS
```

**Notes:**
You may use the function picture.bitmap to make sure that the picture is a bitmap, because this function works only for bitmap pictures.

app.resourceFork.getpicture(148) is the about picture of REALbasic in the 4.5 release. This may change in future releases, so you will get nil. But using this picture will make the plugin download smaller.
80.4. CLASS PICTURE

80.4.103 Rotate270MBS as picture

MBS Picture Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Rotates the picture by 270 counter clockwise.

**Example:**

```pascal
dim p,r as picture
r=LogoMBS(500)
p=r.cloneMBS
canvas1.backdrop=p.Rotate270MBS
```

**Notes:**

You may use the function picture.bitmap to make sure that the picture is a bitmap, because this function works only for bitmap pictures.

app.resourceFork.getpicture(148) is the about picture of REALbasic in the 4.5 release. This may change in future releases, so you will get nil. But using this picture will make the plugin download smaller.

80.4.104 Rotate90MBS as picture

MBS Picture Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Rotates the picture by 90 counter clockwise.

**Example:**

```pascal
dim p,r as picture
r=LogoMBS(500)
p=r.cloneMBS
canvas1.backdrop=p.Rotate90MBS
```

**Notes:**

You may use the function picture.bitmap to make sure that the picture is a bitmap, because this function works only for bitmap pictures.

app.resourceFork.getpicture(148) is the about picture of REALbasic in the 4.5 release. This may change in future releases, so you will get nil. But using this picture will make the plugin download smaller.
80.4.105  **RotateImageAndMaskMBS**(angle as Double, cut as boolean = False) as picture

MBS Picture Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Rotates the picture by angle counter clockwise.  
**Notes:**  
Internally uses RotateMBS.  
Works with masked and alpha channel pictures, but is faster with masked pictures.  
Returns nil on any error.  
if cut is true, the image is cut to the original size.

80.4.106  **RotateMBS**(angle as Double, background as color = & cFFFFFFFF) as picture

MBS Picture Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Rotates the picture by angle counter clockwise.  
**Example:**

```
dim p,r as picture  
r=LogoMBS(500)  
p=r.cloneMBS  
canvas1.backdrop=p.RotateMBS(42.3,rgb(255,255,255))  
```

**Notes:**  
The area around the picture is filled using the backcolor.

You may use the function picture.bitmap to make sure that the picture is a bitmap, because this function works only for bitmap pictures.

app.resourceFork.getpicture(148) is the about picture of REALbasic in the 4.5 release. This may change in future releases, so you will get nil. But using this picture will make the plugin download smaller.

Alpha channel support is half done. If it's working for you, please enjoy it. If not, please report.

80.4.107  **RotateMemoryMBS**(angle as Double) as Int64

MBS Picture Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the memory needed to rotate the picture with the given angle.  
**Notes:** RotateMBS needs temporary buffers and fails if somewhere between memory is low.
80.4.108  **ScaleImageAndMaskMBS**<br>(width as Integer, height as Integer, AntiAlias as boolean=false, YieldTicks as Integer=0) as picture

MBS Picture Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**<br>Scales the picture to the new size including mask (in case one exists).<br>**Notes:**<br>This is a self made algorithm which produces nice pictures on all platforms.<br>It is slower than QuickDraw on Mac OS, but nicer than drawpicture on Windows.<br>Returns nil on low memory or invalid width and height values.<br><br>AntiAlias is set to false if width<=self.width or height<=self.height.<br><br>If YieldTicks is 0, no time is given to other threads in your application. If it is a value >0, this time is waited before a thread switch is done. Setting it to 1 will give away control to another thread after 1/60th of a second. We recommend a value of 3 to 5 for a good reponsibility of your application.

80.4.109  **ScaleMBS**<br>(width as Integer, height as Integer, AntiAlias as boolean=false, YieldTicks as Integer=0) as picture

MBS Picture Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**<br>Scales the picture to the new size.<br>**Example:**

```plaintext
dim pic as new Picture(100,100,32)
pic.Graphics.ForeColor=& cFF0000
pic.Graphics.FillOval 0,0,100,100

dim scaledPic as picture = pic.ScaleMBS(200,200)

// show scaledPic
window1.backdrop = scaledPic
```

**Notes:**<br>This is a self made algorithm which produces nice pictures on all platforms.<br>It is slower than QuickDraw on Mac OS, but nicer than drawpicture on Windows.<br>Returns nil on low memory or invalid width and height values.
AntiAlias is set to false if width<=self.width or height<=self.height.

If YieldTicks is 0, no time is given to other threads in your application. If it is a value >0, this time is waited before a thread switch is done. Setting it to 1 will give away control to another thread after 1/60th of a second. We recommend a value of 3 to 5 for a good responsibility of your application.

Scaling down does not use antialias. If you need full antialias, please use ScalingMBS function.

If input and output size is equal, you get your picture back unchanged. This function does not handle mask or alpha channel. Please use pictures with mask and scale image and mask separately.

**80.4.110 ScalingMBS(mode as Integer, width as Integer, height as Integer, yield as Integer = 0) as picture**

MBS Picture Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Scales the picture to the given size.

**Example:**

```plaintext
dim p as Picture

p=LogoMBS(1000)

p=p.ScalingMBS(2, 4000, 4000)

backdrop=p
```

**Notes:**
On low memory this function can return nil or the image may look bad. (e.g. all black)
The memory used for the temporary storage is original height * new width * 12 bytes plus some extra.
For scaling with the same size as the picture already has, the scaling is still performed.

Returns nil ony error. (e.g. destwidth=0)

**Modes:**

This function does not handle mask or alpha channel. Please use pictures with mask and scale image and mask separately.
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triangle
box, nearest neighbor
lanczos 3
lanczos 8
mitchell
poly 3
cubic

80.4.111 ScrollHorizontalMBS(delta as Integer, wrap as boolean, scrollmask as boolean) as boolean


dim p as Picture
p=LogoMBS(500) // any bitmap image
if p.ScrollHorizontalMBS(100,true,false) then
Title="ok"
end if
Backdrop=p

Notes:
Returns true on success and false on failure.
Works only on Mac OS and Windows with 32bit bitmap images.
scrollmask defines whether a mask (if one exists) is also scrolled.
Wrap will define whether the image will wrap on the edges. If wrap is enabled on Mac, the whole thing speeds up.

80.4.112 ScrollMBS(deltaX as Integer, deltaY as Integer, wrap as boolean, scrollmask as boolean) as boolean

MBS Picture Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. Function: Combines calls to ScrollHorizontalMBS and ScrollVerticalMBS. Notes:
Returns true on success and false on failure. Works only on Mac OS and Windows with 32bit bitmap images. scrollmask defines whether a mask (if one exists) is also scrolled. Wrap will define whether the image will wrap on the edges. If wrap is enabled on Mac, the whole thing speeds up.

80.4.113 ScrollVerticalMBS(delta as Integer, wrap as boolean, scrollmask as boolean) as boolean

MBS Picture Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Scrolls the image data vertically. **Example:**

```basic
dim p as Picture
p=LogoMBS(500) // any bitmap image
if p.ScrollVerticalMBS(100,true,false) then
    Title="ok"
end if
Backdrop=p
```

Notes:

Returns true on success and false on failure. Works only on Mac OS and Windows with 32bit bitmap images. scrollmask defines whether a mask (if one exists) is also scrolled. Wrap will define whether the image will wrap on the edges. If wrap is enabled on Mac, the whole thing speeds up.

80.4.114 SetSteganographyMBS(flags as Integer, data as Memoryblock) as boolean

MBS Picture Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds steganography to an existing picture. **Example:**

```basic
dim p as Picture = LogoMBS(500)
// this example uses chr(0) as end marker
dim s as string = "Hello World. This is just a test." + chr(0)
if p.SetSteganographyMBS(1, s) then
```

Notes:

Returns true on success and false on failure. Works only on Mac OS and Windows with 32bit bitmap images. scrollmask defines whether a mask (if one exists) is also scrolled. Wrap will define whether the image will wrap on the edges. If wrap is enabled on Mac, the whole thing speeds up.
80.4. CLASS PICTURE

```vba
    dim data as MemoryBlock = p.SteganographyMBS(1)
    dim d as string = data.CString(0)

    Backdrop = p
    Break
    end if
```

**Notes:**

Flags can be a combination of red (& h100), green (& h010) and blue (& h001).
Returns true on success or false on failure.
If memoryblock provided is nil, this function fails.

If you like to store data, please encrypt them and include some way that you find your data again, detect length of data, verify it’s okay via checksum and than decrypt your data.
Please store image in a loss less format like PNG.
Function does not handle mask or alpha channel.

80.4.115 SetSteganographyPictureMBS(flags as Integer, data as Picture) as boolean

MBS Picture Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds steganography to an existing picture.
**Example:**

```vba
    const AllChannels = & h111

    dim p as new Picture(500, 500, 32)
    dim l as Picture = LogoMBS(500)

    dim w as new window1
    w.Title = "Logo"
    w.Backdrop = l

    // adds picture. You will normally not see the modification
    if p.SetSteganographyPictureMBS(AllChannels, l) then

        w = new window1
        w.Title = "Logo hidden in white picture"
        w.Backdrop = p

        // as we store in lowest bit, this picture will look strange
        dim y as Picture = p.SteganographyPictureMBS(AllChannels)
```

w = new window1
w.Title = "Logo extracted"
w.Backdrop = y
end if

Notes:
Flags can be a combination of red (& h100), green (& h010) and blue (& h001).
Returns true on success or false on failure.

Function does not handle mask or alpha channel.

80.4.116 SobelChannelsMBS(Red as boolean, Green as Boolean, Blue as boolean,
direction1 as Integer = 1, direction2 as Integer = 3, swap as boolean = false) as picture

MBS Picture Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Calculates the sobel operator.
Example:
dim m as Picture = LogoMBS(500)

// only green
Backdrop = m.SobelChannelsMBS(false, true, false)

Notes:
Useful for edge detection.
See also SobelMBS function which takes similar operators.
You can set Red/Blue/Green parameters to define which channel is modified and which channel is just
copied.
Pictures look quite funny. The channel who got the edge detection has bigger areas black or white so other
colors in other channels have much more visible effect.

80.4.117 SobelMBS(direction1 as Integer = 1, direction2 as Integer = 3, swap
as boolean = false, gray as boolean = true) as picture

MBS Picture Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Calculates the sobel operator.
Example:
80.4.  CLASS PICTURE

`dim m as Picture = LogoMBS(500)`

Backdrop = m.SobelMBS

**Notes:**

Useful for edge detection.

direction1: The direction for first matrix.
direction2: The direction for first matrix.
swap: If false, you get white on black. If true you get black on white.
gray: whether to output gray image instead of RGB image.

Possible Matrix values:
-1: negative identity:
0: identity
1: west
2: east
3: north
4: south
5: south east
6: north west
7: north east
8: south west

You can add 10 to the 8 direction matrixes to get more weight.

80.4.118  SteganographyMBS(flags as Integer) as Memoryblock

MBS Picture Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries steganography information inside the picture.

**Example:**

```vbs
dim p as Picture = LogoMBS(500)

dim s as string = "Hello World. This is just a test." + chr(0)
if p.SetSteganographyMBS(1, s) then

dim data as MemoryBlock = p.SteganographyMBS(1)
dim d as string = data.CString(0)

Backdrop = p
Break
```
CHAPTER 80. GRAPHICS & PICTURES

Notes: Flags can be a combination of red (& h100), green (& h010) and blue (& h001).

80.4.119 SteganographyPictureMBS(flags as Integer) as Picture


Example:

```vba
const AllChannels = & h111
dim p as new Picture(500, 500, 32)
dim w as new window1
w.Title = "white"
w.Backdrop = p
dim l as Picture = LogoMBS(500)
w = new window1
w.Title = "Logo"
w.Backdrop = l

// adds picture. You will normally not see the modification
dim x as Picture = p.AddSteganographyPictureMBS(AllChannels, l)
w = new window1
w.Title = "Logo hidden in white picture"
w.Backdrop = x

// as we store in lowest bit, this picture will look strange
dim y as Picture = x.SteganographyPictureMBS(AllChannels)
w = new window1
w.Title = "Logo extracted"
w.Backdrop = y
```

Notes: Flags can be a combination of red (& h100), green (& h010) and blue (& h001).
80.4.120 **ThreadedTransformMBS(Threaded as Integer, Map() as color, dest as picture = nil) as picture**

MBS Picture Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Performs a transformation to the picture.

**Example:**

```vba
dim p as Picture = LogoMBS(500)

dim map(-1) as color

for r as Integer = 0 to 255
    for g as Integer = 0 to 255
        for b as Integer = 0 to 255
            // index is r*65536+g*256+b
            // we swap colors: r gives g, g gives b, b gives r
            map.Append rgb(g,b,r)
        next
    next
next

Backdrop=p.ThreadedTransformMBS(0, map)
```

**Notes:**

Threaded parameter specifies how many threads you want to use:
A negative value disables threading, zero will use one thread for each CPU core and a positive number specifies the thread count.

For each color in the source picture the red, blue and green values are used as index (blue+green*256+blue*65536) in the arrays to get the new color value.

The arrays should have \(2^{24}\) entries.

You can pass destination picture. If dest is not nil and size matches, the plugin reuses the picture object which increases performance as no new picture is created.

See also:

- 80.4.121 **ThreadedTransformMBS(Threaded as Integer, Map() as Integer, dest as picture = nil) as picture**
- 80.4.122 **ThreadedTransformMBS(Threaded as Integer, RedMap as memoryblock, GreenMap as memoryblock, BlueMap as memoryblock, dest as picture = nil) as picture**
- 80.4.123 **ThreadedTransformMBS(Threaded as Integer, RedMap() as Integer, GreenMap() as Integer,
80.4.121 ThreadedTransformMBS(Threaded as Integer, Map() as Integer, dest as picture = nil) as picture

MBS Picture Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Performs a transformation to the picture.

**Example:**

```vba
dim p as Picture = LogoMBS(500)

dim map(-1) as Integer

for r as Integer = 0 to 255
    for g as Integer = 0 to 255
        for b as Integer = 0 to 255
            // index is r*65536+g*256+b
            // we swap colors: r gives g, g gives b, b gives r
            map.Append g*65536+b*256+r
        next
    next
next

Backdrop=p.ThreadedTransformMBS(0, map)
```

**Notes:**

Threaded parameter specifies how many threads you want to use:
A negative value disables threading, zero will use one thread for each CPU core and a positive number specifies the thread count.

For each color in the source picture the red, blue and green values are used as index (blue+green*256+blue*65536) in the arrays to get the new color value.

The arrays should have 2^24 entries.

You can pass destination picture. If dest is not nil and size matches, the plugin reuses the picture object which increases performance as no new picture is created.

See also:

- 80.4.120 ThreadedTransformMBS(Threaded as Integer, Map() as color, dest as picture = nil) as picture
- 80.4.122 ThreadedTransformMBS(Threaded as Integer, RedMap as memoryblock, GreenMap as mem-
80.4. **CLASS PICTURE**

oryblock, BlueMap as memoryblock, dest as picture = nil) as picture

• 80.4.123 ThreadedTransformMBS(Threaded as Integer, RedMap() as Integer, GreenMap() as Integer, BlueMap() as Integer, dest as picture = nil) as picture

80.4.122 ThreadedTransformMBS(Threaded as Integer, RedMap as memoryblock, GreenMap as memoryblock, BlueMap as memoryblock, dest as picture = nil) as picture

MBS Picture Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Performs a transformation to the picture.

**Example:**

```vba
dim p as Picture = LogoMBS(500)

dim red as MemoryBlock = NewMemoryBlock(256)
dim green as MemoryBlock = NewMemoryBlock(256)
dim blue as MemoryBlock = NewMemoryBlock(256)

for i as Integer=0 to 255
    red.Byte(i)=i/2
    green.Byte(i)=i/2
    blue.Byte(i)=i/2
next

Backdrop=p.ThreadedTransformMBS(0, red, green, blue)
```

**Notes:**

Threaded parameter specifies how many threads you want to use:
A negative value disables threading, zero will use one thread for each CPU core and a positive number specifies the thread count.

For each color in the source picture the red, blue and green values are used as index in the memoryblocks to get the new color value.

The memoryblocks must have a size of 256 Bytes.

You can pass destination picture. If dest is not nil and size matches, the plugin reuses the picture object which increases performance as no new picture is created.

See also:

• 80.4.120 ThreadedTransformMBS(Threaded as Integer, Map() as color, dest as picture = nil) as picture
80.4.123 ThreadedTransformMBS(Threaded as Integer, RedMap() as Integer, GreenMap() as Integer, BlueMap() as Integer, dest as picture = nil) as picture

MBS Picture Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Performs a transformation to the picture.

**Example:**

```vba
dim p as Picture = LogoMBS(500)

dim red(-1) as Integer
dim green(-1) as Integer
dim blue(-1) as Integer

for i as Integer=0 to 255
  red.Append i/2
  green.Append i/2
  blue.Append i/2
next

Backdrop=p.ThreadedTransformMBS(0, red, green, blue)
```

**Notes:**

Threaded parameter specifies how many threads you want to use:
A negative value disables threading, zero will use one thread for each CPU core and a positive number specifies the thread count.

For each color in the source picture the red, blue and green values are used as index in the arrays to get the new color value.

The arrays should have 256 entries.

You can pass destination picture. If dest is not nil and size matches, the plugin reuses the picture object which increases performance as no new picture is created.

See also:

- 80.4.120 ThreadedTransformMBS(Threaded as Integer, Map() as color, dest as picture = nil) as picture
80.4.124 ThresholdMBS(Threshold as integer) as picture

MBS Picture Plugin, Plugin Version: 17.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates black and white picture. **Notes:**
With threshold value you define threshold in range from 0 to 255. Normally you use 127 for turning picture to black & white.

80.4.125 TransformColorsMBS(red as memoryblock, blue as memoryblock, green as memoryblock, dest as picture = nil) as picture

MBS Picture Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Applies a transform table to the pixels. **Notes:**
Red, blue and green are 256 byte big memoryblocks with one byte for each value.

In RB the function does this:
color=rgb(red.byte [ color.red ] , green.byte [ color.green ] , blue.byte [ color.blue ] )

If you pass a destination picture and it has right size, the plugin will recycle that instead of creating a new one to increase performance.

80.4.126 TrimMBS(left as Integer, top as Integer, width as Integer, height as Integer) as picture

MBS Picture Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Trims the picture to the given rectangle. **Example:**
```dim p as Picture = LogoMBS(500)`
Backdrop = p.TrimMBS(100,100,300,300)`
Notes:
This method does not handle the mask.
So \texttt{p.Trim(0,0,p.width,\texttt{p.height})} will give you a copy of the image pixels without mask.
left and top are zero based.

Use \texttt{TrimWithMaskMBS} if you need the mask to be trimmed.
Returns nil on low memory or bad parameters.

80.4.127 \texttt{TrimWithMaskMBS(left as Integer, top as Integer, width as Integer, height as Integer) as picture}

MBS Picture Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. \textbf{Function:} Trims the picture to the given rectangle.
\textbf{Example:}
\begin{verbatim}
dim p as picture
dim someimage as Picture = LogoMBS(100)
p=someimage.TrimWithMaskMBS(100,200,300,400)
\end{verbatim}

Notes:
left and top are zero based.
Returns nil on low memory or bad parameters.

80.4.128 \texttt{VMirrorMBS as picture}

MBS Picture Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. \textbf{Function:} Mirrors the picture vertically.
\textbf{Example:}
\begin{verbatim}
canvas1.backdrop=pic.VMirrorMBS
\end{verbatim}

Notes:
This method returns a copy of the picture mirrored.
Returns nil on low memory.
80.4. **CLASS PICTURE**

80.4.129 **VMirrorPictureMBS as boolean**

MBS Picture Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Mirrors the picture vertically.

**Example:**

```pascal
if pic.VMirrorPictureMBS then // mirror picture
  canvas1.backdrop=pic
else
  canvas1.backdrop=pic.VMirrorMBS // mirror a copy
end if
```

**Notes:** This method mirrors the picture data itself. Returns true on success and false on failure. Only bitmap pictures can be mirrored this way.

80.4.130 **Properties**

80.4.131 **EmbeddedMaskMBS**(swap as boolean) as picture

MBS Picture Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** Read or write a picture mask.

**Example:**

```pascal
// Export a mask picture:

dim f as FolderItem
dim t as TiffPictureMBS
dim m,p as Picture
dim q as QTGraphicsExporterMBS

p=NewPicture(100,100,32)
p.Graphics.ForeColor=rgb(100,100,100)
p.Graphics.fillrect 0,0,100,100
p.Graphics.ForeColor=rgb(255,0,0)
p.Graphics.fillrect 20,20,80,30
m=NewPicture(100,100,32)
m.Graphics.ForeColor=rgb(255,255,255)
m.Graphics.FillRect 0,0,30,100
m.Graphics.ForeColor=rgb(200,200,200)
m.Graphics.FillRect 30,0,30,100
m.Graphics.ForeColor=rgb(100,100,100)
m.Graphics.FillRect 60,0,30,100

p.EmbeddedMaskMBS(true)=m
```
p.Mask.Graphics.DrawPicture m,0,0 // just for showing as a backdrop

q=new QTGraphicsExporterMBS

q.OpenExporter("TIFF")
q.Density=32
q.InputPicture=p
q.CompressionQuality=1024
q.OutputFile=SpecialFolder.Desktop.Child("Hello.tif")
title=str(q.Export)

Backdrop=p

**Notes:**

Only useful on 32bit images.
Realbasic takes white for transparent, so you may need to swap this to black using the swap parameter.

Windows support removed somewhere in version 10.4 with internal changes. If you need this, please tell us. (Read and Write computed property)
80.5.  CLASS PICTURECONVOLUTIONMBS

80.5  class PictureConvolutionMBS

80.5.1  class PictureConvolutionMBS

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**
A class for a Picture Convolution.

**Example:**

```plaintext
// blur

dim l as Picture = LogoMBS(500)
dim p as new PictureConvolutionMBS

p.hor(0) = 0.2
p.hor(1) = 0.2
p.hor(2) = 0.2
p.hor(3) = 0.2
p.hor(4) = 0.2

p.ver(0) = 0.2
p.ver(1) = 0.2
p.ver(2) = 0.2
p.ver(3) = 0.2
p.ver(4) = 0.2

p.ValueCount=5

p.SourcePicture=l

dim t as Integer=ticks
call p.run(7)
t=ticks-t

Title=str(t)

Backdrop=p.DestinationPicture
```

80.5.2  Methods

80.5.3  close

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**
The destructor.

**Notes:**
There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you. (e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

### 80.5.4 Run(channels as Integer) as boolean

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Runs the picture effect.  
**Notes:** Fails if the pictures are not bitmap pictures. Source and Destination can be equal. If you provide a destination picture, the dimensions of source and destination must be equal.

Channels is a combination of 1, 2 and 4. 1 for Red, 2 for Green and 4 for Blue. The border (one pixel thick) is not filled in the destination picture.

This method does the following for each pixel:

```plaintext
// first horizontal fill the temporary picture
r=0
g=0
b=0

if RedChannel then
  r = r + sourcepicture.pixel(x-1,y).red * Hor(0)
  r = r + sourcepicture.pixel(x ,y).red * Hor(1)
  r = r + sourcepicture.pixel(x+1,y).red * Hor(2)
else
  r = sourcepicture.pixel(x,y)
end if

if GreenChannel then
  g = g + sourcepicture.pixel(x-1,y).green * Hor(0)
  g = g + sourcepicture.pixel(x ,y).green * Hor(1)
  g = g + sourcepicture.pixel(x+1,y).green * Hor(2)
else
  g = sourcepicture.pixel(x,y)
end if

if BlueChannel then
  b = b + sourcepicture.pixel(x-1,y).blue * Hor(0)
  b = b + sourcepicture.pixel(x ,y).blue * Hor(1)
  b = b + sourcepicture.pixel(x+1,y).blue * Hor(2)
```


else
b = sourcepicture.pixel(x,y)
end if

tempppicture.pixel(x,y)=rgb(r,g,b)

// now back from temporary picture to the destination picture

r=0
g=0
b=0

if RedChannel then
r = r + tempppicture.pixel(x,y-1).red * Ver(0)
r = r + tempppicture.pixel(x,y ).red * Ver(1)
r = r + tempppicture.pixel(x,y+1).red * Ver(2)
else
r = tempppicture.pixel(x,y)
end if

if GreenChannel then
g = g + tempppicture.pixel(x,y-1).green * Ver(0)
g = g + tempppicture.pixel(x,y ).green * Ver(1)
g = g + tempppicture.pixel(x,y+1).green * Ver(2)
else
g = tempppicture.pixel(x,y)
end if

if BlueChannel then
b = b + tempppicture.pixel(x,y-1).blue * Ver(0)
b = b + tempppicture.pixel(x,y ).blue * Ver(1)
b = b + tempppicture.pixel(x,y+1).blue * Ver(2)
else
b = tempppicture.pixel(x,y)
end if

destinationpicture.pixel(x,y)=rgb(r,g,b)
80.5.5 Properties

80.5.6 DestinationPicture as Picture

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The destination picture.
**Notes:**
If you set this property, use a bitmap picture equal in size to the source picture.
If this property is nil, the Run method will create a picture.
(Read and Write property)

80.5.7 SourcePicture as Picture

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The source picture.
**Notes:**
Must be a bitmap picture.
(you can use the picture.BitmapMBS function for this)
(Read and Write property)

80.5.8 ValueCount as Integer

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The number of values set in the Hor and Ver array.
**Example:**
```vbnet
dim p as new PictureConvolutionMBS

p.Hor(0)=0.25
p.Hor(1)=0.5
p.Hor(2)=0.25
p.ValueCount=3
```

**Notes:**
The index in the arrays goes from 0 to ValueCount-1.
Default is 3.
Use values like 1, 3, 5, 7, 9, 11, 13, 15, 17 or 19.
(Read and Write property)
80.5.9  **Hor(index as UInt32) as Double**

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The horizontal factors.

**Notes:**
Index from 0 to 19.
(Read and Write computed property)

80.5.10  **Ver(index as UInt32) as Double**

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The vertical factors.

**Notes:**
Index from 0 to 19.
(Read and Write computed property)
80.6 class PictureEditorMBS

80.6.1 class PictureEditorMBS

MBS Picture Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** class to edit picture data as a memoryblock in place.
**Notes:** This is the same code the plugin uses to edit pictures.

80.6.2 Methods

80.6.3 Data(Row as Integer) as MemoryBlock

MBS Picture Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The memoryblock with the original image data of the given row.
**Notes:**
Changes here will be visible in the picture.
This memoryblock has a size property with value 0!
No bound checking can be done by Realbasic on this memoryblock.

80.6.4 Properties

80.6.5 AllData as Memoryblock

MBS Picture Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The memoryblock with the original image data.
**Notes:**
Changes here will be visible in the picture.
This memoryblock has a size property with value 0!
No bound checking can be done by Realbasic on this memoryblock.

Returns nil for console pictures.
(Read only property)

80.6.6 AllDataCopy as Memoryblock

MBS Picture Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies the data for the current picture into a new memoryblock.
**Notes:**
Changes to this memoryblock will not be visible in the original picture.
(Read only property)

80.6.7  **BlueOffset as Integer**

MBS Picture Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The platform dependend offset of the blue channel in the RGB data.
**Notes:**
A value between 0 and 3.
(Read only property)

80.6.8  **BytesPerPixel as Integer**

MBS Picture Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Number of bytes per pixel.
**Notes:**
Most times 4, but for some platforms 3.
(Read only property)

80.6.9  **DataPtr as Integer**

MBS Picture Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The memory address where the data is stored.
**Notes:**
Maybe useful for declares.
Returns nil for console pictures.
(Read only property)

80.6.10  **GreenOffset as Integer**

MBS Picture Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The platform dependend offset of the green channel in the RGB data.
**Notes:**
A value between 0 and 3.
(Read only property)
CHAPTER 80. GRAPHICS & PICTURES

80.6.11 HasAlphaChannel as Boolean

MBS Picture Plugin, Plugin Version: 14.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether an alpha channel exists. **Notes:** (Read only property)

80.6.12 Height as Integer

MBS Picture Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The height of the image in pixels. **Notes:** (Read only property)

80.6.13 Picture as Picture

MBS Picture Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The original picture reference. **Notes:** (Read only property)

80.6.14 RedOffset as Integer

MBS Picture Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The platform dependent offset of the red channel in the RGB data. **Notes:**
A value between 0 and 3. (Read only property)

80.6.15 RowBytes as Integer

MBS Picture Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The width of an image row in bytes. **Notes:**
RowBytes can be width*bytesPerPixel, but often it is not. (Read only property)
80.6.16 Width as Integer

MBS Picture Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The width of the image in pixels. **Notes:** (Read only property)
80.7 class PictureLut3DMBS

80.7.1 class PictureLut3DMBS

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class for doing a LUT 3D on a picture.

80.7.2 Methods

80.7.3 close

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The destructor.
**Notes:**
There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

80.7.4 Run as boolean

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Runs the picture effect.
**Notes:** Fails if the pictures are not bitmap pictures. Source and Destination can be equal. If you provide a destination picture, the dimensions of source and destination must be equal.

80.7.5 Properties

80.7.6 DestinationPicture as Picture

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The destination picture.
**Notes:**
If you set this property, use a bitmap picture equal in size to the source picture.
If this property is nil, the Run method will create a picture.
(Read and Write property)
80.7. CLASS PICTURELUT3DMBS

80.7.7 MaxX as Integer

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The maximal x coordinate to use.
**Notes:**
If 0 the width of the source picture defines this value.
(Read and Write property)

80.7.8 MaxY as Integer

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The maximal y coordinate to use.
**Notes:**
If 0 the height of the source picture defines this value.
(Read and Write property)

80.7.9 MinX as Integer

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The minimal x coordinate to use.
**Notes:**
Default is 0.
(Read and Write property)

80.7.10 MinY as Integer

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The minimal y coordinate to use.
**Notes:**
Default is 0.
(Read and Write property)

80.7.11 SourcePicture as Picture

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The source picture.
**Notes:**
80.7.12  Table(r as UInt32, g as UInt32, b as UInt32, x as UInt32) as Double

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**  The lut table.

**Notes:**

Indexes r, g and b go from 0 to 16 while x goes from 0 to 2.
(Read and Write computed property)
80.8.  

80.8. CLASS PICTUREMATRIX3DMBS

80.8  class PictureMatrix3DMBS

80.8.1  class PictureMatrix3DMBS

Function:  
A class for doing a 3D picture matrix.

80.8.2  Methods

80.8.3  close

Function:  
The destructor.  
Notes:  
There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.  
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

80.8.4  Run as boolean

Function:  
Runs the picture effect.  
Notes:  
Fails if the pictures are not bitmap pictures. Source and Destination can be equal. If you provide a destination picture, the dimensions of source and destination must be equal.

80.8.5  Properties

80.8.6  DestinationPicture as Picture

Function:  
The destination picture.  
Notes:  
If you set this property, use a bitmap picture equal in size to the source picture.  
If this property is nil, the Run method will create a picture.  
(Read and Write property)
80.8.7 MaxX as Integer

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The maximal x coordinate to use.  
**Notes:**  
If 0 the width of the source picture defines this value.  
(Read and Write property)

80.8.8 MaxY as Integer

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The maximal y coordinate to use.  
**Notes:**  
If 0 the height of the source picture defines this value.  
(Read and Write property)

80.8.9 MinX as Integer

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The minimal x coordinate to use.  
**Notes:**  
Default is 0.  
(Read and Write property)

80.8.10 MinY as Integer

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The minimal y coordinate to use.  
**Notes:**  
Default is 0.  
(Read and Write property)

80.8.11 SourcePicture as Picture

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The source picture.  
**Notes:**
80.8. **CLASS PICTUREMATRIX3DMBS**

Must be a bitmap picture.
(you can use the picture.BitmapMBS function for this)
(Read and Write property)

80.8.12 **Matrix(x as UInt32, y as UInt32) as Double**

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The matrix to use.
**Notes:**
The indexes x and y are 0 based.
(Read and Write computed property)
80.9 class PictureMatrixMBS

80.9.1 class PictureMatrixMBS

MBS Picture Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class for matrix operations on a picture. **Notes:** Can be used e.g. to sharpen a picture.

80.9.2 Methods

80.9.3 close

MBS Picture Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The destructor. **Notes:** There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you. (e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

80.9.4 Run as boolean

MBS Picture Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Runs the process. **Notes:** Returns true on success.

80.9.5 RunRGB(red as boolean, green as boolean, blue as boolean) as boolean

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Runs the process for the given channels. **Notes:** Returns true on success. A few combinations are optimized for faster processing. Still more optimization is possible.
80.9.6 Properties

80.9.7 DestinationPicture as Picture

MBS Picture Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The destination picture.

**Notes:**
If this property is nil, a new picture will be placed here inside the Run method.
If you place a picture here, please use one created with newpicture with a 32bit depth.
(Read and Write property)

80.9.8 Displacement as Integer

MBS Picture Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The displacement value.

**Notes:**
See the example project for details.
(Read and Write property)

80.9.9 MaxX as Integer

MBS Picture Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The maximum x coordinate to use.

**Notes:**
Just for limiting the working area to a part of the picture.
(Read and Write property)

80.9.10 MaxY as Integer

MBS Picture Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The maximum y coordinate to use.

**Notes:**
Just for limiting the working area to a part of the picture.
(Read and Write property)
80.9.11 MinX as Integer

MBS Picture Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The minimum x coordinate to use. **Notes:** Just for limiting the working area to a part of the picture. (Read and Write property)

80.9.12 MinY as Integer

MBS Picture Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The minimum y coordinate to use. **Notes:** Just for limiting the working area to a part of the picture. (Read and Write property)

80.9.13 ScaleFactor as Double

MBS Picture Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A scaling factor. **Notes:** See the example project for details. (Read and Write property)

80.9.14 SourcePicture as Picture

MBS Picture Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The source picture. **Notes:** The run method will fail if this picture is not a 32bit deep picture created with newpicture. (Read and Write property)

80.9.15 Matrix(x as UInt32, y as UInt32) as Integer

MBS Picture Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The matrix used. **Notes:**


X and Y are in range from 0 to 4. Values >255 are used for empty cells. (Read and Write computed property)
80.10  class PictureMinMaxMBS

80.10.1  class PictureMinMaxMBS

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A class to find the minimum/maximum pixel values.

**Example:**

```vbnet
dim pic as Picture = LogoMBS(500)
dim m as new PictureMinMaxMBS

if m.FindAll(pic) then
    break // check values in debugger
end if
```

**Notes:**
This class offers several Find functions.
Please choose carefully which one you use as it’s faster to use e.g. `FindRed` instead of `FindMinRed` and `FindMaxRed` together.

80.10.2  Methods

80.10.3  FindAll(p as picture) as boolean

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Searches for the minimum and maximum pixels.

**Notes:** Sets all fields.

80.10.4  FindBlue(p as picture) as boolean

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Searches for the minimum and maximum blue pixels.

**Notes:** Sets `BlueMaxX`, `BlueMax`, `BlueMinX`, `BlueMinY`, `BlueMin` and `BlueMaxY`.

80.10.5  FindGreen(p as picture) as boolean

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Searches for the minimum and maximum green pixels.
Notes: Sets GreenMaxX, GreenMax, GreenMinX, GreenMinY, GreenMin and GreenMaxY.

80.10.6  FindMaxAll(p as picture) as boolean

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Searches for the maximum pixels.  
**Notes:** Sets RedMaxX, RedMax, RedMaxY, GreenMaxX, GreenMax, GreenMaxY, BlueMaxX, BlueMax and BlueMaxY.

80.10.7  FindMaxBlue(p as picture) as boolean

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Searches for the maximum blue pixel.  
**Notes:** Sets BlueMaxX, BlueMax and BlueMaxY.

80.10.8  FindMaxGreen(p as picture) as boolean

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Searches for the maximum green pixel.  
**Notes:** Sets GreenMaxX, GreenMax and GreenMaxY.

80.10.9  FindMaxRed(p as picture) as boolean

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Searches for the maximum red pixel.  
**Notes:** Sets RedMaxX, RedMax and RedMaxY.

80.10.10  FindMaxSum(p as picture) as boolean

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Searches for the maximum sum pixel.  
**Notes:**  
The sum of a pixel is the sum of all color channels of this pixel (red+Sum+blue).  
Sets SumMaxX, SumMax and SumMaxY.
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80.10.11 FindMinAll(p as picture) as boolean

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Searches for the minimum pixels.
**Notes:** Sets RedMinX, RedMin, RedMinY, GreenMinX, GreenMin, GreenMinY, BlueMinX, BlueMin and BlueMinY.

80.10.12 FindMinBlue(p as picture) as boolean

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Searches for the minimum blue pixel.
**Notes:** Sets BlueMinX, BlueMin and BlueMinY.

80.10.13 FindMinGreen(p as picture) as boolean

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Searches for the minimum green pixel.
**Notes:** Sets GreenMinX, GreenMin and GreenMinY.

80.10.14 FindMinRed(p as picture) as boolean

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Searches for the minimum red pixel.
**Notes:** Sets RedMinX, RedMin and RedMinY.

80.10.15 FindMinSum(p as picture) as boolean

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Searches for the minimum sum pixel.
**Notes:** The sum of a pixel is the sum of all color channels of this pixel (red+green+blue).
Sets SumMinX, SumMin and SumMinY.

80.10.16 FindRed(p as picture) as boolean

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Searches for the minimum and maximum red pixels.
80.10. CLASS PICTUREMINMAXMBS

Notes: Sets RedMaxX, RedMax, RedMinX, RedMinY, RedMin and RedMaxY.

80.10.17 FindSum(p as picture) as boolean


Notes:
The sum of a pixel is the sum of all color channels of this pixel (red+Sum+blue).
Sets SumMaxX, SumMax, SumMinX, SumMinY, SumMin and SumMaxY.

80.10.18 Properties

80.10.19 BlueMax as Integer


Notes:
Range: 0 to 255.
(Read and Write property)

80.10.20 BlueMaxX as Integer

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The location of the pixel with the maximum blue value.

Notes:
Range: 0 to Picture.Width-1. Set to -1 on any error.
(Read and Write property)

80.10.21 BlueMaxY as Integer

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The location of the pixel with the maximum blue value.

Notes:
Range: 0 to Picture.Height-1. Set to -1 on any error.
(Read and Write property)
80.10.22  BlueMin as Integer

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The minimum blue color value. **Notes:**
Range: 0 to 255.
(Read and Write property)

80.10.23  BlueMinX as Integer

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The location of the pixel with the minimum blue value. **Notes:**
Range: 0 to Picture.Width-1. Set to -1 on any error.
(Read and Write property)

80.10.24  BlueMinY as Integer

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The location of the pixel with the minimum blue value. **Notes:**
Range: 0 to Picture.Height-1. Set to -1 on any error.
(Read and Write property)

80.10.25  GreenMax as Integer

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The maximum green color value. **Notes:**
Range: 0 to 255
(Read and Write property)

80.10.26  GreenMaxX as Integer

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The location of the pixel with the maximum green value. **Notes:**
80.10. CLASS PICTUREMINMAXMBS

Range: 0 to Picture.Width-1. Set to -1 on any error.
(Read and Write property)

80.10.27 GreenMaxY as Integer

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The location of the pixel with the maximum green value.
**Notes:**
Range: 0 to Picture.Height-1. Set to -1 on any error.
(Read and Write property)

80.10.28 GreenMin as Integer

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The minimum green color value.
**Notes:**
Range: 0 to 255
(Read and Write property)

80.10.29 GreenMinX as Integer

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The location of the pixel with the minimum green value.
**Notes:**
Range: 0 to Picture.Width-1. Set to -1 on any error.
(Read and Write property)

80.10.30 GreenMinY as Integer

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The location of the pixel with the minimum green value.
**Notes:**
Range: 0 to Picture.Height-1. Set to -1 on any error.
(Read and Write property)
80.10.31 RedMax as Integer

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The maximum red color value.  
**Notes:**
Range: 0 to 255  
(Read and Write property)

80.10.32 RedMaxX as Integer

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The location of the pixel with the maximum red value.  
**Notes:**
Range: 0 to Picture.Width-1. Set to -1 on any error.  
(Read and Write property)

80.10.33 RedMaxY as Integer

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The location of the pixel with the maximum red value.  
**Notes:**
Range: 0 to Picture.Height-1. Set to -1 on any error.  
(Read and Write property)

80.10.34 RedMin as Integer

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The minimum red color value.  
**Notes:**
Range: 0 to 255  
(Read and Write property)

80.10.35 RedMinX as Integer

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The location of the pixel with the minimum red value.  
**Notes:**
80.10. **CLASS PICTUREMINMAXMBS**

Range: 0 to Picture.Width-1. Set to -1 on any error.
(Read and Write property)

---

**80.10.36 RedMinY as Integer**

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The location of the pixel with the minimum red value.
**Notes:**
Range: 0 to Picture.Height-1. Set to -1 on any error.
(Read and Write property)

---

**80.10.37 SumMax as Integer**

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The maximum sum color value.
**Notes:**
sum=red+blue+green
Range: 0 to 765
(Read and Write property)

---

**80.10.38 SumMaxX as Integer**

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The location of the pixel with the maximum sum value.
**Notes:**
Range: 0 to Picture.Width-1. Set to -1 on any error.
(Read and Write property)

---

**80.10.39 SumMaxY as Integer**

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The location of the pixel with the maximum sum value.
**Notes:**
Range: 0 to Picture.Height-1. Set to -1 on any error.
(Read and Write property)
80.10.40 SumMin as Integer

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The minimum sum color value.  
**Notes:**  
\[ \text{sum} = \text{red} + \text{blue} + \text{green} \]  
Range: 0 to 765  
(Read and Write property)

80.10.41 SumMinX as Integer

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The location of the pixel with the minimum sum value.  
**Notes:**  
Range: 0 to Picture.Width-1. Set to -1 on any error.  
(Read and Write property)

80.10.42 SumMinY as Integer

MBS Picture Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The location of the pixel with the minimum sum value.  
**Notes:**  
Range: 0 to Picture.Height-1. Set to -1 on any error.  
(Read and Write property)
**80.11.1 class PictureReaderMBS**

MBS Picture Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class to read picture data as a memoryblock.

**Example:**

```vba
dim pic as Picture = LogoMBS(500)
dim p as PictureReaderMBS
dim m as MemoryBlock
dim r,g,b,rRow,gRow,bRow,h1,w1,x,y,bpp as Integer

// Create a new picture reader
p=NewPictureReaderMBS(pic)

h1=p.Height-1
w1=p.Width-1

bpp=p.BytesPerPixel
rRow=p.RedOffset
gRow=p.GreenOffset
bRow=p.BlueOffset
// in each row the red, blue and green channels have different offsets.
// but offsets are platform dependend

dim sum as Double

for y=0 to h1
  // Get data in memory. This Memoryblock has a size property of 0!
m=p.Data(y)
r=rRow
g=gRow
b=bRow

  for x=0 to w1
    sum = sum + m.UInt8Value(r)
    sum = sum + m.UInt8Value(g)
    sum = sum + m.UInt8Value(b)

    r=r+bpp
g=g+bpp
b=b+bpp
  next
next
```
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// show the sum of all pixels:
MsgBox "Sum with plugin is: " + str(sum)

// now try same in RB code:

dim surface as RGBSurface = pic.RGBSurface
dim c as color

sum = 0.0

for y=0 to h1
  for x=0 to w1
    c = surface.Pixel(x,y)
    sum = sum + c.red
    sum = sum + c.Green
    sum = sum + c.Blue
  next
next

surface = nil

MsgBox "Sum with RB Code is: " + str(sum)
quit

Notes: This is the same code the plugin uses to read pictures.

80.11.2 Methods

80.11.3 Data(Row as Integer) as MemoryBlock

MBS Picture Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The memoryblock with the original image data for this row.

Notes:

Changes here will be visible in the picture. (except for platforms where a copy is made of the data)
This memoryblock has a size property with value 0!
No bound checking can be done by Realbasic on this memoryblock.
See also:

• 80.11.7 Data as Memoryblock
80.11.4 Properties

80.11.5 BlueOffset as Integer

MBS Picture Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The platform dependent offset of the blue channel in the RGB data. **Notes:** A value between 0 and 3. (Read only property)

80.11.6 BytesPerPixel as Integer

MBS Picture Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Number of bytes per pixel. **Notes:** Most times 4, but for some platforms 3. (Read only property)

80.11.7 Data as Memoryblock

MBS Picture Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The memoryblock with the original image data. **Notes:** Changes here will be visible in the picture. (except for platforms where a copy is made of the data) This memoryblock has a size property with value 0! No bound checking can be done by Realbasic on this memoryblock. Returns nil for console pictures. (Read only property) See also:

- 80.11.3 Data(Row as Integer) as MemoryBlock

80.11.8 DataCopy as Memoryblock

MBS Picture Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies the data for the current picture into a new memoryblock. **Notes:** (Read only property)
80.11.9 DataPtr as Integer

MBS Picture Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The memory address where the data is stored.
**Notes:**
Maybe useful for declares.
Returns nil for console pictures.
(Read only property)

80.11.10 GreenOffset as Integer

MBS Picture Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The platform dependent offset of the green channel in the RGB data.
**Notes:**
A value between 0 and 3.
(Read only property)

80.11.11 HasAlphaChannel as Boolean

**Notes:** (Read only property)

80.11.12 Height as Integer

MBS Picture Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The height of the image in pixels.
**Notes:** (Read only property)

80.11.13 Picture as Picture

**Notes:** (Read only property)
80.11. **RedOffset as Integer**

MBS Picture Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The platform dependend offset of the red channel in the RGB data. **Notes:**
A value between 0 and 3. (Read only property)

80.11. **RowBytes as Integer**

MBS Picture Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The width of an image row in bytes. **Notes:**
RowBytes can be width*bytesPerPixel, but often it is not. (Read only property)

80.11. **Width as Integer**

MBS Picture Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The width of the image in pixels. **Notes:** (Read only property)
80.12 class PictureSepiaMBS

80.12.1 class PictureSepiaMBS

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
A class for doing a sepia effect.

80.12.2 Methods

80.12.3 close

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
The destructor.
Notes:
There is no need to call this method except you want to free all resources of this object now without waiting
for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

80.12.4 Run as boolean

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Runs the picture effect.
Notes:
Fails if the pictures are not bitmap pictures. Source and Destination can be equal. If you provide a destina-
tion picture, the dimensions of source and destination must be equal.

For each pixel this method does:

sourcepixel=sourcepicture.pixel(x,y)
r=sourcepixel.red
g=sourcepixel.green
b=sourcepixel.blue

sum = r * RedFactor + g * GreenFactor + b * BlueFactor

r = sum + SepiaColor.red
g = sum + SepiaColor.green
b = sum + SepiaColor.blue
80.12.5 Properties

80.12.6 DestinationPicture as Picture

Notes: If you set this property, use a bitmap picture equal in size to the source picture.
If this property is nil, the Run method will create a picture.
(Read and Write property)

80.12.7 FactorBlue as Double

Notes: (Read and Write property)

80.12.8 FactorGreen as Double

Notes: (Read and Write property)

80.12.9 FactorRed as Double

Notes: (Read and Write property)

80.12.10 MaxX as Integer

Notes:
If 0 the width of the source picture defines this value.
(Read and Write property)

80.12.11 MaxY as Integer

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The maximal y coordinate to use.
**Notes:**
If 0 the height of the source picture defines this value.
(Read and Write property)

80.12.12 MinX as Integer

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The minimal x coordinate to use.
**Notes:**
Default is 0.
(Read and Write property)

80.12.13 MinY as Integer

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The minimal y coordinate to use.
**Notes:**
Default is 0.
(Read and Write property)

80.12.14 SepiaBlue as Integer

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The sepia color to use.
**Notes:**
Default is 0.
(Read and Write property)
80.12.15  **SepiaGreen as Integer**

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The sepia color to use. **Notes:**
Default is 0. (Read and Write property)

80.12.16  **SepiaRed as Integer**

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The sepia color to use. **Notes:**
Default is 0. (Read and Write property)

80.12.17  **SourcePicture as Picture**

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The source picture. **Notes:**
Must be a bitmap picture. (you can use the picture.BitmapMBS function for this) (Read and Write property)
80.13 class PictureWriterMBS

80.13.1 class PictureWriterMBS

MBS Picture Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class to build a picture by filling a memoryblock.

**Example:**

```vbs
dim p as PictureWriterMBS
dim m as MemoryBlock
dim r,g,b,rRow,gRow,bRow,h1,w1,x,y,bpp as Integer

// Create a new picture writer
p=NewPictureWriterMBS(512,512)

h1=p.Height-1
w1=p.Width-1

bpp=p.BytesPerPixel
rRow=p.RedOffset
gRow=p.GreenOffset
bRow=p.BlueOffset

// in each row the red, blue and green channels have different offsets.
// but offsets are platform dependend

for y=0 to h1
    // Get data in memory. This Memoryblock has a size property of 0!
    m=p.Data(y)
    r=rRow
    g=gRow
    b=bRow

    for x=0 to w1
        m.UInt8Value(r)=x\2
        m.UInt8Value(g)=y\2
        m.UInt8Value(b)=x*y\2

        r=r+bpp
        g=g+bpp
        b=b+bpp
    next
next

// Use Render to make a picture object
dim pic as Picture = p.Render
Backdrop = pic
```
Notes: This is the same code the plugin uses to create pictures.

### 80.13.2 Methods

#### 80.13.3 Data(Row as Integer) as MemoryBlock

MBS Picture Plugin, Plugin Version: 10.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The memoryblock with the original image data for the given row.
**Notes:**
Changes here will be visible in the picture.
This memoryblock has a size property with value 0!
No bound checking can be done by Realbasic on this memoryblock.
See also:
- 80.13.8 Data as MemoryBlock

#### 80.13.4 Render as picture

MBS Picture Plugin, Plugin Version: 6.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates and returns a picture for this writer.
**Notes:**
The writer is destroyed with this call, so do not use it any more.
(one picture can be created with one writer currently)

### 80.13.5 Properties

#### 80.13.6 BlueOffset as Integer

MBS Picture Plugin, Plugin Version: 6.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The platform dependend offset of the blue channel in the RGB data.
**Notes:**
A value between 0 and 3.
(Read only property)
80.13.7 BytesPerPixel as Integer

Notes: Most times 4, but for some platforms 3. (Read only property)

80.13.8 Data as Memoryblock

Notes: Changes here will be visible in the picture. This memoryblock has a size property with value 0! No bound checking can be done by Realbasic on this memoryblock. Returns nil for console pictures. (Read only property)
See also:
- 80.13.3 Data(Row as Integer) as MemoryBlock

80.13.9 DataCopy as Memoryblock

Notes: Changes to this memoryblock will not be visible in the rendered picture. (Read only property)

80.13.10 DataPtr as Integer

MBS Picture Plugin, Plugin Version: 6.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: The memory address where the data is stored.
Notes: Maybe useful for declares. Returns nil for console pictures. (Read only property)
80.13.11 GreenOffset as Integer

MBS Picture Plugin, Plugin Version: 6.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The platform dependend offset of the green channel in the RGB data.
**Notes:**
A value between 0 and 3.
(Read only property)

80.13.12 HasAlphaChannel as Boolean

MBS Picture Plugin, Plugin Version: 14.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether an alpha channel exists.
**Example:**
```vbs
Dim p As PictureWriterMBS = NewPictureWriterMBS(200, 200, True)
MsgBox "Alpha: " + Str(p.HasAlphaChannel)

// get pointer to bytes
Dim m As MemoryBlock = p.Data

// fill all with 127
m.FillBytesMBS 0, p.RowBytes * p.Height, 127

Dim x As Picture = p.Render
Break
```
**Notes:** (Read only property)

80.13.13 Height as Integer

MBS Picture Plugin, Plugin Version: 6.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The height of the image in pixels.
**Notes:** (Read only property)

80.13.14 Picture as Picture

MBS Picture Plugin, Plugin Version: 6.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The buffer picture reference.
**Notes:**
If the writer uses a RB picture as buffer it is available here.
(depends on the actual implementation for a given platform whether this property is used)
(Read only property)

**80.13.15 RedOffset as Integer**

MBS Picture Plugin, Plugin Version: 6.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The platform dependend offset of the red channel in the RGB data.
**Notes:**
A value between 0 and 3.
(Read only property)

**80.13.16 RowBytes as Integer**

MBS Picture Plugin, Plugin Version: 6.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The width of an image row in bytes.
**Notes:**
RowBytes can be width*bytesPerPixel, but often it is not.
(Read only property)

**80.13.17 Width as Integer**

MBS Picture Plugin, Plugin Version: 6.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The width of the image in pixels.
**Notes:** (Read only property)
Chapter 81

GraphicsMagick

81.1  class GM16BlobMBS

81.1.1  class GM16BlobMBS


Function: The class for binary large objects.

Example:

// get some image data (e.g. from blob in database)
dim logo as Picture = LogoMBS(500)
dim jpegData as string = PictureToJPEGStringMBS(logo, 80)

// new image
Dim mp as new GM16ImageMBS
dim blob as new GM16BlobMBS(jpegData)

// read data from blob into this image object
mp.Read blob

// sometimes you need to explicit convert to RGB/RGBA
'mp.type = mp.TrueColorMatteType
Backdrop=mp.CombinePictureWithMask

Notes:

Blob provides the means to contain any opaque data. It is named after the term "Binary Large OBit" commonly used to describe unstructured data (such as encoded images) which is stored in a database. While the function of Blob is very simple (store a pointer and and size associated with allocated data), the Blob class provides some very useful capabilities. In particular, it is fully reference counted just like the Image class.
The Blob class supports value assignment while preserving any outstanding earlier versions of the object. Since assignment is via a pointer internally, Blob is efficient enough to be stored directly in an STL container or any other data structure which requires assignment. In particular, by storing a Blob in an associative container (such as STL’s ’map’) it is possible to create simple indexed in-memory ”database” of Blobs.

Magick++ currently uses Blob to contain encoded images (e.g. JPEG) as well as ICC and IPTC profiles. Since Blob is a general-purpose class, it may be used for other purposes as well.

81.1.2 Methods

81.1.3 Constructor


Function: Default constructor creating an empty blob object.

See also:

- 81.1.4 Constructor(data as memoryblock, offset as Integer, size as Integer)
- 81.1.5 Constructor(data as string)
- 81.1.6 Constructor(other as GM16BlobMBS)

81.1.4 Constructor(data as memoryblock, offset as Integer, size as Integer)


Function: Construct object with data, making a copy of the supplied data.

See also:

- 81.1.3 Constructor
- 81.1.5 Constructor(data as string)
- 81.1.6 Constructor(other as GM16BlobMBS)

81.1.5 Constructor(data as string)


Function: Construct object with data, making a copy of the supplied data.

Example:

```// get some image data (e.g. from blob in database)
dim logo as Picture = LogoMBS(500)
dim jpegData as string = PictureToJPEGStringMBS(logo, 80)```
// new image
Dim mp as new GM16ImageMBS
dim blob as new GM16BlobMBS(jpegData)

// read data from blob into this image object
mp.Read blob

// sometimes you need to explicit convert to RGB/RGBA
mp.type = mp.TrueColorMatteType
Backdrop=mp.CombinePictureWithMask

See also:

- 81.1.3 Constructor 13310
- 81.1.4 Constructor(data as memoryblock, offset as Integer, size as Integer) 13310
- 81.1.6 Constructor(other as GM16BlobMBS) 13311

81.1.6 Constructor(other as GM16BlobMBS)

Function: Copy constructor (reference counted).
See also:

- 81.1.3 Constructor 13310
- 81.1.4 Constructor(data as memoryblock, offset as Integer, size as Integer) 13310
- 81.1.5 Constructor(data as string) 13310

81.1.7 CopyMemory as memoryblock

Function: Returns a copy of the data as a memoryblock.
Notes: Returns nil on any error like low memory.

81.1.8 CopyString as string

Function: Returns a copy of the data as a string.
81.1.9  Data as Ptr

**Function:** A memoryblock with the data from this blob.

**Example:**

```vbscript
dim b as new GM16BlobMBS("Hello")

dim m as memoryblock = b.Data
MsgBox m.StringValue(0,5) // shows "Hello"
```

**Notes:** This is a memoryblock referencing the data of the blob. It has no size set. The memoryblock can only be used as long as the blob object exists. if you use it after you destroyed the blob object, you can crash you application.

81.1.10  Update(data as memoryblock, offset as Integer, size as Integer)

**Function:** Replaces the content of this blob with a copy of the bytes in the memoryblock.

See also:

- 81.1.11 Update(data as string)

81.1.11  Update(data as string)

**Function:** Replaces the content of this blob with a copy of the bytes in the string.

**Notes:** Offset is zero based.

See also:

- 81.1.10 Update(data as memoryblock, offset as Integer, size as Integer)

81.1.12  Properties

81.1.13  handle as Integer

**Function:** The internal handle of the blob object.

**Notes:** (Read and Write property)
81.1. CLASS GM16BLOBMBS

81.1.14 length as UInt64


Function: Obtain data length in bytes.

Example:

dim b as new GM16BlobMBS("Hello")

MsgBox str(b.length) // shows 5

Notes: (Read only property)

81.1.15 base64 as string


Function: The blob content as a string in Base64 format.

Example:

dim b as new GM16BlobMBS("Hello")

MsgBox b.base64 // shows "SGVsbG8="

Notes: (Read and Write computed property)
81.2  class GM16CoderInfoMBS

81.2.1  class GM16CoderInfoMBS

Function: The class used to get information about all registered coders.
Example:

```vbnet
dim coders(-1) as GM16CoderInfoMBS = GM16CoderInfoMBS.CoderInfoList
dim names(-1) as string
for each coder as GM16CoderInfoMBS in coders
    names.Append coder.name
next
MsgBox Join(names, EndOfLine)
```

Notes: The CoderInfo class provides the means to provide information regarding GraphicsMagick support
for an image format (designated by a magick string). It may be used to provide support for a specific named
format (provided as an argument to the constructor), or as an element of a container when format support
is queried using the coderInfoList() templated function.

81.2.2  Methods

81.2.3  CoderInfoList(needReadable as boolean = true, needWriteable as boolean = false, needMultiFrame as boolean = false) as GM16CoderInfoMBS()

Function: Creates a list of all coders.
Example:

```vbnet
dim coders(-1) as GM16CoderInfoMBS = GM16CoderInfoMBS.CoderInfoList
```

81.2.4  Properties

81.2.5  description as string

Function: Format description (e.g. "CompuServe graphics interchange format").
Example:
81.2.  CLASS GM16CODERINFOMBS

\[\text{dim coders(-1) as GM16CoderInfoMBS = GM16CoderInfoMBS.CoderInfoList}\]
\[\text{dim names(-1) as string}\]

\text{for each coder as GM16CoderInfoMBS in coders}\]
\text{names.Append coder.name+" "+coder.description}\n\text{next}\]

\text{MsgBox Join(names,EndTimeLine)\]}

\textbf{Notes:} (Read and Write property)

\textbf{81.2.6  isMultiFrame as boolean}

\textbf{Function:} Format supports multiple frames.
\textbf{Example:}
\[\text{dim coders(-1) as GM16CoderInfoMBS = GM16CoderInfoMBS.CoderInfoList}\]
\[\text{dim names(-1) as string}\]

\text{for each coder as GM16CoderInfoMBS in coders}\]
\text{names.Append coder.name+" "+str(coder.isMultiFrame)}\n\text{next}\]

\text{MsgBox Join(names,EndTimeLine)\]}

\textbf{Notes:} (Read and Write property)

\textbf{81.2.7  isReadable as boolean}

\textbf{Function:} Format is readable.
\textbf{Example:}
\[\text{dim coders(-1) as GM16CoderInfoMBS = GM16CoderInfoMBS.CoderInfoList}\]
\[\text{dim names(-1) as string}\]

\text{for each coder as GM16CoderInfoMBS in coders}\]
\text{names.Append coder.name+" "+str(coder.isReadable)}\n\text{next}\]
MsgBox Join(names,EndOfLine)

**Notes:** (Read and Write property)

### 81.2.8 isWritable as boolean

**Function:** Format is writeable.
**Example:**

```vbscript
dim coders(-1) as GM16CoderInfoMBS = GM16CoderInfoMBS.CoderInfoList
dim names(-1) as string

For Each coder As GM16CoderInfoMBS In coders
    names.Append coder.name + " " + Str(coder.isWritable)
Next

MsgBox Join(names, EndOfLine)
```

**Notes:** (Read and Write property)

### 81.2.9 name as string

**Function:** Format name (e.g. "GIF").
**Example:**

```vbscript
dim coders(-1) as GM16CoderInfoMBS = GM16CoderInfoMBS.CoderInfoList
dim coder as GM16CoderInfoMBS = coders(0) // pick first one

MsgBox coder.name
```

**Notes:** (Read and Write property)
81.3. class GM16ColorGrayMBS

81.3.1 class GM16ColorGrayMBS


**Function:** The color subclass for a grayscale color.

**Example:**

```dim g as new GM16ColorGrayMBS(0.5)
MsgBox str(g.shade)```

**Notes:**

Representation of grayscale RGB color.
Equal parts red, green, and blue specified as a ratio (0 to 1).
Subclass of the GM16ColorMBS class.

81.3.2 Methods

81.3.3 Constructor


**Function:** Creates a new color with transparent black.

**Example:**

```dim c as new GM16ColorGrayMBS
MsgBox str(c.redQuantum) +” ” +str(c.greenQuantum)+” ” +str(c.blueQuantum)```

See also:

- 81.3.4 Constructor(other as GM16ColorMBS)
- 81.3.5 Constructor(shade as Double)

81.3.4 Constructor(other as GM16ColorMBS)


**Function:** Creates a new color copying the existing color.

**Example:**

```dim g as new GM16ColorGrayMBS(0.5)
dim o as new GM16ColorGrayMBS(g)```
See also:

- 81.3.3 Constructor
- 81.3.5 Constructor(shade as Double)

### 81.3.5 Constructor(shade as Double)


**Function:** Creates a new color with the given value.

**Example:**

```vbnet
dim g as new GM16ColorGrayMBS(1.0)
MsgBox str(g.colorValue)
```

**Notes:** Range is 0.0 to 1.0.

See also:

- 81.3.3 Constructor
- 81.3.4 Constructor(other as GM16ColorMBS)

### 81.3.6 Properties

#### 81.3.7 shade as Double


**Function:** The gray value for this color.

**Example:**

```vbnet
dim g as new GM16ColorGrayMBS(1.0)
MsgBox str(g.shade)
```

**Notes:**

Range is 0.0 to 1.0
(Read and Write property)
81.4. **CLASS GM16COLORHSLMBS**

81.4  **class GM16ColorHSLMBS**

81.4.1  **class GM16ColorHSLMBS**


**Function:** The class for a HSL color.

**Example:**

```vbscript
dim g as new GM16ColorHSLMBS(0.1,0.2,0.3)
MsgBox str(g.colorValue)
```

**Notes:** Subclass of the GM16ColorMBS class.

81.4.2  **Methods**

81.4.3  **Constructor**


**Function:** Creates a new color with transparent black.

**Example:**

```vbscript
dim c as new GM16ColorHSLMBS
MsgBox str(c.redQuantum)+” ”+str(c.greenQuantum)+” ”+str(c.blueQuantum)
```

See also:

- 81.4.4 Constructor(hue as Double, saturation as Double, luminosity as Double)
- 81.4.5 Constructor(other as GM16ColorMBS)

81.4.4  **Constructor(hue as Double, saturation as Double, luminosity as Double)**


**Function:** Creates a new color with the given values.

**Example:**

```vbscript
dim g as new GM16ColorHSLMBS(0.1,0.2,0.3)
MsgBox str(g.hue)+” ”+str(g.saturation)+” ”+str(g.luminosity)
```

See also:
81.4.3 Constructor

81.4.5 Constructor(other as GM16ColorMBS)

81.4.5 Constructor(other as GM16ColorMBS)


Function: Creates a new color copying the existing color.

Example:

```vbs
dim g as new GM16ColorHSLMBS(0.1,0.2,0.3)
dim o as new GM16ColorHSLMBS(g)
MsgBox str(o.colorValue)
```

See also:

- 81.4.3 Constructor
- 81.4.4 Constructor(hue as Double, saturation as Double, luminosity as Double)

81.4.6 Properties

81.4.7 hue as Double


Function: The hue value.

Example:

```vbs
dim g as new GM16ColorHSLMBS(0.1,0.2,0.3)
MsgBox str(g.hue)
```

Notes: (Read and Write property)

81.4.8 luminosity as Double


Function: The luminosity value.

Example:

```vbs
dim g as new GM16ColorHSLMBS(0.1,0.2,0.3)
MsgBox str(g.luminosity)
```
81.4. CLASS GM16COLORHSLMBS

Notes: (Read and Write property)

81.4.9 saturation as Double

Function: The saturation value.
Example:

dim g as new GM16ColorHSLMBS(0.1,0.2,0.3)
MsgBox str(g.saturation)

Notes: (Read and Write property)
81.5  class GM16ColorMBS

81.5.1  class GM16ColorMBS

**Function:** Color is the base color class.  
**Example:**

```vbnet
dim c as new GM16ColorMBS(127,255,127) // light green  
MsgBox str(c.redQuantum)+" "+str(c.greenQuantum)+" "+str(c.blueQuantum)
```

**Notes:** It is a simple container class for the pixel red, green, blue, and alpha values scaled to fit GraphicsMagick's Quantum size. Normally users will instantiate a class derived from Color which supports the color model that fits the needs of the application. The Color class may be constructed directly from an X11-style color string. As a perhaps odd design decision, the value transparent black is considered to represent an unset value (invalid color) in many cases. This choice was made since it avoided using more memory. The default Color constructor constructs an invalid color (i.e. transparent black) and may be used as a parameter in order to remove a color setting.

81.5.2  Methods

81.5.3  Constructor

**Function:** Creates a new color with transparent black.  
**Example:**

```vbnet
dim c as new GM16ColorMBS  
MsgBox str(c.redQuantum)+" "+str(c.greenQuantum)+" "+str(c.blueQuantum)
```

See also:

- 81.5.4 Constructor(ColorName as string)  
- 81.5.5 Constructor(ColorValue as color)  
- 81.5.6 Constructor(ColorValue as color, alpha as Integer)  
- 81.5.7 Constructor(other as GM16ColorMBS)  
- 81.5.8 Constructor(red as Integer, green as Integer, blue as Integer)  
- 81.5.9 Constructor(red as Integer, green as Integer, blue as Integer, alpha as Integer)
81.5.4 Constructor(ColorName as string)

Function: Creates a new color based on the X11 color name.
Example:

```vbscript
dim c as new GM16ColorMBS("red")
MsgBox str(c.redQuantum)+"-"+str(c.greenQuantum)+"-"+str(c.blueQuantum)  // shows "255-0-0"

dim d as new GM16ColorMBS("# 77FF00")
MsgBox str(d.redQuantum)+"-"+str(d.greenQuantum)+"-"+str(d.blueQuantum)  // shows "119-255-0"
```

Notes: An alternate way to construct the class is via an X11-compatible color specification string (e.g. Color("red") or Color("# FF0000")). Since the class may be constructed from a string, convenient strings may be passed in place of an explicit Color object in methods which accept a reference to Color. Color may also be converted to a std::string for convenience in user interfaces, and for saving settings to a text file.
See also:

- 81.5.3 Constructor
- 81.5.5 Constructor(ColorValue as color)
- 81.5.6 Constructor(ColorValue as color, alpha as Integer)
- 81.5.7 Constructor(other as GM16ColorMBS)
- 81.5.8 Constructor(red as Integer, green as Integer, blue as Integer)
- 81.5.9 Constructor(red as Integer, green as Integer, blue as Integer, alpha as Integer)

81.5.5 Constructor(ColorValue as color)

Function: Creates a new color with the given values.
Example:

```vbscript
dim c as new GM16ColorMBS(& c FF0000)
MsgBox str(c.redQuantum)+"-"+str(c.greenQuantum)+"-"+str(c.blueQuantum)
```

See also:

- 81.5.3 Constructor
- 81.5.4 Constructor(ColorName as string)
81.5.6 Constructor(ColorValue as color, alpha as Integer)


Function: Creates a new color with the given values.

Example:
```
dim c as new GM16ColorMBS(& c FF0102, 127)
MsgBox str(c.redQuantum)+" "+str(c.greenQuantum)+" "+str(c.blueQuantum)+" "+str(c.alpha)
```

See also:
- 81.5.3 Constructor
- 81.5.4 Constructor(ColorName as string)
- 81.5.5 Constructor(ColorValue as color)
- 81.5.7 Constructor(other as GM16ColorMBS)
- 81.5.8 Constructor(red as Integer, green as Integer, blue as Integer)
- 81.5.9 Constructor(red as Integer, green as Integer, blue as Integer, alpha as Integer)

81.5.7 Constructor(other as GM16ColorMBS)


Function: Creates a new color copying the existing color.

Example:
```
dim r as new GM16ColorMBS(1,2,3)
dim c as new GM16ColorMBS(r)
MsgBox str(C.redQuantum)+" "+str(c.greenQuantum)+" "+str(c.blueQuantum)
```

See also:
- 81.5.3 Constructor
- 81.5.4 Constructor(ColorName as string)
81.5. CLASS GM16COLORMBS

- 81.5.5 Constructor(ColorValue as color)
- 81.5.6 Constructor(ColorValue as color, alpha as Integer)
- 81.5.8 Constructor(red as Integer, green as Integer, blue as Integer)
- 81.5.9 Constructor(red as Integer, green as Integer, blue as Integer, alpha as Integer)

81.5.8 Constructor(red as Integer, green as Integer, blue as Integer)

**Function:** Creates a new color with the given values.
**Example:**

```vbnet
dim c as new GM16ColorMBS(1,2,3)
MsgBox str(C.redQuantum)+" "+str(c.greenQuantum)+" "+str(c.blueQuantum)
```

**Notes:**
For 8-bit range is 0 to 255.
For 16-bit range is 0 to 65535.
See also:

- 81.5.3 Constructor
- 81.5.4 Constructor(ColorName as string)
- 81.5.5 Constructor(ColorValue as color)
- 81.5.6 Constructor(ColorValue as color, alpha as Integer)
- 81.5.7 Constructor(other as GM16ColorMBS)
- 81.5.9 Constructor(red as Integer, green as Integer, blue as Integer, alpha as Integer)

81.5.9 Constructor(red as Integer, green as Integer, blue as Integer, alpha as Integer)

**Function:** Creates a new color with the given values.
**Example:**

```vbnet
dim c as new GM16ColorMBS(1,2,3,4)
// display color, alpha is double...
MsgBox str(C.redQuantum)+" "+str(c.greenQuantum)+" "+str(c.blueQuantum)+" "+str(c.alpha)
```
Notes:

For 8-bit range is 0 to 255.
For 16-bit range is 0 to 65535.
See also:

- 81.5.3 Constructor
- 81.5.4 Constructor(ColorName as string)
- 81.5.5 Constructor(ColorValue as color)
- 81.5.6 Constructor(ColorValue as color, alpha as Integer)
- 81.5.7 Constructor(other as GM16ColorMBS)
- 81.5.8 Constructor(red as Integer, green as Integer, blue as Integer)

81.5.10 QuantumByteSize as Integer

Function: The quantum byte size.
Example:
MsgBox str(GM16ColorMBS.QuantumByteSize)

Notes: As the plugin uses 8 bit this value should be 1.

81.5.11 scaleDoubleToQuantum(value as Double) as Integer

Function: Scales a double value to a value in the range of a quantum.
Example:

dim d as Double = 1.0
dim v as Integer = GM16ColorMBS.scaleDoubleToQuantum(d)
MsgBox str(v)

Notes: As the plugin uses 8 bit quantums, this is basically a multiplication by 255.0
81.5.12  scaleQuantumToDouble(value as Integer) as Double

**Function:** Scales a quantum to a double value.
**Example:**

```vbnet
dim v as Integer = 255
dim d as Double = GM16ColorMBS.scaleQuantumToDouble(v)
MsgBox str(d)
```

**Notes:** The plugin uses 8bit quantums, so this is basically the division of value by 255.0

---

81.5.13  Properties

81.5.14  alpha as Double

**Function:** The alpha value of this color.
**Example:**

```vbnet
dim c as new GM16ColorMBS(1,2,3,1.0)
MsgBox str(c.alpha)
```

**Notes:**
Range is 0.0 to 1.0. If you pass values higher, they are divided by 255.
(Read and Write property)

---

81.5.15  alphaQuantum as Integer

**Function:** The alpha color value.
**Notes:**
For 8-bit range is 0 to 255.
For 16-bit range is 0 to 65535.
(Read and Write property)
81.5.16 blueQuantum as Integer


Function: The blue color value.

Example:

```vba
dim c as new GM16ColorMBS(1,2,3)
MsgBox str(c.redQuantum) // 3
```

Notes:

For 8-bit range is 0 to 255.
For 16-bit range is 0 to 65535.
(Read and Write property)

81.5.17 colorValue as color


Function: The REALbasic color for the GraphicsMagick color.

Example:

```vba
dim c as new GM16ColorMBS(& c FF0102)
MsgBox str(c.ColorValue)
```

Notes: (Read and Write property)

81.5.18 greenQuantum as Integer


Function: The green color value.

Example:

```vba
dim r as new GM16ColorMBS(1,2,3)
MsgBox str(r.greenQuantum) // shows 2
```

Notes:

For 8-bit range is 0 to 255.
For 16-bit range is 0 to 65535.
(Read and Write property)
81.5. **CLASS GM16COLORMBS**

81.5.19  **handle as Integer**


**Function:** The internal color reference.

**Example:**

```vbnet
dim r as new GM16ColorMBS(1,2,3)
MsgBox str(r.handle)
```

**Notes:** (Read and Write property)

81.5.20  **intensity as Double**


**Function:** The intensity of this color.

**Example:**

```vbnet
dim c as new GM16ColorMBS(1,2,3)
MsgBox str(c.intensity)
```

**Notes:** (Read only property)

81.5.21  **isValid as boolean**


**Function:** Does object contain valid color?

**Example:**

```vbnet
dim c as new GM16ColorMBS(1,2,3)
MsgBox str(c.isValid)
```

**Notes:** (Read and Write property)

81.5.22  **redQuantum as Integer**


**Function:** The red color value.

**Example:**
`dim c as new GM16ColorMBS(1,2,3)`
`MsgBox str(c.redQuantum) // 1`

**Notes:**
For 8-bit range is 0 to 255.
For 16-bit range is 0 to 65535.
(Read and Write property)
81.6. **CLASS GM16COLORMONOMBS**

81.6. **class GM16ColorMonoMBS**

81.6.1. **class GM16ColorMonoMBS**


**Function:** Representation of a black/white color (true/false)

**Example:**

```vbscript
dim g as new GM16ColorMonoMBS(false)
MsgBox str(g.colorValue)
```

**Notes:** Subclass of the GM16ColorMBS class.

81.6.2. **Methods**

81.6.3. **Constructor**


**Function:** Creates a new color with transparent black.

**Example:**

```vbscript
dim c as new GM16ColorMonoMBS
MsgBox str(c.redQuantum)+” ”+str(c.greenQuantum)+” ”+str(c.blueQuantum)
```

See also:

- 81.6.4 Constructor(mono as boolean)
- 81.6.5 Constructor(other as GM16ColorMBS)

81.6.4. **Constructor(mono as boolean)**


**Function:** Creates a new color with the given values.

**Example:**

```vbscript
dim g as new GM16ColorMonoMBS(false)
MsgBox str(g.mono)
```

See also:
81.6.5 Constructor(other as GM16ColorMBS)

**Function:** Creates a new color copying the existing color.

**Example:**
```
dim g as new GM16ColorMonoMBS(false)
dim o as new GM16ColorMonoMBS(g)
MsgBox str(o.mono)
```

See also:

- 81.6.3 Constructor
- 81.6.4 Constructor(mono as boolean)

81.6.6 Properties

81.6.7 mono as boolean

**Function:** The color value.

**Example:**
```
dim g as new GM16ColorMonoMBS(true)
MsgBox str(g.mono)
```

**Notes:** (Read and Write property)
81.7. **CLASS GM16COLORRGBMBS**

81.7. **class GM16ColorRGBMBS**

81.7.1 **class GM16ColorRGBMBS**


**Function:** The color class for RGB colors.

**Example:**

```vbnet
dim c as new GM16ColorRGBMBS(1.0,0.0,0.0) // red
MsgBox str(c.red)+" " +str(c.green)+" " +str(c.blue)
MsgBox str(c.redQuantum)+" " +str(c.greenQuantum)+" " +str(c.blueQuantum)
```

**Notes:**

Representation of RGB color with red, green, and blue specified as ratios (0 to 1)
Subclass of the GM16ColorMBS class.

81.7.2 **Methods**

81.7.3 **Constructor**


**Function:** Creates a new color with transparent black.

**Example:**

```vbnet
dim c as new GM16ColorRGBMBS
MsgBox str(c.redQuantum)+" " +str(c.greenQuantum)+" " +str(c.blueQuantum)
```

See also:

- 81.7.4 Constructor(other as GM16ColorMBS)
- 81.7.5 Constructor(red as Double, green as Double, blue as Double)

81.7.4 **Constructor(other as GM16ColorMBS)**


**Function:** Creates a new color copying the existing color.

**Example:**

```vbnet
dim g as new GM16ColorRGBMBS(1.2,3)
dim o as new GM16ColorRGBMBS(g)
```
`MsgBox str(o.colorValue)`

See also:

- 81.7.3 Constructor
- 81.7.5 Constructor(red as Double, green as Double, blue as Double)

### 81.7.5 Constructor(red as Double, green as Double, blue as Double)


**Function:** Creates a new color with the given values.

**Example:**

```vba
dim c as new GM16ColorRGBMBS(0.1,0.2,0.3)
```

**Notes:** Range is 0.0 to 1.0.

See also:

- 81.7.3 Constructor
- 81.7.4 Constructor(other as GM16ColorMBS)

### 81.7.6 Properties

### 81.7.7 blue as Double


**Function:** The blue color component.

**Example:**

```vba
dim c as new GM16ColorRGBMBS(0.0,0.0,1.0)
MsgBox str(c.blue)
```

**Notes:**

Range is 0.0 to 1.0.

(Read and Write property)
81.7.8 green as Double

Function: The green color component.
Example:

dim c as new GM16ColorRGBMBS(0.0,1.0,0.0)
MsgBox str(c.green)

Notes:
Range is 0.0 to 1.0.
(Read and Write property)

81.7.9 red as Double

Function: The red color component.
Example:

dim c as new GM16ColorRGBMBS(1.0,0.0,0.0) // red
MsgBox str(c.red)

Notes:
Range is 0.0 to 1.0.
(Read and Write property)
81.8 class GM16ColorYUVMBS

81.8.1 class GM16ColorYUVMBS

Function: Representation of a color in the YUV colorspace
Example:

```
dim g as new GM16ColorYUVMBS(0.1, 0.2, 0.3)
MsgBox str(g.y)+" "+str(g.u)+" "+str(g.v)
```

Notes: Subclass of the GM16ColorMBS class.

81.8.2 Methods

81.8.3 Constructor

Function: Creates a new color with transparent black.
Example:

```
dim c as new GM16ColorYUVMBS
MsgBox str(c.redQuantum)+" "+str(c.greenQuantum)+" "+str(c.blueQuantum)
```

See also:

- 81.8.4 Constructor(other as GM16ColorMBS)
- 81.8.5 Constructor(y as Double, u as Double, v as Double)

81.8.4 Constructor(other as GM16ColorMBS)

Function: Creates a new color copying the existing color.
Example:

```
dim g as new GM16ColorYUVMBS(0.1, 0.2, 0.3)
dim o as new GM16ColorYUVMBS(g)
MsgBox str(o.colorValue)
```

See also:
81.8. **CLASS GM16COLORYUVMBS**

- 81.8.3 Constructor
- 81.8.5 Constructor(y as Double, u as Double, v as Double)

### 81.8.5 Constructor(y as Double, u as Double, v as Double)

**MBS GraphicsMagick Plugin, Plugin Version:** 14.1, **Console & Web:** Yes, **Mac:** Yes, **Win:** Yes, **Linux:** Yes.

**Function:** Creates a new color with the given values.

**Example:**

```dim g as new GM16ColorYUVMBS(0.1, 0.2, 0.3)```

See also:

- 81.8.3 Constructor
- 81.8.4 Constructor(other as GM16ColorMBS)

### 81.8.6 Properties

#### 81.8.7 u as Double

**MBS GraphicsMagick Plugin, Plugin Version:** 14.1, **Console & Web:** Yes, **Mac:** Yes, **Win:** Yes, **Linux:** Yes.

**Function:** The u color component.

**Example:**

```dim g as new GM16ColorYUVMBS(0.1, 0.2, 0.3) MsgBox str(g.u)```

**Notes:**

Range is -0.5 to +0.5.

(Read and Write property)

#### 81.8.8 v as Double

**MBS GraphicsMagick Plugin, Plugin Version:** 14.1, **Console & Web:** Yes, **Mac:** Yes, **Win:** Yes, **Linux:** Yes.

**Function:** The v color component.

**Example:**

```dim g as new GM16ColorYUVMBS(0.1, 0.2, 0.3) MsgBox str(g.v)```
Notes:
Range is -0.5 to +0.5.
(Read and Write property)

81.8.9 y as Double

**Function:** The y color component.
**Example:**
```vba
dim g as new GM16ColorYUVMBS(0.1, 0.2, 0.3)
MsgBox str(g.y)
```

Notes:
Range is 0.0 to 1.0.
(Read and Write property)
81.9.  CLASS GM16COORDINATEMBS

81.9  class GM16CoordinateMBS

81.9.1  class GM16CoordinateMBS

**Function:** The Graphics Magick class for a coordinate.
**Example:**
```vba
dim c as new GM16CoordinateMBS(5,6)
MsgBox str(c.x) + " " + str(c.y)
```

81.9.2  Methods

81.9.3  Constructor

**Function:** The constructor to create a new coordinate.
**See also:**
- 81.9.4 Constructor(x as Double, y as Double)

81.9.4  Constructor(x as Double, y as Double)

**Function:** The constructor to create a new coordinate.
**Example:**
```vba
dim c as new GM16CoordinateMBS(5,6)
MsgBox str(c.x) + " " + str(c.y)
```

**See also:**
- 81.9.3 Constructor

81.9.5  Properties

81.9.6  x as Double

**Function:** The x value.
**Example:**
dim c as new GM16CoordinateMBS
  c.x = 5
  MsgBox str(c.x)

Notes: (Read and Write property)

81.9.7  y as Double

Function: The y value.
Example:
  dim c as new GM16CoordinateMBS
  c.y = 5
  MsgBox str(c.y)

Notes: (Read and Write property)
81.10 class GM16ErrorExceptionMBS

81.10.1 class GM16ErrorExceptionMBS


**Function:** The exception to report errors in the GraphicMagick plugin.

**Notes:**

Check the message property for details.

Subclass of the RuntimeException class.
81.11 class GM16GeometryMBS

81.11.1 class GM16GeometryMBS


Function: Geometry provides a convenient means to specify a geometry argument.

Example:

dim g as new GM16GeometryMBS(300,400)
MsgBox str(G.width)+" "+str(G.height)

Notes: The object may be initialized from a string containing a geometry specification. It may also be initialized by more efficient parameterized constructors.

81.11.2 Methods

81.11.3 Constructor


Function: Creates empty geometry.

Example:

dim g as new GM16GeometryMBS
MsgBox str(G.width)+" "+str(G.height)

See also:

- 81.11.4 Constructor(geometry as string)
- 81.11.5 Constructor(other as GM16GeometryMBS)
- 81.11.6 Constructor(Width as UInt32, Height as UInt32, XOffset as UInt32=0, YOffset as UInt32=0, xNegative as boolean=false, yNegative as boolean=false)

81.11.4 Constructor(geometry as string)


Function: Construct geometry from string.

Example:

dim g as new GM16GeometryMBS("600x600")
81.11. CLASS GM16GEOMETRYMBS

MsgBox str(G.width)+" "+str(G.height)

Notes:
See the GraphicsMagick website for details.
http://www.graphicsmagick.org/Magick++/Geometry.html
See also:

- 81.11.3 Constructor
- 81.11.5 Constructor(other as GM16GeometryMBS)
- 81.11.6 Constructor(Width as UInt32, Height as UInt32, XOffset as UInt32=0, YOffset as UInt32=0, xNegative as boolean=false, yNegative as boolean=false)

81.11.5 Constructor(other as GM16GeometryMBS)

Function: Creates a new geometry object by copying an existing one.
Example:

dim g as new GM16GeometryMBS(600,600)
dim h as new GM16GeometryMBS(g)
MsgBox str(h.width)

See also:

- 81.11.3 Constructor
- 81.11.4 Constructor(geometry as string)
- 81.11.6 Constructor(Width as UInt32, Height as UInt32, XOffset as UInt32=0, YOffset as UInt32=0, xNegative as boolean=false, yNegative as boolean=false)

81.11.6 Constructor(Width as UInt32, Height as UInt32, XOffset as UInt32=0, YOffset as UInt32=0, xNegative as boolean=false, yNegative as boolean=false)

Function: Creates geometry with the given values.
Example:

dim g as new GM16GeometryMBS(600,600)
MsgBox str(g.width)
81.11.7 Make(geometry as string) as GM16GeometryMBS

**Function:** Construct geometry from string.  
**Example:**
```vbnet
dim g as GM16GeometryMBS = GM16GeometryMBS.Make("600x600")
MsgBox str(g.width)+" "+str(g.height)
```

**Notes:**
See the GraphicsMagick website for more details:  
http://www.graphicsmagick.org/Magick++/Geometry.html  
See also:

- 81.11.8 Make(Width as UInt32, Height as UInt32, XOffset as UInt32=0, YOffset as UInt32=0, xNegative as boolean=false, yNegative as boolean=false) as GM16GeometryMBS

81.11.8 Make(Width as UInt32, Height as UInt32, XOffset as UInt32=0, YOffset as UInt32=0, xNegative as boolean=false, yNegative as boolean=false) as GM16GeometryMBS

**Function:** Creates geometry with the given values.  
**Example:**
```vbnet
dim g as GM16GeometryMBS = GM16GeometryMBS.Make(600,600)
MsgBox str(g.width)
```

See also:

- 81.11.7 Make(geometry as string) as GM16GeometryMBS
81.11.10  aspect as boolean

Function: Resize without preserving aspect ratio (!).
Example:
```vbscript
dim g as new GM16GeometryMBS(600,600)
MsgBox str(g.aspect)
```

Notes: (Read and Write property)

81.11.11  greater as boolean

Function: Resize if image is greater than size (>).
Example:
```vbscript
dim g as new GM16GeometryMBS(600,600)
MsgBox str(g.greater)
```

Notes: (Read and Write property)

81.11.12  height as Uint32

Function: The height value.
Example:
```vbscript
dim g as new GM16GeometryMBS(600,600)
MsgBox str(g.height)
```

Notes: (Read and Write property)
81.11.13 isValid as boolean

**Function:** Does object contain a valid geometry?
**Example:**
```dim g as new GM16GeometryMBS(100,200)
MsgBox str(G.isValid)
```

**Notes:**
May be set to false in order to invalidate an existing geometry object.
(Read and Write property)

81.11.14 less as boolean

**Function:** Resize if image is less than size (<).
**Example:**
```dim g as new GM16GeometryMBS(600,600)
MsgBox str(g.less)
```

**Notes:** (Read and Write property)

81.11.15 percent as boolean

**Function:** Width and height are expressed as percentages.
**Example:**
```dim g as new GM16GeometryMBS(600,600)
MsgBox str(g.percent)
```

**Notes:** (Read and Write property)
81.11.  CLASS GM16GEOMETRYMBS

81.11.16  StringValue as string

Function: The string representation of the geometry object.
Example:

```vbscript
dim g as new GM16GeometryMBS(600,600)
MsgBox str(g.StringValue)
```

Notes: (Read and Write property)

81.11.17  width as Uint32

Function: The width value.
Example:

```vbscript
dim g as new GM16GeometryMBS(600,600)
MsgBox str(g.width)
```

Notes: (Read and Write property)

81.11.18  xNegative as boolean

Function: Sign of X offset negative? (X origin at right)
Example:

```vbscript
dim g as new GM16GeometryMBS(100,200,30,40,true,false)
MsgBox str(g.xNegative)
```

Notes: (Read and Write property)

81.11.19  xOff as Uint32

Function: X offset from origin.
Example:
dim g as new GM16GeometryMBS(100,200,30,40,true,true)
MsgBox str(G.xOff)+" "+str(G.yOff)

Notes: (Read and Write property)

81.11.20  yNegative as boolean

Function: Sign of Y offset negative? (Y origin at bottom)
Example:

dim g as new GM16GeometryMBS(100,200,30,40,false,true)
MsgBox str(G.yNegative)

Notes: (Read and Write property)

81.11.21  yOff as Uint32

Function: Y offset from origin
Example:

dim g as new GM16GeometryMBS(100,200,30,40,true,true)
MsgBox str(G.xOff)+" "+str(G.yOff)

Notes: (Read and Write property)
81.12. CLASS GM16GRAPHICSMBS

81.12 class GM16GraphicsMBS

81.12.1 class GM16GraphicsMBS

**Function:** The class for drawing commands targeting a GM16ImageMBS.
**Notes:** Please remember that all commands are collected till you call the Draw method.

81.12.2 Methods

81.12.3 Arc(startX as Double, startY as Double, endX as Double, endY as Double, startDegrees as Double, endDegrees as Double)

**Function:** Draw an arc using the stroke color and based on the circle starting at coordinates startX,startY, and ending with coordinates endX,endY, and bounded by the rotational arc startDegrees,endDegrees.
**Example:**

```vba
dim g as new GM16GeometryMBS(500,500)
dim c as new GM16ColorRGBMBS("white") // white
dim image as new GM16ImageMBS(g, c)

image.type = image.TrueColorType
image.strokeColor = new GM16ColorRGBMBS("red") // Outline color
image.fillColor = new GM16ColorRGBMBS("green") // Fill color
image.strokeWidth = 5

dim draw as GM16GraphicsMBS = image.Graphics
draw.arc(250, 250, 100, 100,50,300)
draw.Draw

Backdrop=image.CopyPicture
```

81.12.4 Bezier(values() as GM16CoordinateMBS)

**Function:** Draw a bezier curve using the stroke color and based on the coordinates specified by the coordinates array.
### Chapter 81: GraphicsMagick

#### 81.12.5 Circle(originX as Double, originY as Double, perimX as Double, perimY as Double)

MBS GraphicsMagick Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Draw a circle using the stroke color and thickness using specified origin and perimeter coordinates.

**Example:**

```plaintext
dim g as new GM16GeometryMBS(500,500)
dim c as new GM16ColorRGBMBS("white") // white
dim image as new GM16ImageMBS(g, c)

image.type = image.TrueColorType
image.strokeColor = new GM16ColorRGBMBS("red") // Outline color
image.fillColor = new GM16ColorRGBMBS("green") // Fill color
image.strokeWidth = 5

dim draw as GM16GraphicsMBS = image.Graphics

// Draw a circle
draw.Circle(250, 250, 120, 150)
draw.Draw

Backdrop=image.CopyPicture
```

**Notes:** If a fill color is specified, then the object is filled.

#### 81.12.6 ClipPath(id as string)

MBS GraphicsMagick Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Select a drawing clip path matching id.

#### 81.12.7 ColorPixel(x as Double, y as Double, paintMethod as Integer)

MBS GraphicsMagick Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Color image according to paintMethod.

**Notes:** The point method recolors the target pixel. The replace method recolors any pixel that matches the color of the target pixel. Floodfill recolors any pixel that matches the color of the target pixel and is a neighbor, whereas filltoborder recolors any neighbor pixel that is not the border color. Finally, reset recolors all pixels.
81.12.8  CompositeImage(x as Double, y as Double, file as folderitem)

**Function:** Composite current image with contents of specified image, at specified coordinates.
**Notes:** If the matte attribute is set to true, then the image composition will consider an alpha channel, or transparency, present in the image file so that non-opaque portions allow part (or all) of the composite image to show through.
See also:

- 81.12.9 CompositeImage(x as Double, y as Double, image as GM16ImageMBS) 13351
- 81.12.10 CompositeImage(x as Double, y as Double, path as string) 13352
- 81.12.11 CompositeImage(x as Double, y as Double, w as Double, h as Double, file as folderitem) 13352
- 81.12.12 CompositeImage(x as Double, y as Double, w as Double, h as Double, file as folderitem, CompositeOperator as Integer) 13353
- 81.12.13 CompositeImage(x as Double, y as Double, w as Double, h as Double, image as GM16ImageMBS) 13354
- 81.12.14 CompositeImage(x as Double, y as Double, w as Double, h as Double, image as GM16ImageMBS, CompositeOperator as Integer) 13354
- 81.12.15 CompositeImage(x as Double, y as Double, w as Double, h as Double, path as string) 13355
- 81.12.16 CompositeImage(x as Double, y as Double, w as Double, h as Double, path as string, CompositeOperator as Integer) 13355

81.12.9  CompositeImage(x as Double, y as Double, image as GM16ImageMBS)

**Function:** Composite current image with contents of specified image, at specified coordinates.
**Notes:** If the matte attribute is set to true, then the image composition will consider an alpha channel, or transparency, present in the image file so that non-opaque portions allow part (or all) of the composite image to show through.
See also:

- 81.12.8 CompositeImage(x as Double, y as Double, file as folderitem) 13351
- 81.12.10 CompositeImage(x as Double, y as Double, path as string) 13352
- 81.12.11 CompositeImage(x as Double, y as Double, w as Double, h as Double, file as folderitem) 13352
- 81.12.12 CompositeImage(x as Double, y as Double, w as Double, h as Double, file as folderitem, CompositeOperator as Integer) 13353
- 81.12.13 CompositeImage(x as Double, y as Double, w as Double, h as Double, image as GM16ImageMBS) 13354
• 81.12.14 CompositeImage(x as Double, y as Double, w as Double, h as Double, image as GM16ImageMBS, CompositeOperator as Integer) 13354

• 81.12.15 CompositeImage(x as Double, y as Double, w as Double, h as Double, path as string) 13355

• 81.12.16 CompositeImage(x as Double, y as Double, w as Double, h as Double, path as string, CompositeOperator as Integer) 13355

81.12.10  CompositeImage(x as Double, y as Double, path as string)


**Function:** Composite current image with contents of specified image, at specified coordinates.

**Notes:** If the matte attribute is set to true, then the image composition will consider an alpha channel, or transparency, present in the image file so that non-opaque portions allow part (or all) of the composite image to show through.

See also:

• 81.12.8 CompositeImage(x as Double, y as Double, file as folderitem) 13351

• 81.12.9 CompositeImage(x as Double, y as Double, image as GM16ImageMBS) 13351

• 81.12.11 CompositeImage(x as Double, y as Double, w as Double, h as Double, file as folderitem) 13352

• 81.12.12 CompositeImage(x as Double, y as Double, w as Double, h as Double, file as folderitem, CompositeOperator as Integer) 13353

• 81.12.13 CompositeImage(x as Double, y as Double, w as Double, h as Double, image as GM16ImageMBS) 13354

• 81.12.14 CompositeImage(x as Double, y as Double, w as Double, h as Double, image as GM16ImageMBS, CompositeOperator as Integer) 13354

• 81.12.15 CompositeImage(x as Double, y as Double, w as Double, h as Double, path as string) 13355

• 81.12.16 CompositeImage(x as Double, y as Double, w as Double, h as Double, path as string, CompositeOperator as Integer) 13355

81.12.11  CompositeImage(x as Double, y as Double, w as Double, h as Double, file as folderitem)


**Function:** Composite current image with contents of specified image, rendered with specified width and height, at specified coordinates.

**Notes:** If the matte attribute is set to true, then the image composition will consider an alpha channel, or transparency, present in the image file so that non-opaque portions allow part (or all) of the composite image to show through. If the specified width or height is zero, then the image is composited at its natural size, without enlargement or reduction.

See also:
81.12. **CLASS GM16GRAPHICSMBS**

- 81.12.8 **CompositeImage(x as Double, y as Double, file as folderitem)**
- 81.12.9 **CompositeImage(x as Double, y as Double, image as GM16ImageMBS)**
- 81.12.10 **CompositeImage(x as Double, y as Double, path as string)**
- 81.12.12 **CompositeImage(x as Double, y as Double, w as Double, h as Double, file as folderitem, CompositeOperator as Integer)**
- 81.12.13 **CompositeImage(x as Double, y as Double, w as Double, h as Double, image as GM16ImageMBS)**
- 81.12.14 **CompositeImage(x as Double, y as Double, w as Double, h as Double, image as GM16ImageMBS, CompositeOperator as Integer)**
- 81.12.15 **CompositeImage(x as Double, y as Double, w as Double, h as Double, path as string)**
- 81.12.16 **CompositeImage(x as Double, y as Double, w as Double, h as Double, path as string, CompositeOperator as Integer)**

81.12.12 **CompositeImage(x as Double, y as Double, w as Double, h as Double, file as folderitem, CompositeOperator as Integer)**

**Function:** Composite current image with contents of specified image, rendered with specified width and height, using specified composition algorithm, at specified coordinates.  
**Notes:** If the matte attribute is set to true, then the image composition will consider an alpha channel, or transparency, present in the image file so that non-opaque portions allow part (or all) of the composite image to show through. If the specified width or height is zero, then the image is composited at its natural size, without enlargement or reduction.  
See also:

- 81.12.8 **CompositeImage(x as Double, y as Double, file as folderitem)**
- 81.12.9 **CompositeImage(x as Double, y as Double, image as GM16ImageMBS)**
- 81.12.10 **CompositeImage(x as Double, y as Double, path as string)**
- 81.12.11 **CompositeImage(x as Double, y as Double, w as Double, h as Double, file as folderitem)**
- 81.12.13 **CompositeImage(x as Double, y as Double, w as Double, h as Double, image as GM16ImageMBS)**
- 81.12.14 **CompositeImage(x as Double, y as Double, w as Double, h as Double, image as GM16ImageMBS, CompositeOperator as Integer)**
- 81.12.15 **CompositeImage(x as Double, y as Double, w as Double, h as Double, path as string)**
- 81.12.16 **CompositeImage(x as Double, y as Double, w as Double, h as Double, path as string, CompositeOperator as Integer)**
81.12.13  CompositeImage\( (x \text{ as } \text{Double}, \ y \text{ as } \text{Double}, \ w \text{ as } \text{Double}, \ h \text{ as } \text{Double}, \ \text{image as GM16ImageMBS}) \)


**Function:** Composite current image with contents of specified image, rendered with specified width and height, at specified coordinates.

**Notes:** If the matte attribute is set to true, then the image composition will consider an alpha channel, or transparency, present in the image file so that non-opaque portions allow part (or all) of the composite image to show through. If the specified width or height is zero, then the image is composited at its natural size, without enlargement or reduction.

See also:

- 81.12.8 CompositeImage\( (x \text{ as } \text{Double}, \ y \text{ as } \text{Double}, \ \text{file as folderitem}) \) 13351
- 81.12.9 CompositeImage\( (x \text{ as } \text{Double}, \ y \text{ as } \text{Double}, \ \text{image as GM16ImageMBS}) \) 13351
- 81.12.10 CompositeImage\( (x \text{ as } \text{Double}, \ y \text{ as } \text{Double}, \ \text{path as string}) \) 13352
- 81.12.11 CompositeImage\( (x \text{ as } \text{Double}, \ y \text{ as } \text{Double}, \ w \text{ as } \text{Double}, \ h \text{ as } \text{Double}, \ \text{file as folderitem}) \) 13352
- 81.12.12 CompositeImage\( (x \text{ as } \text{Double}, \ y \text{ as } \text{Double}, \ w \text{ as } \text{Double}, \ h \text{ as } \text{Double}, \ \text{file as folderitem, CompositeOperator as Integer}) \) 13353
- 81.12.14 CompositeImage\( (x \text{ as } \text{Double}, \ y \text{ as } \text{Double}, \ w \text{ as } \text{Double}, \ h \text{ as } \text{Double}, \ \text{image as GM16ImageMBS, CompositeOperator as Integer}) \) 13354
- 81.12.15 CompositeImage\( (x \text{ as } \text{Double}, \ y \text{ as } \text{Double}, \ w \text{ as } \text{Double}, \ h \text{ as } \text{Double}, \ \text{path as string}) \) 13355
- 81.12.16 CompositeImage\( (x \text{ as } \text{Double}, \ y \text{ as } \text{Double}, \ w \text{ as } \text{Double}, \ h \text{ as } \text{Double}, \ \text{path as string, CompositeOperator as Integer}) \) 13355

81.12.14  CompositeImage\( (x \text{ as } \text{Double}, \ y \text{ as } \text{Double}, \ w \text{ as } \text{Double}, \ h \text{ as } \text{Double}, \ \text{image as GM16ImageMBS, CompositeOperator as Integer}) \)


**Function:** Composite current image with contents of specified image, rendered with specified width and height, using specified composition algorithm, at specified coordinates.

**Notes:** If the matte attribute is set to true, then the image composition will consider an alpha channel, or transparency, present in the image file so that non-opaque portions allow part (or all) of the composite image to show through. If the specified width or height is zero, then the image is composited at its natural size, without enlargement or reduction.

See also:

- 81.12.8 CompositeImage\( (x \text{ as } \text{Double}, \ y \text{ as } \text{Double}, \ \text{file as folderitem}) \) 13351
- 81.12.9 CompositeImage\( (x \text{ as } \text{Double}, \ y \text{ as } \text{Double}, \ \text{image as GM16ImageMBS}) \) 13351
- 81.12.10 CompositeImage\( (x \text{ as } \text{Double}, \ y \text{ as } \text{Double}, \ \text{path as string}) \) 13352
- 81.12.11 CompositeImage\( (x \text{ as } \text{Double}, \ y \text{ as } \text{Double}, \ w \text{ as } \text{Double}, \ h \text{ as } \text{Double}, \ \text{file as folderitem}) \) 13352
81.12. CompositeImage(x as Double, y as Double, w as Double, h as Double, file as folderitem, CompositeOperator as Integer) 13353

81.12.13 CompositeImage(x as Double, y as Double, w as Double, h as Double, image as GM16ImageMBS) 13354

81.12.15 CompositeImage(x as Double, y as Double, w as Double, h as Double, path as string) 13355

81.12.16 CompositeImage(x as Double, y as Double, w as Double, h as Double, path as string, CompositeOperator as Integer) 13355

81.12.15  CompositeImage(x as Double, y as Double, w as Double, h as Double, path as string)


**Function:** Composite current image with contents of specified image, rendered with specified width and height, at specified coordinates.

**Notes:** If the matte attribute is set to true, then the image composition will consider an alpha channel, or transparency, present in the image file so that non-opaque portions allow part (or all) of the composite image to show through. If the specified width or height is zero, then the image is composited at its natural size, without enlargement or reduction.

See also:

- 81.12.8 CompositeImage(x as Double, y as Double, file as folderitem) 13351
- 81.12.9 CompositeImage(x as Double, y as Double, image as GM16ImageMBS) 13351
- 81.12.10 CompositeImage(x as Double, y as Double, path as string) 13352
- 81.12.11 CompositeImage(x as Double, y as Double, w as Double, h as Double, file as folderitem) 13352
- 81.12.12 CompositeImage(x as Double, y as Double, w as Double, h as Double, file as folderitem, CompositeOperator as Integer) 13353
- 81.12.13 CompositeImage(x as Double, y as Double, w as Double, h as Double, image as GM16ImageMBS) 13354
- 81.12.14 CompositeImage(x as Double, y as Double, w as Double, h as Double, image as GM16ImageMBS, CompositeOperator as Integer) 13354
- 81.12.16 CompositeImage(x as Double, y as Double, w as Double, h as Double, path as string, CompositeOperator as Integer) 13355

81.12.16  CompositeImage(x as Double, y as Double, w as Double, h as Double, path as string, CompositeOperator as Integer)


**Function:** Composite current image with contents of specified image, rendered with specified width and height, using specified composition algorithm, at specified coordinates.
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Notes: If the matte attribute is set to true, then the image composition will consider an alpha channel, or transparency, present in the image file so that non-opaque portions allow part (or all) of the composite image to show through. If the specified width or height is zero, then the image is composited at its natural size, without enlargement or reduction.

See also:

- 81.12.8 CompositeImage(x as Double, y as Double, file as folderitem) 13351
- 81.12.9 CompositeImage(x as Double, y as Double, image as GM16ImageMBS) 13351
- 81.12.10 CompositeImage(x as Double, y as Double, path as string) 13352
- 81.12.11 CompositeImage(x as Double, y as Double, w as Double, h as Double, file as folderitem) 13352
- 81.12.12 CompositeImage(x as Double, y as Double, w as Double, h as Double, file as folderitem, CompositeOperator as Integer) 13353
- 81.12.13 CompositeImage(x as Double, y as Double, w as Double, h as Double, image as GM16ImageMBS) 13354
- 81.12.14 CompositeImage(x as Double, y as Double, w as Double, h as Double, image as GM16ImageMBS, CompositeOperator as Integer) 13354
- 81.12.15 CompositeImage(x as Double, y as Double, w as Double, h as Double, path as string) 13355

81.12.17 Constructor(image as GM16ImageMBS)


Function: Creates a new object referencing the given image.

81.12.18 DashArray(values() as Double)


Function: Specify the pattern of dashes and gaps used to stroke paths.

Notes: The strokeDashArray represents a zero-terminated array of numbers that specify the lengths of alternating dashes and gaps in pixels. If an odd number of values is provided, then the list of values is repeated to yield an even number of values. A typical strokeDashArray array might contain the members 5 3 2 0, where the zero value indicates the end of the pattern array.

81.12.19 DashOffset(offset as Double)


Function: Specify the distance into the dash pattern to start the dash.

Notes: See documentation on SVG’s stroke-dashoffset property for usage details.
81.12.20  Draw

**Function:** Draws all draw commands collected.
**Example:**

```javascript
dim g as new GM16GeometryMBS(500,500)
dim c as new GM16ColorRGBMBS("white") // white
dim image as new GM16ImageMBS(g, c)

image.type = image.TrueColorType
image.strokeWidth = 5

dim draw as GM16GraphicsMBS = image.Graphics

draw.StrokeColor new GM16ColorRGBMBS("red")
draw.Line(100,100,400,400)
draw.Draw

Backdrop=image.CopyPicture
```

81.12.21  DrawPath

**Function:** Draw on image using vector path.
**Example:**

```javascript
// new picture, 500x500 and filled with white
dim g as new GM16GeometryMBS(500,500)
dim c as new GM16ColorRGBMBS("white") // white
dim image as new GM16ImageMBS(g, c)

dim draw as GM16GraphicsMBS = image.Graphics

// Draw path

dim cr as new GM16ColorRGBMBS("red")
dim gr as new GM16ColorRGBMBS("green")
draw.StrokeColor cr
draw.FillColor gr
draw.PathMovetoAbs(30,10)
draw.PathLinetoAbs(20,55)
draw.PathLinetoAbs(70,50)
draw.PathLinetoAbs(80,5)
```
draw.DrawPath

draw.Draw

// show picture
image.type = image.TrueColorType // make sure it's a bitmap
Backdrop=image.CopyPicture

81.12.22 Ellipse(originX as Double, originY as Double, perimX as Double, perimY as Double, arcStart as Double, arcEnd as Double)

**Function:** Draw an ellipse using the stroke color and thickness, specified origin, x & y radius, as well as specified start and end of arc in degrees.
**Notes:** If a fill color is specified, then the object is filled.

81.12.23 FillColor(c as GM16ColorMBS)

**Function:** Specify drawing object fill color.

81.12.24 FillOpacity(opacity as Double)

**Function:** Specify opacity to use when drawing using fill color.

81.12.25 FillRule(fillRule as Integer)

**Function:** Specify the algorithm which is to be used to determine what parts of the canvas are included inside the shape.
**Notes:** See documentation on SVG’s fill-rule property for usage details.

81.12.26 Font(fontname as string)

**Function:** Specify font name to use when drawing text.
81.12.  CLASS GM16GRAPHICSMBS

Example:

```plaintext
dim g as new GM16GeometryMBS(500,500)
dim c as new GM16ColorRGBMBS("white") // white
dim image as new GM16ImageMBS(g, c)

dim draw as GM16GraphicsMBS = image.Graphics

// draw red text
draw.strokeColor(new GM16ColorRGBMBS("red")) // Outline color
draw.strokeWidth(1)
draw.Font("/Library/Fonts/Verdana.ttf")
draw.Text(50, 50, "Hello", ")
draw.Draw

Backdrop=image.CopyPicture
```

See also:

- 81.12.27 Font(fontname as string, StyleType as Integer, weight as Integer, StretchType as Integer)

81.12.27  Font(fontname as string, StyleType as Integer, weight as Integer, StretchType as Integer)

Function: Sets the font.
Notes: Specify font family, style, weight (one of the set { 100 | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900 } with 400 being the normal size), and stretch to be used to select the font used when drawing text. Wildcard matches may be applied to style via the AnyStyle enumeration, applied to weight if weight is zero, and applied to stretch via the AnyStretch enumeration.
See also:

- 81.12.26 Font(fontname as string)

81.12.28  Gravity(GravityType as Integer)

Function: Specify text positioning gravity.
81.12.29 **Line**(startX as Double, startY as Double, endX as Double, endY as Double)

**Function:** Draw a line using stroke color and thickness using starting and ending coordinates

**Example:**

```plaintext
dim g as new GM16GeometryMBS(500,500)
dim c as new GM16ColorRGBMBS("white") // white
dim image as new GM16ImageMBS(g, c)

image.strokeColor = new GM16ColorRGBMBS("red") // Outline color
image.fillColor = new GM16ColorRGBMBS("green") // Fill color
image.strokeWidth = 5

dim draw as GM16GraphicsMBS = image.Graphics

// Draw a line
draw.Line(100,100,400,400)
draw.Draw

image.type = image.TrueColorType
Backdrop=image.CopyPicture
```

81.12.30 **Matte**(x as Double, y as Double, paintMethod as Integer)

**Function:** Change the pixel matte value to transparent.

**Notes:** The point method changes the matte value of the target pixel. The replace method changes the matte value of any pixel that matches the color of the target pixel. Floodfill changes the matte value of any pixel that matches the color of the target pixel and is a neighbor, whereas filltoborder changes the matte value of any neighbor pixel that is not the border color. Finally reset changes the matte value of all pixels.

81.12.31 **MiterLimit**(miterlimit as Integer)

**Function:** Specify miter limit.

**Notes:** When two line segments meet at a sharp angle and miter joins have been specified for 'lineJoin', it is possible for the miter to extend far beyond the thickness of the line stroking the path. The miterLimit' imposes a limit on the ratio of the miter length to the 'lineWidth'. The default value of this parameter is 4.
81.12.32 PathArcAbs(c as GM16PathArgsMBS)


**Function:** Draws an elliptical arc from the current point to (x, y).

**Notes:**

The size and orientation of the ellipse are defined by two radii (radiusX, radiusY) and an xAxisRotation, which indicates how the ellipse as a whole is rotated relative to the current coordinate system. The center (cx, cy) of the ellipse is calculated automatically to satisfy the constraints imposed by the other parameters. largeArcFlag and sweepFlag contribute to the automatic calculations and help determine how the arc is drawn. If largeArcFlag is true then draw the larger of the available arcs. If sweepFlag is true, then draw the arc matching a clock-wise rotation.

In the GM16PathArgsMBS, set the following properties: radiusX, radiusY, xAxisRotation, bool largeArcFlag, sweepFlag, x and y.

See also:

- 81.12.33 PathArcAbs(c() as GM16PathArgsMBS)  

- 81.12.34 PathArcAbs(radiusX as Double, radiusY as Double, xAxisRotation as Double, largeArcFlag as boolean, sweepFlag as Boolean, x as Double, y as Double)  

81.12.33 PathArcAbs(c() as GM16PathArgsMBS)


**Function:** Draws an elliptical arc from the current point to (x, y).

**Notes:**

The size and orientation of the ellipse are defined by two radii (radiusX, radiusY) and an xAxisRotation, which indicates how the ellipse as a whole is rotated relative to the current coordinate system. The center (cx, cy) of the ellipse is calculated automatically to satisfy the constraints imposed by the other parameters. largeArcFlag and sweepFlag contribute to the automatic calculations and help determine how the arc is drawn. If largeArcFlag is true then draw the larger of the available arcs. If sweepFlag is true, then draw the arc matching a clock-wise rotation.

In the GM16PathArgsMBS, set the following properties: radiusX, radiusY, xAxisRotation, bool largeArcFlag, sweepFlag, x and y.

See also:

- 81.12.32 PathArcAbs(c as GM16PathArgsMBS)  

- 81.12.34 PathArcAbs(radiusX as Double, radiusY as Double, xAxisRotation as Double, largeArcFlag as boolean, sweepFlag as Boolean, x as Double, y as Double)
PathArcAbs(radiusX as Double, radiusY as Double, xAxisRotation as Double, largeArcFlag as boolean, sweepFlag as Boolean, x as Double, y as Double)


**Function:** Draws an elliptical arc from the current point to (x, y).

**Example:**

```vba
dim g as new GM16GeometryMBS(500,500)
dim c as new GM16ColorRGBMBS("white") // white
dim image as new GM16ImageMBS(g, c)

image.strokeColor = new GM16ColorRGBMBS("red") // Outline color
image.fillColor = new GM16ColorRGBMBS("green") // Fill color
image.strokeWidth = 5

dim draw as GM16GraphicsMBS = image.Graphics

// Draw an arc

draw.PathMovetoAbs 100,100
draw.PathArcAbs(100,100, 0, false, false, 200,200)
draw.DrawPath
draw.Draw

Backdrop=image.CopyPicture
```

**Notes:** The size and orientation of the ellipse are defined by two radii (radiusX, radiusY) and an xAxisRotation, which indicates how the ellipse as a whole is rotated relative to the current coordinate system. The center (cx, cy) of the ellipse is calculated automatically to satisfy the constraints imposed by the other parameters. largeArcFlag and sweepFlag contribute to the automatic calculations and help determine how the arc is drawn. If largeArcFlag is true then draw the larger of the available arcs. If sweepFlag is true, then draw the arc matching a clock-wise rotation.

See also:

- 81.12.32 PathArcAbs(c as GM16PathArgsMBS)
- 81.12.33 PathArcAbs(c() as GM16PathArgsMBS)

PathArcRel(c as GM16PathArgsMBS)


**Function:** Draws an elliptical arc from the current point to (x, y).

**Notes:**

The size and orientation of the ellipse are defined by two radii (radiusX, radiusY) and an xAxisRotation,
which indicates how the ellipse as a whole is rotated relative to the current coordinate system. The center
(cx, cy) of the ellipse is calculated automatically to satisfy the constraints imposed by the other parameters.
largeArcFlag and sweepFlag contribute to the automatic calculations and help determine how the arc is
drawn. If largeArcFlag is true then draw the larger of the available arcs. If sweepFlag is true, then draw the
arc matching a clock-wise rotation.

In the GM16PathArgsMBS, set the following properties: radiusX, radiusY, xAxisRotation, bool largeArcFlag,
sweepFlag, x and y.
See also:

- 81.12.36 PathArcRel(c() as GM16PathArgsMBS)
- 81.12.37 PathArcRel(radiusX as Double, radiusY as Double, xAxisRotation as Double, largeArcFlag
  as boolean, sweepFlag as Boolean, x as Double, y as Double)

81.12.36  PathArcRel(c() as GM16PathArgsMBS)

Function: Draws an elliptical arc from the current point to (x, y).
Notes:
The size and orientation of the ellipse are defined by two radii (radiusX, radiusY) and an xAxisRotation,
which indicates how the ellipse as a whole is rotated relative to the current coordinate system. The center
(cx, cy) of the ellipse is calculated automatically to satisfy the constraints imposed by the other parameters.
largeArcFlag and sweepFlag contribute to the automatic calculations and help determine how the arc is
drawn. If largeArcFlag is true then draw the larger of the available arcs. If sweepFlag is true, then draw the
arc matching a clock-wise rotation.

In the GM16PathArgsMBS, set the following properties: radiusX, radiusY, xAxisRotation, bool largeArcFlag,
sweepFlag, x and y.
See also:

- 81.12.35 PathArcRel(c as GM16PathArgsMBS)
- 81.12.37 PathArcRel(radiusX as Double, radiusY as Double, xAxisRotation as Double, largeArcFlag
  as boolean, sweepFlag as Boolean, x as Double, y as Double)

81.12.37  PathArcRel(radiusX as Double, radiusY as Double, xAxisRotation as Double, largeArcFlag
as boolean, sweepFlag as Boolean, x as Double, y as Double)

Function: Draws an elliptical arc from the current point to (x, y).
Notes: The size and orientation of the ellipse are defined by two radii (radiusX, radiusY) and an xAxis-
Rotation, which indicates how the ellipse as a whole is rotated relative to the current coordinate system.
The center (cx, cy) of the ellipse is calculated automatically to satisfy the constraints imposed by the other parameters. largeArcFlag and sweepFlag contribute to the automatic calculations and help determine how the arc is drawn. If largeArcFlag is true then draw the larger of the available arcs. If sweepFlag is true, then draw the arc matching a clock-wise rotation.

See also:

- 81.12.35 PathArcRel(c as GM16PathArgsMBS)
- 81.12.36 PathArcRel(c() as GM16PathArgsMBS)

### 81.12.38 PathClosePath

**Function:** Close the current subpath by drawing a straight line from the current point to current subpath’s most recent starting point (usually, the most recent moveto point).

### 81.12.39 PathCurvetoAbs(c as GM16PathArgsMBS)

**Function:** Draws a cubic Bzier curve from the current point to (x,y) using (x1,y1) as the control point at the beginning of the curve and (x2,y2) as the control point at the end of the curve.
**Notes:**
PathCurvetoAbs indicates that absolute coordinates will follow; PathCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

In the GM16PathArgsMBS object, set the following properties: x1, y1, x2, y2, x and y.

See also:

- 81.12.40 PathCurvetoAbs(c() as GM16PathArgsMBS)
- 81.12.41 PathCurvetoAbs(x1 as Double, y1 as Double, x2 as Double, y2 as Double, x as Double, y as Double)

### 81.12.40 PathCurvetoAbs(c() as GM16PathArgsMBS)

**Function:** Draws a cubic Bzier curve from the current point to (x,y) using (x1,y1) as the control point at the beginning of the curve and (x2,y2) as the control point at the end of the curve.
**Notes:**
PathCurvetoAbs indicates that absolute coordinates will follow; PathCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the
81.12. **CLASS GM16GRAPHICSMBS**

In the GM16PathArgsMBS object, set the following properties: \(x_1, y_1, x_2, y_2, x\) and \(y\). See also:

- 81.12.39 PathCurvetoAbs\(\text{c as GM16PathArgsMBS}\)  
- 81.12.41 PathCurvetoAbs\(\text{x1 as Double, y1 as Double, x2 as Double, y2 as Double, x as Double, y as Double}\)  

81.12.41 **PathCurvetoAbs(x1 as Double, y1 as Double, x2 as Double, y2 as Double, x as Double, y as Double)**

MBS GraphicsMagick Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Draws a cubic Bzier curve from the current point to \((x,y)\) using \((x_1,y_1)\) as the control point at the beginning of the curve and \((x_2,y_2)\) as the control point at the end of the curve. **Notes:** PathCurvetoAbs indicates that absolute coordinates will follow; PathCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the command, the new current point becomes the final \((x,y)\) coordinate pair used in the polybezier. See also:

- 81.12.39 PathCurvetoAbs\(\text{c as GM16PathArgsMBS}\)  
- 81.12.40 PathCurvetoAbs\(\text{c() as GM16PathArgsMBS}\)  

81.12.42 **PathCurvetoRel(c as GM16PathArgsMBS)**

MBS GraphicsMagick Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Draws a cubic Bzier curve from the current point to \((x,y)\) using \((x_1,y_1)\) as the control point at the beginning of the curve and \((x_2,y_2)\) as the control point at the end of the curve. **Notes:** PathCurvetoAbs indicates that absolute coordinates will follow; PathCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the command, the new current point becomes the final \((x,y)\) coordinate pair used in the polybezier.

In the GM16PathArgsMBS object, set the following properties: \(x_1, y_1, x_2, y_2, x\) and \(y\). See also:

- 81.12.43 PathCurvetoRel\(\text{c() as GM16PathArgsMBS}\)  
- 81.12.44 PathCurvetoRel\(\text{x1 as Double, y1 as Double, x2 as Double, y2 as Double, x as Double, y as Double}\)
81.12.43  **PathCurvetoRel(c() as GM16PathArgsMBS)**


**Function:** Draws a cubic Bzier curve from the current point to (x,y) using (x1,y1) as the control point at the beginning of the curve and (x2,y2) as the control point at the end of the curve.

**Notes:**
PathCurvetoAbs indicates that absolute coordinates will follow; PathCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

In the GM16PathArgsMBS object, set the following properties: x1, y1, x2, y2, x and y.

See also:
- 81.12.42 PathCurvetoRel(c as GM16PathArgsMBS)
- 81.12.44 PathCurvetoRel(x1 as Double, y1 as Double, x2 as Double, y2 as Double, x as Double, y as Double)

81.12.44  **PathCurvetoRel(x1 as Double, y1 as Double, x2 as Double, y2 as Double, x as Double, y as Double)**


**Function:** Draws a cubic Bzier curve from the current point to (x,y) using (x1,y1) as the control point at the beginning of the curve and (x2,y2) as the control point at the end of the curve.

**Notes:** PathCurvetoAbs indicates that absolute coordinates will follow; PathCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

See also:
- 81.12.42 PathCurvetoRel(c as GM16PathArgsMBS)
- 81.12.43 PathCurvetoRel(c() as GM16PathArgsMBS)

81.12.45  **PathLinetoAbs(c as GM16CoordinateMBS)**


**Function:** The various "lineto" commands draw straight lines from the current point to a new point.

**Notes:** Draw a line from the current point to the given coordinate which becomes the new current point. PathLinetoAbs indicates that absolute coordinates are used; PathLinetoRel indicates that relative coordinates are used. A number of coordinates pairs may be specified in a list to draw a polyline. At the end of the command, the new current point is set to the final set of coordinates provided.

See also:
- 81.12.46 PathLinetoAbs(c() as GM16CoordinateMBS)
- 81.12.47 PathLinetoAbs(x as Double, y as Double)
**81.12.46 PathLinetoAbs(c() as GM16CoordinateMBS)**


**Function:** The various "lineto" commands draw straight lines from the current point to a new point.

**Notes:** Draw a line from the current point to the given coordinate which becomes the new current point. PathLinetoAbs indicates that absolute coordinates are used; PathLinetoRel indicates that relative coordinates are used. A number of coordinates pairs may be specified in a list to draw a polyline. At the end of the command, the new current point is set to the final set of coordinates provided.

See also:
- 81.12.45 PathLinetoAbs(c as GM16CoordinateMBS)
- 81.12.47 PathLinetoAbs(x as Double, y as Double)

**81.12.47 PathLinetoAbs(x as Double, y as Double)**


**Function:** The various "lineto" commands draw straight lines from the current point to a new point.

**Notes:** Draw a line from the current point to the given coordinate which becomes the new current point. PathLinetoAbs indicates that absolute coordinates are used; PathLinetoRel indicates that relative coordinates are used. A number of coordinates pairs may be specified in a list to draw a polyline. At the end of the command, the new current point is set to the final set of coordinates provided.

See also:
- 81.12.45 PathLinetoAbs(c as GM16CoordinateMBS)
- 81.12.46 PathLinetoAbs(c() as GM16CoordinateMBS)

**81.12.48 PathLinetoHorizontalAbs(v as Double)**


**Function:** The various "lineto" commands draw straight lines from the current point to a new point.

**Notes:** Draws a horizontal line from the current point (cpx, cpy) to (x, cpy). PathLinetoHorizontalAbs indicates that absolute coordinates are supplied; PathLinetoHorizontalRel indicates that relative coordinates are supplied. At the end of the command, the new current point becomes (x, cpy) for the final value of x.

**81.12.49 PathLinetoHorizontalRel(v as Double)**


**Function:** The various "lineto" commands draw straight lines from the current point to a new point.

**Notes:** Draws a horizontal line from the current point (cpx, cpy) to (x, cpy). PathLinetoHorizontalAbs indicates that absolute coordinates are supplied; PathLinetoHorizontalRel indicates that relative coordinates are supplied. At the end of the command, the new current point becomes (x, cpy) for the final value of x.
81.12.50 PathLinetoRel(c as GM16CoordinateMBS)


**Function:** The various "lineto" commands draw straight lines from the current point to a new point.

**Notes:** Draw a line from the current point to the given coordinate which becomes the new current point. PathLinetoAbs indicates that absolute coordinates are used; PathLinetoRel indicates that relative coordinates are used. A number of coordinates pairs may be specified in a list to draw a polyline. At the end of the command, the new current point is set to the final set of coordinates provided.

See also:

- 81.12.51 PathLinetoRel(c() as GM16CoordinateMBS) 13368
- 81.12.52 PathLinetoRel(x as Double, y as Double) 13368

81.12.51 PathLinetoRel(c() as GM16CoordinateMBS)


**Function:** The various "lineto" commands draw straight lines from the current point to a new point.

**Notes:** Draw a line from the current point to the given coordinate which becomes the new current point. PathLinetoAbs indicates that absolute coordinates are used; PathLinetoRel indicates that relative coordinates are used. A number of coordinates pairs may be specified in a list to draw a polyline. At the end of the command, the new current point is set to the final set of coordinates provided.

See also:

- 81.12.50 PathLinetoRel(c as GM16CoordinateMBS) 13368
- 81.12.52 PathLinetoRel(x as Double, y as Double) 13368

81.12.52 PathLinetoRel(x as Double, y as Double)


**Function:** The various "lineto" commands draw straight lines from the current point to a new point.

**Example:**

```plaintext
// new picture, 500x500 and filled with white
dim g as new GM16GeometryMBS(500,500)
dim c as new GM16ColorRGBMBS(“white”) // white
dim image as new GM16ImageMBS(g, c)

dim draw as GM16GraphicsMBS = image.Graphics

// Draw path

dim cr as new GM16ColorRGBMBS(“red”)
dim gr as new GM16ColorRGBMBS(“green”)
```
draw.StrokeColor cr
draw.FillColor gr
draw.PathMovetoAbs(30,10)
draw.PathLinetoAbs(20,55)
draw.PathLinetoAbs(70,50)
draw.PathLinetoAbs(80,5)
draw.DrawPath

draw.Draw

// show picture
image.type = image.TrueColorType // make sure it’s a bitmap
Backdrop=image.CopyPicture

Notes: Draw a line from the current point to the given coordinate which becomes the new current point. PathLinetoAbs indicates that absolute coordinates are used; PathLinetoRel indicates that relative coordinates are used. A number of coordinates pairs may be specified in a list to draw a polyline. At the end of the command, the new current point is set to the final set of coordinates provided.
See also:

- 81.12.50 PathLinetoRel(c as GM16CoordinateMBS)
- 81.12.51 PathLinetoRel(c() as GM16CoordinateMBS)

81.12.53 PathLinetoVerticalAbs(v as Double)

MBS GraphicsMagick Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The various "lineto" commands draw straight lines from the current point to a new point.
Notes: Draws a vertical line from the current point (cpx, cpy) to (cpx, y). PathLinetoVerticalAbs indicates that absolute coordinates are supplied; PathLinetoVerticalRel indicates that relative coordinates are supplied. At the end of the command, the new current point becomes (cpx, y) for the final value of y.

81.12.54 PathLinetoVerticalRel(v as Double)

MBS GraphicsMagick Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The various "lineto" commands draw straight lines from the current point to a new point.
Notes: Draws a vertical line from the current point (cpx, cpy) to (cpx, y). PathLinetoVerticalAbs indicates that absolute coordinates are supplied; PathLinetoVerticalRel indicates that relative coordinates are supplied. At the end of the command, the new current point becomes (cpx, y) for the final value of y.
81.12.55  PathMovetoAbs(c as GM16CoordinateMBS)

Function: The "moveto" commands establish a new current point.
Notes:
The effect is as if the "pen" were lifted and moved to a new location. A path data segment must begin with either one of the "moveto" commands or one of the "arc" commands. Subsequent "moveto" commands (i.e., when the "moveto" is not the first command) represent the start of a new subpath.

Start a new sub-path at the given coordinate. PathMovetoAbs indicates that absolute coordinates will follow; PathMovetoRel indicates that relative coordinates will follow. If a relative moveto appears as the first element of the path, then it is treated as a pair of absolute coordinates. If a moveto is followed by multiple pairs of coordinates, the subsequent pairs are treated as implicit lineto commands.
See also:
• 81.12.56 PathMovetoAbs(x as Double, y as Double)

81.12.56  PathMovetoAbs(x as Double, y as Double)

Function: The "moveto" commands establish a new current point.
Notes:
The effect is as if the "pen" were lifted and moved to a new location. A path data segment must begin with either one of the "moveto" commands or one of the "arc" commands. Subsequent "moveto" commands (i.e., when the "moveto" is not the first command) represent the start of a new subpath.

Start a new sub-path at the given coordinate. PathMovetoAbs indicates that absolute coordinates will follow; PathMovetoRel indicates that relative coordinates will follow. If a relative moveto appears as the first element of the path, then it is treated as a pair of absolute coordinates. If a moveto is followed by multiple pairs of coordinates, the subsequent pairs are treated as implicit lineto commands.
See also:
• 81.12.55 PathMovetoAbs(c as GM16CoordinateMBS)

81.12.57  PathMovetoRel(c as GM16CoordinateMBS)

Function: The "moveto" commands establish a new current point.
Notes:
The effect is as if the "pen" were lifted and moved to a new location. A path data segment must begin with either one of the "moveto" commands or one of the "arc" commands. Subsequent "moveto" commands (i.e., when the "moveto" is not the first command) represent the start of a new subpath.
Start a new sub-path at the given coordinate. PathMovetoAbs indicates that absolute coordinates will follow; PathMovetoRel indicates that relative coordinates will follow. If a relative moveto appears as the first element of the path, then it is treated as a pair of absolute coordinates. If a moveto is followed by multiple pairs of coordinates, the subsequent pairs are treated as implicit lineto commands.

See also:

- 81.12.58 PathMovetoRel(x as Double, y as Double)

81.12.58 PathMovetoRel(x as Double, y as Double)


**Function:** The "moveto" commands establish a new current point.

**Notes:**

The effect is as if the "pen" were lifted and moved to a new location. A path data segment must begin with either one of the "moveto" commands or one of the "arc" commands. Subsequent "moveto" commands (i.e., when the "moveto" is not the first command) represent the start of a new subpath.

Start a new sub-path at the given coordinate. PathMovetoAbs indicates that absolute coordinates will follow; PathMovetoRel indicates that relative coordinates will follow. If a relative moveto appears as the first element of the path, then it is treated as a pair of absolute coordinates. If a moveto is followed by multiple pairs of coordinates, the subsequent pairs are treated as implicit lineto commands.

See also:

- 81.12.57 PathMovetoRel(c as GM16CoordinateMBS)

81.12.59 PathQuadraticCurvetoAbs(c as GM16PathArgsMBS)


**Function:** Draws a quadratic Bzier curve from the current point to (x,y) using (x1,y1) as the control point.

**Notes:**

PathQuadraticCurvetoAbs indicates that absolute coordinates will follow; PathQuadraticCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

In the GM16PathArgsMBS object, set the following properties: x1, y1, x and y.

See also:

- 81.12.60 PathQuadraticCurvetoAbs(c() as GM16PathArgsMBS)
- 81.12.61 PathQuadraticCurvetoAbs(x1 as Double, y1 as Double, x as Double, y as Double)
81.12.60  PathQuadraticCurvetoAbs(c() as GM16PathArgsMBS)

Function: Draws a quadratic Bzier curve from the current point to (x,y) using (x1,y1) as the control point.
Notes:
PathQuadraticCurvetoAbs indicates that absolute coordinates will follow; PathQuadraticCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

In the GM16PathArgsMBS object, set the following properties: x1, y1, x and y.
See also:
- 81.12.59 PathQuadraticCurvetoAbs(c as GM16PathArgsMBS) 13371
- 81.12.61 PathQuadraticCurvetoAbs(x1 as Double, y1 as Double, x as Double, y as Double) 13372

81.12.61  PathQuadraticCurvetoAbs(x1 as Double, y1 as Double, x as Double, y as Double)

Function: Draws a quadratic Bzier curve from the current point to (x,y) using (x1,y1) as the control point.
Notes: PathQuadraticCurvetoAbs indicates that absolute coordinates will follow; PathQuadraticCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.
See also:
- 81.12.59 PathQuadraticCurvetoAbs(c as GM16PathArgsMBS) 13371
- 81.12.60 PathQuadraticCurvetoAbs(c() as GM16PathArgsMBS) 13372

81.12.62  PathQuadraticCurvetoRel(c as GM16PathArgsMBS)

Function: Draws a quadratic Bzier curve from the current point to (x,y) using (x1,y1) as the control point.
Notes:
PathQuadraticCurvetoAbs indicates that absolute coordinates will follow; PathQuadraticCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

In the GM16PathArgsMBS object, set the following properties: x1, y1, x and y.
See also:
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- 81.12.63 *PathQuadraticCurvetoRel(c() as GM16PathArgsMBS)*
- 81.12.64 *PathQuadraticCurvetoRel(x1 as Double, y1 as Double, x as Double, y as Double)*

### 81.12.63 PathQuadraticCurvetoRel(c() as GM16PathArgsMBS)


**Function:** Draws a quadratic Bzier curve from the current point to (x,y) using (x1,y1) as the control point.

**Notes:**
PathQuadraticCurvetoAbs indicates that absolute coordinates will follow; PathQuadraticCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

In the GM16PathArgsMBS object, set the following properties: x1, y1, x and y.

See also:
- 81.12.62 *PathQuadraticCurvetoRel(c as GM16PathArgsMBS)*
- 81.12.64 *PathQuadraticCurvetoRel(x1 as Double, y1 as Double, x as Double, y as Double)*

### 81.12.64 PathQuadraticCurvetoRel(x1 as Double, y1 as Double, x as Double, y as Double)


**Function:** Draws a quadratic Bzier curve from the current point to (x,y) using (x1,y1) as the control point.

**Notes:** PathQuadraticCurvetoAbs indicates that absolute coordinates will follow; PathQuadraticCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

See also:
- 81.12.62 *PathQuadraticCurvetoRel(c as GM16PathArgsMBS)*
- 81.12.63 *PathQuadraticCurvetoRel(c() as GM16PathArgsMBS)*

### 81.12.65 PathSmoothCurvetoAbs(c as GM16CoordinateMBS)


**Function:** Draws a cubic Bzier curve from the current point to (x,y).

**Notes:**
The first control point is assumed to be the reflection of the second control point on the previous command relative to the current point. (If there is no previous command or if the previous command was not
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81.12.66  PathSmoothCurvetoAbs(c() as GM16CoordinateMBS)


Function: Draws a cubic Bzier curve from the current point to (x,y).

Notes: The first control point is assumed to be the reflection of the second control point on the previous command relative to the current point. (If there is no previous command or if the previous command was not an PathCurvetoAbs, PathCurvetoRel, PathSmoothCurvetoAbs or PathSmoothCurvetoRel, assume the first control point is coincident with the current point.) (x2,y2) is the second control point (i.e., the control point at the end of the curve). PathSmoothCurvetoAbs indicates that absolute coordinates will follow; PathSmoothCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

In the GM16PathArgsMBS object, set the following properties: x1, y1, x2, y2, x and y.

See also:

- 81.12.65 PathSmoothCurvetoAbs(c as GM16CoordinateMBS)
- 81.12.67 PathSmoothCurvetoAbs(x as Double, y as Double)

81.12.67  PathSmoothCurvetoAbs(x as Double, y as Double)


Function: Draws a cubic Bzier curve from the current point to (x,y).

Notes: The first control point is assumed to be the reflection of the second control point on the previous command relative to the current point. (If there is no previous command or if the previous command was not an PathCurvetoAbs, PathCurvetoRel, PathSmoothCurvetoAbs or PathSmoothCurvetoRel, assume the first control point is coincident with the current point.) (x2,y2) is the second control point (i.e., the control point at the end of the curve). PathSmoothCurvetoAbs indicates that absolute coordinates will follow;
PathSmoothCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

See also:

- 81.12.65 PathSmoothCurvetoAbs(c as GM16CoordinateMBS)
- 81.12.66 PathSmoothCurvetoAbs(c() as GM16CoordinateMBS)

81.12.68 PathSmoothCurvetoRel(c as GM16CoordinateMBS)


Function: Draws a cubic Bzier curve from the current point to (x,y).

Notes:

The first control point is assumed to be the reflection of the second control point on the previous command relative to the current point. (If there is no previous command or if the previous command was not an PathCurvetoAbs, PathCurvetoRel, PathSmoothCurvetoAbs or PathSmoothCurvetoRel, assume the first control point is coincident with the current point.) (x2,y2) is the second control point (i.e., the control point at the end of the curve). PathSmoothCurvetoAbs indicates that absolute coordinates will follow; PathSmoothCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

In the GM16PathArgsMBS object, set the following properties: x1, y1, x2, y2, x and y.

See also:

- 81.12.69 PathSmoothCurvetoRel(c() as GM16CoordinateMBS)
- 81.12.70 PathSmoothCurvetoRel(x as Double, y as Double)

81.12.69 PathSmoothCurvetoRel(c() as GM16CoordinateMBS)


Function: Draws a cubic Bzier curve from the current point to (x,y).

Notes:

The first control point is assumed to be the reflection of the second control point on the previous command relative to the current point. (If there is no previous command or if the previous command was not an PathCurvetoAbs, PathCurvetoRel, PathSmoothCurvetoAbs or PathSmoothCurvetoRel, assume the first control point is coincident with the current point.) (x2,y2) is the second control point (i.e., the control point at the end of the curve). PathSmoothCurvetoAbs indicates that absolute coordinates will follow; PathSmoothCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.
In the GM16PathArgsMBS object, set the following properties: x1, y1, x2, y2, x and y.

See also:

- 81.12.68 PathSmoothCurvetoRel(c as GM16CoordinateMBS)  
- 81.12.70 PathSmoothCurvetoRel(x as Double, y as Double)

### 81.12.70 PathSmoothCurvetoRel(x as Double, y as Double)

**Function:** Draws a cubic Bzier curve from the current point to (x,y).  
**Notes:** The first control point is assumed to be the reflection of the second control point on the previous command relative to the current point. (If there is no previous command or if the previous command was not an PathCurvetoAbs, PathCurvetoRel, PathSmoothCurvetoAbs or PathSmoothCurvetoRel, assume the first control point is coincident with the current point.) (x2,y2) is the second control point (i.e., the control point at the end of the curve). PathSmoothCurvetoAbs indicates that absolute coordinates will follow; PathSmoothCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

See also:

- 81.12.68 PathSmoothCurvetoRel(c as GM16CoordinateMBS)  
- 81.12.69 PathSmoothCurvetoRel(c() as GM16CoordinateMBS)

### 81.12.71 PathSmoothQuadraticCurvetoAbs(c as GM16CoordinateMBS)

**Function:** Draws a quadratic Bzier curve from the current point to (x,y).  
**Notes:** The control point is assumed to be the reflection of the control point on the previous command relative to the current point. (If there is no previous command or if the previous command was not a PathQuadraticCurvetoAbs, PathQuadraticCurvetoRel, PathSmoothQuadraticCurvetoAbs or PathSmoothQuadraticCurvetoRel, assume the control point is coincident with the current point.) PathSmoothQuadraticCurvetoAbs indicates that absolute coordinates will follow; PathSmoothQuadraticCurvetoRel indicates that relative coordinates will follow. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

In the GM16PathArgsMBS object, set the following properties: x1, y1, x and y.

See also:

- 81.12.72 PathSmoothQuadraticCurvetoAbs(c() as GM16CoordinateMBS)  
- 81.12.73 PathSmoothQuadraticCurvetoAbs(x as Double, y as Double)
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81.12.72  **PathSmoothQuadraticCurvetoAbs(c() as GM16CoordinateMBS)**


**Function:** Draws a quadratic Bzier curve from the current point to (x,y).

**Notes:**

The control point is assumed to be the reflection of the control point on the previous command relative to the current point. (If there is no previous command or if the previous command was not a PathQuadraticCurvetoAbs, PathQuadraticCurvetoRel, PathSmoothQuadraticCurvetoAbs or PathSmoothQuadraticCurvetoRel, assume the control point is coincident with the current point.) PathSmoothQuadraticCurvetoAbs indicates that absolute coordinates will follow; PathSmoothQuadraticCurvetoRel indicates that relative coordinates will follow. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

In the GM16PathArgsMBS object, set the following properties: x1, y1, x and y.

See also:

- 81.12.71 PathSmoothQuadraticCurvetoAbs(c as GM16CoordinateMBS) 13376
- 81.12.73 PathSmoothQuadraticCurvetoAbs(x as Double, y as Double) 13377

81.12.73  **PathSmoothQuadraticCurvetoAbs(x as Double, y as Double)**


**Function:** Draws a quadratic Bzier curve from the current point to (x,y).

**Notes:**

The control point is assumed to be the reflection of the control point on the previous command relative to the current point. (If there is no previous command or if the previous command was not a PathQuadraticCurvetoAbs, PathQuadraticCurvetoRel, PathSmoothQuadraticCurvetoAbs or PathSmoothQuadraticCurvetoRel, assume the control point is coincident with the current point.) PathSmoothQuadraticCurvetoAbs indicates that absolute coordinates will follow; PathSmoothQuadraticCurvetoRel indicates that relative coordinates will follow. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

See also:

- 81.12.71 PathSmoothQuadraticCurvetoAbs(c as GM16CoordinateMBS) 13376
- 81.12.72 PathSmoothQuadraticCurvetoAbs(c() as GM16CoordinateMBS) 13377

81.12.74  **PathSmoothQuadraticCurvetoRel(c as GM16CoordinateMBS)**


**Function:** Draws a quadratic Bzier curve from the current point to (x,y).

**Notes:**
The control point is assumed to be the reflection of the control point on the previous command relative to the current point. (If there is no previous command or if the previous command was not a PathQuadraticCurvetoAbs, PathQuadraticCurvetoRel, PathSmoothQuadraticCurvetoAbs or PathSmoothQuadraticCurvetoRel, assume the control point is coincident with the current point.) PathSmoothQuadraticCurvetoAbs indicates that absolute coordinates will follow; PathSmoothQuadraticCurvetoRel indicates that relative coordinates will follow. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

In the GM16PathArgsMBS object, set the following properties: x1, y1, x and y.

See also:

- 81.12.75 PathSmoothQuadraticCurvetoRel(c() as GM16CoordinateMBS) 13378
- 81.12.76 PathSmoothQuadraticCurvetoRel(x as Double, y as Double) 13378

81.12.75  PathSmoothQuadraticCurvetoRel(c() as GM16CoordinateMBS)


Function: Draws a quadratic Bzier curve from the current point to (x,y).

Notes:

The control point is assumed to be the reflection of the control point on the previous command relative to the current point. (If there is no previous command or if the previous command was not a PathQuadraticCurvetoAbs, PathQuadraticCurvetoRel, PathSmoothQuadraticCurvetoAbs or PathSmoothQuadraticCurvetoRel, assume the control point is coincident with the current point.) PathSmoothQuadraticCurvetoAbs indicates that absolute coordinates will follow; PathSmoothQuadraticCurvetoRel indicates that relative coordinates will follow. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

In the GM16PathArgsMBS object, set the following properties: x1, y1, x and y.

See also:

- 81.12.74 PathSmoothQuadraticCurvetoRel(c as GM16CoordinateMBS) 13377
- 81.12.76 PathSmoothQuadraticCurvetoRel(x as Double, y as Double) 13378

81.12.76  PathSmoothQuadraticCurvetoRel(x as Double, y as Double)


Function: Draws a quadratic Bzier curve from the current point to (x,y).

Notes:

The control point is assumed to be the reflection of the control point on the previous command relative to the current point. (If there is no previous command or if the previous command was not a PathQuadraticCurvetoAbs, PathQuadraticCurvetoRel, PathSmoothQuadraticCurvetoAbs or PathSmoothQuadraticCurvetoRel, assume the control point is coincident with the current point.) PathSmoothQuadraticCurveto-
toAbs indicates that absolute coordinates will follow; PathSmoothQuadraticCurvetoRel indicates that relative coordinates will follow. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

See also:

- 81.12.74 PathSmoothQuadraticCurvetoRel(c as GM16CoordinateMBS)
- 81.12.75 PathSmoothQuadraticCurvetoRel(c() as GM16CoordinateMBS)

### 81.12.77 Point(x as Double, y as Double)


**Function:** Draw a point using stroke color and thickness at coordinate.

**Example:**
```vbscript
dim g as new GM16GeometryMBS(500,500)
dim c as new GM16ColorRGBMBS("white") // white
dim image as new GM16ImageMBS(g, c)

image.fillColor = new GM16ColorRGBMBS("red") // set color
dim draw as GM16GraphicsMBS = image.Graphics

// draw cross with pixels
for x as Integer = 240 to 260
draw.Point(x, 250)
next
for y as Integer = 240 to 260
draw.Point(250, y)
next
draw.Draw

Backdrop=image.CopyPicture
```

### 81.12.78 PointSize(pointSize as Double)


**Function:** Set font point size.

### 81.12.79 Polygon(values() as GM16CoordinateMBS)


**Function:** Draw an arbitrary polygon using stroke color and thickness consisting of three or more
coordinates contained in an array.

**Example:**

```vbs
dim g as new GM16GeometryMBS(500,500)
dim c as new GM16ColorRGBMBS("white") // white
dim image as new GM16ImageMBS(g, c)

image.fillColor = new GM16ColorRGBMBS("red") // set color
image.strokeColor = new GM16ColorRGBMBS("green") // set color

dim draw as GM16GraphicsMBS = image.Graphics
dim coordinates(-1) as GM16CoordinateMBS
coordinates.Append new GM16CoordinateMBS(70,70)
coordinates.Append new GM16CoordinateMBS(100,340)
coordinates.Append new GM16CoordinateMBS(380,200)
coordinates.Append new GM16CoordinateMBS(70,70)
draw.Polygon coordinates
draw.Draw

Backdrop=image.CopyPicture
```

**Notes:** If a fill color is specified, then the object is filled.

**81.12.80 Polyline(values() as GM16CoordinateMBS)**

MBS GraphicsMagick Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Draw an arbitrary polyline using stroke color and thickness consisting of three or more coordinates contained in an array.

**Example:**

```vbs
dim g as new GM16GeometryMBS(500,500)
dim c as new GM16ColorRGBMBS("white") // white
dim image as new GM16ImageMBS(g, c)

image.strokeColor = new GM16ColorRGBMBS("green") // set color

dim draw as GM16GraphicsMBS = image.Graphics
dim coordinates(-1) as GM16CoordinateMBS
coordinates.Append new GM16CoordinateMBS(70,70)
coordinates.Append new GM16CoordinateMBS(100,340)
coordinates.Append new GM16CoordinateMBS(380,200)
coordinates.Append new GM16CoordinateMBS(70,70)
```
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draw.Polyline coordinates
draw.Draw

Backdrop=image.CopyPicture

**Notes:** If a fill color is specified, then the object is filled.

### 81.12.81 PopClipPath

**Function:** Pop (terminate) clip path definition started by PushClipPath.

### 81.12.82 PopGraphicContext

**Function:** Pop Graphic Context.
**Example:**

```vbscript
dim g as new GM16GeometryMBS(500,500)
dim c as new GM16ColorRGBMBS("white") // white
dim image as new GM16ImageMBS(g, c)

image.strokeColor = new GM16ColorRGBMBS("red") // Outline color
image.fillColor = new GM16ColorMBS() // transparent fillcolor
image.strokeWidth = 5

dim draw as GM16GraphicsMBS = image.Graphics

// Draw a Rectangle
draw.PushGraphicContext
draw.Translation(250,250)
draw.Rotation(50)
draw.Rectangle(0, 0, 100, 100) // rotated
draw.PopGraphicContext
draw.Rectangle(0, 0, 100, 100) // not rotated
draw.Draw

Backdrop=image.CopyPicture
```

**Notes:** Removing the current graphic context from the graphic context stack restores the options to the values they had prior to the preceding PushGraphicContext operation.
81.12.83 PopPattern


**Function:** Terminate a pattern definition started via PushPattern.

---

81.12.84 PushClipPath(id as string)


**Function:** Push (create) clip path definition with id.

**Notes:** Clip patch definition consists of subsequent drawing commands, terminated by PopClipPath.

---

81.12.85 PushGraphicContext


**Function:** Push Graphic Context.

**Example:**

```vbnet
dim g as new GM16GeometryMBS(500,500)
dim c as new GM16ColorRGBMBS("white") // white
dim image as new GM16ImageMBS(g, c)

image.strokeColor = new GM16ColorRGBMBS("red") // Outline color
image.fillColor = new GM16ColorMBS() // transparent fillcolor
image.strokeWidth = 5

dim draw as GM16GraphicsMBS = image.Graphics

// Draw a Rectangle
draw.PushGraphicContext
draw.Translation(250,250)
draw.Rotation(50)
draw.Rectangle(0, 0, 100, 100) // rotated
draw.PopGraphicContext
draw.Rectangle(0, 0, 100, 100) // not rotated
draw.Draw

Backdrop=image.CopyPicture
```

**Notes:** When a graphic context is pushed, options set after the context is pushed (such as coordinate transformations, color settings, etc.) are saved to a new graphic context. This allows related options to be saved
on a graphic context "stack" in order to support hierarchical nesting of options. When \texttt{PopGraphicContext} is used to pop the current graphic context, the options in effect during the last \texttt{PushGraphicContext} operation are restored.

\section{PushPattern(id as string, x as Integer, y as Integer, width as Integer, height as Integer)}

\begin{verbatim}
\textbf{Function:} Start a pattern definition with arbitrary pattern name specified by id, pattern offset specified by x and y, and pattern size specified by width and height.
\textbf{Notes:} The pattern is defined within the coordinate system defined by the specified offset and size. Arbitrary drawing objects (including \texttt{DrawableCompositeImage}) may be specified between \texttt{PushPattern} and \texttt{PopPattern} in order to draw the pattern. Normally the pair \texttt{PushGraphicContext} & \texttt{PopGraphicContext} are used to enclose a pattern definition. Pattern definitions are terminated by a \texttt{PopPattern} object.
\end{verbatim}

\section{Rectangle(upperLeftX as Double, upperLeftY as Double, lowerRightX as Double, lowerRightY as Double)}

\begin{verbatim}
\textbf{Function:} Draw a rectangle using stroke color and thickness from upper-left coordinates to lower-right coordinates.
\textbf{Example:}

dim g as new GM16GeometryMBS(500,500)
dim c as new GM16ColorRGBMBS("white") // white
dim image as new GM16ImageMBS(g, c)

image.strokeColor = new GM16ColorRGBMBS("red") // Outline color
image.fillColor = new GM16ColorRGBMBS("green") // Fill color
image.strokeWidth = 5

dim draw as GM16GraphicsMBS = image.Graphics

// Draw a rectangle
draw.Rectangle(250, 250, 100, 100)
draw.Draw

Backdrop=image.CopyPicture
\end{verbatim}

\textbf{Notes:} If a fill color is specified, then the object is filled.
81.12.88 Rotation (angle as Double)

**Function:** Set rotation to use when drawing (coordinate transformation).  
**Example:**

```vbscript
dim g as new GM16GeometryMBS(500,500)
dim c as new GM16ColorRGBMBS("white") // white
dim image as new GM16ImageMBS(g, c)

image.strokeWidth = 5

dim draw as GM16GraphicsMBS = image.Graphics

draw.StrokeColor new GM16ColorRGBMBS("red")
draw.Line(100,100,400,400)
draw.Rotation 5
draw.StrokeColor new GM16ColorRGBMBS("blue")
draw.Line(100,100,400,400)
draw.Draw

Backdrop=image.CopyPicture
```

81.12.89 RoundRectangle (centerX as Double, centerY as Double, width as Double, height as Double, cornerWidth as Double, cornerHeight as Double)

**Function:** Draw a rounded rectangle using stroke color and thickness, with specified center coordinate, specified width and height, and specified corner width and height.  
**Example:**

```vbscript
dim g as new GM16GeometryMBS(500,500)
dim c as new GM16ColorRGBMBS("white") // white
dim image as new GM16ImageMBS(g, c)

image.strokeColor = new GM16ColorRGBMBS("red") // Outline color
image.fillColor = new GM16ColorRGBMBS("green") // Fill color
image.strokeWidth = 5

dim draw as GM16GraphicsMBS = image.Graphics

// Draw a round rectangle
draw.RoundRectangle(250, 250, 100, 100,20,20)
draw.Draw
```
Notes: If a fill color is specified, then the object is filled.

### 81.12.90 Scaling(x as Double, y as Double)

MBS GraphicsMagick Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function**: Apply scaling in x and y direction while drawing objects (coordinate transformation). **Example**:

```vbs
dim g as new GM16GeometryMBS(500,500)
dim c as new GM16ColorRGBMBS("white") // white
dim image as new GM16ImageMBS(g, c)
image.strokeWidth = 5

dim draw as GM16GraphicsMBS = image.Graphics
draw.FillColor new GM16ColorRGBMBS("red")
drawROKE 32.1,0.1

draw.Line(100,100,400,400)
draw.StrokeColor new GM16ColorRGBMBS("blue")
draw.Scaling 1.2,1.1

draw.Line(100,100,400,400)
draw.Draw

Backdrop=image.CopyPicture
```

### 81.12.91 SkewX(angle as Double)

MBS GraphicsMagick Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function**: Apply Skew in X direction (coordinate transformation) **Example**:

```vbs
dim g as new GM16GeometryMBS(500,500)
dim c as new GM16ColorRGBMBS("white") // white
dim image as new GM16ImageMBS(g, c)
image.strokeWidth = 5

dim draw as GM16GraphicsMBS = image.Graphics
draw.FillColor new GM16ColorRGBMBS("red")
drawROKE 32.1,0.1

draw.Line(100,100,400,400)
draw.StrokeColor new GM16ColorRGBMBS("blue")
draw.Scaling 1.2,1.1

draw.Line(100,100,400,400)
draw.Draw

Backdrop=image.CopyPicture
```
draw.StrokeColor new GM16ColorRGBMBS("red")
draw.Line(100,100,400,400)
draw.SkewX 5
draw.StrokeColor new GM16ColorRGBMBS("blue")
draw.Line(100,100,400,400)
draw.Draw

Backdrop=image.CopyPicture

### 81.12.92 SkewY(angle as Double)

**Function:** Apply Skew in Y direction.  
**Example:**

```vbscript
Dim g As New GM16GeometryMBS(500,500)
Dim c As New GM16ColorRGBMBS("white") ' white
Dim image As New GM16ImageMBS(g, c)

image.strokeWidth = 5

Dim draw As GM16GraphicsMBS = image.Graphics

draw.StrokeColor new GM16ColorRGBMBS("red")
draw.Line(100,100,400,400)
draw.SkewY 5
draw.StrokeColor new GM16ColorRGBMBS("blue")
draw.Line(100,100,400,400)
draw.Draw

Backdrop=image.CopyPicture
```

### 81.12.93 StrokeAntialias(flag as boolean)

**Function:** Antialias while drawing lines or object outlines.
**81.12.94 StrokeColor(c as GM16ColorMBS)**


**Function:** Set color to use when drawing lines or object outlines.

**Example:**

```plaintext
dim g as new GM16GeometryMBS(500,500)
dim c as new GM16ColorRGBMBS("white") // white
dim image as new GM16ImageMBS(g, c)

image.strokeWidth = 5

dim draw as GM16GraphicsMBS = image.Graphics
draw.StrokeColor new GM16ColorRGBMBS("red")
draw.Line(100,100,400,400)
draw.Draw

Backdrop=image.CopyPicture
```

**81.12.95 StrokeLineCap(LineCap as Integer)**


**Function:** Specify the shape to be used at the end of open subpaths when they are stroked.

**Notes:** Values of LineCap are UndefinedCap, ButtCap, RoundCap, and SquareCap.

**81.12.96 StrokeLineJoin(LineJoin as Integer)**


**Function:** Specify the shape to be used at the corners of paths (or other vector shapes) when they are stroked.

**Notes:** Values of LineJoin are UndefinedJoin, MiterJoin, RoundJoin, and BevelJoin.

**81.12.97 StrokeOpacity(opacity as Double)**


**Function:** Opacity to use when drawing lines or object outlines.
81.12.98 StrokeWidth(opacity as Double)

**Function:** Set width to use when drawing lines or object outlines.

81.12.99 Text(x as Double, y as Double, text as string)

**Function:** Annotate image with text using stroke color, font, font pointsize, and box color (text background color), at specified coordinates.  
**Example:**

```vbnet
dim g as new GM16GeometryMBS(500,500)  
dim c as new GM16ColorRBGMSB("white")  // white  
dim image as new GM16ImageMBS(g, c)  

dim draw as GM16GraphicsMBS = image.Graphics  
// draw red text  
draw.strokeColor(new GM16ColorRBGMSB("red"))  // Outline color  
draw.strokeWidth(1)  
draw.Font("/Library/Fonts/Verdana.ttf")  
draw.Text(50, 50, "Hello")  
draw.Draw  
Backdrop=image.CopyPicture  
```

**Notes:** If text contains special format characters the image filename, type, width, height, or other image attributes may be incorporated in the text (see label).  
See also:

- 81.12.100 Text(x as Double, y as Double, text as string, encoding as string)

81.12.100 Text(x as Double, y as Double, text as string, encoding as string)

**Function:** Annotate image with text represented with text encoding, using current stroke color, font, font pointsize, and box color (text background color), at specified coordinates.  
**Notes:**  
If text contains special format characters the image filename, type, width, height, or other image attributes may be incorporated in the text (see label()).
The text encoding specifies the code set to use for text annotations. The only character encoding which may be specified at this time is "UTF-8" for representing Unicode as a sequence of bytes. Specify an empty string to set text encoding to the system’s default. Successful text annotation using Unicode may require fonts designed to support Unicode.

Seems like you need ghostscript or the DPS library for text handling, so it may no be available for you. See also:

- 81.12.99 Text(x as Double, y as Double, text as string)

81.12.101  TextAntialias(flag as boolean)


**Function:** Antialias while drawing text (default true).

**Notes:** The main reason to disable text antialiasing is to avoid adding new colors to the image.

81.12.102  TextDecoration(DecorationType as Integer)


**Function:** Specify decoration (e.g. UnderlineDecoration) to apply to text.
81.12.103 TextUnderColor(c as GM16ColorMBS)

MBS GraphicsMagick Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Draw a box under rendered text using the specified color.

81.12.104 Translation(x as Double, y as Double)


**Example:**
```vba
dim g as new GM16GeometryMBS(500,500)
dim c as new GM16ColorRGBMBS("white") // white
dim image as new GM16ImageMBS(g, c)

image.strokeWidth = 5

dim draw as GM16GraphicsMBS = image.Graphics
draw.StrokeColor new GM16ColorRGBMBS("red")
draw.Line(100,100,400,400)
draw.Translation 5,5
draw.StrokeColor new GM16ColorRGBMBS("blue")
draw.Line(100,100,400,400)
draw.Draw

Backdrop=image.CopyPicture
```

81.12.105 Viewbox(x1 as Integer, y1 as Integer, x2 as Integer, y2 as Integer)


**Notes:** If the image is to be written to a vector format (e.g. MVG or SVG), then a PushGraphicContext() object should be pushed to the head of the list, followed by a Viewbox() statement to establish the output canvas size. A matching PopGraphicContext() object should be pushed to the tail of the list.
81.12.106 Properties

81.12.107 Image as GM16ImageMBS


**Function:** The image this graphics object belongs to.

**Notes:** (Read only property)
81.13  class GM16ImageArrayMBS

81.13.1  class GM16ImageArrayMBS

Function: The class for an array of images in GraphicsMagick.
Example:

// extract all layers of photoshop file
Dim file As FolderItem = SpecialFolder.Desktop.Child(“test.psd”)
Dim images As New GM16ImageArrayMBS
images.readImages(file.UnixpathMBS)

Dim c As Integer = images.size
For i As Integer = 0 To c-1
Dim image As GM16ImageMBS = images.Image(i)
file = SpecialFolder.Desktop.Child(image.FileName+“.”+str(i)+“.png”)
image.write(file)
Next

Notes: Can be used to assemble/disassemble gif images.

81.13.2  Methods

81.13.3  animateImages

Function: Animate a sequence of image frames.
Notes: Image frames are displayed in succession, creating an animated effect. The animation options are taken from the first image frame. This feature is only supported under X11 at the moment.

81.13.4  append(image as GM16ImageMBS)

Function: Adds an image to the end of the array.
Example:

// read gif
Dim g As New GM16ImageArrayMBS
Dim file As FolderItem = SpecialFolder.Desktop.Child(“test.gif”)
g.readImages(file.UnixpathMBS)
// put copy of first image on the back
dim n as GM16ImageMBS = g.FirstImage
g.append n

// write to file

dim output as FolderItem = SpecialFolder.Desktop.Child("output.gif")
g.writeImages(output.UnixpathMBS)

### 81.13.5 appendImages(stack as boolean = false) as GM16ImageMBS

**Function:** Append a sequence of image frames, writing the result to new image.  
**Notes:** All the input image frames must have the same width or height. Image frames of the same width are stacked top-to-bottom. Image frames of the same height are stacked left-to-right. If the stack parameter is false, rectangular image frames are stacked left-to-right otherwise top-to-bottom.

### 81.13.6 averageImages as GM16ImageMBS

**Function:** Average a sequence of image frames, writing the result to averagedImage.  
**Example:**

```vba
// read gif
dim g as new GM16ImageArrayMBS
dim file as FolderItem = SpecialFolder.Desktop.Child("test.gif")
g.readImages(file.UnixpathMBS)

// averageImages
dim n as GM16ImageMBS = g.averageImages
Backdrop = n.CopyPicture
```

**Notes:** All the input image frames must be the same size in pixels.

### 81.13.7 coalesceImages as GM16ImageArrayMBS

**Function:** Create a coalesced image sequence obtained by "playing" the image sequence (observing page
offsets and disposal methods) to create a new image sequence in which all frames are full size and completely rendered.

**Example:**

```javascript
// read gif
dim g as new GM16ImageArrayMBS
dim file as FolderItem = SpecialFolder.Desktop.Child("test.gif")
g.readImages(file.UnixpathMBS)

// deconstruct

g = g.coalesceImages

// write gif

dim output as FolderItem = SpecialFolder.Desktop.Child("output.gif")
g.writeImages output.UnixpathMBS
```

**Notes:** Note that if the original image sequence relied on page offsets and disposal methods that the resulting sequence will be larger (perhaps much larger) then the original. This is useful for GIF animation sequences that have page offsets and disposal methods. The resulting image sequence is returned.

### 81.13.8 Constructor


**Function:** Creates an empty image array.

### 81.13.9 deconstructImages as GM16ImageArrayMBS


**Function:** Break down an image sequence into constituent parts.

**Example:**

```javascript
// read gif

dim g as new GM16ImageArrayMBS

dim file as FolderItem = SpecialFolder.Desktop.Child("test.gif")
g.readImages(file.UnixpathMBS)

// deconstruct

g = g.deconstructImages

// write gif

dim output as FolderItem = SpecialFolder.Desktop.Child("output.gif")
g.writeImages output.UnixpathMBS
```
Notes: This is useful for creating GIF or MNG animation sequences.

81.13.10 displayImages

Function: Display a sequence of image frames.
Notes:
Through use of a pop-up menu, image frames may be selected in succession. This feature is fully supported under X11 but may have only limited support in other environments.
Caution: if an image format is is not compatable with the display visual (e.g. JPEG on a colormapped display) then the original image will be altered. Use a copy of the original if this is a problem.

display methods are not supported currently.

81.13.11 FirstImage as GM16ImageMBS

Function: Returns first image in array.
Example:
```cpp
// read gif
dim g as new GM16ImageArrayMBS
dim file as FolderItem = SpecialFolder.Desktop.Child("test.gif")
g.readImages(file.UnixpathMBS)

// show first image
dim img as GM16ImageMBS = g.FirstImage

// convert to true color for CopyPicture to work
const TrueColorType=6
img.type=TrueColorType
Backdrop = img.CopyPicture
```

81.13.12 flattenImages as GM16ImageMBS

MBS GraphicsMagick Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Merge a sequence of image frames which represent image layers into a single composited
Example:

```vbnet
// read gif
dim g as new GM16ImageArrayMBS
dim file as FolderItem = SpecialFolder.Desktop.Child("test.gif")
g.readImages(file.UnixpathMBS)

// put copy of first image on the back
dim n as GM16ImageMBS = g.flattenImages
Backdrop = n.CopyPicture
```

Notes: Returns the flattened image. This function is useful for combining Photoshop layers into a single image.

### 81.13.13 Image(index as Integer) as GM16ImageMBS

**Function:** Queries image with given index.

### 81.13.14 insert(image as GM16ImageMBS)

**Function:** Inserts an image on the front.  
**Example:**

```vbnet
// read gif
dim g as new GM16ImageArrayMBS
dim file as FolderItem = SpecialFolder.Desktop.Child("test.gif")
g.readImages(file.UnixpathMBS)

// put copy of first image on the front
dim n as GM16ImageMBS = g.FirstImage
g.insert n

// write to file

dim output as FolderItem = SpecialFolder.Desktop.Child("output.gif")
g.writeImages(output.UnixpathMBS)
```
81.13. CLASS GM16IMAGEARRAYMBS

81.13.15 LastImage as GM16ImageMBS

**Function:** Returns last image in array.

81.13.16 mapImages(map as GM16ImageMBS, dither as boolean = true, measureError as boolean = false)

**Function:** Replace the colors of a sequence of images with the closest color from a reference image.
**Notes:** Set dither to true to enable dithering. Set measureError to true in order to evaluate quantization error.

81.13.17 montageImages(options as GM16MontageMBS) as GM16ImageArrayMBS

**Function:** Create a composite image by combining several separate image frames.
**Example:**

```plaintext
// build montage
dim StackingMontage as New GM16MontageMBS
StackingMontage.backgroundColor = New GM16ColorMBS(& c E7E7E7)
StackingMontage.fillColor = New GM16ColorMBS(& c 000000)
StackingMontage.tile = New GM16GeometryMBS("1x20")
StackingMontage.geometry = New GM16GeometryMBS("160x120+5+5")
StackingMontage.font = "Helvetica"
StackingMontage.pointSize = 12
StackingMontage.title = "Title goes here"

// make picture
dim logo as Picture = LogoMBS(500)
dim image as New GM16ImageMBS(logo)
image.label("Sample label")

// Put the current image into the array
Dim StackingFrames As new GM16ImageArrayMBS
StackingFrames.insert(image)

// show result
dim resultImages as GM16ImageArrayMBS = StackingFrames.montageImages(StackingMontage)
Backdrop = resultImages.Image(0).CopyPicture
```
Notes: Multiple frames may be generated in the output array depending on the tile setting and the number of image frames montaged. Montage options are provided via the parameter options. Options set in the first image frame (backgroundColor, borderColor, matteColor, fillColor, strokeColor, font and fontPointsize) are also used as options by montageImages().

81.13.18 morphImages(frames as Integer) as GM16ImageArrayMBS

Function: Morph a sequence of image frames.
Example:

```plaintext
// read gif
dim g as new GM16ImageArrayMBS
dim file as FolderItem = SpecialFolder.Desktop.Child(“test.gif”)  
g.readImages(file.UnixpathMBS)

// coalesce to make sure we have full images  
g = g.coalesceImages
// morph to 10 pictures  
g = g.morphImages(10)

// write gif  
dim output as FolderItem = SpecialFolder.Desktop.Child(“output.gif”)  
g.writeImages output.UnixpathMBS
```

Notes: This algorithm expands the number of image frames (output to the new image array) by adding the number of intervening frames specified by frames such that the original frames morph (blend) into each other when played as an animation.

81.13.19 mosaicImages as GM16ImageMBS

Function: Inlay a number of images to form a single coherent picture.
Notes: The result image argument is updated with a mosaic constructed from the image sequence.

81.13.20 quantizeImages(measureError as boolean = false)

Function: Quantize colors in images using current quantization settings.
81.13. CLASS GM16IMAGEARRAYMBS

Notes: Set measureError to true in order to measure quantization error.

81.13.21 readImages(blob as GM16BlobMBS)

Function: Read a sequence of image frames into existing container (appending to array) from blob.
See also:

- 81.13.22 readImages(imageSpec as string)

81.13.22 readImages(imageSpec as string)

Function: Read a sequence of image frames into existing container (appending to array) with image names specified in the string imageSpec.
See also:

- 81.13.21 readImages(blob as GM16BlobMBS)

81.13.23 remove(index as Integer)

Function: Removes the image with the given index.
Example:

```vbnet
// read gif
dim g as new GM16ImageArrayMBS
dim file as FolderItem = SpecialFolder.Desktop.Child("test.gif")
g.readImages(file.UnixpathMBS)

// remove first
g.remove 0

// write to file

dim output as FolderItem = SpecialFolder.Desktop.Child("output.gif")
g.writeImages(output.UnixpathMBS)
```

Notes: Index should be between 0 and size-1.
### 81.13.24 reverse

**Function:** Reverses the order of images in the array.

### 81.13.25 writeImages(blob as GM16BlobMBS, adjoin as boolean = true)

**Function:** Writes images to the given blob object.
**Notes:**
Write images in container to in-memory BLOB specified by Blob blob. Set adjoin to false to write a set of image frames via a wildcard imageSpec (e.g. image% 02d.miff).
Caution: if an image format is selected which is capable of supporting fewer colors than the original image or quantization has been requested, the original image will be quantized to fewer colors. Use a copy of the original if this is a problem.
See also:

- 81.13.26 writeImages(imageSpec as string, adjoin as boolean = true)

### 81.13.26 writeImages(imageSpec as string, adjoin as boolean = true)

**Function:** Writes images to the given path.
**Example:**
```plaintext
// read gif
dim g as new GM16ImageArrayMBS
dim file as FolderItem = SpecialFolder.Desktop.Child("test.gif")
g.readImages(file.UnixpathMBS)

// write to file

dim output as FolderItem = SpecialFolder.Desktop.Child("output.gif")
g.writeImages(output.UnixpathMBS)
```

**Notes:**
Write images in container to file specified by string imageSpec. Set adjoin, to false to write a set of image frames via a wildcard imageSpec (e.g. image% 02d.miff).
The wildcard must be one of % 0Nd, % 0No, or % 0Nx.
Caution: if an image format is selected which is capable of supporting fewer colors than the original image or quantization has been requested, the original image will be quantized to fewer colors. Use a copy of the
81.13. CLASS GM16IMAGEARRAYMBS

original if this is a problem.
See also:

- 81.13.25 writeImages(blob as GM16BlobMBS, adjoin as boolean = true)

81.13.27 Properties

81.13.28 empty as boolean

**Function:** Checks whether image array is empty.
**Notes:**
Returns true if array is empty or false if not.
(Read only property)

81.13.29 handle as Integer

**Function:** The internal handle of the image array.
**Notes:**
Should always be non zero.
(Read and Write property)

81.13.30 size as Integer

**Function:** Returns number of images in this array.
**Example:**

```vba
// read gif
dim g as new GM16ImageArrayMBS
dim file as FolderItem = SpecialFolder.Desktop.Child("test.gif")
g.readImages(file.UnixpathMBS)

// display number of images
MsgBox str(g.size)
```

**Notes:** (Read only property)
81.14  class GM16ImageChannelStatisticsMBS

81.14.1  class GM16ImageChannelStatisticsMBS

Function: The statistics for image channel.
Example:

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim g as new GM16ImageMBS(f)
dim stat as GM16ImageStatisticsMBS = g.statistics
dim gs as GM16ImageChannelStatisticsMBS = stat.blue
MsgBox "blue channel: " + str(gs.minimum) + ", mean " + str(gs.mean)
```

Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

81.14.2  Methods

81.14.3  Constructor

Function: The private constructor.

81.14.4  Properties

81.14.5  maximum as Double

Function: Maximum value observed.
Example:

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim g as new GM16ImageMBS(f)
dim stat as GM16ImageStatisticsMBS = g.statistics
dim gs as GM16ImageChannelStatisticsMBS = stat.green
MsgBox "maximum green color: " + str(gs.maximum)
```
81.14. **mean as Double**


**Function:** Average (mean) value observed.

**Example:**

dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")  
dim g as new GM16ImageMBS(f)  
dim stat as GM16ImageStatisticsMBS = g.statistics  
dim r as GM16ImageChannelStatisticsMBS = stat.red  

MsgBox "mean red color: "+str(R.mean)  

**Notes:** (Read only property)

81.14.7 **minimum as Double**


**Function:** Minimum value observed.

**Notes:** (Read only property)

81.14.8 **standardDeviation as Double**


**Function:** Standard deviation, sqrt(variance).

**Notes:** (Read only property)

81.14.9 **variance as Double**


**Function:** Variance.

**Notes:** (Read only property)
81.15 class GM16ImageMBS

81.15.1 class GM16ImageMBS


Function: Image is the primary object in Magick++ and represents a single image frame (see image design).

Example:

dim c as new GM16ColorMBS("white")
dim g as new GM16GeometryMBS(100,100)
dim image as new GM16ImageMBS(g, c)

Notes:

With MBS Plugin 14.0 we offer this classes in 8bit (GM prefix) or 16bit (GM16 prefix).

The GM16ImageArrayMBS class must be used to operate on image sequences or images (e.g. of format GIF, TIFF, MIFF, Postscript, & MNG) which are comprised of multiple image frames. Individual frames of a multi-frame image may be requested by adding array-style notation to the end of the file name (e.g. "animation.gif [3]" retrieves the fourth frame of a GIF animation. Various image manipulation operations may be applied to the image. Attributes may be set on the image to influence the operation of the manipulation operations. The GM16PixelsMBS class provides low-level access to image pixels.

81.15.2 Methods

81.15.3 adaptiveThreshold(width as UInt32, height as UInt32, offset as UInt32=0)


Function: Apply adaptive thresholding to the image.

Notes:

see: http://www.dai.ed.ac.uk/HIPR2/adpthrsh.htm

Adaptive thresholding is useful if the ideal threshold level is not known in advance, or if the illumination gradient is not constant across the image. Adaptive thresholding works by evaluating the mean (average) of a pixel region (size specified by width and height) and using the mean as the thresholding value. In order to remove residual noise from the background, the threshold may be adjusted by subtracting a constant offset (default zero) from the mean to compute the threshold.
81.15. CLASS GM16IMAGEMBS

81.15.4  **addNoise(noise as Integer)**

**Function:** Add noise to image with the specified noise type.  
**Example:**

```vbs
dim p as Picture = LogoMBS(500)  
dim image as new GM16ImageMBS(p)
```

```vbs
image.addNoise(image.GaussianNoise)
```

```vbs
Backdrop=image.CopyPicture
```

**Notes:** Use one of this constants: GaussianNoise, ImpulseNoise, LaplacianNoise, MultiplicativeGaussianNoise, PoissonNoise, UniformNoise.

81.15.5  **addNoiseChannel(channel as Integer, noise as Integer)**

**Function:** Add noise to an image channel with the specified noise type. The channel parameter specifies the channel to add noise to.  
**Example:**

```vbs
dim p as Picture = LogoMBS(500)  
dim image as new GM16ImageMBS(p)
```

```vbs
image.addNoiseChannel(image.BlueChannel, image.ImpulseNoise)
```

```vbs
Backdrop=image.CopyPicture
```

**Notes:**  
The noiseType parameter specifies the type of noise.  
Use one of this constants: GaussianNoise, ImpulseNoise, LaplacianNoise, MultiplicativeGaussianNoise, PoissonNoise, UniformNoise.

81.15.6  **affineTransform(sx as Double, sy as Double, rx as Double, ry as Double, tx as Double, ty as Double)**

**Function:** Applies an affine transformation to the drawing matrix.
Notes: Specify a transformation matrix to adjust scaling, rotation, and translation (coordinate transformation) for subsequently drawn objects in the same or decendent drawing context. The sx & sy parameters represent the x & y scale factors, the rx & ry parameters represent the x & y rotation, and the tx & ty parameters represent the x & y translation.

81.15.7  annotate(text as string, boundingArea as GM16GeometryMBS, gravity as Integer)

Function: Annotate using specified text, bounding area, and placement gravity.
Notes:
Annotate image (draw text on image)

Gravity effects text placement in bounding area according to these rules:

- NorthWestGravity: text bottom-left corner placed at top-left
- NorthGravity: text bottom-center placed at top-center
- NorthEastGravity: text bottom-right corner placed at top-right
- WestGravity: text left-center placed at left-center
- CenterGravity: text center placed at center
- EastGravity: text right-center placed at right-center
- SouthWestGravity: text top-left placed at bottom-left
- SouthGravity: text top-center placed at bottom-center
- SouthEastGravity: text top-right placed at bottom-right

Annotate annotates an image with text. Optionally you can include any of the following bits of information about the image by embedding the appropriate special characters:

- % b file size in bytes
- % c comment
- % d directory in which the image resides
- % e extension of the image file
- % f original filename of the image
- % h height of image
- % i filename of the image
- % k number of unique colors
- % l image label
- % m image file format
- % n number of images in a image sequence
- % o output image filename
- % p page number of the image
- % q image depth (8 or 16)
- % r page number of the image
- % s image scene number
- % t image filename without any extension
- % u a unique temporary filename
- % w image width
- % x x resolution of the image
- % y y resolution of the image

Set a font with full path and @ in front. e.g. "@/Library/Fonts/Arial.ttf". This way the plugin loads it directly.

See also:

- 81.15.8 annotate(text as string, boundingArea as GM16GeometryMBS, gravity as Integer, degrees as Double)
81.15.  CLASS GM16IMAGEMBS

- 81.15.9 annotate(text as string, gravity as Integer) 13408
- 81.15.10 annotate(text as string, location as GM16GeometryMBS) 13409

81.15.8  annotate(text as string, boundingArea as GM16GeometryMBS, gravity as Integer, degrees as Double)


Function: Annotate with text using specified text, bounding area, placement gravity, and rotation.

Notes:
Annotate image (draw text on image)

Gravity effects text placement in bounding area according to these rules:

- NorthWestGravity text bottom-left corner placed at top-left
- NorthGravity text bottom-center placed at top-center
- NorthEastGravity text bottom-right corner placed at top-right
- WestGravity text left-center placed at left-center
- CenterGravity text center placed at center
- EastGravity text right-center placed at right-center
- SouthWestGravity text top-left placed at bottom-left
- SouthGravity text top-center placed at bottom-center
- SouthEastGravity text top-right placed at bottom-right

Annotate annotates an image with text. Optionally you can include any of the following bits of information about the image by embedding the appropriate special characters:

- % b file size in bytes. % c comment. % d directory in which the image resides. % e extension of the image file. % f original filename of the image. % h height of image. % i filename of the image. % k number of unique colors. % l image label. % m image file format. % n number of images in a image sequence. % o output image filename. % p page number of the image. % q image depth (8 or 16). % r page number of the image. % s image scene number. % t image filename without any extension. % u a unique temporary filename. % w image width. % x x resolution of the image. % y y resolution of the image.

Set a font with full path and @ in front. e.g. "@/Library/Fonts/Arial.ttf". This way the plugin loads it directly.

See also:
- 81.15.7 annotate(text as string, boundingArea as GM16GeometryMBS, gravity as Integer) 13406
- 81.15.9 annotate(text as string, gravity as Integer) 13408
- 81.15.10 annotate(text as string, location as GM16GeometryMBS) 13409
CHAPTER 81. GRAPHICS MAGICK

81.15.9 annotate(text as string, gravity as Integer)


**Function:** Annotate with text (bounding area is entire image) and placement gravity.

**Example:**

```plaintext
dim White as new GM16ColorGrayMBS(1)
dim Black as new GM16ColorGrayMBS(0)
dim geo as new GM16GeometryMBS("300x200")

dim g as new GM16ImageMBS(geo, White)

g.antiAlias = False
g.fillColor = Black
g.lineWidth = 1
g.strokeColor = Black
g.font = "@/Library/Fonts/Tahoma.ttf"
g.fontPointsSize = 15

g.annotate("Hello World", g.SouthGravity)

Backdrop = g.CopyPicture
```

**Notes:**

Annotate image (draw text on image)

Gravity effects text placement in bounding area according to these rules:

- NorthWestGravity: text bottom-left corner placed at top-left
- NorthGravity: text bottom-center placed at top-center
- NorthEastGravity: text bottom-right corner placed at top-right
- WestGravity: text left-center placed at left-center
- CenterGravity: text center placed at center
- EastGravity: text right-center placed at right-center
- SouthWestGravity: text top-left placed at bottom-left
- SouthGravity: text top-center placed at bottom-center
- SouthEastGravity: text top-right placed at bottom-right

Annotate annotates an image with text. Optionally you can include any of the following bits of information about the image by embedding the appropriate special characters:

- % b file size in bytes
- % c comment
- % d directory in which the image resides
- % e extension of the image file
- % f original filename of the image
- % h height of image
- % i filename of the image
- % k number of
unique colors. % l image label. % m image file format. % n number of images in a image sequence. % o output image filename. % p page number of the image. % q image depth (8 or 16). % p page number of the image. % q image depth (8 or 16). % s image scene number. % t image filename without any extension. % u a unique temporary filename. % w image width. % x x resolution of the image. % y y resolution of the image.

Set a font with full path and @ in front. e.g. "@/Library/Fonts/Arial.ttf". This way the plugin loads it directly.

See also:

- 81.15.7 annotate(text as string, boundingArea as GM16GeometryMBS, gravity as Integer) 13406
- 81.15.8 annotate(text as string, boundingArea as GM16GeometryMBS, gravity as Integer, degrees as Double) 13407
- 81.15.10 annotate(text as string, location as GM16GeometryMBS) 13409

81.15.10 annotate(text as string, location as GM16GeometryMBS)


**Function:** Annotate using specified text, and placement location.

**Notes:**

Annotate image (draw text on image)

Gravity effects text placement in bounding area according to these rules:

- NorthWestGravity text bottom-left corner placed at top-left
- NorthGravity text bottom-center placed at top-center
- NorthEastGravity text bottom-right corner placed at top-right
- WestGravity text left-center placed at left-center
- CenterGravity text center placed at center
- EastGravity text right-center placed at right-center
- SouthWestGravity text top-left placed at bottom-left
- SouthGravity text top-center placed at bottom-center
- SouthEastGravity text top-right placed at bottom-right

Annotate annotates an image with text. Optionally you can include any of the following bits of information about the image by embedding the appropriate special characters:

% b file size in bytes. % c comment. % d directory in which the image resides. % e extension of the image file. % f original filename of the image. % h height of image. % i filename of the image. % k number of unique colors. % l image label. % m image file format. % n number of images in a image sequence. % o output image filename. % p page number of the image. % q image depth (8 or 16). % p page number of the image. % q image depth (8 or 16). % s image scene number. % t image filename without any extension. % u
a unique temporary filename. \% w image width. \% x x resolution of the image. \% y y resolution of the image.

Set a font with full path and @ in front. e.g. "@/Library/Fonts/Arial.ttf". This way the plugin loads it directly.

See also:

- 81.15.7 annotate(text as string, boundingArea as GM16GeometryMBS, gravity as Integer) 13406
- 81.15.8 annotate(text as string, boundingArea as GM16GeometryMBS, gravity as Integer, degrees as Double) 13407
- 81.15.9 annotate(text as string, gravity as Integer) 13408

81.15.11 attributeValues as dictionary

Function: A dictionary with all attributes.
Notes: As attributes are created on demand, this will only return all so far generated attributes.

81.15.12 blur(radius as Double=0.0, sigma as Double=1.0)

Function: Blur an image with the specified blur factor.
Example:

```dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)
image.blur(30,10)
Backdrop=image.CopyPicture```

Notes: The radius parameter specifies the radius of the Gaussian, in pixels, not counting the center pixel. The sigma parameter specifies the standard deviation of the Laplacian, in pixels.

81.15.13 blurChannel(channel as Integer, radius as Double=0.0, sigma as Double=1.0)

Function: Blur an image channel with the specified blur factor.
Example:
81.15.  CLASS GM16IMAGEMBS

    dim p as Picture = LogoMBS(500)
    dim image as new GM16ImageMBS(p)

    image.blurChannel(image.BlueChannel, 30,10)
    Backdrop=image.CopyPicture

Notes: The channel parameter specifies the channel to modify. The radius parameter specifies the radius of the Gaussian, in pixels, not counting the center pixel. The sigma parameter specifies the standard deviation of the Laplacian, in pixels.

81.15.14  border

Function: Border image (add border to image).
Example:

    dim p as Picture = LogoMBS(500)
    dim image as new GM16ImageMBS(p)

    image.border
    Backdrop=image.CopyPicture

Notes: The color of the border is specified by the borderColor attribute.
See also:
  • 81.15.15 border(geometry as GM16GeometryMBS)

81.15.15  border(geometry as GM16GeometryMBS)

Function: Border image (add border to image).
Example:

    dim p as Picture = LogoMBS(500)
    dim image as new GM16ImageMBS(p)

    image.border GM16GeometryMBS.Make(10,10)
    Backdrop=image.CopyPicture
Notes: The color of the border is specified by the borderColor attribute. See also:

- 81.15.14 border

81.15.16  borderGeometryDefault as String


Function: The default geometry description for border.

81.15.17  boundingBox as GM16GeometryMBS


Function: Return smallest bounding box enclosing non-border pixels.

Example:

```plaintext
dim g as new GM16GeometryMBS(500,500)
dim c as new GM16ColorRGBMBS("white") // white
dim image as new GM16ImageMBS(g, c)

image.fillColor = new GM16ColorRGBMBS("red") // set color
image.strokeColor = new GM16ColorRGBMBS("green") // set color

image.strokeWidth = 5

dim draw as GM16GraphicsMBS = image.Graphics

// Draw a circle

draw.Circle(250, 250, 120, 150)
draw.Draw

draw = nil
image.type = image.TrueColorType

Backdrop = image.CopyPicture

MsgBox image.boundingBox.StringValue
```

Notes: The current fuzz value is used when discriminating between pixels. This is the crop bounding box used by crop(Geometry(0,0)).
81.15.18  cacheThreshold(threshold as UInt32)

**Function:** Pixel cache threshold in megabytes.
**Notes:** Once this memory threshold is exceeded, all subsequent pixels cache operations are to/from disk. This setting is shared by all Image objects.

81.15.19  cdl(cdl as string)

**Function:** Bake in the ASC-CDL.
**Notes:** Bake in the ASC-CDL, which is a convention for the exchange of basic primary color grading information between equipment and software from different manufacturers. It is a useful transform for other purposes as well.

81.15.20  channel(channel as Integer)

**Function:** Extract channel from image.
**Notes:** Use this option to extract a particular channel from the image. MatteChannel for example, is useful for extracting the opacity values from an image.

81.15.21  charcoal(radius as Double=0.0, sigma as Double=1.0)

**Function:** Charcoal effect image (looks like charcoal sketch).
**Example:**
```
  dim p as Picture = LogoMBS(500)
  dim image as new GM16ImageMBS(p)
  image.charcoal

  Backdrop=image.CopyPicture
```
**Notes:** The radius parameter specifies the radius of the Gaussian, in pixels, not counting the center pixel. The sigma parameter specifies the standard deviation of the Laplacian, in pixels.
81.15.22 chop( geometry as GM16GeometryMBS)

**Function:** Chop image (remove vertical or horizontal subregion of image).

81.15.23 colorHistogram as dictionary

**Function:** Calculates histogram. 
**Example:**
```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim g as new GM16ImageMBS(f)
dim d as Dictionary = g.colorHistogram

MsgBox str(d.Count) + " color"
// check first color
dim c as GM16ColorMBS = d.key(0)

MsgBox "Color " + str(c.colorValue) + ": " + str(d.Value(c))
```

**Notes:** The dictionary has a GM16ColorMBS/GMColor16MBS object as key for each color and an unsigned integer as value.

81.15.24 colorize(opacity as UInt32, penColor as GM16ColorMBS)

**Function:** Colorize image with pen color, using specified percent opacity. 
**Example:**
```
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)

image.colorize(10, new GM16ColorMBS("red"))

Backdrop=image.CopyToPicture
```

See also:
- 81.15.25 colorize(opacityRed as UInt32, opacityGreen as UInt32, opacityBlue as UInt32, penColor as
81.15.5 Colorize image with pen color, using specified percent opacity for red, green, and blue quantums.

Example:

```vbnet
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)

image.colorize(10, 0, 5, new GM16ColorMBS("red"))

Backdrop = image.CopyPicture
```

See also:

- 81.15.24 Colorize image with pen color, using specified percent opacity for red and green quantums.

81.15.26 Apply a color matrix to the image channels.

Example:

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim g as new GM16ImageMBS(f)

dim m(8) as Double

m(0) = 0.25
m(1) = 0
m(2) = 0.25
m(3) = 0
m(4) = 0
m(5) = 0
m(6) = 0.25
m(7) = 0
m(8) = 0.25

g.colorMatrix 3, m
```
Backdrop = g.CopyPicture

**Notes:** The user supplied matrix may be of order 1 to 5 (1x1 through 5x5).

### 81.15.27 columns as UInt32

**Function:** Image width.  
**Example:**
```vbs
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)

Title = str(image.columns)+" \times "+str(image.rows)
Backdrop=image.CopyPicture
```

### 81.15.28 CombinePictureWithMask as picture

**Function:** Creates a copy of the image with mask.  
**Example:**
```vbs
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)

dim c as new GM16ColorMBS("white")
image.transparent(c)

Backdrop=image.CombinePictureWithMask
```

**Notes:** Internally this calls Width and Height, CopyPicture and CopyMask.

### 81.15.29 compare(image as GM16ImageMBS) as boolean

**Function:** Compare current image with another image.  
**Notes:** Sets meanErrorPerPixel, normalizedMaxError, and normalizedMeanError in the current image. False is returned if the images are identical. An ErrorOption exception is thrown if the reference image
columns, rows, colorspace, or matte differ from the current image:

### 81.15.30 composite(compositeImage as GM16ImageMBS, gravity as Integer, CompositeOperator as Integer=2)

**Function:** Compose an image onto another at specified x and y offset and using a specified algorithm.
See also:

- 81.15.31 composite(compositeImage as GM16ImageMBS, offset as GM16GeometryMBS, CompositeOperator as Integer=2) 13417
- 81.15.32 composite(compositeImage as GM16ImageMBS, xOffset as Integer, yOffset as Integer, CompositeOperator as Integer=2) 13417

### 81.15.31 composite(compositeImage as GM16ImageMBS, offset as GM16GeometryMBS, CompositeOperator as Integer=2)

**Function:** Compose an image onto another at specified x and y offset and using a specified algorithm.
See also:

- 81.15.30 composite(compositeImage as GM16ImageMBS, gravity as Integer, CompositeOperator as Integer=2) 13417
- 81.15.32 composite(compositeImage as GM16ImageMBS, xOffset as Integer, yOffset as Integer, CompositeOperator as Integer=2) 13417

### 81.15.32 composite(compositeImage as GM16ImageMBS, xOffset as Integer, yOffset as Integer, CompositeOperator as Integer=2)

**Function:** Compose an image onto another at specified x and y offset and using a specified algorithm.
See also:

- 81.15.30 composite(compositeImage as GM16ImageMBS, gravity as Integer, CompositeOperator as Integer=2) 13417
- 81.15.31 composite(compositeImage as GM16ImageMBS, offset as GM16GeometryMBS, CompositeOperator as Integer=2) 13417
81.15.33 Constructor


**Example:**

```plaintext
// get some image data (e.g. from blob in database)
dim logo as Picture = LogoMBS(500)
dim jpegData as string = PictureToJPEGStringMBS(logo, 80)

// new image
Dim mp as new GM16ImageMBS
dim blob as new GM16BlobMBS(jpegData)

// read data from blob into this image object
mp.Read blob

// sometimes you need to explicit convert to RGB/RGBA
mp.type = mp.TrueColorMatteType
Backdrop=mp.CombinePictureWithMask
```

See also:

- 81.15.34 Constructor(blob as GM16BlobMBS)  
- 81.15.35 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS)  
- 81.15.36 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, depth as UInt32)  
- 81.15.37 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, depth as UInt32, Magick as string)  
- 81.15.38 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, Magick as string)  
- 81.15.39 Constructor(file as folderitem)  
- 81.15.40 Constructor(other as GM16ImageMBS)  
- 81.15.41 Constructor(Path as string)  
- 81.15.42 Constructor(pic as picture)  
- 81.15.43 Constructor(size as GM16GeometryMBS, ColorValue as GM16ColorMBS)  
- 81.15.44 Constructor(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr)
CLASS GM16IMAGEMBS

81.15.34 Constructor(blob as GM16BlobMBS)


**Function:** Construct Image from in-memory Blob.

See also:

- 81.15.33 Constructor
- 81.15.35 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS)
- 81.15.36 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, depth as UInt32)
- 81.15.37 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, depth as UInt32, Magick as string)
- 81.15.38 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, Magick as string)
- 81.15.39 Constructor(file as folderitem)
- 81.15.40 Constructor(other as GM16ImageMBS)
- 81.15.41 Constructor(Path as string)
- 81.15.42 Constructor(pic as picture)
- 81.15.43 Constructor(size as GM16GeometryMBS, ColorValue as GM16ColorMBS)
- 81.15.44 Constructor(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr)

81.15.35 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS)


**Function:** Construct Image of specified size from in-memory Blob.

See also:

- 81.15.33 Constructor
- 81.15.34 Constructor(blob as GM16BlobMBS)
- 81.15.36 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, depth as UInt32)
- 81.15.37 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, depth as UInt32, Magick as string)
- 81.15.38 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, Magick as string)
- 81.15.39 Constructor(file as folderitem)
• 81.15.40 Constructor(other as GM16ImageMBS) 13422
• 81.15.41 Constructor(Path as string) 13423
• 81.15.42 Constructor(pic as picture) 13423
• 81.15.43 Constructor(size as GM16GeometryMBS, ColorValue as GM16ColorMBS) 13424
• 81.15.44 Constructor(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr) 13425

81.15.36 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, depth as UInt32)

Function: Construct Image of specified size and depth from in-memory Blob.

See also:
• 81.15.33 Constructor 13418
• 81.15.34 Constructor(blob as GM16BlobMBS) 13419
• 81.15.35 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS) 13419
• 81.15.37 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, depth as UInt32, Magick as string) 13420
• 81.15.38 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, Magick as string) 13421
• 81.15.39 Constructor(file as folderitem) 13422
• 81.15.40 Constructor(other as GM16ImageMBS) 13422
• 81.15.41 Constructor(Path as string) 13423
• 81.15.42 Constructor(pic as picture) 13423
• 81.15.43 Constructor(size as GM16GeometryMBS, ColorValue as GM16ColorMBS) 13424
• 81.15.44 Constructor(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr) 13425

81.15.37 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, depth as UInt32, Magick as string)

Function: Construct Image of specified size, depth, and format from in-memory Blob.

See also:
### 81.15. `CLASS GM16IMAGEMBS`  
- 81.15.33 Constructor  
- 81.15.34 Constructor(blob as GM16BlobMBS)  
- 81.15.35 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS)  
- 81.15.36 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, depth as UInt32)  
- 81.15.38 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, Magick as string)  
- 81.15.39 Constructor(file as folderitem)  
- 81.15.40 Constructor(other as GM16ImageMBS)  
- 81.15.41 Constructor(Path as string)  
- 81.15.42 Constructor(pic as picture)  
- 81.15.43 Constructor(size as GM16GeometryMBS, ColorValue as GM16ColorMBS)  
- 81.15.44 Constructor(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr)  

### 81.15.38 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, Magick as string)  

**Function:** Construct Image of specified size, depth, and format from in-memory Blob.  
See also:
- 81.15.33 Constructor  
- 81.15.34 Constructor(blob as GM16BlobMBS)  
- 81.15.35 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS)  
- 81.15.36 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, depth as UInt32)  
- 81.15.37 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, depth as UInt32, Magick as string)  
- 81.15.39 Constructor(file as folderitem)  
- 81.15.40 Constructor(other as GM16ImageMBS)  
- 81.15.41 Constructor(Path as string)  
- 81.15.42 Constructor(pic as picture)  
- 81.15.43 Constructor(size as GM16GeometryMBS, ColorValue as GM16ColorMBS)  
- 81.15.44 Constructor(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr)
81.15.39 Constructor(file as folderitem)


**Function:** Construct from image file.

See also:

- 81.15.33 Constructor
- 81.15.34 Constructor(blob as GM16BlobMBS)
- 81.15.35 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS)
- 81.15.36 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, depth as UInt32)
- 81.15.37 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, depth as UInt32, Magick as string)
- 81.15.38 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, Magick as string)
- 81.15.40 Constructor(other as GM16ImageMBS)
- 81.15.41 Constructor(Path as string)
- 81.15.42 Constructor(pic as picture)
- 81.15.43 Constructor(size as GM16GeometryMBS, ColorValue as GM16ColorMBS)
- 81.15.44 Constructor(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr)

81.15.40 Constructor(other as GM16ImageMBS)


**Function:** Creates an image by making a copy of the existing one.

See also:

- 81.15.33 Constructor
- 81.15.34 Constructor(blob as GM16BlobMBS)
- 81.15.35 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS)
- 81.15.36 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, depth as UInt32)
- 81.15.37 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, depth as UInt32, Magick as string)
- 81.15.38 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, Magick as string)
81.15. **CLASS GM16IMAGEMBS**

- 81.15.39 Constructor(file as folderitem)
- 81.15.41 Constructor(Path as string)
- 81.15.42 Constructor(pic as picture)
- 81.15.43 Constructor(size as GM16GeometryMBS, ColorValue as GM16ColorMBS)
- 81.15.44 Constructor(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr)

81.15.41 Constructor(Path as string)

**Function:** Construct from image file or image specification.
See also:

- 81.15.33 Constructor
- 81.15.34 Constructor(blob as GM16BlobMBS)
- 81.15.35 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS)
- 81.15.36 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, depth as UInt32)
- 81.15.37 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, depth as UInt32, Magick as string)
- 81.15.38 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, Magick as string)
- 81.15.39 Constructor(file as folderitem)
- 81.15.40 Constructor(other as GM16ImageMBS)
- 81.15.42 Constructor(pic as picture)
- 81.15.43 Constructor(size as GM16GeometryMBS, ColorValue as GM16ColorMBS)
- 81.15.44 Constructor(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr)

81.15.42 Constructor(pic as picture)

**Function:** Creates a new GMImage with the given picture.

**Example:**

```javascript
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)
```
Notes: Pixels from both the picture and picture’s mask.
See also:

- 81.15.33 Constructor
- 81.15.34 Constructor(blob as GM16BlobMBS)
- 81.15.35 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS)
- 81.15.36 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, depth as UInt32)
- 81.15.37 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, depth as UInt32, Magick as string)
- 81.15.38 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, Magick as string)
- 81.15.39 Constructor(file as folderitem)
- 81.15.40 Constructor(other as GM16ImageMBS)
- 81.15.41 Constructor(Path as string)
- 81.15.43 Constructor(size as GM16GeometryMBS, ColorValue as GM16ColorMBS)
- 81.15.44 Constructor(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr)

81.15.43 Constructor(size as GM16GeometryMBS, ColorValue as GM16ColorMBS)

Function: Construct a blank image canvas of specified size and color.
Example:

```plaintext
dim g as new GM16GeometryMBS(600,600)
dim c as new GM16ColorRGBMBS(1.0,0.0,0.0) // red
dim image as new GM16ImageMBS(g, c)

const TrueColorType=6

// Ensure that there are no other references to this image.
image.modifyImage
// Set the image type to TrueColor DirectClass representation.
image.type=TrueColorType
```
81.15. **CLASS GM16IMAGEMBS**

Backdrop=image.CopyPicture(0,0,600,600)

See also:

- 81.15.33 Constructor
- 81.15.34 Constructor(blob as GM16BlobMBS)
- 81.15.35 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS)
- 81.15.36 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, depth as UInt32)
- 81.15.37 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, depth as UInt32, Magick as string)
- 81.15.38 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, Magick as string)
- 81.15.39 Constructor(file as folderitem)
- 81.15.40 Constructor(other as GM16ImageMBS)
- 81.15.41 Constructor(Path as string)
- 81.15.42 Constructor(pic as picture)
- 81.15.44 Constructor(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr)

**81.15.44 Constructor(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr)**

MBS GraphicsMagick Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Initializes single image frame from an array of raw pixels, with specified storage type (ConstituteImage).

**Example:**

```plaintext
dim data as new memoryblock(2048*2048) // your data
dim image as new GM16ImageMBS(2048, 2048, "I", GM16ImageMBS.StorageTypeCharPixel, data)
```

**Notes:**

Returns an Image corresponding to an image stored in a raw memory array format. The pixel data must be in scanline order top-to-bottom. The data can be unsigned char, unsigned short int, unsigned int, unsigned long, float, or double. Float and double require the pixels to be normalized to the range \([0..1]\), otherwise the range is \([0..\text{MaxVal}]\) where MaxVal is the maximum possible value for that type.
Note that for most 32-bit architectures the size of an unsigned long is the same as unsigned int, but for 64-bit architectures observing the LP64 standard, an unsigned long is 64 bits, while an unsigned int remains 32 bits. This should be considered when deciding if the data should be described as "Integer" or "Long".

For example, to create a 640x480 image from unsigned red-green-blue character data, use

```java
image = new GM16ImageMBS(640, 480, "RGB", GM16ImageMBS.StorageTypeCharPixel, pixels);
```

**width**: width in pixels of the image.
**height**: height in pixels of the image.
**map**: This string reflects the expected ordering of the pixel array. It can be any combination or order of R = red, G = green, B = blue, A = alpha (same as Transparency), O = Opacity, T = Transparency, C = cyan, Y = yellow, M = magenta, K = black, or I = intensity (for grayscale). Specify "P" = pad, to skip over a quantum which is intentionally ignored. Creation of an alpha channel for CMYK images is currently not supported.
**type**: Define the data type of the pixels. Float and double types are expected to be normalized \[ 0..1 \] otherwise \[ 0..MaxRGB \] . Choose from these types: StorageTypeCharPixel, StorageTypeShortPixel, StorageTypeIntegerPixel, StorageTypeLongPixel, StorageTypeFloatPixel, or StorageTypeDoublePixel.
**pixels**: This array of values contain the pixel components as defined by map and type. You must preallocate this array where the expected length varies depending on the values of width, height, map, and type.

See also:

- 81.15.33 Constructor
- 81.15.34 Constructor(blob as GM16BlobMBS)
- 81.15.35 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS)
- 81.15.36 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, depth as UInt32)
- 81.15.37 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, depth as UInt32, Magick as string)
- 81.15.38 Constructor(blob as GM16BlobMBS, geometry as GM16GeometryMBS, Magick as string)
- 81.15.39 Constructor(file as folderitem)
- 81.15.40 Constructor(other as GM16ImageMBS)
- 81.15.41 Constructor(Path as string)
- 81.15.42 Constructor(pic as picture)
- 81.15.43 Constructor(size as GM16GeometryMBS, ColorValue as GM16ColorMBS)
81.15.45  **contrast (sharpen as UInt32)**

**Function**: Contrast image (enhance intensity differences in image).  
**Example**:  
```vbscript
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)

image.contrast(10)
```

Backdrop=image.CopyPicture

---

81.15.46  **convolve (order as Integer, ColorMatrix() as Double)**

**Function**: Convolve image.  
**Example**:  
```vbscript
dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim g as new GM16ImageMBS(f)

dim m(8) as Double

m(0) = 0.25  
m(1) = 0  
m(2) = 0.25

m(3) = 0  
m(4) = 0  
m(5) = 0

m(6) = 0.25  
m(7) = 0  
m(8) = 0.25

g.convolve 3, m
```

Backdrop = g.CopyPicture

---

**Notes**:  
Applies a user-specified convolution to the image.  
order represents the number of columns and rows in the filter kernel.
kernel is an array of doubles representing the convolution kernel.

81.15.47 CopyPicture as picture


**Function:** Creates a copy of the image and returns it as a new picture.

**Example:**

```vbscript
dim g as new GM16GeometryMBS(500,500)
dim c as new GM16ColorRGBMBS("white") // white
dim image as new GM16ImageMBS(g, c)
image.strokeColor = new GM16ColorRGBMBS("red") // Outline color
image.fillColor = new GM16ColorRGBMBS("green") // Fill color
image.strokeWidth = 5

dim draw as GM16GraphicsMBS = image.Graphics
// Draw a circle
draw.Rectangle(250, 250, 100, 100)
Backdrop=image.CopyPicture
```

**Notes:** You may need to set image type to RGB to get it working.

See also:

- 81.15.48 CopyPicture(x as Integer, y as Integer, width as Integer, height as Integer) as picture

81.15.48 CopyPicture(x as Integer, y as Integer, width as Integer, height as Integer) as picture


**Function:** Creates a copy of the image and returns it as a new picture.

**Example:**

```vbscript
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)
image.threshold 127
// convert to RGB so CopyPicture works
image.type = image.TrueColorType
Backdrop=image.CopyPicture(0,0,250,250)
```
**Notes:** You may need to set image type to RGB to get it working.

See also:

- 81.15.47 CopyPicture as picture

### 81.15.49 CopyPictureMask as picture


**Function:** Creates a copy of the image's mask and returns it as a new picture.

See also:

- 81.15.50 CopyPictureMask(x as Integer, y as Integer, width as Integer, height as Integer) as picture

### 81.15.50 CopyPictureMask(x as Integer, y as Integer, width as Integer, height as Integer) as picture


**Function:** Creates a copy of the image's mask and returns it as a new picture.

See also:

- 81.15.49 CopyPictureMask as picture

### 81.15.51 CopyPixelsMemory as Memoryblock

MBS GraphicsMagick Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Copy the pixels as they are into a memoryblock.

**Notes:**

Optional specify rectangle.

Returns nil on low memory or bad parameter. Image must be of type class direct (not palette picture).

Order of pixel data is normally Red, Green, Blue, Opacity. Or Cyan, Magenta, Yellow, Black for CMYK images.

For GM16ImageMBS, the data is 8bit per channel. For GMImage16MBS, the data is 16bit per channel.

See also:

- 81.15.52 CopyPixelsMemory(x as Integer, y as Integer, width as Integer, height as Integer) as Memoryblock
81.15.52 CopyPixelsMemory(x as Integer, y as Integer, width as Integer, height as Integer) as Memoryblock

MBS GraphicsMagick Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Copy the pixels as they are into a memoryblock.
Notes:
Optional specify rectangle.
Returns nil on low memory or bad parameter. Image must be of type class direct (not palette picture).
Order of pixel data is normally Red, Green, Blue, Opacity. Or Cyan, Magenta, Yellow, Black for CMYK images.
For GM16ImageMBS, the data is 8bit per channel. For GMImage16MBS, the data is 16bit per channel.
See also:

- 81.15.51 CopyPixelsMemory as Memoryblock

81.15.53 CreateHBITMAP as Ptr

MBS GraphicsMagick Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.
Function: Creates a HBITMAP for the image for use with Windows Declares.
Example:

```xoj
// get test image
dim logo as Picture = LogoMBS(500)

// create GraphicsMagick image
dim g as new GM16ImageMBS(logo)

// make a HBitmap
dim hBitmap as ptr = g.CreateHBITMAP

// convert back to Xojo picture
dim pic as Picture = WindowsBitmapMBS.HBitmapToPicture(hBitmap, true)

// show in window
Backdrop = pic

// and cleanup memory
WindowsBitmapMBS.DeleteBitmap(h_bitmap)
```

Notes: The HBITMAP returned needs to be freed when you are done with it or you risk having a memory leak.
81.15. CLASS GM16IMAGEMBS

81.15.54  **crop(geometry as GM16GeometryMBS)**

**Function:** Crop image (return subregion of original image).
**Example:**
```vbs
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)
image.crop GM16GeometryMBS.Make(100,200)
Backdrop=image.CopyPicture
```

81.15.55  **cycleColormap(amount as Integer)**

**Function:** Cycle (rotate) image colormap.
**Example:**
```vbs
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)
image.cycleColormap(5)
image.type = image.TrueColorType
Backdrop=image.CopyPicture
```

81.15.56  **despeckle**

**Function:** Despeckle image (reduce speckle noise).
**Example:**
```vbs
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)
image.despeckle
Backdrop=image.CopyPicture
```
**81.15.57 directory as string**

**Function:** Tile names from within an image montage.

**81.15.58 display**

**Function:** Display image on screen.  
**Notes:**  
Caution: if an image format is is not compatible with the display visual (e.g. JPEG on a colormapped display) then the original image will be altered. Use a copy of the original if this is a problem.

The plugin is not compiled with X11 so this call may not be useful.

**81.15.59 edge(radius as Double=0.0)**

**Function:** Edge image (hilight edges in image).  
**Example:**

```vbnet
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)
image.edge
Backdrop=image.CopyPicture
```

**Notes:** The radius is the radius of the pixel neighborhood. Specify a radius of zero for automatic radius selection.

**81.15.60 emboss(radius as Double=0.0, sigma as Double=1.0)**

**Function:** Emboss image (hilight edges with 3D effect).  
**Example:**

```vbnet
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)
```
image.emboss
Backdrop=image.CopyPicture

Notes: The radius parameter specifies the radius of the Gaussian, in pixels, not counting the center pixel. The sigma parameter specifies the standard deviation of the Laplacian, in pixels.

81.15.61 enhance

Function: Enhance image (minimize noise).
Example:
```dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)
image.enhance
Backdrop=image.CopyPicture```

81.15.62 erase

Function: Set all image pixels to the current background color.

81.15.63 fileSize as Int64

Function: Number of bytes of the image on disk.

81.15.64 flip

Function: Flip image (reflect each scanline in the vertical direction).
Example:
```dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)```
image.flip
Backdrop=image.CopyPicture

81.15.65  floodFillColor(point as GM16GeometryMBS, fillColor as GM16ColorMBS)

Function: Flood-fill color across pixels that match the color of the target pixel and are neighbors of the
target pixel.
Notes: Uses current fuzz setting when determining color match.
See also:

- 81.15.66 floodFillColor(point as GM16GeometryMBS, fillColor as GM16ColorMBS, borderColor as GM16ColorMBS) 13434
- 81.15.67 floodFillColor(x as UInt32, y as UInt32, fillColor as GM16ColorMBS) 13434
- 81.15.68 floodFillColor(x as UInt32, y as UInt32, fillColor as GM16ColorMBS, borderColor as GM16ColorMBS) 13435

81.15.66  floodFillColor(point as GM16GeometryMBS, fillColor as GM16ColorMBS, borderColor as GM16ColorMBS)

Function: Flood-fill color across pixels starting at target-pixel and stopping at pixels matching specified
border color.
Notes: Uses current fuzz setting when determining color match.
See also:

- 81.15.65 floodFillColor(point as GM16GeometryMBS, fillColor as GM16ColorMBS) 13434
- 81.15.67 floodFillColor(x as UInt32, y as UInt32, fillColor as GM16ColorMBS) 13434
- 81.15.68 floodFillColor(x as UInt32, y as UInt32, fillColor as GM16ColorMBS, borderColor as GM16ColorMBS) 13435

81.15.67  floodFillColor(x as UInt32, y as UInt32, fillColor as GM16ColorMBS)

Function: Flood-fill color across pixels that match the color of the target pixel and are neighbors of the
target pixel.
81.15. CLASS GM16IMAGEMBS

Notes: Uses current fuzz setting when determining color match.
See also:

- 81.15.65 floodFillColor(point as GM16GeometryMBS, fillColor as GM16ColorMBS) 13434
- 81.15.66 floodFillColor(point as GM16GeometryMBS, fillColor as GM16ColorMBS, borderColor as GM16ColorMBS) 13434
- 81.15.68 floodFillColor(x as UInt32, y as UInt32, fillColor as GM16ColorMBS, borderColor as GM16ColorMBS) 13435

81.15.68 floodFillColor(x as UInt32, y as UInt32, fillColor as GM16ColorMBS, borderColor as GM16ColorMBS)

Function: Flood-fill color across pixels starting at target-pixel and stopping at pixels matching specified border color.
Notes: Uses current fuzz setting when determining color match:
See also:

- 81.15.65 floodFillColor(point as GM16GeometryMBS, fillColor as GM16ColorMBS) 13434
- 81.15.66 floodFillColor(point as GM16GeometryMBS, fillColor as GM16ColorMBS, borderColor as GM16ColorMBS) 13434
- 81.15.67 floodFillColor(x as UInt32, y as UInt32, fillColor as GM16ColorMBS) 13434

81.15.69 floodFillOpacity(x as UInt32, y as UInt32, opacity as UInt32, Paint-Method as Integer)

Function: Flood-fill pixels matching color (within fuzz factor) of target pixel(x,y) with replacement opacity value using method.

81.15.70 floodFillTexture(point as GM16GeometryMBS, fillColor as GM16ColorMBS)

Function: Flood-fill texture across pixels that match the color of the target pixel and are neighbors of the target pixel.
Notes: Uses current fuzz setting when determining color match.
See also:

- 81.15.71 floodFillTexture(point as GM16GeometryMBS, fillColor as GM16ColorMBS, borderColor as GM16ColorMBS) 13436
81.15.71 floodFillTexture(point as GM16GeometryMBS, fillColor as GM16ColorMBS, borderColor as GM16ColorMBS)

**Function:** Flood-fill texture across pixels starting at target-pixel and stopping at pixels matching specified border color.
**Notes:** Uses current fuzz setting when determining color match.
See also:

- 81.15.70 floodFillTexture(point as GM16GeometryMBS, fillColor as GM16ColorMBS)
- 81.15.72 floodFillTexture(x as UInt32, y as UInt32, fillColor as GM16ColorMBS)
- 81.15.73 floodFillTexture(x as UInt32, y as UInt32, fillColor as GM16ColorMBS, borderColor as GM16ColorMBS)

81.15.72 floodFillTexture(x as UInt32, y as UInt32, fillColor as GM16ColorMBS)

**Function:** Flood-fill texture across pixels that match the color of the target pixel and are neighbors of the target pixel.
**Notes:** Uses current fuzz setting when determining color match.
See also:

- 81.15.70 floodFillTexture(point as GM16GeometryMBS, fillColor as GM16ColorMBS)
- 81.15.71 floodFillTexture(point as GM16GeometryMBS, fillColor as GM16ColorMBS, borderColor as GM16ColorMBS)
- 81.15.73 floodFillTexture(x as UInt32, y as UInt32, fillColor as GM16ColorMBS, borderColor as GM16ColorMBS)

81.15.73 floodFillTexture(x as UInt32, y as UInt32, fillColor as GM16ColorMBS, borderColor as GM16ColorMBS)

**Function:** Flood-fill texture across pixels starting at target-pixel and stopping at pixels matching specified border color.
**Notes:** Uses current fuzz setting when determining color match.
See also:
81.15.  CLASS GM16IMAGEMBS

- 81.15.70 floodFillTexture(point as GM16GeometryMBS, fillColor as GM16ColorMBS) 13435
- 81.15.71 floodFillTexture(point as GM16GeometryMBS, fillColor as GM16ColorMBS, borderColor as GM16ColorMBS) 13436
- 81.15.72 floodFillTexture(x as UInt32, y as UInt32, fillColor as GM16ColorMBS) 13436

81.15.74  flop

**Function:** Flop image (reflect each scanline in the horizontal direction).
**Example:**
```vba
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)
image.flop
Backdrop=image.CopyPicture```

81.15.75  fontTypeMetrics(name as string) as GM16TypeMetricMBS

**Function:** Obtain font metrics for text string given current font, pointsize, and density settings.

81.15.76  format as string

**Function:** Long image format description.

81.15.77  frame

**Function:** Draw a decorative frame around the image.
**Example:**
```vba
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)
image.frame```
Backdrop=image.CopyPicture

See also:

- 81.15.78 frame(geometry as GM16GeometryMBS)
- 81.15.79 frame(width as UInt32, height as UInt32, innerBevel as Integer=6, outerBevel as Integer=6)

81.15.78  frame(geometry as GM16GeometryMBS)

Function: Draw a decorative frame around the image.
Example:

```
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)

image.frame(GM16GeometryMBS.Make("10x10"))
```
Backdrop=image.CopyPicture

See also:

- 81.15.77 frame
- 81.15.79 frame(width as UInt32, height as UInt32, innerBevel as Integer=6, outerBevel as Integer=6)

81.15.79  frame(width as UInt32, height as UInt32, innerBevel as Integer=6, outerBevel as Integer=6)

Function: Draw a decorative frame around the image.
Example:

```
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)

image.frame(15,15)
```
Backdrop=image.CopyPicture
81.15. CLASS GM16IMAGEMBS

See also:

- 81.15.77 frame
- 81.15.78 frame(geometry as GM16GeometryMBS)

81.15.80 frameGeometryDefault as String


**Function:** The default geometry description for frame.

81.15.81 gamma(gammaRed as Double, gammaGreen as Double, gammaBlue as Double)


**Function:** Gamma correct the image or individual image channels.

**Example:**

```vba
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)

image.gamma(1,2,3)

Backdrop=image.CopyPicture
```

See also:

- 81.15.241 gamma as Double

81.15.82 gaussianBlur(width as Double, sigma as Double)


**Function:** Gaussian blur image.

**Example:**

```vba
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)

image.gaussianBlur(30, 10)

Backdrop=image.CopyPicture
```
Notes: The number of neighbor pixels to be included in the convolution mask is specified by width. The standard deviation of the gaussian bell curve is specified by sigma.

81.15.83  gaussianBlurChannel(channel as Integer, width as Double, sigma as Double)

**Function:** Gaussian blur image channel.
**Notes:** The number of neighbor pixels to be included in the convolution mask is specified by width. The standard deviation of the gaussian bell curve is specified by sigma.

81.15.84  geometry as GM16GeometryMBS

**Function:** Preferred size of the image when encoding.

81.15.85  getChromaBluePrimary(byref x as Double, byref y as Double)

**Function:** Chromaticity blue primary point.

81.15.86  getChromaGreenPrimary(byref x as Double, byref y as Double)

**Function:** Chromaticity green primary point.
**Notes:** e.g. x=0.3, y=0.6

81.15.87  getChromaRedPrimary(byref x as Double, byref y as Double)

**Function:** Chromaticity red primary point.
**Notes:** e.g. x=0.64, y=0.33
81.15. **CLASS GM16IMAGEMBS**

81.15.88  **getchromaWhitePoint(byref x as Double, byref y as Double)**

**Function:** Chromaticity white point  
**Notes:** e.g. x=0.3127, y=0.329

81.15.89  **getConstIndexes as Ptr**

**Function:** Obtain immutable image pixel indexes (valid for PseudoClass images)

81.15.90  **getConstPixels(x as Integer, y as Integer, columns as Integer, rows as Integer) as Ptr**

**Function:** Transfers read-only pixels from the image to the pixel cache as defined by the specified region

81.15.91  **getIndexes as Ptr**

**Function:** Obtain mutable image pixel indexes (valid for PseudoClass images)

81.15.92  **getPixels(x as Integer, y as Integer, columns as Integer, rows as Integer) as Ptr**

**Function:** Transfers pixels from the image to the pixel cache as defined by the specified region.  
**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim g as new GM16ImageMBS(f)
```

```vbnet
// get pointer to some pixels to write
dim x as ptr = g.getPixels(0, 0, 100, 100)
```

```vbnet
// draw a red line to the pixel buffer
dim o as Integer
for i as Integer = 0 to 99
    o = 100 * i + i
    x.UInt32(o * 4) = &hFFFF0000
```
// write back
g.syncPixels

// show
me.Backdrop = g.CopyPicture

Notes: Modified pixels may be subsequently transferred back to the image via syncPixels. This method is valid for DirectClass images.

81.15.93 Graphics as GM16GraphicsMBS

Function: Creates a graphics object for this image.
Example:

    dim g as new GM16GeometryMBS(500,500)
dim c as new GM16ColorRGBMBS(“white”) // white
dim image as new GM16ImageMBS(g, c)

    image.strokeColor = new GM16ColorRGBMBS(“red”) // Outline color
    image.fillColor = new GM16ColorRGBMBS(“green”) // Fill color
    image.strokeWidth = 5

    dim draw as GM16GraphicsMBS = image.Graphics

    // Draw a circle
draw.Circle(250, 250, 120, 150)

Backdrop=image.CopyPicture

Notes: Using the graphics object you can draw on the image.

81.15.94 haldClut(image as GM16ImageMBS)

Function: Apply a color lookup table (Hald CLUT) to the image.
**81.15.95 implode(factor as Double=0.0)**

**Function:** Implode image (special effect).
**Example:**
```vba
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)

image.implode(0.3)
Backdrop=image.CopyPicture
```

**81.15.96 label as string**

**Function:** Image label.
**Notes:** Use this option to assign a specific label to the image. Optionally you can include the image filename, type, width, height, or scene number in the label by embedding special format characters. If the first character of string is @, the image label is read from a file titled by the remaining characters in the string. When converting to Postscript, use this option to specify a header string to print above the image.
**See also:**
- 81.15.96 label as string

**81.15.97 label(text as string)**

**Function:** Assign a label to an image.
**Notes:** Use this option to assign a specific label to the image. Optionally you can include the image filename, type, width, height, or scene number in the label by embedding special format characters. If the first character of string is @, the image label is read from a file titled by the remaining characters in the string. When converting to Postscript, use this option to specify a header string to print above the image.
**See also:**
- 81.15.96 label as string

**81.15.98 level(black_point as Double, white_point as Double, mid_point as Double=1.0)**

**Function:** Level image to increase image contrast, and/or adjust image gamma.
**Example:**
```vba
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)
```
image.level(0, 127.0)

Backdrop=image.CopyPicture

**Notes:** Adjust the levels of the image by scaling the colors falling between specified white and black points to the full available quantum range. The parameters provided represent the black, mid (gamma), and white points. The black point specifies the darkest color in the image. Colors darker than the black point are set to zero. Mid point (gamma) specifies a gamma correction to apply to the image. White point specifies the lightest color in the image. Colors brighter than the white point are set to the maximum quantum value. The black and white point have the valid range 0 to MaxRGB while mid (gamma) has a useful range of 0 to ten:

### 81.15.99  levelChannel(channel as Integer, black_point as Double, white_point as Double, mid_point as Double=1.0)


**Function:** Level image channel to increase image contrast, and/or adjust image gamma.

**Example:**

```lisp
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)

image.levelChannel(image.BlueChannel, 0, 127.0)

Backdrop=image.CopyPicture
```

**Notes:** Adjust the levels of the image channel by scaling the colors falling between specified white and black points to the full available quantum range. The parameters provided represent the black, mid (gamma), and white points. The black point specifies the darkest color in the image. Colors darker than the black point are set to zero. Mid point (gamma) specifies a gamma correction to apply to the image. White point specifies the lightest color in the image. Colors brighter than the white point are set to the maximum quantum value. The black and white point have the valid range 0 to MaxRGB while mid (gamma) has a useful range of 0 to ten:

### 81.15.100  LibVersion as String


**Function:** Returns the version string of the GraphicsMagick library.
81.15.101 magnify

**Function:** Magnify image by integral size (double the dimensions)  
**Example:**

```vbs
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)

image.magnify

Backdrop = image.CopyPicture
```

81.15.102 map(mapImage as GM16ImageMBS, dither as boolean=false)

**Function:** Remap image colors with closest color from a reference image.  
**Example:**

```vbs
// some picture we want to map colors
dim pic as Picture = LogoMBS(500)

// build a picture with palette
dim backgroundColor as new GM16ColorMBS(255,255,255)  // white
dim size as new GM16GeometryMBS(10,10)

dim i as new GM16ImageMBS(pic)
dim x as new GM16ImageMBS(size, backgroundColor)

x.pixelColor(0,0) = new GM16ColorMBS(0,0,0)  // black
x.pixelColor(0,1) = new GM16ColorMBS(255,0,0)  // red
x.pixelColor(0,2) = new GM16ColorMBS(0,255,0)  // green
x.pixelColor(0,3) = new GM16ColorMBS(0,0,255)  // blue
x.pixelColor(0,4) = new GM16ColorMBS(255,255,0)  // yellow
x.pixelColor(0,5) = new GM16ColorMBS(0,255,255)  // cyan
x.pixelColor(0,6) = new GM16ColorMBS(255,0,255)  // magenta

// do the map
i.map(x, false)

// convert result from palette picture to bitmap picture
i.type = i.TrueColorType

// and copy picture to backdrop
Backdrop = i.CopyPicture
```
Notes: Set dither to true in to apply Floyd/Steinberg error diffusion to the image. By default, color reduction chooses an optimal set of colors that best represent the original image. Alternatively, you can choose a particular set of colors from an image file with this option.
**81.15.103**  **matteFloodfill**

**(target as GM16ColorMBS, opacity as UInt32, x as Integer, y as Integer, PaintMethod as Integer)**


**Function:** Floodfill designated area with a replacement opacity value.

---

**81.15.104**  **meanErrorPerPixel as Double**


**Function:** The mean error per pixel computed when an image is color reduced.

**Notes:** This parameter is only valid if verbose is set to true and the image has just been quantized.

---

**81.15.105**  **medianFilter**(radius as Double=0.0)


**Function:** Filter image by replacing each pixel component with the median color in a circular neighborhood.

**Example:**

```vbnet
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)

image.medianFilter(10)

Backdrop=image.CopyPicture
```

---

**81.15.106**  **minify**


**Function:** Reduce image by integral (half) size.

**Example:**

```vbnet
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)

image.minify

Backdrop=image.CopyPicture
```
CHAPTER 81. GRAPHICS MAGICK

81.15.107  modequalizeifyImage

Function: Not documented.

81.15.108  modifyImage

Function: Prepare to update image (copy if reference >1).
Notes: Normally Magick++’s implicit reference counting takes care of all instance management. In the rare case that the automatic instance management does not work, use this method to assure that there is only one reference to the image to be modified. It should be used in the cases where a GraphicsMagick C function is used directly on an image which may have multiple references:

81.15.109  modulate(brightness as Double, saturation as Double, hue as Double)

Function: Modulate percent hue, saturation, and brightness of an image.
Example:

```cpp
dim logo as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(logo)
image.type = image.TrueColorType

// brightness 150%
image.modulate(150,100,100)
backdrop = image.CopyPicture
```

Notes: Modulation of saturation and brightness is as a ratio of the current value (100 for no change). Modulation of hue is an absolute rotation of -180 degrees to +180 degrees from the current position corresponding to an argument range of 0 to 200 (100 for no change).

81.15.110  montageGeometry as GM16GeometryMBS

Function: Tile size and offset within an image montage.
Notes: Only valid for montage images.
81.15. **CLASS GM16IMAGEMBS**

81.15.111 **motionBlur(radius as Double, sigma as Double, angle as Double)**

**Function:** Motion blur image with specified blur factor.  
**Example:**

```vba
dim p as Picture = LogoMBS(500)  
dim image as new GM16ImageMBS(p)

image.motionBlur(30,10,90)

Backdrop=image.CopyPicture
```

**Notes:** The radius parameter specifies the radius of the Gaussian, in pixels, not counting the center pixel.  
The sigma parameter specifies the standard deviation of the Laplacian, in pixels.  
The angle parameter specifies the angle the object appears to be coming from (zero degrees is from the right).

81.15.112 **negate(grayscale as boolean=false)**

**Function:** Negate colors in image.  
**Example:**

```vba
dim p as Picture = LogoMBS(500)  
dim image as new GM16ImageMBS(p)

image.negate

Backdrop=image.CopyPicture
```

**Notes:** Set grayscale to only negate grayscale values in image.

81.15.113 **normalize**

**Function:** Normalize image (increase contrast by normalizing the pixel values to span the full range of color values).  
**Example:**

```vba
dim p as Picture = LogoMBS(500)  
dim image as new GM16ImageMBS(p)
```
image.normalize

Backdrop=image.CopyPicture

### 81.15.114  normalizedMaxError as Double

**Function:** The normalized max error per pixel computed when an image is color reduced.
**Notes:** This parameter is only valid if verbose is set to true and the image has just been quantized.

### 81.15.115  normalizedMeanError as Double

**Function:** The normalized mean error per pixel computed when an image is color reduced.
**Notes:** This parameter is only valid if verbose is set to true and the image has just been quantized.

### 81.15.116  oilPaint(radius as Double=3.0)

**Function:** Oilpaint image (image looks like an oil painting).
**Example:**
```plaintext
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)
image.oilPaint

Backdrop=image.CopyPicture
```

### 81.15.117  opacity(opacity as UInt32)

**Function:** Set or attenuate the opacity channel in the image.
**Notes:** If the image pixels are opaque then they are set to the specified opacity value, otherwise they are blended with the supplied opacity value. The value of opacity ranges from 0 (completely opaque) to MaxRGB. The defines OpaqueOpacity and TransparentOpacity are available to specify completely opaque or completely transparent, respectively.
81.15.118 opaque(opaqueColor as GM16ColorMBS, penColor as GM16ColorMBS)

**Function:** Change color of specified opaque pixel to specified pen color.

81.15.119 ping(data as GM16BlobMBS)

**Function:** Reads information for an image from the blob.
**Notes:** Ping is similar to read except only enough of the image is read to determine the image columns, rows, and filesize. Access the columns, rows, and fileSize attributes after invoking ping. The image pixels are not valid after calling ping.

See also:
- 81.15.120 ping(file as folderitem)
- 81.15.121 ping(Path as string)

81.15.120 ping(file as folderitem)

**Function:** Reads information for an image from the file.
**Example:**
```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
// try with Constructor (same as read)
dim t1 as Double = Microseconds
dim g1 as new GM16ImageMBS(f)

// now just ping
dim t2 as Double = Microseconds
dim g2 as new GM16ImageMBS
  g2.ping(f)

// or read
dim t3 as Double = Microseconds
dim g3 as new GM16ImageMBS
  g3.read(f)

dim t4 as Double = Microseconds

// show speeds
MsgBox str(T4-t3)+" s for read"+EndOfLine+-
  str(T3-t2)+" s for ping"+EndOfLine+-
```
str(T2-t1)+" s for Constructor"

**Notes:** Ping is similar to read except only enough of the image is read to determine the image columns, rows, and filesize. Access the columns, rows, and fileSize attributes after invoking ping. The image pixels are not valid after calling ping.

See also:

- 81.15.119 ping(data as GM16BlobMBS)
- 81.15.121 ping(Path as string)

### 81.15.121 ping(Path as string)


**Function:** Reads information for an image from the image specification.

**Notes:** Ping is similar to read except only enough of the image is read to determine the image columns, rows, and filesize. Access the columns, rows, and fileSize attributes after invoking ping. The image pixels are not valid after calling ping.

See also:

- 81.15.119 ping(data as GM16BlobMBS)
- 81.15.120 ping(file as folderitem)

### 81.15.122 PNGLibVersion as string


**Function:** Queries PNG library version string.

### 81.15.123 quantize(measureError as boolean=false)


**Function:** Quantize image (reduce number of colors).

**Example:**

```vba
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)
image.quantize
image.type = image.TrueColorType
Backdrop=image.CopyPicture
```
Notes: Set measureError to true in order to calculate error attributes.

81.15.124 QuantumDepth as Integer

Function: Returns the quantum depth.

81.15.125 quantumOperator(channel as Integer, Operator as Integer, rvalue as Double)

Function: Apply an arithmetic or bitwise operator to the image pixel quantums.
Example:
```vba
dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim g as new GM16ImageMBS(f)
const AddQuantumOp = 1
const ThresholdQuantumOp = 10

g.quantumOperator( g.AllChannels, AddQuantumOp, 100)
```

// show
me.Backdrop = g.CopyPicture

See also:

- 81.15.126 quantumOperator(x as Integer, y as Integer, columns as Integer, rows as Integer, channel as Integer, Operator as Integer, rvalue as Double)

81.15.126 quantumOperator(x as Integer, y as Integer, columns as Integer, rows as Integer, channel as Integer, Operator as Integer, rvalue as Double)

Function: Apply an arithmetic or bitwise operator to the image pixel quantums.
See also:

- 81.15.125 quantumOperator(channel as Integer, Operator as Integer, rvalue as Double)
**81.15.127 raiseGeometryDefault as String**

**Function:** The default geometry description for raise.

---

**81.15.128 raiseImage**

**Function:** Raise image (lighten or darken the edges of an image to give a 3-D raised or lowered effect).  
**Example:**

```vba
' See also:
• 81.15.128 raiseImage 13454
```

---

**81.15.129 raiseImage(geometry as GM16GeometryMBS, raisedFlag as boolean=false)**

**Function:** Raise image (lighten or darken the edges of an image to give a 3-D raised or lowered effect).  
**Example:**

```vba
' See also:
• 81.15.128 raiseImage 13454
```
81.15.130 randomThreshold(thresholds as GM16GeometryMBS)

Function: Random threshold image.
Example:

```vbscript
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)

image.randomThreshold(GM16GeometryMBS.make("50x200"))

image.type = image.TrueColorType
Backdrop=image.CopyPicture
```

Notes: Changes the value of individual pixels based on the intensity of each pixel compared to a random threshold. The result is a low-contrast, two color image. The thresholds argument is a geometry containing LOWxHIGH thresholds. If the string contains 2x2, 3x3, or 4x4, then an ordered dither of order 2, 3, or 4 will be performed instead. If a channel argument is specified then only the specified channel is altered. This is a very fast alternative to 'quantize' based dithering.

81.15.131 randomThresholdChannel(thresholds as GM16GeometryMBS, channel as Integer)

Function: Random threshold image channel.
Notes: Changes the value of individual pixels based on the intensity of each pixel compared to a random threshold. The result is a low-contrast, two color image. The thresholds argument is a geometry containing LOWxHIGH thresholds. If the string contains 2x2, 3x3, or 4x4, then an ordered dither of order 2, 3, or 4 will be performed instead. If a channel argument is specified then only the specified channel is altered. This is a very fast alternative to 'quantize' based dithering.

81.15.132 read(blob as GM16BlobMBS)

Function: Read single image frame from in-memory Blob.
Example:

```vbscript
// get some image data (e.g. from blob in database)
dim logo as Picture = LogoMBS(500)
dim jpegData as string = PictureToJPEGStringMBS(logo, 80)

// new image
Dim mp as new GM16ImageMBS
```
dim blob as new GM16BlobMBS(jpegData)

// read data from blob into this image object
mp.Read blob

// sometimes you need to explicit convert to RGB/RGBA
'mp.type = mp.TrueColorMatteType
Backdrop=mp.CombinePictureWithMask

See also:

- 81.15.133 read(blob as GM16BlobMBS, size as GM16GeometryMBS) 13456
- 81.15.134 read(blob as GM16BlobMBS, size as GM16GeometryMBS, depth as Integer) 13457
- 81.15.135 read(blob as GM16BlobMBS, size as GM16GeometryMBS, depth as Integer, magick as string) 13457
- 81.15.136 read(blob as GM16BlobMBS, size as GM16GeometryMBS, magick as string) 13458
- 81.15.137 read(file as folderitem) 13458
- 81.15.138 read(path as string) 13459
- 81.15.139 read(size as GM16GeometryMBS, file as folderitem) 13459
- 81.15.140 read(size as GM16GeometryMBS, Path as string) 13460
- 81.15.141 read(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr) 13460

81.15.133  read(blob as GM16BlobMBS, size as GM16GeometryMBS)

Function: Read single image frame of specified size from in-memory Blob. 
See also:

- 81.15.132 read(blob as GM16BlobMBS) 13455
- 81.15.134 read(blob as GM16BlobMBS, size as GM16GeometryMBS, depth as Integer) 13457
- 81.15.135 read(blob as GM16BlobMBS, size as GM16GeometryMBS, depth as Integer, magick as string) 13457
- 81.15.136 read(blob as GM16BlobMBS, size as GM16GeometryMBS, magick as string) 13458
- 81.15.137 read(file as folderitem) 13458
- 81.15.138 read(path as string) 13459
81.15. **CLASS GM16IMAGEMBS**

- 81.15.139 read(size as GM16GeometryMBS, file as folderitem)  
- 81.15.140 read(size as GM16GeometryMBS, Path as string)  
- 81.15.141 read(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr)  

81.15.134 **read(blob as GM16BlobMBS, size as GM16GeometryMBS, depth as Integer)**

**Function:** Read single image frame of specified size and depth from in-memory Blob.  
See also:

- 81.15.132 read(blob as GM16BlobMBS)  
- 81.15.133 read(blob as GM16BlobMBS, size as GM16GeometryMBS)  
- 81.15.135 read(blob as GM16BlobMBS, size as GM16GeometryMBS, depth as Integer, magick as string)  
- 81.15.136 read(blob as GM16BlobMBS, size as GM16GeometryMBS, magick as string)  
- 81.15.137 read(file as folderitem)  
- 81.15.138 read(path as string)  
- 81.15.139 read(size as GM16GeometryMBS, file as folderitem)  
- 81.15.140 read(size as GM16GeometryMBS, Path as string)  
- 81.15.141 read(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr)  

81.15.135 **read(blob as GM16BlobMBS, size as GM16GeometryMBS, depth as Integer, magick as string)**

**Function:** Read single image frame of specified size, depth, and format from in-memory Blob.  
See also:

- 81.15.132 read(blob as GM16BlobMBS)  
- 81.15.133 read(blob as GM16BlobMBS, size as GM16GeometryMBS)  
- 81.15.134 read(blob as GM16BlobMBS, size as GM16GeometryMBS, depth as Integer)  
- 81.15.136 read(blob as GM16BlobMBS, size as GM16GeometryMBS, magick as string)  
- 81.15.137 read(file as folderitem)
81.15.136  read(blob as GM16BlobMBS, size as GM16GeometryMBS, magick as string)

Function: Read single image frame of specified size, and format from in-memory Blob.
See also:

• 81.15.132 read(blob as GM16BlobMBS)
• 81.15.133 read(blob as GM16BlobMBS, size as GM16GeometryMBS)
• 81.15.134 read(blob as GM16BlobMBS, size as GM16GeometryMBS, depth as Integer)
• 81.15.135 read(blob as GM16BlobMBS, size as GM16GeometryMBS, depth as Integer, magick as string)
• 81.15.137 read(file as folderitem)
• 81.15.138 read(path as string)
• 81.15.139 read(size as GM16GeometryMBS, file as folderitem)
• 81.15.140 read(size as GM16GeometryMBS, Path as string)
• 81.15.141 read(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr)

81.15.137  read(file as folderitem)

Function: Read single image frame into current object.
See also:

• 81.15.132 read(blob as GM16BlobMBS)
• 81.15.133 read(blob as GM16BlobMBS, size as GM16GeometryMBS)
• 81.15.134 read(blob as GM16BlobMBS, size as GM16GeometryMBS, depth as Integer)
• 81.15.135 read(blob as GM16BlobMBS, size as GM16GeometryMBS, depth as Integer, magick as string)
81.15. **CLASS GM16IMAGEMBS**

- 81.15.136 read(blob as GM16BlobMBS, size as GM16GeometryMBS, magick as string) 13458
- 81.15.138 read(path as string) 13459
- 81.15.139 read(size as GM16GeometryMBS, file as folderitem) 13459
- 81.15.140 read(size as GM16GeometryMBS, Path as string) 13460
- 81.15.141 read(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr) 13460

### 81.15.138 read(path as string)

**MBS GraphicsMagick Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:** Read single image frame into current object.

**See also:**

- 81.15.132 read(blob as GM16BlobMBS) 13455
- 81.15.133 read(blob as GM16BlobMBS, size as GM16GeometryMBS) 13456
- 81.15.134 read(blob as GM16BlobMBS, size as GM16GeometryMBS, depth as Integer) 13457
- 81.15.135 read(blob as GM16BlobMBS, size as GM16GeometryMBS, depth as Integer, magick as string) 13457
- 81.15.136 read(blob as GM16BlobMBS, size as GM16GeometryMBS, magick as string) 13458
- 81.15.137 read(file as folderitem) 13458
- 81.15.139 read(size as GM16GeometryMBS, file as folderitem) 13459
- 81.15.140 read(size as GM16GeometryMBS, Path as string) 13460
- 81.15.141 read(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr) 13460

### 81.15.139 read(size as GM16GeometryMBS, file as folderitem)

**MBS GraphicsMagick Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**

**Function:** Read single image frame of specified size into current object.

**See also:**

- 81.15.132 read(blob as GM16BlobMBS) 13455
- 81.15.133 read(blob as GM16BlobMBS, size as GM16GeometryMBS) 13456
- 81.15.134 read(blob as GM16BlobMBS, size as GM16GeometryMBS, depth as Integer) 13457
- 81.15.135 read(blob as GM16BlobMBS, size as GM16GeometryMBS, depth as Integer, magick as string) 13457
81.15.140  read(size as GM16GeometryMBS, Path as string)


Function: Read single image frame of specified size into current object.

See also:

- 81.15.132 read(blob as GM16BlobMBS)
- 81.15.133 read(blob as GM16BlobMBS, size as GM16GeometryMBS)
- 81.15.134 read(blob as GM16BlobMBS, size as GM16GeometryMBS, depth as Integer)
- 81.15.135 read(blob as GM16BlobMBS, size as GM16GeometryMBS, depth as Integer, magick as string)
- 81.15.136 read(blob as GM16BlobMBS, size as GM16GeometryMBS, magick as string)
- 81.15.137 read(file as folderitem)
- 81.15.138 read(path as string)
- 81.15.139 read(size as GM16GeometryMBS, file as folderitem)
- 81.15.141 read(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr)

81.15.141  read(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr)


Function: Read single image frame from an array of raw pixels, with specified storage type (ConstituteImage).

Notes:

Returns an Image corresponding to an image stored in a raw memory array format. The pixel data must be in scanline order top-to-bottom. The data can be unsigned char, unsigned short int, unsigned int, unsigned long, float, or double. Float and double require the pixels to be normalized to the range [0..1], otherwise the range is [0..MaxVal] where MaxVal is the maximum possible value for that type.
Note that for most 32-bit architectures the size of an unsigned long is the same as unsigned int, but for 64-bit architectures observing the LP64 standard, an unsigned long is 64 bits, while an unsigned int remains 32 bits. This should be considered when deciding if the data should be described as "Integer" or "Long".

For example, to create a 640x480 image from unsigned red-green-blue character data, use

```plaintext
image = new GM16ImageMBS(640, 480, "RGB", GM16ImageMBS.StorageTypeCharPixel, pixels);
```

- **width**: width in pixels of the image.
- **height**: height in pixels of the image.
- **map**: This string reflects the expected ordering of the pixel array. It can be any combination or order of R = red, G = green, B = blue, A = alpha (same as Transparency), O = Opacity, T = Transparency, C = cyan, Y = yellow, M = magenta, K = black, or I = intensity (for grayscale). Specify "P" = pad, to skip over a quantum which is intentionally ignored. Creation of an alpha channel for CMYK images is currently not supported.
- **type**: Define the data type of the pixels. Float and double types are expected to be normalized \([0..1]\) otherwise \(0..\text{MaxRGB}\). Choose from these types: StorageTypeCharPixel, StorageTypeShortPixel, StorageTypeIntegerPixel, StorageTypeLongPixel, StorageTypeFloatPixel, or StorageTypeDoublePixel.
- **pixels**: This array of values contain the pixel components as defined by map and type. You must preallocate this array where the expected length varies depending on the values of width, height, map, and type.

See also:

- 81.15.132 read(blob as GM16BlobMBS)
- 81.15.133 read(blob as GM16BlobMBS, size as GM16GeometryMBS)
- 81.15.134 read(blob as GM16BlobMBS, size as GM16GeometryMBS, depth as Integer)
- 81.15.135 read(blob as GM16BlobMBS, size as GM16GeometryMBS, depth as Integer, magick as string)
- 81.15.136 read(blob as GM16BlobMBS, size as GM16GeometryMBS, magick as string)
- 81.15.137 read(file as folderitem)
- 81.15.138 read(path as string)
- 81.15.139 read(size as GM16GeometryMBS, file as folderitem)
- 81.15.140 read(size as GM16GeometryMBS, Path as string)

### 81.15.142 reduceNoise

MBS GraphicsMagick Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function**: Reduce noise in image using a noise peak elimination filter. **Example**:

```plaintext
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)
```
image.reduceNoise
Backdrop=image.CopyPicture

See also:

- 81.15.143 reduceNoise(order as Double) 13462

81.15.143 reduceNoise(order as Double)

**Function:** Reduce noise in image using a noise peak elimination filter.
See also:

- 81.15.142 reduceNoise 13461

81.15.144 ReleaseDate as String

**Function:** Returns the release date of the used graphics magick library.
**Notes:** We update the library only when someone needs an update, so if you need, please contact us.

81.15.145 roll(columns as UInt32, rows as UInt32)

**Function:** Roll image (rolls image vertically and horizontally) by specified number of columns and rows.
**Example:**

```plaintext
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)

image.roll(30,30)
Backdrop=image.CopyPicture
```

See also:

- 81.15.146 roll(roll as GM16GeometryMBS) 13463
81.15.146  roll(roll as GM16GeometryMBS)

Function: Roll image (rolls image vertically and horizontally) by specified number of columns and rows.
Example:

```vba
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)

image.roll(GM16GeometryMBS.Make(0,0,30,30))

Backdrop=image.CopyPicture
```

See also:

- 81.15.145 roll(columns as UInt32, rows as UInt32)

81.15.147  rotate(degree as Double)

Function: Rotate image counter-clockwise by specified number of degrees.
Example:

```vba
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)

image.rotate(30)

Backdrop=image.CopyPicture
```

81.15.148  rows as UInt32

Function: The number of pixel rows in the image.
Example:

```vba
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)

Title = str(image.columns)+” x ”+str(image.rows)
Backdrop=image.CopyPicture
```
81.15.149  **sample(geometry as GM16GeometryMBS)**

**Function:** Resize image by using pixel sampling algorithm.  
**Example:**

```vba
    dim p as Picture = LogoMBS(500)
    dim image as new GM16ImageMBS(p)

    image.sample GM16GeometryMBS.make(100,100)

    Backdrop=image.CopyPicture
```

81.15.150  **scale(geometry as GM16GeometryMBS)**

**Function:** Resize image by using simple ratio algorithm which provides good quality.  
**Example:**

```vba
    dim p as Picture = LogoMBS(500)
    dim image as new GM16ImageMBS(p)

    image.scale new GM16GeometryMBS(100,100)

    Backdrop=image.CopyPicture
```

81.15.151  **segment(clusterThreshold as Double=1.0, smoothingThreshold as Double=1.5)**

**Function:** Segment (coalesce similar image components) by analyzing the histograms of the color components and identifying units that are homogeneous with the fuzzy c-means technique.  
**Example:**

```vba
    dim p as Picture = LogoMBS(500)
    dim image as new GM16ImageMBS(p)

    image.segment

    image.type = image.TrueColorType

    Backdrop=image.CopyPicture
```
Notes: A histogram is built for the image. This histogram is filtered to reduce noise and a second derivative of the histogram plot is built and used to identify potential cluster colors (peaks in the histogram). The cluster colors are then validated by scanning through all of the pixels to see how many pixels fall within each cluster. Some candidate cluster colors may not match any of the image pixels at all and should be discarded. Specify clusterThreshold, as the number of pixels matching a cluster color in order for the cluster to be considered valid. SmoothingThreshold eliminates noise in the second derivative of the histogram. As the value is increased, you can expect a smoother second derivative. The default is 1.5.

81.15.152 setChromaBluePrimary(x as Double, y as Double)
Function: Chromaticity blue primary point.
Notes: e.g. x=0.15, y=0.06

81.15.153 setChromaGreenPrimary(x as Double, y as Double)
Function: Chromaticity green primary point.
Notes: e.g. x=0.3, y=0.6

81.15.154 setChromaRedPrimary(x as Double, y as Double)
Function: Chromaticity red primary point
Notes: e.g. x=0.64, y=0.33

81.15.155 setChromaWhitePoint(x as Double, y as Double)
Function: Chromaticity white point
Notes: e.g. x=0.3127, y=0.329

81.15.156 SetPicture(pic as picture, x as Integer, y as Integer)
Function: Copies the picture into the Image at the given position.
81.15.157  SetPictureMask(maskpic as picture, x as Integer, y as Integer)

Function: Copies the picture into the Image’s mask at the given position.
Example:

// this converts 32 bit PNG with alpha channel to BMP

dim f as FolderItem = SpecialFolder.Desktop.Child("test.png")
dim p as Picture = Picture.Open(f)

dim g as new GM16ImageMBS(new GM16GeometryMBS(p.Width, p.Height), new GM16ColorGrayMBS(1.0))
g.type = g.TrueColorMatteType
g.matte = True
g.magick = "BMP"

g.SetPicture(p, 0, 0)
g.SetPictureMask(p.mask.invertMBS, 0, 0)

f = SpecialFolder.Desktop.Child("test.bmp")
g.write(f)

81.15.158  setPixels(x as Integer, y as Integer, columns as Integer, rows as Integer) as Ptr

Function: Allocates a pixel cache region to store image pixels as defined by the region rectangle.
Example:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim g as new GM16ImageMBS(f)

// get pointer to some pixels to write
dim x as ptr = g.setPixels(0, 0, 100, 100)

// draw a red line to the pixel buffer
dim o as Integer
for i as Integer = 0 to 99
    o = 100 * i + i
    x.UInt32(o * 4) = & hFFFF0000
next
// write back
g.syncPixels

// show
me.Backdrop = g.CopyPicture

**Notes:** This area is subsequently transferred from the pixel cache to the image via syncPixels.

### 81.15.159 setStrokeDashArray(values() as Double)


**Function:** Sets stroke dash pattern.

**Notes:** Specify the pattern of dashes and gaps used to stroke paths. The strokeLineArray represents a zero-terminated array of numbers that specify the lengths of alternating dashes and gaps in pixels. If an odd number of values is provided, then the list of values is repeated to yield an even number of values. A typical strokeLineArray array might contain the members 5 3 2 0, where the zero value indicates the end of the pattern array.

### 81.15.160 shade(azimuth as Double=30.0, elevation as Double=30.0, colorShading as boolean=false)


**Function:** Shade image using distant light source.

**Notes:** Specify azimuth and elevation as the position of the light source. By default, the shading results as a grayscale image. Set colorShading to true to shade the red, green, and blue components of the image.

### 81.15.161 sharpen(radius as Double=0.0, sigma as Double=1.0)


**Function:** Sharpen pixels in image.

**Example:**

```vba
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)

image.sharpen

Backdrop=image.CopyPicture
```
Notes: The radius parameter specifies the radius of the Gaussian, in pixels, not counting the center pixel. The sigma parameter specifies the standard deviation of the Laplacian, in pixels.

81.15.162  sharpenChannel(channel as Integer, radius as Double=0.0, sigma as Double=1.0)

Function: Sharpen pixels in image channel.
Notes: The radius parameter specifies the radius of the Gaussian, in pixels, not counting the center pixel. The sigma parameter specifies the standard deviation of the Laplacian, in pixels.

81.15.163  shave(geometry as GM16GeometryMBS)

Function: Shave pixels from image edges.
Example:

```vbnet
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)

image.shave(new GM16GeometryMBS(200,200))

Backdrop=image.CopyPicture
```

81.15.164  shear(xShearAngle as Double, yShearAngle as Double)

Function: Shear image (create parallelogram by sliding image by X or Y axis).
Example:

```vbnet
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)

image.shear(10,20)

Backdrop=image.CopyPicture
```

Notes: Shearing slides one edge of an image along the X or Y axis, creating a parallelogram. An X direction
shear slides an edge along the X axis, while a Y direction shear slides an edge along the Y axis. The amount of the shear is controlled by a shear angle. For X direction shears, $x$ degrees is measured relative to the Y axis, and similarly, for Y direction shears y degrees is measured relative to the X axis. Empty triangles left over from shearing the image are filled with the color defined as borderColor.

### 81.15.165 signature (force as boolean=false) as string

**Function:** Image textual signature.  
**Example:**
```vbnet
dim p as Picture = LogoMBS(500)  
dim image as new GM16ImageMBS(p)  
MsgBox image.signature  
Backdrop=image.CopyPicture
```

**Notes:** Set force to true in order to re-calculate the signature regardless of whether the image data has been modified.

### 81.15.166 solarize (factor as Double=50.0)

**Function:** Solarize image (similar to effect seen when exposing a photographic film to light during the development process)  
**Example:**
```vbnet
dim p as Picture = LogoMBS(500)  
dim image as new GM16ImageMBS(p)  
image.solarize  
Backdrop=image.CopyPicture
```

### 81.15.167 spread (amount as UInt32=3)

**Function:** Spread pixels randomly within image by specified amount  
**Example:**
Dim p As Picture = LogoMBS(500)
Dim image As New GM16ImageMBS(p)

image.spread 5
Backdrop=image.CopyPicture

81.15.168 statistics as GM16ImageStatisticsMBS

**Function:** Obtain image statistics.  
**Example:**

```vbnet
Dim f As FolderItem = SpecialFolder.Desktop.Child("test.jpg")
Dim g As New GM16ImageMBS(f)
Dim stat As GM16ImageStatisticsMBS = g.statistics
Dim gs As GM16ImageChannelStatisticsMBS = stat.blue

MsgBox "blue channel: "+Str(g.minimum)+"-"+Str(g.maximum)+", mean "+Str(gs.mean)
```

**Notes:** Statistics are normalized to the range of 0.0 to 1.0 and are output to the specified ImageStatistics structure.

81.15.169 stegano(watermark as GM16ImageMBS)

**Function:** Add a digital watermark to the image (based on second image).  
**Example:**

```vbnet
Dim p As Picture = LogoMBS(500)
Dim p1 As Picture = NewPicture(550,500,32)
Dim p2 As Picture = NewPicture(550,500,32)
p1.Graphics.DrawPicture p, 0,0
p2.Graphics.DrawPicture p,50,0

Dim image1 As New GM16ImageMBS(p1)
Dim image2 As New GM16ImageMBS(p2)

image2.zoom(New GM16GeometryMBS(100,100)) // scale down

// add watermark
```
image1.stego(image2)

// now make a threshold so you see the difference
image1.threshold 254

image1.type = image1.TrueColorType
Backdrop=image1.CopyPicture

81.15.170 stereo(rightImage as GM16ImageMBS)

**Function:** Create an image which appears in stereo when viewed with red-blue glasses (Red image on left, blue on right)
**Example:**

```vba
dim p as Picture = LogoMBS(500)
dim p1 as Picture = NewPicture(550,500,32)
dim p2 as Picture = NewPicture(550,500,32)

p1.Graphics.DrawPicture p, 0,0
p2.Graphics.DrawPicture p,50,0

dim image1 as new GM16ImageMBS(p1)
dim image2 as new GM16ImageMBS(p2)

image1.stereo(IMAGE2)

Backdrop=image1.CopyPicture
```

81.15.171 strip

**Function:** Remove all profiles and text attributes from the image.

81.15.172 strokeDashArray as Double()

**Function:** Queries stroke dash pattern.
**Notes:** Specify the pattern of dashes and gaps used to stroke paths. The strokeDashArray represents a zero-terminated array of numbers that specify the lengths of alternating dashes and gaps in pixels. If an
odd number of values is provided, then the list of values is repeated to yield an even number of values. A typical strokeDashArray array might contain the members 5 3 2 0, where the zero value indicates the end of the pattern array.

81.15.173  swirl(degree as Double)

**Function:** Swirl image (image pixels are rotated by degrees).
**Example:**
```dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)
image.swirl 200
Backdrop=image.CopyPicture```

81.15.174  syncPixels

**Function:** Transfers the image cache pixels to the image.

81.15.175  texture(texture as GM16ImageMBS)

**Function:** Channel a texture on pixels matching image background color.

81.15.176  threshold(degree as Double)

**Function:** Threshold image channels (below threshold becomes black, above threshold becomes white).
**Example:**
```dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)
image.threshold 127
// convert to RGB so CopyPicture works```
image.type = image.TrueColorType
Backdrop=image.CopyPicture

Notes: The range of the threshold parameter is 0 to MaxRGB.

81.15.177 thumbnail(geometry as GM16GeometryMBS)

Function: Resize image using several algorithms to make smaller images very quickly.
Example:

```vbs
    dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
    dim g as new GM16ImageMBS(f)

    // make thumbnail
    dim geo as new GM16GeometryMBS(100, 100)
    g.thumbnail(geo)

    // show
    me.Backdrop = g.CopyPicture
```

81.15.178 totalColors as UInt32

Function: Number of colors in the image.
Example:

```vbs
    dim p as Picture = LogoMBS(500)
    dim image as new GM16ImageMBS(p)

    Title = str(image.totalColors) // shows 5284
    Backdrop=image.CombinePictureWithMask
```

81.15.179 transform(imageGeometry as GM16GeometryMBS)

Function: Transform image based on image and crop geometries.
Notes: Crop geometry is optional.
See also:

- 81.15.180 transform(imageGeometry as GM16GeometryMBS, cropGeometry as GM16GeometryMBS)

81.15.180 transform(imageGeometry as GM16GeometryMBS, cropGeometry as GM16GeometryMBS)

Function: Transform image based on image and crop geometries.
Notes: Crop geometry is optional.
See also:

- 81.15.179 transform(imageGeometry as GM16GeometryMBS)

81.15.181 transformOrigin(tx as Double, ty as Double)

Function: Origin of coordinate system to use when annotating with text or drawing.

81.15.182 transformReset

Function: Reset transformation parameters to default.

81.15.183 transformRotation(angle as Double)

Function: Rotation to use when annotating with text or drawing.

81.15.184 transformScale(tx as Double, ty as Double)

Function: Scale to use when annotating with text or drawing.
81.15.185  **transformSkewX(x as Double)**

**Function:** Skew to use in X axis when annotating with text or drawing.

81.15.186  **transformSkewY(y as Double)**

**Function:** Skew to use in Y axis when annotating with text or drawing.

81.15.187  **transparent(color as GM16ColorMBS)**

**Function:** Add matte channel to image, setting pixels matching color to transparent.
**Example:**

```plaintext
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)

dim c as new GM16ColorMBS("white")
image.transparent(c)

Backdrop=image.CombinePictureWithMask
```

81.15.188  **trim**

**Function:** Trim edges that are the background color from the image.
**Example:**

```plaintext
dim p as Picture = LogoMBS(500)
// make the logo picture bigger
dim q as Picture = NewPicture(700,700,32)

q.Graphics.DrawPicture p,100,100

dim image as new GM16ImageMBS(q)

// now trim the white border away
image.trim
```
81.15.189  unregisterId

Function: Not documented.

81.15.190  unsharpmask(radius as Double, sigma as Double, amount as Double, threshold as Double)

Function: Replace image with a sharpened version of the original image using the unsharp mask algorithm.
Example:

dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)

image.unsharpmask(10,1,0.5,50)

Backdrop=image.CopyPicture

Notes:

radius: the radius of the Gaussian, in pixels, not counting the center pixel.
sigma: the standard deviation of the Gaussian, in pixels.
amount: the percentage of the difference between the original and the blur image that is added back into
the original.
threshold: the threshold in pixels needed to apply the difference amount.

81.15.191  unsharpmaskChannel(channel as Integer, radius as Double, sigma as Double, amount as Double, threshold as Double)

Function: Replace image channel with a sharpened version of the original image using the unsharp mask
algorithm.
Example:

dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)
81.15. CLASS GM16IMAGE MBS

image.unsharpmaskChannel(Image.RedChannel, 10, 1, 0.5, 50)

Backdrop=image.CopyPicture

Notes:

channel: image channel to modify.
radius: the radius of the Gaussian, in pixels, not counting the center pixel.
sigma: the standard deviation of the Gaussian, in pixels.
amount: the percentage of the difference between the original and the blur image that is added back into the original.
threshold: the threshold in pixels needed to apply the difference amount.

81.15.192 wave(amplitude as Double=25.0, wavelength as Double=150.0)

Function: Map image pixels to a sine wave.
Example:

dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)

image.wave

Backdrop=image.CopyPicture

81.15.193 write(blob as GM16BlobMBS)

Function: Write single image frame to in-memory Blob, with optional format and adjoin parameters.
See also:

- 81.15.194 write(blob as GM16BlobMBS, magick as string)
- 81.15.195 write(blob as GM16BlobMBS, magick as string, depth as UInt32)
- 81.15.196 write(file as folderitem)
- 81.15.197 write(Path as string)
- 81.15.198 write(x as Integer, y as Integer, columns as Integer, rows as Integer, map as string, type as Integer, Pixels as Ptr)
81.15.194  write(blob as GM16BlobMBS, magick as string)

**Function:** Write single image frame to in-memory Blob, with optional format and adjoin parameters.  
See also:

- 81.15.193 write(blob as GM16BlobMBS)  
- 81.15.195 write(blob as GM16BlobMBS, magick as string, depth as UInt32)  
- 81.15.196 write(file as folderitem)  
- 81.15.197 write(Path as string)  
- 81.15.198 write(x as Integer, y as Integer, columns as Integer, rows as Integer, map as string, type as Integer, Pixels as Ptr)

81.15.195  write(blob as GM16BlobMBS, magick as string, depth as UInt32)

**Function:** Write single image frame to in-memory Blob, with optional format and adjoin parameters.  
See also:

- 81.15.193 write(blob as GM16BlobMBS)  
- 81.15.194 write(blob as GM16BlobMBS, magick as string)  
- 81.15.196 write(file as folderitem)  
- 81.15.197 write(Path as string)  
- 81.15.198 write(x as Integer, y as Integer, columns as Integer, rows as Integer, map as string, type as Integer, Pixels as Ptr)

81.15.196  write(file as folderitem)

**Function:** Write single image frame to a file.  
**Example:**

```plaintext
// this converts 32 bit PNG with alpha channel to BMP

dim f as FolderItem = SpecialFolder.Desktop.Child(“test.png”)
dim p as Picture = Picture.Open(f)

dim g as new GM16ImageMBS( new GM16GeometryMBS(p.Width, p.Height), new GM16ColorGrayMBS(1.0))
g.type = g.TrueColorMatteType
```
81.15. CLASS GM16IMAGEMBS

g.matte = True
g.magick = "BMP"

g.SetPicture(p, 0, 0)
g.SetPictureMask(p.mask.invertMBS, 0, 0)

f = SpecialFolder.Desktop.Child("test.bmp")
g.write(f)

See also:

- 81.15.193 write(blob as GM16BlobMBS)
- 81.15.194 write(blob as GM16BlobMBS, magick as string)
- 81.15.195 write(blob as GM16BlobMBS, magick as string, depth as UInt32)
- 81.15.197 write(Path as string)
- 81.15.198 write(x as Integer, y as Integer, columns as Integer, rows as Integer, map as string, type as Integer, Pixels as Ptr)

81.15.197 write(Path as string)

Function: Write single image frame to a file.
See also:

- 81.15.193 write(blob as GM16BlobMBS)
- 81.15.194 write(blob as GM16BlobMBS, magick as string)
- 81.15.195 write(blob as GM16BlobMBS, magick as string, depth as UInt32)
- 81.15.196 write(file as folderitem)
- 81.15.198 write(x as Integer, y as Integer, columns as Integer, rows as Integer, map as string, type as Integer, Pixels as Ptr)

81.15.198 write(x as Integer, y as Integer, columns as Integer, rows as Integer, map as string, type as Integer, Pixels as Ptr)

Function: Write single image frame to an array of pixels with storage type specified by user (DispatchImage).
Notes: e.g. image.write( 0, 0, 640, 1, "RGB", 0, pixels )
See also:
• 81.15.193 write(blob as GM16BlobMBS) 13477
• 81.15.194 write(blob as GM16BlobMBS, magick as string) 13478
• 81.15.195 write(blob as GM16BlobMBS, magick as string, depth as UInt32) 13478
• 81.15.196 write(file as folderitem) 13478
• 81.15.197 write(Path as string) 13479

81.15.199  xResolution as Double

Function: x resolution of the image.
Notes: See also density functions.

81.15.200  yResolution as Double

Function: y resolution of the image.

81.15.201  zoom(geometry as GM16GeometryMBS)

Function: Zoom (resize) image to specified size.
Example:

```
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)

image.zoom(new GM16GeometryMBS(200,200))
```
Backdrop=image.CopyPicture

81.15.202  Properties

81.15.203  baseColumns as UInt32

Function: Base image width (before transformations)
Notes: (Read only property)
81.15. **CLASS GM16IMAGEMBS**

81.15.204 **baseFilename as String**


**Function:** Base image filename (before transformations)

**Notes:** (Read only property)

81.15.205 **baseRows as Uint32**


**Function:** Base image height (before transformations).

**Example:**

```vbscript
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)
Title = str(image.baseRows) + " x " + str(image.baseColumns)
```

**Notes:** (Read only property)

81.15.206 **comment as string**


**Function:** Image comment.

**Notes:**

When you set this property, you add comment string to image.

By default, each image is commented with its file name. Use this method to assign a specific comment to the image. Optionally you can include the image filename, type, width, height, or other image attributes by embedding special format characters:

(Read and Write property)

81.15.207 **handle as Integer**


**Function:** The internal object reference.

**Example:**

```vbscript
dim c as new GM16ColorMBS("white")
dim g as new GM16GeometryMBS(100,100)
dim image as new GM16ImageMBS(g, c)
MsgBox hex(Image.handle) // valid if not zero
```
Notes: (Read and Write property)

81.15.208 height as Integer

Function: The height of the image.  
Example:

dim c as new GM16ColorRGBMBS(1.0,0.0,0.0)
dim size as new GM16GeometryMBS(100,100)
dim g as new GM16ImageMBS(size, c)

MsgBox str(g.width)+" "+str(g.height)

Notes:  
This is a convenience function for you which calls size.height.  
(Read only property)

81.15.209 width as Integer

Function: The width of the image.  
Example:

dim c as new GM16ColorRGBMBS(1.0,0.0,0.0)
dim size as new GM16GeometryMBS(100,100)
dim g as new GM16ImageMBS(size, c)

MsgBox str(g.width)+" "+str(g.height)

Notes:  
This is a convenience function for you which calls size.width.  
(Read only property)
81.15. CLASS GM16IMAGEMBS

81.15.210  adjoin as boolean
Function: Join images into a single multi-image file.
Notes: (Read and Write computed property)

81.15.211  animationDelay as UInt32
Function: Time in 1/100ths of a second (0 to 65535) which must expire before displaying the next image in an animated sequence.
Notes: This option is useful for regulating the animation of a sequence of GIF images within Netscape.
(Read and Write computed property)

81.15.212  animationIterations as UInt32
Function: Number of iterations to loop an animation (e.g. Netscape loop extension) for.
Notes: (Read and Write computed property)

81.15.213  antiAlias as boolean
Function: Control antialiasing of rendered Postscript and Postscript or TrueType fonts.
Notes: Enabled by default.
(Read and Write computed property)

81.15.214  attributeValue(name as string) as string
Function: Access an arbitrary named image attribute.
Example:

dim f as FolderItem = SpecialFolder.Desktop.Child("IMG_4048.jpg")
dim g as new GM16ImageMBS(f)
dim a as string = g.attributeValue("EXIF:DateTime")
MsgBox a
Notes:
Any number of named attributes may be attached to the image. For example, the image comment is a named image attribute with the name "comment". EXIF tags are attached to the image as named attributes. Use the syntax "EXIF:<tag>" to request an EXIF tag similar to "EXIF:DateTime":
(Read and Write computed property)

81.15.215  **backgroundColor as GM16ColorMBS**

**Function:** Image background color.
**Notes:** (Read and Write computed property)

81.15.216  **backgroundTexture as string**

**Function:** Image file name to use as the background texture.
**Notes:** Does not modify image pixels.
(Read and Write computed property)

81.15.217  **borderColor as GM16ColorMBS**

**Function:** Image border color.
**Notes:** (Read and Write computed property)

81.15.218  **boxColor as GM16ColorMBS**

**Function:** Base color that annotation text is rendered on (default none).
**Notes:** (Read and Write computed property)
81.15.219  channelDepth(channel as Integer) as UINt32

Function: Set or obtain modulus channel depth.
Notes: (Read and Write computed property)

81.15.220  classType as Integer

Function: Image class (DirectClass or PseudoClass).
Notes:
NOTE: setting a DirectClass image to PseudoClass will result in the loss of color information if the number
of colors in the image is greater than the maximum palette size (either 256 or 65536 entries depending on
the value of QuantumDepth when ImageMagick was built):
(Read and Write computed property)

81.15.221  clipMask as GM16ImageMBS

Function: Associate a clip mask image with the current image.
Notes:
The clip mask image must have the same dimensions as the current image or an exception is thrown. Clipping
occurs wherever pixels are transparent in the clip mask image. Clipping Pass an invalid image to unset
an existing clip mask.
(Read and Write computed property)

81.15.222  colorFuzz as Double

Function: Colors within this distance are considered equal.
Notes:
A number of algorithms search for a target color. By default the color must be exact. Use this option to
match colors that are close to the target color in RGB space.
(Read and Write computed property)
81.15.223  colorMap(index as UInt32) as GM16ColorMBS

Function: Color at colormap position index.
Notes: (Read and Write computed property)

81.15.224  colorMapSize as UInt32

Function: Number of entries in the colormap.
Notes:
Setting the colormap size may extend or truncate the colormap. The maximum number of supported entries is specified by the MaxColormapSize constant, and is dependent on the value of QuantumDepth when GraphicsMagick is compiled. An exception is thrown if more entries are requested than may be supported. Care should be taken when truncating the colormap to ensure that the image colormap indexes reference valid colormap entries.
(Read and Write computed property)

81.15.225  colorSpace as Integer

Function: The colorspace (e.g. CMYK) used to represent the image pixel colors.
Notes: (Read and Write computed property)

81.15.226  compose as Integer

Function: Composition operator to be used when composition is implicitly used (such as for image flattening).
Notes: (Read and Write computed property)

81.15.227  compressType as Integer

Function: Image compression type.
Notes:
### 81.15. CLASS GM16IMAGEMBS

<table>
<thead>
<tr>
<th>Colorspace</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UndefinedColorspace</td>
<td>0</td>
<td>(Plain old RGB colorspace)</td>
</tr>
<tr>
<td>RGBColorspace</td>
<td>1</td>
<td>(Plain old full-range grayscale)</td>
</tr>
<tr>
<td>GRAYColorspace</td>
<td>2</td>
<td>(RGB but preserve matte channel during quantize)</td>
</tr>
<tr>
<td>TransparentColorspace</td>
<td>3</td>
<td>(RGB but preserve matte channel during quantize)</td>
</tr>
<tr>
<td>OHTAColorspace</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>XYZColorspace</td>
<td>5</td>
<td>(CIE XYZ)</td>
</tr>
<tr>
<td>YCCColorspace</td>
<td>6</td>
<td>(Kodak PhotoCD PhotoYCC)</td>
</tr>
<tr>
<td>YIQColorspace</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>YPbPrColorspace</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>YUVColorspace</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>CMYKColorspace</td>
<td>10</td>
<td>(Cyan, magenta, yellow, black, alpha)</td>
</tr>
<tr>
<td>sRGBColorspace</td>
<td>11</td>
<td>(Kodak PhotoCD sRGB)</td>
</tr>
<tr>
<td>HSLColorspace</td>
<td>12</td>
<td>(Hue, saturation, luminosity)</td>
</tr>
<tr>
<td>HWBColorspace</td>
<td>13</td>
<td>(Hue, whiteness, blackness)</td>
</tr>
<tr>
<td>LABColorspace</td>
<td>14</td>
<td>(LAB colorspace not supported yet other than via lcms)</td>
</tr>
<tr>
<td>CineonLogRGBColorspace</td>
<td>15</td>
<td>(RGB data with Cineon Log scaling, 2.048 density range)</td>
</tr>
<tr>
<td>Rec601LumaColorspace</td>
<td>16</td>
<td>(Luma (Y) according to ITU-R 601)</td>
</tr>
<tr>
<td>Rec601YCbCrColorspace</td>
<td>17</td>
<td>(YCbCr according to ITU-R 601)</td>
</tr>
<tr>
<td>Rec709LumaColorspace</td>
<td>18</td>
<td>(Luma (Y) according to ITU-R 709)</td>
</tr>
<tr>
<td>Rec709YCbCrColorspace</td>
<td>19</td>
<td>(YCbCr according to ITU-R 709)</td>
</tr>
</tbody>
</table>

The default is the compression type of the input image file.
(Read and Write computed property)

### 81.15.228  debug as boolean

**Function:** Enable printing of debug messages from GraphicsMagick as it executes.
**Notes:** (Read and Write computed property)

### 81.15.229  defineSet(magick as string, key as string) as boolean

**Function:** Set or obtain a definition flag to applied when encoding or decoding the specified format.
**Notes:**
Similar to the defineValue() method except that passing the flag value 'true' creates a value-less define with that format and key. Passing the flag value 'false' removes any existing matching definition. The method returns 'true' if a matching key exists, and 'false' if no matching key exists.
(Read and Write computed property)
81.15.230 defineValue(magick as string, key as string) as string

**Function:** Set or obtain a definition string to applied when encoding or decoding the specified format.
**Notes:**
The meanings of the definitions are format specific. The format is designated by the magick argument, the
format-specific key is designated by key, and the associated value is specified by value. See the defineSet() method if the key must be removed entirely.
(Read and Write computed property)

81.15.231 density as GM16GeometryMBS

**Function:** Vertical and horizontal resolution in pixels of the image.
**Example:**
```vbscript
dim p as new GM16ImageMBS

dim item as FolderItem = SpecialFolder.Desktop.Child(“input.png”)  
p.read(item)  
p.scale new GM16GeometryMBS(3750,3750)  
p.quality = 95  
p.resolutionUnits = p.PixelsPerInchResolution  
p.density = new GM16GeometryMBS(300, 300)

dim out as FolderItem = SpecialFolder.Desktop.Child(“output.png”)  
p.write out
```
**Notes:**
This option specifies an image density when decoding a Postscript or Portable Document page. Often used with psPageSize.
(Read and Write computed property)

81.15.232 depth as UInt32

**Function:** Image depth (bits allocated to red/green/blue components).
**Notes:**
Used to specify the bit depth when reading or writing raw images or when the output format supports multiple depths. Defaults to the quantum depth that GraphicsMagick is compiled with.
(Read and Write computed property)
81.15. CLASS GM16IMAGEMBS

81.15.233 endian as Integer


Function: The endian mode.
Notes: Endianness (LSBEndian like Intel, MSBEndian like SPARC, or NativeEndian for what this computer uses) for image formats which support endian-specific options.
(Read and Write computed property)

81.15.234 fileName as string


Function: Image file name.
Notes: (Read and Write computed property)

81.15.235 fillColor as GM16ColorMBS


Function: Color to use when filling drawn objects.
Example:

```vbnet
dim g as new GM16GeometryMBS(500,500)
dim c as new GM16ColorRGBMBS(“white”) // white
dim image as new GM16ImageMBS(g, c)

image.strokeColor = new GM16ColorRGBMBS(“red”) // Outline color
image.fillColor = new GM16ColorRGBMBS(“green”) // Fill color
image.strokeWidth = 5

dim draw as GM16GraphicsMBS = image.Graphics

// Draw a circle
draw.Circle(250, 250, 120, 150)

Backdrop=image.CopyPicture
```

Notes: (Read and Write computed property)
81.15.236 fillPattern as GM16ImageMBS

Function: Pattern to use while filling drawn objects.
Notes: (Read and Write computed property)

81.15.237 fillRule as Integer

Function: Rule to use when filling drawn objects
Notes: (Read and Write computed property)

81.15.238 filterType as Integer

Function: The reduction filter employed has a significant effect on the time required to resize an image and
the resulting quality. The default filter is Lanczos which has been shown to produce high quality results
when reducing most images.
Notes: Filter to use when resizing image.
(Read and Write computed property)

81.15.239 font as string

Function: Text rendering font.
Notes: If the font is a fully qualified X server font name, the font is obtained from an X server. To use a TrueType
font, precede the TrueType filename with an @. Otherwise, specify a Postscript font name (e.g. ”helvetica”).
(Read and Write computed property)

81.15.240 fontPointSize as Double

Function: Text rendering font point size.
Notes: (Read and Write computed property)
81.15. CLASS GM16IMAGE MBS

81.15.241 gamma as Double


**Function:** Gamma correct the image or individual image channels.

**Example:**

```vbnet
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)

image.gamma = 3.0

Backdrop=image.CopyPicture
```

**Notes:**

If you get the value, it is the gamma level of the image. Gamma is a pow() function which converts between the linear light representation and the representation for the computer display. Most computer images are gamma corrected to 2.2 \((1/0.4545)\) so that each step results in a visually linear step on a computer or video display:

(Read and Write computed property)

See also:

- 81.15.81 gamma(gammaRed as Double, gammaGreen as Double, gammaBlue as Double)

81.15.242 gifDisposeMethod as UInt32


**Function:** GIF disposal method.

**Notes:**

This option (specific to the GIF file format) is used to control how successive frames are rendered (how the preceding frame is disposed of) when creating a GIF animation.

<table>
<thead>
<tr>
<th>Constant</th>
<th>Disposal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UndefinedDispose</td>
<td>0</td>
<td>No disposal specified.</td>
</tr>
<tr>
<td>NoneDispose</td>
<td>1</td>
<td>Do not dispose between frames.</td>
</tr>
<tr>
<td>BackgroundDispose</td>
<td>2</td>
<td>Overwrite frame with background color from header.</td>
</tr>
<tr>
<td>PreviousDispose</td>
<td>3</td>
<td>Overwrite with previous frame.</td>
</tr>
</tbody>
</table>

(Read and Write computed property)
81.15.243  iccColorProfile as GM16BlobMBS

Function: ICC color profile.
Example:

```vba
dim f as FolderItem = SpecialFolder.Desktop.Child("IMG_0793.tif")
dim Image as new GM16ImageMBS(f)
dim ProfileBlob as GM16BlobMBS = Image.iccColorProfile
dim ProfileData as string = ProfileBlob.CopyString
dim cm as LCMS2ProfileMBS = LCMS2ProfileMBS.OpenProfileFromString(ProfileData)
dim name as string = cm.Name

Break  // check data in debugger
```

Notes:
Supplied via a Blob since Magick++/ and GraphicsMagick do not currently support formatting this data structure directly. Specifications are available from the International Color Consortium for the format of ICC color profiles.
(Read and Write computed property)

81.15.244  interlaceType as Integer

Function: The type of interlacing scheme (default NoInterlace ).
Notes:
This option is used to specify the type of interlacing scheme for raw image formats such as RGB or YUV. NoInterlace means do not interlace, LineInterlace uses scanline interlacing, and PlaneInterlace uses plane interlacing. PartitionInterlace is like PlaneInterlace except the different planes are saved to individual files (e.g. image.R, image.G, and image.B). Use LineInterlace or PlaneInterlace to create an interlaced GIF or progressive JPEG image.
(Read and Write computed property)

81.15.245  iptcProfile as GM16BlobMBS

Function: IPTC profile.
Notes:
Supplied via a Blob since Magick++ and GraphicsMagick do not currently support formatting this data structure directly. Specifications are available from the International Press Telecommunications Council for IPTC profiles.
81.15. CLASS GM16IMAGEMBS

(Read and Write computed property)

81.15.246 isValid as boolean

**Function:** Does object contain valid image?
**Notes:**
Set to false in order to invalidate the image. Images constructed via the default constructor are invalid images and isValid() will return false.
(Read and Write computed property)

81.15.247 lineWidth as Double

**Function:** Stroke width for drawing vector objects (default one)
**Notes:**
This method is now deprecated. Please use strokeWidth instead.
(Read and Write computed property)

81.15.248 magick as string

**Function:** The name of the codec to use for compression.
**Example:**
```
// this converts 32 bit PNG with alpha channel to BMP

dim f as FolderItem = SpecialFolder.Desktop.Child("test.png")
dim p as Picture = Picture.Open(f)
dim g as new GM16ImageMBS( new GM16GeometryMBS(p.Width, p.Height), new GM16ColorGrayMBS(1.0))

g.type = g.TrueColorMatteType
g.matte = True
g.magick = "BMP"

g.SetPicture(p, 0, 0)
g.SetPictureMask(p.mask.invertMBS, 0, 0)

f = SpecialFolder.Desktop.Child("test.bmp")
g.write(f)
```
Notes: (Read and Write computed property)

81.15.249 matte as boolean

Function: Image supports transparency (matte channel)
Notes: (Read and Write computed property)

81.15.250 matteColor as GM16ColorMBS

Function: Image matte (frame) color.
Notes: (Read and Write computed property)

81.15.251 modulusDepth as UInt32

Function: Image modulus depth (minimum number of bits required to support red/green/blue components without loss of accuracy).
Notes: The pixel modulus depth may be decreased by supplying a value which is less than the current value, updating the pixels (reducing accuracy) to the new depth. The pixel modulus depth can not be increased over the current value using this method.
(Read and Write computed property)

81.15.252 monochrome as boolean

Function: Transform image to black and white while color reducing (quantizing).
Notes: (Read and Write computed property)

81.15.253 orientation as Integer

Function: Image orientation. Supported by some file formats such as DPX and TIFF. Useful for turning
81.15.  CLASS GM16IMAGEMBS

the right way up.
Notes: (Read and Write computed property)

81.15.254  page as GM16GeometryMBS

Function: Preferred size and location of an image canvas.
Notes:
Use this option to specify the dimensions and position of the Postscript page in dots per inch or a TEXT page in pixels. This option is typically used in concert with density.

Page may also be used to position a GIF image (such as for a scene in an animation).
(Read and Write computed property)

81.15.255  penColor as GM16ColorMBS

Function: The pen color.
Notes: (Read and Write computed property)

81.15.256  pixelColor(x as UInt32, y as UInt32) as GM16ColorMBS

Function: Get/set pixel color at location x & y.
Example:

dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)
dim c as new GM16ColorMBS("red")

for x as Integer = 240 to 260
    image.pixelColor(x,250)=c
next

for y as Integer = 240 to 260
    image.pixelColor(250,y)=c
next

Backdrop=image.CopyPicture
81.15.257 profile(name as string) as GM16BlobMBS


**Function:** Get or set a named profile.

**Notes:**
Add or remove a named profile to/from the image. Remove the profile by passing an empty Blob (e.g. Blob()). Valid names are "*", "8BIM", "ICM", "IPTC", or a user/format-defined profile name.

Retrieve a named profile from the image. Valid names are: "8BIM", "8BIMTEXT", "APP1", "APP1JPEG", "ICC", "ICM", & "IPTC" or an existing user/format-defined profile name (Read and Write computed property)

81.15.258 quality as UInt32


**Function:** JPEG/MIFF/PNG compression level (default 75).

**Notes:** (Read and Write computed property)

81.15.259 quantizeColors as UInt32


**Function:** Maximum number of colors to quantize to.

**Example:**

```pascal
    dim p as Picture = LogoMBS(500)
    dim image as new GM16ImageMBS(p)

    image.quantizeColors = 10
    image.quantize

    image.type = image.TrueColorType
    Backdrop=image.CopyPicture
```

**Notes:** (Read and Write computed property)
81.15. CLASS GM16IMAGEMBS

81.15.260 quantizeColorSpace as Integer


**Function:** Colorspace to quantize in (default RGB).

**Example:**

```vbnet
// load a picture
dim f as FolderItem = SpecialFolder.Desktop.Child("test.png")
dim pic as Picture = Picture.Open(f)

const GrayColorSpace = 2

Dim Converter As New GM16ImageMBS(Pic)

// quantize with dither
Converter.type = GM16ImageMBS.BilevelType
Converter.quantizeColorSpace = GrayColorSpace
Converter.quantizeColors = 2
Converter.quantizeDither = True
Converter.quantize

// convert back to Xojo
Converter.type = GM16ImageMBS.TrueColorType
Backdrop = Converter.CopyPicture
```

**Notes:**

Empirical evidence suggests that distances in color spaces such as YUV or YIQ correspond to perceptual color differences more closely than do distances in RGB space. These color spaces may give better results when color reducing an image.

(Read and Write computed property)

81.15.261 quantizeDither as boolean


**Function:** Apply Floyd/Steinberg error diffusion to the image.

**Example:**

```vbnet
dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)

image.quantizeColors = 10
image.quantizeDither = true
image.quantize
```
image.type = image.TrueColorType
Backdrop=image.CopyPicture

Notes:
The basic strategy of dithering is to trade intensity resolution for spatial resolution by averaging the intensities of several neighboring pixels. Images which suffer from severe contouring when reducing colors can be improved with this option. The quantizeColors or monochrome option must be set for this option to take effect.
(Read and Write computed property)

81.15.262 quantizeTreeDepth as UInt32

Function: Depth of the quantization color classification tree.
Notes:
Values of 0 or 1 allow selection of the optimal tree depth for the color reduction algorithm. Values between 2 and 8 may be used to manually adjust the tree depth.
(Read and Write computed property)

81.15.263 renderingIntent as Integer

Function: The type of rendering intent (used when applying an ICC color profile).
Notes: (Read and Write computed property)

81.15.264 resolutionUnits as Integer

Function: Units of image resolution.
Notes: (Read and Write computed property)

81.15.265 scene as UInt32

Function: Image scene number.
Notes: (Read and Write computed property)
**81.15.266 size as GM16GeometryMBS**

MBS GraphicsMagick Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Width and height of a raw image (an image which does not support width and height information).

**Example:**

```vba
Dim p As Picture = LogoMBS(500)
Dim image As New GM16ImageMBS(p)
MsgBox image.size.StringValue

image.size = New GM16GeometryMBS(200, 200)
Backdrop = image.CopyPicture
```

**Notes:**

Size may also be used to affect the image size read from a multi-resolution format (e.g. Photo CD, JBIG, or JPEG.

(Read and Write computed property)

**81.15.267 strokeAntiAlias as boolean**


**Function:** Enable/disable stroke anti-aliasing.

**Notes:** (Read and Write computed property)

**81.15.268 strokeColor as GM16ColorMBS**


**Function:** Color to use when drawing object outlines.

**Example:**

```vba
Dim g As New GM16GeometryMBS(500, 500)
Dim c As New GM16ColorRGBMBS("white") 'white
Dim image As New GM16ImageMBS(g, c)

image.strokeColor = New GM16ColorRGBMBS("red") 'Outline color
image.fillColor = New GM16ColorRGBMBS("green") 'Fill color
image.strokeWidth = 5

Dim draw As GM16GraphicsMBS = image.Graphics
```
// Draw a circle
draw.Circle(250, 250, 120, 150)

Backdrop=image.CopyPicture

Notes: (Read and Write computed property)

81.15.269 strokeDashOffset as Double

Function: While drawing using a dash pattern, specify distance into the dash pattern to start the dash (default 0).
Notes: (Read and Write computed property)

81.15.270 strokeLineCap as Integer

Function: Specify the shape to be used at the end of open subpaths when they are stroked. #
Notes: Values of LineCap are UndefinedCap, ButtCap, RoundCap, and SquareCap.
(Read and Write computed property)

81.15.271 strokeLineJoin as Integer

Function: Specify the shape to be used at the corners of paths (or other vector shapes) when they are stroked. Values of LineJoin are UndefinedJoin, MiterJoin, RoundJoin, and BevelJoin.
Notes: (Read and Write computed property)

81.15.272 strokeMiterLimit as UInt32

Function: Specify miter limit.
Notes: When two line segments meet at a sharp angle and miter joins have been specified for 'lineJoin', it is possible for the miter to extend far beyond the thickness of the line stroking the path. The miterLimit imposes a
81.15. **CLASS GM16IMAGEMBS**

limit on the ratio of the miter length to the 'lineWidth'. The default value of this parameter is 4. 
(Read and Write computed property)

---

### 81.15.273 strokePattern as GM16ImageMBS

**Function:** Pattern image to use while stroking object outlines. 
**Notes:** (Read and Write computed property)

---

### 81.15.274 strokeWidth as Double

**Function:** Stroke width for drawing vector objects (default one). 
**Example:**

```plaintext
dim g as new GM16GeometryMBS(500,500)  
dim c as new GM16ColorRGBMBS("white")  // white  
dim image as new GM16ImageMBS(g, c)  

image.strokeColor = new GM16ColorRGBMBS("red")  // Outline color  
image.fillColor = new GM16ColorRGBMBS("green")  // Fill color  
image.strokeWidth = 5  

dim draw as GM16GraphicsMBS = image.Graphics  

// Draw a circle  
draw.Circle(250, 250, 120, 150)  

Backdrop=image.CopyPicture
```

**Notes:** (Read and Write computed property)

---

### 81.15.275 subImage as UInt32

**Function:** Subimage of an image sequence. 
**Notes:** (Read and Write computed property)
81.15.276  subRange as UInt32

**Function:** Number of images relative to the base image.
**Notes:** (Read and Write computed property)

81.15.277  textEncoding as string

**Function:** Annotation text encoding (e.g. "UTF-16").
**Notes:** (Read and Write computed property)

81.15.278  tileName as string

**Function:** Tile name.
**Notes:** (Read and Write computed property)

81.15.279  type as Integer

**Function:** The type of this image.
**Example:**
```dim p as Picture = LogoMBS(500)
dim image as new GM16ImageMBS(p)image.type = image.GrayscaleTypeBackdrop=image.CopyPicture```

**Notes:**
You can set this value to convert the image to the type.

Convert the image representation to the specified type or retrieve the current image type. If the image is reduced to an inferior type, then image information may be lost (e.g. color changed to grayscale).

Available enumerations for the type parameter:
81.15.280 verbose as boolean

**Function:** Print detailed information about the image.
**Notes:** (Read and Write computed property)

81.15.281 view as string

**Function:** FlashPix viewing parameters.
**Notes:** (Read and Write computed property)

81.15.282 x11Display as string

**Function:** X11 display to display to, obtain fonts from, or to capture image from.
**Notes:** (Read and Write computed property)

81.15.283 Constants

81.15.284 AbsoluteIntent = 3

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the intent type constants.
81.15.285  AddCompositeOp = 8

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.

81.15.286  AllChannels = 10

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the possible channel constants.

81.15.287  AllCompliance = & hffff

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the Compliance type constants.

81.15.288  AssociatedAlpha = 1

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the possible alpha type constants.

81.15.289  AtopCompositeOp = 4

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.

81.15.290  BackgroundDispose = 2

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the gif dispose type constants.

81.15.291  BesselFilter = 14

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the filter type constants.

81.15.292  BilevelType = 1

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the image type constants.

**Example:**
81.15. CLASS GM16IMAGEMBS

// load a picture
dim f as FolderItem = SpecialFolder.Desktop.Child("test.png")
dim pic as Picture = Picture.Open(f)

const GrayColorSpace = 2

Dim Converter As New GM16ImageMBS(Pic)

// quantize with dither
Converter.type = GM16ImageMBS.BilevelType
Converter.quantizeColorSpace = GrayColorSpace
Converter.quantizeColors = 2
Converter.quantizeDither = True
Converter.quantize

// convert back to Xojo
Converter.type = GM16ImageMBS.TrueColorType
Backdrop = Converter.CopyPicture

81.15.293 BlackChannel = 8


81.15.294 BlackmanFilter = 7


81.15.295 BlueChannel = 5


81.15.296 BottomLeftOrientation = 4


Notes:
Line direction: Left to right
Frame Direction: Bottom to top
81.15.297  **BottomRightOrientation = 3**

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the orientation type constants.  
**Notes:**
- Line direction: Right to left  
- Frame Direction: Bottom to top

81.15.298  **BoxFilter = 2**

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the filter type constants.

81.15.299  **BumpmapCompositeOp = 12**

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.

81.15.300  **BZipCompression = 2**

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the compression type constants.

81.15.301  **CatromFilter = 11**

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the filter type constants.

81.15.302  **CenterGravity = 5**

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the possible gravity constants.

81.15.303  **ClearCompositeOp = 18**

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.
81.15.304 ColorizeCompositeOp = 28

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.

81.15.305 ColorSeparationMatteType = 9

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the image type constants.

81.15.306 ColorSeparationType = 8

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the image type constants.

81.15.307 ConcatenateMode = 3

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the image type constants.

81.15.308 CopyBlackCompositeOp = 35

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.

81.15.309 CopyBlueCompositeOp = 16

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.

81.15.310 CopyCompositeOp = 13

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.

81.15.311 CopyCyanCompositeOp = 32

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.
81.15.312 CopyGreenCompositeOp = 15

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.

81.15.313 CopyMagentaCompositeOp = 33

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.

81.15.314 CopyOpacityCompositeOp = 17

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.

81.15.315 CopyRedCompositeOp = 14

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.

81.15.316 CopyYellowCompositeOp = 34

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.

81.15.317 CubicFilter = 10

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the filter type constants.

81.15.318 CyanChannel = 2

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the possible channel constants.

81.15.319 DarkenCompositeOp = 24

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.
81.15.320 DifferenceCompositeOp = 10

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.

81.15.321 DirectClass = 1

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the class type constants.

81.15.322 DisplaceCompositeOp = 20

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.

81.15.323 DissolveCompositeOp = 19

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.

81.15.324 DivideCompositeOp = 36

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.

81.15.325 EastGravity = 6

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the possible gravity constants.

81.15.326 FaxCompression = 3

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the compression type constants.

81.15.327 ForgetGravity = 0

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the possible gravity constants.
81.15.328 FrameMode = 1
MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the mode type constants.

81.15.329 GaussianFilter = 8
MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the filter type constants.

81.15.330 GaussianNoise = 1
MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the possible noise constants.

81.15.331 GrayChannel = 11
MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the possible channel constants.

81.15.332 GrayscaleMatteType = 3
MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the image type constants.

81.15.333 GrayscaleType = 2
MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the image type constants.

81.15.334 GreenChannel = 3
MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the possible channel constants.

81.15.335 Group4Compression = 4
MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the compression type constants.
81.15.336  HammingFilter = 6

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the filter type constants.

81.15.337  HanningFilter = 5

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the filter type constants.

81.15.338  HermiteFilter = 4

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the filter type constants.

81.15.339  HueCompositeOp = 26

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.

81.15.340  ImpulseNoise = 3

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the possible noise constants.

81.15.341  InCompositeOp = 2

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.

81.15.342  JPEGCompression = 5

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the compression type constants.

81.15.343  LanczosFilter = 13

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the filter type constants.
81.15.344  LaplacianNoise = 4

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the possible noise constants.

81.15.345  LeftBottomOrientation = 8

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the orientation type constants.  
**Notes:**  
Line direction: Bottom to top  
Frame Direction: Left to right

81.15.346  LeftTopOrientation = 5

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the orientation type constants.  
**Notes:**  
Line direction: Top to bottom  
Frame Direction: Left to right

81.15.347  LightenCompositeOp = 25

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.

81.15.348  LineInterlace = 2

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the interlace type constants.

81.15.349  LosslessJPEGCompression = 6

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the compression type constants.

81.15.350  LSBEndian = 1

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the endian type constants.  
**Notes:** "little" endian
81.15.351 LuminizeCompositeOp = 29

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.

81.15.352 LZWCompression = 7

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the compression type constants.

81.15.353 MagentaChannel = 4

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the possible channel constants.

81.15.354 MatteChannel = 9

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the possible channel constants.

81.15.355 MinusCompositeOp = 7

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.

81.15.356 MitchellFilter = 12

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the filter type constants.

81.15.357 ModulateCompositeOp = 21

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.
81.15.358  MSBEndian = 2

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the endian type constants. **Notes:** "big" endian

81.15.359  MultiplicativeGaussianNoise = 2

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the possible noise constants.

81.15.360  MultiplyCompositeOp = 11

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.

81.15.361  NativeEndian = 3

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the endian type constants. **Notes:** native endian

81.15.362  NoCompliance = 0

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the Compliance type constants.

81.15.363  NoCompositeOp = 23

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.

81.15.364  NoCompression = 1

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the compression type constants.

81.15.365  NoInterlace = 1

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the interlace type constants.
81.15.366 NoneDispose = 1

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the gif dispose type constants.

81.15.367 NorthEastGravity = 3

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the possible gravity constants.

81.15.368 NorthGravity = 2

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the possible gravity constants.

81.15.369 NorthWestGravity = 1

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the possible gravity constants.

81.15.370 OpacityChannel = 7

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the possible channel constants.

81.15.371 OptimizeType = 10

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the image type constants.

81.15.372 OutCompositeOp = 3

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.

81.15.373 OverCompositeOp = 1

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.
81.15.374 OverlayCompositeOp = 31

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants. **Notes:** Not yet implemented in GraphicsMagick.

81.15.375 PaletteMatteType = 5

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the image type constants.

81.15.376 PaletteType = 4

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the image type constants.

81.15.377 PartitionInterlace = 4

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the interlace type constants.

81.15.378 PerceptualIntent = 2

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the intent type constants.

81.15.379 PixelsPerCentimeterResolution = 2

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the resolution type constants.

81.15.380 PixelsPerInchResolution = 1

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the resolution type constants.

81.15.381 PlaneInterlace = 3

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the interlace type constants.
81.15.382 PlusCompositeOp = 6

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.

81.15.383 PointFilter = 1

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the filter type constants.

81.15.384 PoissonNoise = 5

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the possible noise constants.

81.15.385 PreviousDispose = 3

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the gif dispose type constants.

81.15.386 PseudoClass = 2

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the class type constants.

81.15.387 QuadraticFilter = 9

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the filter type constants.

81.15.388 RedChannel = 1

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the possible channel constants.

81.15.389 RelativeIntent = 4

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the intent type constants.
81.15.390  **RightBottomOrientation = 7**

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the orientation type constants.  
**Notes:**
Line direction: Bottom to top  
Frame Direction: Right to left

81.15.391  **RightTopOrientation = 6**

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the orientation type constants.  
**Notes:**
Line direction: Top to bottom  
Frame Direction: Right to left

81.15.392  **RLECompression = 8**

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the compression type constants.

81.15.393  **SaturateCompositeOp = 27**

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.

81.15.394  **SaturationIntent = 1**

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the intent type constants.

81.15.395  **ScreenCompositeOp = 30**

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.  
**Notes:** Not yet implemented in GraphicsMagick.
81.15.396  **SincFilter = 15**

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function**: One of the filter type constants.

81.15.397  **SouthEastGravity = 9**

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function**: One of the possible gravity constants.

81.15.398  **SouthGravity = 8**

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function**: One of the possible gravity constants.

81.15.399  **SouthWestGravity = 7**

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function**: One of the possible gravity constants.

81.15.400  **StaticGravity = 10**

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function**: One of the possible gravity constants.

81.15.401  **StorageTypeCharPixel = 0**

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function**: One of the storage types. **Notes**: 8bit numbers.

81.15.402  **StorageTypeDoublePixel = 5**

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function**: One of the storage types. **Notes**: 64bit floating numbers.

81.15.403  **StorageTypeFloatPixel = 4**

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function**: One of the storage types. **Notes**: 32bit floating numbers.
81.15.404 StorageTypeIntegerPixel = 2

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the storage types. **Notes:** 32bit numbers.

81.15.405 StorageTypeLongPixel = 3

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the storage types. **Notes:** 64bit numbers.

81.15.406 StorageTypeShortPixel = 1

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the storage types. **Notes:** 16bit numbers.

81.15.407 SubtractCompositeOp = 9

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.

81.15.408 SVGCompliance = 1

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the Compliance type constants.

81.15.409 ThresholdCompositeOp = 22

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.

81.15.410 TopLeftOrientation = 1

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the orientation type constants. **Notes:**
81.15.411  TopRightOrientation = 2

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the orientation type constants.  
**Notes:**

Line direction: Right to left  
Frame Direction: Top to bottom

81.15.412  TriangleFilter = 3

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the filter type constants.

81.15.413  TrueColorMatteType = 7

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the image type constants.  
**Example:**

```
Dim mp as new GM16ImageMBS(new GM16GeometryMBS(700, 700), New GM16ColorRGBMBS(1.0, 0.0, 0.0))
mp.type = mp.TrueColorMatteType
dim p as picture = mp.CopyPicture
break // see in debugger a red picture
```

81.15.414  TrueColorType = 6

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the image type constants.

81.15.415  UnassociatedAlpha = 2

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the possible alpha type constants.
81.15.416  UndefinedChannel = 0

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function**: One of the possible channel constants.

81.15.417  UndefinedClass = 0

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function**: One of the class type constants.

81.15.418  UndefinedCompliance = 0

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function**: One of the Compliance type constants.

81.15.419  UndefinedCompositeOp = 0

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function**: One of the composite type constants.

81.15.420  UndefinedCompression = 0

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function**: One of the compression type constants.

81.15.421  UndefinedDispose = 0

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function**: One of the gif dispose type constants.

81.15.422  UndefinedEndian = 0

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function**: One of the endian type constants.

81.15.423  UndefinedFilter = 0

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function**: One of the filter type constants.
81.15. CLASS GM16IMAGEMBS

81.15.424  UndefinedIntent = 0

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the intent type constants.

81.15.425  UndefinedInterlace = 0

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the interlace type constants.

81.15.426  UndefinedMode = 0

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the mode type constants.

81.15.427  UndefinedOrientation = 0

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the orientation type constants. **Notes:**
Line direction: Unknown
Frame Direction: Unknown

81.15.428  UndefinedResolution = 0

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the resolution type constants.

81.15.429  UndefinedType = 0

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the image type constants.

81.15.430  UnframeMode = 2

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the mode type constants.
81.15.431 UniformNoise = 0

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the possible noise constants.

81.15.432 UnspecifiedAlpha = 0

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the possible alpha type constants.

81.15.433 WestGravity = 4

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the possible gravity constants.

81.15.434 X11Compliance = 2

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the Compliance type constants.

81.15.435 XorCompositeOp = 5

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the composite type constants.

81.15.436 XPMCompliance = 4

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the Compliance type constants.

81.15.437 YellowChannel = 6

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the possible channel constants.

81.15.438 ZipCompression = 9

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the compression type constants.
81.16. class GM16ImageStatisticsMBS

81.16.1. class GM16ImageStatisticsMBS

Function: The class for image statistics.
Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

81.16.2. Methods

81.16.3. Constructor

Function: The private constructor.

81.16.4. Properties

81.16.5. blue as GM16ImageChannelStatisticsMBS

Function: The blue channel statistics.
Notes: (Read only property)

81.16.6. green as GM16ImageChannelStatisticsMBS

Function: The green channel statistics.
Notes: (Read only property)

81.16.7. opacity as GM16ImageChannelStatisticsMBS

Function: The opacity channel statistics.
Notes: (Read only property)
81.16.8  red as GM16ImageChannelStatisticsMBS

**Function:** The red channel statistics.
**Notes:** (Read only property)
81.17. *CLASS GM16LOCKMBS*

81.17  **class GM16LockMBS**

81.17.1  **class GM16LockMBS**

**Function:** The class for locking a certain resource.
**Notes:** The idea is to pass the constructor a mutexlock and keep the only reference to this new lock object on the stack. On the end of the method, the destructor is called by REALbasic and releases the mutexlock automatically.

81.17.2  **Methods**

81.17.3  **Constructor(mutexlock as GM16MutexLockMBS)**

**Function:** Creates a new Lock based on the given mutexlock.

81.17.4  **Properties**

81.17.5  **handle as Integer**

**Function:** The internal object reference.
**Notes:** (Read and Write property)

81.17.6  **target as GM16MutexLockMBS**

**Function:** The mutexlock this lock is referencing to.
**Notes:** (Read and Write property)
81.18 class GM16MontageFramedMBS

81.18.1 class GM16MontageFramedMBS

MBS GraphicsMagick Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** MontageFramed provides the means to specify montage options when it is desired to have decorative frames around the image thumbnails.

**Notes:**
MontageFramed inherits from Montage and therefore provides all the methods of Montage as well as those shown in the table "MontageFramed Methods".

Framed thumbnails consist of four components: the thumbnail image, the thumbnail frame, the thumbnail border, an optional thumbnail shadow, and an optional thumbnail label area. Subclass of the GM16MontageMBS class.

81.18.2 Methods

81.18.3 Constructor

MBS GraphicsMagick Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor.

81.18.4 Properties

81.18.5 borderColor as GM16ColorMBS

MBS GraphicsMagick Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Specifies the background color within the thumbnail frame.
**Notes:** (Read and Write computed property)

81.18.6 borderWidth as Uint32

MBS GraphicsMagick Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Specifies the border (in pixels) to place between a thumbnail and its surrounding frame.
**Notes:**
This option only takes effect if thumbnail frames are enabled (via frameGeometry) and the thumbnail geometry specification doesn’t also specify the thumbnail border width. (Read and Write computed property)
81.18. **CLASS GM16MONTAGEFRAMEDMBS**

### 81.18.7 frameGeometry as GM16GeometryMBS


**Function:** Specifies the geometry specification for frame to place around thumbnail.

**Notes:**
If this parameter is not specified, then the montage is unframed.
(Read and Write computed property)

### 81.18.8 matteColor as GM16ColorMBS


**Function:** Specifies the thumbnail frame color.

**Notes:** (Read and Write computed property)
81.19 class GM16MontageMBS

81.19.1 class GM16MontageMBS


Function: Montage is the base class to provide montage options and provides methods to set all options required to render simple (unframed) montages.

Example:

```vbscript
// build montage
Dim StackingMontage As New GM16MontageMBS
StackingMontage.backgroundColor = New GM16ColorMBS(& cE7E7E7)
StackingMontage.fillColor = New GM16ColorMBS(& c000000)
StackingMontage.tile = New GM16GeometryMBS("1x20")
StackingMontage.geometry = New GM16GeometryMBS("160x120+5+5")
StackingMontage.font = "Helvetica"
StackingMontage.pointSize = 12
StackingMontage.title = "Title goes here"

// make picture
Dim logo As Picture = LogoMBS(500)
Dim image As New GM16ImageMBS(logo)
image.label("Sample label")

// Put the current image into the array
Dim StackingFrames As New GM16ImageArrayMBS
StackingFrames.insert(image)

// show result
Dim resultImages As GM16ImageArrayMBS = StackingFrames.montageImages(StackingMontage)
Backdrop = resultImages.Image(0).CopyPicture
```

Notes:
See GM16MontageFramedMBS if you would like to create a framed montage.

Unframed thumbnails consist of four components: the thumbnail image, the thumbnail border, an optional thumbnail shadow, and an optional thumbnail label area.
81.19. CLASS GM16MONTAGEMBS

81.19.2 Methods

81.19.3 Constructor

Function: The constructor.

81.19.4 Properties

81.19.5 handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

81.19.6 backgroundColor as GM16ColorMBS

Function: Specifies the background color that thumbnails are imaged upon.
Notes: (Read and Write computed property)

81.19.7 compose as Integer

Function: Specifies the image composition algorithm for thumbnails.
Notes:
This controls the algorithm by which the thumbnail image is placed on the background. Use of OverCompositeOp is recommended for use with images that have transparency. This option may have negative side-effects for images without transparency.
(Read and Write computed property)

81.19.8 fileName as string

Function: Specifies the image filename to be used for the generated montage images.
Notes:
To handle the case were multiple montage images are generated, a printf-style format may be embedded within the filename. For example, a filename specification of image%02d.miff names the montage images as...
81.19.9  fillColor as GM16ColorMBS

Function: Specifies the fill color to use for the label text.
Notes: (Read and Write computed property)

81.19.10  font as string

Function: Specifies the thumbnail label font.
Notes: (Read and Write computed property)

81.19.11  geometry as GM16GeometryMBS

Function: Specifies the size of the generated thumbnail.
Notes: (Read and Write computed property)

81.19.12  gravity as Integer

Function: Specifies the thumbnail positioning within the specified geometry area.
Notes:
If the thumbnail is smaller in any dimension than the geometry, then it is placed according to this specification.
See Gravity constants in GM16ImageMBS class.
(Read and Write computed property)

81.19.13  label as string

Function: Specifies the format used for the image label.
Notes:
Special format characters may be embedded in the format string to include information about the image. (Read and Write computed property)

81.19.14  **penColor as GM16ColorMBS**

**Function:** Specifies the pen color to use for the label text (same as fill).  
**Notes:** (Read and Write computed property)

81.19.15  **pointSize as UInt32**

**Function:** Specifies the thumbnail label font size.  
**Notes:** (Read and Write computed property)

81.19.16  **shadow as boolean**

**Function:** Enable/disable drop-shadow on thumbnails.  
**Notes:** (Read and Write computed property)

81.19.17  **strokeColor as GM16ColorMBS**

**Function:** Specifies the stroke color to use for the label text.  
**Notes:** (Read and Write computed property)

81.19.18  **texture as string**

**Function:** Specifies a texture image to use as montage background.  
**Notes:**  
The built-in textures "granite:" and "plasma:" are available. A texture is the same as a background image. (Read and Write computed property)
81.19.19  tile as GM16GeometryMBS

**Function:** Specifies the maximum number of montage columns and rows in the montage.  
**Notes:**  
The montage is built by filling out all cells in a row before advancing to the next row. Once the montage has reached the maximum number of columns and rows, a new montage image is started.  
(Read and Write computed property)

81.19.20  title as string

**Function:** Specifies the montage title.  
**Notes:** (Read and Write computed property)

81.19.21  transparentColor as GM16ColorMBS

**Function:** Specifies a montage color to set transparent.  
**Notes:**  
This option can be set the same as the background color in order for the thumbnails to appear without a background when rendered on an HTML page. For best effect, ensure that the transparent color selected does not occur in the rendered thumbnail colors.  
(Read and Write computed property)
class GM16MutexLockMBS


**Function:** The mutex class for GraphicsMagick.

### 81.20.2 Methods

#### 81.20.3 lock


**Function:** Locks the lock.

**Notes:** Only one thread at a time can get the lock. The other threads will wait when lock is called.

#### 81.20.4 unlock


**Function:** Unlocks the lock.

### 81.20.5 Properties

#### 81.20.6 handle as Integer


**Function:** The internal object reference.

**Notes:** (Read and Write property)
81.21 class GM16NotInitializedExceptionMBS

81.21.1 class GM16NotInitializedExceptionMBS

MBS GraphicsMagick Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The exception raised if you access a method/property in an object and the object was not initialized properly.

**Notes:**

Check the message property for details.
Subclass of the GM16ErrorExceptionMBS class.
### 81.22. CLASS GM16PATHARGSMBS

#### 81.22 class GM16PathArgsMBS

**Function:** This is a class for arguments to the path arc/curve methods in GM16GraphicsMBS.

**Example:**

```vba
    dim g as new GM16PathArgsMBS(1,2,3,4) // for a QuadraticCurveto
    MsgBox str(g.x1)+EndOfLine+str(g.y1)+EndOfLine+str(g.x)+EndOfLine+str(g.y)
```

**Notes:** Due we use this class for three different ways, we have three constructors to fill in the value you need for the calls.

#### 81.22.2 Methods

#### 81.22.3 Constructor

**Function:** The constructor for creating an empty object.

See also:

- 81.22.4 Constructor(radiusX as Double, radiusY as Double, xAxisRotation as Double, largeArcFlag as boolean, sweepFlag as Boolean, x as Double, y as Double) 13537
- 81.22.5 Constructor(x1 as Double, y1 as Double, x as Double, y as Double) 13538
- 81.22.6 Constructor(x1 as Double, y1 as Double, x2 as Double, y2 as Double, x as Double, y as Double) 13538

**Function:** The constructor to create the arguments object for the PathArc methods in GM16GraphicsMBS.

See also:

- 81.22.3 Constructor 13537
- 81.22.5 Constructor(x1 as Double, y1 as Double, x as Double, y as Double) 13538
81.22.6 Constructor(x1 as Double, y1 as Double, x2 as Double, y2 as Double, x as Double, y as Double)

81.22.5 Constructor(x1 as Double, y1 as Double, x as Double, y as Double)

MBS GraphicsMagick Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor to create the arguments object for the QuadraticCurveto methods in GM16GraphicsMBS.

**Example:**

```vbnet
dim g as new GM16PathArgsMBS(1,2,3,4)
MsgBox str(g.x1)+EndOfLine+str(g.y1)+EndOfLine+str(g.x)+EndOfLine+str(g.y)
```

See also:

- 81.22.3 Constructor
- 81.22.4 Constructor(radiusX as Double, radiusY as Double, xAxisRotation as Double, largeArcFlag as boolean, sweepFlag as Boolean, x as Double, y as Double)
- 81.22.5 Constructor(x1 as Double, y1 as Double, x as Double, y as Double)

81.22.6 Constructor(x1 as Double, y1 as Double, x2 as Double, y2 as Double, x as Double, y as Double)

MBS GraphicsMagick Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor to create the arguments object for the Curveto methods in GM16GraphicsMBS.

**Example:**

```vbnet
dim g as new GM16PathArgsMBS(1,2,3,4,5,6)
MsgBox str(g.x1)+EndOfLine+str(g.y1)+EndOfLine+str(g.x2)+EndOfLine+str(g.y2)+EndOfLine+str(g.x)+EndOfLine+str(g.y)
```

See also:

- 81.22.3 Constructor
- 81.22.4 Constructor(radiusX as Double, radiusY as Double, xAxisRotation as Double, largeArcFlag as boolean, sweepFlag as Boolean, x as Double, y as Double)
- 81.22.5 Constructor(x1 as Double, y1 as Double, x as Double, y as Double)
81.22.7 Properties

81.22.8 largeArcFlag as Boolean

Function: The large arc flag.
Notes: Draw longer of the two matching arcs (Read and Write property)

81.22.9 radiusX as Double

Function: The radius x value.
Notes: (Read and Write property)

81.22.10 radiusY as Double

Function: The radius y value.
Notes: (Read and Write property)

81.22.11 sweepFlag as Boolean

Function: The sweep flag value.
Notes: Draw arc matching clock-wise rotation. (Read and Write property)

81.22.12 x as Double

Function: The x value.
Notes: For an arc: End-point X (Read and Write property)
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81.22.13  x1 as Double

Function: The x1 value.
Notes: (Read and Write property)

81.22.14  x2 as Double

Function: The x2 value.
Notes: (Read and Write property)

81.22.15  xAxisRotation as Double

Function: The x Axis Rotation value.
Notes:
Rotation relative to X axis.
(Read and Write property)

81.22.16  y as Double

Function: The y value.
Notes:
for an arc: End-point Y
(Read and Write property)

81.22.17  y1 as Double

Function: The y1 value.
Notes: (Read and Write property)
81.22. CLASS GM16PATHARGSMBS

81.22.18  y2 as Double


Function: The y2 value.
Notes: (Read and Write property)
81.23 class GM16PixelsMBS

81.23.1 class GM16PixelsMBS

Function: Creates an empty pixels object.
Example:

```vba
dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim g as new GM16ImageMBS(f)
dim p as new GM16PixelsMBS(g)

// get pointer to some pixels to read/write
dim x as ptr = p.get(0, 0, 100, 100)

// draw a red line to the pixel buffer
dim o as Integer
for i as Integer = 0 to 99
    o = 100 * i + i
    x.UInt32(o * 4) = &hFFFF0000
next

// write back
p.sync

// show
window1.Backdrop = g.CopyPicture
```

81.23.2 Methods

81.23.3 Constructor(Image as GM16ImageMBS)

Function: Creates a new Pixels object with the pixels from an image.

81.23.4 get(x as Integer, y as Integer, columns as Integer, rows as Integer) as Ptr

Function: Transfer pixels from the image to the pixel view as defined by the specified region.
Example:
dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim g as new GM16ImageMBS(f)
dim p as new GM16PixelsMBS(g)

// get pointer to some pixels
dim x as ptr = p.get(0, 0, 100, 100)

// draw a red line to the pixel buffer
dim o as Integer
for i as Integer = 0 to 99
    o = 100 * i + i
    x.UInt32(o * 4) = &hFFFF0000
next

// write back
p.sync

// show
window1.Backdrop = g.CopyPicture

Notes: Modified pixels may be subsequently transferred back to the image via sync.

81.23.5 getConst(x as Integer, y as Integer, columns as Integer, rows as Integer) as Ptr

Function: Transfer read-only pixels from the image to the pixel view as defined by the specified region.

81.23.6 indexes as Ptr

Function: Return pixel colormap index array.

81.23.7 set(x as Integer, y as Integer, columns as Integer, rows as Integer) as Ptr

Function: Allocate a pixel view region to store image pixels as defined by the region rectangle.
Example:
```vbnet
    dim f as FolderItem = SpecialFolder/Desktop/Child("test.jpg")
dim g as new GM16ImageMBS(f)
dim p as new GM16PixelsMBS(g)

    // get pointer to some pixels to write
    dim x as ptr = p.set(0, 0, 100, 100)

    // draw a red line to the pixel buffer
    dim o as Integer
    for i as Integer = 0 to 99
        o = 100 * i + i
        x.UInt32(o * 4) = &hFFFF0000
    next

    // write back
    p.sync

    // show
    window1.Backdrop = g.CopyPicture
```

**Notes:** This area is subsequently transferred from the pixel view to the image via sync.

### 81.23.8 sync

**Function:** Transfers the image cache pixels to the image.

### 81.23.9 Properties

#### 81.23.10 columns as Integer

**Function:** Width of view.
**Example:**

```vbnet
    dim f as FolderItem = SpecialFolder/Desktop/Child("test.jpg")
dim g as new GM16ImageMBS(f)
dim p as new GM16PixelsMBS(g)

    // get pointer to some pixels
    dim x as ptr = p.get(0, 0, 100, 100)
```
// and show size
MsgBox str(p.columns)+" x "+str(p.rows)

**Notes:** (Read only property)

### 81.23.11 handle as Integer

**Function:** The internal object reference.
**Notes:** (Read and Write property)

### 81.23.12 rows as Integer

**Function:** Height of view.
**Notes:** (Read only property)

### 81.23.13 x as Integer

**Function:** Left ordinate of view.
**Notes:** (Read only property)

### 81.23.14 y as Integer

**Function:** Top ordinate of view.
**Notes:** (Read only property)
81.24 class GM16TypeMetricMBS

81.24.1 class GM16TypeMetricMBS

MBS GraphicsMagick Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The TypeMetric class provides the means to pass data from the Image class’s TypeMetric method to the user.

Notes:

It provides information regarding font metrics such as ascent, descent, text width, text height, and maximum horizontal advance. The units of these font metrics are in pixels, and that the metrics are dependent on the current Image font (default Ghostscript’s "Helvetica"), pointsize (default 12 points), and x/y resolution (default 72 DPI) settings.

The pixel units may be converted to points (the standard resolution-independent measure used by the typesetting industry) via the following equation:

\[
\text{size\_points} = \frac{\text{size\_pixels} \times 72}{\text{resolution}}
\]

where resolution is in dots-per-inch (DPI). This means that at the default image resolution, there is one pixel per point.

Note that a font’s pointsize is only a first-order approximation of the font height (ascender + descender) in points. The relationship between the specified pointsize and the rendered font height is determined by the font designer.

See FreeType Glyph Conventions for a detailed description of font metrics related issues.

81.24.2 Methods

81.24.3 Constructor


81.24.4 Properties

81.24.5 ascent as Double

MBS GraphicsMagick Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns the distance in pixels from the text baseline to the highest/upper grid coordinate used
to place an outline point.

**Notes:**
Always a positive value.
(Read only property)

### 81.24.6 descent as Double


**Function:** Returns the the distance in pixels from the baseline to the lowest grid coordinate used to place an outline point.

**Notes:**
Always a negative value.
(Read only property)

### 81.24.7 maxHorizontalAdvance as Double


**Function:** Returns the maximum horizontal advance (advance from the beginning of a character to the beginning of the next character) in pixels.

**Notes:** (Read only property)

### 81.24.8 textHeight as Double


**Function:** Returns text height in pixels.

**Notes:** (Read only property)

### 81.24.9 textWidth as Double


**Function:** Returns text width in pixels.

**Notes:** (Read only property)
81.25 **class GM16UnsupportedExceptionMBS**

81.25.1 **class GM16UnsupportedExceptionMBS**

**Function:** An exception raised if you call the GM functions on an unsupported platform.  
**Notes:**  
Check the message property for details.  
This exception is currently only used on Windows.  
(Windows support may come later)  
Subclass of the GM16ErrorExceptionMBS class.
81.26. CLASS GMBLOBMBS

81.26 class GMBlobMBS

81.26.1 class GMBlobMBS


Function: The class for binary large objects.

Example:

// get some image data (e.g. from blob in database)
dim logo as Picture = LogoMBS(500)
dim jpegData as string = PictureToJPEGStringMBS(logo, 80)

// new image
Dim mp as new GMImageMBS
dim blob as new GMBlobMBS(jpegData)

// read data from blob into this image object
mp.Read blob

// sometimes you need to explicit convert to RGB/RGBA
'mp.type = mp.TrueColorMatteType
Backdrop=mp.CombinePictureWithMask

Notes:

Blob provides the means to contain any opaque data. It is named after the term "Binary Large OBject" commonly used to describe unstructured data (such as encoded images) which is stored in a database. While the function of Blob is very simple (store a pointer and and size associated with allocated data), the Blob class provides some very useful capabilities. In particular, it is fully reference counted just like the Image class.

The Blob class supports value assignment while preserving any outstanding earlier versions of the object. Since assignment is via a pointer internally, Blob is efficient enough to be stored directly in an STL container or any other data structure which requires assignment. In particular, by storing a Blob in an associative container (such as STL's 'map') it is possible to create simple indexed in-memory "database" of Blobs.

Magick++ currently uses Blob to contain encoded images (e.g. JPEG) as well as ICC and IPTC profiles. Since Blob is a general-purpose class, it may be used for other purposes as well.
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81.26.2 Methods

81.26.3 Constructor


Function: Default constructor creating an empty blob object.
See also:

- 81.26.4 Constructor(data as memoryblock, offset as Integer, size as Integer) 13550
- 81.26.5 Constructor(data as string) 13550
- 81.26.6 Constructor(other as GMBlobMBS) 13551

81.26.4 Constructor(data as memoryblock, offset as Integer, size as Integer)


Function: Construct object with data, making a copy of the supplied data.
See also:

- 81.26.3 Constructor 13550
- 81.26.5 Constructor(data as string) 13550
- 81.26.6 Constructor(other as GMBlobMBS) 13551

81.26.5 Constructor(data as string)


Function: Construct object with data, making a copy of the supplied data.

Example:

```vba
// get some image data (e.g. from blob in database)
dim logo as Picture = LogoMBS(500)
dim jpegData as string = PictureToJPEGStringMBS(logo, 80)

// new image
Dim mp as new GMImageMBS
dim blob as new GMBlobMBS(jpegData)

// read data from blob into this image object
mp.Read blob

// sometimes you need to explicit convert to RGB/RGBA
mp.type = mp.TrueColorMatteType
Backdrop=mp.CombinePictureWithMask
```
81.26. CLASS GMBLOBMBS

See also:

• 81.26.3 Constructor
• 81.26.4 Constructor(data as memoryblock, offset as Integer, size as Integer)
• 81.26.6 Constructor(other as GMBlobMBS)

81.26.6 Constructor(other as GMBlobMBS)

Function: Copy constructor (reference counted).
See also:

• 81.26.3 Constructor
• 81.26.4 Constructor(data as memoryblock, offset as Integer, size as Integer)
• 81.26.5 Constructor(data as string)

81.26.7 CopyMemory as memoryblock

Function: Returns a copy of the data as a memoryblock.
Notes: Returns nil on any error like low memory.

81.26.8 CopyString as string

Function: Returns a copy of the data as a string.

81.26.9 Data as Ptr

Function: A memoryblock with the data from this blob.
Example:

dim b as new GMBlobMBS("Hello")

dim m as memoryblock = b.Data
MsgBox m.StringValue(0,5) // shows "Hello"
Notes: This is a memoryblock referencing the data of the blob. It has no size set. The memoryblock can only be used as long as the blob object exists. If you use it after you destroyed the blob object, you can crash your application.

81.26.10 Update(data as memoryblock, offset as Integer, size as Integer)

Function: Replaces the content of this blob with a copy of the bytes in the memoryblock.
See also:
  • 81.26.11 Update(data as string)

81.26.11 Update(data as string)

Function: Replaces the content of this blob with a copy of the bytes in the string.
Notes: Offset is zero based.
See also:
  • 81.26.10 Update(data as memoryblock, offset as Integer, size as Integer)

81.26.12 Properties

81.26.13 handle as Integer

Function: The internal handle of the blob object.
Notes: (Read and Write property)

81.26.14 length as UInt64

Function: Obtain data length in bytes.
Example:
  dim b as new GMBlobMBS("Hello")
  MsgBox str(B.length) // shows 5
81.26. CLASS GMBLOBMBS

Notes: (Read only property)

81.26.15 base64 as string

Function: The blob content as a string in Base64 format.
Example:

```vbscript
dim b as new GMBlobMBS("Hello")
MsgBox b.base64 // shows "SGVsbG8="
```

Notes: (Read and Write computed property)
81.27 class GMCoderInfoMBS

81.27.1 class GMCoderInfoMBS


Function: The class used to get information about all registered coders.

Example:

```vba
dim coders(-1) as GMCoderInfoMBS = GMCoderInfoMBS.CoderInfoList
dim names(-1) as string

for each coder as GMCoderInfoMBS in coders
    names.Append coder.name
next

MsgBox Join(names, EndOfLine)
```

Notes: The CoderInfo class provides the means to provide information regarding GraphicsMagick support for an image format (designated by a magick string). It may be used to provide support for a specific named format (provided as an argument to the constructor), or as an element of a container when format support is queried using the coderInfoList() templated function.

81.27.2 Methods

81.27.3 CoderInfoList(needReadable as boolean = true, needWriteable as boolean = false, needMultiFrame as boolean = false) as GMCoderInfoMBS()


Function: Creates a list of all coders.

Example:

```vba
dim coders(-1) as GMCoderInfoMBS = GMCoderInfoMBS.CoderInfoList
```

81.27.4 Properties

81.27.5 description as string


Function: Format description (e.g. "CompuServe graphics interchange format").

Example:
81.27. **CLASS GMCODERINFOMBS**

```vba
dim coders(-1) as GMCoderInfoMBS = GMCoderInfoMBS.CoderInfoList
dim names(-1) as string

for each coder as GMCoderInfoMBS in coders
    names.Append coder.name + " " + coder.description
next

MsgBox Join(names, EndOfLine)
```

**Notes:** (Read and Write property)

### 81.27.6 isMultiFrame as boolean

**Function:** Format supports multiple frames.  
**Example:**

```vba
dim coders(-1) as GMCoderInfoMBS = GMCoderInfoMBS.CoderInfoList
dim names(-1) as string

for each coder as GMCoderInfoMBS in coders
    names.Append coder.name + " " + str(coder.isMultiFrame)
next

MsgBox Join(names, EndOfLine)
```

**Notes:** (Read and Write property)

### 81.27.7 isReadable as boolean

**Function:** Format is readable.  
**Example:**

```vba
dim coders(-1) as GMCoderInfoMBS = GMCoderInfoMBS.CoderInfoList
dim names(-1) as string

for each coder as GMCoderInfoMBS in coders
    names.Append coder.name + " " + str(coder.isReadable)
next
```

**Notes:** (Read and Write property)
MsgBox Join(names, EndOfLine)

**Notes:** (Read and Write property)

### 81.27.8 `isWritable` as boolean


**Function:** Format is writeable.

**Example:**

```vba
dim coders(-1) as GMCoderInfoMBS = GMCoderInfoMBS.CoderInfoList
dim names(-1) as string

for each coder as GMCoderInfoMBS in coders
    names.Append coder.name & " " + str(coder.isWritable)
next

MsgBox Join(names, EndOfLine)
```

**Notes:** (Read and Write property)

### 81.27.9 `name` as string


**Function:** Format name (e.g. "GIF").

**Example:**

```vba
dim coders(-1) as GMCoderInfoMBS = GMCoderInfoMBS.CoderInfoList
dim coder as GMCoderInfoMBS = coders(0) // pick first one

MsgBox coder.name
```

**Notes:** (Read and Write property)
81.28. class GMColorGrayMBS

81.28.1 class GMColorGrayMBS

Function: The color subclass for a grayscale color.
Example:

dim g as new GMColorGrayMBS(0.5)
MsgBox str(g.shade)

Notes:
Representation of grayscale RGB color.
Equal parts red, green, and blue specified as a ratio (0 to 1).
Subclass of the GMColorMBS class.

81.28.2 Methods

81.28.3 Constructor

Function: Creates a new color with transparent black.
Example:

dim c as new GMColorGrayMBS
MsgBox str(c.redQuantum)+"" +str(c.greenQuantum)+"" +str(c.blueQuantum)

See also:

- 81.28.4 Constructor(other as GMColorMBS)
- 81.28.5 Constructor(shade as Double)

81.28.4 Constructor(other as GMColorMBS)

Function: Creates a new color copying the existing color.
Example:

dim g as new GMColorGrayMBS(0.5)
dim o as new GMColorGrayMBS(g)
CHAPTER 81. GRAPHICS MAGICK

MsgBox str(o.shade)

See also:

- 81.28.3 Constructor
- 81.28.5 Constructor (shade as Double)

81.28.5 Constructor (shade as Double)


Function: Creates a new color with the given value.

Example:

dim g as new GMColorGrayMBS(1.0)
MsgBox str(g.colorValue)

Notes: Range is 0.0 to 1.0.

See also:

- 81.28.3 Constructor
- 81.28.4 Constructor (other as GMColorMBS)

81.28.6 Properties

81.28.7 shade as Double


Function: The gray value for this color.

Example:

dim g as new GMColorGrayMBS(1.0)
MsgBox str(g.shade)

Notes:

Range is 0.0 to 1.0
(Read and Write property)
class GMColorHSLMBS

81.29.1 class GMColorHSLMBS

**Function:** The class for a HSL color.  
**Example:**

```vbnet
dim g as new GMColorHSLMBS(0.1,0.2,0.3)  
MsgBox str(g.colorValue)
```

**Notes:** Subclass of the GMColorMBS class.

81.29.2 Methods

81.29.3 Constructor

**Function:** Creates a new color with transparent black.  
**Example:**

```vbnet
dim c as new GMColorHSLMBS  
MsgBox str(c.redQuantum)+" "+str(c.greenQuantum)+" "+str(c.blueQuantum)
```

See also:

- 81.29.4 Constructor(hue as Double, saturation as Double, luminosity as Double)  
- 81.29.5 Constructor(other as GMColorMBS)

81.29.4 Constructor(hue as Double, saturation as Double, luminosity as Double)

**Function:** Creates a new color with the given values.  
**Example:**

```vbnet
dim g as new GMColorHSLMBS(0.1,0.2,0.3)  
MsgBox str(g.hue)+" "+str(g.saturation)+" "+str(g.luminosity)
```

See also:
81.29.5 Constructor(other as GMColorMBS)


Function: Creates a new color copying the existing color.

Example:

```vbnet
dim g as new GMColorHSLMBS(0.1,0.2,0.3)
dim o as new GMColorHSLMBS(g)
MsgBox str(o.colorValue)
```

See also:

- 81.29.3 Constructor
- 81.29.4 Constructor(hue as Double, saturation as Double, luminosity as Double)

81.29.6 Properties

81.29.7 hue as Double


Function: The hue value.

Example:

```vbnet
dim g as new GMColorHSLMBS(0.1,0.2,0.3)
MsgBox str(g.hue)
```

Notes: (Read and Write property)

81.29.8 luminosity as Double


Function: The luminosity value.

Example:

```vbnet
dim g as new GMColorHSLMBS(0.1,0.2,0.3)
MsgBox str(g.luminosity)
```
Notes: (Read and Write property)

81.29.9 saturation as Double

Function: The saturation value.
Example:

```vbnet
dim g as new GMColorHSLMBS(0.1,0.2,0.3)
MsgBox str(g.saturation)
```

Notes: (Read and Write property)
### 81.30 class GMColorMBS

#### 81.30.1 class GMColorMBS


**Function:** Color is the base color class.

**Example:**

```vba
dim c as new GMColorMBS(127,255,127) // light green
MsgBox str(c.redQuantum)+” ”+str(c.greenQuantum)+” ”+str(c.blueQuantum)
```

**Notes:** It is a simple container class for the pixel red, green, blue, and alpha values scaled to fit GraphicsMagick’s Quantum size. Normally users will instantiate a class derived from Color which supports the color model that fits the needs of the application. The Color class may be constructed directly from an X11-style color string. As a perhaps odd design decision, the value transparent black is considered to represent an unset value (invalid color) in many cases. This choice was made since it avoided using more memory. The default Color constructor constructs an invalid color (i.e. transparent black) and may be used as a parameter in order to remove a color setting.

### 81.30.2 Methods

#### 81.30.3 Constructor


**Function:** Creates a new color with transparent black.

**Example:**

```vba
dim c as new GMColorMBS
MsgBox str(c.redQuantum)+” ”+str(c.greenQuantum)+” ”+str(c.blueQuantum)
```

See also:

- 81.30.4 Constructor(ColorName as string) 13563
- 81.30.5 Constructor(ColorValue as color) 13563
- 81.30.6 Constructor(ColorValue as color, alpha as Integer) 13564
- 81.30.7 Constructor(other as GMColorMBS) 13564
- 81.30.8 Constructor(red as Integer, green as Integer, blue as Integer) 13565
- 81.30.9 Constructor(red as Integer, green as Integer, blue as Integer, alpha as Integer) 13565
81.30. CLASS GMCOLORMBS

81.30.4 Constructor(ColorName as string)


Function: Creates a new color based on the X11 color name.

Example:

dim c as new GMColorMBS("red")

MsgBox str(c.redQuantum)+"-"+str(c.greenQuantum)+"-"+str(c.blueQuantum) // shows "255-0-0"

dim d as new GMColorMBS("# 77FF00")

MsgBox str(d.redQuantum)+"-"+str(d.greenQuantum)+"-"+str(d.blueQuantum) // shows "119-255-0"

Notes: An alternate way to construct the class is via an X11-compatible color specification string (e.g. Color("red") or Color ("# FF0000")). Since the class may be constructed from a string, convenient strings may be passed in place of an explicit Color object in methods which accept a reference to Color. Color may also be converted to a std::string for convenience in user interfaces, and for saving settings to a text file.

See also:

- 81.30.3 Constructor 13562
- 81.30.5 Constructor(ColorValue as color) 13563
- 81.30.6 Constructor(ColorValue as color, alpha as Integer) 13564
- 81.30.7 Constructor(other as GMColorMBS) 13564
- 81.30.8 Constructor(red as Integer, green as Integer, blue as Integer) 13565
- 81.30.9 Constructor(red as Integer, green as Integer, blue as Integer, alpha as Integer) 13565

81.30.5 Constructor(ColorValue as color)


Function: Creates a new color with the given values.

Example:

dim c as new GMColorMBS(& c FF0000)

MsgBox str(c.redQuantum)+"-"+str(c.greenQuantum)+"-"+str(c.blueQuantum)

See also:

- 81.30.3 Constructor 13562
- 81.30.4 Constructor(ColorName as string) 13563
81.30.6 Constructor(ColorValue as color, alpha as Integer)


Function: Creates a new color with the given values.

Example:

```vba
dim c as new GMColorMBS(& c FF0102, 127)
MsgBox str(c.redQuantum) + " " + str(c.greenQuantum) + " " + str(c.blueQuantum) + " " + str(c.alpha)
```

See also:

- 81.30.3 Constructor
- 81.30.4 Constructor(ColorName as string)
- 81.30.5 Constructor(ColorValue as color)
- 81.30.7 Constructor(other as GMColorMBS)
- 81.30.8 Constructor(red as Integer, green as Integer, blue as Integer)
- 81.30.9 Constructor(red as Integer, green as Integer, blue as Integer, alpha as Integer)

81.30.7 Constructor(other as GMColorMBS)


Function: Creates a new color copying the existing color.

Example:

```vba
dim r as new GMColorMBS(1, 2, 3)
dim c as new GMColorMBS(r)
MsgBox str(c.redQuantum) + " " + str(c.greenQuantum) + " " + str(c.blueQuantum)
```

See also:

- 81.30.3 Constructor
- 81.30.4 Constructor(ColorName as string)
81.30. CLASS GMCOLORMBS

- 81.30.5 Constructor(ColorValue as color)  
- 81.30.6 Constructor(ColorValue as color, alpha as Integer)  
- 81.30.8 Constructor(red as Integer, green as Integer, blue as Integer)  
- 81.30.9 Constructor(red as Integer, green as Integer, blue as Integer, alpha as Integer)  

81.30.8 Constructor(red as Integer, green as Integer, blue as Integer)


**Function:** Creates a new color with the given values.

**Example:**

dim c as new GMColorMBS(1,2,3)
MsgBox str(C.redQuantum)+" "+str(c.greenQuantum)+" "+str(c.blueQuantum)

**Notes:**

For 8-bit range is 0 to 255.
For 16-bit range is 0 to 65535.

See also:

- 81.30.3 Constructor  
- 81.30.4 Constructor(ColorName as string)  
- 81.30.5 Constructor(ColorValue as color)  
- 81.30.6 Constructor(ColorValue as color, alpha as Integer)  
- 81.30.7 Constructor(other as GMColorMBS)  
- 81.30.9 Constructor(red as Integer, green as Integer, blue as Integer, alpha as Integer)  

81.30.9 Constructor(red as Integer, green as Integer, blue as Integer, alpha as Integer)


**Function:** Creates a new color with the given values.

**Example:**

dim c as new GMColorMBS(1,2,3,4)

// display color, alpha is double...
MsgBox str(C.redQuantum)+" "+str(c.greenQuantum)+" "+str(c.blueQuantum)+" "+str(c.alpha)
Notes:
For 8-bit range is 0 to 255.
For 16-bit range is 0 to 65535.
See also:

- 81.30.3 Constructor
- 81.30.4 Constructor(ColorName as string)
- 81.30.5 Constructor(ColorValue as color)
- 81.30.6 Constructor(ColorValue as color, alpha as Integer)
- 81.30.7 Constructor(other as GMColorMBS)
- 81.30.8 Constructor(red as Integer, green as Integer, blue as Integer)

81.30.10 QuantumByteSize as Integer

Function: The quantum byte size.
Example:
MsgBox str(GMColorMBS.QuantumByteSize)

Notes: As the plugin uses 8 bit this value should be 1.

81.30.11 scaleDoubleToQuantum(value as Double) as Integer

Function: Scales a double value to a value in the range of a quantum.
Example:

dim d as Double = 1.0
dim v as Integer = GMColorMBS.scaleDoubleToQuantum(d)
MsgBox str(v)

Notes: As the plugin uses 8 bit quantums, this is basically a multiplication by 255.0
81.30. CLASS GMCOLORMBS

81.30.12 scaleQuantumToDouble(value as Integer) as Double

Function: Scales a quantum to a double value.
Example:

```vba
dim v as Integer = 255
dim d as Double = GMColorMBS.scaleQuantumToDouble(v)
MsgBox str(d)
```

Notes: The plugin uses 8bit quantums, so this is basicly the division of value by 255.0

81.30.13 Properties

81.30.14 alpha as Double

Function: The alpha value of this color.
Example:

```vba
dim c as new GMColorMBS(1,2,3,1.0)
MsgBox str(c.alpha)
```

Notes:
Range is 0.0 to 1.0. If you pass values higher, they are divided by 255.
(Read and Write property)

81.30.15 alphaQuantum as Integer

Function: The alpha color value.
Notes:
For 8-bit range is 0 to 255.
For 16-bit range is 0 to 65535.
(Read and Write property)
81.30.16 blueQuantum as Integer

**Function:** The blue color value.
**Example:**
```vbnet
dim c as new GMColorMBS(1,2,3)
MsgBox str(c.redQuantum) // 3
```

**Notes:**
For 8-bit range is 0 to 255.
For 16-bit range is 0 to 65535.
(Read and Write property)

81.30.17 colorValue as color

**Function:** The REALbasic color for the GraphicsMagick color.
**Example:**
```vbnet
dim c as new GMColorMBS(& c FF0102)
MsgBox str(c.ColorValue)
```

**Notes:** (Read and Write property)

81.30.18 greenQuantum as Integer

**Function:** The green color value.
**Example:**
```vbnet
dim r as new GMColorMBS(1,2,3)
MsgBox str(r.greenQuantum) // shows 2
```

**Notes:**
For 8-bit range is 0 to 255.
For 16-bit range is 0 to 65535.
(Read and Write property)
81.30. CLASS GMCOLORMBS

81.30.19  handle as Integer

Function: The internal color reference.
Example:
```vbscript
dim r as new GMColorMBS(1,2,3)
MsgBox str(r.handle)
```

Notes: (Read and Write property)

81.30.20  intensity as Double

Function: The intensity of this color.
Example:
```vbscript
dim c as new GMColorMBS(1,2,3)
MsgBox str(c.intensity)
```

Notes: (Read only property)

81.30.21  isValid as boolean

Function: Does object contain valid color?
Example:
```vbscript
dim c as new GMColorMBS(1,2,3)
MsgBox str(c.isValid)
```

Notes: (Read and Write property)

81.30.22  redQuantum as Integer

Function: The red color value.
Example:
dim c as new GMColorMBS(1,2,3)
MsgBox str(c.redQuantum) // 1

Notes:
For 8-bit range is 0 to 255.
For 16-bit range is 0 to 65535.
(Read and Write property)
81.31  class GMColorMonoMBS

81.31.1  class GMColorMonoMBS


Function: Representation of a black/white color (true/false)

Example:

dim g as new GMColorMonoMBS(false)
MsgBox str(g.colorValue)

Notes: Subclass of the GMColorMBS class.

81.31.2  Methods

81.31.3  Constructor


Function: Creates a new color with transparent black.

Example:

dim c as new GMColorMonoMBS
MsgBox str(c.redQuantum)+” ”+str(c.greenQuantum)+” ”+str(c.blueQuantum)

See also:

- 81.31.4 Constructor(mono as boolean)
- 81.31.5 Constructor(other as GMColorMBS)

81.31.4  Constructor(mono as boolean)


Function: Creates a new color with the given values.

Example:

dim g as new GMColorMonoMBS(false)
MsgBox str(g.mono)

See also:
81.31.5 Constructor(other as GMColorMBS)


**Function:** Creates a new color copying the existing color.

**Example:**

```vbnet
dim g as new GMColorMonoMBS(false)
dim o as new GMColorMonoMBS(g)
MsgBox str(o.mono)
```

See also:

- 81.31.3 Constructor
- 81.31.4 Constructor(mono as boolean)

### 81.31.6 Properties

#### 81.31.7 mono as boolean


**Function:** The color value.

**Example:**

```vbnet
dim g as new GMColorMonoMBS(true)
MsgBox str(g.mono)
```

**Notes:** (Read and Write property)
81.32. class GMColorRGBMBS

81.32.1 class GMColorRGBMBS

Function: The color class for RGB colors.
Example:

```vba
dim c as new GMColorRGBMBS(1.0,0.0,0.0) // red
MsgBox str(c.red)+" "+str(c.green)+" "+str(c.blue)
MsgBox str(c.redQuantum)+" "+str(c.greenQuantum)+" "+str(c.blueQuantum)
```

Notes:
Representation of RGB color with red, green, and blue specified as ratios (0 to 1).
Subclass of the GMColorMBS class.

81.32.2 Methods

81.32.3 Constructor

Function: Creates a new color with transparent black.
Example:

```vba
dim c as new GMColorRGBMBS
MsgBox str(c.redQuantum)+" "+str(c.greenQuantum)+" "+str(c.blueQuantum)
```

See also:

- 81.32.4 Constructor(other as GMColorMBS)
- 81.32.5 Constructor(red as Double, green as Double, blue as Double)

81.32.4 Constructor(other as GMColorMBS)

Function: Creates a new color copying the existing color.
Example:

```vba
dim g as new GMColorRGBMBS(1,2,3)
dim o as new GMColorRGBMBS(g)
```
MsgBox str(o.colorValue)

See also:

- 81.32.3 Constructor
- 81.32.5 Constructor(red as Double, green as Double, blue as Double)

### 81.32.5 Constructor(red as Double, green as Double, blue as Double)


**Function:** Creates a new color with the given values.

**Example:**

```dim c as new GMColorRGBMBS(0.1,0.2,0.3)```

**Notes:** Range is 0.0 to 1.0.

See also:

- 81.32.3 Constructor
- 81.32.4 Constructor(other as GMColorMBS)

### 81.32.6 Properties

#### 81.32.7 blue as Double


**Function:** The blue color component.

**Example:**

```dim c as new GMColorRGBMBS(0.0,0.0,1.0)
MsgBox str(c.blue)```

**Notes:**

Range is 0.0 to 1.0.

(Read and Write property)
81.32. **CLASS GMCOLORRGBMBS**

### 81.32.8 green as Double


**Function:** The green color component.

**Example:**

```vbnet
dim c as new GMColorRGBMBS(0.0,1.0,0.0)
MsgBox str(c.green)
```

**Notes:**

- Range is 0.0 to 1.0.
- (Read and Write property)

### 81.32.9 red as Double


**Function:** The red color component.

**Example:**

```vbnet
dim c as new GMColorRGBMBS(1.0,0.0,0.0) // red
MsgBox str(C.red)
```

**Notes:**

- Range is 0.0 to 1.0.
- (Read and Write property)
81.33 class GMColorYUVMBS

81.33.1 class GMColorYUVMBS

Function: Representation of a color in the YUV colorspace
Example:

```vba
dim g as new GMColorYUVMBS(0.1, 0.2, 0.3)
MsgBox str(g.y)+" " +str(g.u)+" " +str(g.v)
```

Notes: Subclass of the GMColorMBS class.

81.33.2 Methods

81.33.3 Constructor

Function: Creates a new color with transparent black.
Example:

```vba
dim c as new GMColorYUVMBS
MsgBox str(c.redQuantum)+" " +str(c.greenQuantum)+" " +str(c.blueQuantum)
```

See also:

- 81.33.4 Constructor(other as GMColorMBS)
- 81.33.5 Constructor(y as Double, u as Double, v as Double)

81.33.4 Constructor(other as GMColorMBS)

Function: Creates a new color copying the existing color.
Example:

```vba
dim g as new GMColorYUVMBS(0.1, 0.2, 0.3)
dim o as new GMColorYUVMBS(g)
MsgBox str(o.colorValue)
```

See also:
81.33.  CLASS GMCOLORYUVMS

- 81.33.3 Constructor
- 81.33.5 Constructor(y as Double, u as Double, v as Double)

81.33.5  Constructor(y as Double, u as Double, v as Double)


**Function:** Creates a new color with the given values.

**Example:**

```vba
dim g as new GMColorYUVMS(0.1, 0.2, 0.3)
```

See also:

- 81.33.3 Constructor
- 81.33.4 Constructor(other as GMColorMBS)

81.33.6  Properties

81.33.7  u as Double


**Function:** The u color component.

**Example:**

```vba
dim g as new GMColorYUVMS(0.1, 0.2, 0.3)
MsgBox str(g.u)
```

**Notes:**

Range is -0.5 to +0.5.
(Read and Write property)

81.33.8  v as Double


**Function:** The v color component.

**Example:**

```vba
dim g as new GMColorYUVMS(0.1, 0.2, 0.3)
MsgBox str(g.v)
```
Notes:
Range is -0.5 to +0.5.
(Read and Write property)

81.33.9  y as Double

Function: The y color component.
Example:

```vbscript
dim g as new GMColorYUVMBS(0.1, 0.2, 0.3)
MsgBox str(g.y)
```

Notes:
Range is 0.0 to 1.0.
(Read and Write property)
**81.34. CLASS GMCOORDINATEMBS**

**81.34 class GMCoordinateMBS**

**81.34.1 class GMCoordinateMBS**

**Function:** The Graphics Magick class for a coordinate.
**Example:**
```vbs
dim c as new GMCoordinateMBS(5,6)
MsgBox str(c.x)+" "+str(c.y)
```

**81.34.2 Methods**

**81.34.3 Constructor**

**Function:** The constructor to create a new coordinate.
**See also:**
- 81.34.4 Constructor(x as Double, y as Double)

**81.34.4 Constructor(x as Double, y as Double)**

**Function:** The constructor to create a new coordinate.
**Example:**
```vbs
dim c as new GMCoordinateMBS(5,6)
MsgBox str(c.x)+" "+str(c.y)
```
**See also:**
- 81.34.3 Constructor

**81.34.5 Properties**

**81.34.6 x as Double**

**Function:** The x value.
**Example:**
dim c as new GMCoordinateMBS
c.x = 5
MsgBox str(c.x)

Notes: (Read and Write property)

81.34.7 y as Double

Function: The y value.
Example:
  dim c as new GMCoordinateMBS
c.y = 5
MsgBox str(c.y)

Notes: (Read and Write property)
81.35. class GMErrorExceptionMBS

81.35.1. class GMErrorExceptionMBS


**Function:** The exception to report errors in the GraphicMagick plugin.

**Notes:**
Check the message property for details.
Subclass of the RuntimeException class.
81.36 class GMGeometryMBS

81.36.1 class GMGeometryMBS

Function: Geometry provides a convenient means to specify a geometry argument.
Example:

```vbscript
dim g as new GMGeometryMBS(300,400)
MsgBox str(G.width)+" " +str(G.height)
```

Notes: The object may be initialized from a string containing a geometry specification. It may also be initialized by more efficient parameterized constructors.

81.36.2 Methods

81.36.3 Constructor

Function: Creates empty geometry.
Example:

```vbscript
dim g as new GMGeometryMBS
MsgBox str(G.width)+" " +str(G.height)
```

See also:

- 81.36.4 Constructor(geometry as string) 13582
- 81.36.5 Constructor(other as GMGeometryMBS) 13583
- 81.36.6 Constructor(Width as UInt32, Height as UInt32, XOffset as UInt32=0, YOffset as UInt32=0, xNegative as boolean=false, yNegative as boolean=false) 13583

81.36.4 Constructor(geometry as string)

Function: Construct geometry from string.
Example:

```vbscript
dim g as new GMGeometryMBS("600x600")
```
81.36. CLASS GMGEOMETRYMBS

MsgBox str(G.width) + " " + str(G.height)

Notes:
See the GraphicsMagick website for details.
http://www.graphicsmagick.org/Magick++/Geometry.html
See also:

- 81.36.3 Constructor
- 81.36.5 Constructor(other as GMGeometryMBS)
- 81.36.6 Constructor(Width as UInt32, Height as UInt32, XOffset as UInt32=0, YOffset as UInt32=0, xNegative as boolean=false, yNegative as boolean=false)

81.36.5 Constructor(other as GMGeometryMBS)

Function: Creates a new geometry object by copying an existing one.
Example:

dim g as new GMGeometryMBS(600,600)
dim h as new GMGeometryMBS(g)
MsgBox str(h.width)

See also:

- 81.36.3 Constructor
- 81.36.4 Constructor(geometry as string)
- 81.36.6 Constructor(Width as UInt32, Height as UInt32, XOffset as UInt32=0, YOffset as UInt32=0, xNegative as boolean=false, yNegative as boolean=false)

81.36.6 Constructor(Width as UInt32, Height as UInt32, XOffset as UInt32=0, YOffset as UInt32=0, xNegative as boolean=false, yNegative as boolean=false)

Function: Creates geometry with the given values.
Example:

dim g as new GMGeometryMBS(600,600)
MsgBox str(g.width)
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See also:

- 81.36.3 Constructor 13582
- 81.36.4 Constructor(geometry as string) 13582
- 81.36.5 Constructor(other as GMGeometryMBS) 13583

81.36.7 Make(geometry as string) as GMGeometryMBS

Function: Construct geometry from string.
Example:

```vbscript
dim g as GMGeometryMBS = GMGeometryMBS.Make("600x600")
MsgBox str(g.width)+"x"+str(g.height)
```

Notes:
See the GraphicsMagick website for more details:
http://www.graphicsmagick.org/Magick++/Geometry.html
See also:

- 81.36.8 Make(Width as UInt32, Height as UInt32, XOffset as UInt32=0, YOffset as UInt32=0, xNegative as boolean=false, yNegative as boolean=false) as GMGeometryMBS 13584

81.36.8 Make(Width as UInt32, Height as UInt32, XOffset as UInt32=0, YOffset as UInt32=0, xNegative as boolean=false, yNegative as boolean=false) as GMGeometryMBS

Function: Creates geometry with the given values.
Example:

```vbscript
dim g as GMGeometryMBS = GMGeometryMBS.Make(600,600)
MsgBox str(g.width)
```

See also:

- 81.36.7 Make(geometry as string) as GMGeometryMBS 13584
81.36. CLASS GMGEOMETRYMBS

81.36.9 Properties

81.36.10 aspect as boolean


Function: Resize without preserving aspect ratio (!).

Example:

```dim g as new GMGeometryMBS(600,600)
MsgBox str(g.aspect)```

Notes: (Read and Write property)

81.36.11 greater as boolean


Function: Resize if image is greater than size (>).

Example:

```dim g as new GMGeometryMBS(600,600)
MsgBox str(g.greater)```

Notes: (Read and Write property)

81.36.12 height as Uint32


Function: The height value.

Example:

```dim g as new GMGeometryMBS(600,600)
MsgBox str(g.height)```

Notes: (Read and Write property)
81.36.13  isValid as boolean

**Function:** Does object contain a valid geometry?
**Example:**
```vba
dim g as new GMGeometryMBS(100,200)
MsgBox str(G.isValid)
```

**Notes:**
May be set to false in order to invalidate an existing geometry object.
(Read and Write property)

---

81.36.14  less as boolean

**Function:** Resize if image is less than size (<).
**Example:**
```vba
dim g as new GMGeometryMBS(600,600)
MsgBox str(g.less)
```

**Notes:** (Read and Write property)

---

81.36.15  percent as boolean

**Function:** Width and height are expressed as percentages.
**Example:**
```vba
dim g as new GMGeometryMBS(600,600)
MsgBox str(g.percent)
```

**Notes:** (Read and Write property)
81.36. **CLASS GMGEOMETRYMBS**

### 81.36.16 StringValue as string


**Function:** The string representation of the geometry object.

**Example:**

```plaintext
dim g as new GMGeometryMBS(600,600)
MsgBox str(g.StringValue)
```

**Notes:** (Read and Write property)

### 81.36.17 width as Uint32


**Function:** The width value.

**Example:**

```plaintext
dim g as new GMGeometryMBS(600,600)
MsgBox str(g.width)
```

**Notes:** (Read and Write property)

### 81.36.18 xNegative as boolean


**Function:** Sign of X offset negative? (X origin at right)

**Example:**

```plaintext
dim g as new GMGeometryMBS(100,200,30,40,true,false)
MsgBox str(G.xNegative)
```

**Notes:** (Read and Write property)

### 81.36.19 xOff as Uint32


**Function:** X offset from origin.

**Example:**
dim g as new GMGeometryMBS(100,200,30,40,true,true)
MsgBox str(G.xOff)+" "+str(G.yOff)

Notes: (Read and Write property)

81.36.20 yNegative as boolean

Function: Sign of Y offset negative? (Y origin at bottom)
Example:
  dim g as new GMGeometryMBS(100,200,30,40,false,true)
  MsgBox str(G.yNegative)

Notes: (Read and Write property)

81.36.21 yOff as Uint32

Function: Y offset from origin
Example:
  dim g as new GMGeometryMBS(100,200,30,40,true,true)
  MsgBox str(G.xOff)+" "+str(G.yOff)

Notes: (Read and Write property)
81.37  class GMGraphicsMBS

81.37.1  class GMGraphicsMBS

**Function:** The class for drawing commands targeting a GMImageMBS.
**Notes:** Please remember that all commands are collected till you call the Draw method.

81.37.2  Methods

81.37.3  Arc(startX as Double, startY as Double, endX as Double, endY as Double, startDegrees as Double, endDegrees as Double)

**Function:** Draw an arc using the stroke color and based on the circle starting at coordinates startX,startY, and ending with coordinates endX,endY, and bounded by the rotational arc startDegrees,endDegrees.
**Example:**

```vbnet
dim g as new GMGeometryMBS(500,500)
dim c as new GMColorRGBMBS("white") // white
dim image as new GMImageMBS(g, c)

image.type = image.TrueColorType
image.strokeColor = new GMColorRGBMBS("red") // Outline color
image.fillColor = new GMColorRGBMBS("green") // Fill color
image.strokeWidth = 5

dim draw as GMGraphicsMBS = image.Graphics
draw.arc(250, 250, 100, 100,50,300)
draw.Draw

Backdrop=image.CopyPicture
```

81.37.4  Bezier(values() as GMCoordinateMBS)

MBS GraphicsMagick Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Draw a bezier curve using the stroke color and based on the coordinates specified by the coordinates array.
81.37.5 Circle(originX as Double, originY as Double, perimX as Double, perimY as Double)

MBS GraphicsMagick Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Draw a circle using the stroke color and thickness using specified origin and perimeter coordinates.

**Example:**

```vbs
dim g as new GMGeometryMBS(500,500)
dim c as new GMColorRGBMBS("white") // white
dim image as new GMImageMBS(g, c)

image.type = image.TrueColorType
image.strokeColor = new GMColorRGBMBS("red") // Outline color
image.fillColor = new GMColorRGBMBS("green") // Fill color
image.strokeWidth = 5

dim draw as GMGraphicsMBS = image.Graphics

// Draw a circle
draw.Circle(250, 250, 120, 150)
draw.Draw

Backdrop=image.CopyPicture
```

**Notes:** If a fill color is specified, then the object is filled.

81.37.6 ClipPath(id as string)

MBS GraphicsMagick Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Select a drawing clip path matching id.

81.37.7 ColorPixel(x as Double, y as Double, paintMethod as Integer)

MBS GraphicsMagick Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Color image according to paintMethod.

**Notes:** The point method recolors the target pixel. The replace method recolors any pixel that matches the color of the target pixel. Floodfill recolors any pixel that matches the color of the target pixel and is a neighbor, whereas filltoborder recolors any neighbor pixel that is not the border color. Finally, reset recolors all pixels.
81.37. CLASS GMGRAPHICSMBS

81.37.8 CompositeImage(x as Double, y as Double, file as folderitem)

**Function:** Composite current image with contents of specified image, at specified coordinates.
**Notes:** If the matte attribute is set to true, then the image composition will consider an alpha channel, or transparency, present in the image file so that non-opaque portions allow part (or all) of the composite image to show through.

See also:

- 81.37.9 CompositeImage(x as Double, y as Double, image as GMImageMBS)
- 81.37.10 CompositeImage(x as Double, y as Double, path as string)
- 81.37.11 CompositeImage(x as Double, y as Double, w as Double, h as Double, file as folderitem)
- 81.37.12 CompositeImage(x as Double, y as Double, w as Double, h as Double, file as folderitem, CompositeOperator as Integer)
- 81.37.13 CompositeImage(x as Double, y as Double, w as Double, h as Double, image as GMImageMBS)
- 81.37.14 CompositeImage(x as Double, y as Double, w as Double, h as Double, image as GMImageMBS, CompositeOperator as Integer)
- 81.37.15 CompositeImage(x as Double, y as Double, w as Double, h as Double, path as string)
- 81.37.16 CompositeImage(x as Double, y as Double, w as Double, h as Double, path as string, CompositeOperator as Integer)

81.37.9 CompositeImage(x as Double, y as Double, image as GMImageMBS)

**Function:** Composite current image with contents of specified image, at specified coordinates.
**Notes:** If the matte attribute is set to true, then the image composition will consider an alpha channel, or transparency, present in the image file so that non-opaque portions allow part (or all) of the composite image to show through.

See also:

- 81.37.8 CompositeImage(x as Double, y as Double, file as folderitem)
- 81.37.10 CompositeImage(x as Double, y as Double, path as string)
- 81.37.11 CompositeImage(x as Double, y as Double, w as Double, h as Double, file as folderitem)
- 81.37.12 CompositeImage(x as Double, y as Double, w as Double, h as Double, file as folderitem, CompositeOperator as Integer)
- 81.37.13 CompositeImage(x as Double, y as Double, w as Double, h as Double, image as GMImageMBS)
81.37.10 CompositeImage(x as Double, y as Double, path as string)


Function: Composite current image with contents of specified image, rendered with specified width and height, at specified coordinates.

Notes: If the matte attribute is set to true, then the image composition will consider an alpha channel, or transparency, present in the image file so that non-opaque portions allow part (or all) of the composite image to show through. If the specified width or height is zero, then the image is composited at its natural size, without enlargement or reduction.

See also:

- 81.37.8 CompositeImage(x as Double, y as Double, file as folderitem) 13591
- 81.37.9 CompositeImage(x as Double, y as Double, image as GMImageMBS) 13591
- 81.37.11 CompositeImage(x as Double, y as Double, w as Double, h as Double, file as folderitem) 13592
- 81.37.12 CompositeImage(x as Double, y as Double, w as Double, h as Double, file as folderitem, CompositeOperator as Integer) 13593
- 81.37.13 CompositeImage(x as Double, y as Double, w as Double, h as Double, image as GMImageMBS) 13594
- 81.37.14 CompositeImage(x as Double, y as Double, w as Double, h as Double, image as GMImageMBS, CompositeOperator as Integer) 13594
- 81.37.15 CompositeImage(x as Double, y as Double, w as Double, h as Double, path as string) 13595
- 81.37.16 CompositeImage(x as Double, y as Double, w as Double, h as Double, path as string, CompositeOperator as Integer) 13595

81.37.11 CompositeImage(x as Double, y as Double, w as Double, h as Double, file as folderitem)


Function: Composite current image with contents of specified image, rendered with specified width and height, at specified coordinates.

Notes: If the matte attribute is set to true, then the image composition will consider an alpha channel, or transparency, present in the image file so that non-opaque portions allow part (or all) of the composite image to show through. If the specified width or height is zero, then the image is composited at its natural size, without enlargement or reduction.

See also:
81.37. **CLASS GMGRAPHICSMB**

- 81.37.8 CompositeImage(x as Double, y as Double, file as folderitem) 13591
- 81.37.9 CompositeImage(x as Double, y as Double, image as GMImageMBS) 13591
- 81.37.10 CompositeImage(x as Double, y as Double, path as string) 13592
- 81.37.12 CompositeImage(x as Double, y as Double, w as Double, h as Double, file as folderitem, CompositeOperator as Integer) 13593
- 81.37.13 CompositeImage(x as Double, y as Double, w as Double, h as Double, image as GMImageMBS) 13594
- 81.37.14 CompositeImage(x as Double, y as Double, w as Double, h as Double, image as GMImageMBS, CompositeOperator as Integer) 13594
- 81.37.15 CompositeImage(x as Double, y as Double, w as Double, h as Double, path as string) 13595
- 81.37.16 CompositeImage(x as Double, y as Double, w as Double, h as Double, path as string, CompositeOperator as Integer) 13595

### 81.37.12 CompositeImage(x as Double, y as Double, w as Double, h as Double, file as folderitem, CompositeOperator as Integer)


**Function:** Composite current image with contents of specified image, rendered with specified width and height, using specified composition algorithm, at specified coordinates.

**Notes:** If the matte attribute is set to true, then the image composition will consider an alpha channel, or transparency, present in the image file so that non-opaque portions allow part (or all) of the composite image to show through. If the specified width or height is zero, then the image is composited at its natural size, without enlargement or reduction.

See also:

- 81.37.8 CompositeImage(x as Double, y as Double, file as folderitem) 13591
- 81.37.9 CompositeImage(x as Double, y as Double, image as GMImageMBS) 13591
- 81.37.10 CompositeImage(x as Double, y as Double, path as string) 13592
- 81.37.11 CompositeImage(x as Double, y as Double, w as Double, h as Double, file as folderitem) 13592
- 81.37.13 CompositeImage(x as Double, y as Double, w as Double, h as Double, image as GMImageMBS) 13594
- 81.37.14 CompositeImage(x as Double, y as Double, w as Double, h as Double, image as GMImageMBS, CompositeOperator as Integer) 13594
- 81.37.15 CompositeImage(x as Double, y as Double, w as Double, h as Double, path as string) 13595
- 81.37.16 CompositeImage(x as Double, y as Double, w as Double, h as Double, path as string, CompositeOperator as Integer) 13595
81.37.13 **CompositeImage(x as Double, y as Double, w as Double, h as Double, image as GMImageMBS)**


**Function:** Composite current image with contents of specified image, rendered with specified width and height, at specified coordinates.

**Notes:** If the matte attribute is set to true, then the image composition will consider an alpha channel, or transparency, present in the image file so that non-opaque portions allow part (or all) of the composite image to show through. If the specified width or height is zero, then the image is composited at its natural size, without enlargement or reduction.

See also:

- 81.37.8 CompositeImage(x as Double, y as Double, file as folderitem) 13591
- 81.37.9 CompositeImage(x as Double, y as Double, image as GMImageMBS) 13591
- 81.37.10 CompositeImage(x as Double, y as Double, path as string) 13592
- 81.37.11 CompositeImage(x as Double, y as Double, w as Double, h as Double, file as folderitem) 13592
- 81.37.12 CompositeImage(x as Double, y as Double, w as Double, h as Double, file as folderitem, CompositeOperator as Integer) 13593
- 81.37.14 CompositeImage(x as Double, y as Double, w as Double, h as Double, image as GMImageMBS, CompositeOperator as Integer) 13594
- 81.37.15 CompositeImage(x as Double, y as Double, w as Double, h as Double, path as string) 13595
- 81.37.16 CompositeImage(x as Double, y as Double, w as Double, h as Double, path as string, CompositeOperator as Integer) 13595

81.37.14 **CompositeImage(x as Double, y as Double, w as Double, h as Double, image as GMImageMBS, CompositeOperator as Integer)**


**Function:** Composite current image with contents of specified image, rendered with specified width and height, using specified composition algorithm, at specified coordinates.

**Notes:** If the matte attribute is set to true, then the image composition will consider an alpha channel, or transparency, present in the image file so that non-opaque portions allow part (or all) of the composite image to show through. If the specified width or height is zero, then the image is composited at its natural size, without enlargement or reduction.

See also:

- 81.37.8 CompositeImage(x as Double, y as Double, file as folderitem) 13591
- 81.37.9 CompositeImage(x as Double, y as Double, image as GMImageMBS) 13591
- 81.37.10 CompositeImage(x as Double, y as Double, path as string) 13592
- 81.37.11 CompositeImage(x as Double, y as Double, w as Double, h as Double, file as folderitem) 13592
81.37. CompositeImage(x as Double, y as Double, w as Double, h as Double, path as string, CompositeOperator as Integer)


**Function:** Composite current image with contents of specified image, rendered with specified width and height, using specified composition algorithm, at specified coordinates.

**Notes:** If the matte attribute is set to true, then the image composition will consider an alpha channel, or transparency, present in the image file so that non-opaque portions allow part (or all) of the composite image to show through. If the specified width or height is zero, then the image is composited at its natural size, without enlargement or reduction.

See also:

- 81.37.8 CompositeImage(x as Double, y as Double, file as folderitem)
- 81.37.9 CompositeImage(x as Double, y as Double, image as GMImageMBS)
- 81.37.10 CompositeImage(x as Double, y as Double, path as string)
- 81.37.11 CompositeImage(x as Double, y as Double, w as Double, h as Double, file as folderitem)
- 81.37.12 CompositeImage(x as Double, y as Double, w as Double, h as Double, file as folderitem, CompositeOperator as Integer)
- 81.37.13 CompositeImage(x as Double, y as Double, w as Double, h as Double, image as GMImageMBS)
- 81.37.14 CompositeImage(x as Double, y as Double, w as Double, h as Double, image as GMImageMBS, CompositeOperator as Integer)
- 81.37.16 CompositeImage(x as Double, y as Double, w as Double, h as Double, path as string, CompositeOperator as Integer)
Notes: If the matte attribute is set to true, then the image composition will consider an alpha channel, or transparency, present in the image file so that non-opaque portions allow part (or all) of the composite image to show through. If the specified width or height is zero, then the image is composited at its natural size, without enlargement or reduction.

See also:

- 81.37.8 CompositeImage(x as Double, y as Double, file as folderitem) 13591
- 81.37.9 CompositeImage(x as Double, y as Double, image as GMImageMBS) 13591
- 81.37.10 CompositeImage(x as Double, y as Double, path as string) 13592
- 81.37.11 CompositeImage(x as Double, y as Double, w as Double, h as Double, file as folderitem) 13592
- 81.37.12 CompositeImage(x as Double, y as Double, w as Double, h as Double, file as folderitem, CompositeOperator as Integer) 13593
- 81.37.13 CompositeImage(x as Double, y as Double, w as Double, h as Double, image as GMImageMBS) 13594
- 81.37.14 CompositeImage(x as Double, y as Double, w as Double, h as Double, image as GMImageMBS, CompositeOperator as Integer) 13594
- 81.37.15 CompositeImage(x as Double, y as Double, w as Double, h as Double, path as string) 13595

81.37.17 Constructor(image as GMImageMBS)


Function: Creates a new object referencing the given image.

81.37.18 DashArray(values() as Double)


Function: Specify the pattern of dashes and gaps used to stroke paths.

Notes: The strokeDashArray represents a zero-terminated array of numbers that specify the lengths of alternating dashes and gaps in pixels. If an odd number of values is provided, then the list of values is repeated to yield an even number of values. A typical strokeDashArray array might contain the members 5 3 2 0, where the zero value indicates the end of the pattern array.

81.37.19 DashOffset(offset as Double)


Function: Specify the distance into the dash pattern to start the dash.

Notes: See documentation on SVG’s stroke-dashoffset property for usage details.
81.37.20 Draw


**Function:** Draws all draw commands collected.

**Example:**

```plaintext
Dim g As New GMGeometryMBS(500,500)
Dim c As New GMMColorRGBMBS("white") // white
Dim image As New GMImageMBS(g, c)

image.Type = image.TrueColorType
image.StrokeWidth = 5

Dim draw As GMMGraphicsMBS = image.Graphics

draw.StrokeColor New GMMColorRGBMBS("red")
draw.Line(100,100,400,400)
draw.Draw

Backdrop = image.CopyPicture
```

81.37.21 DrawPath


**Function:** Draw on image using vector path.

**Example:**

```plaintext
// new picture, 500x500 and filled with white
Dim g As New GMGeometryMBS(500,500)
Dim c As New GMMColorRGBMBS("white") // white
Dim image As New GMImageMBS(g, c)

Dim draw As GMMGraphicsMBS = image.Graphics

// Draw path

Dim cr As New GMMColorRGBMBS("red")
Dim gr As New GMMColorRGBMBS("green")
draw.StrokeColor cr
draw.FillColor gr
draw.PathMovetoAbs(30,10)
draw.PathLinetoAbs(20,55)
draw.PathLinetoAbs(70,50)
draw.PathLinetoAbs(80,5)
```
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draw.DrawPath

draw.Draw

// show picture
image.type = image.TrueColorType // make sure it's a bitmap
Backdrop=image.CopyPicture

81.37.22 Ellipse(originX as Double, originY as Double, perimX as Double, perimY as Double, arcStart as Double, arcEnd as Double)

Function: Draw an ellipse using the stroke color and thickness, specified origin, x & y radius, as well as specified start and end of arc in degrees.
Notes: If a fill color is specified, then the object is filled.

81.37.23 FillColor(c as GMColorMBS)

Function: Specify drawing object fill color.

81.37.24 FillOpacity(opacity as Double)

Function: Specify opacity to use when drawing using fill color.

81.37.25 FillRule(fillRule as Integer)

Function: Specify the algorithm which is to be used to determine what parts of the canvas are included inside the shape.
Notes: See documentation on SVG’s fill-rule property for usage details.

81.37.26 Font(fontname as string)

Function: Specify font name to use when drawing text.
81.37. CLASS GMGRAPHICSMBS

Example:

```vbnet
dim g as new GMGeometryMBS(500,500)
dim c as new GMColorRGBMBS("white") // white
dim image as new GMImageMBS(g, c)

dim draw as GMGraphicsMBS = image.Graphics

// draw red text
draw.strokeColor(new GMColorRGBMBS("red").Red) // Outline color
draw.strokeWidth(1)
draw.Font("/Library/Fonts/Verdana.ttf")
draw.Text(50, 50, "Hello", "")
draw.Draw

Backdrop = image.CopyPicture
```

See also:

- 81.37.27 Font(fontname as string, StyleType as Integer, weight as Integer, StretchType as Integer)

81.37.27 Font(fontname as string, StyleType as Integer, weight as Integer, StretchType as Integer)


**Function:** Sets the font.

**Notes:** Specify font family, style, weight (one of the set { 100 | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900 } with 400 being the normal size), and stretch to be used to select the font used when drawing text. Wildcard matches may be applied to style via the AnyStyle enumeration, applied to weight if weight is zero, and applied to stretch via the AnyStretch enumeration.

See also:

- 81.37.26 Font(fontname as string)

81.37.28 Gravity(GravityType as Integer)


**Function:** Specify text positioning gravity.
81.37.29 Line(startX as Double, startY as Double, endX as Double, endY as Double)

**Function:** Draw a line using stroke color and thickness using starting and ending coordinates
**Example:**

```vba
dim g as new GMGeometryMBS(500,500)
dim c as new GMColorRGBMBS("white") // white
dim image as new GMImageMBS(g, c)

image.strokeColor = new GMColorRGBMBS("red") // Outline color
image.fillColor = new GMColorRGBMBS("green") // Fill color
image.strokeWidth = 5

dim draw as GMGraphicsMBS = image.Graphics

// Draw a line
draw.Line(100,100,400,400)
draw.Draw

image.type = image.TrueColorType
Backdrop=image.CopyPicture
```

81.37.30 Matte(x as Double, y as Double, paintMethod as Integer)

**Function:** Change the pixel matte value to transparent.
**Notes:** The point method changes the matte value of the target pixel. The replace method changes the matte value of any pixel that matches the color of the target pixel. Floodfill changes the matte value of any pixel that matches the color of the target pixel and is a neighbor, whereas filltoborder changes the matte value of any neighbor pixel that is not the border color. Finally reset changes the matte value of all pixels.

81.37.31 MiterLimit(miterlimit as Integer)

**Function:** Specify miter limit.
**Notes:** When two line segments meet at a sharp angle and miter joins have been specified for 'lineJoin', it is possible for the miter to extend far beyond the thickness of the line stroking the path. The miterLimit' imposes a limit on the ratio of the miter length to the 'lineWidth'. The default value of this parameter is 4.
81.37. CLASS GMGRAPHICSMBS

81.37.32 PathArcAbs(c as GMPatchArgsMBS)

Function: Draws an elliptical arc from the current point to (x, y).
Notes:
The size and orientation of the ellipse are defined by two radii (radiusX, radiusY) and an xAxisRotation, which indicates how the ellipse as a whole is rotated relative to the current coordinate system. The center (cx, cy) of the ellipse is calculated automatically to satisfy the constraints imposed by the other parameters. largeArcFlag and sweepFlag contribute to the automatic calculations and help determine how the arc is drawn. If largeArcFlag is true then draw the larger of the available arcs. If sweepFlag is true, then draw the arc matching a clock-wise rotation.

In the GMPatchArgsMBS, set the following properties: radiusX, radiusY, xAxisRotation, bool largeArcFlag, sweepFlag, x and y.
See also:

- 81.37.33 PathArcAbs(c() as GMPatchArgsMBS)
- 81.37.34 PathArcAbs(radiusX as Double, radiusY as Double, xAxisRotation as Double, largeArcFlag as boolean, sweepFlag as Boolean, x as Double, y as Double)

81.37.33 PathArcAbs(c() as GMPatchArgsMBS)

Function: Draws an elliptical arc from the current point to (x, y).
Notes:
The size and orientation of the ellipse are defined by two radii (radiusX, radiusY) and an xAxisRotation, which indicates how the ellipse as a whole is rotated relative to the current coordinate system. The center (cx, cy) of the ellipse is calculated automatically to satisfy the constraints imposed by the other parameters. largeArcFlag and sweepFlag contribute to the automatic calculations and help determine how the arc is drawn. If largeArcFlag is true then draw the larger of the available arcs. If sweepFlag is true, then draw the arc matching a clock-wise rotation.

In the GMPatchArgsMBS, set the following properties: radiusX, radiusY, xAxisRotation, bool largeArcFlag, sweepFlag, x and y.
See also:

- 81.37.32 PathArcAbs(c as GMPatchArgsMBS)
- 81.37.34 PathArcAbs(radiusX as Double, radiusY as Double, xAxisRotation as Double, largeArcFlag as boolean, sweepFlag as Boolean, x as Double, y as Double)
81.37.34 PathArcAbs(radiusX as Double, radiusY as Double, xAxisRotation as Double, largeArcFlag as boolean, sweepFlag as Boolean, x as Double, y as Double)


**Function:** Draws an elliptical arc from the current point to (x, y).

**Example:**

```vbnet
dim g as new GMGeometryMBS(500,500)
dim c as new GMColorRGBMBS("white") // white
dim image as new GMImageMBS(g, c)

image.strokeColor = new GMColorRGBMBS("red") // Outline color
image.fillColor = new GMColorRGBMBS("green") // Fill color
image.strokeWidth = 5

dim draw as GMGraphicsMBS = image.Graphics

// Draw an arc

draw.PathMovetoAbs 100,100
draw.PathArcAbs(100,100, 0, false, false, 200,200)
draw.DrawPath
draw.Draw

Backdrop=image.CopyPicture
```

**Notes:** The size and orientation of the ellipse are defined by two radii (radiusX, radiusY) and an xAxisRotation, which indicates how the ellipse as a whole is rotated relative to the current coordinate system. The center (cx, cy) of the ellipse is calculated automatically to satisfy the constraints imposed by the other parameters. largeArcFlag and sweepFlag contribute to the automatic calculations and help determine how the arc is drawn. If largeArcFlag is true then draw the larger of the available arcs. If sweepFlag is true, then draw the arc matching a clock-wise rotation.

See also:

- 81.37.32 PathArcAbs(c as GMPPathArgsMBS)
- 81.37.33 PathArcAbs(c() as GMPPathArgsMBS)

81.37.35 PathArcRel(c as GMPPathArgsMBS)


**Function:** Draws an elliptical arc from the current point to (x, y).

**Notes:**

The size and orientation of the ellipse are defined by two radii (radiusX, radiusY) and an xAxisRotation,
which indicates how the ellipse as a whole is rotated relative to the current coordinate system. The center (cx, cy) of the ellipse is calculated automatically to satisfy the constraints imposed by the other parameters. largeArcFlag and sweepFlag contribute to the automatic calculations and help determine how the arc is drawn. If largeArcFlag is true then draw the larger of the available arcs. If sweepFlag is true, then draw the arc matching a clock-wise rotation.

In the GMPathArgsMBS, set the following properties: radiusX, radiusY, xAxisRotation, bool largeArcFlag, sweepFlag, x and y.
See also:

- 81.37.36 PathArcRel(c() as GMPathArgsMBS) 13603
- 81.37.37 PathArcRel(radiusX as Double, radiusY as Double, xAxisRotation as Double, largeArcFlag as boolean, sweepFlag as Boolean, x as Double, y as Double) 13603

81.37.36 PathArcRel(c() as GMPathArgsMBS)

**Function:** Draws an elliptical arc from the current point to (x, y).
**Notes:**

The size and orientation of the ellipse are defined by two radii (radiusX, radiusY) and an xAxisRotation, which indicates how the ellipse as a whole is rotated relative to the current coordinate system. The center (cx, cy) of the ellipse is calculated automatically to satisfy the constraints imposed by the other parameters. largeArcFlag and sweepFlag contribute to the automatic calculations and help determine how the arc is drawn. If largeArcFlag is true then draw the larger of the available arcs. If sweepFlag is true, then draw the arc matching a clock-wise rotation.

In the GMPathArgsMBS, set the following properties: radiusX, radiusY, xAxisRotation, bool largeArcFlag, sweepFlag, x and y.
See also:

- 81.37.35 PathArcRel(c as GMPathArgsMBS) 13602
- 81.37.37 PathArcRel(radiusX as Double, radiusY as Double, xAxisRotation as Double, largeArcFlag as boolean, sweepFlag as Boolean, x as Double, y as Double) 13603

81.37.37 PathArcRel(radiusX as Double, radiusY as Double, xAxisRotation as Double, largeArcFlag as boolean, sweepFlag as Boolean, x as Double, y as Double)

**Function:** Draws an elliptical arc from the current point to (x, y).
**Notes:** The size and orientation of the ellipse are defined by two radii (radiusX, radiusY) and an xAxis-Rotation, which indicates how the ellipse as a whole is rotated relative to the current coordinate system.
The center \((cx, cy)\) of the ellipse is calculated automatically to satisfy the constraints imposed by the other parameters. `largeArcFlag` and `sweepFlag` contribute to the automatic calculations and help determine how the arc is drawn. If `largeArcFlag` is true then draw the larger of the available arcs. If `sweepFlag` is true, then draw the arc matching a clock-wise rotation.

See also:

- 81.37.35 PathArcRel\((c as GMPathArgsMBS)\)
- 81.37.36 PathArcRel\((c() as GMPathArgsMBS)\)

### 81.37.38 PathClosePath

MBS GraphicsMagick Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Close the current subpath by drawing a straight line from the current point to current subpath’s most recent starting point (usually, the most recent moveto point).

### 81.37.39 PathCurvetoAbs\((c as GMPathArgsMBS)\)

MBS GraphicsMagick Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Draws a cubic Bzier curve from the current point to \((x, y)\) using \((x_1, y_1)\) as the control point at the beginning of the curve and \((x_2, y_2)\) as the control point at the end of the curve. **Notes:**

PathCurvetoAbs indicates that absolute coordinates will follow; PathCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the command, the new current point becomes the final \((x, y)\) coordinate pair used in the polybezier.

In the GMPathArgsMBS object, set the following properties: \(x_1, y_1, x_2, y_2, x\) and \(y\).

See also:

- 81.37.40 PathCurvetoAbs\((c() as GMPathArgsMBS)\)
- 81.37.41 PathCurvetoAbs\((x_1 as Double, y_1 as Double, x_2 as Double, y_2 as Double, x as Double, y as Double)\)

### 81.37.40 PathCurvetoAbs\((c() as GMPathArgsMBS)\)

MBS GraphicsMagick Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Draws a cubic Bzier curve from the current point to \((x, y)\) using \((x_1, y_1)\) as the control point at the beginning of the curve and \((x_2, y_2)\) as the control point at the end of the curve. **Notes:**

PathCurvetoAbs indicates that absolute coordinates will follow; PathCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the
command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

In the GMPathArgsMBS object, set the following properties: x1, y1, x2, y2, x and y.

See also:

- 81.37.39 PathCurvetoAbs(c as GMPathArgsMBS)  
  - 81.37.41 PathCurvetoAbs(x1 as Double, y1 as Double, x2 as Double, y2 as Double, x as Double, y as Double)

81.37.41  PathCurvetoAbs(x1 as Double, y1 as Double, x2 as Double, y2 as Double, x as Double, y as Double)

Function: Draws a cubic Bzier curve from the current point to (x,y) using (x1,y1) as the control point at the beginning of the curve and (x2,y2) as the control point at the end of the curve.
Notes: PathCurvetoAbs indicates that absolute coordinates will follow; PathCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.
See also:

- 81.37.39 PathCurvetoAbs(c as GMPathArgsMBS)
- 81.37.40 PathCurvetoAbs(c() as GMPathArgsMBS)

81.37.42  PathCurvetoRel(c as GMPathArgsMBS)

Function: Draws a cubic Bzier curve from the current point to (x,y) using (x1,y1) as the control point at the beginning of the curve and (x2,y2) as the control point at the end of the curve.
Notes: PathCurvetoAbs indicates that absolute coordinates will follow; PathCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

In the GMPathArgsMBS object, set the following properties: x1, y1, x2, y2, x and y.
See also:

- 81.37.43 PathCurvetoRel(c() as GMPathArgsMBS)
- 81.37.44 PathCurvetoRel(x1 as Double, y1 as Double, x2 as Double, y2 as Double, x as Double, y as Double)
81.37.43  *PathCurvetoRel(c() as GMPathArgsMBS)*

**Function:** Draws a cubic Bzern curve from the current point to (x,y) using (x1,y1) as the control point at the beginning of the curve and (x2,y2) as the control point at the end of the curve.  
**Notes:**  
PathCurvetoAbs indicates that absolute coordinates will follow; PathCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

In the GMPathArgsMBS object, set the following properties: x1, y1, x2, y2, x and y.  
See also:

- 81.37.42  *PathCurvetoRel(c as GMPathArgsMBS)*  
- 81.37.44  *PathCurvetoRel(x1 as Double, y1 as Double, x2 as Double, y2 as Double, x as Double, y as Double)*  

81.37.44  *PathCurvetoRel(x1 as Double, y1 as Double, x2 as Double, y2 as Double, x as Double, y as Double)*

**Function:** Draws a cubic Bzern curve from the current point to (x,y) using (x1,y1) as the control point at the beginning of the curve and (x2,y2) as the control point at the end of the curve.  
**Notes:**  
PathCurvetoAbs indicates that absolute coordinates will follow; PathCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.  
See also:

- 81.37.42  *PathCurvetoRel(c as GMPathArgsMBS)*  
- 81.37.43  *PathCurvetoRel(c() as GMPathArgsMBS)*  

81.37.45  *PathLinetoAbs(c as GMCoordinateMBS)*

**Function:** The various "lineto" commands draw straight lines from the current point to a new point.  
**Notes:** Draw a line from the current point to the given coordinate which becomes the new current point. PathLinetoAbs indicates that absolute coordinates are used; PathLinetoRel indicates that relative coordinates are used. A number of coordinates pairs may be specified in a list to draw a polyline. At the end of the command, the new current point is set to the final set of coordinates provided.  
See also:

- 81.37.46  *PathLinetoAbs(c() as GMCoordinateMBS)*  
- 81.37.47  *PathLinetoAbs(x as Double, y as Double)*  

- 81.37.46  *PathLinetoAbs(c() as GMCoordinateMBS)*  
- 81.37.47  *PathLinetoAbs(x as Double, y as Double)*
81.37. **PathLinetoAbs(c() as GMCoordinateMBS)**

**Function:** The various "lineto" commands draw straight lines from the current point to a new point.
**Notes:** Draw a line from the current point to the given coordinate which becomes the new current point. PathLinetoAbs indicates that absolute coordinates are used; PathLinetoRel indicates that relative coordinates are used. A number of coordinates pairs may be specified in a list to draw a polyline. At the end of the command, the new current point is set to the final set of coordinates provided.
See also:
- 81.37.45 PathLinetoAbs(c as GMCoordinateMBS)
- 81.37.46 PathLinetoAbs(c() as GMCoordinateMBS)

81.37. **PathLinetoAbs(x as Double, y as Double)**

**Function:** The various "lineto" commands draw straight lines from the current point to a new point.
**Notes:** Draw a line from the current point to the given coordinate which becomes the new current point. PathLinetoAbs indicates that absolute coordinates are used; PathLinetoRel indicates that relative coordinates are used. A number of coordinates pairs may be specified in a list to draw a polyline. At the end of the command, the new current point is set to the final set of coordinates provided.
See also:
- 81.37.45 PathLinetoAbs(c as GMCoordinateMBS)
- 81.37.46 PathLinetoAbs(c() as GMCoordinateMBS)

81.37. **PathLinetoHorizontalAbs(v as Double)**

**Function:** The various "lineto" commands draw straight lines from the current point to a new point.
**Notes:** Draws a horizontal line from the current point (cpx, cpy) to (x, cpy). PathLinetoHorizontalAbs indicates that absolute coordinates are supplied; PathLinetoHorizontalRel indicates that relative coordinates are supplied. At the end of the command, the new current point becomes (x, cpy) for the final value of x.

81.37. **PathLinetoHorizontalRel(v as Double)**

**Function:** The various "lineto" commands draw straight lines from the current point to a new point.
**Notes:** Draws a horizontal line from the current point (cpx, cpy) to (x, cpy). PathLinetoHorizontalAbs indicates that absolute coordinates are supplied; PathLinetoHorizontalRel indicates that relative coordinates are supplied. At the end of the command, the new current point becomes (x, cpy) for the final value of x.
81.37.50 PathLinetoRel(c as GMCoordinateMBS)


Function: The various "lineto" commands draw straight lines from the current point to a new point.

Notes: Draw a line from the current point to the given coordinate which becomes the new current point. PathLinetoAbs indicates that absolute coordinates are used; PathLinetoRel indicates that relative coordinates are used. A number of coordinates pairs may be specified in a list to draw a polyline. At the end of the command, the new current point is set to the final set of coordinates provided.

See also:

- 81.37.51 PathLinetoRel(c() as GMCoordinateMBS) 13608
- 81.37.52 PathLinetoRel(x as Double, y as Double) 13608

81.37.51 PathLinetoRel(c() as GMCoordinateMBS)


Function: The various "lineto" commands draw straight lines from the current point to a new point.

Notes: Draw a line from the current point to the given coordinate which becomes the new current point. PathLinetoAbs indicates that absolute coordinates are used; PathLinetoRel indicates that relative coordinates are used. A number of coordinates pairs may be specified in a list to draw a polyline. At the end of the command, the new current point is set to the final set of coordinates provided.

See also:

- 81.37.50 PathLinetoRel(c as GMCoordinateMBS) 13608
- 81.37.52 PathLinetoRel(x as Double, y as Double) 13608

81.37.52 PathLinetoRel(x as Double, y as Double)


Function: The various "lineto" commands draw straight lines from the current point to a new point.

Example:

```java
// new picture, 500x500 and filled with white
dim g as new GMGeometryMBS(500,500)
dim c as new GMColorRGBMBS("white") // white
dim image as new GMImageMBS(g, c)

dim draw as GMGraphicsMBS = image.Graphics

// Draw path

dim cr as new GMColorRGBMBS("red")
dim gr as new GMColorRGBMBS("green")
```
81.37. **CLASS GMGRAPHICSMBS**

draw.StrokeColor cr
draw.FillColor gr
draw.PathMovetoAbs(30,10)
draw.PathLinetoAbs(20,55)
draw.PathLinetoAbs(70,50)
draw.PathLinetoAbs(80,5)
draw.DrawPath

draw.Draw

// show picture
image.type = image.TrueColorType // make sure it’s a bitmap
Backdrop=image.CopyPicture

**Notes:** Draw a line from the current point to the given coordinate which becomes the new current point. PathLinetoAbs indicates that absolute coordinates are used; PathLinetoRel indicates that relative coordinates are used. A number of coordinates pairs may be specified in a list to draw a polyline. At the end of the command, the new current point is set to the final set of coordinates provided.

See also:

- 81.37.50 PathLinetoRel(c as GMCoordinateMBS)
- 81.37.51 PathLinetoRel(c() as GMCoordinateMBS)

### 81.37.53 PathLinetoVerticalAbs(v as Double)

MBS GraphicsMagick Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The various "lineto" commands draw straight lines from the current point to a new point. **Notes:** Draws a vertical line from the current point (cpx, cpy) to (cpx, y). PathLinetoVerticalAbs indicates that absolute coordinates are supplied; PathLinetoVerticalRel indicates that relative coordinates are supplied. At the end of the command, the new current point becomes (cpx, y) for the final value of y.

### 81.37.54 PathLinetoVerticalRel(v as Double)

MBS GraphicsMagick Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The various "lineto" commands draw straight lines from the current point to a new point. **Notes:** Draws a vertical line from the current point (cpx, cpy) to (cpx, y). PathLinetoVerticalAbs indicates that absolute coordinates are supplied; PathLinetoVerticalRel indicates that relative coordinates are supplied. At the end of the command, the new current point becomes (cpx, y) for the final value of y.
81.37.55 PathMovetoAbs(c as GMCoordinateMBS)

Function: The "moveto" commands establish a new current point.
Notes:
The effect is as if the "pen" were lifted and moved to a new location. A path data segment must begin with either one of the "moveto" commands or one of the "arc" commands. Subsequent "moveto" commands (i.e., when the "moveto" is not the first command) represent the start of a new subpath.

Start a new sub-path at the given coordinate. PathMovetoAbs indicates that absolute coordinates will follow; PathMovetoRel indicates that relative coordinates will follow. If a relative moveto appears as the first element of the path, then it is treated as a pair of absolute coordinates. If a moveto is followed by multiple pairs of coordinates, the subsequent pairs are treated as implicit lineto commands.
See also:
- 81.37.56 PathMovetoAbs(x as Double, y as Double)

81.37.56 PathMovetoAbs(x as Double, y as Double)

Function: The "moveto" commands establish a new current point.
Notes:
The effect is as if the "pen" were lifted and moved to a new location. A path data segment must begin with either one of the "moveto" commands or one of the "arc" commands. Subsequent "moveto" commands (i.e., when the "moveto" is not the first command) represent the start of a new subpath.

Start a new sub-path at the given coordinate. PathMovetoAbs indicates that absolute coordinates will follow; PathMovetoRel indicates that relative coordinates will follow. If a relative moveto appears as the first element of the path, then it is treated as a pair of absolute coordinates. If a moveto is followed by multiple pairs of coordinates, the subsequent pairs are treated as implicit lineto commands.
See also:
- 81.37.55 PathMovetoAbs(c as GMCoordinateMBS)

81.37.57 PathMovetoRel(c as GMCoordinateMBS)

Function: The "moveto" commands establish a new current point.
Notes:
The effect is as if the "pen" were lifted and moved to a new location. A path data segment must begin with either one of the "moveto" commands or one of the "arc" commands. Subsequent "moveto" commands (i.e., when the "moveto" is not the first command) represent the start of a new subpath.
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Start a new sub-path at the given coordinate. PathMovetoAbs indicates that absolute coordinates will follow; PathMovetoRel indicates that relative coordinates will follow. If a relative moveto appears as the first element of the path, then it is treated as a pair of absolute coordinates. If a moveto is followed by multiple pairs of coordinates, the subsequent pairs are treated as implicit lineto commands.

See also:

- 81.37.58 PathMovetoRel(x as Double, y as Double)

81.37.58 PathMovetoRel(x as Double, y as Double)


Function: The "moveto" commands establish a new current point.

Notes:

The effect is as if the "pen" were lifted and moved to a new location. A path data segment must begin with either one of the "moveto" commands or one of the "arc" commands. Subsequent "moveto" commands (i.e., when the "moveto" is not the first command) represent the start of a new subpath.

Start a new sub-path at the given coordinate. PathMovetoAbs indicates that absolute coordinates will follow; PathMovetoRel indicates that relative coordinates will follow. If a relative moveto appears as the first element of the path, then it is treated as a pair of absolute coordinates. If a moveto is followed by multiple pairs of coordinates, the subsequent pairs are treated as implicit lineto commands.

See also:

- 81.37.57 PathMovetoRel(c as GMCoordinateMBS)

81.37.59 PathQuadraticCurvetoAbs(c as GMPPathArgsMBS)


Function: Draws a quadratic Bzier curve from the current point to (x,y) using (x1,y1) as the control point.

Notes:

PathQuadraticCurvetoAbs indicates that absolute coordinates will follow; PathQuadraticCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

In the GMPPathArgsMBS object, set the following properties: x1, y1, x and y.

See also:

- 81.37.60 PathQuadraticCurvetoAbs(c() as GMPPathArgsMBS)
- 81.37.61 PathQuadraticCurvetoAbs(x1 as Double, y1 as Double, x as Double, y as Double)
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81.37.60 PathQuadraticCurvetoAbs(c() as GMPathArgsMBS)


Function: Draws a quadratic Bzier curve from the current point to (x,y) using (x1,y1) as the control point.

Notes: PathQuadraticCurvetoAbs indicates that absolute coordinates will follow; PathQuadraticCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

In the GMPathArgsMBS object, set the following properties: x1, y1, x and y.

See also:
- 81.37.59 PathQuadraticCurvetoAbs(c as GMPathArgsMBS) 13611
- 81.37.61 PathQuadraticCurvetoAbs(x1 as Double, y1 as Double, x as Double, y as Double) 13612

81.37.61 PathQuadraticCurvetoAbs(x1 as Double, y1 as Double, x as Double, y as Double)


Function: Draws a quadratic Bzier curve from the current point to (x,y) using (x1,y1) as the control point.

Notes: PathQuadraticCurvetoAbs indicates that absolute coordinates will follow; PathQuadraticCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

See also:
- 81.37.59 PathQuadraticCurvetoAbs(c as GMPathArgsMBS) 13611
- 81.37.60 PathQuadraticCurvetoAbs(c() as GMPathArgsMBS) 13612

81.37.62 PathQuadraticCurvetoRel(c as GMPathArgsMBS)


Function: Draws a quadratic Bzier curve from the current point to (x,y) using (x1,y1) as the control point.

Notes: PathQuadraticCurvetoAbs indicates that absolute coordinates will follow; PathQuadraticCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

In the GMPathArgsMBS object, set the following properties: x1, y1, x and y.

See also:
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- 81.37.63 **PathQuadraticCurvetoRel(c() as GMPathArgsMBS)**
- 81.37.64 **PathQuadraticCurvetoRel(x1 as Double, y1 as Double, x as Double, y as Double)**

### 81.37.63 PathQuadraticCurvetoRel(c() as GMPathArgsMBS)


**Function:** Draws a quadratic Bzier curve from the current point to (x,y) using (x1,y1) as the control point.

**Notes:**
PathQuadraticCurvetoAbs indicates that absolute coordinates will follow; PathQuadraticCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

In the GMPathArgsMBS object, set the following properties: x1, y1, x and y.

See also:
- 81.37.62 PathQuadraticCurvetoRel(c as GMPathArgsMBS)
- 81.37.64 PathQuadraticCurvetoRel(x1 as Double, y1 as Double, x as Double, y as Double)

### 81.37.64 PathQuadraticCurvetoRel(x1 as Double, y1 as Double, x as Double, y as Double)


**Function:** Draws a quadratic Bzier curve from the current point to (x,y) using (x1,y1) as the control point.

**Notes:**
PathQuadraticCurvetoAbs indicates that absolute coordinates will follow; PathQuadraticCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

See also:
- 81.37.62 PathQuadraticCurvetoRel(c as GMPathArgsMBS)
- 81.37.63 PathQuadraticCurvetoRel(c() as GMPathArgsMBS)

### 81.37.65 PathSmoothCurvetoAbs(c as GMCoordinateMBS)


**Function:** Draws a cubic Bzier curve from the current point to (x,y).

**Notes:**
The first control point is assumed to be the reflection of the second control point on the previous command relative to the current point. (If there is no previous command or if the previous command was not
an PathCurvetoAbs, PathCurvetoRel, PathSmoothCurvetoAbs or PathSmoothCurvetoRel, assume the first control point is coincident with the current point.) (x2, y2) is the second control point (i.e., the control point at the end of the curve). PathSmoothCurvetoAbs indicates that absolute coordinates will follow; PathSmoothCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the command, the new current point becomes the final (x, y) coordinate pair used in the polybezier.

In the GMPathArgsMBS object, set the following properties: x1, y1, x2, y2, x and y.
See also:

- 81.37.66 PathSmoothCurvetoAbs(c() as GMCoordinateMBS) 13614
- 81.37.67 PathSmoothCurvetoAbs(x as Double, y as Double) 13614

81.37.66 PathSmoothCurvetoAbs(c() as GMCoordinateMBS)

Function: Draws a cubic Bzier curve from the current point to (x, y).
Notes:
The first control point is assumed to be the reflection of the second control point on the previous command relative to the current point. (If there is no previous command or if the previous command was not an PathCurvetoAbs, PathCurvetoRel, PathSmoothCurvetoAbs or PathSmoothCurvetoRel, assume the first control point is coincident with the current point.) (x2, y2) is the second control point (i.e., the control point at the end of the curve). PathSmoothCurvetoAbs indicates that absolute coordinates will follow; PathSmoothCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the command, the new current point becomes the final (x, y) coordinate pair used in the polybezier.

In the GMPathArgsMBS object, set the following properties: x1, y1, x2, y2, x and y.
See also:

- 81.37.65 PathSmoothCurvetoAbs(c as GMCoordinateMBS) 13613
- 81.37.67 PathSmoothCurvetoAbs(x as Double, y as Double) 13614

81.37.67 PathSmoothCurvetoAbs(x as Double, y as Double)

Function: Draws a cubic Bzier curve from the current point to (x, y).
Notes: The first control point is assumed to be the reflection of the second control point on the previous command relative to the current point. (If there is no previous command or if the previous command was not an PathCurvetoAbs, PathCurvetoRel, PathSmoothCurvetoAbs or PathSmoothCurvetoRel, assume the first control point is coincident with the current point.) (x2, y2) is the second control point (i.e., the control point at the end of the curve). PathSmoothCurvetoAbs indicates that absolute coordinates will follow;
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PathSmoothCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

See also:

- 81.37.65 PathSmoothCurvetoAbs(c as GMCoordinateMBS)
- 81.37.66 PathSmoothCurvetoAbs(c() as GMCoordinateMBS)

81.37.68 PathSmoothCurvetoRel(c as GMCoordinateMBS)


Function: Draws a cubic Bzier curve from the current point to (x,y).

Notes:

The first control point is assumed to be the reflection of the second control point on the previous command relative to the current point. (If there is no previous command or if the previous command was not an PathCurvetoAbs, PathCurvetoRel, PathSmoothCurvetoAbs or PathSmoothCurvetoRel, assume the first control point is coincident with the current point.) (x2,y2) is the second control point (i.e., the control point at the end of the curve). PathSmoothCurvetoAbs indicates that absolute coordinates will follow; PathSmoothCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

In the GMPathArgsMBS object, set the following properties: x1, y1, x2, y2, x and y.

See also:

- 81.37.69 PathSmoothCurvetoRel(c() as GMCoordinateMBS)
- 81.37.70 PathSmoothCurvetoRel(x as Double, y as Double)

81.37.69 PathSmoothCurvetoRel(c() as GMCoordinateMBS)


Function: Draws a cubic Bzier curve from the current point to (x,y).

Notes:

The first control point is assumed to be the reflection of the second control point on the previous command relative to the current point. (If there is no previous command or if the previous command was not an PathCurvetoAbs, PathCurvetoRel, PathSmoothCurvetoAbs or PathSmoothCurvetoRel, assume the first control point is coincident with the current point.) (x2,y2) is the second control point (i.e., the control point at the end of the curve). PathSmoothCurvetoAbs indicates that absolute coordinates will follow; PathSmoothCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.
In the GMPathArgsMBS object, set the following properties: x1, y1, x2, y2, x and y.

See also:

- 81.37.68 PathSmoothCurvetoRel(c as GMCoordinateMBS)  
- 81.37.70 PathSmoothCurvetoRel(x as Double, y as Double)  

81.37.70 PathSmoothCurvetoRel(x as Double, y as Double)


Function: Draws a cubic Bzier curve from the current point to (x,y).

Notes: The first control point is assumed to be the reflection of the second control point on the previous command relative to the current point. (If there is no previous command or if the previous command was not an PathCurvetoAbs, PathCurvetoRel, PathSmoothCurvetoAbs or PathSmoothCurvetoRel, assume the first control point is coincident with the current point.) (x2,y2) is the second control point (i.e., the control point at the end of the curve). PathSmoothCurvetoAbs indicates that absolute coordinates will follow; PathSmoothCurvetoRel indicates that relative coordinates will follow. Multiple sets of coordinates may be specified to draw a polybezier. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

See also:

- 81.37.68 PathSmoothCurvetoRel(c as GMCoordinateMBS)  
- 81.37.69 PathSmoothCurvetoRel(c() as GMCoordinateMBS)  

81.37.71 PathSmoothQuadraticCurvetoAbs(c as GMCoordinateMBS)


Function: Draws a quadratic Bzier curve from the current point to (x,y).

Notes:
The control point is assumed to be the reflection of the control point on the previous command relative to the current point. (If there is no previous command or if the previous command was not a PathQuadraticCurvetoAbs, PathQuadraticCurvetoRel, PathSmoothQuadraticCurvetoAbs or PathSmoothQuadraticCurvetoRel, assume the control point is coincident with the current point.) PathSmoothQuadraticCurvetoAbs indicates that absolute coordinates will follow; PathSmoothQuadraticCurvetoRel indicates that relative coordinates will follow. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

In the GMPathArgsMBS object, set the following properties: x1, y1, x and y.

See also:

- 81.37.72 PathSmoothQuadraticCurvetoAbs(c() as GMCoordinateMBS)  
- 81.37.73 PathSmoothQuadraticCurvetoAbs(x as Double, y as Double)  

**81.37.72 PathSmoothQuadraticCurvetoAbs(c() as GMCoordinateMBS)**


**Function:** Draws a quadratic Bzier curve from the current point to (x,y).

**Notes:**

The control point is assumed to be the reflection of the control point on the previous command relative to the current point. (If there is no previous command or if the previous command was not a PathQuadraticCurvetoAbs, PathQuadraticCurvetoRel, PathSmoothQuadraticCurvetoAbs or PathSmoothQuadraticCurvetoRel, assume the control point is coincident with the current point.) PathSmoothQuadraticCurvetoAbs indicates that absolute coordinates will follow; PathSmoothQuadraticCurvetoRel indicates that relative coordinates will follow. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

In the GMPathArgsMBS object, set the following properties: x1, y1, x and y.

See also:

- 81.37.71 PathSmoothQuadraticCurvetoAbs(c as GMCoordinateMBS)
- 81.37.73 PathSmoothQuadraticCurvetoAbs(x as Double, y as Double)

**81.37.73 PathSmoothQuadraticCurvetoAbs(x as Double, y as Double)**


**Function:** Draws a quadratic Bzier curve from the current point to (x,y).

**Notes:**

The control point is assumed to be the reflection of the control point on the previous command relative to the current point. (If there is no previous command or if the previous command was not a PathQuadraticCurvetoAbs, PathQuadraticCurvetoRel, PathSmoothQuadraticCurvetoAbs or PathSmoothQuadraticCurvetoRel, assume the control point is coincident with the current point.) PathSmoothQuadraticCurvetoAbs indicates that absolute coordinates will follow; PathSmoothQuadraticCurvetoRel indicates that relative coordinates will follow. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

See also:

- 81.37.71 PathSmoothQuadraticCurvetoAbs(c as GMCoordinateMBS)
- 81.37.72 PathSmoothQuadraticCurvetoAbs(c() as GMCoordinateMBS)

**81.37.74 PathSmoothQuadraticCurvetoRel(c as GMCoordinateMBS)**


**Function:** Draws a quadratic Bzier curve from the current point to (x,y).

**Notes:**
The control point is assumed to be the reflection of the control point on the previous command relative to the current point. (If there is no previous command or if the previous command was not a PathQuadraticCurvetoAbs, PathQuadraticCurvetoRel, PathSmoothQuadraticCurvetoAbs or PathSmoothQuadraticCurvetoRel, assume the control point is coincident with the current point.) PathSmoothQuadraticCurvetoAbs indicates that absolute coordinates will follow; PathSmoothQuadraticCurvetoRel indicates that relative coordinates will follow. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

In the GMPathArgsMBS object, set the following properties: x1, y1, x and y.
See also:

- 81.37.75 PathSmoothQuadraticCurvetoRel(c() as GMCoordinateMBS) 13618
- 81.37.76 PathSmoothQuadraticCurvetoRel(x as Double, y as Double) 13618

### 81.37.75 PathSmoothQuadraticCurvetoRel(c() as GMCoordinateMBS)

**Function:** Draws a quadratic Bzier curve from the current point to (x,y).  
**Notes:**

The control point is assumed to be the reflection of the control point on the previous command relative to the current point. (If there is no previous command or if the previous command was not a PathQuadraticCurvetoAbs, PathQuadraticCurvetoRel, PathSmoothQuadraticCurvetoAbs or PathSmoothQuadraticCurvetoRel, assume the control point is coincident with the current point.) PathSmoothQuadraticCurvetoAbs indicates that absolute coordinates will follow; PathSmoothQuadraticCurvetoRel indicates that relative coordinates will follow. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

In the GMPathArgsMBS object, set the following properties: x1, y1, x and y.
See also:

- 81.37.74 PathSmoothQuadraticCurvetoRel(c as GMCoordinateMBS) 13617
- 81.37.76 PathSmoothQuadraticCurvetoRel(x as Double, y as Double) 13618

### 81.37.76 PathSmoothQuadraticCurvetoRel(x as Double, y as Double)

**Function:** Draws a quadratic Bzier curve from the current point to (x,y).  
**Notes:**

The control point is assumed to be the reflection of the control point on the previous command relative to the current point. (If there is no previous command or if the previous command was not a PathQuadraticCurvetoAbs, PathQuadraticCurvetoRel, PathSmoothQuadraticCurvetoAbs or PathSmoothQuadraticCurvetoRel, assume the control point is coincident with the current point.) PathSmoothQuadraticCurveto-
toAbs indicates that absolute coordinates will follow; PathSmoothQuadraticCurvetoRel indicates that relative coordinates will follow. At the end of the command, the new current point becomes the final (x,y) coordinate pair used in the polybezier.

See also:

- 81.37.74 PathSmoothQuadraticCurvetoRel(c as GMCoordinateMBS) 13617
- 81.37.75 PathSmoothQuadraticCurvetoRel(c() as GMCoordinateMBS) 13618

81.37.77  Point(x as Double, y as Double)


**Function:** Draw a point using stroke color and thickness at coordinate.

**Example:**

```dim g as new GMGeometryMBS(500,500)
dim c as new GMColorRGBMBS("white") // white
dim image as new GMImageMBS(g, c)
image.fillColor = new GMColorRGBMBS("red") // set color
dim draw as GMGraphicsMBS = image.Graphics
  // draw cross with pixels
for x as Integer = 240 to 260
draw.Point(x, 250)
next
for y as Integer = 240 to 260
draw.Point(250,y)
next
draw.Draw
Backdrop=image.CopyPicture```

81.37.78  PointSize(pointSize as Double)


**Function:** Set font point size.

81.37.79  Polygon(values() as GMCoordinateMBS)


**Function:** Draw an arbitrary polygon using stroke color and thickness consisting of three or more
coordinates contained in an array.

**Example:**

```vbs
dim g as new GMGeometryMBS(500,500)
dim c as new GMColorRGBMBS("white") // white
dim image as new GMImageMBS(g, c)

image.fillColor = new GMColorRGBMBS("red") // set color
image.strokeColor = new GMColorRGBMBS("green") // set color

dim draw as GMGraphicsMBS = image.Graphics
dim coordinates(-1) as GMCoordinateMBS

coordinates.Append new GMCoordinateMBS(70,70)
coordinates.Append new GMCoordinateMBS(100,340)
coordinates.Append new GMCoordinateMBS(380,200)
coordinates.Append new GMCoordinateMBS(70,70)

draw.Polygon coordinates
draw.Draw

Backdrop=image.CopyPicture
```

**Notes:** If a fill color is specified, then the object is filled.

### 81.37.80 Polyline(values() as GMCoordinateMBS)

MBS GraphicsMagick Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Draw an arbitrary polyline using stroke color and thickness consisting of three or more coordinates contained in an array.

**Example:**

```vbs
dim g as new GMGeometryMBS(500,500)
dim c as new GMColorRGBMBS("white") // white
dim image as new GMImageMBS(g, c)

image.strokeColor = new GMColorRGBMBS("green") // set color

dim draw as GMGraphicsMBS = image.Graphics
dim coordinates(-1) as GMCoordinateMBS

coordinates.Append new GMCoordinateMBS(70,70)
coordinates.Append new GMCoordinateMBS(100,340)
coordinates.Append new GMCoordinateMBS(380,200)
coordinates.Append new GMCoordinateMBS(70,70)

draw.Polygon coordinates
draw.Draw

Backdrop=image.CopyPicture
```
draw.Polyline coordinates
draw.Draw

Backdrop=image.CopyPicture

**Notes:** If a fill color is specified, then the object is filled.

### 81.37.81 PopClipPath

MBS GraphicsMagick Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Pop (terminate) clip path definition started by PushClipPath.

### 81.37.82 PopGraphicContext

MBS GraphicsMagick Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Pop Graphic Context. **Example:**

```vba
dim g as new GMGeometryMBS(500,500)
dim c as new GMColorRGBMBS("white") // white
dim image as new GMImageMBS(g, c)

image.strokeColor = new GMColorRGBMBS("red") // Outline color
image.fillColor = new GMColorMBS() // transparent fillcolor
image.strokeWidth = 5

dim draw as GMGraphicsMBS = image.Graphics

// Draw a Rectangle
draw.PushGraphicContext
draw.Translation(250,250)
draw.Rotation(50)
draw.Rectangle(0, 0, 100, 100) // rotated
draw.PopGraphicContext
draw.Rectangle(0, 0, 100, 100) // not rotated
draw.Draw

Backdrop=image.CopyPicture

**Notes:** Removing the current graphic context from the graphic context stack restores the options to the values they had prior to the preceding PushGraphicContext operation.
81.37.83  PopPattern

**Function:** Terminate a pattern definition started via PushPattern.

81.37.84  PushClipPath(id as string)

**Function:** Push (create) clip path definition with id.
**Notes:** Clip patch definition consists of subsequent drawing commands, terminated by PopClipPath.

81.37.85  PushGraphicContext

**Function:** Push Graphic Context.
**Example:**

```pascal
dim g as new GMGeometryMBS(500,500)
dim c as new GMColorRGBMBS("white")  // white
dim image as new GMImageMBS(g, c)

image.strokeColor = new GMColorRGBMBS("red")  // Outline color
image.fillColor = new GMColorMBS()  // transparent fillcolor
image.strokeWidth = 5

dim draw as GMGraphicsMBS = image.Graphics

// Draw a Rectangle
draw.PushGraphicContext
draw.Translation(250,250)
draw.Rotation(50)
draw.Rectangle(0, 0, 100, 100)  // rotated
draw.PopGraphicContext
draw.Rectangle(0, 0, 100, 100)  // not rotated
draw.Draw

Backdrop=image.CopyPicture
```

**Notes:** When a graphic context is pushed, options set after the context is pushed (such as coordinate transformations, color settings, etc.) are saved to a new graphic context. This allows related options to be saved.
on a graphic context "stack" in order to support hierarchial nesting of options. When \texttt{PopGraphicContext} is used to pop the current graphic context, the options in effect during the last \texttt{PushGraphicContext} operation are restored.

### 81.37.86 PushPattern(id as string, x as Integer, y as Integer, width as Integer, height as Integer)

\textbf{Function:} Start a pattern definition with arbitrary pattern name specified by \texttt{id}, pattern offset specified by \texttt{x} and \texttt{y}, and pattern size specified by \texttt{width} and \texttt{height}.  
\textbf{Notes:} The pattern is defined within the coordinate system defined by the specified offset and size. Arbitrary drawing objects (including \texttt{DrawableCompositeImage}) may be specified between \texttt{PushPattern} and \texttt{PopPattern} in order to draw the pattern. Normally the pair \texttt{PushGraphicContext} & \texttt{PopGraphicContext} are used to enclose a pattern definition. Pattern definitions are terminated by a \texttt{PopPattern} object.

### 81.37.87 Rectangle(upperLeftX as Double, upperLeftY as Double, lowerRightX as Double, lowerRightY as Double)

\textbf{Function:} Draw a rectangle using stroke color and thickness from upper-left coordinates to lower-right coordinates.  
\textbf{Example:}

```vbnet
dim g as new GMGeometryMBS(500,500)  
dim c as new GMColorRGBMBS("white") // white  
dim image as new GMImageMBS(g, c)  
image.strokeColor = new GMColorRGBMBS("red") // Outline color  
image.fillColor = new GMColorRGBMBS("green") // Fill color  
image.strokeWidth = 5  

dim draw as GMGraphicsMBS = image.Graphics  
// Draw a rectangle  
draw.Rectangle(250, 250, 100, 100)  
draw.Draw  
Backdrop=image.CopyPicture
```

\textbf{Notes:} If a fill color is specified, then the object is filled.
81.37.88 **Rotation(angle as Double)**


**Function:** Set rotation to use when drawing (coordinate transformation).

**Example:**

```vbscript
dim g as new GMGeometryMBS(500,500)
dim c as new GMColorRGBMBS("white") // white
dim image as new GMImageMBS(g, c)

image.strokeWidth = 5

dim draw as GMGraphicsMBS = image.Graphics

draw.StrokeColor new GMColorRGBMBS("red")
draw.Line(100,100,400,400)
draw.Rotation 5
draw.StrokeColor new GMColorRGBMBS("blue")
draw.Line(100,100,400,400)
draw.Draw

Backdrop=image.CopyPicture
```

81.37.89 **RoundRectangle(centerX as Double, centerY as Double, width as Double, height as Double, cornerWidth as Double, cornerHeight as Double)**


**Function:** Draw a rounded rectangle using stroke color and thickness, with specified center coordinate, specified width and height, and specified corner width and height.

**Example:**

```vbscript
dim g as new GMGeometryMBS(500,500)
dim c as new GMColorRGBMBS("white") // white
dim image as new GMImageMBS(g, c)

image.strokeColor = new GMColorRGBMBS("red") // Outline color
image.fillColor = new GMColorRGBMBS("green") // Fill color
image.strokeWidth = 5

dim draw as GMGraphicsMBS = image.Graphics

// Draw a round rectangle
draw.RoundRectangle(250, 250, 100, 100,20,20)
draw.Draw
```
Notes: If a fill color is specified, then the object is filled.

81.37.90  Scaling(x as Double, y as Double)

Function: Apply scaling in x and y direction while drawing objects (coordinate transformation).
Example:

```vbs
' 1. Define a new geometry
  g = New GMGeometryMBS(500, 500)

' 2. Assign a color to the image
  c = GMColorRGBMBS("white") // white

' 3. Create a new image
  image = GMImageMBS(g, c)

' 4. Set the stroke width
  image.strokeWidth = 5

' 5. Create a graphics object
  draw = image.Graphics

' 6. Set fill color
  draw.FillColor = new GMColorRGBMBS("red")

' 7. Set stroke color
  draw.StrokeColor = new GMColorRGBMBS("red")

' 8. Draw a line
  draw.Line(100,100,400,400)

' 9. Scale the image
  draw.Scaling = 1.2,1.1

' 10. Redraw
  draw.Draw

Backdrop=image.CopyPicture
```

81.37.91  SkewX(angle as Double)

Function: Apply skew in X direction (coordinate transformation)
Example:

```vbs
' 1. Define a new geometry
  g = New GMGeometryMBS(500, 500)

' 2. Assign a color to the image
  c = GMColorRGBMBS("white") // white

' 3. Create a new image
  image = GMImageMBS(g, c)

' 4. Set the stroke width
  image.strokeWidth = 5

' 5. Create a graphics object
  draw = image.Graphics

' 6. Set fill color
  draw.FillColor = new GMColorRGBMBS("red")

' 7. Set stroke color
  draw.StrokeColor = new GMColorRGBMBS("red")

' 8. Draw a line
  draw.Line(100,100,400,400)

' 9. Apply skew
  draw.SkewX = 1.1

' 10. Draw
  draw.Draw

Backdrop=image.CopyPicture
```
draw.StrokeColor new GMColorRGBMBS("red")
draw.Line(100,100,400,400)
draw.SkewX 5
draw.StrokeColor new GMColorRGBMBS("blue")
draw.Line(100,100,400,400)
draw.Draw

Backdrop=image.CopyPicture

81.37.92 SkewY(angle as Double)

**Function:** Apply Skew in Y direction.

**Example:**

```vba
dim g as new GMGeometryMBS(500,500)
dim c as new GMColorRGBMBS("white") // white
dim image as new GMImageMBS(g, c)

image.strokeWidth = 5

dim draw as GMGraphicsMBS = image.Graphics

draw.StrokeColor new GMColorRGBMBS("red")
draw.Line(100,100,400,400)
draw.SkewY 5
draw.StrokeColor new GMColorRGBMBS("blue")
draw.Line(100,100,400,400)
draw.Draw

Backdrop=image.CopyPicture
```

81.37.93 StrokeAntialias(flag as boolean)

**Function:** Antialias while drawing lines or object outlines.
81.37.94 **StrokeColor(c as GMColorMBS)**


**Function:** Set color to use when drawing lines or object outlines.

**Example:**

```vba
dim g as new GMGeometryMBS(500,500)
dim c as new GMColorRGBMBS(“white”) // white
dim image as new GMImageMBS(g, c)

image.strokeWidth = 5

dim draw as GMGraphicsMBS = image.Graphics

draw.StrokeColor new GMColorRGBMBS(“red”)  
draw.Line(100,100,400,400)  
draw.Draw

Backdrop=image.CopyPicture
```

81.37.95 **StrokeLineCap(LineCap as Integer)**


**Function:** Specify the shape to be used at the end of open subpaths when they are stroked.

**Notes:** Values of LineCap are UndefinedCap, ButtCap, RoundCap, and SquareCap.

81.37.96 **StrokeLineJoin(LineJoin as Integer)**


**Function:** Specify the shape to be used at the corners of paths (or other vector shapes) when they are stroked.

**Notes:** Values of LineJoin are UndefinedJoin, MiterJoin, RoundJoin, and BevelJoin.

81.37.97 **StrokeOpacity(opacity as Double)**


**Function:** Opacity to use when drawing lines or object outlines.
81.37.98 StrokeWidth(opacity as Double)

**Function:** Set width to use when drawing lines or object outlines.

81.37.99 Text(x as Double, y as Double, text as string)

**Function:** Annotate image with text using stroke color, font, font pointsize, and box color (text background color), at specified coordinates.

**Example:**
```vbnet
dim g as new GMGeometryMBS(500,500)
dim c as new GMCColorRGBMBS("white") // white
dim image as new GMImageMBS(g, c)

dim draw as GMGraphicsMBS = image.Graphics

// draw red text
draw.strokeColor(new GMCColorRGBMBS("red")) // Outline color
draw.strokeWidth(1)
draw.Font("/Library/Fonts/Verdana.ttf")
draw.Text(50, 50, "Hello")
draw.Draw

Backdrop=image.CopyPicture
```

**Notes:** If text contains special format characters the image filename, type, width, height, or other image attributes may be incorporated in the text (see label).

See also:
- 81.37.100 Text(x as Double, y as Double, text as string, encoding as string)

81.37.100 Text(x as Double, y as Double, text as string, encoding as string)

**Function:** Annotate image with text represented with text encoding, using current stroke color, font, font pointsize, and box color (text background color), at specified coordinates.

**Notes:**
If text contains special format characters the image filename, type, width, height, or other image attributes may be incorporated in the text (see label()).
The text encoding specifies the code set to use for text annotations. The only character encoding which may be specified at this time is "UTF-8" for representing Unicode as a sequence of bytes. Specify an empty string to set text encoding to the system’s default. Successful text annotation using Unicode may require fonts designed to support Unicode.

Seems like you need ghostscript or the DPS library for text handling, so it may not be available for you. See also:

- 81.37.99 Text(x as Double, y as Double, text as string)

### 81.37.101 TextAntialias(flag as boolean)


**Function:** Antialias while drawing text (default true).

**Notes:** The main reason to disable text antialiasing is to avoid adding new colors to the image.

### 81.37.102 TextDecoration(DecorationType as Integer)


**Function:** Specify decoration (e.g. UnderlineDecoration) to apply to text.
81.37.103  TextUnderColor(c as GMColorMBS)

Function: Draw a box under rendered text using the specified color.

81.37.104  Translation(x as Double, y as Double)

Function: Apply coordinate translation (set new coordinate origin).
Example:

```dim g as new GMGeometryMBS(500,500)
dim c as new GMColorRGBMBS("white") // white
dim image as new GMImageMBS(g, c)

image.strokeWidth = 5

dim draw as GMGraphicsMBS = image.Graphics

draw.StrokeColor new GMColorRGBMBS("red")
draw.Line(100,100,400,400)
draw.Translation 5,5
draw.StrokeColor new GMColorRGBMBS("blue")
draw.Line(100,100,400,400)
draw.Draw

Backdrop=image.CopyPicture```

81.37.105  Viewbox(x1 as Integer, y1 as Integer, x2 as Integer, y2 as Integer)

Function: Dimensions of the output viewbox.
Notes: If the image is to be written to a vector format (e.g. MVG or SVG), then a PushGraphicContext() object should be pushed to the head of the list, followed by a Viewbox() statement to establish the output canvas size. A matching PopGraphicContext() object should be pushed to the tail of the list.
81.37. CLASS GMGRAPHICSMBS

81.37.106 Properties

81.37.107 Image as GMImageMBS


**Function:** The image this graphics object belongs to.

**Notes:** (Read only property)
81.38 class GMImageArrayMBS

81.38.1 class GMImageArrayMBS


Function: The class for an array of images in GraphicsMagick.

Example:

```vba
// extract all layers of photoshop file
Dim file As FolderItem = SpecialFolder.Desktop.Child("test.psd")
Dim images As new GMImageArrayMBS

images.readImages(file.UnixpathMBS)

Dim c As Integer = images.size
For i As Integer = 0 To c-1
    Dim image As GMImageMBS = images.Image(i)
    Dim file As SpecialFolder.Desktop.Child(image.FileName + "." + Str(i) + ".png")
    image.write(file)
Next
```

Notes: Can be used to assemble/disassemble gif images.

81.38.2 Methods

81.38.3 animateImages


Function: Animate a sequence of image frames.

Notes: Image frames are displayed in succession, creating an animated effect. The animation options are taken from the first image frame. This feature is only supported under X11 at the moment.

81.38.4 append(image as GMImageMBS)


Function: Adds an image to the end of the array.

Example:

```vba
// read gif
Dim g As new GMImageArrayMBS
Dim file As FolderItem = SpecialFolder.Desktop.Child("test.gif")
g.readImages(file.UnixpathMBS)
```
/ put copy of first image on the back
dim n as GMImageMBS = g.FirstImage
   g.append n

// write to file
   dim output as FolderItem = SpecialFolder.Desktop.Child("output.gif")
   g.writeImages(output.UnixpathMBS)

81.38.5 appendImages(stack as boolean = false) as GMImageMBS

Function: Append a sequence of image frames, writing the result to new image.
Notes: All the input image frames must have the same width or height. Image frames of the same width
are stacked top-to-bottom. Image frames of the same height are stacked left-to-right. If the stack parameter
is false, rectangular image frames are stacked left-to-right otherwise top-to-bottom.

81.38.6 averageImages as GMImageMBS

Function: Average a sequence of image frames, writing the result to averagedImage.
Example:
   // read gif
   dim g as new GMImageArrayMBS
   dim file as FolderItem = SpecialFolder.Desktop.Child("test.gif")
   g.readImages(file.UnixpathMBS)
   // averageImages
   dim n as GMImageMBS = g.averageImages
   Backdrop = n.CopyPicture

Notes: All the input image frames must be the same size in pixels.

81.38.7 coalesceImages as GMImageArrayMBS

Function: Create a coalesced image sequence obtained by "playing" the image sequence (observing page
offsets and disposal methods) to create a new image sequence in which all frames are full size and completely rendered.

**Example:**

```plaintext
// read gif
dim g as new GMImageArrayMBS
dim file as FolderItem = SpecialFolder.Desktop.Child("test.gif")
g.readImages(file.UnixpathMBS)

// deconstruct
g = g.coalesceImages

// write gif
dim output as FolderItem = SpecialFolder.Desktop.Child("output.gif")
g.writeImages output.UnixpathMBS
```

**Notes:** Note that if the original image sequence relied on page offsets and disposal methods that the resulting sequence will be larger (perhaps much larger) than the original. This is useful for GIF animation sequences that have page offsets and disposal methods. The resulting image sequence is returned.

### 81.38.8 Constructor


**Function:** Creates an empty image array.

### 81.38.9 deconstructImages as GMImageArrayMBS


**Function:** Break down an image sequence into constituent parts.

**Example:**

```plaintext
// read gif
dim g as new GMImageArrayMBS
dim file as FolderItem = SpecialFolder.Desktop.Child("test.gif")
g.readImages(file.UnixpathMBS)

// deconstruct
g = g.deconstructImages

// write gif
dim output as FolderItem = SpecialFolder.Desktop.Child("output.gif")
g.writeImages output.UnixpathMBS
```
Notes: This is useful for creating GIF or MNG animation sequences.

81.38.10 displayImages

Function: Display a sequence of image frames.
Notes:
Through use of a pop-up menu, image frames may be selected in succession. This feature is fully supported under X11 but may have only limited support in other environments. 
Caution: if an image format is is not compatible with the display visual (e.g. JPEG on a color-mapped display) then the original image will be altered. Use a copy of the original if this is a problem.

display methods are not supported currently.

81.38.11 FirstImage as GMImageMBS

Function: Returns first image in array.
Example:

```vbg
// read gif
dim g as new GMImageArrayMBS
dim file as FolderItem = SpecialFolder.Desktop.Child(“test.gif”)
g.readImages(file.UnixpathMBS)

// show first image
dim img as GMImageMBS = g.FirstImage

// convert to true color for CopyPicture to work
const TrueColorType=6
img.type=TrueColorType
Backdrop = img.CopyPicture
```

81.38.12 flattenImages as GMImageMBS

Function: Merge a sequence of image frames which represent image layers into a single composited
representation.

**Example:**

```vbs
// read gif
dim g as new GMImageArrayMBS
dim file as FolderItem = SpecialFolder.Desktop.Child("test.gif")
g.readImages(file.UnixPathMBS)

// put copy of first image on the back
dim n as GMImageMBS = g.flattenImages
Backdrop = n.CopyPicture
```

**Notes:** Returns the flattened image. This function is useful for combining Photoshop layers into a single image.

### 81.38.13 Image(index as Integer) as GMImageMBS

**Function:** Queries image with given index.

### 81.38.14 insert(image as GMImageMBS)

**Function:** Inserts an image on the front.

**Example:**

```vbs
// read gif
dim g as new GMImageArrayMBS
dim file as FolderItem = SpecialFolder.Desktop.Child("test.gif")
g.readImages(file.UnixPathMBS)

// put copy of first image on the front
dim n as GMImageMBS = g.FirstImage
g.insert n

// write to file

dim output as FolderItem = SpecialFolder.Desktop.Child("output.gif")
g.writeImages(output.UnixPathMBS)
```
81.38.15 LastImage as GMImageMBS

**Function:** Returns last image in array.

81.38.16 mapImages(map as GMImageMBS, dither as boolean = true, measureError as boolean = false)

**Function:** Replace the colors of a sequence of images with the closest color from a reference image.
**Notes:** Set dither to true to enable dithering. Set measureError to true in order to evaluate quantization error.

81.38.17 montageImages(options as GMMontageMBS) as GMImageArrayMBS

**Function:** Create a composite image by combining several separate image frames.
**Example:**

```plaintext
// build montage
dim StackingMontage as New GM16MontageMBS
StackingMontage.backgroundColor = New GM16ColorMBS(& cE7E7E7)
StackingMontage.fillColor = New GM16ColorMBS(& c000000)
StackingMontage.tile = New GM16GeometryMBS("1x20")
StackingMontage.geometry = New GM16GeometryMBS("160x120+5+5")
StackingMontage.font = "Helvetica"
StackingMontage.pointSize = 12
StackingMontage.title = "Title goes here"

// make picture
dim logo as Picture = LogoMBS(500)
dim image as New GM16ImageMBS(logo)

image.label("Sample label")

// Put the current image into the array
Dim StackingFrames As new GM16ImageArrayMBS
StackingFrames.insert(image)

// show result
dim resultImages as GM16ImageArrayMBS = StackingFrames.montageImages(StackingMontage)
Backdrop = resultImages.Image(0).CopyPicture
```
Notes: Multiple frames may be generated in the output array depending on the tile setting and the number of image frames montaged. Montage options are provided via the parameter options. Options set in the first image frame (backgroundColor, borderColor, matteColor, fillColor, strokeColor, font and fontPointsize) are also used as options by montageImages().

81.38.18  morphImages(frames as Integer) as GMImageArrayMBS

Function: Morph a sequence of image frames.
Example:

`// read gif
dim g as new GMImageArrayMBS
dim file as FolderItem = SpecialFolder.Desktop.Child("test.gif")
g.readImages(file.UnixpathMBS)

// coalesce to make sure we have full images
g = g.coalesceImages

// morph to 10 pictures
\[ g = g.morphImages(10) \]

// write gif
\[ \text{dim output as FolderItem = SpecialFolder.Desktop.Child("output.gif")} \]
\[ g.writeImages output.UnixpathMBS \]

Notes: This algorithm expands the number of image frames (output to the new image array) by adding the number of intervening frames specified by frames such that the original frames morph (blend) into each other when played as an animation.

81.38.19  mosaicImages as GMImageMBS

Function: Inlay a number of images to form a single coherent picture.
Notes: The result image argument is updated with a mosaic constructed from the image sequence.

81.38.20  quantizeImages(measureError as boolean = false)

Function: Quantize colors in images using current quantization settings.
Notes: Set measureError to true in order to measure quantization error.
81.38. CLASS GMIMAGEARRAYMBS

81.38.21 readImages(blob as GMBlobMBS)

Function: Read a sequence of image frames into existing container (appending to array) from blob.
See also:

- 81.38.22 readImages(imageSpec as string)

81.38.22 readImages(imageSpec as string)

Function: Read a sequence of image frames into existing container (appending to array) with image names specified in the string imageSpec.
See also:

- 81.38.21 readImages(blob as GMBlobMBS)

81.38.23 remove(index as Integer)

Function: Removes the image with the given index.

Example:

```vbnet
// read gif
dim g as new GMImageArrayMBS
dim file as FolderItem = SpecialFolder.Desktop.Child("test.gif")
g.readImages(file.UnixpathMBS)

// remove first
g.remove 0

// write to file

dim output as FolderItem = SpecialFolder.Desktop.Child("output.gif")
g.writeImages(output.UnixpathMBS)
```

Notes: Index should be between 0 and size-1.

81.38.24 reverse

Function: Reverses the order of images in the array.
81.38.25 writeImages(blob as GMBlobMBS, adjoin as boolean = true)


Function: Writes images to the given blob object.

Notes:
Write images in container to in-memory BLOB specified by Blob blob. Set adjoin to false to write a set of image frames via a wildcard imageSpec (e.g. image% 02d.miff).
Caution: if an image format is selected which is capable of supporting fewer colors than the original image or quantization has been requested, the original image will be quantized to fewer colors. Use a copy of the original if this is a problem.
See also:

• 81.38.26 writeImages(imageSpec as string, adjoin as boolean = true)

81.38.26 writeImages(imageSpec as string, adjoin as boolean = true)


Function: Writes images to the given path.

Example:

```plaintext
// read gif
dim g as new GMImageArrayMBS
dim file as FolderItem = SpecialFolder.Desktop.Child("test.gif")
g.readImages(file.UnixpathMBS)

// write to file

dim output as FolderItem = SpecialFolder.Desktop.Child("output.gif")
g.writeImages(output.UnixpathMBS)
```

Notes:
Write images in container to file specified by string imageSpec. Set adjoin, to false to write a set of image frames via a wildcard imageSpec (e.g. image% 02d.miff).
The wildcard must be one of % 0Nd, % 0No, or % 0Nx.
Caution: if an image format is selected which is capable of supporting fewer colors than the original image or quantization has been requested, the original image will be quantized to fewer colors. Use a copy of the original if this is a problem.
See also:

• 81.38.25 writeImages(blob as GMBlobMBS, adjoin as boolean = true)
81.38.27  Properties

81.38.28  empty as boolean

Function: Checks whether image array is empty.
Notes:
Returns true if array is empty or false if not.
(Read only property)

81.38.29  handle as Integer

Function: The internal handle of the image array.
Notes:
Should always be non zero.
(Read and Write property)

81.38.30  size as Integer

Function: Returns number of images in this array.
Example:
   // read gif
   dim g as new GMImageArrayMBS
   dim file as FolderItem = SpecialFolder.Desktop.Child("test.gif")
   g.readImages(file.UnixpathMBS)
   // display number of images
   MsgBox str(g.size)

Notes: (Read only property)
81.39 class GMImageChannelStatisticsMBS

81.39.1 class GMImageChannelStatisticsMBS


Function: The statistics for image channel.

Example:

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim g as new GMImageMBS(f)
dim stat as GMImageStatisticsMBS = g.statistics
dim gs as GMImageChannelStatisticsMBS = stat.blue

MsgBox "blue channel: " + str(gs.minimum) + ", maximum " + str(gs.maximum) + ", mean " + str(gs.mean)
```

Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

81.39.2 Methods

81.39.3 Constructor


Function: The private constructor.

81.39.4 Properties

81.39.5 maximum as Double


Function: Maximum value observed.

Example:

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim g as new GMImageMBS(f)
dim stat as GMImageStatisticsMBS = g.statistics
dim gs as GMImageChannelStatisticsMBS = stat.green

MsgBox "maximum green color: " + str(gs.maximum)
```
81.39. **mean as Double**

**Function:** Average (mean) value observed.  
**Example:**
```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim g as new GMImageMBS(f)
dim stat as GMImageStatisticsMBS = g.statistics
dim r as GMImageChannelStatisticsMBS = stat.red

MsgBox "mean red color: " + str(R.mean)
```

**Notes:** (Read only property)

81.39. **minimum as Double**

**Function:** Minimum value observed.  
**Notes:** (Read only property)

81.39. **standardDeviation as Double**

**Function:** Standard deviation, sqrt(variance).  
**Notes:** (Read only property)

81.39. **variance as Double**

**Function:** Variance.  
**Notes:** (Read only property)
81.40 class GMImageMBS

81.40.1 class GMImageMBS


Function: Image is the primary object in Magick++ and represents a single image frame (see image design).

Example:

```
dim c as new GMColorMBS("white")
dim g as new GMGeometryMBS(100,100)
dim image as new GMImageMBS(g, c)
```

Notes:

With MBS Plugin 14.0 we offer this classes in 8bit (GM prefix) or 16bit (GM16 prefix).

The GMImageArrayMBS class must be used to operate on image sequences or images (e.g. of format GIF, TIFF, MIFF, Postscript, & MNG) which are comprised of multiple image frames. Individual frames of a multi-frame image may be requested by adding array-style notation to the end of the file name (e.g. "animation.gif [ 3 ] " retrieves the fourth frame of a GIF animation. Various image manipulation operations may be applied to the image. Attributes may be set on the image to influence the operation of the manipulation operations. The GMPixelsMBS class provides low-level access to image pixels.

81.40.2 Methods

81.40.3 adaptiveThreshold(width as UInt32, height as UInt32, offset as UInt32=0)


Function: Apply adaptive thresholding to the image.

Notes:

see:
http://www.dai.ed.ac.uk/HIPR2/adpthrsh.htm

Adaptive thresholding is useful if the ideal threshold level is not known in advance, or if the illumination gradient is not constant across the image. Adaptive thresholding works by evaluating the mean (average) of a pixel region (size specified by width and height) and using the mean as the thresholding value. In order to remove residual noise from the background, the threshold may be adjusted by subtracting a constant offset (default zero) from the mean to compute the threshold.
81.40.4  **addNoise(noise as Integer)**

**Function:** Add noise to image with the specified noise type.
**Example:**
```vbnet
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.addNoise(image.GaussianNoise)

Backdrop=image.CopyPicture
```

**Notes:** Use one of this constants: GaussianNoise, ImpulseNoise, LaplacianNoise, MultiplicativeGaussianNoise, PoissonNoise, UniformNoise.

81.40.5  **addNoiseChannel(channel as Integer, noise as Integer)**

**Function:** Add noise to an image channel with the specified noise type. The channel parameter specifies the channel to add noise to.
**Example:**
```vbnet
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.addNoiseChannel(image.BlueChannel, image.ImpulseNoise)

Backdrop=image.CopyPicture
```

**Notes:**
The noiseType parameter specifies the type of noise.
Use one of this constants: GaussianNoise, ImpulseNoise, LaplacianNoise, MultiplicativeGaussianNoise, PoissonNoise, UniformNoise.

81.40.6  **affineTransform(sx as Double, sy as Double, rx as Double, ry as Double, tx as Double, ty as Double)**

**Function:** Applies an affine transformation to the drawing matrix.
Notes: Specify a transformation matrix to adjust scaling, rotation, and translation (coordinate transformation) for subsequently drawn objects in the same or decendent drawing context. The sx & sy parameters represent the x & y scale factors, the rx & ry parameters represent the x & y rotation, and the tx & ty parameters represent the x & y translation.

81.40.7  annotate(text as string, boundingArea as GMSGeometryMBS, gravity as Integer)


Function: Annotate using specified text, bounding area, and placement gravity.

Notes:

Annotate image (draw text on image)

Gravity effects text placement in bounding area according to these rules:

- NorthWestGravity: text bottom-left corner placed at top-left
- NorthGravity: text bottom-center placed at top-center
- NorthEastGravity: text bottom-right corner placed at top-right
- WestGravity: text left-center placed at left-center
- CenterGravity: text center placed at center
- EastGravity: text right-center placed at right-center
- SouthWestGravity: text top-left placed at bottom-left
- SouthGravity: text top-center placed at bottom-center
- SouthEastGravity: text top-right placed at bottom-right

Annotate annotates an image with text. Optionally you can include any of the following bits of information about the image by embedding the appropriate special characters:

- %b file size in bytes.
- %c comment.
- %d directory in which the image resides.
- %e extension of the image file.
- %f original filename of the image.
- %h height of image.
- %i filename of the image.
- %k number of unique colors.
- %l image label.
- %m image file format.
- %n number of images in a image sequence.
- %o output image filename.
- %p page number of the image.
- %q image depth (8 or 16).
- %r page number of the image.
- %s image scene number.
- %t image filename without any extension.
- %u a unique temporary filename.
- %w image width.
- %x x resolution of the image.
- %y y resolution of the image.

Set a font with full path and @ in front. e.g. "@/Library/Fonts/Arial.ttf". This way the plugin loads it directly.

See also:

- 81.40.8 annotate(text as string, boundingArea as GMSGeometryMBS, gravity as Integer, degrees as Double)
81.40. **CLASS GMIMAGEMBS**

- 81.40.9 `annotate(text as string, gravity as Integer)`
- 81.40.10 `annotate(text as string, location as GMGeometryMBS)`

### 81.40.8 `annotate(text as string, boundingArea as GMGeometryMBS, gravity as Integer, degrees as Double)`


**Function:** Annotate with text using specified text, bounding area, placement gravity, and rotation.  

**Notes:**

Annotate image (draw text on image)

Gravity effects text placement in bounding area according to these rules:

<table>
<thead>
<tr>
<th>Gravity</th>
<th>Placement</th>
</tr>
</thead>
<tbody>
<tr>
<td>NorthWestGravity</td>
<td>text bottom-left corner placed at top-left</td>
</tr>
<tr>
<td>NorthGravity</td>
<td>text bottom-center placed at top-center</td>
</tr>
<tr>
<td>NorthEastGravity</td>
<td>text bottom-right corner placed at top-right</td>
</tr>
<tr>
<td>WestGravity</td>
<td>text left-center placed at left-center</td>
</tr>
<tr>
<td>CenterGravity</td>
<td>text center placed at center</td>
</tr>
<tr>
<td>EastGravity</td>
<td>text right-center placed at right-center</td>
</tr>
<tr>
<td>SouthWestGravity</td>
<td>text top-left placed at bottom-left</td>
</tr>
<tr>
<td>SouthGravity</td>
<td>text top-center placed at bottom-center</td>
</tr>
<tr>
<td>SouthEastGravity</td>
<td>text top-right placed at bottom-right</td>
</tr>
</tbody>
</table>

Annotate annotates an image with text. Optionally you can include any of the following bits of information about the image by embedding the appropriate special characters:

- `%b` file size in bytes.  
- `%c` comment.  
- `%d` directory in which the image resides.  
- `%e` extension of the image file.  
- `%f` original filename of the image.  
- `%h` height of image.  
- `%i` filename of the image.  
- `%k` number of unique colors.  
- `%l` image label.  
- `%m` image file format.  
- `%n` number of images in a image sequence.  
- `%o` output image filename.  
- `%p` page number of the image.  
- `%q` image depth (8 or 16).  
- `%s` image scene number.  
- `%t` image filename without any extension.  
- `%u` a unique temporary filename.  
- `%w` image width.  
- `%x` resolution of the image.  
- `%y` resolution of the image.

Set a font with full path and @ in front. e.g. "@/Library/Fonts/Arial.ttf". This way the plugin loads it directly.

**See also:**

- 81.40.7 `annotate(text as string, boundingArea as GMGeometryMBS, gravity as Integer)`  
- 81.40.9 `annotate(text as string, gravity as Integer)`  
- 81.40.10 `annotate(text as string, location as GMGeometryMBS)`
81.40.9 annotate(text as string, gravity as Integer)

**Function:** Annotate with text (bounding area is entire image) and placement gravity.

**Example:**

```vba
dim White as new GMColorGrayMBS(1)
dim Black as new GMColorGrayMBS(0)
dim geo as new GMGeometryMBS("300x200")

dim g as new GMImageMBS(geo, White)

g.antiAlias = False
g.fillColor = Black
g.lineWidth = 1
g.strokeColor = Black
g.font = "@/Library/Fonts/Tahoma.ttf"
g.fontPointsize = 15

g.annotate("Hello World", g.SouthGravity)

Backdrop = g.CopyPicture
```

**Notes:**

Annotate image (draw text on image)

Gravity effects text placement in bounding area according to these rules:

- **NorthWestGravity** text bottom-left corner placed at top-left
- **NorthGravity** text bottom-center placed at top-center
- **NorthEastGravity** text bottom-right corner placed at top-right
- **WestGravity** text left-center placed at left-center
- **CenterGravity** text center placed at center
- **EastGravity** text right-center placed at right-center
- **SouthWestGravity** text top-left placed at bottom-left
- **SouthGravity** text top-center placed at bottom-center
- **SouthEastGravity** text top-right placed at bottom-right

Annotate annotates an image with text. Optionally you can include any of the following bits of information about the image by embedding the appropriate special characters:

- % b file size in bytes
- % c comment
- % d directory in which the image resides
- % e extension of the image file
- % f original filename of the image
- % h height of image
- % i filename of the image
- % k number of
unique colors. \%l image label. \%m image file format. \%n number of images in a image sequence. \%o output image filename. \%p page number of the image. \%q image depth (8 or 16). \%r page number of the image. \%s image scene number. \%t image filename without any extension. \%u a unique temporary filename. \%w image width. \%x x resolution of the image. \%y y resolution of the image.

Set a font with full path and @ in front. e.g. "@/Library/Fonts/Arial.ttf". This way the plugin loads it directly.
See also:

- 81.40.7 annotate(text as string, boundingArea as GMGeometryMBS, gravity as Integer) 13646
- 81.40.8 annotate(text as string, boundingArea as GMGeometryMBS, gravity as Integer, degrees as Double) 13647
- 81.40.10 annotate(text as string, location as GMGeometryMBS) 13649

81.40.10 annotate(text as string, location as GMGeometryMBS)

**Function:** Annotate using specified text, and placement location.
**Notes:**
Annotate image (draw text on image)

Gravity effects text placement in bounding area according to these rules:

- NorthWestGravity text bottom-left corner placed at top-left
- NorthGravity text bottom-center placed at top-center
- NorthEastGravity text bottom-right corner placed at top-right
- WestGravity text left-center placed at left-center
- CenterGravity text center placed at center
- EastGravity text right-center placed at right-center
- SouthWestGravity text top-left placed at bottom-left
- SouthGravity text top-center placed at bottom-center
- SouthEastGravity text top-right placed at bottom-right

Annotate annotates an image with text. Optionally you can include any of the following bits of information about the image by embedding the appropriate special characters:

- \%b file size in bytes.
- \%c comment.
- \%d directory in which the image resides.
- \%e extension of the image file.
- \%f original filename of the image.
- \%h height of image.
- \%i filename of the image.
- \%k number of unique colors.
- \%l image label.
- \%m image file format.
- \%n number of images in a image sequence.
- \%o output image filename.
- \%p page number of the image.
- \%q image depth (8 or 16).
- \%r page number of the image.
- \%s image scene number.
- \%t image filename without any extension.
a unique temporary filename. % w image width. % x x resolution of the image. % y y resolution of the image.

Set a font with full path and @ in front. e.g. "@/Library/Fonts/Arial.ttf". This way the plugin loads it directly.
See also:

- 81.40.7 annotate(text as string, boundingArea as GMGeometryMBS, gravity as Integer) 13646
- 81.40.8 annotate(text as string, boundingArea as GMGeometryMBS, gravity as Integer, degrees as Double) 13647
- 81.40.9 annotate(text as string, gravity as Integer) 13648

81.40.11 attributeValues as dictionary

Function: A dictionary with all attributes.
Notes: As attributes are created on demand, this will only return all so far generated attributes.

81.40.12 blur(radius as Double=0.0, sigma as Double=1.0)

Function: Blur an image with the specified blur factor.
Example:

```vbnet
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.blur(30,10)

Backdrop=image.CopyPicture
```

Notes: The radius parameter specifies the radius of the Gaussian, in pixels, not counting the center pixel. The sigma parameter specifies the standard deviation of the Laplacian, in pixels.

81.40.13 blurChannel(channel as Integer, radius as Double=0.0, sigma as Double=1.0)

Function: Blur an image channel with the specified blur factor.
Example:
81.40. CLASS GMIMAGEMBS

```vbs
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.blurChannel(image.BlueChannel, 30, 10)

Backdrop=image.CopyPicture
```

**Notes:** The channel parameter specifies the channel to modify. The radius parameter specifies the radius of the Gaussian, in pixels, not counting the center pixel. The sigma parameter specifies the standard deviation of the Laplacian, in pixels.

### 81.40.14 border


**Function:** Border image (add border to image).

**Example:**

```vbs
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.border

Backdrop=image.CopyPicture
```

**Notes:** The color of the border is specified by the borderColor attribute.

See also:

- 81.40.15 border(geometry as GMGeometryMBS)

### 81.40.15 border(geometry as GMGeometryMBS)


**Function:** Border image (add border to image).

**Example:**

```vbs
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.border GMGeometryMBS.Make(10, 10)

Backdrop=image.CopyPicture
```
Notes: The color of the border is specified by the borderColor attribute. 
See also: 
- 81.40.14 border 

81.40.16  borderGeometryDefault as String

Function: The default geometry description for border.

81.40.17  boundingBox as GMGeometryMBS

Function: Return smallest bounding box enclosing non-border pixels. 
Example: 
```vbnet
dim g as new GMGeometryMBS(500,500)
dim c as new GMColorRGBMBS(“white”) // white
dim image as new GMImageMBS(g, c)

image.fillColor = new GMColorRGBMBS(“red”) // set color
image.strokeColor = new GMColorRGBMBS(“green”) // set color

image.strokeWidth = 5

dim draw as GMGraphicsMBS = image.Graphics

// Draw a circle
draw.Circle(250, 250, 120, 150)
draw.Draw

draw = nil
image.type = image.TrueColorType

Backdrop = image.CopyPicture

MsgBox image.boundingBox.StringValue
```

Notes: The current fuzz value is used when discriminating between pixels. This is the crop bounding box used by crop(Geometry(0,0)).
### 81.40.18 cacheThreshold(threshold as UInt32)

**Function:** Pixel cache threshold in megabytes.
**Notes:** Once this memory threshold is exceeded, all subsequent pixels cache operations are to/from disk. This setting is shared by all Image objects.

### 81.40.19 cdl(cdl as string)

**Function:** Bake in the ASC-CDL.
**Notes:** Bake in the ASC-CDL, which is a convention for the exchange of basic primary color grading information between equipment and software from different manufacturers. It is a useful transform for other purposes as well.

### 81.40.20 channel(channel as Integer)

**Function:** Extract channel from image.
**Notes:** Use this option to extract a particular channel from the image. MatteChannel for example, is useful for extracting the opacity values from an image.

### 81.40.21 charcoal(radius as Double=0.0, sigma as Double=1.0)

**Function:** Charcoal effect image (looks like charcoal sketch).
**Example:**
```vba
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)
image.charcoal
Backdrop=image.CopyPicture
```
**Notes:** The radius parameter specifies the radius of the Gaussian, in pixels, not counting the center pixel. The sigma parameter specifies the standard deviation of the Laplacian, in pixels.
81.40.22 chop(geom as GMGeometryMBS)

**Function:** Chop image (remove vertical or horizontal subregion of image).

81.40.23 colorHistogram as dictionary

**Function:** Calculates histogram.
**Example:**
```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim g as new GMImageMBS(f)
dim d as Dictionary = g.colorHistogram

MsgBox str(d.Count)+" color"

// check first color
dim c as GMColorMBS = d.key(0)

MsgBox "Color "+str(c.colorValue)+": "+str(d.Value(c))
```

**Notes:** The dictionary has a GMColorMBS/GMColor16MBS object as key for each color and an unsigned integer as value.

81.40.24 colorize(opacity as UInt32, penColor as GMColorMBS)

**Function:** Colorize image with pen color, using specified percent opacity.
**Example:**
```
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.colorize(10, new GMColorMBS("red"))

Backdrop=image.CopyPicture
```

See also:

- 81.40.25 colorize(opacityRed as UInt32, opacityGreen as UInt32, opacityBlue as UInt32, penColor as
81.40. **CLASS GMIMAGE,MBS**

GMColorMBS)

81.40.25 `colorize(opacityRed as UInt32, opacityGreen as UInt32, opacityBlue as UInt32, penColor as GMColorMBS)`

**Function:** Colorize image with pen color, using specified percent opacity for red, green, and blue quantums.
**Example:**

```vba
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.colorize(10, 0, 5, new GMColorMBS("red"))

Backdrop=image.CopyPicture
```

See also:

- 81.40.24 `colorize(opacity as UInt32, penColor as GMColorMBS)`

81.40.26 `colorMatrix(order as Integer, ColorMatrix() as Double)`

**Function:** Apply a color matrix to the image channels.
**Example:**

```vba
dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim g as new GMImageMBS(f)

dim m(8) as Double

m(0) = 0.25
m(1) = 0
m(2) = 0.25

m(3) = 0
m(4) = 0
m(5) = 0

m(6) = 0.25
m(7) = 0
m(8) = 0.25

g.colorMatrix 3, m
```
Notes: The user supplied matrix may be of order 1 to 5 (1x1 through 5x5).

### 81.40.27 columns as UInt32

**Function:** Image width.
**Example:**
```vbnet
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)
```

Title = str(image.columns) + ” x ” + str(image.rows)
Backdrop = image.CopyPicture

### 81.40.28 CombinePictureWithMask as picture

**Function:** Creates a copy of the image with mask.
**Example:**
```vbnet
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

dim c as new GMColorMBS(”white”) 
image.transparent(c)

Backdrop = image.CombinePictureWithMask
```

**Notes:** Internally this calls Width and Height, CopyPicture and CopyMask.

### 81.40.29 compare(image as GMImageMBS) as boolean

**Function:** Compare current image with another image.
**Notes:** Sets meanErrorPerPixel, normalizedMaxError, and normalizedMeanError in the current image. False is returned if the images are identical. An ErrorOption exception is thrown if the reference image
columns, rows, colorspace, or matte differ from the current image:

### 81.40.30 composite(compositeImage as GMImageMBS, gravity as Integer, CompositeOperator as Integer=2)

MBS GraphicsMagick Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Compose an image onto another at specified x and y offset and using a specified algorithm. See also:

- 81.40.31 composite(compositeImage as GMImageMBS, offset as GMGeometryMBS, CompositeOperator as Integer=2)
- 81.40.32 composite(compositeImage as GMImageMBS, xOffset as Integer, yOffset as Integer, CompositeOperator as Integer=2)

### 81.40.31 composite(compositeImage as GMImageMBS, offset as GMGeometryMBS, CompositeOperator as Integer=2)

MBS GraphicsMagick Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Compose an image onto another at specified x and y offset and using a specified algorithm. See also:

- 81.40.30 composite(compositeImage as GMImageMBS, gravity as Integer, CompositeOperator as Integer=2)
- 81.40.32 composite(compositeImage as GMImageMBS, xOffset as Integer, yOffset as Integer, CompositeOperator as Integer=2)

### 81.40.32 composite(compositeImage as GMImageMBS, xOffset as Integer, yOffset as Integer, CompositeOperator as Integer=2)

MBS GraphicsMagick Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Compose an image onto another at specified x and y offset and using a specified algorithm. See also:

- 81.40.30 composite(compositeImage as GMImageMBS, gravity as Integer, CompositeOperator as Integer=2)
- 81.40.31 composite(compositeImage as GMImageMBS, offset as GMGeometryMBS, CompositeOperator as Integer=2)
- 81.40.32 composite(compositeImage as GMImageMBS, xOffset as Integer, yOffset as Integer, CompositeOperator as Integer=2)
CHAPTER 81. GRAPHICSMAGICK

81.40.33 Constructor


Function: Default constructor.

Example:

```vba
// get some image data (e.g. from blob in database)
dim logo as Picture = LogoMBS(500)
dim jpegData as string = PictureToJPEGStringMBS(logo, 80)

// new image
Dim mp as new GMImageMBS
dim blob as new GMBlobMBS(jpegData)

// read data from blob into this image object
mp.Read blob

// sometimes you need to explicit convert to RGB/RGBA
'mp.type = mp.TrueColorMatteType
Backdrop=mp.CombinePictureWithMask
```

See also:

- 81.40.34 Constructor(blob as GMBlobMBS) 13659
- 81.40.35 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS) 13659
- 81.40.36 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS, depth as UInt32) 13660
- 81.40.37 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS, depth as UInt32, Magick as string) 13660
- 81.40.38 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS, Magick as string) 13661
- 81.40.39 Constructor(file as folderitem) 13662
- 81.40.40 Constructor(other as GMImageMBS) 13662
- 81.40.41 Constructor(Path as string) 13663
- 81.40.42 Constructor(pic as picture) 13663
- 81.40.43 Constructor(size as GMGeometryMBS, ColorValue as GMColorMBS) 13664
- 81.40.44 Constructor(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr) 13665
81.40. CLASS GMIMagemBS

81.40.34 Constructor(blob as GMBlobMBS)


See also:

- 81.40.33 Constructor
- 81.40.35 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS)
- 81.40.36 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS, depth as UInt32)
- 81.40.37 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS, depth as UInt32, Magick as string)
- 81.40.38 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS, Magick as string)
- 81.40.39 Constructor(file as folderitem)
- 81.40.40 Constructor(other as GMImageMBS)
- 81.40.41 Constructor(Path as string)
- 81.40.42 Constructor(pic as picture)
- 81.40.43 Constructor(size as GMGeometryMBS, ColorValue as GMColorMBS)
- 81.40.44 Constructor(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr)

81.40.35 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS)


See also:

- 81.40.33 Constructor
- 81.40.34 Constructor(blob as GMBlobMBS)
- 81.40.36 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS, depth as UInt32)
- 81.40.37 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS, depth as UInt32, Magick as string)
- 81.40.38 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS, Magick as string)
- 81.40.39 Constructor(file as folderitem)
- 81.40.40 Constructor(other as GMImageMBS)
- 81.40.41 Constructor(Path as string)
81.40.36 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS, depth as UInt32)

**Function:** Construct Image of specified size and depth from in-memory Blob. 
See also:

- 81.40.33 Constructor
- 81.40.34 Constructor(blob as GMBlobMBS)
- 81.40.35 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS)
- 81.40.37 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS, depth as UInt32, Magick as string)
- 81.40.38 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS, Magick as string)
- 81.40.39 Constructor(file as folderitem)
- 81.40.40 Constructor(other as GMImageMBS)
- 81.40.41 Constructor(Path as string)
- 81.40.42 Constructor(pic as picture)
- 81.40.43 Constructor(size as GMGeometryMBS, ColorValue as GMColorMBS)
- 81.40.44 Constructor(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr)

81.40.37 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS, depth as UInt32, Magick as string)

**Function:** Construct Image of specified size, depth, and format from in-memory Blob. 
See also:

- 81.40.33 Constructor
- 81.40.34 Constructor(blob as GMBlobMBS)
- 81.40.35 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS)
81.40. **CLASS GMIMAGEMBS**

- 81.40.36 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS, depth as UInt32) 13660
- 81.40.38 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS, Magick as string) 13661
- 81.40.39 Constructor(file as folderitem) 13662
- 81.40.40 Constructor(other as GMImageMBS) 13662
- 81.40.41 Constructor(Path as string) 13663
- 81.40.42 Constructor(pic as picture) 13663
- 81.40.43 Constructor(size as GMGeometryMBS, ColorValue as GMColorMBS) 13664
- 81.40.44 Constructor(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr) 13665

**81.40.38 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS, Magick as string)**


See also:

- 81.40.33 Constructor 13658
- 81.40.34 Constructor(blob as GMBlobMBS) 13659
- 81.40.35 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS) 13659
- 81.40.36 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS, depth as UInt32) 13660
- 81.40.37 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS, depth as UInt32, Magick as string) 13660
- 81.40.39 Constructor(file as folderitem) 13662
- 81.40.40 Constructor(other as GMImageMBS) 13662
- 81.40.41 Constructor(Path as string) 13663
- 81.40.42 Constructor(pic as picture) 13663
- 81.40.43 Constructor(size as GMGeometryMBS, ColorValue as GMColorMBS) 13664
- 81.40.44 Constructor(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr) 13665
81.40.39 Constructor(file as folderitem)


Function: Construct from image file.

See also:
- 81.40.33 Constructor
- 81.40.34 Constructor(blob as GMBlobMBS)
- 81.40.35 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS)
- 81.40.36 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS, depth as UInt32)
- 81.40.37 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS, depth as UInt32, Magick as string)
- 81.40.38 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS, Magick as string)
- 81.40.39 Constructor(file as folderitem)
- 81.40.40 Constructor(other as GMImageMBS)
- 81.40.41 Constructor(Path as string)
- 81.40.42 Constructor(pic as picture)
- 81.40.43 Constructor(size as GMGeometryMBS, ColorValue as GMColorMBS)
- 81.40.44 Constructor(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr)

81.40.40 Constructor(other as GMImageMBS)


Function: Creates an image by making a copy of the existing one.

See also:
- 81.40.33 Constructor
- 81.40.34 Constructor(blob as GMBlobMBS)
- 81.40.35 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS)
- 81.40.36 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS, depth as UInt32)
- 81.40.37 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS, depth as UInt32, Magick as string)
- 81.40.38 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS, Magick as string)
- 81.40.39 Constructor(file as folderitem)
- 81.40.40 Constructor(other as GMImageMBS)
- 81.40.41 Constructor(Path as string)
81.40. CLASS GMIMAGEMBS

- 81.40.42 Constructor(pic as picture)  
- 81.40.43 Constructor(size as GMGeometryMBS, ColorValue as GMColorMBS)  
- 81.40.44 Constructor(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr)  

81.40.41 Constructor(Path as string)

**Function:** Construct from image file or image specification.  
See also:

- 81.40.33 Constructor  
- 81.40.34 Constructor(blob as GMBlobMBS)  
- 81.40.35 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS)  
- 81.40.36 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS, depth as UInt32)  
- 81.40.37 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS, depth as UInt32, Magick as string)  
- 81.40.38 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS, Magick as string)  
- 81.40.39 Constructor(file as folderitem)  
- 81.40.40 Constructor(other as GMImageMBS)  
- 81.40.42 Constructor(pic as picture)  
- 81.40.43 Constructor(size as GMGeometryMBS, ColorValue as GMColorMBS)  
- 81.40.44 Constructor(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr)  

81.40.42 Constructor(pic as picture)

**Function:** Creates a new GMImage with the given picture.  
**Example:**

```vba
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)
Backdrop=image.CopyPicture
```

**Notes:** Pixels from both the picture and picture’s mask.  
See also:
81.40.43 Constructor(size as GMGeometryMBS, ColorValue as GMColorMBS)


Function: Construct a blank image canvas of specified size and color.

Example:

```plaintext
dim g as new GMGeometryMBS(600,600)
dim c as new GMColorRGBMBS(1.0,0.0,0.0) // red
dim image as new GMImageMBS(g, c)

const TrueColorType=6

// Ensure that there are no other references to this image.
image.modifyImage
// Set the image type to TrueColor DirectClass representation.
image.type=TrueColorType

Backdrop=image.CopyPicture(0,0,600,600)
```

See also:

- 81.40.33 Constructor
- 81.40.34 Constructor(blob as GMBlobMBS)
- 81.40.35 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS)
81.40. **CLASS GMIMAGEMBS**

- 81.40.36 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS, depth as UInt32) 13660
- 81.40.37 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS, depth as UInt32, Magick as string) 13660
- 81.40.38 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS, Magick as string) 13661
- 81.40.39 Constructor(file as folderitem) 13662
- 81.40.40 Constructor(other as GMImageMBS) 13662
- 81.40.41 Constructor(Path as string) 13663
- 81.40.42 Constructor(pic as picture) 13663
- 81.40.44 Constructor(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr) 13665

### 81.40.44 Constructor(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr)

MBS GraphicsMagick Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Initializes single image frame from an array of raw pixels, with specified storage type (ConstituteImage).

**Example:**

```delphi
dim data as new memoryblock(2048*2048) // your data
dim image as new GMImageMBS(2048, 2048, "I", GMImageMBS.StorageTypeCharPixel, data)
```

**Notes:**

Returns an Image corresponding to an image stored in a raw memory array format. The pixel data must be in scanline order top-to-bottom. The data can be unsigned char, unsigned short int, unsigned int, unsigned long, float, or double. Float and double require the pixels to be normalized to the range \([0..1]\), otherwise the range is \([0..\text{MaxVal}]\) where MaxVal is the maximum possible value for that type.

Note that for most 32-bit architectures the size of an unsigned long is the same as unsigned int, but for 64-bit architectures observing the LP64 standard, an unsigned long is 64 bits, while an unsigned int remains 32 bits. This should be considered when deciding if the data should be described as "Integer" or "Long".

For example, to create a 640x480 image from unsigned red-green-blue character data, use

```delphi
image = new GMImageMBS(640, 480, "RGB", GMImageMBS.StorageTypeCharPixel, pixels);
```

width: width in pixels of the image.
height: height in pixels of the image.
map: This string reflects the expected ordering of the pixel array. It can be any combination or order of R = red, G = green, B = blue, A = alpha (same as Transparency), O = Opacity, T = Transparency, C = cyan, Y = yellow, M = magenta, K = black, or I = intensity (for grayscale). Specify "P" = pad, to skip over a quantum which is intentionally ignored. Creation of an alpha channel for CMYK images is currently not supported.

type: Define the data type of the pixels. Float and double types are expected to be normalized [ 0..1 ] otherwise [ 0..MaxRGB ]. Choose from these types: StorageTypeCharPixel, StorageTypeShortPixel, StorageTypeIntegerPixel, StorageTypeLongPixel, StorageTypeFloatPixel, or StorageTypeDoublePixel.

pixels: This array of values contain the pixel components as defined by map and type. You must preallocate this array where the expected length varies depending on the values of width, height, map, and type. You must preallocate this array where the expected length varies depending on the values of width, height, map, and type.

See also:

- 81.40.33 Constructor
- 81.40.34 Constructor(blob as GMBlobMBS)
- 81.40.35 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS)
- 81.40.36 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS, depth as UInt32)
- 81.40.37 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS, depth as UInt32, Magick as string)
- 81.40.38 Constructor(blob as GMBlobMBS, geometry as GMGeometryMBS, Magick as string)
- 81.40.39 Constructor(file as folderitem)
- 81.40.40 Constructor(other as GMImageMBS)
- 81.40.41 Constructor(Path as string)
- 81.40.42 Constructor(pic as picture)
- 81.40.43 Constructor(size as GMGeometryMBS, ColorValue as GMColorMBS)

81.40.45 contrast(sharpen as UInt32)


Function: Contrast image (enhance intensity differences in image).

Example:

dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.contrast(10)

Backdrop=image.CopyPicture
81.40.46  **convolve(order as Integer, ColorMatrix() as Double)**

**Function:** Convolves the image.
**Example:**

```vbs
dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim g as new GMImageMBS(f)

dim m(8) as Double
m(0) = 0.25
m(1) = 0
m(2) = 0.25
m(3) = 0
m(4) = 0
m(5) = 0
m(6) = 0.25
m(7) = 0
m(8) = 0.25

g.convolve 3, m

Backdrop = g.CopyPicture
```

**Notes:**

Applies a user-specified convolution to the image.
order represents the number of columns and rows in the filter kernel.
kernel is an array of doubles representing the convolution kernel.

---

81.40.47  **CopyPicture as picture**

**Function:** Creates a copy of the image and returns it as a new picture.
**Example:**

```vbs
dim g as new GMGeometryMBS(500,500)
dim c as new GMColorRGBMBS("white") // white
dim image as new GMImageMBS(g, c)

text.strokeColor = new GMColorRGBMBS("red") // Outline color
text.fillColor = new GMColorRGBMBS("green") // Fill color
```
image.strokeWidth = 5

dim draw as GMGraphicsMBS = image.Graphics

// Draw a circle
draw.Rectangle(250, 250, 100, 100)

Backdrop=image.CopyPicture

Notes: You may need to set image type to RGB to get it working.
See also:

- 81.40.48 CopyPicture(x as Integer, y as Integer, width as Integer, height as Integer) as picture

**81.40.48 CopyPicture(x as Integer, y as Integer, width as Integer, height as Integer) as picture**

Function: Creates a copy of the image and returns it as a new picture.
Example:

dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.threshold 127

// convert to RGB so CopyPicture works
image.type = image.TrueColorType
Backdrop=image.CopyPicture(0,0,250,250)

Notes: You may need to set image type to RGB to get it working.
See also:

- 81.40.47 CopyPicture as picture

**81.40.49 CopyPictureMask as picture**

Function: Creates a copy of the image’s mask and returns it as a new picture.
See also:

- 81.40.50 CopyPictureMask(x as Integer, y as Integer, width as Integer, height as Integer) as picture
81.40. CLASS GMIMAGEMBS

81.40.50 CopyPictureMask(x as Integer, y as Integer, width as Integer, height as Integer) as picture

**Function:** Creates a copy of the image’s mask and returns it as a new picture.

See also:
- 81.40.49 CopyPictureMask as picture

81.40.51 CopyPixelsMemory as Memoryblock

MBS GraphicsMagick Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Copy the pixels as they are into a memoryblock.

**Notes:**
Optional specify rectangle.
Returns nil on low memory or bad parameter. Image must be of type class direct (not palette picture).
Order of pixel data is normally Red, Green, Blue, Opacity. Or Cyan, Magenta, Yellow, Black for CMYK images.
For GMImageMBS, the data is 8bit per channel. For GMImage16MBS, the data is 16bit per channel.

See also:
- 81.40.52 CopyPixelsMemory(x as Integer, y as Integer, width as Integer, height as Integer) as Memoryblock

81.40.52 CopyPixelsMemory(x as Integer, y as Integer, width as Integer, height as Integer) as Memoryblock

MBS GraphicsMagick Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Copy the pixels as they are into a memoryblock.

**Notes:**
Optional specify rectangle.
Returns nil on low memory or bad parameter. Image must be of type class direct (not palette picture).
Order of pixel data is normally Red, Green, Blue, Opacity. Or Cyan, Magenta, Yellow, Black for CMYK images.
For GMImageMBS, the data is 8bit per channel. For GMImage16MBS, the data is 16bit per channel.

See also:
- 81.40.51 CopyPixelsMemory as Memoryblock

81.40.53 CreateHBITMAP as Ptr

MBS GraphicsMagick Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.
**Function:** Creates a HBITMAP for the image for use with Windows Declares.
Example:

```plaintext
// get test image
dim logo as Picture = LogoMBS(500)

// create GraphicsMagick image
dim g as new GMImageMBS(logo)

// make a HBitmap
dim hBitmap as ptr = g.CreateHBITMAP

// convert back to Xojo picture
dim pic as Picture = WindowsBitmapMBS.HBitmapToPicture(hBitmap, true)

// show in window
Backdrop = pic

// and cleanup memory
WindowsBitmapMBS.DeleteBitmap(hBitmap)
```

Notes: The HBITMAP returned needs to be freed when you are done with it or you risk having a memory leak.

### 81.40.54 crop(geometry as GMGeometryMBS)

**Function:** Crop image (return subregion of original image).
**Example:**

```plaintext
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.crop GMGeometryMBS.Make(100,200)

Backdrop=image.CopyPicture
```

### 81.40.55 cycleColormap(amount as Integer)

**Function:** Cycle (rotate) image colormap.
**Example:**
81.40. CLASS GMIMAGEMBS

```vbs```
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)
image.cycleColormap(5)
image.type = image.TrueColorType
Backdrop=image.CopyPicture
```

81.40.56 despeckle

**Function:** Despeckle image (reduce speckle noise).
**Example:**
```vbs```
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)
image.despeckle
Backdrop=image.CopyPicture```

81.40.57 directory as string

**Function:** Tile names from within an image montage.

81.40.58 display

**Function:** Display image on screen.
**Notes:**
Caution: if an image format is is not compatible with the display visual (e.g. JPEG on a colormapped display) then the original image will be altered. Use a copy of the original if this is a problem.

The plugin is not compiled with X11 so this call may not be useful.
81.40.59  edge(radius as Double=0.0)

**Function:** Edge image (hilight edges in image).  
**Example:**

```vba
    dim p as Picture = LogoMBS(500)  
    dim image as new GMImageMBS(p)  

    image.edge  
    Backdrop=image.CopyPicture
```

**Notes:** The radius is the radius of the pixel neighborhood. Specify a radius of zero for automatic radius selection.

81.40.60  emboss(radius as Double=0.0, sigma as Double=1.0)

**Function:** Emboss image (hilight edges with 3D effect).  
**Example:**

```vba
    dim p as Picture = LogoMBS(500)  
    dim image as new GMImageMBS(p)  

    image.emboss  
    Backdrop=image.CopyPicture
```

**Notes:** The radius parameter specifies the radius of the Gaussian, in pixels, not counting the center pixel. The sigma parameter specifies the standard deviation of the Laplacian, in pixels.

81.40.61  enhance

**Function:** Enhance image (minimize noise).  
**Example:**

```vba
    dim p as Picture = LogoMBS(500)  
    dim image as new GMImageMBS(p)  

    image.enhance
```
Backdrop=image.CopyPicture

81.40.62 erase

Function: Set all image pixels to the current background color.

81.40.63 fileSize as Int64

Function: Number of bytes of the image on disk.

81.40.64 flip

Function: Flip image (reflect each scanline in the vertical direction).
Example:

dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.flip

Backdrop=image.CopyPicture

81.40.65 floodFillColor(point as GMGeometryMBS, fillColor as GMColorMBS)

Function: Flood-fill color across pixels that match the color of the target pixel and are neighbors of the
target pixel.
Notes: Uses current fuzz setting when determining color match.
See also:

- 81.40.66 floodFillColor(point as GMGeometryMBS, fillColor as GMColorMBS, borderColor as GMColorMBS)
- 81.40.67 floodFillColor(x as UInt32, y as UInt32, fillColor as GMColorMBS)

**Function:** Flood-fill color across pixels starting at target-pixel and stopping at pixels matching specified border color.

**Notes:** Uses current fuzz setting when determining color match.

**See also:**

- 81.40.65 floodFillColor(point as GMGeometryMBS, fillColor as GMColorMBS)
- 81.40.67 floodFillColor(point as GMGeometryMBS, fillColor as GMColorMBS, borderColor as GMColorMBS)
- 81.40.68 floodFillColor(x as UInt32, y as UInt32, fillColor as GMColorMBS)
- 81.40.68 floodFillColor(x as UInt32, y as UInt32, fillColor as GMColorMBS, borderColor as GMColorMBS)

---


**Function:** Flood-fill color across pixels that match the color of the target pixel and are neighbors of the target pixel.

**Notes:** Uses current fuzz setting when determining color match.

**See also:**

- 81.40.65 floodFillColor(point as GMGeometryMBS, fillColor as GMColorMBS)
- 81.40.67 floodFillColor(point as GMGeometryMBS, fillColor as GMColorMBS, borderColor as GMColorMBS)
- 81.40.68 floodFillColor(x as UInt32, y as UInt32, fillColor as GMColorMBS)
- 81.40.68 floodFillColor(x as UInt32, y as UInt32, fillColor as GMColorMBS, borderColor as GMColorMBS)

---


**Function:** Flood-fill color across pixels starting at target-pixel and stopping at pixels matching specified border color.

**Notes:** Uses current fuzz setting when determining color match.

**See also:**

- 81.40.65 floodFillColor(point as GMGeometryMBS, fillColor as GMColorMBS)
81.40. **CLASS GMIMAGEMBS**

- 81.40.66 `floodFillColor(point as GMGeometryMBS, fillColor as GMColorMBS, borderColor as GMColorMBS)`
- 81.40.67 `floodFillColor(x as UInt32, y as UInt32, fillColor as GMColorMBS)`

81.40.69 `floodFillOpacity(x as UInt32, y as UInt32, opacity as UInt32, PaintMethod as Integer)`

**Function:** Flood-fill pixels matching color (within fuzz factor) of target pixel(x,y) with replacement opacity value using method.

81.40.70 `floodFillTexture(point as GMGeometryMBS, fillColor as GMColorMBS)`

**Function:** Flood-fill texture across pixels that match the color of the target pixel and are neighbors of the target pixel.  
**Notes:** Uses current fuzz setting when determining color match.  
See also:

- 81.40.71 `floodFillTexture(point as GMGeometryMBS, fillColor as GMColorMBS, borderColor as GMColorMBS)`
- 81.40.72 `floodFillTexture(x as UInt32, y as UInt32, fillColor as GMColorMBS)`
- 81.40.73 `floodFillTexture(x as UInt32, y as UInt32, fillColor as GMColorMBS, borderColor as GMColorMBS)`

81.40.71 `floodFillTexture(point as GMGeometryMBS, fillColor as GMColorMBS, borderColor as GMColorMBS)`

**Function:** Flood-fill texture across pixels starting at target-pixel and stopping at pixels matching specified border color.  
**Notes:** Uses current fuzz setting when determining color match.  
See also:

- 81.40.70 `floodFillTexture(point as GMGeometryMBS, fillColor as GMColorMBS)`
- 81.40.72 `floodFillTexture(x as UInt32, y as UInt32, fillColor as GMColorMBS)`
- 81.40.73 `floodFillTexture(x as UInt32, y as UInt32, fillColor as GMColorMBS, borderColor as GMColorMBS)`
81.40.72 floodFillTexture(x as UInt32, y as UInt32, fillColor as GMColorMBS)

Function: Flood-fill texture across pixels that match the color of the target pixel and are neighbors of the target pixel.
Notes: Uses current fuzz setting when determining color match.
See also:

- 81.40.70 floodFillTexture(point as GMGeometryMBS, fillColor as GMColorMBS)
- 81.40.71 floodFillTexture(point as GMGeometryMBS, fillColor as GMColorMBS, borderColor as GMColorMBS)
- 81.40.73 floodFillTexture(x as UInt32, y as UInt32, fillColor as GMColorMBS, borderColor as GMColorMBS)

81.40.73 floodFillTexture(x as UInt32, y as UInt32, fillColor as GMColorMBS, borderColor as GMColorMBS)

Function: Flood-fill texture across pixels starting at target-pixel and stopping at pixels matching specified border color.
Notes: Uses current fuzz setting when determining color match.
See also:

- 81.40.70 floodFillTexture(point as GMGeometryMBS, fillColor as GMColorMBS)
- 81.40.71 floodFillTexture(point as GMGeometryMBS, fillColor as GMColorMBS, borderColor as GMColorMBS)
- 81.40.72 floodFillTexture(x as UInt32, y as UInt32, fillColor as GMColorMBS)

81.40.74 flop

Function: Flop image (reflect each scanline in the horizontal direction).
Example:

```vbnet
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.flop

Backdrop=image.CopyPicture```

81.40.75  `fontTypeMetrics(name as string) as GMTypeMetricMBS`  
**Function:** Obtain font metrics for text string given current font, pointsize, and density settings.

81.40.76  `format as string`  
**Function:** Long image format description.

81.40.77  `frame`  
**Function:** Draw a decorative frame around the image.  
**Example:**  
```vbnet
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.frame

Backdrop=image.CopyPicture
```

See also:
- 81.40.78 `frame(geometry as GMGeometryMBS)`  
- 81.40.79 `frame(width as UInt32, height as UInt32, innerBevel as Integer=6, outerBevel as Integer=6)`

81.40.78  `frame(geometry as GMGeometryMBS)`  
**Function:** Draw a decorative frame around the image.  
**Example:**  
```vbnet
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.frame(GMGeometryMBS.Make("10x10"))

Backdrop=image.CopyPicture
```
See also:

- 81.40.77 frame
- 81.40.79 frame(width as UInt32, height as UInt32, innerBevel as Integer=6, outerBevel as Integer=6)

81.40.79 frame(width as UInt32, height as UInt32, innerBevel as Integer=6, outerBevel as Integer=6)


**Function:** Draw a decorative frame around the image.

**Example:**

```plaintext
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.frame(15,15)

Backdrop=image.CopyPicture
```

See also:

- 81.40.77 frame
- 81.40.78 frame(geometry as GMGeometryMBS)

81.40.80 frameGeometryDefault as String


**Function:** The default geometry description for frame.

81.40.81 gamma(gammaRed as Double, gammaGreen as Double, gammaBlue as Double)


**Function:** Gamma correct the image or individual image channels.

**Example:**

```plaintext
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)
```
image.gamma(1,2,3)
Backdrop=image.CopyPicture

See also:

- 81.40.241 gamma as Double

### 81.40.82 gaussianBlur(width as Double, sigma as Double)

**Function:** Gaussian blur image.  
**Example:**
```
    dim p as Picture = LogoMBS(500)
    dim image as new GMImageMBS(p)

    image.gaussianBlur(30, 10)

    Backdrop=image.CopyPicture
```

**Notes:** The number of neighbor pixels to be included in the convolution mask is specified by width. The standard deviation of the gaussian bell curve is specified by sigma.

### 81.40.83 gaussianBlurChannel(channel as Integer, width as Double, sigma as Double)

**Function:** Gaussian blur image channel.  
**Notes:** The number of neighbor pixels to be included in the convolution mask is specified by width. The standard deviation of the gaussian bell curve is specified by sigma.

### 81.40.84 geometry as GMGeometryMBS

**Function:** Preferred size of the image when encoding.
81.40.85 getChromaBluePrimary(byref x as Double, byref y as Double)

Function: Chromaticity blue primary point.

81.40.86 getChromaGreenPrimary(byref x as Double, byref y as Double)

Function: Chromaticity green primary point.
Notes: e.g. x=0.3, y=0.6

81.40.87 getChromaRedPrimary(byref x as Double, byref y as Double)

Function: Chromaticity red primary point.
Notes: e.g. x=0.64, y=0.33

81.40.88 getChromaWhitePoint(byref x as Double, byref y as Double)

Function: Chromaticity white point.
Notes: e.g. x=0.3127, y=0.329

81.40.89 getConstIndexes as Ptr

Function: Obtain immutable image pixel indexes (valid for PseudoClass images)

81.40.90 getConstPixels(x as Integer, y as Integer, columns as Integer, rows as Integer) as Ptr

Function: Transfers read-only pixels from the image to the pixel cache as defined by the specified region
81.40.91  getIndexes as Ptr

Function: Obtain mutable image pixel indexes (valid for PseudoClass images)

81.40.92  getPixels(x as Integer, y as Integer, columns as Integer, rows as Integer) as Ptr

Function: Transfers pixels from the image to the pixel cache as defined by the specified region.
Example:

```vbscript
dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim g as new GMImageMBS(f)

// get pointer to some pixels to write
dim x as ptr = g.getPixels(0, 0, 100, 100)

// draw a red line to the pixel buffer
dim o as Integer
for i as Integer = 0 to 99
    o = 100 * i + i
    x.UInt32(o * 4) = &hFFFF0000
next

// write back
g.syncPixels

// show
me.Backdrop = g.CopyPicture
```

Notes: Modified pixels may be subsequently transferred back to the image via syncPixels. This method is valid for DirectClass images.

81.40.93  Graphics as GMGraphicsMBS

Function: Creates a graphics object for this image.
Example:

```vbscript
dim g as new GMGeometryMBS(500,500)
dim c as new GMColorRGBMBS("white") // white
dim image as new GMImageMBS(g, c)
```
image.strokeColor = new GMColorRGBMBS("red") // Outline color
image.fillColor = new GMColorRGBMBS("green") // Fill color
image.strokeWidth = 5

dim draw as GMGraphicsMBS = image.Graphics

// Draw a circle
draw.Circle(250, 250, 120, 150)

Backdrop=image.CopyPicture

Notes: Using the graphics object you can draw on the image.

81.40.94 haldClut(image as GMImageMBS)

Function: Apply a color lookup table (Hald CLUT) to the image.

81.40.95 implode(factor as Double=0.0)

Function: Implode image (special effect).
Example:

dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.implode(0.3)

Backdrop=image.CopyPicture

81.40.96 label as string

Function: Image label.
See also:
- 81.40.97 label(text as string)
81.40. CLASS GMIMAGEMBS

81.40.97 label(text as string)

**Function:** Assign a label to an image.
**Notes:** Use this option to assign a specific label to the image. Optionally you can include the image filename, type, width, height, or scene number in the label by embedding special format characters. If the first character of string is @, the image label is read from a file titled by the remaining characters in the string. When converting to Postscript, use this option to specify a header string to print above the image.
See also:
- 81.40.96 label as string

81.40.98 level(black_point as Double, white_point as Double, mid_point as Double=1.0)

**Function:** Level image to increase image contrast, and/or adjust image gamma.
**Example:**
```
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.level(0, 127.0)
```

**Notes:** Adjust the levels of the image by scaling the colors falling between specified white and black points to the full available quantum range. The parameters provided represent the black, mid (gamma), and white points. The black point specifies the darkest color in the image. Colors darker than the black point are set to zero. Mid point (gamma) specifies a gamma correction to apply to the image. White point specifies the lightest color in the image. Colors brighter than the white point are set to the maximum quantum value. The black and white point have the valid range 0 to MaxRGB while mid (gamma) has a useful range of 0 to ten:

81.40.99 levelChannel(channel as Integer, black_point as Double, white_point as Double, mid_point as Double=1.0)

**Function:** Level image channel to increase image contrast, and/or adjust image gamma.
**Example:**
```
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)
```
image.levelChannel(image.BlueChannel, 0, 127.0)
Backdrop=image.CopyPicture

**Notes:** Adjust the levels of the image channel by scaling the colors falling between specified white and black points to the full available quantum range. The parameters provided represent the black, mid (gamma), and white points. The black point specifies the darkest color in the image. Colors darker than the black point are set to zero. Mid point (gamma) specifies a gamma correction to apply to the image. White point specifies the lightest color in the image. Colors brighter than the white point are set to the maximum quantum value. The black and white point have the valid range 0 to MaxRGB while mid (gamma) has a useful range of 0 to ten.

### 81.40.100 LibVersion as String

**Function:** Returns the version string of the GraphicsMagick library.

### 81.40.101 magnify

**Function:** Magnify image by integral size (double the dimensions)  
**Example:**
```
    dim p as Picture = LogoMBS(500)
    dim image as new GMImageMBS(p)
    image.magnify
    Backdrop=image.CopyPicture
```

### 81.40.102 map(mapImage as GMImageMBS, dither as boolean=false)

**Function:** Remap image colors with closest color from a reference image.  
**Example:**
```
    // some picture we want to map colors
    dim pic as Picture = LogoMBS(500)
```
// build a picture with palette
dim backgroundColor as new GMColorMBS(255,255,255) // white
dim size as new GMGeometryMBS(10,10)

dim i as new GMImageMBS(pic)
dim x as new GMImageMBS(size, backgroundColor)

x.pixelColor(0,0) = new GMColorMBS(0,0,0) // black
x.pixelColor(0,1) = new GMColorMBS(255,0,0) // red
x.pixelColor(0,2) = new GMColorMBS(0,255,0) // green
x.pixelColor(0,3) = new GMColorMBS(0,0,255) // blue
x.pixelColor(0,4) = new GMColorMBS(255,255,0) // yellow
x.pixelColor(0,5) = new GMColorMBS(0,255,255) // cyan
x.pixelColor(0,6) = new GMColorMBS(255,0,255) // magenta

// do the map
i.map(x, false)

// convert result from palette picture to bitmap picture
i.type = i.TrueColorType

// and copy picture to backdrop
Backdrop = i.CopyPicture

Notes: Set dither to true in to apply Floyd/Steinberg error diffusion to the image. By default, color reduction chooses an optimal set of colors that best represent the original image. Alternatively, you can choose a particular set of colors from an image file with this option.
81.40.103 matteFloodfill(target as GMColorMBS, opacity as UInt32, x as Integer, y as Integer, PaintMethod as Integer)

**Function:** Floodfill designated area with a replacement opacity value.

81.40.104 meanErrorPerPixel as Double

**Function:** The mean error per pixel computed when an image is color reduced.  
**Notes:** This parameter is only valid if verbose is set to true and the image has just been quantized.

81.40.105 medianFilter(radius as Double=0.0)

**Function:** Filter image by replacing each pixel component with the median color in a circular neighborhood.  
**Example:**
```vba
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)
image.medianFilter(10)
Backdrop=image.CopyPicture
```

81.40.106 minify

**Function:** Reduce image by integral (half) size.  
**Example:**
```vba
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)
image.minify
Backdrop=image.CopyPicture
```
81.40. **modequalizeifyImage**

**Function:** Not documented.

81.40.**modifyImage**

**Function:** Prepare to update image (copy if reference >1).
**Notes:** Normally Magick++’s implicit reference counting takes care of all instance management. In the rare case that the automatic instance management does not work, use this method to assure that there is only one reference to the image to be modified. It should be used in the cases where a GraphicsMagick C function is used directly on an image which may have multiple references:

81.40.**modulate(brightness as Double, saturation as Double, hue as Double)**

**Function:** Modulate percent hue, saturation, and brightness of an image.
**Example:**
```
dim logo as Picture = LogoMBS(500)
dim image as new GMImageMBS(logo)
image.type = image.TrueColorType

// brightness 150%
image.modulate(150,100,100)
backdrop = image.CopyPicture
```
**Notes:** Modulation of saturation and brightness is as a ratio of the current value (100 for no change). Modulation of hue is an absolute rotation of -180 degrees to +180 degrees from the current position corresponding to an argument range of 0 to 200 (100 for no change).

81.40.**montageGeometry as GMGeometryMBS**

**Function:** Tile size and offset within an image montage.
**Notes:** Only valid for montage images.
81.40.111  **motionBlur(radius as Double, sigma as Double, angle as Double)**

**Function:** Motion blur image with specified blur factor.
**Example:**
```vbnet
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.motionBlur(30,10,90)
Backdrops=image.CopyPicture
```

**Notes:** The radius parameter specifies the radius of the Gaussian, in pixels, not counting the center pixel. The sigma parameter specifies the standard deviation of the Laplacian, in pixels. The angle parameter specifies the angle the object appears to be coming from (zero degrees is from the right).

81.40.112  **negate(grayscale as boolean=false)**

**Function:** Negate colors in image.
**Example:**
```vbnet
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.negate
Backdrops=image.CopyPicture
```

**Notes:** Set grayscale to only negate grayscale values in image.

81.40.113  **normalize**

**Function:** Normalize image (increase contrast by normalizing the pixel values to span the full range of color values).
**Example:**
```vbnet
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)
```
81.40. CLASS GMIMAGEMBS

image.normalize

Backdrop=image.CopyPicture

81.40.114  normalizedMaxError as Double

Function: The normalized max error per pixel computed when an image is color reduced.
Notes: This parameter is only valid if verbose is set to true and the image has just been quantized.

81.40.115  normalizedMeanError as Double

Function: The normalized mean error per pixel computed when an image is color reduced.
Notes: This parameter is only valid if verbose is set to true and the image has just been quantized.

81.40.116  oilPaint(radius as Double=3.0)

Function: Oilpaint image (image looks like an oil painting).
Example:

```
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.oilPaint

Backdrop=image.CopyPicture
```

81.40.117  opacity(opacity as UInt32)

Function: Set or attenuate the opacity channel in the image.
Notes: If the image pixels are opaque then they are set to the specified opacity value, otherwise they are blended with the supplied opacity value. The value of opacity ranges from 0 (completely opaque) to MaxRGB. The defines OpaqueOpacity and TransparentOpacity are available to specify completely opaque or completely transparent, respectively.
81.40.118  
**opaque(opaqueColor as GMColorMBS, penColor as GMColorMBS)**

**Function:** Change color of specified opaque pixel to specified pen color.

81.40.119  
**ping(data as GMBlobMBS)**

**Function:** Reads information for an image from the blob.  
**Notes:** Ping is similar to read except only enough of the image is read to determine the image columns, rows, and filesize. Access the columns, rows, and fileSize attributes after invoking ping. The image pixels are not valid after calling ping.  
**See also:**
- 81.40.120 ping(file as folderitem)
- 81.40.121 ping(Path as string)

81.40.120  
**ping(file as folderitem)**

**Function:** Reads information for an image from the file.  
**Example:**
```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child( “test.jpg”)

// try with Constructor (same as read)
dim t1 as Double = Microseconds
dim g1 as new GMImageMBS(f)

// now just ping
dim t2 as Double = Microseconds
dim g2 as new GMImageMBS
g2.ping(f)

// or read
dim t3 as Double = Microseconds
dim g3 as new GMImageMBS
g3.read(f)

dim t4 as Double = Microseconds

// show speeds
MsgBox str(T4-t3)+” s for read”+EndOfLine+-
str(T3-t2)+” s for ping”+EndOfLine+.-```
**81.40. CLASS GMIMAGEMBS**

`str(T2-t1) + " s for Constructor"`

**Notes:** Ping is similar to read except only enough of the image is read to determine the image columns, rows, and filesize. Access the columns, rows, and fileSize attributes after invoking ping. The image pixels are not valid after calling ping.

See also:

- 81.40.119 ping(data as GMBlobMBS)
- 81.40.121 ping(Path as string)

**81.40.121  ping(Path as string)**


**Function:** Reads information for an image from the image specification.

**Notes:** Ping is similar to read except only enough of the image is read to determine the image columns, rows, and filesize. Access the columns, rows, and fileSize attributes after invoking ping. The image pixels are not valid after calling ping.

See also:

- 81.40.119 ping(data as GMBlobMBS)
- 81.40.120 ping(file as folderitem)

**81.40.122  PNGLibVersion as string**


**Function:** Queries PNG library version string.

**81.40.123  quantize(measureError as boolean=false)**


**Function:** Quantize image (reduce number of colors).

**Example:**

```plaintext
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.quantize

image.type = image.TrueColorType
Backdrop = image.CopyPicture
```
Notes: Set `measureError` to true in order to calculate error attributes.

81.40.124  **QuantumDepth as Integer**

**Function:** Returns the quantum depth.

81.40.125  **quantumOperator(channel as Integer, Operator as Integer, rvalue as Double)**

**Function:** Apply an arithmetic or bitwise operator to the image pixel quantums.  
**Example:**
```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim g as new GMImageMBS(f)

const AddQuantumOp = 1
const ThresholdQuantumOp = 10

g.quantumOperator( g.AllChannels, AddQuantumOp, 100)

// show
me.Backdrop = g.CopyPicture
```

See also:
- 81.40.126 quantumOperator(x as Integer, y as Integer, columns as Integer, rows as Integer, channel as Integer, Operator as Integer, rvalue as Double)

81.40.126  **quantumOperator(x as Integer, y as Integer, columns as Integer, rows as Integer, channel as Integer, Operator as Integer, rvalue as Double)**

**Function:** Apply an arithmetic or bitwise operator to the image pixel quantums.  
See also:
- 81.40.125 quantumOperator(channel as Integer, Operator as Integer, rvalue as Double)
81.40. CLASS GMIMAGEMBS

81.40.127 raiseGeometryDefault as String

**Function:** The default geometry description for raise.

81.40.128 raiseImage

**Function:** Raise image (lighten or darken the edges of an image to give a 3-D raised or lowered effect).

**Example:**
```
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.raiseImage

Backdrop=image.CopyPicture
```

See also:

- 81.40.129 raiseImage(geometry as GMGeometryMBS, raisedFlag as boolean=false)

81.40.129 raiseImage(geometry as GMGeometryMBS, raisedFlag as boolean=false)

**Function:** Raise image (lighten or darken the edges of an image to give a 3-D raised or lowered effect).

**Example:**
```
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.raiseImage(GMGeometryMBS.Make(5,8))

Backdrop=image.CopyPicture
```

See also:

- 81.40.128 raiseImage
**81.40.130 randomThreshold(thresholds as GMGeometryMBS)**


**Function:** Random threshold image.

**Example:**

```vba
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.randomThreshold(GMGeometryMBS.make("50x200"))

image.type = image.TrueColorType
Backdrop=image.CopyPicture
```

**Notes:** Changes the value of individual pixels based on the intensity of each pixel compared to a random threshold. The result is a low-contrast, two color image. The thresholds argument is a geometry containing LOWxHIGH thresholds. If the string contains 2x2, 3x3, or 4x4, then an ordered dither of order 2, 3, or 4 will be performed instead. If a channel argument is specified then only the specified channel is altered. This is a very fast alternative to 'quantize' based dithering.

**81.40.131 randomThresholdChannel(thresholds as GMGeometryMBS, channel as Integer)**


**Function:** Random threshold image channel.

**Notes:** Changes the value of individual pixels based on the intensity of each pixel compared to a random threshold. The result is a low-contrast, two color image. The thresholds argument is a geometry containing LOWxHIGH thresholds. If the string contains 2x2, 3x3, or 4x4, then an ordered dither of order 2, 3, or 4 will be performed instead. If a channel argument is specified then only the specified channel is altered. This is a very fast alternative to 'quantize' based dithering.

**81.40.132 read(blob as GMBlobMBS)**


**Function:** Read single image frame from in-memory Blob.

**Example:**

```vba
// get some image data (e.g. from blob in database)
dim logo as Picture = LogoMBS(500)
dim jpegData as string = PictureToJPEGStringMBS(logo, 80)

// new image
Dim mp as new GMImageMBS
```
81.40. CLASS GMIMAGEMBS

dim blob as new GMBlobMBS(jpegData)

// read data from blob into this image object
mp.Read blob

// sometimes you need to explicit convert to RGB/RGBA
'mp.type = mp.TrueColorMatteType
Backdrop=mp.CombinePictureWithMask

See also:

- 81.40.133 read(blob as GMBlobMBS, size as GMGeometryMBS) 13695
- 81.40.134 read(blob as GMBlobMBS, size as GMGeometryMBS, depth as Integer) 13696
- 81.40.135 read(blob as GMBlobMBS, size as GMGeometryMBS, depth as Integer, magick as string) 13696
- 81.40.136 read(blob as GMBlobMBS, size as GMGeometryMBS, magick as string) 13697
- 81.40.137 read(file as folderitem) 13697
- 81.40.138 read(path as string) 13698
- 81.40.139 read(size as GMGeometryMBS, file as folderitem) 13698
- 81.40.140 read(size as GMGeometryMBS, Path as string) 13699
- 81.40.141 read(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr) 13699

81.40.133 read(blob as GMBlobMBS, size as GMGeometryMBS)


Function: Read single image frame of specified size from in-memory Blob.

See also:

- 81.40.132 read(blob as GMBlobMBS) 13694
- 81.40.134 read(blob as GMBlobMBS, size as GMGeometryMBS, depth as Integer) 13696
- 81.40.135 read(blob as GMBlobMBS, size as GMGeometryMBS, depth as Integer, magick as string) 13696
- 81.40.136 read(blob as GMBlobMBS, size as GMGeometryMBS, magick as string) 13697
- 81.40.137 read(file as folderitem) 13697
- 81.40.138 read(path as string) 13698
81.40.134  read(blob as GMBlobMBS, size as GMGeometryMBS, depth as Integer)

Function: Read single image frame of specified size and depth from in-memory Blob.
See also:

- 81.40.132 read(blob as GMBlobMBS)
- 81.40.133 read(blob as GMBlobMBS, size as GMGeometryMBS)
- 81.40.134 read(blob as GMBlobMBS, size as GMGeometryMBS, depth as Integer)
- 81.40.136 read(blob as GMBlobMBS, size as GMGeometryMBS, magick as string)
- 81.40.137 read(file as folderitem)
- 81.40.138 read(path as string)
- 81.40.139 read(size as GMGeometryMBS, file as folderitem)
- 81.40.140 read(size as GMGeometryMBS, Path as string)
- 81.40.141 read(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr)

81.40.135  read(blob as GMBlobMBS, size as GMGeometryMBS, depth as Integer, magick as string)

Function: Read single image frame of specified size, depth, and format from in-memory Blob.
See also:

- 81.40.132 read(blob as GMBlobMBS)
- 81.40.133 read(blob as GMBlobMBS, size as GMGeometryMBS)
- 81.40.134 read(blob as GMBlobMBS, size as GMGeometryMBS, depth as Integer)
- 81.40.136 read(blob as GMBlobMBS, size as GMGeometryMBS, magick as string)
- 81.40.137 read(file as folderitem)
81.40.  CLASS GMIMAGE MBS

- 81.40.138 read(path as string)  
- 81.40.139 read(size as GMGeometryMBS, file as folderitem)  
- 81.40.140 read(size as GMGeometryMBS, Path as string)  
- 81.40.141 read(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr)  

81.40.136  read(blob as GMBlobMBS, size as GMGeometryMBS, magick as string)

Function: Read single image frame of specified size, and format from in-memory Blob.
See also:

- 81.40.132 read(blob as GMBlobMBS)  
- 81.40.133 read(blob as GMBlobMBS, size as GMGeometryMBS)  
- 81.40.134 read(blob as GMBlobMBS, size as GMGeometryMBS, depth as Integer)  
- 81.40.135 read(blob as GMBlobMBS, size as GMGeometryMBS, depth as Integer, magick as string)  
- 81.40.137 read(file as folderitem)  
- 81.40.138 read(path as string)  
- 81.40.139 read(size as GMGeometryMBS, file as folderitem)  
- 81.40.140 read(size as GMGeometryMBS, Path as string)  
- 81.40.141 read(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr)  

81.40.137  read(file as folderitem)

Function: Read single image frame into current object.
See also:

- 81.40.132 read(blob as GMBlobMBS)  
- 81.40.133 read(blob as GMBlobMBS, size as GMGeometryMBS)  
- 81.40.134 read(blob as GMBlobMBS, size as GMGeometryMBS, depth as Integer)  
- 81.40.135 read(blob as GMBlobMBS, size as GMGeometryMBS, depth as Integer, magick as string)
• 81.40.136 read(blob as GMBlobMBS, size as GMGeometryMBS, magick as string) 13697
• 81.40.138 read(path as string) 13698
• 81.40.139 read(size as GMGeometryMBS, file as folderitem) 13698
• 81.40.140 read(size as GMGeometryMBS, Path as string) 13699
• 81.40.141 read(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr) 13699

**81.40.138 read(path as string)**

**Function:** Read single image frame into current object.
See also:
• 81.40.132 read(blob as GMBlobMBS) 13694
• 81.40.133 read(blob as GMBlobMBS, size as GMGeometryMBS) 13695
• 81.40.134 read(blob as GMBlobMBS, size as GMGeometryMBS, depth as Integer) 13696
• 81.40.135 read(blob as GMBlobMBS, size as GMGeometryMBS, depth as Integer, magick as string) 13696
• 81.40.136 read(blob as GMBlobMBS, size as GMGeometryMBS, magick as string) 13697
• 81.40.137 read(file as folderitem) 13697
• 81.40.139 read(size as GMGeometryMBS, file as folderitem) 13698
• 81.40.140 read(size as GMGeometryMBS, Path as string) 13699
• 81.40.141 read(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr) 13699

**81.40.139 read(size as GMGeometryMBS, file as folderitem)**

**Function:** Read single image frame of specified size into current object.
See also:
• 81.40.132 read(blob as GMBlobMBS) 13694
• 81.40.133 read(blob as GMBlobMBS, size as GMGeometryMBS) 13695
• 81.40.134 read(blob as GMBlobMBS, size as GMGeometryMBS, depth as Integer) 13696
• 81.40.135 read(blob as GMBlobMBS, size as GMGeometryMBS, depth as Integer, magick as string) 13696
81.40. CLASS GMIMAGE MBS

- 81.40.136 read(blob as GMBlobMBS, size as GMGeometryMBS, magick as string) 13697
- 81.40.137 read(file as folderitem) 13697
- 81.40.138 read(path as string) 13698
- 81.40.140 read(size as GMGeometryMBS, Path as string) 13699
- 81.40.141 read(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr) 13699

81.40.140  read(size as GMGeometryMBS, Path as string)

Function: Read single image frame of specified size into current object.
See also:

- 81.40.132 read(blob as GMBlobMBS) 13694
- 81.40.133 read(blob as GMBlobMBS, size as GMGeometryMBS) 13695
- 81.40.134 read(blob as GMBlobMBS, size as GMGeometryMBS, depth as Integer) 13696
- 81.40.135 read(blob as GMBlobMBS, size as GMGeometryMBS, depth as Integer, magick as string) 13696
- 81.40.136 read(blob as GMBlobMBS, size as GMGeometryMBS, magick as string) 13697
- 81.40.137 read(file as folderitem) 13697
- 81.40.138 read(path as string) 13698
- 81.40.139 read(size as GMGeometryMBS, file as folderitem) 13698
- 81.40.141 read(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr) 13699

81.40.141  read(width as UInt32, height as UInt32, map as string, StorageType as Integer, data as ptr)

Function: Read single image frame from an array of raw pixels, with specified storage type (ConstituteImage).
Notes:

Returns an Image corresponding to an image stored in a raw memory array format. The pixel data must be in scanline order top-to-bottom. The data can be unsigned char, unsigned short int, unsigned int, unsigned long, float, or double. Float and double require the pixels to be normalized to the range [ 0..1 ] , otherwise the range is [ 0..MaxVal ] where MaxVal is the maximum possible value for that type.
Note that for most 32-bit architectures the size of an unsigned long is the same as unsigned int, but for 64-bit architectures observing the LP64 standard, an unsigned long is 64 bits, while an unsigned int remains 32 bits. This should be considered when deciding if the data should be described as "Integer" or "Long".

For example, to create a 640x480 image from unsigned red-green-blue character data, use

```csharp
image = new GMImageMBS(640, 480, "RGB", GMImageMBS.StorageTypeCharPixel, pixels);
```

width: width in pixels of the image.

height: height in pixels of the image.

map: This string reflects the expected ordering of the pixel array. It can be any combination or order of R = red, G = green, B = blue, A = alpha (same as Transparency), O = Opacity, T = Transparency, C = cyan, Y = yellow, M = magenta, K = black, or I = intensity (for grayscale). Specify "P" = pad, to skip over a quantum which is intentionally ignored. Creation of an alpha channel for CMYK images is currently not supported.

type: Define the data type of the pixels. Float and double types are expected to be normalized [ 0..1 ] otherwise [ 0..MaxRGB ] . Choose from these types: StorageTypeCharPixel, StorageTypeShortPixel, StorageTypeIntegerPixel, StorageTypeLongPixel, StorageTypeFloatPixel, or StorageTypeDoublePixel.

pixels: This array of values contain the pixel components as defined by map and type. You must preallocate this array where the expected length varies depending on the values of width, height, map, and type.

See also:

- 81.40.132 read(blob as GMBlobMBS)
- 81.40.133 read(blob as GMBlobMBS, size as GMGeometryMBS)
- 81.40.134 read(blob as GMBlobMBS, size as GMGeometryMBS, depth as Integer)
- 81.40.135 read(blob as GMBlobMBS, size as GMGeometryMBS, depth as Integer, magick as string)
- 81.40.136 read(blob as GMBlobMBS, size as GMGeometryMBS, magick as string)
- 81.40.137 read(file as folderitem)
- 81.40.138 read(path as string)
- 81.40.139 read(size as GMGeometryMBS, file as folderitem)
- 81.40.140 read(size as GMGeometryMBS, Path as string)

81.40.142 reduceNoise


**Function:** Reduce noise in image using a noise peak elimination filter.

**Example:**

```csharp
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)
```
81.40. CLASS GMIMAGEMBS

image.reduceNoise

Backdrop=image.CopyPicture

See also:

• 81.40.143 reduceNoise(order as Double)

81.40.143 reduceNoise(order as Double)

**Function:** Reduce noise in image using a noise peak elimination filter.

See also:

• 81.40.142 reduceNoise

81.40.144 ReleaseDate as String

**Function:** Returns the release date of the used graphics magick library.
**Notes:** We update the library only when someone needs an update, so if you need, please contact us.

81.40.145 roll(columns as UInt32, rows as UInt32)

**Function:** Roll image (rolls image vertically and horizontally) by specified number of columns and rows.
**Example:**

```pascal
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.roll(30,30)

Backdrop=image.CopyPicture
```

See also:

• 81.40.146 roll(roll as GMGeometryMBS)
81.40.146  roll(roll as GMGeometryMBS)

**Function:** Roll image (rolls image vertically and horizontally) by specified number of columns and rows.
**Example:**
```vbscript
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)
image.roll(GMGeometryMBS.Make(0,0,30,30))
Backdrop=image.CopyPicture
```

See also:
- 81.40.145 roll(columns as UInt32, rows as UInt32)

81.40.147  rotate(degree as Double)

**Function:** Rotate image counter-clockwise by specified number of degrees.
**Example:**
```vbscript
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)
image.rotate(30)
Backdrop=image.CopyPicture
```

81.40.148  rows as UInt32

**Function:** The number of pixel rows in the image.
**Example:**
```vbscript
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)
Title = str(image.columns)+" x "+str(image.rows)
Backdrop=image.CopyPicture
```
81.40. CLASS GMIMAGEMBS

81.40.149 sample(geometry as GMGeometryMBS)

Function: Resize image by using pixel sampling algorithm.
Example:

```vbnet
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.sample GMGeometryMBS.make(100,100)

Backdrop=image.CopyPicture
```

81.40.150 scale(geometry as GMGeometryMBS)

Function: Resize image by using simple ratio algorithm which provides good quality.
Example:

```vbnet
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.scale new GMGeometryMBS(100,100)

Backdrop=image.CopyPicture
```

81.40.151 segment(clusterThreshold as Double=1.0, smoothingThreshold as Double=1.5)

Function: Segment (coalesce similar image components) by analyzing the histograms of the color components and identifying units that are homogeneous with the fuzzy c-means technique.
Example:

```vbnet
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.segment

image.type = image.TrueColorType

Backdrop=image.CopyPicture
```
Notes: A histogram is built for the image. This histogram is filtered to reduce noise and a second derivative of the histogram plot is built and used to identify potential cluster colors (peaks in the histogram). The cluster colors are then validated by scanning through all of the pixels to see how many pixels fall within each cluster. Some candidate cluster colors may not match any of the image pixels at all and should be discarded. Specify clusterThreshold, as the number of pixels matching a cluster color in order for the cluster to be considered valid. SmoothingThreshold eliminates noise in the second derivative of the histogram. As the value is increased, you can expect a smoother second derivative. The default is 1.5.

81.40.152  setChromaBluePrimary(x as Double, y as Double)
Function: Chromaticity blue primary point.
Notes: e.g. x=0.15, y=0.06

81.40.153  setChromaGreenPrimary(x as Double, y as Double)
Function: Chromaticity green primary point.
Notes: e.g. x=0.3, y=0.6

81.40.154  setChromaRedPrimary(x as Double, y as Double)
Function: Chromaticity red primary point
Notes: e.g. x=0.64, y=0.33

81.40.155  setChromaWhitePoint(x as Double, y as Double)
Function: Chromaticity white point
Notes: e.g. x=0.3127, y=0.329

81.40.156  SetPicture(pic as picture, x as Integer, y as Integer)
Function: Copies the picture into the Image at the given position.
81.40.157  SetPictureMask(maskpic as picture, x as Integer, y as Integer)

Function: Copies the picture into the Image’s mask at the given position.
Example:

```vba
' this converts 32 bit PNG with alpha channel to BMP

Dim f As FolderItem = SpecialFolder.Desktop.Child("test.png")
Dim p As Picture = Picture.Open(f)

Dim g As New GMImageMBS( New GMGeometryMBS(p.Width, p.Height), New GMColorGrayMBS(1.0))

G.Type = G.TrueColorMatteType
G.Matte = True
G.Magick = "BMP"

G.SetPicture(p, 0, 0)
G.SetPictureMask(p.mask.invertMBS, 0, 0)

F = SpecialFolder.Desktop.Child("test.bmp")
G.Write(f)
```

81.40.158  setPixels(x as Integer, y as Integer, columns as Integer, rows as Integer) as Ptr

Function: Allocates a pixel cache region to store image pixels as defined by the region rectangle.
Example:

```vba
Dim f As FolderItem = SpecialFolder.Desktop.Child("test.jpg")
Dim g As New GMImageMBS(f)

' get pointer to some pixels to write
Dim x As ptr = g.setPixels(0, 0, 100, 100)

' draw a red line to the pixel buffer
Dim o As Integer
For i As Integer = 0 To 99
    o = 100 * i + i
    x.UInt32(o * 4) = &HFFFF0000
Next
```
// write back
g.syncPixels

// show
me.Backdrop = g.CopyPicture

**Notes:** This area is subsequently transferred from the pixel cache to the image via syncPixels.

### 81.40.159  setStrokeDashArray(values() as Double)


**Function:** Sets stroke dash pattern.

**Notes:** Specify the pattern of dashes and gaps used to stroke paths. The strokeDashArray represents a zero-terminated array of numbers that specify the lengths of alternating dashes and gaps in pixels. If an odd number of values is provided, then the list of values is repeated to yield an even number of values. A typical strokeDashArray array might contain the members 5 3 2 0, where the zero value indicates the end of the pattern array.

### 81.40.160  shade(azimuth as Double=30.0, elevation as Double=30.0, colorShading as boolean=false)


**Function:** Shade image using distant light source.

**Notes:** Specify azimuth and elevation as the position of the light source. By default, the shading results as a grayscale image. Set colorShading to true to shade the red, green, and blue components of the image.

### 81.40.161  sharpen(radius as Double=0.0, sigma as Double=1.0)


**Function:** Sharpen pixels in image.

**Example:**

```vbs
    dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.sharpen

Backdrop=image.CopyPicture
```
Notes: The radius parameter specifies the radius of the Gaussian, in pixels, not counting the center pixel. The sigma parameter specifies the standard deviation of the Laplacian, in pixels.

81.40.162 sharpenChannel(channel as Integer, radius as Double=0.0, sigma as Double=1.0)

Function: Sharpen pixels in image channel.
Notes: The radius parameter specifies the radius of the Gaussian, in pixels, not counting the center pixel. The sigma parameter specifies the standard deviation of the Laplacian, in pixels.

81.40.163 shave(geometry as GMGeometryMBS)

Function: Shave pixels from image edges.
Example:
```vba
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)
image.shave(new GMGeometryMBS(200,200))
Backdroup=image.CopyPicture
```

81.40.164 shear(xShearAngle as Double, yShearAngle as Double)

Function: Shear image (create parallelogram by sliding image by X or Y axis).
Example:
```vba
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)
image.shear(10,20)
Backdroup=image.CopyPicture
```

Notes: Shearing slides one edge of an image along the X or Y axis, creating a parallelogram. An X direction
shear slides an edge along the X axis, while a Y direction shear slides an edge along the Y axis. The amount of the shear is controlled by a shear angle. For X direction shears, x degrees is measured relative to the Y axis, and similarly, for Y direction shears y degrees is measured relative to the X axis. Empty triangles left over from shearing the image are filled with the color defined as borderColor.

**81.40.165 signature(force as boolean=false) as string**

**Function:** Image textual signature.  
**Example:**

```vbnet
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)
MsgBox image.signature
Backdrop=image.CopyPicture
```

**Notes:** Set force to true in order to re-calculate the signature regardless of whether the image data has been modified.

**81.40.166 solarize(factor as Double=50.0)**

**Function:** Solarize image (similar to effect seen when exposing a photographic film to light during the development process)  
**Example:**

```vbnet
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)
image.solarize
Backdrop=image.CopyPicture
```

**81.40.167 spread(amount as UInt32=3)**

**Function:** Spread pixels randomly within image by specified amount  
**Example:**
81.40. CLASS GMIMAGEMBS

dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.spread 5

Backdrop=image.CopyPicture

81.40.168 statistics as GMImageStatisticsMBS

**Function:** Obtain image statistics.  
**Example:**

dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim g as new GMImageMBS(f)
dim stat as GMImageStatisticsMBS = g.statistics
dim gs as GMImageChannelStatisticsMBS = stat.blue

MsgBox "blue channel: "+str(gs.minimum)+" - "+str(gs.maximum)+", mean "+str(gs.mean)

**Notes:** Statistics are normalized to the range of 0.0 to 1.0 and are output to the specified ImageStatistics structure.

81.40.169 stegano(watermark as GMImageMBS)

**Function:** Add a digital watermark to the image (based on second image).  
**Example:**

dim p as Picture = LogoMBS(500)
dim p1 as Picture = NewPicture(550,500,32)
dim p2 as Picture = NewPicture(550,500,32)
p1.Graphics.DrawPicture p, 0,0
p2.Graphics.DrawPicture p,50,0

dim image1 as new GMImageMBS(p1)
dim image2 as new GMImageMBS(p2)

image2.zoom(new GMGeometryMBS(100,100)) // scale down

// add watermark
image1.stegano(image2)

// now make a threshold so you see the difference
image1.threshold 254

image1.type = image1.TrueColorType
Backdrop=image1.CopyPicture

81.40.170  stereo(rightImage as GMImageMBS)

**Function:** Create an image which appears in stereo when viewed with red-blue glasses (Red image on left, blue on right)
**Example:**

```vbscript
dim p as Picture = LogoMBS(500)
dim p1 as Picture = NewPicture(550,500,32)
dim p2 as Picture = NewPicture(550,500,32)

p1.Graphics.DrawPicture p, 0,0
p2.Graphics.DrawPicture p,50,0

dim image1 as new GMImageMBS(p1)
dim image2 as new GMImageMBS(p2)

image1.stereo(IMAGE2)

Backdrop=image1.CopyPicture
```

81.40.171  strip

**Function:** Remove all profiles and text attributes from the image.

81.40.172  strokeDashArray as Double()

**Function:** Queries stroke dash pattern.
**Notes:** Specify the pattern of dashes and gaps used to stroke paths. The strokeDashArray represents a zero-terminated array of numbers that specify the lengths of alternating dashes and gaps in pixels. If an
odd number of values is provided, then the list of values is repeated to yield an even number of values. A typical strokeDashArray array might contain the members 5 3 2 0, where the zero value indicates the end of the pattern array.

### 81.40.173 swirl(degree as Double)


**Function:** Swirl image (image pixels are rotated by degrees).

**Example:**
```
Dim p as Picture = LogoMBS(500)
Dim image as new GMImageMBS(p)

Image.swirl 200

Backdrop = Image.CopyPicture
```

### 81.40.174 syncPixels


**Function:** Transfers the image cache pixels to the image.

### 81.40.175 texture(texture as GMImageMBS)


**Function:** Channel a texture on pixels matching image background color.

### 81.40.176 threshold(degree as Double)


**Function:** Threshold image channels (below threshold becomes black, above threshold becomes white).

**Example:**
```
Dim p as Picture = LogoMBS(500)
Dim image as new GMImageMBS(p)

Image.threshold 127

// convert to RGB so CopyPicture works
```
image.type = image.TrueColorType
Backdrop=image.CopyPicture

**Notes:** The range of the threshold parameter is 0 to MaxRGB.

### 81.40.177  thumbnail(geometry as GMGeometryMBS)

**MBS GraphicsMagick Plugin, Plugin Version:** 16.4, **Console & Web:** Yes, **Mac:** Yes, **Win:** Yes, **Linux:** Yes.  
**Function:** Resize image using several algorithms to make smaller images very quickly.  
**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim g as new GMImageMBS(f)

// make thumbnail
dim geo as new GMGeometryMBS(100, 100)
g.thumbnail(geo)

// show
me.Backdrop = g.CopyPicture
```

### 81.40.178  totalColors as UInt32

**MBS GraphicsMagick Plugin, Plugin Version:** 9.3, **Console & Web:** Yes, **Mac:** Yes, **Win:** Yes, **Linux:** Yes.  
**Function:** Number of colors in the image.  
**Example:**

```vbnet
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

Title = str(image.totalColors) // shows 5284
Backdrop=image.CombinePictureWithMask
```

### 81.40.179  transform(imageGeometry as GMGeometryMBS)

**MBS GraphicsMagick Plugin, Plugin Version:** 9.3, **Console & Web:** Yes, **Mac:** Yes, **Win:** Yes, **Linux:** Yes.  
**Function:** Transform image based on image and crop geometries.
81.40. CLASS GMIMAGEMBS

Notes: Crop geometry is optional.
See also:

- 81.40.180 transform(imageGeometry as GMGeometryMBS, cropGeometry as GMGeometryMBS) 13713

81.40.180 transform(imageGeometry as GMGeometryMBS, cropGeometry as GMGeometryMBS)

Function: Transform image based on image and crop geometries.
Notes: Crop geometry is optional.
See also:

- 81.40.179 transform(imageGeometry as GMGeometryMBS) 13712

81.40.181 transformOrigin(tx as Double, ty as Double)

Function: Origin of coordinate system to use when annotating with text or drawing.

81.40.182 transformReset

Function: Reset transformation parameters to default.

81.40.183 transformRotation(angle as Double)

Function: Rotation to use when annotating with text or drawing.

81.40.184 transformScale(tx as Double, ty as Double)

Function: Scale to use when annotating with text or drawing.
**81.40.185 transformSkewX(x as Double)**

**Function:** Skew to use in X axis when annotating with text or drawing.

**81.40.186 transformSkewY(y as Double)**

**Function:** Skew to use in Y axis when annotating with text or drawing.

**81.40.187 transparent(color as GMColorMBS)**

**Function:** Add matte channel to image, setting pixels matching color to transparent.
**Example:**

```vba
Dim p As Picture = LogoMBS(500)
Dim image As New GMImageMBS(p)

Dim c As New GMColorMBS("white")
image.transparent(c)
Backdrop = image.CombinePictureWithMask
```

**81.40.188 trim**

**Function:** Trim edges that are the background color from the image.
**Example:**

```vba
Dim p As Picture = LogoMBS(500)
// make the logo picture bigger
Dim q As Picture = NewPicture(700,700,32)
q.Graphics.DrawPicture p,100,100

Dim image As New GMImageMBS(q)
// now trim the white border away
image.trim
```
81.40.189 unregisterId

**Function:** Not documented.

81.40.190 unsharpmask(radius as Double, sigma as Double, amount as Double, threshold as Double)

**Function:** Replace image with a sharpened version of the original image using the unsharp mask algorithm.  
**Example:**
```pascal
    dim p as Picture = LogoMBS(500)
    dim image as new GMImageMBS(p)
    image.unsharpmask(10,1,0.5,50)
```

Notes:
- radius: the radius of the Gaussian, in pixels, not counting the center pixel.
- sigma: the standard deviation of the Gaussian, in pixels.
- amount: the percentage of the difference between the original and the blur image that is added back into the original.
- threshold: the threshold in pixels needed to apply the difference amount.

81.40.191 unsharpmaskChannel(channel as Integer, radius as Double, sigma as Double, amount as Double, threshold as Double)

**Function:** Replace image channel with a sharpened version of the original image using the unsharp mask algorithm.  
**Example:**
```pascal
    dim p as Picture = LogoMBS(500)
    dim image as new GMImageMBS(p)
```
image.unsharpmaskChannel(Image.RedChannel, 10,1,0.5,50)

Backdrop=image.CopyPicture

Notes:

channel: image channel to modify.
radius: the radius of the Gaussian, in pixels, not counting the center pixel.
sigma: the standard deviation of the Gaussian, in pixels.
amount: the percentage of the difference between the original and the blur image that is added back into the original.
threshold: the threshold in pixels needed to apply the difference amount.

81.40.192 wave(amplitude as Double=25.0, wavelength as Double=150.0)

Function: Map image pixels to a sine wave.
Example:

dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.wave

Backdrop=image.CopyPicture

81.40.193 write(blob as GMBlobMBS)

Function: Write single image frame to in-memory Blob, with optional format and adjoin parameters.
See also:

- 81.40.194 write(blob as GMBlobMBS, magick as string) 13717
- 81.40.195 write(blob as GMBlobMBS, magick as string, depth as UInt32) 13717
- 81.40.196 write(file as folderitem) 13717
- 81.40.197 write(Path as string) 13718
- 81.40.198 write(x as Integer, y as Integer, columns as Integer, rows as Integer, map as string, type as Integer, Pixels as Ptr) 13718
81.40.  CLASS GMIMAGEMBS

81.40.194  write(blob as GMBlobMBS, magick as string)

Function: Write single image frame to in-memory Blob, with optional format and adjoin parameters.
See also:

- 81.40.193 write(blob as GMBlobMBS)
- 81.40.195 write(blob as GMBlobMBS, magick as string, depth as UInt32)
- 81.40.196 write(file as folderitem)
- 81.40.197 write(Path as string)
- 81.40.198 write(x as Integer, y as Integer, columns as Integer, rows as Integer, map as string, type as Integer, Pixels as Ptr)

81.40.195  write(blob as GMBlobMBS, magick as string, depth as UInt32)

Function: Write single image frame to in-memory Blob, with optional format and adjoin parameters.
See also:

- 81.40.193 write(blob as GMBlobMBS)
- 81.40.194 write(blob as GMBlobMBS, magick as string)
- 81.40.196 write(file as folderitem)
- 81.40.197 write(Path as string)
- 81.40.198 write(x as Integer, y as Integer, columns as Integer, rows as Integer, map as string, type as Integer, Pixels as Ptr)

81.40.196  write(file as folderitem)

Function: Write single image frame to a file.
Example:

// this converts 32 bit PNG with alpha channel to BMP

dim f as FolderItem = SpecialFolder.Desktop.Child("test.png")
dim p as Picture = Picture.Open(f)

dim g as new GMImageMBS( new GMGeometryMBS(p.Width, p.Height), new GMColorGrayMBS(1.0))
g.type = g.TrueColorMatteType
g.matte = True
g.magick = "BMP"

g.SetPicture(p, 0, 0)
g.SetPictureMask(p.mask.invertMBS, 0, 0)

f = SpecialFolder.Desktop.Child("test.bmp")
g.write(f)

See also:

- 81.40.193 write(blob as GMBlobMBS) 13716
- 81.40.194 write(blob as GMBlobMBS, magick as string) 13717
- 81.40.195 write(blob as GMBlobMBS, magick as string, depth as UInt32) 13717
- 81.40.197 write(Path as string) 13718
- 81.40.198 write(x as Integer, y as Integer, columns as Integer, rows as Integer, map as string, type as Integer, Pixels as Ptr) 13718

81.40.197 write(Path as string)


Function: Write single image frame to a file.

See also:

- 81.40.193 write(blob as GMBlobMBS) 13716
- 81.40.194 write(blob as GMBlobMBS, magick as string) 13717
- 81.40.195 write(blob as GMBlobMBS, magick as string, depth as UInt32) 13717
- 81.40.196 write(file as folderitem) 13717
- 81.40.198 write(x as Integer, y as Integer, columns as Integer, rows as Integer, map as string, type as Integer, Pixels as Ptr) 13718

81.40.198 write(x as Integer, y as Integer, columns as Integer, rows as Integer, map as string, type as Integer, Pixels as Ptr)


Function: Write single image frame to an array of pixels with storage type specified by user (DispatchImage).

Notes: e.g. image.write( 0, 0, 640, 1, "RGB", 0, pixels)

See also:
81.40. **CLASS GMIMAGEMBS**  
- 81.40.193 write(blob as GMBlobMBS)  
- 81.40.194 write(blob as GMBlobMBS, magick as string)  
- 81.40.195 write(blob as GMBlobMBS, magick as string, depth as UInt32)  
- 81.40.196 write(file as folderitem)  
- 81.40.197 write(Path as string)

81.40.199 **xResolution as Double**

**Function:** x resolution of the image.  
**Notes:** See also density functions.

81.40.200 **yResolution as Double**

**Function:** y resolution of the image.

81.40.201 **zoom(geometry as GMGeometryMBS)**

**Function:** Zoom (resize) image to specified size.  
**Example:**
```
dim p as Picture = LogoMBS(500)  
dim image as new GMImageMBS(p)  
image.zoom(new GMGeometryMBS(200,200))  
Backdrop=image.CopyPicture
```

81.40.202 **Properties**

81.40.203 **baseColumns as UInt32**

**Function:** Base image width (before transformations)  
**Notes:** (Read only property)
81.40.204  baseFilename as String

Function: Base image filename (before transformations)
Notes: (Read only property)

81.40.205  baseRows as Uint32

Function: Base image height (before transformations).
Example:

```vba
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)
Title = str(image.baseRows)+" x "+str(image.baseColumns)
```

Notes: (Read only property)

81.40.206  comment as string

Function: Image comment.
Notes:
When you set this property, you add comment string to image.
By default, each image is commented with its file name. Use this method to assign a specific comment to
the image. Optionally you can include the image filename, type, width, height, or other image attributes by
embedding special format characters:
(Read and Write property)

81.40.207  handle as Integer

Function: The internal object reference.
Example:

```vba
dim c as new GMColorMBS("white")
dim g as new GMGeometryMBS(100,100)
dim image as new GMImageMBS(g, c)
MsgBox hex(image.handle) // valid if not zero
```
Notes: (Read and Write property)

81.40.208 height as Integer

Function: The height of the image.  
Example:  

```vbnet
dim c as new GMColorRGBMBS(1.0,0.0,0.0)
dim size as new GMGeometryMBS(100,100)
dim g as new GMImageMBS(size, c)
```

MsgBox str(g.width)+" "+str(g.height)

Notes:  
This is a convenience function for you which calls size.height.  
(Read only property)

81.40.209 width as Integer

Function: The width of the image.  
Example:  

```vbnet
dim c as new GMColorRGBMBS(1.0,0.0,0.0)
dim size as new GMGeometryMBS(100,100)
dim g as new GMImageMBS(size, c)
```

MsgBox str(g.width)+" "+str(g.height)

Notes:  
This is a convenience function for you which calls size.width.  
(Read only property)
81.40.210  adjoin as boolean

**Function:** Join images into a single multi-image file.  
**Notes:** (Read and Write computed property)

81.40.211  animationDelay as UInt32

**Function:** Time in 1/100ths of a second (0 to 65535) which must expire before displaying the next image in an animated sequence.  
**Notes:**  
This option is useful for regulating the animation of a sequence of GIF images within Netscape. (Read and Write computed property)

81.40.212  animationIterations as UInt32

**Function:** Number of iterations to loop an animation (e.g. Netscape loop extension) for.  
**Notes:** (Read and Write computed property)

81.40.213  antiAlias as boolean

**Function:** Control antialiasing of rendered Postscript and Postscript or TrueType fonts.  
**Notes:**  
Enabled by default.  
(Read and Write computed property)

81.40.214  attributeValue(name as string) as string

**Function:** Access an arbitrary named image attribute.  
**Example:**
```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("IMG_4048.jpg")
dim g as new GMImageMBS(f)
dim a as string = g.attributeValue("EXIF:DateTime")
MsgBox a
```
Any number of named attributes may be attached to the image. For example, the image comment is a named image attribute with the name "comment". EXIF tags are attached to the image as named attributes. Use the syntax "EXIF:<tag>" to request an EXIF tag similar to "EXIF:DateTime":

(Read and Write computed property)
**81.40.219 channelDepth(channel as Integer) as UInt32**

Function: Set or obtain modulus channel depth.
Notes: (Read and Write computed property)

**81.40.220 classType as Integer**

Function: Image class (DirectClass or PseudoClass).
Notes: NOTE: setting a DirectClass image to PseudoClass will result in the loss of color information if the number of colors in the image is greater than the maximum palette size (either 256 or 65536 entries depending on the value of QuantumDepth when ImageMagick was built):
(Read and Write computed property)

**81.40.221 clipMask as GMImageMBS**

Function: Associate a clip mask image with the current image.
Notes: The clip mask image must have the same dimensions as the current image or an exception is thrown. Clipping occurs wherever pixels are transparent in the clip mask image. Clipping Pass an invalid image to unset an existing clip mask.
(Read and Write computed property)

**81.40.222 colorFuzz as Double**

Function: Colors within this distance are considered equal.
Notes: A number of algorithms search for a target color. By default the color must be exact. Use this option to match colors that are close to the target color in RGB space.
(Read and Write computed property)
81.40.223 colorMap(index as UInt32) as GMColorMBS

**Function:** Color at colormap position index.
**Notes:** (Read and Write computed property)

81.40.224 colorMapSize as UInt32

**Function:** Number of entries in the colormap.
**Notes:**
Setting the colormap size may extend or truncate the colormap. The maximum number of supported entries is specified by the MaxColormapSize constant, and is dependent on the value of QuantumDepth when GraphicsMagick is compiled. An exception is thrown if more entries are requested than may be supported. Care should be taken when truncating the colormap to ensure that the image colormap indexes reference valid colormap entries.
(Read and Write computed property)

81.40.225 colorSpace as Integer

**Function:** The colorspace (e.g. CMYK) used to represent the image pixel colors.
**Notes:**
(Read and Write computed property)

81.40.226 compose as Integer

**Function:** Composition operator to be used when composition is implicitly used (such as for image flattening).
**Notes:** (Read and Write computed property)

81.40.227 compressType as Integer

**Function:** Image compression type.
**Notes:**
UndefinedColors = 0
RGBColors = 1 (Plain old RGB colorspace)
GRAYColors = 2 (Plain old full-range grayscale)
TransparentColor = 3 (RGB but preserve matte channel during quantize)
OHTAColors = 4
XYZColors = 5 (CIE XYZ)
YCCColors = 6 (Kodak PhotoCD PhotoYCC)
YIQColors = 7
YPbPrColors = 8
YUVColors = 9
CMYKColors = 10 (Cyan, magenta, yellow, black, alpha)
sRGBColors = 11 (Kodak PhotoCD sRGB)
HSLColors = 12 (Hue, saturation, luminosity)
HWBColors = 13 (Hue, whiteness, blackness)
LABColors = 14 (LAB colorspace not supported yet other than via lcms)
CineonLogRGBColors = 15 (RGB data with Cineon Log scaling, 2.048 density range)
Rec601LumaColors = 16 (Luma (Y) according to ITU-R 601)
Rec601YCbCrColors = 17 (YCbCr according to ITU-R 601)
Rec709LumaColors = 18 (Luma (Y) according to ITU-R 709)
Rec709YCbCrColors = 19 (YCbCr according to ITU-R 709)

The default is the compression type of the input image file.
(Read and Write computed property)

81.40.228 debug as boolean

Function: Enable printing of debug messages from GraphicsMagick as it executes.
Notes: (Read and Write computed property)

81.40.229 defineSet(magick as string, key as string) as boolean

Function: Set or obtain a definition flag to applied when encoding or decoding the specified format.
Notes:
Similar to the defineValue() method except that passing the flag value 'true' creates a value-less define with
that format and key. Passing the flag value 'false' removes any existing matching definition. The method
returns 'true' if a matching key exists, and 'false' if no matching key exists.
(Read and Write computed property)
81.40.230  **defineValue(magick as string, key as string) as string**

**Function:** Set or obtain a definition string to applied when encoding or decoding the specified format.  
**Notes:**

The meanings of the definitions are format specific. The format is designated by the magick argument, the format-specific key is designated by key, and the associated value is specified by value. See the defineSet() method if the key must be removed entirely.  
(Read and Write computed property)

81.40.231  **density as GMGeometryMBS**

**Function:** Vertical and horizontal resolution in pixels of the image.  
**Example:**

```vbnet
dim p as new GMImageMBS

item as FolderItem = SpecialFolder.Desktop.Child(“input.png”)  
p.read(item)  
p.scale new GMGeometryMBS(3750,3750)  
p.quality = 95  
p.resolutionUnits = p.PixelsPerInchResolution  
p.density = new GMGeometryMBS(300, 300)  
dim out as FolderItem = SpecialFolder.Desktop.Child(“output.png”)  
p.write out
```

**Notes:**

This option specifies an image density when decoding a Postscript or Portable Document page. Often used with psPageSize.  
(Read and Write computed property)

81.40.232  **depth as UInt32**

**Function:** Image depth (bits allocated to red/green/blue components).  
**Notes:**

Used to specify the bit depth when reading or writing raw images or when the output format supports multiple depths. Defaults to the quantum depth that GraphicsMagick is compiled with.  
(Read and Write computed property)
81.40.233  endian as Integer

**Function:** The endian mode.
**Notes:**
Endianness (LSBEndian like Intel, MSBEndian like SPARC, or NativeEndian for what this computer uses)
for image formats which support endian-specific options.
(Read and Write computed property)

81.40.234  fileName as string

**Function:** Image file name.
**Notes:** (Read and Write computed property)

81.40.235  fillColor as GMColorMBS

**Function:** Color to use when filling drawn objects.
**Example:**
```plaintext
dim g as new GMGeometryMBS(500,500)
dim c as new GMColorRGBMBS(“white”) // white
dim image as new GMImageMBS(g, c)

image.strokeColor = new GMColorRGBMBS(“red”) // Outline color
image.fillColor = new GMColorRGBMBS(“green”) // Fill color
image.strokeWidth = 5

dim draw as GMGraphicsMBS = image.Graphics

// Draw a circle
draw.Circle(250, 250, 120, 150)
Backdrop=image.CopyPicture
```
**Notes:** (Read and Write computed property)
81.40. CLASS GMIMAGEMBS

81.40.236 fillPattern as GMImageMBS

**Function:** Pattern to use while filling drawn objects.
**Notes:** (Read and Write computed property)

81.40.237 fillRule as Integer

**Function:** Rule to use when filling drawn objects
**Notes:** (Read and Write computed property)

81.40.238 filterType as Integer

**Function:** The reduction filter employed has a significant effect on the time required to resize an image and the resulting quality. The default filter is Lanczos which has been shown to produce high quality results when reducing most images.
**Notes:**
Filter to use when resizing image.
(Read and Write computed property)

81.40.239 font as string

**Function:** Text rendering font.
**Notes:**
If the font is a fully qualified X server font name, the font is obtained from an X server. To use a TrueType font, precede the TrueType filename with an @. Otherwise, specify a Postscript font name (e.g. "helvetica").
(Read and Write computed property)

81.40.240 fontPointsize as Double

**Function:** Text rendering font point size.
**Notes:** (Read and Write computed property)
81.40.241  gamma as Double


Function:  Gamma correct the image or individual image channels.

Example:

```vba
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.gamma = 3.0

Backdrop=image.CopyPicture
```

Notes:

If you get the value, it is the gamma level of the image. Gamma is a pow() function which converts between the linear light representation and the representation for the computer display. Most computer images are gamma corrected to 2.2 (1/0.4545) so that each step results in a visually linear step on a computer or video display:

(Read and Write computed property)

See also:

- 81.40.81 gamma(gammaRed as Double, gammaGreen as Double, gammaBlue as Double)

81.40.242  gifDisposeMethod as UInt32


Function:  GIF disposal method.

Notes:

This option (specific to the GIF file format) is used to control how successive frames are rendered (how the preceding frame is disposed of) when creating a GIF animation.

<table>
<thead>
<tr>
<th>Constant</th>
<th>Disposal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UndefinedDispose</td>
<td>0</td>
<td>No disposal specified.</td>
</tr>
<tr>
<td>NoneDispose</td>
<td>1</td>
<td>Do not dispose between frames.</td>
</tr>
<tr>
<td>BackgroundDispose</td>
<td>2</td>
<td>Overwrite frame with background color from header.</td>
</tr>
<tr>
<td>PreviousDispose</td>
<td>3</td>
<td>Overwrite with previous frame.</td>
</tr>
</tbody>
</table>

(Read and Write computed property)
81.40.243  iccColorProfile as GMBlobMBS

**Function:** ICC color profile.

**Example:**
```vbscript
dim f as FolderItem = SpecialFolder.Desktop.Child("IMG_0793.tif")
dim Image as new GMImageMBS(f)
dim ProfileBlob as GMBlobMBS = Image.iccColorProfile

dim.ProfileData as string = ProfileBlob.CopyString

dim cm as LCMS2ProfileMBS = LCMS2ProfileMBS.OpenProfileFromString(ProfileData)
dim name as string = cm.Name

Break  // check data in debugger
```

**Notes:**
Supplied via a Blob since Magick++/ and GraphicsMagick do not currently support formatting this data structure directly. Specifications are available from the International Color Consortium for the format of ICC color profiles.
(Read and Write computed property)

81.40.244  interlaceType as Integer

**Function:** The type of interlacing scheme (default NoInterlace).

**Notes:**
This option is used to specify the type of interlacing scheme for raw image formats such as RGB or YUV. NoInterlace means do not interlace, LineInterlace uses scanline interlacing, and PlaneInterlace uses plane interlacing. PartitionInterlace is like PlaneInterlace except the different planes are saved to individual files (e.g. image.R, image.G, and image.B). Use LineInterlace or PlaneInterlace to create an interlaced GIF or progressive JPEG image.
(Read and Write computed property)

81.40.245  iptcProfile as GMBlobMBS

**Function:** IPTC profile.

**Notes:**
Supplied via a Blob since Magick++ and GraphicsMagick do not currently support formatting this data structure directly. Specifications are available from the International Press Telecommunications Council for IPTC profiles.
81.40.246 isValid as boolean

Function: Does object contain valid image?
Notes: Set to false in order to invalidate the image. Images constructed via the default constructor are invalid images and isValid() will return false.
(Read and Write computed property)

81.40.247 lineWidth as Double

Function: Stroke width for drawing vector objects (default one)
Notes: This method is now deprecated. Please use strokeWidth instead.
(Read and Write computed property)

81.40.248 magick as string

Function: The name of the codec to use for compression.
Example:

```javascript
// this converts 32 bit PNG with alpha channel to BMP

dim f as FolderItem = SpecialFolder.Desktop.Child("test.png")
dim p as Picture = Picture.Open(f)

dim g as new GMImageMBS( new GMGeometryMBS(p.Width, p.Height), new GMColorGrayMBS(1.0))
g.type = g.TrueColorMatteType
g.matte = True
g.magick = ”BMP”
g.SetPicture(p, 0, 0)
g.SetPictureMask(p.mask.invertMBS, 0, 0)

f = SpecialFolder.Desktop.Child("test.bmp")
g.write(f)
```
81.40. CLASS GMIMAGEMBS

Notes: (Read and Write computed property)

81.40.249  matte as boolean

Function: Image supports transparency (matte channel)
Notes: (Read and Write computed property)

81.40.250  matteColor as GMColorMBS

Function: Image matte (frame) color.
Notes: (Read and Write computed property)

81.40.251  modulusDepth as UInt32

Function: Image modulus depth (minimum number of bits required to support red/green/blue components without loss of accuracy).
Notes: The pixel modulus depth may be decreased by supplying a value which is less than the current value, updating the pixels (reducing accuracy) to the new depth. The pixel modulus depth can not be increased over the current value using this method.
(Read and Write computed property)

81.40.252  monochrome as boolean

Function: Transform image to black and white while color reducing (quantizing).
Notes: (Read and Write computed property)

81.40.253  orientation as Integer

Function: Image orientation. Supported by some file formats such as DPX and TIFF. Useful for turning
the right way up.

Notes: (Read and Write computed property)

81.40.254 page as GMGeometryMBS


Function: Preferred size and location of an image canvas.

Notes:

Use this option to specify the dimensions and position of the Postscript page in dots per inch or a TEXT page in pixels. This option is typically used in concert with density. Page may also be used to position a GIF image (such as for a scene in an animation).

(Read and Write computed property)

81.40.255 penColor as GMColorMBS


Function: The pen color.

Notes: (Read and Write computed property)

81.40.256 pixelColor(x as UInt32, y as UInt32) as GMColorMBS


Function: Get/set pixel color at location x & y.

Example:

```pascal
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)
dim c as new GMColorMBS(“red”)

for x as Integer = 240 to 260
     image.pixelColor(x,250)=c
next

for y as Integer = 240 to 260
     image.pixelColor(250,y)=c
next

Backdrop=image.CopyPicture
```
81.40. CLASS GMIMAGEMBS

Notes: (Read and Write computed property)

81.40.257 profile(name as string) as GMBlobMBS

Function: Get or set a named profile.
Notes:
Add or remove a named profile to/from the image. Remove the profile by passing an empty Blob (e.g. Blob()). Valid names are "**", "8BIM", "ICM", "IPTC", or a user/format-defined profile name.

Retrieve a named profile from the image. Valid names are: "8BIM", "8BIMTEXT", "APP1", "APP1JPEG", "ICC", "ICM", & "IPTC" or an existing user/format-defined profile name
(Read and Write computed property)

81.40.258 quality as UInt32

Function: JPEG/MIFF/PNG compression level (default 75).
Notes: (Read and Write computed property)

81.40.259 quantizeColors as UInt32

Function: Maximum number of colors to quantize to.
Example:

dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.quantizeColors = 10
image.quantize

image.type = image.TrueColorType
Backdrop=image.CopyPicture

Notes: (Read and Write computed property)
81.40.260  quantizeColorSpace as Integer

**Function:** Colorspace to quantize in (default RGB).  
**Example:**

```vba
// load a picture
dim f as FolderItem = SpecialFolder.Desktop.Child("test.png")
dim pic as Picture = Picture.Open(f)

const GrayColorSpace = 2

Dim Converter As New GMImageMBS(Pic)

// quantize with dither
Converter.type = GMImageMBS.BilevelType
Converter.quantizeColorSpace = GrayColorSpace
Converter.quantizeColors = 2
Converter.quantizeDither = True
Converter.quantize

// convert back to Xojo
Converter.type = GMImageMBS.TrueColorType
Backdrop = Converter.CopyPicture
```

**Notes:**

Empirical evidence suggests that distances in color spaces such as YUV or YIQ correspond to perceptual color differences more closely than do distances in RGB space. These color spaces may give better results when color reducing an image.  
(Read and Write computed property)

81.40.261  quantizeDither as boolean

**Function:** Apply Floyd/Steinberg error diffusion to the image.  
**Example:**

```vba
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.quantizeColors = 10
image.quantizeDither = true
image.quantize
```
image.type = image.TrueColorType
Backdrop=image.CopyPicture

Notes:
The basic strategy of dithering is to trade intensity resolution for spatial resolution by averaging the intensities of several neighboring pixels. Images which suffer from severe contouring when reducing colors can be improved with this option. The quantizeColors or monochrome option must be set for this option to take effect.
(Read and Write computed property)

81.40.262 quantizeTreeDepth as UInt32

Function: Depth of the quantization color classification tree.
Notes:
Values of 0 or 1 allow selection of the optimal tree depth for the color reduction algorithm. Values between 2 and 8 may be used to manually adjust the tree depth.
(Read and Write computed property)

81.40.263 renderingIntent as Integer

Function: The type of rendering intent (used when applying an ICC color profile).
Notes: (Read and Write computed property)

81.40.264 resolutionUnits as Integer

Function: Units of image resolution.
Notes: (Read and Write computed property)

81.40.265 scene as UInt32

Function: Image scene number.
Notes: (Read and Write computed property)
81.40.266 size as GMGeometryMBS

MBS GraphicsMagick Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Width and height of a raw image (an image which does not support width and height information).

**Example:**

```vba
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

MsgBox image.size.StringValue

image.size = new GMGeometryMBS(200,200)

Backdrop=image.CopyPicture
```

**Notes:**

Size may also be used to affect the image size read from a multi-resolution format (e.g. Photo CD, JBIG, or JPEG.
(Read and Write computed property)

81.40.267 strokeAntiAlias as boolean


**Notes:** (Read and Write computed property)

81.40.268 strokeColor as GMColorMBS

MBS GraphicsMagick Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Color to use when drawing object outlines.

**Example:**

```vba
dim g as new GMGeometryMBS(500,500)
dim c as new GMColorRGBMBS("white") // white
dim image as new GMImageMBS(g, c)

image.strokeColor = new GMColorRGBMBS("red") // Outline color
image.fillColor = new GMColorRGBMBS("green") // Fill color
image.strokeWidth = 5

dim draw as GMGraphicsMBS = image.Graphics
```
81.40. CLASS GMIMAGEMBS

// Draw a circle
draw.Circle(250, 250, 120, 150)

Backdrop=image.CopyPicture

Notes: (Read and Write computed property)

81.40.269  strokeLineJoin as Integer

Function: Specify the shape to be used at the corners of paths (or other vector shapes) when they are stroked. 
Notes: (Read and Write computed property)

Values of LineJoin are UndefinedJoin, MiterJoin, RoundJoin, and BevelJoin.
(Read and Write computed property)

81.40.271  strokeLineCap as Integer

Function: Specify the shape to be used at the end of open subpaths when they are stroked. 
Notes: (Read and Write computed property)

Values of LineCap are UndefinedCap, ButtCap, RoundCap, and SquareCap.
(Read and Write computed property)

81.40.272  strokeMiterLimit as UInt32

Function: Specify miter limit.
Notes:
When two line segments meet at a sharp angle and miter joins have been specified for 'lineJoin', it is possible for the miter to extend far beyond the thickness of the line stroking the path. The miterLimit imposes a
limit on the ratio of the miter length to the 'lineWidth'. The default value of this parameter is 4.
(Read and Write computed property)

81.40.273 strokePattern as GMImageMBS

Function: Pattern image to use while stroking object outlines.
Notes: (Read and Write computed property)

81.40.274 strokeWidth as Double

Function: Stroke width for drawing vector objects (default one).
Example:

```dim g as new GMGeometryMBS(500,500)
dim c as new GMColorRGBMBS("white") // white
dim image as new GMImageMBS(g, c)

image.strokeColor = new GMColorRGBMBS("red") // Outline color
image.fillColor = new GMColorRGBMBS("green") // Fill color
image.strokeWidth = 5

dim draw as GMGraphicsMBS = image.Graphics

// Draw a circle
draw.Circle(250, 250, 120, 150)

Backdrop=image.CopyPicture```

Notes: (Read and Write computed property)

81.40.275 subImage as UInt32

Function: Subimage of an image sequence.
Notes: (Read and Write computed property)
81.40. CLASS GMIMAGEMBS

81.40.276  subRange as UInt32

**Function:** Number of images relative to the base image.
**Notes:** (Read and Write computed property)

81.40.277  textEncoding as string

**Function:** Annotation text encoding (e.g. "UTF-16").
**Notes:** (Read and Write computed property)

81.40.278  tileName as string

**Function:** Tile name.
**Notes:** (Read and Write computed property)

81.40.279  type as Integer

**Function:** The type of this image.
**Example:**

```
dim p as Picture = LogoMBS(500)
dim image as new GMImageMBS(p)

image.type = image.GrayscaleType

Backdrop=image.CopyPicture
```

**Notes:**
You can set this value to convert the image to the type.

Convert the image representation to the specified type or retrieve the current image type. If the image is reduced to an inferior type, then image information may be lost (e.g. color changed to grayscale).

Available enumerations for the type parameter:
<table>
<thead>
<tr>
<th>Variable</th>
<th>Value Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BilevelType</td>
<td>1 black/white</td>
</tr>
<tr>
<td>GrayscaleType</td>
<td>2 grayscale</td>
</tr>
<tr>
<td>GrayscaleMatteType</td>
<td>3 grayscale with alpha (opacity) channel</td>
</tr>
<tr>
<td>PaletteType</td>
<td>4 colormapped</td>
</tr>
<tr>
<td>PaletteMatteType</td>
<td>5 colormapped with transparency</td>
</tr>
<tr>
<td>TrueColorType</td>
<td>6 true (full) color</td>
</tr>
<tr>
<td>TrueColorMatteType</td>
<td>7 true (full) color with alpha (opacity) channel</td>
</tr>
<tr>
<td>ColorSeparationType</td>
<td>8 Cyan, magenta, yellow, and black</td>
</tr>
<tr>
<td>ColorSeparationMatteType</td>
<td>9 Cyan, magenta, yellow, and black with alpha (opacity) channel</td>
</tr>
<tr>
<td>OptimizeType</td>
<td>10 Optimize the image type to best represent the existing pixels</td>
</tr>
</tbody>
</table>

(Read and Write computed property)

**81.40.280  verbose as boolean**

**Function:** Print detailed information about the image.  
**Notes:** (Read and Write computed property)

**81.40.281  view as string**

**Function:** FlashPix viewing parameters.  
**Notes:** (Read and Write computed property)

**81.40.282  x11Display as string**

**Function:** X11 display to display to, obtain fonts from, or to capture image from.  
**Notes:** (Read and Write computed property)

**81.40.283  Constants**

81.40.284  **AbsoluteIntent = 3**

MBS GraphicsMagick Plugin, Plugin Version: 10.2.  
**Function:** One of the intent type constants.
81.40.285  AddCompositeOp = 8

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants.

81.40.286  AllChannels = 10

MBS GraphicsMagick Plugin, Plugin Version: 9.3. **Function:** One of the possible channel constants.

81.40.287  AllCompliance = & hffff

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the Compliance type constants.

81.40.288  AssociatedAlpha = 1

MBS GraphicsMagick Plugin, Plugin Version: 9.3. **Function:** One of the possible alpha type constants.

81.40.289  AtopCompositeOp = 4

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants.

81.40.290  BackgroundDispose = 2

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the gif dispose type constants.

81.40.291  BesselFilter = 14

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the filter type constants.

81.40.292  BilevelType = 1

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the image type constants.

**Example:**
CHAPTER 81. GRAPHICSMAGICK

// load a picture
dim f as FolderItem = SpecialFolder.Desktop.Child("test.png")
dim pic as Picture = Picture.Open(f)

const GrayColorSpace = 2

Dim Converter As New GMImageMBS(Pic)

// quantize with dither
Converter.type = GMImageMBS.BilevelType
Converter.quantizeColorSpace = GrayColorSpace
Converter.quantizeColors = 2
Converter.quantizeDither = True
Converter.quantize

// convert back to Xojo
Converter.type = GMImageMBS.TrueColorType
Backdrop = Converter.CopyPicture

81.40.293 BlackChannel = 8

MBS GraphicsMagick Plugin, Plugin Version: 9.3. **Function:** One of the possible channel constants.

81.40.294 BlackmanFilter = 7

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the filter type constants.

81.40.295 BlueChannel = 5

MBS GraphicsMagick Plugin, Plugin Version: 9.3. **Function:** One of the possible channel constants.

81.40.296 BottomLeftOrientation = 4

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the orientation type constants.

**Notes:**

Line direction: Left to right
Frame Direction: Bottom to top
81.40.297  BottomRightOrientation = 3

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the orientation type constants.

**Notes:**
Line direction: Right to left
Frame Direction: Bottom to top

81.40.298  BoxFilter = 2

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the filter type constants.

81.40.299  BumpmapCompositeOp = 12

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants.

81.40.300  BZipCompression = 2

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the compression type constants.

81.40.301  CatromFilter = 11

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the filter type constants.

81.40.302  CenterGravity = 5

MBS GraphicsMagick Plugin, Plugin Version: 9.3. **Function:** One of the possible gravity constants.

81.40.303  ClearCompositeOp = 18

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants.
81.40.304  ColorizeCompositeOp = 28

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants.

81.40.305  ColorSeparationMatteType = 9

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the image type constants.

81.40.306  ColorSeparationType = 8

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the image type constants.

81.40.307  ConcatenateMode = 3

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the image type constants.

81.40.308  CopyBlackCompositeOp = 35

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants.

81.40.309  CopyBlueCompositeOp = 16

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants.

81.40.310  CopyCompositeOp = 13

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants.

81.40.311  CopyCyanCompositeOp = 32

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants.
81.40.312  CopyGreenCompositeOp = 15

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants.

81.40.313  CopyMagentaCompositeOp = 33

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants.

81.40.314  CopyOpacityCompositeOp = 17

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants.

81.40.315  CopyRedCompositeOp = 14

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants.

81.40.316  CopyYellowCompositeOp = 34

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants.

81.40.317  CubicFilter = 10

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the filter type constants.

81.40.318  CyanChannel = 2

MBS GraphicsMagick Plugin, Plugin Version: 9.3. **Function:** One of the possible channel constants.

81.40.319  DarkenCompositeOp = 24

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants.
81.40.320  DifferenceCompositeOp = 10

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants.

81.40.321  DirectClass = 1

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the class type constants.

81.40.322  DisplaceCompositeOp = 20

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants.

81.40.323  DissolveCompositeOp = 19

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants.

81.40.324  DivideCompositeOp = 36

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants.

81.40.325  EastGravity = 6

MBS GraphicsMagick Plugin, Plugin Version: 9.3. **Function:** One of the possible gravity constants.

81.40.326  FaxCompression = 3

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the compression type constants.

81.40.327  ForgetGravity = 0

MBS GraphicsMagick Plugin, Plugin Version: 9.3. **Function:** One of the possible gravity constants.
81.40.328  FrameMode = 1

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the mode type constants.

81.40.329  GaussianFilter = 8

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the filter type constants.

81.40.330  GaussianNoise = 1

MBS GraphicsMagick Plugin, Plugin Version: 9.3. **Function:** One of the possible noise constants.

81.40.331  GrayChannel = 11

MBS GraphicsMagick Plugin, Plugin Version: 9.3. **Function:** One of the possible channel constants.

81.40.332  GrayscaleMatteType = 3

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the image type constants.

81.40.333  GrayscaleType = 2

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the image type constants.

81.40.334  GreenChannel = 3

MBS GraphicsMagick Plugin, Plugin Version: 9.3. **Function:** One of the possible channel constants.

81.40.335  Group4Compression = 4

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the compression type constants.
81.40.336 \textit{HammingFilter} = 6

MBS GraphicsMagick Plugin, Plugin Version: 10.2. \textbf{Function}: One of the filter type constants.

81.40.337 \textit{HanningFilter} = 5

MBS GraphicsMagick Plugin, Plugin Version: 10.2. \textbf{Function}: One of the filter type constants.

81.40.338 \textit{HermiteFilter} = 4

MBS GraphicsMagick Plugin, Plugin Version: 10.2. \textbf{Function}: One of the filter type constants.

81.40.339 \textit{HueCompositeOp} = 26

MBS GraphicsMagick Plugin, Plugin Version: 10.2. \textbf{Function}: One of the composite type constants.

81.40.340 \textit{ImpulseNoise} = 3

MBS GraphicsMagick Plugin, Plugin Version: 9.3. \textbf{Function}: One of the possible noise constants.

81.40.341 \textit{InCompositeOp} = 2

MBS GraphicsMagick Plugin, Plugin Version: 10.2. \textbf{Function}: One of the composite type constants.

81.40.342 \textit{JPEGCompression} = 5

MBS GraphicsMagick Plugin, Plugin Version: 10.2. \textbf{Function}: One of the compression type constants.

81.40.343 \textit{LanczosFilter} = 13

MBS GraphicsMagick Plugin, Plugin Version: 10.2. \textbf{Function}: One of the filter type constants.
81.40. CLASS GMIMAGEMBS

81.40.344 LaplacianNoise = 4

MBS GraphicsMagick Plugin, Plugin Version: 9.3. **Function:** One of the possible noise constants.

81.40.345 LeftBottomOrientation = 8

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the orientation type constants. **Notes:**
- Line direction: Bottom to top
- Frame Direction: Left to right

81.40.346 LeftTopOrientation = 5

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the orientation type constants. **Notes:**
- Line direction: Top to bottom
- Frame Direction: Left to right

81.40.347 LightenCompositeOp = 25

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants.

81.40.348 LineInterlace = 2

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the interlace type constants.

81.40.349 LosslessJPEGCompression = 6

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the compression type constants.

81.40.350 LSBEndian = 1

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the endian type constants. **Notes:** “little” endian
81.40.351  LuminizeCompositeOp = 29

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants.

81.40.352  LZWCompression = 7

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the compression type constants.

81.40.353  MagentaChannel = 4

MBS GraphicsMagick Plugin, Plugin Version: 9.3. **Function:** One of the possible channel constants.

81.40.354  MatteChannel = 9

MBS GraphicsMagick Plugin, Plugin Version: 9.3. **Function:** One of the possible channel constants.

81.40.355  MinusCompositeOp = 7

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants.

81.40.356  MitchellFilter = 12

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the filter type constants.

81.40.357  ModulateCompositeOp = 21

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants.
81.40.358  MSBEndian = 2

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the endian type constants. **Notes:** "big" endian

81.40.359  MultiplicativeGaussianNoise = 2

MBS GraphicsMagick Plugin, Plugin Version: 9.3. **Function:** One of the possible noise constants.

81.40.360  MultiplyCompositeOp = 11

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants.

81.40.361  NativeEndian = 3

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the endian type constants. **Notes:** native endian

81.40.362  NoCompliance = 0

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the Compliance type constants.

81.40.363  NoCompositeOp = 23

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants.

81.40.364  NoCompression = 1

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the compression type constants.

81.40.365  NoInterlace = 1

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the interlace type constants.
81.40.366  NoneDispose = 1

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the gif dispose type constants.

81.40.367  NorthEastGravity = 3

MBS GraphicsMagick Plugin, Plugin Version: 9.3. **Function:** One of the possible gravity constants.

81.40.368  NorthGravity = 2

MBS GraphicsMagick Plugin, Plugin Version: 9.3. **Function:** One of the possible gravity constants.

81.40.369  NorthWestGravity = 1

MBS GraphicsMagick Plugin, Plugin Version: 9.3. **Function:** One of the possible gravity constants.

81.40.370  OpacityChannel = 7

MBS GraphicsMagick Plugin, Plugin Version: 9.3. **Function:** One of the possible channel constants.

81.40.371  OptimizeType = 10

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the image type constants.

81.40.372  OutCompositeOp = 3

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants.

81.40.373  OverCompositeOp = 1

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants.
81.40.374  **OverlayCompositeOp = 31**

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants. **Notes:** Not yet implemented in GraphicsMagick.

81.40.375  **PaletteMatteType = 5**

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the image type constants.

81.40.376  **PaletteType = 4**

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the image type constants.

81.40.377  **PartitionInterlace = 4**

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the interlace type constants.

81.40.378  **PerceptualIntent = 2**

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the intent type constants.

81.40.379  **PixelsPerCentimeterResolution = 2**

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the resolution type constants.

81.40.380  **PixelsPerInchResolution = 1**

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the resolution type constants.

81.40.381  **PlaneInterlace = 3**

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the interlace type constants.
81.40.382  PlusCompositeOp = 6

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function**: One of the composite type constants.

81.40.383  PointFilter = 1

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function**: One of the filter type constants.

81.40.384  PoissonNoise = 5

MBS GraphicsMagick Plugin, Plugin Version: 9.3. **Function**: One of the possible noise constants.

81.40.385  PreviousDispose = 3

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function**: One of the gif dispose type constants.

81.40.386  PseudoClass = 2

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function**: One of the class type constants.

81.40.387  QuadraticFilter = 9

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function**: One of the filter type constants.

81.40.388  RedChannel = 1

MBS GraphicsMagick Plugin, Plugin Version: 9.3. **Function**: One of the possible channel constants.

81.40.389  RelativeIntent = 4

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function**: One of the intent type constants.
81.40. CLASS GMIMAGEMBS

81.40.390  RightBottomOrientation = 7

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the orientation type constants.  
**Notes:**
Line direction: Bottom to top  
Frame Direction: Right to left

81.40.391  RightTopOrientation = 6

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the orientation type constants.  
**Notes:**
Line direction: Top to bottom  
Frame Direction: Right to left

81.40.392  RLECompression = 8

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the compression type constants.

81.40.393  SaturateCompositeOp = 27

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants.

81.40.394  SaturationIntent = 1

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the intent type constants.

81.40.395  ScreenCompositeOp = 30

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants.  
**Notes:** Not yet implemented in GraphicsMagick.
81.40.396  **SincFilter = 15**

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the filter type constants.

81.40.397  **SouthEastGravity = 9**

MBS GraphicsMagick Plugin, Plugin Version: 9.3. **Function:** One of the possible gravity constants.

81.40.398  **SouthGravity = 8**

MBS GraphicsMagick Plugin, Plugin Version: 9.3. **Function:** One of the possible gravity constants.

81.40.399  **SouthWestGravity = 7**

MBS GraphicsMagick Plugin, Plugin Version: 9.3. **Function:** One of the possible gravity constants.

81.40.400  **StaticGravity = 10**

MBS GraphicsMagick Plugin, Plugin Version: 9.3. **Function:** One of the possible gravity constants.

81.40.401  **StorageTypeCharPixel = 0**

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the storage types. **Notes:** 8bit numbers.

81.40.402  **StorageTypeDoublePixel = 5**

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the storage types. **Notes:** 64bit floating numbers.

81.40.403  **StorageTypeFloatPixel = 4**

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the storage types. **Notes:** 32bit floating numbers.
81.40.404 StorageTypeIntegerPixel = 2

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the storage types.  
**Notes:** 32bit numbers.

81.40.405 StorageTypeLongPixel = 3

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the storage types.  
**Notes:** 64bit numbers.

81.40.406 StorageTypeShortPixel = 1

MBS GraphicsMagick Plugin, Plugin Version: 14.1. **Function:** One of the storage types.  
**Notes:** 16bit numbers.

81.40.407 SubtractCompositeOp = 9

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants.

81.40.408 SVGCompliance = 1

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the Compliance type constants.

81.40.409 ThresholdCompositeOp = 22

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants.

81.40.410 TopLeftOrientation = 1

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the orientation type constants.  
**Notes:**
81.40.411  TopRightOrientation = 2

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the orientation type constants.

**Notes:**
Line direction: Right to left
Frame Direction: Top to bottom

81.40.412  TriangleFilter = 3

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the filter type constants.

81.40.413  TrueColorMatteType = 7

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the image type constants.

**Example:**

```vbnet
Dim mp as new GMImageMBS(new GMGeometryMBS(700, 700), New GMColorRGBMBS(1.0, 0.0, 0.0))
mp.type = mp.TrueColorMatteType
dim p as picture = mp.CopyPicture
break // see in debugger a red picture
```

81.40.414  TrueColorType = 6

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the image type constants.

81.40.415  UnassociatedAlpha = 2

MBS GraphicsMagick Plugin, Plugin Version: 9.3. **Function:** One of the possible alpha type constants.
81.40.416  UndefinedChannel = 0

MBS GraphicsMagick Plugin, Plugin Version: 9.3. **Function:** One of the possible channel constants.

81.40.417  UndefinedClass = 0

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the class type constants.

81.40.418  UndefinedCompliance = 0

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the Compliance type constants.

81.40.419  UndefinedCompositeOp = 0

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants.

81.40.420  UndefinedCompression = 0

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the compression type constants.

81.40.421  UndefinedDispose = 0

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the gif dispose type constants.

81.40.422  UndefinedEndian = 0

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the endian type constants.

81.40.423  UndefinedFilter = 0

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the filter type constants.
81.40.424  **UndefinedIntent = 0**

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the intent type constants.

81.40.425  **UndefinedInterlace = 0**

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the interlace type constants.

81.40.426  **UndefinedMode = 0**

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the mode type constants.

81.40.427  **UndefinedOrientation = 0**

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the orientation type constants.

**Notes:**

Line direction: Unknown
Frame Direction: Unknown

81.40.428  **UndefinedResolution = 0**

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the resolution type constants.

81.40.429  **UndefinedType = 0**

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the image type constants.

81.40.430  **UnframeMode = 2**

MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the mode type constants.
81.40. CLASS GMIMAGEMBS

81.40.431 UniformNoise = 0
MBS GraphicsMagick Plugin, Plugin Version: 9.3. **Function:** One of the possible noise constants.

81.40.432 UnspecifiedAlpha = 0
MBS GraphicsMagick Plugin, Plugin Version: 9.3. **Function:** One of the possible alpha type constants.

81.40.433 WestGravity = 4
MBS GraphicsMagick Plugin, Plugin Version: 9.3. **Function:** One of the possible gravity constants.

81.40.434 X11Compliance = 2
MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the Compliance type constants.

81.40.435 XorCompositeOp = 5
MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the composite type constants.

81.40.436 XPMCompliance = 4
MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the Compliance type constants.

81.40.437 YellowChannel = 6
MBS GraphicsMagick Plugin, Plugin Version: 9.3. **Function:** One of the possible channel constants.

81.40.438 ZipCompression = 9
MBS GraphicsMagick Plugin, Plugin Version: 10.2. **Function:** One of the compression type constants.
81.41 class GMImageStatisticsMBS

81.41.1 class GMImageStatisticsMBS


Function: The class for image statistics.
Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

81.41.2 Methods

81.41.3 Constructor


Function: The private constructor.

81.41.4 Properties

81.41.5 blue as GMImageChannelStatisticsMBS


Function: The blue channel statistics.
Notes: (Read only property)

81.41.6 green as GMImageChannelStatisticsMBS


Function: The green channel statistics.
Notes: (Read only property)

81.41.7 opacity as GMImageChannelStatisticsMBS


Function: The opacity channel statistics.
Notes: (Read only property)
81.41.8 red as GMImageChannelStatisticsMBS


**Function:** The red channel statistics.

**Notes:** (Read only property)
81.42 class GMLockMBS

81.42.1 class GMLockMBS

Function: The class for locking a certain resource.
Notes: The idea is to pass the constructor a mutexlock and keep the only reference to this new lock object on the stack. On the end of the method, the destructor is called by REALbasic and releases the mutexlock automatically.

81.42.2 Methods

81.42.3 Constructor(mutexlock as GMMutexLockMBS)

Function: Creates a new Lock based on the given mutexlock.

81.42.4 Properties

81.42.5 handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

81.42.6 target as GMMutexLockMBS

Function: The mutexlock this lock is referencing to.
Notes: (Read and Write property)
81.43  class GMMontageFramedMBS

81.43.1  class GMMontageFramedMBS

MBS GraphicsMagick Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** MontageFramed provides the means to specify montage options when it is desired to have decorative frames around the image thumbnails.

**Notes:**

MontageFramed inherits from Montage and therefore provides all the methods of Montage as well as those shown in the table "MontageFramed Methods".

Framed thumbnails consist of four components: the thumbnail image, the thumbnail frame, the thumbnail border, an optional thumbnail shadow, and an optional thumbnail label area.

Subclass of the GMMontageMBS class.

81.43.2  Methods

81.43.3  Constructor


81.43.4  Properties

81.43.5  borderColor as GMColorMBS

MBS GraphicsMagick Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Specifies the background color within the thumbnail frame.

**Notes:** (Read and Write computed property)

81.43.6  borderWidth as Uint32

MBS GraphicsMagick Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Specifies the border (in pixels) to place between a thumbnail and its surrounding frame.

**Notes:**

This option only takes effect if thumbnail frames are enabled (via frameGeometry) and the thumbnail geometry specification doesn’t also specify the thumbnail border width.

(Read and Write computed property)
81.43.7 frameGeometry as GMGeometryMBS

**Function:** Specifies the geometry specification for frame to place around thumbnail.
**Notes:**
If this parameter is not specified, then the montage is unframed.
(Read and Write computed property)

81.43.8 matteColor as GMColorMBS

**Function:** Specifies the thumbnail frame color.
**Notes:** (Read and Write computed property)
81.44 class GMMontageMBS

81.44.1 class GMMontageMBS


**Function:** Montage is the base class to provide montage options and provides methods to set all options required to render simple (unframed) montages.

**Example:**

```plaintext
// build montage
dim StackingMontage as New GM16MontageMBS
StackingMontage.backgroundColor = New GM16ColorMBS(& cE7E7E7)
StackingMontage.fillColor = New GM16ColorMBS(& c000000)
StackingMontage.tile = New GM16GeometryMBS(“1x20”)  
StackingMontage.geometry = New GM16GeometryMBS(“160x120+5+5”)  
StackingMontage.font = ”Helvetica”
StackingMontage.pointSize = 12
StackingMontage.title = ”Title goes here”

// make picture
dim logo as Picture = LogoMBS(500)
dim image as New GM16ImageMBS(logo)
image.label(”Sample label”)

// Put the current image into the array
Dim StackingFrames As new GM16ImageArrayMBS
StackingFrames.insert(image)

// show result
dim resultImages as GM16ImageArrayMBS = StackingFrames.montageImages(StackingMontage)
Backdrop = resultImages.Image(0).CopyPicture
```

**Notes:**

See GMMontageFramedMBS if you would like to create a framed montage.

Unframed thumbnails consist of four components: the thumbnail image, the thumbnail border, an optional thumbnail shadow, and an optional thumbnail label area.
81.44.2 Methods

81.44.3 Constructor

**Function:** The constructor.

81.44.4 Properties

81.44.5 handle as Integer

**Function:** The internal object reference.
**Notes:** (Read and Write property)

81.44.6 backgroundColor as GMColorMBS

**Function:** Specifies the background color that thumbnails are imaged upon.
**Notes:** (Read and Write computed property)

81.44.7 compose as Integer

**Function:** Specifies the image composition algorithm for thumbnails.
**Notes:**
This controls the algorithm by which the thumbnail image is placed on the background. Use of OverCompositeOp is recommended for use with images that have transparency. This option may have negative side-effects for images without transparency.
(Read and Write computed property)

81.44.8 fileName as string

**Function:** Specifies the image filename to be used for the generated montage images.
**Notes:**
To handle the case were multiple montage images are generated, a printf-style format may be embedded within the filename. For example, a filename specification of image%02d.miff names the montage images as
81.44.9 fillColor as GMColorMBS

Function: Specifies the fill color to use for the label text.
Notes: (Read and Write computed property)

81.44.10 font as string

Function: Specifies the thumbnail label font.
Notes: (Read and Write computed property)

81.44.11 geometry as GMGeometryMBS

Function: Specifies the size of the generated thumbnail.
Notes: (Read and Write computed property)

81.44.12 gravity as Integer

Function: Specifies the thumbnail positioning within the specified geometry area.
Notes:
If the thumbnail is smaller in any dimension than the geometry, then it is placed according to this specification.
See Gravity constants in GMImageMBS class.
(Read and Write computed property)

81.44.13 label as string

Function: Specifies the format used for the image label.
Notes:
Special format characters may be embedded in the format string to include information about the image.
(Read and Write computed property)

**81.44.14 penColor as GMColorMBS**

**Function:** Specifies the pen color to use for the label text (same as fill).
**Notes:** (Read and Write computed property)

**81.44.15 pointSize as UInt32**

**Function:** Specifies the thumbnail label font size.
**Notes:** (Read and Write computed property)

**81.44.16 shadow as boolean**

**Function:** Enable/disable drop-shadow on thumbnails.
**Notes:** (Read and Write computed property)

**81.44.17 strokeColor as GMColorMBS**

**Function:** Specifies the stroke color to use for the label text.
**Notes:** (Read and Write computed property)

**81.44.18 texture as string**

**Function:** Specifies a texture image to use as montage background.
**Notes:**
The built-in textures "granite:" and "plasma:" are available. A texture is the same as a background image.
(Read and Write computed property)
81.44. CLASS GMTAGEMBS

81.44.19 tile as GMGeometryMBS

Function: Specifies the maximum number of montage columns and rows in the montage.
Notes:
The montage is built by filling out all cells in a row before advancing to the next row. Once the montage has reached the maximum number of columns and rows, a new montage image is started.
(Read and Write computed property)

81.44.20 title as string

Function: Specifies the montage title.
Notes: (Read and Write computed property)

81.44.21 transparentColor as GMColorMBS

Function: Specifies a montage color to set transparent.
Notes:
This option can be set the same as the background color in order for the thumbnails to appear without a background when rendered on an HTML page. For best effect, ensure that the transparent color selected does not occur in the rendered thumbnail colors.
(Read and Write computed property)
81.45 class GMMutexLockMBS

81.45.1 class GMMutexLockMBS

**Function:** The mutex class for GraphicsMagick.

81.45.2 Methods

81.45.3 lock

**Function:** Locks the lock.
**Notes:** Only one thread at a time can get the lock. The other threads will wait when lock is called.

81.45.4 unlock

**Function:** Unlocks the lock.

81.45.5 Properties

81.45.6 handle as Integer

**Function:** The internal object reference.
**Notes:** (Read and Write property)
class GMNotInitializedExceptionMBS

Function: The exception raised if you access a method/property in an object and the object was not initialized properly.

Notes:
Check the message property for details.
Subclass of the GMErrorExceptionMBS class.
81.47  class GMPathArgsMBS

81.47.1  class GMPathArgsMBS


**Function:** This is a class for arguments to the path arc/curve methods in GMGraphicsMBS.

**Example:**

```vbs
dim g as new GMPathArgsMBS(1,2,3,4) // for a QuadraticCurveto
MsgBox str(g.x1)+EndOfLine+str(g.y1)+EndOfLine+str(g.x)+EndOfLine+str(g.y)
```

**Notes:** Due we use this class for three different ways, we have three constructors to fill in the value you need for the calls.

81.47.2  Methods

81.47.3  Constructor


**Function:** The constructor for creating an empty object.

See also:

- 81.47.4 Constructor(radiusX as Double, radiusY as Double, xAxisRotation as Double, largeArcFlag as boolean, sweepFlag as Boolean, x as Double, y as Double) 13776
- 81.47.5 Constructor(x1 as Double, y1 as Double, x as Double, y as Double) 13777
- 81.47.6 Constructor(x1 as Double, y1 as Double, x2 as Double, y2 as Double, x as Double, y as Double) 13777

81.47.4  Constructor(radiusX as Double, radiusY as Double, xAxisRotation as Double, largeArcFlag as boolean, sweepFlag as Boolean, x as Double, y as Double)


**Function:** The constructor to create the arguments object for the PathArc methods in GMGraphicsMBS.

See also:

- 81.47.3 Constructor 13776
- 81.47.5 Constructor(x1 as Double, y1 as Double, x as Double, y as Double) 13777
81.47. **CLASS GMPATHARGSMBS**

- 81.47.6 Constructor(x1 as Double, y1 as Double, x2 as Double, y2 as Double, x as Double, y as Double) 13777

81.47.5 **Constructor(x1 as Double, y1 as Double, x as Double, y as Double)**

MBS GraphicsMagick Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor to create the arguments object for the QuadraticCurveto methods in GMGraphicsMBS.

**Example:**

```vba
dim g as new GMPathArgsMBS(1,2,3,4)
MsgBox str(g.x1)+EndOfLine+str(g.y1)+EndOfLine+str(g.x)+EndOfLine+str(g.y)
```

See also:

- 81.47.3 Constructor 13776
- 81.47.4 Constructor(radiusX as Double, radiusY as Double, xAxisRotation as Double, largeArcFlag as boolean, sweepFlag as Boolean, x as Double, y as Double) 13776
- 81.47.6 Constructor(x1 as Double, y1 as Double, x2 as Double, y2 as Double, x as Double, y as Double) 13777

81.47.6 **Constructor(x1 as Double, y1 as Double, x2 as Double, y2 as Double, x as Double, y as Double)**

MBS GraphicsMagick Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor to create the arguments object for the Curveto methods in GMGraphicsMBS.

**Example:**

```vba
dim g as new GMPathArgsMBS(1,2,3,4,5,6)
MsgBox str(g.x1)+EndOfLine+str(g.y1)+EndOfLine+str(g.x2)+EndOfLine+str(g.y2)+EndOfLine+str(g.x)+EndOfLine+str(g.y)
```

See also:

- 81.47.3 Constructor 13776
- 81.47.4 Constructor(radiusX as Double, radiusY as Double, xAxisRotation as Double, largeArcFlag as boolean, sweepFlag as Boolean, x as Double, y as Double) 13776
- 81.47.5 Constructor(x1 as Double, y1 as Double, x as Double, y as Double) 13777
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81.47.7 Properties

81.47.8 largeArcFlag as Boolean

Function: The large arc flag.
Notes:
Draw longer of the two matching arcs
(Read and Write property)

81.47.9 radiusX as Double

Function: The radius x value.
Notes: (Read and Write property)

81.47.10 radiusY as Double

Function: The radius y value.
Notes: (Read and Write property)

81.47.11 sweepFlag as Boolean

Function: The sweep flag value.
Notes:
Draw arc matching clock-wise rotation.
(Read and Write property)

81.47.12 x as Double

Function: The x value.
Notes:
For an arc: End-point X
(Read and Write property)
81.47. CLASS GMPATHARGSMBS

81.47.13  x1 as Double
**Function:** The x1 value.
**Notes:** (Read and Write property)

81.47.14  x2 as Double
**Function:** The x2 value.
**Notes:** (Read and Write property)

81.47.15  xAxisRotation as Double
**Function:** The x Axis Rotation value.
**Notes:**
Rotation relative to X axis.
(Read and Write property)

81.47.16  y as Double
**Function:** The y value.
**Notes:**
for an arc: End-point Y
(Read and Write property)

81.47.17  y1 as Double
**Function:** The y1 value.
**Notes:** (Read and Write property)
81.47.18  y2 as Double


Function: The y2 value.
Notes: (Read and Write property)
81.48. class GMPixelsMBS

81.48.1 class GMPixelsMBS

Function: Creates an empty pixels object.  
Example:

```vbscript
    dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
    dim g as new GMImageMBS(f)
    dim p as new GMPixelsMBS(g)

    // get pointer to some pixels to read/write
    dim x as ptr = p.get(0, 0, 100, 100)

    // draw a red line to the pixel buffer
    dim o as Integer
    for i as Integer = 0 to 99
        o = 100 * i + i
        x.UInt32(o * 4) = &hFFFF0000
    next

    // write back
    p.sync

    // show
    window1.Backdrop = g.CopyPicture
```

81.48.2 Methods

81.48.3 Constructor(Image as GMImageMBS)

Function: Creates a new Pixels object with the pixels from an image.

81.48.4 get(x as Integer, y as Integer, columns as Integer, rows as Integer) as Ptr

Function: Transfer pixels from the image to the pixel view as defined by the specified region.  
Example:
```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim g as new GMImageMBS(f)
dim p as new GMPixelsMBS(g)

// get pointer to some pixels
dim x as ptr = p.get(0, 0, 100, 100)

// draw a red line to the pixel buffer
dim o as Integer
for i as Integer = 0 to 99
    o = 100 * i + i
    x.UInt32(o * 4) = & hFFFF0000
next

// write back
p.sync

// show
window1.Backdrop = g.CopyPicture
```

Notes: Modified pixels may be subsequently transferred back to the image via sync.

### 81.48.5 getConst(x as Integer, y as Integer, columns as Integer, rows as Integer) as Ptr

MBS GraphicsMagick Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Transfer read-only pixels from the image to the pixel view as defined by the specified region.

### 81.48.6 indexes as Ptr


### 81.48.7 set(x as Integer, y as Integer, columns as Integer, rows as Integer) as Ptr

MBS GraphicsMagick Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Allocate a pixel view region to store image pixels as defined by the region rectangle. **Example:**
dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim g as new GMImageMBS(f)
dim p as new GMPixelsMBS(g)

// get pointer to some pixels to write
dim x as ptr = p.set(0, 0, 100, 100)

// draw a red line to the pixel buffer
dim o as Integer
for i as Integer = 0 to 99
    o = 100 * i + i
    x.UInt32(o * 4) = & hFFFF0000
next

// write back
p.sync

// show
window1.Backdrop = g.CopyPicture

Notes: This area is subsequently transferred from the pixel view to the image via sync.

81.48.8 sync

Function: Transfers the image cache pixels to the image.

81.48.9 Properties

81.48.10 columns as Integer

Function: Width of view.
Example:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim g as new GMImageMBS(f)
dim p as new GMPixelsMBS(g)

// get pointer to some pixels
dim x as ptr = p.get(0, 0, 100, 100)
```
// and show size
MsgBox str(p.columns) + " x " + str(p.rows)
```

**Notes:** (Read only property)

### 81.48.11 handle as Integer

**Function:** The internal object reference.  
**Notes:** (Read and Write property)

### 81.48.12 rows as Integer

**Function:** Height of view.  
**Notes:** (Read only property)

### 81.48.13 x as Integer

**Function:** Left ordinate of view.  
**Notes:** (Read only property)

### 81.48.14 y as Integer

**Function:** Top ordinate of view.  
**Notes:** (Read only property)
class GMTypeMetricMBS

Function: The TypeMetric class provides the means to pass data from the Image class’s TypeMetric method to the user.

Notes:
It provides information regarding font metrics such as ascent, descent, text width, text height, and maximum horizontal advance. The units of these font metrics are in pixels, and that the metrics are dependent on the current Image font (default Ghostscript’s “Helvetica”), pointsize (default 12 points), and x/y resolution (default 72 DPI) settings.

The pixel units may be converted to points (the standard resolution-independent measure used by the typesetting industry) via the following equation:

\[ \text{size\_points} = \frac{(\text{size\_pixels} \times 72)}{\text{resolution}} \]

where resolution is in dots-per-inch (DPI). This means that at the default image resolution, there is one pixel per point.

Note that a font’s pointsize is only a first-order approximation of the font height (ascender + descender) in points. The relationship between the specified pointsize and the rendered font height is determined by the font designer.

See FreeType Glyph Conventions for a detailed description of font metrics related issues.

Methods

Constructor

Properties

ascent as Double

Function: Returns the distance in pixels from the text baseline to the highest/upper grid coordinate used
to place an outline point.

Notes:
Always a positive value.
(Read only property)

81.49.6 descent as Double

Function: Returns the the distance in pixels from the baseline to the lowest grid coordinate used to place
an outline point.
Notes:
Always a negative value.
(Read only property)

81.49.7 maxHorizontalAdvance as Double

Function: Returns the maximum horizontal advance (advance from the beginning of a character to the
beginning of the next character) in pixels.
Notes: (Read only property)

81.49.8 textHeight as Double

Function: Returns text height in pixels.
Notes: (Read only property)

81.49.9 textWidth as Double

Function: Returns text width in pixels.
Notes: (Read only property)
81.50. class GMUnsupportedExceptionMBS

81.50.1 class GMUnsupportedExceptionMBS


**Function:** An exception raised if you call the GM functions on an unsupported platform.

**Notes:**
Check the message property for details.
This exception is currently only used on Windows.
(Windows support may come later)
Subclass of the GMErrorExceptionMBS class.
Chapter 82

Growl

82.1 class GrowlApplicationBridgeMBS

82.1.1 class GrowlApplicationBridgeMBS

Function: The class for Growl Framework 1.3 or newer.
Notes:

A class used to interface with Growl.
This class provides a means to interface with Growl.

Currently it provides a way to detect if Growl is installed and launch the GrowlHelperApp if it’s not already running.

The plugin installs this class for you as delegate, so all the events go the plugin events defined in this class. If you don’t have code in an event, the plugin reports it to Growl as not existant.

Please use LoadFramework before calling other methods.

82.1.2 Methods

82.1.3 bestRegistrationDictionary as Dictionary

Function: Obtains a registration dictionary, filled out to the best of GrowlApplicationBridge’s knowledge.
Example:
CHAPTER 82. GROWL

dim d as Dictionary = GrowlApplicationBridgeMBS.bestRegistrationDictionary

Notes:
This method creates a registration dictionary as best GrowlApplicationBridge knows how.

First, GrowlApplicationBridge contacts the Growl delegate (if there is one) and gets the registration dictionary from that. If no such dictionary was obtained, GrowlApplicationBridge looks in your application’s main bundle for an auto-discoverable registration dictionary file. If that doesn’t exist either, this method returns nil.

Second, GrowlApplicationBridge calls registrationDictionaryByFillingInDictionary with whatever dictionary was obtained. The result of that method is the result of this method.

GrowlApplicationBridge uses this method when you call registerWithDictionary with nil.

This method was introduced in Growl.framework 0.7.

Returns a registration dictionary.

82.1.4 Constructor


82.1.5 Destructor


82.1.6 frameworkInfoDictionary as Dictionary


Example:

dim d as Dictionary = GrowlApplicationBridgeMBS.frameworkInfoDictionary
break // check values in debugger
Notes: You can find e.g. the version in value for the CFBundleVersion key.

82.1.7 IsFrameworkLoaded as boolean

Function: Whether the Growl Framework has been loaded.
Example:
MsgBox str(GrowlApplicationBridgeMBS.IsFrameworkLoaded)

Notes: Returns true if framework is loaded.

82.1.8 isGrowlRunning as boolean

Function: Detects whether GrowlHelperApp is currently running.
Example:
MsgBox str(GrowlApplicationBridgeMBS.isGrowlRunning)

Notes:
Cycles through the process list to find whether GrowlHelperApp is running and returns its findings.
Returns true if GrowlHelperApp is running, false otherwise.

82.1.9 isMistEnabled as boolean

Function: Gives the caller a fairly good indication of whether or not built-in notifications(Mist) will be used.
Notes:
Since this call makes use of isGrowlRunning it is entirely possible for this value to change between call and executing a notification dispatch
Returns true if Growl isn’t reachable and the developer has not opted-out of Mist and the user hasn’t set the global mist enable key to false.
82.1.10  LoadFramework(path as folderitem) as boolean

Function: Loads the growl framework.
Example:

if GrowlApplicationBridgeMBS.LoadFramework(SpecialFolder.Desktop.Child("Growl.framework")) then
    MsgBox "OK"
else
    MsgBox "Failed."
end if

Notes:
Framework should be version 1.3.
Please call this method before you use other Growl methods.
The framework can be inside your application bundle.

82.1.11  notificationDictionaryByFillingInDictionary(notifDict as dictionary) as Dictionary

Function: Tries to fill in missing keys in a notification dictionary.
Notes:
notifDict: The dictionary to fill in.

Returns the dictionary with the keys filled in. This will be a separate instance from notifDict.

This function examines the notifDict for missing keys, and tries to get them from the last known registration dictionary. As of 1.1, the keys that it will look for are: kApplicationName and kApplicationIcon

82.1.12  notifyWithDictionary(userInfo as dictionary)

Function: Notifies using a userInfo dictionary suitable for passing to NSDistributedNotificationCenter.
Notes:
userInfo: The dictionary to notify with.

Before Growl 0.6, your application would have posted notifications using NSDistributedNotificationCenter by creating a userInfo dictionary with the notification data. This had the advantage of allowing you to add
other data to the dictionary for programs besides Growl that might be listening.

This method allows you to use such dictionaries without being restricted to using NSDistributedNotificationCenter. The keys for this dictionary can be found in constants.

82.1.13 notifyWithTitle(title as string, description as string, notificationName as string, iconData as memoryblock = nil, Priority as Integer = 0, isSticky as boolean = false, clickContext as Variant = nil)

Function: Send a Growl notification.
Notes:
This is the preferred means for sending a Growl notification. The notification name and at least one of the title and description are required (all three are preferred). All other parameters may be nil (or 0 or false as appropriate) to accept default values.

If using the Growl-WithInstaller framework, if Growl is not installed the user will be prompted to install Growl. If the user cancels, this method will have no effect until the next application session, at which time when it is called the user will be prompted again. The user is also given the option to not be prompted again. If the user does choose to install Growl, the requested notification will be displayed once Growl is installed and running.

See also:
- 82.1.14 notifyWithTitle(title as string, description as string, notificationName as string, iconData as memoryblock, Priority as Integer, isSticky as boolean, clickContext as Variant, identifier as string)

82.1.14 notifyWithTitle(title as string, description as string, notificationName as string, iconData as memoryblock, Priority as Integer, isSticky as boolean, clickContext as Variant, identifier as string)

Function: Send a Growl notification.
Notes:
This is the preferred means for sending a Growl notification. The notification name and at least one of the title and description are required (all three are preferred). All
other parameters may be nil (or 0 or false as appropriate) to accept default values.

If using the Growl-WithInstaller framework, if Growl is not installed the user will be prompted to install Growl. If the user cancels, this method will have no effect until the next application session, at which time when it is called the user will be prompted again. The user is also given the option to not be prompted again. If the user does choose to install Growl, the requested notification will be displayed once Growl is installed and running.

- **title** The title of the notification displayed to the user.
- **description** The full description of the notification displayed to the user.
- **notifName** The internal name of the notification. Should be human-readable, as it will be displayed in the Growl preference pane.
- **iconData** Memoryblock to show with the notification as its icon. If nil, the application’s icon will be used instead.
- **priority** The priority of the notification. The default value is 0; positive values are higher priority and negative values are lower priority. Not all Growl displays support priority.
- **isSticky** If true, the notification will remain on screen until clicked. Not all Growl displays support sticky notifications.
- **clickContext** A context passed back to the Growl delegate if it implements `growlNotificationWasClicked` and the notification is clicked. Not all display plugins support clicking. The `clickContext` must be plist-encodable (completely of String, Array, Numbers, Dictionary, and Memoryblock types).
- **identifier** An identifier for this notification. Notifications with equal identifiers are coalesced.

See also:

- 82.1.13 `notifyWithTitle(title as string, description as string, notificationName as string, iconData as memoryblock = nil, Priority as Integer = 0, isSticky as boolean = false, clickContext as Variant = nil)`

### 82.1.15 `registerWithDictionary(regDict as dictionary = nil) as boolean`


**Function:** Register your application with Growl without setting a delegate.

**Notes:**

When you call this method with a dictionary, GrowlApplicationBridge registers your application using that dictionary. If you pass nil, GrowlApplicationBridge will ask the delegate (if there is one) for a dictionary, and if that doesn’t work, it will look in your application’s bundle for an auto-discoverable plist.
If you pass a dictionary to this method, it must include the kApplicationName key, unless a delegate is set.

This method is mainly an alternative to the delegate system introduced with Growl 0.6. Without a delegate, you cannot receive callbacks such as growlIsReady (since they are sent to the delegate). You can, however, set a delegate after registering without one.

This method was introduced in Growl.framework 0.7.

**82.1.16 registrationDictionaryByFillingInDictionary(regDict as dictionary) as Dictionary**


**Function:** Tries to fill in missing keys in a registration dictionary.

**Notes:**
This method examines the passed-in dictionary for missing keys, and tries to work out correct values for them. As of 0.7, it uses:

<table>
<thead>
<tr>
<th>Key</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kApplicationName</td>
<td>CFBundleExecutableName</td>
</tr>
<tr>
<td>kApplicationIcon</td>
<td>The data of the icon of the application.</td>
</tr>
<tr>
<td>App Location</td>
<td>The location of the application.</td>
</tr>
<tr>
<td>kNotificationsDefault</td>
<td>kNotificationsDefault</td>
</tr>
</tbody>
</table>

Keys are only filled in if missing; if a key is present in the dictionary, its value will not be changed.

This method was introduced in Growl.framework 0.7.

regDict: The dictionary to fill in.

Returns the dictionary with the keys filled in.
See also:

- **82.1.17 registrationDictionaryByFillingInDictionary(regDict as dictionary, restrictToKeys() as string) as Dictionary**

**82.1.17 registrationDictionaryByFillingInDictionary(regDict as dictionary, restrictToKeys() as string) as Dictionary**


**Function:** Tries to fill in missing keys in a registration dictionary.

**Notes:**
This method examines the passed-in dictionary for missing keys, and tries to work out correct values for them. As of 0.7, it uses:

<table>
<thead>
<tr>
<th>Key</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kApplicationName</td>
<td>CFBundleExecutableName</td>
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<td>kApplicationIcon</td>
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</tr>
<tr>
<td>App Location</td>
<td>The location of the application.</td>
</tr>
<tr>
<td>kNotificationsDefault</td>
<td>kNotificationsDefault</td>
</tr>
</tbody>
</table>

Only those keys that are listed in restrictToKeys array will be filled in. Other missing keys are ignored. Also, keys are only filled in if missing; if a key is present in the dictionary, its value will not be changed.

This method was introduced in Growl.framework 0.7.
regDict: The dictionary to fill in.
restrictToKeys: The keys to fill in. If nil, any missing keys are filled in.

Returns the dictionary with the keys filled in.
See also:

- 82.1.16 registrationDictionaryByFillingInDictionary(regDict as dictionary) as Dictionary

### 82.1.18 registrationDictionaryFromBundle(bundle as Variant = nil) as Dictionary


**Function:** Looks in a bundle for a registration dictionary.

**Example:**

```Dim d As Dictionary = GrowlApplicationBridgeMBS.registrationDictionaryFromBundle(NSBundleMBS.mainBundle)```

**Notes:**

Bundle must be an instance of NSBundleMBS class.

This method looks in a bundle for an auto-discoverable registration dictionary file using NSBundle methods. If it finds one, it loads the file using dictionaryWithContentsOfFile and returns the result.

If you pass nil as the bundle, the main bundle is examined.

This method does not attempt to clean up the dictionary in any way - for example, if it is missing the
<code>GROWL_APP_NAME</code> key, the result will be missing it too. Use registrationDictionaryByFillingInDictionary to try to fill in missing keys.

This method was introduced in Growl.framework 0.7.
Returns a registration dictionary.

### 82.1.19 registrationDictionaryFromDelegate as Dictionary

**Function:** Asks the delegate for a registration dictionary.
**Notes:**
If no delegate is set, or if the delegate’s registrationDictionaryForGrowl method returns nil, this method returns nil.

This method does not attempt to clean up the dictionary in any way - for example, if it is missing the kApplicationName key, the result will be missing it too. Use registrationDictionaryByFillingInDictionary to try to fill in missing keys.

This method was introduced in Growl.framework 0.7.
Returns a registration dictionary.

### 82.1.20 reregisterGrowlNotifications

**Function:** Reregister the notifications for this application.
**Notes:**
This method does not normally need to be called. If your application changes what notifications it is registering with Growl, call this method to have the Growl delegate’s registrationDictionaryForGrowl method called again and the Growl registration information updated.

This method is now implemented using registerWithDictionary.

### 82.1.21 shouldUseBuiltInNotifications as boolean

**Function:** The current opt-in state of the framework’s use of the Mist display style.
**Notes:**
Opt-out mechanism for the mist notification style in the event growl can’t be reached.

If growl is unavailable due to not being installed or as a result of being turned off then this option can enable/disable a built-in fire and forget display style.

Specifies whether or not the developer wants to opt-in (default) or opt out of the built-in Mist style in the event Growl is unreachable.  
(Read and Write computed property)

82.1.22  willRegisterWhenGrowlIsReady as boolean

MBS MacExtras Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether to register with Growl when Growl launches (or not). Notes: When Growl has started listening for notifications, it posts a GROWL_IS_READY notification on the Distributed Notification Center. GrowlApplicationBridge listens for this notification, using it to perform various tasks (such as calling your delegate’s growlIsReady method, if it has one). If this method is called with true, one of those tasks will be to reregister with Growl (in the manner of reregisterGrowlNotifications). This attribute is automatically set back to false (the default) after every GROWL_IS_READY notification. Value: True, if you want GrowlApplicationBridge to register with Growl when next it is ready; false if not. (Read and Write computed property)

82.1.23  Properties

82.1.24  Handle as Integer

MBS MacExtras Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The internal handle for the Growl object. Notes: (Read and Write property)

82.1.25  Events

82.1.26  applicationIconDataForGrowl as Memoryblock

MBS MacExtras Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Return the data to treat as the application icon.
Notes:
The delegate may optionally return a memoryblock object to use as the application icon; if this is not implemented, the application’s own icon is used. This is not generally needed.
Return the memoryblock to treat as the application icon.
Deprecated In version 1.1, in favor of `applicationIconForGrowl`.

### 82.1.27 `applicationIconForGrowl` as Variant

**Function:** Return the NSImage to treat as the application icon.
**Notes:**
The delegate may optionally return an NSImageMBS object to use as the application icon. If this method is not implemented, `applicationIconDataForGrowl` is tried. If that method is not implemented, the application’s own icon is used. Neither method is generally needed.

Return a NSImageMBS to treat as the application icon.

### 82.1.28 `applicationNameForGrowl` as string

**Function:** Return the name of this application which will be used for Growl bookkeeping.
**Notes:**
This name is used both internally and in the Growl preferences.

This should remain stable between different versions and incarnations of your application.
For example, "SurfWriter" is a good app name, whereas "SurfWriter 2.0" and "SurfWriter Lite" are not.

You do not need to implement this method if you are providing the application name elsewhere, meaning in an auto-discoverable plist file in your app bundle or in the result of `registrationDictionaryForGrowl`.

Return the name of the application using Growl.

### 82.1.29 `growlIsReady`

**Function:** Informs the delegate that Growl has launched.
**Notes:** Informs the delegate that Growl (specifically, the GrowlHelperApp) was launched successfully. The
application can take actions with the knowledge that Growl is installed and functional.

82.1.30  growlNotificationTimedOut(clickContext as Variant)

Function: Informs the delegate that a Growl notification timed out.
Notes:
Informs the delegate that a Growl notification timed out. It is only sent for notifications sent with a non-nil clickContext, so if you want to receive a message when a notification is clicked, clickContext must not be nil when calling notifyWithTitle.

clickContext: The clickContext passed when displaying the notification originally via notifyWithTitle.

82.1.31  growlNotificationWasClicked(clickContext as Variant)

Function: Informs the delegate that a Growl notification was clicked.
Notes:
Informs the delegate that a Growl notification was clicked. It is only sent for notifications sent with a non-nil clickContext, so if you want to receive a message when a notification is clicked, clickContext must not be nil when calling notifyWithTitle.

clickContext: The clickContext passed when displaying the notification originally via notifyWithTitle.

82.1.32  hasNetworkClientEntitlement as boolean

Function: Used only in sandboxed situations since we don’t know whether the app has com.apple.security.network.client entitlement.
Notes: GrowlDelegate calls to find out if we have the com.apple.security.network.client entitlement, since we can’t find this out without hitting the sandbox. We only call it if we detect that the application is sandboxed.

82.1.33  registrationDictionaryForGrowl as dictionary

Function: Return the dictionary used to register this application with Growl.
Notes:
The returned dictionary gives Growl the complete list of notifications this application will ever send, and it also specifies which notifications should be enabled by default. Each is specified by an array of strings.

For most applications, these two arrays can be the same (if all sent notifications should be displayed by default).

The strings of these arrays will correspond to the notificationName parameter passed in notifyWithTitle calls.

The dictionary should have the required key object pairs:

```plaintext
key: kNotificationsAll object: Array of Strings
key: kNotificationsDefault object: Array of Strings
```

The dictionary may have the following key object pairs:

```plaintext
key: kNotificationsHumanReadableNames
object: Dictionary of key: notification name object: human-readable notification name
```

You do not need to implement this method if you have an auto-discoverable plist file in your app bundle. Return the Dictionary to use for registration.

### 82.1.34 Constants

#### 82.1.35 kApplicationIcon = ”ApplicationIcon”

MBS MacExtras Plugin, Plugin Version: 11.3. **Function**: One of the keys for the registration dictionary. **Notes:**

The image data for your application's icon. Image data representing your application's icon. This may be superimposed on a notification icon as a badge, used as the notification icon when a notification-specific icon is not supplied, or ignored altogether, depending on the display. Must be in a format supported by NSImage, such as TIFF, PNG, GIF, JPEG, BMP, PICT, or PDF.

Optional. Not supported by all display plugins.

#### 82.1.36 kApplicationId = ”ApplicationId”

MBS MacExtras Plugin, Plugin Version: 11.3. **Function**: One of the keys for the registration dictionary. **Notes:**
The bundle identifier of your application. This key should be unique for your application while there may be several applications with the same kApplicationName. This key is optional.

82.1.37 kApplicationName = ”ApplicationName”

MBS MacExtras Plugin, Plugin Version: 11.3. Function: One of the keys for the registration dictionary.
Notes:
The name of your application. This should remain stable between different versions and incarnations of your application. For example, ”SurfWriter” is a good app name, whereas ”SurfWriter 2.0” and ”SurfWriter Lite” are not.

82.1.38 kApplicationPID = ”ApplicationPID”

MBS MacExtras Plugin, Plugin Version: 11.3. Function: One of the keys for the notification dictionary.
Notes:
The process identifier of the process which sends this notification. If this field is set, the application will only receive clicked and timed out notifications which originate from this process.
Optional.

82.1.39 kGrowlNotificationIdentifier = ”GrowlNotificationIdentifier”

MBS MacExtras Plugin, Plugin Version: 11.3. Function: One of the keys for the notification dictionary.
Notes:
An identifier for the notification for coalescing purposes.
Notifications with the same identifier fall into the same class; only the last notification of a class is displayed on the screen. If a notification of the same class is currently being displayed, it is replaced by this notification.
Optional. Not supported by all display plugins.
82.1.40 kNotificationAppIcon = "NotificationAppIcon"

MBS MacExtras Plugin, Plugin Version: 11.3. **Function:** One of the keys for the notification dictionary. **Notes:**

Image data for the application icon, in case kNotificationAppIcon does not apply for some reason. Image data be in a format supported by NSImage, such as TIFF, PNG, GIF, JPEG, BMP, PICT, or PDF.

Optional. Not supported by all display plugins.

82.1.41 kNotificationClickContext = "NotificationClickContext"

MBS MacExtras Plugin, Plugin Version: 11.3. **Function:** One of the keys for the notification dictionary. **Notes:**

Identifies which notification was clicked.

An identifier for the notification for clicking purposes.

This will be passed back to the application when the notification is clicked. It must be plist-encodable (a data, dictionary, array, number, or string), and it should be unique for each notification you post. A good click context would be a UUID string returned by UUIDMBS class.

Optional. Not supported by all display plugins.

82.1.42 kNotificationDescription = "NotificationDescription"

MBS MacExtras Plugin, Plugin Version: 11.3. **Function:** One of the keys for the notification dictionary. **Notes:**

The description to display in the notification. The description should be longer and more verbose than the title. The description usually tells the subject of the action, e.g. "Growl-0.6.dmg downloaded in 5.02 minutes".

82.1.43 kNotificationIcon = "NotificationIcon"

MBS MacExtras Plugin, Plugin Version: 11.3. **Function:** One of the keys for the notification dictionary. **Notes:**

Image data for the application icon, in case kNotificationAppIcon does not apply for some reason. Image data be in a format supported by NSImage, such as TIFF, PNG, GIF, JPEG, BMP, PICT, or PDF.
CHAPTER 82. GROWL

Optional. Not supported by all display plugins.

82.1.44 kNotificationName = "NotificationName"

MBS MacExtras Plugin, Plugin Version: 11.3. **Function:** One of the keys for the notification dictionary. **Notes:**
The name of the notification.
The name of the notification. Note that if you do not define kNotificationsHumanReadableNames when registering your ticket originally this name will the one displayed within the Growl preference pane and should be human-readable.

82.1.45 kNotificationPriority = "NotificationPriority"

MBS MacExtras Plugin, Plugin Version: 11.3. **Function:** One of the keys for the notification dictionary. **Notes:**
The priority of the notification as an integer number from -2 to +2 (+2 being highest).
Optional. Not supported by all display plugins.

82.1.46 kNotificationProgress = "NotificationProgress"

MBS MacExtras Plugin, Plugin Version: 11.3. **Function:** One of the keys for the notification dictionary. **Notes:**
If this key is set, it should contain a double value which describes some sort of progress (from 0.0 to 100.0).
If this is key is not set, no progress bar is shown.
Optional. Not supported by all display plugins.

82.1.47 kNotificationsAll = "AllNotifications"

MBS MacExtras Plugin, Plugin Version: 11.3. **Function:** One of the keys for the registration dictionary. **Notes:** The array of all notifications your application can send.
82.1.48  kNotificationsDefault = "DefaultNotifications"

MBS MacExtras Plugin, Plugin Version: 11.3. Function: One of the keys for the registration dictionary. Notes:
The array of notifications to turn on by default.
These are the names of the notifications that should be enabled by default when your application registers for the first time. If your application reregisters, Growl will look here for any new notification names found in kNotificationsAll, but ignore any others.

82.1.49  kNotificationsDescriptions = "NotificationDescriptions"

MBS MacExtras Plugin, Plugin Version: 11.3. Function: One of the keys for the registration dictionary. Notes:
A dictionary of descriptions of _when_ each notification occurs

This is an Dictionary whose keys are kNotificationName strings and whose objects are descriptions of _when_ each notification occurs, such as "You received a new mail message" or "A file finished downloading".

This key is optional.

82.1.50  kNotificationsHumanReadableNames = "HumanReadableNames"

MBS MacExtras Plugin, Plugin Version: 11.3. Function: One of the keys for the registration dictionary. Notes:
A dictionary of human-readable names for your notifications.

By default, the Growl UI will display notifications by the names given in kNotificationsAll which correspond to the kNotificationName. This dictionary specifies the human-readable name to display.
The keys of the dictionary are kNotificationName strings; the objects are the human-readable versions.
For any kNotificationName not specific in this dictionary, the kNotificationName will be displayed.

This key is optional.

82.1.51  kNotificationSticky = "NotificationSticky"

MBS MacExtras Plugin, Plugin Version: 11.3. Function: One of the keys for the notification dictionary. Notes:
A Boolean number controlling whether the notification is sticky. Optional. Not supported by all display plugins.

### 82.1.52 `kNotificationTitle = "NotificationTitle"`

MBS MacExtras Plugin, Plugin Version: 11.3. **Function:** One of the keys for the notification dictionary. 
**Notes:**

The title to display in the notification. 
Should be very brief. The title usually says what happened, e.g. "Download complete".

### 82.1.53 `kTicketVersion = "TicketVersion"`

MBS MacExtras Plugin, Plugin Version: 11.3. **Function:** One of the keys for the registration dictionary. 
**Notes:**

The version of your registration ticket. 
Include this key in a ticket.plist file that you put in your application bundle for auto-discovery. The current ticket version is 1.
82.2. CLASS GROWLMBS

82.2  class GrowlMBS

82.2.1  class GrowlMBS

Function: A class for all the global growl functions.
Notes: On the growl website you will find more information:  
http://growl.info

The plugin is compatible to framework v0.7.5.

82.2.2  Methods

82.2.3  IsInstalled as boolean

Function: Determines whether the Growl prefpane and its helper app are installed.  
Notes: Returns true if Growl is installed, false otherwise.

82.2.4  IsRunning as boolean

Function: Cycles through the process list to find whether GrowlHelperApp is running.  
Notes: Warning: This function crashes with Growl version 0.7.5.

Returns true if Growl is running, false otherwise.

82.2.5  LaunchIfInstalled as boolean

Function: Launches GrowlHelperApp if it is not already running.  
Notes: Calls the Launched event after the helper application was launched.  
Returns true on success and false on any error.
82.2.6 LoadFramework(file as folderitem) as boolean

MBS MacOSX Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Loads the framework from a given folderitem.
**Notes:**
Must be called before using any other function.
Returns true on success and false on any error.

The best thing is to take the framework and copy it into the application bundle with a build step so you can locate and load it easily.

82.2.7 Register

MBS MacOSX Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Registers the current application.
**Notes:**
Must be called before posting notifications.

If you are using Growl-WithInstaller.framework, and an older version of Growl is installed on the user’s system, the user will automatically be prompted to update.

This will fail if you don’t have a bundle identifier on your application.

82.2.8 SetAllNotificationArray(names() as string)

MBS MacOSX Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Contains the names of all notifications your application may post.
**Notes:** You must call this function before using Register.

82.2.9 SetDefaultNotificationArray(names() as string)

MBS MacOSX Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Names of notifications that should be enabled by default.
**Notes:**
This array can be set optional.
If not set, all notifications will be enabled by default.
82.2. CLASS GROWLMBS

82.2.10 Properties

82.2.11 ApplicationIconData as String

MBS MacOSX Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The icon to display in the notifications.

**Notes:**
The data can be in any format supported by NSImage. As of Mac OS X 10.3, this includes the .icns, TIFF, JPEG, GIF, PNG, PDF, and PICT formats.

If this is not supplied, Growl will look up your application’s icon by its application name.
(Read and Write property)

82.2.12 ApplicationName as String

MBS MacOSX Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This name is used both internally and in the Growl preferences.

**Notes:**
This should remain stable between different versions and incarnations of your application.
For example, ”SurfWriter” is a good app name, whereas ”SurfWriter 2.0” and ”SurfWriter Lite” are not.
(Read and Write property)

82.2.13 InstallationInformation as String

MBS MacOSX Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The installation window information text.

**Notes:**
This information may be as long or short as desired (the window will be sized to fit it). If Growl is not installed, it will be displayed to the user as an explanation of what Growl is and what it can do in your application.
It should probably note that no download is required to install.

If this is empty, Growl will use a default, localized explanation.

Only used if you’re using Growl-WithInstaller.framework. Otherwise, this member is ignored.
(Read and Write property)
82.2.14 InstallationWindowTitle as String

MBS MacOSX Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The installation window title. **Notes:** Leave empty for default localized title. (Read and Write property)

82.2.15 UpdateInformation as String

MBS MacOSX Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The update window information text. **Notes:** This information may be as long or short as desired (the window will be sized to fit it). If an older version of Growl is installed, it will be displayed to the user as an explanation that an updated version of Growl is included in your application and no download is required.

If this is empty, Growl will use a default, localized explanation.

Only used if you’re using Growl-WithInstaller.framework. Otherwise, this member is ignored. (Read and Write property)

82.2.16 UpdateWindowTitle as String

MBS MacOSX Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The update window information title. **Notes:** Leave empty to use default text. (Read and Write property)

82.2.17 WillRegisterWhenGrowlIsReady as boolean

MBS MacOSX Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Tells framework to register with Growl when Growl launches (or not). **Notes:** (Read and Write computed property)
82.2. CLASS GROWLMBS

82.2.18 Events

82.2.19 Launched

MBS MacOSX Plugin, Plugin Version: 7.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
An event to inform application that the helper application was launched.
82.3 class GrowlNotificationMBS

82.3.1 class GrowlNotificationMBS

MBS MacOSX Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class for all the global notification related functions.

**Notes:**
You may subclass this class to fill the events in case you need them.

On this website you will find more information:
http://growl.info

The plugin is compatible to framework v0.7.5.

82.3.2 Methods

82.3.3 PostNotification

MBS MacOSX Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Posts a Growl notification.

**Notes:**
This is the preferred means for sending a Growl notification.
The notification name and at least one of the title and description are required (all three are preferred). All other parameters may be empty (or 0 or false as appropriate) to accept default values.

If using the Growl-WithInstaller framework, if Growl is not installed the user will be prompted to install Growl.
If the user cancels, this function will have no effect until the next application session, at which time when it is called the user will be prompted again. The user is also given the option to not be prompted again.
If the user does choose to install Growl, the requested notification will be displayed once Growl is installed and running.

82.3.4 Properties

82.3.5 Description as String

MBS MacOSX Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The description supplements the title with more information.

**Notes:**
It is usually longer and sometimes involves a list of subjects. For example, for a 'Download complete' notification, the description might have one filename per line. GrowlMail in Growl 0.6 uses a description of '%d new mail(s)' (formatted with the number of messages).

### 82.3.6 IconData as String

MBS MacOSX Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The icon to display in the notification.

**Notes:**
The data can be in any format supported by NSImage. As of Mac OS X 10.3, this includes the .icns, TIFF, JPEG, GIF, PNG, PDF, and PICT formats.

If this is not supplied, Growl will look up your application’s icon by its application name.

(Read and Write property)

### 82.3.7 Identifier as String

MBS MacOSX Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The identifier to use for the application.

**Notes:**
Optional. Growl will use the bundle identifier of your application if you don’t have one.

(Read and Write property)

### 82.3.8 IsSticky as Boolean

MBS MacOSX Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Requests that a notification stay on-screen until dismissed explicitly.

**Notes:**
notifications disappear after a certain amount of time. Sticky notifications, however, remain on-screen until the user dismisses them explicitly, usually by clicking them.

Sticky notifications were introduced in Growl 0.6. Most notifications should not be sticky. Not all displays support sticky notifications, and the user may choose in Growl’s preference pane to force the notification to be sticky or non-sticky, in which case the sticky bit in the notification will be ignored.

(Read and Write property)
82.3.9 Name as String

MBS MacOSX Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The notification name distinguishes one type of notification from another.

**Notes:**
The name should be human-readable, as it will be displayed in the Growl preference pane.

The name is used in the All Notification Array and the Default Notification Array.
(Read and Write property)

82.3.10 Priority as Integer

MBS MacOSX Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The priority of the notification.

**Notes:**
Priority is new in Growl 0.6, and is represented as a signed integer from -2 to +2. 0 is Normal priority, -2 is Very Low priority, and +2 is Very High priority.

Not all displays support priority. If you do not wish to assign a priority to your notification, assign 0.
(Read and Write property)

82.3.11 Title as String

MBS MacOSX Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A notification’s title describes the notification briefly.

**Notes:**
It should be easy to read quickly by the user.
(Read and Write property)

82.3.12 Events

82.3.13 Clicked

MBS MacOSX Plugin, Plugin Version: 7.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
This notification was clicked.
82.3.14 TimeOut

MBS MacOSX Plugin, Plugin Version: 7.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** This notification timed out.
82.4 class WindowsGrowlMBS

82.4.1 class WindowsGrowlMBS

MBS Win Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The class for sending growl notifications on Windows.

82.4.2 Methods

82.4.3 Constructor(protocol as Integer, password as string, application as string, notifications() as string)

MBS Win Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Creates a new Growl object to send notifications to a local server.

**Example:**

```plaintext
dim notifications(-1) as string
Notifications.Append "MyNotification"

dim g as new WindowsGrowlMBS(WindowsGrowlMBS.kGrowlUDP, "pass", "MyApp", notifications)
```

See also:

- 82.4.4 Constructor(protocol as Integer, server as string, password as string, application as string, notifications() as string)

82.4.4 Constructor(protocol as Integer, server as string, password as string, application as string, notifications() as string)

MBS Win Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Creates a new Growl object to send notifications to a remote server.

**Example:**

```plaintext
dim notifications(-1) as string
Notifications.Append "MyNotification"

dim g as new WindowsGrowlMBS(WindowsGrowlMBS.kGrowlUDP, "192.168.1.12", "pass", "MyApp", notifications)
```
82.4. CLASS WINDOWSGROWLMBS

See also:

- 82.4.3 Constructor(protocol as Integer, password as string, application as string, notifications() as string)

82.4.5 Notify(notification as string, title as string, message as string)

MBS Win Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Send a notification.

**Example:**

```vba
dim g as WindowsGrowlMBS // your growl instance
g.Notify("MyNotification", "Just a test to show what growl can do for you.", "http://www.mbsplugins.de/")
```

**Notes:**

- notification: Name of notification
- title: Title text to show
- message: Message text.

See also:

- 82.4.6 Notify(notification as string, title as string, message as string, url as string, icon as string)

82.4.6 Notify(notification as string, title as string, message as string, url as string, icon as string)

MBS Win Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Send a notification.

**Example:**

```vba
dim g as WindowsGrowlMBS // your growl instance
g.Notify("MyNotification", "Just a test", "to show what growl can do for you.")
```

**Notes:**

- notification: Name of notification
- title: Title text to show
- message: Message text.
- URL: The URL to display with message.
- icon: The URL to the icon for this message.

See also:

- 82.4.5 Notify(notification as string, title as string, message as string)
82.4.7 Properties

82.4.8 Application as string

MBS Win Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The application name. Notes: (Read only property)

82.4.9 Password as string

MBS Win Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The password. Notes: (Read only property)

82.4.10 Protocol as Integer

MBS Win Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The protocol to use. Notes: (Read only property)

82.4.11 Server as string

MBS Win Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The server address. Notes: (Read only property)

82.4.12 Constants

82.4.13 kGrowlTCP = 1


82.4.14 kGrowlUDP = 0

Chapter 83

Hotkey

83.1 class HotKeyMBS

83.1.1 class HotKeyMBS

Notes: This is a crossplatform replacement for our CarbonHotKeyMBS class.

83.1.2 Methods

83.1.3 Close

Notes: Same as destructor, but to unregister hotkey now.

83.1.4 Constructor(KeyCode as Integer, Modifiers as Integer, Exclusive as Boolean = false)

Notes: The plugin may not check if combination is allowed, makes sense or can be pressed.
83.1.5 **KeyCodeForText(name as string) as Integer**

MBS Util Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Queries a keycode for a character.  
**Example:**

MsgBox "Return: " + str(HotKeyMBS.KeyCodeForText("return"))

**Notes:**
Helper function to return platform specific key codes for various keys.  
Plugin has a list based on the constants defined by Apple and Microsoft for keys.

83.1.6 **Properties**

83.1.7 **Exclusive as Boolean**

MBS Util Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Whether exclusive ownership of hotkey was requested.  
**Notes:** (Read only property)

83.1.8 **Handle as Integer**

MBS Util Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The internal object reference.  
**Notes:**
Only used on Mac OS X.  
(Read only property)

83.1.9 **ID as Integer**

MBS Util Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The internal ID of the hotkey.  
**Notes:** (Read only property)
83.1. CLASS HOTKEYMBS

83.1.10 KeyCode as Integer

**Function:** The keycode registered.
**Notes:** (Read only property)

83.1.11 Modifiers as Integer

**Function:** The modifiers used at registration.
**Notes:** (Read only property)

83.1.12 Events

83.1.13 KeyDown

**Function:** The key down event.

83.1.14 KeyUp

**Function:** The key up event.

83.1.15 Constants

83.1.16 AlphaKey = &h400

MBS Util Plugin, Plugin Version: 15.2. **Function:** One of the modifier flags.
**Notes:** Alpha Lock

83.1.17 CommandKey = &h100

MBS Util Plugin, Plugin Version: 15.2. **Function:** One of the modifier flags.
**Notes:** Command Key on Mac, Windows Key on Windows.
83.1.18  **ControlKey = & h1000**

MBS Util Plugin, Plugin Version: 15.2. **Function:** One of the modifier flags.  
**Notes:** Control Key

83.1.19  **OptionKey = & h800**

MBS Util Plugin, Plugin Version: 15.2. **Function:** One of the modifier flags.  
**Notes:** Option/Alt Key

83.1.20  **ShiftKey = & h200**

MBS Util Plugin, Plugin Version: 15.2. **Function:** One of the modifier flags.  
**Notes:** Shift Key
Chapter 84

HTMLViewer Linux

84.1 class LinuxJavaScriptContextMBS

84.1.1 class LinuxJavaScriptContextMBS

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The class for a javascript context. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

84.1.2 Methods

84.1.3 CheckScriptSyntax(script as string, sourceURL as string = "", StartLineNumber as Integer = 0) as boolean

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Checks for syntax errors in a string of JavaScript. **Notes:**

- script: A string containing the script to check for syntax errors.
- sourceURL: A string containing a URL for the script’s source file. This is only used when reporting exceptions. Pass "" if you do not care to include source file information in exceptions.
- startingLineNumber: An integer value specifying the script’s starting line number in the file located at sourceURL. This is only used when reporting exceptions.
- exception: A string in which to store a syntax error exception, if any.

Returns true if the script is syntactically correct, otherwise false.

See also:

- 84.1.4 CheckScriptSyntax(script as string, sourceURL as string, StartLineNumber as Integer, byref
84.1.4 CheckScriptSyntax(script as string, sourceURL as string, StartLineNumber as Integer, byref JSExtension as string) as boolean

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Checks for syntax errors in a string of JavaScript.  
**Notes:**  
script: A string containing the script to check for syntax errors.  
sourceURL: A string containing a URL for the script’s source file. This is only used when reporting exceptions. Pass "" if you do not care to include source file information in exceptions.  
startingLineNumber: An integer value specifying the script’s starting line number in the file located at sourceURL. This is only used when reporting exceptions.  
exception: A string in which to store a syntax error exception, if any.  
Returns true if the script is syntactically correct, otherwise false.  
See also:  
- 84.1.3 CheckScriptSyntax(script as string, sourceURL as string = ""), StartLineNumber as Integer = 0) as boolean

84.1.5 Constructor

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**  
The private constructor.

84.1.6 Destructor

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**  
The destructor.

84.1.7 EvaluateScript(script as string, sourceURL as string = ""), StartLineNumber as Integer = 0) as string

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**  
Evaluates a string of JavaScript.  
**Notes:**  
script A string containing the script to evaluate.  
sourceURL: A string containing a URL for the script’s source file. This is only used when reporting exceptions. Pass "" if you do not care to include source file information in exceptions.  
startingLineNumber: An integer value specifying the script’s starting line number in the file located at
sourceURL. This is only used when reporting exceptions.
exception A string in which to store an exception, if any.
Returns the value as string that results from evaluating script, or "" if an exception is thrown.
See also:

- 84.1.8 EvaluateScript(script as string, sourceURL as string, StartLineNumber as Integer, byref JSException as string) as string

84.1.8 EvaluateScript(script as string, sourceURL as string, StartLineNumber as Integer, byref JSException as string) as string

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Evaluates a string of JavaScript.
**Notes:**

script A string containing the script to evaluate.
sourceURL: A string containing a URL for the script’s source file. This is only used when reporting exceptions. Pass "" if you do not care to include source file information in exceptions.
startingLineNumber: An integer value specifying the script’s starting line number in the file located at sourceURL. This is only used when reporting exceptions.
exception A string in which to store an exception, if any.
Returns the value as string that results from evaluating script, or "" if an exception is thrown.
See also:

- 84.1.7 EvaluateScript(script as string, sourceURL as string = "", StartLineNumber as Integer = 0) as string

84.1.9 GarbageCollect

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Performs a JavaScript garbage collection.
**Notes:** You should not need to call this.

84.1.10 Properties

84.1.11 Handle as Integer

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
The internal object reference.
**Notes:** (Read and Write property)
84.1.12 HTMLViewer as HTMLViewer

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The reference to the parent HTMLViewer.
**Notes:** (Read and Write property)
84.2. class LinuxWebBackForwardListMBS

84.2.1 class LinuxWebBackForwardListMBS

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The history of a WebView.

84.2.2 Methods

84.2.3 AddItem(item as LinuxWebHistoryItemMBS)

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Adds the item to the WebBackForwardList.

84.2.4 BackItem as LinuxWebHistoryItemMBS

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Returns the item that precedes the current item.

84.2.5 BackLength as Integer

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Returns the number of items that preced the current item.

84.2.6 Clear

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Clears the webBackForwardList by removing all its elements. **Notes:** Note that not even the current page is kept in list when cleared so you would have to add it later. This method also clears the list of visited links which means that all links will appear unvisited.

84.2.7 Constructor(webview as LinuxWebViewMBS)

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Creates an instance of the back forward list with a controlling WebView.
84.2.8 ContainsItem(item as LinuxWebHistoryItemMBS) as boolean

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Checks if item is in the back forward list.

84.2.9 CurrentItem as LinuxWebHistoryItemMBS

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The current item. **Notes:** Returns a nil value if the back forward list is empty.

84.2.10 Destructor

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The destructor.

84.2.11 ForwardItem as LinuxWebHistoryItemMBS

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The next item forward in the list. **Notes:** Returns a nil value if there nothing that succeeds the current item.

84.2.12 ForwardLength as Integer

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Returns the number of items that succeed the current item.

84.2.13 GoBack

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Steps backward in the back forward list.

84.2.14 GoForward

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Steps forward in the back forward list.
84.2.15 GoToItem(item as LinuxWebHistoryItemMBS)

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Go to the specified item in the back forward list.

84.2.16 Item(index as Integer) as LinuxWebHistoryItemMBS

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Returns the item at a given index relative to the current item.

84.2.17 Properties

84.2.18 Handle as Integer

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
The internal object reference.
**Notes:** (Read and Write property)

84.2.19 HTMLViewer as HTMLViewer

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
The parent htmlviewer.
**Notes:** (Read and Write property)

84.2.20 Limit as Integer

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
The maximum limit of the back forward list.
**Notes:** (Read and Write computed property)
84.3 class LinuxWebCookieMBS

84.3.1 class LinuxWebCookieMBS

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
The class for a cookie used with WebKit on Linux.

**Example:**
```
    dim c as new LinuxWebCookieMBS("test", "12345", "mbsplugins.de", ",", LinuxWebCookieMBS.kMaxAge-Week)
    MsgBox c.Expires.ShortDate+" "+c.Expires.ShortTime
```

**Notes:**
LinuxWebCookieMBS implements HTTP cookies, primarily as described by the original Netscape cookie specification, but with slight modifications based on RFC 2109, Microsoft’s HttpOnly extension attribute, and observed real-world usage (and, in particular, based on what Firefox does).

An HTTP cookie.

name and value will be set for all cookies. If the cookie is generated from a string that appears to have no name, then name will be the empty string.

domain and path give the host or domain, and path within that host/domain, to restrict this cookie to. If domain starts with ".", that indicates a domain (which matches the string after the ".", or any hostname that has domain as a suffix). Otherwise, it is a hostname and must match exactly.

expires will be non-nil if the cookie uses either the original "expires" attribute, or the "max-age" attribute specified in RFC 2109. If expires is nil, it indicates that neither "expires" nor "max-age" was specified, and the cookie expires at the end of the session.

If http_only is set, the cookie should not be exposed to untrusted code (eg, javascript), so as to minimize the danger posed by cross-site scripting attacks.

84.3.2 Methods

84.3.3 Constructor(name as string, value as string, domain as string, path as string, maxAge as Integer)

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Creates a new cookie with the given attributes.
Example:

```vbnet
dim c as new LinuxWebCookieMBS("test", "12345", "mbsplugins.de", ",", LinuxWebCookieMBS.kMaxAge-Week)
MsgBox str(c.Name)
```

Notes:

Use Secure and HTTPOnly properties if you need to set those attributes on the returned cookie.

maxAge is used to set the "expires" attribute on the cookie; pass -1 to not include the attribute (indicating that the cookie expires with the current session), 0 for an already-expired cookie, or a lifetime in seconds. You can use the constants kMaxAgeHour, kMaxAgeDay, kMaxAgeWeek and kMaxAgeYear (or multiples thereof) to calculate this value. (If you really care about setting the exact time that the cookie will expire, use Expire property.)

name: cookie name
value: cookie value
domain: cookie domain or hostname
path: cookie path, or ""
maxage: max age of the cookie, or -1 for a session cookie

### 84.3.4 Copy as LinuxWebCookieMBS

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Creates a copy.

**Notes:** If you want to edit an existing cookie, please make a copy first.

### 84.3.5 Destructor

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The destructor.

### 84.3.6 Equal(other as LinuxWebCookieMBS) as boolean

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Compares two cookies.

**Notes:** Returns true if they are equal.
CHAPTER 84. HTMLVIEWER LINUX

84.3.7 SetMaxAge(value as Integer)

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Sets cookie’s max age to value.

**Example:**

```vba
dim c as new LinuxWebCookieMBS("test", "12345", "mbsplugins.de", ",", LinuxWebCookieMBS.kMaxAge-Hour)
c.SetMaxAge(c.kMaxAgeWeek)
MsgBox c.ToSetCookieHeader
```

**Notes:**

If max_age is -1, the cookie is a session cookie, and will expire at the end of the client’s session. Otherwise, it is the number of seconds until the cookie expires. You can use the constants kMaxAgeHour, kMaxAgeDay, kMaxAgeWeek and kMaxAgeYear (or multiples thereof) to calculate this value. (A value of 0 indicates that the cookie should be considered already-expired.)

(This sets the same property as Expire.)

84.3.8 ToCookieHeader as string

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Serializes cookie in the format used by the Cookie header (ie, for returning a cookie from to a server).

**Example:**

```vba
dim c as new LinuxWebCookieMBS("test", "12345", "mbsplugins.de", ",", LinuxWebCookieMBS.kMaxAge-Week)
MsgBox c.ToCookieHeader
```

84.3.9 ToSetCookieHeader as string

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Serializes cookie in the format used by the Set-Cookie header (ie, for sending a cookie from to a client).

**Example:**

```vba
dim c as new LinuxWebCookieMBS("test", "12345", "mbsplugins.de", ",", LinuxWebCookieMBS.kMaxAge-Week)
MsgBox c.ToSetCookieHeader
```
84.3. CLASS LINUXWEBCOOKIEMBS

84.3.10 Properties

84.3.11 Handle as Integer

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
The internal object reference.
**Notes:** (Read and Write property)

84.3.12 Owner as Variant

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
The owner of this object.
**Notes:** (Read and Write property)

84.3.13 Domain as string

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
The domain text.
**Example:**
```vba
dim c as new LinuxWebCookieMBS("test", "12345", "mbsplugins.de", ",", LinuxWebCookieMBS.kMaxAge-Week)
MsgBox str(c.Domain)
```
**Notes:** (Read and Write computed property)

84.3.14 Expires as date

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
The expiration time.
**Example:**
```vba
dim c as new LinuxWebCookieMBS("test", "12345", "mbsplugins.de", ",", LinuxWebCookieMBS.kMaxAge-Week)
MsgBox c.Expires.ShortDate+" "+c.Expires.ShortTime
```
**Notes:**
If expires is nil, cookie will be a session cookie and will expire at the end of the client’s session.
84.3.15 **HTTPOnly as boolean**

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The `httponly` attribute.

**Notes:**
If true, cookie will be marked as "http only", meaning it should not be exposed to web page scripts or other untrusted code.
(Read and Write computed property)

84.3.16 **Name as string**

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The name of the cookie.

**Example:**

```vbnet
dim c as new LinuxWebCookieMBS("test", "12345", "mbsplugins.de", ",", LinuxWebCookieMBS.kMaxAgeWeek)
MsgBox str(c.Name)
```

**Notes:** (Read and Write computed property)

84.3.17 **Path as string**

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The path of the cookie.

**Example:**

```vbnet
dim c as new LinuxWebCookieMBS("test", "12345", "mbsplugins.de", "test", LinuxWebCookieMBS.kMaxAgeWeek)
MsgBox str(c.Path)
```

**Notes:** (Read and Write computed property)
84.3. CLASS LINUXWEBCOOKIEMBS

84.3.18 Secure as boolean

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The secure attribute.
**Example:**

```vba
dim c as new LinuxWebCookieMBS("test", "12345", "mbsplugins.de", "", LinuxWebCookieMBS.kMaxAgeWeek)
MsgBox str(c.Secure)
c.Secure = true
MsgBox str(c.Secure)
```

**Notes:**
Cookie will only be transmitted from the client to the server over secure (https) connections if secure is true. (Read and Write computed property)

84.3.19 Value as string

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The value of the cookie.
**Example:**

```vba
dim c as new LinuxWebCookieMBS("test", "12345", "mbsplugins.de", "", LinuxWebCookieMBS.kMaxAgeWeek)
MsgBox str(c.Value)
```

**Notes:** (Read and Write computed property)

84.3.20 Constants

84.3.21 kMaxAgeDay = 86400

MBS Linux Plugin, Plugin Version: 12.4. **Function:** A constant for one day in seconds.

84.3.22 kMaxAgeHour = 3600

MBS Linux Plugin, Plugin Version: 12.4. **Function:** A constant for one hour in seconds.
84.3.23 $k\text{MaxAgeWeek} = 604800$

MBS Linux Plugin, Plugin Version: 12.4. **Function:** A constant for one week in seconds.

84.3.24 $k\text{MaxAgeYear} = 31556926$

MBS Linux Plugin, Plugin Version: 12.4. **Function:** A constant for one year in seconds.
84.4.  CLASS LINUXWEBCOOKIESTOREMBS

84.4  class LinuxWebCookieStoreMBS

84.4.1  class LinuxWebCookieStoreMBS

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
The store for cookies.

**Example:**

```vbscript
dim store as LinuxWebCookieStoreMBS = LinuxWebCookieStoreMBS.CookieStore
dim cookies() as LinuxWebCookieMBS = store.AllCookies
MsgBox str(UBound(cookies)+1)+" cookies"
```

84.4.2  Methods

84.4.3  AddCookie(cookie as LinuxWebCookieMBS)

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Adds cookie to store.

84.4.4  AllCookies as LinuxWebCookieMBS()

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Returns an array with all cookies.

**Example:**

```vbscript
// show all cookies
dim store as LinuxWebCookieStoreMBS = LinuxWebCookieStoreMBS.CookieStore
dim cookies(-1) as LinuxWebCookieMBS = store.AllCookies
dim lines() as string

for each c as LinuxWebCookieMBS in cookies
lines.Append c.ToSetCookieHeader
next

MsgBox Join(lines,EndOfLine)
```

84.4.5  Available as Boolean

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Returns true if the plugin found all functions for the web cookie store.
84.4.6 Constructor

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Creates a new cookie store. **Notes:** The base LinuxWebCookieStoreMBS class does not support persistent storage of cookies; use a subclass for that.

84.4.7 CookieStore as LinuxWebCookieStoreMBS

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Queries the default cookie store. **Example:**

```vbscript
dim w as LinuxWebCookieStoreMBS = LinuxWebCookieStoreMBS.CookieStore

MsgBox "AcceptPolicy: "+str(w.AcceptPolicy)
w.AcceptPolicy = w.kAcceptNoThirdParty
MsgBox "AcceptPolicy: "+str(w.AcceptPolicy)
```

84.4.8 DeleteAllCookies

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Deletes all cookies. **Example:**

```vbscript
dim w as LinuxWebCookieStoreMBS = LinuxWebCookieStoreMBS.CookieStore
w.DeleteAllCookies
```

84.4.9 DeleteCookie(cookie as LinuxWebCookieMBS)

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Deletes cookie.
84.4.10 Destructor

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The destructor.

84.4.11 SetCookieStore(newStore as LinuxWebCookieStoreMBS)

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Makes the given cookie store the default one.

84.4.12 Properties

84.4.13 Handle as Integer

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The internal object reference. **Notes:** (Read and Write property)

84.4.14 Owner as Variant

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The owner of this object. **Notes:** (Read and Write property)

84.4.15 AcceptPolicy as Integer

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Get/set the policy for accepting cookies. **Example:**

```vbnet
dim w as LinuxWebCookieStoreMBS = LinuxWebCookieStoreMBS.CookieStore

MsgBox "AcceptPolicy: " + str(w.AcceptPolicy)
w.AcceptPolicy = w.kAcceptNoThirdParty
MsgBox "AcceptPolicy: " + str(w.AcceptPolicy)
```

**Notes:** (Read and Write computed property)
84.4.16 Constants

84.4.17 \texttt{kAcceptAlways} = 0

MBS Linux Plugin, Plugin Version: 12.4. \textbf{Function}: One of the cookie accept modes. \textbf{Notes}: Accept all cookies unconditionally.

84.4.18 \texttt{kAcceptNever} = 1

MBS Linux Plugin, Plugin Version: 12.4. \textbf{Function}: One of the cookie accept modes. \textbf{Notes}: Reject all cookies unconditionally.

84.4.19 \texttt{kAcceptNoThirdParty} = 2

MBS Linux Plugin, Plugin Version: 12.4. \textbf{Function}: One of the cookie accept modes. \textbf{Notes}:

No Third party cookies.
Accept all cookies set by the main document loaded in the application using libsoup. An example of the most common case, web browsers, would be: If http://www.example.com is the page loaded, accept all cookies set by example.com, but if a resource from http://www.third-party.com is loaded from that page reject any cookie that it could try to set. For libsoup to be able to tell apart first party cookies from the rest, the application must call \texttt{soup_message_set_first_party()} on each outgoing SoupMessage, setting the SoupURI of the main document. If no first party is set in a message when this policy is in effect, cookies will be assumed to be third party by default. (this is done by webkit)
84.5. class LinuxWebDataSourceMBS

84.5.1 class LinuxWebDataSourceMBS

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Data source encapsulates the content of a WebFrame.
**Notes:** A WebFrame has a main resource and subresources and the data source provides access to these resources. When a request gets loaded initially, it is set to a provisional state. The application can request for the request that initiated the load by asking for the provisional data source and invoking the InitialRequest method of DataSource. This data source may not have enough data and some methods may return empty values. To get a "full" data source with the data and resources loaded, you need to get the non-provisional data source through WebFrame’s DataSource method. This data source will have the data after everything was loaded. Make sure that the data source was finished loading before using any of its methods. You can do this via IsLoading.

84.5.2 Methods

84.5.3 Constructor

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Creates a new WebKitWebDataSource instance.
**Notes:** The URL of the WebKitWebDataSource will be set to "about:blank".
See also:

• 84.5.4 Constructor(request as LinuxWebNetworkRequestMBS)

84.5.4 Constructor(request as LinuxWebNetworkRequestMBS)

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Creates a new data source with the given network request.
See also:

• 84.5.3 Constructor

84.5.5 Data as string

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Returns the raw data that represents the the frame’s content.
**Notes:** The data will be incomplete until the data has finished loading. Returns "" if the web frame hasn’t loaded any data. Use isLoading to test if data source is in the process of loading.
84.5.6 Destructor

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The destructor.

84.5.7 Encoding as string

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Returns the text encoding name as set in the WebView, or if not, the text encoding of the response.

84.5.8 InitialRequest as LinuxWebNetworkRequestMBS

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Returns a reference to the original request that was used to load the web content. **Notes:** The NetworkRequest returned by this method is the request prior to the "committed" load state. See Request for getting the "committed" request.

84.5.9 IsLoading as boolean

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Determines whether the data source is in the process of loading its content. **Notes:** Returns true if loading or false if not.

84.5.10 MainResource as LinuxWebResourceMBS

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Returns the main resource of the data source.

84.5.11 Request as LinuxWebNetworkRequestMBS

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Returns a NetworkRequest that was used to create this DataSource. **Notes:** The NetworkRequest returned by this method is the request that was "committed", and hence, different from the request you get from the InitialRequest method.
84.5.12  **Subresources as LinuxWebResourceMBS()**

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Gives you a list of WebKitWebResource objects that compose the WebView to which this DataSource is attached.

84.5.13  **UnrechableURI as string**

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Return the unreachable URI of data source.
**Notes:** The data source will have an unreachable URL if it was created using WebFrame's LoadAlternate-HtmlString method.

84.5.14  **WebFrame as LinuxWebFrameMBS**

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Returns the WebFrame that represents this data source.
**Notes:**
The WebFrame is owned by WebKit and should not be freed or destroyed.
This will return nil if the data source is not attached to a frame.

84.5.15  **Properties**

84.5.16  **Handle as Integer**

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
The internal object reference.
**Notes:** (Read and Write property)

84.5.17  **HTMLViewer as HTMLViewer**

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
The parent HTMLViewer.
**Notes:** (Read and Write property)
84.6 class LinuxWebFrameMBS

84.6.1 class LinuxWebFrameMBS

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The class for a WebKit WebFrame on Linux. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

84.6.2 Methods

84.6.3 Constructor

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The private constructor.

84.6.4 DataSource as LinuxWebDataSourceMBS

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Returns the committed data source.

84.6.5 Destructor

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The destructor.

84.6.6 FindFrame(name as string) as LinuxWebFrameMBS

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Searches a frame by name. **Notes:** For pre-defined names, returns frame if name is ",self" or ",current", returns frame’s parent frame if name is ",parent", and returns the main frame if name is ",top". Also returns frame if it is the main frame and name is either ",parent" or ",top". For other names, this function returns the first frame that matches name. This function searches frame and its descendents first, then frame’s parent and its children moving up the hierarchy until a match is found. If no match is found in frame’s hierarchy, this function will search for a matching frame in other main frame hierarchies. Returns nil if no match is found.
name: the name of the frame to be found
Returns the found WebKitWebFrame or nil in case none is found.

84.6.7 JSContext as LinuxJavaScriptContextMBS

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Queries the javascript context for this webframe.

84.6.8 LoadAlternateString(content as string, BaseURL as string, unreachableURL as string)

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Request loading of an alternate content for a URL that is unreachable. **Notes:** Using this method will preserve the back-forward list. The URI passed in base url has to be an absolute URI.

84.6.9 LoadRequest(request as LinuxWebNetworkRequestMBS)

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Connects to a given URI by initiating an asynchronous client request. **Notes:** Creates a provisional data source that will transition to a committed data source once any data has been received. Use StopLoading to stop the load. This function is typically invoked on the main frame.

84.6.10 LoadStatus as Integer

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Returns the current load state.

84.6.11 LoadString(content as string, MimeType as String, Encoding as String, BaseURL as string)

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Requests loading of the given content with the specified MimeType, encoding and BaseURL. **Notes:**

If mime_type is "", "text/html" is assumed.
If encoding is "", "UTF-8" is assumed.
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84.6.12  LoadURL(URL as string)

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. Function:
Requests loading of the specified URI string.

84.6.13  Name as string

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. Function:
Returns the frame’s name

84.6.14  NetworkResponse as LinuxWebNetworkResponseMBS

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. Function:
Returns the network response.
Notes: Returns a NetworkResponse object representing the response that was given to the request for the
given frame, or nil if the frame was not created by a load. You must unref the object when you are done
with it.

84.6.15  Parent as LinuxWebFrameMBS

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. Function:
Returns the frame’s parent frame, or nil if it has none.

84.6.16  Print

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. Function:
Asks the control to print it’s content.
84.6.17  ProvisionalDataSource as LinuxWebDataSourceMBS

**Function:**
You use the LoadRequest method to initiate a request that creates a provisional data source.
**Notes:**
The provisional data source will transition to a committed data source once any data has been received. Use DataSource to get the committed data source.

Returns the provisional WebDataSource or nil if a load request is not in progress.

84.6.18  Reload

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes.
**Function:**
Reloads the initial request.

84.6.19  StopLoading

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes.
**Function:**
Stops any pending loads on frame’s data source, and those of its children.

84.6.20  Title as string

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes.
**Function:**
Returns the frame’s document title

84.6.21  URL as string

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes.
**Function:**
Returns the current URI of the contents displayed by the frame.

84.6.22  Properties

84.6.23  Handle as Integer

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes.
**Function:**
The internal object reference.
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84.6.24 HTMLViewer as HTMLViewer

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The parent HTMLViewer.
**Notes:** (Read and Write property)

84.6.25 WebView as LinuxWebViewMBS

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The reference to the parent webview.
**Notes:** (Read and Write property)

84.6.26 Constants

84.6.27 kLoadCommitted = 1

MBS Linux Plugin, Plugin Version: 12.4. **Function:** One of the load state constants.
**Notes:** The first data chunk has arrived, meaning that the necessary transport requirements are stabilised, and the load is being performed.

84.6.28 kLoadFailed = 4

MBS Linux Plugin, Plugin Version: 12.4. **Function:** One of the load state constants.
**Notes:** This state means that some error occurred during the page load that prevented it from being completed. You can connect to the error event if you want to know precisely what kind of error occurred.

84.6.29 kLoadFinished = 2

MBS Linux Plugin, Plugin Version: 12.4. **Function:** One of the load state constants.
**Notes:** This state means that everything that was required to display the page has been loaded.
84.6.30  \texttt{kLoadFirstVisuallyNonEmptyLayout} = 3

MBS Linux Plugin, Plugin Version: 12.4. \textbf{Function}: One of the load state constants.
\textbf{Notes}: The first layout with actual visible content happened; one or more layouts may have happened before that caused nothing to be visible on the screen, because the data available at the time was not significant enough.

84.6.31  \texttt{kLoadProvisional} = 0

MBS Linux Plugin, Plugin Version: 12.4. \textbf{Function}: One of the load state constants.
\textbf{Notes}: No data has been received yet, empty structures have been allocated to perform the load; the load may still fail for transport issues such as not being able to resolve a name, or connect to a port.
84.7  class LinuxWebHistoryItemMBS

84.7.1  class LinuxWebHistoryItemMBS

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** One item of the WebBackForwardList and or global history.  
**Notes:** A history item consists out of a title and a uri. It can be part of the WebBackForwardList and the global history. The global history is used for coloring the links of visited sites. WebHistoryItem’s constructed with Constructor() are automatically added to the global history.

84.7.2  Methods

84.7.3  Constructor

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Creates a new WebHistoryItem instance.  
See also:

- 84.7.4 Constructor(URI as string, Title as string)  

84.7.4  Constructor(URI as string, Title as string)

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Creates a new WebHistoryItem with the given URI and title.  
See also:

- 84.7.3 Constructor

84.7.5  Copy as LinuxWebHistoryItemMBS

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Makes a copy of the item for use with other WebView objects.

84.7.6  Destructor

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The destructor.
84.7. **CLASS LINUXWEBHISTORYITEMMBS**

### 84.7.7 LastVisitedTime as Double

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The last visited timestamp.

### 84.7.8 OriginalURI as string

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The original URL of this item.

### 84.7.9 Title as string

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The title of this item.

### 84.7.10 URI as string

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The URL of this item.

### 84.7.11 Properties

#### 84.7.12 Handle as Integer

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The internal object reference. **Notes:** (Read and Write property)

### 84.7.13 HTMLViewer as HTMLViewer

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The parent htmlviewer. **Notes:** (Read and Write property)
84.7.14 AlternateTitle as string

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
The alternate title.
**Notes:** (Read and Write computed property)
84.8. class LinuxWebInspectorMBS

84.8.1 class LinuxWebInspectorMBS

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The WebKit Inspector is a graphical tool to inspect and change the content of a WebKitWebView.

**Notes:**
It also includes an interactive JavaScriptDebugger. Using this class one can get a GtkWidget which can be embedded into an application to show the inspector.

The inspector is available when the WebKitWebSettings of the WebKitWebView has set the "enable-developer-extras" to true otherwise no inspector is available.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

84.8.2 Methods

84.8.3 Close

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Causes the Web Inspector to be closed.

84.8.4 Constructor

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The private constructor.

84.8.5 Destructor

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The destructor.

84.8.6 InspectCoordinates(x as Double, y as Double)

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Causes the Web Inspector to inspect the node that is located at the given coordinates of the widget.

**Notes:**
The coordinates should be relative to the WebKitWebView widget, not to the scrollable content, and may be obtained from a GdkEvent directly. This means x, and y being zero doesn’t guarantee you will hit the left-most top corner of the content, since the contents may have been scrolled.

x: the X coordinate of the node to be inspected
y: the Y coordinate of the node to be inspected

84.8.7 InspectedURI as string
MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Obtains the URI that is currently being inspected.

84.8.8 Show
MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Causes the Web Inspector to be shown.

84.8.9 WebView as LinuxWebViewMBS
MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Obtains the WebKitWebView that is used to render the inspector.

84.8.10 Properties

84.8.11 Handle as Integer
MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The internal object reference.
**Notes:** (Read and Write property)

84.8.12 HTMLViewer as HTMLViewer
MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The reference to the parent HTMLViewer.
**Notes:** (Read and Write property)
84.9. **CLASS LINUXWEBNETWORKREQUESTMBS**

84.9  **class LinuxWebNetworkRequestMBS**

84.9.1  **class LinuxWebNetworkRequestMBS**

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** This class represents the network related aspects of a navigation request. **Notes:** It is used whenever WebKit wants to provide information about a request that will be sent, or has been sent. Inside it you can find the URI of the request, and, for valid URIs, a SoupMessage object, which provides access to further information such as headers.

84.9.2  **Methods**

84.9.3  **Constructor(url as string)**

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Creates a new NetworkRequest initialized with an URI.

84.9.4  **Destructor**

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The destructor.

84.9.5  **Properties**

84.9.6  **Handle as Integer**

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The internal object reference. **Notes:** (Read and Write property)

84.9.7  **HTMLViewer as HTMLViewer**

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The parent HTMLViewer. **Notes:** (Read and Write property)
84.9.8 URL as string

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Get or set the URL for this request. 
**Notes:** (Read and Write computed property)
84.10. Class LinuxWebNetworkResponseMBS

84.10.1 class LinuxWebNetworkResponseMBS

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
This class represents the network related aspects of a navigation response.

84.10.2 Methods

84.10.3 Constructor(url as string)

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Creates a new response object with the given URL.

84.10.4 Destructor

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
The destructor.

84.10.5 Properties

84.10.6 Handle as Integer

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
The internal object reference.
**Notes:** (Read and Write property)

84.10.7 HTMLViewer as HTMLViewer

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
The parent HTMLViewer.
**Notes:** (Read and Write property)
84.10.8 URL as string

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Get or set the URL for this request. **Notes:** (Read and Write computed property)
84.11 class LinuxWebResourceMBS

84.11.1 class LinuxWebResourceMBS

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** A web resource encapsulates the data of the download as well as the URI, MIME type and frame name of the resource.

84.11.2 Methods

84.11.3 Constructor(data as string, uri as string, mimeType as string, encoding as string = "", FrameName as string = "")


**Notes:**
The encoding can be "". The FrameName argument can be used if the resource represents contents of an entire HTML frame, otherwise pass "".

See also FileExtensionToMimeTypeMBS function.

84.11.4 Data as string

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Returns the data of the webResource.

84.11.5 Destructor

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The destructor.

84.11.6 Encoding as string

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Returns the encoding for this resource.
84.11.7  FrameName as string

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Queries the frame name.

84.11.8  MimeType as string

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The MIME Type for this resource.
**Notes:** See also MimeTypeToFileExtensionMBS function.

84.11.9  URL as string

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The URL for this resource.

84.11.10  Properties

84.11.11  Handle as Integer

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The internal object reference.
**Notes:** (Read and Write property)

84.11.12  HTMLViewer as HTMLViewer

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The parent HTMLViewer.
**Notes:** (Read and Write property)
84.12.  CLASS LINUXWEBSETTINGSMBS

84.12  class LinuxWebSettingsMBS

84.12.1  class LinuxWebSettingsMBS

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** WebSettings can be applied to a WebKitWebView to control text encoding, color, font sizes, printing mode, script support, loading of images and various other things. **Notes:** After creation, a WebSettings object contains default settings.

84.12.2  Methods

84.12.3  Constructor

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Creates a new WebSettings instance with default values. **Notes:** It must be manually attached to a WebView.

84.12.4  Copy as LinuxWebSettingsMBS

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Copies an existing WebSettings instance.

84.12.5  Destructor

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The destructor.

84.12.6  UserAgent as string

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Returns the User-Agent string currently used by the web view(s) associated with the web settings.
84.12.7 Properties

84.12.8 Handle as Integer

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The internal object reference.  
**Notes:** (Read and Write property)

84.12.9 HTMLViewer as HTMLViewer

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The parent htmlviewer.  
**Notes:** (Read and Write property)
84.13. **CLASS LINUXWEBVIEWMBS**

### 84.13 class LinuxWebViewMBS

**84.13.1 class LinuxWebViewMBS**

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The class for a WebKit WebView on Linux.  
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

**84.13.2 Methods**

**84.13.3 Available as Boolean**

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Whether the plugin found libwebkit on linux.  
**Notes:** Returns true on linux if the class can work. Else it returns false.

**84.13.4 BackForwardList as LinuxWebBackForwardListMBS**

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Obtains the BackForwardList associated with the given WebView.  
**Notes:** The BackForwardList is owned by the WebView.

**84.13.5 CacheModel as Integer**

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The cache model for the htmlviewer.  
**Notes:** (Read and Write computed property)

**84.13.6 CanCopyClipboard as boolean**

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Whether copy is possible.
84.13.7 CanCutClipboard as boolean

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Whether cut is possible.

84.13.8 CanGoBack as boolean

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Determines whether web_view has a previous history item. **Notes:** Returns true if able to move back, false otherwise.

84.13.9 CanGoBackOrForward(steps as Integer) as boolean

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Determines whether web_view has a history item of steps. **Notes:** Negative values represent steps backward while positive values represent steps forward. steps: the number of steps Returns true if able to move back or forward the given number of steps, false otherwise.

84.13.10 CanGoForward as boolean

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Determines whether web_view has a next history item. **Notes:** Returns true if able to move forward, false otherwise.

84.13.11 CanPasteClipboard as boolean

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Whether paste is possible.

84.13.12 CanRedo as boolean

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Whether redo is possible.
84.13. CLAS LINUXWEBVIEWMBS

84.13.13 CanShowMimeType(MimeType as string) as boolean

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
This function returns whether or not a MIME type can be displayed using this view.

**Notes:**
MimeType: a MIME type

Return boolean indicating if the MIME type can be displayed.
See also FileExtensionToMimeTypeMBS function.

84.13.14 CanUndo as boolean

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Whether undo is possible.

84.13.15 Constructor

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
The private constructor.

84.13.16 CookieStore as LinuxWebCookieStoreMBS

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Queries the default cookie store.

84.13.17 CopyClipboard

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Copies the current selection inside the web_view to the clipboard.

84.13.18 CutClipboard

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Cuts the current selection inside the web_view to the clipboard.
84.13.19  DeleteSelection

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Deletes the current selection inside the web view.

84.13.20  Destructor

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
The destructor.

84.13.21  Encoding as string

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Returns the default encoding of the WebKitWebView.

84.13.22  EvaluateScript(script as string) as string

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Evaluates a string of JavaScript.
**Notes:**
script A string containing the script to evaluate.
Returns the value as string that results from evaluating script, or "" if an exception is thrown.

84.13.23  ExecuteScript(script as string)

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Executes java script.

84.13.24  FocusedFrame as LinuxWebFrameMBS

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Returns the frame that has focus or an active text selection.
**Notes:**
Returns the focused frame or nil if no frame is focused
84.13.25  GoBack

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Loads the previous history item.

84.13.26  GoBackOrForward(steps as Integer)

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Loads the history item that is the number of steps away from the current item.
**Notes:** Negative values represent steps backward while positive values represent steps forward.

84.13.27  GoForward

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Loads the next history item.

84.13.28  GoToItem(item as LinuxWebHistoryItemMBS) as boolean

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Go to the specified history item.
**Notes:** Returns true if loading of item is successful, false if not.

84.13.29  HasSelection as boolean

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Determines whether text was selected.
**Notes:** Returns true if there is selected text, false if not

84.13.30  IconURL as string

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Returns the favorite icon URL for the current website.
84.13.31 Inspector as LinuxWebInspectorMBS

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Obtains the WebKitWebInspector associated with the WebKitWebView.

**Notes:** Every WebKitWebView object has a WebKitWebInspector object attached to it as soon as it is created, so this function will only return nil if the argument is not a valid WebKitWebView.

84.13.32 JSContext as LinuxJavaScriptContextMBS

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Queries the javascript context for the main webframe.

84.13.33 LoadHTMLString(HTMLString as string, BaseURL as string = "")

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Loads a HTML string.

84.13.34 LoadRequest(request as LinuxWebNetworkRequestMBS)

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Requests loading of the specified asynchronous client request.

**Notes:** Creates a provisional data source that will transition to a committed data source once any data has been received. Use StopLoading to stop the load.

84.13.35 LoadStatus as Integer

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Returns the current load state.

84.13.36 LoadString(content as string, MimeType as String, Encoding as String, BaseURL as string)

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Requests loading of the given content with the specified MIMEType, encoding and BaseURL.

**Notes:**
If mime_type is "", "text/html" is assumed.
If encoding is "", "UTF-8" is assumed.
Content: an URI string
MimeType: the MIME type, or "."
Encoding: the encoding, or "."
BaseUrl: the base URI for relative locations.

See also FileExtensionToMimeTypeMBS function.

84.13.37 LoadURL(URL as string)

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Requests loading of the specified URI string.

84.13.38 MainFrame as LinuxWebFrameMBS

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Returns the main frame of the document.

84.13.39 MajorVersion as Integer

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Returns major version of webkit.

84.13.40 MarkTextMatches(text as string, caseSensitive as boolean = false, limit as Integer = 99) as Integer

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Attempts to highlight all occurrences of string inside webview. **Notes:**

- string: a string to look for
- case_sensitive: whether to respect the case of text
- limit: the maximum number of strings to look for or 0 for all

Returns the number of strings highlighted.
84.13.41  **MicroVersion as Integer**

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Returns micro version of webkit.

84.13.42  **MinorVersion as Integer**

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Returns minor version of webkit.

84.13.43  **PasteClipboard**

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Pastes the current contents of the clipboard to the webview.

84.13.44  **Progress as Double**

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The global locating progress in percent. **Notes:** 1.0 is full progress.

84.13.45  **ProxyURL as String**

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The proxy URL setting. **Notes:** (Read and Write computed property)

84.13.46  **Redo**

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Redos last action if possible.

84.13.47  **Reload**

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Reloads the initial request.
84.13.48  **ReloadIgnoreCache**

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Reloads the webview without using any cached data.

84.13.49  **SearchText(text as string, caseSensitive as boolean = false, forward as boolean = true, wrap as boolean = true) as boolean**

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Looks for a specified string inside webview.  
**Notes:**
- text: a string to look for.
- case_sensitive: whether to respect the case of text.
- forward: whether to find forward or not.
- wrap: whether to continue looking at the beginning after reaching the end.
Returns true on success or false on failure.

84.13.50  **SelectAll**

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Attempts to select everything inside the webview.

84.13.51  **SetCookieStore(newStore as LinuxWebCookieStoreMBS)**

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Makes the given cookie store the default one.

84.13.52  **SetHighlightTextMatches(highlight as boolean)**

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Highlights text matches previously marked by MarkTextMatches.
84.13.53 SetMaintainsBackForwardList(flag as boolean)

MBS Linux Plugin, Plugin Version: 13.5, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Set the view to maintain a back or forward list of history items.

84.13.54 StopLoading

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Stops any pending loads on frame’s data source, and those of its children.

84.13.55 Title as string

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
The title of the website.

84.13.56 Undo

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Undos last action if possible.

84.13.57 UnmarkTextMatches

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Unmarks text matches from search.

84.13.58 URL as string

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Returns the current URL.

84.13.59 ZoomIn

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Increases the zoom level of web_view.
**Notes:** The current zoom level is incremented by the value of the "zoom-step" property of the settings
84.13. CLASS LINUXWEBVIEWMBS

associated with webview.

84.13.60  ZoomOut

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Decreases the zoom level of webview.  
**Notes:** The current zoom level is decremented by the value of the "zoom-step" property of the settings associated with webview.

84.13.61  Properties

84.13.62  Handle as Integer

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The internal object reference.  
**Notes:** (Read and Write property)

84.13.63  HTMLViewer as HTMLViewer

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The reference to the parent HTMLViewer.  
**Notes:** (Read and Write property)

84.13.64  CustomEncoding as string

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The current WebKitWebView encoding.  
**Notes:** (Read and Write computed property)

84.13.65  Editable as boolean

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Whether the user is allowed to edit the document.  
**Notes:** If flag is true, webview allows the user to edit the document. If flag is false, an element in webview's document can only be edited if the CONTENTEDITABLE attribute has been set on the element or one of its parent elements. You can change webview's document programmatically regardless of this setting. By
default a WebKitWebView is not editable.

Normally, an HTML document is not editable unless the elements within the document are editable. This function provides a low-level way to make the contents of a WebKitWebView editable without altering the document or DOM structure.

(Read and Write computed property)

84.13.66 FullContentZoom as boolean

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. Function: Whether the zoom level affects only text or all elements.

Notes: False if only text should be scaled (the default), true if the full content of the view should be scaled.

(Read and Write computed property)

84.13.67 Settings as LinuxWebSettingsMBS


Notes: (Read and Write computed property)

84.13.68 Transparent as boolean

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. Function: Whether the WebKitWebView has a transparent background.

Notes: False when the WebKitWebView draws a solid background (the default), otherwise true.

(Read and Write computed property)

84.13.69 ViewSourceMode as boolean

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. Function: Whether we are viewing the source code.

Notes: (Read and Write computed property)
84.13. **CLASS LINUXWEBVIEWMBS**

84.13.70 **ZoomLevel as Double**

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Returns the zoom level of web_view, i.e. the factor by which elements in the page are scaled with respect to their original size.

**Notes:**
If the "full-content-zoom" property is set to false (the default) the zoom level changes the text size, or if true, scales all elements in the page.
(Read and Write computed property)

84.13.71 **Constants**

84.13.72 **kCacheModelDocumentViewer = 1**

MBS Linux Plugin, Plugin Version: 12.4. **Function:** One of the cache model constants.
**Notes:** Cache in Document Viewer.

84.13.73 **kCacheModelWebBrowser = 2**

MBS Linux Plugin, Plugin Version: 12.4. **Function:** One of the cache model constants.
**Notes:** Cache in Web Browser.

84.13.74 **kLoadCommitted = 1**

MBS Linux Plugin, Plugin Version: 12.4. **Function:** One of the load state constants.
**Notes:** The first data chunk has arrived, meaning that the necessary transport requirements are stabilished, and the load is being performed.

84.13.75 **kLoadFailed = 4**

MBS Linux Plugin, Plugin Version: 12.4. **Function:** One of the load state constants.
**Notes:** This state means that some error occurred during the page load that prevented it from being completed. You can connect to the error event if you want to know precisely what kind of error occurred.
84.13.76  \texttt{kLoadFinished} = 2

MBS Linux Plugin, Plugin Version: 12.4. \textbf{Function}: One of the load state constants. 
\textbf{Notes}: This state means that everything that was required to display the page has been loaded.

84.13.77  \texttt{kLoadFirstVisuallyNonEmptyLayout} = 3

MBS Linux Plugin, Plugin Version: 12.4. \textbf{Function}: One of the load state constants. 
\textbf{Notes}: The first layout with actual visible content happened; one or more layouts may have happened before that caused nothing to be visible on the screen, because the data available at the time was not significant enough.

84.13.78  \texttt{kLoadProvisional} = 0

MBS Linux Plugin, Plugin Version: 12.4. \textbf{Function}: One of the load state constants. 
\textbf{Notes}: No data has been received yet, empty structures have been allocated to perform the load; the load may still fail for transport issues such as not being able to resolve a name, or connect to a port.
Chapter 85

HTMLViewer Mac

85.1 class DOMAbstractViewMBS

85.1.1 class DOMAbstractViewMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the
message, name and reason properties you can see what was the reason for this exception. Please report if
you find a method which does not handle exceptions correct.
Subclass of the DOMObjectMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin
functions.

85.1.2 Methods

85.1.3 document as DOMDocumentMBS

Function: Check the DOM documentation for details on this function.
85.2 class DOMAttrMBS

85.2.1 class DOMAttrMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMNodeMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.2.2 Methods

85.2.3 name as String

Function: Check the DOM documentation for details on this function.

85.2.4 ownerElement as DOMElementMBS

Function: Check the DOM documentation for details on this function.

85.2.5 specified as boolean

Function: Check the DOM documentation for details on this function.

85.2.6 Properties

85.2.7 value as String

Function: Check the DOM documentation for details on this function.
85.2. *CLASS DOMATTRMBS*

**Notes:** (Read and Write computed property)
85.3 class DOMCDATASectionMBS

85.3.1 class DOMCDATASectionMBS


Function: One of the DOM classes.

Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

Subclass of the DOMTextMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.
85.4. CLASS DOMCHARACTERDATAMBS

85.4 class DOMCharacterDataMBS

85.4.1 class DOMCharacterDataMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the
message, name and reason properties you can see what was the reason for this exception. Please report if
you find a method which does not handle exceptions correct.
Subclass of the DOMNodeMBS class.
This is a subclass of an abstract class. You can't create an instance, but you can get one from various plugin
functions.

85.4.2 Methods

85.4.3 appendData(arg as string)

Function: Check the DOM documentation for details on this function.

85.4.4 deleteData(offset as Integer, count as Integer)

Function: Check the DOM documentation for details on this function.

85.4.5 insertData(offset as Integer, arg as string)

Function: Check the DOM documentation for details on this function.

85.4.6 length as Integer

Function: Check the DOM documentation for details on this function.
85.4.7 replaceData(offset as Integer, count as Integer, arg as string)

**Function:** Check the DOM documentation for details on this function.

85.4.8 substringData(offset as Integer, count as Integer) as string

**Function:** Check the DOM documentation for details on this function.

85.4.9 Properties

85.4.10 data as string

**Function:** Check the DOM documentation for details on this function.  
**Notes:** (Read and Write computed property)
85.5.  CLASS DOMCOMMENTMBS

85.5  class DOMCommentMBS

85.5.1  class DOMCommentMBS

Function: One of the DOM classes.
Notes:

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the
message, name and reason properties you can see what was the reason for this exception. Please report if
you find a method which does not handle exceptions correct.
Subclass of the DOMCharacterDataMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin
functions.
85.6  class DOMCounterMBS

85.6.1  class DOMCounterMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMObjectMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.6.2  Methods

85.6.3  identifier as String

Function: Check the DOM documentation for details on this function.

85.6.4  listStyle as String

Function: Check the DOM documentation for details on this function.

85.6.5  separator as String

Function: Check the DOM documentation for details on this function.
85.7.  **CLASS DOMCSSCharsetRuleMBS**

85.7  **class DOMCSSCharsetRuleMBS**

**Function:** One of the DOM classes.  
**Notes:**  
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.  
Subclass of the DOMCSSRuleMBS class.  
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.7.2  **Methods**

85.7.3  **encoding as String**

**Function:** Check the DOM documentation for details on this function.
85.8 class DOMCSSFontFaceRuleMBS

85.8.1 class DOMCSSFontFaceRuleMBS

Function: One of the DOM classes.
Notes:

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMCSSRuleMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.8.2 Methods

85.8.3 style as DOMCSSStyleDeclarationMBS

Function: Check the DOM documentation for details on this function.
85.9. class DOMCSSImportRuleMBS

85.9.1 class DOMCSSImportRuleMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the
message, name and reason properties you can see what was the reason for this exception. Please report if
you find a method which does not handle exceptions correct.
Subclass of the DOMCSSRuleMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin
functions.

85.9.2 Methods

85.9.3 href as String

Function: Check the DOM documentation for details on this function.

85.9.4 media as DOMMediaListMBS

Function: Check the DOM documentation for details on this function.

85.9.5 styleSheet as DOMCSSStyleSheetMBS

Function: Check the DOM documentation for details on this function.
85.10  class DOMCSSMediaRuleMBS

85.10.1  class DOMCSSMediaRuleMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the
message, name and reason properties you can see what was the reason for this exception. Please report if
you find a method which does not handle exceptions correct.
Subclass of the DOMCSSRuleMBS class.
This is a subclass of an abstract class. You can't create an instance, but you can get one from various plugin
functions.

85.10.2  Methods

85.10.3  cssRules as DOMCSSRuleListMBS

Function: Check the DOM documentation for details on this function.

85.10.4  deleteRule(index as Integer)

Function: Check the DOM documentation for details on this function.

85.10.5  insertRule(rule as string, index as Integer) as Integer

Function: Check the DOM documentation for details on this function.

85.10.6  media as DOMMediaListMBS

Function: Check the DOM documentation for details on this function.
85.11. class DOMCSSPageRuleMBS

85.11.1 class DOMCSSPageRuleMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMCSSRuleMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.11.2 Methods

85.11.3 style as DOMCSSStyleDeclarationMBS

Function: Check the DOM documentation for details on this function.

85.11.4 Properties

85.11.5 selectorText as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.12 class DOMCSSPrimitiveValueMBS

85.12.1 class DOMCSSPrimitiveValueMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMCSSValueMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.12.2 Methods

85.12.3 getCounterValue as DOMCounterMBS

Function: Check the DOM documentation for details on this function.

85.12.4 getRectValue as DOMRectMBS

Function: Check the DOM documentation for details on this function.

85.12.5 getRGBColorValue as DOMRGBColorMBS

Function: Check the DOM documentation for details on this function.

85.12.6 getStringValue as String

Function: Check the DOM documentation for details on this function.
85.12.7  primitiveType as Integer

Function: The type of this value.
Notes: See the constants for possible values.

85.12.8  setStringValue(StringType as Integer, StringValue as string)

Function: Check the DOM documentation for details on this function.

85.12.9  Properties

85.12.10  getFloatValue(unitType as Integer) as single

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.12.11  Constants

85.12.12  DOM_CSS_ATTR = 22

MBS MacControls Plugin, Plugin Version: 7.4. Function: A constant for the primitiveType property.

85.12.13  DOM_CSS_CM = 6

MBS MacControls Plugin, Plugin Version: 7.4. Function: A constant for the primitiveType property.

85.12.14  DOM_CSS_COUNTER = 23

MBS MacControls Plugin, Plugin Version: 7.4. Function: A constant for the primitiveType property.
85.12.15  DOM_CSS_DEG = 11

MBS MacControls Plugin, Plugin Version: 7.4. Function: A constant for the primitiveType property.

85.12.16  DOM_CSS_DIMENSION = 18

MBS MacControls Plugin, Plugin Version: 7.4. Function: A constant for the primitiveType property.

85.12.17  DOM_CSSEMS = 3

MBS MacControls Plugin, Plugin Version: 7.4. Function: A constant for the primitiveType property.

85.12.18  DOM_CSS_EXS = 4

MBS MacControls Plugin, Plugin Version: 7.4. Function: A constant for the primitiveType property.

85.12.19  DOM_CSS_GRAD = 13

MBS MacControls Plugin, Plugin Version: 7.4. Function: A constant for the primitiveType property.

85.12.20  DOM_CSS_HZ = 16

MBS MacControls Plugin, Plugin Version: 7.4. Function: A constant for the primitiveType property.

85.12.21  DOM_CSS_IDENT = 21

MBS MacControls Plugin, Plugin Version: 7.4. Function: A constant for the primitiveType property.

85.12.22  DOM_CSS_IN = 8

MBS MacControls Plugin, Plugin Version: 7.4. Function: A constant for the primitiveType property.
85.12.23  DOM_CSS_KHZ = 17

MBS MacControls Plugin, Plugin Version: 7.4. **Function**: A constant for the `primitiveType` property.

85.12.24  DOM_CSS_MM = 7

MBS MacControls Plugin, Plugin Version: 7.4. **Function**: A constant for the `primitiveType` property.

85.12.25  DOM_CSS_MS = 14

MBS MacControls Plugin, Plugin Version: 7.4. **Function**: A constant for the `primitiveType` property.

85.12.26  DOM_CSS_NUMBER = 1

MBS MacControls Plugin, Plugin Version: 7.4. **Function**: A constant for the `primitiveType` property.

85.12.27  DOM_CSS_PC = 10

MBS MacControls Plugin, Plugin Version: 7.4. **Function**: A constant for the `primitiveType` property.

85.12.28  DOM_CSS_PERCENTAGE = 2

MBS MacControls Plugin, Plugin Version: 7.4. **Function**: A constant for the `primitiveType` property.

85.12.29  DOM_CSS_PT = 9

MBS MacControls Plugin, Plugin Version: 7.4. **Function**: A constant for the `primitiveType` property.

85.12.30  DOM_CSS PX = 5

MBS MacControls Plugin, Plugin Version: 7.4. **Function**: A constant for the `primitiveType` property.
85.12.31  DOM_CSS_RAD = 12

MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for the primitiveType property.

85.12.32  DOM_CSS_RECT = 24

MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for the primitiveType property.

85.12.33  DOM_CSS_RGBCOLOR = 25

MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for the primitiveType property.

85.12.34  DOM_CSS_S = 15

MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for the primitiveType property.

85.12.35  DOM_CSS_STRING = 19

MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for the primitiveType property.

85.12.36  DOM_CSS_UNKNOWN = 0

MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for the primitiveType property.

85.12.37  DOM_CSS_URI = 20

MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for the primitiveType property.
85.13. class DOMCSSRuleListMBS

85.13.1. class DOMCSSRuleListMBS


Function: A class for a list of css rules.

Notes:

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

Subclass of the DOMObjectMBS class.

This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.13.2. Methods

85.13.3. item(index as UInt32) as DOMCSSRuleMBS


Function: Returns the item with the given index or nil.

Notes: Index is zero based.

85.13.4. length as Integer


Function: The number of items in this list.
85.14 class DOMCSSRuleMBS

85.14.1 class DOMCSSRuleMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMObjectMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.14.2 Methods

85.14.3 parentRule as DOMCSSRuleMBS

Function: Check the DOM documentation for details on this function.

85.14.4 parentStyleSheet as DOMCSSStyleSheetMBS

Function: Check the DOM documentation for details on this function.

85.14.5 type as Integer

Function: The type of this rule.
Notes: See the constants for possible values.

85.14.6 Properties

85.14.7 cssText as String

Function: Check the DOM documentation for details on this function.
85.14.8  Constants

85.14.9  DOM_CHARSET_RULE = 2
MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for the type property.

85.14.10 DOM_IMPORT_RULE = 3
MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for the type property.

85.14.11 DOM_MEDIA_RULE = 4
MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for the type property.

85.14.12 DOM_STYLE_RULE = 1
MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for the type property.

85.14.13 DOM_UNKNOWN_RULE = 0
MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for the type property.
85.15 **class DOMCSSStyleDeclarationMBS**

85.15.1 **class DOMCSSStyleDeclarationMBS**


**Function:** One of the DOM classes.

**Notes:**
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMObjectMBS class.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

85.15.2 **Methods**

85.15.3 **Constructor**


**Function:** The private constructor.

85.15.4 **getPropertyCSSValue(propertyName as string) as DOMCSSValueMBS**


**Function:** Check the DOM documentation for details on this function.

85.15.5 **getPropertyPriority(propertyName as string) as string**


**Function:** Check the DOM documentation for details on this function.

85.15.6 **getPropertyValue(propertyName as string) as string**


**Function:** Check the DOM documentation for details on this function.
85.15.7 item(index as UInt32) as string

Function: Check the DOM documentation for details on this function.

85.15.8 length as Integer

Function: Check the DOM documentation for details on this function.

85.15.9 parentRule as DOMCSSRuleMBS

Function: Check the DOM documentation for details on this function.

85.15.10 removeProperty(propertyName as string) as string

Function: Check the DOM documentation for details on this function.

85.15.11 setProperty(propertyName as string, value as string, priority as string)

Function: Check the DOM documentation for details on this function.

85.15.12 Properties

85.15.13 azimuth as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.15.14  background as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.15  backgroundAttachment as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.16  backgroundColor as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.17  backgroundImage as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.18  backgroundPosition as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.19  backgroundRepeat as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.15.20  **border** as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.15.21  **borderBottom** as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.15.22  **borderBottomColor** as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.15.23  **borderBottomStyle** as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.15.24  **borderBottomWidth** as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.15.25  **borderCollapse** as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)
85.15.26  borderColor as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.27  borderLeft as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.28  borderLeftColor as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.29  borderLeftStyle as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.30  borderLeftWidth as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.31  borderRight as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.15.32  **borderRightColor as String**

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.33  **borderRightStyle as String**

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.34  **borderRightWidth as String**

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.35  **borderSpacing as String**

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.36  **borderStyle as String**

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.37  **borderTop as String**

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.15.38  borderTopColor as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.39  borderTopStyle as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.40  borderTopWidth as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.41  borderWidth as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.42  bottom as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.43  captionSide as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.15.44 clear as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.15.45 clip as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.15.46 colorValue as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.15.47 content as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.15.48 counterIncrement as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.15.49 counterReset as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)
85.15.50  cssFloat as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.51  cssText as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.52  cue as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.53  cueAfter as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.54  cueBefore as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.55  cursor as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.15.  CLASS DOMCSSSTYLEDECLARATIONMBS

85.15.56  direction as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.57  display as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.58  elevation as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.59  emptyCells as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.60  font as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.61  fontFamily as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.15.62  fontSize as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.15.63  fontSizeAdjust as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.15.64  fontStretch as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.15.65  fontStyle as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.15.66  fontVariant as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.15.67  fontWeight as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)
85.15.68  **height as String**

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.69  **left as String**

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.70  **letterSpacing as String**

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.71  **lineHeight as String**

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.72  **listStyle as String**

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.73  **listStyleImage as String**

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.15.74  listStylePosition as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.75  listStyleType as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.76  margin as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.77  marginBottom as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.78  marginLeft as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.79  marginRight as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.15.80  marginTop as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.81  markerOffset as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.82  marks as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.83  maxHeight as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.84  maxWidth as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.85  minHeight as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.15.86  minWidth as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.15.87  orphans as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.15.88  outline as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.15.89  outlineColor as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.15.90  outlineStyle as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.15.91  outlineWidth as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)
85.15.92 overflow as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.93 padding as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.94 paddingBottom as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.95 paddingLeft as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.96 paddingRight as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.97 paddingTop as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.15.98 page as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.99 pageBreakAfter as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.100 pageBreakBefore as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.101 pageBreakInside as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.102 pause as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.103 pauseAfter as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.15.104  pauseBefore as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.105  pitch as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.106  pitchRange as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.107  playDuring as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.108  position as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.109  quotes as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.15.110 richness as String

**Function:** Check the DOM documentation for details on this function.  
**Notes:** (Read and Write computed property)

85.15.111 right as String

**Function:** Check the DOM documentation for details on this function.  
**Notes:** (Read and Write computed property)

85.15.112 size as String

**Function:** Check the DOM documentation for details on this function.  
**Notes:** (Read and Write computed property)

85.15.113 speak as String

**Function:** Check the DOM documentation for details on this function.  
**Notes:** (Read and Write computed property)

85.15.114 speakHeader as String

**Function:** Check the DOM documentation for details on this function.  
**Notes:** (Read and Write computed property)

85.15.115 speakNumeral as String

**Function:** Check the DOM documentation for details on this function.  
**Notes:** (Read and Write computed property)
85.15. Class DOMCSSStyleDeclarationMBS

85.15.116 speakPunctuation as String


Function: Check the DOM documentation for details on this function.

Notes: (Read and Write computed property)

85.15.117 speechRate as String


Function: Check the DOM documentation for details on this function.

Notes: (Read and Write computed property)

85.15.118 stress as String


Function: Check the DOM documentation for details on this function.

Notes: (Read and Write computed property)

85.15.119 tableLayout as String


Function: Check the DOM documentation for details on this function.

Notes: (Read and Write computed property)

85.15.120 textAlign as String


Function: Check the DOM documentation for details on this function.

Notes: (Read and Write computed property)

85.15.121 textDecoration as String


Function: Check the DOM documentation for details on this function.

Notes: (Read and Write computed property)
85.15.122  textIndent as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.123  textShadow as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.124  textTransform as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.125  top as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.126  unicodeBidi as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.127  verticalAlign as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.15.128 visibility as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.129 voiceFamily as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.130 volume as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.131 whiteSpace as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.132 widows as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.133 width as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.15.134  wordSpacing as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.15.135  zIndex as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.16. class DOMCSSStyleRuleMBS

85.16.1 class DOMCSSStyleRuleMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMCSSRuleMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.16.2 Methods

85.16.3 style as DOMCSSStyleDeclarationMBS

Function: Check the DOM documentation for details on this function.

85.16.4 Properties

85.16.5 selectorText as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.17 class DOMCSSStyleSheetMBS

85.17.1 class DOMCSSStyleSheetMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMStyleSheetMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.17.2 Methods

85.17.3 cssRules as DOMCSSRuleListMBS

Function: Check the DOM documentation for details on this function.

85.17.4 deleteRule(index as Integer)

Function: Check the DOM documentation for details on this function.

85.17.5 insertRule(rule as string, index as Integer) as Integer

Function: Check the DOM documentation for details on this function.

85.17.6 ownerRule as DOMCSSRuleMBS

Function: Check the DOM documentation for details on this function.
85.18. class DOMCSSUnknownRuleMBS

85.18.1 class DOMCSSUnknownRuleMBS


Function: One of the DOM classes.

Notes:

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

Subclass of the DOMCSSRuleMBS class.

This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.
85.19 class DOMCSSValueListMBS

85.19.1 class DOMCSSValueListMBS

**Function:** A class for a list of css values.
**Notes:**
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMCSSValueMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.19.2 Methods

85.19.3 item(index as UInt32) as DOMCSSValueMBS

**Function:** Returns the item with the given index or nil.
**Notes:** Index is zero based.

85.19.4 length as Integer

**Function:** The number of items in this list.
85.20. class DOMCSSValueMBS

85.20.1 class DOMCSSValueMBS

**Function:** One of the DOM classes. 
**Notes:**
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct. 
Subclass of the DOMObjectMBS class. 
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.20.2 Methods

85.20.3 cssValueType as Integer

**Function:** The type of this value. 
**Notes:** See the constants for possible values.

85.20.4 Properties

85.20.5 cssText as String

**Function:** Check the DOM documentation for details on this function. 
**Notes:** (Read and Write computed property)

85.20.6 Constants

85.20.7 DOM_CSS_CUSTOM = 3

MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for the cssValueType property.
85.20.8  DOM_CSS_INHERIT = 0

MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for the cssValueType property.

85.20.9  DOM_CSS_PRIMITIVE_VALUE = 1

MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for the cssValueType property.

85.20.10 DOM_CSS_VALUE_LIST = 2

MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for the cssValueType property.
85.21. **CLASS DOMDOCUMENTFRAGMENTMBS**

### 85.21 class DOMDocumentFragmentMBS

#### 85.21.1 class DOMDocumentFragmentMBS

**Function:** One of the DOM classes.  
**Notes:**  
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.  
Subclass of the DOMNodeMBS class.  
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.
85.22  class DOMDocumentMBS

85.22.1 class DOMDocumentMBS

**Function:** One of the DOM classes.
**Notes:**
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMNodeMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.22.2 Methods

85.22.3 createAttribute(name as string) as DOMAttrMBS

**Function:** Check the DOM documentation for details on this function.

85.22.4 createAttributeNS(namespaceURI as string, qualifiedName as string) as DOMAttrMBS

**Function:** Check the DOM documentation for details on this function.

85.22.5 createCDATASection(data as string) as DOMCDATASectionMBS

**Function:** Check the DOM documentation for details on this function.

85.22.6 createComment(data as string) as DOMCommentMBS

**Function:** Check the DOM documentation for details on this function.
85.22.27. createCSSStyleDeclaration as DOMCSSStyleDeclarationMBS

**Function:** Check the DOM documentation for details on this function.

85.22.28. createDocumentFragment as DOMDocumentFragmentMBS

**Function:** Check the DOM documentation for details on this function.

85.22.29. createElement(tagName as string) as DOMElementMBS

**Function:** Check the DOM documentation for details on this function.

85.22.30. createElementNS(namespaceURI as string, qualifiedName as string) as DOMElementMBS

**Function:** Check the DOM documentation for details on this function.

85.22.31. createEntityReference(name as string) as DOMEntityReferenceMBS

**Function:** Check the DOM documentation for details on this function.

85.22.32. createProcessingInstruction(target as string, data as string) as DOMProcessingInstructionMBS

**Function:** Check the DOM documentation for details on this function.
85.22.13 **createRange as DOMRangeMBS**

**Function:** Check the DOM documentation for details on this function.

85.22.14 **createTextNode(data as string) as DOMTextMBS**

**Function:** Check the DOM documentation for details on this function.

85.22.15 **defaultView as DOMAbstractViewMBS**

**Function:** Check the DOM documentation for details on this function.

85.22.16 **doctype as DOMDocumentTypeMBS**

**Function:** Check the DOM documentation for details on this function.

85.22.17 **documentElement as DOMElementMBS**

**Function:** Check the DOM documentation for details on this function.

85.22.18 **getComputedStyle(elt as DOMElementMBS, pseudoElt as string) as DOMCSSStyleDeclarationMBS**

**Function:** Check the DOM documentation for details on this function.

85.22.19 **getElementById(elementId as string) as DOMElementMBS**

**Function:** Check the DOM documentation for details on this function.
85.22.20  getElementsByTagName(name as string) as DOMNodeListMBS

Function: Check the DOM documentation for details on this function.

85.22.21  getElementsByTagNameNS(namespaceURI as string, localName as string) as DOMNodeListMBS

Function: Check the DOM documentation for details on this function.

85.22.22  getOverrideStyle(elt as DOMElementMBS, pseudoElt as string) as DOMCSSStyleDeclarationMBS

Function: Check the DOM documentation for details on this function.

85.22.23  implementation as DOMImplementationMBS

Function: Check the DOM documentation for details on this function.

85.22.24  importNode(importedNode as DOMNodeMBS, deep as boolean) as DOMNodeMBS

Function: Check the DOM documentation for details on this function.

85.22.25  styleSheets as DOMStyleSheetListMBS

Function: Check the DOM documentation for details on this function.
85.23 class DOMDocumentTypeMBS

85.23.1 class DOMDocumentTypeMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMNodeMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.23.2 Methods

85.23.3 entities as DOMElementMBS

Function: Check the DOM documentation for details on this function.

85.23.4 internalSubset as String

Function: Check the DOM documentation for details on this function.

85.23.5 name as String

Function: Check the DOM documentation for details on this function.

85.23.6 notations as DOMElementMBS

Function: Check the DOM documentation for details on this function.
85.23. **CLASS DOMDOCUMENTTYPEMBS**

85.23.7 **publicId as String**

**Function:** Check the DOM documentation for details on this function.

85.23.8 **systemId as String**

**Function:** Check the DOM documentation for details on this function.
85.24 class DOMElementMBS

85.24.1 class DOMElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMNodeMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.24.2 Methods

85.24.3 getAttribute(name as string) as string

Function: Check the DOM documentation for details on this function.

85.24.4 getAttributeNode(name as string) as DOMAttrMBS

Function: Check the DOM documentation for details on this function.

85.24.5 getAttributeNodeNS(namespaceURI as string, localName as string) as DOMAttrMBS

Function: Check the DOM documentation for details on this function.

85.24.6 getAttributeNS(namespaceURI as string, localName as string) as String

Function: Check the DOM documentation for details on this function.
85.24. CLASS DOMELEMENTMBS

85.24.7 getElementsByTagName(name as string) as DOMNodeListMBS

Function: Check the DOM documentation for details on this function.

85.24.8 getElementsByTagNameNS(namespaceURI as string, localName as string) as DOMNodeListMBS

Function: Check the DOM documentation for details on this function.

85.24.9 hasAttribute(name as string) as boolean

Function: Check the DOM documentation for details on this function.

85.24.10 hasAttributeNS(namespaceURI as string, localName as string) as boolean

Function: Check the DOM documentation for details on this function.

85.24.11 removeAttribute(name as string)

Function: Check the DOM documentation for details on this function.

85.24.12 removeAttributeNode(oldAttr as DOMAttrMBS) as DOMAttrMBS

Function: Check the DOM documentation for details on this function.

85.24.13 removeAttributeNS(namespaceURI as string, qualifiedName as string)

Function: Check the DOM documentation for details on this function.
85.24.14  setAttribute(name as string, value as string)

Function: Check the DOM documentation for details on this function.

85.24.15  setAttributeNode(newAttr as DOMAttrMBS) as DOMAttrMBS

Function: Check the DOM documentation for details on this function.

85.24.16  setAttributeNodeNS(newAttr as DOMAttrMBS) as DOMAttrMBS

Function: Check the DOM documentation for details on this function.

85.24.17  setAttributeNS(namespaceURI as string, qualifiedName as string, value as string)

Function: Check the DOM documentation for details on this function.

85.24.18  style as DOMCSSStyleDeclarationMBS

Function: Check the DOM documentation for details on this function.

85.24.19  tagName as String

Function: Check the DOM documentation for details on this function.
85.25 class DOMEntityMBS

85.25.1 class DOMEntityMBS

**Function:** One of the DOM classes.

**Notes:**
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMNodeMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.25.2 Methods

85.25.3 notationName as String

**Function:** Check the DOM documentation for details on this function.

85.25.4 publicId as String

**Function:** Check the DOM documentation for details on this function.

85.25.5 systemId as String

**Function:** Check the DOM documentation for details on this function.
85.26 class DOMEntityReferenceMBS

85.26.1 class DOMEntityReferenceMBS


Function: One of the DOM classes.

Notes:

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

Subclass of the DOMNodeMBS class.

This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.
class DOMHTMLAnchorElementMBS


Function: One of the DOM classes.

Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

Methods

blur

Function: Check the DOM documentation for details on this function.

focus

Function: Check the DOM documentation for details on this function.

Properties

accessKey as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

charset as String

Function: Check the DOM documentation for details on this function.
**85.27.8 coords as String**

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

**85.27.9 href as String**

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

**85.27.10 hreflang as String**

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

**85.27.11 name as String**

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

**85.27.12 rel as String**

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

**85.27.13 rev as String**

**Function:** Check the DOM documentation for details on this function.
85.27.14  shape as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.27.15  tabIndex as Integer

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.27.16  target as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.27.17  type as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.28 class DOMHTMLAppletElementMBS

85.28.1 class DOMHTMLAppletElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.28.2 Properties

85.28.3 align as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.28.4 alt as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.28.5 archive as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.28.6 code as string

Function: Check the DOM documentation for details on this function.
85.28. **codeBase as string**


**Function:** Check the DOM documentation for details on this function.

**Notes:** (Read and Write computed property)

85.28. **height as String**


**Function:** Check the DOM documentation for details on this function.

**Notes:** (Read and Write computed property)

85.28. **hspace as Integer**


**Function:** Check the DOM documentation for details on this function.

**Notes:** (Read and Write computed property)

85.28. **name as String**


**Function:** Check the DOM documentation for details on this function.

**Notes:** (Read and Write computed property)

85.28. **objectValue as String**


**Function:** Check the DOM documentation for details on this function.

**Notes:** (Read and Write computed property)

85.28. **vspace as Integer**


**Function:** Check the DOM documentation for details on this function.
85.28.13 width as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.29. **class DOMHTMLAreaElementMBS**

**85.29.1 class DOMHTMLAreaElementMBS**


**Function:** One of the DOM classes.

**Notes:**

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct. Subclass of the DOMHTMLElementMBS class. This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

**85.29.2 Properties**

**85.29.3 accessKey as String**


**Function:** Check the DOM documentation for details on this function.

**Notes:** (Read and Write computed property)

**85.29.4 alt as String**


**Function:** Check the DOM documentation for details on this function.

**Notes:** (Read and Write computed property)

**85.29.5 coords as String**


**Function:** Check the DOM documentation for details on this function.

**Notes:** (Read and Write computed property)

**85.29.6 href as String**


**Function:** Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.29.7 noHref as boolean

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.29.8 shape as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.29.9 tabIndex as Integer

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.29.10 target as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.30  class DOMHTMLBaseElementMBS

85.30.1  class DOMHTMLBaseElementMBS

Function: One of the DOM classes.
Notes:All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.30.2  Properties

85.30.3  href as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.30.4  target as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.31 class DOMHTMLBaseFontElementMBS

85.31.1 class DOMHTMLBaseFontElementMBS


Function: One of the DOM classes.

Notes:

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

Subclass of the DOMHTMLElementMBS class.

This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.31.2 Properties

85.31.3 colorValue as String


Function: Check the DOM documentation for details on this function.

Notes: (Read and Write computed property)

85.31.4 face as String


Function: Check the DOM documentation for details on this function.

Notes: (Read and Write computed property)

85.31.5 size as String


Function: Check the DOM documentation for details on this function.

Notes: (Read and Write computed property)
85.32. CLASS DOMHTMLBODYELEMENTMBS

85.32  class DOMHTMLBodyElementMBS

85.32.1 class DOMHTMLBodyElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the
message, name and reason properties you can see what was the reason for this exception. Please report if
you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin
functions.

85.32.2 Properties

85.32.3 aLink as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.32.4 background as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.32.5 bgColor as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.32.6 link as String

Function: Check the DOM documentation for details on this function.
85.32.7  text as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.32.8  vLink as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
class DOMHTMLBRElementMBS

85.33.1 class DOMHTMLBRElementMBS


Function: One of the DOM classes.

Notes:

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

Subclass of the DOMHTMLElementMBS class.

This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.33.2 Properties

85.33.3 clear as String


Function: Check the DOM documentation for details on this function.

Notes: (Read and Write computed property)
85.34 class DOMHTMLButtonElementMBS

85.34.1 class DOMHTMLButtonElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.34.2 Methods

85.34.3 form as DOMHTMLFormElementMBS

Function: Check the DOM documentation for details on this function.

85.34.4 type as String

Function: Check the DOM documentation for details on this function.

85.34.5 Properties

85.34.6 accessKey as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.34.7 disabled as boolean

Function: Check the DOM documentation for details on this function.
85.34.8  **name as String**

**Function:** Check the DOM documentation for details on this function.  
**Notes:** (Read and Write computed property)

85.34.9  **tabIndex as Integer**

**Function:** Check the DOM documentation for details on this function.  
**Notes:** (Read and Write computed property)

85.34.10  **value as String**

**Function:** Check the DOM documentation for details on this function.  
**Notes:** (Read and Write computed property)
85.35  class DOMHTMLCollectionMBS

85.35.1  class DOMHTMLCollectionMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the
message, name and reason properties you can see what was the reason for this exception. Please report if
you find a method which does not handle exceptions correct.
Subclass of the DOMObjectMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin
functions.

85.35.2  Methods

85.35.3  item(index as UInt32) as DOMNodeMBS

Function: Check the DOM documentation for details on this function.

85.35.4  length as Integer

Function: Check the DOM documentation for details on this function.

85.35.5  namedItem(name as string) as DOMNodeMBS

Function: Check the DOM documentation for details on this function.
85.36.  class DOMHTMLDirectoryElementMBS

85.36.1  class DOMHTMLDirectoryElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the
message, name and reason properties you can see what was the reason for this exception. Please report if
you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin
functions.

85.36.2  Properties

85.36.3  compact as boolean

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.37 class DOMHTMLDivElementMBS

85.37.1 class DOMHTMLDivElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the
message, name and reason properties you can see what was the reason for this exception. Please report if
you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLDivElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin
functions.

85.37.2 Properties

85.37.3 align as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.38. **CLASS DOMHTMLDLISTELEMENTMBS**

85.38 **class DOMHTMLDListElementMBS**

85.38.1 **class DOMHTMLDLListElementMBS**


**Function:** One of the DOM classes.

**Notes:**

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

Subclass of the DOMHTMLElementMBS class.

This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.38.2 **Properties**

85.38.3 **compact as boolean**


**Function:** Check the DOM documentation for details on this function.

**Notes:** (Read and Write computed property)
85.39 class DOMHTMLDocumentMBS

85.39.1 class DOMHTMLDocumentMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMDocumentMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.39.2 Methods

85.39.3 anchors as DOMHTMLCollectionMBS

Function: Check the DOM documentation for details on this function.

85.39.4 applets as DOMHTMLCollectionMBS

Function: Check the DOM documentation for details on this function.

85.39.5 close

Function: Check the DOM documentation for details on this function.

85.39.6 domain as String

Function: Check the DOM documentation for details on this function.
85.39. **CLASS DOMHTMLDOCUMENTMBS**

85.39.7 **forms as DOMHTMLCollectionMBS**

**Function:** Check the DOM documentation for details on this function.

85.39.8 **getElementById(elementId as string) as DOMElementMBS**

**Function:** Check the DOM documentation for details on this function.

85.39.9 **getElementsByName(elementName as string) as DOMNodeListMBS**

**Function:** Check the DOM documentation for details on this function.

85.39.10 **images as DOMHTMLCollectionMBS**

**Function:** Check the DOM documentation for details on this function.

85.39.11 **links as DOMHTMLCollectionMBS**

**Function:** Check the DOM documentation for details on this function.

85.39.12 **open**

**Function:** Check the DOM documentation for details on this function.

85.39.13 **referrer as String**

**Function:** Check the DOM documentation for details on this function.
85.39.14 **URL as String**

**Function:** Check the DOM documentation for details on this function.

85.39.15 **write(text as string)**

**Function:** Check the DOM documentation for details on this function.

85.39.16 **writeln(text as string)**

**Function:** Check the DOM documentation for details on this function.

85.39.17 **Properties**

85.39.18 **body as DOMHTMLMBS**

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.39.19 **cookie as String**

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.39.20 **title as String**

**Function:** Check the DOM documentation for details on this function.
**Example:**

```vbs
dim f as WebFrameMBS = HTMLViewer1.mainFrameMBS
dim doc as DOMDocumentMBS = f.DOMDocument
```
if doc isa DOMHTMLDocumentMBS then // works only if you loaded html document in htmlviewer.
dim h as DOMHTMLDocumentMBS = DOMHTMLDocumentMBS(doc)
MsgBox h.Title
end if

Notes: (Read and Write computed property)
85.40  class DOMHTMLElementMBS

85.40.1  class DOMHTMLElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the
message, name and reason properties you can see what was the reason for this exception. Please report if
you find a method which does not handle exceptions correct.
Subclass of the DOMElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin
functions.

85.40.2  Methods

85.40.3  children as DOMHTMLCollectionMBS

Function: Check the DOM documentation for details on this function.

85.40.4  isContentEditable as boolean

Function: Check the DOM documentation for details on this function.

85.40.5  Properties

85.40.6  className as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.40.7  contentEditable as String

Function: Check the DOM documentation for details on this function.
85.40. CLASS DOMHTMLELEMENTMBS

Notes: (Read and Write computed property)

85.40.8 dir as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.40.9 idName as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.40.10 innerHTML as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.40.11 innerText as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.40.12 lang as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.40.13 outerHTML as String

Function: Check the DOM documentation for details on this function.
85.40.14 outerText as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.40.15 title as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.41. **CLASS DOMHTMLEMBEDELEMENTMBS**

85.41 **class DOMHTMLEmbedElementMBS**

85.41.1 **class DOMHTMLEmbedElementMBS**


**Function:** One of the DOM classes.

**Notes:**
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.41.2 **Properties**

85.41.3 **align as String**


**Function:** Check the DOM documentation for details on this function.

**Notes:** (Read and Write computed property)

85.41.4 **height as Integer**


**Function:** Check the DOM documentation for details on this function.

**Notes:** (Read and Write computed property)

85.41.5 **name as String**


**Function:** Check the DOM documentation for details on this function.

**Notes:** (Read and Write computed property)

85.41.6 **src as String**


**Function:** Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.41.7 type as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.41.8 width as Integer

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
class DOMHTMLFieldSetElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

Methods

form as DOMHTMLFormElementMBS

Function: Check the DOM documentation for details on this function.
85.43 class DOMHTMLFontElementMBS

85.43.1 class DOMHTMLFontElementMBS

**Function:** One of the DOM classes.
**Notes:**

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.43.2 Properties

85.43.3 colorValue as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.43.4 face as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.43.5 size as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)
85.44. **CLASS DOMHTMLFORMELEMENTMBS**

85.44 class DOMHTMLFormElementMBS

85.44.1 class DOMHTMLFormElementMBS

**Function:** One of the DOM classes.  
**Notes:**  
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.  
Subclass of the DOMHTMLElementMBS class.  
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.44.2 Methods

85.44.3 elements as DOMHTMLCollectionMBS

**Function:** Check the DOM documentation for details on this function.

85.44.4 length as Integer

**Function:** Check the DOM documentation for details on this function.

85.44.5 reset

**Function:** Check the DOM documentation for details on this function.

85.44.6 submit

**Function:** Check the DOM documentation for details on this function.
85.44.7 Properties

85.44.8 acceptCharset as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.44.9 action as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.44.10 enctype as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.44.11 method as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.44.12 name as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.44.13 target as String

Function: Check the DOM documentation for details on this function.
85.44. **CLASS DOMHTMLFORMELEMENTMBS**

**Notes:** (Read and Write computed property)
85.45 class DOMHTMLFrameElementMBS

85.45.1 class DOMHTMLFrameElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the
message, name and reason properties you can see what was the reason for this exception. Please report if
you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin
functions.

85.45.2 Methods

85.45.3 contentDocument as DOMDocumentMBS

Function: Check the DOM documentation for details on this function.

85.45.4 Properties

85.45.5 frameborder as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.45.6 longDesc as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.45. **CLASS DOMHTMLFRAMEELEMENTMBS**

85.45.7 **marginHeight as String**

**Function:** Check the DOM documentation for details on this function.  
**Notes:** (Read and Write computed property)

85.45.8 **marginWidth as String**

**Function:** Check the DOM documentation for details on this function.  
**Notes:** (Read and Write computed property)

85.45.9 **name as String**

**Function:** Check the DOM documentation for details on this function.  
**Notes:** (Read and Write computed property)

85.45.10 **noResize as Boolean**

**Function:** Check the DOM documentation for details on this function.  
**Notes:** (Read and Write computed property)

85.45.11 **scrolling as String**

**Function:** Check the DOM documentation for details on this function.  
**Notes:** (Read and Write computed property)

85.45.12 **src as String**

**Function:** Check the DOM documentation for details on this function.  
**Notes:** (Read and Write computed property)
class DOMHTMLFrameSetElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

Properties

cols as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

rows as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.47  class DOMHTMLHeadElementMBS

85.47.1  class DOMHTMLHeadElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the
message, name and reason properties you can see what was the reason for this exception. Please report if
you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin
functions.

85.47.2  Properties

85.47.3  profile as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.48 class DOMHTMLHeadingElementMBS

85.48.1 class DOMHTMLHeadingElementMBS


Function: One of the DOM classes.

Notes:

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

Subclass of the DOMHTMLElementMBS class.

This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.48.2 Properties

85.48.3 align as String


Function: Check the DOM documentation for details on this function.

Notes: (Read and Write computed property)
85.49  class DOMHTMLHRElementMBS

85.49.1  class DOMHTMLHRElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the
message, name and reason properties you can see what was the reason for this exception. Please report if
you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin
functions.

85.49.2  Properties

85.49.3  align as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.49.4  noShade as Boolean

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.49.5  size as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.49.6  width as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.50  class DOMHTMLHtmlElementMBS

85.50.1  class DOMHTMLHtmlElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.50.2  Properties

85.50.3  version as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.51  class DOMHTMLIFrameElementMBS

85.51.1  class DOMHTMLIFrameElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the
message, name and reason properties you can see what was the reason for this exception. Please report if
you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin
functions.

85.51.2  Methods

85.51.3  contentDocument as DOMDocumentMBS

Function: Check the DOM documentation for details on this function.

85.51.4  Properties

85.51.5  align as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.51.6  frameBorder as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.51. **height as String**

**Function:** Check the DOM documentation for details on this function.  
**Notes:** (Read and Write computed property)

85.51. **longDesc as String**

**Function:** Check the DOM documentation for details on this function.  
**Notes:** (Read and Write computed property)

85.51. **marginHeight as String**

**Function:** Check the DOM documentation for details on this function.  
**Notes:** (Read and Write computed property)

85.51. **marginWidth as String**

**Function:** Check the DOM documentation for details on this function.  
**Notes:** (Read and Write computed property)

85.51. **name as String**

**Function:** Check the DOM documentation for details on this function.  
**Notes:** (Read and Write computed property)

85.51. **scrolling as String**

**Function:** Check the DOM documentation for details on this function.  
**Notes:** (Read and Write computed property)
85.51.13  src as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.51.14  width as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.52. Class DOMHTMLImageElementMBS

85.52.1 Class DOMHTMLImageElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the
message, name and reason properties you can see what was the reason for this exception. Please report if
you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLImageElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin
functions.

85.52.2 Properties

85.52.3 align as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.52.4 alt as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.52.5 border as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.52.6 height as Integer

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.52.7 hspace as Integer

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.52.8 isMap as boolean

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.52.9 longDesc as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.52.10 name as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.52.11 src as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.52.12 useMap as String

Function: Check the DOM documentation for details on this function.
85.52.13 vspace as Integer

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.52.14 width as Integer

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.53  class DOMHTMLInputElementMBS

85.53.1  class DOMHTMLInputElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the
message, name and reason properties you can see what was the reason for this exception. Please report if
you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin
functions.

85.53.2  Methods

85.53.3  blur

Function: Check the DOM documentation for details on this function.

85.53.4  click

Function: Check the DOM documentation for details on this function.

85.53.5  focus

Function: Check the DOM documentation for details on this function.

85.53.6  form as DOMHTMLFormElementMBS

Function: Check the DOM documentation for details on this function.
85.53.7 selectMethod

Function: Check the DOM documentation for details on this function.

85.53.8 Properties

85.53.9 accept as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.53.10 accessKey as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.53.11 align as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.53.12 alt as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.53.13 checked as boolean

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.53.14  **defaultChecked as boolean**

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.53.15  **defaultValue as String**

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.53.16  **disabled as boolean**

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.53.17  **maxLength as Integer**

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.53.18  **name as String**

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.53.19  **readOnly as boolean**

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)
85.53. CLASS DOMHTMLINPUTELEMENTMBS

85.53.20 size as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.53.21 src as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.53.22 tabIndex as Integer

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.53.23 type as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.53.24 useMap as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.53.25 value as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.54 class DOMHTMLIsIndexElementMBS

85.54.1 class DOMHTMLIsIndexElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.54.2 Methods

85.54.3 form as DOMHTMLFormElementMBS

Function: Check the DOM documentation for details on this function.

85.54.4 Properties

85.54.5 prompt as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
class DOMHTMLLabelElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

Methods

form as DOMHTMLFormElementMBS

Properties

accessKey as String

htmlFor as String
85.56 class DOMHTMLLegendElementMBS

85.56.1 class DOMHTMLLegendElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.56.2 Methods

85.56.3 form as DOMHTMLFormElementMBS

Function: Check the DOM documentation for details on this function.

85.56.4 Properties

85.56.5 accessKey as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.56.6 align as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.57. class DOMHTMLLIElementMBS

85.57.1 class DOMHTMLLIElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the
message, name and reason properties you can see what was the reason for this exception. Please report if
you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin
functions.

85.57.2 Properties

85.57.3 type as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.57.4 value as Integer

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.58 class DOMHTMLLinkElementMBS

85.58.1 class DOMHTMLLinkElementMBS

Function: One of the DOM classes.
Notes: All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.58.2 Properties

85.58.3 charset as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.58.4 disabled as boolean

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.58.5 href as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.58.6 hreflang as String

Function: Check the DOM documentation for details on this function.
85.58.7 media as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.58.8 rel as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.58.9 rev as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.58.10 target as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.58.11 type as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.59 class DOMHTMLMapElementMBS

85.59.1 class DOMHTMLMapElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.59.2 Methods

85.59.3 areas as DOMHTMLCollectionMBS

Function: Check the DOM documentation for details on this function.

85.59.4 Properties

85.59.5 name as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.60. **CLASS DOMHTMLMENUELEMENTMBS**

85.60  **class DOMHTMLMenuElementMBS**

85.60.1  **class DOMHTMLMenuElementMBS**

**Function:** One of the DOM classes.
**Notes:**
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.60.2  **Properties**

85.60.3  **compact as boolean**

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)
85.61 class DOMHTMLMetaElementMBS

85.61.1 class DOMHTMLMetaElementMBS

**Function:** One of the DOM classes.

**Notes:**
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.61.2 Properties

85.61.3 content as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.61.4 httpEquiv as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.61.5 name as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.61.6 scheme as String

**Function:** Check the DOM documentation for details on this function.
85.61. CLASS DOMHTMLMETAELEMENTMBS

Notes: (Read and Write computed property)
85.62 class DOMHTMLModElementMBS

85.62.1 class DOMHTMLModElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.62.2 Properties

85.62.3 cite as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.62.4 dateTime as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.63. class DOMHTMLObjectElementMBS

85.63.1 class DOMHTMLObjectElementMBS


Function: One of the DOM classes.

Notes:

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

Subclass of the DOMHTMLElementMBS class.

This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.63.2 Methods

85.63.3 cells as DOMDocumentMBS


Function: Check the DOM documentation for details on this function.

85.63.4 form as DOMHTMLFormElementMBS


Function: Check the DOM documentation for details on this function.

85.63.5 Properties

85.63.6 align as string


Function: Check the DOM documentation for details on this function.

Notes: (Read and Write computed property)

85.63.7 archive as string


Function: Check the DOM documentation for details on this function.
85.63.8  border as string

**Function:** Check the DOM documentation for details on this function.  
**Notes:** (Read and Write computed property)

85.63.9  code as string

**Function:** Check the DOM documentation for details on this function.  
**Notes:** (Read and Write computed property)

85.63.10  codeBase as string

**Function:** Check the DOM documentation for details on this function.  
**Notes:** (Read and Write computed property)

85.63.11  codeType as string

**Function:** Check the DOM documentation for details on this function.  
**Notes:** (Read and Write computed property)

85.63.12  data as string

**Function:** Check the DOM documentation for details on this function.  
**Notes:** (Read and Write computed property)

85.63.13  declareValue as boolean

**Function:** Check the DOM documentation for details on this function.
85.63. CLASS DOMHTMLOBJECTELEMENTMBS

Notes: (Read and Write computed property)

85.63.14  height as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.63.15  hspace as Integer

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.63.16  name as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.63.17  standby as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.63.18  tabIndex as Integer

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.63.19  type as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.63.20  useMap as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.63.21  vspace as Integer

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.63.22  width as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
class DOMHTMLOLListElementMBS

Function: One of the DOM classes.
Notes:

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

Properties

compact as boolean

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

start as Integer

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

type as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.65 class DOMHTMLOptGroupElementMBS

85.65.1 class DOMHTMLOptGroupElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the
message, name and reason properties you can see what was the reason for this exception. Please report if
you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin
functions.

85.65.2 Properties

85.65.3 content as boolean

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.65.4 label as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.66. **CLASS DOMHTMLOPTIONELEMENTMBS**

85.66. **class DOMHTMLOptionElementMBS**

85.66.1 **class DOMHTMLOptionElementMBS**


**Function:** One of the DOM classes.

**Notes:**

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

Subclass of the DOMHTMLElementMBS class.

This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.66.2 **Methods**

85.66.3 **form as DOMHTMLFormElementMBS**


**Function:** Check the DOM documentation for details on this function.

85.66.4 **index as Integer**


**Function:** Check the DOM documentation for details on this function.

85.66.5 **text as String**


**Function:** Check the DOM documentation for details on this function.

85.66.6 **Properties**

85.66.7 **defaultSelected as boolean**


**Function:** Check the DOM documentation for details on this function.
85.66.8 disabled as boolean


Function: Check the DOM documentation for details on this function.

Notes: (Read and Write computed property)

85.66.9 label as String


Function: Check the DOM documentation for details on this function.

Notes: (Read and Write computed property)

85.66.10 selected as boolean


Function: Check the DOM documentation for details on this function.

Notes: (Read and Write computed property)

85.66.11 value as String


Function: Check the DOM documentation for details on this function.

Notes: (Read and Write computed property)
**85.67. CLASS DOMHTMLOPTIONSCOLLECTIONMBS**

**85.67. class DOMHTMLOptionsCollectionMBS**


**Function:** One of the DOM classes.

**Notes:**
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMObjectMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

**85.67.2 Methods**

**85.67.3 item(index as Integer) as DOMNodeMBS**


**Function:** Check the DOM documentation for details on this function.

**85.67.4 namedItem(name as string) as DOMNodeMBS**


**Function:** Check the DOM documentation for details on this function.

**85.67.5 Properties**

**85.67.6 length as Integer**


**Function:** Check the DOM documentation for details on this function.

**Notes:** (Read and Write computed property)
85.68 class DOMHTMLParagraphElementMBS

85.68.1 class DOMHTMLParagraphElementMBS

Function: One of the DOM classes.
Notes:

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.68.2 Properties

85.68.3 align as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.69. **CLASS DOMHTMLPARAMELEMENTMBS**

85.69  **class DOMHTMLParamElementMBS**

85.69.1  **class DOMHTMLParamElementMBS**


**Function:** One of the DOM classes.

**Notes:**

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

Subclass of the DOMHTMLElementMBS class. This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.69.2  **Properties**

85.69.3  **name as String**


**Function:** Check the DOM documentation for details on this function.

**Notes:** (Read and Write computed property)

85.69.4  **type as String**


**Function:** Check the DOM documentation for details on this function.

**Notes:** (Read and Write computed property)

85.69.5  **value as String**


**Function:** Check the DOM documentation for details on this function.

**Notes:** (Read and Write computed property)

85.69.6  **valueType as String**


**Function:** Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
class DOMHTMLPreElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

Properties

width as Integer

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.71 class DOMHTMLQuoteElementMBS

85.71.1 class DOMHTMLQuoteElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the
message, name and reason properties you can see what was the reason for this exception. Please report if
you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin
functions.

85.71.2 Properties

85.71.3 cite as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.72. CLASS DOMHTMLSCRIPTELEMENTMBS

85.72 class DOMHTMLScriptElementMBS

85.72.1 class DOMHTMLScriptElementMBS


Function: One of the DOM classes.

Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the
message, name and reason properties you can see what was the reason for this exception. Please report if
you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin
functions.

85.72.2 Properties

85.72.3 charset as String


Function: Check the DOM documentation for details on this function.

Notes: (Read and Write computed property)

85.72.4 defer as boolean


Function: Check the DOM documentation for details on this function.

Notes: (Read and Write computed property)

85.72.5 eventValue as String


Function: Check the DOM documentation for details on this function.

Notes: (Read and Write computed property)

85.72.6 htmlFor as String


Function: Check the DOM documentation for details on this function.
85.72.7  src as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.72.8  text as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.72.9  type as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.73. CLASS DOMHTMLSELECTELEMENTMBS

85.73. class DOMHTMLSelectElementMBS

85.73.1. class DOMHTMLSelectElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.73.2. Methods

85.73.3. add(element as DOMHTMLInputElementMBS, before as DOMHTMLInputElementMBS)

Function: Check the DOM documentation for details on this function.

85.73.4. blur

Function: Check the DOM documentation for details on this function.

85.73.5. focus

Function: Check the DOM documentation for details on this function.

85.73.6. form as DOMHTMLFormElementMBS

Function: Check the DOM documentation for details on this function.
85.73.7 length as Integer

Function: Check the DOM documentation for details on this function.

85.73.8 options as DOMHTMLOptionsCollectionMBS

Function: Check the DOM documentation for details on this function.

85.73.9 remove(index as Integer)

Function: Check the DOM documentation for details on this function.

85.73.10 type as String

Function: Check the DOM documentation for details on this function.

85.73.11 Properties

85.73.12 disabled as boolean

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.73.13 multiple as boolean

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.73.14 name as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.73.15 selectedIndex as Integer

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.73.16 size as Integer

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.73.17 tabIndex as Integer

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.73.18 value as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.74 class DOMHTMLStyleElementMBS

85.74.1 class DOMHTMLStyleElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.74.2 Properties

85.74.3 content as boolean

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.74.4 media as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.74.5 type as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.75. class DOMHTMLTableCaptionElementMBS

85.75.1 class DOMHTMLTableCaptionElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.75.2 Properties

85.75.3 align as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
class DOMHTMLTableCellElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

Methods

cellIndex as Integer

Function: Check the DOM documentation for details on this function.

Properties

abbr as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

align as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.76.7  axis as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.76.8  bgColor as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.76.9  ch as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.76.10  chOff as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.76.11  colSpan as Integer

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.76.12  headers as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.76.13  height as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.76.14  nowrap as boolean

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.76.15  rowspan as Integer

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.76.16  scope as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.76.17  vAlign as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.76.18  width as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.77  class DOMHTMLTableColElementMBS

85.77.1  class DOMHTMLTableColElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the
message, name and reason properties you can see what was the reason for this exception. Please report if
you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin
functions.

85.77.2  Properties

85.77.3  align as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.77.4  ch as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.77.5  chOff as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.77.6  span as Integer

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.77.7  vAlign as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.77.8  width as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
class DOMHTMLTableElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

Methods

createCaption as DOMHTMLElementMBS

Function: Check the DOM documentation for details on this function.

createTFoot as DOMHTMLElementMBS

Function: Check the DOM documentation for details on this function.

createTHead as DOMHTMLElementMBS

Function: Check the DOM documentation for details on this function.

deleteCaption

Function: Check the DOM documentation for details on this function.
**85.78.7 deleteRow(index as Integer)**

Function: Check the DOM documentation for details on this function.

**85.78.8 deleteTFooter**

Function: Check the DOM documentation for details on this function.

**85.78.9 deleteTHeader**

Function: Check the DOM documentation for details on this function.

**85.78.10 insertRow(index as Integer) as DOMHTMLElementMBS**

Function: Check the DOM documentation for details on this function.

**85.78.11 rows as DOMHTMLCollectionMBS**

Function: Check the DOM documentation for details on this function.

**85.78.12 tBodies as DOMHTMLCollectionMBS**

Function: Check the DOM documentation for details on this function.
85.78.13 Properties

85.78.14 align as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.78.15 bgColor as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.78.16 border as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.78.17 caption as DOMHTMLTableCaptionElementMBS

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.78.18 cellPadding as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.78.19 cellSpacing as string

Function: Check the DOM documentation for details on this function.
85.78.20  frameBorders as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.78.21  rules as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.78.22  summary as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.78.23  tFoot as DOMHTMLTableSectionElementMBS

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.78.24  tHead as DOMHTMLTableSectionElementMBS

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.78.25  width as string

Function: Check the DOM documentation for details on this function.
85.78. CLASS DOMHTMLTABLEELEMENTMBS

Notes: (Read and Write computed property)
85.79 class DOMHTMLTableRowElementMBS

85.79.1 class DOMHTMLTableRowElementMBS

**Function:** One of the DOM classes.

**Notes:**
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.79.2 Methods

85.79.3 cells as DOMHTMLCollectionMBS

**Function:** Check the DOM documentation for details on this function.

85.79.4 deleteCell(index as Integer)

**Function:** Check the DOM documentation for details on this function.

85.79.5 insertCell(index as Integer) as DOMHTMLElementMBS

**Function:** Check the DOM documentation for details on this function.

85.79.6 rowIndex as Integer

**Function:** Check the DOM documentation for details on this function.
85.79.7  sectionRowIndex as Integer

Function: Check the DOM documentation for details on this function.

85.79.8  Properties

85.79.9  align as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.79.10  bgColor as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.79.11  ch as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.79.12  chOff as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.79.13  vAlign as string

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
class DOMHTMLTableSectionElementMBS

85.80.1 class DOMHTMLTableSectionElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.80.2 Methods

85.80.3 deleteRow(index as Integer)

Function: Check the DOM documentation for details on this function.

85.80.4 insertRow(index as Integer) as DOMHTMLElementMBS

Function: Check the DOM documentation for details on this function.

85.80.5 rows as DOMHTMLCollectionMBS

Function: Check the DOM documentation for details on this function.

85.80.6 Properties

85.80.7 align as string

Function: Check the DOM documentation for details on this function.
85.80. **CLASS DOMHTMLTABLESECTIONELEMENTMBS**

**Notes:** (Read and Write computed property)

---

**85.80.8 **ch** as string**


**Function:** Check the DOM documentation for details on this function.

**Notes:** (Read and Write computed property)

---

**85.80.9 **chOff** as string**


**Function:** Check the DOM documentation for details on this function.

**Notes:** (Read and Write computed property)

---

**85.80.10 **vAlign** as string**


**Function:** Check the DOM documentation for details on this function.

**Notes:** (Read and Write computed property)
85.81 class DOMHTMLTextAreaElementMBS

85.81.1 class DOMHTMLTextAreaElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLMElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.81.2 Methods

85.81.3 blur

Function: Check the DOM documentation for details on this function.

85.81.4 focus

Function: Check the DOM documentation for details on this function.

85.81.5 form as DOMHTMLFormElementMBS

Function: Check the DOM documentation for details on this function.

85.81.6 selectMethod

Function: Check the DOM documentation for details on this function.
85.81.7  type as String

**Function:** Check the DOM documentation for details on this function.

85.81.8  Properties

85.81.9  accessKey as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.81.10  cols as Integer

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.81.11  defaultValue as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.81.12  disabled as boolean

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.81.13  name as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)
85.81.14  `readOnly` as boolean

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.81.15  `rows` as Integer

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.81.16  `tabIndex` as Integer

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)

85.81.17  `value` as String

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)
85.82. CLASS DOMHTMLTITLEELEMENTMBS

85.82 class DOMHTMLTitleElementMBS

85.82.1 class DOMHTMLTitleElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the
message, name and reason properties you can see what was the reason for this exception. Please report if
you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin
functions.

85.82.2 Properties

85.82.3 text as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.83 class DOMHTMLULItemListElementMBS

85.83.1 class DOMHTMLULItemListElementMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the
message, name and reason properties you can see what was the reason for this exception. Please report if
you find a method which does not handle exceptions correct.
Subclass of the DOMHTMLElementMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin
functions.

85.83.2 Properties

85.83.3 compact as boolean

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.83.4 type as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.84  class DOMImplementationMBS

85.84.1  class DOMImplementationMBS

**Function:** One of the DOM classes.
**Notes:**
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMObjectMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.84.2  Methods

85.84.3  createCSSStyleSheet(title as string, media as string) as DOMCSSStyleSheetMBS

**Function:** Check the DOM documentation for details on this function.

85.84.4  createDocument(namespaceURI as string, qualifiedName as string, doctype as string) as DOMDocumentTypeMBS

**Function:** Check the DOM documentation for details on this function.

85.84.5  createDocumentType(qualifiedName as string, publicId as string, systemId as string) as DOMDocumentTypeMBS

**Function:** Check the DOM documentation for details on this function.

85.84.6  hasFeature(feature as string, version as string) as boolean

**Function:** Check the DOM documentation for details on this function.
85.85 class DOMMediaListMBS

85.85.1 class DOMMediaListMBS

Function: A class for a list of medias.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMObjectMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.85.2 Methods

85.85.3 appendMedium(newMedium as string)

Function: Check the DOM documentation for details on this function.

85.85.4 deleteMedium(oldMedium as string)

Function: Check the DOM documentation for details on this function.

85.85.5 item(index as Integer) as string

Function: Returns the item with the given index or "".
Notes: Index is zero based.

85.85.6 length as Integer

Function: The number of items in this list.
85.85.7 Properties

85.85.8 mediaText as String

**Function:** Check the DOM documentation for details on this function.  
**Notes:** (Read and Write computed property)
85.86 class DOMNamedNodeMapMBS

85.86.1 class DOMNamedNodeMapMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

See also:
http://www.w3schools.com/dom/dom_namednodemap.asp
Subclass of the DOMObjectMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.86.2 Methods

85.86.3 getNamedItem(name as string) as DOMNodeMBS

Function: Check the DOM documentation for details on this function.

85.86.4 getNamedItemNS(namespaceURI as string, localName as string) as DOMNodeMBS

Function: Check the DOM documentation for details on this function.

85.86.5 item(index as UInt32) as DOMNodeMBS

Function: Check the DOM documentation for details on this function.
85.86. CLASS DOMNAMEDNODEMAPMBS

85.86.6  length as Integer

Function: Check the DOM documentation for details on this function.

85.86.7  removeNamedItem(name as string) as DOMNodeMBS

Function: Check the DOM documentation for details on this function.

85.86.8  removeNamedItemNS(namespaceURI as string, localName as string) as DOMNodeMBS

Function: Check the DOM documentation for details on this function.

85.86.9  setNamedItem(arg as DOMNodeMBS) as DOMNodeMBS

Function: Check the DOM documentation for details on this function.

85.86.10 setNamedItemNS(arg as DOMNodeMBS) as DOMNodeMBS

Function: Check the DOM documentation for details on this function.
85.87 class DOMNodeListMBS

85.87.1 class DOMNodeListMBS

Function: A class for a list of nodes.
Notes: All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

see also http://www.w3schools.com/dom/dom_nodeList.asp
Subclass of the DOMObjectMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.87.2 Methods

85.87.3 item(index as UInt32) as DOMNodeMBS

Function: Returns the item with the given index or nil.
Notes: Index is zero based.

85.87.4 length as Integer

Function: The number of items in this list.
**85.88. CLASS DOMNODEMBS**

**85.88. class DOMNodeMBS**

**85.88.1. class DOMNodeMBS**


**Function:** One of the DOM classes.

**Notes:**

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

See also

http://www.w3schools.com/dom/dom_node.asp

Subclass of the DOMObjectMBS class.

This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

**85.88.2. Methods**

**85.88.3. appendChild(newChild as DOMNodeMBS) as DOMNodeMBS**


**Function:** Check the DOM documentation for details on this function.

**85.88.4. childNodes as DOMNodeListMBS**


**Function:** Check the DOM documentation for details on this function.

**85.88.5. cloneNode(deep as boolean) as DOMNodeMBS**


**Function:** Check the DOM documentation for details on this function.

**85.88.6. firstChild as DOMNodeMBS**


**Function:** Check the DOM documentation for details on this function.
85.88.7  getAttributes as DOMNamedNodeMapMBS

Function: Check the DOM documentation for details on this function.
Notes: Renamed Attributes parameter to getAttributes in plugin version 8.2.

85.88.8  hasAttributes as boolean

Function: Check the DOM documentation for details on this function.

85.88.9  hasChildNodes as boolean

Function: Check the DOM documentation for details on this function.

85.88.10  insertBefore(newChild as DOMNodeMBS, refChild as DOMNodeMBS) as DOMNodeMBS

Function: Check the DOM documentation for details on this function.

85.88.11  isSupported(feature as string, version as string) as boolean

Function: Check the DOM documentation for details on this function.

85.88.12  lastChild as DOMNodeMBS

Function: Check the DOM documentation for details on this function.
85.88.13  **localName as String**

**Function:** Check the DOM documentation for details on this function.

85.88.14  **namespaceURI as String**

**Function:** Check the DOM documentation for details on this function.

85.88.15  **nextSibling as DOMNodeMBS**

**Function:** Check the DOM documentation for details on this function.

85.88.16  **nodeName as String**

**Function:** Check the DOM documentation for details on this function.

85.88.17  **nodeType as Integer**

**Function:** The type of this node.
**Notes:** See the constants for possible values.

85.88.18  **normalize**

**Function:** Check the DOM documentation for details on this function.

85.88.19  **ownerDocument as DOMDocumentMBS**

**Function:** Check the DOM documentation for details on this function.
85.88.20  parentNode as DOMNodeMBS

Function: Check the DOM documentation for details on this function.

85.88.21  previousSibling as DOMNodeMBS

Function: Check the DOM documentation for details on this function.

85.88.22  removeChild(oldChild as DOMNodeMBS) as DOMNodeMBS

Function: Check the DOM documentation for details on this function.

85.88.23  replaceChild(newChild as DOMNodeMBS, oldChild as DOMNodeMBS) as DOMNodeMBS

Function: Check the DOM documentation for details on this function.

85.88.24  Properties

85.88.25  nodeValue as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)

85.88.26  prefix as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
85.88.27 Constants

85.88.28 **DOM_ATTRIBUTE_NODE = 2**

MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for the nodeType property.

85.88.29 **DOM_CDATA_SECTION_NODE = 4**

MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for the nodeType property.

85.88.30 **DOM_COMMENT_NODE = 8**

MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for the nodeType property.

85.88.31 **DOM_DOCUMENT_FRAGMENT_NODE = 11**

MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for the nodeType property.

85.88.32 **DOM_DOCUMENT_NODE = 9**

MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for the nodeType property.

85.88.33 **DOM_DOCUMENT_TYPE_NODE = 10**

MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for the nodeType property.

85.88.34 **DOM_ELEMENT_NODE = 1**

MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for the nodeType property.
85.88.35  DOM_ENTITY_NODE = 6

MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for the nodeType property.

85.88.36  DOM_ENTITY_REFERENCE_NODE = 5

MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for the nodeType property.

85.88.37  DOM_NOTATION_NODE = 12

MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for the nodeType property.

85.88.38  DOM_PROCESSING_INSTRUCTION_NODE = 7

MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for the nodeType property.

85.88.39  DOM_TEXT_NODE = 3

MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for the nodeType property.
85.89  class DOMNotationMBS

85.89.1  class DOMNotationMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the
message, name and reason properties you can see what was the reason for this exception. Please report if
you find a method which does not handle exceptions correct.
Subclass of the DOMNodeMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin
functions.

85.89.2  Methods

85.89.3  publicId as String

Function: Check the DOM documentation for details on this function.

85.89.4  systemId as String

Function: Check the DOM documentation for details on this function.
85.90  class DOMObjectMBS

85.90.1  class DOMObjectMBS

Function: One of the DOM classes.
Notes:

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the
message, name and reason properties you can see what was the reason for this exception. Please report if
you find a method which does not handle exceptions correct.
Subclass of the WebScriptObjectMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin
functions.

85.90.2  Methods

85.90.3  sheet as DOMStyleSheetMBS

Function: Check the DOM documentation for details on this function.
85.91. class DOMProcessingInstructionMBS

85.91.1 class DOMProcessingInstructionMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the
message, name and reason properties you can see what was the reason for this exception. Please report if
you find a method which does not handle exceptions correct.
Subclass of the DOMNodeMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin
functions.

85.91.2 Methods

85.91.3 target as String

Function: Check the DOM documentation for details on this function.

85.91.4 Properties

85.91.5 data as String

Function: Check the DOM documentation for details on this function.
Notes: (Read and Write computed property)
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85.92 class DOMRangeMBS

85.92.1 class DOMRangeMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMObjectMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.92.2 Methods

85.92.3 cloneContents as DOMDocumentFragmentMBS

Function: Check the DOM documentation for details on this function.

85.92.4 cloneRange as DOMRangeMBS

Function: Check the DOM documentation for details on this function.

85.92.5 collapse(toStart as boolean)

Function: Check the DOM documentation for details on this function.

85.92.6 collapsed as boolean

Function: Check the DOM documentation for details on this function.
85.92.7 commonAncestorContainer as DOMNodeMBS

Function: Check the DOM documentation for details on this function.

85.92.8 compareBoundaryPoints(how as Integer, sourceRange as DOMRangeMBS) as Integer

Function: Check the DOM documentation for details on this function.

85.92.9 deleteContents

Function: Check the DOM documentation for details on this function.

85.92.10 detach

Function: Check the DOM documentation for details on this function.

85.92.11 endContainer as DOMNodeMBS

Function: Check the DOM documentation for details on this function.

85.92.12 endOffset as Integer

Function: Check the DOM documentation for details on this function.

85.92.13 extractContents as DOMDocumentFragmentMBS

Function: Check the DOM documentation for details on this function.
85.92.14  insertNode(newNode as DOMNodeMBS)

Function: Check the DOM documentation for details on this function.

85.92.15  selectNode(refNode as DOMNodeMBS)

Function: Check the DOM documentation for details on this function.

85.92.16  selectNodeContents(refNode as DOMNodeMBS)

Function: Check the DOM documentation for details on this function.

85.92.17  setEnd(refNode as DOMNodeMBS, offset as Integer)

Function: Check the DOM documentation for details on this function.

85.92.18  setEndAfter(refNode as DOMNodeMBS)

Function: Check the DOM documentation for details on this function.

85.92.19  setEndBefore(refNode as DOMNodeMBS)

Function: Check the DOM documentation for details on this function.

85.92.20  setStart(refNode as DOMNodeMBS, offset as Integer)

Function: Check the DOM documentation for details on this function.
85.92.21 setStartAfter(refNode as DOMNodeMBS)

**Function:** Check the DOM documentation for details on this function.

85.92.22 setStartBefore(refNode as DOMNodeMBS)

**Function:** Check the DOM documentation for details on this function.

85.92.23 startContainer as DOMNodeMBS

**Function:** Check the DOM documentation for details on this function.

85.92.24 startOffset as Integer

**Function:** Check the DOM documentation for details on this function.

85.92.25 surroundContents(newParent as DOMNodeMBS)

**Function:** Check the DOM documentation for details on this function.

85.92.26 toString as string

**Function:** Check the DOM documentation for details on this function.
85.92.27  Constants

85.92.28  DOM_BAD_BOUNDRYPOINTS_ERR = 1

MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for a special offset value.

85.92.29  DOM_END_TO_END = 2

MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for a special offset value.

85.92.30  DOM_END_TO_START = 3

MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for a special offset value.

85.92.31  DOM_INVALID_NODE_TYPE_ERR = 2

MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for a special offset value.

85.92.32  DOM_START_TO_END = 1

MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for a special offset value.

85.92.33  DOM_START_TO_START = 0

MBS MacControls Plugin, Plugin Version: 7.4. **Function:** A constant for a special offset value.
85.93. **CLASS DOMRECTMBS**

85.93  **class DOMRectMBS**

85.93.1  **class DOMRectMBS**

**Function:** One of the DOM classes.
**Notes:**
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMObjectMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.93.2  **Methods**

85.93.3  **bottom as DOMCSSPrimitiveValueMBS**

**Function:** The bottom distance.

85.93.4  **left as DOMCSSPrimitiveValueMBS**

**Function:** The left distance.

85.93.5  **right as DOMCSSPrimitiveValueMBS**

**Function:** The right distance.

85.93.6  **top as DOMCSSPrimitiveValueMBS**

**Function:** The top distance.
85.94 class DOMRGBColorMBS

85.94.1 class DOMRGBColorMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMObjectMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.94.2 Methods

85.94.3 alpha as DOMCSSPrimitiveValueMBS

Function: The alpha color component.

85.94.4 blue as DOMCSSPrimitiveValueMBS

Function: The blue color component.

85.94.5 green as DOMCSSPrimitiveValueMBS

Function: The green color component.

85.94.6 red as DOMCSSPrimitiveValueMBS

Function: The red color component.
85.95. class DOMStyleSheetListMBS

Function: A class for a list of style sheets.
Notes: All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
Subclass of the DOMObjectMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.95.2 Methods

85.95.3 item(index as UInt32) as DOMStyleSheetMBS

Function: Returns the item with the given index or nil.
Notes: There is a bug in Webkit 2.x which makes this method returns only DOMStyleSheetMBS objects and not DOMCSSStyleSheetMBS objects.
Index is zero based.

85.95.4 length as Integer

Function: The number of items in this list.
85.96 class DOMStyleSheetMBS

85.96.1 class DOMStyleSheetMBS

Function: One of the DOM classes.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the
message, name and reason properties you can see what was the reason for this exception. Please report if
you find a method which does not handle exceptions correct.
Subclass of the DOMObjectMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin
functions.

85.96.2 Methods

85.96.3 href as String

Function: Check the DOM documentation for details on this function.

85.96.4 media as DOMMediaListMBS

Function: Check the DOM documentation for details on this function.

85.96.5 ownerNode as DOMNodeMBS

Function: Check the DOM documentation for details on this function.

85.96.6 parentStyleSheet as DOMStyleSheetMBS

Function: Check the DOM documentation for details on this function.
85.96.7  title as String

**Function:** Check the DOM documentation for details on this function.

85.96.8  type as String

**Function:** Check the DOM documentation for details on this function.

85.96.9  Properties

85.96.10  disabled as boolean

**Function:** Check the DOM documentation for details on this function.
**Notes:** (Read and Write computed property)
85.97 class DOMTextMBS

85.97.1 class DOMTextMBS

Function: One of the DOM classes.
Notes:

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the
message, name and reason properties you can see what was the reason for this exception. Please report if
you find a method which does not handle exceptions correct.
Subclass of the DOMCharacterDataMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin
functions.

85.97.2 Methods

85.97.3 splitText(offset as Integer) as DOMTextMBS

Function: Check the DOM documentation for details on this function.
85.98. **CLASS HTMLVIEWER**

85.98  **class HTMLViewer**

85.98.1  **class HTMLViewer**

Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Class in Realbasic 2005 for HTML rendering. **Notes:** The class itself is available on all platforms, but all the plugin methods are currently only working on Mac OS X.

85.98.2  **Methods**

85.98.3  **backForwardListMBS as WebBackForwardListMBS**

MBS MacControls Plugin, Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The backforward list for this webView. **Notes:** Nil on failure.

85.98.4  **canGoBackMBS as boolean**

MBS MacControls Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether the history can be used to move back one website. **Example:**

MsgBox str(HTMLViewer1.canGoBackMBS)

85.98.5  **canGoForwardMBS as boolean**

MBS MacControls Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether the history can be used to move forward one website. **Example:**

MsgBox str(HTMLViewer1.canGoForwardMBS)

85.98.6  **canMakeTextLargerMBS as boolean**

MBS MacControls Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether the text size can be increased. **Example:**
85.98.7  canMakeTextSmallerMBS as boolean

Function: Whether the text size can be decreased.
Example:
MsgBox str(HTMLViewer1.canMakeTextSmallerMBS)

85.98.8  canResetPageZoomMBS as boolean

MBS MacControls Plugin, Plugin Version: 11.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Whether web page can be reset.
Example:
MsgBox str(HTMLViewer1.canResetPageZoomMBS)

Notes: This is a new webview function which is not available on all webview versions. So be aware that you may get an NSExceptionMBS about the function not being available.

85.98.9  CanShowMIMETypeAsHTMLMBS(mime as string) as boolean

Function: Checks if the the MIME type is a type that the WebKit will interpret as HTML.
Example:
MsgBox str(HTMLViewer1.CanShowMIMETypeAsHTMLMBS("text/plain"))

Notes:
Returns false on any error and true on success.
See also FileExtensionToMimeTypeMBS function.
85.98.10 CanShowMIMETypeMBS(mime as string) as boolean

Function: Checks if the WebKit can show content of a certain MIME type.
Example:
MsgBox str(HTMLViewer1.CanShowMIMETypeMBS(“text/plain”))

Notes:
Returns false on any error and true on success.
See also FileExtensionToMimeTypeMBS function.

85.98.11 canZoomPageInMBS as boolean

MBS MacControls Plugin, Plugin Version: 11.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Whether web page can be zoomed in.
Example:
MsgBox str(HTMLViewer1.canZoomPageInMBS)

Notes: This is a new webview function which is not available on all webview versions. So be aware that you may get an NSExceptionMBS about the function not being available.

85.98.12 canZoomPageOutMBS as boolean

MBS MacControls Plugin, Plugin Version: 11.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Whether web page can be zoomed out.
Example:
MsgBox str(HTMLViewer1.canZoomPageOutMBS)

Notes: This is a new webview function which is not available on all webview versions. So be aware that you may get an NSExceptionMBS about the function not being available.
85.98.13 ChromiumBrowserMBS as ChromiumBrowserMBS


**Example:**

```vbnet
dim b as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
MsgBox b.MainFrame.URL
```

**Notes:**

Works only on Windows if Webkit is chosen as renderer.
Returns nil on any error.

Please call all chromium functions only on main thread.
Do not call in open event of HTMLViewer as browser control is not yet initialized there.

85.98.14 ClearFocusMBS

MBS MacControls Plugin, Plugin Version: 7.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Clears the focus.

**Example:**

HTMLViewer1.ClearFocusMBS

**Notes:** If the focus is on the webpage, it will be cleared so there is no focus on the window. Useful if you want to workaround a focus bug in the htmlviewer control.

85.98.15 EstimatedProgressMBS as Double

MBS MacControls Plugin, Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** An estimate of the percent complete for a document load.

**Example:**

MsgBox str(HTMLViewer1.EstimatedProgressMBS)

**Notes:** This value will range from 0 to 1.0 and, once a load completes, will remain at 1.0 until a new load starts, at which point it will be reset to 0. The value is an estimate based on the total number of bytes expected to be received for a document, including all it’s possible subresources. For more accurate progress indication it is recommended that you implement a WebFrameLoadDelegate and a WebResourceLoadDelegate.
85.98.16 EvaluateJavaScriptMBS(code as string) as string

Function: Runs the given java script and returns the result.
Example:

// shows current user agent string which the control sends to website
MsgBox htmlviewer1.EvaluateJavaScriptMBS("navigator.userAgent")

// using eval:
MsgBox HTMLViewer1.EvaluateJavaScriptMBS("eval(""x=10;y=20;x*y"""")")

// with function:
MsgBox HTMLViewer1.EvaluateJavaScriptMBS(" test(); function test() {
  x = 10 ; y = 20; return x * y; } ")

// with multiline script:
dim s as string = "test();" +EndOfLine+
"function test()"+EndOfLine+
" {"+EndOfLine+
"  x = 10; "+EndOfLine+
"  y = 20; "+EndOfLine+
"  return x * y;"+EndOfLine+
" } "
MsgBox HTMLViewer1.EvaluateJavaScriptMBS(s)

Notes:
Returns "" on any error.

In Safari 2 we used "return 1+2;" while in Safari 3 we only need "1+2;". The return is no longer needed.
Be aware that there is an implicit return now with Safari 3!

For Windows use IERunJavaScriptMBS function.

85.98.17 GetPageFormatMBS as string

Function: The current page format settings as a string.
Example:
MsgBox HTMLViewer1.GetPageFormatMBS
// shows a big XML String

Notes:
Can be used to save current printer settings to a preferences file.
Value is an empty string until a page format is defined.

85.98.18  GoBackMBS

Function: Go back to the previous URL in the backforward list.
Example:
HTMLViewer1.GoBackMBS

Notes: Returns true if able to go back in the backforward list, false otherwise.

85.98.19  GoForwardMBS

Function: Go forward to the next URL in the backforward list.
Example:
HTMLViewer1.GoForwardMBS

Notes: Returns true if able to go forward in the backforward list, false otherwise.

85.98.20  goToBackForwardItemMBS(item as WebHistoryItemMBS) as boolean

Function: Moves on the history to the given item.
Notes: Returns true on success or false on failure.
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85.98.21 **HandleMBS as Integer**

**Function:** The Handle of the WebView behind the HTMLViewer control.  
**Example:**

```vbnet
MsgBox str(HTMLViewer1.HandleMBS)
```

**Notes:** Must be non zero for the plugin functions to work.

85.98.22 **HTMLTextMBS as string**

**Function:** Returns HTML text for this document.  
**Notes:** This is the text as we generate it from current DOM tree. It is not the html text we loaded from the website. To get this original html text, please use HTMLViewer1.mainFrameMBS.dataSource.data instead.

85.98.23 **IEContinueFindTextMBS(text as string, count as Integer, flags as Integer, selectText as boolean) as boolean**

**Function:** Continues a search started with IEFindTextMBS.  
**Notes:** Parameters are the same as for IEFindTextMBS.

85.98.24 **IEDrawToHDCMBS(HDC as Ptr, PrinterName as string = "]") as boolean**

**Function:** Draws the content of the html document into the graphics context.  
**Notes:** As of Windows Internet Explorer 9, this method is deprecated and should not be used. Returns true on success and false on failure.  
With some printers, running DrawToDC may cause problems. You can ensure that DrawToDC works properly on all printers by running SetDocumentPrinter method first, and then passing the modified device context to DrawToDC. The plugin calls SetDocumentPrinter for you when you provide a printer name.
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85.98.25  IEFileCreationDateMBS as string

MBS Win Plugin, Plugin Version: 7.8, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: Retrieves the date the file was created.
Notes: Example value: "09/13/2007"

85.98.26  IEFileModifiedDateMBS as string

MBS Win Plugin, Plugin Version: 7.8, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: Retrieves the date the file was last modified.
Notes: Example value: "12/03/2007"

85.98.27  IEFileSizeMBS as string

Notes: Example value: "12475"

85.98.28  IEFileUpdatedDateMBS as string

MBS Win Plugin, Plugin Version: 7.8, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: Retrieves the date the file was last updated.
Notes: Example value: "01/01/1601"

85.98.29  IEFindTextMBS(text as string, count as Integer, flags as Integer, selectText as boolean) as boolean

Notes:
text: the string that specifies the text to find.
count: long that specifies the number of characters to search from the starting point of the range. A positive integer indicates a forward search; a negative integer indicates a backward search.
Flags: integer that specifies one or more of the following flags to indicate the type of search:
Returns true: The search text was found.
Returns false: The search text was not found.
85.98.30  IEGetTextAreaMBS(FormName as String, FieldName as String) as String


Notes:
FormName can be "" to look for any field with given name.
Raises exception if field is not found.
Returns text from textarea.

85.98.31  IEHandleMBS as Integer

MBS Win Plugin, Plugin Version: 8.0, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: The handle to the windows browser object.

Notes: If this value is zero, the plugin htmlviewer functions for Windows will not work.

85.98.32  IEHistoryBackMBS

MBS Win Plugin, Plugin Version: 7.8, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: Loads a previous URL from the History list.

85.98.33  IEHistoryForwardMBS

MBS Win Plugin, Plugin Version: 7.8, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: Loads the next URL from the History list.
85.98.34  **IEHistoryLengthMBS as Integer**

MBS Win Plugin, Plugin Version: 7.8, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Retrieves the number of elements in the History list.  
**Notes:** Example value: "0"

85.98.35  **IEHTMLTextMBS as string**

MBS Win Plugin, Plugin Version: 7.7, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Returns a copy of the html source code of the current webpage.  
**Example:**

```vbnet
msgbox htmlviewer1.IEHTMLTextMBS
```

**Notes:**

Improved in plugin version 12.2 to return better HTML text. This is the html generated from current web content and not the page we originally loaded. So this works with IEditableMBS property.  
Returns "" on any error.

On Mac OS X, you can use HTMLViewer1.mainFrameMBS.dataSource.data to get the document html text.

85.98.36  **IEImageMBS as picture**

MBS Win Plugin, Plugin Version: 9.5, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Copies the picture form the htmlviewer.  
**Example:**

```vbnet
Sub Action()
    ClearFocus
    Dim picWeb As Picture

    // Get image from IE
    picWeb = HTMLViewer1.IEImageMBS

    canvas1.backdrop = picWeb
End Sub
```

**Notes:**
You may want to resize the htmlviewer to get a picture without scrollbars. (See example projects)
You may need to call ClearFocus as it seems like if the focus is on the htmlviewer it does not draw itself in our picture.

85.98.37  IELastModifiedMBS as string

MBS Win Plugin, Plugin Version: 7.8, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Gets the date that the page was last modified, if the page supplies one.
**Notes:** Example value: "12/03/2007 20:08:17"

85.98.38  IELoadHTMLMBS(HTMLText as string) as boolean

MBS Win Plugin, Plugin Version: 15.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Loads the HTML text into the htmlviewer.
**Example:**
```vba
// in window open event, load blank page
HTMLViewer1.LoadURL "about:blank"

// later somewhere in app load HTML:
HTMLViewer1.IELoadHTMLMBS "<html><body>Hello World</body></html>"
```

**Notes:**
Does not use a temp file like Xojo’s built in method.
Returns true on success.
On Windows you may need to reset webviewer before or load "about:blank" to initialize the webviewer by Xojo (or Real Studio).

85.98.39  IEMimeTypeMBS as string

MBS Win Plugin, Plugin Version: 7.8, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Retrieves the MIME type for the file.
**Notes:**
Example value: "HTM-Datei"
See also MimeTypeToFileExtensionMBS function.
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85.98.40 IENNamePropMBS as string

MBS Win Plugin, Plugin Version: 7.8, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Gets the title of the document file.  
**Notes:** Example value: "Apple"

85.98.41 IENavigatorAppMinorVersionMBS as string

MBS Win Plugin, Plugin Version: 7.8, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Retrieves the application's minor version value.  
**Notes:** Example value: ";SP2;"

85.98.42 IENavigatorAppNameMBS as string

MBS Win Plugin, Plugin Version: 7.8, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Retrieves the name of the browser.  
**Notes:** Example value: "Microsoft Internet Explorer"

85.98.43 IENavigatorAppVersionMBS as string

MBS Win Plugin, Plugin Version: 7.8, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Retrieves the platform and version of the browser.  
**Notes:** Example value: "4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 1.1.4322; .NET CLR 2.0.50727)"

85.98.44 IENavigatorBrowserLanguageMBS as string

MBS Win Plugin, Plugin Version: 7.8, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Retrieves the current browser language.  
**Notes:** Example value: "de"

85.98.45 IENavigatorCookieEnabledMBS as boolean

MBS Win Plugin, Plugin Version: 7.8, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Retrieves whether client-side persistent cookies are enabled in the browser.  
**Notes:**
Persistent cookies are those that are stored on the client-side computer.
Example value: "True"

**85.98.46 IENavigatorJavaEnabledMBS as boolean**

MBS Win Plugin, Plugin Version: 7.8, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Returns whether Java is enabled.
**Notes:** Example value: "True"

**85.98.47 IENavigatorOnLineMBS as boolean**

MBS Win Plugin, Plugin Version: 7.8, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Retrieves a value indicating whether the system is in global offline mode.
**Notes:**
The user can modify the global offline state by choosing Work Offline from the File menu in Microsoft Internet Explorer version 4.0 or later. This property does not indicate whether the system is connected to the network.
Example value: "True"

**85.98.48 IENavigatorUserAgentMBS as string**

MBS Win Plugin, Plugin Version: 7.8, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Retrieves a string equivalent to the HTTP user-agent request header.
**Notes:**
The HTTP user-agent request header contains information about compatibility, the browser, and the platform name. For more information about the browser, see the IENavigatorappNameMBS property. For more information about the platform, see the IENavigatorappVersionMBS property.

The IENavigatoruserAgentMBS property dynamically returns a different value depending on the browser and platform versions. For example, Microsoft Internet Explorer 6 returns the following string for Microsoft Windows XP.

Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1)

Example value: "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 1.1.4322; .NET CLR 2.0.50727)"
Like other plugin function, this can only work if a page has been loaded. Real Studio won’t create the internal htmlviewer object before you load a page.

85.98.49  IENavigatorUserLanguageMBS as string

MBS Win Plugin, Plugin Version: 7.8, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: Retrieves the operating system’s natural language setting.
Notes: Example value: "de"

85.98.50  IEPrintMBS as boolean

Notes: Returns false on failure.

85.98.51  IEPrintPreviewMBS as boolean

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: Commands Internet Explorer to show the print preview dialog for this htmlviewer.
Example:
call htmlviewer1.IEPrintPreviewMBS

Notes:
Returns true on success. Returns false if function is not supported.
The function returns directly while the preview dialog is still running.

85.98.52  IEProtocolMBS as string

MBS Win Plugin, Plugin Version: 7.8, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: Sets or retrieves the protocol portion of a URL.
Notes: Example value: "HTTP (HyperText Transfer-Protokoll)"
**85.98.53  IEReadyStateMBS as string**

MBS Win Plugin, Plugin Version: 12.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Retrieves a value that indicates the current state of the htmlviewer.
**Notes:**

uninitialized: Object is not initialized with data.
loading: Object is loading its data.
loaded: Object has finished loading its data.
interactive: User can interact with the object even though it is not fully loaded.
complete: Object is completely initialized.

An object’s state is initially set to uninitialized, and then to loading. When data loading is complete, the state of the link object passes through the loaded and interactive states to reach the complete state.

The states through which an object passes are determined by that object; an object can skip certain states (for example, interactive) if the state does not apply to that object.

Data source objects and databound elements are normally populated asynchronously, and certain programmatic operations can only be performed reliably on databound objects when they are ready for use. Therefore, the appropriate code should be written to confirm the readyState of objects prior to performing certain operations on them. For example, walking the rows of a table should not be attempted until after the table has reached the complete state.

The readyState property enables the status of an object to be tested. The correct place to test the readyState property is in the event handler for onreadystatechange. Similarly, a data source object (DSO) fires the ondatasetcomplete event to notify the document that the dataset is ready for programmatic operation.

**85.98.54  IERefCountMBS as Integer**

MBS Win Plugin, Plugin Version: 15.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Queries the reference count of the IE browser object.
**Notes:** Useful to check if references are leaked.

**85.98.55  IEReferrerMBS as string**

MBS Win Plugin, Plugin Version: 7.8, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Gets the URL of the location that referred the user to the current page.
**Notes:** Example value: ”http://www.apple.com/”
85.98.56 IEReloadMBS(Force as boolean = false) as boolean

MBS Win Plugin, Plugin Version: 12.0, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Reloads the current page.  
**Notes:**  
Boolean that specifies one of the following possible values:  
False: Default. Reloads the document from the cache.  
True: Reloads the document from the server.

85.98.57 IERunJavaScriptMBS(JavaScript as string) as boolean

MBS Win Plugin, Plugin Version: 8.0, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Runs a given javascript code.  
**Example:**  
// shows current user agent string which the control sends to website  
call htmlviewer1.IERunJavaScriptMBS("document.title=navigator.userAgent;")  
MsgBox htmlviewer1.IETitleMBS

// load a dummy page:  
HTMLViewer1.LoadPage "<html><head></head><body></body></html>", nil

// shows an error message because of the navigator having a 6 inside:  
call htmlviewer1.IERunJavaScriptMBS("document.title=navig6ator.userAgent;")

// uses try to avoid error message

dim script as string = "document.title=navig6ator.userAgent;"  
dim s as string = "try { " + SCRIPT + " } catch(err) { document.title = err.description; } "

call htmlviewer1.IERunJavaScriptMBS(s)  
MsgBox HTMLViewer1.IETitleMBS // shows "navig6ator is undefined"

**Notes:**  
Returns true if the javascript code was sent to the browser.  
Returns false on any error.

The IE API does not allow to return values from Javascript. So you need to store your result in window.title and access it later using IETitleMBS.

IERunJavaScriptMBS fails if the htmlviewer is empty. You can load a dummy page like above.
For Windows use EvaluateJavaScriptMBS function.

### 85.98.58 IEScrollHeightMBS as Integer

MBS Win Plugin, Plugin Version: 9.5, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Queries the height of the html viewer content. **Notes:** Returns 0 on any error.

### 85.98.59 IEScrollWidthMBS as Integer

MBS Win Plugin, Plugin Version: 9.5, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Queries the width of the html viewer content. **Notes:** Returns 0 on any error.

### 85.98.60 IESecurityMBS as string

MBS Win Plugin, Plugin Version: 7.8, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Retrieves the security state. **Notes:** Example value: "Fr diesen Dokumententyp gibt es kein Sicherheitszertifikat."

### 85.98.61 IESetTextAreaMBS(FormName as String, FieldName as String, Value as String) as Boolean

MBS Win Plugin, Plugin Version: 16.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Sets text for a textarea. **Notes:** FormName can be "" to look for any field with given name. Raises exception if field is not found. Returns true if text is set or false on failure.

### 85.98.62 IEStopMBS as boolean

MBS Win Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Stops loading. **Notes:** Returns true on success and false on failure.
85.98.63  IETextMBS as string

MBS Win Plugin, Plugin Version: 7.7, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Returns a copy of the text of the current webpage.

**Example:**

msgbox htmlviewer1.IETextMBS

**Notes:**
Asks Internet Explorer for a selection of the whole document and asks selection about the text content. Returns "" on any error.

On Mac OS X, you can use HTMLViewer1.mainFrameMBS.dataSource.data to get the document html text.

85.98.64  IEToStringMBS as string

MBS Win Plugin, Plugin Version: 7.8, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Retrieves a string representation of the object.

**Notes:** Example value: " [ object ] "

85.98.65  IEZoomMBS(factor as Integer) as boolean


**Notes:**
Factor can be 50 for 50%. Returns true on success.

85.98.66  InstallWebDownloadDelegateMBS(WebDownloadDelegate as WebDownloadDelegateMBS)

MBS MacControls Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Installs a WebDownloadDelegateMBS to receive events from htmlviewer control.

**Notes:** You need to keep a reference to this WebDownloadDelegateMBS object in the window where the htmlviewer is inside so the class is not destroyed too early.
85.98.67 InstallWebFrameLoadDelegateMBS(WebFrameLoadDelegate as WebFrameLoadDelegateMBS)

MBS MacControls Plugin, Plugin Version: 7.5, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Function:** Installs a WebFrameLoadDelegateMBS to receive events from htmlviewer control.  **Notes:** You need to keep a reference to this WebFrameLoadDelegateMBS object in the window where the htmlviewer is inside so the class is not destroyed too early.

85.98.68 InstallWebPolicyDelegateMBS(WebPolicyDelegate as WebPolicyDelegateMBS)

MBS MacControls Plugin, Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Function:** Installs a WebPolicyDelegateMBS to receive events from htmlviewer control.  **Notes:** You need to keep a reference to this WebPolicyDelegateMBS object in the window where the htmlviewer is inside so the class is not destroyed too early.

85.98.69 InstallWebResourceLoadDelegateMBS(WebResourceLoadDelegate as WebResourceLoadDelegateMBS)

MBS MacControls Plugin, Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Function:** Installs a WebResourceLoadDelegateMBS to receive events from htmlviewer control.  **Notes:** You need to keep a reference to this WebResourceLoadDelegateMBS object in the window where the htmlviewer is inside so the class is not destroyed too early.

85.98.70 InstallWebUIDelegateMBS(WebUIDelegate as WebUIDelegateMBS)

MBS MacControls Plugin, Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Function:** Installs a HTMLViewerUIDelegateMBS to receive events from htmlviewer control.  **Notes:** You need to keep a reference to this HTMLViewerUIDelegateMBS object in the window where the htmlviewer is inside so the class is not destroyed too early.

85.98.71 LinuxWebViewMBS as LinuxWebViewMBS

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes.  **Function:** Queries the linux WebKit web view for the given htmlviewer.  **Notes:** Requires a recent Real Studio version (2011?).  And libwekit-1.0 must be installed, so Real Studio uses it for browsing.
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Check Also the Available shared method on LinuxWebViewMBS class.

85.98.72  LoadHTMLStringMBS(data as memoryblock, mime as string, encoding as string, url as string)

Function: Loads data as a webpage.
Example:
HTMLViewer1.LoadHTMLStringMBS "<b>test</b>",”text/plain”,”,”,” // show as plain text
HTMLViewer1.LoadHTMLStringMBS "<b>test</b>",”text/html”,”,”,” // show as html

Notes:
data: The data to use for the main page of the document.
mime: The MIME type of the data. e.g. "text/html"
textencoding: The encoding of the data.
url: The base URL to apply to relative URLs within the document.

All parameters can be empty if needed.
Using "text/plain" mime type you can show source code of website.

Like a most Webkit Methods this one can not be called from a thread.
See also:

• 85.98.73 LoadHTMLStringMBS(text as string, url as string)

85.98.73  LoadHTMLStringMBS(text as string, url as string)

Function: Loads a html page from a string.
Example:
HTMLViewer1.LoadHTMLStringMBS("<p>Hello <a href = ""realbasic/"">realbasic</a></p>", "http://www.monkeybreadsoftware.de/")

Notes:
html: The string to use for the main page of the document.
url: The base URL to apply to relative URLs within the document. (optional)
Like most Webkit Methods this one can not be called from a thread.

See also:

- 85.98.72 LoadHTMLStringMBS(data as memoryblock, mime as string, encoding as string, url as string) 14086

85.98.74 LoadRequest(request as NSURLRequestMBS)

Function: Loads the given url request.
Example:

```pascal
dim r as NSURLRequestMBS = NSURLRequestMBS.requestWithURL("http://www.apple.de")
HTMLViewer1.LoadRequest r
```

Notes: Like most Webkit Methods this one can not be called from a thread.

85.98.75 LoadURLMBS(url as string)

Function: Loads the url.
Example:

```pascal
htmlviewer1.LoadURLMBS "http://www.monkeybreadsoftware.de"
```

Notes:
Like most Webkit Methods this one can not be called from a thread.
Internally this calls LoadRequest with a NSURLRequest based on the given URL.
See also:

- 85.98.76 LoadURLMBS(url as string, CachePolicy as Integer, TimeOut as Double) 14087

85.98.76 LoadURLMBS(url as string, CachePolicy as Integer, TimeOut as Double)

Function: htmlviewer1.LoadURLMBS "http://www.monkeybreadsoftware.de", 1, 2.0
Notes:
The timeout interval is in seconds.
Constants for the CachePolicy parameter:

const UseProtocolCachePolicy = 0 Specifies that the caching logic defined in the protocol implementation, if any, is used for a particular URL load request. This is the default policy for URL load requests.

const ReloadIgnoringCacheData = 1 Specifies that the data for the URL load should be loaded from the originating source. No existing cache data should be used to satisfy a URL load request.

const ReturnCacheDataElseLoad = 2 Specifies that the existing cached data should be used to satisfy the request, regardless of its age or expiration date. If there is no existing data in the cache corresponding the request, the data is loaded from the originating source.

const ReturnCacheDataDontLoad = 3 Specifies that the existing cache data should be used to satisfy a request, regardless of its age or expiration date. If there is no existing data in the cache corresponding to a URL load request, no attempt is made to load the data from the originating source, and the load is considered to have failed. This constant specifies a behavior that is similar to an “offline” mode.

Like most Webkit Methods this one can not be called from a thread.
Internally this calls LoadRequest with a NSURLRequest based on the given URL. It is Webkit’s decision what it does based on the given constants.
See also:

- 85.98.75 LoadURLMBS(url as string)

85.98.77 mainFrameMBS as WebFrameMBS


Function: The main webframe currently displayed.

Example:

// get the current page url:

MsgBox HTMLViewer1.mainFrameMBS.dataSource.request.URL

// get the html data of the current page:

MsgBox HTMLViewer1.mainFrameMBS.dataSource.data

Notes: Nil if no is present.

85.98.78 makeTextLargerMBS


Function: Increases the text size in the webview.

Example:
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HTMLViewer1.LoadPage "<p>Hello</p>", nil
HTMLViewer1.makeTextLargerMBS

85.98.79  makeTextSmallerMBS

Function: Decreases the text size in the webview.
Example:

HTMLViewer1.LoadPage "<p>Hello</p>", nil
HTMLViewer1.makeTextSmallerMBS

85.98.80  mediaVolumeMBS as Double

MBS MacControls Plugin, Plugin Version: 11.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Queries the maximum volume of all sounds generated on this webview.
Example:

// shows 1 normally
MsgBox str(HTMLViewer1.mediaVolumeMBS)

// set to 50%
HTMLViewer1.setMediaVolumeMBS 0.5

// and check
MsgBox str(HTMLViewer1.mediaVolumeMBS)

Notes: This is a new webview function which is not available on all webview versions. So be aware that you may get an NSExceptionMBS about the function not being available.

85.98.81  NSScrollViewMBS as Variant

Function: Returns the scrollview for this webviewer.
Example:

// get the scrollview
dim s as NSScrollViewMBS = HTMLViewer1.NSScrollViewMBS
// and destroy the scrollbars
s.horizontalScroller = nil
s.verticalScroller = nil

Notes:
Same as calling HTMLViewer.mainFrameMBS.frameView.documentView.enclosingScrollView.

We return a variant to avoid plugin dependencies. Please assign to a NSScrollViewMBS variable.

85.98.82 PageSetupDialogMBS(sheetTarget as window=nil) as boolean

Function: Shows a page setup sheet.
Example:
call HTMLViewer1.PageSetupDialogMBS(Window1)

Notes:
If sheetTarget is nil a modal dialog is shown and the function returns after the user clicked one of the buttons
to close the dialog.
If sheetTarget is a valid window reference this window will show a sheet and the function returns while the
sheet waits for mouseclicks.

Returns true on success.

85.98.83 pageSizeMultiplierMBS as Double

MBS MacControls Plugin, Plugin Version: 11.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Queries the page size multiplier.
Example:
MsgBox str(HTMLViewer1.pageSizeMultiplierMBS)

Notes: This is a new webview function which is not available on all webview versions. So be aware that
you may get an NSExceptionMBS about the function not being available.
85.98.84 PrintDialogMBS(sheetTarget as window=nil, PDFFile as folderitem=nil) as boolean

Function: Show the print sheet and allows the user to print the web content.
Example:
call HTMLViewer1.PrintDialogMBS(Workbook1)

Notes:
If sheetTarget is nil a modal dialog is shown and the function returns after the user clicked one of the buttons
to close the dialog.
If sheetTarget is a valid window reference this window will show a sheet and the function returns while the
sheet waits for mouseclicks.

If PDFFile is not nil, printing is redirected to a PDF file.

Returns true on success.

85.98.85 PrintDialogVisibleMBS as boolean

Function: Whether a printing sheet is visible.
Example:
MsgBox str(HTMLViewer1.PrintDialogVisibleMBS)

Notes:
Used with the PageSetupDialog and the PrintDialog methods.
Returns true when a dialog is visible and false when not.

85.98.86 PrintingEndMBS

Function: Releases memory from the printing code.
Notes: First call PrintingStartMBS with your page size, then call several times PrintingPageMBS and
finally call PrintingEndMBS.
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85.98.87 PrintingPageMBS(index as UInt32) as Memoryblock

Function: Returns the given page as string.
Notes:
On any error the function returns nil.
The string contains an one page PDF document.

First call PrintingStartMBS with your page size, then call several times PrintingPageMBS and finally call PrintingEndMBS.

You may want to set
HTMLViewer.preferencesMBS.shouldPrintBackgrounds = true
HTMLViewer.preferencesMBS.allowsAnimatedImageLooping = true
to get a print which includes backgrounds and animated images.

85.98.88 PrintingStartMBS(width as Double, height as Double) as Integer

Function: Starts the printing code.
Example:

dim i,c as Integer
dim f as FolderItem
dim s as string
dim b as BinaryStream

HTMLViewer1.preferencesMBS.shouldPrintBackgrounds = true // with backgrounds
HTMLViewer1.preferencesMBS.allowsAnimatedImageLooping = true // and with animated images

c=HTMLViewer1.PrintingStartMBS(800,600)
i=0
while i<c
s=HTMLViewer1.PrintingPageMBS(i)

f=SpecialFolder.Desktop.Child("Page "+str(i+1)+".pdf")
b=f.CreateBinaryFile(""")
if b<>nil then
b.Write s
b.Close
end if
i=i+1
wend
Notes:
First call PrintingStartMBS with your page size, then call several times PrintingPageMBS and finally call PrintingEndMBS.

Only one print job can be processed at the same time as they use all the same global properties.

Returns the number of pages to be printed.

85.98.89  PrintMBS(PDFFile as folderitem=nil) as boolean

Function: Prints the web content without a dialog.
Example:
MsgBox str(HTMLViewer1.PrintMBS)

Notes:
If PDFFile is not nil, printing is redirected to a PDF file.
Returns true on success.

85.98.90  PrintToPDFFileMBS(PDFFile as folderitem, LeftMargin as Double = 50.0, TopMargin as Double = 50.0, RightMargin as Double = 50.0, BottomMargin as Double = 50.0) as boolean

MBS MacControls Plugin, Plugin Version: 11.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Prints the PDF to a file.
Example:
Dim file as folderitem = Specialfolder.desktop.child("test.pdf")
If not HTMLViewer1.PrintToPDFFileMBS(file) then
MsgBox "Failed"
End If
Notes:
This uses the Cocoa printing system to format the web pages into nice pages.
Returns true on success.
Margin is measured in points in the user coordinate space.

85.98.91 reloadFromOriginMBS

Function: Action method that performs an end-to-end revalidation using cache-validating conditionals if possible.
Notes: Available in OS X v10.6 and later. On older versions the plugin will fall back to normal reload method.

85.98.92 ReloadMBS

Function: Reloads the current page.
Example:
HTMLViewer1.ReloadMBS

85.98.93 RenderDocumentToEPSMBS as Memoryblock

MBS MacControls Plugin, Plugin Version: 8.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Returns the content of the view as a EPS file’s data.
Example:

dim f as FolderItem
dim b as BinaryStream

// create a new pdf with current content of view
f=SpecialFolder.Desktop.Child(”test.eps”)
b=f.CreateBinaryFile(””)
b.Write theHTMLViewer.RenderDocumentToEPSMBS
b.Close
f.Launch // show the pdf in preview

Notes:
85.98. CLASS HTMLVIEWER

Returns nil on any error.
Will resize the eps page to match the size of the website.

85.98.94 RenderDocumentToPDFMBS as Memoryblock

MBS MacControls Plugin, Plugin Version: 8.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Returns the content of the view as a PDF file’s data.
Example:

```vba
dim f as FolderItem
dim b as BinaryStream

// create a new pdf with current content of view
f=SpecialFolder.Desktop.Child("test.pdf")
b=f.CreateBinaryFile("")
b.Write theHTMLViewer.RenderDocumentToPDFMBS
b.Close

f.Launch // show the pdf in preview
```

Notes:

Returns nil on any error.
Will resize the pdf page to match the size of the website.

85.98.95 RenderEPSMBS as Memoryblock

Function: Returns the content of the view as a EPS file’s data.
Example:

```vba
dim f as FolderItem
dim b as BinaryStream

// create a new pdf with current content of view
f=SpecialFolder.Desktop.Child("test.eps")
b=f.CreateBinaryFile("")
b.Write theHTMLViewer.RenderEPSMBS
b.Close

f.Launch // show the pdf in preview
```
Notes:

Returns nil on any error.
If there is a scrollbar, it will be included.
For nice printouts, use the webview/htmlviewer printmbs method.

**85.98.96 RenderPDFMBS as Memoryblock**

**Function:** Returns the content of the view as a PDF file’s data.  
**Example:**

```vba
dim f as FolderItem  
dim b as BinaryStream

// create a new pdf with current content of view  
f=SpecialFolder.Desktop.Child("test.pdf")  
b=f.CreateBinaryFile("")  
b.Write theHTMLViewer.RenderPDFMBS  
b.Close

f.Launch // show the pdf in preview
```

Notes:

Returns nil on any error.  
If there is a scrollbar, it will be included.  
For nice printouts, use the webview/htmlviewer printmbs method.

**85.98.97 RenderWebsiteImageMBS(ResolutionScale as Double = 1.0) as NSImageMBS**

**Function:** Makes a screenshot of the current displayed content.  
**Example:**

```vba
dim f as FolderItem  
dim b as BinaryStream  
dim i as NSImageMBS  
dim p as string

i=HTMLViewer1.RenderWebsiteImageMBS

p=i.PNGRepresentation
```
f=SpecialFolder.Desktop.Child("test.png")
b=f.CreateBinaryFile(""")
b.Write p

Notes:
Nil on failure.
The image returned is the page completely without scrollbars, so it may be a few thousand pixels height and may not fit on a page to print.

The value of this variant must be an object of class NSImageMBS.

Added ResolutionScale in version 13.1 to allow to get high res images. Pass 2 for a retina resolution image (independent of whether your app runs on retina display).

85.98.98 resetPageZoomMBS

MBS MacControls Plugin, Plugin Version: 11.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Resets the web page zoom.
Example:
HTMLViewer1.resetPageZoomMBS

Notes: This is a new webview function which is not available on all webview versions. So be aware that you may get an NSExceptionMBS about the function not being available.

85.98.99 SearchForMBS(text as string, Forward as boolean, CaseSensitive as boolean, Wrap as Boolean) as boolean

Function: Searches a document view for a string and highlights the string if it is found.
Example:
call HTMLViewer1.SearchForMBS "holiday",true,false,true

Notes:
Starts the search from the current selection. Will search across all frames.
text: The string to search for.
forward: True to search forward, False to search backwards.
caseSensitive: True for case-sensitive search, False for case-insensitive search.

Returns true if found, false if not found.

85.98.100  setMaintainsBackForwardListMBS(value as boolean)

Function: Whether the back forward history list is created by the webview.
Example:
HTMLViewer1.setMaintainsBackForwardListMBS true

Notes: Default is true.

85.98.101  setMediaVolumeMBS(value as Double)

MBS MacControls Plugin, Plugin Version: 11.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Sets the maximum volume of all sounds generated on this webview.
Example:
HTMLViewer1.setMediaVolumeMBS 0.5

Notes:
Sets a master volume control for all media elements in the WebView. Valid values are 0..1.

This is a new webview function which is not available on all webview versions. So be aware that you may get an NSExceptionMBS about the function not being available.

85.98.102  SetPageFormatMBS(data as string) as boolean

Function: Loads page format settings from a string.
Notes: Returns true on success and false on failure.
85.98.103  setPageSizeMultiplierMBS(value as Double)

MBS MacControls Plugin, Plugin Version: 11.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Sets the page size multiplier.
Example:
HTMLViewer1.setPageSizeMultiplierMBS 2.0

Notes:
Change the zoom factor of the page in views managed by this webView.
value: A fractional percentage value, 1.0 is 100%.

This is a new webview function which is not available on all webview versions. So be aware that you may get an NSExceptionMBS about the function not being available.

85.98.104  StopLoadingMBS

Function: Stop any pending loads on the frame’s data source, and its children.
Example:
HTMLViewer1.StopLoadingMBS

85.98.105  SupportsTextEncodingMBS as boolean

Function: Find out if the current web page supports text encodings.
Example:
MsgBox str(HTMLViewer1.SupportsTextEncodingMBS)

Notes: Returns true if the document view of the current web page can support different text encodings.

85.98.106  userAgentForURLMBS(url as string) as String

Function: The user agent used for accessing the given URL.
Example:

```
msgbox htmlviewer1.userAgentForURLMBS("http://www.apple.com")
// shows: Mozilla/5.0 (Macintosh; U; PPC Mac OS X; de-de) AppleWebKit/419 (KHTML, like Gecko)
```

Notes: An empty string on failure else the user-agent string for the supplied URL.

85.98.107 VisibleHeightMBS as Double

Function: The visible height of the htmlviewer control.
Example:

```
MsgBox str(HTMLViewer1.VisibleWidthMBS)+" x "+str(HTMLViewer1.VisibleHeightMBS)
```

Notes: Bounds is the width and height of the controls area, but visible is only a part depending on the window size. So if Bounds are equal to the visible part, there is no scrollbar.

85.98.108 VisibleLeftMBS as Double

Function: The left position of the visible area.
Example:

```
MsgBox str(HTMLViewer1.VisibleLeftMBS)+" x "+str(HTMLViewer1.VisibleTopMBS)
```

Notes: Should be 0.

85.98.109 VisibleTopMBS as Double

Function: The top position of the visible area.
Example:

```
MsgBox str(HTMLViewer1.VisibleLeftMBS)+" x "+str(HTMLViewer1.VisibleTopMBS)
```

Notes: Should be 0.
85.98.110 VisibleWidthMBS as Double

Function: The visible width of the htmlviewer control.
Example:
MsgBox str(HTMLViewer1.VisibleWidthMBS) + " x " + str(HTMLViewer1.VisibleHeightMBS)

Notes: Bounds is the width and height of the controls area, but visible is only a part depending on the window size. So if Bounds are equal to the visible part, there is no scrollbar.

85.98.111 WebViewMBS as WebViewMBS

Function: Returns the webview for this htmlviewer.
Example:
HTMLViewer1.WebViewMBS.toolTip = "Test tooltip"

Notes: Nil on failure.

85.98.112 zoomPageInMBS

MBS MacControls Plugin, Plugin Version: 11.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Zooms web page in.
Example:
HTMLViewer1.zoomPageInMBS

Notes: This is a new webview function which is not available on all webview versions. So be aware that you may get an NSExceptionMBS about the function not being available.
85.98.113  zoomPageOutMBS

MBS MacControls Plugin, Plugin Version: 11.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Zooms web page out.
Example:
HTMLViewer1.zoomPageOutMBS

Notes: This is a new webview function which is not available on all webview versions. So be aware that you may get an NSExceptionMBS about the function not being available.

85.98.114  Properties

85.98.115  ApplicationNameForUserAgentMBS as String

Function: The application name.
Example:
htmlviewer1.ApplicationNameForUserAgentMBS=”test”
// useragent is now ”Mozilla/5.0 (Macintosh; U; PPC Mac OS X; de-de) AppleWebKit/417.9 (KHTML, like Gecko) test”

Notes:
This name will be used in user-agent strings that are chosen for best results in rendering web pages.
(Read and Write computed property)

85.98.116  BoundsHeightMBS as Double

Function: The height of the htmlviewer control.
Example:
MsgBox str(HTMLViewer1.BoundsLeftMBS)+” ”+str(HTMLViewer1.BoundsTopMBS)+” ”+str(HTMLViewer1.BoundsWidthMBS)+” ”+str(HTMLViewer1.BoundsHeightMBS)

Notes:
Bounds is the width and height of the controls area, but visible is only a part depending on the window size. So if Bounds are equal to the visible part, there is no scrollbar.
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(Read and Write computed property)

85.98.117 BoundsLeftMBS as Double

Function: The left position of the control size.
Example:

MsgBox str(HTMLViewer1.BoundsLeftMBS)+" "+str(HTMLViewer1.BoundsTopMBS)+" "+str(HTMLViewer1.BoundsWidthMBS)+" "+str(HTMLViewer1.BoundsHeightMBS)

Notes:
Should be 0.
(Read and Write computed property)

85.98.118 BoundsTopMBS as Double

Function: The top position of the view size.
Example:

MsgBox str(HTMLViewer1.BoundsLeftMBS)+" "+str(HTMLViewer1.BoundsTopMBS)+" "+str(HTMLViewer1.BoundsWidthMBS)+" "+str(HTMLViewer1.BoundsHeightMBS)

Notes:
Should be 0.
(Read and Write computed property)

85.98.119 BoundsWidthMBS as Double

Function: The width of the htmlviewer control.
Example:

dim w as NSViewMBS

w=HTMLViewer1.mainFrameMBS.frameView.documentView

MsgBox "width: "+str(w.Bounds.Width)+" height: "+str(w.Bounds.Height)
w=HTMLViewer1.WebViewMBS

MsgBox "width: " +str(w.Bounds.Width)+" height: " +str(w.Bounds.Height)

Notes:
Bounds is the width and height of the controls area, but visible is only a part depending on the window size. So if Bounds are equal to the visible part, there is no scrollbar. (Read and Write computed property)

85.98.120 ContinuousSpellCheckingEnabledMBS as boolean

Function: Whether continuous spell checking is enabled.
Example:
htmlviewer1.ContinuousSpellCheckingEnabledMBS=True

Notes: (Read and Write computed property)

85.98.121 CustomTextEncodingNameMBS as String

Function: The custom text encoding name.
Example:
MsgBox HTMLViewer1.CustomTextEncodingNameMBS

Notes:
On getting:
The custom text encoding name or "" if no custom text encoding name has been set.

On setting:
Make the page display with a different text encoding; stops any load in progress.
The text encoding passed in overrides the normal text encoding smarts including what’s specified in a web page’s header or HTTP response.
The text encoding automatically goes back to the default when the top level frame changes to a new location.
Setting the text encoding name to nil makes the webView use default encoding rules.  
(Read and Write computed property)

85.98.122  CustomUserAgentMBS as String

**Function:** The custom user-agent string or nil if no custom user-agent string has been set.  
**Example:**

```plaintext
htmlviewer1.CustomUserAgentMBS = NewCFStringMBS("HelloWorldBrowser")
```

**Notes:** (Read and Write computed property)

85.98.123  dashboardBehaviorMBS(behavior as Integer) as boolean

**Function:** Get or set the htmlviewer behavior.  
**Notes:**
This is a private API from Apple which may break in the future.  
It seems to exist for the dashboard application to switch some flags for event handling.

Behavior constants:
- `const WebDashboardBehaviorAlwaysSendMouseEventsToAllWindows = 0`
- `const WebDashboardBehaviorAlwaysSendActiveNullEventsToPlugIns = 1`
- `const WebDashboardBehaviorAlwaysAcceptsFirstMouse = 2`
- `const WebDashboardBehaviorAllowWheelScrolling = 3`
- `const WebDashboardBehaviorUseBackwardCompatibilityMode = 4`

(Read and Write computed property)

85.98.124  DrawsBackgroundMBS as Boolean

**Function:** Enable or disable the background drawing.  
**Example:**

```plaintext
HTMLViewer1.DrawsBackgroundMBS = false
```

**Notes:**
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Works only with Webkit on Mac OS X 10.3.9 and newer. Returns false on unsupported Webkit versions. If you set it to false, the background is not drawn and you can have transparent websites like the Dashboard widgets. (Read and Write computed property)

85.98.125 EditableMBS as boolean

Function: Whether the user is allowed to edit the document. 
Notes: You can change the receiver’s document programmatically regardless of this setting. Available in Mac OS X v10.3.9 and later.

Normally, an HTML document is not editable unless the elements within the document are editable. This method provides a low-level way to make the contents of a WebView object editable without altering the document or DOM structure.

True if the receiver allows the user to edit the document. False if an element in the receiver’s document can be edited only if the CONTENTEDITABLE attribute has been set on the element or one of its parent elements. (Read and Write computed property)

85.98.126 FrameHeightMBS as Double

Function: The height of the view frame. 
Example:
MsgBox str(HTMLViewer1.FrameLeftMBS)+” ”+str(HTMLViewer1.FrameTopMBS)+” ”+str(HTMLViewer1.FrameWidthMBS)+” ”+str(HTMLViewer1.FrameHeightMBS)

Notes: (Read and Write computed property)

85.98.127 FrameLeftMBS as Double

Function: The left position of the view frame. 
Example:
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MsgBox str(HTMLViewer1.FrameLeftMBS) + " " + str(HTMLViewer1.FrameTopMBS) + " " + str(HTMLViewer1.FrameWidthMBS) + " " + str(HTMLViewer1.FrameHeightMBS)

Notes: (Read and Write computed property)

85.98.128 FrameTopMBS as Double

Function: The top position of the view frame.
Example:
MsgBox str(HTMLViewer1.FrameLeftMBS) + " " + str(HTMLViewer1.FrameTopMBS) + " " + str(HTMLViewer1.FrameWidthMBS) + " " + str(HTMLViewer1.FrameHeightMBS)

Notes: (Read and Write computed property)

85.98.129 FrameWidthMBS as Double

Function: The width of the view frame.
Example:
MsgBox str(HTMLViewer1.FrameLeftMBS) + " " + str(HTMLViewer1.FrameTopMBS) + " " + str(HTMLViewer1.FrameWidthMBS) + " " + str(HTMLViewer1.FrameHeightMBS)

Notes: (Read and Write computed property)

85.98.130 GroupNameMBS as string

Function: The group name for this WebView.
Example:
HTMLViewer1.GroupNameMBS = "Hello"

Notes:
JavaScript may access named frames within the same group.
(Read and Write computed property)

85.98.131  **IECharSetMBS as string**

MBS Win Plugin, Plugin Version: 7.8, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Sets or retrieves the character set used to encode the object.
**Notes:**
Example value: "utf-8"
(Read and Write computed property)

85.98.132  **IECookieMBS as string**

MBS Win Plugin, Plugin Version: 7.8, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Sets or gets the string value of a cookie.
**Notes:**
Example value: 
"s_vi= [ CS ] v1 | 427CA13500002D10-A000B5B00000001 [ CE ] ; s_cc=true; s_nr=1196708888562;
s_sq=% 5B% 5BB% 5D% 5D"
(Read and Write computed property)

85.98.133  **IEDefaultCharsetMBS as string**

MBS Win Plugin, Plugin Version: 7.8, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Gets the default character set from the current regional language settings.
**Notes:**
Example value: "windows-1252"
(Read and Write computed property)

85.98.134  **IEDomainMBS as string**

MBS Win Plugin, Plugin Version: 7.8, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Sets or gets the security domain of the document.
**Notes:**
Example value: "www.apple.com"
(Read and Write computed property)
85.98.135  IEEEditableMBS as boolean

MBS Win Plugin, Plugin Version: 11.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Makes the htmlviewer editable on Windows.  
**Notes:** (Read and Write computed property)

85.98.136  IETitleMBS as string

MBS Win Plugin, Plugin Version: 7.8, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Sets or gets the title of the document.  
**Notes:**  
Example value: "Apple" 
(Read and Write computed property)

85.98.137  IEURLMBS as string

MBS Win Plugin, Plugin Version: 7.8, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Sets or gets the URL for the current document.  
**Notes:**  
Example value: "http://www.apple.com/" 
(Read and Write computed property)

85.98.138  mediaStyleMBS as String

MBS MacControls Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The value to use for the CSS media property.  
**Example:** 
htmlviewer1.mediaStyleMBS="print"

**Notes:**  
Set or get the media style for the WebView. The mediaStyle will override the normal value of the CSS media property. Setting the value to nil will restore the normal value.  
(Read and Write computed property)
85.98.139 PreferencesIdentifierMBS as string

Function: The string to use a prefix for storing values for this WebView in the user defaults database.
Example:
MsgBox HTMLViewer1.PreferencesIdentifierMBS

Notes:
If the WebPreferences for this WebView are stored in the user defaults database, the string set in this method will be used a key prefix.
(Read and Write computed property)

85.98.140 preferencesMBS as WebPreferencesMBS

Function: The preferences for this htmlviewer.
Example:
HTMLViewer1.preferencesMBS.defaultFontSize = 10
HTMLViewer1.Loadpage "<p>Hello</p>", nil

Notes:
Nil on failure.
(Read and Write computed property)

85.98.141 ScrollHeightMBS as single

Function: The height of the scroll view.
Example:
MsgBox str(HTMLViewer1.ScrollWidthMBS)+" "+str(HTMLViewer1.ScrollHeightMBS)

Notes: (Read and Write computed property)
85.98.142 ScrollLeftMBS as single

Function: The left position of the scroll view.
Example:
```
HTMLViewer1.ScrollLeftMBS=HTMLViewer1.ScrollLeftMBS+5
```

Notes:
You can set this value to scroll manually.
(Read and Write computed property)

85.98.143 ScrollTopMBS as single

Function: The top position of the scroll view.
Example:
```
HTMLViewer1.ScrollTopMBS=HTMLViewer1.ScrollTopMBS+5
```

Notes:
You can set this value to scroll manually.
(Read and Write computed property)

85.98.144 ScrollWidthMBS as single

Function: The width of the scroll view.
Example:
```
MsgBox str(HTMLViewer1.ScrollWidthMBS)+" "+str(HTMLViewer1.ScrollHeightMBS)
```

Notes: (Read and Write computed property)
85.98.145 **TextSizeMultiplierMBS as single**

Function: The size of the text rendering in views managed by this webView.
Example:

```pascal
HTMLViewer1.LoadPage "<p>Hello</p>", nil
HTMLViewer1.TextSizeMultiplierMBS = 5
```

Notes:
A fractional percentage value, 1.0 is 100% .
(Read and Write computed property)

85.98.146 **tooltipMBS as String**

Function: The tooltip for this htmlviewer.
Example:

```pascal
HTMLViewer1.tooltipMBS = "Test tooltip"
```

Notes: (Read and Write computed property)

85.98.147 **visibleMBS as boolean**

Function: Whether the control is visible.
Example:

```pascal
MsgBox str(HTMLViewer1.visibleMBS)
```

Notes:
True is visible and false if hidden.
(Read and Write computed property)
85.99 Globals

85.99.1 InstallWebDownloadDelegate(extends w as WebViewMBS, theDelegate as WebDownloadDelegateMBS)

Function: Installs a WebDownloadDelegateMBS to receive events from webview.
Notes: You need to keep a reference to this WebDownloadDelegateMBS object in the window where the webview is inside so the class is not destroyed too early.

85.99.2 InstallWebFrameLoadDelegate(extends w as WebViewMBS, theDelegate as WebFrameLoadDelegateMBS)

Function: Installs a WebFrameLoadDelegateMBS to receive events from a webview control.
Notes: You need to keep a reference to this WebFrameLoadDelegateMBS object in the window where the htmlviewer is inside so the class is not destroyed too early.

85.99.3 InstallWebPolicyDelegate(extends w as WebViewMBS, theDelegate as WebPolicyDelegateMBS)

Function: Installs a WebPolicyDelegateMBS to receive events from a webview control.
Notes: You need to keep a reference to this WebPolicyDelegateMBS object in the window where the htmlviewer is inside so the class is not destroyed too early.

85.99.4 InstallWebResourceLoadDelegate(extends w as WebViewMBS, theDelegate as WebResourceLoadDelegateMBS)

Function: Installs a WebResourceLoadDelegateMBS to receive events from a webview control.
Notes: You need to keep a reference to this WebResourceLoadDelegateMBS object in the window where the WebView is inside so the class is not destroyed too early.
85.99.5  InstallWebUIDelegate(extends w as WebViewMBS, theDelegate as WebUIDelegateMBS)

Function: Installs a HTMLViewerUIDelegateMBS to receive events from a webview control.
Notes: You need to keep a reference to this HTMLViewerUIDelegateMBS object in the window where the htmlviewer is inside so the class is not destroyed too early.

85.100  class WebArchiveMBS

85.100.1  class WebArchiveMBS

Function: The class to represent a webarchive.
Notes:
WebArchive represents a main resource as well as all the subresources and subframes associated with the main resource.
The main resource can be an entire web page, a portion of a web page, or some other kind of data such as an image.
This class can be used for saving standalone web pages, representing portions of a web page on the pasteboard, or any other application where one class is needed to represent rich web content.

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

85.100.2  Methods

85.100.3  Constructor(data as Memoryblock)

Function: The initializer for creating a WebArchive from data.
Notes: data: The data representing the archive. This can be obtained using WebArchive’s data method.
See also:

- 85.100.4 Constructor(mainResource as WebResourceMBS)
- 85.100.5 Constructor(mainResource as WebResourceMBS, subresources() as WebResourceMBS)
- 85.100.6 Constructor(mainResource as WebResourceMBS, subresources() as WebResourceMBS, sub-frameArchives() as WebArchiveMBS)
85.100. CLASS WEBARCHIVEMBS

85.100.4 Constructor(mainResource as WebResourceMBS)

Function: A constructor for WebArchive.
Notes: Creates a new archive object with the given webresources.
See also:
- 85.100.3 Constructor(data as Memoryblock)
- 85.100.5 Constructor(mainResource as WebResourceMBS, subresources() as WebResourceMBS)
- 85.100.6 Constructor(mainResource as WebResourceMBS, subresources() as WebResourceMBS, subframeArchives() as WebArchiveMBS)

85.100.5 Constructor(mainResource as WebResourceMBS, subresources() as WebResourceMBS)

Function: A constructor for WebArchive.
Notes: Creates a new archive object with the given webresources.
The array can be empty.
See also:
- 85.100.3 Constructor(data as Memoryblock)
- 85.100.4 Constructor(mainResource as WebResourceMBS)
- 85.100.6 Constructor(mainResource as WebResourceMBS, subresources() as WebResourceMBS, subframeArchives() as WebArchiveMBS)

85.100.6 Constructor(mainResource as WebResourceMBS, subresources() as WebResourceMBS, subframeArchives() as WebArchiveMBS)

Function: A constructor for WebArchive.
Notes: Creates a new archive object with the given webresources.
The arrays can be empty.
See also:
- 85.100.3 Constructor(data as Memoryblock)
- 85.100.4 Constructor(mainResource as WebResourceMBS)
- 85.100.5 Constructor(mainResource as WebResourceMBS, subresources() as WebResourceMBS)
85.100.7  data as Memoryblock

Function: The data representation of the archive.
Notes: The data returned by this method can be used to save a web archive to a file or to place a web archive on the pasteboard using WebArchivePboardType. To create a WebArchive using the returned data, use the matching constructor.

85.100.8  mainResource as WebResourceMBS

Function: The main resource of the archive.
Notes: Nil on any error.

85.100.9  subframeArchives as WebArchiveMBS()

Function: The archives representing the subframes of the archive (can be empty).

85.100.10  subresources as WebResourceMBS()

Function: The subresource of the archive (can be empty).

85.100.11  Properties

85.100.12  Handle as Integer

Function: The handle to the internal used WebArchive object.
Notes: (Read and Write property)
85.101. class WebBackForwardListMBS

85.101.1 class WebBackForwardListMBS

Function: WebBackForwardList holds an ordered list of WebHistoryItems that comprises the back and forward lists.
Notes:
Note that the methods which modify instances of this class do not cause navigation to happen in other layers of the stack; they are only for maintaining this data structure.

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

85.101.2 Methods

85.101.3 addItem(item as WebHistoryItemMBS)

Function: Adds an entry to the list.
Notes:
The added entry is inserted immediately after the current entry.
If the current position in the list is not at the end of the list, elements in the forward list will be dropped at this point. In addition, entries may be dropped to keep the size of the list within the maximum size.

85.101.4 backItem as WebHistoryItemMBS

Function: Returns the entry right before the current entry.

85.101.5 backListCount as Integer

Function: Returns the back list’s current count.
85.101.6 backListWithLimit(limit as Integer) as WebHistoryItemMBS()

Function: Returns a portion of the list before the current entry.
Notes:
limit: A cap on the size of the array returned.
An array of items before the current entry. The entries are in the order that they were originally visited.

85.101.7 Constructor

Function: The private constructor.

85.101.8 containsItem(item as WebHistoryItemMBS) as boolean

Function: Whether the item is part of the list.
Notes: Returns true if the item is found.

85.101.9 currentItem as WebHistoryItemMBS

Function: Returns the current entry.

85.101.10 forwardItem as WebHistoryItemMBS

Function: Returns the entry right after the current entry.

85.101.11 forwardListCount as Integer

Function: Returns the forward list’s current count.
85.101.12  forwardListWithLimit(limit as Integer) as WebHistoryItemMBS()

Function: Returns a portion of the list after the current entry.
Notes:
limit: A cap on the size of the array returned.
An array of items after the current entry, or nil if there are none. The entries are in the order that they were
originally visited.

85.101.13  goBack

Function: Move the current pointer back to the entry before the current entry.

85.101.14  goForward

Function: Move the current pointer ahead to the entry after the current entry.

85.101.15  goToItem(item as WebHistoryItemMBS)

Function: Move the current pointer to the given entry.

85.101.16  itemAtIndex(index as Integer) as WebHistoryItemMBS

Function: Returns an entry the given distance from the current entry.
Notes:
index: Index of the desired list item relative to the current item; 0 is current item, -1 is back item, 1 is
forward item, etc.
Returns the entry the given distance from the current entry. If index exceeds the limits of the list, nil is
returned.
85.101.17 Properties

85.101.18 Handle as Integer

Function: The internal WebBackForwardList reference.
Notes: (Read and Write property)

85.101.19 capacity as Integer

Function: The list’s maximum size.
Notes: (Read and Write computed property)

85.101.20 PageCacheSize as Integer

Function: The number of pages that may be cached.
Notes: (Read and Write computed property)
85.102. class WebDataSourceMBS

85.102.1 class WebDataSourceMBS


Function: A WebDataSource represents the data associated with a web page.

Notes:

A datasource has a WebDocumentRepresentation which holds an appropriate representation of the data. WebDataSources manage a hierarchy of WebFrames. WebDataSources are typically related to a view by their containing WebFrame.

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

85.102.2 Methods

85.102.3 addSubresource(Subresource as WebResourceMBS)


Function: Adds a subresource to the data source.

Notes:

Adds a subresource to the data source’s list of subresources.
Later, if something causes the data source to load the URL of the subresource, the data source will load the data from the subresource instead of from the network. For example, if one wants to add an image that is already downloaded to a web page, addSubresource can be called so that the data source uses the downloaded image rather than accessing the network. NOTE: If the data source already has a subresource with the same URL, addSubresource will replace it.

85.102.4 Constructor(request as NSURLRequestMBS)


Function: Creates a new data source based on the given request.

Notes: Handle will be non 0 on success.

85.102.5 data as MemoryBlock


Function: The data will be incomplete until the datasource has completely loaded.
Notes: Returns the raw data associated with the datasource. Returns nil if the datasource hasn’t loaded any data.

85.102.6 initialRequest as NSURLRequestMBS

Function: Returns a reference to the original request that created the datasource.
Notes: This request will be unmodified by WebKit.

85.102.7 isLoading as boolean

Function: Returns true if there are any pending loads.

85.102.8 mainResource as WebResourceMBS

Function: The main resource for this web data resource.
Notes: Nil on any error.

85.102.9 pageTitle as string

Function: Returns "" or the page title.

85.102.10 representation as WebDocumentRepresentationMBS

Function: A representation holds a type specific representation of the datasource’s data.
Notes:
The representation class is determined by mapping a MIME type to a class.
The representation is created once the MIME type of the datasource content has been determined.
Returns the representation associated with this datasource.
Returns nil if the datasource hasn’t created it’s representation.
85.102.11  request as NSURLRequestMBS

Function: Returns the request that was used to create this datasource.
Notes: Nil on any error.

85.102.12  response as NSURLResponseMBS

Function: The response for the data source.
Notes: Nil on any error.

85.102.13  subresourceForURL(url as string) as WebResourceMBS

Function: Returns a subresource for a given URL.
Notes: Returns non-nil if the data source has fully downloaded a subresource with the given URL.

85.102.14  subresources as WebResourceMBS()

Function: Returns all the subresources associated with the data source.
Notes: The returned array only contains subresources that have fully downloaded.

85.102.15  textEncodingName as string

Function: Returns either the override encoding, as set on the WebView for this dataSource or the encoding
from the response.

85.102.16  unreachableURL as String

Function: This will be non-empty only for dataSources created by calls to the WebFrame method loadAl-
ternateHTMLString.
85.102.17 webArchive as WebArchiveMBS

Function: This method constructs a WebArchive using the original downloaded data.
Notes: In the case of HTML, if the current state of the document is preferred, webArchive should be called on the DOM document instead.
Returns a WebArchive representing the data source, its subresources and child frames.
Nil on any error.

85.102.18 webFrame as WebFrameMBS

Function: Return the frame that represents this data source.
Notes: Nil on any error.

85.102.19 Properties

85.102.20 Handle as Integer

Function: The handle to the internal used WebDataSource reference.
Notes: (Read and Write property)
85.103. class WebDocumentRepresentationMBS

85.103.1 class WebDocumentRepresentationMBS

Function: A class to represent a web document representation.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

85.103.2 Methods

85.103.3 canProvideDocumentSource as boolean

Function: Returns true if the representation can provide document source.

85.103.4 Constructor

Function: The private constructor.

85.103.5 documentSource as string

Function: Returns the textual source representation of the document.
Notes: For HTML documents this is the original HTML source.

85.103.6 title as string

Function: Return the title for the document.
85.103.7 Properties

85.103.8 Handle as Integer

**Function:** The internal used handle to a WebDocumentRepresentation.
**Notes:** (Read and Write property)
85.104. class WebDocumentViewMBS


Function: The view to render a webdocument.

Notes:

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

You can embed this view in a CustomNSViewMBS to get more events for mouse and keyboard. Subclass of the NSViewMBS class.

85.104.2 Methods

85.104.3 attributedString as NSAttributedStringMBS


Function: the document view content as one attributed string.

Example:

```java
// save website as word document (if possible)

dim f as FolderItem
dim b as BinaryStream
dim a as NSAttributedStringMBS

a=HTMLViewer1.mainFrameMBS.frameView.documentView.attributedString

f=SpecialFolder.Desktop.Child("test.doc")
b=f.CreateBinaryFile(""")
b.Write a.docFormatFromRange(0,a.length)
b.Close
```

Notes:

Works only if TextFunctionsAvailable returns true.

Returns nil on failure.
85.104.4  **dataSourceUpdated(dataSource as WebDataSourceMBS)**

**Function:** Called when the corresponding data source has received data.

85.104.5  **deselectAll**

**Function:** Deselects all text in the document view.  
**Example:**

```plaintext
HTMLViewer1.mainFrameMBS.frameView.documentView.selectAll
```

**Notes:** Works only if TextFunctionsAvailable returns true.

85.104.6  **Image as NSImageMBS**

**Function:** Makes a screenshot of the current displayed content.  
**Example:**

```plaintext
dim f as FolderItem  
dim b as BinaryStream  
dim i as NSImageMBS  
dim p as string

i=theWebDocumentView.Image  
p=i.PNGRepresentation  

f=SpecialFolder.Desktop.Child("test.png")  
b=f.CreateBinaryFile("")  
b.Write p
```

**Notes:**

Nil on failure.  
The image returned is the page completely without scrollbars, so it may be a few thousand pixels height and may not fit on a page to print.
85.104.7  layout

**Function:** Called when the document view must immediately layout.
**Notes:** For simple views, setting the frame is a sufficient implementation of this method.

85.104.8  print

**Function:** Prints this view.
**Notes:** This is printing the whole view. The Cocoa framework shows print dialog and progress bar window for you.

85.104.9  SearchFor(text as string, Forward as boolean, CaseSensitive as boolean, Wrap as Boolean) as boolean

**Function:** Searches a document view for a string and highlights the string if it is found.
**Example:**
```
call myWebDocumentView.SearchFor "holiday",true,false,true
```

**Notes:**
Starts the search from the current selection. Will search across all frames.

text: The string to search for.
forward: True to search forward, False to seach backwards.
caseSensitive: True to for case-sensitive search, False for case-insensitive search.

Returns true if found, false if not found.

Works only if SearchFunctionsAvailable returns true.

85.104.10  SearchFunctionsAvailable as boolean

**Function:** Whether the document view implements the search functions.
Notes: Not all document view classes support all functions.

### 85.104.11 selectAll

**Function:** Selects all text in the document view.
**Example:**

```plaintext```
HTMLViewer1.mainFrameMBS.frameView.documentView.selectAll
```

Notes: Works only if TextFunctionsAvailable returns true.

### 85.104.12 selectedAttributedString as NSAttributedStringMBS

**Function:** Attributed string that represents the current selection.
**Notes:** Works only if TextFunctionsAvailable returns true.

### 85.104.13 SelectedString as String

**Function:** String that represents the current selection.
**Example:**

```plaintext```
MsgBox HTMLViewer1.mainFrameMBS.frameView.documentView.SelectedValue
```

Notes: Works only if TextFunctionsAvailable returns true.

### 85.104.14 setDataSource(dataSource as WebDataSourceMBS)

**Function:** Called when the corresponding data source has been created.
85.104.15 setNeedsLayout(flag as boolean)

Function: Called when WebKit has determined that the document view needs to layout.

85.104.16 stringValue as String

Function: The plain text content of this document view.
Example:
MsgBox HTMLViewer1.mainFrameMBS.frameView.documentView.stringValue

Notes:
Works only if TextFunctionsAvailable returns true.
This method should be named string, but RB does not allow that.

85.104.17 supportsTextEncoding as boolean

Function: True if the document view support text encoding, false if it doesn’t.
Notes: Works only if TextFunctionsAvailable returns true.

85.104.18 TextFunctionsAvailable as boolean

Function: Whether the document view implements the text functions.
Notes: Not all document view subclasses support all functions.
85.105 class WebDownloadDelegateMBS

85.105.1 class WebDownloadDelegateMBS


Function: The class for receiving events about downloads running in a htmlviewer/webviewer.

Notes:

The NSURLDownloadDelegate protocol defines methods that allow an object to receive informational callbacks about the asynchronous load of a download’s URL request. Other delegate methods provide facilities that allow the delegate to customize the process of performing an asynchronous URL load.

Note that these delegate methods will be called on the thread that started the asynchronous load operation for the associated NSURLDownload object.

- A didBegin message will be sent to the delegate immediately upon starting the download.
- Zero or more willSendRequest messages will be sent to the delegate before any further messages are sent if it is determined that the download must redirect to a new location. The delegate can allow the redirect, modify the destination or deny the redirect.
- Zero or more didReceiveAuthenticationChallenge messages will be sent to the delegate if it is necessary to authenticate in order to download the request and NSURLDownload does not already have authenticated credentials.
- Zero or more didCancelAuthenticationChallenge messages will be sent to the delegate if NSURLDownload cancels the authentication challenge due to encountering a protocol implementation error.
- Zero or more didReceiveResponse messages will be sent to the delegate before receiving a didReceiveDataOfLength message. The only case where didReceiveResponse is not sent to a delegate is when the protocol implementation encounters an error before a response could be created.
- Zero or more didReceiveDataOfLength messages will be sent before didFinish or didFailWithError is sent to the delegate.
- Zero or one decideDestinationWithSuggestedFilename will be sent to the delegate when sufficient information has been received to determine the suggested filename for the downloaded file. The delegate will not receive this message if setDestination has already been sent to the NSURLDownload instance.
- A didCreateDestination message will be sent to the delegate when the NSURLDownload instance creates the file on disk.
- If NSURLDownload determines that the downloaded file is in a format that it is able to decode (MacBinary, Binhex or gzip), the delegate will receive a shouldDecodeSourceDataOfMIMEType. The delegate should return true to decode the data, false otherwise.
- Unless an NSURLDownload instance receives a cancel message, the delegate will receive one and only one didFinish or didFailWithError: message, but never both. In addition, once either of messages are sent, the delegate will receive no further messages for the given NSURLDownload.
Please use one delegate class per HTMLViewer (or WebViewMBS) and make sure they live about the same time. Our class keeps a reference on the WebView, so we can remove our delegate when the delegate is destroyed.

85.105.2 Events

85.105.3 canAuthenticateAgainstProtectionSpace(download as NSURLDownloadMBS, protectionSpace as NSURLProtectionSpaceMBS) as boolean


Function: Sent to determine whether the delegate is able to respond to a protection space’s form of authentication. (required)

Notes:

download: The download sending the message.
protectionSpace: The protection space that generates an authentication challenge.

This method is called before didReceiveAuthenticationChallenge, allowing the delegate to inspect a protection space before attempting to authenticate against it. By returning true, the delegate indicates that it can handle the form of authentication, which it does in the subsequent call to didReceiveAuthenticationChallenge. Not implementing this method is the same as returning false, in which case default authentication handling is used.

Available in Mac OS X v10.6 and later.

85.105.4 Close


Function: The close event.

Notes: Called when the delegate is destroyed.

85.105.5 decideDestinationWithSuggestedFilename(download as NSURLDownloadMBS, filename as string)


Function: The delegate receives this message when download has determined a suggested filename for the downloaded file. (required)

Notes:

download: The URL download object sending the message.
filename: The suggested filename for the download.
The suggested filename is either derived from the last path component of the URL and the MIME type or, if the download was encoded, from the encoding. If the delegate wishes to modify the path, it should send setDestination to download.

The delegate will not receive this message if setDestination has already been called for the download.

Available in Mac OS X v10.2 and later.

85.105.6 DidBegin(download as NSURLDownloadMBS)

Function: Sent immediately after a download object begins a download. (required)
Notes:
download: The URL download object sending the message.

Available in Mac OS X v10.2 and later.

85.105.7 didCancelAuthenticationChallenge(download as NSURLDownloadMBS, challenge as NSURLAuthenticationChallengeMBS)

Function: Sent if an authentication challenge is canceled due to the protocol implementation encountering an error. (required)
Notes:
download: The URL download object sending the message.
challenge: The authentication challenge that caused the download object to cancel the download.
If the delegate receives this message the download will fail and the delegate will receive a didFailWithError message.

Available in Mac OS X v10.2 and later.
85.105.8 didCreateDestination(download as NSURLDownloadMBS, path as string, file as folderitem)

**Function:** Sent when the destination file is created. (required)
**Notes:**
download: The URL download object sending the message.
path: The path to the destination file.
file: The path to the destination file as folderitem.

Available in Mac OS X v10.2 and later.

85.105.9 didFailWithError(download as NSURLDownloadMBS, error as NSErrorMBS)

**Function:** Sent if the download fails or if an I/O error occurs when the file is written to disk. (required)
**Notes:**
download: The URL download object sending the message.
error: The error that caused the failure of the download.

Any partially downloaded file will be deleted.

Once the delegate receives this message, it will receive no further messages for download.
Available in Mac OS X v10.2 and later.

85.105.10 DidFinish(download as NSURLDownloadMBS)

**Function:** Sent when a download object has completed downloading successfully and has written its results to disk. (required)
**Notes:**
download: The URL download object sending the message.

The delegate will receive no further messages for download.
Available in Mac OS X v10.2 and later.
85.105.11 didReceiveAuthenticationChallenge(download as NSURLDownloadMBS, challenge as NSURLAuthenticationChallengeMBS)


**Function:** Sent when the URL download must authenticate a challenge in order to download the request. (required)

**Notes:**

download: The URL download object sending the message.

challenge: The URL authentication challenge that must be authenticated in order to download the request.

This method gives the delegate the opportunity to determine the course of action taken for the challenge: provide credentials, continue without providing credentials or cancel the authentication challenge and the download.

The delegate can determine the number of previous authentication challenges by sending the message previousFailureCount to challenge.

If the previous failure count is 0 and the value returned by proposedCredential is nil, the delegate can create a new NSURLCredential object, providing information specific to the type of credential, and send a useCredential message to challenge, passing the credential and challenge as parameters. If proposedCredential is not nil, the value is a credential from the URL or the shared credential storage that can be provided to the user as feedback.

The delegate may decide to abandon further attempts at authentication at any time by sending challenge a continueWithoutCredentialForAuthenticationChallenge or a cancelAuthenticationChallenge message. The specific action is implementation dependent.

If the delegate implements this method, the download will suspend until [challenge sender] is sent one of the following messages: useCredential, continueWithoutCredentialForAuthenticationChallenge or cancelAuthenticationChallenge.

If the delegate does not implement this method the default implementation is used. If a valid credential for the request is provided as part of the URL, or is available from the NSURLCredentialStorage the challenge is sent a useCredential:forAuthenticationChallenge with the credential. If the challenge has no credential or the credentials fail to authorize access, then continueWithoutCredentialForAuthenticationChallenge is sent to challenge sender instead.

Available in Mac OS X v10.2 and later.
85.105.12 didReceiveDataOfLength(download as NSURLDownloadMBS, length as UInt64)

Function: Sent as a download object receives data incrementally. (required)
Notes:
download: The URL download object sending the message.
length: The amount of data received in this increment of the download, measured in bytes.

Available in Mac OS X v10.2 and later.

85.105.13 didReceiveResponse(download as NSURLDownloadMBS, response as NSURLResponseMBS)

Function: Sent when a download object has received sufficient load data to construct the NSURLResponse object for the download. (required)
Notes:
download: The URL download object sending the message.
response: The URL response object received as part of the download. response is immutable and will not be modified after this method is called.

In some rare cases, multiple responses may be received for a single download. In this case, the client should assume that each new response resets the download progress to 0 and should check the new response for the expected content length.
Available in Mac OS X v10.2 and later.

85.105.14 Open

Function: The open event.
Notes:
Called just after the delegate has been installed in a htmlviewer control.
This allows you to initialize your stuff before the first event is called.
85.105.15 shouldDecodeSourceDataOfMIMEType(download as NSURLDownloadMBS, encodingType as string) as boolean


Function: Sent when a download object determines that the downloaded file is encoded to inquire whether the file should be automatically decoded. (required)

Notes:

download: The URL download object sending the message.
encodingType: The type of encoding used by the downloaded file. The supported encoding formats are MacBinary ("application/macbinary"), Binhex ("application/mac-binhex40") and gzip ("application/gzip").

Return true to decode the file, false otherwise.

The delegate may receive this message more than once if the file has been encoded multiple times. This method is not called if the downloaded file is not encoded.
Available in Mac OS X v10.2 and later.

85.105.16 ShouldUseCredentialStorage(download as NSURLDownloadMBS) as boolean


Function: Sent to determine whether the URL loader should consult the credential storage to authenticate the download. (required)

Notes:

collection: The connection sending the message.

This method is called before any attempt to authenticate is made. By returning false, the delegate tells the download not to consult the credential storage and makes itself responsible for providing credentials for any authentication challenges. Not implementing this method is the same as returning true. The delegate is free to consult the credential storage itself when it receives a didReceiveAuthenticationChallenge message.

Available in Mac OS X v10.6 and later.

85.105.17 willResumeWithResponse(download as NSURLDownloadMBS, response as NSURLResponseMBS, startingByte as Int64)


Function: Sent when a download object has received a response from the server after attempting to resume a download. (required)

Notes:
download: The URL download object sending the message.
response: The URL response received from the server in response to an attempt to resume a download.

The location of the start of the resumed data, in bytes.
Available in Mac OS X v10.4 and later.

85.105.18 willSendRequest(download as NSURLDownloadMBS, request as NSURLRequestMBS, redirectResponse as NSURLResponseMBS) as NSURLRequestMBS

Function: Sent when the download object determines that it must change URLs in order to continue loading a request. (required)
Notes:
download: The URL download object sending the message.
request: The proposed redirected request. The delegate should inspect the redirected request to verify that it meets its needs, and create a copy with new attributes to return to the connection if necessary.
redirectResponse: The URL response that caused the redirect. May be nil in cases where this method is not being sent as a result of involving the delegate in redirect processing.

Return the actual URL request to use in light of the redirection response. The delegate may copy and modify request as necessary to change its attributes, return request unmodified, or return nil.

If the delegate wishes to cancel the redirect, it should call the download object’s cancel method. Alternatively, the delegate method can return nil to cancel the redirect, and the download will continue to process. This has special relevance in the case where redirectResponse is not nil. In this case, any data that is loaded for the download will be sent to the delegate, and the delegate will receive a downloadDidFinish: or download:didFailWithError: message, as appropriate.

The delegate can receive this message as a result of transforming a request’s URL to its canonical form, or for protocol-specific reasons, such as an HTTP redirect. The delegate implementation should be prepared to receive this message multiple times.

Available in Mac OS X v10.2 and later.

85.105.19 WindowForAuthenticationSheet(download as NSURLDownloadMBS) as NSWindowMBS

Function: Called to query the right window when automatically prompting with a sheet.
85.106.1  class WebFrameLoadDelegateMBS

Function: The delegate to receive events about frames being loaded.
Notes:
A WebView’s WebFrameLoadDelegate tracks the loading progress of its frames. When a data source of a
frame starts to load, the data source is considered provisional”. Once at least one byte is received, the data
source is considered “committed”. This is done so the contents of the frame will not be lost if the new data
source fails to successfully load.

Please use one delegate class per HTMLViewer (or WebViewMBS) and make sure they live about the same
time. Our class keeps a reference on the WebView, so we can remove our delegate when the delegate is
destroyed.

85.106.2  Events

85.106.3  Close

Function: The close event.
Notes: Called when the delegate is destroyed.

85.106.4  didCancelClientRedirectForFrame(WebView as WebViewMBS, frame
as WebFrameMBS) as boolean

Function: Invoked when a client redirect is cancelled.
Notes:
Webview: The web view containing the frame.
frame: The frame being loaded.

This might happen if a frame changes locations before a pending client redirect is fired. The client redirect
occurred in frame.
85.106.5 didChangeLocationWithinPageForFrame(WebView as WebViewMBS, frame as WebFrameMBS) as boolean

Function: Notifies the delegate that the scroll position in a frame has changed
Notes:
frame: The frame that scrolled

This method is called when anchors within a page have been clicked.

If you have code in this event, return true to block the event from being sent to the next delegate. Return false to allow sending to next delegate.

85.106.6 didCommitLoadForFrame(WebView as WebViewMBS, frame as WebFrameMBS) as boolean

Function: Notifies the delegate that the load has changed from provisional to committed
Notes:
frame: The frame for which the load has committed

This method is called after the provisional data source has become the committed data source.

In some cases, a single load may be committed more than once. This happens in the case of multipart/x-mixed-replace, also known as "server push". In this case, a single location change leads to multiple documents that are loaded in sequence. When this happens, a new commit will be sent for each document.

If you have code in this event, return true to block the event from being sent to the next delegate. Return false to allow sending to next delegate.

85.106.7 didFailLoadWithError(WebView as WebViewMBS, ErrorString as string, frame as WebFrameMBS) as boolean

Function: Notifies the delegate that the committed load of a frame has failed
Notes:
error: The error that occurred
This method is called after a data source has committed but failed to completely load.

If you have code in this event, return true to block the event from being sent to the next delegate. Return false to allow sending to next delegate.

**85.106.8** `didFailProvisionalLoadWithError(WebView as WebViewMBS, ErrorString as string, frame as WebFrameMBS) as boolean`

Function: Notifies the delegate that the provisional load has failed
Notes:
error: The error that occurred
frame: The frame for which the error occurred
This method is called after the provisional data source has failed to load.
The frame will continue to display the contents of the committed data source if there is one.

If you have code in this event, return true to block the event from being sent to the next delegate. Return false to allow sending to next delegate.

**85.106.9** `didFinishLoadForFrame(WebView as WebViewMBS, frame as WebFrameMBS) as boolean`

Function: Notifies the delegate that the committed load of a frame has completed
Notes:
frame: The frame that finished loading
This method is called after the committed data source of a frame has successfully loaded and will only be called when all subresources such as images and stylesheets are done loading. Plug-In content and JavaScript-requested loads may occur after this method is called.

If you have code in this event, return true to block the event from being sent to the next delegate. Return false to allow sending to next delegate.
85.106.10  didReceiveIcon(WebView as WebViewMBS, image as NSImageMBS, frame as WebFrameMBS) as boolean

Function: Notifies the delegate that a page icon image for a frame has been received
Notes:
image: The icon image. Also known as a "favicon".
frame: The frame for which a page icon has been received

If you have code in this event, return true to block the event from being sent to the next delegate. Return false to allow sending to next delegate.

85.106.11  didReceiveServerRedirectForProvisionalLoadForFrame(WebView as WebViewMBS, frame as WebFrameMBS) as boolean

Function: Notifies the delegate that a server redirect occurred during the provisional load.
Notes:
frame: The frame for which the redirect occurred

If you have code in this event, return true to block the event from being sent to the next delegate. Return false to allow sending to next delegate.

85.106.12  didReceiveTitle(WebView as WebViewMBS, title as string, frame as WebFrameMBS) as boolean

Function: Notifies the delegate that the page title for a frame has been received
Notes:
title: The new page title
frame: The frame for which the title has been received

The title may update during loading; clients should be prepared for this.

If you have code in this event, return true to block the event from being sent to the next delegate. Return false to allow sending to next delegate.
85.106.13  didStartProvisionalLoadForFrame(WebView as WebViewMBS, frame as WebFrameMBS) as boolean

Function: Notifies the delegate that the provisional load of a frame has started
Notes:
frame: The frame for which the provisional load has started
This method is called after the provisional data source of a frame has started to load.

If you have code in this event, return true to block the event from being sent to the next delegate. Return false to allow sending to next delegate.

85.106.14  Open

Function: The open event.
Notes:
Called just after the delegate has been installed in a htmlviewer control.
This allows you to initialize your stuff before the first event is called.

85.106.15  willCloseFrame(WebView as WebViewMBS, frame as WebFrameMBS) as boolean

Function: Notifies the delegate that a pending client-side redirect has been cancelled
Notes:
frame: The frame for which the pending redirect was cancelled

A client-side redirect can be cancelled if a frame changes location before the timeout.

If you have code in this event, return true to block the event from being sent to the next delegate. Return false to allow sending to next delegate.
85.106.16  willPerformClientRedirectToURL(WebView as WebViewMBS, URL as String, delay as Double, fireDate as Date, frame as WebFrameMBS) as boolean

Function: Notifies the delegate that a frame will perform a client-side redirect
Notes:
frame: The frame for which the pending redirect was cancelled
URL: The URL to be redirected to
seconds: Seconds in which the redirect will happen
date: The fire date
frame: The frame on which the redirect will occur

This method can be used to continue progress feedback while a client-side redirect is pending.

If you have code in this event, return true to block the event from being sent to the next delegate. Return false to allow sending to next delegate.

85.106.17  windowScriptObjectAvailable(WebView as WebViewMBS, windowScriptObject as WebScriptObjectMBS) as boolean

Function: Notifies the delegate that the scripting object for a page is available.
Notes:
This is called before the page is loaded. It may be useful to allow delegates to bind native objects to the window.

windowScriptObject: The WebScriptObject for the window in the scripting environment.

If you have code in this event, return true to block the event from being sent to the next delegate. Return false to allow sending to next delegate.
85.107. class WebFrameMBS

85.107.1. class WebFrameMBS

Function: Every web page is represented by at least one WebFrame.
Notes: A WebFrame has a WebFrameView and a WebDataSource.

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.107.2. Methods

85.107.3. childFrames as WebFrameMBS()

Function: The frames in the array are associated with a frame set or iframe.
Notes: Returns an array of WebFrames.

85.107.4. Constructor

Function: The private constructor.

85.107.5. dataSource as WebDataSourceMBS

Function: Returns the committed data source.
Example:
// shows the page source in a msgbox:

dim w as WebFrameMBS
w=HTMLViewer1.mainFrameMBS
msgbox w.dataSource.data
Notes: Will return nil if the provisional data source hasn’t yet been loaded.

85.107.6 DOMDocument as Variant

Function: The DOM representation of this web document.
Notes: The value of this variant must be an object of class DOMDocumentMBS.

85.107.7 findFrameNamed(name as string) as WebFrameMBS

Function: This method returns a frame with the given name.
Notes:
findFrameNamed returns self for _self and _current, the parent frame for _parent and the main frame for _top.
findFrameNamed returns self for _parent and _top if the receiver is the mainFrame.
findFrameNamed first searches from the current frame to all descending frames then the rest of the frames in the WebView. If still not found, findFrameNamed searches the frames of the other WebViews.

85.107.8 frameElement as Variant

Function: Returns the FRAME element from the HTML source code as a DOM HTML Element object.
Notes:
nil on any error.

The value of this variant must be an object of class DOMHTML ElementMBS.

85.107.9 frameView as WebFrameViewMBS

Function: The WebFrameView for this frame.
85.107.10 loadArchive(archive as WebArchiveMBS)

**Function:** Causes WebFrame to load a WebArchive.

85.107.11 LoadHTMLString(data as memoryblock, mime as string, encoding as string, url as string)

**Function:** Loads a html string.
**Notes:**
- data: The data to use for the main page of the document.
- mime: The MIME type of the data.
- encoding: The encoding of the data.
- url: The base URL to apply to relative URLs within the document.
See also:
- 85.107.12 LoadHTMLString(text as string, url as string)

85.107.12 LoadHTMLString(text as string, url as string)

**Function:** Loads a html string.
**Notes:**
- text: The string to use for the main page of the document.
- url: The base URL to apply to relative URLs within the document.
See also:
- 85.107.11 LoadHTMLString(data as memoryblock, mime as string, encoding as string, url as string)

85.107.13 LoadURL(url as string)

**Function:** Loads the given URL.
See also:
- 85.107.14 LoadURL(url as string, CachePolicy as Integer, TimeOut as Double)
85.107.14  LoadURL(url as string, CachePolicy as Integer, TimeOut as Double)

Function: Loads the url.
Notes:
The timeout interval is in seconds.

Constants for the CachePolicy parameter:

- const UseProtocolCachePolicy = 0 Specifies that the caching logic defined in the protocol implementation, if any, is used for a particular URL load request. This is the default policy for URL load requests.
- const ReloadIgnoringCacheData = 1 Specifies that the data for the URL load should be loaded from the originating source. No existing cache data should be used to satisfy a URL load request.
- const ReturnCacheDataElseLoad = 2 Specifies that the existing cached data should be used to satisfy the request, regardless of its age or expiration date. If there is no existing data in the cache corresponding the request, the data is loaded from the originating source.
- const ReturnCacheDataDontLoad = 3 Specifies that the existing cache data should be used to satisfy a request, regardless of its age or expiration date. If there is no existing data in the cache corresponding to a URL load request, no attempt is made to load the data from the originating source, and the load is considered to have failed. This constant specifies a behavior that is similar to an "offline" mode.

See also:
- 85.107.13 LoadURL(url as string)

85.107.15  name as String

Function: The frame name.

85.107.16  parentFrame as WebFrameMBS

Function: The frame containing this frame, or nil if this is a top level frame.
Notes: Nil on any error.

85.107.17  provisionalDataSource as WebDataSourceMBS

Function: Will return the provisional data source.
Notes: The provisional data source will be nil if no data source has been set on the frame, or the data source has successfully transitioned to the committed data source.

85.107.18  reload

Function: Reloads the frame.

85.107.19  reloadFromOrigin

Function: Performs an end-to-end revalidation using cache-validating conditionals if possible.
Notes: End-to-end reload may be necessary if the cache entry has become corrupted for some reason.

Available in OS X v10.6 and later. So this raises exception on older OS X versions. In that case, please catch exception and call reload.

85.107.20  stopLoading

Function: Stop any pending loads on the frame’s data source, and its children.

85.107.21  webView as WebViewMBS

Function: Returns the WebView for the document that includes this frame.

85.107.22  Properties

85.107.23  Handle as Integer

Function: The internal used reference to a WebFrame object.
Notes: (Read and Write property)
85.108 class WebFrameViewMBS

85.108.1 class WebFrameViewMBS

Function: A class to display a webframe.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

You can embed this view in a CustomNSViewMBS to get more events for mouse and keyboard. Subclass of the NSViewMBS class.

85.108.2 Methods

85.108.3 Constructor

Function: Creates a new web frame view with size 100/100 and position 0/0
Example:

dim t as new WebFrameViewMBS

Notes: On success the handle property is not zero.
See also:

- 85.108.4 Constructor(Handle as Integer)
- 85.108.5 Constructor(left as Double, top as Double, width as Double, height as Double)

85.108.4 Constructor(Handle as Integer)

Function: Creates an object based on the given WebFrameView handle.
Example:

dim t as new WebFrameViewMBS(0, 0, 100, 100)
dim v as new WebFrameViewMBS(t.handle)

MsgBox str(v.Bounds.Width)+” x “+str(v.Bounds.Height)
**Notes:** The handle is casted to a WebFrameView and the plugin retains this handle.
See also:

- 85.108.3 Constructor
- 85.108.5 Constructor(left as Double, top as Double, width as Double, height as Double)

### 85.108.5 Constructor(left as Double, top as Double, width as Double, height as Double)

**Function:** Creates a new button with the given size and position.
**Example:**

```vbnet
dim x as new WebFrameViewMBS(0, 0, 100, 100)
```

**Notes:** On success the handle property is not zero.
See also:

- 85.108.3 Constructor
- 85.108.4 Constructor(Handle as Integer)

### 85.108.6 printDocumentView

**Function:** Called by the host application when the WebFrameView returns true from documentView-ShouldHandlePrint.

### 85.108.7 printOperationWithPrintInfo(printInfo as NSPrintInfoMBS) as NSPrintOperationMBS

**Function:** Creates a print operation set up to print this frame.
**Notes:**

Returns a newly created print operation object (NSPrintOperationMBS).
printInfo must be a NSPrintInfoMBS object.
85.108.8 Properties

85.108.9 allowsScrolling as boolean

**Function:** Whether the WebFrameView allows its document to be scrolled.
**Notes:**
True to allow the document to be scrolled, false to disallow scrolling.
(Read and Write property)

85.108.10 canPrintHeadersAndFooters as Boolean

**Function:** Whether this frame can print headers and footers.
**Notes:** (Read only property)

85.108.11 documentView as WebDocumentViewMBS

**Function:** Returns the WebFrameView’s document subview.
**Notes:**
Returns nil on error or the subview that renders the WebFrameView’s contents.
(Read only property)

85.108.12 documentViewShouldHandlePrint as Boolean

**Function:** Called by the host application before it initializes and runs a print operation.
**Notes:**
If false is returned, the host application will abort its print operation and call printDocumentView on the WebFrameView. The document view is then expected to run its own print operation.
If true is returned, the host application’s print operation will continue as normal.
(Read only property)

85.108.13 webFrame as WebFrameMBS

**Function:** Returns the WebFrame associated with this WebFrameView.
85.108.  CLASS WEBFRAMEVIEWMBS  14155

Notes: (Read only property)
85.109 class WebHistoryItemMBS

85.109.1 class WebHistoryItemMBS

Function: WebHistoryItems are created by WebKit to represent pages visited.
Notes:
The WebBackForwardList and WebHistory classes both use WebHistoryItems to represent pages visited. With the exception of the displayTitle, the properties of WebHistoryItems are set by WebKit. WebHistoryItems are normally never created directly.

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

85.109.2 Methods

85.109.3 Constructor(URLstring as String, title as string, lastVisited as date)

Function: Constructor for a new history item with the given values.
Example:
```
dim w as WebHistoryItemMBS
dim d as new date
w=new WebHistoryItemMBS("http://www.apple.com","Apple Inc.",d)
```
Notes:
WebHistoryItems are normally created for you by the WebKit.
You may use this method to prepopulate a WebBackForwardList, or create 'artificial' items to add to a WebBackForwardList. When first initialized the URLString and originalURLString will be the same.
See also:
- 85.109.4 Constructor(URLstring as String, title as string, lastVisited as Double)

85.109.4 Constructor(URLstring as String, title as string, lastVisited as Double)

Function: Constructor for a new history item with the given values.
Notes:

WebHistoryItems are normally created for you by the WebKit. You may use this method to prepopulate a WebBackForwardList, or create 'artificial' items to add to a WebBackForwardList. When first initialized the URLString and originalURLString will be the same. See also:

- 85.109.3 Constructor(URLString as String, title as string, lastVisited as date)

85.109.5 icon as NSImage

Function: The favorite icon of the page represented by this item.
Notes: This icon returned will be determined by the WebKit.

85.109.6 lastVisited as date

Function: The last time the page represented by this item was visited.
Notes: Nil on any error.

85.109.7 lastVisitedTimeInterval as Double

Function: The last time the page represented by this item was visited.
Notes: The interval is since the reference date as determined by NSDate. This value is normally set by the WebKit.

85.109.8 originalURLString as String

Function: The string representation of the originial URL of this item.
Notes: This value is normally set by the WebKit.

85.109.9 title as String

Function: The title of the page represented by this item.
Notes: This title cannot be changed by the client. This value is normally set by the WebKit when a page
title for the item is received.

85.109.10 URLString as String

Function: The string representation of the URL represented by this item.
Notes:
The URLString may be different than the originalURLString if the page redirected to a new location. This value is normally set by the WebKit.
The value is the string corresponding to the final URL of this item.

85.109.11 Properties

85.109.12 Handle as Integer

Function: The handle to the internal used WebHistoryItem reference.
Notes: (Read and Write property)

85.109.13 alternateTitle as String

Function: A title that may be used by the client to display this item.
Notes: (Read and Write computed property)
85.110. CLASS WEBHISTORYMBS

85.110  class WebHistoryMBS

85.110.1  class WebHistoryMBS

Function: WebHistory is used to track pages that have been loaded by WebKit.
Notes:
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the
message, name and reason properties you can see what was the reason for this exception. Please report if
you find a method which does not handle exceptions correct.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.110.2  Methods

85.110.3  addItem(item as WebHistoryItemMBS)

Function: Adds an item to the history.

85.110.4  addItems(items() as WebHistoryItemMBS)

Function: Adds all items in the array to the history.

85.110.5  Constructor

Function: The private constructor.

85.110.6  itemForURL(url as string) as WebHistoryItemMBS

Function: Get an item for a specific URL.
Notes:
URL: The URL of the history item to search for.
Returns an item matching the URL or nil on any error.
85.110.7  loadFromURL(file as folderitem, byref description as string) as boolean

Function: Loads a web history from the given file.
Notes:
Returns true if successful, false otherwise.
description will be set to the error description on return in case of an error.
See also:

• 85.110.8 loadFromURL(url as string, byref description as string) as boolean

85.110.8  loadFromURL(url as string, byref description as string) as boolean

Function: Loads a web history from the given URL.
Notes:
Returns true if successful, false otherwise.
description will be set to the error description on return in case of an error.
See also:

• 85.110.7 loadFromURL(file as folderitem, byref description as string) as boolean

85.110.9  optionalSharedHistory as WebHistoryMBS

Function: A shared WebHistory instance initialized with the default history file.
Notes:
Nil on any error.
If you set it, don’t set it to nil.
(Read and Write computed property)

85.110.10  orderedItemsLastVisitedOnDay(day as date) as WebHistoryItemMBS()
85.110.11  orderedLastVisitedDays as date()

Function: Get an array of dates, each one representing a unique day that contains one or more history items, ordered from most recent to oldest.

85.110.12  removeAllItems

Function: Removes all items from this history.

85.110.13  removeItem(item as WebHistoryItemMBS)

Function: Removes a WebHistoryItem from the WebHistory.

85.110.14  removeItems(items() as WebHistoryItemMBS)

Function: Removes an array of WebHistoryItems from the WebHistory.

85.110.15  saveToURL(file as folderitem, byref description as string) as boolean

Function: Save history to file.
Notes:
It is the client’s responsibility to call this at appropriate times.
Returns true if successful, false otherwise.
description will be set to the error description on return in case of an error.
See also:
- 85.110.16 saveToURL(url as string, byref description as string) as boolean

85.110.16  saveToURL(url as string, byref description as string) as boolean

Function: Save history to URL.
Notes:
It is the client’s responsibility to call this at appropriate times. Returns true if successful, false otherwise. Description will be set to the error description on return in case of an error.
See also:

- 85.110.15 saveToURL(file as folderitem, byref description as string) as boolean

85.110.17 Properties

85.110.18 Handle as Integer

Function: The handle to the internal used WebHistory reference.
Notes: (Read and Write property)

85.110.19 historyAgeInDaysLimit as Integer

Function: The maximum number of days to be read from stored history.
Notes: (Read and Write computed property)

85.110.20 historyItemLimit as Integer

Function: The maximum number of items that will be stored by the WebHistory.
Notes: (Read and Write computed property)
85.111. class WebOpenPanelResultListenerMBS

85.111.1 class WebOpenPanelResultListenerMBS

MBS MacControls Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** WebView user interface delegates that implement the runOpenPanelForFileButtonWithResultListener method use the methods defined in this protocol to communicate with the listener object.

**Notes:**
The methods allow the delegate to send a cancel message, or set the selected file name. This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.111.2 Methods

85.111.3 cancel

MBS MacControls Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Invoked when a file open operation was cancelled.

85.111.4 chooseFilename(file as folderitem)

MBS MacControls Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Handles the results of a file open panel.

**Notes:** This method is invoked when a file was selected in a file open panel.
See also:
- 85.111.5 chooseFilename(filename as string) 14163

85.111.5 chooseFilename(filename as string)

MBS MacControls Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Handles the results of a file open panel.

**Notes:** This method is invoked when a file was selected in a file open panel.
See also:
- 85.111.4 chooseFilename(file as folderitem) 14163

85.111.6 chooseFilenames(filenames() as string)

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Handles the results of a file open panel.
Notes: This method is invoked when a file was selected in a file open panel.
See also:

- 85.111.7 chooseFilenames(files() as folderitem)

85.111.7 chooseFilenames(files() as folderitem)

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Handles the results of a file open panel.
Notes: This method is invoked when a file was selected in a file open panel.
See also:

- 85.111.6 chooseFilenames(filenames() as string)

85.111.8 Constructor

Function: The private constructor.

85.111.9 Properties

85.111.10 allowMultipleFiles as Boolean

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Whether multiple selection is allowed.
Notes: (Read only property)

85.111.11 Handle as Integer

Function: The handle to the internal reference.
Notes: (Read and Write property)
85.112. class WebPolicyDecisionListenerMBS

85.112.1. class WebPolicyDecisionListenerMBS

Function: This protocol is used to call back with the results of a policy decision.
Notes:
This provides the ability to make these decisions asynchronously, which means the decision can be made by prompting with a sheet, for example.

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.112.2. Methods

85.112.3. Constructor

Function: The private constructor.

85.112.4. download

Function: Download this resource.
Notes:
Download the resource instead of displaying it.
This method is more than just a convenience because it allows an in-progress navigation to be converted to a download based on content type, without having to stop and restart the load.

85.112.5. ignore

Function: Ignore this resource.
Notes:
Do nothing (but the client may choose to handle the request itself)

A policy of ignore prevents WebKit from doing anything further with the load, however, the client is still free to handle the request in some other way, such as opening a new window, opening a new window behind the current one, opening the URL in an external app, revealing the location in Finder if a file URL, etc.

### 85.112.6 use


**Function:** Use the resource.

**Notes:**

If there remain more policy decisions to be made, then the next policy delegate method gets to decide. This will be either the next navigation policy delegate if there is a redirect, or the content policy delegate. If there are no more policy decisions to be made, the resource will be displayed inline if possible.

If there is no view available to display the resource inline, then unableToImplementPolicyWithError will be called with an appropriate error.

If a new window is going to be created for this navigation as a result of frame targetting, then it will be created once you call this method.

### 85.112.7 Properties

### 85.112.8 Handle as Integer


**Function:** The internal used reference to the WebPolicyDecisionListener object.

**Notes:** (Read and Write property)
85.113. Class WebPolicyDelegateMBS

85.113.1 Class WebPolicyDelegateMBS


**Function:** A class to decide policies for webkit.

**Notes:**

While loading a URL, WebKit asks the WebPolicyDelegate for policies that determine the action of what to do with the URL or the data that the URL represents. Typically, the policy handler methods are called in this order:

- `decidePolicyForNewWindowAction` (at most once)
- `decidePolicyForNavigationAction` (zero or more times)
- `decidePolicyForMIMEType:request` (zero or more times)

New window policy is always checked. Navigation policy is checked for the initial load and every redirect unless blocked by an earlier policy. Content policy is checked once the content type is known, unless an earlier policy prevented it.

In rare cases, content policy might be checked more than once. This occurs when loading a "multipart/x-mixed-replace" document, also known as "server push". In this case, multiple documents come in one navigation, with each replacing the last. In this case, content policy will be checked for each one.

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

Please use one delegate class per HTMLViewer (or WebViewMBS) and make sure they live about the same time. Our class keeps a reference on the WebView, so we can remove our delegate when the delegate is destroyed.

85.113.2 Events

85.113.3 Close


**Function:** The close event.

**Notes:** Called when the delegate is destroyed.
**85.113.4 decidePolicyForMIMEType**

```
decidePolicyForMIMEType(type as string, request as NSURLRequestMBS, frame as WebFrameMBS, decisionListener as WebPolicyDecisionListenerMBS) as boolean
```


**Function:** Returns the policy for content which has been partially loaded.

**Notes:**
Sent after `didStartProvisionalLoadForFrame` is sent on the `WebFrameLoadDelegate`.

- **type:** MIME type for the resource.
- **request:** A `NSURLRequest` for the partially loaded content.
- **frame:** The frame which is loading the URL.
- **decisionListener:** The object to call when the decision is made.

Return true to avoid the default delegate to handle this request. Call listener methods to decide what to do.

See also `MimeTypeToFileExtensionMBS` function.

**85.113.5 decidePolicyForNavigationAction**

```
decidePolicyForNavigationAction(request as NSURLRequestMBS, frame as WebFrameMBS, decisionListener as WebPolicyDecisionListenerMBS, NavigationType as Integer, ModifierFlags as Integer, OriginalURL as string) as boolean
```


**Function:** This method is called to decide what to do with a proposed navigation.

**Notes:**
- **request:** The request for the proposed navigation.
- **frame:** The `WebFrame` in which the navigation is happening.
- **decisionListener:** The object to call when the decision is made.

This method will be called before loading starts, and on every redirect.

**Values for NavigationType:**

- `const WebNavigationTypeLinkClicked = 0` A link with an href was clicked.
- `const WebNavigationTypeFormSubmitted = 1` A form was submitted.
- `const WebNavigationTypeBackForward = 2` The user chose back or forward.
- `const WebNavigationTypeReload = 3` The User hit the reload button.
- `const WebNavigationTypeFormResubmitted = 4` A form was resubmitted (by virtue of doing back, forward or reload).
- `const WebNavigationTypeOther = 5` Navigation is taking place for some other reason.

Return true to avoid the default delegate to handle this request. Call listener methods to decide what to do.
85.113.6  decidePolicyForNewWindowAction(request as NSURLRequestMBS, framename as string, decisionListener as WebPolicyDecisionListenerMBS, NavigationType as Integer, ModifierFlags as Integer, OriginalURL as string) as boolean


**Function:** This method is called to decide what to do with a targeted navigation that would open a new window.

**Notes:**

request The request for the proposed navigation
frame The frame in which the navigation is taking place
decisionListener The object to call when the decision is made

This method is provided so that modified clicks on a targeted link which opens a new frame can prevent the new window from being opened if they decide to do something else, like download or present the new frame in a specialized way.

If this method picks a policy of Use, the new window will be opened, and decidePolicyForNavigationAction will be called with a WebNavigationType of WebNavigationTypeOther in its action. This is to avoid possible confusion about the modifiers.

**Values for NavigationType:**

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>const WebNavigationTypeLinkClicked</td>
<td>0</td>
<td>A link with an href was clicked.</td>
</tr>
<tr>
<td>const WebNavigationTypeFormSubmitted</td>
<td>1</td>
<td>A form was submitted.</td>
</tr>
<tr>
<td>const WebNavigationTypeBackForward</td>
<td>2</td>
<td>The user chose back or forward.</td>
</tr>
<tr>
<td>const WebNavigationTypeReload</td>
<td>3</td>
<td>The User hit the reload button.</td>
</tr>
<tr>
<td>const WebNavigationTypeFormResubmitted</td>
<td>4</td>
<td>A form was resubmitted (by virtue of doing back, forward or reload).</td>
</tr>
<tr>
<td>const WebNavigationTypeOther</td>
<td>5</td>
<td>Navigation is taking place for some other reason.</td>
</tr>
</tbody>
</table>

Return true to avoid the default delegate to handle this request. Call listener methods to decide what to do.

85.113.7  Open


**Function:** The open event.

**Notes:**

Called just after the delegate has been installed in a htmlviewer control.
This allows you to initialize your stuff before the first event is called.
85.113.8  unableToImplementPolicyWithError(errorString as string, frame as WebFrameMBS) as boolean

**Function:** Called when a WebPolicy could not be implemented.
**Notes:**

It is up to the client to display appropriate feedback.

errorString: The error that caused the policy to not be implemented.
frame: The frame in which the policy could not be implemented.

Return true to avoid the default delegate to handle this request.
85.114. class WebPreferencesMBS

85.114.1 class WebPreferencesMBS

Function: A class for handling webkit preferences.
Example:
MsgBox WebPreferencesMBS.standardPreferences.serifFontFamily

Notes: All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

85.114.2 Methods

85.114.3 Constructor(identifier as String)

Function: Creates a new WebPreferences object with loading the values stored with the given identifier.
Example:
dim w as new WebPreferencesMBS("de.monkeybreadsoftware.mytest")

Notes: On success handle is not zero.

85.114.4 standardPreferences as WebPreferencesMBS

Function: Returns the default preferences.
Example:
MsgBox WebPreferencesMBS.standardPreferences.identifier

Notes: nil on any error.
85.114.5 Properties

85.114.6 allowsAnimatedImageLooping as boolean

Function: Whether animated image files are allowed to loop.
Example:
HTMLViewer1.preferencesMBS.allowsAnimatedImageLooping = false

Notes: (Read and Write property)

85.114.7 allowsAnimatedImages as boolean

Function: Whether to allow animated images.
Example:
HTMLViewer1.preferencesMBS.allowsAnimatedImages = false

Notes:
  e.g. GIF images.
  (Read and Write property)

85.114.8 arePlugInsEnabled as boolean

Function: Whether plugins are enabled.
Example:
HTMLViewer1.preferencesMBS.arePlugInsEnabled = False

Notes: (Read and Write property)
85.114.9 autosaves as boolean


**Function:** Whether preferences are saved automatically.

**Example:**

```javascript
HTMLViewer1.preferencesMBS.autosaves = false
```

**Notes:**

If autosave preferences is true the settings represented by WebPreferences will be stored in the user defaults database.

*(Read and Write property)*

85.114.10 cacheModel as Integer


**Function:** The usage model according to which WebKit determines its caching behavior.

**Example:**

```javascript
HTMLViewer1.preferencesMBS.cacheModel = WebPreferencesMBS.WebCacheModelDocumentViewer
```

**Notes:**

Specifies a usage model for a WebView, which WebKit will use to determine its caching behavior.

If necessary, WebKit will prune its caches to match cacheModel if you set the value.

Research indicates that users tend to browse within clusters of documents that hold resources in common, and to revisit previously visited documents. WebKit and the frameworks below it include built-in caches that take advantage of these patterns, substantially improving document load speed in browsing situations. The WebKit cache model controls the behaviors of all of these caches, including NSURLCache and the various WebCore caches.

Applications with a browsing interface can improve document load speed substantially by specifying WebCacheModelDocumentBrowser. Applications without a browsing interface can reduce memory usage substantially by specifying WebCacheModelDocumentViewer.
If cacheModel is not set, WebKit will select a cache model automatically.  
(Read and Write property)

85.114.11  cursiveFontFamily as String

Function: The name of the cursive font family.  
Example:  
MsgBox HTMLViewer1.preferencesMBS.cursiveFontFamily

Notes: (Read and Write property)

85.114.12  databasesEnabled as Boolean

Function: Whether databases are enabled.  
Example:  
\[ \text{dim p as WebPreferencesMBS = HTMLViewer1.preferencesMBS} \]
MsgBox str(p.databasesEnabled)

Notes:  
This is a property defined in WebKit, but not in Apple's headers, so please wrap in try/catch to catch 
NSExceptionMBS if method is not implemented in older Webkit versions.  
(Read and Write property)

85.114.13  defaultFixedFontSize as Integer

Function: The default font size for fixed fonts.  
Example:  
MsgBox str(WebPreferencesMBS.standardPreferences.defaultFixedFontSize)
85.114. **defaultFontSize as Integer**


**Function:** The default font size for fonts.

**Example:**

MsgBox str(HTMLViewer1.preferencesMBS.defaultFontSize)

**Notes:**

(for non fixed fonts)
(Read and Write property)

85.114.15 **defaultTextEncodingName as String**


**Function:** The name of the default text encoding.

**Example:**

MsgBox HTMLViewer1.preferencesMBS.defaultTextEncodingName

**Notes:** (Read and Write property)

85.114.16 **fantasyFontFamily as String**


**Function:** The name of the fantasy font family.

**Example:**

MsgBox HTMLViewer1.preferencesMBS.fantasyFontFamily

**Notes:** (Read and Write property)
85.114.17 fixedFontFamily as String

Function: The name of the fixed font family.
Example:
MsgBox HTMLViewer1.preferencesMBS.fixedFontFamily

Notes: (Read and Write property)

85.114.18 Handle as Integer

Function: The internal used reference to the WebPreferences object.
Example:
MsgBox str(WebPreferencesMBS.standardPreferences.Handle)

Notes: (Read and Write property)

85.114.19 identifier as String

Function: The identifier for this WebPreferences.
Example:
MsgBox HTMLViewer1.preferencesMBS.identifier

Notes: (Read only property)

85.114.20 isJavaEnabled as boolean

Function: Whether java is enabled.
Example:
HTMLViewer1.preferencesMBS.isJavaEnabled = false
85.114.21 isJavaScriptEnabled as boolean

Function: Whether Javascript is enabled.
Example:
```javascript
HTMLViewer1.preferencesMBS.isJavaScriptEnabled = false
```

Notes: (Read and Write property)

85.114.22 javaScriptCanOpenWindowsAutomatically as boolean

Function: Whether javascript is allowed to open windows automatically.
Example:
```javascript
HTMLViewer1.preferencesMBS.javaScriptCanOpenWindowsAutomatically = false
```

Notes: (Read and Write property)

85.114.23 loadsImagesAutomatically as boolean

Function: Whether images are loaded automatically.
Example:
```javascript
HTMLViewer1.preferencesMBS.loadsImagesAutomatically = false
```

Notes: (Read and Write property)
### 85.114.24 localStorageDatabasePath as String


**Function:** The local path for local storage.

**Example:**

```vba
' create folder
dim f as FolderItem = SpecialFolder.Desktop.Child("databases")
f.CreateAsFolder

' set it
dim p as WebPreferencesMBS = HTMLViewer1.preferencesMBS
p.localStorageDatabasePath = f.NativePath
p.localStorageEnabled = true
```

**Notes:**

This is a property defined in WebKit, but not in Apple's headers, so please wrap in try/catch to catch NSExceptionMBS if method is not implemented in older Webkit versions.  
(Read and Write property)

### 85.114.25 localStorageEnabled as Boolean


**Function:** Whether local storage is enabled.

**Example:**

```vba
dim p as WebPreferencesMBS = HTMLViewer1.preferencesMBS
MsgBox str(p.localStorageEnabled)
```

**Notes:**

This is a property defined in WebKit, but not in Apple's headers, so please wrap in try/catch to catch NSExceptionMBS if method is not implemented in older Webkit versions.  
(Read and Write property)

### 85.114.26 minimumFontSize as Integer


**Function:** The minimum font size.

**Example:**
85.114. CLASS WEBPREFERENCESMBS

MsgBox str(HTMLViewer1.preferencesMBS.minimumFontSize)

Notes: (Read and Write property)

85.114.27 minimumLogicalFontSize as Integer

Function: The minimum logical font size.
Example:
MsgBox str(HTMLViewer1.preferencesMBS.minimumLogicalFontSize)

Notes: (Read and Write property)

85.114.28 privateBrowsingEnabled as boolean

Function: Whether private browsing is enabled.
Example:
HTMLViewer1.preferencesMBS.privateBrowsingEnabled = false

Notes:
If private browsing is enabled, WebKit will not store information about sites the user visits.
(Read and Write property)

85.114.29 sansSerifFontFamily as String

Function: The name of the sans serif font family.
Example:
MsgBox HTMLViewer1.preferencesMBS.sansSerifFontFamily

Notes: (Read and Write property)
**85.114.30 serifFontFamily as String**


**Function:** The name of the serif font family.

**Example:**

MsgBox HTMLViewer1.preferencesMBS.serifFontFamily

**Notes:** (Read and Write property)

---

**85.114.31 shouldPrintBackgrounds as boolean**


**Function:** Whether webkit draws background on printing.

**Example:**

HTMLViewer1.preferencesMBS.shouldPrintBackgrounds = false

**Notes:** (Read and Write property)

---

**85.114.32 standardFontFamily as String**


**Function:** The name of the standard font family.

**Example:**

MsgBox HTMLViewer1.preferencesMBS.standardFontFamily

**Notes:** (Read and Write property)

---

**85.114.33 suppressesIncrementalRendering as boolean**


**Function:** True if the WebView suppresses incremental rendering.

**Notes:**

Available in Mac OS X 10.8 or newer.

(Read and Write property)
85.114.34  tabsToLinks as boolean

Function: Whether the tab key will move focus on links.
Example:
HTMLViewer1.preferencesMBS.tabsToLinks = false

Notes:
If tabsToLinks is true, the tab key will focus links and form controls.
The option key temporarily reverses this preference.
(Read and Write property)

85.114.35  textAreasAreResizable as Boolean

Function: Whether text areas are resizable.
Example:

dim p as WebPreferencesMBS = HTMLViewer1.preferencesMBS
MsgBox str(p.textAreasAreResizable)

Notes:
This is a property defined in WebKit, but not in Apple’s headers, so please wrap in try/catch to catch
NSExcetionMBS if method is not implemented in older Webkit versions.
(Read and Write property)

85.114.36  userStyleSheetEnabled as boolean

Function: Whether an user style sheet is enabled.
Example:
HTMLViewer1.preferencesMBS.userStyleSheetEnabled = false
85.114.37  **userStyleSheetLocation as string**

**Function:** The location of the user style sheet.  
**Example:**

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.css")
HTMLViewer1.preferencesMBS.userStyleSheetLocation = f.UnixPathMBS
```

**Notes:** (Read and Write property)

85.114.38  **usesPageCache as boolean**

**Function:** Whether the receiver should use the shared page cache.  
**Example:**

```
HTMLViewer1.preferencesMBS.usesPageCache = false
```

**Notes:**  
Pages are cached as they are added to a WebBackForwardList, and removed from the cache as they are removed from a WebBackForwardList. Because the page cache is global, caching a page in one WebBackForwardList may cause a page in another WebBackForwardList to be evicted from the cache.  
(Read and Write property)

85.114.39  **Constants**

85.114.40  **WebCacheModelDocumentBrowser=1**

MBS MacControls Plugin, Plugin Version: 9.4.  
**Function:**  
One of the constants for the usage model for a WebView, which WebKit will use to determine its caching behavior.  
**Example:**

```
HTMLViewer1.preferencesMBS.cacheModel = WebPreferencesMBS.WebCacheModelDocumentBrowser
```
Notes:
Appropriate for a WebView displaying a browsable series of documents with a UI for navigating between them – for example, a reference materials browser or a website designer. The WebView will cache a reasonable number of resources and previously viewed documents in memory and/or on disk.

Examples: Dictionary, Help Viewer, Coda.

85.114.41 WebCacheModelDocumentViewer=0

MBS MacControls Plugin, Plugin Version: 9.4. **Function:**

One of the constants for the usage model for a WebView, which WebKit will use to determine its caching behavior.

**Example:**

HTMLViewer1.preferencesMBS.cacheModel = WebPreferencesMBS.WebCacheModelDocumentViewer

Notes:
Appropriate for a WebView displaying a fixed document – like a splash screen, a chat document, or a word processing document – with no UI for navigation. The WebView will behave like any other view, releasing resources when they are no longer referenced. Remote resources, if any, will be cached to disk. This is the most memory-efficient setting.

Examples: iChat, Mail, TextMate, Growl.

85.114.42 WebCacheModelPrimaryWebBrowser=2

MBS MacControls Plugin, Plugin Version: 9.4. **Function:**

One of the constants for the usage model for a WebView, which WebKit will use to determine its caching behavior.

**Example:**

HTMLViewer1.preferencesMBS.cacheModel = WebPreferencesMBS.WebCacheModelPrimaryWebBrowser

Notes:
Appropriate for a WebView in the application that acts as the user’s primary web browser. The WebView will cache a very large number of resources and previously viewed documents in memory and/or on disk.
Examples: Safari, OmniWeb, Shiira.
85.115. CLASS WEBPRINTMBS

85.115 class WebPrintMBS

85.115.1 class WebPrintMBS

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: A class for printing webviews.
Notes:
Can be used with HTMLViewer control and the WebViewMBS class.
With the WebViewMBS class you can render to PDF even in console applications.

85.115.2 Methods

85.115.3 Constructor(view as htmlviewer)

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The constructor to attach this class to a htmlviewer.
See also:

- 85.115.4 Constructor(WebViewHandle as Integer)

85.115.4 Constructor(WebViewHandle as Integer)

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The constructor to attach this class to a webview.
See also:

- 85.115.3 Constructor(view as htmlviewer)

85.115.5 GetPageFormat as string

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The current page format settings as a string.
Notes:
Can be used to save current printer settings to a preferences file.
Value is an empty string until a page format is defined.

85.115.6 PageSetup as boolean

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Shows a page setup sheet.
Notes:
If sheetTarget is nil a modal dialog is shown and the function returns after the user clicked one of the buttons
to close the dialog.
If sheetTarget is a valid window reference this window will show a sheet and the function returns while the
sheet waits for mouseclicks.

Returns true on success.

85.115.7 Print as boolean

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Prints the web content without a dialog.
Notes:
If PDFFile is not nil, printing is redirected to a PDF file.
Returns true on success.

85.115.8 PrintDialog as boolean

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Show the print sheet/dialog and allows the user to print the web content.
Notes:
If sheetTarget is nil a modal dialog is shown and the function returns after the user clicked one of the buttons
to close the dialog.
If sheetTarget is a valid window reference this window will show a sheet and the function returns while the
sheet waits for mouseclicks.

If PDFFile is not nil, printing is redirected to a PDF file.

Returns true on success.

85.115.9 PrintingEnd

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Releases memory from the printing code.
Notes: First call PrintingStart with your page size, then call several times PrintingPage and finally call
PrintingEnd.
85.115.10  **PrintingPage(index as UInt32) as Memoryblock**

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** Returns the given page as string.
**Notes:**
On any error the function returns nil.
The string contains an one page PDF document.

First call PrintingStart with your page size, then call several times PrintingPage and finally call PrintingEnd.

85.115.11  **PrintingStart(width as Double, height as Double) as Integer**

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** Starts the printing code.
**Example:**

```vbs
dim i,c as Integer
dim f as FolderItem
dim s as string
dim b as BinaryStream
dim web as new WebPrintMBS(HTMLViewer1)
c=web.PrintingStart(800,600)
i=0
while i<c
    s=web.PrintingPage(i)
    f=SpecialFolder.Desktop.Child("Page "+str(i+1)+".pdf")
    b=f.CreateBinaryFile(""")
    if b<>nil then
        b.Write s
        b.Close
    end if
    i=i+1
wend
web.PrintingEnd
MsgBox str(c)+" pages printed."
```

**Notes:**
First call PrintingStart with your page size, then call several times PrintingPage and finally call PrintingEnd.
Only one print job can be processed at the same time as they use all the same global properties.

Returns the number of pages to be printed.

85.115.12 SetPageFormat(data as string) as boolean

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Loads page format settings from a string.
Notes: Returns true on success and false on failure.

85.115.13 Properties

85.115.14 DialogOpen as Boolean

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Whether a printing sheet is visible.
Notes: Used with the PageSetup and the PrintDialog methods.
Returns true when a dialog is visible and false when not.
(Read and Write property)

85.115.15 HTMLViewer as HTMLViewer

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The htmlviewer control this webprint object is attached to.
Notes: (Read only property)

85.115.16 PageFormatHandle as Integer

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The internal handle for the page format.
Notes: (Read only property)
85.115.17  PDFFile as Folderitem

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The pdf file where data is written to.
Notes: If not nil, the printing goes to this file instead of the printer.
(Read and Write property)

85.115.18  PrintSessionHandle as Integer

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The internal handle for the print session.
Notes: (Read only property)

85.115.19  PrintSettingsHandle as Integer

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The internal handle for the print settings.
Notes: (Read only property)

85.115.20  SheetTarget as Window

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The sheet parent window.
Notes: If you set this property to a window, the dialogs will be sheets and attached to the window. If you set it to nil, the dialogs will be modal.
(Read and Write property)

85.115.21  Events

85.115.22  PageSetupDialogDone(accepted as boolean)

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The event to notify you about the result from the page format dialog.
85.115.23  PrintDialogDone(accepted as boolean)

MBS MacControls Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event to notify you about the result from the print dialog.
85.116  class WebResourceLoadDelegateMBS

85.116.1  class WebResourceLoadDelegateMBS

Function: A class to receive informations about resource loading.  
Notes: Implementors of this protocol will receive messages indicating that a resource is about to be loaded, data has been received for a resource, an error has been received for a resource, and completion of a resource load.

Implementors are also given the opportunity to mutate requests before they are sent.  
The various progress methods of this protocol all receive an identifier as the parameter. This identifier can be used to track messages associated with a single resource. For example, a single resource may generate multiple willSendRequest calls as it’s URL is redirected.

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

Please use one delegate class per HTMLViewer (or WebViewMBS) and make sure they live about the same time. Our class keeps a reference on the WebView, so we can remove our delegate when the delegate is destroyed.

85.116.2  Events

85.116.3  Close

Function: The close event.  
Notes: Called when the delegate is destroyed.

85.116.4  didCancelAuthenticationChallenge(id as Variant, challenge as NSURLAuthenticationChallengeMBS, dataSource as WebDataSourceMBS)

Function: Cancel authentication for a given request.
85.116.5 didFailLoadingWithError(id as Variant, errorString as string, dataSource as WebDataSourceMBS)

Function: This event is called after a load has failed to load due to an error.
Notes:
id: An identifier that can be used to track the progress of a resource load across multiple call backs.
errorString: The error associated with this load.
dataSource: The dataSource that initiated the load.

85.116.6 didFinishLoadingFromDataSource(id as Variant, dataSource as WebDataSourceMBS)

Function: This event is called after a load has successfully completed.
Notes:
id: An identifier that can be used to track the progress of a resource load across multiple call backs.
dataSource: The dataSource that initiated the load.

85.116.7 didReceiveAuthenticationChallenge(id as Variant, challenge as NSURLAuthenticationChallengeMBS, dataSource as WebDataSourceMBS)

Function: Start authentication for the resource, providing a challenge
Notes:
Call useCredential, continueWithoutCredential or cancel on the challenge when done.

If you do not implement this event, WebKit will handle authentication automatically by prompting with a sheet on the window that the WebView is associated with.

85.116.8 didReceiveContentLoaded(id as Variant, length as Integer, dataSource as WebDataSourceMBS)

Function: Multiple of these messages may be sent as data arrives.
Notes:
id: An identifier that can be used to track the progress of a resource load across multiple events.
length: The amount of new data received. This is not the total amount, just the new amount received.
dataSource: The dataSource that initiated the load.

**85.116.9 didReceiveResponse(id as Variant, response as NSURLResponseMBS, dataSource as WebDataSourceMBS)**


**Function:** This event is called after a response has been received for this load.

**Notes:**

id: An identifier that can be used to track the progress of a resource load across multiple call backs.
response: The response for the request.
dataSource: The dataSource that initiated the load.

In some rare cases, multiple responses may be received for a single load. This occurs with multipart/x-mixed-replace, or “server push”. In this case, the client should assume that each new response resets progress so far for the resource back to 0, and should check the new response for the expected content length.

**85.116.10 identifierForInitialRequest(request as NSURLRequestMBS, dataSource as WebDataSourceMBS) as Variant**


**Function:** An implementor of WebResourceLoadDelegate should provide an identifier that can be used to track the load of a single resource.

**Notes:**

This identifier will be passed as the first argument for all of the other WebResourceLoadDelegate methods. The identifier is useful to track changes to a resources request, which will be provided by one or more calls to willSendRequest:redirectResponse.

Return an identifier that will be passed back to the implementor for each event.

**85.116.11 Open**


**Function:** The open event.

**Notes:**

Called just after the delegate has been installed in a htmlviewer control. This allows you to initialize your stuff before the first event is called.
85.116.12 plugInFailedWithError(errorString as string, dataSource as WebDataSourceMBS)

MBS MacControls Plugin, Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Called when a plug-in is not found, fails to load or is not available for some reason. Notes: errorString is the localized description.

85.116.13 willSendRequest(id as Variant, request as NSURLRequestMBS, redirectResponse as NSURLResponseMBS, dataSource as WebDataSourceMBS) as NSURLRequestMBS

MBS MacControls Plugin, Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: This event is called before a load is initiated. Notes: The request may be modified as necessary by the receiver.

id: An identifier that can be used to track the progress of a resource load across multiple call backs.
request: The request about to be sent.
redirectResponse: If the request is being made in response to a redirect we received, the response that conveyed that redirect.
dataSource: The dataSource that initiated the load.

Returns the request, which may be mutated by the implementor, although typically will be request. You can return a new request if you like.
85.117. CLASS WEBRESOURCEMS

85.117 class WebResourceMBS

85.117.1 class WebResourceMBS


Function: A WebResource represents a fully downloaded URL.

Example:

dim w as new WebResourceMBS(“Hello World”, ”http://www.server.invalid”, ”text/plain”, ”ASCII”, ”myframe”)

MsgBox w.URL+EndOfLine+w.textEncodingName+EndOfLine+w.MIMEType

Notes:

It includes the data of the resource as well as the metadata associated with the resource.

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

85.117.2 Methods

85.117.3 Constructor(data as MemoryBlock, url as string, mimeType as string, TextEncodingName as string=’”, frameName as string=’”’)


Function: The constructor to create an new WebResource.

Example:

dim w as new WebResourceMBS(“Hello World”, ”http://www.server.invalid”, ”text/plain”, ”ASCII”, ”myframe”)

Notes:

Handle is not 0 on success.

data: The data of the resource.

URL: The URL of the resource.

MIMEType: The MIME type of the resource.

TextEncodingName: The text encoding name of the resource (can be empty).

frameName: The frame name of the resource if the resource represents the contents of an entire HTML frame (can be empty).
See also FileExtensionToMimeTypeMBS function.

### 85.117.4 data as MemoryBlock


**Function:** The data of the resource.

**Example:**

```vba
Dim w As New WebResourceMBS("Hello World", "http://www.server.invalid", "text/plain", "ASCII", "myframe")
MsgBox w.data
```

### 85.117.5 frameName as String


**Function:** The frame name of the resource if the resource represents the contents of an entire HTML frame.

**Example:**

```vba
Dim w As New WebResourceMBS("Hello World", "http://www.server.invalid", "text/plain", "ASCII", "myframe")
MsgBox w.frameName
```

**Notes:** Can be an empty string.

### 85.117.6 MIMEType as String


**Function:** The MIME type of the resource.

**Example:**

```vba
Dim w As New WebResourceMBS("Hello World", "http://www.server.invalid", "text/plain", "ASCII", "myframe")
MsgBox w.MIMEType
```

**Notes:** See also MimeTypeToFileExtensionMBS function.
85.117.7  textEncodingName as String


Function: The text encoding name of the resource.

Example:

dim w as new WebResourceMBS("Hello World", "http://www.server.invalid", "text/plain", "ASCII", "myframe")

MsgBox w.textEncodingName

Notes: Can be an empty string.

85.117.8  URL as String


Function: The URL of the resource.

Example:

dim w as new WebResourceMBS("Hello World", "http://www.server.invalid", "text/plain", "ASCII", "myframe")

MsgBox w.URL

85.117.9  Properties

85.117.10  Handle as Integer


Function: The handle to the internal used webresource reference.

Example:

dim w as new WebResourceMBS("Hello World", "http://www.server.invalid", "text/plain", "ASCII", "myframe")

MsgBox str(w.Handle)

Notes: (Read and Write property)
class WebScriptCallbackMBS

85.118.1 Methods

85.118.3 ArgumentValue(index as Integer) as Variant

Function: The argument with the given index for the current callback.
Notes:
Index is from 0 to ArgumentCount-1.
variant can be a string, a number, a boolean or a date.
Only valid while a callback event is running.

85.118.4 Constructor

Function: The constructor creating a new web script callback object.
Notes: On success the handle property is not zero.

85.118.5 Properties

85.118.6 ArgumentCount as Integer

Function: The number of arguments for the current callback.
Notes:
Only valid while a callback event is running.
(Read only property)
85.118.7 Handle as Integer

Function: The internally used handle for the callback object.
Notes: (Read and Write property)

85.118.8 Events

85.118.9 Callback(Name as string) as Variant

Function: The callback event.
Notes:
Name is the name of the method which was called.

The functions ArgumentCount and ArgumentValue give you the parameters of this method call.

You can return numbers, strings, date objects or booleans.

85.118.10 Close

Notes: Called when the object is destroyed.
85.119 class WebScriptObjectMBS

85.119.1 class WebScriptObjectMBS

**Function:** The base object for scripting and all DOM objects. 
**Notes:**
All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct. This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

85.119.2 Methods

85.119.3 Constructor

**Function:** The private constructor.

85.119.4 evaluateWebScript(script as String) as Variant

**Function:** Evaluates a script. 
**Example:**

dim code as string

// code="1+5"
code="""hello """+5"

dim d as DOMDocumentMBS = HTMLViewer1.mainFrameMBS.DOMDocument
MsgBox d.evaluateWebScript(code)
// shows result of calculations

**Notes:**
The script will be executed in the target script environment. The format of the script is dependent of the target script environment. 
**Name:** The script to execute in the target script environment.
85.119.5  getValue(name as String) as Variant

Function: Gets a value in this webscript object.
Example:
  dim w as WebFrameMBS = HTMLViewer1.mainFrameMBS
  dim d as DOMDocumentMBS = w.DOMDocument

  MsgBox d.getValue("key")

Notes: Works for numbers, booleans, dates and strings.

85.119.6  removeValue(name as String)

Function: Removes a value with the given name.

85.119.7  setValue(name as String, value as Variant)

Function: Sets a value in this webscript object.
Example:
  dim w as WebFrameMBS = HTMLViewer1.mainFrameMBS
  dim d as DOMDocumentMBS = w.DOMDocument

  d.setValue("key","Hello")

Notes: Works for numbers, booleans, dates and strings.

85.119.8  setWebScriptCallback(name as String, value as WebScriptCallbackMBS)

Function: Sets a value in this webscript object.
Example:
  // in the windowScriptObjectAvailable event you can register the callback object

  Function windowScriptObjectAvailable(windowScriptObject as WebScriptObjectMBS) As boolean
// Install an Object called "MyBrowser" on the javascript document object
// Any function call inside will trigger callback event
dim callback as WebScriptCallbackMBS // your global callback object
windowScriptObject.setWebScriptCallback "MyBrowser", callback
End Function

Notes: This is the special version of SetValue to be used with the WebScriptCallbackMBS class.

85.119.9 setWebScriptValueAtIndex(index as Integer, value as Variant)
Function: Sets the value of the property at the specified index.
Notes:
Index is zero based.
Works for numbers, booleans, dates and strings.

85.119.10 stringRepresentation as String
Function: The string representation of this object.
Notes: Returns an empty string on any error.

85.119.11 webScriptValueAtIndex(index as Integer) as Variant
Function: Gets the value of the property at the specified index.
Example:
dim d as DOMDocumentMBS = HTMLViewer1.mainFrameMBS.DOMDocument
MsgBox d.webScriptValueAtIndex(1)

Notes:
Index is zero based.
Works for numbers, booleans, dates and strings.
85.119. CLASS WEBSHRIPTOBJECTMBS

85.119.12 Properties

85.119.13 Handle as Integer

Function: The handle of the internal used reference to a WebScriptObject.
Notes: (Read and Write property)
85.120  class WebUIDelegateMBS

85.120.1  class WebUIDelegateMBS

Function: A class to handle user interface requests.
Notes:
The plugin is very careful on which events it registers.
All events where you don’t have code inside (not even comments), is not registered with the system and you
get the default behavior.

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the
message, name and reason properties you can see what was the reason for this exception. Please report if
you find a method which does not handle exceptions correct.

Please use one delegate class per HTMLViewer (or WebViewMBS) and make sure they live about the same
time. Our class keeps a reference on the WebView, so we can remove our delegate when the delegate is
destroyed.

85.120.2  Methods

85.120.3  Constructor

Function: The constructor for this class.

85.120.4  Properties

85.120.5  DisableContextMenu as Boolean

Function: Whether the plugin should disable contextual menus completely.
Notes:
Set to true to disabled the context menu.
(Read and Write property)
85.120.  CLASS WEBUIDELEGATEMBS

85.120.6  DisableNewWindow as Boolean

Function: Whether the plugin should block new window requests.
Notes:
Set to true to block all requests.
(Read and Write property)

85.120.7  Events

85.120.8  AreToolbarsVisible as boolean

Function: Determine whether the window’s toolbars are currently visible.
Notes:
This method should return true if the window has any toolbars that are currently on, besides the status bar. If the app has more than one toolbar per window, for example a regular command toolbar and a favorites bar, it should return true from this method if at least one is on.

If you place code in this event, return a value.
If no code is in the event, the default delegate will be called.

85.120.9  Close

Notes: Called when the delegate is destroyed.

85.120.10  CreateWithRequest(Request as NSURLRequestMBS) as object

Function: Create a new window and begin to load the specified request.
Notes:
The newly created window is hidden, and the window operations delegate on the new WebViews will get a webViewShow call.

If no value is returned or no code is in the event, the default delegate is called.
Return nil, nothing or a valid htmlviewer or WebviewMBS object. Your application will certainly crash if you return something different.

Request may be nil. In this case WebKit later calls LoadRequest for the new webview.

85.120.11  dragDestinationActionMaskForDraggingInfo(draggingInfo as NSDraggingInfoMBS) as Integer

Function: Controls behavior when dragging to a WebView.
Notes:

draggingInfo: The dragging info of the drag
This method is called periodically as something is dragged over a WebView. The UI delegate can return a mask indicating which drag destination actions can occur, WebDragDestinationActionAny to allow any kind of action or WebDragDestinationActionNone to not accept the drag.

If you implement this, the default delegate is not called.

If you return WebDragDestinationActionAny you simply allow all kind of drag and drop including javascript using it.

85.120.12  dragSourceActionMaskForPoint(x as Double, y as Double) as Integer

Function: Controls behavior when dragging from a WebView.
Notes:

X/Y: The point where the drag started in the coordinates of the WebView.

This method is called after the user has begun a drag from a WebView. The UI delegate can return a mask indicating which drag source actions can occur, WebDragSourceActionAny to allow any kind of action or WebDragSourceActionNone to not begin a drag.

If you implement this, the default delegate is not called.

If you return WebDragDestinationActionAny you simply allow all kind of drag and drop including javascript using it.
85.120.13  **drawFooterInRect**(rect as NSRectMBS, g as NSGraphicsMBS)

**Function:** The delegate should draw a footer for the sender in the supplied rect.
**Notes:** rect: The NSRectMBS reserved for the footer of the page

85.120.14  **drawHeaderInRect**(rect as NSRectMBS, g as NSGraphicsMBS)

**Function:** The delegate should draw a header for the sender in the supplied rect.
**Notes:** rect: The NSRect reserved for the header of the page

85.120.15  **FooterHeight** as single

**Function:** The height returned will be used to calculate the rect passed to drawFooterInRect.
**Notes:**
Reserve a height for the printed page footer.
Returns the height to reserve for the printed page footer, return 0.0 to not reserve any space for a footer.

85.120.16  **GetContentRect**(byref left as Double, byref top as Double, byref width as Double, byref height as Double) as boolean

**Function:** Return the window’s content rect.
**Notes:** If you want to return values, return true, else return false and the default delegate will be called for this.

85.120.17  **GetFrame**(byref left as Double, byref top as Double, byref width as Double, byref height as Double) as boolean

**Function:** Return the window’s frame rect.
**Notes:** If you want to return values, return true, else return false and the default delegate will be called for this.
85.120.18  GetStatusText as String

Function: Get the currently displayed status text.
Notes:
If you place code in this event, return a value.
If no code is in the event, the default delegate will be called.

85.120.19  HeaderHeight as single

Function: The height returned will be used to calculate the rect passed to drawHeaderInRect.
Notes:
Reserve a height for the printed page header.
Return the height to reserve for the printed page header, return 0.0 to not reserve any space for a header.

85.120.20  IsResizable as boolean

Function: Determine whether the window is resizable or not.
Notes:
If there are multiple views in the same window, they have have their own separate resize controls and this
may need to be handled specially.

If you place code in this event, return a value.
If no code is in the event, the default delegate will be called.

85.120.21  IsStatusBarVisible as boolean

Function: Determine whether the status bar is visible.
Notes:
true if the status bar is visible, otherwise false.

If you place code in this event, return a value.
If no code is in the event, the default delegate will be called.
**85.120.22**  
**MouseDidMoveOverElement(elementInformation as Dictionary, modifierFlags as Integer) as boolean**

**Function:** Updates information about the element the user is mousing over.  
**Notes:**

- **elementInformation:** A dictionary that describes the element under the mouse, or nil. Keys and values:
  - WebElementKeyDOMNode: DOMNodeMBS of the element
  - WebElementFrame: WebFrameMBS of the element
  - WebImageAltString: String of the ALT attribute of the image element
  - WebImage: NSImageMBS of the image element
  - WebImageRect: NSRectMBS of an NSRect, the rect of the image element
  - WebImageURL: String of the image element
  - WebIsSelected: Number of BOOL indicating whether the element is selected or not
  - WebLinkURL: String of the link if the element is within an anchor
  - WebLinkTargetFrame: WebFrameMBS of the target of the anchor
  - WebLinkTitle: String of the title of the anchor
  - WebLinkLabel: String of the text within the anchor

- **modifierFlags:** An integer bit field that indicates the modifier keys in effect during the event.

**85.120.23**  
**Open**

**Function:** The open event.  
**Notes:**  
Called just after the delegate has been installed in a htmlviewer control.  
This allows you to initialize your stuff before the first event is called.

**85.120.24**  
**printFrameView(frameView as WebFrameViewMBS)**

**Function:** Informs that a WebFrameView needs to be printed.  
**Notes:**

- **frameView:** The WebFrameView needing to be printed

This method is called when a script or user requests the page to be printed.  
In this method the delegate can prepare the WebFrameView to be printed. Some content that WebKit dis-
plays can be printed directly by the WebFrameView, other content will need to be handled by the delegate. To determine if the WebFrameView can handle printing the delegate should check WebFrameView’s documentViewShouldHandlePrint, if true then the delegate can call printDocumentView on the WebFrameView. Otherwise the delegate will need to request a NSPrintOperation from the WebFrameView’s printOperationWithPrintInfo to handle the printing.

85.120.25  RunJavaScriptAlertPanelWithMessage(message as String)

Notes: Clients should visually indicate that this panel comes from JavaScript. The panel should have a single OK button.

85.120.26  RunJavaScriptConfirmPanelWithMessage(message as String) as boolean

Notes:
Return true if the user hit OK, false if the user chose Cancel.
Clients should visually indicate that this panel comes from JavaScript. The panel should have two buttons, e.g. "OK" and "Cancel".

If you place code in this event, return a value.
If no code is in the event, the default delegate will be called.

85.120.27  RunJavaScriptTextInputPanelWithPrompt(prompt as String, defaultText as String) as String

Notes:
Return the typed text if the user hit OK, otherwise an empty string.
Clients should visually indicate that this panel comes from JavaScript. The panel should have two buttons, e.g. "OK" and "Cancel", and an area to type text.

If you place code in this event, return a value.
If no code is in the event, the default delegate will be called.
85.120.28  **runOpenPanelForFileButtonWithResultListener**


**Function:** Called when an open panel should be shown.

**Notes:**
Return true if you handled this event.
Call chooseFilename or cancel on the listener to inform about the result.

85.120.29  **setContentRect**


**Function:** Set the window’s content rect.

**Notes:**
Even though a plugin could set the frame directly using the Window, this method is provided so implemen-
tors of this protocol can do special things on programmatic move/resize, like avoiding autosaving of the size.

If you return true the default delegate will not be called for this.

85.120.30  **setFrame**


**Function:** Set the window’s frame rect.

**Notes:**
Even though a plugin could set the frame directly using the Window, this method is provided so implemen-
tors of this protocol can do special things on programmatic move/resize, like avoiding autosaving of the size.

If you return true the default delegate will not be called for this.

85.120.31  **setResizable**


**Function:** Set the window to resizable or not.

**Notes:**
If there are multiple views in the same window, they have have their own separate resize controls and this may need to be handled specially.
If you return true the default delegate will not be called for this.

85.120.32  SetStatusBarVisible(visible as boolean) as boolean

MBS MacControls Plugin, Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Set whether the status bar is currently visible.
Notes: Setting this to true should show the status bar, setting it to false should hide it.
If you return true the default delegate will not be called for this.

85.120.33  SetStatusText(text as String) as boolean

MBS MacControls Plugin, Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Set the window’s status display, if any, to the specified string.
Notes: If you return true the default delegate will not be called for this.

85.120.34  SetToolbarsVisible(visible as boolean) as boolean

MBS MacControls Plugin, Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Set whether the window’s toolbars are currently visible.
Notes: Setting this to true should turn on all toolbars (except for a possible status bar). Setting it to false should turn off all toolbars (with the same exception).
If you return true the default delegate will not be called for this.

85.120.35  willPerformDragDestinationAction(WebDrag DestinationAction as Integer, draggingInfo as NSDraggingInfoMBS)

Notes: action: The drag destination action
draggingInfo: The dragging info of the drag
This method is called after the last call to dragDestinationActionMaskForDraggingInfo after something is dropped on a WebView.
This method informs the UI delegate of the drag destination action that WebView will perform.

**85.120.36**  
**willPerformDragSourceAction(WebDragDestinationAction as Integer, X as Double, Y as Double, pasteboard as NSPasteboardMBS)**

**Function:** Informs that a drag a has begun from a WebView.
**Notes:**
- action: The drag source action
- X/Y: The point where the drag started in the coordinates of the WebView
- pasteboard: The drag pasteboard

This method is called after dragSourceActionMaskForPoint is called after the user has begun a drag from a WebView.
This method informs the UI delegate of the drag source action that will be performed and gives the delegate an opportunity to modify the contents of the dragging pasteboard.

**85.120.37**  
**WindowClose as boolean**

**Function:** Close the current window.
**Notes:**
- Clients showing multiple views in one window may choose to close only the one corresponding to this WebView. Other clients may choose to ignore this method entirely.
- If this event returns false the control is handled to the default delegate.

**85.120.38**  
**WindowFocus as boolean**

**Function:** Focus the current window.
**Notes:**
- Clients showing multiple views in one window may want to also do something to focus the one corresponding to this WebView.
- If this event returns false the control is handled to the default delegate.
85.120.39 WindowShow as boolean

Function: Show the window that contains the top level view of the WebView, ordering it frontmost.
Notes:
This will only be called just after CreateWithRequest is used to create a new window.
If this event returns false the control is handled to the default delegate.

85.120.40 WindowUnfocus as boolean

Function: Unfocus the current window.
Notes:
Clients showing multiple views in one window may want to also do something to unfocus the one correspond-
ing to this WebView.
If this event returns false the control is handled to the default delegate.

85.120.41 Constants

85.120.42 WebDragDestinationActionAny = -1

MBS MacControls Plugin, Plugin Version: 16.1. Function: One of the action constants that the destination
object of a drag operation can perform.
Notes: Allows any defined action to occur.

85.120.43 WebDragDestinationActionDHTML = 1

MBS MacControls Plugin, Plugin Version: 16.1. Function: One of the action constants that the destination
object of a drag operation can perform.
Notes: Allows DHTML (such as JavaScript) to handle the drag.

85.120.44 WebDragDestinationActionEdit = 2

MBS MacControls Plugin, Plugin Version: 16.1. Function: One of the action constants that the destination
object of a drag operation can perform.
Notes: Allows editable documents to be changed by the drag operation.
85.120.45  WebDragDestinationActionLoad = 4

MBS MacControls Plugin, Plugin Version: 16.1. **Function:** One of the action constants that the destination object of a drag operation can perform.
**Notes:** Allows the drag operation to change the location.

85.120.46  WebDragDestinationActionNone = 0

MBS MacControls Plugin, Plugin Version: 16.1. **Function:** One of the action constants that the destination object of a drag operation can perform.
**Notes:** No action.
85.121 class WebViewMBS

85.121.1 class WebViewMBS

Function: The class to handle a webview.
Notes:
A webview is simply a content viewer for any web based content. It can render html pages, text pages and with plugins also flash or pdf files.

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

You can embed this view in a CustomNSViewMBS to get more events for mouse and keyboard. Subclass of the NSViewMBS class.

85.121.2 Methods

85.121.3 alignCenter

Function: An action method that applies center alignment to selected content or all content if there’s no selection.
Notes: Available in Mac OS X v10.3.9 and later.

85.121.4 alignJustified

Function: An action method that applies full justification to selected content or all content if there’s no selection.
Notes: Available in Mac OS X v10.3.9 and later.

85.121.5 alignLeft

Function: An action method that applies left justification to selected content or all content if there’s no selection.
**85.121. CLASS WEBVIEWMBS**

*Notes:* Available in Mac OS X v10.3.9 and later.

---

### 85.121.6 alignRight


*Function:* An action method that applies right justification to selected content or all content if there is no selection.

*Notes:* Available in Mac OS X v10.3.9 and later.

---

### 85.121.7 applyStyle(style as Variant)


*Function:* Applies the CSS typing style to the current selection.

*Example:*

```vbnet
dim w as WebViewMBS = HTMLViewer1.WebViewMBS
dim doc as DOMDocumentMBS = w.mainFrame.DOMDocument
dim d as DOMCSSStyleDeclarationMBS = doc.createCSSStyleDeclaration

d.fontWeight="bold"

w.applyStyle d
```

*Notes:*

- *style:* The style to apply to the current selection. Must be a DOMCSSStyleDeclarationMBS object.

- This method does nothing if there is no current selection or if the current selection is collapsed.

- This method hides the complexities of applying styles to elements. If necessary, this method will make multiple passes over the range of the current selection to ensure that the requested style is applied to the elements in that range, and takes into account the complexities of CSS style application rules. This method also simplifies styling attributes so that the minimum number of styling directives are used to yield a given computed style.

---

### 85.121.8 backForwardList as WebBackForwardListMBS


*Function:* Returns the backforward list for this webView.
85.121.9  canGoBack as boolean

Function: Whether the history can be used to move back one website.

85.121.10  canGoForward as boolean

Function: Whether the history can be used to move forward one website.

85.121.11  canMakeTextLarger as boolean

Function: Whether the text size can be increased.

85.121.12  canMakeTextSmaller as boolean

Function: Whether the text size can be decreased.

85.121.13  canResetPageZoom as boolean

Function: Whether web page can be reset.
Notes: This is a new webview function which is not available on all webview versions. So be aware that you may get an NSExceptionMBS about the function not being available.

85.121.14  CanShowMIMEType(mime as string) as boolean

Function: Checks if the WebKit can show content of a certain MIME type.
Notes:
Returns false on any error and true on success.
See also MimeTypeToFileExtensionMBS function.

85.121.15 CanShowMIMETypeAsHTML(mime as string) as boolean

Function: Checks if the the MIME type is a type that the WebKit will interpret as HTML.
Notes: Returns false on any error and true on success.
See also MimeTypeToFileExtensionMBS function.

85.121.16 canZoomPageIn as boolean

Function: Whether web page can be zoomed in.
Notes: This is a new webview function which is not available on all webview versions. So be aware that you may get an NSExceptionMBS about the function not being available.

85.121.17 canZoomPageOut as boolean

Function: Whether web page can be zoomed out.
Notes: This is a new webview function which is not available on all webview versions. So be aware that you may get an NSExceptionMBS about the function not being available.

85.121.18 capitalizeWord

Function: Implemented by WebView to capitalize the word or words surrounding the insertion point or selection, expanding the selection if necessary.
Notes: If either end of the selection partially covers a word, that entire word is made lowercase. The sender argument is typically the object that invoked this method.

85.121.19 centerSelectionInVisibleArea

Function: Implemented by WebView to scroll the selection, whatever it is, inside its visible area.
85.121.20  changeAttributes

**Function:** An action method that changes the attributes of the current selection.
**Notes:** Available in Mac OS X v10.3.9 and later.

85.121.21  changeCaseOfLetter

**Function:** Implemented by WebView to change the case of a letter or letters in the selection, perhaps by opening a panel with capitalization options or by cycling through possible case combinations.

85.121.22  changeColor

**Function:** Sets the color of the selected content.
**Notes:**
This method is invoked by the NSColorPanel sender.
Available in Mac OS X v10.3.9 and later.

85.121.23  changeDocumentBackgroundColor

**Function:** Sets the background color of the selected content.
**Notes:**
This method is invoked by the NSColorPanel sender.
Available in Mac OS X v10.3.9 and later.

85.121.24  changeFont

**Function:** An action method that changes the font of the selection, or all content if there is no selection.
**Notes:**
If the receiver doesn't use the Fonts panel, this method does nothing.

Available in Mac OS X v10.3.9 and later.

**85.121.25 checkSpelling**


**Function:** An action method that searches for a misspelled word in the receiver.

**Notes:**
This action method starts a search at the end of the selection and continues until it reaches a word suspected of being misspelled or the end of the content. If a word isn't recognized by the spelling server, a showGuessPanel message is sent to the receiver which opens the Guess panel and allows the user to make a correction or add the word to the local dictionary.

Available in Mac OS X v10.3.9 and later.

**85.121.26 ClearFocus**


**Function:** Clears the focus.

**Example:**

```plaintext
webview.ClearFocus
```

**Notes:** If the focus is on the webpage, it will be cleared so there is no focus on the window. Useful if you want to workaround a focus bug in the htmlviewer control.

**85.121.27 complete**


**Function:** Implemented by WebView to complete an operation in progress or a partially constructed element.

**Notes:** This method can be interpreted, for example, as a request to attempt expansion of a partial word, such as for expanding a glossary shortcut, or to close a graphics item being drawn.
85.121.28 Constructor

Function: Creates a new box view with size 100/100 and position 0/0
Example:

```vba
dim x as new WebViewMBS
```

Notes: On success the handle property is not zero.
See also:

- 85.121.29 Constructor(Handle as Integer)
- 85.121.30 Constructor(left as Double, top as Double, width as Double, height as Double)
- 85.121.31 Constructor(x as Double, y as Double, w as Double, h as Double, FrameName as string, GroupName as string)

85.121.29 Constructor(Handle as Integer)

Function: Creates an object based on the given WebView handle.
Example:

```vba
dim t as new WebViewMBS(0, 0, 100, 100)
dim v as new WebViewMBS(t.handle)
MsgBox str(v.Bounds.Width)+" x "+str(v.Bounds.Height)
```

Notes: The handle is casted to a WebView and the plugin retains this handle.
See also:

- 85.121.28 Constructor
- 85.121.30 Constructor(left as Double, top as Double, width as Double, height as Double)
- 85.121.31 Constructor(x as Double, y as Double, w as Double, h as Double, FrameName as string, GroupName as string)

85.121.30 Constructor(left as Double, top as Double, width as Double, height as Double)

Function: Creates a new button with the given size and position.
Example:
**85.121. CLASS WEBVIEWMBS**

`dim w as new WebViewMBS(0,0,800,600)`

`w.LoadHTMLString "Hello World",""

// and later

`dim n as NSImageMBS = w.RenderImage`
`Backdrop=n.CopyPicture`

**Notes:** On success the handle property is not zero.

See also:

- 85.121.28 Constructor
- 85.121.29 Constructor(Handle as Integer)
- 85.121.31 Constructor(x as Double, y as Double, w as Double, h as Double, FrameName as string, GroupName as string)

**85.121.31 Constructor(x as Double, y as Double, w as Double, h as Double, FrameName as string, GroupName as string)**


**Function:** Initializes a webview with a frame rectangle, a WebFrame name, and a group name.

**Example:**

```plaintext```
dim w as webviewmbs

w=new WebViewMBS(0,0,800,600,"test","test")

w.LoadHTMLString "Hello World",""

// and later

dim n as NSImageMBS = w.RenderImage
Backdrop=n.CopyPicture
```

**Notes:**

The `FrameName` should not be one of the pre-defined frame names (see the WebFrame `findFrameNamed` for a description of their meaning), but a custom name or a name used in HTML source. The `GroupName` argument is an arbitrary identifier used to group related frames. For example, JavaScript running in a frame can access any other frame in the same group. It’s up to the application how it chooses to scope related frames. Both `FrameName` and `GroupName` may be "". This method is the designated initializer for the WebView class.
On success the handle property is not zero.

See also:

- 85.121.28 Constructor
- 85.121.29 Constructor(Handle as Integer)
- 85.121.30 Constructor(left as Double, top as Double, width as Double, height as Double)

85.121.32 copy


**Function:** Action method that copies the selected content to the general pasteboard.

**Notes:**
This action method copies the selected content onto the general pasteboard, in as many formats as the receiver supports. For example, a plain text object uses NSStringPboardType for plain text, and a rich text object also uses NSRTFPboardType.

Available in Mac OS X v10.3.9 and later.

85.121.33 copyFont


**Function:** An action method that copies font information onto the font pasteboard.

**Notes:**
This action method copies the font information for the first character of the selection (or for the insertion point) onto the font pasteboard as NSFontPboardType.

Available in Mac OS X v10.3.9 and later.

85.121.34 cut


**Function:** An action method that deletes selected content and puts it on the general pasteboard.

**Notes:**
This action method deletes the selected content and places it onto the general pasteboard, in as many formats as the receiver supports. For example, a plain text object uses NSStringPboardType for plain text, and a rich text object also uses NSRTFPboardType.
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Available in Mac OS X v10.3.9 and later.

85.121.35 delete

Function: An action method that deletes the selected content.
Notes:
The pasteboard is unaffected by invoking this method.

Available in Mac OS X v10.3.9 and later.

85.121.36 deleteBackward

Function: Implemented by WebView to delete the selection, if there is one, or a single element backward from the insertion point (a letter or character in text, for example).

85.121.37 deleteBackwardByDecomposingPreviousCharacter

Function: Implemented by WebView to delete the selection, if there is one, or a single character backward from the insertion point.
Notes: If the previous character is canonically decomposable, this method should try to delete only the last character in the grapheme cluster (for example, deleting "a"+ "’" results in "a"). NSResponder declares but does not implement this method.

85.121.38 deleteForward

Function: Implemented by WebView to delete the selection, if there is one, or a single element forward from the insertion point (a letter or character in text, for example).

85.121.39 deleteSelection

Function: Deletes the receiver’s current selection unless it’s collapsed.
Notes: No content is removed if the current selection is collapsed (a range is selected with the same nodes and offsets for the start and end) or if there is no current selection.

85.121.40 deleteToBeginningOfLine

Function: Implemented by WebView to delete the selection, if there is one, or all text from the insertion point to the beginning of a line (typically of text). 
Notes: Also places the deleted text into the kill buffer.

85.121.41 deleteToBeginningOfParagraph

Function: Implemented by WebView to delete the selection, if there is one, or all text from the insertion point to the beginning of a paragraph of text. 
Notes: Also places the deleted text into the kill buffer.

85.121.42 deleteToEndOfLine

Function: Implemented by WebView to delete the selection, if there is one, or all text from the insertion point to the end of a line (typically of text). 
Notes: Also places the deleted text into the kill buffer.

85.121.43 deleteToEndOfParagraph

Function: Implemented by WebView to delete the selection, if there is one, or all text from the insertion point to the end of a paragraph of text. 
Notes: Also places the deleted text into the kill buffer.

85.121.44 deleteWordBackward

Function: Implemented by WebView to delete the selection, if there is one, or a single word backward from the insertion point.
85.121.45 deleteWordForward

Function: Implemented by WebView to delete the selection, if there is one, or a single word forward from
the insertion point.

85.121.46 EstimatedProgress as Double

Function: An estimate of the percent complete for a document load.
Example:
// waits till rendering is done:
dim f as FolderItem = SpecialFolder.Desktop.Child(“test.html”)
WebView.mainFrame.LoadURL f.URLPath
while WebView.EstimatedProgress>0
DelayMBS 0.1
wend
// this works only because EstimatedProgress is set to 0.1 by LoadURL
// and set back to zero when the load process finishes.
// If future Webkit versions change the EstimatedProgress results,
// it will break.

Notes: This value will range from 0 to 1.0 and, once a load completes, will remain at 1.0 until a new load
starts, at which point it will be reset to 0. The value is an estimate based on the total number of bytes
expected to be received for a document, including all it’s possible subresources. For more accurate progress
indication it is recommended that you implement a WebFrameLoadDelegate and a WebResourceLoadDelegate.

85.121.47 EvaluateJavaScript(code as string) as string

Function: Runs the given java script and returns the result.
Example:
// shows current user agent string which the control sends to website
MsgBox webview1.EvaluateJavaScript(”navigator.userAgent;”)
// using eval:
MsgBox webview1.EvaluateJavaScript(”eval(“”x=10;y=20;x*y”””)”
// with function:
MsgBox webview1.EvaluateJavaScript(" test(); function test() { x = 10 ; y = 20; return x * y; } ")

// with multiline script:
dim s as string = "test();"+EndOfLine+ 
" function test()"+EndOfLine+ 
" { "+EndOfLine+ 
" x = 10; "+EndOfLine+ 
" y = 20; "+EndOfLine+ 
" return x * y;"+EndOfLine+ 
" } "

MsgBox webview1.EvaluateJavaScript(s)

Notes:
Returns "" on any error.

In Safari 2 we used "return 1+2;" while in Safari 3 we only need "1+2;". The return is no longer needed. Be aware that there is an implicit return now with Safari 3!

85.121.48  GoBack

Function: Go back to the previous URL in the backforward list.

85.121.49  GoForward

Function: Go forward to the next URL in the backforward list.

85.121.50  goToBackForwardItem(item as WebHistoryItemMBS) as boolean

Function: Moves on the history to the given item. 
Notes: Returns true on success or false on failure.
85.121.51 HTMLText as string

Function: Returns HTML text for this document.
Notes: This is the text as we generate it from current DOM tree. It is not the html text we loaded from the website. To get this original html text, please use mainFrameMBS.dataSource.data instead.

85.121.52 indent

Function: Implemented by WebView to indent the selection or the insertion point if there is no selection.

85.121.53 insertBacktab

Function: Implemented by WebView to handle a backward tab.
Notes: A field editor might respond to this method by selecting the field before it, while a regular text object either doesn't respond to or ignores such a message.

85.121.54 insertNewline

Function: Implemented by WebView to insert a newline character at the insertion point or selection, deleting the selection if there is one, or to end editing if the receiver is a text field or other field editor.

85.121.55 insertParagraphSeparator

Function: Implemented by WebView to insert a paragraph separator at the insertion point or selection, deleting the selection if there is one.

85.121.56 insertTab

Function: Implemented by WebView to insert a tab character at the insertion point or selection, deleting the selection if there is one, or to end editing if the receiver is a text field or other field editor.
**85.121.57 LoadHTMLString(data as memoryblock, mime as string, encoding as string, url as string)**


**Function:** Loads data as a webpage.

**Example:**

```javascript
webview.LoadHTMLString "<b>test</b>" , "text/plain" , "" , "" ; // show as plain text
webview.LoadHTMLString "<b>test</b>" , "text/html" , "" , "" ; // show as html
```

**Notes:**

data: The data to use for the main page of the document.
mime: The MIME type of the data. e.g. "text/html"
textencoding: The encoding of the data.
url: The base URL to apply to relative URLs within the document.

All parameters can be empty if needed.
Using "text/plain" mime type you can show source code of website.

Like most Webkit Methods this one can not be called from a thread.
See also:

- 85.121.58 LoadHTMLString(text as string, url as string)

**85.121.58 LoadHTMLString(text as string, url as string)**


**Function:** Loads a html page from a string.

**Notes:**

html: The string to use for the main page of the document.
url: The base URL to apply to relative URLs within the document. (optional)

Like most Webkit Methods this one can not be called from a thread.
See also:

- 85.121.57 LoadHTMLString(data as memoryblock, mime as string, encoding as string, url as string)
85.121.59  LoadRequest(request as NSURLRequestMBS)

Function: Loads the given url request.
Notes: Like most Webkit Methods this one can not be called from a thread.

85.121.60  LoadURL(url as string)

Function: Loads the url.
Example:
webview.LoadURL "http://www.monkeybreadsoftware.de"

Notes:
Like most Webkit Methods this one can not be called from a thread.
Internally this calls LoadRequest with a NSURLRequest based on the given URL.
See also:
• 85.121.61 LoadURL(url as string, CachePolicy as Integer, TimeOut as Double)

85.121.61  LoadURL(url as string, CachePolicy as Integer, TimeOut as Double)

Function: Loads the URL.
Example:
webview.LoadURL "http://www.monkeybreadsoftware.de", 1, 2.0

Notes:
The timeout interval is in seconds.

Constants for the CachePolicy parameter:
Like most Webkit Methods this one can not be called from a thread.
Internally this calls LoadRequest with a NSURLRequest based on the given URL.
See also:
• 85.121.60 LoadURL(url as string)
const UseProtocolCachePolicy = 0 Specifies that the caching logic defined in the protocol implementation, if any, is used for a particular URL load request. This is the default policy for URL load requests.

const ReloadIgnoringCacheData = 1 Specifies that the data for the URL load should be loaded from the originating source. No existing cache data should be used to satisfy a URL load request.

const ReturnCacheDataElseLoad = 2 Specifies that the existing cached data should be used to satisfy the request, regardless of its age or expiration date. If there is no existing data in the cache corresponding to the request, the data is loaded from the originating source.

const ReturnCacheDataDontLoad = 3 Specifies that the existing cache data should be used to satisfy a request, regardless of its age or expiration date. If there is no existing data in the cache corresponding to a URL load request, no attempt is made to load the data from the originating source, and the load is considered to have failed. This constant specifies a behavior that is similar to an "offline" mode.

85.121.62 lowercaseWord


Function: Implemented by WebView to make lowercase every letter in the word or words surrounding the insertion point or selection, expanding the selection if necessary.

Notes: If either end of the selection partially covers a word, that entire word is made lowercase. NSResponder declares, but doesn’t implement this method.

85.121.63 mainFrame as WebFrameMBS


Function: The main webframe currently displayed.

Notes: Nil if no is present.

85.121.64 makeTextLarger


Function: Increases the text size in the webview.

85.121.65 makeTextSmaller


Function: Decreases the text size in the webview.
85.121.66 mediaVolume as single

**Function:** Queries the maximum volume of all sounds generated on this webview.
**Notes:** This is a new webview function which is not available on all webview versions. So be aware that you may get an NSExceptionMBS about the function not being available.

85.121.67 moveBackward

**Function:** Implemented by WebView to move the selection or insertion point one element or character backward.
**Notes:** In text, if there is a selection it should be deselected, and the insertion point should be placed at the beginning of the former selection.

85.121.68 moveBackwardAndModifySelection

**Function:** Implemented by WebView to expand or reduce either end of the selection backward by one element or character.
**Notes:** If the end being modified is the backward end, this method expands the selection; if the end being modified is the forward end, it reduces the selection. The first moveBackwardAndModifySelection or moveForwardAndModifySelection method in a series determines the end being modified by always expanding. Hence, this method results in the backward end becoming the mobile one if invoked first. By default, moveLeftAndModifySelection is bound to the left arrow key.

85.121.69 moveDown

**Function:** Implemented by WebView to move the selection or insertion point one element or character down.
**Notes:** In text, if there is a selection it should be deselected, and the insertion point should be placed below the beginning of the former selection.

85.121.70 moveDownAndModifySelection

**Function:** Implemented by WebView to expand or reduce the top or bottom end of the selection downward by one element, character, or line (whichever is appropriate for text direction).
**Notes:** If the end being modified is the bottom, this method expands the selection; if the end being modified
is the top, it reduces the selection. The first moveDownAndModifySelection or moveUpAndModifySelection
method in a series determines the end being modified by always expanding. Hence, this method results in
the bottom end becoming the mobile one if invoked first.

85.121.71 moveForward

Function: Implemented by WebView to move the selection or insertion point one element or character
forward.
Notes: In text, if there is a selection it should be deselected, and the insertion point should be placed at
the end of the former selection.

85.121.72 moveForwardAndModifySelection

Function: Implemented by WebView to expand or reduce either end of the selection forward by one ele-
ment or character.
Notes: If the end being modified is the backward end, this method reduces the selection; if the end be-
ing modified is the forward end, it expands the selection. The first moveBackwardAndModifySelection or
moveForwardAndModifySelection method in a series determines the end being modified by always expand-
ing. Hence, this method results in the forward end becoming the mobile one if invoked first. By default,
moveRightAndModifySelection is bound to the right arrow key.

85.121.73 moveLeft

Function: Implemented by WebView to move the selection or insertion point one element or character to
the left.
Notes: In text, if there is a selection it should be deselected, and the insertion point should be placed at
the left end of the former selection.

85.121.74 moveLeftAndModifySelection

Function: Implemented by WebView to expand or reduce either end of the selection to the left (display
order) by one element or character.
Notes:
If the end being modified is the left end, this method expands the selection; if the end being modified is the
right end, it reduces the selection. The first moveLeftAndModifySelection or moveRightAndModifySelect-
tion method in a series determines the end being modified by always expanding. Hence, this method results in the left end becoming the mobile one if invoked first. By default, this method is bound to the left arrow key.

The essential difference between this method and the corresponding moveBackwardAndModifySelection is that the latter method moves in logical order, which can differ in bidirectional text, whereas this method moves in display order.

85.121.75 moveRight

Function: Implemented by WebView to move the selection or insertion point one element or character to the right.
Notes: In text, if there is a selection it should be deselected, and the insertion point should be placed at the right end of the former selection.

85.121.76 moveRightAndModifySelection

Function: Implemented by WebView to expand or reduce either end of the selection to the right (display order) by one element or character.
Notes: If the end being modified is the left end, this method reduces the selection; if the end being modified is the right end, it expands the selection. The first moveLeftAndModifySelection or moveRightAndModifySelection method in a series determines the end being modified by always expanding. Hence, this method results in the right end becoming the mobile one if invoked first. By default, this method is bound to the right arrow key.

The essential difference between this method and the corresponding moveForwardAndModifySelection is that the latter method moves in logical order, which can differ in bidirectional text, whereas this method moves in display order.

85.121.77 moveToBeginningOfDocument

Function: Implemented by WebView to move the selection to the first element of the document or the insertion point to the beginning.
**85.121.78  moveToBeginningOfDocumentAndModifySelection**

**Function:** Implemented by WebView to move the selection or insertion point to the beginning of the document, expanding or reducing the current selection.

**85.121.79  moveToBeginningOfLine**

**Function:** Implemented by WebView to move the selection to the first element of the selected line or the insertion point to the beginning of the line.

**85.121.80  moveToBeginningOfLineAndModifySelection**

**Function:** Implemented by WebView to move the selection or insertion point to the beginning of the line, expanding or reducing the current selection.

**85.121.81  moveToBeginningOfParagraph**

**Function:** Implemented by WebView to move the insertion point to the beginning of the selected paragraph.

**85.121.82  moveToBeginningOfParagraphAndModifySelection**

**Function:** Implemented by WebView to move the selection or insertion point to the beginning of the current paragraph, expanding or reducing the current selection.

**85.121.83  moveToBeginningOfSentence**

**Function:** Moves the insertion point to the beginning of the current sentence.
**85.121.84 moveToBeginningOfSentenceAndModifySelection**

**Function:** Moves the insertion point and extends the selection to the beginning of the current sentence.

**85.121.85 moveToEndOfDocument**

**Function:** Implemented by WebView to move the selection to the last element of the document or the insertion point to the end.

**85.121.86 moveToEndOfDocumentAndModifySelection**

**Function:** Implemented by WebView to move the selection or insertion point to the end of the document, expanding or reducing the current selection.

**85.121.87 moveToEndOfLine**

**Function:** Implemented by WebView to move the selection to the last element of the selected line or the insertion point to the end of the line.

**85.121.88 moveToEndOfLineAndModifySelection**

**Function:** Implemented by WebView to move the selection or insertion point to the end of the line, expanding or reducing the current selection.

**85.121.89 moveToEndOfParagraph**

**Function:** Implemented by WebView to move the insertion point to the end of the selected paragraph.
85.121.90  moveToEndOfParagraphAndModifySelection

Function: Implemented by WebView to move the selection or insertion point to the end of the current paragraph, expanding or reducing the current selection.

85.121.91  moveToEndOfSentence

Function: Moves the insertion point to the end of the current sentence.

85.121.92  moveToEndOfSentenceAndModifySelection

Function: Moves the insertion point and extends the selection to the end of the current sentence.

85.121.93  moveUp

Function: Implemented by WebView to move the selection or insertion point one element or character up.
Notes: In text, if there is a selection it should be deselected, and the insertion point should be placed above the beginning of the former selection.

85.121.94  moveUpAndModifySelection

Function: Implemented by WebView to move the selection or insertion point one element or character up.
Notes: If the end being modified is the bottom, this method reduces the selection; if the end being modified is the top, it expands the selection. The first moveDownAndModifySelection or moveUpAndModifySelection method in a series determines the end being modified by always expanding. Hence, this method results in the top end becoming the mobile one if invoked first.

85.121.95  moveWordBackward

Function: Implemented by WebView to move the selection or insertion point one word backward.
Notes: If there is a selection it should be deselected, and the insertion point should be placed at the end of the first word preceding the former selection.

85.121.96  moveWordBackwardAndModifySelection

Function: Implemented by WebView to expand or reduce either end of the selection backward by one whole word.
Notes: If the end being modified is the backward end, this method expands the selection; if the end being modified is the forward end, it reduces the selection. The first moveWordBackwardAndModifySelection or moveWordForwardAndModifySelection method in a series determines the end being modified by always expanding. Hence, this method results in the backward end becoming the mobile one if invoked first.

85.121.97  moveWordForward

Function: Implemented by WebView to move the selection or insertion point one word forward, in logical order.
Notes: If there is a selection it should be deselected, and the insertion point should be placed at the beginning of the first word following the former selection.

85.121.98  moveWordForwardAndModifySelection

Function: Implemented by WebView to expand or reduce either end of the selection forward by one whole word.
Notes: If the end being modified is the backward end, this method reduces the selection; if the end being modified is the forward end, it expands the selection. The first moveWordBackwardAndModifySelection or moveWordForwardAndModifySelection method in a series determines the end being modified by always expanding. Hence, this method results in the forward end becoming the mobile one if invoked first.

85.121.99  moveWordLeft

Function: Implemented by WebView to move the selection or insertion point one word to the left, in display order.
Notes: If there is a selection it should be deselected, and the insertion point should be placed at the end of the first word to the left of the former selection.
The main difference between this method and the corresponding moveWordBackward method is that the latter moves in logical order, which is important in bidirectional text, whereas this method moves in display order.

### 85.121.100 moveWordLeftAndModifySelection

**Function:** Implemented by WebView to expand or reduce either end of the selection left by one whole word in display order.  
**Notes:**  
If the end being modified is the left end, this method expands the selection; if the end being modified is the right end, it reduces the selection. The first moveWordLeftAndModifySelection or moveWordRightAndModifySelection method in a series determines the end being modified by always expanding. Hence, this method results in the left end becoming the mobile one if invoked first.

The main difference between this method and the corresponding moveWordBackwardAndModifySelection method is that the latter moves in logical order, which is important in bidirectional text, whereas this method moves in display order.

### 85.121.101 moveWordRight

**Function:** Implemented by WebView to move the selection or insertion point one word right.  
**Notes:**  
If there is a selection it should be deselected, and the insertion point should be placed at the beginning of the first word to the right of the former selection.

The main difference between this method and the corresponding moveWordForward method is that the latter moves in logical order, which is important in bidirectional text, whereas this method moves in display order.

### 85.121.102 moveWordRightAndModifySelection

**Function:** Implemented by WebView to expand or reduce either end of the selection to the right by one whole word.  
**Notes:**  
If the end being modified is the backward end, this method reduces the selection; if the end being modified is
the forward end, it expands the selection. The first moveWordBackwardAndModifySelection or moveWord ForwardAndModifySelection method in a series determines the end being modified by always expanding. Hence, this method results in the forward end becoming the mobile one if invoked first.

The main difference between this method and the corresponding moveWordForwardAndModifySelection method is that the latter moves in logical order, which is important in bidirectional text, whereas this method moves in display order.
85.121.103 **NSScrollView as NSScrollViewMBS**

**Function:** Returns the scrollview for this webviewer.
**Notes:** Same as calling WebViewMBS.mainFrame.frameView.documentView.enclosingScrollView.

85.121.104 **pageDown**

**Function:** Implemented by WebView to scroll the receiver down (or back) one page in its scroll view, also moving the insertion point to the top of the newly displayed page.

85.121.105 **pageSizeMultiplier as single**

**Function:** Queries the page size multiplier.
**Notes:** This is a new webview function which is not available on all webview versions. So be aware that you may get an NSExceptionMBS about the function not being available.

85.121.106 **pageUp**

**Function:** Implemented by WebView to scroll the receiver up (or forward) one page in its scroll view, also moving the insertion point to the top of the newly displayed page.

85.121.107 **paste**

**Function:** An action method that pastes content from the pasteboard at the insertion point or over the selection.
**Notes:** Available in Mac OS X v10.3.9 and later.

85.121.108 **pasteAsPlainText**

**Function:** An action method that pastes pasteboard content as plain text.
**Notes:** Available in Mac OS X v10.3.9 and later.
85.121.109 pasteAsRichText

**Function:** An action method that pastes pasteboard content into the receiver as rich text, maintaining its attributes.
**Notes:**
The text is inserted at the insertion point if there is one; otherwise, it replaces the selection.

Available in Mac OS X v10.3.9 and later.

85.121.110 pasteFont

**Function:** An action method that pastes font information from the font pasteboard.
**Notes:**
This action method pastes font information from the font pasteboard onto the selected content or insertion point of a rich text object, or over all text of the receiver.

Available in Mac OS X v10.3.9 and later.

85.121.111 performFindPanelAction

**Function:** An action method that opens the Find menu and Find panel.
**Notes:** Available in Mac OS X v10.3.9 and later.

85.121.112 PrintToPDFFile(PDFFile as folderitem, LeftMargin as Double = 50.0, TopMargin as Double = 50.0, RightMargin as Double = 50.0, BottomMargin as Double = 50.0) as boolean

**Function:** Prints the PDF to a file.
**Example:**
```plaintext
dim file as folderitem = Specialfolder.desktop.child("test.pdf")
if not myWebView.PrintToPDFFile(file) then
    msgbox "Failed"
end if
```
Notes:
This uses the Cocoa printing system to format the web pages into nice pages.
Returns true on success.

85.121.113  Reload

Function: Reloads the current page.

85.121.114  reloadFromOrigin

Function: Action method that performs an end-to-end revalidation using cache-validating conditionals if possible.
Notes: Available in OS X v10.6 and later. So this raises exception on older OS X versions. In that case, please catch exception and call reload.

85.121.115  RenderDocumentToEPS as Memoryblock

Function: Returns the content of the view as a EPS file’s data.
Example:

```vbnet
dim f as FolderItem
dim b as BinaryStream

// create a new pdf with current content of view
f=SpecialFolder.Desktop.Child(“test.eps”)
b=f.CreateBinaryFile(“”)
b.Write theWebView.RenderDocumentToEPS
b.Close

f.Launch // show the pdf in preview
```

Notes:
Returns nil on any error.
Will resize the eps page to match the size of the website.
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85.121.116 RenderDocumentToPDF as Memoryblock

Function: Returns the content of the view as a PDF file’s data.
Example:

```vbs
dim f as FolderItem
dim b as BinaryStream

// create a new pdf with current content of view
f=SpecialFolder.Desktop.Child(”test.pdf”)
b=f.CreateBinaryFile(””)
b.Write thewebview.RenderDocumentToPDF
b.Close

f.Launch // show the pdf in preview
```

Notes:

Returns nil on any error.
Will resize the pdf page to match the size of the website.

85.121.117 RenderWebsiteImage as NSImageMBS

Function: Makes a screenshot of the current displayed content.
Example:

```vbs
dim f as FolderItem
dim b as BinaryStream
dim i as NSImageMBS
dim p as string

i=webview.RenderWebsiteImage

p=i.PNGRepresentation

f=SpecialFolder.Desktop.Child(”test.png”)  
b=f.CreateBinaryFile(””)
b.Write p
```

Notes:

Nil on failure.
The image returned is the page completely without scrollbars, so it may be a few thousand pixels height and may not fit on a page to print.

85.121.118 replaceSelectionWithMarkupString(html as string)

Function: Replaces the current selection with mixed text and markup.
Notes:
markupString: The markup string that replaces the current selection.

If the current selection is collapsed (a range is selected with the same nodes and offsets for the start and end) then no content is removed when inserting the markup, and the selection is collapsed and moved to the end of the inserted content. If no content is selected, the markup is not inserted.

85.121.119 replaceSelectionWithText(text as string)

Function: Replaces the current selection with a string of text.
Notes:
text: The text that replaces the current selection.

If the current selection is collapsed (a range is selected with the same nodes and offsets for the start and end) then no content is removed when inserting the text, and the selection is collapsed and moved to the end of the inserted content. If no content is selected, the text is not inserted.

85.121.120 resetPageZoom

Function: Resets the web page zoom.
Notes: This is a new webview function which is not available on all webview versions. So be aware that you may get an NSExceptionMBS about the function not being available.

85.121.121 scrollLineDown

Function: Implemented by WebView to scroll the receiver one line down in its scroll view, without changing the selection.
85.121.122 scrollLineUp

**Function:** Implemented by WebView to scroll the receiver one line up in its scroll view, without changing the selection.

85.121.123 scrollPageDown

**Function:** Implemented by WebView to scroll the receiver one page down in its scroll view, without changing the selection.

85.121.124 scrollPageUp

**Function:** Implemented by WebView to scroll the receiver one page up in its scroll view, without changing the selection.

85.121.125 SearchFor(text as string, Forward as boolean, CaseSensitive as boolean, Wrap as Boolean) as boolean

**Function:** Searches a document view for a string and highlights the string if it is found.
**Notes:**
Starts the search from the current selection. Will search across all frames.

- text: The string to search for.
- forward: True to search forward, False to search backwards.
- caseSensitive: True to for case-sensitive search, False for case-insensitive search.

Returns true if found, false if not found.
85.121.126 selectAll

Function: Implemented by WebView to select all selectable elements.

85.121.127 selectLine

Function: Implemented by WebView to select all elements in the line or lines containing the selection or insertion point.

85.121.128 selectParagraph

Function: Implemented by WebView to select all paragraphs containing the selection or insertion point.

85.121.129 selectSentence

Function: Selects the entire sentence around the insertion point.

85.121.130 selectWord

Function: Implemented by WebView to extend the selection to the nearest word boundaries outside it (up to, but not including, word delimiters).

85.121.131 setMaintainsBackForwardList(value as boolean)

Function: Whether the back forward history list is created by the webview.
Notes: Default is true.
85.121.132  setMediaVolume(value as single)

Function: Sets the maximum volume of all sounds generated on this webview.
Notes:
Sets a master volume control for all media elements in the WebView. Valid values are 0..1.

This is a new webview function which is not available on all webview versions. So be aware that you may get an NSExceptionMBS about the function not being available.

85.121.133  setPageSizeMultiplier(value as single)

Function: Sets the page size multiplier.
Notes:
Change the zoom factor of the page in views managed by this webView.
value: A fractional percentage value, 1.0 is 100%.

This is a new webview function which is not available on all webview versions. So be aware that you may get an NSExceptionMBS about the function not being available.

85.121.134  showGuessPanel

Function: An action method that shows a spelling correction panel.
Notes:
This action method opens the Spelling panel, allowing the user to make a correction during spell checking.

Available in Mac OS X v10.3.9 and later.

85.121.135  startSpeaking

Function: An action method that starts speaking the selected text or all text if there’s no selection.
Notes:
Speech continues asynchronously until the end of the text or until terminated by invoking the stopSpeaking: method.
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Available in Mac OS X v10.3.9 and later.

85.121.136 StopLoading

Function: Stop any pending loads on the frame’s data source, and its children.

85.121.137 stopSpeaking

Function: An action method that stops speaking that is in progress.
Notes: This action method stops speech that was previously started with startSpeaking.
Available in Mac OS X v10.3.9 and later.

85.121.138 SupportsTextEncoding as boolean

Function: Find out if the current web page supports text encodings.
Notes: Returns true if the document view of the current web page can support different text encodings.

85.121.139 uppercaseWord

Function: Implemented by WebView to make uppercase every letter in the word or words surrounding the insertion point or selection, expanding the selection if necessary.
Notes: If either end of the selection partially covers a word, that entire word is made uppercase.

85.121.140 userAgentForURL(url as string) as String

Function: The user agent used for accessing the given URL.
Example: 
msgbox htmlviewer1.WebViewMBS.userAgentForURL("http://www.apple.com")
// shows: Mozilla/5.0 (Macintosh; U; PPC Mac OS X; de-de) AppleWebKit/419 (KHTML, like Gecko)

**Notes:** An empty string on failure else the user-agent string for the supplied URL.

### 85.121.141 zoomPageIn

**Function:** Zooms web page in.
**Notes:** This is a new webview function which is not available on all webview versions. So be aware that you may get an NSExceptionMBS about the function not being available.

### 85.121.142 zoomPageOut

**Function:** Zooms web page out.
**Notes:** This is a new webview function which is not available on all webview versions. So be aware that you may get an NSExceptionMBS about the function not being available.

### 85.121.143 Properties

#### 85.121.144 ApplicationNameForUserAgent as String

**Function:** The application name.
**Example:**

```
webview1.ApplicationNameForUserAgent="test"
// useragent is now "Mozilla/5.0 (Macintosh; U; PPC Mac OS X; de-de) AppleWebKit/417.9 (KHTML, like Gecko) test"
```

**Notes:**

This name will be used in user-agent strings that are chosen for best results in rendering web pages.
(Read and Write computed property)
85.121.145  **ContinuousSpellCheckingEnabled as boolean**

**Function:** Whether continuous spell checking is enabled.  
**Example:**  
```plaintext```
webview1.ContinuousSpellCheckingEnabled=True
```plaintext```

**Notes:**
True if the object should have continuous spell-checking enabled; otherwise, false.
Available in Mac OS X v10.3.9 and later.
(Read and Write computed property)

85.121.146  **CustomTextEncodingName as String**

**Function:** The custom text encoding name.  
**Notes:**
On getting:
The custom text encoding name or "" if no custom text encoding name has been set.

On setting:
Make the page display with a different text encoding; stops any load in progress.
The text encoding passed in overrides the normal text encoding smarts including what’s specified in a web page’s header or HTTP response.
The text encoding automatically goes back to the default when the top level frame changes to a new location.
Setting the text encoding name to nil makes the webView use default encoding rules.
(Read and Write computed property)

85.121.147  **CustomUserAgent as String**

**Function:** The custom user-agent string or nil if no custom user-agent string has been set.  
**Example:**  
```plaintext```
webview1.CustomUserAgent="HelloWorldBrowser"
```plaintext```

**Notes:** (Read and Write computed property)
**85.121.148  dashboardBehavior(behavior as Integer) as boolean**


**Function:** Get or set the htmlviewer behavior.

**Notes:**
This is a private API from Apple which may break in the future.
It seems to exist for the dashboard application to switch some flags for event handling.

Behavior constants:
- `const WebDashboardBehaviorAlwaysSendMouseEventsToAllWindows = 0`
- `const WebDashboardBehaviorAlwaysSendActiveNullEventsToPlugIns = 1`
- `const WebDashboardBehaviorAlwaysAcceptsFirstMouse = 2`
- `const WebDashboardBehaviorAllowWheelScrolling = 3`
- `const WebDashboardBehaviorUseBackwardCompatibilityMode = 4`

(Read and Write computed property)

**85.121.149  DrawsBackground as Boolean**


**Function:** Enable or disable the background drawing.

**Notes:**
Works only with Webkit on Mac OS X 10.3.9 and newer.
Returns false on unsupported Webkit versions.
If you set it to false, the background is not drawn and you can have transparent websites like the Dashboard widgets.
(Read and Write computed property)

**85.121.150  Editable as boolean**


**Function:** Whether the user is allowed to edit the document.

**Notes:**
You can change the receiver’s document programmatically regardless of this setting.
Available in Mac OS X v10.3.9 and later.

Normally, an HTML document is not editable unless the elements within the document are editable. This method provides a low-level way to make the contents of a WebView object editable without altering the document or DOM structure.

True if the receiver allows the user to edit the document. False if an element in the receiver’s document
can be edited only if the CONTENTEDITABLE attribute has been set on the element or one of its parent elements.
(Read and Write computed property)

### 85.121.151 GroupName as string

**Function:** The group name for this WebView.
**Notes:**
JavaScript may access named frames within the same group.
(Read and Write computed property)

### 85.121.152 mediaStyle as String

**Function:** The value to use for the CSS media property.
**Example:**
```javascript
dim w as WebViewMBS // your WebView
w.mediaStyle="print"
```
**Notes:**
Set or get the media style for the WebView. The mediaStyle will override the normal value of the CSS media property. Setting the value to nil will restore the normal value.
(Read and Write computed property)

### 85.121.153 preferences as WebPreferencesMBS

**Function:** The preferences for this webview.
**Notes:**
Nil on failure.
(Read and Write computed property)
85.121.154 PreferencesIdentifier as string

Function: The string to use a prefix for storing values for this WebView in the user defaults database.
Notes: If the WebPreferences for this WebView are stored in the user defaults database, the string set in this method will be used a key prefix.
(Read and Write computed property)

85.121.155 ScrollHeight as single

Function: The height of the scroll view.
Notes: (Read and Write computed property)

85.121.156 ScrollLeft as single

Function: The left position of the scroll view.
Example:
myWebView.ScrollLeft=myWebView.ScrollLeft+5

Notes: You can set this value to scroll manually.
(Read and Write computed property)

85.121.157 ScrollTop as single

Function: The top position of the scroll view.
Example:
myWebView.ScrollTop=myWebView.ScrollTop+5

Notes: You can set this value to scroll manually.
85.121.158 ScrollWidth as single

**Function:** The width of the scroll view.
**Notes:** (Read and Write computed property)

85.121.159 ShouldUpdateWhileOffscreen as boolean

**Function:** Whether the web view should update even when it is not in a window that is currently visible.
**Notes:**
If true, the web view updates regardless if it is visible. If false, it updates only if it is visible, possibly improving performance, and then updates automatically when it becomes visible. The default value is true.

Available in OS X v10.6 and later.
(Read and Write computed property)

85.121.160 smartInsertDeleteEnabled as boolean

**Function:** Whether the receiver should insert or delete spaces around selected words to preserve proper spacing and punctuation.
**Notes:**
If true, the receiver performs smart insert and delete; if false, it inserts and deletes exactly what’s selected.

Available in Mac OS X v10.3.9 and later.
(Read and Write computed property)

85.121.161 TextSizeMultiplier as single

**Function:** The size of the text rendering in views managed by this webView.
**Notes:**
A fractional percentage value, 1.0 is 100% .
(Read and Write computed property)
85.121.162 typingStyle as Variant


**Function:** The CSS typing style.

**Notes:**

This is a DOMCSSStyleDeclarationMBS object.
The typing style is reset automatically when the receiver’s selection changes.
(Read and Write computed property)
85.122  control WKWebViewControlMBS

85.122.1  control WKWebViewControlMBS

MBS Mac64bit Plugin, Plugin Version: 16.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: A WKWebView object displays interactive web content, such as for an in-app browser.
Notes:
This is a control to use WebKit in 32-bit and WebKit 2 in 64-bit.
Most of the events provided by Xojo for the control will not work.
But we can add features over time as needed.

85.122.2  Methods

85.122.3  addScriptMessageHandler(Name as String)

Example:
// register once
browser.addScriptMessageHandler "test"
// later use in javascript:
browser.EvaluateJavaScript("window.webkit.messageHandlers.test.postMessage('Hello');")

Notes:
Name: The name of the message handler.

Adding a script message handler with name name causes the JavaScript function window.webkit.messageHandlers.name.postMessage(messageBody) to be defined in all frames in all web views that use the user content controller.

85.122.4  EvaluateJavaScript(JavaScript as String, Tag as String = "")

Notes: Calls later JavaScriptEvaluated event with result and passed tag value.
85.122.5  goBack

MBS Mac64bit Plugin, Plugin Version: 16.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Navigates to the back item in the back-forward list.

85.122.6  goForward

MBS Mac64bit Plugin, Plugin Version: 16.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Navigates to the forward item in the back-forward list.

85.122.7  LoadData(Data as MemoryBlock, MIMEType as String, textEncodingName as String, baseURL as string = ””)

MBS Mac64bit Plugin, Plugin Version: 16.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sets the webpage contents and base URL.

**Notes:**
- **data:** The data to use as the contents of the webpage.
- **MIMEType:** The MIME type of the data.
- **characterEncodingName:** The data’s character encoding name.
- **baseURL:** A URL used to resolve relative URLs within the document.

85.122.8  LoadHTML(htmlText as String, baseURL as string = ””)

MBS Mac64bit Plugin, Plugin Version: 16.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sets the webpage contents and base URL.

**Notes:**
- **htmlText:** The string to use as the contents of the webpage.
- **baseURL:** A URL used to resolve relative URLs within the document.

85.122.9  LoadURL(URL as string)

MBS Mac64bit Plugin, Plugin Version: 16.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Navigates to a requested URL.
85.122.10 LoadURLRequest(Request as NSURLRequestMBS)

MBS Mac64bit Plugin, Plugin Version: 16.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Navigates to a requested URL.

85.122.11 reload

MBS Mac64bit Plugin, Plugin Version: 16.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Reloads the current page.

85.122.12 reloadFromOrigin

MBS Mac64bit Plugin, Plugin Version: 16.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Reloads the current page, performing end-to-end revalidation using cache-validating conditionals if possible.

85.122.13 removeScriptMessageHandler(Name as String)

MBS Mac64bit Plugin, Plugin Version: 18.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Removes a script message handler.  
**Notes:** name: The name of the message handler to remove.

85.122.14 stopLoading

MBS Mac64bit Plugin, Plugin Version: 16.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Stops loading all resources on the current page.

85.122.15 takeSnapshot(tag as string = "")

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Requests a snapshot.  
**Notes:**  
Calls later takeSnapshotCompleted event.  
Tag is passed to event to distinguish various snapshot requests.
### 85.122.16 Properties

#### 85.122.17 allowFileAccessFromFileURLs as Boolean

MBS Mac64bit Plugin, Plugin Version: 18.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Allow file access for file URLs.  
**Notes:**  
Access to files is allowed for some files. Please check WebKit documentation for details.

Set allowFileAccessFromFileURLs and allowUniversalAccessFromFileURLs to true to disable all the security checks to block local file access for websites. allowUniversalAccessFromFileURLs would allow all file URLs. allowFileAccessFromFileURLs would only allow in same path.  
(Read and Write property)

#### 85.122.18 allowsBackForwardNavigationGestures as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value indicating whether horizontal swipe gestures will trigger back-forward list navigations.  
**Notes:**  
The default value is false. Available for 64-bit on macOS 10.10 or newer.  
(Read and Write property)

#### 85.122.19 allowsLinkPreview as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value that determines whether pressing on a link displays a preview of the destination for the link.  
**Notes:**  
(Read and Write property)

#### 85.122.20 allowUniversalAccessFromFileURLs as Boolean

MBS Mac64bit Plugin, Plugin Version: 18.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Allow universal file access for URLs.  
**Notes:**  
Any file URL will be loaded if true. Please check WebKit documentation for details.
85.122.21 CanGoBack as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: A Boolean value indicating whether there is a back item in the back-forward list that can be navigated to.
Notes: (Read only property)

85.122.22 CanGoForward as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: A Boolean value indicating whether there is a forward item in the back-forward list that can be navigated to.
Notes: (Read only property)

85.122.23 customUserAgent as String

Notes: If no custom user agent string has been set, this is set to "". Available in 32-bit. Available in 64-bit for macOS 10.11 or newer. (Read and Write property)

85.122.24 developerExtrasEnabled as Boolean

Notes: For WebKit 2 (64bit) to enable the context menu to inspect items. (Read and Write property)

85.122.25 EstimatedProgress as Double

MBS Mac64bit Plugin, Plugin Version: 16.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: An estimate of what fraction of the current navigation has been loaded.
Notes:
This value ranges from 0.0 to 1.0 based on the total number of bytes expected to be received, including the main document and all of its potential subresources. After a navigation loading completes, the estimatedProgress remains at 1.0 until a new navigation starts, at which point the estimatedProgress is reset to 0.0. 
(Read only property)

**85.122.26** hasOnlySecureContent as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function**: A Boolean value indicating whether all resources on the page have been loaded through securely encrypted connections.
**Notes**: Only set for 64-bit, always false on 32-bit. 
(Read only property)

**85.122.27** IsLoading as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function**: A Boolean value indicating whether the view is currently loading content.
**Notes**: (Read only property)

**85.122.28** javaEnabled as Boolean

MBS Mac64bit Plugin, Plugin Version: 17.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function**: Whether java is enabled.
**Notes**: (Read and Write property)

**85.122.29** javaScriptCanOpenWindowsAutomatically as Boolean

MBS Mac64bit Plugin, Plugin Version: 17.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function**: Whether javascript can open new windows.
**Notes**: (Read and Write property)

**85.122.30** javaScriptEnabled as Boolean

MBS Mac64bit Plugin, Plugin Version: 17.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function**: Whether javascript is enabled.
85.122.31  loadsImagesAutomatically as Boolean

MBS Mac64bit Plugin, Plugin Version: 17.3, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Function:** Whether to load images automatically.  
**Notes:** (Read and Write property)

85.122.32  minimumFontSize as Double

MBS Mac64bit Plugin, Plugin Version: 17.3, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Function:** The minimum font size to use.  
**Notes:** (Read and Write property)

85.122.33  plugInsEnabled as Boolean

MBS Mac64bit Plugin, Plugin Version: 17.3, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Function:** Whether plugins are enabled.  
**Notes:** (Read and Write property)

85.122.34  Title as String

MBS Mac64bit Plugin, Plugin Version: 16.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Function:** The page title.  
**Notes:** (Read only property)

85.122.35  URL as String

MBS Mac64bit Plugin, Plugin Version: 16.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Function:** The active URL.  
**Notes:** This is the URL that should be reflected in the user interface.  
(Read only property)
85.122.36  View as NSViewMBS

MBS Mac64bit Plugin, Plugin Version: 16.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The used view.
**Notes:**
Should be either a WebView (32bit) or WKWebView (64bit).
(Read only property)

85.122.37  Events

85.122.38  BoundsChanged

MBS Mac64bit Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event called when the bounds, but not the frame, changed.

85.122.39  decidePolicyForNavigationAction(URL as String, NavigationType as String, modifierFlags as Integer, buttonNumber as Integer, newWindow as boolean, frameName as string) as boolean

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Decides whether to allow or cancel a navigation.
**Notes:**
Return true to cancel or false to allow.
URL is the URL to load.
NavigationType defines what navigation is happening: LinkClicked, FormSubmitted, BackForward, Reload, FormResubmitted or Other.
modifierFlags: The keyboard modifiers.
buttonNumber: Which mouse button was clicked: 0 for left button, 1 for middle button, 2 for right button
newWindow: True if a new window should be opened or false if not.
frameName: The frame name. (32-bit only)

85.122.40  didCommitNavigation

MBS Mac64bit Plugin, Plugin Version: 17.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Invoked when content starts arriving for the main frame.
85.122.41  didFailNavigation(Error as NSErrorMBS)

MBS Mac64bit Plugin, Plugin Version: 17.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Invoked when an error occurs during a committed main frame navigation.

85.122.42  didFailProvisionalNavigation(Error as NSErrorMBS)

MBS Mac64bit Plugin, Plugin Version: 17.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Invoked when an error occurs while starting to load data for the main frame.

85.122.43  didFinishNavigation

MBS Mac64bit Plugin, Plugin Version: 17.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Invoked when a main frame navigation completes.

**Notes:** Same as DocumentComplete in HTMLViewer.

85.122.44  didReceiveScriptMessage(Body as Variant, name as String)

MBS Mac64bit Plugin, Plugin Version: 18.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Invoked when a script message is received from a webpage.

**Notes:**

body: The body of the message. Automatic translated from Javascript types.
name: The name of the message handler to which the message is sent.

85.122.45  didReceiveServerRedirectForProvisionalNavigation

MBS Mac64bit Plugin, Plugin Version: 17.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Invoked when a server redirect is received for the main frame.

85.122.46  didStartProvisionalNavigation

MBS Mac64bit Plugin, Plugin Version: 17.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Invoked when a main frame navigation starts.
85.122.47 EnableMenuItems

MBS Mac64bit Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event where you can enable menu items.

85.122.48 FrameChanged

MBS Mac64bit Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event called when the frame changed.

85.122.49 GotFocus

MBS Mac64bit Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The control itself got focus. **Notes:** This only fires if the control itself got focus and not a sub control.

85.122.50 JavaScriptEvaluated(JavaScript as String, Result as Variant, Error as NSErrorMBS, Tag as String)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** JavaScript was evaluated. **Notes:** Error is only set with 64-bit, not with 32-bit. Tag is passed from EvaluateJavaScript call.

85.122.51 LostFocus

MBS Mac64bit Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The control lost focus. **Notes:** This only fires if the control itself lost focus and not a sub control.

85.122.52 MenuAction(HitItem as MenuItem) As Boolean

MBS Mac64bit Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called when a menuitem is chosen. **Notes:** This allows the control to react on its relevant menu items. Please return true if you handled it or
false to give others a chance.

85.122.53 MouseDown(x as Integer, y as Integer, Modifiers as Integer) As Boolean

MBS Mac64bit Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The mouse button was pressed inside the controls region at the location passed in to x, y.

**Notes:**
The coordinates x and y are local to the control, i.e. they represent the position of the mouse click relative to the upper-left corner or the Control.
Return True if you are going to handle the MouseDown. In such a case:

- The Action event, if any, will not execute and the state of the object will not change.
- You will receive the MouseDrag and MouseUp events.

If you return False, the system handles the MouseDown so the above event handlers do not get called.

85.122.54 MouseDrag(x as Integer, y as Integer)

MBS Mac64bit Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** This event fires continuously after the mouse button was pressed inside the Control.

**Notes:**
Mouse location is local to the control passed in to x, y.
As this event is fired continuously (hundreds of time per second), it is your responsibility to determine if the mouse has really moved.

85.122.55 MouseUp(x as Integer, y as Integer)

MBS Mac64bit Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The mouse button was released.

**Notes:** Use the x and y parameters to determine if the mouse button was released within the control’s boundaries.

85.122.56 runJavaScriptAlertPanel(message as String)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Displays a JavaScript alert panel.
Notes:
message: The message to display.

If you do not implement this method, the web view will behave as if the user selected the OK button.

85.122.57 runJavaScriptConfirmPanel(message as String) as boolean

Notes:
message: The message to display.

Return true if the user chose OK, false if the user chose Cancel.

If you do not implement this method, the web view will behave as if the user selected the Cancel button.

85.122.58 runJavaScriptTextInputPanel(prompt as String, defaultText as String) as String

Notes:
message: The message to display.
defaultText: The initial text to display in the text entry field.

Return the entered text if the user chose OK, otherwise "".

If you do not implement this method, the web view will behave as if the user selected the Cancel button.

85.122.59 ScaleFactorChanged(NewFactor as Double)

MBS Mac64bit Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The backing store scale factor has changed.
Notes: Please invalidate any cached bitmaps or other relevant state.
85.122.60  takeSnapshotCompleted(image as NSImageMBS, error as NSErrorMBS, tag as string)

MBS Mac64bit Plugin, Plugin Version: 17.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Called when snapshot of website is completed. Notes: If snapshot creation failed, error is set.
Chapter 86

HTMLViewer Win

86.1 class ChromiumBrowserMBS

86.1.1 class ChromiumBrowserMBS


Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

86.1.2 Methods

86.1.3 CanGoBack as boolean


Example:

```vba
dim m as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
MsgBox str(m.CanGoBack)
```

86.1.4 CanGoForward as boolean


Example:
86.1.5 ClearFocus

MBS Win Plugin, Plugin Version: 15.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Clears focus.
**Example:**
```vba
dim m as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
m.ClearFocus
```

86.1.6 ClearHistory

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Clear the back/forward browsing history.
**Example:**
```vba
dim m as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
m.ClearHistory
```

**Notes:** Only supported for Chromium 2.x, but not 3.x.

86.1.7 CloseDevTools

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Explicitly close the developer tools window if one exists for this browser instance.
**Example:**
```vba
dim m as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
m.CloseDevTools
```

**Notes:** Only supported for Chromium 2.x, but not 3.x.
86.1.8 Constructor

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The private constructor.

86.1.9 Destructor

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The destructor.

86.1.10 ExecuteJavaScript(jsCode as string, scriptUrl as string = "", startLine as Integer = 0)

MBS Win Plugin, Plugin Version: 14.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Execute a string of JavaScript code in this frame.
**Example:**
```vba
// go back to last page via javascript
dim b as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
b.ExecuteJavaScript "window.history.back();"
```

**Notes:** The scriptUrl parameter is the URL where the script in question can be found, if any. The renderer may request this URL to show the developer the source of the error. The startLine parameter is the base line number to use for error reporting.

86.1.11 Find(identifier as Integer, searchText as string, forward as boolean, MatchCase as boolean, FindNext as boolean)

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Search for searchText.
**Example:**
```vba
dim m as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
m.Find 1, "Hello", true, false, false
// later
m.Find 1, "Hello", true, false, true
```

**Notes:** Identifier can be used to have multiple searches running simultaneously. forward indicates whether
to search forward or backward within the page. matchCase indicates whether the search should be case-sensitive. findNext indicates whether this is the first request or a follow-up.

### 86.1.12 Frame(ID as Int64) as ChromiumFrameMBS

MBS Win Plugin, Plugin Version: 17.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: Returns the frame with the specified identifier, or nil if not found.

Example:

```vba
dim b as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
if b<>Nil then
    dim idn() as Int64 = b.FrameIdentifiers
    dim ids() as string
    for each n as Int64 in idn
        dim f as ChromiumFrameMBS = b.Frame(n)
        ids.Append str(n)+" " +f.Name
    next
    MsgBox "FrameIdentifiers: "+EndOfLine+EndOfLine+Join(ids, EndOfLine)
end if
```

See also:

- 86.1.13 Frame(name as string) as ChromiumFrameMBS

### 86.1.13 Frame(name as string) as ChromiumFrameMBS

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: Returns the frame with the specified name, or nil if not found.

Example:

```vba
dim b as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
dim f as ChromiumFrameMBS = b.Frame("TopFrame")
dim s as string = f.Name
MsgBox s
```

See also:

- 86.1.12 Frame(ID as Int64) as ChromiumFrameMBS
86.1.14 FrameIdentifiers as Int64()

MBS Win Plugin, Plugin Version: 17.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Queries list of frame identifiers.

**Example:**

```vba
dim b as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
if b<>Nil then
    dim idn() as Int64= b.FrameIdentifiers
    dim ids() as string
    for each n as Int64 in idn
        dim f as ChromiumFrameMBS = b.Frame(n)
        ids.Append str(n)+" "+f.Name
    next
    MsgBox "FrameIdentifiers: " +EndOfLine+EndOfLine+Join(ids, EndOfLine)
end if
```

86.1.15 FrameNames as String()

MBS Win Plugin, Plugin Version: 17.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Queries list of frame names.

**Example:**

```vba
dim b as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
if b<>Nil then
    dim Names() as string = b.FrameNames
    MsgBox "FrameNames: " +EndOfLine+EndOfLine+Join(Names, EndOfLine)
end if
```

**Notes:** Often frames are unnamed, so named is generic.

86.1.16 GoBack


**Example:**

```vba
dim m as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
m.GoBack
```
86.1.17 GoForward

**Example:**
```vbnet
dim m as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
m.GoForward
```

86.1.18 HasDocument as boolean

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Returns true if a document has been loaded in the browser.
**Example:**
```vbnet
dim m as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
MsgBox str(m.HasDocument)
```

86.1.19 HidePopup

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Hide the currently visible popup, if any.
**Example:**
```vbnet
dim m as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
m.HidePopup
```

**Notes:** Only supported for Chromium 2.x, but not 3.x.

86.1.20 Image(width as Integer, height as Integer) as Picture

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Get the raw image data contained in the specified element without performing validation.
**Example:**
```vbnet
dim m as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
dim p as picture = m.Image(600, 800)
window1.backdrop = p
```
86.1. CLASS CHROMIUMBROWSERMBS

Notes:
The specified width and height dimensions must match the current element size.
Only supported for Chromium 2.x, but not 3.x.

86.1.21 invalidate(x as Integer, y as Integer, width as Integer, height as Integer)

Example:
```
dim m as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
m.invalidate 0, 0, 600, 800
```

Notes: This function is only used when window rendering is disabled and will result in a call to HandlePaint().

86.1.22 IsLoading as boolean

Notes:
Returns true while page is loading.
Only available for Xojo 2017 and newer.

86.1.23 IsPopup as boolean

Example:
```
dim m as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
MsgBox str(m.IsPopup)
```
86.1.24 LibVersion as Integer

MBS Win Plugin, Plugin Version: 14.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Returns revision number of the Chromium library.

**Example:**

```vbnet
Dim b As ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
MsgBox str(b.LibVersion)
```

**Notes:**

up to Xojo 2014r1 this is 607.
Xojo 2014r2 uses 1562.

86.1.25 Release

MBS Win Plugin, Plugin Version: 15.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Releases the browser object.

**Notes:**

You don’t need this normally.
This method can be used for working around Feedback case 33565.

86.1.26 Reload

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Reload the current page.

**Example:**

```vbnet
Dim m As ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
m.Reload
```

86.1.27 ReloadIgnoreCache

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Reload the current page ignoring any cached data.

**Example:**

```vbnet
Dim m As ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
m.ReloadIgnoreCache
```
86.1.28  Retain

MBS Win Plugin, Plugin Version: 15.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Retains the browser object.
**Notes:** You don’t need this normally.

86.1.29  SetFocus(enableFocus as boolean = true)

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Set focus for the browser window.
**Example:**
```
dim m as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
m.SetFocus
```

**Notes:** If enable is true focus will be set to the window. Otherwise, focus will be removed.

86.1.30  setSize(width as Integer, height as Integer)

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Set the size of the specified element.
**Example:**
```
dim m as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
m.setSize 600, 800
```

**Notes:** Only supported for Chromium 2.x, but not 3.x.

86.1.31  ShowDevTools

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Open developer tools in its own window.
**Example:**
```
dim m as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
m.ShowDevTools
```
Notes: Only supported for Chromium 2.x, but not 3.x.

86.1.32  StopFinding(clearSelection as boolean)

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function:  
Cancel all searches that are currently going on.

86.1.33  StopLoad

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function:  
Stop loading the page.  
Example:  
```vba
dim m as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS  
m.StopLoad
```

86.1.34  Properties

86.1.35  FocusedFrame as ChromiumFrameMBS

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function:  
Returns the focused frame for the browser window.  
Example:  
```vba
dim b as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS  
dim f as ChromiumFrameMBS = b.FocusedFrame  
dim s as string = f.URL  
MsgBox s
```

Notes: (Read only property)

86.1.36  FrameCount as Integer

MBS Win Plugin, Plugin Version: 17.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function:  
Queries frame count.
Example:
```
dim b as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
if b<>Nil then
    MsgBox "FrameCount: "+str(b.FrameCount)
end if
```

Notes:
Only available in Xojo 2017 and newer.
(Read only property)

86.1.37 Handle as Integer

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The internal object reference.
**Notes:** (Read only property)

86.1.38 Height as Integer

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Queries height of the browser.
**Example:**
```
dim m as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
MsgBox str(m.Width) + " x " + str(m.Height)
```

Notes:
Only supported for Chromium 2.x, but not 3.x.
(Read only property)

86.1.39 MainFrame as ChromiumFrameMBS

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Returns the main (top-level) frame for the browser window.
**Example:**
```
dim b as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
dim f as ChromiumFrameMBS = bMainFrame
dim s as string = f.URL
```
Notes: (Read only property)

86.1.40 Parent as HTMLViewer

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The owner htmlviewer.
**Notes:** (Read only property)

86.1.41 PopupVisible as Boolean

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Returns true if a popup is currently visible.
**Example:**
```vbnet
dim m as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
msgbox str(m.PopupVisible)
```

**Notes:**
Only supported for Chromium 2.x, but not 3.x.
(Read only property)

86.1.42 ReferenceCount as Integer

MBS Win Plugin, Plugin Version: 15.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Queries reference count of this browser object.
**Notes:**
Normal it is 3 or 4, but due to a bug in Xojo, it can increase a lot.
See Feedback case 33565 for details.
(Read only property)

86.1.43 Width as Integer

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Queries width of the browser.
86.1. **CLASS CHROMIUMBROWSERMBS**

**Example:**

```vba
dim m as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
MsgBox str(m.Width) + " x " + str(m.Height)
```

**Notes:**

Only supported for Chromium 2.x, but not 3.x.
(Read only property)

---

### 86.1.44 WindowRenderingDisabled as Boolean

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Returns true if window rendering is disabled.

**Notes:**

Only supported for Chromium 2.x, but not 3.x.
(Read only property)

---

### 86.1.45 ZoomLevel as Double

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Get/Set the zoom level.

**Example:**

```vba
dim b as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
b.ZoomLevel = 2
```

**Notes:**

Change the zoom level to the specified value.
(Read and Write property)
86.2 class ChromiumCookieManagerMBS

86.2.1 class ChromiumCookieManagerMBS

MBS Win Plugin, Plugin Version: 15.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The class to manage cookies for Chromium on Windows.

**Notes:**
May need to have a HTMLViewer first being initialized by Xojo before the Chromium DLLs can work properly.

Due to bugs in thread or stack handling, this class currently does not work well.
It frequently crashes in the Chromium DLLs when calling AllCookies method to query cookies.

86.2.2 Methods

86.2.3 AllCookies as ChromiumCookieMBS()

MBS Win Plugin, Plugin Version: 15.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Visit all cookies.

**Example:**
```vba
dim m as new ChromiumCookieManagerMBS
dim cookies() as ChromiumCookieMBS = m.AllCookies
MsgBox str(cookies.Ubound+1)+" cookies"
```

**Notes:** The returned cookies are ordered by longest path, then by earliest creation date. Returns false (0) if cookies cannot be accessed.

86.2.4 Constructor

MBS Win Plugin, Plugin Version: 15.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The constructor.

**Notes:**
Can raise exception if no cookie manager is available, e.g. when calling on Linux or Mac OS X or Windows if you don’t have the dlls.
May not work if the Chromium was not initialized before by Xojo.
See also:

- 86.2.5 Constructor(path as string)
86.2. CLASS CHROMIUMCOOKIEMANAGERMBS

86.2.5 Constructor(path as string)

MBS Win Plugin, Plugin Version: 16.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The constructor for a new cookie manager.

**Notes:**
Can raise exception if no cookie manager is available, e.g. when calling on Linux or Mac OS X or Windows if you don’t have the dlls.
May not work if the Chromium was not initialized before by Xojo.
See also:

- 86.2.4 Constructor

86.2.6 DeleteAllCookies as Integer

MBS Win Plugin, Plugin Version: 15.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Deletes all cookies.

**Notes:** Returns number of deleted cookies.

86.2.7 DeleteCookie(URL as string, CookieName as string) as boolean

MBS Win Plugin, Plugin Version: 15.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Delete all cookies that match the specified parameters.

**Notes:**
If both url and values cookieName are specified all host and domain cookies matching both will be deleted.
If only | url | is specified all host cookies (but not domain cookies) irrespective of path will be deleted. If url is empty all cookies for all hosts and domains will be deleted. Returns false if a non-empty invalid URL is specified or if cookies cannot be accessed.
Returns true on success.

86.2.8 DeleteCookies(URLs() as string, CookieNames() as string) as Integer

MBS Win Plugin, Plugin Version: 15.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Deletes several cookies.

**Notes:**
Same as DeleteCookie, but with arrays for parameters.
Returns number of successful delete attempts.
86.2.9 DeleteURLCookies(URL as String, HTTPOnly as boolean = false) as Integer

MBS Win Plugin, Plugin Version: 15.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: Deletes all cookies for a given URL.
Notes: The cookies to delete are filtered by the given url scheme, host, domain and path. If includeHttpOnly is true HTTP-only cookies will also be included in the deletion.
Returns number of cookies deleted.

86.2.10 Destructor


86.2.11 SetCookie(URL as string, cookie as ChromiumCookieMBS) as boolean

MBS Win Plugin, Plugin Version: 15.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: Sets a cookie given a valid URL and explicit user-provided cookie attributes.
Example:

```vba
dim d as new Date
dim c as new ChromiumCookieMBS

c.Domain = "www.mbsplugins.de"
c.Path = "/"
c.CreationDate = d
c.LastAccessDate = d
c.ExpirationDate = nil
c.Value = "test " + d.SQLDateTime
c.Name = "test"
c.Secure = false
c.HTTPOnly = false

if CookieManager.SetCookie(c.URL, c) then
t_msgbox "OK"
else
MsgBox "Failed to add cookie"
end if
```

Notes: This function expects each attribute to be well-formed. It will check for disallowed characters (e.g. the ';' character is disallowed within the cookie value attribute) and will return false without setting the
cookie if such characters are found.

### 86.2.12 SetCookies(URL() as string, cookies() as ChromiumCookieMBS) as Integer

MBS Win Plugin, Plugin Version: 15.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Sets a lot of cookies.  
**Notes:** 
Same as SetCookie, but with arrays of URLs and cookie objects.  
Returns number of cookies created successfully.

### 86.2.13 SetStoragePath(Path as string) as boolean

MBS Win Plugin, Plugin Version: 15.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Sets the directory path that will be used for storing cookie data.  
**Example:**
```vbnet
dim CookieManager as ChromiumCookieManagerMBS // property of window/app

dim f as FolderItem = SpecialFolder.Desktop.Child("cookies")
f.CreateAsFolder

CookieManager = new ChromiumCookieManagerMBS

if CookieManager.SetStoragePath(f.NativePath) then
    MsgBox "OK"
else
    MsgBox "Failed"
end if
```

**Notes:**

If path is empty data will be stored in memory only.  
Returns false if cookies cannot be accessed.

### 86.2.14 URLCookies(URL as String, HTTPOnly as boolean = false) as ChromiumCookieMBS()

MBS Win Plugin, Plugin Version: 15.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Queries a subset of cookies.
Notes:
The results are filtered by the given url scheme, host, domain and path. If includeHttpOnly is true HTTP-only cookies will also be included in the results. The returned cookies are ordered by longest path, then by earliest creation date. Returns empty array if cookies cannot be accessed. Returns nil on any error like low memory.

86.2.15 Properties

86.2.16 Handle as Integer

MBS Win Plugin, Plugin Version: 15.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The internal object reference.
**Notes:** (Read only property)

86.2.17 ReferenceCount as Integer

MBS Win Plugin, Plugin Version: 15.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The reference count for the internal object.
**Notes:**
Only for debugging.
(Read only property)
86.3.  CLASS CHROMIUMCOOKIEMBS

86.3  class ChromiumCookieMBS

86.3.1  class ChromiumCookieMBS

MBS Win Plugin, Plugin Version: 15.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The class for a cookie with WebKit on Windows.

86.3.2  Methods

86.3.3  Constructor

MBS Win Plugin, Plugin Version: 15.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The constructor.

86.3.4  Destructor

MBS Win Plugin, Plugin Version: 15.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The destructor.

86.3.5  Properties

86.3.6  CreationDate as Date

MBS Win Plugin, Plugin Version: 15.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The cookie creation date.
**Notes:**
This is automatically populated by the system on cookie creation.
(Read and Write property)

86.3.7  Domain as String

MBS Win Plugin, Plugin Version: 15.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The domain for this cookie.
**Notes:**
If domain is empty a host cookie will be created instead of a domain cookie. Domain cookies are stored with a leading "." and are visible to sub-domains whereas host cookies are not.
86.3.8 ExpirationDate as Date

Notes: Can be nil to have no expiration date.
(Read and Write property)

86.3.9 HTTPonly as Boolean

Notes: If httponly is true the cookie will only be sent for HTTP requests.
(Read and Write property)

86.3.10 LastAccessDate as Date

MBS Win Plugin, Plugin Version: 15.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: The cookie last access date.
Notes: This is automatically populated by the system on access.
(Read and Write property)

86.3.11 Name as String

Notes: (Read and Write property)

86.3.12 Path as String

Notes:
If path is non-empty only URLs at or below the path will get the cookie value.
(Read and Write property)

### 86.3.13  Scheme as String

MBS Win Plugin, Plugin Version: 15.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The scheme.
**Notes:**
Depends on secure setting only.
Can be "http://" or "https://".
(Read only property)

### 86.3.14  Secure as Boolean

MBS Win Plugin, Plugin Version: 15.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Whether this is a HTTPS only cookie.
**Notes:**
If secure is true the cookie will only be sent for HTTPS requests.
(Read and Write property)

### 86.3.15  URL as String

MBS Win Plugin, Plugin Version: 15.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The URL of the cookie.
**Notes:**
Build from Secure, Path and Domain.
(Read only property)

### 86.3.16  Value as String

MBS Win Plugin, Plugin Version: 15.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The cookie value.
**Notes:** (Read and Write property)
86.4 class ChromiumFrameMBS

86.4.1 class ChromiumFrameMBS

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The class for a webframe with WebKit on Windows.

**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

86.4.2 Methods

86.4.3 Constructor


86.4.4 copy

**Example:**

```vbnet
dim b as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS  
b>MainFrame.copy
```

86.4.5 cut

**Example:**

```vbnet
dim b as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS  
b.MainFrame.cut
```

86.4.6 delete

86.4. CLASS CHROMIUMFRAMEMBS

Example:

```vba
dim b as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
b>MainFrame.delete
```

86.4.7 Destructor

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The destructor.

86.4.8 ExecuteJavaScript(jsCode as string, scriptUrl as string = "", startLine as Integer = 0)

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Execute a string of JavaScript code in this frame.

**Example:**

```vba
// go back to last page via javascript
dim b as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
dim m as ChromiumFrameMBS = b.mainFrame
m.ExecuteJavaScript "window.history.back();"
```

**Notes:** The scriptUrl parameter is the URL where the script in question can be found, if any. The renderer may request this URL to show the developer the source of the error. The startLine parameter is the base line number to use for error reporting.

86.4.9 LoadString(StringValue as string, URL as string)

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Load the contents of StringValue with the optional dummy target URL.

**Example:**

```vba
dim b as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
dim m as ChromiumFrameMBS = b.mainFrame
m.LoadString "<p>Hello</p>", "blank:about"
```
86.4.10 LoadURL(URL as string)

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Load the specified url.

**Example:**

```vbscript
dim b as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
dim m as ChromiumFrameMBS = b.mainFrame
m.LoadURL "http://www.macrumors.com"
```

86.4.11 paste


**Example:**

```vbscript
dim b as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
bMainFrame.paste
```

86.4.12 print

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Execute printing in the this frame. The user will be prompted with the print dialog appropriate to the operating system.

**Example:**

```vbscript
dim b as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
b>MainFrame.print
```

**Notes:** Only supported for Chromium 2.x, but not 3.x.

86.4.13 redo

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Execute redo in this frame.

**Example:**

```vbscript
dim b as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
b.MainFrame.redo
```
86.4.14 SelectAll

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Execute select all in this frame.

**Example:**
```vbnet
dim b as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
dim m as ChromiumFrameMBS = b.mainFrame
m.SelectAll
```

86.4.15 undo


**Example:**
```vbnet
dim b as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
b.MainFrame.undo
```

86.4.16 ViewSource

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Save this frame’s HTML source to a temporary file and open it in the default text viewing application.

**Example:**
```vbnet
dim b as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
dim m as ChromiumFrameMBS = b.mainFrame
m.ViewSource
```

86.4.17 Properties

86.4.18 Browser as ChromiumBrowserMBS

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Returns the browser that this frame belongs to.
86.4.19 **Handle as Integer**

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The internal object reference. **Notes:** (Read only property)

86.4.20 **identifier as Int64**

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Returns the globally unique identifier for this frame. **Example:**

```vbnet
dim b as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
dim m as ChromiumFrameMBS = b.mainFrame
MsgBox str(m.identifier)
```

**Notes:** (Read only property)

86.4.21 **IsFocused as Boolean**

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Returns true if this is the focused frame. **Example:**

```vbnet
dim b as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
dim m as ChromiumFrameMBS = b.mainFrame
MsgBox str(m.IsFocused)
```

**Notes:** (Read only property)

86.4.22 **IsMain as Boolean**

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Returns true if this is the main (top-level) frame. **Example:**
86.4. **CLASS CHROMIUMFRAMEMBS**

```vbscript
dim b as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
dim m as ChromiumFrameMBS = b.mainFrame
MsgBox str(m.IsMain)
```

**Notes:** (Read only property)

### 86.4.23 Name as String

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Returns the name for this frame.

**Example:**

```vbscript
dim b as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
dim m as ChromiumFrameMBS = b.mainFrame
MsgBox m.Name
```

**Notes:**

If the frame has an assigned name (for example, set via the iframe "name" attribute) then that value will be returned. Otherwise a unique name will be constructed based on the frame parent hierarchy. The main (top-level) frame will always have an empty name value.

(Read only property)

### 86.4.24 Parent as HTMLViewer


**Notes:** (Read only property)

### 86.4.25 ParentFrame as ChromiumFrameMBS

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Returns the parent of this frame or nil if this is the main (top-level) frame.

**Notes:** (Read only property)
86.4.26 Source as String

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Returns this frame’s HTML source as a string.
**Example:**
```vbnet
dim b as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
dim f as ChromiumFrameMBS = b.MainFrame
dim s as string = f.Source
Break // view in debugger
```

**Notes:** (Read only property)

86.4.27 Text as String

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Returns this frame’s display text as a string.
**Example:**
```vbnet
dim b as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
dim f as ChromiumFrameMBS = b.MainFrame
dim s as string = f.Text
Break // view in debugger
```

**Notes:** (Read only property)

86.4.28 URL as String

MBS Win Plugin, Plugin Version: 14.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Returns the URL currently loaded in this frame.
**Example:**
```vbnet
dim b as ChromiumBrowserMBS = HTMLViewer1.ChromiumBrowserMBS
dim f as ChromiumFrameMBS = b.MainFrame
dim s as string = f.URL
MsgBox s
```

**Notes:** (Read only property)
86.5. class ChromiumWebPluginInfoMBS

86.5.1 class ChromiumWebPluginInfoMBS

MBS Win Plugin, Plugin Version: 16.0, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The class for details on installed plugins.  
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

86.5.2 Methods

86.5.3 Constructor

MBS Win Plugin, Plugin Version: 16.0, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The private constructor.

86.5.4 Destructor

MBS Win Plugin, Plugin Version: 16.0, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The destructor.

86.5.5 Plugins as ChromiumWebPluginInfoMBS()

MBS Win Plugin, Plugin Version: 16.0, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Queries list of plugins.  
**Notes:** Those are the plugins Chromium found on the Windows PC. e.g. 5 different versions of QuickTime Plugin.

86.5.6 Properties

86.5.7 Description as String

MBS Win Plugin, Plugin Version: 16.0, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** A description of the plugin from the version information.  
**Notes:** (Read only property)
86.5.8 Name as String

MBS Win Plugin, Plugin Version: 16.0, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The plugin name (i.e. Flash).
**Notes:** (Read only property)

86.5.9 Path as String

MBS Win Plugin, Plugin Version: 16.0, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The plugin file path (DLL/bundle/library).
**Notes:** (Read only property)

86.5.10 Version as String

MBS Win Plugin, Plugin Version: 16.0, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The version of the plugin (may be OS-specific).
**Notes:** (Read only property)
Chapter 87

iCloud

87.1 class NSComparisonPredicateMBS

87.1.1 class NSComparisonPredicateMBS

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** NSComparisonPredicateMBS is a subclass of NSPredicateMBS that you use to compare expressions. **Example:**

```vba
' dim n1 as NSExpressionMBS = NSExpressionMBS.expressionForConstantValue(4)
' dim n2 as NSExpressionMBS = NSExpressionMBS.expressionForConstantValue(9)

' dim modifier as Integer = NSComparisonPredicateMBS.NSDirectPredicateModifier
' dim type as Integer = NSComparisonPredicateMBS.NSGreaterThanPredicateOperatorType
' dim options as Integer = 0

' dim c as new NSComparisonPredicateMBS(n1, n2, Modifier, type, options)

MsgBox c.predicateFormat
```

**Notes:**

You use comparison predicates to compare the results of two expressions. You create a comparison predicate with an operator, a left expression, and a right expression. You represent the expressions using instances of the NSExpressionMBS class. When you evaluate the predicate, it returns as a BOOL value the result of invoking the operator with the results of evaluating the expressions. Subclass of the NSPredicateMBS class.
87.1.2 Methods

87.1.3 comparisonPredicateModifier as Integer


Function: Returns the comparison predicate modifier for the receiver.

Notes:
Available in Mac OS X v10.4 and later.
The default value is NSDirectPredicateModifier.

87.1.4 Constructor(LeftExpression as NSExpressionMBS, rightExpression as NSExpressionMBS, modifier as UInt32, type as UInt32, options as UInt32)


Function: Initializes a predicate to a given type formed by combining given left and right expressions using a given modifier and options.

Example:

dim n1 as NSExpressionMBS = NSExpressionMBS.expressionForConstantValue(4)
dim n2 as NSExpressionMBS = NSExpressionMBS.expressionForConstantValue(9)

dim modifier as Integer = NSComparisonPredicateMBS.NSDirectPredicateModifier
dim type as Integer = NSComparisonPredicateMBS.NSGreaterThanPredicateOperatorType
dim options as Integer = 0

dim c as new NSComparisonPredicateMBS(n1, n2, Modifier, type, options)

MsgBox c.predicateFormat

Notes:
LeftExpression: The left hand expression.
rightExpression: The right hand expression.
modifier: The modifier to apply.
type: The predicate operator type.
options: The options to apply (see constants). For no options, pass 0.

The receiver, initialized to a predicate of type type formed by combining the left and right expressions using the modifier and options.
Available in Mac OS X v10.4 and later.
87.1.5  **leftExpression as NSExpressionMBS**

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns the left expression for the receiver, or nil if there is none.

87.1.6  **options as Integer**

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns the options that are set for the receiver.

87.1.7  **predicate(LeftExpression as NSExpressionMBS, rightExpression as NSExpressionMBS, modifier as UInt32, type as UInt32, options as UInt32) as NSPredicateMBS**

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Creates and returns a predicate of a given type formed by combining given left and right expressions using a given modifier and options.

**Notes:**

LeftExpression: The left hand expression.
rightExpression: The right hand expression.
modifier: The modifier to apply.
type: The predicate operator type.
options: The options to apply (see "NSComparisonPredicate Options"). For no options, pass 0.

Returns a new predicate of type type formed by combining the given left and right expressions using the modifier and options.
Available in Mac OS X v10.4 and later.

87.1.8  **predicateOperatorType as Integer**

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns the predicate type for the receiver.

87.1.9  **rightExpression as NSExpressionMBS**

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns the right expression for the receiver, or nil if there is none.
87.1.10 Constants

87.1.11 NSAllPredicateModifier = 1

MBS MacCloud Plugin, Plugin Version: 11.3. **Function:** One of the possible modifier types.
**Notes:**
A predicate to compare all entries in the destination of a to-many relationship. The left hand side must be a collection. The corresponding predicate compares each value in the left hand side with the right hand side, and returns false when it finds the first mismatch or true if all match. Available in Mac OS X v10.4 and later.

87.1.12 NSAnyPredicateModifier = 2

MBS MacCloud Plugin, Plugin Version: 11.3. **Function:** One of the possible modifier types.
**Notes:**
A predicate to match with any entry in the destination of a to-many relationship. The left hand side must be a collection. The corresponding predicate compares each value in the left hand side against the right hand side and returns true when it finds the first match or false if no match is found. Available in Mac OS X v10.4 and later.

87.1.13 NSBeginsWithPredicateOperatorType = 8

MBS MacCloud Plugin, Plugin Version: 11.3. **Function:** One of the comparison type constants.
**Notes:**
A begins-with predicate. Available in Mac OS X v10.4 and later.

87.1.14 NSBetweenPredicateOperatorType = 100

MBS MacCloud Plugin, Plugin Version: 11.3. **Function:** One of the comparison type constants.
**Notes:**
A predicate to determine if the right hand side lies at or between bounds specified by the left hand side. Returns true if \[ \text{lhs between rhs} \] ; the right hand side must be an array in which the first element sets the lower bound and the second element the upper, inclusive. Comparison is performed using compare: or the class-appropriate equivalent. Available in Mac OS X v10.5 and later.
87.1. CLASS NSCOMPARISONPREDICATEMBS

87.1.15 NSCaseInsensitivePredicateOption = 1

MBS MacCloud Plugin, Plugin Version: 11.3. **Function:** One of the constants for possible types of string comparison.

**Notes:**
A case-insensitive predicate.
You represent this option in a predicate format string using a \[ c \] following a string operation (for example, "NeXT" like \[ c \] "next").
Available in Mac OS X v10.4 and later.
These options are supported for LIKE as well as all of the equality/comparison operators.

87.1.16 NSContainsPredicateOperatorType = 99

MBS MacCloud Plugin, Plugin Version: 11.3. **Function:** One of the comparison type constants.

**Notes:**
A predicate to determine if the left hand side contains the right hand side.
Returns true if \[ lhs contains rhs \] ; the left hand side must be an NSExpression object that evaluates to a collection
Available in Mac OS X v10.5 and later.

87.1.17 NSCustomSelectorPredicateOperatorType = 11

MBS MacCloud Plugin, Plugin Version: 11.3. **Function:** One of the comparison type constants.

**Notes:**
A predicate that uses a custom selector that takes a single argument and returns a BOOL value.
The selector is invoked on the left hand side with the right hand side as the argument.
Available in Mac OS X v10.4 and later.

87.1.18 NSDiacriticInsensitivePredicateOption = 2

MBS MacCloud Plugin, Plugin Version: 11.3. **Function:** One of the constants for possible types of string comparison.

**Notes:**
A diacritic-insensitive predicate.
You represent this option in a predicate format string using a \[ d \] following a string operation (for example, "nave" like \[ d \] "naive").
Available in Mac OS X v10.4 and later.
These options are supported for LIKE as well as all of the equality/comparison operators.
87.1.19  **NSDirectPredicateModifier** = 0

MBS MacCloud Plugin, Plugin Version: 11.3. **Function**: One of the possible modifier types. 
**Notes:**
A predicate to compare directly the left and right hand sides. Available in Mac OS X v10.4 and later.

87.1.20  **NSEndsWithPredicateOperatorType** = 9

MBS MacCloud Plugin, Plugin Version: 11.3. **Function**: One of the comparison type constants. 
**Notes:**
An ends-with predicate. Available in Mac OS X v10.4 and later.

87.1.21  **NSEqualToPredicateOperatorType** = 4

MBS MacCloud Plugin, Plugin Version: 11.3. **Function**: One of the comparison type constants. 
**Notes:**
An equal-to predicate. Available in Mac OS X v10.4 and later.

87.1.22  **NSGreaterThanOrEqualToPredicateOperatorType** = 3

MBS MacCloud Plugin, Plugin Version: 11.3. **Function**: One of the comparison type constants. 
**Notes:**
A greater-than-or-equal-to predicate. Available in Mac OS X v10.4 and later.

87.1.23  **NSGreaterThanPredicateOperatorType** = 2

MBS MacCloud Plugin, Plugin Version: 11.3. **Function**: One of the comparison type constants. 
**Notes:**
A greater-than predicate. Available in Mac OS X v10.4 and later.
87.1.24  NSInPredicateOperatorType = 10

MBS MacCloud Plugin, Plugin Version: 11.3.  **Function:** One of the comparison type constants.  
**Notes:**
A predicate to determine if the left hand side is in the right hand side.  
For strings, returns true if the left hand side is a substring of the right hand side.  
For collections, returns true if the left hand side is in the right hand side.  
Available in Mac OS X v10.4 and later.

87.1.25  NSLessThanOrEqualToPredicateOperatorType = 1

MBS MacCloud Plugin, Plugin Version: 11.3.  **Function:** One of the comparison type constants.  
**Notes:**
A less-than-or-equal-to predicate.  
Available in Mac OS X v10.4 and later.

87.1.26  NSLessThanPredicateOperatorType = 0

MBS MacCloud Plugin, Plugin Version: 11.3.  **Function:** One of the comparison type constants.  
**Notes:**
A less-than predicate.  
Available in Mac OS X v10.4 and later.

87.1.27  NSLikePredicateOperatorType = 7

MBS MacCloud Plugin, Plugin Version: 11.3.  **Function:** One of the comparison type constants.  
**Notes:**
A simple subset of the MATCHES predicate, similar in behavior to SQL LIKE.  
Available in Mac OS X v10.4 and later.

87.1.28  NSMatchesPredicateOperatorType = 6

MBS MacCloud Plugin, Plugin Version: 11.3.  **Function:** One of the comparison type constants.  
**Notes:**
A full regular expression matching predicate.  
Available in Mac OS X v10.4 and later.
87.1.29  **NSNormalizedPredicateOption = 4**

MBS MacCloud Plugin, Plugin Version: 11.3. **Function:** One of the constants for possible types of string comparison.

**Notes:**

Indicates that the strings to be compared have been preprocessed.
This option supersedes NSCaseInsensitivePredicateOption and NSDiacriticInsensitivePredicateOption, and is intended as a performance optimization option.
You represent this option in a predicate format string using a \[ n \] following a string operation (for example, "WXYZlan" matches \[ n \ ].lan").
Available in Mac OS X v10.7 and later.
These options are supported for LIKE as well as all of the equality/comparison operators.

87.1.30  **NSNotEqualToPredicateOperatorType = 5**

MBS MacCloud Plugin, Plugin Version: 11.3. **Function:** One of the comparison type constants.

**Notes:**

A not-equal-to predicate.
Available in Mac OS X v10.4 and later.
87.2. CLASS NSCOMPOUNDPREDICATEMBS

87.2 class NSCompoundPredicateMBS

87.2.1 class NSCompoundPredicateMBS


Function: NSCompoundPredicate is a subclass of NSPredicate used to represent logical "gate" operations (AND/OR/NOT) and comparison operations.

Example:

dim n1 as NSPredicateMBS = NSPredicateMBS.predicateWithValue(true)
dim n2 as NSPredicateMBS = NSPredicateMBS.predicateWithValue(false)

dim n as NSPredicateMBS = NSCompoundPredicateMBS.orPredicateWithSubpredicates(array(n1,n2))
MsgBox n.predicateFormat

Notes:

Comparison operations are based on two expressions, as represented by instances of the NSExpression class. Expressions are created for constant values, key paths, and so on.

In Mac OS X v10.5 and later and in iOS, you can use NSCompoundPredicate to create an AND or OR compound predicate (but not a NOT compound predicate) using an array with 0, 1, or more elements:

- An AND predicate with no subpredicates evaluates to TRUE.
- An OR predicate with no subpredicates evaluates to FALSE.
- A compound predicate with one or more subpredicates evaluates to the truth of its subpredicates.

Subclass of the NSPredicateMBS class.

87.2.2 Methods

87.2.3 andPredicateWithSubpredicates(predicates() as NSPredicateMBS) as NSPredicateMBS


Function: Returns a new predicate formed by AND-ing the predicates in a given array.

Example:

dim n1 as NSPredicateMBS = NSPredicateMBS.predicateWithValue(true)
dim n2 as NSPredicateMBS = NSPredicateMBS.predicateWithValue(false)
dim n as NSPredicateMBS = NSCompoundPredicateMBS.andPredicateWithSubpredicates(array(n1,n2))

MsgBox n.predicateFormat

Notes:

subpredicates: An array of NSPredicate objects.

Returns a new predicate formed by AND-ing the predicates specified by subpredicates. An AND predicate with no subpredicates evaluates to TRUE.

87.2.4 compoundPredicateType as Integer


87.2.5 Constructor(type as Integer, predicates() as NSPredicateMBS)

Example:

dim n1 as NSPredicateMBS = NSPredicateMBS.predicateWithValue(true)
dim n2 as NSPredicateMBS = NSPredicateMBS.predicateWithValue(false)

dim n as NSPredicateMBS = new NSCompoundPredicateMBS(NSCompoundPredicateMBS.kAnd, array(n1,n2))
MsgBox n.predicateFormat

Notes:

type: The type of the new predicate.
subpredicates: An array of NSPredicate objects.

87.2.6 notPredicateWithSubpredicate(predicate as NSPredicateMBS) as NSPredicateMBS

Notes:
predicate: A predicate.

Returns a new predicate formed by NOT-ing the predicate specified by predicate.

87.2.7 orPredicateWithSubpredicates(predicates() as NSPredicateMBS) as NSPredicateMBS

Function: Returns a new predicate formed by OR-ing the predicates in a given array.
Notes: subpredicates: An array of NSPredicate objects.

Returns a new predicate formed by OR-ing the predicates specified by subpredicates.

An OR predicate with no subpredicates evaluates to FALSE.

87.2.8 subpredicates as NSPredicateMBS()

Function: Returns the array of the receiver’s subpredicates.
Example:

dim n1 as NSPredicateMBS = NSPredicateMBS.predicateWithValue(true)
dim n2 as NSPredicateMBS = NSPredicateMBS.predicateWithValue(false)
dim n as new NSCompoundPredicateMBS(NSCompoundPredicateMBS.kAnd, array(n1,n2))

for each x as NSPredicateMBS in n.subpredicates
MsgBox x.predicateFormat
next

87.2.9 Constants

87.2.10 kAnd = 1

MBS MacCloud Plugin, Plugin Version: 11.3. Function: One of the compound predicate types.
Notes: A logical AND predicate.
87.2.11 kNot = 0

MBS MacCloud Plugin, Plugin Version: 11.3. **Function:** One of the compound predicate types. **Notes:** A logical NOT predicate.

87.2.12 kOR = 2

MBS MacCloud Plugin, Plugin Version: 11.3. **Function:** One of the compound predicate types. **Notes:** A logical OR predicate.
87.3. class NSExpressionMBS

87.3.1 class NSExpressionMBS

Function: NSExpression is used to represent expressions in a predicate.
Notes:
Comparison operations in an NSPredicate are based on two expressions, as represented by instances of the NSExpression class. Expressions are created for constant values, key paths, and so on.

Generally, anywhere in the NSExpression class hierarchy where there is composite API and subtypes that may only reasonably respond to a subset of that API, invoking a method that does not make sense for that subtype will cause an exception to be thrown.

See NSException class documentation on apple.com.

87.3.2 Methods

87.3.3 arguments as Variant()

Function: Returns the arguments for the receiver.
Example:

```vba
dim args() as Variant
args.Append 5.0
dim n as NSExpressionMBS = NSExpressionMBS.expressionForFunction("abs:", args)

// query arguments
dim theargs() as Variant = n.arguments
MsgBox theargs(0)
```

Notes:
Returns the arguments for the receiver that is, the array of expressions that will be passed as parameters during invocation of the selector on the operand of a function expression.

This method raises an exception if it is not applicable to the receiver.
87.3.4 constantValue as Variant

**Function:** Returns the constant value of the receiver.  
**Example:**

```vbnet
dim n as NSExpressionMBS = NSExpressionMBS.expressionForConstantValue(5)
dim v as Variant = n.constantValue
MsgBox v.StringValue ' shows 5
```

**Notes:**

This method raises an exception if it is not applicable to the receiver.  
Available in Mac OS X v10.4 and later.

87.3.5 Constructor(Type as Integer)

**Function:** Initializes the receiver with the specified expression type.  
**Notes:** Available in Mac OS X v10.4 and later.

87.3.6 expressionForAggregate(subexpressions() as NSExpressionMBS) as NSExpressionMBS

**Function:** Returns a new aggregate expression for a given collection.  
**Notes:**

collection: A collection object that contains further expressions.  
Returns a new expression that contains the expressions in collection.

87.3.7 expressionForConstantValue(value as Variant) as NSExpressionMBS

**Function:** Returns a new expression that represents a given constant value.  
**Example:**

```vbnet
dim n as NSExpressionMBS = NSExpressionMBS.expressionForConstantValue(5)
dim v as Variant = n.constantValue
MsgBox v.StringValue ' shows 5
```
87.3. **CLASS NSEXPRESSIONMBS**

**Notes:**

obj: The constant value the new expression is to represent.

Returns a new expression that represents the constant value, obj.
Available in Mac OS X v10.4 and later.

---

**87.3.8 expressionForEvaluatedObject as NSExpressionMBS**

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a new expression that represents the object being evaluated.
**Notes:** Available in Mac OS X v10.4 and later.

---

**87.3.9 expressionForFunction(FunctionName as string, arguments() as Variant) as NSExpressionMBS**

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a new expression that will invoke one of the predefined functions.
**Notes:**

name: The name of the function to invoke.
parameters: An array containing NSExpression objects that will be used as parameters during the invocation of selector.
For a selector taking no parameters, the array should be empty. For a selector taking one or more parameters, the array should contain one NSExpression object which will evaluate to an instance of the appropriate type for each parameter.
If there is a mismatch between the number of parameters expected and the number you provide during evaluation, an exception may be raised or missing parameters may simply be replaced by nil (which occurs depends on how many parameters are provided, and whether you have over- or underflow).

Returns a new expression that invokes the function name using the parameters in parameters.
The name parameter can be one of the following predefined functions.

See NSExpression class documentation on apple.com for details.

---

**87.3.10 expressionForIntersectSet(LeftExpression as NSExpressionMBS, rightExpression as NSExpressionMBS) as NSExpressionMBS**

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a new NSExpression object that represent the intersection of a given set and collection.
Notes:

LeftExpression: An expression that evaluates to an NSSet object.
rightExpression: An expression that evaluates to a collection object (an instance of NSArray, NSSet, or NSDictionary).

Returns a new NSExpression object that represents the intersection of left and right. Available in Mac OS X v10.5 and later.

87.3.11 expressionForKeyPath(name as string) as NSExpressionMBS

Function: Returns a new expression that invokes valueForKeyPath: with a given key path.
Notes:
keyPath: The key path that the new expression should evaluate.

Returns a new expression that invokes valueForKeyPath: with keyPath. Available in Mac OS X v10.4 and later.

87.3.12 expressionForMinusSet(LeftExpression as NSExpressionMBS, rightExpression as NSExpressionMBS) as NSExpressionMBS

Function: Returns a new NSExpression object that represent the subtraction of a given collection from a given set.
Notes:
LeftExpression: An expression that evaluates to an NSSet object.
rightExpression: An expression that evaluates to a collection object (an instance of NSArray, NSSet, or NSDictionary).

Returns a new NSExpression object that represents the subtraction of right from left. Available in Mac OS X v10.5 and later.

87.3.13 expressionForUnionSet(LeftExpression as NSExpressionMBS, rightExpression as NSExpressionMBS) as NSExpressionMBS

Function: Returns a new NSExpression object that represent the union of a given set and collection.
Notes:
87.3. CLASS NSEXPRESSIONMBS

LeftExpression: An expression that evaluates to an NSSet object.
rightExpression: An expression that evaluates to a collection object (an instance of NSArray, NSSet, or NSDictionary).

Returns a new NSExpression object that represents the union of left and right. Available in Mac OS X v10.5 and later.

87.3.14 expressionForVariable(name as string) as NSEXPRESSIONMBS

**Function:** Returns a new expression that extracts a value from the variable bindings dictionary for a given key.
**Notes:**

name: The key for the variable to extract from the variable bindings dictionary.

Returns a new expression that extracts from the variable bindings dictionary the value for the key string. Available in Mac OS X v10.4 and later.

87.3.15 expressionType as Integer

**Function:** Returns the expression type for the receiver.
**Example:**

```excel
dim n as NSEXPRESSIONMBS = NSEXPRESSIONMBS.expressionForVariable("hello")
MsgBox str(n.expressionType) // = NSVariableExpressionType
```

**Notes:** This method raises an exception if it is not applicable to the receiver.

87.3.16 expressionWithFormat(format as string) as NSEXPRESSIONMBS

**Function:** Creates an expression with the given format.
**See also:**

- 87.3.17 expressionWithFormat(format as string, arguments() as Variant) as NSEXPRESSIONMBS 14318
87.3.17 expressionWithFormat(format as string, arguments() as Variant) as NSExpressionMBS

Function: Creates an expression with the given format.
See also:

• 87.3.16 expressionWithFormat(format as string) as NSExpressionMBS

87.3.18 functionName as string

Function: Returns the function for the receiver.
Example:

dim args() as Variant
args.Append "World"
args.Append 5.0
dim n as NSExpressionMBS = NSExpressionMBS.expressionForFunction("Hello", args)
MsgBox n.functionName

Notes: This method raises an exception if it is not applicable to the receiver.

87.3.19 keyPath as string

Function: Returns the key path for the receiver.
Notes:
This method raises an exception if it is not applicable to the receiver.
Available in Mac OS X v10.4 and later.

87.3.20 leftExpression as NSExpressionMBS

Function: Returns the left expression of an aggregate expression.
Notes:
This method raises an exception if it is not applicable to the receiver.
Available in Mac OS X v10.5 and later.
87.3. CLASS NSExpressionMBS

87.3.21 operand as NSExpressionMBS

Function: Returns the operand for the receiver.
Notes:
The operand for the receiver that is, the object on which the selector will be invoked.
The object is the result of evaluating a key path or one of the defined functions. This method raises an exception if it is not applicable to the receiver.
Available in Mac OS X v10.4 and later.

87.3.22 predicate as NSPredicateMBS

Function: Return the predicate of a subquery expression.
Notes:
This method raises an exception if it is not applicable to the receiver.
Available in Mac OS X v10.5 and later.

87.3.23 rightExpression as NSExpressionMBS

Function: Returns the right expression of an aggregate expression.
Notes:
This method raises an exception if it is not applicable to the receiver.
Available in Mac OS X v10.5 and later.

87.3.24 variable as string

Function: Returns the variable for the receiver.
Example:
```dim n as NSExpressionMBS = NSExpressionMBS.expressionForVariable("hello")
MsgBox n.variable```
Notes:
This method raises an exception if it is not applicable to the receiver.
Available in Mac OS X v10.4 and later.
87.3.25  Properties

87.3.26  Handle as Integer

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The internal reference to the NSExpression object. Notes: (Read and Write property)

87.3.27  Constants

87.3.28  NSAggregateExpressionType = 14

MBS MacCloud Plugin, Plugin Version: 11.3. Function: One of the expression type constants. Notes:
An expression that defines an aggregate of NSExpression objects. Available in Mac OS X v10.5 and later.

87.3.29  NSBlockExpressionType = 19

MBS MacCloud Plugin, Plugin Version: 11.3. Function: One of the expression type constants. Notes:
An expression that uses a Block. Available in Mac OS X v10.6 and later.

87.3.30  NSConstantValueExpressionType = 0

MBS MacCloud Plugin, Plugin Version: 11.3. Function: One of the expression type constants. Notes:
An expression that always returns the same value. Available in Mac OS X v10.4 and later.
87.3.31  **NSEvaluatedObjectExpressionType = 1**

MBS MacCloud Plugin, Plugin Version: 11.3. **Function:** One of the expression type constants. **Notes:**
An expression that always returns the parameter object itself. Available in Mac OS X v10.4 and later.

87.3.32  **NSFunctionExpressionType = 4**

MBS MacCloud Plugin, Plugin Version: 11.3. **Function:** One of the expression type constants. **Notes:**
An expression that returns the result of evaluating a function. Available in Mac OS X v10.4 and later.

87.3.33  **NSIntersectSetExpressionType = 6**

MBS MacCloud Plugin, Plugin Version: 11.3. **Function:** One of the expression type constants. **Notes:**
An expression that creates an intersection of the results of two nested expressions. Available in Mac OS X v10.5 and later.

87.3.34  **NSKeyPathExpressionType = 3**

MBS MacCloud Plugin, Plugin Version: 11.3. **Function:** One of the expression type constants. **Notes:**
An expression that returns something that can be used as a key path. Available in Mac OS X v10.4 and later.

87.3.35  **NSMinusSetExpressionType = 7**

MBS MacCloud Plugin, Plugin Version: 11.3. **Function:** One of the expression type constants. **Notes:**
An expression that combines two nested expression results by set subtraction. Available in Mac OS X v10.5 and later.
87.3.36  **NSSubqueryExpressionType = 13**

MBS MacCloud Plugin, Plugin Version: 11.3. **Function:** One of the expression type constants.  
**Notes:**  
An expression that filters a collection using a subpredicate.  
Available in Mac OS X v10.5 and later.

87.3.37  **NSUnionSetExpressionType = 5**

MBS MacCloud Plugin, Plugin Version: 11.3. **Function:** One of the expression type constants.  
**Notes:**  
An expression that creates a union of the results of two nested expressions.  
Available in Mac OS X v10.5 and later.

87.3.38  **NSVariableExpressionType = 2**

MBS MacCloud Plugin, Plugin Version: 11.3. **Function:** One of the expression type constants.  
**Notes:**  
An expression that always returns whatever value is associated with the key specified by variable' in the bindings dictionary.  
Available in Mac OS X v10.4 and later.
87.4. CLASS NSFILECOORDINATORMBS

87.4 class NSFileCoordinatorMBS

87.4.1 class NSFileCoordinatorMBS

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for file coordinating.

**Notes:** Please also check the documentation from Apple for the NSFileCoordinator class.

87.4.2 Methods

87.4.3 addFilePresenter(filePresenter as NSFilePresenterMBS)


**Notes:**

If you invoke addFilePresenter: you have to do a balancing invocation of removeFilePresenter before the file presenter is deallocated, even in a garbage-collected application.

If your application reads an item and then registers a file presenter for it there is a possible race condition in which between those two steps another process does coordinated reading or writing of the item, without any messages sent to your not-quite-registered file presenter. This can leave your file presenter ignorant of the fact that what it knows about the item it just read is already out of date, or under the misconception that just because it hasn’t received a relinquish... method it owns the item. To avoid that race condition you can invoke addFilePresenter in the same block that you pass to coordinateReadingItemAtURL to read what the file presenter will present.

87.4.4 cancel

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Cancel all invocations of coordinate... and prepare... methods for the receiver.

**Notes:**

Any current invocation of one of those methods will stop waiting and return immediately, unless it has already invoked the passed-in block, in which case it will return when the passed-in block returns. Subsequent invocations of those methods will not invoke the blocks passed into them at all. When an invocation of coordinate... or prepare... returns without invoking the passed-in block because this method was invoked it instead returns an error whose domain is NSCocoaErrorDomain and whose code is NSUserCancelledError. Messages that have already been sent to NSFilePresenters will not be cancelled but the file coordination machinery will stop waiting for the replies.

This method this can be invoked from any thread. It always returns immediately, without waiting for any-
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thing. Cancellation is racy; you usually cannot assume that no block passed into a coordinate... or prepare...
method is already being invoked, so the code inside those blocks typically still has to check for cancellation,
whatever that means in your application.

87.4.5 Constructor(filePresenter as NSFilePresenterMBS = nil)

Function: The constructor.
Notes:
The designated initializer. If an NSFilePresenter is provided then the receiver is considered to have been
created by that NSFilePresenter, or on its behalf.

NSFileCoordinator is meant to be instantiated on a per-file-operation basis, where a file operation is some-
thing like the opening or saving of a document, or the copying or moving of a batch of folders and files.
There is no benefit to keeping an instance of it alive in your application for much more time than it takes
to actually perform the file operation. Doing so can be harmful, or at least wasteful of memory, because
NSFileCoordinators may retain NSFilePresenters.

You pass an NSFilePresenter to this initializer when the operation whose file access is to be coordinated
is being performed by that NSFilePresenter. Associating an NSFileCoordinator with an NSFilePresenter
accomplishes a few important things:
- It prevents the NSFileCoordinator from sending messages to that NSFilePresenter, so the NSFilePresenter
does not have to somehow filter out messages about its own file operations. The exception to this rule is that
messages about versions of the presented item being added, remove, or resolved during coordinated writing
are sent to every relevant NSFilePresenter, even the one passed to Constructor.
- It allows the file coordination mechanism to determine when coordinated writing is being done in re-
sponse to an NSFilePresenter receiving a savePresentedItemChangesWithCompletionHandler message, and
not deadlock. Usually coordinated writing done by one NSFileCoordinator must wait for coordinated read-
ing of the same file or directory done by another NSFileCoordinator. But, for example, when coordinated
reading is begun with one NSFileCoordinator, and that causes an NSFilePresenter to do coordinated writing
using another NSFileCoordinator, the writing done with the second NSFileCoordinator should not wait for the
completion of the first NSFileCoordinator’s reading, it should instead happen while the first NSFileCo-
dinator is waiting to read.
- It allows the file coordination mechanism to handle a race condition that can occur when it has sent an
NSFilePresenter a presentedItemDidMoveToURL message in the NSFilePresenter’s operation queue but be-
fore that message is dequeued the NSFilePresenter enqueues, on a different queue, an operation using the
old URL. For this to be effective however the NSFileCoordinator must be initialized in the same operation
queue in which NSFilePresenter messages are received.
- It allows the file coordination mechanism to gracefully handle your application’s registration of an NS-
FilePresenter that at first returns nil when sent presentedItemURL but can later return non-nil at the end of
doing a coordinated write that creates the presented item in the file system for the very first time. AppKit
for example takes advantage of this by registering brand new untitled NSDocuments as NSFilePresenters
immediately, instead of waiting until after the first time the user causes the document to be saved to a file,
which would be more complicated.
For example, NSDocument creates a single NSFileCoordinator for all of the coordinated reading and writing it does during the saving of a document. It always creates the NSFileCoordinator in the main queue even when it is doing the actual coordinated reading and writing in a background queue to implement asynchronous saving.

### 87.4.6 coordinateReadingItemAtURL

**Function:** Initiates a read operation on a single file or directory using the specified options.

**Notes:**
- **file:** A URL identifying the file or directory to read. If other objects or processes are acting on the item at the URL, the actual URL passed to reader parameter may be different than the one in this parameter. The plugin converts the folderitem to an URL for you.
- **options:** One of the reading options (see constants). If you pass 0 for this parameter, the savePresentedItemChangesWithCompletionHandler method of relevant file presenters is called before your block executes.
- **Error:** If a file presenter encounters an error while preparing for this read operation, that error is returned in this parameter and the block in the reader parameter is not executed. If you cancel this operation before the reader block is executed, this parameter contains an error object on output.

The coordinateReadingItemAtURL event performs the file operations in a coordinated manner. This block receives an url and folderitem of the item and returns no value. Always use the URL/folderitem passed into the event instead of the value in the url parameter.

You use this method to perform read-related operations on a file or directory in a coordinated manner. This method executes synchronously, blocking the current thread until the reader event finishes executing. Before executing that event, though, the file coordinator waits until other relevant file presenter objects finish in-progress actions. Similarly, your read operation may cause pending actions for other file presenters to wait until your operations are complete. Whether or not the file coordinator waits depends on whether the item being read is a file or directory and also depends on other related operations.

If the url parameter specifies a file:

- This method waits for other writers of the exact same file to finish in-progress actions.
- This method waits if the file is a file package and other writers are writing to items in the package directory.
- This method does not wait for other readers of the file.
- This method does not wait for writers that are manipulating the parent directory of the file, unless one
of those writers specified the NSFileCoordinatorWritingForDeleting or NSFileCoordinatorWritingForMoving option.

If the url parameter specifies a directory:

- This method waits if other write operations are occurring on the exact same directory.
- This method does not wait if write operations are occurring on items inside the directory (but not on the directory itself).
- This method does not wait for other readers of the directory.
- This method does not wait for writers that are manipulating the parent directory of the directory, unless one of those writers specified the NSFileCoordinatorWritingForDeleting or NSFileCoordinatorWritingForMoving option.

This method calls the relinquishPresentedItemToReader method of any relevant file presenters. This method is called both for file presenters in the current process and in other processes. Depending on the options you specify, other methods of the file presenters may also be called. When reading a file package directory, file presenter objects that are currently reading the contents of that file package also receive these notifications. All of the called methods must return successfully before the file coordinator executes your block. If multiple file presenters are operating on the item, the order in which those presenters are notified is undefined.

Do not nest calls to file coordinator methods inside the event. If you call this method or any of the other file coordination methods from inside your event, the file coordinator object throws an exception. If you want to perform a write operation from inside a read block, use the coordinateWritingItemAtURL method instead. If you want to perform a batch read operation on multiple files, use the prepareForReadingItemsAtURLs method.

Available in Mac OS X v10.7 and later.

See also:

- 87.4.22 coordinateReadingItemAtURL(url as string, file as folderitem, tag as Variant)
- 87.4.7 coordinateReadingItemAtURL(URL as string, options as Integer, byref error as NSErrorMBS, tag as Variant = nil)

**87.4.7 coordinateReadingItemAtURL(URL as string, options as Integer, byref error as NSErrorMBS, tag as Variant = nil)**


Function: Initiates a read operation on a single file or directory using the specified options.

Notes:

url: A URL identifying the file or directory to read. If other objects or processes are acting on the item at the URL, the actual URL passed to reader parameter may be different than the one in this parameter.
options: One of the reading options (see constants). If you pass 0 for this parameter, the savePresentedItemChangesWithCompletionHandler method of relevant file presenters is called before your block executes.

Error: If a file presenter encounters an error while preparing for this read operation, that error is returned in this parameter and the block in the reader parameter is not executed. If you cancel this operation before the reader block is executed, this parameter contains an error object on output.

The coordinateReadingItemAtURL event performs the file operations in a coordinated manner. This block receives an url and folderitem of the item and returns no value. Always use the URL/folderitem passed into the event instead of the value in the url parameter.

You use this method to perform read-related operations on a file or directory in a coordinated manner. This method executes synchronously, blocking the current thread until the reader event finishes executing. Before executing that event, though, the file coordinator waits until other relevant file presenter objects finish in-progress actions. Similarly, your read operation may cause pending actions for other file presenters to wait until your operations are complete. Whether or not the file coordinator waits depends on whether the item being read is a file or directory and also depends on other related operations.

If the url parameter specifies a file:

- This method waits for other writers of the exact same file to finish in-progress actions.
- This method waits if the file is a file package and other writers are writing to items in the package directory.
- This method does not wait for other readers of the file.
- This method does not wait for writers that are manipulating the parent directory of the file, unless one of those writers specified the NSFileCoordinatorWritingForDeleting or NSFileCoordinatorWritingForMoving option.

If the url parameter specifies a directory:

- This method waits if other write operations are occurring on the exact same directory.
- This method does not wait if write operations are occurring on items inside the directory (but not on the directory itself).
- This method does not wait for other readers of the directory.
- This method does not wait for writers that are manipulating the parent directory of the directory, unless one of those writers specified the NSFileCoordinatorWritingForDeleting or NSFileCoordinatorWritingForMoving option.

This method calls the relinquishPresentedItemToReader method of any relevant file presenters. This method is called both for file presenters in the current process and in other processes. Depending on the options you specify, other methods of the file presenters may also be called. When reading a file package directory,
file presenter objects that are currently reading the contents of that file package also receive these notifications. All of the called methods must return successfully before the file coordinator executes your block. If multiple file presenters are operating on the item, the order in which those presenters are notified is undefined.

Do not nest calls to file coordinator methods inside the event. If you call this method or any of the other file coordination methods from inside your event, the file coordinator object throws an exception. If you want to perform a write operation from inside a read block, use the coordinateWritingItemAtURL method instead. If you want to perform a batch read operation on multiple files, use the prepareForReadingItemsAtURLs method.

Available in Mac OS X v10.7 and later.

See also:

- 87.4.6 coordinateReadingItemAtURL(File as folderitem, options as Integer, byref error as NSErrorMBS, tag as Variant = nil) 14325
- 87.4.22 coordinateReadingItemAtURL(url as string, file as folderitem, tag as Variant) 14337

87.4.8 coordinateReadingItemAtURLwritingItemAtURL(readingFile as folderitem, readingOptions as Integer, writingItemAtFile as folderitem, writingOptions as Integer, byref error as NSErrorMBS, tag as Variant = nil)


Function: Initiates a read operation that contains a follow-up write operation.

Notes:

readingFile: A URL identifying the file or directory to read. If other objects or processes are acting on the item at the URL, the actual URL passed to the block in the readerWriter parameter may be different than the one in this parameter.

readingOptions: One of the reading options (see constants). If you pass 0 for this parameter, the savePresentedItemChangesWithCompletionHandler: method of relevant file presenters is called before your block executes.

writingItemAtFile: A URL identifying the file or directory to write. If other objects or processes are acting on the item at the URL, the actual URL passed to the block in the readerWriter parameter may be different than the one in this parameter.

writingOptions: One of the writing options (see constants). The options you specify partially determine how file presenters are notified and how this file coordinator object waits to execute your block.

Error: If a file presenter encounters an error while preparing for this operation, that error is returned in this parameter and the event is not executed. If you cancel this operation before the readerWriter event is executed, this parameter contains an error object on output.

The coordinateReadingItemAtURLwritingItemAtURL event performs the read and write operations in a coordinated manner. This event receives URLs of the items to read and write and returns no value. Always use the URLs passed into the block instead of the values in the readingURL and writingURL parameters.
You use this method to perform a read operation that might also contain a write operation that needs to be coordinated. This method executes synchronously, blocking the current thread until the readerWriter event finishes executing. When performing the write operation, you may call the coordinateWritingItemAtURL method from your readerWriter block. This method does the canonical lock ordering that is required to prevent a potential deadlock of the file operations.

This method makes the same calls to file presenters, and has the same general wait behavior as the coordinateReadingItemAtURL method.

Available in Mac OS X v10.7 and later.

See also:

- 87.4.23 coordinateReadingItemAtURLwritingItemAtURL(readingURL as string, readingFile as folderitem, writingURL as string, writingFile as folderitem, tag as Variant)
- 87.4.9 coordinateReadingItemAtURLwritingItemAtURL(readingURL as string, readingOptions as Integer, writingItemAtURL as string, writingOptions as Integer, byref error as NSErrorMBS, tag as Variant = nil)

87.4.9 coordinateReadingItemAtURLwritingItemAtURL(readingURL as string, readingOptions as Integer, writingItemAtURL as string, writingOptions as Integer, byref error as NSErrorMBS, tag as Variant = nil)


Function: Initiates a read operation that contains a follow-up write operation.

Notes:

readingURL: A URL identifying the file or directory to read. If other objects or processes are acting on the item at the URL, the actual URL passed to the block in the readerWriter parameter may be different than the one in this parameter.

readingOptions: One of the reading options (see constants). If you pass 0 for this parameter, the savePresentedItemChangesWithCompletionHandler: method of relevant file presenters is called before your block executes.

writingItemAtURL: A URL identifying the file or directory to write. If other objects or processes are acting on the item at the URL, the actual URL passed to the block in the readerWriter parameter may be different than the one in this parameter.

writingOptions: One of the writing options (see constants). The options you specify partially determine how file presenters are notified and how this file coordinator object waits to execute your block.

Error: If a file presenter encounters an error while preparing for this operation, that error is returned in this parameter and the event is not executed. If you cancel this operation before the readerWriter event is executed, this parameter contains an error object on output.

The coordinateReadingItemAtURLwritingItemAtURL event performs the read and write operations in a coordinated manner. This event receives URLs of the items to read and write and returns no value. Always use the URLs passed into the block instead of the values in the readingURL and writingURL parameters.
You use this method to perform a read operation that might also contain a write operation that needs to be coordinated. This method executes synchronously, blocking the current thread until the readerWriter event finishes executing. When performing the write operation, you may call the coordinateWritingItemAtURL method from your readerWriter block. This method does the canonical lock ordering that is required to prevent a potential deadlock of the file operations.

This method makes the same calls to file presenters, and has the same general wait behavior as the coordinateReadingItemAtURL method.

Available in Mac OS X v10.7 and later.

See also:

- 87.4.8 coordinateReadingItemAtURLwritingItemAtURL(readingFile as folderitem, readingOptions as Integer, writingItemAtFile as folderitem, writingOptions as Integer, byref error as NSErrorMBS, tag as Variant = nil) 14328
- 87.4.23 coordinateReadingItemAtURLwritingItemAtURL(readingURL as string, readingFile as folderitem, writingURL as string, writingFile as folderitem, tag as Variant) 14337

87.4.10 coordinateWritingItemAtURL(File as folderitem, options as Integer, byref error as NSErrorMBS, tag as Variant = nil)


Function: Initiates a write operation on a single file or directory using the specified options.

Notes:

File: A URL identifying the file or directory to write. If other objects or processes are acting on the item at the URL, the actual URL passed to writer parameter may be different than the one in this parameter. (plugin converts from folderitem to URL for you)

options: One of the writing options (see constants). The options you specify partially determine how file presenters are notified and how this file coordinator object waits to execute your coordinateWritingItemAtURL event.

error: If a file presenter encounters an error while preparing for this write operation, that error is returned in this parameter and the event in the writer parameter is not executed. If you cancel this operation before the writer event is executed, this parameter contains an error object on output.

The coordinateWritingItemAtURL event performs the file operations in a coordinated manner. This event receives the file reference containing the URL of the item and returns no value. Always use the UR passed into the block instead of the value in the url parameter.

You use this method to perform write-related operations on a file or directory in a coordinated manner. This method executes synchronously, blocking the current thread until the writer block finishes executing. Before executing the block, though, the file coordinator waits until other relevant file presenter objects finish in-progress actions. Similarly, your write operation may cause pending actions for other file presenters to wait until your operations are complete. Whether or not the file coordinator waits depends on whether the
item being written is a file or directory and also depends on other related operations.

If the url parameter specifies a file:

- This method waits for other readers and writers of the exact same file to finish in-progress actions.
- This method waits if the file is a file package and other writers are reading or writing items in the package directory.
- This method does not wait for readers or writers that are manipulating the parent directory of the file, unless one of those writers specified the NSFileCoordinatorWritingForDeleting or NSFileCoordinatorWritingForMoving option.

If the url parameter specifies a directory:

- This method waits if other read or write operations are occurring on the exact same directory.
- This method does not wait if read or write operations are occurring on items inside the directory (but not on the directory itself).
- This method does not wait for readers or writers that are manipulating the parent directory of the directory, unless one of those writers specified the NSFileCoordinatorWritingForDeleting or NSFileCoordinatorWritingForMoving option.

This method calls the relinquishPresentedItemToWriter method of any relevant file presenters. This method is called both for file presenters in the current process and in other processes. Depending on the options you specify, other methods of the file presenters may also be called. When writing a file package directory, file presenter objects that are currently reading or writing the contents of that file package also receive these notifications. All of the called methods must return successfully before the file coordinator executes your block. If multiple file presenters are operating on the item, the order in which those presenters are notified is undefined.

Note: When deleting an item inside a file package using the NSFileCoordinatorWritingForDeleting option, the file coordinator does not call the accommodatePresentedItemDeletionWithCompletionHandler method of any file presenters monitoring the file package directory itself. Instead, the delete operation is treated as a write operation on the file package.

With one exception, do not nest calls to file coordinator methods inside the block you pass to this method. You may call the coordinateReadingItemAtURL method to read the file if you discover through modification-date checking that the contents of the file have changed. However, if you call this method from inside your block, the file coordinator object throws an exception.

Available in Mac OS X v10.7 and later.
See also:

- 87.4.24 coordinateWritingItemAtURL(url as string, file as folderitem, tag as Variant)
87.4.11 coordinateWritingItemAtURL(URL as string, options as Integer, byref error as NSErrorMBS, tag as Variant = nil)


**Function:** Initiates a write operation on a single file or directory using the specified options.

**Notes:**

url: A URL identifying the file or directory to write. If other objects or processes are acting on the item at the URL, the actual URL passed to writer parameter may be different than the one in this parameter.

options: One of the writing options (see constants). The options you specify partially determine how file presenters are notified and how this file coordinator object waits to execute your coordinateWritingItemAtURL event.

error: If a file presenter encounters an error while preparing for this write operation, that error is returned in this parameter and the event in the writer parameter is not executed. If you cancel this operation before the writer event is executed, this parameter contains an error object on output.

The coordinateWritingItemAtURL event performs the file operations in a coordinated manner. This event receives the file reference containing the URL of the item and returns no value. Always use the UR passed into the block instead of the value in the url parameter.

You use this method to perform write-related operations on a file or directory in a coordinated manner. This method executes synchronously, blocking the current thread until the writer block finishes executing. Before executing the block, though, the file coordinator waits until other relevant file presenter objects finish in-progress actions. Similarly, your write operation may cause pending actions for other file presenters to wait until your operations are complete. Whether or not the file coordinator waits depends on whether the item being written is a file or directory and also depends on other related operations.

If the url parameter specifies a file:

- This method waits for other readers and writers of the exact same file to finish in-progress actions.
- This method waits if the file is a file package and other writers are reading or writing items in the package directory.
- This method does not wait for readers or writers that are manipulating the parent directory of the file, unless one of those writers specified the NSFileCoordinatorWritingForDeleting or NSFileCoordinatorWritingForMoving option.

If the url parameter specifies a directory:

- This method waits if other read or write operations are occurring on the exact same directory.
This method does not wait if read or write operations are occurring on items inside the directory (but not on the directory itself).

This method does not wait for readers or writers that are manipulating the parent directory of the directory, unless one of those writers specified the NSFileCoordinatorWritingForDeleting or NSFileCoordinatorWritingForMoving option.

This method calls the relinquishPresentedItemToWriter method of any relevant file presenters. This method is called both for file presenters in the current process and in other processes. Depending on the options you specify, other methods of the file presenters may also be called. When writing a file package directory, file presenter objects that are currently reading or writing the contents of that file package also receive these notifications. All of the called methods must return successfully before the file coordinator executes your block. If multiple file presenters are operating on the item, the order in which those presenters are notified is undefined.

Note: When deleting an item inside a file package using the NSFileCoordinatorWritingForDeleting option, the file coordinator does not call the accommodatePresentedItemDeletionWithCompletionHandler method of any file presenters monitoring the file package directory itself. Instead, the delete operation is treated as a write operation on the file package.

With one exception, do not nest calls to file coordinator methods inside the block you pass to this method. You may call the coordinateReadingItemAtURL method to read the file if you discover through modification-date checking that the contents of the file have changed. However, if you call this method from inside your block, the file coordinator object throws an exception.

Available in Mac OS X v10.7 and later.

See also:

- 87.4.10 coordinateWritingItemAtURL(File as folderitem, options as Integer, byref error as NSErrorMBS, tag as Variant = nil) 14330
- 87.4.24 coordinateWritingItemAtURL(url as string, file as folderitem, tag as Variant) 14338

87.4.12 filePresenters as NSFilePresenterMBS()


87.4.13 FileURL(file as folderitem) as string

87.4.14 itemAtURLdidMoveToURL(oldURL as string, newURL as string)


Function: Announce that the item located by a URL is now located by another URL.

Notes:
This triggers the sending of messages to NSFilePresenters that implement the corresponding optional methods, even those in other processes, except the one specified when -initWithFilePresenter: was invoked:
- presentedItemDidMoveToURL: is sent to NSFilePresenters of the item.
- If the item is a directory then presentedItemDidMoveToURL is sent to NSFilePresenters of each item contained by it.
- presentedSubitemAtURL is sent to NSFilePresenters of each directory that contains the item, unless that method is not implemented but presentedItemDidChange is, and the directory is actually a file package, in which case presentedItemDidChange is sent instead.

Useless invocations of this method are harmless, so you don’t have to write code that compares NSURLs for equality, which is not straightforward. This method must be invoked from within the block passed to an invocation of coordinateWritingItemAtURL.

87.4.15 itemAtURLwillMoveToURL(oldURL as string, newURL as string)


Function: Announce that the item located by a URL is going to be located by another URL.

Notes:
Support for App Sandbox on OS X. Some applications can rename files while saving them. For example, when a user adds attachments to a rich text document, TextEdit changes the document’s extension from .rtf to .rtfd. A sandboxed application like TextEdit must ordinarily prompt the user for approval before renaming a document. You can invoke this method to make your process declare its intent to rename a document without user approval. After the renaming succeeds you must invoke itemAtURLdidMoveToURL, with the same arguments, for the process to keep access to the file with its new name and to give up access to any file that appears with the old name. If the renaming fails you should probably not invoke itemAtURLwillMoveToURL.

There is no reason to invoke this method from applications that do not use App Sandbox. Invoking it does nothing on iOS.

87.4.16 prepareForReadingItemsAtURLs(readingFiles() as folderitem, readingOptions as Integer, writingItemsAtFiles() as folderitem, writingOptions as Integer, byref error as NSErrorMBS, tag as Variant = nil)


Function: Prepare to read or write from multiple files in a single batch operation.

Notes:
87.4. CLASS NSFILECOORDINATORMBS

readingFiles: An array of folderitems identifying the items you want to read.
readingOptions: One of the reading options (see constants). If you pass 0 for this parameter, the savePresentedItemChangesWithCompletionHandler method of relevant file presenters is called before the prepareComplete event executes.
writingItemsAtFiles: An array of folderitems identifying the items you want to write.
writingOptions: One of the writing options (see constants). The options you specify partially determine how file presenters are notified and how this file coordinator object waits to execute your block.

Error: If a file presenter encounters an error while preparing for this operation, that error is returned in this parameter and the block in the writer parameter is not executed. If you cancel this operation before the batchAccessor block is executed, this parameter contains an error object on output.

The prepareComplete event is called and receives a completion handler that it must execute when it has finished its read and write calls.

You use this method to prepare the file coordinator for multiple read and write operations. This method executes synchronously, blocking the current thread until the prepareComplete event finishes executing. The event does not perform the actual operations itself but calls the coordinateReadingItemAtURL and coordinateWritingItemAtURL methods to perform them. The reason to call this method first is to improve performance when reading and writing large numbers of files or directories.

Because file coordination requires interprocess communication, it is much more efficient to batch changes to large numbers of files and directories than to change each item individually. The file coordinator uses the values in the readingURLs and writingURLs parameters together with reading and writing options to prepare any relevant file presenters for the upcoming operations. Specifically, it uses these parameters in the same way as the coordinateReadingItemAtURL and coordinateWritingItemAtURL methods to determine which file presenter methods to call.

Available in Mac OS X v10.7 and later.
See also:

- 87.4.17 prepareForReadingItemsAtURLs(readingURLs() as string, readingOptions as Integer, writingItemsAtURLs() as string, writingOptions as Integer, byref error as NSErrorMBS, tag as Variant = nil)

87.4.17 prepareForReadingItemsAtURLs(readingURLs() as string, readingOptions as Integer, writingItemsAtURLs() as string, writingOptions as Integer, byref error as NSErrorMBS, tag as Variant = nil)

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Prepare to read or write from multiple files in a single batch operation. Notes:

readingURLs: An array of url strings identifying the items you want to read.
readingOptions: One of the reading options (see constants). If you pass 0 for this parameter, the `savePresentedItemChangesWithCompletionHandler` method of relevant file presenters is called before the prepareComplete event executes.

writingItemsAtURLs: An array of url strings identifying the items you want to write.

writingOptions: One of the writing options (see constants). The options you specify partially determine how file presenters are notified and how this file coordinator object waits to execute your block.

Error: If a file presenter encounters an error while preparing for this operation, that error is returned in this parameter and the block in the writer parameter is not executed. If you cancel this operation before the batchAccessor block is executed, this parameter contains an error object on output.

The prepareComplete event is called and receives a completion handler that it must execute when it has finished its read and write calls.

You use this method to prepare the file coordinator for multiple read and write operations. This method executes synchronously, blocking the current thread until the prepareComplete event finishes executing. The event does not perform the actual operations itself but calls the `coordinateReadingItemAtURL` and `coordinateWritingItemAtURL` methods to perform them. The reason to call this method first is to improve performance when reading and writing large numbers of files or directories.

Because file coordination requires interprocess communication, it is much more efficient to batch changes to large numbers of files and directories than to change each item individually. The file coordinator uses the values in the readingURLs and writingURLs parameters together with reading and writing options to prepare any relevant file presenters for the upcoming operations. Specifically, it uses these parameters in the same way as the `coordinateReadingItemAtURL` and `coordinateWritingItemAtURL` methods to determine which file presenter methods to call.

Available in Mac OS X v10.7 and later.

See also:

- `87.4.16 prepareForReadingItemsAtURLs(readingFiles() as folderitem, readingOptions as Integer, writingItemsAtFiles() as folderitem, writingOptions as Integer, byref error as NSErrorMBS, tag as Variant = nil)`

### 87.4.18 removeFilePresenter(filePresenter as NSFilePresenterMBS)

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes the file presenter.
87.4.19 Properties

87.4.20 Handle as Integer

Notes: (Read and Write property)

87.4.21 Events

87.4.22 coordinateReadingItemAtURL(url as string, file as folderitem, tag as Variant)

Notes: The plugin provides the URL and for your convenience a folderitem.
See also:

- 87.4.6 coordinateReadingItemAtURL(File as folderitem, options as Integer, byref error as NSErrorMBS, tag as Variant = nil) 14325
- 87.4.7 coordinateReadingItemAtURL(URL as string, options as Integer, byref error as NSErrorMBS, tag as Variant = nil) 14326

87.4.23 coordinateReadingItemAtURLwritingItemAtURL(readingURL as string, readingFile as folderitem, writingURL as string, writingFile as folderitem, tag as Variant)

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The event called from coordinateReadingItemAtURLwritingItemAtURL method.
Notes: The plugin provides the URLs and for your convenience also folderitems.
See also:

- 87.4.8 coordinateReadingItemAtURLwritingItemAtURL(readingFile as folderitem, readingOptions as Integer, writingItemAtFile as folderitem, writingOptions as Integer, byref error as NSErrorMBS, tag as Variant = nil) 14328
- 87.4.9 coordinateReadingItemAtURLwritingItemAtURL(readingURL as string, readingOptions as Integer, writingItemAtURL as string, writingOptions as Integer, byref error as NSErrorMBS, tag as Variant = nil) 14329
87.4.24 `coordinateWritingItemAtURL(url as string, file as folderitem, tag as Variant)`

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event called from `coordinateWritingItemAtURL` method. **Notes:** The plugin provides the URL and for your convenience a folderitem. See also:

- 87.4.10 `coordinateWritingItemAtURL(File as folderitem, options as Integer, byref error as NSErrorMBS, tag as Variant = nil)` 14330
- 87.4.11 `coordinateWritingItemAtURL(URL as string, options as Integer, byref error as NSErrorMBS, tag as Variant = nil)` 14332

87.4.25 `prepareComplete(Complete as NSFilePresenterHandlerMBS, tag as Variant)`

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** This event is called by `prepareForReadingItemsAtURLs`. **Notes:** You must call the complete handler when you are done.

87.4.26 Constants

87.4.27 `NSFileCoordinatorReadingResolvesSymbolicLink = 2`

MBS MacCloud Plugin, Plugin Version: 11.2. **Function:** One of the reading flag constants. **Notes:** Whether reading of an item that might be a symbolic link file causes the resolution of the link if it is. This affects the URL passed to the block passed to an invocation of one of the `coordinateReadingItemAtURL...` methods. This is not a valid option to use with `prepareForReadingItemsAtURLs`.

87.4.28 `NSFileCoordinatorReadingWithoutChanges = 1`

MBS MacCloud Plugin, Plugin Version: 11.2. **Function:** One of the reading flag constants. **Notes:** Whether reading does _not_ trigger sending of `savePresentedItemChangesWithCompletionHandler` to certain `NSFilePresenters` in the system and waiting for those `NSFilePresenters` to respond. The default behavior during coordinated reading is to send `savePresentedItemChangesWithCompletionHandler` to `NSFilePresenters`. 
87.4.29  NSFileCoordinatorWritingForDeleting = 1

MBS MacCloud Plugin, Plugin Version: 11.2. **Function:** One of the writing flag constants.
**Notes:**
Whether the writing to be done is actually the deletion of the item. This affects how the writing waits for previously scheduled coordinated reading and writing, how the writing causes subsequently scheduled reading and writing to wait, and what NSFilePresenter messaging is done. See the comments in the Single File Coordination section below. This option is how you trigger sending of accommodatePresentedItemDeletionWithCompletionHandler or accommodatePresentedSubitemDeletionAtURL messages to NSFilePresenters.

For example, Finder uses this when it’s emptying the trash to give NSFilePresenters a chance to close documents before their files disappear, or would disappear if the files weren’t still open.

87.4.30  NSFileCoordinatorWritingForMerging = 4

MBS MacCloud Plugin, Plugin Version: 11.2. **Function:** One of the writing flag constants.
**Notes:** Whether coordinated writing triggers sending of savePresentedItemChangesWithCompletionHandler to certain NSFilePresenters in the system and waiting for those NSFilePresenters to respond.

87.4.31  NSFileCoordinatorWritingForMoving = 2

MBS MacCloud Plugin, Plugin Version: 11.2. **Function:** One of the writing flag constants.
**Notes:**
Whether the writing to be done is actually the moving or renaming of the item. This affects how the writing waits for previously scheduled coordinated reading and writing, how the writing causes subsequently scheduled reading and writing to wait, and what NSFilePresenter messaging is done. See the comments in the Single File Coordination section below. This option has no effect when what’s being moved is a plain file so you can use it in code that moves file system items without checking whether the items are files or directories. Any such check would invite a race condition anyway.

For example, Finder uses this when it’s moving items that the user has dragged and dropped so as not to yank files contained by moved folders out from underneath applications that are reading or writing those files.

87.4.32  NSFileCoordinatorWritingForReplacing = 8

MBS MacCloud Plugin, Plugin Version: 11.2. **Function:** One of the writing flag constants.
**Notes:**
Whether the writing to be done is actually the replacement of the item with a different item. It causes the same behavior as NSFileCoordinatorWritingForDeleting except that when the item being written to is
renamed or moved while the writer is being made to wait the item is considered to have been a different item, so the writer is not passed an updated URL to reflect the renaming or moving. Use this when the moving or creation of an item will replace any item that gets in its way. To avoid a race condition use it regardless of whether there is actually an item in the way before the writing begins. Don’t use this when simply updating the contents of a file, even if the way you do that is writing the contents to another file and renaming it into place. This is not a valid option to use with prepareForReadingItemsAtURLs.

For example, NSDocument uses this for NSSaveAsOperation and NSSaveToOperation to announce that it is possibly overwriting an item with a brand new file or file package. This gives any NSFilePresenter of the overwritten item, including perhaps a different instance of NSDocument, perhaps in the same application, a chance to close itself before the item is overwritten.

For another example, the most accurate and safe way to coordinate a move is to invoke coordinateWritingItemAtURL using the NSFileCoordinatorWritingForMoving option with the source URL and NSFileCoordinatorWritingForReplacing with the destination URL.
87.5. class NSFileManagerMBS

87.5.1 class NSFileManagerMBS

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The NSFileManager class enables you to perform many generic file-system operations and insulates an application from the underlying file system.

Notes:
In Real Studio you can do the same with folderitem. But for some iCloud related tasks you need to use this class.

In Cocoa applications, a file manager object is usually your first interaction with the file system. You use this object to locate, create, copy, and move files and directories. You also use this object to get information about files and directories, such as its size, modification date, and BSD permissions. You can also use a file manager object to change the values of many file and directory attributes.

The NSFileManagerMBS class supports both the folderitem and path string as ways to specify the location of a file or directory. The use of the folderitem is generally preferred for specifying file-system items because they can convert path information to a more efficient representation internally. You can also obtain a bookmark from an folderitem, which is similar to an alias and offers a more sure way of locating the file or directory later.

In iOS 5.0 and later and in Mac OS X v10.7 and later, NSFileManager includes methods for managing items stored in the cloud. Files and directories tagged for cloud storage are synced to the user’s MobileMe account so that they can be made available to the user’s iOS devices and Macintosh computers. Changes to an item in one location are propagated to all other locations to ensure the items stay in sync.

87.5.2 Methods

87.5.3 attributesOfItemAtPath(item as folderitem, byref error as NSErrorMBS) as Dictionary


Example:

```pascal
dim n as new NSFileManagerMBS
dim e as NSErrorMBS
dim d as Dictionary = n.attributesOfItemAtPath(SpecialFolder.Desktop, e)
break // check dictionary in debugger
```
Notes:

item: The folderitem of a file or directory.
Error: If an error occurs, this is set to an actual error object containing the error information.

Return a Dictionary object that describes the attributes (file, directory, symlink, and so on) of the file specified by path. The keys in the dictionary are described in File Attribute Keys. (see NSFile* shared methods)

Special Considerations
This method does not traverse symbolic links. If the item at the path is a symbolic link that is, the value of the NSFileType key in the attributes dictionary is NSFileTypeSymbolicLink you can use the destinationOfSymbolicLinkAtPath method to retrieve the path of the item pointed to by the link. You can also use the stringByResolvingSymlinksInPath method of NSString to resolve links in the path before retrieving the item’s attributes.

Available in Mac OS X v10.5 and later.
See also:

• 87.5.4 attributesOfItemAtPath(path as string, byref error as NSErrorMBS) as Dictionary

87.5.4 attributesOfItemAtPath(path as string, byref error as NSErrorMBS) as Dictionary

Function: Returns the attributes of the item at a given path.
Notes:

path: The path of a file or directory.
Error: If an error occurs, this is set to an actual error object containing the error information.

Return a Dictionary object that describes the attributes (file, directory, symlink, and so on) of the file specified by path. The keys in the dictionary are described in File Attribute Keys. (see NSFile* shared methods)

Special Considerations
This method does not traverse symbolic links. If the item at the path is a symbolic link that is, the value of the NSFileType key in the attributes dictionary is NSFileTypeSymbolicLink you can use the destinationOfSymbolicLinkAtPath method to retrieve the path of the item pointed to by the link. You can also use the stringByResolvingSymlinksInPath method of NSString to resolve links in the path before retrieving the item’s attributes.

Available in Mac OS X v10.5 and later.
See also:

• 87.5.3 attributesOfItemAtPath(item as folderitem, byref error as NSErrorMBS) as Dictionary
87.5.5  changeCurrentDirectory(folder as folderitem) as boolean


**Function:** Changes the path of the current working directory to the specified path.

**Example:**

```vbs
dim m as new NSFileManagerMBS
dim f as FolderItem = SpecialFolder.Applications
if m.changeCurrentDirectory(f) then
    MsgBox m.currentDirectory.AbsolutePath
end if
```

**Notes:**

- folder: The path of the directory to which to change.

  Returns true if successful, otherwise false.

  All relative pathnames refer implicitly to the current working directory. Changing the current working directory affects only paths created in the current process.

  See also:

  - 87.5.6 changeCurrentDirectory(path as string) as boolean

87.5.6  changeCurrentDirectory(path as string) as boolean


**Function:** Changes the path of the current working directory to the specified path.

**Example:**

```vbs
dim m as new NSFileManagerMBS
if m.changeCurrentDirectory("/Users") then
    MsgBox m.currentDirectoryPath
end if
```

**Notes:**

- path: The path of the directory to which to change.

  Returns true if successful, otherwise false.

  All relative pathnames refer implicitly to the current working directory. Changing the current working directory affects only paths created in the current process.
See also:

- 87.5.5 changeCurrentDirectory(folder as folderitem) as boolean

87.5.7 Constructor

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.

87.5.8 containerFolderForSecurityApplicationGroupIdentifier(groupIdentifier as string) as folderItem

MBS MacCloud Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the container directory associated with the specified security application group ID. **Notes:**

As explained in App Sandbox Design Guide, groups of sandboxed apps that need to share files and other information can request a container directory as part of their entitlements. These directories are stored in `~/Library/Group Containers/`.

When called with a valid group identifier, this method returns the location of that directory as an folderItem. This method also creates the directory if it does not yet exist.

Important: Your app must have a com.apple.security.application-groups entitlement for the specified application group.

Available in OS X v10.8 and later.

87.5.9 containerURLForSecurityApplicationGroupIdentifier(groupIdentifier as string) as string

MBS MacCloud Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the container directory associated with the specified security application group ID. **Notes:**

As explained in App Sandbox Design Guide, groups of sandboxed apps that need to share files and other information can request a container directory as part of their entitlements. These directories are stored in `~/Library/Group Containers/`.

When called with a valid group identifier, this method returns the location of that directory as an URL. This method also creates the directory if it does not yet exist.
Important: Your app must have a com.apple.security.application-groups entitlement for the specified application group.

Available in OS X v10.8 and later.

**87.5.10 copyItem**

(source as folderItem, dest as folderItem, byref error as NSErrorMBS) as boolean


**Function:** Copies the item at the specified path to a new location synchronously.

**Notes:**

- **Source:** The path to the file or directory you want to move.
- **Dest:** The path at which to place the copy of srcPath. This path must include the name of the file or directory in its new location.
- **error:** If an error occurs, this is set to an actual error object containing the error information.

Returns true if the item was copied successfully or the file manager’s delegate aborted the operation deliberately. Returns false if an error occurred.

When copying items, the current process must have permission to read the file or directory at Source and write the parent directory of Dest. If the item at Source is a directory, this method copies the directory and all of its contents, including any hidden files. If a file with the same name already exists at Dest, this method aborts the copy attempt and returns an appropriate error. If the last component of srcPath is a symbolic link, only the link is copied to the new path.

Available in OS X v10.5 and later.

**87.5.11 copyItemMT**

(source as folderItem, dest as folderItem, byref error as NSErrorMBS) as boolean


**Function:** Copies the item at the specified path to a new location synchronously.

**Example:**

```dim f as FolderItem = SpecialFolder.Desktop.Child("test.rtf")
dim d as FolderItem = SpecialFolder.Desktop.Child("output.rtf")
dim e as NSErrorMBS
if not NSFileManagerMBS.copyItemMT(f,d,e) then```

if not NSFileManagerMBS.copyItemMT(f,d,e) then
MsgBox e.LocalizedDescription
else
MsgBox "OK"
end if

Notes:
Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.

Source: The path to the file or directory you want to move.
Dest: The path at which to place the copy of srcPath. This path must include the name of the file or directory in its new location.
error: If an error occurs, this is set to an actual error object containing the error information.

Returns true if the item was copied successfully or the file manager’s delegate aborted the operation deliberately. Returns false if an error occurred.

When copying items, the current process must have permission to read the file or directory at Source and write the parent directory of Dest. If the item at Source is a directory, this method copies the directory and all of its contents, including any hidden files. If a file with the same name already exists at Dest, this method aborts the copy attempt and returns an appropriate error. If the last component of srcPath is a symbolic link, only the link is copied to the new path.

Available in OS X v10.5 and later.

87.5.12 createSymbolicLink(file as folderitem, destFile as folderitem, byref error as NSErrorMBS) as boolean

Function: Creates a symbolic link at the specified URL that points to an item at the given URL.
Example:

```
dim m as new NSFileManagerMBS
dim file as FolderItem = SpecialFolder.Desktop.Child("test.rtf")
dim destfile as FolderItem = SpecialFolder.Desktop.Child("Notes.rtf")
dim error as NSErrorMBS

if m.createSymbolicLink(file, destfile, error) then
    MsgBox "OK"
else
    MsgBox "Error: " + error.localizedDescription
```
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end if

Notes:

file: The path at which to create the new symbolic link. The last path component is used as the name of
the link.
destFile: The path that contains the item to be pointed to by the link. In other words, this is the destination
of the link.
error: If an error occurs, upon return contains an NSError object that describes the problem.

Returns true if the symbolic link was created or false if an error occurred. This method also returns false if
a file, directory, or link already exists at path.

This method does not traverse symbolic links contained in either path or destPath.

Available in Mac OS X v10.5 and later.
As of Mac OS X 10.7 tests here, it seems like an alias file is created, not a symbolic link.
See also:

• 87.5.13 createSymbolicLink(path as string, destPath as string, byref error as NSErrorMBS) as boolean

87.5.13  createSymbolicLink(path as string, destPath as string, byref error as NSErrorMBS) as boolean

Function: Creates a symbolic link that points to the specified destination.
Notes:

path: The path at which to create the new symbolic link. The last path component is used as the name of
the link.
destPath: The path that contains the item to be pointed to by the link. In other words, this is the destination
of the link.
error: If an error occurs, upon return contains an NSError object that describes the problem.

Returns true if the symbolic link was created or false if an error occurred. This method also returns false if
a file, directory, or link already exists at path.

This method does not traverse symbolic links contained in either path or destPath.

Available in Mac OS X v10.5 and later.
As of Mac OS X 10.7 tests here, it seems like an alias file is created, not a symbolic link.
87.5.14  currentDirectory as folderitem

Function: Returns the path of the program’s current directory.
Example:

dim m as new NSFileManagerMBS
dim f as FolderItem = SpecialFolder.Applications
if m.changeCurrentDirectory(f) then
    MsgBox m.currentDirectory.AbsolutePath
end if

Notes:
Returns the path of the program’s current directory. If the program’s current working directory isn’t accessible, returns nil.

The string returned by this method is initialized to the current working directory; you can change the working directory by invoking changeCurrentDirectoryPath.

Relative pathnames refer implicitly to the current directory. For example, if the current directory is /tmp, and the relative pathname reports/info.txt is specified, the resulting full pathname is /tmp/reports/info.txt.

87.5.15  currentDirectoryPath as string

Function: Returns the path of the program’s current directory as string.
Example:

dim m as new NSFileManagerMBS
MsgBox m.currentDirectoryPath

Notes:
Returns the path of the program’s current directory. If the program’s current working directory isn’t accessible, returns "".
The string returned by this method is initialized to the current working directory; you can change the working directory by invoking changeCurrentDirectoryPath.

Relative pathnames refer implicitly to the current directory. For example, if the current directory is /tmp, and the relative pathname reports/info.txt is specified, the resulting full pathname is /tmp/reports/info.txt.

### 87.5.16 destinationOfSymbolicLinkAtPath(file as folderitem, byref error as NSErrorMBS) as string

**Function:** Returns the path of the item pointed to by a symbolic link.
**Notes:**

- file: The folderitem of a file or directory. Be aware that Xojo may already have resolved the symlink!
- error: If an error occurs, upon return contains an NSError object that describes the problem.

Returns a string containing the path of the directory or file to which the symbolic link path refers, or "" upon failure. If the symbolic link is specified as a relative path, that relative path is returned.

See also:

- 87.5.17 destinationOfSymbolicLinkAtPath(path as string, byref error as NSErrorMBS) as string

### 87.5.17 destinationOfSymbolicLinkAtPath(path as string, byref error as NSErrorMBS) as string

**Function:** Returns the path of the item pointed to by a symbolic link.
**Example:**

```vbnet
dim f as new NSFileManagerMBS
dim e as NSErrorMBS

dim p as string = f.destinationOfSymbolicLinkAtPath("/tmp", e)

if e = nil then
    MsgBox p
else
    MsgBox e.LocalizedDescription
end if
```

**Notes:**

- path: The path of a file or directory.
error: If an error occurs, upon return contains an NSError object that describes the problem.

Returns a string containing the path of the directory or file to which the symbolic link path refers, or "" upon failure. If the symbolic link is specified as a relative path, that relative path is returned.
See also:

- 87.5.16 destinationOfSymbolicLinkAtPath(file as folderitem, byref error as NSErrorMBS) as string

87.5.18 displayName(path as folderitem) as string

Function: Returns the display name of the file or directory at a specified path.
Notes:

path: The path of a file or directory.

The name of the file or directory at path in a localized form appropriate for presentation to the user. If there is no file or directory at path, or if an error occurs, returns path as is.

Display names are user-friendly names for files. They are typically used to localize standard file and directory names according to the user's language settings. They may also reflect other modifications, such as the removal of filename extensions. Such modifications are used only when displaying the file or directory to the user and do not reflect the actual path to the item in the file system. For example, if the current user’s preferred language is French, the following code fragment logs the name Bibliothèque and not the name Library, which is the actual name of the directory.

87.5.19 evictUbiquitousItem(item as folderitem, byref error as NSErrorMBS) as boolean

Function: Removes the local copy of the specified cloud-based item.
Notes:

item: Specify the file or directory in iCloud storage.
error: If an error occurs, this pointer is set to an NSError object containing information about the error.

Returns true if the local item was removed successfully or false if it was not. If false is returned, an NSError object describing the error is returned in the error parameter.

This method does not remove the item from the cloud. It removes only the local version. You can use this method to force iCloud to download a new version of the file or directory from the server.
87.5. CLASS NSFILEMANAGERMBS

To delete a file permanently from the user’s iCloud storage, use the regular NSFileManager routines for deleting files and directories. Remember that deleting items from iCloud cannot be undone. Once deleted, the item is gone forever.

Available in Mac OS X v10.7 and later.

87.5.20 fileExists(path as folderitem) as boolean


**Function:** Returns a Boolean value that indicates whether a file or directory exists at a specified path.

**Example:**

```vbnet
dim m as new NSFileManagerMBS
dim f as FolderItem = SpecialFolder.Desktop.Child("notes.rtf")

MsgBox "File exists: " + str(m.fileExists(f))
```

**Notes:**

- path: The path of the file or directory. I

Returns true if a file at the specified path exists or false if the file’s does not exist or its existence could not be determined.

If the file at path is inaccessible to your application, perhaps because one or more parent directories are inaccessible, this method returns false. If the final element in path specifies a symbolic link, this method traverses the link and returns true or false based on the existence of the file at the link destination.

Note: Attempting to predicate behavior based on the current state of the file system or a particular file on the file system is not recommended. Doing so can cause odd behavior or race conditions. It’s far better to attempt an operation (such as loading a file or creating a directory), check for errors, and handle those errors gracefully than it is to try to figure out ahead of time whether the operation will succeed. For more information on file system race conditions, see Race Conditions, File Operations, and Interprocess Communication in Secure Coding Guide.


See also:

- 87.5.21 fileExists(path as folderitem, byref isDirectory as boolean) as boolean
87.5.21  fileExists(path as folderitem, byref isDirectory as boolean) as boolean

**Function:** Returns a Boolean value that indicates whether a file or directory exists at a specified path. 
**Example:**

```vbnet
dim m as new NSFileManagerMBS
dim f as FolderItem = SpecialFolder.Desktop

dim directory as Boolean
MsgBox "File exists: " + str(m.fileExists(f, directory)) + " and is Directory: " + str(Directory)
```

**Notes:**
- **path:** The path of a file or directory. 
- **isDirectory:** Upon return, contains true if path is a directory or if the final path element is a symbolic link that points to a directory, otherwise contains false. If path doesn’t exist, the return value is undefined.

Returns true if a file at the specified path exists or false if the file’s does not exist or its existence could not be determined.

If the file at path is inaccessible to your application, perhaps because one or more parent directories are inaccessible, this method returns false. If the final element in path specifies a symbolic link, this method traverses the link and returns true or false based on the existence of the file at the link destination.

If you need to further determine if path is a package, use the isFilePackageAtPath method of NSWorkspaceMBS.

Note: Attempting to predicate behavior based on the current state of the file system or a particular file on the file system is not recommended. Doing so can cause odd behavior or race conditions. It’s far better to attempt an operation (such as loading a file or creating a directory), check for errors, and handle those errors gracefully than it is to try to figure out ahead of time whether the operation will succeed. For more information on file system race conditions, see Race Conditions, File Operations, and Interprocess Communication in Secure Coding Guide.


See also:
- 87.5.20 fileExists(path as folderitem) as boolean

87.5.22  FileForUbiquityContainerIdentifier(containerIdentifier as string) as folderitem

**Function:** Returns the iCloud directory associated with the specified container ID.  
**Notes:**
containerID: Specify the container ID of the cloud-based storage container. The string you specify must not contain wildcards and must be of the form <TEAMID>.<CONTAINER>, where <TEAMID> is your development team ID and <CONTAINER> describes the bundle identifier of the container you want to access. The container identifiers for your application must be declared in the com.apple.developer.ubiquity-container-identifiers entitlement.

If you specify "", this method returns the first container listed in the com.apple.developer.ubiquity-container-identifiers entitlement.

Returns a folderitem pointing to the specified container directory or nil if the container could not be located or if iCloud storage is unavailable for the current user or device.

You can use the folderitem returned by this method to build paths to files and directories in the user’s iCloud storage. Each application that syncs documents to the cloud must have at least one associated container directory in which to put those files. This container directory can be unique to the application or shared by multiple applications. You use this method to retrieve the folderitem for that container directory.

In addition to writing to its own container directory, an application can write to any container directory for which it has the appropriate permission. Each additional container directory should be listed as an additional value in the com.apple.developer.ubiquity-container-identifiers entitlement.

Note: The development team ID that precedes each container ID string is the unique identifier associated with your development team. You can find this string in the Member Center of the Apple Developer website (http://developer.apple.com/membercenter). From the Member Center home page, select the Your Account tab and then select Organization Profile from the column on the left of that tab. Your team’s identifier is in the Company/Organization ID field.

The first time you call this method for a given container directory, iOS extends your application sandbox to include that container directory. Thus, it is important that you call this method at least once before trying to search for files in iCloud. And if your application accesses multiple container directories, you should call the method once for each directory.

Available in Mac OS X v10.7 and later.

FileForUbiquityContainerIdentifier returns folderitem while URLForUbiquityContainerIdentifier returns URL string.

**87.5.23 isDeletableFile(path as folderitem) as boolean**


Function: Returns a Boolean value that indicates whether the invoking object appears able to delete a specified file.

Example:

```ruby
dim m as new NSFileManagerMBS
dim f as FolderItem = SpecialFolder.Desktop.Child("notes.rtf")
```
MsgBox "Can delete: " + str(m.isDeletableFile(f))

Notes:
path: A file path.

Returns true if the current process has delete privileges for the file at path; otherwise false if the process does not have delete privileges or the existence of the file could not be determined.

For a directory or file to be deletable, the current process must either be able to write to the parent directory of path or it must have the same owner as the item at path. If path is a directory, every item contained in path must be deletable by the current process.

If the file at path is inaccessible to your application, perhaps because it does not have search privileges for one or more parent directories, this method returns false. This method does not traverse symbolic links in the path.

Note: Attempting to predicate behavior based on the current state of the file system or a particular file on the file system is not recommended. Doing so can cause odd behavior or race conditions. It’s far better to attempt an operation (such as loading a file or creating a directory), check for errors, and handle those errors gracefully than it is to try to figure out ahead of time whether the operation will succeed. For more information on file system race conditions, see Race Conditions, File Operations, and Interprocess Communication in Secure Coding Guide.

87.5.24 \hspace{1em} isExecutableFile(path as folderitem) as boolean

Function: Returns a Boolean value that indicates whether the operating system appears able to execute a specified file.
Example:

```vba
dim m as new NSFileManagerMBS
dim f as FolderItem = SpecialFolder.Desktop.Child("notes.rtf")
MsgBox "Can execute: " + str(m.isExecutableFile(f))
```

Notes:
path: A file path.

Returns true if the current process has execute privileges for the file at path; otherwise false if the process does not have execute privileges or the existence of the file could not be determined.

If the file at path is inaccessible to your application, perhaps because it does not have search privileges for one or more parent directories, this method returns false. This method traverses symbolic links in the path. This method also uses the real user ID and group ID, as opposed to the effective user and group IDs, to determine if the file is executable.

Note: Attempting to predicate behavior based on the current state of the file system or a particular file on the file system is not recommended. Doing so can cause odd behavior or race conditions. It’s far better to attempt an operation (such as loading a file or creating a directory), check for errors, and handle those errors gracefully than it is to try to figure out ahead of time whether the operation will succeed. For more information on file system race conditions, see Race Conditions, File Operations, and Interprocess Communication in Secure Coding Guide:

87.5.25  isReadableFile(path as folderitem) as boolean

Function: Returns a Boolean value that indicates whether the invoking object appears able to read a specified file.  
Example:

dim m as new NSFileManagerMBS
dim f as FolderItem = SpecialFolder.Desktop.Child("notes.rtf")

MsgBox "Can read: "+str(m.isReadableFile(f))

Notes:

path: A file path.

Returns true if the current process has read privileges for the file at path; otherwise false if the process does not have read privileges or the existence of the file could not be determined.

If the file at path is inaccessible to your application, perhaps because it does not have search privileges for one or more parent directories, this method returns false. This method traverses symbolic links in the path. This method also uses the real user ID and group ID, as opposed to the effective user and group IDs, to determine if the file is readable.
Note: Attempting to predicate behavior based on the current state of the file system or a particular file on the file system is not recommended. Doing so can cause odd behavior or race conditions. It’s far better to attempt an operation (such as loading a file or creating a directory), check for errors, and handle those errors gracefully than it is to try to figure out ahead of time whether the operation will succeed. For more information on file system race conditions, see Race Conditions, File Operations, and Interprocess Communication in Secure Coding Guide.


87.5.26  isUbiquitousItem(item as folderitem) as boolean

Function: Returns a Boolean indicating whether the item is targeted for storage in iCloud.
Example:

dim m as new NSFileManagerMBS
dim f as FolderItem = SpecialFolder.Desktop.Child("notes.rtf")

MsgBox "Is in iCloud: " + str(m.isUbiquitousItem(f))

Notes:

item: Specify the folderitem for the file or directory whose status you want to check.

Returns true if the item is targeted for iCloud storage or false if it is not. This method also returns false if no item exists at url.

This method reflects only whether the item should be stored in iCloud because a call was made to the setUbiquitous method with a value of true for its flag parameter. This method does not reflect whether the file has actually been uploaded to any iCloud servers. To determine a file’s upload status, check the IsUploadedMBS function in the folderitem class.

Available in Mac OS X v10.7 and later.
See also:

• 87.5.27 isUbiquitousItem(URL as string) as boolean

87.5.27  isUbiquitousItem(URL as string) as boolean

Function: Returns a Boolean indicating whether the item is targeted for storage in iCloud.
Notes:

item: Specify the URL for the file or directory whose status you want to check.

Returns true if the item is targeted for iCloud storage or false if it is not. This method also returns false if no item exists at url.

This method reflects only whether the item should be stored in iCloud because a call was made to the setUbiquitous method with a value of true for its flag parameter. This method does not reflect whether the file has actually been uploaded to any iCloud servers. To determine a file’s upload status, check the IsUploadedMBS function in the folderitem class.

Available in Mac OS X v10.7 and later.
See also:

• 87.5.26 isUbiquitousItem(item as folderitem) as boolean

87.5.28  isWritableFile(path as folderitem) as boolean

Function: Returns a Boolean value that indicates whether the invoking object appears able to write to a specified file.
Example:

dim m as new NSFileManagerMBS
dim f as FolderItem = SpecialFolder.Desktop.Child("notes.rtf")

MsgBox "Can write: " + str(m.isWritableFile(f))

Notes:

path: A file path.

Returns true if the current process has write privileges for the file at path; otherwise false if the process does not have write privileges or the existence of the file could not be determined.

If the file at path is inaccessible to your application, perhaps because it does not have search privileges for one or more parent directories, this method returns false. This method traverses symbolic links in the path. This method also uses the real user ID and group ID, as opposed to the effective user and group IDs, to determine if the file is writable.

Note: Attempting to predicate behavior based on the current state of the file system or a particular file on the file system is not recommended. Doing so can cause odd behavior or race conditions. It’s far better
to attempt an operation (such as loading a file or creating a directory), check for errors, and handle those
erors gracefully than it is to try to figure out ahead of time whether the operation will succeed. For more
information on file system race conditions, see Race Conditions, File Operations, and Interprocess Commu-
nication in Secure Coding Guide:
Conditions.html# //apple_ref/doc/uid/TP40002585

87.5.29  lastPathComponent(pathOrURL as string) as string

MBS MacCloud Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the last path component of a file URL or file path.
Notes: Available in Mac OS X v10.6 and later.

87.5.30  linkItem(source as folderItem, dest as folderItem, byref error as NSErrorMBS) as boolean

Notes:
Source: The path that specifies the item you wish to link to. The value in this parameter must not be nil.
Dest: The path that identifies the location where the link will be created. The value in this parameter must
not be nil.
error: If an error occurs, this pointer is set to an actual error object containing the error information.
Returns true if the hard link was created or NO if an error occurred. This method also returns false if a file,
directory, or link already exists at dstPath.
Use this method to create hard links between files in the current file system. If Source is a directory, this
method creates a new directory at Dest and then creates hard links for the items in that directory. If Source is
(or contains) a symbolic link, the symbolic link is copied to the new location and not converted to a hard link.
Available in OS X v10.5 and later.

87.5.31  moveItem(source as folderItem, dest as folderItem, byref error as NSErrorMBS) as boolean

MBS MacCloud Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Moves the file or directory at the specified path to a new location synchronously.
Notes:
source: The path to the file or directory you want to move. This parameter must not be nil.
dest: The new path for the item in Source. This path must include the name of the file or directory in its
new location. This parameter must not be nil.
error: If an error occurs, this is set to an actual error object containing the error information.

Returns true if the item was moved successfully or the file manager’s delegate aborted the operation deliber-
ately. Returns NO if an error occurred.

When moving items, the current process must have permission to read the item at Source and write the
parent directory of Dest. If the item at Source is a directory, this method moves the directory and all of
its contents, including any hidden files. If an item with the same name already exists at Dest, this method
aborts the move attempt and returns an appropriate error. If the last component of Source is a symbolic
link, only the link is moved to the new path; the item pointed to by the link remains at its current location.

If the source and destination of the move operation are not on the same volume, this method copies the item
first and then removes it from its current location. This behavior may trigger additional delegate notifica-
tions related to copying and removing individual items.

Available in OS X v10.5 and later.

87.5.32  NSFileAppendOnly as string

Function: One of the keys to access file attribute values contained in dictionary used by setAttributes,
attributesOfItemAtPath, createDirectoryAtPath, and createFileAtPath.
Notes:
The key in a file attribute dictionary whose value indicates whether the file is read-only.
The corresponding value is a number containing a Boolean value.
Available in Mac OS X v10.2 and later.

87.5.33  NSFileBusy as string

Function: One of the keys to access file attribute values contained in dictionary used by setAttributes,
attributesOfItemAtPath, createDirectoryAtPath, and createFileAtPath.
Notes:
The key in a file attribute dictionary whose value indicates whether the file is busy.
The corresponding value is a number containing a Boolean value.
Available in Mac OS X v10.4 and later.
87.5.34  **NSFileCreationDate as string**

MBS MacCloud Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys to access file attribute values contained in dictionary used by setAttributes, attributesOfItemAtPath, createDirectoryAtPath, and createFileAtPath. **Notes:** The key in a file attribute dictionary whose value indicates the file’s creation date. The corresponding value is a date. Available in Mac OS X v10.2 and later.

87.5.35  **NSFileDeviceIdentifier as string**

MBS MacCloud Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys to access file attribute values contained in dictionary used by setAttributes, attributesOfItemAtPath, createDirectoryAtPath, and createFileAtPath. **Notes:** The key in a file attribute dictionary whose value indicates the identifier for the device on which the file resides. The corresponding value is a number containing an Int32. Available in Mac OS X v10.0 and later.

87.5.36  **NSFileExtensionHidden as string**

MBS MacCloud Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys to access file attribute values contained in dictionary used by setAttributes, attributesOfItemAtPath, createDirectoryAtPath, and createFileAtPath. **Notes:** The key in a file attribute dictionary whose value indicates whether the file’s extension is hidden. The corresponding value is a number containing a Boolean value. Available in Mac OS X v10.1 and later.

87.5.37  **NSFileGroupOwnerAccountID as string**

MBS MacCloud Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys to access file attribute values contained in dictionary used by setAttributes, attributesOfItemAtPath, createDirectoryAtPath, and createFileAtPath. **Notes:** The key in a file attribute dictionary whose value indicates the file’s group ID. The corresponding value is a number containing an Int32.
87.5.38 **NSFileGroupOwnerAccountName as string**

**Function:** One of the keys to access file attribute values contained in dictionary used by setAttributes, attributesOfItemAtPath, createDirectoryAtPath, and createFileAtPath.
**Notes:**
The key in a file attribute dictionary whose value indicates the group name of the file’s owner.
The corresponding value is a string.
Available in Mac OS X v10.0 and later.

87.5.39 **NSFileHFSCreatorCode as string**

**Function:** One of the keys to access file attribute values contained in dictionary used by setAttributes, attributesOfItemAtPath, createDirectoryAtPath, and createFileAtPath.
**Notes:**
The key in a file attribute dictionary whose value indicates the file’s HFS creator code.
The corresponding value is a number containing an Int32. See "HFS File Types" for possible values.
Available in Mac OS X v10.1 and later.

87.5.40 **NSFileHFSTypeCode as string**

**Function:** One of the keys to access file attribute values contained in dictionary used by setAttributes, attributesOfItemAtPath, createDirectoryAtPath, and createFileAtPath.
**Notes:**
The key in a file attribute dictionary whose value indicates the file’s HFS type code.
The corresponding value is a number containing an Int32. See "HFS File Types" for possible values.
Available in Mac OS X v10.1 and later.

87.5.41 **NSFileImmutable as string**

**Function:** One of the keys to access file attribute values contained in dictionary used by setAttributes, attributesOfItemAtPath, createDirectoryAtPath, and createFileAtPath.
**Notes:**
The key in a file attribute dictionary whose value indicates whether the file is mutable. The corresponding value is a number containing a Boolean value. Available in Mac OS X v10.2 and later.

87.5.42 **NSFileModificationDate as string**

**Function:** One of the keys to access file attribute values contained in dictionary used by setAttributes, attributesOfItemAtPath, createDirectoryAtPath, and createFileAtPath.
**Notes:**
The key in a file attribute dictionary whose value indicates the file's last modified date. The corresponding value is a date. Available in Mac OS X v10.0 and later.

87.5.43 **NSFileOwnerAccountID as string**

**Function:** One of the keys to access file attribute values contained in dictionary used by setAttributes, attributesOfItemAtPath, createDirectoryAtPath, and createFileAtPath.
**Notes:**
The key in a file attribute dictionary whose value indicates the file's owner's account ID. The corresponding value is a number containing an Int32. Available in Mac OS X v10.2 and later.

87.5.44 **NSFileOwnerAccountName as string**

**Function:** One of the keys to access file attribute values contained in dictionary used by setAttributes, attributesOfItemAtPath, createDirectoryAtPath, and createFileAtPath.
**Notes:**
The key in a file attribute dictionary whose value indicates the name of the file's owner. The corresponding value is a string. Available in Mac OS X v10.0 and later.

87.5.45 **NSFilePosixPermissions as string**

**Function:** One of the keys to access file attribute values contained in dictionary used by setAttributes,
attributesOfItemAtPath, createDirectoryAtPath, and createFileAtPath.

Notes:
The key in a file attribute dictionary whose value indicates the file's Posix permissions.
The corresponding value is a number.
Available in Mac OS X v10.0 and later.

87.5.46 NSFileReferenceCount as string

Function: One of the keys to access file attribute values contained in dictionary used by setAttributes,
attributesOfItemAtPath, createDirectoryAtPath, and createFileAtPath.
Notes:
The key in a file attribute dictionary whose value indicates the file's reference count.
The corresponding value is a number containing an Int32.
The number specifies the number of hard links to a file.
Available in Mac OS X v10.0 and later.

87.5.47 NSFileSize as string

Function: One of the keys to access file attribute values contained in dictionary used by setAttributes,
attributesOfItemAtPath, createDirectoryAtPath, and createFileAtPath.
Notes:
The key in a file attribute dictionary whose value indicates the file's size in bytes.
The corresponding value is a number containing an Int64.
Important If the file has a resource fork, the returned value does not include the size of the resource fork.

87.5.48 NSFileSystemFileNumber as string

Function: One of the keys to access file attribute values contained in dictionary used by setAttributes,
attributesOfItemAtPath, createDirectoryAtPath, and createFileAtPath.
Notes:
The key in a file attribute dictionary whose value indicates the file's filesystem file number.
The corresponding value is a number containing an Int32. The value corresponds to the value of st_ino, as returned by stat(2).
Available in Mac OS X v10.0 and later.
87.5.49 NSFileSystemFreeNodes as string

**Function:** One of the keys to access the file attribute values contained in the dictionary object returned from the attributesOfFilesystemForPath function.
**Notes:**
The key in a file system attribute dictionary whose value indicates the number of free nodes in the file system.
The corresponding value is a number that specifies the number of free nodes in the file system.
Available in Mac OS X v10.0 and later.

87.5.50 NSFileSystemFreeSize as string

**Function:** One of the keys to access the file attribute values contained in the dictionary object returned from the attributesOfFilesystemForPath function.
**Notes:**
The key in a file system attribute dictionary whose value indicates the amount of free space on the file system.
The corresponding value is a number that specifies the amount of free space on the file system in bytes. The value is determined by statfs().
Available in Mac OS X v10.0 and later.

87.5.51 NSFileSystemNodes as string

**Function:** One of the keys to access the file attribute values contained in the dictionary object returned from the attributesOfFilesystemForPath function.
**Notes:**
The key in a file system attribute dictionary whose value indicates the number of nodes in the file system.
The corresponding value is a number that specifies the number of nodes in the file system.
Available in Mac OS X v10.0 and later.

87.5.52 NSFileSystemNumber as string

**Function:** One of the keys to access the file attribute values contained in the dictionary object returned from the attributesOfFilesystemForPath function.
**Notes:**
The key in a file system attribute dictionary whose value indicates the filesystem number of the file system.
The corresponding value is a number that specifies the filesystem number of the file system. The value corresponds to the value of \texttt{st.dev}, as returned by \texttt{stat(2)}.
Available in Mac OS X v10.0 and later.

87.5.53 \textbf{NSFileSystemSize as string}

\textbf{Function:} One of the keys to access the file attribute values contained in the dictionary object returned from the \texttt{attributesOfFileSystemForPath} function.
\textbf{Notes:}
The key in a file system attribute dictionary whose value indicates the size of the file system.
The corresponding value is a number that specifies the size of the file system in bytes. The value is determined by \texttt{statfs(\)}. Available in Mac OS X v10.0 and later.

87.5.54 \textbf{NSFileType as string}

\textbf{Function:} One of the keys to access file attribute values contained in dictionary used by \texttt{setAttributes}, \texttt{attributesOfItemAtPath}, \texttt{createDirectoryAtPath}, and \texttt{createFileAtPath}.
\textbf{Notes:}
The key in a file attribute dictionary whose value indicates the file's type.
The corresponding value is a string (see \texttt{NSFileType*} shared methods for possible values).
Available in Mac OS X v10.0 and later.

87.5.55 \textbf{NSFileTypeBlockSpecial as string}

\textbf{Function:} One of the possible \texttt{NSFileType} values.
\textbf{Example:}

```swift
// check first hard disc
dim e as NSErrorMBS
dim n as new NSFileManagerMBS
dim d as Dictionary = n.attributesOfItemAtPath("/dev/disk0", e)
MsgBox d.Value(n.NSFileType)
```
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Notes: Block special file (e.g. hard disk)

87.5.56  **NSFileTypeCharacterSpecial as string**

MBS MacCloud Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the possible NSFileType values.  **Notes:** Character special file

87.5.57  **NSFileTypeDirectory as string**

MBS MacCloud Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the possible NSFileType values.  **Example:**

```plaintext
dim e as NSErrorMBS
dim n as new NSFileManagerMBS
dim d as Dictionary = n.attributesOfItemAtPath("/System", e)
MsgBox d.Value(n.NSFileType)
```

**Notes:** Directory

87.5.58  **NSFileTypeRegular as string**

MBS MacCloud Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the possible NSFileType values.  **Notes:** Regular file

87.5.59  **NSFileTypeSocket as string**

MBS MacCloud Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the possible NSFileType values.  **Notes:** Socket (a socket visible in file system as a file)

87.5.60  **NSFileTypeSymbolicLink as string**

MBS MacCloud Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the possible NSFileType values.
87.5.61 **NSFileTypeUnknown as string**

MBS MacCloud Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the possible NSFileType values. **Notes:** Unknown

87.5.62 **pathExtension(pathOrURL as string) as string**

MBS MacCloud Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the path extension of a file URL or file path. **Notes:** Available in Mac OS X v10.6 and later.

87.5.63 **removeItem(file as folderitem, byref error as NSErrorMBS) as boolean**

MBS MacCloud Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes the file or directory at the specified path. **Notes:** path: A path string indicating the file or directory to remove. If the path specifies a directory, the contents of that directory are recursively removed. error: If an error occurs, this is set to an actual error object containing the error information.

Returns true if the item was removed successfully or if path was nil. Returns false if an error occurred. If the delegate aborts the operation for a file, this method returns true. However, if the delegate aborts the operation for a directory, this method returns false.

Available in OS X v10.5 and later. See also:

- 87.5.64 **removeItem(path as string, byref error as NSErrorMBS) as boolean**

87.5.64 **removeItem(path as string, byref error as NSErrorMBS) as boolean**

MBS MacCloud Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes the file or directory at the specified path. **Notes:**
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path: A path string indicating the file or directory to remove. If the path specifies a directory, the contents of that directory are recursively removed.

error: If an error occurs, this is set to an actual error object containing the error information.

Returns true if the item was removed successfully or if path was nil. Returns false if an error occurred. If the delegate aborts the operation for a file, this method returns true. However, if the delegate aborts the operation for a directory, this method returns false.

Available in OS X v10.5 and later.

See also:

- 87.5.63 removeItem(file as folderitem, byref error as NSErrorMBS) as boolean

87.5.65 setAttributes(attributesDic as dictionary, item as folderitem, byref error as NSErrorMBS) as boolean


Function: Sets the attributes of the specified file or directory.

Notes:

attributes: A dictionary containing as keys the attributes to set for path and as values the corresponding value for the attribute. You can set the following attributes: NSFileBusy, NSFileCreationDate, NSFileExtensionHidden, NSFileGroupOwnerAccountID, NSFileGroupOwnerAccountName, NSFileHFSCreatorCode, NSFileHFSFileTypeCode, NSFileImmutable, NSFileModificationDate, NSFileOwnerAccountID, NSFileOwnerAccountName, NSFilePosixPermissions. You can change single attributes or any combination of attributes; you need not specify keys for all attributes.

item: The folderitem of a file or directory.

error: If an error occurs, this is set to an actual error object containing the error information.

Returns true if all changes succeed. If any change fails, returns false, but it is undefined whether any changes actually occurred.

Discussion

As in the POSIX standard, the application either must own the file or directory or must be running as superuser for attribute changes to take effect. The method attempts to make all changes specified in attributes and ignores any rejection of an attempted modification. If the last component of the path is a symbolic link it is traversed.

The NSFilePosixPermissions value must be initialized with the code representing the POSIX file-permissions bit pattern. NSFileHFSCreatorCode and NSFileHFSFileTypeCode will only be heeded when path specifies a file.

Available in Mac OS X v10.5 and later.

See also:
87.5.66  setAttributes(attributesDic as dictionary, path as string, byref error as NSErrorMBS) as boolean

Function: Sets the attributes of the specified file or directory.
Notes:
attributes: A dictionary containing as keys the attributes to set for path and as values the corresponding value for the attribute. You can set the following attributes: NSFileBusy, NSFile_creationDate, NSFileExtensionHidden, NSFileGroupOwnerAccountID, NSFileGroupOwnerAccountName, NSFileHFSCreatorCode, NSFileHFSTypeCode, NSFileImmutable, NSFileModificationDate, NSFileOwnerAccountID, NSFileOwnerAccountName, NSFilePosixPermissions. You can change single attributes or any combination of attributes; you need not specify keys for all attributes.
path: The path of a file or directory.
error: If an error occurs, this is set to an actual error object containing the error information.

Returns true if all changes succeed. If any change fails, returns false, but it is undefined whether any changes actually occurred.

Discussion
As in the POSIX standard, the application either must own the file or directory or must be running as superuser for attribute changes to take effect. The method attempts to make all changes specified in attributes and ignores any rejection of an attempted modification. If the last component of the path is a symbolic link it is traversed.

The NSFilePosixPermissions value must be initialized with the code representing the POSIX file-permissions bit pattern. NSFileHFSCreatorCode and NSFileHFSTypeCode will only be heeded when path specifies a file.

Available in Mac OS X v10.5 and later.
See also:

• 87.5.65 setAttributes(attributesDic as dictionary, item as folderitem, byref error as NSErrorMBS) as boolean

87.5.67  setUbiquitous(flag as boolean, item as folderitem, destitem as folderitem, byref error as NSErrorMBS) as boolean

Function: Sets whether the item at the specified URL should be stored in the cloud.
Notes:

flag: Specify true to move the item to iCloud or false to remove it from iCloud (if it is there currently).

item: Specify the folderitem of the item (file or directory) that you want to store in iCloud.

destitem: Specify the location in iCloud at which to store the file or directory. This folderitem must be constructed from a folderitem returned by the URLForUbiquityContainerIdentifier method, which you use to retrieve the desired iCloud container directory. The folderitem you specify may contain additional subdirectories so that you can organize your files hierarchically in iCloud. However, you are responsible for creating those intermediate subdirectories (using the NSFileManagerMBS or folderitem class) in your iCloud container directory.

error: If an error occurs, this pointer is set to an NSError object containing information about the error. You may specify nil for this parameter if you do not want the error information.

Returns yes if the item’s status was updated successfully or false if an error occurred. If this method returns false and you specified a value for the error parameter, this method returns an error object.

Use this method to move a file from its current location to iCloud. For files located in an application’s sandbox, this involves physically removing the file from the sandbox directory. (The system extends your application’s sandbox privileges to give it access to files it moves to iCloud.) You can also use this method to move files out of iCloud and back into a local directory.

Your application must have an active file presenter object configured to monitor the specified file or directory before calling this method. When you specify true for the flag parameter, this method attempts to move the file or directory to the cloud and returns true if it is successful. This method also notifies your file presenter of the new location of the file so that your application can continue to operate on it.

Important: Do not call this method from your application’s main thread. This method performs a coordinated write operation on the file you specify, and calling this method from the main thread can trigger a deadlock with the file presenter you have monitoring the file. Instead, use a dispatch queue (other than the main thread queue) to perform the method call on a secondary thread. You can always message your main thread after the call finishes to update the rest of your application’s data structures.

Available in Mac OS X v10.7 and later.

See also:

- 87.5.68 setUbiquitous(flag as boolean, item as folderitem, destURL as string, byref error as NSErrorMBS) as boolean

87.5.68  setUbiquitous(flag as boolean, item as folderitem, destURL as string, byref error as NSErrorMBS) as boolean


Function: Sets whether the item at the specified URL should be stored in the cloud.

Notes:

flag: Specify true to move the item to iCloud or false to remove it from iCloud (if it is there currently).
item: Specify the `folderitem` of the item (file or directory) that you want to store in iCloud.

destitem: Specify the location in iCloud at which to store the file or directory. This `folderitem` must be constructed from a `folderitem` returned by the `URLForUbiquityContainerIdentifier` method, which you use to retrieve the desired iCloud container directory. The `folderitem` you specify may contain additional subdirectories so that you can organize your files hierarchically in iCloud. However, you are responsible for creating those intermediate subdirectories (using the `NSFileManagerMBS` or `folderitem` class) in your iCloud container directory.

error: If an error occurs, this pointer is set to an `NSError` object containing information about the error. You may specify nil for this parameter if you do not want the error information.

Returns yes if the item’s status was updated successfully or false if an error occurred. If this method returns false and you specified a value for the error parameter, this method returns an error object.

Use this method to move a file from its current location to iCloud. For files located in an application’s sandbox, this involves physically removing the file from the sandbox directory. (The system extends your application’s sandbox privileges to give it access to files it moves to iCloud.) You can also use this method to move files out of iCloud and back into a local directory.

Your application must have an active file presenter object configured to monitor the specified file or directory before calling this method. When you specify true for the flag parameter, this method attempts to move the file or directory to the cloud and returns true if it is successful. This method also notifies your file presenter of the new location of the file so that your application can continue to operate on it.

Important: Do not call this method from your application’s main thread. This method performs a coordinated write operation on the file you specify, and calling this method from the main thread can trigger a deadlock with the file presenter you have monitoring the file. Instead, use a dispatch queue (other than the main thread queue) to perform the method call on a secondary thread. You can always message your main thread after the call finishes to update the rest of your application’s data structures.

Available in Mac OS X v10.7 and later.

See also:

- 87.5.67 `setUbiquitous(flag as boolean, item as folderitem, destitem as folderitem, byref error as NSErrorMBS) as boolean` 14369

87.5.69 `startDownloadingUbiquitousItem(item as folderitem, byref error as NSErrorMBS) as boolean`


**Function:** Starts downloading (if necessary) the specified item to the local system.

**Notes:**

item: Specify the `folderitem` for the file or directory in the cloud that you want to download.

error: On input, a pointer to variable for an `NSError` object. If an error occurs, this pointer is set to an
NSError object containing information about the error. Y

Returns true if the download started successfully or was not necessary, otherwise false. If false is returned and error is not nil, an NSError object describing the error is returned in that parameter.

If a cloud-based file or directory has not been downloaded yet, calling this method starts the download process. If the item exists locally, calling this method synchronizes the local copy with the version in the cloud.

For a given folder item, you can determine if a file is downloaded by getting the value of the IsDownloaded method. You can also use related methods to determine the current progress in downloading the file.

Available in Mac OS X v10.7 and later.
See also:

- 87.5.69 startDownloadingUbiquitousItem(item as folderitem, byref error as NSErrorMBS) as boolean

87.5.70 startDownloadingUbiquitousItem(URL as string, byref error as NSErrorMBS) as boolean

Function: Starts downloading (if necessary) the specified item to the local system.
Notes:
item: Specify the URL for the file or directory in the cloud that you want to download.
error: On input, a pointer to variable for an NSError object. If an error occurs, this pointer is set to an NSError object containing information about the error. Y

Returns true if the download started successfully or was not necessary, otherwise false. If false is returned and error is not nil, an NSError object describing the error is returned in that parameter.

If a cloud-based file or directory has not been downloaded yet, calling this method starts the download process. If the item exists locally, calling this method synchronizes the local copy with the version in the cloud.

For a given folder item, you can determine if a file is downloaded by getting the value of the IsDownloaded method. You can also use related methods to determine the current progress in downloading the file.

Available in Mac OS X v10.7 and later.
See also:

- 87.5.69 startDownloadingUbiquitousItem(item as folderitem, byref error as NSErrorMBS) as boolean
87.5.71 `stringByAbbreviatingWithTildeInPath(path as string) as string`  

Function: Returns a new string that replaces the current home directory portion of the current path with a tilde (`textasciitilde`) character.  
Notes:  
A new string based on the current string object. If the new string specifies a file in the current home directory, the home directory portion of the path is replaced with a tilde (`textasciitilde`) character. If the string does not specify a file in the current home directory, this method returns a new string object whose path is unchanged from the path in the current string.  

Note that this method only works with file paths. It does not work for string representations of URLs.  

For sandboxed apps in OS X, the current home directory is not the same as the users home directory. For a sandboxed app, the home directory is the apps home directory. So if you specified a path of `/Users/<current_user>/file.txt` for a sandboxed app, the returned path would be unchanged from the original. However, if you specified the same path for an app not in a sandbox, this method would replace the `/Users/<current_user>`portion of the path with a tilde.

87.5.72 `stringByAppendingPathComponent(path as string, Component as string) as string`  

Function: Returns a new string made by appending to the receiver a given string.  
Notes:  
The following table illustrates the effect of this method on a variety of different paths, assuming that aString is supplied as scratch.tiff:  

<table>
<thead>
<tr>
<th>Receivers String Value</th>
<th>Resulting String</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>/tmp</code></td>
<td><code>/tmp/scratch.tiff</code></td>
</tr>
<tr>
<td><code>/tmp/</code></td>
<td><code>/tmp/scratch.tiff</code></td>
</tr>
<tr>
<td><code>/</code></td>
<td><code>/scratch.tiff</code></td>
</tr>
<tr>
<td>(an empty string)</td>
<td><code>scratch.tiff</code></td>
</tr>
</tbody>
</table>

Note that this method only works with file paths (not, for example, string representations of URLs).
87.5.73  `stringByAppendingPathExtension(path as string, Extension as string)` as string

**Function:** Returns a new string made by appending to the receiver an extension separator followed by a given extension.
**Notes:**

The following table illustrates the effect of this method on a variety of different paths, assuming that ext is supplied as "tiff":

<table>
<thead>
<tr>
<th>Receivers String Value</th>
<th>Resulting String</th>
</tr>
</thead>
<tbody>
<tr>
<td>/tmp/scratch.old</td>
<td>/tmp/scratch.old.tiff</td>
</tr>
<tr>
<td>/tmp/scratch.</td>
<td>/tmp/scratch..tiff</td>
</tr>
<tr>
<td>/tmp/scratch</td>
<td>/tmp.tiff</td>
</tr>
<tr>
<td>scratch</td>
<td>scratch.tiff</td>
</tr>
</tbody>
</table>

Note that adding an extension to "/tmp/” causes the result to be "/tmp.tiff” instead of "/tmp/.tiff”. This difference is because a file named ".tiff” is not considered to have an extension, so the string is appended to the last nonempty path component.

Note that this method only works with file paths (not, for example, string representations of URLs).

**Special Considerations**

Prior to OS X v10.9 this method did not allow you to append file extensions to filenames starting with the tilde character (textasciitilde).

87.5.74  `stringByDeletingLastPathComponent(path as string)` as string

**Function:** Returns a new string made by deleting the last path component from the receiver, along with any final path separator.
**Notes:**

A new string made by deleting the last path component from the receiver, along with any final path separator. If the receiver represents the root path it is returned unaltered.

The following table illustrates the effect of this method on a variety of different paths:

Note that this method only works with file paths (not, for example, string representations of URLs).
87.5. stringByDeletingPathExtension(path as string) as string


Function: Returns a new string made by deleting the extension (if any, and only the last) from the receiver.

Notes:
A new string made by deleting the extension (if any, and only the last) from the receiver. Strips any trailing path separator before checking for an extension. If the receiver represents the root path, it is returned unaltered.

The following table illustrates the effect of this method on a variety of different paths:

<table>
<thead>
<tr>
<th>Receivers String Value</th>
<th>Resulting String</th>
</tr>
</thead>
<tbody>
<tr>
<td>/tmp/scratch.tiff</td>
<td>/tmp/scratch</td>
</tr>
<tr>
<td>/tmp/lock/</td>
<td>/tmp</td>
</tr>
<tr>
<td>/tmp/</td>
<td>/</td>
</tr>
<tr>
<td>/tmp</td>
<td>/</td>
</tr>
<tr>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>scratch.tiff</td>
<td>(an empty string)</td>
</tr>
</tbody>
</table>

Note that attempting to delete an extension from ".tiff" causes the result to be @".tiff" instead of an empty string. This difference is because a file named ".tiff" is not considered to have an extension, so nothing is deleted. Note also that this method only works with file paths (not, for example, string representations of URLs).

87.5.6 stringByExpandingTildeInPath(path as string) as string


Function: Returns a new string made by expanding the initial component of the receiver to its full path value.

Notes:
A new string made by expanding the initial component of the receiver, if it begins with textasciitilde  or
textasciitilde user, to its full path value. Returns a new string matching the receiver if the receivers initial component cant be expanded.

Note that this method only works with file paths (not, for example, string representations of URLs).

87.5.77 stringByResolvingSymlinksInPath(path as string) as string

Function: Returns a new string made from the receiver by resolving all symbolic links and standardizing path.
Notes:
A new string made by resolving all symbolic links, then removing extraneous path components. For absolute paths, all symbolic links are guaranteed to be removed. For relative paths, symbolic links that cant be resolved are left unresolved in the returned string.

Returns self if an error occurs.

Note that this method only works with file paths (not, for example, string representations of URLs).

87.5.78 stringByStandardizingPath(path as string) as string

Function: Returns a new string made by removing extraneous path components from the receiver.
Notes:
A new string made by performing the following operations:

- Expanding an initial tilde expression using stringByExpandingTildeInPath.
- Removing an initial component of /private/var/automount, /var/automount, or /private from the path, if the result still indicates an existing file or directory (checked by consulting the file system).
- Reducing empty components and references to the current directory (that is, the sequences // and ./.) to single path separators.
- Removing a trailing slash from the last component.
- For absolute paths only, resolving references to the parent directory (that is, the component ..) to the real parent directory if possible using stringByResolvingSymlinksInPath. For relative paths, references to the parent directory are left in place.
- Returns self if an error occurs.
Note that the path returned by this method may still have symbolic link components in it. Note also that this method only works with file paths (not, for example, string representations of URLs).

### 87.5.79 trashItem(file as folderItem, byref Resulting as folderItem, byref error as NSErrorMBS) as boolean


**Function:** Moves an item to the trash.

**Notes:**

Returns true if the item at url was successfully moved to the trash. Since the operation may require renaming the item to avoid a file name collision, this method returns, by reference, the resulting folderItem that the item was moved to.

If this method returns false, the item was not moved to the trash; the error parameter then contains information about the error.

Available in OS X v10.8 and later.

### 87.5.80 URLByAppendingPathComponent(URL as string, pathComponent as string) as string


**Function:** Returns a new URL made by appending a path component to the original URL.

**Notes:**

pathComponent: The path component to add to the URL.

Returns a new URL with pathComponent appended.

If the original URL does not end with a forward slash and pathComponent does not begin with a forward slash, a forward slash is inserted between the two parts of the returned URL, unless the original URL is the empty string.

Available in Mac OS X v10.6 and later.

See also:

- 87.5.81 URLByAppendingPathComponent(URL as string, pathComponent as string, isDirectory as boolean) as string
87.5.81 URLByAppendingPathComponent(URL as string, pathComponent as string, isDirectory as boolean) as string


**Function:** Returns a new URL made by appending a path component to the original URL, along with a trailing slash if the component is designated a directory.

**Notes:**
- pathComponent: The path component to add to the URL.
- isDirectory: If true, a trailing slash is appended after pathComponent.
- Returns a new URL with pathComponent appended.

If the original URL does not end with a forward slash and pathComponent does not begin with a forward slash, a forward slash is inserted between the two parts of the returned URL, unless the original URL is the empty string.

Available in Mac OS X v10.7 and later.

See also:
- 87.5.80 URLByAppendingPathComponent(URL as string, pathComponent as string) as string

87.5.82 URLByAppendingPathExtension(URL as string, pathExtension as string) as string


**Function:** Returns a new URL made by appending a path extension to the original URL.

**Notes:**
- pathExtension: The path extension to add to the URL.
- Returns a new URL with pathExtension appended.

If the original URL ends with one or more forward slashes, these are removed from the returned URL. A period is inserted between the two parts of the new URL.

Available in Mac OS X v10.6 and later.

87.5.83 URLByDeletingLastPathComponent(URL as string) as string


**Function:** Returns a new URL made by deleting the last path component from the original URL.

**Notes:**
- If the original URL represents the root path, the returned URL is identical. Otherwise, if the original URL...
has only one path component, the new URL is the empty string.
Available in Mac OS X v10.6 and later.

87.5.84 URLByDeletingPathExtension(URL as string) as string

**Function:** Returns a new URL made by deleting the path extension, if any, from the original URL.
**Notes:**
If the original URL represents the root path, the returned URL is identical. If the URL has multiple path extensions, only the last one is removed.
Available in Mac OS X v10.6 and later.

87.5.85 URLByResolvingSymlinksInPath(URL as string) as string

**Function:** Returns a new URL that points to the same resource as the original URL and includes no symbolic links.
**Notes:**
If the original URL has no symbolic links, the returned URL is identical to the original URL.
This method only works on URLs with the file: path scheme. This method will return an identical URL for all other URLs.
Available in Mac OS X v10.6 and later.

87.5.86 URLByStandardizingPath(URL as string) as string

**Function:** Returns a new URL that points to the same resource as the original URL and is an absolute path.
**Notes:**
This method only works on URLs with the file: path scheme. This method will return an identical URL for all other URLs.
Available in Mac OS X v10.6 and later.
CHAPTER 87. ICLOUD

87.5.87  URLForPublishingUbiquitousItem(item as folderitem, byref expirationDate as date, byref error as NSErrorMBS) as string


**Function:** Returns a URL that can be emailed to users to allow them to download a copy of a cloud-based item.

**Example:**

```dim m as new NSFileManagerMBS
dim f as FolderItem = SpecialFolder.Desktop.Child("test.rtf")
dim error as NSErrorMBS
dim exdate as date
dim url as string = m.URLForPublishingUbiquitousItem(f, exdate, error)
```

// always fails as desktop folder is not in cloud
if error<>nil then
    MsgBox error.localizedDescription
end if

**Notes:**

- url: Specify the URL of the item in the cloud that you want to share. The URL must be prefixed with the base URL returned from the URLForUbiquityContainerIdentifier method that corresponds to the item's location.
- expirationDate: On output, this parameter contains the date after which the item is no longer available at the returned URL.
- error: If an error occurs, this pointer is set to an NSError object containing information about the error.

Returns an URL with which users can download a copy of the item at url. Returns nil if the URL could not be created for any reason.

**Discussion**

This method creates a snapshot of the specified file and places that copy in a temporary iCloud location where it can be accessed by other users using the returned URL. The snapshot reflects the contents of the file at the time the URL was generated and is not updated when subsequent changes are made to the original file in the user's iCloud storage. The snapshot file remains available at the specified URL until the date specified in the outDate parameter, after which it is automatically deleted.

Your application must have access to the network for this call to succeed.
Available in Mac OS X v10.7 and later.

See also:

- 87.5.88 URLForPublishingUbiquitousItem(URL as string, byref expirationDate as date, byref error as NSErrorMBS) as string
87.5.88  URLForPublishingUbiquitousItem(URL as string, byref expirationDate as date, byref error as NSErrorMBS) as string


**Function:** Returns a URL that can be emailed to users to allow them to download a copy of a cloud-based item.

**Notes:**

- **url:** Specify the URL of the item in the cloud that you want to share. The URL must be prefixed with the base URL returned from the URLForUbiquityContainerIdentifier method that corresponds to the item’s location.
- **expirationDate:** On output, this parameter contains the date after which the item is no longer available at the returned URL.
- **error:** If an error occurs, this pointer is set to an NSError object containing information about the error.

Returns an URL with which users can download a copy of the item at url. Returns nil if the URL could not be created for any reason.

**Discussion**

This method creates a snapshot of the specified file and places that copy in a temporary iCloud location where it can be accessed by other users using the returned URL. The snapshot reflects the contents of the file at the time the URL was generated and is not updated when subsequent changes are made to the original file in the user’s iCloud storage. The snapshot file remains available at the specified URL until the date specified in the outDate parameter, after which it is automatically deleted.

Your application must have access to the network for this call to succeed.

Available in Mac OS X v10.7 and later.

See also:

- 87.5.87 URLForPublishingUbiquitousItem(item as folderitem, byref expirationDate as date, byref error as NSErrorMBS) as string

87.5.89  URLForUbiquityContainerIdentifier(containerIdentifier as string) as string


**Function:** Returns the iCloud directory associated with the specified container ID.

**Notes:**

- **containerID:** Specify the container ID of the cloud-based storage container. The string you specify must not contain wildcards and must be of the form `<TEAMID>..<CONTAINER>`, where `<TEAMID>` is your development team ID and `<CONTAINER>` describes the bundle identifier of the container you want to access. The container identifiers for your application must be declared in the com.apple.developer.ubiquity-container-identifiers entitlement.

If you specify "", this method returns the first container listed in the com.apple.developer.ubiquity-container-identifiers entitlement.
Returns a folderitem pointing to the specified container directory or nil if the container could not be located or if iCloud storage is unavailable for the current user or device.

You can use the folderitem returned by this method to build paths to files and directories in the user’s iCloud storage. Each application that syncs documents to the cloud must have at least one associated container directory in which to put those files. This container directory can be unique to the application or shared by multiple applications. You use this method to retrieve the folderitem for that container directory.

In addition to writing to its own container directory, an application can write to any container directory for which it has the appropriate permission. Each additional container directory should be listed as an additional value in the com.apple.developer.ubiquity-container-identifiers entitlement.

Note: The development team ID that precedes each container ID string is the unique identifier associated with your development team. You can find this string in the Member Center of the Apple Developer website (http://developer.apple.com/membercenter). From the Member Center home page, select the Your Account tab and then select Organization Profile from the column on the left of that tab. Your team’s identifier is in the Company/Organization ID field.

The first time you call this method for a given container directory, iOS extends your application sandbox to include that container directory. Thus, it is important that you call this method at least once before trying to search for files in iCloud. And if your application accesses multiple container directories, you should call the method once for each directory.

Available in Mac OS X v10.7 and later.

FileForUbiquityContainerIdentifier returns folderitem while URLForUbiquityContainerIdentifier returns URL string.

**87.5.90  Constants**

**87.5.91  NSDirectoryEnumerationSkipsHiddenFiles = 4**

MBS MacCloud Plugin, Plugin Version: 11.3. **Function:** One of the option constants for enumerating the contents of directories with the contentsOfDirectoryAtURL method.

**Notes:**

Do not enumerate hidden files.

Available in Mac OS X v10.6 and later.

**87.5.92  NSDirectoryEnumerationSkipsPackageDescendants = 2**

MBS MacCloud Plugin, Plugin Version: 11.3. **Function:** One of the option constants for enumerating the contents of directories with the contentsOfDirectoryAtURL method.

**Notes:**
Do not descend into packages.
Available in Mac OS X v10.6 and later.

87.5.93 NSDirectoryEnumerationSkipsSubdirectoryDescendants = 1

MBS MacCloud Plugin, Plugin Version: 11.3. Function: One of the option constants for enumerating the contents of directories with the contentsOfDirectoryAtURL method.
Notes:
Perform a shallow enumeration; do not descend into directories.
Available in Mac OS X v10.6 and later.

87.5.94 NSFileManagerItemReplacementUsingNewMetadataOnly = 1

MBS MacCloud Plugin, Plugin Version: 11.3. Function: One of the options constants to specify the replacement behavior in NSFileManagerItemReplacementWithoutDeletingBackupItem.
Notes:
Causes NSFileManagerItemReplacementWithoutDeletingBackupItem to use metadata from the new item only and not to attempt to preserve metadata from the original item.
Available in Mac OS X v10.6 and later.

87.5.95 NSFileManagerItemReplacementWithoutDeletingBackupItem = 2

MBS MacCloud Plugin, Plugin Version: 11.3. Function: One of the options constants to specify the replacement behavior in NSFileManagerItemReplacementWithoutDeletingBackupItem.
Notes:
Causes NSFileManagerItemReplacementWithoutDeletingBackupItem to leave the backup item in place after a successful replacement. The default behavior is to remove the item.
Available in Mac OS X v10.6 and later.

87.5.96 NSVolumeEnumerationProduceFileReferenceURLs = 4

MBS MacCloud Plugin, Plugin Version: 11.3. Function: One of the option constants for enumerating mounted volumes with the mountedVolumeURLsIncludingResourceValuesForKeys method.
Notes:
The enumeration produces file reference URLs rather than path-based URLs.
Available in Mac OS X v10.6 and later.
87.5.97  NSVolumeEnumerationSkipHiddenVolumes = 2

MBS MacCloud Plugin, Plugin Version: 11.3. **Function:** One of the option constants for enumerating mounted volumes with the mountedVolumeURLsIncludingResourceValuesForKeys method.  
**Notes:**  
The enumeration skips hidden volumes.  
Available in Mac OS X v10.6 and later.
87.6. CLASS NSFILEPRESENTERHANDLERMBS

87.6  class NSFilePresenterHandlerMBS

87.6.1  class NSFile Presenter HandlerMBS

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The class for a callback. Notes: Some iCloud related functions in NSFileCoordinatorMBS or NSFilePresenterMBS require that you call a function to notify the caller that you are finished doing some work.

87.6.2  Methods

87.6.3  Destructor


87.6.4  Run(errorOrNil as NSErrorMBS = nil)

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Calls the callback. Notes: As some callbacks ask for an error object in case of an error, you can pass one. Other callbacks don’t take a parameter.
class NSFilePresenterMBS

Function: The plugin class to implement the NSFilePresenter protocol.
Notes:
A protocol to be implemented by objects that present the contents of files or directories to the user for viewing or editing. The objects can take an active role in operations that access those files or directories, even operations performed by other processes in the system. For an NSFilePresenter to be aware of such file access it must be "coordinated" file access. Starting in version 10.7 many components of Mac OS X use NSFileCoordinatorMBS, including AppKit, Finder, and various applications. NSDocument conforms to the NSFilePresenter protocol and has useful implementations of all of its methods. You are unlikely to have to implement NSFilePresenter yourself in an NSDocument-based application.

See the comments for NSFileCoordinator.Constructor for information about how an NSFilePresenter can avoid receiving messages about its own reading and writing.

You can consider "item" in method names in this header file to be an abbreviation of "fileOrDirectory." As always, a directory might actually be a file package.

Please also check the documentation from Apple for the NSFilePresenter protocol.

Methods

Constructor

Function: The constructor.

Destructor

Function: The destructor.
87.7. CLASS NSFILEPRESENTERMBS

87.7.5 Properties

87.7.6 Handle as Integer


87.7.7 Events

87.7.8 accommodatePresentedItemDeletionWithCompletionHandler(Complete as NSFilePresenterHandlerMBS)

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Tells your object that its presented item is about to be deleted. Notes: Complete: The complete handler object to call after updating your data structures. Pass nil to the run method’s errorOrNil parameter if you were able to successfully prepare for the deletion of the item. Pass an error object if your object could not prepare itself properly.

A file coordinator calls this method when your object’s presented item is about to be deleted. You can use this method to perform any actions that are needed to prepare for the deletion. For example, document objects typically use this method to close the document.

Important: If you implement this method, you must execute the run method in the complete parameter at the end of your implementation. The system waits for you to execute that method before allowing the other object to delete the file or directory. Therefore, failure to execute the method could stall threads in your application or other processes.

Available in Mac OS X v10.7 and later.

87.7.9 accommodatePresentedSubitemDeletionAtURL(URL as string, file as FolderItem, Complete as NSFilePresenterHandlerMBS)

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Tells the delegate that some entity wants to delete an item that is inside of a presented directory. (required) Notes: url: The URL of the item being deleted from the presented directory. The item need not be at the top level of the presented directory but may itself be inside a nested subdirectory.
file: URL as folderitem.

complete: The complete handler object to call after updating your data structures. Pass nil to the run method’s errorOrNil parameter if you were able to successfully prepare for the deletion of the item. Pass an error object if your object could not prepare itself properly.

This method is relevant for applications that present directories. This might occur if the delegate manages the contents of a directory or manages a file that is implemented as a file package. When called, your implementation of this method should take whatever actions needed to update your application to handle the deletion of the specified file.

Important: If you implement this method, you must execute the run method in the Complete parameter at the end of your implementation. The system waits for you to execute that method before allowing the other object to delete the item at the specified URL. Therefore, failure to execute the method could stall threads in your application or in other processes.

Available in Mac OS X v10.7 and later.

87.7.10 presentedItemDidChange


Function: This event is called when the item changed.

Notes: Be notified that the file or file package’s contents or attributes have been been written to. Because this method may be be invoked when the attributes have changed but the contents have not, implementations that read the contents must use modification date checking to avoid needless rereading. They should check that the modification date has changed since the receiver most recently read from or wrote to the item. To avoid race conditions, getting the modification date should typically be done within invocations of one of the NSFileCoordinatorMBS.coordinate... methods.

For example, NSDocument implements this method to react to both contents changes (like the user overwriting the document file with another application) and attribute changes (like the user toggling the "Hide extension" checkbox in a Finder info panel). It uses modification date checking as described above.

Not all programs use file coordination. Your NSFileProvider may be sent this message without being sent relinquishPresentedItemToWriter first. Make your application do the best it can in that case.

87.7.11 presentedItemDidGainVersion(version as NSFileVersionMBS)


Function: Be notified that something in the system has added a version of the file or file package.
87.7.12 presentedItemDidLoseVersion(version as NSFileVersionMBS)

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Be notified that something in the system has removed a version of the file or file package.

87.7.13 presentedItemDidMoveToURL(url as string, file as folderitem)

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Be notified that the file or directory has been moved or renamed, or a directory containing it has been moved or renamed.
**Notes:**
A typical implementation of this method will cause subsequent invocations of presentedItemURL to return the new URL.

The new URL may have a different file name extension than the current value of the presentedItemURL property.

For example, NSDocument implements this method to handle document file moving and renaming. A shoebox application would only implement this method to be robust against surprising things like the user moving its data directory while the application is running.

Not all programs use file coordination. Your NSFileProvider may be sent this message without being sent relinquishPresentedItemToWriter first. Make your application do the best it can in that case.

87.7.14 presentedItemDidResolveConflictVersion(version as NSFileVersionMBS)

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Be notified that something in the system has resolved a version of the file or file package.

87.7.15 presentedItemURL as string

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The URL that locates the file or directory that the receiver is presenting to the user.
**Notes:**
Implementations of this method must be prepared to be invoked by Cocoa in any queue, at any time, including from within invocations of NSFileCoordinator methods. A nil value is valid and means that the
presented item does not exist yet. An NSFilePresenter with a nil presentedItemURL will be asked for its presentedItemURL again when coordinated file access on behalf of that NSFilePresenter completes, in case the presented item was just created.

For example, NSDocument has a -presentedItemURL method that usually returns self.fileURL. In a shoebox application that stores the user’s data in files somewhere on the user’s computer you can implement this method to specify the directory that contains those files.

87.7.16 presentedSubitemAtURLdidGainVersion(URL as string, file as Folderitem, version as NSFileVersionMBS)

Function: Tells the delegate that the item inside the presented directory gained a new version. (required)
Notes:
url: The URL of the item inside the presented directory that gained a new version. The item need not be at the top level of the presented directory but may itself be inside a nested subdirectory.
file: url as folderitem.
version: The file version object containing information about the new file version.

Your delegate can use this method to determine how to incorporate data from the new version of the item. This might involve incorporating the version silently or asking the user about how to proceed.

Available in Mac OS X v10.7 and later.

87.7.17 presentedSubitemAtURLdidLoseVersion(URL as string, file as Folderitem, version as NSFileVersionMBS)

Function: Tells the delegate that the item inside the presented directory lost an existing version. (required)
Notes:
url: The URL of the item inside the presented directory that lost a version. The item need not be at the top level of the presented directory but may itself be inside a nested subdirectory.
file: URL as folderitem.
version: The file version object containing information about the version that was removed.

Your delegate can use this method to determine how to handle the loss of the specified file version. For an old version, you might not have to do anything. However, if your application is currently using the lost version, you would need to update your application’s user interface or prompt the user about how to proceed.
87.7.18  **presentedSubitemAtURLdidMoveToURL** (oldURL as string, newURL as string, oldFile as folderitem, newFile as folderitem)

**Function:** Tells the delegate that an item in the presented directory moved to a new location. (required) 
**Notes:**
oldURL: The original URL of the item inside the presented directory. The item need not be at the top level of the presented directory but may itself be inside a nested subdirectory.
newURL: The new URL for the item. This URL may or may not be located inside the presented directory.
oldFile: oldURL as folderitem.
newFile: newURL as folderitem.

This method is relevant for applications that present directories. This might occur if the delegate manages the contents of a directory or manages a file that is implemented as a file package. Your implementation of this method should take whatever actions necessary to handle the change in location of the specified item. For example, you might update references to the item in your application’s data structures and refresh your user interface.

If the presented directory is a file package, the system calls the presentedItemDidChange method if your delegate does not implement this method.

Available in Mac OS X v10.7 and later.

87.7.19  **presentedSubitemAtURLdidResolveConflictVersion** (URL as string, file as Folderitem, version as NSFileVersionMBS)

**Function:** Tells the delegate that the item inside the presented directory had a version conflict resolved by an outside entity. (required) 
**Notes:**
url: The URL of the item inside the presented directory that was in conflict. The item need not be at the top level of the presented directory but may itself be inside a nested subdirectory.
file: URL as folderitem.
version: The version object containing the conflicting change.

Your delegate can use this method to respond to the resolution of a version conflict by a different file presenter. This might occur if a version of your application running on another device resolves the conflict first. You might then use this method to update your user interface to indicate that there is no longer a conflict.
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Available in Mac OS X v10.7 and later.

87.7.20 presentedSubitemDidAppearAtURL(URL as string, file as Folderitem)

Function: Tells the delegate that an item was added to the presented directory. (required)
Notes: url: The URL of the item being added to the presented directory. The item need not be at the top level of
the presented directory but may itself be inside a nested subdirectory.
file: URL as a folderitem.

This method is relevant for applications that present directories. This might occur if the delegate manages
the contents of a directory or manages a file that is implemented as a file package. Your implementation of
this method should take whatever actions necessary to incorporate the new file or directory into the pre-
sented content. For example, you might add the new item to your application’s data structures and refresh
your user interface.

If the presented directory is a file package, the system calls the presentedItemDidChange method if your
delegate does not implement this method.

Available in Mac OS X v10.7 and later.

87.7.21 presentedSubitemDidChangeAtURL(URL as string, file as Folderitem)

Function: Tells the delegate that the contents or attributes of the specified item changed. (required)
Notes: url: The URL of the item in the presented directory that changed. The item need not be at the top level of
the presented directory but may itself be inside a nested subdirectory.

This method is relevant for applications that present directories. This might occur if the delegate manages
the contents of a directory or manages a file that is implemented as a file package. Your implementation of
this method should take whatever actions necessary to handle the change in content or attributes of the
specified item.

If the presented directory is a file package, the system calls the presentedItemDidChange method if your
delegate does not implement this method.
87.7. CLASS NSFILEPRESENTERMBS

Available in Mac OS X v10.7 and later.

87.7.22 primaryPresentedItemURL as string

Function: The URL of a secondary item's primary presented file or directory. (read-only)
Notes:
This property supports App Sandbox in OS X.

Some apps require access to secondary files or directories with names that are related to the primary, user-selected file. For example, a subtitle file, by convention, has the same name as its corresponding movie file, but with a different filename extension. If a movie player is sandboxed, an NSOpenPanel object will grant access only to the user-selected movie file (the primary item) and not its associated subtitle file (the secondary item).

To gain access to a secondary item, first register an NSFilePresenter object for it. At any point in its existence, a secondary item must be able to return an NSURL object to its primary item. This is done by using this property. When done accessing the secondary item, unregister the file presenter object.

Available in OS X v10.8 and later.

87.7.23 reacquirer

Function: The reacquirer event.
Notes:
Called when you can reacquire an object.
e.g. called by relinquishPresentedItemToReader method.

87.7.24 relinquishPresentedItemToReader(reader as NSFilePresenterHandlerMBS)

Function: Notifies your object that another object or process wants to read the presented file or directory.
Notes:
reader: A handler object. The reacquirer event is called to notify when the reader is done. If your object does not need to be notified, it can pass nil for the reacquirer block.
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You use this method to provide an appropriate response when another object wants to read from your presented URL. For example, when this method is called, you might temporarily stop making changes to the file or directory. After taking any appropriate steps, you must execute the block in the reader parameter to let the waiting object know that it may now proceed with its task. If you want to be notified when the reader has completed its task, pass your own block to the reader and use that block to reacquire the file or URL for your own uses.

Important: If you implement this method, you must execute the run method in the reader parameter as part of your implementation. The system waits for you to execute that method before allowing the reader to operate on the file. Therefore, failure to execute the method could stall threads in your application or other processes until the user takes corrective actions.

Your implementation of this method is executed using the queue in the presentedItemOperationQueue property. Your reacquirer event is executed on the queue associated with the reader.

Available in Mac OS X v10.7 and later.

87.7.25 relinquishPresentedItemToWriter(writer as NSFilePresenterHandlerMBS)


Function: Notifies your object that another object or process wants to write to the presented file or directory.

Notes:

writer: A complete handler object. The reacquirer event is called so that your object can be notified when the writer is done.

You use this method to provide an appropriate response when another object wants to write to your presented URL. For example, when this method is called, you would likely stop making changes to the file or directory. After taking any appropriate steps, you must execute the run method in the writer parameter to let the waiting object know that it may now proceed with its task.

Important: If you implement this method, you must execute the run method in the writer parameter at the end of your implementation. The system waits for you to execute that block before allowing the writer to operate on the file. Therefore, failure to execute the run method could stall threads in your application or other processes.

If the writer changes the file or directory, you do not need to incorporate those changes in your reacquirer block. Instead, implement the presentedItemDidChange method and use it to detect when a writer actually wrote its changes to disk.

Your implementation of this method is executed using the queue in the presentedItemOperationQueue property. Your reacquirer event is executed on the queue associated with the writer.
Available in Mac OS X v10.7 and later.

87.7.26  savePresentedItemChangesWithCompletionHandler(Complete as NSFilePresenterHandlerMBS)


**Function:** Tells your object to save any unsaved changes for the presented item.

**Notes:**

Complete: The handler object to call after you save your changes. If you saved your changes successfully, pass nil for the run’s `errorOrNil` parameter; otherwise, pass an error object indicating why the changes could not be saved.

The file coordinator calls this method to ensure that all objects trying to access the file or directory see the same contents. Implement this method if your object can change the presented item in a way that requires you to write those changes back to disk. If your presenter object does not make changes that need to be saved, you do not need to implement this method.

Important: If you implement this method, you must execute the run method in the `Complete` parameter at the end of your implementation. The system waits for you to execute that block before allowing other objects to operate on the file. Therefore, failure to execute the run method could stall threads in your application or other processes.

Available in Mac OS X v10.7 and later.
87.8 class NSFileVersionMBS

87.8.1 class NSFileVersionMBS


Function: The class for different file versions on Mac OS X 10.7.

Notes:

Instances of NSFileVersionMBS for the same version of the same file are equal, and instances of NSFileVersionMBS for different versions of the same file are not equal, but the equality of NSFileVersionMBSs for different files is undefined. Repeated invocations of the methods that return NSFileVersionMBSs do not necessarily return the exact same instance of NSFileVersionMBS.

An NSFileVersion object represents a snapshot of a file at a specific point in time. You use the NSFileVersion class to access and create and manage file revisions in your application. Each instance of this class contains meta information about a single revision, such as the location of the file containing the revision data, the modification date of the revision, and whether the revision is discardable.

In Mac OS X applications, you can use file version objects to track changes to a local file over time and to prevent the loss of data during editing. When managing local versions, the document architecture creates versions at specific points in the lifetime of your application. Your application can also create versions explicitly at times that your application designates as appropriate.

In addition to managing local files, the system also uses this class to manage cloud-based files. For files in the cloud, there is usually only one version of the file at any given time. However, additional file versions may be created in cases where two different computers attempt to save the file to the cloud at the same time. In that case, one file is chosen as the current version and any other versions are tagged as being in conflict with the original. Conflict versions are reported to the appropriate file presenter objects and should be resolved as soon as possible so that the corresponding files can be removed from the cloud.

Available on Mac OS X 10.7 or later.

Please also check the documentation from Apple for the NSFileVersion class.

Works also well with files in backup (Time Machine) to find older versions.

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.
87.8. CLASS NSFILEVERSIONMBS

87.8.2 Methods

87.8.3 addVersionOfItemAtURL(url as string, withContentsOfURL as string, options as Integer, byref error as NSErrorMBS) as NSFileVersionMBS


**Function:** Add a new version of the file located by a URL, with the contents coming from a file located by either the same or a different URL, and return a new instance that represents the version if successful.

**Notes:**

If not successful, return false after setting Error to an NSErrorMBS that encapsulates why not.

You can add versions only on Mac OS X.

When adding or removing versions of a file you should do it as part of a "coordinated" write to the file, see NSFileCoordinatorMBS class. Using it properly ensures that NSFilePresenters of the file, or directories that contain the file, receive accurate notifications about versions being added or removed. For example, use NSFileCoordinatorMBS.coordinateWritingItemAtURL when the file URL and the contents url are the same. (NSFileVersion doesn't simply use NSFileCoordinator itself because that would be insufficient when the adding or removing of versions is part of a larger operation that should be treated as one coordinated file access.)

87.8.4 Conflict as boolean


**Function:** Whether the version was created as a result of the discovery of a conflict between two writers of the versioned file.

**Notes:** When two or more versions of a file are written at the same time, perhaps because the file is saved in the cloud and one or more of the writers were offline when they were writing, the system attempts to resolve the conflict automatically. It does this by picking one of the file versions to be the current file and setting this property to true for the other file version that are in conflict.

87.8.5 Constructor


**Function:** The private constructor.
87.8.6 currentVersionOfItemAtURL(file as folderitem) as NSFileVersionMBS

**Function:** Convenience variant of currentVersionOfItemAtURL which takes folderitem.  
**Example:**

```vba
dim f as FolderItem = SpecialFolder.Desktop.Child("Notes.rtf")
dim n as NSFileVersionMBS = NSFileVersionMBS.currentVersionOfItemAtURL(f)

MsgBox n.localizedName
```

See also:

- 87.8.7 currentVersionOfItemAtURL(url as string) as NSFileVersionMBS

87.8.7 currentVersionOfItemAtURL(url as string) as NSFileVersionMBS

**Function:** Return an NSFileVersionMBS that represents the contents of the file located by a URL, or nil if there is no such file.  
See also:

- 87.8.6 currentVersionOfItemAtURL(file as folderitem) as NSFileVersionMBS

87.8.8 File as folderitem

**Function:** The location of the receiver’s storage.  
**Notes:**  
Or possibly nil if the receiver’s storage has been deleted. The storage is read-only. The URL will have an arcane path. You must not derive user-presentable text from it.  
If the URL does not represent a folderitem, this function gives nil.

87.8.9 FileURL(file as folderitem) as string

**Function:** Returns URL for a folderitem.  
**Notes:** Call is method in case you need to provide an URL for a folderitem.
87.8.10 localizedName as string


**Function:** The user-presentable name of the version, or possibly "" if the receiver's storage has been deleted.

**Example:**

```vbscript
dim f as FolderItem = SpecialFolder.Desktop.Child("Notes.rtf")
dim n as NSFileVersionMBS = NSFileVersionMBS.currentVersionOfItemAtURL(f)
MsgBox n.localizedName
```

**Notes:** This will be different from the user-presentable name of the versioned file if, for example, the file has been renamed since the version was added.

87.8.11 localizedNameOfSavingComputer as string


**Function:** The user-presentable name of the computer on which the version was saved, or possibly "" if the receiver's storage has been deleted, or "" if no computer name was recorded.

**Notes:** The computer name is guaranteed to have been recorded only if the version is a conflict version. This will be different from that computer's current name if the computer's name has been changed since the version was retrieved from that computer.

87.8.12 modificationDate as date


**Function:** The modification date of the version, or possibly nil if the receiver's storage has been deleted.

**Example:**

```vbscript
dim f as FolderItem = SpecialFolder.Desktop.Child("Notes.rtf")
dim n as NSFileVersionMBS = NSFileVersionMBS.currentVersionOfItemAtURL(f)
MsgBox n.modificationDate.SQLDateTime
```

87.8.13 otherVersionsOfItemAtURL(file as folderitem) as NSFileVersionMBS()


**Function:** Convenience variant of otherVersionsOfItemAtURL taking a folderitem.

**Example:**
14400

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dim f as FolderItem = SpecialFolder.Desktop.Child("Notes.rtf")
dim n() as NSFileVersionMBS = NSFileVersionMBS.otherVersionsOfItemAtURL(f)

// shows all time stamps of this file.
dim lines() as string
for each x as NSFileVersionMBS in n
    lines.Append x.modificationDate.SQLDateTime
next
MsgBox Join(lines,EndOfLine)

See also:

• 87.8.14 otherVersionsOfItemAtURL(url as string) as NSFileVersionMBS() 14400

87.8.14 otherVersionsOfItemAtURL(url as string) as NSFileVersionMBS()

Function: Return an array of NSFileVersionMBS objects associated with the file located by a URL, or an
empty array if there is no such file.
Notes: The array never contains an NSFileVersionMBS equal to what currentVersionOfItemAtURL would
return.
See also:

• 87.8.13 otherVersionsOfItemAtURL(file as folderitem) as NSFileVersionMBS() 14399

87.8.15 persistentIdentifier as MemoryBlock

Function: The identifier for this version of the file. (read-only)
Example:

// get a file version
dim f as FolderItem = SpecialFolder.Desktop.Child("Notes.rtf")
dim n as NSFileVersionMBS = NSFileVersionMBS.currentVersionOfItemAtURL(f)

// get persistent identifier
dim m as MemoryBlock = n.persistentIdentifier

// later find version again
dim x as NSFileVersionMBS = NSFileVersionMBS.versionOfItemAtURLforPersistentIdentifier(f, m)

// and show something
MsgBox x.localizedName
Notes:

You can save the value of this property persistently and use it to recreate the version object later. When recreating the version object using the versionOfItemAtURLforPersistentIdentifier method, the version object returned is equivalent to the current object.

The plugin encodes the identifier for you into a memoryblock, so you can store it somewhere in your preferences.

### 87.8.16 removeAndReturnError(byref error as NSErrorMBS) as boolean


**Function:** Delete the receiver's storage, and return true if successful.

**Notes:**

If not successful, return false after setting Error to an NSErrorMBS that encapsulates why not. Subsequent invocations of versionsOfItemAtURL won’t include an NSFileVersion for a successfully removed version.

You cannot use this method to delete the versioned file itself. This method always throws an exception when sent to the result of invoking currentVersionOfItemAtURL. Use NSFileManagerMBS.removeItemAtURL for that instead.

When removing versions of a file you should do it as part of a coordinated write to the file. The advice about this for addVersionOfItemAtURL applies here too.

### 87.8.17 removeOtherVersionsOfItemAtURL(file as folderitem, byref error as NSErrorMBS) as boolean


**Function:** Convenience variant of removeOtherVersionsOfItemAtURL which takes folderitem.

See also:

- 87.8.18 removeOtherVersionsOfItemAtURL(url as string, byref error as NSErrorMBS) as boolean

### 87.8.18 removeOtherVersionsOfItemAtURL(url as string, byref error as NSErrorMBS) as boolean


**Function:** Delete all of the versions associated with the file located by a URL, except for the current one, and return true if successful.

**Notes:**
If not successful, return false after setting error to an NSErrorMBS that encapsulates why not.

When removing versions of a file you should do it as part of a coordinated write to the file. The advice about this for addVersionOfItemAtURL applies here too.

See also:

- 87.8.17 removeOtherVersionsOfItemAtURL(file as folderitem, byref error as NSErrorMBS) as boolean

87.8.19 replaceItemAtURL(file as folderitem, options as Integer, byref error as NSErrorMBS) as string

Function: Convenience variant of replaceItemAtURL which takes a folderitem.
See also:

- 87.8.20 replaceItemAtURL(url as string, options as Integer, byref error as NSErrorMBS) as string

87.8.20 replaceItemAtURL(url as string, options as Integer, byref error as NSErrorMBS) as string

Function: If the passed-in URL locates a file, replace the file with a file whose contents are taken from the version but whose display name is taken from the file.
Notes:
If the passed-in URL does not locate a file then simply write one. If successful, return a URL that locates the resulting file; it may be different from the passed-in URL. The one exception to taking the display name from an existing file is if the version is of a different type than the overwritten file. In that case the file name extension will be taken from the version. (When file name extensions are being hidden in a user-friendly way this is not actually an exception.) If not successful, return false after setting *outError to an NSError that encapsulates why not.

When you use NSFileVersionReplacingByMoving you remove a version of the file, and should do it as part of a coordinated write to the file. The advice about this for addVersionOfItemAtURL applies here too. When you use it to promote a version to a separate file you actually write to two files, and should do it as part of a coordinated write to two files, using NSFileCoordinatorMBS.coordinateWritingItemAtURL, most likely using NSFileCoordinatorWritingForReplacing for the file you’re promoting the version to.
See also:

- 87.8.19 replaceItemAtURL(file as folderitem, options as Integer, byref error as NSErrorMBS) as string
87.8.21 temporaryDirectoryURLForNewVersionOfItemAtURL(url as string) as string

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Given a URL, create a new directory that is suitable for using as the container of a new temporary file that you will create and use with NSFileVersionAddingByMoving.

**Notes:** This is useful when you want to create a new version of a file out of something other than the file's current contents, for example, the contents in memory of a document that has not yet been saved to its file. You must remove this directory when you are done with it, using NSFileManagerMBS.removeItemAtPathURL for example.

87.8.22 unresolvedConflictVersionsOfItemAtURL(file as folderitem) as NSFileVersionMBS()

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return an array of NSFileVersionMBS that represent unresolved conflicts for the file located by a URL, or nil if there is no such file.

See also:

- 87.8.23 unresolvedConflictVersionsOfItemAtURL(url as string) as NSFileVersionMBS() 14403

87.8.23 unresolvedConflictVersionsOfItemAtURL(url as string) as NSFileVersionMBS()

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return an array of NSFileVersionMBS that represent unresolved conflicts for the file located by a URL, or nil if there is no such file.

See also:

- 87.8.22 unresolvedConflictVersionsOfItemAtURL(file as folderitem) as NSFileVersionMBS() 14403

87.8.24 URL as string

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The location of the receiver's storage.

**Notes:** Or possibly “” if the receiver’s storage has been deleted. The storage is read-only. The URL will have an arcane path. You must not derive user-presentable text from it.
87.8.25  `versionOfItemAtURLforPersistentIdentifier(file as folderitem, PersistentIdentifier as Memoryblock) as NSFileVersionMBS`


**Function:** Returns the version of the file that has the specified persistent ID.

**Notes:**

url: The URL of the file whose version you want.
persistentIdentifier: The persistent ID of the NSFileVersion object you want. The plugin decodes it for you from the memoryblock.

Returns the file version object with the specified ID or nil if no such version object exists.

See also:

- 87.8.26 `versionOfItemAtURLforPersistentIdentifier(URL as string, PersistentIdentifier as Memoryblock) as NSFileVersionMBS`

87.8.26  `versionOfItemAtURLforPersistentIdentifier(URL as string, PersistentIdentifier as Memoryblock) as NSFileVersionMBS`


**Function:** Returns the version of the file that has the specified persistent ID.

**Notes:**

url: The URL of the file whose version you want.
persistentIdentifier: The persistent ID of the NSFileVersion object you want. The plugin decodes it for you from the memoryblock.

Returns the file version object with the specified ID or nil if no such version object exists.

See also:

- 87.8.25 `versionOfItemAtURLforPersistentIdentifier(file as folderitem, PersistentIdentifier as Memoryblock) as NSFileVersionMBS`

87.8.27  **Properties**

87.8.28  **Handle as Integer**


**Function:** The internal reference to the NSFileVersion object.

**Notes:** (Read and Write property)
87.8.29 Discardable as boolean

**Function:** Whether the system is allowed to automatically delete the receiver’s storage in the future, at an unpredictable time.

**Notes:**
Setting this to true can fail so you must not depend on discarding for correct operation.

Once you have indicated that a version is discardable you cannot make it undiscardable again. Setting this to false causes an exception to be thrown.

You cannot make the versioned file itself discardable. Setting the value of this property always throws an exception when sent to the result of invoking currentVersionOfItemAtURL.

Versions can be discardable only on Mac OS X.
(Read and Write computed property)

87.8.30 Resolved as boolean

**Function:** If the version is a conflict version, whether the conflict has been resolved.

**Notes:**
If the version is not a conflict version, simply true.

The operating system’s reaction to your setting this to true is complicated and subject to change in future releases. One result however is that the version won’t appear in arrays returned by unresolvedConflictVersionsOfItemAtURL anymore, unless setting fails.

Once you have indicated that a conflict has been resolved you cannot make it unresolved again. Setting this to false causes an exception to be thrown.
(Read and Write computed property)

87.8.31 Constants

87.8.32 NSFileVersionAddingByMoving = 1

MBS MacCloud Plugin, Plugin Version: 11.2. **Function:** One of the constants for addVersionOfItemAtURL.

**Notes:** Whether addVersionOfItemAtURL can move the new version contents file into the version store
instead of copying it. Moving is much faster. See the comment for temporaryDirectoryURLForNewVersionOfItemAtURL for an example of when this useful.

87.8.33 NSFileVersionReplacingByMoving = 1

MBS MacCloud Plugin, Plugin Version: 11.2. **Function:** One of the constants for replaceItemAtURL. **Notes:** Whether replaceItemAtURL must move the version’s contents out of the version store instead of copying it. This is useful when you want to promote a version’s contents to a separate file. You wouldn’t use this to restore a version of a file.
87.9. class NSMetadataItemMBS

87.9.1 Class NSMetadataItemMBS

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The NSMetadataItem class represents the metadata associated with a file, providing a simple interface to retrieve the available attribute names and values. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

87.9.2 Methods

87.9.3 attributeKeys as string()

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array containing the attribute names of the receiver’s values.

87.9.4 Constructor


87.9.5 DisplayName as string

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The display name of the item, which may be different then the file system name. **Notes:** Available in Mac OS X v10.7 and later.

87.9.6 File as folderitem

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The file reference. **Notes:** Available in Mac OS X v10.7 and later.
87.9.7  FileContentChangeDate as date

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The date and time that the file contents last changed.  
**Notes:** Available in Mac OS X v10.7 and later.

87.9.8  FileCreationDate as date

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The date and time that the file was created.  
**Notes:** Available in Mac OS X v10.7 and later.

87.9.9  FileName as string

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of the item as seen in the file system.  
**Notes:** Available in Mac OS X v10.7 and later.

87.9.10  FileSize as UInt64

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The size (in bytes) of the file on disk.  
**Notes:** Available in Mac OS X v10.7 and later.

87.9.11  IsUbiquitous as boolean

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the item is stored in the cloud.  
**Notes:** Available in Mac OS X v10.7 and later.

87.9.12  NSMetadataItemDisplayNameKey as string

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the possible attribute keys that may be associated with an item.  
**Notes:** The value is a string with the display name of the item, which may be different then the file system name. Available in Mac OS X v10.7 and later.
87.9.13 NSMetadataItemFSContentChangeDateKey as string

Function: One of the possible attribute keys that may be associated with an item.
Notes:
The value is a date object that contains the date and time that the file contents last changed.
Available in Mac OS X v10.7 and later.

87.9.14 NSMetadataItemFSCreationDateKey as string

Function: One of the possible attribute keys that may be associated with an item.
Notes:
The value is a date object that contains the date and time that the file was created.
Available in Mac OS X v10.7 and later.

87.9.15 NSMetadataItemFSNameKey as string

Function: One of the possible attribute keys that may be associated with an item.
Notes:
The value is a string with the name of the item as seen in the file system.
Available in Mac OS X v10.7 and later.

87.9.16 NSMetadataItemFSSizeKey as string

Function: One of the possible attribute keys that may be associated with an item.
Notes:
The value is a number that indicates the size (in bytes) of the file on disk.
Available in Mac OS X v10.7 and later.
87.9.17 NSMetadataItemIsUbiquitousKey as string

**Function:** One of the possible attribute keys that describe cloud-related information about the item.
**Notes:**
The value is a boolean indicating whether the item is stored in the cloud.
Available in Mac OS X v10.7 and later.

87.9.18 NSMetadataItemPathKey as string

**Function:** One of the possible attribute keys that may be associated with an item.
**Notes:**
The value is a string object that contains the full path to the file.
Available in Mac OS X v10.7 and later.

87.9.19 NSMetadataItemURLKey as string

**Function:** One of the possible attribute keys that may be associated with an item.
**Notes:**
The value is an URL string that you can use to open the file.
Available in Mac OS X v10.7 and later.

87.9.20 NSMetadataUbiquitousItemHasUnresolvedConflictsKey as string

**Function:** One of the possible attribute keys that describe cloud-related information about the item.
**Notes:**
The value is a Boolean indicating whether the item is currently in conflict with another version of the file somewhere else.
Available in Mac OS X v10.7 and later.

87.9.21 NSMetadataUbiquitousItemIsDownloadedKey as string

**Function:** One of the possible attribute keys that describe cloud-related information about the item.
**87.9. CLASS NSMETADATAITEMMBS**

**Notes:**
The value is a Boolean indicating whether the current version of the item has been downloaded and is available locally.
Available in Mac OS X v10.7 and later.

**87.9.22 NSMetadataUbiquitousItemIsDownloadingKey as string**

**Function:** One of the possible attribute keys that describe cloud-related information about the item.
**Notes:**
The value is a Boolean indicating whether the item is currently being downloaded to the local device.
Available in Mac OS X v10.7 and later.

**87.9.23 NSMetadataUbiquitousItemIsUploadedKey as string**

**Function:** One of the possible attribute keys that describe cloud-related information about the item.
**Notes:**
The value is a Boolean indicating whether the item has been uploaded to the cloud.
Available in Mac OS X v10.7 and later.

**87.9.24 NSMetadataUbiquitousItemIsUploadingKey as string**

**Function:** One of the possible attribute keys that describe cloud-related information about the item.
**Notes:**
The value is a Boolean indicating whether the current version of the item is currently being uploaded to the cloud.
Available in Mac OS X v10.7 and later.

**87.9.25 NSMetadataUbiquitousItemPercentDownloadedKey as string**

**Function:** One of the possible attribute keys that describe cloud-related information about the item.
**Notes:**
The value is a number that contains the percentage of the file that has already been downloaded from the cloud. The value is a double in the range 0.0 to 100.0.
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Available in Mac OS X v10.7 and later.

87.9.26 NSMetadataUbiquitousItemPercentUploadedKey as string

Function: One of the possible attribute keys that describe cloud-related information about the item. 
Notes: 
The value is a number that contains the percentage of the file that has already been uploaded to the cloud. 
The value is a double in the range 0.0 to 100.0. 
Available in Mac OS X v10.7 and later.

87.9.27 Path as string

Function: The file path. 
Notes: Available in Mac OS X v10.7 and later.

87.9.28 UbiquitousItemHasUnresolvedConflicts as boolean

Function: Whether the item is currently in conflict with another version of the file somewhere else. 
Notes: Available in Mac OS X v10.7 and later.

87.9.29 UbiquitousItemIsDownloaded as boolean

Function: Whether the current version of the item has been downloaded and is available locally. 
Notes: Available in Mac OS X v10.7 and later.

87.9.30 UbiquitousItemIsDownloading as boolean

Function: Whether the item is currently being downloaded to the local device. 
Notes: Available in Mac OS X v10.7 and later.
87.9. **CLASS NSMETADATAITEMMBS**

87.9.31 **UbiquitousItemIsUploaded as boolean**

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the item has been uploaded to the cloud. **Notes:** Available in Mac OS X v10.7 and later.

87.9.32 **UbiquitousItemIsUploading as boolean**

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the current version of the item is currently being uploaded to the cloud. **Notes:** Available in Mac OS X v10.7 and later.

87.9.33 **UbiquitousItemPercentDownloaded as Double**

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The percentage of the file that has already been downloaded from the cloud. The value is a double in the range 0.0 to 100.0. **Notes:** Available in Mac OS X v10.7 and later.

87.9.34 **UbiquitousItemPercentUploaded as Double**

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The percentage of the file that has already been uploaded to the cloud. The value is a double in the range 0.0 to 100.0. **Notes:** Available in Mac OS X v10.7 and later.

87.9.35 **URL as string**

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The file URL. **Notes:** Available in Mac OS X v10.7 and later.

87.9.36 **valueForAttribute(key as string) as Variant**

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver’s metadata attribute name specified by a given key. **Notes:**
key: The name of a metadata attribute.
Returns value as Variant.

87.9.37 valuesForAttributes(keys() as string) as dictionary

**Function:** Returns a dictionary containing the key-value pairs for the attribute names specified by a given array of keys.
**Notes:**

keys: An array containing strings that specify the names of a metadata attributes.

A dictionary containing the key-value pairs for the attribute names specified by keys.

87.9.38 Properties

87.9.39 Handle as Integer

**Function:** The internal reference to the metadata item.
**Notes:**

Available in Mac OS X v10.7 and later.
(Read and Write property)
87.10 class NSMetadataQueryMBS

87.10.1 class NSMetadataQueryMBS


**Function:** The NSMetadataQuery class encapsulates the functionality provided by the MDQuery opaque type for querying the Spotlight metadata.

**Notes:**
You may prefer MDQueryMBS class from our plugins. NSMetadataQueryMBS exists as it supports iCloud search.

NSMetadataQuery objects provide metadata query results in several ways:

- As individual attribute values for requested attributes.
- As value lists that contain the distinct values for given attributes in the query results.
- A result array proxy, containing all the query results. This is suitable for use with Cocoa bindings.
- As a hierarchical collection of results, grouping together items with the same values for specified grouping attributes. This is also suitable for use with Cocoa bindings.

Queries have two phases: the initial gathering phase that collects all currently matching results and a second live-update phase.

By default the receiver has no limitation on its search scope. Use setSearchScopes to customize.
By default, notification of updated results occurs at 1.0 seconds. Use setNotificationBatchingInterval to customize.
You must set a predicate with the setPredicate method before starting a query.

87.10.2 Methods

87.10.3 Constructor


**Function:** Initializes the NSMetadataQuery object.

87.10.4 Destructor


**Function:** The destructor.
87.10.5  disableUpdates

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Disables updates to the query results. Notes: You should invoke this method before iterating over query results that could change due to live updates.

87.10.6  enableUpdates

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Enables updates to the query results. Notes: You should invoke this method after you’re done iterating over the query results.

87.10.7  groupedResults as NSMetadataQueryResultGroupMBS()


87.10.8  groupingAttributes as string()


87.10.9  indexOfResult(item as NSMetadataItemMBS) as Integer


87.10.10  isGathering as boolean

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a Boolean value that indicates whether the receiver is in the initial gathering phase of the query. Notes: Returns true when the query is in the initial gathering phase; false otherwise.
87.10. **CLASS NSMETADATAQUERYMBS**

87.10.11  **isStarted as boolean**

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value that indicates whether the receiver has started the query. **Notes:** Returns true when the receiver has executed the startQuery method; false otherwise.

87.10.12  **isStopped as boolean**

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value that indicates whether the receiver has stopped the query. **Notes:** Returns true when the receiver has stopped the query, false otherwise.

87.10.13  **NSMetadataQueryDidFinishGatheringNotification as string**

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the query notification names. **Notes:** Posted when the receiver has finished with the initial result-gathering phase of the query.

87.10.14  **NSMetadataQueryDidStartGatheringNotification as string**

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the query notification names. **Notes:** Posted when the receiver begins with the initial result-gathering phase of the query.

87.10.15  **NSMetadataQueryDidUpdateNotification as string**

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the query notification names. **Notes:** Posted when the receiver’s results have changed during the live-update phase of the query.

87.10.16  **NSMetadataQueryGatheringProgressNotification as string**

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the query notification names. **Notes:** Posted as the receiver’s is collecting results during the initial result-gathering phase of the query.
87.10.17  **NSMetadataQueryLocalComputerScope as string**

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** One of the scope constants you can use with setSearchScopes.

87.10.18  **NSMetadataQueryNetworkScope as string**

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** One of the scope constants you can use with setSearchScopes.

**Notes:** Search all user-mounted remote volumes.

87.10.19  **NSMetadataQueryResultContentRelevanceAttribute as string**

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** In addition to the requested metadata attributes, a query result also includes content relevance, accessed with this key.

**Notes:**
Key used to retrieve a number with a floating point value between 0.0 and 1.0 inclusive. The relevance value indicates the relevance of the content of a result object. The relevance is computed based on the value of the result itself, not on its relevance to the other results returned by the query. If the value is not computed, it is treated as an attribute on the item that does not exist.
Available in Mac OS X v10.4 and later.

87.10.20  **NSMetadataQueryUbiquitousDataScope as string**

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** One of the scope constants you can use with setSearchScopes.

**Notes:**
Search all files not in the Documents directories of the application’s iCloud container directories.
Available in Mac OS X v10.7 and later.

87.10.21  **NSMetadataQueryUbiquitousDocumentsScope as string**

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** One of the scope constants you can use with setSearchScopes.

**Notes:**
Search all files in the Documents directories of the application’s iCloud container directories.
Available in Mac OS X v10.7 and later.
87.10.22  NSMetadataQueryUserHomeScope as string

**Function:** One of the scope constants you can use with setSearchScopes.
**Notes:** Search all local mounted volumes, including the user home directory. The user’s home directory is searched even if it is a remote volume.

87.10.23  resultAtIndex(index as Integer) as NSMetadataItemMBS

**Function:** Returns the query result at a specific index.
**Notes:**
index: Index of the desired result in the query result array.
Returns query result at the position specified by index.
For performance reasons, you should use this method when retrieving a specific result, rather than their array returned by results.

87.10.24  resultCount as Integer

**Function:** Returns the number of results returned by the receiver.
**Notes:** For performance reasons, you should use this method, rather than invoking count on results array.

87.10.25  results as NSMetadataItemMBS()

**Function:** Returns an array containing the result objects for the receiver.
**Notes:** The results array is a proxy object that is primarily intended for use with Cocoa bindings. While it is possible to copy the proxy array and receive a "snapshot" of the complete current query results, it is generally not recommended due to performance and memory issues. To access individual result array elements you should instead use the resultCount and resultAtIndex methods.
87.10.26 searchScopes as string()

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array containing the receiver’s search scopes. **Notes:** The array can contain strings that represent file system directories or the search scopes specified in Constants. An empty array indicates that there is no limitation on where the receiver searches.

87.10.27 setGroupingAttributes(attributeNames() as string)

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the receiver’s grouping attributes to specific attribute names. **Notes:** Invoking this method on a receiver while it’s running a query, stops the query and discards current results, and immediately starts a new query. Available in Mac OS X v10.4 and later.

87.10.28 setSearchScopes(folders() as folderitem)

MBS MacCloud Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Restrict the search scope of the receiver. **Notes:** You can pass paths as folderitem. See also:

- 87.10.29 setSearchScopes(paths() as string) 14420
- 87.10.30 setSearchScopes(paths() as string, folders() as folderitem) 14420

87.10.29 setSearchScopes(paths() as string)

MBS MacCloud Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Restrict the search scope of the receiver. **Notes:** You can pass paths as strings and with the string array also the special scope strings from this class. See also:

- 87.10.28 setSearchScopes(folders() as folderitem) 14420
- 87.10.30 setSearchScopes(paths() as string, folders() as folderitem) 14420

87.10.30 setSearchScopes(paths() as string, folders() as folderitem)

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Restrict the search scope of the receiver.
87.10. CLASS NSMETADATAQUERYMBS

Example:

```vba
dim m as new NSMetadataQueryMBS
dim paths() as string
dim folders() as FolderItem

// you can specify where to search either by path or by FolderItem
paths.Append "/Applications"
folders.Append SpecialFolder.Applications

m.setSearchScopes paths, folders
```

Notes: You can pass paths as strings, paths as folderItem and with the string array also the special scope strings from this class.
See also:

- 87.10.28 setSearchScopes(folders() as folderItem)
- 87.10.29 setSearchScopes(paths() as string)

87.10.31 setSortDescriptor(sortDescriptor as NSSortDescriptorMBS)

Function: Sets the sort descriptors to be used by the receiver.
Example:

```vba
dim m as new NSMetadataQueryMBS
m.setSortDescriptor NSSortDescriptorMBS.sortDescriptorWithKey(NSMetadataItemMBS.NSMetadataItemDisplayNameKey, true)
```

Notes: Invoking this method on the receiver running a query causes the existing query to stop, all current results are discarded, and a new query is started immediately.

87.10.32 setSortDescriptors(sortDescriptors() as NSSortDescriptorMBS)

Function: Sets the sort descriptors to be used by the receiver.
Notes: Invoking this method on the receiver running a query causes the existing query to stop, all current results are discarded, and a new query is started immediately.
87.10.33 sortDescriptors as NSSortDescriptorMBS()

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array containing the receiver’s sort descriptors. **Notes:** Available in Mac OS X v10.4 and later.

87.10.34 startQuery as boolean

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Attempts to start the query. **Notes:**

Returns true when successful; false otherwise.

A query can’t be started if the receiver is already running a query or no predicate has been specified.

87.10.35 stopQuery

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Stops the receiver’s current query from gathering any further results. **Notes:**

The receiver first completes gathering any unprocessed results. If a query is stopped before the gathering phase finishes, it will not post an NSMetadataQueryDidStartGatheringNotification notification.

You would call this function to stop a query that is generating too many results to be useful but still want to access the available results. If the receiver is sent a startQuery message after performing this method, the existing results are discarded.

87.10.36 Properties

87.10.37 Handle as Integer

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal reference to the NSMetadataQuery object. **Notes:** (Read and Write property)
87.10. CLASS NSMETADATAQUERYMBS

87.10.38 notificationBatchingInterval as Double

**Function:** The interval that the receiver provides notification of updated query results.
**Notes:**
in seconds.
(Read and Write computed property)

87.10.39 predicate as NSPredicateMBS

**Function:** The predicate used by the receiver to filter the query results.
**Example:**
```null
dim m as new NSMetadataQueryMBS
m.predicate = NSPredicateMBS.predicateWithFormat("kMDItemContentType=""com.apple.application-bundle"")
```
**Notes:**
Setting the predicate on a receiver running a query causes the existing query to stop, all current results are discarded, and a new query is started immediately.
(Read and Write computed property)

87.10.40 Events

87.10.41 DidFinishGathering(n as NSNotificationMBS)

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Function:** Called as the query has finished with the initial result-gathering phase of the query.

87.10.42 DidStartGathering(n as NSNotificationMBS)

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Function:** Called as the query begins with the initial result-gathering phase of the query.
87.10.43 DidUpdate(n as NSNotificationMBS)

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called as the query’s results have changed during the live-update phase of the query.

87.10.44 GatheringProgress(n as NSNotificationMBS)

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called as the query is collecting results during the initial result-gathering phase of the query.
87.11. CLASS NSMETADATAQUERYRESULTGROUPMBS

87.11.1 class NSMetadataQueryResultGroupMBS

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The NSMetadataQueryResultGroupMBS class represents a collection of grouped attribute results returned by an NSMetadataQueryMBS object. **Notes:** This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

87.11.2 Methods

87.11.3 attributeName as string

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the attribute name for the receiver's result group.

87.11.4 Constructor


87.11.5 resultAtIndex(index as Integer) as NSMetadataItemMBS

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the query result at a specific index. **Notes:** index: The index of the desired result.

For performance reasons, you should use this method when retrieving a specific result, rather than they array returned by results.

87.11.6 resultCount as Integer

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the number of results returned by the receiver. **Notes:** For performance reasons, you should use this method, rather than invoking count on results.
87.11.7 results as NSMetadataItemMBS()

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array containing the result objects for the receiver. **Notes:** The results array is a proxy object that is primarily intended for use with Cocoa bindings. While it is possible to copy the proxy array to get a "snapshot" of the complete current query results, it is generally not recommended due to performance and memory issues. To access individual result array elements you should instead use the resultCount and resultAtIndex methods.

87.11.8 subgroups as NSMetadataQueryResultGroupMBS()

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array containing the subgroups of the receiver.

87.11.9 value as Variant

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the value of the attribute name for the receiver.

87.11.10 Properties

87.11.11 Handle as Integer

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal handle to the NSMetadataQueryResultGroup object. **Notes:** (Read and Write property)
87.12. CLASS NSPREDICATEMBS

87.12 class NSPredicateMBS

87.12.1 class NSPredicateMBS


**Function:** The NSPredicate class is used to define logical conditions used to constrain a search either for a fetch or for in-memory filtering.

**Notes:**

You use predicates to represent logical conditions, used for describing objects in persistent stores and in-memory filtering of objects. Although it is common to create predicates directly from instances of NSComparisonPredicate, NSCompoundPredicate, and NSExpression, you often create predicates from a format string which is parsed by the class methods on NSPredicate. Examples of predicate format strings include:

- Simple comparisons, such as grade == "7" or firstName like "Shaffiq"
- Case and diacritic insensitive lookups, such as name contains [ cd ] "itroen"
- Logical operations, such as (firstName like "Mark") OR (lastName like "Adderley")
- In Mac OS X v10.5 and later, you can create between predicates such as date between { $ YESTERDAY, $ TOMORROW }.

You can create predicates for relationships, such as:

- group.name like "work*"
- ALL children.age >12
- ANY children.age >12

You can create predicates for operations, such as @sum.items.price <1000. For a complete syntax reference, refer to the Predicate Programming Guide:

87.12.2 Methods

87.12.3 Constructor(predicateFormat as string)


**Function:** Creates and returns a new predicate by substituting the values in a given array into a format string and parsing the result.

**Example:**
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```vbs
Dim n As New NSPredicateMBS("kMDItemContentType=""com.apple.application-bundle"")
MsgBox n.predicateFormat
```

Notes:

predicateFormat: The format string for the new predicate.
arguments: Optional, the arguments to substitute into predicateFormat. Values are substituted into predicateFormat in the order they appear in the array.

You get a new predicate by substituting the values in arguments into predicateFormat, and parsing the result.

For details of the format of the format string and of limitations on variable substitution, see Predicate Format String Syntax:


Available in Mac OS X v10.4 and later.

See also:

- 87.12.4 Constructor(predicateFormat as string, arguments() as Variant) 14428
- 87.12.5 Constructor(value as boolean) 14429

### 87.12.4 Constructor(predicateFormat as string, arguments() as Variant)


**Function:** Creates and returns a new predicate by substituting the values in a given array into a format string and parsing the result.

**Example:**

```vbs
// we use one parameter here
Dim s() As Variant
s.Append "com.apple.application-bundle"

Dim n As New NSPredicateMBS("kMDItemContentType=% @", s)
```

// shows final string
MsgBox n.predicateFormat

Notes:

predicateFormat: The format string for the new predicate.
arguments: Optional, the arguments to substitute into predicateFormat. Values are substituted into predicateFormat in the order they appear in the array.
You get a new predicate by substituting the values in arguments into predicateFormat, and parsing the result.
For details of the format of the format string and of limitations on variable substitution, see Predicate Format String Syntax:

Available in Mac OS X v10.4 and later.
See also:

- 87.12.3 Constructor(predicateFormat as string)
- 87.12.5 Constructor(value as boolean)

87.12.5 Constructor(value as boolean)

Function: Creates and returns a predicate that always evaluates to a given value.
Example:

```vbscript
dim n as new NSPredicateMBS(true)
MsgBox n.predicateFormat
```

See also:

- 87.12.3 Constructor(predicateFormat as string)
- 87.12.4 Constructor(predicateFormat as string, arguments() as Variant)

87.12.6 description as string

Function: The descriptor for this event.
Example:

```vbscript
dim args() as Variant
args.Append NSMetadataItemMBS.NSMetadataItemFSNameKey
dim pred as NSPredicateMBS = NSPredicateMBS.predicateWithFormat("% K LIKE '*'", args)
MsgBox pred.description
```

Notes: This is a text representation for debugging.
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87.12.7 predicateFormat as string

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the receiver’s format string. **Notes:** The string returned by this method is not guaranteed to be the same as a string used to create the predicate.

87.12.8 predicateWithFormat(predicateFormat as string) as NSPredicateMBS

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns a new predicate by substituting the values in a given array into a format string and parsing the result. **Example:**
```
dim n as NSPredicateMBS
n = NSPredicateMBS.predicateWithFormat("kMDItemContentType="’com.apple.application-bundle’")
MsgBox n.predicateFormat
```

**Notes:**
- **predicateFormat:** The format string for the new predicate.
- **arguments:** Optional, the arguments to substitute into predicateFormat. Values are substituted into predicateFormat in the order they appear in the array.

Returns a new predicate by substituting the values in arguments into predicateFormat, and parsing the result.

For details of the format of the format string and of limitations on variable substitution, see Predicate Format String Syntax: http://developer.apple.com/library/mac/documentation/Cocoa/Conceptual/Predicates/Articles/pSyntax.html#//apple_ref/doc/uid/TP40001795

Available in Mac OS X v10.4 and later.
See also:
- 87.12.9 predicateWithFormat(predicateFormat as string, arguments() as Variant) as NSPredicateMBS

87.12.9 predicateWithFormat(predicateFormat as string, arguments() as Variant) as NSPredicateMBS

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns a new predicate by substituting the values in a given array into a format
87.12. CLASS NSPREDICATEMBS

string and parsing the result.

Example:

```vbscript
dim args() as Variant
args.Append NSMetadataItemMBS.NSMetadataItemFSNameKey
dim pred as NSPredicateMBS = NSPredicateMBS.predicateWithFormat("%K LIKE '*'", args)
MsgBox pred.description
```

Notes:

- **predicateFormat**: The format string for the new predicate.
- **arguments**: Optional, the arguments to substitute into predicateFormat. Values are substituted into predicateFormat in the order they appear in the array.

Returns a new predicate by substituting the values in arguments into predicateFormat, and parsing the result.

For details of the format of the format string and of limitations on variable substitution, see Predicate Format String Syntax:


Available in Mac OS X v10.4 and later.

See also:

- 87.12.8 predicateWithFormat(predicateFormat as string) as NSPredicateMBS

87.12.10 predicateWithValue(value as boolean) as NSPredicateMBS


**Function**: Creates and returns a predicate that always evaluates to a given value.

**Example**:

```vbscript
dim p as NSPredicateMBS = NSPredicateMBS.predicateWithValue(true)
MsgBox p.predicateFormat
```

87.12.11 Print


**Function**: Writes description for this event descriptor to the console.

**Notes**: You can see result in Console.app.
87.12.12 Properties

87.12.13 Handle as Integer

MBS MacCloud Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal handle to the NSPredicate object. **Notes:** (Read and Write property)
87.13. class NSSortDescriptorMBS

87.13.1 class NSSortDescriptorMBS

MBS Main Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The cocoa class for sort descriptions.

**Example:**

```vba
dim n as new NSSortDescriptorMBS("Hello", true)
MsgBox str(n.key)
```

**Notes:**

An instance of NSSortDescriptor describes a basis for ordering objects by specifying the property to use to compare the objects, the method to use to compare the properties, and whether the comparison should be ascending or descending. Instances of NSSortDescriptor are immutable.

You construct an instance of NSSortDescriptor by specifying the key path of the property to be compared, the order of the sort (ascending or descending), and (optionally) a selector to use to perform the comparison. The three-argument constructor allows you to specify other comparison selectors such as caseInsensitiveCompare: and localizedCompare:. Sorting raises an exception if the objects to be sorted do not respond to the sort descriptor’s comparison selector.

Note: Many of the descriptions of NSSortDescriptor methods refer to ”property key”. This, briefly, is a string (key) that identifies a property (an attribute or relationship) of an object. You can find a discussion of this terminology in ”Object Modeling” in Cocoa Fundamentals Guide and in Key-Value Coding Programming Guide.

There are a number of situations in which you can use sort descriptors, for example:

- To sort an array (an instance of NSArray or NSMutableArray see sortedArrayUsingDescriptors and sortUsingDescriptors)
- To directly compare two objects (see compareObject method)
- To specify how the elements in a table view should be arranged (see sortDescriptors)
- To specify how the elements managed by an array controller should be arranged (see sortDescriptors)
- If you are using Core Data, to specify the ordering of objects returned from a fetch request (see sortDescriptors)
87.13.2 Methods

87.13.3 compareObject(obj1 as variant, obj2 as variant) as Integer

MBS Main Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Compares two objects. **Notes:** Returns 1, -1 or 0 (zero for equal).

87.13.4 Constructor(key as string, ascending as boolean)

MBS Main Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes an NSSortDescriptor object initialized with a given property key path and sort order, and with the default comparison selector. **Example:**

```vbs
dim n as new NSSortDescriptorMBS("Hello", true)
MsgBox str(n.key)
```

**Notes:**

key: The property key to use when performing a comparison. In the comparison, the property is accessed using key-value coding.
ascending: True if the receiver specifies sorting in ascending order, otherwise false.

On success the handle property is not zero.
Available in Mac OS X v10.3 and later.
If you implement the Compare event, we use it on OS X 10.6 and newer.

See also:

- 87.13.5 Constructor(key as string, ascending as boolean, SelectorName as String)

87.13.5 Constructor(key as string, ascending as boolean, SelectorName as String)

MBS Main Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes an NSSortDescriptor object initialized with a given property key path and sort order, and with the default comparison selector. **Notes:**

key: The property key to use when performing a comparison. In the comparison, the property is accessed using key-value coding.
ascending: True if the receiver specifies sorting in ascending order, otherwise false.

On success the handle property is not zero.
87.13. **CLASS NSSORTDESCRIPTORMBS**

Please pass valid name of a selector for the objects. Wrong selector causes trouble, e.g. "localizedCompare:"

Available in Mac OS X v10.3 and later.

See also:

- 87.13.4 Constructor(key as string, ascending as boolean)

87.13.6 **reversedSortDescriptor as NSSortDescriptorMBS**

MBS Main Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Returns a copy of the receiver with the sort order reversed.

**Example:**

```plaintext
dim n as NSSortDescriptorMBS
n = NSSortDescriptorMBS.sortDescriptorWithKey("Hello", true)

dim x as NSSortDescriptorMBS = n.reversedSortDescriptor
MsgBox x.key+" " + str(x.ascending)
```

87.13.7 **sortDescriptorWithKey(key as string, ascending as boolean) as NSSortDescriptorMBS**

MBS Main Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Creates and returns an NSSortDescriptor with the specified key and ordering.

**Example:**

```plaintext
dim n as NSSortDescriptorMBS
n = NSSortDescriptorMBS.sortDescriptorWithKey("Hello", true)
MsgBox n.key
```

**Notes:**

key: The property key to use when performing a comparison. In the comparison, the property is accessed using key-value coding.

ascending: True if the receiver specifies sorting in ascending order, otherwise false.

Returns an NSSortDescriptorMBS object initialized with the specified key and ordering.

Available in Mac OS X 10.3 and newer.
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87.13.8 sortDescriptorWithKeyComparator(key as string, ascending as boolean, Comparator as NSComparatorDelegateMBS, tag as Variant = nil) as NSSortDescriptorMBS

MBS Main Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an NSSortDescriptor object initialized to do with the given ordering and comparator delegate. **Notes:**

- key: The property key to use when performing a comparison. In the comparison, the property is accessed using key-value coding (see Key-Value Coding Programming Guide).
- ascending: true if the receiver specifies sorting in ascending order, otherwise false.
- Comparator: the comparator to use with delegate declaration “NSComparatorDelegateMBS(obj1 as Variant, obj2 as Variant, tag as Variant) as Integer”.

87.13.9 sortDescriptorWithKeyWithCaseInsensitiveCompare(key as string, ascending as boolean) as NSSortDescriptorMBS

MBS Main Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an NSSortDescriptor with the specified key and ordering. **Example:**

```dim n as NSSortDescriptorMBS
n = NSSortDescriptorMBS.sortDescriptorWithKeyWithCaseInsensitiveCompare(“Hello”, true)
MsgBox n.key```

**Notes:**

- key: The property key to use when performing a comparison. In the comparison, the property is accessed using key-value coding.
- ascending: True if the receiver specifies sorting in ascending order, otherwise false.

Returns an NSSortDescriptorMBS object initialized with the specified key and ordering. With case insensitive string comparison.

Available in Mac OS X 10.3 and newer.

87.13.10 sortDescriptorWithKeyWithCompare(key as string, ascending as boolean) as NSSortDescriptorMBS

MBS Main Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an NSSortDescriptor with the specified key and ordering.
Example:

```vbnet
dim n as NSSortDescriptorMBS

n = NSSortDescriptorMBS.sortDescriptorWithKeyWithCompare("Hello", true)
MsgBox n.key
```

Notes:

key: The property key to use when performing a comparison. In the comparison, the property is accessed using key-value coding.
ascending: True if the receiver specifies sorting in ascending order, otherwise false.

Returns an NSSortDescriptorMBS object initialized with the specified key and ordering. Uses selector "compare:"
Available in Mac OS X 10.3 and newer.
See also:

- 87.13.11 sortDescriptorWithKeyWithCompare(key as string, ascending as boolean, Options as Integer) as NSSortDescriptorMBS

87.13.11 sortDescriptorWithKeyWithCompare(key as string, ascending as boolean, Options as Integer) as NSSortDescriptorMBS

MBS Main Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates and returns an NSSortDescriptor with the specified key and ordering.
**Example:**

```vbnet
dim n as NSSortDescriptorMBS

n = NSSortDescriptorMBS.sortDescriptorWithKeyWithCompare("Hello", true)
MsgBox n.key
```

Notes:

key: The property key to use when performing a comparison. In the comparison, the property is accessed using key-value coding.
ascending: True if the receiver specifies sorting in ascending order, otherwise false.

Returns an NSSortDescriptorMBS object initialized with the specified key and ordering. Uses selector "compare:options:"
Please pass options for NSString comparison. e.g. NSNumericSearch
Available in Mac OS X 10.3 and newer.
See also:
87.13.10 sortDescriptorWithKeyWithCompare(key as string, ascending as boolean) as NSSortDescriptorMBS

87.13.12 sortDescriptorWithKeyWithLocalizedCaseInsensitiveCompare(key as string, ascending as boolean) as NSSortDescriptorMBS

MBS Main Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an NSSortDescriptor with the specified key and ordering.

**Example:**

```vbnet
dim n as NSSortDescriptorMBS
n = NSSortDescriptorMBS.sortDescriptorWithKeyWithLocalizedCaseInsensitiveCompare("Hello", true)
MsgBox n.key
```

**Notes:**

- **key:** The property key to use when performing a comparison. In the comparison, the property is accessed using key-value coding.
- **ascending:** True if the receiver specifies sorting in ascending order, otherwise false.

Returns an NSSortDescriptorMBS object initialized with the specified key and ordering. With localized string comparison. With case insensitive string comparison. Available in Mac OS X 10.3 and newer.

87.13.13 sortDescriptorWithKeyWithLocalizedCompare(key as string, ascending as boolean) as NSSortDescriptorMBS

MBS Main Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates and returns an NSSortDescriptor with the specified key and ordering.

**Example:**

```vbnet
dim n as NSSortDescriptorMBS
n = NSSortDescriptorMBS.sortDescriptorWithKeyWithLocalizedCompare("Hello", true)
MsgBox n.key
```

**Notes:**

- **key:** The property key to use when performing a comparison. In the comparison, the property is accessed using key-value coding.
- **ascending:** True if the receiver specifies sorting in ascending order, otherwise false.
Returns an NSSortDescriptorMBS object initialized with the specified key and ordering. With localized string comparison.
Available in Mac OS X 10.3 and newer.

87.13.14 sortDescriptorWithKeyWithSelector(key as string, ascending as boolean, SelectorName as String) as NSSortDescriptorMBS

MBS Main Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creates and returns an NSSortDescriptor with the specified selector, key and ordering.
Notes:
key: The property key to use when performing a comparison. In the comparison, the property is accessed using key-value coding.
ascending: True if the receiver specifies sorting in ascending order, otherwise false.

Returns an NSSortDescriptorMBS object initialized with the specified key and ordering. Please pass valid name of a selector for the objects. Wrong selector causes trouble, e.g. "localizedCompare:". Available in Mac OS X 10.3 and newer.

87.13.15 Properties

87.13.16 ascending as boolean

MBS Main Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a Boolean value that indicates whether the receiver specifies sorting in ascending order.
Example:
```plaintext
dim n as new NSSortDescriptorMBS("Hello", true)
MsgBox str(n.ascending)
```

Notes: (Read only property)

87.13.17 Handle as Integer

Notes: (Read and Write property)
87.13.18  key as string

MBS Main Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the receiver’s property key path.
**Example:**
```
dim n as new NSSortDescriptorMBS(“Hello”, true)
MsgBox str(n.key)
```

**Notes:**
This key path specifies the property that is compared during sorting.
(Read only property)

87.13.19  selector as String

MBS Main Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The selector used to sort.
**Notes:** (Read only property)

87.13.20  Events

87.13.21  Comparator(obj1 as Variant, obj2 as Variant) as Integer

MBS Main Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The compare event.
87.14.1 class NSUbiquitousKeyValueStoreMBS


**Function:** The iCloud class to store key value data.

**Notes:**
Size of data is limited to 64 KB per application and 4 KB per value.
Do not store data here. Better store some configuration data, bookmarks or highscores.

Please also check the documentation from Apple for the NSUbiquitousKeyValueStore class. Seems like you need your app to be signed with iCloud Storage Entitlements.

87.14.2 Methods

87.14.3 ArrayValue(key as string) as Variant()


**Function:** Get the value for this key as a variant.

**Example:**

```vbnet
dim values() as Variant

values.Append "Hello"
values.Append "World"

dim u as new NSUbiquitousKeyValueStoreMBS

u.ArrayValue("key")=values

// later read back
dim nvalues() as Variant = u.ArrayValue("key")
```

See also:

- 87.14.4 ArrayValue(key as string, assigns values() as Variant)

87.14.4 ArrayValue(key as string, assigns values() as Variant)


**Function:** Set the value for this key as a variant.
Example:

dim u as new NSUbiquitousKeyValueStoreMBS
dim nvalues() as Variant = u.ArrayValue("key")

See also:

- 87.14.3 ArrayValue(key as string) as Variant()

87.14.5 available as boolean

**Function:** Whether this class is available.

**Example:**

msgbox "iCloud Key Value Store available: " + str(NSUbiquitousKeyValueStoreMBS.available)

**Notes:** This does not tell you whether Apple switched on their servers.

87.14.6 Constructor

**Function:** The constructor.

87.14.7 defaultStore as NSUbiquitousKeyValueStoreMBS

**Function:** Returns a reference to the default key store.

87.14.8 Destructor

**Function:** The destructor.
87.14.9 dictionaryRepresentation as dictionary

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The key value store as a dictionary.

87.14.10 NSUbiquitousKeyValueStoreChangedKeysKey as string

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A key name for the userinfo dictionary when you receive the NSUbiquitousKeyValueStoreDidChangeExternallyNotification notification. **Notes:** Value for this key in the dictionary in an array of strings.

87.14.11 NSUbiquitousKeyValueStoreChangeReasonKey as string

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A key name for the userinfo dictionary when you receive the NSUbiquitousKeyValueStoreDidChangeExternallyNotification notification. **Notes:** Value for this key in the dictionary in an integer.

87.14.12 NSUbiquitousKeyValueStoreDidChangeExternallyNotification as string

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The notification name for the notification sent when the . **Notes:** You can observe this notification with the NSNotificationCenterMBS class or simply subclass NSUbiquitousKeyValueStoreMBS and use the DidChangeExternally event.

87.14.13 removeObjectForKey(key as string)

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes the value for the key.

87.14.14 synchronize as boolean

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Synchronizes the key value store. **Example:**
dim u as NSUbiquitousKeyValueStoreMBS = NSUbiquitousKeyValueStoreMBS.defaultStore

// safe something
u.StringValue("Font") = "Times"

if u.synchronize then
    MsgBox "OK"
else
    MsgBox "Failed"
end if

Notes: Returns true on success.

87.14.15 Properties

87.14.16 Handle as Integer

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The internal reference for this object. Notes: (Read and Write property)

87.14.17 BooleanValue(key as string) as Boolean

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Get or set the value for this key as a boolean. Notes: (Read and Write computed property)

87.14.18 DataValue(key as string) as memoryblock

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Get or set the value for this key as a memoryblock. Notes: (Read and Write computed property)

87.14.19 DictionaryValue(key as string) as Dictionary

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Get or set the value for this key as a dictionary.
**87.14.20 DoubleValue(key as string) as Double**


*Function:* Get or set the value for this key as a double.

*Example:*

```vbnet
dim u as new NSUbiquitousKeyValueStoreMBS

u.DoubleValue("HighScore") = 3456
```

*Notes:* (Read and Write computed property)

---

**87.14.21 IntegerValue(key as string) as Int64**


*Function:* Get or set the value for this key as an integer.

*Example:*

```vbnet
dim u as new NSUbiquitousKeyValueStoreMBS

// query highscore value
MsgBox str(u.IntegerValue("HighScore"))
```

*Notes:* (Read and Write computed property)

---

**87.14.22 StringValue(key as string) as string**


*Function:* Get or set the string value for the given key.

*Example:*

```vbnet
dim u as NSUbiquitousKeyValueStoreMBS = NSUbiquitousKeyValueStoreMBS.defaultStore

// safe something
u.StringValue("Font") = "Times"
```
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Notes: (Read and Write computed property)

**87.14.23 VariantValue(key as string) as Variant**

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Get or set the value for this key as a variant.

Notes: (Read and Write computed property)

**87.14.24 Events**

**87.14.25 DidChangeExternally(ChangeReason as Integer, ChangedKeys() as string, notification as Variant)**

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: This event is called when the ubiquitous key value store changed.

Notes:

ChangeReason gives the reason.
Can be NSUbiquitousKeyValueStoreServerChange, NSUbiquitousKeyValueStoreInitialSyncChange or NSUbiquitousKeyValueStoreQuotaViolationChange.

**87.14.26 Constants**

**87.14.27 NSUbiquitousKeyValueStoreInitialSyncChange = 1**

MBS MacCloud Plugin, Plugin Version: 11.2. Function: One of the reasons for an external change to the key store.

**87.14.28 NSUbiquitousKeyValueStoreQuotaViolationChange = 2**

MBS MacCloud Plugin, Plugin Version: 11.2. Function: One of the reasons for an external change to the key store.

**87.14.29 NSUbiquitousKeyValueStoreServerChange = 0**

MBS MacCloud Plugin, Plugin Version: 11.2. Function: One of the reasons for an external change to the key store.
87.14. CLASS NSUBIQUITOUSKEYVALUESTOREMBS

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Chapter 88

Icon Service

88.1  Globals

88.1.1  CompositeIconsMBS(ForeGround as IconMBS, BackGround as IconMBS) as IconMBS

MBS Picture Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Combines two icons.

**Example:**

```vbs
dim i as IconMBS  // global
Sub Open()
    dim a,b as IconMBS
    b=new IconMBS(SpecialFolder.Desktop)
    a=new IconMBS(app.ApplicationFileMBS)
    i=CompositeIconsMBS(a,b)
End Sub

Sub Paint(g As Graphics)
    i.DrawIcon(g,0,0,128,128)
End Sub
```

**Notes:** Returns nil on any error (e.g. one of the two icons is invalid or nil).
88.1.2 NewIconFamilyMBS as IconFamilyMBS

MBS Picture Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new empty IconFamily object.

**Example:**

dim i as IconFamilyMBS = NewIconFamilyMBS

**Notes:** Returns nil on any error.

88.1.3 NewIconFamilyMBSFromScrap as IconFamilyMBS

MBS Picture Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new IconFamily object with the data of a "icns" resource from the clipboard.

**Example:**

// put the Finder Icon on the clipboard

dim i as new IconMBS("FNDR", "MACS")
i.IconFamily.PutOnScrap

// and get it back

dim n as IconFamilyMBS = NewIconFamilyMBSFromScrap
Backdrop = n.Thumbnail32BitData

**Notes:** Returns nil on any error.

88.1.4 IconStringToPictMBS(icon as String, bitDepth as Integer, size as Integer) as Picture

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: Yes. **Function:** Converts an icon into a Picture so that you can display it within the REALbasic environment.

**Example:**

dim icondata as string
dim p as Picture

p=IconStringToPictMBS(icondata, 8, 32)
Notes:
To see how it is used, look at the method DisplayTheFileIcon in the included REALbasic demo project. Currently this function only creates a Picture from the Icon’s Image, and does not consider the Icon Mask. The Mask is always right behind the Icon Image, in case you want to get that, too. Size is the width and height of the icon which must be equal. If you need something other, please ask.

88.2 class IconFamilyMBS

88.2.1 class IconFamilyMBS

MBS Picture Plugin, Plugin Version: 2.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class for an icon family on Mac OS.

88.2.2 Methods

88.2.3 close

MBS Picture Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The destructor.
**Notes:**
There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you. (e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

88.2.4 GetIconImage(size as Integer, byref pic as picture, byref mask as picture) as boolean

MBS Picture Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns an icon with the given size.
**Example:**
```vbnet
dim p,m as Picture
dim s as IconFamilyMBS // your icon

if s.GetIconImage(512,p,m) then
    window1.Backdrop=p
    window2.Backdrop=m
end if
```
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Notes:
Size may be 16, 32, 48, 128, 256 or 512.
Returns true on success and false on failure.
Works only on Mac OS X 10.5 or newer.

LastError is -50 if the given size is not available.
Added 1024 pixel support in 12.3 plugins.

88.2.5 Icon(width as Integer) as picture

MBS Picture Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns an picture with the icon of the icon family for the given icon size.
Example:

```
dim i as new IconMBS(SpecialFolder.Desktop)
dim f as IconFamilyMBS = i.IconFamily
Backdrop = f.Icon(200)
```

Notes: The icon is adjusted to have the requested size if needed.

88.2.6 IconImage(width as Integer) as picture

MBS Picture Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns an picture with the icon image of the icon family.
Example:

```
dim i as new IconMBS(SpecialFolder.Desktop)
dim f as IconFamilyMBS = i.IconFamily
// gives 256 pixel icon
Backdrop = f.IconImage(200)
```

Notes: The icon may be bigger or smaller if no such icon size exists.

88.2.7 IconMask(width as Integer) as picture

MBS Picture Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns an picture with the icon mask of the icon family.
Example:
88.2. CLASS ICONFAMILYMBS

```vba
dim i as new IconMBS(SpecialFolder.Desktop)
dim f as IconFamilyMBS = i.IconFamily
// gives 256 pixel icon
Backdrop = f.IconMask(200)
```

**Notes:** The icon may be bigger or smaller if no such icon size exists.

88.2.8 PutOnScrap

MBS Picture Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Puts the Icon as an "icns" resource on the clipboard.

**Example:**

```vba
dim i as new IconMBS("FNDR", "MACS")
i.IconFamily.PutOnScrap
```

**Notes:** LastError is set.

88.2.9 Register(creator as string, type as string) as IconMBS


**Notes:**

- The current icon stored in the iconfamily is saved in the global icon list with the given type and creator combination.
- On success the new IconMBS object is returned. In case the IconMBS object is destroyed, the icon will automatically be removed from the icon list.
- Lasterror is set.

88.2.10 SetIconImage(pic as picture, mask as picture) as boolean

MBS Picture Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the icon data.

**Example:**

```vba
dim p as Picture // your picture
dim m as Picture // the mask for the picture
dim i as IconFamilyMBS // your icon family
```
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// 512, 256, 128 Pixel images for Leopard
dim ps,ms as Picture
ps=p.ScaleMBS(512,512)
ms=m.ScaleMBS(512,512)
call i.SetIconImage(ps,ms)
ps=p.ScaleMBS(512,256)
ms=m.ScaleMBS(512,256)
call i.SetIconImage(ps,ms)
ps=p.ScaleMBS(512,128)
ms=m.ScaleMBS(512,128)
call i.SetIconImage(ps,ms)

Notes:
Size of the pictures may be 16, 32, 48, 128, 256 or 512.
pic and mask must not be nil.
pic.width, mask.width, pic.height and mask.height must all be same.
Returns true on success and false on failure.
Works only on Mac OS X 10.5 or newer.
Added 1024 pixel support in 12.3 plugins.

88.2.11 WriteFile(f as folderitem)

MBS Picture Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Writes the icon family into an icon file.

**Example:**

dim pict,mask as Picture
dim iconfamily as IconFamilyMBS
dim f as FolderItem

// create pictures
pict=NewPicture(128,128,32)
mask=NewPicture(128,128,32)
pict.Graphics.ForeColor=rgb(255,0,0)
pict.Graphics.FillOval 0,0,128,128

mask.Graphics.ForeColor=rgb(0,0,0)
mask.Graphics.FillOval 0,0,128,128

// make an icon family
iconfamily=NewIconFamilyMBS
iconfamily.Thumbnail32BitData=pict
iconfamily.Thumbnail8BitMask=mask
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' you may fill more like iconfamily.Large32BitData...

f=SpecialFolder.Desktop.Child(“test.icns”)

// Save *.ICNS file:
iconfamily.WriteFile f

if f.AddCustomIconMBS(iconfamily,false)=0 then
    // successfully added custom icon
end if

Notes: LastError is set.

88.2.12  Properties

88.2.13  Dither as boolean

MBS Picture Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. Function:
whether on setting an icon the picture is dithered to the new color depth.
Notes:
Dithered pictures look normally better.
(Read and Write property)

88.2.14  Handle as Integer

MBS Picture Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The Handle for this Icon family.
Notes:
Value is a IconFamilyHandle.
(Read and Write property)

88.2.15  LastError as Integer

MBS Picture Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The last error code.
Notes:
The last function was successfull if lasterror is 0.
If the last function was not available on this machine, the value is set to -1.
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Other values are Mac OS error codes.
(Read and Write property)

### 88.2.16 Release as boolean

MBS Picture Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:**
whether to release the handle in the destructor.
**Notes:** (Read and Write property)

### 88.2.17 Valid as boolean

MBS Picture Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
whether the icon family is valid.
**Notes:** (Read and Write property)

### 88.2.18 Data as string

MBS Picture Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The data of this icon in the ICNS format.
**Example:**

```vbs
dim g as FolderItem
dim i as IconMBS
dim f as IconFamilyMBS
dim s as string
dim b as BinaryStream

g=SpecialFolder.Desktop
i=new IconMBS(g) // get icon from desktop folder on Mac OS X
f=i.IconFamily
Backdrop=f.Thumbnail32BitData

s=f.Data
MsgBox str(lenb(s))+” bytes”

g=SpecialFolder.Desktop.Child(”Desktop folder icon.icns”)
b=g.CreateBinaryFile(”Icon”) // you need to define this type!
b.write s
b.close

g.launch // shows in preview the icns file
```
88.2. **CLASS ICONFAMILYMBS**

Notes:
Returns "" on low memory or any error.
(Read and Write computed property)

### 88.2.19 DataMemory as Memoryblock

MBS Picture Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The data of this icon in the ICNS format.
**Example:**
```vba
// get icon from desktop folder on Mac OS X
dim i as new IconMBS(SpecialFolder.Desktop)
dim f as IconFamilyMBS = i.IconFamily
dim m as memoryblock = f.DataMemory

MsgBox str(m.size) + " bytes"
```

Notes:
Returns nil on low memory or any error.
(Read and Write computed property)

### 88.2.20 Huge1BitData as picture

MBS Picture Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
If such an icon is included in this icon family, this function returns it.
**Example:**
```vba
dim i as new IconMBS("FNDR", "MACS")
Backdrop = i.IconFamily.Huge1BitData
```

Notes:
Lasterror is set.
(Read and Write computed property)
88.2.21 Huge1BitMask as picture

MBS Picture Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** If such an icon is included in this icon family, this function returns it.

**Example:**

```vbscript
dim i as new IconMBS("FNDR", "MACS")
Backdrop = i.IconFamily.Huge1BitMask
```

**Notes:**

Lasterror is set.
(Read and Write computed property)

---

88.2.22 Huge32BitData as picture

MBS Picture Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** If such an icon is included in this icon family, this function returns it.

**Example:**

```vbscript
dim i as new IconMBS("FNDR", "MACS")
Backdrop = i.IconFamily.Huge32BitData
```

**Notes:**

Lasterror is set.
(Read and Write computed property)

---

88.2.23 Huge4BitData as picture

MBS Picture Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** If such an icon is included in this icon family, this function returns it.

**Example:**

```vbscript
dim i as new IconMBS("FNDR", "MACS")
Backdrop = i.IconFamily.Huge4BitData
```

**Notes:**

Lasterror is set.
(Read and Write computed property)
**88.2.24 Huge8BitData as picture**

MBS Picture Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** If such an icon is included in this icon family, this function returns it. **Example:**

```vbnet
dim i as new IconMBS("FNDR", "MACS")
Backdrop = i.IconFamily.Huge8BitData
```

**Notes:**
Lasterror is set.
(Read and Write computed property)

---

**88.2.25 Huge8BitMask as picture**

MBS Picture Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** If such an icon is included in this icon family, this function returns it. **Example:**

```vbnet
dim i as new IconMBS("FNDR", "MACS")
Backdrop = i.IconFamily.Huge8BitMask
```

**Notes:**
Lasterror is set.
(Read and Write computed property)

---

**88.2.26 Large1BitData as picture**

MBS Picture Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** If such an icon is included in this icon family, this function returns it. **Example:**

```vbnet
dim i as new IconMBS("FNDR", "MACS")
Backdrop = i.IconFamily.Large1BitData
```

**Notes:**
Lasterror is set.
(Read and Write computed property)

88.2.27 Large1BitMask as picture

Function:
If such an icon is included in this icon family, this function returns it.
Example:

```vbscript
dim i as new IconMBS("FNDR", "MACS")
Backdrop = i.IconFamily.Large1BitMask
```

Notes:
Lasterror is set.
(Read and Write computed property)

88.2.28 Large32BitData as picture

Function:
If such an icon is included in this icon family, this function returns it.
Example:

```vbscript
dim i as new IconMBS("FNDR", "MACS")
Backdrop = i.IconFamily.Large32BitData
```

Notes:
Lasterror is set.
(Read and Write computed property)

88.2.29 Large4BitData as picture

Function:
If such an icon is included in this icon family, this function returns it.
Example:

```vbscript
dim i as new IconMBS("FNDR", "MACS")
Backdrop = i.IconFamily.Large4BitData
```
88.2. CLASS ICONFAMILYMBS

Notes:
Lasterror is set.
(Read and Write computed property)

88.2.30 Large8BitData as picture

MBS Picture Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
If such an icon is included in this icon family, this function returns it.

**Example:**
```vbnet
dim i as new IconMBS("FNDR", "MACS")
Backdrop = i.IconFamily.Large8BitData
```

Notes:
Lasterror is set.
(Read and Write computed property)

88.2.31 Large8BitMask as picture

MBS Picture Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
If such an icon is included in this icon family, this function returns it.

**Example:**
```vbnet
dim i as new IconMBS("FNDR", "MACS")
Backdrop = i.IconFamily.Large8BitMask
```

Notes:
Lasterror is set.
(Read and Write computed property)

88.2.32 Small1BitData as picture

MBS Picture Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
If such an icon is included in this icon family, this function returns it.

**Example:**
```vbnet
dim i as new IconMBS("FNDR", "MACS")
Backdrop = i.IconFamily.Small1BitData
```
Notes:
Lasterror is set.
(Read and Write computed property)

88.2.33 Small1BitMask as picture

MBS Picture Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
If such an icon is included in this icon family, this function returns it.
**Example:**
```plaintext
dim i as new IconMBS("FNDR", "MACS")
Backdrop = i.IconFamily.Small1BitMask
```

Notes:
Lasterror is set.
(Read and Write computed property)

88.2.34 Small32BitData as picture

MBS Picture Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
If such an icon is included in this icon family, this function returns it.
**Example:**
```plaintext
dim i as new IconMBS("FNDR", "MACS")
Backdrop = i.IconFamily.Small32BitData
```

Notes:
Lasterror is set.
(Read and Write computed property)

88.2.35 Small4BitData as picture

MBS Picture Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
If such an icon is included in this icon family, this function returns it.
Example:

```vba
dim i as new IconMBS("FNDR", "MACS")
Backdrop = i.IconFamily.Small4BitData
```

Notes:
Lasterror is set.
(Read and Write computed property)

88.2.36 Small8BitData as picture

MBS Picture Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
If such an icon is included in this icon family, this function returns it.

**Example:**

```vba
dim i as new IconMBS("FNDR", "MACS")
Backdrop = i.IconFamily.Small8BitData
```

Notes:
Lasterror is set.
(Read and Write computed property)

88.2.37 Small8BitMask as picture

MBS Picture Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
If such an icon is included in this icon family, this function returns it.

**Example:**

```vba
dim i as new IconMBS("FNDR", "MACS")
Backdrop = i.IconFamily.Small8BitMask
```

Notes:
Lasterror is set.
(Read and Write computed property)
88.2.38 Thumbnail32BitData as picture

MBS Picture Plugin, Plugin Version: 2.7. Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
If such an icon is included in this icon family, this function returns it. **Example:**

```plaintext
// Example about a function to return a REALbasic picture with an icon and its
// mask.
//
// Function geticonpicture As picture
// You have to add more support, like for example for Huge and Small icons.

dim icon as IconMBS
dim p as picture
dim b as picture
dim m as picture

icon=new IconMBS("APPL","sbkt")

if icon.valid then
    dim i as IconFamilyMBS = icon.IconFamily

    p=newpicture(128,128,32)
    b=i.Thumbnail32BitData
    if b<>nil then
        p.mask.graphics.drawpicture b,0,0
        p.graphics.drawpicture i.thumbnail8BitMask,0,0
        return p
    end if

    m=i.Large1BitMask
    if m<>nil then
        b=i.Large32BitData
        if B=nil then
            b=i.Large8BitData
            end if
        if b=nil then
            b=i.Large4BitData
            end if
        if b=nil then
            b=i.large1BitData
            end if
        p.graphics.drawpicture b,0,0,128,128,0,0,32,32
        b=i.large8BitMask
        if b<>nil then
            m=b
    end if
```

end if
p.mask.graphics.drawpicture m,0,0,128,128,0,0,32,32
return p
end if
end if
End Function

Notes:
Lasterror is set.
(Read and Write computed property)

88.2.39 Thumbnail8BitMask as picture

MBS Picture Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: If such an icon is included in this icon family, this function returns it.
Example:
dim i as new IconMBS("FNDR", "MACS")
Backdrop = i.IconFamily.Thumbnail8BitMask

Notes:
Lasterror is set.
(Read and Write computed property)
88.3  class IconMBS

88.3.1  class IconMBS

MBS Picture Plugin, Plugin Version: 2.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class for an icon on Mac OS.

**Example:**

// A function which will try to return an icon for the given type/creator including the Mask.

Function GetIconPicture(macCreator as string, macType as string, size as Integer) As picture
dim icn as IconMBS
dim icf as IconFamilyMBS
dim pic, tmp as Picture

icn = new IconMBS(macType, macCreator)

if icn<>nil and icn.valid then
    icf = icn.IconFamily
    
end if

if icf<>nil and icf.Valid then
    pic = NewPicture(size, size, 32)

    // Try Thumbnail
    if size>32 then
        tmp = icf.Thumbnail32BitData
        if tmp<>nil then
            pic.Graphics.DrawPicture tmp, 0, 0, size, size, 0, 0, tmp.width,tmp.Height
        end if
        
        tmp = icf.Thumbnail8BitMask
        if tmp<>nil then
            pic.Mask.Graphics.DrawPicture tmp, 0, 0, size, size, 0, 0, tmp.width, tmp.Height
        end if
        
    end if
    
    Return pic
end if
end if

// Try Large Icon in 32 bit

tmp = icf.Large32BitData
if tmp<>nil then
    pic.Graphics.DrawPicture tmp, 0, 0, size, size, 0, 0, tmp.width,tmp.Height
end if

tmp = icf.Large8BitMask
if tmp<>nil then
    pic.Mask.Graphics.DrawPicture tmp, 0, 0, size, size, 0, 0, tmp.width, tmp.Height
end if

Return pic
end if

// Try Large Icon in 8 bit
tmp = icf.Large8BitData
if tmp<>nil then
    pic.Graphics.DrawPicture tmp, 0, 0, size, size, 0, 0, tmp.width,tmp.Height
end if

tmp = icf.Large1BitMask
if tmp<>nil then
    pic.Mask.Graphics.DrawPicture tmp, 0, 0, size, size, 0, 0, tmp.width, tmp.Height
end if
return pic
end if

// You may add more like e.g. Small or Huge Icons
end if

Exception // on any error, just return nil

// Call like:
// Backdrop=GetIconPicture("R*ch","TEXT",128)
End Function

88.3.2 Methods

88.3.3 Constructor(f as folderitem, NoBadge as boolean = false)

MBS Picture Plugin, Plugin Version: 2.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Loads the icon for this file/folder/volume.

**Example:**

// in a paint event:

dim i as new IconMBS(SpecialFolder.Desktop)
i.DrawIcon(g, 0, 0, 128, 128)

**Notes:**

The example "GetIcon.rb" shows how to get the file icons.
A custom icon is preferred (ID -16455).
NoBadge can be set to true to have no badges on the icon.

See also:

- 88.3.4 Constructor(type as string, creator as string)
- 88.3.5 Constructor(type as string, creator as string, extension as string, mime as string)

### 88.3.4 Constructor(type as string, creator as string)

MBS Picture Plugin, Plugin Version: 2.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Loads the icon for this type and creator code combination.

**Example:**

```vbscript
// in a paint event:

   dim i as new IconMBS("FNDR", "MACS")

   i.DrawIcon(g, 0, 0, 128, 128)
```

**Notes:** The example "GetIcon.rb" shows how to get the predefined icons from the system.

See also:

- 88.3.3 Constructor(f as folderitem, NoBadge as boolean = false)
- 88.3.5 Constructor(type as string, creator as string, extension as string, mime as string)

### 88.3.5 Constructor(type as string, creator as string, extension as string, mime as string)

MBS Picture Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Loads the icon base on the given information.

**Example:**

```vbscript
Sub Paint(g As Graphics)  // in a window paint event:

   dim i as IconMBS
   dim type, creator, extension, mime as string

   type=""
   creator=""
   extension="jpg"
   mime=""

   i=new iconmbs(type, creator, extension, mime)
```
88.3. **CLASS ICONMBS**  

```plaintext
// draws jpeg icon
i.DrawIcon(g,0,0,128,128)

type=""
creator=""
extension=""
mime="video/quicktime"

i=new iconmbs(type, creator, extension, mime)
// draws quicktime movie icon
i.DrawIcon(g,128,0,128,128)

type="TEXT"
creator="MSWD"
extension=""
mime=""

i=new iconmbs(type, creator, extension, mime)
// draws microsoft word text file icon
i.DrawIcon(g,0,128,128,128)

type=""
creator="GKON"
extension="jpg"
mime=""

i=new iconmbs(type, creator, extension, mime)
// draws graphic converter jpeg file icon
i.DrawIcon(g,128,128,128,128)

End Sub
```

**Notes:**

All parameters can be empty strings if you don’t know this information.
Requires Mac OS X 10.3 to work properly.
See also:

- 88.3.3 Constructor(f as folderitem, NoBadge as boolean = false) 14467

- 88.3.4 Constructor(type as string, creator as string) 14468
88.3.6 **DrawIcon(g as graphics, x as Integer, y as Integer, width as Integer, height as Integer)**

MBS Picture Plugin, Plugin Version: 2.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Draws the icon.

**Example:**

```javascript
// in a paint event:

dim i as new IconMBS("FNDR", "MACS")

i.DrawIcon(g, 0, 0, 128, 128)
```

**Notes:**

DrawIcon with align and transform set to none.

Not supported for Cocoa. Please use DrawIconCGContext there.

See also:

- 88.3.7 **DrawIcon(g as graphics, x as Integer, y as Integer, width as Integer, height as Integer, align as Integer)**
- 88.3.8 **DrawIcon(g as graphics, x as Integer, y as Integer, width as Integer, height as Integer, align as Integer, transform as Integer)**

88.3.7 **DrawIcon(g as graphics, x as Integer, y as Integer, width as Integer, height as Integer, align as Integer)**

MBS Picture Plugin, Plugin Version: 2.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Draws the icon.

**Example:**

```javascript
// in a paint event:

dim i as new IconMBS("FNDR", "MACS")

i.DrawIcon(g, 0, 0, 128, 128, 8)
```

**Notes:**

DrawIcon with transform set to none.

Not supported for Cocoa. Please use DrawIconCGContext there.

See also:
88.3. **CLASS ICONMBS**

- 88.3.6 DrawIcon(g as graphics, x as Integer, y as Integer, width as Integer, height as Integer)
- 88.3.8 DrawIcon(g as graphics, x as Integer, y as Integer, width as Integer, height as Integer, align as Integer, transform as Integer)

### 88.3.8 DrawIcon(g as graphics, x as Integer, y as Integer, width as Integer, height as Integer, align as Integer, transform as Integer)

MBS Picture Plugin, Plugin Version: 2.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Draws the icon.

**Example:**

```javascript
// in a paint event:

dim i as new IconMBS("FNDR", "MACS")

i.DrawIcon(g, 0, 0, 128, 128, 0, & h4000)
```

**Notes:**

Align and Transform are optional parameters.

The coordinates inside the graphics objects are absolute to the picture or window where the graphics object came from.

Align constants:

Transform constants:

Not supported for Cocoa. Please use DrawIconCGContext there.

**See also:**

- 88.3.6 DrawIcon(g as graphics, x as Integer, y as Integer, width as Integer, height as Integer)
- 88.3.7 DrawIcon(g as graphics, x as Integer, y as Integer, width as Integer, height as Integer, align as Integer)

### 88.3.9 DrawIconCGContext(CGContextHandle as Integer, x as Integer, y as Integer, width as Integer, height as Integer, align as Integer, transform as Integer, flags as Integer, labelColor as color)

MBS Picture Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Draws the icon in a CoreGraphics Context.
None 0
VerticalCenter 1
Top 2
Bottom 3
HorizontalCenter 4
AbsoluteCenter 5
CenterTop 6
CenterBottom 7
Left 8
CenterLeft 9
TopLeft 10
BottomLeft 11
Right 12
CenterRight 13
TopRight 14
BottomRight 15

Example:

Function GetIconImage(i as iconmbs, w as Integer, h as Integer) As picture
dim c as new CGPictureContextMBS(w,h)

const DrawNormal=0
const DrawNoImage=2
const DrawNoMask=4
const DrawSelected=& h8000

i.DrawIconCGContext(c.Handle, 0,0,w,0,h,0,DrawNoMask,& c000000)

c.Flush

Return c.CopyPicture
End Function

Notes:

You must make sure that the CGContext handle you pass in is valid. You can use CGContextMBS class for this and use GetCurrentCGContextMBS or Window.CGContextMBS to get a context. Please note that coordinates have the origin typically on the lower left.

Flags:

Align constants:
88.3. **CLASS ICONMBS**

None 0
Disabled 1
Offline 2
Open 3
Label1 & h0100
Label2 & h0200
Label3 & h0300
Label4 & h0400
Label5 & h0500
Label6 & h0600
Label7 & h0700
Selected & h4000
SelectedDisabled & h4001
SelectedOffline & h4002
SelectedOpen & h4003

DrawNormal 0
DrawNoImage 2
DrawNoMask 4
DrawSelected 32768

Transform constants:

### 88.3.10 GetBackground as IconMBS

MBS Picture Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
If the icon is a composited one, this function returns the icon used for the background.

**Notes:**
Returns nil on any error.
Lasterror ist set.

### 88.3.11 GetForeground as IconMBS

MBS Picture Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
If the icon is a composited one, this function returns the icon used for the foreground.

**Notes:**
Returns nil on any error.
88.3.12 IconFamily as IconFamilyMBS

MBS Picture Plugin, Plugin Version: 2.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the icon converted to an Iconfamily.

**Example:**

```vba
dim i as new IconMBS("FNDR", "MACS")
Backdrop = i.IconFamily.Thumbnail32BitData
```

88.3.13 IsIconRefMaskEmpty as boolean

MBS Picture Plugin, Plugin Version: 2.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if the mask of the icon is empty.

**Example:**

```vba
dim i as new IconMBS("FNDR", "MACS")
MsgBox str(i.IsIconRefMaskEmpty)
```
None 0  
Disabled 1  
Offline 2  
Open 3   
Label1 & h0100  
Label2 & h0200  
Label3 & h0300  
Label4 & h0400  
Label5 & h0500  
Label6 & h0600  
Label7 & h0700  
Selected & h4000  
SelectedDisabled & h4001  
SelectedOffline & h4002  
SelectedOpen & h4003

Notes: Lasterror is set.

88.3.14  PointInIcon(pointx as Integer, pointy as Integer, x as Integer, y as Integer, width as Integer, height as Integer, align as Integer) as boolean

MBS Picture Plugin, Plugin Version: 2.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Tests whether a point is inside the icon’s picture. Notes: The coordinates for pointx/pointy and x/y must be in the same system.

Align constants:

88.3.15  RectInIcon(rectx as Integer, recty as Integer, rectwidth as Integer, rectheight as Integer, x as Integer, y as Integer, width as Integer, height as Integer, align as Integer) as boolean

MBS Picture Plugin, Plugin Version: 2.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Tests whether a rectangle is inside the icon’s picture. Notes: The coordinates for both rectangles must be in the same coordinate system.

Align constants:
None 0
VerticalCenter 1
Top 2
Bottom 3
HorizontalCenter 4
AbsoluteCenter 5
CenterTop 6
CenterBottom 7
Left 8
CenterLeft 9
TopLeft 10
BottomLeft 11
Right 12
CenterRight 13
TopRight 14
BottomRight 15

This call may fail in some RB versions because of the count of parameters.

### 88.3.16 RetainCount as Integer

MBS Picture Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** How many references to this icon are hold on this Mac.

**Example:**
```
dim i as new IconMBS("FNDR", "MACS") // Finder Icon
MsgBox str(i.RetainCount)
```

### 88.3.17 Properties

#### 88.3.18 handle as Integer

MBS Picture Plugin, Plugin Version: 2.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle of this icon in memory.

**Example:**
```
dim i as new IconMBS("FNDR", "MACS") // Finder Icon
```
# 88.3. CLASS ICONMBS

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>0</td>
</tr>
<tr>
<td>VerticalCenter</td>
<td>1</td>
</tr>
<tr>
<td>Top</td>
<td>2</td>
</tr>
<tr>
<td>Bottom</td>
<td>3</td>
</tr>
<tr>
<td>HorizontalCenter</td>
<td>4</td>
</tr>
<tr>
<td>AbsoluteCenter</td>
<td>5</td>
</tr>
<tr>
<td>CenterTop</td>
<td>6</td>
</tr>
<tr>
<td>CenterBottom</td>
<td>7</td>
</tr>
<tr>
<td>Left</td>
<td>8</td>
</tr>
<tr>
<td>CenterLeft</td>
<td>9</td>
</tr>
<tr>
<td>TopLeft</td>
<td>10</td>
</tr>
<tr>
<td>BottomLeft</td>
<td>11</td>
</tr>
<tr>
<td>Right</td>
<td>12</td>
</tr>
<tr>
<td>CenterRight</td>
<td>13</td>
</tr>
<tr>
<td>TopRight</td>
<td>14</td>
</tr>
<tr>
<td>BottomRight</td>
<td>15</td>
</tr>
</tbody>
</table>

MsgBox str(i.handle)

**Notes:** (Read and Write property)

## 88.3.19 LastError as Integer

MBS Picture Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The last error code.

**Example:**

```vbnet
dim i as new IconMBS("FNDR", "MACS") // Finder Icon
```

MsgBox str(i.LastError)

**Notes:**

The last function was successfull if lasterror is 0.
If the last function was not available on this machine, the value is set to -1.
Other values are Mac OS error codes.
(Read and Write property)
88.3.20 Release as boolean

MBS Picture Plugin, Plugin Version: 2.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** whether the destructor will release the handle.

**Example:**
```
dim i as new IconMBS("FNDR", "MACS") // Finder Icon
MsgBox str(i.Release)
```

**Notes:** (Read and Write property)

88.3.21 valid as boolean

MBS Picture Plugin, Plugin Version: 2.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Were the constructors successfull?

**Example:**
```
dim i as new IconMBS("FNDR", "MACS") // Finder Icon
MsgBox str(i.valid)
```

**Notes:** (Read and Write property)
Chapter 89

Image Capture

89.1 class ICCameraDeviceMBS

89.1.1 class ICCameraDeviceMBS


Function: ICCameraDeviceMBS is a concrete subclass of ICDeviceMBS class.

Notes:
ICDeviceBrowserMBS creates instances of this class.
Subclass of the ICDeviceMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

89.1.2 Methods

89.1.3 cancelDelete

Function: Cancels the current delete operation started by sending a requestDeleteFiles.

89.1.4 cancelDownload

Function: Cancels the current download operation.
89.1.5 Constructor

**Function:** The private constructor.

89.1.6 contents as ICCameraItemMBS()

**Function:** Contents of the camera.  
**Notes:** The structure of the elements in this array will reflect the folder structure of the storage reported by the camera. Each item in this array will correspond to a storage on the camera.

89.1.7 filesOfType(fileUTType as string) as ICCameraFileMBS()

**Function:** This method returns an array of files on the camera of type fileType.  
**Notes:**  
The fileType string is one of the following Uniform Type Identifier strings: kUTTypeImage, kUTTypeMovie, kUTTypeAudio, or kUTTypeData.  
See UTTypeMBS module.

89.1.8 ICCameraDeviceCanAcceptPTPCommands as string

**Function:** One of the constants used to describe capabilities of a camera.  
**Notes:** Indicates that the camera can accept PTP commands.

89.1.9 ICCameraDeviceCanDeleteAllFiles as string

**Function:** One of the constants used to describe capabilities of a camera.  
**Notes:** Indicates that the camera can delete all files in a single operation while it is connected.

89.1.10 ICCameraDeviceCanDeleteOneFile as string

**Function:** One of the constants used to describe capabilities of a camera.
89.1. **CLASS ICCAMERADEVICEMBS**

Notes: Indicates that the camera can delete a file at a time while it is connected.

89.1.11 **ICCameraDeviceCanReceiveFile as string**

**Function:** One of the constants used to describe capabilities of a camera.  
**Notes:** Indicates that the host can upload files to the camera.

89.1.12 **ICCameraDeviceCanSyncClock as string**

**Function:** One of the constants used to describe capabilities of a camera.  
**Notes:** Indicates that the camera can synchronize its date and time with that of the host computer.

89.1.13 **ICCameraDeviceCanTakePicture as string**

**Function:** One of the constants used to describe capabilities of a camera.  
**Notes:** Indicates that the camera can capture a picture while it is connected, if the client sends a request-TakePicture message to it.

89.1.14 **ICCameraDeviceCanTakePictureUsingShutterReleaseOnCamera as string**

**Function:** One of the constants used to describe capabilities of a camera.  
**Notes:** Indicates that the camera can capture a picture while it is connected, if the user presses the shutter release on the camera.

89.1.15 **ICDeleteAfterSuccessfulDownload as string**

**Function:** One of the keys for options dictionary.  
**Notes:** The value for this key should be a boolean value. If this value is true, the file will be deleted from the device after it is successfully downloaded.
89.1.16  **ICDownloadsDirectoryURL as string**

**Function:** One of the keys for options dictionary.  
**Notes:**  
The value for this key should be an CFURLMBS referencing a writable directory.  
The downloaded files will be saved in that directory.

89.1.17  **ICDownloadSidecarFiles as string**

**Function:** One of the keys for options dictionary.  
**Notes:** The value for this key should be a boolean value. If this value is true, all sidecar files will be downloaded along with the media file.

89.1.18  **ICOverwrite as string**

**Function:** One of the keys for options dictionary.  
**Notes:** The value for this key should be a boolean value. If this value is true, the downloaded file will overwrite an existing file with the same name and extension.

89.1.19  **ICSaveAsFilename as string**

**Function:** One of the keys for options dictionary.  
**Notes:** The value for this key should be a string containing the name to be used for the downloaded file.

89.1.20  **ICSavedAncillaryFiles as string**

**Function:** One of the keys for options dictionary.  
**Notes:** The value for this key will be an array containing names of files associated with the primary file that is downloaded. The options dictionary returned in `didDownloadFile` may have this key.
89.1. CLASS ICCAMERADEVICEMBS

89.1.21 ICSavedFilename as string

Function: One of the keys for options dictionary.
Notes: The value for this key will be a string containing the actual name of the saved file. The options
dictionary returned in didDownloadFile will have this key.

89.1.22 mediaFiles as ICCameraFileMBS()

Function: The property mediaFiles represents all image, movie and audio files on the camera.
Notes: These files are returned as a single array without regard to the folder hierarchy used to store these files on
the camera.

If no files show up, try again a second later as the framework may not yet have the list loaded.

89.1.23 requestDeleteFiles(files() as ICCameraFileMBS)

Function: Deletes files.

89.1.24 requestDisableTethering

Function: Send this message to disable tethered capture on the camera device if the camera has the 'IC-
CameraDeviceCanTakePicture' capability and if your process has already sent a 'requestEnableTethering'
to it.

89.1.25 requestDownloadFile(file as ICCameraFileMBS, options as dictionary
= nil)

Function: Download a file from the camera. Please refer to the top of this header for information about
the options.
Notes: Calls cameraDeviceDidDownloadFile event later.
The content of error returned should be examined to determine if the request completed successfully.
89.1.26 requestEnableTethering

**Function:** Send this message to enable tethered capture on the camera device if the camera has the 'IC-CameraDeviceCanTakePicture' capability.

89.1.27 requestReadDataFromFile(file as ICCameraFileMBS, offset as UInt64, Length as UInt64)

**Function:** This method asynchronously reads data of a specified length from a specified offset.
**Notes:**
Calls later ImageCaptureEventsMBS.cameraDeviceDidReadData event.
The content of error returned should be examined to determine if the request completed successfully.

89.1.28 requestSendPTPCommand(command as MemoryBlock, dataOut as MemoryBlock)

**Function:** This method asynchronously sends a PTP command to a camera.
**Notes:** The content of error returned should be examined to determine if the request completed successfully.

89.1.29 requestSyncClock

**Function:** Synchronize camera’s clock with the computer’s clock.
**Notes:** You should send this request only if the camera has the 'ICCameraDeviceCanSyncClock' capability.

89.1.30 requestTakePicture

**Function:** Capture a new image using the camera, the camera capabilities include 'ICCameraDeviceCanTakePicture'.
**Notes:** You MUST send ‘requestEnableTethering’ message to the camera before sending 'requestTakePicture' message.
89.1.31 requestUploadFile(file as folderitem, options as dictionary = nil)

Function: Upload a file at fileURL to the camera.
Notes:
The options dictionary is not used in this version.
Calls later ImageCaptureEventsMBS.cameraDeviceDidUploadFile event.
The content of error returned should be examined to determine if the request completed successfully.

89.1.32 Properties

89.1.33 batteryLevel as Integer

Function: Indicates the battery charge level.
Notes:
Its value ranges from 0 to 100.
(Read only property)

89.1.34 batteryLevelAvailable as Boolean

Function: Indicates if the device has reported battery charge level.
Notes: (Read only property)

89.1.35 contentCatalogPercentCompleted as Integer

Function: Indicates the percentage of content cataloging completed on the device.
Notes:
Its value ranges from 0 to 100.
(Read only property)

89.1.36 isAccessRestrictedAppleDevice as Boolean

Function: Set to true if the device is made by Apple and is pass-coded locked and connected to an untrusted
CHAPTER 89. IMAGE CAPTURE

host.

Notes: (Read only property)

89.1.37  mountPoint as String

Function: Filesystem mount point for a device with transportType of ICTransportTypeMassStorage.
Notes:
This will be "" for all other devices.
(Read only property)

89.1.38  tetheredCaptureEnabled as Boolean

Function: This property is set to YES when tethered capture is enabled on the device.
Notes:
Use 'requestEnableTethering' and 'requestDisableTethering' to enable or disable tethered capture on the device.
(Read only property)

89.1.39  timeOffset as Double

Function: Indicates the time offset, in seconds, between the camera’s clock and the computer’s clock.
Notes:
This value is positive if the camera’s clock is ahead of the computer’s clock. This property should be ignored if the camera’s capabilities property does not contain ICCameraDeviceCanSyncClock.
(Read only property)
89.2  **CLASS ICCAMERAFILEMBS**

89.2  **class ICCameraFileMBS**

89.2.1  **class ICCameraFileMBS**

**Function:** This class represents a file on an ICCameraDevice object.  
**Notes:**  
Subclass of the ICCameraItemMBS class.  
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

89.2.2  **Methods**

89.2.3  **Constructor**

**Function:** The private constructor.

89.2.4  **sidecarFiles as ICCameraFileMBS()**

**Function:** Returns array of sidecar files.  
**Notes:** This property is an empty array if there are no sidecar files associated with this file. Otherwise it is an array of ICCameraFile instances of sidecar files associated with this file. An example of a sidecar file is a file with the same base name as this file and having an extension XMP.

89.2.5  **Properties**

89.2.6  **Duration as Double**

**Function:** Duration of audio/video file in seconds.  
**Notes:** (Read only property)

89.2.7  **FileSize as UInt64**

**Function:** Size of file in bytes.
89.2.8 Orientation as Integer

Function: Desired orientation of image to use when it is downloaded.
Notes:
This property is set to ICEXIFOrientation1 initially. If the format of this file supports EXIF orientation tag, then this property will be updated to match the value of that tag, when the thumbnail or metadata for this file is received.

Possible values:

<table>
<thead>
<tr>
<th>ICEXIFOrientation</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Normal</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>Flipped horizontally</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>Rotated 180</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>Flipped vertically</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>Rotated 90 CCW and flipped vertically</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>Rotated 90 CCW</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
<td>Rotated 90 CW and flipped vertically</td>
</tr>
<tr>
<td>8</td>
<td>8</td>
<td>Rotated 90 CW</td>
</tr>
</tbody>
</table>

(Read and Write property)
89.3. class ICCameraFolderMBS

89.3.1 class ICCameraFolderMBS

Function: This class represents a folder on an ICCameraDevice object.
Notes:
Subclass of the ICCameraItemMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

89.3.2 Methods

89.3.3 Constructor

Function: The private constructor.

89.3.4 contents as ICCameraItemMBS() 

Function: A list of items contained by this folder.
89.4 class ICCameraItemMBS

89.4.1 class ICCameraItemMBS

Function: ICCameraItem is an abstract class that represents an item in an ICCameraDevice object.
Notes:
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

89.4.2 Methods

89.4.3 Constructor

Function: The private constructor.

89.4.4 Properties

89.4.5 addedAfterContentCatalogCompleted as Boolean

Function: This property is set if the file is captured on the device after the device’s content is fully enumerated.
Notes:
This does not apply to files added as a result of adding a new store to the device.
(Read only property)

89.4.6 CreationDate as Date

Function: Creation date of this file.
Notes:
This information is usually the same as the EXIF creation date.
(Read only property)
89.4.7 Device as ICCameraDeviceMBS

Function: Parent device of this folder.
Notes: (Read only property)

89.4.8 FileSystemPath as String

Function: The file system path of the item for items on a device with transportType of ICTransportType-MassStorage.
Notes: (Read only property)

89.4.9 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

89.4.10 InTemporaryStore as Boolean

Function: Indicates if this folder is in a temporary store.
Notes:
A temporary store may be used by the device when images are captures on the device when it is tethered to the computer.
(Read only property)

89.4.11 largeThumbnailIfAvailable as Variant

Function: Large thumbnail for the item if one is readily available.
Notes:
Value is a CGImageMBS.
If one is not readily available, accessing this property will send a message to the device requesting a thumbnail for the file. The ImageCaptureEventsMBS subclass will be notified via event cameraDevice-DidReceiveThumbnailForItem.
89.4.12 Locked as Boolean

Function: Indicates the protection state of this item.
Notes: It is locked if the storage card in the camera is locked.
(Read only property)

89.4.13 MetadataIfAvailable as Dictionary

Function: Metadata for the file if one is readily available.
Notes: If one is not readily available, accessing this property will send a message to the device requesting a thumbnail for the file. The ImageCaptureEventsMBS subclass will be notified via event cameraDeviceDidReceiveMetaDataForItem.
(Read only property)

89.4.14 ModificationDate as Date

Function: Modification date of this file.
Notes: This information is usually the same as the EXIF modification date.
(Read only property)

89.4.15 Name as String

Function: Name of this file or folder.
Notes: (Read only property)
89.4. **CLASS ICCAMERAITEMMBS**

### 89.4.16 ParentFolder as ICCameraFolderMBS


**Function:** Parent folder of this folder. The root folder’s parentFolder is nil.

**Notes:** (Read only property)

### 89.4.17 ptpObjectHandle as Integer


**Function:** PTP object handle value if the item is on a camera that uses PTP protocol.

**Notes:**

The value of this property is set to 0 if the camera does not use PTP protocol.

(Read only property)

### 89.4.18 Raw as Boolean


**Function:** Indicates if the file is a raw image file.

**Notes:** (Read only property)

### 89.4.19 thumbnailIfAvailable as Variant


**Function:** Thumbnail for the item if one is readily available.

**Notes:**

Value is a CGImageMBS.

If one is not readily available, accessing this property will send a message to the device requesting a thumbnail for the file. The ImageCaptureEventsMBS subclass will be notified via event cameraDevice-DidReceiveThumbnailForItem.

(Read only property)

### 89.4.20 UserData as Dictionary


**Function:** A mutable dictionary to store arbitrary key-value pairs associated with a camera item object.

**Notes:**

This can be used by view objects that bind to this object to store "house-keeping" information.

In Xojo, please query dictionary, modify it and assign back to this property.
89.4.21 UTI as String


Function: Item UTI.

Notes:
This is an Uniform Type Identifier string. It is one of: kUTTypeFolder, kUTTypeImage, kUTTypeMovie, kUTTypeAudio, or kUTTypeData.
See UTTypeMBS module.
(Read only property)
89.5. **CLASS ICDEVICEBROWSERMBS**

89.5  **class ICDeviceBrowserMBS**

89.5.1  **class ICDeviceBrowserMBS**


**Function:** The ICDeviceBrowser object is used to find devices such as digital cameras and scanners that are supported by Image Capture.

**Notes:** These device may be directly attached to the USB or FireWire bus on the host computer, shared by other computers, or available over a TCP/IP network. This object communicates with an Image Capture agent process asynchronously to accomplish this.

89.5.2  **Methods**

89.5.3  **Constructor**


**Function:** The constructor.

89.5.4  **Destructor**


**Function:** The destructor.

89.5.5  **devices as ICDeviceMBS()**


**Function:** All devices found by the browser.

**Notes:** This property will change as devices appear and disappear. This array is empty before the first invocation of the deviceBrowserDidAddDevice event.

89.5.6  **Start**


**Function:** This message tells the receiver to start looking for devices.

**Notes:** Please use ImageCaptureEventsMBS class to receive events.
89.5.7  Stop

Function: This method tells the receiver to stop looking for devices.
Notes: This will free all device instances that are not in use.

89.5.8  Properties

89.5.9  browsedDeviceTypeMask as Integer

Function: The device type mask.
Notes: A mask whose set bits indicate the type of device(s) being browsed after the receiver receives the start message. This property can be changed while the browser is browsing for devices. This property can be constructed by OR'd values of ICDeviceTypeMask with values of ICDeviceLocationTypeMask. (Read and Write property)

89.5.10  Browsing as Boolean

Function: Indicates whether the device browser is browsing for devices.
Notes: (Read only property)

89.5.11  Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

89.5.12  preferredDevice as ICDeviceMBS

Function: This method returns a device object that should be selected by the client application when it is launched.
Notes: If the client application that calls this method is the auto-launch application associated with a device and that device is the last device attached (through USB, FireWire or network), then that device will be the
preferred device. The best place to call this method is in the event deviceBrowserDidAddDevice, if the "moreComing" parameter passed to the delegate is false; or in the event deviceBrowserDidEnumerateLocalDevices.

(Read only property)

89.5.13 Events

89.5.14 DeviceDidChangeName(device as ICDeviceMBS)


Function: This event is sent if the name of a device changes.

Notes: This happens if the device module overrides the default name of the device reported by the device’s transport layer, or if the name of the filesystem volume mounted by the device is changed by the user.

89.5.15 DeviceDidChangeSharingState(device as ICDeviceMBS)


Function: This event is sent when the sharing state of a device has changed.

Notes: Any Image Capture client application can choose to share the device over the network using the sharing or webSharing facility in Image Capture.

89.5.16 DidAddDevice(device as ICDeviceMBS, moreComing as boolean)


Function: This event is sent to inform that a device has been added.

Notes: If several devices are found during the initial search, then this event is sent once for each device with the value of 'moreComing' set to true in each event except the last one.

89.5.17 DidEnumerateLocalDevices


Function: This event is sent after the device browser completes sending deviceBrowser:didAddDevice event for all local devices.

Notes: Detecting locally connected devices (USB and FireWire devices) is faster than detecting devices connected using a network protocol. An Image Capture client application may use this event to update its user interface to let the user know that it has completed looking for locally connected devices and then start looking for network devices.
89.5.18  DidRemoveDevice(device as ICDeviceMBS, moreGoing as boolean)


**Function:** This event is sent to the delegate to inform that a device has been removed.

**Notes:** If several devices are removed at the same time, then this event is sent once for each device with the value of 'moreGoing' set to true in each event except the last one.

89.5.19  RequestsSelectDevice(device as ICDeviceMBS)


**Function:** This event is sent when an event that occurred on the device may be of interest to the client application.

**Notes:** In Mac OS X 10.6, this event is sent when a button is pressed on a device and the current application is the target for that button press. In the case of the button-press event, if a session is open on the device, this event will not be sent, instead the deviceDidReceiveButtonPress event is sent.
89.6. class ICDeviceMBS

89.6.1 class ICDeviceMBS

Function: ICDevice is an abstract class that represents a device supported by Image Capture.
Notes:
ImageCaptureCore defines two concrete subclasses of ICDeviceMBS, ICCameraDeviceMBS and ICScannerDeviceMBS. ICDeviceBrowserMBS creates instances of these two subclasses to represent cameras and scanners it finds.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

89.6.2 Methods

89.6.3 capabilities as Variant()

Function: The capabilities of the device as reported by the device module.

89.6.4 Constructor

Function: The private constructor.

89.6.5 ICBUTTONTYPECOPY as string

Function: One of the constants used to identify button-press on a device.
Notes: Indicates that the "Copy" button on the device was pressed.

89.6.6 ICBUTTONTYPEMAIL as string

Function: One of the constants used to identify button-press on a device.
Notes: Indicates that the "Mail" button on the device was pressed.
89.6.7  **ICButtonTypePrint as string**

**Function:** One of the constants used to identify button-press on a device.
**Notes:** Indicates that the "Print" button on the device was pressed.

89.6.8  **ICButtonTypeScan as string**

**Function:** One of the constants used to identify button-press on a device.
**Notes:** Indicates that the "Scan" button on the device was pressed.

89.6.9  **ICButtonTypeTransfer as string**

**Function:** One of the constants used to identify button-press on a device.
**Notes:** Indicates that the "Transfer" button on the device was pressed.

89.6.10  **ICButtonTypeWeb as string**

**Function:** One of the constants used to identify button-press on a device.
**Notes:** Indicates that the "Web" button on the device was pressed.

89.6.11  **ICDeviceCanEjectOrDisconnect as string**

**Function:** One of the constants used to describe capabilities of a device.
**Notes:** Indicates either the device is mounted as a mass-storage volume and can be ejected or the it is a remote device with an active connection that can be disconnected.

89.6.12  **ICDeviceLocationDescriptionBluetooth as string**

**Function:** This description is returned for locationDescription property of a device connected via Bluetooth.
89.6. **CLASS ICDEVICEMBS**

89.6.13 **ICDeviceLocationDescriptionFireWire as string**

Function: This description is returned for locationDescription property of a device connected to a FireWire port.

89.6.14 **ICDeviceLocationDescriptionMassStorage as string**

Function: This description is returned for locationDescription property of a device that is mounted as a mass-storage volume.

89.6.15 **ICDeviceLocationDescriptionUSB as string**

Function: This description is returned for locationDescription property of a device connected to a USB port.

89.6.16 **ICLocalizedStatusNotificationKey as string**

Function: One of the constants used for device status notifications.
Notes: Key for a localized notification string.

89.6.17 **ICStatusCodeKey as string**

Function: One of the constants used for device status notifications.
Notes: One of values defined in ICReturnCode.

89.6.18 **ICStatusNotificationKey as string**

Function: One of the constants used for device status notifications.
Notes: Key for a non-localized notification string.
89.6.19 ICTransportTypeBluetooth as string

**Function:** Indicates that the device uses Bluetooth transport.

89.6.20 ICTransportTypeFireWire as string

**Function:** Indicates that the device uses FireWire transport.

89.6.21 ICTransportTypeMassStorage as string

**Function:** Indicates that the device use mounts as a mass-storage volume.

89.6.22 ICTransportTypeTCPIP as string

**Function:** Indicates that the device uses TCP/IP transport.
**Notes:** These devices are discovered using Bonjour.

89.6.23 ICTransportTypeUSB as string

**Function:** Indicates that the device uses USB transport.

89.6.24 requestCloseSession

**Function:** This message requests to close a previously opened session on this device.
**Notes:** This request is completed when the ImageCaptureEventsMBS subclass receives a deviceDidCloseSessionWithError event.
89.6.25 requestEjectOrDisconnect

**Function:** Eject the media if permitted by the device, or disconnect from a remote device.

89.6.26 requestOpenSession

**Function:** This message requests to open a session on the device.
**Notes:**
A client MUST open a session on a device in order to use the device.
This request is completed when the ImageCaptureEventsMBS subclass receives a deviceDidOpenSessionWithError event. No more events will be sent to the delegate if this request fails.

89.6.27 requestSendMessage(messageCode as UInt32, data as MemoryBlock, maxReturnedDataSize as UInt64)

**Function:** This method asynchronously sends an arbitrary message with optional data to a device.
**Notes:**
This method allows developers to send a private message from a client application to a device module. This method is the functional equivalent of calling ICAObjectSendMessage() found in ImageCapture.framework, which has been deprecated in Mac OS X 10.6. The response to this command will be delivered using deviceDidSendMessage event.
The content of error returned should be examined to determine if the request completed successfully.
NOTE: This method SHOULD NOT BE USED to send PTP pass-through commands to a PTP camera. Please refer to requestSendPTPCommand defined in ICCameraDeviceMBS for sending PTP pass-through commands.

89.6.28 requestYield

**Function:** This message requests the device module in control of this device to yield control.
**Notes:** This message should be used only if the client is planning on communing with the device directly.
The device module may not yield control of the device if it has an open session.
89.6.29 Properties

89.6.30 AutolaunchApplicationPath as String

**Function:** Filesystem path of an application that is to be automatically launched when this device is added.
**Notes:** (Read and Write property)

89.6.31 BonjourServiceType as String

MBS AVFoundation Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** Service type if device was found via Bonjour.
**Notes:** (Read only property)

89.6.32 BskonjourServiceName as String

MBS AVFoundation Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** Service name if device was found via Bonjour.
**Notes:** (Read only property)

89.6.33 ButtonPressed as String

**Function:** A string object with one of the ICBButtonType* values defined above.
**Notes:** (Read only property)

89.6.34 canDeleteAllFiles as Boolean

**Function:** If all files can be deleted.
**Notes:** (Read only property)

89.6.35 canDeleteOneFile as Boolean

**Function:** Whether a file can be deleted.
89.6.36 canEject as Boolean

Function: Whether this device can be ejected.
Notes: (Read only property)

89.6.37 canReceiveFile as Boolean

Function: Whether this device can receive a file.
Notes: (Read only property)

89.6.38 canSyncClock as Boolean

Function: Whether this device can sync clock.
Notes: (Read only property)

89.6.39 canTakePicture as Boolean

Function: Whether this device can take pictures.
Notes: (Read only property)

89.6.40 fwGUID as Int64

Function: The FireWire GUID of a FireWire device in the IOKit registry.
Notes:
This will be 0 for non-FireWire devices.
(Read only property)
89.6.41 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

89.6.42 HasConfigurableWiFiInterface as Boolean

Function: Indicates whether the device can be configured for use on a WiFi network.
Notes: (Read only property)

89.6.43 HasOpenSession as Boolean

Function: Indicates whether the device has an open session.
Notes: (Read only property)

89.6.44 Icon as Variant

Function: Icon image for the device.
Notes:
Value is a CGImageMBS.
(Read only property)

89.6.45 IconPath as String

MBS AVFoundation Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Path to icon file.
Notes: (Read only property)

89.6.46 IPAddress as String

MBS AVFoundation Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: IP Address.
89.6.47  IsRemote as Boolean

Function: Indicates whether the device is a remote device published by Image Capture device sharing facility.
Notes: (Read only property)

89.6.48  IsShared as Boolean

Function: Indicates whether the device is shared using the Image Capture device sharing facility.
Notes: This value will change when sharing of this device is enabled or disabled.
(Read only property)

89.6.49  LocationDescription as String

Function: A non-localized location description string for the device.
Notes: The value returned in one of the location description strings defined above, or location obtained from the Bonjour TXT record of a network device.
(Read only property)

89.6.50  ModuleExecutableArchitecture as Integer

Function: Executable Architecture of the device module in control of this device.
Notes: Possible values:
(Read only property)
89.6.51 ModulePath as String

**Function:** Filesystem path of the device module that is associated with this device.
**Notes:**
Camera-specific capabilities are defined in ICCameraDeviceMBS class and scanner-specific capabilities are defined in ICScannerDeviceMBS class.
(Read only property)

89.6.52 ModuleVersion as String

**Function:** The bundle version of the device module associated with this device.
**Notes:**
This may change if an existing device module associated with this device is updated or a new device module for this device is installed.
(Read only property)

89.6.53 Name as String

**Function:** Name of the device as reported by the device module or by the device transport when a device module is not in control of this device.
**Notes:**
This name may change if the device module overrides the default name of the device reported by the device's transport, or if the name of the filesystem volume mounted by the device is changed by the user.
(Read only property)

89.6.54 PersistentIDString as String

**Function:** A string representation of the persistent ID of the device.
89.6. **CLASS ICDEVICEMBS**

**Notes:** (Read only property)

---

### 89.6.55  ProductKind as String

MBS AVFoundation Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** Product kind.
**Notes:** (Read only property)

---

### 89.6.56  SerialNumberString as String

**Function:** The serial number of the device.
**Notes:**
This will be "" if the device does not provide a serial number.
(Read only property)

---

### 89.6.57  TransportType as String

**Function:** The transport type used by the device.
**Notes:**
The possible values are: ICTransportTypeUSB, ICTransportTypeFireWire, ICTransportTypeBluetooth, ICTransportTypeTCP/IP, or ICTransportTypeMassStorage.
(Read only property)

---

### 89.6.58  type as Integer

**Function:** The type of the device as defined by ICDeviceType OR’d with its ICDeviceLocationType.
**Notes:**
The type of this device can be obtained by AND’ing the value returned by this property with an appropriate ICDeviceTypeMask. The location type of this device can be obtained by AND’ing the value returned by this property with an appropriate ICDeviceLocationTypeMask.
(Read only property)
89.6.59 usbLocationID as Integer

Function: The USB location ID of a USB device in the IOKit registry.
Notes: This will be 0 for non-USB devices.
(Read only property)

89.6.60 usbProductID as Integer

Function: The USB product ID of a USB device in the IOKit registry.
Notes: This will be 0 for non-USB devices.
(Read only property)

89.6.61 usbVendorID as Integer

Function: The USB vendor ID of a USB device in the IOKit registry.
Notes: This will be 0 for non-USB devices.
(Read only property)

89.6.62 UserData as Dictionary

Function: A mutable dictionary to store arbitrary key-value pairs associated with a device object.
Notes: This can be used by view objects that bind to this object to store "house-keeping" information. In Xojo, please query dictionary, modify it and assign back to this property.
(Read and Write property)

89.6.63 UUIDString as String

Function: A string representation of the Universally Unique ID of the device.
89.6.64 Constants

89.6.65 ICDeviceLocationTypeBluetooth = & h00000800

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the device types. 
**Notes:** Device found as a paired Bluetooth device.

89.6.66 ICDeviceLocationTypeBonjour = & h00000400

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the device types. 
**Notes:** Device found over the network by searching for Bonjour services supported by Image Capture.

89.6.67 ICDeviceLocationTypeLocal = & h00000100

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the device types. 
**Notes:** Device found directly attached to the Macintosh via its USB or FireWire port.

89.6.68 ICDeviceLocationTypeMaskBluetooth = & h00000800

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the Image Capture Device Location Type Masks. 
**Notes:** Mask to detect paired Bluetooth device.

89.6.69 ICDeviceLocationTypeMaskBonjour = & h00000400

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the Image Capture Device Location Type Masks. 
**Notes:** Mask to detect a network device that publishes a Bonjour service.

89.6.70 ICDeviceLocationTypeMaskLocal = & h00000100

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the Image Capture Device Location Type Masks.
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Notes: Mask to detect a local (e.g., USB or FireWire) device.

89.6.71  ICDeviceLocationTypeMaskRemote = & h0000FE00

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the Image Capture Device Location Type Masks. 
Notes: Mask to detect a remote (shared, Bonjour, Bluetooth) device.

89.6.72  ICDeviceLocationTypeMaskShared = & h00000200

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the Image Capture Device Location Type Masks. 
Notes: Mask to detect a device by another Macintosh host.

89.6.73  ICDeviceLocationTypeShared = & h00000200

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the device types. 
Notes: Device found over the network by searching for devices shared by other Macintosh hosts.

89.6.74  ICDeviceTypeCamera = & h00000001

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the image capture device types. 
Notes: Camera device.

89.6.75  ICDeviceTypeMaskCamera = & h00000001

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the device type masks. 
Notes: Mask to detect a camera device.

89.6.76  ICDeviceTypeMaskScanner = & h00000002

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the device type masks. 
Notes: Mask to detect a scanner device.
89.6.77  ICDeviceTypeScanner = & h00000002

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the image capture device types. **Notes:** Scanner device.
89.7  class ICScannerBandDataMBS

89.7.1  class ICScannerBandDataMBS

Function: The class for band data from scanner.
Notes:
If image is too big to be transferred in one big block, it’s sent in little chunks using this class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

89.7.2  Methods

89.7.3  Constructor

Function: The private constructor.

89.7.4  Properties

89.7.5  bigEndian as Boolean

Function: Describes if the banded image data is reported in big endian.
Notes: (Read only property)

89.7.6  bitsPerComponent as UInt64

Function: Describes the number of bits per component for the banded image.
Notes: (Read only property)

89.7.7  bitsPerPixel as UInt64

Function: Describes the number of bits per pixel for banded the image.
Notes: (Read only property)
89.7.8  bytesPerRow as UInt64

Function: Describes how many bytes are in each image band row.
Notes: (Read only property)

89.7.9  colorSyncProfilePath as String

Function: Returns the path to the color profile matching the banded data.
Notes: (Read only property)

89.7.10  dataBuffer as Memoryblock

Function: The pointer to the data buffer object.
Notes: Plugin returns a copy of the data when you query this property.
(Read only property)

89.7.11  dataNumRows as UInt64

Function: Describes the number of rows contained in the image band.
Notes: (Read only property)

89.7.12  dataSize as UInt64

Function: Describes the actual data size of the image band buffer.
Notes: (Read only property)

89.7.13  dataStartRow as UInt64

Function: Describes the start row of the image band.
89.7.14  **fullImageHeight as UInt64**

**Function:** Describes the full image height of the banded image.
**Notes:** (Read only property)

89.7.15  **fullImageWidth as UInt64**

**Function:** Describes the full image width of the banded image.
**Notes:** (Read only property)

89.7.16  **Handle as Integer**

**Function:** The internal object reference.
**Notes:** (Read and Write property)

89.7.17  **numComponents as UInt64**

**Function:** Describes how many components are contained within the banded image.
**Notes:** (Read only property)

89.7.18  **pixelDataType as Integer**

**Function:** Type of pixel data that is contained in the band.
**Notes:**
See ICScannerFunctionalUnitMBS.ICScannerPixelDataType* constants.
(Read only property)
89.8. **CLASS ICSCANNERDEVICEMBS**

89.8  **class ICScannerDeviceMBS**

89.8.1  **class ICScannerDeviceMBS**


**Function:** The class for a scanner device.

**Notes:**

ICScannerDeviceMBS is a concrete subclass of IDeviceMBS class. IDeviceBrowserMBS creates instances of this class. In this release, an instance of ICScannerDeviceMBS class is intended to be used by the IKScannerDeviceViewMBS object. The IKScannerDeviceView class encapsulates the complexities of setting scan parameters, performing scans and saving the result. The developer should consider using IKScannerDeviceViewMBS instead of building their own views using the ICScannerDeviceMBS object.

Subclass of the IDeviceMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

89.8.2  **Methods**

89.8.3  **availableFunctionalUnitTypes as Integer()**


**Function:** An array of functional unit types available on this scanner device.

**Notes:** This is an array of numbers whose values are of type ICScannerFunctionalUnitType.

89.8.4  **cancelScan**


**Function:** Cancels the current scan operation started by sending a 'requestOverviewScan' or 'requestScan'.

89.8.5  **Constructor**


**Function:** The private constructor.

89.8.6  **ICSannerStatusRequestsOverviewScan as string**


**Function:** Constants used for device status notifications.

**Notes:** A non-localized notification string to indicate that the scanner is requesting an overview scan to be
performed.

89.8.7  ICScannerStatusWarmingUp as string

**Function:** Constants used for device status notifications.
**Notes:** A non-localized notification string to indicate that the scanner is warming up.

89.8.8  ICScannerStatusWarmUpDone as string

**Function:** Constants used for device status notifications.
**Notes:** A non-localized notification string to indicate that the scanner has warmed up.

89.8.9  requestOverviewScan

**Function:** Starts an overview scan on selectedFunctionalUnit.
**Notes:** When this request is completed, the delegate will be notified using the scannerDeviceDidCompleteOverviewScanWithError event. The content of error returned should be examined to determine if the request completed successfully.

89.8.10  requestScan

**Function:** Starts a scan on selectedFunctionalUnit.
**Notes:** When this request is completed, the delegate will be notified using the scannerDeviceDidCompleteScanWithError event. The content of error returned should be examined to determine if the request completed successfully.

89.8.11  requestSelectFunctionalUnit(type as Integer)

**Function:** Requests the scanner device to select a functional unit.
**Notes:** When this request is completed, the delegate will be notified using the scannerDeviceDidSelectFunctionalUnit event.
89.8.12 Properties

89.8.13 documentName as String

Function: The document name.
Notes: (Read and Write property)

89.8.14 documentUTI as String

Function: The document UTI.
Notes: Currently supported UTIs are: kUTTypeJPEG, kUTTypeJPEG2000, kUTTypeTIFF, kUTTypePNG etc.
see UTTypeMBS module.
(Read and Write property)

89.8.15 downloadsDirectory as String

Function: The downloads directory.
Notes: Download location can be provided as file URL with downloadsDirectory property or as folderitem with downloadsFolder property.
(Read and Write property)

89.8.16 downloadsFolder as FolderItem

Function: The downloads directory.
Notes: Download location can be provided as file URL with downloadsDirectory property or as folderitem with downloadsFolder property.
(Read and Write property)
89.8.17  \textit{maxMemoryBandSize} as \texttt{UInt64}

\textbf{Function:} The total maximum band size requested when performing a ICScannerTransferModeMemory-Based.  
\textbf{Notes:} (Read and Write property)

89.8.18  \textit{selectedFunctionalUnit} as \texttt{ICScannerFunctionalUnitMBS}

\textbf{Function:} The currently selected functional unit on the scanner device.  
\textbf{Notes:} (Read only property)

89.8.19  \textit{transferMode} as \texttt{Integer}

\textbf{Function:} The transfer mode for scanned document.  
\textbf{Notes:} (Read and Write property)

89.8.20  Constants

89.8.21  \texttt{ICScannerTransferModeFileBased} = 0

MBS AVFoundation Plugin, Plugin Version: 14.3.  \textbf{Function:} Transfer mode constants to be used when transferring scan data from the scanner functional unit.  
\textbf{Notes:} Save the scan as a file.

89.8.22  \texttt{ICScannerTransferModeMemoryBased} = 1

MBS AVFoundation Plugin, Plugin Version: 14.3.  \textbf{Function:} Transfer mode constants to be used when transferring scan data from the scanner functional unit.  
\textbf{Notes:} Transfer the scan as data.
89.9 class ICScannerFeatureBooleanMBS

89.9.1 class ICScannerFeatureBooleanMBS

Function: ICScannerFeatureBoolean object is used to represent a property of a scanner functional unit whose value can be true or false.
Notes:
Subclass of the ICScannerFeatureMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

89.9.2 Methods

89.9.3 Constructor

Function: The private constructor.

89.9.4 Properties

89.9.5 value as Boolean

Function: The value of this feature.
Notes: (Read and Write property)
89.10 class ICScannerFeatureEnumerationMBS

89.10.1 class ICScannerFeatureEnumerationMBS

**Function:** ICScannerFeatureEnumeration object is used to represent a feature of a scanner functional unit that can have one of several discrete values.
**Notes:**
Subclass of the ICScannerFeatureMBS class.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

**Methods**

89.10.2 Constructor

89.10.4 `menuItemLabels as String()`

89.10.5 `menuItemLabelsTooltips as String()`

89.10.6 `values as Variant()`
89.10.7 Properties

89.10.8 currentValue as Variant

Function: The current value.
Notes:
The current value can be set to one of the possible values in the "values" property below.
(Read and Write property)

89.10.9 defaultValue as Variant

Function: The default value.
Notes:
The default value can be set to one of the possible values in the "values" property below.
(Read only property)
89.11  class ICScannerFeatureMBS

89.11.1  class ICScannerFeatureMBS

Function: ICScannerFeature class is an abstract base class used to describe a scanner feature.
Notes:
ImageCaptureCore defines three concrete subclasses of ICScannerFeatureMBS: ICScannerFeatureEnumera-
tionMBS, ICScannerFeatureRangeMBS and ICScannerFeatureBooleanMBS.
The scanner functional units may have one or more instances of these classes to allow users to choose scanner-
specific settings or operations before performing a scan.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

89.11.2  Methods

89.11.3  Constructor

Function: The private constructor.

89.11.4  Properties

89.11.5  Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

89.11.6  humanReadableName as String

Function: The human readable name of this feature.
Notes: (Read only property)

89.11.7  internalName as String

Function: The internal name of this feature.
89.11. **CLASS ICSCANNERFEATUREMBS**

**Notes:** (Read only property)

### 89.11.8  **tooltip as String**

**Function:** Tooltip text describing the feature.  
**Notes:** (Read only property)

### 89.11.9  **type as Integer**

**Function:** Scanner feature type.  
**Notes:** See ICScannerFeatureType* constants.  
(Read only property)

### 89.11.10  **Constants**

#### 89.11.11  **ICScannerFeatureTypeBoolean = 2**

MBS AVFoundation Plugin, Plugin Version: 14.3.  
**Function:** One of the feature type constants.  
**Notes:** The value of this feature can be true or false.

#### 89.11.12  **ICScannerFeatureTypeEnumeration = 0**

MBS AVFoundation Plugin, Plugin Version: 14.3.  
**Function:** One of the feature type constants.  
**Notes:** This feature can have one of several discrete values, strings or numbers.

#### 89.11.13  **ICScannerFeatureTypeRange = 1**

MBS AVFoundation Plugin, Plugin Version: 14.3.  
**Function:** One of the feature type constants.  
**Notes:** This value of this feature lies within a range.
89.11.14  ICScannerFeatureTypeTemplate = 3

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the feature type constants. **Notes:** A group of features.
class ICScannerFeatureRangeMBS

Function: ICScannerFeatureRange object is used to represent a property of a scanner functional unit whose value lies within a range.

Notes:
Subclass of the ICScannerFeatureMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

Methods

Constructor

Properties

currentValue as Double

Function: The current value.
Notes:
Attempting to set the current value to a value that is not coincident with a step will result in a value corresponding to the nearest step being assigned to the current value.
(Read only property)

defaultValue as Double

Function: The default value.
Notes:
Attempting to set the default value to a value that is not coincident with a step will result in a value corresponding to the nearest step being assigned to the default value.
(Read only property)
89.12.7  **maxValue as Double**

Function: The maximum value.
Notes: (Read only property)

89.12.8  **minValue as Double**

Function: The minimum value.
Notes: (Read only property)

89.12.9  **stepSize as Double**

Function: The step size.
Notes: (Read only property)
89.13. class ICScannerFeatureTemplateMBS

89.13.1 class ICScannerFeatureTemplateMBS

**Function:** ICScannerFeatureTemplate object is used to define a group of one or more rectangular scan areas that can be used with a scanner functional unit.
**Notes:**
Subclass of the ICScannerFeatureMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

89.13.2 Methods

89.13.3 Constructor

**Function:** The private constructor.

89.13.4 targets as ICScannerFeatureMBS()

**Function:** The target features.
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89.14 class ICScannerFunctionalUnitDocumentFeederMBS

89.14.1 class ICScannerFunctionalUnitDocumentFeederMBS


Function: ICScannerFunctionalUnitDocumentFeeder is a concrete subclass of ICScannerFunctionalUnit class.

Notes:
ICScannerDevice creates instances of this class.
This represents the document feeder unit on the scanner.
Subclass of the ICScannerFunctionalUnitMBS class.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

89.14.2 Methods

89.14.3 Constructor


Function: The private constructor.

89.14.4 Properties

89.14.5 documentLoaded as Boolean


Function: Indicates whether the feeder has documents to scan.

Notes:
This value will change when the document is loaded or removed from the feeder, if the scanner module has
the capability to detect this state.
(Read only property)

89.14.6 duplexScanningEnabled as Boolean


Function: Indicates whether duplex scanning is enabled.

Notes: (Read and Write property)
89.14.7 evenPageOrientation as Integer

Function: Desired orientation of the even pages of the scanned document.
Notes:
This property is set to ICEXIFOrientation1 initially.

Possible values:

<table>
<thead>
<tr>
<th>ICEXIFOrientation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Normal</td>
</tr>
<tr>
<td>2</td>
<td>Flipped horizontally</td>
</tr>
<tr>
<td>3</td>
<td>Rotated 180</td>
</tr>
<tr>
<td>4</td>
<td>Flipped vertically</td>
</tr>
<tr>
<td>5</td>
<td>Rotated 90 CCW and flipped vertically</td>
</tr>
<tr>
<td>6</td>
<td>Rotated 90 CCW</td>
</tr>
<tr>
<td>7</td>
<td>Rotated 90 CW and flipped vertically</td>
</tr>
<tr>
<td>8</td>
<td>Rotated 90 CW</td>
</tr>
</tbody>
</table>

(Read and Write property)

89.14.8 oddPageOrientation as Integer

Function: Desired orientation of the odd pages of the scanned document.
Notes:
This property is set to ICEXIFOrientation1 initially.

Possible values:

<table>
<thead>
<tr>
<th>ICEXIFOrientation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Normal</td>
</tr>
<tr>
<td>2</td>
<td>Flipped horizontally</td>
</tr>
<tr>
<td>3</td>
<td>Rotated 180</td>
</tr>
<tr>
<td>4</td>
<td>Flipped vertically</td>
</tr>
<tr>
<td>5</td>
<td>Rotated 90 CCW and flipped vertically</td>
</tr>
<tr>
<td>6</td>
<td>Rotated 90 CCW</td>
</tr>
<tr>
<td>7</td>
<td>Rotated 90 CW and flipped vertically</td>
</tr>
<tr>
<td>8</td>
<td>Rotated 90 CW</td>
</tr>
</tbody>
</table>

(Read and Write property)
CHAPTER 89. IMAGE CAPTURE

89.14.9 reverseFeederPageOrder as Boolean

Function: Indicates whether the document feeder reads pages from back to front.
Notes: (Read only property)

89.14.10 supportsDuplexScanning as Boolean

Function: Indicates whether duplex scanning is supported.
Notes: (Read only property)
89.15 class ICS scannerFunctionalUnitFlatbedMBS

89.15.1 class ICS scannerFunctionalUnitFlatbedMBS


**Function:** ICS scannerFunctionalUnitFlatbedMBS is a concrete subclass of ICS scannerFunctionalUnitMBS class.

**Notes:**
ICS scannerDevice creates instances of this class.
This represents the flatbed unit on the scanner.
Subclass of the ICS scannerFunctionalUnitMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

89.15.2 Methods

89.15.3 Constructor


**Function:** The private constructor.
89.16  class ICScannerFunctionalUnitMBS

89.16.1  class ICScannerFunctionalUnitMBS

Function: ICScannerFunctionalUnit is an abstract class that represents a scanner functional unit.
Notes:
ImageCaptureCore defines three concrete subclasses of ICScannerFunctionalUnit: ICScannerFunctionalUnitFlatbed, ICScannerFunctionalUnitPositiveTransparency, ICScannerFunctionalUnitNegativeTransparency and ICScannerFunctionalUnitDocumentFeeder. ICScannerDevice creates instances of these concrete subclasses.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

89.16.2  Methods

89.16.3  Constructor

Function: The private constructor.

89.16.4  templates as ICScannerFeatureTemplateMBS()

Function: An array of objects of type ICScannerFeatureTemplate.

89.16.5  vendorFeatures as ICScannerFeatureMBS()

Function: An array of objects of type ICScannerFeature.

89.16.6  Properties

89.16.7  acceptsThresholdForBlackAndWhiteScanning as Boolean

Function: Indicates if this functional unit accepts threshold value to be used when performing a scan in black & white.
89.16.8  **bitDepth as Integer**


**Function:** The bit depth to use when performing the final scan.

**Notes:**
This will always be one of the supported bit depths.
(Read and Write property)

89.16.9  **canPerformOverviewScan as Boolean**


**Function:** Indicates if this functional unit can perform an overview scan.

**Notes:**
Not all functional units can perform an overview scan. For example, a document feeder or a sheet feeder unit cannot perform an overview scan.
(Read only property)

89.16.10  **defaultThresholdForBlackAndWhiteScanning as Integer**


**Function:** Default threshold value used when performing a scan in black & white.

**Notes:**
This value is from 0 to 255.
(Read only property)

89.16.11  **documentSize as NSSizeMBS**


**Function:** Document size of the current document type expressed in current measurement unit.

**Notes:** (Read only property)
89.16.12 documentType as Integer

Function: Current document type.
Notes:
This will always be one of the supported document types.
(Read and Write property)

89.16.13 measurementUnit as Integer

Function: Current measurement unit. This will always be one of the supported measurement units.
Notes: (Read and Write property)

89.16.14 nativeXResolution as Integer

Function: Optical resolution along the X axis.
Notes: (Read only property)

89.16.15 nativeYResolution as Integer

Function: Optical resolution along the Y axis.
Notes: (Read only property)

89.16.16 overviewImage as Variant

Function: Overview scan image.
Notes:
This property will be nil for functional units that do not support overview scans.
Value is a CGImageMBS.
(Read only property)
89.16. **CLASS ICSCANNERFUNCTIONALUNITMBS**

**89.16.17 overviewResolution as Integer**

**Function:** Overview image resolution.  
**Notes:** Value assigned to this will be constrained by resolutions allowed by the device.  
(Read and Write property)

**89.16.18 overviewScanInProgress as Boolean**

**Function:** Indicates if an overview scan is in progress.  
**Notes:** (Read only property)

**89.16.19 physicalSize as NSSizeMBS**

**Function:** Physical size of the scan area in current measurement unit.  
**Notes:** (Read only property)

**89.16.20 pixelDataType as Integer**

**Function:** The pixel data type.  
**Notes:** See ICSnannerPixelDataType* constants.  
(Read and Write property)

**89.16.21 preferredResolutions as NSIndexSetMBS**

**Function:** Current scan resolution.  
**Notes:** This will always be one of the supported resolution values.  
(Read only property)
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89.16.22 preferredScaleFactors as NSIndexSetMBS

Function: Preferred scale factors in percentage.
Notes: (Read only property)

89.16.23 resolution as Integer

Function: Current scan resolution.
Notes:
This will always be one of the supported resolution values.
(Read and Write property)

89.16.24 scaleFactor as Integer

Function: Current scale factor.
Notes:
This will always be one of the supported scale factor values.
(Read only property)

89.16.25 scanArea as NSRectMBS

Function: This property along with scanAreaOrientation describes the area to be scanned.
Notes: (Read and Write property)

89.16.26 scanAreaOrientation as Integer

Function: Desired orientation of the scan area.
Notes:
This property along with scanArea describes the area to be scanned.
This property is set to ICEXIFOrientation1 initially. This property is not used by the ICScannerFunction-
alUnitDocumentFeeder subclass.
Possible values:

- ICEXIFOrientation1 1 Normal
- ICEXIFOrientation2 2 Flipped horizontally
- ICEXIFOrientation3 3 Rotated 180
- ICEXIFOrientation4 4 Flipped vertically
- ICEXIFOrientation5 5 Rotated 90 CCW and flipped vertically
- ICEXIFOrientation6 6 Rotated 90 CCW
- ICEXIFOrientation7 7 Rotated 90 CW and flipped vertically
- ICEXIFOrientation8 8 Rotated 90 CW

(Read and Write property)

**89.16.27 scanInProgress as Boolean**


**Function:** Indicates if a scan is in progress.

**Notes:** (Read only property)

**89.16.28 scanProgressPercentDone as Double**


**Function:** Indicates percentage of scan completed.

**Notes:** (Read only property)

**89.16.29 state as Integer**


**Function:** Indicates the current state of the functional unit.

**Notes:**

See ICScannerFunctionalUnitState* constants.

(Read only property)

**89.16.30 supportedBitDepths as NSIndexSetMBS**


**Function:** Supported bit depths.

**Notes:**
The values in this set are valid values defined by ICScannerBitDepth.
(Read only property)

89.16.31 supportedDocumentTypes as NSIndexSetMBS
Function: Supported document types.
Notes: The values in this set are valid values defined by ICScannerDocumentType.
(Read only property)

89.16.32 supportedMeasurementUnits as NSIndexSetMBS
Function: Supported measurement units. The values in this set are valid values defined by ICScannerMeasurementUnit.
Notes: (Read only property)

89.16.33 supportedResolutions as NSIndexSetMBS
Function: Supported scan resolutions in DPI.
Notes: (Read only property)

89.16.34 supportedScaleFactors as NSIndexSetMBS
Function: Supported scale factors in percentage.
Notes: (Read only property)

89.16.35 thresholdForBlackAndWhiteScanning as Integer
Function: Threshold value to be used when performing a scan in black & white.
Notes:
This value should be from 0 to 255.
(Read and Write property)

### 89.16.36 type as Integer

**Function:** Functional unit type.
**Notes:**
See ICScannerFunctionalUnitType* constants.
(Read only property)

### 89.16.37 usesThresholdForBlackAndWhiteScanning as Boolean

**Function:** Indicates if this functional unit uses threshold value to be used when performing a scan in black & white.
**Notes:** (Read only property)

### 89.16.38 Constants

#### 89.16.39 ICScannerBitDepth16Bits = 16

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the possible number of bits per channel in the scanned image.
**Notes:** Image with 16 bits per channel.

#### 89.16.40 ICScannerBitDepth1Bit = 1

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the possible number of bits per channel in the scanned image.
**Notes:** 1-bit image.

#### 89.16.41 ICScannerBitDepth8Bits = 8

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the possible number of bits per channel in the scanned image.
CHAPTER 89. IMAGE CAPTURE

Notes: Image with 8 bits per channel.

89.16.42  ICScannerColorDataFormatTypeChunky = 0

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the color data formats.
Notes:
For multi-channel data (e.g., RGB) data from all channels are interleaved.
Identifies color data formats. Only relevant for multi-channel data. Corresponds to "ICAP_PLANARCHUNKY"
of the TWAIN Specification.

89.16.43  ICScannerColorDataFormatTypePlanar = 1

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the color data formats.
Notes:
For multi-channel data (e.g., RGB) each channel is transferred sequentially.
Identifies color data formats. Only relevant for multi-channel data. Corresponds to "ICAP_PLANARCHUNKY"
of the TWAIN Specification.

89.16.44  ICScannerDocumentType10 = 25

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the document types.
Notes: A10, 26.00 mm x 37.00 mm

89.16.45  ICScannerDocumentType10R = 67

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the document types.
Notes: 10R, 10” x 12” 254.00 mm x 304.80 mm 5:6

89.16.46  ICScannerDocumentType110 = 72

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the document types.
Notes: Instamatic 110, 13.00 mm x 17.00 mm
89.16.47 ICScannerDocumentType11R = 69
MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types.
**Notes:** 11R, 11” x 14” 279.40 mm x 355.60 mm 11:14

89.16.48 ICScannerDocumentType12R = 70
MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types.
**Notes:** 12R, 12” x 15” 304.80 mm x 381.00 mm 4:5

89.16.49 ICScannerDocumentType135 = 76
MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types.
**Notes:** Standard 35 mm, 36.00 mm x 24.00 mm

89.16.50 ICScannerDocumentType2A0 = 18
MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types.
**Notes:** 2A0, 1189.00 mm x 1682.00 mm

89.16.51 ICScannerDocumentType3R = 61
MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types.
**Notes:** 3R, 3.5” x 5” 88.90 mm x 127.00 mm 7:10

89.16.52 ICScannerDocumentType4A0 = 17
MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types.
**Notes:** 4A0, 1682.00 mm x 2378.00 mm

89.16.53 ICScannerDocumentType4R = 62
MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types.
**Notes:** 4R, 4” x 6” 101.60 mm x 152.40 mm 2:3
89.16.54  ICScannerDocumentType5R = 63

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the document types.
Notes: 5R, 5″ x 7″ 127.00 mm x 177.80 mm 5:7

89.16.55  ICScannerDocumentType6R = 64

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the document types.
Notes: 6R, 6″ x 8″ 152.40 mm x 203.20 mm 3:4

89.16.56  ICScannerDocumentType8R = 65

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the document types.
Notes: 8R, 8″ x 10″ 203.20 mm x 254.00 mm 4:5

89.16.57  ICScannerDocumentTypeA0 = 19

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the document types.
Notes: A0, 841.00 mm x 1189.00 mm

89.16.58  ICScannerDocumentTypeA1 = 20

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the document types.
Notes: A1, 594.00 mm x 841.00 mm

89.16.59  ICScannerDocumentTypeA2 = 21

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the document types.
Notes: A2, 420.00 mm x 594.00 mm

89.16.60  ICScannerDocumentTypeA3 = 11

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the document types.
Notes: A3, 297.00 mm x 420.00 mm
89.16. CLASS ICSCANNERFUNCTIONALUNITMBS

89.16.61 ICScannerDocumentTypeA4 = 1

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types. **Notes:** A4, 210.00 mm x 297.00 mm

89.16.62 ICScannerDocumentTypeA5 = 5

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types. **Notes:** A5, 148.00 mm x 210.00 mm

89.16.63 ICScannerDocumentTypeA6 = 13

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types. **Notes:** A6, 105.00 mm x 148.00 mm

89.16.64 ICScannerDocumentTypeA7 = 22

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types. **Notes:** A7, 74.00 mm x 105.00 mm

89.16.65 ICScannerDocumentTypeA8 = 23

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types. **Notes:** A8, 52.00 mm x 74.00 mm

89.16.66 ICScannerDocumentTypeA9 = 24

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types. **Notes:** A9, 37.00 mm x 52.00 mm

89.16.67 ICScannerDocumentTypeAPSC = 74

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types. **Notes:** APS Classic, 25.10 mm x 16.70 mm
89.16.68  ICScannerDocumentTypeAPSH = 73

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types.
**Notes:** APS High Definition, 30.20 mm x 16.70 mm

89.16.69  ICScannerDocumentTypeAPSP = 75

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types.
**Notes:** APS Panoramic, 30.20 mm x 9.50 mm

89.16.70  ICScannerDocumentTypeB5 = 2

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types.
**Notes:** B5/JIS B5, 182.00 mm x 257.00 mm

89.16.71  ICScannerDocumentTypeBusinessCard = 53

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types.
**Notes:** Business Card, 90.00 mm x 55.00 mm

89.16.72  ICScannerDocumentTypeC0 = 44

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types.
**Notes:** C0, 917.00 mm x 1297.00 mm

89.16.73  ICScannerDocumentTypeC1 = 45

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types.
**Notes:** C1, 648.00 mm x 917.00 mm

89.16.74  ICScannerDocumentTypeC10 = 51

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types.
**Notes:** C10, 28.00 mm x 40.00 mm
89.16.75  ICScannerDocumentTypeC2 = 46

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types.  
**Notes:** C2, 458.00 mm x 648.00 mm

89.16.76  ICScannerDocumentTypeC3 = 47

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types.  
**Notes:** C3, 324.00 mm x 458.00 mm

89.16.77  ICScannerDocumentTypeC4 = 14

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types.  
**Notes:** C4, 229.00 mm x 324.00 mm

89.16.78  ICScannerDocumentTypeC5 = 15

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types.  
**Notes:** C5, 162.00 mm x 229.00 mm

89.16.79  ICScannerDocumentTypeC6 = 16

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types.  
**Notes:** C6, 114.00 mm x 162.00 mm

89.16.80  ICScannerDocumentTypeC7 = 48

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types.  
**Notes:** C7, 81.00 mm x 114.00 mm

89.16.81  ICScannerDocumentTypeC8 = 49

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types.  
**Notes:** C8, 57.00 mm x 81.00 mm
89.16.82  ICScannerDocumentTypeC9 = 50

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the document types. Notes: C9, 40.00 mm x 57.00 mm

89.16.83  ICScannerDocumentTypeDefault = 0

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the document types. Notes: This is the platten size. Not valid for scanners without a platten.

89.16.84  ICScannerDocumentTypeE = 60

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the document types. Notes: Japanese E, 3.25” x 4.75” 82.55 mm x 120.65 mm 11:16

89.16.85  ICScannerDocumentTypeISOB0 = 26

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the document types. Notes: ISO B0, 1000.00 mm x 1414.00 mm

89.16.86  ICScannerDocumentTypeISOB1 = 27

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the document types. Notes: ISO B1, 707.00 mm x 1000.00 mm

89.16.87  ICScannerDocumentTypeISOB10 = 33

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the document types. Notes: ISO B10, 31.00 mm x 44.00 mm

89.16.88  ICScannerDocumentTypeISOB2 = 28

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the document types. Notes: ISO B2, 500.00 mm x 707.00 mm
89.16.89  ICScannerDocumentTypeISO B3 = 12

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types. **Notes:** B3/ISO B3, 353.00 mm x 500.00 mm

89.16.90  ICScannerDocumentTypeISO B4 = 6

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types. **Notes:** B4/ISO B4, 250.00 mm x 353.00 mm

89.16.91  ICScannerDocumentTypeISO B5 = 29

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types. **Notes:** ISO B5, 176.00 mm x 250.00 mm

89.16.92  ICScannerDocumentTypeISO B6 = 7

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types. **Notes:** B6/ISO B6, 125.00 mm x 176.00 mm

89.16.93  ICScannerDocumentTypeISO B7 = 30

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types. **Notes:** ISO B7, 88.00 mm x 125.00 mm

89.16.94  ICScannerDocumentTypeISO B8 = 31

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types. **Notes:** ISO B8, 62.00 mm x 88.00 mm

89.16.95  ICScannerDocumentTypeISO B9 = 32

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types. **Notes:** ISO B9, 44.00 mm x 62.00 mm
89.16.96  ICScannerDocumentTypeJISB0 = 34
MBS AVFoundation Plugin, Plugin Version: 14.3.  **Function:** One of the document types.
**Notes:** JIS B0, 1030.00 mm x 1456.00 mm

89.16.97  ICScannerDocumentTypeJISB1 = 35
MBS AVFoundation Plugin, Plugin Version: 14.3.  **Function:** One of the document types.
**Notes:** JIS B1, 728.00 mm x 1030.00 mm

89.16.98  ICScannerDocumentTypeJISB10 = 43
MBS AVFoundation Plugin, Plugin Version: 14.3.  **Function:** One of the document types.
**Notes:** JIS B10, 32.00 mm x 45.00 mm

89.16.99  ICScannerDocumentTypeJISB2 = 36
MBS AVFoundation Plugin, Plugin Version: 14.3.  **Function:** One of the document types.
**Notes:** JIS B2, 515.00 mm x 728.00 mm

89.16.100  ICScannerDocumentTypeJISB3 = 37
MBS AVFoundation Plugin, Plugin Version: 14.3.  **Function:** One of the document types.
**Notes:** JIS B3, 364.00 mm x 515.00 mm

89.16.101  ICScannerDocumentTypeJISB4 = 38
MBS AVFoundation Plugin, Plugin Version: 14.3.  **Function:** One of the document types.
**Notes:** JIS B4, 257.00 mm x 364.00 mm

89.16.102  ICScannerDocumentTypeJISB6 = 39
MBS AVFoundation Plugin, Plugin Version: 14.3.  **Function:** One of the document types.
**Notes:** JIS B6, 128.00 mm x 182.00 mm
89.16.103  ICScannerDocumentTypeJISB7 = 40

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types.  
**Notes:** JIS B7, 91.00 mm x 128.00 mm

89.16.104  ICScannerDocumentTypeJISB8 = 41

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types.  
**Notes:** JIS B8, 64.00 mm x 91.00 mm
89.16.105  ICScannerDocumentTypeJISB9 = 42

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function**: One of the document types.  
**Notes**: JIS B9, 45.00 mm x 64.00 mm

89.16.106  ICScannerDocumentTypeLF = 78

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function**: One of the document types.  
**Notes**: Large Format, 100.00 mm x 120.00 mm

89.16.107  ICScannerDocumentTypeMF = 77

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function**: One of the document types.  
**Notes**: Medium Format, 60.00 mm x 60.00 mm

89.16.108  ICScannerDocumentTypeS10R = 68

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function**: One of the document types.  
**Notes**: S10R, 10” x 15” 254.00 mm x 381.00 mm 2:3

89.16.109  ICScannerDocumentTypeS12R = 71

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function**: One of the document types.  
**Notes**: S12R, 12” x 18” 304.80 mm x 457.20 mm 2:3

89.16.110  ICScannerDocumentTypeS8R = 66

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function**: One of the document types.  
**Notes**: S8R 8” x 12” 203.20 mm x 304.80 mm 2:3

89.16.111  ICScannerDocumentTypeUSExecutive = 10

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function**: One of the document types.  
**Notes**: US Executive, 7.25” x 10.5”, 184.15 mm x 266.70 mm
89.16.112  ICScannerDocumentTypeUSLedger = 9

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types. **Notes:** US Ledger, 11" x 17.0", 279.40 mm x 431.80 mm

89.16.113  ICScannerDocumentTypeUSLegal = 4

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types. **Notes:** US Legal, 8.5" x 14.0", 215.90 mm x 355.60 mm

89.16.114  ICScannerDocumentTypeUSLetter = 3

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types. **Notes:** US Letter, 8.5" x 11.0", 215.90 mm x 279.40 mm

89.16.115  ICScannerDocumentTypeUSStatement = 52

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the document types. **Notes:** US Statement, 5.5" x 8.5", 139.70 mm x 215.90 mm

89.16.116  ICScannerFunctionalUnitStateOverviewScanInProgress = 4

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** A flag to indicate the scanner functional unit’s state. **Notes:** The scanner functional unit is performing an overview scan.

89.16.117  ICScannerFunctionalUnitStateReady = 1

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** A flag to indicate the scanner functional unit’s state. **Notes:** The scanner functional unit is ready for operation.

89.16.118  ICScannerFunctionalUnitStateScanInProgress = 2

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** A flag to indicate the scanner functional unit’s state.
89.16.119  **ICScannerFunctionalUnitTypeDocumentFeeder = 3**

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the Scanner Functional Unit Types.  
**Notes:** Document feeder functional unit.

89.16.120  **ICScannerFunctionalUnitTypeFlatbed = 0**

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the Scanner Functional Unit Types.  
**Notes:** Flatbed functional unit.

89.16.121  **ICScannerFunctionalUnitTypeNegativeTransparency = 2**

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the Scanner Functional Unit Types.  
**Notes:** Transparency functional unit for scanning negatives.

89.16.122  **ICScannerFunctionalUnitTypePositiveTransparency = 1**

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the Scanner Functional Unit Types.  
**Notes:** Transparency functional unit for scanning positives.

89.16.123  **ICScannerMeasurementUnitCentimeters = 1**

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the units of measurement used by the scanner.  
**Notes:** 1 cm = 1.00 cm or 1/2.54 inches

89.16.124  **ICScannerMeasurementUnitInches = 0**

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the units of measurement used by the scanner.  
**Notes:** 1 inch = 2.54 cm
89.16.125  ICScannerMeasurementUnitPicas = 2

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the units of measurement used by the scanner.
**Notes:** 1 pica = .42333333 cm or 1/6 inches

89.16.126  ICScannerMeasurementUnitPixels = 5

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the units of measurement used by the scanner.

89.16.127  ICScannerMeasurementUnitPoints = 3

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the units of measurement used by the scanner.
**Notes:** 1 point = .0352777775 cm or 1/72 inches

89.16.128  ICScannerMeasurementUnitTwips = 4

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the units of measurement used by the scanner.
**Notes:** 1 twip = .0001763888 cm or 1/1440 inches

89.16.129  ICScannerPixelDataTypeBW = 0

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the pixel data types.
**Notes:** Monochrome 1 bit pixel image.

89.16.130  ICScannerPixelDataTypeCIEXYZ = 8

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the pixel data types.
**Notes:** Color image in CIEXYZ color space.
89.16.131  ICScannerPixelDataTypeCMY = 4

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the pixel data types. Notes: Color image in CMY color space.

89.16.132  ICScannerPixelDataTypeCMYK = 5

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the pixel data types. Notes: Color image in CMYK color space.

89.16.133  ICScannerPixelDataTypeGray = 1

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the pixel data types. Notes: 8 bit pixel Gray color space.

89.16.134  ICScannerPixelDataTypePalette = 3


89.16.135  ICScannerPixelDataTypeRGB = 2

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the pixel data types. Notes: Color image RGB color space.

89.16.136  ICScannerPixelDataTypeYUV = 6

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the pixel data types. Notes: Color image in YUV color space.

89.16.137  ICScannerPixelDataTypeYUVK = 7

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the pixel data types. Notes: Color image in YUVK color space.
89.17. class ICScannerFunctionalUnitNegativeTransparencyMBS

Function: ICScannerFunctionalUnitNegativeTransparencyMBS is a concrete subclass of ICScannerFunctionalUnitMBS class.
Notes:
ICScannerDeviceMBS creates instances of this class.
This represents the transparency unit on the scanner for scanning negatives.
Subclass of the ICScannerFunctionalUnitMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

89.17.2 Methods

89.17.3 Constructor

Function: The private constructor.
89.18 class ICScannerFunctionalUnitPositiveTransparencyMBS

89.18.1 class ICScannerFunctionalUnitPositiveTransparencyMBS

**Function:** ICScannerFunctionalUnitPositiveTransparencyMBS is a concrete subclass of ICScannerFunctionalUnitMBS class.
**Notes:**
ICScannerDeviceMBS creates instances of this class.
This represents the transparency unit on the scanner for scanning positives.
Subclass of the ICScannerFunctionalUnitMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

89.18.2 Methods

89.18.3 Constructor

**Function:** The private constructor.
89.19  control IKCameraDeviceViewControlMBS

89.19.1  control IKCameraDeviceViewControlMBS

Function: The Xojo control for a Camera Device View.
Notes: For Xojo with Cocoa target.

89.19.2  Properties

89.19.3  View as IKCameraDeviceViewMBS

Function: The camera device view used in this control.
Notes: (Read only property)

89.19.4  Events

89.19.5  BoundsChanged

MBS AVFoundation Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The event called when the bounds, but not the frame, changed.

89.19.6  DidDownloadFile(CameraFile as ICCameraFileMBS, URL as string, File as folderItem, data as MemoryBlock, error as NSErrorMBS)

Function: This event is sent for each file that gets downloaded.
Notes: Based on the IKCameraDeviceViewDisplayMode the downloaded file will be saved on disk using the 'url', or returned in memory as Memoryblock.

89.19.7  DidEncounterError(Error as NSErrorMBS)

Function: This event is sent every time the camera device reports an error.
89.19.8 EnableMenuItems

MBS AVFoundation Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The event where you can enable menu items.

89.19.9 FrameChanged

MBS AVFoundation Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.  
**Function:** The event called when the frame changed.

89.19.10 GotFocus

**Function:** The control itself got focus.  
**Notes:** This only fires if the control itself got focus and not a sub control.

89.19.11 LostFocus

**Function:** The control lost focus.  
**Notes:** This only fires if the control itself lost focus and not a sub control.

89.19.12 MenuAction(HitItem as MenuItem) As Boolean

MBS AVFoundation Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.  
**Function:** Called when a menuitem is choosen.  
**Notes:** This allows the control to react on its relevant menu items. Please return true if you handled it or false to give others a chance.

89.19.13 MouseDown(x as Integer, y as Integer, Modifiers as Integer) As Boolean

MBS AVFoundation Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.  
**Function:** The mouse button was pressed inside the controls region at the location passed in to x, y.  
**Notes:** The coordinates x and y are local to the control, i.e. they represent the position of the mouse click relative to the upper-left corner or the Control.
Return True if you are going to handle the MouseDown. In such a case:

- The Action event, if any, will not execute and the state of the object will not change.
- You will receive the MouseDrag and MouseUp events.

If you return False, the system handles the MouseDown so the above event handlers do not get called.

89.19.14 MouseDrag(x as Integer, y as Integer)

MBS AVFoundation Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: This event fires continuously after the mouse button was pressed inside the Control.
Notes:
Mouse location is local to the control passed in to x, y.
As this event is fired continuously (hundreds of time per second), it is your responsibility to determine if the mouse has really moved.

89.19.15 MouseUp(x as Integer, y as Integer)

MBS AVFoundation Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The mouse button was released.
Notes: Use the x and y parameters to determine if the mouse button was released within the control’s boundaries.

89.19.16 ScaleFactorChanged(NewFactor as Double)

MBS AVFoundation Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The backing store scale factor has changed.
Notes: Please invalidate any cached bitmaps or other relevant state.

89.19.17 SelectionDidChange

Function: This event is sent when the user selection did change.
89.20  class IKCameraDeviceViewMBS

89.20.1  class IKCameraDeviceViewMBS

Function: Displays content of a Image Capture supported camera.
Notes: Subclass of the NSViewMBS class.

89.20.2  Methods

89.20.3  Constructor

Function: Creates a new box view with size 100/100 and position 0/0
Example:

```vbs
dim x as new IKCameraDeviceViewMBS
```

Notes: On success the handle property is not zero.
See also:

- 89.20.4 Constructor(Handle as Integer) 14562
- 89.20.5 Constructor(left as Double, top as Double, width as Double, height as Double) 14563

89.20.4  Constructor(Handle as Integer)

Function: Creates an object based on the given NSView handle.
Example:

```vbs
dim t as new IKCameraDeviceViewMBS(0, 0, 100, 100)
dim v as new IKCameraDeviceViewMBS(t.handle)
MsgBox str(v.Bounds.Width)+" x "+str(v.Bounds.Height)
```

Notes: The handle is casted to a IKCameraDeviceView and the plugin retains this handle.
See also:

- 89.20.3 Constructor 14562
- 89.20.5 Constructor(left as Double, top as Double, width as Double, height as Double) 14563
89.20. CLASS IKCAMERADEVICEVIEWMBS

89.20.5 Constructor(left as Double, top as Double, width as Double, height as Double)

Function: Creates a new control with the given size and position.
Example:

```vbnet
dim left, top, width, height as Integer
// define rectangle
dim x as new IKCameraDeviceViewMBS(left, top, width, height)
```

Notes: On success the handle property is not zero.
See also:

- 89.20.3 Constructor
- 89.20.4 Constructor(Handle as Integer)

89.20.6 deleteSelectedItems

Function: Delete selected items.

89.20.7 downloadAllItems

Function: Download all items.

89.20.8 downloadSelectedItems

Function: Download selected items.

89.20.9 rotateLeft

Function: Rotate selected items left.
89.20.10 rotateRight

**Function:** Rotate selected items right.

89.20.11 selectIndexes(indexes as NSIndexSetMBS, extend as boolean)

**Function:** Setting current user selection.

89.20.12 Properties

89.20.13 cameraDevice as ICCameraDeviceMBS

**Function:** The camera device.
**Notes:** (Read and Write property)

89.20.14 canDeleteSelectedItems as Boolean

**Function:** Indicates if the user selected items can be deleted.
**Notes:** (Read only property)

89.20.15 canDownloadSelectedItems as Boolean

**Function:** Indicates if the user selected items can be downloaded.
**Notes:** (Read only property)

89.20.16 canRotateSelectedItemsLeft as Boolean

**Function:** Indicates if the user selected items can be rotated left.
**Notes:** (Read only property)
89.20.17 canRotateSelectedItemsRight as Boolean

**Function:** Indicates if the user selected items can be rotated right.
**Notes:** (Read only property)

89.20.18 displaysDownloadsDirectoryControl as Boolean

**Function:** Show a downloads directory control.
**Notes:** (Read and Write property)

89.20.19 displaysPostProcessApplicationControl as Boolean

**Function:** Show a postprocessing application control.
**Notes:** (Read and Write property)

89.20.20 downloadAllControlLabel as String

**Function:** Label for the 'Download All' control - allows for example renaming to 'Import All'.
**Notes:** (Read and Write property)

89.20.21 downloadsDirectory as String

**Function:** Downloads directory.
**Notes:**
Download location can be provided as file URL with downloadsDirectory property or as folderitem with downloadsFolder property.
(Read and Write property)

89.20.22 downloadSelectedControlLabel as String

**Function:** Label for the 'Download Selected' control.
89.20.23 downloadsFolder as FolderItem

Function: Downloads directory.
Notes: Download location can be provided as file URL with downloadsDirectory property or as folderitem with downloadsFolder property.
(Read and Write property)

89.20.24 hasDisplayModeIcon as Boolean

Function: Support icon view display mode.
Notes: (Read and Write property)

89.20.25 hasDisplayModeTable as Boolean

Function: Support table view display mode.
Notes: (Read and Write property)

89.20.26 iconSize as Integer

Function: in icon mode: size of the image thumbnails.
Notes: (Read and Write property)

89.20.27 mode as Integer

Function: Current display mode.
Notes: see IKCameraDeviceViewDisplayMode constants.
(Read and Write property)
89.20.28  postProcessApplication as String

Function: Postprocessing application.
Notes:
A file URL to application.
(Read and Write property)

89.20.29  selectedIndexes as NSIndexSetMBS

Function: Current user selection.
Notes: (Read only property)

89.20.30  transferMode as Integer

Function: Transfer mode either file based - or - in memory.
Notes:
See IKCameraDeviceViewTransferMode constants.
(Read and Write property)

89.20.31  Events

89.20.32  DidDownloadFile(CameraFile as ICCameraFileMBS, URL as string, File as folderItem, data as MemoryBlock, error as NSErrorMBS)

Function: This event is sent for each file that gets downloaded.
Notes: Based on the IKCameraDeviceViewDisplayMode the downloaded file will be saved on disk using the 'url', or returned in memory as Memoryblock.

89.20.33  DidEncounterError(Error as NSErrorMBS)

Function: This event is sent every time the camera device reports an error.
89.20.34 SelectionDidChange

**Function:** This event is sent when the user selection did change.

89.20.35 Constants

89.20.36 IKCameraDeviceViewDisplayModeIcon = 1

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the display modes. 
**Notes:** Show Icons

89.20.37 IKCameraDeviceViewDisplayModeTable = 0

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the display modes. 
**Notes:** Show Table

89.20.38 IKCameraDeviceViewTransferModeFileBased = 0

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the transfer mode constants. 
**Notes:** File based download.

89.20.39 IKCameraDeviceViewTransferModeMemoryBased = 1

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the transfer mode constants. 
**Notes:** Memory based download.
89.21 control IKDeviceBrowserViewControlMBS

89.21.1 control IKDeviceBrowserViewControlMBS

**Function:** The Xojo control for a Device Browser View.
**Notes:** For Xojo with Cocoa target.

89.21.2 Properties

89.21.3 View as IKDeviceBrowserViewMBS

**Function:** The device browser view used in this control.
**Notes:** (Read only property)

89.21.4 Events

89.21.5 BoundsChanged

MBS AVFoundation Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.
**Function:** The event called when the bounds, but not the frame, changed.

89.21.6 DidEncounterError(error as NSErrorMBS)

**Function:** This event is sent every time the device browser reports an error.

89.21.7 EnableMenuItems

MBS AVFoundation Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The event where you can enable menu items.
89.21.8 FrameChanged

MBS AVFoundation Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The event called when the frame changed.

89.21.9 GotFocus

Function: The control itself got focus.
Notes: This only fires if the control itself got focus and not a sub control.

89.21.10 LostFocus

Function: The control lost focus.
Notes: This only fires if the control itself lost focus and not a sub control.

89.21.11 MenuAction(HitItem as MenuItem) As Boolean

MBS AVFoundation Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Called when a menuitem is choosen.
Notes: This allows the control to react on its relevant menu items. Please return true if you handled it or false to give others a chance.

89.21.12 MouseDown(x as Integer, y as Integer, Modifiers as Integer) As Boolean

MBS AVFoundation Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The mouse button was pressed inside the controls region at the location passed in to x, y.
Notes:
The coordinates x and y are local to the control, i.e. they represent the position of the mouse click relative to the upper-left corner or the Control.
Return True if you are going to handle the MouseDown. In such a case:

- The Action event, if any, will not execute and the state of the object will not change.
- You will receive the MouseDrag and MouseUp events.

If you return False, the system handles the MouseDown so the above event handlers do not get called.
89.21. CONTROL IKDEVICEBROWSERVIEWCONTROLMBS

89.21.13 MouseDrag(x as Integer, y as Integer)

MBS AVFoundation Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.

Function: This event fires continuously after the mouse button was pressed inside the Control.

Notes:
Mouse location is local to the control passed in to x, y.
As this event is fired continuously (hundreds of time per second), it is your responsibility to determine if the mouse has really moved.

89.21.14 MouseUp(x as Integer, y as Integer)

MBS AVFoundation Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.

Function: The mouse button was released.

Notes: Use the x and y parameters to determine if the mouse button was released within the control’s boundaries.

89.21.15 ScaleFactorChanged(NewFactor as Double)

MBS AVFoundation Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.

Function: The backing store scale factor has changed.

Notes: Please invalidate any cached bitmaps or other relevant state.

89.21.16 SelectionDidChange(device as ICDeviceMBS)


Function: This event is sent when the user selection did change.

Notes: The device may be a ICCameraDeviceMBS or a IScannerDeviceMBS.
89.22 class IKDeviceBrowserViewMBS

89.22.1 class IKDeviceBrowserViewMBS

Function: Displays Image Capture cameras and scanners.
Notes: Subclass of the NSViewMBS class.

89.22.2 Methods

89.22.3 Constructor

Function: Creates a new box view with size 100/100 and position 0/0
Example:

```vba
dim x as new IKDeviceBrowserViewMBS
```

Notes: On success the handle property is not zero.
See also:

- 89.22.4 Constructor(Handle as Integer) 14572
- 89.22.5 Constructor(left as Double, top as Double, width as Double, height as Double) 14573

89.22.4 Constructor(Handle as Integer)

Function: Creates an object based on the given NSView handle.
Example:

```vba
dim t as new IKDeviceBrowserViewMBS(0, 0, 100, 100)
dim v as new IKDeviceBrowserViewMBS(t.handle)
MsgBox str(v.Bounds.Width)+" x "+str(v.Bounds.Height)
```

Notes: The handle is casted to a IKDeviceBrowserView and the plugin retains this handle.
See also:

- 89.22.3 Constructor 14572
- 89.22.5 Constructor(left as Double, top as Double, width as Double, height as Double) 14573
89.22. CLASS IKDEVICEBROWSERVIEWMBS

89.22.5 Constructor(left as Double, top as Double, width as Double, height as Double)

Function: Creates a new control with the given size and position.
Example:

```vbnet
dim left, top, width, height as Integer
// define rectangle
dim x as new IKDeviceBrowserViewMBS(left, top, width, height)
```

Notes: On success the handle property is not zero.
See also:

- 89.22.3 Constructor
- 89.22.4 Constructor(Handle as Integer)

89.22.6 Properties

89.22.7 displaysLocalCameras as Boolean

Function: For device filtering - indicates that the IKDeviceBrowserView should include local cameras.
Notes: (Read and Write property)

89.22.8 displaysLocalScanners as Boolean

Function: For device filtering - indicates that the IKDeviceBrowserView should include local scanners.
Notes: (Read and Write property)

89.22.9 displaysNetworkCameras as Boolean

Function: For device filtering - indicates that the IKDeviceBrowserView should include network/shared cameras.
Notes: (Read and Write property)
89.22.10  displaysNetworkScanners as Boolean

Function: for device filtering - indicates that the IKDeviceBrowserView should include network/shared scanners.
Notes: (Read and Write property)

89.22.11  mode as Integer

Function: One of the supported display modes (table, outline, or icon mode).
Notes: (Read and Write property)

89.22.12  selectedDevice as ICDeviceMBS

Function: User selected device (ICCameraDevice or ICSnannerDevice).
Notes: (Read only property)

89.22.13  Events

89.22.14  DidEncounterError(error as NSErrorMBS)

Function: This event is sent every time the device browser reports an error.

89.22.15  SelectionDidChange(device as ICDeviceMBS)

Function: This event is sent when the user selection did change.
Notes: The device may be a ICCameraDeviceMBS or a ICSnannerDeviceMBS.
89.22.16 Constants

89.22.17 IKDeviceBrowserViewDisplayModeIcon = 2

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the display modes. **Notes:** Icon

89.22.18 IKDeviceBrowserViewDisplayModeOutline = 1

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the display modes. **Notes:** Outline

89.22.19 IKDeviceBrowserViewDisplayModeTable = 0

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the display modes. **Notes:** Table
89.23  control IKScannerDeviceViewControlMBS

89.23.1 control IKScannerDeviceViewControlMBS

Function: The Xojo control for a Scanner Device View.
Notes: For Xojo with Cocoa target.

89.23.2 Properties

89.23.3 View as IKScannerDeviceViewMBS

Function: The scanner view used in this control.
Notes: (Read only property)

89.23.4 Events

89.23.5 BoundsChanged

MBS AVFoundation Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The event called when the bounds, but not the frame, changed.

89.23.6 DidEncounterError(error as NSErrorMBS)

Function: This event is sent every time the scanner device reports an error.

89.23.7 DidScanToBandData(data as ICScannerBandDataMBS, scanInfo as Dictionary, error as NSErrorMBS)

Function: For memory a based transfer this event is sent for every time an image band of data was scanned.
Notes: The ‘data’ parameter describes the scanned image data. Note that rotation/cropping/image adjustments are not applied yet. The ‘scanInfo’ parameter contains additional information (rotation angle, ...) that should be applied once the scan is completed.
89.23.8  DidScanToURL(url as String, file as FolderItem, fileData as MemoryBlock, error as NSErrorMBS)

**Function:** For file based transfer this event is sent for each image that gets scanned.  
**Notes:** Based on the IKScannerDeviceViewTransferMode the downloaded file will be saved on disk using the 'url', or returned in memory as Memoryblock.

89.23.9  EnableMenuItems

MBS AVFoundation Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.  
**Function:** The event where you can enable menu items.

89.23.10  FrameChanged

MBS AVFoundation Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.  
**Function:** The event called when the frame changed.

89.23.11  GotFocus

**Function:** The control itself got focus.  
**Notes:** This only fires if the control itself got focus and not a sub control.

89.23.12  LostFocus

**Function:** The control lost focus.  
**Notes:** This only fires if the control itself lost focus and not a sub control.

89.23.13  MenuAction(HitItem as MenuItem) As Boolean

MBS AVFoundation Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.  
**Function:** Called when a menuitem is choosen.  
**Notes:** This allows the control to react on its relevant menu items. Please return true if you handled it or false to give others a chance.
89.23.14 MouseDown(x as Integer, y as Integer, Modifiers as Integer) As Boolean

MBS AVFoundation Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The mouse button was pressed inside the controls region at the location passed in to x, y.
Notes:
The coordinates x and y are local to the control, i.e. they represent the position of the mouse click relative to the upper-left corner or the Control.
Return True if you are going to handle the MouseDown. In such a case:

- The Action event, if any, will not execute and the state of the object will not change.
- You will receive the MouseDrag and MouseUp events.

If you return False, the system handles the MouseDown so the above event handlers do not get called.

89.23.15 MouseDrag(x as Integer, y as Integer)

MBS AVFoundation Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: This event fires continuously after the mouse button was pressed inside the Control.
Notes:
Mouse location is local to the control passed in to x, y.
As this event is fired continuously (hundreds of time per second), it is your responsibility to determine if the mouse has really moved.

89.23.16 MouseUp(x as Integer, y as Integer)

MBS AVFoundation Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The mouse button was released.
Notes: Use the x and y parameters to determine if the mouse button was released within the control's boundaries.

89.23.17 ScaleFactorChanged(NewFactor as Double)

MBS AVFoundation Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The backing store scale factor has changed.
Notes: Please invalidate any cached bitmaps or other relevant state.
89.24  class IKScannerDeviceViewMBS

89.24.1  class IKScannerDeviceViewMBS

Function: IKScannerDeviceView displays a UI to work with Image Capture supported scanners.
Notes: Subclass of the NSViewMBS class.

89.24.2  Methods

89.24.3  Constructor

Function: Creates a new box view with size 100/100 and position 0/0
Example:

```vba
    dim x as new IKScannerDeviceViewMBS
```

Notes: On success the handle property is not zero.
See also:

- 89.24.4 Constructor(Handle as Integer) 14579
- 89.24.5 Constructor(left as Double, top as Double, width as Double, height as Double) 14580

89.24.4  Constructor(Handle as Integer)

Function: Creates an object based on the given NSView handle.
Example:

```vba
    dim t as new IKScannerDeviceViewMBS(0, 0, 100, 100)
    dim v as new IKScannerDeviceViewMBS(t.handle)
    MsgBox str(v.Bounds.Width)+" x "+str(v.Bounds.Height)
```

Notes: The handle is casted to a IKScannerDeviceView and the plugin retains this handle.
See also:

- 89.24.3 Constructor 14579
- 89.24.5 Constructor(left as Double, top as Double, width as Double, height as Double) 14580
89.24.5 Constructor(left as Double, top as Double, width as Double, height as Double)

**Function:** Creates a new control with the given size and position.

**Example:**
```
dim left, top, width, height as Integer  
// define rectangle
dim x as new IKScannerDeviceViewMBS(left, top, width, height)
```

**Notes:** On success the handle property is not zero.
See also:
- 89.24.3 Constructor
- 89.24.4 Constructor(Handle as Integer)

89.24.6 Properties

89.24.7 displaysDownloadsDirectoryControl as Boolean

**Function:** Show a downloads directory control.
**Notes:** (Read and Write property)

89.24.8 displaysPostProcessApplicationControl as Boolean

**Function:** Show a postprocessing application control.
**Notes:** (Read and Write property)

89.24.9 documentName as String

**Function:** Document name.
**Notes:** (Read and Write property)
89.24. **CLASS IKSCANNERDEVICEVIEWMBS**

89.24.10 **downloadsDirectory as String**

**Function:** Downloads directory.  
**Notes:**  
Download location can be provided as file URL with downloadsDirectory property or as folderitem with downloadsFolder property.  
(Read and Write property)

89.24.11 **downloadsFolder as FolderItem**

**Function:** Downloads directory.  
**Notes:**  
Download location can be provided as file URL with downloadsDirectory property or as folderitem with downloadsFolder property.  
(Read and Write property)

89.24.12 **hasDisplayModeAdvanced as Boolean**

**Function:** Support advanced scanning UI.  
**Notes:** (Read and Write property)

89.24.13 **hasDisplayModeSimple as Boolean**

**Function:** Support a simple scanning UI.  
**Notes:** (Read and Write property)

89.24.14 **mode as Integer**

**Function:** Current display mode.  
**Notes:**  
See IKScannerDeviceViewDisplayMode constants.  
(Read and Write property)
89.24.15 overviewControlLabel as String

Function: Label for the 'Overview' control.
Notes: (Read and Write property)

89.24.16 postProcessApplication as String

Function: Postprocessing application.
Notes: (Read and Write property)

89.24.17 scanControlLabel as String

Function: label for the 'Scan' control.
Notes: (Read and Write property)

89.24.18 scannerDevice as IScannerDeviceMBS

Function: The scanner device.
Notes: (Read and Write property)

89.24.19 transferMode as Integer

Function: transfer mode either file based - or - in memory.
Notes: See IKScannerDeviceViewTransferMode constants.
(Read and Write property)
89.24. Events

89.24.21 DidEncounterError(error as NSErrorMBS)

**Function:** This event is sent every time the scanner device reports an error.

89.24.22 DidScanToBandData(data as ICScannerBandDataMBS, scanInfo as Dictionary, error as NSErrorMBS)

**Function:** For memory a based transfer this event is sent for every time an image band of data was scanned.  
**Notes:** The 'data' parameter describes the scanned image data. Note that rotation/cropping/image adjustments are not applied yet. The 'scanInfo' parameter contains additional information (rotation angle, ...) that should be applied once the scan is completed.

89.24.23 DidScanToURL(url as String, file as FolderItem, fileData as Memory-Block, error as NSErrorMBS)

**Function:** For file based transfer this event is sent for each image that gets scanned.  
**Notes:** Based on the IKScannerDeviceViewTransferMode the downloaded file will be saved on disk using the 'url', or returned in memory as Memoryblock.

89.24. Constants

89.24.25 IKScannerDeviceViewDisplayModeAdvanced = 1

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the display mode constants.  
**Notes:** Advanced

89.24.26 IKScannerDeviceViewDisplayModeSimple = 0

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the display mode constants.  
**Notes:** Simple
89.24.27  IKScannerDeviceViewTransferModeFileBased = 0

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the transport modes.  
**Notes:** File based scan.

89.24.28  IKScannerDeviceViewTransferModeMemoryBased = 1

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the transport modes.  
**Notes:** Memory based scan.
89.25.  **CLASS IMAGECAPTUREEVENTSMBS**

89.25  **class ImageCaptureEventsMBS**

89.25.1  **class ImageCaptureEventsMBS**

**Function:** Central class for Image Capture events.
**Notes:**
Whenever you have an ICA object, the plugin will register a delegate for it and dispatch all events here.
For some view classes, events are in addition dispatched to the controls.

89.25.2  **Properties**

89.25.3  **Handle as Integer**

**Function:** The internal object reference.
**Notes:** (Read and Write property)

89.25.4  **Events**

89.25.5  **cameraDeviceDidAddItem(camera as ICCameraDeviceMBS, item as ICCameraItemMBS)**

**Function:** This event is sent when an object is added to the device.
**Notes:** The object may be an instance of ICCameraFolder or ICCameraFile class.

89.25.6  **cameraDeviceDidAddItems(camera as ICCameraDeviceMBS, items() as ICCameraItemMBS)**

**Function:** This event is sent when an object or objects are added to the device.
**Notes:**
Instead of receive one event per object, an array of objects is sent.
The objects may be instances of ICCameraFolder or ICCameraFile class.
89.25.7  cameraDeviceDidBecomeReadyWithCompleteContentCatalog(camera as ICCameraDeviceMBS)

Function: This event is sent when the camera device is done enumerating its content and is ready to receive requests.
Notes: A session must be opened on the device in order to enumerate its content and make it ready to receive requests.

89.25.8  cameraDeviceDidChangeCapability(camera as ICCameraDeviceMBS)

Function: This event is sent when the capability of a device changes.
Notes: This usually happens when the device module takes control or yields control of the device.

89.25.9  cameraDeviceDidCompleteDeleteFilesWithError(camera as ICCameraDeviceMBS, error as NSErrorMBS)

Function: Files have been deleted.
Notes: This event is sent after the camera device completes a delete operation initiated by sending a requestDeleteFiles event to that device.

89.25.10  cameraDeviceDidDownloadFile(file as ICCameraFileMBS, error as NSErrorMBS, options as Dictionary, device as ICCameraDeviceMBS)

Function: Download of file finished.

89.25.11  cameraDeviceDidReadData(data as Memoryblock, file as ICCameraFileMBS, error as NSErrorMBS, device as ICCameraDeviceMBS)

Function: Reading file data finished.
89.25.12 cameraDeviceDidReceiveDownloadProgressForFile(file as ICCameraFileMBS, downloadedBytes as UInt64, maxBytes as UInt64)


**Function:** This event is sent to the delegate to provide status of the download operation.

89.25.13 cameraDeviceDidReceiveMetadataForItem(camera as ICCameraDeviceMBS, item as ICCameraItemMBS)


**Function:** This event is sent when the metadata requested for an item on a device is available.

89.25.14 cameraDeviceDidReceivePTPEvent(camera as ICCameraDeviceMBS, eventData as MemoryBlock)


**Function:** This event is sent to the delegate to convey a PTP event.

89.25.15 cameraDeviceDidReceiveThumbnailForItem(camera as ICCameraDeviceMBS, item as ICCameraItemMBS)


**Function:** This event is sent when the thumbnail requested for an item on a device is available.

89.25.16 cameraDeviceDidRemoveItem(camera as ICCameraDeviceMBS, item as ICCameraItemMBS)


**Function:** This event is sent when an object is removed from the device.

**Notes:** The object may be an instance of ICCameraFolder or ICCameraFile class.

89.25.17 cameraDeviceDidRemoveItems(camera as ICCameraDeviceMBS, items() as ICCameraItemMBS)


**Function:** This event is sent when an object or objects are removed from the device.
Notes: The objects may be instances of ICCameraFolder or ICCameraFile class. This method supercedes cameraDeviceDidRemoveItem method described above.

89.25.18  cameraDeviceDidRenameItems(camera as ICCameraDeviceMBS, items() as ICCameraItemMBS)

Function: This event is sent when an object or objects are renamed on the device.
Notes: The objects may be instances of ICCameraFolder or ICCameraFile class.

89.25.19  cameraDeviceDidSendPTPCommand(command as Memoryblock, data as Memoryblock, response as MemoryBlock, error as NSErrorMBS, device as ICCameraDeviceMBS)

Function: Called when a requestSendPTPCommand event got a response or error.

89.25.20  cameraDeviceDidUploadFile(fileURL as string, file as FolderItem, error as NSErrorMBS, device as ICCameraDeviceMBS)

Function: A file upload was completed.

89.25.21  cameraDeviceViewDidDownloadFile(cameraDeviceView as IKCameraDeviceViewMBS, CameraFile as ICCameraFileMBS, URL as string, File as folderItem, data as MemoryBlock, error as NSErrorMBS)

Function: This event is sent for each file that gets downloaded.
Notes: Based on the IKCameraDeviceViewDisplayMode the downloaded file will be saved on disk using the 'url', or returned in memory as Memoryblock.

89.25.22  cameraDeviceViewDidEncounterError(cameraDeviceView as IKCameraDeviceViewMBS, error as NSErrorMBS)

Function: This event is sent every time the camera device reports an error.
89.25.23 cameraDeviceViewSelectionDidChange(cameraDeviceView as IKCameraDeviceViewMBS)

Function: This event is sent when the user selection did change.

89.25.24 deviceBrowserDeviceDidChangeName(browser as ICDeviceBrowserMBS, device as ICDeviceMBS)

Function: This event is sent if the name of a device changes.
Notes: This happens if the device module overrides the default name of the device reported by the device’s transport layer, or if the name of the filesystem volume mounted by the device is changed by the user.

89.25.25 deviceBrowserDeviceDidChangeSharingState(browser as ICDeviceBrowserMBS, device as ICDeviceMBS)

Function: This event is sent when the sharing state of a device has changed.
Notes: Any Image Capture client application can choose to share the device over the network using the sharing or webSharing facility in Image Capture.

89.25.26 deviceBrowserDidAddDevice(browser as ICDeviceBrowserMBS, device as ICDeviceMBS, moreComing as boolean)

Function: This event is sent to the delegate to inform that a device has been added.
Notes: If several devices are found during the initial search, then this event is sent once for each device with the value of 'moreComing' set to true in each event except the last one.

89.25.27 deviceBrowserDidEnumerateLocalDevices(browser as ICDeviceBrowserMBS)

Function: This event is sent after the device browser completes sending deviceBrowserDidAddDevice event for all local devices.
Notes: Detecting locally connected devices (USB and FireWire devices) is faster than detecting devices
connected using a network protocol. An Image Capture client application may use this event to update its
user interface to let the user know that it has completed looking for locally connected devices and then start
looking for network devices.

89.25.28  deviceBrowserDidRemoveDevice(browser as ICDeviceBrowserMBS, de-
vice as ICDeviceMBS, moreGoing as boolean)

Function: This event is sent to the delegate to inform that a device has been removed.
Notes: If several devices are removed at the same time, then this event is sent once for each device with
the value of ‘moreGoing’ set to true in each event except the last one.

89.25.29  deviceBrowserRequestsSelectDevice(browser as ICDeviceBrowserMBS,
device as ICDeviceMBS)

Function: This event is sent when an event that occurred on the device may be of interest to the client
application.
Notes: In Mac OS X 10.6, this event is sent when a button is pressed on a device and the current application
is the target for that button press. In the case of the button-press event, if a session is open on the device,
this event will not be sent, instead the deviceDidReceiveButtonPress event is sent.

89.25.30  deviceBrowserViewDidEncounterError(deviceBrowserView as IKDe-
viceBrowserViewMBS, error as NSErrorMBS)

Function: This event is sent every time the device browser reports an error.

89.25.31  deviceBrowserViewSelectionDidChangeEvent(deviceBrowserView as IKDe-
viceBrowserViewMBS, device as ICDeviceMBS)

Function: This event is sent when the user selection did change.
Notes: The device may be a ICCameraDeviceMBS or a IScannerDeviceMBS.
89.25.32  deviceDidBecomeReady(device as ICDeviceMBS)

**Function:** This event is sent when the device is ready to receive requests.
**Notes:** A camera device is ready, when it is ready to receive requests. A scanner device is ready when its functional units are found and the default functional unit is selected for use and is ready to receive requests. The device will become ready to receive requests only after a session is opened.

89.25.33  deviceDidChangeName(device as ICDeviceMBS)

**Function:** This event is sent if the name of a device changes.
**Notes:** This happens if the device module overrides the default name of the device reported by the device’s transport layer, or if the name of the filesystem volume mounted by the device is changed by the user.

89.25.34  deviceDidChangeSharingState(device as ICDeviceMBS)

**Function:** This event is sent when the sharing state of a device has changes.
**Notes:** Any Image Capture client application can choose to share the device over the network using the sharing or webSharing facility in Image Capture.

89.25.35  deviceDidCloseSessionWithError(device as ICDeviceMBS, error as NSErrorMBS)

**Function:** This event is sent when a session is closed on a device.
**Notes:** This event completes the process initiated by the message ”requestCloseSession” sent to the device object. This event is also sent if the device module in control of the device ceases to control the device.

89.25.36  deviceDidEncounterError(device as ICDeviceMBS, error as NSErrorMBS)

**Function:** This event is sent to the device delegate when a camera or scanner device encounters an error.
89.25.37 deviceDidOpenSessionWithError(device as ICDeviceMBS, error as NSErrorMBS)

Function: This event is sent when a session is opened on a device.
Notes: This event completes the process initiated by the requestOpenSession sent to the device object.

89.25.38 deviceDidReceiveButtonPress(device as ICDeviceMBS, buttonType as String)

Function: This event is sent to the device delegate if a button is pressed on the device.
Notes: This event is sent only if a session is open on the device. The value of 'buttonType' argument is one of the ICBButtonType* values defined above.

89.25.39 deviceDidReceiveCustomNotification(device as ICDeviceMBS, notification as Dictionary, data as Memoryblock)

Function: This event is sent to the device delegate the device sends a custom notification 'notification' with an arbitrary byte buffer 'data'.
Notes: This event is sent only if a session is open on the device.

89.25.40 deviceDidReceiveStatusInformation(device as ICDeviceMBS, status as Dictionary)

Function: This event is sent when status information is received from a camera or a scanner.
Notes:
In Mac OS X 10.6 this event is not called for camera devices. This may change in the future releases of Mac OS X.
The 'status' dictionary contains two keys, ICStatusNotificationKey and ICLocalizedStatusNotificationKey, which are defined above. If type of 'device' is ICDeviceTypeScanner, the value of ICStatusNotificationKey will be one of the values defined in IScannerDevice.h (e.g., ICScannerStatusWarmingUp, ICScannerStatusWarmUpDone, or ICScannerStatusRequestsOverviewScan); the value of ICLocalizedStatusNotificationKey will be a localized status information string suitable for displaying to the user.
89.25.41  deviceDidRemove(device as ICDeviceMBS)

**Function:** This event is sent to the delegate to inform that a device has been removed.

89.25.42  deviceDidSendMessage(messageCode as UInt32, data as Memoryblock, error as NSErrorMBS, device as ICDeviceMBS)

**Function:** The call to requestSendMessage was successful.

89.25.43  scannerDeviceDidBecomeAvailable(scanner as ICScannerDeviceMBS)

**Function:** This event is sent when another client closes an open session on the scanner.
**Notes:** Scanners require exclusive access, only one client can open a session on a scanner. The scanner is available if it does not have a session opened by another client. Attempting to open a session on a scanner that already has an open session for another client will result in an error. A client that wants to open a session on a scanner as soon as it is available should implement this method and send "requestOpenSession" message to scanner object from that method.

89.25.44  scannerDeviceDidCompleteOverviewScanWithError(scanner as ICScannerDeviceMBS, error as NSErrorMBS)

**Function:** This event is sent after the scanner device completes an overview scan.

89.25.45  scannerDeviceDidCompleteScanWithError(scanner as ICScannerDeviceMBS, error as NSErrorMBS)

**Function:** This event is sent after the scanner device completes a scan.
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89.25.46 scannerDeviceDidScanToBandData(scanner as ICScannerDeviceMBS, Data as ICScannerBandDataMBS)

Function: This event is sent when the scanner device receives the requested scan progress notification and a band of data is sent for each notification received.
Notes: In memory transfer mode, this will send a band of size that has been selected by the client via the maxMemoryBandSize property.

89.25.47 scannerDeviceDidScanToURL(scanner as ICScannerDeviceMBS, URL as string, file as folderitem, data as MemoryBlock)

Function: This event is sent when the scanner device receives the requested scan.
Notes: If selectedFunctionalUnit is a document feeder, then this event will be sent once for each scanned page. This event is sent when the scanner device receives the requested scan. If selectedFunctionalUnit is a document feeder, then this event will be sent once for each scanned page.

89.25.48 scannerDeviceDidSelectFunctionalUnit(scanner as ICScannerDeviceMBS, functionalUnit as Variant, Error as NSErrorMBS)

Function: This event is sent when a functional unit is selected on the scanner device.
Notes: A functional unit is selected immediately after the scanner device is instantiated and in response to requestSelectFunctionalUnit method.

89.25.49 scannerDeviceViewDidEncounterError(scannerDeviceView as IKScannerDeviceViewMBS, error as NSErrorMBS)

Function: This event is sent every time the scanner device reports an error.
89.25.50 scannerDeviceViewDidScanToBandData(scannerDeviceView as IKScannerDeviceViewMBS, data as ICScannerBandDataMBS, scanInfo as Dictionary, error as NSErrorMBS)

**Function:** For memory a based transfer this event is sent for every time an image band of data was scanned.
**Notes:** The ‘data’ parameter describes the scanned image data. Note that rotation/cropping/image adjustments are not applied yet. The ‘scanInfo’ parameter contains additional information (rotation angle, ...) that should be applied once the scan is completed.

89.25.51 scannerDeviceViewDidScanToURL(scannerDeviceView as IKScannerDeviceViewMBS, url as String, file as FolderItem, fileData as MemoryBlock, error as NSErrorMBS)

**Function:** For file based transfer this event is sent for each image that gets scanned.
**Notes:** Based on the IKScannerDeviceViewTransferMode the downloaded file will be saved on disk using the ‘url’, or returned in memory as Memoryblock.

89.25.52 Constants

89.25.53 ICReturnCommunicationTimedOut = -9923

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the error constants.
**Notes:** Communication between different components of Image Capture timed out.

89.25.54 ICReturnDeleteFilesCanceled = -9942

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the error constants.
**Notes:** A request to delete files was canceled.

89.25.55 ICReturnDeleteFilesFailed = -9941

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the error constants.
**Notes:** A request to delete files failed.
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89.25.56  ICReturnDeviceFailedToCloseSession = -9928

MBS AVFoundation Plugin, Plugin Version: 14.3.  Function: One of the error constants.  Notes: Failed to close a session on a specified device.

89.25.57  ICReturnDeviceFailedToOpenSession = -9927

MBS AVFoundation Plugin, Plugin Version: 14.3.  Function: One of the error constants.  Notes: Failed to open a session on a specified device.

89.25.58  ICReturnDeviceFailedToTakePicture = -9944

MBS AVFoundation Plugin, Plugin Version: 14.3.  Function: One of the error constants.  Notes: Failed to take a tethered-capture picture on a camera device.

89.25.59  ICReturnDeviceIsPasscodeLocked = -9943

MBS AVFoundation Plugin, Plugin Version: 14.3.  Function: One of the error constants.  Notes: The device is locked with a passcode. Its contents cannot be seen unless it is unlocked.

89.25.60  ICReturnDeviceSoftwareInstallationCanceled = -9948

MBS AVFoundation Plugin, Plugin Version: 14.3.  Function: One of the error constants.  Notes: Software installation for the device has been canceled.

89.25.61  ICReturnDeviceSoftwareInstallationCompleted = -9947

MBS AVFoundation Plugin, Plugin Version: 14.3.  Function: One of the error constants.  Notes: Software installation for the device has completed successfully.

89.25.62  ICReturnDeviceSoftwareInstallationFailed = -9949

89.25.63  **ICReturnDeviceSoftwareIsBeingInstalled = -9946**

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the error constants.  
**Notes:** Failed to open session because software to communicate with the device is being installed.

89.25.64  **ICReturnDeviceSoftwareNotAvailable = -9950**

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the error constants.  
**Notes:** Software for the device is not available from Apple.

89.25.65  **ICReturnDeviceSoftwareNotInstalled = -9945**

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the error constants.  
**Notes:** Failed to open session because software to communicate with the device is not installed.

89.25.66  **ICReturnDownloadCanceled = -9937**

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the error constants.  
**Notes:** A download operation was canceled.

89.25.67  **ICReturnDownloadFailed = -9934**

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the error constants.  
**Notes:** A non-specific error occurred while downloading a file.

89.25.68  **ICReturnFailedToCompletePassThroughCommand = -9936**

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the error constants.  
**Notes:** Failed to complete a pass-through (e.g., PTP pass-through) command.

89.25.69  **ICReturnFailedToCompleteSendMessageRequest = -9940**

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the error constants.  
**Notes:** A request to send a event to a device failed.
89.25.70  **ICReturnFailedToDisableTethering = -9939**

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the error constants.  
**Notes:** Failed to disable tethered-capture on a camera device.

89.25.71  **ICReturnFailedToEnableTethering = -9938**

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the error constants.  
**Notes:** Failed to enable tethered-capture on a camera device.

89.25.72  **ICReturnInvalidParam = -9922**

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the error constants.  
**Notes:** An invalid parameter was found.

89.25.73  **ICReturnReceivedUnsolicitedScannerErrorInfo = -9933**

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the error constants.  
**Notes:** An unsolicited error information was received from a scanner.

89.25.74  **ICReturnReceivedUnsolicitedScannerStatusInfo = -9932**

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the error constants.  
**Notes:** An unsolicited status information was received from a scanner.

89.25.75  **ICReturnScannerFailedToCompleteOverviewScan = -9930**

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the error constants.  
**Notes:** Overview scan operation failed to complete on the specified scanner.

89.25.76  **ICReturnScannerFailedToCompleteScan = -9931**

MBS AVFoundation Plugin, Plugin Version: 14.3. **Function:** One of the error constants.  
**Notes:** Scan operation failed to complete on the specified scanner.
89.25.77  ICReturnScannerFailedToSelectFunctionalUnit = -9929

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the error constants. Notes: Failed to select a functional unit on the specified scanner.

89.25.78  ICReturnScannerInUseByLocalUser = -9925

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the error constants. Notes: Scanner is being used by a remote user.

89.25.79  ICReturnScannerInUseByRemoteUser = -9926

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the error constants. Notes: Scanner is being used by a local user.

89.25.80  ICReturnScanOperationCanceled = -9924

MBS AVFoundation Plugin, Plugin Version: 14.3. Function: One of the error constants. Notes: The scan operation is canceled.

89.25.81  ICReturnSuccess = 0


89.25.82  ICReturnUploadFailed = -9935

89.26 class ImageCaptureMBS

89.26.1 class ImageCaptureMBS

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The base class to start with image capture.

**Example:**

```vcl
dim m as new ImageCaptureMBS
dim list as ImageCaptureObjectMBS = m.DeviceList

if List<>Nil then
    // look into properties
    dim dic as Dictionary = list.PropertyDictionary

    // take the devices array there
    if dic<>Nil and dic.HasKey(ImageCaptureObjectMBS.kICADevicesArrayKey) then
        dim a(-1) as Variant = dic.Value(ImageCaptureObjectMBS.kICADevicesArrayKey)

        // display device name
        for each properties as Dictionary in a
            MsgBox Properties.Value("ifil")
        next
    end if
end if
```

**Deprecated:** This item is deprecated and should no longer be used. You can use ICDDeviceMBS instead.

**Notes:**

Deprecated. Please stop using this class soon.

On Mac OS X 10.8 some functions stop working as Apple does no longer provide 32 bit libraries.

89.26.2 Methods

89.26.3 DeviceList as ImageCaptureObjectMBS

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the object with the device list.

**Example:**

```vcl
dim m as new ImageCaptureMBS
dim list as ImageCaptureObjectMBS = m.DeviceList

if List<>Nil then
```
// look into properties
dim dic as Dictionary = list.PropertyDictionary

// take the devices array there
if dic<>Nil and dic.HasKey(ImageCaptureObjectMBS.kICADevicesArrayKey) then
    dim a(-1) as Variant = dic.Value(ImageCaptureObjectMBS.kICADevicesArrayKey)

    // display device name
    for each properties as Dictionary in a
        MsgBox Properties.Value("ifil")
    next
end if
end if

Notes:
Returns nil on any error.
LastError is set.

89.26.4 ImportImage(flags as Integer) as string()

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: This method displays a Common User Interface panel similar to the user interface of Image Capture Application.
Example:

dim m as new ImageCaptureMBS
dim flags as Integer = ImageCaptureObjectMBS.kICAAllowMultipleImages + ImageCaptureObjectMBS.kICADownloadAndReturnPathArray

    // do the import and allow all file types
    dim files(-1) as string = m.ImportImage(flags)

    for each path as string in files
    // show path
        MsgBox path
    next

    // open that picture file in preview
    dim f as FolderItem = GetFolderItem(path, FolderItem.PathTypeShell)
    f.Launch
next

Notes:
Use this method to allow the user to work a camera or a scanner.

The behavior:
(a) if no device is connected, a panel saying that there’s no device connected is displayed,
(b) if a single device is connected, an appropriate user interface to access that device will be displayed,
(c) if several devices are connected, a device selector panel will be displayed.

filetypes: Optional an array of file extension strings such as ”jpg”, ”tif”, etc., that are of interest to the calling application. If no array is provided, all files are displayed.

Flag values that can be used in ImportImage:

```
klCAAllowAnonymousImages = 1 Use this constant to allow users to select multiple images in the Import Image dialog.
klCADownloadAndReturnPathArray = 2 Use this constant to download the images to a temporary location and return an array of paths to the downloaded images.
```

Returns an array of Strings for the imported images if the klCADownloadAndReturnPathArray flag is not specified. Otherwise returns an array of Strings holding the paths of the images that are downloaded.

See also:

• 89.26.5 ImportImage(flags as Integer, filetypes() as string) as string()
for each path as string in files
// show path
MsgBox path

// open that picture file in preview
dim f as FolderItem = GetFolderItem(path, FolderItem.PathTypeShell)
f.Launch
next

Notes:
Use this method to allow the user to work a camera or a scanner.

The behavior:
(a) if no device is connected, a panel saying that there’s no device connected is displayed,
(b) if a single device is connected, an appropriate user interface to access that device will be displayed,
(c) if several devices are connected, a device selector panel will be displayed.

filetypes: Optional an array of file extension strings such as ”jpg”, ”tif”, etc., that are of interest to the calling application. If no array is provided, all files are displayed.

Flag values that can be used in ImportImage:

kICAAllowMultipleImages = 1 Use this constant to allow users to select multiple images in the Import Image dialog.
kICADownloadAndReturnPathArray = 2 Use this constant to download the images to a temporary location and return an array of paths to the downloaded images.

Returns an array of Strings for the imported images if the kICADownloadAndReturnPathArray flag is not specified. Otherwise returns an array of Strings holding the paths of the images that are downloaded.
See also:

• 89.26.4 ImportImage(flags as Integer) as string()

89.26.6 kICABluetoothAddressKey as string

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89.26.7  kICABluetoothTransportType as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the transport type constants.

89.26.8  kICADeviceBrowserDeviceRefKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the parameter dictionary for LoadDeviceModule.

89.26.9  kICADeviceIconPathKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the parameter dictionary for LoadDeviceModule.

89.26.10  kICADeviceModulePathKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the parameter dictionary for LoadDeviceModule.

89.26.11  kICAErrorKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the notification dictionary.

89.26.12  kICAFireWireGUIDKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the parameter dictionary for LoadDeviceModule.

89.26.13  kICAFireWireTransportType as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the transport type constants.
89.26.14 kICAIServicePathKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the parameter dictionary for LoadDeviceModule.

89.26.15 kICAIPAddressKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the parameter dictionary for LoadDeviceModule.

89.26.16 kICAIPGUIDKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the parameter dictionary for LoadDeviceModule.

89.26.17 kICAIPNameKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the parameter dictionary for LoadDeviceModule.

89.26.18 kICANotificationClassKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the notification dictionary.

89.26.19 kICANotificationClassProprietary as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the notification classes. **Notes:** A possible value for kICANotificationClassKey.

89.26.20 kICANotificationClassPTPStandard as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the notification classes.
89.26.21 kICANotificationClassPTPVendor as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. 

Function: One of the constants for the notification classes.

Notes: A possible value for kICANotificationClassKey.

89.26.22 kICANotificationDataCookieKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. 

Function: One of the keys for the notification dictionary.

89.26.23 kICANotificationDataKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. 

Function: One of the keys for the notification dictionary.

89.26.24 kICANotificationDataSizeKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. 

Function: One of the keys for the notification dictionary.

89.26.25 kICANotificationDeviceICAObjectKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. 

Function: One of the keys for the notification dictionary.

89.26.26 kICANotificationDeviceListICAObjectKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. 

Function: One of the keys for the notification dictionary.
89.26.27  
**kICANotificationICAObjectKey as string**

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the notification dictionary.

89.26.28  
**kICANotificationImageBytesPerRowKey as string**

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the notification dictionary.

89.26.29  
**kICANotificationImageDataKey as string**

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the notification dictionary.

89.26.30  
**kICANotificationImageDataSizeKey as string**

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the notification dictionary.

89.26.31  
**kICANotificationImageHeightKey as string**

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the notification dictionary.

89.26.32  
**kICANotificationImageKey as string**

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the notification dictionary.

89.26.33  
**kICANotificationImageNumberOfRowsKey as string**

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the notification dictionary.
89.26.34 kICANotificationImageStartRowKey as string


89.26.35 kICANotificationImageWidthKey as string


89.26.36 kICANotificationNumberOfImagesRemainingKey as string


89.26.37 kICANotificationPercentDownloadedKey as string


89.26.38 kICANotificationRawEventKey as string


89.26.39 kICANotificationScannerButtonTypeKey as string


89.26.40 kICANotificationScannerDocumentNameKey as string

89.26.41 kICANotificationSubTypeDocumentLoaded as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the notification dictionary.

89.26.42 kICANotificationSubTypeDocumentNotLoaded as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the notification dictionary.

89.26.43 kICANotificationSubTypeKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the notification dictionary.

89.26.44 kICANotificationSubTypePerformOverviewScan as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the notification dictionary.

89.26.45 kICANotificationSubTypeWarmUpDone as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the notification dictionary.

89.26.46 kICANotificationSubTypeWarmUpStarted as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the notification dictionary.

89.26.47 kICANotificationTypeCaptureComplete as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification types for the notification event.
89.26.48  kICANotificationTypeDeviceAdded as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification types for the notification event.

89.26.49  kICANotificationTypeDeviceConnectionProgress as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification types for the notification event.

89.26.50  kICANotificationTypeDeviceInfoChanged as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification types for the notification event.

89.26.51  kICANotificationTypeDevicePropertyChanged as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification types for the notification event.

89.26.52  kICANotificationTypeDeviceRemoved as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification types for the notification event.

89.26.53  kICANotificationTypeDeviceStatusError as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification types for the notification event.

89.26.54  kICANotificationTypeDeviceStatusInfo as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification types for the notification event.
89.26.55  kICANotificationTypeDeviceWasReset as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification types for the notification event.

89.26.56  kICANotificationTypeDownloadProgressStatus as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification types for the notification event.

89.26.57  kICANotificationTypeKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the notification dictionary. **Notes:** The type of notification. See kICANotificationType* constants.

89.26.58  kICANotificationTypeObjectAdded as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification types for the notification event.

89.26.59  kICANotificationTypeObjectInfoChanged as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification types for the notification event.

89.26.60  kICANotificationTypeObjectRemoved as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification types for the notification event.

89.26.61  kICANotificationTypeProprietary as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification types for the notification event.
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89.26.62 kICANotificationTypeRequestObjectTransfer as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification types for the notification event.

89.26.63 kICANotificationTypeScannerButtonPressed as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification types for the notification event.

89.26.64 kICANotificationTypeScannerOverviewOverlayAvailable as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification types for the notification event.

89.26.65 kICANotificationTypeScannerPageDone as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification types for the notification event.

89.26.66 kICANotificationTypeScannerScanDone as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification types for the notification event.

89.26.67 kICANotificationTypeScannerSessionClosed as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification types for the notification event.

89.26.68 kICANotificationTypeScanProgressStatus as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification types for the notification event.
89.26.69  kICANotificationTypeStoreAdded as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Function:** One of the notification types for the notification event.

89.26.70  kICANotificationTypeStoreFull as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Function:** One of the notification types for the notification event.

89.26.71  kICANotificationTypeStoreInfoChanged as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Function:** One of the notification types for the notification event.

89.26.72  kICANotificationTypeStoreRemoved as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Function:** One of the notification types for the notification event.

89.26.73  kICANotificationTypeTransactionCanceled as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Function:** One of the notification types for the notification event.

89.26.74  kICANotificationTypeUnreportedStatus as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Function:** One of the notification types for the notification event.

89.26.75  kICANotificationVendorErrorCodeKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Function:** One of the keys for the notification dictionary.
89.26.76  **kICARefconKey as string**

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the notification dictionary.

89.26.77  **kICASCSITransportType as string**

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the transport type constants.

89.26.78  **kICATCPIPTransportType as string**

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the transport type constants.

89.26.79  **kICATransportTypeKey as string**

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the parameter dictionary for LoadDeviceModule.

89.26.80  **kICAWAINDSPATHKey as string**

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the parameter dictionary for LoadDeviceModule.

89.26.81  **kICAWAINTransportType as string**

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the transport type constants.

89.26.82  **kICAUSBLocationIDKey as string**

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the parameter dictionary for LoadDeviceModule.
89.26. **CLASS IMAGECAPTUREMBS**

89.26.83  **kICAUSBTransportType as string**

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. *Function:* One of the transport type constants.

89.26.84  **kICAUserAssignedDeviceNameKey as string**

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. *Function:* One of the device properties keys.
*Notes:* This key may be present in the property dictionary of a device if the device has a user-assigned name.

89.26.85  **LoadDeviceModule(params as dictionary)**

*Notes:* Typically, connecting a FireWire or an USB device will automatically load an appropriate device module. This API is needed only for loading a device module manually for devices that do not use a hot-plug interface, such as Bluetooth, SCSI, or TCP/IP.

Legal Key-Value pairs for populating paramDictionary:

<table>
<thead>
<tr>
<th>Key</th>
<th>Value</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>kICADeviceModulePathKey</td>
<td>String</td>
<td>Path to the device module bundle that needs to be launched.</td>
</tr>
<tr>
<td>kICAUSBTransportTypeKey</td>
<td>String</td>
<td>Should be one of the six predefined transport types.</td>
</tr>
<tr>
<td>kICABluetoothAddressKey</td>
<td>String</td>
<td>Bluetooth device address string formatted as &quot;00-11-22-33-44-55&quot;.</td>
</tr>
<tr>
<td>kICAUSBLocationIDKey</td>
<td>Number (integer)</td>
<td>32 bit USB location ID.</td>
</tr>
<tr>
<td>kICAFireWireGUIDKey</td>
<td>Number (Int64)</td>
<td>64 bit FireWire GUID.</td>
</tr>
<tr>
<td>kICAIOServicePathKey</td>
<td>String</td>
<td>IO service path to the device obtained from the IO registry.</td>
</tr>
<tr>
<td>kICAIPAddressKey</td>
<td>String</td>
<td>IP address of the device. This can be a host address (&quot;camera.apple.com&quot;), ipv4 address (&quot;192.168.123.10&quot;) or ipv6 address (&quot;3ffe:0000:0000:0000:0123:4567:89ab:0cdef&quot;)</td>
</tr>
<tr>
<td>kICAIPNameKey</td>
<td>Number (integer)</td>
<td>IP port number of the device.</td>
</tr>
<tr>
<td>kICAIPGUIDKey</td>
<td>String</td>
<td>Human readable device name.</td>
</tr>
<tr>
<td>kICATWAINDSPathKey</td>
<td>String</td>
<td>16 byte GUID string of the device formatted as &quot;01234567-89ab-cdef-0123-456789ab-cdef&quot;.</td>
</tr>
<tr>
<td>kICATWAINDSPathKey</td>
<td>String</td>
<td>16 byte GUID string of the device formatted as &quot;01234567-89ab-cdef-0123-456789ab-cdef&quot;.</td>
</tr>
</tbody>
</table>

LastError is set.
89.26.86  **RegisterForEventNotification**(objectOfInterest as ImageCaptureObjectMBS, eventsOfInterest() as string, options as dictionary)

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Register with Image Capture framework to receive notification about events of interest.

89.26.87  **SendNotification**(notificationDictionary as dictionary) as Integer

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sends notification.  
**Notes:**  
Returns the reply code.  
Lasterror is set.

89.26.88  **SendNotificationAndWaitForReply**(notificationDictionary as dictionary) as Integer

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sends notification and wait for reply.  
**Notes:**  
Returns the reply code.  
Lasterror is set.

89.26.89  **ShowDeviceBrowser**

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Displays a device browser user interface from any Image Capture client application.  
**Notes:**  
The device browser user interface allows the user to do the following:

- enable and disable sharing of locally connected cameras and scanners.
- connect to or disconnect from cameras and scanners shared by other computers.
- configure WiFi capable cameras for use over the WiFi network.

Lasterror is set.
89.26. **CLASS IMAGECAPTUREMBS**

89.26.90 **UnloadDeviceModule(deviceObject as ImageCaptureObjectMBS)**

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Unloads a device module.

**Notes:**

The device module providing this object will be unloaded, if this is the last device object provided by the device module.

LastError is set.

89.26.91 **Properties**

89.26.92 **LastError as Integer**

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**

The error code from the last function used.

**Notes:**

Value is 0 if the function was successful, -1 if the function is not available, one of the following values or a Mac OS error code:

Possible values:

- kICACommunicationErr = -9900
- kICADeviceNotFoundErr = -9901
- kICADeviceNotOpenErr = -9902
- kICAFailedToOpenDeviceErr = -9903
- kICAIOPendingErr = -9904
- kICAMalformedDataErr = -9905
- kICAMalformedPropertyErr = -9906
- kICAMalformedPropertyErr = -9907
- kICAPropertyTypeNotFoundErr = -9908
- kICAMalformedDeviceErr = -9909
- kICAMalformationErr = -9910
- kICAMalformedDeviceMemoryAllocationErr = -9911
- kICAMalformedDeviceInvalidParamErr = -9912
- kICAMalformedDeviceAlreadyOpenErr = -9913
- kICAMalformedDeviceLocationIDNotFoundErr = -9914
- kICAMalformedDeviceGUIDNotFoundErr = -9915
- kICAMalformedDeviceIOServicePathNotFoundErr = -9916
- kICAMalformedDeviceIOServicePathNotFoundErr = -9917
- kICAMalformedDeviceUnsupportedErr = -9918
- kICAMalformedDeviceUnsupportedErr = -9919
- kICAMalformedDeviceUnsupportedErr = -9920
- kICAMalformedDeviceUnsupportedErr = -9921
89.26.93 Events

89.26.94 Notification(notificationType as string, notificationDictionary as dictionary)

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The event called for all events coming from Image Capture.

**Notes:**
Use RegisterForEventNotification to register for events.

The Image Capture notification event will be called with a notificationDictionary that may contain one or more key-value pairs as defined below:

<table>
<thead>
<tr>
<th>Key</th>
<th>Value Type</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>kICANotificationICAObjectKey</td>
<td>Number</td>
<td>An object associated with the notification.</td>
</tr>
<tr>
<td>kICANotificationDeviceICAObjectKey</td>
<td>Number</td>
<td>A device object associated with the notification.</td>
</tr>
<tr>
<td>kICANotificationClassKey</td>
<td>String</td>
<td>See below.</td>
</tr>
<tr>
<td>kICANotificationTypeKey</td>
<td>String</td>
<td>See below.</td>
</tr>
<tr>
<td>kICANotificationRawEventKey</td>
<td>Number</td>
<td>The unprocessed event code sent by a device.</td>
</tr>
<tr>
<td>kICANotificationDataKey</td>
<td>Data String</td>
<td>Data associated with the event.</td>
</tr>
<tr>
<td>kICANotificationDataSizeKey</td>
<td>Number</td>
<td>Size of data associated with the event. [Needed for backward compatibility with pre-Leopard device modules]</td>
</tr>
<tr>
<td>kICANotificationDataCookieKey</td>
<td>Number</td>
<td>A token identifying the data associated with this event. This data can be retrieved by calling SendMessage with messageType set to kICAMessageGetEventData, dataType set to value of kICANotificationDataCookieKey and dataSize set to value of kICANotificationDataSizeKey.</td>
</tr>
</tbody>
</table>

The following keys are present if the value of kICANotificationDataKey represents image data. The values of these keys are Numbers representing the width, height, bytes per row, start row, and number of rows of the image:

<table>
<thead>
<tr>
<th>Key</th>
<th>Dictionary</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>kICANotificationImageKey</td>
<td>Dictionary</td>
<td>A dictionary that describes an Image associated with the notification.</td>
</tr>
<tr>
<td>kICANotificationImageDataKey</td>
<td>Data String</td>
<td>Image data</td>
</tr>
<tr>
<td>kICANotificationImageWidthKey</td>
<td>Number</td>
<td>Image width in pixels</td>
</tr>
<tr>
<td>kICANotificationImageHeightKey</td>
<td>Number</td>
<td>Image height in pixels</td>
</tr>
<tr>
<td>kICANotificationImageBytesPerRowKey</td>
<td>Number</td>
<td>Bytes per row in image</td>
</tr>
<tr>
<td>kICANotificationImageStartRowKey</td>
<td>Number</td>
<td>Starting row number of the image.</td>
</tr>
<tr>
<td>kICANotificationImageNumberOfRowsKey</td>
<td>Number</td>
<td>Number of rows of image data sent in this notification.</td>
</tr>
</tbody>
</table>
89.27  class ImageCaptureObjectMBS

89.27.1  class ImageCaptureObjectMBS

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An image capture object.  
**Deprecated:** This item is deprecated and should no longer be used. You can use IDeviceMBS instead.

89.27.2  Methods

89.27.3  CloseSession

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Close a session on a camera device.  
**Notes:**  
Lasterror is set.  
For a scanner device use the ScannerCloseSession.

89.27.4  Constructor

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new image capture object.  
See also:

- 89.27.5 Constructor(handle as Integer)

89.27.5  Constructor(handle as Integer)

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new image capture object with the given handle.  
See also:

- 89.27.4 Constructor

89.27.6  CopyData(startByte as int64, requestedSize as int64) as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Get a copy of data associated with a file object.  
**Example:**

```
dim o as ImageCaptureObjectMBS // your object pointing to an image file.
```
`dim d2 as Dictionary = o.PropertyDictionary`  
`dim size as Integer = d2.Value(o.kICAPropertyImageSize)`  
`dim data as string = o.CopyData(0, size)`  

if lenb(data)>0 then  
    // you got the data, now process it.  
end if

Notes:

startByte: Starting byte offset of the data in the file object.  
requestedSize: Requested data size in bytes.

If you want to get all bytes of an object, pass startByte = 0 and requestedSize = filesize.  
LastError is set.

89.27.7 CopyThumbnail(format as string) as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**  
Get a thumbnail associated with an object.  
**Notes:**  
This is the recommended way to get the thumbnail of an object.

Use the constants for the format: kICAThumbnailFormatJPEG, kICAThumbnailFormatTIFF or kICAThumbnailFormatPNG  
LastError is set.

89.27.8 DownloadFile(dir as folderitem, flags as Integer, MacType as string, MacCreator as string, angle as Double) as folderitem

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**  
Downloads a file to disk.  
**Notes:**  
This API is a convenient way to download a file to disk. To receive the image data in memory use CopyObjectData.

Constants for flags:
kDeleteAfterDownload = 1 Delete file after a successful download.
kCreateCustomIcon = 2 Create a custom icon for Finder.
kAddMetaDataToFinderComment = 4 Add basic metadata to finder comment field.
kAdjustCreationDate = 8 Set creation date of the downloaded file same as the creation date for the file as reported by the device.
kSetFileTypeAndCreator = &h10 Set 4-char file type and creator code.
kEmbedColorSyncProfile = &h20 Embed ColorSync profile to the image if one was not already embedded.
kRotateImage = &h40 Rotate the image.
kDontEmbedColorSyncProfile = &h80 Do not embed ColorSync profile to the image.

LastError is set.

89.27.9  ImportImage(flags as Integer) as string()

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: This method displays a Common User Interface panel similar to the user interface of Image Capture Application.

Notes:
Use this method to allow the user to work a camera or a scanner. The ImageCaptureObjectMBS object you use for this call, should point to a camera or scanner device.

filetypes: Optional an array of file extension strings such as "jpg", "tif", etc., that are of interest to the calling application. If no array is provided, all files are displayed.

Flag values that can be used in ImportImage:

kICAAllowMultipleImages = 1 Use this constant to allow users to select multiple images in the Import Image dialog.
kICADownloadAndReturnPathArray = 2 Use this constant to download the images to a temporary location and return an array of paths to the downloaded images.

Returns an array of Strings for the imported images if the kICADownloadAndReturnPathArray flag is not specified. Otherwise returns an array of Strings holding the paths of the images that are downloaded.

See also:

• 89.27.10 ImportImage(flags as Integer, filetypes() as string) as string()
CHAPTER 89. IMAGE CAPTURE

Application.

Notes:

Use this method to allow the user to work a camera or a scanner.
The ImageCaptureObjectMBS object you use for this call, should point to a camera or scanner device.

filetypes: Optional an array of file extension strings such as "jpg", "tif", etc., that are of interest to the calling application. If no array is provided, all files are displayed.

Flag values that can be used in ImportImage:

kICAAllowMultipleImages = 1 Use this constant to allow users to select multiple images in the Import Image dialog.

kICADownloadAndReturnPathArray = 2 Use this constant to download the images to a temporary location and return an array of paths to the downloaded images.

Returns an array of Strings for the imported images if the kICADownloadAndReturnPathArray flag is not specified. Otherwise returns an array of Strings holding the paths of the images that are downloaded.

See also:

- 89.27.9 ImportImage(flags as Integer) as string()

89.27.11 kICABonjourServiceNameKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: One of the constants for the keys in the dictionaries.

89.27.12 kICABonjourServiceTypeKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: One of the constants for the keys in the dictionaries.

89.27.13 kICABonjourTXTRecordKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: One of the constants for the keys in the dictionaries.
89.27.14  kICACreationDateStringKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the keys in the dictionaries.

89.27.15  kICADataPropertyKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the keys in the dictionaries.

89.27.16  kICADataSizeKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the keys in the dictionaries.

89.27.17  kICADataTypeKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the keys in the dictionaries.

89.27.18  kICADeviceCapabilitiesKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the keys in the dictionaries.

89.27.19  kICADevicePropArtist as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the device properties.

89.27.20  kICADevicePropBatteryLevel as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the device properties.
89.27.21  kICADevicePropBurstInterval as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the device properties.

89.27.22  kICADevicePropBurstNumber as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the device properties.

89.27.23  kICADevicePropCaptureDelay as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the device properties.

89.27.24  kICADevicePropCompressionSetting as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the device properties.

89.27.25  kICADevicePropContrast as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the device properties.

89.27.26  kICADevicePropCopyrightInfo as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the device properties.

89.27.27  kICADevicePropDateTime as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the device properties.
89.27.28 kICADevicePropDigitalZoom as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: One of the constants for the device properties.

89.27.29 kICADevicePropEffectMode as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: One of the constants for the device properties.

89.27.30 kICADevicePropExposureBiasCompensation as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: One of the constants for the device properties.

89.27.31 kICADevicePropExposureIndex as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: One of the constants for the device properties.

89.27.32 kICADevicePropExposureMeteringMode as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: One of the constants for the device properties.

89.27.33 kICADevicePropExposureProgramMode as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: One of the constants for the device properties.

89.27.34 kICADevicePropExposureTime as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: One of the constants for the device properties.
89.27.35  kICADevicePropFlashMode as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function**: One of the constants for the device properties.

89.27.36  kICADevicePropFNumber as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function**: One of the constants for the device properties.

89.27.37  kICADevicePropFocalLength as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function**: One of the constants for the device properties.

89.27.38  kICADevicePropFocusDistance as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function**: One of the constants for the device properties.

89.27.39  kICADevicePropFocusMeteringMode as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function**: One of the constants for the device properties.

89.27.40  kICADevicePropFocusMode as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function**: One of the constants for the device properties.

89.27.41  kICADevicePropFunctionalMode as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function**: One of the constants for the device properties.
89.27.42  kICADevicePropImageSize as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the device properties.

89.27.43  kICADevicePropRGBGain as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the device properties.

89.27.44  kICADevicePropSharpness as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the device properties.

89.27.45  kICADevicePropStillCaptureMode as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the device properties.

89.27.46  kICADevicePropTimelapseInterval as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the device properties.

89.27.47  kICADevicePropTimelapseNumber as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the device properties.

89.27.48  kICADevicePropUndefined as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the device properties.
89.27.49  kICADevicePropUploadURL as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: One of the constants for the device properties.

89.27.50  kICADevicePropWhiteBalance as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: One of the constants for the device properties.

89.27.51  kICADevicesArrayKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: One of the constants for the keys in the dictionaries.

Example:

```vba
dim m as new ImageCaptureMBS
dim list as ImageCaptureObjectMBS = m.DeviceList
if List<>Nil then
    // look into properties
    dim dic as Dictionary = list.PropertyDictionary

    // take the devices array there
    if dic<>Nil and dic.HasKey(ImageCaptureObjectMBS.kICADevicesArrayKey) then
        dim a(-1) as Variant = dic.Value(ImageCaptureObjectMBS.kICADevicesArrayKey)

        // display device name
        for each properties as Dictionary in a
            MsgBox Properties.Value("ifil")
        next
    end if
end if
```

89.27.52  kICADeviceSharedKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: One of the constants for the keys in the dictionaries.
**89.27. **CLASS IMAGECAPTUREOBJECTMBS

**89.27.53  kICADeviceTypeCamera as string**

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the device type constants.

**89.27.54  kICADeviceTypeKey as string**

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the keys in the dictionaries.

**89.27.55  kICADeviceTypeScanner as string**

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the device type constants.

**89.27.56  kICADeviceUsedKey as string**

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the keys in the dictionaries.

**89.27.57  kICADeviceWebSharedKey as string**

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the keys in the dictionaries.

**89.27.58  kICAExecutableArchitectureKey as string**

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the keys in the dictionaries.

**89.27.59  kICALockStatusKey as string**

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the keys in the dictionaries.
89.27.60  kICAMediaDurationInSecondsKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.  Function: One of the constants for the keys in the dictionaries.

89.27.61  kICAMediaHeightKey as string

Notes: Value for this key in the dictionary is a number.

89.27.62  kICAMediaWidthKey as string

Notes: Value for this key in the dictionary is a number.

89.27.63  kICAModificationDateStringKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.  Function: One of the constants for the keys in the dictionaries.

89.27.64  kICAObjectKey as string


89.27.65  kICAObjectNameKey as string


89.27.66  kICARawKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.  Function: One of the constants for the keys in the dictionaries.
89.27.67 kICARemoteDeviceKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the keys in the dictionaries.

89.27.68 kICAThumbnailPropertyKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the keys in the dictionaries.

89.27.69 kICAThumbnailSizeKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the keys in the dictionaries.

89.27.70 kICAUSBProductIDKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for a device.

89.27.71 kICAUSBVendorIDKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for a device.

89.27.72 kMetaDataDictionaryKey as string

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the keys in the dictionaries.
**89.27.73 OpenSession(device as ImageCaptureObjectMBS)**

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Opens a session on a camera device.

**Notes:**

Lasterror is set.
For a scanner device use the ScannerOpenSession method.

---

**89.27.74 PropertyDictionary as dictionary**

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Get a dictionary containing all the properties for an object specified.

**Example:**

```vba
dim m as new ImageCaptureMBS
dim list as ImageCaptureObjectMBS = m.DeviceList

if List<>Nil then
    // look into properties
    dim dic as Dictionary = list.PropertyDictionary

    // take the devices array there
    if dic<>Nil and dic.HasKey(ImageCaptureObjectMBS.kICADevicesArrayKey) then
        dim a(-1) as Variant = dic.Value(ImageCaptureObjectMBS.kICADevicesArrayKey)

        // display device name
        for each properties as Dictionary in a
            MsgBox properties.Value("ifil")
        next

    end if
end if
```

**Notes:** Lasterror is set.

---

**89.27.75 PropertyDictionaryText as string**

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Get a dictionary containing all the properties for an object specified.

**Example:**

```vba
dim m as new ImageCaptureMBS
dim list as ImageCaptureObjectMBS = m.DeviceList
```
if List<>Nil then
MsgBox List.PropertyDictionaryText
end if

Notes:
Lasterror is set.
This is for debugging and may be removed soon.
The format of the text is the plist file format.

89.27.76  ScannerCloseSession

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Function:**
Closes a session on a scanner device.
**Notes:**
Lasterror is set.
For a camera device use the CloseSession method.

89.27.77  ScannerGetParameters as dictionary

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Function:**
Query scanner parameters.
**Notes:**
Use this method to get information about the scanner such as resolution, scanning area, etc.
Lasterror is set.

89.27.78  ScannerInitialize

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Function:**
Initializes a scanner device.
**Notes:** Lasterror is set.

89.27.79  ScannerOpenSession(device as ImageCaptureObjectMBS)

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Function:**
Opens a session on a scanner device.
Notes:
Lasterror is set.
For a camera device use the OpenSession method.

89.27.80  ScannerSetParameters(dic as dictionary)

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Configures a scanner.

Notes:
Use this method to specify scan parameters that will be used when a scan is initiated via ScannerStart.
Lasterror is set.

89.27.81  ScannerStart

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Starts scanning.

Notes:
Use this method to start a scan based on the parameters that were specified in a previous ScannerSetParameters call.
Lasterror is set.

89.27.82  ScannerStatus as Integer

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the scanner status.

Notes: Lasterror is set.

89.27.83  SendMessageMemory(messageType as string, startByte as UInt32, data as memoryblock, dataType as string) as UInt32

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sends a message to a device object.

Notes:
Use this API to send a message to a device object. All devices do not respond to all the messages defined above.
messageType: A message type. e.g., kICAMessageCameraCaptureNewImage.
startByte: Offset in dataPtr from where data access for read/write should occur.
data: The data to send.
dataType: Data type.

LastError is set.
Returns the result from this message.

**89.27.84 SendMessageString**(messageType as string, startByte as UInt32, data as string, dataType as string) as UInt32

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sends a message to a device object.

**Notes:**
Use this API to send a message to a device object. All devices do not respond to all the messages defined above.

messageType: A message type. e.g., kICAMessageCameraCaptureNewImage.
startByte: Offset in dataPtr from where data access for read/write should occur.
data: The data to send.
dataType: Data type.

LastError is set.
Returns the result from this message.

**89.27.85 UploadFile**(file as folderitem, flags as Integer)

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Uploads a file to a device that supports this capability.

**Notes:**
The device chooses an appropriate destination location for the uploaded image and sends a kICANotificationTypeObjectAdded notification.

LastError is set.

Flag values that can be used in UploadFile:

- kICAUploadFileAsIs Use this constant to upload a file as is.
- kICAUploadFileScaleToFit Use this constant to upload a file after scaling to fit a specified bounding rect.
89.27.86 Properties

89.27.87 Handle as Integer

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The internal object handle. 
**Notes:** (Read and Write property)

89.27.88 Lasterror as Integer

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The error code from the last function used. 
**Notes:**

Value is 0 if the function was successfull, -1 if the function is not available, one of the following values or a Mac OS error code:

Possible values:

- kICACommunicationErr = -9900
- kICADeviceNotFoundErr = -9901
- kICADeviceNotOpenErr = -9902
- kICAFileCorruptedErr = -9903
- kICAIOPendingErr = -9904
- kICAInvalidObjectErr = -9905
- kICAInvalidPropertyErr = -9906
- kICAIndexOutOfRangeErr = -9907
- kICAPropertyTypeNotFoundErr = -9908
- kICACannotYieldDevice = -9909
- kICADataTypeNotFoundErr = -9910
- kICADeviceMemoryAllocationErr = -9911
- kICADeviceInternalErr = -9912
- kICADeviceInvalidParamErr = -9913
- kICADeviceAlreadyOpenErr = -9914
- kICADeviceLocationIDNotFoundErr = -9915
- kICADeviceGUIDNotFoundErr = -9916
- kICADeviceIOServicePathNotFoundErr = -9917
- kICADeviceUnsupportedErr = -9918
- kICAFrameworkInternalErr = -9919
- kICAExtensionInternalErr = -9920
- kICAInvalidSessionErr = -9921

(Read and Write property)
89.27.89  **ScannerSessionHandle as Integer**

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The internal handle for a scanner session.  
**Notes:**  
Last error is set.  
(Read and Write property)

89.27.90  **SessionHandle as Integer**

MBS MacOSX Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The handle for the session.  
**Notes:** (Read and Write property)

89.27.91  **Constants**

89.27.92  **kAddMetaDataToFinderComment = 4**

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the flag constants for DownloadFile.  
**Notes:** Add basic metadata to finder comment field.

89.27.93  **kAdjustCreationDate = 8**

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the flag constants for DownloadFile.  
**Notes:** Set creation date of the downloaded file same as the creation date for the file as reported by the device.

89.27.94  **kCreateCustomIcon = 2**

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the flag constants for DownloadFile.  
**Notes:** Create a custom icon for Finder.

89.27.95  **kDeleteAfterDownload = 1**

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the flag constants for DownloadFile.  
**Notes:** Delete file after a successful download.
**89.27.96**  
\texttt{kDontEmbedColorSyncProfile = & h80}

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the flag constants for DownloadFile.  
**Notes:** Do not embed ColorSync profile to the image.

---

**89.27.97**  
\texttt{kEmbedColorSyncProfile = & h20}

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the flag constants for DownloadFile.  
**Notes:** Embed ColorSync profile to the image if one was not already embedded.

---

**89.27.98**  
\texttt{kICAAccessReadOnly = 1}

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant values for kICAPropertyCameraAccessCapability.  
**Notes:** Read-only without object deletion.

---

**89.27.99**  
\texttt{kICAAccessReadOnlyWithObjectDeletion = 2}

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant values for kICAPropertyCameraAccessCapability.  
**Notes:** Read-only with object deletion.

---

**89.27.100**  
\texttt{kICAAccessReadWrite = 0}

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant values for kICAPropertyCameraAccessCapability.  
**Notes:** Read-write.

---

**89.27.101**  
\texttt{kICAAllowMultipleImages = 1}

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the flag constants for ImportImage.  
**Notes:** Use this constant to allow users to select multiple images in the Import Image dialog.  
Seems like Image Capture in Mac OS X 10.6 ignores this flag and allows multiple images always.
89.27. Class ImageCaptureObjectMBS

89.27.102 kICAButtonCopy = "copy"
MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constants for scanner buttons. **Notes:** Copy button.

89.27.103 kICAButtonEMail = "mail"
MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constants for scanner buttons. **Notes:** Email button.

89.27.104 kICAButtonScan = "scan"
MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constants for scanner buttons. **Notes:** Scan button.
89.27.105  kICAButtonWeb = "web "

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constants for scanner buttons.  
**Notes:** Web button.

89.27.106  kICACameraPassThruNotUsed = 2

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the flag constants associated with Image Capture PassThru commands.  
**Notes:** Use this constant when using a pass-through command that doesn’t involve sending or receiving data.

89.27.107  kICACameraPassThruReceive = 1

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the flag constants associated with Image Capture PassThru commands.  
**Notes:** Use this constant when receiving data from a device using a pass-through command.

89.27.108  kICACameraPassThruSend = 0

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the flag constants associated with Image Capture PassThru commands.  
**Notes:** Use this constant when sending data to a device using a pass-through command.

89.27.109  kICACannotYieldDevice = -9909

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the image capture specific error constants.  
**Notes:** The device module cannot yield the specified device to the requestor.

89.27.110  kICACapabilityCanCameraCaptureNewImage = ”ccni”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the Camera capabilities constants.  
**Notes:** Can capture a new image using the camera.
89.27. CLASS IMAGECAPTUREOBJECTMBS

89.27.111 kICACapabilityCanCameraDeleteAll = ”dela”
MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the Camera capabilities constants. **Notes:** Can delete all images stored in the camera.

89.27.112 kICACapabilityCanCameraDeleteOne = ”del1”
MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the Camera capabilities constants. **Notes:** Can delete one image stored in the camera.

89.27.113 kICACapabilityCanCameraSyncClock = ”sclk”
MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the Camera capabilities constants. **Notes:** Can synchronize camera’s clock with the computer’s clock.

89.27.114 kICACapabilityCanCameraUploadData = ”load”
MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the Camera capabilities constants. **Notes:** Can upload data to the camera.

89.27.115 kICACapabilityMayStoreNewImagesInTempStore = ”temp”
MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the Camera capabilities constants.

89.27.116 kICACommunicationErr = -9900
MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the image capture specific error constants. **Notes:** An error occurred in communication between different components of Image Capture framework.

89.27.117 kICADataTypeNotFoundErr = -9910
MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the image capture specific error constants. **Notes:** Data with the specified data type is not found.
89.27.118 kICADevice = "icdv"

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the object types and subtypes constants. **Notes:** Object is a device supported by Image Capture framework.

89.27.119 kICADeviceAlreadyOpenErr = -9914

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the image capture specific error constants. **Notes:** The specified device is already open.

89.27.120 kICADeviceCamera = "cmra"

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the object types and subtypes constants. **Notes:** Object is a camera.

89.27.121 kICADeviceGUIDNotFoundErr = -9916

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the image capture specific error constants. **Notes:** The specified FireWire GUID is not found.

89.27.122 kICADeviceInternalErr = -9912

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the image capture specific error constants. **Notes:** The device module encountered an unspecified error.

89.27.123 kICADeviceInvalidParamErr = -9913

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the image capture specific error constants. **Notes:** At least one of the parameters passed to the device module is invalid.

89.27.124 kICADeviceIOServicePathNotFoundErr = -9917

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the image capture specific error constants. **Notes:** The specified IOService path is not found.
89.27. Class ImageCaptureObjectMBS

89.27.125 kICADeviceLocationIDNotFoundErr = -9915

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the image capture specific error constants. **Notes:** The specified USB Location ID is not found.

89.27.126 kICADeviceMemoryAllocationErr = -9911

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the image capture specific error constants. **Notes:** The device module encountered a memory allocation error.

89.27.127 kICADeviceMFP = "mfp"

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the object types and subtypes constants. **Notes:** Object is a multi-function peripheral.

89.27.128 kICADeviceNotFoundErr = -9901

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the image capture specific error constants. **Notes:** The specified device is not found.

89.27.129 kICADeviceNotOpenErr = -9902

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the image capture specific error constants. **Notes:** The specified device is not open.

89.27.130 kICADeviceOther = "doth"

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the object types and subtypes constants. **Notes:** Object is a device supported by Image Capture framework, but of unknown subtype.

89.27.131 kICADevicePDA = "pda"

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the object types and subtypes constants. **Notes:** Object is a personal digital assistant.
89.27.132  kICADevicePhone = "phon"

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the object types and subtypes constants.  
**Notes:** Object is a camera phone.

89.27.133  kICADeviceScanner = "scan"

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the object types and subtypes constants.  
**Notes:** Object is a scanner.

89.27.134  kICADeviceUnsupportedErr = -9918

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the image capture specific error constants.  
**Notes:** Device not supported.

89.27.135  kICADirectory = "dire"

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the object types and subtypes constants.  
**Notes:** Object is a directory.

89.27.136  kICADownloadAndReturnPathArray = 2

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the flag constants for ImportImage.  
**Example:**

```vbnet
dim m as new ImageCaptureMBS
dim flags as Integer = ImageCaptureObjectMBS.kICAAllowMultipleImages + ImageCaptureObjectMBS.kICADownloadAndReturnPathArray

// do the import and allow all file types
dim files(-1) as string = m.ImportImage(flags)

for each path as string in files
  // open that picture file in preview
  dim f as FolderItem = GetFolderItem(path, FolderItem.PathTypeShell)
f.Launch
next
```
Notes: Use this constant to download the images to a temporary location and return an array of paths to the downloaded images.

89.27.137 kICAExtensionInternalErr = -9920


89.27.138 kICAFile = ”file”

MBS MacOSX Plugin, Plugin Version: 10.1. Function: One of the object types and subtypes constants. Notes: Object is a file.

89.27.139 kICAFileAudio = ”audio”

MBS MacOSX Plugin, Plugin Version: 10.1. Function: One of the object types and subtypes constants. Notes: Object is an audio file.

89.27.140 kICAFileCorruptedErr = -9903


89.27.141 kICAFileFirmware = ”firm”

MBS MacOSX Plugin, Plugin Version: 10.1. Function: One of the object types and subtypes constants. Notes: Object is a firmware file.

89.27.142 kICAFileImage = ”imag”

MBS MacOSX Plugin, Plugin Version: 10.1. Function: One of the object types and subtypes constants. Notes: Object is an image file.
89.27.143  kICAFileMovie = ”moov”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the object types and subtypes constants. **Notes:** Object is a movie file.

89.27.144  kICAFileOther = ”othe”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the object types and subtypes constants. **Notes:** Object is a generic file.

89.27.145  kICAFilesystemDCF = 3

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constants values for kICAPROPERTYCameraFilesystemType. **Notes:** DCF-conformant.

89.27.146  kICAFilesystemGenericFlat = 1

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constants values for kICAPROPERTYCameraFilesystemType. **Notes:** Generic flat.

89.27.147  kICAFilesystemGenericHierarchical = 2

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constants values for kICAPROPERTYCameraFilesystemType. **Notes:** Generic hierarchical.

89.27.148  kICAFilesystemUndefined = 0

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constants values for kICAPROPERTYCameraFilesystemType. **Notes:** Undefined.
89.27.  CLASS IMAGECAPTUREOBJECTMBS

89.27.149  kICAFlagReadAccess = 2
Notes: Access for read only.

89.27.150  kICAFlagReadWriteAccess = 1
Notes: Access for read and write.

89.27.151  kICAFrameworkInternalErr = -9919
MBS MacOSX Plugin, Plugin Version: 10.1. Function: One of the image capture specific error constants.
Notes: Image Capture Framework encountered an error.

89.27.152  kICAIndexOutOfRangeErr = -9907
MBS MacOSX Plugin, Plugin Version: 10.1. Function: One of the image capture specific error constants.
Notes: The specified index is out of range.

89.27.153  kICAInvalidObjectErr = -9905
MBS MacOSX Plugin, Plugin Version: 10.1. Function: One of the image capture specific error constants.
Notes: The specified object is invalid.

89.27.154  kICAInvalidPropertyErr = -9906
MBS MacOSX Plugin, Plugin Version: 10.1. Function: One of the image capture specific error constants.
Notes: The specified property is invalid.

89.27.155  kICAInvalidSessionErr = -9921
MBS MacOSX Plugin, Plugin Version: 10.1. Function: One of the image capture specific error constants.
Notes: The specified session is not valid.
89.27.156  kICAIOPendingErr = -9904

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the image capture specific error constants.  
**Notes:** There is a pending I/O.

89.27.157  kICAList = ”objl”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the object types and subtypes constants.  
**Notes:** Object is a device list.

89.27.158  kICAMessageCameraCaptureNewImage = ”ccni”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the Camera message constants.  
**Notes:** Capture a new image using the camera.

89.27.159  kICAMessageCameraDeleteAll = ”dela”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the Camera message constants.  
**Notes:** Delete all images stored in the camera.

89.27.160  kICAMessageCameraDeleteOne = ”del1”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the Camera message constants.  
**Notes:** Delete one image stored in the camera.

89.27.161  kICAMessageCameraPassThrough = ”pass”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the Camera message constants.

89.27.162  kICAMessageCameraReadClock = ”rclk”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the Camera message constants.  
**Notes:** Read clock from device.
89.27.163  kICAMessageCameraSyncClock = "sclk"

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the Camera message constants.  
**Notes:** Synchronize camera’s clock with the computer’s clock.

89.27.164  kICAMessageCameraUploadData = "load"

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the Camera message constants.  
**Notes:** Upload data to the camera.

89.27.165  kICAMessageCheckDevice = "chkd"

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the message constants.

89.27.166  kICAMessageConnect = "open"

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the message constants.  
**Notes:** Connect to device.

89.27.167  kICAMessageDeviceYield = "yiel"

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the message constants.  
**Notes:** Yield device. Image Capture framework yields a device so that the sender of the message can directly communicate with the device.

89.27.168  kICAMessageDisconnect = "clos"

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the message constants.  
**Notes:** Disconnect device.

89.27.169  kICAMessageGetEventData = "mged"

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the message constants.  
**Notes:** Get data associated with an event.
89.27.170  kICAMessageGetLastButtonPressed = ”btn?”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the message constants.  
**Notes:** Get last button pressed on the device (scanner).

89.27.171  kICAMessageReset = ”rese”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the message constants.  
**Notes:** Reset device.

89.27.172  kICAMessageScannerOverviewSelectionChanged = ”area”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the message constants.

89.27.173  kICAProperty = ”prop”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the keys for the properties dictionary.  
**Notes:** Generic property type; for images, refer to 'Digital Still Camera Image File Format Standard' Exif Version 2.1 section 2.6.4. and 2.6.5.

89.27.174  kICAPropertyCameraAccessCapability = ”acap”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant for Standard camera properties.  
**Notes:** Access capability. Data type: UInt16.

89.27.175  kICAPropertyCameraArtist = ”501E”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant for Standard camera properties.  
**Notes:** Artist. Property data type: string; Property desc forms: none.

89.27.176  kICAPropertyCameraBatteryLevel = ”5001”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant for Standard camera properties.
89.27. CLASS IMAGECAPTUREOBJECTMBS

Notes: Battery level. Property data type: UInt8; Property desc forms: Enum/Range.

89.27.177 kICAPropertyCameraBurstInterval = ”5019”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant for Standard camera properties.
**Notes:** Burst interval. Property data type: UInt16; Property desc forms: Enum/Range.

89.27.178 kICAPropertyCameraBurstNumber = ”5018”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant for Standard camera properties.
**Notes:** Burst number. Property data type: UInt16; Property desc forms: Enum/Range.

89.27.179 kICAPropertyCameraCaptureDelay = ”5012”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant for Standard camera properties.
**Notes:** Capture delay. Property data type: UInt32; Property desc forms: Enum/Range.

89.27.180 kICAPropertyCameraCompressionSetting = ”5004”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant for Standard camera properties.
**Notes:** Compression setting. Property data type: UInt8; Property desc forms: Enum/Range.

89.27.181 kICAPropertyCameraContrast = ”5014”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant for Standard camera properties.
**Notes:** Contrast. Property data type: UInt8; Property desc forms: Enum/Range.

89.27.182 kICAPropertyCameraCopyrightInfo = ”501F”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant for Standard camera properties.
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Notes: Copyright info. Property data type: string; Property desc forms: none.

89.27.183  kICAPropertyCameraDateTime = ”5011”
Notes: Date & time. Property data type: string; Property desc forms: none.

89.27.184  kICAPropertyCameraDigitalZoom = ”5016”
Notes: Digital zoom. Property data type: UInt8; Property desc forms: Enum/Range.

89.27.185  kICAPropertyCameraEffectMode = ”5017”
Notes: Effect mode. Property data type: UInt16; Property desc forms: Enum.

89.27.186  kICAPropertyCameraExposureBiasCompensation = ”5010”
Notes: Exposure bias compensation. Property data type: UInt16; Property desc forms: Enum/Range.

89.27.187  kICAPropertyCameraExposureIndex = ”500F”
Notes: Exposure index. Property data type: UInt16; Property desc forms: Enum/Range.

89.27.188  kICAPropertyCameraExposureMeteringMode = ”500B”
Notes: Exposure Metering mode. Property data type: UInt16; Property desc forms: Enum.

89.27.189  kICAPropertyCameraExposureProgramMode = ”500E”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant for Standard camera properties.
**Notes:** Exposure program mode. Property data type: UInt16; Property desc forms: Enum.

89.27.190  kICAPropertyCameraExposureTime = ”500D”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant for Standard camera properties.
**Notes:** Exposure time. Property data type: UInt32; Property desc forms: Enum/Range.

89.27.191  kICAPropertyCameraFilesystemType = ”fsys”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant for Standard camera properties.
**Notes:** File system type. Data type: UInt16.

89.27.192  kICAPropertyCameraFlashMode = ”500C”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant for Standard camera properties.
**Notes:** Flash mode. Property data type: UInt16; Property desc forms: Enum.

89.27.193  kICAPropertyCameraFNumber = ”5007”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant for Standard camera properties.
**Notes:** F-number. Property data type: UInt8; Property desc forms: Enum/Range.

89.27.194  kICAPropertyCameraFocalLength = ”5008”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant for Standard camera properties.
Notes: Focal length. Property data type: UInt32; Property desc forms: Enum/Range.

89.27.195  kICAPropertyCameraFocusDistance = ”5009”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant for Standard camera properties.
**Notes:** Focus distance. Property data type: UInt16; Property desc forms: Enum.

89.27.196  kICAPropertyCameraFocusMeteringMode = ”501C”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant for Standard camera properties.
**Notes:** Focus metering mode. Property data type: UInt16; Property desc forms: Enum.

89.27.197  kICAPropertyCameraFocusMode = ”500A”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant for Standard camera properties.
**Notes:** Focus mode. Property data type: UInt16; Property desc forms: Enum.

89.27.198  kICAPropertyCameraFreeSpaceInBytes = ”fres”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant for Standard camera properties.
**Notes:** Free space available on storage in bytes. Data type: UInt64.

89.27.199  kICAPropertyCameraFreeSpaceInImages = ”frei”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant for Standard camera properties.
**Notes:** Number of images that may still be captured in to this store based on the current image capture settings on the camera. Data type: UInt32.
89.27. **CLASS IMAGECAPTUREOBJECTMBS**

89.27.200  **kICAPropertyCameraFunctionalMode = ”5002”**

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant for Standard camera properties.
**Notes:** Functional mode. Property data type: UInt16; Property desc forms: Enum.

89.27.201  **kICAPropertyCameraIcon = ”icon”**

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constants for camera specific constants.
**Notes:** Camera icon in ICAThumbnail format.

89.27.202  **kICAPropertyCameraImageSize = ”5003”**

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant for Standard camera properties.
**Notes:** Image size. Property data type: CFString; Property desc forms: Enum/Range.

89.27.203  **kICAPropertyCameraMaxCapacity = ”maxc”**

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant for Standard camera properties.
**Notes:** Total storage capacity in bytes. Data type: UInt64.

89.27.204  **kICAPropertyCameraRGBGain = ”5006”**

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant for Standard camera properties.
**Notes:** RGB gain. Property data type: string; Property desc forms: Enum/Range.

89.27.205  **kICAPropertyCameraSharpness = ”5015”**

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant for Standard camera properties.
**Notes:** Sharpness. Property data type: UInt8; Property desc forms: Enum/Range.
89.27.206  kICAPropertyCameraStillCaptureMode = ”5013”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant for Standard camera properties.
**Notes:** Still capture mode. Property data type: UInt16; Property desc forms: Enum.

89.27.207  kICAPropertyCameraStorageDescription = ”stod”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant for Standard camera properties.
**Notes:** Storage description. Data type: string.

89.27.208  kICAPropertyCameraStorageType = ”stor”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant for Standard camera properties.
**Notes:** Storage type. Data type: UInt16.

89.27.209  kICAPropertyCameraSupportedMessages = ”msgs”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constants for camera specific constants.
**Notes:** Messages supported/understood by the camera.

89.27.210  kICAPropertyCameraTimelapseInterval = ”501B”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant for Standard camera properties.
**Notes:** Timelapse interval. Property data type: UInt32; Property desc forms: Enum/Range.

89.27.211  kICAPropertyCameraTimelapseNumber = ”501A”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant for Standard camera properties.
**Notes:** Timelapse number. Property data type: UInt16; Property desc forms: Enum/Range.
89.27.212  kICAPropertyCameraUploadURL = ”501D”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant for Standard camera properties.
**Notes:** Upload URL. Property data type: string; Property desc forms: none.

89.27.213  kICAPropertyCameraVolumeLabel = ”voll”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant for Standard camera properties.
**Notes:** Volume label. Data type: string.

89.27.214  kICAPropertyCameraWhiteBalance = ”5005”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant for Standard camera properties.
**Notes:** White balance. Property data type: UInt16; Property desc forms: Enum.

89.27.215  kICAPropertyColorSpace = ”A001”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the keys for the properties dictionary.
**Notes:** Color space used to represent an image.

89.27.216  kICAPropertyColorSyncProfile = ”prof”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the keys for the properties dictionary.
**Notes:** ColorSync profile associated with an image.

89.27.217  kICAPropertyImageAperture = ”9202”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the keys for the properties dictionary.
**Notes:** Aperture used to capture an image.
89.27.218  kICAPropertyImageBitDepth = "0102"

89.27.219  kICAPropertyImageData = "idat"
MBS MacOSX Plugin, Plugin Version: 10.1. Function: One of the keys for the properties dictionary. Notes: Data of an image.

89.27.220  kICAPropertyImageDateDigitized = "9004"
MBS MacOSX Plugin, Plugin Version: 10.1. Function: One of the keys for the properties dictionary. Notes: Digitized date & time of an object; value associated with this property is a null-terminated string conforming to format "YYYY:MM:DD hh:mm:ss".

89.27.221  kICAPropertyImageDateOriginal = "9003"
MBS MacOSX Plugin, Plugin Version: 10.1. Function: One of the keys for the properties dictionary. Notes: Original date & time of an object; value associated with this property is a null-terminated string conforming to format "YYYY:MM:DD hh:mm:ss".

89.27.222  kICAPropertyImageDPI = "011A"
MBS MacOSX Plugin, Plugin Version: 10.1. Function: One of the keys for the properties dictionary. Notes: Image DPI.

89.27.223  kICAPropertyImageExposureTime = "829A"

89.27.224  kICAPropertyImageFilename = "ifil"
89.27.225  kICAPropertyImageFlash = ”9209”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the keys for the properties dictionary. **Notes:** Indicates whether flash was used to capture an image.

89.27.226  kICAPropertyImageFNumber = ”829D”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the keys for the properties dictionary. **Notes:** Image f-Number.

89.27.227  kICAPropertyImageHeight = ”0101”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the keys for the properties dictionary. **Notes:** Image height.

89.27.228  kICAPropertyImageShutterSpeed = ”9201”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the keys for the properties dictionary. **Notes:** Shutter speed used to capture an image.

89.27.229  kICAPropertyImageSize = ”isiz”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the keys for the properties dictionary. **Notes:** Size of an image in bytes.

89.27.230  kICAPropertyImageThumbnail = ”thum”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the keys for the properties dictionary. **Notes:** Thumbnail of an image.
89.27.231  kICAPropertyImageWidth = ”0100”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the keys for the properties dictionary. **Notes:** Image width.

89.27.232  kICAPropertyTypeNotFoundErr = -9908

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the image capture specific error constants. **Notes:** A property with the specified property type is not found.

89.27.233  kICAStorageFixedRAM = 3

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant values for kICAPropertyCameraStorageType. **Notes:** Fixed RAM.

89.27.234  kICAStorageFixedROM = 1

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant values for kICAPropertyCameraStorageType. **Notes:** Fixed ROM.

89.27.235  kICAStorageRemovableRAM = 4

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant values for kICAPropertyCameraStorageType. **Notes:** Removable RAM.

89.27.236  kICAStorageRemovableROM = 2

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant values for kICAPropertyCameraStorageType. **Notes:** Removable ROM.
89.27.237  kICAStorageUndefined = 0

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the constant values for kICAPROPERTYCameraStorageType.
**Notes:** Undefined.

89.27.238  kICAThumbnailFormatJPEG = ”jpeg”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the thumbnail format constants.
**Notes:** Use this constant to receive a thumbnail in JPEG format.

89.27.239  kICAThumbnailFormatPNG = ”png ”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the thumbnail format constants.
**Notes:** Use this constant to receive a thumbnail in PNG format.

89.27.240  kICAThumbnailFormatTIFF = ”tiff”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the thumbnail format constants.
**Notes:** Use this constant to receive a thumbnail in TIFF format.

89.27.241  kICATypeBoolean = ”bool”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the data type constants.
**Notes:** Boolean

89.27.242  kICATypeData = ”data”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the data type constants.

89.27.243  kICATypeFixed = ”sing”

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the data type constants.
**Notes:** IEEE 32-bit floating point.
89.27.244  kICATypeFloat = "float"


89.27.245  kICATypeSInt16 = "si16"


89.27.246  kICATypeSInt32 = "si32"


89.27.247  kICATypeSInt64 = "si64"

MBS MacOSX Plugin, Plugin Version: 10.1. Function: One of the data type constants. Notes: SInt64.

89.27.248  kICATypeString = "TEXT"

MBS MacOSX Plugin, Plugin Version: 10.1. Function: One of the data type constants. Notes: Char string.

89.27.249  kICATypeThumbnail = "thum"


89.27.250  kICATypeUInt16 = "ui16"

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89.27.251 kICATypeUInt32 = "ui32"

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the data type constants. 
**Notes:** UInt32.

89.27.252 kICATypeUInt64 = "ui64"

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the data type constants. 
**Notes:** UInt64.

89.27.253 kICATypeUInt8 = "ui08"

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the data type constants. 
**Notes:** UInt8.

89.27.254 kICAUploadFileAsIs = 0

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the flag constants for UploadFile. 
**Notes:** Use this constant to upload a file as is.

89.27.255 kICAUploadFileScaleToFit = 1

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the flag constants for UploadFile. 
**Notes:** Use this constant to upload a file after scaling to fit a specified bounding rect.

89.27.256 kRotateImage = & h40

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the flag constants for DownloadFile. 
**Notes:** Rotate the image.

89.27.257 kSetFileTypeAndCreator = & h10

MBS MacOSX Plugin, Plugin Version: 10.1. **Function:** One of the flag constants for DownloadFile. 
**Notes:** Set 4-char file type and creator code.
89.28 class WIADataCallbackMBS

89.28.1 class WIADataCallbackMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Provides an application callback mechanism during data transfers from Windows Image Acquisition (WIA) hardware devices to applications.

89.28.2 Properties

89.28.3 Handle as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The internal reference to the object.
**Notes:** (Read and Write property)

89.28.4 Events

89.28.5 BandedDataCallback(message as Integer, Status as Integer, PercentComplete as Integer, Offset as Integer, Length as Integer, Buffer as memoryblock) as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Provides data transfer status notifications.
**Notes:**
Windows Image Acquisition (WIA) data transfer methods of the WiaDataTransfer interface periodically call this method.

Message: Specifies a constant that indicates the reason for the callback. Can be one of the kMessage* constants.
Status: Specifies a constant that indicates the status of the WIA device. Can be set to a combination of the kStatus* constants.
PercentComplete: Specifies the percentage of the total data that has been transferred so far.
Offset: Specifies an offset, in bytes, from the beginning of the buffer where the current band of data begins.
Length: Specifies the length, in bytes, of the current band of data.
Buffer: The data buffer.

Lasterror is set.
Your application must provide the BandedDataCallback event. This event is periodically invoked by the data transfer methods of the WiaDataTransferMBS interface. It provides status messages to the application during the data transfer. By returning false, your program can also use this method to prematurely terminate the data transfer.

When this method is invoked, the Message parameter will contain the reason for the call. Not all parameters will contain data on all calls. For example, when BandedDataCallback is invoked with a message of kMessageTermination, it should not attempt to use the values in the Buffer, Offset, and Length parameters.

If the value of Message is kMessageData, the buffer contains a band of image data. The Offset parameter contains an offset in bytes from the beginning of the buffer where the current band of data begins. The Length parameter specifies the length in bytes of the current band of data.

During calls where Message is set to kMessageData or kMessageStatus, the Status parameter contains a valid value. Its contents should not be used when Message contains other values.

If Message is kMessageDataHeader, the Buffer parameter points to a WIA_DATA_CALLBACK_HEADER structure.

When an error has occurred during an image data transfer, the driver sets Message to IT_MSG_DEVICE_STATUS. The proxy callback object calls ReportStatus, which handles the error and displays messages to the user.

### 89.28.6 Constants

#### 89.28.7 kMessageData = 2

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the constants for the message parameter in the BandedDataCallback callback.

**Notes:** The WIA system is transferring data to the application.

#### 89.28.8 kMessageDataHeader = 1

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the constants for the message parameter in the BandedDataCallback callback.

**Notes:** The application is receiving a header prior to receiving the actual data.
89.28.9  \textit{kMessageFilePreviewData} = 6

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the constants for the message parameter in the BandedDataCallback callback.  
\textbf{Notes}: The WIA system is transferring preview data to the application.

89.28.10  \textit{kMessageFilePreviewDataHeader} = 7

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the constants for the message parameter in the BandedDataCallback callback.  
\textbf{Notes}: The application is receiving a header prior to receiving the actual preview data.

89.28.11  \textit{kMessageNewPage} = 5

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the constants for the message parameter in the BandedDataCallback callback.  
\textbf{Notes}: The data transfer is beginning a new page.

89.28.12  \textit{kMessageStatus} = 3

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the constants for the message parameter in the BandedDataCallback callback.  
\textbf{Notes}: This invocation of the callback is sending only status information.

89.28.13  \textit{kMessageTermination} = 4

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the constants for the message parameter in the BandedDataCallback callback.  
\textbf{Notes}: The data transfer is complete.

89.28.14  \textit{kStatusProcessingData} = 2

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the constants for the status parameter in the BandedDataCallback callback.  
\textbf{Notes}: Data is currently being processed.
89.28.15  $k_{\text{StatusTransferFromDevice}} = 1$

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the constants for the status parameter in the BandedDataCallback callback.  
**Notes:** Data is currently being transferred from the WIA device.

89.28.16  $k_{\text{StatusTransferToClient}} = 4$

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the constants for the status parameter in the BandedDataCallback callback.  
**Notes:** Data is currently being transferred to the client’s data buffer.
89.29 class WIADDataTransferInfoMBS

89.29.1 class WIADDataTransferInfoMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The WIADDataTransferInfoMBS class is used by applications to describe the buffer used to retrieve bands of data from Windows Image Acquisition (WIA) devices. **Notes:** It is primarily used in conjunction with the methods of the IWiaDataTransfer interface.

89.29.2 Properties

89.29.3 BufferSize as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The size in bytes of the buffer that is used for the data transfer. **Notes:** (Read and Write property)

89.29.4 DoubleBuffer as Boolean

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Contains true if the device is double buffered, false if the device is not double buffered. **Notes:** (Read and Write property)

89.29.5 Section as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Specifies an optional handle to a shared section of memory allocated by the application. If this member is set to nil, GetBandedData allocates the shared memory itself. **Notes:** (Read and Write property)

89.29.6 Size as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Contains the size of this structure. **Notes:** (Read and Write property)
89.30 class WIADataTransferMBS

89.30.1 class WIADataTransferMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The WIADataTransferMBS interface is a high performance data transfer interface.

**Notes:**
This interface supports a shared memory window to transfer data from the device object to the application, and eliminates unnecessary data copies during marshalling. A callback mechanism is provided in the form of the WiaDataCallbackMBS interface. It enables applications to obtain data transfer status notification, transfer data from the Windows Image Acquisition (WIA) device to the application, and cancel pending data transfers.

For Windows Vista applications, use IWiaTransfer instead of IWiaDataTransfer.

89.30.2 Methods

89.30.3 EnumerateFormatInfo as WIAFormatInfoEnumeratorMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns an enumerator for the format information.

**Notes:** Lasterror is set.

89.30.4 GetBandedData(DataTransInfo as WIADataTransferInfoMBS, DataCallback as WIADataCallbackMBS)

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The GetBandedData method transfers a band of data from a hardware device to an application.

**Notes:**
For efficiency, applications retrieve data from Windows Image Acquisition (WIA) hardware devices in successive bands.
Lasterror is set.

89.30.5 GetDataFile(DataCallback as WIADataCallbackMBS) as folderitem

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The GetData method retrieves complete files from a Windows Image Acquisition (WIA) device.

**Notes:**
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Lasterror is set.
Returns the folderitem for the new file. Copy or load the file as this temporary file is deleted as soon as the object is destroyed.

89.30.6 GetDataPath(DataCallback as WIADataCallbackMBS) as string

Returns the folderitem for the new file. Copy or load the file as this temporary file is deleted as soon as the object is destroyed.

89.30.7 GetExtendedTransferInfo as WIAExtendedTransferInfoMBS

Lasterror is set.

89.30.8 QueryGetData as WIAFormatInfoMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The QueryGetData method is used by applications to query a Windows Image Acquisition (WIA) device to determine what types of data formats it supports. Notes: Lasterror is set.

89.30.9 Properties

89.30.10 Handle as Integer

89.30. CLASS WIADATATRANSFERMBS

Notes: (Read and Write property)

89.30.11 Lasterror as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The last error code.
**Notes:** (Read and Write property)
89.31 class WIADeviceCapabilitiesEnumeratorMBS

89.31.1 class WIADeviceCapabilitiesEnumeratorMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The WIADeviceCapabilitiesEnumeratorMBS class enumerates the currently available Windows Image Acquisition (WIA) hardware device capabilities.
Notes: Device capabilities include commands and events that the device supports.

89.31.2 Methods

89.31.3 Clone as WIADeviceCapabilitiesEnumeratorMBS

Notes: Lasterror is set.

89.31.4 Count as Integer

Notes: Lasterror is set.

89.31.5 NextItem as WIADeviceCapabilitiesMBS

Notes: Lasterror is set.

89.31.6 Reset

Notes: Lasterror is set.
**89.31.7 **Skip(celt as Integer)

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Skips the given number of entries in the enumeration.
**Notes:** Lasterror is set.

**89.31.8 **Properties

**89.31.9 **Handle as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The internal reference to the object.
**Notes:** (Read and Write property)

**89.31.10 **Lasterror as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The last error code.
**Notes:** (Read and Write property)
89.32 class WIADeviceCapabilitiesMBS

89.32.1 class WIADeviceCapabilitiesMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A class for device capabilities.

89.32.2 Properties

89.32.3 Commandline as String

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Specifies a string that represents command line arguments. **Notes:** (Read and Write property)

89.32.4 Description as String

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Specifies a string that contains a description of the capability that is displayed to the user. **Notes:** (Read and Write property)

89.32.5 Flags as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Flags for this capability **Notes:** (Read and Write property)

89.32.6 GUID as String

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Specifies a GUID that identifies the device capability. **Notes:** This member can be set to any of the values specified in WIAItemMBS constants for Device Commands (kCommand*) or WIA Event Identifiers (kEvent*). (Read and Write property)
89.32. CLASS WIADEVICECAPABILITIESMBS

89.32.7 Icon as String

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Specifies a string that represents the location and resource ID of the icon that represents this capability or handler.

**Notes:**

The string must be of the following form: drive:\path\module,n, where n is the icon’s negated resource ID (that is, if the resource ID of the icon is 100, then n is -100).
(Read and Write property)

89.32.8 Name as String

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Specifies a string that contains a short version of the capability name.

**Notes:** (Read and Write property)
89.33 class WIADeviceInfoEnumeratorMBS

89.33.1 class WIADeviceInfoEnumeratorMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The WIADeviceInfoEnumeratorMBS class enumerates the currently available Windows Image Acquisition (WIA) hardware devices and their properties. **Notes:** Device information properties describe the installation and configuration of WIA hardware devices.

89.33.2 Methods

89.33.3 Clone as WIADeviceInfoEnumeratorMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Creates a copy of the enumerator. **Notes:** Lasterror is set.

89.33.4 Count as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the number of items in the enumeration. **Notes:** Lasterror is set.

89.33.5 NextItem as WIAPropertyStorageMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the next item in the enumeration. **Notes:** Lasterror is set.

89.33.6 Reset

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Resets the enumeration. **Notes:** Lasterror is set.
89.33. **CLASS WIADEVICEINFOENUMERATORMBS**

89.33.7 **Skip(celt as Integer)**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Skips the given number of entries in the enumeration.
**Notes:** Lasterror is set.

89.33.8 **Properties**

89.33.9 **Handle as Integer**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The internal reference to the object.
**Notes:** (Read and Write property)

89.33.10 **Lasterror as Integer**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The last error code.
**Notes:** (Read and Write property)
89.34 class WIADeviceManager1MBS

89.34.1 class WIADeviceManager1MBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The WIADeviceManager1MBS interface is used to create and manage image acquisition devices and to register to receive device events. **Notes:** WIA 1.x is available on Windows 2000 and newer

89.34.2 Methods

89.34.3 Constructor

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Creates a new WIA 1.0 manager object. **Example:**

```vbs
Dim DeviceManager As New WIADeviceManager1MBS
If 0 = DeviceManager.Handle Then
    MsgBox "Failed to initialize device manager."
Else
    MsgBox "OK"
End If
```

89.34.4 CreateDevice(DeviceID as string) as WIAItemMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Creates a hierarchical tree of WIAItem objects for a Windows Image Acquisition device. **Notes:** DeviceID: Specifies the unique identifier of the WIA device. Lasterror is set. Applications use the CreateDevice method to create a device object for the WIA devices specified by the DeviceID parameter. Returns the WIAItemMBS object for the root item. Applications can use this tree of objects to control and retrieve data from the WIA device.
89.34.5 EnumDeviceInfo(flags as Integer = & h10) as WIADeviceInfoEnumer-
torMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Creates an enumerator of property information for each available Windows Image Acquisition device.

**Example:**

```vba
dim DeviceManager1 as new WIADeviceManager1MBS

// Enumerate all local devices
dim e as WIADeviceInfoEnumeratorMBS = DeviceManager1.EnumDeviceInfo(DeviceManager1.kEnumLocal)
if e<>Nil then

dim p as WIAPropertyStorageMBS = e.NextItem
while p<>Nil

// display the name of the device in a listbox
ListBox1.AddFolder p.Read(p.kDevicePropertyDevNameString)

p = e.NextItem
wend
end if
```

**Notes:**

Flags: Specifies the types of WIA devices to enumerate. Should be set to kEnumLocal. Lasterror is set.

89.34.6 GetImageDialog(parentWindow as window, DeviceType as Integer, Flags
as Integer, Intent as Integer, file as folderitem, rootitem as WIAItemMBS=nil)

MBS Win Plugin, Plugin Version: 10.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The GetImageDialog method displays one or more dialog boxes that enable a user to acquire an image from
a Windows Image Acquisition (WIA) device and write the image to a specified file.

**Notes:**

Lasterror is set.

This method combines the functionality of SelectDeviceDialog to completely encapsulate image acquisition
within a single API call.

parentWindowHandle: Handle of the window that owns the Get Image dialog box.
DeviceType: Specifies which type of WIA device to use. Is set to kDeviceTypeDefault, kDeviceTypeScanner,
or kDeviceTypeDigitalCamera.

Flags: Specifies dialog box behavior. Can be set to the following constants: kSelectDeviceNoDefault, kDeviceDialogUseCommonUI and kDeviceDialogSingleImage.

Intent: Specifies what type of data the image is intended to represent. Use kIntent* constants.

rootitem: Returns the interface of the hierarchical tree of WiaItem objects returned by CreateDevice.

file: Specifies the name of the file to which the image data is written.

Invoking this method displays a dialog box that enables users to acquire images. It can also display the Select Device dialog box created by the SelectDeviceDlg method.

If the application passes nil for the value of the rootitem parameter, GetImageDlg displays the Select Device dialog box that lets the user select the WIA input device. If the application specifies a WIA input device by passing a pointer to the device’s item tree through the pItemRoot parameter, GetImageDlg does not display the Select Device dialog box. Instead, it will use the specified input device to acquire the image.

When using the Select Device dialog box, applications can specify types of WIA input devices. To do so, they must set the rootitem parameter to NULL and pass the appropriate constants through the DeviceType parameter. If more than one device of the specified type is present, the GetImageDlg displays the Select Device dialog box to let the user select which device will be used.

If GetImageDlg finds only one matching device, it will not display the Select Device dialog box. Instead, it will select the matching device. You can override this behavior and force GetImageDlg to display the Select Device dialog box by passing kSelectDeviceNoDefault as the value for the lFlags parameter.

It is recommended that applications make device and image selection available through a menu item named From scanner or camera on the File menu.

The dialog must have sufficient rights to the folder for file that it can save the file with a unique file name. The folder should also be protected with an access control list (ACL) because it contains user data.

See also:

- 89.34.7 GetImageDialog(parentWindowHandle as Integer, DeviceType as Integer, Flags as Integer, Intent as Integer, file as folderitem, rootitem as WIAItemMBS=nil)

89.34.7 GetImageDialog(parentWindowHandle as Integer, DeviceType as Integer, Flags as Integer, Intent as Integer, file as folderitem, rootitem as WIAItemMBS=nil)

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The GetImageDialog method displays one or more dialog boxes that enable a user to acquire an image from a Windows Image Acquisition (WIA) device and write the image to a specified file.

Notes:
This method combines the functionality of SelectDeviceDialog to completely encapsulate image acquisition within a single API call.

parentWindowHandle: Handle of the window that owns the Get Image dialog box.
DeviceType: Specifies which type of WIA device to use. Is set to kDeviceTypeDefault, kDeviceTypeScanner, or kDeviceTypeDigitalCamera.
Flags: Specifies dialog box behavior. Can be set to the following constants: kSelectDeviceNoDefault, kDeviceDialogUseCommonUI and kDeviceDialogSingleImage.
Intent: Specifies what type of data the image is intended to represent. Use kIntent* constants.
rootitem: Returns the interface of the hierarchical tree of WiaItem objects returned by CreateDevice.
file: Specifies the name of the file to which the image data is written.

Invoking this method displays a dialog box that enables users to acquire images. It can also display the Select Device dialog box created by the SelectDeviceDlg method.

If the application passes nil for the value of the rootitem parameter, GetImageDlg displays the Select Device dialog box that lets the user select the WIA input device. If the application specifies a WIA input device by passing a pointer to the device’s item tree through the pItemRoot parameter, GetImageDlg does not display the Select Device dialog box. Instead, it will use the specified input device to acquire the image.

When using the Select Device dialog box, applications can specify types of WIA input devices. To do so, they must set the rootitem parameter to NULL and pass the appropriate constants through the DeviceType parameter. If more than one device of the specified type is present, the GetImageDlg displays the Select Device dialog box to let the user select which device will be used.

If GetImageDlg finds only one matching device, it will not display the Select Device dialog box. Instead, it will select the matching device. You can override this behavior and force GetImageDlg to display the Select Device dialog box by passing kSelectDeviceNoDefault as the value for the lFlags parameter.

It is recommended that applications make device and image selection available through a menu item named From scanner or camera on the File menu.

The dialog must have sufficient rights to the folder for file that it can save the file with a unique file name. The folder should also be protected with an access control list (ACL) because it contains user data.

See also:

- 89.34.6 GetImageDialog(parentWindow as window, DeviceType as Integer, Flags as Integer, Intent as Integer, file as folderitem, rootitem as WIAItemMBS=nil)
89.34.8 SelectDeviceDialog(parentWindow as window, DeviceType as Integer, Flags as Integer) as WIAItemMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Displays a dialog box that enables the user to select a hardware device for image acquisition.

**Example:**

```vbs
dim DeviceManager as new WIADeviceManager1MBS

if 0 = DeviceManager.Handle then
    MsgBox "Failed to initialize device manager."
else
    dim it as WIAItemMBS = DeviceManager.SelectDeviceDialog(window1, DeviceManager.kDeviceTypeDefault, DeviceManager.kSelectDeviceNoDefault)

    if it<>Nil then
        dim p as WIAPropertyStorageMBS = it.PropertyStorage
        dim name as string = p.Read(p.kItemPropertyItemNameString)
        MsgBox name
    end if
end if
```

**Notes:**

- **parentWindow:** Specifies the parent window of the Select Device dialog box.
- **DeviceType:** Specifies which type of WIA 2.0 device to use. See WIA Device Type Specifiers for a list of possible values.
- **Flags:** Specifies the behavior of the dialog box. The value can be one of the following constants: kSelectDeviceNoDefault
- **DeviceID:** Optional, On output, receives a string which contains the device’s identifier string. On input, pass the address of a pointer if this information is needed, or "" if it is not needed.

Returns the WIAItem which was selected.

Lasterror is set.

This method creates and displays the Select Device dialog box so the user can select a WIA device for image acquisition. If a device is successfully selected, the SelectDeviceDialog method creates a hierarchical tree of IWiaItem2 objects for the device. It returns the WiaItemMBS object of the root item.

The application can restrict the devices displayed to the user to particular types by specifying the device types through the DeviceType parameter. If only one device meets the specification, SelectDeviceDialog does not display the Select Device dialog box. Instead it returns the WiaItemMBS tree for the device. You can override this behavior and force SelectDeviceDialog to display the dialog box by specifying kSelectDeviceNoDefault as the value for the Flags parameter. If more than one WIA device matches the specification, all matching devices are displayed in the Select Device dialog box so the user may choose one.
It is recommended that applications make device and image selection available through a menu item named From scanner on the File menu.

See also:

- 89.34.9 SelectDeviceDialog(parentWindow as window, DeviceType as Integer, Flags as Integer, byref DeviceID as string) as WIAItemMBS
- 89.34.10 SelectDeviceDialog(parentWindowHandle as Integer, DeviceType as Integer, Flags as Integer) as WIAItemMBS
- 89.34.11 SelectDeviceDialog(parentWindowHandle as Integer, DeviceType as Integer, Flags as Integer, byref DeviceID as string) as WIAItemMBS

89.34.9 SelectDeviceDialog(parentWindow as window, DeviceType as Integer, Flags as Integer, byref DeviceID as string) as WIAItemMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Displays a dialog box that enables the user to select a hardware device for image acquisition.

**Notes:**

- **parentWindow:** Specifies the parent window of the Select Device dialog box.
- **DeviceType:** Specifies which type of WIA 2.0 device to use. See WIA Device Type Specifiers for a list of possible values.
- **Flags:** Specifies the behavior of the dialog box. The value can be one of the following constants: kSelectDeviceNoDefault
- **DeviceID:** Optional, On output, receives a string which contains the device’s identifier string. On input, pass the address of a pointer if this information is needed, or ”” if it is not needed.

Returns the WIAItem which was selected.

Lasterror is set.

This method creates and displays the Select Device dialog box so the user can select a WIA device for image acquisition. If a device is successfully selected, the SelectDeviceDialog method creates a hierarchical tree of IWiaItem2 objects for the device. It returns the WiaItemMBS object of the root item.

The application can restrict the devices displayed to the user to particular types by specifying the device types through the DeviceType parameter. If only one device meets the specification, SelectDeviceDialog does not display the Select Device dialog box. Instead it returns the WiaItemMBS tree for the device. You can override this behavior and force SelectDeviceDialog to display the dialog box by specifying kSelectDeviceNoDefault as the value for the Flags parameter. If more than one WIA device matches the specification, all matching devices are displayed in the Select Device dialog box so the user may choose one.

It is recommended that applications make device and image selection available through a menu item named From scanner on the File menu.
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See also:

- 89.34.8 SelectDeviceDialog(parentWindow as window, DeviceType as Integer, Flags as Integer) as WIAItemMBS
- 89.34.10 SelectDeviceDialog(parentWindowHandle as Integer, DeviceType as Integer, Flags as Integer) as WIAItemMBS
- 89.34.11 SelectDeviceDialog(parentWindowHandle as Integer, DeviceType as Integer, Flags as Integer, byref DeviceID as string) as WIAItemMBS

89.34.10 SelectDeviceDialog(parentWindowHandle as Integer, DeviceType as Integer, Flags as Integer) as WIAItemMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Displays a dialog box that enables the user to select a hardware device for image acquisition.

**Notes:**

- parentWindow: Specifies the parent window of the Select Device dialog box.
- DeviceType: Specifies which type of WIA 2.0 device to use. See WIA Device Type Specifiers for a list of possible values.
- Flags: Specifies the behavior of the dialog box. The value can be one of the following constants: kSelectDeviceNoDefault
- DeviceID: Optional, On output, receives a string which contains the device’s identifier string. On input, pass the address of a pointer if this information is needed, or "" if it is not needed.

Returns the WIAItem which was selected.
Lasterror is set.

This method creates and displays the Select Device dialog box so the user can select a WIA device for image acquisition. If a device is successfully selected, the SelectDeviceDialog method creates a hierarchical tree of IWiaItem2 objects for the device. It returns the WiaItemMBS object of the root item.

The application can restrict the devices displayed to the user to particular types by specifying the device types through the DeviceType parameter. If only one device meets the specification, SelectDeviceDialog does not display the Select Device dialog box. Instead it returns the WiaItemMBS tree for the device. You can override this behavior and force SelectDeviceDialog to display the dialog box by specifying kSelectDeviceNoDefault as the value for the Flags parameter. If more than one WIA device matches the specification, all matching devices are displayed in the Select Device dialog box so the user may choose one.

It is recommended that applications make device and image selection available through a menu item named From scanner on the File menu.

See also:

- 89.34.8 SelectDeviceDialog(parentWindow as window, DeviceType as Integer, Flags as Integer) as WIAItemMBS
89.34. CLASS WIADEVICEMANAGER1MBS

- 89.34.9 SelectDeviceDialog(parentWindow as window, DeviceType as Integer, Flags as Integer, byref DeviceID as string) as WIAItemMBS

- 89.34.11 SelectDeviceDialog(parentWindowHandle as Integer, DeviceType as Integer, Flags as Integer, byref DeviceID as string) as WIAItemMBS

89.34.11 SelectDeviceDialog(parentWindowHandle as Integer, DeviceType as Integer, Flags as Integer, byref DeviceID as string) as WIAItemMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Displays a dialog box that enables the user to select a hardware device for image acquisition.

**Notes:**

parentWindow: Specifies the parent window of the Select Device dialog box.
DeviceType: Specifies which type of WIA 2.0 device to use. See WIA Device Type Specifiers for a list of possible values.
Flags: Specifies the behavior of the dialog box. The value can be one of the following constants: kSelectDeviceNoDefault
DeviceID: Optional, On output, receives a string which contains the device’s identifier string. On input, pass the address of a pointer if this information is needed, or ” ” if it is not needed.

Returns the WIAItem which was selected.
LastError is set.

This method creates and displays the Select Device dialog box so the user can select a WIA device for image acquisition. If a device is successfully selected, the SelectDeviceDialog method creates a hierarchical tree of IWiaItem2 objects for the device. It returns the WiaItemMBS object of the root item.

The application can restrict the devices displayed to the user to particular types by specifying the device types through the DeviceType parameter. If only one device meets the specification, SelectDeviceDialog does not display the Select Device dialog box. Instead it returns the WiaItemMBS tree for the device. You can override this behavior and force SelectDeviceDialog to display the dialog box by specifying kSelectDeviceNoDefault as the value for the Flags parameter. If more than one WIA device matches the specification, all matching devices are displayed in the Select Device dialog box so the user may choose one.

It is recommended that applications make device and image selection available through a menu item named From scanner on the File menu.

See also:

- 89.34.8 SelectDeviceDialog(parentWindow as window, DeviceType as Integer, Flags as Integer) as WIAItemMBS

- 89.34.9 SelectDeviceDialog(parentWindow as window, DeviceType as Integer, Flags as Integer, byref DeviceID as string) as WIAItemMBS
89.34.10 SelectDeviceDialog(parentWindowHandle as Integer, DeviceType as Integer, Flags as Integer) as WIAItemMBS

89.34.12 SelectDeviceDialogID(parentWindow as window, DeviceType as Integer, Flags as Integer) as string

MBS Win Plugin, Plugin Version: 10.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Displays a dialog box that enables the user to select a hardware device for image acquisition. **Notes:**

Lasterror is set.

parentWindow: Specifies the parent window of the Select Device dialog box. DeviceType: Specifies which type of WIA device to use. See kDeviceType* constants. Flags: Specifies the behavior of the dialog box. You can pass the following constant: kSelectDeviceNoDefault

Returns the selected DeviceID.

This method creates and displays the Select Device dialog box so the user can select a WIA device for image acquisition. If a device is successfully selected, the SelectDeviceDialogID method returns its identifier string to the application.

The application can restrict the devices displayed to the user to particular types by specifying the device types through the DeviceType parameter. If only one device meets the specification, SelectDeviceDialogID does not display the Select Device dialog box. Instead it passes the device’s identifier string to the application without displaying the dialog box. You can override this behavior and force SelectDeviceDialogID to display the dialog box by passing kSelectDeviceNoDefault as the value for the IFlags parameter. If more than one WIA device matches the specification, all matching devices are displayed in the SelectDevice dialog box so the user may choose one.

Note It is recommended that applications make device and image selection available through a menu item named From scanner on the File menu. See also:

89.34.13 SelectDeviceDialogID(parentWindowHandle as Integer, DeviceType as Integer, Flags as Integer) as string

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Displays a dialog box that enables the user to select a hardware device for image acquisition. **Notes:**
parentWindow: Specifies the parent window of the Select Device dialog box.
DeviceType: Specifies which type of WIA device to use. See kDeviceType* constants.
Flags: Specifies the behavior of the dialog box. You can pass the following constant: kSelectDeviceNoDefault

Returns the selected DeviceID.

This method creates and displays the Select Device dialog box so the user can select a WIA device for image acquisition. If a device is successfully selected, the SelectDeviceDialogID method returns its identifier string to the application.

The application can restrict the devices displayed to the user to particular types by specifying the device types through the DeviceType parameter. If only one device meets the specification, SelectDeviceDialogID does not display the Select Device dialog box. Instead it passes the device's identifier string to the application without displaying the dialog box. You can override this behavior and force SelectDeviceDialogID to display the dialog box by passing kSelectDeviceNoDefault as the value for the Flags parameter. If more than one WIA device matches the specification, all matching devices are displayed in the SelectDevice dialog box so the user may choose one.

Note It is recommended that applications make device and image selection available through a menu item named From scanner on the File menu.

See also:

- 89.34.12 SelectDeviceDialogID(parentWindow as window, DeviceType as Integer, Flags as Integer) as string

**89.34.14 Properties**

**89.34.15 Handle as Integer**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The internal reference to the object.
**Notes:**
The handle for WIA 1.x.
(Read and Write property)

**89.34.16 Lasterror as Integer**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The last error code.
89.34.17 Constants

89.34.18 kDeviceDialogSingleImage = 2

Notes: Restrict image selection to a single image in the device image acquisition dialog box. Only for WIA 2.x.

89.34.19 kDeviceDialogUseCommonUI = 4

Notes: Use the system UI, if available, rather than the vendor-supplied UI. If the system UI is not available, the vendor UI is used. If neither UI is available, the function returns E_NOTIMPL.

89.34.20 kDeviceTypeDefault = 0

MBS Win Plugin, Plugin Version: 10.3. Function: One of the device type constants.

89.34.21 kDeviceTypeDigitalCamera = 2

MBS Win Plugin, Plugin Version: 10.3. Function: One of the device type constants.

89.34.22 kDeviceTypeScanner = 1

MBS Win Plugin, Plugin Version: 10.3. Function: One of the device type constants.

89.34.23 kDeviceTypeStreamingVideo = 3

MBS Win Plugin, Plugin Version: 10.3. Function: One of the device type constants.
89.34.24  kEnumAll = 15

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the constants for EnumDeviceInfo flags parameter.
**Notes:** All devices are enumerated, both locally and remote, including inactive (disconnected) devices and legacy STI-only devices.

89.34.25  kEnumLocal = 16

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the constants for EnumDeviceInfo flags parameter.
**Notes:** Only locally connected active scanner devices are enumerated.

89.34.26  kIntentBestPreview = & h40000

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the intent constants for GetImageDialog.
**Notes:** Specifies the best quality preview.

89.34.27  kIntentImageTypeColor = 1

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the intent constants for GetImageDialog.
**Notes:** Preset properties for color content.

89.34.28  kIntentImageTypeGrayscale = 2

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the intent constants for GetImageDialog.
**Notes:** Preset properties for grayscale content.

89.34.29  kIntentImageTypeMask = & hF

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the intent constants for GetImageDialog.
**Notes:** Mask for all of the image type flags.
89.34.30  kIntentImageTypeText = 4

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the intent constants for GetImageDialog. **Notes:** Preset properties for text content.

89.34.31  kIntentMaximizeQuality = & h20000

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the intent constants for GetImageDialog. **Notes:** Preset properties to maximize image quality.

89.34.32  kIntentMinimizeSize = & h10000

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the intent constants for GetImageDialog. **Notes:** Preset properties to minimize image size.

89.34.33  kIntentNone = 0

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the intent constants for GetImageDialog. **Notes:** Default value. Do not preset any properties.

89.34.34  kIntentSizeMask = & hF0000

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the intent constants for GetImageDialog. **Notes:** Mask for all of the size/quality flags.

89.34.35  kSelectDeviceNoDefault = 1

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the constants for the GetImageDialog method. **Notes:**
Force this method to display the Select Device dialog box. Only for WIA 2.x.
89.35. class WIADeviceManager2MBS

89.35.1 class WIADeviceManager2MBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The WIADeviceManager2MBS interface is used to create and manage image acquisition devices and to register to receive device events. **Notes:** WIA 2.x is available on Windows Vista and newer.

89.35.2 Methods

89.35.3 Constructor

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Creates a new WIA 2.0 manager object. **Example:**

```vba
dim DeviceManager as new WIADeviceManager2MBS
if 0 = DeviceManager.Handle then
    MsgBox "Failed to initialize device manager."
else
    MsgBox "OK"
end if
```

89.35.4 CreateDevice(DeviceID as string) as WIAItemMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Creates a hierarchical tree of WiaItem objects for a Windows Image Acquisition device. **Notes:** DeviceID: Specifies the unique identifier of the WIA device.

Lasterror is set.

Applications use the CreateDevice method to create a device object for the WIA devices specified by the DeviceID parameter.

Returns the WIAItemMBS object for the root item. Applications can use this tree of objects to control and retrieve data from the WIA device.
89.35.5 EnumDeviceInfo(flags as Integer = &h10) as WIADeviceInfoEnumer-atorMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Creates an enumerator of property information for each available Windows Image Acquisition device. **Example:**

```vbs
dim DeviceManager2 as new WIADeviceManager2MBS

// Enumerate all local devices
dim e as WIADeviceInfoEnumeratorMBS = DeviceManager2.EnumDeviceInfo(DeviceManager2.kEnumLocal)
if e<>Nil then

dim p as WIAPropertyStorageMBS = e.NextItem
while p<>Nil
    // display the name of the device in a listbox
    ListBox1.AddFolder p.Read(p.kDevicePropertyDevNameString)
    p = e.NextItem
wend
endif
```

**Notes:**
Flags: Specifies the types of WIA devices to enumerate. Should be set to kEnumLocal or kEnumAll. Lasterror is set.

89.35.6 GetImageDialog(Flags as Integer, DeviceID as string, parentWindow as window, FolderName as String, Filename as String, byref item as WIAItemMBS) as string()

MBS Win Plugin, Plugin Version: 10.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The GetImageDialog method displays one or more dialog boxes that enable a user to acquire an image from a Windows Image Acquisition (WIA) 2.0 device and write the image to a specified file. This method extends the functionality of SelectDeviceDlg to encapsulate image acquisition within a single API call. **Notes:** Lasterror is set.

Flags: Specifies dialog box behavior. Can be set to the following values: kDeviceDialogUseCommonUI
DeviceID: Specifies the scanner to use.
parentWindowHandle: A handle of the window that owns the Get Image dialog box.
FolderName: Specifies the name of the folder to store the scanned files in.
Filename: Specifies the name of the file to write the image data to.
item: The variable to return the WiaItem that the images were scanned from.

Returns an array with paths to the files that have been scanned.

If the application passes an empty string for the value of the DeviceID parameter, GetImageDialog displays the Select Device dialog box so that the user can select the WIA 2.0 input device.

Use a menu item named From scanner on the File menu so that device and image selections are available in your application.

The dialog box must have sufficient rights to FolderName so that it can save the files with unique file names. Protect the folder with an access control list (ACL) because it contains user data.

See also:

- 89.35.7 GetImageDialog(Flags as Integer, DeviceID as string, parentWindowHandle as Integer, FolderName as String, Filename as String, byref item as WIAItemMBS) as string()
Use a menu item named From scanner on the File menu so that device and image selections are available in your application.

The dialog box must have sufficient rights to FolderName so that it can save the files with unique file names. Protect the folder with an access control list (ACL) because it contains user data.

See also:

- 89.35.6 GetImageDialog(Flags as Integer, DeviceID as string, parentWindow as window, FolderName as String, Filename as String, byref item as WIAItemMBS) as string()
- 89.35.8 SelectDeviceDialog(parentWindow as window, DeviceType as Integer, Flags as Integer) as WIAItemMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Displays a dialog box that enables the user to select a hardware device for image acquisition.

**Example:**

```vba
dim DeviceManager as new WIADeviceManager2MBS

if 0 = DeviceManager.Handle then
    MsgBox "Failed to initialize device manager."
else
    dim it as WIAItemMBS = DeviceManager.SelectDeviceDialog(window1, DeviceManager.kDeviceTypeDefault, DeviceManager.kSelectDeviceNoDefault)

    if it<>Nil then
        dim p as WIAPropertyStorageMBS = it.PropertyStorage
        dim name as string = p.Read(p.kItemPropertyItemNameString)
        MsgBox name
    end if
end if
```

**Notes:**

parentWindow: Specifies the parent window of the Select Device dialog box.
DeviceType: Specifies which type of WIA 2.0 device to use. See WIA Device Type Specifiers for a list of possible values.
Flags: Specifies the behavior of the dialog box. The value can be one of the following constants: kSelectDeviceNoDefault
DeviceID: Optional, On output, receives a string which contains the device’s identifier string. On input, pass the address of a pointer if this information is needed, or "" if it is not needed.

Returns the WIAItem which was selected.
LastError is set.
This method creates and displays the Select Device dialog box so the user can select a WIA device for image acquisition. If a device is successfully selected, the SelectDeviceDialog method creates a hierarchical tree of IWiaItem2 objects for the device. It returns the WiaItemMBS object of the root item.

The application can restrict the devices displayed to the user to particular types by specifying the device types through the DeviceType parameter. If only one device meets the specification, SelectDeviceDialog does not display the Select Device dialog box. Instead it returns the WiaItemMBS tree for the device. You can override this behavior and force SelectDeviceDialog to display the dialog box by specifying kSelectDeviceNoDefault as the value for the Flags parameter. If more than one WIA device matches the specification, all matching devices are displayed in the Select Device dialog box so the user may choose one.

It is recommended that applications make device and image selection available through a menu item named From scanner on the File menu.

See also:

- 89.35.9 SelectDeviceDialog(parentWindow as window, DeviceType as Integer, Flags as Integer, byref DeviceID as string) as WIAItemMBS
- 89.35.10 SelectDeviceDialog(parentWindowHandle as Integer, DeviceType as Integer, Flags as Integer) as WIAItemMBS
- 89.35.11 SelectDeviceDialog(parentWindowHandle as Integer, DeviceType as Integer, Flags as Integer, byref DeviceID as string) as WIAItemMBS

89.35.9  SelectDeviceDialog(parentWindow as window, DeviceType as Integer, Flags as Integer, byref DeviceID as string) as WIAItemMBS

Displays a dialog box that enables the user to select a hardware device for image acquisition.

Notes:

- parentWindow: Specifies the parent window of the Select Device dialog box.
- DeviceType: Specifies which type of WIA 2.0 device to use. See WIA Device Type Specifiers for a list of possible values.
- Flags: Specifies the behavior of the dialog box. The value can be one of the following constants: kSelectDeviceNoDefault
- DeviceID: Optional, On output, receives a string which contains the device’s identifier string. On input, pass the address of a pointer if this information is needed, or "" if it is not needed.

Returns the WIAItem which was selected.
Lasterror is set.

This method creates and displays the Select Device dialog box so the user can select a WIA device for image acquisition. If a device is successfully selected, the SelectDeviceDialog method creates a hierarchical tree of IWiaItem2 objects for the device. It returns the WiaItemMBS object of the root item.
The application can restrict the devices displayed to the user to particular types by specifying the device types through the DeviceType parameter. If only one device meets the specification, SelectDeviceDialog does not display the Select Device dialog box. Instead it returns the WiaItemMBS tree for the device. You can override this behavior and force SelectDeviceDialog to display the dialog box by specifying kSelectDeviceNoDefault as the value for the Flags parameter. If more than one WIA device matches the specification, all matching devices are displayed in the Select Device dialog box so the user may choose one.

It is recommended that applications make device and image selection available through a menu item named From scanner on the File menu.

See also:

- 89.35.8 SelectDeviceDialog(parentWindow as window, DeviceType as Integer, Flags as Integer) as WIAItemMBS

- 89.35.10 SelectDeviceDialog(parentWindowHandle as Integer, DeviceType as Integer, Flags as Integer) as WIAItemMBS

- 89.35.11 SelectDeviceDialog(parentWindowHandle as Integer, DeviceType as Integer, Flags as Integer, byref DeviceID as string) as WIAItemMBS

89.35.10 SelectDeviceDialog(parentWindowHandle as Integer, DeviceType as Integer, Flags as Integer) as WIAItemMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Displays a dialog box that enables the user to select a hardware device for image acquisition.

**Notes:**

- parentWindow: Specifies the parent window of the Select Device dialog box.
- DeviceType: Specifies which type of WIA 2.0 device to use. See WIA Device Type Specifiers for a list of possible values.
- Flags: Specifies the behavior of the dialog box. The value can be one of the following constants: kSelectDeviceNoDefault
- DeviceID: Optional, On output, receives a string which contains the device’s identifier string. On input, pass the address of a pointer if this information is needed, or "" if it is not needed.

Returns the WIAItem which was selected.

Lasterror is set.

This method creates and displays the Select Device dialog box so the user can select a WIA device for image acquisition. If a device is successfully selected, the SelectDeviceDialog method creates a hierarchical tree of IWiaItem2 objects for the device. It returns the WiaItemMBS object of the root item.

The application can restrict the devices displayed to the user to particular types by specifying the device types through the DeviceType parameter. If only one device meets the specification, SelectDeviceDialog does not display the Select Device dialog box. Instead it returns the WiaItemMBS tree for the device. You
can override this behavior and force SelectDeviceDialog to display the dialog box by specifying kSelectDeviceNoDefault as the value for the Flags parameter. If more than one WIA device matches the specification, all matching devices are displayed in the Select Device dialog box so the user may choose one.

It is recommended that applications make device and image selection available through a menu item named From scanner on the File menu.

See also:

- 89.35.8 SelectDeviceDialog(parentWindow as window, DeviceType as Integer, Flags as Integer) as WIAItemMBS 14694
- 89.35.9 SelectDeviceDialog(parentWindow as window, DeviceType as Integer, Flags as Integer, byref DeviceID as string) as WIAItemMBS 14695
- 89.35.11 SelectDeviceDialog(parentWindowHandle as Integer, DeviceType as Integer, Flags as Integer, byref DeviceID as string) as WIAItemMBS 14697

### 89.35.11 SelectDeviceDialog(parentWindowHandle as Integer, DeviceType as Integer, Flags as Integer, byref DeviceID as string) as WIAItemMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Displays a dialog box that enables the user to select a hardware device for image acquisition. **Notes:**

- parentWindow: Specifies the parent window of the Select Device dialog box.
- DeviceType: Specifies which type of WIA 2.0 device to use. See WIA Device Type Specifiers for a list of possible values.
- Flags: Specifies the behavior of the dialog box. The value can be one of the following constants: kSelectDeviceNoDefault
- DeviceID: Optional, On output, receives a string which contains the device’s identifier string. On input, pass the address of a pointer if this information is needed, or ”” if it is not needed.

Returns the WIAItem which was selected.

Lasterror is set.

This method creates and displays the Select Device dialog box so the user can select a WIA device for image acquisition. If a device is successfully selected, the SelectDeviceDialog method creates a hierarchical tree of IWiaItem2 objects for the device. It returns the WiaItemMBS object of the root item.

The application can restrict the devices displayed to the user to particular types by specifying the device types through the DeviceType parameter. If only one device meets the specification, SelectDeviceDialog does not display the Select Device dialog box. Instead it returns the WiaItemMBS tree for the device. You can override this behavior and force SelectDeviceDialog to display the dialog box by specifying kSelectDeviceNoDefault as the value for the Flags parameter. If more than one WIA device matches the specification, all matching devices are displayed in the Select Device dialog box so the user may choose one.
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It is recommended that applications make device and image selection available through a menu item named From scanner on the File menu.

See also:

- 89.35.8 SelectDeviceDialog(parentWindow as window, DeviceType as Integer, Flags as Integer) as WIAItemMBS

- 89.35.9 SelectDeviceDialog(parentWindow as window, DeviceType as Integer, Flags as Integer, byref DeviceID as string) as WIAItemMBS

- 89.35.10 SelectDeviceDialog(parentWindowHandle as Integer, DeviceType as Integer, Flags as Integer) as WIAItemMBS

89.35.12 SelectDeviceDialogID(parentWindow as window, DeviceType as Integer, Flags as Integer) as string

MBS Win Plugin, Plugin Version: 10.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Displays a dialog box that enables the user to select a hardware device for image acquisition.

**Notes:**

Lasterror is set.

parentWindow: Specifies the parent window of the Select Device dialog box.
DeviceType: Specifies which type of WIA device to use. See kDeviceType* constants.
Flags: Specifies the behavior of the dialog box. You can pass the following constant: kSelectDeviceNoDefault

Returns the selected DeviceID.

This method creates and displays the Select Device dialog box so the user can select a WIA device for image acquisition. If a device is successfully selected, the SelectDeviceDialogID method returns its identifier string to the application.

The application can restrict the devices displayed to the user to particular types by specifying the device types through the DeviceType parameter. If only one device meets the specification, SelectDeviceDialogID does not display the Select Device dialog box. Instead it passes the device's identifier string to the application without displaying the dialog box. You can override this behavior and force SelectDeviceDialogID to display the dialog box by passing kSelectDeviceNoDefault as the value for the lFlags parameter. If more than one WIA device matches the specification, all matching devices are displayed in the SelectDevice dialog box so the user may choose one.

Note It is recommended that applications make device and image selection available through a menu item named From scanner on the File menu.

See also:
89.35.13 SelectDeviceDialogID(parentWindowHandle as Integer, DeviceType as Integer, Flags as Integer) as string

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Displays a dialog box that enables the user to select a hardware device for image acquisition. **Notes:**
LastError is set.

- **parentWindow:** Specifies the parent window of the Select Device dialog box.
- **DeviceType:** Specifies which type of WIA device to use. See kDeviceType* constants.
- **Flags:** Specifies the behavior of the dialog box. You can pass the following constant: kSelectDeviceNoDefault

Returns the selected DeviceID.

This method creates and displays the Select Device dialog box so the user can select a WIA device for image acquisition. If a device is successfully selected, the SelectDeviceDialogID method returns its identifier string to the application.

The application can restrict the devices displayed to the user to particular types by specifying the device types through the DeviceType parameter. If only one device meets the specification, SelectDeviceDialogID does not display the Select Device dialog box. Instead it passes the device’s identifier string to the application without displaying the dialog box. You can override this behavior and force SelectDeviceDialogID to display the dialog box by passing kSelectDeviceNoDefault as the value for the IFlags parameter. If more than one WIA device matches the specification, all matching devices are displayed in the SelectDevice dialog box so the user may choose one.

Note It is recommended that applications make device and image selection available through a menu item named From scanner on the File menu.

See also:

- 89.35.12 SelectDeviceDialogID(parentWindow as window, DeviceType as Integer, Flags as Integer) as string

89.35.14 Properties

89.35.15 Handle as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The internal reference to the object.
Notes:
The handle for WIA 2.x.
(Read and Write property)

89.35.16 Lasterror as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The last error code.
**Notes:** (Read and Write property)

89.35.17 Constants

89.35.18 kDeviceDialogSingleImage = 2

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the constants for the GetImageDialog method.
**Notes:**
Restrict image selection to a single image in the device image acquisition dialog box.
Only for WIA 2.x.

89.35.19 kDeviceDialogUseCommonUI = 4

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the constants for the GetImageDialog method.
**Notes:** Use the system UI, if available, rather than the vendor-supplied UI. If the system UI is not available, the vendor UI is used. If neither UI is available, the function returns E_NOTIMPL.

89.35.20 kDeviceTypeDefault = 0

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the device type constants.

89.35.21 kDeviceTypeDigitalCamera = 2

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the device type constants.
89.35.22  \texttt{kDeviceTypeScanner} = 1

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the device type constants.

89.35.23  \texttt{kDeviceTypeStreamingVideo} = 3

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the device type constants.

89.35.24  \texttt{kEnumAll} = 15

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the constants for \texttt{EnumDeviceInfo} flags parameter.
\textbf{Notes}: All devices are enumerated, both locally and remote, including inactive (disconnected) devices and legacy STI-only devices.

89.35.25  \texttt{kEnumLocal} = 16

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the constants for \texttt{EnumDeviceInfo} flags parameter.
\textbf{Notes}: Only locally connected active scanner devices are enumerated.

89.35.26  \texttt{kIntentBestPreview} = & h40000

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the intent constants for \texttt{GetImageDialog}.
\textbf{Notes}: Specifies the best quality preview.

89.35.27  \texttt{kIntentImageTypeColor} = 1

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the intent constants for \texttt{GetImageDialog}.
\textbf{Notes}: Preset properties for color content.

89.35.28  \texttt{kIntentImageTypeGrayscale} = 2

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the intent constants for \texttt{GetImageDialog}.
\textbf{Notes}: Preset properties for grayscale content.
89.35.29  \texttt{kIntentImageTypeMask = \& \texttt{hF}}

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the intent constants for GetImageDialog.  
\textbf{Notes:} Mask for all of the image type flags.

89.35.30  \texttt{kIntentImageTypeText} = 4

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the intent constants for GetImageDialog.  
\textbf{Notes:} Preset properties for text content.

89.35.31  \texttt{kIntentMaximizeQuality = \& \texttt{h20000}}

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the intent constants for GetImageDialog.  
\textbf{Notes:} Preset properties to maximize image quality.

89.35.32  \texttt{kIntentMinimizeSize = \& \texttt{h10000}}

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the intent constants for GetImageDialog.  
\textbf{Notes:} Preset properties to minimize image size.

89.35.33  \texttt{kIntentNone} = 0

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the intent constants for GetImageDialog.  
\textbf{Notes:} Default value. Do not preset any properties.

89.35.34  \texttt{kIntentSizeMask = \& \texttt{hF0000}}

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the intent constants for GetImageDialog.  
\textbf{Notes:} Mask for all of the size/quality flags.

89.35.35  \texttt{kSelectDeviceNoDefault} = 1

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the constants for the GetImageDialog method.  
\textbf{Notes:} Force this method to display the Select Device dialog box.
89.36. **CLASS WIAEXTENDEDTRANSFERINFOMBS**

89.36  **class WIAExtendedTransferInfoMBS**

89.36.1  **class WIAExtendedTransferInfoMBS**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The WIAExtendedTransferInfoMBS class specifies extended transfer information for the GetExtendedTransferInfo method. 
**Notes:** Requires Windows 2000 Professional, Windows XP or Windows Server 2003.

89.36.2  **Properties**

89.36.3  **MaxBufferSize as Integer**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Driver-recommended maximum buffer size the application could request in a call to GetBandedData. 
**Notes:** Going over this limit is not detrimental, however, the driver can simply not use the whole buffer and limit each band of data to this maximum size. (Read and Write property)

89.36.4  **MinBufferSize as Integer**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Minimum buffer size the application should request in a call to GetBandedData. 
**Notes:** (Read and Write property)

89.36.5  **NumBuffers as Integer**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** This value is not used and should be ignored. 
**Notes:** (Read and Write property)

89.36.6  **OptimalBufferSize as Integer**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Driver-recommended buffer size the application should request in a call to GetBandedData. 
**Notes:** (Read and Write property)
89.36.7 Size as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Size of this structure.

**Notes:** (Read and Write property)
class WIAFormatInfoEnumeratorMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Use the WIAFormatInfoEnumeratorMBS class to enumerate the format and media type information for a device.

**Methods**

**Clone as WIAFormatInfoEnumeratorMBS**

Clones this enumerator.

Notes: Lasterror is set.

**Count as Integer**

Returns the number of elements stored by this enumerator.

Notes: Lasterror is set.

**NextItem as WIAFormatInfoMBS**

Returns the next item in the enumeration.

**Reset**

Resets the enumerator.

Notes: Lasterror is set.

**Skip(celt as Integer)**

Skips the specified number of structures in the enumeration.
Notes: Lasterror is set.

### 89.37.8 Properties

### 89.37.9 Handle as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The internal reference to the object.
**Notes:** (Read and Write property)

### 89.37.10 Lasterror as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The last error code.
**Notes:** (Read and Write property)
89.38. CLASS WIAFORMATINFOMBS

89.38 class WIAFormatInfoMBS

89.38.1 class WIAFormatInfoMBS


89.38.2 Properties

89.38.3 FormatID as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** GUID that identifies the format. **Notes:** (Read and Write property)

89.38.4 Tymed as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The media type that corresponds to the guidFormatID member. **Notes:** (Read and Write property)
89.39 class WIAGUIDMBS

89.39.1 class WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The class for a Windows unique ID.

**Example:**

```vbs
Dim w As WIAGUIDMBS = WIAPropertyStorageMBS.kImageFormatTIFF
MsgBox w.DisplayString
```

**Notes:** If you need to validate a GUID or UUID, please check the IsGUID function in our FAQ.

89.39.2 Methods

89.39.3 Constructor

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Creates a GUID with only zeros.

**Example:**

```vbs
Dim g As New WIAGUIDMBS
MsgBox g.DisplayString
```

See also:

- 89.39.4 Constructor(value1 as Integer, value2 as Integer, value3 as Integer, value4 as Integer, value5 as Integer, value6 as Integer, value7 as Integer, value8 as Integer, value9 as Integer, value10 as Integer, value11 as Integer, value12 as Integer, value13 as Integer, value14 as Integer, value15 as Integer, value16 as Integer)

89.39.4 Constructor(value1 as Integer, value2 as Integer, value3 as Integer, value4 as Integer, value5 as Integer, value6 as Integer, value7 as Integer, value8 as Integer, value9 as Integer, value10 as Integer, value11 as Integer, value12 as Integer, value13 as Integer, value14 as Integer, value15 as Integer, value16 as Integer)

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Creates a new GUID with the given byte values.
89.39. **CLASS WIAGUIDMBS**

**Example:**

```vbscript
dim g as new WIAGUIDMBS(& h14, & h3e, & h4e, & h83, & h97, & h11, & hd2, & ha2, & h31, & h00, & hc0, & h4f, & ha3, & h18, & h09)

MsgBox g.DisplayString
```

See also:

- 89.39.3 Constructor

**89.39.5 DisplayString as string**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The ID well formatted.  
**Example:**

```vbscript
dim w as WIAGUIDMBS = WIAPropertyStorageMBS.kImageFormatTIFF

MsgBox w.DisplayString
```

**89.39.6 Equal(other as WIAGUIDMBS) as boolean**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Checks whether two GUIDs are equal.  
**Example:**

```vbscript
dim w as WIAGUIDMBS = WIAPropertyStorageMBS.kImageFormatTIFF
dim v as WIAGUIDMBS = WIAPropertyStorageMBS.kImageFormatTIFF

if w.Equal(v) then
    MsgBox "Equal, right."
else
    MsgBox "not equal, a bug."
end if

v = WIAPropertyStorageMBS.kImageFormatBMP

if w.Equal(v) then
    MsgBox "Equal, a bug."
else
    MsgBox "not equal, right."
end if
```
Notes: Returns true if both items are equals.

89.39.7 Parse(GUID as String) as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Parses GUID string into a GUID object.

89.39.8 Properties

89.39.9 Byte(index as Integer) as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Read or write the byte value.

**Example:**
```
dim g as new WIAGUIDMBS

g.Byte(1) = 65

MsgBox str(g.Byte(1)) // shows 65
```

Notes: (Read and Write computed property)

89.39.10 Data as string

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The UID as binary string.

**Example:**
```
dim w as WIAGUIDMBS = WIAPropertyStorageMBS.kImageFormatTIFF

MsgBox EncodeBase64(w.Data)
```

Notes: (Read and Write computed property)
89.40 class WIAItemEnumeratorMBS

89.40.1 class WIAItemEnumeratorMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The WIAItemEnumeratorMBS class is used by applications to enumerate WiaItemMBS objects in the tree’s current folder.

**Example:**

```vba
Sub EnumerateItems(root as WIAItemMBS)
    dim e as WIAItemEnumeratorMBS = Root.EnumerateChildItems
    if e<>Nil then
        dim it as WIAItemMBS = e.NextItem
        while it<>nil
            // do something with item
            it = e.NextItem
        wend
    end if
End Sub
```

**Notes:** The Windows Image Acquisition (WIA) run-time system represents every WIA hardware device to applications as a hierarchical tree of WiaItemMBS objects.

89.40.2 Methods

89.40.3 Clone as WIAItemEnumeratorMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Creates an additional instance of the WIAItemEnumeratorMBS object.

**Notes:** Lasterror is set.

89.40.4 Count as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Returns the number of elements stored by this enumerator.

**Notes:** Lasterror is set.
89.40.5  **NextItem as WIAItemMBS**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the next item in the enumeration.  
**Example:**

```vba
Sub EnumerateItems(root as WIAItemMBS)
    dim e as WIAItemEnumeratorMBS = Root.EnumerateChildItems

    if e <> Nil then
        dim it as WIAItemMBS = e.NextItem

        while it <> nil
            // do something with item

            it = e.NextItem
       wend
    end if
End Sub
```

**Notes:** Lasterror is set.

---

89.40.6  **Reset**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Resets the enumeration.  
**Notes:** Lasterror is set.

---

89.40.7  **Skip(celt as Integer)**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Skips the specified number of items during an enumeration of available WiaItemMBS objects.  
**Notes:** Lasterror is set.
89.40.8 Properties

89.40.9 Handle as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The internal reference to the object.  
**Notes:**  
The handle for WIA 1.x or 2.x.  
(Read and Write property)

89.40.10 Handle1 as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The internal reference to the object.  
**Notes:**  
The handle for WIA 1.x.  
(Read and Write property)

89.40.11 Handle2 as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The internal reference to the object.  
**Notes:**  
The handle for WIA 2.x.  
(Read and Write property)

89.40.12 Lasterror as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The last error code.  
**Notes:**  
(Read and Write property)
89.41 class WIAItemMBS

89.41.1 class WIAItemMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The class for an item.

**Notes:**
Each Windows Image Acquisition (WIA) hardware device is represented to an application as a hierarchical
tree of WiaItem objects. The WiaItem interface provides applications with the ability to query devices to
discover their capabilities. It also provides access to data transfer interfaces and item properties. In addition,
the WiaItem interface provides methods to enable applications to control the device.

This class encapsulates transparently the system classes for WIA 1.x and 2.x.

89.41.2 Methods

89.41.3 AnalyzeItem

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The AnalyzeItem method causes the Windows Image Acquisition (WIA) hardware device to acquire and try
to detect what data types are present.

**Notes:**
This method is used with scanners to detect what type of data is on a page. When an application calls this
method, the WIA hardware device driver scans and analyzes the current page. For each data type it detects,
it creates an WiaItem object to represent the region on the page the data occupies.

Image processing and OCR software can use this capability to detect graphics and text on a page. This
method adds the regions it creates into the WIA device’s WiaItem tree. The application can select the
individual regions and use the standard data transfer methods to acquire data from them.

If necessary, applications can override the regions created by this method.

Works only on WIA 1.x.
Lasterror is set.
89.41.4 CreateChildItem(ItemFlags as Integer, CreationFlags as Integer, ItemName as string, FullItemName as string) as WIAItemMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The CreateChildItem method is used by applications to add WiaItem objects to the WiaItem tree of a device.

**Notes:**
- ItemFlags: Specifies the WIA item type.
- CreationFlags: Specifies how to create the new item. Only for WIA 2.x. Can be 0 to set the default values for the properties of the child. Can be &H40000000 to copy the values of all Read/Write properties from the parent.
- ItemName: Specifies the WIA item name, such as "Top". You can think of this parameter as being equivalent to a file name.
- FullItemName: Specifies the full WIA item name. You can think of this parameter as equivalent to a full path to a file, such as "003\Root\Top". Only for WIA 1.x.

Lasterror is set.
Returns nil on any error and the new item object on success.

Some WIA hardware devices allow applications to create new items in the WiaItem tree that represents the device. Applications must test the devices to see if they support this capability. Use the EnumerateDevice-Capabilities function to enumerate the current device’s capabilities.

If the device allows the creation of new items in the WiaItem tree, invoking CreateChildItem creates a new WiaItem that is a child of the current node.

89.41.5 DataTransfer as WIADataTransferMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Creates a Data transfer object.

**Notes:**
- Lasterror is set.
- Only for WIA 1.x.
- Returns nil on any error.

89.41.6 DeleteItem

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Removes the current IWiaItem object from the object tree of the device.

**Notes:**
Lasterror is set.
Available on both WIA 1.x and 2.x.

The Windows Image Acquisition (WIA) run-time system represents each WIA hardware device connected to the user’s computer as a hierarchical tree of IWiaItem objects. A given WIA device may or may not allow applications to delete IWiaItem objects from its tree. Use the EnumerateDeviceCapabilities function to query the device for item deletion capability.

If the device supports item deletion in its WiaItem tree, invoke the DeleteItem method to remove the WiaItem object. Note that this method will only delete an object after all references to the object have been released.

### 89.41.7 DeviceCommand(command as WIAGUIDMBS) as WIAItemMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Issues a command to a Windows Image Acquisition (WIA) hardware device.

**Example:**
```vbnet
dim targetItem as WIAItemMBS // your item
dim resultItem as WIAItemMBS
resultItem = targetItem.DeviceCommand(targetItem.kCommandTakePicture)
```

**Notes:**
Command: Specifies the command to send to the WIA 2.0 device. See kCommand* constants.
Works with WIA 1.x and 2.x.

Applications use this method to send WIA commands to hardware devices.

When the application sends the kCommandTakePicture command to the device, the WIA run-time system creates the WiaItem object to represent the image. The DeviceCommand method returns this new WIAItemMBS object.

### 89.41.8 DeviceDialog(Flags as Integer, Win as window, FolderName as string, Filename as string, paths() as string, items() as WIAItemMBS)

MBS Win Plugin, Plugin Version: 10.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Displays a dialog box to the user to prepare for image acquisition.

**Notes:**
Lasterror is set.
Only for WIA 2.x.
89.41. CLASS WIAITEMMBS

Flags: Specifies a set of flags that control the dialog box's operation. The value can be either 0 to represent the default behavior or any of the following flags: kDeviceDialogSingleImage, kDeviceDialogUseCommonUI and kSelectDeviceNoDefault
Win: A handle to the parent window.
FolderName: Specifies the folder name where the files are to be transferred.
Filename: Specifies the template file name.
paths: An array to be filled with the file paths.
items: An array to be filled with the wia item objects.

This method displays a dialog box to the user that an application uses to gather all the information required for image acquisition. It is also used to specify image scan properties such as brightness and contrast.

After this method returns, the application can use the WiaTransferMBS class to acquire the image.
See also:

- 89.41.9 DeviceDialog(Flags as Integer, WindowHandle as Integer, FolderName as string, Filename as string, paths() as string, items() as WIAItemMBS)
- 89.41.10 DeviceDialog(Win as window, Flags as Integer, Intent as Integer) as WIAItemMBS()
- 89.41.11 DeviceDialog(WindowHandle as Integer, Flags as Integer, Intent as Integer) as WIAItemMBS()

89.41.9  DeviceDialog(Flags as Integer, WindowHandle as Integer, FolderName as string, Filename as string, paths() as string, items() as WIAItemMBS)

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Displays a dialog box to the user to prepare for image acquisition.

**Notes:**
Lasterror is set.
Only for WIA 2.x.

Flags: Specifies a set of flags that control the dialog box's operation. The value can be either 0 to represent the default behavior or any of the following flags: kDeviceDialogSingleImage, kDeviceDialogUseCommonUI and kSelectDeviceNoDefault
WindowHandle: A handle to the parent window.
FolderName: Specifies the folder name where the files are to be transferred.
Filename: Specifies the template file name.
paths: An array to be filled with the file paths.
items: An array to be filled with the wia item objects.

This method displays a dialog box to the user that an application uses to gather all the information required for image acquisition. It is also used to specify image scan properties such as brightness and contrast.
After this method returns, the application can use the WiaTransferMBS class to acquire the image.

See also:

- 89.41.8 DeviceDialog(Flags as Integer, Win as window, FolderName as string, Filename as string, paths() as string, items() as WIAItemMBS) 14716
- 89.41.10 DeviceDialog(Win as window, Flags as Integer, Intent as Integer) as WIAItemMBS() 14718
- 89.41.11 DeviceDialog(WindowHandle as Integer, Flags as Integer, Intent as Integer) as WIAItemMBS() 14719

89.41.10 DeviceDialog(Win as window, Flags as Integer, Intent as Integer) as WIAItemMBS()

MBS Win Plugin, Plugin Version: 10.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The DeviceDialog method is used by applications to display a dialog box to the user to prepare for image acquisition.

**Notes:**

- win: Handle of the parent window of the dialog box.
- Flags: Specifies a set of flags that control the dialog box’s operation. Can be set to any of the following values: kDeviceDialogUseCommonUI and kDeviceDialogSingleImage.
- Intent: Specifies what type of data the image is intended to represent. For a list of image intent values, kIntent* constants.

Lasterror is set.

Only for WIA 1.x.

This method displays a dialog box to the user that an application uses to gather all the information required for image acquisition. For instance, this dialog box enables the user to select images to download from a camera. When using a scanner, it is also used to specify image scan properties such as brightness and contrast.

After this method returns, the application can use the WiaDataTransferMBS interface to acquire the image.

It is recommended that applications make device and image selection available through a menu item named From scanner or camera on the File menu.

See also:

- 89.41.8 DeviceDialog(Flags as Integer, Win as window, FolderName as string, Filename as string, paths() as string, items() as WIAItemMBS) 14716
- 89.41.9 DeviceDialog(Flags as Integer, WindowHandle as Integer, FolderName as string, Filename as string, paths() as string, items() as WIAItemMBS) 14717
89.41. **CLASS WIAITEMMBS**

- **89.41.11 DeviceDialog(WindowHandle as Integer, Flags as Integer, Intent as Integer) as WIAItemMBS()**

**89.41.11 DeviceDialog(WindowHandle as Integer, Flags as Integer, Intent as Integer) as WIAItemMBS()**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The DeviceDialog method is used by applications to display a dialog box to the user to prepare for image acquisition.

**Notes:**
- **WindowHandle:** Handle of the parent window of the dialog box.
- **Flags:** Specifies a set of flags that control the dialog box’s operation. Can be set to any of the following values: kDeviceDialogUseCommonUI and kDeviceDialogSingleImage.
- **Intent:** Specifies what type of data the image is intended to represent. For a list of image intent values, kIntent* constants.

Lasterror is set.
Only for WIA 1.x.

This method displays a dialog box to the user that an application uses to gather all the information required for image acquisition. For instance, this dialog box enables the user to select images to download from a camera. When using a scanner, it is also used to specify image scan properties such as brightness and contrast.

After this method returns, the application can use the WiaDataTransferMBS interface to acquire the image.

It is recommended that applications make device and image selection available through a menu item named From scanner or camera on the File menu.

See also:

- **89.41.8 DeviceDialog(Flags as Integer, Win as window, FolderName as string, Filename as string, paths() as string, items() as WIAItemMBS) 14716**

- **89.41.9 DeviceDialog(Flags as Integer, WindowHandle as Integer, FolderName as string, Filename as string, paths() as string, items() as WIAItemMBS) 14717**

- **89.41.10 DeviceDialog(Win as window, Flags as Integer, Intent as Integer) as WIAItemMBS() 14718**

**89.41.12 EnumerateChildItems(CategoryGUID as WIAGUIDMBS=nil) as WIAItemMBS**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Creates and returns an enumerator object for non-empty folders in a WiaItem tree of a Windows Image
Acquisition (WIA) device.

**Example:**

```vbnet
Sub EnumerateItems(root as WIAItemMBS)
    Dim e as WIAItemEnumeratorMBS = Root.EnumerateChildItems
    If e <> Nil Then
        Dim it as WIAItemMBS = e.NextItem
        While it <> Nil
            // do something with item
            It = e.NextItem
        Wend
    End If
End Sub
```

**Notes:**

LastError is set.
Works for WIA 1.x and WIA 2.x.

CategoryGUID: Specifies a category for which child nodes are enumerated. If nil, then all child nodes are enumerated. This parameter is only used on WIA 2.x.

The WIA run-time system represents each WIA hardware device as a hierarchical tree of WiaItem objects. The EnumerateChildItems method enables applications to enumerate child items in the current item. However, it can only be applied to items that are folders.

If the folder is not empty, it contains a subtree of WiaItem objects. The EnumerateChildItems method enumerates all of the items contained in the folder.

**89.41.13 EnumerateDeviceCapabilities(Flags as Integer) as WIADeviceCapabilitiesEnumeratorMBS**

MBS Win Plug Win, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Creates an enumerator that is used to ascertain the commands and events a Windows Image Acquisition (WIA) device supports.

**Notes:**

Flags: Specifies a flag that selects the type of capabilities to enumerate. Can be a combination of kDe-
89.41. CLASS WIAITEMMBS
viceCommands and kDeviceEvents.
Works for both WIA 1.x and 2.x
Lasterror is set.
Use this method to create an enumerator object to obtain the set of commands and events that a WIA device
supports. You can use the Flags parameter to specify which kinds of device capabilities to enumerate.

89.41.14 FindItemByName(name as string) as WIAItemMBS
MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Searches an item’s tree of subitems using the name as the search key.
**Notes:**
name: Specifies the name fo the item to search for.
Lasterror is set.
Works with WIA 1.x and 2.x.
This method searches the current item’s tree of sub-items using the name as the search key. If FindItemBy-
Name finds the item specified by name, it reutrns the WiaItem object.

89.41.15 ItemCategory as WIAGUIDMBS
MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Gets an item’s category information.
**Notes:**
Lasterror is set. Only for WIA 2.x.
Every WiaItemMBS object in the hierarchical tree of objects associated with a Windows Image Acquisition
(WIA) 2.0 hardware device has a specific category. This method enables applications to identify the category
of any item in a hierarchical tree of item objects in a device.
Requires Windows Vista or Windows Server 2008.
89.41.16  **ItemType as Integer**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Gets an item’s type information.

**Example:**

```vba
dim it as WIAItemMBS // your item
if BitwiseAnd(it.ItemType,it.kTypeFolder)=it.kTypeFolder or BitwiseAnd(it.ItemType, it.kTypeHasAttachments)=it.kTypeHasAttachments then
    msgbox "may have children."
else
    msgbox "no children."
end if
```

**Notes:**

Works with WIA 1.x and 2.x.
Lasterror is set.

Every WiaItemMBS object in the hierarchical tree of objects associated with a Windows Image Acquisition (WIA) 2.0 hardware device has a specific data type. Item objects represent folders and files. Folders contain file objects. File objects contain data acquired by the device such as images and sounds. This method enables applications to identify the type of any item in a hierarchical tree of item objects in a device.

An item may have more than one type. For example, an item that represents an audio file will have the type attributes WiaItemTypeAudio bitwiseor WiaItemTypeFile.

89.41.17  **kCategoryFeeder as WIAGUIDMBS**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
One of the WIA IPA item category constants

**Example:**

```vba
MsgBox WIAItemMBS.kCategoryFeeder.DisplayString
```

89.41.18  **kCategoryFeederBack as WIAGUIDMBS**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
One of the WIA IPA item category constants

**Example:**

```vba
```
89.41. **CLASS WIAITEMMBS**

MsgBox WIAItemMBS.kCategoryFeederBack.DisplayString

### 89.41.19 **kCategoryFeederFront as WIAGUIDMBS**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
One of the WIA IPA item category constants
**Example:**
MsgBox WIAItemMBS.kCategoryFeederFront.DisplayString

### 89.41.20 **kCategoryFilm as WIAGUIDMBS**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
One of the WIA IPA item category constants
**Example:**
MsgBox WIAItemMBS.kCategoryFilm.DisplayString

### 89.41.21 **kCategoryFinishedFile as WIAGUIDMBS**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
One of the WIA IPA item category constants
**Example:**
MsgBox WIAItemMBS.kCategoryFinishedFile.DisplayString

### 89.41.22 **kCategoryFlatbed as WIAGUIDMBS**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
One of the WIA IPA item category constants
**Example:**
MsgBox WIAItemMBS.kCategoryFlatbed.DisplayString
89.41.23  **kCategoryFolder as WIAGUIDMBS**

**Function:** One of the WIA IPA item category constants  
**Example:**  
MsgBox WIAItemMBS.kCategoryFolder.DisplayString

89.41.24  **kCategoryRoot as WIAGUIDMBS**

**Function:** One of the WIA IPA item category constants  
**Example:**  
MsgBox WIAItemMBS.kCategoryRoot.DisplayString

89.41.25  **kCommandChangeDocument as WIAGUIDMBS**

**Function:** One of the WIA command constants.  
**Example:**  
MsgBox WIAItemMBS.kCommandChangeDocument.DisplayString

89.41.26  **kCommandDeleteAllItems as WIAGUIDMBS**

**Function:** One of the WIA command constants.  
**Example:**  
MsgBox WIAItemMBS.kCommandDeleteAllItems.DisplayString

89.41.27  **kCommandDiagnostic as WIAGUIDMBS**

**Function:** One of the WIA command constants.  
**Example:**  

89.41. CLASS WIAITEMMBS

MsgBox WIAItemMBS.kCommandDiagnostic.DisplayString

89.41.28 kCommandSynchronize as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
One of the WIA command constants.
**Example:**
MsgBox WIAItemMBS.kCommandSynchronize.DisplayString

89.41.29 kCommandTakePicture as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
One of the WIA command constants.

89.41.30 kCommandUnloadDocument as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
One of the WIA command constants.
**Example:**
MsgBox WIAItemMBS.kCommandUnloadDocument.DisplayString

89.41.31 ParentItem as WIAItemMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Gets the parent item in the tree that represents a Windows Image Acquisition (WIA) 2.0 hardware device.
**Notes:**
Works only in WIA 2.x. Lasterror is set.
Given any WiaItem object in the object tree of a WIA 2.0 hardware device, the application retrieves a
pointer to the parent item by calling this function.
PropertyStorage as WIAPropertyStorageMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries properties for this item.

**Example:**

```vbscript
Sub ListProperties(it as WIAItemMBS, plist as listbox)

    // enumerate properties into a given listbox
    // clear list
    PList.DeleteAllRows

    // get properties
    dim p as WIAPropertyStorageMBS = it.PropertyStorage
    if p<>Nil then
        dim e as WIAPropertyEnumeratorMBS = p.Enumerate

        if e<>nil then
            dim ps as WIAPropertyMBS = e.NextItem

            while ps<>Nil
                // read the property value
                dim v as Variant = p.Read(ps)

                // get some identifier string for the listbox, name or id
                dim k as string = ps.Name
                if len(k)=0 then
                    k = str(ps.ID)
                end if

                PList.AddRow k

                if v.Type = v.TypeObject then
                    if v isa WIAGUIDMBS then
                        dim g as WIAGUIDMBS = v
                        PList.Cell(PList.LastIndex,1)=g.DisplayString
                    else
                        PList.Cell(PList.LastIndex,1)="? some object" // should never happen
                    end if
                else
                    PList.Cell(PList.LastIndex,1)=v.StringValue
                end if

                ps = e.NextItem
            wend
        end if
    end if
end if
```
Notes:
Lasterror is set.
Returns nil on any error.

89.41.33 RootItem as WIAItemMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Retrieves the root item of a tree of item objects used to represent a Windows Image Acquisition (WIA) hardware device.
**Notes:**
Lasterror is set.
Works with WIA 1.x and 2.x.

Given any WiaItem object in the object tree of a WIA hardware device, the application retrieves a pointer to the root item by calling this function.

89.41.34 Transfer as WIATransferMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Creates a transfer object for this item.
**Notes:**
Only available on WIA 2.x.
Lasterror is set.
Returns nil on any error.

89.41.35 Properties

89.41.36 Handle as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The internal reference to the object.
**Notes:**
The handle for WIA 1.x or 2.x.
(Read and Write property)
89.41.37 Handle1 as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The internal reference to the object. Notes: The handle for WIA 1.x. (Read and Write property)

89.41.38 Handle2 as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The internal reference to the object. Notes: The handle for WIA 2.x. (Read and Write property)

89.41.39 Lasterror as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The last error code. Notes: (Read and Write property)

89.41.40 Constants

89.41.41 kDeviceCommands = 1


89.41.42 kDeviceDialogSingleImage = 2

MBS Win Plugin, Plugin Version: 10.3. Function: One of the DeviceDialog and ImageDialog flag constants. Notes: Only allow one image to be selected
89.41.43 kDeviceDialogUseCommonUI = 4

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the DeviceDialog and ImageDialog flag constants. **Notes:** Give preference to the system-provided UI, if available.

89.41.44 kDeviceEvents = 2

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the flag constants for the EnumerateDeviceCapabilities function. **Notes:** Enumerate device events.

89.41.45 kIntentBestPreview = & h40000

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the intent constants for GetImageDialog. **Notes:** Specifies the best quality preview.

89.41.46 kIntentImageTypeColor = 1

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the intent constants for GetImageDialog. **Notes:** Preset properties for color content.

89.41.47 kIntentImageTypeGrayscale = 2

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the intent constants for GetImageDialog. **Notes:** Preset properties for grayscale content.

89.41.48 kIntentImageTypeMask = & hF

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the intent constants for GetImageDialog. **Notes:** Mask for all of the image type flags.

89.41.49 kIntentImageTypeText = 4

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the intent constants for GetImageDialog. **Notes:** Preset properties for text content.
89.41.50  kIntentMaximizeQuality = & h20000

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the intent constants for GetImageDialog.  
**Notes:** Preset properties to maximize image quality.

89.41.51  kIntentMinimizeSize = & h10000

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the intent constants for GetImageDialog.  
**Notes:** Preset properties to minimize image size.

89.41.52  kIntentNone = 0

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the intent constants for GetImageDialog.  
**Notes:** Default value. Do not preset any properties.

89.41.53  kIntentSizeMask = & hF0000

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the intent constants for GetImageDialog.  
**Notes:** Mask for all of the size/quality flags.

89.41.54  kSelectDeviceNoDefault = 1

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the Select Device Dialog and Image Dialog flag constants.

89.41.55  kTypeAnalyze = & h00000010

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA item type constants.

89.41.56  kTypeAudio = & h00000020

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA item type constants.
### 89.41.57 kTypeBurst = & h00000800

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA item type constants.

### 89.41.58 kTypeDeleted = & h00000080

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA item type constants.

### 89.41.59 kTypeDevice = & h00000040

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA item type constants.

### 89.41.60 kTypeDisconnected = & h00000100

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA item type constants.

### 89.41.61 kTypeFile = & h00000002

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA item type constants.

### 89.41.62 kTypeFolder = & h00000004

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA item type constants.

**Example:**

```vbs
Dim it As WIAItemMBS ' your item
If BitwiseAnd(it.ItemType, it.kTypeFolder) = it.kTypeFolder Or BitwiseAnd(it.ItemType, it.kTypeHasAttachments) = it.kTypeHasAttachments Then
    MsgBox "may have children."
Else
    MsgBox "no children."
End If
```


89.41.63  kTypeFree = & h00000000

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA item type constants.

89.41.64  kTypeGenerated = & h00004000

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA item type constants.

89.41.65  kTypeHasAttachments = & h00008000

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA item type constants.

**Example:**

```vba
dim it as WIAItemMBS ' your item
if BitwiseAnd(it.ItemType, it.kTypeFolder)=it.kTypeFolder or BitwiseAnd(it.ItemType, it.kTypeHasAttachments)=it.kTypeHasAttachments then
msgbox "may have children."
else
msgbox "no children."
end if
```

89.41.66  kTypeHPanorama = & h00000200

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA item type constants.

89.41.67  kTypeImage = & h00000001

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA item type constants.

89.41.68  kTypeRoot = & h00000008

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA item type constants.
89.41. CLASS WIAITEMMBS

89.41.69  kTypeStorage = & h00001000

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA item type constants.

89.41.70  kTypeTransfer = & h00002000

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA item type constants.

89.41.71  kTypeVideo = & h00010000

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA item type constants.

89.41.72  kTypeVPanorama = & h00000400

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA item type constants.
89.42 class WIAPROPERTYENUMERATORMBS

89.42.1 class WIAPROPERTYENUMERATORMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
The class for a property enumerator.

Example:

Sub ListProperties(it as WIAITEMMBS, plist as listbox)
// enumerate properties into a given listbox

// clear list
PList.DeleteAllRows

// get properties
dim p as WIAPROPERTYSTORAGEMBS = it.PropertyStorage
if p<>Nil then
    dim e as WIAPROPERTYENUMERATORMBS = p.Enumerate

if e<>nil then
    dim ps as WIAPROPERTYMBS = e.NextItem

while ps<>Nil
    // read the property value
    dim v as Variant = p.Read(ps)

    // get some identifier string for the listbox, name or id
    dim k as string = ps.Name
    if len(k)=0 then
        k = str(ps.ID)
    end if

    PList.AddRow k

    if v.Type = v.TypeObject then
        if v isa WIAGUIDMBS then
            dim g as WIAGUIDMBS = v
            PList.Cell(PList.LastIndex,1)=g.DisplayString
        else
            PList.Cell(PList.LastIndex,1)="? some object" // should never happen
        end if
    else
        PList.Cell(PList.LastIndex,1)=v.StringValue
    end if

    ps = e.NextItem
wend
89.42. CLASS WIAPROPERTYENUMERATORMBS

end if
end if
End Sub

89.42.2 Methods

89.42.3 Clone as WIAPROPERTYENUMERATORMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
Creates a copy of the enumerator.
Notes: Lasterror is set.

89.42.4 NextItem as WIAPROPERTYMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
Returns the next item.
Example:

Sub ListProperties(it as WIAItemMBS, plist as listbox)
// enumerate properties into a given listbox

// clear list
PList.DeleteAllRows

// get properties
dim p as WIAPROPERTYSTORAGEMBS = it.PropertyStorage
if p<>Nil then
dim e as WIAPROPERTYENUMERATORMBS = p.Enumerate

if e<>nil then
dim ps as WIAPROPERTYMBS = e.NextItem

while ps<>Nil
// read the property value
dim v as Variant = p.Read(ps)

// get some identifier string for the listbox, name or id
dim k as string = ps.Name
if len(k)=0 then
    k = str(ps.ID)
end if

PList.AddRow k
if v.Type = v.TypeObject then
if v isa WIAGUIDMBS then
dim g as WIAGUIDMBS = v
PList.Cell(PList.LastIndex,1)=g.DisplayString
else
PList.Cell(PList.LastIndex,1)="? some object" // should never happen
end if
else
PList.Cell(PList.LastIndex,1)=v.StringValue
end if
ps = e.NextItem
wend
end if
end if
End Sub

Notes: Lasterror is set.

89.42.5  Reset

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Resets the enumerator.
**Notes:** Lasterror is set.

89.42.6  Skip(celt as Integer)

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Skips the next items.
**Notes:** Lasterror is set.

89.42.7  Properties

89.42.8  Handle as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The internal reference to the object.
89.42. **CLASS WIAPROPERTYENUMERATORMBS**

*Notes:* (Read and Write property)

### 89.42.9 Lasterror as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The last error code.

*Notes:* (Read and Write property)
89.43 class WIAPropertyMBS

89.43.1 class WIAPropertyMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The WIAPropertyMBS class contains data about a single property in a property set. This data is the property ID and type tag, and the optional string name that may be associated with the property.

**Example:**

```vba
Sub ListProperties(it as WIAItemMBS, plist as listbox)
    // enumerate properties into a given listbox

    // clear list
    PList.DeleteAllRows

    // get properties
    dim p as WIAPropertyStorageMBS = it.PropertyStorage
    if p<>Nil then
        dim e as WIAPropertyEnumeratorMBS = p.Enumerate

        if e<>nil then
            dim ps as WIAPropertyMBS = e.NextItem

            while ps<>Nil
                // read the property value
                dim v as Variant = p.Read(ps)

                // get some identifier string for the listbox, name or id
                dim k as string = ps.Name
                if len(k)=0 then
                    k = str(ps.ID)
                end if

                PList.AddRow k

                if v.Type = v.TypeObject then
                    if v isa WIAGUIDMBS then
                        dim g as WIAGUIDMBS = v
                        PList.Cell(PList.LastIndex,1)=g.DisplayString
                    else
                        PList.Cell(PList.LastIndex,1)="? some object" // should never happen
                    end if
                else
                    PList.Cell(PList.LastIndex,1)=v.StringValue
                end if

                ps = e.NextItem
            wend
    end if
end Sub
```
89.43.2 Properties

89.43.3 ID as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A 32-bit identifier that uniquely identifies the property within the property set.

**Example:**

```vba
dim ps as WIAPropertyMBS // your property

dim k as string = ps.Name
if len(k)=0 then
    k = str(ps.ID)
end if

MsgBox k
```

**Notes:**

All properties within property sets must have unique property identifiers.

(Read and Write property)

89.43.4 Name as String

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The string that contains the optional string name associated with the property

**Example:**

```vba
dim ps as WIAPropertyMBS // your property

dim k as string = ps.Name
if len(k)=0 then
    k = str(ps.ID)
end if

MsgBox k
```
Notes: (Read and Write property)

89.43.5 Type as Integer

Notes: (Read and Write property)
89.44. **CLASS WIAPROPERTYSTORAGEMBS**

89.44  **class WIAPropertyStorageMBS**

89.44.1  **class WIAPropertyStorageMBS**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The WIAPropertyStorageMBS class manages the persistent properties of a single property set.

**Example:**

```vba
dim DeviceManager as new WIADeviceManager1MBS
if 0 = DeviceManager.Handle then
    MsgBox "Failed to initialize device manager."
else
    dim it as WIAItemMBS = DeviceManager.SelectDeviceDialog(window1, DeviceManager.kDeviceTypeDefault, DeviceManager.kSelectDeviceNoDefault)
    if it<>Nil then
        dim p as WIAPropertyStorageMBS = it.PropertyStorage
        dim name as string = p.Read(p.kItemPropertyItemNameString)
        MsgBox name
    end if
end if
```

**Notes:**

Persistent properties consist of information that can be stored persistently in a property set, such as the summary information associated with a file. This contrasts with run-time properties associated with Controls and Automation, which can be used to affect system behavior. Use the methods of the WIAPropertyStorageMBS interface to create or open a persistent property set. An instance of the WIAPropertyStorageMBS interface can manage zero or more WIAPropertyStorageMBS instances.

Each property within a property set is identified by a property identifier (ID), a integer value unique to that set. You can also assign a string name to a property through the WIAPropertyStorageMBS interface.

The automatic conversion to variant supports:
nil, integer, uint32, int64, uint64, single, double, boolean, string and WIAGUIDMBS.

The automatic conversion from variant supports:
integer, boolean, single, double, Int64, string and WIAGUIDMBS.
89.44.2 Methods

89.44.3 Commit(flags as Integer)

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Saves changes made to a property storage object to the parent storage object.

**Notes:**
See kCommit* flags for the flags parameter.
Lasterror is set.

89.44.4 Count as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the number of properties stored in the property storage.

**Notes:** Lasterror is set.

89.44.5 Delete(id as Integer)

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Deletes an item by ID.

**Notes:** Lasterror is set.
See also:

- 89.44.6 Delete(name as string)

89.44.6 Delete(name as string)

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Deletes an item by name.

**Notes:** Lasterror is set.
See also:

- 89.44.5 Delete(id as Integer)

89.44.7 DeletePropertyName(id as Integer)

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Deletes specified string names from the current property set.

**Notes:**
id: Property identifier for which string name are to be deleted.

For each property identifier in rgpropid, DeletePropertyName removes any corresponding name-to-property ID mapping. An attempt is silently ignored to delete the name of a property that either does not exist or does not currently have a string name associated with it. This method has no effect on the properties themselves.

89.44.8 Enumerate as WIAPROPERTYSTORAGEMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Enumerates the properties on this property storage. **Notes:** Returns nil on any error. Lasterror is set.

89.44.9 kAudioFormatAIFF as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the WIA audio format constants. **Example:**

MsgBox WIAPropertyStorageMBS.kAudioFormatAIFF.DisplayString

89.44.10 kAudioFormatMP3 as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the WIA audio format constants. **Example:**

MsgBox WIAPropertyStorageMBS.kAudioFormatMP3.DisplayString

89.44.11 kAudioFormatWAV as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the WIA audio format constants. **Example:**
89.44.12 **kAudioFormatWMA as WIAGUIDMBS**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the WIA audio format constants.

**Example:**
MsgBox WIAPropertyStorageMBS.kAudioFormatWMA_DisplayString

89.44.13 **kImageFormatASF as WIAGUIDMBS**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the WIA misc format constants.

**Example:**
MsgBox WIAPropertyStorageMBS.kImageFormatASF_DisplayString

89.44.14 **kImageFormatAVI as WIAGUIDMBS**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the WIA audio format constants.

**Example:**
MsgBox WIAPropertyStorageMBS.kImageFormatAVI_DisplayString

89.44.15 **kImageFormatBMP as WIAGUIDMBS**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the WIA image format constants.

**Example:**
MsgBox WIAPropertyStorageMBS.kImageFormatBMP_DisplayString
89.44.16  kImageFormatCIFF as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the WIA image format constants.
Example:
MsgBox WIAPropertyStorageMBS.kImageFormatCIFF.DisplayString

89.44.17  kImageFormatDPOF as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the WIA misc format constants.
Example:
MsgBox WIAPropertyStorageMBS.kImageFormatDPOF.DisplayString

89.44.18  kImageFormatEMF as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the WIA image format constants.
Example:
MsgBox WIAPropertyStorageMBS.kImageFormatEMF.DisplayString

89.44.19  kImageFormatExec as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the WIA misc format constants.
Example:
MsgBox WIAPropertyStorageMBS.kImageFormatExec.DisplayString

89.44.20  kImageFormatEXIF as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the WIA image format constants.
Example:
89.44.21 kImageFormatFlashPix as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the WIA image format constants.

**Example:**

MsgBox WIAPropertyStorageMBS.kImageFormatFlashPix.DisplayString

89.44.22 kImageFormatGIF as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the WIA image format constants.

**Example:**

MsgBox WIAPropertyStorageMBS.kImageFormatGIF.DisplayString

89.44.23 kImageFormatHTML as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the WIA document format constants.

**Example:**

MsgBox WIAPropertyStorageMBS.kImageFormatHTML.DisplayString

89.44.24 kImageFormatICO as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the WIA image format constants.

**Example:**

MsgBox WIAPropertyStorageMBS.kImageFormatICO.DisplayString
89.44. CLASS WIAPROPERTYSTORAGEMBS

89.44.25 kImageFormatJPEG as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the WIA image format constants.  
**Example:**
MsgBox WIAPropertyStorageMBS.kImageFormatJPEG.DisplayString

89.44.26 kImageFormatJPEG2K as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the WIA image format constants.  
**Example:**
MsgBox WIAPropertyStorageMBS.kImageFormatJPEG2K.DisplayString

89.44.27 kImageFormatJPEG2KX as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the WIA image format constants.  
**Example:**
MsgBox WIAPropertyStorageMBS.kImageFormatJPEG2KX.DisplayString

89.44.28 kImageFormatMemoryBMP as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the WIA image format constants.  
**Example:**
MsgBox WIAPropertyStorageMBS.kImageFormatMemoryBMP.DisplayString

89.44.29 kImageFormatMPG as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the WIA audio format constants.  
**Example:**
89.44.30  kImageFormatPhotoCD as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the WIA image format constants.
**Example:**
MsgBox WIAPropertyStorageMBS.kImageFormatPhotoCD.DisplayString

89.44.31  kImageFormatPICT as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the WIA image format constants.
**Example:**
MsgBox WIAPropertyStorageMBS.kImageFormatPICT.DisplayString

89.44.32  kImageFormatPNG as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the WIA image format constants.
**Example:**
MsgBox WIAPropertyStorageMBS.kImageFormatPNG.DisplayString

89.44.33  kImageFormatRawRGB as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the WIA image format constants.
**Example:**
MsgBox WIAPropertyStorageMBS.kImageFormatRawRGB.DisplayString
89.44. CLASS WIAPROPERTYSTORAGEMBS

89.44.34  kImageFormatRTF as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the WIA document format constants.  
**Example:**  
MsgBox WIAPropertyStorageMBS.kImageFormatRTF.DisplayString

89.44.35  kImageFormatScript as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the WIA misc format constants.  
**Example:**  
MsgBox WIAPropertyStorageMBS.kImageFormatScript.DisplayString

89.44.36  kImageFormatTIFF as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the WIA image format constants.  
**Example:**  
MsgBox WIAPropertyStorageMBS.kImageFormatTIFF.DisplayString

89.44.37  kImageFormatTXT as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the WIA document format constants.  
**Example:**  
MsgBox WIAPropertyStorageMBS.kImageFormatTXT.DisplayString

89.44.38  kImageFormatUndefined as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** One of the WIA image format constants.  
**Example:**
89.44.39  kImageFormatUnicode16 as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
One of the WIA misc format constants.
**Example:**
MsgBox WIAPropertyStorageMBS.kImageFormatUnicode16.DisplayString

89.44.40  kImageFormatWMF as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
One of the WIA image format constants.
**Example:**
MsgBox WIAPropertyStorageMBS.kImageFormatWMF.DisplayString

89.44.41  kImageFormatXML as WIAGUIDMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
One of the WIA document format constants.
**Example:**
MsgBox WIAPropertyStorageMBS.kImageFormatXML.DisplayString

89.44.42  Read(id as Integer) as Variant

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Reads a property by id.
**Notes:** Lasterror is set.
See also:
- 89.44.43 Read(name as string) as Variant
- 89.44.44 Read(p as WIAPropertyMBS) as Variant
89.44. **CLASS WIAPROPERTYSTORAGEMBS**

### 89.44.43 Read(name as string) as Variant

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Reads a property by name.

**Example:**

```vba
dim DeviceManager as new WIADeviceManager1MBS
if 0 = DeviceManager.Handle then
    MsgBox "Failed to initialize device manager."
else
    dim it as WIAItemMBS = DeviceManager.SelectDeviceDialog(window1, DeviceManager.kDeviceTypeDefault, DeviceManager.kSelectDeviceNoDefault)
    if it<>Nil then
        dim p as WIAPropertyStorageMBS = it.PropertyStorage
        dim name as string = p.Read(p.kItemPropertyItemNameString)
        MsgBox name
    end if
end if
```

**Notes:** Lasterror is set.

See also:

- 89.44.42 Read(id as Integer) as Variant
- 89.44.44 Read(p as WIAPropertyMBS) as Variant

### 89.44.44 Read(p as WIAPropertyMBS) as Variant

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Reads a property by a property specification.

**Notes:** Lasterror is set.

See also:

- 89.44.42 Read(id as Integer) as Variant
- 89.44.43 Read(name as string) as Variant

### 89.44.45 ReadPropertyName(id as Integer) as string

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Retrieves any existing string name for the specified property ID.

**Notes:** Lasterror is set.
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89.44.46 Revert

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The Revert method discards all changes to the named property set since it was last opened or discards changes that were last committed to the property set.

**Notes:**
This method has no effect on a direct-mode property set.
Lasterror is set.

89.44.47 Write(id as Integer, value as Variant)

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Writes a property by id.

**Notes:** Lasterror is set.
See also:

- 89.44.48 Write(name as string, value as Variant, id as Integer = 0) 14752
- 89.44.49 Write(p as WIAPropertyMBS, value as Variant) 14752

89.44.48 Write(name as string, value as Variant, id as Integer = 0)

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Writes a property by name with optional id.

**Notes:** Lasterror is set.
See also:

- 89.44.47 Write(id as Integer, value as Variant) 14752
- 89.44.49 Write(p as WIAPropertyMBS, value as Variant) 14752

89.44.49 Write(p as WIAPropertyMBS, value as Variant)

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Writes a property by property specification.

**Notes:** Lasterror is set.
See also:

- 89.44.47 Write(id as Integer, value as Variant) 14752
- 89.44.48 Write(name as string, value as Variant, id as Integer = 0) 14752
89.44. CLASS WIAPROPERTYSTORAGEMBS

89.44.50 WritePropertyName(id as Integer, name as string)

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Assigns string names to a specified array of property IDs in the current property set.
**Notes:**
id: the property ID for which name is to be set.
name: The new name to be assigned to the corresponding property ID in the id parameter. This name may
not exceed 255 characters.

Lasterror is set.

89.44.51 Properties

89.44.52 Handle as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The internal reference to the object.
**Notes:** (Read and Write property)

89.44.53 Lasterror as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The last error code.
**Notes:** (Read and Write property)

89.44.54 Constants

89.44.55 kCameraDevicePropertyArtist = 2090

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.56 kCameraDevicePropertyArtistString = ”Artist”

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.
89.44.57  kCameraDevicePropertyBatteryStatus = 2065

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.58  kCameraDevicePropertyBatteryStatusString = "Battery Status"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.59  kCameraDevicePropertyBurstInterval = 2075

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.60  kCameraDevicePropertyBurstIntervalString = "Burst Interval"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.61  kCameraDevicePropertyBurstNumber = 2076

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.62  kCameraDevicePropertyBurstNumberString = "Burst Number"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.63  kCameraDevicePropertyCaptureDelay = 2082

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.64  kCameraDevicePropertyCaptureDelayString = "Capture Delay"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.
89.44. CLASS WIAPROPERTYSTORAGE\[MBS\]

89.44.65  kCameraDevicePropertyCaptureMode = 2081
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.66  kCameraDevicePropertyCaptureModeString = ”Capture Mode”
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.67  kCameraDevicePropertyCompressionSetting = 2071
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.68  kCameraDevicePropertyCompressionSettingString = ”Compression Setting”
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.69  kCameraDevicePropertyContrast = 2080
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.70  kCameraDevicePropertyContrastString = ”Contrast”
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.71  kCameraDevicePropertyCopyrightInfo = 2091
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.72  kCameraDevicePropertyCopyrightInfoString = ”Copyright Info”
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.
89.44.73  kCameraDevicePropertyDigitalZoom = 2078
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.74  kCameraDevicePropertyDigitalZoomString = ”Digital Zoom”
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.75  kCameraDevicePropertyDimension = 2070
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.76  kCameraDevicePropertyDimensionString = ”Dimension”
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.77  kCameraDevicePropertyEffectMode = 2077
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.78  kCameraDevicePropertyEffectModeString = ”Effect Mode”
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.79  kCameraDevicePropertyExposureComp = 2053
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.80  kCameraDevicePropertyExposureCompString = ”Exposure Compensation”
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.
89.44.1 kCameraDevicePropertyExposureIndex = 2083
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.2 kCameraDevicePropertyExposureIndexString = "Exposure Index"
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.3 kCameraDevicePropertyExposureMeteringMode = 2084
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.4 kCameraDevicePropertyExposureMeteringModeString = "Exposure Metering Mode"
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.5 kCameraDevicePropertyExposureMode = 2052
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.6 kCameraDevicePropertyExposureModeString = "Exposure Mode"
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.7 kCameraDevicePropertyExposureTime = 2054
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.8 kCameraDevicePropertyExposureTimeString = "Exposure Time"
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.
89.44.89 kCameraDevicePropertyFlashMode = 2056
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.90 kCameraDevicePropertyFlashModeString = "Flash Mode"
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.91 kCameraDevicePropertyFnumber = 2055
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.92 kCameraDevicePropertyFnumberString = "F Number"
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.93 kCameraDevicePropertyFocalLength = 2086
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.94 kCameraDevicePropertyFocalLengthString = "Focus Length"
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.95 kCameraDevicePropertyFocusDistance = 2085
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.96 kCameraDevicePropertyFocusDistanceString = "Focus Distance"
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.
89.44. CLASS WIAPROPERTYSTORAGEMBS

89.44.97  kCameraDevicePropertyFocusManualDist = 2058

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.98  kCameraDevicePropertyFocusManualDistString = ”Focus Manual Dist”

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.99  kCameraDevicePropertyFocusMeteringMode = 2072

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.100  kCameraDevicePropertyFocusMeteringModeString = ”Focus Metering Mode”

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.101  kCameraDevicePropertyFocusMode = 2057

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.102  kCameraDevicePropertyFocusModeString = ”Focus Mode”

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.103  kCameraDevicePropertyPanPosition = 2060

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.104  kCameraDevicePropertyPanPositionString = ”Pan Position”

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.
89.44.105  kCameraDevicePropertyPictHeight = 2069

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.106  kCameraDevicePropertyPictHeightString = "Picture Height"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.107  kCameraDevicePropertyPicturesRemaining = 2051

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.108  kCameraDevicePropertyPicturesRemainingString = "Pictures Remaining"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.109  kCameraDevicePropertyPicturesTaken = 2050

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.110  kCameraDevicePropertyPicturesTakenString = "Pictures Taken"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.111  kCameraDevicePropertyPictWidth = 2068

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.112  kCameraDevicePropertyPictWidthString = "Picture Width"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.
89.44.113  \textit{kCameraDevicePropertyPowerMode} = 2064

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the WIA property constants.

89.44.114  \textit{kCameraDevicePropertyPowerModeString} = ”Power Mode”

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the WIA property constants.

89.44.115  \textit{kCameraDevicePropertyRgbGain} = 2087

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the WIA property constants.

89.44.116  \textit{kCameraDevicePropertyRgbGainString} = ”RGB Gain”

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the WIA property constants.

89.44.117  \textit{kCameraDevicePropertySharpness} = 2079

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the WIA property constants.

89.44.118  \textit{kCameraDevicePropertySharpnessString} = ”Sharpness”

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the WIA property constants.

89.44.119  \textit{kCameraDevicePropertyThumbHeight} = 2067

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the WIA property constants.

89.44.120  \textit{kCameraDevicePropertyThumbHeightString} = ”Thumbnail Height”

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the WIA property constants.
89.44.121 \( k_{\text{CameraDevicePropertyThumbWidth}} = 2066 \)

MBS Win Plugin, Plugin Version: 10.3. **Function**: One of the WIA property constants.

89.44.122 \( k_{\text{CameraDevicePropertyThumbWidthString}} = "\text{Thumbnail Width}" \)

MBS Win Plugin, Plugin Version: 10.3. **Function**: One of the WIA property constants.

89.44.123 \( k_{\text{CameraDevicePropertyTiltPosition}} = 2061 \)

MBS Win Plugin, Plugin Version: 10.3. **Function**: One of the WIA property constants.

89.44.124 \( k_{\text{CameraDevicePropertyTiltPositionString}} = "\text{Tilt Position}" \)

MBS Win Plugin, Plugin Version: 10.3. **Function**: One of the WIA property constants.

89.44.125 \( k_{\text{CameraDevicePropertyTimelapseInterval}} = 2073 \)

MBS Win Plugin, Plugin Version: 10.3. **Function**: One of the WIA property constants.

89.44.126 \( k_{\text{CameraDevicePropertyTimelapseIntervalString}} = "\text{Timelapse Interval}" \)

MBS Win Plugin, Plugin Version: 10.3. **Function**: One of the WIA property constants.

89.44.127 \( k_{\text{CameraDevicePropertyTimelapseNumber}} = 2074 \)

MBS Win Plugin, Plugin Version: 10.3. **Function**: One of the WIA property constants.
**89.44.128**  \( \text{kCameraDevicePropertyTimelapseNumberString} = \text{"Timelapse Number"} \)

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

**89.44.129**  \( \text{kCameraDevicePropertyTimerMode} = 2062 \)

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

**89.44.130**  \( \text{kCameraDevicePropertyTimerModeString} = \text{"Timer Mode"} \)

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

**89.44.131**  \( \text{kCameraDevicePropertyTimerValue} = 2063 \)

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

**89.44.132**  \( \text{kCameraDevicePropertyTimerValueString} = \text{"Timer Value"} \)

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

**89.44.133**  \( \text{kCameraDevicePropertyUploadUrl} = 2089 \)

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

**89.44.134**  \( \text{kCameraDevicePropertyUploadUrlString} = \text{"Upload UR"} \)

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

**89.44.135**  \( \text{kCameraDevicePropertyWhiteBalance} = 2088 \)

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.
CHAPTER 89. IMAGE CAPTURE

89.44.136 kCameraDevicePropertyWhiteBalanceString = ”White Balance”

MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.137 kCameraDevicePropertyZoomPosition = 2059

MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.138 kCameraDevicePropertyZoomPositionString = ”Zoom Position”

MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.139 kCameraItemPropertyAudioAvailable = 5125

MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.140 kCameraItemPropertyAudioAvailableString = ”Audio Available”

MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.141 kCameraItemPropertyAudioData = 5127

MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.142 kCameraItemPropertyAudioDataFormat = 5126

MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.143 kCameraItemPropertyAudioDataFormatString = ”Audio Format”

MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.
89.44. **CLASS WIAPROPERTYSTORAGEMBS**

89.44.144  \texttt{kCameraItemPropertyAudioDataString} = "Audio Data"

MBS Win Plugin, Plugin Version: 10.3. **Function**: One of the WIA property constants.

89.44.145  \texttt{kCameraItemPropertyNumPictPerRow} = 5128

MBS Win Plugin, Plugin Version: 10.3. **Function**: One of the WIA property constants.

89.44.146  \texttt{kCameraItemPropertyNumPictPerRowString} = "Pictures per Row"

MBS Win Plugin, Plugin Version: 10.3. **Function**: One of the WIA property constants.

89.44.147  \texttt{kCameraItemPropertySequence} = 5129

MBS Win Plugin, Plugin Version: 10.3. **Function**: One of the WIA property constants.

89.44.148  \texttt{kCameraItemPropertySequenceString} = "Sequence Number"

MBS Win Plugin, Plugin Version: 10.3. **Function**: One of the WIA property constants.

89.44.149  \texttt{kCameraItemPropertyThumbHeight} = 5124

MBS Win Plugin, Plugin Version: 10.3. **Function**: One of the WIA property constants.

89.44.150  \texttt{kCameraItemPropertyThumbHeightString} = "Thumbnail Height"

MBS Win Plugin, Plugin Version: 10.3. **Function**: One of the WIA property constants.

89.44.151  \texttt{kCameraItemPropertyThumbnail} = 5122

MBS Win Plugin, Plugin Version: 10.3. **Function**: One of the WIA property constants.
89.44.152  kCameraItemPropertyThumbnailString = "Thumbnail Data"
MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.153  kCameraItemPropertyThumbWidth = 5123
MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.154  kCameraItemPropertyThumbWidthString = "Thumbnail Width"
MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.155  kCameraItemPropertyTimedelay = 5130
MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.156  kCameraItemPropertyTimedelayString = "Time Delay"
MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.157  kCommitFlagsConsolidate = 8
MBS Win Plugin, Plugin Version: 10.3. Function: One of the commit flag constants.

89.44.158  kCommitFlagsDangerouslyCommitMeRelayToDiskCache = 4
MBS Win Plugin, Plugin Version: 10.3. Function: One of the commit flag constants.

89.44.159  kCommitFlagsDefault = 0
MBS Win Plugin, Plugin Version: 10.3. Function: One of the commit flag constants.
Notes: Commits per the usual transaction semantics. Last writer wins. This flag may not be specified with other flag values.
89.44. CLASS WIAPROPERTYSTORAGEMBS

89.44.160 kCommitFlagsOnlyIfCurrent = 2

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the commit flag constants.  
**Notes:** Commits the changes only if the current persistent contents of the property set are the ones on which the changes about to be committed are based. That is, does not commit changes if the contents of the property set have been changed by a commit from another opening of the property set. The error STG_E_NOTCURRENT is returned if the commit does not succeed for this reason.

89.44.161 kCommitFlagsOverwrite = 1

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the commit flag constants.  
**Notes:** Useful only when committing a transaction that has no further outer nesting level of transactions, though acceptable in all cases.  
Note: Indicates that the caller is willing to risk some data corruption at the expense of decreased disk usage on the destination volume. This flag is potentially useful in low disk-space scenarios, though it should be used with caution.

89.44.162 kDevicePropertyBaudrate = 12

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.163 kDevicePropertyBaudrateString = "BaudRate"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.164 kDevicePropertyConnectStatus = 1027

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.165 kDevicePropertyConnectStatusString = "Connect Status"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.
89.44.166  kDevicePropertyDevDesc = 4
MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.167  kDevicePropertyDevDescString = "Description"
MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.168  kDevicePropertyDeviceTime = 1028
MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.169  kDevicePropertyDeviceTimeString = "Device Time"
MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.170  kDevicePropertyDevId = 2
MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.171  kDevicePropertyDevIdString = "Unique Device ID"
MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.172  kDevicePropertyDevName = 7
MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.173  kDevicePropertyDevNameString = "Name"
MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.
89.44. CLASS WIAPROPERTYSTORAGEMBS

89.44.174 kDevicePropertyDevType = 5
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.175 kDevicePropertyDevTypeString = "Type"
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.176 kDevicePropertyDriverVersion = 15
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.177 kDevicePropertyDriverVersionString = "Driver Version"
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.178 kDevicePropertyFirmwareVersion = 1026
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.179 kDevicePropertyFirmwareVersionString = "Firmware Version"
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.180 kDevicePropertyHwConfig = 11
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.181 kDevicePropertyHwConfigString = "Hardware Configuration"
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.
89.44.182  kDevicePropertyPortName = 6

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.183  kDevicePropertyPortNameString = "Port"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.184  kDevicePropertyRemoteDevId = 9

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.185  kDevicePropertyRemoteDevIdString = "Remote Device ID"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.186  kDevicePropertyServerName = 8

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.187  kDevicePropertyServerNameString = "Server"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.188  kDevicePropertyStiGenCapabilities = 13

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.189  kDevicePropertyStiGenCapabilitiesString = "STI Generic Capabilities"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.
CLASS WIAPROPERTYSTORAGEMBS

89.44.190  kDevicePropertyUiClsid = 10

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.191  kDevicePropertyUiClsidString = ”UI Class ID”

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.192  kDevicePropertyVendDesc = 3

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.193  kDevicePropertyVendDescString = ”Manufacturer”

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.194  kDevicePropertyWiaVersion = 14

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.195  kDevicePropertyWiaVersionString = ”WIA Version”

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.196  kFileSystemPropertyMountPoint = 3330

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.197  kFileSystemPropertyMountPointString = ”Directory mount point”

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.
89.44.198  kItemPropertyAccessRights = 4102
MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.199  kItemPropertyAccessRightsString = ”Access Rights”
MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.200  kItemPropertyAppColorMapping = 4121
MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.201  kItemPropertyAppColorMappingString = ”Application Applies Color Mapping”
MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.202  kItemPropertyBitsPerChannel = 4110
MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.203  kItemPropertyBitsPerChannelString = ”Bits Per Channel”
MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.204  kItemPropertyBytesPerLine = 4113
MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.205  kItemPropertyBytesPerLineString = ”Bytes Per Line”
MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.
**89.44. CLASS WIAPROPERTYSTORAGEMBS**

89.44.206  **kItemPropertyChannelsPerPixel = 4109**

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.207  **kItemPropertyChannelsPerPixelString = ”Channels Per Pixe”**

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.208  **kItemPropertyColorProfile = 4117**

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.209  **kItemPropertyColorProfileString = ”Color Profiles”**

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.210  **kItemPropertyCompression = 4107**

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.211  **kItemPropertyCompressionString = ”Compression”**

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.212  **kItemPropertyDatatype = 4103**

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.213  **kItemPropertyDatatypeString = ”Data Type”**

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.
89.44.214 kItemPropertyDepth = 4104

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.215 kItemPropertyDepthString = "Bits Per Pixe"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.216 kItemPropertyFilenameExtension = 4123

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.217 kItemPropertyFilenameExtensionString = "Filename extension"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.218 kItemPropertyFormat = 4106

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.219 kItemPropertyFormatString = "Format"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.220 kItemPropertyFullItemName = 4099

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.221 kItemPropertyFullItemNameString = "Full Item Name"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.
89.44.  CLASS WIAPROPERTYSTORAGEMBS

89.44.222  kItemPropertyGammaCurves = 4115

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.223  kItemPropertyGammaCurvesString = "Gamma Curves"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.224  kItemPropertyIcmProfileName = 4120

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.225  kItemPropertyIcmProfileNameString = "Color Profile Name"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.226  kItemPropertyItemFlags = 4101

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.227  kItemPropertyItemFlagsString = "Item Flags"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.228  kItemPropertyItemName = 4098

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.229  kItemPropertyItemNameString = "Item Name"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

**Example:**
```vbnet
dim DeviceManager as new WIADeviceManager1MBS

if 0 = DeviceManager.Handle then
    MsgBox "Failed to initialize device manager."
else
    dim it as WIAItemMBS = DeviceManager.SelectDeviceDialog(window1, DeviceManager.kDeviceTypeDefault, DeviceManager.kSelectDeviceNoDefault)
    if it <> Nil then
        dim p as WIAPropertyStorageMBS = it.PropertyStorage
        dim name as string = p.Read(p.kItemPropertyItemNameString)
        MsgBox name
    end if
end if
```

### 89.44.230 kItemPropertyItemSize = 4116

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

### 89.44.231 kItemPropertyItemSizeString = ”Item Size”

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

### 89.44.232 kItemPropertyItemTime = 4100

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

### 89.44.233 kItemPropertyItemTimeString = ”Item Time Stamp”

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

### 89.44.234 kItemPropertyMinBufferSize = 4118

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.
89.44.235  kItemPropertyMinBufferSizeString = ”Buffer Size”

MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.236  kItemPropertyNumberOfLines = 4114

MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.237  kItemPropertyNumberOfLinesString = ”Number of Lines”

MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.238  kItemPropertyPixelsPerLine = 4112

MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.239  kItemPropertyPixelsPerLineString = ”Pixels Per Line”

MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.240  kItemPropertyPlanar = 4111

MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.241  kItemPropertyPlanarString = ”Planar”

MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.242  kItemPropertyPreferredFormat = 4105

MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.
89.44.243  

kItemPropertyPreferredFormatString = "Preferred Format"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.244  

kItemPropertyPropStreamCompatId = 4122

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.245  

kItemPropertyPropStreamCompatIdString = "Stream Compatibility ID"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.246  

kItemPropertyRegionType = 4119

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.247  

kItemPropertyRegionTypeString = "Region Type"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.248  

kItemPropertySuppressPropertyPage = 4124

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.249  

kItemPropertySuppressPropertyPageString = "Suppress a property page"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.
89.44. CLASS WIAPROPERTYSTORAGE\textit{MBS}

89.44.250 \textbf{kItemPropertyTymed} = 4108

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the WIA property constants.

89.44.251 \textbf{kItemPropertyTymedString} = ”Media Type”

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the WIA property constants.

89.44.252 \textbf{kScannerDevicePropertyDitherPatternData} = 3075

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the WIA property constants.

89.44.253 \textbf{kScannerDevicePropertyDitherPatternDataString} = ”Dither Pattern Data”

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the WIA property constants.

89.44.254 \textbf{kScannerDevicePropertyDitherSelect} = 3074

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the WIA property constants.

89.44.255 \textbf{kScannerDevicePropertyDitherSelectString} = ”Dither Select”

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the WIA property constants.

89.44.256 \textbf{kScannerDevicePropertyDocumentHandlingCapabilities} = 3074

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the WIA property constants.
89.44.257  kScannerDevicePropertyDocumentHandlingCapabilitiesString = ”Document Handling Capabilities”

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.258  kScannerDevicePropertyDocumentHandlingCapacity = 3075

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.259  kScannerDevicePropertyDocumentHandlingCapacityString = ”Document Handling Capacity”

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.260  kScannerDevicePropertyDocumentHandlingSelect = 3074

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.261  kScannerDevicePropertyDocumentHandlingSelectString = ”Document Handling Select”

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.262  kScannerDevicePropertyDocumentHandlingStatus = 3075

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.263  kScannerDevicePropertyDocumentHandlingStatusString = ”Document Handling Status”

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.
89.44. CLASS WIAPROPERTYSTORAGEMBS

89.44.264  kScannerDevicePropertyEndorserCharacters = 3074

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.265  kScannerDevicePropertyEndorserCharactersString = ”Endorser Characters”

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.266  kScannerDevicePropertyEndorserString = 3075

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.267  kScannerDevicePropertyEndorserStringString = ”Endorser String”

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.268  kScannerDevicePropertyFilterSelect = 3075

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.269  kScannerDevicePropertyFilterSelectString = ”Filter Select”

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.270  kScannerDevicePropertyHorizontalBedRegistration = 3075

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.
**89.44.271**  \texttt{kScannerDevicePropertyHorizontalBedRegistrationString = "Horizontal Bed Registration"}

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the WIA property constants.

**89.44.272**  \texttt{kScannerDevicePropertyHorizontalBedSize = 3074}

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the WIA property constants.

**89.44.273**  \texttt{kScannerDevicePropertyHorizontalBedSizeString = "Horizontal Bed Size"}

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the WIA property constants.

**89.44.274**  \texttt{kScannerDevicePropertyHorizontalSheetFeedSize = 3074}

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the WIA property constants.

**89.44.275**  \texttt{kScannerDevicePropertyHorizontalSheetFeedSizeString = "Horizontal Sheet Feed Size"}

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the WIA property constants.

**89.44.276**  \texttt{kScannerDevicePropertyMaxScanTime = 3075}

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the WIA property constants.

**89.44.277**  \texttt{kScannerDevicePropertyMaxScanTimeString = "Max Scan Time"}

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the WIA property constants.
89.44. CLASS WIAPROPERTYSTORAGEMBS

89.44.278  \text{**kScannerDevicePropertyMinHorizontalSheetFeedSize = 3074**}

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the WIA property constants.

89.44.279  \text{**kScannerDevicePropertyMinHorizontalSheetFeedSizeString = ”Minimum Horizontal Sheet Feed Size”**}

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the WIA property constants.

89.44.280  \text{**kScannerDevicePropertyMinVerticalSheetFeedSize = 3075**}

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the WIA property constants.

89.44.281  \text{**kScannerDevicePropertyMinVerticalSheetFeedSizeString = ”Minimum Vertical Sheet Feed Size”**}

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the WIA property constants.

89.44.282  \text{**kScannerDevicePropertyOpticalXres = 3074**}

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the WIA property constants.

89.44.283  \text{**kScannerDevicePropertyOpticalXresString = ”Horizontal Optical Resolution”**}

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the WIA property constants.

89.44.284  \text{**kScannerDevicePropertyOpticalYres = 3075**}

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the WIA property constants.
89.44.285 \textit{kScannerDevicePropertyOpticalYresString} = "Vertical Optical Resolution"

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the WIA property constants.

89.44.286 \textit{kScannerDevicePropertyPadColor} = 3074

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the WIA property constants.

89.44.287 \textit{kScannerDevicePropertyPadColorString} = "Pad Color"

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the WIA property constants.

89.44.288 \textit{kScannerDevicePropertyPageHeight} = 3075

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the WIA property constants.

89.44.289 \textit{kScannerDevicePropertyPageHeightString} = "Page Height"

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the WIA property constants.

89.44.290 \textit{kScannerDevicePropertyPages} = 3074

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the WIA property constants.

89.44.291 \textit{kScannerDevicePropertyPageSize} = 3075

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the WIA property constants.

89.44.292 \textit{kScannerDevicePropertyPageSizeString} = "Page Size"

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the WIA property constants.
89.44.293  kScannerDevicePropertyPagesString = ”Pages”

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.294  kScannerDevicePropertyPageWidth = 3074

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.295  kScannerDevicePropertyPageWidthString = ”Page Width”

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.296  kScannerDevicePropertyPlatenColor = 3075

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.297  kScannerDevicePropertyPlatenColorString = ”Platen Color”

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.298  kScannerDevicePropertyPreview = 3074

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.299  kScannerDevicePropertyPreviewString = ”Preview”

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.300  kScannerDevicePropertyScanAheadPages = 3074

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.
89.44.301  kScannerDevicePropertyScanAheadPagesString = ”Scan Ahead Pages”

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.302  kScannerDevicePropertySheetFeederRegistration = 3074

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.303  kScannerDevicePropertySheetFeederRegistrationString = ”Sheet Feeder Registration”

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.304  kScannerDevicePropertyShowPreviewControl = 3075

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.305  kScannerDevicePropertyShowPreviewControlString = ”Show preview control”

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.306  kScannerDevicePropertyTransparency = 3075

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.307  kScannerDevicePropertyTransparencySelect = 3074

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.
kScannerDevicePropertyTransparencySelectString = "Transparency Adapter Select"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

kScannerDevicePropertyTransparencyString = "Transparency Adapter"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

kScannerDevicePropertyVerticalBedRegistration = 3074

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

kScannerDevicePropertyVerticalBedRegistrationString = "Vertical Bed Registration"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

kScannerDevicePropertyVerticalBedSize = 3075

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

kScannerDevicePropertyVerticalBedSizeString = "Vertical Bed Size"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

kScannerDevicePropertyVerticalSheetFeedSize = 3075

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.
89.44.315  kScannerDevicePropertyVerticalSheetFeedSizeString = "Vertical Sheet Feed Size"

MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.316  kScannerItemPropertyBrightness = 6154

MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.317  kScannerItemPropertyBrightnessString = "Brightness"

MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.318  kScannerItemPropertyContrast = 6155

MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.319  kScannerItemPropertyContrastString = "Contrast"

MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.320  kScannerItemPropertyCurIntent = 6146

MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.321  kScannerItemPropertyCurIntentString = "Current Intent"

MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.

89.44.322  kScannerItemPropertyInvert = 6160

MBS Win Plugin, Plugin Version: 10.3. Function: One of the WIA property constants.
89.44. **CLASS WIAPROPERTYSTORAGEMBS**

89.44.323  \texttt{kScannerItemPropertyInvertString} = "Invert"

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the WIA property constants.

89.44.324  \texttt{kScannerItemPropertyMirror} = 6158

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the WIA property constants.

89.44.325  \texttt{kScannerItemPropertyMirrorString} = "Mirror"

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the WIA property constants.

89.44.326  \texttt{kScannerItemPropertyOrientation} = 6156

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the WIA property constants.

89.44.327  \texttt{kScannerItemPropertyOrientationString} = "Orientation"

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the WIA property constants.

89.44.328  \texttt{kScannerItemPropertyPhotometricInterp} = 6153

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the WIA property constants.

89.44.329  \texttt{kScannerItemPropertyPhotometricInterpString} = "Photometric Interpretation"

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the WIA property constants.

89.44.330  \texttt{kScannerItemPropertyRotation} = 6157

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function}: One of the WIA property constants.
89.44.331  \( k_{\text{ScannerItemPropertyRotationString}} = \text{"Rotation"} \) 

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the WIA property constants.

89.44.332  \( k_{\text{ScannerItemPropertyThreshold}} = 6159 \) 

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the WIA property constants.

89.44.333  \( k_{\text{ScannerItemPropertyThresholdString}} = \text{"Threshold"} \) 

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the WIA property constants.

89.44.334  \( k_{\text{ScannerItemPropertyWarmUpTime}} = 6161 \) 

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the WIA property constants.

89.44.335  \( k_{\text{ScannerItemPropertyWarmUpTimeString}} = \text{"Lamp Warm up Time"} \) 

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the WIA property constants.

89.44.336  \( k_{\text{ScannerItemPropertyXextent}} = 6151 \) 

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the WIA property constants.

89.44.337  \( k_{\text{ScannerItemPropertyXextentString}} = \text{"Horizontal Extent"} \) 

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the WIA property constants.

89.44.338  \( k_{\text{ScannerItemPropertyXpos}} = 6149 \) 

MBS Win Plugin, Plugin Version: 10.3. \textbf{Function:} One of the WIA property constants.
89.44. CLASS WIAPROPERTYSTORAGEMBS

89.44.339 kScannerItemPropertyXposString = "Horizontal Start Position"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.340 kScannerItemPropertyXres = 6147

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.341 kScannerItemPropertyXresString = "Horizontal Resolution"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.342 kScannerItemPropertyYextent = 6152

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.343 kScannerItemPropertyYextentString = "Vertical Extent"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.344 kScannerItemPropertyYpos = 6150

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.345 kScannerItemPropertyYposString = "Vertical Start Position"

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.346 kScannerItemPropertyYres = 6148

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.
89.44.347  kScannerItemPropertyYresString = ”Vertical Resolution”

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.348  kTymedCallback = 128

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA TYMED constants.

89.44.349  kTymedFile = 2

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA TYMED constants. **Notes:** Writes data to a file.

89.44.350  kTymedMultiPageCallback = 512

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA TYMED constants.

89.44.351  kTymedMultiPageFile = 256

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA TYMED constants.

89.44.352  kVideoCameraPropertyDShowDevicePath = 3588

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.353  kVideoCameraPropertyDShowDevicePathString = ”Directshow Device Path”

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.354  kVideoCameraPropertyImagesDirectory = 3587

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.
89.44. CLASS WIAPROPERTYSTORAGEMBS

89.44.355  kVideoCameraPropertyImagesDirectoryString = ”Images Directory”
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.356  kVideoCameraPropertyLastPictureTaken = 3586
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.

89.44.357  kVideoCameraPropertyLastPictureTakenString = ”Last Picture Taken”
MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the WIA property constants.
89.45 class WIAStreamMBS

89.45.1 class WIAStreamMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The WIAStreamMBS interface lets you read and write data to stream objects.

**Example:**
```
dim ItemName as string = "Hello.jpg"
dim f as FolderItem = SpecialFolder.Desktop.Child(ItemName)
dim s as new WIAStreamMBS(WIAStreamMBS.kModeWrite + WIAStreamMBS.kModeCreate, f)
```

**Notes:** Stream objects contain the data in a structured storage object, where storages provide the structure. Simple data can be written directly to a stream but, most frequently, streams are elements nested within a storage object. They are similar to standard files.

89.45.2 Methods

89.45.3 Clone as WIAStreamMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The Clone method creates a new stream object with its own seek pointer that references the same bytes as the original stream.

**Notes:**
The Clone method creates a new stream object for accessing the same bytes but using a separate seek pointer. The new stream object sees the same data as the source-stream object. Changes written to one object are immediately visible in the other. Range locking is shared between the stream objects.

The initial setting of the seek pointer in the cloned stream instance is the same as the current setting of the seek pointer in the original stream at the time of the clone operation.

Lasterror is set.

89.45.4 Commit(flags as Integer)

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The Commit method ensures that any changes made to a stream object open in transacted mode are reflected in the parent storage.

**Notes:**
If the stream object is open in direct mode, Commit has no effect other than flushing all memory buffers to the next-level storage object. The COM compound file implementation of streams does not support opening streams in transacted mode. Lasterror is set.

Possible flags: kCommitConsolidate, kCommitDangerouslyCommitMerelyToDiskCache, kCommitDefault, kCommitOnlyIfCurrent and kCommitOverwrite.

89.45.5 Constructor(mode as Integer, file as folderitem)

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: Opens or creates a file and retrieves a stream to read or write to that file.

Example:

```vbs
    dim ItemName as string = "Hello.jpg"
    dim f as FolderItem = SpecialFolder.Desktop.Child(ItemName)
    dim s as new WIAStreamMBS(WIAStreamMBS.kModeWrite + WIAStreamMBS.kModeCreate, f)
```

Notes:

mode: the flags. Use the kMode* constants.
path: the file path.

Lasterror is set.

See also:

- 89.45.6 Constructor(mode as Integer, path as string)

89.45.6 Constructor(mode as Integer, path as string)

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: Opens or creates a file and retrieves a stream to read or write to that file.

Notes:

mode: the flags. Use the kMode* constants.
path: the file path.

Lasterror is set.

See also:

- 89.45.5 Constructor(mode as Integer, file as folderitem)
89.45.7 CopyTo(other as WIAStreamMBS, length as UInt64)

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The CopyTo method copies a specified number of bytes from the current seek pointer in the stream to the
current seek pointer in another stream.

**Notes:**
other: The destination stream. The stream pointed to by pstm can be a new stream or a clone of the source stream.
length: The number of bytes to copy from the source stream.
ReadSize: Optional, a variable where the actual number of bytes read from the source.
WriteSize: Optional, a variable where the actual number of bytes written to the destination.

Lasterror is set.

The CopyTo method copies the specified bytes from one stream to another. It can also be used to copy a
stream to itself. The seek pointer in each stream instance is adjusted for the number of bytes read or written.
This method is equivalent to reading cb bytes into memory using Read and then immediately writing them
to the destination stream using Write, although CopyTo will be more efficient.

The destination stream can be a clone of the source stream created by calling the Clone method.

If CopyTo returns an error, you cannot assume that the seek pointers are valid for either the source or destina-
tion. Additionally, the values of pcbRead and pcbWritten are not meaningful even though they are returned.

If CopyTo returns successfully, the actual number of bytes read and written are the same.

To copy the remainder of the source from the current seek pointer, specify the maximum large integer value
for the cb parameter. If the seek pointer is the beginning of the stream, this operation copies the entire
stream.

See also:
- 89.45.8 CopyTo(other as WIAStreamMBS, length as UInt64, byref ReadSize as UInt64, byref WriteSize
  as UInt64)

89.45.8 CopyTo(other as WIAStreamMBS, length as UInt64, byref ReadSize as UInt64, byref WriteSize
as UInt64)

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The CopyTo method copies a specified number of bytes from the current seek pointer in the stream to the
current seek pointer in another stream.

**Notes:**
other: The destination stream. The stream pointed to by pstm can be a new stream or a clone of the source
89.45.  CLASS WIASTREAMMBS

stream.
length: The number of bytes to copy from the source stream.
ReadSize: Optional, a variable where the actual number of bytes read from the source.
WriteSize: Optional, a variable where the actual number of bytes written to the destination.

LastError is set.

The CopyTo method copies the specified bytes from one stream to another. It can also be used to copy a
stream to itself. The seek pointer in each stream instance is adjusted for the number of bytes read or written.
This method is equivalent to reading cb bytes into memory using Read and then immediately writing them
to the destination stream using Write, although CopyTo will be more efficient.

The destination stream can be a clone of the source stream created by calling the Clone method.

If CopyTo returns an error, you cannot assume that the seek pointers are valid for either the source or destination.
Additionally, the values of pcbRead and pcbWritten are not meaningful even though they are returned.

If CopyTo returns successfully, the actual number of bytes read and written are the same.

To copy the remainder of the source from the current seek pointer, specify the maximum large integer value
for the cb parameter. If the seek pointer is the beginning of the stream, this operation copies the entire
stream.
See also:

- 89.45.7 CopyTo(other as WIAStreamMBS, length as UInt64)

89.45.9  Revert

**Function:**
The Revert method discards all changes that have been made to a transacted stream since the last Commit
call.
**Notes:**
On streams open in direct mode and streams using the COM compound file implementation of Revert, this
method has no effect.
LastError is set.

89.45.10  Seek(value as Int64, Origin as Integer) as UInt64

**Function:**
The Seek method changes the seek pointer to a new location.
**Notes:**
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The new location is relative to either the beginning of the stream, the end of the stream, or the current seek pointer.

Value: The displacement to be added to the location indicated by the dwOrigin parameter. If dwOrigin is kSeekSet, this is interpreted as an unsigned value rather than a signed value.

Origin: The origin for the displacement specified in value. The origin can be the beginning of the file (kSeekSet), the current seek pointer (kSeekCur), or the end of the file (kSeekEnd). For more information about values, see the kSeek* constants.

Returns the new seek pointer from the beginning of the stream.

Seek changes the seek pointer so that subsequent read and write operations can be performed at a different location in the stream object. It is an error to seek before the beginning of the stream. It is not, however, an error to seek past the end of the stream. Seeking past the end of the stream is useful for subsequent write operations, as the stream byte range will be extended to the new seek position immediately before the write is complete.

You can also use this method to obtain the current value of the seek pointer by calling this method with the Origin parameter set to kSeekCur and the value parameter set to 0 so that the seek pointer is not changed. The current seek pointer is returned.

Lasterror is set.

89.45.11 SetSize(size as UInt64)


Notes:
SetSize changes the size of the stream object. Call this method to preallocate space for the stream. If the size parameter is larger than the current stream size, the stream is extended to the indicated size by filling the intervening space with bytes of undefined value. This operation is similar to the Write method if the seek pointer is past the current end of stream.

If the size parameter is smaller than the current stream, the stream is truncated to the indicated size.

The seek pointer is not affected by the change in stream size.

Calling SetSize can be an effective way to obtain a large chunk of contiguous space.
Lasterror is set.

### 89.45.12 Properties

#### 89.45.13 Handle as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The internal reference to the object. **Notes:** (Read and Write property)

#### 89.45.14 Lasterror as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The last error code. **Notes:** (Read and Write property)

### 89.45.15 Constants

#### 89.45.16 kCommitConsolidate = 8

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the flags for commit. **Notes:** Windows 2000 and Windows XP: Indicates that a storage should be consolidated after it is committed, resulting in a smaller file on disk. This flag is valid only on the outermost storage object that has been opened in transacted mode. It is not valid for streams. The kCommitConsolidate flag can be combined with any other kCommit* flags.

#### 89.45.17 kCommitDangerouslyCommitMerelyToDiskCache = 4

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the flags for commit. **Notes:** Commits the changes to a write-behind disk cache, but does not save the cache to the disk. In a write-behind disk cache, the operation that writes to disk actually writes to a disk cache, thus increasing performance. The cache is eventually written to the disk, but usually not until after the write operation has already returned. The performance increase comes at the expense of an increased risk of losing data if a problem occurs before the cache is saved and the data in the cache is lost.

If you do not specify this value, then committing changes to root-level storage objects is robust even if a disk cache is used. The two-phase commit process ensures that data is stored on the disk and not just to
the disk cache.

89.45.18  kCommitDefault = 0

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the flags for commit.  
**Notes:** You can specify this condition with kCommitConsolidate, or some combination of the other three flags in this list of elements. Use this value to increase the readability of code.

89.45.19  kCommitOnlyIfCurrent = 2

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the flags for commit.  
**Notes:** Prevents multiple users of a storage object from overwriting each other’s changes. The commit operation occurs only if there have been no changes to the saved storage object because the user most recently opened it. Thus, the saved version of the storage object is the same version that the user has been editing. If other users have changed the storage object, the commit operation fails and returns the STG_E_NOTCURRENT value. To override this behavior, call the Commit method again using the kCommitDefault value.

89.45.20  kCommitOverwrite = 1

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the flags for commit.  
**Notes:**

The commit operation can overwrite existing data to reduce overall space requirements. This value is not recommended for typical usage because it is not as robust as the default value. In this case, it is possible for the commit operation to fail after the old data is overwritten, but before the new data is completely committed. Then, neither the old version nor the new version of the storage object will be intact.

You can use this value in the following cases:

- The user is willing to risk losing the data.
- The low-memory save sequence will be used to safely save the storage object to a smaller file.
- A previous commit returned STG_E_MEDIUMFULL, but overwriting the existing data would provide enough space to commit changes to the storage object.

Be aware that the commit operation verifies that adequate space exists before any overwriting occurs. Thus, even with this value specified, if the commit operation fails due to space requirements, the old data is safe. It is possible, however, for data loss to occur with the kCommitOverwrite value specified if the commit operation fails for any reason other than lack of disk space.
89.45.21 kModeConvert = & h20000

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the mode constants for the file stream. **Notes:** Creates the new object while preserving existing data in a stream named "Contents". In the case of a storage object or a byte array, the old data is formatted into a stream regardless of whether the existing file or byte array currently contains a layered storage object. This flag can only be used when creating a root storage object. It cannot be used within a storage object; for example, in CreateStream. It is also not valid to use this flag and the kModeDeleteOnRelease flag simultaneously.

89.45.22 kModeCreate = & h1000

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the mode constants for the file stream. **Notes:**

Indicates that an existing storage object or stream should be removed before the new object replaces it. A new object is created when this flag is specified only if the existing object has been successfully removed.

This flag is used when attempting to create:

- A storage object on a disk, but a file of that name exists.
- An object inside a storage object, but a object with the specified name exists.
- A byte array object, but one with the specified name exists.

89.45.23 kModeDeleteOnRelease = & h400000

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the mode constants for the file stream. **Notes:** Indicates that the underlying file is to be automatically destroyed when the root storage object is released. This feature is most useful for creating temporary files.

89.45.24 kModeFailIfThere = 0

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the mode constants for the file stream. **Notes:** Causes the create operation to fail if an existing object with the specified name exists. In this case, STG_E_FILEALREADYEXISTS is returned. This is the default creation mode; that is, if no other create flag is specified, kModeFailIfThere is implied.
89.45.25  \( \text{kModeRead} = 0 \)

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the mode constants for the file stream.  
**Notes:** Indicates that the object is read-only, meaning that modifications cannot be made.

89.45.26  \( \text{kModeReadWrite} = 2 \)

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the mode constants for the file stream.  
**Notes:** Enables access and modification of object data.

89.45.27  \( \text{kModeShareDenyExclusive} = \& \, \text{h10} \)

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the mode constants for the file stream.  
**Notes:** Prevents others from subsequently opening the object in any mode. Be aware that this value is not a simple bitwise OR operation of the kModeShareDenyRead and kModeShareDenyWrite values. In transacted mode, sharing of kModeShareDenyWrite or kModeShareDenyExclusive can significantly improve performance because they do not require snapshots. For more information about transactioning, see the Remarks section.

89.45.28  \( \text{kModeShareDenyNone} = \& \, \text{h40} \)

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the mode constants for the file stream.  
**Notes:** Specifies that subsequent openings of the object are not denied read or write access. If no flag from the sharing group is specified, this flag is assumed.

89.45.29  \( \text{kModeShareDenyRead} = \& \, \text{h30} \)

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the mode constants for the file stream.  
**Notes:** Prevents others from subsequently opening the object in STGM_READ mode. It is typically used on a root storage object.

89.45.30  \( \text{kModeShareDenyWrite} = \& \, \text{h20} \)

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the mode constants for the file stream.  
**Notes:** Prevents others from subsequently opening the object for kModeShareWrite or kModeShareReadWrite access. In transacted mode, sharing of kModeShareDenyWrite or kModeShareDenyExclusive can significantly improve performance because they do not require snapshots.
89.45. **CLASS WIASTREAMMBS**

89.45.31 **kModeWrite = 1**

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the mode constants for the file stream. **Notes:** Enables you to save changes to the object, but does not permit access to its data.

89.45.32 **kSeekCur = 1**

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the seek constants. **Notes:** The new seek pointer is an offset relative to the current seek pointer location. In this case, the dlibMove parameter is the signed displacement from the current seek position.

89.45.33 **kSeekEnd = 2**

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the seek constants. **Notes:** The new seek pointer is an offset relative to the end of the stream. In this case, the dlibMove parameter is the new seek position relative to the end of the stream.

89.45.34 **kSeekSet = 0**

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the seek constants. **Notes:** The new seek pointer is an offset relative to the beginning of the stream. In this case, the dlibMove parameter is the new seek position relative to the beginning of the stream.
89.46 class WIATransferCallbackMBS

89.46.1 class WIATransferCallbackMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The class for transferring data from the device into your application. Notes: This class is only used for WIA 2.x.

89.46.2 Properties

89.46.3 Handle as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The internal reference to the object. Notes: (Read and Write property)

89.46.4 Events

89.46.5 GetNextStream(ItemName as string, FullItemName as string) as WIAStreamMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: Gets a new stream for the specified item. Notes: ItemName: Specifies the name of the item to create stream for. FullItemName: Specifies the full name of the item to create stream for. Returns a new WIAStreamMBS object or nil for an error.

When this method is implemented by an image processing filter, the Windows Image Acquisition (WIA) 2.0 minidriver calls it during image acquisition to get the destination stream from the client.

A filter’s WIATransferCallbackMBS.GetNextStream must delegate to the application’s callback method. The filter uses the stream returned by the application callback’s WIATransferCallbackMBS.GetNextStream implementation to create its own stream that it passes back to the WIA 2.0 service. The filtering is done when the filter’s stream calls the IStream::Write method.

The filter’s stream cannot make any assumptions on the number of bytes that are written to it on each write, since the unfiltered image data may come from the WIA 2.0 Preview Component rather than the driver.
The WIA 2.0 Preview Component always writes the whole unfiltered image data into the filter's stream only once, which means that the filter's stream has one source writing into it. If both the driver and the preview component write into the filter's stream, the filter's stream cannot assume, for example, that it will receive the full header the first time IStream::Write is called although its corresponding driver always writes the header data first in one write. Nor can it assume that a subsequent write contains exactly one scan line. So the filtering stream may have to count the number of bytes written to it to determine, for example, where the image data starts.

The image processing filter's WIATransferCallbackMBS.GetNextStream implementation should read the properties needed for its image processing from the item for which the image is being acquired. The filter does not read the properties directly from the pWiaItem2 passed into InitializeFilter. Instead the filter must call FindItemByName on this WIA 2.0 item to obtain the actual WIA 2.0 item. The reason for this is that the image being acquired may actually be a child item of pWiaItem2. For example, during a folder acquisition the filter uses pWiaItem2 to obtain pWiaItem2's child items in WIATransferCallbackMBS.GetNextStream (during a folder acquisition the driver returns the images represented by the child items of WiaItemMBS). The same is true when the WIA 2.0 Preview Component calls into the image processing filter passing a child WIA 2.0 item.

### 89.46.6 TransferCallback(w as WIATransferParamsMBS) as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Provides progress and other notifications during a transfer. **Notes:** Returns an error value or zero on success.
89.47 class WIATransferMBS

89.47.1 class WIATransferMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The WIATransferMBS class provides stream-based transfer of data.
**Notes:** This class is for WIA 2.x.

89.47.2 Methods

89.47.3 Cancel

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Cancels the current transfer operation.
**Notes:** Lasterror is set.

89.47.4 Download(TransferCallback as WIATransferCallbackMBS)

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Initiates a data download to the caller.
**Notes:**
TransferCallback: The WIATransferCallbackMBS object to receive progress details and specify the destination.

If a folder is downloaded, then all the child items of that folder are also transferred. Each item is transferred in a separate stream.

Lasterror is set.

89.47.5 EnumerateFormatInfo as WIAFormatInfoEnumeratorMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Creates an enumerator for the transfer formats that the Windows Image Acquisition (WIA) 2.0 device supports.
**Notes:** Lasterror is set.
89.47.6 Upload(Source as WIAStreamMBS, TransferCallback as WIATransferCallbackMBS)

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Initiates a data upload of a single item from the caller.

**Notes:**
- Source: Specifies a pointer to the Stream data.
- TransferCallback: Specifies a pointer to the caller’s WIATransferCallbackMBS interface.

Lasterror is set.

89.47.7 Properties

89.47.8 Handle as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The internal reference to the object.

**Notes:** (Read and Write property)

89.47.9 Lasterror as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The last error code.

**Notes:** (Read and Write property)
89.48 class WIATransferParamsMBS

89.48.1 class WIATransferParamsMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The class you subclass to get progress of the image transfer.  
**Notes:** The WiaTransferParams is transmitted to an application during a data transfer by the Windows Image Acquisition (WIA) run-time system to the WiaTransferCallbackMBS.TransferCallback method.

89.48.2 Properties

89.48.3 ErrorStatus as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The status, or error state, of the device set by the driver; for example, "warming up".  
**Notes:** (Read and Write property)

89.48.4 Message as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Indicates the status of the data transfer.  
**Notes:** See the kMessage* constants  
(Read and Write property)

89.48.5 PercentComplete as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Indicates the progress of the data transfer as a percentage.  
**Example:**
```vbnet
dim w as WIATransferParamsMBS // your parameters
ProgressBar1.maximum = 100
ProgressBar1.value = w.PercentComplete
```

**Notes:** (Read and Write property)
89.48. CLASS WIATRANSFERPARAMSMBS

89.48.6 TransferredBytes as UInt64

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Indicates the amount of data transferred. **Notes:** (Read and Write property)

89.48.7 Constants

89.48.8 kMessageDeviceStatus = 4

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the message constants.

89.48.9 kMessageEndOfStream = 2

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the message constants.

89.48.10 kMessageEndOfTransfer = 3

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the message constants.

89.48.11 kMessageNewPage = 5

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the message constants.

89.48.12 kMessageStatus = 1

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the message constants.
89.49 class WIAVideoMBS

89.49.1 class WIAVideoMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The IWiaVideo interface provides methods that allow an application that uses Windows Image Acquisition (WIA) services to acquire still images from a streaming video device.
**Notes:** Note WIA does not support video devices in Windows Server 2003, Windows Vista, and later. For those versions of the Windows, use DirectShow to acquire images from video.

89.49.2 Methods

89.49.3 Constructor

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The constructor.
**Notes:** Requires Windows XP or Windows Server 2003.

89.49.4 CreateVideoByDevNum(DeviceNumber as Integer, win as window, StretchToFitParent as boolean, AutoBeginPlayback as boolean)

MBS Win Plugin, Plugin Version: 10.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The CreateVideoByDevNum method creates a connection to a streaming video device with the device number obtained from a Directshow enumeration.
**Notes:**
DeviceNumber: Specifies the video device’s Directshow device number.
win: Specifies the window in which to display the streaming video.
StretchToFitParent: Specifies whether the video display is stretched to fit the parent window. Set this parameter to true if the display should be stretched to fit the parent window; otherwise, set to false.
AutoBeginPlayback: Specifies whether the streaming video begins playback as soon as this method returns. Set this parameter to TRUE to cause immediate playback; set it to false to require a call to Play before video playback begins.

Lasterror is set.
By default, the video is displayed in the video device’s default resolution. If bStretchToFitParent is set to TRUE, the video display fills the window.
See also:

- 89.49.5 CreateVideoByDevNum(DeviceNumber as Integer, WindowHandle as Integer, StretchToFitParent as boolean, AutoBeginPlayback as boolean)
89.49.5  CreateVideoByDevNum(DeviceNumber as Integer, WindowHandle as Integer, StretchToFitParent as boolean, AutoBeginPlayback as boolean)

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The CreateVideoByDevNum method creates a connection to a streaming video device with the device number obtained from a Directshow enumeration.

**Notes:**
DeviceNumber: Specifies the video device’s Directshow device number.
WindowHandle: Specifies the window in which to display the streaming video.
StretchToFitParent: Specifies whether the video display is stretched to fit the parent window. Set this parameter to true if the display should be stretched to fit the parent window; otherwise, set to false.
AutoBeginPlayback: Specifies whether the streaming video begins playback as soon as this method returns. Set this parameter to TRUE to cause immediate playback; set it to false to require a call to Play before video playback begins.

LastError is set.
By default, the video is displayed in the video device’s default resolution. If bStretchToFitParent is set to TRUE, the video display fills the window.
See also:
- 89.49.4 CreateVideoByDevNum(DeviceNumber as Integer, win as window, StretchToFitParent as boolean, AutoBeginPlayback as boolean)

89.49.6  CreateVideoByName(FriendlyName as string, win as window, StretchToFitParent as boolean, AutoBeginPlayback as boolean)

MBS Win Plugin, Plugin Version: 10.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The CreateVideoByName method creates a connection to a streaming video device with the friendly device name obtained from a Directshow enumeration.

**Notes:**
FriendlyName: Specifies the video device’s friendly name obtained from a Directshow device enumeration.
win: Specifies the window in which to display the streaming video.
StretchToFitParent: Specifies whether the video display is stretched to fit the parent window. Set this parameter to true if the display should be stretched to fit the parent window; otherwise, set to false.
AutoBeginPlayback: Specifies whether the streaming video begins playback as soon as this method returns. Set this parameter to TRUE to cause immediate playback; set it to false to require a call to Play before video playback begins.

LastError is set.
By default, the video is displayed in the video device’s default resolution. If bStretchToFitParent is set to TRUE, the video display fills the window.
See also:
- 89.49.7 CreateVideoByName(FriendlyName as string, WindowHandle as Integer, StretchToFitParent
89.49.7 CreateVideoByName(FriendlyName as string, WindowHandle as Integer, StretchToFitParent as boolean, AutoBeginPlayback as boolean)

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The CreateVideoByName method creates a connection to a streaming video device with the friendly device name obtained from a Directshow enumeration.

**Notes:**
- FriendlyName: Specifies the video device's friendly name obtained from a Directshow device enumeration.
- win: Specifies the window in which to display the streaming video.
- StretchToFitParent: Specifies whether the video display is stretched to fit the parent window. Set this parameter to true if the display should be stretched to fit the parent window; otherwise, set to false.
- AutoBeginPlayback: Specifies whether the streaming video begins playback as soon as this method returns. Set this parameter to TRUE to cause immediate playback; set it to false to require a call to Play before video playback begins.

Lasterror is set.
By default, the video is displayed in the video device's default resolution. If bStretchToFitParent is set to TRUE, the video display fills the window.

See also:
- 89.49.6 CreateVideoByName(FriendlyName as string, win as window, StretchToFitParent as boolean, AutoBeginPlayback as boolean)

89.49.8 CreateVideoByWiaDevID(WiaDeviceID as string, win as window, StretchToFitParent as boolean, AutoBeginPlayback as boolean)

MBS Win Plugin, Plugin Version: 10.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The CreateVideoByWiaDevID method creates a connection to a streaming video device from its DeviceID.

**Notes:**
- WiaDeviceID: Specifies the value of the video device's DeviceID property.
- win: Specifies the window in which to display the streaming video.
- StretchToFitParent: Specifies whether the video display is stretched to fit the parent window. Set this parameter to true if the display should be stretched to fit the parent window; otherwise, set to false.
- AutoBeginPlayback: Specifies whether the streaming video begins playback as soon as this method returns. Set this parameter to true to cause immediate playback; set it to false to require a call to Play before video playback begins.

Lasterror is set.
By default, the video is displayed in the video device's default resolution. If bStretchToFitParent is set to TRUE, the video display fills the window.
In order for the function to succeed, the ImagesDirectory property must be specified first.

See also:

- 89.49.9 CreateVideoByWiaDevID(WiaDeviceID as string, WindowHandle as Integer, StretchToFitParent as boolean, AutoBeginPlayback as boolean)

89.49.9 CreateVideoByWiaDevID(WiaDeviceID as string, WindowHandle as Integer, StretchToFitParent as boolean, AutoBeginPlayback as boolean)

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The CreateVideoByWiaDevID method creates a connection to a streaming video device from its DeviceID.

**Notes:**

WiaDeviceID: Specifies the value of the video device’s DeviceID property.

win: Specifies the window in which to display the streaming video.

StretchToFitParent: Specifies whether the video display is stretched to fit the parent window. Set this parameter to true if the display should be stretched to fit the parent window; otherwise, set to false.

AutoBeginPlayback: Specifies whether the streaming video begins playback as soon as this method returns. Set this parameter to true to cause immediate playback; set it to false to require a call to Play before video playback begins.

LastError is set.

By default, the video is displayed in the video device’s default resolution. If bStretchToFitParent is set to TRUE, the video display fills the window.

In order for the function to succeed, the ImagesDirectory property must be specified first.

See also:

- 89.49.8 CreateVideoByWiaDevID(WiaDeviceID as string, win as window, StretchToFitParent as boolean, AutoBeginPlayback as boolean)

89.49.10 CurrentState as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries the state of the video stream.

**Notes:** See the kState* constants.

89.49.11 DestroyVideo

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The DestroyVideo method shuts down the streaming video.

**Notes:**
CHAPTER 89. IMAGE CAPTURE

To restart video playback, the application must call one of the CreateVideo methods again. 
LastError is set.

Call this method only after a successful call to CreateVideoByWiaDevID, CreateVideoByDevNum, or CreateVideoByName.

89.49.12 Pause

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The Pause method pauses video playback. 
**Notes:** Call this method only after a successful call to CreateVideoByWiaDevID, CreateVideoByDevNum, or CreateVideoByName. 
LastError is set.

89.49.13 Play

**Notes:** Call this method only after a successful call to CreateVideoByWiaDevID, CreateVideoByDevNum, or CreateVideoByName. 
LastError is set.

89.49.14 ResizeVideo(StretchToFitParent as boolean)

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The ResizeVideo method resizes the video playback to the largest supported resolution that fits inside the parent window. 
**Notes:** Call this method whenever the parent window is moved or resized. 
By default, the video is displayed in a supported resolution smaller than the parent window. If bStretchToFitParent is set to true, the video display fills the window. 
LastError is set.
89.49. CLASS WIAVIDEOMBS

89.49.15 TakePicture as folderitem

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The TakePicture method extracts a still image from the video stream, and saves the image as a JPEG file. **Notes:** Returns the full path and filename of the JPEG file that this method creates. Lasterror is set.

The path and directory where the image file is saved are specified by the ImagesDirectory or ImageFolder property. See also:

- 89.49.16 TakePicture as string

89.49.16 TakePicture as string

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The TakePicture method extracts a still image from the video stream, and saves the image as a JPEG file. **Notes:** Returns the full path and filename of the JPEG file that this method creates. Lasterror is set.

The path and directory where the image file is saved are specified by the ImagesDirectory or ImageFolder property. See also:

- 89.49.15 TakePicture as folderitem

89.49.17 Properties

89.49.18 Handle as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The internal reference to the object. **Notes:** (Read and Write property)

89.49.19 Lasterror as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The last error code.
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Notes: (Read and Write property)

89.49.20 ImagesDirectory as string

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: Specifies the full path and directory where images are stored when calling the TakePicture method.
Notes: Lasterror is set.
(Read and Write computed property)

89.49.21 ImagesFolder as folderitem

Notes: Lasterror is set.
(Read and Write computed property)

89.49.22 PreviewVisible as boolean

Notes: This does not affect the state of the video.
Lasterror is set.
(Read and Write computed property)

89.49.23 Constants

89.49.24 kStateCreatingVideo = 2

MBS Win Plugin, Plugin Version: 10.3. Function: One of the constants for the video state.
Notes: One of the WiaVideoMBS CreateVideo methods was called and WIA is in the process of creating the video stream.
89.49. **CLASS WIAVIDEOOMBS**

89.49.25  **kStateDestroyingVideo = 6**

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the constants for the video state.  
**Notes:** The application called DestroyVideo method, and WIA is in the process of destroying the video stream.

89.49.26  **kStateNoVideo = 1**

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the constants for the video state.  
**Notes:** No video stream exists. Call CreateVideoByWiaDevID, CreateVideoByDevNum, or CreateVideoByName to create a video.

89.49.27  **kStateVideoCreated = 3**

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the constants for the video state.  
**Notes:** A video stream has been successfully created, but playback has not yet started.

89.49.28  **kStateVideoPaused = 5**

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the constants for the video state.  
**Notes:** A video stream has been successfully created, and the video is paused. The application can now call the TakePicture method.

89.49.29  **kStateVideoPlaying = 4**

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the constants for the video state.  
**Notes:** A video stream has been successfully created, and the video is playing. The application can now call the TakePicture method.
Chapter 90

Image Magick

90.1 class ImageMagickQ16MBS

90.1.1 class ImageMagickQ16MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The class for global functions from the Image Magick library
Notes:
Before using this class you need to load the ImageMagick dylib or dll.
Not all functions from the library are available through the plugin. If you need something special, please ask.
For Mac OS X you need the ImageMagick dylib/bundle and for Windows the normal ImageMagick installation with the DLL.
For more details please check the ImageMagick documentation.
The plugin implements three versions of this ImageMagick classes. One with Q8 for 8 bit quantum depth, one with Q16 for 16 bit depth and Q32 for 32 bit depth.

90.1.2 Methods

90.1.3 Copyright as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The copyright notice for this format.
Notes: For more details please check the ImageMagick documentation.

### 90.1.4 Features as String

**Function:** Returns the ImageMagick features.
**Notes:** For example whether library is compiled with OpenMP for faster performance.

### 90.1.5 HomeURL as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns the home url of the library.
**Notes:** For more details please check the ImageMagick documentation.

### 90.1.6 InitializeMagick(path as string = "")

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Initializes the ImageMagick environment.
**Example:**
```
    dim i as new ImageMagickQ16MBS
    i.InitializeMagick("")
```

**Notes:**
Path: The execution path of the current ImageMagick client.

For more details please check the ImageMagick documentation.
You need to call LoadLibrary functions to load the library before calling this.

### 90.1.7 IsMagickInstantiated as boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns true if the ImageMagick environment is currently instantiated.
**Notes:**
In other words: True if InitializeMagick has been called before.
For more details please check the ImageMagick documentation.

### 90.1.8 LoadErrorString as string

**Function:** The last error message from loading the image magick library.

### 90.1.9 LoadLibrary(path as string) as boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Loads the dll/bundle on the give path.  
**Example:**
```
dim i as new ImageMagickQ16MBS
if TargetLinux then
  if i.LoadLibrary("libMagick.so.6") then
    //MsgBox "library loaded."
  else
    MsgBox "library failed."
  end if
else if TargetWin32 then
  if i.LoadLibrary("CORE_RL_magick_dll") then
    //MsgBox "library loaded."
  else
    MsgBox "library failed."
  end if
else
  // Mac OS X
  if i.LoadLibraryFile(GetFolderItem("ImageMagick.bundle")) then
    //MsgBox "library loaded."
  else
    MsgBox "The library failed to load."
  end if
end if
```

**Notes:**

In case the loading fails the library may be linked to some other libraries (e.g. X11) and you need to install them to get it working.

On Windows you can just pass the name of the library and the system will search it on the paths in the
environment variable "PATH" (or the Windows folder).

On Linux, pass the path or name of the library and the system will search for it.

For more details please check the ImageMagick documentation.

With plugin version 6.1 the Mac OS X part accepts a path to a dylib file, too. Changed to a shared method in plugin version 10.4.

### 90.1.10 LoadLibraryFile(path as folderitem) as boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Loads the dll/bundle on the give path.

**Example:**

```vbnet
Dim i as new ImageMagickQ16MBS

If TargetLinux Then
    If i.LoadLibrary("libMagick.so.6") Then
        //MsgBox "library loaded."
    Else
        MsgBox "library failed."
    End If
ElseIf TargetWin32 Then
    If i.LoadLibrary("CORE\RL\magick\_.dll") Then
        //MsgBox "library loaded."
    Else
        MsgBox "library failed."
    End If
Else
    // Mac OS X
    If i.LoadLibraryFile(GetFolderItem("ImageMagick.bundle")) Then
        //MsgBox "library loaded."
    Else
        MsgBox "The library failed to load."
    End If
End If
End If
```

**Notes:**

In case the loading fails the library may be linked to some other libraries (e.g. X11) and you need to install them to get it working.
This is the preferred way for Mac OS X as paths may not be unique.

For more details please check the ImageMagick documentation.

With plugin version 6.1 the Mac OS X part accepts a folderitem for a dylib file, too.
Changed to a shared method in plugin version 10.4.

**90.1.11  MagickInfoList as IMMagickInfoListQ16MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns the list of known image formats.
**Notes:**
Sets the last exception property.
For more details please check the ImageMagick documentation.

**90.1.12  MagickToMime(name as string) as string**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns the officially registered (or de facto) MIME media-type corresponding to a magick string.
**Notes:**
If there is no registered media-type, then the string "image/x-magick" (all lower case) is returned.

For more details please check the ImageMagick documentation.

**90.1.13  NewImageInfo as IMImageInfoQ16MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Creates a new ImageInfo object.
**Notes:**
Returns nil on low memory.
For more details please check the ImageMagick documentation.

**90.1.14  NewImageList as IMImageQ16MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Creates a new empty image list.
90.1.15  **PackageName as String**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The package name of the library.
**Notes:** For more details please check the ImageMagick documentation.

90.1.16  **QuantumDepth as String**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The Quantum Depth of the library.
**Notes:** For more details please check the ImageMagick documentation.

90.1.17  **QuantumDepthLibrary as Integer**

**Function:** The quantum depth used to compile the library.
**Notes:** QuantumDepthLibrary and QuantumDepthPlugin must be equal for the plugin to work correctly. Currently it is compiled for 16bit support.

90.1.18  **QuantumRange as String**

**Function:** The quantum range used by this library.
**Notes:** Should be a string like "Q16".

90.1.19  **ReadImage(info as IMImageInfoQ16MBS) as IMImageQ16MBS**

**Function:** Reads an image from a file.
**Notes:**
Sets the last exception property.
Returns nil on any error.
You need to pass in an info object to describe the image.
90.1. **CLASS IMAGEMAGICKQ16MBS**

For more details please check the ImageMagick documentation.

90.1.20 **ReadImageFromString(info as IMImageInfoQ16MBS, data as string) as IMImageQ16MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Reads an image from a string.
**Notes:**
Sets the last exception property.
Returns nil on any error.
You need to pass in an info object to describe the image.

For more details please check the ImageMagick documentation.

90.1.21 **ReadImageHeaderFromString(info as IMImageInfoQ16MBS, data as string) as IMImageQ16MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Reads the image header.
**Notes:**
Same as ReadImageFromString except the pixel data is not read.
Sets the last exception property.
For more details please check the ImageMagick documentation.

90.1.22 **ReleaseDate as String**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The release date of the library.
**Notes:** For more details please check the ImageMagick documentation.

90.1.23 **SetCurrentDirectory(path as folderitem) as boolean**

**Function:** Sets the current working directory.
**Notes:** This is needed for most installations to point to the folder with the libraries in order for LoadLibrary to find the dependencies.
CHAPTER 90. IMAGE MAGICK

90.1.24 Version as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The version of the library.
**Notes:** For more details please check the ImageMagick documentation.

90.1.25 Properties

90.1.26 LastError as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The last error code reported.
**Notes:**
If an exception is raised and it is not a warning exception, this exception code is saved in this property.
(Read and Write property)

90.1.27 LastException as IMExceptionQ16MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The last exception thrown by the Image Magick library.
**Notes:**
You should check this value after every call to the library, process the error and set the property to nil.

For more details please check the ImageMagick documentation.
(Read and Write property)
90.2.  **CLASS IMAGEMAGICKQ32MBS**

90.2  **class ImageMagickQ32MBS**

90.2.1  **class ImageMagickQ32MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The class for global functions from the Image Magick library

**Notes:**

Before using this class you need to load the ImageMagick dylib or dll.

Not all functions from the library are available through the plugin. If you need something special, please ask.

For Mac OS X you need the ImageMagick dylib/bundle and for Windows the normal ImageMagick installation with the DLL.

For more details please check the ImageMagick documentation.

The plugin implements three versions of this ImageMagick classes. One with Q8 for 8 bit quantum depth, one with Q16 for 16 bit depth and Q32 for 32 bit depth.

90.2.2  **Methods**

90.2.3  **Copyright as String**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The copyright notice for this format.

**Notes:** For more details please check the ImageMagick documentation.

90.2.4  **Features as String**


**Function:** Returns the ImageMagick features.

**Notes:** For example whether library is compiled with OpenMP for faster performance.

90.2.5  **HomeURL as String**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Returns the home url of the library.
CHAPTER 90. IMAGE MAGICK

Notes: For more details please check the ImageMagick documentation.

90.2.6 InitializeMagick(path as string = "")

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Initializes the ImageMagick environment.
Example:

```vbnet
dim i as new ImageMagickQ32MBS
i.InitializeMagick(""
```

Notes:
Path: The execution path of the current ImageMagick client.

For more details please check the ImageMagick documentation.
You need to call LoadLibrary functions to load the library before calling this.

90.2.7 IsMagickInstantiated as boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns true if the ImageMagick environment is currently instantiated.
Notes:
In other words: True if InitializeMagick has been called before.

For more details please check the ImageMagick documentation.

90.2.8 LoadErrorString as string

Function: The last error message from loading the image magick library.

90.2.9 LoadLibrary(path as string) as boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Loads the dll/bundle on the give path.
Example:
dim i as new ImageMagickQ32MBS

if TargetLinux then
    if i.LoadLibrary("libMagick.so.6") then
        //MsgBox "library loaded."
    else
        MsgBox "library failed."
    end if
elseif TargetWin32 then
    if i.LoadLibrary("CORE_RL_magick_dll") then
        //MsgBox "library loaded."
    else
        MsgBox "library failed."
    end if
else
    // Mac OS X
    if i.LoadLibraryFile(GetFolderItem("ImageMagick.bundle")) then
        //MsgBox "library loaded."
    else
        MsgBox "The library failed to load."
    end if
end if

Notes:
In case the loading fails the library may be linked to some other libraries (e.g. X11) and you need to install them to get it working.

On Windows you can just pass the name of the library and the system will search it on the paths in the environment variable "PATH" (or the Windows folder).

On Linux, pass the path or name of the library and the system will search for it.

For more details please check the ImageMagick documentation.

With plugin version 6.1 the Mac OS X part accepts a path to a dylib file, too.
Changed to a shared method in plugin version 10.4.

90.2.10 LoadLibraryFile(path as folderitem) as boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Loads the dll/bundle on the give path.
Example:

```vbnet
dim i as new ImageMagickQ32MBS

if TargetLinux then
    if i.LoadLibrary("libMagick.so.6") then
        //MsgBox "library loaded."
    else
        MsgBox "library failed."
    end if
elsif TargetWin32 then
    if i.LoadLibrary("CORE_RL_magick_.dll") then
        //MsgBox "library loaded."
    else
        MsgBox "library failed."
    end if
else
    // Mac OS X
    if i.LoadLibraryFile(GetFolderItem("ImageMagick.bundle")) then
        //MsgBox "library loaded."
    else
        MsgBox "The library failed to load."
    end if
end if
```

Notes:

In case the loading fails the library may be linked to some other libraries (e.g. X11) and you need to install them to get it working.

This is the preferred way for Mac OS X as paths may not be unique.

For more details please check the ImageMagick documentation.

With plugin version 6.1 the Mac OS X part accepts a folderitem for a dylib file, too. Changed to a shared method in plugin version 10.4.

**90.2.11 MagickInfoList as IMMagickInfoListQ32MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Returns the list of known image formats.

**Notes:**

Sets the last exception property.
90.2. CLASS IMAGEMAGICKQ32MBS

For more details please check the ImageMagick documentation.

90.2.12  MagickToMime(name as string) as string

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Returns the officially registered (or de facto) MIME media-type corresponding to a magick string.

Notes:
If there is no registered media-type, then the string "image/x-magick" (all lower case) is returned.

For more details please check the ImageMagick documentation.

90.2.13  NewImageInfo as IMImageInfoQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Creates a new ImageInfo object.

Notes:
Returns nil on low memory.
For more details please check the ImageMagick documentation.

90.2.14  NewImageList as IMImageQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Creates a new empty image list.

Notes: For more details please check the ImageMagick documentation.

90.2.15  PackageName as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: The package name of the library.

Notes: For more details please check the ImageMagick documentation.

90.2.16  QuantumDepth as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: The Quantum Depth of the library.
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Notes: For more details please check the ImageMagick documentation.

90.2.17 QuantumDepthLibrary as Integer

Function: The quantum depth used to compile the library.
Notes: QuantumDepthLibrary and QuantumDepthPlugin must be equal for the plugin to work correctly. Currently it is compiled for 16bit support.

90.2.18 QuantumRange as String

Function: The quantum range used by this library.
Notes: Should be a string like "Q16".

90.2.19 ReadImage(info as IMImageInfoQ32MBS) as IMImageQ32MBS

Function: Reads an image from a file.
Notes:
Sets the last exception property.
Returns nil on any error.
You need to pass in an info object to describe the image.

For more details please check the ImageMagick documentation.

90.2.20 ReadImageFromString(info as IMImageInfoQ32MBS, data as string) as IMImageQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Reads an image from a string.
Notes:
Sets the last exception property.
Returns nil on any error.
You need to pass in an info object to describe the image.
90.2. CLASS IMAGEMAGICKQ32MBS

For more details please check the ImageMagick documentation.

90.2.21 ReadImageHeaderFromString(info as IMImageInfoQ32MBS, data as string) as IMImageQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Reads the image header.
Notes: Same as ReadImageFromString except the pixel data is not read.
Sets the last exception property.
For more details please check the ImageMagick documentation.

90.2.22 ReleaseDate as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The release date of the library.
Notes: For more details please check the ImageMagick documentation.

90.2.23 SetCurrentDirectory(path as folderitem) as boolean

Function: Sets the current working directory.
Notes: This is needed for most installations to point to the folder with the libraries in order for LoadLibrary
to find the dependencies.

90.2.24 Version as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The version of the library.
Notes: For more details please check the ImageMagick documentation.

90.2.25 Properties

90.2.26 LastError as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The last error code reported.
Notes:
If an exception is raised and it is not a warning exception, this exception code is saved in this property.  
(Read and Write property)

90.2.27  LastException as IMExceptionQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The last exception thrown by the Image Magick library.  
**Notes:**
You should check this value after every call to the library, process the error and set the property to nil.  
For more details please check the ImageMagick documentation.  
(Read and Write property)
90.3.  CLASS IMAGEMAGICKQ8MBS

90.3  class ImageMagickQ8MBS

90.3.1  class ImageMagickQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
Function: The class for global functions from the Image Magick library
Notes: Before using this class you need to load the ImageMagick dylib or dll.

Not all functions from the library are available through the plugin. If you need something special, please ask.

For Mac OS X you need the ImageMagick dylib/bundle and for Windows the normal ImageMagick installation with the DLL.

For more details please check the ImageMagick documentation.

The plugin implements three versions of this ImageMagick classes. One with Q8 for 8 bit quantum depth, one with Q16 for 16 bit depth and Q32 for 32 bit depth.

90.3.2  Methods

90.3.3  Copyright as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
Function: The copyright notice for this format.
Notes: For more details please check the ImageMagick documentation.

90.3.4  Features as String

Function: Returns the ImageMagick features.
Notes: For example whether library is compiled with OpenMP for faster performance.

90.3.5  HomeURL as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
Function: Returns the home url of the library.
90.3.6  InitializeMagick(path as string = ")")

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Initializes the ImageMagick environment.

**Example:**

```vbs
    dim i as new ImageMagickQ8MBS
    i.InitializeMagick(""
```

**Notes:**

Path: The execution path of the current ImageMagick client.

For more details please check the ImageMagick documentation.
You need to call LoadLibrary functions to load the library before calling this.

90.3.7  IsMagickInstantiated as boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns true if the ImageMagick environment is currently instantiated.

**Notes:**

In other words: True if InitializeMagick has been called before.

For more details please check the ImageMagick documentation.

90.3.8  LoadErrorString as string

**Function:** The last error message from loading the image magick library.

90.3.9  LoadLibrary(path as string) as boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Loads the dll/bundle on the give path.

**Example:**

```vbs
    dim i as new ImageMagickQ8MBS
    i.InitializeMagick(""
```
90.3. CLASS IMAGEMAGICKQ8MBS

\texttt{dim i as new ImageMagickQ8MBS}

\begin{verbatim}
if TargetLinux then
  if i.LoadLibrary("libMagick.so.6") then
    //MsgBox "library loaded."
  else
    MsgBox "library failed."
  end if
elseif TargetWin32 then
  if i.LoadLibrary("CORE_RL_magick_.dll") then
    //MsgBox "library loaded."
  else
    MsgBox "library failed."
  end if
else
  // Mac OS X
  if i.LoadLibraryFile(GetFolderItem("ImageMagick.bundle")) then
    //MsgBox "library loaded."
  else
    MsgBox "The library failed to load."
  end if
end if
\end{verbatim}

Notes:

In case the loading fails the library may be linked to some other libraries (e.g. X11) and you need to install them to get it working.

On Windows you can just pass the name of the library and the system will search it on the paths in the environment variable "PATH" (or the Windows folder).

On Linux, pass the path or name of the library and the system will search for it.

For more details please check the ImageMagick documentation.

With plugin version 6.1 the Mac OS X part accepts a path to a dylib file, too.

Changed to a shared method in plugin version 10.4.

90.3.10 \textbf{LoadLibraryFile(path as folderitem) as boolean}

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

\textbf{Function}: Loads the dll/bundle on the give path.
Example:

dim i as new ImageMagickQ8MBS

if TargetLinux then
if i.LoadLibrary("libMagick.so.6") then
  //MsgBox "library loaded."
else
  MsgBox "library failed."
end if
elseif TargetWin32 then
if i.LoadLibrary("CORE_RL_magick.dll") then
  //MsgBox "library loaded."
else
  MsgBox "library failed."
end if
else
  // Mac OS X
if i.LoadLibraryFile(GetFolderItem("ImageMagick.bundle")) then
  //MsgBox "library loaded."
else
  MsgBox "The library failed to load."
end if
end if

Notes:

In case the loading fails the library may be linked to some other libraries (e.g. X11) and you need to install them to get it working.

This is the preferred way for Mac OS X as paths may not be unique.

For more details please check the Image Magick documentation.

With plugin version 6.1 the Mac OS X part accepts a folderitem for a dylib file, too. Changed to a shared method in plugin version 10.4.

90.3.11 MagickInfoList as IMMagickInfoListQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns the list of known image formats.
Notes:

Sets the last exception property.
90.3. CLASS IMAGEMAGICKQ8MBS

For more details please check the ImageMagick documentation.

90.3.12  MagickToMime(name as string) as string

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns the officially registered (or de facto) MIME media-type corresponding to a magick string.
**Notes:**
If there is no registered media-type, then the string "image/x-magick" (all lower case) is returned.

For more details please check the ImageMagick documentation.

90.3.13  NewImageInfo as IMImageInfoQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Creates a new ImageInfo object.
**Notes:**
Returns nil on low memory.
For more details please check the ImageMagick documentation.

90.3.14  NewImageList as IMImageQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Creates a new empty image list.
**Notes:** For more details please check the ImageMagick documentation.

90.3.15  PackageName as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The package name of the library.
**Notes:** For more details please check the ImageMagick documentation.

90.3.16  QuantumDepth as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The Quantum Depth of the library.
Notes: For more details please check the ImageMagick documentation.

90.3.17 QuantumDepthLibrary as Integer

Function: The quantum depth used to compile the library.
Notes: QuantumDepthLibrary and QuantumDepthPlugin must be equal for the plugin to work correctly. Currently it is compiled for 16bit support.

90.3.18 QuantumRange as String

Function: The quantum range used by this library.
Notes: Should be a string like "Q16".

90.3.19 ReadImage(info as IMImageInfoQ8MBS) as IMImageQ8MBS

Function: Reads an image from a file.
Notes:
Sets the last exception property.
Returns nil on any error.
You need to pass in an info object to describe the image.

For more details please check the ImageMagick documentation.

90.3.20 ReadImageFromString(info as IMImageInfoQ8MBS, data as string) as IMImageQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Reads an image from a string.
Notes:
Sets the last exception property.
Returns nil on any error.
You need to pass in an info object to describe the image.
90.3. **CLASS IMAGEMAGICKQ8MBS**

For more details please check the ImageMagick documentation.

### 90.3.21 **ReadImageHeaderFromString**

**Function:** Reads the image header.

**Notes:**
Same as ReadImageFromString except the pixel data is not read.
Sets the last exception property.
For more details please check the ImageMagick documentation.

### 90.3.22 **ReleaseDate as String**

**Function:** The release date of the library.

**Notes:** For more details please check the ImageMagick documentation.

### 90.3.23 **SetCurrentDirectory**

**Function:** Sets the current working directory.

**Notes:** This is needed for most installations to point to the folder with the libraries in order for LoadLibrary to find the dependencies.

### 90.3.24 **Version as String**

**Function:** The version of the library.

**Notes:** For more details please check the ImageMagick documentation.

### 90.3.25 **Properties**

### 90.3.26 **LastError as Integer**

**Function:** The last error code reported.
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Notes:

If an exception is raised and it is not a warning exception, this exception code is saved in this property.
(Read and Write property)

90.3.27 LastException as IMExceptionQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The last exception thrown by the Image Magick library.
Notes:

You should check this value after every call to the library, process the error and set the property to nil.

For more details please check the ImageMagick documentation.
(Read and Write property)
90.4. CLASS IMCOLORQ16MBS

90.4. class IMColorQ16MBS

90.4.1. class IMColorQ16MBS

Function: The Image Magick class to represent a color.
Example:

    dim i as IMImageInfoQ16MBS
    dim c as IMColorQ16MBS

    c=i.BackgroundColor
    c.red=65535 // full red
    i.BackgroundColor=c

Notes:
As you see above the IMColorQ16MBS object does not reference the original values, but contains a copy, so
you must assign the modified color back to store it.
(Same as on the Realbasic Color class)

90.4.2. Methods

90.4.3. Constructor

Function: Creates a color object where all four properties are zero.
See also:

- 90.4.4 Constructor(c as color) 14843
- 90.4.5 Constructor(red as UInt32, green as UInt32, blue as UInt32, Opacity as UInt32 = 0) 14844

90.4.4. Constructor(c as color)

Function: Creates a new color value and fills it with the given Real Studio color.
See also:

- 90.4.3 Constructor 14843
- 90.4.5 Constructor(red as UInt32, green as UInt32, blue as UInt32, Opacity as UInt32 = 0) 14844
90.4.5 Constructor(red as UInt32, green as UInt32, blue as UInt32, Opacity as UInt32 = 0)


Function: Creates a new color object with the given values.
See also:

- 90.4.3 Constructor

- 90.4.4 Constructor(c as color)

90.4.6 Properties

90.4.7 Blue as UInt32


Function: The blue component.

Notes:
Value from 0 to 65535.
(Read and Write property)

90.4.8 ColorValue as Color


Function: The color as a Real Studio color.

Notes:
Please note that Real Studio colors are 8 bit. So for Q16 and Q32 classes the colors are scaled up or down. This reads/writes the red, green and blue property, but not the opacity property.
(Read and Write property)

90.4.9 Green as UInt32


Function: The green component.

Notes:
Value from 0 to 65535.
(Read and Write property)
90.4.  CLASS IMCOLORQ16MBS

90.4.10  Opacity as UInt32

**Function:** The opacity part of the color.
**Notes:**
Value from 0 to 65535.
(Read and Write property)

90.4.11  Red as UInt32

**Function:** The red component.
**Notes:**
Value from 0 to 65535.
(Read and Write property)
90.5 class IMColorQ32MBS

90.5.1 class IMColorQ32MBS

Function: The Image Magick class to represent a color.
Example:

```vbs
Dim i As IMImageInfoQ32MBS
Dim c As IMColorQ32MBS

c = i.BackgroundColor
C.Red = 65535 ' full red
i.BackgroundColor = c
```

Notes:
As you see above the IMColorQ32MBS object does not reference the original values, but contains a copy, so you must assign the modified color back to store it.
(Same as on the Realbasic Color class)

90.5.2 Methods

90.5.3 Constructor

Function: Creates a color object where all four properties are zero.
See also:

- 90.5.4 Constructor(c as color) 14846
- 90.5.5 Constructor(red as UInt32, green as UInt32, blue as UInt32, Opacity as UInt32 = 0) 14847

90.5.4 Constructor(c as color)

Function: Creates a new color value and fills it with the given Real Studio color.
See also:

- 90.5.3 Constructor 14846
- 90.5.5 Constructor(red as UInt32, green as UInt32, blue as UInt32, Opacity as UInt32 = 0) 14847
90.5. CLASS IMCOLORQ32MBS

90.5.5 Constructor(red as UInt32, green as UInt32, blue as UInt32, Opacity as UInt32 = 0)

MBS GraphicsMagick Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Creates a new color object with the given values. See also:

- 90.5.3 Constructor 14846
- 90.5.4 Constructor(c as color) 14846

90.5.6 Properties

90.5.7 Blue as UInt32

MBS GraphicsMagick Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The blue component. Notes: Value from 0 to 65535. (Read and Write property)

90.5.8 ColorValue as Color

MBS GraphicsMagick Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The color as a Real Studio color. Notes: Please note that Real Studio colors are 8 bit. So for Q16 and Q32 classes the colors are scaled up or down. This reads/writes the red, green and blue property, but not the opacity property. (Read and Write property)

90.5.9 Green as UInt32

MBS GraphicsMagick Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The green component. Notes: Value from 0 to 65535. (Read and Write property)
90.5.10 Opacity as UInt32

Function: The opacity part of the color.
Notes:
Value from 0 to 65535.
(Read and Write property)

90.5.11 Red as UInt32

Function: The red component.
Notes:
Value from 0 to 65535.
(Read and Write property)
90.6. CLASS IMCOLORQ8MBS

90.6  class IMColorQ8MBS

90.6.1  class IMColorQ8MBS

Function: The Image Magick class to represent a color.
Example:

dim i as IMImageInfoQ8MBS
dim c as IMColorQ8MBS

c=i.BackgroundColor

Example:

c.red=65535  // full red
i.BackgroundColor=c

Notes:
As you see above the IMColorQ8MBS object does not reference the original values, but contains a copy, so
you must assign the modified color back to store it.
(Same as on the Realbasic Color class)

90.6.2  Methods

90.6.3  Constructor

Function: Creates a color object where all four properties are zero.
See also:

• 90.6.4 Constructor(c as color) 14849

• 90.6.5 Constructor(red as UInt32, green as UInt32, blue as UInt32, Opacity as UInt32 = 0) 14850

90.6.4  Constructor(c as color)

Function: Creates a new color value and fills it with the given Real Studio color.
See also:

• 90.6.3 Constructor 14849

• 90.6.5 Constructor(red as UInt32, green as UInt32, blue as UInt32, Opacity as UInt32 = 0) 14850
### 90.6.5 Constructor(red as UInt32, green as UInt32, blue as UInt32, Opacity as UInt32 = 0)

**Function:** Creates a new color object with the given values.  
See also:

- 90.6.3 Constructor
- 90.6.4 Constructor(c as color)

### 90.6.6 Properties

#### 90.6.7 Blue as UInt32

**Function:** The blue component.  
**Notes:**  
Value from 0 to 65535.  
(Read and Write property)

#### 90.6.8 ColorValue as Color

**Function:** The color as a Real Studio color.  
**Notes:**  
Please note that Real Studio colors are 8 bit. So for Q16 and Q32 classes the colors are scaled up or down.  
This reads/writes the red, green and blue property, but not the opacity property.  
(Read and Write property)

#### 90.6.9 Green as UInt32

**Function:** The green component.  
**Notes:**  
Value from 0 to 65535.  
(Read and Write property)
90.6.  CLASS IMCOLORQ8MBS

90.6.10  Opacity as UInt32

Function: The opacity part of the color.
Notes:
Value from 0 to 65535.
(Read and Write property)

90.6.11  Red as UInt32

Function: The red component.
Notes:
Value from 0 to 65535.
(Read and Write property)
90.7 class IMExceptionQ16MBS

90.7.1 class IMExceptionQ16MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The class for information about an Image Magick Exception.
Notes:
Some functions can throw an exception and you find this exception object after calling the function inside
the class. For Example after calling IMImageQ16MBS.resize, the IMImageQ16MBS.LastException property
will be nil for no exception or just contain the exception from the resize operation.

For more details please check the ImageMagick documentation.
Subclass of the RuntimeException class.

90.7.2 Methods

90.7.3 Close

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The destructor.
Notes:
There is no need to call this method except you want to free all resources used by this object now without
waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

90.7.4 Properties

90.7.5 Description as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The description of the exception.
Notes:
For more details please check the ImageMagick documentation.
(Read and Write property)
90.7.6  Reason as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The reason of the exception.
**Notes:**
For more details please check the ImageMagick documentation.
(Read and Write property)

90.7.7  Severity as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The exception type.
**Notes:**
some usefull constants:
For more details please check the ImageMagick documentation.
(Read and Write property)

90.7.8  Signature as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The signature of the exception.
**Notes:**
For more details please check the ImageMagick documentation.
(Read and Write property)
const UndefinedException = 0
const WarningException = 300
const ResourceLimitWarning = 300
const TypeWarning = 305
const OptionWarning = 310
const DelegateWarning = 315
const MissingDelegateWarning = 320
const CorruptImageWarning = 325
const FileOpenWarning = 330
const BlobWarning = 335
const StreamWarning = 340
const CacheWarning = 345
const CoderWarning = 350
const ModuleWarning = 355
const DrawWarning = 360
const ImageWarning = 365
const XServerWarning = 380
const MonitorWarning = 385
const RegistryWarning = 390
const ConfigureWarning = 395
constErrorException = 400
const ResourceLimitErrorException = 400
const TypeError = 405
const OptionError = 410
const DelegateError = 415
const MissingDelegateError = 420
const CorruptImageError = 425
const FileOpenError = 430
const BlobError = 435
const StreamError = 440
const CacheError = 445
const CoderError = 450
const ModuleError = 455
const DrawError = 460
const ImageError = 465
const XServerError = 480
const MonitorError = 485
const RegistryError = 490
const ConfigureError = 495
const FatalErrorException = 700
const ResourceLimitFatalError = 700
const TypeFatalError = 705
const OptionFatalError = 710
const DelegateFatalError = 715
const MissingDelegateFatalError = 720
const CorruptImageFatalError = 725
const FileOpenFatalError = 730
const BlobFatalError = 735
const StreamFatalError = 740
const CacheFatalError = 745
const CoderFatalError = 750
const ModuleFatalError = 755
const DrawFatalError = 760
const ImageFatalError = 765
const XServerFatalError = 780
const MonitorFatalError = 785
const RegistryFatalError = 790
const ConfigureFatalError = 795
90.8.  CLASS IMEXCEPTIONQ32MBS

90.8  class IMExceptionQ32MBS

90.8.1  class IMExceptionQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The class for information about an Image Magick Exception.
Notes:
Some functions can throw an exception and you find this exception object after calling the function inside
the class. For Example after calling IMImageQ32MBS.resize, the IMImageQ32MBS.LastException property
will be nil for no exception or just contain the exception from the resize operation.

For more details please check the ImageMagick documentation.
Subclass of the RuntimeException class.

90.8.2  Methods

90.8.3  Close

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The destructor.
Notes:
There is no need to call this method except you want to free all resources used by this object now without
waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

90.8.4  Properties

90.8.5  Description as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The description of the exception.
Notes:
For more details please check the ImageMagick documentation.
(Read and Write property)
90.8.6 Reason as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The reason of the exception.
Notes:
For more details please check the ImageMagick documentation.
(Read and Write property)

90.8.7 Severity as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The exception type.
Notes:
some usefull constants:
For more details please check the ImageMagick documentation.
(Read and Write property)

90.8.8 Signature as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The signature of the exception.
Notes:
For more details please check the ImageMagick documentation.
(Read and Write property)
const UndefinedException = 0
const WarningException = 300
const ResourceLimitWarning = 300
const TypeWarning = 305
const OptionWarning = 310
const DelegateWarning = 315
const MissingDelegateWarning = 320
const CorruptImageWarning = 325
const FileOpenWarning = 330
const BlobWarning = 335
const StreamWarning = 340
const CacheWarning = 345
const CoderWarning = 350
const ModuleWarning = 355
const DrawWarning = 360
const ImageWarning = 365
const XServerWarning = 380
const MonitorWarning = 385
const RegistryWarning = 390
const ConfigureWarning = 395
const ErrorException = 400
const ResourceLimitError = 400
const TypeError = 405
const OptionError = 410
const DelegateError = 415
const MissingDelegateError = 420
const CorruptImageError = 425
const FileOpenError = 430
const BlobError = 435
const StreamError = 440
const CacheError = 445
const CoderError = 450
const ModuleError = 455
const DrawError = 460
const ImageError = 465
const XServerError = 480
const MonitorError = 485
const RegistryError = 490
const ConfigureError = 495
const FatalErrorException = 700
const ResourceLimitFatalError = 700
const TypeFatalError = 705
const OptionFatalError = 710
const DelegateFatalError = 715
const MissingDelegateFatalError = 720
const CorruptImageFatalError = 725
const FileOpenFatalError = 730
const BlobFatalError = 735
const StreamFatalError = 740
const CacheFatalError = 745
const CoderFatalError = 750
const ModuleFatalError = 755
const DrawFatalError = 760
const ImageFatalError = 765
const XServerFatalError = 780
const MonitorFatalError = 785
const RegistryFatalError = 790
const ConfigureFatalError = 795
90.9 class IMExceptionQ8MBS

90.9.1 class IMExceptionQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The class for information about an Image Magick Exception.
Notes: Some functions can throw an exception and you find this exception object after calling the function inside the class. For Example after calling IMImageQ8MBS.resize, the IMImageQ8MBS.LastException property will be nil for no exception or just contain the exception from the resize operation.

For more details please check the ImageMagick documentation.
Subclass of the RuntimeException class.

90.9.2 Methods

90.9.3 Close

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The destructor.
Notes: There is no need to call this method except you want to free all resources used by this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

90.9.4 Properties

90.9.5 Description as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The description of the exception.
Notes: For more details please check the ImageMagick documentation.
(Read and Write property)
90.9.6  Reason as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The reason of the exception.
Notes:
For more details please check the ImageMagick documentation.
(Read and Write property)

90.9.7  Severity as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The exception type.
Notes:
some usefull constants:
For more details please check the ImageMagick documentation.
(Read and Write property)

90.9.8  Signature as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The signature of the exception.
Notes:
For more details please check the ImageMagick documentation.
(Read and Write property)
const UndefinedException = 0
const WarningException = 300
const ResourceLimitWarning = 300
const TypeWarning = 305
const OptionWarning = 310
const DelegateWarning = 315
const MissingDelegateWarning = 320
const CorruptImageWarning = 325
const FileOpenWarning = 330
const BlobWarning = 335
const StreamWarning = 340
const CacheWarning = 345
const CoderWarning = 350
const ModuleWarning = 355
const DrawWarning = 360
const ImageWarning = 365
const XServerWarning = 380
const MonitorWarning = 385
const RegistryWarning = 390
const ConfigureWarning = 395
const ErrorException = 400
const ResourceLimitError = 400
const TypeError = 405
const OptionError = 410
const DelegateError = 415
const MissingDelegateError = 420
const CorruptImageError = 425
const FileOpenError = 430
const BlobError = 435
const StreamError = 440
const CacheError = 445
const CoderError = 450
const ModuleError = 455
const DrawError = 460
const ImageError = 465
const XServerError = 480
const MonitorError = 485
const RegistryError = 490
const ConfigureError = 495
const FatalErrorException = 700
const ResourceLimitFatalError = 700
const TypeFatalError = 705
const OptionFatalError = 710
const DelegateFatalError = 715
const MissingDelegateFatalError = 720
const CorruptImageFatalError = 725
const FileOpenFatalError = 730
const BlobFatalError = 735
const StreamFatalError = 740
const CacheFatalError = 745
const CoderFatalError = 750
const ModuleFatalError = 755
const DrawFatalError = 760
const ImageFatalError = 765
const XServerFatalError = 780
const MonitorFatalError = 785
const RegistryFatalError = 790
const ConfigureFatalError = 795
90.10. CLASS IMIMAGEAFFINEMATRIXQ16MBS

90.10  class IMImageAffineMatrixQ16MBS

90.10.1  class IMImageAffineMatrixQ16MBS

**Function:** The class for an Image Magick affine transformation matrix.

90.10.2  Methods

90.10.3  Constructor

**Function:** Creates an identity matrix.

90.10.4  Properties

90.10.5  RX as Double

**Function:** The rotate x value.
**Notes:** (Read and Write property)

90.10.6  RY as Double

**Function:** The rotate y value.
**Notes:** (Read and Write property)

90.10.7  SX as Double

**Function:** The scale x value.
**Notes:** (Read and Write property)
90.10.8  SY as Double

Function: The scale y value.
Notes: (Read and Write property)

90.10.9  TX as Double

Function: The translate y value.
Notes: (Read and Write property)

90.10.10  TY as Double

Function: The translate y value.
Notes: (Read and Write property)
90.11. class IMImageAffineMatrixQ32MBS

90.11.1 class IMImageAffineMatrixQ32MBS

Function: The class for an Image Magick affine transformation matrix.

90.11.2 Methods

90.11.3 Constructor

Function: Creates an identity matrix.

90.11.4 Properties

90.11.5 RX as Double

Function: The rotate x value.
Notes: (Read and Write property)

90.11.6 RY as Double

Function: The rotate y value.
Notes: (Read and Write property)

90.11.7 SX as Double

Function: The scale x value.
Notes: (Read and Write property)
### 90.11.8 SY as Double

**Function:** The scale y value.
**Notes:** (Read and Write property)

### 90.11.9 TX as Double

**Function:** The translate y value.
**Notes:** (Read and Write property)

### 90.11.10 TY as Double

**Function:** The translate y value.
**Notes:** (Read and Write property)
90.12. CLASS IMIMAGEAFFINEMATRIXQ8MBS

90.12  class IMImageAffineMatrixQ8MBS

Function: The class for an Image Magick affine transformation matrix.

90.12.2  Methods

90.12.3  Constructor

Function: Creates an identity matrix.

90.12.4  Properties

90.12.5  RX as Double

Function: The rotate x value.
Notes: (Read and Write property)

90.12.6  RY as Double

Function: The rotate y value.
Notes: (Read and Write property)

90.12.7  SX as Double

Function: The scale x value.
Notes: (Read and Write property)
90.12.8 SY as Double

Function: The scale y value.
Notes: (Read and Write property)

90.12.9 TX as Double

Function: The translate y value.
Notes: (Read and Write property)

90.12.10 TY as Double

Function: The translate y value.
Notes: (Read and Write property)
90.13. class IMImageAttributeQ16MBS

90.13.1 class IMImageAttributeQ16MBS

Function: A class for an image attribute.
Notes:
Used only for reading the attributes.
Do not keep references over long times as memory of key/value pairs may be released.

90.13.2 Properties

90.13.3 Compression as Boolean

Function: Whether compression is used.
Notes: (Read only property)

90.13.4 Key as String

Function: The key of this attribute.
Notes:
String is in binary text encoding.
(Read only property)

90.13.5 Value as String

Function: The value of this attribute.
Notes:
String is in binary text encoding.
(Read only property)
90.14 class IMImageAttributeQ32MBS

90.14.1 class IMImageAttributeQ32MBS

Function: A class for an image attribute.
Notes:
Used only for reading the attributes.
Do not keep references over long times as memory of key/value pairs may be released.

90.14.2 Properties

90.14.3 Compression as Boolean

Function: Whether compression is used.
Notes: (Read only property)

90.14.4 Key as String

Function: The key of this attribute.
Notes:
String is in binary text encoding.
(Read only property)

90.14.5 Value as String

Function: The value of this attribute.
Notes:
String is in binary text encoding.
(Read only property)
90.15 class IMImageAttributeQ8MBS

90.15.1 class IMImageAttributeQ8MBS


**Function:** A class for an image attribute.

**Notes:**
Used only for reading the attributes.
Do not keep references over long times as memory of key/value pairs may be released.

90.15.2 Properties

90.15.3 Compression as Boolean


**Function:** Whether compression is used.

**Notes:** (Read only property)

90.15.4 Key as String


**Function:** The key of this attribute.

**Notes:**
String is in binary text encoding.
(Read only property)

90.15.5 Value as String


**Function:** The value of this attribute.

**Notes:**
String is in binary text encoding.
(Read only property)
90.16 class IMImageInfoQ16MBS

90.16.1 class IMImageInfoQ16MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: A class for information about an image.
Notes: For more details please check the ImageMagick documentation.

90.16.2 Methods

90.16.3 Clone as IMImageInfoQ16MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Clones the ImageInfo object.
Notes: For more details please check the ImageMagick documentation.

90.16.4 Close

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The destructor.
Notes:
There is no need to call this method except you want to free all resources used by this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

90.16.5 DestroyImageInfo

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Destroys the image info and sets the handle to 0.
Notes:
For more details please check the ImageMagick documentation.
The destructor will call this for you if release=true.

90.16.6 HandleMemory as memoryblock

Function: The content of the whole ImageInfo structure copied into a memoryblock.
90.16.7 Properties

90.16.8 Adjoin as Boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Join images into a single multi-image file.
Notes:
For more details please check the ImageMagick documentation.
(Read and Write property)

90.16.9 Affirm as Boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Unknown.
Notes:
For more details please check the ImageMagick documentation.
(Read and Write property)

90.16.10 Antialias as Boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Control antialiasing of rendered Postscript and Postscript or TrueType fonts.
Notes:
Enabled by default.
For more details please check the ImageMagick documentation.
(Read and Write property)

90.16.11 Authenticate as String

Function: An undocumented property.
Notes: (Read and Write property)
90.16.12 BackgroundColor as IMColorQ16MBS

Function: Image background color.  
Notes: (Read and Write property)

90.16.13 BorderColor as IMColorQ16MBS

Function: Image border color.  
Notes: (Read and Write property)

90.16.14 Channel as Integer

Function: The channel to use.  
Notes: 

Constants for channel:

```
const UndefinedChannel = 0  
const RedChannel = & h0001  
const GrayChannel = & h0001  
const CyanChannel = & h0001  
const GreenChannel = & h0002  
const MagentaChannel = & h0002  
const BlueChannel = & h0004  
const YellowChannel = & h0004  
const AlphaChannel = & h0008  
const OpacityChannel = & h0008  
const BlackChannel = & h0020  
const IndexChannel = & h0020  
const AllChannels = & h7fffffff
```

(Read and Write property)

90.16.15 Colors as Integer

Function: An undocumented property.
90.16.16 ColorSpace as Integer


**Function:** Image pixel interpretation.

**Example:**

```plaintext
dim im as ImageMagickQ16MBS // global

Function IMPictureToString(p as picture, magick as string, quality as Integer) As string
dim image as new IMImageQ16MBS
dim imageinfo as IMImageInfoQ16MBS
dim s,data as string
dim impp as new IMMagickPixelPacketQ16MBS

// empty string for nil picture
if p = nil then
    Return ""
end if

// create a new picture info
imageinfo = im.NewImageInfo
imageinfo.ColorSpace=1
// only color space is needed. 1 for RGB.

// background color of image
impp.red = 0
impp.Green = 0
impp.Blue = 0

// creates a new image object
if not image.NewImage(imageinfo,p.Width,p.Height,impp) then
    Return ""
end if

// copy RB picture into IM Image at position 0/0
image.ColorSpace = 1
image.SetPicture(p,0,0)

// set compression data
imageinfo.Magick = magick
imageinfo.Quality = quality

// and rendering intent: 2=PerceptualIntent
```
'image.RenderingIntent = 2

// create image data
data = image.ImageToBlob(imageinfo)

// release memory
image.DestroyImage
imageinfo.DestroyImageInfo

// return result
Return data

Exception
// in case of an exception return nothing
Return ""

End Function

Notes:
If the colorspace is RGB the pixels are red, green, blue. If matte is true, then red, green, blue, and index. If
it is CMYK, the pixels are cyan, yellow, magenta, black. Otherwise the colorspace is ignored.

constants:

UndefinedColors 0
RGBColors 1
GRAYColors 2
TransparentColors 3
OHTAColors 4
LABColors 5
XYZColors 6
YCbCrColors 7
YCCColors 8
YIQColors 9
YPbPrColors 10
YUVColors 11
CMYKColors 12
sRGBColors 13
HSBColors 14
HSLCcolors 15
HWBColors 16
90.16.17 Compression as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Image compression type.

**Notes:**
useful constants:

```plaintext
class UndefinedCompression = 0
const NoCompression = 1
const BZipCompression = 2
const FaxCompression = 3
const Group4Compression = 4
const JPEGCompression = 5
const LosslessJPEGCompression = 6
const LZWCompression = 7
const RLECompression = 8
const ZipCompression = 9
```

The default is the compression type of the specified image file.
For more details please check the ImageMagick documentation.
(Read and Write property)

90.16.18 Density as String

**Function:** Vertical and horizontal resolution in pixels of the image.

**Notes:**
This option specifies an image density when decoding a Postscript or Portable Document page.
(Read and Write property)

90.16.19 Depth as Integer

**Function:** Image depth (8 or 16).

**Notes:**
QuantumLeap must be defined before a depth of 16 is valid.
(Read and Write property)
90.16.20  Dither as Boolean

**Function:** An undocumented property.
**Notes:** (Read and Write property)

90.16.21  Endian as Integer

**Function:** The endian setting to use.
**Notes:**

constants:

- UndefinedEndian 0
- LSBEndian 1 (Windows)
- MSBEndian 2 (Mac)

E.g. tiff files support different endian settings.
(Read and Write property)

90.16.22  Extract as String

**Function:** An undocumented property.
**Notes:** (Read and Write property)

90.16.23  Filename as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The file path/name.
**Notes:**

The string must be in the encoding of the library and is limited to 4000 bytes.
For more details please check the ImageMagick documentation.
(Read and Write property)
90.16.24 Font as String

Function: Text rendering font.
Notes:
If the font is a fully qualified X server font name, the font is obtained from an X server. To use a TrueType
font, precede the TrueType filename with an @. Otherwise, specify a Postscript font name (e.g. "helvetica").
(Read and Write property)

90.16.25 Group as Integer

Function: An undocumented property.
Notes: (Read and Write property)

90.16.26 Handle as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The handle used internally by the plugin.
Notes:
A pointer to a ImageInfo structure.
For more details please check the ImageMagick documentation.
(Read and Write property)

90.16.27 HeaderOnly as Boolean

Function: True if only the header was read from the image data.
Notes: (Read and Write property)

90.16.28 Interlace as Integer

Function: The type of interlacing scheme (default NoInterlace).
Notes:
This option is used to specify the type of interlacing scheme for raw image formats such as RGB or YUV.
NoInterlace means do not interlace, LineInterlace uses scanline interlacing, and PlaneInterlace uses plane
interlacing. PartitionInterlace is like PlaneInterlace except the different planes are saved to individual files.
(e.g. image.R, image.G, and image.B). Use LineInterlace or PlaneInterlace to create an interlaced GIF or progressive JPEG image.

constants:

- UndefinedInterlace 0 Unset value.
- NoInterlace 1 Don’t interlace image (RGBRGBRGBRGBRGBRGB...)
- LineInterlace 2 Use scanline interlacing (RRR...GGG...BBB...RRR...GGG...BBB...)
- PlaneInterlace 3 Use plane interlacing (RRRRRR...GGGGGG...BBBBBBB...)
- PartitionInterlace 4 Similar to plane interlacing except that the different planes are saved to individual files (e.g. image.R, image.G, and image.B)

(Read and Write property)

90.16.29 Magick as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Image encoding format (e.g. "GIF").

**Example:**

```plaintext
dim imageinfo as IMImageInfoQ16MBS
dim blob as string
dim image as IMImageQ16MBS

// Now lets convert to tiff
imageinfo.Filename = "image"
imageinfo.Magick="JPEG"
imageinfo.Quality = 10 //since we are displaying, lets use highest quality, lowest compression
blob = image.ImageToBlob(imageinfo)
```

**Notes:**

For more details please check the ImageMagick documentation.  
(Read and Write property)

90.16.30 MatteColor as IMColorQ16MBS

**Function:** Image matte (transparent) color.  
**Notes:** (Read and Write property)
90.16.31  Monochrome as Boolean

**Function:** Transform the image to black and white.
**Notes:** (Read and Write property)

90.16.32  Orientation as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The image orientation.
**Notes:**

constants:

```
const UndefinedOrientation = 0
const TopLeftOrientation   = 1
const TopRightOrientation  = 2
const BottomRightOrientation = 3
const BottomLeftOrientation = 4
const LeftTopOrientation   = 5
const RightTopOrientation  = 6
const RightBottomOrientation = 7
const LeftBottomOrientation = 8
```

For more details please check the ImageMagick documentation.
(Read and Write property)

90.16.33  Page as String

**Function:** Equivalent size of Postscript page.
**Notes:** (Read and Write property)

90.16.34  PointSize as Double

**Function:** Text rendering font point size.
**Notes:** (Read and Write property)
90.16.35 Preview as Integer


Function: Image manipulation preview option.

Notes:
Used by 'display'.

constants:

UndefinedPreview 0
RotatePreview 1
ShearPreview 2
RollPreview 3
HuePreview 4
SaturationPreview 5
BrightnessPreview 6
GammaPreview 7
SpiffPreview 8
DullPreview 9
GrayscalePreview 10
QuantizePreview 11
DespecklePreview 12
ReduceNoisePreview 13
AddNoisePreview 14
SharpenPreview 15
BlurPreview 16
ThresholdPreview 17
EdgeDetectPreview 18
SpreadPreview 19
SolarizePreview 20
ShadePreview 21
RaisePreview 22
SegmentPreview 23
SwirlPreview 24
ImplodePreview 25
WavePreview 26
OilPaintPreview 27
CharcoalDrawingPreview 28
JPEGPreview 29

(Read and Write property)
90.16.36  Quality as Integer

Function: JPEG/MIFF/PNG compression level.
Notes:
Default value is 75.
(Read and Write property)

90.16.37  Release as Boolean

Function: If true, the destructor will release the handle.
Notes: (Read and Write property)

90.16.38  ResolutionUnits as Integer

Function: Units of image resolution.
Notes:
constants:

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UndefinedResolution</td>
<td>0</td>
<td>Unset value.</td>
</tr>
<tr>
<td>PixelsPerInchResolution</td>
<td>1</td>
<td>Density specifications are specified in units of pixels per inch (english units).</td>
</tr>
<tr>
<td>PixelsPerCentimeterResolution</td>
<td>2</td>
<td>Density specifications are specified in units of pixels per centimeter (metric units).</td>
</tr>
</tbody>
</table>

(Read and Write property)

90.16.39  SamplingFactor as String

Function: An undocumented property.
Notes: (Read and Write property)
90.16.40 Scene as Integer

**Function:** An undocumented property.
**Notes:** (Read and Write property)

90.16.41 SceneCount as Integer

**Function:** An undocumented property.
**Notes:** (Read and Write property)

90.16.42 Scenes as String

**Function:** An undocumented property.
**Notes:** (Read and Write property)

90.16.43 ServerName as String

**Function:** X11 display to display to.
**Notes:**
- obtain fonts from, or to capture image from.
  (Read and Write property)

90.16.44 Size as String

MBS GraphicsMagick Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:** Width and height of a raw image (an image which does not support width and height information).
**Notes:**
- Size may also be used to affect the image size read from a multi-resolution format (e.g. Photo CD, JBIG, or JPEG.
  (Read and Write property)
90.16.45 **Temporary as Boolean**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

*Function*: Unknown.

*Notes:*

For more details please check the ImageMagick documentation.
(Read and Write property)

---

90.16.46 **Texture as String**


*Function*: Image filename to use as background texture.

*Notes:* (Read and Write property)

---

90.16.47 **Type as Integer**


*Function*: The Image type.

*Notes:*

constants:

- UndefinedType: 0
- BilevelType: 1
- GrayscaleType: 2
- GrayscaleMatteType: 3
- PaletteType: 4
- PaletteMatteType: 5
- TrueColorType: 6
- TrueColorMatteType: 7
- ColorSeparationType: 8
- ColorSeparationMatteType: 9
- OptimizeType: 10

(Read and Write property)

---

90.16.48 **Verbose as Boolean**


*Function*: Print detailed information about the image if True.
90.16.49 View as String


**Function:** FlashPix viewing parameters.

**Notes:** (Read and Write property)
90.17. **CLASS IMImageInfoQ32MBS**

90.17 **class IMImageInfoQ32MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** A class for information about an image.  
**Notes:** For more details please check the ImageMagick documentation.

90.17.2 **Methods**

90.17.3 **Clone as IMImageInfoQ32MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Clones the ImageInfo object.  
**Notes:** For more details please check the ImageMagick documentation.

90.17.4 **Close**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The destructor.  
**Notes:**  
There is no need to call this method except you want to free all resources used by this object now without waiting for Realbasic to do it for you.  
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

90.17.5 **DestroyImageInfo**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Destroys the image info and sets the handle to 0.  
**Notes:**  
For more details please check the ImageMagick documentation.  
The destructor will call this for you if release=true.

90.17.6 **HandleMemory as memoryblock**

**Function:** The content of the whole ImageInfo structure copied into a memoryblock.
Notes: Returns nil on any error.

90.17.7 Properties

90.17.8 Adjoin as Boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Join images into a single multi-image file.
**Notes:**
For more details please check the ImageMagick documentation.
(Read and Write property)

90.17.9 Affirm as Boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Unknown.
**Notes:**
For more details please check the ImageMagick documentation.
(Read and Write property)

90.17.10 Antialias as Boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Control antialiasing of rendered Postscript and Postscript or TrueType fonts.
**Notes:**
Enabled by default.
For more details please check the ImageMagick documentation.
(Read and Write property)

90.17.11 Authenticate as String

**Function:** An undocumented property.
**Notes:** (Read and Write property)
90.17.12 **BackgroundColor as IMColorQ32MBS**

**Function:** Image background color.
**Notes:** (Read and Write property)

90.17.13 **BorderColor as IMColorQ32MBS**

**Function:** Image border color.
**Notes:** (Read and Write property)

90.17.14 **Channel as Integer**

**Function:** The channel to use.
**Notes:**

Constants for channel:

- `const UndefinedChannel = 0`
- `const RedChannel = & h0001`
- `const GrayChannel = & h0001`
- `const CyanChannel = & h0001`
- `const GreenChannel = & h0002`
- `const MagentaChannel = & h0002`
- `const BlueChannel = & h0004`
- `const YellowChannel = & h0004`
- `const AlphaChannel = & h0008`
- `const OpacityChannel = & h0008`
- `const BlackChannel = & h0020`
- `const IndexChannel = & h0020`
- `const AllChannels = & h7fffffff`

(Read and Write property)

90.17.15 **Colors as Integer**

**Function:** An undocumented property.
90.17.16 ColorSpace as Integer

Function: Image pixel interpretation.
Example:

```vba
dim im as ImageMagickQ32MBS // global

Function IMPictureToString(p as picture, magick as string, quality as Integer) As string
dim image as new IMImageQ32MBS
dim imageinfo as IMImageInfoQ32MBS
dim s, data as string
dim impp as new IMMagickPixelPacketQ32MBS

// empty string for nil picture
if p = nil then
    Return ""
end if

// create a new picture info
imageinfo = im.NewImageInfo
imageinfo.ColorSpace = 1
// only color space is needed. 1 for RGB.

// background color of image
impp.red = 0
impp.Green = 0
impp.Blue = 0

// creates a new image object
if not image.NewImage(imageinfo,p.Width,p.Height,impp) then
    Return ""
end if

// copy RB picture into IM Image at position 0/0
image.ColorSpace = 1
image.SetPicture(p,0,0)

// set compression data
imageinfo.Magick = magick
imageinfo.Quality = quality

// and rendering intent: 2=PerceptualIntent
```
'image.RenderingIntent = 2

// create image data
data = image.ImageToBlob(imageinfo)

// release memory
image.DestroyImage
imageinfo.DestroyImageInfo

// return result
Return data

Exception
// in case of an exception return nothing
Return ""

End Function

Notes:

If the colorspace is RGB the pixels are red, green, blue. If matte is true, then red, green, blue, and index. If it is CMYK, the pixels are cyan, yellow, magenta, black. Otherwise the colorspace is ignored.

constants:

UndefinedColorsapce 0
RGBColorsapce 1
GRAYColorsapce 2
TransparentColorsapce 3
OHTAColorsapce 4
LABColorsapce 5
XYZColorsapce 6
YCbCrColorsapce 7
YCCCColorsapce 8
YIQColorsapce 9
YPbPrColorsapce 10
YUVColorsapce 11
CMYKColorsapce 12
sRGBColorsapce 13
HSBColorsapce 14
HSLColorsapce 15
HWBColorsapce 16
90.17.17 Compression as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Image compression type.
Notes:
useful constants:

const UndefinedCompression = 0
const NoCompression = 1
const BZipCompression = 2
const FaxCompression = 3
const Group4Compression = 4
const JPEGCompression = 5
const LosslessJPEGCompression = 6
const LZWCompression = 7
const RLECompression = 8
const ZipCompression = 9

The default is the compression type of the specified image file.
For more details please check the ImageMagick documentation.
(Read and Write property)

90.17.18 Density as String

Function: Vertical and horizontal resolution in pixels of the image.
Notes:
This option specifies an image density when decoding a Postscript or Portable Document page.
(Read and Write property)

90.17.19 Depth as Integer

Function: Image depth (8 or 16).
Notes:
QuantumLeap must be defined before a depth of 16 is valid.
(Read and Write property)
**90.17.20  Dither as Boolean**

**Function:** An undocumented property.  
**Notes:** (Read and Write property)

---

**90.17.21  Endian as Integer**

**Function:** The endian setting to use.  
**Notes:**

constants:

- UndefinedEndian 0
- LSBE endian 1 (Windows)
- MSBE endian 2 (Mac)

- e.g. tiff files support different endian settings.  
  (Read and Write property)

---

**90.17.22  Extract as String**

**Function:** An undocumented property.  
**Notes:** (Read and Write property)

---

**90.17.23  Filename as String**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The file path/name.  
**Notes:**

- The string must be in the encoding of the library and is limited to 4000 bytes.  
- For more details please check the ImageMagick documentation.  
  (Read and Write property)
90.17.24 Font as String


**Function:** Text rendering font.

**Notes:**

If the font is a fully qualified X server font name, the font is obtained from an X server. To use a TrueType font, precede the TrueType filename with an @. Otherwise, specify a Postscript font name (e.g. "helvetica").

(Read and Write property)

90.17.25 Group as Integer


**Function:** An undocumented property.

**Notes:** (Read and Write property)

90.17.26 Handle as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The handle used internally by the plugin.

**Notes:**

A pointer to a ImageInfo structure.

For more details please check the ImageMagick documentation.

(Read and Write property)

90.17.27 HeaderOnly as Boolean


**Function:** True if only the header was read from the image data.

**Notes:** (Read and Write property)

90.17.28 Interlace as Integer


**Function:** The type of interlacing scheme (default NoInterlace).

**Notes:**

This option is used to specify the type of interlacing scheme for raw image formats such as RGB or YUV. NoInterlace means do not interlace, LineInterlace uses scanline interlacing, and PlaneInterlace uses plane interlacing. PartitionInterlace is like PlaneInterlace except the different planes are saved to individual files
(e.g. image.R, image.G, and image.B). Use LineInterlace or PlaneInterlace to create an interlaced GIF or progressive JPEG image.

**constants:**

- UndefinedInterlace 0  Unset value.
- NoInterlace 1  Don’t interlace image (RGBRGBRGBRGBRGBRGB...)
- LineInterlace 2  Use scanline interlacing (RRR...GGG...BBB...RRR...GGG...BBB...)
- PlaneInterlace 3  Use plane interlacing (RRRRRR...GGGGGG...BBBBBBB...)
- PartitionInterlace 4  Similar to plane interlacing except that the different planes are saved to individual files (e.g. image.R, image.G, and image.B)

(Read and Write property)

**90.17.29  Magick as String**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Image encoding format (e.g, "GIF").

**Example:**

```vba
dim imageinfo as IMImageInfoQ32MBS
dim blob as string
dim image as IMImageQ32MBS

// Now lets convert to tiff
imageinfo.Filename = "image"
imageinfo.Magick="JPEG"
imageinfo.Quality = 10  //since we are displaying, lets use highest quality, lowest compression
blob = image.ImageToBlob(imageinfo)
```

**Notes:**

For more details please check the ImageMagick documentation.  
(Read and Write property)

**90.17.30  MatteColor as IMColorQ32MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Image matte (transparent) color.  
**Notes:** (Read and Write property)
90.17.31 Monochrome as Boolean


Function: Transform the image to black and white.
Notes: (Read and Write property)

90.17.32 Orientation as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: The image orientation.
Notes:

constants:

const UndefinedOrientation = 0
const TopLeftOrientation = 1
const TopRightOrientation = 2
const BottomRightOrientation = 3
const BottomLeftOrientation = 4
const LeftTopOrientation = 5
const RightTopOrientation = 6
const RightBottomOrientation = 7
const LeftBottomOrientation = 8

For more details please check the ImageMagick documentation.
(Read and Write property)

90.17.33 Page as String


Function: Equivalent size of Postscript page.
Notes: (Read and Write property)

90.17.34 PointSize as Double


Function: Text rendering font point size.
Notes: (Read and Write property)
90.17.35 Preview as Integer


**Function:** Image manipulation preview option.

**Notes:**

Used by 'display'.

**constants:**

- UndefinedPreview 0
- RotatePreview 1
- ShearPreview 2
- RollPreview 3
- HuePreview 4
- SaturationPreview 5
- BrightnessPreview 6
- GammaPreview 7
- SpiffPreview 8
- DullPreview 9
- GrayscalePreview 10
- QuantizePreview 11
- DespecklePreview 12
- ReduceNoisePreview 13
- AddNoisePreview 14
- SharpenPreview 15
- BlurPreview 16
- ThresholdPreview 17
- EdgeDetectPreview 18
- SpreadPreview 19
- SolarizePreview 20
- ShadePreview 21
- RaisePreview 22
- SegmentPreview 23
- SwirlPreview 24
- ImplodePreview 25
- WavePreview 26
- OilPaintPreview 27
- CharcoalDrawingPreview 28
- JPEGPreview 29

(Read and Write property)
90.17.36 Quality as Integer

**Function:** JPEG/MIFF/PNG compression level.
**Notes:**
Default value is 75.
(Read and Write property)

90.17.37 Release as Boolean

**Function:** If true, the destructor will release the handle.
**Notes:** (Read and Write property)

90.17.38 ResolutionUnits as Integer

**Function:** Units of image resolution.
**Notes:**
constants:

- UndefinedResolution 0 Unset value.
- PixelsPerInchResolution 1 Density specifications are specified in units of pixels per inch (english units).
- PixelsPerCentimeterResolution 2 Density specifications are specified in units of pixels per centimeter (metric units).

(Read and Write property)

90.17.39 SamplingFactor as String

**Function:** An undocumented property.
**Notes:** (Read and Write property)
90.17.40 Scene as Integer

Function: An undocumented property.
Notes: (Read and Write property)

90.17.41 SceneCount as Integer

Function: An undocumented property.
Notes: (Read and Write property)

90.17.42 Scenes as String

Function: An undocumented property.
Notes: (Read and Write property)

90.17.43 ServerName as String

Function: X11 display to display to.
Notes:
obtain fonts from, or to capture image from.
(Read and Write property)

90.17.44 Size as String

Function: Width and height of a raw image (an image which does not support width and height information).
Notes:
Size may also be used to affect the image size read from a multi-resolution format (e.g. Photo CD, JBIG, or JPEG.
(Read and Write property)
90.17.45  Temporary as Boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Unknown.
Notes:
For more details please check the ImageMagick documentation.
(Read and Write property)

90.17.46  Texture as String

Function: Image filename to use as background texture.
Notes: (Read and Write property)

90.17.47  Type as Integer

Function: The Image type.
Notes:
constants:

- UndefinedType 0
- BilevelType 1
- GrayscaleType 2
- GrayscaleMatteType 3
- PaletteType 4
- PaletteMatteType 5
- TrueColorType 6
- TrueColorMatteType 7
- ColorSeparationType 8
- ColorSeparationMatteType 9
- OptimizeType 10

(Read and Write property)

90.17.48  Verbose as Boolean

Function: Print detailed information about the image if True.
90.17.49 View as String

**Function:** FlashPix viewing parameters. 
**Notes:** (Read and Write property)
90.18 class IMImageInfoQ8MBS

90.18.1 class IMImageInfoQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: A class for information about an image.
Notes: For more details please check the ImageMagick documentation.

90.18.2 Methods

90.18.3 Clone as IMImageInfoQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Clones the ImageInfo object.
Notes: For more details please check the ImageMagick documentation.

90.18.4 Close

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The destructor.
Notes:
There is no need to call this method except you want to free all resources used by this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

90.18.5 DestroyImageInfo

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Destroys the image info and sets the handle to 0.
Notes:
For more details please check the ImageMagick documentation.
The destructor will call this for you if release=true.

90.18.6 HandleMemory as memoryblock

Function: The content of the whole ImageInfo structure copied into a memoryblock.
90.18.7 Properties

90.18.8 Adjoin as Boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Join images into a single multi-image file.
Notes:
For more details please check the ImageMagick documentation.
(Read and Write property)

90.18.9 Affirm as Boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Unknown.
Notes:
For more details please check the ImageMagick documentation.
(Read and Write property)

90.18.10 Antialias as Boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Control antialiasing of rendered Postscript and Postscript or TrueType fonts.
Notes:
Enabled by default.
For more details please check the ImageMagick documentation.
(Read and Write property)

90.18.11 Authenticate as String

Function: An undocumented property.
Notes: (Read and Write property)
90.18.12 BackgroundColor as IMColorQ8MBS

Function: Image background color.
Notes: (Read and Write property)

90.18.13 BorderColor as IMColorQ8MBS

Function: Image border color.
Notes: (Read and Write property)

90.18.14 Channel as Integer

Function: The channel to use.
Notes:

Constants for channel:

```cpp
const UndefinedChannel = 0
const RedChannel = & h0001
const GrayChannel = & h0001
const CyanChannel = & h0001
const GreenChannel = & h0002
const MagentaChannel = & h0002
const BlueChannel = & h0004
const YellowChannel = & h0004
const AlphaChannel = & h0008
const OpacityChannel = & h0008
const BlackChannel = & h0020
const IndexChannel = & h0020
const AllChannels = & h7fffffff
```

(Read and Write property)

90.18.15 Colors as Integer

Function: An undocumented property.
90.18.16  **ColorSpace as Integer**


**Function:** Image pixel interpretation.

**Example:**

```vbnet
dim im as ImageMagickQ8MBS  // global

Function IMPictureToString(p as picture, magick as string, quality as Integer) As string
dim image as new IMImageQ8MBS
dim imageinfo as IMImageInfoQ8MBS
dim s,data as string
dim impp as new IMMagickPixelPacketQ8MBS

    // empty string for nil picture
    if p = nil then
        Return ""
    end if

    // create a new picture info
    imageinfo = im.NewImageInfo
    imageinfo.ColorSpace=1
    // only color space is needed. 1 for RGB.

    // background color of image
    impp.red = 0
    impp.Green = 0
    impp.Blue = 0

    // creates a new image object
    if not image.NewImage(imageinfo,p.Width,p.Height,impp) then
        Return ""
    end if

    // copy RB picture into IM Image at position 0/0
    image.ColorSpace = 1
    image.SetPicture(p,0,0)

    // set compression data
    imageinfo.Magick = magick
    imageinfo.Quality = quality

    // and rendering intent: 2=PerceptualIntent
```
'image.RenderingIntent = 2

// create image data
data = image.ImageToBlob(imageinfo)

// release memory
image.DestroyImage
imageinfo.DestroyImageInfo

// return result
Return data

Exception
// in case of an exception return nothing
Return ""

End Function

Notes:
If the colorspace is RGB the pixels are red, green, blue. If matte is true, then red, green, blue, and index. If it is CMYK, the pixels are cyan, yellow, magenta, black. Otherwise the colorspace is ignored.

constants:

UndefinedColorspace  0
RGBColorspace      1
GRAYColorspace    2
TransparentColorspace  3
OHTAColorspace   4
LABColorspace    5
XYZColorspace    6
YCbCrColorspace  7
YCCColorspace    8
YIQColorspace    9
YPbPrColorspace 10
YUVColorspace   11
CMYKColorspace  12
sRGBColorspace  13
HSBColorspace  14
HSLColorspace  15
HWBColorspace  16
90.18.17  Compression as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Image compression type.

Notes:

useful constants:

const UndefinedCompression = 0
const NoCompression = 1
const BZipCompression = 2
const FaxCompression = 3
const Group4Compression = 4
const JPEGCompression = 5
const LosslessJPEGCompression = 6
const LZWCompression = 7
const RLECompression = 8
const ZipCompression = 9

The default is the compression type of the specified image file.
For more details please check the ImageMagick documentation.

(Read and Write property)

90.18.18  Density as String


Function: Vertical and horizontal resolution in pixels of the image.

Notes:

This option specifies an image density when decoding a Postscript or Portable Document page.

(Read and Write property)

90.18.19  Depth as Integer


Function: Image depth (8 or 16).

Notes:

QuantumLeap must be defined before a depth of 16 is valid.

(Read and Write property)
90.18.20  Dither as Boolean

Function: An undocumented property.
Notes: (Read and Write property)

90.18.21  Endian as Integer

Function: The endian setting to use.
Notes:

constants:

UndefinedEndian  0
LSBE endian  1  (Windows)
MSBE endian  2  (Mac)

e.g. tiff files support different endian settings.
(Read and Write property)

90.18.22  Extract as String

Function: An undocumented property.
Notes: (Read and Write property)

90.18.23  Filename as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The file path/name.
Notes:
The string must be in the encoding of the library and is limited to 4000 bytes.
For more details please check the ImageMagick documentation.
(Read and Write property)
90.18.24  **Font as String**

Function: Text rendering font.
Notes:
If the font is a fully qualified X server font name, the font is obtained from an X server. To use a TrueType font, precede the TrueType filename with an @. Otherwise, specify a Postscript font name (e.g. "helvetica").
(Read and Write property)

90.18.25  **Group as Integer**

Function: An undocumented property.
Notes: (Read and Write property)

90.18.26  **Handle as Integer**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The handle used internally by the plugin.
Notes:
A pointer to a ImageInfo structure.
For more details please check the ImageMagick documentation.
(Read and Write property)

90.18.27  **HeaderOnly as Boolean**

Function: True if only the header was read from the image data.
Notes: (Read and Write property)

90.18.28  **Interlace as Integer**

Function: The type of interlacing scheme (default NoInterlace).
Notes:
This option is used to specify the type of interlacing scheme for raw image formats such as RGB or YUV. NoInterlace means do not interlace, LineInterlace uses scanline interlacing, and PlaneInterlace uses plane interlacing. PartitionInterlace is like PlaneInterlace except the different planes are saved to individual files.
(e.g. image.R, image.G, and image.B). Use LineInterlace or PlaneInterlace to create an interlaced GIF or progressive JPEG image.

**constants:**

- **UndefinedInterlace** 0  Unset value.
- **NoInterlace** 1  Don’t interlace image (RRRRR...GGGG...BBBB...RRRRR...GGGG...BBBB...)
- **LineInterlace** 2  Use scanline interlacing (RRRRR...GGGG...BBBB...RRRRR...GGGG...BBBB...)
- **PlaneInterlace** 3  Use plane interlacing (RRRRR...GGGG...BBBB...)
- **PartitionInterlace** 4  Similar to plane interlacing except that the different planes are saved to individual files (e.g. image.R, image.G, and image.B)

(Read and Write property)

### 90.18.29 Magick as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Image encoding format (e.g. "GIF").  
**Example:**

```vbnet
dim imageinfo as IMImageInfoQ8MBS  
dim blob as string  
dim image as IMImageQ8MBS

// Now lets convert to tiff  
imageinfo.Filename = "image"  
imageinfo.Magick="JPEG"  
imageinfo.Quality = 10 //since we are displaying, lets use highest quality, lowest compression  
blob = image.ImageToBlob(imageinfo)
```

**Notes:**

For more details please check the ImageMagick documentation.  
(Read and Write property)

### 90.18.30 MatteColor as IMColorQ8MBS

**Function:** Image matte (transparent) color.  
**Notes:** (Read and Write property)
90.18.31 Monochrome as Boolean

**Function:** Transform the image to black and white.
**Notes:** (Read and Write property)

90.18.32 Orientation as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The image orientation.
**Notes:**

constants:

```
const UndefinedOrientation = 0
const TopLeftOrientation = 1
const TopRightOrientation = 2
const BottomRightOrientation = 3
const BottomLeftOrientation = 4
const LeftTopOrientation = 5
const RightTopOrientation = 6
const RightBottomOrientation = 7
const LeftBottomOrientation = 8
```

For more details please check the ImageMagick documentation.
(Read and Write property)

90.18.33 Page as String

**Function:** Equivalent size of Postscript page.
**Notes:** (Read and Write property)

90.18.34 PointSize as Double

**Function:** Text rendering font point size.
**Notes:** (Read and Write property)
90.18.35 Preview as Integer


Function: Image manipulation preview option.

Notes:

Used by 'display'.

Constants:

- UndefinedPreview 0
- RotatePreview 1
- ShearPreview 2
- RollPreview 3
- HuePreview 4
- SaturationPreview 5
- BrightnessPreview 6
- GammaPreview 7
- SpiffPreview 8
- DullPreview 9
- GrayscalePreview 10
- QuantizePreview 11
- DespecklePreview 12
- ReduceNoisePreview 13
- AddNoisePreview 14
- SharpenPreview 15
- BlurPreview 16
- ThresholdPreview 17
- EdgeDetectPreview 18
- SpreadPreview 19
- SolarizePreview 20
- ShadePreview 21
- RaisePreview 22
- SegmentPreview 23
- SwirlPreview 24
- ImplodePreview 25
- WavePreview 26
- OilPaintPreview 27
- CharcoalDrawingPreview 28
- JPEGPreview 29

(Read and Write property)
90.18.36  Quality as Integer

**Function:** JPEG/MIFF/PNG compression level. 
**Notes:**  
Default value is 75.  
(Read and Write property)

90.18.37  Release as Boolean

**Function:** If true, the destructor will release the handle.  
**Notes:** (Read and Write property)

90.18.38  ResolutionUnits as Integer

**Function:** Units of image resolution.  
**Notes:**  
constants:

- UndefinedResolution 0  Unset value.  
- PixelsPerInchResolution 1  Density specifications are specified in units of pixels per inch (english units).  
- PixelsPerCentimeterResolution 2  Density specifications are specified in units of pixels per centimeter (metric units).

(Read and Write property)

90.18.39  SamplingFactor as String

**Function:** An undocumented property.  
**Notes:** (Read and Write property)
90.18.40  Scene as Integer

Function: An undocumented property.
Notes: (Read and Write property)

90.18.41  SceneCount as Integer

Function: An undocumented property.
Notes: (Read and Write property)

90.18.42  Scenes as String

Function: An undocumented property.
Notes: (Read and Write property)

90.18.43  ServerName as String

Function: X11 display to display to.
Notes:
obtain fonts from, or to capture image from.
(Read and Write property)

90.18.44  Size as String

Function: Width and height of a raw image (an image which does not support width and height information).
Notes:
Size may also be used to affect the image size read from a multi-resolution format (e.g. Photo CD, JBIG, or JPEG.
(Read and Write property)
90.18.45 Temporary as Boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Unknown.
Notes: For more details please check the ImageMagick documentation.
(Read and Write property)

90.18.46 Texture as String

Function: Image filename to use as background texture.
Notes: (Read and Write property)

90.18.47 Type as Integer

Function: The Image type.
Notes:

constants:

- UndefinedType 0
- BilevelType 1
- GrayscaleType 2
- GrayscaleMatteType 3
- PaletteType 4
- PaletteMatteType 5
- TrueColorType 6
- TrueColorMatteType 7
- ColorSeparationType 8
- ColorSeparationMatteType 9
- OptimizeType 10

(Read and Write property)

90.18.48 Verbose as Boolean

Function: Print detailed information about the image if True.
Notes: (Read and Write property)

90.18.49 View as String

**Function:** FlashPix viewing parameters.  
**Notes:** (Read and Write property)
90.19. class IMImageQ16MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** A class for an Image Magick Image in memory.
**Notes:**
Can exist with or without pixel data.

For more details please check the ImageMagick documentation.

---

90.19.2 Methods

90.19.3 AdaptiveThreshold(width as Integer, height as Integer, offset as Integer) as IMImageQ16MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** AdaptiveThreshold selects an individual threshold for each pixel based on the range of intensity values in its local neighborhood.
**Notes:**
This allows for thresholding of an image whose global intensity histogram doesn’t contain distinctive peaks. Sets the last exception property.

width: The width of the local neighborhood.
height: The height of the local neighborhood.
offset: The mean offset.

For more details please check the ImageMagick documentation.

---

90.19.4 AddNoise(NoiseType as Integer) as IMImageQ16MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Adds random noise to the image.
**Notes:**
Constants

For more details please check the ImageMagick documentation.
Sets the last exception property.
90.19.5 AffineTransformImage(matrix as IMImageAffineMatrixQ16MBS) as IMImageQ16MBS

**Function:** Transforms an image as dictated by the affine matrix.

90.19.6 AppendImageToList(img as IMImageQ16MBS)

**Function:** Adds an image to the image list.
**Notes:** For more details please check the ImageMagick documentation.

90.19.7 AutoGammaImage as Boolean

**Function:** AutoGammaImage extract the ‘mean’ from the image and adjust the image to try make set its gamma appropriately.
**Notes:** Returns true on success or false on failure.

90.19.8 AutoGammaImageChannel(ChannelType as Integer) as Boolean

**Function:** AutoGammaImage extract the ‘mean’ from the image and adjust the image to try make set its gamma appropriately.
**Notes:** Returns true on success or false on failure.
channelType: The channels to auto-level. If the special 'SyncChannels' flag is set all given channels is adjusted in the same way using the mean average of those channels.

Constants for channel:

```
const UndefinedChannel = 0
const RedChannel = & h0001
const GrayChannel = & h0001
const CyanChannel = & h0001
const GreenChannel = & h0002
const MagentaChannel = & h0002
const BlueChannel = & h0004
const YellowChannel = & h0004
const AlphaChannel = & h0008
const OpacityChannel = & h0008
const BlackChannel = & h0020
const IndexChannel = & h0020
const AllChannels = & h7fffffff
```

### 90.19.9 AutoLevelImage as Boolean


**Function:** AutoLevelImage adjusts the levels of a particular image channel by scaling the minimum and maximum values to the full quantum range.

**Notes:** Returns true on success or false on failure.

### 90.19.10 AutoLevelImageChannel(ChannelType as Integer) as Boolean


**Function:** AutoLevelImage adjusts the levels of a particular image channel by scaling the minimum and maximum values to the full quantum range.

**Notes:**

Returns true on success or false on failure.

ChannelType: The channels to auto-level. If the special 'SyncChannels' flag is set the min/max/mean value of all given channels is used for all given channels, to all channels in the same way.

Constants for channel:
const UndefinedChannel = 0
const RedChannel = & h0001
const GrayChannel = & h0001
const CyanChannel = & h0001
const GreenChannel = & h0002
const MagentaChannel = & h0002
const BlueChannel = & h0004
const YellowChannel = & h0004
const AlphaChannel = & h0008
const OpacityChannel = & h0008
const BlackChannel = & h0020
const IndexChannel = & h0020
const AllChannels = & h7fffffff

90.19.11 Average as IMImageQ16MBS

Function: The Average() method takes a set of images and averages them together.
Notes:
Each image in the set must have the same width and height. Average() returns a single image with each corresponding pixel component of each image averaged. On failure, a nil image is returned and exception describes the reason for the failure.
Sets the last exception property.

For more details please check the ImageMagick documentation.

90.19.12 BilevelChannel(channel as Integer, threshold as Double) as boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Changes the value of individual pixels based on the intensity of each pixel channel.
Notes:
The result is a high-contrast image.

channel: The channel type.
threshold: define the threshold values.

Constants for channel:

For more details please check the ImageMagick documentation.
const UndefinedChannel = 0
const RedChannel = & h0001
const GrayChannel = & h0001
const CyanChannel = & h0001
const GreenChannel = & h0002
const MagentaChannel = & h0002
const BlueChannel = & h0004
const YellowChannel = & h0004
const AlphaChannel = & h0008
const OpacityChannel = & h0008
const BlackChannel = & h0020
const IndexChannel = & h0020
const AllChannels = & h7fffffff

90.19.13 BlackThreshold(threshold as string) as boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** BlackThreshold is like Threshold but forces all pixels below the threshold into black while leaving all pixels above the threshold unchanged.

**Notes:**

No exceptions are generated.

threshold: Define the threshold value. (ASCII string)

For more details please check the ImageMagick documentation.

90.19.14 BlobSize as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The expected size for this image written to a file.

**Notes:** For more details please check the ImageMagick documentation.

90.19.15 Blur(radius as Double, sigma as Double) as IMImageQ16MBS


**Function:** Blurs an image.

**Notes:**

We convolve the image with a Gaussian operator of the given radius and standard deviation (sigma). For reasonable results, the radius should be larger than sigma. Use a radius of 0 and BlurImage selects a suitable radius for you.

radius: The radius of the Gaussian, in pixels, not counting the center pixel.
sigma: The standard deviation of the Gaussian, in pixels.

For more details please check the ImageMagick documentation.

90.19.16 BlurImageChannel(channel as Integer, radius as Double, sigma as Double) as IMImageQ16MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Blurs an image.

**Notes:**

We convolve the image with a Gaussian operator of the given radius and standard deviation (sigma). For reasonable results, the radius should be larger than sigma. Use a radius of 0 and BlurImageChannel selects a suitable radius for you.

channel: The channel type.

radius: The radius of the Gaussian, in pixels, not counting the center pixel.

sigma: The standard deviation of the Gaussian, in pixels.

Constants for channel:

```plaintext
const UndefinedChannel    = 0
const RedChannel          = & h0001
const GrayChannel         = & h0001
const CyanChannel         = & h0001
const GreenChannel        = & h0002
const MagentaChannel      = & h0002
const BlueChannel         = & h0004
const YellowChannel       = & h0004
const AlphaChannel        = & h0008
const OpacityChannel      = & h0008
const BlackChannel        = & h0020
const IndexChannel        = & h0020
const AllChannels         = & h7fffffff
```

For more details please check the ImageMagick documentation.
90.19.17 BorderImage(x as Integer, y as Integer, width as Integer, height as Integer) as IMImageQ16MBS

**Function:** Surrounds the image with a border of the color defined by the bordercolor member of the image.
**Notes:** The width and height of the border are defined by the corresponding parameters.

90.19.18 BrightnessContrastImage(brightness as Double, contrast as Double) as Boolean

**Function:** Changes the brightness and/or contrast of an image. It converts the brightness and contrast parameters into slope and intercept and calls a polynomical function to apply to the image.
**Notes:**
Returns true on success or false on failure.

brightness: the brightness percent (-100 .. 100).
contrast: the contrast percent (-100 .. 100).

90.19.19 BrightnessContrastImageChannel(ChannelType as Integer, brightness as Double, contrast as Double) as Boolean

**Function:** Changes the brightness and/or contrast of an image. It converts the brightness and contrast parameters into slope and intercept and calls a polynomical function to apply to the image.
**Notes:**
Returns true on success or false on failure.

brightness: the brightness percent (-100 .. 100).
contrast: the contrast percent (-100 .. 100).
ChannelType: The channels to use.

Constants for channel:

90.19.20 Charcoal(radius as Double, sigma as Double) as IMImageQ16MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Charcoal creates a new image that is a copy of an existing one with the edge highlighted.
const UndefinedChannel = 0
const RedChannel = & h0001
const GrayChannel = & h0001
const CyanChannel = & h0002
const GreenChannel = & h0001
const MagentaChannel = & h0002
const BlueChannel = & h0004
const YellowChannel = & h0004
const AlphaChannel = & h0008
const OpacityChannel = & h0008
const BlackChannel = & h0020
const IndexChannel = & h0020
const AllChannels = & hfffffff

Notes:
radius: the radius of the pixel neighborhood.
sigma: The standard deviation of the Gaussian, in pixels.

Returns nil on any error.
Sets the last exception property.

90.19.21 Chop(x as Integer, y as Integer, width as Integer, height as Integer) as IMImageQ16MBS

Function: Chop removes a region of an image and collapses the image to occupy the removed portion.
Notes:
Returns nil on any error.
Sets the last exception property.

90.19.22 ClipPath(path as string, inside as boolean) as boolean

Function: Sets the image clip mask based any clipping path information if it exists.
Notes:
Returns true on success and false on any error.
pathname: name of clipping path resource. If name is preceded by #, use clipping path numbered by name.
inside: if true, later operations take effect inside clipping path. Otherwise later operations take effect outside clipping path.

90.19.23 Clone as IMImageQ16MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Creates a copy of this image object.
Notes: For more details please check the ImageMagick documentation.

90.19.24 CloneImageAttributes(image as IMImageAttributeQ16MBS) as Boolean

Function: CloneImageAttributes() clones one or more image attributes.
Notes: Returns false on any error.

90.19.25 CloneImageProfiles(SourceImage as IMImageQ16MBS) as boolean

Function: Clones one or more image profiles.
Notes: Returns false on any error and true on success.

90.19.26 Close

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The destructor.
Notes:
There is no need to call this method except you want to free all resources used by this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

90.19.27 ClutImage(clutImage as IMImageQ16MBS) as Boolean

Function: Replaces each color value in the given image, by using it as an index to lookup a replacement
color value in a Color Look UP Table in the form of an image.

**Notes:**

The values are extracted along a diagonal of the CLUT image so either a horizontal or vertical gradient image can be used.

Typically this is used to either re-color a gray-scale image according to a color gradient in the CLUT image, or to perform a freeform histogram (level) adjustment according to the (typically gray-scale) gradient in the CLUT image.

When the 'channel' mask includes the matte/alpha transparency channel but one image has no such channel it is assumed that that image is a simple gray-scale image that will effect the alpha channel values, either for gray-scale coloring (with transparent or semi-transparent colors), or a histogram adjustment of existing alpha channel values. If both images have matte channels, direct and normal indexing is applied, which is rarely used.

ClutImage: the color lookup table image for replacement color values.

Returns true on success or false on failure.

### 90.19.28 ClutImageChannel(ChannelType as Integer, clutImage as IMImageQ16MBS) as Boolean

MBS GraphicsMagick Plugin. Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Replaces each color value in the given image, by using it as an index to lookup a replacement color value in a Color Look UP Table in the form of an image.

**Notes:**

The values are extracted along a diagonal of the CLUT image so either a horizontal or vertical gradient image can be used.

Typically this is used to either re-color a gray-scale image according to a color gradient in the CLUT image, or to perform a freeform histogram (level) adjustment according to the (typically gray-scale) gradient in the CLUT image.

When the 'channel' mask includes the matte/alpha transparency channel but one image has no such channel it is assumed that that image is a simple gray-scale image that will effect the alpha channel values, either for gray-scale coloring (with transparent or semi-transparent colors), or a histogram adjustment of existing alpha channel values. If both images have matte channels, direct and normal indexing is applied, which is rarely used.

ClutImage: the color lookup table image for replacement color values.
ChannelType: The channels to use.

Returns true on success or false on failure.

Constants for channel:

```plaintext
const UndefinedChannel = 0
const RedChannel   = & h0001
const GrayChannel  = & h0001
const CyanChannel  = & h0001
const GreenChannel = & h0002
const MagentaChannel = & h0002
const BlueChannel  = & h0004
const YellowChannel = & h0004
const AlphaChannel = & h0008
const OpacityChannel = & h0008
const BlackChannel = & h0020
const IndexChannel = & h0020
const AllChannels = & h7fffffff
```

90.19.29 CoalesceImages as IMImageQ16MBS

MBS GraphicsMagick Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** CoalesceImages composites a set of images while respecting any page offsets and disposal methods.

**Notes:**

GIF, MIFF, and MNG animation sequences typically start with an image background and each subsequent image varies in size and offset. CoalesceImages() returns a new sequence where each image in the sequence is the same size as the first and composited with the next image in the sequence.

Returns nil on any error.

Sets the last exception property.

90.19.30 Colorize(opacity as string, PenColorRed as Integer, PenColorGreen as Integer, PenColorBlue as Integer, PenColorOpacity as Integer) as IMImageQ16MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Method ColorizeImage creates a new image that is a copy of an existing one with the image
pixels colorized.

**Notes:**

The colorization is controlled with the pen color and the opacity levels.

opacity: A character string indicating the level of opacity as a percentage (0-100).

PenColorRed, PenColorGreen, PenColorBlue and PenColorOpacity define the pen color used.

Returns nil on any error.
Sets the last exception property.

### 90.19.31 Combine(channel as Integer) as IMImageQ16MBS


**Function:** Combines one or more images into a single image.

**Notes:**

The grayscale value of the pixels of each image in the sequence is assigned in order to the specified channels of the combined image. The typical ordering would be image 1 => Red, 2 => Green, 3 => Blue, etc.

The lastexception property is set.

### 90.19.32 CompareImageLayers(ImageLayerMethod as Integer) as IMImageQ16MBS


**Function:** CompareImageLayers() compares each image with the next in a sequence and returns the minimum bounding region of all the pixel differences (of the mageLayerMethod specified) it discovers.

**Notes:**

Images do NOT have to be the same size, though it is best that all the images are 'coalesced' (images are all the same size, on a flattened canvas, so as to represent exactly how an specific frame should look).

No GIF dispose methods are applied, so GIF animations must be coalesced before applying this image operator to find differences to them.

**ImageLayerMethod:**

the layers type to compare images with. Must be one of... CompareAnyLayer, CompareClearLayer, CompareOverlayLayer.

Can raise an exception.
90.19.33 Composite(CompositeOperator as Integer, Image as IMImageQ16MBS, x as Integer, y as Integer)

**Function:** Returns the second image composited onto the first at the specified offsets.

**Notes:**
- compose: Specifies an image composite operator.
- Image: The second image.
- x: An integer that specifies the column offset of the composited image.
- y: An integer that specifies the row offset of the composited image.

No error code and exception!

90.19.34 ConsolidateCMYKImages as IMImageQ16MBS

**Function:** Consolidates a sequence of CMYK images.

**Notes:**
- Returns nil on any error.
- Sets the last exception property.

90.19.35 ContrastImage(sharpen as boolean) as Boolean

**Function:** Enhances the intensity differences between the lighter and darker elements of the image.

**Notes:**
- Returns true on success or false on failure.
- Set sharpen to true to increase the image contrast otherwise the contrast is reduced.

90.19.36 CopyPicture as picture

**Function:** Copies the Image Magick Image and returns a Realbasic picture.

**Example:**
```realbasic
dim image as IMImageQ16MBS // your image
Canvas1.Backdrop=image.CopyPicture
```
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Notes:
Sets the last exception property.
Returns nil on any error.
This method works only for bitmap images.
See also:

* 90.19.37 CopyPicture(x as Integer, y as Integer, width as Integer, height as Integer) as picture

90.19.37 CopyPicture(x as Integer, y as Integer, width as Integer, height as Integer) as picture

Function: Copies a portion of the Image Magick Image and returns a Realbasic picture.
Example:

dim image as IMImageQ16MBS // your image
Canvas1.Backdrop=image.CopyPicture(0,0,image.Width,image.Height)

Notes:
Sets the last exception property.
Returns nil on any error.
This method works only for bitmap images.
x and y are zero based.
See also:

* 90.19.36 CopyPicture as picture

90.19.38 CopyPictureMask as picture

Function: Copies the mask of the Image Magick Image and returns a Realbasic picture.
Example:

dim image as IMImageQ16MBS // your image
Canvas1.Backdrop=image.CopyPictureMask

Notes:
Sets the last exception property.
Returns nil on any error.
This method works only for bitmap images.
See also:
90.19.  **CLASS IMIMAGEQ16MBS**

- 90.19.39  **CopyPictureMask(x as Integer, y as Integer, width as Integer, height as Integer) as picture**

**90.19.39  CopyPictureMask(x as Integer, y as Integer, width as Integer, height as Integer) as picture**

**Function:** Copies a portion of the mask of the Image Magick Image and returns a Realbasic picture.  
**Example:**

```basic
Dim image as IMImageQ16MBS // your image
Canvas1.Backdrop = image.CopyPictureMask(0, 0, image.Width, image.Height)
```

**Notes:**

Sets the last exception property.  
Returns nil on any error.  
This method works only for bitmap images.  
x and y are zero based.  
See also:

- 90.19.38  **CopyPictureMask as picture**

**90.19.40  CopyPixel(x as Integer, y as Integer) as IMColorQ16MBS**

**Function:** Copies a pixel.  
**Notes:**

Returns nil on any error.  
This method works only for bitmap images.  
x and y are zero based.

**90.19.41  CreateHBITMAP as Ptr**

MBS GraphicsMagick Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  
**Function:** Creates a HBITMAP for the image for use with Windows Declares.  
**Notes:** The HBITMAP returned needs to be freed when you are done with it or you risk having a memory leak.
90.19.42 **Crop** *(x as Integer, y as Integer, width as Integer, height as Integer)* as IMImageQ16MBS

**Function:** Crop extracts a region of the image starting at the offset defined by geometry.
**Notes:**
Returns nil on any error.
Sets the last exception property.

90.19.43 **CropImageToTiles** *(CropGeometry as string)* as IMImageQ16MBS

**Function:** Crops a single image, into a possible list of tiles.
**Notes:** This may include a single sub-region of the image. This basically applies all the normal geometry flags for Crop.

90.19.44 **CycleColormap** *(displace as Integer)* as boolean

**Function:** Displaces an image’s colormap by a given number of positions.
**Notes:**
If you cycle the colormap a number of times you can produce a psychodelic effect.
Returns true on success.
displace: displace the colormap this amount.

90.19.45 **DecipherImage** *(passkey as string)* as boolean

**Function:** Converts cipher pixels to plain pixels.
**Notes:**
Passkey: decipher cipher pixels with this passphrase.
Returns true on success.

90.19.46 **DeconstructImages** as IMImageQ16MBS

**Function:** DeconstructImages() compares each image with the next in a sequence and returns the minimum
bounding region of all differences from the first image.

**Notes:**
- Returns nil on any error.
- Sets the last exception property.

### 90.19.47 DeleteImageAttribute(key as string) as Boolean


**Function:** DeleteImageAttribute() deletes an attribute from the image.

**Notes:** Returns false on any error.

### 90.19.48 Despeckle() as IMImageQ16MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Reduces the speckle noise in an image while perserving the edges of the original image.

**Notes:**
- Sets the last exception property.
- For more details please check the ImageMagick documentation.

### 90.19.49 DestroyImage

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Releases the memory used for this image and sets handle to 0.

**Notes:**
- For more details please check the ImageMagick documentation.
- The destructor will call this for you if release=true.

### 90.19.50 DestroyImageAttributes


**Function:** Deallocates memory associated with the image attribute list.

### 90.19.51 DestroyImageList


**Function:** Destroys the image list and sets the handle to 0.
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Notes:
For more details please check the ImageMagick documentation.
The destructor will call this for you if release=true.

90.19.52 DestroyImageProfiles

Function: Releases memory associated with an image profile map.

90.19.53 DistortImage(DistortImageMethod as Integer, values() as Double, best-fit as boolean) as IMImageQ16MBS

Function: DistortImage() distorts an image using various distortion methods, by mapping color lookups of the source image to a new destination image usually of the same size as the source image, unless 'bestfit' is set to true.
Notes:
If 'bestfit' is enabled, and distortion allows it, the destination image is adjusted to ensure the whole source 'image' will just fit within the final destination image, which will be sized and offset accordingly. Also in many cases the virtual offset of the source image will be taken into account in the mapping.

If the '-verbose' control option has been set print to standard error the equicelent '-fx' formula with coefficients for the function, if practical.

A description of each parameter follows:
self: the image to be distorted.
m: the method of image distortion. ArcDistortion always ignores source image offset, and always 'bestfit' the destination image with the top left corner offset relative to the polar mapping center. Affine, Perspective, and Bilinear, do least squares fitting of the distrotion when more than the minimum number of control point pairs are provided. Perspective, and Bilinear, fall back to a Affine distortion when less than 4 control point pairs are provided. While Affine distortions let you use any number of control point pairs, that is Zero pairs is a No-Op (viewport only) distortion, one pair is a translation and two pairs of control points do a scale-rotate-translate, without any shearing.
values: arguments given.
bestfit: Attempt to 'bestfit' the size of the resulting image. This also forces the resulting image to be a 'layered' virtual canvas image. Can be overridden using 'distort:viewport' setting.

Extra Controls from Image meta-data (artifacts)...

• `-verbose` Output to stderr alternatives, internal coefficients, and FX equivalents for the distortion
operation (if feasible). This forms an extra check of the distortion method, and allows users access to
the internal constants IM calculates for the distortion.

- "distort:viewport" Directly set the output image canvas area and offset to use for the resulting image,
  rather than use the original images canvas, or a calculated 'bestfit' canvas.

- "distort:scale" Scale the size of the output canvas by this amount to provide a method of Zooming,
  and for super-sampling the results.

Other settings that can effect results include

- 'interpolate' For source image lookups (scale enlargements)
- 'filter' Set filter to use for area-resampling (scale shrinking). Set to 'point' to turn off and use 'inter-
  polate' lookup instead

See also:

- 90.19.54 DistortImage(DistortImageMethod as Integer, values() as Double, bestfit as boolean) as IM-
  ImageQ16MBS

90.19.54  DistortImage(DistortImageMethod as Integer, values() as Double, best-
fit as boolean) as IMImageQ16MBS

Function: DistortImage() distorts an image using various distortion methods, by mapping color lookups of
the source image to a new destination image usually of the same size as the source image, unless 'bestfit' is
set to true.
Notes:

If 'bestfit' is enabled, and distortion allows it, the destination image is adjusted to ensure the whole source
'image' will just fit within the final destination image, which will be sized and offset accordingly. Also in
many cases the virtual offset of the source image will be taken into account in the mapping.

If the '-verbose' control option has been set print to standard error the equivalent '-fx' formula with coefficients
for the function, if practical.

A description of each parameter follows:
self: the image to be distorted.
m: the method of image distortion. ArcDistortion always ignores source image offset, and always 'bestfit' the
destination image with the top left corner offset relative to the polar mapping center. Affine, Perspective,
and Bilinear, do least squares fitting of the distortion when more than the minimum number of control point
pairs are provided. Perspective, and Bilinear, fall back to a Affine distortion when less than 4 control point
pairs are provided. While Affine distortions let you use any number of control point pairs, that is Zero
pairs is a No-Op (viewport only) distortion, one pair is a translation and two pairs of control points do a
scale-rotate-translate, without any shearing.
values: arguments given.
bestfit: Attempt to ‘bestfit’ the size of the resulting image. This also forces the resulting image to be a ‘layered’ virtual canvas image. Can be overridden using ‘distort:viewport’ setting.

Extra Controls from Image meta-data (artifacts)...

- "verbose" Output to stderr alternatives, internal coefficients, and FX equivalents for the distortion operation (if feasible). This forms an extra check of the distortion method, and allows users access to the internal constants IM calculates for the distortion.

- "distort:viewport" Directly set the output image canvas area and offset to use for the resulting image, rather than use the original images canvas, or a calculated ‘bestfit’ canvas.

- "distort:scale" Scale the size of the output canvas by this amount to provide a method of Zooming, and for super-sampling the results.

Other settings that can effect results include

- 'interpolate' For source image lookups (scale enlargements)

- 'filter' Set filter to use for area-resampling (scale shrinking). Set to ‘point’ to turn off and use ‘interpolate’ lookup instead

See also:

- 90.19.53 DistortImage(DistortImageMethod as Integer, values() as Double, bestfit as boolean) as IMImageQ16MBS

90.19.55 Edge(radius as Double) as IMImageQ16MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Finds edges in an image.
Notes:
Radius defines the radius of the convolution filter. Use a radius of 0 and Edge selects a suitable radius for you.
Sets the last exception property.

For more details please check the ImageMagick documentation.
90.19.56 Emboss(radius as Double, sigma as Double) as IMImageQ16MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns a grayscale image with a three-dimensional effect.
Notes:
We convolve the image with a Gaussian operator of the given radius and standard deviation (sigma). For reasonable results, radius should be larger than sigma. Use a radius of 0 and Emboss selects a suitable radius for you.
Sets the last exception property.
For more details please check the ImageMagick documentation.

90.19.57 EncipherImage(passkey as string) as boolean

Function: Converts pixels to cipher-pixels.
Notes:
passkey: encipher pixels with this passphrase.
Returns true on success.

90.19.58 EqualizeImage as Boolean

Function: Applies a histogram equalization to the image.
Notes:
Returns true on success or false on failure.
ChannelType: The channels to use.

90.19.59 EqualizeImageChannel(ChannelType as Integer) as Boolean

Function: Applies a histogram equalization to the image.
Notes:
Returns true on success or false on failure.
ChannelType: The channels to use.
Constants for channel:

```plaintext
const UndefinedChannel = 0
const RedChannel = & h0001
const GrayChannel = & h0001
const CyanChannel = & h0001
const GreenChannel = & h0002
const MagentaChannel = & h0002
const BlueChannel = & h0004
const YellowChannel = & h0004
const AlphaChannel = & h0008
const OpacityChannel = & h0008
const BlackChannel = & h0020
const IndexChannel = & h0020
const AllChannels = & h7fffffff
```

90.19.60 ExcerptImage(x as Integer, y as Integer, width as Integer, height as Integer) as IMImageQ16MBS

**Function:** Returns a excerpt of the image as defined by the geometry.
**Notes:** Define the region of the image to extend with x, y, width, and height.

90.19.61 ExtentImage(x as Integer, y as Integer, width as Integer, height as Integer) as IMImageQ16MBS

**Function:** Extends the image as defined by the geometry, gravity, and image background color.
**Notes:**
Define the region of the image to extend with x, y, width, and height.

Set the (x,y) offset of the geometry to move the original image relative to the extended image.

90.19.62 FlattenImages as IMImageQ16MBS

**Function:** Flatten composites all images from the current image pointer to the end of the image list and
returns a single flattened image.

Notes:
Returns nil on any error.
Sets the last exception property.

90.19.63 Flip as IMImageQ16MBS


Function: Flip creates a vertical mirror image by reflecting the pixels around the central x-axis.

Notes:
Returns nil on any error.
Sets the last exception property.

90.19.64 Flop as IMImageQ16MBS


Function: Flop creates a horizontal mirror image by reflecting the pixels around the central y-axis.

Notes:
Returns nil on any error.
Sets the last exception property.

90.19.65 FrameImage(x as Integer, y as Integer, width as Integer, height as Integer, innerBevel as Integer, OuterBevel as Integer) as IMImageQ16MBS


Function: Adds a simulated three-dimensional border around the image.

Notes: The color of the border is defined by the MatteColor of image. Width and height specify the border width of the vertical and horizontal sides of the frame. innerBevel and OuterBevel indicate the width of the inner and outer shadows of the frame.

90.19.66 FxImage(expression as string) as IMImageQ16MBS


Function: FxImage() applies a mathematical expression to the specified image.

Notes: Can raise an exception.
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90.19.67 GaussianBlurChannel(channel as Integer, radius as Double, sigma as Double) as IMImageQ16MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Blurs an image.

**Notes:**

We convolve the image with a Gaussian operator of the given radius and standard deviation (sigma). For reasonable results, the radius should be larger than sigma. Use a radius of 0 and GaussianBlur selects a suitable radius for you.

Sets the last exception property.

radius: the radius of the Gaussian, in pixels, not counting the center pixel.
channel: The channel type.
sigma: the standard deviation of the Gaussian, in pixels.

Constants for channel:

```plaintext
const UndefinedChannel   = 0
const RedChannel         = & h0001
const GrayChannel        = & h0001
const CyanChannel        = & h0001
const GreenChannel       = & h0002
const MagentaChannel     = & h0002
const BlueChannel        = & h0004
const YellowChannel      = & h0004
const AlphaChannel       = & h0008
const OpacityChannel     = & h0008
const BlackChannel       = & h0020
const IndexChannel       = & h0020
const AllChannels        = & h7fffffff
```

For more details please check the ImageMagick documentation.

90.19.68 GetImageAttribute(key as string) as IMImageAttributeQ16MBS


**Function:** GetImageAttribute searches the list of image attributes and returns a reference to the attribute if it exists otherwise nil.
90.19.69 GetImageClippingPathAttribute as IMImageAttributeQ16MBS

Function: GetImageClippingPathAttribute searches the list of image attributes and returns a reference to a clipping path if it exists otherwise nil.

90.19.70 GetImageProfile(name as string) as string

Function: Gets a profile associated with an image by name.
Notes: Returns "" on any error.

90.19.71 GetNextImageAttribute as IMImageAttributeQ16MBS

Function: GetNextImageAttribute() gets the next image attribute.
Notes: Returns nil on any error.

90.19.72 GetNextImageProfile as string

Function: Gets the next profile name for an image.
Notes: Returns "" on any error.

90.19.73 HandleMemory as memoryblock

Function: The content of the whole Image structure copied into a memoryblock.
Notes: Returns nil on any error.

90.19.74 ImagesToBlob(info as IMImageInfoQ16MBS) as String

Function: ImagesToBlob implements direct to memory image formats.
Notes: It returns the image sequence as a string. The magick member of the ImageInfo structure determines the format of the returned blob (GIF, JPEG, PNG, etc.)
Note, some image formats do not permit multiple images to the same image stream (e.g. JPEG). in this instance, just the first image of the sequence is returned as a blob.

Sets the last exception property and returns "" on any error.
For more details please check the ImageMagick documentation.

**90.19.75 ImageToBlob(info as IMImageInfoQ16MBS) as String**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** ImagesToBlob implements direct to memory image formats.

**Example:**

```vbscript
dim im as ImageMagickQ16MBS // global

Function IMPictureToString(p as picture, magick as string, quality as Integer) As string
    dim image as new IMImageQ16MBS
    dim imageinfo as IMImageInfoQ16MBS
    dim s,data as string
    dim impp as new IMMagickPixelPacketQ16MBS

    // empty string for nil picture
    if p = nil then
        Return ""
    end if

    // create a new picture info
    imageinfo = im.NewImageInfo
    imageinfo.ColorSpace=1
    // only color space is needed. 1 for RGB.

    // background color of image
    impp.red = 0
    impp.Green = 0
    impp.Blue = 0

    // creates a new image object
    if not image.NewImage(imageinfo,p.Width,p.Height,impp) then
        Return ""
    end if

    // copy RB picture into IM Image at position 0/0
    image.ColorSpace = 1
    image.SetPicture(p,0,0)
```

/**
 * Set compression data
 * imageinfo.Magick = magick
 * imageinfo.Quality = quality
 *
 * // and rendering intent: 2=PerceptualIntent
 * image.RenderingIntent = 2
 *
 * // create image data
 * data = image.ImageToBlob(imageinfo)
 *
 * // release memory
 * image.DestroyImage
 * imageinfo.DestroyImageInfo
 *
 * // return result
 * Return data
 *
 * Exception
 * // in case of an exception return nothing
 * Return ""
 *
 * End Function
 *

Notes:
It returns the image sequence as a string. The magick member of the ImageInfo structure determines the
format of the returned blob (GIF, JPEG, PNG, etc.)

Note, some image formats do not permit multiple images to the same image stream (e.g. JPEG). in this
instance, just the first image of the sequence is returned as a blob.

Sets the last exception property and returns "" on any error.
For more details please check the ImageMagick documentation.

90.19.76  Implode(factor as Double) as IMImageQ16MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Method ImplodeImage creates a new image that is a copy of an existing one with the image
pixels "implode" by the specified percentage.
Notes:
factor: A double value that defines the extent of the implosion.
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Returns nil on any error.
Sets the last exception property.

90.19.77  **IsBlobExempt as boolean**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns true if the blob is exempt.
**Notes:** For more details please check the ImageMagick documentation.

90.19.78  **IsBlobSeekable as boolean**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns true if the blob is seekable.
**Notes:** For more details please check the ImageMagick documentation.

90.19.79  **IsBlobTemporary as boolean**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns true if the blob is temporary.
**Notes:** For more details please check the ImageMagick documentation.

90.19.80  **Magnify as IMImageQ16MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** A convenience method that scales an image proportionally to twice its size.
**Notes:**
Sets the last exception property.
For more details please check the ImageMagick documentation.

90.19.81  **MedianFilter(radius as Double) as IMImageQ16MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Applies a digital filter that improves the quality of a noisy image.
**Notes:**
Each pixel is replaced by the median in a set of neighboring pixels as defined by radius.
Sets the last exception property.

For more details please check the ImageMagick documentation.

90.19.82  MergeImageLayers(ImageLayerMethod as Integer) as IMImageQ16MBS

Function: MergeImageLayers() composes all the image layers from the current given image onward to produce a single image of the merged layers.
Notes:
The initial canvas's size depends on the given ImageLayerMethod, and is initialized using the first images background color. The images are then composited onto that image in sequence using the given composition that has been assigned to each individual image.

ImageLayerMethod:
the method of selecting the size of the initial canvas.

MergeLayer: Merge all layers onto a canvas just large enough to hold all the actual images. The virtual canvas of the first image is preserved but otherwise ignored.

FlattenLayer: Use the virtual canvas size of first image. Images which fall outside this canvas is clipped. This can be used to 'fill out' a given virtual canvas.

MosaicLayer: Start with the virtual canvas of the first image, enlarging left and right edges to contain all images. Images with negative offsets will be clipped.

Can raise an exception.

90.19.83  Minify as IMImageQ16MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: A convenience method that scales an image proportionally to half its size.
Notes:
Sets the last exception property.
For more details please check the ImageMagick documentation.
90.19.84 MosaicImages as IMImageQ16MBS

**Function:** MosaicImages inlays an image sequence to form a single coherent picture.
**Notes:**
- It returns a single image with each image in the sequence composited at the location defined by the page member of the image structure.
- Returns nil on any error.
- Sets the last exception property.

90.19.85 MotionBlur(radius as Double, sigma as Double, angle as Double) as IMImageQ16MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Simulates motion blur.
**Notes:**
- We convolve the image with a Gaussian operator of the given radius and standard deviation (sigma). For reasonable results, radius should be larger than sigma. Use a radius of 0 and MotionBlur selects a suitable radius for you. Angle gives the angle of the blurring motion.
- Sets the last exception property.

For more details please check the ImageMagick documentation.

90.19.86 NegateImage(gray as boolean = false) as Boolean

**Function:** Negates the colors in the reference image.
**Notes:**
- Returns true on success or false on failure.
- The grayscale option means that only grayscale values within the image are negated.

gray: If true, only negate grayscale pixels within the image.

90.19.87 NegateImageChannel(ChannelType as Integer, gray as boolean = false) as Boolean

**Function:** Negates the colors in the reference image.
Notes:

Returns true on success or false on failure.
The grayscale option means that only grayscale values within the image are negated.

ChannelType: The channels to use.
gray: If true, only negate grayscale pixels within the image.

Constants for channel:

```
const UndefinedChannel = 0
const RedChannel = & h0001
const GrayChannel = & h0001
const CyanChannel = & h0001
const GreenChannel = & h0002
const MagentaChannel = & h0002
const BlueChannel = & h0004
const YellowChannel = & h0004
const AlphaChannel = & h0008
const OpacityChannel = & h0008
const BlackChannel = & h0020
const IndexChannel = & h0020
const AllChannels = & h7ffffff
```

90.19.88 NewImage(info as IMImageInfoQ16MBS, width as Integer, height as Integer, background as IMMagickPixelPacketQ16MBS) as boolean


**Function:** Creates a new image.

**Example:**

```plaintext
dim im as ImageMagickQ16MBS // global
dim p as picture
dim imageinfo as IMImageInfoQ16MBS
dim image as IMImageQ16MBS
dim b as new IMMagickPixelPacketQ16MBS
b.Blue=65535
b.ColorSpace=1 // RGB
b.Depth=16

imageinfo = im.NewImageInfo
imageinfo.Depth=16
imageinfo.ColorSpace=1
```
//this should read any image IM understands
image = new IMImageQ16MBS
if image.NewImage(imageinfo,500,500,b) then
p=NewPicture(300,300,32)
p.Graphics.ForeColor=Rgb(255,0,0)
p.Graphics.FillOval 0,0,300,300
image.SetPicture p,0,0
else
MsgBox "failed"
end if

Notes: Returns false on failure and true on success.

90.19.89 NormalizeImage as Boolean

Function: Enhances the contrast of a color image by mapping the darkest 2 percent of all pixel to black
and the brightest 1 percent to white.
Notes: Returns true on success or false on failure.

90.19.90 NormalizeImageChannel(.ChannelType as Integer) as Boolean

Function: Enhances the contrast of a color image by mapping the darkest 2 percent of all pixel to black
and the brightest 1 percent to white.
Notes: Returns true on success or false on failure.

ChannelType: The channels to auto-level. If the special 'SyncChannels' flag is set the min/max/mean value
of all given channels is used for all given channels, to all channels in the same way.

Constants for channel:

90.19.91 OilPaint(radius as Double) as IMImageQ16MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Method OilPaintImage creates a new image that is a copy of an existing one with each pixel
component replaced with the color of greatest frequency in a circular neighborhood.
const UndefinedChannel = 0
const RedChannel = & h0001
const GrayChannel = & h0001
const CyanChannel = & h0002
const GreenChannel = & h0002
const MagentaChannel = & h0002
const BlueChannel = & h0004
const YellowChannel = & h0004
const AlphaChannel = & h0008
const OpacityChannel = & h0008
const BlackChannel = & h0020
const IndexChannel = & h0020
const AllChannels = & h7fffffff

Notes:

radius parameter: radius of the circular neighborhood.
Returns nil on any error.
Sets the last exception property.

90.19.92 OptimizeImageLayers as IMImageQ16MBS

Function: OptimizeImageLayers() compares each image the GIF disposed forms of the previous image in
the sequence.
Notes:

From this it attempts to select the smallest cropped image to replace each frame, while preserving the results
of the GIF animation.

Can raise an exception.

90.19.93 OptimizeImageTransparency

Function: OptimizeImageTransparency() takes a frame optimized GIF animation, and compares the
overrayed pixels against the disposal image resulting from all the previous frames in the animation.
Notes:

Any pixel that does not change the disposal image (and thus does not effect the outcome of an overlay) is
made transparent.
WARNING: This modifies the current images directly, rather than generate a new image sequence.

Can raise an exception.

**90.19.94 OptimizePlusImageLayers as IMImageQ16MBS**


**Function:** OptimizeImagePlusLayers() is exactly as OptimizeImageLayers(), but may also add or even remove extra frames in the animation, if it improves the total number of pixels in the resulting GIF animation.

**Notes:** Can raise an exception.

**90.19.95 ProfileImage(name as string, ProfileData as string) as boolean**


**Function:** Adds or removes an ICC, IPTC, or generic profile from an image.

**Notes:**
If the ProfileData is "", it is removed from the image otherwise added. Use a name of "*" and a ProfileData of "" to remove all profiles from the image.

Returns false on any error and true on success.

**90.19.96 RadialBlur(angle as Double) as IMImageQ16MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** RadialBlur applies a radial blur to the image.

**Notes:**
angle: The angle of the radial blur.

Sets the last exception property.
For more details please check the ImageMagick documentation.

**90.19.97 RaiseImage(x as Integer, y as Integer, width as Integer, height as Integer, raise as boolean) as boolean**


**Function:** Creates a simulated three-dimensional button-like effect by lightening and darkening the edges
of the image.

Notes:

Width and height define the width of the vertical and horizontal edge of the effect.
raise: A value other than zero creates a 3-D raise effect, otherwise it has a lowered effect.

90.19.98 RandomThresholdChannel(channel as Integer, thresholds as string) as boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Changes the value of individual pixels based on the intensity of each pixel compared to a random threshold.

Notes:
The result is a low-contrast, two color image.

channel: The channel or channels to be thresholded.
thresholds: a geometry string containing low,high thresholds. If the string contains 2x2, 3x3, or 4x4, an ordered dither of order 2, 3, or 4 is performed instead. (ASCII string)

Sets the last exception property.

Constants for channel:

    const UndefinedChannel = 0
    const RedChannel = & h0001
    const GrayChannel = & h0001
    const CyanChannel = & h0001
    const GreenChannel = & h0002
    const MagentaChannel = & h0002
    const BlueChannel = & h0004
    const YellowChannel = & h0004
    const AlphaChannel = & h0008
    const OpacityChannel = & h0008
    const BlackChannel = & h0020
    const IndexChannel = & h0020
    const AllChannels = & h7fffffff

For more details please check the ImageMagick documentation.
90.19.99 ReduceNoise(radius as Double) as IMImageQ16MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Smooths the contours of an image while still preserving edge information.
**Notes:**
The algorithm works by replacing each pixel with its neighbor closest in value. A neighbor is defined by radius. Use a radius of 0 and ReduceNoise selects a suitable radius for you.

For more details please check the ImageMagick documentation.

90.19.100 RemoveDuplicateLayers

**Function:** Removes any image that is exactly the same as the next image in the given image list.
**Notes:**
Image size and virtual canvas offset must also match, though not the virtual canvas size itself.

No check is made with regards to image disposal setting, though it is the dispose setting of later image that is kept. Also any time delays are also added together. As such coalesced image animations should still produce the same result, though with duplicate frames merged into a single frame.

90.19.101 RemoveFirstImageFromList as IMImageQ16MBS

**Function:** Removes the first image from the image list and returns the image.
**Notes:**
Returns nil on any error.
For more details please check the ImageMagick documentation.

90.19.102 RemoveImageProfile(name as string) as string

**Function:** Removes a profile from the image-map by its name.
90.19.103 RemoveZeroDelayLayers

Function: Removes any image that as a zero delay time.
Notes:
Such images generally represent intermediate or partial updates in GIF animations used for file optimization. They are not meant to be displayed to users of the animation. Viewable images in an animation should have a time delay of 3 or more centi-seconds (hundredths of a second).

However if all the frames have a zero time delay, then either the animation is as yet incomplete, or it is not a GIF animation. This is a non-sensible situation, so no image will be removed and a 'Zero Time Animation' warning (exception) given.

No warning will be given if no image was removed because all images had an appropriate non-zero time delay set.

Due to the special requirements of GIF disposal handling, GIF animations should be coalesced first, before calling this function, though that is not a requirement.

90.19.104 ResetImageAttributeIterator

Function: ResetImageAttributeIterator() resets the image attributes iterator.
Notes: Use it in conjunction with GetNextImageAttribute() to iterate over all the values associated with an image.

90.19.105 ResetImageProfileIterator

Function: Resets the image profile iterator.
Notes: Use it in conjunction with GetNextImageProfile() to iterate over all the profiles associated with an image.

90.19.106 Resize(width as Integer, height as Integer, FilterID as Integer, blur as Double) as IMImageQ16MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Scales an image to the desired dimensions.
Notes:
Constants for the FilterID:

```plaintext
const PointFilter = 1
const BoxFilter = 2
const TriangleFilter = 3
const HermiteFilter = 4
const HanningFilter = 5
const HammingFilter = 6
const BlackmanFilter = 7
const GaussianFilter = 8
const QuadraticFilter = 9
const CubicFilter = 10
const CatromFilter = 11
const MitchellFilter = 12
const LanczosFilter = 13
const BesselFilter = 14
const SincFilter = 15
```

Most of the filters are FIR (finite impulse response), however, Bessel, Gaussian, and Sinc are IIR (infinite impulse response). Bessel and Sinc are windowed (brought down to zero) with the Blackman filter. Sets the last exception property.

### 90.19.107 RGBTransformImage(Colorspace as Integer) as boolean


**Function:** Method RGBTransformImage converts the reference image from RGB to an alternate colorspace.

**Notes:**
The transformation matrices are not the standard ones: the weights are rescaled to normalized the range of the transformed values to be \[ 0..\text{MaxRGB} \].

- **colorspace:** An integer value that indicates which colorspace to transform the image.

Returns false on any error and true on success.

**constants:**

### 90.19.108 Roll(x as Integer, y as Integer) as IMImageQ16MBS


**Function:** Roll offsets an image as defined by x and y.
90.19.  CLASS IMIMAGEQ16MBS

UndefinedColorspace  0
RGBColorspace       1
GRAYColorspace      2
TransparentColorspace 3
OHTAColorspace      4
LABColorspace       5
XYZColorspace       6
YCbCrColorspace     7
YCCColorspace       8
YIQColorspace       9
YPbPrColorspace    10
YUVColorspace       11
CMYKColorspace     12
sRGBColorspace     13
HSBColorspace      14
HSLColorspace      15
HWBColorspace     16

Notes:
Returns nil on any error.
Sets the last exception property.

90.19.109  Rotate(degrees as Double) as IMImageQ16MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Rotation of an image.
Notes:
Method RotateImage creates a new image that is a rotated copy of an existing one. Positive angles rotate counter-clockwise (right-hand rule), while negative angles rotate clockwise. Rotated images are usually larger than the originals and have 'empty' triangular corners. X axis. Empty triangles left over from shearing the image are filled with the color specified by the image background color. RotateImage allocates the memory necessary for the new Image structure and returns a pointer to the new image.

Method RotateImage is based on the paper "A Fast Algorithm for General Raster Rotatation" by Alan W. Paeth. RotateImage is adapted from a similar method based on the Paeth paper written by Michael Halle of the Spatial Imaging Group, MIT Media Lab.

degrees: Specifies the number of degrees to rotate the image.

Sets the lastexception property.
Returns nil on low memory.
90.19.110  **Sample(width as Integer, height as Integer) as IMImageQ16MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Scales an image to the desired dimensions with pixel sampling.  
**Notes:**  
Unlike other scaling methods, this method does not introduce any additional color into the scaled image.  
For more details please check the ImageMagick documentation.  
Sets the last exception property.

90.19.111  **Scale(width as Integer, height as Integer) as IMImageQ16MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Changes the size of an image to the given dimensions.  
**Example:**  
```
  dim image as IMImageQ16MBS  // your image
  image=Image.Scale(100,80)
```

**Notes:**  
This method was designed by Bob Friesenhahn as a low cost thumbnail generator.

columns: The number of columns in the scaled image.  
rows: The number of rows in the scaled image.

Sets the last exception property.  
For more details please check the ImageMagick documentation.

90.19.112  **SetImageAttribute(key as string, value as string) as boolean**

**Function:** SetImageAttribute searches the list of image attributes and replaces the attribute value.  
**Notes:** If it is not found in the list, the attribute name and value is added to the list. If the attribute exists in the list, the value is concatenated to the attribute. SetImageAttribute returns True if the attribute is successfully concatenated or added to the list, otherwise False. If the value is "", the matching key is deleted from the list.
90.19.113  SetImageColorsspace(Colorspace as Integer) as boolean

**Function:** Sets the colorspace member of the Image structure.
**Notes:** Returns false on any error and true on success.

90.19.114  SetImageProfile(name as string, ProfileData as string) as boolean

**Function:** Adds a named profile to the image.
**Notes:**
If a profile with the same name already exists, it is replaced. This method differs from the ProfileImage() method in that it does not apply CMS color profiles.

name: The profile name.
profiledata: The binary data of the profile.

Returns false on any error and true on success.

90.19.115  SetPicture(pic as picture, x as Integer, y as Integer)

**Function:** Copies the pixels from a given Realbasic picture into the Image Magick Image at the given location.
**Example:**
```vbnet
dim image as IMImageQ16MBS // your image
dim p as picture
p=NewPicture(32,32,32)
p.Graphics.ForeColor=rgb(0,255,0)
p.Graphics.FillRect 0,0,32,32
image.SetPicture(p,30,30)
```

**Notes:**
Sets the last exception property.
The method will do nothing on bad bounds.
This method works only for bitmap images.
x and y are zero based.
90.19.116  **SetPictureMask(maskpic as picture, x as Integer, y as Integer)**

**Function:** Copies the pixels from a given Realbasic picture into the mask of the Image Magick Image at the given location.
**Example:**

```realbasic
dim i as IMImageQ16MBS // your image
dim p as picture

p=NewPicture(32,32,32)
p.Graphics.ForeColor=rgb(0,255,0)
p.Graphics.FillRect 0,0,32,32

i.SetPictureMask(p,30,30)
```

**Notes:**
- Sets the last exception property.
- The method will do nothing on bad bounds.
- This method works only for bitmap images.
- x and y are zero based.
- You may need to set matte=True after this.

90.19.117  **SetPixel(x as Integer, y as Integer, newPixel as IMColorQ16MBS)**

**Function:** Sets a pixel value.
**Example:**

```realbasic
dim image as IMImageQ16MBS // your image
dim co as IMColorQ16MBS

co=new IMColorQ16MBS
co.blue=65535 // max value
image.SetPixel 50,50,co // Makes Pixel 50/50 blue
```

**Notes:**
- The method will fail silently if the values are out of bounds or the image is not a bitmap image.
- This method works only for bitmap images.
x and y are zero based.

90.19.118 Shade(gray as boolean, azimuth as Double, elevation as Double) as IMImageQ16MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Shines a distant light on an image to create a three-dimensional effect.
Notes:
You control the positioning of the light with azimuth and elevation; azimuth is measured in degrees off the x axis and elevation is measured in pixels above the Z axis.
Sets the last exception property.

For more details please check the ImageMagick documentation.

90.19.119 SharpenChannel(channel as Integer, radius as Double, sigma as Double) as IMImageQ16MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Sharpens one or more image channels.
Notes:
We convolve the image with a Gaussian operator of the given radius and standard deviation (sigma). For reasonable results, radius should be larger than sigma. Use a radius of 0 and Sharpen selects a suitable radius for you.

channel: The channel type.
radius: The radius of the Gaussian, in pixels, not counting the center pixel.
sigma: The standard deviation of the Laplacian, in pixels.

Constants for channel:

Sets the last exception property.
For more details please check the ImageMagick documentation.

90.19.120 Shave(x as Integer, y as Integer, width as Integer, height as Integer) as IMImageQ16MBS

Function: Shave shaves pixels from the image edges.
const UndefinedChannel = 0
const RedChannel = & h0001
const GrayChannel = & h0001
const CyanChannel = & h0001
const GreenChannel = & h0002
const MagentaChannel = & h0002
const BlueChannel = & h0004
const YellowChannel = & h0004
const AlphaChannel = & h0008
const OpacityChannel = & h0008
const BlackChannel = & h0020
const IndexChannel = & h0020
const AllChannels = & h7ffffff

Notes:
It allocates the memory necessary for the new Image structure and returns a pointer to the new image.
Returns nil on any error.
Sets the last exception property.

90.19.121 Shear(Xshear as Double, Yshear as Double) as IMImageQ16MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Method ShearImage creates a new image that is a shear image copy of an existing one.
Notes:
Shearing slides one edge of an image along the X or Y axis, creating a parallelogram. An X direction shear slides an edge along the X axis, while a Y direction shear slides an edge along the Y axis. The amount of the shear is controlled by a shear angle. For X direction shears, xshear is measured relative to the Y axis, and similarly, for Y direction shears yshear is measured relative to the X axis. Empty triangles left over from shearing the image are filled with the color defined by the pixel at location (0,0). ShearImage allocates the memory necessary for the new Image structure and returns a pointer to the new image.

Xshear and Yshear specify the number of degrees to shear the image.

Sets the last exception property.
For more details please check the ImageMagick documentation.

90.19.122 Solarize(factor as Double) as boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Method SolarizeImage produces a 'solarization' effect seen when exposing a photographic film
to light during the development process.

**Notes:**

factor: An double value that defines the extent of the solarization.
Returns nil on any error.
Sets the last exception property.

---

**90.19.123 Splice(x as Integer, y as Integer, width as Integer, height as Integer) as IMImageQ16MBS**


**Function:** Splice splices a solid color into the image as defined by the geometry.

**Notes:**

Returns nil on any error.
Sets the last exception property.

---

**90.19.124 Spread(radius as Double) as IMImageQ16MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** This is a special effects method that randomly displaces each pixel in a block defined by the radius parameter.

**Notes:**

radius: Choose a random pixel in a neighborhood of this extent.
Sets the last exception property.

For more details please check the ImageMagick documentation.

---

**90.19.125 Stegano(watermarkImage as IMImageQ16MBS) as IMImageQ16MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Method SteganoImage hides a digital watermark within the image.

**Notes:**

Returns nil on any error.
Sets the last exception property.
90.19.126  Stereo(otherImage as IMImageQ16MBS) as IMImageQ16MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Method StereoImage combines two images and produces a single image that is the composite of a left and right image of a stereo pair.
Notes: The left image is converted to gray scale and written to the red channel of the stereo image. The right image is converted to gray scale and written to the blue channel of the stereo image. View the composite image with red-blue glasses to create a stereo effect.

left image = self
right image = otherImage parameter

Returns nil on any error.
Sets the last exception property.

90.19.127  Swirl(degrees as Double) as IMImageQ16MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Method SwirlImage creates a new image that is a copy of an existing one with the image pixels "swirl" at a specified angle.
Notes: degrees: An double value that defines the tightness of the swirling.

Returns nil on any error.
Sets the last exception property.

90.19.128  Thumbnail(width as Integer, height as Integer) as IMImageQ16MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Changes the size of an image to the given dimensions.
Notes: Sets the last exception property.
This method was designed by Bob Friesenhahn as a low cost thumbnail generator.
For more details please check the ImageMagick documentation.
90.19.129 TransformImage(CropGeometry as string, ImageGeometry as string) as boolean

Function: TransformImage() is a convenience method that behaves like ResizeImage() or CropImage() but accepts scaling and/or cropping information as a region geometry specification. If the operation fails, the original image handle is left as is.
Notes:
This should only be used for single images.

CropGeometry: A crop geometry string. This geometry defines a subregion of the image to crop.
ImageGeometry: An image geometry string. This geometry defines the final size of the image.

Returns true on success.

90.19.130 TransformImages(CropGeometry as string, ImageGeometry as string) as boolean

Function: TransformImages() calls TransformImage() on each image of a sequence.
Notes:
TransformImage() is a convenience method that behaves like ResizeImage() or CropImage() but accepts scaling and/or cropping information as a region geometry specification. If the operation fails, the original image handle is left as is.

CropGeometry: A crop geometry string. This geometry defines a subregion of the image to crop.
ImageGeometry: An image geometry string. This geometry defines the final size of the image.

Returns true on success.

90.19.131 TransformRGBImage(Colorspace as Integer) as boolean

Function: Method TransformRGBImage converts the reference image from an alternate colorspace.
Notes:
The transformation matrices are not the standard ones: the weights are rescaled to normalized the range of the transformed values to be [ 0..MaxRGB ] .

colorspace: An integer value that indicates the colorspace the image is currently in. On return the image is
in the RGB color space.

Returns false on any error and true on success.

constants:

```
UndefinedColorspace  0
RGBColorspace      1
GRAYColorspace     2
TransparentColorspace  3
OHTAColorspace     4
LABColorspace      5
XYZColorspace      6
YCbCrColorspace    7
YCCColorspace      8
YIQColorspace      9
YPbPrColorspace   10
YUVColorspace      11
CMYKColorspace    12
sRGBColorspace    13
HSBColorspace     14
HSLColorspace     15
HWBColorspace     16
```

### 90.19.132 TransposeImage as IMImageQ16MBS

**Function:** TransposeImage() creates a horizontal mirror image by reflecting the pixels around the central y-axis while rotating them by 90 degrees.

### 90.19.133 TransverseImage as IMImageQ16MBS

**Function:** TransverseImage() creates a vertical mirror image by reflecting the pixels around the central x-axis while rotating them by 270 degrees.

### 90.19.134 Trim as IMImageQ16MBS

**Function:** Trim trims pixels from the image edges.
Notes:
It allocates the memory necessary for the new Image structure and returns a pointer to the new image.

Returns nil on any error.
Sets the last exception property.

90.19.135 UnsharpMaskChannel(channel as Integer, radius as Double, sigma as Double, amount as Double, threshold as Double) as IMImageQ16MBS

Function: Sharpens one or more image channels.
Notes:
We convolve the image with a Gaussian operator of the given radius and standard deviation (sigma). For reasonable results, radius should be larger than sigma. Use a radius of 0 and UnsharpMask selects a suitable radius for you.

Constants for channel:

- const UndefinedChannel = 0
- const RedChannel = & h0001
- const GrayChannel = & h0001
- const CyanChannel = & h0001
- const GreenChannel = & h0002
- const MagentaChannel = & h0002
- const BlueChannel = & h0004
- const YellowChannel = & h0004
- const AlphaChannel = & h0008
- const OpacityChannel = & h0008
- const BlackChannel = & h0020
- const IndexChannel = & h0020
- const AllChannels = & h7fffffff

Sets the last exception property.
For more details please check the ImageMagick documentation.

90.19.136 Wave(amplitude as Double, wavelength as Double) as IMImageQ16MBS

Function: Method Wave creates a new image that is a copy of an existing one with the image pixels altered
along a sine wave.

**Notes:**

Parameters are double values that indicates the amplitude and wavelength of the sine wave.
Returns nil on any error.
Sets the last exception property.

### 90.19.137 WhiteThreshold(threshold as string) as boolean

**MBS GraphicsMagick Plugin, Plugin Version:** 5.1, **Console & Web:** Yes, **Mac:** Yes, **Win:** Yes, **Linux:** Yes.

**Function:** WhiteThreshold is like Threshold but forces all pixels above the threshold into white while leaving all pixels below the threshold unchanged.

**Notes:**

No exceptions are generated.
threshold: Define the threshold value. (ASCII string)
For more details please check the ImageMagick documentation.

### 90.19.138 WriteImage(info as IMImageInfoQ16MBS) as boolean

**MBS GraphicsMagick Plugin, Plugin Version:** 5.2, **Console & Web:** Yes, **Mac:** Yes, **Win:** Yes, **Linux:** Yes.

**Function:** Method WriteImage writes an image to a file as defined by image.filename.

**Notes:**

You can specify a particular image format by prefixing the file with the image type and a colon (i.e. ps:image) or specify the image type as the filename suffix (i.e. image.ps). The image may be modified to adapt it to the requirements of the image format. For example, DirectClass images must be color-reduced to PseudoClass if the format is GIF.

WriteImage returns True if the image is written. False is returned if there is a memory shortage or if the image file fails to write.

### 90.19.139 Properties

### 90.19.140 BackgroundColor as IMColorQ16MBS

**MBS GraphicsMagick Plugin, Plugin Version:** 5.2, **Console & Web:** Yes, **Mac:** Yes, **Win:** Yes, **Linux:** Yes.

**Function:** Image background color.

**Notes:** (Read and Write property)
90.19.141 Bias as Double

Function: An undocumented property.
Notes: (Read and Write property)

90.19.142 BlurFactor as Double

Function: Blur factor to apply to the image when zooming. Default is 1.0 (no blur).
Notes: (Read and Write property)

90.19.143 BorderColor as IMColorQ16MBS

Function: Image border color.
Notes: (Read and Write property)

90.19.144 Colors as Integer

Function: The desired number of colors.
Notes:
Used by Quantize().
(Read and Write property)

90.19.145 ColorSpace as Integer

Function: Image pixel interpretation.
Notes:
If the colorspace is RGB the pixels are red, green, blue. If matte is true, then red, green, blue, and index. If it is CMYK, the pixels are cyan, yellow, magenta, black. Otherwise the colorspace is ignored.

constants:
## 90.19.146 Compression as Integer


**Function:** Image compression type.

**Notes:**

useful constants:

```plaintext
const UndefinedCompression = 0
const NoCompression = 1
const BZipCompression = 2
const FaxCompression = 3
const Group4Compression = 4
const JPEGCompression = 5
const LosslessJPEGCompression = 6
const LZWCompression = 7
const RLECompression = 8
const ZipCompression = 9
```

The default is the compression type of the specified image file.
For more details please check the ImageMagick documentation.

(Read and Write property)
90.19.147  Depth as Integer

**Function:** Image depth (8 or 16).
**Notes:**
QuantumLeap must be defined before a depth of 16 is valid.
(Read and Write property)

90.19.148  Directory as String

**Function:** Tile names from within an image montage.
**Notes:**
Only valid after calling MontageImages() or reading a MIFF file which contains a directory.
(Read and Write property)

90.19.149  Endian as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.2, Console & Web:457.150  Filename as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The file path/name.
**Notes:**
The string must be in the encoding of the library and is limited to 4000 bytes.
For more details please check the ImageMagick documentation.

## Endian as Integer

**Constants:**

<table>
<thead>
<tr>
<th>Endian Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>UndefinedEndian</td>
<td>0</td>
</tr>
<tr>
<td>LSBEndian</td>
<td>1     (Windows)</td>
</tr>
<tr>
<td>MSBEndian</td>
<td>2     (Mac)</td>
</tr>
</tbody>
</table>

e.g. tiff files support different endian settings.
(Read and Write property)
90.19.151 Filter as Integer


**Function:** Filter to use when resizing image.

**Notes:**

Constants:

- `const PointFilter = 1`
- `const BoxFilter = 2`
- `const TriangleFilter = 3`
- `const HermiteFilter = 4`
- `const HanningFilter = 5`
- `const HammingFilter = 6`
- `const BlackmanFilter = 7`
- `const GaussianFilter = 8`
- `const QuadraticFilter = 9`
- `const CubicFilter = 10`
- `const CatromFilter = 11`
- `const MitchellFilter = 12`
- `const LanczosFilter = 13`
- `const BesselFilter = 14`
- `const SincFilter = 15`

The reduction filter employed has a significant effect on the time required to resize an image and the resulting quality. The default filter is Lanczos which has been shown to produce high quality results when reducing most images.

(Read and Write property)

90.19.152 Fuzz as Double


**Function:** Colors within this distance are considered equal.

**Notes:**

A number of algorithms search for a target color. By default the color must be exact. Use this to match colors that are close to the target color in RGB space.

(Read and Write property)
90.19.153  Gamma as Double

**Function:** Gamma level of the image.
**Notes:**
The same color image displayed on two different workstations may look different due to differences in the display monitor. Use gamma correction to adjust for this color difference.
(Read and Write property)

90.19.154  Geometry as String

**Function:** Preferred size of the image when encoding.
**Notes:** (Read and Write property)

90.19.155  Gravity as Integer

**Function:** An undocumented property.
**Notes:** (Read and Write property)

90.19.156  Handle as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The handle used internally by the plugin.
**Notes:**
A pointer to an Image structure.
For more details please check the ImageMagick documentation.
(Read and Write property)

90.19.157  Height as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The height of the image in pixels.
**Notes:**
For more details please check the ImageMagick documentation.
(Read and Write property)
90.19.158 Interlace as Integer


**Function:** The type of interlacing scheme (default NoInterlace).

**Notes:**
This option is used to specify the type of interlacing scheme for raw image formats such as RGB or YUV. NoInterlace means do not interlace, LineInterlace uses scanline interlacing, and PlaneInterlace uses plane interlacing. PartitionInterlace is like PlaneInterlace except the different planes are saved to individual files (e.g. image.R, image.G, and image.B). Use LineInterlace or PlaneInterlace to create an interlaced GIF or progressive JPEG image.

**Constants:**

- UndefinedInterlace 0 Unset value.
- NoInterlace 1 Don’t interlace image (RGBRGBRGBRGBRGBRGB...)
- LineInterlace 2 Use scanline interlacing (RRR...GGG...BBB...RRR...GGG...BBB...)
- PlaneInterlace 3 Use plane interlacing (RRRRRR...GGGGGG...BBBBBB...)
- PartitionInterlace 4 Similar to plane interlacing except that the different planes are saved to individual files (e.g. image.R, image.G, and image.B)

(Read and Write property)

90.19.159 LastError as Integer


**Function:** The last error code reported.

**Notes:**
If an exception is raised and it is not a warning exception, this exception code is saved in this property.

(Read and Write property)

90.19.160 LastException as IMExceptionQ16MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The last exception thrown by the Image Magick library.

**Notes:**
You should check this value after every call to the library, process the error and set the property to nil.

For more details please check the ImageMagick documentation.

(Read and Write property)
90.19.161  Magick as String

Function: Image encoding format (e.g. "GIF").
Notes: (Read and Write property)

90.19.162  Matte as Boolean

Function: Whether an alpha channel is used/present.
Notes: Set to true to enable masks.
(Read and Write property)

90.19.163  MatteColor as IMColorQ16MBS

Function: Image matte (transparent) color.
Notes: (Read and Write property)

90.19.164  Montage as String

Function: Tile size and offset within an image montage. Only valid for montage images.
Notes: (Read and Write property)

90.19.165  Offset as Integer

Function: Number of initial bytes to skip over when reading raw image.
Notes: (Read and Write property)
**90.19.166 Orientation as Integer**


**Function:** The image orientation.

**Notes:**

**constants:**

\[
\begin{align*}
\text{const UndefinedOrientation} &= 0 \\
\text{const TopLeftOrientation} &= 1 \\
\text{const TopRightOrientation} &= 2 \\
\text{const BottomRightOrientation} &= 3 \\
\text{const BottomLeftOrientation} &= 4 \\
\text{const LeftTopOrientation} &= 5 \\
\text{const RightTopOrientation} &= 6 \\
\text{const RightBottomOrientation} &= 7 \\
\text{const LeftBottomOrientation} &= 8
\end{align*}
\]

For more details please check the ImageMagick documentation.
(Read and Write property)

**90.19.167 Quality as Integer**


**Function:** JPEG/MIFF/PNG compression level.

**Example:**

```vba
dim im as ImageMagickQ16MBS // global

Function TestJPEG(f as folderitem) As picture
    // Reads an image, compresses in memory to JPEG, decompresses using JPEGlib and returns the image
    // if quality setting works, you see it in the result.
    // no error checking included!

    // needs: im as ImageMagickQ16MBS ready initialized

    dim image as IMImageQ16MBS
    dim imageinfo as IMImageInfoQ16MBS
    dim s, blob as string
    dim p as Picture
    dim i as Integer

    if f = nil then
        Return nil
    end if
```
imageinfo = im.NewImageInfo

# if TargetWin32 then //do not use shellpath, if spaces, IM doesn’t like escaped paths
imageinfo.Filename = f.AbsolutePath
# else
imageinfo.Filename = f.UnixpathMBS
# endif

//this should read any image IM understands
image = im.ReadImage(imageinfo)
//check for error
if im.lastexception <> nil and im.LastException.Severity >= 400 then
s = ”LastError: ”+Format(im.LastError,”-0“)+” - Severity: ”+str(im.LastException.Severity)+EndOfLine+im.LastException.Reason
MsgBox s
Return nil
elseif image = nil then
MsgBox ”image=nil”
Return nil
end if

// Now lets convert to jpeg
imageinfo.Filename = ”image.jpg”
imageinfo.Quality = 10 // 100 is max
blob = image.ImageToBlob(imageinfo)

// It may fail
if blob.lenb = 0 then
Return nil
end if
p = JPEGStringToPictureMBS(blob,true)

image.DestroyImage
imageinfo.DestroyImageInfo

Return p
Exception
Return nil
End Function

Notes:
Default value is 75.
(Read and Write property)
90.19.168  Release as Boolean

Function: If true, the destructor will release the handle.
Notes: (Read and Write property)

90.19.169  RenderingIntent as Integer

Function: The rendering intent to use.
Notes: 
constants:

UndefinedIntent 0
SaturationIntent 1
PerceptualIntent 2
AbsoluteIntent 3
RelativeIntent 4

(Read and Write property)

90.19.170  ResolutionUnits as Integer

Function: Units of image resolution.
Notes: 
constants:

UndefinedResolution 0  Unset value.
PixelsPerInchResolution 1  Density specifications are specified in units of pixels per inch (english units).
PixelsPerCentimeterResolution 2  Density specifications are specified in units of pixels per centimeter (metric units).

(Read and Write property)
### 90.19.171 ResolutionX as Double

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The horizontal resolution of the image.

**Notes:**

The unit for resolution must be specified.
For more details please check the ImageMagick documentation.

(Read and Write property)

### 90.19.172 ResolutionY as Double

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The vertical resolution of the image.

**Notes:**

The unit for resolution must be specified.
For more details please check the ImageMagick documentation.

(Read and Write property)

### 90.19.173 Scene as Integer


**Function:** An undocumented property.

**Notes:** (Read and Write property)

### 90.19.174 StorageClass as Integer


**Function:** Image storage class.

**Notes:**

If DirectClass then the image packets contain valid RGB or CMYK colors. If PseudoClass then the image has a colormap referenced by pixel’s index member.

**Constants:**

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UndefinedClass</td>
<td>0</td>
<td>Unset value.</td>
</tr>
<tr>
<td>DirectClass</td>
<td>1</td>
<td>Image is composed of pixels which represent literal color values.</td>
</tr>
<tr>
<td>PseudoClass</td>
<td>2</td>
<td>Image is composed of pixels which specify an index in a color palette.</td>
</tr>
</tbody>
</table>
90.19.175  Taint as Boolean

**Function:** Set to True if the image pixels have been modified.  
**Notes:** (Read and Write property)

90.19.176  Width as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The width of the image in pixels.  
**Notes:**  
For more details please check the ImageMagick documentation.  
(Read and Write property)

90.19.177  Constants

90.19.178  kAffineDistortion = 1

MBS GraphicsMagick Plugin, Plugin Version: 12.5.  
**Function:** One of the distortion effect constants.  
See also:

- 90.19.179 kAffineDistortion = 1

90.19.179  kAffineDistortion = 1

MBS GraphicsMagick Plugin, Plugin Version: 12.5.  
**Function:** One of the distortion effect constants.  
See also:

- 90.19.178 kAffineDistortion = 1

90.19.180  kAffineProjectionDistortion = 2

MBS GraphicsMagick Plugin, Plugin Version: 12.5.  
**Function:** One of the distortion effect constants.  
See also:

- 90.19.181 kAffineProjectionDistortion = 2
90.19.181  \textbf{kAffineProjectionDistortion} = 2

MBS GraphicsMagick Plugin, Plugin Version: 12.5. \textbf{Function}: One of the distortion effect constants. See also:

- 90.19.180 \textbf{kAffineProjectionDistortion} = 2

90.19.182  \textbf{kArcDistortion} = 9

MBS GraphicsMagick Plugin, Plugin Version: 12.5. \textbf{Function}: One of the distortion effect constants. See also:

- 90.19.183 \textbf{kArcDistortion} = 9

90.19.183  \textbf{kArcDistortion} = 9

MBS GraphicsMagick Plugin, Plugin Version: 12.5. \textbf{Function}: One of the distortion effect constants. See also:

- 90.19.182 \textbf{kArcDistortion} = 9

90.19.184  \textbf{kBackgroundDispose} = 2

MBS GraphicsMagick Plugin, Plugin Version: 8.3. \textbf{Function}: One of the Image layer Dispose Types.

90.19.185  \textbf{kBarrelDistortion} = \& h0000000E

MBS GraphicsMagick Plugin, Plugin Version: 12.5. \textbf{Function}: One of the distortion effect constants. See also:

- 90.19.186 \textbf{kBarrelDistortion} = \& h0000000E

90.19.186  \textbf{kBarrelDistortion} = \& h0000000E

MBS GraphicsMagick Plugin, Plugin Version: 12.5. \textbf{Function}: One of the distortion effect constants. See also:

- 90.19.185 \textbf{kBarrelDistortion} = \& h0000000E
90.19.187  \textit{kBarrelInverseDistortion} = \& h0000000F

MBS GraphicsMagick Plugin, Plugin Version: 12.5. \textbf{Function}: One of the distortion effect constants. See also:

- 90.19.188 \textit{kBarrelInverseDistortion} = \& h0000000F

90.19.188  \textit{kBarrelInverseDistortion} = \& h0000000F

MBS GraphicsMagick Plugin, Plugin Version: 12.5. \textbf{Function}: One of the distortion effect constants. See also:

- 90.19.187 \textit{kBarrelInverseDistortion} = \& h0000000F

90.19.189  \textit{kBarycentricColorInterpolate} = 1

MBS GraphicsMagick Plugin, Plugin Version: 12.5. \textbf{Function}: One of the interpolate method constants. See also:

- 90.19.190 \textit{kBarycentricColorInterpolate} = 1

90.19.190  \textit{kBarycentricColorInterpolate} = 1

MBS GraphicsMagick Plugin, Plugin Version: 12.5. \textbf{Function}: One of the interpolate method constants. See also:

- 90.19.189 \textit{kBarycentricColorInterpolate} = 1

90.19.191  \textit{kBilinearColorInterpolate} = 7

MBS GraphicsMagick Plugin, Plugin Version: 12.5. \textbf{Function}: One of the interpolate method constants. See also:

- 90.19.192 \textit{kBilinearColorInterpolate} = 7

90.19.192  \textit{kBilinearColorInterpolate} = 7

MBS GraphicsMagick Plugin, Plugin Version: 12.5. \textbf{Function}: One of the interpolate method constants. See also:

- 90.19.191 \textit{kBilinearColorInterpolate} = 7
90.19. CLASS IMIMAGEQ1EMBS

90.19.193  kBilinearDistortion = 6

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.19.194 kBilinearDistortion = 6

90.19.194  kBilinearDistortion = 6

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.19.193 kBilinearDistortion = 6

90.19.195  kBilinearForwardDistortion = 6

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.19.196 kBilinearForwardDistortion = 6

90.19.196  kBilinearForwardDistortion = 6

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.19.195 kBilinearForwardDistortion = 6

90.19.197  kBilinearReverseDistortion = 7

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.19.198 kBilinearReverseDistortion = 7

90.19.198  kBilinearReverseDistortion = 7

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.19.197 kBilinearReverseDistortion = 7
90.19.199 $\text{kCoalesceLayer} = 1$

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

90.19.200 $\text{kCompareAnyLayer} = 2$

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

90.19.201 $\text{kCompareClearLayer} = 3$

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

90.19.202 $\text{kCompareOverlayLayer} = 4$

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

90.19.203 $\text{kCompositeLayer} = \& \text{h}0000000C$

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

90.19.204 $\text{kCylinder2PlaneDistortion} = \& \text{h}0000000C$

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.19.205 $\text{kCylinder2PlaneDistortion} = \& \text{h}0000000C$

90.19.205 $\text{kCylinder2PlaneDistortion} = \& \text{h}0000000C$

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.19.204 $\text{kCylinder2PlaneDistortion} = \& \text{h}0000000C$
90.19. CLASS IMIMAGEQ16MBS

90.19.206 kDePolarDistortion = & h0000000B

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.19.207 kDePolarDistortion = & h0000000B

90.19.207 kDePolarDistortion = & h0000000B

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.19.206 kDePolarDistortion = & h0000000B

90.19.208 kDisposeLayer = 5

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

90.19.209 kFlattenLayer = & h0000000E

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

90.19.210 kInverseColorInterpolate = & h00000013

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the interpolate method constants. See also:

- 90.19.211 kInverseColorInterpolate = & h00000013

90.19.211 kInverseColorInterpolate = & h00000013

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the interpolate method constants. See also:

- 90.19.210 kInverseColorInterpolate = & h00000013

90.19.212 kMergeLayer = & h0000000D

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.
90.19.213  kMosaicLayer = &h0000000F

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

90.19.214  kNoneDispose = 1

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer Dispose Types.

90.19.215  kOptimizeImageLayer = 7

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

90.19.216  kOptimizeLayer = 6

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

90.19.217  kOptimizePlusLayer = 8

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

90.19.218  kOptimizeTransLayer = 9

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

90.19.219  kPerspectiveDistortion = 4

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.19.220  kPerspectiveDistortion = 4

90.19.220  kPerspectiveDistortion = 4

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:
90.19.221  \textbf{kPerspectiveProjectionDistortion} = 5

MBS GraphicsMagick Plugin, Plugin Version: 12.5. \textbf{Function:} One of the distortion effect constants. See also:

- 90.19.222  kPerspectiveProjectionDistortion = 5

90.19.222  \textbf{kPerspectiveProjectionDistortion} = 5

MBS GraphicsMagick Plugin, Plugin Version: 12.5. \textbf{Function:} One of the distortion effect constants. See also:

- 90.19.221  kPerspectiveProjectionDistortion = 5

90.19.223  \textbf{kPlane2CylinderDistortion} = & h0000000D

MBS GraphicsMagick Plugin, Plugin Version: 12.5. \textbf{Function:} One of the distortion effect constants. See also:

- 90.19.224  kPlane2CylinderDistortion = & h0000000D

90.19.224  \textbf{kPlane2CylinderDistortion} = & h0000000D

MBS GraphicsMagick Plugin, Plugin Version: 12.5. \textbf{Function:} One of the distortion effect constants. See also:

- 90.19.223  kPlane2CylinderDistortion = & h0000000D

90.19.225  \textbf{kPolarDistortion} = & h0000000A

MBS GraphicsMagick Plugin, Plugin Version: 12.5. \textbf{Function:} One of the distortion effect constants. See also:

- 90.19.226  kPolarDistortion = & h0000000A

90.19.226  \textbf{kPolarDistortion} = & h0000000A

MBS GraphicsMagick Plugin, Plugin Version: 12.5. \textbf{Function:} One of the distortion effect constants. See also:
90.19.227 kPolynomialColorInterpolate = 8

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function**: One of the interpolate method constants. See also:

- 90.19.228 kPolynomialColorInterpolate = 8

90.19.228 kPolynomialColorInterpolate = 8

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function**: One of the interpolate method constants. See also:

- 90.19.227 kPolynomialColorInterpolate = 8

90.19.229 kPolynomialDistortion = 8

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function**: One of the distortion effect constants. See also:

- 90.19.230 kPolynomialDistortion = 8

90.19.230 kPolynomialDistortion = 8

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function**: One of the distortion effect constants. See also:

- 90.19.229 kPolynomialDistortion = 8

90.19.231 kPreviousDispose = 3

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function**: One of the Image layer Dispose Types.

90.19.232 kRemoveDupsLayer = & h0000000A

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function**: One of the Image layer method constants.
90.19.233  kRemoveZeroLayer = & h000000B

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

90.19.234  kResizeDistortion = & h00000011

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.19.235 kResizeDistortion = & h00000011

90.19.235  kResizeDistortion = & h00000011

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.19.234 kResizeDistortion = & h00000011

90.19.236  kScaleRotateTranslateDistortion = 3

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.19.237 kScaleRotateTranslateDistortion = 3

90.19.237  kScaleRotateTranslateDistortion = 3

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.19.236 kScaleRotateTranslateDistortion = 3

90.19.238  kSentinelDistortion = & h00000012

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.19.239 kSentinelDistortion = & h00000012
90.19.239  **kSentinelDistortion = \& h00000012**

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.19.238 **kSentinelDistortion = \& h00000012**

90.19.240  **kShepardsColorInterpolate = \& h00000010**

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the interpolate method constants. See also:

- 90.19.241 **kShepardsColorInterpolate = \& h00000010**

90.19.241  **kShepardsColorInterpolate = \& h00000010**

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the interpolate method constants. See also:

- 90.19.240 **kShepardsColorInterpolate = \& h00000010**

90.19.242  **kShepardsDistortion = \& h00000010**

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.19.243 **kShepardsDistortion = \& h00000010**

90.19.243  **kShepardsDistortion = \& h00000010**

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.19.242 **kShepardsDistortion = \& h00000010**

90.19.244  **kUndefinedColorInterpolate = 0**

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the interpolate method constants. See also:

- 90.19.245 **kUndefinedColorInterpolate = 0**
90.19.245  kUndefinedColorInterpolate = 0

MBS GraphicsMagick Plugin, Plugin Version: 12.5. Function: One of the interpolate method constants. See also:

- 90.19.244 kUndefinedColorInterpolate = 0

90.19.246  kUndefinedDispose = 0

MBS GraphicsMagick Plugin, Plugin Version: 8.3. Function: One of the Image layer Dispose Types.

90.19.247  kUndefinedDistortion = 0

MBS GraphicsMagick Plugin, Plugin Version: 12.5. Function: One of the distortion effect constants. See also:

- 90.19.248 kUndefinedDistortion = 0

90.19.248  kUndefinedDistortion = 0

MBS GraphicsMagick Plugin, Plugin Version: 12.5. Function: One of the distortion effect constants. See also:

- 90.19.247 kUndefinedDistortion = 0

90.19.249  kUndefinedLayer = 0


90.19.250  kUnrecognizedDispose = 0

MBS GraphicsMagick Plugin, Plugin Version: 8.3. Function: One of the Image layer Dispose Types.

90.19.251  kVoronoiColorInterpolate = & h00000012

MBS GraphicsMagick Plugin, Plugin Version: 12.5. Function: One of the interpolate method constants. See also:

- 90.19.252 kVoronoiColorInterpolate = & h00000012
90.19.252  \texttt{kVoronoiColorInterpolate = & h00000012}

MBS GraphicsMagick Plugin, Plugin Version: 12.5. \textbf{Function:} One of the interpolate method constants. See also:

- 90.19.251 \texttt{kVoronoiColorInterpolate = & h00000012}
90.20  class IMImageQ32MBS

90.20.1  class IMImageQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: A class for an Image Magick Image in memory.
Notes:
Can exist with or without pixel data.

For more details please check the ImageMagick documentation.

90.20.2  Methods

90.20.3  AdaptiveThreshold(width as Integer, height as Integer, offset as Integer) as IMImageQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: AdaptiveThreshold selects an individual threshold for each pixel based on the range of intensity values in its local neighborhood.
Notes:
This allows for thresholding of an image whose global intensity histogram doesn’t contain distinctive peaks. Sets the last exception property.

width: The width of the local neighborhood.
height: The height of the local neighborhood.
offset: The mean offset.

For more details please check the ImageMagick documentation.

90.20.4  AddNoise(NoiseType as Integer) as IMImageQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Adds random noise to the image.
Notes:
Constants

For more details please check the ImageMagick documentation.
Sets the last exception property.
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UndefinedNoise = 0
UniformNoise = 1
GaussianNoise = 2
MultiplicativeGaussianNoise = 3
ImpulseNoise = 4
LaplacianNoise = 5
PoissonNoise = 6

90.20.5 AffineTransformImage(matrix as IMImageAffineMatrixQ32MBS) as IMImageQ32MBS

Function: Transforms an image as dictated by the affine matrix.

90.20.6 AppendImageToList(img as IMImageQ32MBS)

Function: Adds an image to the image list.
Notes: For more details please check the ImageMagick documentation.

90.20.7 AutoGammaImage as Boolean

Function: AutoGammaImage extract the 'mean' from the image and adjust the image to try make set its gamma appropriatally.
Notes: Returns true on success or false on failure.

90.20.8 AutoGammaImageChannel(ChannelType as Integer) as Boolean

Function: AutoGammaImage extract the 'mean' from the image and adjust the image to try make set its gamma appropriatally.
Notes: Returns true on success or false on failure.
channelType: The channels to auto-level. If the special 'SyncChannels' flag is set all given channels is adjusted in the same way using the mean average of those channels.

Constants for channel:

```c
const UndefinedChannel = 0
const RedChannel = & h0001
const GrayChannel = & h0001
const CyanChannel = & h0001
const GreenChannel = & h0002
const MagentaChannel = & h0002
const BlueChannel = & h0004
const YellowChannel = & h0004
const AlphaChannel = & h0008
const OpacityChannel = & h0008
const BlackChannel = & h0020
const IndexChannel = & h0020
const AllChannels = & h7fffffff
```

90.20.9  AutoLevelImage as Boolean

**Function:** AutoLevelImage adjusts the levels of a particular image channel by scaling the minimum and maximum values to the full quantum range.
**Notes:** Returns true on success or false on failure.

90.20.10  AutoLevelImageChannel(ChannelType as Integer) as Boolean

**Function:** AutoLevelImage adjusts the levels of a particular image channel by scaling the minimum and maximum values to the full quantum range.
**Notes:** Returns true on success or false on failure.

ChannelType: The channels to auto-level. If the special 'SyncChannels' flag is set the min/max/mean value of all given channels is used for all given channels, to all channels in the same way.

Constants for channel:
const UndefinedChannel = 0
const RedChannel = & h0001
const GrayChannel = & h0001
const CyanChannel = & h0001
const GreenChannel = & h0002
const MagentaChannel = & h0002
const BlueChannel = & h0004
const YellowChannel = & h0004
const AlphaChannel = & h0008
const OpacityChannel = & h0008
const BlackChannel = & h0020
const IndexChannel = & h0020
const AllChannels = & h7fffffff

90.20.11 Average as IMImageQ32MBS

Function: The Average() method takes a set of images and averages them together.
Notes:
Each image in the set must have the same width and height. Average() returns a single image with each corresponding pixel component of each image averaged. On failure, a nil image is returned and exception describes the reason for the failure.
Sets the last exception property.

For more details please check the ImageMagick documentation.

90.20.12 BilevelChannel(channel as Integer, threshold as Double) as boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Changes the value of individual pixels based on the intensity of each pixel channel.
Notes:
The result is a high-contrast image.
channel: The channel type.
threshold: define the threshold values.

Constants for channel:

For more details please check the ImageMagick documentation.
const UndefinedChannel = 0
const RedChannel = & h0001
const GrayChannel = & h0001
const CyanChannel = & h0001
const GreenChannel = & h0002
const MagentaChannel = & h0002
const BlueChannel = & h0004
const YellowChannel = & h0004
const AlphaChannel = & h0008
const OpacityChannel = & h0008
const BlackChannel = & h0020
const IndexChannel = & h0020
const AllChannels = & h7fffffff

90.20.13  BlackThreshold(threshold as string) as boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** BlackThreshold is like Threshold but forces all pixels below the threshold into black while leaving all pixels above the threshold unchanged.
**Notes:**
No exceptions are generated.
threshold: Define the threshold value. (ASCII string)
For more details please check the ImageMagick documentation.

90.20.14  BlobSize as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The expected size for this image written to a file.
**Notes:** For more details please check the ImageMagick documentation.

90.20.15  Blur(radius as Double, sigma as Double) as IMImageQ32MBS

**Function:** Blurs an image.
**Notes:**
We convolve the image with a Gaussian operator of the given radius and standard deviation (sigma) . For reasonable results, the radius should be larger than sigma. Use a radius of 0 and BlurImage selects a suitable radius for you.

radius: The radius of the Gaussian, in pixels, not counting the center pixel.
sigma: The standard deviation of the Gaussian, in pixels.

For more details please check the ImageMagick documentation.

90.20.16 BlurImageChannel(channel as Integer, radius as Double, sigma as Double) as IMImageQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Blurs an image.

**Notes:**

We convolve the image with a Gaussian operator of the given radius and standard deviation (sigma). For reasonable results, the radius should be larger than sigma. Use a radius of 0 and BlurImageChannel selects a suitable radius for you.

channel: The channel type.
radius: The radius of the Gaussian, in pixels, not counting the center pixel.
sigma: The standard deviation of the Gaussian, in pixels.

Constants for channel:

```plaintext
const UndefinedChannel = 0
const RedChannel = & h0001
const GrayChannel = & h0001
const CyanChannel = & h0001
const GreenChannel = & h0002
const MagentaChannel = & h0002
const BlueChannel = & h0004
const YellowChannel = & h0004
const AlphaChannel = & h0008
const OpacityChannel = & h0008
const BlackChannel = & h0020
const IndexChannel = & h0020
const AllChannels = & h7fffffff
```

For more details please check the ImageMagick documentation.
90.20.17  BorderImage(x as Integer, y as Integer, width as Integer, height as Integer) as IMImageQ32MBS

Function: Surrounds the image with a border of the color defined by the bordercolor member of the image.
Notes: The width and height of the border are defined by the corresponding parameters.

90.20.18  BrightnessContrastImage(brightness as Double, contrast as Double) as Boolean

Function: Changes the brightness and/or contrast of an image. It converts the brightness and contrast
parameters into slope and intercept and calls a polynomial function to apply to the image.
Notes:
Returns true on success or false on failure.

brightness: the brightness percent (-100 .. 100).
contrast: the contrast percent (-100 .. 100).

90.20.19  BrightnessContrastImageChannel(ChannelType as Integer, brightness as Double, contrast as Double) as Boolean

Function: Changes the brightness and/or contrast of an image. It converts the brightness and contrast
parameters into slope and intercept and calls a polynomial function to apply to the image.
Notes:
Returns true on success or false on failure.

brightness: the brightness percent (-100 .. 100).
contrast: the contrast percent (-100 .. 100).
ChannelType: The channels to use.

90.20.20  Charcoal(radius as Double, sigma as Double) as IMImageQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Charcoal creates a new image that is a copy of an existing one with the edge highlighted.
const UndefinedChannel = 0
const RedChannel = & h0001
const GrayChannel = & h0001
const CyanChannel = & h0002
const GreenChannel = & h0001
const MagentaChannel = & h0002
const BlueChannel = & h0004
const YellowChannel = & h0004
const AlphaChannel = & h0008
const OpacityChannel = & h0008
const BlackChannel = & h0020
const IndexChannel = & h0020
const AllChannels = & h7fffffff

Notes:

radius: the radius of the pixel neighborhood.
sigma: The standard deviation of the Gaussian, in pixels.

Returns nil on any error.
Sets the last exception property.

90.20.21 Chop(x as Integer, y as Integer, width as Integer, height as Integer) as IMImageQ32MBS

Function: Chop removes a region of an image and collapses the image to occupy the removed portion.
Notes:

Returns nil on any error.
Sets the last exception property.

90.20.22 ClipPath(path as string, inside as boolean) as boolean

Function: Sets the image clip mask based any clipping path information if it exists.
Notes:

Returns true on success and false on any error.
pathname: name of clipping path resource. If name is preceded by #, use clipping path numbered by name.
inside: if true, later operations take effect inside clipping path. Otherwise later operations take effect outside clipping path.

90.20.23 Clone as IMImageQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Creates a copy of this image object.
Notes: For more details please check the ImageMagick documentation.

90.20.24 CloneImageAttributes(image as IMImageAttributeQ32MBS) as Boolean

Function: CloneImageAttributes() clones one or more image attributes.
Notes: Returns false on any error.

90.20.25 CloneImageProfiles(SourceImage as IMImageQ32MBS) as boolean

Function: Clones one or more image profiles.
Notes: Returns false on any error and true on success.

90.20.26 Close

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The destructor.
Notes:
There is no need to call this method except you want to free all resources used by this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

90.20.27 ClutImage(clutImage as IMImageQ32MBS) as Boolean

Function: Replaces each color value in the given image, by using it as an index to lookup a replacement
color value in a Color Look UP Table in the form of an image.

Notes:
The values are extracted along a diagonal of the CLUT image so either a horizontal or vertical gradient image can be used.

Typically this is used to either re-color a gray-scale image according to a color gradient in the CLUT image, or to perform a freeform histogram (level) adjustment according to the (typically gray-scale) gradient in the CLUT image.

When the ‘channel’ mask includes the matte/alpha transparency channel but one image has no such channel it is assumed that that image is a simple gray-scale image that will effect the alpha channel values, either for gray-scale coloring (with transparent or semi-transparent colors), or a histogram adjustment of existing alpha channel values. If both images have matte channels, direct and normal indexing is applied, which is rarely used.

ClutImage: the color lookup table image for replacement color values.

Returns true on success or false on failure.

90.20.28 ClutImageChannel(ChannelType as Integer, clutImage as IMImageQ32MBS) as Boolean

 Function: Replaces each color value in the given image, by using it as an index to lookup a replacement color value in a Color Look UP Table in the form of an image.
Notes:
The values are extracted along a diagonal of the CLUT image so either a horizontal or vertical gradient image can be used.

Typically this is used to either re-color a gray-scale image according to a color gradient in the CLUT image, or to perform a freeform histogram (level) adjustment according to the (typically gray-scale) gradient in the CLUT image.

When the ‘channel’ mask includes the matte/alpha transparency channel but one image has no such channel it is assumed that that image is a simple gray-scale image that will effect the alpha channel values, either for gray-scale coloring (with transparent or semi-transparent colors), or a histogram adjustment of existing alpha channel values. If both images have matte channels, direct and normal indexing is applied, which is rarely used.

ClutImage: the color lookup table image for replacement color values.
ChannelType: The channels to use.

Returns true on success or false on failure.

Constants for channel:

```cpp
const UndefinedChannel = 0
const RedChannel = & h0001
const GrayChannel = & h0001
const CyanChannel = & h0001
const GreenChannel = & h0002
const MagentaChannel = & h0002
const BlueChannel = & h0004
const YellowChannel = & h0004
const AlphaChannel = & h0008
const OpacityChannel = & h0008
const BlackChannel = & h0020
const IndexChannel = & h0020
const AllChannels = & h7fffffff
```

**90.20.29 CoalesceImages as IMImageQ32MBS**

MBS GraphicsMagick Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** CoalesceImages composites a set of images while respecting any page offsets and disposal methods.

**Notes:**

GIF, MIFF, and MNG animation sequences typically start with an image background and each subsequent image varies in size and offset. CoalesceImages() returns a new sequence where each image in the sequence is the same size as the first and composited with the next image in the sequence.

Returns nil on any error.

Sets the last exception property.

**90.20.30 Colorize(opacity as string, PenColorRed as Integer, PenColorGreen as Integer, PenColorBlue as Integer, PenColorOpacity as Integer) as IMImageQ32MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Method ColorizeImage creates a new image that is a copy of an existing one with the image
pixels colorized.

Notes:
The colorization is controlled with the pen color and the opacity levels.

opacity: A character string indicating the level of opacity as a percentage (0-100).
PencilColorRed, PencolorGreen, PencolorBlue and PencolorOpacity define the pen color used.

Returns nil on any error.
Sets the last exception property.

90.20.31 Combine(channel as Integer) as IMImageQ32MBS

Function: Combines one or more images into a single image.

Notes:
The grayscale value of the pixels of each image in the sequence is assigned in order to the specified channels
of the combined image. The typical ordering would be image 1 => Red, 2 => Green, 3 => Blue, etc.

The lastexception property is set.

90.20.32 CompareImageLayers(ImageLayerMethod as Integer) as IMImageQ32MBS

Function: CompareImageLayers() compares each image with the next in a sequence and returns the
minimum bounding region of all the pixel differences (of the mageLayerMethod specified) it discovers.
Notes:
Images do NOT have to be the same size, though it is best that all the images are 'coalesced' (images are
all the same size, on a flattened canvas, so as to represent exactly how an specific frame should look).

No GIF dispose methods are applied, so GIF animations must be coalesced before applying this image op-
erator to find differences to them.

ImageLayerMethod:
the layers type to compare images with. Must be one of... CompareAnyLayer, CompareClearLayer, Com-
pareOverlayLayer.

Can raise an exception.
90.20.33  Composite(ComposeOperator as Integer, Image as IMImageQ32MBS, x as Integer, y as Integer)

**Function:** Returns the second image composited onto the first at the specified offsets.
**Notes:**
- compose: Specifies an image composite operator.
- Image: The second image.
- x: An integer that specifies the column offset of the composited image.
- y: An integer that specifies the row offset of the composited image.

No error code and exception!

90.20.34  ConsolidateCMYKImages as IMImageQ32MBS

**Function:** Consolidates a sequence of CMYK images.
**Notes:**
- Returns nil on any error.
- Sets the last exception property.

90.20.35  ContrastImage(sharpen as boolean) as Boolean

**Function:** Enhances the intensity differences between the lighter and darker elements of the image.
**Notes:**
- Returns true on success or false on failure.
- Set sharpen to true to increase the image contrast otherwise the contrast is reduced.

90.20.36  CopyPicture as picture

**Function:** Copies the Image Magick Image and returns a Realbasic picture.
**Example:**
```realbasic
dim image as IMImageQ32MBS // your image
Canvas1.Backdrop=image.CopyPicture
```
Notes:
Sets the last exception property.
Returns nil on any error.
This method works only for bitmap images.
See also:

- 90.20.37 CopyPicture(x as Integer, y as Integer, width as Integer, height as Integer) as picture

90.20.37 CopyPicture(x as Integer, y as Integer, width as Integer, height as Integer) as picture

Function: Copies a portion of the Image Magick Image and returns a Realbasic picture.
Example:

dim image as IMImageQ32MBS // your image
Canvas1.Backdrop=image.CopyPicture(0,0,image.Width,image.Height)

Notes:
Sets the last exception property.
Returns nil on any error.
This method works only for bitmap images.
x and y are zero based.
See also:

- 90.20.36 CopyPicture as picture

90.20.38 CopyPictureMask as picture

Function: Copies the mask of the Image Magick Image and returns a Realbasic picture.
Example:

dim image as IMImageQ32MBS // your image
Canvas1.Backdrop=image.CopyPictureMask

Notes:
Sets the last exception property.
Returns nil on any error.
This method works only for bitmap images.
See also:
90.20.39 CopyPictureMask(x as Integer, y as Integer, width as Integer, height as Integer) as picture

Function: Copies a portion of the mask of the Image Magick Image and returns a Realbasic picture.
Example:

```realbasic
dim image as IMImageQ32MBS // your image
Canvas1.Backdrop=image.CopyPictureMask(0,0,image.Width,image.Height)
```

Notes:
Set the last exception property.
Returns nil on any error.
This method works only for bitmap images.
x and y are zero based.
See also:

- 90.20.38 CopyPictureMask as picture

90.20.40 CopyPixel(x as Integer, y as Integer) as IMColorQ32MBS

Function: Copies a pixel.
Notes:
Returns nil on any error.
This method works only for bitmap images.
x and y are zero based.

90.20.41 CreateHBITMAP as Ptr

MBS GraphicsMagick Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.
Function: Creates a HBITMAP for the image for use with Windows Declares.
Notes: The HBITMAP returned needs to be freed when you are done with it or you risk having a memory leak.
90.20.42  **Crop(x as Integer, y as Integer, width as Integer, height as Integer) as IMImageQ32MBS**

**Function:** Crop extracts a region of the image starting at the offset defined by geometry.
**Notes:**
- Returns nil on any error.
- Sets the last exception property.

90.20.43  **CropImageToTiles(CropGeometry as string) as IMImageQ32MBS**

**Function:** Crops a single image, into a possible list of tiles.
**Notes:** This may include a single sub-region of the image. This basically applies all the normal geometry flags for Crop.

90.20.44  **CycleColormap(displace as Integer) as boolean**

**Function:** Displaces an image's colormap by a given number of positions.
**Notes:**
- If you cycle the colormap a number of times you can produce a psychodelic effect.
- Returns true on success.
- displace: displace the colormap this amount.

90.20.45  **DecipherImage(passkey as string) as boolean**

**Function:** Converts cipher pixels to plain pixels.
**Notes:**
- Passkey: decipher cipher pixels with this passphrase.
- Returns true on success.

90.20.46  **DeconstructImages as IMImageQ32MBS**

**Function:** DeconstructImages() compares each image with the next in a sequence and returns the minimum
bounding region of all differences from the first image.

Notes:
Returns nil on any error.
Sets the last exception property.

90.20.47 DeleteImageAttribute(key as string) as Boolean

Function: DeleteImageAttribute() deletes an attribute from the image.
Notes: Returns false on any error.

90.20.48 Despeckle() as IMImageQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Reduces the speckle noise in an image while preserving the edges of the original image.
Notes:
Sets the last exception property.
For more details please check the ImageMagick documentation.

90.20.49 DestroyImage

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Releases the memory used for this image and sets handle to 0.
Notes:
For more details please check the ImageMagick documentation.
The destructor will call this for you if release=true.

90.20.50 DestroyImageAttributes

Function: Deallocates memory associated with the image attribute list.

90.20.51 DestroyImageList

Function: Destroys the image list and sets the handle to 0.
Notes:
For more details please check the ImageMagick documentation.
The destructor will call this for you if release=true.

90.20.52 DestroyImageProfiles

Function: Releases memory associated with an image profile map.

90.20.53 DistortImage(DistortImageMethod as Integer, values() as Double, best-fit as boolean) as IMImageQ32MBS

Function: DistortImage() distorts an image using various distortion methods, by mapping color lookups of
the source image to a new destination image usually of the same size as the source image, unless 'bestfit' is
set to true.
Notes:
If 'bestfit' is enabled, and distortion allows it, the destination image is adjusted to ensure the whole source
'image' will just fit within the final destination image, which will be sized and offset accordingly. Also in
many cases the virtual offset of the source image will be taken into account in the mapping.

If the '-verbose' control option has been set print to standard error the equivalent '-fx' formula with coeffi-
cients for the function, if practical.

A description of each parameter follows:
self: the image to be distorted.
m: the method of image distortion. ArcDistortion always ignores source image offset, and always 'bestfit' the
destination image with the top left corner offset relative to the polar mapping center. Affine, Perspective,
and Bilinear, do least squares fitting of the distortion when more than the minimum number of control point
pairs are provided. Perspective, and Bilinear, fall back to an Affine distortion when less than 4 control point
pairs are provided. While Affine distortions let you use any number of control point pairs, that is Zero
pairs is a No-Op (viewport only) distortion, one pair is a translation and two pairs of control points do a
scale-rotate-translate, without any shearing.
values: arguments given.
bestfit: Attempt to 'bestfit' the size of the resulting image. This also forces the resulting image to be a
'layered' virtual canvas image. Can be overridden using 'distort:viewport' setting.

Extra Controls from Image meta-data (artifacts)...

- '-verbose' Output to stderr alternatives, internal coefficients, and FX equivalents for the distortion
operation (if feasible). This forms an extra check of the distortion method, and allows users access to
the internal constants IM calculates for the distortion.

- "distort:viewport" Directly set the output image canvas area and offset to use for the resulting image,
rather than use the original images canvas, or a calculated 'bestfit' canvas.

- "distort:scale" Scale the size of the output canvas by this amount to provide a method of Zooming,
and for super-sampling the results.

Other settings that can effect results include

- 'interpolate' For source image lookups (scale enlargements)
- 'filter' Set filter to use for area-resampling (scale shrinking). Set to 'point' to turn off and use 'inter-
polate' lookup instead

See also:

- 90.20.54 DistortImage(DistortImageMethod as Integer, values() as Double, bestfit as boolean) as IM-
ImageQ32MBS

90.20.54 DistortImage(DistortImageMethod as Integer, values() as Double, best-
fit as boolean) as IMImageQ32MBS

Function: DistortImage() distorts an image using various distortion methods, by mapping color lookups of
the source image to a new destination image usually of the same size as the source image, unless 'bestfit' is
set to true.
Notes:

If 'bestfit' is enabled, and distortion allows it, the destination image is adjusted to ensure the whole source
'image' will just fit within the final destination image, which will be sized and offset accordingly. Also in
many cases the virtual offset of the source image will be taken into account in the mapping.

If the '-verbose' control option has been set print to standard error the equicelent '-fx' formula with coeffi-
cients for the function, if practical.

A description of each parameter follows:
self: the image to be distorted.
m: the method of image distortion. ArcDistortion always ignores source image offset, and always 'bestfit' the
destination image with the top left corner offset relative to the polar mapping center. Affine, Perspective,
and Bilinear, do least squares fitting of the distrotion when more than the minimum number of control point
pairs are provided. Perspective, and Bilinear, fall back to a Affine distortion when less than 4 control point
pairs are provided. While Affine distortions let you use any number of control point pairs, that is Zero
pairs is a No-Op (viewport only) distortion, one pair is a translation and two pairs of control points do a
scale-rotate-translate, without any shearing.
values: arguments given.
bestfit: Attempt to 'bestfit' the size of the resulting image. This also forces the resulting image to be a
'layered' virtual canvas image. Can be overridden using 'distort:viewport' setting.

Extra Controls from Image meta-data (artifacts)...

- "verbose" Output to stderr alternatives, internal coefficients, and FX equivalents for the distortion
  operation (if feasible). This forms an extra check of the distortion method, and allows users access to
  the internal constants IM calculates for the distortion.
- "distort:viewport" Directly set the output image canvas area and offest to use for the resulting image,
  rather than use the original images canvas, or a calculated 'bestfit' canvas.
- "distort:scale" Scale the size of the output canvas by this amount to provide a method of Zooming,
  and for super-sampling the results.

Other settings that can effect results include

- 'interpolate' For source image lookups (scale enlargements)
- 'filter' Set filter to use for area-resampling (scale shrinking). Set to 'point' to turn off and use 'inter-
 polate' lookup instead

See also:

- 90.20.53 DistortImage(DistortImageMethod as Integer, values() as Double, bestfit as boolean) as IM-
  ImageQ32MBS

90.20.55 Edge(radius as Double) as IMImageQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Finds edges in an image.
Notes:
Radius defines the radius of the convolution filter. Use a radius of 0 and Edge selects a suitable radius for
you.
Sets the last exception property.

For more details please check the ImageMagick documentation.
90.20.56 Emboss(radius as Double, sigma as Double) as IMImageQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns a grayscale image with a three-dimensional effect.
Notes:
We convolve the image with a Gaussian operator of the given radius and standard deviation (sigma) . For reasonable results, radius should be larger than sigma. Use a radius of 0 and Emboss selects a suitable radius for you.
Sets the last exception property.

For more details please check the ImageMagick documentation.

90.20.57 EncipherImage(passkey as string) as boolean

Function: Converts pixels to cipher-pixels.
Notes:
passkey: encipher pixels with this passphrase.
Returns true on success.

90.20.58 EqualizeImage as Boolean

Function: Applies a histogram equalization to the image.
Notes:
Returns true on success or false on failure.

ChannelType: The channels to use.

90.20.59 EqualizeImageChannel(ChannelType as Integer) as Boolean

Function: Applies a histogram equalization to the image.
Notes:
Returns true on success or false on failure.

ChannelType: The channels to use.
### Constants for channel:

- `const UndefinedChannel = 0`
- `const RedChannel = & h0001`
- `const GrayChannel = & h0001`
- `const CyanChannel = & h0001`
- `const GreenChannel = & h0002`
- `const MagentaChannel = & h0002`
- `const BlueChannel = & h0004`
- `const YellowChannel = & h0004`
- `const AlphaChannel = & h0008`
- `const OpacityChannel = & h0008`
- `const BlackChannel = & h0020`
- `const IndexChannel = & h0020`
- `const AllChannels = & h7fffffff`

### 90.20.60 ExcerptImage(x as Integer, y as Integer, width as Integer, height as Integer) as IMImageQ32MBS

**Function:** Returns a excerpt of the image as defined by the geometry.

**Notes:** Define the region of the image to extend with x, y, width, and height.

### 90.20.61 ExtentImage(x as Integer, y as Integer, width as Integer, height as Integer) as IMImageQ32MBS

**Function:** Extends the image as defined by the geometry, gravity, and image background color.

**Notes:**
- Define the region of the image to extend with x, y, width, and height.
- Set the (x,y) offset of the geometry to move the original image relative to the extended image.

### 90.20.62 FlattenImages as IMImageQ32MBS

**Function:** Flattens composites all images from the current image pointer to the end of the image list and
returns a single flattened image.

Notes:

Returns nil on any error.
Sets the last exception property.

90.20.63  **Flip as IMImageQ32MBS**


**Function:** Flip creates a vertical mirror image by reflecting the pixels around the central x-axis.

**Notes:**

Returns nil on any error.
Sets the last exception property.

90.20.64  **Flop as IMImageQ32MBS**


**Function:** Flop creates a horizontal mirror image by reflecting the pixels around the central y-axis.

**Notes:**

Returns nil on any error.
Sets the last exception property.

90.20.65  **FrameImage(x as Integer, y as Integer, width as Integer, height as Integer, innerBevel as Integer, OuterBevel as Integer) as IMImageQ32MBS**


**Function:** Adds a simulated three-dimensional border around the image.

**Notes:** The color of the border is defined by the MatteColor of image. Width and height specify the border width of the vertical and horizontal sides of the frame. innerBevel and OuterBevel indicate the width of the inner and outer shadows of the frame.

90.20.66  **FxImage(expression as string) as IMImageQ32MBS**


**Function:** FxImage() applies a mathematical expression to the specified image.

**Notes:** Can raise an exception.
GaussianBlurChannel(channel as Integer, radius as Double, sigma as Double) as IMImageQ32MBS

Function: Blurs an image.

Notes:

We convolve the image with a Gaussian operator of the given radius and standard deviation (sigma). For reasonable results, the radius should be larger than sigma. Use a radius of 0 and GaussianBlur selects a suitable radius for you.

Sets the last exception property.

radius: the radius of the Gaussian, in pixels, not counting the center pixel.
channel: The channel type.
sigma: the standard deviation of the Gaussian, in pixels.

Constants for channel:

const UndefinedChannel = 0
const RedChannel = & h0001
const GrayChannel = & h0001
const CyanChannel = & h0001
const GreenChannel = & h0002
const MagentaChannel = & h0002
const BlueChannel = & h0004
const YellowChannel = & h0004
const AlphaChannel = & h0008
const OpacityChannel = & h0008
const BlackChannel = & h0020
const IndexChannel = & h0020
const AllChannels = & h7fffffff

For more details please check the ImageMagick documentation.

GetImageAttribute(key as string) as IMImageAttributeQ32MBS

Function: GetImageAttribute searches the list of image attributes and returns a reference to the attribute if it exists otherwise nil.
90.20.69  **GetImageClippingPathAttribute as IMImageAttributeQ32MBS**

**Function:** GetImageClippingPathAttribute searches the list of image attributes and returns a reference to a clipping path if it exists otherwise nil.

90.20.70  **GetImageProfile(name as string) as string**

**Function:** Gets a profile associated with an image by name.
**Notes:** Returns "" on any error.

90.20.71  **GetNextImageAttribute as IMImageAttributeQ32MBS**

**Function:** GetNextImageAttribute() gets the next image attribute.
**Notes:** Returns nil on any error.

90.20.72  **GetNextImageProfile as string**

**Function:** Gets the next profile name for an image.
**Notes:** Returns "" on any error.

90.20.73  **HandleMemory as memoryblock**

**Function:** The content of the whole Image structure copied into a memoryblock.
**Notes:** Returns nil on any error.

90.20.74  **ImagesToBlob(info as IMImageInfoQ32MBS) as String**

**Function:** ImagesToBlob implements direct to memory image formats.
**Notes:** It returns the image sequence as a string. The magick member of the ImageInfo structure determines the format of the returned blob (GIF, JPEG, PNG, etc.)
Note, some image formats do not permit multiple images to the same image stream (e.g. JPEG). In this instance, just the first image of the sequence is returned as a blob.

Sets the last exception property and returns "" on any error.  For more details please check the ImageMagick documentation.

**90.20.75 ImageToBlob(info as IMImageInfoQ32MBS) as String**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** ImagesToBlob implements direct to memory image formats.  
**Example:**

```vbnet
dim im as ImageMagickQ32MBS // global

Function IMPictureToString(p as picture, magick as string, quality as Integer) As string
    dim image as new IMImageQ32MBS
    dim imageinfo as IMImageInfoQ32MBS
    dim s,data as string
    dim impp as new IMMagickPixelPacketQ32MBS

    // empty string for nil picture
    if p = nil then
        Return ""
    end if

    // create a new picture info
    imageinfo = im.NewImageInfo
    imageinfo.ColorSpace=1
    // only color space is needed. 1 for RGB.

    // background color of image
    impp.red = 0
    impp.Green = 0
    impp.Blue = 0

    // creates a new image object
    if not image.NewImage(imageinfo,p.Width,p.Height,impp) then
        Return ""
    end if

    // copy RB picture into IM Image at position 0/0
    image.ColorSpace = 1
    image.SetPicture(p,0,0)
```

// set compression data
imageinfo.Magick = magick
imageinfo.Quality = quality

// and rendering intent: 2=PerceptualIntent
image.RenderingIntent = 2

// create image data
data = image.ImageToBlob(imageinfo)

// release memory
image.DestroyImage
imageinfo.DestroyImageInfo

// return result
Return data

Exception
// in case of an exception return nothing
Return ""

End Function

Notes:
It returns the image sequence as a string. The magick member of the ImageInfo structure determines the format of the returned blob (GIF, JPEG, PNG, etc.)

Note, some image formats do not permit multiple images to the same image stream (e.g. JPEG). In this instance, just the first image of the sequence is returned as a blob.

Sets the last exception property and returns "" on any error.
For more details please check the ImageMagick documentation.

90.20.76 Implode(factor as Double) as IMImageQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Method ImplodeImage creates a new image that is a copy of an existing one with the image pixels "implode" by the specified percentage.
Notes:
factor: A double value that defines the extent of the implosion.
Returns nil on any error.
Sets the last exception property.

90.20.77  **IsBlobExempt as boolean**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Returns true if the blob is exempt.  
**Notes:** For more details please check the ImageMagick documentation.

90.20.78  **IsBlobSeekable as boolean**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Returns true if the blob is seekable.  
**Notes:** For more details please check the ImageMagick documentation.

90.20.79  **IsBlobTemporary as boolean**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Returns true if the blob is temporary.  
**Notes:** For more details please check the ImageMagick documentation.

90.20.80  **Magnify as IMImageQ32MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** A convenience method that scales an image proportionally to twice its size.  
**Notes:** Sets the last exception property.  
For more details please check the ImageMagick documentation.

90.20.81  **MedianFilter(radius as Double) as IMImageQ32MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Applies a digital filter that improves the quality of a noisy image.  
**Notes:**
Each pixel is replaced by the median in a set of neighboring pixels as defined by radius. Sets the last exception property.

For more details please check the ImageMagick documentation.

### 90.20.82 MergeImageLayers(ImageLayerMethod as Integer) as IMImageQ32MBS


**Function:** MergeImageLayers() composes all the image layers from the current given image onward to produce a single image of the merged layers.

**Notes:**

The initial canvas's size depends on the given ImageLayerMethod, and is initialized using the first images background color. The images are then composited onto that image in sequence using the given composition that has been assigned to each individual image.

**ImageLayerMethod:**

- **MergeLayer:** Merge all layers onto a canvas just large enough to hold all the actual images. The virtual canvas of the first image is preserved but otherwise ignored.

- **FlattenLayer:** Use the virtual canvas size of first image. Images which fall outside this canvas is clipped. This can be used to 'fill out' a given virtual canvas.

- **MosaicLayer:** Start with the virtual canvas of the first image, enlarging left and right edges to contain all images. Images with negative offsets will be clipped.

Can raise an exception.

### 90.20.83 Minify as IMImageQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** A convenience method that scales an image proportionally to half its size.

**Notes:**

Sets the last exception property.

For more details please check the ImageMagick documentation.
90.20.84  MosaicImages as IMImageQ32MBS

**Function:** MosaicImages inlays an image sequence to form a single coherent picture.
**Notes:**
- It returns a single image with each image in the sequence composited at the location defined by the page member of the image structure.
- Returns nil on any error.
- Sets the last exception property.

90.20.85  MotionBlur(radius as Double, sigma as Double, angle as Double) as IMImageQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Simulates motion blur.
**Notes:**
- We convolve the image with a Gaussian operator of the given radius and standard deviation (sigma). For reasonable results, radius should be larger than sigma. Use a radius of 0 and MotionBlur selects a suitable radius for you. Angle gives the angle of the blurring motion.
- Sets the last exception property.

For more details please check the ImageMagick documentation.

90.20.86  NegateImage(gray as boolean = false) as Boolean

**Function:** Negates the colors in the reference image.
**Notes:**
- Returns true on success or false on failure.
- The grayscale option means that only grayscale values within the image are negated.

gray: If true, only negate grayscale pixels within the image.

90.20.87  NegateImageChannel(ChannelType as Integer, gray as boolean = false) as Boolean

**Function:** Negates the colors in the reference image.
Notes:

Returns true on success or false on failure.
The grayscale option means that only grayscale values within the image are negated.

ChannelType: The channels to use.
gray: If true, only negate grayscale pixels within the image.

Constants for channel:

```plaintext
const UndefinedChannel = 0
const RedChannel = & h0001
const GrayChannel = & h0001
const CyanChannel = & h0001
const GreenChannel = & h0002
const MagentaChannel = & h0002
const BlueChannel = & h0004
const YellowChannel = & h0004
const AlphaChannel = & h0008
const OpacityChannel = & h0008
const BlackChannel = & h0020
const IndexChannel = & h0020
const AllChannels = & h7fffffff
```

90.20.88 NewImage(info as IMImageInfoQ32MBS, width as Integer, height as Integer, background as IMM MagickPixelPacketQ32MBS) as boolean


Function: Creates a new image.

Example:

```plaintext
dim im as ImageMagickQ32MBS // global
dim p as picture
dim imageinfo as IMImageInfoQ32MBS
dim image as IMImageQ32MBS
dim b as new IMM MagickPixelPacketQ32MBS
b.Blue=65535
b.ColorSpace=1 // RGB
b.Depth=16

imageinfo = im.NewImageInfo
imageinfo.Depth=16
imageinfo.ColorSpace=1
```
//this should read any image IM understands
image = new IMImageQ32MBS
if image.NewImage(imageinfo,500,500,b) then
    p=NewPicture(300,300,32)
p.Graphics.ForeColor=Rgb(255,0,0)
p.Graphics.FillOval 0,0,300,300
    image.SetPicture p,0,0
else
    MsgBox "failed"
end if

**Notes:** Returns false on failure and true on success.

### 90.20.89 NormalizeImage as Boolean

**Function:** Enhances the contrast of a color image by mapping the darkest 2 percent of all pixel to black and the brightest 1 percent to white.
**Notes:** Returns true on success or false on failure.

### 90.20.90 NormalizeImageChannel(ChannelType as Integer) as Boolean

**Function:** Enhances the contrast of a color image by mapping the darkest 2 percent of all pixel to black and the brightest 1 percent to white.
**Notes:**

Returns true on success or false on failure.

ChannelType: The channels to auto-level. If the special 'SyncChannels' flag is set the min/max/mean value of all given channels is used for all given channels, to all channels in the same way.

Constants for channel:

### 90.20.91 OilPaint(radius as Double) as IMImageQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Method OilPaintImage creates a new image that is a copy of an existing one with each pixel component replaced with the color of greatest frequency in a circular neighborhood.
const UndefinedChannel = 0
const RedChannel     = & h0001
const GrayChannel    = & h0001
const CyanChannel    = & h0001
const GreenChannel   = & h0002
const MagentaChannel = & h0002
const BlueChannel    = & h0004
const YellowChannel  = & h0004
const AlphaChannel   = & h0008
const OpacityChannel = & h0008
const BlackChannel   = & h0020
const IndexChannel   = & h0020
const AllChannels    = & h7fffffff

Notes:

radius parameter: radius of the circular neighborhood.
Returns nil on any error.
Sets the last exception property.

90.20.92 OptimizeImageLayers as IMImageQ32MBS

**Function:** OptimizeImageLayers() compares each image the GIF disposed forms of the previous image in the sequence.  
**Notes:**

From this it attempts to select the smallest cropped image to replace each frame, while preserving the results of the GIF animation.

Can raise an exception.

90.20.93 OptimizeImageTransparency

MBS GraphicsMagick Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** OptimizeImageTransparency() takes a frame optimized GIF animation, and compares the overlayed pixels against the disposal image resulting from all the previous frames in the animation. 
**Notes:**

Any pixel that does not change the disposal image (and thus does not effect the outcome of an overlay) is made transparent.
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WARNING: This modifies the current images directly, rather than generate a new image sequence.

Can raise an exception.

90.20.94 OptimizePlusImageLayers as IMImageQ32MBS

Function: OptimizeImagePlusLayers() is exactly as OptimizeImageLayers(), but may also add or even remove extra frames in the animation, if it improves the total number of pixels in the resulting GIF animation.
Notes: Can raise an exception.

90.20.95 ProfileImage(name as string, ProfileData as string) as boolean

Function: Adds or removes a ICC, IPTC, or generic profile from an image.
Notes:
If the ProfileData is "", it is removed from the image otherwise added. Use a name of '*' and a ProfileData of "" to remove all profiles from the image.

Returns false on any error and true on success.

90.20.96 RadialBlur(angle as Double) as IMImageQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: RadialBlur applies a radial blur to the image.
Notes:
angle: The angle of the radial blur.

Sets the last exception property.
For more details please check the ImageMagick documentation.

90.20.97 RaiseImage(x as Integer, y as Integer, width as Integer, height as Integer, raise as boolean) as boolean

Function: Creates a simulated three-dimensional button-like effect by lightening and darkening the edges
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Notes:

Width and height define the width of the vertical and horizontal edge of the effect.
raise: A value other than zero creates a 3-D raise effect, otherwise it has a lowered effect.

90.20.98 RandomThresholdChannel(channel as Integer, thresholds as string)
as boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Canges the value of individual pixels based on the intensity of each pixel compared to a random threshold.
Notes:
The result is a low-contrast, two color image.

channel: The channel or channels to be thresholded.
thresholds: a geometry string containing low, high thresholds. If the string contains 2x2, 3x3, or 4x4, an ordered dither of order 2, 3, or 4 is performed instead. (ASCII string)

Sets the last exception property.

Constants for channel:

const UndefinedChannel = 0
const RedChannel = & h0001
const GrayChannel = & h0001
const CyanChannel = & h0001
const GreenChannel = & h0002
const MagentaChannel = & h0002
const BlueChannel = & h0004
const YellowChannel = & h0004
const AlphaChannel = & h0008
const OpacityChannel = & h0008
const BlackChannel = & h0020
const IndexChannel = & h0020
const AllChannels = & h7fffffff

For more details please check the ImageMagick documentation.
90.20.99 ReduceNoise(radius as Double) as IMImageQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Smooths the contours of an image while still preserving edge information.
**Notes:**
The algorithm works by replacing each pixel with its neighbor closest in value. A neighbor is defined by radius. Use a radius of 0 and ReduceNoise selects a suitable radius for you.

For more details please check the ImageMagick documentation.

90.20.100 RemoveDuplicateLayers

**Function:** Removes any image that is exactly the same as the next image in the given image list.
**Notes:**
Image size and virtual canvas offset must also match, though not the virtual canvas size itself.

No check is made with regards to image disposal setting, though it is the dispose setting of later image that is kept. Also any time delays are also added together. As such coalesced image animations should still produce the same result, though with duplicate frames merged into a single frame.

90.20.101 RemoveFirstImageFromList as IMImageQ32MBS

**Function:** Removes the first image from the image list and returns the image.
**Notes:**
Returns nil on any error.
For more details please check the ImageMagick documentation.

90.20.102 RemoveImageProfile(name as string) as string

**Function:** Removes a profile from the image-map by its name.
90.20.103 RemoveZeroDelayLayers

**Function:** Removes any image that as a zero delay time.
**Notes:**
Such images generally represent intermediate or partial updates in GIF animations used for file optimization. They are not meant to be displayed to users of the animation. Viewable images in an animation should have a time delay of 3 or more centi-seconds (hundredths of a second).

However if all the frames have a zero time delay, then either the animation is as yet incomplete, or it is not a GIF animation. This is a non-sensible situation, so no image will be removed and a 'Zero Time Animation' warning (exception) given.

No warning will be given if no image was removed because all images had an appropriate non-zero time delay set.

Due to the special requirements of GIF disposal handling, GIF animations should be coalesced first, before calling this function, though that is not a requirement.

90.20.104 ResetImageAttributeIterator

**Function:** ResetImageAttributeIterator() resets the image attributes iterator.
**Notes:** Use it in conjunction with GetNextImageAttribute() to iterate over all the values associated with an image.

90.20.105 ResetImageProfileIterator

**Function:** Resets the image profile iterator.
**Notes:** Use it in conjunction with GetNextImageProfile() to iterate over all the profiles associated with an image.

90.20.106 Resize(width as Integer, height as Integer, FilterID as Integer, blur as Double) as IMImageQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Scales an image to the desired dimensions.
**Notes:**
CHAPTER 90. IMAGE MAGICK

Constants for the FilterID:

```
const PointFilter = 1
const BoxFilter = 2
const TriangleFilter = 3
const HermiteFilter = 4
const HanningFilter = 5
const HammingFilter = 6
const BlackmanFilter = 7
const GaussianFilter = 8
const QuadraticFilter = 9
const CubicFilter = 10
const CatromFilter = 11
const MitchellFilter = 12
const LanczosFilter = 13
const BesselFilter = 14
const SincFilter = 15
```

Most of the filters are FIR (finite impulse response), however, Bessel, Gaussian, and Sinc are IIR (infinite impulse response). Bessel and Sinc are windowed (brought down to zero) with the Blackman filter. Sets the last exception property.

90.20.107 RGBTransformImage(Colorspace as Integer) as boolean


Function: Method RGBTransformImage converts the reference image from RGB to an alternate colorspace.

Notes:

The transformation matrices are not the standard ones: the weights are rescaled to normalized the range of the transformed values to be \([0..\text{MaxRGB}]\).

```
colorspace: An integer value that indicates which colorspace to transform the image.
```

Returns false on any error and true on success.

constants:

90.20.108 Roll(x as Integer, y as Integer) as IMImageQ32MBS


Function: Roll offsets an image as defined by \(x\) and \(y\).
90.20. CLASS IMIMAGEQ32MBS

UndefinedColors 0
RGBColors 1
GRAYColors 2
TransparentColor 3
OHTAColors 4
LABColors 5
XYZColors 6
YCbCrColors 7
YCCColors 8
YIQColors 9
YPbPrColors 10
YUVColors 11
CMYKColors 12
sRGBColors 13
HSBColors 14
HSLColors 15
HWBColors 16

Notes:

Returns nil on any error.
Sets the last exception property.

90.20.109 Rotate(degrees as Double) as IMImageQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Rotation of an image.
Notes:

Method RotateImage creates a new image that is a rotated copy of an existing one. Positive angles rotate counter-clockwise (right-hand rule), while negative angles rotate clockwise. Rotated images are usually larger than the originals and have 'empty' triangular corners. X axis. Empty triangles left over from shearing the image are filled with the color specified by the image background color. RotateImage allocates the memory necessary for the new Image structure and returns a pointer to the new image.

Method RotateImage is based on the paper "A Fast Algorithm for General Raster Rotatation" by Alan W. Paeth. RotateImage is adapted from a similar method based on the Paeth paper written by Michael Halle of the Spatial Imaging Group, MIT Media Lab.

degrees: Specifies the number of degrees to rotate the image.

Sets the last exception property.
Returns nil on low memory.
For more details please check the ImageMagick documentation.

90.20.110  Sample(width as Integer, height as Integer) as IMImageQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Scales an image to the desired dimensions with pixel sampling. 
**Notes:** Unlike other scaling methods, this method does not introduce any additional color into the scaled image. For more details please check the ImageMagick documentation. Sets the last exception property.

90.20.111  Scale(width as Integer, height as Integer) as IMImageQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Changes the size of an image to the given dimensions. 
**Example:**
```vbnet
dim image as IMImageQ32MBS // your image
image=Image.Scale(100,80)
```

**Notes:** This method was designed by Bob Friesenhahn as a low cost thumbnail generator. 

- columns: The number of columns in the scaled image. 
- rows: The number of rows in the scaled image. 

Sets the last exception property. 
For more details please check the ImageMagick documentation.

90.20.112  SetImageAttribute(key as string, value as string) as boolean

**Function:** SetImageAttribute searches the list of image attributes and replaces the attribute value. 
**Notes:** If it is not found in the list, the attribute name and value is added to the list. If the attribute exists in the list, the value is concatenated to the attribute. SetImageAttribute returns True if the attribute is successfully concatenated or added to the list, otherwise False. If the value is ””, the matching key is deleted from the list.
90.20.113 SetImageColorspspace(Colorspsace as Integer) as boolean

**Function:** Sets the colorspace member of the Image structure.
**Notes:** Returns false on any error and true on success.

90.20.114 SetImageProfile(name as string, ProfileData as string) as boolean

**Function:** Adds a named profile to the image.
**Notes:**
If a profile with the same name already exists, it is replaced. This method differs from the ProfileImage() method in that it does not apply CMS color profiles.

- name: The profile name.
- profiledata: The binary data of the profile.

Returns false on any error and true on success.

90.20.115 SetPicture(pic as picture, x as Integer, y as Integer)

**Function:** Copies the pixels from a given Realbasic picture into the Image Magick Image at the given location.
**Example:**
```java
dim image as IMImageQ32MBS ' // your image
dim p as picture

p=NewPicture(32,32,32)
p.Graphics.ForeColor=rgb(0,255,0)
p.Graphics.FillRect 0,0,32,32

image.SetPicture(p,30,30)
```
**Notes:**
Sets the last exception property.
The method will do nothing on bad bounds.
This method works only for bitmap images.
x and y are zero based.
90.20.116  SetPictureMask(maskpic as picture, x as Integer, y as Integer)


Function: Copies the pixels from a given Realbasic picture into the mask of the Image Magick Image at
the given location.

Example:

```basic
    dim i as IMImageQ32MBS // your image
    dim p as picture

    p=NewPicture(32,32,32)
p.Graphics.ForeColor=rgb(0,255,0)
p.Graphics.FillRect 0,0,32,32

    i.SetPictureMask(p,30,30)
```

Notes:

Sets the last exception property.
The method will do nothing on bad bounds.
This method works only for bitmap images.
x and y are zero based.
You may need to set matte=True after this.

90.20.117  SetPixel(x as Integer, y as Integer, newPixel as IMColorQ32MBS)


Function: Sets a pixel value.

Example:

```basic
    dim image as IMImageQ32MBS // your image
    dim co as IMColorQ32MBS

    co=new IMColorQ32MBS
    co.blue=65535  // max value
    image.SetPixel 50,50,co // Makes Pixel 50/50 blue
```

Notes:

The method will fail silently if the values are out of bounds or the image is not a bitmap image.
This method works only for bitmap images.
x and y are zero based.

**90.20.118 Shade(gray as boolean, azimuth as Double, elevation as Double) as IMImageQ32MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Shines a distant light on an image to create a three-dimensional effect.

**Notes:**

You control the positioning of the light with azimuth and elevation; azimuth is measured in degrees off the x axis and elevation is measured in pixels above the Z axis.

Sets the last exception property.

For more details please check the ImageMagick documentation.

**90.20.119 SharpenChannel(channel as Integer, radius as Double, sigma as Double) as IMImageQ32MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Sharpens one or more image channels.

**Notes:**

We convolve the image with a Gaussian operator of the given radius and standard deviation (sigma). For reasonable results, radius should be larger than sigma. Use a radius of 0 and Sharpen selects a suitable radius for you.

channel: The channel type.
radius: The radius of the Gaussian, in pixels, not counting the center pixel.
sigma: The standard deviation of the Laplacian, in pixels.

Constants for channel:

Sets the last exception property.

For more details please check the ImageMagick documentation.

**90.20.120 Shave(x as Integer, y as Integer, width as Integer, height as Integer) as IMImageQ32MBS**


**Function:** Shave shaves pixels from the image edges.
const UndefinedChannel = 0
const RedChannel = & h0001
const GrayChannel = & h0001
const CyanChannel = & h0001
const GreenChannel = & h0002
const MagentaChannel = & h0002
const BlueChannel = & h0004
const YellowChannel = & h0004
const AlphaChannel = & h0008
const OpacityChannel = & h0008
const BlackChannel = & h0020
const IndexChannel = & h0020
const AllChannels = & h7fffffff

Notes:
It allocates the memory necessary for the new Image structure and returns a pointer to the new image.
Returns nil on any error.
Sets the last exception property.

90.20.121 Shear(Xshear as Double, Yshear as Double) as IMImageQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Method ShearImage creates a new image that is a shear image copy of an existing one.
Notes:
Shearing slides one edge of an image along the X or Y axis, creating a parallelogram. An X direction shear slides an edge along the X axis, while a Y direction shear slides an edge along the Y axis. The amount of the shear is controlled by a shear angle. For X direction shears, x_shear is measured relative to the Y axis, and similarly, for Y direction shears y_shear is measured relative to the X axis. Empty triangles left over from shearing the image are filled with the color defined by the pixel at location (0,0). ShearImage allocates the memory necessary for the new Image structure and returns a pointer to the new image.

Xshear and Yshear specify the number of degrees to shear the image.

Sets the last exception property.
For more details please check the ImageMagick documentation.

90.20.122 Solarize(factor as Double) as boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Method SolarizeImage produces a 'solarization' effect seen when exposing a photographic film
to light during the development process.

**Notes:**

- factor: An double value that defines the extent of the solarization.
- Returns nil on any error.
- Sets the last exception property.

### 90.20.123 Splice(x as Integer, y as Integer, width as Integer, height as Integer) as IMImageQ32MBS


**Function:** Splice splices a solid color into the image as defined by the geometry.

**Notes:**

- Returns nil on any error.
- Sets the last exception property.

### 90.20.124 Spread(radius as Double) as IMImageQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** This is a special effects method that randomly displaces each pixel in a block defined by the radius parameter.

**Notes:**

- radius: Choose a random pixel in a neighborhood of this extent.
- Sets the last exception property.

For more details please check the ImageMagick documentation.

### 90.20.125 Stegano(watermarkImage as IMImageQ32MBS) as IMImageQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Method SteganoImage hides a digital watermark within the image.

**Notes:**

- Returns nil on any error.
- Sets the last exception property.
90.20.126  Stereo(otherImage as IMImageQ32MBS) as IMImageQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Method StereoImage combines two images and produces a single image that is the composite of a left and right image of a stereo pair.
Notes: The left image is converted to gray scale and written to the red channel of the stereo image. The right image is converted to gray scale and written to the blue channel of the stereo image. View the composite image with red-blue glasses to create a stereo effect.

left image = self
right image = otherImage parameter

Returns nil on any error.
Sets the last exception property.

90.20.127  Swirl(degrees as Double) as IMImageQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Method SwirlImage creates a new image that is a copy of an existing one with the image pixels "swirl" at a specified angle.
Notes: degrees: An double value that defines the tightness of the swirling.

Returns nil on any error.
Sets the last exception property.

90.20.128  Thumbnail(width as Integer, height as Integer) as IMImageQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Changes the size of an image to the given dimensions.
Notes: Sets the last exception property.
This method was designed by Bob Friesenhahn as a low cost thumbnail generator.
For more details please check the ImageMagick documentation.
90.20.129 TransformImage(CropGeometry as string, ImageGeometry as string) as boolean

Function: TransformImage() is a convenience method that behaves like ResizeImage() or CropImage() but accepts scaling and/or cropping information as a region geometry specification. If the operation fails, the original image handle is left as is.
Notes:
This should only be used for single images.

CropGeometry: A crop geometry string. This geometry defines a subregion of the image to crop.
ImageGeometry: An image geometry string. This geometry defines the final size of the image.

Returns true on success.

90.20.130 TransformImages(CropGeometry as string, ImageGeometry as string) as boolean

Function: TransformImages() calls TransformImage() on each image of a sequence.
Notes:
TransformImage() is a convenience method that behaves like ResizeImage() or CropImage() but accepts scaling and/or cropping information as a region geometry specification. If the operation fails, the original image handle is left as is.

CropGeometry: A crop geometry string. This geometry defines a subregion of the image to crop.
ImageGeometry: An image geometry string. This geometry defines the final size of the image.

Returns true on success.

90.20.131 TransformRGBImage(Colorsaspace as Integer) as boolean

Function: Method TransformRGBImage converts the reference image from an alternate colorspace.
Notes:
The transformation matrices are not the standard ones: the weights are rescaled to normalized the range of the transformed values to be [ 0..MaxRGB ].

colorsaspace: An integer value that indicates the colorspace the image is currently in. On return the image is
in the RGB color space.

Returns false on any error and true on success.

constants:

- UndefinedColorspace 0
- RGBColorspace 1
- GRAYColorspace 2
- TransparentColorspace 3
- OHTAColorspace 4
- LABColorspace 5
- XYZColorspace 6
- YCbCrColorspace 7
- YCCColorspace 8
- YIQColorspace 9
- YPbPrColorspace 10
- YUVColorspace 11
- CMYKColorspace 12
- sRGBColorspace 13
- HSBColorspace 14
- HSLColorspace 15
- HWBColorspace 16

90.20.132  TransposeImage as IMImageQ32MBS

**Function:** TransposeImage() creates a horizontal mirror image by reflecting the pixels around the central y-axis while rotating them by 90 degrees.

90.20.133  TransverseImage as IMImageQ32MBS

**Function:** TransverseImage() creates a vertical mirror image by reflecting the pixels around the central x-axis while rotating them by 270 degrees.

90.20.134  Trim as IMImageQ32MBS

**Function:** Trim trims pixels from the image edges.
Notes:

It allocates the memory necessary for the new Image structure and returns a pointer to the new image.

Returns nil on any error.

Sets the last exception property.

90.20.135 UnsharpMaskChannel(channel as Integer, radius as Double, sigma as Double, amount as Double, threshold as Double) as IMImageQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Sharpens one or more image channels.

Notes:

We convolve the image with a Gaussian operator of the given radius and standard deviation (sigma). For reasonable results, radius should be larger than sigma. Use a radius of 0 and UnsharpMask selects a suitable radius for you.

Constants for channel:

```
const UndefinedChannel = 0
const RedChannel = & h0001
const GrayChannel = & h0001
const CyanChannel = & h0001
const GreenChannel = & h0002
const MagentaChannel = & h0002
const BlueChannel = & h0004
const YellowChannel = & h0004
const AlphaChannel = & h0008
const OpacityChannel = & h0008
const BlackChannel = & h0020
const IndexChannel = & h0020
const AllChannels = & h7ffffff
```

Sets the last exception property.

For more details please check the ImageMagick documentation.

90.20.136 Wave(amplitude as Double, wavelength as Double) as IMImageQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: Method Wave creates a new image that is a copy of an existing one with the image pixels altered
along a sine wave.

**Notes:**

Parameters are double values that indicates the amplitude and wavelength of the sine wave.
Returns nil on any error.
Sets the last exception property.

### 90.20.137 WhiteThreshold(threshold as string) as boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** WhiteThreshold is like Threshold but forces all pixels above the threshold into white while leaving all pixels below the threshold unchanged.
**Notes:**

No exceptions are generated.
threshold: Define the threshold value. (ASCII string)
For more details please check the ImageMagick documentation.

### 90.20.138 WriteImage(info as IMImageInfoQ32MBS) as boolean

**Function:** Method WriteImage writes an image to a file as defined by image.filename.
**Notes:**

You can specify a particular image format by prefixing the file with the image type and a colon (i.e. ps:image) or specify the image type as the filename suffix (i.e. image.ps). The image may be modified to adapt it to the requirements of the image format. For example, DirectClass images must be color-reduced to PseudoClass if the format is GIF.

WriteImage returns True if the image is written. False is returned if there is a memory shortage or if the image file fails to write.

### 90.20.139 Properties

### 90.20.140 BackgroundColor as IMColorQ32MBS

**Function:** Image background color.
**Notes:** (Read and Write property)
90.20.141 Bias as Double

**Function:** An undocumented property.
**Notes:** (Read and Write property)

90.20.142 BlurFactor as Double

**Function:** Blur factor to apply to the image when zooming. Default is 1.0 (no blur).
**Notes:** (Read and Write property)

90.20.143 BorderColor as IMColorQ32MBS

**Function:** Image border color.
**Notes:** (Read and Write property)

90.20.144 Colors as Integer

**Function:** The desired number of colors.
**Notes:**
Used by Quantize().
(Read and Write property)

90.20.145 ColorSpace as Integer

**Function:** Image pixel interpretation.
**Notes:**
If the colorspace is RGB the pixels are red, green, blue. If matte is true, then red, green, blue, and index. If it is CMYK, the pixels are cyan, yellow, magenta, black. Otherwise the colorspace is ignored.

constants:
### 90.20.146 Compression as Integer


**Function:** Image compression type.

**Notes:**

useful constants:

<table>
<thead>
<tr>
<th>Constant Name</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>const UndefinedCompression</td>
<td>0</td>
</tr>
<tr>
<td>const NoCompression</td>
<td>1</td>
</tr>
<tr>
<td>const BZipCompression</td>
<td>2</td>
</tr>
<tr>
<td>const FaxCompression</td>
<td>3</td>
</tr>
<tr>
<td>const Group4Compression</td>
<td>4</td>
</tr>
<tr>
<td>const JPEGCompression</td>
<td>5</td>
</tr>
<tr>
<td>const LosslessJPEGCompression</td>
<td>6</td>
</tr>
<tr>
<td>const LZWCompression</td>
<td>7</td>
</tr>
<tr>
<td>const RLECompression</td>
<td>8</td>
</tr>
<tr>
<td>const ZipCompression</td>
<td>9</td>
</tr>
</tbody>
</table>

The default is the compression type of the specified image file.
For more details please check the ImageMagick documentation.
(Read and Write property)
90.20.147  Depth as Integer

**Function:** Image depth (8 or 16).
**Notes:**
QuantumLeap must be defined before a depth of 16 is valid.
(Read and Write property)

90.20.148  Directory as String

**Function:** Tile names from within an image montage.
**Notes:**
Only valid after calling MontageImages() or reading a MIFF file which contains a directory.
(Read and Write property)

90.20.149  Endian as Integer

**Function:** The endian setting to use.
**Notes:**
constants:

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Platform</th>
</tr>
</thead>
<tbody>
<tr>
<td>UndefinedEndian</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>LSBEndian</td>
<td>1</td>
<td>(Windows)</td>
</tr>
<tr>
<td>MSBEndian</td>
<td>2</td>
<td>(Mac)</td>
</tr>
</tbody>
</table>

e.g. tiff files support different endian settings.
(Read and Write property)

90.20.150  Filename as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The file path/name.
**Notes:**
The string must be in the encoding of the library and is limited to 4000 bytes.
For more details please check the ImageMagick documentation.
90.20.151 Filter as Integer


**Function:** Filter to use when resizing image.

**Notes:**

Constants:

```plaintext
const PointFilter = 1
const BoxFilter = 2
const TriangleFilter = 3
const HermiteFilter = 4
const HanningFilter = 5
const HammingFilter = 6
const BlackmanFilter = 7
const GaussianFilter = 8
const QuadraticFilter = 9
const CubicFilter = 10
const CatromFilter = 11
const MitchellFilter = 12
const LanczosFilter = 13
const BesselFilter = 14
const SincFilter = 15
```

The reduction filter employed has a significant effect on the time required to resize an image and the resulting quality. The default filter is Lanczos which has been shown to produce high quality results when reducing most images.

(Read and Write property)

90.20.152 Fuzz as Double


**Function:** Colors within this distance are considered equal.

**Notes:**

A number of algorithms search for a target color. By default the color must be exact. Use this to match colors that are close to the target color in RGB space.

(Read and Write property)
90.20.153  Gamma as Double

**Function:** Gamma level of the image.
**Notes:**
The same color image displayed on two different workstations may look different due to differences in the display monitor. Use gamma correction to adjust for this color difference.
(Read and Write property)

90.20.154  Geometry as String

**Function:** Preferred size of the image when encoding.
**Notes:** (Read and Write property)

90.20.155  Gravity as Integer

**Function:** An undocumented property.
**Notes:** (Read and Write property)

90.20.156  Handle as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The handle used internally by the plugin.
**Notes:**
A pointer to an Image structure.
For more details please check the ImageMagick documentation.
(Read and Write property)

90.20.157  Height as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The height of the image in pixels.
**Notes:**
For more details please check the ImageMagick documentation.
(Read and Write property)
90.20.158  Interlace as Integer

Function: The type of interlacing scheme (default NoInterlace).
Notes:
This option is used to specify the type of interlacing scheme for raw image formats such as RGB or YUV. NoInterlace means do not interlace, LineInterlace uses scanline interlacing, and PlaneInterlace uses plane interlacing. PartitionInterlace is like PlaneInterlace except the different planes are saved to individual files (e.g. image.R, image.G, and image.B). Use LineInterlace or PlaneInterlace to create an interlaced GIF or progressive JPEG image.

constants:

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UndefinedInterlace</td>
<td>0</td>
<td>Unset value.</td>
</tr>
<tr>
<td>NoInterlace</td>
<td>1</td>
<td>Don’t interlace image (RGBRGBRGBRGBRGBRGB...)</td>
</tr>
<tr>
<td>LineInterlace</td>
<td>2</td>
<td>Use scanline interlacing (RRR...GGG...BBB...RRR...GGG...BBB...)</td>
</tr>
<tr>
<td>PlaneInterlace</td>
<td>3</td>
<td>Use plane interlacing (RRRRRR...GGGGGG...BBBBBB...)</td>
</tr>
<tr>
<td>PartitionInterlace</td>
<td>4</td>
<td>Similar to plane interlacing except that the different planes are saved to individual files (e.g. image.R, image.G, and image.B)</td>
</tr>
</tbody>
</table>

(Read and Write property)

90.20.159  LastError as Integer

Function: The last error code reported.
Notes:
If an exception is raised and it is not a warning exception, this exception code is saved in this property.
(Read and Write property)

90.20.160  LastException as IMExceptionQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The last exception thrown by the Image Magick library.
Notes:
You should check this value after every call to the library, process the error and set the property to nil.
For more details please check the ImageMagick documentation.
(Read and Write property)
90.20.161  Magick as String

**Function:** Image encoding format (e.g. "GIF").
**Notes:** (Read and Write property)

90.20.162  Matte as Boolean

**Function:** Whether an alpha channel is used/present.
**Notes:**
Set to true to enable masks.
(Read and Write property)

90.20.163  MatteColor as IMColorQ32MBS

**Function:** Image matte (transparent) color.
**Notes:** (Read and Write property)

90.20.164  Montage as String

**Function:** Tile size and offset within an image montage. Only valid for montage images.
**Notes:** (Read and Write property)

90.20.165  Offset as Integer

**Function:** Number of initial bytes to skip over when reading raw image.
**Notes:** (Read and Write property)
90.20.166 Orientation as Integer


Function: The image orientation.

Notes:

constants:

const UndefinedOrientation = 0
const TopLeftOrientation = 1
const TopRightOrientation = 2
const BottomRightOrientation = 3
const BottomLeftOrientation = 4
const LeftTopOrientation = 5
const RightTopOrientation = 6
const RightBottomOrientation = 7
const LeftBottomOrientation = 8

For more details please check the ImageMagick documentation.
(Read and Write property)

90.20.167 Quality as Integer


Function: JPEG/MIFF/PNG compression level.

Example:

```pascal
dim im as ImageMagickQ32MBS // global

Function TestJPEG(f as folderitem) As picture
    // Reads an image, compresses in memory to JPEG, decompresses using JPEGlib and returns the image
    // if quality setting works, you see it in the result.
    // no error checking included!

    // needs: im as ImageMagickQ32MBS ready initialized

    dim image as IMImageQ32MBS
    dim imageinfo as IMImageInfoQ32MBS
    dim s,blob as string
    dim p as Picture
    dim i as Integer

    if f = nil then
        Return nil
    end if
```
imageinfo = im.NewImageInfo

# if TargetWin32 then //do not use shellpath, if spaces, IM doesn’t like escaped paths
imageinfo.Filename = f.AbsolutePath
# else
imageinfo.Filename = f.UnixpathMBS
# endif

//this should read any image IM understands
image = im.ReadImage(imageinfo)
//check for error
if im.lastexception <> nil and im.LastException.Severity >= 400 then
MsgBox s
Return nil
elseif image = nil then
MsgBox ”image=nil”
Return nil
end if

// Now lets convert to jpeg
imageinfo.Filename = ”image.jpg”
imageinfo.Quality = 10 // 100 is max
blob = image.ImageToBlob(imageinfo)

// It may fail
if blob.lenb = 0 then
Return nil
end if
p = JPEGStringToPictureMBS(blob, true)

image.DestroyImage
imageinfo.DestroyImageInfo

Return p
Exception
Return nil
End Function

Notes:
Default value is 75.
(Read and Write property)
90.20.168  Release as Boolean

**Function:** If true, the destructor will release the handle.
**Notes:** (Read and Write property)

90.20.169  RenderingIntent as Integer

**Function:** The rendering intent to use.
**Notes:**

constants:

- UndefinedIntent 0
- SaturationIntent 1
- PerceptualIntent 2
- AbsoluteIntent 3
- RelativeIntent 4

(Read and Write property)

90.20.170  ResolutionUnits as Integer

**Function:** Units of image resolution.
**Notes:**

constants:

- UndefinedResolution 0  Unset value.
- PixelsPerInchResolution 1  Density specifications are specified in units of pixels per inch (english units).
- PixelsPerCentimeterResolution 2  Density specifications are specified in units of pixels per centimeter (metric units).

(Read and Write property)
90.20.171 ResolutionX as Double

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The horizontal resolution of the image.
Notes:
The unit for resolution must be specified.
For more details please check the ImageMagick documentation.
(Read and Write property)

90.20.172 ResolutionY as Double

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The vertical resolution of the image.
Notes:
The unit for resolution must be specified.
For more details please check the ImageMagick documentation.
(Read and Write property)

90.20.173 Scene as Integer

Function: An undocumented property.
Notes: (Read and Write property)

90.20.174 StorageClass as Integer

Function: Image storage class.
Notes:
If DirectClass then the image packets contain valid RGB or CMYK colors. If PseudoClass then the image has a colormap referenced by pixel's index member.

constants:

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UndefinedClass</td>
<td>0</td>
<td>Unset value.</td>
</tr>
<tr>
<td>DirectClass</td>
<td>1</td>
<td>Image is composed of pixels which represent literal color values.</td>
</tr>
<tr>
<td>PseudoClass</td>
<td>2</td>
<td>Image is composed of pixels which specify an index in a color palette.</td>
</tr>
</tbody>
</table>
90.20.175  Taint as Boolean

**Function:** Set to True if the image pixels have been modified.  
**Notes:** (Read and Write property)

90.20.176  Width as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The width of the image in pixels.  
**Notes:**  
For more details please check the ImageMagick documentation.  
(Read and Write property)

90.20.177  Constants

90.20.178  kAffineDistortion = 1

MBS GraphicsMagick Plugin, Plugin Version: 12.5.  
**Function:** One of the distortion effect constants.  
See also:
- 90.20.179 kAffineDistortion = 1

90.20.179  kAffineDistortion = 1

MBS GraphicsMagick Plugin, Plugin Version: 12.5.  
**Function:** One of the distortion effect constants.  
See also:
- 90.20.178 kAffineDistortion = 1

90.20.180  kAffineProjectionDistortion = 2

MBS GraphicsMagick Plugin, Plugin Version: 12.5.  
**Function:** One of the distortion effect constants.  
See also:
- 90.20.181 kAffineProjectionDistortion = 2
90.20.  CLASS IMIMAGEQ32MBS

90.20.181  kAffineProjectionDistortion = 2

MBS GraphicsMagick Plugin, Plugin Version: 12.5. Function: One of the distortion effect constants. See also:

- 90.20.180 kAffineProjectionDistortion = 2

90.20.182  kArcDistortion = 9

MBS GraphicsMagick Plugin, Plugin Version: 12.5. Function: One of the distortion effect constants. See also:

- 90.20.183 kArcDistortion = 9

90.20.183  kArcDistortion = 9

MBS GraphicsMagick Plugin, Plugin Version: 12.5. Function: One of the distortion effect constants. See also:

- 90.20.182 kArcDistortion = 9

90.20.184  kBackgroundDispose = 2

MBS GraphicsMagick Plugin, Plugin Version: 8.3. Function: One of the Image layer Dispose Types.

90.20.185  kBarrelDistortion = & h0000000E

MBS GraphicsMagick Plugin, Plugin Version: 12.5. Function: One of the distortion effect constants. See also:

- 90.20.186 kBarrelDistortion = & h0000000E

90.20.186  kBarrelDistortion = & h0000000E

MBS GraphicsMagick Plugin, Plugin Version: 12.5. Function: One of the distortion effect constants. See also:

- 90.20.185 kBarrelDistortion = & h0000000E
90.20.187  \texttt{kBarrelInverseDistortion} = \&\texttt{h0000000F}

MBS GraphicsMagick Plugin, Plugin Version: 12.5. \textbf{Function:} One of the distortion effect constants. See also:

- 90.20.188 \texttt{kBarrelInverseDistortion} = \&\texttt{h0000000F}

90.20.188  \texttt{kBarrelInverseDistortion} = \&\texttt{h0000000F}

MBS GraphicsMagick Plugin, Plugin Version: 12.5. \textbf{Function:} One of the distortion effect constants. See also:

- 90.20.187 \texttt{kBarrelInverseDistortion} = \&\texttt{h0000000F}

90.20.189  \texttt{kBarycentricColorInterpolate} = 1

MBS GraphicsMagick Plugin, Plugin Version: 12.5. \textbf{Function:} One of the interpolate method constants. See also:

- 90.20.190 \texttt{kBarycentricColorInterpolate} = 1

90.20.190  \texttt{kBarycentricColorInterpolate} = 1

MBS GraphicsMagick Plugin, Plugin Version: 12.5. \textbf{Function:} One of the interpolate method constants. See also:

- 90.20.189 \texttt{kBarycentricColorInterpolate} = 1

90.20.191  \texttt{kBilinearColorInterpolate} = 7

MBS GraphicsMagick Plugin, Plugin Version: 12.5. \textbf{Function:} One of the interpolate method constants. See also:

- 90.20.192 \texttt{kBilinearColorInterpolate} = 7

90.20.192  \texttt{kBilinearColorInterpolate} = 7

MBS GraphicsMagick Plugin, Plugin Version: 12.5. \textbf{Function:} One of the interpolate method constants. See also:

- 90.20.191 \texttt{kBilinearColorInterpolate} = 7
90.20. CLASS IMIMAGEQ32MBS

90.20.193 kBilinearDistortion = 6

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.20.194 kBilinearDistortion = 6

90.20.194 kBilinearDistortion = 6

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.20.193 kBilinearDistortion = 6

90.20.195 kBilinearForwardDistortion = 6

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.20.196 kBilinearForwardDistortion = 6

90.20.196 kBilinearForwardDistortion = 6

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.20.195 kBilinearForwardDistortion = 6

90.20.197 kBilinearReverseDistortion = 7

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.20.198 kBilinearReverseDistortion = 7

90.20.198 kBilinearReverseDistortion = 7

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.20.197 kBilinearReverseDistortion = 7
90.20.199 kCoalesceLayer = 1

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

90.20.200 kCompareAnyLayer = 2

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

90.20.201 kCompareClearLayer = 3

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

90.20.202 kCompareOverlayLayer = 4

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

90.20.203 kCompositeLayer = & h0000000C

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

90.20.204 kCylinder2PlaneDistortion = & h0000000C

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.20.205 kCylinder2PlaneDistortion = & h0000000C

90.20.205 kCylinder2PlaneDistortion = & h0000000C

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.20.204 kCylinder2PlaneDistortion = & h0000000C
90.20. CLASS IMIMAGEQ32MBS

90.20.206  kDePolarDistortion = & h0000000B

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

```
  • 90.20.207 kDePolarDistortion = & h0000000B
```

90.20.207  kDePolarDistortion = & h0000000B

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

```
  • 90.20.206 kDePolarDistortion = & h0000000B
```

90.20.208  kDisposeLayer = 5

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

90.20.209  kFlattenLayer = & h0000000E

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

90.20.210  kInverseColorInterpolate = & h00000013

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the interpolate method constants. See also:

```
  • 90.20.211 kInverseColorInterpolate = & h00000013
```

90.20.211  kInverseColorInterpolate = & h00000013

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the interpolate method constants. See also:

```
  • 90.20.210 kInverseColorInterpolate = & h00000013
```

90.20.212  kMergeLayer = & h0000000D

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.
**kMosaicLayer = \& h0000000F**

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

**kNoneDispose = 1**

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer Dispose Types.

**kOptimizeImageLayer = 7**

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

**kOptimizeLayer = 6**

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

**kOptimizePlusLayer = 8**

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

**kOptimizeTransLayer = 9**

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

**kPerspectiveDistortion = 4**

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- **kPerspectiveDistortion = 4**

**kPerspectiveDistortion = 4**

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:
90.20. CLASS IMAGEQ32MBS

- 90.20.219 kPerspectiveDistortion = 4

90.20.221 kPerspectiveProjectionDistortion = 5

MBS GraphicsMagick Plugin, Plugin Version: 12.5. Function: One of the distortion effect constants. See also:

- 90.20.222 kPerspectiveProjectionDistortion = 5

90.20.222 kPerspectiveProjectionDistortion = 5

MBS GraphicsMagick Plugin, Plugin Version: 12.5. Function: One of the distortion effect constants. See also:

- 90.20.221 kPerspectiveProjectionDistortion = 5

90.20.223 kPlane2CylinderDistortion = & h0000000D

MBS GraphicsMagick Plugin, Plugin Version: 12.5. Function: One of the distortion effect constants. See also:

- 90.20.224 kPlane2CylinderDistortion = & h0000000D

90.20.224 kPlane2CylinderDistortion = & h0000000D

MBS GraphicsMagick Plugin, Plugin Version: 12.5. Function: One of the distortion effect constants. See also:

- 90.20.223 kPlane2CylinderDistortion = & h0000000D

90.20.225 kPolarDistortion = & h0000000A

MBS GraphicsMagick Plugin, Plugin Version: 12.5. Function: One of the distortion effect constants. See also:

- 90.20.226 kPolarDistortion = & h0000000A

90.20.226 kPolarDistortion = & h0000000A

MBS GraphicsMagick Plugin, Plugin Version: 12.5. Function: One of the distortion effect constants. See also:
90.20.227 \texttt{kPolynomialColorInterpolate} = 8

MBS GraphicsMagick Plugin, Plugin Version: 12.5. \textbf{Function:} One of the interpolate method constants. See also:

\begin{itemize}
  \item 90.20.228 \texttt{kPolynomialColorInterpolate} = 8
\end{itemize}

90.20.228 \texttt{kPolynomialColorInterpolate} = 8

MBS GraphicsMagick Plugin, Plugin Version: 12.5. \textbf{Function:} One of the interpolate method constants. See also:

\begin{itemize}
  \item 90.20.227 \texttt{kPolynomialColorInterpolate} = 8
\end{itemize}

90.20.229 \texttt{kPolynomialDistortion} = 8

MBS GraphicsMagick Plugin, Plugin Version: 12.5. \textbf{Function:} One of the distortion effect constants. See also:

\begin{itemize}
  \item 90.20.230 \texttt{kPolynomialDistortion} = 8
\end{itemize}

90.20.230 \texttt{kPolynomialDistortion} = 8

MBS GraphicsMagick Plugin, Plugin Version: 12.5. \textbf{Function:} One of the distortion effect constants. See also:

\begin{itemize}
  \item 90.20.229 \texttt{kPolynomialDistortion} = 8
\end{itemize}

90.20.231 \texttt{kPreviousDispose} = 3

MBS GraphicsMagick Plugin, Plugin Version: 8.3. \textbf{Function:} One of the Image layer Dispose Types.

90.20.232 \texttt{kRemoveDupsLayer} = \& h0000000A

90.20. **CLASS IMIMAGEQ32MBS**

90.20.233  **kRemoveZeroLayer = & h0000000B**

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

90.20.234  **kResizeDistortion = & h00000011**

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.20.235  **kResizeDistortion = & h00000011**

90.20.235  **kResizeDistortion = & h00000011**

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.20.234  **kResizeDistortion = & h00000011**

90.20.236  **kScaleRotateTranslateDistortion = 3**

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.20.237  **kScaleRotateTranslateDistortion = 3**

90.20.237  **kScaleRotateTranslateDistortion = 3**

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.20.236  **kScaleRotateTranslateDistortion = 3**

90.20.238  **kSentinelDistortion = & h00000012**

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.20.239  **kSentinelDistortion = & h00000012**
CHAPTER 90. IMAGE MAGICK

90.20.239 kSentinelDistortion = & h00000012

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.20.238 kSentinelDistortion = & h00000012

90.20.240 kShepardsColorInterpolate = & h00000010

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the interpolate method constants. See also:

- 90.20.241 kShepardsColorInterpolate = & h00000010

90.20.241 kShepardsColorInterpolate = & h00000010

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the interpolate method constants. See also:

- 90.20.240 kShepardsColorInterpolate = & h00000010

90.20.242 kShepardsDistortion = & h00000010

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.20.243 kShepardsDistortion = & h00000010

90.20.243 kShepardsDistortion = & h00000010

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.20.242 kShepardsDistortion = & h00000010

90.20.244 kUndefinedColorInterpolate = 0

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the interpolate method constants. See also:

- 90.20.245 kUndefinedColorInterpolate = 0
90.20. **CLASS IMIMAGEQ32MBS**

90.20.245  **kUndefinedColorInterpolate = 0**

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the interpolate method constants. See also:

- 90.20.244  **kUndefinedColorInterpolate = 0**

90.20.246  **kUndefinedDispose = 0**

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer Dispose Types.

90.20.247  **kUndefinedDistortion = 0**

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.20.248  **kUndefinedDistortion = 0**

90.20.248  **kUndefinedDistortion = 0**

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants. See also:

- 90.20.247  **kUndefinedDistortion = 0**

90.20.249  **kUndefinedLayer = 0**

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

90.20.250  **kUnrecognizedDispose = 0**

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer Dispose Types.

90.20.251  **kVoronoiColorInterpolate = & h00000012**

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the interpolate method constants. See also:

- 90.20.252  **kVoronoiColorInterpolate = & h00000012**
90.20.252  \texttt{kVoronoiColorInterpolate = \& h00000012}

MBS GraphicsMagick Plugin, Plugin Version: 12.5. \textbf{Function:} One of the interpolate method constants. See also:

- 90.20.251 \texttt{kVoronoiColorInterpolate = \& h00000012}
90.21.1 class IMImageQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: A class for an Image Magick Image in memory.
Notes:
Can exist with or without pixel data.

For more details please check the ImageMagick documentation.

90.21.2 Methods

90.21.3 AdaptiveThreshold(width as Integer, height as Integer, offset as Integer) as IMImageQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: AdaptiveThreshold selects an individual threshold for each pixel based on the range of intensity values in its local neighborhood.
Notes:
This allows for thresholding of an image whose global intensity histogram doesn’t contain distinctive peaks.
Sets the last exception property.

width: The width of the local neighborhood.
height: The height of the local neighborhood.
offset: The mean offset.

For more details please check the ImageMagick documentation.

90.21.4 AddNoise(NoiseType as Integer) as IMImageQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Adds random noise to the image.
Notes:
Constants

For more details please check the ImageMagick documentation.
Sets the last exception property.
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UndefinedNoise = 0
UniformNoise = 1
GaussianNoise = 2
MultiplicativeGaussianNoise = 3
ImpulseNoise = 4
LaplacianNoise = 5
PoissonNoise = 6

90.21.5 AffineTransformImage(matrix as IMImageAffineMatrixQ8MBS) as IMImageQ8MBS

Function: Transforms an image as dictated by the affine matrix.

90.21.6 AppendImageToList(img as IMImageQ8MBS)

Function: Adds an image to the image list.
Notes: For more details please check the ImageMagick documentation.

90.21.7 AutoGammaImage as Boolean

Function: AutoGammaImage extract the ‘mean’ from the image and adjust the image to try make set its gamma appropriatally.
Notes: Returns true on success or false on failure.

90.21.8 AutoGammaImageChannel(ChannelType as Integer) as Boolean

Function: AutoGammaImage extract the ‘mean’ from the image and adjust the image to try make set its gamma appropriatally.
Notes: Returns true on success or false on failure.
channelType: The channels to auto-level. If the special 'SyncChannels' flag is set all given channels is adjusted in the same way using the mean average of those channels.

Constants for channel:

```plaintext
const UndefinedChannel = 0
const RedChannel = & h0001
const GrayChannel = & h0001
const CyanChannel = & h0001
const GreenChannel = & h0002
const MagentaChannel = & h0002
const BlueChannel = & h0004
const YellowChannel = & h0004
const AlphaChannel = & h0008
const OpacityChannel = & h0008
const BlackChannel = & h0020
const IndexChannel = & h0020
const AllChannels = & h7fffffff
```

90.21.9 AutoLevelImage as Boolean

**Function:** AutoLevelImage adjusts the levels of a particular image channel by scaling the minimum and maximum values to the full quantum range.
**Notes:** Returns true on success or false on failure.

90.21.10 AutoLevelImageChannel(ChannelType as Integer) as Boolean

**Function:** AutoLevelImage adjusts the levels of a particular image channel by scaling the minimum and maximum values to the full quantum range.
**Notes:**
Returns true on success or false on failure.

ChannelType: The channels to auto-level. If the special 'SyncChannels' flag is set the min/max/mean value of all given channels is used for all given channels, to all channels in the same way.

Constants for channel:
const UndefinedChannel = 0
const RedChannel = & h0001
const GrayChannel = & h0001
const CyanChannel = & h0001
const GreenChannel = & h0002
const MagentaChannel = & h0002
const BlueChannel = & h0004
const YellowChannel = & h0004
const AlphaChannel = & h0008
const OpacityChannel = & h0008
const BlackChannel = & h0020
const IndexChannel = & h0020
const AllChannels = & h7fffffff

90.21.11  Average as IMImageQ8MBS

Function: The Average() method takes a set of images and averages them together.
Notes:
Each image in the set must have the same width and height. Average() returns a single image with each corresponding pixel component of each image averaged. On failure, a nil image is returned and exception describes the reason for the failure.
Sets the last exception property.

For more details please check the ImageMagick documentation.

90.21.12  BilevelChannel(channel as Integer, threshold as Double) as boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Changes the value of individual pixels based on the intensity of each pixel channel.
Notes:
The result is a high-contrast image.

channel: The channel type.
threshold: define the threshold values.

Constants for channel:

For more details please check the ImageMagick documentation.
const UndefinedChannel = 0
const RedChannel = & h0001
const GrayChannel = & h0001
const CyanChannel = & h0001
const GreenChannel = & h0002
const MagentaChannel = & h0002
const BlueChannel = & h0004
const YellowChannel = & h0004
const AlphaChannel = & h0008
const OpacityChannel = & h0008
const BlackChannel = & h0020
const IndexChannel = & h0020
const AllChannels = & h7fffffff

90.21.13  BlackThreshold(threshold as string) as boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** BlackThreshold is like Threshold but forces all pixels below the threshold into black while leaving all pixels above the threshold unchanged.
**Notes:**
No exceptions are generated.
threshold: Define the threshold value. (ASCII string)
For more details please check the ImageMagick documentation.

90.21.14  BlobSize as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The expected size for this image written to a file.
**Notes:** For more details please check the ImageMagick documentation.

90.21.15  Blur(radius as Double, sigma as Double) as IMImageQ8MBS

**Function:** Blurs an image.
**Notes:**
We convolve the image with a Gaussian operator of the given radius and standard deviation (sigma) . For reasonable results, the radius should be larger than sigma. Use a radius of 0 and BlurImage selects a suitable radius for you.

radius: The radius of the Gaussian, in pixels, not counting the center pixel.
sigma: The standard deviation of the Gaussian, in pixels.

For more details please check the ImageMagick documentation.

90.21.16 BlurImageChannel(channel as Integer, radius as Double, sigma as Double) as IMImageQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Blurs an image.

**Notes:**

We convolve the image with a Gaussian operator of the given radius and standard deviation (sigma) . For reasonable results, the radius should be larger than sigma. Use a radius of 0 and BlurImageChannel selects a suitable radius for you.

channel: The channel type.

radius: The radius of the Gaussian, in pixels, not counting the center pixel.

sigma: The standard deviation of the Gaussian, in pixels.

Constants for channel:

```plaintext
const UndefinedChannel = 0
const RedChannel     = & h0001
const GrayChannel    = & h0001
const CyanChannel    = & h0001
const GreenChannel   = & h0002
const MagentaChannel = & h0002
const BlueChannel    = & h0004
const YellowChannel  = & h0004
const AlphaChannel   = & h0008
const OpacityChannel = & h0008
const BlackChannel   = & h0020
const IndexChannel   = & h0020
const AllChannels    = & h7fffffff
```

For more details please check the ImageMagick documentation.
90.21.17  BorderImage(x as Integer, y as Integer, width as Integer, height as Integer) as IMImageQ8MBS

Function: Surrounds the image with a border of the color defined by the bordercolor member of the image.
Notes: The width and height of the border are defined by the corresponding parameters.

90.21.18  BrightnessContrastImage(brightness as Double, contrast as Double) as Boolean

Function: Changes the brightness and/or contrast of an image. It converts the brightness and contrast parameters into slope and intercept and calls a polynomical function to apply to the image.
Notes:
Returns true on success or false on failure.

brightness: the brightness percent (-100 .. 100).
contrast: the contrast percent (-100 .. 100).

90.21.19  BrightnessContrastImageChannel(ChannelType as Integer, brightness as Double, contrast as Double) as Boolean

Function: Changes the brightness and/or contrast of an image. It converts the brightness and contrast parameters into slope and intercept and calls a polynomical function to apply to the image.
Notes:
Returns true on success or false on failure.

brightness: the brightness percent (-100 .. 100).
contrast: the contrast percent (-100 .. 100).
ChannelType: The channels to use.

Constants for channel:

90.21.20  Charcoal(radius as Double, sigma as Double) as IMImageQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Charcoal creates a new image that is a copy of an existing one with the edge highlighted.
const UndefinedChannel = 0
const RedChannel = & h0001
const GrayChannel = & h0001
const CyanChannel = & h0002
const GreenChannel = & h0001
const MagentaChannel = & h0002
const BlueChannel = & h0004
const YellowChannel = & h0004
const AlphaChannel = & h0008
const OpacityChannel = & h0008
const BlackChannel = & h0020
const IndexChannel = & h0020
const AllChannels = & h7fffffff

Notes:

radius: the radius of the pixel neighborhood.
sigma: The standard deviation of the Gaussian, in pixels.

Returns nil on any error.
Sets the last exception property.

90.21.21 Chop(x as Integer, y as Integer, width as Integer, height as Integer) as IMImageQ8MBS

Function: Chop removes a region of an image and collapses the image to occupy the removed portion.
Notes:

Returns nil on any error.
Sets the last exception property.

90.21.22 ClipPath(path as string, inside as boolean) as boolean

Function: Sets the image clip mask based any clipping path information if it exists.
Notes:

Returns true on success and false on any error.
pathname: name of clipping path resource. If name is preceded by #, use clipping path numbered by name.
inside: if true, later operations take effect inside clipping path. Otherwise later operations take effect outside clipping path.

90.21.23 Clone as IMImageQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Creates a copy of this image object.
Notes: For more details please check the ImageMagick documentation.

90.21.24 CloneImageAttributes(image as IMImageAttributeQ8MBS) as Boolean

Function: CloneImageAttributes() clones one or more image attributes.
Notes: Returns false on any error.

90.21.25 CloneImageProfiles(SourceImage as IMImageQ8MBS) as boolean

Function: Clones one or more image profiles.
Notes: Returns false on any error and true on success.

90.21.26 Close

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The destructor.
Notes:
There is no need to call this method except you want to free all resources used by this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

90.21.27 ClutImage(clutImage as IMImageQ8MBS) as Boolean

Function: Replaces each color value in the given image, by using it as an index to lookup a replacement
color value in a Color Look UP Table in the form of an image.

Notes:

The values are extracted along a diagonal of the CLUT image so either a horizontal or vertical gradient image can be used.

Typically this is used to either re-color a gray-scale image according to a color gradient in the CLUT image, or to perform a freeform histogram (level) adjustment according to the (typically gray-scale) gradient in the CLUT image.

When the 'channel' mask includes the matte/alpha transparency channel but one image has no such channel it is assumed that that image is a simple gray-scale image that will effect the alpha channel values, either for gray-scale coloring (with transparent or semi-transparent colors), or a histogram adjustment of existing alpha channel values. If both images have matte channels, direct and normal indexing is applied, which is rarely used.

ClutImage: the color lookup table image for replacement color values.

Returns true on success or false on failure.

90.21.28 ClutImageChannel(ChannelType as Integer, clutImage as IMImageQ8MBS) as Boolean


Function: Replaces each color value in the given image, by using it as an index to lookup a replacement color value in a Color Look UP Table in the form of an image.

Notes:

The values are extracted along a diagonal of the CLUT image so either a horizontal or vertical gradient image can be used.

Typically this is used to either re-color a gray-scale image according to a color gradient in the CLUT image, or to perform a freeform histogram (level) adjustment according to the (typically gray-scale) gradient in the CLUT image.

When the 'channel' mask includes the matte/alpha transparency channel but one image has no such channel it is assumed that that image is a simple gray-scale image that will effect the alpha channel values, either for gray-scale coloring (with transparent or semi-transparent colors), or a histogram adjustment of existing alpha channel values. If both images have matte channels, direct and normal indexing is applied, which is rarely used.

ClutImage: the color lookup table image for replacement color values.
ChannelType: The channels to use.

Returns true on success or false on failure.

Constants for channel:

```plaintext
const UndefinedChannel  = 0
const RedChannel        = & h0001
const GrayChannel       = & h0001
const CyanChannel       = & h0001
const GreenChannel      = & h0002
const MagentaChannel    = & h0002
const BlueChannel       = & h0004
const YellowChannel     = & h0004
const AlphaChannel      = & h0008
const OpacityChannel    = & h0008
const BlackChannel      = & h0020
const IndexChannel      = & h0020
const AllChannels       = & h7ffffff
```

### 90.21.29 CoalesceImages as IMImageQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** CoalesceImages composites a set of images while respecting any page offsets and disposal methods.

**Notes:**

GIF, MIFF, and MNG animation sequences typically start with an image background and each subsequent image varies in size and offset. CoalesceImages() returns a new sequence where each image in the sequence is the same size as the first and composited with the next image in the sequence.

Returns nil on any error.
Sets the last exception property.

### 90.21.30 Colorize(opacity as string, PenColorRed as Integer, PenColorGreen as Integer, PenColorBlue as Integer, PenColorOpacity as Integer) as IMImageQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Method ColorizeImage creates a new image that is a copy of an existing one with the image
pixels colorized.

Notes:
The colorization is controlled with the pen color and the opacity levels.

opacity: A character string indicating the level of opacity as a percentage (0-100).
PenColorRed, PenColorGreen, PenColorBlue and PenColorOpacity define the pen color used.

Returns nil on any error.
Sets the last exception property.

90.21.31 Combine(channel as Integer) as IMImageQ8MBS

**Function:** Combines one or more images into a single image.
**Notes:**
The grayscale value of the pixels of each image in the sequence is assigned in order to the specified channels of the combined image. The typical ordering would be image 1 -> Red, 2 -> Green, 3 -> Blue, etc.

The lastexception property is set.

90.21.32 CompareImageLayers(ImageLayerMethod as Integer) as IMImageQ8MBS

**Function:** CompareImageLayers() compares each image with the next in a sequence and returns the minimum bounding region of all the pixel differences (of the imageLayerMethod specified) it discovers.
**Notes:**
Images do NOT have to be the same size, though it is best that all the images are 'coalesced' (images are all the same size, on a flattened canvas, so as to represent exactly how an specific frame should look).

No GIF dispose methods are applied, so GIF animations must be coalesced before applying this image operator to find differences to them.

ImageLayerMethod:
the layers type to compare images with. Must be one of... CompareAnyLayer, CompareClearLayer, CompareOverlayLayer.

Can raise an exception.
90.21.33 Composite(ComposeOperator as Integer, Image as IMImageQ8MBS, x as Integer, y as Integer)

Function: Returns the second image composited onto the first at the specified offsets.
Notes:
compose: Specifies an image composite operator.
Image: The second image.
x: An integer that specifies the column offset of the composited image.
y: An integer that specifies the row offset of the composited image.

No error code and exception!

90.21.34 ConsolidateCMYKImages as IMImageQ8MBS

Function: Consolidates a sequence of CMYK images.
Notes:
Returns nil on any error.
Sets the last exception property.

90.21.35 ContrastImage(sharpen as boolean) as Boolean

Function: Enhances the intensity differences between the lighter and darker elements of the image.
Notes:
Returns true on success or false on failure.
Set sharpen to true to increase the image contrast otherwise the contrast is reduced.

90.21.36 CopyPicture as picture

Function: Copies the Image Magick Image and returns a Realbasic picture.
Example:

dim image as IMImageQ8MBS // your image
Canvas1.Backdrop=image.CopyPicture
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Notes:
Sets the last exception property.
Returns nil on any error.
This method works only for bitmap images.
See also:

• 90.21.37 CopyPicture(x as Integer, y as Integer, width as Integer, height as Integer) as picture

90.21.37 CopyPicture(x as Integer, y as Integer, width as Integer, height as Integer) as picture

Function: Copies a portion of the Image Magick Image and returns a Realbasic picture.
Example:

dim image as IMImageQ8MBS // your image
Canvas1.Backdrop=image.CopyPicture(0,0,image.Width,image.Height)

Notes:
Sets the last exception property.
Returns nil on any error.
This method works only for bitmap images.
x and y are zero based.
See also:

• 90.21.36 CopyPicture as picture

90.21.38 CopyPictureMask as picture

Function: Copies the mask of the Image Magick Image and returns a Realbasic picture.
Example:

dim image as IMImageQ8MBS // your image
Canvas1.Backdrop=image.CopyPictureMask

Notes:
Sets the last exception property.
Returns nil on any error.
This method works only for bitmap images.
See also:
90.21. **CLASS IMIMAGEQ8MBS**

- 90.21.39 CopyPictureMask(x as Integer, y as Integer, width as Integer, height as Integer) as picture

**90.21.39 CopyPictureMask(x as Integer, y as Integer, width as Integer, height as Integer) as picture**


**Function:** Copies a portion of the mask of the Image Magick Image and returns a Realbasic picture.

**Example:**

```realbasic
dim image as IMImageQ8MBS // your image
Canvas1.Backdrop=image.CopyPictureMask(0,0,image.Width,image.Height)
```

**Notes:**
Sets the last exception property.
Returns nil on any error.
This method works only for bitmap images.
x and y are zero based.
See also:

- 90.21.38 CopyPictureMask as picture

**90.21.40 CopyPixel(x as Integer, y as Integer) as IMColorQ8MBS**


**Function:** Copies a pixel.

**Notes:**
Returns nil on any error.
This method works only for bitmap images.
x and y are zero based.

**90.21.41 CreateHBITMAP as Ptr**

MBS GraphicsMagick Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.

**Function:** Creates a HBITMAP for the image for use with Windows Declares.

**Notes:** The HBITMAP returned needs to be freed when you are done with it or you risk having a memory leak.
90.21.42  **Crop(x as Integer, y as Integer, width as Integer, height as Integer)**
as IMImageQ8MBS

**Function:** Crop extracts a region of the image starting at the offset defined by geometry.
**Notes:**
Returns nil on any error.
Sets the last exception property.

90.21.43  **CropImageToTiles(CropGeometry as string)** as IMImageQ8MBS

**Function:** Crops a single image, into a possible list of tiles.
**Notes:** This may include a single sub-region of the image. This basically applies all the normal geometry flags for Crop.

90.21.44  **CycleColormap(displace as Integer)** as boolean

**Function:** Displaces an image’s colormap by a given number of positions.
**Notes:**
If you cycle the colormap a number of times you can produce a psychodelic effect.
Returns true on success.
displace: displace the colormap this amount.

90.21.45  **DecipherImage(passkey as string)** as boolean

**Function:** Converts cipher pixels to plain pixels.
**Notes:**
Passkey: decipher cipher pixels with this passphrase.
Returns true on success.

90.21.46  **DeconstructImages** as IMImageQ8MBS

**Function:** DeconstructImages() compares each image with the next in a sequence and returns the minimum
bounding region of all differences from the first image.

Notes:
Returns nil on any error.
Sets the last exception property.

90.21.47 DeleteImageAttribute(key as string) as Boolean

Function: DeleteImageAttribute() deletes an attribute from the image.
Notes: Returns false on any error.

90.21.48 Despeckle() as IMImageQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Reduces the speckle noise in an image while preserving the edges of the original image.
Notes:
Sets the last exception property.
For more details please check the ImageMagick documentation.

90.21.49 DestroyImage

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Releases the memory used for this image and sets handle to 0.
Notes:
For more details please check the ImageMagick documentation.
The destructor will call this for you if release=true.

90.21.50 DestroyImageAttributes

Function: Deallocates memory associated with the image attribute list.

90.21.51 DestroyImageList

Function: Destroys the image list and sets the handle to 0.
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Notes:
For more details please check the ImageMagick documentation.
The destructor will call this for you if release=true.

90.21.52 DestroyImageProfiles

Function: Releases memory associated with an image profile map.

90.21.53 DistortImage(DistortImageMethod as Integer, values() as Double, best-fit as boolean) as IMImageQ8MBS

Function: DistortImage() distorts an image using various distortion methods, by mapping color lookups of
the source image to a new destination image usually of the same size as the source image, unless 'bestfit' is
set to true.
Notes:
If 'bestfit' is enabled, and distortion allows it, the destination image is adjusted to ensure the whole source
'image' will just fit within the final destination image, which will be sized and offset accordingly. Also in
many cases the virtual offset of the source image will be taken into account in the mapping.

If the '-verbose' control option has been set print to standard error the equivalent '-fx' formula with coeffi-
cients for the function, if practical.

A description of each parameter follows:
self: the image to be distorted.
m: the method of image distortion. ArcDistortion always ignores source image offset, and always 'bestfit' the
destination image with the top left corner offset relative to the polar mapping center. Affine, Perspective,
and Bilinear, do least squares fitting of the distortion when more than the minimum number of control point
pairs are provided. Perspective, and Bilinear, fall back to a Affine distortion when less than 4 control point
pairs are provided. While Affine distortions let you use any number of control point pairs, that is Zero
pairs is a No-Op (viewport only) distortion, one pair is a translation and two pairs of control points do a
scale-rotate-translate, without any shearing.
values: arguments given.
bestfit: Attempt to 'bestfit' the size of the resulting image. This also forces the resulting image to be a
'layered' virtual canvas image. Can be overridden using 'distort:viewport' setting.

Extra Controls from Image meta-data (artifacts)...

- "verbose" Output to stderr alternatives, internal coefficients, and FX equivalents for the distortion
operation (if feasible). This forms an extra check of the distortion method, and allows users access to the internal constants IM calculates for the distortion.

- "distort:viewport" Directly set the output image canvas area and offset to use for the resulting image, rather than use the original images canvas, or a calculated 'bestfit' canvas.

- "distort:scale" Scale the size of the output canvas by this amount to provide a method of Zooming, and for super-sampling the results.

Other settings that can effect results include

- 'interpolate' For source image lookups (scale enlargements)
- 'filter' Set filter to use for area-resampling (scale shrinking). Set to 'point' to turn off and use 'interpolate' lookup instead

### 90.21.54 Edge(radius as Double) as IMImageQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Finds edges in an image.  
**Notes:**  
Radius defines the radius of the convolution filter. Use a radius of 0 and Edge selects a suitable radius for you.  
Sets the last exception property.

For more details please check the ImageMagick documentation.

### 90.21.55 Emboss(radius as Double, sigma as Double) as IMImageQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Returns a grayscale image with a three-dimensional effect.  
**Notes:**  
We convolve the image with a Gaussian operator of the given radius and standard deviation (sigma). For reasonable results, radius should be larger than sigma. Use a radius of 0 and Emboss selects a suitable radius for you.  
Sets the last exception property.

For more details please check the ImageMagick documentation.
90.21.56 EncipherImage(passkey as string) as boolean

Function: Converts pixels to cipher-pixels.
Notes:
  passkey: encipher pixels with this passphrase.
  Returns true on success.

90.21.57 EqualizeImage as Boolean

Function: Applies a histogram equalization to the image.
Notes:
  Returns true on success or false on failure.
  ChannelType: The channels to use.

90.21.58 EqualizeImageChannel(ChannelType as Integer) as Boolean

Function: Applies a histogram equalization to the image.
Notes:
  Returns true on success or false on failure.
  ChannelType: The channels to use.

90.21.59 ExcerptImage(x as Integer, y as Integer, width as Integer, height as Integer) as IMImageQ8MBS

Function: Returns a excerpt of the image as defined by the geometry.
Notes: Define the region of the image to extend with x, y, width, and height.
90.21. CLASS IMIMAGEQ8MBS

const UndefinedChannel = 0
const RedChannel = & h0001
const GrayChannel = & h0001
const CyanChannel = & h0001
const GreenChannel = & h0002
const MagentaChannel = & h0002
const BlueChannel = & h0004
const YellowChannel = & h0004
const AlphaChannel = & h0008
const OpacityChannel = & h0008
const BlackChannel = & h0020
const IndexChannel = & h0020
const AllChannels = & hfffffff

90.21.60 ExtentImage(x as Integer, y as Integer, width as Integer, height as Integer) as IMImageQ8MBS

**Function:** Extends the image as defined by the geometry, gravity, and image background color.
**Notes:**
Define the region of the image to extend with x, y, width, and height.
Set the (x,y) offset of the geometry to move the original image relative to the extended image.

90.21.61 FlattenImages as IMImageQ8MBS

**Function:** Flatten composites all images from the current image pointer to the end of the image list and returns a single flattened image.
**Notes:**
Returns nil on any error.
Sets the last exception property.

90.21.62 Flip as IMImageQ8MBS

**Function:** Flip creates a vertical mirror image by reflecting the pixels around the central x-axis.
**Notes:**
Returns nil on any error.
Sets the last exception property.
90.21.63  Flop as IMImageQ8MBS

Function: Flop creates a horizontal mirror image by reflecting the pixels around the central y-axis.
Notes: Returns nil on any error.
Sets the last exception property.

90.21.64  FrameImage(x as Integer, y as Integer, width as Integer, height as Integer, innerBevel as Integer, OuterBevel as Integer) as IMImageQ8MBS

Function: Adds a simulated three-dimensional border around the image.
Notes: The color of the border is defined by the MatteColor of image. Width and height specify the border
width of the vertical and horizontal sides of the frame. innerBevel and OuterBevel indicate the width of the
inner and outer shadows of the frame.

90.21.65  FxImage(expression as string) as IMImageQ8MBS

Function: FxImage() applies a mathematical expression to the specified image.
Notes: Can raise an exception.

90.21.66  GaussianBlurChannel(channel as Integer, radius as Double, sigma as Double) as IMImageQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Blurs an image.
Notes:
We convolve the image with a Gaussian operator of the given radius and standard deviation (sigma) . For
reasonable results, the radius should be larger than sigma. Use a radius of 0 and GaussianBlur selects a
suitable radius for you.
Sets the last exception property.

radius: the radius of the Gaussian, in pixels, not counting the center pixel.
channel: The channel type.
sigma: the standard deviation of the Gaussian, in pixels.

Constants for channel:

```cpp
const UndefinedChannel = 0
const RedChannel = & h0001
const GrayChannel = & h0001
const CyanChannel = & h0001
const GreenChannel = & h0002
const MagentaChannel = & h0002
const BlueChannel = & h0004
const YellowChannel = & h0004
const AlphaChannel = & h0008
const OpacityChannel = & h0008
const BlackChannel = & h0020
const IndexChannel = & h0020
const AllChannels = & h7fffffff
```

For more details please check the ImageMagick documentation.

**90.21.67 GetImageAttribute(key as string) as IMImageAttributeQ8MBS**

**Function:** GetImageAttribute searches the list of image attributes and returns a reference to the attribute if it exists otherwise nil.

**90.21.68 GetImageClippingPathAttribute as IMImageAttributeQ8MBS**

**Function:** GetImageClippingPathAttribute searches the list of image attributes and returns a reference to a clipping path if it exists otherwise nil.

**90.21.69 GetImageProfile(name as string) as string**

**Function:** Gets a profile associated with an image by name.  
**Notes:** Returns "" on any error.
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90.21.70  GetNextImageAttribute as IMImageAttributeQ8MBS

Function: GetNextImageAttribute() gets the next image attribute.
Notes: Returns nil on any error.

90.21.71  GetNextImageProfile as string

Function: Gets the next profile name for an image.
Notes: Returns "" on any error.

90.21.72  HandleMemory as memoryblock

Function: The content of the whole Image structure copied into a memoryblock.
Notes: Returns nil on any error.

90.21.73  ImagesToBlob(info as IMImageInfoQ8MBS) as String

Function: ImagesToBlob implements direct to memory image formats.
Notes:
It returns the image sequence as a string. The magick member of the ImageInfo structure determines the
format of the returned blob ( GIF, JPEG, PNG, etc. )

Note, some image formats do not permit multiple images to the same image stream (e.g. JPEG). in this
instance, just the first image of the sequence is returned as a blob.

Sets the last exception property and returns "" on any error.
For more details please check the ImageMagick documentation.

90.21.74  ImageToBlob(info as IMImageInfoQ8MBS) as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: ImagesToBlob implements direct to memory image formats.
Example:
90.21. CLASS IMIMAGEQ8MBS

```vbs
15087

dim im as ImageMagickQ8MBS // global

Function IMPictureToString(p as picture, magick as string, quality as Integer) As string
    dim image as new IMImageQ8MBS
    dim imageinfo as IMImageInfoQ8MBS
    dim s,data as string
    dim impp as new IMMaggiockPixelPacketQ8MBS

    // empty string for nil picture
    if p = nil then
        Return ""
    end if

    // create a new picture info
    imageinfo = im.NewImageInfo
    imageinfo.ColorSpace=1
    // only color space is needed. 1 for RGB.

    // background color of image
    impp.red = 0
    impp.Green = 0
    impp.Blue = 0

    // creates a new image object
    if not image.NewImage(imageinfo,p.Width,p.Height,impp) then
        Return ""
    end if

    // copy RB picture into IM Image at position 0/0
    image.ColorSpace = 1
    image.SetPicture(p,0,0)

    // set compression data
    imageinfo.Magick = magick
    imageinfo.Quality = quality

    // and rendering intent: 2=PerceptualIntent
    image.RenderingIntent = 2

    // create image data
    data = image.ImageToBlob(imageinfo)

    // release memory
    image.DestroyImage
    imageinfo.DestroyImageInfo

    // return result
    Return data
End Function
```

Return data

Exception
   // in case of an exception return nothing
Return ""

End Function

Notes:

It returns the image sequence as a string. The magick member of the ImageInfo structure determines the format of the returned blob (GIF, JPEG, PNG, etc.).

Note, some image formats do not permit multiple images to the same image stream (e.g. JPEG). In this instance, just the first image of the sequence is returned as a blob.

Sets the last exception property and returns "" on any error.
For more details please check the ImageMagick documentation.

90.21.75 Implode(factor as Double) as IMImageQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Method ImplodeImage creates a new image that is a copy of an existing one with the image pixels "implode" by the specified percentage.
Notes:
   factor: A double value that defines the extent of the implosion.

Returns nil on any error.
Sets the last exception property.

90.21.76 IsBlobExempt as boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns true if the blob is exempt.
Notes: For more details please check the ImageMagick documentation.
90.21.77  IsBlobSeekable as boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns true if the blob is seekable.
Notes: For more details please check the ImageMagick documentation.

90.21.78  IsBlobTemporary as boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns true if the blob is temporary.
Notes: For more details please check the ImageMagick documentation.

90.21.79  Magnify as IMImageQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: A convenience method that scales an image proportionally to twice its size.
Notes:
Sets the last exception property.
For more details please check the ImageMagick documentation.

90.21.80  MedianFilter(radius as Double) as IMImageQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Applies a digital filter that improves the quality of a noisy image.
Notes:
Each pixel is replaced by the median in a set of neighboring pixels as defined by radius.
Sets the last exception property.

For more details please check the ImageMagick documentation.

90.21.81  MergeImageLayers(ImageLayerMethod as Integer) as IMImageQ8MBS

Function: MergeImageLayers() composes all the image layers from the current given image onward to produce a single image of the merged layers.
Notes:
The initial canvas's size depends on the given ImageLayerMethod, and is initialized using the first images
images background color. The images are then composited onto that image in sequence using the given composition that has been assigned to each individual image.

ImageLayerMethod:
the method of selecting the size of the initial canvas.

MergeLayer: Merge all layers onto a canvas just large enough to hold all the actual images. The virtual canvas of the first image is preserved but otherwise ignored.

FlattenLayer: Use the virtual canvas size of first image. Images which fall outside this canvas is clipped. This can be used to 'fill out' a given virtual canvas.

MosaicLayer: Start with the virtual canvas of the first image, enlarging left and right edges to contain all images. Images with negative offsets will be clipped.

Can raise an exception.

90.21.82 Minify as IMImageQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: A convenience method that scales an image proportionally to half its size.
Notes:
Sets the last exception property.
For more details please check the ImageMagick documentation.

90.21.83 MosaicImages as IMImageQ8MBS

Function: MosaicImages inlays an image sequence to form a single coherent picture.
Notes:
It returns a single image with each image in the sequence composited at the location defined by the page member of the image structure.
Returns nil on any error.
Sets the last exception property.
90.21.84 MotionBlur(radius as Double, sigma as Double, angle as Double) as IMImageQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Simulates motion blur.
Notes:

We convolve the image with a Gaussian operator of the given radius and standard deviation (sigma). For reasonable results, radius should be larger than sigma. Use a radius of 0 and MotionBlur selects a suitable radius for you. Angle gives the angle of the blurring motion.
Sets the last exception property.

For more details please check the ImageMagick documentation.

90.21.85 NegateImage(gray as boolean = false) as Boolean

Function: Negates the colors in the reference image.
Notes:

Returns true on success or false on failure.
The grayscale option means that only grayscale values within the image are negated.

gray: If true, only negate grayscale pixels within the image.

90.21.86 NegateImageChannel(ChannelType as Integer, gray as boolean = false) as Boolean

Function: Negates the colors in the reference image.
Notes:

Returns true on success or false on failure.
The grayscale option means that only grayscale values within the image are negated.

ChannelType: The channels to use.
gray: If true, only negate grayscale pixels within the image.

Constants for channel:
const UndefinedChannel = 0
const RedChannel = & h0001
const GrayChannel = & h0001
const CyanChannel = & h0002
const GreenChannel = & h0002
const MagentaChannel = & h0002
const BlueChannel = & h0004
const YellowChannel = & h0004
const AlphaChannel = & h0008
const OpacityChannel = & h0008
const BlackChannel = & h0020
const IndexChannel = & h0020
const AllChannels = & h7fffffff

90.21.87 NewImage(info as IMImageInfoQ8MBS, width as Integer, height as Integer, background as IMMagickPixelPacketQ8MBS) as boolean


**Function:** Creates a new image.

**Example:**

```
dim im as ImageMagickQ8MBS // global
dim p as picture
dim imageinfo as IMImageInfoQ8MBS
dim image as IMImageQ8MBS
dim b as new IMMagickPixelPacketQ8MBS
b.Blue=65535
b.ColorSpace=1 // RGB
b.Depth=16

imageinfo = im.NewImageInfo
imageinfo.Depth=16
imageinfo.ColorSpace=1

//this should read any image IM understands
image = new IMImageQ8MBS
if image.NewImage(imageinfo,500,500,b) then
  p=NewPicture(300,300,32)
p.Graphics.ForeColor=Rgb(255,0,0)
p.Graphics.FillOval 0,0,300,300
image.SetPicture p,0,0
else
  MsgBox "failed"
end if
```
90.21. NormalizeImage as Boolean


**Function:** Enhances the contrast of a color image by mapping the darkest 2 percent of all pixel to black and the brightest 1 percent to white.

**Notes:** Returns true on success or false on failure.

90.21.89 NormalizeImageChannel(ChannelType as Integer) as Boolean


**Function:** Enhances the contrast of a color image by mapping the darkest 2 percent of all pixel to black and the brightest 1 percent to white.

**Notes:** Returns true on success or false on failure.

ChannelType: The channels to auto-level. If the special 'SyncChannels' flag is set the min/max/mean value of all given channels is used for all given channels, to all channels in the same way.

Constants for channel:

```plaintext
const UndefinedChannel    = 0
const RedChannel          = & h0001
const GrayChannel         = & h0001
const CyanChannel         = & h0001
const GreenChannel        = & h0002
const MagentaChannel      = & h0002
const BlueChannel         = & h0004
const YellowChannel       = & h0004
const AlphaChannel        = & h0008
const OpacityChannel      = & h0008
const BlackChannel        = & h0020
const IndexChannel        = & h0020
const AllChannels         = & h7fffffff
```
90.21.90 OilPaint(radius as Double) as IMImageQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Method OilPaintImage creates a new image that is a copy of an existing one with each pixel component replaced with the color of greatest frequency in a circular neighborhood.

**Notes:**
- radius parameter: radius of the circular neighborhood.
- Returns nil on any error.
- Sets the last exception property.

90.21.91 OptimizeImageLayers as IMImageQ8MBS


**Function:** OptimizeImageLayers() compares each image the GIF disposed forms of the previous image in the sequence.

**Notes:**
- From this it attempts to select the smallest cropped image to replace each frame, while preserving the results of the GIF animation.

Can raise an exception.

90.21.92 OptimizeImageTransparency


**Function:** OptimizeImageTransparency() takes a frame optimized GIF animation, and compares the overlayed pixels against the disposal image resulting from all the previous frames in the animation.

**Notes:**
- Any pixel that does not change the disposal image (and thus does not effect the outcome of an overlay) is made transparent.

WARNING: This modifies the current images directly, rather than generate a new image sequence.

Can raise an exception.

90.21.93 OptimizePlusImageLayers as IMImageQ8MBS


**Function:** OptimizeImagePlusLayers() is exactly as OptimizeImageLayers(), but may also add or even re-
move extra frames in the animation, if it improves the total number of pixels in the resulting GIF animation.

**Notes:** Can raise an exception.

### 90.21.94 `ProfileImage(name as string, ProfileData as string) as boolean`


**Function:** Adds or removes a ICC, IPTC, or generic profile from an image.

**Notes:**
If the ProfileData is "", it is removed from the image otherwise added. Use a name of "*" and a ProfileData of "" to remove all profiles from the image.

Returns false on any error and true on success.

### 90.21.95 `RadialBlur(angle as Double) as IMImageQ8MBS`

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** RadialBlur applies a radial blur to the image.

**Notes:**
angle: The angle of the radial blur.

Sets the last exception property.
For more details please check the ImageMagick documentation.

### 90.21.96 `RaiseImage(x as Integer, y as Integer, width as Integer, height as Integer, raise as boolean) as boolean`


**Function:** Creates a simulated three-dimensional button-like effect by lightening and darkening the edges of the image.

**Notes:**
Width and height define the width of the vertical and horizontal edge of the effect.
raise: A value other than zero creates a 3-D raise effect, otherwise it has a lowered effect.
90.21.97 RandomThresholdChannel(channel as Integer, thresholds as string) as boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Changes the value of individual pixels based on the intensity of each pixel compared to a random threshold.

**Notes:**

The result is a low-contrast, two color image.

channel: The channel or channels to be thresholded.
thresholds: a geometry string containing low, high thresholds. If the string contains 2x2, 3x3, or 4x4, an ordered dither of order 2, 3, or 4 is performed instead. (ASCII string)

Sets the last exception property.

Constants for channel:

```c
const UndefinedChannel = 0
const RedChannel = & h0001
const GrayChannel = & h0001
const CyanChannel = & h0001
const GreenChannel = & h0002
const MagentaChannel = & h0002
const BlueChannel = & h0004
const YellowChannel = & h0004
const AlphaChannel = & h0008
const OpacityChannel = & h0008
const BlackChannel = & h0020
const IndexChannel = & h0020
const AllChannels = & h7fffffff
```

For more details please check the ImageMagick documentation.

90.21.98 ReduceNoise(radius as Double) as IMImageQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Smooths the contours of an image while still preserving edge information.

**Notes:**

The algorithm works by replacing each pixel with its neighbor closest in value. A neighbor is defined by radius. Use a radius of 0 and ReduceNoise selects a suitable radius for you.
For more details please check the ImageMagick documentation.

### 90.21.99 RemoveDuplicateLayers


**Function:** Removes any image that is exactly the same as the next image in the given image list.

**Notes:**

Image size and virtual canvas offset must also match, though not the virtual canvas size itself.

No check is made with regards to image disposal setting, though it is the dispose setting of later image that is kept. Also any time delays are also added together. As such coalesced image animations should still produce the same result, though with duplicate frames merged into a single frame.

---

### 90.21.100 RemoveFirstImageFromList as IMImageQ8MBS


**Function:** Removes the first image from the image list and returns the image.

**Notes:**

Returns nil on any error.

For more details please check the ImageMagick documentation.

---

### 90.21.101 RemoveImageProfile(name as string) as string


**Function:** Removes a profile from the image-map by its name.

---

### 90.21.102 RemoveZeroDelayLayers


**Function:** Removes any image that as a zero delay time.

**Notes:**

Such images generally represent intermediate or partial updates in GIF animations used for file optimization. They are not ment to be displayed to users of the animation. Viewable images in an animation should have a time delay of 3 or more centi-seconds (hundredths of a second).

However if all the frames have a zero time delay, then either the animation is as yet incomplete, or it is not a GIF animation. This is a non-sensible situation, so no image will be removed and a 'Zero Time Animation'
warning (exception) given.

No warning will be given if no image was removed because all images had an appropriate non-zero time delay set.

Due to the special requirements of GIF disposal handling, GIF animations should be coalesced first, before calling this function, though that is not a requirement.
90.21. **CLASS IMIMAGEQ8MBS**

90.21.103 **ResetImageAttributeIterator**

MBS GraphicsMagick Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** ResetImageAttributeIterator() resets the image attributes iterator. **Notes:** Use it in conjunction with GetNextImageAttribute() to iterate over all the values associated with an image.

90.21.104 **ResetImageProfileIterator**

MBS GraphicsMagick Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Resets the image profile iterator. **Notes:** Use it in conjunction with GetNextImageProfile() to iterate over all the profiles associated with an image.

90.21.105 **Resize(width as Integer, height as Integer, FilterID as Integer, blur as Double) as IMImageQ8MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Scales an image to the desired dimensions. **Notes:**

Constants for the FilterID:

```plaintext
const PointFilter = 1
const BoxFilter = 2
const TriangleFilter = 3
const HermiteFilter = 4
const HanningFilter = 5
const HammingFilter = 6
const BlackmanFilter = 7
const GaussianFilter = 8
const QuadraticFilter = 9
const CubicFilter = 10
const CatromFilter = 11
const MitchellFilter = 12
const LanczosFilter = 13
const BesselFilter = 14
const SincFilter = 15
```

Most of the filters are FIR (finite impulse response), however, Bessel, Gaussian, and Sinc are IIR (infinite impulse response). Bessel and Sinc are windowed (brought down to zero) with the Blackman filter.
Sets the last exception property.

90.21.106  RGBTransformImage(Colorsaspace as Integer) as boolean


Function: Method RGBTransformImage converts the reference image from RGB to an alternate colorspace.

Notes:

The transformation matrices are not the standard ones: the weights are rescaled to normalized the range of the transformed values to be \([0..\text{MaxRGB}]\).

colorsaspace: An integer value that indicates which colorspace to transform the image.

Returns false on any error and true on success.

constants:

- UndefinedColorsaspace 0
- RGBColorsaspace 1
- GRAYColorsaspace 2
- TransparentColorsaspace 3
- OHTAColorsaspace 4
- LABColorsaspace 5
- XYZColorsaspace 6
- YCbCrColorsaspace 7
- YCCColorsaspace 8
- YIQColorsaspace 9
- YPbPrColorsaspace 10
- YUVColorsaspace 11
- CMYKColorsaspace 12
- sRGBColorsaspace 13
- HSBColorsaspace 14
- HSLColorsaspace 15
- HWBColorsaspace 16

90.21.107  Roll(x as Integer, y as Integer) as IMImageQ8MBS


Function: Roll offsets an image as defined by \(x\) and \(y\).

Notes:
Returns nil on any error.
Sets the last exception property.

90.21.108  Rotate(degrees as Double) as IMImageQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Rotation of an image.
Notes:
Method RotateImage creates a new image that is a rotated copy of an existing one. Positive angles rotate counter-clockwise (right-hand rule), while negative angles rotate clockwise. Rotated images are usually larger than the originals and have 'empty' triangular corners. X axis. Empty triangles left over from shearing the image are filled with the color specified by the image background color. RotateImage allocates the memory necessary for the new Image structure and returns a pointer to the new image.

Method RotateImage is based on the paper "A Fast Algorithm for General Raster Rotatation" by Alan W. Paeth. RotateImage is adapted from a similar method based on the Paeth paper written by Michael Halle of the Spatial Imaging Group, MIT Media Lab.

degrees: Specifies the number of degrees to rotate the image.

Sets the last exception property.
Returns nil on low memory.
For more details please check the ImageMagick documentation.

90.21.109  Sample(width as Integer, height as Integer) as IMImageQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Scales an image to the desired dimensions with pixel sampling.
Notes:
Unlike other scaling methods, this method does not introduce any additional color into the scaled image.
For more details please check the ImageMagick documentation.
Sets the last exception property.

90.21.110  Scale(width as Integer, height as Integer) as IMImageQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Changes the size of an image to the given dimensions.
Example:
dim image as IMImageQ8MBS // your image
image=Image.Scale(100,80)

**Notes:**
This method was designed by Bob Friesenhahn as a low cost thumbnail generator.

columns: The number of columns in the scaled image.
rows: The number of rows in the scaled image.

Sets the last exception property.
For more details please check the ImageMagick documentation.

### 90.21.111 SetImageAttribute(key as string, value as string) as boolean

**MBS GraphicsMagick Plugin, Plugin Version:** 6.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** SetImageAttribute searches the list of image attributes and replaces the attribute value.
**Notes:** If it is not found in the list, the attribute name and value is added to the list. If the attribute exists in the list, the value is concatenated to the attribute. SetImageAttribute returns True if the attribute is successfully concatenated or added to the list, otherwise False. If the value is "", the matching key is deleted from the list.

### 90.21.112 SetImageColorspace(Colorspace as Integer) as boolean

**MBS GraphicsMagick Plugin, Plugin Version:** 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Sets the colorspace member of the Image structure.
**Notes:** Returns false on any error and true on success.

### 90.21.113 SetImageProfile(name as string, ProfileData as string) as boolean

**MBS GraphicsMagick Plugin, Plugin Version:** 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Adds a named profile to the image.
**Notes:**
If a profile with the same name already exists, it is replaced. This method differs from the ProfileImage() method in that it does not apply CMS color profiles.

name: The profile name.
profiledata: The binary data of the profile.
Returns false on any error and true on success.

### 90.21.114 SetPicture(pic as picture, x as Integer, y as Integer)

**Function:** Copies the pixels from a given Realbasic picture into the Image Magick Image at the given location.
**Example:**

```xbasic
dim image as IMImageQ8MBS // your image
dim p as picture

p=NewPicture(32,32,32)
p.Graphics.ForeColor=rgb(0,255,0)
p.Graphics.FillRect 0,0,32,32

image.SetPicture(p,30,30)
```

**Notes:**
- Sets the last exception property.
- The method will do nothing on bad bounds.
- This method works only for bitmap images.
- x and y are zero based.

### 90.21.115 SetPictureMask(maskpic as picture, x as Integer, y as Integer)

**Function:** Copies the pixels from a given Realbasic picture into the mask of the Image Magick Image at the given location.
**Example:**

```xbasic
dim i as IMImageQ8MBS // your image
dim p as picture

p=NewPicture(32,32,32)
p.Graphics.ForeColor=rgb(0,255,0)
p.Graphics.FillRect 0,0,32,32

i.SetPictureMask(p,30,30)
```
Notes:
Sets the last exception property.
The method will do nothing on bad bounds.
This method works only for bitmap images.
x and y are zero based.
You may need to set matte=True after this.

90.21.116  SetPixel(x as Integer, y as Integer, newPixel as IMColorQ8MBS)

Function: Sets a pixel value.
Example:

dim image as IMImageQ8MBS // your image
dim co as IMColorQ8MBS

go=New IMColorQ8MBS
co.blue=65535 // max value
image.SetPixel 50,50,co // Makes Pixel 50/50 blue

Notes:
The method will fail silently if the values are out of bounds or the image is not a bitmap image.
This method works only for bitmap images.
x and y are zero based.

90.21.117  Shade(gray as boolean, azimuth as Double, elevation as Double) as IMImageQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Shines a distant light on an image to create a three-dimensional effect.
Notes:
You control the positioning of the light with azimuth and elevation; azimuth is measured in degrees off the
x axis and elevation is measured in pixels above the Z axis.
Sets the last exception property.

For more details please check the ImageMagick documentation.
90.21.118  **SharpenChannel(channel as Integer, radius as Double, sigma as Double) as IMImageQ8MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Sharpens one or more image channels.  
**Notes:**
We convolve the image with a Gaussian operator of the given radius and standard deviation (sigma). For reasonable results, radius should be larger than sigma. Use a radius of 0 and Sharpen selects a suitable radius for you.

channel: The channel type.  
radius: The radius of the Gaussian, in pixels, not counting the center pixel.  
sigma: The standard deviation of the Laplacian, in pixels.

Constants for channel:

```plaintext
const UndefinedChannel  = 0
const RedChannel        = & h0001
const GrayChannel       = & h0001
const CyanChannel       = & h0001
const GreenChannel      = & h0002
const MagentaChannel    = & h0002
const BlueChannel       = & h0004
const YellowChannel     = & h0004
const AlphaChannel      = & h0008
const OpacityChannel    = & h0008
const BlackChannel      = & h0020
const IndexChannel      = & h0020
const AllChannels       = & h7fffffff
```

Sets the last exception property.  
For more details please check the ImageMagick documentation.

90.21.119  **Shave(x as Integer, y as Integer, width as Integer, height as Integer) as IMImageQ8MBS**

**Function:** Shave shaves pixels from the image edges.  
**Notes:**
It allocates the memory necessary for the new Image structure and returns a pointer to the new image.  
Returns nil on any error.
Sets the last exception property.

90.21.120  **Shear(Xshear as Double, Yshear as Double) as IMImageQ8MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Method ShearImage creates a new image that is a shear image copy of an existing one.

**Notes:**

Shearing slides one edge of an image along the X or Y axis, creating a parallelogram. An X direction shear slides an edge along the X axis, while a Y direction shear slides an edge along the Y axis. The amount of the shear is controlled by a shear angle. For X direction shears, x shear is measured relative to the Y axis, and similarly, for Y direction shears y shear is measured relative to the X axis. Empty triangles left over from shearing the image are filled with the color defined by the pixel at location (0,0). ShearImage allocates the memory necessary for the new Image structure and returns a pointer to the new image.

Xshear and YYshear specify the number of degrees to shear the image.

Sets the last exception property.

For more details please check the ImageMagick documentation.

90.21.121  **Solarize(factor as Double) as boolean**

MBS GraphicsMagick Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Method SolarizeImage produces a 'solarization' effect seen when exposing a photographic film to light during the development process.

**Notes:**

factor: An double value that defines the extent of the solarization.

Returns nil on any error.

Sets the last exception property.

90.21.122  **Splice(x as Integer, y as Integer, width as Integer, height as Integer) as IMImageQ8MBS**


**Function:** Splice splices a solid color into the image as defined by the geometry.

**Notes:**

Returns nil on any error.

Sets the last exception property.
90.21.123  **Spread(radius as Double) as IMImageQ8MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** This is a special effects method that randomly displaces each pixel in a block defined by the radius parameter.

**Notes:**

radius: Choose a random pixel in a neighborhood of this extent.
Sets the last exception property.

For more details please check the ImageMagick documentation.

---

90.21.124  **Stegano(watermarkImage as IMImageQ8MBS) as IMImageQ8MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Method SteganoImage hides a digital watermark within the image.

**Notes:**

Returns nil on any error.
Sets the last exception property.

---

90.21.125  **Stereo(otherImage as IMImageQ8MBS) as IMImageQ8MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Method StereoImage combines two images and produces a single image that is the composite of a left and right image of a stereo pair.

**Notes:**

The left image is converted to gray scale and written to the red channel of the stereo image. The right image is converted to gray scale and written to the blue channel of the stereo image. View the composite image with red-blue glasses to create a stereo effect.

left image = self
right image = otherImage parameter

Returns nil on any error.
Sets the last exception property.
90.21.126  **Swirl(degrees as Double) as IMImageQ8MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Method SwirlImage creates a new image that is a copy of an existing one with the image pixels "swirl" at a specified angle.
**Notes:**
- degrees: An double value that defines the tightness of the swirling.
- Returns nil on any error.
- Sets the last exception property.

90.21.127  **Thumbnail(width as Integer, height as Integer) as IMImageQ8MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Changes the size of an image to the given dimensions.
**Notes:**
- Sets the last exception property.
- This method was designed by Bob Friesenhahn as a low cost thumbnail generator.
- For more details please check the ImageMagick documentation.

90.21.128  **TransformImage(CropGeometry as string, ImageGeometry as string) as boolean**

**Function:** TransformImage() is a convenience method that behaves like ResizeImage() or CropImage() but accepts scaling and/or cropping information as a region geometry specification. If the operation fails, the original image handle is left as is.
**Notes:**
- This should only be used for single images.
- CropGeometry: A crop geometry string. This geometry defines a subregion of the image to crop.
- ImageGeometry: An image geometry string. This geometry defines the final size of the image.
- Returns true on success.
90.21.129  TransformImages(CropGeometry as string, ImageGeometry as string) as boolean


Function: TransformImages() calls TransformImage() on each image of a sequence.

Notes:

TransformImage() is a convenience method that behaves like ResizeImage() or CropImage() but accepts scaling and/or cropping information as a region geometry specification. If the operation fails, the original image handle is left as is.

CropGeometry: A crop geometry string. This geometry defines a subregion of the image to crop.
ImageGeometry: An image geometry string. This geometry defines the final size of the image.

Returns true on success.

90.21.130  TransformRGBImage(Colorspace as Integer) as boolean


Function: Method TransformRGBImage converts the reference image from an alternate colorspace.

Notes:

The transformation matrices are not the standard ones: the weights are rescaled to normalized the range of the transformed values to be \([0..\text{MaxRGB}]\).

colorspace: An integer value that indicates the colorspace the image is currently in. On return the image is in the RGB color space.

Returns false on any error and true on success.

constants:

90.21.131  TransposeImage as IMImageQ8MBS


Function: TransposeImage() creates a horizontal mirror image by reflecting the pixels around the central y-axis while rotating them by 90 degrees.
CHAPTER 90. IMAGE MAGICK

UndefinedColorspace 0
RGBColorspace 1
GRAYColorspace 2
TransparentColorspace 3
OHTAColorspace 4
LABColorspace 5
XYZColorspace 6
YCbCrColorspace 7
YCCColorspace 8
YIQColorspace 9
YPbPrColorspace 10
YUVColorspace 11
CMYKColorspace 12
sRGBColorspace 13
HSBColorspace 14
HSLColorspace 15
HWBColorspace 16

90.21.132 TransverseImage as IMImageQ8MBS

Function: TransverseImage() creates a vertical mirror image by reflecting the pixels around the central x-axis while rotating them by 270 degrees.

90.21.133 Trim as IMImageQ8MBS

Function: Trim trims pixels from the image edges.
Notes:
It allocates the memory necessary for the new Image structure and returns a pointer to the new image.

Returns nil on any error.
Sets the last exception property.

90.21.134 UnsharpMaskChannel(channel as Integer, radius as Double, sigma as Double, amount as Double, threshold as Double) as IMImageQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Sharpens one or more image channels.
Notes:
We convolve the image with a Gaussian operator of the given radius and standard deviation (sigma). For reasonable results, radius should be larger than sigma. Use a radius of 0 and UnsharpMask selects a suitable radius for you.

Constants for channel:

```plaintext
const UndefinedChannel  = 0
const RedChannel        = & h0001
const GrayChannel       = & h0001
const CyanChannel       = & h0001
const GreenChannel      = & h0002
const MagentaChannel    = & h0002
const BlueChannel       = & h0004
const YellowChannel     = & h0004
const AlphaChannel      = & h0008
const OpacityChannel    = & h0008
const BlackChannel      = & h0020
const IndexChannel      = & h0020
const AllChannels       = & h7fffffff
```

Sets the last exception property.
For more details please check the ImageMagick documentation.

**90.21.135 Wave(amplitude as Double, wavelength as Double) as IMImageQ8MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Method Wave creates a new image that is a copy of an existing one with the image pixels altered along a sine wave.
**Notes:**
Parameters are double values that indicates the amplitude and wavelength of the sine wave.
Returns nil on any error.
Sets the last exception property.

**90.21.136 WhiteThreshold(threshold as string) as boolean**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** WhiteThreshold is like Threshold but forces all pixels above the threshold into white while leaving all pixels below the threshold unchanged.
**Notes:**
No exceptions are generated.
threshold: Define the threshold value. (ASCII string)
For more details please check the ImageMagick documentation.

90.21.137 WriteImage(info as IMImageInfoQ8MBS) as boolean

Function: Method WriteImage writes an image to a file as defined by image.filename.
Notes:
You can specify a particular image format by prefixing the file with the image type and a colon (i.e. ps:image)
or specify the image type as the filename suffix (i.e. image.ps). The image may be modified to adapt it to the
requirements of the image format. For example, DirectClass images must be color-reduced to PseudoClass
if the format is GIF.

WriteImage returns True if the image is written. False is returned if there is a memory shortage or if the
image file fails to write.

90.21.138 Properties

90.21.139 BackgroundColor as IMColorQ8MBS

Function: Image background color.
Notes: (Read and Write property)

90.21.140 Bias as Double

Function: An undocumented property.
Notes: (Read and Write property)

90.21.141 BlurFactor as Double

Function: Blur factor to apply to the image when zooming. Default is 1.0 (no blur).
Notes: (Read and Write property)
90.21. **CLASS IMIMAGEQ8MBS**

90.21.142 **BorderColor as IMColorQ8MBS**

**Function:** Image border color.
**Notes:** (Read and Write property)

90.21.143 **Colors as Integer**

**Function:** The desired number of colors.
**Notes:**
Used by Quantize().
(Read and Write property)

90.21.144 **ColorSpace as Integer**

**Function:** Image pixel interpretation.
**Notes:**
If the colorspace is RGB the pixels are red, green, blue. If matte is true, then red, green, blue, and index. If it is CMYK, the pixels are cyan, yellow, magenta, black. Otherwise the colorspace is ignored.

**constants:**

(Read and Write property)

90.21.145 **Compression as Integer**

**Function:** Image compression type.
**Notes:**
useful constants:

The default is the compression type of the specified image file.
For more details please check the ImageMagick documentation.
(Read and Write property)
UndefinedColorspace 0
RGBColorspace 1
GRAYColorspace 2
TransparentColorspace 3
OHTAColorspace 4
LABColorspace 5
XYZColorspace 6
YCbCrColorspace 7
YCCColorspace 8
YIQColorspace 9
YPbPrColorspace 10
YUVColorspace 11
CMYKColorspace 12
sRGBColorspace 13
HSBColorspace 14
HSLColorspace 15
HWBColorspace 16

const UndefinedCompression = 0
const NoCompression = 1
const BZipCompression = 2
const FaxCompression = 3
const Group4Compression = 4
const JPEGCompression = 5
const LosslessJPEGCompression = 6
const LZWCompression = 7
const RLECompression = 8
const ZipCompression = 9

90.21.146  Depth as Integer

Function: Image depth (8 or 16).
Notes:
QuantumLeap must be defined before a depth of 16 is valid.
(Read and Write property)

90.21.147  Directory as String

Function: Tile names from within an image montage.
Notes:
Only valid after calling MontageImages() or reading a MIFF file which contains a directory.
90.21.148  Endian as Integer

**Function:** The endian setting to use.
**Notes:**

constants:

- UndefinedEndian  0
- LSBEndian        1  (Windows)
- MSBEndian        2  (Mac)

E.g. tiff files support different endian settings.
(Read and Write property)

90.21.149  Filename as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The file path/name.
**Notes:**

The string must be in the encoding of the library and is limited to 4000 bytes.
For more details please check the ImageMagick documentation.
(Read and Write property)

90.21.150  Filter as Integer

**Function:** Filter to use when resizing image.
**Notes:**

Constants:

The reduction filter employed has a significant effect on the time required to resize an image and the resulting quality. The default filter is Lanczos which has been shown to produce high quality results when reducing most images.
(Read and Write property)
const PointFilter = 1
const BoxFilter = 2
const TriangleFilter = 3
const HermiteFilter = 4
const HanningFilter = 5
const HammingFilter = 6
const BlackmanFilter = 7
const GaussianFilter = 8
const QuadraticFilter = 9
const CubicFilter = 10
const CatromFilter = 11
const MitchellFilter = 12
const LanczosFilter = 13
const BesselFilter = 14
const SincFilter = 15

90.21.151  Fuzz as Double

Function: Colors within this distance are considered equal.
Notes:
A number of algorithms search for a target color. By default the color must be exact. Use this to match
colors that are close to the target color in RGB space.
(Read and Write property)

90.21.152  Gamma as Double

Function: Gamma level of the image.
Notes:
The same color image displayed on two different workstations may look different due to differences in the
display monitor. Use gamma correction to adjust for this color difference.
(Read and Write property)

90.21.153  Geometry as String

Function: Preferred size of the image when encoding.
Notes: (Read and Write property)
90.21.154  Gravity as Integer

**Function:** An undocumented property.  
**Notes:** (Read and Write property)

90.21.155  Handle as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The handle used internally by the plugin.  
**Notes:**  
A pointer to an Image structure.  
For more details please check the ImageMagick documentation.  
(Read and Write property)

90.21.156  Height as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The height of the image in pixels.  
**Notes:**  
For more details please check the ImageMagick documentation.  
(Read and Write property)

90.21.157  Interlace as Integer

**Function:** The type of interlacing scheme (default NoInterlace).  
**Notes:**  
This option is used to specify the type of interlacing scheme for raw image formats such as RGB or YUV.  
NoInterlace means do not interlace, LineInterlace uses scanline interlacing, and PlaneInterlace uses plane interlacing.  
PartitionInterlace is like PlaneInterlace except the different planes are saved to individual files (e.g. image.R, image.G, and image.B).  
Use LineInterlace or PlaneInterlace to create an interlaced GIF or progressive JPEG image.  

constants:

(Read and Write property)
UndefinedInterlace 0  Unset value.
NoInterlace 1  Don't interlace image (RGBRGBRGBRGBRGBRGBRGB...
LineInterlace 2  Use scanline interlacing (RRRRGGGGBBBBBBRRRRGGGGBBBBBB...
PlaneInterlace 3  Use plane interlacing (RRRRRRGGGGGGBBBBBB...
PartitionInterlace 4  Similar to plane interlacing except that the different planes are saved to individual files (e.g. image.R, image.G, and image.B)

90.21.158 LastError as Integer

Function: The last error code reported.
Notes:
If an exception is raised and it is not a warning exception, this exception code is saved in this property.
(Read and Write property)

90.21.159 LastException as IMExceptionQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The last exception thrown by the Image Magick library.
Notes:
You should check this value after every call to the library, process the error and set the property to nil.
For more details please check the ImageMagick documentation.
(Read and Write property)

90.21.160 Magick as String

Function: Image encoding format (e.g. "GIF").
Notes: (Read and Write property)

90.21.161 Matte as Boolean

Function: Whether an alpha channel is used/present.
Notes:
Set to true to enable masks.
90.21. CLASS IMAGEMBS
(Read and Write property)

90.21.162 MatteColor as IMColorQ8MBS
Function: Image matte (transparent) color.
Notes: (Read and Write property)

90.21.163 Montage as String
Function: Tile size and offset within an image montage. Only valid for montage images.
Notes: (Read and Write property)

90.21.164 Offset as Integer
Function: Number of initial bytes to skip over when reading raw image.
Notes: (Read and Write property)

90.21.165 Orientation as Integer
Function: The image orientation.
Notes:

constants:

const UndefinedOrientation = 0
const TopLeftOrientation = 1
const TopRightOrientation = 2
const BottomRightOrientation = 3
const BottomLeftOrientation = 4
const LeftTopOrientation = 5
const RightTopOrientation = 6
const RightBottomOrientation = 7
const LeftBottomOrientation = 8
For more details please check the ImageMagick documentation. (Read and Write property)

90.21.166 Quality as Integer

Function: JPEG/MIFF/PNG compression level.
Example:

```vba
dim im as ImageMagickQ8MBS // global

Function TestJPEG(f as folderitem) As picture
   // Reads an image, compresses in memory to JPEG, decompresses using JPEGLib and returns the image
   // if quality setting works, you see it in the result.
   // no error checking included!
   // needs: im as ImageMagickQ8MBS ready initialized

dim image as IMImageQ8MBS
dim imageinfo as IMImageInfoQ8MBS
dim s,blob as string
dim p as Picture
dim i as Integer

if f = nil then
   Return nil
end if

imageinfo = im.NewImageInfo

# if TargetWin32 then //do not use shellpath, if spaces, IM doesn't like escaped paths
imageinfo.Filename = f.AbsolutePath
# else
imageinfo.Filename = f.UnixpathMBS
# endif

//this should read any image IM understands
image = im.ReadImage(imageinfo)
//check for error
if im.lastexception <> nil and im.LastException.Severity >= 400 then
   s = "LastError: " + Format(im.LastError,"-0") + " - Severity: " + str(im.LastException.Severity) + EndOfLine + im.LastException.Reason
   MsgBox s
   Return nil
elseif image = nil then
   MsgBox "image=nil"
```
Return nil
end if

// Now lets convert to jpeg
imageinfo.Filename = "image.jpg"
imageinfo.Quality = 10 // 100 is max
blob = image.ImageToBlob(imageinfo)

// It may fail
if blob.lenb = 0 then
  Return nil
end if
p = JPEGStringToPictureMBS(blob, true)

image.DestroyImage
imageinfo.DestroyImageInfo

Return p
Exception
Return nil
End Function

Notes:

Default value is 75.
(Read and Write property)

90.21.167  Release as Boolean

Function: If true, the destructor will release the handle.
Notes: (Read and Write property)

90.21.168  RenderingIntent as Integer

Function: The rendering intent to use.
Notes:

constants:

(Read and Write property)
UndefinedIntent  0
SaturationIntent  1
PerceptualIntent  2
AbsoluteIntent   3
RelativeIntent   4

90.21.169  ResolutionUnits as Integer

Function: Units of image resolution.
Notes:

constants:

UndefinedResolution  0  Unset value.
PixelsPerInchResolution  1  Density specifications are specified in units of pixels per inch (English units).
PixelsPerCentimeterResolution  2  Density specifications are specified in units of pixels per centimeter (metric units).

(Read and Write property)

90.21.170  ResolutionX as Double

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The horizontal resolution of the image.
Notes:
The unit for resolution must be specified.
For more details please check the ImageMagick documentation.
(Read and Write property)

90.21.171  ResolutionY as Double

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The vertical resolution of the image.
Notes:
The unit for resolution must be specified.
For more details please check the ImageMagick documentation.
90.21.172  Scene as Integer

Function: An undocumented property.
Notes: (Read and Write property)

90.21.173  StorageClass as Integer

Function: Image storage class.
Notes:
If DirectClass then the image packets contain valid RGB or CMYK colors. If PseudoClass then the image has a colormap referenced by pixel's index member.

constants:

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UndefinedClass</td>
<td>0</td>
<td>Unset value.</td>
</tr>
<tr>
<td>DirectClass</td>
<td>1</td>
<td>Image is composed of pixels which represent literal color values.</td>
</tr>
<tr>
<td>PseudoClass</td>
<td>2</td>
<td>Image is composed of pixels which specify an index in a color palette.</td>
</tr>
</tbody>
</table>

(Read and Write property)

90.21.174  Taint as Boolean

Function: Set to True if the image pixels have been modified.
Notes: (Read and Write property)

90.21.175  Width as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The width of the image in pixels.
Notes:
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For more details please check the ImageMagick documentation. (Read and Write property)

90.21.176 Constants

90.21.177 kAffineDistortion = 1
MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants.

90.21.178 kAffineProjectionDistortion = 2
MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants.

90.21.179 kArcDistortion = 9
MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants.

90.21.180 kBackgroundDispose = 2
MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer Dispose Types.

90.21.181 kBarrelDistortion = & h0000000E
MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants.

90.21.182 kBarrelInverseDistortion = & h0000000F
MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants.

90.21.183 kBarycentricColorInterpolate = 1
MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the interpolate method constants.
90.21.184  kBilinearColorInterpolate = 7

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the interpolate method constants.

90.21.185  kBilinearDistortion = 6

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants.

90.21.186  kBilinearForwardDistortion = 6

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants.

90.21.187  kBilinearReverseDistortion = 7

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants.

90.21.188  kCoalesceLayer = 1

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

90.21.189  kCompareAnyLayer = 2

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

90.21.190  kCompareClearLayer = 3

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

90.21.191  kCompareOverlayLayer = 4

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.
90.21.192 \textit{kCompositeLayer} = & h0000000C


90.21.193 \textit{kCylinder2PlaneDistortion} = & h0000000C

MBS GraphicsMagick Plugin, Plugin Version: 12.5. \textbf{Function:} One of the distortion effect constants.

90.21.194 \textit{kDePolarDistortion} = & h0000000B

MBS GraphicsMagick Plugin, Plugin Version: 12.5. \textbf{Function:} One of the distortion effect constants.

90.21.195 \textit{kDisposeLayer} = 5


90.21.196 \textit{kFlattenLayer} = & h0000000E


90.21.197 \textit{kInverseColorInterpolate} = & h00000013

MBS GraphicsMagick Plugin, Plugin Version: 12.5. \textbf{Function:} One of the interpolate method constants.

90.21.198 \textit{kMergeLayer} = & h0000000D


90.21.199 \textit{kMosaicLayer} = & h0000000F

90.21. CLASS IMIMAGEQ8MBS

90.21.200  kNoneDispose = 1

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer Dispose Types.

90.21.201  kOptimizeImageLayer = 7

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

90.21.202  kOptimizeLayer = 6

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

90.21.203  kOptimizePlusLayer = 8

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

90.21.204  kOptimizeTransLayer = 9

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

90.21.205  kPerspectiveDistortion = 4

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants.

90.21.206  kPerspectiveProjectionDistortion = 5

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants.

90.21.207  kPlane2CylinderDistortion = & h0000000D

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants.
90.21.208  \( k\text{PolarDistortion} = \& h0000000A \)

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants.

90.21.209  \( k\text{PolynomialColorInterpolate} = 8 \)

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the interpolate method constants.

90.21.210  \( k\text{PolynomialDistortion} = 8 \)

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants.

90.21.211  \( k\text{PreviousDispose} = 3 \)

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer Dispose Types.

90.21.212  \( k\text{RemoveDupsLayer} = \& h0000000A \)

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

90.21.213  \( k\text{RemoveZeroLayer} = \& h0000000B \)

MBS GraphicsMagick Plugin, Plugin Version: 8.3. **Function:** One of the Image layer method constants.

90.21.214  \( k\text{ResizeDistortion} = \& h00000011 \)

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants.

90.21.215  \( k\text{ScaleRotateTranslateDistortion} = 3 \)

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the distortion effect constants.
90.21.216  kSentinelDistortion = & h00000012

MBS GraphicsMagick Plugin, Plugin Version: 12.5. Function: One of the distortion effect constants.

90.21.217  kShepardsColorInterpolate = & h00000010

MBS GraphicsMagick Plugin, Plugin Version: 12.5. Function: One of the interpolate method constants.

90.21.218  kShepardsDistortion = & h00000010

MBS GraphicsMagick Plugin, Plugin Version: 12.5. Function: One of the distortion effect constants.

90.21.219  kUndefinedColorInterpolate = 0

MBS GraphicsMagick Plugin, Plugin Version: 12.5. Function: One of the interpolate method constants.

90.21.220  kUndefinedDispose = 0

MBS GraphicsMagick Plugin, Plugin Version: 8.3. Function: One of the Image layer Dispose Types.

90.21.221  kUndefinedDistortion = 0

MBS GraphicsMagick Plugin, Plugin Version: 12.5. Function: One of the distortion effect constants.

90.21.222  kUndefinedLayer = 0


90.21.223  kUnrecognizedDispose = 0

MBS GraphicsMagick Plugin, Plugin Version: 8.3. Function: One of the Image layer Dispose Types.
90.21.224  kVoronoiColorInterpolate = & h0000012

MBS GraphicsMagick Plugin, Plugin Version: 12.5. **Function:** One of the interpolate method constants.
90.22. **class IMMagickInfoListQ16MBS**

90.22.1 **class IMMagickInfoListQ16MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The class with the list of the image formats supported in Image Magick.
**Notes:** For more details please check the ImageMagick documentation.

90.22.2 **Methods**

90.22.3 **Item(index as Integer) as IMMagickInfoQ16MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The items inside this list.
**Notes:**
Index goes from 0 to count-1.
Returns nil on invalid index.

90.22.4 **Properties**

90.22.5 **Count as Integer**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The number of items.
**Notes:**
Index goes from 0 to count-1.
(Read only property)

90.22.6 **Handle as Integer**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The handle used internally by the plugin.
**Notes:**
A pointer to a MagickInfo list.
For more details please check the ImageMagick documentation.
(Read only property)
90.23 class IMMagickInfoListQ32MBS

90.23.1 class IMMagickInfoListQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The class with the list of the image formats supported in Image Magick.
Notes: For more details please check the ImageMagick documentation.

90.23.2 Methods

90.23.3 Item(index as Integer) as IMMagickInfoQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The items inside this list.
Notes:
Index goes from 0 to count-1.
Returns nil on invalid index.

90.23.4 Properties

90.23.5 Count as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The number of items.
Notes:
Index goes from 0 to count-1.
(Read only property)

90.23.6 Handle as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The handle used internally by the plugin.
Notes:
A pointer to a MagickInfo list.
For more details please check the ImageMagick documentation.
(Read only property)
90.24. class IMMagickInfoListQ8MBS

90.24.1 class IMMagickInfoListQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The class with the list of the image formats supported in Image Magick.
**Notes:** For more details please check the ImageMagick documentation.

90.24.2 Methods

90.24.3 Item(index as Integer) as IMMagickInfoQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The items inside this list.
**Notes:**
Index goes from 0 to count-1.
Returns nil on invalid index.

90.24.4 Properties

90.24.5 Count as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The number of items.
**Notes:**
Index goes from 0 to count-1.
(Read only property)

90.24.6 Handle as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The handle used internally by the plugin.
**Notes:**
A pointer to a MagickInfo list.
For more details please check the ImageMagick documentation.
(Read only property)
**90.25  class IMMagickInfoQ16MBS**

**90.25.1  class IMMagickInfoQ16MBS**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** A class for information about a file import/export format Image Magick can handle.
**Notes:** For more details please check the ImageMagick documentation.

**90.25.2  Methods**

**90.25.3  Close**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The destructor.
**Notes:**
There is no need to call this method except you want to free all resources used by this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

**90.25.4  Properties**

**90.25.5  Adjoin as Boolean**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** True if this file format supports multi-frame images.
**Notes:**
For more details please check the ImageMagick documentation.
Returns false for an invalid MagickInfo (handle=0).
(Read only property)

**90.25.6  BlobSupport as Boolean**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** True if the encoder and decoder for this format supports operating on arbitrary BLOBs (rather than only disk files).
**Notes:**
As currently disc read/write does not work with the 5.1 plugins, we really need that to use the classes.
Returns false for an invalid MagickInfo (handle=0).
90.25. **CLASS IMMAKICKINFOQ16MBS**

For more details please check the ImageMagick documentation.
(Read only property)

### 90.25.7 Description as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Long form image format description (e.g. "CompuServe graphics interchange format").
**Notes:**
For more details please check the ImageMagick documentation.
Returns "" for an invalid MagickInfo (handle=0).
(Read only property)

### 90.25.8 EndianSupport as Boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Whether endian support is available.
**Notes:**
For more details please check the ImageMagick documentation.
Returns false for an invalid MagickInfo (handle=0).
(Read only property)

### 90.25.9 Handle as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** The handle used internally by the plugin.
**Notes:**
A pointer to a MagickInfo structure.
For more details please check the ImageMagick documentation.
(Read and Write property)

### 90.25.10 ModuleName as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Name of module (e.g. "GIF") which registered this format.
**Notes:**
Value is "" if format is not registered by a module.
For more details please check the ImageMagick documentation.
Returns "" for an invalid MagickInfo (handle=0).
(Read only property)

90.25.11 Name as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Magick string (e.g. "GIF") which identifies this format.
Notes:
For more details please check the ImageMagick documentation.
Returns "" for an invalid MagickInfo (handle=0).
(Read only property)

90.25.12 Note as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Additional notes for this format.
Notes:
e.g. compilation parameters or copyright notices.
Returns "" for an invalid MagickInfo (handle=0).
For more details please check the ImageMagick documentation.
(Read only property)

90.25.13 Raw as Boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: True if Image format does not contain size (must be specified in ImageInfo).
Notes:
Returns false for an invalid MagickInfo (handle=0).
For more details please check the ImageMagick documentation.
(Read only property)

90.25.14 SeekableStream as Boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns True if the magick supports a seekable stream.
Notes:
For more details please check the ImageMagick documentation.
Returns false for an invalid MagickInfo (handle=0).
(Read only property)

90.25.15 **Stealth as Boolean**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Unknown.
**Notes:**
For more details please check the ImageMagick documentation.
Returns false for an invalid MagickInfo (handle=0).
(Read only property)

90.25.16 **ThreadSupport as Boolean**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** True if threading is supported.
**Notes:**
For more details please check the ImageMagick documentation.
Returns false for an invalid MagickInfo (handle=0).
(Read only property)

90.25.17 **Version as String**

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Version string.
**Notes:**
For more details please check the ImageMagick documentation.
Returns "" for an invalid MagickInfo (handle=0).
(Read only property)
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90.26 class IMMagickInfoQ32MBS

90.26.1 class IMMagickInfoQ32MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: A class for information about a file import/export format Image Magick can handle.
Notes: For more details please check the ImageMagick documentation.

90.26.2 Methods

90.26.3 Close

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The destructor.
Notes: There is no need to call this method except you want to free all resources used by this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

90.26.4 Properties

90.26.5 Adjoin as Boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: True if this file format supports multi-frame images.
Notes: For more details please check the ImageMagick documentation.
Returns false for an invalid MagickInfo (handle=0).
(Read only property)

90.26.6 BlobSupport as Boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: True if the encoder and decoder for this format supports operating on arbitrary BLOBs (rather than only disk files).
Notes: As currently disc read/write does not work with the 5.1 plugins, we really need that to use the classes.
Returns false for an invalid MagickInfo (handle=0).
For more details please check the ImageMagick documentation. (Read only property)

90.26.7 Description as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Long form image format description (e.g. "CompuServe graphics interchange format").
Notes:
For more details please check the ImageMagick documentation.
Returns "" for an invalid MagickInfo (handle=0).
(Read only property)

90.26.8 EndianSupport as Boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Whether endian support is available.
Notes:
For more details please check the ImageMagick documentation.
Returns false for an invalid MagickInfo (handle=0).
(Read only property)

90.26.9 Handle as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The handle used internally by the plugin.
Notes:
A pointer to a MagickInfo structure.
For more details please check the ImageMagick documentation.
(Read and Write property)

90.26.10 ModuleName as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Name of module (e.g. "GIF") which registered this format.
Notes:
Value is "" if format is not registered by a module.
For more details please check the ImageMagick documentation.
90.26.11 Name as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Magick string (e.g. "GIF") which identifies this format.
Notes: For more details please check the ImageMagick documentation.
Returns "" for an invalid MagickInfo (handle=0).
(Read only property)

90.26.12 Note as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Additional notes for this format.
Notes: e.g. compilation parameters or copyright notices.
Returns "" for an invalid MagickInfo (handle=0).
For more details please check the ImageMagick documentation.
(Read only property)

90.26.13 Raw as Boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: True if Image format does not contain size (must be specified in ImageInfo).
Notes: Returns false for an invalid MagickInfo (handle=0).
For more details please check the ImageMagick documentation.
(Read only property)

90.26.14 SeekableStream as Boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Returns True if the magick supports a seekable stream.
Notes:
For more details please check the ImageMagick documentation. Returns false for an invalid MagickInfo (handle=0). (Read only property)

### 90.26.15 Stealth as Boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Unknown. **Notes:** For more details please check the ImageMagick documentation. Returns false for an invalid MagickInfo (handle=0). (Read only property)

### 90.26.16 ThreadSupport as Boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if threading is supported. **Notes:** For more details please check the ImageMagick documentation. Returns false for an invalid MagickInfo (handle=0). (Read only property)

### 90.26.17 Version as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Version string. **Notes:** For more details please check the ImageMagick documentation. Returns "" for an invalid MagickInfo (handle=0). (Read only property)
90.27 class IMMagickInfoQ8MBS

90.27.1 class IMMagickInfoQ8MBS

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** A class for information about a file import/export format Image Magick can handle.

**Notes:** For more details please check the ImageMagick documentation.

90.27.2 Methods

90.27.3 Close

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** The destructor.

**Notes:**

There is no need to call this method except you want to free all resources used by this object now without waiting for Realbasic to do it for you.

(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

90.27.4 Properties

90.27.5 Adjoin as Boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** True if this file format supports multi-frame images.

**Notes:**

For more details please check the ImageMagick documentation.

Returns false for an invalid MagickInfo (handle=0).

(Read only property)

90.27.6 BlobSupport as Boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** True if the encoder and decoder for this format supports operating on arbitrary BLOBs (rather than only disk files).

**Notes:**

As currently disc read/write does not work with the 5.1 plugins, we really need that to use the classes.

Returns false for an invalid MagickInfo (handle=0).
For more details please check the ImageMagick documentation.
(Read only property)

90.27.7 Description as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Long form image format description (e.g. ”CompuServe graphics interchange format”).  
**Notes:**  
For more details please check the ImageMagick documentation.  
Returns ”” for an invalid MagickInfo (handle=0).  
(Read only property)

90.27.8 EndianSupport as Boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Whether endian support is available.  
**Notes:**  
For more details please check the ImageMagick documentation.  
Returns false for an invalid MagickInfo (handle=0).  
(Read only property)

90.27.9 Handle as Integer

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The handle used internally by the plugin.  
**Notes:**  
A pointer to a MagickInfo structure.  
For more details please check the ImageMagick documentation.  
(Read and Write property)

90.27.10 ModuleName as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** Name of module (e.g. ”GIF”) which registered this format.  
**Notes:**  
Value is ”” if format is not registered by a module.  
For more details please check the ImageMagick documentation.
Returns "" for an invalid MagickInfo (handle=0).
(Read only property)

### 90.27.11 Name as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Magick string (e.g. "GIF") which identifies this format.
**Notes:**
For more details please check the ImageMagick documentation.
Returns "" for an invalid MagickInfo (handle=0).
(Read only property)

### 90.27.12 Note as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Additional notes for this format.
**Notes:**
e.g. compilation parameters or copyright notices.
Returns "" for an invalid MagickInfo (handle=0).
For more details please check the ImageMagick documentation.
(Read only property)

### 90.27.13 Raw as Boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** True if Image format does not contain size (must be specified in ImageInfo).
**Notes:**
Returns false for an invalid MagickInfo (handle=0).
For more details please check the ImageMagick documentation.
(Read only property)

### 90.27.14 SeekableStream as Boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns True if the magick supports a seekable stream.
**Notes:**
For more details please check the ImageMagick documentation.
Returns false for an invalid MagickInfo (handle=0).
(Read only property)

### 90.27.15 Stealth as Boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Unknown.
**Notes:**
For more details please check the ImageMagick documentation.
Returns false for an invalid MagickInfo (handle=0).
(Read only property)

### 90.27.16 ThreadSupport as Boolean

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** True if threading is supported.
**Notes:**
For more details please check the ImageMagick documentation.
Returns false for an invalid MagickInfo (handle=0).
(Read only property)

### 90.27.17 Version as String

MBS GraphicsMagick Plugin, Plugin Version: 5.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Version string.
**Notes:**
For more details please check the ImageMagick documentation.
Returns "" for an invalid MagickInfo (handle=0).
(Read only property)
class IMMagickPixelPacketQ16MBS

Function: The class to describe a picture background.
Notes: Needed for IMImageQ16MBS.NewImage function.

Methods

HandleMemory as memoryblock

Function: The content of the whole ImageInfo structure copied into a memoryblock.
Notes: Returns nil on any error.

Properties

Blue as Single

Function: The blue color value.
Notes: (Read and Write property)

ColorSpace as Integer

Function: Image pixel interpretation.
Notes:
If the colorspace is RGB the pixels are red, green, blue. If matte is true, then red, green, blue, and index. If it is CMYK, the pixels are cyan, yellow, magenta, black. Otherwise the colorspace is ignored.

constants:
(Read and Write property)
90.28.7  Depth as Integer

Function: Image depth (8 or 16).
Notes: (Read and Write property)

90.28.8  Fuzz as Double

Function: Colors within this distance are considered equal.
Notes:
A number of algorithms search for a target color. By default the color must be exact. Use this to match
colors that are close to the target color in RGB space.
(Read and Write property)

90.28.9  Green as Single

Function: The green color value.
Notes: (Read and Write property)
90.28.10 Handle as Integer

Function: The handle used internally by the plugin.
Notes:
A pointer to an MagickPixelPacket structure.
For more details please check the ImageMagick documentation.
(Read and Write property)

90.28.11 Index as Single

Function: The index color value.
Notes:
Only for indexed color spaces.
(Read and Write property)

90.28.12 Matte as Boolean

Function: Whether an alpha channel is used/present.
Notes:
Set to true to enable masks.
(Read and Write property)

90.28.13 Opacity as Single

Function: The opacity part of the color value.
Notes: (Read and Write property)

90.28.14 Red as Single

Function: The red color value.
Notes: (Read and Write property)
90.29. class IMMagickPixelPacketQ32MBS

90.29.1 class IMMagickPixelPacketQ32MBS


Function: The class to describe a picture background.
Notes: Needed for IMImageQ32MBS.NewImage function.

90.29.2 Methods

90.29.3 HandleMemory as memoryblock


Function: The content of the whole ImageInfo structure copied into a memoryblock.
Notes: Returns nil on any error.

90.29.4 Properties

90.29.5 Blue as Single


Function: The blue color value.
Notes: (Read and Write property)

90.29.6 ColorSpace as Integer


Function: Image pixel interpretation.
Notes:
If the colorspace is RGB the pixels are red, green, blue. If matte is true, then red, green, blue, and index. If it is CMYK, the pixels are cyan, yellow, magenta, black. Otherwise the colorspace is ignored.

constants:

(Read and Write property)
UndefinedColorspace  0
RGBColorspace       1
GRAYColorspace      2
TransparentColorspace 3
OHTAColorspace      4
LABColorspace       5
XYZColorspace       6
YCbCrColorspace     7
YCCColorspace       8
YIQColorspace       9
YPbPrColorspace    10
YUVColorspace       11
CMYKColorspace      12
sRGBColorspace      13
HSBColorspace       14
HSLColorspace       15
HWBColorspace       16

90.29.7  Depth as Integer

Function:  Image depth (8 or 16).
Notes:  (Read and Write property)

90.29.8  Fuzz as Double

Function:  Colors within this distance are considered equal.
Notes:
A number of algorithms search for a target color. By default the color must be exact. Use this to match
colors that are close to the target color in RGB space.
(Read and Write property)

90.29.9  Green as Single

Function:  The green color value.
Notes:  (Read and Write property)
90.29. **Handle as Integer**


**Function:** The handle used internally by the plugin.

**Notes:**
A pointer to an MagickPixelPacket structure.
For more details please check the ImageMagick documentation.
(Read and Write property)

90.29.11 **Index as Single**


**Function:** The index color value.

**Notes:**
Only for indexed color spaces.
(Read and Write property)

90.29.12 **Matte as Boolean**


**Function:** Whether an alpha channel is used/present.

**Notes:**
Set to true to enable masks.
(Read and Write property)

90.29.13 **Opacity as Single**


**Function:** The opacity part of the color value.

**Notes:** (Read and Write property)

90.29.14 **Red as Single**


**Function:** The red color value.

**Notes:** (Read and Write property)
90.30  class IMMagickPixelPacketQ8MBS

90.30.1  class IMMagickPixelPacketQ8MBS

Function: The class to describe a picture background.
Notes: Needed for IMImageQ8MBS.NewImage function.

90.30.2  Methods

90.30.3  HandleMemory as memoryblock

Function: The content of the whole ImageInfo structure copied into a memoryblock.
Notes: Returns nil on any error.

90.30.4  Properties

90.30.5  Blue as Single

Function: The blue color value.
Notes: (Read and Write property)

90.30.6  ColorSpace as Integer

Function: Image pixel interpretation.
Notes: If the colorspace is RGB the pixels are red, green, blue. If matte is true, then red, green, blue, and index. If it is CMYK, the pixels are cyan, yellow, magenta, black. Otherwise the colorspace is ignored.

constants:

(Read and Write property)
90.30. **CLASS IMAGICKPIXELPACKETQ8MBS**

UndefinedColorspace 0
RGBColorspace 1
GRAYColorspace 2
TransparentColorspace 3
OHTAColorspace 4
LABColorspace 5
XYZColorspace 6
YCbCrColorspace 7
YCCColorspace 8
YIQColorspace 9
YPbPrColorspace 10
YUVColorspace 11
CMYKColorspace 12
sRGBColorspace 13
HSBColorspace 14
HSLColorspace 15
HWBColorspace 16

**90.30.7  Depth as Integer**

**Function:** Image depth (8 or 16).  
**Notes:** (Read and Write property)

**90.30.8  Fuzz as Double**

**Function:** Colors within this distance are considered equal.  
**Notes:**  
A number of algorithms search for a target color. By default the color must be exact. Use this to match colors that are close to the target color in RGB space.  
(Read and Write property)

**90.30.9  Green as Single**

**Function:** The green color value.  
**Notes:** (Read and Write property)
90.30.10  Handle as Integer

**Function:** The handle used internally by the plugin.
**Notes:**
A pointer to an MagickPixelPacket structure.
For more details please check the ImageMagick documentation.
(Read and Write property)

90.30.11  Index as Single

**Function:** The index color value.
**Notes:**
Only for indexed color spaces.
(Read and Write property)

90.30.12  Matte as Boolean

**Function:** Whether an alpha channel is used/present.
**Notes:**
Set to true to enable masks.
(Read and Write property)

90.30.13  Opacity as Single

**Function:** The opacity part of the color value.
**Notes:** (Read and Write property)

90.30.14  Red as Single

**Function:** The red color value.
**Notes:** (Read and Write property)
90.31. class IMMissingFunctionExceptionQ16MBS

90.31.1 class IMMissingFunctionExceptionQ16MBS

Function: A class for an exception in Image Magick.
Notes: This exception is raised on every IM function if the library function behind is not available.
(this can be a plugin bug or a bad compiled library or simply a too old library.) Subclass of the RuntimeException class.
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90.32 class IMMissingFunctionExceptionQ32MBS

90.32.1 class IMMissingFunctionExceptionQ32MBS


Function: A class for an exception in Image Magick.

Notes:
This exception is raised on every IM function if the library function behind is not available.
(this can be a plugin bug or a bad compiled library or simply a too old library.)
Subclass of the RuntimeException class.
90.33. class IMMissingFunctionExceptionQ8MBS

90.33.1 class IMMissingFunctionExceptionQ8MBS


**Function:** A class for an exception in Image Magick.

**Notes:**
This exception is raised on every IM function if the library function behind is not available. (this can be a plugin bug or a bad compiled library or simply a too old library.)
Subclass of the RuntimeException class.
Chapter 91

ImageKit

91.1 class IKImageBrowserCellMBS

91.1.1 class IKImageBrowserCellMBS

Function: The class for an image browser cell.
Notes:
The IKImageBrowserCell class is used to display a cell conforming to the IKImageBrowserItem Protocol protocol in an IKImageBrowserView.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

91.1.2 Methods

91.1.3 cellState as Integer

Function: Returns the current cell state of the receiver.
Notes:
The IKImageBrowserView creates thumbnails asynchronously. This method returns the current state.
Available in OS X v10.6 and later.

91.1.4 Constructor

Function: The private constructor.
91.1.5 frame as NSRectMBS

Function: Returns the receiver’s frame rectangle, which defines its position in its IKImageBrowserView.
Notes: Available in OS X v10.6 and later.

91.1.6 IKImageBrowserCellBackgroundLayer as string

Function: One of the layer types you can pass to layerForType.
Notes: Layer displayed in the background.
Available in OS X v10.6 and later.

91.1.7 IKImageBrowserCellForegroundLayer as string

Function: One of the layer types you can pass to layerForType.
Notes: Layer displayed in the foreground.
Available in OS X v10.6 and later.

91.1.8 IKImageBrowserCellPlaceHolderLayer as string

Function: One of the layer types you can pass to layerForType.
Notes: Layer displayed as a placeholder when an image is not yet available.
Available in OS X v10.6 and later.

91.1.9 IKImageBrowserCellSelectionLayer as string

Function: One of the layer types you can pass to layerForType.
Notes:
Layer displayed as the selection.
Available in OS X v10.6 and later.

91.1.10 imageAlignment as Integer

Function: Returns the position of the cell’s image in the frame.

91.1.11 imageBrowserView as IKImageBrowserViewMBS

Function: Returns the view the receiver uses to display the cell.
Notes: Available in OS X v10.6 and later.

91.1.12 imageContainerFrame as NSRectMBS

Function: Returns the receiver’s image container frame rectangle, which defines the position of the container
of the thumbnail.
Notes:
The coordinates of image container frame, in the IKImageBrowserView coordinate space.
The image frame is computed automatically from the image container frame by taking in account the image
alignment and the image aspect ratio.
Subclasses can override this method to customize the position of the thumbnail container.
Available in OS X v10.6 and later.

91.1.13 imageFrame as NSRectMBS

Function: Returns the receiver’s image frame rectangle, which defines the position of the thumbnail in its
IKImageBrowserView.
Notes:
Returns the coordinates of the frame, in the IKImageBrowserView coordinate space.
It is the developer’s responsibility to compute the imageFrame such that it lies entirely within the cell’s
frame rectangle.
Subclasses can override this method to customize the position of the thumbnail.
Available in OS X v10.6 and later.
CHAPTER 91. IMAGEKIT

91.1.14 indexOfRepresentedItem as Integer

Function: Returns the index of the receiver’s represented object in the datasource.
Notes: Available in OS X v10.6 and later.

91.1.15 isSelected as boolean

Function: Returns whether the cell is selected.
Notes:
Returns true if the cell is selected, otherwise false.
Subclasses should not override this method.
Available in OS X v10.6 and later.

91.1.16 layerForType(type as string) as CALayerMBS

Function: Returns a layer for the specified position.
Notes:
type: A string representing the layer location. See Cell Layer Positions for possible values.
Return the CALayer to display in the specified position.
Subclasses can override this method to add a Core Animation layer to the cell
Available in OS X v10.6 and later.

91.1.17 opacity as Double

Function: Returns the opacity of the receiver.
Notes:
Possible values are between 0.0 (transparent) and 1.0 (opaque).
Subclasses can override this method to customize the opacity of the cell.
Available in OS X v10.6 and later.

91.1.18 representedItem as Variant

Function: Returns the receiver’s represented object.
91.1. CLASS IKIMAGEBROWSERCELLMBS

Notes:
Subclasses should not override this method. Available in OS X v10.6 and later.

91.1.19 selectionFrame as NSRectMBS

Function: Returns the receiver's selection frame rectangle, which defines the position of the selection rectangle in its IKImageBrowserView.
Notes:
Subclasses can override this method to customize the position of the selection frame. Available in OS X v10.6 and later.

91.1.20 subtitleFrame as NSRectMBS

Function: Returns the receiver's subtitle frame rectangle.
Notes:
The coordinates of the subtitle frame, in the IKImageBrowserView coordinate space.
It is the developer's responsibility to compute the subtitleFrame such that it lies entirely within the cell's frame rectangle. Subclasses can override this method to customize the position of the subtitle. Available in OS X v10.6 and later.

91.1.21 titleFrame as NSRectMBS

Function: Returns the receiver's title frame rectangle.
Notes:
The coordinates of the title frame, in the IKImageBrowserView coordinate space.
It is the developer's responsibility to compute the titleFrame such that it lies entirely within the cell's frame rectangle. Subclasses can override this method to customize the position of the title.
Available in OS X v10.6 and later.

91.1.22 Properties

91.1.23 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

91.1.24 Constants

91.1.25 IKImageStateInvalid = 1

MBS AVFoundation Plugin, Plugin Version: 13.1. Function: One of the cell state constants.
Notes:
The thumbnail is invalid. For example, an unsupported image is provided.
Available in OS X v10.6 and later.

91.1.26 IKImageStateNoImage = 0

MBS AVFoundation Plugin, Plugin Version: 13.1. Function: One of the cell state constants.
Notes:
Returned until a thumbnail has been created from the represented object.
Available in OS X v10.6 and later.

91.1.27 IKImageStateReady = 2

MBS AVFoundation Plugin, Plugin Version: 13.1. Function: One of the cell state constants.
Notes:
The receiver’s represented object has been set and the cell is ready to display.
Available in OS X v10.6 and later.
91.2. CLASS IKIMAGEBROWSERITEMMBS

91.2. class IKImageBrowserItemMBS

**Function:** The class for items in image browser.

91.2.2 Methods

91.2.3 Constructor(imageUID as string, imageRepresentationType as string, imageRepresentation as Variant, imageVersion as Integer = 1, imageTitle as string = "", imageSubtitle as string = "", isSelectable as boolean = true)

**Function:** Creates a new item with given values.

91.2.4 ItemWithCGImage(imageUID as string, Image as Variant, imageVersion as Integer = 1, imageTitle as string = "", imageSubtitle as string = "", isSelectable as boolean = true) as IKImageBrowserItemMBS

**Function:** Creates a new item with given image.

91.2.5 ItemWithData(imageUID as string, Data as Memoryblock, imageVersion as Integer = 1, imageTitle as string = "", imageSubtitle as string = "", isSelectable as boolean = true) as IKImageBrowserItemMBS

**Function:** Creates a new item with given data.

91.2.6 ItemWithFile(imageUID as string, file as folderitem, imageVersion as Integer = 1, imageTitle as string = "", imageSubtitle as string = "", isSelectable as boolean = true) as IKImageBrowserItemMBS

**Function:** Creates a new item with given file.
91.2.7  **ItemWithNSImage** (imageUID as string, Image as NSImageMBS, imageVersion as Integer = 1, imageTitle as string = "", imageSubtitle as string = "", isSelectable as boolean = true) as IKImageBrowserItemMBS


**Function:** Creates a new item with given image.

91.2.8  **ItemWithPath** (imageUID as string, path as string, imageVersion as Integer = 1, imageTitle as string = "", imageSubtitle as string = "", isSelectable as boolean = true) as IKImageBrowserItemMBS


**Function:** Creates a new item with given path.

91.2.9  **ItemWithURL** (imageUID as string, URL as string, imageVersion as Integer = 1, imageTitle as string = "", imageSubtitle as string = "", isSelectable as boolean = true) as IKImageBrowserItemMBS


**Function:** Creates a new item with given URL.

91.2.10  **Properties**

91.2.11  **Handle as Integer**


**Function:** The internal object handle.

**Notes:** (Read and Write property)

91.2.12  **imageRepresentation as Variant**


**Function:** Returns the image to display.

**Notes:** (Read and Write computed property)
91.2.13  imageRepresentationType as string

Function: Returns the representation type of the image to display.
Notes: (Read and Write computed property)

91.2.14  imageSubtitle as string

Function: Returns the display subtitle of the image.
Notes: (Read and Write computed property)

91.2.15  imageTitle as string

Function: Returns the display title of the image.
Notes: (Read and Write computed property)

91.2.16  imageUID as string

Function: Returns a unique string that identifies the data source item.
Notes:
The image browser view uses this identifier to associate the data source item and its cache.
(Read and Write computed property)

91.2.17  imageVersion as Integer

Function: Returns the version of the item.
Notes:
The receiver can return a new version to let the image browser know that it should not use its cache for the item.
(Read and Write computed property)
91.2.18 isSelectable as boolean

Function: Returns whether this item is selectable.
Notes:
True if the item is selectable; false otherwise.
(Read and Write computed property)
91.3. CONTROL IKIMAGEBROWSERVIEWCONTROLMBS

91.3 control IKImageBrowserViewControlMBS

91.3.1 control IKImageBrowserViewControlMBS

Function: The control to wrap a IKImageBrowserViewMBS.

91.3.2 Properties

91.3.3 Scrollview as NSScrollViewMBS

Function: The scrollview we embed the image browser view inside.
Notes: (Read only property)

91.3.4 View as IKImageBrowserViewMBS

Function: The image browser view.
Notes: (Read only property)

91.3.5 Events

91.3.6 backgroundWasRightClickedWithEvent(e as NSEventMBS)

Function: Performs custom tasks when the user right-clicks the image browser view background.
Notes:
event: The event that invoked the method.

This method signals that the user either right-clicked the background or left-clicked it with the Alt key pressed. You can implement this method if you want to perform custom tasks at that time. Available in OS X v10.5 and later.
91.3.7 BoundsChanged

MBS AVFoundation Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The event called when the bounds, but not the frame, changed.

91.3.8 cellWasDoubleClickedAtIndex(index as Integer)

Function: Performs custom tasks when the user double-clicks an item in the image browser view.
Notes:
index: The index of the cell.

This method signals that the user double-clicked an item in the image browser view. You can implement
this method if you want to perform custom tasks at that time.
Available in OS X v10.5 and later.

91.3.9 cellWasRightClickedAtIndex(index as Integer, e as NSEventMBS)

Function: Performs custom tasks when the user right-clicks an item in the image browser view.
Notes:
index: The index of the cell.
event: The event that invoked the method.

This method signals that the user either right-clicked an item in the browser or left-clicked the item with
the Alt key pressed. You can implement this method if you want to perform custom tasks at that time.
Available in OS X v10.5 and later.

91.3.10 concludeDragOperation(sender as NSDraggingInfoMBS)

Function: Invoked when the dragging operation is complete, signaling the receiver to perform any necessary
clean-up.
Notes:
sender: The object sending the message; use it to get details about the dragging operation.

For this method to be invoked, the previous performDragOperation must have returned true.
The destination implements this method to perform any tidying up that it needs to do, such as updating its
visual representation now that it has incorporated the dragged data. This message is the last message sent
from sender to the destination during a dragging session.

If the sender object’s animatesToDestination property was set to true in prepareForDragOperation, then the
drag image is still visible. At this point you should draw the final visual representation in the view. When
this method returns, the drag image is removed form the screen. If your final visual representation matches
the visual representation in the drag, this is a seamless transition.

91.3.11 draggingEnded(sender as NSDraggingInfoMBS)

Function: Implement this event to be notified when a drag operation ends in some other destination.
Notes:
sender: The object sending the message; use it to get details about the dragging operation.
This method might be used by a destination doing auto-expansion in order to collapse any auto-expands.

91.3.12 draggingEntered(sender as NSDraggingInfoMBS) as Integer

Function: Invoked when the dragged image enters destination bounds or frame; delegate returns dragging
operation to perform.
Notes:
sender: The object sending the message; use it to get details about the dragging operation.

Return one (and only one) of the dragging operation constants described in NSDragOperation in the NS-
DraggingInfo reference. The default return value (if this method is not implemented by the destination) is
the value returned by the previous draggingEntered: message.

Invoked when a dragged image enters the destination but only if the destination has registered for the paste-
board data type involved in the drag operation. Specifically, this method is invoked when the mouse pointer
enters the destination’s bounds rectangle (if it is a view object) or its frame rectangle (if it is a window object).

This method must return a value that indicates which dragging operation the destination will perform when
the image is released. In deciding which dragging operation to return, the method should evaluate the
overlap between both the dragging operations allowed by the source (obtained from sender with the drag-
gingSourceOperationMask method) and the dragging operations and pasteboard data types the destination
itself supports.

If none of the operations is appropriate, this method should return NSDragOperationNone (this is the default
response if the method is not implemented by the destination). A destination will still receive draggingUpdated: and draggingExited: even if NSDragOperationNone is returned by this method.

91.3.13  draggingExited(sender as NSDraggingInfoMBS)

**Function:** Invoked when the dragged image exits the destination’s bounds rectangle (in the case of a view object) or its frame rectangle (in the case of a window object).
**Notes:** sender: The object sending the message; use it to get details about the dragging operation.

91.3.14  draggingSourceOperationMaskForLocal(flag as boolean) as Integer

**Function:** Returns an integer bit mask indicating the types of dragging operations the source object will allow to be performed on the dragged image’s data.
**Notes:**

(isLocal: True indicates that the candidate destination object (the window or view over which the dragged image is currently poised) is in the same application as the source, while a false value indicates that the destination object is in a different application.

A mask, created by combining the dragging operations listed in the NSDragOperation section of NSDraggingInfo protocol reference using the C bitwise OR operator. If the source does not permit any dragging operations, it should return NSDragOperationNone.

If not implemented, the default value is NSDragOperationCopy | NSDragOperationLink | NSDragOperationGeneric | NSDragOperationPrivate.

Available in OS X v10.0 and later. Deprecated in OS X v10.7.

91.3.15  draggingUpdated(sender as NSDraggingInfoMBS) as Integer

**Function:** Invoked periodically as the image is held within the destination area, allowing modification of the dragging operation or mouse-pointer position.
**Notes:**
sender: The object sending the message; use it to get details about the dragging operation.

Returns one (and only one) of the dragging operation constants described in NSDragOperation in the NS-DraggingInfo reference. The default return value (if this method is not implemented by the destination) is the value returned by the previous draggingEntered: message.

For this to be invoked, the destination must have registered for the pasteboard data type involved in the drag operation. The messages continue until the image is either released or dragged out of the window or view.

This method provides the destination with an opportunity to modify the dragging operation depending on the position of the mouse pointer inside of the destination view or window object. For example, you may have several graphics or areas of text contained within the same view and wish to tailor the dragging operation, or to ignore the drag event completely, depending upon which object is underneath the mouse pointer at the time when the user releases the dragged image and the performDragOperation method is invoked.

You typically examine the contents of the pasteboard in the draggingEntered method, where this examination is performed only once, rather than in the draggingUpdated method, which is invoked multiple times.

Only one destination at a time receives a sequence of draggingUpdated messages. If the mouse pointer is within the bounds of two overlapping views that are both valid destinations, the uppermost view receives these messages until the image is either released or dragged out.

### 91.3.16 EnableMenuItems

MBS AVFoundation Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes.  
**Function:** The event where you can enable menu items.

### 91.3.17 FrameChanged

MBS AVFoundation Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.  
**Function:** The event called when the frame changed.

### 91.3.18 GotFocus

**Function:** The control itself got focus.  
**Notes:** This only fires if the control itself got focus and not a sub control.
91.3.19 groupAtIndex(index as Integer) as Dictionary

Function: Returns the group at the specified index.
Notes:

index: The index of the group you want to retrieve.

Returns a dictionary that defines the group. The keys in this dictionary can be any of the following constants: IKImageBrowserGroupStyle, IKImageBrowserGroupBackgroundColorKey, IKImageBrowserGroupTitleKey, and IKImageBrowserGroupRangeKey. For more information on these constants, see IKImageBrowserView Class Reference.

This method is optional.
Available in OS X v10.5 and later.

91.3.20 itemAtIndex(index as Integer) as IKImageBrowserItemMBS

Function: Returns an object for the item in an image browser view that corresponds to the specified index.
Notes:

index: The index of the item you want to retrieve.

Return an IKImageBrowserItem object.

Your data source must implement this method. The returned object must implement the required methods of the IKImageBrowserItem protocol.
Available in OS X v10.5 and later.

91.3.21 LostFocus

Function: The control lost focus.
Notes: This only fires if the control itself lost focus and not a sub control.

91.3.22 MenuAction(HitItem as MenuItem) As Boolean

MBS AVFoundation Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Called when a menuitem is choosen.
91.3. CONTROL IKIMAGEBROWSERVIEWCONTROLMBS

Notes: This allows the control to react on its relevant menu items. Please return true if you handled it or false to give others a chance.

91.3.23 MouseDown(x as Integer, y as Integer, Modifiers as Integer) As Boolean

MBS AVFoundation Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The mouse button was pressed inside the controls region at the location passed in to x, y.
Notes:
The coordinates x and y are local to the control, i.e. they represent the position of the mouse click relative to the upper-left corner or the Control.
Return True if you are going to handle the MouseDown. In such a case:

- The Action event, if any, will not execute and the state of the object will not change.
- You will receive the MouseDrag and MouseUp events.

If you return False, the system handles the MouseDown so the above event handlers do not get called.

91.3.24 MouseDrag(x as Integer, y as Integer)

MBS AVFoundation Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: This event fires continuously after the mouse button was pressed inside the Control.
Notes:
Mouse location is local to the control passed in to x, y.
As this event is fired continuously (hundreds of time per second), it is your responsibility to determine if the mouse has really moved.

91.3.25 MouseUp(x as Integer, y as Integer)

MBS AVFoundation Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The mouse button was released.
Notes: Use the x and y parameters to determine if the mouse button was released within the control's boundaries.
91.3.26 moveItemsAtIndexes(indexes as NSIndexSetMBS, destinationIndex as Integer) as boolean

**Function:** Signals that the specified items should be moved to the specified destination.
**Notes:**
- indexes: The indexes of the items that should be reordered.
- destinationIndex: The starting index of the destination the items should be moved to.

Returns true if successful; false otherwise.

This method is optional. It is invoked by the image browser view after Image Kit determines that a reordering operation should be applied. The data source should update itself by reordering its elements. Available in OS X v10.5 and later.

91.3.27 numberOfGroups as Integer

**Function:** Returns the number of groups in an image browser view.
**Notes:**
- Return the number of groups.

This method is optional. Available in OS X v10.5 and later.

91.3.28 numberOfItems as Integer

**Function:** Returns the number of records managed by the data source object.
**Notes:**
- Return the number of records managed by the image browser view.

Your data source must implement this method. An IKImageView object uses this method to determine how many cells it should create and display. Available in OS X v10.5 and later.
91.3.29 performDragOperation(sender as NSDraggingInfoMBS) as boolean


**Function:** Invoked after the released image has been removed from the screen, signaling the receiver to import the pasteboard data.

**Notes:**

sender: The object sending the message; use it to get details about the dragging operation.

Returns if the destination accepts the data, it returns true; otherwise it returns false. The default is to return false.

For this method to be invoked, the previous prepareForDragOperation message must have returned true. The destination should implement this method to do the real work of importing the pasteboard data represented by the image.

If the sender object’s animatesToDestination was set to true in prepareForDragOperation, then setup any animation to arrange space for the drag items to animate to. Also at this time, enumerate through the dragging items to set their destination frames and destination images.

91.3.30 prepareForDragOperation(sender as NSDraggingInfoMBS) as boolean


**Function:** Invoked when the image is released, allowing the receiver to agree to or refuse drag operation.

**Notes:**

sender: The object sending the message; use it to get details about the dragging operation.

Return true if the receiver agrees to perform the drag operation and false if not.

This method is invoked only if the most recent draggingEntered or draggingUpdated event returned an acceptable drag-operation value.

If you want the drag items to animate from their current location on screen to their final location in your view, set the sender object’s animatesToDestination property to true in your implementation of this event.

91.3.31 removeItemsAtIndexes(indexes as NSIndexSetMBS)


**Function:** Signals that a remove operation should be applied to the specified items.

**Notes:**
indexes: The indexes of the items that should be removed.

This method is optional. It is invoked by the image browser after Image Kit determines that a remove operation should be applied. In response, the data source should update itself by removing the specified items.
Available in OS X v10.5 and later.

91.3.32 ScaleFactorChanged(NewFactor as Double)

MBS AVFoundation Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The backing store scale factor has changed.
Notes: Please invalidate any cached bitmaps or other relevant state.

91.3.33 selectionDidChange

Function: Performs custom tasks when the selection changes.
Notes:
This method signals that the user changes the selection in the image browser view. You can implement this method if you want to perform custom tasks at that time.
Available in OS X v10.5 and later.

91.3.34 updateDraggingItemsForDrag(sender as NSDraggingInfoMBS)

Function: Invoked when the dragging images should be changed.
Notes:
sender: The object sending the message; use this object to get details about the dragging operation.

While a destination may change the dragging images at any time, it is recommended to wait until this method is called before updating the dragging images.

This allows the system to delay changing the dragging images until it is likely that the user will drop on this destination. Otherwise, the dragging images will change too often during the drag which would be distracting to the user.

During enumerateDraggingItemsWithOptions you may set non-acceptable drag items images to nil to hide them or use the enumeration option of NSDraggingItemEnumerationClearNonenumeratedImages If there
are items that you hide, then after enumeration, you need to set the numberOfValidItemsForDrop to the
number of non-hidden drag items. However, if the valid item count is 0, then it is better to return NSDrag-
OperationNone from your implementation of draggingEntered and, or draggingUpdated instead of hiding all
drag items during enumeration.
Available in OS X v10.7 and later.

91.3.35  wantsPeriodicDraggingUpdates as boolean

Function:  Asks the destination object whether it wants to receive periodic draggingUpdated events.
Notes:
Returns true if the destination wants to receive periodic draggingUpdated messages, false otherwise.
If the destination returns false, these messages are sent only when the mouse moves or a modifier flag changes.
Otherwise the destination gets the default behavior, where it receives periodic dragging-updated events even
if nothing changes.

91.3.36  writeItemsAtIndexes(indexes as NSIndexSetMBS, pasteboard as NSPaste-
boardMBS) as Integer

Function:  Signals that a drag should begin.
Notes:
itemIndexes: The indexes of the items that should be dragged.
pasteboard: The pasteboard to copy the items to.
Returns the number of items written to the pasteboard.
This method is optional. It is invoked after Image Kit determines that a drag should begin, but before the
drag has been started.
Available in OS X v10.5 and later.
91.4 class IKImageBrowserViewMBS

91.4.1 class IKImageBrowserViewMBS

Function: The IKImageBrowserView class is a view for displaying and browsing a large amount of images and movies efficiently.
Notes:
Available in OS X v10.5 and later.
Subclass of the NSViewMBS class.

91.4.2 Methods

91.4.3 cellForItemAtIndex(index as Integer) as IKImageBrowserCellMBS

Function: Returns the browser cell for the item at the specified index.
Notes:
Subclasses must not override this method.
Available in OS X v10.6 and later.

91.4.4 collapseGroupAtIndex(index as Integer)

Function: Collapses a group at the specified index.
Notes: index: The index of the group you want to collapse.

91.4.5 columnIndexesInRect(rect as NSRectMBS) as NSIndexSetMBS

Function: Returns the column indexes in the specified rectangle.
Notes: rect: The rectangle in the view’s coordinate system.
Returns an index set containing the cell indexes.
Available in OS X v10.6 and later.
91.4. **CLASS IKIMAGEBROWSERVIEWMBS**

### 91.4.6 Constructor


**Function:** Creates a new control with size 100/100 and position 0/0

**Example:**

```vbscript
dim t as new IKImageBrowserViewMBS
```

**Notes:** On success the handle property is not zero.

See also:

- 91.4.7 Constructor(Handle as Integer)
- 91.4.8 Constructor(left as Double, top as Double, width as Double, height as Double)

### 91.4.7 Constructor(Handle as Integer)


**Function:** Creates an object based on the given IKImageBrowserView handle.

**Example:**

```vbscript
dim t as new IKImageBrowserViewMBS(0, 0, 100, 100)
dim v as new IKImageBrowserViewMBS(t.handle)
MsgBox str(v.Bounds.Width)+" x "+str(v.Bounds.Height)
```

**Notes:** The handle is casted to a IKImageBrowserView and the plugin retains this handle.

See also:

- 91.4.6 Constructor
- 91.4.8 Constructor(left as Double, top as Double, width as Double, height as Double)

### 91.4.8 Constructor(left as Double, top as Double, width as Double, height as Double)


**Function:** Creates a new control with the given size and position.

**Example:**

```vbscript
dim x as new IKImageBrowserViewMBS(0, 0, 100, 20)
```
**Notes:** On success the handle property is not zero.

See also:

- 91.4.6 Constructor
- 91.4.7 Constructor(Handle as Integer)

### 91.4.9 Destructor


**Function:** The destructor.

### 91.4.10 dropOperation as Integer


**Function:** Returns the current drop operation.

**Notes:**

Returns IKImageBrowserDropOn if the drop occurs on an item, otherwise IKImageBrowserDropBefore. The returned value is valid when a drop occurred and until next drop.

For example, given a browser with N cells, a cell of N-1 and operation of IKImageBrowserDropOn would specify a drop on the last cell. To specify a drop after the last cell, one would use an index of N and IKImageBrowserDropBefore for the operation.

Available in OS X v10.6 and later.

### 91.4.11 expandGroupAtIndex(index as Integer)


**Function:** Expands a group at the specified index.

**Notes:**

index: The index of the group you want to expand.

Available in OS X v10.5 and later.

### 91.4.12 getValue(name as String) as Variant


**Function:** Queries a value for a given key.
91.4.13 **IKImageBrowserBackgroundColorKey as string**


**Function:** One of the keys for image browser view options.

**Notes:**
A key for the background color of the image browser view. The associated value is a NSColorMBS object.
Available in OS X v10.5 and later.

91.4.14 **IKImageBrowserCellsHighlightedTitleAttributesKey as string**


**Function:** One of the keys for image browser view options.

**Notes:**
A key for the highlighted title attribute for an item in the image browser view. The associated value is a Dictionary.
Available in OS X v10.5 and later.

91.4.15 **IKImageBrowserCellsOutlineColorKey as string**


**Function:** One of the keys for image browser view options.

**Notes:**
A key for the outline color for an item in the image browser view. The associated value is an NSColorMBS object.
Available in OS X v10.5 and later.

91.4.16 **IKImageBrowserCellsSubtitleAttributesKey as string**


**Function:** One of the keys for image browser view options.

**Notes:**
A key for a subtitle attribute for an item in the image browser view. The associated value is a dictionary.
Available in OS X v10.5 and later.
91.4.17 **IKImageBrowserCellsTitleAttributesKey as string**

**Function:** One of the keys for image browser view options.
**Example:**
```plaintext
dim Imagebrowser as IKImageBrowseViewMBS // your control
dim d as new Dictionary
  d.Value(NSAttributedStringMBS.NSForegroundColorAttributeName) = NSColorMBS.redColor
Imagebrowser.setValue Imagebrowser.IKImageBrowserCellsTitleAttributesKey, d
```

**Notes:**
A key for title attribute of an item in the image browser view. The associated value is a dDictionary.
Available in OS X v10.5 and later.

91.4.18 **IKImageBrowserCGImageRepresentationType as string**

**Function:** One of the image representation types.
**Notes:** A CGImageRef object.

91.4.19 **IKImageBrowserCGImageSourceRepresentationType as string**

**Function:** One of the image representation types.
**Notes:** A CGImageSourceRef object.

91.4.20 **IKImageBrowserGroupBackgroundColorKey as string**

**Function:** One of the group attribute keys.
**Notes:**
A key for the background color of a group. The associated value is an NSColor object. This color is used only for the bezel style.
Available in OS X v10.5 and later.
91.4. CLASS IKIMAGEBROWSERVIEWMBS

91.4.21 IKImageBrowserGroupFooterLayer as string

**Function:** One of the group attribute keys.
**Notes:**
A key for the header layer of the group. The associated value is a CALayer.
Available in OS X v10.6 and later.

91.4.22 IKImageBrowserGroupHeaderLayer as string

**Function:** One of the group attribute keys.
**Notes:**
A key for the header layer of the group. The associated value is a CALayer.
Available in OS X v10.6 and later.

91.4.23 IKImageBrowserGroupRangeKey as string

**Function:** One of the group attribute keys.
**Notes:**
A key for the range of a group. The associated value is a NSRangeMBS. This is required if the view uses grouping.
Available in OS X v10.5 and later.

91.4.24 IKImageBrowserGroupStyleKey as string

**Function:** One of the group attribute keys.
**Notes:**
A key for the style of a group. The associated value is one of the constants defined in "Group Style Attributes".
Available in OS X v10.5 and later.
91.4.25  **IKImageBrowserGroupTitleKey as string**


**Function:** One of the group attribute keys.

**Notes:**

A key for the title of a group. The associated value is a string. This string is used for the disclosure style only.
Available in OS X v10.5 and later.

91.4.26  **IKImageBrowserIconRefPathRepresentationType as string**


**Function:** One of the image representation types.

**Notes:** A path to an icon.

91.4.27  **IKImageBrowserIconRefRepresentationType as string**


**Function:** One of the image representation types.

**Notes:** An icon.

91.4.28  **IKImageBrowserNSBitmapImageRepresentationType as string**


**Function:** One of the image representation types.

**Notes:** An NSBitmapImageRep object.

91.4.29  **IKImageBrowserNSDataRepresentationType as string**


**Function:** One of the image representation types.

**Notes:** Value for this key is a memoryblock.

91.4.30  **IKImageBrowserNSImageRepresentationType as string**


**Function:** One of the image representation types.
91.4. CLASS IKIMAGEBROWSERVIEWMBS

Notes: An NSImage object.

91.4.31  IKImageBrowserNSURLRepresentationType as string

Function: One of the image representation types.
Notes: An NSURL object.

91.4.32  IKImageBrowserPathRepresentationType as string

Function: One of the image representation types.
Notes: A path representation (string).

91.4.33  IKImageBrowserPDFPageRepresentationType as string

Function: One of the image representation types.
Notes: A PDFPage instance or a CGPDFPageRef.

91.4.34  IKImageBrowserQCCompositionPathRepresentationType as string

Function: One of the image representation types.
Notes: A path (String) or URL (NSURL) to a Quartz Composer composition.

91.4.35  IKImageBrowserQCCompositionRepresentationType as string

Function: One of the image representation types.
Notes: A QCComposition object.

91.4.36  IKImageBrowserQTMoviePathRepresentationType as string

Function: One of the image representation types.
Notes: A path (string) or URL to a QuickTime movie.

91.4.37  IKImageBrowserQTMovieRepresentationType as string

Function: One of the image representation types.
Notes: A QTMovie object.

91.4.38  IKImageBrowserQuickLookPathRepresentationType as string

Function: One of the image representation types.
Notes: A path (string) or URL (NSURL) to load data using QuickLook.

91.4.39  IKImageBrowserSelectionColorKey as string

Function: One of the keys for image browser view options.
Notes: A key for the color that indicates a selection. The associated value is an NSColorMBS object.
Available in OS X v10.5 and later.

91.4.40  indexAtLocationOfDroppedItem as Integer

Function: Returns the index of the cell where the drop operation occurred.
Notes: Returns the index of the cell where the drop operation occurred.
The returned index is valid until the next drop occurs.
Available in OS X v10.5 and later.

91.4.41  indexOfItemAtPoint(point as NSPointMBS) as Integer

Function: Returns the index of the item at the specified location.
Notes: Returns the index of the item or NSNotFound (-1) if no item at this location.
91.4.42  isGroupExpandedAtIndex(index as Integer) as boolean


Function: Returns whether the group at the provided index is expanded.

Notes: Return true if the group is expanded; false otherwise.

91.4.43  itemFrameAtIndex(index as Integer) as NSRectMBS


Function: Returns the frame rectangle for the item located at the specified index.

Notes:

index: The index of the item whose frame rectangle you want to obtain.
Return the frame rectangle of the item.

91.4.44  newCellForRepresentedItem(item as IKImageBrowserItemMBS) as IKImageBrowserCellMBS


Function: Returns the cell to use for the specified item.

Notes:

Subclasses can override this method to customize the appearance of the cell that will represent anItem.
Available in OS X v10.6 and later.

91.4.45  numberOfColumns as Integer


Function: Returns the current number of columns.

Notes: Available in OS X v10.6 and later.

91.4.46  numberOfRows as Integer


Function: Returns the current number of rows.

Notes: Available in OS X v10.6 and later.
91.4.47 rectOfColumn(columnIndex as Integer) as NSRectMBS

**Function:** Returns the rectangle containing the specified column.
**Notes:**
Return a rectangle containing the column. Specified in the view’s coordinate system.
Available in OS X v10.6 and later.

91.4.48 rectOfRow(rowIndex as Integer) as NSRectMBS

**Function:** Returns the rectangle containing the specified row.
**Notes:**
Returns a rectangle containing the column. Specified in the view’s coordinate system.
Available in OS X v10.6 and later.

91.4.49 reloadData

**Function:** Marks the receiver as needing its data reloaded.

91.4.50 rowIndexesInRect(rect as NSRectMBS) as NSIndexSetMBS

**Function:** Returns the row indexes in the specified rectangle.
**Notes:**
rect: A rectangle in the view’s coordinate system.
Returns an index set containing the item indexes.
Available in OS X v10.6 and later.

91.4.51 scrollIndexToVisible(index as Integer)

**Function:** Scrolls the receiver to the item at the specified index.
91.4.52 selectionIndexes as NSIndexSetMBS

**Function:** Returns the indexes of the selected cells.

91.4.53 setDropIndex(index as Integer, operation as Integer)

**Function:** Allows the class to retarget the drop action.
**Notes:**
- index: The requested drop index.
- operation: The requested drop operation. The possible values are described in IKImageBrowserDropOperation.

For example, To specify a drop on the second item, one would specify index as 1, and operation as IKImageBrowserDropOn. To specify a drop after the last item, one would specify index as the number of items and operation as IKImageBrowserDropBefore.

Passing a value of 1 for index, and IKImageBrowserDropOn as the operation causes the entire browser view to be highlighted rather than a specific item. This is useful if the data displayed by the receiver does not allow the user to drop items at a specific item location.

91.4.54 setSelectionIndexes(indexes as NSIndexSetMBS, extendSelection as boolean = false)

**Function:** Selects cells at the specified indexes.
**Notes:**
- indexes: The indexes of the cells you want to select.
- extendSelection: A boolean value that specifies whether to extend the current selection. Pass true to extends the selection; false replaces the current selection.
  Available in OS X v10.5 and later.

91.4.55 setValue(name as String, value as Variant)

**Function:** Sets a value for a given key.
91.4.56  visibleItemIndexes as NSIndexSetMBS

Function: Returns the indexes of the view's currently visible items.
Notes: Available in OS X v10.6 and later.

91.4.57  Properties

91.4.58  allowsDroppingOnItems as boolean

Function: Whether the user can drop on items.
Notes: True if the user is able to drop on items, otherwise false.
Available in OS X v10.6 and later.
(Read and Write computed property)

91.4.59  allowsEmptySelection as boolean

Function: Whether an empty selection is allowed.
Notes: (Read and Write computed property)

91.4.60  allowsMultipleSelection as boolean

Function: Whether the user can select more than one cell at a time.
Notes: (Read and Write computed property)

91.4.61  allowsReordering as boolean

Function: Whether the user can reorder items.
Notes: (Read and Write computed property)
91.4.62 animates as boolean

**Function:** Whether the receiver animates reordering and changes of the data source.
**Notes:** (Read and Write computed property)

91.4.63 backgroundLayer as CALayerMBS

**Function:** The Core Animation layer used as the view’s background.
**Notes:**
- The background layer can have sublayers. Additionally, the layers can also contain animations.
- The layer is optional.
- Available in OS X v10.6 and later.
(Read and Write computed property)

91.4.64 canControlQuickLookPanel as boolean

**Function:** Whether the view can automatically take control of the QuickLook panel.
**Notes:**
- When the browser view displays the QuickLook panel it sets itself as the QuickLook datasource. If the browser cells returned by the datasource return items that are URLs or paths, then the QuickLook panel will display the image at that location. Otherwise, the browser cell must implement the QLPreviewItem protocol and return the requested URL for the custom cell.
- Available in OS X v10.6 and later.
(Read and Write computed property)

91.4.65 cellSize as NSSizeMBS

**Function:** The cell size.
**Notes:**
- You must use CellSize or ZoomValue, but not both. Setting the zoom value changes the cell size, and vice versa.
- Available in OS X v10.5 and later.
(Read and Write computed property)
91.4.66 cellsStyleMask as Integer

Function: The appearance style of the cells.
Notes: (Read and Write computed property)

91.4.67 constrainsToOriginalSize as boolean

Function: Whether the receiver constrains the cell’s image to its original size.
Notes:
The default value is false.
(Read and Write computed property)

91.4.68 contentResizingMask as Integer

Function: The content resizing mask, which determines how its content is resized while zooming.
Notes:
You specify a mask by combining any of the following options using the bitwise OR operator: NSViewWidthSizable (2), NSViewHeightSizable (16). Other values are ignored.
(Read and Write computed property)

91.4.69 foregroundLayer as CALayerMBS

Function: Returns the foreground Core Animation layer
Notes:
Returns a CALayer instance.
Available in OS X v10.6 and later.
(Read and Write computed property)

91.4.70 intercellSpacing as NSSizeMBS

Function: Returns the spacing between cells in the view.
Notes:
Returns the vertical and horizontal spacing between cells.
Available in OS X v10.6 and later.
(Read and Write computed property)

91.4.71  zoomValue as Double

Function: The zoom value.
Notes:
The zoom value. This value should be greater or equal to zero and less or equal than one. A zoom value of zero corresponds to the minimum size (40x40 pixels). A zoom value of one means images fits the browser bounds. Other values are interpolated.
Discussion
You must use ZoomValue or CellSize, but not both. Setting the zoom value changes the cell size, and vice versa.
Available in OS X v10.5 and later.
(Read and Write computed property)

91.4.72  Events

91.4.73  backgroundWasRightClickedWithEvent(e as NSEventMBS)

Function: Performs custom tasks when the user right-clicks the image browser view background.
Notes:
event: The event that invoked the method.

This method signals that the user either right-clicked the background or left-clicked it with the Alt key pressed. You can implement this method if you want to perform custom tasks at that time.
Available in OS X v10.5 and later.

91.4.74  cellWasDoubleClickedAtIndex(index as Integer)

Function: Performs custom tasks when the user double-clicks an item in the image browser view.
Notes:
index: The index of the cell.
This method signals that the user double-clicked an item in the image browser view. You can implement this method if you want to perform custom tasks at that time. Available in OS X v10.5 and later.

91.4.75  cellWasRightClickedAtIndex(index as Integer, e as NSEventMBS)

Function: Performs custom tasks when the user right-clicks an item in the image browser view.
Notes:
- index: The index of the cell.
- event: The event that invoked the method.

This method signals that the user either right-clicked an item in the browser or left-clicked the item with the Alt key pressed. You can implement this method if you want to perform custom tasks at that time. Available in OS X v10.5 and later.

91.4.76  concludeDragOperation(sender as NSDraggingInfoMBS)

Function: Invoked when the dragging operation is complete, signaling the receiver to perform any necessary clean-up.
Notes:
- sender: The object sending the message; use it to get details about the dragging operation.

For this method to be invoked, the previous performDragOperation must have returned true.

The destination implements this method to perform any tidying up that it needs to do, such as updating its visual representation now that it has incorporated the dragged data. This message is the last message sent from sender to the destination during a dragging session.

If the sender object’s animatesToDestination property was set to true in prepareForDragOperation, then the drag image is still visible. At this point you should draw the final visual representation in the view. When this method returns, the drag image is removed from the screen. If your final visual representation matches the visual representation in the drag, this is a seamless transition.
91.4. draggingEnded(sender as NSDraggingInfoMBS)

Function: Implement this event to be notified when a drag operation ends in some other destination.
Notes:
sender: The object sending the message; use it to get details about the dragging operation.
This method might be used by a destination doing auto-expansion in order to collapse any auto-expands.

91.4.78 draggingEntered(sender as NSDraggingInfoMBS) as Integer

Function: Invoked when the dragged image enters destination bounds or frame; delegate returns dragging operation to perform.
Notes:
sender: The object sending the message; use it to get details about the dragging operation.

Return one (and only one) of the dragging operation constants described in NSDragOperation in the NS-DraggingInfo reference. The default return value (if this method is not implemented by the destination) is the value returned by the previous draggingEntered: message.

Invoked when a dragged image enters the destination but only if the destination has registered for the pasteboard data type involved in the drag operation. Specifically, this method is invoked when the mouse pointer enters the destination’s bounds rectangle (if it is a view object) or its frame rectangle (if it is a window object).

This method must return a value that indicates which dragging operation the destination will perform when the image is released. In deciding which dragging operation to return, the method should evaluate the overlap between both the dragging operations allowed by the source (obtained from sender with the draggingSourceOperationMask method) and the dragging operations and pasteboard data types the destination itself supports.

If none of the operations is appropriate, this method should return NSDragOperationNone (this is the default response if the method is not implemented by the destination). A destination will still receive draggingUpdated: and draggingExited: even if NSDragOperationNone is returned by this method.

91.4.79 draggingExited(sender as NSDraggingInfoMBS)

Function: Invoked when the dragged image exits the destination’s bounds rectangle (in the case of a view object) or its frame rectangle (in the case of a window object).
Notes: sender: The object sending the message; use it to get details about the dragging operation.
91.4.80 draggingSourceOperationMaskForLocal(flag as boolean) as Integer


**Function:** Returns an integer bit mask indicating the types of dragging operations the source object will allow to be performed on the dragged image’s data.

**Notes:**

(Deprecated in OS X v10.7. This method is informally deprecated. It is only called if the source does not implement the NSDraggingSource protocol methods. This method will be formally deprecated in a future OS release.)

isLocal: True indicates that the candidate destination object (the window or view over which the dragged image is currently poised) is in the same application as the source, while a false value indicates that the destination object is in a different application.

A mask, created by combining the dragging operations listed in the NSDragOperation section of NSDraggingInfo protocol reference using the C bitwise OR operator. If the source does not permit any dragging operations, it should return NSDragOperationNone.

If not implemented, the default value is NSDragOperationCopy | NSDragOperationLink | NSDragOperationGeneric | NSDragOperationPrivate.

Available in OS X v10.0 and later. Deprecated in OS X v10.7.

91.4.81 draggingUpdated(sender as NSDraggingInfoMBS) as Integer


**Function:** Invoked periodically as the image is held within the destination area, allowing modification of the dragging operation or mouse-pointer position.

**Notes:**

sender: The object sending the message; use it to get details about the dragging operation.

Returns one (and only one) of the dragging operation constants described in NSDragOperation in the NSDraggingInfo reference. The default return value (if this method is not implemented by the destination) is the value returned by the previous draggingEntered: message.

For this to be invoked, the destination must have registered for the pasteboard data type involved in the drag operation. The messages continue until the image is either released or dragged out of the window or view.
This method provides the destination with an opportunity to modify the dragging operation depending on the position of the mouse pointer inside of the destination view or window object. For example, you may have several graphics or areas of text contained within the same view and wish to tailor the dragging operation, or to ignore the drag event completely, depending upon which object is underneath the mouse pointer at the time when the user releases the dragged image and the performDragOperation method is invoked.

You typically examine the contents of the pasteboard in the draggingEntered method, where this examination is performed only once, rather than in the draggingUpdated method, which is invoked multiple times.

Only one destination at a time receives a sequence of draggingUpdated messages. If the mouse pointer is within the bounds of two overlapping views that are both valid destinations, the uppermost view receives these messages until the image is either released or dragged out.

### 91.4.82 groupAtIndex(index as Integer) as Dictionary


**Function:** Returns the group at the specified index.

**Notes:**

*index:* The index of the group you want to retrieve.

Returns a dictionary that defines the group. The keys in this dictionary can be any of the following constants: IKImageBrowserGroupStyle, IKImageBrowserGroupBackgroundColorKey, IKImageBrowserGroupTitleKey, and IKImageBrowserGroupRangeKey. For more information on these constants, see IKImageBrowserView Class Reference.

This method is optional.

Available in OS X v10.5 and later.

### 91.4.83 itemAtIndex(index as Integer) as IKImageBrowserItemMBS


**Function:** Returns an object for the item in an image browser view that corresponds to the specified index.

**Notes:**

*index:* The index of the item you want to retrieve.

Return an IKImageBrowserItem object.

Your data source must implement this method. The returned object must implement the required methods of the IKImageBrowserItem protocol.
91.4.84 moveItemsAtIndexes(indexes as NSIndexSetMBS, destinationIndex as Integer) as boolean

Function: Signals that the specified items should be moved to the specified destination.
Notes:
indexes: The indexes of the items that should be reordered.
destinationIndex: The starting index of the destination the items should be moved to.

Returns true if successful; false otherwise.

This method is optional. It is invoked by the image browser view after Image Kit determines that a reordering operation should be applied. The data source should update itself by reordering its elements.
Available in OS X v10.5 and later.

91.4.85 numberOfGroups as Integer

Function: Returns the number of groups in an image browser view.
Notes:
Return the number of groups.

This method is optional.
Available in OS X v10.5 and later.

91.4.86 numberOfItems as Integer

Function: Returns the number of records managed by the data source object.
Notes:
Return the number of records managed by the image browser view.

Your data source must implement this method. An IKImageView object uses this method to determine how many cells it should create and display.
Available in OS X v10.5 and later.
91.4.87  performDragOperation(sender as NSDraggingInfoMBS) as boolean

**Function:** Invoked after the released image has been removed from the screen, signaling the receiver to import the pasteboard data.
**Notes:**

sender: The object sending the message; use it to get details about the dragging operation.

Returns if the destination accepts the data, it returns true; otherwise it returns false. The default is to return false.

For this method to be invoked, the previous prepareForDragOperation message must have returned true. The destination should implement this method to do the real work of importing the pasteboard data represented by the image.

If the sender object’s animatesToDestination was set to true in prepareForDragOperation, then setup any animation to arrange space for the drag items to animate to. Also at this time, enumerate through the dragging items to set their destination frames and destination images.

91.4.88  prepareForDragOperation(sender as NSDraggingInfoMBS) as boolean

**Function:** Invoked when the image is released, allowing the receiver to agree to or refuse drag operation.
**Notes:**

sender: The object sending the message; use it to get details about the dragging operation.

Return true if the receiver agrees to perform the drag operation and false if not.

This method is invoked only if the most recent draggingEntered or draggingUpdated event returned an acceptable drag-operation value.

If you want the drag items to animate from their current location on screen to their final location in your view, set the sender object’s animatesToDestination property to true in your implementation of this event.
91.4.89  removeItemsAtIndexes(indexes as NSIndexSetMBS)

Function: Signals that a remove operation should be applied to the specified items.
Notes:
indexes: The indexes of the items that should be removed.

This method is optional. It is invoked by the image browser after Image Kit determines that a remove
operation should be applied. In response, the data source should update itself by removing the specified
items.
Available in OS X v10.5 and later.

91.4.90  selectionDidChange

Function: Performs custom tasks when the selection changes.
Notes:
This method signals that the user changes the selection in the image browser view. You can implement this
method if you want to perform custom tasks at that time.
Available in OS X v10.5 and later.

91.4.91  updateDraggingItemsForDrag(sender as NSDraggingInfoMBS)

Function: Invoked when the dragging images should be changed.
Notes:
sender: The object sending the message; use this object to get details about the dragging operation.

While a destination may change the dragging images at any time, it is recommended to wait until this
method is called before updating the dragging images.

This allows the system to delay changing the dragging images until it is likely that the user will drop on
this destination. Otherwise, the dragging images will change too often during the drag which would be
distracting to the user.

During enumerateDraggingItemsWithOptions you may set non-acceptable drag items images to nil to hide
them or use the enumeration option of NSDraggingItemEnumerationClearNonenumeratedImages If there
are items that you hide, then after enumeration, you need to set the numberOfValidItemsForDrop to the
number of non-hidden drag items. However, if the valid item count is 0, then it is better to return NSDrag-
91.4. CLASS IKIMAGEBROWSERVIEWMBS

Operation None from your implementation of draggingEntered and, or draggingUpdated instead of hiding all drag items during enumeration.
Available in OS X v10.7 and later.

91.4.92 wantsPeriodicDraggingUpdates as boolean

Function: Asks the destination object whether it wants to receive periodic draggingUpdated events.
Notes:
Returns true if the destination wants to receive periodic draggingUpdated messages, false otherwise.
If the destination returns false, these messages are sent only when the mouse moves or a modifier flag changes. Otherwise the destination gets the default behavior, where it receives periodic dragging-updated events even if nothing changes.

91.4.93 writeItemsAtIndexes(indexes as NSIndexSetMBS, pasteboard as NSPasteboardMBS) as Integer

Function: Signals that a drag should begin.
Notes:
itemIndexes: The indexes of the items that should be dragged.
pasteboard: The pasteboard to copy the items to.
Returns the number of items written to the pasteboard.
This method is optional. It is invoked after Image Kit determines that a drag should begin, but before the drag has been started.
Available in OS X v10.5 and later.

91.4.94 Constants

91.4.95 IKCellsStyleNone = 0

MBS AVFoundation Plugin, Plugin Version: 13.1. Function: One of the cell style constants.
Notes: No style.
91.4.96  IKCellsStyleOutlined = 2

MBS AVFoundation Plugin, Plugin Version: 13.1. **Function**: One of the cell style constants.  
**Notes**: Cells are outlined.

91.4.97  IKCellsStyleShadowed = 1

MBS AVFoundation Plugin, Plugin Version: 13.1. **Function**: One of the cell style constants.  
**Notes**: Cells use shadows.

91.4.98  IKCellsStyleSubtitled = 8

MBS AVFoundation Plugin, Plugin Version: 13.1. **Function**: One of the cell style constants.  
**Notes**: Cells display a subtitle.

91.4.99  IKCellsStyleTitled = 4

MBS AVFoundation Plugin, Plugin Version: 13.1. **Function**: One of the cell style constants.  
**Notes**: Cells display a title.

91.4.100  IKGroupBezelStyle = 0

MBS AVFoundation Plugin, Plugin Version: 13.1. **Function**: One of the bevel styles.  
**Notes**:  
A bevel style.  
Available in OS X v10.5 and later.

91.4.101  IKGroupDisclosureStyle = 1

MBS AVFoundation Plugin, Plugin Version: 13.1. **Function**: One of the bevel styles.  
**Notes**:  
A disclosure triangle.  
Available in OS X v10.5 and later.
91.4.102  IKImageBrowserDropBefore = 1

MBS AVFoundation Plugin, Plugin Version: 13.1. Function: One of the constants to specify the locations for dropping items onto the browser view.
Notes:
Drop the item before the cell.
Available in OS X v10.6 and later.
Used by the method setDropIndex.

91.4.103  IKImageBrowserDropOn = 0

MBS AVFoundation Plugin, Plugin Version: 13.1. Function: One of the constants to specify the locations for dropping items onto the browser view.
Notes:
Drop the item on the cell.
Available in OS X v10.6 and later.
Used by the method setDropIndex.
91.5 class IKImageEditPanelMBS

91.5.1 class IKImageEditPanelMBS

MBS AVFoundation Plugin, Plugin Version: 8.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The class for the image edit panel from Mac OS X 10.5.
Notes: Subclass of the NSPanelMBS class.

91.5.2 Methods

91.5.3 Constructor

MBS AVFoundation Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The constructor to create a new image edit panel.

91.5.4 reloadData

MBS AVFoundation Plugin, Plugin Version: 8.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Requests the panel to reload the image.
Notes: Do call this if you have a new image to return in the image event.

91.5.5 Properties

91.5.6 LastImage as Picture

MBS AVFoundation Plugin, Plugin Version: 8.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The last image passed to you or requested from you.
Notes: This property is set with the picture you return with the image event and is set with the image sent to you using the Changed event.
(Read and Write property)
91.5. Events

91.5.8 Changed(picture, CGImageHandle as Integer, metaData as dictionary)

MBS AVFoundation Plugin, Plugin Version: 8.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The image changed and you should update your GUI.
Notes:
pic: The image as a picture.
CGImageHandle: The internal handle to the original CGImage which is used to make the picture.
metaData: additional image data.

91.5.9 hasAdjustMode as Boolean

Function: Returns whether the adjust mode view tab should be displayed.
Notes:
Return true if the tab should be displayed, otherwise false.
Available on Mac OS X 10.6 or newer.

91.5.10 hasDetailsMode as Boolean

Function: Returns whether the details mode view tab should be displayed.
Notes:
True if the tab should be displayed, otherwise false.
Available on Mac OS X 10.6 or newer.

91.5.11 hasEffectsMode as Boolean

Function: Returns whether the effects mode view tab should be displayed.
Notes:
True if the tab should be displayed, otherwise false.
Available on Mac OS X 10.6 or newer.
91.5.12 Image as picture

MBS AVFoundation Plugin, Plugin Version: 8.1, Console & Web: No, Mac: Yes, Win: No, Linux: No.
**Function:** The panel needs an image to start with.
**Notes:** Return your image in this event whenever the panel needs it.

91.5.13 imageProperties as Dictionary

**Function:** Returns a dictionary of the image properties associated with the image in the image edit panel.
**Notes:** Available on Mac OS X 10.5 or newer.

91.5.14 thumbnailWithMaximumSize(Width as Double, Height as Double) as picture

**Function:** Returns a thumbnail image whose size is no larger than the specified size.
**Notes:** Available in OS X v 10.5 and later.
91.6. **CLASS IKPICTURETAKERMBS**

91.6. **class IKPictureTakerMBS**

91.6.1. **class IKPictureTakerMBS**

**Function:** An IKPictureTaker object is a panel that allows users to choose and crop an image.  
**Notes:**  
It supports browsing of the file system and includes a recents popup-menu. The IKPictureTaker lets the user to crop a chosen image or to take snapshot from a camera like the built-in iSight.

Requires Mac OS X 10.5.  
Subclass of the NSPanelMBS class.

91.6.2. **Methods**

91.6.3. **Available as boolean**

**Function:** Whether the picture taker is available on that platform or not.  
**Example:**

```vba
dim n as Integer

dim p as new IKPictureTakerMBS

if not p.Available then  
MsgBox "This application requires Mac OS X 10.5 and a Macho Target"  
Return  
end if
```

**Notes:** True on Mac OS X 10.5.

91.6.4. **beginPictureTaker as boolean**

**Function:** Launch the PictureTaker.  
**Example:**

```vba
dim p as IKPictureTakerMBS // your picture taker
```
if not p.beginPictureTaker then
MsgBox "Can’t show picture taker!?
end if

Notes:
You will later receive an event for the case the user clicks on OK or Cancel buttons.
Returns true on success and false on failure.

91.6.5 beginPictureTakerSheet(parent as NSWindowMBS) as boolean

MBS AVFoundation Plugin, Plugin Version: 9.6, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Opens a picture taker as a sheet whose parent is the specified window.
Notes:
parent: The parent window of the picture taker sheet.
You will later receive an event for the case the user clicks on OK or Cancel buttons.
Available in Mac OS X v10.5 and later.
See also:

• 91.6.6 beginPictureTakerSheet(parent as window) as boolean

91.6.6 beginPictureTakerSheet(parent as window) as boolean

MBS AVFoundation Plugin, Plugin Version: 9.6, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Opens a picture taker as a sheet whose parent is the specified window.
Notes:
parent: The parent window of the picture taker sheet.
You will later receive an event for the case the user clicks on OK or Cancel buttons.
Available in Mac OS X v10.5 and later.
See also:

• 91.6.5 beginPictureTakerSheet(parent as NSWindowMBS) as boolean
91.6.7 Constructor

MBS AVFoundation Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.  
Function: The constructor to create a new picture taker panel.

91.6.8 CropAreaSizeHeight as Double

Function: The height of the crop area.

91.6.9 CropAreaSizeWidth as Double

Function: The width of the crop area.

91.6.10 outputImage as NSImageMBS

Function: Return the edited image.

91.6.11 OutputImageMaxSizeKeyHeight as Double

Function: The maximum height of the output image.

91.6.12 OutputImageMaxSizeKeyWidth as Double

Function: The maximum width of the output image.

91.6.13 popUpRecentsMenuForView(parent as NSViewMBS) as boolean

MBS AVFoundation Plugin, Plugin Version: 9.6, Console & Web: No, Mac: Yes, Win: No, Linux: No.  
Function: Displays the Open Recent popup menu associated with the picture taker.  
Notes:
You will later receive an event for the case the user clicks on OK or Cancel buttons.

Available in Mac OS X v10.5 and later.

**91.6.14  runModal as Integer**


**Function:** Launches a modal PictureTaker session.

**Example:**

```pascal
dim p as IKPictureTakerMBS // global property
dim n as Integer

p=new IKPictureTakerMBS

if not p.Available then
    MsgBox "This application requires Mac OS X 10.5 and a Macho Target"
    Return
end if

p.AllowsFileChoosing=true
p.AllowsEditing=true
p.AllowsVideoCapture=true
p.ShowEffects=FALSE // disable if you run modal!
p.ShowRecentPicture=true
p.UpdateRecentPicture=true
p.InformationalText="Please take a picture"

n=p.runModal

if n=1 then // ok
    Backdrop=p.outputImage.CopyPictureWithMask
else
    Title=Str(n)
end if
```

**Notes:**

Returns NSOKButton (1) if the user edits or chooses an image and confirm panel, NSCancelButton (0) if the user canceled or didn’t change the image.

You may want to disable effects as they won’t work in Realbasic in a modal picture taker dialog.
91.6.15  SetCropAreaSize(width as Double, height as Double)

Function: Sets the crop area.

91.6.16  SetOutputImageMaxSize(width as Double, height as Double)

Function: Sets the maximum output image size.

91.6.17  Properties

91.6.18  AllowsEditing as boolean

Function: Whether editing is allowed or not.
Notes: (Read and Write computed property)

91.6.19  AllowsFileChoosing as boolean

Function: Whether choosing a file is allowed or not.
Notes: (Read and Write computed property)

91.6.20  AllowsVideoCapture as boolean

Function: Whether video capture is allowed or not.
Notes: (Read and Write computed property)

91.6.21  InformationalText as NSAttributedStringMBS

Function: The information text as a plain string.
Notes:
On getting the value the plugin will check whether the value is a formatted or a plain text. if it is a plain
text, it will return the plain text as a NSAttributedStringMBS.
(Read and Write computed property)
See also:

- 91.6.22 InformationalText as string

91.6.22 InformationalText as string

Function: The information text as a plain string.
Example:

```plaintext
dim p as IKPictureTakerMBS // your picture taker
p.InformationalText="Please take a picture"
```

Notes:
On getting the value the plugin will check whether the value is a formatted or a plain text. if it is a formatted text, it will return the formatted text as plain text.
(Read and Write computed property)
See also:

- 91.6.21 InformationalText as NSAttributedStringMBS

91.6.23 inputImage as NSImageMBS

Function: The input image.
Notes: The input image is never modified by the PictureTaker.
(Read and Write computed property)

91.6.24 mirroring as boolean

Function: True if video mirroring is enabled, false otherwise.
Notes: Controls whether the receiver enable/disable video mirroring durning snapshots (default is true).
(Read and Write computed property)
91.6. CLASS IKPICTURETAKERMBS

91.6.25 RemainOpenAfterValidate as boolean

MBS AVFoundation Plugin, Plugin Version: 9.6, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Whether the picture taker remains open.
Notes: Requires Mac OS X 10.6.
(Read and Write computed property)

91.6.26 ShowAddressBookPicture as boolean

Function: Whether the addressbook picture is shown or not.
Notes: (Read and Write computed property)

91.6.27 ShowEffects as boolean

Function: Whether effects are shown or not.
Notes: (Read and Write computed property)

91.6.28 ShowEmptyPicture as NSImageMBS

Function: The image to use for an empty image.
Notes: (Read and Write computed property)

91.6.29 ShowRecentPicture as boolean

Function: Whether recent pictures should be shown.
Notes: (Read and Write computed property)

91.6.30 UpdateRecentPicture as boolean

Function: Whether recent pictures should be updated.
91.6.31 Events

91.6.32 Finished(returnCode as Integer)

Function: beginPictureTaker has finished work.
Notes: ReturnCode is 1 if the user clicked OK and 0 if the user clicked false.
91.6.33 Screenshots

91.6.34 PictureTaker1.jpg

Function: The picture taker with an image choosed.
91.6.35  PictureTaker2.jpg

Function: The picture taker doing effects on a photo taken with the iSight.
Function: The Quartz filter manager panel.
91.7  class IKSlideshowMBS

91.7.1  class IKSlideshowMBS

Function: The ImageKit class for a slideshow.
Notes:
Requires Mac OS X 10.5.
Slideshows can be only with pictures, with PDF pages or with file references.
Those files can be picture files, pdf files or anything you want.

91.7.2  Methods

91.7.3  addFile(file as folderitem, name as string=””)

MBS AVFoundation Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Adds a file to the items list.

Example:

dim p as picture
dim n as NSImageMBS
dim s as new IKSlideshowMBS

// get picture to p
n=new NSImageMBS(p)
s.addImageMBS n

91.7.4  addImage(image as NSImageMBS, name as string=””)

MBS AVFoundation Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Adds an image to the items list.

Example:

dim p as picture
dim n as NSImageMBS
dim s as new IKSlideshowMBS

// get picture to p
n=new NSImageMBS(p)
s.addImageMBS n

91.7.5  addPage(page as Variant, name as string=””)

MBS AVFoundation Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Adds a PDF page to the items list.
Notes: Page must be a PDFPageMBS object.
91.7. CLASS IKSLIDESHOWMBS

91.7.6 autoPlayDelay as Double

**Function:** The time to wait before the slideshow will start automatically.
**Notes:**
Value is in seconds.
(Read and Write computed property)

91.7.7 Available as boolean

**Function:** Whether the slide show functions are available.
**Example:**
```
if IKSlideshowMBS.Available=False then
    MsgBox "You need Mac OS X 10.5 for this and a MachO application."
    quit
end if
```
**Notes:** Value is true for Mac OS X 10.5.

91.7.8 canExportToApplication(applicationBundleIdentifier as string) as boolean

**Function:** is exporting to a given application possible?
**Notes:** (application installed?, right version?, ...)

91.7.9 exportSlideshowItems(applicationBundleIdentifier as string)

**Function:** Export items to the given application.
**Example:**
```
dim i,c as Integer
dim s as new IKSlideshowMBS

// add items here

if false=IKSlideshowMBS.canExportToApplication(IKSlideshowMBS.iPhotoBundleIdentifier) then
    MsgBox "Can’t export to iPhoto."
```
else

if s.itemcount>0 then

s.exportSlideshowItems IKSlideshowMBS.iPhotoBundleIdentifier

else
MsgBox "no slides?"
end if
end if

91.7.10  indexOfCurrentSlideshowItem as Integer

Function: The index of the current slide.  
Notes: Index is from 0 to count-1.

91.7.11  ItemCount as Integer

MBS AVFoundation Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  
Function: Returns the number of items.

91.7.12  reloadData

Function: Reloads all slides.

91.7.13  reloadSlideshowItemAtIndex(index as Integer)

Function: Reloads the slide show with the given index.

91.7.14  removeItem(index as Integer)

MBS AVFoundation Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  
Function: Removes an item from the item list.
91.7. **CLASS IKSLIDESHOWMBS**

91.7.15  **removeItems**

MBS AVFoundation Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** Removes all items from the item list.

91.7.16  **runSlideshows**

**Function:** Start the slideshow.
**Example:**
```vba
dim s as new IKSlideshowMBS
// add items
s.runSlideshows
```

**Notes:** You may want to set all the properties before.

91.7.17  **setFile(index as Integer, file as folderitem, name as string=””)**

MBS AVFoundation Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** Sets the file in the items list with the given index.

91.7.18  **setImage(index as Integer, image as NSImageMBS, name as string=””)**

MBS AVFoundation Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** Sets the image in the items list with the given index.

91.7.19  **setPage(index as Integer, page as Variant, name as string=””)**

MBS AVFoundation Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** Sets a PDF page in the items list with the given index.
**Notes:** Page must be a PDFPageMBS object.
91.7.20  stopSlideshow

**Function:** Stops the slideshow.

91.7.21  Properties

91.7.22  AudioFile as Folderitem

MBS AVFoundation Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** Optional audio file to play while running slide show.
**Notes:**
Only used for Mac OS X 10.6.
(Read and Write property)

91.7.23  PDFDisplayBox as Integer

**Function:** The PDF display box mode to use.
**Notes:**
Default value is -1 which means that we use the framework default mode.
(Read and Write property)

91.7.24  PDFDisplayMode as Integer

**Function:** The PDF display mode you want.
**Notes:**
Default value is -1 which means that we use the framework default mode.
(Read and Write property)

91.7.25  PDFDisplaysAsBook as Boolean

**Function:** Whether PDF should display as book.
**Notes:**
91.7. **CLASS IKSLIDESHOWMBS**

Default value is false.
(Read and Write property)

### 91.7.26 ScreenIndex as Integer

MBS AVFoundation Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** The screen to use.
**Notes:**
Default is main screen.
Only used for Mac OS X 10.6.
(Read and Write property)

### 91.7.27 StartIndex as Integer

**Function:** The index of the first slide to show.
**Notes:**
Index is from 0 to count-1.
Default value is -1 which means that we use the framework default mode.
(Read and Write property)

### 91.7.28 StartPaused as Boolean

**Function:** Whether to start paused.
**Notes:**
Default is false.
(Read and Write property)

### 91.7.29 WrapAround as Boolean

**Function:** Whether to wrap around when the slideshow runs.
**Notes:**
Default is false.
(Read and Write property)
91.7.30 Events

91.7.31 canExportSlideshowItemAtIndex(index as Integer, applicationBundleIdentifier as string) as boolean

Function: Should the export button be enabled for a given item at index?
Notes: This event is optional.

91.7.32 slideshowDidChangeCurrentIndex(newIndex as Integer)

Function: Slideshow did change current item index.

91.7.33 slideshowDidStop

Function: Slideshow did stop
Notes: This event is optional.

91.7.34 slideshowWillStart

Function: Slideshow will start.
Notes: This event is optional.

91.7.35 Constants

91.7.36 iPhotoBundleIdentifier="com.apple.iPhoto"

MBS AVFoundation Plugin, Plugin Version: 7.7. Function: The iPhoto application identifier.
Notes: May be used on the export functions.

91.7.37 kPDFDisplayBoxArtBox=4

MBS AVFoundation Plugin, Plugin Version: 7.7. Function: One of the possible values for the PDFDisplayBox property.
91.7.38  kPDFDisplayBoxBleedBox=2
MBS AVFoundation Plugin, Plugin Version: 7.7. **Function:** One of the possible values for the PDFDisplayBox property.

91.7.39  kPDFDisplayBoxCropBox=1
MBS AVFoundation Plugin, Plugin Version: 7.7. **Function:** One of the possible values for the PDFDisplayBox property.

91.7.40  kPDFDisplayBoxMediaBox=0
MBS AVFoundation Plugin, Plugin Version: 7.7. **Function:** One of the possible values for the PDFDisplayBox property.

91.7.41  kPDFDisplayBoxTrimBox=3
MBS AVFoundation Plugin, Plugin Version: 7.7. **Function:** One of the possible values for the PDFDisplayBox property.

91.7.42  kPDFDisplaySinglePage=0
MBS AVFoundation Plugin, Plugin Version: 7.7. **Function:** One of the PDF display mode constants.

91.7.43  kPDFDisplaySinglePageContinuous=1
MBS AVFoundation Plugin, Plugin Version: 7.7. **Function:** One of the PDF display mode constants.

91.7.44  kPDFDisplayTwoUp=2
MBS AVFoundation Plugin, Plugin Version: 7.7. **Function:** One of the PDF display mode constants.
91.7.45  kPDFDisplayTwoUpContinuous=3

MBS AVFoundation Plugin, Plugin Version: 7.7. **Function**: One of the PDF display mode constants.
Chapter 92

Instant Message

92.1 class IMServiceMBS

92.1.1 class IMServiceMBS

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An IMService object represents a service available to a user through iChat, such as AIM, Jabber, and Bonjour.

**Notes:**

Each IMService object represents one service available through iChat. Class methods such as allServices and serviceWithName will return these objects. Each object acts as the liaison to its single service, allowing you to access the individual user’s global status, the user’s list of acquaintances, and other information which can be integrated into your application.

You may want to subclass the InstantMessageMBS class to get events for changes.

All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

92.1.2 Methods

92.1.3 imageFileForStatus(status as Integer) as folderitem

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the folderitem of the image corresponding to the IMPersonStatus specified by status.

**Notes:** Convenience function which does the same as InstantMessageMBS.imageFileForStatus.
92.1.4 imageNameForStatus(status as Integer) as string

MBS MacCocoa Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the image name for the given status.

**Example:**

MsgBox IMServiceMBS.imageNameForStatus(IMServiceMBS.IMPersonStatusIdle)

**Notes:**

Mac OS X 10.5 only.
On Mac OS X the NSImage class can be used to access system images by name and there you can use this name.

92.1.5 imageURLForStatus(status as Integer) as string

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the URL of the image corresponding to the IMPersonStatus specified by status.

**Notes:** Convenience function which does the same as InstantMessageMBS.imageURLForStatus.

92.1.6 IMCapabilityAudioConference as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the info dictionaries.

92.1.7 IMCapabilityDirectIM as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the info dictionaries.

92.1.8 IMCapabilityFileSharing as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the info dictionaries.
92.1. CLASS IMSERVICEMBS

92.1.9 IMCapabilityFileTransfer as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the info dictionaries.

92.1.10 IMCapabilityText as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the info dictionaries.

92.1.11 IMCapabilityVideoConference as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the info dictionaries.

92.1.12 IMPersonAVBusyKey as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the info dictionaries. **Notes:** Used to obtain a person’s busy status. The value is a number set to 0 if the person’s audio/video capabilities are available, or 1 if they are busy.

92.1.13 IMPersonCapabilitiesKey as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the info dictionaries. **Notes:** Used to obtain a person’s iChat capabilities. The value is an array of capability properties. Check for IMCapability* strings in this array.

92.1.14 IMPersonEmailKey as string

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the info dictionaries. **Notes:** Used to obtain a person’s email address. The value is a string containing the person’s email address. This is a key used directly by Bonjour; however, if a person has an Address Book entry associated with a relevant AIM account, this key reflects the first email address of that person.
CHAPTER 92. INSTANT MESSAGE

92.1.15 IMPersonFirstNameKey as string

Notes: Used to obtain a person’s first name. The value is a string containing the person’s first name. This is a key used directly by Bonjour; however, if a person has an Address Book entry associated with a relevant AIM account, this key reflects the first name of that person.

92.1.16 IMPersonIdleSinceKey as string

Notes: Used to obtain a person’s idle status. The value is a date containing the time, in seconds, since the last user activity. Available if the person’s status is idle.

92.1.17 IMPersonLastNameKey as string

Notes: Used to obtain a person’s last name. The value is a string containing the person’s last name. This is a key used directly by Bonjour; however, if a person has an Address Book entry associated with a relevant AIM account, this key reflects the last name of that person.

92.1.18 IMPersonPictureDataKey as string

Notes: Used to obtain a person’s image. The value is a string containing the image for the person’s icon.

92.1.19 IMPersonScreenNameKey as string

Notes: Used to obtain a person’s screen name. The value is a string containing the service-specific identifier for a person. For example, ”User123” or ”steve@mac.com” for AIM, and ”John Doe” for Bonjour.
92.1. **CLASS IMSERVICE MBS**

92.1.20 **IMPersonServiceNameKey as string**

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the info dictionaries. **Notes:** Used to obtain a person’s service name. The value is a string containing the name of the service this person belongs to.

92.1.21 **IMPersonStatusKey as string**

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the info dictionaries. **Notes:** Used to obtain a person’s online status. The value is a number representing the current online status of the person, if known.

92.1.22 **IMPersonStatusMessageKey as string**

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the info dictionaries. **Notes:** Used to obtain a person’s status message. The value is a string containing the person’s current status message.

92.1.23 **infoForAllScreenNames as dictionary()**

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns information about all people and all accounts currently logged in to the service. **Notes:**

If a person is logged in on multiple accounts (determined by the user’s Address Book), this method will return the information for all of the logged-in accounts.

Returns an Array of the dictionaries. Use IMPerson*Key strings for the keys in that dictionary.

92.1.24 **infoForPreferredScreenNames as dictionary()**

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns information about all people and their primary accounts currently logged in to the service. **Notes:**
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If a person is logged in on multiple accounts (determined by the user’s Address Book), this method will only return the information for the preferred account. The preferred account is determined by iChat, using a combination of capabilities (video chat capability, audio chat capability, and so on), status (available, idle, away), and other user attributes.

Returns an Array of the dictionaries for all people and is guaranteed to provide only one array entry for any logged-in person. Use IMPerson*Key strings for the keys in that dictionary.

92.1.25 infoForScreenName(name as string) as dictionary

Function: Returns information about the person specified by his/her screenName.
Notes:
screenName: A string containing the screen name identifier of a person.

Returns a dictionary on success and nil on failure. Use IMPerson*Key strings for the keys in that dictionary.

92.1.26 LocalizedName as String

Function: Returns the user-visible localized name of the service.
Example:

dim services() as IMServiceMBS = InstantMessageMBS.allServices
for each service as IMServiceMBS in Services
    MsgBox service.LocalizedName
next
Notes: Returns a String. Will contain the localized service name, such as ”AOL Instant Messenger”, ”Jabber”, or ”Bonjour”, for example. This string will be localized if required.

92.1.27 LocalizedShortName as String

Function: Returns a shorter version, if available, of the user-visible localized name of the service.
Example:
92.1. CLASS IMSERVICEMBS

```vbnet
dim services() as IMServiceMBS = InstantMessageMBS.allServices

for each service as IMServiceMBS in Services
    MsgBox service.LocalizedShortName
next
```

**Notes:** Returns a "" on failure. Will return a localized string if required.

---

92.1.28 Name as String

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the fixed canonical name of the service.

**Example:**

```vbnet
dim services() as IMServiceMBS = InstantMessageMBS.allServices

for each service as IMServiceMBS in Services
    MsgBox service.Name
next
```

**Notes:** Returns a "" on failure. This string is not localized.

---

92.1.29 peopleWithScreenName(screenName as string) as ABPersonMBS()

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Address Book person objects that correspond to the person with the screenName matched by screenName.

**Notes:**

- screenName: An string containing the screen name identifier of a person or persons.

Returns an array of ABPersonMBS objects that match the screen name matched by screenName. Can return an empty array or an array with one or more items.

Returns empty array on failure.
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92.1.30 screenNamesForPerson(person as ABPersonMBS) as string()


Function: Returns a list of valid screen names for any given person.

Example:

// show my screennames on all services

dim AddressBook as new ABAAddressBookMBS
dim owner as ABPersonMBS = AddressBook.owner
dim services() as IMServicesMBS = InstantMessageMBS.allServices

for each service as IMServicesMBS in Services
    MsgBox service.LocalizedName + "::" + EndOfLine + join(service.screenNamesForPerson(owner), EndOfLine)
next

Notes:

person: An Address Book ABPerson object.
Returns an Array of Strings that are valid screen names for the person specified by person. See Address
Book documentation for more information on ABPerson and accessing the user’s address book. Can return
an empty array or an array with one or more items.

Returns an empty array on failure.

92.1.31 Status as Integer


Function: Returns the login status of the service.

Notes: Returns the appropriate IMServicesStatus number.

92.1.32 Properties

92.1.33 Handle as Integer


Function: Handle to the internal used IMServices reference.

Notes: (Read and Write property)
92.1.34  Constants

92.1.35  IMPersonStatusAvailable = 4

MBS MacCocoa Plugin, Plugin Version: 7.1. **Function:** A status constant.

92.1.36  IMPersonStatusAway = 3

MBS MacCocoa Plugin, Plugin Version: 7.1. **Function:** A status constant.

92.1.37  IMPersonStatusIdle = 2

MBS MacCocoa Plugin, Plugin Version: 7.1. **Function:** A status constant.

92.1.38  IMPersonStatusNoStatus = 5

MBS MacCocoa Plugin, Plugin Version: 7.7. **Function:** The status constant for persons where the status is unknown.
**Notes:** Mac OS X 10.5 only.

92.1.39  IMPersonStatusOffline = 1

MBS MacCocoa Plugin, Plugin Version: 7.1. **Function:** A status constant.

92.1.40  IMPersonStatusUnknown = 0

MBS MacCocoa Plugin, Plugin Version: 7.1. **Function:** A status constant.

92.1.41  IMServiceStatusDisconnected = 1

MBS MacCocoa Plugin, Plugin Version: 7.1. **Function:** A status constant.
92.1.42  IMServiceStatusLoggedIn = 4
MBS MacCocoa Plugin, Plugin Version: 7.1. **Function:** A status constant.

92.1.43  IMServiceStatusLoggedOut = 0
MBS MacCocoa Plugin, Plugin Version: 7.1. **Function:** A status constant.

92.1.44  IMServiceStatusLoggingIn = 3
MBS MacCocoa Plugin, Plugin Version: 7.1. **Function:** A status constant.

92.1.45  IMServiceStatusLoggingOut = 2
MBS MacCocoa Plugin, Plugin Version: 7.1. **Function:** A status constant.
92.2. CLASS INSTANTMESSAGEMBS

92.2 class InstantMessageMBS

92.2.1 class InstantMessageMBS

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The class to handle Instant Message support for Mac OS X 10.4 and newer. Notes: This class is based on the Instant Message framework from Apple. It can be used to get the status of iChat.

92.2.2 Methods

92.2.3 allServices as IMServiceMBS()

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the list of services currently available to the user, regardless of their status. Notes: Returns nil on failure. Returns a array with IMServiceMBS objects corresponding to the current available services (AIM, Bonjour, Jabber, and so on.)

92.2.4 Available as boolean


92.2.5 imageFileForStatus(status as Integer) as folderitem

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the folderitem of the image corresponding to the IMPersonStatus specified by status. Notes: This image reflects the status of the user, and is usually reflected by a colored bubble or triangle. Returns nil on failure. This is a convenience function which will call imageFileForStatus and return the folderitem matching the
URL in case it points to a disc file.

For Mac OS X 10.4 all images are stored as TIFF files on hard disc. Use the TiffPictureMBS class to load them (OpenAsPicture will not work because of the masks).

values:

IMPersonStatusUnknown = 0
IMPersonStatusOffline = 1
IMPersonStatusIdle = 2
IMPersonStatusAway = 3
IMPersonStatusAvailable = 4

### 92.2.6 imageNameForStatus(status as Integer) as string

MBS MacCocoa Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the image name for the given status.
**Notes:**
Mac OS X 10.5 only.
On Mac OS X the NSImage class can be used to access system images by name and there you can use this name.

### 92.2.7 imageURLForStatus(status as Integer) as string

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the URL of the image corresponding to the IMPersonStatus specified by status.
**Notes:**
This image reflects the status of the user, and is usually reflected by a colored bubble or triangle.

Returns nil on failure.

values:

### 92.2.8 myIdleTime as Double

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Class method to return the idle time of the active user.
92.2.  CLASS INSTANTMESSAGEMBS

IMPersonStatusUnknown = 0
IMPersonStatusOffline = 1
IMPersonStatusIdle = 2
IMPersonStatusAway = 3
IMPersonStatusAvailable = 4

Notes: Returns in seconds the time since the currently active user went idle.

92.2.9  myStatus as Integer

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Class method to return the status of the currently active user.  
**Notes:**  
This status is global across all services.

values:

IMPersonStatusUnknown = 0
IMPersonStatusOffline = 1
IMPersonStatusIdle = 2
IMPersonStatusAway = 3
IMPersonStatusAvailable = 4

92.2.10  notificationCenter as NSNotificationCenterMBS

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns the custom notification center for the service.  
**Notes:**  
A custom notification center that manages IMService notifications.  
Available in Mac OS X v10.4 and later.

92.2.11  serviceWithName(name as string) as IMSERVICEMBS

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns only the service specified by a given name.  
**Notes:**
name: A String containing a service name as returned by a previous call to name. Hard-coding the service names internally is not recommended. Returns an IMService object corresponding to the available service specified by name. Returns nil on any failure.

92.2.12 Events

92.2.13 MyStatusChanged

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** This event is called when the local user changes online status. **Notes:** The client should call myStatus function to get the new status.

92.2.14 PersonInfoChanged(info as dictionary)

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Event sent when a screenName changes some aspect of their published information. **Notes:** The user information dictionary will always contain an ScreenName and may contain any of the following values: StatusMessage, IdleSince, FirstName, LastName, IMPersonEmailKey, PictureData, AVAvailable and AVBusy, Capabilities values.

92.2.15 PersonStatusChanged(info as dictionary)

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Event sent when a different user (screenName) logs in, logs off, goes away, and so on. **Notes:** The info object knows the ScreenName and the Status of the person.

92.2.16 ServiceStatusChanged

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Event sent when the user logs in, logs off, goes away, and so on. **Notes:** Call MyStatus to get the new state.
92.2.17 StatusImagesChangedAppearance

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Event sent when the user changes their preferred images for displaying status. **Notes:** Clients that display status information graphically (using the green/yellow/red dots) should call `imageURLForStatus` to get the new image.
Chapter 93

IO Registry

93.1 class DarwinDriveStatisticsMBS

93.1.1 class DarwinDriveStatisticsMBS

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class for an iterator over the IORegistry drives.

**Example:**
```
dim d as DarwinDriveStatisticsMBS
dim l as CFDictionaryMBS

d=new DarwinDriveStatisticsMBS
l=d.NextDrive
while l<>Nil
CFShowMBS l
l=d.NextDrive
wend
```

93.1.2 Methods

93.1.3 close

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The destructor.

**Notes:**
There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

93.1.4 kIOBlockStorageDriverStatisticsBytesReadKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the statistics dictionary. **Notes:**

Describes the number of bytes read since the block storage driver was instantiated.

This property describes the number of bytes read since the block storage driver was instantiated. It is one of the statistic entries listed under the top-level kIOBlockStorageDriverStatisticsKey property table. It has an CFNumber value.

93.1.5 kIOBlockStorageDriverStatisticsBytesWrittenKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the statistics dictionary. **Notes:**

Describes the number of bytes written since the block storage driver was instantiated.

This property describes the number of bytes written since the block storage driver was instantiated. It is one of the statistic entries listed under the top-level kIOBlockStorageDriverStatisticsKey property table. It has an CFNumber value.

93.1.6 kIOBlockStorageDriverStatisticsKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The key value used to get a statistics dictionary from the drive information dictionary.

93.1.7 kIOBlockStorageDriverStatisticsLatentReadTimeKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the statistics dictionary. **Notes:**

Describes the number of nanoseconds of latency during reads since the block storage driver was instantiated.
This property describes the number of nanoseconds of latency during reads since the block storage driver was instantiated. It is one of the statistic entries listed under the top-level kIOBlockStorageDriverStatisticsKey property table. It has an CFNumber value.

93.1.8 kIOBlockStorageDriverStatisticsLatentWriteTimeKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the statistics dictionary.

**Notes:**

Describes the number of nanoseconds of latency during writes since the block storage driver was instantiated.

This property describes the number of nanoseconds of latency during writes since the block storage driver was instantiated. It is one of the statistic entries listed under the top-level kIOBlockStorageDriverStatisticsKey property table. It has an CFNumber value.

93.1.9 kIOBlockStorageDriverStatisticsReadErrorsKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the statistics dictionary.

**Notes:**

Describes the number of read errors encountered since the block storage driver was instantiated.

This property describes the number of read errors encountered since the block storage driver was instantiated. It is one of the statistic entries listed under the top-level kIOBlockStorageDriverStatisticsKey property table. It has an CFNumber value.

93.1.10 kIOBlockStorageDriverStatisticsReadRetriesKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the statistics dictionary.

**Notes:**

Describes the number of read retries required since the block storage driver was instantiated.

This property describes the number of read retries required since the block storage driver was instantiated. It is one of the statistic entries listed under the top-level kIOBlockStorageDriverStatisticsKey property table. It has an CFNumber value.
93.1.11 kIOBlockStorageDriverStatisticsReadsKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for the statistics dictionary.
**Notes:**
Describes the number of read operations processed since the block storage driver was instantiated.

This property describes the number of read operations processed since the block storage driver was instantiated. It is one of the statistic entries listed under the top-level kIOBlockStorageDriverStatisticsKey property table. It has an CFNumber value.

93.1.12 kIOBlockStorageDriverStatisticsTotalReadTimeKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for the statistics dictionary.
**Notes:**
Describes the number of nanoseconds spent performing reads since the block storage driver was instantiated.

This property describes the number of nanoseconds spent performing reads since the block storage driver was instantiated. It is one of the statistic entries listed under the top-level kIOBlockStorageDriverStatisticsKey property table. It has an CFNumber value.

93.1.13 kIOBlockStorageDriverStatisticsTotalWriteTimeKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for the statistics dictionary.
**Notes:**
Describes the number of nanoseconds spent performing writes since the block storage driver was instantiated.

This property describes the number of nanoseconds spent performing writes since the block storage driver was instantiated. It is one of the statistic entries listed under the top-level kIOBlockStorageDriverStatisticsKey property table. It has an OSNumber value.

93.1.14 kIOBlockStorageDriverStatisticsWriteErrorsKey as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the keys for the statistics dictionary.
**Notes:**
Describes the number of write errors encountered since the block storage driver was instantiated. This property describes the number of write errors encountered since the block storage driver was instantiated. It is one of the statistic entries listed under the top-level kIOBlockStorageDriverStatisticsKey property table. It has an CFNumber value.

**93.1.15  kIOBlockStorageDriverStatisticsWriteRetriesKey as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the statistics dictionary. **Notes:**

Describes the number of write retries required since the block storage driver was instantiated.

This property describes the number of write retries required since the block storage driver was instantiated. It is one of the statistic entries listed under the top-level kIOBlockStorageDriverStatisticsKey property table. It has an OSNumber value.

**93.1.16  kIOBlockStorageDriverStatisticsWritesKey as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the keys for the statistics dictionary. **Notes:**

Describes the number of write operations processed since the block storage driver was instantiated.

This property describes the number of write operations processed since the block storage driver was instantiated. It is one of the statistic entries listed under the top-level kIOBlockStorageDriverStatisticsKey property table. It has a CFNumber value.

**93.1.17  NextDrive as CFDictionaryMBS**

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the dictionary describing the next drive in the list.

**93.1.18  Reset**

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Moves you back to the beginning of the list.
93.1.19 Properties

93.1.20 Handle as Integer

MBS MacCF Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Internal object reference. **Notes:** (Read and Write property)
93.2. MODULE IOREGISTRYMBS

93.2 module IORegistryMBS

93.2.1 module IORegistryMBS

Notes: The IORegistryMBS stores information about the installed hardware.

93.2.2 Methods

93.2.3 AudioRoot as IORegistryNodeMBS


93.2.4 DeviceRoot as IORegistryNodeMBS


93.2.5 FirewireRoot as IORegistryNodeMBS


93.2.6 MatchingServices(servicename as string) as IORegistryNodeMBS()

Example:

// search for Serial devices
dim devices() as IORegistryNodeMBS = IORegistryMBS.MatchingServices("IOSerialBSDClient")
dim names(-1) as string

// check devices and query names
for each dev as IORegistryNodeMBS in devices
dim dic as Dictionary = dev.Properties
names.Append dic.Lookup("IOTTYBaseName","")
93.2.7 PerformanceStatistics as Dictionary

MBS MacCF Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Queries performance statistics for first graphics card on a Mac.

**Example:**

```vbscript
dim d as Dictionary = IORegistryMBS.PerformanceStatistics
if d <> nil then
    dim gpuCoreUse as Int64 = d.Value("GPU Core Utilization")
    dim freeVramCount as Int64 = d.Value("vramFreeBytes")
    dim usedVramCount as Int64 = d.Value("vramUsedBytes")
    dim sum as int64 = (freeVramCount + usedVramCount)
    List.AddRow format(gpuCoreUse/1000000000.0, "0% "), Format(freeVramCount/1024.0/1024.0, "0") + " MB of "+Format(sum/1024.0/1024.0, "0") + " MB", Format(usedVramCount / sum, "0% ")
else
    Break
end if
```

**Notes:**

The dictionary contains details about performance of graphics card.
This includes vramFreeBytes and vramUsedBytes for memory usage as well as "GPU Core Utilization" key with GPU time used.
Returns nil on any error.

93.2.8 PowerRoot as IORegistryNodeMBS

MBS MacCF Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the root of the Power tree inside the IO Registry.
93.2.9 Present as Boolean

MBS MacCF Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Is the IORegistryMBS working?
**Notes:** Returns true on Mac OS X and false on other platforms.

93.2.10 Root(plane as string) as IORegistryNodeMBS

MBS MacCF Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the root of the IORegistry tree with the given plane name.
**Example:**
```vba
// shows names of all USB devices
dim u as IORegistryNodeMBS = IORegistryMBS.Root("IOUSB") // same as USBRoot function

// now loop over all devices with all children (non recursive)
dim names(-1) as string
dim nodes(-1) as IORegistryNodeMBS = array(u)

while UBound(nodes)>=0
    dim p as IORegistryNodeMBS = nodes.pop
    names.Append p.Name
    for each c as IORegistryNodeMBS in p.Children
        nodes.Append c
    next
wend

// and display array with names
MsgBox Join(names,EndOfLine)
```

93.2.11 ServiceRoot as IORegistryNodeMBS

MBS MacCF Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the root of the Service tree inside the IO Registry.

93.2.12 USBRoot as IORegistryNodeMBS

MBS MacCF Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the root of the USB tree inside the IO Registry.
**Example:**
/ shows names of all USB devices
dim u as IORegistryNodeMBS = IORegistryMBS.USBRoot

// now loop over all devices with all children (non recursive)
dim names(-1) as string
dim nodes(-1) as IORegistryNodeMBS = array(u)

while UBound(nodes)>0
dim p as IORegistryNodeMBS = nodes.pop

names.Append p.Name
for each c as IORegistryNodeMBS in p.Children
nodes.Append c
next
wend

// and display array with names
MsgBox Join(names,EndOfLine)
93.3. CLASS IORegistryNodeMBS

93.3. class IORegistryNodeMBS

MBS MacCF Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a node inside the IO Registry.

93.3.2 Methods

93.3.3 CFProperties as CFDictionaryMBS

MBS MacCF Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a CFDictionary object with all the properties of this note.

93.3.4 Child(index as Integer) as IORegistryNodeMBS

MBS MacCF Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the IORegistryNodeMBS with the given index. **Notes:** Index from 0 to ChildCount-1.

93.3.5 Children as IORegistryNodeMBS()

MBS MacCF Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array with all child nodes.

93.3.6 Parents as IORegistryNodeMBS()

MBS MacCF Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array with all parent nodes.

93.3.7 Properties as Dictionary

MBS MacCF Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a Real Studio dictionary with all the properties of this note.
CHAPTER 93. IO REGISTRY

93.3.8 Properties

93.3.9 Busy as Integer

**Notes:**
Many activities in IOService are asynchronous. When registration, matching, or termination is in progress on an IOService, its busyState is increased by one. Change in busyState to or from zero also changes the IOService’s provider’s busyState by one, which means that an IOService is marked busy when any of the above activities is occurring on it or any of its clients.
(Read only property)

93.3.10 ChildCount as Integer

MBS MacCF Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Count of sub nodes.
**Notes:** (Read only property)

93.3.11 DataCount as Integer

MBS MacCF Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Count of data items.
**Notes:** (Read only property)

93.3.12 IOClass as String

MBS MacCF Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of the IOKit class.
**Notes:** (Read only property)

93.3.13 Name as String

MBS MacCF Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of this node.
**Notes:** (Read only property)
93.3. **CLASS IOREGISTRYNODEMBS**

93.3.14 **ParentCount as Integer**

MBS MacCF Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of parent nodes for this node. **Notes:** Typically one. (Read only property)

93.3.15 **Path as String**

MBS MacCF Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The path of this node. **Notes:** Useful for finding a node again. (Read only property)

93.3.16 **RetainCount as Integer**

MBS MacCF Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Retain count of this object. **Notes:** (Read only property)
Chapter 94

IO Warrior

94.1 class IOWarriorCarbonDeviceMBS

94.1.1 class IOWarriorCarbonDeviceMBS

MBS USB Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A class to describe

94.1.2 Properties

94.1.3 InterfaceHandle as Integer

Notes: This value is needed for WriteToInterface and ReadFromInterface calls. (Read and Write property)

94.1.4 InterfaceOpen as Boolean

MBS USB Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether this Interface is open or not.
Notes: (Read and Write property)
94.1.5 InterfaceType as Integer

MBS USB Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Type of interface.
**Notes:**
One of the values in the kIOWarrior*Interface* constants.
(Read and Write property)

94.1.6 SerialNumber as String

MBS USB Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The serial number of this device.
**Notes:**
Not available on very old devices.
(Read and Write property)


94.2. CLASS IOWARRIORCARBONMBS

94.2 class IOWarriorCarbonMBS

94.2.1 class IOWarriorCarbonMBS

MBS USB Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A class to control the IOWarrior Device on Mac OS X.

Notes:
This is the software for the IOWarrior USB Device from codemercs.com. The SDK from May 2003 is used.

http://www.codemercs.com

94.2.2 Methods

94.2.3 CountInterfaces as Integer

Notes: Please email support if you need more functions to handle more than one device.

94.2.4 FirstInterfaceOfType(InterfaceType as Integer) as Integer

Notes:
Returns 0 on any error.
This value is needed for WriteToInterface and ReadFromInterface calls.

94.2.5 Init as Integer

Notes: Return 0 if successfull.

94.2.6 InterfaceAtIndex(index as Integer) as IOWarriorCarbonDeviceMBS

CHAPTER 94. IO WARRIOR

Notes:

Returns nil on any error.
Index is zero based and goes till CountInterfaces-1.

94.2.7 IsPresent as Integer

MBS USB Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Counts the devices found.

94.2.8 ReadFromInterface(InterfaceHandle as Integer, reportID as Integer, size as Integer, data as memoryblock) as Integer

MBS USB Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Writes bytes from the interface.
Notes: Size must match the device’s report size.

94.2.9 ReadInterface0(byref int32 as Integer) as Integer

MBS USB Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Reads a 32bit value from interface 0.

94.2.10 ReadInterface1(reportid as Integer, m as memoryblock) as Integer

MBS USB Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Reads from interface 0.

94.2.11 WriteInterface0(value as Integer) as Integer

MBS USB Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Writes to interface 0.

94.2.12 WriteInterface1(reportid as Integer, m as memoryblock) as Integer

MBS USB Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Writes to interface 1.
94.2.13 WriteToInterface(InterfaceHandle as Integer, size as Integer, data as memoryblock) as Integer

MBS USB Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Writes bytes to the interface.  
**Notes:** Size must match the device’s report size.

94.2.14 Properties

94.2.15 USB24DeviceID as Integer

MBS USB Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The USB Device ID used for a IOWarrior 24 device.  
**Notes:** (Read and Write property)

94.2.16 USB24PVDeviceID as Integer

MBS USB Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The USB Device ID used for a IOWarrior 24 PV device.  
**Notes:** (Read and Write property)

94.2.17 USB40DeviceID as Integer

MBS USB Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The USB Device ID used for a IOWarrior 40 device.  
**Notes:** (Read and Write property)

94.2.18 USB56DeviceID as Integer

MBS USB Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The USB Device ID used for a IOWarrior 56 device.  
**Notes:** (Read and Write property)
94.2.19 USBVendorID as Integer

MBS USB Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The USB vendor ID of this device. **Notes:** (Read and Write property)

94.2.20 Constants

94.2.21 kIOWarrior24Interface0 = 2

MBS USB Plugin, Plugin Version: 7.1. **Function:** One of the interface type constants.

94.2.22 kIOWarrior24Interface1 = 3

MBS USB Plugin, Plugin Version: 7.1. **Function:** One of the interface type constants.

94.2.23 kIOWarrior24PVInterface0 = 6

MBS USB Plugin, Plugin Version: 7.1. **Function:** One of the interface type constants.

94.2.24 kIOWarrior24PVInterface1 = 7

MBS USB Plugin, Plugin Version: 7.1. **Function:** One of the interface type constants.

94.2.25 kIOWarrior40Interface0 = 0

MBS USB Plugin, Plugin Version: 7.1. **Function:** One of the interface type constants.

94.2.26 kIOWarrior40Interface1 = 1

MBS USB Plugin, Plugin Version: 7.1. **Function:** One of the interface type constants.
94.2. CLASS IOWARRIORCARBONMBS

94.2.27 kIOWarrior56Interface0 = 4

MBS USB Plugin, Plugin Version: 7.1. **Function:** One of the interface type constants.

94.2.28 kIOWarrior56Interface1 = 5

MBS USB Plugin, Plugin Version: 7.1. **Function:** One of the interface type constants.
94.3  class IOWarriorWindowsMBS

94.3.1  class IOWarriorWindowsMBS

MBS USB Plugin, Plugin Version: 3.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** A class to control the IOWarrior Device on Windows.
**Notes:**
This is the software for the IOWarrior USB Device from codemercs.com. The SDK 1.5 vom 21. September 2006 is used.
http://www.codemercs.com/

To work the stuff needs as a minimum the SetupAPI DLL on Windows which is part of Windows 98 or newer.
The plugin can be changed to simply do nothing on Window 95 or NT4 if someone needs this. (A RB application using this plugin can’t launch on Windows 95 or NT4 because of the missing DLL.)

94.3.2  Methods

94.3.3  CancelIO(Pipe as Integer) as boolean

MBS USB Plugin, Plugin Version: 7.0, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Cancels current IO processing.
**Notes:**
Returns true for success.

Cancel a read or write operation under way on one of the pipes.
This function is seldom used, because you need several threads in your program to be able to call it at all.
Read() blocks the thread so you need another thread for cancelling. Setting the timeouts is an easier way for handling read or write problems.
The function cancels pending read and write operations simultaneously.

94.3.4  close

MBS USB Plugin, Plugin Version: 3.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Closes the connection to the hardware.
**Notes:**
Close all IO-Warriors.
You must call this function when you are done using IO-Warriors in your program.
If multiple IO-Warriors are present all will be closed by this function.
94.3. **CLASS IOWARRIORWINDOWSMBS**

## 94.3.5 DeviceCount as Integer

MBS USB Plugin, Plugin Version: 7.0, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Returns the number of IO-Warrior devices present.

### Notes:

The function has to be called after Open() to return meaningful results.
Plugging or unplugging IO-Warriors after calling IowKitOpenDevice() is not handled. The number DeviceCount() returns stays the same.

## 94.3.6 GetProductID as Integer

MBS USB Plugin, Plugin Version: 7.0, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The product ID of the USB device used.

### Notes:

You can compare this with the values from USB40DeviceID, USB56DeviceID and USB24DeviceID.

Return the Product ID of the IO-Warrior device identified by iowHandle.
The Product ID is a 16-bit Word identifying the specific kind of IO-Warrior.
The value is cached in the dynamic library because access to the device needs some msecs.

## 94.3.7 GetRevision as Integer

MBS USB Plugin, Plugin Version: 7.0, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Return the revision of the firmware of the current IO-Warrior device.

### Notes:

0 on any error.

## 94.3.8 Open as boolean

MBS USB Plugin, Plugin Version: 3.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Opens a connection to the hardware.

## 94.3.9 Read(pipe as Integer, buffer as memoryblock, bufferSize as Integer) as Integer

MBS USB Plugin, Plugin Version: 3.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Reads bytes from the device into the buffer.

### Notes:
Read data from IO-Warrior.
This function reads length bytes from IO-Warrior and returns the number of bytes read if successful.
Note that you must specify the number of the pipe (see IO-Warrior specs) to read from. numPipe ranges from 0 to IOWKIT_MAX_PIPES-1.
Since the IO-Warriors are HID devices, you can only read the data in chunks called reports. Each report is preceded by a ReportID byte. The "IOWarriorDatasheet.pdf" elaborates about that.
The function returns the number of bytes read, so you should always check if it reads the correct number of bytes, you can use GetLastError() to get error details. Keep in mind that data is always returned in report chunks, so reading 5 bytes from the IO-pins of an IO-Warrior 24 would only return 3 bytes of data because the IO-Warrior 24 has a 3 byte report whereas an IO-Warrior 40 has a 5 byte report.
The Special Mode pipe has a report size of 8 bytes for all IO-Warriors.
Linux does not have a ReportID byte of 0 for pipe 0 (I/O pins). To be completely compatible with Windows libiowkit.so adds that ReportID to the data.
As of dynamic library version 1.4 the function correctly reads several reports at once.

ATTENTION!
This function blocks the current thread until something changes on IO-Warrior (i.e. until user presses a button connected to an input pin, or until IIC data arrives), so if you do not want your program to be blocked you should use a separate thread for reading from IO-Warrior. If you do not want a blocking read use ReadImmediate(). Alternatively you can set the read timeout with SetTimeout() to force Read() to fail when the timeout elapsed.

94.3.10  ReadImmediate(byref value as UInt32) as Integer

MBS USB Plugin, Plugin Version: 3.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function:
Returns the last value readed in the parameter.
Notes:
Return last value read from IO-Warrior pipe 0 (I/O pins).
The function returns TRUE (1) if a new value has arrived otherwise it returns FALSE and places the last value read into value.
The function can only read the I/O pins via pipe 0 so it does not need a numPipe parameter. It also abstracts from the number of I/O pins the device has.

Until the first report has been read the function returns -1 because the I/O pins are initially high.

Internally 8 reports are buffered to allow using a timer to call ReadImmediate() without losing fast bursts of reports. Read() also uses the buffered reports so do not mix calls to Read() and ReadImmediate() without careful consideration.
This is not true for the Linux version yet.
There is no non-blocking read for pipe 1 (Special Mode Functions) because pipe 1 has a command interface where you write a command and then read the answer.
94.3.11 ReadNonBlocking(pipe as Integer, buffer as memoryblock, bufferSize as Integer) as Integer

MBS USB Plugin, Plugin Version: 7.0, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Reads bytes from the device into the buffer in non blocking mode.

94.3.12 SerialNumber as string

MBS USB Plugin, Plugin Version: 7.0, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The serialnumber of this IOWarrior device.

**Notes:**
Returns an empty string if there is no serial number available.
The serialnumber is an eight byte long string.

94.3.13 SetTimeout(timeout as Integer) as boolean

MBS USB Plugin, Plugin Version: 7.0, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Sets the timeout.

**Example:**
```
dim w as IOWarriorWindowsMBS // your instance

if w.SetTimeout(1000) then
  MsgBox "OK. Set one second timeout"
else
  MsgBox "Failed."
end if
```

**Notes:**
Default is infinity.

Set read I/O timeout in milliseconds.
It is possible to lose reports with HID devices. Since reading a HID device is a blocking call it is possible to block your application in that case.
SetTimeout() makes Read() fail if it does not read a report in the allotted time.
If Read() times out, you have to restart any pending transaction (for example, IIC write or read transaction) from the beginning.
It is recommended to use 1 second (1000) or bigger timeout values.

Returns true on success.
94.3.14  SetWriteTimeout(timeout as Integer) as boolean

MBS USB Plugin, Plugin Version: 7.0, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Sets the write timeout.

**Notes:**
Default is infinity.

Set write I/O timeout in milliseconds.
SetWriteTimeout() makes Write() fail if it does not write a report in the allotted time.
If Write() times out, you have to restart any pending transaction (for example, IIC write transaction) from the beginning.
Failure of Write() is uncommon. Check your hardware if you encounter write errors.
The Linux library does not implement SetWriteTimeout() yet.
It is recommended to use 1 second (1000) or bigger timeout values.

94.3.15  Version as string

MBS USB Plugin, Plugin Version: 7.0, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The version of the IOWarrior library used for this class.

**Notes:** returns e.g. "IO-Warrior Kit V1.4".

94.3.16  Write(pipe as Integer, buffer as memoryblock, bufferSize as Integer) as Integer

MBS USB Plugin, Plugin Version: 3.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Writes bytes from the buffer to the device.

**Notes:**
Write length bytes of data to pipe numPipe of IO-Warrior. The return value is the number of bytes written.
Writing something else than a single report of the correct size and a valid report ID for the pipe fails for Windows. The function allows writing to the I/O pins through pipe 0 and Special Mode functions through pipe 1. To be completely compatible with the Windows version libiowkit.so expects a ReportID 0 for pipe 0 (I/O pins) even if Linux does not have a ReportID on pipe 0. The ReportID is stripped from the data sent to the device.
Sample write to pipe 0 of an IO-Warrior 40:
Integer value consists of 32 bits, which correspond to the 32 IO-Warrior 40 I/O pins. Each bit has the following meaning:
When a 1 is written to a pin the output driver of that pin is off and the pin is pulled high by an internal resistor. The pin can now be used as an input or an output with high state.
When a 0 is written to a pin the output driver is switched on pulling the pin to ground. The pin is now a output driving low.

For example, writing 0 (all 32 bits are zero) to IO-Warrior sets all pins as outputs driving low (so if you have LEDs connected to them they will be on).

Reading the status of the pins does always return the logic level on the pins, not the value written to the pin drivers.

Writing -1 (value in hex, all 32 bits set) sets all pins as inputs.

Note that if you want to use a pin as an input, you must first set it up as input, in other words, you must write 1 to it. For connected LEDs this means they go off.

### 94.3.17 Properties

#### 94.3.18 DeviceIndex as Integer

MBS USB Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The index of the current used IOWarrior device.

**Notes:**
Index is one based.
You can switch between the IO-Warrior devices by setting this parameter.
(Read and Write property)

#### 94.3.19 Handle as Integer

MBS USB Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The handle of the current IOWarrior device.

**Notes:** (Read and Write property)

#### 94.3.20 USB24DeviceID as Integer

MBS USB Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The USB Device ID used for a IOWarrior 24 device.

**Notes:** (Read and Write property)

#### 94.3.21 USB40DeviceID as Integer

MBS USB Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The USB Device ID used for a IOWarrior 40 device.

**Notes:** (Read and Write property)
94.3.22 USB56DeviceID as Integer

MBS USB Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The USB Device ID used for a IOWarrior 56 device. **Notes:** (Read and Write property)

94.3.23 USBVendorID as Integer

MBS USB Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The USB vendor ID of this device. **Notes:** (Read and Write property)
Chapter 95

iTunes

95.1 class iTunesLibraryAlbumMBS

95.1.1 class iTunesLibraryAlbumMBS

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Represents an album where a given media item (MediaItem) is contained. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

95.1.2 Methods

95.1.3 Constructor

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.

95.1.4 Properties

95.1.5 AlbumArtist as String

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The artist associated with this album. **Notes:** (Read only property)
95.1.6 Artist as iTunesLibraryArtistMBS

Function: The artist. 
Notes: 
Deprecated. Will be removed in future versions. 
(Read only property)

95.1.7 Compilation as Boolean

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether this album is a compilation. 
Notes: (Read only property)

95.1.8 DiscCount as Integer

Notes: (Read only property)

95.1.9 DiscNumber as Integer

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The index (i.e. 1, 2, 3, etc.) of the disc this album refers to within a compilation. 
Notes: (Read only property)

95.1.10 Gapless as Boolean

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether this track’s album is gapless. 
Notes: (Read only property)

95.1.11 Handle as Integer

95.1. CLASS ITUNESLIBRARYALBUMMBS

Notes: (Read and Write property)

95.1.12 Rating as Integer

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The rating of this track’s album. Notes: (Read only property)

95.1.13 RatingComputed as Boolean

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The rating of this track’s album. Notes: (Read only property)

95.1.14 SortAlbumArtist as String

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The artist associated with this album. This field should be used when sorting. Notes: (Read only property)

95.1.15 SortTitle as String

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The name of this that should be used for sorting purposes. Notes: (Read only property)

95.1.16 Title as String

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The name of this album. Notes: (Read only property)

95.1.17 TrackCount as Integer

Notes: (Read only property)
95.2. **CLASS ITUNESLIBRARYARTISTMBS**

95.2.1 **class iTunesLibraryArtistMBS**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Represents an artist, such as the performer of a song. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

95.2.2 **Methods**

95.2.3 **Constructor**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.

95.2.4 **Properties**

95.2.5 **Handle as Integer**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object handle. **Notes:** (Read and Write property)

95.2.6 **name as String**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of this artist. **Notes:** (Read only property)

95.2.7 **sortName as String**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of this artist that should be used for sorting purposes. **Notes:** (Read only property)
95.3    class iTunesLibraryArtworkMBS

95.3.1    class iTunesLibraryArtworkMBS

Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

95.3.2    Methods

95.3.3    Constructor


95.3.4    Properties

95.3.5    Handle as Integer

Notes: (Read and Write property)

95.3.6    image as NSImageMBS

Notes: (Read only property)

95.3.7    imageData as Memoryblock

Notes: (Read only property)
95.3. CLASS ITUNESLIBRARYARTWORKMBS

95.3.8 imageDataFormat as Integer

MBS Mac Extras Plugin, Plugin Version: 13.5. Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The format of the data returned by the imageData method. **Notes:** (Read only property)

95.3.9 Constants

95.3.10 ITLibArtworkFormatBitmap = 1

MBS Mac Extras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify the possible formats of the data returned by ITLibArtwork’s imageData method. **Notes:** The image data format is a bitmap.

95.3.11 ITLibArtworkFormatBMP = 6

MBS Mac Extras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify the possible formats of the data returned by ITLibArtwork’s imageData method. **Notes:** The image data corresponds to a BMP image.

95.3.12 ITLibArtworkFormatGIF = 4

MBS Mac Extras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify the possible formats of the data returned by ITLibArtwork’s imageData method. **Notes:** The image data corresponds to a GIF image.

95.3.13 ITLibArtworkFormatJPEG = 2

MBS Mac Extras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify the possible formats of the data returned by ITLibArtwork’s imageData method. **Notes:** The image data corresponds to a JPEG image.

95.3.14 ITLibArtworkFormatJPEG2000 = 3

MBS Mac Extras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify the possible formats of the data returned by ITLibArtwork’s imageData method.
Notes: The image data corresponds to a JPEG2000 image.

95.3.15  ITLibArtworkFormatNone = 0

MBS MacExtras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify the possible formats of the data returned by ITLibArtwork’s imageData method. **Notes:** The image data format is unknown.

95.3.16  ITLibArtworkFormatPICT = 8

MBS MacExtras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify the possible formats of the data returned by ITLibArtwork’s imageData method. **Notes:** The image data corresponds to a PICT image.

95.3.17  ITLibArtworkFormatPNG = 5

MBS MacExtras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify the possible formats of the data returned by ITLibArtwork’s imageData method. **Notes:** The image data corresponds to a PNG image.

95.3.18  ITLibArtworkFormatTIFF = 7

MBS MacExtras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify the possible formats of the data returned by ITLibArtwork’s imageData method. **Notes:** The image data corresponds to a TIFF image.
95.4. **CLASS ITUNESLIBRARYMBS**

95.4. class iTunesLibraryMBS

95.4.1 class iTunesLibraryMBS

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class representing an iTunes library whose metadata is being queried. **Notes:** Requires iTunes 11 on Mac OS X. And your app must be code signed.

95.4.2 Methods

95.4.3 allMediaItems as iTunesLibraryMediaItemMBS()

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** All media items in the library.

95.4.4 allPlaylists as iTunesLibraryPlaylistMBS()

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** All playlists in the library.

95.4.5 artworkForMediaFile(mediaFile as folderitem) as iTunesLibraryArtworkMBS

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Retrieves the artwork from a media file. **Notes:**

mediaFile: The folderitem of the media file whose artwork should be extracted. Returns a iTunesLibraryArtworkMBS instance represeting the media file artwork, or nil if the artwork was not found or could not be extracted. 

See also:

- 95.4.6 artworkForMediaFile(mediaFileURL as string) as iTunesLibraryArtworkMBS

95.4.6 artworkForMediaFile(mediaFileURL as string) as iTunesLibraryArtworkMBS

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Retrieves the artwork from a media file. **Notes:**

mediaFileURL: The URL of the media file whose artwork should be extracted. Returns a iTunesLibraryArtworkMBS instance represeting the media file artwork, or nil if the artwork was
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not found or could not be extracted.

See also:

• 95.4.5 artworkForMediaFile(mediaFile as folderitem) as iTunesLibraryArtworkMBS

95.4.7 Constructor(requestedAPIVersion as string, byref error as NSErrorMBS)


**Function:** Initializes an instance of ITLibrary which can be used to retrieve media entities.

**Notes:**

Upon initialization of the library class, the default iTunes database for the current user will be read and parsed.

At this point all media entities will be cached in memory until the time the object is deallocated.

requestedAPIVersion: The version of the iTunesLibrary API that the application is requesting, provide "1.0" if unknown.

error: A variable that will receive an NSError if this method fails. May be nil if caller does not care about error.

If handle is 0, the initialization failed.

Requires that your app is code signed.

95.4.8 libraryWithAPIVersion(requestedAPIVersion as string, byref error as NSErrorMBS) as iTunesLibraryMBS


**Function:** Initializes an instance of ITLibrary which can be used to retrieve media entities.

**Notes:**

Upon initialization of the library class, the default iTunes database for the current user will be read and parsed.

At this point all media entities will be cached in memory until the time the object is deallocated.

requestedAPIVersion: The version of the iTunesLibrary API that the application is requesting, provide "1.0" if unknown.

error: A variable that will receive an NSError if this method fails. May be nil if caller does not care about error.

Returns a Library instance, or nil if this method fails.

Requires that your app is code signed.
95.4.9 Properties

95.4.10 apiMajorVersion as Integer

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The major version number of this API.  
**Notes:** (Read only property)

95.4.11 apiMinorVersion as Integer

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The minor version number of this API.  
**Notes:** (Read only property)

95.4.12 applicationVersion as String

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The version of iTunes being accessed.  
**Notes:** (Read only property)

95.4.13 features as Integer

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A bitwise OR combination of the features of this library.  
**Notes:** (Read only property)

95.4.14 Handle as Integer

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object handle.  
**Notes:** (Read and Write property)

95.4.15 musicFolderLocation as String

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The location of the iTunes music folder.
95.4.16  showContentRating as Boolean

MBS Mac Extras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether to show content rating labels.  
**Notes:** (Read only property)

95.4.17  Constants

95.4.18  ITLibExportFeatureNone = 0

MBS Mac Extras Plugin, Plugin Version: 13.5. **Function:** One of the constants describe the features supported by a given iTunes library.  
**Notes:** No features are supported.
95.5. class iTunesLibraryMediaEntityMBS

95.5.1 class iTunesLibraryMediaEntityMBS

MBS MacExtrnas Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Abstract superclass for MediaItem and Playlist instances. Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

95.5.2 Methods

95.5.3 Constructor


95.5.4 enumerateValuesExceptForProperties(propertyNames() as string) as dictionary

MBS MacExtrnas Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Queries all keys and values for all properties except the given property names.

95.5.5 enumerateValuesForAllProperties as dictionary


95.5.6 enumerateValuesForProperties(propertyNames() as string) as dictionary


95.5.7 ITLibMediaEntityPropertyPersistentID as string

95.5.8 \texttt{valueForProperty(PropertyName as string) as Variant}

\textbf{Function:} Gets the value for a specified media property key.
\textbf{Notes:}

The media property keys you can use with this property are listed in this document and in Media Item Property Keys and Playlist Property Keys.

\textit{property:} The media property key that you want the corresponding value of.
\textit{Returns:} The value for the media property key.

95.5.9 \textbf{Properties}

95.5.10 \textbf{Handle as Integer}

\textbf{Notes:} (Read and Write property)

95.5.11 \textbf{persistentID as Integer}

\textbf{Notes:} (Read only property)
95.6  class iTunesLibraryMediaItemMBS

95.6.1  class iTunesLibraryMediaItemMBS

**Function:** A media item represents a single piece of media (such as a song, a video, a podcast, etc) in the  
iTunes library.  
**Notes:**  
A media item has an overall unique identifier, accessed using the persistentID property. The media item  
metadata may be accessed through its individual properties or via the iTunesLibraryMediaEntityMBS gen-  
eral property accessor methods.  
Subclass of the iTunesLibraryMediaEntityMBS class.  
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

95.6.2  Methods

95.6.3  Constructor

**Function:** The private constructor.

95.6.4  ITLibMediaItemPropertyAddedDate as string

**Function:** One of the constants for properties.

95.6.5  ITLibMediaItemPropertyAlbumArtist as string

**Function:** One of the constants for properties.

95.6.6  ITLibMediaItemPropertyAlbumDiscCount as string

**Function:** One of the constants for properties.
95.6.7 **ITLibMediaItemPropertyAlbumDiscNumber as string**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.8 **ITLibMediaItemPropertyAlbumIsCompilation as string**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.9 **ITLibMediaItemPropertyAlbumIsGapless as string**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.10 **ITLibMediaItemPropertyAlbumRating as string**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.11 **ITLibMediaItemPropertyAlbumRatingComputed as string**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.12 **ITLibMediaItemPropertyAlbumTitle as string**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.13 **ITLibMediaItemPropertyAlbumTrackCount as string**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.
95.6.14  **ITLibMediaItemPropertyArtistName** as string

MBS Mac Extras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.15  **ITLibMediaItemPropertyArtwork** as string

MBS Mac Extras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.16  **ITLibMediaItemPropertyBeatsPerMinute** as string

MBS Mac Extras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.17  **ITLibMediaItemPropertyBitRate** as string

MBS Mac Extras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.18  **ITLibMediaItemPropertyCategory** as string

MBS Mac Extras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.19  **ITLibMediaItemPropertyComments** as string

MBS Mac Extras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.20  **ITLibMediaItemPropertyComposer** as string

MBS Mac Extras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.
95.6.21  ITLibMediaItemPropertyContentRating as string

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.22  ITLibMediaItemPropertyDescription as string

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.23  ITLibMediaItemPropertyFileType as string

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.24  ITLibMediaItemPropertyGenre as string

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.25  ITLibMediaItemPropertyGrouping as string

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.26  ITLibMediaItemPropertyHasArtwork as string

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.27  ITLibMediaItemPropertyIsDRMProtected as string

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.
95.6.28  ITLibMediaItemPropertyIsPurchased as string

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.29  ITLibMediaItemPropertyIsUserDisabled as string

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.30  ITLibMediaItemPropertyIsVideo as string

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.31  ITLibMediaItemPropertyKind as string

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.32  ITLibMediaItemPropertyLastPlayDate as string

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.33  ITLibMediaItemPropertyLocation as string

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.34  ITLibMediaItemPropertyLocationType as string

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.
95.6.35  ITLibMediaItemPropertyLyricsContentRating as string

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.36  ITLibMediaItemPropertyMediaKind as string

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.37  ITLibMediaItemPropertyModifiedDate as string

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.38  ITLibMediaItemPropertyPlayCount as string

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.39  ITLibMediaItemPropertyRating as string

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.40  ITLibMediaItemPropertyRatingComputed as string

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.41  ITLibMediaItemPropertyReleaseDate as string

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.
95.6.42 ITLibMediaItemPropertySampleRate as string


95.6.43 ITLibMediaItemPropertySize as string


95.6.44 ITLibMediaItemPropertySkipDate as string


95.6.45 ITLibMediaItemPropertySortAlbumArtist as string


95.6.46 ITLibMediaItemPropertySortAlbumTitle as string


95.6.47 ITLibMediaItemPropertySortArtistName as string


95.6.48 ITLibMediaItemPropertySortComposer as string

95.6.49 ITLibMediaItemPropertySortTitle as string

MBS Mac Extras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.50 ITLibMediaItemPropertyStartTime as string

MBS Mac Extras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.51 ITLibMediaItemPropertyStopTime as string

MBS Mac Extras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.52 ITLibMediaItemPropertyTitle as string

MBS Mac Extras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.53 ITLibMediaItemPropertyTotalTime as string

MBS Mac Extras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.54 ITLibMediaItemPropertyTrackNumber as string

MBS Mac Extras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.

95.6.55 ITLibMediaItemPropertyUserSkipCount as string

MBS Mac Extras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for properties.
95.6.56  ITLibMediaItemPropertyVideoEpisode as string


95.6.57  ITLibMediaItemPropertyVideoEpisodeOrder as string


95.6.58  ITLibMediaItemPropertyVideoHeight as string


95.6.59  ITLibMediaItemPropertyVideoIsHD as string


95.6.60  ITLibMediaItemPropertyVideoSeason as string


95.6.61  ITLibMediaItemPropertyVideoSeries as string


95.6.62  ITLibMediaItemPropertyVideoSortSeries as string

95.6.63  ITLibMediaItemPropertyVideoWidth as string


95.6.64  ITLibMediaItemPropertyVoiceOverLanguage as string


95.6.65  ITLibMediaItemPropertyVolumeAdjustment as string


95.6.66  ITLibMediaItemPropertyVolumeNormalizationEnergy as string


95.6.67  ITLibMediaItemPropertyYear as string


95.6.68  Properties

95.6.69  addedDate as Date

MBS MacExtrus Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The date and media item this media item was added to the iTunes database. Notes: (Read only property)
95.6. **CLASS ITUNESLIBRARYMEDIAITEMMBS**

95.6.70  **album as iTunesLibraryAlbumMBS**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** The album where this media item belongs.
**Notes:** (Read only property)

95.6.71  **artist as iTunesLibraryArtistMBS**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** The artist associated with this media item.
**Notes:** (Read only property)

95.6.72  **artwork as iTunesLibraryArtworkMBS**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Whether this media item has artwork.
**Notes:** (Read only property)

95.6.73  **ArtworkAvailable as Boolean**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Whether this media item has artwork.
**Notes:** (Read only property)

95.6.74  **beatsPerMinute as Integer**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** The BPM (beats per minute) of this media item.
**Notes:** (Read only property)

95.6.75  **bitrate as Integer**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** The bitrate of this media item in kbps.
**Notes:** (Read only property)
95.6.76  category as String

MBS Mac Extras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The podcast category of this media item (implies this media item is a podcast).
Notes: (Read only property)

95.6.77  comments as String

Notes: (Read only property)

95.6.78  composer as String

Notes: (Read only property)

95.6.79  contentRating as String

Notes: (Read only property)

95.6.80  description as String

MBS Mac Extras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Any podcast description of with this media item (implies this media item is a podcast).
Notes: (Read only property)

95.6.81  DRMProtected as Boolean

Notes: (Read only property)
95.6.82  **fileType as Integer**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: The type of the file this media item refers to. **Notes**: (Read only property)

95.6.83  **genre as String**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: The genre associated with this media item. **Notes**: (Read only property)

95.6.84  **grouping as String**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: The grouping of this media item. **Notes**: (Read only property)

95.6.85  **kind as String**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: This media item’s file kind (ex. MPEG audio file). **Notes**: (Read only property)

95.6.86  **lastPlayedDate as Date**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: The date and time this media item was last played in iTunes, or nil if this media item has not been played. **Notes**: (Read only property)

95.6.87  **location as String**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: The location of this media item on disk. **Notes**: (Read only property)
95.6.88  locationFile as FolderItem

**Function:** The location of this media item on disk.  
**Notes:** For your convenience we provide this folderitem if location points to a valid file.  
(Read only property)

95.6.89  locationType as Integer

**Function:** The type of this media item with respect to its location.  
**Notes:** (Read only property)

95.6.90  lyricsContentRating as Integer

**Function:** The content rating of this media item’s lyrics.  
**Notes:** (Read only property)

95.6.91  mediaKind as Integer

**Function:** This media item’s media kind.  
**Notes:** (Read only property)

95.6.92  modifiedDate as Date

**Function:** The date and time this media item was last modified.  
**Notes:** (Read only property)

95.6.93  playCount as Integer

**Function:** The number of times this media item has been played in iTunes.
95.6.94  Purchased as Boolean

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this media item was purchased.  
**Notes:** (Read only property)

95.6.95  rating as Integer

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The rating of this media item.  
**Notes:** (Read only property)

95.6.96  RatingComputed as Boolean

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this media item’s rating is computed.  
**Notes:** (Read only property)

95.6.97  releaseDate as Date

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The date this media item was released.  
**Notes:** (Read only property)

95.6.98  sampleRate as Integer

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The sample rate of this media item in samples per second.  
**Notes:** (Read only property)

95.6.99  size as UInt64

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The size in bytes of this media item on disk.
95.6.100  skipCount as Integer

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of times this media item has been skipped.
**Notes:** (Read only property)

95.6.101  skipDate as Date

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The date and time when this media item was last skipped.
**Notes:** (Read only property)

95.6.102  sortComposer as String

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of the composer associated with this media item that should be used for sorting purposes.
**Notes:** (Read only property)

95.6.103  sortTitle as String

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The title of this media item that should be used for sorting purposes.
**Notes:** (Read only property)
95.6.104  **startTime as Integer**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The start time of this media item given that the media item is a podcast. **Notes:** (Read only property)

95.6.105  **stopTime as Integer**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The stop time of this media item given that the media item is a podcast. **Notes:** (Read only property)

95.6.106  **title as String**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The title of this media item. **Notes:** (Read only property)

95.6.107  **totalTime as Integer**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The length of this media item in seconds. **Notes:** (Read only property)

95.6.108  **trackNumber as Integer**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The position of this media item within its album. **Notes:** (Read only property)

95.6.109  **userDisabled as Boolean**

MBS Mac Extras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the user has disabled this media item. **Notes:** (Read only property)
95.6.110  video as Boolean

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this media item is a video media item (video podcast, movie, etc).
**Notes:** (Read only property)

95.6.111  videoInfo as iTunesLibraryMediaItemVideoInfoMBS

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The video information of this media item (implies this media item is a video media item).
**Notes:** (Read only property)

95.6.112  voiceOverLanguage as String

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The voice-over language of this media item.
**Notes:** (Read only property)

95.6.113  volumeAdjustment as Integer

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The volume adjustment used for this media item if any.
**Notes:** (Read only property)

95.6.114  volumeNormalizationEnergy as Integer

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The volume normalization energy applied to this media item.
**Notes:** (Read only property)

95.6.115  year as Integer

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The year when this media item was released.
**Notes:** (Read only property)
95.6. Constants

95.6.116  ITLibMediaItemLocationTypeFile = 1

MBS Mac Extras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify possible the type of a media item with respect to its location.
**Notes:** The media item location refers to a local file.

95.6.118  ITLibMediaItemLocationTypeRemote = 3

MBS Mac Extras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify possible the type of a media item with respect to its location.
**Notes:** The media item location refers to a remote file.

95.6.119  ITLibMediaItemLocationTypeUnknown = 0

MBS Mac Extras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify possible the type of a media item with respect to its location.
**Notes:** The media item type is not known.

95.6.120  ITLibMediaItemLocationTypeURL = 2

MBS Mac Extras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify possible the type of a media item with respect to its location.
**Notes:** The media item location refers to a URL (for example, a podcast).

95.6.121  ITLibMediaItemLyricsContentRatingClean = 2

MBS Mac Extras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify the possible ratings of media item lyrics.
**Notes:** The media item lyrics do not contain explicit language.

95.6.122  ITLibMediaItemLyricsContentRatingExplicit = 1

MBS Mac Extras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify the possible ratings of media item lyrics.
Notes: The media item lyrics contain explicit language.

95.6.123 ITLibMediaItemLyricsContentRatingNone = 0

MBS MacExtras Plugin, Plugin Version: 13.5. Function: One of the constants to specify the possible ratings of media item lyrics.
Notes: No rating information for the media item lyrics.

95.6.124 ITLibMediaItemMediaKindAlertTone = 21

MBS MacExtras Plugin, Plugin Version: 13.5. Function: One of the constants to specify the possible media kinds of a iTunes media item.
Notes: The media item is an audio tone on an iOS device which is not a protected ringtone.

95.6.125 ITLibMediaItemMediaKindAudiobook = 5

MBS MacExtras Plugin, Plugin Version: 13.5. Function: One of the constants to specify the possible media kinds of a iTunes media item.
Notes: The media item is an audiobook.

95.6.126 ITLibMediaItemMediaKindBook = 19

MBS MacExtras Plugin, Plugin Version: 13.5. Function: One of the constants to specify the possible media kinds of a iTunes media item.
Notes: The media item is an EPUB or iBooks Author book.

95.6.127 ITLibMediaItemMediaKindDigitalBooklet = 15

MBS MacExtras Plugin, Plugin Version: 13.5. Function: One of the constants to specify the possible media kinds of a iTunes media item.
Notes: The media item is an iTunes Extra or an iTunes LP.

95.6.128 ITLibMediaItemMediaKindHomeVideo = 12

MBS MacExtras Plugin, Plugin Version: 13.5. Function: One of the constants to specify the possible media kinds of a iTunes media item.
95.6. CLASS ITUNESLIBRARYMEDIAITEMMBS

Notes: The media item is a non-iTunes Store movie.

95.6.129  ITLibMediaItemMediaKindInteractiveBooklet = 9

MBS MacExtrar Plugin, Plugin Version: 13.5. Function: One of the constants to specify the possible media kinds of a iTunes media item.
Notes: The media item is a QuickTime movie with embedded flash (deprecated)

95.6.130  ITLibMediaItemMediaKindIOSApplication = 16

MBS MacExtrar Plugin, Plugin Version: 13.5. Function: One of the constants to specify the possible media kinds of a iTunes media item.
Notes: The media item is an iPhone or iPod touch application.

95.6.131  ITLibMediaItemMediaKindiTunesU = 18

MBS MacExtrar Plugin, Plugin Version: 13.5. Function: One of the constants to specify the possible media kinds of a iTunes media item.
Notes: The media item is an iTunesU audio of video file.

95.6.132  ITLibMediaItemMediaKindMovie = 3

MBS MacExtrar Plugin, Plugin Version: 13.5. Function: One of the constants to specify the possible media kinds of a iTunes media item.
Notes: The media item is a movie.

95.6.133  ITLibMediaItemMediaKindMusicVideo = 7

MBS MacExtrar Plugin, Plugin Version: 13.5. Function: One of the constants to specify the possible media kinds of a iTunes media item.
Notes: The media item is a music video.

95.6.134  ITLibMediaItemMediaKindPDFBook = 20

MBS MacExtrar Plugin, Plugin Version: 13.5. Function: One of the constants to specify the possible media kinds of a iTunes media item.
95.6.135  ITLibMediaItemMediaKindPDFBooklet = 6

MBS MacExtras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify the possible media kinds of a iTunes media item.
**Notes:** The media item is an unwrapped PDF file that is part of a Music album.

95.6.136  ITLibMediaItemMediaKindPodcast = 4

MBS MacExtras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify the possible media kinds of a iTunes media item.
**Notes:** The media item is an audio or video podcast.

95.6.137  ITLibMediaItemMediaKindRingtone = 14

MBS MacExtras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify the possible media kinds of a iTunes media item.
**Notes:** The media item is an iOS ringtone.

95.6.138  ITLibMediaItemMediaKindSong = 2

MBS MacExtras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify the possible media kinds of a iTunes media item.
**Notes:** The media item is a song.

95.6.139  ITLibMediaItemMediaKindTVShow = 8

MBS MacExtras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify the possible media kinds of a iTunes media item.
**Notes:** The media item is a TV show.

95.6.140  ITLibMediaItemMediaKindUnknown = 1

MBS MacExtras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify the possible media kinds of a iTunes media item.
95.6. **CLASS ITUNESLIBRARYMEDIAITEMMBS**

**Notes:** The media item kind is unknown.

95.6.141 **ITLibMediaItemMediaKindVoiceMemo = 17**

MBS MacExtras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify the possible media kinds of a iTunes media item.

**Notes:** The media item is a voice memo recorded on iPod/iPhone.
95.7 class iTunesLibraryMediaItemVideoInfoMBS

95.7.1 class iTunesLibraryMediaItemVideoInfoMBS

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Encapsulates the video information of a video media item. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

95.7.2 Methods

95.7.3 Constructor

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.

95.7.4 Properties

95.7.5 episode as String

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The TV episode the video is associated with (implies the track is a TV show). **Notes:** (Read only property)

95.7.6 episodeOrder as Integer

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The TV episode order the video is associated with (implies the track is a TV show). **Notes:** (Read only property)

95.7.7 Handle as Integer

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object handle. **Notes:** (Read and Write property)
95.7.8  HD as Boolean

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether the video is high definition. Notes: (Read only property)

95.7.9  season as Integer

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The name of TV season the video is associated with (implies the track is a TV show). Notes: (Read only property)

95.7.10 series as String

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The name of TV series the video is associated with (implies track is a TV show). Notes: (Read only property)

95.7.11 sortSeries as String

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The name of the TV series the video is associated with that should be used for when sorting (implies the track is a TV show). Notes: (Read only property)

95.7.12 videoHeight as Integer

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The height of the video. Notes: (Read only property)

95.7.13 videoWidth as Integer

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The width of the video. Notes: (Read only property)
95.8 class iTunesLibraryPlaylistMBS

95.8.1 class iTunesLibraryPlaylistMBS

Function: A playlist is a collection of related media items.
Notes:
(Media items are described in iTunesLibraryMediaItemMBS Class Reference.)
Each playlist has a name, a set of attributes, and a unique identifier that persists across application launches.
Subclass of the iTunesLibraryMediaEntityMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

95.8.2 Methods

95.8.3 Constructor


95.8.4 items as iTunesLibraryMediaItemMBS()


95.8.5 ITLibPlaylistPropertyAllItemsPlaylist as string


95.8.6 ITLibPlaylistPropertyDistinguishedKind as string

95.8.7  **ITLibPlaylistPropertyItems as string**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the playlist property.

95.8.8  **ITLibPlaylistPropertyMaster as string**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the playlist property.

95.8.9  **ITLibPlaylistPropertyName as string**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the playlist property.

95.8.10  **ITLibPlaylistPropertyParentPersistentID as string**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the playlist property.

95.8.11  **ITLibPlaylistPropertyVisible as string**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the playlist property.

95.8.12  **Properties**

95.8.13  **AllItemsPlaylist as Boolean**

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this playlist is an "all items" playlist.

**Notes:**

i.e. marked items in playlist exceeds the total tracks in the playlist so the playlist is a discreet object.

(Read only property)
95.8.14  DistinguishedKind as Integer

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The distinguished kind of this playlist.  
**Notes:** (Read only property)

95.8.15  Master as Boolean

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this playlist is a master playlist.  
**Notes:** (Read only property)

95.8.16  name as String

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name or title of this playlist.  
**Notes:** (Read only property)

95.8.17  ParentID as Integer

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The unique identifier of this playlist’s parent.  
**Notes:** (Read only property)

95.8.18  Visible as Boolean

MBS MacExtras Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this playlist is visible.  
**Notes:** (Read only property)

95.8.19  Constants

95.8.20  ITLibDistinguishedPlaylistKind90sMusic = 42

MBS MacExtras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify the possible kinds of playlists.
Notes: The playlist is the default 90’s music iTunes playlist.

95.8.21  ITLibDistinguishedPlaylistKindBooks = 4

MBS MacExtras Plugin, Plugin Version: 13.5. Function: One of the constants to specify the possible kinds of playlists. 
Notes: The playlist contains all the books in the iTunes Library

95.8.22  ITLibDistinguishedPlaylistKindClassicalMusic = 48

MBS MacExtras Plugin, Plugin Version: 13.5. Function: One of the constants to specify the possible kinds of playlists. 
Notes: The playlist is the default Classical Music smart playlist generated by iTunes.

95.8.23  ITLibDistinguishedPlaylistKindHomeVideos = 50

MBS MacExtras Plugin, Plugin Version: 13.5. Function: One of the constants to specify the possible kinds of playlists. 
Notes: The playlist contains all homes videos in the iTunes Library.

95.8.24  ITLibDistinguishedPlaylistKindiTunesU = 26

MBS MacExtras Plugin, Plugin Version: 13.5. Function: One of the constants to specify the possible kinds of playlists. 
Notes: The playlist contains the user’s iTunesU items.

95.8.25  ITLibDistinguishedPlaylistKindLibraryMusicVideos = 49

MBS MacExtras Plugin, Plugin Version: 13.5. Function: One of the constants to specify the possible kinds of playlists. 
Notes: The playlist contains all music videos in the iTunes Library. This is NOT the same as the default Music Videos smart playlist.
95.8.26  ITLibDistinguishedPlaylistKindMovies = 1

MBS MacExtras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify the possible kinds of playlists.
**Notes:** The playlist contains all the movies in the iTunes Library.

95.8.27  ITLibDistinguishedPlaylistKindMusic = 3

MBS MacExtras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify the possible kinds of playlists.
**Notes:** The playlist contains all the music items in the iTunes Library.

95.8.28  ITLibDistinguishedPlaylistKindMusicVideos = 47

MBS MacExtras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify the possible kinds of playlists.
**Notes:** The playlist is the default Music Videos smart playlist generated by iTunes.

95.8.29  ITLibDistinguishedPlaylistKindMyTopRated = 43

MBS MacExtras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify the possible kinds of playlists.
**Notes:** The playlist is the default Top Rated smart playlist generated by iTunes.

95.8.30  ITLibDistinguishedPlaylistKindNone = 0

MBS MacExtras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify the possible kinds of playlists.
**Notes:** The playlist is not a distinguished playlist.

95.8.31  ITLibDistinguishedPlaylistKindPodcasts = 7

MBS MacExtras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify the possible kinds of playlists.
**Notes:** The playlist contains all the podcasts in the iTunes library.
95.8.32 ITLibDistinguishedPlaylistKindPurchases = 16

MBS MacExtras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify the possible kinds of playlists.
**Notes:** The playlist contains all the user’s purchases in the iTunes Store.

95.8.33 ITLibDistinguishedPlaylistKindRecentlyAdded = 46

MBS MacExtras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify the possible kinds of playlists.
**Notes:** The playlist is the default Recently Added smart playlist generated by iTunes.

95.8.34 ITLibDistinguishedPlaylistKindRecentlyPlayed = 45

MBS MacExtras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify the possible kinds of playlists.
**Notes:** The playlist is the default Recently Played smart playlist generated by iTunes.

95.8.35 ITLibDistinguishedPlaylistKindRingtones = 5

MBS MacExtras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify the possible kinds of playlists.
**Notes:** The playlist contains all the ringtones in the iTunes Library.

95.8.36 ITLibDistinguishedPlaylistKindTop25MostPlayed = 44

MBS MacExtras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify the possible kinds of playlists.
**Notes:** The playlist is the default 25 Most Played smart playlist generated by iTunes.

95.8.37 ITLibDistinguishedPlaylistKindTVShows = 2

MBS MacExtras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify the possible kinds of playlists.
**Notes:** The playlists contains all the TV shows in the iTunes Library.
95.8.38 ITLibDistinguishedPlaylistKindVoiceMemos = 14

MBS MacExtras Plugin, Plugin Version: 13.5. **Function:** One of the constants to specify the possible kinds of playlists.

**Notes:** The playlist contains all voice memos.
Chapter 96

Java

96.1 class JavaArrayMBS

96.1.1 class JavaArrayMBS

Notes: Subclass of the JavaObjectMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

96.1.2 Methods

96.1.3 Constructor


96.1.4 Length as Integer

Notes: Returns 0 on any error.
96.2 class JavaBooleanArrayMBS

96.2.1 class JavaBooleanArrayMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
The wrapper class for the java boolean array object.
Notes:
Subclass of the JavaArrayMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

96.2.2 Methods

96.2.3 Constructor

MBS Java Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
The private constructor.

96.2.4 Elements as memoryblock

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
All the elements in this array as one memoryblock.
Notes: Use memoryblock.byte(index) to access.

96.2.5 Values as Boolean()

MBS Java Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Returns a Xojo array with values.

96.2.6 Properties

96.2.7 Region(start as Integer, len as Integer) as memoryblock

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Get or set a region of the array.
Notes:
Start is the starting index (0 based) and len the number of items to copy.
Throws ArrayIndexOutOfBoundsException if (start + len - 1) does not specify a valid index in the array.
96.2. CLASS JAVABOOLEANARRAYMBS

(Read and Write computed property)
96.3 class JavaByteArrayMBS

96.3.1 class JavaByteArrayMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The wrapper class for the java byte array object.
**Notes:**
Subclass of the JavaArrayMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

96.3.2 Methods

96.3.3 Constructor

MBS Java Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

96.3.4 Elements as memoryblock

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
All the elements in this array as one memoryblock.
**Notes:** Use memoryblock.Byte(index) to access.

96.3.5 Values as Int8()

MBS Java Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns a Xojo array with values.

96.3.6 Properties

96.3.7 Region(start as Integer, len as Integer) as memoryblock

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get or set a region of the array.
**Notes:**
Start is the starting index (0 based) and len the number of items to copy.
Throws ArrayIndexOutOfBoundsException if (start + len - 1) does not specify a valid index in the array.
96.3. **CLASS JAVA_BYTEARRAYMBS**

(Read and Write computed property)
96.4 class JavaCharArrayMBS

96.4.1 class JavaCharArrayMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The wrapper class for the java char array object.

**Notes:**
Subclass of the JavaArrayMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

96.4.2 Methods

96.4.3 Constructor

MBS Java Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The private constructor.

96.4.4 Elements as memoryblock

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** All the elements in this array as one memoryblock.

**Notes:** Use memoryblock.UShortMBS(index*2) to access.

96.4.5 Values as UInt16()

MBS Java Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a Xojo array with values.

96.4.6 Properties

96.4.7 Region(start as Integer, len as Integer) as memoryblock

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get or set a region of the array.

**Notes:**
Start is the starting index (0 based) and len the number of items to copy.
Throws ArrayIndexOutOfBoundsException if (start + len - 1) does not specify a valid index in the array.
96.4. CLASS JAVACHARARRAYMBS

(Read and Write computed property)
96.5 class JavaClassMBS

96.5.1 class JavaClassMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The wrapper class for a Java class.  
**Notes:**  
Subclass of the JavaObjectMBS class.  
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

96.5.2 Methods

96.5.3 AllocateObject as JavaObjectMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Allocates a new Java object without invoking any of the constructors for the object. #  
**Notes:**  
Returns a reference to the object or nil on any error.  
Does not work for array classes.  
Throws InstantiationException if the class is an interface or an abstract class.

96.5.4 CallStaticBooleanMethod(MethodID as JavaMethodMBS, args as memoryblock) as boolean

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calls a static method with a boolean return value.  
**Notes:**  
This call invokes a static method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling JavaClassMBS.GetMethod().  
The method ID must be derived from this class, not from one of its superclasses.  
Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.  
In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)
96.5.5  CallStaticByteMethod(MethodID as JavaMethodMBS, args as memoryblock) as Integer

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a static method with a byte return value.
**Notes:**
This call invokes a static method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling JavaClassMBS.GetMethod().

The method ID must be derived from this class, not from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.
In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

96.5.6  CallStaticCharMethod(MethodID as JavaMethodMBS, args as memoryblock) as Integer

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a static method with a char return value.
**Notes:**
This call invokes a static method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling JavaClassMBS.GetMethod().

The method ID must be derived from this class, not from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.
In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

96.5.7  CallStaticDoubleMethod(MethodID as JavaMethodMBS, args as memoryblock) as Double

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a static method with a double return value.
**Notes:**
This call invokes a static method on a Java object, according to the specified method ID. The methodID
The method ID must be derived from this class, not from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

### 96.5.8 CallStaticFloatMethod(MethodID as JavaMethodMBS, args as memoryblock) as single

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a static method with a float return value.

**Notes:**
This call invokes a static method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling JavaClassMBS.GetMethod().

The method ID must be derived from this class, not from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

### 96.5.9 CallStaticIntMethod(MethodID as JavaMethodMBS, args as memoryblock) as Integer

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a static method with an integer return value.

**Notes:**
This call invokes a static method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling JavaClassMBS.GetMethod().

The method ID must be derived from this class, not from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.

In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)
96.5.10 CallStaticLongMethod(MethodID as JavaMethodMBS, args as memoryblock) as Int64

MBS Java Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a static method with a long return value.

**Notes:**
This call invokes a static method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling JavaClassMBS.GetMethod().

The method ID must be derived from this class, not from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.
In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

96.5.11 CallStaticMain(args() as string)

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a static main method and passes the String array.

96.5.12 CallStaticObjectMethod(MethodID as JavaMethodMBS, args as memoryblock) as JavaObjectMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a static method with an object return value.

**Example:**

```vmb
    dim m as JavaVMMBS // global

    // Call "public static String getMessage()" and "public static void setMessage(String theMessage)" from class "test".

    dim jclass, sclass as JavaClassMBS    
    dim jmethod as JavaMethodMBS         
    dim jstring as JavaStringMBS         
    dim args as JavaObjectArrayMBS       
    dim m as MemoryBlock
```
dim s as String
dim jfield as JavaFieldMBS

jclass=e.FindClass("test")

if jclass=nil then
    msgbox "Can't find test class"
else
    jmethod = jclass.GetStaticMethod("setMessage", "(Ljava/lang/String;)V")

    if jmethod=nil then
        msgbox "Can't find HelloWorld.setMessage"
    else
        jstring = e.NewStringUTF8("Hello from Realbasic!")
        if jstring=nil then
            msgbox "Out of memory"
        else
            m=NewMemoryBlock(8) // 8 bytes per parameter
            m.long(0)=jstring.Handle
            jclass.CallStaticVoidMethod(jmethod, m)
        end if
    end if
end if
end if

Notes:
This call invokes a static method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling JavaClassMBS.GetMethod().

The method ID must be derived from this class, not from one of its superclasses.
Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.
In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

**96.5.13 CallStaticShortMethod(MethodID as JavaMethodMBS, args as memoryblock) as Integer**

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a static method with a short return value.
**Notes:**
This call invokes a static method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling JavaClassMBS.GetMethod().
The method ID must be derived from this class, not from one of its superclasses.
Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.
In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

**96.5.14 CallStaticVoidMethod(MethodID as JavaMethodMBS, args as memoryblock)**

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a static method with no return value.
**Notes:**
This call invokes a static method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling JavaClassMBS.GetMethod().
The method ID must be derived from this class, not from one of its superclasses.
Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.
In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)


96.5.15 Constructor


96.5.16 GetField(name as string, sig as string) as JavaFieldMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Searches for the Field with the given Name and Signature. **Notes:** Nil on any error.

The signature is a string derived from the field’s type or method’s arguments and return type, as shown here:

<table>
<thead>
<tr>
<th>Java Type</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>boolean</td>
<td>Z</td>
</tr>
<tr>
<td>byte</td>
<td>B</td>
</tr>
<tr>
<td>char</td>
<td>C</td>
</tr>
<tr>
<td>short</td>
<td>S</td>
</tr>
<tr>
<td>int</td>
<td>I</td>
</tr>
<tr>
<td>long</td>
<td>L</td>
</tr>
<tr>
<td>float</td>
<td>F</td>
</tr>
<tr>
<td>double</td>
<td>D</td>
</tr>
<tr>
<td>void</td>
<td>V</td>
</tr>
<tr>
<td>objects</td>
<td>Lfully-qualified-class-name;</td>
</tr>
<tr>
<td>arrays</td>
<td>[ array-type</td>
</tr>
<tr>
<td>methods</td>
<td>(argument-types)return-type</td>
</tr>
</tbody>
</table>

96.5.17 GetMethod(name as string, sig as string) as JavaMethodMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Searches the method with the given name and signature. **Example:**

dim jclass as JavaClassMBS
dim method as JavaMethodMBS

method=jclass.GetMethod("mymethod", "([Ljava/lang/String;)V")
Notes:

Returns the method ID for an instance (non-static) method of a class or interface. The method may be
defined in one of the the class’s super classes and inherited by the class. The method is determined by its
name and signature.

To obtain the method ID of a constructor, supply `<init>` as the method name and void (V) as the return type.

Nil on any error.

Throws NoSuchMethodError if the specified method cannot be found.

The signature is a string derived from the field’s type or method’s arguments and return type, as shown here:

<table>
<thead>
<tr>
<th>Java Type</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>boolean</td>
<td>Z</td>
</tr>
<tr>
<td>byte</td>
<td>B</td>
</tr>
<tr>
<td>char</td>
<td>C</td>
</tr>
<tr>
<td>short</td>
<td>S</td>
</tr>
<tr>
<td>int</td>
<td>I</td>
</tr>
<tr>
<td>long</td>
<td>L</td>
</tr>
<tr>
<td>float</td>
<td>F</td>
</tr>
<tr>
<td>double</td>
<td>D</td>
</tr>
<tr>
<td>void</td>
<td>V</td>
</tr>
<tr>
<td>objects</td>
<td>Lfully-qualified-class-name;</td>
</tr>
<tr>
<td>arrays</td>
<td></td>
</tr>
<tr>
<td>methods</td>
<td>(argument-types) return-type</td>
</tr>
</tbody>
</table>

96.5.18 GetStaticField(name as string, sig as string) as JavaFieldMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Searches the static field with the given name and signature.
**Notes:** Nil on any error.

96.5.19 GetStaticMethod(name as string, sig as string) as JavaMethodMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the method ID for a static method of a class. The method is specified by its name and signature.
**Example:**
dim jclass as JavaClassMBS
dim method as JavaMethodMBS

method=jclass.GetStaticMethod("main", "( [Ljava/lang/String;)V")

Notes:
Nil on any error.
e.g. the signature of the default static main method is "( [Ljava/lang/String;)V" which means return type void at the end and before an array of string.

96.5.20 NewObject(methodID as JavaMethodMBS, args as memoryblock) as JavaObjectMBS

Notes: The method ID indicates which constructor method to invoke. This ID must be obtained by calling GetMethod with <init> as the method name and void (V) as the return type.

Returns nil on any error.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.
In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

Throws InstantiationException if the class is an interface or an abstract class.

96.5.21 Superclass as JavaClassMBS

Notes: Nil if no superclass exists.
96.5.22 Properties

96.5.23 StaticBooleanField(TheField as JavaFieldMBS) as boolean

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get or set the value for a static boolean field in this class. **Notes:** (Read and Write computed property)

96.5.24 StaticByteField(TheField as JavaFieldMBS) as Integer

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get or set the value for a static byte field in this class. **Notes:** (Read and Write computed property)

96.5.25 StaticCharField(TheField as JavaFieldMBS) as Integer

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get or set the value for a static char field in this class. **Notes:** (Read and Write computed property)

96.5.26 StaticDoubleField(TheField as JavaFieldMBS) as Double

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get or set the value for a static double field in this class. **Notes:** (Read and Write computed property)

96.5.27 StaticFloatField(TheField as JavaFieldMBS) as single

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get or set the value for a static float field in this class. **Notes:** (Read and Write computed property)

96.5.28 StaticIntField(TheField as JavaFieldMBS) as Integer

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get or set the value for a static integer field in this class. **Example:**
dim f as FolderItem

f = SpecialFolder.Desktop.Child("ojdbc14.jar")

dim j as new JavaVMMBS(f)

dim c as JavaClassMBS = j.FindClass("oracle/jdbc/driver/OracleTypes")

dim field as JavaFieldMBS

// this are all static integer fields in this class:

field = c.GetStaticField("CURSOR","I")
MsgBox str(c_STATICINTFIELD(field))

field = c.GetStaticField("BLOB","I")
MsgBox str(c_STATICINTFIELD(field))

field = c.GetStaticField("DOUBLE","I")
MsgBox str(c_STATICINTFIELD(field))

Notes: (Read and Write computed property)

96.5.29 StaticLongField(TheField as JavaFieldMBS) as Int64

MBS Java Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get or set the value for a static long field in this class.
**Notes:** (Read and Write computed property)

96.5.30 StaticObjectField(TheField as JavaFieldMBS) as JavaObjectMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get or set the value for a static object field in this class.
**Notes:** (Read and Write computed property)

96.5.31 StaticShortField(TheField as JavaFieldMBS) as Integer

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get or set the value for a static short field in this class.
**Notes:** (Read and Write computed property)
96.6  class JavaDoubleArrayMBS

96.6.1  class JavaDoubleArrayMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The wrapper class for the java double array object.
**Notes:**
Subclass of the JavaArrayMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

96.6.2  Methods

96.6.3  Constructor

MBS Java Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

96.6.4  Elements as memoryblock

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
All the elements in this array as one memoryblock.
**Notes:** Use memoryblock.DoubleValue(index*4) to access.

96.6.5  Values as Double()

MBS Java Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns a Xojo array with values.

96.6.6  Properties

96.6.7  Region(start as Integer, len as Integer) as memoryblock

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get or set a region of the array.
**Notes:**
Start is the starting index (0 based) and len the number of items to copy.
Throws ArrayIndexOutOfBoundsException if (start + len - 1) does not specify a valid index in the array.
96.6. CLASS JAVADOUBLEARRAYMBS

(Read and Write computed property)
96.7  class JavaFieldMBS

96.7.1  class JavaFieldMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The wrapper class for the java field ID.

**Example:**

```vba
dim f as FolderItem

f=SpecialFolder.Desktop.Child("ojdbc14.jar")

dim j as new JavaVMMBS(f)

dim c as JavaClassMBS = j.FindClass("oracle/jdbc/driver/OracleTypes")

dim field as JavaFieldMBS

// this are all static integer fields in this class:

field = c.GetStaticField("CURSOR","I")
MsgBox str(c.StaticIntField(field))

field = c.GetStaticField("BLOB","I")
MsgBox str(c.StaticIntField(field))

field = c.GetStaticField("DOUBLE","I")
MsgBox str(c.StaticIntField(field))
```

**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

96.7.2  Methods

96.7.3  Constructor

MBS Java Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.
96.7.4 Properties

96.7.5 Handle as Integer

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The fieldID of this field.
**Notes:** (Read and Write property)
96.8 class JavaFloatArrayMBS

96.8.1 class JavaFloatArrayMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The wrapper class for the java float array object.

**Notes:**
Subclass of the JavaArrayMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

96.8.2 Methods

96.8.3 Constructor

MBS Java Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The private constructor.

96.8.4 Elements as memoryblock

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** All the elements in this array as one memoryblock.

**Notes:** Use memoryblock.SingleValue(index*4) to access.

96.8.5 Values as Single()

MBS Java Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a Xojo array with values.

96.8.6 Properties

96.8.7 Region(start as Integer, len as Integer) as memoryblock

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get or set a region of the array.

**Notes:**
Start is the starting index (0 based) and len the number of items to copy.
Throws ArrayIndexOutOfBoundsException if (start + len - 1) does not specify a valid index in the array.
96.8. *CLASS JAVAFLOATARRAYMBS*  
(Read and Write computed property)
96.9 class JavaHandleNilExceptionMBS

96.9.1 class JavaHandleNilExceptionMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The exception which is raised whenever a Java function is operations on an object and there is none. **Notes:** For example if you call a method on the JavaObjectMBS class which requires the handle value being not zero, the exception raises if the handle value is zero. Subclass of the RuntimeException class.
96.10  CLASS JAVAINTARRAYMBS

96.10  class JavaIntArrayMBS

96.10.1  class JavaIntArrayMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The wrapper class for the java int array object.
**Notes:**
Subclass of the JavaArrayMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

96.10.2  Methods

96.10.3  Constructor

MBS Java Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

96.10.4  Elements as memoryblock

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
All the elements in this array as one memoryblock.
**Notes:** Use memoryblock.Long(index*4) to access.

96.10.5  Values as Integer()

MBS Java Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns a Xojo array with values.

96.10.6  Properties

96.10.7  Region(start as Integer, len as Integer) as memoryblock

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get or set a region of the array.
**Notes:**
Start is the starting index (0 based) and len the number of items to copy.
Throws ArrayIndexOutOfBoundsException if (start + len - 1) does not specify a valid index in the array.
(Read and Write computed property)
96.11. CLASS JAVALONGARRAYMBS

96.11.1 class JavaLongArrayMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The wrapper class for the java long array object.
**Notes:**
Subclass of the JavaArrayMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

96.11.2 Methods

96.11.3 Constructor

MBS Java Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

96.11.4 Elements as memoryblock

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
All the elements in this array as one memoryblock.
**Notes:** Use memoryblock.Int64DoubleMBS(index*8) to access.

96.11.5 Values as Int64()

MBS Java Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns a Xojo array with values.

96.11.6 Properties

96.11.7 Region(start as Integer, len as Integer) as memoryblock

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get or set a region of the array.
**Notes:**
Start is the starting index (0 based) and len the number of items to copy.
Throws ArrayIndexOutOfBoundsException if (start + len - 1) does not specify a valid index in the array.
(Read and Write computed property)
96.12. CLASS JAVAMETHODMBS

96.12  class JavaMethodMBS

96.12.1  class JavaMethodMBS


Notes:
In terminal you can use "javap -s <classname>" to display the class with the method names and parameters. This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

96.12.2  Methods

96.12.3  Constructor


96.12.4  Properties

96.12.5  Handle as Integer


Notes: (Read and Write property)
96.13 class JavaNotInitializedExceptionMBS

96.13.1 class JavaNotInitializedExceptionMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The exception which is raised whenever a Java function is called which requires you to initialize the JVM before calling it. **Notes:** Subclass of the RuntimeException class.
96.14. class JavaObjectArrayMBS

96.14.1. class JavaObjectArrayMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The wrapper class for the java object array object.

**Notes:**
Subclass of the JavaArrayMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

96.14.2. Methods

96.14.3. Constructor

MBS Java Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

96.14.4. Values as JavaObjectMBS()

MBS Java Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns a Xojo array with values.

96.14.5. Properties

96.14.6. ArrayElement(index as Integer) as JavaObjectMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The object at the given index in the array.

**Notes:**
May return nil if the array is empty on the given index or if the index is out of bounds or any other error occurs.

Index is 0 based.

**Throws**
ArrayIndexOutOfBoundsException: if index does not specify a valid index in the array.
ArrayStoreException: if the class of value is not a subclass of the element class of the array.
(Read and Write computed property)
96.15. class JavaObjectMBS

96.15.1 class JavaObjectMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The wrapper class for the java object.
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

96.15.2 Methods

96.15.3 CallBooleanMethod(MethodID as JavaMethodMBS, args as memory-block) as boolean

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a virtual method with a boolean value.
**Notes:**
This family of operations invokes an instance (non-static) method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling GetMethodID.

When this function is used to call private methods and constructors, the method ID must be derived from the real class of obj, not from one of its super classes.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.
In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

96.15.4 CallByteMethod(MethodID as JavaMethodMBS, args as memoryblock) as Integer

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a virtual method with a byte value.
**Notes:**
This family of operations invokes an instance (non-static) method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling GetMethodID.

When this function is used to call private methods and constructors, the method ID must be derived from the real class of obj, not from one of its super classes.
Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.
In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

96.15.5 CallCharMethod(MethodID as JavaMethodMBS, args as memoryblock) as Integer

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calls a virtual method with a char value.

**Notes:**
This family of operations invokes an instance (non-static) method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling GetMethodID.

When this function is used to call private methods and constructors, the method ID must be derived from the real class of obj, not from one of its super classes.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.
In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

96.15.6 CallDoubleMethod(MethodID as JavaMethodMBS, args as memoryblock) as Double


**Notes:**
This family of operations invokes an instance (non-static) method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling GetMethodID.

When this function is used to call private methods and constructors, the method ID must be derived from the real class of obj, not from one of its super classes.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.
In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)
96.15.7 CallFloatMethod(MethodID as JavaMethodMBS, args as memoryblock) as single

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a virtual method with a float value.

**Notes:**
This family of operations invokes an instance (non-static) method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling GetMethodID.

When this function is used to call private methods and constructors, the method ID must be derived from the real class of obj, not from one of its super classes.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.
In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

96.15.8 CallIntMethod(MethodID as JavaMethodMBS, args as memoryblock) as Integer

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a virtual method with an integer value.

**Notes:**
This family of operations invokes an instance (non-static) method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling GetMethodID.

When this function is used to call private methods and constructors, the method ID must be derived from the real class of obj, not from one of its super classes.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.
In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)
96.15.9  **CallLongMethod(MethodID as JavaMethodMBS, args as memoryblock)** as Int64

MBS Java Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calls a virtual method with a long value.
**Notes:**
This family of operations invokes an instance (non-static) method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling GetMethodID.

When this function is used to call private methods and constructors, the method ID must be derived from the real class of obj, not from one of its super classes.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.
In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

96.15.10  **CallNonvirtualBooleanMethod(TheClass as JavaClassMBS, MethodID as JavaMethodMBS, args as memoryblock)** as boolean

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calls a non virtual method with a boolean value.
**Notes:**
This call invokes an instance (non-static) method on a Java object, according to the specified class and method ID. The methodID argument must be obtained by calling GetMethodID on the class TheClass.

The CallNonvirtualMethod family of routines and the CallMethod family of routines are different. CallMethod routines invoke the method based on the class of the object, while CallNonvirtualMethod routines invoke the method based on the class, designated by the TheClass parameter, from which the method ID is obtained. The method ID must be obtained from the real class of the object or from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.
In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)
96.15. **CLASS JAVAOBJECTMBS**

**96.15.11 CallNonvirtualByteMethod(TheClass as JavaClassMBS, MethodID as JavaMethodMBS, args as memoryblock) as Integer**

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a non virtual method with a byte value.

**Notes:**
This call invokes an instance (non-static) method on a Java object, according to the specified class and method ID. The methodID argument must be obtained by calling GetMethodID on the class TheClass.

The CallNonvirtualMethod family of routines and the CallMethod family of routines are different. CallMethod routines invoke the method based on the class of the object, while CallNonvirtualMethod routines invoke the method based on the class, designated by the TheClass parameter, from which the method ID is obtained. The method ID must be obtained from the real class of the object or from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.
In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

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**96.15.12 CallNonvirtualCharMethod(TheClass as JavaClassMBS, MethodID as JavaMethodMBS, args as memoryblock) as Integer**

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a non virtual method with a char value.

**Notes:**
This call invokes an instance (non-static) method on a Java object, according to the specified class and method ID. The methodID argument must be obtained by calling GetMethodID on the class TheClass.

The CallNonvirtualMethod family of routines and the CallMethod family of routines are different. CallMethod routines invoke the method based on the class of the object, while CallNonvirtualMethod routines invoke the method based on the class, designated by the TheClass parameter, from which the method ID is obtained. The method ID must be obtained from the real class of the object or from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.
In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)
96.15.13  CallNonvirtualDoubleMethod(TheClass as JavaClassMBS, MethodID as JavaMethodMBS, args as memoryblock) as Double

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a non virtual method with a double value.

**Notes:**
This call invokes an instance (non-static) method on a Java object, according to the specified class and method ID. The methodID argument must be obtained by calling GetMethodID on the class TheClass.

The CallNonvirtualMethod family of routines and the CallMethod family of routines are different. CallMethod routines invoke the method based on the class of the object, while CallNonvirtualMethod routines invoke the method based on the class, designated by the TheClass parameter, from which the method ID is obtained. The method ID must be obtained from the real class of the object or from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.
In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

96.15.14  CallNonvirtualFloatMethod(TheClass as JavaClassMBS, MethodID as JavaMethodMBS, args as memoryblock) as single

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a non virtual method with a float value.

**Notes:**
This call invokes an instance (non-static) method on a Java object, according to the specified class and method ID. The methodID argument must be obtained by calling GetMethodID on the class TheClass.

The CallNonvirtualMethod family of routines and the CallMethod family of routines are different. CallMethod routines invoke the method based on the class of the object, while CallNonvirtualMethod routines invoke the method based on the class, designated by the TheClass parameter, from which the method ID is obtained. The method ID must be obtained from the real class of the object or from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.
In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)
96.15.15 CallNonvirtualIntMethod(TheClass as JavaClassMBS, MethodID as JavaMethodMBS, args as memoryblock) as Integer

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a non virtual method with an integer value.

**Notes:**
This call invokes an instance (non-static) method on a Java object, according to the specified class and method ID. The methodID argument must be obtained by calling GetMethodID on the class TheClass.

The CallNonvirtualMethod family of routines and the CallMethod family of routines are different. CallMethod routines invoke the method based on the class of the object, while CallNonvirtualMethod routines invoke the method based on the class, designated by the TheClass parameter, from which the method ID is obtained. The method ID must be obtained from the real class of the object or from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.
In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

96.15.16 CallNonvirtualLongMethod(TheClass as JavaClassMBS, MethodID as JavaMethodMBS, args as memoryblock) as Int64

MBS Java Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a non virtual method with a long value.

**Notes:**
This call invokes an instance (non-static) method on a Java object, according to the specified class and method ID. The methodID argument must be obtained by calling GetMethodID on the class TheClass.

The CallNonvirtualMethod family of routines and the CallMethod family of routines are different. CallMethod routines invoke the method based on the class of the object, while CallNonvirtualMethod routines invoke the method based on the class, designated by the TheClass parameter, from which the method ID is obtained. The method ID must be obtained from the real class of the object or from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.
In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)
96.15.17 CallNonvirtualObjectMethod(TheClass as JavaClassMBS, MethodID as JavaMethodMBS, args as memoryblock) as JavaObjectMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a non virtual method with an object value.

**Notes:**
This call invokes an instance (non-static) method on a Java object, according to the specified class and method ID. The methodID argument must be obtained by calling GetMethodID on the class TheClass.

The CallNonvirtualMethod family of routines and the CallMethod family of routines are different. CallMethod routines invoke the method based on the class of the object, while CallNonvirtualMethod routines invoke the method based on the class, designated by the TheClass parameter, from which the method ID is obtained. The method ID must be obtained from the real class of the object or from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.
In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

96.15.18 CallNonvirtualShortMethod(TheClass as JavaClassMBS, MethodID as JavaMethodMBS, args as memoryblock) as Integer

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a non virtual method with a short value.

**Notes:**
This call invokes an instance (non-static) method on a Java object, according to the specified class and method ID. The methodID argument must be obtained by calling GetMethodID on the class TheClass.

The CallNonvirtualMethod family of routines and the CallMethod family of routines are different. CallMethod routines invoke the method based on the class of the object, while CallNonvirtualMethod routines invoke the method based on the class, designated by the TheClass parameter, from which the method ID is obtained. The method ID must be obtained from the real class of the object or from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.
In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)
96.15.19 CallNonvirtualVoidMethod(TheClass as JavaClassMBS, MethodID as JavaMethodMBS, args as memoryblock)

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calls a non virtual method with no return value.

**Notes:**

This call invokes an instance (non-static) method on a Java object, according to the specified class and method ID. The methodID argument must be obtained by calling GetMethodID on the class TheClass.

The CallNonvirtualMethod family of routines and the CallMethod family of routines are different. CallMethod routines invoke the method based on the class of the object, while CallNonvirtualMethod routines invoke the method based on the class, designated by the TheClass parameter, from which the method ID is obtained. The method ID must be obtained from the real class of the object or from one of its superclasses.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.
In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

96.15.20 CallObjectMethod(MethodID as JavaMethodMBS, args as memoryblock) as JavaObjectMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calls a virtual method with an object value.

**Notes:**

This family of operations invokes an instance (non-static) method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling GetMethodID.

When this function is used to call private methods and constructors, the method ID must be derived from the real class of obj, not from one of its super classes.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.
In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)
96.15.21  CallShortMethod(MethodID as JavaMethodMBS, args as memory-block) as Integer

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a virtual method with a short value.

**Notes:**
This family of operations invokes an instance (non-static) method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling GetMethodID.

When this function is used to call private methods and constructors, the method ID must be derived from the real class of obj, not from one of its super classes.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.
In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

96.15.22  CallVoidMethod(MethodID as JavaMethodMBS, args as memoryblock)

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a virtual method with no return value.

**Notes:**
This family of operations invokes an instance (non-static) method on a Java object, according to the specified method ID. The methodID argument must be obtained by calling GetMethodID.

When this function is used to call private methods and constructors, the method ID must be derived from the real class of obj, not from one of its super classes.

Programmers place all arguments to the method in an args memoryblock that immediately follows the methodID argument.
In the memoryblock you need to use 8 bytes per argument and align them correctly. (alignment depends on platform)

96.15.23  Constructor

MBS Java Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.
96.15.24 GetDirectBufferAddress(directbuffer as JavaObjectMBS) as Integer

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the address of the memory from a directbuffer object. **Notes:** Returns 0 on any error.

96.15.25 GetDirectBufferCapacity(directbuffer as JavaObjectMBS) as Integer

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the size of the memory from a directbuffer object. **Notes:** Returns 0 on any error.

96.15.26 IsInstanceOf(TheClass as JavaClassMBS) as boolean

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Tests whether an object is an instance of a class. **Notes:** Returns true if obj can be cast to TheClass; otherwise, returns false. A nil object can be cast to any class.

96.15.27 IsSameObject(obj as JavaObjectMBS) as boolean

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Tests whether two references refer to the same Java object. **Notes:** Returns true if ref1 and ref2 refer to the same Java object, or are both nil; otherwise, returns false. False on any error.

96.15.28 ObjectClass as JavaClassMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the class of an object. **Notes:** Returns nil on any error.
96.15.29 Properties

96.15.30 ClassName as String

MBS Java Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Queries class name of object.
Notes: (Read only property)

96.15.31 Database as Variant

MBS Java Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
The reference to the database object.
Notes:
The variant is a JavaDatabaseMBS.
Do not assign new values, please.
This is set for all database classes, so the database isn’t release from memory before you finished using this object.
(Read and Write property)

96.15.32 Handle as Integer

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
The handle to the jobject.
Notes: (Read and Write property)

96.15.33 Lasterror as Integer

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
The last error code reported.
Notes: (Read and Write property)

96.15.34 Tag as Variant

MBS Java Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
This is a property you can use for whatever you like.
Notes:
The property value is stored as long as the RB object lives. The Java object may live longer.
(Read and Write property)
96.15.35 VM as JavaVMMBS

MBS Java Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The reference to the virtual machine.

**Notes:**
Please do not assign new value unless you know what you do.
(Read and Write property)

96.15.36 BooleanField(TheField as JavaFieldMBS) as boolean

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get or set the value for a boolean field in this class.

**Notes:**
Do not use for static fields!
(Read and Write computed property)

96.15.37 ByteField(TheField as JavaFieldMBS) as Integer

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get or set the value for a byte field in this class.

**Notes:**
Do not use for static fields!
(Read and Write computed property)

96.15.38 CharField(TheField as JavaFieldMBS) as Integer

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get or set the value for a char field in this class.

**Notes:**
Do not use for static fields!
(Read and Write computed property)
96.15.39 DoubleField(TheField as JavaFieldMBS) as Double

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get or set the value for a double field in this class.

**Notes:**
Do not use for static fields!
(Read and Write computed property)

96.15.40 FloatField(TheField as JavaFieldMBS) as single

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get or set the value for a single field in this class.

**Notes:**
Do not use for static fields!
(Read and Write computed property)

96.15.41 IntField(TheField as JavaFieldMBS) as Integer

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get or set the value for an integer field in this class.

**Notes:**
Do not use for static fields!
(Read and Write computed property)

96.15.42 LongField(TheField as JavaFieldMBS) as Int64

MBS Java Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get or set the value for a long field in this class.

**Notes:**
Do not use for static fields!
(Read and Write computed property)

96.15.43 ObjectField(TheField as JavaFieldMBS) as JavaObjectMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get or set the value for an object field in this class.

**Notes:**
96.15. CLASS JAVAOBJECTMBS

Do not use for static fields!
(Read and Write computed property)

96.15.44 ShortField(TheField as JavaFieldMBS) as Integer

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get or set the value for a short field in this class.

**Notes:**
Do not use for static fields!
(Read and Write computed property)
96.16  class JavaShortArrayMBS

96.16.1  class JavaShortArrayMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The wrapper class for the java short array object.
**Notes:**
Subclass of the JavaArrayMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

96.16.2  Methods

96.16.3  Constructor

MBS Java Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

96.16.4  Elements as memoryblock

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
All the elements in this array as one memoryblock.
**Notes:** Use memoryblock.short(index*2) to access.

96.16.5  Values as Int16()

MBS Java Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns a Xojo array with values.

96.16.6  Properties

96.16.7  Region(start as Integer, len as Integer) as memoryblock

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get or set a region of the array.
**Notes:**
Start is the starting index (0 based) and len the number of items to copy.
Throws ArrayIndexOutOfBoundsException if (start + len - 1) does not specify a valid index in the array.
96.16. CLASS JAVASHORTARRAYMBS

(Read and Write computed property)
96.17  class JavaStringMBS

96.17.1  class JavaStringMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The wrapper class for the java string class.

**Notes:**

Subclass of the JavaObjectMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

96.17.2  Methods

96.17.3  Constructor

MBS Java Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The private constructor.

96.17.4  CopyString as string

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies the content of the string into a REALbasic string.

**Notes:** Returns "" on any error. The string returned is marked as being Unicode (16bit).
See also:

- 96.17.5 CopyString(start as Integer, len as Integer) as string

96.17.5  CopyString(start as Integer, len as Integer) as string

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies the content of the string into a REALbasic string.

**Example:**

```realbasic
dim s as string
dim js as JavaStringMBS // your java string

s=js.CopyString(0,1) // copies first character
s=js.CopyString(3,6) // copies six characters from starting at the forth
```

**Notes:**
96.17. CLASS JAVASTRINGMBS

Returns "" on any error. The string returned is marked as being Unicode (16bit).
For the first character to be the start use start=0.
For the first character to be the end use len=1 and start=0.
May crash on bad values for start and len.
See also:

- 96.17.4 CopyString as string

96.17.6 CopyStringUTF as string

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Copies the content of the string into a REALbasic string.
**Notes:** Returns "" on any error. The string returned is marked as being UTF8.
See also:

- 96.17.7 CopyStringUTF(start as Integer, len as Integer) as string

96.17.7 CopyStringUTF(start as Integer, len as Integer) as string

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Copies the content of the string into a REALbasic string.
**Notes:**
Returns "" on any error. The string returned is marked as being UTF8.
Start is 0 based.
May crash on bad values for start and len.
See also:

- 96.17.6 CopyStringUTF as string

96.17.8 Length as Integer

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The length of this string in unicode characters.
**Notes:** Returns 0 on any error.

96.17.9 UTFLength as Integer

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The length of the string in bytes encoded as UTF8.
**Notes:** Returns 0 on any error.
96.18 class JavaThrowableMBS

96.18.1 class JavaThrowableMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The wrapper class for the java throwable object.

**Notes:**

Subclass of the JavaObjectMBS class.
This is a subclass of an abstract class. You can’t create an instance, but you can get one from various plugin functions.
96.19. class JavaVMMBS

96.19.1 class JavaVMMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for a java virtual machine.

**Example:**

```vbscript
dim vm as JavaVMMBS // global

const JNI_VERSION_1_1 = & h00010001
const JNI_VERSION_1_2 = & h00010002
const JNI_VERSION_1_4 = & h00010004

if TargetLinux then
    // change path for your linux PC!
    JavaVMMBS.SetLibraryPath("/home/cs/jre1.6.0.05/lib/i386/client/libjvm.so")
end if

dim options(-1) as string

dim f as FolderItem=GetFolderItem("test.jar")

vm=new JavaVMMBS(JNI_VERSION_1_4, options, f, false)

if vm.Handle = 0 then
    MsgBox "Can't create Java VM"
else
    MsgBox "Java Initialized."
end if
```

**Notes:**

Add Linux support plugin version 8.7.

Releasing the java vm (by releasing all java objects), and reinitializing can fail.

Please make sure this Java VM object stays alive until you are done with all your java stuff. So all the java objects go away and this vm object is destroyed on the end. Because if some java code is still running like an background java thread, quitting the VM can lead into crashes.

While the plugin supports to have several instances, it seems like JNI does not support that.
96.19.2 Methods

96.19.3 Constructor(path as folderitem)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Initializes the Java virtual machine.

**Notes:**
This is a convenience function which initializes the java with version=JNI\_VERSION\_1.4 and no options except the specified path.
The path can be a folderitem pointing to a jar file or a folder with class files.

This method raises UnsupportedOperationException with error about missing CreateJavaVM function if there is no Java found. Either because it is not installed or the bit number (32 vs. 64) does not match.

Since version 16.5 the plugin will no longer raise exception if an existing JavaVM was found. In that case we use that JavaVM and return normally. Lasterror will be set to -5 which indicates this. In that case your options and paths are not passed to VM.

See also:

- 96.19.4 Constructor(path as string)
- 96.19.5 Constructor(version as Integer, options() as string, ignoreUnrecognizedOptions as boolean)
- 96.19.6 Constructor(version as Integer, options() as string, path as folderitem, ignoreUnrecognizedOptions as boolean)
- 96.19.7 Constructor(version as Integer, options() as string, path as string, ignoreUnrecognizedOptions as boolean)

96.19.4 Constructor(path as string)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Initializes the Java virtual machine.

**Notes:**
This is a convenience function which initializes the java engine with version=JNI\_VERSION\_1.4 and no options except the specified path.
The path can be a path pointing to a jar file or a folder with class files. If you use more than one path, you need to separate them with ";". Seems like on Mac OS X and Linux the separator is ":".

This method raises UnsupportedOperationException with error about missing CreateJavaVM function if there is no Java found. Either because it is not installed or the bit number (32 vs. 64) does not match.
Since version 16.5 the plugin will no longer raise exception if an existing JavaVM was found. In that case we use that JavaVM and return normally. Lasterror will be set to -5 which indicates this. In that case your options and paths are not passed to VM.

See also:

- 96.19.3 Constructor(path as folderitem)
- 96.19.5 Constructor(version as Integer, options() as string, ignoreUnrecognizedOptions as boolean)
- 96.19.6 Constructor(version as Integer, options() as string, path as folderitem, ignoreUnrecognizedOptions as boolean)
- 96.19.7 Constructor(version as Integer, options() as string, path as string, ignoreUnrecognizedOptions as boolean)

96.19.5 Constructor(version as Integer, options() as string, ignoreUnrecognizedOptions as boolean)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Initializes the java virtual machine.

**Notes:**
Only one VM can run at a time with this plugin.
You can specify whatever command line options you need in the options array.
Version must be one of the JNI\_VERSION\_1\_x constants.

A note for Mac OS X and Java versions:

To specify the current preferred JDK in a family of JVM's, say the 1.5.x family, applications should set the environment variable JAVA\_JVM\_VERSION to 1.5, and then pass JNI\_VERSION\_1\_4 into JNI\_CreateJavaVM as the vm\_args.version. To get a specific Java 1.5 JVM, say Java 1.5.0, set the environment variable JAVA\_JVM\_VERSION to 1.5.0. For Java 1.6 it will be the same in that applications will need to set the environment variable JAVA\_JVM\_VERSION to 1.6.0 to specify the current preferred 1.6 Java VM, and to get a specific Java 1.6 JVM, say Java 1.6.1, set the environment variable JAVA\_JVM\_VERSION to 1.6.1.

To make this sample bring up the current preferred 1.5 JVM, set the environment variable JAVA\_JVM\_VERSION to 1.5 before calling JNI\_CreateJavaVM as shown below. Applications must currently check for availability of JDK 1.5 before requesting it. If your application requires JDK 1.5 and it is not found, it is your responsibility to report an error to the user. To verify if a JVM is installed, check to see if the symlink, or directory exists for the JVM in /System/Library/Frameworks/JavaVM.framework/Versions/ before setting the environment variable JAVA\_JVM\_VERSION.

If the environment variable JAVA\_JVM\_VERSION is not set, and JNI\_VERSION\_1\_4 is passed into JNI\_CreateJavaVM as the vm\_args.version, JNI\_CreateJavaVM will return the current preferred JDK. Java 1.4.2 is the preferred
JDK as of the release of this sample and the release of Mac OS X 10.4.

Useful option strings:

"-verbose:jni" show debug output on the console
"-Xms256M" initial memory
"-Xmx512M" maximum memory

This method raises UnsupportedOperationException with error about missing CreateJavaVM function if there is no Java found. Either because it is not installed or the bit number (32 vs. 64) does not match.

Since version 16.5 the plugin will no longer raise exception if an existing JavaVM was found. In that case we use that JavaVM and return normally. Lasterror will be set to -5 which indicates this. In that case your options and paths are not passed to VM.

See also:

- 96.19.3 Constructor(path as folderitem) 15374
- 96.19.4 Constructor(path as string) 15374
- 96.19.6 Constructor(version as Integer, options() as string, path as folderitem, ignoreUnrecognizedOptions as boolean) 15376
- 96.19.7 Constructor(version as Integer, options() as string, path as string, ignoreUnrecognizedOptions as boolean) 15377

### 96.19.6 Constructor(version as Integer, options() as string, path as folderitem, ignoreUnrecognizedOptions as boolean)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Initializes the Java virtual machine.

**Example:**

```vba
dim JarPath as folderitem = specialfolder.desktop.child("test.jar")
dim options() as string
options.append "-Xms256M"
options.append "-Xmx512M"
dim v as new JavaVMMBS(JavaVMMBS.JNI_VERSION_1_4, options, JarPath, false)
```

**Notes:**
This is a convenience function which initializes the java engine with adding the given path to the options.

Only one VM can run at a time with this plugin.
You can specify whatever command line options you need in the options array.
Version must be one of the JNI\_VERSION\_1\_x constants.
The path can be a folderitem pointing to a jar file or a folder with class files.

Useful option strings:

"-verbose:jni" show debug output on the console
"-Xms256M" initial memory
"-Xmx512M" maximum memory

This method raises UnsupportedOperationException with error about missing CreateJavaVM function if there is no Java found. Either because it is not installed or the bit number (32 vs. 64) does not match.

Since version 16.5 the plugin will no longer raise exception if an existing JavaVM was found. In that case we use that JavaVM and return normally. Lasterror will be set to -5 which indicates this. In that case your options and paths are not passed to VM.

See also:

- 96.19.3 Constructor(path as folderitem)
- 96.19.4 Constructor(path as string)
- 96.19.5 Constructor(version as Integer, options() as string, ignoreUnrecognizedOptions as boolean)
- 96.19.7 Constructor(version as Integer, options() as string, path as string, ignoreUnrecognizedOptions as boolean)

**96.19.7 Constructor(version as Integer, options() as string, path as string, ignoreUnrecognizedOptions as boolean)**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Initializes the java virtual machine.

**Notes:**
This is a convenience function which initializes the java engine with adding the given path to the options.

Only one VM can run at a time with this plugin.
You can specify whatever command line options you need in the options array.
Version must be one of the JNI\_VERSION\_1\_x constants.
The path can be a path pointing to a jar file or a folder with class files. If you use more than one path, you need to separate them with ";". Seems like on Mac OS X and Linux the separator is ":".

Useful option strings:

"-verbose:jni" show debug output on the console
"-Xms256M" initial memory
"-Xmx512M" maximum memory

This method raises UnsupportedOperationException with error about missing CreateJavaVM function if there is no Java found. Either because it is not installed or the bit number (32 vs. 64) does not match.

Since version 16.5 the plugin will no longer raise exception if an existing JavaVM was found. In that case we use that JavaVM and return normally. Lasterror will be set to -5 which indicates this. In that case your options and paths are not passed to VM.

See also:

- 96.19.3 Constructor(path as folderitem)
- 96.19.4 Constructor(path as string)
- 96.19.5 Constructor(version as Integer, options() as string, ignoreUnrecognizedOptions as boolean)
- 96.19.6 Constructor(version as Integer, options() as string, path as folderitem, ignoreUnrecognizedOptions as boolean)

### 96.19.8 FindClass(name as string) as JavaClassMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Searches a class based on the name.

**Example:**

```vbnet
dim e as JavaVMMBS ' global
dim c as JavaClassMBS


```

**Notes:**

This function loads a locally defined class. It searches the directories and zip files specified by the CLASSPATH environment variable for the class with the specified name.
name: a fully qualified class name (that is, a package name, delimited by "/", followed by the class name). If the name begins with "[ " (the array signature character), it returns an array class.

Returns nil on any error.

If your class is not found, it may be possible that it can’t be loaded as the jar archive has dependencies to other jar archives.

96.19.9 FreeCurrentThread

MBS Java Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Releases the thread in Java.

**Example:**
```
Dim w As JavaVMMBS // your vm object
w.FreeCurrentThread
```

**Notes:** The plugin is written to detect if you use it in a thread. But when the thread ends you need to deregister it with the Java runtime.

96.19.10 FromReflectedField(field as JavaObjectMBS) as JavaFieldMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Searches the field which matches the reflected field object.

96.19.11 FromReflectedMethod(method as JavaObjectMBS) as JavaMethodMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Searches the method which matches the reflected method object.

96.19.12 IsAssignableFrom(TheSubClass as JavaClassMBS, TheSuperClass as JavaClassMBS) as boolean

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if the class is assignable from the other class.

**Notes:** That means that the sub class is somewhere down the class tree from the super class.
96.19.13  **MonitorEnter(obj as JavaObjectMBS) as Integer**

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Enteres the monitor associated with the underlying Java object referred to by obj. **Notes:**
Returns zero on success; otherwise, returns a negative value on failure.

Each Java object has a monitor associated with it. If the current thread already owns the monitor associated with ref, it increments a counter in the monitor indicating the number of times this thread has entered the monitor. If the monitor associated with ref is not owned by any thread, the current thread becomes the owner of the monitor, setting the entry count of this monitor to 1. If another thread already owns the monitor associated with ref, the current thread waits until the monitor is released, then tries again to gain ownership.

96.19.14  **MonitorExit(obj as JavaObjectMBS) as Integer**

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Releases the monitor. **Notes:**
The current thread must be the owner of the monitor associated with the underlying Java object referred to by ref. The thread decrements the counter indicating the number of times it has entered this monitor. If as a result the value of the counter becomes zero, the current thread releases the monitor.

Returns zero on success; otherwise, returns a negative value on failure.

96.19.15  **NewBooleanArray(ref as JavaObjectMBS) as JavaBooleanArrayMBS**

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new array object based on the given java object. **Notes:** This function is a convenience function to convert a java object array reference to a java array object in REALbasic. It can crash if the java object used is not the array of the requested type. See also:

- 96.19.16 NewBooleanArray(size as Integer) as JavaBooleanArrayMBS

96.19.16  **NewBooleanArray(size as Integer) as JavaBooleanArrayMBS**

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new array for booleans with the given size.
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**Notes:** Returns nil on any error.

See also:

- 96.19.15 NewBooleanArray(ref as JavaObjectMBS) as JavaBooleanArrayMBS

96.19.17 **NewByteArray(ref as JavaObjectMBS) as JavaByteArrayMBS**

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new array object based on the given java object. **Notes:** This function is a convenience function to convert a java object array reference to a java array object in REALbasic. It can crash if the java object used is not the array of the requested type.

See also:

- 96.19.18 NewByteArray(size as Integer) as JavaByteArrayMBS

96.19.18 **NewByteArray(size as Integer) as JavaByteArrayMBS**

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new array for bytes with the given size. **Notes:** Returns nil on any error.

See also:

- 96.19.17 NewByteArray(ref as JavaObjectMBS) as JavaByteArrayMBS

96.19.19 **NewCharArray(ref as JavaObjectMBS) as JavaCharArrayMBS**

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new array object based on the given java object. **Notes:** This function is a convenience function to convert a java object array reference to a java array object in REALbasic. It can crash if the java object used is not the array of the requested type.

See also:

- 96.19.20 NewCharArray(size as Integer) as JavaCharArrayMBS

96.19.20 **NewCharArray(size as Integer) as JavaCharArrayMBS**

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new array for chars (16bit) with the given size. **Notes:** Returns nil on any error.

See also:

- 96.19.19 NewCharArray(ref as JavaObjectMBS) as JavaCharArrayMBS
96.19.21 NewDirectByteBuffer(address as Integer, size as Integer) as JavaObjectMBS

See also:

   • 96.19.22 NewDirectByteBuffer(mem as memoryblock) as JavaObjectMBS

96.19.22 NewDirectByteBuffer(mem as memoryblock) as JavaObjectMBS

Notes: Keep the memoryblock until this object is destroyed.
See also:

   • 96.19.21 NewDirectByteBuffer(address as Integer, size as Integer) as JavaObjectMBS

96.19.23 NewDoubleArray(ref as JavaObjectMBS) as JavaDoubleArrayMBS

Notes: This function is a convenience function to convert a java object array reference to a java array object in REALbasic. It can crash if the java object used is not the array of the requested type.
See also:

   • 96.19.24 NewDoubleArray(size as Integer) as JavaDoubleArrayMBS

96.19.24 NewDoubleArray(size as Integer) as JavaDoubleArrayMBS

Notes: Returns nil on any error.
See also:

   • 96.19.23 NewDoubleArray(ref as JavaObjectMBS) as JavaDoubleArrayMBS

96.19.25 NewFloatArray(ref as JavaObjectMBS) as JavaFloatArrayMBS

Notes: This function is a convenience function to convert a java object array reference to a java array object
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in REALbasic. It can crash if the java object used is not the array of the requested type.

See also:

- 96.19.26 NewFloatArray(size as Integer) as JavaFloatArrayMBS

96.19.26 NewFloatArray(size as Integer) as JavaFloatArrayMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Creates a new array for singles with the given size.
Notes: Returns nil on any error.
See also:

- 96.19.25 NewFloatArray(ref as JavaObjectMBS) as JavaFloatArrayMBS

96.19.27 NewIntArray(ref as JavaObjectMBS) as JavaIntArrayMBS

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Creates a new array object based on the given java object.
Notes: This function is a convenience function to convert a java object array reference to a java array object in REALbasic. It can crash if the java object used is not the array of the requested type.
See also:

- 96.19.28 NewIntArray(size as Integer) as JavaIntArrayMBS

96.19.28 NewIntArray(size as Integer) as JavaIntArrayMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Creates a new array for integers with the given size.
Notes: Returns nil on any error.
See also:

- 96.19.27 NewIntArray(ref as JavaObjectMBS) as JavaIntArrayMBS

96.19.29 NewLongArray(ref as JavaObjectMBS) as JavaLongArrayMBS

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Creates a new array object based on the given java object.
Notes: This function is a convenience function to convert a java object array reference to a java array object in REALbasic. It can crash if the java object used is not the array of the requested type.
See also:

- 96.19.30 NewLongArray(size as Integer) as JavaLongArrayMBS
96.19.30  NewLongArray(size as Integer) as JavaLongArrayMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new array for 64 bit integers with the given size. **Notes:** Returns nil on any error. See also:

- 96.19.29 NewLongArray(ref as JavaObjectMBS) as JavaLongArrayMBS

96.19.31  NewObjectArray(ref as JavaObjectMBS) as JavaObjectArrayMBS

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new array object based on the given java object. **Notes:** This function is a convenience function to convert a java object array reference to a java array object in REALbasic. It can crash if the java object used is not the array of the requested type. See also:

- 96.19.32 NewObjectArray(size as Integer, TheClass as JavaClassMBS, InitialValue as JavaObjectMBS) as JavaObjectArrayMBS

96.19.32  NewObjectArray(size as Integer, TheClass as JavaClassMBS, InitialValue as JavaObjectMBS) as JavaObjectArrayMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Constructs a new array holding objects in class elementClass. **Notes:** All elements are initially set to initialElement. Returns nil on any error. See also:

- 96.19.31 NewObjectArray(ref as JavaObjectMBS) as JavaObjectArrayMBS

96.19.33  NewShortArray(ref as JavaObjectMBS) as JavaShortArrayMBS

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new array object based on the given java object. **Notes:** This function is a convenience function to convert a java object array reference to a java array object in REALbasic. It can crash if the java object used is not the array of the requested type. See also:

- 96.19.34 NewShortArray(size as Integer) as JavaShortArrayMBS
96.19.34 NewShortArray(size as Integer) as JavaShortArrayMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new array for shorts with the given size. **Notes:** Returns nil on any error. See also:

- 96.19.33 NewShortArray(ref as JavaObjectMBS) as JavaShortArrayMBS

96.19.35 NewStringUnicode(s as string) as JavaStringMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new string. **Notes:** Preferes an Unicode encoded string.

96.19.36 NewStringUTF8(s as string) as JavaStringMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new string. **Example:**

```
// init Java
dim options() as string
dim javaVm as new JavaVMMBS(JavaVMMBS.JNI_VERSION_1_4, options, true)

// Get system class
Dim system As JavaClassMBS = javaVm.FindClass("java/lang/System")
If system <> Nil Then

    // query method
    dim transformerGetPropertyId as JavaMethodMBS = system.GetStaticMethod("getProperty", "(Ljava/lang/String;)Ljava/lang/String;")
    If transformerGetPropertyId <> Nil Then

        // make parameters
        Dim keyString As JavaStringMBS = javaVm.NewStringUTF8("os.version")
        dim m as New MemoryBlock(8)
        m.long(0)=keyString.Handle

        // run it
        dim r as JavaObjectMBS = system.CallStaticObjectMethod(transfomerGetPropertyId, m)
        if r <> Nil then

            // show result
            dim s as JavaStringMBS = JavaStringMBS(r)
```
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MsgBox s.CopyStringUTF
end if
End If
End If

Notes: Preferes an UTF8 encoded string.

96.19.37  Runtime as JavaRuntimeMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Returns the runtime object for the current VM so you can query the memory statistics.

96.19.38  SetLibraryPath(path as folderitem)

MBS Java Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Defines the path where to find the java library.
Notes:
Must be called before you use the constructor.
This value is ignored on Mac OS X and on Windows if not set the registry is searched for this path.
See also:
• 96.19.39 SetLibraryPath(path as string)

96.19.39  SetLibraryPath(path as string)

MBS Java Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Defines the path where to find the java library.
Example:
if TargetLinux then
// change path for your linux PC!
JavaVMMBS.SetLibraryPath(“/home/cs/jre1.6.0_05/lib/i386/client/libjvm.so”)
end if

Notes:
Must be called before you use the constructor.
This value is ignored on Mac OS X and on Windows if not set the registry is searched for this path.
See also:
96.19.00  CLASS JAVA VM MBS

- 96.19.38 SetLibraryPath(path as folderitem)

96.19.40  ToReflectedField(TheClass as JavaClassMBS, fieldID as JavaFieldMBS, isStatic as boolean) as JavaObjectMBS

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new reflected field object for the given field.

96.19.41  ToReflectedMethod(TheClass as JavaClassMBS, methodID as JavaMethodMBS, isStatic as boolean) as JavaObjectMBS


96.19.42  Version as Integer

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the version of the java engine.

**Notes:**
Currently the plugin always uses version 1.4.

Returns the major version number in the higher 16 bits and the minor version number in the lower 16 bits.

In JDK1.1, GetVersion() returns 0x00010001.

96.19.43  Properties

96.19.44  Handle as Integer

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The handle of the JavaVM.

**Notes:** (Read only property)
96.19.45  Lasterror as Integer

MBS Java Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last error code reported. 
**Notes:** (Read and Write property)

96.19.46  Constants

96.19.47  JNI\_VERSION\_1\_1 = & h00010001

MBS Java Plugin, Plugin Version: 8.5. **Function:** One of the constants to specify the JNI version in the constructor.

96.19.48  JNI\_VERSION\_1\_2 = & h00010002

MBS Java Plugin, Plugin Version: 8.5. **Function:** One of the constants to specify the JNI version in the constructor.

96.19.49  JNI\_VERSION\_1\_4 = & h00010004

MBS Java Plugin, Plugin Version: 8.5. **Function:** One of the constants to specify the JNI version in the constructor.

96.19.50  JNI\_VERSION\_1\_6 = & h00010006

MBS Java Plugin, Plugin Version: 16.5. **Function:** One of the constants to specify the JNI version in the constructor.
Chapter 97

Java Database

97.1 class JavaBlobMBS

97.1.1 class JavaBlobMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The java class for a binary large object.
**Notes:**
Subclass of the JavaObjectMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

97.1.2 Methods

97.1.3 Constructor

MBS Java Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

97.1.4 getBytes(Position as Int64, Length as Integer) as string

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves all or part of the BLOB value that this Blob object represents, as an array of bytes.
**Notes:**
This byte array contains up to length consecutive bytes starting at position pos.
pos: the ordinal position of the first byte in the BLOB value to be extracted; the first byte is at position 1
length: the number of consecutive bytes to be copied

Returns a byte array (as string) containing up to length consecutive bytes from the BLOB value designated by this Blob object, starting with the byte at position pos

97.1.5 length as int64

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the number of bytes in the BLOB value designated by this Blob object.

97.1.6 position(SearchString as JavaBlobMBS, Position as Int64) as Int64

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves the byte position in the BLOB value designated by this Blob object at which pattern begins. The search begins at position start.
**Notes:**
pattern: the Blob object designating the BLOB value for which to search
start: the position in the BLOB value at which to begin searching; the first position is 1

Returns the position at which the pattern begins, else -1
See also:
- 97.1.7 position(SearchString as String, Position as Int64) as Int64

97.1.7 position(SearchString as String, Position as Int64) as Int64

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves the byte position at which the specified byte array pattern begins within the BLOB value that this Blob object represents.
**Notes:**
The search for pattern begins at position start.

pattern: the byte array for which to search
start: the position at which to begin searching; the first position is 1

Returns the position at which the pattern appears, else -1
See also:
97.1.8  setBytes(Position as Int64, Value as String) as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes the given array of bytes to the BLOB value that this Blob object represents, starting at position pos, and returns the number of bytes written.

**Notes:**

pos: the position in the BLOB object at which to start writing
bytes: the array of bytes to be written to the BLOB value that this Blob object represents

Returns the number of bytes written

See also:

- 97.1.9 setBytes(Position as Int64, Value as String, Offset as Integer, Length as Integer) as Integer

97.1.9  setBytes(Position as Int64, Value as String, Offset as Integer, Length as Integer) as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes all or part of the given byte array to the BLOB value that this Blob object represents and returns the number of bytes written.

**Notes:**

Writing starts at position pos in the BLOB value; len bytes from the given byte array are written.

pos: the position in the BLOB object at which to start writing
bytes: the array of bytes to be written to this BLOB object
offset: the offset into the array bytes at which to start reading the bytes to be set
len: the number of bytes to be written to the BLOB value from the array of bytes

Returns the number of bytes written

See also:

- 97.1.8 setBytes(Position as Int64, Value as String) as Integer

97.1.10  truncate(len as int64)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Truncates the BLOB value that this Blob object represents to be len bytes in length.

**Notes:** len: the length, in bytes, to which the BLOB value that this Blob object represents should be
truncated
97.2. class JavaCallableStatementMBS

97.2.1 class JavaCallableStatementMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The REALbasic class to handle a CallableStatement in Java.

**Notes:**
The interface used to execute SQL stored procedures. The JDBC API provides a stored procedure SQL escape syntax that allows stored procedures to be called in a standard way for all RDBMSs. This escape syntax has one form that includes a result parameter and one that does not. If used, the result parameter must be registered as an OUT parameter. The other parameters can be used for input, output or both. Parameters are referred to sequentially, by number, with the first parameter being 1.

```sql
{ ?= call <procedure-name>[ <arg1>,<arg2>, ... ] }
{ call <procedure-name>[ <arg1>,<arg2>, ... ] }
```

IN parameter values are set using the set methods inherited from PreparedStatement. The type of all OUT parameters must be registered prior to executing the stored procedure; their values are retrieved after execution via the get methods provided here.

A CallableStatement can return one ResultSet object or multiple ResultSet objects. Multiple ResultSet objects are handled using operations inherited from Statement.

For maximum portability, a call’s ResultSet objects and update counts should be processed prior to getting the values of output parameters.

Subclass of the JavaStatementMBS class.

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

97.2.2 Methods

97.2.3 Constructor

MBS Java Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

97.2.4 getBlob(parameterIndex as Integer) as JavaBlobMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves the value of the designated JDBC BLOB parameter as a Blob object in the Java programming
language.

Notes:

Parameters:
i - the first parameter is 1, the second is 2, and so on

Returns:
the parameter value as a Blob object in the Java programming language. If the value was SQL NULL, the value null is returned.

See also:

- 97.2.5 getBlob(parameterName as string) as JavaBlobMBS

97.2.5 getBlob(parameterName as string) as JavaBlobMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Retrieves the value of a JDBC BLOB parameter as a Blob object in the Java programming language.

Notes:

Parameters:
parameterName - the name of the parameter

Returns:
the parameter value as a Blob object in the Java programming language. If the value was SQL NULL, the value null is returned.

See also:

- 97.2.4 getBlob(parameterIndex as Integer) as JavaBlobMBS

97.2.6 getBoolean(parameterIndex as Integer) as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Retrieves the value of the designated JDBC BIT parameter as a boolean in the Java programming language.

Notes:

Parameters:
parameterIndex - the first parameter is 1, the second is 2, and so on

Returns:
the parameter value. If the value is SQL NULL, the result is false.

See also:

- 97.2.7 getBoolean(parameterName as string) as boolean

97.2.7 getBoolean(parameterName as string) as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Retrieves the value of a JDBC BIT parameter as a boolean in the Java programming language.

Notes:
97.2. CLASS JAVACALLABLESTATEMENTMBS

Parameters:
parameterName - the name of the parameter

Returns:
the parameter value. If the value is SQL NULL, the result is false.

See also:

- 97.2.6 getBoolean(parameterIndex as Integer) as boolean

97.2.8 getByte(parameterIndex as Integer) as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Retrieves the value of the designated JDBC TINYINT parameter as a byte in the Java programming language.

Notes:

Parameters:
parameterIndex - the first parameter is 1, the second is 2, and so on

Returns:
the parameter value. If the value is SQL NULL, the result is 0.

See also:

- 97.2.9 getByte(parameterName as string) as Integer

97.2.9 getByte(parameterName as string) as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Retrieves the value of a JDBC TINYINT parameter as a byte in the Java programming language.

Notes:

Parameters:
parameterName - the name of the parameter

Returns:
the parameter value. If the value is SQL NULL, the result is 0.

See also:

- 97.2.8 getByte(parameterIndex as Integer) as Integer

97.2.10 getClob(parameterIndex as Integer) as JavaClobMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Retrieves the value of the designated JDBC CLOB parameter as a Clob object in the Java programming language.

Notes:

Parameters:
i - the first parameter is 1, the second is 2, and so on
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Returns:
the parameter value as a Clob object in the Java programming language. If the value was SQL NULL, the
value null is returned.
See also:

- 97.2.11 getClob(parameterName as string) as JavaClobMBS

97.2.11  getClob(parameterName as string) as JavaClobMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves the value of a JDBC CLOB parameter as a Clob object in the Java programming language.
**Notes:**

Parameters:
- parameterName - the name of the parameter

Returns:
the parameter value as a Clob object in the Java programming language. If the value was SQL NULL, the
value null is returned.
See also:

- 97.2.10 getClob(parameterIndex as Integer) as JavaClobMBS

97.2.12  getDouble(parameterIndex as Integer) as Double

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves the value of the designated JDBC DOUBLE parameter as a double in the Java programming
language.
**Notes:**

Parameters:
- parameterIndex - the first parameter is 1, the second is 2, and so on

Returns:
the parameter value. If the value is SQL NULL, the result is 0.
See also:

- 97.2.13 getDouble(parameterName as string) as Double

97.2.13  getDouble(parameterName as string) as Double

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves the value of a JDBC DOUBLE parameter as a double in the Java programming language.
**Notes:**

Parameters:
- parameterName - the name of the parameter
Returns:
the parameter value. If the value is SQL NULL, the result is 0.
See also:

- 97.2.12 getDouble(parameterIndex as Integer) as Double

**97.2.14 getFloat(parameterIndex as Integer) as single**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the value of the designated JDBC FLOAT parameter as a float in the Java programming language. **Notes:**

Parameters:
parameterIndex - the first parameter is 1, the second is 2, and so on
Returns:
the parameter value. If the value is SQL NULL, the result is 0.
See also:

- 97.2.15 getFloat(parameterName as string) as single

**97.2.15 getFloat(parameterName as string) as single**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the value of a JDBC FLOAT parameter as a float in the Java programming language. **Notes:**

Parameters:
parameterName - the name of the parameter
Returns:
the parameter value. If the value is SQL NULL, the result is 0.
See also:

- 97.2.14 getFloat(parameterIndex as Integer) as single

**97.2.16 getInt(parameterIndex as Integer) as Integer**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the value of the designated JDBC INTEGER parameter as an int in the Java programming language. **Notes:**

Parameters:
parameterIndex - the first parameter is 1, the second is 2, and so on
Returns:
the parameter value. If the value is SQL NULL, the result is 0.
See also:
97.2.17  getInt(parameterName as string) as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the value of a JDBC INTEGER parameter as an int in the Java programming language.

**Notes:**

Parameters:
- parameterName - the name of the parameter

Returns:
- the parameter value. If the value is SQL NULL, the result is 0.

See also:

- 97.2.16 getInt(parameterIndex as Integer) as Integer

97.2.18  getLong(parameterIndex as Integer) as Int64

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the value of the designated JDBC BIGINT parameter as a long in the Java programming language.

**Notes:**

Parameters:
- parameterIndex - the first parameter is 1, the second is 2, and so on

Returns:
- the parameter value. If the value is SQL NULL, the result is 0.

See also:

- 97.2.19 getLong(parameterName as string) as Int64

97.2.19  getLong(parameterName as string) as Int64

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the value of a JDBC BIGINT parameter as a long in the Java programming language.

**Notes:**

Parameters:
- parameterName - the name of the parameter

Returns:
- the parameter value. If the value is SQL NULL, the result is 0.

See also:

- 97.2.18 getLong(parameterIndex as Integer) as Int64
97.2. CLASS JAVACALLABLESTATEMENTMBS

97.2.20  getShort(parameterIndex as Integer) as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the value of the designated JDBC SMALLINT parameter as a short in the Java programming language.

**Notes:**

Parameters:
- parameterIndex - the first parameter is 1, the second is 2, and so on

Returns:
- the parameter value. If the value is SQL NULL, the result is 0.

See also:

- 97.2.21 getShort(parameterName as string) as Integer

97.2.21  getShort(parameterName as string) as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the value of a JDBC SMALLINT parameter as a short in the Java programming language.

**Notes:**

Parameters:
- parameterName - the name of the parameter

Returns:
- the parameter value. If the value is SQL NULL, the result is 0.

See also:

- 97.2.20 getShort(parameterIndex as Integer) as Integer

97.2.22  getString(parameterIndex as Integer) as String

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the value of the designated JDBC CHAR, VARCHAR, or LONGVARCHAR parameter as a String in the Java programming language.

**Notes:**

For the fixed-length type JDBC CHAR, the String object returned has exactly the same value the JDBC CHAR value had in the database, including any padding added by the database.

Parameters:
- parameterIndex - the first parameter is 1, the second is 2, and so on

Returns:
- the parameter value. If the value is SQL NULL, the result is null.

See also:

- 97.2.23 getString(parameterName as string) as String
97.2.23  getString(parameterName as string) as String

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the value of a JDBC CHAR, VARCHAR, or LONGVARCHAR parameter as a String in the Java programming language.

**Notes:**
For the fixed-length type JDBC CHAR, the String object returned has exactly the same value the JDBC CHAR value had in the database, including any padding added by the database.

Parameters:
parameterName - the name of the parameter

Returns:
the parameter value. If the value is SQL NULL, the result is null.

See also:

- 97.2.22 getString(parameterIndex as Integer) as String

97.2.24  registerOutParameter(parameterIndex as Integer, sqlType as Integer)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Registers the OUT parameter in ordinal position parameterIndex to the JDBC type sqlType.

**Notes:**
All OUT parameters must be registered before a stored procedure is executed.
The JDBC type specified by sqlType for an OUT parameter determines the Java type that must be used in the get method to read the value of that parameter.

If the JDBC type expected to be returned to this output parameter is specific to this particular database, sqlType should be java.sql.Types.OTHER. The method getObject(int) retrieves the value.

parameterIndex - the first parameter is 1, the second is 2, and so on
sqlType - the JDBC type code defined by java.sql.Types. If the parameter is of JDBC type NUMERIC or DECIMAL, the version of registerOutParameter that accepts a scale value should be used.

See also:

- 97.2.25 registerOutParameter(parameterIndex as Integer, sqlType as Integer, scale as Integer)
- 97.2.26 registerOutParameter(parameterIndex as Integer, sqlType as Integer, typeName as string)
- 97.2.27 registerOutParameter(parameterName as string, sqlType as Integer)
- 97.2.28 registerOutParameter(parameterName as string, sqlType as Integer, scale as Integer)
- 97.2.29 registerOutParameter(parameterName as string, sqlType as Integer, typeName as string)
97.2.25 registerOutParameter(parameterIndex as Integer, sqlType as Integer, scale as Integer)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Registers the parameter in ordinal position parameterIndex to be of JDBC type sqlType.

**Notes:**
This method must be called before a stored procedure is executed.
The JDBC type specified by sqlType for an OUT parameter determines the Java type that must be used in the get method to read the value of that parameter.

This version of registerOutParameter should be used when the parameter is of JDBC type NUMERIC or DECIMAL.

d parameterIndex - the first parameter is 1, the second is 2, and so on
sqlType - the SQL type code defined by java.sql.Types.
scale - the desired number of digits to the right of the decimal point. It must be greater than or equal to zero.

See also:
- 97.2.24 registerOutParameter(parameterIndex as Integer, sqlType as Integer) 15400
- 97.2.26 registerOutParameter(parameterIndex as Integer, sqlType as Integer, typeName as string) 15401
- 97.2.27 registerOutParameter(parameterName as string, sqlType as Integer) 15402
- 97.2.28 registerOutParameter(parameterName as string, sqlType as Integer, scale as Integer) 15403
- 97.2.29 registerOutParameter(parameterName as string, sqlType as Integer, typeName as string) 15403

97.2.26 registerOutParameter(parameterIndex as Integer, sqlType as Integer, typeName as string)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Registers the designated output parameter.

**Notes:**
This version of the method registerOutParameter should be used for a user-defined or REF output parameter. Examples of user-defined types include: STRUCT, DISTINCT, JAVA_OBJECT, and named array types. Before executing a stored procedure call, you must explicitly call registerOutParameter to register the type from java.sql.Types for each OUT parameter. For a user-defined parameter, the fully-qualified SQL type name of the parameter should also be given, while a REF parameter requires that the fully-qualified type name of the referenced type be given. A JDBC driver that does not need the type code and type name information may ignore it. To be portable, however, applications should always provide these values for user-defined and REF parameters. Although it is intended for user-defined and REF parameters, this method may be used to register a parameter of any JDBC type. If the parameter does not have a user-defined or
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REF type, the typeName parameter is ignored.
Note: When reading the value of an out parameter, you must use the getter method whose Java type corresponds to the parameter’s registered SQL type.

Parameters:
paramIndex - the first parameter is 1, the second is 2,...
sqlType - a value from Types
typeName - the fully-qualified name of an SQL structured type
See also:

- 97.2.24 registerOutParameter(parameterIndex as Integer, sqlType as Integer) 15400
- 97.2.25 registerOutParameter(parameterIndex as Integer, sqlType as Integer, scale as Integer) 15401
- 97.2.27 registerOutParameter(parameterName as string, sqlType as Integer) 15402
- 97.2.28 registerOutParameter(parameterName as string, sqlType as Integer, scale as Integer) 15403
- 97.2.29 registerOutParameter(parameterName as string, sqlType as Integer, typeName as string) 15403

97.2.27  registerOutParameter(parameterName as string, sqlType as Integer)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Registers the OUT parameter named parameterName to the JDBC type sqlType.
**Notes:**
Registers the OUT parameter named parameterName to the JDBC type sqlType. All OUT parameters must be registered before a stored procedure is executed.
The JDBC type specified by sqlType for an OUT parameter determines the Java type that must be used in the get method to read the value of that parameter.

If the JDBC type expected to be returned to this output parameter is specific to this particular database, sqlType should be java.sql.Types.OTHER. The method getObject(int) retrieves the value.

Parameters:
parameterName - the name of the parameter
sqlType - the JDBC type code defined by java.sql.Types. If the parameter is of JDBC type NUMERIC or DECIMAL, the version of registerOutParameter that accepts a scale value should be used.
See also:

- 97.2.24 registerOutParameter(parameterIndex as Integer, sqlType as Integer) 15400
- 97.2.25 registerOutParameter(parameterIndex as Integer, sqlType as Integer, scale as Integer) 15401
- 97.2.26 registerOutParameter(parameterIndex as Integer, sqlType as Integer, typeName as string) 15402
- 97.2.28 registerOutParameter(parameterName as string, sqlType as Integer, scale as Integer) 15403
- 97.2.29 registerOutParameter(parameterName as string, sqlType as Integer, typeName as string) 15403
97.2.28  registerOutParameter(parameterName as string, sqlType as Integer, scale as Integer)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Registers the parameter named parameterName to be of JDBC type sqlType. **Notes:**

This method must be called before a stored procedure is executed. The JDBC type specified by sqlType for an OUT parameter determines the Java type that must be used in the get method to read the value of that parameter.

This version of registerOutParameter should be used when the parameter is of JDBC type NUMERIC or DECIMAL.

Parameters:
- parameterName - the name of the parameter
- sqlType - SQL type code defined by java.sql.Types.
- scale - the desired number of digits to the right of the decimal point. It must be greater than or equal to zero.

See also:
- 97.2.24 registerOutParameter(parameterIndex as Integer, sqlType as Integer) 15400
- 97.2.25 registerOutParameter(parameterIndex as Integer, sqlType as Integer, scale as Integer) 15401
- 97.2.26 registerOutParameter(parameterIndex as Integer, sqlType as Integer, typeName as string) 15401
- 97.2.27 registerOutParameter(parameterName as string, sqlType as Integer) 15402
- 97.2.29 registerOutParameter(parameterName as string, sqlType as Integer, typeName as string) 15403

97.2.29  registerOutParameter(parameterName as string, sqlType as Integer, typeName as string)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Registers the designated output parameter. **Notes:**

This version of the method registerOutParameter should be used for a user-named or REF output parameter. Examples of user-named types include: STRUCT, DISTINCT, JAVA_OBJECT, and named array types. Before executing a stored procedure call, you must explicitly call registerOutParameter to register the type from java.sql.Types for each OUT parameter. For a user-named parameter the fully-qualified SQL type name of the parameter should also be given, while a REF parameter requires that the fully-qualified type name of the referenced type be given. A JDBC driver that does not need the type code and type name information may ignore it. To be portable, however, applications should always provide these values for user-named and REF parameters. Although it is intended for user-named and REF parameters, this method...
may be used to register a parameter of any JDBC type. If the parameter does not have a user-named or
REF type, the typeName parameter is ignored.
Note: When reading the value of an out parameter, you must use the getXXX method whose Java type
XXX corresponds to the parameter’s registered SQL type.

Parameters:
parameterName - the name of the parameter
sqlType - a value from Types
typeName - the fully-qualified name of an SQL structured type
See also:

- 97.2.24 registerOutParameter(parameterIndex as Integer, sqlType as Integer) 15400
- 97.2.25 registerOutParameter(parameterIndex as Integer, sqlType as Integer, scale as Integer) 15401
- 97.2.26 registerOutParameter(parameterIndex as Integer, sqlType as Integer, typeName as string) 15401
- 97.2.27 registerOutParameter(parameterName as string, sqlType as Integer) 15402
- 97.2.28 registerOutParameter(parameterName as string, sqlType as Integer, scale as Integer) 15403

97.2.30 setBoolean(parameterName as string, x as boolean)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Sets the designated parameter to the given Java boolean value.
Notes:
The driver converts this to an SQL BIT value when it sends it to the database.
Parameters:
parameterName - the name of the parameter
x - the parameter value

97.2.31 setByte(parameterName as string, x as Integer)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Sets the designated parameter to the given Java byte value.
Notes:
The driver converts this to an SQL TINYINT value when it sends it to the database.
Parameters:
parameterName - the name of the parameter
x - the parameter value
97.2.32 setDouble(parameterName as string, x as Double)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the designated parameter to the given Java double value.
**Notes:**
The driver converts this to an SQL DOUBLE value when it sends it to the database.
**Parameters:**
- parameterName - the name of the parameter
- x - the parameter value

97.2.33 setFloat(parameterName as string, x as single)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the designated parameter to the given Java float value.
**Notes:**
The driver converts this to an SQL FLOAT value when it sends it to the database.
**Parameters:**
- parameterName - the name of the parameter
- x - the parameter value

97.2.34 setInt(parameterName as string, x as Integer)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the designated parameter to the given Java int value.
**Notes:**
The driver converts this to an SQL INTEGER value when it sends it to the database.
**Parameters:**
- parameterName - the name of the parameter
- x - the parameter value

97.2.35 setLong(parameterName as string, x as int64)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the designated parameter to the given Java long value.
**Notes:**
The driver converts this to an SQL BIGINT value when it sends it to the database.
**Parameters:**
- parameterName - the name of the parameter
97.2.36  `setNull(parameterName as string, sqlType as Integer)`

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the designated parameter to SQL NULL.
**Notes:**
Note: You must specify the parameter’s SQL type.

Parameters:
- `parameterName` - the name of the parameter
- `sqlType` - the SQL type code defined in `java.sql.Types`

See also:
- 97.2.37 `setNull(parameterName as string, sqlType as Integer, typeName as string)`

97.2.37  `setNull(parameterName as string, sqlType as Integer, typeName as string)`

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the designated parameter to SQL NULL.
**Notes:**
This version of the method `setNull` should be used for user-defined types and REF type parameters. Examples of user-defined types include: STRUCT, DISTINCT, JAVA_OBJECT, and named array types.
Note: To be portable, applications must give the SQL type code and the fully-qualified SQL type name when specifying a NULL user-defined or REF parameter. In the case of a user-defined type the name is the type name of the parameter itself. For a REF parameter, the name is the type name of the referenced type. If a JDBC driver does not need the type code or type name information, it may ignore it. Although it is intended for user-defined and Ref parameters, this method may be used to set a null parameter of any JDBC type. If the parameter does not have a user-defined or REF type, the given `typeName` is ignored.

Parameters:
- `parameterName` - the name of the parameter
- `sqlType` - a value from `java.sql.Types`
- `typeName` - the fully-qualified name of an SQL user-defined type; ignored if the parameter is not a user-defined type or SQL REF value

See also:
- 97.2.36 `setNull(parameterName as string, sqlType as Integer)`
97.2.38  setShort(parameterName as string, x as Integer)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the designated parameter to the given Java short value.  
**Notes:**  
The driver converts this to an SQL SMALLINT value when it sends it to the database.  
**Parameters:**  
- parameterName - the name of the parameter  
- x - the parameter value

97.2.39  setString(parameterName as string, x as string)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the designated parameter to the given Java String value.  
**Notes:**  
The driver converts this to an SQL VARCHAR or LONGVARCHAR value (depending on the argument's size relative to the driver's limits on VARCHAR values) when it sends it to the database.  
**Parameters:**  
- parameterName - the name of the parameter  
- x - the parameter value

97.2.40  wasNull as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether the last OUT parameter read had the value of SQL NULL.  
**Notes:**  
Note that this method should be called only after calling a getter method; otherwise, there is no value to use in determining whether it is null or not.  
**Returns:**  
true if the last parameter read was SQL NULL; false otherwise
97.3  class JavaClobMBS

97.3.1  class JavaClobMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The java class for large character objects.
**Notes:**
Subclass of the JavaObjectMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

97.3.2  Methods

97.3.3  Constructor

MBS Java Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

97.3.4  getSubString(Position as int64, Length as Integer) as string

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves a copy of the specified substring in the CLOB value designated by this Clob object.
**Notes:**
The substring begins at position pos and has up to length consecutive characters.

Parameters:
pos: the first character of the substring to be extracted. The first character is at position 1.
length: the number of consecutive characters to be copied

Returns a String that is the specified substring in the CLOB value designated by this Clob object

97.3.5  length as int64

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves the number of characters in the CLOB value designated by this Clob object.
**Notes:** Returns length of the CLOB in characters.
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97.3.6  position(SearchString as JavaClobMBS, Start as Int64) as Int64

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves the character position at which the specified Clob object searchstr appears in this Clob object.

**Notes:**
The search begins at position start.

SearchString: the Clob object for which to search
start: the position at which to begin searching; the first position is 1

Returns the position at which the Clob object appears or -1 if it is not present; the first position is 1
See also:

- 97.3.7 position(SearchString as String, Start as Int64) as Int64

97.3.7  position(SearchString as String, Start as Int64) as Int64

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves the character position at which the specified substring searchstr appears in the SQL CLOB value represented by this Clob object.

**Notes:**
The search begins at position start.

searchstr: the substring for which to search
start: the position at which to begin searching; the first position is 1

Returns the position at which the substring appears or -1 if it is not present; the first position is 1
See also:

- 97.3.6 position(SearchString as JavaClobMBS, Start as Int64) as Int64

97.3.8  setString(Position as Int64, Value as String) as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Writes the given Java String to the CLOB value that this Clob object designates at the position pos.

**Notes:**
Position: the position at which to start writing to the CLOB value that this Clob object represents
Value: the string to be written to the CLOB value that this Clob designates

Returns the number of characters written
See also:
97.3.9 setString(Position as Int64, Value as String, Offset as Integer, Length as Integer) as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
 Writes Length characters of Value, starting at character offset, to the CLOB value that this Clob represents.
**Notes:**
Position: the position at which to start writing to this CLOB object
Value: the string to be written to the CLOB value that this Clob object represents
Offset: the offset into str to start reading the characters to be written
Length: the number of characters to be written

Returns the number of characters written
See also:

- 97.3.8 setString(Position as Int64, Value as String) as Integer

97.3.10 truncate(len as int64)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Truncates the CLOB value that this Clob designates to have a length of len characters.
**Notes:** len: the length, in bytes, to which the CLOB value should be truncated
97.4. class JavaConnectionMBS

97.4.1 class JavaConnectionMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for a java connection.

**Notes:**
Subclass of the JavaObjectMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

97.4.2 Methods

97.4.3 clearWarnings

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Clears all warnings reported for this Connection object.

**Notes:** After a call to this method, the method getWarnings returns null until a new warning is reported for this Connection object.

97.4.4 close

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Releases this Connection object’s database and JDBC resources immediately instead of waiting for them to be automatically released.

97.4.5 CLOSE_CURSORS_AT_COMMIT as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant indicating that ResultSet objects should be closed when the method Connection.commit is called.

97.4.6 commit

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Makes all changes made since the previous commit/rollback permanent and releases any database locks currently held by the Connection.

**Notes:** See the java documentation for details on java.sql.Connection.Commit.
97.4.7 CONCUR_READ_ONLY as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constant indicating the concurrency mode for a ResultSet object that may NOT be updated.

97.4.8 CONCUR_UPDATABLE as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constant indicating the concurrency mode for a ResultSet object that may be updated.

97.4.9 Constructor

MBS Java Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

97.4.10 createBlob as JavaBlobMBS

MBS Java Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Constructs an object that implements the Blob interface. 
**Notes:** The object returned initially contains no data. The setBinaryStream and setBytes methods of the Blob interface may be used to add data to the Blob.

97.4.11 createClob as JavaClobMBS

MBS Java Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Constructs an object that implements the Clob interface. 
**Notes:** The object returned initially contains no data. The setAsciiStream, setCharacterStream and set-String methods of the Clob interface may be used to add data to the Clob.

97.4.12 createStatement as JavaStatementMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a Statement object for sending SQL statements to the database. 
**Notes:**
SQL statements without parameters are normally executed using Statement objects. If the same SQL statement is executed many times, it may be more efficient to use a PreparedStatement object. Result sets created using the returned Statement object will by default be type TYPE_FORWARD_ONLY
and have a concurrency level of CONCUR_READ_ONLY.

Returns:
a new default Statement object
See also:

- 97.4.13 createStatement(resultSetType as Integer, resultSetConcurrency as Integer) as JavaStatementMBS
- 97.4.14 createStatement(resultSetType as Integer, resultSetConcurrency as Integer, resultSetHoldability as Integer) as JavaStatementMBS

97.4.13 createStatement(resultSetType as Integer, resultSetConcurrency as Integer) as JavaStatementMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a Statement object that will generate ResultSet objects with the given type and concurrency.

**Notes:**
This method is the same as the createStatement method above, but it allows the default result set type and concurrency to be overridden.

**Parameters:**
- resultSetType - a result set type; one of ResultSet.TYPE_FORWARD_ONLY, ResultSet.TYPE_SCROLL_INSENSITIVE, or ResultSet.TYPE_SCROLL_SENSITIVE
- resultSetConcurrency - a concurrency type; one of ResultSet.CONCUR_READ_ONLY or ResultSet.CONCUR_UPDATABLE

**Returns:**
a new Statement object that will generate ResultSet objects with the given type and concurrency

See also:

- 97.4.12 createStatement as JavaStatementMBS
- 97.4.14 createStatement(resultSetType as Integer, resultSetConcurrency as Integer, resultSetHoldability as Integer) as JavaStatementMBS

97.4.14 createStatement(resultSetType as Integer, resultSetConcurrency as Integer, resultSetHoldability as Integer) as JavaStatementMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a Statement object that will generate ResultSet objects with the given type, concurrency, and holdability.

**Notes:**
This method is the same as the createStatement method above, but it allows the default result set type, concurrency, and holdability to be overridden.

**Parameters:**
resultSetType - one of the following ResultSet constants: ResultSet.TYPE_FORWARD_ONLY, ResultSet.TYPE_SCROLL_INSENSITIVE, or ResultSet.TYPE_SCROLL_SENSITIVE
resultSetConcurrency - one of the following ResultSet constants: ResultSet.CONCUR_READ_ONLY or ResultSet.CONCUR_UPDATABLE
resultSetHoldability - one of the following ResultSet constants: ResultSet.HOLD_CURSORS_OVER_COMMIT or ResultSet.CLOSE_CURSORS_AT_COMMIT

Returns:
   a new Statement object that will generate ResultSet objects with the given type, concurrency, and holdability

See also:
   • 97.4.12 createStatement as JavaStatementMBS
   • 97.4.13 createStatement(resultSetType as Integer, resultSetConcurrency as Integer) as JavaStatementMBS

97.4.15 FETCH_FORWARD as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
The constant indicating that the rows in a result set will be processed in a forward direction; first-to-last.
Notes: This constant is used by the method setFetchDirection as a hint to the driver, which the driver may ignore.

97.4.16 FETCH_REVERSE as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
The constant indicating that the rows in a result set will be processed in a reverse direction; last-to-first.
Notes: This constant is used by the method setFetchDirection as a hint to the driver, which the driver may ignore.

97.4.17 FETCH_UNKNOWN as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
The constant indicating that the order in which rows in a result set will be processed is unknown.
Notes: This constant is used by the method setFetchDirection as a hint to the driver, which the driver may ignore.

97.4.18 getMetaData as JavaDatabaseMetaDataMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Retrieves a DatabaseMetaData object that contains metadata about the database to which this Connection
object represents a connection.

Notes:
The metadata includes information about the database’s tables, its supported SQL grammar, its stored procedures, the capabilities of this connection, and so on.

Returns:
a DatabaseMetaData object for this Connection object

97.4.19  HOLD_CURSORS_OVER_COMMIT as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constant indicating that ResultSet objects should not be closed when the method Connection.commit is called.

97.4.20  isClosed as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves whether this Connection object has been closed.

Notes:
A connection is closed if the method close has been called on it or if certain fatal errors have occurred. This method is guaranteed to return true only when it is called after the method Connection.close has been called. This method generally cannot be called to determine whether a connection to a database is valid or invalid. A typical client can determine that a connection is invalid by catching any exceptions that might be thrown when an operation is attempted.

Returns:
true if this Connection object is closed; false if it is still open

97.4.21  nativeSQL(sql as string) as string

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Converts the given SQL statement into the system’s native SQL grammar.

Notes:
A driver may convert the JDBC SQL grammar into its system’s native SQL grammar prior to sending it. This method returns the native form of the statement that the driver would have sent.

Parameters:
sql - an SQL statement that may contain one or more ’?’ parameter placeholders

Returns:
the native form of this statement
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97.4.22 prepareCall(sql as string) as JavaCallableStatementMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a CallableStatement object for calling database stored procedures.

**Notes:**

The CallableStatement object provides methods for setting up its IN and OUT parameters, and methods for executing the call to a stored procedure.

Note: This method is optimized for handling stored procedure call statements. Some drivers may send the call statement to the database when the method prepareCall is done; others may wait until the CallableStatement object is executed. This has no direct effect on users; however, it does affect which method throws certain SQLExceptions.

Result sets created using the returned CallableStatement object will by default be type TYPE_FORWARD_ONLY and have a concurrency level of CONCUR_READ_ONLY.

**Parameters:**
sql - an SQL statement that may contain one or more '?' parameter placeholders. Typically this statement is a JDBC function call escape string.

**Returns:**
a new default CallableStatement object containing the pre-compiled SQL statement

See also:

- 97.4.23 prepareCall(sql as string, resultSetType as Integer, resultSetConcurrency as Integer) as JavaCallableStatementMBS
- 97.4.24 prepareCall(sql as string, resultSetType as Integer, resultSetConcurrency as Integer, resultSetHoldability as Integer) as JavaCallableStatementMBS

97.4.23 prepareCall(sql as string, resultSetType as Integer, resultSetConcurrency as Integer) as JavaCallableStatementMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a CallableStatement object that will generate ResultSet objects with the given type and concurrency.

**Notes:**

This method is the same as the prepareCall method above, but it allows the default result set type and concurrency to be overridden.

**Parameters:**
sql - a String object that is the SQL statement to be sent to the database; may contain one or more ? parameters
resultSetType - a result set type; one of ResultSet.TYPE_FORWARD_ONLY, ResultSet.TYPE_SCROLL_INSENSITIVE, or ResultSet.TYPE_SCROLL_SENSITIVE
resultSetConcurrency - a concurrency type; one of ResultSet.CONCUR_READ_ONLY or ResultSet.CONCUR_UPDATABLE

**Returns:**
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a new CallableStatement object containing the pre-compiled SQL statement that will produce ResultSet objects with the given type and concurrency

See also:

- 97.4.22 prepareCall(sql as string) as JavaCallableStatementMBS
- 97.4.24 prepareCall(sql as string, resultSetType as Integer, resultSetConcurrency as Integer, resultSetHoldability as Integer) as JavaCallableStatementMBS

97.4.24 prepareCall(sql as string, resultSetType as Integer, resultSetConcurrency as Integer, resultSetHoldability as Integer) as JavaCallableStatementMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a CallableStatement object that will generate ResultSet objects with the given type and concurrency.

**Notes:**
This method is the same as the prepareCall method above, but it allows the default result set type, result set concurrency type and holdability to be overridden.

**Parameters:**
- `sql` - a String object that is the SQL statement to be sent to the database; may contain on or more ? parameters
- `resultSetType` - one of the following ResultSet constants: ResultSet.TYPE_FORWARDONLY, ResultSet.TYPE_SCROLL_INSENSITIVE, or ResultSet.TYPE_SCROLL_SENSITIVE
- `resultSetConcurrency` - one of the following ResultSet constants: ResultSet.CONCUR_READONLY or ResultSet.CONCUR_UPDATABLE
- `resultSetHoldability` - one of the following ResultSet constants: ResultSet.HOLD_CURSORS_OVER_COMMIT or ResultSet.CLOSE_CURSORS_AT_COMMIT

**Returns:**
a new CallableStatement object, containing the pre-compiled SQL statement, that will generate ResultSet objects with the given type, concurrency, and holdability

See also:

- 97.4.22 prepareCall(sql as string) as JavaCallableStatementMBS
- 97.4.23 prepareCall(sql as string, resultSetType as Integer, resultSetConcurrency as Integer) as JavaCallableStatementMBS

97.4.25 prepareStatement(sql as string) as JavaPreparedStatementMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a PreparedStatement object for sending parameterized SQL statements to the database.

**Notes:**
A SQL statement with or without IN parameters can be pre-compiled and stored in a PreparedStatement object. This object can then be used to efficiently execute this statement multiple times.
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Note: This method is optimized for handling parametric SQL statements that benefit from precompilation. If the driver supports precompilation, the method prepareStatement will send the statement to the database for precompilation. Some drivers may not support precompilation. In this case, the statement may not be sent to the database until the PreparedStatement object is executed. This has no direct effect on users; however, it does affect which methods throw certain SQLException objects.

Result sets created using the returned PreparedStatement object will by default be type TYPE_FORWARD_ONLY and have a concurrency level of CONCUR_READ_ONLY.

Parameters:
- sql - an SQL statement that may contain one or more '?' IN parameter placeholders

See also:
- 97.4.26 prepareStatement(sql as string, autoGeneratedKeys as Integer) as JavaPreparedStatementMBS
- 97.4.27 prepareStatement(sql as string, resultSetType as Integer, resultSetConcurrency as Integer) as JavaPreparedStatementMBS
- 97.4.28 prepareStatement(sql as string, resultSetType as Integer, resultSetConcurrency as Integer, resultSetHoldability as Integer) as JavaPreparedStatementMBS

97.4.26 prepareStatement(sql as string, autoGeneratedKeys as Integer) as JavaPreparedStatementMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Creates a default PreparedStatement object that has the capability to retrieve auto-generated keys.

Notes:
The given constant tells the driver whether it should make auto-generated keys available for retrieval. This parameter is ignored if the SQL statement is not an INSERT statement.
Note: This method is optimized for handling parametric SQL statements that benefit from precompilation. If the driver supports precompilation, the method prepareStatement will send the statement to the database for precompilation. Some drivers may not support precompilation. In this case, the statement may not be sent to the database until the PreparedStatement object is executed. This has no direct effect on users; however, it does affect which methods throw certain SQLExceptions.

Result sets created using the returned PreparedStatement object will by default be type TYPE_FORWARD_ONLY and have a concurrency level of CONCUR_READ_ONLY.

Parameters:
- sql - an SQL statement that may contain one or more '?' IN parameter placeholders
- autoGeneratedKeys - a flag indicating whether auto-generated keys should be returned; one of Statement.RETURN_GENERATED_KEYS or Statement.NO_GENERATED_KEYS

Returns:
a new PreparedStatement object, containing the pre-compiled SQL statement, that will have the capability of returning auto-generated keys
See also:

- 97.4.25 prepareStatement(sql as string) as JavaPreparedStatementMBS
- 97.4.27 prepareStatement(sql as string, resultSetType as Integer, resultSetConcurrency as Integer) as JavaPreparedStatementMBS
- 97.4.28 prepareStatement(sql as string, resultSetType as Integer, resultSetConcurrency as Integer, resultSetHoldability as Integer) as JavaPreparedStatementMBS

97.4.27 prepareStatement(sql as string, resultSetType as Integer, resultSetConcurrency as Integer) as JavaPreparedStatementMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a PreparedStatement object that will generate ResultSet objects with the given type and concurrency. **Notes:**
This method is the same as the prepareStatement method above, but it allows the default result set type and concurrency to be overridden.
**Parameters:**
sql - a String object that is the SQL statement to be sent to the database; may contain one or more ? IN parameters
resultSetType - a result set type; one of ResultSet.TYPE_FORWARD_ONLY, ResultSet.TYPE_SCROLL_INSENSITIVE, or ResultSet.TYPE_SCROLL_SENSITIVE
resultSetConcurrency - a concurrency type; one of ResultSet.CONCUR_READ_ONLY or ResultSet.CONCUR_UPDATABLE
**Returns:**
a new PreparedStatement object containing the pre-compiled SQL statement that will produce ResultSet objects with the given type and concurrency
See also:

- 97.4.25 prepareStatement(sql as string) as JavaPreparedStatementMBS
- 97.4.26 prepareStatement(sql as string, autoGeneratedKeys as Integer) as JavaPreparedStatementMBS
- 97.4.28 prepareStatement(sql as string, resultSetType as Integer, resultSetConcurrency as Integer, resultSetHoldability as Integer) as JavaPreparedStatementMBS

97.4.28 prepareStatement(sql as string, resultSetType as Integer, resultSetConcurrency as Integer, resultSetHoldability as Integer) as JavaPreparedStatementMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a PreparedStatement object that will generate ResultSet objects with the given type, concurrency,
and holdability.

Notes:

This method is the same as the prepareStatement method above, but it allows the default result set type, concurrency, and holdability to be overridden.

Parameters:
sql - a String object that is the SQL statement to be sent to the database; may contain one or more ? IN parameters
resultSetType - one of the following ResultSet constants: ResultSet.TYPE_FORWARD_ONLY, ResultSet.TYPE_SCROLL_INSENSITIVE, or ResultSet.TYPE_SCROLL_SENSITIVE
resultSetConcurrency - one of the following ResultSet constants: ResultSet.CONCUR_READ_ONLY or ResultSet.CONCUR_UPDATABLE
resultSetHoldability - one of the following ResultSet constants: ResultSet.HOLD_CURSORS_OVER_COMMIT or ResultSet.CLOSE_CURSORS_AT_COMMIT

Returns:
a new PreparedStatement object, containing the pre-compiled SQL statement, that will generate ResultSet objects with the given type, concurrency, and holdability

See also:

- 97.4.25 prepareStatement(sql as string) as JavaPreparedStatementMBS
- 97.4.26 prepareStatement(sql as string, autoGeneratedKeys as Integer) as JavaPreparedStatementMBS
- 97.4.27 prepareStatement(sql as string, resultSetType as Integer, resultSetConcurrency as Integer) as JavaPreparedStatementMBS

97.4.29 releaseSavepoint(safepoint as JavaSavepointMBS)


Notes:
Any reference to the savepoint after it have been removed will cause an SQLException to be thrown.

savepoint: the Savepoint object to be removed

97.4.30 rollback

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Drops all changes made since the previous commit/rollback and releases any database locks currently held by this Connection.

Notes:
97.4. CLASS JAVACONNECTIONMBS

This method should be used only when auto-commit has been disabled.

See the java documentation for details on java.sql.Connection.Rollback.
See also:

- 97.4.31 rollback(safepoint as JavaSavepointMBS)

97.4.31 rollback(safepoint as JavaSavepointMBS)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Undoes all changes made after the given Savepoint object was set.
**Notes:**
This method should be used only when auto-commit has been disabled.

savepoint: the Savepoint object to roll back to
See also:

- 97.4.30 rollback

97.4.32 setSavepoint as JavaSavepointMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates an unnamed savepoint in the current transaction and returns the new Savepoint object that represents it.
See also:

- 97.4.33 setSavepoint(name as string) as JavaSavepointMBS

97.4.33 setSavepoint(name as string) as JavaSavepointMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a savepoint with the given name in the current transaction and returns the new Savepoint object that represents it.
**Notes:**
name: a String containing the name of the savepoint
returns the new Savepoint object
See also:

- 97.4.32 setSavepoint as JavaSavepointMBS
97.4.34 TRANSACTION_NONE as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A constant indicating that transactions are not supported.

97.4.35 TRANSACTION_READ_COMMITTED as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A constant indicating that dirty reads are prevented; non-repeatable reads and phantom reads can occur. **Notes:** This level only prohibits a transaction from reading a row with uncommitted changes in it.

97.4.36 TRANSACTION_READ_UNCOMMITTED as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A constant indicating that dirty reads, non-repeatable reads and phantom reads can occur. **Notes:** This level allows a row changed by one transaction to be read by another transaction before any changes in that row have been committed (a "dirty read"). If any of the changes are rolled back, the second transaction will have retrieved an invalid row.

97.4.37 TRANSACTION_REPEATABLE_READ as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A constant indicating that dirty reads and non-repeatable reads are prevented; phantom reads can occur. **Notes:** This level prohibits a transaction from reading a row with uncommitted changes in it, and it also prohibits the situation where one transaction reads a row, a second transaction alters the row, and the first transaction rereads the row, getting different values the second time (a "non-repeatable read").

97.4.38 TRANSACTION_SERIALIZABLE as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A constant indicating that dirty reads, non-repeatable reads and phantom reads are prevented. **Notes:** This level includes the prohibitions in TRANSACTION_REPEATABLE_READ and further prohibits the situation where one transaction reads all rows that satisfy a WHERE condition, a second transaction inserts a row that satisfies that WHERE condition, and the first transaction rereads for the same condition, retrieving the additional "phantom" row in the second read.
97.4.39  typeARRAY as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type ARRAY.

97.4.40  typeBIGINT as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type BIGINT.  
**Example:**
```
dim d as JavaConnectionMBS
MsgBox str(d.typeBIGINT)
```

97.4.41  typeBINARY as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type BINARY.

97.4.42  typeBIT as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type BIT.

97.4.43  typeBLOB as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type BLOB.
97.4.44  **typeCHAR as Integer**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type CHAR.

97.4.45  **typeCLOB as Integer**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type CLOB.

97.4.46  **typeDATE as Integer**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type DATE.

97.4.47  **typeDECIMAL as Integer**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type DECIMAL.

97.4.48  **typeDISTINCT as Integer**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type DISTINCT.

97.4.49  **typeDOUBLE as Integer**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type DOUBLE.
97.4.50  **typeFLOAT as Integer**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constant in the Java programming language, sometimes referred to as a type code, that identifies the
generic SQL type FLOAT.

97.4.51  **typeINTEGER as Integer**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constant in the Java programming language, sometimes referred to as a type code, that identifies the
generic SQL type INTEGER.

97.4.52  **typeJAVA_OBJECT as Integer**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constant in the Java programming language, sometimes referred to as a type code, that identifies the
generic SQL type JAVA_OBJECT.

97.4.53  **typeLONGVARBINARY as Integer**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constant in the Java programming language, sometimes referred to as a type code, that identifies the
generic SQL type LONGVARBINARY.

97.4.54  **typeLONGVARCHAR as Integer**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constant in the Java programming language, sometimes referred to as a type code, that identifies the
generic SQL type LONGVARCHAR.

97.4.55  **typeNULL as Integer**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constant in the Java programming language, sometimes referred to as a type code, that identifies the
generic SQL type NULL.
97.4.56 typeNUMERIC as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type NUMERIC.

97.4.57 typeOTHER as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant in the Java programming language that indicates that the SQL type is database-specific and gets mapped to a Java object that can be accessed via the methods getObject and setObject.

97.4.58 typeREAL as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type REAL.

97.4.59 typeREF as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type REF.

97.4.60 typeSMALLINT as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type SMALLINT.

97.4.61 typeSTRUCT as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type STRUCT.
97.4. CLASS JAVACONNECTIONMBS

97.4.62 typeTIME as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type TIME.

97.4.63 typeTIMESTAMP as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type TIMESTAMP.

97.4.64 typeTINYINT as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type TINYINT.

97.4.65 typeVARBINARY as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type VARBINARY.

97.4.66 typeVARCHAR as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant in the Java programming language, sometimes referred to as a type code, that identifies the generic SQL type VARCHAR.

97.4.67 TYPE_FORWARD_ONLY as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant indicating the type for a ResultSet object whose cursor may move only forward.
97.4.68  **TYPE_SCROLL_INSENSITIVE** as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant indicating the type for a ResultSet object that is scrollable but generally not sensitive to changes made by others.

97.4.69  **TYPE_SCROLL_SENSITIVE** as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant indicating the type for a ResultSet object that is scrollable and generally sensitive to changes made by others.

97.4.70  **Properties**

97.4.71  **AutoCommit** as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The current auto-commit state. **Notes:** See the java documentation for details on java.sql.Connection.setAutoCommit. (Read and Write computed property)

97.4.72  **Catalog** as string

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets or gets the given catalog name in order to select a subspace of this Connection object’s database in which to work. **Notes:** If the driver does not support catalogs, it will silently ignore this request. (Read and Write computed property)

97.4.73  **Holdability** as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Changes or retrieves the holdability of ResultSet objects created using this Connection object to the given holdability. **Notes:**
97.4. CLASS JAVACONNECTIONMBS

Parameters:
holdability - a ResultSet holdability constant; one of ResultSet.HOLD_CURSORS_OVER_COMMIT or ResultSet.CLOSE_CURSORS_AT_COMMIT
(Read and Write computed property)

97.4.74 ReadOnly as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Whether this connection in read-only mode as a hint to enable database optimizations.
Notes: See the java documentation for details on java.sql.Connection.setReadOnly.
(Read and Write computed property)

97.4.75 TransactionIsolation as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Attempts to change the transaction isolation level for this Connection object to the one given.
Notes: The constants defined in the interface Connection are the possible transaction isolation levels.
Note: If this method is called during a transaction, the result is implementation-defined.

Parameters:
level - one of the following Connection constants: Connection.TRANSACTION_READ_UNCOMMITTED, Connection.TRANSACTION_READ_COMMITTED, Connection.TRANSACTION_REPEATABLE_READ, or Connection.TRANSACTION_SERIALIZABLE. (Note that Connection.TRANSACTION_NONE cannot be used because it specifies that transactions are not supported.)
(Read and Write computed property)
97.5  class JavaDatabaseMBS

97.5.1  class JavaDatabaseMBS

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class to handle database access using JDBC drivers.

**Notes:**
This class is not a subclass of RB’s database class, so you can use it with Real Studio Standard Edition.

Nearly all methods on this class can raise java exceptions which you can get using the error property. (and errorstring and errorcode)

Add Linux support plugin version 8.7.

Please make sure this Java VM object stays alive until you are done with all your java stuff. So all the java objects go away and this vm object is destroyed on the end. Because if some java code is still running like an background java thread, quitting the VM can lead into crashes.

Subclass of the JavaObjectMBS class.

97.5.2  Methods

97.5.3  connect(url as string) as JavaConnectionMBS

MBS Java Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Connects directly to the database calling the Drivers's connect method.

**Notes:**
While getConnection calls DriverManager, this calls directly the driver.

Attempts to make a database connection to the given URL. The driver should return "null" if it realizes it is the wrong kind of driver to connect to the given URL. This will be common, as when the JDBC driver manager is asked to connect to a given URL it passes the URL to each loaded driver in turn.
The driver should throw an SQLException if it is the right driver to connect to the given URL but has trouble connecting to the database.

The java.util.Properties argument can be used to pass arbitrary string tag/value pairs as connection arguments. Normally at least "user" and "password" properties should be included in the Properties object. (the plugin passes empty Properties object)

url - the URL of the database to which to connect
97.5.   CLASS JAVADATABASEMBS

Returns a Connection object that represents a connection to the URL
Throws SQLException - if a database access error occurs

97.5.4 Constructor(vm as JavaVMMBS, driverclass as string)

Example:

```vbnet
dim vm as JavaVMMBS // your VM
dim db as JavaDatabaseMBS

db=new JavaDatabaseMBS(vm,"com.mysql.jdbc.Driver")
```

Notes: The driverclass is the name of the main class of the jdbc driver.

97.5.5 getConnection(url as string) as JavaConnectionMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Attempts to establish a connection to the given database URL.
Example:

```vbnet
dim d as JavaDatabaseMBS
dim c as JavaConnectionMBS

// get database

// connect to Oracle database using service name:
c=d.getConnection("jdbc:oracle:thin:@//192.168.10.20:1521/adbprod","user","pw")

// connect with SID:
c=d.getConnection("jdbc:oracle:thin:@192.168.10.20:1521:adbprod","user","pw")
```

Notes:
The DriverManager attempts to select an appropriate driver from the set of registered JDBC drivers.

Parameters:
url - a database url of the form jdbc:subprotocol:subname

Returns:
a connection to the URL
97.5.6 getConnection(url as string, username as string, password as string) as JavaConnectionMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Attempts to establish a connection to the given database URL.

**Example:**

```java
dim d as JavaDatabaseMBS
dim c as JavaConnectionMBS

// get database

// connect to Oracle database using service name:
c=d.getConnection("jdbc:oracle:thin:@//192.168.10.20:1521/adbprod","user","pw")

// connect with SID:
c=d.getConnection("jdbc:oracle:thin:@192.168.10.20:1521:adbprod","user","pw")
```

**Notes:**

The DriverManager attempts to select an appropriate driver from the set of registered JDBC drivers.

**Parameters:**
- url - a database url of the form jdbc:subprotocol:subname
- user - the database user on whose behalf the connection is being made
- password - the user's password

**Returns:**
a connection to the URL

See also:

- 97.5.5 getConnection(url as string) as JavaConnectionMBS

97.5.7 IsDriverLoaded as Boolean

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether a driver has been loaded.
97.5.8 println(message as string)

MBS Java Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Prints a message to the current JDBC log stream.

97.5.9 Properties

97.5.10 LoginTimeout as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The maximum time in seconds that a driver will wait while attempting to connect to a database. **Notes:**

The login time limit in seconds.
(Read and Write computed property)
97.6  class JavaDatabaseMetaDataMBS

97.6.1  class JavaDatabaseMetaDataMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Comprehensive information about the database as a whole.

**Notes:**

This interface is implemented by driver vendors to let users know the capabilities of a Database Management System (DBMS) in combination with the driver based on JDBC technology (“JDBC driver”) that is used with it. Different relational DBMSs often support different features, implement features in different ways, and use different data types. In addition, a driver may implement a feature on top of what the DBMS offers. Information returned by methods in this interface applies to the capabilities of a particular driver and a particular DBMS working together. Note that as used in this documentation, the term “database” is used generically to refer to both the driver and DBMS.

A user for this interface is commonly a tool that needs to discover how to deal with the underlying DBMS. This is especially true for applications that are intended to be used with more than one DBMS. For example, a tool might use the method getTypeInfo to find out what data types can be used in a CREATE TABLE statement. Or a user might call the method supportsCorrelatedSubqueries to see if it is possible to use a correlated subquery or supportsBatchUpdates to see if it is possible to use batch updates.

Some DatabaseMetaData methods return lists of information in the form of ResultSet objects. Regular ResultSet methods, such as getString and getInt, can be used to retrieve the data from these ResultSet objects. If a given form of metadata is not available, the ResultSet getter methods throw an SQLException.

Some DatabaseMetaData methods take arguments that are String patterns. These arguments all have names such as fooPattern. Within a pattern String, “% ” means match any substring of 0 or more characters, and ”_” means match any one character. Only metadata entries matching the search pattern are returned. If a search pattern argument is set to null, that argument’s criterion will be dropped from the search.

A method that gets information about a feature that the driver does not support will throw an SQLException. In the case of methods that return a ResultSet object, either a ResultSet object (which may be empty) is returned or an SQLException is thrown.

Subclass of the JavaObjectMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

97.6.2  Methods

97.6.3  allProceduresAreCallable as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether the current user can call all the procedures returned by the method getProcedures.
97.6.4 allTablesAreSelectable as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves whether the current user can use all the tables returned by the method getTables in a SELECT statement.
**Notes:** Returns true if so; false otherwise

97.6.5 attributeNoNulls as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Indicates that NULL values might not be allowed.
**Notes:** A possible value for the column NULLABLE in the ResultSet object returned by the method getAttributes.

97.6.6 attributeNullable as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Indicates that NULL values are definitely allowed.
**Notes:** A possible value for the column NULLABLE in the ResultSet object returned by the method getAttributes.

97.6.7 attributeNullableUnknown as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Indicates that whether NULL values are allowed is not known.
**Notes:** A possible value for the column NULLABLE in the ResultSet object returned by the method getAttributes.

97.6.8 bestRowNotPseudo as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Indicates that the best row identifier is NOT a pseudo column.
**Notes:** A possible value for the column PSEUDO_COLUMN in the ResultSet object returned by the method getBestRowIdentifier.
97.6.9  bestRowPseudo as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates that the best row identifier is a pseudo column. **Notes:** A possible value for the column PSEUDO_COLUMN in the ResultSet object returned by the method getBestRowIdentifier.

97.6.10  bestRowSession as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates that the scope of the best row identifier is the remainder of the current session. **Notes:** A possible value for the column SCOPE in the ResultSet object returned by the method getBestRowIdentifier.

97.6.11  bestRowTemporary as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates that the scope of the best row identifier is very temporary, lasting only while the row is being used. **Notes:** A possible value for the column SCOPE in the ResultSet object returned by the method getBestRowIdentifier.

97.6.12  bestRowTransaction as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates that the scope of the best row identifier is the remainder of the current transaction. **Notes:** A possible value for the column SCOPE in the ResultSet object returned by the method getBestRowIdentifier.

97.6.13  bestRowUnknown as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates that the best row identifier may or may not be a pseudo column. **Notes:** A possible value for the column PSEUDO_COLUMN in the ResultSet object returned by the method getBestRowIdentifier.
97.6.14 columnNoNulls as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates that the column might not allow NULL values. **Notes:** A possible value for the column NULLABLE in the ResultSet returned by the method getColumns.

97.6.15 columnNullable as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates that the column definitely allows NULL values. **Notes:** A possible value for the column NULLABLE in the ResultSet returned by the method getColumns.

97.6.16 columnNullableUnknown as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates that the nullability of columns is unknown. **Notes:** A possible value for the column NULLABLE in the ResultSet returned by the method getColumns.

97.6.17 Constructor

MBS Java Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The private constructor.

97.6.18 dataDefinitionCausesTransactionCommit as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether a data definition statement within a transaction forces the transaction to commit.

97.6.19 dataDefinitionIgnoredInTransactions as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database ignores a data definition statement within a transaction.
97.6.20 deletesAreDetected(type as Integer) as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves whether or not a visible row delete can be detected by calling the method ResultSet.rowDeleted.
**Notes:**
If the method deletesAreDetected returns false, it means that deleted rows are removed from the result set.

**Parameters:**
- type - the ResultSet type; one of ResultSet.TYPE_FORWARD_ONLY, ResultSet.TYPE_SCROLL_INSENSITIVE, or ResultSet.TYPE_SCROLL_SENSITIVE

**Returns:**
- true if deletes are detected by the given result set type; false otherwise

97.6.21 doesMaxRowSizeIncludeBlobs as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves whether the return value for the method getMaxRowSize includes the SQL data types LONGVARCHAR and LONGVARBINARY.
**Notes:** Returns true if so; false otherwise.

97.6.22 getAttributes(catalog as string, schemaPattern as string, typeNamePattern as string, attributeNamePattern as string) as JavaResultSetMBS

MBS Java Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves a description of the given attribute of the given type for a user-defined type (UDT) that is available in the given schema and catalog.
**Notes:**
Descriptions are returned only for attributes of UDTs matching the catalog, schema, type, and attribute name criteria. They are ordered by TYPE_SCHEM, TYPE_NAME and ORDINAL_POSITION. This description does not contain inherited attributes.

The ResultSet object that is returned has the following columns:

- TYPE_CAT String => type catalog (may be null)
- TYPE_SCHEM String => type schema (may be null)
- TYPE_NAME String => type name
- ATTR_NAME String => attribute name
- DATA_TYPE int => attribute type SQL type from java.sql.Types
- ATTR_TYPE_NAME String => Data source dependent type name. For a UDT, the type name is fully
qualified. For a REF, the type name is fully qualified and represents the target type of the reference type.

ATTR_SIZE int =>column size. For char or date types this is the maximum number of characters; for numeric or decimal types this is precision.

DECIMAL_DIGITS int =>the number of fractional digits

NUM_PREC_RADIX int =>Radix (typically either 10 or 2)

NULLABLE int =>whether NULL is allowed

attributeNoNulls - might not allow NULL values

attributeNullable - definitely allows NULL values

attributeNullableUnknown - nullability unknown

REMARKS String =>comment describing column (may be null)

ATTR_DEF String =>default value (may be null)

SQL_DATA_TYPE int =>unused

SQL_DATETIME_SUB int =>unused

CHAR_OCTET_LENGTH int =>for char types the maximum number of bytes in the column

ORDINAL_POSITION int =>index of column in table (starting at 1)

IS_NULLABLE String ="false" means column definitely does not allow NULL values; "true" means the column might allow NULL values. An empty string means unknown.

SCOPE_CATALOG String =>catalog of table that is the scope of a reference attribute (null if DATA_TYPE isn’t REF)

SCOPE_SCHEMA String =>schema of table that is the scope of a reference attribute (null if DATA_TYPE isn’t REF)

SCOPE_TABLE String =>table name that is the scope of a reference attribute (null if the DATA_TYPE isn’t REF)

SOURCE_DATA_TYPE short =>source type of a distinct type or user-generated Ref type.SQL type from java.sql.Types (null if DATA_TYPE isn’t DISTINCT or user-generated REF)

Parameters:
catalog - a catalog name; must match the catalog name as it is stored in the database; "" retrieves those without a catalog; null means that the catalog name should not be used to narrow the search

schemaPattern - a schema name pattern; must match the schema name as it is stored in the database; "" retrieves those without a schema; null means that the schema name should not be used to narrow the search
typeNamePattern - a type name pattern; must match the type name as it is stored in the database

attributeNamePattern - an attribute name pattern; must match the attribute name as it is declared in the database

Returns:
a ResultSet object in which each row is an attribute description

Throws:
SQLException - if a database access error occurs
97.6.23 getCatalogs as JavaResultSetMBS

MBS Java Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves the catalog names available in this database. The results are ordered by catalog name.

**Notes:**

The catalog column is:

```
TABLE_CAT String => catalog name
```

Returns:

a ResultSet object in which each row has a single String column that is a catalog name

**Throws:**

SQLException - if a database access error occurs

97.6.24 getCatalogSeparator as string

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves the String that this database uses as the separator between a catalog and table name.

97.6.25 getCatalogTerm as string

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves the database vendor’s preferred term for "catalog".

97.6.26 getColumnPrivileges(catalog as string, schema as string, table as string,
columnNamePattern as string) as JavaResultSetMBS

MBS Java Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves a description of the access rights for a table's columns.

**Notes:**

Only privileges matching the column name criteria are returned. They are ordered by COLUMN_NAME
and PRIVILEGE.

Each privilege description has the following columns:

```
TABLE_CAT String => table catalog (may be null)
```
TABLE_SCHEM String => table schema (may be null)
TABLE_NAME String => table name
COLUMN_NAME String => column name
GRANTOR => grantor of access (may be null)
GRANTEE String => grantee of access
PRIVILEGE String => name of access (SELECT, INSERT, UPDATE, REFERENCES, ...)
IS_GRANTABLE String => "true" if grantee is permitted to grant to others; "false" if not; null if unknown

Parameters:
catalog - a catalog name; must match the catalog name as it is stored in the database; "" retrieves those without a catalog; null means that the catalog name should not be used to narrow the search
schema - a schema name; must match the schema name as it is stored in the database; "" retrieves those without a schema; null means that the schema name should not be used to narrow the search
table - a table name; must match the table name as it is stored in the database
columnNamePattern - a column name pattern; must match the column name as it is stored in the database

Returns:
ResultSet - each row is a column privilege description

Throws:
SQLException - if a database access error occurs

97.6.27 getColumns(catalog as string, schemaPattern as string, tableNamePattern as string, columnNamePattern as string) as JavaResultSetMBS


Notes:
Only column descriptions matching the catalog, schema, table and column name criteria are returned. They are ordered by TABLE_SCHEM, TABLE_NAME, and ORDINAL_POSITION.

Each column description has the following columns:

TABLE_CAT String => table catalog (may be null)
TABLE_SCHEM String => table schema (may be null)
TABLE_NAME String => table name
COLUMN_NAME String => column name
DATA_TYPE int => SQL type from java.sql.Types
TYPE_NAME String => Data source dependent type name, for a UDT the type name is fully qualified
COLUMN_SIZE int => column size. For char or date types this is the maximum number of characters, for numeric or decimal types this is precision.
BUFFER_LENGTH is not used.
DECIMAL_DIGITS int => the number of fractional digits
NUM_PREC_RADIX int => Radix (typically either 10 or 2)
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NULLABLE int => is NULL allowed.
columnNoNulls - might not allow NULL values
columnNullable - definitely allows NULL values
columnNullableUnknown - nullability unknown
REMARKS String => comment describing column (may be null)
COLUMN_DEF String => default value (may be null)
SQL_DATA_TYPE int => unused
SQL_DATETIME_SUB int => unused
CHAR_OCTET_LENGTH int => for char types the maximum number of bytes in the column

ORDINAL_POSITION int => index of column in table (starting at 1)

IS_NULLABLE String => "false" means column definitely does not allow NULL values; "true" means the
column might allow NULL values. An empty string means nobody knows.
SCOPE_CATLOG String => catalog of table that is the scope of a reference attribute (null if DATA_TYPE
isn’t REF)
SCOPE_SCHEMA String => schema of table that is the scope of a reference attribute (null if the DATA_TYPE
isn’t REF)
SCOPE_TABLE String => table name that this the scope of a reference attribute (null if the DATA_TYPE isn’t REF)
SOURCE_DATA_TYPE short => source type of a distinct type or user-generated Ref type, SQL type from
java.sql.Types (null if DATA_TYPE isn’t DISTINCT or user-generated REF)

Parameters:
catalog - a catalog name; must match the catalog name as it is stored in the database; "" retrieves those
without a catalog; null means that the catalog name should not be used to narrow the search
schemaPattern - a schema name pattern; must match the schema name as it is stored in the database; "" 
retrieves those without a schema; null means that the schema name should not be used to narrow the search
tableNamePattern - a table name pattern; must match the table name as it is stored in the database
columnNamePattern - a column name pattern; must match the column name as it is stored in the database

Returns:
ResultSet - each row is a column description

Throws:
SQLException - if a database access error occurs

97.6.28 getConnection as JavaConnectionMBS

MBS Java Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Retrieves the connection that produced this metadata object.
97.6.29 getCrossReference(primaryCatalog as string, primarySchema as string, primaryTable as string, foreignCatalog as string, foreignSchema as string, foreignTable as string) as JavaResultSetMBS

MBS Java Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves a description of the foreign key columns in the given foreign key table that reference the primary key columns of the given primary key table (describe how one table imports another's key).

**Notes:**
This should normally return a single foreign key/primary key pair because most tables import a foreign key from a table only once. They are ordered by FKTABLE_CAT, FKTABLE_SCHEM, FKTABLE_NAME, and KEY_SEQ.

Each foreign key column description has the following columns:

- **PKTABLE_CAT** String => primary key table catalog (may be null)
- **PKTABLE_SCHEM** String => primary key table schema (may be null)
- **PKCOLUMN_NAME** String => primary key column name
- **FKTABLE_CAT** String => foreign key table catalog (may be null) being exported (may be null)
- **FKTABLE_SCHEM** String => foreign key table schema (may be null) being exported (may be null)
- **FKTABLE_NAME** String => foreign key table name being exported
- **FKCOLUMN_NAME** String => foreign key column name being exported
- **KEY_SEQ** short => sequence number within foreign key
- **UPDATE_RULE** short => What happens to foreign key when primary is updated:
  - importedNoAction - do not allow update of primary key if it has been imported
  - importedKeyCascade - change imported key to agree with primary key update
  - importedKeySetNull - change imported key to NULL if its primary key has been updated
  - importedKeySetDefault - change imported key to default values if its primary key has been updated
  - importedKeyRestrict - same as importedKeyNoAction (for ODBC 2.x compatibility)
- **DELETE_RULE** short => What happens to the foreign key when primary is deleted:
  - importedKeyNoAction - do not allow delete of primary key if it has been imported
  - importedKeyCascade - delete rows that import a deleted key
  - importedKeySetNull - change imported key to NULL if its primary key has been deleted
  - importedKeyRestrict - same as importedKeyNoAction (for ODBC 2.x compatibility)
  - importedKeySetDefault - change imported key to default if its primary key has been deleted
- **FK_NAME** String => foreign key name (may be null)
- **PK_NAME** String => primary key name (may be null)
- **DEFERRABILITY** short => can the evaluation of foreign key constraints be deferred until commit
  - importedKeyInitiallyDeferred - see SQL92 for definition
  - importedKeyInitiallyImmediate - see SQL92 for definition
  - importedKeyNotDeferrable - see SQL92 for definition

**Parameters:**
- primaryCatalog - a catalog name; must match the catalog name as it is stored in the database; "" retrieves those without a catalog; null means drop catalog name from the selection criteria
- primarySchema - a schema name; must match the schema name as it is stored in the database; "" retrieves those without a schema; null means drop schema name from the selection criteria
- primaryTable - the name of the table that exports the key; must match the table name as it is stored in the
database
foreignCatalog - a catalog name; must match the catalog name as it is stored in the database; "" retrieves those without a catalog; null means drop catalog name from the selection criteria
foreignSchema - a schema name; must match the schema name as it is stored in the database; "" retrieves those without a schema; null means drop schema name from the selection criteria
foreignTable - the name of the table that imports the key; must match the table name as it is stored in the database
Returns:
ResultSet - each row is a foreign key column description
Throws:
SQLException - if a database access error occurs

97.6.30 **getDatabaseMajorVersion as Integer**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves the major version number of the underlying database.

97.6.31 **getDatabaseMinorVersion as Integer**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves the minor version number of the underlying database.

97.6.32 **getDatabaseProductName as string**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves the name of this database product.

97.6.33 **getDatabaseProductVersion as string**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves the version number of this database product.

97.6.34 **getDefaultTransactionIsolation as Integer**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves this database’s default transaction isolation level.
**Notes:** The possible values are defined in java.sql.Connection.
97.6.35  getDriverMajorVersion as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves this JDBC driver’s major version number.

97.6.36  getDriverMinorVersion as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves this JDBC driver’s minor version number.

97.6.37  getDriverName as string

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the name of this JDBC driver.

97.6.38  getDriverVersion as string

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the version number of this JDBC driver as a String.

97.6.39  getExportedKeys(catalog as string, schema as string, table as string) as JavaResultSetMBS

MBS Java Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves a description of the foreign key columns that reference the given table’s primary key columns (the foreign keys exported by a table).

**Notes:**
They are ordered by FKTABLE_CAT, FKTABLE_SCHEM, FKTABLE_NAME, and KEY_SEQ.
Each foreign key column description has the following columns:

- **PKTABLE_CAT** String => primary key table catalog (may be null)
- **PKTABLE_SCHEM** String => primary key table schema (may be null)
- **PKTABLE_NAME** String => primary key table name
- **PKCOLUMN_NAME** String => primary key column name
- **FKTABLE_CAT** String => foreign key table catalog (may be null) being exported (may be null)
- **FKTABLE_SCHEM** String => foreign key table schema (may be null) being exported (may be null)
- **FKTABLE_NAME** String => foreign key table name being exported
- **FKCOLUMN_NAME** String => foreign key column name being exported
KEY_SEQ short => sequence number within foreign key
UPDATE_RULE short => What happens to foreign key when primary is updated:
importedNoAction - do not allow update of primary key if it has been imported
importedKeyCascade - change imported key to agree with primary key update
importedKeySetNull - change imported key to NULL if its primary key has been updated
importedKeySetDefault - change imported key to default values if its primary key has been updated
importedKeyRestrict - same as importedKeyNoAction (for ODBC 2.x compatibility)
DELETE_RULE short => What happens to the foreign key when primary is deleted.
importedKeyNoAction - do not allow delete of primary key if it has been imported
importedKeyCascade - delete rows that import a deleted key
importedKeySetNull - change imported key to NULL if its primary key has been deleted
importedKeyRestrict - same as importedKeyNoAction (for ODBC 2.x compatibility)
importedKeySetDefault - change imported key to default if its primary key has been deleted
FK_NAME String => foreign key name (may be null)
PK_NAME String => primary key name (may be null)
DEFERRABILITY short => can the evaluation of foreign key constraints be deferred until commit
importedKeyInitiallyDeferred - see SQL92 for definition
importedKeyInitiallyImmediate - see SQL92 for definition
importedKeyNotDeferrable - see SQL92 for definition

Parameters:
catalog - a catalog name; must match the catalog name as it is stored in this database; "" retrieves those
without a catalog; null means that the catalog name should not be used to narrow the search
schema - a schema name; must match the schema name as it is stored in the database; "" retrieves those
without a schema; null means that the schema name should not be used to narrow the search
table - a table name; must match the table name as it is stored in this database

Returns:
a ResultSet object in which each row is a foreign key column description

Throws:
SQLException - if a database access error occurs

97.6.40 getExtraNameCharacters as string

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Retrieves all the "extra" characters that can be used in unquoted identifier names (those beyond a-z, A-Z,
0-9 and _).
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97.6.41 getIdentifierQuoteString as string

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves the string used to quote SQL identifiers. This method returns a space " " if identifier quoting is not supported.

97.6.42 getImportedKeys(catalog as string, schema as string, table as string) as JavaResultSetMBS

MBS Java Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves a description of the primary key columns that are referenced by a table’s foreign key columns (the primary keys imported by a table).
**Notes:**
They are ordered by PKTABLE_CAT, PKTABLE_SCHEMA, PKTABLE_NAME, and KEY_SEQ.
Each primary key column description has the following columns:

- **PKTABLE_CAT** String = primary key table catalog being imported (may be null)
- **PKTABLE_SCHEMA** String = primary key table schema being imported (may be null)
- **PKTABLE_NAME** String = primary key table name being imported
- **PKCOLUMN_NAME** String = primary key column name being imported
- **FKTABLE_CAT** String = foreign key table catalog (may be null)
- **FKTABLE_SCHEMA** String = foreign key table schema (may be null)
- **FKTABLE_NAME** String = foreign key table name
- **FKCOLUMN_NAME** String = foreign key column name
- **KEY_SEQ** short = sequence number within a foreign key
- **UPDATE_RULE** short = What happens to a foreign key when the primary key is updated:
  - importedNoAction - do not allow update of primary key if it has been imported
  - importedKeyCascade - change imported key to agree with primary key update
  - importedKeySetNull - change imported key to NULL if its primary key has been updated
  - importedKeySetDefault - change imported key to default values if its primary key has been updated
  - importedKeyRestrict - same as importedKeyNoAction (for ODBC 2.x compatibility)
- **DELETE_RULE** short = What happens to the foreign key when primary is deleted:
  - importedKeyNoAction - do not allow delete of primary key if it has been imported
  - importedKeyCascade - delete rows that import a deleted key
  - importedKeySetNull - change imported key to NULL if its primary key has been deleted
  - importedKeyRestrict - same as importedKeyNoAction (for ODBC 2.x compatibility)
- **FK_NAME** String = foreign key name (may be null)
- **PK_NAME** String = primary key name (may be null)
- **DEFERRABILITY** short = can the evaluation of foreign key constraints be deferred until commit
  - importedKeyInitiallyDeferred - see SQL92 for definition
  - importedKeyInitiallyImmediate - see SQL92 for definition
  - importedKeyNotDeferrable - see SQL92 for definition

Parameters:
catalog - a catalog name; must match the catalog name as it is stored in the database; "" retrieves those without a catalog; null means that the catalog name should not be used to narrow the search

schema - a schema name; must match the schema name as it is stored in the database; "" retrieves those without a schema; null means that the schema name should not be used to narrow the search

table - a table name; must match the table name as it is stored in the database

Returns:
ResultSet - each row is a primary key column description

Throws:
SQLException - if a database access error occurs

97.6.43 getJDBCMajorVersion as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Retrieves the major JDBC version number for this driver.

97.6.44 getJDBCMinorVersion as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Retrieves the minor JDBC version number for this driver.

97.6.45 getMaxBinaryLiteralLength as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Retrieves the maximum number of hex characters this database allows in an inline binary literal.
Notes: Returns the maximum length (in hex characters) for a binary literal; a result of zero means that there is no limit or the limit is not known

97.6.46 getMaxCatalogNameLength as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Retrieves the maximum number of characters that this database allows in a catalog name.
Notes: Returns the maximum number of characters allowed in a catalog name; a result of zero means that there is no limit or the limit is not known
97.6.47  getMaxCharLiteralLength as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the maximum number of characters this database allows for a character literal.
**Notes:** Returns the maximum number of characters allowed for a character literal; a result of zero means that there is no limit or the limit is not known

97.6.48  getMaxColumnNameLength as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the maximum number of characters this database allows for a column name.
**Notes:** Returns the maximum number of characters allowed for a column name; a result of zero means that there is no limit or the limit is not known

97.6.49  getMaxColumnsInGroupBy as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the maximum number of columns this database allows in a GROUP BY clause.
**Notes:** Returns the maximum number of columns allowed; a result of zero means that there is no limit or the limit is not known

97.6.50  getMaxColumnsInIndex as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the maximum number of columns this database allows in an index.
**Notes:** Returns the maximum number of columns allowed; a result of zero means that there is no limit or the limit is not known

97.6.51  getMaxColumnsInOrderBy as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the maximum number of columns this database allows in an ORDER BY clause.
**Notes:** Returns the maximum number of columns allowed; a result of zero means that there is no limit or the limit is not known
97.6.52 getMaxColumnsInSelect as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the maximum number of columns this database allows in a SELECT list.  
**Notes:** Returns the maximum number of columns allowed; a result of zero means that there is no limit or the limit is not known

97.6.53 getMaxColumnsInTable as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the maximum number of columns this database allows in a table.  
**Notes:** Returns the maximum number of columns allowed; a result of zero means that there is no limit or the limit is not known

97.6.54 getMaxConnections as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the maximum number of concurrent connections to this database that are possible.  
**Notes:** Returns the maximum number of active connections possible at one time; a result of zero means that there is no limit or the limit is not known

97.6.55 getMaxCursorNameLength as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the maximum number of characters that this database allows in a cursor name.  
**Notes:** Returns the maximum number of characters allowed in a cursor name; a result of zero means that there is no limit or the limit is not known

97.6.56 getMaxIndexLength as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the maximum number of bytes this database allows for an index, including all of the parts of the index.  
**Notes:** Returns the maximum number of bytes allowed; this limit includes the composite of all the constituent parts of the index; a result of zero means that there is no limit or the limit is not known
97.6.57  getMaxProcedureNameLength as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the maximum number of characters that this database allows in a procedure name. **Notes:** Returns the maximum number of characters allowed in a procedure name; a result of zero means that there is no limit or the limit is not known

97.6.58  getMaxRowSize as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the maximum number of bytes this database allows in a single row. **Notes:** Returns the maximum number of bytes allowed for a row; a result of zero means that there is no limit or the limit is not known

97.6.59  getMaxSchemaNameLength as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the maximum number of characters that this database allows in a schema name. **Notes:** Returns the maximum number of characters allowed in a schema name; a result of zero means that there is no limit or the limit is not known

97.6.60  getMaxStatementLength as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the maximum number of characters this database allows in an SQL statement. **Notes:** Returns the maximum number of characters allowed for an SQL statement; a result of zero means that there is no limit or the limit is not known

97.6.61  getMaxStatements as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the maximum number of active statements to this database that can be open at the same time. **Notes:** Returns the maximum number of statements that can be open at one time; a result of zero means that there is no limit or the limit is not known
97.6.62  getMaxTableNameLength as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the maximum number of characters this database allows in a table name. **Notes:** Returns the maximum number of characters allowed for a table name; a result of zero means that there is no limit or the limit is not known.

97.6.63  getMaxTablesInSelect as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the maximum number of tables this database allows in a SELECT statement. **Notes:** Returns the maximum number of tables allowed in a SELECT statement; a result of zero means that there is no limit or the limit is not known.

97.6.64  getMaxUserNameLength as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the maximum number of characters this database allows in a user name. **Notes:** Returns the maximum number of characters allowed for a user name; a result of zero means that there is no limit or the limit is not known.

97.6.65  getNumericFunctions as string

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves a comma-separated list of math functions available with this database. **Notes:** These are the Open /Open CLI math function names used in the JDBC function escape clause.

97.6.66  getPrimaryKeys(catalog as string, schema as string, table as string) as JavaResultSetMBS

MBS Java Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves a description of the given table’s primary key columns. They are ordered by COLUMN_NAME. **Notes:**

Each primary key column description has the following columns:

- TABLE_CAT String => table catalog (may be null)
- TABLE_SCHEM String => table schema (may be null)
- TABLE_NAME String => table name
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COLUMN_NAME String => column name
KEY_SEQ short => sequence number within primary key
PK_NAME String => primary key name (may be null)

Parameters:
catalog - a catalog name; must match the catalog name as it is stored in the database; "" retrieves those without a catalog; null means that the catalog name should not be used to narrow the search
schema - a schema name; must match the schema name as it is stored in the database; "" retrieves those without a schema; null means that the schema name should not be used to narrow the search
table - a table name; must match the table name as it is stored in the database

Returns:
ResultSet - each row is a primary key column description

97.6.67 getProcedureColumns(catalog as string, schemaPattern as string, procedureNamePattern as string, columnNamePattern as string) as JavaResultSetMBS

MBS Java Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves a description of the given catalog’s stored procedure parameter and result columns.

**Notes:**
Only descriptions matching the schema, procedure and parameter name criteria are returned. They are ordered by PROCEDURE_SCHEM and PROCEDURE_NAME. Within this, the return value, if any, is first. Next are the parameter descriptions in call order. The column descriptions follow in column number order.

Each row in the ResultSet is a parameter description or column description with the following fields:

PROCEDURE_CAT String => procedure catalog (may be null)
PROCEDURE_SCHEM String => procedure schema (may be null)
PROCEDURE_NAME String => procedure name
COLUMN_NAME String => column/parameter name
COLUMN_TYPE Short => kind of column/parameter:
procedureColumnUnknown - nobody knows
procedureColumnIn - IN parameter
procedureColumnInOut - INOUT parameter
procedureColumnOut - OUT parameter
procedureColumnReturn - procedure return value
procedureColumnResult - result column in ResultSet
DATA_TYPE int => SQL type from java.sql.Types
TYPE_NAME String => SQL type name, for a UDT type the type name is fully qualified
PRECISION int => precision
LENGTH int => length in bytes of data
SCALE short => scale
RADIX short => radix
NULLABLE short => can it contain NULL.
procedureNoNulls - does not allow NULL values
procedureNullable - allows NULL values
procedureNullableUnknown - nullability unknown
REMARKS String => comment describing parameter/column
Note: Some databases may not return the column descriptions for a procedure. Additional columns beyond REMARKS can be defined by the database.

Parameters:
catalog - a catalog name; must match the catalog name as it is stored in the database; "" retrieves those without a catalog; null means that the catalog name should not be used to narrow the search
schemaPattern - a schema name pattern; must match the schema name as it is stored in the database; "" retrieves those without a schema; null means that the schema name should not be used to narrow the search
procedureNamePattern - a procedure name pattern; must match the procedure name as it is stored in the database
columnNamePattern - a column name pattern; must match the column name as it is stored in the database

Returns:
ResultSet - each row describes a stored procedure parameter or column

Throws:
SQLException - if a database access error occurs

97.6.68 getProcedures(catalog as string, schemaPattern as string, procedure-NamePattern as string) as JavaResultSetMBS

Notes:
Only procedure descriptions matching the schema and procedure name criteria are returned. They are ordered by PROCEDURE_SCHEM and PROCEDURE_NAME.

Each procedure description has the the following columns:

PROCEDURE_CAT String => procedure catalog (may be null)
PROCEDURE_SCHEM String => procedure schema (may be null)
PROCEDURE_NAME String => procedure name
reserved for future use
reserved for future use
reserved for future use
REMARKS String => explanatory comment on the procedure
PROCEDURE_TYPE short => kind of procedure:
procedureResultUnknown - May return a result
procedureNoResult - Does not return a result
procedureReturnsResult - Returns a result
Parameters:
catalog - a catalog name; must match the catalog name as it is stored in the database; "" retrieves those without a catalog; null means that the catalog name should not be used to narrow the search
schemaPattern - a schema name pattern; must match the schema name as it is stored in the database; "" retrieves those without a schema; null means that the schema name should not be used to narrow the search
procedureNamePattern - a procedure name pattern; must match the procedure name as it is stored in the database

Returns:
ResultSet - each row is a procedure description

Throws:
SQLException - if a database access error occurs

97.6.69 getProcedureTerm as string

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves the database vendor’s preferred term for "procedure".

97.6.70 getResultSetHoldability as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves the default holdability of this ResultSet object.
**Notes:**
Returns:
the default holdability; either ResultSet.HOLD_CURSORS_OVER_COMMIT or ResultSet.CLOSE_CURSORS_AT_COMMIT

97.6.71 getSchemas as JavaResultSetMBS

MBS Java Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves the schema names available in this database.
**Notes:**
The results are ordered by schema name.

The schema column is:

TABLE_SCHEM String => schema name
TABLE_CATALOG String => catalog name (may be null)
Returns:
a ResultSet object in which each row is a schema description

Throws:
SQLException - if a database access error occurs

97.6.72 getSchemaTerm as string

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the database vendor’s preferred term for “schema”.

97.6.73 getSearchStringEscape as string

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the string that can be used to escape wildcard characters. **Notes:**
This is the string that can be used to escape ’*’ or ’%’ in the catalog search parameters that are a pattern (and therefore use one of the wildcard characters).
The ’*’ character represents any single character; the ’%’ character represents any sequence of zero or more characters.

97.6.74 getSQLKeywords as string

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves a comma-separated list of all of this database’s SQL keywords that are NOT also SQL92 keywords.

97.6.75 getSQLStateType as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates whether the SQLSTATE returned by SQLException.getSQLState is X/Open (now known as Open Group) SQL CLI or SQL99. **Notes:**
Returns:
the type of SQLSTATE; one of: sqlStateXOpen or sqlStateSQL99
97.6.76  getStringFunctions as string

Function: Retrieves a comma-separated list of string functions available with this database.  
Notes: These are the Open Group CLI string function names used in the JDBC function escape clause.

97.6.77  getSuperTables(catalog as string, schemaPattern as string, tableNamePattern as string) as JavaResultSetMBS

Function: Retrieves a description of the table hierarchies defined in a particular schema in this database.  
Notes: Only supertable information for tables matching the catalog, schema and table name are returned. The table name parameter may be a fully-qualified name, in which case, the catalog and schemaPattern parameters are ignored. If a table does not have a super table, it is not listed here. Supertables have to be defined in the same catalog and schema as the sub tables. Therefore, the type description does not need to include this information for the supertable.

Each type description has the following columns:

- TABLE_CAT String => the type’s catalog (may be null)
- TABLE_SCHEM String => type’s schema (may be null)
- TABLE_NAME String => type name
- SUPERTABLE_NAME String => the direct super type’s name
Note: If the driver does not support type hierarchies, an empty result set is returned.

Parameters:
- catalog - a catalog name: ”” retrieves those without a catalog; null means drop catalog name from the selection criteria
- schemaPattern - a schema name pattern; ”” retrieves those without a schema
- tableNamePattern - a table name pattern; may be a fully-qualified name

Returns:
a ResultSet object in which each row is a type description

Throws:
SQLException - if a database access error occurs
97.6.78  getSuperTypes(catalog as string, schemaPattern as string, typeNamePattern as string) as JavaResultSetMBS

MBS Java Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves a description of the user-defined type (UDT) hierarchies defined in a particular schema in this
database.

**Notes:**
Only the immediate super type/ sub type relationship is modeled.
Only supertype information for UDTs matching the catalog, schema, and type name is returned. The type
name parameter may be a fully-qualified name. When the UDT name supplied is a fully-qualified name, the
catalog and schemaPattern parameters are ignored.

If a UDT does not have a direct super type, it is not listed here. A row of the ResultSet object returned by
this method describes the designated UDT and a direct supertype. A row has the following columns:

- **TYPE_CAT** String => the UDT’s catalog (may be null)
- **TYPE_SCHEMA** String => UDT’s schema (may be null)
- **TYPE_NAME** String => name of the UDT
- **SUPERTYPE_CAT** String => the direct super type’s catalog (may be null)
- **SUPERTYPE_SCHEMA** String => the direct super type’s schema (may be null)
- **SUPERTYPE_NAME** String => the direct super type’s name

Note: If the driver does not support type hierarchies, an empty result set is returned.

**Parameters:**
catalog - a catalog name; "" retrieves those without a catalog; null means drop catalog name from the
selection criteria
schemaPattern - a schema name pattern; "" retrieves those without a schema
typeNamePattern - a UDT name pattern; may be a fully-qualified name

**Returns:**
a ResultSet object in which a row gives information about the designated UDT

**Throws:**
SQLException - if a database access error occurs

97.6.79  getSystemFunctions as string

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves a comma-separated list of system functions available with this database.

**Notes:** These are the Open Group CLI system function names used in the JDBC function escape clause.
97.6.80 getTablePrivileges(catalog as string, schemaPattern as string, tableNamePattern as string) as JavaResultSetMBS

MBS Java Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves a description of the access rights for each table available in a catalog.

**Notes:**

Note that a table privilege applies to one or more columns in the table. It would be wrong to assume that this privilege applies to all columns (this may be true for some systems but is not true for all.) Only privileges matching the schema and table name criteria are returned. They are ordered by TABLE_SCHEM, TABLE_NAME, and PRIVILEGE.

Each privilege description has the following columns:

- **TABLE_CAT** String => table catalog (may be null)
- **TABLE_SCHEMA** String => table schema (may be null)
- **TABLE_NAME** String => table name
- **GRANTOR** => grantor of access (may be null)
- **GRANTEE** String => grantee of access
- **PRIVILEGE** String => name of access (SELECT, INSERT, UPDATE, REFERENCES, ...)
- **IS_GRANTABLE** String => "true" if grantee is permitted to grant to others; "false" if not; null if unknown

Parameters:
- catalog - a catalog name; must match the catalog name as it is stored in the database; "" retrieves those without a catalog; null means that the catalog name should not be used to narrow the search
- schemaPattern - a schema name pattern; must match the schema name as it is stored in the database; "" retrieves those without a schema; null means that the schema name should not be used to narrow the search
- tableNamePattern - a table name pattern; must match the table name as it is stored in the database

**Returns:**
- ResultSet - each row is a table privilege description

**Throws:**
- SQLException - if a database access error occurs

97.6.81 getTables(catalog as string, schemaPattern as string, tableNamePattern as string) as JavaResultSetMBS

MBS Java Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves a description of the tables available in the given catalog.

**Notes:**

Only table descriptions matching the catalog, schema, table name and type criteria are returned. They are ordered by TABLE_TYPE, TABLE_SCHEMA and TABLE_NAME.

Each table description has the following columns:
TABLE_CAT String => table catalog (may be null)
TABLE_SCHEMA String => table schema (may be null)
TABLE_NAME String => table name

TABLE_TYPE String => table type. Typical types are "TABLE", "VIEW", "SYSTEM TABLE", "GLOBAL TEMPORARY", "LOCAL TEMPORARY", "ALIAS", "SYNONYM".

REMARKS String => explanatory comment on the table
TYPE_CAT String => the types catalog (may be null)
TYPE_SCHEMA String => the types schema (may be null)
TYPE_NAME String => type name (may be null)
SELF_REFERENCING_COLUMN_NAME String => name of the designated "identifier" column of a typed table (may be null)
REF_GENERATION String => specifies how values in SELF_REFERENCING_COLUMN_NAME are created. Values are "SYSTEM", "USER", "DERIVED". (may be null)

Note: Some databases may not return information for all tables.

Parameters:
catalog - a catalog name; must match the catalog name as it is stored in the database; "" retrieves those without a catalog; null means that the catalog name should not be used to narrow the search
schemaPattern - a schema name pattern; must match the schema name as it is stored in the database; "" retrieves those without a schema; null means that the schema name should not be used to narrow the search
tableNamePattern - a table name pattern; must match the table name as it is stored in the database

types - a list of table types to include (optionally)

Returns:
ResultSet - each row is a table description

Throws:
SQLException - if a database access error occurs

See also:
- 97.6.82 getTables(catalog as string, schemaPattern as string, tableNamePattern as string, types() as string) as JavaResultSetMBS

97.6.82 getTables(catalog as string, schemaPattern as string, tableNamePattern as string, types() as string) as JavaResultSetMBS

MBS Java Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Retrieves a description of the tables available in the given catalog.

Notes:
Only table descriptions matching the catalog, schema, table name and type criteria are returned. They are
ordered by TABLE_TYPE, TABLE_SCHEM and TABLE_NAME.
Each table description has the following columns:

TABLE_CAT String => table catalog (may be null)
TABLE_SCHEM String => table schema (may be null)
TABLE_NAME String => table name

TABLE_TYPE String => table type. Typical types are "TABLE", "VIEW", "SYSTEM TABLE", "GLOBAL TEMPORARY", "LOCAL TEMPORARY", "ALIAS", "SYNONYM".

REMARKS String => explanatory comment on the table
TYPE_CAT String => the types catalog (may be null)
TYPE_SCHEM String => the types schema (may be null)
TYPE_NAME String => type name (may be null)
SELF_REFERENCING_COL_NAME String => name of the designated "identifier" column of a typed table (may be null)
REF_GENERATION String => specifies how values in SELF_REFERENCING_COL_NAME are created. Values are "SYSTEM", "USER", "DERIVED". (may be null)
Note: Some databases may not return information for all tables.

Parameters:
catalog - a catalog name; must match the catalog name as it is stored in the database; "" retrieves those without a catalog; null means that the catalog name should not be used to narrow the search
schemaPattern - a schema name pattern; must match the schema name as it is stored in the database; "" retrieves those without a schema; null means that the schema name should not be used to narrow the search
tableNamePattern - a table name pattern; must match the table name as it is stored in the database
types - a list of table types to include (optionally)

Returns:
ResultSet - each row is a table description

Throws:
SQLException - if a database access error occurs
See also:

- 97.6.81 getTables(catalog as string, schemaPattern as string, tableNamePattern as string) as JavaResultSetMBS

97.6.83 getTableTypes as JavaResultSetMBS

Notes:
The table type is:

```
TABLE_TYPE String -> table type. Typical types are "TABLE", "VIEW", "SYSTEM TABLE", "GLOBAL TEMPORARY", "LOCAL TEMPORARY", "ALIAS", "SYNONYM".
```

Returns:
a ResultSet object in which each row has a single String column that is a table type

Throws:
SQLException - if a database access error occurs

97.6.84  getTimeDateFunctions as string

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves a comma-separated list of the time and date functions available with this database.

97.6.85  getTypeInfos as JavaResultSetMBS

MBS Java Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves a description of all the standard SQL types supported by this database.

**Notes:**
They are ordered by DATA_TYPE and then by how closely the data type maps to the corresponding JDBC SQL type.

Each type description has the following columns:

```
TYPE_NAME String -> Type name
DATA_TYPE int -> SQL data type from java.sql.Types
PRECISION int -> maximum precision
LITERAL_PREFIX String -> prefix used to quote a literal (may be null)
LITERAL_SUFFIX String -> suffix used to quote a literal (may be null)
CREATE_PARAMS String -> parameters used in creating the type (may be null)
NULLABLE short -> can you use NULL for this type.
typeNoNulls - does not allow NULL values
typeNullable - allows NULL values
typeNullableUnknown - nullability unknown
CASE_SENSITIVE boolean -> is it case sensitive.
SEARCHABLE short -> can you use "WHERE" based on this type:
typePredNone - No support
typePredChar - Only supported with WHERE .. LIKE
typePredBasic - Supported except for WHERE .. LIKE
```
typeSearchable - Supported for all WHERE ..
UNSIGNED_ATTRIBUTE boolean => is it unsigned.
FIXED_PREC_SCALE boolean => can it be a money value.
AUTO_INCREMENT boolean => can it be used for an auto-increment value.
LOCAL_TYPE_NAME String => localized version of type name (may be null)
MINIMUM_SCALE short => minimum scale supported
MAXIMUM_SCALE short => maximum scale supported
SQL_DATA_TYPE int => unused
SQL_DATETIME_SUB int => unused
NUM_PREC_RADIX int => usually 2 or 10

Returns:
a ResultSet object in which each row is an SQL type description

Throws:
SQLException - if a database access error occurs

This method is named getTypeInfo in Java and getTypeInfos in this plugin because REALbasic has a global method and sees a conflict.

97.6.86 getURL as string

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the URL for this DBMS. **Notes:** Returns the URL for this DBMS or "" if it cannot be generated.

97.6.87 getUserName as string

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the user name as known to this database.

97.6.88 getVersionColumns(catalog as string, schema as string, table as string) as JavaResultSetMBS

MBS Java Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves a description of a table's columns that are automatically updated when any value in a row is updated. They are unordered. **Notes:** Each column description has the following columns:
SCOPE short => is not used
COLUMN_NAME String => column name
DATA_TYPE int => SQL data type from java.sql.Types
TYPE_NAME String => Data source-dependent type name
COLUMN_SIZE int => precision
BUFFER_LENGTH int => length of column value in bytes

DECIMAL_DIGITS short => scale

PSEUDO_COLUMN short => whether this is pseudo column like an Oracle ROWID
versionColumnUnknown - may or may not be pseudo column
versionColumnNotPseudo - is NOT a pseudo column
versionColumnPseudo - is a pseudo column

Parameters:
catalog - a catalog name; must match the catalog name as it is stored in the database; "" retrieves those without a catalog; null means that the catalog name should not be used to narrow the search
schema - a schema name; must match the schema name as it is stored in the database; "" retrieves those without a schema; null means that the schema name should not be used to narrow the search
table - a table name; must match the table name as it is stored in the database

Returns:
a ResultSet object in which each row is a column description

97.6.89 importedKeyCascade as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
For the column UPDATE_RULE, indicates that when the primary key is updated, the foreign key (imported key) is changed to agree with it.
**Notes:**
For the column DELETE_RULE, it indicates that when the primary key is deleted, rows that imported that key are deleted.
A possible value for the columns UPDATE_RULE and DELETE_RULE in the ResultSet objects returned by the methods getImportedKeys, getExportedKeys, and getCrossReference.

97.6.90 importedKeyInitiallyDeferred as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Indicates deferrability. See SQL-92 for a definition.
**Notes:** A possible value for the column DEFERRABILITY in the ResultSet objects returned by the meth-
ods getImportedKeys, getExportedKeys, and getCrossReference.

97.6.91 importedKeyInitiallyImmediate as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates deferrability. See SQL-92 for a definition. **Notes:** A possible value for the column DEFERRABILITY in the ResultSet objects returned by the methods getImportedKeys, getExportedKeys, and getCrossReference.

97.6.92 importedKeyNoAction as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** For the columns UPDATE_RULE and DELETE_RULE, indicates that if the primary key has been imported, it cannot be updated or deleted. **Notes:** A possible value for the columns UPDATE_RULE and DELETE_RULE in the ResultSet objects returned by the methods getImportedKeys, getExportedKeys, and getCrossReference.

97.6.93 importedKeyNotDeferrable as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates deferrability. See SQL-92 for a definition. **Notes:** A possible value for the column DEFERRABILITY in the ResultSet objects returned by the methods getImportedKeys, getExportedKeys, and getCrossReference.

97.6.94 importedKeyRestrict as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** For the column UPDATE_RULE, indicates that a primary key may not be updated if it has been imported by another table as a foreign key. **Notes:** For the column DELETE_RULE, indicates that a primary key may not be deleted if it has been imported by another table as a foreign key. A possible value for the columns UPDATE_RULE and DELETE_RULE in the ResultSet objects returned by the methods getImportedKeys, getExportedKeys, and getCrossReference.
97.6.95 importedKeySetDefault as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
For the columns UPDATE_RULE and DELETE_RULE, indicates that if the primary key is updated or deleted, the foreign key (imported key) is set to the default value.
**Notes:** A possible value for the columns UPDATE_RULE and DELETE_RULE in the ResultSet objects returned by the methods getImportedKeys, getExportedKeys, and getCrossReference.

97.6.96 importedKeySetNull as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
For the columns UPDATE_RULE and DELETE_RULE, indicates that when the primary key is updated or deleted, the foreign key (imported key) is changed to NULL.
**Notes:** A possible value for the columns UPDATE_RULE and DELETE_RULE in the ResultSet objects returned by the methods getImportedKeys, getExportedKeys, and getCrossReference.

97.6.97 insertsAreDetected(type as Integer) as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves whether or not a visible row insert can be detected by calling the method ResultSet.rowInserted.
**Notes:**
Parameters:
type - the ResultSet type; one of ResultSet.TYPE_FORWARD_ONLY, ResultSet.TYPE_SCROLL_INSENSITIVE, or ResultSet.TYPE_SCROLL_SENSITIVE

Returns:
true if changes are detected by the specified result set type; false otherwise

97.6.98 isCatalogAtStart as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves whether a catalog appears at the start of a fully qualified table name. If not, the catalog appears at the end.

97.6.99 isReadOnly as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves whether this database is in read-only mode.
97.6.100  locatorsUpdateCopy as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates whether updates made to a LOB are made on a copy or directly to the LOB.

**Notes:**

Returns:
true if updates are made to a copy of the LOB; false if updates are made directly to the LOB

97.6.101  nullPlusNonNullIsNull as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports concatenations between NULL and non-NULL values being NULL.

97.6.102  nullsAreSortedAtEnd as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether NULL values are sorted at the end regardless of sort order.
97.6.103 nullsAreSortedAtStart as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether NULL values are sorted at the start regardless of sort order.

97.6.104 nullsAreSortedHigh as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether NULL values are sorted high. **Notes:** Sorted high means that NULL values sort higher than any other value in a domain. In an ascending order, if this method returns true, NULL values will appear at the end. By contrast, the method nullsAreSortedAtStart indicates whether NULL values are sorted at the start regardless of sort order.

97.6.105 nullsAreSortedLow as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether NULL values are sorted low. **Notes:** Sorted low means that NULL values sort lower than any other value in a domain. In an ascending order, if this method returns true, NULL values will appear at the beginning. By contrast, the method nullsAreSortedAtStart indicates whether NULL values are sorted at the beginning regardless of sort order.

97.6.106 othersDeletesAreVisible(type as Integer) as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether deletes made by others are visible. **Notes:**

Parameters:
- type - the ResultSet type; one of ResultSet.TYPE_FORWARD_ONLY, ResultSet.TYPE_SCROLL_INSENSITIVE, or ResultSet.TYPE_SCROLL_SENSITIVE

Returns:
- true if deletes made by others are visible for the given result set type; false otherwise

97.6.107 othersInsertsAreVisible(type as Integer) as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether inserts made by others are visible. **Notes:**
Parameters:
type - the ResultSet type; one of ResultSet.TYP\_FORWARD\_ONLY, ResultSet.TYP\_SCROLL\_INSENSITIVE, or ResultSet.TYP\_SCROLL\_SENSITIVE

Returns:
true if inserts made by others are visible for the given result set type; false otherwise

97.6.108  **othersUpdatesAreVisible**(type as Integer) as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves whether updates made by others are visible.

**Notes:**
Parameters:
type - the ResultSet type; one of ResultSet.TYP\_FORWARD\_ONLY, ResultSet.TYP\_SCROLL\_INSENSITIVE, or ResultSet.TYP\_SCROLL\_SENSITIVE

Returns:
true if updates made by others are visible for the given result set type; false otherwise

97.6.109  **ownDeletesAreVisible**(type as Integer) as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves whether a result set’s own deletes are visible.

**Notes:**
type - the ResultSet type; one of ResultSet.TYP\_FORWARD\_ONLY, ResultSet.TYP\_SCROLL\_INSENSITIVE, or ResultSet.TYP\_SCROLL\_SENSITIVE

Returns true if deletes are visible for the given result set type; false otherwise

97.6.110  **ownInsertsAreVisible**(type as Integer) as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves whether a result set’s own inserts are visible.

**Notes:**
type - the ResultSet type; one of ResultSet.TYP\_FORWARD\_ONLY, ResultSet.TYP\_SCROLL\_INSENSITIVE, or ResultSet.TYP\_SCROLL\_SENSITIVE
Returns true if inserts are visible for the given result set type; false otherwise.

97.6.111 ownUpdatesAreVisible(type as Integer) as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether for the given type of ResultSet object, the result set’s own updates are visible. **Notes:** type - the ResultSet type; one of ResultSet.TYPE_FORWARD_ONLY, ResultSet.TYPE_SCROLL_INSENSITIVE, or ResultSet.TYPE_SCROLL_SENSITIVE

97.6.112 procedureColumnIn as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates that the column stores IN parameters. **Notes:** A possible value for the column COLUMN_TYPE in the ResultSet returned by the method getProcedureColumns.

97.6.113 procedureColumnInOut as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates that the column stores INOUT parameters. **Notes:** A possible value for the column COLUMN_TYPE in the ResultSet returned by the method getProcedureColumns.

97.6.114 procedureColumnOut as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates that the column stores OUT parameters. **Notes:** A possible value for the column COLUMN_TYPE in the ResultSet returned by the method getProcedureColumns.

97.6.115 procedureColumnResult as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates that the column stores results. **Notes:** A possible value for the column COLUMN_TYPE in the ResultSet returned by the method getProcedureColumns.
97.6.116 procedureColumnReturn as Integer


97.6.117 procedureColumnUnknown as Integer


97.6.118 procedureNoNulls as Integer


97.6.119 procedureNoResult as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Indicates that the procedure does not return a result. Notes: A possible value for column PROCEDURE_TYPE in the ResultSet object returned by the method getProcedures.

97.6.120 procedureNullable as Integer

97.6.121  procedureNullableUnknown as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates that whether NULL values are allowed is unknown.  
**Notes:** A possible value for the column NULLABLE in the ResultSet object returned by the method getProcedureColumns.

97.6.122  procedureResultUnknown as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates that it is not known whether the procedure returns a result.  
**Notes:** A possible value for column PROCEDURE_TYPE in the ResultSet object returned by the method getProcedures.

97.6.123  procedureReturnsResult as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates that the procedure returns a result.  
**Notes:** A possible value for column PROCEDURE_TYPE in the ResultSet object returned by the method getProcedures.

97.6.124  sqlStateSQL99 as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates that the value is an SQL99 SQLSTATE value.  
**Notes:** A possible return value for the method SQLException.getSQLState.

97.6.125  sqlStateXOpen as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates that the value is an X/Open (now know as Open Group) SQL CLI SQLSTATE value.  
**Notes:** A possible return value for the method SQLException.getSQLState.

97.6.126  storesLowerCaseIdentifiers as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database treats mixed case unquoted SQL identifiers as case insensitive and stores
them in lower case.

97.6.127 storesLowerCaseQuotedIdentifiers as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database treats mixed case quoted SQL identifiers as case insensitive and stores them in lower case.

97.6.128 storesMixedCaseIdentifiers as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database treats mixed case unquoted SQL identifiers as case insensitive and stores them in mixed case.

97.6.129 storesMixedCaseQuotedIdentifiers as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database treats mixed case quoted SQL identifiers as case sensitive and as a result stores them in mixed case.

97.6.130 storesUpperCaseIdentifiers as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database treats mixed case unquoted SQL identifiers as case insensitive and stores them in upper case.

97.6.131 storesUpperCaseQuotedIdentifiers as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database treats mixed case quoted SQL identifiers as case insensitive and stores them in upper case.

97.6.132 supportsAlterTableWithAddColumn as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports ALTER TABLE with add column.
97.6.133  supportsAlterTableWithDropColumn as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports ALTER TABLE with drop column.

97.6.134  supportsANSI92EntryLevelSQL as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports the ANSI92 entry level SQL grammar.

97.6.135  supportsANSI92FullSQL as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports the ANSI92 full SQL grammar supported.

97.6.136  supportsANSI92IntermediateSQL as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports the ANSI92 intermediate SQL grammar supported.

97.6.137  supportsBatchUpdates as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports batch updates.
**Notes:**
Returns:
true if this database supports batch updates; false otherwise

97.6.138  supportsCatalogsInDataManipulation as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether a catalog name can be used in a data manipulation statement.
97.6.139 supportsCatalogsInIndexDefinitions as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether a catalog name can be used in an index definition statement.

97.6.140 supportsCatalogsInPrivilegeDefinitions as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether a catalog name can be used in an index definition statement.

97.6.141 supportsCatalogsInProcedureCalls as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether a catalog name can be used in a procedure call statement.

97.6.142 supportsCatalogsInTableDefinitions as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether a catalog name can be used in a table definition statement.

97.6.143 supportsColumnAliasing as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports column aliasing. **Notes:** If so, the SQL AS clause can be used to provide names for computed columns or to provide alias names for columns as required.

97.6.144 supportsConvert as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports the CONVERT function between SQL types. **See also:**

- 97.6.145 supportsConvert(fromType as Integer, toType as Integer) as boolean
**97.6.145 supportsConvert(fromType as Integer, toType as Integer) as boolean**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports the CONVERT for two given SQL types. **Notes:**

Parameters:
fromType - the type to convert from; one of the type codes from the class JavaDatabaseMBS
toType - the type to convert to; one of the type codes from the class JavaDatabaseMBS

Returns:
ture if so; false otherwise
See also:

- 97.6.144 supportsConvert as boolean

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**97.6.146 supportsCoreSQLGrammar as boolean**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports the ODBC Core SQL grammar.

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**97.6.147 supportsCorrelatedSubqueries as boolean**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports correlated subqueries.

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**97.6.148 supportsDataDefinitionAndDataManipulationTransactions as boolean**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports both data definition and data manipulation statements within a transaction.

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**97.6.149 supportsDataManipulationTransactionsOnly as boolean**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports only data manipulation statements within a transaction.
97.6.150 supportsDifferentTableCorrelationNames as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether, when table correlation names are supported, they are restricted to being different from the names of the tables.

97.6.151 supportsExpressionsInOrderBy as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports expressions in ORDER BY lists.

97.6.152 supportsExtendedSQLGrammar as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports the ODBC Extended SQL grammar.

97.6.153 supportsFullOuterJoins as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports full nested outer joins.

97.6.154 supportsGetGeneratedKeys as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether auto-generated keys can be retrieved after a statement has been executed. **Notes:**

Returns:
true if auto-generated keys can be retrieved after a statement has executed; false otherwise

97.6.155 supportsGroupBy as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports some form of GROUP BY clause.
97.6.156 supportsGroupByBeyondSelect as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports using columns not included in the SELECT statement in a GROUP BY clause provided that all of the columns in the SELECT statement are included in the GROUP BY clause.

97.6.157 supportsGroupByUnrelated as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports using a column that is not in the SELECT statement in a GROUP BY clause.

97.6.158 supportsIntegrityEnhancementFacility as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports the SQL Integrity Enhancement Facility.

97.6.159 supportsLikeEscapeClause as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports specifying a LIKE escape clause.

97.6.160 supportsLimitedOuterJoins as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database provides limited support for outer joins. **Notes:** (This will be true if the method supportsFullOuterJoins returns true).

97.6.161 supportsMinimumSQLGrammar as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports the ODBC Minimum SQL grammar.
97.6.162 supportsMixedCaseIdentifiers as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database treats mixed case unquoted SQL identifiers as case sensitive and as a result stores them in mixed case.

97.6.163 supportsMixedCaseQuotedIdentifiers as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database treats mixed case quoted SQL identifiers as case sensitive and as a result stores them in mixed case.

97.6.164 supportsMultipleOpenResults as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether it is possible to have multiple ResultSet objects returned from a CallableStatement object simultaneously.

**Notes:**

Returns:
ture if a CallableStatement object can return multiple ResultSet objects simultaneously; false otherwise.

97.6.165 supportsMultipleResultSets as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports getting multiple ResultSet objects from a single call to the method execute.

97.6.166 supportsMultipleTransactions as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database allows having multiple transactions open at once (on different connections).

97.6.167 supportsNamedParameters as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports named parameters to callable statements.

**Notes:**
Returns:
true if named parameters are supported; false otherwise

97.6.168 supportsNonNullColumns as boolean
MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Retrieves whether columns in this database may be defined as non-nullable.

97.6.169 supportsOpenCursorsAcrossCommit as boolean
MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Retrieves whether this database supports keeping cursors open across commits.

97.6.170 supportsOpenCursorsAcrossRollback as boolean
MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Retrieves whether this database supports keeping cursors open across rollbacks.

97.6.171 supportsOpenStatementsAcrossCommit as boolean
MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Retrieves whether this database supports keeping statements open across commits.

97.6.172 supportsOpenStatementsAcrossRollback as boolean
MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Retrieves whether this database supports keeping statements open across rollbacks.

97.6.173 supportsOrderByUnrelated as boolean
MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Retrieves whether this database supports using a column that is not in the SELECT statement in an ORDER BY clause.
97.6.174 supportsOuterJoins as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports some form of outer join.

97.6.175 supportsPositionedDelete as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether a catalog name can be used in an index definition statement.

97.6.176 supportsPositionedUpdate as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports positioned UPDATE statements.

97.6.177 supportsResultSetConcurrency(type as Integer, concurrency as Integer) as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports the given concurrency type in combination with the given result set type.

97.6.178 supportsResultSetHoldability(holdability as Integer) as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports the given result set holdability. **Notes:**

Parameters:
holdability - one of the following constants: ResultSet.HOLD_CURSORS_OVER_COMMIT or ResultSet.CLOSE_CURSORS_AT_COMMIT

Returns:
true if so; false otherwise

97.6.179 supportsResultSetType(type as Integer) as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports the given result set type.
97.6.180  supportsSavepoints as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports savepoints. **Notes:** Returns: true if savepoints are supported; false otherwise

97.6.181  supportsSchemasInDataManipulation as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether a schema name can be used in a data manipulation statement.

97.6.182  supportsSchemasInIndexDefinitions as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether a schema name can be used in an index definition statement.

97.6.183  supportsSchemasInPrivilegeDefinitions as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether a schema name can be used in a privilege definition statement.

97.6.184  supportsSchemasInProcedureCalls as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether a schema name can be used in a procedure call statement.

97.6.185  supportsSchemasInTableDefinitions as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether a schema name can be used in a table definition statement.
97.6.186  supportsSelectForUpdate as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports SELECT FOR UPDATE statements.

97.6.187  supportsStatementPooling as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports statement pooling.
**Notes:**
Returns:
true if so; false otherwise

97.6.188  supportsStoredProcedures as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports stored procedure calls that use the stored procedure escape syntax.

97.6.189  supportsSubqueriesInComparisons as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports subqueries in comparison expressions.

97.6.190  supportsSubqueriesInExists as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports subqueries in EXISTS expressions.

97.6.191  supportsSubqueriesInIns as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database supports subqueries in IN statements.
97.6.192 supportsSubqueriesInQuantifieds as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves whether this database supports subqueries in quantified expressions.

97.6.193 supportsTableCorrelationNames as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves whether this database supports table correlation names.

97.6.194 supportsTransactionIsolationLevel(level as Integer) as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves whether this database supports the given transaction isolation level.
**Notes:**
Parameters:
level - one of the transaction isolation levels defined in javaConnectionMBS

Returns:
true if so; false otherwise

97.6.195 supportsTransactions as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves whether this database supports transactions.
**Notes:** If not, invoking the method commit is a noop, and the isolation level is TRANSACTION_NONE.

97.6.196 supportsUnion as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves whether this database supports SQL UNION.

97.6.197 supportsUnionAll as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves whether this database supports SQL UNION ALL.
97.6.198  tableIndexClustered as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates that this table index is a clustered index.  
**Notes:** A possible value for column TYPE in the ResultSet object returned by the method getIndexInfo.

97.6.199  tableIndexHashed as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates that this table index is a hashed index.  
**Notes:** A possible value for column TYPE in the ResultSet object returned by the method getIndexInfo.

97.6.200  tableIndexOther as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates that this table index is not a clustered index, a hashed index, or table statistics; it is something other than these.  
**Notes:** A possible value for column TYPE in the ResultSet object returned by the method getIndexInfo.

97.6.201  tableIndexStatistic as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates that this column contains table statistics that are returned in conjunction with a table’s index descriptions.  
**Notes:** A possible value for column TYPE in the ResultSet object returned by the method getIndexInfo.

97.6.202  typeNoNulls as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates that a NULL value is NOT allowed for this data type.  
**Notes:** A possible value for column NULLABLE in the ResultSet object returned by the method getTypeInfo.
97.6.203  typeNullable as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Indicates that a NULL value is allowed for this data type.
**Notes:** A possible value for column NULLABLE in the ResultSet object returned by the method getType-
Info.

97.6.204  typeNullableUnknown as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Indicates that it is not known whether a NULL value is allowed for this data type.
**Notes:** A possible value for column NULLABLE in the ResultSet object returned by the method getType-
Info.

97.6.205  typePredBasic as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Indicates that one can base all WHERE search clauses except WHERE . . . LIKE on this data type.
**Notes:** A possible value for column SEARCHABLE in the ResultSet object returned by the method getType-
Info.

97.6.206  typePredChar as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Indicates that the only WHERE search clause that can be based on this type is WHERE . . . LIKE.
**Notes:** A possible value for column SEARCHABLE in the ResultSet object returned by the method getType-
Info.

97.6.207  typePredNone as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Indicates that WHERE search clauses are not supported for this type.
**Notes:** A possible value for column SEARCHABLE in the ResultSet object returned by the method getType-
Info.
97.6.208  typeSearchable as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates that all WHERE search clauses can be based on this type. **Notes:** A possible value for column SEARCHABLE in the ResultSet object returned by the method get-TypeInfo.

97.6.209  updatesAreDetected(type as Integer) as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether or not a visible row update can be detected by calling the method ResultSet.rowUpdated. **Notes:**

Parameters:
type - the ResultSet type; one of ResultSet.TYPE_FORWARD_ONLY, ResultSet.TYPE_SCROLL_INSENSITIVE, or ResultSet.TYPE_SCROLL_SENSITIVE

Returns:
true if changes are detected by the result set type; false otherwise

97.6.210  usesLocalFilePerTable as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database uses a file for each table.

97.6.211  usesLocalFiles as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether this database stores tables in a local file.

97.6.212  versionColumnNotPseudo as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates that this version column is NOT a pseudo column. **Notes:** A possible value for the column PSEUDO_COLUMN in the ResultSet object returned by the method getVersionColumns.
**97.6.213 versionColumnPseudo as Integer**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates that this version column is a pseudo column. **Notes:** A possible value for the column PSEUDO_COLUMN in the ResultSet object returned by the method getVersionColumns.

**97.6.214 versionColumnUnknown as Integer**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates that this version column may or may not be a pseudo column. **Notes:** A possible value for the column PSEUDO_COLUMN in the ResultSet object returned by the method getVersionColumns.
97.7. CLASS JAVAEXCEPTIONMBS

97.7 class JavaExceptionMBS

97.7.1 class JavaExceptionMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The exception class used to report java exception.
**Notes:**
For SQLExceptions the ErrorNumber property will be filled.
For all java exceptions the message property is filled.
Subclass of the RuntimeException class.

97.7.2 Methods

97.7.3 RaiseJavaException(message as string)

MBS Java Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A method to test exception handling.
**Example:**
JavaExceptionMBS.RaiseJavaException "Just a test!"

**Notes:** This method raises a new JavaExceptionMBS with the given message.
97.8  class JavaInputStreamMBS

97.8.1  class JavaInputStreamMBS

MBS Java Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The plugin class for an input stream.

**Example:**

```java
// your result set
Dim r As JavaResultSetMBS

// get binary data for BLOB column named 'data'
Dim myInputStream As JavaInputStreamMBS = r.getBinaryStream( "data" )
If myInputStream <> nil Then

// read byte for byte in a loop
// better use other read() method with buffer
Dim data As String
Do
Dim c As Integer = myInputStream.read
If c = -1 then exit

data = data + chrb(c)
Loop

Dim myPicture As Picture = Picture.FromData(data)

// work with picture here
End If
```

**Notes:**

This abstract class in Java is the superclass of all classes representing an input stream of bytes.
Subclass of the JavaObjectMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

97.8.2  Methods

97.8.3  available as Integer

MBS Java Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an estimate of the number of bytes that can be read (or skipped over) from this input stream without blocking by the next invocation of a method for this input stream.
Notes:

The next invocation might be the same thread or another thread. A single read or skip of this many bytes will not block, but may read or skip fewer bytes.
Note that while some implementations of InputStream will return the total number of bytes in the stream, many will not. It is never correct to use the return value of this method to allocate a buffer intended to hold all data in this stream.

A subclass' implementation of this method may choose to throw an IOException if this input stream has been closed by invoking the close() method.

The available method for class InputStream always returns 0.

This method should be overridden by subclasses.

Returns an estimate of the number of bytes that can be read (or skipped over) from this input stream without blocking or 0 when it reaches the end of the input stream.

Throws:
IOException - if an I/O error occurs.

97.8.4 close

MBS Java Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Closes this input stream and releases any system resources associated with the stream.

97.8.5 Constructor

MBS Java Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
The private constructor.

97.8.6 mark(readlimit as Integer)

MBS Java Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Marks the current position in this input stream.
Notes:
A subsequent call to the reset method repositions this stream at the last marked position so that subsequent reads re-read the same bytes.
The readlimit arguments tells this input stream to allow that many bytes to be read before the mark position
The general contract of mark is that, if the method markSupported returns true, the stream somehow remembers all the bytes read after the call to mark and stands ready to supply those same bytes again if and whenever the method reset is called. However, the stream is not required to remember any data at all if more than readlimit bytes are read from the stream before reset is called.

Marking a closed stream should not have any effect on the stream.

The mark method of InputStream does nothing.

Parameters:
readlimit - the maximum limit of bytes that can be read before the mark position becomes invalid.

97.8.7 markSupported as boolean

MBS Java Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Tests if this input stream supports the mark and reset methods.

**Notes:**
Whether or not mark and reset are supported is an invariant property of a particular input stream instance. The markSupported method of InputStream returns false.

Returns true if this stream instance supports the mark and reset methods; false otherwise.

97.8.8 read as Integer

MBS Java Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the next byte of data from the input stream.

**Notes:**
The value byte is returned as an int in the range 0 to 255. If no byte is available because the end of the stream has been reached, the value -1 is returned. This method blocks until input data is available, the end of the stream is detected, or an exception is thrown.
A subclass must provide an implementation of this method.

Returns the next byte of data, or -1 if the end of the stream is reached.

**Throws:**
IOException - if an I/O error occurs.
97.8. **CLASS JAVAINPUTSTREAMMBS**

See also:

- 97.8.9 read(bytes as JavaByteArrayMBS) as Integer
- 97.8.10 read(bytes as JavaByteArrayMBS, Offset as Integer, Length as Integer) as Integer

### 97.8.9 read(bytes as JavaByteArrayMBS) as Integer

MBS Java Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Reads some number of bytes from the input stream and stores them into the buffer array bytes.

**Notes:**
The number of bytes actually read is returned as an integer. This method blocks until input data is available, end of file is detected, or an exception is thrown.
If the length of bytes is zero, then no bytes are read and 0 is returned; otherwise, there is an attempt to read at least one byte. If no byte is available because the stream is at the end of the file, the value -1 is returned; otherwise, at least one byte is read and stored into bytes.

The first byte read is stored into element bytes [ 0 ], the next one into bytes [ 1 ], and so on. The number of bytes read is, at most, equal to the length of bytes. Let k be the number of bytes actually read; these bytes will be stored in elements bytes [ 0 ] through bytes [ k-1 ], leaving elements bytes [ k ] through bytes [ bytes.length-1 ] unaffected.

The read(bytes) method for class InputStream has the same effect as:

```
read(bytes, 0, bytes.length)
```

**Parameters:**
bytes: the buffer into which the data is read.

Returns the total number of bytes read into the buffer, or -1 is there is no more data because the end of the stream has been reached.

**Throws:**
IOException - If the first byte cannot be read for any reason other than the end of the file, if the input stream has been closed, or if some other I/O error occurs.
NullPointerException - if bytes is null.

See also:

- 97.8.8 read as Integer
- 97.8.10 read(bytes as JavaByteArrayMBS, Offset as Integer, Length as Integer) as Integer
97.8.10  read(bytes as JavaByteArrayMBS, Offset as Integer, Length as Integer) as Integer

MBS Java Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads up to Length bytes of data from the input stream into an array of bytes.

**Notes:**
An attempt is made to read as many as Length bytes, but a smaller number may be read. The number of bytes actually read is returned as an integer.
This method blocks until input data is available, end of file is detected, or an exception is thrown.

If Length is zero, then no bytes are read and 0 is returned; otherwise, there is an attempt to read at least one byte. If no byte is available because the stream is at end of file, the value -1 is returned; otherwise, at least one byte is read and stored into bytes.

The first byte read is stored into element bytes [ Offset ] , the next one into bytes [ Offset+1 ] , and so on. The number of bytes read is, at most, equal to Length. Let k be the number of bytes actually read; these bytes will be stored in elements bytes [ Offset ] through bytes [ Offset+k-1 ] , leaving elements bytes [ Offset+k ] through bytes [ Offset+Length-1 ] unaffected.

In every case, elements bytes [ 0 ] through bytes [ Offset ] and elements bytes [ Offset+Length ] through bytes [ bytes.length-1 ] are unaffected.

The read(bytes, Offset, Length) method for class InputStream simply calls the method read() repeatedly. If the first such call results in an IOException, that exception is returned from the call to the read(bytes, Offset, Length) method. If any subsequent call to read() results in a IOException, the exception is caught and treated as if it were end of file; the bytes read up to that point are stored into bytes and the number of bytes read before the exception occurred is returned. The default implementation of this method blocks until the requested amount of input data len has been read, end of file is detected, or an exception is thrown. Subclasses are encouraged to provide a more efficient implementation of this method.

**Parameters:**
- bytes: the buffer into which the data is read.
- Offset: the start offset in array bytes at which the data is written.
- Length: the maximum number of bytes to read.

**Returns:**
- the total number of bytes read into the buffer, or -1 if there is no more data because the end of the stream has been reached.

**Throws:**
- IOException - If the first byte cannot be read for any reason other than end of file, or if the input stream has been closed, or if some other I/O error occurs.
- NullPointerException - If bytes is null.
- IndexOutOfBoundsException - If Offset is negative, Length is negative, or Length is greater than bytes.length.
97.8. **CLASS JAVAINPUTSTREAMMBS**

- Offset

See also:

- 97.8.8 read as Integer
  
- 97.8.9 read(bytes as JavaByteArrayMBS) as Integer

### 97.8.11 reset

MBS Java Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Repositions this stream to the position at the time the mark method was last called on this input stream.

**Notes:**

The general contract of reset is:

- If the method markSupported returns true, then:
  - If the method mark has not been called since the stream was created, or the number of bytes read from the stream since mark was last called is larger than the argument to mark at that last call, then an IOException might be thrown.
  - If such an IOException is not thrown, then the stream is reset to a state such that all the bytes read since the most recent call to mark (or since the start of the file, if mark has not been called) will be resupplied to subsequent callers of the read method, followed by any bytes that otherwise would have been the next input data as of the time of the call to reset.

- If the method markSupported returns false, then:
  - The call to reset may throw an IOException.
  - If an IOException is not thrown, then the stream is reset to a fixed state that depends on the particular type of the input stream and how it was created. The bytes that will be supplied to subsequent callers of the read method depend on the particular type of the input stream.

The method reset for class InputStream does nothing except throw an IOException.

**Throws:**

IOException - if this stream has not been marked or if the mark has been invalidated.

### 97.8.12 skip(count as Int64) as Int64

MBS Java Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Skips over and discards count bytes of data from this input stream.

**Notes:**
CHAPTER 97. JAVA DATABASE

The skip method may, for a variety of reasons, end up skipping over some smaller number of bytes, possibly 0. This may result from any of a number of conditions; reaching end of file before count bytes have been skipped is only one possibility. The actual number of bytes skipped is returned. If count is negative, no bytes are skipped.

The skip method of this class creates a byte array and then repeatedly reads into it until count bytes have been read or the end of the stream has been reached. Subclasses are encouraged to provide a more efficient implementation of this method. For instance, the implementation may depend on the ability to seek.

Parameters:

count: the number of bytes to be skipped.

Returns the actual number of bytes skipped.

Throws:

IOException - if the stream does not support seek, or if some other I/O error occurs.
97.9.  CLASS JAVAPARAMETERMETADATAMBS

97.9  class JavaParameterMetaDataMBS

Function:  
An object that can be used to get information about the types and properties of the parameters in a  
PreparedStatement object.  
Notes:  
Subclass of the JavaObjectMBS class.  
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

97.9.2  Methods

97.9.3  Constructor

MBS Java Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  
Function:  
The private constructor.

97.9.4  getParameterClassName(param as Integer) as string

Function:  
Retrieves the fully-qualified name of the Java class whose instances should be passed to the method Pre-  
paredStatement.setObject.  
Notes:  
Parameters:  
param - the first parameter is 1, the second is 2, ...  
Returns:  
the fully-qualified name of the class in the Java programming language that would be used by the method  
PreparedStatement.setObject to set the value in the specified parameter. This is the class name used for  
custom mapping.

97.9.5  getParameterCount as Integer

Function:  
Retrieves the number of parameters in the PreparedStatement object for which this ParameterMetaData  
does not contain information.  
Notes:  
Returns:  
the number of parameters
97.9.6 getParameterMode(param as Integer) as Integer


Notes:

Parameters:
param - the first parameter is 1, the second is 2, ...

Returns:
mode of the parameter; one of ParameterMetaData.parameterModeIn, ParameterMetaData.parameterModeOut, or ParameterMetaData.parameterModeInOut ParameterMetaData.parameterModeUnknown.

97.9.7 getParameterType(param as Integer) as Integer


Notes:

Parameters:
param - the first parameter is 1, the second is 2, ...

Returns:
SQL type from java.sql.Types

97.9.8 getParameterTypeName(param as Integer) as string


Notes:

Parameters:
param - the first parameter is 1, the second is 2, ...

Returns:
type the name used by the database. If the parameter type is a user-defined type, then a fully-qualified type name is returned.

97.9.9 getPrecision(param as Integer) as Integer


Notes:
Parameters:
param - the first parameter is 1, the second is 2, ...
Returns:
precision

### 97.9.10 `getScale(param as Integer) as Integer`

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves the designated parameter’s number of digits to right of the decimal point.
**Notes:**
Parameters:
param - the first parameter is 1, the second is 2, ...
Returns:
scale

### 97.9.11 `isNullible(param as Integer) as Integer`

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves whether null values are allowed in the designated parameter.
**Notes:**
Parameters:
param - the first parameter is 1, the second is 2, ...
Returns:
the nullability status of the given parameter; one of `ParameterMetaData.parameterNoNulls`, `ParameterMetaData.parameterNullable`, or `ParameterMetaData.parameterNullableUnknown`

### 97.9.12 `isSigned(param as Integer) as boolean`

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves whether values for the designated parameter can be signed numbers.
**Notes:**
Parameters:
param - the first parameter is 1, the second is 2, ...
Returns:
true if so; false otherwise
97.9.13  parameterModeIn as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constant indicating that the parameter’s mode is IN.

97.9.14  parameterModeInOut as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constant indicating that the parameter’s mode is INOUT.

97.9.15  parameterModeOut as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constant indicating that the parameter’s mode is OUT.

97.9.16  parameterModeUnknown as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constant indicating that the mode of the parameter is unknown.

97.9.17  parameterNoNulls as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constant indicating that a parameter will not allow NULL values.

97.9.18  parameterNullable as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constant indicating that a parameter will allow NULL values.

97.9.19  parameterNullableUnknown as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constant indicating that the nullability of a parameter is unknown.
97.10. **CLASS JAVA PREPARED STATEMENT MBS**

97.10. **class JavaPreparedStatementMBS**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An object that represents a precompiled SQL statement.

**Notes:**
A SQL statement is precompiled and stored in a PreparedStatement object. This object can then be used to efficiently execute this statement multiple times.

Note: The setter methods (setShort, setString, and so on) for setting IN parameter values must specify types that are compatible with the defined SQL type of the input parameter. For instance, if the IN parameter has SQL type INTEGER, then the method setInt should be used.

If arbitrary parameter type conversions are required, the method setObject should be used with a target SQL type.

In the following example of setting a parameter, con represents an active connection:

```java
PreparedStatement pstmt = con.prepareStatement("UPDATE EMPLOYEES SET SALARY = ? WHERE ID = ");
pstmt.setBigDecimal(1, 153833.00)
pstmt.setInt(2, 110592)
```

Subclass of the JavaStatementMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

97.10.2 **Methods**

97.10.3 **addBatch**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds a set of parameters to this PreparedStatement object’s batch of commands.

97.10.4 **clearParameters**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Clears the current parameter values immediately.

**Notes:** In general, parameter values remain in force for repeated use of a statement. Setting a parameter value automatically clears its previous value. However, in some cases it is useful to immediately release the
resources used by the current parameter values; this can be done by calling the method clearParameters.

97.10.5 Constructor

MBS Java Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The private constructor.

97.10.6 execute as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Executes the SQL statement in this PreparedStatement object, which may be any kind of SQL statement. **Notes:** Some prepared statements return multiple results; the execute method handles these complex statements as well as the simpler form of statements handled by the methods executeQuery and executeUpdate. The execute method returns a boolean to indicate the form of the first result. You must call either the method getResultSet or getUpdateCount to retrieve the result; you must call getMoreResults to move to any subsequent result(s).

Returns:
true if the first result is a ResultSet object; false if the first result is an update count or there is no result

97.10.7 executeQuery as JavaResultSetMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Executes the SQL query in this PreparedStatement object and returns the ResultSet object generated by the query. **Notes:**

Returns:
a ResultSet object that contains the data produced by the query; never null

97.10.8 executeUpdate as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Executes the SQL statement in this PreparedStatement object, which must be an SQL INSERT, UPDATE or DELETE statement; or an SQL statement that returns nothing, such as a DDL statement. **Notes:**

Returns:
either (1) the row count for INSERT, UPDATE, or DELETE statements or (2) 0 for SQL statements that return nothing.

97.10.9 getMetaData as JavaResultSetMetaDataMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves a ResultSetMetaData object that contains information about the columns of the ResultSet object that will be returned when this PreparedStatement object is executed.

**Notes:**

Because a PreparedStatement object is precompiled, it is possible to know about the ResultSet object that it will return without having to execute it. Consequently, it is possible to invoke the method getMetaData on a PreparedStatement object rather than waiting to execute it and then invoking the ResultSet.getMetaData method on the ResultSet object that is returned.

**NOTE:** Using this method may be expensive for some drivers due to the lack of underlying DBMS support.

**Returns:**

the description of a ResultSet object’s columns or null if the driver cannot return a ResultSetMetaData object

97.10.10 getParameterMetaData as JavaParameterMetaDataMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the number, types and properties of this PreparedStatement object’s parameters.

**Notes:**

Returns:

a ParameterMetaData object that contains information about the number, types and properties of this PreparedStatement object’s parameters

97.10.11 setBlob(parameterIndex as Integer, x as JavaBlobMBS)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the designated parameter to the given Blob object.

**Notes:**

The driver converts this to an SQL BLOB value when it sends it to the database.

**Parameters:**

i - the first parameter is 1, the second is 2, ...

x - a Blob object that maps an SQL BLOB value
97.10.12  \texttt{setBoolean(parameterIndex as Integer, x as boolean)}

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. \textbf{Function:} Sets the designated parameter to the given Java boolean value.  
\textbf{Notes:}  
The driver converts this to an SQL BIT value when it sends it to the database.

\textbf{Parameters:}
- parameterIndex - the first parameter is 1, the second is 2, ...
- x - the parameter value

97.10.13  \texttt{setByte(parameterIndex as Integer, x as Integer)}

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. \textbf{Function:} Sets the designated parameter to the given Java byte value.  
\textbf{Notes:}  
The driver converts this to an SQL TINYINT value when it sends it to the database.

\textbf{Parameters:}
- parameterIndex - the first parameter is 1, the second is 2, ...
- x - the parameter value

97.10.14  \texttt{setBytes(parameterIndex as Integer, Value as String)}

\textbf{Notes:}  
The driver converts this to an SQL VARBINARY or LONGVARBINARY (depending on the argument’s size relative to the driver’s limits on VARBINARY values) when it sends it to the database.

\textbf{Parameters:}
- parameterIndex: the first parameter is 1, the second is 2, ...
- Value: the parameter value as a string.
97.10.15  setClob(parameterIndex as Integer, x as JavaClobMBS)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the designated parameter to the given Clob object.

**Notes:**
The driver converts this to an SQL CLOB value when it sends it to the database.

Parameters:
i - the first parameter is 1, the second is 2, ...
x - a Clob object that maps an SQL CLOB value

97.10.16  setDouble(parameterIndex as Integer, x as Double)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the designated parameter to the given Java double value.

**Notes:**
The driver converts this to an SQL DOUBLE value when it sends it to the database.

Parameters:
parameterIndex - the first parameter is 1, the second is 2, ...
x - the parameter value

97.10.17  setFloat(parameterIndex as Integer, x as single)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the designated parameter to the given Java float value.

**Notes:**
The driver converts this to an SQL FLOAT value when it sends it to the database.

Parameters:
parameterIndex - the first parameter is 1, the second is 2, ...
x - the parameter value

97.10.18  setInt(parameterIndex as Integer, x as Integer)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the designated parameter to the given Java int value.

**Notes:**
The driver converts this to an SQL INTEGER value when it sends it to the database.

Parameters:
parameterIndex - the first parameter is 1, the second is 2, ...
x - the parameter value

97.10.19  setLong(parameterIndex as Integer, x as Int64)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Sets the designated parameter to the given Java long value.
Notes:
The driver converts this to an SQL BIGINT value when it sends it to the database.

Parameters:
parameterIndex - the first parameter is 1, the second is 2, ...
x - the parameter value

97.10.20  setNull(parameterIndex as Integer, sqlType as Integer)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Sets the designated parameter to SQL NULL.
Notes:
You must specify the parameter’s SQL type.

Parameters:
parameterIndex - the first parameter is 1, the second is 2, ...
sqlType - the SQL type code defined in java.sql.Types

97.10.21  setShort(parameterIndex as Integer, x as Integer)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Sets the designated parameter to the given Java short value.
Notes:
The driver converts this to an SQL SMALLINT value when it sends it to the database.

Parameters:
parameterIndex - the first parameter is 1, the second is 2, ...
97.10. **CLASS JAVAPREPAREDSTATEMENTMBS**

x - the parameter value

97.10.22  **setString(parameterIndex as Integer, x as string)**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the designated parameter to the given Java String value.

**Notes:**

The driver converts this to an SQL VARCHAR or LONGVARCHAR value (depending on the argument’s size relative to the driver’s limits on VARCHAR values) when it sends it to the database.

**Parameters:**

- parameterIndex - the first parameter is 1, the second is 2, ...
- x - the parameter value
97.11 class JavaResultSetMBS

97.11.1 class JavaResultSetMBS

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for a recordset in Java.

**Notes:**
- Nearly all methods on this class can raise java exceptions which you can get using the error property. (and errorstring and errorcode)
- Subclass of the JavaObjectMBS class.
- This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

97.11.2 Methods

97.11.3 absolute(row as Integer) as boolean

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Moves the cursor to the given row number in this ResultSet object.

**Example:**
```vbnet
dim db as JavaConnectionMBS 'your database
dim r as JavaResultSetMBS
dim s as JavaStatementMBS

// check second row
s=db.createStatement
r=s.executeQuery("SELECT * from myTable")
if r<>Nil then
    if r.absolute(2) then
        MsgBox str(R.getInt("test_id")+" " +r.getString("test_val")
    end if
end if
```

**Notes:** See the java documentation for details on java.sql.ResultSet.absolute.

97.11.4 afterLast

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Moves the cursor to the end of this ResultSet object, just after the last row.

**Notes:** See the java documentation for details on java.sql.ResultSet.afterLast.
97.11.5 beforeFirst

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Moves the cursor to the front of this ResultSet object, just before the first row.  
**Notes:** See the java documentation for details on java.sql.ResultSet.beforeFirst.

97.11.6 cancelRowUpdates

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Cancels the updates made to the current row in this ResultSet object.  
**Notes:**  
This method may be called after calling an updater method(s) and before calling the method updateRow to roll back the updates made to a row. If no updates have been made or updateRow has already been called, this method has no effect.  

See the java documentation for details on java.sql.ResultSet.cancelRowUpdates.

97.11.7 clearWarnings

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Clears all warnings reported on this ResultSet object.  
**Notes:** See the java documentation for details on java.sql.ResultSet.clearWarnings.

97.11.8 CLOSE_CURSORS_AT_COMMIT as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant indicating that ResultSet objects should be closed when the method Connection.commit is called.

97.11.9 CONCUR_READ_ONLY as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant indicating the concurrency mode for a ResultSet object that may NOT be updated.
97.11.10 CONCUR_UPDATABLE as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant indicating the concurrency mode for a ResultSet object that may be updated.

97.11.11 Constructor

MBS Java Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The private constructor.

97.11.12 deleteRow

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Deletes the current row from this ResultSet object and from the underlying database. **Notes:** See the java documentation for details on java.sql.ResultSet.deleteRow.

97.11.13 FETCH_FORWARD as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant indicating that the rows in a result set will be processed in a forward direction; first-to-last. **Notes:** This constant is used by the method setFetchDirection as a hint to the driver, which the driver may ignore.

97.11.14 FETCH.Reverse as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant indicating that the rows in a result set will be processed in a reverse direction; last-to-first. **Notes:** This constant is used by the method setFetchDirection as a hint to the driver, which the driver may ignore.

97.11.15 FETCH_UNKNOWN as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant indicating that the order in which rows in a result set will be processed is unknown. **Notes:** This constant is used by the method setFetchDirection as a hint to the driver, which the driver may ignore.
**97.11.16  findColumn(column as string) as Integer**

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Maps the given ResultSet column name to its ResultSet column index.

**Example:**

```vbs
dim r as JavaResultSetMBS // your result set
MsgBox str(r.findColumn("test_id")) + " " + str(r.findColumn("test_val"))
```

**Notes:**
Returns 0 on any error.  
See the java documentation for details on java.sql.ResultSet.findColumn.

---

**97.11.17  first as boolean**

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Moves the cursor to the first row in this ResultSet object.  
**Notes:** See the java documentation for details on java.sql.ResultSet.first.

---

**97.11.18  getAsciiStream(column as Integer) as JavaInputStreamMBS**

MBS Java Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves the value of the designated column in the current row of this ResultSet object as a stream of ASCII characters.  
**Notes:**
Retrieves the value of the designated column in the current row of this ResultSet object as a stream of ASCII characters. The value can then be read in chunks from the stream. This method is particularly suitable for retrieving large LONGVARCHAR values. The JDBC driver will do any necessary conversion from the database format into ASCII.  
Note: All the data in the returned stream must be read prior to getting the value of any other column. The next call to a getter method implicitly closes the stream. Also, a stream may return 0 when the method InputStream.available is called whether there is data available or not.

**Parameters:**
column: the first column is 1, the second is 2, ...

**Returns:**
A Java input stream that delivers the database column value as a stream of one-byte ASCII characters; if the value is SQL NULL, the value returned is null.
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Throws:
SQLException - if the columnIndex is not valid; if a database access error occurs or this method is called on a closed result set.
See also:

• 97.11.19 getAsciiStream(column as string) as JavaInputStreamMBS

97.11.19  getAsciiStream(column as string) as JavaInputStreamMBS

MBS Java Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the value of the designated column in the current row of this ResultSet object as an Array object in the Java programming language.

**Notes:**
Retrieves the value of the designated column in the current row of this ResultSet object as a stream of ASCII characters. The value can then be read in chunks from the stream. This method is particularly suitable for retrieving large LONGVARCHAR values. The JDBC driver will do any necessary conversion from the database format into ASCII.
Note: All the data in the returned stream must be read prior to getting the value of any other column. The next call to a getter method implicitly closes the stream. Also, a stream may return 0 when the method available is called whether there is data available or not.

Parameters:
column: the label for the column specified with the SQL AS clause. If the SQL AS clause was not specified, then the label is the name of the column

Returns a Java input stream that delivers the database column value as a stream of one-byte ASCII characters. If the value is SQL NULL, the value returned is null.

Throws:
SQLException - if the columnLabel is not valid; if a database access error occurs or this method is called on a closed result set
See also:

• 97.11.18 getAsciiStream(column as Integer) as JavaInputStreamMBS

97.11.20  getBinaryStream(column as Integer) as JavaInputStreamMBS

MBS Java Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the value of the designated column in the current row of this ResultSet object as a stream of uninterpreted bytes.

**Notes:**
Retrieves the value of the designated column in the current row of this ResultSet object as a stream of uninterpreted bytes. The value can then be read in chunks from the stream. This method is particularly
suitable for retrieving large LONGVARBINARY values.

Note: All the data in the returned stream must be read prior to getting the value of any other column. The next call to a getter method implicitly closes the stream. Also, a stream may return 0 when the method InputStream.available is called whether there is data available or not.

Parameters:

- column: the first column is 1, the second is 2, ...

Returns a Java input stream that delivers the database column value as a stream of uninterpreted bytes; if the value is SQL NULL, the value returned is null.

Throws:

SQLException - if the columnIndex is not valid; if a database access error occurs or this method is called on a closed result set

See also:

- 97.11.21 getBinaryStream(column as string) as JavaInputStreamMBS

97.11.21 getBinaryStream(column as string) as JavaInputStreamMBS

MBS Java Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Retrieves the value of the designated column in the current row of this ResultSet object as a stream of uninterpreted bytes.

**Notes:**

Retrieves the value of the designated column in the current row of this ResultSet object as a stream of uninterpreted bytes. The value can then be read in chunks from the stream. This method is particularly suitable for retrieving large LONGVARBINARY values.

Note: All the data in the returned stream must be read prior to getting the value of any other column. The next call to a getter method implicitly closes the stream. Also, a stream may return 0 when the method available is called whether there is data available or not.

Parameters:

- column: the label for the column specified with the SQL AS clause. If the SQL AS clause was not specified, then the label is the name of the column

Returns a Java input stream that delivers the database column value as a stream of uninterpreted bytes; if the value is SQL NULL, the result is null.

Throws SQLException - if the columnLabel is not valid; if a database access error occurs or this method is called on a closed result set

See also:

- 97.11.20 getBinaryStream(column as Integer) as JavaInputStreamMBS
97.11.22 `getBlob(column as Integer) as JavaBlobMBS`

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the value of the designated column in the current row of this ResultSet object as a Blob object in the Java programming language.

**Notes:**
Column: the first column is 1, the second is 2, ...

Returns a Blob object representing the SQL BLOB value in the specified column
See also:

- 97.11.23 `getBlob(column as string) as JavaBlobMBS`

97.11.23 `getBlob(column as string) as JavaBlobMBS`

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the value of the designated column in the current row of this ResultSet object as a Blob object in the Java programming language.

**Notes:**
column: the name of the column from which to retrieve the value
Returns a Blob object representing the SQL BLOB value in the specified column
See also:

- 97.11.22 `getBlob(column as Integer) as JavaBlobMBS`

97.11.24 `getBoolean(column as Integer) as boolean`

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the value of the designated column in the current row of this ResultSet object as a boolean.

**Notes:** See the java documentation for details on java.sql.ResultSet.getBoolean.
See also:

- 97.11.25 `getBoolean(column as string) as boolean`

97.11.25 `getBoolean(column as string) as boolean`

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the value of the designated column in the current row of this ResultSet object as a boolean.

**Notes:** See the java documentation for details on java.sql.ResultSet.getBoolean.
See also:

- 97.11.24 `getBoolean(column as Integer) as boolean`
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### 97.11.26 `getByte(column as Integer) as Integer`

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the value of the designated column in the current row of this ResultSet object as a byte in the Java programming language.

**Notes:**

Parameters:
columnIndex - the first column is 1, the second is 2, ...

Returns:
the column value; if the value is SQL NULL, the value returned is 0

See also:

- 97.11.27 `getByte(column as string) as Integer`

### 97.11.27 `getByte(column as string) as Integer`

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the value of the designated column in the current row of this ResultSet object as a byte in the Java programming language.

**Notes:**

Parameters:
columnName - the SQL name of the column

Returns:
the column value; if the value is SQL NULL, the value returned is 0

See also:

- 97.11.26 `getByte(column as Integer) as Integer`

### 97.11.28 `getBytes(column as Integer) as string`

MBS Java Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the value of the designated column in the current row of this ResultSet object as a byte array in the Java programming language.

**Notes:**

column: the first column is 1, the second is 2, ...
the plugin gives you the bytes as a string with no encoding.

See also:

- 97.11.29 `getBytes(column as string) as string`
97.11.29 getBytes(column as string) as string

MBS Java Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the value of the designated column in the current row of this ResultSet object as a byte array in the Java programming language.

**Notes:** the plugin gives you the bytes as a string with no encoding.
See also:

- 97.11.28 getBytes(column as Integer) as string

97.11.30 getClob(column as Integer) as JavaClobMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the value of the designated column in the current row of this ResultSet object as a Clob object in the Java programming language.

**Notes:**
Column: the first column is 1, the second is 2, ...
Returns a Clob object representing the SQL CLOB value in the specified column
See also:

- 97.11.31 getClob(column as string) as JavaClobMBS

97.11.31 getClob(column as string) as JavaClobMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the value of the designated column in the current row of this ResultSet object as a Clob object in the Java programming language.

**Notes:**
Column: the name of the column from which to retrieve the value
Returns a Clob object representing the SQL CLOB value in the specified column
See also:

- 97.11.30 getClob(column as Integer) as JavaClobMBS

97.11.32 getConcurrency as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the concurrency mode of this ResultSet object.

**Notes:**
The concurrency used is determined by the Statement object that created the result set.
Returns:
the concurrency type, either ResultSet.CONCUR_READ_ONLY or ResultSet.CONCUR_UPDATABLE
97.11.33 getCursorName as string

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the name of the SQL cursor used by this ResultSet object.

**Notes:**

In SQL, a result table is retrieved through a cursor that is named. The current row of a result set can be updated or deleted using a positioned update/delete statement that references the cursor name. To insure that the cursor has the proper isolation level to support update, the cursor's SELECT statement should be of the form `SELECT FOR UPDATE`. If `FOR UPDATE` is omitted, the positioned updates may fail.

The JDBC API supports this SQL feature by providing the name of the SQL cursor used by a ResultSet object. The current row of a ResultSet object is also the current row of this SQL cursor.

**Note:** If positioned update is not supported, a SQLException is thrown.

**Returns:**
the SQL name for this ResultSet object’s cursor

97.11.34 getDouble(column as Integer) as Double

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the value of the designated column in the current row of this ResultSet object as a double.

**Notes:** See the java documentation for details on `java.sql.ResultSet.getDouble`. See also:

- 97.11.35 getDouble(column as string) as Double

97.11.35 getDouble(column as string) as Double

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the value of the designated column in the current row of this ResultSet object as a double.

**Notes:** See the java documentation for details on `java.sql.ResultSet.getDouble`. See also:

- 97.11.34 getDouble(column as Integer) as Double

97.11.36 getFloat(column as Integer) as single

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the value of the designated column in the current row of this ResultSet object as a float in the
Java programming language.

Notes:

Parameters:
columnIndex - the first column is 1, the second is 2, ...

Returns:
the column value; if the value is SQL NULL, the value returned is 0

See also:

• 97.11.37 getFloat(column as string) as single

97.11.37 getFloat(column as string) as single

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the value of the designated column in the current row of this ResultSet object as a float in the Java programming language.

Notes:

Parameters:
columnName - the SQL name of the column

Returns:
the column value; if the value is SQL NULL, the value returned is 0

See also:

• 97.11.36 getFloat(column as Integer) as single

97.11.38 getInt(column as Integer) as Integer

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the value of the designated column in the current row of this ResultSet object as an int.

Notes:

Parameters:
columnIndex - the first column is 1, the second is 2, ...

Returns:
the column value; if the value is SQL NULL, the value returned is 0

See the java documentation for details on java.sql.ResultSet.getInt.

See also:

• 97.11.39 getInt(column as string) as Integer

97.11.39 getInt(column as string) as Integer

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the value of the designated column in the current row of this ResultSet object as an int.
Example:

```basic
dim r as JavaResultSetMBS // your result set
MsgBox str(R.getInt("test_id"))+" "+r.getString("test_val")
```

Notes: See the java documentation for details on java.sql.ResultSet.getInt.
See also:

- 97.11.38 getInt(column as Integer) as Integer

97.11.40 getLong(column as Integer) as int64

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the value of the designated column in the current row of this ResultSet object as an int64.

Notes: See the java documentation for details on java.sql.ResultSet.getLong.
See also:

- 97.11.41 getLong(column as string) as int64

97.11.41 getLong(column as string) as int64

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the value of the designated column in the current row of this ResultSet object as an int64.

Notes: See the java documentation for details on java.sql.ResultSet.getLong.
See also:

- 97.11.40 getLong(column as Integer) as int64

97.11.42 getMetaData as JavaResultSetMetaDataMBS

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Retrieves the number, types and properties of this ResultSet object’s columns.

Notes:

Returns:
the description of this ResultSet object’s columns

97.11.43 getRow as Integer

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Retrieves the current row number.
Notes: See the java documentation for details on java.sql.ResultSet.getRow.

97.11.44  getShort(column as Integer) as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Retrieves the value of the designated column in the current row of this ResultSet object as a short in the Java programming language.
Notes:
Parameters:
columnIndex - the first column is 1, the second is 2, ...
Returns:
the column value; if the value is SQL NULL, the value returned is 0.
See also:

- 97.11.45 getShort(column as string) as Integer

97.11.45  getShort(column as string) as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Retrieves the value of the designated column in the current row of this ResultSet object as a short in the Java programming language.
Notes:
Parameters:
columnName - the SQL name of the column
Returns:
the column value; if the value is SQL NULL, the value returned is 0
See also:

- 97.11.44 getShort(column as Integer) as Integer

97.11.46  getString(column as Integer) as string

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Gets the value of the designated column in the current row of this ResultSet object as a String.
Notes: See the java documentation for details on java.sql.ResultSet.getString.
See also:

- 97.11.47 getString(column as string) as string
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97.11.47  **getString(column as string) as string**

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the value of the designated column in the current row of this ResultSet object as a String.

**Example:**

```dim r as JavaResultSetMBS // your result set
MsgBox str(R.getInt("test_id")+" "+r.getString("test_val")```

**Notes:** See the java documentation for details on java.sql.ResultSet.getString. See also:

- 97.11.46 getString(column as Integer) as string

97.11.48  **getType as Integer**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the type of this ResultSet object.

**Notes:**

The type is determined by the Statement object that created the result set.

**Returns:**

ResultSet.TYPE_FORWARD_ONLY, ResultSet.TYPE_SCROLL_INSENSITIVE, or ResultSet.TYPE_SCROLL_SENSITIVE

97.11.49  **getUnicodeStream(column as Integer) as JavaInputStreamMBS**

MBS Java Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Deprecated. use getCharacterStream in place of getUnicodeStream

**Notes:**

Retrieves the value of the designated column in the current row of this ResultSet object as a stream of two-byte 3 characters. The first byte is the high byte; the second byte is the low byte. The value can then be read in chunks from the stream. This method is particularly suitable for retrieving large LONGVARCHAR values. The JDBC driver will do any necessary conversion from the database format into Unicode.

Note: All the data in the returned stream must be read prior to getting the value of any other column. The next call to a getter method implicitly closes the stream. Also, a stream may return 0 when the method InputStream.available is called, whether there is data available or not.

**Parameters:**

- column: the first column is 1, the second is 2, ...

**Returns:**

A Java input stream that delivers the database column value as a stream of two-byte Unicode characters; if the value is SQL NULL, the value returned is null
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97.11.50 getUnicodeStream(column as string) as JavaInputStreamMBS

MBS Java Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Deprecated. use getCharacterStream instead

**Notes:**
Retrieves the value of the designated column in the current row of this ResultSet object as a stream of
two-byte Unicode characters. The first byte is the high byte; the second byte is the low byte. The value can
then be read in chunks from the stream. This method is particularly suitable for retrieving large LONG-
VARCHAR values. The JDBC technology-enabled driver will do any necessary conversion from the database
format into Unicode.

Note: All the data in the returned stream must be read prior to getting the value of any other column. The
next call to a getter method implicitly closes the stream. Also, a stream may return 0 when the method
InputStream.available is called, whether there is data available or not.

**Parameters:**
column: the label for the column specified with the SQL AS clause. If the SQL AS clause was not specified,
then the label is the name of the column

Returns a Java input stream that delivers the database column value as a stream of two-byte Unicode char-
acters. If the value is SQL NULL, the value returned is null.

**Throws:**
SQLException - if the columnLabel is not valid; if a database access error occurs or this method is called on
a closed result set
SQLFeatureNotSupportedException - if the JDBC driver does not support this method

See also:

- 97.11.49 getUnicodeStream(column as Integer) as JavaInputStreamMBS

97.11.51 HOLD_CURSORS_OVER_COMMIT as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constant indicating that ResultSet objects should not be closed when the method Connection.commit
is called.

97.11.52 insertRow

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Inserts the contents of the insert row into this ResultSet object and into the database. **Notes:** See the java documentation for details on java.sql.ResultSet.insertRow.

97.11.53 isAfterLast as boolean

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates whether the cursor is after the last row in this ResultSet object. **Notes:** See the java documentation for details on java.sql.ResultSet.isAfterLast.

97.11.54 isBeforeFirst as boolean

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether the cursor is before the first row in this ResultSet object. **Notes:**

Returns:
true if the cursor is before the first row; false if the cursor is at any other position or the result set contains no rows

See the java documentation for details on java.sql.ResultSet.isBeforeFirst.

97.11.55 isFirst as boolean

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates whether the cursor is on the first row of this ResultSet object. **Notes:** See the java documentation for details on java.sql.ResultSet.isFirst.

97.11.56 isLast as boolean

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates whether the cursor is on the last row of this ResultSet object. **Notes:** See the java documentation for details on java.sql.ResultSet.isLast.
97.11.57 last as boolean

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Moves the cursor to the last row in this ResultSet object. **Notes:** See the java documentation for details on java.sql.ResultSet.last.

97.11.58 moveToCurrentRow

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Moves the cursor to the remembered cursor position, usually the current row. **Notes:** This method has no effect if the cursor is not on the insert row.

See the java documentation for details on java.sql.ResultSet.moveToCurrentRow.

97.11.59 moveToInsertRow

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Moves the cursor to the insert row. **Notes:** The current cursor position is remembered while the cursor is positioned on the insert row. The insert row is a special row associated with an updatable result set. It is essentially a buffer where a new row may be constructed by calling the updater methods prior to inserting the row into the result set. Only the updater, getter, and insertRow methods may be called when the cursor is on the insert row. All of the columns in a result set must be given a value each time this method is called before calling insertRow. An updater method must be called before a getter method can be called on a column value.

See the java documentation for details on java.sql.ResultSet.moveToInsertRow.

97.11.60 NextRecord as boolean

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Moves the cursor down one row from its current position. **Notes:** See the java documentation for details on java.sql.ResultSet.next.
97.11.61 previousRecord as boolean

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Moves the cursor to the previous row in this ResultSet object.  
**Notes:** See the java documentation for details on java.sql.ResultSet.previous.

97.11.62 refreshRow

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Refreshes the current row with its most recent value in the database.  
**Notes:**  
This method cannot be called when the cursor is on the insert row.  
The refreshRow method provides a way for an application to explicitly tell the JDBC driver to refetch a row(s) from the database. An application may want to call refreshRow when caching or prefetching is being done by the JDBC driver to fetch the latest value of a row from the database. The JDBC driver may actually refresh multiple rows at once if the fetch size is greater than one.  

All values are refetched subject to the transaction isolation level and cursor sensitivity. If refreshRow is called after calling an updater method, but before calling the method updateRow, then the updates made to the row are lost. Calling the method refreshRow frequently will likely slow performance.

97.11.63 relative(row as Integer) as boolean

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Moves the cursor a relative number of rows, either positive or negative.  
**Notes:** See the java documentation for details on java.sql.ResultSet.relative.

97.11.64 rowDeleted as boolean

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether a row has been deleted.  
**Notes:**  
A deleted row may leave a visible ”hole” in a result set. This method can be used to detect holes in a result set. The value returned depends on whether or not this ResultSet object can detect deletions.  
**Returns:**  
true if a row was deleted and deletions are detected; false otherwise
97.11.65  rowInserted as boolean

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether the current row has had an insertion.

**Notes:**
The value returned depends on whether or not this ResultSet object can detect visible inserts.

**Returns:**
true if a row has had an insertion and insertions are detected; false otherwise

97.11.66  rowUpdated as boolean

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves whether the current row has been updated.

**Notes:**
The value returned depends on whether or not the result set can detect updates.

**Returns:**
true if both (1) the row has been visibly updated by the owner or another and (2) updates are detected

97.11.67  TYPE_FORWARD_ONLY as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant indicating the type for a ResultSet object whose cursor may move only forward.

97.11.68  TYPE_SCROLL_INSENSITIVE as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant indicating the type for a ResultSet object that is scrollable but generally not sensitive to changes made by others.

97.11.69  TYPE_SCROLL_SENSITIVE as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant indicating the type for a ResultSet object that is scrollable and generally sensitive to changes made by others.
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97.11.70  updateBlob(column as Integer, value as JavaBlobMBS)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Updates the designated column with a java.sql.Blob value.

**Notes:**
The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

column: the first column is 1, the second is 2, ...
value: the new column value
See also:

- 97.11.71 updateBlob(column as string, value as JavaBlobMBS)

97.11.71  updateBlob(column as string, value as JavaBlobMBS)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Updates the designated column with a java.sql.Blob value.

**Notes:**
The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

column: the name of the column
value: the new column value
See also:

- 97.11.70 updateBlob(column as Integer, value as JavaBlobMBS)

97.11.72  updateBoolean(column as Integer, value as boolean)

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Updates the designated column with a boolean value.

**Notes:**
The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

Parameters:
columnIndex - the first column is 1, the second is 2, ...
x - the new column value
See also:
97.11.73 updateBoolean(column as string, value as boolean)

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Updates the designated column with a boolean value.

**Notes:**
The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

**Parameters:**
columnName - the name of the column
x - the new column value

See also:
- 97.11.72 updateBoolean(column as Integer, value as boolean)

97.11.74 updateByte(column as Integer, value as Integer)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Updates the designated column with a byte value.

**Notes:**
The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

**Parameters:**
columnIndex - the first column is 1, the second is 2, ...
x - the new column value

See also:
- 97.11.75 updateByte(column as string, value as Integer)

97.11.75 updateByte(column as string, value as Integer)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Updates the designated column with a byte value.

**Notes:**
The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.
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Parameters:
columnName - the name of the column
x - the new column value
See also:

- 97.11.74 updateByte(column as Integer, value as Integer)

97.11.76 updateBytes(column as Integer, Value as String)

MBS Java Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Updates the designated column with a byte array value.

**Notes:**
The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.
column: column index starting at 1.
Value: The new byte array as a string.
See also:

- 97.11.77 updateBytes(column as string, Value as String)

97.11.77 updateBytes(column as string, Value as String)

MBS Java Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Updates the designated column with a byte array value.

**Notes:**
The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.
column: The column name.
Value: The new byte array as a string.
See also:

- 97.11.76 updateBytes(column as Integer, Value as String)

97.11.78 updateClob(column as Integer, value as JavaClobMBS)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Updates the designated column with a java.sql.Clob value.

**Notes:**
The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called
to update the database.

column: the first column is 1, the second is 2, ...
value: the new column value
See also:

- 97.11.79 updateClob(column as string, value as JavaClobMBS)

97.11.79  updateClob(column as string, value as JavaClobMBS)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Updates the designated column with a java.sql.Clob value.
**Notes:**
The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

column: the name of the column
value: the new column value
See also:

- 97.11.78 updateClob(column as Integer, value as JavaClobMBS)

97.11.80  updateDouble(column as Integer, value as Double)

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Updates the designated column with a double value.
**Notes:**
The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.
Parameters:
columnIndex - the first column is 1, the second is 2, ...
x - the new column value
See also:

- 97.11.81 updateDouble(column as string, value as Double)

97.11.81  updateDouble(column as string, value as Double)

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Updates the designated column with a double value.
**Notes:**
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The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

Parameters:

- **columnName** - the name of the column
- **x** - the new column value

See also:

- 97.11.80 `updateDouble(column as Integer, value as Double)`

### 97.11.82 `updateFloat(column as Integer, value as single)`

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Updates the designated column with a float value.

**Notes:**

The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

Parameters:

- **columnIndex** - the first column is 1, the second is 2, ...
- **x** - the new column value

See also:

- 97.11.83 `updateFloat(column as string, value as single)`

### 97.11.83 `updateFloat(column as string, value as single)`

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Updates the designated column with a float value.

**Notes:**

The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

Parameters:

- **columnName** - the name of the column
- **x** - the new column value

See also:

- 97.11.82 `updateFloat(column as Integer, value as single)`
97.11.84  updateInt(column as Integer, value as Integer)

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Updates the designated column with an int value.

**Notes:**
The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

**Parameters:**
- columnIndex - the first column is 1, the second is 2, ...
- x - the new column value

**See also:**
- 97.11.85 updateInt(column as string, value as Integer)

97.11.85  updateInt(column as string, value as Integer)

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Updates the designated column with an int value.

**Notes:**
The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

**Parameters:**
- columnName - the name of the column
- x - the new column value

**See also:**
- 97.11.84 updateInt(column as Integer, value as Integer)

97.11.86  updateLong(column as Integer, value as int64)

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Updates the designated column with a long value.

**Notes:**
The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

**Parameters:**
- columnIndex - the first column is 1, the second is 2, ...
- x - the new column value

**See also:**
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- 97.11.87 updateLong(column as string, value as int64)

### 97.11.87 updateLong(column as string, value as int64)

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Updates the designated column with a long value.  
**Notes:**  
The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

**Parameters:**
- columnName - the name of the column
- x - the new column value

See also:
- 97.11.86 updateLong(column as Integer, value as int64)

### 97.11.88 updateNull(column as Integer)

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gives a nullable column a null value.  
**Notes:**  
The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

**Parameters:**
- columnIndex - the first column is 1, the second is 2, ...

See also:
- 97.11.89 updateNull(column as string)

### 97.11.89 updateNull(column as string)

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Updates the designated column with a null value.  
**Notes:**  
The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.
Parameters:
columnName - the name of the column
See also:

- 97.11.88 updateNull(column as Integer)

97.11.90 \textbf{updateRow}

Updates the underlying database with the new contents of the current row of this ResultSet object.

\textbf{Example:}
\begin{verbatim}
dim r as JavaResultSetMBS
dim db as JavaConnectionMBS // your database
dim s as JavaStatementMBS

s=db.createStatement
r=s.executeQuery("SELECT test_id from myTable")

if r<>Nil then
  while r.NextRecord
    r.updateInt("test_id",10+r.getInt("test_id"))
    r.updateRow
  wend
end if
\end{verbatim}

\textbf{Notes:}
This method cannot be called when the cursor is on the insert row.

See the java documentation for details on java.sql.ResultSet.updateRow.

97.11.91 \textbf{updateShort}(column as Integer, value as Integer)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. \textbf{Function:}
Updates the designated column with a short value.

\textbf{Notes:}
The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

\textbf{Parameters:}
columnIndex - the first column is 1, the second is 2, ...
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x - the new column value
See also:

• 97.11.92 updateShort(column as string, value as Integer)

97.11.92 updateShort(column as string, value as Integer)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Updates the designated column with a short value.

**Notes:**
The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

Parameters:
columnName - the name of the column
x - the new column value
See also:

• 97.11.91 updateShort(column as Integer, value as Integer)

97.11.93 updateString(column as Integer, value as string)

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Updates the designated column with a String value.

**Notes:**
The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

Parameters:
columnIndex - the first column is 1, the second is 2, ...
x - the new column value
See also:

• 97.11.94 updateString(column as string, value as string)

97.11.94 updateString(column as string, value as string)

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Updates the designated column with a String value.

**Notes:**
The updater methods are used to update column values in the current row or the insert row. The updater methods do not update the underlying database; instead the updateRow or insertRow methods are called to update the database.

Parameters:
- columnName - the name of the column
- x - the new column value

See also:
- 97.11.93 updateString(column as Integer, value as string)

97.11.95 wasNull as boolean

MBS Java Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reports whether the last column read had a value of SQL NULL.

**Notes:** See the java documentation for details on java.sql.ResultSet.wasNull.

97.11.96 Properties

97.11.97 FetchDirection as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gives a hint as to the direction in which the rows in this ResultSet object will be processed.

**Notes:**
- The initial value is determined by the Statement object that produced this ResultSet object. The fetch direction may be changed at any time.

**Parameters:**
- direction - an int specifying the suggested fetch direction; one of ResultSet.FETCH_FORWARD, ResultSet.FETCH_REVERSE, or ResultSet.FETCH_UNKNOWN

(Read and Write computed property)

97.11.98 FetchSize as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gives the JDBC driver a hint as to the number of rows that should be fetched from the database when more rows are needed for this ResultSet object.

**Notes:**
- If the fetch size specified is zero, the JDBC driver ignores the value and is free to make its own best guess as to what the fetch size should be. The default value is set by the Statement object that created the result set. The fetch size may be changed at any time.
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Parameters:
rows - the number of rows to fetch
(Read and Write computed property)
97.12 class JavaResultSetMetaDataMBS

97.12.1 class JavaResultSetMetaDataMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An object that can be used to get information about the types and properties of the columns in a ResultSet object.

**Notes:**
Subclass of the JavaObjectMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

97.12.2 Methods

97.12.3 columnNoNulls as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant indicating that a column does not allow NULL values.

97.12.4 columnNullable as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant indicating that a column allows NULL values.

97.12.5 columnNullableUnknown as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant indicating that the nullability of a column’s values is unknown.

97.12.6 Constructor

MBS Java Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The private constructor.
97.12.7  **getCatalogName(Column as Integer) as string**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the designated column’s table’s catalog name.

**Notes:**
- Parameters:
  - column - the first column is 1, the second is 2, ...
- Returns:
  - the name of the catalog for the table in which the given column appears or "" if not applicable

97.12.8  **getColumnClassName(Column as Integer) as string**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the fully-qualified name of the Java class whose instances are manufactured if the method ResultSet.getObject is called to retrieve a value from the column.

**Notes:**
- ResultSet.getObject may return a subclass of the class returned by this method.
- Parameters:
  - column - the first column is 1, the second is 2, ...
- Returns:
  - the fully-qualified name of the class in the Java programming language that would be used by the method ResultSet.getObject to retrieve the value in the specified column. This is the class name used for custom mapping.

97.12.9  **getColumnCount as Integer**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the number of columns in this ResultSet object.

97.12.10  **getColumnDisplaySize(Column as Integer) as Integer**

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Indicates the designated column’s normal maximum width in characters.

**Notes:**
- Parameters:
  - column - the first column is 1, the second is 2, ...
- Returns:
the normal maximum number of characters allowed as the width of the designated column

### 97.12.11 getColumnLabel(Column as Integer) as string

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the designated column’s suggested title for use in printouts and displays.

**Notes:**

Parameters:
column - the first column is 1, the second is 2, ...

Returns:
the suggested column title

### 97.12.12 getColumnName(Column as Integer) as string

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get the designated column’s name.

**Notes:**

Parameters:
column - the first column is 1, the second is 2, ...

Returns:
column name

### 97.12.13 getColumnType(Column as Integer) as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves the designated column’s SQL type.

**Notes:**

Parameters:
column - the first column is 1, the second is 2, ...

Returns:
SQL type from java.sql.Types

### 97.12.14 getColumnTypeName(Column as Integer) as string

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves the designated column’s database-specific type name.

**Notes:**
Parameters:
column - the first column is 1, the second is 2, ...
Returns:
type name used by the database. If the column type is a user-defined type, then a fully-qualified type name is returned.

97.12.15 getPrecision(Column as Integer) as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get the designated column’s number of decimal digits.
**Notes:**
Parameters:
column - the first column is 1, the second is 2, ...
Returns:
precision

97.12.16 getScale(Column as Integer) as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the designated column’s number of digits to right of the decimal point.
**Notes:**
Parameters:
column - the first column is 1, the second is 2, ...
Returns:
scale

97.12.17 getSchemaName(Column as Integer) as string

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get the designated column’s table’s schema.
**Notes:**
Parameters:
column - the first column is 1, the second is 2, ...
Returns:
schema name or "" if not applicable
97.12.18 getTableName(Column as Integer) as string

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the designated column’s table name.

**Notes:**

Parameters:
column - the first column is 1, the second is 2, ...

Returns:
table name or "" if not applicable

97.12.19 isAutoIncrement(Column as Integer) as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates whether the designated column is automatically numbered, thus read-only.

**Notes:**

Parameters:
column - the first column is 1, the second is 2, ...

Returns:
true if so; false otherwise

97.12.20 isCaseSensitive(Column as Integer) as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates whether a column’s case matters.

**Notes:**

Parameters:
column - the first column is 1, the second is 2, ...

Returns:
true if so; false otherwise

97.12.21 isCurrency(Column as Integer) as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates whether the designated column is a cash value

**Notes:**

Parameters:
column - the first column is 1, the second is 2, ...

Returns:
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true if so; false otherwise

97.12.22 isDefinitelyWritable(Column as Integer) as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates whether a write on the designated column will definitely succeed. **Notes:**

Parameters:
column - the first column is 1, the second is 2, ...

Returns:
true if so; false otherwise

97.12.23 isNullable(Column as Integer) as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates the nullability of values in the designated column. **Notes:**

Parameters:
column - the first column is 1, the second is 2, ...

Returns:
the nullability status of the given column; one of columnNoNulls, columnNullable or columnNullableUnknown

97.12.24 isReadOnly(Column as Integer) as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates whether the designated column is definitely not writable. **Notes:**

Parameters:
column - the first column is 1, the second is 2, ...

Returns:
true if so; false otherwise

97.12.25 isSearchable(Column as Integer) as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates whether the designated column can be used in a where clause. **Notes:**
97.12.26  isSigned(Column as Integer) as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates whether values in the designated column are signed numbers.

**Notes:**

Parameters:
column - the first column is 1, the second is 2, ...
Returns:
true if so; false otherwise

97.12.27  isWritable(Column as Integer) as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Indicates whether it is possible for a write on the designated column to succeed.

**Notes:**

Parameters:
column - the first column is 1, the second is 2, ...
Returns:
true if so; false otherwise
97.13  CLASS JAVARUNTIMEMBS

97.13  class JavaRuntimeMBS

97.13.1  class JavaRuntimeMBS

Notes:
Subclass of the JavaObjectMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

97.13.2  Methods

97.13.3  availableProcessors as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns the number of processors available to the Java virtual machine.
Notes: This value may change during a particular invocation of the virtual machine. Applications that are sensitive to the number of available processors should therefore occasionally poll this property and adjust their resource usage appropriately.

97.13.4  Constructor


97.13.5  freeMemory as Int64

Notes: Calling the gc method may result in increasing the value returned by freeMemory.

97.13.6  gc

Notes: Calls "System.gc" in Java.
97.13.7  maxMemory as Int64

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the maximum amount of memory that the Java virtual machine will attempt to use.
**Notes:** If there is no inherent limit then the value Long.MAX_VALUE will be returned.

97.13.8  totalMemory as Int64

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the total amount of memory in the Java virtual machine.
**Notes:**
The value returned by this method may vary over time, depending on the host environment.
Note that the amount of memory required to hold an object of any given type may be implementation-dependent.
97.14. **class JavaSavepointMBS**

### 97.14.1 class JavaSavepointMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The representation of a savepoint, which is a point within the current transaction that can be referenced from the Connection.rollback method. When a transaction is rolled back to a savepoint all changes made after that savepoint are undone.

**Notes:**

- Savepoints can be either named or unnamed. Unnamed savepoints are identified by an ID generated by the underlying data source.
- Subclass of the JavaObjectMBS class.
- This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

### 97.14.2 Methods

#### 97.14.3 Constructor

MBS Java Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The private constructor.

#### 97.14.4 getSavepointId as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the generated ID for the savepoint that this Savepoint object represents.

#### 97.14.5 getSavepointName as string

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the name of the savepoint that this Savepoint object represents.
97.15 class JavaStatementMBS

97.15.1 class JavaStatementMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The object used for executing a static SQL statement and returning the results it produces.
**Notes:**
By default, only one ResultSet object per Statement object can be open at the same time. Therefore, if the
reading of one ResultSet object is interleaved with the reading of another, each must have been generated by
different Statement objects. All execution methods in the Statement interface implicitly close a statement’s
current ResultSet object if an open one exists.
Subclass of the JavaObjectMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

97.15.2 Methods

97.15.3 addBatch(sql as string)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Adds the given SQL command to the current list of commands for this Statement object.
**Notes:**
The commands in this list can be executed as a batch by calling the method executeBatch.

NOTE: This method is optional.

Parameters:
sql - typically this is a static SQL INSERT or UPDATE statement

97.15.4 cancel

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Cancels this Statement object if both the DBMS and driver support aborting an SQL statement.
**Notes:** This method can be used by one thread to cancel a statement that is being executed by another
thread.
97.15.5  clearBatch

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Empties this Statement object’s current list of SQL commands. **Notes:** NOTE: This method is optional.

97.15.6  clearWarnings

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Clears all the warnings reported on this Statement object. **Notes:** After a call to this method, the method getWarnings will return null until a new warning is reported for this Statement object.

97.15.7  close

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Releases this Statement object’s database and JDBC resources immediately instead of waiting for this to happen when it is automatically closed. **Notes:**

It is generally good practice to release resources as soon as you are finished with them to avoid tying up database resources. Calling the method close on a Statement object that is already closed has no effect.

Note: A Statement object is automatically closed when it is garbage collected. When a Statement object is closed, its current ResultSet object, if one exists, is also closed.

97.15.8  CLOSE_ALL_RESULTS as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant indicating that all ResultSet objects that have previously been kept open should be closed when calling getMoreResults.

97.15.9  CLOSE_CURRENT_RESULT as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant indicating that the current ResultSet object should be closed when calling getMoreResults.
97.15.10 Constructor

MBS Java Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

97.15.11 execute(sql as string) as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Executes the given SQL statement, which may return multiple results.
**Notes:**
In some (uncommon) situations, a single SQL statement may return multiple result sets and/or update counts. Normally you can ignore this unless you are (1) executing a stored procedure that you know may return multiple results or (2) you are dynamically executing an unknown SQL string.
The execute method executes an SQL statement and indicates the form of the first result. You must then use the methods getResultSet or getUpdateCount to retrieve the result, and getMoreResults to move to any subsequent result(s).

Parameters:
sql - any SQL statement

Returns:
true if the first result is a ResultSet object; false if it is an update count or there are no results

See also:
• 97.15.12 execute(sql as string, autoGeneratedKeys as Integer) as boolean

97.15.12 execute(sql as string, autoGeneratedKeys as Integer) as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Executes the given SQL statement, which may return multiple results, and signals the driver that any auto-generated keys should be made available for retrieval.
**Notes:**
The driver will ignore this signal if the SQL statement is not an INSERT statement.
In some (uncommon) situations, a single SQL statement may return multiple result sets and/or update counts. Normally you can ignore this unless you are (1) executing a stored procedure that you know may return multiple results or (2) you are dynamically executing an unknown SQL string.
The execute method executes an SQL statement and indicates the form of the first result. You must then use the methods getResultSet or getUpdateCount to retrieve the result, and getMoreResults to move to any subsequent result(s).
Parameters:
sql - any SQL statement
autoGeneratedKeys - a constant indicating whether auto-generated keys should be made available for retrieval using the method getGeneratedKeys; one of the following constants: Statement.RETURN_GENERATED_KEYS or Statement.NO_GENERATED_KEYS

Returns:
true if the first result is a ResultSet object; false if it is an update count or there are no results

See also:

* 97.15.11 execute(sql as string) as boolean

97.15.13 executeBatch as Integer()

MBS Java Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Submits a batch of commands to the database for execution and if all commands execute successfully, returns an array of update counts.

97.15.14 executeQuery(sql as string) as JavaResultSetMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Executes the given SQL statement, which returns a single ResultSet object.

**Notes:**

Parameters:
sql - an SQL statement to be sent to the database, typically a static SQL SELECT statement

Returns:
a ResultSet object that contains the data produced by the given query; never null

97.15.15 executeUpdate(Sql as string) as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Executes the given SQL statement, which may be an INSERT, UPDATE, or DELETE statement or an SQL statement that returns nothing, such as an SQL DDL statement.

**Notes:**

Parameters:
sql - an SQL INSERT, UPDATE or DELETE statement or an SQL statement that returns nothing

Returns:
either the row count for INSERT, UPDATE or DELETE statements, or 0 for SQL statements that return nothing

See also:

* 97.15.16 executeUpdate(Sql as string, autoGeneratedKeys as Integer) as Integer
97.15.16 executeUpdate(Sql as string, autoGeneratedKeys as Integer) as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Executes the given SQL statement and signals the driver with the given flag about whether the auto-generated keys produced by this Statement object should be made available for retrieval.

**Notes:**

**Parameters:**
- sql - must be an SQL INSERT, UPDATE or DELETE statement or an SQL statement that returns nothing
- autoGeneratedKeys - a flag indicating whether auto-generated keys should be made available for retrieval; one of the following constants: Statement.RETURN_GENERATED_KEYS, Statement.NO_GENERATED_KEYS

**Returns:**
either the row count for INSERT, UPDATE or DELETE statements, or 0 for SQL statements that return nothing

See also:
- 97.15.15 executeUpdate(Sql as string) as Integer

97.15.17 EXECUTE_FAILED as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constant indicating that an error occurred while executing a batch statement.

97.15.18 getGeneratedKeys as JavaResultSetMBS

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves any auto-generated keys created as a result of executing this Statement object.

**Notes:**
If this Statement object did not generate any keys, an empty ResultSet object is returned.

**Returns:**
a ResultSet object containing the auto-generated key(s) generated by the execution of this Statement object

97.15.19 getMoreResults as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Moves to this Statement object’s next result, returns true if it is a ResultSet object, and implicitly closes any current ResultSet object(s) obtained with the method getResultSet.

**Notes:**
There are no more results when the following is true:

```java
// stmt is a Statement object
((stmt.getMoreResults() == false) && (stmt.getUpdateCount() == -1))
```

Returns:
true if the next result is a ResultSet object; false if it is an update count or there are no more results

See also:
- 97.15.20 `getMoreResults(current as Integer) as boolean`

### 97.15.20 `getMoreResults(current as Integer) as boolean`

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Moves to this Statement object’s next result, deals with any current ResultSet object(s) according to the instructions specified by the given flag, and returns true if the next result is a ResultSet object.

**Notes:**
There are no more results when the following is true:

```java
// stmt is a Statement object
((stmt.getMoreResults() == false) && (stmt.getUpdateCount() == -1))
```

**Parameters:**
current - one of the following Statement constants indicating what should happen to current ResultSet objects obtained using the method `getResultSet`: `Statement.CLOSE_CURRENT_RESULT`, `Statement.KEEP_CURRENT_RESULT`, or `Statement.CLOSE_ALL_RESULTS`

**Returns:**
true if the next result is a ResultSet object; false if it is an update count or there are no more results

See also:
- 97.15.19 `getMoreResults as boolean`

### 97.15.21 `getResultSet as JavaResultSetMBS`

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the current result as a ResultSet object.

**Notes:**
This method should be called only once per result.

**Returns:**
the current result as a ResultSet object or null if the result is an update count or there are no more results
97.15.22 getResultSetConcurrency as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the result set concurrency for ResultSet objects generated by this Statement object. **Notes:**

Returns:
either ResultSet.CONCUR_READ_ONLY or ResultSet.CONCUR_UPDATABLE

97.15.23 getResultSetHoldability as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the result set holdability for ResultSet objects generated by this Statement object. **Notes:**

Returns:
either ResultSet.HOLD_CURSORS_OVER_COMMIT or ResultSet.CLOSE_CURSORS_AT_COMMIT

97.15.24 getResultSetType as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the result set type for ResultSet objects generated by this Statement object. **Notes:**

Returns:
one of ResultSet.TYPE_FORWARD_ONLY, ResultSet.TYPE_SCROLL_INSENSITIVE, or ResultSet.TYPE_SCROLL_SENSITIVE

97.15.25 getUpdateCount as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the current result as an update count; if the result is a ResultSet object or there are no more results, -1 is returned. **Notes:**

This method should be called only once per result.

Returns:
the current result as an update count; -1 if the current result is a ResultSet object or there are no more results
97.15.26 KEEP_CURRENT_RESULT as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constant indicating that the current ResultSet object should not be closed when calling getMoreResults.

97.15.27 NO_GENERATED_KEYS as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constant indicating that generated keys should not be made available for retrieval.

97.15.28 RETURN_GENERATED_KEYS as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constant indicating that generated keys should be made available for retrieval.

97.15.29 setCursorName(name as string)

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the SQL cursor name to the given String, which will be used by subsequent Statement object execute methods.
**Notes:**
This name can then be used in SQL positioned update or delete statements to identify the current row in the ResultSet object generated by this statement. If the database does not support positioned update/delete, this method is a noop. To insure that a cursor has the proper isolation level to support updates, the cursor’s SELECT statement should have the form SELECT FOR UPDATE. If FOR UPDATE is not present, positioned updates may fail.
Note: By definition, the execution of positioned updates and deletes must be done by a different Statement object than the one that generated the ResultSet object being used for positioning. Also, cursor names must be unique within a connection.

Parameters:
name - the new cursor name, which must be unique within a connection

97.15.30 SUCCESS_NO_INFO as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constant indicating that a batch statement executed successfully but that no count of the number of
97.15.31 Properties

97.15.32 EscapeProcessing as boolean

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether escape processing is on or off.

**Notes:**
If escape scanning is on (the default), the driver will do escape substitution before sending the SQL statement to the database. Note: Since prepared statements have usually been parsed prior to making this call, disabling escape processing for PreparedStatements objects will have no effect.
Parameters:
enable - true to enable escape processing; false to disable it
(Read and Write computed property)

97.15.33 FetchDirection as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The fetch direction.

**Notes:**
Gives the driver a hint as to the direction in which rows will be processed in ResultSet objects created using this Statement object. The default value is ResultSet.FETCH_FORWARD.
Note that this method sets the default fetch direction for result sets generated by this Statement object. Each result set has its own methods for getting and setting its own fetch direction.

Parameters:
direction - the initial direction for processing rows
(Read and Write computed property)

97.15.34 FetchSize as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gives the JDBC driver a hint as to the number of rows that should be fetched from the database when more rows are needed.

**Notes:**
The number of rows specified affects only result sets created using this statement. If the value specified is zero, then the hint is ignored. The default value is zero.
Parameters:
97.15.35  MaxFieldSize as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The maximum number of bytes that can be returned for character and binary column values in a ResultSet object produced by this Statement object.
**Notes:**
This limit applies only to BINARY, VARBINARY, LONGVARBINARY, CHAR, VARCHAR, and LONGVARCHAR columns. If the limit is exceeded, the excess data is silently discarded.
(Read and Write computed property)

97.15.36  MaxRows as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The maximum number of rows that a ResultSet object produced by this Statement object can contain.
**Notes:**
If this limit is exceeded, the excess rows are silently dropped.
(Read and Write computed property)

97.15.37  QueryTimeout as Integer

MBS Java Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The number of seconds the driver will wait for a Statement object to execute. If the limit is exceeded, a SQLException is thrown.
**Notes:**
Returns:
the current query timeout limit in seconds; zero means there is no limit
(Read and Write computed property)
Chapter 98

JavaScript

98.1 class JSClassMBS

98.1.1 class JSClassMBS

Function: The class for a class in javascript.
Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

98.1.2 Methods

98.1.3 Constructor

Function: The private constructor.

98.1.4 NewObject as JSObjectMBS

Function: Creates a JavaScript object for current class.
98.1.5 Properties

98.1.6 context as JSContextMBS

Function: The context for this class.
Notes: (Read only property)

98.1.7 Handle as Integer

Function: The handle for the class object.
Notes: (Read and Write property)

98.1.8 Tag as Variant

Function: The tag value.
Notes: You can store anything here and as long as the JSClass object exists, this value is kept referenced.
(Read and Write property)
98.2. class JSContextMBS

98.2.1 class JSContextMBS

**Function:** The class for a javascript execution context.

**Example:**

```vba
dim c as new JSContextMBS
dim e as JSValueMBS
dim v as JSValueMBS = c.EvaluateScript("1+2", ",", nil, e)

if e <> nil then
    // show error
    MsgBox e.StringValue
else
    // show result
    MsgBox str(v.doubleValue)
end if
```

98.2.2 Methods

98.2.3 CheckScriptSyntax(script as string, sourceURL as String, startingLineNumber as Integer = 1, byref JSException as JSValueMBS) as Boolean

**Function:** Checks for syntax errors in a string of JavaScript.

**Example:**

```vba
dim c as new JSContextMBS
dim e as JSValueMBS
if c.CheckScriptSyntax("1+", ",", e) then
    MsgBox "OK"
else
    // show error
    MsgBox e.StringValue
end if
```

**Notes:**

Script: A string containing the script to check for syntax errors.
sourceURL: A string containing a URL for the script’s source file. This is only used when reporting excep-
98.2.4 Constructor

Function: The constructor.
Notes: Creates a global JavaScript execution context.

98.2.5 EvaluateScript(script as string, sourceURL as String, thisObject as JSValueMBS, startingLineNumber as Integer = 1, byref JSException as JSValueMBS) as JSValueMBS

Function: Evaluates a string of JavaScript.
Example:

```vba
dim c as new JSContextMBS
dim e as JSValueMBS
dim v as JSValueMBS = c.EvaluateScript("1+", ",", nil, e)

if e <> nil then
    // show error
    MsgBox e.StringValue
else
    // show result
    MsgBox str(v.doubleValue)
end if
```

Notes:

script: A string containing the script to evaluate.
thisObject: The object to use as "this," or nil to use the global object as "this."
sourceURL: A string containing a URL for the script’s source file. This is used by debuggers and when reporting exceptions. Pass "" if you do not care to include source file information.
startingLineNumber: An integer value specifying the script’s starting line number in the file located at sourceURL. This is only used when reporting exceptions. The value is one-based, so the first line is line 1 and invalid values are clamped to 1.
and invalid values are clamped to 1.

exception: A JSValueMBS in which to store an exception, if any.

Returns the JSValue that results from evaluating script, or nil if an exception is thrown.

### 98.2.6 GarbageCollect


**Function:** Performs a JavaScript garbage collection.

**Notes:**

JavaScript values that are on the machine stack, in a register, protected by JSValueProtect, set as the global object of an execution context, or reachable from any such value will not be collected.

During JavaScript execution, you are not required to call this function; the JavaScript engine will garbage collect as needed. JavaScript values created within a context group are automatically destroyed when the last reference to the context group is released.

### 98.2.7 NewArray(arguments() as JSValueMBS, byref JSException as JSValueMBS) as JSObjectMBS


**Function:** Creates a JavaScript Array object.

**Example:**

```vba
dim c as new JSContextMBS
dim e as JSValueMBS
dim v as JSObjectMBS = c.NewArray(nil, e)
v SetPropertyAtIndex(0, c.valueWithString("Hello"), e)
v SetPropertyAtIndex(1, c.valueWithString("World"), e)
MsgBox v.JSONString
```

**Notes:**

arguments: A JSValue array of data to populate the Array with.

JSException: A JSValueMBS in which to store an exception, if any.

Returns a JSObject that is an Array.

The behavior of this function does not exactly match the behavior of the built-in Array constructor. Specifically, if one argument is supplied, this function returns an array with one element.

Requires Mac OS X 10.6 or newer.
98.2.8 NewDate(arguments() as JSValueMBS, byref JSException as JSValueMBS) as JSObjectMBS


**Function:** Creates a JavaScript Date object, as if by invoking the built-in Date constructor.

**Example:**

```vbnet
dim c as new JSContextMBS

dim year as JSValueMBS = c.valueWithDouble(2015)
dim month as JSValueMBS = c.valueWithDouble(5)
dim day as JSValueMBS = c.valueWithDouble(12)

dim e as JSValueMBS ' exception
dim d as JSValueMBS = c.NewDate(array(year, month, day), e)

MsgBox d.JSONString
```

**Notes:**

- arguments: A JSValue array of arguments to pass to the Date Constructor.
- JSException: A JSValueMBS in which to store an exception, if any.
- Returns a JSObject that is a Date.
- Requires Mac OS X 10.6 or newer.

98.2.9 NewError(arguments() as JSValueMBS, byref JSException as JSValueMBS) as JSObjectMBS


**Function:** Creates a JavaScript Error object, as if by invoking the built-in Error constructor.

**Example:**

```vbnet
dim c as new JSContextMBS

dim parameters() as JSValueMBS
Parameters.Append c.valueWithString("Hello")

dim ex as JSValueMBS
dim e as JSValueMBS = c.NewError(Parameters, ex)
MsgBox e.StringValue
```

**Notes:**

- arguments: A JSValue array of arguments to pass to the Error Constructor.
98.2. CLASS JSCONTEXTMBS

JSException: A JSValueMBS in which to store an exception, if any.

Returns a JSObject that is a Error.
Requires Mac OS X 10.6 or newer.

98.2.10 NewFunction(name as string) as JSObjectMBS

Function: Convenience method for creating a JavaScript function which raises FunctionCalled event on invocation.
Notes:
name: A string containing the function’s name. This will be used when converting the function to string.
Pass NULL to create an anonymous function.
Returns a JSObject that is a function. The object’s prototype will be the default function prototype.
See also:
- 98.2.11 NewFunction(name as string, parameterNames() as string, Body as String, SourceURL as string = ””, startingLineNumber as Integer = 0, byref JSException as JSValueMBS) as JSValueMBS

98.2.11 NewFunction(name as string, parameterNames() as string, Body as String, SourceURL as string = ””, startingLineNumber as Integer = 0, byref JSException as JSValueMBS) as JSValueMBS

Function: Creates a function with a given script as its body.
Example:

```vbscript
dim c as new JSContextMBS

// create a function
dim parameterNames() as string = array(”value”)  
dim body as string = ”return value*value;”
dim name as string = ”test”

dim e as JSValueMBS
dim v as JSValueMBS = c.NewFunction(name, parameterNames, body, e )

MsgBox v.StringValue

// put it in global memory
C.globalObject.SetProperty ”test”, v, e

// and call it
```
dim r as JSValueMBS = c.EvaluateScript("test(5)", "", nil, e)
MsgBox r.StringValue

Notes:

name: A string containing the function’s name. This will be used when converting the function to string. Pass "" to create an anonymous function.

parameterNames: A string array containing the names of the function’s parameters.

body: A string containing the script to use as the function’s body.

sourceURL: A string containing a URL for the script’s source file. This is only used when reporting exceptions. Pass "" if you do not care to include source file information in exceptions.

startingLineNumber: An integer value specifying the script’s starting line number in the file located at sourceURL. This is only used when reporting exceptions. The value is one-based, so the first line is line 1 and invalid values are clamped to 1.

exception: A JSValueMBS in which to store a syntax error exception, if any. Pass nil if you do not care to store a syntax error exception.

A JSObject that is a function, or nil if either body or parameterNames contains a syntax error. The object’s prototype will be the default function prototype.

Use this method when you want to execute a script repeatedly, to avoid the cost of re-parsing the script before each execution.

See also:

• 98.2.10 NewFunction(name as string) as JSObjectMBS

98.2.12 NewObject as JSObjectMBS


Function: Creates a new object.

98.2.13 NewRegExp(arguments() as JSValueMBS, byref JSExtension as JSValueMBS) as JSObjectMBS


Function: Creates a JavaScript RegExp object, as if by invoking the built-in RegExp constructor.

Notes:

arguments: A JSValue array of arguments to pass to the RegExp Constructor.

JSExtension: A JSValueMBS in which to store an exception, if any.

Returns a JSObject that is a RegExp.

Requires Mac OS X 10.6 or newer.
98.2.14 valueWithBool(value as boolean) as JSValueMBS

**Function:** Creates a JavaScript value of the boolean type.
**Example:**
```vbnet
dim c as new JSContextMBS
dim v as JSValueMBS = c.valueWithBool(true)
MsgBox v.toJSONString
```

98.2.15 valueWithDouble(value as Double) as JSValueMBS

**Function:** Creates a JavaScript value of the number type.
**Example:**
```vbnet
dim c as new JSContextMBS

dim v as JSValueMBS = c.valueWithDouble(5.6)
MsgBox v.StringValue
```

98.2.16 valueWithJSON(JSON as string) as JSValueMBS

**Function:** Creates a JavaScript value from a JSON formatted string.
**Example:**
```vbnet
dim c as new JSContextMBS

dim v as JSValueMBS = c.valueWithJSON("[1,2,3]")
dim o as JSObjectMBS = JSObjectMBS(v) // arrays are objects

dim e as JSValueMBS
dim p as JSValueMBS = o.getProperty("length", e)

MsgBox p.StringValue // shows 3
```

**Notes:**
Returns a JSValue containing the parsed value, or nil if the input is invalid.
Available on Mac OS X 10.7 and newer
98.2.17 valueWithNull as JSValueMBS

Function: Creates a JavaScript value of the null type.
Example:

```vba
dim c as new JSContextMBS
dim j as JSValueMBS = c.valueWithNull
if j.Type = JSValueMBS.kJSTypeNull then
    MsgBox "null"
end if
```

98.2.18 valueWithString(value as string) as JSValueMBS

Function: Creates a JavaScript value of the string type.
Example:

```vba
dim c as new JSContextMBS

dim v as JSValueMBS = c.valueWithString("Hello")
MsgBox v.StringValue
```

98.2.19 valueWithUndefined as JSValueMBS

Function: Creates a JavaScript value of the undefined type.
Example:

```vba
dim c as new JSContextMBS
dim j as JSValueMBS = c.valueWithUndefined
if j.Type = JSValueMBS.kJSTypeUndefined then
    MsgBox "undefined"
end if
```
98.2.20 Properties

98.2.21 globalObject as JSObjectMBS

Function: Gets the global object of a JavaScript execution context.
Example:
```vba
dim c as new JSContextMBS

dim v as JSObjectMBS = c.globalObject
dim e as JSValueMBS

v.SetProperty "Hello", c.valueWithString("World"), e
v.SetProperty "Value", c.valueWithDouble(5), e

MsgBox c.globalObject.JSONString
```

Notes: (Read only property)

98.2.22 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

98.2.23 Name as String

Function: The name.
Example:
```vba
dim c as new JSContextMBS

c.Name = "Hello"
MsgBox c.Name
```

Notes:
Requires Mac OS X 10.10 and newer.
(Read and Write property)
98.2.24 Tag as Variant

Function: The tag value.
Notes:
You can store anything here and as long as the JSContext object exists, this value is kept referenced.
(Read and Write property)

98.2.25 Events

98.2.26 FunctionCalled(functionObject as JSObjectMBS, thisObject as JSObjectMBS, arguments() as JSValueMBS, byref JSException as JSValueMBS) as JSValueMBS

MBS MacFrameworks Plugin, Plugin Version: 15.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The event called when your custom function is called.
Notes: Please return a value and in case of error set exception.
98.3. class JSObjectMBS

Function: The class for a Javascript Object.
Notes:
Subclass of the JSValueMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

98.3.2 Methods

98.3.3 CallAsConstructor(arguments() as JSValueMBS, byref JSException as JSValueMBS) as JSValueMBS

Function: Calls an object as a constructor.
Notes:
self: The JSObject to call as a constructor.
arguments: A JSValueMBS array of arguments to pass to the constructor.
JSException: A pointer to a JSValueMBS in which to store an exception, if any.
Returns the JSObject that results from calling object as a constructor, or nil if an exception is thrown or object is not a constructor.

98.3.4 CallAsFunction(thisObject as JSValueMBS, arguments() as JSValueMBS, byref JSException as JSValueMBS) as JSValueMBS

Function: Calls an object as a function.
Notes:
self: The JSObject to call as a function.
thisObject: The object to use as "this," or nil to use the global object as "this."
arguments: A JSValueMBS array of arguments to pass to the function.
JSException: A JSValueMBS in which to store an exception, if any.

Returns the JSValue that results from calling object as a function, or nil if an exception is thrown or object is not a function.
98.3.5 Constructor

**Function:** The private constructor.

---

98.3.6 DeleteProperty(name as string, byref JSException as JSValueMBS) as boolean

**Function:** Deletes a property from an object.

**Example:**
```
dim c as new JSContextMBS

dim v as JSObjectMBS = c.globalObject

dim e as JSValueMBS

v.SetProperty "Hello", c.valueWithString("World"), e
v.SetProperty "Value", c.valueWithDouble(5), e

MsgBox v.JSONString
call v.DeleteProperty "Hello", e

MsgBox v.JSONString
```

**Notes:**

Name: A string containing the property's name.
JSException: A JSValueMBS in which to store an exception, if any.
Returns true if the delete operation succeeds, otherwise false (for example, if the property has the kJSPropertyAttributeDontDelete attribute set).

---

98.3.7 GetProperty(name as string, byref JSException as JSValueMBS) as JSValueMBS

**Function:** Gets a property from an object.

**Example:**
```
dim c as new JSContextMBS

dim v as JSObjectMBS = c.globalObject
```
98.3. **CLASS JSOBJECTMBS**

dim e as JSValueMBS

v SetProperty ”Hello”, c.valueWithString(”World”), e

MsgBox v.GetProperty(”Hello”, e).StringValue

**Notes:**

object: The JSObject whose property you want to get.
Name: A string containing the property’s name.
JSException: A JSValueMBS in which to store an exception, if any.
Returns the property’s value if object has the property, otherwise the undefined value.

98.3.8 **GetPropertyAtIndex(propertyIndex as Integer, byref JSException as JSValueMBS) as JSValueMBS**

**Function:** Gets a property from an object by numeric index.
**Example:**

dim c as new JSContextMBS

dim v as JSValueMBS = c.valueWithJSON(” [ 1,2,3 ] ”)
dim o as JSObjectMBS = JSObjectMBS(v) // arrays are objects

dim e as JSValueMBS
dim p as JSValueMBS = o.GetProperty(”length”, e)

MsgBox ”Length: ”+p.StringValue

dim n as JSValueMBS = o.GetPropertyAtIndex(2, e)
MsgBox ”3rd value in array: ”+n.StringValue

**Notes:**

The JSObject whose property you want to get.
propertyIndex: An integer value that is the property’s name.
JSException: A JSValueMBS in which to store an exception, if any.

Returns the property’s value if object has the property, otherwise the undefined value.

Calling GetPropertyAtIndex is equivalent to calling GetProperty with a string containing propertyIndex,
but GetPropertyAtIndex provides optimized access to numeric properties.

98.3.9  HasProperty(name as string) as boolean

Function: Tests whether an object has a given property.
Example:

dim c as new JSContextMBS

dim e as JSValueMBS
dim v as JSObjectMBS = c.NewArray(nil, e)
MsgBox str(v.HasProperty("length"))

Notes:

name: A string containing the property’s name.
Returns true if the object has a property whose name matches propertyName, otherwise false.

98.3.10  PropertyNames as String()

Function: Gets the names of an object’s enumerable properties.
Example:

dim c as new JSContextMBS

dim v as JSObjectMBS = c.globalObject
dim e as JSValueMBS

v.SetProperty "Hello", c.valueWithString("World"), e
v.SetProperty "Value", c.valueWithDouble(5), e
MsgBox Join(v.PropertyNames, EndOfLine)

98.3.11  SetProperty(name as string, value as JSValueMBS, byref JSException as JSValueMBS)

Function: Sets a property on an object.
Example:

```vbnet
dim c as new JSContextMBS

dim v as JSObjectMBS = c.globalObject
dim e as JSValueMBS

v.SetProperty "Hello", c.valueWithString("World"), e
v.SetProperty "Value", c.valueWithDouble(5), e
```

Notes:

Name: A string containing the property's name.
Value: A JSValue to use as the property's value.
JSException A pointer to a JSValueRef in which to store an exception, if any.

98.3.12 SetPropertyAtIndex(propertyIndex as Integer, value as JSValueMBS, byref JSException as JSValueMBS)

Function: Sets a property on an object by numeric index.
Notes:

propertyIndex: The property’s name as a number.
value: A JSValue to use as the property's value.
exception: A JSValueMBS in which to store an exception, if any.

Calling SetPropertyAtIndex is equivalent to calling SetProperty with a string containing propertyIndex, but SetPropertyAtIndex provides optimized access to numeric properties.

98.3.13 Properties

98.3.14 isConstructor as Boolean

Function: Tests whether an object can be called as a constructor.
Notes:

Returns true if the object can be called as a constructor, otherwise false.
(Read only property)
98.3.15  **isFunction as Boolean**


**Function:** Tests whether an object can be called as a function.

**Example:**
```
dim c as new JSContextMBS
dim f as JSObjectMBS = c.NewFunction("Hello")
```

MsgBox str(f.isFunction)

**Notes:**
Returns true if the object can be called as a function, otherwise false.
(Read only property)

---

98.3.16  **Prototype as JSValueMBS**


**Function:** An object’s prototype.

**Example:**
```
dim c as new JSContextMBS
dim j as JSValueMBS = c.valueWithJSON(" {"tag": 1 } ")
dim o as JSObjectMBS = JSObjectMBS(j)
MsgBox "object prototyp: "+o.Prototype.StringValue
```

**Notes:** (Read and Write property)
98.4. CLASS JSVALUEMBS

98.4 class JSValueMBS

98.4.1 class JSValueMBS

Function: The class for a Javascript value.
Example:

dim c as new JSContextMBS
dim j as JSValueMBS = c.valueWithDouble(1)
MsgBox j.StringValue

Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

98.4.2 Methods

98.4.3 Constructor

Function: The private constructor.

98.4.4 DoubleValue(byref JSException as JSValueMBS) as Double

Function: Converts a JavaScript value to number and returns the resulting number.
Notes: Returns the numeric result of conversion, or NaN if an exception is thrown.
See also:

• 98.4.15 doubleValue as Double

98.4.5 IsEqual(OtherValue as JSValueMBS, byref JSException as JSValueMBS) as boolean

Function: Tests whether two JavaScript values are equal, as compared by the JS == operator.
Example:

dim c as new JSContextMBS
dim s1 as JSValueMBS = c.valueWithJSON("""Hello""")
dim s2 as JSValueMBS = c.valueWithJSON("""Hello""")
dim e as JSValueMBS
MsgBox str(s1.IsEqual(s2, e))

Notes:
OtherValue The second value to test.
exception: A JSValueMBS in which to store an exception, if any.
Returns true if the two values are equal, false if they are not equal or an exception is thrown.

98.4.6 IsInstanceOfConstructor(ConstructorFunction as JSObjectMBS, byref JSException as JSValueMBS) as boolean

Function: Tests whether a JavaScript value is an object constructed by a given constructor, as compared by the JS instanceof operator.
Notes:
ConstructorFunction: The constructor to test against.
JSException: A JSValueMBS in which to store an exception, if any.
Returns true if value is an object constructed by constructor, as compared by the JS instanceof operator, otherwise false.

98.4.7 IsObjectOfClass(ClassObject as JSValueMBS) as boolean

Function: Tests whether a JavaScript value is an object with a given class in its class chain.
Notes:
ClassObject The JSClass to test against.
Returns true if value is an object and has jsClass in its class chain, otherwise false.

98.4.8 IsStrictEqual(OtherValue as JSValueMBS) as boolean

Function: Tests whether two JavaScript values are strict equal, as compared by the JS === operator.
Example:
dim c as new JSContextMBS
dim j1 as JSValueMBS = c.valueWithDouble(1)
dim j2 as JSValueMBS = c.valueWithDouble(2)
MsgBox str(j1.IsStrictEqual(j2)) // false
MsgBox str(j1.IsStrictEqual(j1))  // true

Notes:
OtherValue: The second value to test.
Returns true if the two values are strict equal, otherwise false.

98.4.9  JSONString(indent as Integer = 0, byref JSExtension as JSValueMBS)  as string

Function: Creates a JavaScript string containing the JSON serialized representation of a JS value.
Example:
  dim c as new JSContextMBS
  dim j as JSValueMBS = c.valueWithJSON(" { ""tag"":"Hello"", ""value"":1 } ")
  dim e as JSValueMBS
  MsgBox j.JSONString(5, e)

Notes:
Requires Mac OS X 10.7 and newer.

The number of spaces to indent when nesting. If 0, the resulting JSON will not contains newlines. The size
of the indent is clamped to 10 spaces.
JSExtension: A JSValueMBS in which to store an exception, if any.
Returns a JSString with the result of serialization, or nil if an exception is thrown.
See also:

• 98.4.25 JSONString as string

98.4.10  ObjectValue(byref JSExtension as JSValueMBS) as JSValueMBS

Function: Converts a JavaScript value to object and returns the resulting object.
Notes:
JSExtension: A JSValueMBS in which to store an exception, if any.
Returns the JObject result of conversion, or nil if an exception is thrown.
98.4.11 **StringValue(byref JSException as JSValueMBS) as string**

**Function:** Converts a JavaScript value to string and copies the result into a JavaScript string.
**Notes:**
JSException: A JSValueMBS in which to store an exception, if any.
Returns a JSString with the result of conversion, or nil if an exception is thrown.
See also:
- 98.4.26 StringValue as String

98.4.12 **Properties**

98.4.13 **booleanValue as Boolean**

**Function:** Converts a JavaScript value to boolean and returns the resulting boolean.
**Example:**
```
dim c as new JSContextMBS
dim j as JSValueMBS = c.valueWithBool(true)
MsgBox str(j.booleanValue)
```
**Notes:** (Read only property)

98.4.14 **context as JSContextMBS**

**Function:** The context for this value.
**Notes:** (Read only property)

98.4.15 **doubleValue as Double**

**Function:** Converts a JavaScript value to number and returns the resulting number.
**Example:**
```
dim c as new JSContextMBS
dim j as JSValueMBS = c.valueWithDouble(5.3)
MsgBox str(j.doubleValue)
```
Notes:

Returns the numeric result of conversion, or NaN if an exception is thrown.
(Read only property)

See also:

- 98.4.4 DoubleValue(byref JSException as JSValueMBS) as Double

98.4.16 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

98.4.17 isArray as Boolean

Function: Tests whether a JavaScript value is an array.
Example:

dim c as new JSContextMBS

dim e as JSValueMBS
dim v as JSValueMBS = c.NewArray(nil, e)

MsgBox str(v.isArray)

Notes:

Returns true if value is an array, otherwise false.
Requires OS X 10.11 or newer.
(Read only property)

98.4.18 isBoolean as Boolean

Function: Tests whether a JavaScript value’s type is the boolean type.
Example:
```
dim c as new JSContextMBS
dim j as JSValueMBS = c.valueWithBool(true)
MsgBox str(j.isBoolean)
```

Notes:
Returns true if value’s type is the boolean type, otherwise false.
(Read only property)

### 98.4.19 isDate as Boolean

**Function:** Tests whether a JavaScript value is a date.
**Example:**
```
dim c as new JSContextMBS

dim year as JSValueMBS = c.valueWithDouble(2015)
dim month as JSValueMBS = c.valueWithDouble(5)
dim day as JSValueMBS = c.valueWithDouble(12)

dim e as JSValueMBS // exception
dim d as JSValueMBS = c.NewDate(array(year, month, day), e)
```

MsgBox str(d.isDate)

Notes:
Returns true if value is a date, otherwise false.
Requires OS X 10.11 or newer.
(Read only property)

### 98.4.20 isNull as Boolean

**Function:** Tests whether a JavaScript value’s type is the null type.
**Example:**
```
dim c as new JSContextMBS
dim n as JSValueMBS = c.valueWithNull
```

MsgBox str(n.isNull)
Notes:
Returns true if value’s type is the null type, otherwise false.  
(Read only property)

**98.4.21 isNumber as Boolean**

**Function:** Tests whether a JavaScript value’s type is the number type.  
**Example:**
```
dim c as new JSContextMBS

dim j as JSValueMBS = c.valueWithDouble(5)  
MsgBox str(j.isNumber)
```

Notes:
Returns true if value’s type is the number type, otherwise false.  
(Read only property)

**98.4.22 isObject as Boolean**

**Function:** Tests whether a JavaScript value’s type is the object type.  
**Example:**
```
dim c as new JSContextMBS

dim e as JSValueMBS  
dim v as JSValueMBS = c.NewArray(nil, e)  
MsgBox str(v.isObject)
```

Notes:
Returns true if value’s type is the object type, otherwise false.  
(Read only property)
98.4.23  **isString as Boolean**


**Function:** Tests whether a JavaScript value’s type is the string type.

**Example:**

```vba
dim c as new JSContextMBS
dim s as JSValueMBS = c.valueWithJSON("""Hello""")
MsgBox str(s.isString)
```

**Notes:**

Returns true if value’s type is the string type, otherwise false.

(Read only property)

98.4.24  **isUndefined as Boolean**


**Function:** Tests whether a JavaScript value’s type is the undefined type.

**Example:**

```vba
dim c as new JSContextMBS

dim j as JSValueMBS = c.valueWithUndefined
MsgBox str(j.isUndefined)
```

**Notes:**

Returns true if value’s type is the undefined type, otherwise false.

(Read only property)

98.4.25  **JSONString as string**


**Function:** Creates a JavaScript string containing the JSON serialized representation of a JS value.

**Example:**

```vba
dim c as new JSContextMBS

dim v as JSValueMBS = c.valueWithString("Hello")
MsgBox v.toJSONString
```
Notes:
Requires Mac OS X 10.7 and newer.
(Read only property)
See also:

- 98.4.9 JSONString(indent as Integer = 0, byref JSException as JSValueMBS) as string

98.4.26 StringValue as String

Function: Converts a JavaScript value to string and copies the result into a JavaScript string.
Example:

dim c as new JSContextMBS

dim v as JSValueMBS = c.valueWithString(“Hello”)
MsgBox v.StringValue

Notes:
Returns a JSString with the result of conversion, or NULL if an exception is thrown.
(Read only property)
See also:

- 98.4.11 StringValue(byref JSException as JSValueMBS) as string

98.4.27 Tag as Variant

Function: The tag value.
Notes:
You can store anything here and as long as the JSValue object exists, this value is kept referenced.
(Read and Write property)

98.4.28 Type as Integer

Function: Returns a JavaScript value’s type.
Example:
dim c as new JSContextMBS
dim j as JSValueMBS

j = c.valueWithDouble(1) // double
'j = c.valueWithNull // null
'j = c.valueWithUndefined // undefined
'j = c.valueWithString("Hello") // string
'j = c.valueWithJSON("
{ 
"tag": 1
}"") // object
'j = c.valueWithBool(true)

Select case j.Type
  case JSValueMBS.kJSTypeUndefined
    MsgBox "undefined"
  case JSValueMBS.kJSTypeNull
    MsgBox "null"
  case JSValueMBS.kJSTypeBoolean
    MsgBox "boolean " + str(j.booleanValue)
  case JSValueMBS.kJSTypeNumber
    MsgBox "number " + str(j.doubleValue)
  case JSValueMBS.kJSTypeString
    MsgBox "string " + j.StringValue
  case JSValueMBS.kJSTypeObject
    MsgBox "object " + j.JSONString
  else
    Break
end Select

Notes: (Read only property)

98.4.29 Constants

98.4.30 kJSTypeBoolean = 2

MBS MacFrameworks Plugin, Plugin Version: 15.4. **Function:** One of the type constant identifying the
type of a JSValue.

**Example:**

dim c as new JSContextMBS
dim j as JSValueMBS = c.valueWithBool(true)

if j.Type = JSValueMBS.kJSTypeBoolean then
  MsgBox "boolean " + str(j.booleanValue)
end if
Notes: A primitive boolean value, one of true or false.

98.4.31 kJSTypeNull = 1

MBS MacFrameworks Plugin, Plugin Version: 15.4. **Function:** One of the type constant identifying the type of a JSValue.
**Example:**

dim c as new JSContextMBS
dim j as JSValueMBS = c.valueWithNull

if j.Type = JSValueMBS.kJSTypeNull then
    MsgBox "null"
end if

Notes: The unique null value.

98.4.32 kJSTypeNumber = 3

MBS MacFrameworks Plugin, Plugin Version: 15.4. **Function:** One of the type constant identifying the type of a JSValue.
**Example:**

dim c as new JSContextMBS
dim j as JSValueMBS = c.valueWithDouble(1) // double

if j.Type = JSValueMBS.kJSTypeNumber then
    MsgBox "number " + str(j.doubleValue)
end if

Notes: A primitive number value.

98.4.33 kJSTypeObject = 5

MBS MacFrameworks Plugin, Plugin Version: 15.4. **Function:** One of the type constant identifying the type of a JSValue.
**Example:**
dim c as new JSContextMBS
dim j as JSValueMBS = c.valueWithJSON(" { ""tag"": 1 } ")

if j.Type = JSValueMBS.kJSTypeBoolean then
    MsgBox "object "+j.JSONString
end if

Notes: An object value (meaning that this JSValueMBS is a JSObjectMBS).

98.4.34 kJSTypeString = 4

MBS MacFrameworks Plugin, Plugin Version: 15.4. **Function:** One of the type constant identifying the type of a JSValue.

**Example:**

dim c as new JSContextMBS
dim j as JSValueMBS = c.valueWithString("Hello")

if j.Type = JSValueMBS.kJSTypeString then
    MsgBox "string "+j.StringValue
end if

Notes: A primitive string value.

98.4.35 kJSTypeUndefined = 0

MBS MacFrameworks Plugin, Plugin Version: 15.4. **Function:** One of the type constant identifying the type of a JSValue.

**Example:**

dim c as new JSContextMBS
dim j as JSValueMBS = c.valueWithUndefined

if j.Type = JSValueMBS.kJSTypeUndefined then
    MsgBox "undefined"
end if

Notes: The unique undefined value.
Chapter 99

JavaScript Object Notation

99.1  class JSONMBS

99.1.1  class JSONMBS

MBS Util Plugin, Plugin Version: 13.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for JSON object parsing and creating.  
**Example:**

```vbnet
dim o as JSONMBS = JSONMBS.NewObjectNode

o.AddItemToObject "Hello", JSONMBS.NewNumberNode(1)
o.AddItemToObject "World", JSONMBS.NewNumberNode(2)

MsgBox o.toString
```

99.1.2  Methods

99.1.3  AddItemToArray(item as JSONMBS)

MBS Util Plugin, Plugin Version: 13.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds an item to an array.  
**Notes:**

If you add item from new nodes created with plugin, we add them to the tree.  
If you add items from existing node from other JSON tree, we add references.
99.1.4 AddItemToObject(label as string, value as JSONMBS)

MBS Util Plugin, Plugin Version: 13.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds an item to an object with given label. 
**Notes:**
If you add item from new nodes created with plugin, we add them to the tree.  
If you add items from existing node from other JSON tree, we add references.

99.1.5 ArrayItem(index as Integer) as JSONMBS

MBS Util Plugin, Plugin Version: 13.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries array item with given index.

99.1.6 Child(label as string) as JSONMBS

MBS Util Plugin, Plugin Version: 13.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the Child node for the node with the given label. 
**Example:**
```
    dim jv as JSONMBS = JSONMBS.NewStringNode(“value”)
    dim jo as JSONMBS = JSONMBS.NewObjectNode
    jo.AddItemToObject(“key”, jv)
    // shows { ”key” : ”value” }
    MsgBox jo.toString
    MsgBox jo.Child(“key”).ValueString
```

**Notes:** Similar to JSONItem.Child()

99.1.7 Clone as JSONMBS

MBS Util Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Clones the JSON tree.
99.1.8 Close

MBS Util Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Frees node.
**Notes:**
No need to call this as destructor does the same.
But this call allows you to release circular references.

99.1.9 Constructor

**Notes:** Lasterror is set.
See also:
- 99.1.10 Constructor(text as string)

99.1.10 Constructor(text as string)

MBS Util Plugin, Plugin Version: 13.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Parses the given JSON String into the tree where this node is the root.
**Example:**
```
dim o as new JSONMBS(" { "text":"Hello World" } ")
MsgBox o.toString
```
**Notes:**
Lasterror is set.
Text should be UTF-8.
Starting with version 15.0, you may see a ParseError and still have all the content which was parsed until that error.
See also:
- 99.1.9 Constructor

99.1.11 hasChild(label as string) as Boolean

MBS Util Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Checks if a child node for the node with the given label exists.
**Example:**
dim jv as JSONMBS = JSONMBS.NewStringNode("value")
dim jo as JSONMBS = JSONMBS.NewObjectNode

jo.AddItemToObject("key", jv)

// shows { "key": "value" }
MsgBox jo.toString
MsgBox str(jo.hasChild("key"))

Notes: Similar to JSONMBS.Child(), but without returning the actual object.

### 99.1.12 JSONObjectCount as Integer

MBS Util Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** For debugging, the plugin counts how many JSONMBS objects we have.

### 99.1.13 NewArrayNode as JSONMBS


**Example:**

dim n as JSONMBS = JSONMBS.NewArrayNode
MsgBox str(n.Type)+" = "+str(n.kTypeArray)

### 99.1.14 NewBoolNode(value as boolean) as JSONMBS


**Example:**

dim j as JSONMBS = JSONMBS.NewBoolNode(true)
MsgBox j.toString
99.1.15  **NewDoubleArray(values() as Double) as JSONMBS**

MBS Util Plugin, Plugin Version: 13.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a json array object with the given values.

**Example:**

```vbnet
dim n() as Double = array(1.0,2,3)
dim j as JSONMBS = JSONMBS.NewDoubleArray(n)
MsgBox j.toString
```

**Notes:**

This is a convenience method to quickly create an array.

Version 17.0 and newer return empty JSON array node in case of empty string array. Older versions returned nil.

99.1.16  **NewFalseNode as JSONMBS**


**Example:**

```vbnet
dim n as JSONMBS = JSONMBS.NewFalseNode
MsgBox str(n.Type)+" = " +str(n.kTypeFalse)
```

**Notes:** This is a node which represents a boolean false value.

99.1.17  **NewInt64Node(value as Int64) as JSONMBS**

MBS Util Plugin, Plugin Version: 17.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new node based on Int64 value.

**Example:**

```vbnet
dim x as int64 = 92233720368547758
dim n as JSONMBS = JSONMBS.NewInt64Node(x)
MsgBox "String: " +n.ValueString+EndOfLine+"ToString: " +n.toString+EndOfLine+"Double: " +str(n.ValueDouble,"-0")+EndOfLine+"Int64: " +str(n.ValueInteger,"-0")
```
99.1.18 NewIntegerArray(values() as Integer) as JSONMBS

MBS Util Plugin, Plugin Version: 13.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a json array object with the given values.  
**Example:**
```
dim n() as Integer = array(1,2,3)  
dim j as JSONMBS = JSONMBS.NewIntegerArray(n)  
MsgBox j.toString  
```

**Notes:**
This is a convenience method to quickly create an array.

Version 17.0 and newer return empty JSON array node in case of empty string array. Older versions returned nil.

99.1.19 NewNullNode as JSONMBS

**Example:**
```
dim n as JSONMBS = JSONMBS.NewNullNode  
MsgBox str(n.Type)+" = "+str(n.kTypeNull)  
```

**Notes:** This is a node which represents a nil value.

99.1.20 NewNumberNode(value as Double) as JSONMBS

**Example:**
```
dim n as JSONMBS = JSONMBS.NewNumberNode(123)  
MsgBox str(n.Type)+" = "+str(n.kTypeNumber)  
```

See also:

- 99.1.21 NewNumberNode(value as string) as JSONMBS
99.1. CLASS JSONMBS

99.1.21 NewNumberNode(value as string) as JSONMBS

MBS Util Plugin, Plugin Version: 17.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new number node with given number as text.

**Example:**

```vbnet
dim n as JSONMBS = JSONMBS.NewNumberNode("92233720368547758")
```

MsgBox "String: "+n.ValueString+EndOfLine+"ToString: "+n.toString+EndOfLine+"Double: "+str(n.ValueDouble,"-0")+EndOfLine+"Int64: "+str(n.ValueInteger,"-0")

**Notes:** This allows you to control formatting of large integer and floating point values.

See also:

- 99.1.20 NewNumberNode(value as Double) as JSONMBS

99.1.22 NewObjectNode as JSONMBS


**Example:**

```vbnet
dim n as JSONMBS = JSONMBS.NewObjectNode
```

MsgBox str(n.Type)+" = "+str(n.kTypeObject)

99.1.23 NewStringArray(values() as string) as JSONMBS

MBS Util Plugin, Plugin Version: 13.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a json array object with the given values.

**Example:**

```vbnet
dim n() as string = array("Hello", "World")
dim j as JSONMBS = JSONMBS.NewStringArray(n)
```

MsgBox j.toString

**Notes:**

This is a convenience method to quickly create an array.

Version 17.0 and newer return empty JSON array node in case of empty string array. Older versions returned nil.
99.1.24  NewStringNode(value as string) as JSONMBS


**Example:**

```vba
// some string with single/double quote and EndOfLine
dim s as string = "Hello'World"+EndOfLine+"this is "" a test."

// make string node
dim j as JSONMBS = JSONMBS.NewStringNode(s)

// get as JSON
dim d as string = j.toString
// show
MsgBox d

// parse again
j = new JSONMBS(d)

MsgBox j.ValueString
```

99.1.25  NewTrueNode as JSONMBS


**Example:**

```vba
dim n as JSONMBS = JSONMBS.NewTrueNode
MsgBox str(n.Type)+" = "+str(n.kTypeTrue)
```

**Notes:** This is a node which represents a boolean true value.

99.1.26  SuffixObject(nextItem as JSONMBS) as JSONMBS

MBS Util Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Appends an array item on a previous item in the same array.

**Example:**

```vba
// test code for SuffixObject:
const UseFastMode = true
```
99.1. **CLASS JSONMBS**

```vba
dim o as JSONMBS = JSONMBS.NewArrayNode

dim startTime as Double = Microseconds
dim last as JSONMBS
for i as Integer = 0 to 10000

dim j as JSONMBS = JSONMBS.NewStringNode("test" + str(i))

# if UseFastMode = False
// slow
o.AddItemToArray(j)

# else
// 10 times faster
if last = nil then
  o.AddItemToArray(j)
  last = o.ChildNode
else
  last = last.SuffixObject(j)
end if
# endif
next

dim endTime as Double = Microseconds

MsgBox (str(endTime - startTime))
```

**Notes:**

This method is an optimization for AddItemToArray.
You can call SuffixObject only on the last item of an array to add another one.
Only add new nodes there.
Any other use could lead into crashes or memory leaks.

Returns in version 16.0 and newer the new reference node.

---

99.1.27 **ToHTML(NoHeader as boolean = false, CSS as string = ") as String**

MBS Util Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Converts JSON to HTML.

**Notes:**

We build for you a HTML with tables for each array and object. We include values and tag rows with
even/odd CSS classes.
If NoHeader is true, you get just the raw table without header/footer.
Anything in CSS parameter is inserted before the table.
Returns HTML, which can be loaded in htmlviewer.

Example for CSS to do even/odd line backgrounds:

```html
/* CSS style to include */
"<style>
  td
  {
    vertical-align:top;
  }
  .odd
    {
      background-color: white;
    }
  .even
    {
      background-color: # DDD;
    }
</style>"
```

99.1.28 toString(formatted as boolean) as string

MBS Util Plugin, Plugin Version: 13.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Produces a JSON markup text document from a document tree.

**Example:**

```vbs
dim o as JSONMBS = JSONMBS.NewObjectNode
o.AddItemToObject "text", JSONMBS.NewStringNode("Hello World")
MsgBox o.toJSONString // shows " { "text":"Hello World" } "
```

**Notes:** Returns "" on any error. Lasterror is set.
See also:

- 99.1.39 toString as String
99.1.29 Properties

99.1.30 ArraySize as Integer

**Notes:** (Read only property)

99.1.31 ChildNode as JSONMBS

**Example:**

```realbasic
dim o as JSONMBS = JSONMBS.NewArrayNode
  o.AddItemToArray JSONMBS.NewNumberNode(1)
  o.AddItemToArray JSONMBS.NewNumberNode(2)
  o.AddItemToArray JSONMBS.NewNumberNode(3)
  o.AddItemToArray JSONMBS.NewNumberNode(4)

dim n as JSONMBS = o.ChildNode // first child
MsgBox n.ValueString // shows 1
```

**Notes:** (Read only property)

99.1.32 Handle as Integer

MBS Util Plugin, Plugin Version: 13.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal handle to the JSON object.  
**Notes:**  
It is possible to have two REALbasic objects with the same handle pointing to the same JSON node.  
(Read only property)

99.1.33 LastChildNode as JSONMBS

**Example:**
dim o as JSONMBS = JSONMBS.NewArrayNode
o.AddItemToArray JSONMBS.NewNumberNode(1)
o.AddItemToArray JSONMBS.NewNumberNode(2)
o.AddItemToArray JSONMBS.NewNumberNode(3)
o.AddItemToArray JSONMBS.NewNumberNode(4)

dim k as JSONMBS = o.LastChildNode
MsgBox k.ValueString // shows 4

Notes: (Read only property)

99.1.34 Name as String

MBS Util Plugin, Plugin Version: 13.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The name of this node.
Notes: (Read only property)

99.1.35 NextNode as JSONMBS

MBS Util Plugin, Plugin Version: 13.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The next node on the same level.
**Example:**
dim o as JSONMBS = JSONMBS.NewArrayNode
o.AddItemToArray JSONMBS.NewNumberNode(1)
o.AddItemToArray JSONMBS.NewNumberNode(2)
o.AddItemToArray JSONMBS.NewNumberNode(3)
o.AddItemToArray JSONMBS.NewNumberNode(4)

dim k as JSONMBS = o.ChildNode
while k<>nil
MsgBox k.ValueString // shows 1, 2, 3, 4
k=k.NextNode
wend

Notes: (Read only property)
99.1. CLASS JSONMBS

99.1.36 ParseError as String

MBS Util Plugin, Plugin Version: 13.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The parse error string.
**Notes:**
When parsing fails, this may be an useful message so you know what went wrong.
(Read only property)

99.1.37 PreviousNode as JSONMBS

MBS Util Plugin, Plugin Version: 13.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The previous node on the same level.
**Example:**
```vbscript
dim o as JSONMBS = JSONMBS.NewArrayNode
o.AddItemToArray JSONMBS.NewNumberNode(1)
o.AddItemToArray JSONMBS.NewNumberNode(2)
o.AddItemToArray JSONMBS.NewNumberNode(3)
o.AddItemToArray JSONMBS NewNumberNode(4)
dim k as JSONMBS = o.LastChildNode
while k<>nil
    MsgBox k.valuestring // shows 4, 3, 2, 1
    k=k.PreviousNode
wend
```
**Notes:** (Read only property)

99.1.38 Root as JSONMBS

**Notes:**
The root node owns the references to all children.
(Read only property)
99.1.39  **toString as String**


**Example:**

```vbs
Dim o As JSONMBS = JSONMBS.NewObjectNode

o.AddItemToObject "text", JSONMBS.NewStringNode("Hello World")

MsgBox o.toString // shows "{"text":"Hello World"}
```

**Notes:**

Returns "" on any error. Lasterror is set.
(Read only property)
See also:
- 99.1.28 `toString(formatted as boolean)` as string

---

99.1.40  **Type as Integer**

MBS Util Plugin, Plugin Version: 13.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The type of the node.

**Example:**

```vbs
Dim n As JSONMBS = JSONMBS.NewNullNode

MsgBox n.Type
```

**Notes:** (Read only property)

---

99.1.41  **TypeName as String**

MBS Util Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Shows type of this node as string.

**Example:**

```vbs
Dim o As JSONMBS = JSONMBS.NewArrayNode

MsgBox o.TypeName
```

**Notes:**
This property was added for debugging so you can see type in debugger.
(Read only property)

99.1.42 Valid as Boolean

MBS Util Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Checks whether node is valid.
**Notes:**
The handle is not zero and there are no error nodes in JSON tree.
Returns true if valid, else false.
(Read only property)

99.1.43 ValueBoolean as Boolean

MBS Util Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The boolean value of this json node.
**Notes:**
Returns true if type is kTypeTrue, false if kTypeFalse or true if ValueInteger <>0.
(Read only property)

99.1.44 ValueDouble as Double

**Notes:** (Read only property)

99.1.45 ValueInteger as Int64

**Notes:** (Read only property)

99.1.46 ValueString as String

99.1.47 Constants

99.1.48 kTypeArray = 6

MBS Util Plugin, Plugin Version: 13.3. **Function**: One of the node type constants. **Notes**: For an array node.

99.1.49 kTypeError = 0

MBS Util Plugin, Plugin Version: 13.3. **Function**: One of the node type constants. **Notes**: The parse failed and you got an invalid node.

99.1.50 kTypeFalse = 1

MBS Util Plugin, Plugin Version: 13.3. **Function**: One of the node type constants. **Notes**: For a false node.

99.1.51 kTypeNull = 3

MBS Util Plugin, Plugin Version: 13.3. **Function**: One of the node type constants. **Notes**: For a null node.

99.1.52 kTypeNumber = 4

MBS Util Plugin, Plugin Version: 13.3. **Function**: One of the node type constants. **Notes**: For a number node.

99.1.53 kTypeObject = 7

MBS Util Plugin, Plugin Version: 13.3. **Function**: One of the node type constants. **Notes**: For an object node.
99.1. **CLASS JSONMBS**

**99.1.54**  `kTypeString = 5`

MBS Util Plugin, Plugin Version: 13.3. **Function:** One of the node type constants. **Notes:** For a string node.

**99.1.55**  `kTypeTrue = 2`

MBS Util Plugin, Plugin Version: 13.3. **Function:** One of the node type constants. **Notes:** For a true node.
Chapter 100

JPEG

100.1  class JPEG2000MBS

100.1.1  class JPEG2000MBS

MBS Images Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for compress/decompress of JPEG 2000 images.

**Example:**

```vbnet
dim file as FolderItem = GetFolderItem("test.jp2")
dim stream as BinaryStream = BinaryStream.Open(file)
dim data as string = stream.Read(stream.Length)

dim jp2 as new JPEG2000MBS
if jp2.InitDecompress(data) then
    MsgBox str(jp2.Width)+" x "+str(jp2.Height)
end if
```

**Notes:**
Currently only supports RGB, RGBA and Grayscale images.

Please note that Jasper library used here is not very memory efficient and may run out of memory with huge images.
100.1.2 Methods

100.1.3 Close

MBS Images Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Performs cleanup.

**Notes:**
Called automatically by destructor for you.
You can call it after you are done to free memory now.

100.1.4 Compress as Boolean

MBS Images Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Compresses image.

**Notes:**
Please use first InitCompress, than loop over rows and use SetRow to fill in data.
This method will compress image and set ImageData property.
Returns true on success and false on failure.

100.1.5 Decode(Data as MemoryBlock) as Picture

MBS Images Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Decodes a JPEG 2000 images.

**Example:**
```
    dim p as Picture = LogoMBS(200)
    
    dim j80 as MemoryBlock = JPEG2000MBS.Encode(p, 80)
    dim p80 as Picture = JPEG2000MBS.Decode(j80)
    
    window1.Backdrop = p80
```

**Notes:**
Returns on success the picture object.
Can raise exception if data is invalid.
See also:

- 100.1.6 Decode(Data as string) as Picture
100.1.6 Decode(Data as string) as Picture

Notes:
Returns on success the picture object.
Can raise exception if data is invalid.
See also:
- 100.1.5 Decode(Data as MemoryBlock) as Picture

100.1.7 Encode(pic as picture, Quality as Integer = 80) as MemoryBlock

Example:
```vbscript
dim p as Picture = LogoMBS(200)

dim j80 as MemoryBlock = JPEG2000MBS.Encode(p, 80)
dim p80 as Picture = JPEG2000MBS.Decode(j80)

window1.Backdrop = p80
```
Notes: Returns image data on success or nil on failure.

100.1.8 GetRow(Index as Integer, Row as MemoryBlock = nil) as MemoryBlock

Notes:
If you pass in a memoryblock, we use it, else we create a new one.
So you can pass in memoryblock from last call to GetRow.
Returns nil in case of error.
100.1.9 InitCompress(Width as Integer, Height as Integer, BytesPerPixel as Integer, BytesPerRow as Integer = 0) as Boolean

MBS Images Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Initializes the compression for a new image.

**Example:**
```vba
dim p as Picture = LogoMBS(200)
dim pp as new PictureMBS(p)

// compress RGB in PictureMBS
dim je as new JPEG2000MBS
if je.InitCompress(pp.Width, pp.Height, 3, pp.RowSize) then
    dim h as Integer = pp.Height - 1
    for i as Integer = 0 to h
        dim rowData as MemoryBlock = pp.RowInFormat(i, pp.ImageFormatRGB)
        if not je.SetRow(i, rowData) then
            Break
        end if
    next
    if je.Compress then
        dim ImageData as MemoryBlock = je.ImageData
        if ImageData <> nil then
            // and decode to show
            dim pic as Picture = JPEG2000MBS.Decode(ImageData)
            window1Backdrop = pic
        end if
    end if
end if
```

**Notes:**

Returns true on success or false on failure.
If BytesPerRow is zero, we calculate it based on BytesPerPixel and Width.
BytesPerPixel can be 1 for gray, 3 for RGB and 4 for RGBA.

100.1.10 InitDecompress(ImageData as MemoryBlock) as Boolean

MBS Images Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Initializes the decompression for given image data.

**Example:**
```vba
```
100.1. **CLASS JPEG2000MBS**

```vbnet
dim p as Picture = LogoMBS(200)

dim j80 as MemoryBlock = JPEG2000MBS.Encode(p, 80)

// decompress to PictureMBS
dim jd as new JPEG2000MBS

if jd.InitDecompress(j80) then

dim pi as new PictureMBS(jd.Width, jd.Height, PictureMBS.ImageFormatRGB)

dim h as Integer = pi.Height-1

dim r as MemoryBlock

for i as Integer = 0 to h

// get row. Recycle MemoryBlock, so we don't create new one each row.
r = jd.getRow(i, r)
pi.RowInFormat(i, pi.ImageFormatRGB) = r

next

// get picture
window1.Backdrop = pi.CopyPicture
end if
```

**Notes:**

Returns true on success or false on failure.
BytesPerPixel is set to 1 for gray, 3 for RGB and 4 for RGBA.

---

**100.1.11 SetRow(Index as Integer, Row as MemoryBlock) as Boolean**

MBS Images Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets data for a row. **Notes:** Returns true on success.

---

**100.1.12 Properties**

**100.1.13 BytesPerPixel as Integer**

MBS Images Plugin, Plugin Version: 15.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of bytes per pixel. **Notes:**

One for gray, 3 for RGB and 4 for RGBA.
Set by InitCompress or InitDecompress.
100.1.14 **BytesPerRow** as Integer

MBS Images Plugin, Plugin Version: 15.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The bytes per row.  
**Notes:**  
Only used to create memoryblock or check memoryblock size.  
Set by InitCompress or InitDecompress.  
(Read only property)

100.1.15 **Height** as Integer

MBS Images Plugin, Plugin Version: 15.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The height of the image.  
**Notes:**  
Set by InitCompress or InitDecompress.  
(Read only property)

100.1.16 **ImageData** as MemoryBlock

MBS Images Plugin, Plugin Version: 15.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The image data.  
**Notes:**  
Set by Compress method on success.  
(Read only property)

100.1.17 **Options** as String

MBS Images Plugin, Plugin Version: 15.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Options to pass to Jasper library for compression.  
**Notes:**  
e.g. "rate=80"  
(Read and Write property)
100.1.18   Width as Integer

MBS Images Plugin, Plugin Version: 15.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The width of the image.
**Notes:**
Set by InitCompress or InitDecompress.
(Read only property)
100.2 class JPEGExporterMBS

100.2.1 class JPEGExporterMBS

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class for JPEG Exporting.

**Example:**

```vbscript
dim g as FolderItem
dim ji as JPEGImporterMBS
dim je as JPEGExporterMBS
dim f as FolderItem
dim m as MemoryBlock

// this code copies a JPG: CMYK or RGB

// import it
g=SpecialFolder.Desktop.Child("PICT1533.JPG")
ji=new JPEGImporterMBS
ji.File=g
ji.AllowDamaged=true
ji.CMYK=true // if it is cmyk
if ji.InitJPEG then
    do
    loop until ji.LoopJPEG<>0
ji.FinishJPEG
end if

// export it
f=SpecialFolder.Desktop.child("PICT1533 copy.JPG")
je=new JPEGExporterMBS
je.File=f
je.Quality=75

if ji.CMYK then
    m=ji.PictureData
    je.ExportCMYK m, ji.Width, ji.Height, ji.Width*4
else
    je.Picture=ji.Picture
    je.Export
end if
```

**Notes:**

This class is not depending on any library! It works without QuickTime even on System 7, but as it contains everything needed this method is around 100 KB big!
100.2. `CLASS JPEGEXPORTERMBS`

(REALbasic’s SaveAsJPEG depends on QuickTime)

Bases on libjpeg.

### 100.2.2 Methods

### 100.2.3 Export

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Exports the picture.  
**Example:**

```vbnet
dim g as FolderItem
dim ji as JPEGImporterMBS
dim je as JPEGExporterMBS
dim f as FolderItem
dim m as MemoryBlock

// this code copies a JPG: CMYK or RGB

// import it
  g=SpecialFolder.Desktop.Child("PICT1533.JPG")
  ji=new JPEGImporterMBS
  ji.File=g
  ji.AllowDamaged=true
  ji.CMYK=true // if it is cmyk
  if ji.InitJPEG then
    do
      loop until ji.LoopJPEG<>0
    ji.FinishJPEG
  end if

// export it
  f=SpecialFolder.Desktop.child("PICT1533 copy.JPG")
  je=new JPEGExporterMBS
  je.File=f
  je.Quality=75

  if ji.CMYK then
    m=ji.PictureData
    je.ExportCMYK m, ji.Width, ji.Height, ji.Width*4
  else
    je.Picture=ji.Picture
    je.Export
  end if
```
**Notes:**

This method saves 32-bit pictures to a file using JPEG Compression. Using the properties of the class you can specify the quality in range between 0 and 100%.

This method is not depending on any library! It works without QuickTime even on System 7, but as it contains everything needed this method is around 100 KB big!

(REALbasic’s SaveAsJPEG depends on QuickTime)

You may use the function picture.bitmap to make sure that the picture is a bitmap, because this function works only for bitmap pictures.

This method uses the YieldTicks property and may yield time to other threads.

### 100.2.4 `ExportCMYK(data as memoryblock, width as UInt32, height as UInt32, rowbytes as UInt32)`

MBS Images Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Exports a picture from CMYK data in a memoryblock.

**Example:**

```plaintext
dim g as FolderItem
dim ji as JPEGImporterMBS
dim je as JPEGExporterMBS
dim f as FolderItem
dim m as MemoryBlock

// import it
g=getOpenFolderItem("image/jpeg")
ji=new JPEGImporterMBS
ji.File=g
ji.AllowDamaged=true
ji.ImportCMYK

m=ji.PictureData

// export it
f=SpecialFolder.Desktop.child("test.jpg")
je=new JPEGExporterMBS
je.HorizontalResolution=300
je.VerticalResolution=300
je.ResolutionUnit=1
je.File=f
```
100.2. CLASS JPEGEXPORTERMBS

je.Quality=75
je.ExportCMYK m, ji.Width, ji.Height, ji.Width*4

Notes:

This method saves 32 bit CMYK pictures to a file using JPEG Compression. Using the properties of the class you can specify the quality in range between 0 and 100%

This method is not depending on any library! It works without QuickTime even on System 7, but as it contains everything needed this method is around 100 KB big! (REALbasic’s SaveAsJPEG depends on QuickTime)

The picture must be in the format that one byte is used for each channel and the channels are ordered in memory in Cyan, Magenta, Yellow and Black.
If rowbytes is 0, the plugin uses width*4 for rowbytes.

This method uses the YieldTicks property and may yield time to other threads.

100.2.5 ExportGray

Notes: Same as Export, but writes grayscale picture. The picture from picture property is converted to grayscale internally for this.
See also:

- 100.2.6 ExportGray(data as memoryblock, width as UInt32, height as UInt32, rowbytes as UInt32) 15617

100.2.6 ExportGray(data as memoryblock, width as UInt32, height as UInt32, rowbytes as UInt32)

Notes:
Same as Export, but writes grayscale picture using data in memoryblock.
If rowbytes is 0, the plugin uses width for rowbytes.
This method uses the YieldTicks property and may yield time to other threads.
See also:

- 100.2.5 ExportGray 15617
100.2.7 ExportRGB(data as memoryblock, width as UInt32, height as UInt32, rowbytes as UInt32)

MBS Images Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Exports a picture from RGB data in a memoryblock.

**Example:**

```vba
dim f as FolderItem
dim ji as new JPEGImporterMBS
dim je as new JPEGExporterMBS
dim m as MemoryBlock
dim i,c as Integer

// read jpeg
f=SpecialFolder.Desktop.Child("input.jpg")

ji.Mode=ji.ModeRGB // read RGB to memoryblock
ji.File=f
ji.Import

m=ji.PictureData

// add red
c=m.Size-1
for i=0 to c step 3
    m.Byte(i)=255
next

// write jpeg
f=SpecialFolder.Desktop.Child("test.jpg")

je.File=f
je.ExportRGB(m,ji.Width, ji.Height, ji.Width*3)
```

**Notes:** The memoryblock data must be in the format with bytes in the order RGB.

100.2.8 ExportRGBwithRowDataEvent(width as UInt32, height as UInt32, rowbytes as UInt32)

MBS Images Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Exports a picture from RGB data in memoryblocks from the GetRowData event.

**Notes:**
You need to implement the GetRowData event by subclassing this class.
The memoryblock data must be in the format with bytes in the order RGB.
100.2.9 GetJPEGVersion as String


100.2.10 Properties

100.2.11 data as string

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The destination string. Notes: If file is nil, the compressed data is saved in this property. The returned string has the encoding set to MacRoman. If you want to concat the string with another you should change the encoding, so both strings have the same encoding. If you don’t handle that RB may convert the JPEG data to UTF8 (Unicode) which will destroy it. (Read and Write property)

100.2.12 DCTMethod as Integer

MBS Images Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Which DCT/IDCT algorithm to use. Notes: Possible values:

-1 Plugin does not change setting
0 slow but accurate integer algorithm (default)
1 faster, less accurate integer method
2 floating-point: accurate, fast on fast Hardware

Default is Integer slow. (Read and Write property)
100.2.13 **ErrorCode as Integer**

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The error code from the Export method.

**Example:**

```vba
dim j as new JPEGExporterMBS

// do something

MsgBox str(j.ErrorCode)+" "+j.ErrorMessage
```

**Notes:**

- The last function was successful if ErrorCode is 0.
- If the parameters are not valid, the value is set to -1.
- Other values are Mac OS error codes.

(Read and Write property)

100.2.14 **ErrorMessage as string**

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last error message reported.

**Example:**

```vba
dim j as new JPEGExporterMBS

// do something

MsgBox j.ErrorMessage
```

**Notes:** (Read and Write property)

100.2.15 **EXIFData as String**

MBS Images Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The EXIF data for this file.

**Example:**

```vba
// Read a picture file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim ji as new JPEGImporterMBS
```
// Write a new picture file
dim o as FolderItem = SpecialFolder.Desktop.Child("out.jpg")
dim je as new JPEGExporterMBS

je.File = o
je.EXIFData = ji.ExifData
je.Picture = ji.Picture
je.Export

Notes:
The export methods use this property.
(Read and Write property)

100.2.16 file as folderitem

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The destination file.
**Example:**

dim p as Picture = LogoMBS(500)

'Save the scan
dim je as new JPEGExporterMBS
je.file = SpecialFolder.Desktop.Child("just a test.jpg")
je.quality = 75
je.picture = p
je.VerticalResolution = 72
je.HorizontalResolution = 72
je.ResolutionUnit = 1
je.export

Notes:
If file is nil, the destination is the data property.
(Read and Write property)
100.2.17  **HorizontalResolution as Integer**

MBS Images Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The horizontal resolution.  
**Example:**
```vbnet
dim j as new JPEGExporterMBS

// setup 300 dpi  
j.VerticalResolution = 300  
j.HorizontalResolution = 300  
j.ResolutionUnit = 1
```

**Notes:** (Read and Write property)

100.2.18  **OptimizeCoding as Boolean**

MBS Images Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the plugin should ask the compressor to optimize the huffman coding tables.  
**Example:**
```vbnet
dim j as new JPEGExporterMBS  
j.OptimizeCoding = true
```

**Notes:**
This usually provides a small percentage decrease in file size.  
(Read and Write property)

100.2.19  **Picture as Picture**

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The picture to use.  
**Example:**
```vbnet
dim MyPic as Picture = LogoMBS(500)  
dim j as JPEGExporterMBS // your exporter  
j.picture=MyPic
```

**Notes:**
Should be a bitmap picture without alpha channel or mask.
100.2.20 ProfileData as String


Example:

```vbs
Dim f As FolderItem
Dim j As JPEGImporterMBS
Dim p As LCMS2ProfileMBS
Dim e As JPEGExporterMBS

f = SpecialFolder.Desktop.Child(“test2.jpg”)
j = New JPEGImporterMBS
j.ReadMarkers = True '// else no metadata is read at all
j.ReadProfileData = True '// needed to fill ProfileData property
j.File = f

j.Import

If j.ProfileData = “” Then
    MsgBox “no profile”
    Return
End If

p = LCMS2ProfileMBS.CreatesRGBProfile

f = SpecialFolder.Desktop.Child(“test3.jpg”)
e = New JPEGExporterMBS
e.File = f
e.Picture = j.Picture
e.ProfileData = p.SaveProfileToString
e.Quality = 75
e.Export
```

Notes:

the string must contain the binary data of the profile. For example SaveProfileToString of the CMProfileMBS class returns such a string.
If the string is empty, no profile is written.
(Read and Write property)
100.2.21 Progressive as Boolean

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** whether to make a progressive compressed image.

**Example:**
```vba
dim j as new JPEGExporterMBS
j.Progressive = true
```

**Notes:**
Default is true.
(Read and Write property)

100.2.22 Quality as Integer

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The quality to use.

**Example:**
```vba
dim je as new JPEGExporterMBS
je.quality = 75
```

**Notes:**
Range from 0 to 100. Default is 75.
(Read and Write property)

100.2.23 ResolutionUnit as Integer

MBS Images Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The unit of the resolution properties.

**Example:**
```vba
dim j as new JPEGExporterMBS

// setup 300 dpi
j.VerticalResolution = 300
j.HorizontalResolution = 300
j.ResolutionUnit = 1
```

**Notes:**
Values:

0  unknown
1  dots per inch
2  dots per cm

(Read and Write property)

100.2.24  **VerticalResolution as Integer**

MBS Images Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The vertical resolution.

**Example:**
```vbnet
dim j as new JPEGExporterMBS

// setup 300 dpi
j.VerticalResolution = 300
j.HorizontalResolution = 300
j.ResolutionUnit = 1
```

**Notes:** (Read and Write property)

100.2.25  **WarningMessage as String**

MBS Images Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The last warning message reported.

**Example:**
```vbnet
dim j as new JPEGExporterMBS

// do something
MsgBox j.WarningMessage
```

**Notes:** (Read and Write property)
100.2.26 XMPData as String

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The XMP data for this file.
**Notes:**
The export methods use this property.
(Read and Write property)

100.2.27 YieldTicks as Integer

MBS Images Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
How much time is given back to REALbasic for other ticks.
**Example:**
```vbnet
dim j as JPEGExporterMBS // your exporter
j.YieldTicks=6 // only use 1/10th of a second
```
**Notes:**
If value is greater than zero, the application will yield to another RB thread after the given number of ticks have passed. 60 ticks are one second. Using a small value can slow down processing a lot while a big value keeps your application not responding to mouse clicks.
If you use this property with e.g. 6 as the value, you may also want to use this method in a thread so you can handle mouse events or let REALbasic redraw a progressbar.
(Read and Write property)

100.2.28 Markers(Index as Integer) as string

MBS Images Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Additional markers.
**Example:**
```vbnet
dim j as new JPEGExporterMBS
j.Picture = LogoMBS(500)
j.Markers(5) = "Hello World"
j.File = SpecialFolder.Desktop.Child("test.jpg")
j.Export
```
// now open jpeg file in text editor and you see hello world near beginning
Notes:
Index from 0 to 15.
Index zero is used for JFIF header.
Index one is normally used for EXIF or XMP.
Index 13 is often used for Photoshop.

see also
http://www.ozhiker.com/electronics/pjmt/jpeg_info/app_segments.html

You can use this markers to embed a given string in the file. You can encrypt data and store it next to the image as you like.
Of course this will not survive if image is loaded and saved again. But can work as a container to hide data and user sees only image.
(Read and Write computed property)

100.2.29 Events

100.2.30 Error(message as string, ErrorCode as Integer)
MBS Images Plugin, Plugin Version: 8.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This events reports all error messages from the jpeg library.

100.2.31 GetRowData(index as Integer) as memoryblock
MBS Images Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The event called to query for the next data block.
**Notes:**
The memoryblock data must be in the format with bytes in the order RGB.
Index is from 0 to height-1.
Returning nil will result in an error on the JPEG compression.

100.2.32 Info(message as string, msglevel as Integer, ErrorCode as Integer)
MBS Images Plugin, Plugin Version: 8.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This events reports all information messages from the jpeg library.
**Notes:**
msglevel is one of:
-1: recoverable corrupt-data warning, may want to abort.
0: important advisory messages (always display to user).
1: first level of tracing detail.
2,3,...: successively more detailed tracing messages.

100.2.33 Warning(message as string, ErrorCode as Integer)

MBS Images Plugin, Plugin Version: 8.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: This events reports all warning messages from the jpeg library.
100.3. class JPEGImporterMarkerMBS

100.3.1 class JPEGImporterMarkerMBS


100.3.2 Properties

100.3.3 Data as String

MBS Images Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The actual data read as a binary string.

**Example:**

```vba
dim j as JPEGImporterMBS
dim f as FolderItem

f=SpecialFolder.Desktop.Child(”test.jpg”)
j=new JPEGImporterMBS

j.ReadMarkers=true // needed to fill ExifData property

// do the import

dim data as string = j.MarkerItem(0).Data

// work with data
```

**Notes:** (Read and Write property)

100.3.4 DataLength as Integer

MBS Images Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The data length in bytes of the data string.

**Example:**

```vba
dim j as JPEGImporterMBS
dim f as FolderItem

f=SpecialFolder.Desktop.Child(”test.jpg”)
j=new JPEGImporterMBS
```
j.ReadMarkers=true // needed to fill ExifData property

// do the import
MsgBox str(j.MarkerItem(0).DataLength)

// work with data

Notes: (Read and Write property)

100.3.5 Marker as Integer

MBS Images Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The type of this datablock. **Example:**

dim j as JPEGImporterMBS
dim f as folderitem

f=SpecialFolder.Desktop.Child("test.jpg")
j=new JPEGImporterMBS

j.ReadMarkers=true // needed to fill ExifData property

// do the import
MsgBox str(j.MarkerItem(0).Marker)

// work with data

Notes:
For example &hE0 for the first user defined block. (Read and Write property)

100.3.6 OriginalLength as Integer

MBS Images Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The original data length in the file. **Example:**
dim j as JPEGImporterMBS
dim f as FolderItem

f=SpecialFolder.Desktop.Child("test.jpg")
j=new JPEGImporterMBS

j.ReadMarkers=true  // needed to fill ExifData property

// do the import

MsgBox str(j.MarkerItem(0).OriginalLength)

// work with data

Notes:
Maybe smaller than data length because of compression. (Read and Write property)
100.4  class JPEGImporterMBS

100.4.1  class JPEGImporterMBS

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class for JPEG Importing.

**Example:**

```vba
dim g as FolderItem
dim ji as JPEGImporterMBS
dim je as JPEGExporterMBS
dim f as FolderItem
dim m as MemoryBlock

// this code copies a JPG: CMYK or RGB

// import it
g=SpecialFolder.Desktop.Child("PICT1533.JPG")
ji=new JPEGImporterMBS
ji.File=g
ji.AllowDamaged=true
ji.CMYK=true // if it is cmyk
if ji.InitJPEG then
do
loop until ji.LoopJPEG<>0
ji.FinishJPEG
end if

// export it
f=SpecialFolder.Desktop.child("PICT1533_copy.JPG")
je=new JPEGExporterMBS
je.File=f
je.Quality=75
if ji.CMYK then
m=ji.PictureData
je.ExportCMYK m, ji.Width, ji.Height, ji.Width*4
else
je.Picture=ji.Picture
je.Export
end if
```

**Notes:**

This class is not depending on any library! It works without QuickTime even on System 7, but as it contains everything needed this method is around 100 KB big!
100.4. CLASS JPEGIMPORTERMBSS

(REALbasic’s OpenAsPicture depends on QuickTime)

Bases on libjpeg.

100.4.2 Methods

100.4.3 BlueTestPicture as picture

MBS Images Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a 100x100 pixel big picture filled with RGB(0,0,255).
**Notes:** Just for testing how well the plugin picture code works.

100.4.4 CleanMarkers

MBS Images Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Clears the marker list.

100.4.5 FinishJPEG

MBS Images Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Releases all memory buffers needed for the JPEG decompression.
**Notes:** This must be called if you used InitJPEG!
Else you have a memory leak.

100.4.6 GetJPEGVersion as String

**Notes:** Currently reporting 9.1 for version 9b.

100.4.7 GreenTestPicture as picture

MBS Images Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a 100x100 pixel big picture filled with RGB(0,255,0).
100.4.8 Import

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Imports the picture. **Example:**

```vba
dim f as FolderItem
dim ji as new JPEGImporterMBS
dim je as new JPEGExporterMBS
dim m as MemoryBlock
dim i,c as Integer

// read jpeg
f=SpecialFolder.Desktop.Child("input.jpg")
ji.Mode=ji.ModeRGB // read RGB to memory block
ji.File=f
ji.Import

m=ji.PictureData

// add red
c=m.Size-1
for i=0 to c step 3
  m.Byte(i)=255
next

// write jpeg
f=SpecialFolder.Desktop.Child("test.jpg")
je.File=f
je.ExportRGB(m,ji.Width, ji.Height, ji.Width*3)
```

**Notes:** The memoryblock data must be in the format with bytes in the order RGB.

100.4.9 ImportCMYK

MBS Images Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Imports a CMYK picture. **Example:**
100.4. CLASS JPEGIMPORTERMBS

```vbnet
dim g as FolderItem
dim ji as JPEGImporterMBS
dim je as JPEGExporterMBS
dim f as FolderItem
dim m as MemoryBlock

// import it
g=getOpenFolderItem("image/jpeg")
ji=new JPEGImporterMBS
ji.File=g
ji.AllowDamaged=true
ji.ImportCMYK

m=ji.PictureData

// export it
f=SpecialFolder.Desktop.child("test.jpg")
je=new JPEGExporterMBS
je.HorizontalResolution=300
je.VerticalResolution=300
je.ResolutionUnit=1
je.File=f
je.Quality=75
je.ExportCMYK m, ji.Width, ji.Height, ji.Width*4
```

**Notes:**

This method should read all JPEG files you can get, but I've only tested it for 32 bit color and 8 bit grayscale.

The read CMYK values are stored in the pictureData property.

This method uses the YieldTicks property and may yield time to other threads.

**100.4.10 InitJPEG as boolean**

MBS Images Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Initializes the JPEG decompressor for use with LoopJPEG.

**Example:**

```vbnet
dim g as FolderItem
dim ji as JPEGImporterMBS
dim je as JPEGExporterMBS
dim f as FolderItem
dim m as MemoryBlock
```
// this code copies a JPG: CMYK or RGB

// import it
g=SpecialFolder.Desktop.Child("PICT1533.JPG")
ji=new JPEGImporterMBS
ji.File=g
ji.AllowDamaged=true
ji.CMYK=true // if it is cmyk
if ji.InitJPEG then
do
loop until ji.LoopJPEG<>0
ji.FinishJPEG
end if

// export it
f=SpecialFolder.Desktop.child("PICT1533 copy.JPG")
je=new JPEGExporterMBS
je.File=f
je.Quality=75
if ji.CMYK then
m=ji.PictureData
je.ExportCMYK m, ji.Width, ji.Height, ji.Width*4
else
je.Picture=ji.Picture
je.Export
end if

Notes:
Call FinishJPEG even if this failes.
Returns true if you can loop using LoopJPEG.

100.4.11 LoopJPEG as Integer

MBS Images Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Decompresses one line of the picture.
Example:
dim j as new JPEGImporterMBS
// fill properties...
if j.initJPEG then
do
100.4. CLASS JPEGIMPORTERMBS

loop until j.LoopJPEG<>0
end if
j.FinishJPEG

backdrop=j.Picture // nil if failed

Notes:
Return values:

0  Decompression was okay
1  Finished decompression
2  if there was an error.
3  Not initialized
4  Header only was requested

100.4.12 MarkerCount as Integer

MBS Images Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Number of markers found in the JPEG data stream.

**Example:**

dim j as JPEGImporterMBS
dim f as FolderItem

f=SpecialFolder.Desktop.Child("test.jpg")
j=new JPEGImporterMBS

j.ReadMarkers=true // else no metadata is read at all

// do the import
MsgBox str(j.MarkerCount)

**Notes:** Only available if ReadMarkers was true on reading the JPEG data.
### MarkerItem(index as Integer) as JPEGImporterMarkerMBS

MBS Images Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the marker with the given index.

**Example:**

```vba
dim j as JPEGImporterMBS
dim f as FolderItem

f=SpecialFolder.Desktop.Child("test.jpg")
j=new JPEGImporterMBS

j.ReadMarkers=true // needed to fill ExifData property

// do the import

dim data as string = j.MarkerItem(0).Data

// work with data
```

**Notes:** Only available if ReadMarkers was true on reading the JPEG data.

### ReadHeader as boolean

MBS Images Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Read the header of the JPEG data in a file or a memoryblock.

**Example:**

```vba
dim f as FolderItem
dim j as JPEGImporterMBS

f=SpecialFolder.Desktop.Child("Jaguar1600.jpg")
j=new JPEGImporterMBS
j.file=f
if j.ReadHeader then
    MsgBox str(j.Width)+" x "+str(j.Height)
else
    MsgBox "no JPEG"
end if
```

**Notes:**

You can use this function to see if the file is a JPEG image and which dimension it has. This function calls InitJPEG and FinishJPEG, so we get all the metadata, but no picture.
100.4.15 RedTestPicture as picture

MBS Images Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a 100x100 pixel big picture files with RGB(255,0,0).
**Notes:** Just for testing how well the plugin picture code works.

100.4.16 Properties

100.4.17 AllowDamaged as boolean

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** whether you want damaged pictures to be returned.
**Notes:**
- If AllowDamaged is false, nil will be returned if the picture is damaged.
- Default value is false.
  *(Read and Write property)*

100.4.18 BlockSmoothing as Boolean

MBS Images Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to do interblock smoothing.
**Notes:**
- Default value is true.

This setting is relevant only when decoding a progressive JPEG image. During the first DC-only scan, block smoothing provides a very "fuzzy" look instead of the very "blocky" look seen without it; which is better seems a matter of personal taste. But block smoothing is nearly always a win during later stages, especially when decoding a successive-approximation image: smoothing helps to hide the slight blockiness that otherwise shows up on smooth gradients until the lowest coefficient bits are sent.
  *(Read and Write property)*

100.4.19 CMYK as Boolean

MBS Images Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the decompressor has imported the picture as a CMYK image into a memoryblock.
**Example:**
```
dim g as FolderItem
dim ji as JPEGImporterMBS

g=getFolderItem("a.auf")
ji=new JPEGImporterMBS
ji.File=g
if ji.InitJPEG then
if ji.CMYK then
MsgBox "CMYK"
else
MsgBox "not"
end if
end if
```

**Notes:**
This property sets the Mode property to ModeCMYK.  
(Read and Write property)

### 100.4.20 ColorComponentCount as Integer

MBS Images Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of color components.  
**Notes:**

1. Grayscale  
3. RGB  
4. CMYK

(Read and Write property)

### 100.4.21 ColorSpace as Integer

MBS Images Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The color space of the image.  
**Example:**

```
dim j as new JPEGImporterMBS

j.File = SpecialFolder.Desktop.Child("cmyk.jpg")
```
if j.InitJPEG then

Select case j.ColorSpace
case j.ColorSpaceCMYK, j.ColorSpaceYCCK
MsgBox "CMYK"
case j.ColorSpaceRGB, j.ColorSpaceYCbCr
MsgBox "RGB"
case j.ColorSpaceGrayScale
MsgBox "Gray"
else
MsgBox "unknown? " + str(j.ColorSpace)
end Select

j.FinishJPEG
end if

Notes:
See also the Colorspace constants.
(Read and Write property)

100.4.22 CurrentDepth as Integer

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The depth of the picture property.

Notes:
In the current implementation always 32bit.
0 if the loading of the picture failed.
(Read and Write property)

100.4.23 data as string

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The source string.

Notes:
If file is nil, the compressed data is taken from this property.
(Read and Write property)
100.4.24  Error Message as string

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last error message reported. **Notes:** (Read and Write property)

100.4.25  Exif Data as String

MBS Images Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The exif data stored in the file. **Example:**

dim j as JPEGImporterMBS
dim f as FolderItem
f=SpecialFolder.Desktop.Child("test.jpg")
j=new JPEGImporterMBS
j.ReadStringExifData=true // needed to fill ExifData property

// do the import
dim data as string = j.ExifData

// work with data

**Notes:**
Only used when ReadExifData is set to true before you import the image. The string contains the binary content of an exif data on disc. Value is "" if no data was found. (Read and Write property)

100.4.26  Fancy Upsampling as Boolean

MBS Images Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to do fancy upsampling. **Notes:**
Default value is true.

If true, use direct DCT scaling with DCT size >8 for downsampling of chroma components. If false, use only DCT size <= 8 and simple separate downsampling. Default is true. For better image stability in multiple
generation compression cycles it is preferable that this value matches the corresponding FancyUpsampling value in decompression.
(Read and Write property)

100.4.27  file as folderitem

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The destination file.
**Notes:**
If file is nil, the source is taken from the data property.
(Read and Write property)

100.4.28  FileOffset as Integer

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The offset inside the file.
**Notes:** (Read and Write property)

100.4.29  Height as Integer

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The height of the picture.
**Notes:**
0 if the loading of the picture failed.
(Read and Write property)

100.4.30  HorizontalResolution as Integer

MBS Images Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The horizontal resolution.
**Notes:** (Read and Write property)

100.4.31  Mode as Integer

MBS Images Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The operation mode.
**Notes:**
Can be either ModePicture (Default), ModeRGB or ModeCMYK.
(Read and Write property)

### 100.4.32 OriginalDepth as Integer

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The original depth of the picture.

**Notes:**
Value maybe 8 for grayscale pictures and 24 or 32 for colored pictures.
0 if the loading of the picture failed.
(Read and Write property)

### 100.4.33 Picture as Picture

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The picture as the result.

**Notes:**
Set to nil on any error.
(Read and Write property)

### 100.4.34 PictureData as MemoryBlock

MBS Images Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The cmyk picture data after importing.

**Example:**

```vba
dim g as FolderItem
dim ji as JPEGImporterMBS
dim je as JPEGExporterMBS
dim f as FolderItem
dim m as MemoryBlock

// import it
    g=getFolderItem("CMYK Example.jpg")
    ji=new JPEGImporterMBS
    ji.File=g
    ji-AllowDamaged=true
    ji.ImportCMYK
    m=ji.PictureData
    msgBox g.name
```
// export it
f=SpecialFolder.Desktop.child("CMYK Example2.jpg")
je=new JPEGExporterMBS
je.File=f
je.Quality=75
je.ExportCMYK m, ji.Width, ji.Height, ji.Width*4

Notes:
Basicly a memoryblock with one byte for each channel.
For ReadByRow methods this property contains memoryblock for a row of the image.
(Read and Write property)

100.4.35 ProfileData as String

Example:

```vbc
dim f as FolderItem
dim j as JPEGImporterMBS
dim p as LCMS2ProfileMBS
f=SpecialFolder.Desktop.Child("test2.jpg")
j=new JPEGImporterMBS
j.ReadMarkers=true // else no metadata is read at all
j.ReadProfileData=true // needed to fill ProfileData property
j.file=f

j.Import
if j.ProfileData="" then
    MsgBox "no profile"
    Return
end if

p=LCMS2ProfileMBS.OpenProfileFromString(j.ProfileData)
MsgBox p.Name
```

Notes:
Only used when ReadProfileData is set to true before you import the image.
The string contains the binary content of a profile file on disc. So you can pass it to the CMOpenProfile-
100.4.36 ProgressiveMode as Boolean

MBS Images Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a progressive jpeg file. **Notes:** Loading progressive files needs more memory. (Read and Write property)

100.4.37 ReadExifData as Boolean

MBS Images Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the plugin should read in the exif data. **Example:**

```vbnet
dim j as JPEGImporterMBS
dim f as FolderItem

f=SpecialFolder.Desktop.Child("test.jpg")
j=new JPEGImporterMBS

j.ReadExifData=true // needed to fill ExifData property

// do the import

dim data as string = j.ExifData

// work with data
```

**Notes:** If there is exif data, it will be stored in the ExifData property. Setting this value to true will set ReadMarkers to true, too. The data is stored in one or more markers, so it is needed to read them before extracting the data. (Read and Write property)
100.4.38 ReadMarkers as Boolean

MBS Images Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether importer should read markers.  
**Example:**
```
    dim j as JPEGImporterMBS
    dim f as FolderItem
    f=SpecialFolder/Desktop.Child("test.jpg")
    j=new JPEGImporterMBS
    j.ReadMarkers=true // else no metadata is read at all
    // do the import
    MsgBox str(j.MarkerCount)
```

**Notes:** (Read and Write property)

100.4.39 ReadProfileData as Boolean

MBS Images Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the plugin should read in the icc profile.  
**Example:**
```
    dim j as JPEGImporterMBS
    dim f as FolderItem
    f=SpecialFolder/Desktop.Child("test.jpg")
    j=new JPEGImporterMBS
    j.ReadProfileData=true // needed to fill ProfileData property
    // do the import
    dim Profile as string = j.ProfileData
    // work with profile data
```

**Notes:**  
If there is a profile, it will be stored in the ProfileData property. Setting this value to true will set ReadMarkers to true, too.
A profile is stored in one or more markers, so it is needed to read them before extracting the profile. (Read and Write property)

100.4.40 ReadXMPData as Boolean

MBS Images Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the plugin should read in the xmp data.

**Notes:**
If there is xmp data, it will be stored in the XMPData property.
Setting this value to true will set ReadMarkers to true, too.
The data is stored in one or more markers, so it is needed to read them before extracting the data. (Read and Write property)

100.4.41 ResolutionUnit as Integer

MBS Images Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The unit of the resolution properties.

**Notes:**
Values:

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>unknown</td>
</tr>
<tr>
<td>1</td>
<td>dots per inch</td>
</tr>
<tr>
<td>2</td>
<td>dots per cm</td>
</tr>
</tbody>
</table>

(Read and Write property)

100.4.42 ScaleFactor as Integer

MBS Images Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The JPEG Library can scale down the picture on the fly.

**Notes:**
Allowed values: 0, 1, 2, 4, 8
0 and 1 disable scaling.
Default value is 0 for no scaling. (Read and Write property)
100.4.43  **VerticalResolution as Integer**

MBS Images Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The vertical resolution.  **Notes:** (Read and Write property)

100.4.44  **WarningMessage as String**

MBS Images Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last warning message reported. **Notes:** (Read and Write property)

100.4.45  **Width as Integer**

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The width of the picture.  **Notes:**

0 if the loading of the picture failed.  
(Read and Write property)

100.4.46  **XMPData as String**

MBS Images Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The XMP Data stored in the file.  **Notes:**

Only used when ReadXMPData is set to true before you import the image.
The string contains the binary content of a xmp data on disc.
Value is "" if no data was found.  
(Read and Write property)

100.4.47  **YieldTicks as Integer**

MBS Images Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** How much time is given back to REALbasic for other ticks.  **Example:**

```plaintext
dim j as JPEGImporterMBS // your importer
j.YieldTicks=6 // only use 1/10th of a second
```
Notes:
If value is greater than zero, the application will yield to another RB thread after the given number of ticks have passed. 60 ticks are one second. Using a small value can slow down processing a lot while a big value keeps your application not responding to mouse clicks.
If you use this property with e.g. 6 as the value, you may also want to use this method in a thread so you can handle mouse events or let REALbasic redraw a progressbar.
(Read and Write property)

100.4.48 Events

100.4.49 Error(message as string, ErrorCode as Integer)

MBS Images Plugin, Plugin Version: 8.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function:
This events reports all error messages from the jpeg library.

100.4.50 HeadersRead as boolean

MBS Images Plugin, Plugin Version: 15.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function:
Event called when headers are read.
Notes:
This allows you to set Mode, ScaleFactor, FancyUpsampling, BlockSmoothing properties.
Return true to cancel Import/InitJPEG methods early.

100.4.51 Info(message as string, msglevel as Integer, ErrorCode as Integer)

MBS Images Plugin, Plugin Version: 8.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function:
This events reports all information messages from the jpeg library.
Notes:
msglevel is one of:

-1: recoverable corrupt-data warning, may want to abort.
  0: important advisory messages (always display to user).
  1: first level of tracing detail.
  2,3,...: successively more detailed tracing messages.
100.4.52 **Warning**(message as string, ErrorCode as Integer)

MBS Images Plugin, Plugin Version: 8.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This event reports all warning messages from the jpeg library.

100.4.53 **Constants**

100.4.54 **ColorSpaceCMYK = 4**

MBS Images Plugin, Plugin Version: 13.4. **Function:** One of the color spaces. **Example:**

```vbscript
dim j as new JPEGImporterMBS
j.File = SpecialFolder.Desktop.Child("cmyk.jpg")
if j.InitJPEG then
  Select case j.ColorSpace
  case j.ColorSpaceCMYK, j.ColorSpaceYCCK
    MsgBox "CMYK"
  case j.ColorSpaceRGB, j.ColorSpaceYCbCr
    MsgBox "RGB"
  case j.ColorSpaceGrayScale
    MsgBox "Gray"
  else
    MsgBox "unknown? " + str(j.ColorSpace)
  end Select
j.FinishJPEG
end if
```

**Notes:** C/M/Y/K

100.4.55 **ColorSpaceGrayScale = 1**

MBS Images Plugin, Plugin Version: 13.4. **Function:** One of the color spaces. **Notes:** Gray
100.4.56 **ColorSpaceRGB = 2**

MBS Images Plugin, Plugin Version: 13.4. **Function:** One of the color spaces.  
**Notes:** red/green/blue

100.4.57 **ColorSpaceUnknown = 0**

MBS Images Plugin, Plugin Version: 13.4. **Function:** One of the color spaces.  
**Notes:** Not set.

100.4.58 **ColorSpaceYCbCr = 3**

MBS Images Plugin, Plugin Version: 13.4. **Function:** One of the color spaces.  
**Notes:** Y/Cb/Cr (also known as YUV)

100.4.59 **ColorSpaceYCCK = 5**

MBS Images Plugin, Plugin Version: 13.4. **Function:** One of the color spaces.  
**Notes:** Y/Cb/Cr/K

100.4.60 **ModeAuto = 30**

MBS Images Plugin, Plugin Version: 15.2. **Function:** One of the mode constants.  
**Example:**

```javascript
    dim j as new JPEGImporterMBS
    j.File = SpecialFolder.Desktop.Child("test.jpg")
    j.Mode = j.ModeAuto
    j.Import
    // check Mode after to see if we got ModeRGB, ModeGray or ModeCMYK here.
```

**Notes:**

Load the image into the picturedata property.  
Switches on import to RGB, Gray or CMYK depending on color space of JPEG file.
100.4.61  **ModeAutoByRow = 31**

MBS Images Plugin, Plugin Version: 15.2. **Function:** One of the mode constants.  
**Example:**

```vbnet
dim j as new JPEGImporterMBS
j.File = SpecialFolder.Desktop.Child("test.jpg")
j.Mode = j.ModeAutoByRow
j.Import
// check Mode after to see if we got ModeRGBbyRow, ModeGraybyRow or ModeCMYKbyRow here.
```

**Notes:**
- Load the image into the picturedata property.
- Switches on import to RGB, Gray or CMYK depending on color space of JPEG file.

100.4.62  **ModeCMYK = 2**

MBS Images Plugin, Plugin Version: 8.4. **Function:** One of the mode constants.  
**Notes:**
- Load the image into the picturedata property.
- The PictureData Memoryblock uses 4 bytes per pixel.

100.4.63  **ModeCMYKbyRow = 12**

MBS Images Plugin, Plugin Version: 9.1. **Function:** One of the mode constants.  
**Notes:**
- Same as ModeCMYK, but PictureData contains only the current row
- The PictureData Memoryblock uses 4 bytes per pixel.

100.4.64  **ModeGray = 3**

MBS Images Plugin, Plugin Version: 8.7. **Function:** One of the mode constants.  
**Example:**

```vbnet
dim j as new JPEGImporterMBS
j.Mode = j.ModeGray
j.File = SpecialFolder.Desktop.Child("testGray.JPG")
j.Import
```

**Notes:**
- Load the image into the picturedata property.
MsgBox str(j.Width) + " x " + str(j.Height)

Notes:
Load the image into the picturedata property.
The PictureData Memoryblock uses one byte per pixel.

100.4.65 ModeGraybyRow = 13

MBS Images Plugin, Plugin Version: 9.1. **Function:** One of the mode constants.
**Notes:**
Same as ModeGray, but PictureData contains only the current row
The PictureData Memoryblock uses one byte per pixel.

100.4.66 ModePicture = 0

MBS Images Plugin, Plugin Version: 8.4. **Function:** One of the mode constants.
**Notes:** Load the image into the picture property.

100.4.67 ModeRaw = 20

MBS Images Plugin, Plugin Version: 13.4. **Function:** One of the mode constants.
**Notes:**
Load the image into the picturedata property.
The PictureData Memoryblock uses 1 to 4 bytes per pixel.

Check the colorspace property to know which color space is used.

100.4.68 ModeRGB = 1

MBS Images Plugin, Plugin Version: 8.4. **Function:** One of the mode constants.
**Example:**
```dim j as new JPEGImporterMBS
j.Mode=j.ModeRGB```

```
100.4.  CLASS JPEGIMPORTERMBS

j.File=SpecialFolder.Desktop.Child("testRGB.JPG")
j.Import

MsgBox str(j.Width)+” x ”+str(j.Height)

Notes:
Load the image into the picturedata property.
The PictureData Memoryblock uses 3 bytes per pixel.

100.4.69  ModeRGBbyRow = 11

Notes:
Same as ModeRGB, but PictureData contains only the current row
The PictureData Memoryblock uses 3 bytes per pixel.
**100.5  class JPEGMovieMBS**

**100.5.1  class JPEGMovieMBS**

MBS Images Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class to write a movie with JPEGs.

**Example:**

```vba
// get a picture
dim p as Picture = LogoMBS(500)

// start movie building
dim m as new JPEGMovieMBS

m.Width = 500
m.Height = 500
m.SecondsPerFrame = 0.5

// add frames where we count up
for i = 1 to 20
    dim c as new Picture(500, 500)
    dim g as Graphics = c.Graphics
    g.ForeColor = & c000000
    g.TextSize = 50
    g.DrawPicture p, 0, 0
    g.DrawString str(i), 20, 50
    dim j as string = c.GetData(c.FormatJPEG)
    m.AddFrame j
next

// generate movie
dim MovieData as string = m.BuildMovie

// and write to file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.mov")
dim b as BinaryStream = BinaryStream.Create(f, true)
b.Write MovieData
```

**Notes:**

This is a self written class to create a QuickTime Movie with one video track using JPEG images. You can use this to quickly write a slideshow video if needed.

Does play in Quicktime player and VLC, but not Windows Media Player.
100.5.2 Methods

100.5.3 AddFrame(Image as MemoryBlock)

**Notes:** Image must be a JPEG compressed image.
See also:

- 100.5.4 AddFrame(Image as String)

100.5.4 AddFrame(Image as String)

**Notes:** Image must be a JPEG compressed image.
See also:

- 100.5.3 AddFrame(Image as MemoryBlock)

100.5.5 BuildMovie as String

**Notes:** Either you get an exception or you get a movie which you can write to a file on disk.

100.5.6 Properties

100.5.7 Duration as Double

MBS Images Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The duration of the video.
**Notes:**
In Seconds.
(Read only property)
100.5.8 FrameCount as Integer

MBS Images Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of frames.  
**Notes:** (Read only property)

100.5.9 Height as Integer

**Notes:** Must match the JPEGs you use.  
(Read and Write property)

100.5.10 SecondsPerFrame as Double

MBS Images Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The seconds to show a frame.  
**Notes:** Default 1 second.  
(Read and Write property)

100.5.11 TimeScale as Integer

MBS Images Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The time scale to use.  
**Notes:** Defines how fine granular you can define time. Default is 600 units per second.  
(Read and Write property)

100.5.12 Width as Integer

MBS Images Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The target width of the video.  
**Notes:** Must match the JPEGs you use.
100.5. CLASS JPEGMVIEMB5

(Read and Write property)
100.6  class JPEGTransformationMBS

100.6.1  class JPEGTransformationMBS

MBS Images Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A class to wrap the jpegtran utility.

**Notes:**
Although rotating and flipping data expressed as DCT coefficients is not hard, there is an asymmetry in
the JPEG format specification for images whose dimensions aren’t multiples of the iMCU size. The right
and bottom image edges are padded out to the next iMCU boundary with junk data; but no padding is
possible at the top and left edges. If we were to flip the whole image including the pad data, then pad
garbage would become visible at the top and/or left, and real pixels would disappear into the pad margins
— perhaps permanently, since encoders & decoders may not bother to preserve DCT blocks that appear to
be completely outside the nominal image area. So, we have to exclude any partial iMCUs from the basic
transformation.

Transpose is the only transformation that can handle partial iMCUs at the right and bottom edges com-
pletely cleanly. Mirror horizontal can flip partial iMCUs at the bottom, but leaves any partial iMCUs at
the right edge untouched. Similarly mirror vertical leaves any partial iMCUs at the bottom edge untouched.
The other transforms are defined as combinations of these basic transforms and process edge blocks in a way
that preserves the equivalence.

The ”trim” option causes untransformable partial iMCUs to be dropped; this is not strictly lossless, but it
usually gives the best-looking result for odd-size images. Note that when this option is active, the expected
mathematical equivalences between the transforms may not hold. (For example, -rot 270 -trim trims only
the bottom edge, but -rot 90 -trim followed by -rot 180 -trim trims both edges.)

We also offer a ”force to grayscale” option, which simply discards the chrominance channels of a YCbCr
image. This is lossless in the sense that the luminance channel is preserved exactly. It’s not the same kind
of thing as the rotate/flip transformations, but it’s convenient to handle it as part of this package, mainly
because the transformation routines have to be aware of the option to know how many components to work
on.

Bases on libjpeg.

100.6.2  Methods

100.6.3  close
There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you. (e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

### 100.6.4 Transform as boolean

MBS Images Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Runs the transformation.

**Notes:**
Outputfile and Inputfile should never be identical, because this will corrupt the file.

Returns only false if the file specifications are invalid. So after true is returned you still need to check the errorcode property.

### 100.6.5 Properties

#### 100.6.6 CopyOption as Integer

MBS Images Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
What to copy from the meta information.

**Notes:**
Values:

| JCOPYOPT_NONE | 0 | copy no optional markers |
| JCOPYOPT_COMMENTS | 1 | copy only comment (COM) markers |
| JCOPYOPT_ALL | 2 | copy all optional markers |

(Read and Write property)

#### 100.6.7 DebugLevel as Integer

MBS Images Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The debug level for the jpeg library.

**Notes:** (Read and Write property)
100.6.8  ErrorCode as Integer

MBS Images Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The last error code reported.
**Notes:** (Read and Write property)

100.6.9  ErrorMessage as String

MBS Images Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The last error message reported.
**Notes:** (Read and Write property)

100.6.10  Grayscale as Boolean

MBS Images Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
whether to reduce to grayscale (omit color data).
**Notes:**
If true the a color image is converted to grayscale.
(Read and Write property)

100.6.11  InputFile as Folderitem

MBS Images Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The input file.
**Notes:**
Outputfile and Inputfile should never be identical, because this will corrupt the file.
(Read and Write property)

100.6.12  MaxMemoryToUse as Integer

MBS Images Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Maximum memory to use.
**Notes:**
Unit is bytes.
(Read and Write property)
100.6. CLASS JPEGTRANSFORMATIONMBS

100.6.13 MirrorHorizontal as Boolean

MBS Images Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: whether to use the left-right mirror transformation.
Notes: Only one transformation can be used.
(Read and Write property)

100.6.14 MirrorVertical as Boolean

Notes: Only one transformation can be used.
(Read and Write property)

100.6.15 OptimizeCoding as Boolean

MBS Images Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Optimize Huffman table (smaller file, but slow compression)
Notes: (Read and Write property)

100.6.16 OutputFile as Folderitem

Notes: On Mac OS X, this function uses the short file name (31 characters). So you may consider to save to a temporary file and rename it after the transformation was successfull.

Outputfile and Inputfile should never be identical, because this will corrupt the file.
(Read and Write property)

100.6.17 Progressive as Boolean

CHAPTER 100. JPEG

Notes: (Read and Write property)

100.6.18  **Rotate180 as Boolean**

MBS Images Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
whether to use the 180 clockwise rotation transformation.

**Notes:**
Only one transformation can be used.
(Read and Write property)

100.6.19  **Rotate270 as Boolean**

MBS Images Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
whether to use the 270 clockwise rotation transformation.

**Notes:**
Only one transformation can be used.
(Read and Write property)

100.6.20  **Rotate90 as Boolean**

MBS Images Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
whether to use the 90 clockwise rotation transformation.

**Notes:**
Only one transformation can be used.
(Read and Write property)

100.6.21  **Transpose as Boolean**

MBS Images Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
whether to transpose the image across UR-to-LL axis.

**Notes:**
Only one transformation can be used.
(Read and Write property)
100.6.22 **Transverse as Boolean**

MBS Images Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** whether to transpose the image across UL-to-LR axis. **Notes:** Only one transformation can be used. (Read and Write property)

100.6.23 **Trim as Boolean**

MBS Images Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** whether to drop non-transformable edge blocks. **Notes:** if true, trim partial MCUs as needed. (Read and Write property)

100.6.24 **WarningMessage as String**

MBS Images Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last warning message reported. **Notes:** (Read and Write property)

100.6.25 **Events**

100.6.26 **Error(message as string, ErrorCode as Integer)**

MBS Images Plugin, Plugin Version: 8.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This events reports all error messages from the jpeg library.

100.6.27 **Info(message as string, msglevel as Integer, ErrorCode as Integer)**

MBS Images Plugin, Plugin Version: 8.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This events reports all information messages from the jpeg library. **Notes:** msglevel is one of:
-1: recoverable corrupt-data warning, may want to abort.
0: important advisory messages (always display to user).
1: first level of tracing detail.
2,3,...: successively more detailed tracing messages.

100.6.28 Warning(message as string, ErrorCode as Integer)

MBS Images Plugin, Plugin Version: 8.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This events reports all warning messages from the jpeg library.
100.7. Globals

100.7.1 JPEGStringToPictureMBS(buf as string) as picture

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads a picture from a JPEG file.

**Example:**

```vba
dim s as string
dim h as new HTTPSocket
s=h.Get("http://www.monkeybreadsoftware.de/realbasic/images/rbplugin.jpg",90)
Backdrop=JPEGStringToPictureMBS(s)
```

**Notes:** Short version of the "JPEGStringToPicture(buf as string, allowdamaged as Boolean) as picture" method. allowdamaged is set to false.

See also:

- 100.7.2 JPEGStringToPictureMBS(buf as string, allowdamaged as Boolean) as picture

100.7.2 JPEGStringToPictureMBS(buf as string, allowdamaged as Boolean) as picture

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads a picture from a JPEG file.

**Example:**

```vba
dim p as Picture = LogoMBS(500)
dim s as string = PictureToJPEGStringMBS(p, 80)
s = leftb(s, lenb(s)-1000) // remove last 1000 bytes
dim q as Picture = JPEGStringToPictureMBS(s, true)
Backdrop = q
```

**Notes:**

This method should read all JPEG file data you can get, but I've only tested it for 32 bit color and 8 bit grayscale.

This method is not depending on any library! It works without QuickTime even on System 7, but as it
contains everything needed this method is around 120 KB big!
(REALbasic’s OpenAsPicture depends on QuickTime)

I wrote it mainly because Realbasic’s built in OpenAsJPEG code crashes badly if your picture is not full
downloaded. For example if you have a webbrowser you can now show JPEGs while you download them.
Normally you can see a good picture already with 50% of the data.

REALbasic’s OpenAsPicture in contrast crashes if the picture is not 100% downloaded or instead of a crash
you get a white picture.

See the "JPEGToString example", "jpeg load crushtest” and "SaveJPEG without QuickTime” examples.
See also:

• 100.7.1 JPEGStringToPictureMBS(buf as string) as picture

100.7.3 PictureToJPEGStringMBS(pic as picture, quality as Integer = 80) as string

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Saves a picture
into a string using JPEG compression.
**Example:**

```basic
dim p as Picture = LogoMBS(500)
dim s as string = PictureToJPEGStringMBS(p, 80)
dim q as Picture = JPEGStringToPictureMBS(s)
Backdrop = q
```

**Notes:**

This methods saves 32bit pictures to a file using JPEG Compression. Using the parameter you can specify
the quality in range between 25 and 100%

This method is not depending on any library! It works without QuickTime even on System 7, but as it
contains everything needed this method is around 100 KB big!
(REALbasic’s SaveAsJPEG depends on QuickTime)

The picture should be a bitmap picture without alpha channel or mask.
Use the JPEGExporterMBS class for more options.

The returned string has the encoding set to binary (no encoding). If you want to concat the string with
another you should change the encoding, so both strings have the same encoding. If you don’t handle that
RB may convert the JPEG data to UTF8 (Unicode) which will destroy it.

The picture is always encoded with 72 dpi. If you want to set a different dpi value, please use the JPEGExporterMBS class.
Chapter 101

Keychain

101.1 class KeychainItemMBS

101.1.1 class KeychainItemMBS

Function: The class for a keychain item.
Example:

Const kDomain = ”koingosw.com”
Const kUsername = ”koingosoftware”
Const kPath = ””
Const kProtocol = ”http”

Dim xPassword As MemoryBlock = ”testpassword”
Dim xAdded As KeychainItemMBS

Dim dQuery as new Dictionary
dQuery.Value(KeychainManagerMBS.kSecAttrAuthenticationType) = KeychainManagerMBS.kSecAttrAuthenticationTypeHTMLForm
dQuery.Value(KeychainManagerMBS.kSecClass) = KeychainManagerMBS.kSecClassInternetPassword
If Len(kDomain) <> 0 Then dQuery.Value(KeychainManagerMBS.kSecAttrServer) = kDomain
If Len(kUsername) <> 0 Then dQuery.Value(KeychainManagerMBS.kSecAttrAccount) = kUsername
If Len(kProtocol) <> 0 Then dQuery.Value(KeychainManagerMBS.kSecAttrProtocol) = kProtocol
dQuery.Value(KeychainManagerMBS.kSecAttrComment) = ”default”
dQuery.Value(KeychainManagerMBS.kSecAttrDescription) = ”Web form password”
dQuery.Value(KeychainManagerMBS.kSecAttrLabel) = kDomain + ” (” + kUsername + ”)”
dQuery.Value(KeychainManagerMBS.kSecValueData) = xPassword

If Not KeychainManagerMBS.AddItem(KeychainManagerMBS.Default,dQuery) Then
Break

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101.1.2 Methods

101.1.3 Delete


101.1.4 ItemClass as string

MBS MacClassic Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Queries the item class for this item. Example:

```vbs
    dim ServiceName as string = "mytest"
    dim Username as string = "myusername"
    dim keychain as KeychainMBS = nil // use default

    dim item as KeychainItemMBS = KeychainManagerMBS.FindGenericItem(keychain, ServiceName, Username)
    MsgBox item.itemclass // shows genp for generic password
```

Notes: Lasterror is set.

101.1.5 Keychain as KeychainMBS


101.1.6 PersistentReference as Memoryblock

Unlike normal references, a persistent reference may be stored on disk or passed between processes. You can convert a persistent reference into an ordinary keychain item reference (KeychainItemMBS) by calling the KeychainManagerMBS.ItemFromPersistentReference function. Lasterror is set.

### 101.1.7 Properties

#### 101.1.8 Handle as Integer

MBS MacClassic Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference. **Notes:** (Read and Write property)

#### 101.1.9 Lasterror as Integer

MBS MacClassic Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last error code returned by one of the methods. **Notes:**

You can use KeychainManagerMBS.ErrorMessageString function to get a text message. The error code -1 is set by plugin if function is missing or parameters are wrong. (Read and Write property)

#### 101.1.10 Account as string

MBS MacClassic Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Convenience property to get/set the account attribute as UTF-8 text. **Example:**

```vbs
Dim ServiceName as String = "mytest"
Dim Username as String = "myusername"
Dim keychain as KeychainMBS = nil ' use default

Dim item as KeychainItemMBS = KeychainManagerMBS.FindGenericItem(keychain, ServiceName, Username)
```

MsgBox "Label: " + item.label + vbCrLf
"Comment: " + item.comment + vbCrLf
"Account: " + item.Account

**Notes:**
101.1.11 AttributeData(attributeName as string) as memoryblock

Function: Get or set an attribute as raw data (memoryblock).
Example:

```vbs
dim ServiceName as string = "mytest"
dim Username as string = "myusername"
dim keychain as KeychainMBS = nil // use default

dim item as KeychainItemMBS = KeychainManagerMBS.FindGenericItem(keychain, ServiceName, Username)

dim data as MemoryBlock = item.AttributeData(item.kSecCreationDateItemAttr)
dim text as string = DefineEncoding(data, encodings.UTF8)
MsgBox text
```

Notes:
Lasterror is set.
(Read and Write computed property)

101.1.12 AttributeText(attributeName as string) as string

Function: Get or set an attribute as an UTF-8 text.
Example:

```vbs
dim ServiceName as string = "mytest"
dim Username as string = "myusername"
dim keychain as KeychainMBS = nil // use default

dim item as KeychainItemMBS = KeychainManagerMBS.FindGenericItem(keychain, ServiceName, Username)

dim text as string = item.AttributeText(item.kSecCreationDateItemAttr)
MsgBox text
```

Notes:
Lasterror is set.
(Read and Write computed property)
101.1. CLASS KEYCHAINITEMMBS

Lasterror is set.
(Read and Write computed property)

101.1.13  Comment as string

Function: Convenience property to get/set the comment attribute as UTF-8 text.
Example:

```vbs
' Example:
dim ServiceName as string = "mytest"
dim Username as string = "myusername"
dim keychain as KeychainMBS = nil ' use default

dim item as KeychainItemMBS = KeychainManagerMBS.FindGenericItem(keychain, ServiceName, Username)

MsgBox "Label: " + item.label + EndOfLine + _
"Comment: " + item.comment + EndOfLine + _
"Account: " + item.Account
```

Notes:
Lasterror is set.
(Read and Write computed property)

101.1.14  Description as string

Function: Convenience property to get/set the description attribute as UTF-8 text.
Example:

```vbs
' Example:
dim ServiceName as string = "mytest"
dim Username as string = "myusername"
dim keychain as KeychainMBS = nil ' use default

dim item as KeychainItemMBS = KeychainManagerMBS.FindGenericItem(keychain, ServiceName, Username)

MsgBox item.Description
```

Notes:
Lasterror is set.
CHAPTER 101. KEYCHAIN

101.1.15  Label as string


**Function:** Convenience property to get/set the label attribute as UTF-8 text.

**Example:**

```vbs
dim items() as KeychainItemMBS = KeychainManagerMBS.AllItems(nil, KeychainManagerMBS.kSecGenericPasswordItemClass)
dim labels() as string

for each item as KeychainItemMBS in items
    labels.append item.label
next

break // see array of labels
```

**Notes:**

Lasterror is set.

(Read and Write computed property)

101.1.16  Password as memoryblock


**Function:** Queries the password or sets a new one.

**Example:**

```vbs
dim ServiceName as string = "mytest"
dim Username as string = "myusername"
dim keychain as KeychainMBS = nil // use default

dim item as KeychainItemMBS = KeychainManagerMBS.FindGenericItem(keychain, ServiceName, Username)

dim passwordData as MemoryBlock = item.Password
dim password as string = DefineEncoding(passwordData, encodings.UTF8)
MsgBox Password
```

**Notes:**

(Read and Write computed property)
101.1. **CLASS KEYCHAINITEMMBS**

Lasterror is set.
(Read and Write computed property)

101.1.17 **Service as string**


**Function:** Convenience property to get/set the service attribute as UTF-8 text.

**Example:**

```vba
    dim ServiceName as string = "mytest"
    dim Username as string = "myusername"
    dim keychain as KeychainMBS = nil // use default
    dim item as KeychainItemMBS = KeychainManagerMBS.FindGenericItem(keychain, ServiceName, Username)
    MsgBox item.Service
```

**Notes:**

Lasterror is set.
(Read and Write computed property)

101.1.18 **Constants**

101.1.19 **kSecAccountItemAttr = ”acct”**

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** One of the keychain item attributes.

**Notes:**

Identifies the account attribute.
You use this tag to set or get a string that represents the user account. It also applies to generic, Internet, and AppleShare password items. Keychain strings should use UTF-8 encoding.

101.1.20 **kSecAddressItemAttr = ”addr”**

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** One of the keychain item attributes.

**Notes:**

Identifies the address attribute.
You use this tag to set or get a value of type string that represents the AppleTalk zone name, or the IP or domain name that represents the server address. This is unique to AppleShare password attributes. Key-
chain strings should use UTF-8 encoding.

101.1.21  kSecAlias = ”alis”

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** One of the keychain item attributes.  
**Notes:** Indicates an alias.

101.1.22  kSecAuthenticationTypeItemAttr = ”atyp”

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** One of the keychain item attributes.  
**Notes:** Indicates an alias.  
Identifies the authentication type attribute.  
You use this tag to set or get a value of type SecAuthenticationType that represents the Internet authentication scheme. For possible authentication values, see ”Keychain Authentication Type Constants.” This is unique to Internet password attributes.

101.1.23  kSecCertificateEncoding = ”cenc”

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** One of the keychain item attributes.  
**Notes:** Indicates a CSSM_CERT_ENCODING type.

101.1.24  kSecCertificateType = ”ctyp”

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** One of the keychain item attributes.  
**Notes:** Indicates a CSSM_CERT_TYPE type.

101.1.25  kSecCommentItemAttr = ”icmt”

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** One of the keychain item attributes.  
**Notes:**  
Identifies the comment attribute.  
You use this tag to set or get a string value that represents a user-editable string containing comments for this item. Keychain strings should use UTF-8 encoding.
101.1.26  kSecCreationDateItemAttr = "cdat"

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** One of the keychain item attributes.  
**Notes:**
Identifies the creation date attribute. 
You use this tag to get a string value that represents the date the item was created, expressed in Zulu Time format ("YYYYMMDDhhmmssZ"). This is the native format for stored time values in the CDSA specification (defined as CSSM_DB_ATTRIBUTE_FORMAT_TIME_DATE in the CSSM_DB_ATTRIBUTE_FORMAT enumeration, Section 17.2.6.). When specifying the creation date as input to a function (for example, SecKeychainSearchCreateFromAttributes), you may alternatively provide a numeric value of type UInt32 or SInt64, expressed as seconds since 01 January 1904.

101.1.27  kSecCreatorItemAttr = "crtr"

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** One of the keychain item attributes.  
**Notes:**
Identifies the creator attribute.  
You use this tag to set or get a value of type FourCharCode that represents the item’s creator.

101.1.28  kSecCrlEncoding = "crnc"

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** One of the keychain item attributes.  
**Notes:** Indicates a CSSM_CRL_ENCODING type.

101.1.29  kSecCrlType = "crtp"

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** One of the keychain item attributes.  
**Notes:** Indicates a CSSM_CRL_TYPE type.

101.1.30  kSecCustomIconItemAttr = "cusi"

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** One of the keychain item attributes.  
**Notes:**
Identifies the custom icon attribute.  
Use of this attribute is deprecated. Custom icons for keychains are not supported in OS X.
101.1.31 kSecDescriptionItemAttr = "desc"

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** One of the keychain item attributes.  
***Notes:***  
Identifies the description attribute.  
You use this tag to set or get a string value that represents a user-visible string describing this particular kind of item, for example "disk image password". Keychain strings should use UTF-8 encoding.

101.1.32 kSecGenericItemAttr = "gena"

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** One of the keychain item attributes.  
***Notes:***  
Identifies the generic attribute.  
You use this tag to set or get a value of untyped bytes that represents a user-defined attribute. This is unique to generic password attributes.

101.1.33 kSecInvisibleItemAttr = "invi"

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** One of the keychain item attributes.  
***Notes:***  
Identifies the invisible attribute.  
You use this tag to set or get a value of type Boolean that indicates whether the item is invisible (that is, should not be displayed).

101.1.34 kSecLabelItemAttr = "labl"

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** One of the keychain item attributes.  
***Notes:***  
Identifies the label attribute.  
You use this tag to set or get a string value that represents a user-editable string containing the label for this item. Keychain strings should use UTF-8 encoding.

101.1.35 kSecModDateItemAttr = "mdat"

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** One of the keychain item attributes.  
***Notes:***
Identifies the modification date attribute. You use this tag to get a string value that represents the date the item was created, expressed in Zulu Time format ("YYYYMMDDhhmmssZ"). This is the native format for stored time values in the CDSA specification (defined as CSSM_DB_ATTRIBUTE_FORMAT_TIME_DATE in the CSSM_DB_ATTRIBUTE_FORMAT enumeration, Section 17.2.6.). When specifying the creation date as input to a function (for example, SecKeychainSearchCreateFromAttributes), you may alternatively provide a numeric value of type UInt32 or SInt64, expressed as seconds since 01 January 1904.

101.1.36  \textbf{kSecNegativeItemAttr = "nega"}

\textbf{Notes:}
Identifies the negative attribute. You use this tag to set or get a value of type Boolean that indicates whether there is a valid password associated with this keychain item. This is useful if your application doesn’t want a password for some particular service to be stored in the keychain, but prefers that it always be entered by the user. The item, which is typically invisible and with zero-length data, acts as a placeholder.

101.1.37  \textbf{kSecPathItemAttr = "path"}

\textbf{Notes:}
Identifies the path attribute. You use this tag to set or get a string value that represents the path. This is unique to Internet password attributes. Keychain strings should use UTF-8 encoding.

101.1.38  \textbf{kSecPortItemAttr = "port"}

\textbf{Notes:}
Identifies the port attribute. You use this tag to set or get a value of type UInt32 that represents the Internet port number. This is unique to Internet password attributes.

101.1.39  \textbf{kSecProtocolItemAttr = "ptcl"}

\textbf{Notes:}
Identifies the protocol attribute.
You use this tag to set or get a value of type SecProtocolType that represents the Internet protocol. For possible protocol type values, see "Keychain Protocol Type Constants." This is unique to AppleShare and Internet password attributes.

101.1.40 kSecScriptCodeItemAttr =”scrp”

Notes:
Identifies the script code attribute.
You use this tag to set or get a value of type ScriptCode that represents the script code for all strings. Use of this attribute is deprecated; string attributes should always be stored in UTF-8 encoding.

101.1.41 kSecSecurityDomainItemAttr =”sdmn”

Notes:
Identifies the security domain attribute.
You use this tag to set or get a value that represents the Internet security domain. This is unique to Internet password attributes.

101.1.42 kSecServerItemAttr =”srvr”

Notes:
Identifies the server attribute.
You use this tag to set or get a string that represents the Internet server’s domain name or IP address. This is unique to Internet password attributes. Keychain strings should use UTF-8 encoding.

101.1.43 kSecServiceItemAttr =”svce”

Notes:
Identifies the service attribute.
You use this tag to set or get a string that represents the service associated with this item, for example, ”iTools”. This is unique to generic password attributes. Keychain strings should use UTF-8 encoding.
101.1.44 kSecSignatureItemAttr = ”ssig”

Notes:  
Identifies the server signature attribute.  
You use this tag to set or get a value of type SecAFPServerSignature that represents the server signature block. This is unique to AppleShare password attributes.

101.1.45 kSecTypeItemAttr = ”type”

Notes:  
Identifies the type attribute.  
You use this tag to set or get a value of type FourCharCode that represents the item’s type.

101.1.46 kSecVolumeItemAttr = ”vlme”

Notes:  
Identifies the volume attribute.  
You use this tag to set or get a string value that represents the AppleShare volume. This is unique to AppleShare password attributes. Keychain strings should use UTF-8 encoding.
101.2 module KeychainManagerMBS

101.2.1 module KeychainManagerMBS

Function: The module for global keychain functions.
Example:

```vbscript
// build query
dim query as new Dictionary

dim domain as string = "test.test"
dim username as string = "testuser"

query.value( KeychainManagerMBS.kSecAttrServer ) = Domain
query.value( KeychainManagerMBS.kSecAttrAccount ) = Username
query.value( KeychainManagerMBS.kSecClass ) = KeychainManagerMBS.kSecClassInternetPassword
query.Value( KeychainManagerMBS.kSecMatchLimit ) = KeychainManagerMBS.kSecMatchLimitOne

// Build Dictionary with new values
dim newValues as new Dictionary
newValues.value( KeychainManagerMBS.kSecAttrComment ) = "Just a test"

// and update
if KeychainManagerMBS.UpdateItem(query, newValues) then
    MsgBox "OK"
else
    MsgBox "Failed."
end if
```

101.2.2 Methods

101.2.3 AddGenericPassword(keychain as KeychainMBS, serviceName as string, accountName as string, password as memoryblock) as KeychainItemMBS

Function: Adds a new generic password to a keychain.
Example:

```vbscript
// add password with password in MemoryBlock
dim Password as string = "mysecret"
dim PasswordData as MemoryBlock = ConvertEncoding(Password, encodings.UTF8)
dim ServiceName as string = "mytest"
dim Username as string = "myusername"
```
dim keychain as KeychainMBS = nil ' use default

call KeychainManagerMBS.AddGenericPassword(keychain, ServiceName, Username, PasswordData)

dim e as Integer = KeychainManagerMBS.LastError
MsgBox str(e) + ": " + KeychainManagerMBS.ErrorMessageString(e)

Notes:

keychain: A reference to the keychain in which to store a generic password. Pass nil to specify the default keychain.
serviceName: The service name.
accountName: The account name.
password: A buffer containing the password data to be stored in the keychain.

Returns the new keychain item.
LastError is set.

The result code errSecNoDefaultKeychain indicates that no default keychain could be found. The result code errSecDuplicateItem indicates that you tried to add a password that already exists in the keychain. The result code errSecDataTooLarge indicates that you tried to add more data than is allowed for a structure of this type. Call ErrorMessageString function to get a human-readable string explaining the result.

This function adds a new generic password to the specified keychain. Required parameters to identify the password are serviceName and accountName, which are application-defined strings.

You can use this function to add passwords for accounts other than the Internet. For example, you might add AppleShare passwords, or passwords for your database or scheduling programs.

This function sets the initial access rights for the new keychain item so that the application creating the item is given trusted access.

This function automatically calls the function Unlock to display the Unlock Keychain dialog box if the keychain is currently locked.
Available in OS X v10.2 and later.
See also:

• 101.2.4 AddGenericPassword(keychain as KeychainMBS, serviceName as string, accountName as string, password as string) as KeychainItemMBS
101.2.4 AddGenericPassword(keychain as KeychainMBS, serviceName as string, accountName as string, password as string) as KeychainItemMBS


Function: Adds a new generic password to a keychain.

Example:

```vbs
// add password with password in string
dim ServiceName as string = "mytest"
dim Username as string = "myusername"
dim Password as string = "mysecret"
dim keychain as KeychainMBS = nil // use default
call KeychainManagerMBS.AddGenericPassword(keychain, ServiceName, Username, Password)
dim e as Integer = KeychainManagerMBS.LastError
MsgBox str(e)+": " +KeychainManagerMBS.ErrorMessageString(e)
```

Notes: Takes UTF-8 text from password string for the password. Else the same as AddGenericPassword with memoryblock.

See also:

- 101.2.3 AddGenericPassword(keychain as KeychainMBS, serviceName as string, accountName as string, password as memoryblock) as KeychainItemMBS

101.2.5 AddInternetPassword(keychain as KeychainMBS, serverName as string, securityDomain as string, accountName as string, path as string, port as Integer, protocol as string, authenticationType as string, password as memoryblock) as KeychainItemMBS


Function: Adds a new Internet password to a keychain.

Notes:

keychain: A reference to the keychain in which to store an Internet password. Pass nil to specify the user's default keychain.

serverName: The server name.

securityDomain: The security domain. This parameter is optional. Pass "" if the protocol does not require it.

accountName: The account name.

path: The character string representing the path.

port: The TCP/IP port number. If no specific port number is associated with this password, pass 0.

protocol: The protocol associated with this password. See Protocol Type Constants for a description of possible values.

authenticationType: The authentication scheme used. See Keychain Authentication Type Constants for
a description of possible values. Pass the constant kSecAuthenticationTypeDefault, to specify the default authentication scheme.

password: A buffer containing the password data to be stored in the keychain.

Returns the new keychain item.
LastError is set.

This function adds a new Internet server password to the specified keychain. Required parameters to identify the password are serverName and accountName (you cannot pass "" for both parameters). In addition, some protocols may require an optional securityDomain when authentication is requested. This function optionally returns a reference to the newly added item.

This function sets the initial access rights for the new keychain item so that the application creating the item is given trusted access.

This function automatically calls the function Unlock to display the Unlock Keychain dialog box if the keychain is currently locked.
Available in OS X v10.2 and later.
See also:

- 101.2.6 AddInternetPassword(keychain as KeychainMBS, serverName as string, securityDomain as string, accountName as string, path as string, port as Integer, protocol as string, authenticationType as string, password as string) as KeychainItemMBS

101.2.6 AddInternetPassword(keychain as KeychainMBS, serverName as string, securityDomain as string, accountName as string, path as string, port as Integer, protocol as string, authenticationType as string, password as string) as KeychainItemMBS

**Function:** Adds a new Internet password to a keychain.

**Example:**

```vbs
// add password with password in string
dim serverName as string = "mytest.com"
dim Password as string = "mysecret"
dim PasswordData as MemoryBlock = ConvertEncoding(Password, encodings.UTF8)
dim keychain as KeychainMBS = nil // use default
dim securityDomain as string = "ftp://mytest.com"
dim accountName as string = "myusername"
dim path as string = "/test"
dim port as Integer = 22
dim protocol as string = KeychainManagerMBS.kSecAttrProtocolFTP
dim authenticationType as string = KeychainManagerMBS.kSecAttrAuthenticationTypeDefault
```
call KeychainManagerMBS.AddInternetPassword(keychain, serverName, securityDomain, accountName, path, port, protocol, authenticationType, PasswordData)

dim e as Integer = KeychainManagerMBS.LastError
MsgBox str(e)+" : " + KeychainManagerMBS.ErrorMessageString(e)

Notes:
See KeychainManagerMBS.AddInternetPassword for details.
The password is stored as data with UTF-8 encoding.
See also:

- 101.2.5 AddInternetPassword(keychain as KeychainMBS, serverName as string, securityDomain as string, accountName as string, path as string, port as Integer, protocol as string, authenticationType as string, password as memoryblock) as KeychainItemMBS

101.2.7 AddItem(Keychain as KeychainMBS, attributesDictionary as dictionary) as boolean

Function: Adds one or more items to a keychain.
Example:

dim a as new Dictionary

dim ServiceName as string = "mytest"
dim Username as string = "myusername"
dim Password as string = "mysecret"
dim PasswordData as MemoryBlock = ConvertEncoding(Password, encodings.UTF8)

a.value( KeychainManagerMBS.kSecAttrAccount ) = Username
a.value( KeychainManagerMBS.kSecAttrService ) = ServiceName
a.value( KeychainManagerMBS.kSecValueData ) = PasswordData
a.value( KeychainManagerMBS.kSecClass ) = KeychainManagerMBS.kSecClassGenericPassword

if KeychainManagerMBS.AddItem(nil, a) then
    MsgBox "OK"
else
    MsgBox "Failed."
end if

Notes: See other method variant for details.
See also:
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- 101.2.8 AddItem(Keychain as KeychainMBS, attributesDictionary as dictionary, byref result as Variant) as boolean

101.2.8 AddItem(Keychain as KeychainMBS, attributesDictionary as dictionary, byref result as Variant) as boolean


**Function:** Adds one or more items to a keychain.

**Example:**

```vbscript
dim a as new Dictionary

dim ServiceName as string = "mytest"
dim Username as string = "myusername"
dim Password as string = "mysecret"
dim PasswordData as MemoryBlock = ConvertEncoding(Password, encodings.UTF8)

a.value( KeychainManagerMBS.kSecAttrAccount ) = Username
a.value( KeychainManagerMBS.kSecAttrService ) = ServiceName
a.value( KeychainManagerMBS.kSecAttrService ) = PasswordData
a.value( KeychainManagerMBS.kSecClass ) = KeychainManagerMBS.kSecClassGenericPassword

dim r as Variant
if KeychainManagerMBS.AddItem(nil, a, r) then
    dim item as KeychainItemMBS = r
    MsgBox "OK"
else
    MsgBox "Failed."
end if
```

**Notes:**

- attributesDictionary: A dictionary containing an item class key-value pair ("Keychain Item Class Keys and Values") and optional attribute key-value pairs ("Attribute Item Keys and Values") specifying the item’s attribute values.
- result: Optional. On return, a reference to the newly added items. The exact type of the result is based on the values supplied in attributes, as discussed below.
- Lasterror is set.

You specify attributes defining an item by adding key-value pairs to the attributes dictionary. To add multiple items to a keychain at once use the kSecUseItemList key (see section "Item List Key") with an array of items as its value. This is currently only supported for non-password items.
If you want the new keychain item to be shared among multiple applications, include the kSecAttrAccessGroup key in the attributes dictionary. The value of this key must be the name of a keychain access group to which all of the programs that will share this item belong.

When you use Xcode to create an application, Xcode adds an application-identifier entitlement to the application bundle. Keychain Services uses this entitlement to grant the application access to its own keychain items. You can also add a keychain-access-groups entitlement to the application and, in the entitlement property list file, specify an array of keychain access groups to which the application belongs. The property list file can have any name you like (for example, keychain-access-groups.plist). The Xcode build variable CODESIGN_ENTITLEMENTS should contain the SRCROOT relative path to the entitlement property list file. The property list file itself should be a dictionary with a top-level key called keychain-access-groups whose value is an array of strings. If you add such a property-list file to the application bundle, then the access group corresponding to the application-identifier entitlement is treated as the last element in the access groups array. If you do not include the kSecAttrAccessGroup key in the attributes dictionary when you call the AddItem function to add an item to the keychain, the function uses the first access group in the array by default. If there is no kSecAttrAccessGroup key in the attributes dictionary and there is no keychain-access-groups entitlement in the application bundle, then the access group of a newly created item is the value of the application-identifier entitlement.

For example, a development group in Apple might have the ID:

659823F3DC53.com.apple

and the application identifiers of their two applications might be:

659823F3DC53.com.apple.oneappleapp and

659823F3DC53.com.apple.twoappleapp

If both applications add a keychain-access-groups entitlement with one value in the array of access groups:

659823F3DC53.com.apple.netaccount

then both applications would add new keychain items to the 659823F3DC53.com.apple.netaccount access group by default and both applications would have access to keychain items in that group. In addition, each application would still have access to its own private keychain items: OneAppleApp would have access to items in keychain access group 659823F3DC53.com.apple.oneappleapp and TwoAppleApp would have access to items in 659823F3DC53.com.apple.twoappleapp.

Return types ("Search Results Constants") are specified as follows:
To obtain the data of the added item as an object of type Memoryblock, specify the return type key kSecReturnData with a value of true.
To obtain all the attributes of the added item as objects of type Dictionary, specify kSecReturnAttributes with a value of true.
To obtain a reference to the added item of type KeychainItemMBS, SecKeyRef, SecCertificateRef, or SecIdentityRef), specify kSecReturnRef with a value of True. This is the default behavior if a return type is not explicitly specified.
To obtain a persistent reference to the added item (an object of type Memoryblock), specify kSecReturnPersistentRef with a value of True. Note that unlike normal references, a persistent reference may be stored on disk or passed between processes.
If more than one of these return types is specified, the result is returned as an object of type Dictionary containing all the requested data.

Available in OS X v10.6 and later.

See also:

- 101.2.7 AddItem(Keychain as KeychainMBS, attributesDictionary as dictionary) as boolean

101.2.9 AllItems(keychain as KeychainMBS, itemClass as string) as KeychainItemMBS()

Function: Queries all items.
Notes:
Keychain: If not nil, searches only this keychain.
ItemClass: The item class to find. For example kSecGenericPasswordItemClass.
Lasterror is set.
Returns array of keychain items.

101.2.10 CopyMatching(Query as dictionary, byref result as Variant) as boolean

Function: Returns one or more keychain items that match a search query, or copies attributes of specific keychain items.
Example:

```
dim ServiceName as string = "mytest"
dim Username as string = "myusername"

// Build query
dim query as new Dictionary
query.value( KeychainManagerMBS.kSecClass ) = KeychainManagerMBS.kSecClassGenericPassword
query.Value( KeychainManagerMBS.kSecReturnAttributes ) = true
query.Value( KeychainManagerMBS.kSecMatchLimit ) = KeychainManagerMBS.kSecMatchLimitOne
```
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query.value( KeychainManagerMBS.kSecAttrAccount ) = Username
query.value( KeychainManagerMBS.kSecAttrService ) = ServiceName

// search the item and show values from attribute dictionary
dim r as Variant
if KeychainManagerMBS.CopyMatching(query, r) then
    if r isa Dictionary then
        dim d as Dictionary = r
        // show values
        MsgBox "Creation Date: " + d.value(KeychainManagerMBS.kSecAttrCreationDate).dateValue.shortdate
        MsgBox "Modification Date: " + d.value(KeychainManagerMBS.kSecAttrModificationDate).dateValue.shortdate
    end if
end if

Notes:

query: A dictionary containing an item class specification and optional attributes for controlling the search. See
result: On return, a reference to the found items. The exact type of the result is based on the search attributes supplied in the query, as discussed below.

Lasterror is set.

You specify attributes defining a search by adding key-value pairs to the query dictionary.

A typical query consists of:

- The class key ("Item Class Key Constant") and a class value constant ("Item Class Value Constants"), which specifies the class of items for which to search.
- One or more attribute key-value pairs ("Attribute Item Keys and Values"), which specify the attribute data to be matched.
- One or more search key-value pairs ("Search Keys"), which specify values that further refine the search.
- A return-type key-value pair ("Search Results Constants"), specifying the type of results you desire.

Return types ("Search Results Constants") are specified as follows:

- To obtain a reference (of type Memoryblock) to the data of a matching item, specify kSecReturnData with a value of true.
• To obtain a dictionary (of type Dictionary) containing the attributes of a matching item, specify kSecReturnAttributes with a value of true.

• To obtain a reference (of type KeychainItemMBS, SecKeyRef, SecCertificateRef, or SecIdentityRef) to a matching item, specify kSecReturnRef with a value of true.

• To obtain a persistent reference (of type Memoryblock) to a matching item, specify kSecReturnPersistentRef with a value of true. Note that unlike normal references, a persistent reference may be stored on disk or passed between processes.

• If more than one return type is specified (for example, kSecReturnRef and kSecReturnAttributes), the results are returned as a dictionary (that is, an object of type Dictionary) containing all the requested data.

By default, this function returns only the first match found. To obtain more than one matching item at a time, specify the search key kSecMatchLimit with a value greater than 1. The result will be an object of type Array containing up to that number of matching items.

Note: You cannot combine the kSecReturnData and kSecMatchLimitAll options when copying password items (items of class kSecInternetPasswordItemClass or kSecGenericPasswordItemClass), because copying each password item could require additional authentication. Instead, request a reference or persistent reference to the items, then request the data for only the specific passwords that you actually require.

By default, this function searches for items in the keychain. To instead provide your own set of items to be filtered by this search query, specify the search key kSecMatchItemList and provide as its value a Array containing items of type SecKeychainItemRef, SecKeyRef, SecCertificateRef, or SecIdentityRef. The objects in the provided array must all be of the same type.

To convert from persistent item references to normal item references, specify the search key kSecMatchItemList with a value that consists of an object of type array referencing an array containing one or more elements of type Memoryblock (the persistent references), and a return-type key of kSecReturnRef whose value is true. The objects in the provided array must all be of the same type.

When you use Xcode to create an application, Xcode adds an application-identifier entitlement to the application bundle. Keychain Services uses this entitlement to grant the application access to its own keychain items. You can also add a keychain-access-groups entitlement to the application and, in the entitlement property list file, specify an array of keychain access groups to which the application belongs. The property list file can have any name you like (for example, keychain-access-groups.plist). The Xcode build variable CODESIGN_ENTITLEMENTS should contain the SRCROOT relative path to the entitlement property list file. The property list file itself should be a dictionary with a top-level key called keychain-access-groups whose value is an array of strings. When you call the SecItemAdd function to add an item to the keychain, you can specify the access group to which that item should belong. By default, the SecItemCopyMatching function searches all the access groups to which the application belongs. However, you can add the kSecAttrAccessGroup key to the search dictionary to specify which access group to search for keychain items.

Availability
Available in OS X v10.6 and later.
101.2.11 CopyMatchingDictionaries(Query as dictionary) as Dictionary()

**Function:** Returns one or more keychain items that match a search query, or copies attributes of specific keychain items.  
**Example:**

```vbnet
// Build query
dim query as new Dictionary
query.value(KeychainManagerMBS.kSecClass) = KeychainManagerMBS.kSecClassGenericPassword
query.Value(KeychainManagerMBS.kSecReturnAttributes) = true
query.Value(KeychainManagerMBS.kSecMatchLimit) = KeychainManagerMBS.kSecMatchLimitAll

// search all items
dim dics() as Dictionary = KeychainManagerMBS.CopyMatchingDictionaries(query)

// pick first
dim dic as Dictionary = dics(0)

// and display
MsgBox "Service: " + dic.Value(KeychainManagerMBS.kSecAttrService) + vbCrLf + "Account: " + dic.Value(KeychainManagerMBS.kSecAttrAccount)
```

**Notes:** This is a variant of CopyMatching which uses kSecReturnAttributes to query array of dictionaries.

101.2.12 CopyMatchingItems(Query as dictionary) as KeychainItemMBS()

**Function:** Returns one or more keychain items that match a search query, or copies attributes of specific keychain items.  
**Example:**

```vbnet
// Build query
dim query as new Dictionary
query.value(KeychainManagerMBS.kSecClass) = KeychainManagerMBS.kSecClassGenericPassword
query.Value(KeychainManagerMBS.kSecMatchLimit) = KeychainManagerMBS.kSecMatchLimitAll
query.Value(KeychainManagerMBS.kSecAttrAccount) = "myusername"

// search all items
dim items() as KeychainItemMBS = KeychainManagerMBS.CopyMatchingItems(query)

if UBound(items) = -1 then
    MsgBox "nothing found."
```
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else

    // pick first
    dim item as KeychainItemMBS = items(0)

    // and display
    MsgBox "Service: " +item.Service+EndOfLine+"Account: " +item.Account

end if

Notes: This is a variant of CopyMatching which uses kSecReturnRef to query array of KeychainItemMBS.

101.2.13 Default as KeychainMBS

Function: Retrieves the default keychain.
Example:
MsgBox KeychainManagerMBS.Default.Path

Notes: Lasterror is set.

101.2.14 DeleteItem(Query as Dictionary) as boolean

Function: Deletes items that match a search query.
Example:
dim ServiceName as string = "mytest"
dim Username as string = "myusername"

    // Build query
    dim query as new Dictionary

    query.value( KeychainManagerMBS.kSecClass ) = KeychainManagerMBS.kSecClassGenericPassword
    query.value( KeychainManagerMBS.kSecAttrAccount ) = Username
    query.value( KeychainManagerMBS.kSecAttrService ) = ServiceName

    // search the item and delete it

    if KeychainManagerMBS.DeleteItem(query) then
        MsgBox "Deleted"
    end if
else
MsgBox "Failed."
end if

Notes:

query: A dictionary containing an item class specification and optional attributes for controlling the search. Lasterror is set.

See the discussion section of the CopyMatching function for information about how to construct a search dictionary.

By default, this function deletes all items matching the specified query. You can change this behavior by specifying a key, as follows:

- To delete an item identified by a transient reference, specify the kSecMatchItemList search key with a reference returned by using the kSecReturnRef return type key in a previous call to the SecItemCopyMatching or SecItemAdd functions.
- To delete an item identified by a persistent reference, specify the kSecMatchItemList search key with a persistent reference returned by using the kSecReturnPersistentRef return type key to the SecItemCopyMatching or SecItemAdd functions.
- If more than one of these return keys is specified, the behavior is undefined.

Available in OS X v10.6 and later.

101.2.15 DomainDefault(domain as Integer) as KeychainMBS

Function: Retrieves the default keychain from a specified preference domain.
Example:
dim SystemKeychain as KeychainMBS = KeychainManagerMBS.DomainDefault(KeychainManagerMBS.kSecPreferencesDomainSystem)
msgbox SystemKeychain.name

Notes:

domain: The preference domain from which you wish to retrieve the default keychain. See Preference Domain Constants for possible domain values.
Returns the keychain object of the default keychain in the specified preference domain. Lasterror is set.

A preference domain is a set of security-related preferences, such as the default keychain and the current keychain search list. Use this function if you want to retrieve the default keychain for a specific preference domain. Use the KeychainManagerMBS.Default function if you want the default keychain for the current preference domain. See the PreferenceDomain function for a discussion of current and default preference domains. Available in OS X v10.3 and later.

101.2.16 DomainSearchList(domain as Integer) as KeychainMBS()

Function: Retrieves the keychain search list for a specified preference domain.
Example:

```vbnet
dim SearchList() as KeychainMBS = KeychainManagerMBS.DomainSearchList(KeychainManagerMBS.kSecPreferencesDomainUser)
dim names() as String
for each k as KeychainMBS in SearchList
    names.Append k.Name
next
MsgBox Join(names, EndOfLine)
```

Notes:

domain: The preference domain from which you wish to retrieve the keychain search list. See Preference Domain Constants for possible domain values.

Returns the keychain search list of the specified preference domain. Lasterror is set.

A preference domain is a set of security-related preferences, such as the default keychain and the current keychain search list. Use this function if you want to retrieve the keychain search list for a specific preference domain. Use the SearchList function if you want the keychain search list for the current preference domain. See the PreferenceDomain function for a discussion of current and default preference domains. Available in OS X v10.3 and later.
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101.2.17  ErrorMessageString(error as Integer) as string

Function: Returns a string explaining the meaning of a security result code.
Notes:
status: A result code of type OSStatus or CSSM_RETURN, returned by a security or CSSM function.

Returns a human-readable string describing the result, or empty string if no string is available for the specified result code.
Available in OS X v10.5 and later.

101.2.18  FindGenericItem(keychain as KeychainMBS, serviceName as string, accountName as string) as KeychainItemMBS

Function: Finds the first generic keychain item based on the attributes passed.
Example:
  dim ServiceName as string = "mytest"
  dim Username as string = "myusername"
  dim keychain as KeychainMBS = nil // use default

  dim item as KeychainItemMBS = KeychainManagerMBS.FindGenericItem(keychain, ServiceName, Username)
  MsgBox "Label: " + item.label + EndOfLine +
  "Comment: " + item.comment + EndOfLine +
  "Account: " + item.Account

Notes: Same as KeychainManagerMBS.FindGenericPassword, but returns item instead of password.

101.2.19  FindGenericPassword(keychain as KeychainMBS, serviceName as string, accountName as string, byref password as memoryblock) as KeychainItemMBS

Function: Finds the first generic password based on the attributes passed.
Notes:
keychain: A reference to a single keychain, or nil to search the user’s default keychain search list.
serviceName: The service name.
accountName: The account name.
password: A memoryblock that holds the password data.

Returns the item object of the generic password.
LastError is set.

This function finds the first generic password item that matches the attributes you provide. Most attributes are optional; you should pass only as many as you need to narrow the search sufficiently for your application's intended use. This function optionally returns a reference to the found item.

This function decrypts the password before returning it to you. If the calling application is not in the list of trusted applications, the user is prompted before access is allowed. If the access controls for this item do not allow decryption, the function returns the errSecAuthFailed result code.

This function automatically calls the function Unlock to display the Unlock Keychain dialog box if the keychain is currently locked.

101.2.20 FindInternetItem(keychain as KeychainMBS, serverName as string, securityDomain as string, accountName as string, path as string, port as Integer, protocol as string, authenticationType as string) as KeychainItemMBS

**Function:** Finds the first Internet password item based on the attributes passed.
**Notes:** See KeychainManagerMBS.FindInternetPassword for details.

101.2.21 FindInternetPassword(keychain as KeychainMBS, serverName as string, securityDomain as string, accountName as string, path as string, port as Integer, protocol as string, authenticationType as string, byref password as memoryblock) as KeychainItemMBS

**Function:** Finds the first Internet password based on the attributes passed.

**Notes:**
keychain: A single keychain or nil to search the user's default keychain search list.
serverName: The server name.
securityDomain: The security domain. This parameter is optional, as not all protocols require it. Pass "" if it is not required.
accountName: The account name.
path: The string representing the path.
port: The TCP/IP port number. Pass 0 to ignore the port number.
protocol: The protocol associated with this password. See Keychain Protocol Type Constants for a description of possible values.
authenticationType: The authentication scheme used. See Keychain Authentication Type Constants for a description of possible values. Pass the constant kSecAuthenticationTypeDefault, to specify the default authentication scheme.
password: On return, a memoryblock containing the password data.

Returns the item object of the Internet password.
LastError is set.

This function finds the first Internet password item that matches the attributes you provide. This function optionally returns a reference to the found item.

This function decrypts the password before returning it to you. If the calling application is not in the list of trusted applications, the user is prompted before access is allowed. If the access controls for this item do not allow decryption, the function returns the errSecAuthFailed result code.

This function automatically calls the function Unlock to display the Unlock Keychain dialog box if the keychain is currently locked.
Available in OS X v10.2 and later.

### 101.2.22 GetPassword(Query as dictionary, byref result as Memoryblock) as boolean

**Function:** Returns one keychain item that match a search query.
**Example:**

```vbs
// build query
dim query as new Dictionary
dim ServiceName as string = "mytest"
dim Username as string = "myusername"
query.value( KeychainManagerMBS.kSecAttrAccount ) = Username
query.value( KeychainManagerMBS.kSecAttrService ) = ServiceName
query.value( KeychainManagerMBS.kSecClass ) = KeychainManagerMBS.kSecClassGenericPassword

// query password
dim passwordData as MemoryBlock
if KeychainManagerMBS.GetPassword(query, passwordData) then
    // and show it
    dim password as string = DefineEncoding(passwordData, Encodings.utf8)
```
MsgBox "OK: " + password
else
    MsgBox "Failed."
end if

Notes:
This is a variant of CopyMatching which uses kSecReturnData to query the data of one keychain item. Returns password of first item found in result parameter. If you expect text, be sure to use DefineEncoding to define as encodings.UTF8.

101.2.23 ItemFromPersistentReference(data as memoryblock) as KeychainItemMBS

Function: Provides a keychain item reference, given a persistent reference.
Notes:
Returns a keychain item reference for the item for which you provided a persistent reference. Available in OS X v10.6 and later.

101.2.24 kSecAttrAccess as string

Function: One of the keychain item attribute keys.
Notes:
A SecAccessRef object describing the access control settings for this item. Available in OS X v10.7 and later.

101.2.25 kSecAttrAccessControl as string

Function: Specifies a dictionary key whose value is SecAccessControl instance which contains access control conditions for item.
Notes:
Available on Mac OS X 10.10 and newer.
IMPORTANT: This attribute is mutually exclusive with kSecAttrAccess attribute.
101.2.26 kSecAttrAccessGroup as string

Function: Specifies a dictionary key whose value is a CFStringRef indicating which access group an item is in.
Notes: Available on Mac OS X 10.9 and newer.
The access groups that a particular application has membership in are determined by two entitlements for that application. The application-identifier entitlement contains the application’s single access group, unless there is a keychain-access-groups entitlement present. The latter has as its value a list of access groups; the first item in this list is the default access group. Unless a specific access group is provided as the value of kSecAttrAccessGroup when SecItemAdd is called, new items are created in the application’s default access group. Specifying this attribute in SecItemCopyMatching, SecItemUpdate, or SecItemDelete calls limits the search to the specified access group (of which the calling application must be a member to obtain matching results.) To share keychain items between multiple applications, each application must have a common group listed in its keychain-access-groups entitlement, and each must specify this shared access group name as the value for the kSecAttrAccessGroup key in the dictionary passed to SecItem functions.

101.2.27 kSecAttrAccessible as string

Function: Specifies a dictionary key whose value indicates when your application needs access to an item’s data.
Notes: You should choose the most restrictive option that meets your application’s needs to allow the system to protect that item in the best way possible. See the kSecAttrAccessible* methods for a list of values which can be specified.
IMPORTANT: This attribute is currently not supported for OS X keychain items, unless the kSecAttrSynchronized attribute is also present. If both attributes are specified on either OS X or iOS, the value for the kSecAttrAccessible key may only be one whose name does not end with ”ThisDeviceOnly”, as those cannot sync to another device.

101.2.28 kSecAttrAccessibleAfterFirstUnlock as string

Function: One of the values for kSecAttrAccessible key.
Notes: Item data can only be accessed once the device has been unlocked after a restart. This is recommended for items that need to be accessible by background applications. Items with this attribute will migrate to a new device when using encrypted backups.
101.2.29  kSecAttrAccessibleAfterFirstUnlockThisDeviceOnly as string

**Function:** One of the values for kSecAttrAccessible key.  
**Notes:**  
Item data can only be accessed once the device has been unlocked after a restart.  
This is recommended for items that need to be accessible by background applications. Items with this attribute will never migrate to a new device, so after a backup is restored to a new device these items will be missing.  
Available on Mac OS X 10.9 and newer.

101.2.30  kSecAttrAccessibleAlways as string

**Function:** One of the values for kSecAttrAccessible key.  
**Notes:**  
Item data can always be accessed regardless of the lock state of the device. This is not recommended for anything except system use. Items with this attribute will migrate to a new device when using encrypted backups.  
Available on Mac OS X 10.9 and newer.

101.2.31  kSecAttrAccessibleAlwaysThisDeviceOnly as string

**Function:** One of the values for kSecAttrAccessible key.  
**Notes:**  
Item data can always be accessed regardless of the lock state of the device. This option is not recommended for anything except system use. Items with this attribute will never migrate to a new device, so after a backup is restored to a new device, these items will be missing.  
Available on Mac OS X 10.9 and newer.

101.2.32  kSecAttrAccessibleWhenPasscodeSetThisDeviceOnly as string

**Function:** One of the values for kSecAttrAccessible key.  
**Notes:**  
Item data can only be accessed while the device is unlocked. This is recommended for items that only need to be accessible while the application is in the foreground and requires a passcode to be set on the device. Items with this attribute will never migrate to a new device, so after a backup is restored to a new device,
these items will be missing. This attribute will not be available on devices without a passcode. Disabling
the device passcode will cause all previously protected items to be deleted.
Available on Mac OS X 10.9 and newer.

101.2.33 kSecAttrAccessibleWhenUnlocked as string

Function: One of the values for kSecAttrAccessible key.
Notes:
Item data can only be accessed while the device is unlocked. This is recommended for items that only need
be accessible while the application is in the foreground. Items with this attribute will migrate to a new device
when using encrypted backups.
Available on Mac OS X 10.9 and newer.

101.2.34 kSecAttrAccessibleWhenUnlockedThisDeviceOnly as string

Function: One of the values for kSecAttrAccessible key.
Notes:
Item data can only be accessed while the device is unlocked. This is recommended for items that only need
be accessible while the application is in the foreground. Items with this attribute will never migrate to a new
device, so after a backup is restored to a new device, these items will be missing.
Available on Mac OS X 10.9 and newer.

101.2.35 kSecAttrAccount as string

Function: One of the keychain item attribute keys.
Notes:
Account attribute key.
The corresponding value is of type String and contains an account name. Items of class kSecClassGeneric-
Password and kSecClassInternetPassword have this attribute.
Available in OS X v10.6 and later.

101.2.36 kSecAttrApplicationLabel as string

Function: One of the keychain item attribute keys.
Notes:

Application label attribute key.
The corresponding value is of type String and contains a label for this item. This attribute is different from
the kSecAttrLabel attribute, which is intended to be human-readable. This attribute is used to look up a
key programmatically; in particular, for keys of class kSecAttrKeyClassPublic and kSecAttrKeyClassPrivate,
the value of this attribute is the hash of the public key.
Available in OS X v10.6 and later.

101.2.37  kSecAttrApplicationTag as string

Function: One of the keychain item attribute keys.
Notes:

Private tag attribute key.
The corresponding value is of type Memoryblock and contains private tag data.
Available in OS X v10.6 and later.

101.2.38  kSecAttrAuthenticationType as string

Function: One of the keychain item attribute keys.
Notes:

Authentication type attribute key.
The corresponding value is of type integer and denotes the authentication scheme for this item (see "Au-
thentication Type Values").
Available in OS X v10.6 and later.

101.2.39  kSecAttrAuthenticationTypeDefault as string

Function: Values that can be used with the kSecAttrAuthenticationType attribute key.
Notes:

The default authentication type.
Available in OS X v10.6 and later.
101.2.40  kSecAttrAuthenticationTypeDPA as string

Function: Values that can be used with the kSecAttrAuthenticationType attribute key.
Notes: Distributed Password authentication.
Available in OS X v10.6 and later.

101.2.41  kSecAttrAuthenticationTypeHTMLForm as string

Function: Values that can be used with the kSecAttrAuthenticationType attribute key.
Notes: HTML form based authentication.
Available in OS X v10.6 and later.

101.2.42  kSecAttrAuthenticationTypeHTTPBasic as string

Function: Values that can be used with the kSecAttrAuthenticationType attribute key.
Notes: HTTP Basic authentication.
Available in OS X v10.6 and later.

101.2.43  kSecAttrAuthenticationTypeHTTPDigest as string

Function: Values that can be used with the kSecAttrAuthenticationType attribute key.
Notes: HTTP Digest Access authentication.
Available in OS X v10.6 and later.

101.2.44  kSecAttrAuthenticationTypeMSN as string

Function: Values that can be used with the kSecAttrAuthenticationType attribute key.
Notes:
Microsoft Network default authentication.
Available in OS X v10.6 and later.

101.2.45  kSecAttrAuthenticationTypeNTLM as string

Function: Values that can be used with the kSecAttrAuthenticationType attribute key.
Notes:
Windows NT LAN Manager authentication.
Available in OS X v10.6 and later.

101.2.46  kSecAttrAuthenticationTypeRPA as string

Function: Values that can be used with the kSecAttrAuthenticationType attribute key.
Notes:
Remote Password authentication.
Available in OS X v10.6 and later.

101.2.47  kSecAttrCanDecrypt as string

Function: One of the keychain item attribute keys.
Notes:
Decryption attribute key.
The corresponding value is of type Boolean and indicates whether this cryptographic key can be used to decrypt data.
Available in OS X v10.6 and later.

101.2.48  kSecAttrCanDerive as string

Function: One of the keychain item attribute keys.
Notes:
Derivation attribute key.
The corresponding value is of type Boolean and indicates whether this cryptographic key can be used to derive another key.
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Available in OS X v10.6 and later.

101.2.49 kSecAttrCanEncrypt as string

Function: One of the keychain item attribute keys.
Notes:
Encryption attribute key.
The corresponding value is of type Boolean and indicates whether this cryptographic key can be used to encrypt data.
Available in OS X v10.6 and later.

101.2.50 kSecAttrCanSign as string

Function: One of the keychain item attribute keys.
Notes:
Signature attribute key.
The corresponding value is of type Boolean and indicates whether this cryptographic key can be used to create a digital signature.
Available in OS X v10.6 and later.

101.2.51 kSecAttrCanUnwrap as string

Function: One of the keychain item attribute keys.
Notes:
Unwrap attribute key.
The corresponding value is of type Boolean and indicates whether this cryptographic key can be used to unwrap another key.
Available in OS X v10.6 and later.

101.2.52 kSecAttrCanVerify as string

Function: One of the keychain item attribute keys.
Notes:
Signature verification attribute key.
The corresponding value is of type Boolean and indicates whether this cryptographic key can be used to verify a digital signature.
Available in OS X v10.6 and later.

101.2.53  kSecAttrCanWrap as string

Function: One of the keychain item attribute keys.
Notes:
Wrap attribute key.
The corresponding value is of type Boolean and indicates whether this cryptographic key can be used to wrap another key.
Available in OS X v10.6 and later.

101.2.54  kSecAttrCertificateEncoding as string

Function: One of the keychain item attribute keys.
Notes:
Certificate encoding attribute key.
The corresponding value is of type integer and denotes the certificate encoding (see the CSSM_CERT_ENCODING enumeration in cssmtype.h). Items of class kSecClassCertificate have this attribute. Read only.
Available in OS X v10.6 and later.

101.2.55  kSecAttrCertificateType as string

Function: One of the keychain item attribute keys.
Notes:
Certificate type attribute key.
The corresponding value is of type integer and denotes the certificate type (see the CSSM_CERT_TYPE enumeration in cssmtype.h). Items of class kSecClassCertificate have this attribute. Read only.
Available in OS X v10.6 and later.
101.2.56 kSecAttrComment as string

Function: One of the keychain item attribute keys.
Notes:
Comment attribute key.
The corresponding value is of type string and contains the user-editable comment for this item.
available in OS X v10.6 and later.

101.2.57 kSecAttrCreationDate as string

Function: One of the keychain item attribute keys.
Notes:
Creation date key.
The corresponding value is of type date and represents the date the item was created. Read only.
available in OS X v10.6 and later.

101.2.58 kSecAttrCreator as string

Function: One of the keychain item attribute keys.
Notes:
Creator attribute key.
The corresponding value is of type integer and represents the item’s creator. This number is the unsigned
integer representation of a four-character code (for example, ‘aCrt’).
available in OS X v10.6 and later.

101.2.59 kSecAttrDescription as string

Function: One of the keychain item attribute keys.
Notes:
Description attribute key.
The corresponding value is of type String and specifies a user-visible string describing this kind of item (for example, "Disk image password").
available in OS X v10.6 and later.
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101.2.60 kSecAttrEffectiveKeySize as string

Function: One of the keychain item attribute keys.
Notes:
Effective number of bits attribute key.
The corresponding value is of type Integer and indicates the effective number of bits in this cryptographic key. For example, a DES key has a kSecAttrKeySizeInBits of 64, but a kSecAttrEffectiveKeySize of 56 bits. Available in OS X v10.6 and later.

101.2.61 kSecAttrGeneric as string

Function: One of the keychain item attribute keys.
Notes:
Generic attribute key.
The corresponding value is of type Memoryblock and contains a user-defined attribute. Items of class kSecClassGenericPassword have this attribute. Available in OS X v10.6 and later.

101.2.62 kSecAttrIsInvisible as string

Function: One of the keychain item attribute keys.
Notes:
Invisible attribute key.
The corresponding value is of type boolean and is true if the item is invisible (that is, should not be displayed). Available in OS X v10.6 and later.

101.2.63 kSecAttrIsNegative as string

Function: One of the keychain item attribute keys.
Notes:
Negative attribute key.
The corresponding value is of type Boolean and indicates whether there is a valid password associated with this keychain item. This is useful if your application doesn’t want a password for some particular service to be stored in the keychain, but prefers that it always be entered by the user.
101.2.64 kSecAttrIsPermanent as string

Function: One of the keychain item attribute keys.
Notes:
Permanence attribute key.
The corresponding value is of type Boolean and indicates whether this cryptographic key is to be stored permanently.
Available in OS X v10.6 and later.

101.2.65 kSecAttrIssuer as string

Function: One of the keychain item attribute keys.
Notes:
Issuer attribute key.
The corresponding value is of type Date and contains the X.500 issuer name of a certificate. Items of class kSecClassCertificate have this attribute. Read only.
Available in OS X v10.6 and later.

101.2.66 kSecAttrKeyClass as string

Function: One of the keychain item attribute keys.
Notes:
Key class attribute key.
The corresponding value is of type CFStringRef and specifies a type of cryptographic key. Possible values are listed in "Key Class Values." Read only.
Available in OS X v10.6 and later.

101.2.67 kSecAttrKeyClassPrivate as string

Function: Values that can be used with the kSecAttrKeyClass attribute key.
Notes:
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A private key of a public-private pair.
Available in OS X v10.6 and later.

101.2.68  **kSecAttrKeyClassPublic as string**

**Function:** Values that can be used with the kSecAttrKeyClass attribute key.
**Notes:**
A public key of a public-private pair.
Available in OS X v10.6 and later.

101.2.69  **kSecAttrKeyClassSymmetric as string**

**Function:** Values that can be used with the kSecAttrKeyClass attribute key.
**Notes:**
A private key used for symmetric-key encryption and decryption.
Available in OS X v10.6 and later.

101.2.70  **kSecAttrKeySizeInBits as string**

**Function:** One of the keychain item attribute keys.
**Notes:**
Number of bits attribute key.
The corresponding value is of type Integer and indicates the total number of bits in this cryptographic key.
Compare with kSecAttrEffectiveKeySize.
Available in OS X v10.6 and later.

101.2.71  **kSecAttrKeyType as string**

**Function:** One of the keychain item attribute keys.
**Notes:**
Algorithm attribute key.
The corresponding value is of type integer and indicates the algorithm associated with this cryptographic key (see the CSSM_ALGORITHMS enumeration in cssmtype.h and "Key Type Values").
101.2.72 kSecAttrKeyType3DES as string

MBS MacClassic Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Values that can be used with the kSecAttrKeyType attribute key.

Notes:
DES algorithm.
Available in OS X v10.7 and later.

101.2.73 kSecAttrKeyTypeAES as string

MBS MacClassic Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Values that can be used with the kSecAttrKeyType attribute key.

Notes:
AES algorithm.
Available in OS X v10.7 and later.

101.2.74 kSecAttrKeyTypeCAST as string

MBS MacClassic Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Values that can be used with the kSecAttrKeyType attribute key.

Notes:
CAST algorithm.
Available in OS X v10.7 and later.

101.2.75 kSecAttrKeyTypeDES as string

MBS MacClassic Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Values that can be used with the kSecAttrKeyType attribute key.

Notes:
DES algorithm.
Available in OS X v10.7 and later.

101.2.76 kSecAttrKeyTypeDSA as string

MBS MacClassic Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Values that can be used with the kSecAttrKeyType attribute key.

Notes:
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DSA algorithm.
Available in OS X v10.7 and later.

101.2.77 kSecAttrKeyTypeEC as string

Function: Values that can be used with the kSecAttrKeyType attribute key.
Notes:
Elliptic curve algorithm.
Available in OS X v10.9 and later.

101.2.78 kSecAttrKeyTypeECDSA as string

Function: Values that can be used with the kSecAttrKeyType attribute key.
Notes:
Elliptic curve DSA algorithm.
Available in OS X v10.7 and later.

101.2.79 kSecAttrKeyTypeRC2 as string

Function: Values that can be used with the kSecAttrKeyType attribute key.
Notes:
RC2 algorithm.
Available in OS X v10.7 and later.

101.2.80 kSecAttrKeyTypeRC4 as string

Function: Values that can be used with the kSecAttrKeyType attribute key.
Notes:
RC4 algorithm.
Available in OS X v10.7 and later.
101.2.81 kSecAttrKeyTypeRSA as string

Function: Values that can be used with the kSecAttrKeyType attribute key.
Notes:
RSA algorithm.
Available in OS X v10.6 and later.

101.2.82 kSecAttrLabel as string

Function: One of the keychain item attribute keys.
Notes:
Label attribute key.
The corresponding value is of type String and contains the user-visible label for this item.
Available in OS X v10.6 and later.

101.2.83 kSecAttrModificationDate as string

Function: One of the keychain item attribute keys.
Notes:
Modification date key.
The corresponding value is of type date and represents the last time the item was updated. Read only.
Available in OS X v10.6 and later.

101.2.84 kSecAttrPath as string

Function: One of the keychain item attribute keys.
Notes:
Path attribute key.
The corresponding value is of type String and represents a path, typically the path component of the URL.
Items of class kSecClassInternetPassword have this attribute.
Available in OS X v10.6 and later.
101.2.85 kSecAttrPort as string

Function: One of the keychain item attribute keys.
Notes:
Port attribute key.
The corresponding value is of type integer and represents an Internet port number. Items of class kSecClass-
InternetPassword have this attribute.
Available in OS X v10.6 and later.

101.2.86 kSecAttrPRF as string

Function: One of the keychain item attribute keys.
Notes:
Pseudorandom function attribute. Possible values are described in "kSecAttrPRF Value Constants."
Available in OS X v10.7 and later.

101.2.87 kSecAttrPRFHmacAlgSHA1 as string

Function: Constants used for the kSecAttrPRF key in the parameters dictionary passed to KeyDerive-
FromPassword.
Notes:
Use the SHA1 algorithm.
Available in OS X v10.7 and later.

101.2.88 kSecAttrPRFHmacAlgSHA224 as string

Function: Constants used for the kSecAttrPRF key in the parameters dictionary passed to KeyDerive-
FromPassword.
Notes:
Use the SHA224 algorithm.
Available in OS X v10.7 and later.
101.2.89 kSecAttrPRFHmacAlgSHA256 as string

Function: Constants used for the kSecAttrPRF key in the parameters dictionary passed to KeyDerive-FromPassword.
Notes:
Use the SHA256 algorithm.
Available in OS X v10.7 and later.

101.2.90 kSecAttrPRFHmacAlgSHA384 as string

Function: Constants used for the kSecAttrPRF key in the parameters dictionary passed to KeyDerive-FromPassword.
Notes:
Use the SHA384 algorithm.
Available in OS X v10.7 and later.

101.2.91 kSecAttrPRFHmacAlgSHA512 as string

Function: Constants used for the kSecAttrPRF key in the parameters dictionary passed to KeyDerive-FromPassword.
Notes:
Use the SHA512 algorithm.
Available in OS X v10.7 and later.

101.2.92 kSecAttrProtocol as string

Function: One of the keychain item attribute keys.
Notes:
Protocol attribute key.
The corresponding value is of type integer and denotes the protocol for this item (see "Protocol Values").
Items of class kSecClassInternetPassword have this attribute.
Available in OS X v10.6 and later.
101.2.93  kSecAttrProtocolAFP as string

Function: Values that can be used with the kSecAttrProtocol attribute key.
Notes:
AFP over TCP.
Available in OS X v10.6 and later.

101.2.94  kSecAttrProtocolAppleTalk as string

Function: Values that can be used with the kSecAttrProtocol attribute key.
Notes:
AFP over AppleTalk.
Available in OS X v10.6 and later.

101.2.95  kSecAttrProtocolDAAP as string

Function: Values that can be used with the kSecAttrProtocol attribute key.
Notes:
DAAP protocol.
Available in OS X v10.6 and later.

101.2.96  kSecAttrProtocolEPPC as string

Function: Values that can be used with the kSecAttrProtocol attribute key.
Notes:
Remote Apple Events.
Available in OS X v10.6 and later.

101.2.97  kSecAttrProtocolFTP as string

Function: Values that can be used with the kSecAttrProtocol attribute key.
Notes:
FTP protocol.
Available in OS X v10.6 and later.

101.2.98 kSecAttrProtocolFTPAccount as string

Function: Values that can be used with the kSecAttrProtocol attribute key.
Notes:
A client side FTP account.
Available in OS X v10.6 and later.

101.2.99 kSecAttrProtocolFTPProxy as string

Function: Values that can be used with the kSecAttrProtocol attribute key.
Notes:
FTP proxy.
Available in OS X v10.6 and later.

101.2.100 kSecAttrProtocolFTPS as string

Function: Values that can be used with the kSecAttrProtocol attribute key.
Notes:
FTP over TLS/SSL.
Available in OS X v10.6 and later.

101.2.101 kSecAttrProtocolHTTP as string

Function: Values that can be used with the kSecAttrProtocol attribute key.
Notes:
HTTP protocol.
Available in OS X v10.6 and later.
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101.2.102 kSecAttrProtocolHTTPProxy as string

**Function:** Values that can be used with the kSecAttrProtocol attribute key.
**Notes:**

HTTP proxy.
Available in OS X v10.6 and later.
101.2.103  kSecAttrProtocolHTTPS as string

Function: Values that can be used with the kSecAttrProtocol attribute key.
Notes:
HTTP over TLS/SSL.
Available in OS X v10.6 and later.

101.2.104  kSecAttrProtocolHTTPSProxy as string

Function: Values that can be used with the kSecAttrProtocol attribute key.
Notes:
HTTPS proxy.
Available in OS X v10.6 and later.

101.2.105  kSecAttrProtocolIMAP as string

Function: Values that can be used with the kSecAttrProtocol attribute key.
Notes:
IMAP protocol.
Available in OS X v10.6 and later.

101.2.106  kSecAttrProtocolIMAPS as string

Function: Values that can be used with the kSecAttrProtocol attribute key.
Notes:
IMAP over TLS/SSL.
Available in OS X v10.6 and later.

101.2.107  kSecAttrProtocolIPP as string

Function: Values that can be used with the kSecAttrProtocol attribute key.
Notes:
IPP protocol.
Available in OS X v10.6 and later.

101.2.108  kSecAttrProtocolIRC as string

Function: Values that can be used with the kSecAttrProtocol attribute key.
Notes:
IRC protocol.
Available in OS X v10.6 and later.

101.2.109  kSecAttrProtocolIRCS as string

Function: Values that can be used with the kSecAttrProtocol attribute key.
Notes:
IRC over TLS/SSL.
Available in OS X v10.6 and later.

101.2.110  kSecAttrProtocolLDAP as string

Function: Values that can be used with the kSecAttrProtocol attribute key.
Notes:
LDAP protocol.
Available in OS X v10.6 and later.

101.2.111  kSecAttrProtocolLDAPS as string

Function: Values that can be used with the kSecAttrProtocol attribute key.
Notes:
LDAP over TLS/SSL.
Available in OS X v10.6 and later.
101.2.112  kSecAttrProtocolNNTP as string


**Function:** Values that can be used with the kSecAttrProtocol attribute key.

**Notes:**

NNTP protocol.
Available in OS X v10.6 and later.

101.2.113  kSecAttrProtocolNNTPS as string


**Function:** Values that can be used with the kSecAttrProtocol attribute key.

**Notes:**

NNTP over TLS/SSL.
Available in OS X v10.6 and later.

101.2.114  kSecAttrProtocolPOP3 as string


**Function:** Values that can be used with the kSecAttrProtocol attribute key.

**Notes:**

POP3 protocol.
Available in OS X v10.6 and later.

101.2.115  kSecAttrProtocolPOP3S as string


**Function:** Values that can be used with the kSecAttrProtocol attribute key.

**Notes:**

POP3 over TLS/SSL.
Available in OS X v10.6 and later.

101.2.116  kSecAttrProtocolRTSP as string


**Function:** Values that can be used with the kSecAttrProtocol attribute key.

**Notes:**
RTSP protocol.
Available in OS X v10.6 and later.

101.2.117  kSecAttrProtocolRTSPProxy as string

**Function:** Values that can be used with the kSecAttrProtocol attribute key.
**Notes:**
RTSP proxy.
Available in OS X v10.6 and later.

101.2.118  kSecAttrProtocolSMB as string

**Function:** Values that can be used with the kSecAttrProtocol attribute key.
**Notes:**
SMB protocol.
Available in OS X v10.6 and later.

101.2.119  kSecAttrProtocolSMTP as string

**Function:** Values that can be used with the kSecAttrProtocol attribute key.
**Notes:**
SMTP protocol.
Available in OS X v10.6 and later.

101.2.120  kSecAttrProtocolSOCKS as string

**Function:** Values that can be used with the kSecAttrProtocol attribute key.
**Notes:**
SOCKS protocol.
Available in OS X v10.6 and later.
101.2.121 kSecAttrProtocolSSH as string

Function: Values that can be used with the kSecAttrProtocol attribute key.
Notes:
SSH protocol.
Available in OS X v10.6 and later.

101.2.122 kSecAttrProtocolTelnet as string

Function: Values that can be used with the kSecAttrProtocol attribute key.
Notes:
Telnet protocol.
Available in OS X v10.6 and later.

101.2.123 kSecAttrProtocolTelnetS as string

Function: Values that can be used with the kSecAttrProtocol attribute key.
Notes:
Telnet over TLS/SSL.
Available in OS X v10.6 and later.

101.2.124 kSecAttrPublicKeyHash as string

Function: One of the keychain item attribute keys.
Notes:
Public key hash attribute key.
The corresponding value is of type memoryblock and contains the hash of a certificate’s public key. Items of class kSecClassCertificate have this attribute. Read only.
Available in OS X v10.6 and later.
101.2.125  kSecAttrRounds as string

**Function:** One of the keychain item attribute keys.
**Notes:**
The number of rounds for the pseudorandom function specified by kSecAttrPRF.
Available in OS X v10.7 and later.

101.2.126  kSecAttrSalt as string

**Function:** One of the keychain item attribute keys.
**Notes:**
A memoryblock object containing the salt to use for this key.
Available in OS X v10.7 and later.

101.2.127  kSecAttrSecurityDomain as string

**Function:** One of the keychain item attribute keys.
**Notes:**
Security domain attribute key.
The corresponding value is of type String and represents the Internet security domain. Items of class kSecClassInternetPassword have this attribute.
Available in OS X v10.6 and later.

101.2.128  kSecAttrSerialNumber as string

**Function:** One of the keychain item attribute keys.
**Notes:**
Serial number attribute key.
The corresponding value is of type Date and contains the serial number data of a certificate. Items of class kSecClassCertificate have this attribute. Read only.
Available in OS X v10.6 and later.
101.2.129  kSecAttrServer as string

Function: One of the keychain item attribute keys.
Notes:
Server attribute key.
The corresponding value is of type String and contains the server's domain name or IP address. Items of
class kSecClassInternetPassword have this attribute.
Available in OS X v10.6 and later.

101.2.130  kSecAttrService as string

Function: One of the keychain item attribute keys.
Notes:
Service attribute key.
The corresponding value is a string of type String that represents the service associated with this item. Items
of class kSecClassGenericPassword have this attribute.
Available in OS X v10.6 and later.

101.2.131  kSecAttrSubject as string

Function: One of the keychain item attribute keys.
Notes:
Subject attribute key.
The corresponding value is of type CFDataRef and contains the X.500 subject name of a certificate. Items
of class kSecClassCertificate have this attribute. Read only.
Available in OS X v10.6 and later.

101.2.132  kSecAttrSubjectKeyID as string

Function: One of the keychain item attribute keys.
Notes:
Subject key ID attribute key.
The corresponding value is of type date and contains the subject key ID of a certificate. Items of class
kSecClassCertificate have this attribute. Read only.
Available in OS X v10.6 and later.

101.2.133 kSecAttrSynchronizable as string


Function: Specifies a dictionary key whose value is a Boolean indicating whether the item in question can be synchronized.

Notes:

To add a new item which can be synced to other devices, or to obtain synchronizable results from a query, supply this key with a value of true. If the key is not supplied, or has a value of false, then no synchronizable items will be added or returned. A predefined value, kSecAttrSynchronizableAny, may be provided instead of true if both synchronizable and non-synchronizable results are desired.

IMPORTANT: Specifying the kSecAttrSynchronizable key has several caveats:

- Updating or deleting items using the kSecAttrSynchronizable key will affect all copies of the item, not just the one on your local device. Be sure that it makes sense to use the same password on all devices before deciding to make a password synchronizable.

- Only password items can currently be synchronized. Keychain syncing is not supported for certificates or cryptographic keys.

- Items stored or obtained using the kSecAttrSynchronizable key cannot specify SecAccessRef-based access control with kSecAttrAccess. If a password is intended to be shared between multiple applications, the kSecAttrAccessGroup key must be specified, and each application using this password must have a 'keychain-access-groups' entitlement with the specified access group value.

- Items stored or obtained using the kSecAttrSynchronizable key may not also specify a kSecAttrAccessible value which is incompatible with syncing (namely, those whose names end with "ThisDeviceOnly").

- Items stored or obtained using the kSecAttrSynchronizable key cannot be specified by reference. You must pass kSecReturnAttributes and/or kSecReturnData to retrieve results; kSecReturnRef is currently not supported for synchronizable items.

- Persistent references to synchronizable items should be avoided; while they may work locally, they cannot be moved between devices, and may not resolve if the item is modified on some other device.

- When specifying a query that uses the kSecAttrSynchronizable key, search keys are limited to the item’s class and attributes. The only search constant which may be used is kSecMatchLimit; other constants using the kSecMatch prefix are not supported at this time.

Available on Mac OS X 10.9 and newer.
101.2.134 kSecAttrSynchronizableAny as string

**Function:** Specifies that both synchronizable and non-synchronizable results should be returned from this query.
**Notes:**
This may be used as a value for the kSecAttrSynchronizable dictionary key in a call to SecItemCopyMatching, SecItemUpdate, or SecItemDelete.
Available on Mac OS X 10.9 and newer.

101.2.135 kSecAttrType as string

**Function:** One of the keychain item attribute keys.
**Notes:**
Type attribute key.
The corresponding value is of type integer and represents the item's type. This number is the unsigned integer representation of a four-character code (for example, 'aTyp').
Available in OS X v10.6 and later.

101.2.136 kSecClass as string

**Function:** Key constant used to set the item class value in a search dictionary.
**Notes:**
Dictionary key whose value is the item's class code.
Possible values for this key are listed in Item Class Value Constants.
Available in OS X v10.6 and later.

101.2.137 kSecClassCertificate as string

**Function:** One of the values used with the kSecClass key in a search dictionary.
**Notes:**
Certificate item.
The following attribute types ("Attribute Item Keys and Values") can be used with an item of this type:
kSecAttrAccessible
kSecAttrAccessGroup
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kSecAttrCertificateType
kSecAttrCertificateEncoding
kSecAttrLabel
kSecAttrSubject
kSecAttrIssuer
kSecAttrSerialNumber
kSecAttrSubjectKeyID
kSecAttrPublicKeyHash

Available in OS X v10.7 and later.

101.2.138 kSecClassGenericPassword as string

**Function:** One of the values used with the kSecClass key in a search dictionary.

**Notes:**
Generic password item.

The following attribute types ("Attribute Item Keys and Values") can be used with an item of this type:

kSecAttrAccessible
kSecAttrAccessGroup
kSecAttrCreationDate
kSecAttrModificationDate
kSecAttrDescription
kSecAttrComment
kSecAttrCreator
kSecAttrType
kSecAttrLabel
kSecAttrIsInvisible
kSecAttrIsNegative
kSecAttrAccount
kSecAttrService
kSecAttrGeneric

Available in OS X v10.7 and later.

101.2.139 kSecClassIdentity as string

**Function:** One of the values used with the kSecClass key in a search dictionary.
Notes:

Identity item.

An identity is a certificate together with its associated private key. Because an identity is the combination of a private key and a certificate, this class shares attributes of both kSecClassKey and kSecClassCertificate.

Available in OS X v10.7 and later.

101.2.140 kSecClassInternetPassword as string

Function: One of the values used with the kSecClass key in a search dictionary.
Notes:

Internet password item.
The following attribute types (“Attribute Item Keys and Values”) can be used with an item of this type:

kSecAttrAccessible
kSecAttrAccessGroup
kSecAttrCreationDate
kSecAttrModificationDate
kSecAttrDescription
kSecAttrComment
kSecAttrCreator
kSecAttrType
kSecAttrLabel
kSecAttrIsInvisible
kSecAttrIsNegative
kSecAttrAccount
kSecAttrSecurityDomain
kSecAttrServer
kSecAttrProtocol
kSecAttrAuthenticationType
kSecAttrPort
kSecAttrPath

Available in OS X v10.6 and later.
101.2.141 kSecClassKey as string

Function: One of the values used with the kSecClass key in a search dictionary.
Notes:
Cryptographic key item.
The following attribute types (“Attribute Item Keys and Values”) can be used with an item of this type:

kSecAttrAccessible
kSecAttrAccessGroup
kSecAttrKeyClass
kSecAttrLabel
kSecAttrApplicationLabel
kSecAttrIsPermanent
kSecAttrApplicationTag
kSecAttrKeyType
kSecAttrKeySizeInBits
kSecAttrEffectiveKeySize
kSecAttrCanEncrypt
kSecAttrCanDecrypt
kSecAttrCanDerive
kSecAttrCanSign
kSecAttrCanVerify
kSecAttrCanWrap
kSecAttrCanUnwrap

Available in OS X v10.7 and later.

101.2.142 kSecMatchCaseInsensitive as string

Function: Keys used to set search attributes in a keychain search dictionary.
Notes:
Case sensitivity attribute key.
The corresponding value is of type Boolean. If this value is False, or if this attribute is not provided, then case-sensitive string matching is performed.
Available in OS X v10.6 and later.
101.2.143  kSecMatchDiacriticInsensitive as string

**Function:** Keys used to set search attributes in a keychain search dictionary.
**Notes:**
Case sensitivity attribute key.
The corresponding value is of type Boolean. If this value is False, or if this attribute is not provided, then
diacritic-sensitive string matching is performed.
Available in OS X v10.7 and later.

101.2.144  kSecMatchEmailAddressIfPresent as string

**Function:** Keys used to set search attributes in a keychain search dictionary.
**Notes:**
Email address attribute key.
The corresponding value is of type string and contains an RFC822 email address. If provided, returned
certificates or identities are limited to those that either contain the address or do not contain any email
address.
Available in OS X v10.6 and later.

101.2.145  kSecMatchIssuers as string

**Function:** Keys used to set search attributes in a keychain search dictionary.
**Notes:**
Issuers attribute key.
The corresponding value is of type array, where the array consists of X.500 names of type Memoryblock. If
provided, returned certificates or identities are limited to those whose certificate chain contains one of the
issuers provided in this list.
Available in OS X v10.6 and later.

101.2.146  kSecMatchItemList as string

**Function:** Keys used to set search attributes in a keychain search dictionary.
**Notes:**
Item list attribute key.
To provide your own set of items to be filtered by a search query rather than searching the keychain, specify
this search key in a call to the SecItemCopyMatching function with a value that consists of an object of type array where the array contains either KeychainItemMBS, SecKeyRef, SecCertificateRef, SecIdentityRef, or memoryblock items. The objects in the provided array must all be of the same type.

To convert from persistent item references to normal item references, specify this search key in a call to the CopyMatching function with a value of type array where the array contains one or more CFDataRef elements (the persistent references), and a return-type key of kSecReturnRef whose value is True.

To delete an item identified by a transient reference, specify the kSecMatchItemList search key in a call to the SecItemDelete function with a reference returned by using the kSecReturnRef return type key in a previous call to the CopyMatching or SecItemAdd functions.

To delete an item identified by a persistent reference, specify the kSecMatchItemList search key in a call to the SecItemDelete function with a persistent reference returned by using the kSecReturnPersistentRef return type key to the CopyMatching or SecItemAdd functions.

Available in OS X v10.6 and later.

101.2.147 kSecMatchLimit as string


Function: Keys used to set search attributes in a keychain search dictionary.

Notes:

Match limit attribute key.
The corresponding value is of type Integer. If provided, this value specifies the maximum number of results to return or otherwise act upon. For a single item, specify kSecMatchLimitOne. To specify all matching items, specify kSecMatchLimitAll. The default behavior is function-dependent.

Available in OS X v10.6 and later.

101.2.148 kSecMatchLimitAll as string


Function: Keys used to set search attributes in a keychain search dictionary.

Notes:

An unlimited number of results may be returned; used as a value for the kSecMatchLimit attribute key.

Available in OS X v10.6 and later.

101.2.149 kSecMatchLimitOne as string


Function: Keys used to set search attributes in a keychain search dictionary.

Notes:

Results are limited to the first item found; used as a value for the kSecMatchLimit attribute key.

Available in OS X v10.6 and later.
101.2.150 kSecMatchPolicy as string

**Function:** Keys used to set search attributes in a keychain search dictionary.
**Notes:**
Match policy attribute key.
The corresponding value is of type SecPolicyRef. If provided, returned certificates or identities must verify
with this policy.
Available in OS X v10.6 and later.

101.2.151 kSecMatchSearchList as string

**Function:** Keys used to set search attributes in a keychain search dictionary.
**Example:**
```vba
// We pass a keychain for searching only in this keychain
dim keychains() as KeychainMBS = KeychainManagerMBS.SearchList
dim keychain as KeychainMBS = keychains(1) // we pick second keychain
dim keychainname as string = keychain.name

// Build query
dim query as new Dictionary
query.value(KeychainManagerMBS.kSecClass) = KeychainManagerMBS.kSecClassGenericPassword
query.Value(KeychainManagerMBS.kSecReturnAttributes) = true
query.Value(KeychainManagerMBS.kSecMatchLimit) = KeychainManagerMBS.kSecMatchLimitAll
query.Value(KeychainManagerMBS.kSecMatchSearchList) = array(keychain)

// search all items
dim dics() as Dictionary = KeychainManagerMBS.CopyMatchingDictionaries(query)

// pick first
dim dic as Dictionary = dics(0)

// and display
MsgBox "Service: " + dic.Value(KeychainManagerMBS.kSecAttrService) + EndOfLine + "Account: " + dic.Value(KeychainManagerMBS.kSecAttrAccount)
```

**Notes:** Available in OS X v10.6 and later.
101.2.152  kSecMatchSubjectContains as string

Function: Keys used to set search attributes in a keychain search dictionary.
Notes:
Subject attribute key.
The corresponding value is of type string. If provided, returned certificates or identities are limited to those
whose subject contains this string.
Available in OS X v10.6 and later.

101.2.153  kSecMatchSubjectEndsWith as string

Function: Keys used to set search attributes in a keychain search dictionary.
Notes:
Subject attribute key.
The corresponding value is of type String. If provided, returned certificates or identities are limited to those
whose subject ends with this string.
Available in OS X v10.7 and later.

101.2.154  kSecMatchSubjectStartsWith as string

Function: Keys used to set search attributes in a keychain search dictionary.
Notes:
Subject attribute key.
The corresponding value is of type String. If provided, returned certificates or identities are limited to those
whose subject starts with this string.
Available in OS X v10.7 and later.

101.2.155  kSecMatchSubjectWholeString as string

Function: Keys used to set search attributes in a keychain search dictionary.
Notes:
Subject attribute key.
The corresponding value is of type String. If provided, returned certificates or identities are limited to those
whose subject is exactly equal to this string.
Available in OS X v10.7 and later.

101.2.156  kSecMatchTrustedOnly as string

Function: Keys used to set search attributes in a keychain search dictionary.
Notes:
Trusted anchor attribute key.
The corresponding value is of type Boolean. If this attribute is provided with a value of True, only certificates that can be verified back to a trusted anchor are returned. If this value is False or the attribute is not provided, then both trusted and untrusted certificates may be returned.
Available in OS X v10.6 and later.

101.2.157  kSecMatchValidOnDate as string

Function: Keys used to set search attributes in a keychain search dictionary.
Notes:
Valid-on-date attribute key.
The corresponding value is of type Date. If provided, returned keys, certificates or identities are limited to those that are valid for the given date. Pass a value of nil to indicate the current date.
Available in OS X v10.6 and later.

101.2.158  kSecMatchWidthInsensitive as string

Function: Keys used to set search attributes in a keychain search dictionary.
Notes:
Case sensitivity attribute key.
The corresponding value is of type Boolean. If this value is False, or if this attribute is not provided, then width-sensitive string matching is performed (for example, the ASCII character a does not match the UTF-8 full-width letter a (U+FF41).
Available in OS X v10.7 and later.

101.2.159  kSecReturnAttributes as string

Function: Keys used to specify the type of results that should be returned by the CopyMatching or
AddItem function.

Notes:

Return attributes attribute key.
The corresponding value is of type Boolean. A value of True indicates that a dictionary of the (unencrypted) attributes of an item should be returned in the form of a Dictionary.
Available in OS X v10.6 and later.

101.2.160 kSecReturnData as string

Function: Keys used to specify the type of results that should be returned by the CopyMatching or AddItem function.
Notes:

Return data attribute key.
The corresponding value is of type Boolean. A value of True indicates that the data of an item should be returned in the form of a Memoryblock. For keys and password items, data is secret (encrypted) and may require the user to enter a password for access.
Available in OS X v10.6 and later.

101.2.161 kSecReturnPersistentRef as string

Function: Keys used to specify the type of results that should be returned by the CopyMatching or AddItem function.
Notes:

Return persistent reference attribute key. A persistent reference to a credential can be stored on disk for later use or passed to other processes.
The corresponding value is of type Boolean. A value of True indicates that a persistent reference to an item (Memoryblock) should be returned.
Available in OS X v10.6 and later.

101.2.162 kSecReturnRef as string

Function: Keys used to specify the type of results that should be returned by the CopyMatching or AddItem function.
Notes:

Return reference attribute key.
The corresponding value is of type Boolean. A value of True indicates that a reference should be returned.
Depending on the item class requested, the returned references may be of type KeychainItemMBS, SecKeyRef, SecCertificateRef, SecIdentityRef, or Memoryblock. Available in OS X v10.6 and later.

101.2.163  

**kSecUseItemList as string**

**Function:** Key used to specify a list of items to search or add.  
**Notes:**  
Item list key.  
The corresponding value is of type CFArrayRef, where the array contains either KeychainItemMBS, SecKeyRef, SecCertificateRef, SecIdentityRef, or (for persistent item references) Memoryblock items. If provided, this array is treated as the set of all possible items to search (or to add if the function being called is AddItem). The items in the array must all be of the same type. Available in OS X v10.6 and later.

101.2.164  

**kSecUseKeychain as string**

**Function:** Key used to specify a list of items to search or add.  
**Notes:**  
Keychain reference key.  
Specifies a SecKeychainRef object that references the keychain to which AddItem should add the provided items. Available in OS X v10.7 and later.

101.2.165  

**kSecValueData as string**

**Function:** Keys used in the results dictionary for CopyMatching or AddItem, indicating the type of values returned.  
**Notes:**  
Data attribute key. A persistent reference to a credential can be stored on disk for later use or passed to other processes. The corresponding value is of type memoryblock. For keys and password items, the data is secret (encrypted) and may require the user to enter a password for access. Available in OS X v10.6 and later.  
You can specify zero or more of these types depending on the function you are calling.
101.2.166 kSecValuePersistentRef as string

Function: Keys used in the results dictionary for CopyMatching or AddItem, indicating the type of values returned.
Notes:
Persistent reference attribute key.
The corresponding value is of type CFDataRef. The bytes in this memory block can be stored by the caller and used on a subsequent invocation of the application (or even a different application) to retrieve the item referenced by it.
Available in OS X v10.6 and later.
You can specify zero or more of these types depending on the function you are calling.

101.2.167 kSecValueRef as string

Function: Keys used in the results dictionary for CopyMatching or AddItem, indicating the type of values returned.
Notes:
Reference attribute key.
The corresponding value, depending on the item class requested, is of type KeychainItemMBS, SecKeyRef, SecCertificateRef, or SecIdentityRef.
Available in OS X v10.6 and later.
You can specify zero or more of these types depending on the function you are calling.

101.2.168 LockAll

Function: Locks all keychains belonging to the current user.
Notes:
Your application should not call this function unless you are responding to a user’s request to lock a keychain. In general, you should leave the keychain unlocked so that the user does not have to unlock it again in another application.
LastError is set.

101.2.169 Open(file as folderitem) as KeychainMBS

Function: Opens a keychain.
Example:
dim file as FolderItem = SpecialFolder.Desktop.Child("test.keychain")
dim k as KeychainMBS = KeychainManagerMBS.Open(file)

MsgBox k.Name

Notes:
You may use this function to retrieve a pointer to a keychain object given the path of the keychain. You do not need to close the keychain, but you should release the memory that the pointer occupies when you are finished with it. Lasterror is set.
See also:

- 101.2.170 Open(path as string) as KeychainMBS

101.2.170 Open(path as string) as KeychainMBS

Function: Opens a keychain.
Example:

dim file as FolderItem = SpecialFolder.Desktop.Child("test.keychain")
dim k as KeychainMBS = KeychainManagerMBS.Open(file.UnixpathMBS)

MsgBox k.Name

Notes:
You may use this function to retrieve a pointer to a keychain object given the path of the keychain. You do not need to close the keychain, but you should release the memory that the pointer occupies when you are finished with it. Lasterror is set.
See also:

- 101.2.169 Open(file as folderitem) as KeychainMBS

101.2.171 PreferenceDomain as Integer

Function: Gets or sets the current keychain preference domain.
Example:

dim n as Integer = KeychainManagerMBS.PreferenceDomain
Select case n
case KeychainManagerMBS.kSecPreferencesDomainCommon
    MsgBox "common"
end Select

case KeychainManagerMBS.kSecPreferencesDomainDynamic
    MsgBox "dynamic"
end Select

case KeychainManagerMBS.kSecPreferencesDomainSystem
    MsgBox "system"
end Select

case KeychainManagerMBS.kSecPreferencesDomainUser
    MsgBox "user"
end Select
else
    MsgBox "unknown"
end Select

Notes:

A preference domain is a set of security-related preferences, such as the default keychain and the current keychain search list. The default preference domain for system daemons (that is, for daemons running in the root session) is the system domain. The default preference domain for all other programs is the user domain. Use the PreferenceDomain function to change the preference domain.

This function changes the preference domain for all subsequent function calls; for example, if you change from the system domain to the user domain and then call Lock specifying nil for the keychain, the function locks the default system keychain rather than the default user keychain. You might want to use this function, for example, when launching a system daemon from a user session so that the daemon uses system preferences rather than user (Read and Write computed property)

101.2.172 SearchCreateFromAttributes(keychain as KeychainMBS, itemClass as string, AttributeKeys() as string, AttributeValues() as string) as KeychainSearchMBS

Example:

dim AttributeKeys() as string
dim AttributeValues() as string
dim keychain as KeychainMBS = nil // default

dim search as KeychainSearchMBS = KeychainManagerMBS.SearchCreateFromAttributes(keychain, "genp", AttributeKeys, AttributeValues)
dim items() as KeychainItemMBS

dim item as KeychainItemMBS = search.NextItem
while item<>Nil
items.Append item
item = search.NextItem
wend

MsgBox str(UBound(items) + 1) + ” items found.”

Notes:

keychains: An array of keychains to search, a single keychain, or nil to search the user’s current keychain search list. Use the function SearchList to retrieve the user’s default search list.
itemClass: The keychain item class. See ”Keychain Item Class Constants” for valid constants.
AttributeKeys: List of zero or more keychain attribute keys to match.
AttributeValues: List of zero or more keychain attribute values to match.

Returns the current search object.
Lasterror is set.

Each item stored in the keychain contains data (such as a certificate), which is indexed by the item’s attributes. You look up an item in a keychain by its attributes. If you find a match, you can then retrieve the item’s data. Use the search object created by this function as input to the SecKeychainSearchCopyNext function to find a a keychain item.

To find and obtain data from a password keychain item, use the FindInternetPassword or FindGenericPassword function.
See also:

- 101.2.173 SearchCreateFromAttributes(keychains() as KeychainMBS, itemClass as string, AttributeKeys() as string, AttributeValues() as string) as KeychainSearchMBS

101.2.173 SearchCreateFromAttributes(keychains() as KeychainMBS, itemClass as string, AttributeKeys() as string, AttributeValues() as string) as KeychainSearchMBS

Function: Creates a search object matching a list of zero or more attributes.
Example:

dim AttributeKeys() as string
dim AttributeValues() as string

dim keychains() as KeychainMBS

AttributeKeys.Append KeychainManagerMBS.kSecAttrAccount
AttributeValues.Append ”myusername”
keychains = KeychainManagerMBS.DomainSearchList(KeychainManagerMBS.kSecPreferencesDomainUser)

dim search as KeychainSearchMBS = KeychainManagerMBS.SearchCreateFromAttributes(keychains, "genp", AttributeKeys, AttributeValues)
dim items() as KeychainItemMBS

dim item as KeychainItemMBS = search.NextItem
while item<>Nil
    items.Append item
    item = search.NextItem
wend

MsgBox str(UBound(items)+1)+" items found."

Notes:

keychains: An array of keychains to search, a single keychain, or nil to search the user's current keychain search list. Use the function SearchList to retrieve the user's default search list.
itemClass: The keychain item class. See "Keychain Item Class Constants" for valid constants.
AttributeKeys: List of zero or more keychain attribute keys to match.
AttributeValues: List of zero or more keychain attribute values to match.

Returns the current search object.
Lasterror is set.

Each item stored in the keychain contains data (such as a certificate), which is indexed by the item's attributes. You look up an item in a keychain by its attributes. If you find a match, you can then retrieve the item's data. Use the search object created by this function as input to the SecKeychainSearchCopyNext function to find a a keychain item.

To find and obtain data from a password keychain item, use the FindInternetPassword or FindGenericPassword function.
See also:

• 101.2.172 SearchCreateFromAttributes(keychain as KeychainMBS, itemClass as string, AttributeKeys() as string, AttributeValues() as string) as KeychainSearchMBS

101.2.174 SearchList as KeychainMBS()

Function: Retrieves a keychain search list.
Example:
dim SearchList() as KeychainMBS = KeychainManagerMBS.SearchList
dim names() as String

for each k as KeychainMBS in SearchList
    names.Append k.Name
next

MsgBox Join(names, EndOfLine)

Notes:
Returns keychain search list.
Lasterror is set.

101.2.175  SetDomainDefault(domain as Integer, keychain as KeychainMBS)

Function: Sets the default keychain for a specified preference domain.
Notes:
domain: The preference domain for which you wish to set the default keychain.
keychain: A reference to the keychain you wish to set as default in the specified preference domain.

Lasterror is set.
A preference domain is a set of security-related preferences, such as the default keychain and the current
keychain search list. Use this function if you want to set the default keychain for a specific preference domain.
Use the SetDefault function if you want to set the default keychain for the current preference domain. See
the PreferenceDomain function for a discussion of current and default preference domains.

101.2.176  SetDomainSearchList(domain as Integer, list() as KeychainMBS)

Function: Sets the keychain search list for a specified preference domain.
Notes:
domain: The preference domain for which you wish to set the default keychain search list. See "Keychain
Preference Domain Constants" for possible domain values.
searchList: A keychain search list to set in the preference domain.

Lasterror is set.
A preference domain is a set of security-related preferences, such as the default keychain and the current
keychain search list. Use this function if you want to set the keychain search list for a specific preference
domain. Use the SetSearchList function if you want to set the keychain search list for the current preference domain. See the PreferenceDomain function for a discussion of current and default preference domains.

## 101.2.177 SetSearchList(list() as KeychainMBS)


**Function:** Specifies the list of keychains to use in the default keychain search list.

**Notes:**
- searchList: An array of keychain references specifying the list of keychains to use in the default keychain search list. Passing an empty array clears the search list.
- Lasterror is set.

The default keychain search list is used by several functions; see for example SearchCreateFromAttributes, FindInternetPassword, or FindGenericPassword. To obtain the current default keychain search list, use the SearchList function.

The default keychain search list is displayed as the keychain list in the Keychain Access utility. If you use SetSearchList to change the keychain search list, the list displayed in Keychain Access changes accordingly.

## 101.2.178 UpdateItem(Query as Dictionary, attributesToUpdate as dictionary) as boolean


**Function:** Modifies items that match a search query.

**Example:**
```vbscript
// build query
dim query as new Dictionary
dim ServiceName as string = "mytest"
dim Username as string = "myusername"

query.value( KeychainManagerMBS.kSecAttrAccount ) = Username
query.value( KeychainManagerMBS.kSecAttrService ) = ServiceName
query.value( KeychainManagerMBS.kSecClass ) = KeychainManagerMBS.kSecClassGenericPassword

// Build Dictionary with new values
dim newValues as new Dictionary
newValues.value( KeychainManagerMBS.kSecAttrComment ) = "Just a test"

// and update
if KeychainManagerMBS.UpdateItem(query, newValues) then
```
MsgBox "OK"
else
MsgBox "Failed."
end if

Notes:
query: A dictionary containing an item class specification and optional attributes for controlling the search. Specify the items whose values you wish to change. See "Search Keys" for a description of currently defined search attributes.
attributesToUpdate: A dictionary containing the attributes whose values should be changed, along with the new values. Only real keychain attributes are permitted in this dictionary (no "meta" attributes are allowed.) See "Attribute Item Keys and Values" for a description of currently defined value attributes.

Lasterror is set.
See the discussion section of the CopyMatching function for information about how to construct a search dictionary.

Available in OS X v10.6 and later.

101.2.179   UserInteractionAllowed as boolean

Function: Indicates whether Keychain Services functions that normally display a user interaction are allowed to do so.
Example:
MsgBox str(KeychainManagerMBS.UserInteractionAllowed)
KeychainManagerMBS.UserInteractionAllowed = false
MsgBox str(KeychainManagerMBS.UserInteractionAllowed)

Notes:
Lasterror is set.
A Boolean value indicating whether user interaction is permitted. If true, user interaction is allowed, and Keychain Services functions that display a user interface can do so as appropriate.
(Read and Write computed property)
101.2. MODULE KEYCHAINMANAGERMBS

101.2.180  Version as Integer

**Function:** Determines the version of Keychain Services installed on the user's system.
**Example:**
```
MsgBox str(KeychainManagerMBS.Version)
```

**Notes:**
Your application can call the Version function to find out which version of Keychain Services is installed on
the user's system.
Lasterror is set.

101.2.181  Properties

101.2.182  LastError as Integer

**Function:** The last error code returned by one of the methods.
**Notes:**
You can use KeychainManagerMBS.ErrorMessageString function to get a text message.
The error code -1 is set by plugin if function is missing or parameters are wrong.
(Read only property)

101.2.183  Constants

101.2.184  ErrorAuthorizationFailed = -25293

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** One of the error codes.
**Notes:** The user name or passphrase you entered is not correct.

101.2.185  ErrorDuplicatedItem = -25299

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** One of the error codes.
**Notes:** The specified item already exists in the keychain.
101.2.186  **ErrorFailedToAllocated = -108**

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** One of the error codes.  
**Notes:** Failed to allocate memory.

101.2.187  **ErrorFailedToDecode = -26275**

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** One of the error codes.  
**Notes:** Unable to decode the provided data.

101.2.188  **ErrorInteractionNotAllowed = -25308**

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** One of the error codes.  
**Notes:** User interaction is not allowed.

101.2.189  **ErrorInvalidParameter = -50**

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** One of the error codes.  
**Notes:** Invalid Parameters.

101.2.190  **ErrorNone = 0**

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** One of the error codes.  
**Notes:** No error.

101.2.191  **ErrorNotAvailable = -25291**

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** One of the error codes.  
**Notes:** No keychain is available. You may need to restart your computer.

101.2.192  **ErrorNotFound = -25300**

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** One of the error codes.  
**Notes:** The specified item could not be found in the keychain.
101.2.193 kSecAppleSharePasswordItemClass = "ashp"

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** Specifies a keychain item’s class code. **Notes:** Indicates that the item is an AppleShare password.

101.2.194 kSecGenericPasswordItemClass = "genp"

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** Specifies a keychain item’s class code. **Notes:** Indicates that the item is a generic password.

101.2.195 kSecInternetPasswordItemClass = "inet"

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** Specifies a keychain item’s class code. **Notes:** Indicates that the item is an Internet password.

101.2.196 kSecPreferencesDomainCommon = 2

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** Defines constants for the keychain preference domains. **Notes:** Indicates the preferences are common to everyone. Available in OS X v10.3 and later.

101.2.197 kSecPreferencesDomainDynamic = 3

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** Defines constants for the keychain preference domains. **Notes:** Indicates a dynamic search list (typically provided by removable keychains such as smart cards). Available in OS X v10.4 and later.

101.2.198 kSecPreferencesDomainSystem = 1

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** Defines constants for the keychain preference domains. **Notes:**
Indicates the system or daemon preference domain preferences. Available in OS X v10.3 and later.

101.2.199  kSecPreferencesDomainUser = 0

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** Defines constants for the keychain preference domains. **Notes:**

Indicates the user preference domain preferences. Available in OS X v10.3 and later.
101.3. CLASS KEYCHAINMBS

101.3 class KeychainMBS

101.3.1 class KeychainMBS

MBS MacClassic Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for a keychain.

101.3.2 Methods

101.3.3 AddGenericPassword(serviceName as string, accountName as string, password as memoryblock) as KeychainItemMBS

MBS MacClassic Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds a new generic password to a keychain. **Notes:** See AddGenericPassword in KeychainManagerMBS for details. See also:

- 101.3.4 AddGenericPassword(serviceName as string, accountName as string, password as string) as KeychainItemMBS

101.3.4 AddGenericPassword(serviceName as string, accountName as string, password as string) as KeychainItemMBS

MBS MacClassic Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds a new generic password to a keychain. **Notes:** See AddGenericPassword in KeychainManagerMBS for details. See also:

- 101.3.3 AddGenericPassword(serviceName as string, accountName as string, password as memoryblock) as KeychainItemMBS

101.3.5 AddInternetPassword(serverName as string, securityDomain as string, accountName as string, path as string, port as Integer, protocol as string, authenticationType as string, password as memoryblock) as KeychainItemMBS

MBS MacClassic Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds a new Internet password to a keychain. **Notes:** See KeychainManagerMBS.AddInternetPassword for details. See also:
101.3.6  AddInternetPassword(serverName as string, securityDomain as string, accountName as string, path as string, port as Integer, protocol as string, authenticationType as string, password as string) as KeychainItemMBS


**Function:** Adds a new Internet password to a keychain.

**Notes:** See KeychainManagerMBS.AddInternetPassword for details.

See also:

- 101.3.5 AddInternetPassword(serverName as string, securityDomain as string, accountName as string, path as string, port as Integer, protocol as string, authenticationType as string, password as memory-block) as KeychainItemMBS

101.3.7  AllItems(itemClass as string) as KeychainItemMBS()


**Function:** Queries all items.

**Notes:**

Keychain: If not nil, searches only this keychain.

ItemClass: The item class to find. For example kSecGenericPasswordItemClass.

Lasterror is set.

Returns array of keychain items.

101.3.8  Delete


**Function:** Deletes one or more keychains from the default keychain search list, and removes the keychain itself if it is a file.

**Notes:**

Lasterror is set.

The keychain may be a file stored locally, a smart card, or retrieved from a network server using non-file-based database protocols. This function deletes the keychain only if it is a local file.
101.3.9  **FindGenericItem** *(serviceName as string, accountName as string)* as KeychainItemMBS

MBS MacClassic Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Finds the first generic keychain item based on the attributes passed. **Notes:** See KeychainManagerMBS.FindGenericItem for details.

101.3.10  **FindGenericPassword** *(serviceName as string, accountName as string, byref password as memoryblock)* as KeychainItemMBS

MBS MacClassic Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Finds the first generic password based on the attributes passed. **Notes:** See KeychainManagerMBS.FindGenericPassword for details.

101.3.11  **FindInternetItem** *(serverName as string, securityDomain as string, accountName as string, path as string, port as Integer, protocol as string, authenticationType as string)* as KeychainItemMBS

MBS MacClassic Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Finds the first Internet password item based on the attributes passed. **Notes:** See KeychainManagerMBS.FindInternetPassword for details.

101.3.12  **FindInternetPassword** *(serverName as string, securityDomain as string, accountName as string, path as string, port as Integer, protocol as string, authenticationType as string, byref password as memoryblock)* as KeychainItemMBS

MBS MacClassic Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Finds the first Internet password based on the attributes passed. **Notes:** See KeychainManagerMBS.FindInternetPassword for details.

101.3.13  **IsUnlocked** as boolean

MBS MacClassic Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if keychain is unlocked. **Example:**

MsgBox str(KeychainManagerMBS.Default.IsUnlocked)
Notes: Lasterror is set.

101.3.14 Lock

Function: Locks a keychain.
Notes:
Your application should not call this function unless you are responding to a user's request to lock a keychain. In general, you should leave the keychain unlocked so that the user does not have to unlock it again in another application. Lasterror is set.

101.3.15 Name as string

Function: Determines the file name of a keychain.
Example:
MsgBox KeychainManagerMBS.Default.Name
Notes:
Similar to path, but name without file extension only. Lasterror is set.

101.3.16 Path as string

Function: Determines the path of a keychain.
Example:
MsgBox KeychainManagerMBS.Default.Path
Notes:
Returns POSIX path of the keychain as a UTF-8 encoded string. Lasterror is set.
101.3. **CLASS KEYCHAINMBS**

101.3.17 **SetDefault**

**Function:** Sets the default keychain.  
**Notes:**

Lasterror is set.

In most cases, your application should not need to set the default keychain, because this is a choice normally made by the user. You may call this function to change where a password or other keychain items are added, but since this is a user choice, you should set the default keychain back to the user specified keychain when you are done.

101.3.18 **Status as Integer**

**Function:** Retrieves status information of a keychain.  
**Example:**

```vbscript
dim values() as string

dim DefaultKeychain as KeychainMBS = KeychainManagerMBS.Default

dim status as Integer = DefaultKeychain.status

if BitwiseAnd(status, KeychainMBS.StatusUnlocked) = KeychainMBS.StatusUnlocked then
    values.Append "unlocked"
else
    values.Append "locked"
end if

if BitwiseAnd(status, KeychainMBS.StatusReadable) = KeychainMBS.StatusReadable then
    values.Append "readable"
else
    values.Append "not readable"
end if

if BitwiseAnd(status, KeychainMBS.StatusWritable) = KeychainMBS.StatusWritable then
    values.Append "writable"
else
    values.Append "not writable"
end if

MsgBox Join(values, ", ")
```

**Notes:**

Lasterror is set.
CHAPTER 101. KEYCHAIN

This function retrieves the status of a specified keychain. You can use this function to determine if the keychain is unlocked, readable, or writable. Note that the lock status of a keychain can change at any time due to user or system activity. Because the system automatically prompts the user to unlock a keychain when necessary, you do not usually have to worry about the lock status of a keychain.

101.3.19 Unlock

Function: Unlocks a keychain.
Notes:
In most cases, your application does not need to call this function directly, since most Keychain Services functions that require an unlocked keychain do so for you. If your application needs to verify that a keychain is unlocked, call the function GetStatus.
Lasterror is set.
See also:

  • 101.3.20 Unlock(password as string)

101.3.20 Unlock(password as string)

Function: Unlocks a keychain.
Notes:
password: The password to use.
In most cases, your application does not need to call this function directly, since most Keychain Services functions that require an unlocked keychain do so for you. If your application needs to verify that a keychain is unlocked, call the function GetStatus.
Lasterror is set.
See also:

  • 101.3.19 Unlock

101.3.21 Properties

101.3.22 Handle as Integer

Notes: (Read and Write property)
101.3. CLASS KEYCHAINMBS

101.3.23 Lasterror as Integer

**Function:** The last error code returned by one of the methods.  
**Notes:**
You can use KeychainManagerMBS.ErrorMessageString function to get a text message.  
The error code -1 is set by plugin if function is missing or parameters are wrong.  
(Read and Write property)

101.3.24 Settings as KeychainSettingsMBS

**Function:** Obtains or sets a keychain's settings.  
**Example:**
```vbscript
dim DefaultKeychain as KeychainMBS = KeychainManagerMBS.Default  
dim settings as KeychainSettingsMBS = DefaultKeychain.Settings  
MsgBox str(settings.useLockInterval)
```

**Notes:**  
Lasterror is set.  
(Read and Write computed property)

101.3.25 Constants

101.3.26 StatusReadable = 2

**Function:** One of the status constants.  
**Notes:** Indicates the keychain is readable.

101.3.27 StatusUnlocked = 1

**Function:** One of the status constants.  
**Notes:** Indicates the keychain is unlocked.
101.3.28 StatusWritable = 4

MBS MacClassic Plugin, Plugin Version: 13.1. **Function:** One of the status constants. **Notes:** Indicates the keychain is writable.
101.4  class KeychainSearchMBS

101.4.1  class KeychainSearchMBS

MBS MacClassic Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for a running keychain search.

101.4.2  Methods

101.4.3  NextItem as KeychainItemMBS

MBS MacClassic Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Finds the next keychain item matching the given search criteria.  
**Notes:**  
Returns object of the next matching keychain item, if any.

Each item stored in the keychain contains data (such as a certificate), which is indexed by the item’s attributes. Use the SearchCreateFromAttributes function to specify attributes to search for. If the NextItem function finds a match, you can use the methods and properties on the item.

To find and obtain data from a password keychain item, use the FindInternetPassword or FindGenericPassword function.  
LastError is set.

101.4.4  Properties

101.4.5  Handle as Integer

**Notes:** (Read and Write property)

101.4.6  LastError as Integer

MBS MacClassic Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last error code returned by one of the methods.  
**Notes:**  
You can use KeychainManagerMBS.ErrorMessageString function to get a text message.
The error code -1 is set by plugin if function is missing or parameters are wrong.
(Read and Write property)
101.5  class KeychainSettingsMBS

101.5.1  class KeychainSettingsMBS


**Function:** The class for information about keychain settings.

**Example:**
```vbs
dim DefaultKeychain as KeychainMBS = KeychainManagerMBS.Default
dim settings as KeychainSettingsMBS = DefaultKeychain.Settings
MsgBox str(settings.useLockInterval)
```

101.5.2  Properties

101.5.3  lockInterval as Integer


**Function:** An unsigned 32-bit integer representing the number of seconds before the keychain locks. If you set useLockInterval to false, set lockInterval to INT_MAX to indicate that the keychain never locks.

**Example:**
```vbs
dim SystemKeychain as KeychainMBS = KeychainManagerMBS.DomainDefault(KeychainManagerMBS.kSecPreferencesDomainSystem)
dim settings as KeychainSettingsMBS = SystemKeychain.Settings
MsgBox str(settings.lockInterval)
```

**Notes:** (Read and Write property)

101.5.4  lockOnSleep as Boolean


**Function:** A Boolean value indicating whether the keychain locks when the system sleeps.

**Example:**
```vbs
dim DefaultKeychain as KeychainMBS = KeychainManagerMBS.Default
dim settings as KeychainSettingsMBS = DefaultKeychain.Settings
MsgBox str(settings.lockOnSleep)
```

**Notes:** (Read and Write property)
101.5.5  **useLockInterval as Boolean**

**Function:** A Boolean value indicating whether the keychain automatically locks after a certain period of time.
**Example:**
```vba
dim DefaultKeychain as KeychainMBS = KeychainManagerMBS.Default
dim settings as KeychainSettingsMBS = DefaultKeychain.Settings
MsgBox str(settings.useLockInterval)
```

**Notes:** (Read and Write property)

101.5.6  **version as Integer**

**Function:** An unsigned 32-bit integer representing the keychain version.
**Example:**
```vba
dim DefaultKeychain as KeychainMBS = KeychainManagerMBS.Default
dim settings as KeychainSettingsMBS = DefaultKeychain.Settings
MsgBox str(settings.version)
```

**Notes:**
- Is always 1.
  (Read and Write property)
Chapter 102

Large Picture

102.1 class PictureFactoryMBS

102.1.1 class PictureFactoryMBS

Notes:
This class gives you a global event where you can provide your own pictures.
Whenever the plugin needs a new PictureMBS object for the result of a function or for temporary storage, you can provide one.

This is mainly for the case where you use virtual memory or you want to reuse pictures.

102.1.2 Methods

102.1.3 SetFactory(factory as PictureFactoryMBS)

Notes: You can set to nil to delete the existing factory.
102.1.4 Events

102.1.5 NewPictureMBS(Width as Integer, Height as Integer, ImageFormat as Integer) as PictureMBS

MBS Images Plugin, Plugin Version: 9.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The factory event.

**Example:**

```pascal
function NewPictureMBS(Width as Integer, Height as Integer, ImageFormat as Integer) as PictureMBS

return new PictureMBS(width, height, ImageFormat)

end function
```

**Notes:**

This event is called whenever a picture is requested. Return an picture you created. The plugin will check the Valid property for this picture and use it only if Valid is true.
102.2. CLASS PICTUREMBS

102.2 class PictureMBS

102.2.1 class PictureMBS

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The MBS picture class for really large pictures.

**Example:**

```vba
dim fSource as FolderItem = SpecialFolder.Desktop.Child("test.png") // some png with alpha
dim oPNGInput as new PNGReaderMBS

If oPNGInput.OpenFile(fSource) Then
    If oPNGInput.ApplyOptions(0) Then
        dim imgSource as New PictureMBS(oPNGInput.Width, oPNGInput.Height, PictureMBS.ImageFormatRGBA)
        ' Read row by row the file and puts it in a PictureMBS instance
        dim nMax as Integer = oPNGInput.Height - 1
        For nInd as Integer = 0 To nMax
            imgSource.RowInFormat(nInd, PictureMBS.ImageFormatRGBA, true) = oPNGInput.ReadRow()
        Next
        ' show only alpha/mask channel
        Backdrop=imgSource.AlphaChannel.CopyPicture
        ' show Picture without mask
        Backdrop=imgSource.CopyPicture
        ' show picture with mask
        Backdrop=imgSource.CopyPictureWithMask
    End If
End If
```

**Notes:**
Using virtual memory you are only limited to hard disc space for swapping.

The REALbasic picture class is limited to 2 GB and to width/height being in platform specific ranges. This class works with pictures up to 100 million pixels width and 2 billion pixels height.
102.2.2 Methods

102.2.3 AlphaChannel as PictureMBS

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The alpha channel as a new PictureMBS object. **Example:**

```plaintext
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatRGB)
dim r as PictureMBS = p.AlphaChannel
r.fillrect(100) // fill only alpha channel
```

**Notes:**

Returns nil if this channel does not exist.

No copy is made of the actual pixel data. Modifying the channel picture will modify the original picture.

Use this function to access the pixels of the channel directly.

The resulting PictureMBS object is a grayscale picture.

102.2.4 ApplyMatrix(dest as PictureMBS, MatrixDimension as Integer, matrix() as Integer) as PictureMBS

MBS Images Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Applies a 5x5 matrix to the picture. **Example:**

```plaintext
dim matrix(24) as Integer
dim x,y as Integer
dim value as Integer

for y=0 to 4
    for x=0 to 4
        matrix(x+y*5)=value // fill matrix
    next
next

dim s,d as PictureMBS // make source and dest somewhere

d=s.ApplyMatrix(d, 5, matrix)
```

**Notes:**

MatrixDimension: Size of the matrix: 1 to 50. This is the width and height of the matrix.

Matrix: The matrix array must contain exactly MatrixDimension*MatrixDimension values. (ubound(mat-
102.2. CLASS PICTUREMBS

trix) = MatrixDimension*MatrixDimension-1)
delta: Optional value. Default is 0.
ScaleFactor: Optional value. Default is 1.0.

if dest is nil, the picture factory is used to create a new picture.
On success dest or the new picture is returned.
If dest is not nil, it must match the size of the original picture.

For each pixel in the dest image the following operation is done:

- Make sum of all source pixels multiplied with their matrix entry.
- add to the sum the delta value
- multiply the sum by ScaleFactor

See the example project for several example matrices.

A matrix value of 255 or more leaves the dest pixel away from the sum.

Works with Gray, RGB and CMYK pictures and supports alpha channel.
See also:

- 102.2.5 ApplyMatrix(dest as PictureMBS, MatrixDimension as Integer, matrix() as Integer, delta as Integer) as PictureMBS
- 102.2.6 ApplyMatrix(dest as PictureMBS, MatrixDimension as Integer, matrix() as Integer, delta as Integer, ScaleFactor as Double) as PictureMBS

102.2.5 ApplyMatrix(dest as PictureMBS, MatrixDimension as Integer, matrix() as Integer, delta as Integer) as PictureMBS

MBS Images Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Applies a 5x5 matrix to the picture.

**Example:**

```plaintext
dim matrix(24) as Integer
dim x,y as Integer
dim value as Integer

for y=0 to 4
  for x=0 to 4
    matrix(x+y*5)=value // fill matrix
  next
next```

```plaintext
```
dim s,d as PictureMBS // make source and dest somewhere

d=s.ApplyMatrix(d, 5, matrix, 5)

Notes:
MatrixDimension: Size of the matrix: 1 to 50. This is the width and height of the matrix.
matrix: The matrix array must contain exactly MatrixDimension*MatrixDimension values. (ubound(matrix)=MatrixDimension*MatrixDimension-1)
delta: Optional value. Default is 0.
ScaleFactor: Optional value. Default is 1.0.

if dest is nil, the picture factory is used to create a new picture.
On success dest or the new picture is returned.
If dest is not nil, it must match the size of the original picture.

For each pixel in the dest image the following operation is done:

- Make sum of all source pixels multiplied with their matrix entry.
- add to the sum the delta value
- multiply the sum by ScaleFactor

See the example project for several example matrices.

A matrix value of 255 or more leaves the dest pixel away from the sum.

Works with Gray, RGB and CMYK pictures and supports alpha channel.
See also:

- 102.2.4 ApplyMatrix(dest as PictureMBS, MatrixDimension as Integer, matrix() as Integer) as PictureMBS
- 102.2.6 ApplyMatrix(dest as PictureMBS, MatrixDimension as Integer, matrix() as Integer, delta as Integer, ScaleFactor as Double) as PictureMBS

102.2.6 ApplyMatrix(dest as PictureMBS, MatrixDimension as Integer, matrix() as Integer, delta as Integer, ScaleFactor as Double) as PictureMBS

MBS Images Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Applies a 5x5 matrix to the picture.
102.2. CLASS PICTUREMBS

Example:

```vbnet
dim matrix(24) as Integer
dim x,y as Integer
dim value as Integer

for y=0 to 4
for x=0 to 4
matrix(x+y*5)=1 // fill matrix
next
next

dim s,d as PictureMBS // make source and dest somewhere
s = new PictureMBS(LogoMBS(500))
d = new PictureMBS(500, 500, PictureMBS.ImageFormatRGB)

// Blur with 5x5 Matrix
d=s.ApplyMatrix(d, 5, matrix, 1, 1.0/25.0)
Backdrop = d.CopyPicture
```

Notes:

MatrixDimension: Size of the matrix: 1 to 50. This is the width and height of the matrix.
matrix: The matrix array must contain exactly MatrixDimension*MatrixDimension values. (ubound(matrix)=MatrixDimension*MatrixDimension-1)
delta: Optional value. Default is 0.
ScaleFactor: Optional value. Default is 1.0.

if dest is nil, the picture factory is used to create a new picture.
On success dest or the new picture is returned.
If dest is not nil, it must match the size of the original picture.

For each pixel in the dest image the following operation is done:

- Make sum of all source pixels multiplied with their matrix entry.
- add to the sum the delta value
- multiply the sum by ScaleFactor

See the example project for several example matrices.

A matrix value of 255 or more leaves the dest pixel away from the sum.
Works with Gray, RGB and CMYK pictures and supports alpha channel.
See also:

- 102.2.4 ApplyMatrix(dest as PictureMBS, MatrixDimension as Integer, matrix() as Integer) as PictureMBS
- 102.2.5 ApplyMatrix(dest as PictureMBS, MatrixDimension as Integer, matrix() as Integer, delta as Integer) as PictureMBS

102.2.7 AutoLevel as boolean

MBS Images Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Applies auto levels on the picture.
**Example:**
```pascal
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
call p.AutoLevel
window1.Backdrop = p.CopyPicture
```

**Notes:**
The histogram is built, white and back points are searched and all pixels adjusted. Returns true on success and false on any error.

Works only with RGB pictures.
See also:

- 102.2.8 AutoLevel(x as Integer, y as Integer, w as Integer, h as Integer) as boolean

102.2.8 AutoLevel(x as Integer, y as Integer, w as Integer, h as Integer) as boolean

MBS Images Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Applies auto levels on the picture.
**Example:**
```pascal
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
call p.AutoLevel(0,0,50,50)
window1.Backdrop = p.CopyPicture
```
102.2. CLASS PICTUREMBS

Notes:
The histogram is built, white and back points are searched and all pixels adjusted. Returns true on success and false on any error.

Works only with RGB pictures.
See also:

• 102.2.7 AutoLevel as boolean

102.2.9 BlackChannel as PictureMBS

MBS Images Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The black channel of a CMYK picture as a new PictureMBS object.

Notes:
Returns nil if this channel does not exist.
No copy is made of the actual pixel data. Modifying the channel picture will modify the original picture.
Use this function to access the pixels of the channel directly.
The resulting PictureMBS object is a grayscale picture.

102.2.10 BlendPicturesWithMaskWithBackground(SourceImage as PictureMBS, DestImage as PictureMBS, Mask as PictureMBS, Result as PictureMBS, BackgroundColour as Color) as Boolean

MBS Images Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Blend picture with mask and background.

Notes:
Works for gray and RGB pictures, not for CMYK.
Returns true on success and false on failure.
Blends source and dest image into result image.
If mask is nil, we just copy pictures.
If mask is not nil, we blend using either DestImage (if non nil) or background color.
Alpha channels are not used.
See also:

• 102.2.11 BlendPicturesWithMaskWithBackground(SourceImage as PictureMBS, DestImage as PictureMBS, Mask as PictureMBS, Result as PictureMBS, BackgroundColour as Color, X As Integer, Y As Integer, Width As Integer, Height As Integer) as Boolean
**102.2.11 BlendPicturesWithMaskWithBackground**

```
BlendPicturesWithMaskWithBackground(SourceImage as PictureMBS, DestImage as PictureMBS, Mask as PictureMBS, Result as PictureMBS, BackgroundColour as Color, X As Integer, Y As Integer, Width As Integer, Height As Integer) as Boolean
```

MBS Images Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Blend picture with mask and background. **Notes:**

Works for gray and RGB pictures, not for CMYK. Returns true on success and false on failure. Blends source and dest image into result image. If mask is nil, we just copy pictures. If mask is not nil, we blend using either DestImage (if non nil) or background color. Alpha channels are not used. See also:

- 102.2.10 BlendPicturesWithMaskWithBackground(SourceImage as PictureMBS, DestImage as PictureMBS, Mask as PictureMBS, Result as PictureMBS, BackgroundColour as Color) as Boolean

**102.2.12 BlueChannel as PictureMBS**

```
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatRGB)
dim r as PictureMBS = p.BlueChannel
r.fillrect(100) // fill only blue channel
```

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The blue channel as a new PictureMBS object. **Example:**

**Notes:**

Returns nil if this channel does not exist. No copy is made of the actual pixel data. Modifying the channel picture will modify the original picture. Use this function to access the pixels of the channel directly. The resulting PictureMBS object is a grayscale picture.

**102.2.13 BoxBlurFilter**

```
BoxBlurFilter(dest as PictureMBS, Radius as Double, Iterations as Integer, Vertical as boolean = true, Horizontal as boolean = true) as PictureMBS
```

MBS Images Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The box blur filter. **Example:**
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Dim boxPic, tempObj As PictureMBS
dim logo as Picture = LogoMBS(500)
dim pictureObj as new PictureMBS(logo)

tempObj = New PictureMBS(pictureObj.Width, pictureObj.Height, pictureObj.ImageFormat)
boxPic = pictureObj.BoxBlurFilter(tempObj, 3.0, 3)

Backdrop = boxPic.CopyPicture

Notes:

if dest is nil, the picture factory is used to create a new picture.
On success dest or the new picture is returned.
If dest is not nil, it must match the size of the original picture.

Vertical and Horizontal define whether effect is applied horizontal and/or vertical.

Returns nil on any error.
Works with Gray, RGB and CMYK pictures and supports alpha channel.
See also:

• 102.2.14 BoxBlurFilter(dest as PictureMBS, Radius as Double, Vertical as boolean = true, Horizontal as boolean = true) as PictureMBS

102.2.14 BoxBlurFilter(dest as PictureMBS, Radius as Double, Vertical as boolean = true, Horizontal as boolean = true) as PictureMBS

Notes:

if dest is nil, the picture factory is used to create a new picture.
On success dest or the new picture is returned.
If dest is not nil, it must match the size of the original picture.

Vertical and Horizontal define whether effect is applied horizontal and/or vertical.

Returns nil on any error.
Works with Gray, RGB and CMYK pictures and supports alpha channel.
See also:

• 102.2.13 BoxBlurFilter(dest as PictureMBS, Radius as Double, Iterations as Integer, Vertical as boolean = true, Horizontal as boolean = true) as PictureMBS
102.2.15 **BoxBlurFractionalFilter(dest as PictureMBS, Radius as Double) as PictureMBS**

MBS Images Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The box blur filter for the radius fraction.
**Notes:**
If you call BoxBlurFilter and BoxBlurFractionalFilter with a radius of 3.5 the BoxBlurFilter does the 3.0 and BoxBlurFractionalFilter does the 0.5.

if dest is nil, the picture factory is used to create a new picture.
On success dest or the new picture is returned.
If dest is not nil, it must match the size of the original picture.

Returns nil on any error.

102.2.16 **CalculateMemory(width as Integer, height as Integer, theImageFormat as Integer) as Int64**

MBS Images Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calculates the memory needed for allocating the image.
**Example:**
```vba
dim n as int64 = PictureMBS.CalculateMemory(1000, 1000, PictureMBS.ImageFormatRGB)
MsgBox str(n)
```
**Notes:** Returns number of bytes needed.

102.2.17 **CanAllocateImage(width as Integer, height as Integer, theImageFormat as Integer) as boolean**

MBS Images Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Can the image with this size be allocated?
**Example:**
```vba
dim n as Boolean = PictureMBS.CanAllocateImage(1000, 1000, PictureMBS.ImageFormatRGB)
MsgBox str(n)
dim x as Boolean = PictureMBS.CanAllocateImage(100000, 100000, PictureMBS.ImageFormatRGB)
MsgBox str(x)
```
102.2. CLASS PICTUREMBS

Notes:
Returns true if possible and false if the size is too big.
To figure out if allocation will work, we simply allocate and release memory and see if that worked.

102.2.18 Channel(index as Integer) as PictureMBS

MBS Images Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the channel with the given index as a new picture object.
**Example:**
```vba
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatRGB)
dim r as PictureMBS = p.Channel(0)
r.fillrect(100) // fill only red channel
```

Notes:
Returns nil on any error. May raise an out of bounds exception on invalid index. Index is zero based.
No copy is made of the actual pixel data. Modifying the channel picture will modify the original picture.
Use this function to access the pixels of the channel directly.
The resulting PictureMBS object is a grayscale picture.
See also:

- 102.2.146 Channel as String

102.2.19 Channels as String()

MBS Images Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The name of the channels of an image.
**Example:**
```vba
dim p as new Picture(100,100,32)
dim q as new PictureMBS(p)
dim channels() as string = q.Channels

dim cr as PictureMBS = q.RedChannel
dim cg as PictureMBS = q.GreenChannel
dim cb as PictureMBS = q.BlueChannel
dim c0 as PictureMBS = q.Channel(0)
dim c1 as PictureMBS = q.Channel(1)
dim c2 as PictureMBS = q.Channel(2)

dim crn as string = cg.Channel

dim cgn as string = cg.Channel
```
102.2.20  ClearCache

MBS Images Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Clears picture cache.

**Notes:**
If target of this PictureMBS is a Xojo picture, this method clears the Xojo cache for the picture to make sure it recognizes changes.
Does nothing if there is no target picture or there is no cache.

102.2.21  ClearRect

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Clears all pixels.

**Example:**
```
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
p.ClearRect
window1.Backdrop = p.CopyPicture
```

**Notes:**
Writes zeros over all pixels and all channels.
Works with Gray, RGB and CMYK pictures and supports alpha channel.
See also:

- 102.2.22 ClearRect(x as Integer, y as Integer, width as Integer, height as Integer)

102.2.22  ClearRect(x as Integer, y as Integer, width as Integer, height as Integer)

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Clears all pixels in the given area.
Example:

dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
p.ClearRect(0,0,100,100)
window1.Backdrop = p.CopyPicture

Notes:

Writes zeros over all pixels and all channels.
Works with Gray, RGB and CMYK pictures and supports alpha channel.
See also:

- 102.2.21 ClearRect

102.2.23  ClipImage as PictureMBS

MBS Images Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Creates a new PictureMBS object for the same picture content.
Notes: This may be useful if you need a second PictureMBS object. For example if two threads work on
different rows.
See also:

- 102.2.24 ClipImage(x as Integer, y as Integer, width as Integer, height as Integer) as PictureMBS

102.2.24  ClipImage(x as Integer, y as Integer, width as Integer, height as Integer) as PictureMBS

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Creates a new PictureMBS object which draws only into a portion of the existing image.
Example:

dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)

// clip it
dim c as PictureMBS = p.ClipImage(100, 100, 300, 300)

// clone it
dim q as PictureMBS = c.Clone

// and see result in debugger
dim pic as Picture = q.CopyPicture

Break
Notes: This may be useful to apply an effect only on a portion of an existing image. See also:

- 102.2.23 ClipImage as PictureMBS

102.2.25 Clone as PictureMBS


Example:

```vbscript
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)

// clip it
dim c as PictureMBS = p.ClipImage(100, 100, 300, 300)

// clone it
dim q as PictureMBS = c.Clone

// and see result in debugger
dim pic as Picture = q.CopyPicture
```

Notes:

Does not work for pictures using virtual memory.
(Fails if IsMapping=True)
Copies the whole picture even if you clone just one channel.

Returns nil on low memory.

102.2.26 Close


Notes: This calls the destructor internally.
102.2. CLASS PICTUREMBS

102.2.27 CMYKChannels as PictureMBS

MBS Images Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The CMYK channels as a new PictureMBS object.  
**Notes:**

Returns nil if the image is not a CMYK picture.  
No copy is made of the actual pixel data. Modifying the channel picture will modify the original picture.  
Use this function to access the CMYK pixels directly without modifying an alpha channel  
The resulting PictureMBS object is a CMYK picture.

102.2.28 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean

MBS Images Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies pixels from one picture into another picture with some options.  
**Example:**

```vbscript
dim DestImage As PictureMBS
dim Image As PictureMBS
dim Mask As PictureMBS
dim DestX as Integer=100
dim DestY as Integer=100
dim SourceX as Integer=0
dim SourceY as Integer=0
dim Width as Integer=500
dim Height as Integer=500

image=new PictureMBS(LogoMBS(500))
Mask=nil
DestImage=new PictureMBS(700,700,PictureMBS.ImageFormatRGB)

// this will only copy the pixels  
if DestImage.Combine(image,Mask,DestX,DestY,SourceX,SourceY,Width,Height,false) then  
    window1.Backdrop=DestImage.CopyPicture  
end if
```

**Notes:**

Returns true on success and false on failure.  
This function has 4 behaviors depending on the parameters:
1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
- Image: the source picture, must not be nil.
- PreMultipliedSource: Optional parameter. If true the image must be premultiplied. Default is false.
- Mask: the mask picture, can be nil.
- DestX: destination position
- DestY: destination position
- SourceX: source position
- SourceY: source position
- Width: width of the area to copy
- Height: height of the area to copy
- UseColours: whether to use the mask colour.
- ForeColour: the fore colour, optional, can be integer or color
- MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The images you use can be Gray, RGB with or without alpha channels. But most variants here ignore alpha channels. To make sure the alpha channel is not touched, use the PictureMBS.RGBChannels function and pass that new PictureMBS.

See also:

- 102.2.29 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean
- 102.2.30 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean
- 102.2.31 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean
- 102.2.32 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer,
102.2.33 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

102.2.34 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean

102.2.35 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as color) as boolean

102.2.36 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean

102.2.37 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

102.2.38 Combine(Mask As PictureMBS, X as Integer, Y as Integer, Width as Integer, Height as Integer, BackColour As color) as boolean

102.2.29 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean

MBS Images Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies pixels from one picture into another picture with some options.

**Notes:**

Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.
4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
Image: the source picture, must not be nil.
PreMultipliedSource: Optional parameter. If true the image must be premultiplied. Default is false.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The images you use can be Gray, RGB with or without alpha channels. But most variants here ignore alpha channels. To make sure the alpha channel is not touched, use the PictureMBS.RGBChannels function and pass that new PictureMBS.

See also:

- 102.2.28 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 15781
- 102.2.30 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 15785
- 102.2.31 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 15787
- 102.2.32 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 15789
- 102.2.33 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 15791
- 102.2.34 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 15793
102.2.35 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, 
DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height 
as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean

102.2.36 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, 
DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height 
as Integer, UseColours As Boolean, ForeColour as Integer) as boolean

102.2.37 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, 
DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height 
as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

102.2.38 Combine(Mask As PictureMBS, X as Integer, Y as Integer, Width as Integer, Height as 
Integer, BackColour As color) as boolean

102.2.30 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as 
Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, 
Width as Integer, Height as Integer, UseColours As Boolean, Fore-
Colour As color, MaskColour As color) as boolean

MBS Images Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Copies pixels from one picture into another picture with some options.

**Example:**

```
    dim DestImage As PictureMBS
    dim Image As PictureMBS
    dim Mask As PictureMBS
    dim DestX as Integer=100
    dim DestY as Integer=100
    dim SourceX as Integer=0
    dim SourceY as Integer=0
    dim Width as Integer=500
    dim Height as Integer=500

    image=new PictureMBS(LogoMBS( 500))
    Mask=nil
    DestImage=new PictureMBS(700,700,PictureMBS.ImageFormatRGB)

    if DestImage.Combine(image,Mask,DestX,DestY,SourceX,SourceY,Width,Height,true, & cFF0000, & cFF0000) then
        window1.Backdrop=DestImage.CopyPicture
    end if
```

**Notes:**
Returns true on success and false on failure.
This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels are copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
- Image: the source picture, must not be nil.
- PreMultipliedSource: Optional parameter. If true the image must be premultiplied. Default is false.
- Mask: the mask picture, can be nil.
- DestX: destination position
- DestY: destination position
- SourceX: source position
- SourceY: source position
- Width: width of the area to copy
- Height: height of the area to copy
- UseColours: whether to use the mask colour.
- ForeColour: the fore colour, optional, can be integer or color
- MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The images you use can be Gray, RGB with or without alpha channels. But most variants here ignore alpha channels. To make sure the alpha channel is not touched, use the PictureMBS.RGBChannels function and pass that new PictureMBS.

See also:

- 102.2.28 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean
- 102.2.29 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean
- 102.2.31 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean
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- 102.2.32 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

- 102.2.33 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean

- 102.2.34 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean

- 102.2.35 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean

- 102.2.36 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean

- 102.2.37 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

- 102.2.38 Combine(Mask As PictureMBS, X as Integer, Y as Integer, Width as Integer, Height as Integer, BackColour As color) as boolean

**102.2.31 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean**

MBS Images Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies pixels from one picture into another picture with some options.

**Notes:**

Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.
4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
Image: the source picture, must not be nil.
PreMultipliedSource: Optional parameter. If true the image must be premultiplied. Default is false.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The images you use can be Gray, RGB with or without alpha channels. But most variants here ignore alpha channels. To make sure the alpha channel is not touched, use the PictureMBS.RGBChannels function and pass that new PictureMBS.

See also:

- 102.2.28 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean
- 102.2.29 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean
- 102.2.30 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean
- 102.2.32 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean
- 102.2.33 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean
- 102.2.34 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean
102.2. CLASS PICTUREMBS

- 102.2.35 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean

- 102.2.36 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean

- 102.2.37 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

- 102.2.38 Combine(Mask As PictureMBS, X as Integer, Y as Integer, Width as Integer, Height as Integer, BackColour As color) as boolean

102.2.32 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

MBS Images Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies pixels from one picture into another picture with some options. **Notes:**

Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

**Parameters:**
- Image: the source picture, must not be nil.
- PreMultipliedSource: Optional parameter. If true the image must be premultiplied. Default is false.
- Mask: the mask picture, can be nil.
- DestX: destination position
- DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The images you use can be Gray, RGB with or without alpha channels. But most variants here ignore alpha channels. To make sure the alpha channel is not touched, use the PictureMBS.RGBChannels function and pass that new PictureMBS.

See also:

- 102.2.28 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean
- 102.2.29 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean
- 102.2.30 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean
- 102.2.31 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean
- 102.2.33 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean
- 102.2.34 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean
- 102.2.35 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour As color) as boolean
- 102.2.36 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean
- 102.2.37 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean
102.2.33 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean

MBS Images Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies pixels from one picture into another picture with some options.

**Example:**

```vba
dim DestImage as PictureMBS
dim Image as PictureMBS
dim Mask as PictureMBS
dim DestX as Integer = 100
dim DestY as Integer = 100
dim SourceX as Integer = 0
dim SourceY as Integer = 0
dim Width as Integer = 500
dim Height as Integer = 500

// we create a little mask for a smooth fade
dim m as Picture = NewPicture(500,500,32)
dim g as Graphics = m.Graphics

for y as Integer = 0 to 499
    dim n as Integer = y * 255 / 499
    g.ForeColor = rgb(n, n, n)
    g.DrawLine 0,y,499,y
next

// uncomment to see our mask:
'Backdrop = m
$return

image=new PictureMBS(LogoMBS(500))
Mask=new PictureMBS(m)
DestImage=new PictureMBS(700,700,PictureMBS.ImageFormatRGB)

// this will only copy the pixels
if DestImage.Combine(image,false,Mask,DestX,DestY,SourceX,SourceY,Width,Height,false) then
    window1.Backdrop=DestImage.CopyPicture
end if
```
Notes:

Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:

- Image: the source picture, must not be nil.
- PreMultipliedSource: Optional parameter. If true the image must be premultiplied. Default is false.
- Mask: the mask picture, can be nil.
- DestX: destination position
- DestY: destination position
- SourceX: source position
- SourceY: source position
- Width: width of the area to copy
- Height: height of the area to copy
- UseColours: whether to use the mask colour.
- ForeColour: the fore colour, optional, can be integer or color
- MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The images you use can be Gray, RGB with or without alpha channels. But most variants here ignore alpha channels. To make sure the alpha channel is not touched, use the PictureMBS.RGBChannels function and pass that new PictureMBS.

See also:

- 102.2.28 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean
- 102.2.29 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean,
102.2.34 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean

MBS Images Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Copies pixels from one picture into another picture with some options.

**Notes:**
Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.
2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
- **Image**: the source picture, must not be nil.
- **PreMultipliedSource**: Optional parameter. If true the image must be premultiplied. Default is false.
- **Mask**: the mask picture, can be nil.
- **DestX**: destination position
- **DestY**: destination position
- **SourceX**: source position
- **SourceY**: source position
- **Width**: width of the area to copy
- **Height**: height of the area to copy
- **UseColours**: whether to use the mask colour.
- **ForeColour**: the fore colour, optional, can be integer or color
- **MaskColour**: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The images you use can be Gray, RGB with or without alpha channels. But most variants here ignore alpha channels. To make sure the alpha channel is not touched, use the PictureMBS.RGBChannels function and pass that new PictureMBS.

See also:
- 102.2.28 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean
- 102.2.29 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean
- 102.2.30 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean
- 102.2.31 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, DestY as Integer)
- 102.2.32 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer,
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SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

- 102.2.33 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean

- 102.2.35 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean

- 102.2.36 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean

- 102.2.37 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

- 102.2.38 Combine(Mask As PictureMBS, X as Integer, Y as Integer, Width as Integer, Height as Integer, BackColour As color) as boolean

102.2.35 **Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean**

MBS Images Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies pixels from one picture into another picture with some options. **Notes:**

Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.
Parameters:
Image: the source picture, must not be nil.
PreMultipliedSource: Optional parameter. If true the image must be premultiplied. Default is false.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The images you use can be Gray, RGB with or without alpha channels. But most variants here ignore alpha channels. To make sure the alpha channel is not touched, use the PictureMBS.RGBChannels function and pass that new PictureMBS.

See also:

- 102.2.28 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 15781
- 102.2.29 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 15783
- 102.2.30 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 15785
- 102.2.31 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 15787
- 102.2.32 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 15789
- 102.2.33 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 15791
- 102.2.34 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 15793
102.2.36 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean

102.2.37 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

102.2.38 Combine(Mask As PictureMBS, X as Integer, Y as Integer, Width as Integer, Height as Integer, BackColour As color) as boolean

102.2.36  Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean

MBS Images Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies pixels from one picture into another picture with some options.

**Example:**

```vba
dim DestImage as PictureMBS
dim Image as PictureMBS
dim Mask as PictureMBS
dim DestX as Integer=100
dim DestY as Integer=100
dim SourceX as Integer=0
dim SourceY as Integer=0
dim Width as Integer=500
dim Height as Integer=500
dim UseColours as Boolean = false
dim ForeColour as color = & c FF0000
image=new PictureMBS(LogoMBS(500))
Mask=nil
DestImage=new PictureMBS(700,700,PictureMBS.ImageFormatRGB)
if DestImage.Combine(image,Mask,DestX,DestY,SourceX,SourceY,Width,Height,UseColours,ForeColour)then
    window1.Backdrop=DestImage.CopyPicture
end if
```

**Notes:**

Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:
1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels are copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the pixels are filled with the fore color applying the mask.

4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
Image: the source picture, must not be nil.
PreMultipliedSource: Optional parameter. If true the image must be premultiplied. Default is false.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The images you use can be Gray, RGB with or without alpha channels. But most variants here ignore alpha channels. To make sure the alpha channel is not touched, use the PictureMBS.RGBChannels function and pass that new PictureMBS.

See also:
• 102.2.28 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean
• 102.2.29 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean
• 102.2.30 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean
• 102.2.31 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer,
102.2.37  Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

MBS Images Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Copies pixels from one picture into another picture with some options.

**Notes:**
Returns true on success and false on failure.

This function has 4 behaviors depending on the parameters:

1. If mask is nil and no ForeColour and MaskColour values are passed, the pixels a copied to the destination picture.

2. But if there is a mask, the pixels are copied with applying the mask.

3. If the mask color is not defined, the the pixels are filled with the fore color applying the mask.
4. As the last variation the pixels are copied and the forecolor, the mask color or black is used with the image as the mask. If UseColours parameter is false black is used for this.

Parameters:
Image: the source picture, must not be nil.
PreMultipliedSource: Optional parameter. If true the image must be premultiplied. Default is false.
Mask: the mask picture, can be nil.
DestX: destination position
DestY: destination position
SourceX: source position
SourceY: source position
Width: width of the area to copy
Height: height of the area to copy
UseColours: whether to use the mask colour.
ForeColour: the fore colour, optional, can be integer or color
MaskColour: the mask color, optional, can be integer or color

This function is 5 times in the plugin defined to implement having the last two parameters optional and either integer or color. You can pass a negative number for MaskColour or ForeColour to disable this parameter.

The images you use can be Gray, RGB with or without alpha channels. But most variants here ignore alpha channels. To make sure the alpha channel is not touched, use the PictureMBS.RGBChannels function and pass that new PictureMBS.

See also:
- 102.2.28 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 15781
- 102.2.29 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean 15783
- 102.2.30 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean 15785
- 102.2.31 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean 15787
- 102.2.32 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean 15789
- 102.2.33 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean 15791
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- 102.2.34 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean

- 102.2.35 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean

- 102.2.36 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean

- 102.2.38 Combine(Mask As PictureMBS, X as Integer, Y as Integer, Width as Integer, Height as Integer, BackColour As color) as boolean

102.2.38 **Combine(Mask As PictureMBS, X as Integer, Y as Integer, Width as Integer, Height as Integer, BackColour As color) as boolean**

MBS Images Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Combines picture with mask and background color.

See also:

- 102.2.28 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean

- 102.2.29 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean

- 102.2.30 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean

- 102.2.31 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean

- 102.2.32 Combine(Image As PictureMBS, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

- 102.2.33 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean) as boolean

- 102.2.34 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color) as boolean
102.2.35 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour As color, MaskColour As color) as boolean

102.2.36 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer) as boolean

102.2.37 Combine(Image As PictureMBS, PreMultipliedSource as boolean, Mask As PictureMBS, DestX as Integer, DestY as Integer, SourceX as Integer, SourceY as Integer, Width as Integer, Height as Integer, UseColours As Boolean, ForeColour as Integer, MaskColour as Integer) as boolean

102.2.39 CompareImages(other as PictureMBS) as Int64

Example:

dim p as new PictureMBS(1000,1000, PictureMBS.imageFormatRGB)

// fill random
p.FillRectRandom

dim q as new PictureMBS(1000,1000, PictureMBS.imageFormatRGB)

// copy pixels
call q.CopyPixels(p, 0, 0, 1000, 1000, 0, 0)
q.FillRect(0,0,10,10,0) // fill 100 pixels

// show image
Backdrop = q.CopyPicture

// and compare
Title = str(p.CompareImages(q)) // shows 100

Notes:
Returns -1 if both pictures are not from the same structure. (e.g. compare gray with RGB)
Else returns the number of different pixels.

102.2.40 Constructor(Buf as MemoryBlock, width as Integer, height as Integer, ImageFormat as Integer, RowSize as Integer)

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See also:

- 102.2.41 Constructor(pic as picture, UseAlpha as boolean=false)  
  MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a PictureMBS which shares memory with the given picture.
  **Example:**
  ```vba
  // Create a picture with mask:
  dim p as Picture = LogoMBS(200)
  dim g as Graphics = p.mask.Graphics

  g.ForeColor = & c FFFFFF
  g.FillRect 0,0,g.Width,g.Height

  g.ForeColor = & c 000000
  g.Filloval 0,0,g.Width,g.Height

  canvas1.Backdrop = p

  // create PictureMBS
  dim pic as new PictureMBS(p, true)
  dim mask as new PictureMBS(p.mask)

  // draw mask into alpha channel
  call pic.AlphaChannel.CopyPixels(mask,0,0,mask.Width,mask.Height,0,0)

  // and copy back to REALbasic picture
  canvas2.Backdrop = pic.CopyPictureWithMask
  ```

**Notes:**

All drawings in the Picture and in the PictureMBS object will be visible in both objects. This function works on Mac OS and Windows with both 24 bit and 32 bit pictures. On Mac this function can fail if the picture is not a GWorld (Bitmap) picture.

The Valid property is set to true on success.
If you set UseAlpha=True, the 4th channel in a 32 bit picture is available for you as an alpha channel. REALbasic does not use the 4th channel in the picture data and 24 bit pictures do not have one. So you can use 32 bit pictures, copy the pictures mask in the alpha channel (using PictureMBS.AlphaChannel, inverting may be needed), perform some operations and later make a copy of the of the image to a picture and extract the alpha channel back into the picture’s mask.

Added support for Console/Web targets in 12.2 plugins. Please be aware that alpha channel of pictures with alpha channel has only a range from 0 to 127 for the values.

See also:

- 102.2.40 Constructor(Buf as MemoryBlock, width as Integer, height as Integer, ImageFormat as Integer, RowSize as Integer) 15802
- 102.2.42 Constructor(width as Integer, height as Integer, ImageFormat as Integer) 15804
- 102.2.43 Constructor(width as Integer, height as Integer, ImageFormat as Integer, BlockSize as Int64, FilePath as folderitem) 15804

102.2.42 Constructor(width as Integer, height as Integer, ImageFormat as Integer)


Notes:

ImageFormat must be one of the ImageFormat constants.
The Valid property is set to true on success.

The constructor allocated address space for the image.
Physical memory is allocated based on write access to pixels.
See also:

- 102.2.40 Constructor(Buf as MemoryBlock, width as Integer, height as Integer, ImageFormat as Integer, RowSize as Integer) 15802
- 102.2.41 Constructor(pic as picture, UseAlpha as boolean=false) 15803
- 102.2.43 Constructor(width as Integer, height as Integer, ImageFormat as Integer, BlockSize as Int64, FilePath as folderitem) 15804

102.2.43 Constructor(width as Integer, height as Integer, ImageFormat as Integer, BlockSize as Int64, FilePath as folderitem)


Example:
102.2. CLASS PICTUREMBS

```vbnet
dim mm as int64 = Picturembs.CalculateMemory(7000, 150000, PictureMBS.ImageFormatRGB)
// shows that this size needs 3 GB in memory

// create image
dim blocksize as Integer = 100*1024*1024
dim file as FolderItem = GetTemporaryFolderItem
dim pic as new PictureMBS(7000, 150000, PictureMBS.ImageFormatRGB, blocksize, file)

// draw dots on it
for x as Integer = 0 to pic.Width step 500
for y as Integer = 0 to pic.Height step 500
pic.FillRect(x, y, 100, 100, 175)
ext
next

// write to tiff
dim f as FolderItem = SpecialFolder.Desktop.Child("test.tif")
dim t as TiffPictureMBS
if pic <> nil then
t = new TiffPictureMBS
if t.Create(F) then
const PLANARCONFIG_CONTIG = 1
const PHOTOMETRIC_RGB = 2
const FILLORDER_MSB2LSB = 1
const RESUNIT_INCH = 2
const ORIENTATION_TOLEFT = 1
const COMPRESSION_LZW = 5

t.Height = pic.Height
t.Width = pic.Width
t.RowsPerStrip = 1
t.PlanarConfig = PLANARCONFIG_CONTIG
t.Photometric = PHOTOMETRIC_RGB
t.BitsPerSample = 8
t.SamplesPerPixel = 3
t.FillOrder = FILLORDER_MSB2LSB
t.Orientation = ORIENTATION_TOLEFT
t.ResolutionUnit = RESUNIT_INCH
t.VerticalResolution = 72.0
t.HorizontalResolution = 72.0
t.Compression = COMPRESSION_LZW

for i as Integer = 0 to t.Height - 1
dim m as MemoryBlock = pic.RowInFormat(i, PictureMBS.ImageFormatRGB)
```
t.Scanline(i) = m

next

t.Close
end if
else

end if

// cleanup
pic = nil
file.delete

Notes:
The size of this image is limited to available hard disc space. The
system will cache this data in memory to avoid writing it to disc. Using picture
sizes bigger than physical memory can result into slow processing.

FilePath points to the location where the file is created.
On Windows the FilePath can be nil in which space in the system swapfile is used.
On Mac/Linux with nil FilePath, we use automatically a temp file path.

BlockSize specifies how many bytes of memory should be used in application
memory space. A typical value may be 100 mega bytes.

The Valid property is set to true on success.
File is deleted in destructor and folderItem is than invalid.
See also:

- 102.2.40 Constructor(Buf as MemoryBlock, width as Integer, height as Integer, ImageFormat as Integer,
  RowSize as Integer) 15802
- 102.2.41 Constructor(pic as picture, UseAlpha as boolean=false) 15803
- 102.2.42 Constructor(width as Integer, height as Integer, ImageFormat as Integer) 15804

102.2.44 CopyGWorld as Variant

MBS Images Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Creates a GWorld with a copy of the picture data.
Example:
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// get a PictureMBS object somewhere
dim pic as Picture = LogoMBS(500)
dim p as Picturembs = new PictureMBS(pic)

// make a gworld from it.
dim g as GWorldMBS = p.CopyGWorld

// for debugging show content
Backdrop = g.CopyPicture

// Export to TIFF with Quicktime Graphics Exporter
dim q as new QTGraphicsExporterMBS
q.OpenExporter("TIFF")
q.InputGWorldHandle = g.Handle
q.CompressionQuality = & h400
q.OutputFile = SpecialFolder.Desktop.Child("test.tif")
if q.Export>0 then
MsgBox "OK"
end if

Notes: Works with 8 bit gray and with RGB data.

102.2.45 CopyMask as picture

Notes:
Be aware that PictureMBS objects can have more pixels than picture objects can store, so this will not always work.
Returns nil on any error (e.g. out of memory).
Works for all pictures with alpha channel.
See also:

• 102.2.46 CopyMask(x as Integer, y as Integer, w as Integer, h as Integer) as picture

102.2.46 CopyMask(x as Integer, y as Integer, w as Integer, h as Integer) as picture

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Copies the given area of the alpha channel into a mask picture.
Notes:
Be aware that PictureMBS objects can have more pixels than picture objects can store, so this will not always work. Returns nil on any error (e.g. out of memory). Works for all pictures with alpha channel. See also:

- 102.2.45 CopyMask as picture

102.2.47 CopyPicture as picture

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Copies the RGB channels or the gray channel into a picture. Example:

```vba
// get some picture
dim logo as Picture = LogoMBS(500)

// create PictureMBS
dim rgb as new PictureMBS/logo)

// Create a gray picture and copy RGB to gray
dim g as new PictureMBS(500, 500, PictureMBS.ImageFormatG)
call g.CopyPixels(rgb)

// Create CMYK and fill cyan channel with grayscale image
dim cmyk as new PictureMBS(500, 500, PictureMBS.ImageFormatCMYK)
call cmyk.MagentaChannel.CopyPixels(g)

// display it
Backdrop = cmyk.CopyPicture
```

Notes:

Be aware that PictureMBS objects can have more pixels than picture objects can store, so this will not always work. Returns nil on any error (e.g. out of memory).

Works with Gray, RGB and CMYK pictures and supports alpha channel. For CMYK we have some simply conversion to RGB to give you a preview. For a real world application, use Color Conversion like our LCMS plugin. See also:

- 102.2.48 CopyPicture(x as Integer, y as Integer, w as Integer, h as Integer) as picture
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### 102.2.48 CopyPicture(x as Integer, y as Integer, w as Integer, h as Integer) as picture

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies the RGB channels or the gray channel in the given area into a picture.  
**Notes:**  
Be aware that PictureMBS objects can have more pixels than picture objects can store, so this will not always work.  
Returns nil on any error (e.g. out of memory).  

Works with Gray, RGB and CMYK pictures and supports alpha channel. For CMYK we have some simply conversion to RGB to give you a preview. For a real world application, use Color Conversion like our LCMS plugin.  
See also:

- **102.2.47 CopyPicture as picture**

### 102.2.49 CopyPictureWithAlpha as picture

MBS Images Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies picture with alpha.  
**Notes:** Returns a picture with HasAlphaChannel = true.  
See also:

- **102.2.50 CopyPictureWithAlpha(x as integer, y as integer, w as integer, h as integer) as picture**

### 102.2.50 CopyPictureWithAlpha(x as integer, y as integer, w as integer, h as integer) as picture

MBS Images Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies picture in rectangle with alpha.  
**Notes:** Returns a picture with HasAlphaChannel = true.  
See also:

- **102.2.49 CopyPictureWithAlpha as picture**

### 102.2.51 CopyPictureWithMask as picture

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies the picture with mask.  
**Notes:**  
Be aware that PictureMBS objects can have more pixels than picture objects can store, so this will not always work.
Returns nil on any error (e.g. out of memory).

Works with Gray, RGB and CMYK pictures and supports alpha channel. For CMYK we have some simply conversion to RGB to give you a preview. For a real world application, use Color Conversion like our LCMS plugin.

See also:

- 102.2.52 CopyPictureWithMask(x as Integer, y as Integer, w as Integer, h as Integer) as picture

102.2.52 CopyPictureWithMask(x as Integer, y as Integer, w as Integer, h as Integer) as picture

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies the picture with mask in the given area.

**Notes:**

Be aware that PictureMBS objects can have more pixels than picture objects can store, so this will not always work.

Returns nil on any error (e.g. out of memory).

Works with Gray, RGB and CMYK pictures and supports alpha channel. For CMYK we have some simply conversion to RGB to give you a preview. For a real world application, use Color Conversion like our LCMS plugin.

See also:

- 102.2.51 CopyPictureWithMask as picture

102.2.53 CopyPixels(source as PictureMBS) as boolean

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies all pixels from the source picture to the current picture.

**Example:**

```lisp
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
  // create new picture:
  // can be any image format: ImageFormatRGB, ImageFormatG, ImageFormatBGR, etc.
dim d as new PictureMBS(l.Width, l.Height, PictureMBS.ImageFormatRGB)

if d.CopyPixels(p) then
  Backdrop = d.CopyPicture
else
  MsgBox "Failed."
end if
```
Notes:
This function is optimized for several image formats:
- Gray to Gray.
- RGB to Gray uses R*0.3+G*0.59+B*0.11.
- RGB to RGB.
- Gray to RGB fill red, green and blue with the same gray value.
- CMYK to CMYK
- CMYK to Gray, copies from black channel
- Gray to CMYK, copies to black channel
If an alpha channel exists in both images, it is copied.

See also:

- 102.2.54 CopyPixels(source as PictureMBS, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer) as boolean
- 102.2.55 CopyPixels(source as PictureMBS, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer, SourceX as Integer, SourceY as Integer) as boolean

### 102.2.54 CopyPixels(source as PictureMBS, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer) as boolean

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies pixels from the source picture to the current picture.

**Example:**

```plaintext
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS()
dim d as new PictureMBS(700, 700, PictureMBS.ImageFormatRGB)

if d.CopyPixels(p,100,100,500,500) then
    Backdrop = d.CopyPicture
else
    MsgBox "Failed."
end if
```

Notes:

DestWidth and DestHeight specify how many pixels are copied.
DestX/DestY specify the destination position in the current picture.

This function is optimized for several image formats:
- Gray to Gray.
- RGB to Gray uses R*0.3+G*0.59+B*0.11.
- RGB to RGB.
- Gray to RGB fill red, green and blue with the same gray value.
- CMYK to Gray, copies from black channel
- Gray to CMYK, copies to black channel
If an alpha channel exists in both images, it is copied.

See also:

- 102.2.53 CopyPixels(source as PictureMBS) as boolean
- 102.2.55 CopyPixels(source as PictureMBS, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer, SourceX as Integer, SourceY as Integer) as boolean

102.2.55 CopyPixels(source as PictureMBS, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer, SourceX as Integer, SourceY as Integer) as boolean

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies pixels from the source picture to the current picture.

**Example:**

```vbnet
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
dim d as new PictureMBS(700, 700, PictureMBS.ImageFormatRGB)

if d.CopyPixels(p,100,100,500,500,0,0) then
    Backdrop = d.CopyPicture
else
    MsgBox "Failed."
end if
```

**Notes:**

SourceX/SourceY is the position in the source picture.
DestWidth/DestHeight specify how many pixels are copied.
DestX/DestY specify the destination position in the current picture.

This function is optimized for several image formats:
- Gray to Gray.
- RGB to Gray uses R*0.3+G*0.59+B*0.11.
- RGB to RGB.
- Gray to RGB fill red, green and blue with the same gray value.
- CMYK to Gray, copies from black channel
- Gray to CMYK, copies to black channel
If an alpha channel exists in both images, it is copied.

See also:
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- 102.2.53 CopyPixels(source as PictureMBS) as boolean
- 102.2.54 CopyPixels(source as PictureMBS, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer) as boolean

102.2.56 CreatePictureMBS(width as Integer, height as Integer, ImageFormat as Integer) as PictureMBS

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new PictureMBS object. **Notes:** Returns nil if no factory can create a valid picture.

First the Factory on the current ImageMBS object (self) is asked to create the picture. Second the global Factory object is asked. Third the normal PictureMBS constructor is used. See also:

- 102.2.57 CreatePictureMBS(width as Integer, height as Integer, theImageFormat as Integer) as PictureMBS

102.2.57 CreatePictureMBS(width as Integer, height as Integer, theImageFormat as Integer) as PictureMBS

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new PictureMBS object. **Notes:** Returns nil if no factory can create a valid picture.

First the global factory object is asked to create the picture. Second the normal PictureMBS constructor is used. See also:

- 102.2.56 CreatePictureMBS(width as Integer, height as Integer, ImageFormat as Integer) as PictureMBS

102.2.58 CyanChannel as PictureMBS

MBS Images Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The cyan channel of a CMYK picture as a new PictureMBS object. **Notes:**
Returns nil if this channel does not exist.
No copy is made of the actual pixel data. Modifying the channel picture will modify the original picture.
Use this function to access the pixels of the channel directly.
The resulting PictureMBS object is a grayscale picture.

102.2.59  DiffuseFilter(dest as PictureMBS, level as Integer) as PictureMBS

MBS Images Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Applies a diffuse filter to the image.
**Notes:**
if dest is nil, the picture factory is used to create a new picture.
On success dest or the new picture is returned.
If dest is not nil, it must match the size of the original picture.

Returns nil on any error.
Level must be between 0 and min(width,height).

102.2.60  DitherFilter(dest as PictureMBS, matrix as Integer, levels as Integer) as PictureMBS

MBS Images Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Applies the dither filter to the picture.
**Notes:**
Use for the matrix parameter one of the Dither* constants.

if dest is nil, the picture factory is used to create a new picture.
On success dest or the new picture is returned.
If dest is not nil, it must match the size of the original picture.

Levels is a number between 2 and 256 and specifies how many color levels are in the final picture.

Returns nil on any error.
102.2.61 DrawMaskedPictureApplyMaskRGB(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer, InvertMask as boolean=False)

MBS Images Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Draws a picture into this PictureMBS object.

**Notes:**
This method applys the pixel values from the Red, Green and Blue channel of the picture with calculating in the mask of the picture.

This is the calculation:

Works only if the PictureMBS has Red, Green and Blue channels.
If you want to copy Pixels from a PictureMBS to a PictureMBS, use CopyPixels.
See also:

- 102.2.62 DrawMaskedPictureApplyMaskRGB(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer, SourceX as Integer, SourceY as Integer, InvertMask as boolean=False) 15815
- 102.2.63 DrawMaskedPictureApplyMaskRGB(pic as picture, DestX as Integer, DestY as Integer, InvertMask as boolean=False) 15816
- 102.2.64 DrawMaskedPictureApplyMaskRGB(pic as picture, InvertMask as boolean=False) 15816

102.2.62 DrawMaskedPictureApplyMaskRGB(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer, SourceX as Integer, SourceY as Integer, InvertMask as boolean=False)

MBS Images Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Draws a picture into this PictureMBS object.

**Notes:**
This method applys the pixel values from the Red, Green and Blue channel of the picture with calculating in the mask of the picture.

This is the calculation:
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Works only if the PictureMBS has Red, Green, Blue and Alpha channels.
If you want to copy Pixels from a PictureMBS to a PictureMBS, use CopyPixels.
See also:

- 102.2.61 DrawMaskedPictureApplyMaskRGB(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer, InvertMask as boolean=False) 15815
- 102.2.63 DrawMaskedPictureApplyMaskRGB(pic as picture, DestX as Integer, DestY as Integer, InvertMask as boolean=False) 15816
- 102.2.64 DrawMaskedPictureApplyMaskRGB(pic as picture, InvertMask as boolean=False) 15816

102.2.63 DrawMaskedPictureApplyMaskRGB(pic as picture, DestX as Integer, DestY as Integer, InvertMask as boolean=False)

MBS Images Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Draws a picture into this PictureMBS object.

**Notes:**

This method applies the pixel values from the Red, Green and Blue channel of the picture with calculating in the mask of the picture.

This is the calculation:

Works only if the PictureMBS has Red, Green, Blue and Alpha channels.
If you want to copy Pixels from a PictureMBS to a PictureMBS, use CopyPixels.
See also:

- 102.2.61 DrawMaskedPictureApplyMaskRGB(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer, InvertMask as boolean=False) 15815
- 102.2.62 DrawMaskedPictureApplyMaskRGB(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer, SourceX as Integer, SourceY as Integer, InvertMask as boolean=False) 15815
- 102.2.64 DrawMaskedPictureApplyMaskRGB(pic as picture, InvertMask as boolean=False) 15816

102.2.64 DrawMaskedPictureApplyMaskRGB(pic as picture, InvertMask as boolean=False)

MBS Images Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Draws a picture into this PictureMBS object.

**Notes:**
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This method applies the pixel values from the Red, Green and Blue channel of the picture with calculating in the mask of the picture.

This is the calculation:

Works only if the PictureMBS has Red, Green, Blue and Alpha channels.
If you want to copy Pixels from a PictureMBS to a PictureMBS, use CopyPixels.
See also:

- 102.2.61 DrawMaskedPictureApplyMaskRGB(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer, InvertMask as boolean=False) 15815
- 102.2.62 DrawMaskedPictureApplyMaskRGB(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer, SourceX as Integer, SourceY as Integer, InvertMask as boolean=False) 15815
- 102.2.63 DrawMaskedPictureApplyMaskRGB(pic as picture, DestX as Integer, DestY as Integer, InvertMask as boolean=False) 15816

102.2.65 DrawMaskedPictureRGB(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer, InvertMask as boolean=False)

MBS Images Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Draws a picture into this PictureMBS object.

**Notes:**
This method copies the pixel values from the Red, Green and Blue channel of the picture and the pixel value of the picture’s mask to the PictureMBS replacing old values.

This is the calculation:
Pixel.Red = PicturePixel.Red
Pixel.Green = PicturePixel.Green
Pixel.Blue = PicturePixel.Blue
Pixel.Alpha = PicturePixel.Mask

Works only if the PictureMBS has Red, Green, Blue and Alpha channels.
If you want to copy Pixels from a PictureMBS to a PictureMBS, use CopyPixels.
See also:

- 102.2.66 DrawMaskedPictureRGB(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer, SourceX as Integer, SourceY as Integer, InvertMask as boolean=False) 15818
102.2.66 DrawMaskedPictureRGB(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer, SourceX as Integer, SourceY as Integer, InvertMask as boolean=False)

MBS Images Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Draws a picture into this PictureMBS object.

**Notes:**
This method copies the pixel values from the Red, Green and Blue channel of the picture and the pixel value of the picture’s mask to the PictureMBS replacing old values.

This is the calculation:
Pixel.Red = PicturePixel.Red  
Pixel.Green = PicturePixel.Green  
Pixel.Blue = PicturePixel.Blue  
Pixel.Alpha = PicturePixel.Mask

Works only if the PictureMBS has Red, Green and Blue channels.  
If you want to copy Pixels from a PictureMBS to a PictureMBS, use CopyPixels.
See also:

- 102.2.65 DrawMaskedPictureRGB(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer, InvertMask as boolean=False) 15817
- 102.2.67 DrawMaskedPictureRGB(pic as picture, DestX as Integer, DestY as Integer, InvertMask as boolean=False) 15818
- 102.2.68 DrawMaskedPictureRGB(pic as picture, InvertMask as boolean=False) 15819

102.2.67 DrawMaskedPictureRGB(pic as picture, DestX as Integer, DestY as Integer, InvertMask as boolean=False)

MBS Images Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Draws a picture into this PictureMBS object.

**Notes:**
This method copies the pixel values from the Red, Green and Blue channel of the picture and the pixel value of the picture’s mask to the PictureMBS replacing old values.

This is the calculation:
Pixel.Red = PicturePixel.Red
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Pixel.Green = PicturePixel.Green
Pixel.Blue = PicturePixel.Blue
Pixel.Alpha = PicturePixel.Mask

Works only if the PictureMBS has Red, Green, Blue and Alpha channels.
If you want to copy Pixels from a PictureMBS to a PictureMBS, use CopyPixels.
See also:

- 102.2.65 DrawMaskedPictureRGB(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer, InvertMask as boolean=False) 15817
- 102.2.66 DrawMaskedPictureRGB(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer, SourceX as Integer, SourceY as Integer, InvertMask as boolean=False) 15818
- 102.2.67 DrawMaskedPictureRGB(pic as picture, InvertMask as boolean=False) 15818

102.2.68 DrawMaskedPictureRGB(pic as picture, InvertMask as boolean=False)

MBS Images Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Draws a picture into this PictureMBS object.

**Notes:**
This method copies the pixel values from the Red, Green and Blue channel of the picture and the pixel value of the picture’s mask to the PictureMBS replacing old values.

This is the calculation:
Pixel.Red = PicturePixel.Red
Pixel.Green = PicturePixel.Green
Pixel.Blue = PicturePixel.Blue
Pixel.Alpha = PicturePixel.Mask

Works only if the PictureMBS has Red, Green, Blue and Alpha channels.
If you want to copy Pixels from a PictureMBS to a PictureMBS, use CopyPixels.
See also:

- 102.2.65 DrawMaskedPictureRGB(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer, InvertMask as boolean=False) 15817
- 102.2.66 DrawMaskedPictureRGB(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer, SourceX as Integer, SourceY as Integer, InvertMask as boolean=False) 15818
- 102.2.67 DrawMaskedPictureRGB(pic as picture, DestX as Integer, DestY as Integer, InvertMask as boolean=False) 15818
102.2.69 **DrawPictureBlueToGrayChannel**(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer)

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Draws the blue channel of a picture object into the gray channel of this picture.

**Notes:**

If you want to copy the blue channel of the picture into the blue channel of the PictureMBS, then first get a PictureMBS object for the blue channel and use this method on this object.

If you want to copy Pixels from a PictureMBS to a PictureMBS, use CopyPixels.

See also:

- 102.2.70 **DrawPictureBlueToGrayChannel**(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer, SourceX as Integer, SourceY as Integer)

102.2.70 **DrawPictureBlueToGrayChannel**(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer, SourceX as Integer, SourceY as Integer)

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Draws the blue channel of a picture object into the gray channel of this picture.

**Notes:**

If you want to copy the blue channel of the picture into the blue channel of the PictureMBS, then first get a PictureMBS object for the blue channel and use this method on this object.

If you want to copy Pixels from a PictureMBS to a PictureMBS, use CopyPixels.

See also:

- 102.2.69 **DrawPictureBlueToGrayChannel**(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer)

102.2.71 **DrawPictureGreenToGrayChannel**(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer)

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Draws the green channel of a picture object into the gray channel of this picture.

**Notes:**

If you want to copy the green channel of the picture into the green channel of the PictureMBS, then first get a PictureMBS object for the green channel and use this method on this object.

If you want to copy Pixels from a PictureMBS to a PictureMBS, use CopyPixels.

See also:

- 102.2.72 **DrawPictureGreenToGrayChannel**(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer, SourceX as Integer, SourceY as Integer)
102.2.72 DrawPictureGreenToGrayChannel(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer, SourceX as Integer, SourceY as Integer)

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Draws the green channel of a picture object into the gray channel of this picture. **Notes:**

If you want to copy the green channel of the picture into the green channel of the PictureMBS, then first get a PictureMBS object for the green channel and use this method on this object.

If you want to copy Pixels from a PictureMBS to a PictureMBS, use CopyPixels.

See also:

- 102.2.71 DrawPictureGreenToGrayChannel(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer)

102.2.73 DrawPictureRedToGrayChannel(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer)

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Draws the red channel of a picture object into the gray channel of this picture. **Notes:**

If you want to copy the red channel of the picture into the red channel of the PictureMBS, then first get a PictureMBS object for the red channel and use this method on this object.

If you want to copy Pixels from a PictureMBS to a PictureMBS, use CopyPixels.

See also:

- 102.2.74 DrawPictureRedToGrayChannel(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer, SourceX as Integer, SourceY as Integer)

102.2.74 DrawPictureRedToGrayChannel(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer, SourceX as Integer, SourceY as Integer)

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Draws the red channel of a picture object into the gray channel of this picture. **Notes:**

If you want to copy the red channel of the picture into the red channel of the PictureMBS, then first get a PictureMBS object for the red channel and use this method on this object.

If you want to copy Pixels from a PictureMBS to a PictureMBS, use CopyPixels.

See also:

- 102.2.73 DrawPictureRedToGrayChannel(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer)
102.2.75 **DrawPictureRGB(pic as picture)**

MBS Images Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Draws a picture into this PictureMBS object.

**Notes:**
Works only if the PictureMBS has Red, Green and Blue channels.
If you want to copy Pixels from a PictureMBS to a PictureMBS, use CopyPixels.

This is the calculation:
Pixel.Red = PicturePixel.Red
Pixel.Green = PicturePixel.Green
Pixel.Blue = PicturePixel.Blue

This method does ignore a mask in the given picture and does not change set the alpha channel.
See also:
- 102.2.75 DrawPictureRGB(pic as picture, DestX as Integer, DestY as Integer)
- 102.2.77 DrawPictureRGB(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer)
- 102.2.78 DrawPictureRGB(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer, SourceX as Integer, SourceY as Integer)

102.2.76 **DrawPictureRGB(pic as picture, DestX as Integer, DestY as Integer)**

MBS Images Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Draws a picture into this PictureMBS object.

**Notes:**
Works only if the PictureMBS has Red, Green and Blue channels.
If you want to copy Pixels from a PictureMBS to a PictureMBS, use CopyPixels.

This is the calculation:
Pixel.Red = PicturePixel.Red
Pixel.Green = PicturePixel.Green
Pixel.Blue = PicturePixel.Blue

This method does ignore a mask in the given picture and does not change set the alpha channel.
See also:
- 102.2.75 DrawPictureRGB(pic as picture)
- 102.2.77 DrawPictureRGB(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer)
102.2.77 DrawPictureRGB(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer)

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Draws a picture into this PictureMBS object.

**Notes:**
Works only if the PictureMBS has Red, Green and Blue channels.
If you want to copy Pixels from a PictureMBS to a PictureMBS, use CopyPixels.

This is the calculation:
Pixel.Red = PicturePixel.Red
Pixel.Green = PicturePixel.Green
Pixel.Blue = PicturePixel.Blue

This method does ignore a mask in the given picture and does not change set the alpha channel.

See also:

- 102.2.75 DrawPictureRGB(pic as picture)
- 102.2.76 DrawPictureRGB(pic as picture, DestX as Integer, DestY as Integer)
- 102.2.78 DrawPictureRGB(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer, SourceX as Integer, SourceY as Integer)
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This method does ignore a mask in the given picture and does not change set the alpha channel.
See also:

- 102.2.75 DrawPictureRGB(pic as picture) 15822
- 102.2.76 DrawPictureRGB(pic as picture, DestX as Integer, DestY as Integer) 15822
- 102.2.77 DrawPictureRGB(pic as picture, DestX as Integer, DestY as Integer, DestWidth as Integer, DestHeight as Integer) 15823

102.2.79 EngraveFilter(dest as PictureMBS, level as Integer) as PictureMBS

MBS Images Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Applies an engrave filter to the image. **Notes:**

if dest is nil, the picture factory is used to create a new picture.
On success dest or the new picture is returned.
If dest is not nil, it must match the size of the original picture.

Level must be between 0 and min(width,height).

Returns nil on any error.

102.2.80 FillRect(value as Integer)

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Fills the picture with the given color. **Example:**

```vbnet
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
p.FillRect(200)
window1.Backdrop = p.CopyPicture
```

**Notes:**

All channels are filled with the given value.
The range of value is 0 to 255.
Works with Gray, RGB and CMYK pictures and supports alpha channel.
See also:

- 102.2.81 FillRect(Value as integer, Alpha as Integer) 15825
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- 102.2.81 FillRect(Value as integer, Alpha as Integer) 15825
- 102.2.82 FillRect(x as Integer, y as Integer, width as Integer, height as Integer, value as Integer) 15825
- 102.2.83 FillRect(x as integer, y as integer, width as integer, height as integer, Value as integer, Alpha as Integer) 15826

102.2.81 FillRect(Value as integer, Alpha as Integer)

MBS Images Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Fills the given area of the picture with the given color.

**Notes:**
All channels are filled with the given value and alpha channel (if exists) with the alpha value. The range of value is 0 to 255. Works with Gray, RGB and CMYK pictures and supports alpha channel.

See also:
- 102.2.80 FillRect(value as Integer) 15824
- 102.2.82 FillRect(x as Integer, y as Integer, width as Integer, height as Integer, value as Integer) 15825
- 102.2.83 FillRect(x as integer, y as integer, width as integer, height as integer, Value as integer, Alpha as Integer) 15826

102.2.82 FillRect(x as Integer, y as Integer, width as Integer, height as Integer, value as Integer)

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Fills the given area of the picture with the given color.

**Example:**
```
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
p.FillRect(10, 10, 20, 20, 200)
window1.Backdrop = p.CopyPicture
```

**Notes:**
All channels are filled with the given value. The range of value is 0 to 255. Works with Gray, RGB and CMYK pictures and supports alpha channel.

See also:
- 102.2.80 FillRect(value as Integer) 15824
- 102.2.81 FillRect(Value as integer, Alpha as Integer) 15825
- 102.2.83 FillRect(x as integer, y as integer, width as integer, height as integer, Value as integer, Alpha as Integer) 15826
102.2.83 **FillRect(x as integer, y as integer, width as integer, height as integer, Value as integer, Alpha as Integer)**

MBS Images Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Fills the given area of the picture with the given color.

**Notes:**
All channels are filled with the given value and alpha channel (if exists) with the alpha value. The range of value is 0 to 255. Works with Gray, RGB and CMYK pictures and supports alpha channel.

See also:
- 102.2.80 FillRect(value as Integer)
- 102.2.81 FillRect(Value as integer, Alpha as Integer)
- 102.2.82 FillRect(x as Integer, y as Integer, width as Integer, height as Integer, value as Integer)

102.2.84 **FillRectApply(FillColor as color, alpha as Integer) as boolean**

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Fills the picture with the given color with using alpha.

**Example:**
```pascal
dim p as new PictureMBS(300, 300, PictureMBS.ImageFormatRGB)
p.FillRectRGB & c FF0000
call p.FillRectApply 0, 0, 50, 100, & c 00FF00, 0
call p.FillRectApply 50, 0, 50, 100, & c00FF00, 255*1/5
call p.FillRectApply 100, 0, 50, 100, & c0FF00, 255*2/5
call p.FillRectApply 150, 0, 50, 100, & c0FF00, 255*3/5
call p.FillRectApply 200, 0, 50, 100, & c0FF00, 255*4/5
call p.FillRectApply 250, 0, 50, 100, & c0FF00, 255*5/5
```

**Notes:**
Works with gray and RGB pictures.
The range of value is 0 to 255.
The alpha channel is ignored of the picture.
This function combines the RGB/Gray channels with the new fill color and the alpha value.

See also:
- 102.2.85 FillRectApply(red as Integer, green as Integer, blue as Integer, alpha as Integer) as boolean
102.2. FillRectApply(x as Integer, y as Integer, width as Integer, height as Integer, FillColor as color, alpha as Integer) as boolean

102.2.85 FillRectApply(red as Integer, green as Integer, blue as Integer, alpha as Integer) as boolean

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Fills the picture with the given color with using alpha.

**Notes:**
Works with gray and RGB pictures.
The range of value is 0 to 255.
The alpha channel is ignored of the picture.
This function combines the RGB/Gray channels with the new fill color and the alpha value.
See also:

- 102.2.84 FillRectApply(FillColor as color, alpha as Integer) as boolean
- 102.2.86 FillRectApply(x as Integer, y as Integer, width as Integer, height as Integer, FillColor as color, alpha as Integer) as boolean
- 102.2.87 FillRectApply(x as Integer, y as Integer, width as Integer, height as Integer, red as Integer, green as Integer, blue as Integer, alpha as Integer) as boolean

102.2.86 FillRectApply(x as Integer, y as Integer, width as Integer, height as Integer, FillColor as color, alpha as Integer) as boolean

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Fills the picture with the given color with using alpha.

**Notes:**
Works with gray and RGB pictures.
The range of value is 0 to 255.
The alpha channel is ignored of the picture.
This function combines the RGB/Gray channels with the new fill color and the alpha value.
See also:

- 102.2.84 FillRectApply(FillColor as color, alpha as Integer) as boolean
- 102.2.85 FillRectApply(red as Integer, green as Integer, blue as Integer, alpha as Integer) as boolean
- 102.2.87 FillRectApply(x as Integer, y as Integer, width as Integer, height as Integer, red as Integer, green as Integer, blue as Integer, alpha as Integer) as boolean
FillRectApply(x as Integer, y as Integer, width as Integer, height as Integer, red as Integer, green as Integer, blue as Integer, alpha as Integer) as boolean

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Fills the picture with the given color with using alpha. **Notes:**

Works with gray and RGB pictures.
The range of value is 0 to 255.
The alpha channel is ignored of the picture.
This function combines the RGB/Gray channels with the new fill color and the alpha value.
See also:

- 102.2.84 FillRectApply(FillColor as color, alpha as Integer) as boolean
- 102.2.85 FillRectApply(red as Integer, green as Integer, blue as Integer, alpha as Integer) as boolean
- 102.2.86 FillRectApply(x as Integer, y as Integer, width as Integer, height as Integer, FillColor as color, alpha as Integer) as boolean

FillRectRandom

MBS Images Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Fills the pixels with random values. **Example:**

```vbnet
dim p as new PictureMBS(1000,1000, PictureMBS.imageFormatRGB)
p.FillRectRandom
```

**Notes:** Works with Gray, RGB and CMYK pictures and supports alpha channel.
See also:

- 102.2.89 FillRectRandom(x as Integer, y as Integer, width as Integer, height as Integer)

FillRectRandom(x as Integer, y as Integer, width as Integer, height as Integer)

MBS Images Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Fills the pixels with random values. **Example:**

```vbnet
dim p as new PictureMBS(1000,1000, PictureMBS.imageFormatRGB)
p.FillRectRandom(0,0,100,100)
```
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Backdrop = p.CopyPicture

Notes: Works with Gray, RGB and CMYK pictures and supports alpha channel.
See also:

- 102.2.88 FillRectRandom

102.2.90 FillRectRGB(FillColor as color)

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Fills the picture with the given color.
Example:

dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
p.FillRectRGB(& cFF0000)
window1.Backdrop = p.CopyPicture

Notes: Works only if the picture has RGB channels.
See also:

- 102.2.91 FillRectRGB(FillColor as color, alpha as Integer)
- 102.2.92 FillRectRGB(red as Integer, green as Integer, blue as Integer)
- 102.2.93 FillRectRGB(red as Integer, green as Integer, blue as Integer, alpha as Integer)
- 102.2.94 FillRectRGB(x as Integer, y as Integer, width as Integer, height as Integer, FillColor as color)
- 102.2.95 FillRectRGB(x as Integer, y as Integer, width as Integer, height as Integer, FillColor as color, alpha as Integer)
- 102.2.96 FillRectRGB(x as Integer, y as Integer, width as Integer, height as Integer, red as Integer, green as Integer, blue as Integer)
- 102.2.97 FillRectRGB(x as Integer, y as Integer, width as Integer, height as Integer, red as Integer, green as Integer, blue as Integer, alpha as Integer)

102.2.91 FillRectRGB(FillColor as color, alpha as Integer)

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Fills the picture with the given color.
Example:
\texttt{dim\ l\ as\ Picture\ =\ LogoMBS(500)}
\texttt{dim\ p\ as\ new\ PictureMBS(l)}
\texttt{p.FillRectRGB(CFF0000,\ 0)}
\texttt{window1.Backdrop\ =\ p.CopyPicture}

\textbf{Notes:}

Works only if the picture has RGB channels.
Alpha is ignored if the picture does not have an alpha channel.
The range of a laho is 0 to 255.
See also:

- \texttt{102.2.90\ FillRectRGB(FillColor as color)}
- \texttt{102.2.92\ FillRectRGB(red as Integer,\ green as Integer,\ blue as Integer)}
- \texttt{102.2.93\ FillRectRGB(red as Integer,\ green as Integer,\ blue as Integer,\ alpha as Integer)}
- \texttt{102.2.94\ FillRectRGB(x\ as\ Integer,\ y\ as\ Integer,\ width\ as\ Integer,\ height\ as\ Integer,\ FillColor\ as\ color)}
- \texttt{102.2.95\ FillRectRGB(x\ as\ Integer,\ y\ as\ Integer,\ width\ as\ Integer,\ height\ as\ Integer,\ FillColor\ as\ color,\ alpha\ as\ Integer)}
- \texttt{102.2.96\ FillRectRGB(x\ as\ Integer,\ y\ as\ Integer,\ width\ as\ Integer,\ height\ as\ Integer,\ red\ as\ Integer,\ green\ as\ Integer,\ blue\ as\ Integer)}
- \texttt{102.2.97\ FillRectRGB(x\ as\ Integer,\ y\ as\ Integer,\ width\ as\ Integer,\ height\ as\ Integer,\ red\ as\ Integer,\ green\ as\ Integer,\ blue\ as\ Integer,\ alpha\ as\ Integer)}

\textbf{102.2.92\ \ FillRectRGB(red\ as\ Integer,\ green\ as\ Integer,\ blue\ as\ Integer)}

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. \textbf{Function:} Fills the picture with the given color.

\textbf{Example:}

\texttt{dim\ l\ as\ Picture\ =\ LogoMBS(500)}
\texttt{dim\ p\ as\ new\ PictureMBS(l)}
\texttt{p.FillRectRGB(255,\ 0,\ 0)}
\texttt{window1.Backdrop\ =\ p.CopyPicture}

\textbf{Notes:}

Works only if the picture has RGB channels.
The ranges of red, green and blue are 0 to 255.
See also:
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- 102.2.90 FillRectRGB(FillColor as color)
- 102.2.91 FillRectRGB(FillColor as color, alpha as Integer)
- 102.2.93 FillRectRGB(red as Integer, green as Integer, blue as Integer, alpha as Integer)
- 102.2.94 FillRectRGB(x as Integer, y as Integer, width as Integer, height as Integer, FillColor as color)
- 102.2.95 FillRectRGB(x as Integer, y as Integer, width as Integer, height as Integer, FillColor as color, alpha as Integer)
- 102.2.96 FillRectRGB(x as Integer, y as Integer, width as Integer, height as Integer, red as Integer, green as Integer, blue as Integer)
- 102.2.97 FillRectRGB(x as Integer, y as Integer, width as Integer, height as Integer, red as Integer, green as Integer, blue as Integer, alpha as Integer)

102.2.93 FillRectRGB(red as Integer, green as Integer, blue as Integer, alpha as Integer)

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Fills the picture with the given color.

**Example:**

```vbs
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
p.FillRectRGB(255, 0, 0, 0)
window1.Backdrop = p.CopyPicture
```

**Notes:**

Works only if the picture has RGB channels.

Alpha is ignored if the picture does not have an alpha channel.

The ranges of alpha, red, green and blue are 0 to 255.

See also:
102.2.94 FillRectRGB(x as Integer, y as Integer, width as Integer, height as Integer, FillColor as color)

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Fills the given area of the picture with the given color.

**Example:**
```vba
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
p.FillRectRGB(10,10,20,20, & cFF0000)
window1.Backdrop = p.CopyPicture
```

**Notes:** Works only if the picture has RGB channels.

See also:

- 102.2.90 FillRectRGB(FillColor as color)
- 102.2.91 FillRectRGB(FillColor as color, alpha as Integer)
- 102.2.92 FillRectRGB(red as Integer, green as Integer, blue as Integer)
- 102.2.93 FillRectRGB(red as Integer, green as Integer, blue as Integer, alpha as Integer)
- 102.2.95 FillRectRGB(x as Integer, y as Integer, width as Integer, height as Integer, FillColor as color, alpha as Integer)
- 102.2.96 FillRectRGB(x as Integer, y as Integer, width as Integer, height as Integer, red as Integer, green as Integer, blue as Integer)
- 102.2.97 FillRectRGB(x as Integer, y as Integer, width as Integer, height as Integer, red as Integer, green as Integer, blue as Integer, alpha as Integer)
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p.FillRectRGB(10,10,20,20, & cFF0000, 0)
window1.Backdrop = p.CopyPicture

Notes:

Works only if the picture has RGB channels.
Alpha is ignored if the picture does not have an alpha channel.
The range of alpha is 0 to 255.
See also:

- 102.2.90 FillRectRGB(FillColor as color)
- 102.2.91 FillRectRGB(FillColor as color, alpha as Integer)
- 102.2.92 FillRectRGB(red as Integer, green as Integer, blue as Integer)
- 102.2.93 FillRectRGB(red as Integer, green as Integer, blue as Integer, alpha as Integer)
- 102.2.94 FillRectRGB(x as Integer, y as Integer, width as Integer, height as Integer, FillColor as color)
- 102.2.96 FillRectRGB(x as Integer, y as Integer, width as Integer, height as Integer, red as Integer, green as Integer, blue as Integer)
- 102.2.97 FillRectRGB(x as Integer, y as Integer, width as Integer, height as Integer, red as Integer, green as Integer, blue as Integer, alpha as Integer)

102.2.96 FillRectRGB(x as Integer, y as Integer, width as Integer, height as Integer, red as Integer, green as Integer, blue as Integer)

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Fills the given area of the picture with the given color.

Example:

dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
p.FillRectRGB(10,10,20,20, 255, 0, 0)
window1.Backdrop = p.CopyPicture

Notes:

Works only if the picture has RGB channels.
The ranges of red, green and blue are 0 to 255.
See also:

- 102.2.90 FillRectRGB(FillColor as color)
102.2.97  **FillRectRGB(x as Integer, y as Integer, width as Integer, height as Integer, red as Integer, green as Integer, blue as Integer, alpha as Integer)**

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Fills the given area of the picture with the given color.

**Example:**

```vbnet
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
p.FillRectRGB(10, 10, 20, 20, 255, 0, 0, 0)
window1.Backdrop = p.CopyPicture
```

**Notes:**

Works only if the picture has RGB channels.

Alpha is ignored if the picture does not have an alpha channel.

See also:
102.2.98 GainFilter(dest as PictureMBS, gain as Double, bias as Double) as PictureMBS

MBS Images Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Applies the gain filter to the picture.

**Notes:**
- If dest is nil, the picture factory is used to create a new picture.
- On success dest or the new picture is returned.
- If dest is not nil, it must match the size of the original picture.

Returns nil on any error.

102.2.99 GammaFilter(dest as PictureMBS, gamma as Double) as PictureMBS

MBS Images Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Changes the gamma value of the picture.

**Notes:**
- If dest is nil, the picture factory is used to create a new picture.
- On success dest or the new picture is returned.
- If dest is not nil, it must match the size of the original picture.

Returns nil on any error.

See also:
- 102.2.100 GammaFilter(dest as PictureMBS, gamma as Double, alphaGamma as Double) as PictureMBS
- 102.2.101 GammaFilter(dest as PictureMBS, redGamma as Double, greenGamma as Double, blueGamma as Double) as PictureMBS
- 102.2.102 GammaFilter(dest as PictureMBS, redGamma as Double, greenGamma as Double, blueGamma as Double, alphaGamma as Double) as PictureMBS

102.2.100 GammaFilter(dest as PictureMBS, gamma as Double, alphaGamma as Double) as PictureMBS

MBS Images Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Changes the gamma value of the picture.

**Notes:**
- If dest is nil, the picture factory is used to create a new picture.
- On success dest or the new picture is returned.
If dest is not nil, it must match the size of the original picture.

If the picture has no alpha channel, the alpha parameter is ignored.

Returns nil on any error.

See also:

- 102.2.99 GammaFilter(dest as PictureMBS, gamma as Double) as PictureMBS
- 102.2.101 GammaFilter(dest as PictureMBS, redGamma as Double, greenGamma as Double, blueGamma as Double) as PictureMBS
- 102.2.102 GammaFilter(dest as PictureMBS, redGamma as Double, greenGamma as Double, blueGamma as Double, alphaGamma as Double) as PictureMBS

102.2.101 GammaFilter(dest as PictureMBS, redGamma as Double, greenGamma as Double, blueGamma as Double) as PictureMBS

MBS Images Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Changes the gamma value of the picture.

**Notes:**

If dest is nil, the picture factory is used to create a new picture.

On success dest or the new picture is returned.

If dest is not nil, it must match the size of the original picture.

For grayscale pictures the gray color is calculated from red, green and blue value.

Returns nil on any error.

See also:

- 102.2.99 GammaFilter(dest as PictureMBS, gamma as Double) as PictureMBS
- 102.2.100 GammaFilter(dest as PictureMBS, gamma as Double, alphaGamma as Double) as PictureMBS
- 102.2.102 GammaFilter(dest as PictureMBS, redGamma as Double, greenGamma as Double, blueGamma as Double, alphaGamma as Double) as PictureMBS

102.2.102 GammaFilter(dest as PictureMBS, redGamma as Double, greenGamma as Double, blueGamma as Double, alphaGamma as Double) as PictureMBS

MBS Images Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Changes the gamma value of the picture.
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**Notes:**

If dest is nil, the picture factory is used to create a new picture. On success dest or the new picture is returned.
If dest is not nil, it must match the size of the original picture.

For grayscale pictures the gray color is calculated from red, green and blue value.
If the picture has no alpha channel, the alpha parameter is ignored.

Returns nil on any error.

See also:

- 102.2.99 GammaFilter(dest as PictureMBS, gamma as Double) as PictureMBS
- 102.2.100 GammaFilter(dest as PictureMBS, gamma as Double, alphaGamma as Double) as PictureMBS
- 102.2.101 GammaFilter(dest as PictureMBS, redGamma as Double, greenGamma as Double, blueGamma as Double) as PictureMBS
102.2.103  GrayChannel as PictureMBS

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The gray channel as a new PictureMBS object.  
**Example:**
```plaintext
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatRGB)  
dim r as PictureMBS = p.GrayChannel  
r.fillrect(100) // fill only gray channel
```

**Notes:**
Returns nil if this channel does not exist.
No copy is made of the actual pixel data. Modifying the channel picture will modify the original picture.
Use this function to access the pixels of the channel directly.
The resulting PictureMBS object is a grayscale picture.

102.2.104  GreenChannel as PictureMBS

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The green channel as a new PictureMBS object.  
**Example:**
```plaintext
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatRGB)  
dim r as PictureMBS = p.GreenChannel  
r.fillrect(100) // fill only green channel
```

**Notes:**
Returns nil if this channel does not exist.
No copy is made of the actual pixel data. Modifying the channel picture will modify the original picture.
Use this function to access the pixels of the channel directly.
The resulting PictureMBS object is a grayscale picture.

102.2.105  HMirror

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Mirrors the image content horizontally (flip).  
**Example:**
```plaintext
// get some picture  
dim l as Picture = LogoMBS(500)
```
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```plaintext
// create new image
dim p as new PictureMBS()
// mirror
p.HMirror
// show in window
window1Backdrop = p.CopyPicture
```

**Notes:** Works with Gray, RGB and CMYK pictures and supports alpha channel.

### 102.2.106 Invert

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Inverts the image data.
**Notes:** Works with Gray, RGB and CMYK pictures and supports alpha channel.
See also:
- 102.2.107 Invert(x as Integer, y as Integer, w as Integer, h as Integer)

### 102.2.107 Invert(x as Integer, y as Integer, w as Integer, h as Integer)

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Inverts the image data in the given area.
**Notes:** Works with Gray, RGB and CMYK pictures and supports alpha channel.
See also:
- 102.2.106 Invert

### 102.2.108 MagentaChannel as PictureMBS

MBS Images Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The magenta channel of a CMYK picture as a new PictureMBS object.
**Notes:**
Returns nil if this channel does not exist.
No copy is made of the actual pixel data. Modifying the channel picture will modify the original picture.
Use this function to access the pixels of the channel directly.
The resulting PictureMBS object is a grayscale picture.
102.2.109 MapInRows(FirstRow as Integer, LastRow as Integer) as boolean


**Notes:**
This function does nothing if given rows are already mapped in.

Fails if range is invalid, image is invalid or mapping is not possible.
Returns true if not a mapped image.

Will resize memory buffer size to be big enough for those rows.

102.2.110 MirroredView as PictureMBS

MBS Images Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new PictureMBS object which draws into the existing one, but has all rows vertically mirrored.

**Notes:** So if the new picture draws into the first row, the change will be in the last row of the original picture.

102.2.111 Multiply

MBS Images Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Multiplies alpha channel of whole picture.

**Notes:** Pictures with alpha channel must be multiplied, while pictures with mask have the alpha unmultiplied and inverse in the mask.
See also:

- 102.2.112 Multiply(x as integer, y as integer, width as integer, height as integer)

102.2.112 Multiply(x as integer, y as integer, width as integer, height as integer)

MBS Images Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Multiplies alpha channel of a rectangle of the picture.

**Notes:** Pictures with alpha channel must be multiplied, while pictures with mask have the alpha unmultiplied and inverse in the mask.
See also:

- 102.2.111 Multiply
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102.2.113 **NeonFilter**(dest as PictureMBS) as PictureMBS

MBS Images Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Applies a neon filter to the image.

**Example:**

```plaintext
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
p = p.NeonFilter(nil)
window1.Backdrop = p.CopyPicture
```

**Notes:**
if dest is nil, the picture factory is used to create a new picture.
On success dest or the new picture is returned.
If dest is not nil, it must match the size of the original picture.

Returns nil on any error.
Works with Gray, RGB and CMYK pictures and supports alpha channel.

102.2.114 **OilFilter**(dest as PictureMBS, levels as Integer, range as Integer) as PictureMBS

MBS Images Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Applies a oil filter to the image.

**Example:**

```plaintext
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
p = p.OilFilter(nil,5,5)
window1.Backdrop = p.CopyPicture
```

**Notes:**
if dest is nil, the picture factory is used to create a new picture.
On success dest or the new picture is returned.
If dest is not nil, it must match the size of the original picture.

Levels must be between 0 and 256.
Range must be between 0 and min(width,height).

Returns nil on any error.
Works with Gray, RGB and CMYK pictures and supports alpha channel.

102.2.115  RawRow(index as Integer) as memoryblock

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a memoryblock with the data of this row. **Example:**

```vbs
// create new image
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatRGB)
// copy row
dim m as MemoryBlock = p.RawRow(10)
// modify directly
m.FillBytesMBS(10,100,200)
// show in window
window1.Backdrop = p.CopyPicture
```

**Notes:**
This memoryblock is pointing to the original data, so any modification is applied to the picture. Returns nil on any error.
May raise OutOfBoundsException for invalid index.

For pictures using virtual memory, this memoryblock can become invalid for the next call to any PictureMBS method!

102.2.116  RawRowPtr(index as Integer) as Ptr

MBS Images Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a Ptr pointing to the data of this row. **Notes:**
This ptr is pointing to the original data, so any modification is applied to the picture. Returns nil on any error.
May raise OutOfBoundsException for invalid index.

For pictures using virtual memory, this ptr can become invalid for the next call to any PictureMBS method!
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102.2.117 RedChannel as PictureMBS

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The red channel as a new PictureMBS object. **Example:**

```vba
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatRGB)
dim r as PictureMBS = p.RedChannel
r.fillRect(100) // fill only red channel
```

**Notes:**

Returns nil if this channel does not exist. No copy is made of the actual pixel data. Modifying the channel picture will modify the original picture. Use this function to access the pixels of the channel directly. The resulting PictureMBS object is a grayscale picture.

102.2.118 RGBChannels as PictureMBS

MBS Images Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The RGB channels as a new PictureMBS object. **Example:**

```vba
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatRGBA)
dim r as PictureMBS = p.RGBChannels
r.fillRect(100) // fill only color channels
```

**Notes:**

Returns nil if the image is not a RGB picture. No copy is made of the actual pixel data. Modifying the channel picture will modify the original picture. Use this function to access the RGB pixels directly without modifying an alpha channel. The resulting PictureMBS object is a RGB picture.

102.2.119 RGBToGray(mode as Integer = 0) as boolean

MBS Images Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Turns picture into grayscale. **Notes:**

Only for RGB pictures and picture stays RGB, but all channels have same color. Returns true on success and false on failure.
Modes:

0  \[ y = 0.33 \times R + 0.5 \times G + 0.16 \times B \]  Faster version of 3
1  \[ y = 0.375 \times R + 0.5 \times G + 0.125 \times B \]  Faster version of 3
2  \[ y = 0.2126 \times R + 0.7152 \times G + 0.0722 \times B \]  Photometric/digital ITU-R
3  \[ y = 0.299 \times R + 0.587 \times G + 0.114 \times B \]  Digital CCIR601
4  \[ y = 0.300 \times R + 0.588 \times G + 0.112 \times B \]  Faster version of 3

Mode 2 and 3 uses doubles and mode 0, 4 and 1 use integers so they should be faster.
Still Mode 0 and 1 are just approximation formulas which trade accuracy for performance.

e.g. a red pixel (FF0000) will turn to 555555 in Mode 0, 5F5F5F in Mode 1, 363636 in Mode 2 and 4C4C4C in Mode 3 and 4.

102.2.120 Rotate(angle as Double, Red as Integer = 0, Green as Integer = 0, Blue as Integer = 0, Alpha as Integer = 0, Gray as Integer = 0, Cyan as Integer = 0, Magenta as Integer = 0, Yellow as Integer = 0, Black as Integer = 0) as PictureMBS

MBS Images Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Rotates the picture by the given degree.

**Example:**

```pascal
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
window1Backdrop = p.CopyPicture
```

**Notes:**

With Red, Blue, Green, Alpha and Gray specify the color of the fill color.

If dest is nil, the PictureFactoryMBS object (local on self or global) is used to create the new picture.
Works with Gray, RGB and CMYK pictures and supports alpha channel.

102.2.121 Rotate180

MBS Images Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Rotates the picture by 180 degree.
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Example:

dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
p.Rotate180
window1.Backdrop = p.CopyPicture

Notes:

Same as HMirror and VMirror together.

There are two Rotate180 methods. One makes a copy and one not. This one does not make a copy.

Works with Gray, RGB and CMYK pictures and supports alpha channel.

See also:

• 102.2.122 Rotate180(dest as PictureMBS=nil) as PictureMBS

102.2.122 Rotate180(dest as PictureMBS=nil) as PictureMBS


Example:

dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
p = p.Rotate180
window1.Backdrop = p.CopyPicture

Notes:

If dest is nil, the PictureFactoryMBS object (local on self or global) is used to create the new picture.

Same as HMirror and VMirror together.

There are two Rotate180 methods. One makes a copy and one not. This one does make a copy.

Works with Gray, RGB and CMYK pictures and supports alpha channel.

See also:

• 102.2.121 Rotate180
102.2.123  **Rotate270(dest as PictureMBS=nil) as PictureMBS**

MBS Images Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Rotates the picture by 270 degree.

**Example:**
```
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
p = p.Rotate270
window1.Backdrop = p.CopyPicture
```

**Notes:**
If dest is nil, the PictureFactoryMBS object (local on self or global) is used to create the new picture. Works with Gray, RGB and CMYK pictures and supports alpha channel.

102.2.124  **Rotate270slow(dest as PictureMBS=nil) as PictureMBS**


**Example:**
```
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
p = p.Rotate270slow
window1.Backdrop = p.CopyPicture
```

**Notes:**
If dest is nil, the PictureFactoryMBS object (local on self or global) is used to create the new picture. Works with Gray, RGB and CMYK pictures and supports alpha channel.

102.2.125  **Rotate90(dest as PictureMBS=nil) as PictureMBS**

MBS Images Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Rotates the picture by 90 degree.

**Example:**
```
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
p = p.Rotate90
window1.Backdrop = p.CopyPicture
```
Notes:
If dest is nil, the PictureFactoryMBS object (local on self or global) is used to create the new picture. Works with Gray, RGB and CMYK pictures and supports alpha channel.

102.2.126 Rotate90slow(dest as PictureMBS=nil) as PictureMBS

MBS Images Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Rotates the picture by 90 degree. **Example:**
```plaintext
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
p = p.Rotate90slow
window1.Backdrop = p.CopyPicture
```

Notes:
If dest is nil, the PictureFactoryMBS object (local on self or global) is used to create the new picture. Works with Gray, RGB and CMYK pictures and supports alpha channel.

102.2.127 Scale(source as PictureMBS, temp as PictureMBS, mode as Integer, width as Integer, height as Integer) as boolean

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Scales the picture to the given size. **Notes:** The final image is stored in the PictureMBS object you call this method on. On low memory this function can fail or the image may look bad. (e.g. all black)

The size of the temporary picture must have the size of the destination width and the source height. Use ImageFormatScaling when you create the temp image to give it the correct size.

For scaling with the same size as the picture already has, the scaling is still performed.

Returns true on success and false on any error. (e.g. width=0)

Use the constants for the mod:
102.2.128  ScaleFast(source as PictureMBS, width as Integer, height as Integer) as boolean

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**
Scales the picture to the new size fast.

**Notes:**
The final image is stored in the PictureMBS object you call this method on.
Returns true on success and false on failure.

This is a low quality algorithm, but it is fast.

This function is optimized for several image formats:
- Gray to Gray.
- RGB to Gray uses R*0.3+G*0.59+B*0.11.
- RGB to RGB.
- Gray to RGB fill red, green and blue with the same gray value.
If an alpha channel exists in both images, it is copied.
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102.2.129  ScaleMT(threads as Integer, source as PictureMBS, temp as PictureMBS, mode as Integer, width as Integer, height as Integer) as boolean

Notes:
Same as Scale, but with additional multithreading.
Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.
Work is split into several threads for greater speed.

Threads parameter specifies how many threads you want to use:
A negative value disables threading, zero will use one thread for each CPU core and a positive number specifies the thread count.

If one of the pictures used has IsMapping = true, the plugin calls Scale() function.

102.2.130  SolarizeFilter(dest as PictureMBS) as PictureMBS

Example:

// get some picture
dim l as Picture = LogoMBS(500)
// create new image
dim p as new PictureMBS(l)
// add filter
p = p.SolarizeFilter(nil)
// show in window
window1.Backdrop = p.CopyPicture

Notes:
if dest is nil, the picture factory is used to create a new picture.
On success dest or the new picture is returned.
If dest is not nil, it must match the size of the original picture.

Returns nil on any error.
Works with Gray, RGB and CMYK pictures and supports alpha channel.
102.2.131 StampFilter(dest as PictureMBS, radius as Double, threshold as Double, softness as Double, Black as Color, White as Color) as PictureMBS

MBS Images Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Applies the stamp filter to the picture. **Notes:** if dest is nil, the picture factory is used to create a new picture. On success dest or the new picture is returned. If dest is not nil, it must match the size of the original picture. Returns nil on any error. Works with Gray and RGB pictures and supports alpha channel.

102.2.132 TransferFilter(dest as PictureMBS, gray() as Integer) as PictureMBS

MBS Images Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Transfers a picture to another picture by looking up each pixel value in the given array. **Example:**
```
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)

dim gray(256) as Integer

for i as Integer = 0 to 255
gray(i)=255-i // invert
next

// inverts the picture
dim d as PictureMBS = p.TransferFilter(nil,gray)

Backdrop = d.CopyPicture
```

**Notes:** if dest is nil, the picture factory is used to create a new picture. On success dest or the new picture is returned. If dest is not nil, it must match the size of the original picture.

The array for gray must have 256 entries starting with index 0. For RGB pictures the gray array is used for all three channels.
Returns nil on any error.

See also:

- 102.2.133 TransferFilter(dest as PictureMBS, gray() as Integer, alpha() as Integer) as PictureMBS
- 102.2.134 TransferFilter(dest as PictureMBS, red() as Integer, green() as Integer, blue() as Integer) as PictureMBS
- 102.2.135 TransferFilter(dest as PictureMBS, red() as Integer, green() as Integer, blue() as Integer, alpha() as Integer) as PictureMBS

### 102.2.133 TransferFilter(dest as PictureMBS, gray() as Integer, alpha() as Integer) as PictureMBS

MBS Images Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Transfers a picture to another picture by looking up each pixel value in the given arrays.

**Notes:**

- If dest is nil, the picture factory is used to create a new picture.
- On success dest or the new picture is returned.
- If dest is not nil, it must match the size of the original picture.

The arrays for gray and alpha must have 256 entries starting with index 0.

For RGB pictures the gray array is used for all three channels.

If the picture has no alpha channel, the alpha parameter is ignored.

Returns nil on any error.

See also:

- 102.2.132 TransferFilter(dest as PictureMBS, gray() as Integer) as PictureMBS
- 102.2.134 TransferFilter(dest as PictureMBS, red() as Integer, green() as Integer, blue() as Integer) as PictureMBS
- 102.2.135 TransferFilter(dest as PictureMBS, red() as Integer, green() as Integer, blue() as Integer, alpha() as Integer) as PictureMBS

### 102.2.134 TransferFilter(dest as PictureMBS, red() as Integer, green() as Integer, blue() as Integer) as PictureMBS

MBS Images Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Transfers a picture to another picture by looking up each pixel value in the given arrays.

**Example:**

```lisp
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
```
dim red(256) as Integer
dim green(256) as Integer
dim blue(256) as Integer

for i as Integer = 0 to 255
  red(i)=i
  green(i)=i
  blue(i)=255-i // invert blue
next

dim d as PictureMBS = p.TransferFilter(nil,red,green,blue)

Backdrop = d.CopyPicture

Notes:

If dest is nil, the picture factory is used to create a new picture.
On success dest or the new picture is returned.
If dest is not nil, it must match the size of the original picture.

The arrays for red, green and blue must have 256 entries starting with index 0.
For grayscale pictures the green array is used for the gray channel.

Returns nil on any error.
See also:

- 102.2.132 TransferFilter(dest as PictureMBS, gray() as Integer) as PictureMBS 15850
- 102.2.133 TransferFilter(dest as PictureMBS, gray() as Integer, alpha() as Integer) as PictureMBS 15851
- 102.2.135 TransferFilter(dest as PictureMBS, red() as Integer, green() as Integer, blue() as Integer, alpha() as Integer) as PictureMBS 15852

102.2.135 TransferFilter(dest as PictureMBS, red() as Integer, green() as Integer, blue() as Integer, alpha() as Integer) as PictureMBS

MBS Images Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Transfers a picture to another picture by looking up each pixel value in the given arrays.

**Notes:**

If dest is nil, the picture factory is used to create a new picture.
On success dest or the new picture is returned.
If dest is not nil, it must match the size of the original picture.
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The arrays for red, green, blue and alpha must have 256 entries starting with index 0.
For grayscale pictures the green array is used for the gray channel.
If the picture has no alpha channel, the alpha parameter is ignored.

Returns nil on any error.

See also:

- 102.2.132 TransferFilter(dest as PictureMBS, gray() as Integer) as PictureMBS
- 102.2.133 TransferFilter(dest as PictureMBS, gray() as Integer, alpha() as Integer) as PictureMBS
- 102.2.134 TransferFilter(dest as PictureMBS, red() as Integer, green() as Integer, blue() as Integer) as PictureMBS

**102.2.136  Unmultiply**

MBS Images Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Un-multiplies alpha channel for whole picture.
**Notes:** Pictures with alpha channel must be multiplied, while pictures with mask have the alpha unmultiplied and inverse in the mask.

See also:

- 102.2.137 Unmultiply(x as integer, y as integer, width as integer, height as integer)

**102.2.137  Unmultiply(x as integer, y as integer, width as integer, height as integer)**

MBS Images Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Un-multiplies alpha channel for given rectangle in picture.
**Notes:** Pictures with alpha channel must be multiplied, while pictures with mask have the alpha unmultiplied and inverse in the mask.

See also:

- 102.2.136 Unmultiply

**102.2.138  UnsharpFilter(origpixels as PictureMBS, Amount as Double, Threshold as Integer) as boolean**

**Notes:**
You may want to run the BoxBlur filter first before using the unsharp filter.
if dest is nil, the picture factory is used to create a new picture. On success dest or the new picture is returned. If dest is not nil, it must match the size of the original picture.

Returns nil on any error.

Works with Gray, RGB and CMYK pictures and supports alpha channel.

102.2.139 VMirror

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Mirrors the image content vertically. **Example:**
```vbnet
// get some picture
dim l as Picture = LogoMBS(500)
// create new image
dim p as new PictureMBS(l)
// mirror
p.VMirror
// show in window
window1.Backdrop = p.CopyPicture
```

**Notes:** Works with Gray, RGB and CMYK pictures and supports alpha channel.

102.2.140 YellowChannel as PictureMBS

MBS Images Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The yellow channel of a CMYK picture as a new PictureMBS object. **Notes:**

Returns nil if this channel does not exist.
No copy is made of the actual pixel data. Modifying the channel picture will modify the original picture. Use this function to access the pixels of the channel directly. The resulting PictureMBS object is a grayscale picture.
102.2.141 Properties

102.2.142 AlphaOffset as Integer

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal offset for pixels in the alpha channel.

**Example:**
```vba
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatGA)
MsgBox str(p.AlphaOffset)
```

**Notes:** (Read and Write property)

102.2.143 BitsPerComponent as Integer

MBS Images Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of bits per component.

**Notes:**
Value is 8 for most pictures except those with format ImageFormatGray16 which use 16.
(Read only property)

102.2.144 BlackOffset as Integer

MBS Images Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal offset for pixels in the black channel.

**Example:**
```vba
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatCMYK)
MsgBox str(p.BlackOffset)
```

**Notes:** (Read only property)

102.2.145 BlueOffset as Integer

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal offset for pixels in the blue channel.

**Example:**
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
MsgBox str(p.BlueOffset)

Notes: (Read and Write property)

102.2.146 Channel as String

MBS Images Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The name of the channel.

**Example:**

```vbs```
dim p as new Picture(100,100,32)
dim q as new PictureMBS(p)

dim channels() as string = q.Channels

dim cr as PictureMBS = q.RedChannel
dim cg as PictureMBS = q.GreenChannel
dim cb as PictureMBS = q.BlueChannel
dim c0 as pictureMBS = q.Channel(0)
dim c1 as pictureMBS = q.Channel(1)
dim c2 as pictureMBS = q.Channel(2)

dim crn as string = cg.Channel
dim cgn as string = cg.Channel
dim cbn as string = cg.Channel
dim c0n as string = c0.Channel
dim c1n as string = c1.Channel
dim c2n as string = c2.Channel
```

Break // check in debugger

Notes:

For pictures which represent a channel of a bigger picture.
(Read only property)

See also:

- 102.2.18 Channel(index as Integer) as PictureMBS
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102.2.147 **ChannelCount as Integer**

MBS Images Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The number of channels in this picture.
**Notes:**
1 for gray, 2 for gray+alpha, 3 for RGB, 4 for RGB+alpha or CMYK and 5 for CMYK+alpha.
(Read only property)

102.2.148 **CyanOffset as Integer**

MBS Images Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The internal offset for pixels in the cyan channel.
**Example:**
```vbs
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatCMYK)
MsgBox str(p.CyanOffset)
```
**Notes:** (Read only property)

102.2.149 **DebugPicture as Picture**

MBS Images Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The picture content to view in the debugger.
**Notes:**
If DebugPictureEnabled is set to true in your code you can use the DebugPicture property to watch the picture content in the debugger. For speed reasons the size of the debug picture is limited to 512 by 512 pixels. (that could be increased)
(Read only property)

102.2.150 **DebugPictureEnabled as Boolean**

MBS Images Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether you want to use the DebugPicture property.
**Notes:**
If DebugPictureEnabled is set to true in your code you can use the DebugPicture property to watch the picture content in the debugger. For speed reasons the size of the debug picture is limited to 512 by 512 pixels. (that could be increased)
(Read and Write property)
102.2.151 Factory as PictureFactoryMBS

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The local factory to be used for pictures created in this picture.  
**Notes:**  
If one of the functions in this PictureMBS instance needs a new PictureMBS object, this factory is asked first.  
(Read and Write property)

102.2.152 GrayOffset as Integer

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal offset for pixels in the gray channel.  
**Example:**
```vbs
    dim p as new PictureMBS(100,100,PictureBox.MBS.ImageFormatAG)  
    MsgBox str(p.GrayOffset)
```

**Notes:** (Read and Write property)

102.2.153 GreenOffset as Integer

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal offset for pixels in the green channel.  
**Example:**
```vbs
    dim l as Picture = LogoMBS(500)  
    dim p as new PictureMBS(l)  
    MsgBox str(p.GreenOffset)
```

**Notes:** (Read and Write property)

102.2.154 HasAlpha as Boolean

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the picture has an alpha channel.  
**Example:**
102.2. CLASS PICTUREMBS

```vbscript
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatGA)
MsgBox str(p.HasAlpha)
```

**Notes:** (Read only property)

102.2.155 HasBlack as Boolean

MBS Images Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the picture has a blue channel. 
**Example:**
```vbscript
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
MsgBox str(p.HasBlack)
```

**Notes:** (Read only property)

102.2.156 HasBlue as Boolean

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the picture has a blue channel. 
**Example:**
```vbscript
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
MsgBox str(p.HasBlue)
```

**Notes:** (Read only property)

102.2.157 HasCyan as Boolean

MBS Images Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the picture has a blue channel. 
**Example:**
```vbscript
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
MsgBox str(p.HasCyan)
```
Notes: (Read only property)

102.2.158 HasGray as Boolean

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the picture has a gray channel. **Example:**

```vbs
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatGA)
MsgBox str(p.HasGray)
```

Notes: (Read only property)

102.2.159 HasGreen as Boolean

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the picture has a green channel. **Example:**

```vbs
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
MsgBox str(p.HasGreen)
```

Notes: (Read only property)

102.2.160 HasMagenta as Boolean

MBS Images Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the picture has a blue channel. **Example:**

```vbs
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
MsgBox str(p.HasMagenta)
```
102.2.161  HasRed as Boolean

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the picture has a channel.

**Example:**

```vba
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
MsgBox str(p.HasRed)
```

**Notes:** (Read only property)

102.2.162  HasYellow as Boolean

MBS Images Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the picture has a blue channel.

**Example:**

```vba
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
MsgBox str(p.HasYellow)
```

**Notes:** (Read only property)

102.2.163  Height as Integer

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The height of the picture in pixels.

**Example:**

```vba
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
MsgBox str(p.Height)
```

**Notes:** (Read only property)
102.2.164  ImageFormat as Integer


Example:

```
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
MsgBox str(p.ImageFormat)
```

Notes:

See the ImageFormat* constants.  
(Read only property)

102.2.165  ImageFormatString as String


Example:

```
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
MsgBox p.ImageFormatString
```

Notes:

Returns for example ”RGB” for ImageFormatRGB.  
(Read only property)

102.2.166  IsCMYK as Boolean

MBS Images Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Whether the picture is a CMYK picture.

Example:

```
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatCMYK)
MsgBox str(p.IsCMYK)
```

Notes:
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HasCyan, HasMagenta, HasYellow and HasBlack are true if IsRGB is true.
(Read only property)

102.2.167  IsGray as Boolean

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this picture is a grayscale picture.
**Example:**
```vbs
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatGA)
MsgBox str(p.IsGray)
```

**Notes:**
HasGray is true if IsGray is true.
(Read only property)

102.2.168  IsMapping as Boolean

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this picture uses virtual memory.
**Notes:**
If IsMapping is true you should not use the Memory property or the Clone function.
(Read only property)

102.2.169  IsRGB as Boolean

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the picture is a RGB picture.
**Example:**
```vbs
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
MsgBox str(p.IsRGB)
```

**Notes:**
HasRed, HasBlue and HasGreen are true if IsRGB is true.
(Read only property)
102.2.170  MagentaOffset as Integer

MBS Images Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal offset for pixels in the magenta channel.  
**Example:**
```vba
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatCMYK)
MsgBox str(p.MagentaOffset)
```

**Notes:** (Read only property)

---

102.2.171  MappingBlockSize as Int64

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The block size for a picture using virtual memory.  
**Notes:** (Read and Write property)

---

102.2.172  MappingFirstRow as Integer

**Notes:**
- Only for mapped images.
- Value is -1 if no data is mapped in.  
  (Read only property)

---

102.2.173  MappingLastRow as Integer

MBS Images Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Last row mapped in memory.  
**Notes:**
- Only for mapped images.
- Value is -1 if no data is mapped in.  
  (Read only property)
102.2.174  MappingRows as Integer

MBS Images Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Number of rows for mapping.
**Notes:**
For a mapped image how many rows fit in the mapping buffer.
(Read only property)

102.2.175  Memory as Memoryblock

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns a memoryblock without size pointing to the current pixel buffer.
**Notes:**
Use only if IsMapping is false.
If size is -1, it's a memoryblock referencing the pixel data.
If size is >0, you got the original memoryblock used to allocate the memory.
(Read only property)

102.2.176  MemoryTarget as Memoryblock

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
If this picture stores its pixels in a memoryblock, you can access the memory block using this property.
**Notes:** (Read only property)

102.2.177  Parent as PictureMBS

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The parent PictureMBS object.
**Notes:**
One PictureMBS can reference the pixels of another PictureMBS. The parent is referenced in this property so it is not released.
(Read only property)

102.2.178  PixelSize as Integer

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The size of a pixel in bytes.
**Example:**
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
MsgBox str(p.PixelSize)

Notes:
For example:
1 for Gray
2 for Gray with Alpha
3 for RGB
4 for RGB with Alpha
(Read only property)

102.2.179 RedOffset as Integer

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal offset for pixels in the red channel.

**Example:**

dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
MsgBox str(p.RedOffset)

Notes: (Read and Write property)

102.2.180 RowOffset as Integer

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal row offset.

**Example:**

dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
dim q as PictureMBS = p.ClipImage(10,10,80,80)
MsgBox str(q.width)+” x ”+str(q.height)+” with row offset: ”+str(q.RowOffset)

Notes:
Only used with clipping images.
(Read only property)
**102.2.181 RowSize as Integer**

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The size of one row in bytes.
**Example:**
```vba
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
MsgBox str(p.RowSize)
```

**Notes:**
Additional bytes may be needed per row for better alignment of the data.
Also using virtual memory functions requires alignment.
(Read only property)

**102.2.182 Target as Picture**

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The target picture.
**Example:**
```vba
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)

window1.Backdrop = p.Target
```

**Notes:**
if this PictureMBS references the pixels of a REALbasic picture, this property keeps a reference to this target picture.
(Read only property)

**102.2.183 TotalSize as Int64**

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The total size of this picture in bytes.
**Example:**
```vba
```
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
MsgBox str(p.TotalSize)

Notes:
The result is Height*RowSize.
(Read only property)

102.2.184 UnclippedHeight as Integer

MBS Images Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The height of the picture in pixels.
**Notes:**
Without clipping, the full height of the image.
(Read only property)

102.2.185 Valid as Boolean

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether this instance is a valid picture.
**Example:**

dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
MsgBox str(p.Valid)

Notes:
Valid is false if the constructor failed to create a picture.
(Read only property)

102.2.186 Width as Integer

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The width of the picture in pixels.
**Example:**

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```vbs
dim l as Picture = LogoMBS(500)
dim p as new PictureMBS(l)
MsgBox str(p.Width)
```

**Notes:** (Read only property)

---

102.2.187 YellowOffset as Integer

**Function:**
The internal offset for pixels in the yellow channel.
**Example:**
```vbs
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatCMYK)
MsgBox str(p.YellowOffset)
```

**Notes:** (Read only property)

---

102.2.188 YieldTicks as Integer

**Function:**
How much time is given back to REALbasic for other ticks.
**Example:**
```vbs
dim p as PictureMBS // your picture

p.YieldTicks=6 // only use 1/10th of a second
```

**Notes:**
If value is greater than zero, the application will yield to another RB thread after the given number of ticks have passed. 60 ticks are one second. Using a small value can slow down processing a lot while a big value keeps your application not responding to mouse clicks.
If you use this property with e.g. 6 as the value, you may also want to use this method in a thread so you can handle mouse events or let REALbasic redraw a progressbar.
(Read and Write property)
102.2.189  **DataStringInFormat(ImageFormat as Integer) as string**

MBS Images Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The data of this picture as a string.

**Notes:**

Strings are limit to 2 GB, but the actual limit is certainly smaller.

You can get and set the image data with this method in the native format.
If you set the data, use a string with at least RowSize bytes.
If you query the data, you will get a copy of the data bytes in a string.
Returns "" on any error.
May raise OutOfBoundsException for invalid index.

Version 18.1 or later will raise an out of memory exception for 32-bit applications if the memory needed will exceed 2 GB in memory. Allocating that many memory will be impossible.
(Read and Write computed property)

102.2.190  **Row(index as Integer) as memoryblock**

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A memoryblock with the data of this row.

**Example:**

```vbnet
// create new image
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatRGB)
// copy row
dim m as MemoryBlock = p.Row(10)
// modify
m.FillBytesMBS(10,100,200)
// copy back
p.row(10)=m
// show in window
window1.Backdrop = p.CopyPicture
```

**Notes:**

You can get and set a row with this method in the native format.
If you set the row, use a memoryblock with at least RowSize bytes.
If you query the row, you will get a copy of the row bytes in a new memoryblock.
Returns "" on any error.
May raise OutOfBoundsException for invalid index.
(Read and Write computed property)
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102.2.191 RowInFormat(index as Integer, ImageFormat as Integer) as memoryblock

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A memoryblock with the data of this row in the format you request.

**Example:**

```vbs
// create new image
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatRGB)
// copy row
dim m as MemoryBlock = p.RowInFormat(10, p.ImageFormatRGB)
// modify
m.FillBytesMBS(10,80,200)
// copy back
p.RowInFormat(10, p.ImageFormatRGB)=m
// show in window
window1.Backdrop = p.CopyPicture
```

**Notes:**

You can get and set a row with this method in the given format.
If you set the row, use a memoryblock with at least Width*PixelSize bytes. PixelSize is the format dependent size in bytes for one pixel.
If you query the row, you will get a copy of the row bytes in a new memoryblock.
Returns nil on any error.
May raise OutOfBoundsException for invalid index.
(Read and Write computed property)
See also:

- 102.2.192 RowInFormat(index as Integer, ImageFormat as Integer, InvertAlpha as boolean) as memoryblock

102.2.192 RowInFormat(index as Integer, ImageFormat as Integer, InvertAlpha as boolean) as memoryblock

MBS Images Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A memoryblock with the data of this row in the format you request.

**Example:**

```vbs
// create new image
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatRGB)
// copy row
dim m as MemoryBlock = p.RowInFormat(10, p.ImageFormatRGB, true)
// modify
m.FillBytesMBS(10,80,200)
// copy back
```
p.RowInFormat(10, p.ImageFormatRGB, true) = m
// show in window
window1.Backdrop = p.CopyPicture

Notes:
You can get and set a row with this method in the given format.
If you set the row, use a memoryblock with at least Width*PixelSize bytes. PixelSize is the format dependent
size in bytes for one pixel.
If you query the row, you will get a copy of the row bytes in a new memoryblock.
Returns nil on any error.
May raise OutOfBoundsException for invalid index.
If InvertAlpha is true, the alpha values are inverted by using A=255-A.
(Read and Write computed property)
See also:

102.2.191 RowInFormat(index as Integer, ImageFormat as Integer) as memoryblock

102.2.193 RowStringInFormat(index as Integer, ImageFormat as Integer) as string

The row as a string.
Notes:
You can get and set a row with this method in the native format.
If you set the row, use a memoryblock with at least RowSize bytes.
If you query the row, you will get a copy of the row bytes in a string.
Returns nil on any error.
May raise OutOfBoundsException for invalid index.
(Read and Write computed property)

102.2.194 Constants

102.2.195 Dither90Halftone6x6Matrix = 5


102.2.196 DitherCluster3Matrix = 8

102.2.197  DitherCluster4Matrix = 9

MBS Images Plugin, Plugin Version: 9.3. **Function:** One of the dither modes for the DitherFilter method.

102.2.198  DitherCluster8Matrix = & h0000000A

MBS Images Plugin, Plugin Version: 9.3. **Function:** One of the dither modes for the DitherFilter method.

102.2.199  DitherLines4x4Matrix = 4

MBS Images Plugin, Plugin Version: 9.3. **Function:** One of the dither modes for the DitherFilter method.

102.2.200  DitherMagic2x2Matrix = 1

MBS Images Plugin, Plugin Version: 9.3. **Function:** One of the dither modes for the DitherFilter method.

102.2.201  DitherMagic4x4Matrix = 2

MBS Images Plugin, Plugin Version: 9.3. **Function:** One of the dither modes for the DitherFilter method.

102.2.202  DitherOrdered4x4Matrix = 3

MBS Images Plugin, Plugin Version: 9.3. **Function:** One of the dither modes for the DitherFilter method.

102.2.203  DitherOrdered6x6Matrix = 6

MBS Images Plugin, Plugin Version: 9.3. **Function:** One of the dither modes for the DitherFilter method.

102.2.204  DitherOrdered8x8Matrix = 7

MBS Images Plugin, Plugin Version: 9.3. **Function:** One of the dither modes for the DitherFilter method.
102.2.205  ImageFormat1of3 = & h0000000F

MBS Images Plugin, Plugin Version: 9.1. **Function:** One of the possible image formats.  
**Notes:**  
This is the image format to use if you target only a gray channel in a RGB picture in memory.  
Targets the first byte with pixelsize=3.

102.2.206  ImageFormat1of4 = & h00000012

MBS Images Plugin, Plugin Version: 9.1. **Function:** One of the possible image formats.  
**Notes:**  
This is the image format to use if you target only a gray channel in a RGB picture in memory.  
Targets the first byte with pixelsize=4.

102.2.207  ImageFormat2of3 = & h00000010

MBS Images Plugin, Plugin Version: 9.1. **Function:** One of the possible image formats.  
**Notes:**  
This is the image format to use if you target only a gray channel in a RGB picture in memory.  
Targets the second byte with pixelsize=3.

102.2.208  ImageFormat2of4 = & h00000013

MBS Images Plugin, Plugin Version: 9.1. **Function:** One of the possible image formats.  
**Notes:**  
This is the image format to use if you target only a gray channel in a RGB picture in memory.  
Targets the second byte with pixelsize=4.

102.2.209  ImageFormat3of3 = & h00000011

MBS Images Plugin, Plugin Version: 9.1. **Function:** One of the possible image formats.  
**Notes:**  
This is the image format to use if you target only a gray channel in a RGB picture in memory.  
Targets the third byte with pixelsize=3.
102.2.210  ImageFormat3of4 = & h00000014

MBS Images Plugin, Plugin Version: 9.1. **Function:** One of the possible image formats.  
**Notes:**  
This is the imageformat to use if you target only a gray channel in a RGB picture in memory.  
Targets the third byte with pixelsize=4.

102.2.211  ImageFormat4of4 = & h00000015

MBS Images Plugin, Plugin Version: 9.1. **Function:** One of the possible image formats.  
**Notes:**  
This is the imageformat to use if you target only a gray channel in a RGB picture in memory.  
Targets the forth byte with pixelsize=4.

102.2.212  ImageFormatABGR = 9

MBS Images Plugin, Plugin Version: 8.7. **Function:** One of the possible image formats.

102.2.213  ImageFormatACMYK = & h00000019

MBS Images Plugin, Plugin Version: 11.0. **Function:** One of the possible image formats.  
**Example:**  
```plaintext
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatACMYK)
```

102.2.214  ImageFormatAG = & h0000000D

MBS Images Plugin, Plugin Version: 8.7. **Function:** One of the possible image formats.  
**Example:**  
```plaintext
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatAG)
```
102.2.215  **ImageFormatAKYMC = & h0000001E**

MBS Images Plugin, Plugin Version: 11.0. **Function:** One of the possible image formats.  
**Example:**
```
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatAKYMC)
```

102.2.216  **ImageFormatAofABGR = & h00000012**

MBS Images Plugin, Plugin Version: 9.1. **Function:** One of the possible image formats.  
**Example:**
```
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatAofABGR)
```

**Notes:** This is the imageformat to use if you target only a gray channel in a RGB picture in memory.

102.2.217  **ImageFormatAofARGB = & h00000012**

MBS Images Plugin, Plugin Version: 9.1. **Function:** One of the possible image formats.  
**Example:**
```
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatAofARGB)
```

**Notes:** This is the imageformat to use if you target only a gray channel in a RGB picture in memory.

102.2.218  **ImageFormatAofBGRA = & h00000015**

MBS Images Plugin, Plugin Version: 9.1. **Function:** One of the possible image formats.  
**Example:**
```
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatAofBGRA)
```

**Notes:** This is the imageformat to use if you target only a gray channel in a RGB picture in memory.
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### 102.2.219 ImageFormatAofRGBA = & h00000015

MBS Images Plugin, Plugin Version: 9.1. **Function:** One of the possible image formats. **Example:**

```vba
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatAofRGBA)
```

**Notes:** This is the imageformat to use if you target only a gray channel in a RGB picture in memory.

### 102.2.220 ImageFormatARGB = 4

MBS Images Plugin, Plugin Version: 8.7. **Function:** One of the possible image formats. **Example:**

```vba
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatARGB)
```

### 102.2.221 ImageFormatBGR = 6

MBS Images Plugin, Plugin Version: 8.7. **Function:** One of the possible image formats. **Example:**

```vba
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatBGR)
```

### 102.2.222 ImageFormatBGRA = 7

MBS Images Plugin, Plugin Version: 8.7. **Function:** One of the possible image formats. **Example:**

```vba
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatBGRA)
```

### 102.2.223 ImageFormatBGRX = 8

MBS Images Plugin, Plugin Version: 8.7. **Function:** One of the possible image formats. **Example:**

```vba
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatBGRX)
```
102.2.224  ImageFormatBofABGR = & h00000013

MBS Images Plugin, Plugin Version: 9.1. **Function:** One of the possible image formats.  
**Example:**
```vbs
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatBofABGR)
```

**Notes:** This is the imageformat to use if you target only a gray channel in a RGB picture in memory.

102.2.225  ImageFormatBofARGB = & h00000015

MBS Images Plugin, Plugin Version: 9.1. **Function:** One of the possible image formats.  
**Example:**
```vbs
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatBofARGB)
```

**Notes:** This is the imageformat to use if you target only a gray channel in a RGB picture in memory.

102.2.226  ImageFormatBofBGR = & h0000000F

MBS Images Plugin, Plugin Version: 9.1. **Function:** One of the possible image formats.  
**Example:**
```vbs
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatBofBGR)
```

**Notes:** This is the imageformat to use if you target only a gray channel in a RGB picture in memory.

102.2.227  ImageFormatBofBGRA = & h00000012

MBS Images Plugin, Plugin Version: 9.1. **Function:** One of the possible image formats.  
**Example:**
```vbs
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatBofBGRA)
```
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Notes: This is the image format to use if you target only a gray channel in a RGB picture in memory.

102.2.228 ImageFormatBofRGB = & h00000011

MBS Images Plugin, Plugin Version: 9.1. **Function:** One of the possible image formats.  
**Example:**

```vba
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatBofRGB)
```

Notes: This is the image format to use if you target only a gray channel in a RGB picture in memory.

102.2.229 ImageFormatBofRGBA = & h00000014

MBS Images Plugin, Plugin Version: 9.1. **Function:** One of the possible image formats.  
**Example:**

```vba
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatBofRGBA)
```

Notes: This is the image format to use if you target only a gray channel in a RGB picture in memory.

102.2.230 ImageFormatBuffer = & h00000016

MBS Images Plugin, Plugin Version: 10.3. **Function:** The image format for picture objects which are used for data storage.  
**Notes:** This format is for PixelSize = 1 and no channels.

102.2.231 ImageFormatCMYK = & h00000017

MBS Images Plugin, Plugin Version: 11.0. **Function:** One of the possible image formats.  
**Example:**

```vba
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatCMYK)
```
102.2.232 ImageFormatCMYKA = &h00000018

MBS Images Plugin, Plugin Version: 11.0. **Function:** One of the possible image formats. **Example:**

dim p as new PictureMBS(100,100,PictureMBS.ImageFormatCMYKA)

102.2.233 ImageFormatCMYKX = &h0000001A

MBS Images Plugin, Plugin Version: 11.0. **Function:** One of the possible image formats. **Example:**

dim p as new PictureMBS(100,100,PictureMBS.ImageFormatCMYKX)

102.2.234 ImageFormatG = &h0000000B

MBS Images Plugin, Plugin Version: 8.7. **Function:** One of the possible image formats. **Example:**

dim p as new PictureMBS(100,100,PictureMBS.ImageFormatG)

102.2.235 ImageFormatGA = &h0000000C

MBS Images Plugin, Plugin Version: 8.7. **Function:** One of the possible image formats. **Example:**

dim p as new PictureMBS(100,100,PictureMBS.ImageFormatGA)

102.2.236 ImageFormatGofABGR = &h00000014

MBS Images Plugin, Plugin Version: 9.1. **Function:** One of the possible image formats. **Example:**

dim p as new PictureMBS(100,100,PictureMBS.ImageFormatGofABGR)
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Notes: This is the imageformat to use if you target only a gray channel in a RGB picture in memory.

102.2.237  ImageFormatGofARGB = & h00000014

Example:

// create a grayscale picture with 4 bytes per pixel
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatGofARGB)

// fill top left pixels white
p.FillRect(0,0,10,10,255)

Backdrop=p.CopyPicture
Title=str(p.PixelSize)

Notes: This is the imageformat to use if you target only a gray channel in a RGB picture in memory.

102.2.238  ImageFormatGofBGR = & h00000010

Example:

dim p as new PictureMBS(100,100,PictureMBS.ImageFormatGofBGR)

Notes: This is the imageformat to use if you target only a gray channel in a RGB picture in memory.

102.2.239  ImageFormatGofBGRA = & h00000013

Example:

dim p as new PictureMBS(100,100,PictureMBS.ImageFormatGofBGRA)

Notes: This is the imageformat to use if you target only a gray channel in a RGB picture in memory.
102.2.240  **ImageFormatGofRGB = & h00000010**

MBS Images Plugin, Plugin Version: 9.1. **Function:** One of the possible image formats.  
**Example:**

```plaintext
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatGofRGB)
```

**Notes:** This is the imageformat to use if you target only a gray channel in a RGB picture in memory.

102.2.241  **ImageFormatGofRGBA = & h00000013**

MBS Images Plugin, Plugin Version: 9.1. **Function:** One of the possible image formats.  
**Example:**

```plaintext
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatGofRGBA)
```

**Notes:** This is the imageformat to use if you target only a gray channel in a RGB picture in memory.

102.2.242  **ImageFormatGray16 = & h00000029**

MBS Images Plugin, Plugin Version: 14.0. **Function:** One of the possible image formats.  
**Example:**

```plaintext
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatGray16)
```

**Notes:**  
Support for 16bit Grayscale pictures is very limited.

With 14.0 plugins, we support for this format:

- constructor to create empty new picture
- Copy pixels from one gray to other gray image
- Invert
- Scale Gray16 to Gray16
- RawRow and Row functions
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- Clip
- Channel access
- Clear
- Clone
- Copy picture

Everything else will probably not work or crash.

102.2.243  ImageFormatKYMC = & h0000001C

MBS Images Plugin, Plugin Version: 11.0. **Function:** One of the possible image formats. **Example:**
```
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatKYMC)
```

102.2.244  ImageFormatKYMCA = & h0000001D

MBS Images Plugin, Plugin Version: 11.0. **Function:** One of the possible image formats. **Example:**
```
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatKYMCA)
```

102.2.245  ImageFormatKYMCX = & h0000001F

MBS Images Plugin, Plugin Version: 11.0. **Function:** One of the possible image formats. **Example:**
```
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatKYMCX)
```

102.2.246  ImageFormatRGB = 1

MBS Images Plugin, Plugin Version: 8.7. **Function:** One of the possible image formats. **Example:**
102.2.247 ImageFormatRGBA = 2

MBS Images Plugin, Plugin Version: 8.7. **Function:** One of the possible image formats.

**Example:**

```vba
dim fSource as FolderItem = SpecialFolder.Desktop.Child("test.png") // some png with alpha
dim oPNGInput as new PNGReaderMBS
If oPNGInput.OpenFile(fSource) Then
If oPNGInput.ApplyOptions(0) Then

dim imgSource as New PictureMBS(oPNGInput.Width, oPNGInput.Height, PictureMBS.ImageFormatRGBA)

' Read row by row the file and puts it in a PictureMBS instance

dim nMax as Integer = oPNGInput.Height - 1
For nInd as Integer = 0 To nMax
    imgSource.RowInFormat(nInd, PictureMBS.ImageFormatRGBA, true) = oPNGInput.ReadRow()
Next

' show only alpha/mask channel
Backdrop=imgSource.AlphaChannel.CopyPicture

' show Picture without mask
Backdrop=imgSource.CopyPicture

' show picture with mask
Backdrop=imgSource.CopyPictureWithMask

End If
End If
```

102.2.248 ImageFormatRGBX = 3

MBS Images Plugin, Plugin Version: 8.7. **Function:** One of the possible image formats.

**Example:**

```vba
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatRGB)
```
102.2. CLASS PICTURES

102.2.249  **ImageFormatRofABGR = \& h00000015**

MBS Images Plugin, Plugin Version: 9.1. **Function:** One of the possible image formats.
**Example:**
```
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatRofABGR)
```

**Notes:** This is the image format to use if you target only a gray channel in a RGB picture in memory.

102.2.250  **ImageFormatRofARGB = \& h00000013**

MBS Images Plugin, Plugin Version: 9.1. **Function:** One of the possible image formats.
**Example:**
```
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatRofARGB)
```

**Notes:** This is the image format to use if you target only a gray channel in a RGB picture in memory.

102.2.251  **ImageFormatRofBGR = \& h00000011**

MBS Images Plugin, Plugin Version: 9.1. **Function:** One of the possible image formats.
**Example:**
```
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatRofBGR)
```

**Notes:** This is the image format to use if you target only a gray channel in a RGB picture in memory.

102.2.252  **ImageFormatRofBGRA = \& h00000014**

MBS Images Plugin, Plugin Version: 9.1. **Function:** One of the possible image formats.
**Example:**
```
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatRofBGRA)
```

**Notes:** This is the image format to use if you target only a gray channel in a RGB picture in memory.
102.2.253  ImageFormatRofRGB = & h0000000F

MBS Images Plugin, Plugin Version: 9.1.  **Function:** One of the possible image formats.  
**Example:**

dim p as new PictureMBS(100,100,PictureMBS.ImageFormatRofRGB)

**Notes:** This is the imageformat to use if you target only a gray channel in a RGB picture in memory.

102.2.254  ImageFormatRofRGBA = & h00000012

MBS Images Plugin, Plugin Version: 9.1.  **Function:** One of the possible image formats.  
**Example:**

dim p as new PictureMBS(100,100,PictureMBS.ImageFormatRofRGBA)

**Notes:** This is the imageformat to use if you target only a gray channel in a RGB picture in memory.

102.2.255  ImageFormatScaling1 = & h00000021

MBS Images Plugin, Plugin Version: 11.3.  **Function:** One of the scaling image formats.  
**Notes:**

Used for the temporary picture while scaling.  
One Byte per Pixel.

102.2.256  ImageFormatScaling2 = & h00000022

MBS Images Plugin, Plugin Version: 11.3.  **Function:** One of the scaling image formats.  
**Notes:**

Used for the temporary picture while scaling.  
2 Bytes per Pixel.

102.2.257  ImageFormatScaling3 = & h00000023

MBS Images Plugin, Plugin Version: 11.3.  **Function:** One of the scaling image formats.  
**Notes:**
102.2. CLASS PICTUREMBS

Used for the temporary picture while scaling.
3 Bytes per Pixel.

102.2.258 ImageFormatScaling4 = & h00000024

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the scaling image formats. **Notes:**
Used for the temporary picture while scaling.
4 Bytes per Pixel.

102.2.259 ImageFormatScaling5 = & h00000025

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the scaling image formats. **Notes:**
Used for the temporary picture while scaling.
5 Bytes per Pixel.

102.2.260 ImageFormatScaling6 = & h00000026

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the scaling image formats. **Notes:**
Used for the temporary picture while scaling.
6 Bytes per Pixel.

102.2.261 ImageFormatScaling7 = & h00000027

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the scaling image formats. **Notes:**
Used for the temporary picture while scaling.
7 Bytes per Pixel.

102.2.262 ImageFormatScaling8 = & h00000028

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the scaling image formats. **Notes:**
102.2.263  ImageFormatUnknown = 0

MBS Images Plugin, Plugin Version: 8.7. **Function:** One of the possible image formats.

102.2.264  ImageFormatXBGR = &h0000000A

MBS Images Plugin, Plugin Version: 8.7. **Function:** One of the possible image formats.  
**Example:**

```cpp
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatXBGR)
```

102.2.265  ImageFormatXCMYK = &h0000001B

MBS Images Plugin, Plugin Version: 11.0. **Function:** One of the possible image formats.  
**Example:**

```cpp
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatXCMYK)
```

102.2.266  ImageFormatXKYM = &h00000020

MBS Images Plugin, Plugin Version: 11.0. **Function:** One of the possible image formats.  
**Example:**

```cpp
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatXKYM)
```

102.2.267  ImageFormatXRGB = 5

MBS Images Plugin, Plugin Version: 8.7. **Function:** One of the possible image formats.  
**Example:**

```cpp
dim p as new PictureMBS(100,100,PictureMBS.ImageFormatXRGB)
```
102.2. ScaleBox = 2

MBS Images Plugin, Plugin Version: 8.7. **Function:** One of the scale modes for the Scale function.

102.2 ScaleCubic = 7

MBS Images Plugin, Plugin Version: 8.7. **Function:** One of the scale modes for the Scale function.

102.2 ScaleLanczos3 = 3

MBS Images Plugin, Plugin Version: 8.7. **Function:** One of the scale modes for the Scale function.

102.2 ScaleLanczos8 = 4

MBS Images Plugin, Plugin Version: 8.7. **Function:** One of the scale modes for the Scale function.

102.2 ScaleMitchell = 5

MBS Images Plugin, Plugin Version: 8.7. **Function:** One of the scale modes for the Scale function.

102.2 ScalePoly3 = 6

MBS Images Plugin, Plugin Version: 8.7. **Function:** One of the scale modes for the Scale function.

102.2 ScaleTriangle = 1

MBS Images Plugin, Plugin Version: 8.7. **Function:** One of the scale modes for the Scale function.
Chapter 103

Launch Services

103.1 class LaunchServicesApplicationListMBS

103.1.1 class LaunchServicesApplicationListMBS

Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

103.1.2 Methods

103.1.3 Constructor


103.1.4 Item(index as Integer) as folderitem

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns an item of this list. 
Notes: Index goes from 0 to count-1.
103.1.5 Properties

103.1.6 Count as Integer

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of items inside this list. **Notes:** (Read and Write property)
103.2 class LaunchServicesItemInfoMBS

103.2.1 class LaunchServicesItemInfoMBS

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class to represent several details about an application folderitem.

103.2.2 Methods

103.2.3 close

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The destructor.  
**Notes:** There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.  
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

103.2.4 Properties

103.2.5 AppIsScriptable as Boolean

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the application can be scripted.  
**Notes:** (Read only property)

103.2.6 AppPrefersClassic as Boolean

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Item is an application that can run either natively or in the Classic emulation environment, but prefers to be launched in the Classic environment.  
**Notes:** This flag is valid only when kLSItemInfoIsNativeApp is set.  
(Read only property)
103.2.7 AppPrefersNative as Boolean

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Item is an application that can run either natively or in the Classic emulation environment, but prefers to be launched natively.
Notes: This flag is valid only when kLSItemInfoIsNativeApp is set.
(Read only property)

103.2.8 Extension as String

Notes: You need to specify the kLSRequestExtension flag to get this information.
(Read only property)

103.2.9 ExtensionIsHidden as Boolean

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: whether the folderitem has a hidden extension.
Notes: (Read only property)

103.2.10 IconFilename as String

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The optional filename string for the icon of this application.
Notes: This property is not be used on 64bit Mac targets.
(Read only property)

103.2.11 IsAliasFile as Boolean

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether the folderitem is an alias file (includes sym links)
Notes: (Read only property)
103.2.12 **IsApplication as Boolean**

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The folderitem is a Single-file or packaged application.

**Example:**
```
dim l as LaunchServicesItemInfoMBS
dim f as FolderItem

f=ApplicationsFolderMBS(0).Child("Mail.app")
l=f.LaunchServicesItemInfoMBS(-1)

if l.IsApplication then
MsgBox "Is an application!"
end if
```

**Notes:**
This property is filled when kLSRequestBasicFlagsOnly is requested. (Read only property)

103.2.13 **IsClassicApp as Boolean**

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The folderitem is a CFM Classic application.

**Notes:** (Read only property)

103.2.14 **IsContainer as Boolean**

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The folderitem is a directory (includes packages) or a volume.

**Notes:** (Read only property)

103.2.15 **IsInvisible as Boolean**

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The folderitem is invisible.

**Notes:**
Does not include ‘.’ files or ‘.hidden’ entries.
This property is filled when kLSRequestBasicFlagsOnly is requested.
103.2.16  **IsNativeApp as Boolean**

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The application is a Carbon or Cocoa native application. **Notes:** (Read only property)

103.2.17  **IsPackage as Boolean**

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** whether the folderitem is an Application, document, or bundle package. **Example:**
```
dim l as LaunchServicesItemInfoMBS
dim f as FolderItem

f=SpecialFolder.Applications.Child("Mail.app")
l=f.LaunchServicesItemInfoMBS(-1)

if l.IsPackage then
    MsgBox "Is a package!"
end if
```

**Notes:**
The item is a packaged directory.
This property is filled when kLSRequestBasicFlagsOnly is requested. (Read only property)

103.2.18  **IsPlainFile as Boolean**

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** None of the other attributes is true. **Notes:**
The item is not a directory, volume, or symlink. This property is filled when kLSRequestBasicFlagsOnly is requested. (Read only property)
103.2.19  IsSymlink as Boolean

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The folderitem is only an UNIX symbolic link.  
**Notes:** (Read only property)

103.2.20  IsVolume as Boolean

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The folderitem is a volume.  
**Notes:** (Read only property)

103.2.21  KindID as Integer

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The kind ID of this folderitem.  
**Notes:**  
This property is not be used on 64bit Mac targets.  
(Read only property)

103.2.22  MacCreator as String

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Mac OS creator code.  
**Example:**

```vba
dim f as FolderItem = SpecialFolder.Applications.Child("Firefox.app")

dim l As LaunchServicesItemInfoMBS = f.LaunchServicesItemInfoMBS(& h02)

if l <> nil Then
    MsgBox l.MacCreator  // shows "MOZB"
end
```

**Notes:**  
You need to specify the kLSRequestTypeCreator flag to get this information.  
(Read only property)
103.2.23 MacType as String

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The Mac OS type code.

**Notes:**
You need to specify the kLSRequestTypeCreator flag to get this information.
(Read only property)
103.3. CLASS LAUNCHSERVICESLAUNCHPARAMETERMBS

103.3 class LaunchServicesLaunchParameterMBS

103.3.1 class LaunchServicesLaunchParameterMBS

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for parameters which can be used to launch an application.

**Example:**

```vbscript
    dim f(0) as FolderItem
    dim a as FolderItem
    dim p as LaunchServicesLaunchParameterMBS

    p=new LaunchServicesLaunchParameterMBS
    p.Defaults=true
    p.Hide=true

    a=LaunchServicesOpenXMBS(f,p)

    MsgBox a.Name
```

103.3.2 Methods

103.3.3 close

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The destructor.

**Notes:**

There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.

(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

103.3.4 Properties

103.3.5 Application as FolderItem

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The application to use to open documents.

**Notes:** (Read and Write property)
103.3.6 Defaults as Boolean

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Default settings should be used. **Notes:** default means: open, async, use Info.plist, start Classic. (Read and Write property)

103.3.7 DontAddToRecents as Boolean

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Do not add application or documents to recents menus. **Notes:** (Read and Write property)

103.3.8 DontSwitch as Boolean

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Don’t bring new app to the foreground. **Example:**

```vbscript
Dim l as New LaunchServicesLaunchParameterMBS
l.DontSwitch=true
Dim files(0) as FolderItem
files(0)=GetFolderItem("/Applications/iTunes.app", FolderItem.PathTypeShell)
Call LaunchServicesOpenXMBS(files,l)
```

**Notes:** (Read and Write property)

103.3.9 Hide as Boolean

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Send child a "hide" request as soon as it checks in. **Notes:** (Read and Write property)
103.3.10 HideOthers as Boolean

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Hide all other apps when child checks in.
Notes: (Read and Write property)

103.3.11 InClassic as Boolean

Notes: (Read and Write property)

103.3.12 InhibitBGOnly as Boolean

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Causes launch to fail if target is background-only.
Notes: (Read and Write property)

103.3.13 LastError as Integer

Notes:
Values for errors:

kLSUnknownErr = -10810
kLSNotAnApplicationErr = -10811
kLSNotInitializedErr = -10812
kLSDataUnavailableErr = -10813 e.g. no kind string
kLSApplicationNotFoundErr = -10814 e.g. no application claims the file
kLSUnknownTypeErr = -10815
kLSDataTooOldErr = -10816
kLSDataErr = -10817
kLSLaunchInProgressErr = -10818 e.g. opening an already opening application
kLSNotRegisteredErr = -10819
kLSAppDoesNotClaimTypeErr = -10820
kLSAppDoesNotSupportSchemeWarning = -10821 not an error, just a warning
kLSServerCommunicationErr = -10822 cannot set recent items
kLSCannotSetInfoErr = -10823 you may not set item info for this item

(Read and Write property)
103.3.14  NewInstance as Boolean

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Instantiate app even if it is already running.
**Notes:** (Read and Write property)

103.3.15  NoParams as Boolean

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Use Info.plist to determine launch parameters.
**Notes:** (Read and Write property)

103.3.16  Print as Boolean

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Print items instead of opening them.
**Notes:** (Read and Write property)

103.3.17  StartClassic as Boolean

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Start up Classic environment if required for this application.
**Notes:** (Read and Write property)
103.4  class LaunchServicesStringListMBS

103.4.1  class LaunchServicesStringListMBS

MBS MacOSX Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**  A class for a list of strings.

103.4.2  Methods

103.4.3  Item(index as Integer) as string

MBS MacOSX Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**  Returns an item of this list.  
**Notes:** Index goes from 0 to count-1.

103.4.4  Properties

103.4.5  Count as Integer

MBS MacOSX Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**  The number of items inside this list.  
**Notes:** (Read and Write property)
103.5  Globals

103.5.1  LaunchServicesAllHandlersForURLSchemeMBS(URLScheme as string) as LaunchServicesStringListMBS

MBS MacOSX Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of application bundle identifiers for applications capable of handling the specified URL scheme.

**Example:**

```vbs
dim l as LaunchServicesStringListMBS
dim s(-1) as string
dim i,c as Integer

l=LaunchServicesAllHandlersForURLSchemeMBS("http")
if l<>nil then
    c=l.Count-1
    for i=0 to c
        s.Append l.Item(i)
    next

    MsgBox Join(s,", ")
end if
```

**Notes:**

URL handling capability is determined according to the kCFBundleURLTypes listed in an application’s Info.plist). Returns nil if no handlers are available.

Example output from the code above:

```
```

Requires Mac OS X 10.4 to work correct. Returns always nil on older systems.

103.5.2  LaunchServicesAllRoleHandlersForContentTypeMBS(ContentType as string, role as Integer) as LaunchServicesStringListMBS

MBS MacOSX Plugin, Plugin Version: 6.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of application bundle identifiers for applications capable of handling the specified content type (UTI) with the specified role(s).

**Example:**
dim l as LaunchServicesStringListMBS
dim s(-1) as string
dim i,c as Integer

c = -1
const kLSRolesAll = -1

c = l.Count - 1
for i = 0 to c
    s.Append l.Item(i)
next

MsgBox Join(s, " , ")

Notes:
Application content handling capabilities are determined according to the kCFBundleDocumentTypes listed in an application’s Info.plist). For any role, specify kLSRolesAll. Returns nil if no handlers are available. Requires Mac OS X 10.4.

Constants you can use for the role parameter:

kLSRolesNone = 1 no claim is made about support for this type/scheme
kLSRolesViewer = 2 claim to be able to view this type/scheme
kLSRolesEditor = 4 claim to be able to edit this type/scheme
kLSRolesAll = -1 claim to do it all

Example output for code above is:

103.5.3 LaunchServicesApplicationForInfoMBS(type as string, creator as string, extension as string, role as Integer) as folderitem

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Return the application used to open items with particular data.
Example:
MsgBox LaunchServicesApplicationForInfoMBS("", "R*ch", "txt", -1).name
MsgBox LaunchServicesApplicationForInfoMBS("TEXT", "", "", -1).name
MsgBox LaunchServicesApplicationForInfoMBS("", "", "txt", -1).name
Notes:
Consults the binding tables to return the application that would be used to open items with type, creator, and/or extension as provided if they were double-clicked in the Finder. This application will be the default for items like this if one has been set. If no application is known to LaunchServices suitable for opening such items, nil (kLSApplicationNotFoundErr) will be returned. Not all three input parameters can be "" at the same time nor can both output parameters be "" at the same time.

Constants you can use for the role parameter:

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kLSRolesNone</td>
<td>1</td>
<td>no claim is made about support for this type/scheme</td>
</tr>
<tr>
<td>kLSRolesViewer</td>
<td>2</td>
<td>claim to be able to view this type/scheme</td>
</tr>
<tr>
<td>kLSRolesEditor</td>
<td>4</td>
<td>claim to be able to edit this type/scheme</td>
</tr>
<tr>
<td>kLSRolesAll</td>
<td>-1</td>
<td>claim to do it all</td>
</tr>
</tbody>
</table>

103.5.4 LaunchServicesApplicationForItemMBS(file as folderitem, role as Integer) as folderitem

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return the application used to open an item.
**Example:**
```vb
dim file, appf as FolderItem

file = SpecialFolder.Desktop.Child("d.rb") // some Realbasic file
appf = LaunchServicesApplicationForItemMBS(file, 0)

MsgBox appf.AbsolutePath
```

Notes:
Consults the binding tables to return the application that would be used to open the folderitem if it were double-clicked in the Finder. This application will be the user-specified override if appropriate or the default otherwise. If no application is known to LaunchServices suitable for opening this item, nil (kLSApplicationNotFoundErr) will be returned.

Constants you can use for the role parameter:
103.5  GLOBALS

kLSRolesNone  = 1  no claim is made about support for this type/scheme
kLSRolesViewer = 2  claim to be able to view this type/scheme
kLSRolesEditor  = 4  claim to be able to edit this type/scheme
kLSRolesAll    = -1 claim to do it all

103.5.5  LaunchServicesCanApplicationAcceptItemMBS(item as folderitem, targetapp as folderitem, role as Integer, flags as Integer) as boolean

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Determine whether an item can accept another item. **Notes:**

Returns whether TargetApp can accept this folderitem as in a drag and drop operation. If role is other than kLSRolesAll then make sure TargetApp claims to fulfill the requested role.

Constants you can use for the role parameter:

kLSRolesNone  = 1  no claim is made about support for this type/scheme
kLSRolesViewer = 2  claim to be able to view this type/scheme
kLSRolesEditor  = 4  claim to be able to edit this type/scheme
kLSRolesAll    = -1 claim to do it all

Values for the flags:

kLSAcceptDefault  = 1
kLSAcceptAllowLoginUI = 2  show UI to log in if necessary

103.5.6  LaunchServicesDefaultHandlerForURLSchemeMBS(URLScheme as string) as string

MBS MacOSX Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the bundle identifier of the default handler for the specified URL scheme. **Example:**

MsgBox LaunchServicesDefaultHandlerForURLSchemeMBS(“http”) // shows here: com.apple.safari

**Notes:**

Returns "" if no handler is available.
Requires Mac OS X 10.4 to work correct. Returns always "" on older systems.
103.5.7 LaunchServicesDefaultRoleHandlerForContentTypeMBS(ContentType as string, role as Integer) as string

MBS MacOSX Plugin, Plugin Version: 6.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the application bundle identifier of the default handler for the specified content type (UTI), in the specified role(s).

**Example:**

```math
const type="com.adobe.pdf"
msgbox LaunchServicesDefaultRoleHandlerForContentTypeMBS(type,-1)
```

**Notes:**

For any role, specify kLSRolesAll. Returns "" if no handler is available.
Requires Mac OS X 10.4.

Constants you can use for the role parameter:

- kLSRolesNone = 1 no claim is made about support for this type/scheme
- kLSRolesViewer = 2 claim to be able to view this type/scheme
- kLSRolesEditor = 4 claim to be able to edit this type/scheme
- kLSRolesAll = -1 claim to do it all

103.5.8 LaunchServicesDisplayNameForCFURLMBS(cfurlhandle as Integer) as string

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Get the display name for an url handle.

**Notes:**

Return a copy of the display name for an url handle. Takes into consideration whether this item has a hidden extension or not.

Cfurlhandle should be the non 0 value from a CFURL object handle property.
103.5.9  LaunchServicesFindApplicationForInfoMBS(creator as string, bundleID as string, name as string) as folderitem

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Locate a specific application.

**Example:**

MsgBox LaunchServicesFindApplicationForInfoMBS(“prvw”,””,”).Name
MsgBox LaunchServicesFindApplicationForInfoMBS(“”,”com.apple.iTunes”,””).Name
MsgBox LaunchServicesFindApplicationForInfoMBS(“”,””,”Safari.app”).Name

**Notes:**

Returns the application with the corresponding input information. The registry of applications is consulted first in order of bundleID, then creator, then name. All comparisons are case insensitive and 'ties' are decided first by version, then by native vs. Classic.

Parameters can be ””. The name of the application must be the name with the extension.

103.5.10  LaunchServicesItemInfoForCFURLMBS(cfurlhandle as Integer, WhichInfo as Integer) as LaunchServicesItemInfoMBS

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return information about an item.

**Notes:**

Returns as much or as little information as requested about the url. Some information is available in a thread-safe manner, some is not.

Cfurlhandle should be the non 0 value from a CFURL object handle property.

Possible values you can combine for the WhichInfo parameter:

103.5.11  LaunchServicesKindStringForCFURLMBS(cfurlhandle as Integer) as string

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Get the kind string for an item.

**Notes:**

Returns the kind string as used in the Finder and elsewhere for the given folderitem.
103.5.12 LaunchServicesOpenMBS(item as folderitem) as folderitem


Notes:
Opens applications, documents, and folders. Applications are opened via an 'oapp' or 'rapp' event. Documents are opened in their user-overridden or default applications as appropriate. Folders are opened in the Finder. Use the more specific LaunchServicesOpenXMBS for more control over launching.

Returns a folderitem to the application which was launched.

103.5.13 LaunchServicesOpenXMBS(documents() as folderitem, parameter as LaunchServicesLaunchParameterMBS) as folderitem

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Opens an application or one or more documents or folders.

Example:

// Open a file in Preview (Mac OS X).
Sub OpenWithPreview(f as folderitem)
    dim p as FolderItem
    dim d(0) as FolderItem
    dim r as FolderItem
    dim param as LaunchServicesLaunchParameterMBS

    // Find preview
    p=LaunchServicesFindApplicationForInfoMBS("prvw","com.apple.Preview","Preview.app")
if p<>Nil then
d(0)=f

param=new LaunchServicesLaunchParameterMBS
param.Application=p
param.Defaults=true  // just default settings

r=LaunchServicesOpenXMBS(d, param)
if r<>nil then
    Return  //Success
end if

// On failure, just launch normally:
f.Launch true
End Sub

Notes:
Opens applications, documents, and folders. Applications are opened via an ‘oapp’ or ‘rapp’ event. Documents are opened in their user-overridden or default applications as appropriate. Folders are opened in the Finder.

Returns a folderitem to the application which was launched.
Currently this function is not available to RB versions before 3.5.
Note that the documents parameter is an array of folderitem and not just one.

103.5.14  LaunchServicesSetDefaultHandlerForURLSchemeMBS(URLScheme as string, BundleID as string) as Integer

MBS MacOSX Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  Function:
Sets the user’s preferred handler for the specified URL scheme.
Example:

dim e as Integer
dim old as string

old=LaunchServicesDefaultHandlerForURLSchemeMBS("http")
MsgBox "Before: "+old

e=LaunchServicesSetDefaultHandlerForURLSchemeMBS("http","com.microsoft.explorer")
MsgBox "LaunchServicesSetDefaultHandlerForURLSchemeMBS: "+str(e)
MsgBox "Between: " + LaunchServicesDefaultHandlerForURLSchemeMBS("http")

e = LaunchServicesSetDefaultHandlerForURLSchemeMBS("http", old)

MsgBox "LaunchServicesSetDefaultHandlerForURLSchemeMBS: " + str(e)

MsgBox "After: " + LaunchServicesDefaultHandlerForURLSchemeMBS("http")

Notes:
Returns Mac OS error code with 0 for success.
The handler is specified as an application bundle identifier.
Requires Mac OS X 10.4 to work correct. Returns always -1 on older systems.

103.5.15 LaunchServicesSetDefaultRoleHandlerForContentTypeMBS(ContentType as string, role as Integer, BundleID as string) as Integer

MBS MacOSX Plugin, Plugin Version: 6.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Sets the user’s preferred handler for the specified content type (UTI) in the specified role(s).
Example:
dim e as Integer

// makes Acrobat the default pdf reader
e = LaunchServicesSetDefaultRoleHandlerForContentTypeMBS("com.adobe.pdf", -1, "com.adobe.Reader")

// makes preview the default pdf reader
e = LaunchServicesSetDefaultRoleHandlerForContentTypeMBS("com.adobe.pdf", -1, "com.apple.preview")

msgbox str(e)

Notes:
For all roles, specify kLSRolesAll. The handler is specified as an application bundle identifier.
Returns a Mac OS error code or -1 if the function is not available.
Requires Mac OS X 10.4.

Constants you can use for the role parameter:
kLSRolesNone    = 1   no claim is made about support for this type/scheme
kLSRolesViewer = 2   claim to be able to view this type/scheme
kLSRolesEditor = 4   claim to be able to edit this type/scheme
kLSRolesAll     = -1  claim to do it all

103.6 module UTTypeMBS

103.6.1 module UTTypeMBS

Notes: See this webpage for a list of all the predefined types:


103.6.2 Methods

103.6.3 ConformsTo(UTI as string, ConformsToUTI as string) as boolean

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Checks whether a type is a subtype of the second type.
Example:

if UTTypeMBS.ConformsTo(“public.jpeg”, ”public.image”) then
    MsgBox ”ConformsTo"
else
    MsgBox ”not ConformsTo"
end if

103.6.4 CreateAllIdentifiersForTag(inTagClass as string, inTag as string, inConformingToUTI as string) as string()

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creates an array of all uniform type identifiers indicated by the specified tag.
Example:

MsgBox join(UTTypeMBS.CreateAllIdentifiersForTag(UTTypeMBS.kUTTagClassFilenameExtension, ”txt”, ””))
// shows ”public.plain-text”
MsgBox join(UTTypeMBS.CreateAllIdentifiersForTag(UTTypeMBS.kUTTagClassFilenameExtension, "xml", ")
// shows "public.xml com.apple.dashcode.xml"

Notes: An overloaded tag (e.g., an extension used by several applications for different file formats) may indicate multiple types. If no declared type identifiers have the specified tag, then a single dynamic type identifier will be created for the tag. Optionally, the returned type identifiers must conform to the identified "conforming-to" type argument. This is a hint to the implementation to constrain the search to a particular tree of types. For example, the client may want to know the type indicated by a particular extension tag. If the client knows that the extension is associated with a directory (rather than a file), the client may specify "public.directory" for the conforming-to argument. This will allow the implementation to ignore all types associated with byte data formats (public.data base type).

103.6.5 CreatePreferredIdentifierForTag(inTagClass as string, inTag as string, inConformingToUTI as string) as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creates a uniform type identifier for the type indicated by the specified tag.
Example:

MsgBox UTTypeMBS.CreatePreferredIdentifierForTag(UTTypeMBS.kUTTagClassFilenameExtension, "jpg", ")
// shows "public.jpeg"
MsgBox UTTypeMBS.CreatePreferredIdentifierForTag(UTTypeMBS.kUTTagClassOSType, "TIFF", "public.image")
// shows "public.tiff"

Notes: This is the primary function to use for going from tag (extension/MIMEType/OSType) to uniform type identifier. Optionally, the returned type identifiers must conform to the identified "conforming-to" type argument. This is a hint to the implementation to constrain the search to a particular tree of types. For example, the client may want to know the type indicated by a particular extension tag. If the client knows that the extension is associated with a directory (rather than a file), the client may specify "public.directory" for the conforming-to argument. This will allow the implementation to ignore all types associated with byte data formats (public.data base type). If more than one type is indicated, preference is given to a public type over a non-public type on the theory that instances of public types are more common, and therefore more likely to be correct. When there a choice must be made between multiple public types or multiple non-public types, the selection rules are undefined. Clients needing finer control should use CreateAllIdentifiersWithTag. If no declared type is indicated, a dynamic type identifier is generated which satisfies the parameters.
103.6. MODULE UTTYPEMBS

103.6.6 DeclaringBundleURL(UTI as string) as folderitem

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the folderitem of the bundle containing the type declaration of the identified type.

**Example:**

MsgBox UTTypeMBS.DeclaringBundleURL("public.jpeg").AbsolutePath

103.6.7 Description(UTI as string) as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the localized, user-readable type description string.

**Example:**

MsgBox UTTypeMBS.Description("public.jpeg") // "JPEG-Bild" in German

103.6.8 Equal(UTI as string, SecondUTI as string) as boolean

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Checks whether two types are equal.

**Example:**

if UTTypeMBS.Equal("public.jpeg","public.jpeg") then
    MsgBox "equal"
else
    MsgBox "not equal"
end if

**Notes:** Returns true if both UTIs are equal.

103.6.9 kUTExportedTypeDeclarationsKey as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the keys used in type declarations.

**Example:**

MsgBox UTTypeMBS.kUTExportedTypeDeclarationsKey /* UTExportedTypeDeclarations"
103.6.10 kUTImportedTypeDeclarationsKey as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the keys used in type declarations.  
**Example:**

MsgBox UTTypeMBS.kUTImportedTypeDeclarationsKey // "UTImportedTypeDeclarations"

103.6.11 kUTTagClassFilenameExtension as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constant strings identify tag classes for use when converting uniform type identifiers to and from equivalent tags.  
**Example:**

MsgBox UTTypeMBS.kUTTagClassFilenameExtension // "public.filename-extension"

103.6.12 kUTTagClassMIMEType as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constant strings identify tag classes for use when converting uniform type identifiers to and from equivalent tags.  
**Example:**

MsgBox UTTypeMBS.kUTTagClassMIMEType // "public.mime-type"

103.6.13 kUTTagClassNSPboardType as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constant strings identify tag classes for use when converting uniform type identifiers to and from equivalent tags.  
**Example:**

MsgBox UTTypeMBS.kUTTagClassNSPboardType // "com.apple.nsboard-type"
103.6.14  kUTTagClassOSType as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constant strings identify tag classes for use when converting uniform type identifiers to and from equivalent tags.

**Example:**

MsgBox UTTypeMBS.kUTTagClassOSType // "com.apple.ostype"

103.6.15  kUTTypeAliasFile as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.16  kUTTypeAliasRecord as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.17  kUTTypeAppleICNS as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.18  kUTTypeAppleProtectedMPEG4Audio as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.19  kUTTypeApplication as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.
103.6.20  kUTTypeApplicationBundle as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.21  kUTTypeApplicationFile as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.22  kUTTypeArchive as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.23  kUTTypeAudio as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.24  kUTTypeAudiovisualContent as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.25  kUTTypeBMP as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.26  kUTTypeBundle as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.
103.6.27  **kUTTypeCHeader as string**

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.28  **kUTTypeCompositeContent as string**

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.29  **kUTTypeConformsToKey as string**

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the keys used in type declarations.  
**Example:**

MsgBox UTTypeMBS.kUTTypeConformsToKey // "UTTypeConformsTo"

103.6.30  **kUTTypeContact as string**

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.31  **kUTTypeContent as string**

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.32  **kUTTypeCPlusPlusHeader as string**

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.
103.6.33 kUTTypeCPlusPlusSource as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.34 kUTTypeCSource as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.35 kUTTypeData as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.36 kUTTypeDescriptionKey as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the keys used in type declarations. **Example:**

MsgBox UTTypeMBS.kUTTypeDescriptionKey // "UTTypeDescription"

103.6.37 kUTTypeDirectory as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.38 kUTTypeDiskImage as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.
103.6.39  kUTTypeFileURL as string
MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: One of the predefined type constants.

103.6.40  kUTTypeFlatRTFD as string
MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: One of the predefined type constants.

103.6.41  kUTTypeFolder as string
MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: One of the predefined type constants.

103.6.42  kUTTypeFramework as string
MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: One of the predefined type constants.

103.6.43  kUTTypeGIF as string
MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: One of the predefined type constants.

103.6.44  kUTTypeHTML as string
MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: One of the predefined type constants.

103.6.45  kUTTypeICO as string
MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: One of the predefined type constants.
103.6.46 kUTTypeIconFileKey as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the keys used in type declarations. **Example:**

```plaintext
MsgBox UTTypeMBS.kUTTypeIconFileKey // "UTTypeIconFile"
```

103.6.47 kUTTypeIdentifierKey as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the keys used in type declarations. **Example:**

```plaintext
MsgBox UTTypeMBS.kUTTypeIdentifierKey // "UTTypeIdentifier"
```

103.6.48 kUTTypeImage as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.49 kUTTypeInkText as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.50 kUTTypeItem as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.51 kUTTypeJavaSource as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.
103.6.52  kUTTypeJPEG as string

**Function:** One of the predefined type constants.

103.6.53  kUTTypeJPEG2000 as string

**Function:** One of the predefined type constants.

103.6.54  kUTTypeMessage as string

**Function:** One of the predefined type constants.

103.6.55  kUTTypeMountPoint as string

**Function:** One of the predefined type constants.

103.6.56  kUTTypeMovie as string

**Function:** One of the predefined type constants. 
**Example:**
```
    dim f as FolderItem = SpecialFolder.Desktop.Child("test.avi")
    dim u as string = UTTypeMBS.UTI(f)

    if UTTypeMBS.ConformsTo(u, UTTypeMBS.kUTTypeMovie) then
        MsgBox u + " is movie"
    else
        MsgBox u + " is not movie."
    end if
```
103.6.57 kUTTypeMP3 as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.58 kUTTypeMPEG as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.59 kUTTypeMPEG4 as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.60 kUTTypeMPEG4Audio as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.61 kUTTypeObjectiveCPlusPlusSource as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.62 kUTTypeObjectiveCSource as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.63 kUTTypePackage as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.
103.6. **MODULE UTTYPEMBS**

103.6.64  **kUTTypePDF as string**

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.65  **kUTTypePICT as string**

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.66  **kUTTypePlainText as string**

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.67  **kUTTypePNG as string**

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.68  **kUTTypeQuickTimeImage as string**

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.69  **kUTTypeQuickTimeMovie as string**

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.70  **kUTTypeReferenceURLKey as string**

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the keys used in type declarations.

**Example:**
103.6.71  kUTTypeResolvable as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.72  kUTTypeRTF as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.73  kUTTypeRTFD as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.74  kUTTypeSourceCode as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.75  kUTTypeSymLink as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.76  kUTTypeTagSpecificationKey as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the keys used in type declarations.  

**Example:**

MsgBox UTTypeMBS.kUTTypeReferenceURLKey // "UTTypeReferenceURL"
103.6.77 kUTTypeText as string


103.6.78 kUTTypeTIFF as string


103.6.79 kUTTypeTXNTextAndMultimediaData as string


103.6.80 kUTTypeURL as string


103.6.81 kUTTypeUTF16ExternalPlainText as string


103.6.82 kUTTypeUTF16PlainText as string

103.6.83  kUTTypeUTF8PlainText as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.84  kUTTypeVCard as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.85  kUTTypeVersionKey as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the keys used in type declarations.  
**Example:**

MsgBox UTTypeMBS.kUTTypeVersionKey // "UTTypeVersion"

103.6.86  kUTTypeVideo as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.87  kUTTypeVolume as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.

103.6.88  kUTTypeWebArchive as string

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the predefined type constants.
103.6. MODULE UTTYPEMBS  

103.6.89  kUTTypeXML as string  


103.6.90  PreferredTagWithClass(inUTI as string, inTagClass as string) as string  

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the identified type’s preferred tag with the specified tag class as a String. Example:

MsgBox UTTypeMBS.PreferredTagWithClass("public.jpeg",UTTypeMBS.kUTTagClassMIMEType)  // shows "image/jpeg"
MsgBox UTTypeMBS.PreferredTagWithClass("public.jpeg",UTTypeMBS.kUTTagClassFilenameExtension)  // shows "jpeg"

Notes: This is the primary function to use for going from uniform type identifier to tag. If the type declaration included more than one tag with the specified class, the first tag in the declared tag array is the preferred tag.

103.6.91  UTI(file as folderitem) as string  

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Queries the UTI for a given file. Notes: Returns "" if no UTI is available.
Chapter 104

LCMS2

104.1 class LCMS2BitmapMBS

104.1.1 class LCMS2BitmapMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for a bitmap.

**Notes:**
You can pass bitmap data as raw memoryblock or fill it using a Real Studio picture.
In our LCMS 1.x plugin, the bitmap was always 16 bit. This plugin also can also use 8 bit or 32 bit.

104.1.2 Methods

104.1.3 Constructor

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates an empty bitmap object.

See also:

- 104.1.4 Constructor(p as picture, bits as Integer = 8) 15932
- 104.1.5 Constructor(p as picture, left as Integer, top as Integer, width as Integer, height as Integer, bits as Integer = 8) 15932
- 104.1.6 Constructor(width as Integer, height as Integer, colorspace as Integer) 15933
- 104.1.7 Constructor(width as Integer, height as Integer, colorspace as Integer, RowBytes as Integer) 15933

15931
104.1.8 Constructor(width as Integer, height as Integer, colorspace as Integer, RowBytes as Integer, data as memoryblock)

104.1.4 Constructor(p as picture, bits as Integer = 8)


**Example:**

```
// convert picture to bitmap
dim b as new LCMS2BitmapMBS(pic)
// convert to picture
Backdrop = b.Picture
```

**Notes:** Bits can be 8, 16 or 32 bit integers.

See also:

- 104.1.3 Constructor
- 104.1.5 Constructor(p as picture, left as Integer, top as Integer, width as Integer, height as Integer, bits as Integer = 8)
- 104.1.6 Constructor(width as Integer, height as Integer, colorspace as Integer)
- 104.1.7 Constructor(width as Integer, height as Integer, colorspace as Integer, RowBytes as Integer)
- 104.1.8 Constructor(width as Integer, height as Integer, colorspace as Integer, RowBytes as Integer, data as memoryblock)

104.1.5 Constructor(p as picture, left as Integer, top as Integer, width as Integer, height as Integer, bits as Integer = 8)


**Example:**

```
// convert small part of picture to bitmap
dim b as new LCMS2BitmapMBS(pic, 50, 50, 100, 100)
// convert to picture
Backdrop = b.Picture
```

**Notes:**
Picks only the provided area from the source picture. Bits can be 8, 16 or 32 bit integers.

See also:

- 104.1.3 Constructor
- 104.1.4 Constructor(p as picture, bits as Integer = 8)
- 104.1.6 Constructor(width as Integer, height as Integer, colorspace as Integer)
- 104.1.7 Constructor(width as Integer, height as Integer, colorspace as Integer, RowBytes as Integer)
- 104.1.8 Constructor(width as Integer, height as Integer, colorspace as Integer, RowBytes as Integer, data as memoryblock)

### 104.1.6 Constructor(width as Integer, height as Integer, colorspace as Integer)

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Creates a bitmap object with given size and color space.

**Notes:**

Colorspace Type should be one of the color space signatures like kcmsSigRgbData. Raises exception if colorspace is invalid.

See also:

- 104.1.3 Constructor
- 104.1.4 Constructor(p as picture, bits as Integer = 8)
- 104.1.5 Constructor(p as picture, left as Integer, top as Integer, width as Integer, height as Integer, bits as Integer = 8)
- 104.1.7 Constructor(width as Integer, height as Integer, colorspace as Integer, RowBytes as Integer)
- 104.1.8 Constructor(width as Integer, height as Integer, colorspace as Integer, RowBytes as Integer, data as memoryblock)

### 104.1.7 Constructor(width as Integer, height as Integer, colorspace as Integer, RowBytes as Integer)

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Creates a bitmap object with given size and color space.

**Notes:**

Colorspace Type should be one of the colorspace signatures like kcmsSigRgbData. Raises exception if colorspace is invalid.

See also:
104.1.8 Constructor(width as Integer, height as Integer, colorspace as Integer, RowBytes as Integer, data as memoryblock)

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a bitmap object with given size and color space.

**Notes:**
In this variant, you pass the memoryblock with right size. Passing memoryblock of wrong size can lead into crashes. Raises exception if colorspace is invalid.

See also:
- 104.1.3 Constructor
- 104.1.4 Constructor(p as picture, bits as Integer = 8)
- 104.1.5 Constructor(p as picture, left as Integer, top as Integer, width as Integer, height as Integer, bits as Integer = 8)
- 104.1.6 Constructor(width as Integer, height as Integer, colorspace as Integer)
- 104.1.7 Constructor(width as Integer, height as Integer, colorspace as Integer, RowBytes as Integer)

**Example:**
// convert small part of picture to bitmap
dim b as new LCMS2BitmapMBS(pic)

// create destination picture
dim pic as new Picture(500, 500, 32)
// copy pixels and show
if b.CopyToPicture(pic, 50, 50) then

Backdrop = pic
end if

Notes:
This may be more efficient for you if you process a lot of image data as you can avoid creating new picture objects with using Picture method in this class.
May not work for all pictures, especially may fail on Linux.
Returns true on success.

104.1.10 Invert

Notes: Requires correct settings for rowbytes, height and data properties.

104.1.11 Picture(HasAlpha as Boolean = false) as picture

Example:

// get some picture
dim logo as Picture = LogoMBS(500)

// let us convert it to a 16 bit memory block
dim l as new LCMS2BitmapMBS(logo, 16)

// check bit depth
Title = str(l.Bits)

// convert back
dim p as Picture = l.Picture

// and display
Backdrop = p

Notes: This method works with 8, 16 and 32 bit integer pictures. Make sure bits property is set.
104.1.12 Properties

104.1.13 Bits as Integer

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Number of bits.  
**Notes:**  
Can be 8, 16 or 32 and is used for conversion to and from Real Studio picture objects.  
(Read and Write property)

104.1.14 ColorSpaceType as Integer

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The color space type.  
**Notes:**  
Only used to let Picture function know what format the data is.  
Typically kcmsSigRgbData.  
(Read and Write property)

104.1.15 Data as MemoryBlock

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The memoryblock with the actual image data.  
**Notes:**  
Data can be stored in 8, 16 or 32 bit Integers or 32bit Floats.  
(Read and Write property)

104.1.16 Height as Integer

**Notes:** (Read and Write property)
104.1.17 RowBytes as Integer

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of bytes per row.

**Notes:**

Normally: rowbytes=pixelsize*width+padding
Where padding is some extra bytes.
(Read and Write property)

104.1.18 Width as Integer

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The width of the Bitmap in Pixels.

**Notes:** (Read and Write property)
104.2 class LCMS2CIECAM02MBS

104.2.1 class LCMS2CIECAM02MBS

Notes: Viewing conditions. Please note those are CAM model viewing conditions, and not the ICC tag viewing conditions, which I'm naming LCMS2ICCViewingConditionsMBS to make differences evident. Unfortunately, the tag cannot deal with surround La, Yb and D value so is basically useless to store CAM02 viewing conditions.

104.2.2 Methods

104.2.3 Constructor(context as LCMS2ContextMBS, VC as LCMS2ViewingConditionsMBS)

Notes: Such object may be used as a color appearance model and evaluated in forward and reverse directions. Viewing conditions is defined by LCMS2ViewingConditionsMBS class. The surround member has to be one of this values: kAVG_SURROUND, kDIM_SURROUND, kDARK_SURROUND or kCUTSHEET_SURROUND. Degree of chromatic adaptation (d), can be specified in 0...1.0 range, or the model can be instructed to calculate it by using D_CALCULATE constant (-1).

Context: user-defined context cargo.
VC: A structure holding viewing conditions.

104.2.4 Forward(value as LCMS2CIEXYZMBS) as LCMS2JChMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Evaluates the CAM02 model in the forward direction: XYZ to JCh
Notes: value: the input XYZ value.
Returns the output JCh value.
104.2. CLASS LCMS2CIECAM02MBS

104.2.5 Reverse(value as LCMS2JChMBS) as LCMS2CIEXYZMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Evaluates the CAM02 model in the reverse direction: JCh to XYZ

**Notes:**

Values: The input JCh value.
Returns the output XYZ value

104.2.6 Properties

104.2.7 Handle as Integer

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal handle to the conversion engine.

**Notes:** (Read and Write property)
104.3 class LCMS2CIELabMBS

104.3.1 class LCMS2CIELabMBS


104.3.2 Methods

104.3.3 BFDdeltaE(Other as LCMS2CIELabMBS) as Double


104.3.4 CIE2000DeltaE(Other as LCMS2CIELabMBS, Kl as Double = 1.0, Kc as Double = 1.0, Kh as Double = 1.0) as Double


Notes:

Delta-E 2000 is the first major revision of the dE94 equation. Unlike dE94, which assumes that L* correctly reflects the perceived differences in lightness, dE2000 varies the weighting of L* depending on where in the lightness range the color falls. dE2000 is still under consideration and does not seem to be widely supported in graphics arts applications.

The weightings KL, KC and KH can be modified to reflect the relative importance of lightness, chroma and hue in different industrial applications.

104.3.5 CIE94DeltaE(Other as LCMS2CIELabMBS) as Double


Notes:

A technical committee of the CIE (TC1-29) published an equation in 1995 called CIE94. The equation is similar to CMC but the weighting functions are largely based on RIT/DuPont tolerance data derived from automotive paint experiments where sample surfaces are smooth. It also has ratios, labeled KL (lightness) and Kc (chroma) and the commercial factor (cf) but these tend to be preset in software and are not often exposed for the user (as it is the case in Little CMS).
104.3. **CLASS LCMS2CIELABMBS**

**104.3.6  Clone as LCMS2CIELabMBS**

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a copy of the color object.  
**Example:**
```vbnet
dim l as new LCMS2CIELabMBS(0.1, 0.2, 0.3)
dim k as LCMS2CIELabMBS = l.Clone
MsgBox str(k.L)+""+str(k.a)+""+str(k.b)
```

**104.3.7  CMCdeltaE(Other as LCMS2CIELabMBS, l as Double, c as Double) as Double**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calculates the CMC delta E.  
**Notes:**
In 1984 the CMC (Colour Measurement Committee of the Society of Dyes and Colourists of Great Britain) developed and adopted an equation based on LCH numbers. Intended for the textiles industry, CMC l:c allows the setting of lightness (l) and chroma (c) factors. As the eye is more sensitive to chroma, the default ratio for l:c is 2:1 allowing for 2x the difference in lightness than chroma (numbers). There is also a 'commercial factor' (cf) which allows an overall varying of the size of the tolerance region according to accuracy requirements. A cf=1.0 means that a delta-E CMC value <1.0 is acceptable.  
CMC l:c is designed to be used with D65 and the CIE Supplementary Observer. Commonly-used values for l:c are 2:1 for acceptability and 1:1 for the threshold of imperceptibility.

**104.3.8  Constructor(L as Double=0.0, a as Double=0.0, b as Double=0.0)**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new Lab color with the given values.  
See also:
- 104.3.9  Constructor(other as LCMS2CIELabMBS)

**104.3.9  Constructor(other as LCMS2CIELabMBS)**

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a copy of the color value.  
See also:
- 104.3.8  Constructor(L as Double=0.0, a as Double=0.0, b as Double=0.0)


104.3.10 DeltaE(Other as LCMS2CIELabMBS) as Double

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calculates delta E.

**Notes:**

You don’t have to spend too long in the color management world before you come across the term Delta-E. As with many things color, it seems simple to understand at first, yet the closer you look, the more elusive it gets. Delta-E (dE) is a single number that represents the 'distance' between two colors. The idea is that a dE of 1.0 is the smallest color difference the human eye can see. So any dE less than 1.0 is imperceptible and it stands to reason that any dE greater than 1.0 is noticeable. Unfortunately it’s not that simple. Some color differences greater than 1 are perfectly acceptable, maybe even unnoticeable. Also, the same dE color difference between two yellows and two blues may not look like the same difference to the eye and there are other places where it can fall down. It’s perfectly understandable that we would want to have a system to show errors. After all, we’ve spent the money on the instruments; shouldn’t we get numbers from them? Delta-E numbers can be used for:

- how far off is a print or proof from the original
- how much has a device drifted
- how effective is a particular profile for printing or proofing
- removes subjectivity (as much as possible)

These functions does compute the difference between two Lab colors, using several difference spaces.

The L*a*b* color space was devised in 1976 and, at the same time delta-E 1976 (dE76) came into being. If you can imagine attaching a string to a color point in 3D Lab space, dE76 describes the sphere that is described by all the possible directions you could pull the string. If you hear people speak of just plain ‘delta-E’ they are probably referring to dE76. It is also known as dE-Lab and dE- ab. One problem with dE76 is that Lab itself is not 'perceptually uniform' as its creators had intended. So different amounts of visual color shift in different color areas of Lab might have the same dE76 number. Conversely, the same amount of color shift might result in different dE76 values. Another issue is that the eye is most sensitive to hue differences, then chroma and finally lightness and dE76 does not take this into account.

104.3.11 DesaturateLab(amax as Double, amin as Double, bmax as Double, bmin as Double) as Boolean

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Does poor man’s gamut mapping.

**Notes:** See also cmsDesaturateLab in LCMS manual.
104.3. CLASS LCMS2CIELABMBS

104.3.12  XYZ(whitePoint as LCMS2CIEXYZMBS=nil) as LCMS2CIEXYZMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Converts color to XYZ value. **Notes:** Setting WhitePoint to NULL forces D50 as white point.

104.3.13  Properties

104.3.14  A as Double

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The a value. **Notes:** (Read and Write property)

104.3.15  B as Double

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The b value. **Notes:** (Read and Write property)

104.3.16  L as Double

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The L value. **Notes:** (Read and Write property)

104.3.17  LCh as LCMS2CIELChMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Converts color to LCh value. **Notes:** (Read only property)
104.4 class LCMS2CIELChMBS

104.4.1 class LCMS2CIELChMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The plugin class for CIE LCh values.

**Example:**

```vbnet
dim c as new LCMS2CIELChMBS(1,2,3)
MsgBox str(c.L)+” ”+str(c.C)+” ”+str(c.h)
```

104.4.2 Methods

104.4.3 Clone as LCMS2CIELChMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a copy of the color object.

104.4.4 Constructor(L as Double=0.0, C as Double=0.0, h as Double=0.0)

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new object with the given values.

See also:

- 104.4.5 Constructor(other as LCMS2CIELChMBS)

104.4.5 Constructor(other as LCMS2CIELChMBS)

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Initializes object with values from other object.

See also:

- 104.4.4 Constructor(L as Double=0.0, C as Double=0.0, h as Double=0.0)

104.4.6 Properties

104.4.7 C as Double

104.4. CLASS LCMS2CIELCHMBS

Notes: (Read and Write property)

104.4.8  h as Double

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The h value. Notes: (Read and Write property)

104.4.9  L as Double


104.4.10  Lab as LCMS2CIELabMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Converts the LCh value to a Lab value. Example:

dim c as new LCMS2CIELChMBS(0.1, 0.2, 0.3)
dim lab as LCMS2CIELabMBS = c.Lab
MsgBox str(lab.L) + " " + str(lab.a) + " " + str(lab.b)

Notes: (Read only property)
104.5  class LCMS2CIExyYMBS

104.5.1  class LCMS2CIExyYMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for a CIE xyY value.

**Example:**

```vbnet
dim c as new LCMS2CIExyYMBS(1, 2, 3)
MsgBox str(c.x) + " " + str(c.y) + " " + str(c.yy)
```

**Notes:** As Real Studio is case insensitive, we have to name the big Y as YY.

104.5.2  Methods

104.5.3  Clone as LCMS2CIExyYMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a copy of the color.

104.5.4  Constructor(other as LCMS2CIExyYMBS)

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Initializes the object with values from other object.

See also:

- 104.5.5 Constructor(X as Double=0.0, Y as Double=0.0, YY as Double=0.0)

104.5.5  Constructor(X as Double=0.0, Y as Double=0.0, YY as Double=0.0)

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new xyY object with the given values.

See also:

- 104.5.4 Constructor(other as LCMS2CIExyYMBS)

104.5.6  TempFromWhitePoint as Double

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calculates the temperature from using this xyY point as the white point.
104.5.7 Properties

104.5.8 x as Double

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The x value. Notes: (Read and Write property)

104.5.9 XYZ as LCMS2CIEXYZMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Converts the xyY value to XYZ. Example:

```vba
dim c as new LCMS2CIExyYMBS(1,2,3)
dim n as LCMS2CIEXYZMBS = c.XYZ
MsgBox str(n.x) + " " + str(n.y) + " " + str(n.z)
dim x as LCMS2CIExyYMBS = n.xyY
MsgBox str(x.x) + " " + str(x.y) + " " + str(x.yy)
```

Notes: (Read only property)

104.5.10 y as Double


104.5.11 YY as Double

As Real Studio is case insensitive, we have to name the big Y as YY.
(Read and Write property)
104.6  class LCMS2CIExyYTripleMBS

104.6.1  class LCMS2CIExyYTripleMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for a xyY color triple.

104.6.2  Methods

104.6.3  Clone as LCMS2CIExyYTripleMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a copy of the xyY triple.

104.6.4  Constructor

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Initializes a xyY triple with zero values. See also:

- 104.6.5 Constructor(other as LCMS2CIExyYTripleMBS)
- 104.6.6 Constructor(Red as LCMS2CIExyYMBS, Green as LCMS2CIExyYMBS, Blue as LCMS2CIExyYMBS)

104.6.5  Constructor(other as LCMS2CIExyYTripleMBS)

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Initializes a xyY triple with values from other object. See also:

- 104.6.4 Constructor
- 104.6.6 Constructor(Red as LCMS2CIExyYMBS, Green as LCMS2CIExyYMBS, Blue as LCMS2CIExyYMBS)

104.6.6  Constructor(Red as LCMS2CIExyYMBS, Green as LCMS2CIExyYMBS, Blue as LCMS2CIExyYMBS)

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Initializes a xyY triple with given values. See also:
104.6.7 Properties

104.6.8 Blue as LCMS2CIExyYMBS

**Notes:** (Read and Write property)

104.6.9 Green as LCMS2CIExyYMBS

**Notes:** (Read and Write property)

104.6.10 Red as LCMS2CIExyYMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The red color.
**Notes:** (Read and Write property)
104.7   class LCMS2CIEXYZMBS

104.7.1   class LCMS2CIEXYZMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for a CIE XYZ values.

**Example:**
```
dim n as new LCMS2CIEXYZMBS(0.1, 0.2, 0.3)
MsgBox str(n.x)+" "+str(n.y)+" "+str(n.z)
```

104.7.2   Methods

104.7.3   Constructor(x as Double=0.0, y as Double=0.0, z as Double=0.0)

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new object with the given values.

104.7.4   Lab(whitePoint as LCMS2CIEXYZMBS=nil) as LCMS2CIELabMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Converts the XYZ value to a lab value using the given whitepoint.

**Notes:** Setting WhitePoint to nil forces D50 as white point.

104.7.5   Properties

104.7.6   x as Double

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The x value.

**Notes:** (Read and Write property)

104.7.7   xyY as LCMS2CIExyYMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Converts the XYZ value to a xyY value.

**Example:**
dim n as new LCMS2CIEXYZMBS(0.1, 0.2, 0.3)
dim l as LCMS2CIExyYMBS = n.xyY
MsgBox str(l.x) + ” ” + str(l.y) + ” ” + str(l.yy)

Notes: (Read only property)

104.7.8 y as Double

Notes: (Read and Write property)

104.7.9 z as Double

Notes: (Read and Write property)
104.8 class LCMS2CIEXYZTripleMBS

104.8.1 class LCMS2CIEXYZTripleMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for a XYZ color triple.

104.8.2 Methods

104.8.3 Clone as LCMS2CIEXYZTripleMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a copy of the XYZ triple.

104.8.4 Constructor

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Initializes a XYZ triple with zero values.

See also:

- 104.8.5 Constructor(other as LCMS2CIEXYZTripleMBS)
- 104.8.6 Constructor(Red as LCMS2CIEXYZMBS, Green as LCMS2CIEXYZMBS, Blue as LCMS2CIEXYZMBS)

104.8.5 Constructor(other as LCMS2CIEXYZTripleMBS)

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Initializes a XYZ triple with values from other object.

See also:

- 104.8.4 Constructor
- 104.8.6 Constructor(Red as LCMS2CIEXYZMBS, Green as LCMS2CIEXYZMBS, Blue as LCMS2CIEXYZMBS)

104.8.6 Constructor(Red as LCMS2CIEXYZMBS, Green as LCMS2CIEXYZMBS, Blue as LCMS2CIEXYZMBS)

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Initializes a XYZ triple with given values.

See also:
104.8.7 Properties

104.8.8 Blue as LCMS2CIEXYZMBS

**Notes:** (Read and Write property)

104.8.9 Green as LCMS2CIEXYZMBS

**Notes:** (Read and Write property)

104.8.10 Red as LCMS2CIEXYZMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The red color. 
**Notes:** (Read and Write property)
104.9. CLASS LCMS2CONTEXTMBS

104.9 class LCMS2ContextMBS

104.9.1 class LCMS2ContextMBS


104.9.2 Methods

104.9.3 Clone as LCMS2ContextMBS


104.9.4 Constructor(other as LCMS2ContextMBS)

MBS Images Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Creates a new context object with a copy of the existing one. See also:

- 104.9.5 Constructor(tag as Variant = nil)

104.9.5 Constructor(tag as Variant = nil)

MBS Images Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Creates a new context object with given tag. See also:

- 104.9.4 Constructor(other as LCMS2ContextMBS)

104.9.6 Properties

104.9.7 Handle as Integer

MBS Images Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The internal handle value. Notes: (Read and Write property)
104.9.8 Tag as Variant

MBS Images Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tag value. **Notes:** (Read and Write property)
104.10 class LCMS2CurveSegmentMBS

104.10.1 class LCMS2CurveSegmentMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class for a curve segment.  
**Notes:** Segmented curves are formed by several segments.

104.10.2 Methods

104.10.3 Constructor(nGridPoints as Integer = 0)

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new object and allocates sample points.  
**Notes:** Pass number of sample points you want to fill.

104.10.4 Properties

104.10.5 nGridPoints as UInt32

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Number of grid points if Type = 0.  
**Notes:** (Read only property)

104.10.6 Type as Integer

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The type of curve segment.  
**Notes:**  
Parametric type, Type = 0 means sampled segment.  
Negative values are reserved.  
(Read and Write property)

104.10.7 x0 as Single

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The x0 value of the domain.  
**Notes:**
Domain; for $x_0 < x \leq x_1$
(Read and Write property)

### 104.10.8 x1 as Single

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The x1 value of the domain.
**Notes:**
Domain; for $x_0 < x \leq x_1$
(Read and Write property)

### 104.10.9 Params(index as Integer) as Double

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Parameters if Type != 0.
**Notes:**
Index from 0 to 9.
(Read and Write computed property)

### 104.10.10 SampledPoints(index as Integer) as Single

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Array of floats if Type = 0.
**Notes:**
Index from 0 to nGridPoints-1.
(Read and Write computed property)
104.11. CLASS LCMS2DATEMBS

104.11 class LCMS2DateMBS

104.11.1 class LCMS2DateMBS


104.11.2 Methods

104.11.3 date as date


104.11.4 Properties

104.11.5 Day as Integer

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The day value. Notes: (Read only property)

104.11.6 Daylight as Integer

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Whether it is daylight saving time. Notes: (Read only property)

104.11.7 DayOfWeek as Integer

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The day of the week. Notes: (Read only property)
104.11.8  **DayOfYear as Integer**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The day of the year. **Notes:** (Read only property)

104.11.9  **Hour as Integer**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The hour value. **Notes:** (Read only property)

104.11.10  **Minute as Integer**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The minute value. **Notes:** (Read only property)

104.11.11  **Month as Integer**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The month value. **Notes:** (Read only property)

104.11.12  **Second as Integer**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The second value. **Notes:** (Read only property)

104.11.13  **Year as Integer**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The year value. **Notes:** (Read only property)
104.12. CLASS LCMS2DICTIONARYENTRYMBS

104.12 class LCMS2DictionaryEntryMBS

104.12.1 class LCMS2DictionaryEntryMBS

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for an entry of the dictionary.

**Example:**

```vbnet
// create new dictionary
dim d as new LCMS2DictionaryMBS(nil)
// add a value
call d.AddEntry "Hello", "World", nil, nil
// queries list of entries
dim e as LCMS2DictionaryEntryMBS = d.EntryList
// shows values
MsgBox e.Name + " " + e.Value
```

**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

104.12.2 Methods

104.12.3 Constructor

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The private constructor.

104.12.4 NextEntry as LCMS2DictionaryEntryMBS

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the next element in linked list.

104.12.5 Properties

104.12.6 DisplayName as LCMS2MLUMBS

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The display name multi language unicode string.
104.12.7 DisplayValue as LCMS2MLUMBS

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The display value multi language unicode string. **Notes:** (Read only property)

104.12.8 Handle as Integer

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal object reference. **Notes:** (Read only property)

104.12.9 Name as String

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The name string. **Example:**
```
// create new dictionary
dim d as new LCMS2DictionaryMBS(nil)
// add a value
call d.AddEntry "Hello", "World", nil, nil
// queries list of entries
dim e as LCMS2DictionaryEntryMBS = d.EntryList
// shows values
MsgBox e.Name + " " + e.Value
```

**Notes:** (Read only property)

104.12.10 Parent as LCMS2DictionaryMBS

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The reference to the parent dictionary. **Notes:** (Read only property)
104.12.11 Value as String

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The value string.

**Example:**

```plaintext
// create new dictionary
dim d as new LCMS2DictionaryMBS(nil)
// add a value
call d.AddEntry "Hello", "World", nil, nil
// queries list of entries
dim e as LCMS2DictionaryEntryMBS = d.EntryList
// shows values
MsgBox e.Name + " " + e.Value
```

**Notes:** (Read only property)
104.13 class LCMS2DictionaryMBS

104.13.1 class LCMS2DictionaryMBS


Example:

```vbscript
// create new dictionary
dim d as new LCMS2DictionaryMBS(nil)
// add a value
call d.AddEntry "Hello", "World", nil, nil
// queries list of entries
dim e as LCMS2DictionaryEntryMBS = d.EntryList
// shows values
MsgBox e.Name+" " + e.Value
```

Notes: This is a simple linked list used to store pairs NameValue for the dictionary metatag, as described in http://www.color.org/ICCSpecRevision_250210_dictType.pdf

104.13.2 Methods

104.13.3 AddEntry(Name as String, Value as String, DisplayName as LCMS2MLUMBS, DisplayValue as LCMS2MLUMBS) as boolean


Notes:

No check for duplicity is made. Dictionary and Name parameters a required, rest is optional and nil may be used.

Name, Value: Strings. Value may be empty.
DisplayName, Display Value: Multilocalized Unicode objects. May be nil.
Returns true on success.

104.13.4 Constructor(context as LCMS2ContextMBS = nil)

104.13.5  EntryList as LCMS2DictionaryEntryMBS

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns first element in linked list.

**Example:**

```vbnet
// create new dictionary
dim d as new LCMS2DictionaryMBS(nil)
// add a value
call d.AddEntry "Hello", "World", nil, nil
// queries list of entries
dim e as LCMS2DictionaryEntryMBS = d.EntryList
// shows values
MsgBox e.Name + " " + e.Value
```

104.13.6  Properties

104.13.7  context as LCMS2ContextMBS

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The context for this profile.

**Notes:**

Error handling uses it, so you can see which part of your application failed.
(Read and Write property)

104.13.8  Handle as Integer

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal object reference.

**Notes:** (Read and Write property)
104.14 class LCMS2GamutBoundaryDescriptionMBS

104.14.1 class LCMS2GamutBoundaryDescriptionMBS

MBS Images Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This class allows you to create gamut boundary, add points, compute and check points.

**Example:**

```vbscript
dim n1,n2 as Integer
dim h as new LCMS2GamutBoundaryDescriptionMBS

// Fill all Lab gamut as valid
for L as Integer = 0 to 100 step 10
    for a as Integer = -128 to 128 step 5
        for b as Integer = -128 to 128 step 5

            dim lab as new LCMS2CIELabMBS(l, a, b)
            if h.AddPoint(lab) then
                n1 = n1 + 1
            else
                break
                MsgBox "Point not in boundary!"
            end if
        next
    next
next

// Complete boundaries
call h.Compute

// All points should be inside gamut
for L as Integer = 10 to 90 step 25
    for a as Integer = -120 to 120 step 25
        for b as Integer = -120 to 120 step 25

            dim lab as new LCMS2CIELabMBS(l, a, b)
            if h.CheckPoint(lab) then
                n2 = n2 + 1
            else
                break
                MsgBox "Point not in boundary!"
            end if
        next
    next
next
```
104.14. CLASS LCMS2GAMUTBOUNDARYDESCRIPTIONMBS

MsgBox str(n1)+" points added and "+str(n2)+" other points found."

Notes: Please check LittleCMS API and tutorial documentation for more details.

104.14.2 Methods

104.14.3 AddPoint(Lab as LCMS2CIELabMBS) as Boolean

Notes:
This function can be called as many times as known points. No memory or other resources are wasted by adding new points. The gamut boundary descriptor cannot be checked until Compute() is called.

Lab: Lab value.
Returns true on success, false on error.

104.14.4 CheckPoint(Lab as LCMS2CIELabMBS) as Boolean

MBS Images Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Checks whatever a Lab value is inside a given gamut boundary descriptor.
Notes:
Lab: Lab value.
Returns: True if point is inside gamut, false otherwise.

104.14.5 Compute(options as UInt32 = 0) as Boolean

MBS Images Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Computes the gamut boundary descriptor using all known points and interpolating any missing sector(s).
Notes:
Call this function after adding all known points with AddPoint() and before using CheckPoint().
Flags: reserved (unused). Set it to 0.
Returns true on success, false on error.
104.14.6 Constructor(context as LCMS2ContextMBS = nil)

MBS Images Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new object.

104.14.7 Properties

104.14.8 context as LCMS2ContextMBS

MBS Images Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The context for this profile. **Notes:** Error handling uses it, so you can see which part of your application failed. (Read and Write property)

104.14.9 Handle as Integer

MBS Images Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal object reference. **Notes:** (Read only property)
104.15 class LCMS2ICCDatambs

104.15.1 class LCMS2ICCDatambs

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for ICC data. **Notes:** This is used for some tags where no dedicated class is available. This way you can modify the data directly in the memoryblock.

104.15.2 Properties

104.15.3 Data as Memoryblock

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The memoryblock with the data. **Notes:** (Read only property)

104.15.4 Flags as UInt32

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The flags. **Notes:** (Read and Write property)

104.15.5 Size as UInt32

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The size of the data. **Notes:** (Read and Write property)
104.16 class LCMS2ICCMasurementConditionsMBS

104.16.1 class LCMS2ICCMasurementConditionsMBS


104.16.2 Methods

104.16.3 Constructor(Observer as UInt32 = 0, Backing as LCMS2CIEXYZMBS = nil, Geometry as UInt32 = 0, Flare as Double = 0.0, IlluminantType as UInt32 = 0)


104.16.4 Properties

104.16.5 Backing as LCMS2CIEXYZMBS


104.16.6 Flare as Double

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The flare value. Notes: Range 0..1.0. (Read and Write property)

104.16.7 Geometry as UInt32

104.16. **CLASS LCMS2ICCMEASUREMENTCONDITIONS MBS**

0=unknown, 1=45/0, 0/45 2=0d, d/0.
(Read and Write property)

**104.16.8 IlluminantType as UInt32**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The illuminant type. **Notes:** (Read and Write property)

**104.16.9 Observer as UInt32**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The observer value. **Notes:**

0 = unknown, 1=CIE 1931, 2=CIE 1964
(Read and Write property)
104.17 class LCMS2ICCViewingConditionsMBS

104.17.1 class LCMS2ICCViewingConditionsMBS


104.17.2 Methods

104.17.3 Constructor(IlluminantXYZ as LCMS2CIEXYZMBS = nil, Backing as LCMS2CIEXYZMBS = nil, IlluminantType as UInt32 = 0)


104.17.4 Properties

104.17.5 IlluminantType as UInt32


104.17.6 IlluminantXYZ as LCMS2CIEXYZMBS


104.17.7 SurroundXYZ as LCMS2CIEXYZMBS

104.18. class LCMS2IT8MBS

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for IT8 handling.

**Notes:**
ANSI CGATS.17 is THE standard text file format for exchanging color measurement data. This standard text format (the ASCII version is by far the most common) is the format accepted by most color measurement and profiling applications.

It consists of a Preamble section containing originator information, keyword definitions, etc and then one or more data sections, each consisting of header and data subsections. The header subsection is where the BEGIN_DATA_FORMAT and END_DATA_FORMAT delimiters define the actual data types / units contained in the following tables. The data subsection contains the BEGIN_DATA and END_DATA delimiters which contain the actual color information in tabular form.

CGATS.17 text files can contain device (RGB, CMYK, etc), colorimetric (Lab, XYZ, etc), densitometric, spectral, naming and other information so it is a fairly comprehensive storage and exchange format.

104.18.2 Methods

104.18.3 Constructor(context as LCMS2ContextMBS = nil)

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Allocates an empty CGATS.17 object.

104.18.4 DefineDblFormat(Formatter as string)

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the format string for float numbers.
**Notes:** It uses the "C" sprintf convention. The default format string is "$ .10g$ .

104.18.5 EnumDataFormat as string()

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an array with pointers to the column names in current table.
**Notes:** Return the column names in table.
104.18.6  **EnumProperties as string()**

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Enumerates all properties in current table. **Notes:** Returns array of property name string.

104.18.7  **EnumPropertyMulti(Prop as string) as string()**

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Enumerates all the identifiers found in a multivalue property in current table. **Notes:**

Prop: A string holding property name
Returns an array with property names.

104.18.8  **FindDataFormat(Sample as string) as Integer**

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the position (column) of a given data sample name in current table. **Notes:**

First column is 0 (SAMPLE_ID). Returns column number if found, 1 if not found.

104.18.9  **GetData(Patch as string, Sample as string) as string**

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets a cell [ Patch, Sample ] as a literal string (uncooked string) in current table. **Notes:**

Patch: The intended patch name (row)
Sample: The intended sample name (column)

Returns the data for the intended cell on success, "" on error.

104.18.10  **GetDataAsDouble(Patch as string, Sample as string) as Double**

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets a cell [ Patch, Sample ] as a double in current table. **Notes:**
104.18.11  **GetDataRowCol(Row as Integer, Col as Integer) as string**

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**
Gets a cell [ row, col ] as a literal string in current table.
**Notes:**
This function is fast since it has not to search columns or rows by name.

row, col: The position of the cell.

Returns the data for the intended cell on success, ”” on error.

104.18.12  **GetDataRowColAsDouble(Row as Integer, Col as Integer) as Double**

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**
Gets a cell [ row, col ] as a double in current table.
**Notes:**
This function is fast since it has not to search columns or rows by name.
row, col: The position of the cell.

Returns the data for the intended cell interpreted as Double on success, 0 on error.

104.18.13  **GetPatchByName(Patch as string) as Integer**

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**
Lookups patch index by name.

104.18.14  **GetPatchName(nPatch as Integer) as string**

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**
Fills buffer with the contents of SAMPLE_ID column for the set given in nPatch.
**Notes:**
That usually corresponds to patch name. Buffer may be NULL to get the internal memory block used by the CGATS.17 object. If specified, buffer gets a copy of such block. In this case it should have space for at least 1024 characters.

nPatch: set number to retrieve name

Returns the patch name. "" if error.

104.18.15 GetProperty(Prop as string) as string

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets a property as a literal string in current table.
**Notes:**

Prop: A string holding property name.

Returns the data for the intended property on success, "" on error.

104.18.16 GetPropertyAsDouble(Prop as string) as Double

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets a property as a double in current table.
**Notes:**

Prop: A string holding property name.

Returns the data for the intended property interpreted as Double on success, 0 on error.

104.18.17 GetPropertyMulti(Key as string, SubKey as string) as string

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Queries property.

104.18.18 GetSheetType as string

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This function returns the type of the IT8 object.
104.18.19  HeaderIsDictionary(HeaderName as string) as boolean

MBS Images Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Checks if a header entry has subkeys, so it has a dictionary with keys and values. **Notes:** This is a helper method in our plugin. May stop working if the internals of LCMS2 change in an update.

104.18.20  HeaderList as string()

MBS Images Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns list of header properties. **Notes:** This is a helper method in our plugin. May stop working if the internals of LCMS2 change in an update.

104.18.21  HeadersAsDictionary as dictionary

MBS Images Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the header keys and values as dictionary. **Notes:**
This is a helper method in our plugin. May stop working if the internals of LCMS2 change in an update. Returns nil on any error.

104.18.22  HeaderSubDictionary(HeaderName as string) as dictionary

MBS Images Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries the dictionary with subkeys for a given header entry. **Notes:**
This is a helper method in our plugin. May stop working if the internals of LCMS2 change in an update. Returns nil on any error.

104.18.23  HeaderValue(HeaderName as string) as string

MBS Images Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the header value for the given header. **Notes:**
This is a helper method in our plugin. May stop working if the internals of LCMS2 change in an update.
104.18.24  LoadFromFile(context as LCMS2ContextMBS, file as folderitem) as LCMS2IT8MBS

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This function allocates a CGATS.17 object and fills it with the contents of file.
**Notes:**
Used for reading existing CGATS files.

Context: The context value.
File: The CGATS.17 file name to read/parse

Returns a CGATS.17 object on success, nil on error.

104.18.25  LoadFromMemory(context as LCMS2ContextMBS, data as Memoryblock) as LCMS2IT8MBS

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Same as LoadFromFile, but the IT8/CGATS.13 stream is read from a memory block.
**Notes:** Returns nil on failure.

104.18.26  LoadFromString(context as LCMS2ContextMBS, data as string) as LCMS2IT8MBS

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Same as LoadFromFile, but the IT8/CGATS.13 stream is read from a string.
**Notes:** Returns nil on failure.

104.18.27  SaveToFile(file as folderitem) as boolean

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This function saves a CGATS.17 object to a file.
**Notes:**
File: Destination file. Existing file will be overwritten if possible.

Returns true on success, false on error.
104.18.28  **SaveToMemory as Memoryblock**

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function saves a CGATS.17 object to a contiguous memory block.

104.18.29  **SaveToString as string**

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function saves a CGATS.17 object to a contiguous memory block.

104.18.30  **SetComment(comment as string) as boolean**

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function is intended to provide a way automated IT8 creators can embed comments into the file. **Notes:** Comments have no effect, and its only purpose is to document any of the file meaning. On this function the calling order is important; as successive calls to SetComment do embed comments in the same order the function is being called.

Comment: The comment to inserted

Returns true on success, false on error.

104.18.31  **SetData(Patch as string, Sample as string, Val as string) as boolean**

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets a cell [Patch, Sample] as a literal string (uncooked string) in current table. **Notes:** Patch: The intended patch name (row) Sample: The intended sample name (column) Val: The value to be set, as a literal

Returns true on success, false on error.
104.18.32  SetDataAsDouble(Patch as string, Sample as string, Val as Double) as boolean

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets a cell [Patch, Sample] as a double in current table.

**Notes:**
Patch: The intended patch name (row)
Sample: The intended sample name (column)
Val: The value to be set, as a cmsFloat64Number

Returns true on success, false on error.

104.18.33  SetDataFormat(n as Integer, Sample as String) as boolean

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets column names in current table.

**Notes:**
First column is 0 (SAMPLE_ID). Special property NUMBER_OF_FIELDS must be set before calling this function.

n: Column to set name
Sample: Name of data

Returns true on success, false on error.

104.18.34  SetDataRowCol(Row as Integer, Col as Integer, Val as string) as boolean

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets a cell [row, col] as a literal string in current table.

**Notes:**
This function is fast since it has not to search columns or rows by name.

row, col: The position of the cell.
Val: The value to be set, as a literal string.

Returns true on success, false on error.
104.18.35 SetDataRowColAsDouble(Row as Integer, Col as Integer, Val as Double) as boolean


**Notes:**
This function is fast since it has not to search columns or rows by name.

row, col: The position of the cell.
Val: The value to be set, as a cmsFloat64Number

Returns true on success, false on error.

104.18.36 SetIndexColumn(Sample as string) as boolean

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the index column.

104.18.37 SetPropertyDouble(Prop as string, Value as Double) as boolean

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets a property as a double in current table.

**Notes:**
Prop: A string holding property name.
Value: The data for the intended property as Double.

Returns true on success, false on error.

104.18.38 SetPropertyHex(Prop as string, Value as UInt32) as boolean

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets a property as an hexadecimal constant (appends $0x$) in current table.

**Notes:**
Prop: A string holding property name.
Value: The value to be set (32 bits max)

Returns true on success, false on error.
104.18.39  SetPropertyMulti(Key as string, SubKey as string, Value as string) as boolean

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds a new subproperty to the property Key.

**Notes:**
Value of buffer is interpreted literally.

Key: A string holding property name.
SubKey: A string holding the subproperty name.
Buffer: A string holding the uncooked value of subproperty.

Returns true on success, false on error.

104.18.40  SetPropertyString(Prop as string, Value as String) as boolean

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets a property as a literal string in current table.

**Notes:**
The string is enclosed in quotes "".
Returns true on success, false on error.

104.18.41  SetPropertyUncooked(Prop as string, Value as Memoryblock) as boolean

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets a property with no interpretation in current table.

**Notes:**
No quotes "" are added. No checking is performed, and it is up to the programmer to make sure the string is valid.
Special prefixes:
0b: Binary
0x: Hexadecimal

Parameters:
cProp: A string holding property name.
Buffer: A string holding the uncooked value to place in the CGATS file.

Returns true on success, false on error.

### 104.18.42 SetSheetType(type as string) as boolean

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function sets the type of a CGATS.17 object to the new type. **Notes:** Returns true on success, false on error.

### 104.18.43 SetTable(nTable as UInt32) as UInt32

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function positions the IT8 object in a given table, identified by its position. **Notes:** Setting nTable to Table Count + 1 does allocate a new empty table. Returns the current table number on success, 1 on error.

### 104.18.44 SetTableByLabel(Set as string, Field as string, ExpectedType as string) as Integer

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets table by label.

### 104.18.45 TableCount as UInt32

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function returns the number of tables found in the current CGATS object. **Notes:** Returns the number of tables on success, 0 on error.

### 104.18.46 ValidKeywords as string()

MBS Images Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns list of valid keywords. **Notes:** This is a helper method in our plugin. May stop working if the internals of LCMS2 change in an
104.18.47 ValidSampleIDs as string()

MBS Images Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns list of valid sample IDs. Notes: This is a helper method in our plugin. May stop working if the internals of LCMS2 change in an update.

104.18.48 Properties

104.18.49 context as LCMS2ContextMBS

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The context for this profile. Notes: Error handling uses it, so you can see which part of your application failed. (Read and Write property)

104.18.50 Handle as Integer

104.19. **CLASS LCMS2JCHMBS**

104.19   class LCMS2JChMBS

104.19.1   class LCMS2JChMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for a JCh value.

104.19.2   Methods

104.19.3   Clone as LCMS2JChMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a copy of this object.

104.19.4   Constructor(J as Double=0.0, C as Double=0.0, h as Double=0.0)


See also:

- 104.19.5 Constructor(other as LCMS2JChMBS)  

104.19.5   Constructor(other as LCMS2JChMBS)

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Initializes new JCh color object with values from existing object.

See also:

- 104.19.4 Constructor(J as Double=0.0, C as Double=0.0, h as Double=0.0)  

104.19.6   Properties

104.19.7   C as Double


**Notes:** (Read and Write property)
104.19.8  h as Double

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The h value.  
**Notes:** (Read and Write property)

104.19.9  J as Double

**Notes:** (Read and Write property)
104.20. CLASS LCMS2MAT3MBS

104.20  class LCMS2Mat3MBS

104.20.1  class LCMS2Mat3MBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class for a 3 by 3 matrix.

104.20.2  Methods

104.20.3  Clone as LCMS2Mat3MBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a copy of the matrix.

104.20.4  Constructor


See also:

- 104.20.5 Constructor(other as LCMS2Mat3MBS)
- 104.20.6 Constructor(v0 as LCMS2Vec3MBS, v1 as LCMS2Vec3MBS, v2 as LCMS2Vec3MBS)

104.20.5  Constructor(other as LCMS2Mat3MBS)

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a copy of the given matrix.

See also:

- 104.20.4 Constructor
- 104.20.6 Constructor(v0 as LCMS2Vec3MBS, v1 as LCMS2Vec3MBS, v2 as LCMS2Vec3MBS)

104.20.6  Constructor(v0 as LCMS2Vec3MBS, v1 as LCMS2Vec3MBS, v2 as LCMS2Vec3MBS)

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new matrix with the given three vectors.

See also:
104.20.4 Constructor

104.20.5 Constructor(other as LCMS2Mat3MBS)

104.20.7 Properties

104.20.8 V0 as LCMS2Vec3MBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Property for first vector.
**Notes:** (Read and Write property)

104.20.9 V1 as LCMS2Vec3MBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Property for second vector.
**Notes:** (Read and Write property)

104.20.10 V2 as LCMS2Vec3MBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Property for third vector.
**Notes:** (Read and Write property)

104.20.11 value(index as UInt32) as LCMS2Vec3MBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the vector by index.
**Notes:**
Index from 0 to 2.
(Read and Write computed property)
104.21 module LCMS2MBS

104.21.1 module LCMS2MBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The central LCMS module with all the global methods and constants.

104.21.2 Methods

104.21.3 AdaptationMatrix(ConeMatrix as LCMS2Mat3MBS, FromIlluminant as LCMS2CIEXYZMBS, ToIlluminant as LCMS2CIEXYZMBS) as LCMS2Mat3MBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calculates adaptation matrix. **Notes:**

Calculates adaptation matrix.

Returns the final chromatic adaptation from illuminant FromIlluminant to Illuminant ToIlluminant. The cone matrix can be specified in ConeMatrix. If nil, Bradford is assumed.

ConeMatrix: the cone matrix.
FromIlluminant: Source illuminant.
ToIlluminant: Destination illuminant.

Returns matrix on success or nil on failure.

104.21.4 AdaptToIlluminant(SourceWhitePoint as LCMS2CIEXYZMBS, Illuminant as LCMS2CIEXYZMBS, Value as LCMS2CIEXYZMBS) as LCMS2CIEXYZMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Chromatic adaptation. **Notes:**

Adapts a color to a given illuminant. Original color is expected to have a SourceWhitePoint white point.

104.21.5 BFDdeltaE(Lab1 as LCMS2CIELabMBS, Lab2 as LCMS2CIELabMBS) as Double

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Computes the dE between two Lab values.
104.21.6 **BuildRGB2XYZtransferMatrix(WhitePoint as LCMS2CIExyYMBS, Primaries as LCMS2CIExyYTripleMBS) as LCMS2Mat3MBS**

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Builds RGB to XYZ transfer matrix.

**Notes:**
Build a White point, primary chromas transfer matrix from RGB to CIE XYZ. This is just an approximation, I am not handling all the non-linear aspects of the RGB to XYZ process, and assuming that the gamma correction has transitive property in the transformation chain.

The algorithm:

- First I build the absolute conversion matrix using primaries in XYZ. This matrix is next inverted
- Then I eval the source white point across this matrix obtaining the coefficients of the transformation
- Then, I apply these coefficients to the original matrix

**WhitePoint:** The white point.
**Primaries:** The primaries.
**Returns matrix on success or nil on failure.**

104.21.7 **BYTES_SH(n as UInt32) as UInt32**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Shifts the value so you can bitwise or it with other values to get a pixel format.

**Notes:** bytes per sample

104.21.8 **ChannelsOf(ColorSpaceSignature as Integer) as UInt32**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of channels in a color space signature.

**Example:**

```
MsgBox "RGB has " +str(LCMS2MBS.ChannelsOf(LCMS2MBS.kcmsSigRgbData))+" channels"
```

104.21.9 **CHANNELS_SH(n as UInt32) as UInt32**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Shifts the value so you can bitwise or it with other values to get a pixel format.
104.21.10  CIE2000DeltaE(Lab1 as LCMS2CIELabMBS, Lab2 as LCMS2CIELabMBS, Kl as Double = 1.0, Kc as Double = 1.0, Kh as Double = 1.0) as Double


**Notes:**
Delta-E 2000 is the first major revision of the dE94 equation. Unlike dE94, which assumes that L* correctly reflects the perceived differences in lightness, dE2000 varies the weighting of L* depending on where in the lightness range the color falls. dE2000 is still under consideration and does not seem to be widely supported in graphics arts applications.

The weightings KL, KC and KH can be modified to reflect the relative importance of lightness, chroma and hue in different industrial applications.

104.21.11  CIE94DeltaE(Lab1 as LCMS2CIELabMBS, Lab2 as LCMS2CIELabMBS) as Double

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calculates the CIE 94 delta e value.

**Notes:**
A technical committee of the CIE (TC1-29) published an equation in 1995 called CIE94. The equation is similar to CMC but the weighting functions are largely based on RIT/DuPont tolerance data derived from automotive paint experiments where sample surfaces are smooth.
It also has ratios, labeled kL (lightness) and Kc (chroma) and the commercial factor (cf) but these tend to be preset in software and are not often exposed for the user (as it is the case in Little CMS).

104.21.12  CMCdeltaE(Lab1 as LCMS2CIELabMBS, Lab2 as LCMS2CIELabMBS, l as Double, c as Double) as Double

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calculates the CMC delta E.

**Notes:**
In 1984 the CMC (Colour Measurement Committee of the Society of Dyes and Colourists of Great Britain) developed and adopted an equation based on LCH numbers. Intended for the textiles industry, CMC l:c allows the setting of lightness (l) and chroma (c) factors. As the eye is more sensitive to chroma, the default
ratio for L:c is 2:1 allowing for 2x the difference in lightness than chroma (numbers). There is also a ‘commercial factor’ (cf) which allows an overall varying of the size of the tolerance region according to accuracy requirements. A cf=1.0 means that a delta-E CMC value <1.0 is acceptable. CMC L:c is designed to be used with D65 and the CIE Supplementary Observer. Commonly-used values for L:c are 2:1 for acceptability and 1:1 for the threshold of imperceptibility.

104.21.13  ColorSpaceICCtoLCMS(ICCColorSpace as Integer) as Integer

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Converts from ICC color space notation to Little CMS color space notation.

104.21.14  ColorSpaceLCMStoICC(LCMSColorSpace as Integer) as Integer

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Converts from Little CMS color space notation to ICC color space notation.

104.21.15  COLORSPACE_SH(n as UInt32) as UInt32

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Shifts the value so you can bitwise or it with other values to get a pixel format. **Notes:** Pixeltype.

104.21.16  CreateBitmapFromPicture(p as picture, bits as Integer = 8) as LCMS2BitmapMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new bitmap based on the pictures. **Notes:** Bits can be 8, 16 or 32 bit integers.

104.21.17  D50_xyY as LCMS2CIExyYMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns D50 white point as xyY color.
104.21. MODULE LCMS2MBS

104.21.18 D50_XYZ as LCMS2CIEXYZMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns D50 white point as XYZ color.

104.21.19 DeltaE(Lab1 as LCMS2CIELabMBS, Lab2 as LCMS2CIELabMBS) as Double

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calculates delta E.

**Notes:**

You don’t have to spend too long in the color management world before you come across the term Delta-E. As with many things color, it seems simple to understand at first, yet the closer you look, the more elusive it gets. Delta-E (dE) is a single number that represents the 'distance' between two colors. The idea is that a dE of 1.0 is the smallest color difference the human eye can see. So any dE less than 1.0 is imperceptible and it stands to reason that any dE greater than 1.0 is noticeable. Unfortunately it’s not that simple. Some color differences greater than 1 are perfectly acceptable, maybe even unnoticeable. Also, the same dE color difference between two yellows and two blues may not look like the same difference to the eye and there are other places where it can fall down. It’s perfectly understandable that we would want to have a system to show errors. After all, we’ve spent the money on the instruments; shouldn’t we get numbers from them? Delta-E numbers can be used for:

- how far off is a print or proof from the original
- how much has a device drifted
- how effective is a particular profile for printing or proofing
- removes subjectivity (as much as possible)

These functions does compute the difference between two Lab colors, using several difference spaces.

The L*a*b* color space was devised in 1976 and, at the same time delta-E 1976 (dE76) came into being. If you can imagine attaching a string to a color point in 3D Lab space, dE76 describes the sphere that is described by all the possible directions you could pull the string. If you hear people speak of just plain 'delta-E' they are probably referring to dE76. It is also known as dE-Lab and dE- ab. One problem with dE76 is that Lab itself is not 'perceptually uniform' as its creators had intended. So different amounts of visual color shift in different color areas of Lab might have the same dE76 number. Conversely, the same amount of color shift might result in different dE76 values. Another issue is that the eye is most sensitive to hue differences, then chroma and finally lightness and dE76 does not take this into account.
104.21.20 DOSWAP_SH(n as UInt32) as UInt32

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Shifts the value so you can bitwise or it with other values to get a pixel format. Notes: Do swap? ie, BGR, KYMC

104.21.21 EncodedCMMversion as Integer

MBS Images Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Queries version of LCMS library. Example:
```
dim e as Integer = LCMS2MBS.EncodedCMMversion
MsgBox str(e \1000)+"."+str((e\10) mod 100)+"."+str(e mod 10)
```

Notes: Returns 2070 for version 2.7.

104.21.22 ENDIAN16_SH(n as UInt32) as UInt32

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Shifts the value so you can bitwise or it with other values to get a pixel format. Notes: swap 16 bps endianess?

104.21.23 EXTRA_SH(n as UInt32) as UInt32

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Shifts the value so you can bitwise or it with other values to get a pixel format. Notes: Extra samples

104.21.24 FLAVOR_SH(n as UInt32) as UInt32

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Shifts the value so you can bitwise or it with other values to get a pixel format. Notes: Flavor 0=MinIsBlack(Chocolate) 1=MinIsWhite(Vanilla).
104.21. MODULE LCMS2MBS

104.21.25  Float2LabEncoded(c as LCMS2CIELabMBS) as Integer()

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Encodes a Lab value. **Notes:** Returns array of 3 encoded UInt16 values.

104.21.26  Float2LabEncodedV2(c as LCMS2CIELabMBS) as Integer()

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Encodes a Lab value to ICC v2 convention. **Notes:** Returns array of 3 encoded UInt16 values.

104.21.27  Float2XYZEncoded(c as LCMS2CIEXYZMBS) as Integer()

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Encodes a XYZ value to ICC convention. **Notes:** Returns three UInt16 values as Integer array.

104.21.28  FLOAT_SH(n as UInt32) as UInt32

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Shifts the value so you can bitwise or it with other values to get a pixel format. **Notes:** Floating point – With this flag we can differentiate 16 bits as float and as int.

104.21.29  GetAlarmCodes as Integer()

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the current global codes used to mark out-out-gamut on Proofing transforms. **Notes:** Values are meant to be encoded in 16 bits. Returns array with 16 integer values. See also:

- 104.21.30 GetAlarmCodes(context as LCMS2ContextMBS) as Integer()
104.21.30  GetAlarmCodes(context as LCMS2ContextMBS) as Integer()

MBS Images Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the current global codes used to mark out-of-gamut on Proofing transforms. **Notes:**

Values are meant to be encoded in 16 bits.
Returns array with 16 integer values.
See also:

- 104.21.29 GetAlarmCodes as Integer()

104.21.31  GetSupportedIntentCodes as UInt32()

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Fills an array with idnumbers for all supported intents.

**Example:**

```vba
dim names() as string = LCMS2MBS.GetSupportedIntentDescriptions
dim codes() as UInt32 = LCMS2MBS.GetSupportedIntentCodes

dim u as Integer = UBound(names)
for i as Integer = 0 to u
    MsgBox str(codes(i)) + ": " + names(i)
next
```

**Notes:** Little CMS plugin architecture allows to implement user-defined intents; use this function to get info about such extended functionality.
See also:

- 104.21.32 GetSupportedIntentCodes(context as LCMS2ContextMBS) as UInt32()
**Notes:** Little CMS plugin architecture allows to implement userdefined intents; use this function to get info about such extended functionality.

See also:

- 104.21.31 GetSupportedIntentCodes as UInt32()

**104.21.33 GetSupportedIntentDescriptions as string()**

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Fills an array with descriptions for all supported intents.

**Example:**

MsgBox Join(LCMS2MBS.GetSupportedIntentDescriptions, EndOfLine)

**Notes:** Little CMS plugin architecture allows to implement userdefined intents; use this function to get info about such extended functionality.

**104.21.34 GridPoints(n as Integer) as Integer**

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calculates grid points.

**Example:**

MsgBox str(LCMS2MBS.GridPoints(2))

**104.21.35 kcmsD50X as Double**

MBS Images Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** X value of D50 XYZ normalized to Y=1.0.

**104.21.36 kcmsD50Y as Double**

MBS Images Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Y value of D50 XYZ normalized to Y=1.0.
104.21.37  kcmsD50Z as Double


104.21.38  kcmsPERCEPTUAL_BLACK_X as Double

MBS Images Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** X of V4 perceptual black.

104.21.39  kcmsPERCEPTUAL_BLACK_Y as Double

MBS Images Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Y of V4 perceptual black.

104.21.40  kcmsPERCEPTUAL_BLACK_Z as Double


104.21.41  Lab2LCh(p as LCMS2CIELabMBS) as LCMS2CIELChMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Converts lab color to LCh value.

104.21.42  Lab2XYZ(p as LCMS2CIELabMBS, whitepoint as LCMS2CIEXYZMBS = nil) as LCMS2CIEXYZMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Converts color to XYZ value. **Notes:** Setting WhitePoint to NULL forces D50 as white point.
104.21.43 LabEncoded2Float(w0 as UInt16, w1 as UInt16, w2 as UInt16) as LCMS2CIELabMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Decodes a Lab value, encoded on ICC v4 convention to a lab value. **Notes:** w0, w1 and w2: Array of 3 UInt16 holding the encoded values. Returns lab color.

104.21.44 LabEncoded2FloatV2(w0 as UInt16, w1 as UInt16, w2 as UInt16) as LCMS2CIELLabMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Decodes a Lab value, encoded on ICC v2 convention to a Lab value. **Notes:** w0, w1 and w2: 3 UInt16 numbers holding the encoded values.

104.21.45 LCh2Lab(p as LCMS2CIELChMBS) as LCMS2CIELabMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Colorimetric space conversion from LCh to Lab.

104.21.46 NewBitmap(width as Integer, height as Integer, colorspace as Integer) as LCMS2BitmapMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a bitmap object with given size and color space. **See also:**

- 104.21.47 NewBitmap(width as Integer, height as Integer, colorspace as Integer, RowBytes as Integer) as LCMS2BitmapMBS
- 104.21.48 NewBitmap(width as Integer, height as Integer, colorspace as Integer, RowBytes as Integer, data as memoryblock) as LCMS2BitmapMBS

104.21.47 NewBitmap(width as Integer, height as Integer, colorspace as Integer, RowBytes as Integer) as LCMS2BitmapMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a bitmap object with given size and color space. **See also:**
104.21.48 NewBitmap(width as Integer, height as Integer, colorspace as Integer, RowBytes as Integer, data as memoryblock) as LCMS2BitmapMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a bitmap object with given size and color space.

**Notes:**
In this variant, you pass the memoryblock with right size. Passing memoryblock of wrong size can lead into crashes.
See also:

- 104.21.46 NewBitmap(width as Integer, height as Integer, colorspace as Integer) as LCMS2BitmapMBS
- 104.21.47 NewBitmap(width as Integer, height as Integer, colorspace as Integer, RowBytes as Integer) as LCMS2BitmapMBS

104.21.49 OPTIMIZED_SH(n as UInt32) as UInt32

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Shifts the value so you can bitwise or it with other values to get a pixel format.

**Notes:** Optimized – previous optimization already returns the final 8-bit value.

104.21.50 PixelFormat(FloatingPoint as boolean, Optimized as boolean, ColorSpace as UInt32, MinIsWhite as boolean, Planar as boolean, EndianSwap as boolean, DoSwap as boolean, ExtraSamples as UInt32, Channels as UInt32, BytesPerSample as UInt32, SwapFirst as boolean) as UInt32

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Utility function to create a pixel format.

**Notes:**
Format of pixel is defined by one UInt32, using bit fields as follows

A O TTTTT U Y F P X S EEE CCCC BBB
104.21. MODULE LCMS2MBS

FloatingPoint: With this flag we can differentiate 16 bits as float and as int
Optimized: Previous optimization already returns the final 8-bit value
ColorSpace: Pixeltype
MinIsWhite: Flavor 0=MinIsBlack(Chocolate) 1=MinIsWhite(Vanilla)
Planar: Planar? 0=Chunky, 1=Planar
EndianSwap: swap 16 bps endianess?
DoSwap: Do swap? ie, BGR, KYMC
ExtraSamples: Extra samples
Channels: Channels (Samples per pixel)
BytesPerSample: bytes per sample
SwapFirst: Swap first - changes ABGR to BGRA and KCMY to CMYK

104.21.51 PLANAR_SH(n as UInt32) as UInt32

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Shifts the value so you can bitwise or it with other values to get a pixel format.
Notes: Planar? 0=Chunky, 1=Planar

104.21.52 SetAdaptationState(context as LCMS2ContextMBS, d as Double) as Double

Notes:
Little CMS can handle incomplete adaptation states.

d: Degree on adaptation 0=Not adapted, 1=Complete adaptation, in-between=Partial adaptation. Use negative values to return the global state without changing it.

Returns previous global adaptation state.
See also:
• 104.21.53 SetAdaptationState(d as Double) as Double

104.21.53 SetAdaptationState(d as Double) as Double

Notes:
Little CMS can handle incomplete adaptation states.

d: Degree on adaptation 0=Not adapted, 1=Complete adaptation, in-between=Partial adaptation. Use negative values to return the global state without changing it.

Returns previous global adaptation state.
See also:

- 104.21.52 SetAdaptationState(context as LCMS2ContextMBS, d as Double) as Double

104.21.54 SetAlarmCodes(context as LCMS2ContextMBS, values() as Integer)

MBS Images Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the global codes used to mark out-out-gamut on Proofing transforms.

Notes:
Values are meant to be encoded in 16 bits.
AlarmCodes: Array of 16 codes. All 16 values must be specified, set to zero for unused channels.
See also:

- 104.21.55 SetAlarmCodes(values() as Integer)

104.21.55 SetAlarmCodes(values() as Integer)

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the global codes used to mark out-out-gamut on Proofing transforms.

Notes:
Values are meant to be encoded in 16 bits.
AlarmCodes: Array of 16 codes. All 16 values must be specified, set to zero for unused channels.
See also:

- 104.21.54 SetAlarmCodes(context as LCMS2ContextMBS, values() as Integer)

104.21.56 SetLogErrorHandler(Context as LCMS2ContextMBS, handler as LCMS2ErrorHandlerMBS)

MBS Images Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Allows user to set any specific logger.

Notes:
Each time this function is called, the previous logger is replaced. Calling this function with NULL as parameter, does reset the logger to the default Little CMS logger. The default Little CMS logger does nothing.
LCMS2ErrorHandlerMBS is an Interface. You add it to the interface of your window/thread/class. Than you get a method "Error(context as LCMS2ContextMBS, ErrorCode as UInt32, Text as string)" which is called to log error messages. The context parameter is the object you pass for reference in the various context parameters to LCMS2 functions.

See also:

- 104.21.57 SetLogErrorHandler(handler as LCMS2ErrorHandlerMBS)

### 104.21.57 SetLogErrorHandler(handler as LCMS2ErrorHandlerMBS)

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Allows user to set any specific logger.

**Notes:**
Each time this function is called, the previous logger is replaced. Calling this function with NULL as parameter, does reset the logger to the default Little CMS logger. The default Little CMS logger does nothing.

LCMS2ErrorHandlerMBS is an Interface. You add it to the interface of your window/thread/class. Than you get a method "Error(context as LCMS2ContextMBS, ErrorCode as UInt32, Text as string)" which is called to log error messages. The context parameter is the object you pass for reference in the various context parameters to LCMS2 functions.

See also:

- 104.21.56 SetLogErrorHandler(Context as LCMS2ContextMBS, handler as LCMS2ErrorHandlerMBS)

### 104.21.58 SWAPFIRST_SH(n as UInt32) as UInt32

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Shifts the value so you can bitwise or it with other values to get a pixel format.

**Notes:** Swap first - changes ABGR to BGRA and KCMY to CMYK

### 104.21.59 TagInteger(tag as string) as UInt32

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Converts tag integer to string.

**Example:**

MsgBox hex(LCMS2MBS.TagInteger("devs")) + " " + LCMS2MBS.TagString(& h64657673)
104.21.60  TagString(tag as UInt32) as string

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Converts tag string to integer.

**Example:**

MsgBox hex(LCMS2MBS.TagInteger("devs")) + " " + LCMS2MBS.TagString(& h64657673)

104.21.61  TempFromWhitePoint(TempK as LCMS2CIExyYMBS) as Double

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Correlates a black body temperature in K from given chromaticity.

**Example:**

```vbnet
dim c as new LCMS2CIExyYMBS

c.x = 0.32
c.y = 0.32
c.YY = 1.0

MsgBox str(LCMS2MBS.TempFromWhitePoint(c))
```

**Notes:** Returns temperature. Or zero on any error.

104.21.62  T_BYTES(n as UInt32) as UInt32

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Unpacks a value from a bitwise pixel format.

**Notes:** bytes per sample

104.21.63  T_CHANNELS(n as UInt32) as UInt32

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Unpacks a value from a bitwise pixel format.

**Notes:** Channels (Samples per pixel)
**104.21.64**  **T_COLORSPACE(n as UInt32) as UInt32**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Unpacks a value from a bitwise pixel format.  
**Notes:** Pixeltype

**104.21.65**  **T_DOSWAP(n as UInt32) as UInt32**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Unpacks a value from a bitwise pixel format.  
**Notes:** Do swap? ie, BGR, KYMC

**104.21.66**  **T_ENDIAN16(n as UInt32) as UInt32**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Unpacks a value from a bitwise pixel format.  
**Notes:** swap 16 bps endianess?

**104.21.67**  **T_EXTRA(n as UInt32) as UInt32**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Unpacks a value from a bitwise pixel format.  
**Notes:** Extra samples

**104.21.68**  **T_FLAVOR(n as UInt32) as UInt32**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Unpacks a value from a bitwise pixel format.  
**Notes:** Flavor 0=MinIsBlack(Chocolate) 1=MinIsWhite(Vanilla)

**104.21.69**  **T_FLOAT(n as UInt32) as UInt32**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Unpacks a value from a bitwise pixel format.  
**Notes:** Floating point – With this flag we can differentiate 16 bits as float and as int
104.21.70  T_OPTIMIZED(n as UInt32) as UInt32

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Unpacks a value from a bitwise pixel format.  
**Notes:** Optimized – previous optimization already returns the final 8-bit value

104.21.71  T_PLANAR(n as UInt32) as UInt32

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Unpacks a value from a bitwise pixel format.  
**Notes:** Planar? 0=Chunky, 1=Planar

104.21.72  T_SWAPFIRST(n as UInt32) as UInt32

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Unpacks a value from a bitwise pixel format.  
**Notes:** Swap first - changes ABGR to BGRA and KCMY to CMYK.

104.21.73  Version as string

**Example:**  
```
MsgBox LCMS2MBS.Version
```

104.21.74  WhitePointFromTemp(TempK as Double) as LCMS2CIExyYMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Correlates a black body chromaticity from given temperature in K.  
**Example:**  
```
dim c as LCMS2CIExyYMBS = LCMS2MBS.WhitePointFromTemp(6500)
MsgBox str(c.x)+" "+str(c.y)+" "+str(c.yy)
```

**Notes:**
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104.21.75  \textit{xyY2XYZ}(p \text{ as } \text{ LCMS2CIELxyYMBS}) \text{ as } \text{ LCMS2CIELxyYMBS}

\text{MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Colorimetric space conversion from \textit{xyY} to \textit{XYZ}.}

104.21.76  \textit{XYZ2Lab}(p \text{ as } \text{ LCMS2CIELxyYMBS}, \text{ whiepoint} \text{ as } \text{ LCMS2CIELxyYMBS} = \text{ nil}) \text{ as } \text{ LCMS2CIELabMBS}

\text{MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Converts \textit{XYZ} color to \textit{Lab}. Notes: Setting \text{ WhitePoint} to \text{ nil} forces D50 as white point.}

104.21.77  \textit{XYZ2xyY}(p \text{ as } \text{ LCMS2CIELxyYMBS}) \text{ as } \text{ LCMS2CIELxyYMBS}

\text{MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Colorimetric space conversion from \textit{XYZ} to \textit{xyY}.}

104.21.78  \textit{XYZEncoded2Float}(w0 \text{ as } \text{ UInt16}, w1 \text{ as } \text{ UInt16}, w2 \text{ as } \text{ UInt16}) \text{ as } \text{ LCMS2CIELxyYMBS}

\text{MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Decodes a \textit{XYZ} value, encoded on ICC convention to a \text{ LCMS2CIELxyYMBS} value. Notes: w0,w1 and w2: Array of 3 \text{ UInt16} values holding the encoded values. Returns \textit{XYZ} color on success or \text{ nil} on failure.}

104.21.79  \textbf{Constants}

104.21.80  \textit{kAVG\_SURROUND} = 1

\text{MBS Images Plugin, Plugin Version: 11.3. Function: One of the surround constants for viewing conditions.}
104.21.81  kcmsEmbeddedProfileFalse = 0

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the header flag constants.

104.21.82  kcmsEmbeddedProfileTrue = 1

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the header flag constants.

104.21.83  kcmsERROR_ALREADY_DEFINED = & h0000000A

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the error constants.

104.21.84  kcmsERROR_BAD_SIGNATURE = & h0000000B

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the error constants.

104.21.85  kcmsERROR_COLORSPACE_CHECK = 9

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the error constants.

104.21.86  kcmsERROR_CORRUPTION_DETECTED = & h0000000C

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the error constants.

104.21.87  kcmsERROR_FILE = 1

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the error constants.

104.21.88  kcmsERROR_INTERNAL = 3

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the error constants.
104.21.89  kcmsERROR_NOT_SUITABLE = & h0000000D

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the error constants.

104.21.90  kcmsERROR_NULL = 4

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the error constants.

104.21.91  kcmsERROR_RANGE = 2

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the error constants.

104.21.92  kcmsERROR_READ = 5

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the error constants.

104.21.93  kcmsERROR_SEEK = 6

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the error constants.

104.21.94  kcmsERROR_UNDEFINED = 0

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the error constants.

104.21.95  kcmsERROR_UNKNOWN_EXTENSION = 8

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the error constants.

104.21.96  kcmsERROR_WRITE = 7

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the error constants.
104.21.97  kcmsFLAGS_8BITS_DEVICELINK = 8

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the flag constants.  
**Notes:** Create 8 bits devicelinks

104.21.98  kcmsFLAGS_BLACKPOINTCOMPENSATION = & h00002000

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the flag constants.  
**Notes:** Black point compensation.

104.21.99  kcmsFLAGS_CLUT_POST_LINEARIZATION = 1

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the flag constants.  
**Notes:** Create postlinearization tables if possible

104.21.100 kcmsFLAGS_CLUT_PRE_LINEARIZATION = & h00000010

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the flag constants.  
**Notes:** Create prelinearization tables if possible

104.21.101 kcmsFLAGS_COPY_ALPHA = & h04000000

MBS Images Plugin, Plugin Version: 16.4. **Function:** One of the flag constants.  
**Notes:** Whether to copy alpha.

104.21.102 kcmsFLAGS_FORCE_CLUT = 2

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the flag constants.  
**Notes:** Force CLUT optimization

104.21.103 kcmsFLAGS_GAMUTCHECK = & h00001000

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the flag constants.  
**Notes:** Out of Gamut alarm
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104.21.104 kcmsgFLAGS_GUESSDEVICECLASS = & h00000020

MBS Images Plugin, Plugin Version: 11.3. Function: One of the flag constants. Notes: Guess device class (for transform2devicelink)

104.21.105 kcmsgFLAGS_HIGHRESPRECALC = & h00000400

MBS Images Plugin, Plugin Version: 11.3. Function: One of the flag constants. Notes: Use more memory to give better accuracy

104.21.106 kcmsgFLAGS_KEEPSEQUENCE = & h00000800

MBS Images Plugin, Plugin Version: 11.3. Function: One of the flag constants. Notes: Keep profile sequence for devicelink creation

104.21.107 kcmsgFLAGS_LOWRESPRECALC = & h00000800

MBS Images Plugin, Plugin Version: 11.3. Function: One of the flag constants. Notes: Use less memory to minimize resources

104.21.108 kcmsgFLAGS_NOCACHE = & h00000040

MBS Images Plugin, Plugin Version: 11.3. Function: One of the flag constants. Notes: Inhibit 1-pixel cache

104.21.109 kcmsgFLAGS_NODEFAULTRESOURCEDEF = & h01000000

MBS Images Plugin, Plugin Version: 11.3. Function: One of the flag constants.

104.21.110 kcmsgFLAGS_NONEGATIVES = & h00000080

MBS Images Plugin, Plugin Version: 15.0. Function: One of the flag constants. Notes: Prevent negative numbers in floating point transforms
104.21.111   kcmsFLAGS_NOOPTIMIZE = & h00000100

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the flag constants.  
**Notes:** Inhibit optimizations

104.21.112   kcmsFLAGS_NOWHITEONWHITEFIXUP = 4

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the flag constants.  
**Notes:** Don’t fix scum dot

104.21.113   kcmsFLAGS_NULLTRANSFORM = & h00000200

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the flag constants.  
**Notes:** Don’t transform anyway

104.21.114   kcmsFLAGS_SOFTPROOFING = & h00004000

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the flag constants.  
**Notes:** Do softproofing

104.21.115   kcmsFREQUENCE_UNITS_LINES_CM = 0

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the screening flag constants.

104.21.116   kcmsFREQUENCE_UNITS_LINES_INCH = 2

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the screening flag constants.

104.21.117   kcmsGlossy = 0

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the device attribute constants.
104.21.118  kcmsILLUMINANT_TYPE_A = 6

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the illuminant constants.
**Notes:** A

104.21.119  kcmsILLUMINANT_TYPE_D50 = 1

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the illuminant constants.
**Notes:** D50

104.21.120  kcmsILLUMINANT_TYPE_D55 = 5

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the illuminant constants.
**Notes:** D55

104.21.121  kcmsILLUMINANT_TYPE_D65 = 2

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the illuminant constants.
**Notes:** D65

104.21.122  kcmsILLUMINANT_TYPE_D93 = 3

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the illuminant constants.
**Notes:** D93

104.21.123  kcmsILLUMINANT_TYPE_E = 7

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the illuminant constants.
**Notes:** E

104.21.124  kcmsILLUMINANT_TYPE_F2 = 4

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the illuminant constants.
**Notes:** F2
104.21.125 \texttt{kcmsILLUMINANT\_TYPE\_F8} = 8

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the illuminant constants. \textbf{Notes}: F8

104.21.126 \texttt{kcmsILLUMINANT\_TYPE\_UNKNOWN} = 0

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the illuminant constants. \textbf{Notes}: Unknown

104.21.127 \texttt{kcmsMagicNumber} = \& h61637370

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: Magic number to identify an ICC profile.

104.21.128 \texttt{kcmsMatte} = 2

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the device attribute constants.

104.21.129 \texttt{kcmsMAXCHANNELS} = \& h00000010


104.21.130 \texttt{kcmsPRINTER\_DEFAULT\_SCREENS} = 1

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the screening flag constants.

104.21.131 \texttt{kcmsReflective} = 0

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the device attribute constants.

104.21.132 \texttt{kcmsSig10colorData} = \& h41434C52

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the colorspace signature constants.
104.21.133  kcmsSig11colorData = &h42434C52

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the colorspace signature constants.

104.21.134  kcmsSig12colorData = &h43434C52

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the colorspace signature constants.

104.21.135  kcmsSig13colorData = &h44434C52

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the colorspace signature constants.

104.21.136  kcmsSig14colorData = &h45434C52

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the colorspace signature constants.

104.21.137  kcmsSig15colorData = &h46434C52

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the colorspace signature constants.

104.21.138  kcmsSig1colorData = &h31434C52

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the colorspace signature constants.

104.21.139  kcmsSig2colorData = &h32434C52

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the colorspace signature constants.

104.21.140  kcmsSig3colorData = &h33434C52

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the colorspace signature constants.
104.21.141  \texttt{kcmsSig4colorData} = \& h34434C52

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the colorspace signature constants.

104.21.142  \texttt{kcmsSig5colorData} = \& h35434C52

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the colorspace signature constants.

104.21.143  \texttt{kcmsSig6colorData} = \& h36434C52

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the colorspace signature constants.

104.21.144  \texttt{kcmsSig7colorData} = \& h37434C52

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the colorspace signature constants.

104.21.145  \texttt{kcmsSig8colorData} = \& h38434C52

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the colorspace signature constants.

104.21.146  \texttt{kcmsSig9colorData} = \& h39434C52

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the colorspace signature constants.

104.21.147  \texttt{kcmsSigAbstractClass} = \& h61627374

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the profile class signature constants. 
\textbf{Notes}: Abstract

104.21.148  \texttt{kcmsSigAMDisplay} = \& h414D4420

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the technology signature constants.
104.21.149  kcmsSigArgyllArtsTag = & h61727473

MBS Images Plugin, Plugin Version: 16.4. **Function:** One of the tag signature constants.

104.21.150  kcmsSigAToB0Tag = & h41324230

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the tag signature constants.

104.21.151  kcmsSigAToB1Tag = & h41324231

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the tag signature constants.

104.21.152  kcmsSigAToB2Tag = & h41324232

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the tag signature constants.

104.21.153  kcmsSigBAcsElemType = & h62414353

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the data type signature constants.

104.21.154  kcmsSigBlueColorantTag = & h6258595A

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the tag signature constants.

104.21.155  kcmsSigBlueMatrixColumnTag = & h6258595A

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the tag signature constants.

104.21.156  kcmsSigBlueTRCTag = & h62545243

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the tag signature constants.
104.21.157 \textit{kcmsSigBToA0Tag} = \&h42324130

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the tag signature constants.

104.21.158 \textit{kcmsSigBToA1Tag} = \&h42324131

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the tag signature constants.

104.21.159 \textit{kcmsSigBToA2Tag} = \&h42324132

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the tag signature constants.

104.21.160 \textit{kcmsSigBToD0Tag} = \&h42324430

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the tag signature constants.

104.21.161 \textit{kcmsSigBToD1Tag} = \&h42324431

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the tag signature constants.

104.21.162 \textit{kcmsSigBToD2Tag} = \&h42324432

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the tag signature constants.

104.21.163 \textit{kcmsSigBToD3Tag} = \&h42324433

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the tag signature constants.

104.21.164 \textit{kcmsSigCalibrationDateTimeTag} = \&h63616C74

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the tag signature constants.
104.21.165  
kcmsSigCharTargetTag = & h74617267

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the tag signature constants.

104.21.166  
kcmsSigChromaticAdaptationTag = & h63686164

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the tag signature constants.

104.21.167  
kcmsSigChromaticityTag = & h6368726D

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the tag signature constants.

104.21.168  
kcmsSigChromaticityType = & h6368726D

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the data type signature constants.

104.21.169  
kcmsSigClipNegativesElemType = & h636C7020

MBS Images Plugin, Plugin Version: 15.0. **Function:** One of the data type signature constants.

104.21.170  
kcmsSigCLutElemType = & h636C7574

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the data type signature constants.

104.21.171  
kcmsSigCmyData = & h434D5920

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the colorspace signature constants.

104.21.172  
kcmsSigCmykData = & h434D594B

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the colorspace signature constants.
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104.21.173  \texttt{kcmsSigColorantOrderTag = & h636C726F}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the tag signature constants.

104.21.174  \texttt{kcmsSigColorantOrderType = & h636C726F}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the data type signature constants.

104.21.175  \texttt{kcmsSigColorantTableOutTag = & h636C6F74}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the tag signature constants.

104.21.176  \texttt{kcmsSigColorantTableTag = & h636C7274}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the tag signature constants.

104.21.177  \texttt{kcmsSigColorantTableType = & h636C7274}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the data type signature constants.

104.21.178  \texttt{kcmsSigColorimetricIntentImageStateTag = & h63696973}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the tag signature constants.

104.21.179  \texttt{kcmsSigColorSpaceClass = & h73707274}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the profile class signature constants.
\textbf{Notes:} Colorspace

104.21.180  \texttt{kcmsSigCopyrightTag = & h63707274}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the tag signature constants.
104.21.181  \texttt{kcmsSigCrdInfoTag} = \& h63726469

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the tag signature constants.

104.21.182  \texttt{kcmsSigCrdInfoType} = \& h63726469

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the data type signature constants.

104.21.183  \texttt{kcmsSigCRTDisplay} = \& h43525420

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the technology signature constants.

104.21.184  \texttt{kcmsSigCurveSetElemType} = \& h63767374

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the data type signature constants.

104.21.185  \texttt{kcmsSigCurveType} = \& h63757276

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the data type signature constants.

104.21.186  \texttt{kcmsSigDataTag} = \& h64617461

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the tag signature constants.

104.21.187  \texttt{kcmsSigDataType} = \& h64617461

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the data type signature constants.

104.21.188  \texttt{kcmsSigDateTimeTag} = \& h6474696D

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the tag signature constants.
104.21.189  \texttt{kcmsSigDateTimeType = & h}\texttt{6474696D}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the data type signature constants.

104.21.190  \texttt{kcmsSigDeviceMfgDescTag = & h}\texttt{646D6E64}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the tag signature constants.

104.21.191  \texttt{kcmsSigDeviceModelDescTag = & h}\texttt{646D6464}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the tag signature constants.

104.21.192  \texttt{kcmsSigDeviceSettingsTag = & h}\texttt{64657673}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the tag signature constants.

104.21.193  \texttt{kcmsSigDeviceSettingsType = & h}\texttt{64657673}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the data type signature constants.

104.21.194  \texttt{kcmsSigDictType = & h}\texttt{64696374}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the data type signature constants.

104.21.195  \texttt{kcmsSigDigitalCamera = & h}\texttt{6463616D}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the technology signature constants.

104.21.196  \texttt{kcmsSigDigitalCinemaProjector = & h}\texttt{64636A70}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the technology signature constants.
104.21.197  kcmsSigDigitalMotionPictureCamera = & h646D7063

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the technology signature constants.

**Notes:**

104.21.198  kcmsSigDisplayClass = & h6D6E7472

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the profile class signature constants.

**Notes:** Display

104.21.199  kcmsSigDN = & h444E2020

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the response curve type signature constants.

**Notes:** DIN E: DIN 16536-2 densitometer response, with no polarising filter.

104.21.200  kcmsSigDNN = & h444E4E20

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the response curve type signature constants.

**Notes:** DIN I: DIN 16536-2 narrow band densitometer response, with no polarising filter.

104.21.201  kcmsSigDNNP = & h444E4E50

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the response curve type signature constants.

**Notes:** DIN I: DIN 16536-2 narrow band densitometer response, with polarising filter.

104.21.202  kcmsSigDNP = & h444E2050

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the response curve type signature constants.

**Notes:** DIN E: DIN 16536-2 densitometer response, with polarising filter.

104.21.203  kcmsSigDToB0Tag = & h44324230

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the tag signature constants.
104.21.204  kcmsSigDToB1Tag = & h44324231

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the tag signature constants.

104.21.205  kcmsSigDToB2Tag = & h44324232

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the tag signature constants.

104.21.206  kcmsSigDToB3Tag = & h44324233

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the tag signature constants.

104.21.207  kcmsSigDyeSublimationPrinter = & h64737562

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the technology signature constants.

104.21.208  kcmsSigEAcsElemType = & h65414353

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the data type signature constants.

104.21.209  kcmsSigElectrophotographicPrinter = & h6570686F

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the technology signature constants.

104.21.210  kcmsSigElectrostaticPrinter = & h65737461

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the technology signature constants.

104.21.211  kcmsSigFilmScanner = & h6673636E

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the technology signature constants.
104.21.212  kcmsSigFilmWriter = & h6670726E

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the technology signature constants.

104.21.213  kcmsSigFlexography = & h666C6578

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the technology signature constants.

104.21.214  kcmsSigFloatPCS2Lab = & h6C326420

MBS Images Plugin, Plugin Version: 12.4. **Function:** One of the data type signature constants.

104.21.215  kcmsSigFloatPCS2XYZ = & h78326420

MBS Images Plugin, Plugin Version: 12.4. **Function:** One of the data type signature constants.

104.21.216  kcmsSigFocalPlaneColorimetryEstimates = & h66706365

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the Colorimetric Intent Image State Tag signature constants.

104.21.217  kcmsSigFormulaCurveSeg = & h70617266

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the curve element type signature constants.

104.21.218  kcmsSigGamutTag = & h67616D74

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the tag signature constants.

104.21.219  kcmsSigGravure = & h67726176

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the technology signature constants.
104.21.220 \( \text{kcmsSigGrayData} = & \text{h}47524159 \)

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the colorspace signature constants.

104.21.221 \( \text{kcmsSigGrayTRCTag} = & \text{h}6B545243 \)

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the tag signature constants.

104.21.222 \( \text{kcmsSigGreenColorantTag} = & \text{h}6758595A \)

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the tag signature constants.

104.21.223 \( \text{kcmsSigGreenMatrixColumnTag} = & \text{h}6758595A \)

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the tag signature constants.

104.21.224 \( \text{kcmsSigGreenTRCTag} = & \text{h}67545243 \)

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the tag signature constants.

104.21.225 \( \text{kcmsSigHlsData} = & \text{h}484C5320 \)

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the colorspace signature constants.

104.21.226 \( \text{kcmsSigHsvData} = & \text{h}48535620 \)

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the colorspace signature constants.

104.21.227 \( \text{kcmsSigIdentityElemType} = & \text{h}69646E20 \)

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the data type signature constants.
104.21.228  \texttt{kcmsSigInkJetPrinter = \& h696A6574}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the technology signature constants.

104.21.229  \texttt{kcmsSigInputClass = \& h73636E72}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the profile class signature constants.  
\textbf{Notes}: Input

104.21.230  \texttt{kcmsSigLab2FloatPCS = \& h64326C20}

MBS Images Plugin, Plugin Version: 12.4. \textbf{Function}: One of the data type signature constants.

104.21.231  \texttt{kcmsSigLab2XYZElemType = \& h78326C20}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the data type signature constants.

104.21.232  \texttt{kcmsSigLabData = \& h4C616220}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the colorspace signature constants.

104.21.233  \texttt{kcmsSigLabV2toV4 = \& h32203420}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the colorspace signature constants.

104.21.234  \texttt{kcmsSigLabV4toV2 = \& h34203220}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the colorspace signature constants.

104.21.235  \texttt{kcmsSigLinkClass = \& h6C696E6B}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the profile class signature constants.  
\textbf{Notes}: Link
104.21.236  kcmsSigLuminanceTag = & h6C756D69

MBS Images Plugin, Plugin Version: 11.3.  **Function:** One of the tag signature constants.

104.21.237  kcmsSigLut16Type = & h6D667432

MBS Images Plugin, Plugin Version: 11.3.  **Function:** One of the data type signature constants.

104.21.238  kcmsSigLut8Type = & h6D667431

MBS Images Plugin, Plugin Version: 11.3.  **Function:** One of the data type signature constants.

104.21.239  kcmsSigLutAtoBType = & h6D414220

MBS Images Plugin, Plugin Version: 11.3.  **Function:** One of the data type signature constants.

104.21.240  kcmsSigLutBtoAType = & h6D424120

MBS Images Plugin, Plugin Version: 11.3.  **Function:** One of the data type signature constants.

104.21.241  kcmsSigLuvData = & h4C757620

MBS Images Plugin, Plugin Version: 11.3.  **Function:** One of the colorspace signature constants.

104.21.242  kcmsSigLuvKData = & h4C75764B

MBS Images Plugin, Plugin Version: 11.3.  **Function:** One of the colorspace signature constants.

104.21.243  kcmsSigMacintosh = & h4150504C

MBS Images Plugin, Plugin Version: 11.3.  **Function:** One of the platform signature constants.  
**Notes:** Mac
MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the data type signature constants.

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the colorspace signature constants.
104.21.252  \texttt{kcmsSigMCH8Data = & h4D434838} \\
MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the colorspace signature constants.

104.21.253  \texttt{kcmsSigMCH9Data = & h4D434839} \\
MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the colorspace signature constants.

104.21.254  \texttt{kcmsSigMCHAData = & h4D434841} \\
MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the colorspace signature constants.

104.21.255  \texttt{kcmsSigMCHBData = & h4D434842} \\
MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the colorspace signature constants.

104.21.256  \texttt{kcmsSigMCHCData = & h4D434843} \\
MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the colorspace signature constants.

104.21.257  \texttt{kcmsSigMCHDData = & h4D434844} \\
MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the colorspace signature constants.

104.21.258  \texttt{kcmsSigMCHEData = & h4D434845} \\
MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the colorspace signature constants.

104.21.259  \texttt{kcmsSigMCHFDData = & h4D434846} \\
MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the colorspace signature constants.
104.21.  MODULE LCMS2MBS

104.21.260  kcmsSigMeasurementTag = & h6D656173

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the tag signature constants.

104.21.261  kcmsSigMeasurementType = & h6D656173

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the data type signature constants.

104.21.262  kcmsSigMediaBlackPointTag = & h626B7074

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the tag signature constants.

104.21.263  kcmsSigMediaWhitePointTag = & h77747074

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the tag signature constants.

104.21.264  kcmsSigMetaTag = & h6D657461

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the tag signature constants.

104.21.265  kcmsSigMicrosoft = & h4D534654

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the platform signature constants. **Notes**: Windows

104.21.266  kcmsSigMotionPictureFilmRecorder = & h6D706672

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the technology signature constants.

104.21.267  kcmsSigMotionPictureFilmScanner = & h6D706673

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the technology signature constants.
104.21.268  
kcmsSigMultiLocalizedUnicodeType = & h6D6C7563

MBS Images Plugin, Plugin Version: 11.3.  
**Function:** One of the data type signature constants.

104.21.269  
kcmsSigMultiProcessElementType = & h6D706574

MBS Images Plugin, Plugin Version: 11.3.  
**Function:** One of the data type signature constants.

104.21.270  
kcmsSigNamedColor2Tag = & h6E636C32

MBS Images Plugin, Plugin Version: 11.3.  
**Function:** One of the tag signature constants.

104.21.271  
kcmsSigNamedColor2Type = & h6E636C32

MBS Images Plugin, Plugin Version: 11.3.  
**Function:** One of the data type signature constants.

104.21.272  
kcmsSigNamedColorClass = & h6E6D636C

MBS Images Plugin, Plugin Version: 11.3.  
**Function:** One of the profile class signature constants.  
**Notes:** Named Colors

104.21.273  
kcmsSigNamedColorElemType = & h6E636C20

MBS Images Plugin, Plugin Version: 11.3.  
**Function:** One of the data type signature constants.

104.21.274  
kcmsSigNamedColorTag = & h6E636F6C

MBS Images Plugin, Plugin Version: 11.3.  
**Function:** One of the tag signature constants.

104.21.275  
kcmsSigNamedColorType = & h6E636F6C

MBS Images Plugin, Plugin Version: 11.3.  
**Function:** One of the data type signature constants.
MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the colorspace signature constants.

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the technology signature constants.

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the profile class signature constants. **Notes:** Output

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the tag signature constants.

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the data type signature constants.

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the reference gammut signature constants.

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the tag signature constants.

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the technology signature constants.
104.21.284  \texttt{kcmsSigPhotographicPaperPrinter} = \& \texttt{h7270686F}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the technology signature constants.

104.21.285  \texttt{kcmsSigPhotoImageSetter} = \& \texttt{h696D6773}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the technology signature constants.

104.21.286  \texttt{kcmsSigPMDisplay} = \& \texttt{h504D4420}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the technology signature constants.

104.21.287  \texttt{kcmsSigPreview0Tag} = \& \texttt{h70726530}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the tag signature constants.

104.21.288  \texttt{kcmsSigPreview1Tag} = \& \texttt{h70726531}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the tag signature constants.

104.21.289  \texttt{kcmsSigPreview2Tag} = \& \texttt{h70726532}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the tag signature constants.

104.21.290  \texttt{kcmsSigProfileDescriptionMLTag} = \& \texttt{h6473636D}


104.21.291  \texttt{kcmsSigProfileDescriptionTag} = \& \texttt{h64657363}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the tag signature constants.
104.21.292  \text{kcmsSigProfileSequenceDescTag} = \& \text{h70736571}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the tag signature constants.

104.21.293  \text{kcmsSigProfileSequenceDescType} = \& \text{h70736571}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the data type signature constants.

104.21.294  \text{kcmsSigProfileSequenceIdTag} = \& \text{h70736964}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the tag signature constants.

104.21.295  \text{kcmsSigProfileSequenceIdType} = \& \text{h70736964}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the data type signature constants.

104.21.296  \text{kcmsSigProjectionTelevision} = \& \text{h706A7476}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the technology signature constants.

104.21.297  \text{kcmsSigPs2CRD0Tag} = \& \text{h70736430}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the tag signature constants.

104.21.298  \text{kcmsSigPs2CRD1Tag} = \& \text{h70736431}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the tag signature constants.

104.21.299  \text{kcmsSigPs2CRD2Tag} = \& \text{h70736432}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the tag signature constants.
104.21.300  \texttt{kcmsSigPs2CRD3Tag = \& h70736433}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the tag signature constants.

104.21.301  \texttt{kcmsSigPs2CSATag = \& h70733273}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the tag signature constants.

104.21.302  \texttt{kcmsSigPs2RenderingIntentTag = \& h70733269}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the tag signature constants.

104.21.303  \texttt{kcmsSigRedColorantTag = \& h7258595A}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the tag signature constants.

104.21.304  \texttt{kcmsSigRedMatrixColumnTag = \& h7258595A}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the tag signature constants.

104.21.305  \texttt{kcmsSigRedTRCTag = \& h72545243}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the tag signature constants.

104.21.306  \texttt{kcmsSigReflectionHardcopyOriginalColorimetry = \& h72686F63}


104.21.307  \texttt{kcmsSigReflectionPrintOutputColorimetry = \& h72706F63}

104.21. MODULE LCMS2MBS

104.21.308  kcmsSigReflectiveScanner = & h7273636E

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the technology signature constants.

104.21.309  kcmsSigResponseCurveSet16Type = & h72637332

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the data type signature constants.

104.21.310  kcmsSigRgbData = & h52474220

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the colorspace signature constants.

104.21.311  kcmsSigS15Fixed16ArrayType = & h73663332

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the data type signature constants.

104.21.312  kcmsSigSampledCurveSeg = & h73616D66

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the curve element type signature constants.

104.21.313  kcmsSigSaturationRenderingIntentGamutTag = & h72696732

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the tag signature constants.

104.21.314  kcmsSigSceneAppearanceEstimates = & h73617065

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the Colorimetric Intent Image State Tag signature constants.

104.21.315  kcmsSigSceneColorimetryEstimates = & h73636F65

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the Colorimetric Intent Image State Tag signature constants.
104.21.316  kcmsSigScreeningDescTag = & h73637264
MBS Images Plugin, Plugin Version: 11.3. Function: One of the tag signature constants.

104.21.317  kcmsSigScreeningTag = & h7363726E
MBS Images Plugin, Plugin Version: 11.3. Function: One of the tag signature constants.

104.21.318  kcmsSigScreeningType = & h7363726E
MBS Images Plugin, Plugin Version: 11.3. Function: One of the data type signature constants.

104.21.319  kcmsSigSegmentedCurve = & h63757266
MBS Images Plugin, Plugin Version: 11.3. Function: One of the curve element type signature constants.

104.21.320  kcmsSigSGI = & h53474920
MBS Images Plugin, Plugin Version: 11.3. Function: One of the platform signature constants.
Notes: SGI

104.21.321  kcmsSigSignatureType = & h73696720
MBS Images Plugin, Plugin Version: 11.3. Function: One of the data type signature constants.

104.21.322  kcmsSigSilkscreen = & h73696C6B
MBS Images Plugin, Plugin Version: 11.3. Function: One of the technology signature constants.

104.21.323  kcmsSigSolaris = & h53554E57
MBS Images Plugin, Plugin Version: 11.3. Function: One of the platform signature constants.
Notes: Solaris
104.21.324  kcmsSigStatusA = & h53746141

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the response curve type signature constants. **Notes:** Status A: ISO 5-3 densitometer response. This is the accepted standard for reflection densitometers for measuring photographic colour prints.

104.21.325  kcmsSigStatusE = & h53746145

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the response curve type signature constants. **Notes:** Status E: ISO 5-3 densitometer response which is the accepted standard in Europe for colour reflection densitometers.

104.21.326  kcmsSigStatusI = & h53746149

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the response curve type signature constants. **Notes:** Status I: ISO 5-3 densitometer response commonly referred to as narrow band or interference-type response.

104.21.327  kcmsSigStatusM = & h5374614D

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the response curve type signature constants. **Notes:** Status M: ISO 5-3 densitometer response for measuring colour negatives.

104.21.328  kcmsSigStatusT = & h53746154

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the response curve type signature constants. **Notes:** Status T: ISO 5-3 wide band colour reflection densitometer response which is the accepted standard in the United States for colour reflection densitometers.

104.21.329  kcmsSigTaligent = & h54474E54

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the platform signature constants. **Notes:** Taligent
104.21.330  kcmsSigTechnologyTag = & h74656368

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the tag signature constants.

104.21.331  kcmsSigTextDescriptionType = & h64657363

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the data type signature constants.

104.21.332  kcmsSigTextType = & h74657874

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the data type signature constants.

104.21.333  kcmsSigThermalWaxPrinter = & h74776178

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the technology signature constants.

104.21.334  kcmsSigU16Fixed16ArrayType = & h75663332

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the data type signature constants.

104.21.335  kcmsSigUcrBgTag = & h62666420

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the tag signature constants.

104.21.336  kcmsSigUcrBgType = & h62666420

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the data type signature constants.

104.21.337  kcmsSigUInt16ArrayType = & h75693136

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the data type signature constants.
104.21.338  kcmsSigUInt32ArrayType = & h75693332

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the data type signature constants.

104.21.339  kcmsSigUInt64ArrayType = & h75693634

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the data type signature constants.

104.21.340  kcmsSigUInt8ArrayType = & h75693038

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the data type signature constants.

104.21.341  kcmsSigUnices = & h2A6E6978

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the platform signature constants. **Notes:** Unix systems

104.21.342  kcmsSigVcgtTag = & h76636774

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the tag signature constants.

104.21.343  kcmsSigVcgtType = & h76636774

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the data type signature constants.

104.21.344  kcmsSigVideoCamera = & h76696463

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the technology signature constants.

104.21.345  kcmsSigVideoMonitor = & h7669646D

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the technology signature constants.
104.21.346  \textit{kcmsSigViewingCondDescTag} = & h76756564

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the tag signature constants.

104.21.347  \textit{kcmsSigViewingConditionsTag} = & h76696577

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the tag signature constants.

104.21.348  \textit{kcmsSigViewingConditionsType} = & h76696577

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the data type signature constants.

104.21.349  \textit{kcmsSigXYZ2FloatPCS} = & h64327820

MBS Images Plugin, Plugin Version: 12.4. \textbf{Function}: One of the data type signature constants.

104.21.350  \textit{kcmsSigXYZ2LabElemType} = & h6C327820

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the data type signature constants.

104.21.351  \textit{kcmsSigXYZData} = & h58595A20

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the colorspace signature constants.

104.21.352  \textit{kcmsSigXYZType} = & h58595A20

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the data type signature constants.

104.21.353  \textit{kcmsSigYCbCrData} = & h59436272

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the colorspace signature constants.
104.21.  MODULE LCMS2MBS

104.21.354  kcmsSigYxyData = & h59787920

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the colorspace signature constants.

104.21.355  kcmsSPOT_CROSS = 7

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the spot shape constants.

104.21.356  kcmsSPOT_DIAMOND = 3

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the spot shape constants.

104.21.357  kcmsSPOT_ELLIPSE = 4

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the spot shape constants.

104.21.358  kcmsSPOT_LINE = 5

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the spot shape constants.

104.21.359  kcmsSPOT_PRINTER_DEFAULT = 1

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the spot shape constants.

104.21.360  kcmsSPOT_ROUND = 2

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the spot shape constants.

104.21.361  kcmsSPOT_SQUARE = 6

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the spot shape constants.
104.21.362  kcmsSPOT\_UNKNOWN = 0

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the spot shape constants.

104.21.363  kcmsTransparency = 1

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the device attribute constants.

104.21.364  kcmsUseAnywhere = 0

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the header flag constants.

104.21.365  kcmsUseWithEmbeddedDataOnly = 2

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the header flag constants.

104.21.366  kCUTSHEET\_SURROUND = 4

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the surround constants for viewing conditions.

104.21.367  kDARK\_SURROUND = 3

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the surround constants for viewing conditions.

104.21.368  kDIM\_SURROUND = 2

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the surround constants for viewing conditions.

104.21.369  kD\_CALCULATE = -1

MBS Images Plugin, Plugin Version: 11.3. **Function:** Special value for D Value of ViewingConditions.
104.21.370 \( \text{kINTENT ABSOLUTE COLORIMETRIC} = 3 \)

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the intent constants.  
**Notes:** Absolute Colorimetric ICC Intent.

104.21.371 \( \text{kINTENT PERCEPTUAL} = 0 \)

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the intent constants.  
**Notes:** Perceptual Colorimetric ICC Intent.

104.21.372 \( \text{kINTENT PRESERVE K ONLY PERCEPTUAL} = \& \text{h000000A} \)

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the intent constants.  
**Notes:** Special LCMS intent.

104.21.373 \( \text{kINTENT PRESERVE K ONLY RELATIVE COLORIMETRIC} = \& \text{h000000B} \)

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the intent constants.  
**Notes:** Special LCMS intent.

104.21.374 \( \text{kINTENT PRESERVE K ONLY SATURATION} = \& \text{h000000C} \)

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the intent constants.  
**Notes:** Special LCMS intent.

104.21.375 \( \text{kINTENT PRESERVE K PLANE PERCEPTUAL} = \& \text{h000000D} \)

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the intent constants.  
**Notes:** Special LCMS intent.
104.21.376  \texttt{kINTENT\_PRE\_BLACK\_VALUE\_RELATIVE\_COLORIMETRIC} = & \texttt{h000000E}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the intent constants.  
\textbf{Notes:} Special LCMS intent.

104.21.377  \texttt{kINTENT\_PRE\_BLACK\_VALUE\_SATURATION} = & \texttt{h000000F}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the intent constants.  
\textbf{Notes:} Special LCMS intent.

104.21.378  \texttt{kINTENT\_RELATIVE\_COLORIMETRIC} = 1

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the intent constants.  
\textbf{Notes:} Relative Colorimetric ICC Intent.

104.21.379  \texttt{kINTENT\_SATURATION} = 2

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the intent constants.  
\textbf{Notes:} Saturation ICC Intent.

104.21.380  \texttt{klcmsSignature} = & \texttt{h6C636D73}


104.21.381  \texttt{kLCMS\_USED\_AS\_INPUT} = 0

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the used direction constants.

104.21.382  \texttt{kLCMS\_USED\_AS\_OUTPUT} = 1

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the used direction constants.
104.21.383  kLCMS USED AS PROOF = 2

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the used direction constants.

104.21.384  kPT_ANY = 0

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the pixel type constants.  
**Notes:** Don’t check colorspace

104.21.385  kPT_CMY = 5

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the pixel type constants.  
**Notes:** CMY

104.21.386  kPT_CMYK = 6

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the pixel type constants.  
**Notes:** CMYK

104.21.387  kPT_GRAY = 3

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the pixel type constants.  
**Notes:** Gray

104.21.388  kPT_HLS = & h0000000D

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the pixel type constants.  
**Notes:** HLS

104.21.389  kPT_HSV = & h0000000C

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the pixel type constants.  
**Notes:** HSV
104.21.390  **kPT_Lab = & h0000000A**

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the pixel type constants.  
**Notes:** Lab

104.21.391  **kPT_LabV2 = & h0000001E**

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the pixel type constants.  
**Notes:** Identical to kPT_Lab, but using the V2 old encoding

104.21.392  **kPT_MCH1 = & h0000000F**

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the pixel type constants.  
**Notes:** Multichannel with 1 channels.

104.21.393  **kPT_MCH10 = & h00000018**

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the pixel type constants.  
**Notes:** Multichannel with 10 channels.

104.21.394  **kPT_MCH11 = & h00000019**

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the pixel type constants.  
**Notes:** Multichannel with 11 channels.

104.21.395  **kPT_MCH12 = & h0000001A**

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the pixel type constants.  
**Notes:** Multichannel with 12 channels.

104.21.396  **kPT_MCH13 = & h0000001B**

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the pixel type constants.  
**Notes:** Multichannel with 13 channels.
104.21. MODULE LCMS2MBS

104.21.397 kPT_MCH14 = & h0000001C

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the pixel type constants. **Notes:** Multichannel with 14 channels.

104.21.398 kPT_MCH15 = & h0000001D

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the pixel type constants. **Notes:** Multichannel with 15 channels.

104.21.399 kPT_MCH2 = & h00000010

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the pixel type constants. **Notes:** Multichannel with 2 channels.

104.21.400 kPT_MCH3 = & h00000011

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the pixel type constants. **Notes:** Multichannel with 3 channels.

104.21.401 kPT_MCH4 = & h00000012

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the pixel type constants. **Notes:** Multichannel with 4 channels.

104.21.402 kPT_MCH5 = & h00000013

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the pixel type constants. **Notes:** Multichannel with 5 channels.

104.21.403 kPT_MCH6 = & h00000014

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the pixel type constants. **Notes:** Multichannel with 6 channels.
104.21.404  kPT_MCH7 = & h00000015

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the pixel type constants. 
**Notes:** Multichannel with 7 channels.

104.21.405  kPT_MCH8 = & h00000016

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the pixel type constants. 
**Notes:** Multichannel with 8 channels.

104.21.406  kPT_MCH9 = & h00000017

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the pixel type constants. 
**Notes:** noMultichannel with 9 channels.

104.21.407  kPT_RGB = 4

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the pixel type constants. 
**Notes:** RGB

104.21.408  kPT_XYZ = 9

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the pixel type constants. 
**Notes:** XYZ

104.21.409  kPT_YCbCr = 7

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the pixel type constants. 
**Notes:** YCbCr

104.21.410  kPT_YUV = 8

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the pixel type constants. 
**Notes:** Lu’v’
104.21.411  kPT_YUVK = \& h0000000B

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the pixel type constants.
**Notes**: Lu’v’K

104.21.412  kPT_Yxy = \& h0000000E

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the pixel type constants.
**Notes**: Yxy

104.21.413  kTYPE_ABGR_16 = \& h0004049A

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the color space type constants.

104.21.414  kTYPE_ABGR_16_PLANAR = \& h0004149A

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the color space type constants.

104.21.415  kTYPE_ABGR_16_SE = \& h00040C9A

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the color space type constants.

104.21.416  kTYPE_ABGR_8 = \& h00040499

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the color space type constants.

104.21.417  kTYPE_ABGR_8_PLANAR = \& h00041499

MBS Images Plugin, Plugin Version: 12.4. **Function**: One of the color space type constants.

104.21.418  kTYPE_ABGR_FLT = \& h0044049C

MBS Images Plugin, Plugin Version: 12.4. **Function**: One of the color space type constants.
104.21.419  kTYPE_ABGR_HALFFLT = \& h0044041A

MBS Images Plugin, Plugin Version: 12.4. **Function:** One of the color space type constants.

104.21.420  kTYPE_ALabV2_8 = \& h001E4099

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.421  kTYPE_ALab_8 = \& h000A4099

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.422  kTYPE_ARGB_16 = \& h0004409A

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.423  kTYPE_ARGB_8 = \& h00044099

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.424  kTYPE_ARGB_8_PLANAR = \& h00045099

MBS Images Plugin, Plugin Version: 12.4. **Function:** One of the color space type constants.

104.21.425  kTYPE_ARGB_FLT = \& h0044409C

MBS Images Plugin, Plugin Version: 12.4. **Function:** One of the color space type constants.

104.21.426  kTYPE_ARGB_HALFFLT = \& h0044409A

MBS Images Plugin, Plugin Version: 12.4. **Function:** One of the color space type constants.
104.21. MODULE LCMS2MBS

104.21.427 kTYPE_BGRA_16 = & h0004449A

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.428 kTYPE_BGRA_16_SE = & h00044C9A

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.429 kTYPE_BGRA_8 = & h00044499

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.430 kTYPE_BGRA_8_PLANAR = & h00045499

MBS Images Plugin, Plugin Version: 12.4. **Function:** One of the color space type constants.

104.21.431 kTYPE_BGRAFLT = & h0044449C

MBS Images Plugin, Plugin Version: 12.4. **Function:** One of the color space type constants.

104.21.432 kTYPE_BGRA_HALF_FLT = & h0044449A

MBS Images Plugin, Plugin Version: 12.4. **Function:** One of the color space type constants.

104.21.433 kTYPE_BGR_16 = & h0004041A

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.434 kTYPE_BGR_16_PLANAR = & h0004141A

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.
104.21.435  \texttt{kTYPE\_BGR\_16\_SE = & h00040C1A}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the color space type constants.

104.21.436  \texttt{kTYPE\_BGR\_8 = & h00040419}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the color space type constants.

104.21.437  \texttt{kTYPE\_BGR\_8\_PLANAR = & h00041419}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the color space type constants.

104.21.438  \texttt{kTYPE\_BGR\_DBL = & h00440418}

MBS Images Plugin, Plugin Version: 12.4. \textbf{Function:} One of the color space type constants.

104.21.439  \texttt{kTYPE\_BGR\_FLT = & h0044041C}

MBS Images Plugin, Plugin Version: 12.4. \textbf{Function:} One of the color space type constants.

104.21.440  \texttt{kTYPE\_BGR\_HALF\_FLT = & h0044041A}

MBS Images Plugin, Plugin Version: 12.4. \textbf{Function:} One of the color space type constants.

104.21.441  \texttt{kTYPE\_CMYK10\_16 = & h00180052}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the color space type constants.

104.21.442  \texttt{kTYPE\_CMYK10\_16\_SE = & h00180852}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function:} One of the color space type constants.
104.21. **MODULE LCMS2MBS**

### 104.21.443 kTYPE_CMYK10_8 = & h00180051

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

### 104.21.444 kTYPE_CMYK11_16 = & h0019005A

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

### 104.21.445 kTYPE_CMYK11_16_SE = & h0019085A

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

### 104.21.446 kTYPE_CMYK11_8 = & h00190059

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

### 104.21.447 kTYPE_CMYK12_16 = & h001A0062

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

### 104.21.448 kTYPE_CMYK12_16_SE = & h001A0862

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

### 104.21.449 kTYPE_CMYK12_8 = & h001A0061

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

### 104.21.450 kTYPE_CMYK5_16 = & h0013002A

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.
104.21.451  kTYPE_CMYK5_16_SE = & h0013082A

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.452  kTYPE_CMYK5_8 = & h00130029

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.453  kTYPE_CMYK6_16 = & h00140032

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.454  kTYPE_CMYK6_16_PLANAR = & h00141032

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.455  kTYPE_CMYK6_16_SE = & h00140832

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.456  kTYPE_CMYK6_8 = & h00140031

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.457  kTYPE_CMYK6_8_PLANAR = & h00141031

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.458  kTYPE_CMYK7_16 = & h0015003A

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.
104.21.459  kTYPE_CMYK7_16_SE = & h0015083A

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.460  kTYPE_CMYK7_8 = & h00150039

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.461  kTYPE_CMYK8_16 = & h00160042

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.462  kTYPE_CMYK8_16_SE = & h00160842

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.463  kTYPE_CMYK8_8 = & h00160041

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.464  kTYPE_CMYK9_16 = & h0017004A

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.465  kTYPE_CMYK9_16_SE = & h0017084A

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.466  kTYPE_CMYK9_8 = & h00170049

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.
104.21.467  \texttt{kTYPE\_CMYKA\_8} = \& \texttt{h000600A1}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the color space type constants.

104.21.468  \texttt{kTYPE\_CMYK\_16} = \& \texttt{h00060022}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the color space type constants.

104.21.469  \texttt{kTYPE\_CMYK\_16\_PLANAR} = \& \texttt{h00061022}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the color space type constants.

104.21.470  \texttt{kTYPE\_CMYK\_16\_REV} = \& \texttt{h00062022}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the color space type constants.

104.21.471  \texttt{kTYPE\_CMYK\_16\_SE} = \& \texttt{h00060822}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the color space type constants.

104.21.472  \texttt{kTYPE\_CMYK\_8} = \& \texttt{h00060021}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the color space type constants.

104.21.473  \texttt{kTYPE\_CMYK\_8\_PLANAR} = \& \texttt{h00061021}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the color space type constants.

104.21.474  \texttt{kTYPE\_CMYK\_8\_REV} = \& \texttt{h00062021}

MBS Images Plugin, Plugin Version: 11.3. \textbf{Function}: One of the color space type constants.
104.21.475  kTYPE_CMYK_DBL = & h00460020

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants. **Notes:** Floating point with doubles.

104.21.476  kTYPE_CMYK_FLT = & h00460024

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants. **Notes:** Floating point.

104.21.477  kTYPE_CMYK_HALF_FLT = & h00460022

MBS Images Plugin, Plugin Version: 12.4. **Function:** One of the color space type constants.

104.21.478  kTYPE_CMY_16 = & h0005001A

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.479  kTYPE_CMY_16_PLANAR = & h0005101A

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.480  kTYPE_CMY_16_SE = & h0005081A

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.481  kTYPE_CMY_8 = & h00050019

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.482  kTYPE_CMY_8_PLANAR = & h00051019

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.
104.21.483  kTYPE_GRAYA_16 = & h0003008A
MBS Images Plugin, Plugin Version: 11.3. Function: One of the color space type constants.

104.21.484  kTYPE_GRAYA_16_PLANAR = & h0003108A
MBS Images Plugin, Plugin Version: 11.3. Function: One of the color space type constants.

104.21.485  kTYPE_GRAYA_16_SE = & h0003088A
MBS Images Plugin, Plugin Version: 11.3. Function: One of the color space type constants.

104.21.486  kTYPE_GRAYA_8 = & h00030089
MBS Images Plugin, Plugin Version: 11.3. Function: One of the color space type constants.

104.21.487  kTYPE_GRAYA_8_PLANAR = & h00031089
MBS Images Plugin, Plugin Version: 11.3. Function: One of the color space type constants.

104.21.488  kTYPE_GRAY_16 = & h0003000A
MBS Images Plugin, Plugin Version: 11.3. Function: One of the color space type constants.

104.21.489  kTYPE_GRAY_16_REV = & h0003200A
MBS Images Plugin, Plugin Version: 11.3. Function: One of the color space type constants.

104.21.490  kTYPE_GRAY_16_SE = & h0003080A
MBS Images Plugin, Plugin Version: 11.3. Function: One of the color space type constants.
104.21. MODULE LCMS2MBS

104.21.491  kTYPE_GRAY_8 = & h00030009

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.492  kTYPE_GRAY_8_REV = & h00032009

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.493  kTYPE_GRAY_DBL = & h00430008

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants. **Notes:** Floating point with doubles.

104.21.494  kTYPE_GRAY_FLT = & h0043000C

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants. **Notes:** Floating point.

104.21.495  kTYPE_GRAY_HALF_FLT = & h0043000A

MBS Images Plugin, Plugin Version: 12.4. **Function:** One of the color space type constants.

104.21.496  kTYPE_HLS_16 = & h000D001A

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.497  kTYPE_HLS_16_PLANAR = & h000D101A

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.498  kTYPE_HLS_16_SE = & h000D081A

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.
104.21.499  kTYPE_HLS_8 = & h000D0019

MBS Images Plugin, Plugin Version: 11.3. Function: One of the color space type constants.

104.21.500  kTYPE_HLS_8_PLANAR = & h000D1019

MBS Images Plugin, Plugin Version: 11.3. Function: One of the color space type constants.

104.21.501  kTYPE_HSV_16 = & h000C001A

MBS Images Plugin, Plugin Version: 11.3. Function: One of the color space type constants.

104.21.502  kTYPE_HSV_16_PLANAR = & h000C101A

MBS Images Plugin, Plugin Version: 11.3. Function: One of the color space type constants.

104.21.503  kTYPE_HSV_16_SE = & h000C081A

MBS Images Plugin, Plugin Version: 11.3. Function: One of the color space type constants.

104.21.504  kTYPE_HSV_8 = & h000C0019

MBS Images Plugin, Plugin Version: 11.3. Function: One of the color space type constants.

104.21.505  kTYPE_HSV_8_PLANAR = & h000C1019

MBS Images Plugin, Plugin Version: 11.3. Function: One of the color space type constants.

104.21.506  kTYPE_KCMY_16 = & h00064022

MBS Images Plugin, Plugin Version: 11.3. Function: One of the color space type constants.
104.21.507  kTYPE_KCMY_16_REV = \& h00066022

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.508  kTYPE_KCMY_16_SE = \& h00064822

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.509  kTYPE_KCMY_8 = \& h00064021

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.510  kTYPE_KCMY_8_REV = \& h00066021

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.511  kTYPE_KYMC10_16 = \& h00180452

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.512  kTYPE_KYMC10_16_SE = \& h00180C52

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.513  kTYPE_KYMC10_8 = \& h00180451

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.514  kTYPE_KYMC11_16 = \& h0019045A

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.
104.21.515  kTYPE_KYMC11_16_SE = & h00190C5A

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the color space type constants.

104.21.516  kTYPE_KYMC11_8 = & h00190459

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the color space type constants.

104.21.517  kTYPE_KYMC12_16 = & h001A0462

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the color space type constants.

104.21.518  kTYPE_KYMC12_16_SE = & h001A0C62

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the color space type constants.

104.21.519  kTYPE_KYMC12_8 = & h001A0461

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the color space type constants.

104.21.520  kTYPE_KYMC5_16 = & h0013042A

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the color space type constants.

104.21.521  kTYPE_KYMC5_16_SE = & h00130C2A

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the color space type constants.

104.21.522  kTYPE_KYMC5_8 = & h00130429

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the color space type constants.
104.21.523  kTYPE_KYMC7_16 = & h0015043A
MBS Images Plugin, Plugin Version: 11.3. Function: One of the color space type constants.

104.21.524  kTYPE_KYMC7_16_SE = & h00150C3A
MBS Images Plugin, Plugin Version: 11.3. Function: One of the color space type constants.

104.21.525  kTYPE_KYMC7_8 = & h00150439
MBS Images Plugin, Plugin Version: 11.3. Function: One of the color space type constants.

104.21.526  kTYPE_KYMC8_16 = & h00160442
MBS Images Plugin, Plugin Version: 11.3. Function: One of the color space type constants.

104.21.527  kTYPE_KYMC8_16_SE = & h00160C42
MBS Images Plugin, Plugin Version: 11.3. Function: One of the color space type constants.

104.21.528  kTYPE_KYMC8_8 = & h00160441
MBS Images Plugin, Plugin Version: 11.3. Function: One of the color space type constants.

104.21.529  kTYPE_KYMC9_16 = & h0017044A
MBS Images Plugin, Plugin Version: 11.3. Function: One of the color space type constants.

104.21.530  kTYPE_KYMC9_16_SE = & h00170C4A
MBS Images Plugin, Plugin Version: 11.3. Function: One of the color space type constants.
104.21.531 \( \text{kTYPE\_KYMC9\_8} = \& \text{h00170449} \)

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.532 \( \text{kTYPE\_KYMC\_16} = \& \text{h00060422} \)

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.533 \( \text{kTYPE\_KYMC\_16\_SE} = \& \text{h00060C22} \)

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.534 \( \text{kTYPE\_KYMC\_8} = \& \text{h00060421} \)

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.535 \( \text{kTYPE\_LabA\_FLT} = \& \text{h004A009C} \)

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants. **Notes:** Floating point.

104.21.536 \( \text{kTYPE\_LabV2\_16} = \& \text{h001E001A} \)

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.537 \( \text{kTYPE\_LabV2\_8} = \& \text{h001E0019} \)

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.538 \( \text{kTYPE\_Lab\_16} = \& \text{h000A001A} \)

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.
104.21.539  kTYPE_Lab_8 = & h000A0019

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.540  kTYPE_Lab_DBL = & h004A0018

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants. **Notes:** Floating point with doubles.

104.21.541  kTYPE_Lab_FLT = & h004A001C

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants. **Notes:** Floating point.

104.21.542  kTYPE_NAMED_COLOR_INDEX = & h0000000A

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.543  kTYPE_RGBA_16 = & h0004009A

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.544  kTYPE_RGBA_16_PLANAR = & h0004109A

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.545  kTYPE_RGBA_16_SE = & h0004089A

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.546  kTYPE_RGBA_8 = & h00040099

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.
104.21.547  kTYPE_RGBA_8_PLANAR = & h00041099

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the color space type constants.

104.21.548  kTYPE_RGBA_FLT = & h0044009C

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the color space type constants. **Notes**: Floating point.

104.21.549  kTYPE_RGBA_HALF_FLT = & h0044009A

MBS Images Plugin, Plugin Version: 12.4. **Function**: One of the color space type constants.

104.21.550  kTYPE_RGB_16 = & h0004001A

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the color space type constants.

104.21.551  kTYPE_RGB_16_PLANAR = & h0004101A

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the color space type constants.

104.21.552  kTYPE_RGB_16_SE = & h0004081A

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the color space type constants.

104.21.553  kTYPE_RGB_8 = & h00040019

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the color space type constants.

104.21.554  kTYPE_RGB_8_PLANAR = & h00041019

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the color space type constants.
104.21.555  kTYPE_RGB_DBL = & h00440018

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the color space type constants.  
**Notes**: Floating point with doubles.

104.21.556  kTYPE_RGB_FLT = & h0044001C

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the color space type constants.  
**Notes**: Floating point.

104.21.557  kTYPE_RGB_HALF_FLT = & h0044001A

MBS Images Plugin, Plugin Version: 12.4. **Function**: One of the color space type constants.

104.21.558  kTYPE_XYZ_16 = & h0009001A

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the color space type constants.

104.21.559  kTYPE_XYZ_DBL = & h00490018

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the color space type constants.  
**Notes**: Floating point with doubles.

104.21.560  kTYPE_XYZ_FLT = & h0049001C

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the color space type constants.  
**Notes**: Floating point.

104.21.561  kTYPE_YCbCr_16 = & h0007001A

MBS Images Plugin, Plugin Version: 11.3. **Function**: One of the color space type constants.
104.21.562  \( \text{kTYPE}_\text{YCbCr}_\text{16}_\text{PLANAR} = \& \text{h0007101A} \)

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.563  \( \text{kTYPE}_\text{YCbCr}_\text{16}_\text{SE} = \& \text{h0007081A} \)

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.564  \( \text{kTYPE}_\text{YCbCr}_\text{8} = \& \text{h00070019} \)

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.565  \( \text{kTYPE}_\text{YCbCr}_\text{8}_\text{PLANAR} = \& \text{h00071019} \)

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.566  \( \text{kTYPE}_\text{YUVK}_\text{16} = \& \text{h00062022} \)

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.567  \( \text{kTYPE}_\text{YUVK}_\text{8} = \& \text{h00062021} \)

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.568  \( \text{kTYPE}_\text{YUV}_\text{16} = \& \text{h0008001A} \)

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.569  \( \text{kTYPE}_\text{YUV}_\text{16}_\text{PLANAR} = \& \text{h0008101A} \)

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.
104.21.570  kTYPE_YUV_16_SE = & h0008081A

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.571  kTYPE_YUV_8 = & h00080019

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.572  kTYPE_YUV_8_PLANAR = & h00081019

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.

104.21.573  kTYPE_Yxy_16 = & h000E001A

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the color space type constants.
104.22 class LCMS2MLUMBS

104.22.1 class LCMS2MLUMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for a multi localized unicode string.

**Notes:**
MLU functions are the low-level interface to access the localization features of V4 ICC profiles. Little CMS does offer a high-level interface for easy operation. You may want, however, handle those objects by yourself.

Obtaining localized info from profiles
In versions prior to 4.0, the ICC format defined a required tag 'desc' which stored ASCII, Unicode, and Script Code versions of the profile description for display purposes. However, this structure allowed the profile to be localized for one language only through Unicode or Script Code. Profile vendors had to ship many localized versions to different countries. It also created problems when a document with localized profiles embedded in it was shipped to a system using a different language. With the adoption of V4 spec as basis, Little CMS solves all those issues honoring a new tag type: mluc' and multi localized Unicode. There is a full part of the API to deal with this stuff, but if you don’t care about the details and all you want is to display the right string, Little CMS provides a simplified interface for that purpose.

Note that ASCII is strictly 7 bits, so you need to use wide chars if you want to preserve the information in the profile. The localization trick is done by using the language and country codes, which you are supposed to supply. Those are two or three ASCII letters. A list of codes may be found here:

Language Code:

Country Codes:

In practice, "en" for "english" and "US" for "united states" are implemented in most profiles. It is Ok to set a language and a country even if the profile does not implement such specific language and country. Little CMS will search for a proper match.

If you don’t care and want just to take the first string in the profile, you can use:

For the language:
kcmsNoLanguage

For the country:
kcmsNoCountry

This will force to get the very first string, without any searching. A note of warning on that: you will get an string, but the language would be any, and probably that is not what you want. It is better to specify
104.22. CLASS LCMS2MLUMBS

a default for language, and let LittleCMS to choose any other country (or language!) if what you ask for is not available.

104.22.2 Methods

104.22.3 Constructor(context as LCMS2ContextMBS, items as UInt32)


**Example:**

```vbnet
dim c as new LCMS2MLUMBS(nil, 3)
call c.setASCII("en", "US", "Hello")
call c.setASCII("de", "DE", "Hallo")
```

104.22.4 getASCII(LanguageCode as string, CountryCode as string) as string

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets an ASCII (7 bit) entry for the given Language and country.

**Example:**

```vbnet
dim c as new LCMS2MLUMBS(nil, 3)
call c.setASCII("en", "US", "Hello")
call c.setASCII("de", "DE", "Hallo")
MsgBox "en: " +c.getASCII("en", "US") + EndOfLine + "de: " +c.getASCII("de", "DE") + EndOfLine + "any: " +c.getASCII("", ")
```

**Notes:**
Language Code: 3 chars describing the language.
CountryCode: 3 chars describing the country.

Returns the string.
104.22.5  getTranslation(LanguageCode as string, CountryCode as string, byref ObtainedLanguageCode as string, byref ObtainedCountryCode as string) as boolean


**Notes:**

Language Code: 3 chars describing the language.
CountryCode: 3 chars describing the country
ObtainedLanguage: 3 chars to get the language translation.
ObtainedCode: 3 chars to get the country translation.

Returns true on success, false on error

104.22.6  getUnicode(LanguageCode as string, CountryCode as string) as string

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets an unicode (16 bit) entry for the given Language and country.

**Notes:**

Language Code: 3 chars describing the language
CountryCode: 3 chars describing the country

Returns the string value.

104.22.7  setASCII(LanguageCode as string, CountryCode as string, ASCIIString as string) as Boolean

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Fills an ASCII (7 bit) entry for the given Language and country.

**Example:**

```vbnet
dim c as new LCMS2MLUMBS(nil, 3)

call c.setASCII("en", "US", "Hello")
call c.setASCII("de", "DE", "Hallo")

MsgBox "en: "+c.getASCII("en", "US") + EndOfLine + "de: "+c.getASCII("de", "DE") + EndOfLine + "any: "+c.getASCII("", "")
```

**Notes:**
104.22. **CLASS LCMS2MLUMBS**

Language Code: 3 chars describing the language  
CountryCode: 3 chars describing the country  
ASCIIString: String to add.

Returns true on success, false on error.

104.22.8  **setUnicode(LanguageCode as string, CountryCode as string, UnicodeString as string) as Boolean**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**  
Fills a UNICODE wide char (16 bit) entry for the given Language and country.  
**Example:**

```vba
dim c as new LCMS2MLUMBS(nil, 3)  
call c.setUnicode("de", "DE", "Ktzchen")  
dim u as string = c.getUnicode("de", "DE")  
MsgBox u
```

**Notes:**

Language Code: 3 chars describing the language  
CountryCode: 3 chars describing the country  
WideString: String to add.

Returns true on success, false on error.

104.22.9  **translationsCodes(index as Integer, byref LanguageCode as string, byref CountryCode as string) as boolean**

MBS Images Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**  
Queries language and country code for the given index.  
**Example:**

```vba
dim c as new LCMS2MLUMBS(nil, 3)  
call c.setASCII("en", "US", "Hello")  
call c.setASCII("de", "DE", "Hallo")

dim u as Integer = c.TranslationsCount-1  
for i as Integer = 0 to u  
dim LanguageCode as string  
dim CountryCode as string
```
if c.translationsCodes(i, LanguageCode, CountryCode) then
MsgBox LanguageCode + " " + CountryCode
end if
next

Notes: Index is from 0 to TranslationsCount-1.

104.22.10 Properties

104.22.11 Handle as Integer


104.22.12 TranslationsCount as Integer

dim c as new LCMS2MLUMBS(nil, 3)
call c.setASCII("en", "US", "Hello")
call c.setASCII("de", "DE", "Hallo")
MsgBox str(c.TranslationsCount) + " translations"

Notes: (Read only property)

104.22.13 Constants

104.22.14 kNoCountry = ""

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the possible language constants. **Notes:** Any language.
104.23 class LCMS2NamedColorListMBS

104.23.1 class LCMS2NamedColorListMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Specialized dictionaries for dealing with named color profiles.

104.23.2 Methods

104.23.3 Append(name as string) as Boolean

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds a new spot color to the list.

**Notes:**
If the number of elements in the list exceeds the initial storage, the list is realloc’ed to accommodate things.

Name: The spot color name without any prefix or suffix specified in Constructor.
PCS: Optionally, Encoded PCS coordinates as three integers.
Colorant: Optionally, Encoded values for device colorant. (up to 16 entries)

Returns true on success and false on failure.
See also:

- 104.23.4 Append(name as string, PCS() as Integer) as Boolean
- 104.23.5 Append(name as string, PCS() as Integer, Colorant() as Integer) as Boolean

104.23.4 Append(name as string, PCS() as Integer) as Boolean

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds a new spot color to the list.

**Notes:**
If the number of elements in the list exceeds the initial storage, the list is realloc’ed to accommodate things.

Name: The spot color name without any prefix or suffix specified in Constructor.
PCS: Optionally, Encoded PCS coordinates as three integers.
Colorant: Optionally, Encoded values for device colorant. (up to 16 entries)

Returns true on success and false on failure.
See also:
104.23. **CLASS LCMS2NAMEDCOLORLISTMBS**

- 104.23.3 Append(name as string) as Boolean
- 104.23.5 Append(name as string, PCS() as Integer, Colorant() as Integer) as Boolean

### 104.23.5 Append(name as string, PCS() as Integer, Colorant() as Integer) as Boolean

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds a new spot color to the list.  
**Notes:**  
If the number of elements in the list exceeds the initial storage, the list is realloc’ed to accommodate things.

Name: The spot color name without any prefix or suffix specified in Constructor.  
PCS: Optionally, Encoded PCS coordinates as three integers.  
Colorant: Optionally, Encoded values for device colorant. (up to 16 entries)

Returns true on success and false on failure.  
See also:

- 104.23.3 Append(name as string) as Boolean
- 104.23.4 Append(name as string, PCS() as Integer) as Boolean

### 104.23.6 Colorant(nColor as UInt32) as Integer()

**Notes:** Array has 16 entries, but not all may be in use.

### 104.23.7 ColorIndex(name as string) as Integer

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Performs a look-up in the dictionary and returns an index on the given color name.  
**Notes:** Returns index on name, or -1 if the spot color is not found.

### 104.23.8 Constructor(context as LCMS2ContextMBS, n as UInt32, Colorant-Count as UInt32, Prefix as string = "", Suffix as string = "")

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new named color list.  
**Notes:**
Allocates an empty named color dictionary.

Context: The user-defined context cargo.
N: Initial number of spot colors in the list
Colorant count: Number of channels of device space (i.e, 3 for RGB, 4 for CMYK, etc.)
Prefix, Suffix: fixed strings for all spot color names, e.g., ”coated”, ”system”, ...

On success handle is not zero.

### 104.23.9 Name(nColor as UInt32) as string


### 104.23.10 PCS(nColor as UInt32) as Integer()

**Notes:** Array has 3 entries.

### 104.23.11 Prefix(nColor as UInt32) as string


### 104.23.12 Suffix(nColor as UInt32) as string


### 104.23.13 Properties

#### 104.23.14 Count as Integer

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of spot colors in a named color list.
Notes:
Returns the number of spot colors on success, 0 on error.
(Read only property)

104.23.15 Handle as Integer

class LCMS2PipelineMBS

class LCMS2PipelineMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for a pipeline. **Notes:** Pipelines are a convenient way to model complex operations on image data. Each pipeline may contain an arbitrary number of stages. Each stage performs a single operation. Pipelines may be optimized to be executed on a certain format (8 bits, for example) and can be saved as LUTs in ICC profiles.

### 104.24.2 Methods

#### 104.24.3 Append(p as LCMS2PipelineMBS) as Boolean

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Appends pipeline l2 at the end of pipeline l1. **Notes:** Channel count must match. Returns true on success and false on failure.

#### 104.24.4 Constructor(context as LCMS2ContextMBS, InputChannels as UInt32, OutputChannels as UInt32)

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Allocates an empty pipeline. **Notes:** Final Input and output channels must be specified at creation time.

context: A user-defined context cargo. InputChannels, OutputChannels: Number of channels on input and output.

#### 104.24.5 Eval16(In as Ptr, Out as Ptr)

For in and out you can use memoryblocks with UInt16 values. We use Ptr for maximum performance. Please make sure the memoryblocks have right size. An UInt16 value has 2 bytes.

**104.24.6 EvalFloat(In as Ptr, Out as Ptr)**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Evaluates a pipeline using floating point numbers. **Notes:**

In: Input values.
Out: Output values.

For in and out you can use memoryblocks with single values. We use Ptr for maximum performance. Please make sure the memoryblocks have right size. A single value has 4 bytes.

**104.24.7 EvalReverseFloat(Target as Ptr, Result as Ptr, Hint as Ptr)**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Evaluates a pipeline in the reverse direction, using Newton’s method. **Notes:**

Target: Input values.
Result: Output values.
Hint: Where begin the search.

For target, result and hint you can use memoryblocks with single values. We use Ptr for maximum performance. Please make sure the memoryblocks have right size. A single value has 4 bytes.

Returns true on success, false on error.

**104.24.8 InsertStage(where as Integer, stage as LCMS2StageMBS) as boolean**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Inserts a stage on either the head or the tail of a given pipeline. **Notes:**
where: enumerated constant, either kAtBegin or kAtEnd.
stage: Pointer to a stage object

104.24.9 SetSaveAs8bitsFlag(save8bit as boolean) as Boolean

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Sets an internal flag that marks the pipeline to be saved in 8 bit precision.
Notes:
By default all pipelines are saved on 16 bits precision on AtoB/BToA tags and in floating point precision on DToB/BToD tags.

save8bit: State of the flag, true=Save as 8 bits, false=Save as 16 bits

Returns true on success, false on error

104.24.10 Stages as LCMS2StageMBS()


104.24.11 UnlinkStage(where as Integer) as LCMS2StageMBS

Notes:
Returns the removed stage object.
where can be kAtBegin or kAtEnd values.

104.24.12 Properties

104.24.13 context as LCMS2ContextMBS

Notes: (Read and Write property)
104.24. **CLASS LCMS2PIPELINEMBS**

104.24.14 **FirstStage as LCMS2StageMBS**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get a the first stage in the pipeline, or nil if pipeline is empty.

**Notes:**
Intended for iterators.
(Read only property)

104.24.15 **Handle as Integer**


**Notes:** (Read and Write property)

104.24.16 **InputChannels as UInt32**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of input channels of a given pipeline.

**Notes:**
Number of channels on success, 0 on error.
(Read only property)

104.24.17 **LastStage as LCMS2StageMBS**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get a the last stage in the pipeline, or nil if pipeline is empty.

**Notes:**
Intended for iterators.
(Read only property)

104.24.18 **OutputChannels as UInt32**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns number of output channels of a given pipeline.

**Notes:**
Number of channels on success, 0 on error.
(Read only property)
104.24.19 StageCount as UInt32

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns number of stages of a given pipeline. Notes: (Read only property)

104.24.20 Constants

104.24.21 kAtBegin = 0

MBS Images Plugin, Plugin Version: 11.3. Function: One of the constants for UnlinkStage. Notes: At the beginning.

104.24.22 kAtEnd = 1

MBS Images Plugin, Plugin Version: 11.3. Function: One of the constants for UnlinkStage. Notes: At the end.
104.25. **CLASS LCMS2PROFILEMBS**

104.25  **class LCMS2ProfileMBS**

104.25.1  **class LCMS2ProfileMBS**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for a LCMS2 profile.

104.25.2  **Methods**

104.25.3  **Constructor(context as LCMS2ContextMBS = nil)**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new empty profile. **Notes:** On success the handle property is not zero. See also:

- 104.25.4 Constructor(file as folderitem, write as boolean = false)

104.25.4  **Constructor(file as folderitem, write as boolean = false)**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates profile by reading in an existing profile or creating a new profile at the given location. **Notes:**

- file: file location.
- write: Whether to create new profile.

On success the handle property is not zero. See also:

- 104.25.3 Constructor(context as LCMS2ContextMBS = nil)

104.25.5  **CreateBCHSWabstractProfile(context as LCMS2ContextMBS, nLUT-Points as UInt32, Bright as double, Contrast as double, Hue as double, Saturation as double, TempSrc as UInt32, TempDest as UInt32) as LCMS2ProfileMBS**

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates an abstract devicelink operating in Lab for Bright/Contrast/Hue/Saturation and white point translation. **Notes:**
White points are specified as temperatures degree of Kelvin.

context: optional context object.
nLUTPoints: Resulting colormap resolution
Bright: Bright increment. May be negative
Contrast: Contrast increment. May be negative.
Hue: Hue displacement in degree.
Saturation: Saturation increment. May be negative
TempSrc: Source white point temperature
TempDest: Destination white point temperature.

Returns an ICC profile object on success, nil on error.

104.25.6 CreateGrayProfile(context as LCMS2ContextMBS, WhitePoint as LCMS2CIExyYMBS, TransferFunction as LCMS2ToneCurveMBS) as LCMS2ProfileMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
This function creates a gray profile based on White point and transfer function.
Notes:
It populates following tags; this conform a standard gray display profile:

1 cmsSigProfileDescriptionTag
2 cmsSigMediaWhitePointTag
3 cmsSigGrayTRCTag

Context: Optional context object.
WhitePoint: The white point of the gray device or space.
TransferFunction: tone curve describing the device or space gamma.

Returns an ICC profile object on success, NULL on error.

104.25.7 CreateInkLimitingDeviceLink(context as LCMS2ContextMBS, ColorSpaceSignature as UInt32, Limit as Double) as LCMS2ProfileMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
This is a devicelink operating in CMYK for ink-limiting.
Notes:
Space: any color space signature. Currently only kcmsSigCmykData is supported.
Limit: Amount of ink limiting in \( \% \) (0..400\%)

Returns new profile or nil on error.

104.25.8 CreateLab2Profile(context as LCMS2ContextMBS = nil, point as LCMS2CIExyYMBS = nil) as LCMS2ProfileMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a Lab to Lab identity, marking it as v2 ICC profile.
**Notes:**
Adjustments for accommodating PCS ending shall be done by Little CMS when using this profile.

Context: The optional context object.
WhitePoint: Lab reference white. nil for D50.

Returns a handle to an ICC profile object on success, nil on error.

104.25.9 CreateLab4Profile(context as LCMS2ContextMBS = nil, point as LCMS2CIExyYMBS = nil) as LCMS2ProfileMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a Lab to Lab identity, marking it as v4 ICC profile.
**Notes:**
Context: The optional context object.
WhitePoint: Lab reference white. nil for D50.

Returns a handle to an ICC profile object on success, nil on error.

104.25.10 CreateLinearizationDeviceLink(context as LCMS2ContextMBS, ColorSpaceSignature as UInt32, TransferFunction() as LCMS2ToneCurveMBS) as LCMS2ProfileMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This is a devicelink operating in the target colorspace with as many transfer functions as components.
**Notes:**
Space: The desired color space signature. Like & h52474220 for RGB.
TransferFunction: tone curves describing the device or space linearization.
Please make sure you pass right number of transfer functions matching number of channels of color space.

A handle to an ICC profile object on success, NULL on error.

**104.25.11 CreateNULLProfile**

(context as LCMS2ContextMBS = nil) as LCMS2ProfileMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Creates a fake NULL profile.

**Notes:**

This profile return 1 channel as always 0. Is useful only for gamut checking tricks.

Returns an ICC profile object on success, nil on error.

**104.25.12 CreateProfilePlaceholder**

(context as LCMS2ContextMBS = nil) as LCMS2ProfileMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Creates an empty profile object, to be populated by the programmer.

**Notes:**

WARNING: The profile without adding any information is not directly useable.

Context: The context object.

Returns an ICC profile object on success, nil on error.

**104.25.13 CreateRGBProfile**

(context as LCMS2ContextMBS, WhitePoint as LCMS2CIExyYMBS, Primaries as LCMS2CIExyYTripleMBS, TransferFunction() as LCMS2ToneCurveMBS) as LCMS2ProfileMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

This function creates a RGB profile based on White point, primaries and transfer functions.

**Notes:**

It populates following tags; this conform a standard RGB Display Profile, and then I add (As per addendum II) chromaticity tag.

Context: Optional context object.

WhitePoint: The white point of the RGB device or space.
Primaries: The primaries in xyY of the device or space.
TransferFunction: 3 tone curves describing the device or space gamma. (if you pass just one, the plugin uses it for all three channels)

Returns the new ICC profile object or nil on any error.

104.25.14 CreateSRGBProfile(context as LCMS2ContextMBS = nil) as LCMS2ProfileMBS

Notes:
sRGB is a standard RGB color space created cooperatively by HP and Microsoft in 1996 for use on monitors, printers, and the Internet.

sRGB white point is D65.
xyY 0.3127, 0.3291, 1.0

Primaries are ITU-R BT.709-5 (xYy)

R  0.400, 0.3300, 1.0
G  0.3000, 0.6000, 1.0
B  0.1500, 0.0600, 1.0
Predefined virtual profiles sRGB transfer functions are defined by:

\[
\begin{align*}
\text{If } R^{\text{sRGB}}, G^{\text{sRGB}}, B^{\text{sRGB}} &< 0.04045 \\
R &= \frac{R^{\text{sRGB}}}{12.92} \\
G &= \frac{G^{\text{sRGB}}}{12.92} \\
B &= \frac{B^{\text{sRGB}}}{12.92} \\
\text{elseif } R^{\text{sRGB}}, G^{\text{sRGB}}, B^{\text{sRGB}} &\geq 0.04045 \\
R &= \left(\frac{R^{\text{sRGB}} + 0.055}{1.055}\right)^{2.4} \\
G &= \left(\frac{G^{\text{sRGB}} + 0.055}{1.055}\right)^{2.4} \\
B &= \left(\frac{B^{\text{sRGB}} + 0.055}{1.055}\right)^{2.4} \\
\end{align*}
\]

end if

Context: Optional context object.
Returns an ICC profile object on success, nil on error.

104.25.15  \texttt{CreateXYZProfile(context as \texttt{LCMS2ContextMBS} = nil) as \texttt{LCMS2ProfileMBS}}

\textbf{Notes:}
WhitePoint used in Absolute colorimetric intent is D50.
Returns the new profile on success or nil on failure.

104.25.16  \texttt{DetectBlackPoint(Intent as Integer, Flags as Integer) as \texttt{LCMS2CIELABMBS}}


104.25.17  \texttt{DetectDestinationBlackPoint(Intent as Integer, Flags as Integer) as \texttt{LCMS2CIELABMBS}}

\textbf{Notes:} This algorithm comes from the Adobe paper disclosing its black point compensation method.
104.25.18  DetectTAC as Double

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Detects total area coverage.

**Notes:**

When several colors are printed on top of each other, there is a limit to the amount of ink that can be put on paper. This maximum total dot percentage is referred to as either TIC (Total Ink Coverage) or TAC (Total Area Coverage). This function does estimate total area coverage for a given profile in %. Only works on output profiles. On RGB profiles, 400% is returned. TAC is detected by subsampling Lab color space on 6x74x74 points.

Returns estimated area coverage in % on success, 0 on error.

104.25.19  FormatterForBitmap(BitCount as Integer = 8) as UInt32

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Build a suitable formatter for the colorspace of this profile.

**Notes:**

This is a convenience function which prepares you a pixel format for use with LCMS2BitmapMBS class. Formatters are used to describe how bitmap buffers are organized.

104.25.20  FormatterForColorspace(nBytes as UInt32, IsFloat as boolean = false) as UInt32

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Build a suitable formatter for the colorspace of this profile.

**Notes:** Formatters are used to describe how bitmap buffers are organized.

104.25.21  FormatterForPCS(nBytes as UInt32, IsFloat as boolean = false) as UInt32

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Build a suitable formatter for the colorspace of this profile.

**Notes:** Formatters are used to describe how bitmap buffers are organized.
104.25.22 GetProfileInfo(Info as Integer, LanguageCode as string, CountryCode as string) as string

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets several information strings from the profile, dealing with localization. **Notes:** Info: A selector of which info to return. (kInfoCopyright, kInfoDescription, kInfoManufacturer or kInfoModel) Language Code: first name language code from ISO-639/2. Country Code: first name region code from ISO-3166. Returns the string. (empty string on error)

104.25.23 IsCLUT(Intent as UInt32, UsedDirection as UInt32) as boolean

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns whatever a CLUT is present in the profile for the given intent and direction. **Notes:** Intent: The intent code. UsedDirection: UsedAsInput = 0, UsedAsOutput = 1, UsedAsProof = 2. Returns true CLUT is present for given intent and direction, false otherwise.

104.25.24 IsIntentSupported(Intent as UInt32, UsedDirection as UInt32) as boolean

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if the requested intent is implemented in the given direction. **Notes:** Little CMS has a fallback strategy that allows to specify any rendering intent when creating the transform, but the intent really being used may be another if the requested intent is not implemented. UsedDirection: UsedAsInput = 0, UsedAsOutput = 1, UsedAsProof = 2. Returns true if the intent is implemented, false otherwise.

104.25.25 IsTag(TagSignature as Integer) as Boolean

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if a tag with signature sig is found on the profile.
104.25. CLASS LCMS2PROFILEMBS

Notes:
Useful to check if a profile contains a given tag.
Returns true if the tag is found or false otherwise.

104.25.26 LinkTag(sig as Integer, dest as Integer) as boolean

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Creates a directory entry on tag sig that points to same location as tag dest.
Notes:
Using this function you can collapse several tag entries to the same block in the profile.

sig: Signature of linking tag.
dest: Signature of linked tag.

Returns true on success, false on error

104.25.27 MD5computeID as boolean

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Computes a MD5 checksum and stores it as Profile ID in the profile header.
Notes: Returns true on success or false on failure.

104.25.28 OpenProfileFromFile(context as LCMS2ContextMBS, file as folderitem, write as boolean = false) as LCMS2ProfileMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Opens a profile from a file or creates a new profile file there.
Notes:
context: Optional context object.
file: The folderitem for the file location.
write: If true, a new profile is created. If false an existing profile is opened.

Returns a new ICC Profile object on success or nil on failure.
See also:

• 104.25.29 OpenProfileFromFile(file as folderitem, write as boolean = false) as LCMS2ProfileMBS
104.25.29 OpenProfileFromFile(file as folderitem, write as boolean = false) as LCMS2ProfileMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Opens a profile from a file or creates a new profile file there. 

**Notes:**
context: Optional context object.
file: The folderitem for the file location.
write: If true, a new profile is created. If false an existing profile is opened.

Returns a new ICC Profile object on success or nil on failure.
See also:
- 104.25.28 OpenProfileFromFile(context as LCMS2ContextMBS, file as folderitem, write as boolean = false) as LCMS2ProfileMBS

104.25.30 OpenProfileFromMemory(context as LCMS2ContextMBS, data as Memoryblock) as LCMS2ProfileMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Opens an ICC profile which is entirely contained in a memory block.

**Notes:**
Context: Optional, the context object.
Data: The profile data.

Useful for accessing embedded profiles. This buffer must hold a full profile image. Memory must be contiguous.
Returns an ICC profile object on success, nil on error.
See also:
- 104.25.31 OpenProfileFromMemory(data as Memoryblock) as LCMS2ProfileMBS

104.25.31 OpenProfileFromMemory(data as Memoryblock) as LCMS2ProfileMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Opens an ICC profile which is entirely contained in a memory block.

**Notes:**
Context: Optional, the context object.
Data: The profile data.

Useful for accessing embedded profiles. This buffer must hold a full profile image. Memory must be contiguous.
104.25. CLASS LCMS2PROFILEMBS

Returns an ICC profile object on success, nil on error.
See also:

- 104.25.30 OpenProfileFromMemory(context as LCMS2ContextMBS, data as Memoryblock) as LCMS2ProfileMBS

104.25.32 OpenProfileFromString(context as LCMS2ContextMBS, data as string) as LCMS2ProfileMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Opens an ICC profile which is entirely contained in a string.
**Notes:**
Context: Optional, the context object.
Data: The profile data.
Useful for accessing embedded profiles. This buffer must hold a full profile image. Memory must be contiguous.
Returns an ICC profile object on success, nil on error.
See also:

- 104.25.33 OpenProfileFromString(data as string) as LCMS2ProfileMBS

104.25.33 OpenProfileFromString(data as string) as LCMS2ProfileMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Opens an ICC profile which is entirely contained in a string.
**Notes:**
Context: Optional, the context object.
Data: The profile data.
Useful for accessing embedded profiles. This buffer must hold a full profile image. Memory must be contiguous.
Returns an ICC profile object on success, nil on error.
See also:

- 104.25.32 OpenProfileFromString(context as LCMS2ContextMBS, data as string) as LCMS2ProfileMBS
104.25.34  PostScriptCRD(context as LCMS2ContextMBS, intent as UInt32, flags as UInt32 = 0) as string

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A wrapper on cmsGetPostScriptColorResource to simplify CRD generation. **Notes:**

- context: Optional a user-defined context cargo.
- Intent: The intent code, as described in Intents constants.
- Flags: A combination of bit-field kcmsFLAGS* constants.

Returns: The resource as string or an empty string on error.

104.25.35  PostScriptCSA(context as LCMS2ContextMBS, intent as UInt32, flags as UInt32 = 0) as string

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A wrapper on cmsGetPostScriptColorResource to simplify CSA generation. **Notes:**

- context: Optional a user-defined context cargo.
- Intent: The intent code, as described in Intents constants.
- Flags: A combination of bit-field kcmsFLAGS* constants.

Returns: The resource as string or an empty string on error.

104.25.36  ReadChromaticAdaptation as LCMS2CIEXYZMBS()

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads a chromatic adaptation. **Notes:** On success returns an array of 3 XYZ values.

104.25.37  ReadChromaticity as LCMS2CIExyYTripleMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads chromaticity tag. **Notes:**

For kcmsSigChromaticityTag.

Returns nil on error.
104.25.38 ReadCIEXYZ(tag as Integer) as LCMS2CIEXYZMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Reads tag as CIE XYZ value.
**Notes:**
Works with kcmsSigBlueColorantTag, kcmsSigBlueMatrixColumnTag, kcmsSigGreenColorantTag, kcmsSigGreenMatrixColumnTag, kcmsSigLuminanceTag, kcmsSigMediaBlackPointTag, kcmsSigMediaWhitePointTag, kcmsSigRedColorantTag and kcmsSigRedMatrixColumnTag.
Returns nil on any error.

104.25.39 ReadColorantOrder as Memoryblock

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Reads colorant order.
**Notes:**
For kcmsSigColorantOrderTag.
Returns nil on any error.

104.25.40 ReadDate(tag as Integer) as LCMS2DateMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Reads tag as date.
**Notes:**
Works with kcmsSigCalibrationDateTimeTag and kcmsSigDateTimeTag.
Returns nil on any error.

104.25.41 ReadDict(tag as Integer) as LCMS2DictionaryMBS

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Reads tag as Dictionary value.
**Notes:**
Works with kcmsSigMetaTag.
Returns nil on any error.
104.25.42 ReadICCData(tag as Integer) as LCMS2ICCDataMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads tag as ICC Data. **Notes:** Works with kcmsSigDataTag, kcmsSigPs2CRD0Tag, kcmsSigPs2CRD1Tag, kcmsSigPs2CRD2Tag, kcmsSigPs2CRD3Tag, kcmsSigPs2CSATag and kcmsSigPs2RenderingIntentTag. Returns nil on any error.

104.25.43 ReadICCMeasurementConditions as LCMS2ICCMeasurementConditionsMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads IIC measurement conditions. **Notes:** for kcmsSigMeasurementTag. Returns nil on any error.

104.25.44 ReadICCViewingConditions as LCMS2ICCViewingConditionsMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads tag as ICCViewingConditions value. **Notes:** Works with kcmsSigViewingConditionsTag.

104.25.45 ReadMLU(tag as Integer) as LCMS2MLUMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads tag as MLU. **Notes:** Works with kcmsSigCharTargetTag, kcmsSigCopyrightTag, kcmsSigDeviceMfgDescTag, kcmsSigDeviceModelDescTag, kcmsSigProfileDescriptionTag, kcmsSigScreeningDescTag and kcmsSigViewingCondDescTag. Returns nil on any error.

104.25.46 ReadNamedColorList(tag as Integer) as LCMS2NamedColorListMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads tag as named color list. **Notes:**
Works with `kcmsSigColorantTableTag`, `kcmsSigColorantTableOutTag`, `kcmsSigCrdInfoTag` and `kcmsSigNamedColor2Tag`. Returns nil on any error.

### 104.25.47 ReadPipeline(tag as Integer) as LCMS2PipelineMBS


**Notes:**

Works with `kcmsSigAToB0Tag`, `kcmsSigAToB1Tag`, `kcmsSigAToB2Tag`, `kcmsSigBToA0Tag`, `kcmsSigBToA1Tag`, `kcmsSigBToA2Tag`, `kcmsSigDToB0Tag`, `kcmsSigDToB1Tag`, `kcmsSigDToB2Tag`, `kcmsSigDToB3Tag`, `kcmsSigBToD0Tag`, `kcmsSigBToD1Tag`, `kcmsSigBToD2Tag`, `kcmsSigBToD3Tag`, `kcmsSigGamutTag`, `kcmsSigPreview0Tag`, `kcmsSigPreview1Tag` and `kcmsSigPreview2Tag`. Returns nil on any error.

### 104.25.48 ReadRawTag(sig as Integer) as Memoryblock


**Notes:**

Similar to ReadTag*, but different in two important aspects. The important point is, this is raw data. No processing is performed, so you can effectively read wrong or broken profiles with this function. Obviously, then you have to interpret all those bytes!

**sig:** Signature of tag to be read

Returns memoryblock with data or nil on any error.

Those functions allows to read/write directly to the ICC profile any data, without checking anything. As a rule, mixing Raw with cooked doesn’t work, so writing a tag as raw and then reading it as cooked without serializing does result into an error. If that is what you want, you will need to dump the profile to memory or disk and then reopen it.

Returns nil on any error.
104.25.49  **ReadScreening as LCMS2ScreeningMBS**

**Notes:**  
Works with kcmsSigScreeningTag.  
Returns nil on any error.

104.25.50  **ReadSequence(tag as Integer) as LCMS2SequenceMBS**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads tag as sequence.  
**Notes:**  
Only for kcmsSigProfileSequenceDescTag and kcmsSigProfileSequenceIdTag.  
Returns nil on any error.

104.25.51  **ReadSignature(tag as Integer) as UInt32**

**Notes:** Works with kcmsSigColorimetricIntentImageStateTag, kcmsSigPerceptualRenderingIntentGamutTag, kcmsSigSaturationRenderingIntentGamutTag or kcmsSigTechnologyTag.

104.25.52  **ReadTag(tag as Integer) as Variant**

**Notes:**  
This is a convenience function which gives you the tag in whatever class the plugin thing is suitable. Check with isa what class you get.  
Returns nil on any error.

104.25.53  **ReadToneCurve(tag as Integer) as LCMS2ToneCurveMBS**

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads tag as ToneCurve.  
**Notes:** Works with kcmsSigBlueTRCTag, kcmsSigGrayTRCTag, kcmsSigGreenTRCTag and kcmsSigRedTRC-
104.25. CLASS LCMS2PROFILEMBS

Tag.

104.25.54   ReadUcrBg as LCMS2UcrBgMBS


104.25.55   SaveProfileToFile(file as folderitem) as boolean


104.25.56   SaveProfileToMemory as Memoryblock


104.25.57   SaveProfileToString as string


104.25.58   TagLinkedTo(sig as Integer) as Integer

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns the tag linked to sig, in the case two tags are sharing same resource, or nil if the tag is not linked to any other tag. Notes: sig: Signature of linking tag.

Returns signature of linked tag, or 0 if no tag is linked.
104.25.59  TagSignature(index as Integer) as Integer

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the signature of a tag located in n position being n a 0-based index: i.e., first tag is indexed with n=0.
**Notes:**
index: index to a tag position (0-based)

Returns the tag signature on success, 0 on error.

104.25.60  WriteChromaticAdaptation(value as LCMS2Mat3MBS) as boolean

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Writes chromatic adaptation.
**Notes:** Variant of the function which takes matrix of values.
See also:
- 104.25.61 WriteChromaticAdaptation(values() as LCMS2CIEXYZMBS) as boolean

104.25.61  WriteChromaticAdaptation(values() as LCMS2CIEXYZMBS) as boolean

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Writes chromatic adaptation.
**Notes:**
Pass array with 3 XYZ colors.
Returns true on success.
See also:
- 104.25.60 WriteChromaticAdaptation(value as LCMS2Mat3MBS) as boolean

104.25.62  WriteChromaticity(o as LCMS2CIExyYTripleMBS) as boolean

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Writes chromaticity tag.
**Notes:**
For kcmsSigChromaticityTag.
Returns true on success and false on error.
104.25.63 WriteCIEXYZ(tag as Integer, o as LCMS2CIEXY zachMBS) as boolean

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes CIE XYZ tag. **Notes:** Works with kcmsSigBlueColorantTag, kcmsSigBlueMatrixColumnTag, kcmsSigGreenColorantTag, kcmsSigGreenMatrixColumnTag, kcmsSigLuminanceTag, kcmsSigMediaBlackPointTag, kcmsSigMediaWhitePointTag, kcmsSigRedColorantTag and kcmsSigRedMatrixColumnTag.

104.25.64 WriteColorantOrder(data as Memoryblock) as boolean

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes colorant order. **Notes:** For kcmsSigColorantOrderTag. Data should be 16 byte long. Returns true on success or false on failure.

104.25.65 WriteDate(tag as Integer, o as LCMS2DateMBS) as boolean

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes date tag. **Notes:** Works with kcmsSigCalibrationDateTimeTag and kcmsSigDateTimeTag.

104.25.66 WriteDict(tag as Integer, o as LCMS2DictionaryMBS) as boolean

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes Dictionary tag. **Notes:** Works with kcmsSigMetaTag.

104.25.67 WriteICCData(tag as Integer, o as LCMS2ICCDataMBS) as boolean

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes ICC Data tag. **Notes:** Works with kcmsSigDataTag, kcmsSigPs2CRD0Tag, kcmsSigPs2CRD1Tag, kcmsSigPs2CRD2Tag, kcmsSigPs2CRD3Tag, kcmsSigPs2CSATag and kcmsSigPs2RenderingIntentTag.
104.25.68 WriteICCMeasurementConditions(value as LCMS2ICCMeasurementConditionsMBS) as boolean

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes ICC measurement conditions.

**Notes:**

for kcmsSigMeasurementTag.
Writes data and returns true on success or false on failure.

104.25.69 WriteICCViewingConditions(o as LCMS2ICCViewingConditionsMBS) as boolean


**Notes:** Works with kcmsSigViewingConditionsTag.

104.25.70 WriteMLU(tag as Integer, o as LCMS2MLUMBS) as boolean


**Notes:** Works with kcmsSigCharTargetTag, kcmsSigCopyrightTag, kcmsSigDeviceMfgDescTag, kcmsSigDeviceModelDescTag, kcmsSigProfileDescriptionTag, kcmsSigScreeningDescTag and kcmsSigViewingCondDescTag.

104.25.71 WriteNamedColorList(tag as Integer, o as LCMS2NamedColorListMBS) as boolean


**Notes:** Works with kcmsSigColorantTableTag, kcmsSigColorantTableOutTag, kcmsSigCrdInfoTag and kcmsSigNamedColor2Tag.

104.25.72 WritePipeline(tag as Integer, o as LCMS2PipelineMBS) as boolean


**Notes:** Works with kcmsSigAToB0Tag, kcmsSigAToB1Tag, kcmsSigAToB2Tag, kcmsSigBToA0Tag, kcmsSigBToA1Tag, kcmsSigBToA2Tag, kcmsSigDToB0Tag, kcmsSigDToB1Tag, kcmsSigDToB2Tag, kcmsSigDToB3Tag,
104.25. **CLASS LCMS2PROFILEMBS**

kcmsSigBToD0Tag, kcapsSigBToD1Tag, kcapsSigBToD2Tag, kcapsSigBToD3Tag, kcapsSigGamutTag, kcapsSigPreview0Tag, kcapsSigPreview1Tag and kcapsSigPreview2Tag.

104.25.73 **WriteRawTag(sig as Integer, data as Memoryblock) as boolean**


**Notes:**

The RAW version does the same as WriteTag* but without any interpretation of the data. Please note it is fair easy to deal with ”cooked” structures, since there are primitives for allocating, deleting and modifying data. For RAW data you are responsible of everything. If you want to deal with a private tag, you may want to write a plug-in instead of messing up with raw data.

- **sig:** Signature of tag to be written
- **data:** memory block holding the data.

Returns true on success, false on error

Those functions allows to read/write directly to the ICC profile any data, without checking anything. As a rule, mixing Raw with cooked doesn’t work, so writting a tag as raw and then reading it as cooked without serializing does result into an error. If that is wha you want, you will need to dump the profile to memory or disk and then reopen it.

104.25.74 **WriteScreening(o as LCMS2ScreeningMBS) as boolean**


**Notes:** Works with kcapsSigScreeningTag.

104.25.75 **WriteSequence(tag as Integer, o as LCMS2SequenceMBS) as boolean**


**Notes:** Only for kcapsSigProfileSequenceDescTag and kcapsSigProfileSequenceIdTag.
104.25.76 WriteSignature(tag as Integer, o as UInt32) as boolean

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes a signature tag with the given values. **Notes:** Works with kcmsSigColorimetricIntentImageStateTag, kcmsSigPerceptualRenderingIntentGamutTag, kcmsSigSaturationRenderingIntentGamutTag or kcmsSigTechnologyTag.

104.25.77 WriteToneCurve(tag as Integer, o as LCMS2ToneCurveMBS) as boolean

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes tone curve tag. **Example:**

```vba
// read a profile
dim f as FolderItem = SpecialFolder.Desktop.Child(“myprofile.icc”)  
dim p as LCMS2ProfileMBS = LCMS2ProfileMBS.OpenProfileFromFile(f)

// find gray level tone curve
dim t as LCMS2ToneCurveMBS = p.ReadToneCurve(LCMS2MBS.kcmsSigGrayTRCTag)
if t<>nil then

// let’s make a new one with half of old values
dim values(1000) as single
for i as Integer = 0 to 1000
    values(i) = t.EvalToneCurveFloat(i/1000.0) * 0.5
next

// build new curve with that values
dim n as LCMS2ToneCurveMBS = LCMS2ToneCurveMBS.BuildTabulatedToneCurve(nil, values)

// write back
if not p.WriteToneCurve(LCMS2MBS.kcmsSigGrayTRCTag, n) then
    MsgBox ”failed to write tone curve”
end if

// write profile
f = SpecialFolder.Desktop.Child(”test.icc”)  
call p.SaveProfileToFile(f)
```

**Notes:** Works with kcmsSigBlueTRCTag, kcmsSigGrayTRCTag, kcmsSigGreenTRCTag and kcmsSigRedTRCTag.
104.25.78 WriteUcrBg(o as LCMS2UcrBgMBS) as boolean

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes UcrBg tag.

104.25.79 Properties

104.25.80 ChannelCount as UInt32

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of channels used for the colorspace of this profile.  
**Example:**
```vba
dim p as LCMS2ProfileMBS = LCMS2ProfileMBS.CreateSRGBProfile
MsgBox str(p.ChannelCount)
```

**Notes:** (Read only property)

104.25.81 ColorSpaceType as Integer

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets/Sets the color space used by the given profile, using the ICC convention.  
**Notes:** (Read and Write property)

104.25.82 context as LCMS2ContextMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The context for this profile.  
**Notes:**  
Error handling uses it, so you can see which part of your application failed.  
(Read only property)

104.25.83 DeviceClass as Integer

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets/sets the device class signature from profile header.  
**Notes:**
Device Classes:

kcmsSigInputClass & h73636E72 scnr
kcmsSigDisplayClass & h6D6E7472 mntr
kcmsSigOutputClass & h70727472 prtr
kcmsSigLinkClass & h6C696E6B link
kcmsSigAbstractClass & h61627374 abst
kcmsSigColorSpaceClass & h73706163 spac
kcmsSigNamedColorClass & h6e6d636c nmcl

(Read and Write property)

**104.25.84 File as Folderitem**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The file reference. **Notes:** Only set for file based profiles, so you can later know what file you used to create the profile object. (Read and Write property)

**104.25.85 Handle as Integer**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Internal object reference. **Notes:** (Read and Write property)

**104.25.86 HeaderAttributes as UInt64**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get/set header attribute flags. **Notes:** Flags can be a combination of kcmsReflective,kcmsTransparency,kcmsGlossy or kcmsMatte. (Read and Write property)
104.25.87  **HeaderCreationDateTime as LCMS2DateMBS**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the date and time when profile was created.

**Notes:**
This is a field stored in profile header.
Returns nil on any error.
(Read only property)

104.25.88  **HeaderCreator as UInt32**

MBS Images Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get/set the creator signature as described in the header.

**Notes:** (Read only property)

104.25.89  **HeaderFlags as UInt32**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get or set header flags of given ICC profile object.

**Notes:**
The profile flags field does contain flags to indicate various hints for the CMM such as distributed processing and caching options. The least-significant 16 bits are reserved for the ICC. Flags in bit positions 0 and 1 shall be used as indicated below.

<table>
<thead>
<tr>
<th>Position</th>
<th>Field Length (bits)</th>
<th>Field Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>Embedded Profile (kcmsEmbeddedProfileFalse if not embedded, kcmsEmbeddedProfileTrue if embedded in file)</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>Profile cannot be used independently from the embedded color data (set to kcmsUseWithEmbeddedDataOnly if true, kcmsUseAnywhere if false)</td>
</tr>
</tbody>
</table>

(Read and Write property)

104.25.90  **HeaderManufacturer as UInt32**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get/set the manufacturer signature as described in the header.

**Notes:**
This functionality is widely superseded by the manufacturer tag. Of use only in elder profiles.
104.25.91  **HeaderView as UInt32**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get/set the model signature as described in the header.
**Notes:**
This functionality is widely superseded by the model tag. Of use only in elder profiles.
(Read and Write property)

104.25.92  **HeaderProfileID as string**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get/set header profile ID.
**Notes:**
Profile ID must be a 16 byte long string.
(Read and Write property)

104.25.93  **IsMatrixShaper as Boolean**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns whatever a matrix-shaper is present in the profile.
**Notes:**
Note that a profile may hold matrix-shaper and CLUT as well.
Returns true if the profile holds a matrix-shaper, false otherwise.
(Read only property)

104.25.94  **Name as string**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the profile name.
**Notes:**
This is a convenience function. The plugin builds this name from manufacturer, model and description strings.
(Read only property)
104.25. **CLASS LCMS2PROFILEMBS**

### 104.25.95 PCS as Integer

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets/Sets the profile connection space used by the given profile, using the ICC convention. **Notes:** (Read and Write property)

### 104.25.96 ProfileICCversion as Integer

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get/set the profile ICC version in the same format as it is stored in the header. **Notes:** (Read and Write property)

### 104.25.97 ProfileVersion as Double

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets/Sets the ICC version in profile header. **Notes:** The version given as to this function as a float n.m is properly encoded. (Read and Write property)

### 104.25.98 RenderingIntent as Integer

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets/Sets the profile header rendering intent. **Notes:** From the ICC spec: "The rendering intent field shall specify the rendering intent which should be used (or, in the case of a Devicelink profile, was used) when this profile is (was) combined with another profile. In a sequence of more than two profiles, it applies to the combination of this profile and the next profile in the sequence and not to the entire sequence. Typically, the user or application will set the rendering intent dynamically at runtime or embedding time. Therefore, this flag may not have any meaning until the profile is used in some context, e.g. in a Devicelink or an embedded source profile." (Read and Write property)

### 104.25.99 TagCount as Integer

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns number of tags of a given profile. **Notes:**
Returns number of tags on success, -1 on error.
(Read only property)

104.25.100  Constants

104.25.101  kInfoCopyright = 3

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the info selectors for GetProfileInfo.
**Notes:** The copyright string.

104.25.102  kInfoDescription = 0

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the info selectors for GetProfileInfo.
**Notes:** The description string.

104.25.103  kInfoManufacturer = 1

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the info selectors for GetProfileInfo.
**Notes:** The manufacturer string.

104.25.104  kInfoModel = 2

MBS Images Plugin, Plugin Version: 11.3. **Function:** One of the info selectors for GetProfileInfo.
**Notes:** The model string.
104.26. CLASS LCMS2SCREENINGCHANNELMBS

104.26 class LCMS2ScreeningChannelMBS

104.26.1 class LCMS2ScreeningChannelMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The screening information for one channel.

104.26.2 Methods

104.26.3 Clone as LCMS2ScreeningChannelMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a copy of the screening channel object.

104.26.4 Constructor(Frequency as Double = 0.0, ScreenAngle as Double = 0.0, SpotShape as UInt32 = 0)

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor.

**See also:**
- 104.26.5 Constructor(other as LCMS2ScreeningChannelMBS)

104.26.5 Constructor(other as LCMS2ScreeningChannelMBS)

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Initializes object with values from other object.

**See also:**
- 104.26.4 Constructor(Frequency as Double = 0.0, ScreenAngle as Double = 0.0, SpotShape as UInt32 = 0)

104.26.6 Properties

104.26.7 Frequency as Double

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The frequency.

**Notes:** (Read and Write property)
104.26.8 ScreenAngle as Double

**Notes:** (Read and Write property)

104.26.9 SpotShape as UInt32

**Notes:**  
See kcmsSpot* constants.  
(Read and Write property)
104.27. class LCMS2ScreeningMBS

104.27.1. class LCMS2ScreeningMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for screening parameters.

104.27.2. Properties

104.27.3. Channels as UInt32

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of channels. **Notes:** (Read and Write property)

104.27.4. Flag as UInt32

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The flags for screening. **Notes:** See flags kcmsPRINTER_DEFAULT_SCREENS, kcmsFREQUENCE_UNITS_LINES_CM and kcmsFREQUENCE_UNITS_LINES_INCH. (Read and Write property)

104.27.5. Channel(index as Integer) as LCMS2ScreeningChannelMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The screening information for each channel. **Notes:** Index from 0 to 15. (Read and Write computed property)
104.28  class LCMS2SequenceDescriptionMBS

104.28.1  class LCMS2SequenceDescriptionMBS


104.28.2  Properties

104.28.3  AttributeFlags as UInt64

**Notes**: (Read and Write property)

104.28.4  Description as LCMS2MLUMBS

**Notes**: (Read only property)

104.28.5  DeviceMfg as UInt32

**Notes**: (Read and Write property)

104.28.6  DeviceModel as UInt32

**Notes**: (Read and Write property)

104.28.7  Manufacturer as LCMS2MLUMBS

104.28. **Model as LCMS2MLUMBS**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The model string.  
**Notes:** (Read only property)

104.28.9 **ProfileID as Memoryblock**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The profile ID. 
**Notes:**  
16 bytes and typically the result of a MD5.  
(Read only property)

104.28.10 **Technology as UInt32**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The technology value. 
**Notes:**  
Use one of the following constants: kcmsSigDigitalCamera, kcmsSigFilmScanner, kcmsSigReflectiveScanner, kcmsSigInkJetPrinter, kcmsSigThermalWaxPrinter, kcmsSigElectrophotographicPrinter, kcmsSigElectrostaticPrinter, kcmsSigDyeSublimationPrinter, kcmsSigPhotographicPaperPrinter, kcmsSigFilmWriter, kcmsSigVideoMonitor, kcmsSigVideoCamera, kcmsSigProjectionTelevision, kcmsSigCRTDisplay, kcmsSigPMDisplay, kcmsSigAMDisplay, kcmsSigPhotoCD, kcmsSigPhotoImageSetter, kcmsSigGravure, kcmsSigOffsetLithography, kcmsSigSilkscreen, kcmsSigFlexography, kcmsSigMotionPictureFilmScanner, kcmsSigMotionPictureFilmRecorder, kcmsSigDigitalMotionPictureCamera or kcmsSigDigitalCinemaProjector.  
(Read and Write property)
104.29 class LCMS2SequenceMBS

104.29.1 class LCMS2SequenceMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Profile sequence descriptors.  
**Notes:** Profile sequence can be read/written by using cmsReadTag and cmsWriteTag functions.

104.29.2 Methods

104.29.3 Constructor(context as LCMS2ContextMBS, Count as UInt32)

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new sequence with the given number of entries.  
**Example:**
```
dim d as new LCMS2SequenceMBS(nil, 5)
MsgBox str(d.Count)
```

**Notes:** On success the handle property is not zero.

104.29.4 Properties

104.29.5 Count as UInt32

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of sequence descriptions used in this class.  
**Notes:** (Read only property)

104.29.6 Handle as Integer

**Notes:** (Read and Write property)
104.29.7 Description(index as Integer) as LCMS2SequenceDescriptionMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The sequence descriptions.
**Notes:**
Index from 0 to count-1.
(Read and Write computed property)
104.30  class LCMS2StageMBS

104.30.1  class LCMS2StageMBS

**Notes:** Stages are single-step operations that can be chained to create pipelines. Actual stage types does include matrices, tone curves, Look-up interpolation and user-defined. There are functions to create new stage types and a plug-in type to allow stages to be saved in multi profile elements tag types. See the plug-in API for further details.

104.30.2  Methods

104.30.3  CLutFloatValues as Double()

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns CLut floating point values.  
**Notes:** Only if stage is from type kcmsSigCLutElemType and CLutHasFloatValues = true.

104.30.4  CLutUInt16Values as UInt16()

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns CLut integer values.  
**Notes:** Only if stage is from type kcmsSigCLutElemType and CLutHasFloatValues = false.

104.30.5  CreateStageWithCLut16bit(Context as LCMS2ContextMBS, GridPoints as UInt32, inputChan as UInt32, outputChan as UInt32) as LCMS2StageMBS

MBS Images Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a stage that contains a 16 bits multidimensional lookup table (CLUT).  
**Notes:**  
Each dimension has same resolution.

- Context: Pointer to a user-defined context cargo.  
- GridPoints: the number of nodes (same for each component).  
- inputChan: Number of input channels.  
- outputChan: Number of output channels.
Returns a pipeline stage on success, nil on error.

See also:

- 104.30.6 CreateStageWithCLut16bit(context as LCMS2ContextMBS, GridPoints as UInt32, inputChan as UInt32, outputChan as UInt32, TableUInt16 as Memoryblock) as LCMS2StageMBS

- 104.30.7 CreateStageWithCLut16bit(context as LCMS2ContextMBS, GridPoints as UInt32, inputChan as UInt32, outputChan as UInt32, values() as UInt16) as LCMS2StageMBS

104.30.6 CreateStageWithCLut16bit(context as LCMS2ContextMBS, GridPoints as UInt32, inputChan as UInt32, outputChan as UInt32, TableUInt16 as Memoryblock) as LCMS2StageMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a stage that contains a 16 bits multidimensional lookup table (CLUT).

**Notes:**

Each dimension has same resolution. The CLUT can be initialized by specifying values in Table parameter. The recommended way is to set Table to nil and use StageSampleCLut16bit with a event, because this way the implementation is independent of the selected number of grid points.

Context: Pointer to a user-defined context cargo.

GridPoints: the number of nodes (same for each component).

inputChan: Number of input channels.

outputChan: Number of output channels.

Table: Memoryblock with a table of UInt16, holding initial values for nodes. If nil the CLUT is initialized to zero.

Returns a pipeline stage on success, nil on error.

Raises exception if table memoryblock is not empty/nil, but has wrong size.

See also:

- 104.30.5 CreateStageWithCLut16bit(Context as LCMS2ContextMBS, GridPoints as UInt32, inputChan as UInt32, outputChan as UInt32) as LCMS2StageMBS

- 104.30.7 CreateStageWithCLut16bit(context as LCMS2ContextMBS, GridPoints as UInt32, inputChan as UInt32, outputChan as UInt32, values() as UInt16) as LCMS2StageMBS

104.30.7 CreateStageWithCLut16bit(context as LCMS2ContextMBS, GridPoints as UInt32, inputChan as UInt32, outputChan as UInt32, values() as UInt16) as LCMS2StageMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a stage that contains a 16 bits multidimensional lookup table (CLUT).

**Example:**
// creates CLUT with 17 grid points, 3 input channels RGB and 4 output channels CMYK

dim data() as UInt16

// fill all the data into the table upfront, RGB to CMYK

dim c,m,y,k as Double

for Grid0 as Integer = 0 to 16 // 17 grid, 1st input
dim r as Double = Grid0 / 16
for Grid1 as Integer = 0 to 16 // 17 grid, 2nd input
dim g as Double = Grid0 / 16
for Grid2 as Integer = 0 to 16 // 17 grid, 3rd input
dim b as Double = Grid0 / 16

// some bad conversion

c = r
m = g
y = b
k = 0

// fill array with values
data.Append 65535 * c
data.Append 65535 * m
data.Append 65535 * y
data.Append 65535 * k

next
next
next

dim CLUT as LCMS2StageMBS = LCMS2StageMBS.CreateStageWithCLut16bit(nil, 17, 3, 4, data)
break

Notes:

Each dimension has same resolution. The CLUT can be initialized by specifying values in Table parameter.

Context: Pointer to a user-defined context cargo.
GridPoints: the number of nodes (same for each component).
inputChan: Number of input channels.
outputChan: Number of output channels.
values: array of U1Int16, holding initial values for nodes.
Returns a pipeline stage on success, nil on error. Raises exception if values array is not empty/nil, but has wrong size.

See also:

- 104.30.5 CreateStageWithCLut16bit(Context as LCMS2ContextMBS, GridPoints as UInt32, inputChan as UInt32, outputChan as UInt32) as LCMS2StageMBS 16122
- 104.30.6 CreateStageWithCLut16bit(context as LCMS2ContextMBS, GridPoints as UInt32, inputChan as UInt32, outputChan as UInt32, TableUInt16 as Memoryblock) as LCMS2StageMBS 16123

104.30.8 CreateStageWithCLut16bitGranular(Context as LCMS2ContextMBS, clutPoints() as UInt32, inputChan as UInt32, outputChan as UInt32) as LCMS2StageMBS

MBS Images Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Similar to CreateStageWithCLut16bit, but it allows different granularity on each CLUT dimension.

**Notes:**

- Context: user-defined context cargo.
- clutPoints: Memoryblock with array [ inputChan ] of UInt32 holding the number of nodes for each component.
- inputChan: Number of input channels,
- outputChan: Number of output channels.

Returns a pipeline stage on success, nil on error.

See also:

- 104.30.9 CreateStageWithCLut16bitGranular(context as LCMS2ContextMBS, clutPoints() as UInt32, inputChan as UInt32, outputChan as UInt32, TableUInt16 as Memoryblock) as LCMS2StageMBS 16125
- 104.30.10 CreateStageWithCLut16bitGranular(Context as LCMS2ContextMBS, clutPoints() as UInt32, inputChan as UInt32, outputChan as UInt32, TableUInt16() as UInt16) as LCMS2StageMBS 16126

104.30.9 CreateStageWithCLut16bitGranular(context as LCMS2ContextMBS, clutPoints() as UInt32, inputChan as UInt32, outputChan as UInt32, TableUInt16 as Memoryblock) as LCMS2StageMBS

MBS Images Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Similar to CreateStageWithCLut16bit, but it allows different granularity on each CLUT dimension.

**Notes:**

- Context: user-defined context cargo.
- clutPoints: Memoryblock with array [ inputChan ] of UInt32 holding the number of nodes for each component.
- inputChan: Number of input channels,
outputChan: Number of output channels.
Table: Memoryblock with table of UInt16, holding initial values for nodes. If nil the CLUT is initialized to zero.

Returns a pipeline stage on success, nil on error.
Raises exception if table memoryblock is not empty,nil, but has wrong size.
See also:

- 104.30.8 CreateStageWithCLut16bitGranular(Context as LCMS2ContextMBS, clutPoints() as UInt32, 
inputChan as UInt32, outputChan as UInt32) as LCMS2StageMBS
- 104.30.10 CreateStageWithCLut16bitGranular(Context as LCMS2ContextMBS, clutPoints() as UInt32, 
inputChan as UInt32, outputChan as UInt32, TableUInt16() as UInt16) as LCMS2StageMBS

104.30.10  CreateStageWithCLut16bitGranular(Context as LCMS2ContextMBS, 
clutPoints() as UInt32, inputChan as UInt32, outputChan as UInt32, 
TableUInt16() as UInt16) as LCMS2StageMBS

MBS Images Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Similar to CreateStageWithCLut16bit, but it allows different granularity on each CLUT dimension.

**Example:**

```csharp
// create CLUT with 15 grid points for 1st channel, 16 for 2nd channel and 17 for 3rd channel
dim ChannelGridPoints(2) as UInt32
ChannelGridPoints(0) = 15
ChannelGridPoints(1) = 16
ChannelGridPoints(2) = 17

dim noData() as UInt16 = nil

dim CLUT as LCMS2StageMBS = LCMS2StageMBS.CreateStageWithCLut16bitGranular(nil, Channel-
GridPoints, 3, 4, noData)
```

**Notes:**

Context: user-defined context cargo.
clutPoints: Array [ inputChan ] of UInt32 holding the number of nodes for each component.
inputChan: Number of input channels.
outputChan: Number of output channels.
Table: Table of UInt16, holding initial values for nodes. If nil/empty the CLUT is initialized to zero.

Returns a pipeline stage on success, nil on error.
Raises exception if values array is not empty/nil, but has wrong size.
See also:
104.30.  CLASS LCMS2STAGEMBS

- 104.30.8 CreateStageWithCLut16bitGranular(Context as LCMS2ContextMBS, clutPoints() as UInt32, inputChan as UInt32, outputChan as UInt32) as LCMS2StageMBS

- 104.30.9 CreateStageWithCLut16bitGranular(context as LCMS2ContextMBS, clutPoints() as UInt32, inputChan as UInt32, outputChan as UInt32, TableUInt16 as Memoryblock) as LCMS2StageMBS

104.30.11 CreateStageWithCLutFloat(Context as LCMS2ContextMBS, GridPoints as UInt32, inputChan as UInt32, outputChan as UInt32) as LCMS2StageMBS

MBS Images Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Creates a stage that contains a float multidimensional lookup table (CLUT).

**Notes:**

Each dimension has same resolution.

Context: user-defined context cargo.
GridPoints: the number of nodes (same for each component).
inputChan: Number of input channels.
outputChan: Number of output channels.

Returns a pipeline stage on success, nil on error.

See also:

- 104.30.12 CreateStageWithCLutFloat(context as LCMS2ContextMBS, GridPoints as UInt32, inputChan as UInt32, outputChan as UInt32, TableSingle as Memoryblock) as LCMS2StageMBS

- 104.30.13CreateStageWithCLutFloat(context as LCMS2ContextMBS, GridPoints as UInt32, inputChan as UInt32, outputChan as UInt32, values() as Double) as LCMS2StageMBS

- 104.30.14 CreateStageWithCLutFloat(Context as LCMS2ContextMBS, GridPoints as UInt32, inputChan as UInt32, outputChan as UInt32, values() as single) as LCMS2StageMBS

104.30.12 CreateStageWithCLutFloat(context as LCMS2ContextMBS, GridPoints as UInt32, inputChan as UInt32, outputChan as UInt32, TableSingle as Memoryblock) as LCMS2StageMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Creates a stage that contains a float multidimensional lookup table (CLUT).

**Notes:**

Each dimension has same resolution. The CLUT can be initialized by specifying values in Table parameter. The recommended way is to set Table to nil and use StageSampleCLutFloat with an event, because this way the implementation is independent of the selected number of grid points.
Context: user-defined context cargo.
GridPoints: the number of nodes (same for each component).
inputChan: Number of input channels.
outputChan: Number of output channels.
Table: Memoryblock with a table of Single (Float32) values, holding initial values for nodes. If nil the CLUT is initialized to zero.

Returns a pipeline stage on success, nil on error.
Raises exception if table memoryblock is not empty/nil, but has wrong size.
See also:

- 104.30.11 CreateStageWithCLutFloat(Context as LCMS2ContextMBS, GridPoints as UInt32, inputChan as UInt32, outputChan as UInt32) as LCMS2StageMBS
- 104.30.13 CreateStageWithCLutFloat(context as LCMS2ContextMBS, GridPoints as UInt32, inputChan as UInt32, outputChan as UInt32, values() as Double) as LCMS2StageMBS
- 104.30.14 CreateStageWithCLutFloat(Context as LCMS2ContextMBS, GridPoints as UInt32, inputChan as UInt32, outputChan as UInt32, values() as single) as LCMS2StageMBS

104.30.13 CreateStageWithCLutFloat(context as LCMS2ContextMBS, GridPoints as UInt32, inputChan as UInt32, outputChan as UInt32, values() as Double) as LCMS2StageMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a stage that contains a float multidimensional lookup table (CLUT).

**Example:**

```csharp
// creates CLUT with 17 grid points, 3 input channels and 4 output channels
dim noData() as Double = nil
dim CLUT as LCMS2StageMBS = LCMS2StageMBS.CreateStageWithCLutFloat(nil, 17, 3, 4, noData)
break
```

**Notes:**

Each dimension has same resolution. The CLUT can be initialized by specifying values in Table parameter.

Context: user-defined context cargo.
GridPoints: the number of nodes (same for each component).
inputChan: Number of input channels.
outputChan: Number of output channels.
values: Array of double values, holding initial values for nodes.
104.30.  CLASS LCMS2STAGEMBS

Returns a pipeline stage on success, nil on error.
Raises exception if values array is not empty/nil, but has wrong size.
See also:

- 104.30.11 CreateStageWithCLutFloat(Context as LCMS2ContextMBS, GridPoints as UInt32, inputChan as UInt32, outputChan as UInt32) as LCMS2StageMBS
- 104.30.12 CreateStageWithCLutFloat(context as LCMS2ContextMBS, GridPoints as UInt32, inputChan as UInt32, outputChan as UInt32, TableSingle as Memoryblock) as LCMS2StageMBS
- 104.30.14 CreateStageWithCLutFloat(Context as LCMS2ContextMBS, GridPoints as UInt32, inputChan as UInt32, outputChan as UInt32, values() as single) as LCMS2StageMBS

104.30.14  CreateStageWithCLutFloat(Context as LCMS2ContextMBS, GridPoints as UInt32, inputChan as UInt32, outputChan as UInt32, values() as single) as LCMS2StageMBS

MBS Images Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a stage that contains a float multidimensional lookup table (CLUT).

**Example:**

```
// creates CLUT with 17 grid points, 3 input channels RGB and 4 output channels CMYK

dim data() as Single

// fill all the data into the table upfront, RGB to CMYK

dim c,m,y,k as Double

for Grid0 as Integer = 0 to 16 // 17 grid, 1st input
    dim r as Double = Grid0 / 16
for Grid1 as Integer = 0 to 16 // 17 grid, 2nd input
    dim g as Double = Grid0 / 16
for Grid2 as Integer = 0 to 16 // 17 grid, 3rd input
    dim b as Double = Grid0 / 16

    // some bad conversion
    c = r
    m = g
    y = b
    k = 0

    // fill array with values
    data.Append c
    data.Append m
    data.Append y
    data.Append k
```
dim CLUT as LCMS2StageMBS = LCMS2StageMBS.CreateStageWithCLutFloat(nil, 17, 3, 4, data)
break

Notes:
Each dimension has same resolution. The CLUT can be initialized by specifying values in Table parameter.

Context: user-defined context cargo.
GridPoints: the number of nodes (same for each component).
inputChan: Number of input channels.
outputChan: Number of output channels.
values: Array of single (Float32) values, holding initial values for nodes.

Returns a pipeline stage on success, nil on error.
Raises exception if values array is not empty/nil, but has wrong size.
See also:

- 104.30.11 CreateStageWithCLutFloat(Context as LCMS2ContextMBS, GridPoints as UInt32, inputChan as UInt32, outputChan as UInt32) as LCMS2StageMBS
- 104.30.12 CreateStageWithCLutFloat(context as LCMS2ContextMBS, GridPoints as UInt32, inputChan as UInt32, outputChan as UInt32, TableSingle as Memoryblock) as LCMS2StageMBS
- 104.30.13 CreateStageWithCLutFloat(context as LCMS2ContextMBS, GridPoints as UInt32, inputChan as UInt32, outputChan as UInt32, values() as Double) as LCMS2StageMBS

104.30.15 CreateStageWithCLutFloatGranular(Context as LCMS2ContextMBS, clutPoints() as UInt32, inputChan as UInt32, outputChan as UInt32) as LCMS2StageMBS

Notes:
Context: user-defined context cargo.
clutPoints: Memoryblock with Array of UInt32 [ inputChan ] holding the number of nodes for each component.
inputChan: Number of input channels.
outputChan: Number of output channels.
Returns a pipeline stage on success, nil on error.

See also:

- 104.30.16 CreateStageWithCLutFloatGranular(context as LCMS2ContextMBS, clutPoints() as UInt32, inputChan as UInt32, outputChan as UInt32, TableSingle as Memoryblock) as LCMS2StageMBS
- 104.30.17 CreateStageWithCLutFloatGranular(Context as LCMS2ContextMBS, clutPoints() as UInt32, inputChan as UInt32, outputChan as UInt32, TableSingle() as Single) as LCMS2StageMBS

104.30.16 CreateStageWithCLutFloatGranular(context as LCMS2ContextMBS, clutPoints() as UInt32, inputChan as UInt32, outputChan as UInt32, TableSingle as Memoryblock) as LCMS2StageMBS

MBS Images Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Similar to CreateStageWithCLutFloat, but it allows different granularity on each CLUT dimension.

**Notes:**

Context: user-defined context cargo.
clutPoints: Memoryblock with Array of UInt32 [inputChan] holding the number of nodes for each component.
inputChan: Number of input channels.
outputChan: Number of output channels.
Table: a pointer to a table of Singles (Float32), holding initial values for nodes.

Returns a pipeline stage on success, nil on error.
Raises exception if table memoryblock is not empty/nil, but has wrong size.

See also:

- 104.30.15 CreateStageWithCLutFloatGranular(Context as LCMS2ContextMBS, clutPoints() as UInt32, inputChan as UInt32, outputChan as UInt32) as LCMS2StageMBS
- 104.30.17 CreateStageWithCLutFloatGranular(Context as LCMS2ContextMBS, clutPoints() as UInt32, inputChan as UInt32, outputChan as UInt32, TableSingle() as Single) as LCMS2StageMBS

104.30.17 CreateStageWithCLutFloatGranular(Context as LCMS2ContextMBS, clutPoints() as UInt32, inputChan as UInt32, outputChan as UInt32, TableSingle() as Single) as LCMS2StageMBS

MBS Images Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Similar to CreateStageWithCLutFloat, but it allows different granularity on each CLUT dimension.

**Example:**

```csharp
// create CLUT with 15 grid points for 1st channel, 16 for 2nd channel and 17 for 3rd channel
dim ChannelGridPoints(2) as UInt32
ChannelGridPoints(0) = 15
ChannelGridPoints(1) = 16
```
ChannelGridPoints(2) = 17

dim noData() as Single = nil
dim CLUT as LCMS2StageMBS = LCMS2StageMBS.CreateStageWithCLutFloatGranular(nil, ChannelGridPoints, 3, 4, noData)

Notes:

Context: user-defined context cargo.
clutPoints: Array of UInt32 [inputChan] holding the number of nodes for each component.
inputChan: Number of input channels.
outputChan: Number of output channels.
Table: a table of Singles (Float32), holding initial values for nodes.

Returns a pipeline stage on success, nil on error.

Raises exception if values array is not empty/nil, but has wrong size.

See also:

• 104.30.15 CreateStageWithCLutFloatGranular(Context as LCMS2ContextMBS, clutPoints() as UInt32, inputChan as UInt32, outputChan as UInt32) as LCMS2StageMBS

• 104.30.16 CreateStageWithCLutFloatGranular(context as LCMS2ContextMBS, clutPoints() as UInt32, inputChan as UInt32, outputChan as UInt32, TableSingle as Memoryblock) as LCMS2StageMBS

104.30.18 CreateStageWithIdentity(context as LCMS2ContextMBS, Channels as UInt32) as LCMS2StageMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:

Creates an empty (identity) stage that does no operation.

Notes:

May be needed in order to save the pipeline as AToB/BToA tags in ICC profiles.

Context: user-defined context cargo.
Channels: Number of channels

Returns a pipeline stage on success, nil on error.
104.30.19 CreateStageWithMatrix\(\) (context as LCMS2ContextMBS, Rows as UInt32, Cols as UInt32, Matrix as Memoryblock, Offset as Memoryblock = nil) as LCMS2StageMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Creates a stage that contains a matrix plus an optional offset.

**Notes:**

Note that Matrix is specified in double precision, whilst CLUT has only float precision. That is because an ICC profile can encode matrices with far more precision that CLUTS.

Context: user-defined context cargo.
Rows, Cols: Dimensions of matrix
Matrix: Memoryblock with a matrix of \([\text{Rows}, \text{Cols}]\) (double values, 8 byte per value)
Offset: Memoryblock with a vector of \([\text{Cols}]\), nil if no offset is to be applied.

Returns a pipeline stage on success, nil on error.

104.30.20 CreateStageWithToneCurves\(\) (context as LCMS2ContextMBS, ChannelCount as Integer) as LCMS2StageMBS

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Creates a stage that contains \(n\) channels tone curves, one per channel.

**Notes:**

Setting Curves to nil forces identity (1:1) curves to be used. The stage keeps and owns a private copy of the tone curve objects.

Context: user-defined context cargo.
Curves: Optionally, an array of tone curves objects, one per channel.

Returns a pipeline stage on success, nil on error.

See also:

- 104.30.21 CreateStageWithToneCurves\(\) (context as LCMS2ContextMBS, Channels() as LCMS2ToneCurveMBS) as LCMS2StageMBS

104.30.21 CreateStageWithToneCurves\(\) (context as LCMS2ContextMBS, Channels() as LCMS2ToneCurveMBS) as LCMS2StageMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Creates a stage that contains \(n\) channels tone curves, one per channel.
Notes:

Setting Curves to nil forces identity (1:1) curves to be used. The stage keeps and owns a private copy of the tone curve objects.

Context: user-defined context cargo.
Curvess: Optionally, an array of tone curves objects, one per channel.

Returns a pipeline stage on success, nil on error.

See also:

- 104.30.20 CreateStageWithToneCurves(context as LCMS2ContextMBS, ChannelCount as Integer) as LCMS2StageMBS

104.30.22 CubeSize(clutPoints() as UInt32, inputChan as UInt32, outputChan as UInt32 = 1) as UInt32

MBS Images Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Calculates the number of values needed for a CLUT with given dimensions. Notes: This is a helper function, so you can know how big the table for CreateStageWithCLut16bitGranular or CreateStageWithCLutFloatGranular must be.

See also:

- 104.30.23 CubeSize(GridPoints as UInt32, inputChan as UInt32, outputChan as UInt32 = 1) as UInt32

104.30.23 CubeSize(GridPoints as UInt32, inputChan as UInt32, outputChan as UInt32 = 1) as UInt32

MBS Images Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Calculates the number of values needed for a CLUT with given dimensions. Notes: This is a helper function, so you can know how big the table for CreateStageWithCLut16bit or CreateStageWithCLutFloat must be.

See also:

- 104.30.22 CubeSize(clutPoints() as UInt32, inputChan as UInt32, outputChan as UInt32 = 1) as UInt32

104.30.24 MatrixOffsets as Double()

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns array with matrix offsets. Notes: Only if stage is from type kcmsSigMatrixElemType and.
104.30.25 MatrixValues as Double()

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns array with matrix values. **Notes:** Only if stage is from type kcmsSigMatrixElemType and.

104.30.26 SampleCLut16bit(sampler as LCMS2StageSamplerMBS, Flags as Integer = 0) as boolean

MBS Images Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Iterate on all nodes of a given CLUT stage, calling a 16-bit sampler on each node. **Notes:** Those functions (SampleCLut16bit and SampleCLutFloat) are provided to populate CLUT stages in a way that is independent of the number of nodes. The programmer has to provide an object with event that will be invoked on each CLUT node. LittleCMS does fill the In parameter with the coordinates that addresses the node. It also fills the Out parameter with CLUT contents on the node, so this can be used also to get CLUT contents after reading it from an ICC profile. In this case, a special flag can be specified to make sure the CLUT is being accessed as read-only and not modified (kSamplerInspect). Works only with CLut stage objects and returns false if the object is not a Clut.

**Sampler:** The object to receive events.

**Flags:** Bit-field flags for different options. Only kSamplerInspect is currently supported.

Returns true on success, false on error.

104.30.27 SampleCLutFloat(sampler as LCMS2StageSamplerMBS, Flags as Integer = 0) as boolean

MBS Images Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Iterate on all nodes of a given CLUT stage, calling a float sampler on each node. **Notes:** Those functions (SampleCLut16bit and SampleCLutFloat) are provided to populate CLUT stages in a way that is independent of the number of nodes. The programmer has to provide an object with event that will be invoked on each CLUT node. LittleCMS does fill the In parameter with the coordinates that addresses the node. It also fills the Out parameter with CLUT contents on the node, so this can be used also to get CLUT contents after reading it from an ICC profile. In this case, a special flag can be specified to make sure the CLUT is being accessed as read-only and not modified (kSamplerInspect).

Works only with CLut stage objects and returns false if the object is not a Clut.
Sampler: The object to receive events.
Flags: Bit-field flags for different options. Only kSamplerInspect is currently supported.

Returns true on success, false on error.

104.30.28 ToneCurves as LCMS2ToneCurveMBS()

Notes: Only if stage is from type kcmsSigCurveSetElemType and.

104.30.29 Properties

104.30.30 CLutEntries as Integer

Notes: Only if stage is from type kcmsSigCLutElemType. (Read only property)

104.30.31 CLutHasFloatValues as Boolean

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Whether this CLut has floating point values.
Notes: Only if stage is from type kcmsSigCLutElemType. (Read only property)

104.30.32 Data as Ptr

Notes: (Read only property)
104.30. **CLASS LCMS2STAGEMBS**

104.30.33 **Handle as Integer**

**Notes:** (Read and Write property)

104.30.34 **InputChannels as UInt32**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of input channels of a given stage object.  
**Notes:** (Read only property)

104.30.35 **NextItem as LCMS2StageMBS**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns next stage in pipeline list, or nil if end of list.  
**Notes:**
Intended for iterators.  
(Read only property)

104.30.36 **OutputChannels as UInt32**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of output channels of a this stage object.  
**Notes:** (Read only property)

104.30.37 **Type as UInt32**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the type of a given stage object.  
**Notes:**
Use this type constants: kcmsSigCurveSetElemType, kcmsSigMatrixElemType, kcmsSigCLutElemType, kcmsSigBAcElemType, kcmsSigEAcsElemType, kcmsSigXYZ2LabElemType, kcmsSigLab2XYZElemType, kcmsSigNamedColorElemType, kcmsSigLabV2toV4, kcmsSigLabV4toV2, kcmsSigIdentityElemType.  
(Read only property)
104.30.38  Constants

104.30.39  kSamplerInspect = & h01000000

MBS Images Plugin, Plugin Version: 12.1. **Function:** One of the flags for Sampling. **Notes:** Use this flag to prevent changes being written to destination when using SampleCLutFloat or SampleCLut16bit.
104.31  class LCMS2StageSamplerMBS


104.31.2  Methods

104.31.3  SliceSpaceFloat(Inputs as UInt32, values() as UInt32) as boolean

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Slices target space executing a floating point callback of type cmsSAMPLERFLOAT.
Notes:
Parameters:
Inputs: Number of components in target space.
clutPoints: Array [ nInputs ] holding the division slices for each component.
Calls Floating point sample event to execute on each slice.

Returns true on success, false on error.

104.31.4  SliceSpaceInteger(Inputs as UInt32, values() as UInt32) as boolean

Notes:
Parameters:
Inputs: Number of components in target space.
values: Array [ nInputs ] holding the division slices for each component.

Calls 16 bit Sample event to execute on each slice.

Returns true on success, false on error.
104.31.5 Events

104.31.6 SamplerFloat(InValues as Ptr, OutValues as Ptr, InputChannels as Integer, OutputChannels as Integer) as boolean

MBS Images Plugin, Plugin Version: 12.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sampler event called by SampleCLutFloat.

**Notes:**

In and Out point to 32 bit float values, so please use Single property to access.
InputChannels and OutputChannels are the number of channels.

104.31.7 SamplerInteger(InValues as Ptr, OutValues as Ptr, InputChannels as Integer, OutputChannels as Integer) as boolean

MBS Images Plugin, Plugin Version: 12.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sampler event called by SampleCLut16bit.

**Notes:**

In and Out point to 16 bit unsigned integer values, so please use UInt16 property to access.
InputChannels and OutputChannels are the number of channels.
104.32. **CLASS LCMS2TONECURVEMBS**

104.32 **class LCMS2ToneCurveMBS**

104.32.1 **class LCMS2ToneCurveMBS**

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for a tone curve or gamma.

104.32.2 **Methods**

104.32.3 **BuildGamma(context as LCMS2ContextMBS, gamma as Double) as LCMS2ToneCurveMBS**

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Simplified wrapper to BuildParametricToneCurve.

**Example:**

```vbnet
dim t as LCMS2ToneCurveMBS = LCMS2ToneCurveMBS.BuildGamma(nil, 2.2)
MsgBox str(t.EstimateGamma)
```

**Notes:**

Builds a parametric curve of type 1.

Context: user-defined context object.
Gamma: Value of gamma exponent

Returns a newly created tone curve object on success, nil on error.

104.32.4 **BuildParametricToneCurve(context as LCMS2ContextMBS, Type as Integer, params() as Double) as LCMS2ToneCurveMBS**

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Builds a parametric tone curve.

**Notes:**

Parameters:
context: user-defined context object.
Type: Number of parametric tone curve. (see LCMS2 manual)
Params: Array of tone curve parameters.
Returns a newly created tone curve object on success, nil on error.

104.32.5  BuildSegmentedToneCurve(context as LCMS2ContextMBS, Segments() as LCMS2CurveSegmentMBS) as LCMS2ToneCurveMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Builds a tone curve from given segment information.

**Notes:**
context: Puser-defined context object
Segments: Array of segments

Returns a newly created tone curve object on success, nil on error.

104.32.6  BuildTabulatedToneCurve(context as LCMS2ContextMBS, values() as Single) as LCMS2ToneCurveMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Builds a tone curve based on a table of floating point values.

**Example:**
```vbs
dim values(-1) as Single
for i as Integer = 0 to 9
    values.Append 0.5 + i*0.02
next

dim t as LCMS2ToneCurveMBS = LCMS2ToneCurveMBS.BuildTabulatedToneCurve(nil, values)

dim items(-1) as string
for i as Integer = 0 to 10
    dim v as Single = t.EvalToneCurveFloat(i/10.0)
    items.Append str(i/10.0)+" ->"+str(v)
next

MsgBox Join(items,EndOfLine)
```

**Notes:**
Tone curves built with this function are not restricted to 0...1.0 domain.

context: user-defined context object.
values: Array of samples. Domain of samples is 0...1.0

Returns a newly created tone curve object on success, nil on error.
See also:

- 104.32.7 BuildTabulatedToneCurve(context as LCMS2ContextMBS, values() as UInt16) as LCMS2ToneCurveMBS

104.32.7 BuildTabulatedToneCurve(context as LCMS2ContextMBS, values() as UInt16) as LCMS2ToneCurveMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Builds a tone curve based on a table of 16-bit values. Tone curves built with this function are restricted to 0...1.0 domain.

**Notes:**

custom: user-defined context object.
values: Array of samples. Domain is 0...65535 (UInt32).

Returns a newly created tone curve object on success, nil on error.
See also:

- 104.32.6 BuildTabulatedToneCurve(context as LCMS2ContextMBS, values() as Single) as LCMS2ToneCurveMBS

104.32.8 EstimatedTable as UInt16()

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Tone curves do maintain a shadow lowresolution tabulated representation of the curve. This function returns an array with this table.

104.32.9 EstimatedTableEntries as UInt32

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Tone curves do maintain a shadow lowresolution tabulated representation of the curve. This function returns the number of entries such table has.

104.32.10 EstimateGamma(Precision as Double = 0.01) as Double

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Estimates the apparent gamma of the tone curve by using least squares fitting to a pure exponential
expression in the f() = .

Example:

```vbnet
dim t as LCMS2ToneCurveMBS = LCMS2ToneCurveMBS.BuildGamma(nil, 2.2)
MsgBox str(t.EstimateGamma)
```

Notes:

Precision: The maximum standard deviation allowed on the residuals, 0.01 is a fair value, set it to a big number to fit any curve, no matter how good is the fit.

Returns the estimated gamma at given precision, or -1.0 if the fitting has less precision.

104.32.11 EvalToneCurve16(value as UInt16) as UInt16

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Evaluates the given 16-bit number across the given tone curve.

Notes:

This function is significantly faster than EvalToneCurveFloat, since it uses a pre-computed 16-bit lookup table.

Value: 16 bit Number to evaluate

Returns operation result

104.32.12 EvalToneCurveFloat(value as Single) as Single

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Evaluates the given floating-point number across the given tone curve.

Example:

```vbnet
dim t1 as LCMS2ToneCurveMBS = LCMS2ToneCurveMBS.BuildGamma(nil, 1.0)
dim t2 as LCMS2ToneCurveMBS = LCMS2ToneCurveMBS.BuildGamma(nil, 2.0)
dim t3 as LCMS2ToneCurveMBS = LCMS2ToneCurveMBS.BuildGamma(nil, 3.0)

dim v1 as Double = t1.EvalToneCurveFloat(0.5)
dim v2 as Double = t2.EvalToneCurveFloat(0.5)
dim v3 as Double = t3.EvalToneCurveFloat(0.5)

MsgBox str(v1)+” ”+str(v2)+” ”+str(v3)
```

Notes:
104.32. CLASS LCMS2TONECURVEMBS

Value: floating point number to evaluate
Returns the result.

104.32.13  IsDescending as Boolean

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if \( f(0) > f(1) \), false otherwise.
**Notes:** Does not take unbounded parts into account.

104.32.14  IsLinear as Boolean

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an estimation of curve being an identity (1:1) in the \([0..1]\) domain.
**Notes:** Does not take unbounded parts into account. This is just a coarse approximation, with no mathematical validity.

104.32.15  IsMonotonic as Boolean

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an estimation of monotonicity of curve in the \([0..1]\) domain.
**Example:**
```vba
dim t as LCMS2ToneCurveMBS = LCMS2ToneCurveMBS.BuildGamma(nil, 2.2)
MsgBox "IsMonotonic: " + str(t.IsMonotonic)
```
**Notes:** Does not take unbounded parts into account. This is just a coarse approximation, with no mathematical validity.

104.32.16  IsMultisegment as Boolean

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if the tone curve contains more than one segment, false if it has only one segment.
104.32.17 JoinToneCurve(context as LCMS2ContextMBS, X as LCMS2ToneCurveMBS, Y as LCMS2ToneCurveMBS, nPoints as UInt32) as LCMS2ToneCurveMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Composites two tone curves in the form $1/(f)$.  
**Notes:**
context: user-defined context object.
X, Y : Tone curve objects.
nPoints: Sample rate for resulting tone curve.

Returns a newly created tone curve object on success, nil on error.

104.32.18 ParametricType as Integer

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the parametric type.

104.32.19 Reverse as LCMS2ToneCurveMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a tone curve that is the inverse $f^{-1}$ of given tone curve.  
**Notes:** Returns a newly created tone curve object on success, nil on error.  
See also:

- 104.32.20 Reverse(nResultSamples as Integer) as LCMS2ToneCurveMBS

104.32.20 Reverse(nResultSamples as Integer) as LCMS2ToneCurveMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a tone curve that is the inverse $f^{-1}$ of given tone curve.  
**Notes:**
In the case it couldn’t be analytically reversed, a tabulatated curve of nResultSamples is created.
nResultSamples: Number of samples to use in the case origin tone curve couldn’t be analytically reversed.  
Returns a newly created tone curve object on success, nil on error.  
See also:

- 104.32.19 Reverse as LCMS2ToneCurveMBS
104.32.21 **Smooth(lambda as Double) as Boolean**

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Smoothes tone curve according to the lambda parameter. **Notes:**

Lambda: degree of smoothing.
Returns true on success, false on error.

104.32.22 **Properties**

104.32.23 **Handle as Integer**

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal object reference. **Notes:** (Read and Write property)
104.33 class LCMS2TransformMBS

104.33.1 class LCMS2TransformMBS


104.33.2 Methods

104.33.3 ChangeBuffersFormat(InputFormat as UInt32, OutputFormat as UInt32) as boolean

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This function does change the encoding of buffers in a yet-existing transform. Notes: Not all transforms can be changed, cmsChangeBuffersFormat only works on transforms created originally with at least 16 bits of precision. This function is provided for backwards compatibility and should be avoided whenever possible, as it prevents transform optimization.

InputFormat: A bit-field format specifier as described in Formatters section. OutputFormat: A bit-field format specifier as described in Formatters section.

Returns true on success and false on failure.

104.33.4 CreateExtendedTransform(context as LCMS2ContextMBS, Profiles() as LCMS2ProfileMBS, BPC() as boolean, Intents() as UInt32, AdaptationStates() as Double, GamutProfile as LCMS2ProfileMBS, GamutPCSposition as UInt32, InputFormat as UInt32, OutputFormat as UInt32, Flags as UInt32 = 0) as LCMS2TransformMBS

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Extended form of multiprofile color transform creation, exposing all parameters for each profile in the chain. Notes: All other transform creation functions are wrappers to this call.

Parameters:
context: Pointer to a user-defined context cargo.
Profiles: Array of handles to open profile objects.
BPC: Array of black point compensation states
GamutProfile: A profile holding gamut information for gamut check. Only used if cmsFLAGS_GAMUTCHECK specified. Set to nil for no gamut check.
GamutPCSPosition: Position in the chain of Lab/XYZ PCS to check against gamut profile. Only used if cmsFLAGS_GAMUTCHECK specified.
InputFormat: Input format.
OutputFormat: Output format.
Intents: An array holding the intent codes.
Flags: Some flags to control it.

Returns a transform object on success, NULL on error.
See also cmsCreateExtendedTransform in the LCMS2 manual.

104.33.5 CreateMultiprofileTransform(context as LCMS2ContextMBS, Profiles() as LCMS2ProfileMBS, InputFormat as UInt32, OutputFormat as UInt32, Intent as UInt32, Flags as UInt32 = 0) as LCMS2TransformMBS

Notes:
User passes in an array of handles to open profiles. The returned color transform does "smelt" all profiles in a single device link. Color spaces must be paired with the exception of Lab/XYZ, which can be interchanged.

context: Optional context object.
Profiles: Array of open profile objects.
InputFormat: A bit-field format specifier as described in Formatters section.
OutputFormat: A bit-field format specifier as described in Formatters section.
Intent: The intent code, as described in Intents section.
Flags: A combination of bit-field of kcmsFLAGS_* constants.

Returns a transform object on success, nil on error.
See also:

- 104.33.6 CreateMultiprofileTransform(Profiles() as LCMS2ProfileMBS, InputFormat as UInt32, OutputFormat as UInt32, Intent as UInt32, Flags as UInt32 = 0) as LCMS2TransformMBS

104.33.6 CreateMultiprofileTransform(Profiles() as LCMS2ProfileMBS, InputFormat as UInt32, OutputFormat as UInt32, Intent as UInt32, Flags as UInt32 = 0) as LCMS2TransformMBS

Notes:
User passes in an array of handles to open profiles. The returned color transform do "smelt" all profiles in a single devicelink. Color spaces must be paired with the exception of Lab/XYZ, which can be interchanged.

context: Optional context object.
Profiles: Array of open profile objects.
InputFormat: A bit-field format specifier as described in Formatters section.
OutputFormat: A bit-field format specifier as described in Formatters section.
Intent: The intent code, as described in Intents section.
Flags: A combination of bit-field of kcmsFLAGS_* constants.

Returns a transform object on success, nil on error.
See also:

- 104.33.5 CreateMultiprofileTransform(context as LCMS2ContextMBS, Profiles() as LCMS2ProfileMBS,
InputFormat as UInt32, OutputFormat as UInt32, Intent as UInt32, Flags as UInt32 = 0) as LCMS2TransformMBS

104.33.7 CreateProofingTransform(context as LCMS2ContextMBS, InputProfile as LCMS2ProfileMBS, InputFormat as UInt32, OutputProfile as LCMS2ProfileMBS, OutputFormat as UInt32, Proofing as LCMS2ProfileMBS, Intent as UInt32, ProofingIntent as UInt32, Flags as UInt32 = 0) as LCMS2TransformMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Same as CreateTransform(), but including soft-proofing.
Notes:

A proofing transform does emulate the colors that would appear as the image were rendered on a specific device. That is, for example, with a proofing transform I can see how will look a photo of my little daughter if rendered on my HP printer. Since most printer profiles does include some sort of gamut-remapping, it is likely colors will not look as the original. Using a proofing transform, it can be done by using the appropriate function. Note that this is an important feature for final users, it is worth of all color-management stuff if the final media is not cheap.

The obtained transform emulates the device described by the "Proofing" profile. Useful to preview final result without rendering to the physical medium. To enable proofing and gamut check you need to include following flags:

cmsFLAGS_GAMUTCHECK: Color out of gamut are flagged to a fixed color defined by the function kcmsg-SetAlarmCodes
cmsFLAGS_SOFTPROOFING: does emulate the Proofing device.

context: Optional context object.
InputProfile: A profile object capable to work in input direction
InputFormat: A bit-field format specifier as described in Formatters section.
OutputProfile: A profile object capable to work in output direction
OutputFormat: A bit-field format specifier as described in Formatters section.
Intent: The intent code.
ProofingIntent: The intent code.
Flags: A combination of bit-field constants described in Table 42.

Returns transform object on success, nil on error.

See also:
- 104.33.8 CreateProofingTransform(InputProfile as LCMS2ProfileMBS, InputFormat as UInt32, OutputProfile as LCMS2ProfileMBS, OutputFormat as UInt32, Proofing as LCMS2ProfileMBS, Intent as UInt32, ProofingIntent as UInt32, Flags as UInt32 = 0) as LCMS2TransformMBS

104.33.8 CreateProofingTransform(InputProfile as LCMS2ProfileMBS, InputFormat as UInt32, OutputProfile as LCMS2ProfileMBS, OutputFormat as UInt32, Proofing as LCMS2ProfileMBS, Intent as UInt32, ProofingIntent as UInt32, Flags as UInt32 = 0) as LCMS2TransformMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Same as CreateTransform(), but including soft-proofing.

**Notes:**
A proofing transform does emulate the colors that would appear as the image were rendered on a specific device. That is, for example, with a proofing transform I can see how will look a photo of my little daughter if rendered on my HP printer. Since most printer profiles does include some sort of gamut-remapping, it is likely colors will not look as the original. Using a proofing transform, it can be done by using the appropriate function. Note that this is an important feature for final users, it is worth of all color-management stuff if the final media is not cheap.

The obtained transform emulates the device described by the "Proofing" profile. Useful to preview final result without rendering to the physical medium. To enable proofing and gamut check you need to include following flags:

cmsFLAGS_GAMUTCHECK: Color out of gamut are flagged to a fixed color defined by the function kcmsgSetAlarmCodes
cmsFLAGS_SOFTPROOFING: does emulate the Proofing device.

corext: Optional context object.
InputProfile: A profile object capable to work in input direction
InputFormat: A bit-field format specifier as described in Formatters section.
OutputProfile: A profile object capable to work in output direction
OutputFormat: A bit-field format specifier as described in Formatters section.
Intent: The intent code.
ProofingIntent: The intent code.
Flags: A combination of bit-field constants described in Table 42.

Returns transform object on success, nil on error.
See also:

- 104.33.7 CreateProofingTransform(context as LCMS2ContextMBS, InputProfile as LCMS2ProfileMBS, InputFormat as UInt32, OutputProfile as LCMS2ProfileMBS, OutputFormat as UInt32, Proofing as LCMS2ProfileMBS, Intent as UInt32, ProofingIntent as UInt32, Flags as UInt32 = 0) as LCMS2TransformMBS

104.33.9 CreateTransform(context as LCMS2ContextMBS, InputProfile as LCMS2ProfileMBS, InputFormat as UInt32, OutputProfile as LCMS2ProfileMBS, OutputFormat as UInt32, Intent as UInt32, Flags as UInt32 = 0) as LCMS2TransformMBS

Notes:

context: Optional, the context object.
InputProfile: A profile object capable to work in input direction
InputFormat: A bit-field format specifier as described in Formatters section.
OutputProfile: A profile object capable to work in output direction
OutputFormat: A bit-field format specifier as described in Formatters section.
Intent: The intent code, as described in Intents section.
Flags: A combination of bit-field kcmsFLAGS_"*" constants.

Returns a transform object on success, NULL on error.
See also:

- 104.33.10 CreateTransform(InputProfile as LCMS2ProfileMBS, InputFormat as UInt32, OutputProfile as LCMS2ProfileMBS, OutputFormat as UInt32, Intent as UInt32, Flags as UInt32 = 0) as LCMS2TransformMBS

104.33.10 CreateTransform(InputProfile as LCMS2ProfileMBS, InputFormat as UInt32, OutputProfile as LCMS2ProfileMBS, OutputFormat as UInt32, Intent as UInt32, Flags as UInt32 = 0) as LCMS2TransformMBS

Notes:
104.33. CLASS LCMS2TRANSFORMMBS

context: Optional, the context object.
InputProfile: A profile object capable to work in input direction
InputFormat: A bit-field format specifier as described in Formatters section.
OutputProfile: A profile object capable to work in output direction
OutputFormat: A bit-field format specifier as described in Formatters section.
Intent: The intent code, as described in Intents section.
Flags: A combination of bit-field kcmsFLAGS.* constants.

Returns a transform object on success, NULL on error.
See also:

- 104.33.9 CreateTransform(context as LCMS2ContextMBS, InputProfile as LCMS2ProfileMBS, InputFormat as UInt32, OutputProfile as LCMS2ProfileMBS, OutputFormat as UInt32, Intent as UInt32, Flags as UInt32 = 0) as LCMS2TransformMBS

104.33.11ToDeviceLink(Version as Double, Flags as UInt32) as LCMS2ProfileMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Generates a device-link profile from a given color transform.

**Notes:**
This profile can then be used by any other function accepting profile handle. Depending on the specified version number, the implementation of the devicelink may vary. Accepted versions are in range 1.0...4.3

Version: The target devicelink version number.
Flags: A combination of bit-field constants kcmsFLAGS.*.

Returns an ICC profile object on success, nil on error.

104.33.12 Transform(bitmap as LCMS2BitmapMBS) as boolean

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function translates bitmaps according of parameters setup when creating the color transform.

**Notes:**
bitmap: the input and output bitmap.

Returns true on success.
Size of input and output bitmaps must match.
Please make sure RowBytes is either zero for both (block mode) or is correct (row by row mode).
Please make sure input and output color space types of transform match the one in the bitmap.
See also:
104.33.13 Transform\(\text{inBitmap as LCMS2BitmapMBS, outBitmap as LCMS2BitmapMBS}\) as boolean

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This function translates bitmaps according of parameters setup when creating the color transform.

**Notes:**
- inBitmap: the input bitmap.
- outBitmap: the output bitmap.

Returns true on success.

Size of input and output bitmaps must match.
Please make sure RowBytes is either zero for both (block mode) or is correct (row by row mode).
Please make sure input and output color space types of transform match the those in the bitmaps.

See also:

- 104.33.12 Transform\(\text{bitmap as LCMS2BitmapMBS}\) as boolean
- 104.33.14 Transform\(\text{InputBuffer as Ptr, OutputBuffer as Ptr, Size as UInt32}\) as boolean

104.33.14 Transform\(\text{InputBuffer as Ptr, OutputBuffer as Ptr, Size as UInt32}\) as boolean

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This function translates bitmaps according of parameters setup when creating the color transform.

**Notes:**
- InputBuffer: A pointer to the input bitmap.
- OutputBuffer: A pointer to the output bitmap.
- Size: the number of PIXELS to be transformed.

Returns true on success.

See also:

- 104.33.12 Transform\(\text{bitmap as LCMS2BitmapMBS}\) as boolean
- 104.33.13 Transform\(\text{inBitmap as LCMS2BitmapMBS, outBitmap as LCMS2BitmapMBS}\) as boolean
104.33.15  TransformLineStride(inBitmap as Ptr, outBitmap as Ptr, PixelsPerLine as UInt32, LineCount as UInt32, BytesPerLineIn as UInt32, BytesPerLineOut as UInt32, BytesPerPlaneIn as UInt32, BytesPerPlaneOut as UInt32) as boolean

MBS Images Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This function translates bitmaps with complex organization.

**Notes:**
Each bitmap may contain several lines, and every may have padding. The distance from one line to the next one is BytesPerLine \{ In/Out \} . In planar formats, each line may hold several planes, each plane may have padding. Padding of lines and planes should be same across all bitmap. I.e. all lines in same bitmap have to be padded in same way. This function may be more efficient that repeated calls to Transform(), especially when customized plug-ins are being used.

**Parameters:**
- InputBuffer: A pointer to the input bitmap
- OutputBuffer: A pointer to the output bitmap.
- PixelsPerLine: The number of pixels for line, which is same on input and in output.
- LineCount: The number of lines, which is same on input and output
- BytesPerLine \{ In,Out \} : The distance in bytes from one line to the next one.
- BytesPerPlaneIn \{ In,Out \} : The distance in bytes from one plane to the next one inside a line. Only applies in planar formats.

Returns true on success.

104.33.16  TransformRGB(c as color) as color

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Convenience function to convert one RGB color.

**Notes:** Works for input/output data with Float (4 or 8 byte) or Integer (1, 2 or 4 bytes).

104.33.17  TransformStride(inBitmap as Ptr, outBitmap as Ptr, size as UInt32, Stride as UInt32) as boolean

MBS Images Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This function translates bitmaps according of parameters setup when creating the color transform.

**Notes:**
On planar-organized buffers, the parameter stride specifies the separation between planes, which may be different of the number of pixels to transform. The main application of this function is when several threads are transforming pixels from different zones of same planar buffer. Otherwise it is identical to other Transform functions.
InputBuffer: A pointer to the input bitmap.
OutputBuffer: A pointer to the output bitmap.
Size: the number of PIXELS to be transformed.
Stride: Plane separation on planar formats

Returns true on success.

104.33.18 Properties

104.33.19 AdaptationState as Double

MBS Images Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The adaptation state. **Notes:** (Read only property)

104.33.20 context as LCMS2ContextMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The context object. **Notes:** (Read and Write property)

104.33.21 EntryColorSpace as Integer

MBS Images Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The entry colorspace. **Notes:** (Read only property)

104.33.22 EntryWhitePoint as LCMS2CIEXYZMBS

MBS Images Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The entry white points. **Notes:** Only for information, so plugin may return a copy of the data. (Read only property)
104.33.23  ExitColorSpace as Integer

MBS Images Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The exit colorspace. **Notes:** (Read only property)

104.33.24  ExitWhitePoint as LCMS2CIEXYZMBS

MBS Images Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The exit white points. **Notes:** Only for information, so plugin may return a copy of the data. (Read only property)

104.33.25  GamutCheck as LCMS2PipelineMBS

MBS Images Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A Pipeline holding the gamut check. It goes from the input space to bilevel. **Notes:** Only for information, so plugin may return a copy of the data. (Read only property)

104.33.26  Handle as Integer

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal object reference. **Notes:** (Read and Write property)

104.33.27  InputColorant as LCMS2NamedColorListMBS

MBS Images Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Input Colorant table. **Notes:** Only for information, so plugin may return a copy of the data. (Read only property)
104.33.28 **InputFormat as UInt32**
MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the input format associated with a given transform. **Notes:** (Read only property)

104.33.29 **Lut as LCMS2PipelineMBS**
MBS Images Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A Pipeline holding the full (optimized) transform. **Notes:** Only for information, so plugin may return a copy of the data. (Read only property)

104.33.30 **NamedColorList as LCMS2NamedColorListMBS**
MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieve a named color list from a given color transform. **Notes:** Returns named color list dictionary on success, nil on error. Only for information, so plugin may return a copy of the data. (Read only property)

104.33.31 **OriginalFlags as UInt32**
MBS Images Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The original flags used to create transform. **Notes:** (Read only property)

104.33.32 **OutputColorant as LCMS2NamedColorListMBS**
MBS Images Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Output Colorant table (for n chans >CMYK) **Notes:** Only for information, so plugin may return a copy of the data. (Read only property)
104.33.33 OutputFormat as UInt32

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the output format associated with a given transform.  
**Notes:** (Read only property)

104.33.34 RenderingIntent as UInt32

MBS Images Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The intent of this transform. That is usually the last intent in the profile chain, but may differ.  
**Notes:** (Read only property)

104.33.35 Sequence as LCMS2SequenceMBS

MBS Images Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The profiles used to create the transform.  
**Notes:**  
Only for information, so plugin may return a copy of the data.  
(Read only property)
104.34 class LCMS2UcrBgMBS

104.34.1 class LCMS2UcrBgMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for the cmsSigUcrBgType tag. **Notes:** This is for Undercolorremoval and black generation.

104.34.2 Methods

104.34.3 Constructor(Ucr as LCMS2ToneCurveMBS = nil, Bg as LCMS2ToneCurveMBS = nil, Desc as LCMS2MLUMBS = nil)

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new object with given values.

104.34.4 Properties

104.34.5 Bg as LCMS2ToneCurveMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The black generation value. **Notes:** (Read and Write property)

104.34.6 Desc as LCMS2MLUMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The description. **Notes:** (Read and Write property)

104.34.7 Ucr as LCMS2ToneCurveMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The undercolor removal setting. **Notes:** (Read and Write property)
104.35 class LCMS2Vec3MBS

104.35.1 class LCMS2Vec3MBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class for a three dimension vector.

**Example:**
```v
    dim v as new LCMS2Vec3MBS(1,2,3)
    MsgBox str(v.X)+" "+str(v.y)+" "+str(v.z)
```

104.35.2 Methods

104.35.3 Clone as LCMS2Vec3MBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a copy of the vector.

104.35.4 Constructor(other as LCMS2Vec3MBS)

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The copy constructor.

**Example:**
```v
    // make a vector
    dim v as new LCMS2Vec3MBS(1,2,3)

    // create a copy
    dim w as new LCMS2Vec3MBS(v)

    // show values
    MsgBox str(w.X)+" "+str(w.y)+" "+str(w.z)
```

See also:

- 104.35.5 Constructor(v1 as Double = 0.0, v2 as Double = 0.0, v3 as Double = 0.0)
104.35.5 Constructor(v1 as Double = 0.0, v2 as Double = 0.0, v3 as Double = 0.0)

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constructor to initialize the object with the given values.

**Example:**

```vba
dim v as new LCMS2Vec3MBS(1,2,3)
MsgBox str(v.X)+” ”+str(v.y)+” ”+str(v.z)
```

See also:

- 104.35.4 Constructor(other as LCMS2Vec3MBS)

104.35.6 Properties

104.35.7 X as Double

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The first value.

**Notes:** (Read and Write property)

104.35.8 Y as Double

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The second value.

**Notes:** (Read and Write property)

104.35.9 Z as Double

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The third value.

**Notes:** (Read and Write property)

104.35.10 value(index as UInt32) as Double

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The values by index.

**Notes:**
104.35. CLASS LCMS2VEC3MBS

Index from 0 to 2.
(Read and Write computed property)
104.36 class LCMS2ViewingConditionsMBS

104.36.1 class LCMS2ViewingConditionsMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Viewing conditions. **Notes:** From LCMS documentation: Please note those are CAM model viewing conditions, and not the ICC tag viewing conditions, which I’m naming cmsICCViewingConditions to make differences evident. Unfortunately, the tag cannot deal with surround La, Yb and D value so is basically useless to store CAM02 viewing conditions.

104.36.2 Methods

104.36.3 Clone as LCMS2ViewingConditionsMBS

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a copy of the object.

104.36.4 Constructor(other as LCMS2ViewingConditionsMBS)

MBS Images Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Initializes object with values from other object. **See also:**

- 104.36.5 Constructor(whitePoint as LCMS2CIEXYZMBS = nil, Yb as Double = 0.0, La as Double = 0.0, surround as Integer = 0, D_value as Double = 0.0)

104.36.5 Constructor(whitePoint as LCMS2CIEXYZMBS = nil, Yb as Double = 0.0, La as Double = 0.0, surround as Integer = 0, D_value as Double = 0.0)

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new viewing conditions object. **See also:**

- 104.36.4 Constructor(other as LCMS2ViewingConditionsMBS)
104.36.6 Properties

104.36.7 D_value as Double

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The D value value. Notes: (Read and Write property)

104.36.8 La as Double


104.36.9 Surround as Integer

Use this constants:
kAVG_SURROUND = 1
kDIM_SURROUND = 2
kDARK_SURROUND = 3
kCUTSHEET_SURROUND = 4
(Read and Write property)

104.36.10 whitePoint as LCMS2CIEXYZMBS

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The white point. Notes: (Read and Write property)

104.36.11 Yb as Double

Chapter 105

LDAP

105.1 class LDAPMBS

105.1.1 class LDAPMBS

Function: The class for LDAP connection.
Example:

// Get a handle to an LDAP connection and set any session preferences.
dim l as new LDAPMBS("localhost", 389)

// Use the ProtocolVersion session preference to specify that the client is an LDAPv3 client.
l.ProtocolVersion = 3
if l.Lasterror <> 0 then
dim error as string = l.ErrorString(l.Lasterror)
Break
end if

// Bind to the server.
// In this example, the client binds anonymously to the server
// (no DN or credentials are specified).

l.SimpleBind("", ")
if l.Lasterror <> 0 then
dim error as string = l.ErrorString(l.Lasterror)
Break
end if

const BASEDN = "dc=example,dc=com"
const SCOPE = l.kScopeSubtree
const FILTER = "(sn=Jensen)"

dim results() as Dictionary = l.Search(BASEDN, SCOPE, FILTER)

for each dic as Dictionary in results
  Break // look in debugger
next

Notes:
On Windows we use Microsoft’s WinLDAP Library.
For Mac OS X and Linux we link to OpenLDAP, so be sure to have the right package installed on Linux.

105.1.2 Methods

105.1.3 Add(distinguishedName as string, attrs() as LDAPModMBS)

Function: Adds attributes.
Example:
  // add like this

dim m1 as new LDAPModMBS
dim m2 as new LDAPModMBS

m1.Operation = m1.kOperationAdd
m1.Type = "sn"
m1.addValue "yyy"

m2.Operation = m1.kOperationAdd
m2.Type = "cn"
m2.addValue "xxx"

dim attr() as LDAPModMBS
attr.Append m1
attr.Append m2

l.Add("test", attr)

Notes:
The Add function initiates a synchronous add operation that adds an entry to a tree. The parent of the entry being added must already exist or the parent must be empty (equal to the root distinguished name)
for an add operation to succeed.

Before calling Add, you must create an entry by specifying its attributes in LDAPModMBS objects. Set the Operator member of each structure to kOperationAdd, and set the Type and Value members as appropriate for your entry.

### 105.1.4 Bind(Who as String, Cred as String, AuthMethod as Integer, Domain as String = "")

MBS Network Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Binds to a server with given credentials and authorization method. **Notes:** Synchronously authenticates a client to the LDAP server. Added domain parameter in plugin version 17.1, Windows only.

### 105.1.5 Connect(TimeOutSeconds as Double = 1.0)

MBS Network Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Connects to server. **Notes:** On Mac does nothing.

### 105.1.6 Constructor

MBS Network Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** Default constructor. **Notes:** Creates a new connection without connecting. See also:

- 105.1.7 Constructor(IP as string, Port as Integer, Open as Boolean = false, Secure as Boolean = false) 16169
- 105.1.8 Constructor(URL as string) 16170

### 105.1.7 Constructor(IP as string, Port as Integer, Open as Boolean = false, Secure as Boolean = false)

MBS Network Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a connection to a LDAP server.
Example:

// connect with SSL
dim ldap as LDAPMBS

# if TargetWin32 then
ldap = new LDAPMBS("192.168.1.123", 636, false, true)
# else
ldap = new LDAPMBS("ldaps://192.168.1.123")
# endif

Notes:

If open is true, we connect directly to server.
Secure: For Windows Vista and newer. Set to true for a secure connection with SSL. (only for open=false)

For connecting via SSL, please use on Mac OS X the Constructor taking the URL and specify ldaps protocol.
For Windows use this constructor with secure parameter set to true.

Changed with 16.0 to work on Mac with secure = true. For Windows we switch to Open = false if secure is true.
See also:

• 105.1.6 Constructor
• 105.1.8 Constructor(URL as string)

105.1.8 Constructor(URL as string)

Function: Creates a connection to a LDAP server.
Example:

// connect with SSL
dim ldap as LDAPMBS

# if TargetWin32 then
ldap = new LDAPMBS("192.168.1.123", 636, false, true)
# else
ldap = new LDAPMBS("ldaps://192.168.1.123")
# endif

Notes: Added Windows support in 16.0 plugins.
See also:
105.1. CLASS LDAPMBS

- 105.1.6 Constructor
- 105.1.7 Constructor(IP as string, Port as Integer, Open as Boolean = false, Secure as Boolean = false)

105.1.9 Delete(distinguishedName as string)

MBS Network Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Deletes an entry.

105.1.10 ErrorString(error as Integer) as string

MBS Network Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries an error message for an error code.

105.1.11 Modify(distinguishedName as string, attrs() as LDAPModMBS)

MBS Network Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Modifies an entry.

**Notes:**

Please pass one LDAPModMBS for each attribute to change.

The Modify function initiates a synchronous operation to modify an existing entry. If values are being added to or replaced in the entry, the function creates the attribute, if necessary. If values are being deleted, the function removes the attribute if no values remain. All modifications are performed in the order in which they are listed.

When connecting to an LDAP 2 server, the application must perform a bind operation (by calling one of the Bind or SimpleBind routines) before attempting any other operations.

105.1.12 Rename(distinguishedName as string, NewDistinguishedName as String, DeleteOldRdn as Boolean)

MBS Network Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Renames an item.

**See also:**

- 105.1.13 Rename(distinguishedName as string, NewRDN as String, NewParent as String, DeleteOldRdn as Boolean)
105.1.13 Rename(distinguishedName as string, NewRDN as String, NewParent as String, DeleteOldRdn as Boolean)

**Function:** Renames an item and can move it to other parent.

See also:
- 105.1.12 Rename(distinguishedName as string, NewDistinguishedName as String, DeleteOldRdn as Boolean)

105.1.14 Search(distinguishedName as string, Scope as Integer, Filter as String, Attrs() as String = nil, AttributesOnly as boolean = false, timeout as Double = 1.0, SizeLimit as Integer = 0) as Dictionary()

**Function:** Search for something.

**Example:**

```vbnet
// Get a handle to an LDAP connection and set any session preferences.
dim l as new LDAPMBS("localhost", 389)

// Use the ProtocolVersion session preference to specify that the client is an LDAPv3 client.
l.ProtocolVersion = 3
if l.Lasterror <> 0 then
    dim error as string = l.ErrorString(l.Lasterror)
    Break
end if

// Bind to the server.
// In this example, the client binds anonymously to the server
// (no DN or credentials are specified).
l.SimpleBind("", "")
if l.Lasterror <> 0 then
    dim error as string = l.ErrorString(l.Lasterror)
    Break
end if

const BASEDN = "dc=example,dc=com"
const SCOPE = l.kScopeSubtree
const FILTER = "(sn=Jensen)"

dim results() as Dictionary = l.Search(BASEDN, SCOPE, FILTER)
for each dic as Dictionary in results
    Break // look in debugger
next
```
**Notes:** The plugin will return result as array of Dictionaries, one for each item. Dictionary contains attributes with their values. A special entry has key = nil and as value the distinguish name of the item.

### 105.1.15 SimpleBind(Who as String, Cred as String)

**Function:** Simple bind call.  
**Example:**

```plaintext
// Get a handle to an LDAP connection and set any session preferences.
dim l as new LDAPMBS("localhost", 389)

// Use the ProtocolVersion session preference to specify that the client is an LDAPv3 client.
l.ProtocolVersion = 3
if l.Lasterror <> 0 then
    dim error as string = l.ErrorString(l.Lasterror)
    Break
end if

// Bind to the server.
// In this example, the client binds anonymously to the server
// (no DN or credentials are specified).

l.SimpleBind("", ")
if l.Lasterror <> 0 then
    dim error as string = l.ErrorString(l.Lasterror)
    Break
end if

const BASEDN = "dc=example,dc=com"
const SCOPE = l.kScopeSubtree
const FILTER = "(sn=Jensen)"

dim results() as Dictionary = l.Search(BASEDN, SCOPE, FILTER)

for each dic as Dictionary in results
    Break // look in debugger
next
```
105.1.16  **Properties**

105.1.17  **Handle as Integer**

MBS Network Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal object reference. **Notes:** (Read and Write property)

105.1.18  **Lasterror as Integer**

MBS Network Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last error code. **Notes:** (Read and Write property)

105.1.19  **NetworkTimeOut as Integer**

MBS Network Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** The network timeout. **Notes:** (Read and Write property)

105.1.20  **ProtocolVersion as Integer**

MBS Network Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get or set the protocol version to use. **Notes:** (Read and Write property)

105.1.21  **Referrals as Integer**

MBS Network Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Specifies whether to automatically follow referrals returned by the LDAP server. **Notes:** (Read and Write property)

105.1.22  **TimeOut as Integer**

MBS Network Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** The default timeout.
105.1. CLASS LDAPMBS

Notes: (Read and Write property)

105.1.23 Events

105.1.24 Error(ErrorCode as Integer, ErrorMessage as String, FunctionName as String)


105.1.25 Constants

105.1.26 kAuthDigest = & h4086


105.1.27 kAuthDPA = & h2086


105.1.28 kAuthExternal = & hA6

MBS Network Plugin, Plugin Version: 15.0. Function: One of the auth mode constants.

105.1.29 kAuthKRBV4 = & hFF

MBS Network Plugin, Plugin Version: 15.0. Function: One of the auth mode constants. Notes: Only for Mac OS X and Linux.
105.1.30 \( \text{kAuthKRBV41} = \& \text{h81} \)

MBS Network Plugin, Plugin Version: 15.0. **Function:** One of the auth mode constants.  
**Notes:** Only for Mac OS X and Linux.

105.1.31 \( \text{kAuthKRBV42} = \& \text{h82} \)

MBS Network Plugin, Plugin Version: 15.0. **Function:** One of the auth mode constants.  
**Notes:** Only for Mac OS X and Linux.

105.1.32 \( \text{kAuthMSN} = \& \text{h0886} \)

MBS Network Plugin, Plugin Version: 15.0. **Function:** One of the auth mode constants.  
**Notes:** Only for Windows.

105.1.33 \( \text{kAuthNegotiate} = \& \text{h4FF} \)

MBS Network Plugin, Plugin Version: 15.0. **Function:** One of the auth mode constants.  
**Notes:** Only for Windows.

105.1.34 \( \text{kAuthNegotiateWin} = \& \text{h0486} \)

MBS Network Plugin, Plugin Version: 15.0. **Function:** One of the auth mode constants.  
**Notes:** Only for Windows.

105.1.35 \( \text{kAuthNone} = 0 \)

MBS Network Plugin, Plugin Version: 15.0. **Function:** One of the auth mode constants.  
**Notes:** No auth.

105.1.36 \( \text{kAuthNTLM} = \& \text{h1086} \)

MBS Network Plugin, Plugin Version: 15.0. **Function:** One of the auth mode constants.  
**Notes:** Only for Windows.
105.1.  CLASS LDAPMBS

105.1.37  kAuthSASL = & hA3

MBS Network Plugin, Plugin Version: 15.0. **Function:** One of the auth mode constants. **Notes:** Only for Mac OS X and Linux.

105.1.38  kAuthSASLWin = & h83

MBS Network Plugin, Plugin Version: 15.0. **Function:** One of the auth mode constants. **Notes:** Only for Windows.

105.1.39  kAuthSicily = & h0286

MBS Network Plugin, Plugin Version: 15.0. **Function:** One of the auth mode constants. **Notes:** Only for Windows.

105.1.40  kAuthSimple = & h80

MBS Network Plugin, Plugin Version: 15.0. **Function:** One of the auth mode constants. **Notes:** Simple authentication.

105.1.41  kAuthSSPI = & h4FF

MBS Network Plugin, Plugin Version: 15.0. **Function:** One of the auth mode constants. **Notes:** Only for Windows.

105.1.42  kScopeBase = 0

MBS Network Plugin, Plugin Version: 15.0. **Function:** One of the scopes constants.

105.1.43  kScopeDefault = -1

MBS Network Plugin, Plugin Version: 15.0. **Function:** One of the scopes constants.
105.1.44  kScopeOneLevel = 1

MBS Network Plugin, Plugin Version: 15.0. **Function:** One of the scopes constants.

105.1.45  kScopeSubordinate = 3

MBS Network Plugin, Plugin Version: 15.0. **Function:** One of the scopes constants.

105.1.46  kScopeSubtree = 2

MBS Network Plugin, Plugin Version: 15.0. **Function:** One of the scopes constants.

105.1.47  kVersion1 = 1

MBS Network Plugin, Plugin Version: 15.0. **Function:** One of the version constants.

105.1.48  kVersion2 = 2

MBS Network Plugin, Plugin Version: 15.0. **Function:** One of the version constants.

105.1.49  kVersion3 = 3

MBS Network Plugin, Plugin Version: 15.0. **Function:** One of the version constants.
105.2. CLS LDAPMODMBS

105.2 class LDAPModMBS

105.2.1 class LDAPModMBS

MBS Network Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class to hold values being added/modified.

**Example:**

```vbnet
dim m1 as new LDAPModMBS
m1.Operation = m1.kOperationAdd
m1.Type = "sn"
m1.addValue "yyy"
```

105.2.2 Methods

105.2.3 addValue(value as String)

MBS Network Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds a value.

**Notes:** An item may have one value or several, so the plugin manages an array for you.

105.2.4 clearValues

MBS Network Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Clears all values.

105.2.5 Constructor

MBS Network Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor.

105.2.6 setValues(values() as String)

MBS Network Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the values array to be the one passed.

**Notes:** Does not make a copy of the array, but references it.
105.2.7 Values as String()

MBS Network Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the array with values. **Notes:** Returns not a copy, but the array used to store values.

105.2.8 Properties

105.2.9 Operation as Integer

MBS Network Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The operation to perform. **Notes:** Can be kOperationAdd, kOperationDelete or kOperationReplace. (Read and Write property)

105.2.10 Type as String

MBS Network Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** String that specifies the name of the attribute to modify. **Notes:** (Read and Write property)

105.2.11 Value as String

MBS Network Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns first value. **Notes:** Some items only have one value, so this is the value. (Read only property)

105.2.12 Constants

105.2.13 kOperationAdd = 0

MBS Network Plugin, Plugin Version: 15.0. **Function:** One of the operation modes. **Notes:** Adds a value to the entry. The supplied values are appended to the existing values in the attribute.
105.2. CLASS LDAPMODMBS

105.2.14  kOperationDelete = 1

MBS Network Plugin, Plugin Version: 15.0. **Function:** One of the operation modes.
**Notes:** Deletes a value in the entry. The supplied values are deleted from the current attribute values.

105.2.15  kOperationReplace = 2

MBS Network Plugin, Plugin Version: 15.0. **Function:** One of the operation modes.
**Notes:** Replaces a value in the entry. The supplied values replace the existing attribute values.
Chapter 106

Licenses

106.1 Licenses

106.1.1 bzip2

Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The bzip2 1.0.5 license

**Notes:**

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THE POSSIBILITY OF SUCH DAMAGE.

Julian Seward, jseward@bzip.org bzip2/libbzip2 version 1.0.5 of 10 December 2007

106.1.2 ChartDirector

Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The ChartDirector 5.0 license

**Notes:**

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106.1.3 CUPS

Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: The CUPS 1.4.4 license

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106.1.4 CURL

Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The CURL 7.20.0 license

**Notes:**

CURL links to libssl, libcrypto, libssh2 and other libraries.

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106.1.5 expat

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Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The FreeType 2.3.9 license

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2006-Jan-27

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Glenn Randers-Pehrson glennrp at users.sourceforge.net June 26, 2010
106.1.14 libssh2

Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The ssh2 1.2.4 license  
**Notes:**

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106.1.15 LibTesseract

Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The LibTesseract 2.04 license  
**Notes:**

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================================
The Aspirin/MIGRAINES system is no longer used.

Tesseract can also make use of the libtiff library. (www.libtiff.org)
Without libtiff, Tesseract can only read uncompressed and G3 compressed
TIFF files.

106.1.16 libtiff

Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The libtiff 3.9.4 license
**Notes:**

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106.1.17 libunimotion

Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: The libunimotion 0.4.1 license
Notes: The plugin loads the unimotion library. So the library is LGPL and your commercial app can load it.

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106.1.18 libunzip

Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The libunzip 1.01e license
**Notes:**

unzip.h – IO for uncompress .zip files using zlib
Version 1.01e, February 12th, 2005

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106.1.19  libxml

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106.1.20  libzip

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**Notes:**

zip.h – IO for compress .zip files using zlib  
Version 1.01e, February 12th, 2005
CHAPTER 106. LICENSES

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This unzip package allow creates .ZIP file, compatible with PKZip 2.04g
WinZip, InfoZip tools and compatible.
Multi volume ZipFile (span) are not supported.
Encryption compatible with pkzip 2.04g only supported
Old compressions used by old PKZip 1.x are not supported

For uncompress .zip file, look at unzip.h

I WAIT FEEDBACK at mail info@winimage.com
Visit also http://www.winimage.com/zLibDll/unzip.html for evolution

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for more info about .ZIP format, see
http://www.info-zip.org/pub/infozip/doc/
PkWare has also a specification at :

106.1.21 LZW

Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The LZW license
**Notes:**
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550 2nd St S.E.
Cedar Rapids, Iowa 52401
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106.1.22 OpenSSL

Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: The OpenSSL license

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106.1.23 optipng

Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: The optipng 0.6.2 license
Notes:

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106.1.24 PCRE

Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: The PCRE 8.0.1 license (RegEx)
Notes:

PCRE LICENCE

PCRE is a library of functions to support regular expressions whose syntax
and semantics are as close as possible to those of the Perl 5 language.

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specified below. The documentation for PCRE, supplied in the "doc"
directory, is distributed under the same terms as the software itself.

The basic library functions are written in C and are freestanding. Also included in the distribution is a set of C++ wrapper functions.

THE BASIC LIBRARY FUNCTIONS

Written by: Philip Hazel
Email local part: ph10
Email domain: cam.ac.uk

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End

106.1.25  php

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Notes:

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106.1.26 PortAudio

Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The PortAudio v19 license

**Notes:**

Portable header file to contain:

```
/*
 * PortAudio Portable Real-Time Audio Library
 * PortAudio API Header File
 * Latest version available at: http://www.portaudio.com
 *
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 *
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* */
<<<<<<

106.1.27 PortMidi

Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The PortMidi v17 license

**Notes:**

/*
* PortMidi Portable Real-Time MIDI Library
*
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* *
* Latest version available at: http://www.cs.cmu.edu/~music/portmidi/
* *
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106.1.28 SecureDongle X

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106.1.30 TCMPortMapper

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**Notes:**

TCMPortMapper
Establishes port mapping via upnp or natpmp

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106.1.31 Tidy

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**Notes:**
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CHAPTER 106. LICENSES

HTML Tidy

HTML parser and pretty printer

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106.1.34 zlib

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Chapter 107

Linguistic

107.1 class NSLinguisticTaggerMBS

107.1.1 class NSLinguisticTaggerMBS


Function: Analyze natural language to tag part of speech and lexical class, identify proper names, perform lemmatization, and determine the language and script (orthography) of text.

Example:

```vbnet
dim TagScheme as string = NSLinguisticTaggerMBS.NSLinguisticTagSchemeLanguage
dim TagSchemes() as string = array(TagScheme)
dim t as new NSLinguisticTaggerMBS(TagSchemes)
t.Text = "Hallo Leute"

dim tokenRange as NSRangeMBS
dim sentenceRange as NSRangeMBS
dim tag as string = t.tagAtIndex(0, TagScheme, tokenRange, sentenceRange)

MsgBox "Language: " + tag // should be "de" for German
```

Notes:

The NSLinguisticTaggerMBS class provides a uniform interface to a variety of natural language processing functionality with support for many different languages and scripts. You can use NSLinguisticTaggerMBS to segment natural language text into paragraphs, sentences, or words, and tag information about those tokens, such as part of speech, lexical class, lemma, script, and language.

When you create a linguistic tagger, you specify what kind of information you’re interested in by passing one or more
NSLinguisticTagScheme values. Set the string property to the natural language text you want to analyze, and the linguistic tagger processes it according to the specified tag schemes. You can then enumerate over the tags in a specified range, using the methods described in Enumerating Linguistic Tags, to get the information requested for a given scheme and unit.

107.1.2 Methods

107.1.3 availableTagSchemesForLanguage(Language as String) as String()


Returns the available tag schemes. For possible values, see NSLinguisticTagScheme.

This is a convenience method for calling the availableTagSchemesForUnit, passing NSLinguisticTaggerUnit-Word as the linguistic unit.

107.1.4 availableTagSchemesForUnit(unit as Integer, Language as String) as String()

MBS MacFrameworks Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the tag schemes available for a particular unit and language on the current device. Notes: unit: The linguistic unit. For possible values, see NSLinguisticTaggerUnit. language: A BCP-47 tag identifying the language. For example, "en" for English or "zh-Hans" for Chinese written using the Simplified Chinese script.

Returns the supported tag schemes. For possible values, see NSLinguisticTagScheme.

Available in macOS 10.13 and newer.

107.1.5 Constructor(tagSchemes() as String, options as integer = 0)

107.1.6  dominantLanguageForString(text as String) as String

**Function:** Returns the dominant language for the specified string.
**Notes:**

string: The string for which the dominant language is determined.

Returns the BCP-47 tag identifying the dominant language of the string, or the tag "und" if a specific language cannot be determined.

This is a convenience method for creating a new linguistic tagger, setting the string property, and getting the dominantLanguage property. If you analyze the same string more than once, you should create a linguistic tagger object instead of calling this method.

Available in macOS 10.13 and newer.

107.1.7  NSLinguisticTagAdjective as String

**Function:** One of the lexical classes.
**Notes:** This token is an adjective.

107.1.8  NSLinguisticTagAdverb as String

**Function:** One of the lexical classes.
**Notes:** This token is an adverb.

107.1.9  NSLinguisticTagClassifier as String

**Function:** One of the lexical classes.
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Notes: This token is a classifier.

107.1.10  NSLinguisticTagCloseParenthesis as String

**Function:** One of the lexical classes.
**Notes:** This token is a close parenthesis.

107.1.11  NSLinguisticTagCloseQuote as String

**Function:** One of the lexical classes.
**Notes:** This token is a close quote.

107.1.12  NSLinguisticTagConjunction as String

**Function:** One of the lexical classes.
**Notes:** This token is a conjunction.

107.1.13  NSLinguisticTagDash as String

**Function:** One of the lexical classes.
**Notes:** This token is a dash.

107.1.14  NSLinguisticTagDeterminer as String

**Function:** One of the lexical classes.
**Notes:** This token is a determiner.

107.1.15  NSLinguisticTagIdiom as String

**Function:** One of the lexical classes.
107.1. CLASS NSLINGUISTICTAGGERMBS

Notes: This token is an idiom.

107.1.16 NSLinguisticTagInterjection as String

Function: One of the lexical classes.
Notes: This token is an interjection.

107.1.17 NSLinguisticTagNoun as String

Function: One of the lexical classes.
Notes: The token is a noun.

107.1.18 NSLinguisticTagNumber as String

Function: One of the lexical classes.
Notes: This token is a number.

107.1.19 NSLinguisticTagOpenParenthesis as String

Function: One of the lexical classes.
Notes: This token is an open parenthesis.

107.1.20 NSLinguisticTagOpenQuote as String

Function: One of the lexical classes.
Notes: This token is an open quote.

107.1.21 NSLinguisticTagOrganizationName as String

Function: One of the Name Types.
107.1.22  **NSLinguisticTagOther as String**

**Function:** One of the token types.  
**Notes:** The token indicates a non-linguistic item, such as a symbol.

107.1.23  **NSLinguisticTagOtherPunctuation as String**

**Function:** One of the lexical classes.  
**Notes:** This token is punctuation other than a kind described by other lexical classes (sentence terminator, open or close quote, open or close parenthesis, word joiner, and dash).

107.1.24  **NSLinguisticTagOtherWhitespace as String**

**Function:** One of the lexical classes.  
**Notes:** This token is whitespace other than a kind described by other lexical classes (paragraph break).

107.1.25  **NSLinguisticTagOtherWord as String**

**Function:** One of the lexical classes.  
**Notes:** This token is a word other than a kind described by other lexical classes (noun, verb, adjective, adverb, pronoun, determiner, particle, preposition, number, conjunction, interjection, classifier, and idiom).

107.1.26  **NSLinguisticTagParagraphBreak as String**

**Function:** One of the lexical classes.  
**Notes:** This token is a paragraph break.
107.1.27  NSLinguisticTagParticle as String

Function: One of the lexical classes.
Notes: This token is a particle.

107.1.28  NSLinguisticTagPersonalName as String

Function: One of the Name Types.
Notes: This token is a personal name.

107.1.29  NSLinguisticTagPlaceName as String

Function: One of the Name Types.
Notes: This token is a place name.

107.1.30  NSLinguisticTagPreposition as String

Function: One of the lexical classes.
Notes: This token is a preposition.

107.1.31  NSLinguisticTagPronoun as String

Function: One of the lexical classes.
Notes: This token is a pronoun.

107.1.32  NSLinguisticTagPunctuation as String

Function: One of the token types.
Notes: The token indicates punctuation.
107.1.33  **NSLinguisticTagSchemeLanguage as String**

**Function:** Supplies a BCP-47 language identifier for a token.
**Notes:**
For example, the language identifier for English is "en" and the identifier for Chinese written using the Simplified Chinese script is "zh-Hans". The identifier "und" is used if a specific language cannot be determined. The tagger generally attempts to determine the language of text at the level of an entire sentence, paragraph, or document, rather than word by word.

107.1.34  **NSLinguisticTagSchemeLemma as String**

**Function:** Supplies a stem form of a word token, if known.

107.1.35  **NSLinguisticTagSchemeLexicalClass as String**

**Function:** Classifies tokens according to class: part of speech for words, type of punctuation, or whitespace.

107.1.36  **NSLinguisticTagSchemeNameType as String**

**Function:** Classifies tokens according to whether they are part of a named entity.

107.1.37  **NSLinguisticTagSchemeNameTypeOrLexicalClass as String**

**Function:** Classifies tokens corresponding to names according to NSLinguisticTagSchemeNameType and tokens all other tokens according to NSLinguisticTagSchemeLexicalClass.

107.1.38  **NSLinguisticTagSchemeScript as String**

**Function:** Supplies an ISO 15924 script identifier for a token.
**Notes:** For example, the identifier for Latin script is "Latn" and the identifier for Simplified Chinese script
is "Hans". The identifier "Zyyy" is used if a specific script cannot be determined.

107.1.39 **NSLinguisticTagSchemeTokenType as String**

**Function:** Classifies tokens according to their broad type: word, punctuation, or whitespace.  
**Notes:**  
To classify tokens by a more specific type, for example, distinguishing words between nouns and verbs, use the NSLinguisticTagSchemeLexicalClass scheme.

107.1.40 **NSLinguisticTagSentenceTerminator as String**

**Function:** One of the lexical classes.  
**Notes:** This token is a sentence terminator.

107.1.41 **NSLinguisticTagVerb as String**

**Function:** One of the lexical classes.  
**Notes:** This token is a verb.

107.1.42 **NSLinguisticTagWhitespace as String**

**Function:** One of the token types.  
**Notes:** The token indicates white space of any sort.

107.1.43 **NSLinguisticTagWord as String**

**Function:** One of the token types.  
**Notes:** The token indicates a word.
107.1.44 NSLinguisticTagWordJoiner as String

**Function:** One of the lexical classes.
**Notes:** This token is a word joiner.

107.1.45 orthographyAtIndex(charIndex as integer, byref effectiveRange as NSRangeMBS) as NSOrthographyMBS

**Function:** Returns the orthography at the index and also returns the effective range.
**Example:**
```
Dim TagScheme As String = NSLinguisticTaggerMBS.NSLinguisticTagSchemeLanguage
Dim TagSchemes() As String = Array(TagScheme)
Dim t As New NSLinguisticTaggerMBS(TagSchemes)

T.Text = "Hallo Leute"

Dim tokenRange As NSRangeMBS
Dim sentenceRange As NSRangeMBS
Dim tag As String = t.tagAtIndex(0, TagScheme, tokenRange, sentenceRange)

Dim effectiveRange As NSRangeMBS
Dim o As NSOrthographyMBS = t.orthographyAtIndex(0, effectiveRange)

MsgBox o.dominantLanguage + " " + o.dominantScript
```
**Notes:**
- charIndex: The character index to begin examination.
- effectiveRange: An NSRangeMBS that, upon completion, contains the range of the orthography containing charIndex.

Returns the orthography for the location.

107.1.46 sentenceRangeForRange(range as NSRangeMBS) as NSRangeMBS

**Function:** Returns the range of a sentence containing the specified range.
**Notes:**
- charRange: The character range.
Returns the range of the sentence.

This is a convenience method for calling `tokenRangeAtIndex`, passing the `NSLinguisticTaggerUnitSentence` unit and the first position of the provided range.

### 107.1.47 `setOrthography(orthography as NSOrthographyMBS, range as NSRangeMBS)`


**Function:** Sets the orthography for the specified range.

**Notes:**
- `orthography`: The orthography.
- `charRange`: The range.

If the orthography of the linguistic tagger is not set, it will determine it automatically from the contents of the text. You should call this method only if you know the orthography of the text by some other means.

### 107.1.48 `tagAtIndex(charIndex as Integer, Scheme as String, byref tokenRange as NSRangeMBS, byref sentenceRange as NSRangeMBS) as String`


**Function:** Returns a tag for a single scheme at the specified character position.

**Notes:**
- `charIndex`: The position of the initial character.
- `tagScheme`: The tag scheme. See `NSLinguisticTagScheme` for the possible values.
- `tokenRange`: The token range for output.
- `sentenceRange`: The range of the sentence for output.

Returns the tag for the requested tag scheme, or nil. If a tag is returned, this function returns by reference the range of the token to `tokenRange`, and the range of the enclosing sentence to `sentenceRange`, if applicable.

This is a convenience method for calling `tagAtIndex` and passing `NSLinguisticTaggerUnitWord` as the linguistic unit.

Available in macOS 10.7 and newer.

See also:

- 107.1.49 `tagAtIndex(charIndex as Integer, unit as Integer, Scheme as String, byref tokenRange as NSRangeMBS) as String`
107.1.49  tagAtIndex(charIndex as Integer, unit as Integer, Scheme as String, byref tokenRange as NSRangeMBS) as String

Function: Returns a tag for a single scheme for a given linguistic unit at the specified character position.  
Notes:  
charIndex: The position of the initial character.  
unit: The linguistic unit. See NSLinguisticTaggerUnit for possible values.  
tagScheme: The tag scheme. See NSLinguisticTagScheme for possible values.  
tokenRange: The token range for output.  

Returns the tag for the requested tag scheme and linguistic unit, or nil. If a tag is returned, this function returns by reference the range of the token to tokenRange.  

Available in macOS 10.13 and newer.  
See also:  

• 107.1.48 tagAtIndex(charIndex as Integer, Scheme as String, byref tokenRange as NSRangeMBS, byref sentenceRange as NSRangeMBS) as String

107.1.50  tagForString(text as string, charIndex as Integer, unit as Integer, Scheme as String, orthography as NSOrthographyMBS, byref tokenRange as NSRangeMBS) as String

Function: Returns a tag for a single scheme for a given linguistic unit at the specified character position in a string.  
Notes:  
charIndex: The position of the initial character.  
unit: The linguistic unit. See NSLinguisticTaggerUnit for possible values.  
tagScheme: The tag scheme. See NSLinguisticTagScheme for possible values.  
tokenRange: The token range for output.  

Returns the tag for the requested tag scheme and linguistic unit, or nil. If a tag is returned, this function returns by reference the range of the token to tokenRange.  

This is a convenience method for initializing a linguistic tagger, setting the string property, and calling the tagForString method. If you analyze the same string more than once, you should create a linguistic tagger object instead of calling this method.
107.1.51 tagSchemes as String()

**Function:** Returns the tag schemes configured for this linguistic tagger.
**Notes:** For possible values, see NSLinguisticTagScheme.

107.1.52 TagsForString(text as string, range as NSRangeMBS, unit as Integer, Scheme as String, options as Integer, orthography as NSOrthographyMBS) as NSLinguisticValueMBS()

**Function:** Returns an array of linguistic tags and token ranges.
**Notes:**
- range: The range from which to return tags.
- unit: The linguistic unit. See NSLinguisticTaggerUnit for possible values.
- tagScheme: The tag scheme. See NSLinguisticTagScheme for possible values.
- options: The linguistic tagger options to use. See NSLinguisticTaggerOptions for possible values.

An array of the values in the requested range (tag and tokenRange set).

When the returned array contains an entry that doesn’t have a corresponding tag scheme, that entry is an empty string ("").
This is a convenience method for initializing a linguistic tagger, setting the string property, and calling the tagsInRange method. If you analyze the same string more than once, you should create a linguistic tagger object instead of calling this method.

Available in macOS 10.13 and newer.

107.1.53 tagsInRange(range as NSRangeMBS, Scheme as String, options as Integer) as NSLinguisticValueMBS()

**Function:** Returns an array of linguistic tags and token ranges.
**Notes:**
- range: The range to analyze.
- tagScheme: The tag scheme. For possible values, see NSLinguisticTagScheme.
- options: The linguistic tagger options to use. See NSLinguisticTaggerOptions for possible values.

Available in macOS 10.7 and newer.
See also:
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107.1.54  tagsInRange(range as NSRangeMBS, unit as Integer, Scheme as String, options as Integer) as NSLinguisticValueMBS()

107.1.54  tagsInRange(range as NSRangeMBS, unit as Integer, Scheme as String, options as Integer) as NSLinguisticValueMBS()

Function: Returns an array of linguistic tags and token ranges.
Notes:
range: The range to analyze.
unit: The linguistic unit. For possible values, see NSLinguisticTaggerUnit.
tagScheme: The tag scheme. For possible values, see NSLinguisticTagScheme.
options: The linguistic tagger options to use. See NSLinguisticTaggerOptions for possible values.
Available in macOS 10.13 and newer.

Returns all tokens intersecting a given range, supplying tags and ranges. The tagger segments the string
into sentences and tokens as necessary, and return those ranges along with a tag for any scheme in its array
of tag schemes. For example, if the tag scheme is NSLinguisticTagSchemeLexicalClass, the tags specify the
part of speech (for word tokens) or the type of whitespace or punctuation (for whitespace or punctuation
tokens). If the tag scheme is NSLinguisticTagSchemeLemma, the tags specify the stem form of the word (if
known) for each word token.
See also:

• 107.1.53 tagsInRange(range as NSRangeMBS, Scheme as String, options as Integer) as NSLinguisticValueMBS()

107.1.55  tokenRangeAtIndex(charIndex as Integer, Unit as Integer) as NSRangeMBS

Function: Returns the range of the linguistic unit containing the specified character index.
Notes:
charIndex: The character index to begin examination.
unit: The linguistic unit. For possible values, see NSLinguisticTaggerUnit.

Returns the range of the substring for the linguistic unit.
Available in macOS 10.13 and newer.
107.1.56 Properties

107.1.57 dominantLanguage as String

Function: Returns the dominant language of the string set for the linguistic tagger.
Notes:
The BCP-47 tag identifying the dominant language of the string, or the tag "und" if a specific language cannot be determined.
Available in macOS 10.13 and newer.
(Read only property)

107.1.58 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

107.1.59 Text as String

Function: The string being analyzed by the linguistic tagger.
Notes: (Read and Write property)

107.1.60 Constants

107.1.61 NSLinguisticTaggerJoinNames = 16

MBS MacFrameworks Plugin, Plugin Version: 17.3. Function: One of the option constants.
Notes: Typically, multiple-word names will be returned as multiple tokens, following the standard tokenization practice of the tagger. If this option is set, then multiple-word names will be joined together and returned as a single token.

107.1.62 NSLinguisticTaggerOmitOther = 8

MBS MacFrameworks Plugin, Plugin Version: 17.3. Function: One of the option constants.
Notes: Omit tokens of type NSLinguisticTagOther (non-linguistic items, such as symbols).
107.1.63 \textbf{NSLinguisticTaggerOmitPunctuation} = 2

MBS MacFrameworks Plugin, Plugin Version: 17.3. \textbf{Function}: One of the option constants. \textbf{Notes}: Omit tokens of type \textit{NSLinguisticTagPunctuation} (all punctuation).

107.1.64 \textbf{NSLinguisticTaggerOmitWhitespace} = 4

MBS MacFrameworks Plugin, Plugin Version: 17.3. \textbf{Function}: One of the option constants. \textbf{Notes}: Omit tokens of type \textit{NSLinguisticTagWhitespace} (whitespace of all sorts).

107.1.65 \textbf{NSLinguisticTaggerOmitWords} = 1

MBS MacFrameworks Plugin, Plugin Version: 17.3. \textbf{Function}: One of the option constants. \textbf{Notes}: Omit tokens of type \textit{NSLinguisticTagWord} (items considered to be words).

107.1.66 \textbf{NSLinguisticTaggerUnitDocument} = 3

MBS MacFrameworks Plugin, Plugin Version: 17.3. \textbf{Function}: One of the constants for a tagger unit. \textbf{Notes}: The document in its entirety.

107.1.67 \textbf{NSLinguisticTaggerUnitParagraph} = 2

MBS MacFrameworks Plugin, Plugin Version: 17.3. \textbf{Function}: One of the constants for a tagger unit. \textbf{Notes}: An individual paragraph.

107.1.68 \textbf{NSLinguisticTaggerUnitSentence} = 1

MBS MacFrameworks Plugin, Plugin Version: 17.3. \textbf{Function}: One of the constants for a tagger unit. \textbf{Notes}: An individual sentence.

107.1.69 \textbf{NSLinguisticTaggerUnitWord} = 0

MBS MacFrameworks Plugin, Plugin Version: 17.3. \textbf{Function}: One of the constants for a tagger unit. \textbf{Notes}: An individual word.
class NSLinguisticValueMBS


Function: The class for linguistic tokens.
Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

Methods

Constructor

Properties

sentenceRange as NSRangeMBS

Function: The sentence range.
Notes: Only filled by tagAtIndex when used without unit.
(Read and Write property)

Tag as String

Function: The linguistic tag.
Notes: (Read and Write property)

Text as String

Function: The text for the token.
Notes: (Read and Write property)
107.2.8  **tokenRange as NSRangeMBS**


**Function:** The token range.

**Notes:** (Read and Write property)
107.3. **CLASS NSORTHOGRAPHYMB**S

### 107.3 class NSOrthographyMBS

**107.3.1 class NSOrthographyMBS**

**Function:** A description of the linguistic content of a piece of text typically used for spelling and grammar checking.  
**Notes:**

An NSOrthography instance describes:

- Which scripts the text contains.
- A dominant language and possibly other languages for each of these scripts.
- A dominant script and language for the text as a whole.

Scripts are uniformly described by standard four-letter tags (Latn, Grek, Cyrl, etc.) with the supertags Jpan and Kore typically used for Japanese and Korean text, Hans and Hant for Chinese text; the tag Zyyy is used if a specific script cannot be identified. See Internationalization and Localization Guide for more information on internationalization.

Languages are uniformly described by BCP-47 tags, preferably in canonical form; the tag und is used if a specific language cannot be determined.

### 107.3.2 Methods

**107.3.3 allLanguages as String()**

**Function:** Returns an array containing all the languages appearing in the values of the language map.  
**Notes:** Available in macOS 10.6 and newer.

**107.3.4 allScripts as String()**

**Function:** Returns an array containing all the scripts appearing as keys in the language map.  
**Notes:** Available in macOS 10.6 and newer.
107.3.5  Constructor(script as string, map as dictionary)

Function: Creates and returns an orthography instance with the specified dominant script and language map.
Notes:
script: The dominant script.
map: A dictionary containing the language map.

Returns an initialized orthography object for the specified script and language map.

107.3.6  copy as NSOrthographyMBS

Function: Create a copy of the object.

107.3.7  defaultOrthographyForLanguage(language as string) as NSOrthographyMBS

Function: Queries default orthography for a language.
Notes: Available in macOS 10.13 and newer.

107.3.8  dominantLanguageForScript(script as string) as String

Function: Returns the dominant language for the specified script.
Notes: Available in macOS 10.6 and newer.

107.3.9  languagesForScript(script as string) as String()

Function: Returns the list of languages for the specified script.
Notes: Available in macOS 10.6 and newer.
107.3. CLASS NSORTOGRAPHYMBS

107.3.10 orthographyWithDominantScript(script as string, map as dictionary) as NSOrthographyMBS

Function: Creates and returns an orthography instance with the specified dominant script and language map.
Notes:
script: The dominant script.
map: A dictionary containing the language map.

Returns an initialized orthography object for the specified script and language map.

107.3.11 Properties

107.3.12 dominantLanguage as String

Function: Returns the first language in the list of languages for the dominant script.
Notes:
Available in macOS 10.6 and newer.
(Read only property)

107.3.13 dominantScript as String

Function: The dominant script for the text.
Notes:
The dominant script should be a script tag, such as Latn, Cyrl, etc.
Available in macOS 10.6 and newer.
(Read only property)

107.3.14 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)
107.3.15 languageMap as Dictionary


**Function:** A dictionary that map script tags to arrays of language tags.

**Notes:**

The dictionarys keys are script tags (such as Latn, Cyrl, and so forth) and whose values are arrays of language tags (such as en, fr, de, etc.)

(Read only property)
Chapter 108

Linux

108.1 class LinuxProcessMBS

108.1.1 class LinuxProcessMBS

MBS Linux Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The class for querying linux process details.

**Example:**

```vbnet
// show the path of current process
dim myPID as Integer = LinuxProcessMBS.PID
dim myProcess as LinuxProcessMBS = LinuxProcessMBS.ProcessByPID(myPID)

MsgBox myProcess.path
```

**Notes:**
If your app has not enough permission to read info about other app, values may be missing.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

108.1.2 Methods

108.1.3 Constructor

MBS Linux Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The private constructor.
108.1.4 PID as Integer

MBS Linux Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The Process ID of the current process (your app).

**Example:**

```vba
dim myPID as Integer = LinuxProcessMBS.PID
MsgBox "my process ID is: " + Str(myPID)
```

108.1.5 ProcessByPID(ProcessID as Integer) as LinuxProcessMBS

MBS Linux Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Queries the information for a process with given ID.

**Example:**

```vba
// show the name of current process
dim myPID as Integer = LinuxProcessMBS.PID
dim myProcess as LinuxProcessMBS = LinuxProcessMBS.ProcessByPID(myPID)

MsgBox myProcess.name
```

**Notes:** Returns nil on error.

108.1.6 Processes as LinuxProcessMBS()

MBS Linux Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Returns array with all processes.

**Example:**

```vba
// shows all process names in listbox
dim Processes() as LinuxProcessMBS = LinuxProcessMBS.Processes

for each p as LinuxProcessMBS in Processes
    listbox1.addrow p.name
next
```
108.1. CLASS LINUXPROCESSMBS

108.1.7 Properties

108.1.8 CommandLine as String

MBS Linux Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The command line used to create this process.

**Example:**

```vba
' show the command line of current process
Dim myPID as Integer = LinuxProcessMBS.PID
Dim myProcess as LinuxProcessMBS = LinuxProcessMBS.ProcessByPID(myPID)
MsgBox myProcess.CommandLine
```

**Notes:** (Read only property)

108.1.9 CurrentWorkingDirectory as String

MBS Linux Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The current working directory.

**Example:**

```vba
' show the current working directory of current process
Dim myPID as Integer = LinuxProcessMBS.PID
Dim myProcess as LinuxProcessMBS = LinuxProcessMBS.ProcessByPID(myPID)
MsgBox myProcess.CurrentWorkingDirectory
```

**Notes:** (Read only property)

108.1.10 Environment as Dictionary

MBS Linux Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The environment variables.

**Notes:** (Read only property)

108.1.11 Name as String

MBS Linux Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The name of the process.
Example:

```vbnet
// shows all process names in listbox
dim Processes() as LinuxProcessMBS = LinuxProcessMBS.Processes

for each p as LinuxProcessMBS in Processes
    listbox1.addrow p.name
next
```

Notes: (Read only property)

### 108.1.12 NumberOfThreads as Integer

MBS Linux Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The number of threads used by this process.
**Notes:** (Read only property)

### 108.1.13 OpenFiles as Dictionary

MBS Linux Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Queries details about open files.
**Example:**

```vbnet
// show the paths of open files of current process in listbox
dim myPID as Integer = LinuxProcessMBS.PID
dim myProcess as LinuxProcessMBS = LinuxProcessMBS.ProcessByPID(myPID)
dim OpenFiles as Dictionary = myProcess.OpenFiles

for each key as Variant in OpenFiles.keys
    listbox1.addrow OpenFiles.Value(key).StringValue
next
```

**Notes:**
This dictionary contains the file descriptor number as key and the path to the file as text.
(Read only property)
108.1. **CLASS LINUXPROCESSMBS**

108.1.14 **ParentProcessID as Integer**

MBS Linux Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The parent process ID.  
**Notes:** (Read only property)

108.1.15 **Path as String**

MBS Linux Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The path for this process.  
**Example:**
```vbscript
// show the path of current process
dim myPID as Integer = LinuxProcessMBS.PID
dim myProcess as LinuxProcessMBS = LinuxProcessMBS.ProcessByPID(myPID)
MsgBox myProcess.Path
```

**Notes:** (Read only property)

108.1.16 **ProcessID as Integer**

MBS Linux Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The process ID.  
**Notes:** (Read only property)

108.1.17 **StartTime as Date**

MBS Linux Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The start time of the process.  
**Example:**
```vbscript
// show the start time of current process
dim myPID as Integer = LinuxProcessMBS.PID
dim myProcess as LinuxProcessMBS = LinuxProcessMBS.ProcessByPID(myPID)
dim d as date = myProcess.StartTime
MsgBox d.LongDate+" "+d.LongTime
```

**Notes:** (Read only property)
108.1.18  State as String

MBS Linux Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The state of the process.

**Notes:**

Can be Running, Sleeping, Disk Sleep, Zombie, Trace or Writing pages. (Read only property)
108.2. **CLASS LINUXSUMBS**

### 108.2 class LinuxSuMBS

#### 108.2.1 class LinuxSuMBS

MBS Linux Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The class to run stuff with sudo.

**Example:**

```vba
dim s as new LinuxSuMBS
s.Command = "/usr/bin/whoami"
s.User = "root"
s.Alert = "Please Root?"
s.Message "Can I install something for you?"
if s.ExecuteSudo then
  MsgBox "OK"
else
  MsgBox s.LastErrorMessage
end if
```

**Notes:** Uses the gksu library.

#### 108.2.2 Methods

##### 108.2.3 AskPassword(prompt as String) as String

MBS Linux Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Asks for the password.

**Notes:**

- Returns password.
- Stores error in LastError and LastErrorMessage properties.

See also:

- 108.2.24 AskPassword(prompt as String, byref ErrorCode as Integer, byref ErrorMessage as String) as string

##### 108.2.4 Available as boolean

MBS Linux Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Whether the gksu library was found and loaded.

**Notes:**

### 108.2.4 Available as boolean

MBS Linux Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Whether the gksu library was found and loaded.

**Notes:**
CHAPTER 108. LINUX

Should return true on linux.
If missing, install the libgksu2-0 library.

108.2.5 ExecuteRun as boolean

MBS Linux Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Runs the command.

**Notes:**
Returns true on success.
Stores error in LastError and LastErrorMessage properties.

108.2.6 ExecuteSu as boolean

MBS Linux Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Runs the command with su.

**Notes:**
Returns true on success.
Stores error in LastError and LastErrorMessage properties.

108.2.7 ExecuteSudo as boolean

MBS Linux Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Runs the command with sudo.

**Example:**

```vba
dim s as new LinuxSuMBS
s.Command = "/usr/bin/whoami"
s.User = "root"
s.Alert = "Please Root?"
s.Message "Can I install something for you?"

if s.ExecuteSudo then
    MsgBox "OK"
else
    MsgBox s.LastErrorMessage
end if
```

**Notes:**
Returns true on success.
Stores error in LastError and LastErrorMessage properties.

### 108.2.8 Properties

#### 108.2.9 Alert as String

MBS Linux Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The alert message.  
**Notes:** (Read and Write property)

#### 108.2.10 AlwaysAskPassword as Boolean

MBS Linux Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Whether to always ask for a password.  
**Notes:** (Read and Write property)

#### 108.2.11 Command as String

MBS Linux Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The command will run with the target user.  
**Notes:** (Read and Write property)

#### 108.2.12 Debug as Boolean

MBS Linux Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Whether debugging information should be printed.  
**Notes:** (Read and Write property)

#### 108.2.13 Description as String

MBS Linux Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The description text.  
**Notes:** (Read and Write property)
108.2.14 ExitCode as Integer

MBS Linux Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The exit code of the last command run.  
**Notes:** (Read and Write property)

108.2.15 Grab as Boolean

MBS Linux Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Grab?  
**Notes:** (Read and Write property)

108.2.16 Handle as Integer

MBS Linux Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The internal object reference.  
**Notes:** (Read and Write property)

108.2.17 KeepEnvironment as Boolean

MBS Linux Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Should the environment be kept as it is?  
**Notes:**  
Defaults to true. Notice that setting this to false may cause the X authorization stuff to fail.  
(Read and Write property)

108.2.18 LastError as Integer

MBS Linux Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The last error code.  
**Notes:** (Read and Write property)

108.2.19 LastErrorMessage as String

MBS Linux Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The last error message.
108.2.20 LoginShell as Boolean

MBS Linux Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The shell in which the command will be run be a login shell?

**Notes:**
Finds out if the shell created by the underlying su process will be a login shell.
(Read and Write property)

108.2.21 Message as String

MBS Linux Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The message text.

**Notes:** (Read and Write property)

108.2.22 User as String

MBS Linux Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** What user the command will be run as.

**Notes:**
The default is root, but you can run the command as any user.
(Read and Write property)

108.2.23 Events

108.2.24 AskPassword(prompt as String, byref ErrorCode as Integer, byref ErrorMessage as String) as string

MBS Linux Plugin, Plugin Version: 16.1, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The event to ask for password.

**Notes:**
If you prefer your own dialog.
Return password or set error parameters.
See also:
- 108.2.3 AskPassword(prompt as String) as String
108.2.25 PasswordNoNeeded

MBS Linux Plugin, Plugin Version: 16.1, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** No password is needed.

108.2.26 Constants

108.2.27 ErrorCanceled = 11

MBS Linux Plugin, Plugin Version: 16.1. **Function:** One of the error codes. **Notes:** The user cancelled.

108.2.28 ErrorChildFailed = 9

MBS Linux Plugin, Plugin Version: 16.1. **Function:** One of the error codes. **Notes:** Child failed.

108.2.29 ErrorExec = 5

MBS Linux Plugin, Plugin Version: 16.1. **Function:** One of the error codes. **Notes:** Execution failed.

108.2.30 ErrorFork = 4

MBS Linux Plugin, Plugin Version: 16.1. **Function:** One of the error codes. **Notes:** Forking failed.

108.2.31 ErrorHelper = 1

MBS Linux Plugin, Plugin Version: 16.1. **Function:** One of the error codes. **Notes:** The helper tool failed.
108.2.32  **ErrorNoCommand = 2**

MBS Linux Plugin, Plugin Version: 16.1. **Function:** One of the error codes. **Notes:** Missing command.

108.2.33  **ErrorNoPassword = 3**

MBS Linux Plugin, Plugin Version: 16.1. **Function:** One of the error codes. **Notes:** Missing password.

108.2.34  **ErrorNotAllowed = 10**

MBS Linux Plugin, Plugin Version: 16.1. **Function:** One of the error codes. **Notes:** Not allowed.

108.2.35  **ErrorPipe = 6**

MBS Linux Plugin, Plugin Version: 16.1. **Function:** One of the error codes. **Notes:** Pipe failed.

108.2.36  **ErrorPiperead = 7**

MBS Linux Plugin, Plugin Version: 16.1. **Function:** One of the error codes. **Notes:** Pipe read error.

108.2.37  **ErrorWrongAutoPass = 12**

MBS Linux Plugin, Plugin Version: 16.1. **Function:** One of the error codes. **Notes:** Wrong auto Password.

108.2.38  **ErrorWrongPass = 8**

MBS Linux Plugin, Plugin Version: 16.1. **Function:** One of the error codes. **Notes:** Wrong Password
108.2.39  **ErrorXauth = 0**

MBS Linux Plugin, Plugin Version: 16.1. **Function:** One of the error codes.  
**Notes:** XAuth failed.
Chapter 109

Login Items

109.1 class LoginItemsMBS

109.1.1 class LoginItemsMBS

MBS MacOSX Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class to handle login items on Mac OS X.

**Notes:**

After creating a new object, the constructor may fail sometimes while updating the list. lasterror is -609 in that case. This happens most likely just after login when the system events process is not yet ready. In that case, let your app wait a few seconds and try again.

For newer Mac OS X versions, please use LSSharedFileListMBS class instead.

109.1.2 Methods

109.1.3 AddFile(file as FolderItem, hidden as boolean=false) as boolean

MBS MacOSX Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds a file to the login items.

**Notes:**

Returns true on success.

For newer Mac OS X versions, please use LSSharedFileListMBS class instead.
109.1.4 AddURL(url as string, hidden as boolean=false) as boolean

MBS MacOSX Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds an url to the item list.

**Notes:**
Returns true on success.

For newer Mac OS X versions, please use LSSharedFileListMBS class instead.

109.1.5 DisplayName(index as Integer) as String

MBS MacOSX Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The display name of the item with the given index.

**Example:**
```pascal
dim l as LoginItemsMBS
l=new LoginItemsMBS
MsgBox l.displayName(0) // shows name of first item
```

**Notes:** The display name may be localized.

109.1.6 File(index as Integer) as FolderItem

MBS MacOSX Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The file reference of the item with the given index.

**Notes:** Index is from 0 to count-1.

109.1.7 IsHidden(index as Integer) as boolean

MBS MacOSX Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the item with the given index should be hidden after launch.

**Notes:**
Index is from 0 to count-1.

This value does not work in Mac OS X 10.4, but works in 10.5.
109.1. CLASS LOGINITEMSMBS

109.1.8 Name(index as Integer) as String

MBS MacOSX Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of the item with the given index.

**Example:**
```vbnet
dim l as LoginItemsMBS
l=new LoginItemsMBS
MsgBox l.Name(0) // shows name of first item
```

**Notes:** This is the file name. To get the name for display, use displayname.

109.1.9 OldAddLoginItem(file as folderitem,hide as boolean,allusers as boolean) as boolean

MBS MacOSX Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds a file to the loginitems list.

**Example:**
```vbnet
dim f as folderItem
dim r as new LoginItemsMBS

f=app.applicationFileMBS
if r.OldAddLoginItem(f,false,false) then
  MsgBox f.displayName+" has been added to the login items!"
else
  MsgBox "Something went wrong."
end if
```

**Notes:**
This is the old method which edits the preferences file directly.
Do not use it unless you really need to. The new functions in this class handle login items using a system service and will be safer for future releases of Mac OS X.

hide matches the checkbox in the loginitems list.
allusers decides whether to set it for all user or the current one.

This function will add a LoginItem to the list of LoginItems when called. The properties given to the new LoginItem are passed when calling the function. Note that *no* check is made when adding the LoginItem to ensure that the path points to a valid application. Note that the LoginItem Is always added to the *end*
CHAPTER 109. LOGIN ITEMS

of the list of LoginItems.

First Parameter (appfile):
The absolute path of the application to be launched expressed as a Realbasic folderitem.

Second Parameter (hide):
A value representing if you want your application to be hidden at login time. True if you want the application to be hidden after it is launched. If you want the application to show up normally use be hidden use false.

Third Parameter (allusers):
A constant which represents which users preferences we want to change. In this case there are two alternatives: False which changes the preferences of the current user. The second alternative is True. The kAllUsers LoginItems are launched for all users on the system. You must be root or admin to use the kAllUsers option.

Function Returns:
This function returns a boolean value representing if the function was successful. The function returns true if the LoginItem was successfully added. False if otherwise. No additional error codes are returned.

Other Notes:
This code doesn’t work properly if more than one application is attempting to write to the LoginItems preference at once. Also no check is made to ensure that what you are adding to the LoginItem list isn’t a duplicate. If there is a duplicate however only one instance of the application is launched.

109.1.10 OldCountOfLoginItems(allusers as boolean) as Integer

MBS MacOSX Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: This function will return the number of LoginItems for the user requested.

Example:

// Add this code for synchronization:

dim cf as CFPrefsMBS

dim b as Boolean

cf=new CFPrefsMBS

b=cf.AppSynchronize(cf.kCFPreferencesCurrentApplication)

// Count items

dim r as new LoginItemsMBS
msgbox str(r.OldCountOfLoginItems(false))

Notes:
This is the old method which edits the preferences file directly.
Do not use it unless you really need to. The new functions in this class handle login items using a system service and will be safer for future releases of Mac OS X.

This function returns the number of LoginItems for the user requested as a signed integer.

109.1.11 OldLoginItemPropertyAtIndex(what as Integer, index as Integer, allusers as boolean) as string

Example:

```vbs
dim i as Integer
dim c as Integer
dim l as Integer
dim path,name,hide as string
dim r as new LoginItemsMBS

c=r.OldCountOfLoginItems(false)
MsgBox str(c)+" Login items found for this user."

c=c-1
for i=0 to c
name=r.OldLoginItemPropertyAtIndex(2,i,false)
hide=r.OldLoginItemPropertyAtIndex(3,i,false)
path=r.OldLoginItemPropertyAtIndex(1,i,false)
list.addrow name
l=list.lastIndex
list.cell(l,1)=hide
list.cell(l,2)=path
list.cell(l,3)=str(i)
next
```

Notes:
This is the old method which edits the preferences file directly.
Do not use it unless you really need to. The new functions in this class handle login items using a system service and will be safer for future releases of Mac OS X.

Index is from 0 to count-1.
What can be 1 for the absolute path of the LoginItem, 2 for the LoginItem name or 3 for a string with "false" or "true" for the hiding option.

Returns "" on any error.

109.1.12 OldRemoveLoginItem(file as folderitem, allusers as boolean) as boolean


Example:

dim f as folderItem
dim r as new LoginItemsMBS

f=app.applicationFileMBS
if r.OldRemoveLoginItem(f,false) then
msgBox f.displayName+" has been added to the login items!"
else
msgBox "Something went wrong."
end if

Notes:
This is the old method which edits the preferences file directly.
Do not use it unless you really need to. The new functions in this class handle login items using a system service and will be safer for future releases of Mac OS X.

The items are compared by path.
Returns true if item was found and the new list is written correctly to disk.
allusers decides whether to set it for all user or the current one.

109.1.13 OldRemoveLoginItemAtIndex(index as Integer, allusers as boolean) as boolean


Notes:
109.1. CLASS LOGINITEMSMBS

This is the old method which edits the preferences file directly.
Do not use it unless you really need to. The new functions in this class handle login items using a system
service and will be safer for future releases of Mac OS X.

Index is from 0 to count-1.

109.1.14 Remove(index as Integer) as boolean

MBS MacOSX Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Removes the item from the login items list.
Notes:
Index is from 0 to count-1.
The count property is updated.

109.1.15 RemoveFile(file as FolderItem) as boolean

MBS MacOSX Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Removes the items matching this file reference from the list.
Notes:
Returns true on success.
Count is updated.

109.1.16 RemoveURL(url as string) as boolean

MBS MacOSX Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Removes the item matching the given URL.
Notes: Returns true on success.

109.1.17 Update

MBS MacOSX Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Reloads the list of items.
Notes:
Update is done after each modification method and in the constructor.
You should never need to call this method.
109.1.18  **URL(index as Integer) as String**

MBS MacOSX Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The URL of the item with the given index.  
**Notes:** Index is from 0 to count-1.

109.1.19  **Properties**

109.1.20  **Count as Integer**

MBS MacOSX Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Number of items in the list currently.  
**Notes:** (Read and Write property)

109.1.21  **Handle as Integer**

MBS MacOSX Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle to the NSArray Reference used internally for the item list.  
**Notes:** (Read and Write property)

109.1.22  **Lasterror as Integer**

MBS MacOSX Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last error code.  
**Notes:**  
Value can be 0 for success or -1 for a parameter error in the plugins or some other Mac OS X error code. (Read and Write property)
109.2. CLASS LSSHAREDFILELISTITEMMBS

109.2 class LSSharedFileListItemMBS

109.2.1 class LSSharedFileListItemMBS

Function: The class for a list item.
Notes: Requires Mac OS X 10.5.

109.2.2 Methods

109.2.3 DisplayName as string

Function: Obtain item’s display name.
Example:

dim l as new LSSharedFileListMBS(LSSharedFileListMBS.kRecentDocumentItems)

if l.Handle=0 then
  MsgBox "Failed to get list."
else
  dim a(-1) as LSSharedFileListItemMBS = l.Snapshot
  dim lines(-1) as string

  for each x as LSSharedFileListItemMBS in a
    lines.append x.DisplayName
  next

  MsgBox Join(lines, EndOfLine)
end if

109.2.4 Icon as Variant

Function: Obtain item’s icon.
Notes: Returns an IconMBS object.
### 109.2.5 ID as UInt32


**Function:** Obtain unique item id.

**Example:**

```vbnet
dim l as new LSSharedFileListMBS(LSSharedFileListMBS.kSessionLoginItems)

if l.Handle=0 then
    MsgBox "Failed to get list."
else
    dim a(-1) as LSSharedFileListItemMBS = l.Snapshot
    dim lines(-1) as string

    for each x as LSSharedFileListItemMBS in a
        lines.append x.DisplayName+" : " + str(x.ID)
    next

    MsgBox Join(lines, EndOfLine)
end if
```

### 109.2.6 Resolve(flags as UInt32) as folderitem


**Function:** Resolve item and return its folderitem.

**Example:**

```vbnet
dim l as new LSSharedFileListMBS(LSSharedFileListMBS.kRecentDocumentItems)

if l.Handle=0 then
    MsgBox "Failed to get list."
else
    dim a(-1) as LSSharedFileListItemMBS = l.Snapshot
    dim lines(-1) as string

    for each x as LSSharedFileListItemMBS in a
        lines.append x.Resolve(0).AbsolutePath
    next

    MsgBox Join(lines, EndOfLine)
end if
```

**Notes:** Pass values like 0, kNoUserInteraction, kDoNotMountVolumes or kDoNotMountVolumes+kNoUser-Interaction.
109.2.7 ResolveURL(flags as UInt32) as string

Function: Resolve item and return its URL.
Example:

```vbscript
dim l as new LSSharedFileListMBS(LSSharedFileListMBS.kRecentDocumentItems)
if l.Handle=0 then
    MsgBox "Failed to get list."
else
    dim a(-1) as LSSharedFileListItemMBS = l.Snapshot
    dim lines(-1) as string
    for each x as LSSharedFileListItemMBS in a
        lines.append x.ResolveURL(x.kNoUserInteraction)
    next
    MsgBox Join(lines, EndOfLine)
end if
```

Notes: Pass values like 0, kNoUserInteraction, kDoNotMountVolumes or kDoNotMountVolumes+kNoUser-Interaction.

109.2.8 Properties

109.2.9 Handle as Integer

Function: The internal reference to the item.
Notes: (Read and Write property)

109.2.10 Lasterror as Integer

Function: The last error code.
Notes: (Read and Write property)
109.2.11 **ItemHidden as boolean**


**Function:** Is item hidden in UI?

**Example:**

```vba
dim l as new LSSharedFileListMBS(LSSharedFileListMBS.kSessionLoginItems)
if l.Handle=0 then
    MsgBox "Failed to get list."
else
    dim a(-1) as LSSharedFileListItemMBS = l.Snapshot
    dim lines(-1) as string
    for each x as LSSharedFileListItemMBS in a
        lines.append x.DisplayName+": "+str(x.ItemHidden)
    next
    MsgBox Join(lines, EndOfLine)
end if
```

**Notes:** (Read and Write computed property)

---

109.2.12 **LoginItemHidden as boolean**


**Function:** Should UI hide login item's window?

**Example:**

```vba
dim l as new LSSharedFileListMBS(LSSharedFileListMBS.kSessionLoginItems)
if l.Handle=0 then
    MsgBox "Failed to get list."
else
    dim a(-1) as LSSharedFileListItemMBS = l.Snapshot
    dim lines(-1) as string
    for each x as LSSharedFileListItemMBS in a
        lines.append x.DisplayName+": "+str(x.LoginItemHidden)
    next
    MsgBox Join(lines, EndOfLine)
end if
```
Notes:
Requires Mac OS X 10.6.
(Read and Write computed property)

109.2.13 Constants

109.2.14 kDoNotMountVolumes = 2

MBS MacFrameworks Plugin, Plugin Version: 9.8. Function: One of the flags for resolve. Notes: do not mount volumes during resolution

109.2.15 kNoUserInteraction = 1

MBS MacFrameworks Plugin, Plugin Version: 9.8. Function: One of the flags for resolve. Notes: no user interaction during resolution
109.3 class LS\texttt{SharedFileListMBS}

109.3.1 class LS\texttt{SharedFileListMBS}


Function: The shared list class.

Notes:
The shared file list API is for sharing and storing list of references to file system objects. The shared file
list is a persistent list of objects, where each item has assigned display name, icon, and url as well as other
optional properties.
Each list can also have various properties attached.

Requires Mac OS X 10.5.

109.3.2 Methods

109.3.3 Constructor(type as Integer)


Function: Creates shared file list reference to be used for changing list and reading its various properties.

Notes: type: A constant indicating list type to create. See the constants in this class.

109.3.4 GetSeedValue as UInt32


Function: Returns seed value of the shared list.

109.3.5 InsertFile(AfterItem as LS\texttt{SharedFileListItemMBS}, DisplayName as string, Icon as object, file as folderitem) as LS\texttt{SharedFileListItemMBS}


Function: Insert item into shared list.

Example:

```plaintext
// Add iPhoto to launch items

// pick app
dim app as FolderItem = SpecialFolder.Applications.Child("iPhoto.app")

// get list object
```
109.3. CLASS LSSHAREDFILELISTMBS

```vbnet
derm l as new LSSharedFileListMBS(LSSharedFileListMBS.kSessionLoginItems)

    // insert file
dim item as LSSharedFileListItemMBS = l.InsertFile(l.kLSSharedFileListItemBeforeFirst, "Launch iPhoto", nil, app)

    // check error
    if l.Lasterror = 0 then
        MsgBox "OK"
    else
        MsgBox "Failed: "+str(l.Lasterror)
    end if
```

**Notes:**

Inserts item into shared list at specified location. If the item already exists in the list it will be moved and its icon, display name and properties will be updated.

**AfterItem:** Item after which new item has to be inserted. To insert at the beginning of the list use kLSSharedFileListItemBeforeFirst or to insert at the end of the list use kLSSharedFileListItemLast.

**DisplayName:** Display name of the new item. Can be NULL.

**Icon:** IconMBS of the new item. Can be nil.

**File:** FolderItem of the new item.

---

109.3.6 InsertURL(AfterItem as LSSharedFileListItemMBS, DisplayName as string, Icon as object, URL as string) as LSSharedFileListItemMBS

**MBS MacFrameworks Plugin, Plugin Version:** 9.8, **Console & Web:** Yes, **Mac:** Yes, **Win:** No, **Linux:** No.

**Function:** Insert item into shared list.

**Notes:**

Inserts item into shared list at specified location. If the item already exists in the list it will be moved and its icon, display name and properties will be updated.

**AfterItem:** Item after which new item has to be inserted. To insert at the beginning of the list use kLSSharedFileListItemBeforeFirst or to insert at the end of the list use kLSSharedFileListItemLast.

**DisplayName:** Display name of the new item. Can be "".

**Icon:** IconMBS object for the icon. Can be nil.

**URL:** URL of the new item.
109.3.7 \textbf{kLSSharedFileListItemBeforeFirst} as \textbf{LSSharedFileListItemMBS}

\textbf{Function:} A virtual item reference for inserting new item at beginning of the list.
\textbf{Example:}

```vbs
dim n as LSSharedFileListItemMBS = LSSharedFileListMBS.kLSSharedFileListItemBeforeFirst
MsgBox str(n.Handle) // a special handle value for this virtual item: 1
```

109.3.8 \textbf{kLSSharedFileListItemLast} as \textbf{LSSharedFileListItemMBS}

\textbf{Function:} A virtual item reference for inserting new item at end of the list.
\textbf{Example:}

```vbs
dim n as LSSharedFileListItemMBS = LSSharedFileListMBS.kLSSharedFileListItemLast
MsgBox str(n.Handle) // a special handle value for this virtual item: 2
```

109.3.9 \textbf{Move(item} as \textbf{LSSharedFileListItemMBS, MoveAfterItem} as \textbf{LSSharedFileListItemMBS)}

\textbf{Function:} Moves item at specified location.
\textbf{Notes:}

- \textbf{item}: Item to move.
- \textbf{MoveAfterItem}: New icon of the new item. Use \textbf{kLSSharedFileListItemBeforeFirst} and \textbf{kLSSharedFileListItemLast} to move at the beginning or the end of the shared list.

109.3.10 \textbf{Remove(item} as \textbf{LSSharedFileListItemMBS)}

\textbf{Function:} Remove item from shared list.
\textbf{Example:}

```vbs
// Remove iPhoto from launch items

// get list object
dim l as new LSSharedFileListMBS(LSSharedFileListMBS.kSessionLoginItems)

// get items
```
109.3. CLASS LSSHAREDFILELISTMBS

\[ \text{dim items(-1) as LSSharedFileListItemMBS = l.Snapshot} \]

\[ \text{// check all items} \]
\[ \text{for each item as LSSharedFileListItemMBS in items} \]
\[ \text{dim file as FolderItem = item.Resolve(LSSharedFileListItemMBS.kNoUserInteraction)} \]

\[ \text{if file<>nil then} \]
\[ \text{if file.Name = "iPhoto.app" then} \]
\[ \text{l.Remove item} \]

\[ \text{if l.Lasterror = 0 then} \]
\[ \text{MsgBox "OK"} \]
\[ \text{else} \]
\[ \text{MsgBox "Error: "+str(l.Lasterror)} \]
\[ \text{end if} \]
\[ \text{Return} \]
\[ \text{end if} \]
\[ \text{end if} \]

\[ \text{next} \]

109.3.11 RemoveAllItems

**Function:** Remove all items from shared list.

109.3.12 SetAuthorization(handle as Integer)

**Function:** Set authorization reference for the shared list.
**Notes:** Before attempting to perform a privileged operation on the shared list caller must authorize appropriate rights. For example, modifying kGlobalLoginItems list requires "system.global-login-items." right authorized.

109.3.13 Snapshot as LSSharedFileListItemMBS()

**Function:** Creates snapshot array, which is list of all items at the moment this method was called.
See also:
- 109.3.14 Snapshot(byref seed as UInt32) as LSSharedFileListItemMBS()
109.3.14  **Snapshot(byref seed as UInt32) as LSSharedFileListItemMBS()**

**Function:** Creates snapshot array, which is list of all items at the moment this method was called.
**Notes:** seed: Returned seed value at which snapshot was taken.
See also:

- 109.3.13 Snapshot as LSSharedFileListItemMBS()

109.3.15  **Properties**

109.3.16  **Handle as Integer**

**Function:** The internal reference to the list.
**Notes:** (Read and Write property)

109.3.17  **Lasterror as Integer**

**Function:** The last error code.
**Notes:** (Read and Write property)

109.3.18  **RecentItemsMaxAmount as Integer**

**Function:** Maximum amount of items in the list.
**Notes:** (Read and Write computed property)

109.3.19  **VolumesComputerVisible as boolean**

**Function:** Is Computer item visible in favorite volumes list?
**Notes:** (Read and Write computed property)
109.3. **CLASS LSSHAREDFILELISTMBS**

109.3.20 **VolumesIDiskVisible as boolean**

**Function:** Is iDisk item visible in favorite volumes list.  
**Notes:** (Read and Write computed property)

109.3.21 **VolumesNetworkVisible as boolean**

**Function:** Is Network item visible in favorite volumes list?  
**Notes:** (Read and Write computed property)

109.3.22 **Events**

109.3.23 **Changed**

**Function:** The event called whenever the list is changed by an application.

109.3.24 **Constants**

109.3.25 **kFavoriteItems = 2**

**Function:** One of the list type constants.  
**Example:**

```vbnet
dim l as new LSSharedFileListMBS(LSSharedFileListMBS.kFavoriteItems)
if l.Handle=0 then
    MsgBox "Failed to get list."
else
    dim a(-1) as LSSharedFileListItemMBS = l.Snapshot
    dim lines(-1) as string
    for each x as LSSharedFileListItemMBS in a
        lines.append x.DisplayName
    next
    MsgBox Join(lines, EndOfLine)
end if
```
109.3.26  \( \textit{kFavoriteVolumes} = 1 \)

MBS MacFrameworks Plugin, Plugin Version: 9.8. **Function:** One of the list type constants.

**Example:**

```vbscript
dim l as new LSSharedFileListMBS(LSSharedFileListMBS.kFavoriteVolumes)
if l.Handle=0 then
    MsgBox "Failed to get list."
else
    dim a(-1) as LSSharedFileListItemMBS = l.Snapshot
    dim lines(-1) as string

    for each x as LSSharedFileListItemMBS in a
        lines.append x.DisplayName
    next

    MsgBox Join(lines, EndOfLine)
end if
```

109.3.27  \( \textit{kGlobalLoginItems} = 7 \)

MBS MacFrameworks Plugin, Plugin Version: 9.8. **Function:** One of the list type constants.

**Example:**

```vbscript
dim l as new LSSharedFileListMBS(LSSharedFileListMBS.kGlobalLoginItems)
if l.Handle=0 then
    MsgBox "Failed to get list."
else
    dim a(-1) as LSSharedFileListItemMBS = l.Snapshot
    dim lines(-1) as string

    for each x as LSSharedFileListItemMBS in a
        lines.append x.DisplayName
    next

    MsgBox Join(lines, EndOfLine)
end if
```
109.3. CLASS LSSHAREDFILELISTMBS

109.3.28  kRecentApplicationItems = 3

MBS MacFrameworks Plugin, Plugin Version: 9.8. **Function:** One of the list type constants. **Example:**

dim l as new LSSharedFileListMBS(LSSharedFileListMBS.kRecentApplicationItems)

if l.Handle=0 then
    MsgBox "Failed to get list."
else
    dim a(-1) as LSSharedFileListItemMBS = l.Snapshot
    dim lines(-1) as string

    for each x as LSSharedFileListItemMBS in a
        lines.append x.DisplayName
    next

    MsgBox Join(lines, EndOfLine)
end if

109.3.29  kRecentDocumentItems = 4

MBS MacFrameworks Plugin, Plugin Version: 9.8. **Function:** One of the list type constants. **Example:**

dim l as new LSSharedFileListMBS(LSSharedFileListMBS.kRecentDocumentItems)

if l.Handle=0 then
    MsgBox "Failed to get list."
else
    dim a(-1) as LSSharedFileListItemMBS = l.Snapshot
    dim lines(-1) as string

    for each x as LSSharedFileListItemMBS in a
        lines.append x.DisplayName
    next

    MsgBox Join(lines, EndOfLine)
end if
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109.3.30  \textbf{kRecentServerItems} = 5

MBS MacFrameworks Plugin, Plugin Version: 9.8. \textbf{Function:} One of the list type constants.
\textbf{Example:}

dim l as new LSSharedFileListMBS(LSSharedFileListMBS.kRecentServerItems)

if l.Handle=0 then
    MsgBox "Failed to get list."
else
    dim a(-1) as LSSharedFileListItemMBS = l.Snapshot
    dim lines(-1) as string

    for each x as LSSharedFileListItemMBS in a
    lines.append x.DisplayName
    next

    MsgBox Join(lines, EndOfLine)
end if

109.3.31  \textbf{kSessionLoginItems} = 6

MBS MacFrameworks Plugin, Plugin Version: 9.8. \textbf{Function:} One of the list type constants.
\textbf{Example:}

dim l as new LSSharedFileListMBS(LSSharedFileListMBS.kSessionLoginItems)

if l.Handle=0 then
    MsgBox "Failed to get list."
else
    dim a(-1) as LSSharedFileListItemMBS = l.Snapshot
    dim lines(-1) as string

    for each x as LSSharedFileListItemMBS in a
    lines.append x.DisplayName
    next

    MsgBox Join(lines, EndOfLine)
end if
109.4 module ServiceManagementModuleMBS

109.4.1 module ServiceManagementModuleMBS

MBS MacCF Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The module with function to add helper to login items. **Notes:** This API seems to be sandbox safe and working with Mac App Store.

109.4.2 Methods

109.4.3 AllJobDictionaries(domain as string) as Dictionary()

MBS MacCF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the job description dictionaries for all jobs in the given domain. **Notes:**
domain: The desired domain (e.g. kSMDomainSystemLaunchd).

Returns a new array containing all job dictionaries, or empty array if an error occurred. Must be released by the caller. Available in OS X v10.6 and later.

109.4.4 CreateAuthorization as AuthorizationMBS

MBS MacCF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates an authorization for Job operations. **Notes:**
Creates an authorization with kSMRightBlessPrivilegedHelper and flags InteractionAllowed, PreAuthorize and ExtendRights.

109.4.5 JobBless(domain as string, executableLabel as string, auth as AuthorizationMBS, byref error as Variant) as boolean

MBS MacCF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Submits the executable for the given label as a launchd job. **Notes:**
domain: The job’s domain. Only kSMDomainSystemLaunchd is supported. executableLabel: The label of the privileged executable to install. This label must be one of the keys found in the SMPrivilegedExecutables dictionary in the application’s Info.plist. auth: An authorization reference containing the kSMRightBlessPrivilegedHelper right. Error: An output reference to a CFErrorMBS describing the specific error encountered while submitting the
executable tool, or nil if successful. It is the responsibility of the application to release the error reference.

Returns true if the job was successfully submitted, otherwise false.

JobBless submits the executable for the given label as a launchd job. This function obviates the need for a setuid helper invoked via AuthorizationExecuteWithPrivileges in order to install a launchd plist.

If the job is already installed, success is returned.

In order to use this function the following requirements must be met:

- The calling application and target executable tool must both be signed.
- The calling application’s Info.plist must include a "SMPrivilegedExecutables" dictionary of strings. Each string is a textual representation of a code signing requirement used to determine whether the application owns the privileged tool once installed (i.e. in order for subsequent versions to update the installed version).

Each key of SMPrivilegedExecutables is a reverse-DNS label for the helper tool (must be globally unique).

- The helper tool must have an embedded Info.plist containing an "SMAuthorizedClients" array of strings. Each string is a textual representation of a code signing requirement describing a client which is allowed to add and remove the tool.
- The helper tool must have an embedded launchd plist. The only required key in this plist is the Label key. When the launchd plist is extracted and written to disk, the key for ProgramArguments will be set to an array of 1 element pointing to a standard location. You cannot specify your own program arguments, so do not rely on custom command line arguments being passed to your tool. Pass any parameters via IPC.
- The helper tool must reside in the Contents/Library/LaunchServices directory inside the application bundle, and its name must be its launchd job label. So if your launchd job label is "com.apple.Mail.helper", this must be the name of the tool in your application bundle.

Available in OS X v10.6 and later.

109.4.6 JobDictionary(domain as string, jobLabel as string) as Dictionary


**Notes:**
domain: The job's domain (e.g. kSMDomainSystemLaunchd).
jobLabel: The label identifier for the job to copy.

Return a new dictionary describing the job, or nil if the job could not be found.
Available in OS X v10.6 and later.

109.4.7 JobRemove(domain as string, jobLabel as string, auth as AuthorizationMBS, wait as boolean, byref error as CFErrorMBS) as boolean

Notes:

domain: The job’s domain (e.g. kSMDomainSystemLaunchd).
jobLabel: The label for the job to remove.
auth: An AuthorizationRef containing the kSMRightModifySystemDaemons right if the given domain is kSMDomainSystemLaunchd.
wait: Pass true to block until the process for the given job has exited.
Error: An output reference to a CFErrorMBS describing the specific error encountered while submitting the job dictionary, or nil if no error occurred. It is the responsibility of the application to release the error reference.

Returns true if the job was removed successfully, otherwise false.

JobSubmit removes the job specified by label from the domain. If the job is currently running, it will conditionally block until the running process has exited.
Available in OS X v10.6 and later.

109.4.8 JobSubmit(domain as string, job as Dictionary, auth as AuthorizationMBS, byref error as CFErrorMBS) as boolean

Notes:

domain: The job’s domain (e.g. kSMDomainSystemLaunchd).
job: A dictionary describing a job.
auth: An AuthorizationRef containing the kSMRightModifySystemDaemons right if the given domain is kSMDomainSystemLaunchd.
Error: An output reference to a CFErrorMBS describing the specific error encountered while submitting the job dictionary, or NULL if no error occurred. It is the responsibility of the application to release the error reference.
Returns true if the job was submitted successfully, otherwise false.

JobSubmit submits the given job to the specified domain.
Available in OS X v10.6 and later.

### 109.4.9 kSMDomainSystemLaunchd as string

MBS MacCF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
System-level launchd domain.

### 109.4.10 kSMDomainUserLaunchd as string

MBS MacCF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
User-level launchd domain.

### 109.4.11 kSMInfoKeyAuthorizedClients as string

MBS MacCF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Authorized clients property list key.

### 109.4.12 kSMInfoKeyPrivilegedExecutables as string

MBS MacCF Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Privileged executables property list key.

### 109.4.13 LoginItemRunning(identifier as string) as boolean

MBS MacCF Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Checks whether a login item is running.
**Notes:** Actually checks if there is a record for your helper, so if it crashed, this returns still true.
109.4.14  **LoginItemSetEnabled** *(identifier as string, enabled as boolean) as boolean*

MBS MacCF Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Enable a helper application located in the main application bundle’s Contents/Library/LoginItems directory.

**Notes:**
- **identifier:** The bundle identifier of the helper application bundle.
- **enabled:** The Boolean enabled state of the helper application. This value is effective only for the currently logged in user. If true, the helper application will be started immediately (and upon subsequent logins) and kept running. If false, the helper application will no longer be kept running.

Returns true if the requested change has taken effect.

109.4.15  **RegisterHelperApp** *(name as string, Update as boolean = false) as boolean*

MBS MacCF Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Registers a helper application in the Launch Services database.

**Notes:**
- The app must exist with given name inside the bundle in Library/LoginItems folder.

- **Update:** A Boolean value specifying whether Launch Services should update existing information registered for the application, if any. If this parameter is false, the application will not be registered if it has already been registered previously and its current modification date has not changed from when it was last registered; if the parameter is true, the application’s registered information will be updated even if its modification date has not changed.

Returns true on success and false on failure.
Chapter 110

Mac

110.1 Globals

110.1.1 CurrentAppearanceThemeMBS as string

MBS MacOSX Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns which theme is used on your computer.

**Example:**

```
msgbox "You are using this theme: " + CurrentAppearanceThemeMBS
```

**Notes:**

Possible values:
- com.apple.theme.appearance.platinum
- com.apple.theme.appearance.aqua
- com.apple.theme.appearance.aqua.blue
- com.apple.theme.appearance.aqua.graphite

Returns "" on any error.

Available in CarbonLib 1.4 and later. Available in Mac OS X 10.1 and later.

On Windows or Linux an empty string is returned.

110.1.2 DisableAquaPrefMenuMBS

MBS MacOSX Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Disables the preference menu item.

**Example:**

```
16337
```
DisjaeAquaPenMenMBS

Notes: In RB 4.5 use the PrefMenuItem instead of this function.

110.1.3 EnableAquaPrefMenuMBS

MBS MacOSX Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Enables the preference menu item.

Example:

EnableAquaPrefMenuMBS

Notes:

In RB 4.5 use the PrefMenuItem instead of this function.

Use some code like this in the Applications HandleEventHandler:

# if targetcarbon // Doesn’t make sense else

// Check if it is the preferences call

if eventClass == "aevt" and eventID == "pref" then

prefdialog.showmodal 'do your stuff here

return true // We handled that Apple Event

end if

# endif

110.1.4 SetDesktopPictureMBS(file as folderitem) as Integer


Notes:

File must be a valid folderitem for an existing file to define a new desktop picture.

Returns a Mac OS or Windows error code or -1 if the function is not available.
You can use file=nil to remove the desktop wallpaper on Windows.

110.2 class SummaryMBS

110.2.1 class SummaryMBS


*Example:*

```vbnet
dim s as new SummaryMBS("Hello World. This is just a test.")
MsgBox s.SentenceSummaryString(1)
```

110.2.2 Methods

110.2.3 Constructor(text as string)


*Example:*

```vbnet
dim s as new SummaryMBS("Hello World. This is just a test.")
MsgBox s.SentenceSummaryString(1)
```

*Notes:*

text: The text string that you want to summarize.
On success the handle property is not zero.

The constructor creates a summarization object that pre-analyzes a text string to support fast summarization.
Available in Mac OS X v10.4 and later.
110.2.4ParagraphAtIndex(index as Integer) as string

MBS MacOSX Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Gets a specified paragraph from the text in a summarization object.  
**Example:**

```vba
dim s as new SummaryMBS("Hello World. This is just a test.")
MsgBox s.ParagraphAtIndex(0)
```

**Notes:**

index: The ordinal number of the paragraph in the original text, with the first paragraph designated by zero (this function uses zero-based indexing).

Return a string containing the specified paragraph, or "" on failure.

Available in Mac OS X v10.4 and later.

110.2.5ParagraphIndexOfParagraphs as Integer()

MBS MacOSX Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Returns the array containing the ordinal number for each paragraph in the original text.

110.2.6ParagraphIndexOfSentences as Integer()

MBS MacOSX Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Returns an array of indexes to map a sentence index to it's paragraph index.

110.2.7ParagraphSummaryString(numParagraphs as Integer) as string

MBS MacOSX Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Gets a text string consisting of a summary with, at most, the requested number of paragraphs.  
**Notes:**

numParagraphs: The maximum number of paragraphs you want in the summary.  
Returns a string containing the requested summary.  
Available in Mac OS X v10.4 and later.
110.2. **CLASS SUMMARYMBS**

110.2.8 **RankOrderOfParagraphs as Integer()**

MBS MacOSX Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array with the summarization relevance rank of each paragraph in the original text.

110.2.9 **RankOrderOfSentences as Integer()**

MBS MacOSX Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array with the summarization relevance rank of each sentence in the original text.

110.2.10 **SentenceAtIndex(index as Integer) as string**

MBS MacOSX Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Gets a specified sentence from the text in a summarization object.

**Example:**

```vbscript
dim s as new SummaryMBS("Hello World. This is just a test.")
MsgBox s.SentenceAtIndex(0)
```

**Notes:**

- **index:** The ordinal number of the sentence in the original text, with the first sentence designated by zero (this function uses zero-based indexing).
- Returns a string containing the specified sentence, or NULL on failure.
- Available in Mac OS X v10.4 and later.

110.2.11 **SentenceIndexOfSentences as Integer()**

MBS MacOSX Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of the ordinal number for each sentence in the original text.

110.2.12 **SentenceSummaryString(numSentences as Integer) as string**

MBS MacOSX Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Gets a text string consisting of a summary with, at most, the requested number of sentences.

**Example:**

```vbscript
dim s as new SummaryMBS("Hello World. This is just a test.")
```
numSentences: The maximum number of sentences you want in the summary. Returns a string containing the requested summary. Available in Mac OS X v10.4 and later.

110.2.13 Properties

110.2.14 Handle as Integer

Example:

dim s as new SummaryMBS("Hello World. This is just a test.")
MsgBox str(s.handle)

Notes: (Read and Write property)

110.2.15 ParagraphCount as Integer

Example:

dim s as new SummaryMBS("Hello World. This is just a test.")
MsgBox str(s.ParagraphCount)

Notes: (Read only property)

110.2.16 SentenceCount as Integer

Example:
110.2. CLASS SUMMARYMBS

```vbnet
dim s as new SummaryMBS("Hello World. This is just a test.")
MsgBox str(s.SentenceCount)
```

**Notes:** (Read only property)
110.3 class TextInputSourceMBS

110.3.1 class TextInputSourceMBS

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for text input source on Mac OS X.

**Notes:**

Text input sources fall into three general categories:

- Keyboard input sources, including keyboard layouts, keyboard input methods and input modes
- Palette input sources, including the character palette, keyboard viewer, and private dictionary panels
- Ink input sources

Palette input sources and ink input source are categorized as non-keyboard input sources. However, palette input sources might still involve some keyboard interaction. Keyboard input methods can be mode-enabled (for instance, Kotoeri). Hence, they are potentially the parent of several input modes directly selectable in the user interface (for instance, hiragana, katakana, and romaji). With mode-enabled input methods, the parent input method is not directly selectable. Non-mode-enabled input methods are directly selectable.

Some input sources are provided and installed with OS X. Other input sources can be installed as third party products themselves or as part of the installation of certain applications. International Preferences displays a list of all visible installed input sources. You can use International Preferences to enable or disable most input sources that are intended to be visible in the user interface. Setup Assistant also enables some input sources. A separate user interface provides a way to enable ink input sources.

You can use some of the functions in Text Input Source Services to enable or disable input sources programmatically in your application. One keyboard input source must be enabled. Only one ink input source may be enabled. Multiple instances of other input source types may be enabled.

Some enabled input sources are invisible but programmatically selectable, such as ink. Some are visible but not programmatically selectable, such as mode-savvy parent input methods (these must be visible so that International Preferences can display the parent input method for a group of input modes).

Input modes can only be changed from disabled to enabled if their parent input method is enabled. Input modes can only be selected if they and their parent input method are enabled.

Exactly one keyboard input source is selected at any time: the current keyboard input source. Selecting a new keyboard input source deselects the previous keyboard input source. Multiple palette input sources may be selected. For instance, there may be one or more character palettes and one or more keyboard viewers selected in addition to the selected keyboard input source. Selecting or deselecting a palette (or ink) input source does not affect any other input source. Input methods that provide associated input palettes may...
programmatically deselect the palette when the input method is deselected, for example.

Text Input Source Source Services specifies modern, non-Script-Manager-based programming interfaces for operating on text input sources and performs the following functions:

- Finds information about text input sources
- Selects, enables, and disables text input sources
- Receives notifications about relevant changes in text input sources.

Available in OS X v10.5 and later.

see also

110.3.2 Methods

110.3.3 BundleID as string

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The reverse DNS BundleID associated with the input source.

**Example:**

MsgBox TextInputSourceMBS.CurrentKeyboardInputSource.BundleID

110.3.4 Category as string

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The category of this input source.

**Example:**

MsgBox TextInputSourceMBS.CurrentKeyboardInputSource.Category

**Notes:** Can be kTISCategoryKeyboardInputSource, kTISCategoryPaletteInputSource, and kTISCategoryInkInputSource.
110.3.5  CreateASCIIcapableInputSourceList as TextInputSourceMBS()

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a list of ASCII-capable keyboard input sources. **Notes:** This list represents a snapshot of ASCII-capable keyboard input sources enabled when the call was made. Successive calls to CreateASCIIcapableInputSourceList may return different results because, for example, in between the calls the user may enable or disable an input source in the International Preferences pane. When a keyboard input source is enabled or disabled, by the user or programmatically, the distributed CF notification kTISNotifyEnabledKeyboardInputSourcesChanged is posted.

110.3.6  CreateInputSourceList(properties as dictionary, includeAllInstalled as boolean) as TextInputSourceMBS()

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a list of input sources that match specified properties. **Notes:**

- properties: A dictionary of property keys and corresponding values to filter the input source list. May be nil, in which case no filtering is performed.
- includeAllInstalled: Typically, set to false so that only enabled input sources are included; set to true to include all installed input sources that match the filter.

Returns an array for a list of text input source references that match the specified properties.

This list represents a snapshot of input sources that matched the properties specified when you made the call. If you want to include input sources that are installed but not currently enabled, set the includeAllInstalled parameter to true. Typically, you do this to obtain a text input source reference for a newly installed input source. In this case, the properties parameter would include very specific criteria limiting the matching input sources.

Important: Calling this function with the includeAllInstalled parameter set to true can have significant memory impact on the calling application if the properties parameter is nil (match all) or if it specifies criteria that might match many installed input sources. This setting might force caching of data for all matching input sources and result in an allocation of up to 120K.

If you are calling CreateInputSourceList to find a specific input source or sources from among the sources included in the list, first call CreateInputSourceList with includeAllInstalled set to false and check whether the returned array includes the desired input source(s). If this is not the case, call CreateInputSourceList again with the includeAllInstalled parameter set to true.

none
110.3.7  CurrentASCIICapableKeyboardInputSource as TextInputSourceMBS

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a text input source reference for the most recently used ASCII-capable keyboard input source.  

**Example:**

```vbnet
dim t as TextInputSourceMBS
t = TextInputSourceMBS.CurrentASCIICapableKeyboardInputSource
MsgBox t.LocalizedName
```

**Notes:**

Returns text input source reference for the most recently used ASCII-capable keyboard input source.

If no ASCII-capable keyboard input source has been used yet, the function returns the default ASCII-capable keyboard layout chosen by Setup Assistant.

110.3.8  CurrentASCIICapableKeyboardLayoutInputSource as TextInputSourceMBS

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a text input source reference for the most recently used ASCII-capable keyboard layout.  

**Example:**

```vbnet
dim t as TextInputSourceMBS
t = TextInputSourceMBS.CurrentASCIICapableKeyboardLayoutInputSource
MsgBox t.LocalizedName
```

**Notes:**

Returns text input source reference for the most recently used ASCII-capable keyboard layout.

If no ASCII-capable keyboard input source has been used yet, the function returns the default ASCII-capable keyboard layout chosen by Setup Assistant.

This function is used by input methods to get the keyboard layout used for key translation if no specific keyboard layout override exists. The CurrentASCIICapableKeyboardInputSource can return input sources that are not keyboard layouts.
110.3.9 **CurrentKeyboardInputSource** as **TextInputSourceMBS**

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a text input source reference for the currently selected keyboard input source. **Example:**

```vbnet
dim t as TextInputSourceMBS
  t = TextInputSourceMBS.CurrentKeyboardInputSource
  MsgBox t.LocalizedName
```

110.3.10 **CurrentKeyboardLayoutInputSource** as **TextInputSourceMBS**

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a text input source reference for the keyboard layout currently in use. **Example:**

```vbnet
dim t as TextInputSourceMBS
  t = TextInputSourceMBS.CurrentKeyboardLayoutInputSource
  MsgBox t.LocalizedName
```

**Notes:** If the currently selected keyboard input source is a keyboard layout, the text input source reference refers to that layout. If the currently selected keyboard input source is an input method or mode, the text input source reference refers to the keyboard layout used by that input method or mode.

110.3.11 **Deselect**

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Deselects the specified input source. **Notes:**

`inputSource`: The input source you want to deselect.

LastError is set.

Deselect is for use with palette or ink input sources only. It has no effect on other input sources. When palette input sources are disabled, the palette disappears. Ink input sources are usually deselected and disabled at the same time.
110.3.12 Disable

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Disables the specified input source.  
**Notes:**
Sets lasterror. Lasterror is paramErr (-50) if the input source cannot be disabled. Otherwise, lasterror is noErr (0).

Disable is primarily intended for input methods, or for applications that supply their own input sources (for example, applications that provide keyboard layouts or palette input methods, and keyboard input methods that provide their own keyboard layouts and input modes). It makes the specified input source unavailable for selection and removes it from the user interface.

110.3.13 Enable

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Enables the specified input source.  
**Notes:**
Lasterror is set. Lasterror is paramErr (-50) if the input source cannot be enabled. Otherwise, it is noErr (0).

Enable is primarily for input methods or for applications that supply their own input sources (for example, applications that provide keyboard layouts or palette input methods, and keyboard input methods that provide their own keyboard layouts and input modes). It makes the specified input source available in the user interface for selection.

For Enable to succeed, the input source must be capable of being enabled (that is, kTISPropertyInputSourceIsEnableCapable is set to true). Furthermore, if the input source is an input mode, its parent must already be enabled for the mode to become enabled.

110.3.14 Icon as Variant

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries IconMBS object for this input source.  
**Notes:** Icon references are the typical icon format for keyboard layouts and input methods. If an icon reference is not available for the specified input source, the value is nil.
110.3.15 IconImageFile as folderitem

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The file containing the image (typically TIFF) to be used as the input source icon. **Notes:** If an image file URL is not available for the specified input source, the value is nil. Note that other image formats (for example, JPEG, PNG) may also be used in the future.

110.3.16 IconImageURL as string

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The URL to the file containing the image (typically TIFF) to be used as the input source icon. **Notes:** If an image file URL is not available for the specified input source, the value is nil. Note that other image formats (for example, JPEG, PNG) may also be used in the future.

110.3.17 InputMethodKeyboardLayoutOverride as TextInputSourceMBS

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a text input source reference for the currently selected input method’s keyboard layout override. **Example:**

```vbs
dim t as TextInputSourceMBS
t = TextInputSourceMBS.InputMethodKeyboardLayoutOverride
if t = nil then
    MsgBox "Nil"
else
    MsgBox t.LocalizedName
end if
```

**Notes:** If the current keyboard input source is an input method or mode that has a keyboard layout override, a text input source reference for that keyboard layout is returned. Otherwise, the function returns nil.

110.3.18 InputModeID as string

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A reverse DNS string that identifies a particular usage class for input modes. **Example:**

```
MsgBox TextInputSourceMBS.CurrentKeyboardInputSource.InputModeID
```
For example, com.apple.inputmethod.Japanese.Katakana identifies a standard Katakana-input usage class that may be associated with input modes from several different input methods. You can attach this input mode to a TSMDocument using the TSMSetDocumentProperty function with the tag kTSMDocumentInputModePropertyTag, to control the input mode usage class that should be used with that TSM document.

**110.3.19 InputSourceForLanguage**(language as string) as TextInputSourceMBS

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a text input source reference for the input source that should be used to input the specified language. **Notes:**

language: A BCP 47 language code (in the same form returned by the Core Foundation function CFLocaleCreateCanonicalLanguageIdentifierFromString function) that represents the language an input source should be returned for.

Returns an enabled input source that can input the specified language. If more than one such input source exists and at least one has been used, the most recently used input source is chosen. If none has been used, one is chosen based on the intended languages of the input sources. If no enabled input source exists that can input the specified language, the function returns nil.

If a text field is expected to have input in a particular language, an application can call InputSourceForLanguage and then SelectIt to select an input source appropriate for that language. This function is a replacement for the deprecated KeyScript programming interface's capability to select the default input source associated with a particular script code.

**110.3.20 IsASCIICapable as boolean**

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the input source is intended to be capable of ASCII input.

**110.3.21 IsEnableCapable as boolean**

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the input source can ever be programmatically enabled using Enable. **Notes:**

You can enable most input sources programmatically at any time. IsEnableCapable is set to true for these input sources.
Some input sources can never be programmatically enabled. These are mainly input method private keyboard layouts used by the input method via the function SetInputMethodKeyboardLayoutOverride. You cannot directly enable these layouts, nor use them as keyboard layout input sources. IsEnableCapable is set to false for these.

Some input sources can be programmatically enabled only under the correct conditions. These are mainly input modes, which can be changed from disabled to enabled only if their parent input method is enabled. However, they can already be in the enabled state, but not currently selectable if their parent input method is disabled. IsEnableCapable is true for these.

### 110.3.22 IsEnabled as boolean

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the input source is currently enabled.  
**Example:**  
MsgBox str(TextInputSourceMBS.CurrentKeyboardInputSource.IsEnabled)

### 110.3.23 IsSelectCapable as boolean

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the input source can ever be programmatically selected using Select.  
**Notes:**  
This static property of an input source does not depend on any current state. For input sources that can be programmatically selected if they are enabled, IsSelectCapable is set to true.  
For input sources that can never be programmatically selected even if they are enabled, IsSelectCapable is set to false. Such sources are mainly input methods that have modes (parent input methods); only their modes can be selected.  
For input sources that are enabled and can only be programmatically selected under the correct conditions, IsSelectCapable is set to true. Such input sources are mainly input modes, which can only be selected if both they and their parent input method are enabled.  
For input sources that can never be enabled or selected, IsSelectCapable is set to false.

### 110.3.24 IsSelected as boolean

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the input source is currently selected.  
**Example:**  
MsgBox str(TextInputSourceMBS.CurrentKeyboardInputSource.IsSelected)
**110.3.25 kTISCCategoryInkInputSource as string**

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the category identifiers. **Notes:** You can install or select 0 or 1 ink input source.

**110.3.26 kTISCCategoryKeyboardInputSource as string**

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the category identifiers. **Notes:** This category includes keyboard layouts, keyboard input methods (both with modes and without), and keyboard input modes. At least one input source in this category is installed. Of all input sources in this category, exactly one is selected; selecting a new one deselects the previous one.

**110.3.27 kTISCCategoryPaletteInputSource as string**

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the category identifiers. **Notes:** This category includes character palettes and keyboard viewers. You can select 0 or more categories.

**110.3.28 kTISNotifyEnabledKeyboardInputSourcesChanged as string**

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of the CF distributed notification for a change to the set of enabled keyboard input sources. **Notes:** Available in OS X v10.5 and later.

**110.3.29 kTISNotifySelectedKeyboardInputSourceChanged as string**

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of the CF distributed notification for a change to the selected keyboard input source. **Notes:** Available in OS X v10.5 and later.

**110.3.30 kTISPropertyBundleID as string**

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys. **Notes:** This property key designates a property value, which is a string for the reverse DNS BundleID
associated with the input source.

110.3.31 kTISPropertyIconImageURL as string

Notes:
This property key designates a property value, which is a CFURLRef indicating the file containing the image (typically TIFF) to be used as the input source icon.
If an image file URL is not available for the specified input source, the value is nil. Note that other image formats (for example, JPEG, PNG) may also be used in the future.
Note: You may not use this key (and its corresponding value) used in the filter dictionary passed to the CreateInputSourceList function.

110.3.32 kTISPropertyIconRef as string

Notes:
This property key designates a property value, which is an IconRef value for the input source icon.
Icon references are the typical icon format for keyboard layouts and input methods. If an icon reference is not available for the specified input source, the value is nil.
Note: You may not use this key (and its corresponding value) used in the filter dictionary passed to the CreateInputSourceList function.

110.3.33 kTISPropertyInputModeID as string

Notes:
This property key designates a property value, which is a CFStringRef for a reverse DNS string that identifies a particular usage class for input modes.
For example, com.apple.inputmethod.Japanese.Katakana identifies a standard Katakana-input usage class that may be associated with input modes from several different input methods.
You can attach this input mode to a TSMDocument using the TSMSetDocumentProperty function with the tag kTSMDocumentInputModePropertyTag, to control the input mode usage class that should be used with that TSM document.
110.3.34  kTISPropertyInputSourceCategory as string

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys.

**Notes:**
This property key designates a property value, which is a string indicating the category of an input source. Possible values are specified by the following property value constants: kTISCCategoryKeyboardInputSource, kTISCCategoryPaletteInputSource, and kTISCCategoryInkInputSource.

110.3.35  kTISPropertyInputSourceID as string

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys.

**Notes:**
This property key designates a property value, which is a CFStringRef for the unique reverse DNS name associated with the input source.

- For keyboard input methods and for palette or ink input sources, typically, the bundle ID, for instance, com.apple.Kotoeri.
- For keyboard input modes, typically, the bundle ID of the parent input method plus a suffix that uniquely identifies the input mode, for instance, com.apple.Kotoeri.Katakana. It is not the generic input mode name used across input methods, for instance, com.apple.inputmethod.Japanese.Katakana.
- For keyboard layouts, a new identification mechanism typically structured as com.company.keyboard-layout.name, for instance, com.apple.keyboardlayout.US.

110.3.36  kTISPropertyInputSourceIsASCIICapable as string

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys.

**Notes:** This property key designates a property value, which is a boolean indicating whether the input source is intended to be capable of ASCII input.

110.3.37  kTISPropertyInputSourceIsEnableCapable as string

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys.

**Notes:** This property key designates a property value which is a boolean indicating whether the input source can ever be programmatically enabled using TISEnableInputSource.
You can enable most input sources programmatically at any time. `kTISPropertyInputSourceIsEnableCapable` is set to true for these input sources.

Some input sources can never be programmatically enabled. These are mainly input method private keyboard layouts used by the input method via the function `TISSetInputMethodKeyboardLayoutOverride`. You cannot directly enable these layouts, nor use them as keyboard layout input sources. `kTISPropertyInputSourceIsEnableCapable` is set to false for these.

Some input sources can be programmatically enabled only under the correct conditions. These are mainly input modes, which can be changed from disabled to enabled only if their parent input method is enabled. However, they can already be in the enabled state, but not currently selectable if their parent input method is disabled. `kTISPropertyInputSourceIsEnableCapable` is true for these.

**110.3.38 kTISPropertyInputSourceIsEnabled as string**

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys. **Notes:** This property key designates a property value, which is a boolean indicating whether the input source is currently enabled.

**110.3.39 kTISPropertyInputSourceIsSelectCapable as string**

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys. **Notes:**

This property key designates a property value, which is a boolean indicating whether the input source can ever be programmatically selected using `TISSelectInputSource`.

This static property of an input source does not depend on any current state. For input sources that can be programmatically selected if they are enabled, `kTISPropertyInputSourceIsSelectCapable` is set to true. For input sources that can never be programmatically selected even if they are enabled, `kTISPropertyInputSourceIsSelectCapable` is set to false. Such sources are mainly input methods that have modes (parent input methods); only their modes can be selected.

For input sources that are enabled and can only be programmatically selected under the correct conditions, `kTISPropertyInputSourceIsSelectCapable` is set to true. Such input sources are mainly input modes, which can only be selected if both they and their parent input method are enabled.

For input sources that can never be enabled or selected, `kTISPropertyInputSourceIsSelectCapable` is set to false.

**110.3.40 kTISPropertyInputSourceIsSelected as string**

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys. **Notes:** This property key designates a property value, which is a Boolean indicating whether the input
source is currently selected.

110.3.41 kTISPropertyInputSourceLanguages as string

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys. **Notes:**

This property key designates a property value, which is a CFArrayRef for an array of CFStringRefs, where each string is the language code for a language that can be input using the input source. You can use this constant with the PropertyValue function, but you may not use it in the filter dictionary passed to the CreateInputSourceList function. Languages codes are in the same BCP 47 form returned by the CFLocaleCreateCanonicalLanguageIdentifierFromstring function. The first language code in the array is the language the input source is intended for. If no such language exists (for example, for the Unicode Hex Input keyboard layout), the first language code is an empty string.

110.3.42 kTISPropertyInputSourceType as string

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys. **Notes:**

This property key designates a property value, which is a string indicating the specific type of an input source. Possible values are specified by the following property value constants: kTISTypeKeyboardLayout, kTISTypeKeyboardInputMethodWithoutModes, kTISTypeKeyboardInputMethodModeEnabled, kTISTypeKeyboardInputMode, kTISTypeCharacterPalette, kTISTypeKeyboardViewer, and kTISTypeInk.

110.3.43 kTISPropertyLocalizedName as string

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys. **Example:**

```dim t as TextInputSourceMBS
t = TextInputSourceMBS.CurrentKeyboardInputSource
MsgBox t.PropertyValue(t.kTISPropertyLocalizedName)
```

**Notes:**

This property key designates a property value, which is a string for the input source's localized name as intended for user interface use.
Uses the best match (determined by CFBundle) between the localization used by the caller and the available localizations of the input source name. In some cases, this might be an unlocalized name.

110.3.44 kTISPropertyUnicodeKeyLayoutData as string

Notes: This property key designates a property value, which is a Memoryblock that refers to the 'uchr' keyboard layout data for a keyboard layout input source. The 'uchr' data is in native-endian order. If the input source is not a keyboard layout, or is a keyboard layout for which only 'KCHR data' is available, the value is nil. Note: You may not use this key (and its corresponding value) used in the filter dictionary passed to the CreateInputSourceList function.

110.3.45 kTISTypeCharacterPalette as string

Notes: This type belongs to the category kTISCategoryPaletteInputSource.

110.3.46 kTISTypeInk as string

Notes: This type belongs to the category kTISCategoryInkInputSource. Even though it is the only type in that category, a type is provided so that clients who don’t need category information can just check input source type.

110.3.47 kTISTypeKeyboardInputMethodModeEnabled as string

Notes: This type belongs to the category kTISCategoryKeyboardInputSource.
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110.3.48 kTISTypeKeyboardInputMethodWithoutModes as string

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the possible type values. **Notes:** This type belongs to the category kTISCategoryKeyboardInputSource.

110.3.49 kTISTypeKeyboardInputMode as string

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the possible type values. **Notes:** This type belongs to the category kTISCategoryKeyboardInputSource.

110.3.50 kTISTypeKeyboardLayout as string

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the possible type values. **Notes:** This type belongs to the category kTISCategoryKeyboardInputSource.

110.3.51 kTISTypeKeyboardViewer as string

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the possible type values. **Notes:** This type belongs to the category kTISCategoryPaletteInputSource.

110.3.52 LocalizedName as string

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The input source’s localized name as intended for user interface use. **Example:**

MsgBox TextInputSourceMBS.CurrentKeyboardInputSource.LocalizedName

**Notes:** Uses the best match (determined by CFBundle) between the localization used by the caller and the available localizations of the input source name. In some cases, this might be an unlocalized name.
110.3.53 **PropertyValue(key as string) as Variant**

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Gets the value of a specified property for a specified input source.

**Example:**

```vbs
dim t as TextInputSourceMBS
t = TextInputSourceMBS.CurrentKeyboardInputSource
MsgBox t.PropertyValue(t.kTISPropertyLocalizedizedName)
```

**Notes:**

Key: The property key constant specifying the desired property value.

Returns a variant associated with the property key. The value type is specified for each key. Can be a string a boolean, a number, an array or an IconMBS. The function might return nil if the specified property is missing or invalid for the specified input source.

110.3.54 **RegisterInputSource(file as folderitem) as Integer**

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Registers any new input sources in a file or bundle so a text input source reference can be obtained immediately for each new input source.

**Notes:**

location: The location of the input sources in a file or bundle.

Returns a result code. The function returns paramErr (-50) if location is invalid or the input sources in the specified location cannot be registered. Otherwise, it returns noErr (0).

This function enables an installer for an input method bundle or a keyboard layout file or bundle to notify the system to register these new input sources. The system can then locate the specified file or bundle and perform any necessary cache rebuilds so that the installer can immediately call TISCreateInputSourceList with appropriate properties (for example, a bundle ID or input source ID) to get text input source references for one or more of the newly registered input sources.

You can only use this function to register the following:

Keyboard layout files or bundles in the /Library/Keyboard Layouts/ or textasciidate /Library/Keyboard Layouts/ directory (available to all users or to the current user, respectively). Such keyboard layouts, once enabled, are selectable.

Input method bundles in the new Library/Input Methods/ or
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textasciitilde /Library/Input Methods/ directories (available to all users or to the current user, respectively).

Note: Input method bundles can include private non-selectable keyboard layouts for use with SetInputMethodKeyboardLayoutOverride. These are registered automatically when the input method is registered, and do not need to be separately registered. They are not registered using TISRegisterInputSource.

Security: Any code that calls RegisterInputSource is part of an application or service that has already been validated in some way (for instance, by the user).

See also:

• 110.3.55 RegisterInputSource(URL as string) as Integer

110.3.55 RegisterInputSource(URL as string) as Integer

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:

Registers any new input sources in a file or bundle so a text input source reference can be obtained immediately for each new input source.

Notes:

location: The location of the input sources in a file or bundle.

Returns a result code. The function returns paramErr (-50) if location is invalid or the input sources in the specified location cannot be registered. Otherwise, it returns noErr (0).

This function enables an installer for an input method bundle or a keyboard layout file or bundle to notify the system to register these new input sources. The system can then locate the specified file or bundle and perform any necessary cache rebuilds so that the installer can immediately call TISCreateInputSourceList with appropriate properties (for example, a bundle ID or input source ID) to get text input source references for one or more of the newly registered input sources.

You can only use this function to register the following:

Keyboard layout files or bundles in the /Library/Keyboard Layouts/ or textasciitilde /Library/Keyboard Layouts/ directory (available to all users or to the current user, respectively). Such keyboard layouts, once enabled, are selectable.

Input method bundles in the new Library/Input Methods/ or textasciitilde /Library/Input Methods/ directories (available to all users or to the current user, respectively).

Note: Input method bundles can include private non-selectable keyboard layouts for use with SetInputMethodKeyboardLayoutOverride. These are registered automatically when the input method is registered, and do not need to be separately registered. They are not registered using TISRegisterInputSource.

Security: Any code that calls RegisterInputSource is part of an application or service that has already been validated in some way (for instance, by the user).

See also:

• 110.3.54 RegisterInputSource(file as folderitem) as Integer
110.3.56 SelectIt

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Selects the specified input source.

**Notes:**

Lasterror is set. Lasterror is paramErr (-50) if the input source is not selectable. Otherwise, it is noErr (0).

When the input source is a selectable keyboard, the specified input source becomes the new current keyboard input source, and the previous input source is deselected. When the input source is a palette, that palette is displayed and made available for input. Ink input sources are typically enabled and selected at the same time. When you call SelectInputSource for a palette or ink input source, there is no effect on other input sources. When you call SelectInputSource for an already selected input source, there is, similarly, no effect.

For SelectInputSource to succeed, the input source must be selectable (that is, kTISPropertyInputSourceIsSelectCapable is set to true) and the input source must be enabled (that is, kTISPropertyInputSourceIsEnabled is set to true). Furthermore, if the input source is an input mode, its parent must be enabled for it to be selected.

We named the function SelectIt as Select is a reserved word in Real Studio.

110.3.57 SetInputMethodKeyboardLayoutOverride

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the keyboard layout override for an input method or mode.

**Notes:**

self: The input source for the keyboard layout that should be used until the current input method is deactivated (if it should be something other than the most recently used ASCII-capable keyboard layout).

Lasterror is set. Value is paramErr (-50) if the current keyboard input source is not an input method or mode or if keyboardLayout does not designate a keyboard layout. Otherwise, it is noErr (0).

When an input method or mode is the selected input source, the most recently used ASCII-capable keyboard layout to translate key events is used. This keyboard layout is also the one that appears in Keyboard Viewer. An input source for this keyboard layout is returned by the function CurrentASCIICapableKeyboardLayoutInputSource. If a different keyboard layout should be used for a particular input method or mode, the activated input method or mode should call SetInputMethodKeyboardLayoutOverride to specify the desired keyboard layout.

For example, when a Kotoeri user selects kana layout for kana input, Kotoeri should call SetInputMethodKeyboardLayoutOverride to set the kana keyboard as the override for the appropriate input modes.
The keyboard layout set in this way is used for the final stage of key translation in the Window Server, the connection, or application-specific key translation.

The override setting is lost when the input method that set it is deactivated.

The keyboard layout used for overriding need not be enabled or explicitly selectable. It can be a non-selectable layout included in an input method bundle and automatically registered.

The default behavior is new with OS X v10.5, and eliminates the necessity that input methods have a user interface for setting the ASCII-capable keyboard for phonetic input based on Latin characters.

110.3.58 SourceID as string

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The unique reverse DNS name associated with the input source.

**Notes:**

- For keyboard input methods and for palette or ink input sources, typically, the bundle ID, for instance, com.apple.Kotoeri.

- For keyboard input modes, typically, the bundle ID of the parent input method plus a suffix that uniquely identifies the input mode, for instance, com.apple.Kotoeri.Katakana. It is not the generic input mode name used across input methods, for instance, com.apple.inputmethod.Japanese.Katakana.

- For keyboard layouts, a new identification mechanism typically structured as com.company.keyboard-layout.name, for instance, com.apple.keyboardlayout.US.

110.3.59 SourceLanguages as string()

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The array of string, where each string is the language code for a language that can be input using the input source.

**Notes:** Languages codes are in the same BCP 47 form returned by the CFLocaleCreateCanonicalLanguageIdentifierFromString function. The first language code in the array is the language the input source is intended for. If no such language exists (for example, for the Unicode Hex Input keyboard layout), the first language code is an empty string.

110.3.60 Type as string

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the type of an input source.

**Example:**
MsgBox TextInputSourceMBS.CurrentKeyboardInputSource.Type

**Notes:** Value can be kTISTypeKeyboardLayout, kTISTypeKeyboardInputMethodWithoutModes, kTISTypeKeyboardInputMethodModeEnabled, kTISTypeKeyboardInputMode, kTISTypeCharacterPalette, kTISTypeKeyboardViewer, and kTISTypeInk.

### 110.3.61 Properties

#### 110.3.62 Handle as Integer

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Internal object reference. **Notes:** (Read and Write property)

#### 110.3.63 Lasterror as Integer

MBS MacOSX Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last error code. **Notes:** (Read and Write property)
110.4. module ValidationMBS

110.4.1 module ValidationMBS

MBS Encryption Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This module has helper functions for App Store Validation. **Deprecated:** This item is deprecated and should no longer be used. You can use CTFontMBS instead. **Notes:** Please use AppReceiptMBS and AppReceiptVerifierMBS classes instead.

110.4.2 Methods

110.4.3 AppStoreReceipt(file as folderitem) as dictionary

MBS Encryption Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Reads the app store receipt. **Example:**

```vbnet
// read a receipt file
dim file as FolderItem = SpecialFolder.Desktop.Child("receipt")

// query values
dim dic as Dictionary = ValidationMBS.AppStoreReceipt(file)

// show identifier
MsgBox dic.Value(ValidationMBS.kReceiptBundleIdentifier)
```

**Notes:**
You can use this to get details from your receipt.
Returns nil on any error.
Please pass folderitem to receipt file.

110.4.4 ExitApp(code as Integer = 173)

MBS Encryption Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Quits the application directly. **Example:**

ValidationMBS.ExitApp 173

**Notes:**
This does not call the destructors and CancelClose events. The app is quit right away.
If you use code 173 the Finder will show error message that app needs to be downloaded again from Mac App Store.

110.4.5 GUID as string

Function: Reads the GUID of the Mac.
Example:

```vba
dim g as String = ValidationMBS.GUID
MsgBox EncodeHex(g)
```

Notes: This is normally build from the MAC ID of the ethernet card.

110.4.6 locateAppStoreReceipt as folderitem

Function: Locates the App Store Receipt in the application bundle.
Example:

```vba
dim f as FolderItem = ValidationMBS.locateAppStoreReceipt
MsgBox f.UnixpathMBS
```

Notes: Please check result if folderitem is not nil and exists before processing.

110.4.7 Validate(file as folderitem) as boolean

Function: Validates the receipt.
Example:

```vba
dim file as FolderItem = ValidationMBS.locateAppStoreReceipt
if ValidationMBS.Validate(file) = false then
    ValidationMBS.ExitApp 173
else
    // ok
end if
```
110.4.8 Constants

110.4.9 kReceiptBundleIdentifier = "BundleIdentifier"

MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the keys for the receipt dictionary. **Example:**

```vba
// read a receipt file
dim file as FolderItem = SpecialFolder.Desktop.Child("receipt")

// query values
dim dic as Dictionary = ValidationMBS.AppStoreReceipt(file)

// show identifier
MsgBox dic.Value(ValidationMBS.kReceiptBundleIdentifier)
```

**Notes:** The bundle identifier.

110.4.10 kReceiptBundleIdentifierData = "BundleIdentifierData"

MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the keys for the receipt dictionary. **Notes:** The bundle identifier data.

110.4.11 kReceiptHash = "Hash"

MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the keys for the receipt dictionary. **Notes:** The hash for the receipt.

110.4.12 kReceiptOpaqueValue = "OpaqueValue"

MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the keys for the receipt dictionary. **Notes:** The opaque value used for hashing.
110.4.13  kReceiptVersion = ”Version”

MBS Encryption Plugin, Plugin Version: 13.4. **Function:** One of the keys for the receipt dictionary.  
**Example:**

```vbnet
// read a receipt file
dim file as FolderItem = SpecialFolder.Desktop.Child(”receipt”)

// query values
dim dic as Dictionary = ValidationMBS.AppStoreReceipt(file)

// show version
MsgBox dic.Value(ValidationMBS.kReceiptVersion)
```

**Notes:** The version string.
Chapter 111

MapKit

111.1 control MapKitViewControlMBS

111.1.1 control MapKitViewControlMBS


Function: The control for showing a map in Xojo.

Notes:
This control is designed for Xojo, but may work also in Cocoa target in Real Studio.

As Xojo provides some events for us automatically like for context menu or mouse wheel, it does not mean that those events do work. The webview used in the map view seems to consume them before the plugin gets them.

111.1.2 Methods

111.1.3 showAddress(address as string)


Function: Convenience method to run an address geocoding and shows position on map.
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111.1.4 Properties

111.1.5 View as MKMapViewMBS

**Function:** The map view used for this control.
**Notes:**
The plugin creates it automatically when the constructor runs.
(Read only property)

111.1.6 Events

111.1.7 annotationViewDidChangeDragState(mapView as MKMapViewMBS, annotationView as MKAnnotationViewMBS, newState as Integer, oldState as Integer)

**Function:** Tells the control that the drag state of one of its annotation views changed.
**Notes:**
mapView: The map view containing the annotation view.
annotationView: The annotation view whose drag state changed.
newState: The new drag state of the annotation view.
oldState: The previous drag state of the annotation view.

The drag state typically changes in response to user interactions with the annotation view. However, the annotation view itself is responsible for changing that state as well.

111.1.8 beginGestureWithEvent(e as NSEventMBS) as boolean

**Function:** Informs the receiver that the user has begun a touch gesture.
**Notes:**
e: An event object representing the gesture beginning.
The event will be sent to the view under the touch in the key window.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.
111.1.9  BoundsChanged

Function: The event called when the bounds, but not the frame, changed.

111.1.10  contextMenuItemsForAnnotationView(mapView as MKMapViewMBS, view as MKAnnotationViewMBS) as NSMenuItemMBS()

Function: Your control can provide menuitems to show a contextual menu on an annotation view.

111.1.11  didAddAnnotationViews(mapView as MKMapViewMBS, AnnotationViews() as MKAnnotationViewMBS)

Function: Tells the control that one or more annotation views were added to the map.
Notes:
mapView: The map view that added the annotation views.
views: An array of MKAnnotationView objects representing the views that were added.

By the time this method is called, the specified views are already added to the map.

111.1.12  didAddOverlayViews(mapView as MKMapViewMBS, overlayViews() as MKOverlayViewMBS)

Function: Tells the control that one or more overlay views were added to the map.
Notes:
mapView: The map view that added the overlay views.
overlayViews: An array of MKOverlayView objects representing the views that were added.

By the time this method is called, the specified views are already added to the map.
111.1.13 **didDeselectAnnotationView** (mapView as MKMapViewMBS, view as MKAnnotationViewMBS)

**Function:** Tells the control that one of its annotation views was deselected.
**Notes:**
mapView: The map view containing the annotation view.
view: The annotation view that was deselected.

You can use this method to track changes in the selection state of annotation views.

111.1.14 **didFailLoadingMap** (mapView as MKMapViewMBS, error as NSErrorMBS)

**Function:** Tells the control that the specified view was unable to load the map data.
**Notes:**
mapView: The map view that started the load operation.
error: The reason that the map data could not be loaded.

This method might be called in situations where the device does not have access to the network or is unable to load the map data for some reason. It may also be called if a request for additional map tiles comes in while a previous request for tiles is still pending. You can use this message to notify the user that the map data is unavailable.

111.1.15 **didFailToLocateUserWithError** (mapView as MKMapViewMBS, error as NSErrorMBS)

**Function:** Tells the control that an attempt to locate the user’s position failed.
**Notes:**
mapView: The map view that is tracking the user’s location.
error: An error object containing the reason why location tracking failed.

111.1.16 **didFinishLoadingMap** (mapView as MKMapViewMBS)

**Function:** Tells the control that the specified map view successfully loaded the needed map data.
111.1. CONTROL MAPKITVIEWCONTROLMBS

Notes:

mapView: The map view that started the load operation.

This method is called when the map tiles associated with the current request have been loaded. Map tiles are requested when a new visible area is scrolled into view and tiles are not already available. Map tiles may also be requested for portions of the map that are not currently visible. For example, the map view may load tiles immediately surrounding the currently visible area as needed to handle small pans by the user.

111.1.17 didSelectAnnotationView(mapView as MKMapViewMBS, view as MKAnnotationViewMBS)

Function: Tells the control that one of its annotation views was selected.
Notes:

mapView: The map view containing the annotation view.
view: The annotation view that was selected.

You can use this method to track changes in the selection state of annotation views.

111.1.18 didStopLocatingUser(mapView as MKMapViewMBS)

Function: Tells the control that the map view stopped tracking the user’s location.
Notes:

mapView: The map view that stopped tracking the user’s location.

This method is called when the value of the showsUserLocation property changes to false.

111.1.19 didUpdateUserLocation(mapView as MKMapViewMBS, userLocation as MKUserLocationMBS)

Function: Tells the control that the location of the user was updated.
Notes:

mapView: The map view that is tracking the user’s location.
userLocation: The location object representing the user’s latest location. This property may be nil.
While the showsUserLocation property is set to true, this method is called whenever a new location update is received by the map view. This method is also called if the map view’s user tracking mode is set to MKUserTrackingModeFollowWithHeading and the heading changes.

This method is not called if the application is currently running in the background. If you want to receive location updates while running in the background, you must use the Core Location framework.

111.1.20 EnableMenuItems

Function: The event where you can enable menu items.

111.1.21 endGestureWithEvent(e as NSEventMBS) as boolean

Function: Informs the receiver that the user has ended a touch gesture.
Notes:
e: An event object representing the gesture end.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.

111.1.22 FrameChanged

Function: The event called when the frame changed.

111.1.23 geocoderDidFailWithError(geocoder as MKGeocoderMBS, error as NSErrorMBS)

Function: The geocoder failed to map address to coordinate.
111.1. CONTROL MAPKITVIEWCONTROLMBS

111.1.24 geocoderDidFindCoordinate(geocoder as MKGeocoderMBS, coordinate as CLLocationCoordinate2DMBS, Latitude as Double, Longitude as Double)

Function: The geocoder did find a coordinate.

111.1.25 GotFocus

Function: The control itself got focus.
Notes: This only fires if the control itself got focus and not a sub control.

111.1.26 LostFocus

Function: The control lost focus.
Notes: This only fires if the control itself lost focus and not a sub control.

111.1.27 magnifyWithEvent(e as NSEventMBS) as boolean

Function: Informs the receiver that the user has begun a pinch gesture.
Notes:
e: An event object representing the magnify gesture.
The event will be sent to the view under the touch in the key window.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.

111.1.28 MenuAction(HitItem as MenuItem) As Boolean

Function: Called when a menuitem is choosen.
Notes: This allows the control to react on its relevant menu items. Please return true if you handled it or false to give others a chance.
111.29 MouseDown(x as Integer, y as Integer, Modifiers as Integer) As Boolean

**Function:** The mouse button was pressed inside the controls region at the location passed in to x, y.
**Notes:**
The coordinates x and y are local to the control, i.e. they represent the position of the mouse click relative to the upper-left corner or the Control.
Return True if you are going to handle the MouseDown. In such a case:

- The Action event, if any, will not execute and the state of the object will not change.
- You will receive the MouseDrag and MouseUp events.

If you return False, the system handles the MouseDown so the above event handlers do not get called.

111.30 MouseDrag(x as Integer, y as Integer)

**Function:** This event fires continuously after the mouse button was pressed inside the Control.
**Notes:**
Mouse location is local to the control passed in to x, y.
As this event is fired continuously (hundreds of time per second), it is your responsibility to determine if the mouse has really moved.

111.31 MouseUp(x as Integer, y as Integer)

**Function:** The mouse button was released.
**Notes:** Use the x and y parameters to determine if the mouse button was released within the control’s boundaries.

111.32 pressureChange(e as NSEventMBS) as boolean

MBS MacFrameworks Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Informs the current object that a pressure change occurred on a system that supports pressure sensitivity.
**Notes:**
This method is invoked automatically in response to user actions. event is the event that initiated the change in pressure.
regionDidChangeAnimated(mapView as MKMapViewMBS, animated as boolean)

Function: Tells the control that the region displayed by the map view just changed.

Notes:
mapView: The map view whose visible region changed.
aminated: If true, the change to the new region was animated.

This method is called whenever the currently displayed map region changes. During scrolling, this method may be called many times to report updates to the map position. Therefore, your implementation of this method should be as lightweight as possible to avoid affecting scrolling performance.

regionWillChangeAnimated(mapView as MKMapViewMBS, animated as boolean)

Function: Tells the control that the region displayed by the map view is about to change.

Notes:
mapView: The map view whose visible region is about to change.
aminated: If true, the change to the new region will be animated. If NO, the change will be made immediately.

This method is called whenever the currently displayed map region changes. During scrolling, this method may be called many times to report updates to the map position. Therefore, your implementation of this method should be as lightweight as possible to avoid affecting scrolling performance.

reverseGeocoderDidFailWithError(geocoder as MKReverseGeocoderMBS, error as NSErrorMBS)

Function: The reverse geocoder failed with an error.
111.1.36 reverseGeocoderDidFindPlacemark(geocoder as MKReverseGeocoderMBS, placemark as MKPlacemarkMBS)

**Function:** The reverse geocoder did find a placemark.

111.1.37 rotateWithEvent(e as NSEventMBS) as boolean

**Function:** Informs the receiver that the user has begun a rotation gesture.
**Notes:**
e: An event object representing the rotate gesture.
The event will be sent to the view under the touch in the key window.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.

111.1.38 ScaleFactorChanged(NewFactor as Double)

**Function:** The backing store scale factor has changed.
**Notes:** Please invalidate any cached bitmaps or other relevant state.

111.1.39 swipeWithEvent(e as NSEventMBS) as boolean

**Function:** Informs the receiver that the user has begun a swipe gesture.
**Notes:**
e: An event object representing the swipe gesture.
The event will be sent to the view under the touch in the key window.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.

111.1.40 userDidClickAndHoldAtCoordinate(mapView as MKMapViewMBS, coordinate as CLLocationCoordinate2DMBS, Latitude as Double, Longitude as Double)

**Function:** The user did click and hold the mouse button down.
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**Notes:** Provides coordinate and you can do something there, like adding a pin.

### 111.1.41 viewForAnnotation(mapView as MKMapViewMBS, annotation as Variant) as MKAnnotationViewMBS

**MBS MacFrameworks Plugin, Plugin Version:** 14.1, **Console & Web:** No, **Mac:** Yes, **Win:** No, **Linux:** No.

**Function:** Returns the view associated with the specified annotation object.

**Notes:**

- **mapView:** The map view that requested the annotation view.
- **annotation:** The object representing the annotation that is about to be displayed. In addition to your custom annotations, this object could be an MKUserLocation object representing the user’s current location.

Returns the annotation view to display for the specified annotation or nil if you want to display a standard annotation view.

Rather than create a new view each time this method is called, you should use the `dequeueReusableAnnotationViewWithIdentifier` method of the MKMapView class to see if an existing annotation view of the desired type already exists. If one does exist, you should update the view to reflect the attributes of the specified annotation and return it. If a view of the appropriate type does not exist, you should create one, configure it with the needed annotation data, and return it.

If the object in the annotation parameter is an instance of the MKUserLocation class, you can provide a custom view to denote the user’s location. To display the user’s location using the default system view, return nil.

If you do not implement this method, or if you return nil from your implementation for annotations other than the user location annotation, the map view uses a standard pin annotation view.

### 111.1.42 viewForOverlay(mapView as MKMapViewMBS, overlay as Variant) as MKOverlayViewMBS

**MBS MacFrameworks Plugin, Plugin Version:** 14.1, **Console & Web:** No, **Mac:** Yes, **Win:** No, **Linux:** No.

**Function:** Asks the control for the overlay view to use when displaying the specified overlay object.

**Notes:**

- **mapView:** The map view that requested the overlay view.
- **overlay:** The object representing the overlay that is about to be displayed.

Returns the view to use when presenting the specified overlay on the map. If you return nil, no view is displayed for the specified overlay object.
111.1.43 willStartLoadingMap(mapView as MKMapViewMBS)


Function: Tells the control that the specified map view is about to retrieve some map data.

Notes:

mapView: The map view that began loading the data.

This method is called whenever a new group of map tiles need to be downloaded from the server. This typically occurs whenever you expose portions of the map by panning or zooming the content. You can use this method to mark the time that it takes for the map view to load the data.

111.1.44 willStartLocatingUser(mapView as MKMapViewMBS)


Function: Tells the control that the map view will start tracking the user’s position.

Notes:

mapView: The map view that is tracking the user’s location.

This method is called when the value of the showsUserLocation property changes to true.
111.2. class MKAnnotationMBS

111.2.1 class MKAnnotationMBS

Function: The class for annotation protocol in the MapKit framework.
Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

111.2.2 Methods

111.2.3 Constructor

Function: The private constructor.

111.2.4 Properties

111.2.5 className as string

Function: The name of this MKAnnotation class.
Notes: (Read only property)

111.2.6 classPath as string

Function: The path of this annotation class.
Notes: Useful for debugging to know what super classes the annotation has.
(Read only property)

111.2.7 coordinate as CLLocationCoordinate2D

Function: The center point (specified as a map coordinate) of the annotation.
Notes: (Read only property)
111.2.8 Handle as Integer

**Function:** The internal object reference.
**Notes:** (Read and Write property)

111.2.9 latitude as Double

**Function:** The center point (specified as a map coordinate) of the annotation.
**Notes:** (Read only property)

111.2.10 longitude as Double

**Function:** The center point (specified as a map coordinate) of the annotation.
**Notes:** (Read only property)

111.2.11 subtitle as String

**Function:** The string containing the annotation’s subtitle.
**Notes:**
This string is displayed in the callout for the associated annotation view.
(Read and Write property)

111.2.12 title as String

**Function:** The string containing the annotation’s title.
**Notes:**
Although this property is optional, if you support the selection of annotations in your map view, you are expected to provide this property. This string is displayed in the callout for the associated annotation view.
(Read and Write property)
111.3  class MKAnnotationViewMBS

111.3.1  class MKAnnotationViewMBS

Function:  The MKAnnotationView class is responsible for presenting annotations visually in a map view.
Notes:
Annotation views are loosely coupled to a corresponding annotation object, which is an object that corre-
sponds to the MKAnnotation protocol. When an annotation’s coordinate point is in the visible region, the
map view asks its delegate to provide a corresponding annotation view. Annotation views may be recycled
later and put into a reuse queue that is maintained by the map view.

see also
Subclass of the MKViewMBS class.

111.3.2  Methods

111.3.3  Constructor(annotation as Variant, reuseIdentifier as string = "")

Function:  Initializes and returns a new annotation view.
Notes:
annotation:  The annotation object to associate with the new view.
reuseIdentifier:  If you plan to reuse the annotation view for similar types of annotations, pass a string to
identify it. Although you can pass nil if you do not intend to reuse the view, reusing annotation views is
generally recommended.

Returns the initialized annotation view or nil if there was a problem initializing the object.

The reuse identifier provides a way for you to improve performance by recycling annotation views as they are
scrolled on and off of the map. As views are no longer needed, they are moved to a reuse queue by the map
view. When a new annotation becomes visible, your application can request a view for that annotation by
passing the appropriate reuse identifier string to the dequeueReusableAnnotationViewWithIdentifier method
of MKMapView.

111.3.4  setCalloutOffset(x as Double, y as Double)

Function:  The offset (in pixels) at which to place the callout bubble.
Notes: This property determines the additional distance by which to move the callout bubble. When this property is set to (0, 0), the anchor point of the callout bubble is placed on the top-center point of the annotation view’s frame. Specifying positive offset values moves the callout bubble down and to the right, while specifying negative values moves it up and to the left.

111.3.5 setCenterOffset(x as Double, y as Double)

Function: The offset (in pixels) at which to display the view.
Notes: By default, the center point of an annotation view is placed at the coordinate point of the associated annotation. You can use this property to reposition the annotation view as needed. This x and y offset values are measured in pixels. Positive offset values move the annotation view down and to the right, while negative values move it up and to the left.

111.3.6 setSelected(selected as boolean, animated as boolean)

Function: Sets the selection state of the annotation view.
Notes:
selected: Contains the value true if the view should display itself as selected.
animated: Set to true if the change in selection state is animated.

You should not call this method directly. An MKMapView object calls this method in response to user interactions with the annotation.

111.3.7 Properties

111.3.8 annotation as Variant

Function: The annotation object currently associated with the view.
Notes:
You should not change the value of this property directly. This property contains a non-nil value only while the annotation view is visible on the map. If the view is queued and waiting to be reused, the value is nil (Read and Write property)
### 111.3.9 calloutOffsetX as Double

**MBS MacFrameworks Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** The offset (in pixels) at which to place the callout bubble.

**Notes:**
This property determines the additional distance by which to move the callout bubble. When this property is set to (0, 0), the anchor point of the callout bubble is placed on the top-center point of the annotation view’s frame. Specifying positive offset values moves the callout bubble down and to the right, while specifying negative values moves it up and to the left.

(Read and Write property)

### 111.3.10 calloutOffsetY as Double

**MBS MacFrameworks Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** The offset (in pixels) at which to place the callout bubble.

**Notes:**
This property determines the additional distance by which to move the callout bubble. When this property is set to (0, 0), the anchor point of the callout bubble is placed on the top-center point of the annotation view’s frame. Specifying positive offset values moves the callout bubble down and to the right, while specifying negative values moves it up and to the left.

(Read and Write property)

### 111.3.11 canShowCallout as Boolean

**MBS MacFrameworks Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** A Boolean value indicating whether the annotation view is able to display extra information in a callout bubble.

**Notes:**
If the value of this property is true, a standard callout bubble is shown when the user taps a selected annotation view. The callout uses the title and subtitle text from the associated annotation object. If there is no title text, though, the annotation view is treated as if its enabled property is set to false. The callout also displays any custom callout views stored in the leftCalloutAccessoryView and rightCalloutAccessoryView properties.

If the value of this property is NO, the value of the title and subtitle strings are ignored and the annotation view remains enabled by default. You can still disable the view explicitly using the enabled property.

(Read and Write property)
111.3.12 centerOffsetX as Double

Function: The offset (in pixels) at which to display the view.

Notes:
By default, the center point of an annotation view is placed at the coordinate point of the associated annotation. You can use this property to reposition the annotation view as needed. This x and y offset values are measured in pixels. Positive offset values move the annotation view down and to the right, while negative values move it up and to the left.

(Read and Write property)

111.3.13 centerOffsetY as Double

Function: The offset (in pixels) at which to display the view.

Notes:
By default, the center point of an annotation view is placed at the coordinate point of the associated annotation. You can use this property to reposition the annotation view as needed. This x and y offset values are measured in pixels. Positive offset values move the annotation view down and to the right, while negative values move it up and to the left.

(Read and Write property)

111.3.14 draggable as Boolean

Function: A Boolean indicating whether the annotation view is draggable.

Notes:
Setting this property to true makes an annotation draggable by the user. If true, the associated annotation object must also implement the setCoordinate method. The default value of this property is false.

Setting this property to true, lets the map view know that the annotation is always draggable. In other words, you cannot conditionalize drag operations by attempting to stop an operation that has already been initiated; doing so can lead to undefined behavior. Once begun, the drag operation should always continue to completion.

(Read and Write property)
111.3. CLASS MKANNOTATIONVIEWMBS

111.3.15 dragState as Integer

Function: The current drag state of the annotation view.
Notes: (Read and Write property)

111.3.16 enabled as Boolean

Function: A Boolean value indicating whether the annotation is enabled.
Notes:
The default value of this property is true. If the value of this property is false, the annotation view ignores touch events and cannot be selected. Subclasses may also display the annotation contents differently depending on the value of this property.
(Read and Write property)

111.3.17 highlighted as Boolean

Function: A Boolean value indicating whether the annotation view is highlighted.
Notes:
You should not set the value of this property directly. The map view sets it in response to touch events entering or exiting the annotation view’s bounds.
(Read and Write property)

111.3.18 imageURL as String

Function: The URL for the image to be displayed by the annotation view.
Notes: (Read and Write property)

111.3.19 reuseIdentifier as String

Function: The string that identifies that this annotation view is reusable.
Notes:
You specify the reuse identifier when you create the view. You use this type later to retrieve an annotation view that was created previously but which is currently unused because its annotation is not on screen.
If you define distinctly different types of annotations (with distinctly different annotation views to go with them), you can differentiate between the annotation types by specifying different reuse identifiers for each one.
(Read only property)

### 111.3.20 selected as Boolean

**Function:** A Boolean value indicating whether the annotation view is currently selected.
**Notes:**
You should not set the value of this property directly. If the property contains YES, the annotation view is displaying a callout bubble.
(Read and Write property)

### 111.3.21 Constants

#### 111.3.22 DragStateCanceling = 3

MBS MacFrameworks Plugin, Plugin Version: 14.1. **Function:** One of the constants indicating the current drag state of an annotation view
**Notes:** An action occurred that indicated the view should cancel the drag operation. You can put an annotation view into this state to abort the operation.

#### 111.3.23 DragStateDragging = 2

MBS MacFrameworks Plugin, Plugin Version: 14.1. **Function:** One of the constants indicating the current drag state of an annotation view
**Notes:** The view is in the middle of a drag operation and is tracking progress.

#### 111.3.24 DragStateEnding = 4

MBS MacFrameworks Plugin, Plugin Version: 14.1. **Function:** One of the constants indicating the current drag state of an annotation view
**Notes:** An action occurred that indicated the view was dropped by the user. The map view automatically moves annotation views to this state in response to appropriate user actions.
111.3.25 DragStateNone = 0

MBS MacFrameworks Plugin, Plugin Version: 14.1. **Function:** One of the constants indicating the current drag state of an annotation view  
**Notes:** The view is not involved in a drag operation. The annotation view is responsible for returning itself to this state when a drag ends or is canceled.

111.3.26 DragStateStarting = 1

MBS MacFrameworks Plugin, Plugin Version: 14.1. **Function:** One of the constants indicating the current drag state of an annotation view  
**Notes:** An action occurred that indicated the view should begin dragging. The map view automatically moves annotation views to this state in response to appropriate user actions.
111.4 class MKCircleMBS

111.4.1 class MKCircleMBS

Function: The MKCircle class is a concrete overlay object representing a circular area on a map.
Notes:
This class manages the data that defines the area and is typically used in conjunction with an MKCircleView object, which handles the drawing of the circular area on a map.
Subclass of the MKShapeMBS class.

111.4.2 Methods

111.4.3 circleWithCenterCoordinate(coord as CLLocationCoordinate2DMBS, radius as Double) as MKCircleMBS

Function: Creates and returns an MKCircle object using the specified coordinate and radius.
Example:

```swift
dim mapview as MKMapViewMBS // your map view
dim centerCoordinate as CLLocationCoordinate2DMBS = mapview.centerCoordinate
dim radius as Integer = 300 // 300 meter

dim circle as MKCircleMBS = MKCircleMBS.circleWithCenterCoordinate(centerCoordinate, radius)
mapview.addOverlay circle
```

Notes:
coord: The center point of the circle, specified as a latitude and longitude value.
radius: The radius of the circle, measured in meters from the center point.
See also:
- 111.4.4 circleWithCenterCoordinate(Latitude as Double, Longitude as Double, radius as Double) as MKCircleMBS

111.4.4 circleWithCenterCoordinate(Latitude as Double, Longitude as Double, radius as Double) as MKCircleMBS

Function: Creates and returns an MKCircle object using the specified coordinate and radius.
Notes:
111.4. CLASS MKCIRCLEMBS

Latitude and Longitude: The center point of the circle, specified as a latitude and longitude value.
radius: The radius of the circle, measured in meters from the center point.

See also:

- 111.4.3 circleWithCenterCoordinate(coord as CLLocationCoordinate2DMBS, radius as Double) as MKCircleMBS

111.4.5 Constructor(coord as CLLocationCoordinate2DMBS, radius as Double)

Function: Creates and returns an MKCircle object using the specified coordinate and radius.
Notes:
coord: The center point of the circle, specified as a latitude and longitude value.
radius: The radius of the circle, measured in meters from the center point.
See also:

- 111.4.6 Constructor(Latitude as Double, Longitude as Double, radius as Double)

111.4.6 Constructor(Latitude as Double, Longitude as Double, radius as Double)

Function: Creates and returns an MKCircle object using the specified coordinate and radius.
Notes:
Latitude and Longitude: The center point of the circle, specified as a latitude and longitude value.
radius: The radius of the circle, measured in meters from the center point.
See also:

- 111.4.5 Constructor(coord as CLLocationCoordinate2DMBS, radius as Double)

111.4.7 Operator_Convert as MKAnnotationMBS

Function: Creates an annotation object referencing this circle.
111.4.8 Properties

111.4.9 coordinate as CLLocationCoordinate2DMBS

Function: The center point of the circular area, specified as a latitude and longitude.
Notes: (Read only property)

111.4.10 latitude as Double

Function: The center point of the circular area, specified as a latitude.
Notes: (Read only property)

111.4.11 longitude as Double

Function: The center point of the circular area, specified as a longitude.
Notes: (Read only property)

111.4.12 radius as Double

Function: The radius of the circular area, measured in meters.
Notes: (Read only property)

111.4.13 region as MKCoordinateRegionMBS

Function: The region linked to this circle.
Notes: (Read only property)

111.4.14 subtitle as String

Function: The subtitle of this circle.
111.4. CLASS MKCIRCLEMBS

Notes: (Read only property)

111.4.15 title as String

Function: The title of this circle.
Notes: (Read only property)
111.5 class MKCircleViewMBS

111.5.1 class MKCircleViewMBS

**Function:** The MKCircleView class provides the visual representation for an MKCircle annotation object.
**Notes:**
This view fills and strokes the circle represented by the annotation. You can change the color and other drawing attributes of the circle by modifying the properties inherited from the MKOverlayPathView class. This class is typically used as is and not subclassed. Subclass of the MKOverlayPathViewMBS class.

111.5.2 Methods

111.5.3 Constructor(circle as Variant)

**Function:** Initializes and returns a new overlay view using the specified circle overlay object.
**Notes:** circle must be a MKCircleMBS object.

111.5.4 Properties

111.5.5 circle as MKCircleMBS

**Function:** The circle overlay object that contains the information used to draw the overlay.
**Notes:** (Read only property)
111.6  class MKCoordinateRegionMBS

111.6.1  class MKCoordinateRegionMBS

**Function:** A structure that defines which portion of the map to display.

111.6.2  Methods

111.6.3  Constructor(center as CLLocationCoordinate2DMBS, span as MKCoordinateSpanMBS)

**Function:** The constructor to initialize an object of this class.

111.6.4  Properties

111.6.5  center as CLLocationCoordinate2DMBS

**Function:** The center point of the region.  
**Notes:** (Read and Write property)

111.6.6  span as MKCoordinateSpanMBS

**Function:** The horizontal and vertical span representing the amount of map to display.  
**Notes:** The span also defines the current zoom level used by the map view object.  
(Read and Write property)
111.7 class MKCoordinateSpanMBS

111.7.1 class MKCoordinateSpanMBS

Function: A structure that defines the area spanned by a map region.
Notes: You use the delta values in this structure to indicate the desired zoom level of the map, with smaller delta values corresponding to a higher zoom level.

111.7.2 Methods

111.7.3 Constructor(latitudeDelta as Double, longitudeDelta as Double)

Function: The constructor to initialize this class.

111.7.4 Properties

111.7.5 latitudeDelta as Double

Function: The amount of north-to-south distance (measured in degrees) to display on the map.
Notes: Unlike longitudinal distances, which vary based on the latitude, one degree of latitude is always approximately 111 kilometers (69 miles).
(Read and Write property)

111.7.6 longitudeDelta as Double

Function: The amount of east-to-west distance (measured in degrees) to display for the map region.
Notes: The number of kilometers spanned by a longitude range varies based on the current latitude. For example, one degree of longitude spans a distance of approximately 111 kilometers (69 miles) at the equator but shrinks to 0 kilometers at the poles.
(Read and Write property)
111.8. CLASS MKGEOCODERMBS

111.8 class MKGeocoderMBS

111.8.1 class MKGeocoderMBS

Function: The class to lookup geo coordinates for an address.

111.8.2 Methods

111.8.3 cancel

Function: Cancels the query.

111.8.4 Constructor

Function: The private constructor.
See also:

- 111.8.5 Constructor(parent as MapKitViewControlMBS, anAddress as string) 16397
- 111.8.6 Constructor(parent as MapKitViewControlMBS, anAddress as string, Coordinate as CLLoca-
  tionCoordinate2DMBS) 16398
- 111.8.7 Constructor(parent as MapKitViewControlMBS, anAddress as string, NearLatitude as Double,
  NearLongitude as Double) 16398

111.8.5 Constructor(parent as MapKitViewControlMBS, anAddress as string)

Function: Submits a forward-geocoding request using the specified address dictionary.
Notes:

address: The address to lookup.

This method submits the specified location data to the geocoding server asynchronously and returns.

Later the events geocoderDidFailWithError or geocoderDidFindCoordinate from MapKitViewControlMBS class are called.
See also:
111.8.4 Constructor

111.8.6 Constructor (parent as MapKitViewControlMBS, anAddress as string, Coordinate as CLLocationCoordinate2DMBS)

111.8.7 Constructor (parent as MapKitViewControlMBS, anAddress as string, NearLatitude as Double, NearLongitude as Double)

111.8.6 Constructor (parent as MapKitViewControlMBS, anAddress as string, Coordinate as CLLocationCoordinate2DMBS)

Function: Submits a forward-geocoding request using the specified address dictionary.
Notes:
address: The address to lookup.
Coordinate: Specifies the region where to search nearby.

This method submits the specified location data to the geocoding server asynchronously and returns.

Later the events geocoderDidFailWithError or geocoderDidFindCoordinate from MapKitViewControlMBS class are called.
See also:

111.8.4 Constructor

111.8.5 Constructor (parent as MapKitViewControlMBS, anAddress as string)

111.8.7 Constructor (parent as MapKitViewControlMBS, anAddress as string, NearLatitude as Double, NearLongitude as Double)

111.8.7 Constructor (parent as MapKitViewControlMBS, anAddress as string, NearLatitude as Double, NearLongitude as Double)

Function: Submits a forward-geocoding request using the specified address dictionary.
Notes:
address: The address to lookup.
Coordinate: Specifies the region where to search nearby.

This method submits the specified location data to the geocoding server asynchronously and returns.

Later the events geocoderDidFailWithError or geocoderDidFindCoordinate from MapKitViewControlMBS class are called.
See also:
111.8. CLASS MKGEOCODERMBS

- 111.8.4 Constructor
- 111.8.5 Constructor(parent as MapKitViewControlMBS, anAddress as string)
- 111.8.6 Constructor(parent as MapKitViewControlMBS, anAddress as string, Coordinate as CLLocationCoordinate2DMBS)

111.8.8 Destructor

Function: The destructor.

111.8.9 start

Function: Starts the geocoder.

111.8.10 Properties

111.8.11 Address as String

Function: The address looking up.
Notes: (Read only property)

111.8.12 coordinate as CLLocationCoordinate2DMBS

Function: The coordinate found.
Notes: (Read only property)

111.8.13 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)
111.8.14 latitude as Double

Function: The latitude of the coordinate.
Notes: (Read only property)

111.8.15 longitude as Double

Function: The longitude of the coordinate.
Notes: (Read only property)

111.8.16 Querying as Boolean

Function: Whether this geocoder is querying currently.
Notes: (Read only property)
111.9  class MKMapViewMBS

111.9.1  class MKMapViewMBS

Function: An MKMapView object provides an embeddable map interface, similar to the one provided by the Maps application.
Notes:
You use this class as-is to display map information and to manipulate the map contents from your application. You can center the map on a given coordinate, specify the size of the area you want to display, and annotate the map with custom information.
Subclass of the NSViewMBS class.

111.9.2  Methods

111.9.3  addAnnotation(annotation as Variant)

Function: Adds the specified annotation to the map view.
Example:

    dim mapview as MKMapViewMBS // your map view

    // new pin
    dim pin as new MKPointAnnotationMBS

    pin.coordinate = mapView.centerCoordinate
    pin.title = "Hello"

    // show on map
    mapView.addAnnotation pin

111.9.4  addAnnotations(annotations() as Variant)

Function: Adds an array of annotation objects to the map view.
111.9.5  **addJavascriptTag(urlString as string)**

**Function:** Adds additional javascript.

111.9.6  **addOverlay(overlay as Variant)**

**Function:** Adds a single overlay object to the map.
**Example:**
```
    dim mapview as MKMapViewMBS // your map view
    dim centerCoordinate as CLLocationCoordinate2DMBS = mapview.centerCoordinate
    dim radius as Integer = 300 // 300 meter

    dim circle as MKCircleMBS = MKCircleMBS.circleWithCenterCoordinate(centerCoordinate, radius)
    mapview.addOverlay circle
```

**Notes:**

- **overlay:** The overlay object to add. This object must conform to the MKOverlay protocol.

The specified object is added to the group of overlay objects in the MKOverlayLevelAboveLabels level. Adding an overlay causes the map view to begin monitoring the area represented by that overlay. As soon as the bounding rectangle of an overlay intersects the visible portion of the map, the map view adds a corresponding overlay view to the map. The overlay view is provided by the mapViewViewForOverlay event.

To remove an overlay from a map, use the removeOverlay method.

111.9.7  **addOverlays(overlays() as Variant)**

**Function:** Adds an array of overlay objects to the map.
**Notes:**

- **overlays:** An array of objects, each of which must conform to the MKOverlay protocol.

The specified objects are added to the group of overlay objects in the MKOverlayLevelAboveLabels level. Adding an overlay causes the map view to begin monitoring the area represented by that overlay. As soon as the bounding rectangle of the overlay intersects the visible portion of the map, the map view tries to draw the overlay. As soon as the bounding rectangle of an overlay intersects the visible portion of the
map, the map view adds a corresponding overlay view to the map. The overlay view is provided by the mapViewViewForOverlay method of the map view’s delegate object.

To remove multiple overlays from a map, use the removeOverlays method.

111.9.8  addStylesheetTag(urlString as string)

Function: Adds additional style sheet.

111.9.9  annotations as Variant()

Function: The complete list of annotations associated with the receiver.
Notes: If no annotations are associated with the map view, the value of this property is empty.

111.9.10 Constructor

Function: Creates a new box view with size 100/100 and position 0/0
Example:

\[
\text{dim } x \text{ as new MKMapViewMBS}
\]

Notes: On success the handle property is not zero.
See also:

- 111.9.11 Constructor(Handle as Integer) 16403
- 111.9.12 Constructor(left as Double, top as Double, width as Double, height as Double) 16404

111.9.11 Constructor(Handle as Integer)

Function: Creates an object based on the given NSView handle.
Example:

\[
\text{dim } t \text{ as new MKMapViewMBS}(0, 0, 100, 100) \\
\text{dim } v \text{ as new MKMapViewMBS}(t.\text{handle})
\]
MsgBox str(v.Bounds.Width)+" x "+str(v.Bounds.Height)

Notes: The handle is casted to a MKMapView and the plugin retains this handle.
See also:

- 111.9.10 Constructor  
- 111.9.12 Constructor(left as Double, top as Double, width as Double, height as Double)  

111.9.12 Constructor(left as Double, top as Double, width as Double, height as Double)

Function: Creates a new control with the given size and position.
Example:

```vbs
dim left,top,width,height as Integer
// define rectangle
dim x as new MKMapViewMBS(left, top, width, height)
```

Notes: On success the handle property is not zero.
See also:

- 111.9.10 Constructor  
- 111.9.11 Constructor(Handle as Integer)  

111.9.13 convertCoordinateToPointToView(coordinate as CLLocationCoordinate2DMBS, view as NSViewMBS) as NSPointMBS

Function: Converts a map coordinate to a point in the specified view.
Notes:

coordinate: The map coordinate for which you want to find the corresponding point.
view: The view in whose coordinate system you want to locate the specified map coordinate. If this parameter is nil, the returned point is specified in the window’s coordinate system. If view is not nil, it must belong to the same window as the map view.

Returns the point (in the appropriate view or window coordinate system) corresponding to the specified latitude and longitude value.
111.9.14  convertPointToCoordinateFromView(point as NSPointMBS, view as NSViewMBS) as CLLocationCoordinate2DMBS

Function: Converts a point in the specified view’s coordinate system to a map coordinate.
Notes:
point: The point you want to convert.
view: The view that serves as the reference coordinate system for the point parameter.

Returns the map coordinate at the specified point.

111.9.15  convertRectToRegionFromView(rect as NSRectMBS, view as NSViewMBS) as MKCoordinateRegionMBS

Function: Converts a rectangle in the specified view’s coordinate system to a map region.
Notes:
rect: The rectangle you want to convert.
view: The view that serves as the reference coordinate system for the rect parameter.

Returns the map region corresponding to the specified view rectangle.

111.9.16  convertRegionToRectToView(region as MKCoordinateRegionMBS, view as NSViewMBS) as NSRectMBS

Function: Converts a map region to a rectangle in the specified view.
Notes:
region: The map region for which you want to find the corresponding view rectangle.
view: The view in whose coordinate system you want to locate the specified map region. If this parameter is
nil, the returned rectangle is specified in the window’s coordinate system. If view is not nil, it must belong
to the same window as the map view.

Returns the rectangle corresponding to the specified map region.
111.9.17 dequeueReusableAnnotationViewWithIdentifier(identifier as string) as MKAnnotationViewMBS

Function: Returns a reusable annotation view located by its identifier.
Notes:
identifier: A string identifying the annotation view to be reused. This string is the same one you specify when initializing the annotation view using the Constructor method.

Returns an annotation view with the specified identifier, or nil if no such object exists in the reuse queue.

For performance reasons, you should generally reuse MKAnnotationView objects in your map views. As annotation views move offscreen, the map view moves them to an internally managed reuse queue. As new annotations move onscreen, and your code is prompted to provide a corresponding annotation view, you should always attempt to dequeue an existing view before creating a new one. Dequeueing saves time and memory during performance-critical operations such as scrolling.

111.9.18 deselectAnnotation(annotation as Variant, animated as boolean)

Function: Deselects the specified annotation and hides its callout view.
Notes:
annotation: The annotation object to deselect.
animated: If true, the callout view is animated offscreen.

111.9.19 Destructor

Function: The destructor.

111.9.20 exchangeOverlay(index1 as Integer, index2 as Integer)

Function: Exchanges the positions of the two overlay objects.
Notes:
index1: The index of an overlay in the MKOverlayLevelAboveLabels map level.
index2: The index of another overlay in the MKOverlayLevelAboveLabels map level.
If you need to exchange overlays in other map levels, use the exchangeOverlay method.

### 111.9.21 InitMapKit as boolean

**Function:** Loads the MapKit framework from Apple.  
**Notes:**

- 64-bit only. And you need to sign app with entitlement for MapKit usage.
- As the plugin can use both frameworks (opensource and Apple), some methods may only be available in one framework.
- You need to load the framework once before you want to use the Map Kit classes.

### 111.9.22 insertOverlayAboveOverlay(overlay as Variant, aboveOverlay as Variant)

**Function:** Inserts one overlay object on top of another.  
**Notes:**

- overlay: The overlay object to insert.
- sibling: An existing object in the overlays array. This object must exist in the array and must not be nil.

This method inserts the overlay into the MKOverlayLevelAboveLabels level and positions it relative to the specified sibling. When displayed, this leads to the overlay’s contents being displayed above that of its sibling. If sibling is not in the same map level, this method appends the overlay to the end of the list of overlays at the indicated level.

### 111.9.23 insertOverlayAtIndex(overlay as Variant, index as Integer)

**Function:** Inserts an overlay object into the list associated with the map.  
**Notes:**

- overlay: The overlay object to insert.
- index: The index at which to insert the overlay object. If this value is greater than the number of objects in the overlays property, this method appends the object to the end of the array.

This method inserts the overlay into the MKOverlayLevelAboveLabels level.
111.9.24  insertOverlayBelowOverlay(overlay as Variant, belowOverlay as Variant)

Function: Inserts one overlay object below another.
Notes:
overlay: The overlay object to insert.
sibling: An existing object in the overlays array. This object must exist in the array and must not be nil.

This method inserts the overlay into the MKOverlayLevelAboveLabels level and positions it relative to the specified sibling. When displayed, this leads to the overlay’s contents being displayed beneath that of its sibling. If sibling is not in the same map level, this method appends the overlay to the end of the list of overlays at the indicated level.

111.9.25  IsFrameworkLoaded as boolean

Function: Whether the MapKit framework was loaded successfully.

111.9.26  LoadFramework(path as folderitem) as boolean

Function: Loads the OpenSource MapKit framework.
Example:
    dim f as FolderItem = getfolderitem("MapKit.framework")

    if MKMapViewMBS.LoadFramework(f) then
        // ok
    else
        MsgBox "Failed to load framework."
        quit
    end if

Notes:
You need to load the framework once before you want to use the Map Kit classes.
Please make sure you have 32/64bit library to match application bit number.
111.9.27 overlays as Variant()


Function: The overlay objects currently associated with the map view.

Notes:
This property contains the union of all overlays at the different levels of the map. The objects in this array must adopt the MKOverlay protocol. If no overlays are associated with the map view, the value of this property is an empty array.

The order of the objects in this array does not necessarily reflect their visual order on the map.

111.9.28 removeAnnotation(annotation as Variant)


Function: Removes the specified annotation object from the map view.

Notes:
annotation: The annotation object to remove. This object must conform to the MKAnnotation protocol.

If the annotation is currently associated with an annotation view, and that view has a reuse identifier, this method removes the annotation view and queues it internally for later reuse. You can retrieve queued annotation views (and associate them with new annotations) using the dequeueReusableAnnotationViewWithIdentifier method.

Removing an annotation object disassociates it from the map view entirely, preventing it from being displayed on the map. Thus, you would typically call this method only when you want to hide or delete a given annotation.

111.9.29 removeAnnotations(annotations() as Variant)


Function: Removes an array of annotation objects from the map view.

Notes:
annotations: The array of annotations to remove. Objects in the array must conform to the MKAnnotation protocol.

If any annotation object in the array has an associated annotation view, and if that view has a reuse identifier, this method removes the annotation view and queues it internally for later reuse. You can retrieve queued annotation views (and associate them with new annotations) using the dequeueReusableAnnotationViewWithIdentifier method.
Removing annotation objects disassociates them from the map view entirely, preventing them from being displayed on the map. Thus, you would typically call this method only when you want to hide or delete the specified annotations.

111.9.30  removeOverlay(overlay as Variant)

Function: Removes a single overlay object from the map.
Notes:
overlay: The overlay object to remove.

This method removes the overlay regardless of the level that it is in. Removing an overlay also removes its corresponding renderer, if one is in use. If the specified overlay is not currently associated with the map view, this method does nothing.

111.9.31  removeOverlays(overlays() as Variant)

Function: Removes one or more overlay objects from the map.
Notes:
overlays: An array of objects, each of which conforms to the MKOverlay protocol.

This method removes the specified overlays regardless of which level each one is in. Removing an overlay also removes its corresponding renderer, if one is in use. If a given overlay object is not associated with the map view, it is ignored.

111.9.32  selectAnnotation(annotation as Variant, animated as boolean)

Function: Selects the specified annotation and displays a callout view for it.
Notes:
annotation: The annotation object to select.
animated: If true, the callout view is animated into position.

If the specified annotation is not onscreen, and therefore does not have an associated annotation view, this method has no effect.
111.9.33 selectedAnnotations as Variant()

**Function:** The annotations that are currently selected.
**Notes:** Assigning a new array to this property selects only the first annotation in the array.

111.9.34 setCenterCoordinate(Latitude as Double, Longitude as Double, Animated as boolean = true)

**Function:** Changes the center coordinate of the map and optionally animates the change.
**Notes:**
Latitude and Longitude: The new center coordinate for the map.
animated: Specify true if you want the map view to scroll to the new location or false if you want the map to display the new location immediately.

Changing the center coordinate centers the map on the new coordinate without changing the current zoom level. It also updates the value in the region property to reflect the new center coordinate and the new span values needed to maintain the current zoom level.

111.9.35 setRegion(c as CLLocationCoordinate2DMBS, animated as boolean = false)

**Function:** Changes the currently visible region and optionally animates the change.
**Notes:** Same as SetRegion with MKCoordinateRegionMBS but reuses current coordinate span.
See also:
- 111.9.36 setRegion(region as MKCoordinateRegionMBS, animated as boolean = false)

111.9.36 setRegion(region as MKCoordinateRegionMBS, animated as boolean = false)

**Function:** Changes the currently visible region and optionally animates the change.
**Example:**
```plaintext
dim mapview as MKMapViewMBS // your mapview

// get current region
dim r as MKCoordinateRegionMBS = mapview.region
```
// make new span with double deltas
dim s as new MKCoordinateSpanMBS(r.span.latitudeDelta*2, r.span.longitudeDelta*2)

// make new region
dim n as new MKCoordinateRegionMBS(r.center, s)

// and zoom there
mapview.setRegion n, true

Notes:

region: The new region to display in the map view.
animated: Specify true if you want the map view to animate the transition to the new region or false if you want the map to center on the specified region immediately.

Changing just the center coordinate of the region can still cause the span values to change implicitly. The span values might change because that the distances represented by a span change at different latitudes and longitudes and the map view may need to adjust the span to account for the new location. If you want to change the center coordinate without changing the zoom level, use the setCenterCoordinate instead.

When setting a new region, the map may adjust the value in the region parameter so that it fits the visible area of the map precisely. This adjustment is normal and is done to ensure that the value in the region property always reflects the visible portion of the map. However, it does mean that if you get the value of that property right after calling this method, the returned value may not match the value you set. (You can use the regionThatFits method to determine the region that will actually be set by the map.)

See also:

• 111.9.35 setRegion(c as CLLocationCoordinate2DMBS, animated as boolean = false)

111.9.37 showAddress(address as string)


Function: Convenience method to run an address geocoding and shows position on map.

Example:

dim mapView as MKMapViewMBS // your map view
mapView.showAddress "Markt 15, Andernach, Deutschland"
111.9.38 viewForAnnotation((annotation as Variant) as MKAnnotationViewMBS)


**Function:** Returns the annotation view associated with the specified annotation object, if any.

**Example:**

```vbnet
Function viewForAnnotation(mapView as MKMapViewMBS, annotation as Variant) As MKAnnotation-
ViewMBS
    // make a new view for this annotation
dim view as new MKPinAnnotationViewMBS(annotation, "id")

    // allow user to drag
    view.draggable = true

    // maybe save it somewhere for later?
    views.Append view

    // and return
    Return view
End Function
```

**Notes:**

- **annotation:** The annotation object whose view you want.

Returns the annotation view or nil if the view has not yet been created. This method may also return nil if the annotation is not in the visible map region and therefore does not have an associated annotation view.

---

111.9.39 viewForOverlay(overlay as MKPolylineMBS) as MKOverlayViewMBS


**Function:** Returns the view associated with the overlay object if any.

**Notes:**

- **overlay:** The overlay object whose view you want.

Returns the view associated with the overlay object or nil if the overlay is not onscreen.
111.9.40 Properties

111.9.41 centerCoordinate as CLLocationCoordinate2DMBS


**Function:** The map coordinate at the center of the map view.

**Example:**

```dim mapview as MKMapViewMBS // your map view
dim centerCoordinate as CLLocationCoordinate2DMBS = mapview.centerCoordinate

// show center
MsgBox str(centerCoordinate.latitude)+” ”+str(centerCoordinate.longitude)```

**Notes:**

Changing the value in this property centers the map on the new coordinate without changing the current zoom level. It also updates the values in the region property to reflect the new center coordinate and the new span values needed to maintain the current zoom level.

Changing the value of this property updates the map view immediately. If you want to animate the change, use the setCenterCoordinate method instead.

(Read only property)

111.9.42 centerCoordinateLatitude as Double


**Function:** The map coordinate at the center of the map view.

**Notes:**

Changing the value in this property centers the map on the new coordinate without changing the current zoom level. It also updates the values in the region property to reflect the new center coordinate and the new span values needed to maintain the current zoom level.

Changing the value of this property updates the map view immediately. If you want to animate the change, use the setCenterCoordinate method instead.

(Read only property)

111.9.43 centerCoordinateLongitude as Double


**Function:** The map coordinate at the center of the map view.
111.9. CLASS MKMAPVIEWMBS

Notes:
Changing the value in this property centers the map on the new coordinate without changing the current zoom level. It also updates the values in the region property to reflect the new center coordinate and the new span values needed to maintain the current zoom level.

Changing the value of this property updates the map view immediately. If you want to animate the change, use the setCenterCoordinate method instead.
(Read only property)

111.9.44 mapType as Integer

Function: The type of data displayed by the map view.
Example:

```dim mapview as MKMapViewMBS // your map view
mapView.mapType = mapView.MKMapTypeHybrid```

Notes:
Changing the value in this property may cause the receiver to begin loading new map content. For example, changing from MKMapTypeStandard to MKMapTypeSatellite might cause it to begin loading the satellite imagery needed for the map. If new data is needed, however, it is loaded asynchronously and appropriate messages are sent to the receiver’s delegate indicating the status of the operation.
(Read and Write property)

111.9.45 region as MKCoordinateRegionMBS

Function: The area currently displayed by the map view.
Notes:
The region encompasses both the latitude and longitude point on which the map is centered and the span of coordinates to display. The span values provide an implicit zoom value for the map. The larger the displayed area, the lower the amount of zoom. Similarly, the smaller the displayed area, the greater the amount of zoom.

Changing only the center coordinate of the region can still cause the span to change implicitly. The span might change because the distances represented by a span change at different latitudes and longitudes and the map view may need to adjust the span to account for the new location. If you want to change the center coordinate without changing the zoom level, use the centerCoordinate instead.
Changing the value of this property updates the map view immediately. When setting this property, the map may adjust the new region value so that it fits the visible area of the map precisely. This is normal and is done to ensure that the value in this property always reflects the visible portion of the map. However, it does mean that if you get the value of this property right after setting it, the returned value may not match the value you set. (You can use the regionThatFits method to determine the region that will actually be set by the map.)

If you want to animate the change in region, use the setRegion method instead.
(Read and Write property)

111.9.46 scrollEnabled as Boolean


Function: A Boolean value that determines whether the user may scroll around the map.

Notes:
This property controls only user interactions with the map. If you set the value of this property to NO, you may still change the map location programmatically by changing the value in the region property.

The default value of this property is true.
(Read and Write property)

111.9.47 showsUserLocation as Boolean


Function: A Boolean value indicating whether the map should try to display the user’s location.

Notes:
This property does not indicate whether the user’s position is actually visible on the map, only whether the map view should try to display it. Setting this property to true causes the map view to use the Core Location framework to find the current location and try to display it on the map. As long as this property is true, the map view continues to track the user’s location and update it periodically. The default value of this property is false.

Showing the user’s location does not guarantee that the location is visible on the map. The user might have scrolled the map to a different point, causing the current location to be offscreen. To determine whether the user’s current location is currently displayed on the map, use the userLocationVisible property.
(Read and Write property)
111.9. **CLASS MKMAPVIEWMBS**

111.9.48 **userLocation as MKUserLocationMBS**

**Function:** The annotation object representing the user’s current location.
**Notes:** (Read only property)

111.9.49 **userLocationVisible as Boolean**

**Function:** A Boolean value indicating whether the device’s current location is visible in the map view.
**Notes:**
This property tells you whether the icon used to represent the user’s current location is visible in the map view. When determining whether the current location is visible, this property factors in the horizontal accuracy of the location data. Specifically, if the rectangle represented by the user’s current location plus or minus minus the horizontal accuracy of that location intersects the map’s visible rectangle, this property contains the value true. If that location rectangle does not intersect the map’s visible rectangle, this property contains the value false.

If the user’s location cannot be determined, this property contains the value false.
(Read only property)

111.9.50 **webview as Variant**

**Function:** The webview used for the map.
**Notes:**
Value is a WebViewMBS object.
(Read only property)

111.9.51 **zoomEnabled as Boolean**

**Function:** A Boolean value that determines whether the user may use pinch gestures to zoom in and out of the map.
**Notes:**
This property controls only user interactions with the map. If you set the value of this property to NO, you may still change the zoom level programmatically by changing the value in the region property.

The default value of this property is true.
111.9.52  Constants

111.9.53  MKMapTypeHybrid = 2

MBS MacFrameworks Plugin, Plugin Version: 14.1.  **Function:** One of the map types.  
**Notes:** Displays a satellite image of the area with road and road name information layered on top.

111.9.54  MKMapTypeSatellite = 1

MBS MacFrameworks Plugin, Plugin Version: 14.1.  **Function:** One of the map types.  
**Notes:** Displays satellite imagery of the area.

111.9.55  MKMapTypeStandard = 0

MBS MacFrameworks Plugin, Plugin Version: 14.1.  **Function:** One of the map types.  
**Notes:** Displays a street map that shows the position of all roads and some road names.
111.10. CLASS MKMULTIPOINTMBS

111.10 class MKMultiPointMBS

111.10.1 class MKMultiPointMBS

Function: The MKMultiPoint class is an abstract superclass used to define shapes composed of multiple points.
Notes: You should not create instances of this class directly. Instead, you should create instances of the MKPolyline or MKPolygon classes. However, you can use the method and properties of this class to access information about the specific points associated with the line or polygon.
Subclass of the MKShapeMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

111.10.2 Methods

111.10.3 Constructor

Function: The private constructor.

111.10.4 coordinates as CLLocationCoordinate2DMBS()

Function: Retrieves points associated with the shape and converts them to coordinate values.
Notes: This method converts the map points into coordinates before returning them to you.

111.10.5 Properties

111.10.6 coordinateCount as Integer

Function: The number of points associated with the shape.
Notes: (Read only property)
CHAPTER 111. MAPKIT

111.11 class MKOverlayPathViewMBS

111.11.1 class MKOverlayPathViewMBS

MBS MacFrameworks Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The MKOverlayPathView class represents a generic overlay that draws its contents using a CGPath data type.

**Notes:**
You can use this class to implement simple path-based overlay views or subclass it to define additional drawing behaviors. The default drawing behavior of this class is to apply the object’s current fill attributes, fill the path, apply the current stroke attributes, and then stroke the path.

If you subclass, you should override the createPath method and use that method to build the appropriate path for the overlay. You can invalidate this path as needed and force the path to be recreated using whatever new data your subclass has obtained.
Subclass of the MKOverlayViewMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

111.11.2 Methods

111.11.3 Constructor


111.11.4 Properties

111.11.5 fillColor as NSColorMBS

MBS MacFrameworks Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The fill color to use for the path.
**Notes:** (Read and Write property)

111.11.6 lineWidth as Double

MBS MacFrameworks Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The stroke width to use for the path.
**Notes:**
111.11. CLASS MKOVERLAYPATHVIEWMBS

The default value of this property is 0.
(Read and Write property)

111.11.7 strokeLineColor as NSColorMBS

Function: The stroke color to use for the path.
Notes: (Read and Write property)
111.12 class MKOverlayViewMBS

111.12.1 class MKOverlayViewMBS


Function: The MKOverlayView class defines the basic behavior associated with all overlay views.

Notes:

An overlay view provides the visual representation of an overlay object that is, an object that conforms to the MKOverlay protocol. This class defines the drawing infrastructure used by the map view but does not do any actual drawing.

The Map Kit framework provides several concrete instances of overlay views. Specifically, it provides overlay views for each of the concrete overlay objects. You can use one of these existing overlay views or define your own subclass if you want to draw the overlay contents differently.

Subclass of the MKViewMBS class.

111.12.2 Methods

111.12.3 Constructor(Overlay as Variant)


Function: Initializes and returns the overlay view and associates it with the specified overlay object.

Notes:

overlay: The overlay object to use when drawing the overlay on the map. This object provides the data needed to draw the overlay’s shape. This object is retained by the overlay view.

Returns an initialized overlay object.

Upon initialization, the frame of the overlay view is set to CGRectZero. The map view sets the size and position of the view at display time, and you should not change those values yourself.

111.12.4 Properties

111.12.5 Overlay as Variant


Function: The overlay object containing the data for drawing.

Notes: (Read only property)
111.13. class MKPinAnnotationViewMBS

111.13.1. class MKPinAnnotationViewMBS


Function: The MKPinAnnotationView class provides a concrete annotation view that displays a pin icon like the ones found in the Maps application.

Notes:
Using this class, you can configure the type of pin to drop and whether you want the pin to be animated into place.
Subclass of the MKAnnotationViewMBS class.

111.13.2. Methods

111.13.3. Constructor


Function: The private constructor.

See also:

- 111.13.4 Constructor(annotation as Variant, reuseIdentifier as string = "")

111.13.4. Constructor(annotation as Variant, reuseIdentifier as string = "")


Function: The constructor.

See also:

- 111.13.3 Constructor

111.13.5. Properties

111.13.6. animatesDrop as Boolean


Function: Whether to animate the dropping of the pin.

Notes: (Read and Write property)
111.13.7  pinColor as Integer

**Function:** The color of the pin head.
**Notes:**
The Maps application uses different pin colors for different types of map annotations. Your own map annotation should use the available pin colors in the same way.
(Read and Write property)

111.13.8  Constants

111.13.9  ColorBlue = 2

MBS MacFrameworks Plugin, Plugin Version: 14.1. **Function:** One of the color constants.
**Notes:** The head of the pin is blue. Purple pins indicate user-specified points on the map.

111.13.10  ColorGreen = 1

MBS MacFrameworks Plugin, Plugin Version: 14.1. **Function:** One of the color constants.
**Notes:** The head of the pin is green. Green pins indicate starting points on the map.

111.13.11  ColorRed = 0

MBS MacFrameworks Plugin, Plugin Version: 14.1. **Function:** One of the color constants.
**Notes:** The head of the pin is red. Red pins indicate destination points on the map.
111.14. class MKPlacemarkMBS

111.14.1 class MKPlacemarkMBS


**Function:** A MKPlacemark object stores placemark data for a given latitude and longitude.

**Notes:**
Placemark data includes information such as the country, state, city, and street address associated with the specified coordinate. Placemarks are typically generated by a MKReverseGeocoder object, although you can also create them explicitly yourself.

A placemark is also an annotation and conforms to the MKAnnotation protocol, whose properties and methods include the placemark coordinate and other information. Because they are annotations, you can add them directly to the map view.

Subclass of the MKAnnotationMBS class.

111.14.2 Methods

111.14.3 Constructor(coordinate as CLLocationCoordinate2DMBS, addressDictionary as dictionary)


**Function:** Initializes and returns a placemark object using the specified coordinate and Address Book dictionary.

**Notes:** You can create placemark objects manually for entities for which you already have address information, such as contacts in the Address Book. Creating a placemark object explicitly avoids the need to query the reverse geocoder object for the same information.

See also:

- 111.14.4 Constructor(Latitude as Double, Longitude as Double, addressDictionary as dictionary) 16425

111.14.4 Constructor(Latitude as Double, Longitude as Double, addressDictionary as dictionary)


**Function:** Initializes and returns a placemark object using the specified coordinate and Address Book dictionary.

**Notes:** You can create placemark objects manually for entities for which you already have address information, such as contacts in the Address Book. Creating a placemark object explicitly avoids the need to query the reverse geocoder object for the same information.

See also:
111.14.3 Constructor(coordinate as CLLocationCoordinate2DMBS, addressDictionary as dictionary)

111.14.5 Properties

111.14.6 addressDictionary as Dictionary

**Function:** A dictionary containing the Address Book keys and values for the placemark.  
**Notes:**  
The keys in this dictionary are those defined by the Address Book framework and used to access address information for a person. For a list of the strings that might be in this dictionary, see the Address Property constants in ABPerson Reference.  
(Read only property)

111.14.7 administrativeArea as String

**Function:** The state associated with the placemark.  
**Notes:**  
If the placemark location was Apple’s headquarters, the value for this property would be the string "CA" or "California".  
(Read only property)

111.14.8 coordinate as CLLocationCoordinate2DMBS

**Function:** The coordinate of the placemark.  
**Notes:** (Read only property)

111.14.9 CoordinateLatitude as Double

**Function:** The coordinate of the placemark.  
**Notes:** (Read only property)
111.14.10 CoordinateLongitude as Double

Function: The coordinate of the placemark.
Notes: (Read only property)

111.14.11 country as String

Function: The name of the country associated with the placemark.
Notes: If the placemark location was Apple’s headquarters, the value for this property would be the string “United States”.
(Read only property)

111.14.12 countryCode as String

Function: The abbreviated country name.
Notes: This string is the standard abbreviation used to refer to the country. For example, if the placemark location was Apple’s headquarters, the value for this property would be the string ”US”.
(Read only property)

111.14.13 locality as String

Function: The city associated with the placemark.
Notes: If the placemark location was Apple’s headquarters, the value for this property would be the string ”Cupertino”.
(Read only property)

111.14.14 postalCode as String

Function: The postal code associated with the placemark.
Notes:
If the placemark location was Apple’s headquarters, the value for this property would be the string "95014".
(Read only property)

**111.14.15 subAdministrativeArea as String**

**Function:** Additional administrative area information for the placemark.
**Notes:**
Subadministrative areas typically correspond to counties or other regions that are then organized into a larger administrative area or state. For example, if the placemark location was Apple's headquarters, the value for this property would be the string "Santa Clara", which is the county in California that contains the city of Cupertino.
(Read only property)

**111.14.16 subLocality as String**

**Function:** Additional city-level information for the placemark.
**Notes:**
This property contains additional information, such as the name of the neighborhood or landmark associated with the placemark. It might also refer to a common name that is associated with the location.
(Read only property)

**111.14.17 subThoroughfare as String**

**Function:** Additional street-level information for the placemark.
**Notes:**
Subthroughfares provide information such as the street number for the location. For example, if the placemark location was Apple’s headquarters (1 Infinite Loop), the value for this property would be the string "1".
(Read only property)

**111.14.18 thoroughfare as String**

**Function:** The street address associated with the placemark.
**Notes:**
The street address contains the street name. For example, if the placemark location was Apple’s headquarters, the value for this property would be the string "Infinite Loop". (Read only property)
111.15 class MKPointAnnotationMBS

111.15.1 class MKPointAnnotationMBS


Function: The MKPointAnnotation class defines a concrete annotation object located at a specified point.

Example:

dim mapview as MKMapViewMBS // your map view

    // new pin
dim pin as new MKPointAnnotationMBS

    pin.coordinate = mapView.centerCoordinate
    pin.title = "Hello"

    // show on map
    mapView.addAnnotation pin

Notes:
You can use this class, rather than define your own, in situations where all you want to do is associate a point on the map with a title.

Subclass of the MKShapeMBS class.

111.15.2 Methods

111.15.3 Constructor


Function: The constructor.

Example:

dim mapview as MKMapViewMBS // your map view

    // new pin
dim pin as new MKPointAnnotationMBS

    pin.coordinate = mapView.centerCoordinate
    pin.title = "Hello"

    // show on map
    mapView.addAnnotation pin
111.15.4 Properties

111.15.5 coordinate as CLLocationCoordinate2DMBS

Function: The coordinate point of the annotation, specified as a latitude and longitude.
Notes: (Read and Write property)

111.15.6 CoordinateLatitude as Double

Function: The coordinate point of the annotation, specified as a latitude and longitude.
Notes: (Read and Write property)

111.15.7 CoordinateLongitude as Double

Function: The coordinate point of the annotation, specified as a latitude and longitude.
Notes: (Read and Write property)
111.16 class MKPolygonMBS

111.16.1 class MKPolygonMBS

Function: The MKPolygon class represents a shape consisting of one or more points that define a closed polygon.
Notes: The points are connected end-to-end in the order they are provided. The first and last points are connected to each other to create the closed shape.

When creating a polygon, you can mask out portions of the polygon by specifying one or more interior polygons. For the polygons you specify, this class uses the even-odd fill rule to determine the final occupied area. When applied to overlapping polygons, this rule can cause specific regions to be masked out (and thereby removed) from the total occupied area. For more information about how fill rules are applied to paths, see "Paths" in Quartz 2D Programming Guide.
Subclass of the MKMultiPointMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

111.16.2 Methods

111.16.3 Constructor

Function: The private constructor.

111.16.4 interiorPolygons as MKPolygonMBS()

Function: The array of polygons nested inside the receiver.
Notes: When a polygon is rendered on screen, the area occupied by any interior polygons is masked out and not considered part of the polygon.

111.16.5 Operator_Convert as MKAnnotationMBS

Function: Creates an annotation object for this polygon.
111.16. CLASS MKPOLYGONMBS

111.16.6 polygonWithCoordinates(coords() as CLLocationCoordinate2DMBS) as MKPolygonMBS

Function: Creates and returns an MKPolygon object from the specified set of coordinates.
Notes:
coords: The array of coordinates defining the shape. Returns a new polygon object.
See also:

• 111.16.7 polygonWithCoordinates(coords() as CLLocationCoordinate2DMBS, InteriorPolygons() as MKPolygonMBS) as MKPolygonMBS

111.16.7 polygonWithCoordinates(coords() as CLLocationCoordinate2DMBS, InteriorPolygons() as MKPolygonMBS) as MKPolygonMBS

Function: Creates and returns an MKPolygon object from the specified set of coordinates and interior
polygons.
Notes:
coords: The array of coordinates defining the shape.
interiorPolygons: An array of MKPolygon objects that define one or more cutout regions for the receiver’s
polygon.

Returns a new polygon object.
See also:

• 111.16.6 polygonWithCoordinates(coords() as CLLocationCoordinate2DMBS) as MKPolygonMBS
111.17 class MKPolygonViewMBS

111.17.1 class MKPolygonViewMBS


**Function:** The MKPolygonView class provides the visual representation for an MKPolygon annotation object.

**Notes:**
This view fills and strokes the area represented by the annotation. You can change the color and other drawing attributes of the polygon by modifying the properties inherited from the MKOverlayPathView class. This class is typically used as is and not subclassed.
Subclass of the MKOverlayPathViewMBS class.

111.17.2 Methods

111.17.3 Constructor(polygon as MKPolygonMBS)


**Function:** Initializes and returns a new overlay view using the specified polygon overlay object.

**Notes:** polygon: The polygon overlay containing the information about the area to be drawn. This object must have at least three points defining the polygon in order for this view to draw the corresponding path.

111.17.4 Properties

111.17.5 Polygon as MKPolygonMBS


**Function:** The polygon overlay object that contains the information used to draw the overlay.

**Notes:** (Read only property)
111.18. class MKPolylineMBS

111.18.1 class MKPolylineMBS


Function: The MKPolyline class represents a shape consisting of one or more points that define connecting line segments.

Notes:
The points are connected end-to-end in the order they are provided. The first and last points are not connected to each other.
Subclass of the MKMultiPointMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

111.18.2 Methods

111.18.3 Constructor


Function: The private constructor.

111.18.4 Operator Convert as MKAnnotationMBS


Function: Creates an annotation object for the polyline.

111.18.5 polylineWithCoordinates(coords() as CLLocationCoordinate2DMBS) as MKPolylineMBS


Function: Creates and returns an MKPolyline object from the specified set of coordinates.

Notes:
coords: The array of coordinates defining the shape. The data in this array is copied to the new object.
Returns a new polyline object.
111.19 class MKPolylineViewMBS

111.19.1 class MKPolylineViewMBS

Function: The MKPolylineView class provides the visual representation for an MKPolyline annotation object.
Notes: This view strokes the path represented by the annotation. (This class does not fill the area enclosed by the path.) You can change the color and other drawing attributes of the path by modifying the properties inherited from the MKOverlayPathView class. This class is typically used as is and not subclassed. Subclass of the MKOverlayPathViewMBS class.

111.19.2 Methods

111.19.3 Constructor(polyline as MKPolylineMBS)

Function: Initializes and returns a new overlay view using the specified polyline overlay object.
Notes: polyline: The polyline overlay object containing the information about the path to be stroked. This object must have at least two points defined in order for this view to draw the corresponding path.

111.19.4 Properties

111.19.5 Polyline as MKPolylineMBS

Function: The polyline overlay object that contains the information used to draw the overlay.
Notes: (Read only property)
111.20. CLASS MKREVERSEGEOCODERMBS

111.20 class MKReverseGeocoderMBS

111.20.1 class MKReverseGeocoderMBS


Function: The MKReverseGeocoder class provides services for converting a map coordinate (specified as a latitude/longitude pair) into information about that coordinate, such as the country, city, or street.

Notes: A reverse geocoder object is a single-shot object that works with a network-based map service to look up placemark information for its specified coordinate value.

111.20.2 Methods

111.20.3 cancel


Function: Cancels a pending reverse-geocoding request.

Notes: You can use this method to cancel a pending request and free up the resources associated with that request. If the request has already returned or has not yet begun, calling this method has no effect.

111.20.4 Constructor


Function: The private constructor.

See also:

- 111.20.5 Constructor(control as MapKitViewControlMBS, coordinate as CLLocationCoordinate2DMBS) 16437
- 111.20.6 Constructor(control as MapKitViewControlMBS, latitude as Double, longitude as Double) 16438

111.20.5 Constructor(control as MapKitViewControlMBS, coordinate as CLLocationCoordinate2DMBS)


Function: Initializes the reverse geocoder with the specified coordinate value.

Notes: coordinate: The map coordinate whose placemark information you want to retrieve.

See also:

- 111.20.4 Constructor 16437
- 111.20.6 Constructor(control as MapKitViewControlMBS, latitude as Double, longitude as Double) 16438
**111.20.6 Constructor(control as MapKitViewControlMBS, latitude as Double, longitude as Double)**


**Function:** Initializes the reverse geocoder with the specified coordinate value.

**Notes:** coordinate: The map coordinate whose placemark information you want to retrieve.

See also:

- 111.20.4 Constructor 16437
- 111.20.5 Constructor(control as MapKitViewControlMBS, coordinate as CLLocationCoordinate2DMBS) 16437

**111.20.7 start**


**Function:** Starts the reverse-geocoding process asynchronously.

**Notes:** You should call this method only once to begin the reverse-geocoding process. This method submits the coordinate value to the map server asynchronously and returns. Once the process is complete, the results are delivered to the associated delegate object.

**111.20.8 Properties**

**111.20.9 coordinate as CLLocationCoordinate2DMBS**


**Function:** The coordinate whose placemark data you want to retrieve.

**Notes:** (Read only property)

**111.20.10 Handle as Integer**


**Function:** The internal object reference.

**Notes:** (Read and Write property)

**111.20.11 latitude as Double**


**Function:** The coordinate whose placemark data you want to retrieve.

**Notes:** (Read only property)
111.20. **CLASS MKREVERSEGEOCODERMB**

111.20.12 **longitude as Double**


**Function:** The coordinate whose placemark data you want to retrieve.

**Notes:** (Read only property)

111.20.13 **placemark as MKPlacemarkMBS**


**Function:** The result of the reverse-geocoding operation.

**Notes:**

The value of this property is nil by default. After a successful reverse-geocoding operation, it is set to the placemark object that was generated.

(Read only property)

111.20.14 **Querying as Boolean**


**Function:** A Boolean value indicating whether the receiver is in the middle of reverse-geocoding its coordinate.

**Notes:**

This property contains true if the process is ongoing or false if the process is done or has not yet been initiated.

(Read only property)
111.21 class MKShapeMBS

111.21.1 class MKShapeMBS


Function: The MKShape class is an abstract class that defines the basic properties for all shape-based annotation objects.

Notes:
This class must be subclassed and cannot be used as is. Subclasses are responsible for defining the geometry of the shape and providing an appropriate value for the coordinate property inherited from the MKAnnotation protocol.
Subclass of the MKAnnotationMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

111.21.2 Methods

111.21.3 Constructor


Function: The private constructor.
111.22. CLASS MKUSERLOCATIONMBS

111.22 class MKUserLocationMBS

111.22.1 class MKUserLocationMBS

Function: The MKUserLocation class defines a specific type of annotation that identifies the user’s current location.
Notes:
You do not create instances of this class directly. Instead, you retrieve an existing MKUserLocation object from the userLocation property of the map view displayed in your application.
Subclass of the MKAnnotationMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

111.22.2 Methods

111.22.3 Constructor

Function: The private constructor.

111.22.4 Properties

111.22.5 location as CLLocationMBS

Function: The current location of the device.
Notes:
This property contains nil if the map view is not currently showing the user location or if the user’s location has not yet been determined.
(Read only property)

111.22.6 updating as Boolean

Function: A Boolean value indicating whether the user’s location is currently being updated.
Notes: (Read only property)
111.23 class MKViewMBS

111.23.1 class MKViewMBS

Function: The class for a view.
Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

111.23.2 Methods

111.23.3 Constructor

Function: The private constructor.

111.23.4 Properties

111.23.5 className as string

Function: The name of this MKView class.
Notes: (Read only property)

111.23.6 classPath as string

Function: The path of this view class.
Notes: Useful for debugging to know what super classes the view has.
(Read only property)

111.23.7 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)
111.23.8 options as Dictionary

**Function:** The options dictionary.
**Notes:** (Read only property)

111.23.9 viewPrototypeName as String

**Function:** The view prototype name.
**Notes:** (Read only property)
Chapter 112

MarkDown

112.1 class MarkdownDocumentMBS

112.1.1 class MarkdownDocumentMBS

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. \textbf{Function:} The class to process markdown text.

112.1.2 Methods

112.1.3 Compile(flags as Integer = 0) as boolean


112.1.4 Constructor(data as string, flags as Integer = 0)


\textbf{Notes:}

Text should have \texttt{EndOfLine.Unix} as newline character.
Text must be in UTF-8 encoding to work best.

See also:

- 112.1.5 Constructor(file as folderitem, flags as Integer = 0)
112.1.5  Constructor(file as folderitem, flags as Integer = 0)

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new document with the content of the file.
**Notes:**
Text should have EndOfLine.Unix as newline character.
Text must be in UTF-8 encoding to work best.
See also:
- 112.1.4 Constructor(data as string, flags as Integer = 0)

112.1.6  CSS as string

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates CSS for the html code.

112.1.7  Document as string

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Generates HTML document.
**Notes:** Creates HTML if needed.

112.1.8  Footnotes as MarkdownFootnoteMBS()

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Queries list of foot notes.

112.1.9  GenerateCSS(File as folderitem) as Integer

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Generates a css file.
**Notes:** Returns number of bytes written. Or -1 on any error.

112.1.10  GenerateHTML(File as folderitem) as boolean

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Generates a html file.
112.1.11 Properties

112.1.12 Author as MarkdownLineMBS

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The author line. **Notes:** Can be nil if not used. (Read only property)

112.1.13 Code as MarkdownParagraphMBS

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Intermediate code generated by compile. **Notes:** (Read only property)

112.1.14 Compiled as Boolean

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether document is compiled already. **Notes:** (Read only property)

112.1.15 Date as MarkdownLineMBS

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The date line. **Notes:** Can be nil if not used. (Read only property)

112.1.16 ExtraFootnotePrefix as String

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The extra footnote prefix.
Notes: (Read and Write property)

112.1.17 Handle as Integer

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Internal object reference. **Notes:** (Read only property)

112.1.18 HasHTML as Boolean

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether html is available. **Notes:** Set to true when html is generated. (Read only property)

112.1.19 Title as MarkdownLineMBS

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The title line. **Notes:** Can be nil if not used. (Read only property)

112.1.20 URLBase as String

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The URL base. **Notes:** (Read and Write property)

112.1.21 Constants

112.1.22 kAutoLink = & h4000

MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the flag values. **Notes:** make http://foo.com link even without <>s
112.1.23  **kCDATA = & h80**
MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the flag values. 
**Notes:** generate code for xml ![CDATA [...]]

112.1.24  **kExtraFootnote = & h200000**
MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the flag values. 
**Notes:** Enable markdown extra-style footnotes.

112.1.25  **kInputMask = & h00030000**
MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the flag values.

112.1.26  **kIsLabel = & h08000000**
MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the flag values.

112.1.27  **kNoAlphaList = & h80000**
MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the flag values. 
**Notes:** Forbid alphabetic lists.

112.1.28  **kNoDivQuote = & h40000**
MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the flag values. 
**Notes:** Forbid >% class% blocks.

112.1.29  **kNoDList = & h100000**
MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the flag values. 
**Notes:** Forbid definition lists.
112.1.30  kNoExt = & h40

MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the flag values.  
**Notes:** Don’t allow pseudo-protocols.

112.1.31  kNoHeader = & h10000

MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the flag values.  
**Notes:** Don’t process header blocks.

112.1.32  kNoHTML = 8

MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the flag values.  
**Notes:** Don’t allow raw html through AT ALL

112.1.33  kNoImage = 2

MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the flag values.  
**Notes:** Don’t do image processing, block `<img>`.

112.1.34  kNoLinks = 1

MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the flag values.  
**Notes:** Don’t do link processing, block `<a>` tags.

112.1.35  kNoPants = 4

MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the flag values.  
**Notes:** don’t run smartypants.

112.1.36  kNoRelaxed = & h200

MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the flag values.  
**Notes:** emphasis happens /everywhere/
112.1.37  kNoStrikethrough = & h800

MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the flag values.  
**Notes:** Forbid strikethrough.

112.1.38  kNoSuperscript = & h100

MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the flag values.  
**Notes:** no A `B

112.1.39  kNoTables = & h400

MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the flag values.  
**Notes:** Disallow tables.

112.1.40  kSafeLink = & h8000

MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the flag values.  
**Notes:** Paranoid check for link protocol.

112.1.41  kStrict = & h10

MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the flag values.  
**Notes:** Disable SUPERSCRIPT, RELAXED_EMPHASIS.

112.1.42  kTabStop = & h20000

MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the flag values.  
**Notes:** Expand tabs to 4 spaces.

112.1.43  kTagText = & h20

MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the flag values.  
**Notes:** process text inside an html tag; no * <em>, no <bold>, no html or [ ] expansion
### 112.1.44 kTOC = & h1000

MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the flag values.  
**Notes:** Do table-of-contents processing.

### 112.1.45 kUserFlags = & h0FFFFFFFF

MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the flag values.
112.2   class MarkdownFootnoteMBS

112.2.1   class MarkdownFootnoteMBS

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for a foot note.
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

112.2.2   Methods

112.2.3   Constructor

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

112.2.4   Properties

112.2.5   Document as MarkdownDocumentMBS

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The back reference to the markdown document.
**Notes:** (Read only property)

112.2.6   Flags as Integer

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The flags.
**Notes:**
Can be zero or a combination of kFlagExtraBookmark and kFlagReferenced.
(Read only property)

112.2.7   Height as Integer

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The dimensions for image link.
**Notes:** (Read only property)
112.2.8 Link as String

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** What this footnote points to.  
**Notes:** (Read only property)

112.2.9 RefNumber as Integer

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The reference number.  
**Notes:** (Read only property)

112.2.10 Tag as String

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tag for the reference link.  
**Notes:** (Read only property)

112.2.11 Title as String

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The title of the footnode.  
**Notes:** (Read only property)

112.2.12 Width as Integer

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The dimensions for image link.  
**Notes:** (Read only property)

112.2.13 Constants

112.2.14 kFlagExtraBookmark = 1

MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the footnode flags.
112.2. CLASS MARKDOWNFOOTNOTE MBS

112.2.15 kFlagReferenced = 2

MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the footnode flags. **Notes:** Set if this footnote is referenced.
112.3 class MarkdownLineMBS

112.3.1 class MarkdownLineMBS

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for a line in the markdown text.
**Notes:**
Each input line is read into a Line, which contains the line, the offset of the first non-space character [ this
assumes that all tabs will be expanded to spaces! ], and a pointer to the next line.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

112.3.2 Methods

112.3.3 Constructor

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

112.3.4 Properties

112.3.5 Count as Integer

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The kind of this line.
**Notes:**
See kKind* constants.
(Read only property)

112.3.6 DLE as Integer

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The leading indent on the line.
**Notes:** (Read only property)
112.3.7 Document as MarkdownDocumentMBS

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The back reference to the markdown document.
**Notes:** (Read only property)

112.3.8 Flags as Integer

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Special attributes for this line.
**Notes:**
Can be combination of kFlag* constants.
(Read only property)

112.3.9 Kind as Integer

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The line type.
**Notes:**
See kKind* constants.
(Read only property)

112.3.10 NextLine as MarkdownLineMBS

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The next line.
**Notes:** (Read only property)

112.3.11 Text as String

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The text of the line.
**Notes:** (Read only property)
112.3.12 Constants

112.3.13 kFlagChecked = 2

MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the flag constants. **Notes:** The line was already processed.

112.3.14 kFlagPipeChar = 1

MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the flag constants. **Notes:** line contains a `|`

112.3.15 k_kindCode = 1

MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the kind values. **Notes:** Code

112.3.16 k_kindDash = 3

MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the kind values. **Notes:** Dash line

112.3.17 k_kindEqual = 5

MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the kind values. **Notes:** Equal line

112.3.18 k_kindHR = 2

MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the kind values. **Notes:** HR line
112.3. CLASS MARKDOWNLINEMBS

112.3.19  kKindText = 0

MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the kind values.  
**Notes:** Text line

112.3.20  kKindTilde = 4

MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the kind values.  
**Notes:** Tilde line
112.4  class MarkdownParagraphMBS

112.4.1  class MarkdownParagraphMBS

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class ofr a paragraph.

**Notes:**
A paragraph is a collection of Lines, with links to the next paragraph and (if it’s a QUOTE, UL, or OL) to
the reparsed contents of this paragraph.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

112.4.2  Methods

112.4.3  Constructor

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

112.4.4  Properties

112.4.5  Align as Integer

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The paragraph alignment.

**Notes:**
Can be kAlignPara, kAlignImplicit or kAlignCenter.
(Read only property)

112.4.6  Document as MarkdownDocumentMBS

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The back reference to the markdown document.

**Notes:** (Read only property)
112.4. **CLASS MARKDOWNPARAGRAPHMBS**

112.4.7 **Down as MarkdownParagraphMBS**

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Recompiled contents of this paragraph.  
**Notes:** (Read only property)

112.4.8 **hNumber as Integer**

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The header level for HDR.  
**Notes:** (Read only property)

112.4.9 **Ident as String**

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** ID tag for quote.  
**Notes:** (Read only property)

112.4.10 **Lang as String**

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** lang attribute for CODE  
**Notes:** (Read only property)

112.4.11 **NextParagraph as MarkdownParagraphMBS**

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The next paragraph.  
**Notes:** (Read only property)

112.4.12 **Text as MarkdownLineMBS**

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** All the text in this paragraph.  
**Notes:** (Read only property)
112.4.13 Typ as Integer

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The type of paragraph. 
**Notes:**
See kType* constants. 
(Read only property)

112.4.14 Constants

112.4.15 kAlignCenter = 2

MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the alignment constants. 
**Notes:** Center

112.4.16 kAlignImplicit = 0

MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the alignment constants. 
**Notes:** Implicit alignment

112.4.17 kAlignPara = 1

MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the alignment constants. 
**Notes:** Paragraph

112.4.18 kTypeAL = 9

MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the type codes. 
**Notes:** AL

112.4.19 kTypeCode = 1

MBS Tools Plugin, Plugin Version: 15.1. **Function:** One of the type codes. 
**Notes:** Code
112.4.20  \textbf{kTypeDL} = 6

MBS Tools Plugin, Plugin Version: 15.1. \textbf{Function}: One of the type codes.  
\textbf{Notes}: DL

112.4.21  \textbf{kTypeHDR} = 11

MBS Tools Plugin, Plugin Version: 15.1. \textbf{Function}: One of the type codes.  
\textbf{Notes}: HDR

112.4.22  \textbf{kTypeHR} = 12

MBS Tools Plugin, Plugin Version: 15.1. \textbf{Function}: One of the type codes.  
\textbf{Notes}: HR

112.4.23  \textbf{kTypeHTML} = 4

MBS Tools Plugin, Plugin Version: 15.1. \textbf{Function}: One of the type codes.  
\textbf{Notes}: HTML

112.4.24  \textbf{kTypeListItem} = 10

MBS Tools Plugin, Plugin Version: 15.1. \textbf{Function}: One of the type codes.  
\textbf{Notes}: ListItem

112.4.25  \textbf{kTypeMarkup} = 3

MBS Tools Plugin, Plugin Version: 15.1. \textbf{Function}: One of the type codes.  
\textbf{Notes}: Markup

112.4.26  \textbf{kTypeOL} = 8

MBS Tools Plugin, Plugin Version: 15.1. \textbf{Function}: One of the type codes.  
\textbf{Notes}: OL
112.4.27 \texttt{kTypeQuote} = 2

MBS Tools Plugin, Plugin Version: 15.1. \textbf{Function}: One of the type codes.  
\textbf{Notes}: Quote

112.4.28 \texttt{kTypeSource} = 14

MBS Tools Plugin, Plugin Version: 15.1. \textbf{Function}: One of the type codes.  
\textbf{Notes}: Source

112.4.29 \texttt{kTypeStyle} = 5

MBS Tools Plugin, Plugin Version: 15.1. \textbf{Function}: One of the type codes.  
\textbf{Notes}: Style

112.4.30 \texttt{kTypeTable} = 13

MBS Tools Plugin, Plugin Version: 15.1. \textbf{Function}: One of the type codes.  
\textbf{Notes}: Table

112.4.31 \texttt{kTypeUL} = 7

MBS Tools Plugin, Plugin Version: 15.1. \textbf{Function}: One of the type codes.  
\textbf{Notes}: UL

112.4.32 \texttt{kTypeWhitespace} = 0

MBS Tools Plugin, Plugin Version: 15.1. \textbf{Function}: One of the type codes.  
\textbf{Notes}: Whitespace
Chapter 113

Math

113.1  class BigNumberErrorExceptionMBS

113.1.1  class BigNumberErrorExceptionMBS

**Function:** The exception class for big number math.  
**Example:**

```vbnet
dim b as new BigNumberMBS(5)
dim c as BigNumberMBS = BigNumberMBS.Zero

// raises exception due to division by zero
dim x as BigNumberMBS = b/c
```

**Notes:**

Raised when operations fail due to division by zero, invalid numbers or overflow/underflow.  
Subclass of the RuntimeException class.
113.2  class BigNumberMBS

113.2.1  class BigNumberMBS

Function:  The class for a big number.
Notes:  This is floating point number with 320 bits, precise for over 100 digits before the dot.
So if you want to store currency or other values where rounding should not happen, better store values
multiplied, e.g. in cents.

Compared to normal double values, you have 5 times the bits.
And we check for math errors and raise exceptions if something goes wrong.

113.2.2  Methods

113.2.3  Abs as BigNumberMBS

Function:  Queries absolute value.
Example:

```vba
dim o as BigNumberMBS = new BigNumberMBS(-123)
dim z as BigNumberMBS = o.Abs
```

MsgBox z.StringValue

Notes:  Removes sign.

113.2.4  Add(other as BigNumberMBS, round as boolean = true) as BigNumberMBS

Function:  Adds a number.
Example:

```vba
dim x as new BigNumberMBS(2)
dim d as new BigNumberMBS(3)
dim p as BigNumberMBS = x.Add(d)
```

MsgBox p.StringValue  // shows 5
113.2.5 BitAnd(other as BigNumberMBS) as BigNumberMBS

**Function:** Calculates bitwise AND operation.  
**Example:**

```vbnet
Dim x As New BigNumberMBS(17)  
Dim y As New BigNumberMBS(16)  
Dim r As BigNumberMBS = x.BitAnd(y)  

MsgBox r.StringValue
```

113.2.6 BitOr(other as BigNumberMBS) as BigNumberMBS

**Function:** Calculates bitwise or operation.  
**Example:**

```vbnet
Dim x As New BigNumberMBS(17)  
Dim y As New BigNumberMBS(16)  
Dim r As BigNumberMBS = x.BitOr(y)  

MsgBox r.StringValue
```

113.2.7 BitXOr(other as BigNumberMBS) as BigNumberMBS

**Function:** Calculates bitwise xor operation.  
**Example:**

```vbnet
Dim x As New BigNumberMBS(17)  
Dim y As New BigNumberMBS(16)  
Dim r As BigNumberMBS = x.BitXOr(y)  

MsgBox r.StringValue
```
113.2.8 Constructor

**Function:** Initialize the number with zero value.
**Example:**
```
dim o as BigNumberMBS = new BigNumberMBS
MsgBox o.StringValue
```

See also:
- 113.2.9 Constructor(other as BigNumberMBS)
- 113.2.10 Constructor(value as Currency)
- 113.2.11 Constructor(value as Double)
- 113.2.12 Constructor(value as Int32)
- 113.2.13 Constructor(value as Int64)
- 113.2.14 Constructor(value as Single)
- 113.2.15 Constructor(value as String)
- 113.2.16 Constructor(value as UInt32)
- 113.2.17 Constructor(value as UInt64)

113.2.9 Constructor(other as BigNumberMBS)

**Function:** Initialize the number with other value.
**Example:**
```
dim o as BigNumberMBS = new BigNumberMBS(2.5)
dim c as BigNumberMBS = new BigNumberMBS(o)
MsgBox c.StringValue
```

See also:
- 113.2.8 Constructor
- 113.2.10 Constructor(value as Currency)
- 113.2.11 Constructor(value as Double)
113.2. **CLASS BIGNUMBERMBS**

- 113.2.12 Constructor(value as Int32)
- 113.2.13 Constructor(value as Int64)
- 113.2.14 Constructor(value as Single)
- 113.2.15 Constructor(value as String)
- 113.2.16 Constructor(value as UInt32)
- 113.2.17 Constructor(value as UInt64)

113.2.10 **Constructor(value as Currency)**


**Function:** Creates a new number object with a currency object.

**Example:**

```vba
dim v as Currency = 123.456
dim b as new BigNumberMBS(v)
MsgBox b.StringValue
```

See also:

- 113.2.8 Constructor
- 113.2.9 Constructor(other as BigNumberMBS)
- 113.2.11 Constructor(value as Double)
- 113.2.12 Constructor(value as Int32)
- 113.2.13 Constructor(value as Int64)
- 113.2.14 Constructor(value as Single)
- 113.2.15 Constructor(value as String)
- 113.2.16 Constructor(value as UInt32)
- 113.2.17 Constructor(value as UInt64)

113.2.11 **Constructor(value as Double)**


**Function:** Initialize the number with double value.

**Example:**

```vba
dim o as BigNumberMBS = new BigNumberMBS(2.5)
MsgBox str(o.DoubleValue)+" = "+str(o.StringValue)#ga
```
113.2.12 Constructor(value as Int32)


**Function:** Creates a new number with a 32-bit integer.

**Example:**

```vba
dim v as Int32 = 123
dim b as new BigNumberMBS(v)
MsgBox b.StringValue
```

See also:

- 113.2.8 Constructor
- 113.2.9 Constructor(other as BigNumberMBS)
- 113.2.10 Constructor(value as Currency)
- 113.2.11 Constructor(value as Double)
- 113.2.12 Constructor(value as Int32)
- 113.2.13 Constructor(value as Int64)
- 113.2.14 Constructor(value as Single)
- 113.2.15 Constructor(value as String)
- 113.2.16 Constructor(value as UInt32)
- 113.2.17 Constructor(value as UInt64)
113.2. CLASS BIGNUMBERMBS

113.2.13 Constructor(value as Int64)

Function: Creates a new number with a 64-bit integer.
Example:

dim v as Int64 = 123
dim b as new BigNumberMBS(v)
MsgBox b.StringValue

See also:

• 113.2.8 Constructor
• 113.2.9 Constructor(other as BigNumberMBS)
• 113.2.10 Constructor(value as Currency)
• 113.2.11 Constructor(value as Double)
• 113.2.12 Constructor(value as Int32)
• 113.2.14 Constructor(value as Single)
• 113.2.15 Constructor(value as String)
• 113.2.16 Constructor(value as UInt32)
• 113.2.17 Constructor(value as UInt64)

113.2.14 Constructor(value as Single)

Function: Creates a new number with a 32-bit floating point number.
Example:

dim v as Single = 123
dim b as new BigNumberMBS(v)
MsgBox b.StringValue

See also:

• 113.2.8 Constructor
• 113.2.9 Constructor(other as BigNumberMBS)
• 113.2.10 Constructor(value as Currency)
113.2.15 Constructor(value as String)


Function: Initialize the number with string value.

Example:

```vba
dim o as BigNumberMBS = new BigNumberMBS("123.456")
MsgBox o.StringValue
```

See also:

- 113.2.8 Constructor
- 113.2.9 Constructor(other as BigNumberMBS)
- 113.2.10 Constructor(value as Currency)
- 113.2.11 Constructor(value as Double)
- 113.2.12 Constructor(value as Int32)
- 113.2.13 Constructor(value as Int64)
- 113.2.14 Constructor(value as Single)
- 113.2.16 Constructor(value as UInt32)
- 113.2.17 Constructor(value as UInt64)

113.2.16 Constructor(value as UInt32)


Function: Creates a new number with an unsigned 32-bit integer.

Example:

```vba
dim v as UInt32 = 123
dim b as new BigNumberMBS(v)
```
113.2. CLASS BIGNUMBERMBS

MsgBox b.StringValue

See also:

- 113.2.8 Constructor
- 113.2.9 Constructor(other as BigNumberMBS)
- 113.2.10 Constructor(value as Currency)
- 113.2.11 Constructor(value as Double)
- 113.2.12 Constructor(value as Int32)
- 113.2.13 Constructor(value as Int64)
- 113.2.14 Constructor(value as Single)
- 113.2.15 Constructor(value as String)
- 113.2.17 Constructor(value as UInt64)

113.2.17 Constructor(value as UInt64)

Function: Creates a new number with an unsigned 32-bit integer.
Example:

dim v as UInt64 = 123
dim b as new BigNumberMBS(v)
MsgBox b.StringValue

See also:

- 113.2.8 Constructor
- 113.2.9 Constructor(other as BigNumberMBS)
- 113.2.10 Constructor(value as Currency)
- 113.2.11 Constructor(value as Double)
- 113.2.12 Constructor(value as Int32)
- 113.2.13 Constructor(value as Int64)
- 113.2.14 Constructor(value as Single)
- 113.2.15 Constructor(value as String)
- 113.2.16 Constructor(value as UInt32)
113.2.18 Divide(other as BigNumberMBS, round as boolean = true) as BigNumberMBS


**Function:** Divides the number.

**Example:**

```vba
dim x as new BigNumberMBS(8)
dim d as new BigNumberMBS(2)
dim p as BigNumberMBS = x.Divide(d)

MsgBox p.StringValue // shows 4
```

113.2.19 E as BigNumberMBS


**Function:** Returns a number with value zero.

**Example:**

```vba
dim b as BigNumberMBS = BigNumberMBS.e
MsgBox b.StringValue
```

113.2.20 Equals(other as BigNumberMBS) as Boolean


**Function:** Checks if two numbers are the same.

**Example:**

```vba
dim o as BigNumMBS = new BigNumMBS(123)
dim z as BigNumMBS = new BigNumMBS(123)

if o.Equals(z) then
    MsgBox "equal"
else
    Break // error
end if
```

**Notes:** Returns true if equal.
113.2. CLASS BIGNUMBERMBS

113.2.21 Exp(value as BigNumberMBS) as BigNumberMBS

**Function:** Calculates $e^\text{value}$.
**Example:**
```
    dim x as new BigNumberMBS(2)
    dim p as BigNumberMBS = BigNumberMBS.Exp(x)
```
```
    MsgBox p.StringValue  // shows $e^2 = 7.38$
```

113.2.22 Floor as BigNumberMBS

**Function:** Removes any fraction part.
**Example:**
```
    dim o as BigNumberMBS = new BigNumberMBS(2.3)
    dim s as BigNumberMBS = o.Floor
```
```
    MsgBox s.StringValue
```
```
    dim a as BigNumberMBS = new BigNumberMBS(-2.3)
    dim b as BigNumberMBS = a.Floor
```
```
    MsgBox b.StringValue
```

113.2.23 Frac as BigNumberMBS

**Function:** Extracts the fraction part.
**Example:**
```
    dim o as BigNumberMBS = new BigNumberMBS(2.5)
    dim s as BigNumberMBS = o.Frac
```
```
    MsgBox s.StringValue
```
```
    dim a as BigNumberMBS = new BigNumberMBS(-2.5)
    dim b as BigNumberMBS = a.Frac
```
```
    MsgBox b.StringValue
```
113.2.24 GetStringValue(Base as Integer = 10, scientific as boolean = false, scientificFrom as Integer = 15, round as Integer = -1, TrimZeros as Boolean = true, comma as String = ".") as String

**Function:** Queries string value.
**Example:**
```vba
dim o as new BigNumberMBS(1234)
// show as hex
MsgBox o.GetStringValue(16)
```
```vba
// show as number with comma and 3 digits
dim z as new BigNumberMBS(12.345)
MsgBox z.GetStringValue(10, false, 15, 3, true, ",")
```

**Notes:**
- **Base:** The base of the number system. Normally 10, but also 16 for hex is common.
- **scientific:** Whether to use scientific notation.
- **scientificFrom:** How many digits we show.
- **Round:** Whether to round to n digits.
- **TrimZeros:** Whether to trim unneeded zeros.
- **comma:** The character to use as decimal dot.

113.2.25 HalfPi as BigNumberMBS

**Function:** Returns a number with value pi/2.
**Example:**
```vba
dim b as BigNumberMBS = BigNumberMBS.HalfPi
MsgBox b.StringValue
```

113.2.26 Ln(value as BigNumberMBS) as BigNumberMBS

**Function:** Calculates natural logarithm.
113.2. CLASS BIGNUMBERMBS

Example:

```vbnet
dim x as new BigNumberMBS(2)
dim p as BigNumberMBS = BigNumberMBS.Ln(x)
MsgBox p.StringValue  // shows ln(2) = 0.69
```

113.2.27 Ln10 as BigNumberMBS

Function: Returns a number with value ln(10).
Example:

```vbnet
dim b as BigNumberMBS = BigNumberMBS.Ln10
MsgBox b/StringValue
```

113.2.28 Ln2 as BigNumberMBS

Function: Returns a number with value ln(2).
Example:

```vbnet
dim b as BigNumberMBS = BigNumberMBS.Ln2
MsgBox b.ToStringValue
```

113.2.29 Log(value as BigNumberMBS, base as BigNumberMBS) as BigNum-

erMBS

Function: Calculates logarithm in a given base.
Example:

```vbnet
dim x as new BigNumberMBS(100)
dim d as new BigNumberMBS(10)
dim p as BigNumberMBS = BigNumberMBS.Log(x, d)
MsgBox p.ToStringValue  // shows ln(100)/ln(10) = 2
```
113.2.30  Max as BigNumberMBS

Function: Returns a number with maximum value.
Example:

dim b as BigNumberMBS = BigNumberMBS.Min
MsgBox b.StringValue

113.2.31  Min as BigNumberMBS

Function: Returns a number with minimum value.
Example:

dim b as BigNumberMBS = BigNumberMBS.Min
MsgBox b.StringValue

113.2.32  Modulate(other as BigNumberMBS) as BigNumberMBS

Function: Modulates a number.
Example:

dim x as new BigNumberMBS(17)
dim y as new BigNumberMBS(3)
dim r as BigNumberMBS = x.Modulate(y)
MsgBox r.StringValue

Notes: Similar to mod keyword in Xojo.

113.2.33  Modulate2 as Integer

Function: Modulates by 2.
Example:

dim x as new BigNumberMBS(8)
dim y as new BigNumberMBS(9)
MsgBox str(x.Modulate2)+" "+str(y.Modulate2)

Notes: Returns 0 or 1.

113.2.34 Multiply(other as BigNumberMBS, round as boolean = true) as BigNumberMBS

Function: Multiplies two numbers.
Example:

dim x as New BigNumberMBS(8)
dim d as New BigNumberMBS(2)
dim p as BigNumberMBS = x.Multiply(d)

MsgBox p.StringValue // shows 16

See also:
- 113.2.35 Multiply(value as Integer) as BigNumberMBS
- 113.2.36 Multiply(value as UInt32) as BigNumberMBS

113.2.35 Multiply(value as Integer) as BigNumberMBS

Function: Multiply by an integer.
Example:

dim x as New BigNumberMBS(2)
dim p as BigNumberMBS = x.Multiply(3)

MsgBox p.StringValue // shows 6

See also:
- 113.2.34 Multiply(other as BigNumberMBS, round as boolean = true) as BigNumberMBS
- 113.2.36 Multiply(value as UInt32) as BigNumberMBS
113.2.36 Multiply(value as UInt32) as BigNumberMBS

Function: Multiply by an unsigned integer.
Example:

dim x as new BigNumberMBS(17)
dim r as BigNumberMBS = x.Multiply(3)

MsgBox r.StringValue

See also:
- 113.2.34 Multiply(other as BigNumberMBS, round as boolean = true) as BigNumberMBS
- 113.2.35 Multiply(value as Integer) as BigNumberMBS

113.2.37 Nan as BigNumberMBS

Function: Returns a number with value NaN.
Example:

dim b as BigNumberMBS = BigNumberMBS.Nan
MsgBox b.StringValue

113.2.38 Negate as BigNumberMBS

Function: Negates the number.
Example:

dim o as BigNumberMBS = new BigNumberMBS(123)
dim z as BigNumberMBS = o.Negate

MsgBox z.StringValue

113.2.39 NumberWithCurrency(value as Currency) as BigNumberMBS

Function: Creates a number with a currency value.
113.2. CLASS BIGNUMBERMBS

Example:

```vbnet
dim v as Currency = 123.456
dim b as BigNumberMBS = BigNumberMBS.NumberWithCurrency(v)
MsgBox b.StringValue
```

113.2.40 NumberWithDouble(value as Double) as BigNumberMBS


Function: Creates a number with a 64-bit floating number.

Example:

```vbnet
dim v as Double = 123.456
dim b as BigNumberMBS = BigNumberMBS.NumberWithDouble(v)
MsgBox b.StringValue
```

113.2.41 NumberWithInt32(value as Int32) as BigNumberMBS


Function: Creates a number with a signed 32-bit integer.

Example:

```vbnet
dim v as Int32 = 123
dim b as BigNumberMBS = BigNumberMBS.NumberWithInt32(v)
MsgBox b.StringValue
```

113.2.42 NumberWithInt64(value as Int64) as BigNumberMBS


Function: Creates a number with a signed 64-bit integer.

Example:

```vbnet
dim v as Int64 = 123
dim b as BigNumberMBS = BigNumberMBS.NumberWithInt64(v)
MsgBox b.StringValue
```
113.2.43    NumberWithInteger(value as Integer) as BigNumberMBS

Function: Creates a number with an integer.
Example:

    dim v as Integer = 123
    dim b as BigNumberMBS = BigNumberMBS.NumberWithInteger(v)

    MsgBox b.StringValue

113.2.44    NumberWithSingle(value as single) as BigNumberMBS

Function: Creates a number with an 32-bit floating point number.
Example:

    dim v as Single = 123
    dim b as BigNumberMBS = BigNumberMBS.NumberWithSingle(v)

    MsgBox b.StringValue

113.2.45    NumberWithString(value as String) as BigNumberMBS

Function: Creates a number with value from string.
Example:

    dim v as String = "123"
    dim b as BigNumberMBS = BigNumberMBS.NumberWithString(v)

    MsgBox b.StringValue

113.2.46    NumberWithUInt32(value as UInt32) as BigNumberMBS

Function: Creates a number with an unsigned 32-bit integer.
Example:

```vbnet
dim v as UInt32 = 123
dim b as BigNumberMBS = BigNumberMBS.NumberWithUInt32(v)
MsgBox b.StringValue
```

### 113.2.47 NumberWithUInt64(value as UInt64) as BigNumberMBS


**Function:** Creates a number with an unsigned 64-bit integer.

**Example:**

```vbnet
dim v as UInt64 = 123
dim b as BigNumberMBS = BigNumberMBS.NumberWithUInt64(v)
MsgBox b.StringValue
```

### 113.2.48 NumberWithUInteger(value as UInteger) as BigNumberMBS


**Function:** Creates a number with an unsigned integer.

**Example:**

```vbnet
dim v as UInteger = 123
dim b as BigNumberMBS = BigNumberMBS.NumberWithUInteger(v)
MsgBox b.StringValue
```

### 113.2.49 NumberWithVariant(value as Variant) as BigNumberMBS


**Function:** Creates a number based on a variant.

**Example:**

```vbnet
dim v as Variant = 123.456
dim b as BigNumberMBS = BigNumberMBS.NumberWithVariant(v)
MsgBox b.StringValue
```
Notes: Internally redirects to other NumberWith functions based on the value type.

113.2.50 One as BigNumberMBS

Function: Returns a number with value one.
Example:

```vbnet
dim b as BigNumberMBS = BigNumberMBS.One
MsgBox b.StringValue
```

113.2.51 Operator_Add(other as BigNumberMBS) as BigNumberMBS

Function: Adds a number.
Example:

```vbnet
dim a as new BigNumberMBS(3)
dim b as new BigNumberMBS(4)

// add
dim c as BigNumberMBS = a + b

MsgBox c.StringValue
```

113.2.52 Operator_AddRight(other as BigNumberMBS) as BigNumberMBS

Function: Adds a number.
Example:

```vbnet
dim a as new BigNumberMBS(3)
dim b as new BigNumberMBS(4)

// add
dim c as BigNumberMBS = a + b

MsgBox c.StringValue
```
113.2.53  Operator_Compare(other as BigNumberMBS) as Integer


Function: Compares two numbers.

Example:

```vbscript
    dim a as new BigNumberMBS(1.2)
    dim b as new BigNumberMBS(1.2)
    dim c as new BigNumberMBS(1.3)

    if a = b then
        // ok
    else
        break
    end if

    if a < c then
        // ok
    else
        Break
    end if

    if c > b then
        // ok
    else
        break
    end if
```

113.2.54  Operator_Convert as String


Function: Converts big number to string automatically.

Example:

```vbscript
    dim b as new BigNumberMBS
    dim n as Double = 5

    // convert from double to big number automatically
    b = n

    // convert to string automatically
    MsgBox b
```
### 113.2.55 Operator_Convert(value as String)


**Function:** Converts a string to a big number.

**Example:**

```vbnet
dim b as new BigNumberMBS
dim n as string = "5"

// convert from string to big number automatically
b = n

// convert to double automatically
dim d as Double = b
MsgBox str(d)
```

See also:

- 113.2.54 Operator_Convert as String

### 113.2.56 Operator_Divide(other as BigNumberMBS) as BigNumberMBS


**Function:** Divides two numbers.

**Example:**

```vbnet
dim a as new BigNumberMBS(9.3)
dim b as new BigNumberMBS(3.0)

dim r as New BigNumberMBS = a / b
MsgBox r.StringValue
```

### 113.2.57 Operator_DivideRight(other as BigNumberMBS) as BigNumberMBS


**Function:** Divides two numbers.
113.2.58  Operator_IntegerDivide(other as BigNumberMBS) as BigNumberMBS

Function: Calculates an integer divide.
Example:

dim a as new BigNumberMBS(9.3)
dim b as new BigNumberMBS(3.0)

dim r as BigNumberMBS = a \ b

MsgBox r.StringValue

Notes: Same as normal divide, but removes fraction part.

113.2.59  Operator_IntegerDivideRight(other as BigNumberMBS) as BigNumberMBS

Function: Calculates an integer divide.
Notes: Same as normal divide, but removes fraction part.

113.2.60  Operator_Modulo(other as BigNumberMBS) as BigNumberMBS

Function: Calculates the modulo of two numbers.
Example:

dim a as new BigNumberMBS(9.3)
dim b as new BigNumberMBS(3.0)

dim r as BigNumberMBS = a mod b

MsgBox r.StringValue
113.2.61 Operator_ModuloRight(other as BigNumberMBS) as BigNumberMBS

**Function:** Calculates the modulo of two numbers.

113.2.62 Operator_Multiply(other as BigNumberMBS) as BigNumberMBS

**Function:** Multiply two numbers. 
**Example:**

```vbnet
dim a as new BigNumberMBS(3)
dim b as new BigNumberMBS(4)

// just multiply
dim c as BigNumberMBS = a * b
```

MsgBox c.StringValue

113.2.63 Operator_MultiplyRight(other as BigNumberMBS) as BigNumberMBS

**Function:** Multiply two numbers.

113.2.64 Operator_Negate as BigNumberMBS

**Function:** Negates a number. 
**Example:**

```vbnet
dim a as new BigNumberMBS(3)

// negate
dim c as BigNumberMBS = -a
```

MsgBox c.StringValue
113.2.65 Operator\_Power(other as BigNumberMBS) as BigNumberMBS

**Function:** Calculates power of two numbers.
**Example:**
```vba
dim a as new BigNumberMBS(3)
dim b as new BigNumberMBS(4)

// pow
dim c as BigNumberMBS = a ^ b
```
```vba
MsgBox c.StringValue
```

113.2.66 Operator\_PowerRight(other as BigNumberMBS) as BigNumberMBS

**Function:** Calculates power of two numbers.

113.2.67 Operator\_Subtract(other as BigNumberMBS) as BigNumberMBS

**Function:** Subtracts one number from other.
**Example:**
```vba
dim a as new BigNumberMBS(3)
dim b as new BigNumberMBS(4)

// subtract
dim c as BigNumberMBS = a - b
```
```vba
MsgBox c.StringValue
```

113.2.68 Operator\_SubtractRight(other as BigNumberMBS) as BigNumberMBS

**Function:** Subtracts one number from other.
113.2.69 Pi as BigNumberMBS

**Function:** Returns a number with value pi.
**Example:**
```vbnet
dim b as BigNumberMBS = BigNumberMBS.Pi
MsgBox b.StringValue
```

113.2.70 Pow(other as BigNumberMBS) as BigNumberMBS

**Function:** Calculates the power of the number.
**Example:**
```vbnet
dim x as new BigNumberMBS(2)
dim o as new BigNumberMBS(5)
dim p as BigNumberMBS = x.Pow(o)
MsgBox p.StringValue // shows 32
```

113.2.71 Round as BigNumberMBS

**Function:** Rounds the number.
**Example:**
```vbnet
dim o as BigNumberMBS = new BigNumberMBS(2.3)
dim s as BigNumberMBS = o.Round
MsgBox s.StringValue
```
```vbnet
dim a as BigNumberMBS = new BigNumberMBS(-2.3)
dim b as BigNumberMBS = a.Round
MsgBox b.StringValue
```
113.2. SetStringValue(Text As String, Base as Integer, byref AfterText as String, Byref ValueRead as boolean)

Function: Parses number from string.
Example:

```vba
// set to 1.2 and show
dim o as new BigNumberMBS

dim after as string
dim ValueRead as Boolean

o.SetStringvalue "1.2 hello", 10, after, ValueRead

MsgBox "value: " + o.Stringvalue + EndofLine + "after: " + after
Break
```

Notes:
Returns also the text after the given text following the number.
Also sets ValueRead if a value was read.

113.2.73 Sqrt as BigNumberMBS

Function: Calculates the square root.
Example:

```vba
dim o as BigNumberMBS = new BigNumberMBS(256)
dim s as BigNumberMBS = o.Sqrt

MsgBox s.StringValue
```

113.2.74 Subtract(other as BigNumberMBS, round as boolean = true) as BigNumberMBS

Function: Subtracts a number.
Example:
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```vbs
Dim x As New BigNumberMBS(2)
Dim d As New BigNumberMBS(3)
Dim p As BigNumberMBS = x.Subtract(d)
MsgBox p.StringValue '// shows -1
```

### 113.2.75 TwoPi as BigNumberMBS

MBS DataTypes Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a number with value 2 * PI. **Example:**

```vbs
Dim b As BigNumberMBS = BigNumberMBS.TwoPi
MsgBox b.StringValue
```

### 113.2.76 Zero as BigNumberMBS

MBS DataTypes Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a number with value zero. **Example:**

```vbs
Dim b As BigNumberMBS = BigNumberMBS.Zero
MsgBox b.StringValue
```

### 113.2.77 Properties

### 113.2.78 CurrencyValue as Currency

MBS DataTypes Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets/Queries currency value. **Example:**

```vbs
Dim u As Currency = 1234.5678
Dim b As New BigNumberMBS(u)
MsgBox str(b.CurrencyValue)
```

**Notes:** (Read and Write property)
113.2. CLASS BIGNUMBERMBS

113.2.79 DoubleValue as Double

Function: Get or Set the double value.
Example:

```vba
dim o as BigNumberMBS = new BigNumberMBS(2.5)

MsgBox str(o.DoubleValue)+" = "+str(oStringValue)
```

Notes: (Read and Write property)

113.2.80 Int64Value as Int64

Function: Get/Set value as Int64.
Example:

```vba
dim u as Int64 = & h7FFFFFFFFFFFFFF // maximum Int64
dim b as new BigNumberMBS(u)
MsgBox str(b.Int64Value)

dim one as new BigNumberMBS(1)
b = b + one

// raises exception due to overflow
MsgBox str(b.Int64Value)
```

Notes: (Read and Write property)

113.2.81 IntegerValue as Integer

Function: Get or Set the integer value.
Example:

```vba
dim o as BigNumberMBS = new BigNumberMBS(2.5)

MsgBox str(o.IntegerValue)+" = "+str(o.StringValue)
```
113.2.82  **IsInteger as Boolean**

**Function:** Whether this number is an integer.  
**Example:**

```vba
    dim o as BigNumberMBS = new BigNumberMBS(1)
    dim z as BigNumberMBS = new BigNumberMBS(1.5)

    if o.IsInteger then
        MsgBox o.StringValue + " is integer"
    else
        break // error
    end if

    if z.IsInteger then
        break // error
    else
        MsgBox z.StringValue + " is not integer"
    end if
```

**Notes:**

If true, there are no digits after the dot.  
(Read only property)

---

113.2.83  **IsNan as Boolean**

**Function:** Whether this is an invalid number.  
**Example:**

```vba
    dim o as BigNumberMBS = BigNumberMBS.zero
    dim z as BigNumberMBS = BigNumberMBS.Nan

    if z.IsNan then
        MsgBox z.StringValue + " is NaN"
    else
        break // error
    end if
```
if o.IsNan then
break // error
else
MsgBox o,StringValue+" is not NaN"
end if

Notes: (Read only property)

113.2.84 IsNegative as Boolean

Function: Whether this value is negative.
Example:

dim o as BigNumberMBS = BigNumberMBS.one
dim z as BigNumberMBS = BigNumberMBS.one.Negate

if z.IsNegative then
MsgBox z,StringValue+" is negative"
else
break // error
end if

if o.IsNegative then
break // error
else
MsgBox o,StringValue+" is not negative"
end if

Notes: (Read only property)

113.2.85 IsZero as Boolean

Function: Checks if value is zero.
Example:

dim o as BigNumberMBS = BigNumberMBS.one
dim z as BigNumberMBS = BigNumberMBS.zero

if z.IsZero then
MsgBox z.StringValue + " is zero"
else
break // error
end if

if o.IsZero then
break // error
else
MsgBox o.StringValue + " is not zero"
end if

Notes: (Read only property)

113.2.86 StringValue as String

Function: Get or set string value of text.
Example:

// set to 1.2 and show
dim o as new BigNumberMBS("1.2")
MsgBox o.StringValue

// set to 2.3
o.StringValue = "2.3"
MsgBox o.StringValue

Notes: (Read and Write property)
See also:

- 113.2.89 StringValue(Base as Integer) as String

113.2.87 UInt64Value as UInt64

Function: Get/Set value as UInt64.
Example:

dim u as UInt64 = 12345678901234567890
dim b as new BigNumberMBS(u)
MsgBox str(b.UInt64Value)
113.2. CLASS BIGNUMBERMBS

Notes: (Read and Write property)

113.2.88 VariantValue as Variant

Function: Queries/Sets value with variant.
Notes:
Floating point values are given as Double.
Integer types as Int32, Int64 or UInt64.
If value exceeds the ranges of those data types, we fall back to string.

When setting, the value is converted to a big number similar to NumberWithVariant.
(Read and Write property)

113.2.89 StringValue(Base as Integer) as String

Function: Get/Set string value with a given base.
Example:
```
dim o as new BigNumberMBS(1234)

// show as hex
MsgBox o.StringValue(16)
```

Notes: (Read and Write computed property)
See also:
- 113.2.86 StringValue as String
113.3 Globals

113.3.1 IsValidCreditCardNumberMBS(Number as String) as boolean

Example:
MsgBox "test 49927398716 gives " + str(IsValidCreditCardNumberMBS(“49927398716”)) + EndOfLine + "test 49927398717 gives " + str(IsValidCreditCardNumberMBS(“49927398717”))

Notes:
This function implements the Luhn algorithm. This is a simple checksum formula used to validate a variety of identification numbers, such as credit card numbers, IMEI numbers, National Provider Identifier numbers in US and Canadian Social Insurance Numbers. Returns true on success or false on failure.

If this function returns false, you can be sure the number is not valid. But if the function returns true, you may want to check the number online with some database.

113.3.2 ACosHMBS(x as Double) as Double

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This function computes the inverse hyperbolic cosine of the real argument x.
Example:
MsgBox str(ACosHMBS(5))

Notes:
acosh(1) returns +0.
acosh(x) returns a NAN for x <1.
acosh(+infinity) returns +infinity.

113.3.3 ACosMBS(x as Double) as Double

MBS Util Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This function computes the principal value of the arc cosine of x in the range [ 0, pi ] .
Example:
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MsgBox str(ACosMBS(5))

Notes:
acos(1) returns +0.
acos(x) returns a NAN for |x| > 1.

113.3.4 ArithmeticShiftMBS(value as UInt64, count as Integer) as UInt64

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Does an arithmetic Shift of value and cares for the sign (+ or -).
**Example:**

msgbox str(ArithmeticShiftMBS(5,3))

// displays 40 which is 5*(2^3) = 5 * 8

Notes: Always using 32bit.

113.3.5 ASinHMBS(x as Double) as Double

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function computes the principal value of the arc sine of x in the range [-pi/2, +pi/2].
**Example:**

MsgBox str(ASinHMBS(5))

Notes:
asin(+-0) returns +-0.
asin(x) returns a NAN for |x| > 1.

113.3.6 ASinMBS(x as Double) as Double

MBS Util Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function computes the principal value of the arc sine of x in the range [-pi/2, +pi/2].
**Example:**
DECLARE ASINMBS(5)

Notes:

asin(+0) returns +0.
asin(x) returns a NAN for |x| > 1.

113.3.7 ATan2MBS(x as Double, y as Double) as Double

MBS Util Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function computes the principal value of the arc tangent of y/x, using the signs of both arguments to determine the quadrant of the return value.

**Example:**

MsgBox str(ATan2MBS(3,4))

Notes:

atan2(+0, -0) returns +pi.
atan2(+0, +0) returns +0.
atan2(+0, x) returns +pi for x < 0.
atan2(+0, x) returns +0 for x > 0.
atan2(y, +0) returns -pi/2 for y > 0.
atan2(-y, -infinity) returns +pi for finite y > 0.
atan2(-y, +infinity) returns +0 for finite y > 0.
atan2(+infinity, +x) returns +pi/2 for finite x.
atan2(+infinity, -infinity) returns +3*pi/4.
atan2(+infinity, +infinity) returns +pi/4.

113.3.8 ATanHMBS(x as Double) as Double

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function computes the inverse hyperbolic tangent of the real argument x.

**Example:**

MsgBox str(ATanHMBS(5))

Notes:

atanh(+0) returns +0.
atanh(+1) returns +infinity.
atanh(x) returns a NaN for \( |x| > 1 \).

### 113.3.9 ATanMBS(x as Double) as Double

MBS Util Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The atan() function computes the principal value of the arc tangent of x in the range \([-\pi/2, +\pi/2]\).  
**Example:**
MsgBox str(ATanMBS(5))

**Notes:**
atan(+0) returns +0.
atan(+infinity) returns +\(\pi/2\).

### 113.3.10 BitClearMBS(value as UInt64, mask as UInt64) as UInt64

MBS Util Plugin, Plugin Version: 6.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Clears the bits in the mask from the value.  
**Example:**
MsgBox bin(BitClearMBS(& b1111, & b0110)) // 1001

**Notes:** Does not work for 64 bit integers.

### 113.3.11 BitCountMBS(value as UInt64) as Integer

MBS Util Plugin, Plugin Version: 6.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Counts the number of bits set.  
**Example:**
MsgBox str(BitCountMBS(& b101)) // 2  
MsgBox str(BitCountMBS(& b10101)) // 5  
MsgBox str(BitCountMBS(& b111111111100001111)) // 16  
MsgBox str(BitCountMBS(& hFFFFFFFF)) // 32

**Notes:** Does not work for 64 bit integers.
113.3.12 BitExclMBS(value as UInt64, bitNumber as Integer) as UInt64

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Does an bitwiseAnd using the value and bitwisenot of 2^bitNumber.
Or: Switches off the bit bitNumber inside value.

**Example:**
```
msgBox str(BitExclMBS(80,4))
```

' displays 64 which is 80 without 16 = 2^4+2^5 without 2^4

**Notes:** Always using 64-bit.

113.3.13 BitInclMBS(value as UInt64, bitNumber as Integer) as UInt64

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Does an bitwiseOr using the value and 2^bitNumber
Or: Switches on the bit bitNumber inside value.

**Example:**
```
msgBox str(BitInclMBS(64,4))
```

' displays 80 which is 64 + 16 = 64 + 2^4

**Notes:** Always using 64-bit.

113.3.14 BitIsSetMBS(value as UInt64, bitNumber as Integer) as Boolean

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Tests whether a certain bit is set inside the value

**Example:**
```
dim bool as boolean

bool=BitIsSetMBS(80,4)
` true, because 2^4=16 is included in 80=2^4+2^6
```

**Notes:** Always using 64-bit.
113.3.15 **BitValMBS**(bitNumber as Integer) as UInt64

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns $2^{\text{bitNumber}}$

**Example:**

```plaintext
msgBox str(BitValMBS(5))
' displays 32
```

**Notes:** Always using 64-bit.

113.3.16 **BitwiseDiffMBS**(x as UInt64, y as UInt64) as UInt64

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns all bits of val1 which are not in val2.

**Example:**

```plaintext
msgBox str(BitwiseDiffMBS(65,80))
' displays 1, because 65=$2^0+2^5$ includes $1=2^0$, which is not part of $80=2^4+2^5$.
```

**Notes:** Always using 32bit.

113.3.17 **BitwiseNAndMBS**(x as UInt64, y as UInt64) as UInt64

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** negates both values and does bitwiseAnd on them.

**Example:**

```plaintext
msgBox str(bitwiseNandMBS(65,80))
' displays -82
```

**Notes:** Always using 32bit.

113.3.18 **BitwiseNOrMBS**(x as UInt64, y as UInt64) as UInt64

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** negates both values and does bitwiseOr on them.

**Example:**

```plaintext

```
msgBox str(bitwisenorMBS(65,80))
' displays -65

Notes: Always using 32bit.

113.3.19 BitwiseNotMBS(value as UInt64) as UInt64

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Does an bitwise negation of value.
**Example:**
msgBox str(BitwiseNotMBS(5))
' displays -6

Notes: Always using 32bit.

113.3.20 BitwiseRotateMBS(value as UInt64, count as Integer, offset as Integer, width as Integer) as UInt64

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Does an bitwise rotation of value.
**Example:**
msgBox str(BitwiseRotateMBS(5,2,0,32))
' displays 20

Notes: Always using 32bit.

113.3.21 ConvertFromFloat16MBS(Number as UInt16) as Single

MBS Util Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Converts a 16bit floating point number to a 32bit floating point number.
**Example:**
dim h1 as UInt16 = ConvertToFloat16MBS(1.0)
dim f1 as single = ConvertFromFloat16MBS(h1) // should be 1.0
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```vbnet
Dim h2 As UInt16 = ConvertToFloat16MBS(-1.0)
Dim f2 As Single = ConvertFromFloat16MBS(h2) ' should be -1.0

Dim h3 As UInt16 = ConvertToFloat16MBS(1000.0)
Dim f3 As Single = ConvertFromFloat16MBS(h3) ' should be 1000.0

Dim h4 As UInt16 = ConvertToFloat16MBS(-1000.0)
Dim f4 As Single = ConvertFromFloat16MBS(h4) ' should be -1000.0

Dim inf As Single = 65504.0
Dim h5 As UInt16 = ConvertToFloat16MBS(inf)
Dim f5 As Single = ConvertFromFloat16MBS(h5) ' should be 65504

Dim nan As Single = Sqrt(-1)
Dim h6 As UInt16 = ConvertToFloat16MBS(nan)
Dim f6 As Single = ConvertFromFloat16MBS(h6) ' should be NAN

Break ' check in debugger
```

113.3.2 ConvertToFloat16MBS(Number As Single) as UInt16

MBS Util Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Converts a 32bit floating point number to a 16bit floating point number. **Example:**

```vbnet
Dim h1 As UInt16 = ConvertToFloat16MBS(1.0)
Dim f1 As Single = ConvertFromFloat16MBS(h1) ' should be 1.0

Dim h2 As UInt16 = ConvertToFloat16MBS(-1.0)
Dim f2 As Single = ConvertFromFloat16MBS(h2) ' should be -1.0

Dim h3 As UInt16 = ConvertToFloat16MBS(1000.0)
Dim f3 As Single = ConvertFromFloat16MBS(h3) ' should be 1000.0

Dim h4 As UInt16 = ConvertToFloat16MBS(-1000.0)
Dim f4 As Single = ConvertFromFloat16MBS(h4) ' should be -1000.0
```
dim inf as single = 65504.0
dim h5 as UInt16 = ConvertToFloat16MBS(inf)
dim f5 as single = ConvertFromFloat16MBS(h5) // should be 65504

dim nan as single = sqrt(-1)
dim h6 as UInt16 = ConvertToFloat16MBS(nan)
dim f6 as single = ConvertFromFloat16MBS(h6) // should be NAN

Break // check in debugger

Notes: This loses precision as 16bit fit less bits than 32 bit.

113.3.23 CosHMBS(x as Double) as Double

MBS Util Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This function computes the hyperbolic cosine of x.
**Example:**
MsgBox str(CosHMBS(5))

Notes:
cosh(+0) returns 1.
cosh(+infinity) returns +infinity.

113.3.24 CosMBS(x as Double) as Double

MBS Util Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This function computes the cosine of x (measured in radians).
**Example:**
MsgBox str(CosMBS(5))

Notes:
cos(+0) returns 1.
cos(+infinity) returns a NaN.
113.3.25 CurrencyAddMBS(value1 as Currency, value2 as Currency) as Currency

MBS Util Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds two currency values. **Notes:** This function uses 64bit integer math to avoid rounding issues.

113.3.26 CurrencyDivMBS(value1 as Currency, value2 as Integer) as Currency

MBS Util Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Divides currency value by integer. **Notes:** Rest is ignored. This function uses 64bit integer math to avoid rounding issues.

113.3.27 CurrencyMulMBS(value1 as Currency, value2 as Integer) as Currency

MBS Util Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Multiplies currency value with integer. **Example:**

```xojo
dim c1 as Currency = 1234567890.1234

// in xojo
dim c3 as Currency = c1 * 12345

// with plugin
dim c4 as Currency = CurrencyMulMBS(c1, 12345)

// verify by 64bit math
dim c5 as Int64 = 12345678901234
dim c6 as int64 = c5 * 12345

// and plugin is correct
MsgBox str(c3)+" "+str(c4)+" "+str(c6)
```

**Notes:** This function uses 64bit integer math to avoid rounding issues.
113.3.28 CurrencySubMBS(value1 as Currency, value2 as Currency) as Currency

MBS Util Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Subtracts value2 from value1. **Notes:** This function uses 64bit integer math to avoid rounding issues.

113.3.29 CurrencyValueMBS(value as string) as Currency

MBS Util Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Parses string into currency value. **Notes:** Replacement for val() which works better with large numbers and raises exceptions on errors.

113.3.30 DoubleToExtendedStrMBS(x as Double) as string

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the double as an 80bit Float stored inside a ten byte string. **Example:**

```vba
dim s as string
dim d as Double
d=5
s=DoubleToExtendedStrMBS(d)
msgBox s
d=extendedStrToDoubleMBS(s)
msgBox str(d)
```

**Notes:** Returns "" if there is not enough memory to create the string.

113.3.31 Exp2MBS(x as Double) as Double

MBS Util Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function computes 2^x, the base-2 exponential of x. **Example:**

MsgBox str(Exp2MBS(5))

**Notes:**
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exp2(+-0) return 1.
exp2(-infinity) return +0.
exp2(+infinity) return +infinity.

113.3.32 ExpMBS(x as Double) as Double

MBS Util Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This function computes e^x, the base-e exponential of x. Example:
MsgBox str(ExpMBS(5))

Notes:
exp(+0) return 1.
exp(-infinity) return +0.
exp(+infinity) return +infinity.

113.3.33 ExtendedStrToDoubleMBS(v as string) as Double

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the 80bit Float as a double. Example:
dim s as string
dim d as Double
d=5
s=DoubleToExtendedStrMBS(d)
msgBox s
d=extendedStrToDoubleMBS(s)
msgBox str(d)

Notes:
Returns NAN (255) if the string is not valid. e.g. "". Returns always NAN on Windows.
113.3.34 FacMBS(x as Integer) as Double

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calculates (value!).

**Example:**

```vba
Sub Open()
    // Fill a listbox with Fac values:
    Dim x As Integer
    Dim y As Double
    For x = 1 To 100
        ListBox1.AddItem Format(x, "0")
        y = FacMBS(x)
        If y = 0 Then
            Exit
        Else
            ListBox1( letztenIndex, 1) = Format(y, "0")
        End If
    Next
End Sub
```

**Notes:**

```vba
MsgBox str(FacMBS(5))
' displays 120 which is 1*2*3*4*5
```

113.3.35 FloorMBS(x as Double) as Double

MBS Util Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function returns the largest integral value less than or equal to x.

**Example:**

```vba
MsgBox str(FloorMBS(5.45))
```

**Notes:**

```vba
floor(+-0) returns +-0.
floor(+-infinity) returns +-infinity.
```
113.3.36  **FRExpMBS(inputx as Double, byref expValue as Integer) as Double**

MBS Util Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:** Breaks floating-point number into normalized fraction and power of 2.  
**Example:**

```vba
dim x as Double = 123.456

dim y as Integer
dim r as Double = FRExpMBS(x, y)

MsgBox str(x)+"": ""+str(y)+""""+str(r)
```

**Notes:**
This function breaks the floating-point number value into a normalized fraction and an integral power of 2. They store the integer in the int object pointed to by exp.

The functions return a number x such that x has a magnitude in the interval [ 1/2, 1) or 0, and value = x*(2^exp).

frexp(+0, exp) returns +0, and stores 0 in the object pointed to by exp.

frexp(+infinity, exp) returns +infinity, and stores an unspecified value in the object pointed to by exp.

frexp(Nan, exp) returns a Nan, and stores an unspecified value in the object pointed to by exp.

113.3.37  **HiWordMBS(i as Integer) as Integer**

MBS Util Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:** Returns the high word part of the integer.  
**Example:**

```vba
MsgBox hex(HiWordMBS(&H12345678)) // shows 1234
```

**Notes:** equal to bitwiseshiftright(i,16)
113.3.38 **HypotMBS(x as Double, y as Double) as Double**

MBS Util Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function computes the $\sqrt{x^2+y^2}$ without undue overflow or underflow. **Example:**

MsgBox str(HypotMBS(3,4)) // shows 5

**Notes:**

- hypot(x, y), hypot(y, x), and hypot(x, -y) are equivalent.
- hypot(x, +0) is equivalent to fabs(x).
- hypot(+-infinity, y) returns +infinity even if y is a NaN.

113.3.39 **IsFiniteMBS(x as Double) as boolean**

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if the parameter is finite. **Example:**

```vbnet
dim x as Double
x=1/0
if not IsFiniteMBS(x) then
    msgbox "the result is Infinite."
end if
```

113.3.40 **IsInfMBS(x as Double) as boolean**

MBS Util Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if the double passed in is an infinity value. **Example:**

```vbnet
dim e as Double = 0.0000000000000000000000000000000000000000000000001
dim d as Double = 1.0/e/e/e/e/e/e
MsgBox str(d)+" is inf: "+str(IsInfMBS(d))
```
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113.3.41 **IsNANMBS(x as Double) as boolean**

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if the parameter is not a number.

**Example:**

```vba
dim x as Double
x=sqrt(-1)
if isnanMBS(x) then
  msgbox "the square root of -1 is not correct."
end if
```

113.3.42 **Log10MBS(x as Double) as Double**

MBS Util Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function computes the value of the logarithm of argument x to base 10.

**Example:**

```vba
MsgBox str(Log10MBS(5))
```

**Notes:**

- \( \log_{10}(1) \) return +0.
- \( \log_{10}(x) \) return a NaN for \( x < 0 \).
- \( \log_{10}(+\infty) \) return +\( \infty \).

113.3.43 **Log2MBS(x as Double) as Double**

MBS Util Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function computes the value of the logarithm of argument x to base 2.

**Example:**

```vba
MsgBox str(Log2MBS(5))
```

**Notes:**

- \( \log_{2}(1) \) return +0.
- \( \log_{2}(x) \) return a NaN for \( x < 0 \).
- \( \log_{2}(+\infty) \) return +\( \infty \).
113.3.44  **LogicalShiftMBS**(value as UInt64, count as Integer) as UInt64

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Does an logical Shift of value and doesn’t take care for the sign (+ or -).

**Example:**

```
msgbox str(LogicalShiftMBS(5,3))
```

**Notes:** Always using 32bit.

113.3.45  **LogMBS**(x as Double) as Double

MBS Util Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function computes the value of the logarithm of argument x to base e.

**Example:**

```
MsgBox str(LogMBS(5))
```

**Notes:**

- \( \log(1) \) return +0.
- \( \log(x) \) return a NaN for \( x < 0 \).
- \( \log(+\infty) \) return +\( \infty \).

113.3.46  **LoWordMBS**(i as Integer) as Integer

MBS Util Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the low word part of the integer.

**Example:**

```
MsgBox hex(LoWordMBS(& H12345678))  // shows 5678
```

**Notes:** equal to bitwiseand(i, & HFFFF)

113.3.47  **PowMBS**(x as Double, y as Double) as Double

MBS Util Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function computes x raised to the power y.
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Example:

MsgBox str(PowMBS(5,5))

Notes:

`pow(+0, y)` returns `+infinity` for `y` an odd integer `<0.`
`pow(+0, y)` returns `+infinity` for `y` `<0` and not an odd integer.
`pow(+0, y)` returns `+0` for `y` an odd integer `>0`.
`pow(+0, y)` returns `+0` for `y` `>0` and not an odd integer.
`pow(-1, +infinity)` returns `1`.
`pow(1, y)` returns `1` for any `y`, even a NaN.
`pow(x, +0)` returns `1` for any `x`, even a NaN.
`pow(x, y)` returns a NaN for finite `x` `<0` and finite non-integer `y`.
`pow(x, -infinity)` returns `+infinity` for `| x | <1`.
`pow(x, -infinity)` returns `+0` for `| x | >1`.
`pow(x, +infinity)` returns `+infinity` for `| x | >1`.
`pow(-infinity, y)` returns `-0` for `y` an odd integer `<0`.
`pow(-infinity, y)` returns `+0` for `y` `<0` and not an odd integer.
`pow(-infinity, y)` returns `-infinity` for `y` an odd integer `>0`.
`pow(-infinity, y)` returns `+infinity` for `y` `>0` and not an odd integer.
`pow(+infinity, y)` returns `+0` for `y` `<0`.
`pow(+infinity, y)` returns `+infinity` for `y` `>0`.

Range errors may occur.

113.3.48 RoundMBS(x as Double, decimals as Integer = 0) as Double

MBS Util Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
This function returns the integral value nearest to `x` rounding half-way cases away from zero, regardless of the current rounding direction.
Example:

MsgBox str(RoundMBS(5,5))

dim lines(-1) as string

for i as Integer = -5 to 5
    lines.Append str(i)+" : "+Format(RoundMBS(123456789.123456789, i), "0.000000")
next

MsgBox join(lines,EndOfLine)
113.3.49 SinHMBS(x as Double) as Double

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function computes the hyperbolic sine of x.
**Example:**
MsgBox str(SinHMBS(5.5))

**Notes:**
sinh(+0) returns +0.
sinh(+infinity) returns +infinity.

113.3.50 SinMBS(x as Double) as Double

MBS Util Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function computes the sine of x (measured in radians).
**Example:**
MsgBox str(SinMBS(5.5))

**Notes:**
sin(+0) returns +0.
sin(+infinity) returns a NaN.

113.3.51 SqrtMBS(x as Double, y as Double) as Double

MBS Util Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This function compute the yth root of x.
**Example:**

dim r,x,y as Double
r=SqrtMBS(x,y)
// r^y=x
Notes:
sqrt(-0) returns -0.
sqrt(x,y) returns a NaN if the root can’t be calculated.

### 113.3.52 \textbf{TanHMBS}(x \text{ as }\text{ Double}) \text{ as Double}

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. \textbf{Function:} This function computes the hyperbolic tangent of x.

\textbf{Example:}

\texttt{MsgBox str(TanHMBS(5.5))}

\begin{itemize}
  \item tanh(+-0) returns +-0.
  \item tanh(+-infinity) returns +-1.
\end{itemize}

### 113.3.53 \textbf{TanMBS}(x \text{ as }\text{ Double}) \text{ as Double}

MBS Util Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. \textbf{Function:} This function computes the tangent of x (measured in radians).

\textbf{Example:}

\texttt{MsgBox str(TanMBS(5.5))}

\begin{itemize}
  \item tan(+-0) returns +-0.
  \item tan(+-infinity) returns a NaN.
\end{itemize}

### 113.3.54 \textbf{DoubleToInt64MBS}(value \text{ as }\text{ Double}) \text{ as }\text{ Int64}

MBS Util Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. \textbf{Function:} Converts a double value to Int64.
113.3.55 DoubleToUInt64MBS(value as Double) as UInt64

MBS Util Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Converts a double value to UInt64 correctly.

**Example:**

```java
// set d to a very high UInt64 value
dim d as Double = pow(256.0, 8.0) - 10000

// RB will convert to Int64 here! so number is cut to 9... instead of 18...
dim u1 as UInt64 = d

// plugin does it right
dim u2 as UInt64 = DoubleToUInt64MBS(d)

MsgBox str(u1) + " " + str(u2)
```

**Notes:** Real Studio converts UInt64 to Double with an intermediate Int64 which breaks big numbers. This function does it correctly.

113.3.56 Int64ToDoubleMBS(value as Int64) as Double

MBS Util Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Converts an Int64 to Double.

113.3.57 UInt64ToDoubleMBS(value as UInt64) as Double

MBS Util Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Converts an UInt64 to Double.

**Example:**

```java
dim d as Double = 18446744073709541376
MsgBox str(d) // fails

dim e as Double = UInt64ToDoubleMBS(18446744073709541376)
MsgBox str(e) // works
```

**Notes:** Real Studio likes to use Int64 internally when doing math with UInt64, so we added this method to fix it.
113.4  class SplineMBS

113.4.1  class SplineMBS

This class calculates a 2D cubic spline. Function:

Notes: The curve goes smooth through all points.

113.4.2  Methods

113.4.3  a(index as Integer) as Double

Function:
The constant part of the coefficient.

113.4.4  b(index as Integer) as Double

Function:
The 1st order coefficient.

113.4.5  c(index as Integer) as Double

Function:
The 2nd order coefficient.

113.4.6  calc(x as Double) as Double

Function:
Calculates the Y value on the spline for a given X value.

113.4.7  Constructor(X() as Double, Y() as Double)

Function:
The constructor.
Raises an exception for invalid arrays passed, e.g. different size.
Calculates the spline curve coefficients and sets count property.

### 113.4.8 d(index as Integer) as Double

MBS Util Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The 3rd order coefficient.

### 113.4.9 x(index as Integer) as Double

MBS Util Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The x value for this coefficient.

### 113.4.10 y(index as Integer) as Double

MBS Util Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The y value for this coefficient.

### 113.4.11 Properties

### 113.4.12 count as Integer

MBS Util Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The number of coefficients.
**Notes:** (Read and Write property)
113.5. **MODULE SUNTIMESMBS**

### 113.5 module SunTimesMBS

MBS Util Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A helper module to calculate sunset/sunrise times.

**Example:**

// may be an hour off due to daylight saving time

dim d as new date

dim jd as Double = SunTimesMBS.CalcJulianDate(d.day, d.Month, d.Year)

// Koblenz, Germany
const latitude = 50.356667
const longitude = 7.593889

// Miami, FL
'const latitude = 25.787778
'const longitude = -80.224167

dim sr as Double = SunTimesMBS.CalcSunriseUTC(jd, latitude, longitude)
dim ss as Double = SunTimesMBS.CalcSunsetUTC (jd, latitude, longitude)


d.gmtoffset = 0
d.hour = 0
d.minute = 0
d.second = 0

dim base as Double = d.totalseconds
d.totalseconds = sr* 60 + base

MsgBox "Sunrise: " +d.longdate+" " +d.longtime

d.totalseconds = ss* 60 + base

MsgBox "Sunset: " +d.longdate+" " +d.longtime

**Notes:** The example code above works well, but seems not to take into account the daylight saving time.
113.5.2 Methods

113.5.3 CalcJulianDate(day as Integer, month as Integer, year as Integer) as Double


113.5.4 CalcSunriseUTC(JD as Double, latitude as Double, longitude as Double) as Double

Notes:
Returns time on date in minutes.
Use CalcJulianDate to calculate the JD parameter.

113.5.5 CalcSunsetUTC(JD as Double, latitude as Double, longitude as Double) as Double

Notes:
Returns time on date in minutes.
Use CalcJulianDate to calculate the JD parameter.
Chapter 114

Media Keys

114.1 class MediaKeysMBS

114.1.1 class MediaKeysMBS


Function: Catch some special keys with this class.

Example:

```plaintext
dim m as MediaKeysMBS // global property!

// app initialization
m = new MediaKeysMBS

// set which keys to watch for
m.Keys(MediaKeysMBS.kMediaKeyEject) = MediaKeysMBS.kModeEventAndBlock

// and start
m.startWatchingMediaKeys
```

Notes:
First written to catch play, fast and rewind keys from Apple keyboards.
Later extended to also catch other keys.
Still not all keys are available on all keyboards.

Please have only instance of this class running your application.
114.1.2 Methods

114.1.3 Constructor

Function: Initializes the key watcher.

114.1.4 Keys(keyCode as Integer) as Integer

Function: Which keys should be intercepted and handled by your application.
Example:

dim m as new MediaKeysMBS // your MediaKeys object

// watch for this key
m.Keys(MediaKeysMBS.kMediaKeyEject) = MediaKeysMBS.kModeEventAndBlock

Notes: (Read and Write computed property)

114.1.5 startWatchingMediaKeys

Function: Starts watching for keys.
Example:

dim m as MediaKeysMBS // global property!

// app initialization
m = new MediaKeysMBS

m.Keys(MediaKeysMBS.kMediaKeyEject) = MediaKeysMBS.kModeEventAndBlock
m.startWatchingMediaKeys

114.1.6 stopWatchingMediaKeys

Function: Stops watching for keys.
Example:
114.1. CLASS MEDIAKEYSMBS

\[\text{dim m as MediaKeysMBS} \quad // \text{global property}\]

// when closing media window
m.stopWatchingMediaKeys

Notes: The destructor calls this for cleanup.

114.1.7 Events

114.1.8 receivedMediaKeyEvent(e as NSEventMBS, keyCode as Integer, keyFlags as Integer, keyState as Integer, keyRepeat as Integer)


Function: The event called when the user uses one of the special keys we listen for.

Notes:
If you don’t get the event, did you make sure all conditions are right?

- Requires Mac OS X 10.5
- Keys(x) set to kModeEventAndBlock or kModeEventAndPass for the keys you need?
- startWatchingMediaKeys called?
- your object is still alive in your application?

114.1.9 Constants

114.1.10 kMediaKeyBrightnessDown = 3

MBS MacFrameworks Plugin, Plugin Version: 11.2. Function: One of the key constants.

Example:
\[\text{dim m as new MediaKeysMBS} \quad // \text{your MediaKeys object}\]

// watch for this key
m.Keys(MediaKeysMBS.kMediaKeyBrightnessDown) = MediaKeysMBS.kModeEventAndBlock
114.1.11  \texttt{kMediaKeyBrightnessUp} = 2

MBS MacFrameworks Plugin, Plugin Version: 11.2. \textbf{Function:} One of the key constants. 
\textbf{Example:}

\begin{verbatim}
dim m as new MediaKeysMBS // your MediaKeys object

  // watch for this key
m.Keys(MediaKeysMBS.kMediaKeyBrightnessUp) = MediaKeysMBS.kModeEventAndBlock
\end{verbatim}

114.1.12  \texttt{kMediaKeyCapsLock} = 4

MBS MacFrameworks Plugin, Plugin Version: 11.2. \textbf{Function:} One of the key constants. 
\textbf{Example:}

\begin{verbatim}
dim m as new MediaKeysMBS // your MediaKeys object

  // watch for this key
m.Keys(MediaKeysMBS.kMediaKeyCapsLock) = MediaKeysMBS.kModeEventAndBlock
\end{verbatim}

\textbf{Notes:} Caps Lock

114.1.13  \texttt{kMediaKeyContrastDown} = 12

MBS MacFrameworks Plugin, Plugin Version: 11.2. \textbf{Function:} One of the key constants. 
\textbf{Example:}

\begin{verbatim}
dim m as new MediaKeysMBS // your MediaKeys object

  // watch for this key
m.Keys(MediaKeysMBS.kMediaKeyContrastDown) = MediaKeysMBS.kModeEventAndBlock
\end{verbatim}

114.1.14  \texttt{kMediaKeyContrastUp} = 11

MBS MacFrameworks Plugin, Plugin Version: 11.2. \textbf{Function:} One of the key constants. 
\textbf{Example:}

\begin{verbatim}
dim m as new MediaKeysMBS // your MediaKeys object

  // watch for this key
\end{verbatim}
114.1. CLASS MEDIAKEYSMBS

m.Keys(MediaKeysMBS.kMediaKeyContrastUp) = MediaKeysMBS.kModeEventAndBlock

114.1.15  kMediaKeyDownArrow = 9

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the key constants. **Example:**

dim m as new MediaKeysMBS // your MediaKeys object

    // watch for this key
m.Keys(MediaKeysMBS.kMediaKeyDownArrow) = MediaKeysMBS.kModeEventAndBlock

114.1.16  kMediaKeyEject = 14

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the key constants. **Example:**

dim m as new MediaKeysMBS // your MediaKeys object

    // watch for this key
m.Keys(MediaKeysMBS.kMediaKeyEject) = MediaKeysMBS.kModeEventAndBlock

**Notes:** Eject key

114.1.17  kMediaKeyFast = 19

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the key constants. **Example:**

dim m as new MediaKeysMBS // your MediaKeys object

    // watch for this key
m.Keys(MediaKeysMBS.kMediaKeyFast) = MediaKeysMBS.kModeEventAndBlock

**Notes:** Fast key. On by default.
114.1.18  kMediaKeyHelp = 5

MBS MacFrameworks Plugin, Plugin Version: 11.2.  **Function:** One of the key constants.  
**Example:**

dim m as new MediaKeysMBS  // your MediaKeys object

    // watch for this key
m.Keys(MediaKeysMBS.kMediaKeyHelp) = MediaKeysMBS.kModeEventAndBlock


114.1.19  kMediaKeyIlluminationDown = 22

MBS MacFrameworks Plugin, Plugin Version: 11.2.  **Function:** One of the key constants.  
**Example:**

dim m as new MediaKeysMBS  // your MediaKeys object

    // watch for this key
m.Keys(MediaKeysMBS.kMediaKeyIlluminationDown) = MediaKeysMBS.kModeEventAndBlock


114.1.20  kMediaKeyIlluminationToggle = 23

MBS MacFrameworks Plugin, Plugin Version: 11.2.  **Function:** One of the key constants.  
**Example:**

dim m as new MediaKeysMBS  // your MediaKeys object

    // watch for this key
m.Keys(MediaKeysMBS.kMediaKeyIlluminationToggle) = MediaKeysMBS.kModeEventAndBlock


114.1.21  kMediaKeyIlluminationUp = 21

MBS MacFrameworks Plugin, Plugin Version: 11.2.  **Function:** One of the key constants.  
**Example:**

dim m as new MediaKeysMBS  // your MediaKeys object

    // watch for this key
m.Keys(MediaKeysMBS.kMediaKeyIlluminationUp) = MediaKeysMBS.kModeEventAndBlock
114.1.22  

**kMediaKeyLaunchPanel = 13**

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the key constants. **Example:**

```vbnet
dim m as new MediaKeysMBS // your MediaKeys object

// watch for this key
m.Keys(MediaKeysMBS.kMediaKeyLaunchPanel) = MediaKeysMBS.kModeEventAndBlock
```

114.1.23  

**kMediaKeyMute = 7**

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the key constants. **Example:**

```vbnet
dim m as new MediaKeysMBS // your MediaKeys object

// watch for this key
m.Keys(MediaKeysMBS.kMediaKeyMute) = MediaKeysMBS.kModeEventAndBlock
```

**Notes:** Sound Mute

114.1.24  

**kMediaKeyNext = 17**

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the key constants. **Example:**

```vbnet
dim m as new MediaKeysMBS // your MediaKeys object

// watch for this key
m.Keys(MediaKeysMBS.kMediaKeyNext) = MediaKeysMBS.kModeEventAndBlock
```
114.1.25  kMediaKeyNumLock = 10

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the key constants. **Example:**

```plaintext
dim m as new MediaKeysMBS // your MediaKeys object

// watch for this key
m.Keys(MediaKeysMBS.kMediaKeyNumLock) = MediaKeysMBS.kModeEventAndBlock
```

**Notes:** Num Lock key

114.1.26  kMediaKeyPlay = 16

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the key constants. **Example:**

```plaintext
dim m as new MediaKeysMBS // your MediaKeys object

// watch for this key
m.Keys(MediaKeysMBS.kMediaKeyPlay) = MediaKeysMBS.kModeEventAndBlock
```

**Notes:** Play key. On by default.

114.1.27  kMediaKeyPower = 6

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the key constants. **Example:**

```plaintext
dim m as new MediaKeysMBS // your MediaKeys object

// watch for this key
m.Keys(MediaKeysMBS.kMediaKeyPower) = MediaKeysMBS.kModeEventAndBlock
```

**Notes:** Power Key
114.1. CLASS MEDIAKEYSMBS

114.1.28  kMediaKeyPrevious = 18

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the key constants.

**Example:**

dim m as new MediaKeysMBS // your MediaKeys object

    // watch for this key
    m.Keys(MediaKeysMBS.kMediaKeyPrevious) = MediaKeysMBS.kModeEventAndBlock

**Notes:** Previous key

114.1.29  kMediaKeyRewind = 20

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the key constants.

**Example:**

dim m as new MediaKeysMBS // your MediaKeys object

    // watch for this key
    m.Keys(MediaKeysMBS.kMediaKeyRewind) = MediaKeysMBS.kModeEventAndBlock

**Notes:** Rewind Key. On by default.

114.1.30  kMediaKeySoundDown = 1

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the key constants.

**Example:**

dim m as new MediaKeysMBS // your MediaKeys object

    // watch for this key
    m.Keys(MediaKeysMBS.kMediaKeySoundDown) = MediaKeysMBS.kModeEventAndBlock

**Notes:** Sound down
114.1.31  kMediaKeySoundUp = 0

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the key constants.
**Example:**

```vbnet
dim m as new MediaKeysMBS ' your MediaKeys object

' watch for this key
m.Keys(MediaKeysMBS.kMediaKeySoundUp) = MediaKeysMBS.kModeEventAndBlock
```

**Notes:** Sound up

114.1.32  kMediaKeyUpArrow = 8

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the key constants.
**Example:**

```vbnet
dim m as new MediaKeysMBS ' your MediaKeys object

' watch for this key
m.Keys(MediaKeysMBS.kMediaKeyUpArrow) = MediaKeysMBS.kModeEventAndBlock
```

114.1.33  kMediaKeyVideoMirror = 15

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the key constants.
**Example:**

```vbnet
dim m as new MediaKeysMBS ' your MediaKeys object

' watch for this key
m.Keys(MediaKeysMBS.kMediaKeyVideoMirror) = MediaKeysMBS.kModeEventAndBlock
```

114.1.34  kModeBlock = 1

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the mode constants.
**Notes:** Block the event.
114.1. CLASS MEDIAKEYSMBS

114.1.35  kModeEventAndBlock = 2

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the mode constants. **Notes:** Call the receivedMediaKeyEvent event and block the event.

114.1.36  kModeEventAndPass = 3

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the mode constants. **Notes:** Call the receivedMediaKeyEvent event and pass the event to other applications.

114.1.37  kModePass = 0

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the mode constants. **Notes:** Pass event to other applications.
Chapter 115

MediaLibrary

115.1  class MLMediaGroupMBS

115.1.1  class MLMediaGroupMBS


Function: The MLMediaGroup class provides groupings for media objects from a single source of media, such as iTunes or Aperture.

Notes:

The media objects — individual files containing a piece of media such as a photo, song, or movie — are referenced by one or more groups within each media source. These groupings serve as filters, providing hierarchical structure to the collection of objects in each source.

The structure of the group hierarchy is specific to each media source, but all sources have certain commonalities. For example, every source has a single root media group, which contains all groups and objects within that source. It is the highest-level parent group in the hierarchy and each of its descendant groups contains its own subgroups and their objects. All groups have a reference to their parent within the hierarchy. A group with no descendants contains only its own objects. If a media group does not contain any objects, it is not visible in the hierarchy.

A media group has an array of attributes which can change at any point. For example, a media group may have certain attributes that describe its objects, but these attributes appear only after the objects for that group have been loaded. When any media group attribute changes, observers are notified via KVO notification. For information about handling attributes that change, see Cocoa Bindings Programming Topics.

Every media group has a unique identifier as well as a type identifier. In certain cases, multiple groups within a source can have the same type identifier. For descriptions of group type identifiers, see MediaLibrary Constants.

All MLMediaGroup properties are read-only, so this information can be accessed but not altered.
115.1.2 Methods

115.1.3 childGroups as MLMediaGroupMBS()

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A list of child groups contained in the media group.

115.1.4 Constructor

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.

115.1.5 mediaObjects as MLMediaObjectMBS()

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A list of media objects in the media group. **Notes:** This accessor property is nonblocking. If there is no data yet, it returns nil and automatically triggers an internal asynchronous request. A KVO notification will be sent via the main thread when data arrives.

115.1.6 MLAertureAllPhotosTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Aperture media source. **Notes:** The media group that represents all photos in Aperture.

115.1.7 MLAertureAllProjectsTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Aperture media source. **Notes:** The media group that represents all projects in Aperture.
115.1.8  MLApertureFacebookAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Aperture media source. **Notes:** A media group that represents a Facebook album that is visible in Aperture.

115.1.9  MLApertureFacebookGroupTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Aperture media source. **Notes:** A media group that represents a Facebook user account in Aperture. A Facebook user account contains one or more Facebook albums.

115.1.10  MLApertureFacesAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Aperture media source. **Notes:** A media group that represents a Faces album in Aperture. Individual Faces albums are nested in the main Faces album.

115.1.11  MLApertureFlaggedTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Aperture media source. **Notes:** The media group that represents the album of flagged media in Aperture.

115.1.12  MLApertureFlickrAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Aperture media source. **Notes:** A media group that represents a Flickr album that is visible in Aperture.

115.1.13  MLApertureFlickrGroupTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Aperture media source. **Notes:** A media group that represents a Flickr user account in Aperture. A Flickr user account contains
one or more Flickr albums.

115.1.14 MLApertureFolderAlbumTypeIdentifier as String


115.1.15 MLApertureLastImportAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the identifiers for media group types in the Aperture media source. Notes: The media group that represents the last import album in Aperture.

115.1.16 MLApertureLastNMonthsAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the identifiers for media group types in the Aperture media source. Notes: The media group that represents the recent content album in Aperture, known as the Last N Months album. The value for N is usually 12 (settable in Aperture >Preferences >General).

115.1.17 MLApertureLastViewedEventAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the identifiers for media group types in the Aperture media source. Notes: The media group that represents the last viewed event in Aperture.

115.1.18 MLApertureLightTableTypeIdentifier as String

115.1.19  MLAperturePhotoStreamAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Aperture media source. **Notes:** A media group that represents a photo stream in Aperture.

115.1.20  MLAperturePlacesAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Aperture media source. **Notes:** The media group that represents the Places album in Aperture.

115.1.21  MLAperturePlacesCityAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Aperture media source. **Notes:** A media group that represents a Places album for a city in Aperture. A city album is nested in a province or state album.

115.1.22  MLAperturePlacesCountryAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Aperture media source. **Notes:** A media group that represents a Places album for a country in Aperture. A country album is nested in the main Places album.

115.1.23  MLAperturePlacesPointOfInterestAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Aperture media source. **Notes:** A media group that represents a Places album for a point-of-interest in Aperture. A point of interest album is nested in a city album.

115.1.24  MLAperturePlacesProvinceAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Aperture media source.
Notes: A media group that represents a Places album for a province or state in Aperture. A province or state album is nested in a country album.

### 115.1.25 MLAperatureProjectAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Aperture media source. **Notes:** A media group that represents a project in Aperture.

### 115.1.26 MLAperatureProjectFolderAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Aperture media source. **Notes:** A media group that represents a folder within a project in Aperture.

### 115.1.27 MLAperatureRootGroupTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Aperture media source. **Notes:** The root media group for Aperture.

### 115.1.28 MLAperatureSlideShowTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Aperture media source. **Notes:** The media group that represents a slideshow in Aperture.

### 115.1.29 MLAperatureSmugMugAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Aperture media source. **Notes:** A media group that represents a SmugMug album that is visible in Aperture.
115.1.30  MLApertureSmugMugGroupTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Aperture media source. **Notes:** A media group that represents a SmugMug user account in Aperture. A SmugMug user account contains one or more SmugMug albums.

115.1.31  MLApertureUserAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Aperture media source. **Notes:** A media group that represents a user-created album in Aperture.

115.1.32  MLApertureUserSmartAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Aperture media source. **Notes:** A media group that represents a user-created smart album in Aperture.

115.1.33  MLFinalCutEventCalendarGroupTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Final Cut Pro media source. **Notes:** A media group that represents a collection of events from a specific time period in Final Cut Pro.

115.1.34  MLFinalCutEventGroupTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Final Cut Pro media source. **Notes:** A media group that represents an event in Final Cut Pro.

115.1.35  MLFinalCutEventLibraryGroupTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Final Cut Pro media source. **Notes:** The media group that represents the event library in Final Cut Pro. The event library contains all event calendar groups.
115.1.36 **MLFinalCutFolderGroupTypeIdentifier as String**

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Final Cut Pro media source. **Notes:** A media group that represents a folder in Final Cut Pro.

115.1.37 **MLFinalCutProjectGroupTypeIdentifier as String**

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Final Cut Pro media source. **Notes:** A media group that represents a project in Final Cut Pro.

115.1.38 **MLFinalCutRootGroupTypeIdentifier as String**

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Final Cut Pro media source. **Notes:** The root media group for Final Cut Pro.

115.1.39 **MLFolderGroupTypeIdentifier as String**

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in folder-based media sources. **Notes:** A media group that represents a folder in folder-based media.

115.1.40 **MLFolderRootGroupTypeIdentifier as String**

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in folder-based media sources. **Notes:** The root media group for folder-based media.

115.1.41 **MLGarageBandFolderGroupTypeIdentifier as String**

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the GarageBand media source. **Notes:** A media group that represents a folder in GarageBand.
115.1.42  MLGarageBandRootGroupTypeIdentifier as String


115.1.43  MLIMovieEventCalendarGroupTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the identifiers for media group types in the iMovie media source. Notes: A media group that represents a collection of events from a specific time period in iMovie.

115.1.44  MLI.MovieEventGroupTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the identifiers for media group types in the iMovie media source. Notes: A media group that represents an event in iMovie.

115.1.45  MLI.MovieEventLibraryGroupTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the identifiers for media group types in the iMovie media source. Notes: The media group that represents the event library in iMovie. The event library contains all event calendar groups.

115.1.46  MLI.MovieFolderGroupTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the identifiers for media group types in the iMovie media source. Notes: A media group that represents a folder in iMovie.

115.1.47  MLI.MovieProjectGroupTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the identifiers for media group types in the iMovie media source. Notes: A media group that represents a project in iMovie.
115.1.48  MLI.MovieRootGroupTypeIdentifier as String


115.1.49  MLI.PhotoAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the identifiers for media group types in the iPhoto media source. Notes: A media group that represents an album in iPhoto.

115.1.50  MLI.PhotoEventAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the identifiers for media group types in the iPhoto media source. Notes: A media group that represents an event in iPhoto.

115.1.51  MLI.PhotoEventsFolderTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the identifiers for media group types in the iPhoto media source. Notes: The media group that represents the Events album in iPhoto.

115.1.52  MLI.PhotoFacebookAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the identifiers for media group types in the iPhoto media source. Notes: A media group that represents a Facebook album that is visible in iPhoto.

115.1.53  MLI.PhotoFacebookGroupTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the identifiers for media group types in the iPhoto media source. Notes: A media group that represents a Facebook user account in iPhoto. A Facebook user account contains one or more Facebook albums.
115.1.54 **MLiPhotoFacesAlbumTypeIdentifier** as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the iPhoto media source. **Notes:** A media group that represents a Faces album in iPhoto. Individual Faces albums are nested in the main Faces album.

115.1.55 **MLiPhotoFlaggedAlbumTypeIdentifier** as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the iPhoto media source. **Notes:** The media group that represents the album of flagged media in iPhoto.

115.1.56 **MLiPhotoFlickrAlbumTypeIdentifier** as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the iPhoto media source. **Notes:** A media group that represents a Flickr album that is visible in iPhoto.

115.1.57 **MLiPhotoFlickrGroupTypeIdentifier** as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the iPhoto media source. **Notes:** A media group that represents a Flickr user account in iPhoto. A Flickr user account contains one or more Flickr albums.

115.1.58 **MLiPhotoFolderAlbumTypeIdentifier** as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the iPhoto media source. **Notes:** A media group that represents a folder in iPhoto.

115.1.59 **MLiPhotoLastImportAlbumTypeIdentifier** as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the iPhoto media source. **Notes:** The media group that represents the Last Import album in iPhoto.
115.1.60  MLiPhotoLastNMonthsAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the iPhoto media source. **Notes:** The media group that represents the recent content album in iPhoto, known as the Last N Months album. The value for N is usually 12 (settable in iPhoto > Preferences > General).

115.1.61  MLiPhotoLastViewedEventAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the iPhoto media source. **Notes:** The media group that represents the last viewed event in iPhoto.

115.1.62  MLiPhotoLibraryAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the iPhoto media source. **Notes:** The media group that represents the Photos album in iPhoto.

115.1.63  MLiPhotoPhotoStreamAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the iPhoto media source. **Notes:** A media group that represents a photo stream in iPhoto.

115.1.64  MLiPhotoPlacesAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the iPhoto media source. **Notes:** The media group that represents the Places album in iPhoto.

115.1.65  MLiPhotoPlacesCityAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the iPhoto media source. **Notes:** A media group that represents a Places album for a city in iPhoto. A city album is nested in a province or state album.
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115.1.66  MLIPhotoPlacesCountryAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the iPhoto media source. **Notes:** A media group that represents a Places album for a country in iPhoto. A country album is nested in the main Places album.

115.1.67  MLIPhotoPlacesPointOfInterestAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the iPhoto media source. **Notes:** A media group that represents a Places album for a point-of-interest in iPhoto. A point of interest album is nested in a city album.

115.1.68  MLIPhotoPlacesProvinceAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the iPhoto media source. **Notes:** A media group that represents a Places album for a province or state in iPhoto. A province or state album is nested in a country album.

115.1.69  MLIPhotoRootGroupTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the iPhoto media source. **Notes:** The root media group for iPhoto.

115.1.70  MLIPhotoSlideShowAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the iPhoto media source. **Notes:** A media group that represents a slideshow album in iPhoto.

115.1.71  MLIPhotoSmartAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the iPhoto media source.
Notes: A media group that represents a smart album in iPhoto.

115.1.72  MLiPhotoSubscribedAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the identifiers for media group types in the iPhoto media source. Notes: A media group that represents a subscribed album in iPhoto.

115.1.73  MLiTunesAudioBooksPlaylistTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the identifiers for media group types in the iTunes media source. Notes: The media group that represents the Audio Books playlist in iTunes.

115.1.74  MLiTunesFolderPlaylistTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the identifiers for media group types in the iTunes media source. Notes: A media group that represents a folder in iTunes.

115.1.75  MLiTunesGeniusPlaylistTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the identifiers for media group types in the iTunes media source. Notes: A media group that represents a genius playlist in iTunes.

115.1.76  MLiTunesiTunesUPlaylistTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the identifiers for media group types in the iTunes media source. Notes: The media group that represents the iTunes U playlist in iTunes.

115.1.77  MLiTunesMoviesPlaylistTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the identifiers for media group types in the iTunes media source.
115.1. CLASS MLMEDIAGROUPMBS

Notes: The media group that represents the Movies playlist in iTunes.

115.1.78 MLiTunesMusicPlaylistTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the identifiers for media group types in the iTunes media source. Notes: The media group that represents the Music playlist in iTunes.

115.1.79 MLiTunesMusicVideosPlaylistTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the identifiers for media group types in the Logic media source. Notes: Music videos playlist

115.1.80 MLiTunesPlaylistTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the identifiers for media group types in the iTunes media source. Notes: A media group that represents a user-created playlist in iTunes.

115.1.81 MLiTunesPodcastPlaylistTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the identifiers for media group types in the iTunes media source. Notes: The media group that represents the Podcast playlist in iTunes.

115.1.82 MLiTunesPurchasedPlaylistTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the identifiers for media group types in the iTunes media source. Notes: The media group that represents the Purchased playlist in iTunes.

115.1.83 MLiTunesRootGroupTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the identifiers for media group types in the iTunes media source.
115.84  **MLiTunesSavedGeniusPlaylistTypeIdentifier as String**

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the iTunes media source. **Notes:** A media group that represents a saved genius playlist in iTunes.

115.85  **MLiTunesSmartPlaylistTypeIdentifier as String**

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the iTunes media source. **Notes:** A media group that represents a smart playlist in iTunes.

115.86  **MLiTunesTVShowsPlaylistTypeIdentifier as String**

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the iTunes media source. **Notes:** The media group that represents the TV Shows playlist in iTunes.

115.87  **MLiTunesVideoPlaylistTypeIdentifier as String**

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Logic media source. **Notes:** Video Playlist

115.88  **MLLogicBouncesGroupTypeIdentifier as String**

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Logic media source. **Notes:** The media group that represents all bounces in Logic.

115.89  **MLLogicProjectsGroupTypeIdentifier as String**

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Logic media source.
115.1. CLASS MLMEDIAGROUPMBS

Notes: The media group that represents all projects in Logic.

115.1.90  MLLogicProjectTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the identifiers for media group types in the Logic media source. Notes: A media group that represents a project in Logic. Projects may be nested.

115.1.91  MLLogicRootGroupTypeIdentifier as String


115.1.92  MLPhotosAlbumsGroupTypeIdentifier as String


115.1.93  MLPhotosAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the identifiers for media group types in the Photos media source. Notes: A media group that represents an album in Photos.

115.1.94  MLPhotosAllCollectionsGroupTypeIdentifier as String


115.1.95  MLPhotosAllMomentsGroupTypeIdentifier as String

115.1.96  **MLPhotosAllPhotosAlbumTypeIdentifier as String**

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Photos media source.

115.1.97  **MLPhotosAllYearsGroupTypeIdentifier as String**

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Photos media source.

115.1.98  **MLPhotosAnimatedGroupTypeIdentifier as String**

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Photos media source.

115.1.99  **MLPhotosBurstGroupTypeIdentifier as String**

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Photos media source.

115.1.100  **MLPhotosCollectionGroupTypeIdentifier as String**

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Photos media source.

115.1.101  **MLPhotosDepthEffectGroupTypeIdentifier as String**

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Photos media source.

115.1.102  **MLPhotosFacesAlbumTypeIdentifier as String**

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Photos media source.
115.1.103 MLPhotosFavoritesGroupTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Photos media source.

115.1.104 MLPhotosFolderTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Photos media source.

115.1.105 MLPhotosFrontCameraGroupTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Photos media source.

115.1.106 MLPhotosLastImportGroupTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Photos media source.

115.1.107 MLPhotosLivePhotosGroupTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Photos media source.

115.1.108 MLPhotosLongExposureGroupTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Photos media source.

115.1.109 MLPhotosMomentGroupTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Photos media source.
115.1.110 MLPhotosMyPhotoStreamTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Photos media source.

115.1.111 MLPhotosPanoramasGroupTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Photos media source.

115.1.112 MLPhotosPublishedAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Photos media source.

115.1.113 MLPhotosRootGroupTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Photos media source.
**Notes:** The root media group for Photos.

115.1.114 MLPhotosScreenshotGroupTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Photos media source.

115.1.115 MLPhotosSharedGroupTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Photos media source.

115.1.116 MLPhotosSharedPhotoStreamTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Photos media source.
115.1.117  MLPhotosSloMoGroupTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Photos media source.

Notes: A media group that represents a slo-mo type in Photos.

115.1.118  MLPhotosSmartAlbumTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Photos media source.

Notes: A media group that represents a smart album in Photos.

115.1.119  MLPhotosTimelapseGroupTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Photos media source.

115.1.120  MLPhotosVideosGroupTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Photos media source.

115.1.121  MLPhotosYearGroupTypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for media group types in the Photos media source.

115.1.122  Properties

115.1.123  Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Internet object reference.

Notes: (Read and Write property)
115.1.124  IconImage as NSImageMBS

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The media groups icon. Notes: (Read only property)

115.1.125  Identifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: An identifier for the media group. Notes: Each groups identifier is unique within a media source. (Read only property)

115.1.126  MediaLibrary as MLMediaLibraryMBS

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A pointer to the media library instance that loaded the media groups source. Notes: (Read only property)

115.1.127  MediaSourceIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: An identifier for the source that loaded the media group. Notes: (Read only property)

115.1.128  ModificationDate as Date

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The date and time when the media group was last altered. Notes: (Read only property)

115.1.129  Name as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The name of the media group. Notes:
This string is human-readable. It is either user created (such as the name of an iTunes playlist) or already localized.
(Read only property)

115.1.130 Parent as MLMediaGroupMBS

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The media groups parent group.
**Notes:** (Read only property)

115.1.131 Properties as Dictionary

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A dictionary of attributes describing the media group.
**Notes:**
These attributes are usually defined by the source app, such as iTunes. For example, an iTunes playlist is represented as a group. iTunes attaches attributes such as "Playlist Persistent ID" to the group in its attributes. The attribute names vary based on the media source. Attributes common to all sources are called out as separate properties.
(Read only property)

115.1.132 TypeIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An identifier for the media groups type.
**Notes:**
Multiple groups within a media source can have the same type identifier. For descriptions of group type identifiers, see MediaLibrary Constants.
(Read only property)

115.1.133 URL as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The location of the media group.
**Notes:**
Some groups do not have a URL, in which case this returns nil. For example, a group that represents a filesystem folder on disk has a URL, but a group that represents a named face in iPhoto does not.
(Read only property)
115.2. **CLASS MLMEDIALIBRARYMBS**

### 115.2 class MLMediaLibraryMBS

**Function:** The MLMediaLibrary class provides an interface for accessing a collection of media objects from various sources.

**Notes:**

It serves as the initial access point of the Media Library framework.

The media library structure is defined by MLMediaSource, MLMediaGroup, and MLMediaObject classes. At the highest level, all content within a media library instance is categorized by media source. Conceptually, a media source represents a single app, such as iTunes or Aperture. Each source contains a hierarchy of media groups that originates from a root group. These groups consist of media objects—individual files containing a piece of media such as a photo, song, or movie. Only one copy of each object exists within a media library instance, but an object can be referenced by multiple groups from a single source. The structure of the group hierarchy is specific to each media source.

A media library is initialized using the Constructor. The options argument to this method serves as a filter. By specifying which folders or sources to include or exclude during load, you can view a particular subset of groups and objects from your collection. All objects provided are thread-safe. For descriptions of possible load options, see Load Options Keys.

The typical and most efficient use case is to create and use one instance of MLMediaLibrary for the lifetime of an app. When the underlying media files and metadata on the user’s system change, the corresponding data model objects (media groups and media objects) are automatically updated and KVO notifications are sent to notify the calling code of any changes. Multiple instances of MLMediaLibrary can be created and used, but their sources, groups, and objects will be independent of those provided by other instances of MLMediaLibrary.

### 115.2.2 Methods

### 115.2.3 Available as Boolean

**Function:** Whether this class available.

**Notes:** Returns true on Mac OS 10.7 or newer in 64-bit app.

### 115.2.4 Constructor(options as Dictionary)

**Function:** Initializes the media library based on the specified load options.
Notes:

options: A dictionary of load options.

Returns a new media library.

For descriptions of possible load options, see Load Options Keys.

115.2.5  MLMediaLoadAppFoldersKey as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the option keys. Notes: Specifies one or more relative paths inside the callers app bundle in which to search for media files. The value for this key is an array of strings (relative paths inside the callers app bundle).

115.2.6  MLMediaLoadAppleLoops as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the identifiers for well-known media folders used to specify the value for MLMediaLoadFoldersKey. Notes: Identifies the folder containing audio loops from Apple.

115.2.7  MLMediaLoadExcludeSourcesKey as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the option keys. Notes: Defines which media sources to exclude when loading. This option is processed after MLMediaLoadIncludeSourcesKey. The value for this key is an array of strings (media source identifiers). For a list of valid media source identifiers, see Media Source Identifiers.

115.2.8  MLMediaLoadFoldersKey as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the option keys. Notes: Specifies the well-known folders that should be searched for media files. If this key is not present, none of the well-known folders will be provided. The value for this key is an array of strings (identifiers that correspond to well-known folder locations). For a list of well-known folder identifiers, see MLMediaLoadMoviesFolder and MLMediaLoadAppleLoops.
115.2. CLASS MLMEDIALIBRARYMBS

115.2.9  MLMediaLoadIncludeSourcesKey as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the option keys. **Notes:** Defines which media sources to include when loading. If not present, load all available media sources. This option is processed after MLMediaLoadSourceTypesKey. If MLMediaLoadIncludeSourcesKey is present but MLMediaLoadSourceTypesKey is not, then only those sources specified here will be loaded. This is useful for loading a single media source. When both keys are present, this is useful for adding one or more media sources that normally would not appear for the requested library type. The value for this key is an array of strings (media source identifiers). For a list of valid media source identifiers, see Media Source Identifiers.

115.2.10  MLMediaLoadMoviesFolder as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the identifiers for well-known media folders used to specify the value for MLMediaLoadFoldersKey. **Notes:** Identifies the users Movies folder.

115.2.11  MLMediaLoadSourceTypesKey as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the option keys. **Notes:** Defines which sources to load based on library type. If not present, this will load all sources. The value for this key is a media source type.

115.2.12  Properties

115.2.13  Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Internet object reference. **Notes:** (Read and Write property)

115.2.14  mediaSources as Dictionary

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a dictionary of media sources by identifier. **Notes:**
Returns nil the first time, beginning an asynchronous load of the media sources. A KVO notification is sent when all media sources have been loaded. If there are no objects in a media source, the source does not appear in this dictionary.
(Read only property)
115.3.  CLASS MLMEDIAOBJECTMBS

115.3  class MLMediaObjectMBS

115.3.1  class MLMediaObjectMBS

Function: The MLMediaObject class describes a single media file, such as a photo, song, or movie.
Notes:
Each media object contains basic metadata including a name, media type, URL, and so on. Additional
information about each object is stored in its list of attributes. For a list of possible object attribute keys,
see Media Object Attribute Keys.

A media object belongs to a single media source but can be referenced by several groups within that source.
In other words, an object can appear in multiple places in the group hierarchy under a single media source.
In iTunes, a movie that was purchased through the iTunes Store is referenced by both the Purchased playlist
and the Movies playlist. If a user adds the movie to his own playlist, the group representing that playlist
will also reference the movie. All three groups reference the same media object.

All MLMediaObject properties are read-only, so this information can be accessed but not altered.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

115.3.2  Methods

115.3.3  Constructor


115.3.4  MLMediaObjectAlbumKey as String

Notes: Specifies the media objects album. The value for this key is a string.

115.3.5  MLMediaObjectArtistKey as String

Notes: Specifies the media objects artist. The value for this key is a string.
115.3.6 MLMediaObjectBitRateKey as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for a media object. **Notes:** Specifies the media objects bit rate, in kilobits per second. The value for this key is a number.

115.3.7 MLMediaObjectChannelCountKey as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for a media object. **Notes:** Specifies the media objects channel count. The value for this key is a number.

115.3.8 MLMediaObjectCommentsKey as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for a media object. **Notes:** Specifies the contents of the comments field associated with the media object. The value for this key is a string.

115.3.9 MLMediaObjectDurationKey as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for a media object. **Notes:** Specifies the media objects duration, in seconds. The value for this key is a number.

115.3.10 MLMediaObjectGenreKey as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for a media object. **Notes:** Specifies the media objects genre. The value for this key is a string.

115.3.11 MLMediaObjectKeywordsKey as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the property keys for a media object. **Notes:** Specifies the keywords associated with the media object. The value for this key is an array of strings.
115.3.12 MLMediaObjectKindKey as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the property keys for a media object. Notes: Used by iTunes only. Specifies the media objects file format (shown in the Kind column in iTunes). The value for this key is a string.

115.3.13 MLMediaObjectProtectedKey as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the property keys for a media object. Notes: Specifies whether the media object is protected by DRM (Digital Rights Management). The value for this key is a boolean value.

115.3.14 MLMediaObjectResolutionStringKey as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the property keys for a media object. Notes: Specifies the media objects resolution. The value for this key is a string with size.

115.3.15 MLMediaObjectSampleRateKey as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the property keys for a media object. Notes: Specifies the media objects sample rate, in samples per second (Hz). The value for this key is a number.

115.3.16 MLMediaObjectTrackNumberKey as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the property keys for a media object. Notes: Specifies the media objects track number. The value for this key is a number.
115.3.17 Properties

115.3.18 ArtworkImage as NSImageMBS

**Function:** Album artwork associated with the media object.
**Notes:**
Applies to iTunes media only. Returns nil if not applicable or not available.
(Read only property)

115.3.19 ContentType as String

**Function:** The UTI associated with the media object.
**Notes:** (Read only property)

115.3.20 File as FolderItem

**Function:** The location of the media object.
**Notes:**
For your convenience, the plugin provides here a folderitem for the URL.
(Read only property)

115.3.21 FileSize as UInt64

**Function:** The size, in bytes, of the media object.
**Notes:** (Read only property)

115.3.22 Handle as Integer

**Function:** Internet object reference.
**Notes:** (Read and Write property)
115.3. **CLASS MLMEDIAOBJECTMBS**

115.3.23 **Identifier as String**

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An identifier for the media object. **Notes:** Each object's identifier is unique within a media source. (Read only property)

115.3.24 **MediaLibrary as MLMediaLibraryMBS**

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A pointer to the media library instance that loaded the media object's source. **Notes:** (Read only property)

115.3.25 **MediaSourceIdentifier as String**

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An identifier for the source that loaded the media object. **Notes:** For a list of possible media source identifiers, see MLMediaLibraryMBS. (Read only property)

115.3.26 **MediaType as Integer**

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The media object's type of media (image, audio, or movie). **Notes:** For a list of possible media types, see kType* constants. (Read only property)

115.3.27 **ModificationDate as Date**

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The date and time when the media object was last altered. **Notes:** (Read only property)
115.3.28 Name as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of the media object.  
**Notes:** (Read only property)

115.3.29 OriginalFile as FolderItem

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The location of the original media object, if URL is not the original (master).  
**Notes:**  
For your convenience, the plugin provides here a folderitem for the URL.  
(Read only property)

115.3.30 OriginalURL as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The location of the original media object, if URL is not the original (master).  
**Notes:**  
This property is provided as a security-scoped URL. In order to gain access to the file that this URL refers to, the caller must call startAccessingSecurityScopedResource before and stopAccessingSecurityScopedResource after using the URL to access the file. For more information about security-scoped URLs, see NSURL.  
(Read only property)

115.3.31 Properties as Dictionary

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A dictionary of attributes describing the media object.  
**Notes:**  
For a list of possible object attribute keys, see Media Object Attribute Keys.  
(Read only property)

115.3.32 ThumbnailFile as FolderItem

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The location of the media objects thumbnail image.  
**Notes:**
For your convenience, the plugin provides here a folderitem for the URL. (Read only property)

115.3.33 **ThumbnailURL as String**

*Function:* The location of the media objects thumbnail image.  
*Notes:* This property is provided as a security-scoped URL. In order to gain access to the file that this URL refers to, the caller must call startAccessingSecurityScopedResource before and stopAccessingSecurityScopedResource after using the URL to access the file. For more information about security-scoped URLs, see NSURL. (Read only property)

115.3.34 **URL as String**

*Function:* The location of the media object.  
*Notes:* This property is provided as a security-scoped URL. In order to gain access to the file that this URL refers to, the caller must call startAccessingSecurityScopedResource before and stopAccessingSecurityScopedResource after using the URL to access the file. For more information about security-scoped URLs, see NSURL. (Read only property)

115.3.35 **Constants**

115.3.36 **kTypeAudio = 1**

MBS Mac64bit Plugin, Plugin Version: 18.2.  
*Function:* One of the types.  
*Notes:* Audio

115.3.37 **kTypeImage = 2**

MBS Mac64bit Plugin, Plugin Version: 18.2.  
*Function:* One of the types.  
*Notes:* Image
115.3.38  kTypeMovie = 4

MBS Mac64bit Plugin, Plugin Version: 18.2. **Function:** One of the types.  
**Notes:** Movie
115.4  class MLMediaSourceMBS

115.4.1  class MLMediaSourceMBS


Notes:
Conceptually, a media source represents a single app, such as iTunes or Aperture. Each media source contains multiple groups of media objects—individual files containing a piece of media such as a photo, song, or movie.

The structure of the group hierarchy is specific to each media source, but all sources have certain commonalities. For example, every source has a single root media group, which contains all groups and objects within that source. It is the highest-level parent group in the hierarchy and each of its descendant groups contains its own subgroups and their objects. All groups have a reference to their parent within the hierarchy. A group with no descendants contains only its own objects. If a media group does not contain any objects, it is not visible in the hierarchy.

Every media source has a unique media source identifier within a single media library instance. For a list of possible media source identifiers, see Media Source Identifiers.

All MLMediaSourceMBS properties are read-only, so this information can be accessed but not altered. This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

115.4.2  Methods

115.4.3  Constructor


115.4.4  mediaGroupForIdentifier(mediaGroupIdentifier as string) as MLMediaGroupMBS

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the media group with the specified identifier.

Notes:
mediaGroupIdentifier: The media group identifier to search for in the source.

The media source must have finished loading before this method returns valid data. Specifically, the root media group must be available before the lookup methods will succeed. Otherwise, the return value is undefined.
115.4.5 mediaGroupsForIdentifiers(mediaGroupIdentifiers() as string) as Dictionary

Function: Returns the media groups with the specified identifiers.
Notes:
mediaGroupIdentifiers: An array of media group identifiers to search for in the source.

Returns a dictionary of media groups matching the specified identifiers.

The media source must have finished loading before this method returns valid data. Specifically, the root media group must be available before the lookup methods will succeed. Otherwise, the return value is undefined.

115.4.6 mediaObjectForIdentifier(mediaObjectIdentifier as string) as MLMediaObjectMBS

Function: Returns the media object with the specified identifier.
Notes:
mediaObjectIdentifier: The media object identifier to search for in the media source.

The media source must have finished loading before this method returns valid data. Specifically, the root media group must be available before the lookup methods will succeed. Otherwise, the return value is undefined.

115.4.7 mediaObjectsForIdentifiers(mediaObjectIdentifiers() as string) as Dictionary

Function: Returns the media objects with the specified identifiers.
Notes:
mediaObjectIdentifiers: An array of media object identifiers to search for in the source.

Returns a dictionary of media objects matching the specified identifiers.

The media source must have finished loading before this method returns valid data. Specifically, the root media group must be available before the lookup methods will succeed. Otherwise, the return value is undefined.
115.4.8  **MLMediaSourceApertureIdentifier as String**

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The identifier for the media source providing content from Aperture.

115.4.9  **MLMediaSourceAppDefinedFoldersIdentifier as String**

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The identifier for the media source providing content from app defined folder.

115.4.10 **MLMediaSourceCustomFoldersIdentifier as String**

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The identifier for the media source providing content from a custom folder.

115.4.11 **MLMediaSourceFinalCutIdentifier as String**

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The identifier for the media source providing content from Final Cut Pro.

115.4.12 **MLMediaSourceGarageBandIdentifier as String**

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The identifier for the media source providing content from GarageBand.

115.4.13 **MLMediaSourceiMovieIdentifier as String**

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The identifier for the media source providing content from iMovie.

115.4.14 **MLMediaSourceiPhotoIdentifier as String**

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The identifier for the media source providing content from iPhoto.
115.4.15 MLMediaSourceiTunesIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The identifier for the media source providing content from iTunes.

115.4.16 MLMediaSourceLogicIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The identifier for the media source providing content from Logic.

115.4.17 MLMediaSourceMoviesFolderIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The identifier for the media source providing content from movies folder.

115.4.18 MLMediaSourcePhotoBoothIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The identifier for the media source providing content from Photo Booth.

115.4.19 MLMediaSourcePhotosIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The identifier for the media source providing content from photos folder.

115.4.20 Properties

115.4.21 Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Internet object reference. **Notes:** (Read and Write property)
115.4.22 MediaLibrary as MLMediaLibraryMBS

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A pointer to the media library instance that loaded this media source.  
**Notes:** (Read only property)

115.4.23 mediaSourceIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A unique identifier for the media source.  
**Notes:**  
For a list of possible media source identifiers, see shared methods.  
(Read only property)

115.4.24 Properties as Dictionary

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A list of attributes describing the media source.  
**Notes:** (Read only property)

115.4.25 rootMediaGroup as MLMediaGroupMBS

MBS Mac64bit Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The base media group in the media source that contains all other groups within the source as descendant elements.  
**Notes:**  
This accessor property is nonblocking. If there is no data yet, it returns nil and automatically triggers an internal asynchronous request. When data arrives, a KVO notification is sent via the main thread.  
(Read only property)

115.4.26 Constants

115.4.27 kSourceTypeAudio = 1

MBS Mac64bit Plugin, Plugin Version: 18.2. **Function:** One of the source types.  
**Notes:** Audio
115.4.28  kSourceTypeImage = 2

MBS Mac64bit Plugin, Plugin Version: 18.2. **Function:** One of the source types.  
**Notes:** Images

115.4.29  kSourceTypeMovie = 4

MBS Mac64bit Plugin, Plugin Version: 18.2. **Function:** One of the source types.  
**Notes:** Movies
115.5. class NSMediaLibraryBrowserControllerMBS

115.5.1 class NSMediaLibraryBrowserControllerMBS

Function: An instance of an NSMediaLibraryBrowserController configures and displays a Media Library Browser Panel.
Notes: A User can drag and drop media files from the Media Library Browser into views in their application. Requires Mac OS X 10.9.

115.5.2 Methods

115.5.3 available as boolean

Function: Whether this class is available.
Notes: Returns true on Mac OS X 10.9 and false on other platforms.

115.5.4 Constructor

Function: Creates a new object for the shared library browser.

115.5.5 orderFront

Function: Orders window to front.

115.5.6 orderOut

Function: Orders window out.
Notes: Hides window.
115.5.7 sharedMediaLibraryBrowserController as NSMediaLibraryBrowserControllerMBS

**Function**: Returns a new object for the shared library browser.

115.5.8 togglePanel

**Function**: Toggles the panel to hide/show.

115.5.9 Properties

115.5.10 Frame as NSRectMBS

**Function**: The bounds of the panel.  
**Notes**: (Read and Write property)

115.5.11 Handle as Integer

**Function**: The internal object reference.  
**Notes**: (Read and Write property)

115.5.12 mediaLibraries as Integer

**Function**: Which media library to show: audio, video or image.  
**Notes**: (Read and Write property)

115.5.13 Visible as Boolean

**Function**: The visible state of the browser panel.  
**Notes**: (Read and Write property)
115.5.14 Constants

115.5.15 NSMediaLibraryAudio = 1

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the media library type constants. **Notes:** Audio

115.5.16 NSMediaLibraryImage = 2

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the media library type constants. **Notes:** Image

115.5.17 NSMediaLibraryMovie = 4

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the media library type constants. **Notes:** Movie
Chapter 116
MemoryBlock

116.1 Globals

116.1.1 NewMemoryBlockWithBytesMBS(Data as Ptr, size as Integer) as memoryblock

MBS Util Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new memoryblock with a copy of the given data.

116.1.2 NewMemoryBlockFromPtrMBS(ptr as Integer) as memoryblock

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a memoryblock for a given address in memory.

116.1.3 Memoryblock2ptrMBS(mem as memoryblock) as Integer

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the memory address of the memoryblock

116.1.4 ptr2MemoryblockMBS(Value as Integer) as memoryblock

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a memoryblock with the bytes at position mem in memory.
116.2 class Memoryblock

116.2.1 class Memoryblock

Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Extends Realbasic’s Memoryblock class.

116.2.2 Methods

116.2.3 AddressMBS(offset as Int64 = 0) as UInt64

MBS Util Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the address of the byte at offset inside the memoryblock.

116.2.4 AddressPtrMBS(offset as Int64 = 0) as Ptr

MBS Util Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the address of the byte at offset inside the memoryblock.

116.2.5 AndBitsMBS(Second as memoryblock, Dest as memoryblock=nil) as memoryblock

MBS Util Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Performs a And on the bits in the memoryblock.

**Example:**

```plaintext
dim m1 as MemoryBlock = NewMemoryBlock(20)
dim m2 as MemoryBlock = NewMemoryBlock(20)
dim m3 as MemoryBlock = NewMemoryBlock(20)

m1.Int32Value(0)& b10000001
m2.Int32Value(0)& b10000000
MsgBox bin(m1.Int32Value(0))+EndOfLine+bin(m2.Int32Value(0))+EndOfLine+bin(m3.Int32Value(0))
call m1.AndBitsMBS(m2,m3)
MsgBox bin(m1.Int32Value(0))+EndOfLine+bin(m2.Int32Value(0))+EndOfLine+bin(m3.Int32Value(0))
```

**Notes:**
116.2. CLASS MEMORYBLOCK

Dest is first and second memoryblock combine with a bitwiseand. And first and second memoryblock are filled with the difference between them.

If dest is nil, a new memoryblock is created. You can speed up processing with reusing the same memoryblock in iterations. If you pass a memoryblock, the plugin does not check the size of the memoryblock.

Returns nil on any error. For example if source is a memoryblock without a known size.

See also:

• 116.2.6 AndBitsMBS(Second as memoryblock, Mask as Integer, Dest as memoryblock=nil) as memoryblock

116.2.6 AndBitsMBS(Second as memoryblock, Mask as Integer, Dest as memoryblock=nil) as memoryblock

MBS Util Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Performs a And on the bits in the memoryblock.

**Example:**

```vba
dim m1 as MemoryBlock = NewMemoryBlock(20)
dim m2 as MemoryBlock = NewMemoryBlock(20)
dim m3 as MemoryBlock = NewMemoryBlock(20)

m1.Int32Value(0)=& b11110001
m2.Int32Value(0)=& b11110000

const mask = & b11001111

MsgBox bin(m1.Int32Value(0))+EndOfLine+bin(m2.Int32Value(0))+EndOfLine+bin(m3.Int32Value(0))
call m1.AndBitsMBS(m2,mask,m3)

MsgBox bin(m1.Int32Value(0))+EndOfLine+bin(m2.Int32Value(0))+EndOfLine+bin(m3.Int32Value(0))
```

**Notes:**

The mask is always 8 bit. Use the & b notation to specify it. Dest is first and second memoryblock combine with a bitwiseand. Only bits set int he given mask are used.

If dest is nil, a new memoryblock is created. You can speed up processing with reusing the same memoryblock in iterations. If you pass a memoryblock, the plugin does not check the size of the memoryblock.
Returns nil on any error. For example if source is a memoryblock without a known size.
See also:

- 116.2.5 AndBitsMBS(Second as memoryblock, Dest as memoryblock=nil) as memoryblock

116.2.7 AppendMBS(other as memoryblock) as memoryblock

MBS Util Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns a new memoryblock with the bytes of the two given memoryblocks.
**Notes:**
This function will not work if the memoryblock has an unknown size.
If one memoryblock is nil than you get a copy of the other memoryblock.

116.2.8 BytesEqualMBS(srcOfs as Integer, numBytes as Integer, destBlk as memoryBlock, destOfs as Integer) as Boolean

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if equal byte data.
**Example:**
```vba
dim m1 as MemoryBlock = NewMemoryBlock(100)
dim m2 as MemoryBlock = NewMemoryBlock(100)

// try with 2 different strings
m1.CString(0)="Hello"
m2.CString(0)="Hallo"
if m1.BytesEqualMBS(0, 100, m2, 0) then
    MsgBox "equal"
else
    MsgBox "not equal"
end if

// try with 2 equal strings
m1.CString(0)="Hello"
m2.CString(0)="Hello"
if m1.BytesEqualMBS(0, 100, m2, 0) then
    MsgBox "equal"
else
    MsgBox "not equal"
end if
```
116.2. CLASS MEMORYBLOCK

Notes:

Fixed in 10.1 to return true on equal bytes and false on non equal bytes. Older plugin versions returned the wrong value.

Does not check the bounds of the memoryblock, so it can crash with wrong parameters. Returns false if one of the memoryblocks is nil.

116.2.9 BytesZeroMBS(srcOfs as Integer, numBytes as Integer) as Boolean

MBS Util Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Returns true if all bytes in the memoryblock in the given range are zero.
Example:

```vbnet
dim m as MemoryBlock = NewMemoryBlock(100)

if m.BytesZeroMBS(0,100) then
    MsgBox "all zero"
else
    MsgBox "error"
end if

m.Byte(50)=1

if m.BytesZeroMBS(0,100) then
    MsgBox "error"
else
    MsgBox "okay"
end if
```

Notes:

Returns false on any error.
Bounds are not checked with the memoryblock, so be careful.

116.2.10 ConvertRGB12BitTo8BitMBS(Width as Integer)

Converts a memoryblock with 12 bit RGB data into 8 bit RGB data.
Notes:

Width is number of pixels.
Please make sure the memoryblock is 9 bytes bigger than input to avoid errors.
Plugin converts each 9 bytes (72 bits) with 2 RGB triple. So first 12 bits are red, next 12 bits green and last 12 bits blue.
Plugin removes last 4 bits.

116.2.11 CopyBytesFromMacHandleMBS(srcHandle as Integer, numBytes as Integer, destOfs as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Copies bytes from Mac Handle into your memoryblock.
**Notes:** Same as CopyBytesFromMacPtr, only that the memory address is a so-called Handle (see documentation about the MacOS memory Manager), which is double-referenced.

116.2.12 CopyBytesFromMacPtrMBS(srcPtr as Ptr, numBytes as Integer, destOfs as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies the given amount of bytes from the given address in the Mac’s memory address space into the memoryBlock.
**Notes:** Make sure that the destination block is large enough to hold the copied bytes (if not, your application or even the whole system can crash).

116.2.13 CopyBytesMBS(srcOfs as Integer, numBytes as Integer, destBlk as memoryBlock, destOfs as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies the specified amount of bytes into a second memoryBlock.
**Example:**
```dim m as MemoryBlock
dim n as MemoryBlock
m=NewMemoryBlock(100)
n=NewMemoryBlock(100)
m.Long(0)=12345
m.CopyBytesMBS(0,4,n,0)
MsgBox str(n.long(0))```
Notes: You must make sure that the destination block is large enough to hold the copied bytes (if not, your application or even the whole system can crash).
See also:

- 116.2.14 CopyBytesMBS(srcOfs as Integer, numBytes as Integer, destOfs as Integer)

116.2.14 CopyBytesMBS(srcOfs as Integer, numBytes as Integer, destOfs as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Copies the specified amount of bytes inside the memoryBlock.
Notes: You must make sure that the copied bytes fit inside the block (if they don’t, your application or even the whole system can crash).
See also:

- 116.2.13 CopyBytesMBS(srcOfs as Integer, numBytes as Integer, destBlk as memoryBlock, destOfs as Integer)

116.2.15 CopyBytesToMacHandleMBS(srcOfs as Integer, numBytes as Integer, destHandle as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Copies byte data from the memoryblock into the memory the handle is pointing to.
Notes: Same as CopyBytesToMacPtr, only that the memory address is a so-called Handle (see documentation about the MacOS memory Manager), which is double-referenced.

116.2.16 CopyBytesToMacPtrMBS(srcOfs as Integer, numBytes as Integer, destPtr as Ptr)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Copies the given amount of bytes from the memoryBlock to the given address in the Mac’s memory address space.
Notes: Be careful where you copy the data to - you can easily crash your computer if you write to the wrong address space.

116.2.17 CopyByteToUShortMBS(dest as memoryblock, SourceOffset as Integer, DestinationOffset as Integer, ByteCount as Integer, divisor as Integer)

MBS Util Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Copies bytes in a memoryblock to another memoryblock converting the 8bit values to 16bit values.
Notes:
Common values for divisor are 256 and 257.
No bound checking. Crashes with invalid values. Optimized for special divisor values.

116.2.18 CopyNthBitsMBS(source as memoryblock, SourceOffsetBits as Integer, DestinationOffsetBits as Integer, BitCount as Integer, StepCount as Integer, NumberOfSteps as Integer) as boolean

MBS Util Plugin, Plugin Version: 6.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies every nth bits in the source memoryblock to the current memoryblock.
**Notes:**
BitCount = the number of bits to copy from each step.
StepCount = the number of bits to not copy.
NumberOfSteps = the number of rounds to do.
There is no bound checking. The function will crash with invalid parameters!

116.2.19 CopyNthBytesMBS(source as memoryblock, SourceOffsetBytes as Integer, DestinationOffsetBytes as Integer, ByteCount as Integer, StepCount as Integer, NumberOfSteps as Integer) as boolean

MBS Util Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies every nth bytes in the source memoryblock to the current memoryblock.
**Example:**

```vbnet
dim s,d as memoryBlock
s=NewmemoryBlock(100)
d=NewmemoryBlock(100)
s.CString(0)="Hello World!"
call d.CopyNthBytesMBS(s,0,0,2,4,3)
MsgBox d.CString(0) // "Heo rl"
```

**Notes:**
ByteCount = the number of bytes to copy from each step.
StepCount = the number of bytes to not copy.
NumberOfSteps = the number of steps to do.
There is no bound checking. The function will crash with invalid parameters!
116.2. CLASS MEMORYBLOCK

116.2.20 CopyUShortToByteMBS(dest as memoryblock, SourceOffset as Integer, DestinationOffset as Integer, ByteCount as Integer, divisor as Integer)

MBS Util Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Copies shorts in a memoryblock to another memoryblock converting the 16bit values to 8bit values.
Notes:
Common values for divisor are 256 and 257.
No bound checking. Crashes with invalid values. Optimized for special divisor values.

116.2.21 CRC_32ContMBS(offset as Integer, numBytes as Integer, prevCRC as UInt32) as UInt32

MBS Util Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Calculates a 32bit Checksum about the provided block of data.

116.2.22 CRC_32MBS(offset as Integer, numBytes as Integer) as UInt32

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Calculates a 32bit Checksum about the provided block of data.

116.2.23 CRC_CCITTContMBS(offset as Integer, numBytes as Integer, prevCRC as UInt32) as UInt32

MBS Util Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Calculates a 16bit Checksum about the provided string.

116.2.24 CRC_CCITTMBS(offset as Integer, numBytes as Integer) as UInt32

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Calculates a 16bit Checksum about the provided block of data.
Notes:
See the text "About-CRC" for details about this Checksum things.
This function is also available for strings.

See the CRC_32 for more details on Checksums.
116.2.25 CRC_DillonMBS(bitWidth as Integer, offset as Integer, numBytes as Integer) as String

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calculates a 16 to 64bit Checksum about the provided block of data.  
**Notes:**
This function is also available for strings.

See the CRC_32 for more details on Checksums.

116.2.26 EndianS16_BtoLMBS(offset as Integer,count as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.  
**Example:**
```plaintext
dim mem as memoryblock // your memoryblock
mem.EndianS16_BtoLMBS(0,mem.size/2)
```

**Notes:**

e.g.:
EndianS32_BtoNMBS(offset as Integer,count as Integer)
EndianU16_LtoBMBS(offset as Integer,count as Integer)

**Details:**
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

Note that count is not the size of the block, but the count of the integers to change.

116.2.27 EndianS16_BtoNMBS(offset as Integer,count as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.  
**Example:**
```plaintext
dim mem as memoryblock // your memoryblock
mem.EndianS16_BtoNMBS(0,mem.size/2)
```
116.2. CLASS MEMORYBLOCK

Notes:
e.g.:
EndianS32_BtoNMBS(offset as Integer,count as Integer)
EndianU16_LtoBMBS(offset as Integer,count as Integer)

Details:
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

Note that count is not the size of the block, but the count of the integers to change.

116.2.28 EndianS16_LtoBMBS(offset as Integer,count as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.

**Example:**
```
dim mem as memoryblock  // your memoryblock
mem.EndianS16_LtoBMBS(0,mem.size/2)
```

Notes:
e.g.:
EndianS32_BtoNMBS(offset as Integer,count as Integer)
EndianU16_LtoBMBS(offset as Integer,count as Integer)

Details:
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

Note that count is not the size of the block, but the count of the integers to change.

116.2.29 EndianS16_LtoNMBBS(offset as Integer,count as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.
Example:

```vbs
dim mem as memoryblock // your memoryblock
mem.EndianS16_LtoNMBS(0,mem.size/2)
```

Notes:

e.g.:
EndianS32_BtoNMBS(offset as Integer,count as Integer)
EndianU16_LtoBMBS(offset as Integer,count as Integer)

Details:
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

Note that count is not the size of the block, but the count of the integers to change.

### 116.2.30 EndianS16_NtoBMBS(offset as Integer,count as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.

**Example:**

```vbs
dim mem as memoryblock // your memoryblock
mem.EndianS16_NtoBMBS(0,mem.size/2)
```

Notes:

e.g.:
EndianS32_BtoNMBS(offset as Integer,count as Integer)
EndianU16_LtoBMBS(offset as Integer,count as Integer)

Details:
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

Note that count is not the size of the block, but the count of the integers to change.
116.2.31 EndianS16_NtoLMBS(offset as Integer, count as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.

**Example:**

```plaintext
dim mem as memoryblock // your memoryblock
mem.EndianS16_NtoLMBS(0, mem.size/2)
```

**Notes:**

```
e.g.:
EndianS32_BtoNMBS(offset as Integer, count as Integer)
EndianU16_LtoBMBS(offset as Integer, count as Integer)
```

**Details:**
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

Note that count is not the size of the block, but the count of the integers to change.

116.2.32 EndianS32_BtoLMBS(offset as Integer, count as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.

**Example:**

```plaintext
dim mem as memoryblock // your memoryblock
mem.EndianS32_BtoLMBS(0, mem.size/4)
```

**Notes:**

```
e.g.:
EndianS32_BtoNMBS(offset as Integer, count as Integer)
EndianU16_LtoBMBS(offset as Integer, count as Integer)
```

**Details:**
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.
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Note that count is not the size of the block, but the count of the integers to change.

116.2.33 EndianS32_BtoNMBS(offset as Integer,count as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.

**Example:**

```
dim mem as memoryblock // your memoryblock
mem.EndianS32_BtoNMBS(0,mem.size/4)
```

**Notes:**

```
e.g.:
EndianS32_BtoNMBS(offset as Integer,count as Integer)
EndianU16_LtoBMBS(offset as Integer,count as Integer)
```

**Details:**

S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

Note that count is not the size of the block, but the count of the integers to change.

116.2.34 EndianS32_LtoBMBS(offset as Integer,count as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.

**Example:**

```
dim mem as memoryblock // your memoryblock
mem.EndianS32_LtoBMBS(0,mem.size/4)
```

**Notes:**

```
e.g.:
EndianS32_BtoNMBS(offset as Integer,count as Integer)
EndianU16_LtoBMBS(offset as Integer,count as Integer)
```

**Details:**
116.2. CLASS MEMORYBLOCK

S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

Note that count is not the size of the block, but the count of the integers to change.

116.2.35 EndianS32_LtoNMBS(offset as Integer,count as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.

**Example:**

```
dim mem as memoryblock // your memoryblock
mem.EndianS32_LtoNMBS(0,mem.size/4)
```

**Notes:**

e.g.:

```
EndianS32_BtoNMBS(offset as Integer,count as Integer)
EndianU16_LtoBMBS(offset as Integer,count as Integer)
```

**Details:**

S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

Note that count is not the size of the block, but the count of the integers to change.

116.2.36 EndianS32_NtoBMBS(offset as Integer,count as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.

**Example:**

```
dim mem as memoryblock // your memoryblock
mem.EndianS32_NtoBMBS(0,mem.size/4)
```

**Notes:**

e.g.:
EndianS32_BtoNMBS(offset as Integer,count as Integer)
EndianU16_LtoBMBS(offset as Integer,count as Integer)

Details:
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

Note that count is not the size of the block, but the count of the integers to change.

116.2.37 **EndianS32_NtoLMBS(offset as Integer,count as Integer)**

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.
**Example:**
```
dim mem as memoryblock // your memoryblock
mem.EndianS32_NtoLMBS(0,mem.size/4)
```

**Notes:**

e.g.:
EndianS32_BtoNMBS(offset as Integer,count as Integer)
EndianU16_LtoBMBS(offset as Integer,count as Integer)

Details:
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

Note that count is not the size of the block, but the count of the integers to change.

116.2.38 **EndianSwap16MBS(offset as Integer,count as Integer)**

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Swaps several 16 bit integers inside a memoryblock.
**Example:**
```
dim mem as memoryblock // your memoryblock
mem.EndianSwap16MBS(0,mem.size/2)
```
116.2.39 **EndianSwap32MBS(offset as Integer, count as Integer)**

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Swaps several 32 bit integers inside a memory block.

**Example:**

```plaintext
dim mem as memoryblock // your memoryblock
mem.EndianSwap32MBS(0, mem.size/4)
```

116.2.40 **EndianU16_BtoLMBS(offset as Integer, count as Integer)**

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.

**Example:**

```plaintext
dim mem as memoryblock // your memoryblock
mem.EndianU16_BtoLMBS(0, mem.size/2)
```

**Notes:**

e.g.:

- EndianS32_BtoNMBS(offset as Integer, count as Integer)
- EndianU16_LtoBMBS(offset as Integer, count as Integer)

**Details:**

- S for signed or U for unsigned.
- 16 for short and 32 for integer.
- B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

Note that count is not the size of the block, but the count of the integers to change.

116.2.41 **EndianU16_BtoNMBS(offset as Integer, count as Integer)**

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.

**Example:**

```plaintext
dim mem as memoryblock // your memoryblock
mem.EndianU16_BtoNMBS(0, mem.size/2)
```
Notes:

e.g.:
EndianS32_BtoNMBS(offset as Integer,count as Integer)
EndianU16_LtoBMBS(offset as Integer,count as Integer)

Details:
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

Note that count is not the size of the block, but the count of the integers to change.

116.2.42   EndianU16_LtoBMBS(offset as Integer,count as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.
**Example:**

dim mem as memoryblock // your memoryblock
mem.EndianU16_LtoBMBS(0,mem.size/2)

Notes:

e.g.:
EndianS32_BtoNMBS(offset as Integer,count as Integer)
EndianU16_LtoBMBS(offset as Integer,count as Integer)

Details:
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

Note that count is not the size of the block, but the count of the integers to change.
116.2. CLASS MEMORYBLOCK

116.2.43 EndianU16_LtoNMBS(offset as Integer,count as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.

**Example:**

```vbnet
dim mem as memoryblock // your memoryblock
mem.EndianU16_LtoNMBS(0,mem.size/2)
```

**Notes:**

e.g.:

```
EndianS32_BtoNMBS(offset as Integer,count as Integer)
EndianU16_LtoBMBS(offset as Integer,count as Integer)
```

**Details:**

S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

Note that count is not the size of the block, but the count of the integers to change.

116.2.44 EndianU16_NtoBMBS(offset as Integer,count as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.

**Example:**

```vbnet
dim mem as memoryblock // your memoryblock
mem.EndianU16_NtoBMBS(0,mem.size/2)
```

**Notes:**

e.g.:

```
EndianS32_BtoNMBS(offset as Integer,count as Integer)
EndianU16_LtoBMBS(offset as Integer,count as Integer)
```

**Details:**

S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.
Note that count is not the size of the block, but the count of the integers to change.

### 116.2.45 EndianU16_NtoLMBS(offset as Integer,count as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.

**Example:**
```
dim mem as memoryblock // your memoryblock
mem.EndianU16_NtoLMBS(0,mem.size/2)
```

**Notes:**
- e.g.:
  - EndianS32_BtoNMBS(offset as Integer,count as Integer)
  - EndianU16_LtoBMBS(offset as Integer,count as Integer)

**Details:**
- S for signed or U for unsigned.
- 16 for short and 32 for integer.
- B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

Note that count is not the size of the block, but the count of the integers to change.

### 116.2.46 EndianU32_BtoLMBS(offset as Integer,count as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.

**Example:**
```
dim mem as memoryblock // your memoryblock
mem.EndianU32_BtoLMBS(0,mem.size/4)
```

**Notes:**
- e.g.:
  - EndianS32_BtoNMBS(offset as Integer,count as Integer)
  - EndianU16_LtoBMBS(offset as Integer,count as Integer)

**Details:**
116.2. CLASS MEMORYBLOCK

S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

Note that count is not the size of the block, but the count of the integers to change.

116.2.47 EndianU32_BtoNMBS(offset as Integer,count as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding. **Example:**

```vba
dim mem as memoryblock // your memoryblock
mem.EndianU32_BtoNMBS(0,mem.size/4)
```

**Notes:**

e.g.:
`EndianS32_BtoNMBS(offset as Integer,count as Integer)`
`EndianU16_LtoBMBS(offset as Integer,count as Integer)`

Details:
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

Note that count is not the size of the block, but the count of the integers to change.

116.2.48 EndianU32_LtoBMBS(offset as Integer,count as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding. **Example:**

```vba
dim mem as memoryblock // your memoryblock
mem.EndianU32_LtoBMBS(0,mem.size/4)
```

**Notes:**

e.g.:
EndianS32_BtoNMBS(offset as Integer,count as Integer)
EndianU16_LtoBMBS(offset as Integer,count as Integer)

Details:
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

Note that count is not the size of the block, but the count of the integers to change.

116.2.49 EndianU32_LtoNMBS(offset as Integer,count as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.

**Example:**
```plaintext
dim mem as memoryblock // your memoryblock
mem.EndianU32_LtoNMBS(0,mem.size/4)
```

**Notes:**

e.g.:
EndianS32_BtoNMBS(offset as Integer,count as Integer)
EndianU16_LtoBMBS(offset as Integer,count as Integer)

Details:
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

Note that count is not the size of the block, but the count of the integers to change.

116.2.50 EndianU32_NtoBMBS(offset as Integer,count as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.

**Example:**
```plaintext
dim mem as memoryblock // your memoryblock
mem.EndianU32_NtoBMBS(0,mem.size/4)
```
116.2. CLASS MEMORYBLOCK

Notes:

e.g.:
EndianS32_BtoNMBS(offset as Integer, count as Integer)
EndianU16_LtoBMBS(offset as Integer, count as Integer)

Details:
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

Note that count is not the size of the block, but the count of the integers to change.

116.2.51 EndianU32_NtoLMBS(offset as Integer, count as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts between BigEndian, LowEndian and Native byte encoding.

**Example:**

dim mem as memoryblock // your memoryblock
mem.EndianU32_NtoLMBS(0, mem.size/4)

Notes:

e.g.:
EndianS32_BtoNMBS(offset as Integer, count as Integer)
EndianU16_LtoBMBS(offset as Integer, count as Integer)

Details:
S for signed or U for unsigned.
16 for short and 32 for integer.
B for BigEndian (Mac), L for LowEndian (x86) and N for the native form of the current platform.

Note that count is not the size of the block, but the count of the integers to change.
116.2.52 ExpandBitsMBS(dest as memoryblock, SourceByteCount as Integer, LowValue as Integer = 0, HighValue as Integer = 255) as boolean

MBS Util Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Expands bits into bytes.
**Example:**
```vbs
    dim m1 as new MemoryBlock(200)
    dim m2 as new MemoryBlock(1600)
    for i as Integer = 0 to 127
        m1.Int8Value(i) = i
    next
    dim n as Integer = 128
    dim b as Boolean = m1.ExpandBitsMBS(m2, n)
    break // see result in debugger
```

**Notes:**
- Takes a bit from the source memoryblock and writes a byte for it to destination. Uses LowValue (default 0) if the bit is not set and HighValue (Default 255) if the bit is set.
- Works only on x86 CPUs (no PPC).
- Reads source memoryblock in 32 bit blocks and writes the destination in 32 byte blocks.

116.2.53 ExtractBitsMBS(Mask as Integer, Dest as memoryblock=nil) as memoryblock

MBS Util Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies bits from a memoryblock to another.
**Example:**
```vbs
    dim mask as Integer = &b01010101
    dim m as MemoryBlock = "Hello World"
    dim r as MemoryBlock = m.ExtractBitsMBS(mask)
    MsgBox r.StringValue(0,r.size) // shows "@EDDE UEPDD"
```

**Notes:**
The mask is always 8 bit. Use the & b notation to specify it.
If dest is nil, a new memoryblock is created. You can speed up processing with reusing the same memory-
116.2. CLASS MEMORYBLOCK

block in iterations. If you pass a memoryblock, the plugin does not check the size of the memoryblock.

Returns nil on any error. For example if source is a memoryblock without a known size.

116.2.54 FillBytesMBS(offset as Integer, count as Integer, value as Integer)

MBS Util Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Fills memory with a specific byte value. **Notes:** Caution: No bounds checking.

116.2.55 FindByteMBS(srcOfs as Integer, numBytes as Integer, byteValue as Integer) as Integer

MBS Util Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Finds the position of the first byte which has the given value. **Example:**

```vba
dim m as MemoryBlock = NewMemoryBlock(100)
dim n as Integer

n = m.FindByteMBS(0, 100, 0)
MsgBox str(n) // shows 0 as the byte at offset 0 is zero
m.Byte(0)=1
n = m.FindByteMBS(0, 100, 0)
MsgBox str(n) // shows 1 as the byte at offset 1 is zero
m.FillBytesMBS(0,100,5)

n = m.FindByteMBS(0, 100, 6)
MsgBox str(n) // shows -1 as there is no byte with value 6
```

**Notes:** Returns -1 if the byte is not found.
116.2.56  **FindBytesMBS(srcOfs as Integer, maxBytes as Integer, target as memoryBlock, targOfs as Integer, targLen as Integer) as Integer**

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Finds some bytes from the target memoryblock inside the current memoryblock.

116.2.57  **FindNotByteMBS(srcOfs as Integer, numBytes as Integer, byteValue as Integer) as Integer**

MBS Util Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Finds the position of the first byte which has no the given value.  
**Example:**
```
    dim m as MemoryBlock = NewMemoryBlock(100)
    dim n as Integer

    n = m.FindNotByteMBS(0, 100, 0)
    MsgBox str(n)  // -1 as no value is not zero

    m.Byte(30)=1
    n = m.FindNotByteMBS(0, 100, 0)
    MsgBox str(n)  // shows 30 as the byte at offset 30 is not zero

    m.Byte(0)=255
    n = m.FindNotByteMBS(0, 100, 255)
    MsgBox str(n)  // shows 1 as the byte at offset 1 is not 255
```

**Notes:** Returns -1 if the no byte was found which has not the given value.

116.2.58  **FindStringMBS(srcOfs as Integer, maxBytes as Integer, target as String) as Integer**

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Finds a string inside a memoryblock.
116.2. CLASS MEMORYBLOCK

116.2.59 GetStringMBS(offset as Integer, numBytes as Integer) as String

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a string from the memoryblock.
**Notes:** With newer RB versions you may better use StringValue.

116.2.60 InvertBytesMBS(offset as Integer, count as Integer)

MBS Util Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Inverts the given number of bytes in a memoryblock.
**Example:**
```plaintext
dim m as memoryblock
m=newmemoryblock(100)
' do something
m.InvertBytesMBS(0,100) // invert all bytes
```
**Notes:** Does work faster if count is a multiply of 4.

116.2.61 LeftMBS(length as Integer) as memoryblock

MBS Util Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a memoryblock with the first given number of bytes.
**Notes:**
If length is greater than the size of the memoryblock then then length is set to size.
Returns nil if length<=0 or on low memory.
This function will not work if the memoryblock has an unknown size.

116.2.62 MaxMBS(firstMem as Ptr, secondMem as Ptr, BitSize as Integer = 8, Signed as Boolean = false, offsetByte as Integer = 0, lengthBytes as Integer = 0) as boolean

MBS Util Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calculates max values of values in memory.
**Example:**
```plaintext
dim m1 as new MemoryBlock(12)
dim m2 as new MemoryBlock(12)
dim mr1 as new MemoryBlock(12)
dim mr2 as new MemoryBlock(12)
```
for i as Integer = 0 to 11
m1.UInt8Value(i) = i
m2.UInt8Value(11-i) = i
next

if mr1.minMBS(m1, m2) then
if mr2.maxMBS(m1, m2) then
MsgBox EncodeHex(m1)+” first”+EndOfLine+_
EncodeHex(m2)+” second”+EndOfLine+_
EncodeHex(mr1)+” min”+EndOfLine+_
EncodeHex(mr2)+” max”
end if
end if

Notes:

firstMem and secondMem can be ptr or memoryblock with some values. Can be same as destination (the memoryblock the method is called at)
BitSize defines integer bit depth 8, 16, 32 or 64. Signed defines if to expect signed or unsigned integers.
offsetByte defines offset in destination memoryblock. lengthBytes is length of memory. If zero, we use size of destination memoryblock.
Passing bad parameters can easily lead to crash. Return true on success and false on failure and raises exceptions for invalid parameters.

116.2.63 MidMBS(offset as Integer) as memoryblock

MBS Util Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Returns a memoryblock with the bytes of the given memoryblock from the given offset on.
Notes:
Offset is 0 based.
Returns nil if offset<0 or on low memory.
This function will not work if the memoryblock has an unknown size.
See also:
• 116.2.64 MidMBS(offset as Integer, length as Integer) as memoryblock

116.2.64 MidMBS(offset as Integer, length as Integer) as memoryblock

MBS Util Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Returns a memoryblock with the given bytes from the middle of the memoryblock.
116.2. CLASS MEMORYBLOCK

Notes:

Offset is 0 based.
Returns nil if offset<0 or on low memory.
If length is too long then length is set to a lower value.
This function will not work if the memoryblock has an unknown size.
See also:

• 116.2.63 MidMBS(offset as Integer) as memoryblock

116.2.65 MinMBS(firstMem as Ptr, secondMem as Ptr, BitSize as Integer = 8, Signed as Boolean = false, offsetByte as Integer = 0, lengthBytes as Integer = 0) as boolean

Example:

dim m1 as new MemoryBlock(24)
dim m2 as new MemoryBlock(24)
dim mr1 as new MemoryBlock(24)
dim mr2 as new MemoryBlock(24)

for i as Integer = 0 to 11
m1.UInt16Value(2*i) = i
m2.UInt16Value(2*(11-i)) = i
next

if mr1.minMBS(m1, m2, 16, false, 0, 24) then
if mr2.maxMBS(m1, m2, 16, false, 0, 24) then
MsgBox EncodeHex(m1)+“ first”+EndOfLine+
EncodeHex(m2)+“ second”+EndOfLine+
EncodeHex(mr1)+“ min”+EndOfLine+
EncodeHex(mr2)+“ max”
end if
end if

Notes:

firstMem and secondMem can be ptr or memoryblock with some values. Can be same as destination (the memoryblock the method is called at)
BitSize defines integer bit depth 8, 16, 32 or 64. Signed defines if to expect signed or unsigned integers.
offsetByte defines offset in destination memoryblock. lengthBytes is length of memory. If zero, we use size of destination memoryblock.
Passing bad parameters can easily lead to crash. Return true on success and false on failure and raises exceptions for invalid parameters.

116.2.66 MirrorBitsInBytesMBS(offsetByte as Integer, lengthByte as Integer)

MBS Util Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Mirrors bits in each byte.

**Example:**

```vbs
dim m as new MemoryBlock(12)
m.CString(0)="HelloHello"
m.MirrorBitsInBytesMBS(0,5)
MsgBox EncodingToHexMBS(m.StringValue(5,5))+" »"+EncodingToHexMBS(m.StringValue(0,5))
```

**Notes:**

- offsetByte: where to start in the memoryblock
- lengthByte: number of bytes to swap

Mirror means in this case, that if you a byte with bits 11001100, after the mirror, you have 00110011. So bit 0 and 7 exchange values. Same for 1 and 6, 2 and 5, 3 and 4.

116.2.67 MirrorBitsMBS(offsetBit as Integer, lengthBit as Integer)

MBS Util Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Mirrors the bits in a memoryblock.

**Notes:**

- e.g. "111100001" in the memoryblock would give "100001111"
- This function is certainly not the fastest one, but faster than anything you can get written in Realbasic.
- And make sure the bounds are matched, because on memory access outside the valid ranges, the function will crash.
- 0 offsetBit < mem.size*8 and 0 lengthBit mem.size*8 - offsetBit
116.2. CLASS MEMORYBLOCK

116.2.68 MirrorBytesMBS(offsetByte as Integer = 0, lengthByte as Integer = -1)

MBS Util Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Mirrors the bytes in the given range.

**Notes:**

e.g. "abcdefg" in the memoryblock would give "hgfedcba"
This function is certainly not the fastest one, but faster than anything you can get written in Realbasic.
And make sure the bounds are matched, because on memory access outside the valid ranges, the function will crash.
offsetByte < mem.size and lengthByte < mem.size - offsetByte

If lengthByte is -1, we query memoryblock for size. If size is unknown or negative, the function does nothing.

116.2.69 MultiplyUInt16MBS(Factor as Double, offsetByte as Integer = 0, lengthBytes as Integer = 0)

MBS Util Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Multiplied UInt16 values in the memoryblock.

**Example:**

```javascript
dim myMemOut3 as new MemoryBlock(500)
myMemOut3.MultiplyUInt16MBS(0.9)
```

**Notes:**

Values bigger than 65535 are set to 65535.
lengthBytes is in bytes, so 2 times the number of values.
Factor must be >= 0.0.
Offset is the offset in bytes from the beginning of the memoryblock to start. Wrong offsets (e.g. negative) can lead to crashes. lengthBytes is optional, if not specified or zero uses the length of memoryblock.

116.2.70 MultiplyUInt8MBS(Factor as Double, offsetByte as Integer = 0, lengthBytes as Integer = 0)

MBS Util Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Multiplies UInt8 values in the memoryblock.

**Example:**

```javascript
dim myMemOut3 as new MemoryBlock(500)
myMemOut3.MultiplyUInt8MBS(0.9)
```

**Notes:**

Values bigger than 65535 are set to 65535.
lengthBytes is in bytes, so 2 times the number of values.
Factor must be >= 0.0.
Notes:
Values bigger than 255 are set to 255.
lengthBytes is in bytes, so 2 times the number of values.
Factor must be $\geq 0.0$.
Offset is the offset in bytes from the beginning of the memoryblock to start. Wrong offsets (e.g. negative) can lead to crashes. lengthBytes is optional, if not specified or zero uses the length of memoryblock.

### 116.2.71 RightMBS(length as Integer) as memoryblock

MBS Util Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a memoryblock with the given number of bytes from the right side of the memoryblock.

**Example:**
```
dim mem, m as MemoryBlock
mem = m.RightMBS(5)
```

**Notes:**
If length is more than the memoryblock’s size, than length is set to size.
Returns nil if length $\leq 0$ or on low memory.
This function will not work if the memoryblock has an unknown size.

### 116.2.72 SetStringMBS(str as String, offset as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets a string inside the memoryblock.

**Notes:** With newer RB versions you may better use StringValue.

### 116.2.73 SwapBytes16MBS(offset as Integer, numBytes as Integer)

MBS Util Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Swaps words inside the given bounds inside the memoryblock.

**Example:**
```
dim numbytes as Integer // number of bytes in MemoryBlock
dim m as MemoryBlock // your memoryblock
dim i as Integer
```
for i=0 to numbytes step 2  
m.USHort(i)=EndianSwap16MBS(m.USHort(i))  
next

### 116.2.74 SwapBytes32MBS(offset as Integer, numBytes as Integer)

MBS Util Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Swaps longs inside the given bounds inside the memory block.  

**Example:**

```vbnet
// Test SwapBytes32MBS and SwapBytes16MBS:

const h11223344=& h11223344
const h22114433=& h22114411 // 16bit swap
const h44332211=& h44332211 // 32bit swap

dim m as memoryBlock

dim ok as Integer

m=NewmemoryBlock(20)
m.Long(00)=h11223344
m.Long(04)=h11223344
m.Long(08)=h11223344
m.Long(12)=h11223344
m.Long(16)=h11223344

m.SwapBytes16MBS(4,4)
m.SwapBytes32MBS(12,4)

if m.Long(00)=h11223344 then
ok=ok+1
else
MsgBox "00: " +hex(m.Long(00))
end if

if m.Long(04)=h22114411 then
ok=ok+1
else
MsgBox "04: " +hex(m.Long(04))
end if

if m.Long(08)=h11223344 then
ok=ok+1
else
MsgBox "08: " +hex(m.Long(08))
end if
```
if m.Long(12)=h44332211 then
  ok=ok+1
else
  MsgBox "$12: $"+hex(m.Long(12))
end if

if m.Long(16)=h11223344 then
  ok=ok+1
else
  MsgBox "$16: $"+hex(m.Long(16))
end if

if ok=5 then
  MsgBox "OK"
else
  MsgBox "Fail"
end if

Notes:
It should do something like this:

dim m as memoryBlock

for i=0 to numbytes step 2
  m.long(i)=EndianSwap32MBS(m.long(i))
next

116.2.75  SwapBytesMBS(offset as Integer, numBytes as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Swaps bytes inside the given bounds inside the memoryblock. Notes: Reverses the order of the bytes at the given offset and length in the memoryBlock. This is helpful to change representation of values from Little Endian (used in Windows) to Big Endian (used in Mac OS) and vice versa. Thanks to Franco Vaccari for the code of this routine.
116.2. CLASS MEMORYBLOCK

116.2.76 Properties

116.2.77 BytesMBS as Integer

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The size of the memoryblock.  
**Notes:**  
Some newer RB version introduced a size property which is read and writeable, but older RB versions didn’t have even a readable size property, so this bytes property will help there.  
Also it should as a property be viewable in the debugging windows.  
(Read only property)

116.2.78 OSTypeMBS(offset as Integer) as String

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Read/Write an OSType.  
**Notes:**  
Interprets 4 bytes starting at the given offset as a OSType value.  
(Read and Write computed property)
116.3 class MemoryBlockMBS

116.3.1 class MemoryBlockMBS

MBS Util Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A class to hold a memoryblock.

**Example:**

```basic
dim m as new MemoryBlockMBS

if m.Create(2000) then

    // copy string into memory
    m.Memory.StringValue(0,5)="Hello"

    // and read again
    MsgBox m.Memory.StringValue(0,5)

end if
```

**Notes:**

Realbasics memoryblocks have two bad things:
- they are limited to 1 GB on Mac OS X and Mac OS Classic
- they take a lot of time to create them
- they take a lot of real memory

Realbasic allocates the memory and fills it with zeros.

The plugin in contrast uses zero filled pages to create the memoryblock which nearly take no time to create them and it does only need virtual memory until the memory is really used which saved swapping space.

116.3.2 Methods

116.3.3 Close

MBS Util Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The destructor.

**Notes:**

There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)
116.3. CLASS MEMORYBLOCKMBS

116.3.4 Constructor

MBS Util Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor. **Notes:** This constructor does nothing, so you can call Create yourself. See also:

- 116.3.5 Constructor(Mem as MemoryBlock)
- 116.3.6 Constructor(Mem as MemoryBlock, Size as Int64, Offset as Int64 = 0)
- 116.3.7 Constructor(Size as Int64)
- 116.3.8 Constructor(Str as String)
- 116.3.9 Constructor(Str as String, Size as Int64, Offset as Int64 = 0)

116.3.5 Constructor(Mem as MemoryBlock)

MBS Util Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new MemoryBlockMBS with content of memoryblock. **Example:**

```vbnet
dim s as string = "Hello World"
dim m as MemoryBlock = s
dim x as new MemoryBlockMBS(m)
MsgBox str(x.Size)
```

**Notes:** Raises exception is size is invalid or no memory is available. See also:

- 116.3.4 Constructor
- 116.3.6 Constructor(Mem as MemoryBlock, Size as Int64, Offset as Int64 = 0)
- 116.3.7 Constructor(Size as Int64)
- 116.3.8 Constructor(Str as String)
- 116.3.9 Constructor(Str as String, Size as Int64, Offset as Int64 = 0)
116.3.6 Constructor(Mem as MemoryBlock, Size as Int64, Offset as Int64 = 0)


Example:

dim s as string = "Hello World"
dim m as MemoryBlock = s

dim x as new MemoryBlockMBS(m, 9)

MsgBox str(x.Size)

Notes: Raises exception is size is invalid or no memory is available.
See also:

- 116.3.4 Constructor
- 116.3.5 Constructor(Mem as MemoryBlock)
- 116.3.7 Constructor(Size as Int64)
- 116.3.8 Constructor(Str as String)
- 116.3.9 Constructor(Str as String, Size as Int64, Offset as Int64 = 0)

116.3.7 Constructor(Size as Int64)


Notes: Raises exception is size is invalid or no memory is available.
See also:

- 116.3.4 Constructor
- 116.3.5 Constructor(Mem as MemoryBlock)
- 116.3.6 Constructor(Mem as MemoryBlock, Size as Int64, Offset as Int64 = 0)
- 116.3.8 Constructor(Str as String)
- 116.3.9 Constructor(Str as String, Size as Int64, Offset as Int64 = 0)

116.3.8 Constructor(Str as String)


Example:
116.3. CLASS MEMORYBLOCKMBS

```vbnet
dim s as string = "Hello World"
dim x as new MemoryBlockMBS(s)
```

MsgBox str(x.Size)

### Notes:

Text encoding is ignored and bytes copied as they are.

Raises exception is size is invalid or no memory is available.

See also:

- 116.3.4 Constructor
- 116.3.5 Constructor(Mem as MemoryBlock)
- 116.3.6 Constructor(Mem as MemoryBlock, Size as Int64, Offset as Int64 = 0)
- 116.3.7 Constructor(Size as Int64)
- 116.3.9 Constructor(Str as String, Size as Int64, Offset as Int64 = 0)

---

116.3.9 Constructor(Str as String, Size as Int64, Offset as Int64 = 0)

MBS Util Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Creates a new MemoryBlockMBS with given size and copies content of string.

**Example:**

```vbnet
dim s as string = "Hello World"
dim x as new MemoryBlockMBS(s, 9)
```

MsgBox str(x.Size)

### Notes:

Text encoding is ignored and bytes copied as they are.

Raises exception is size is invalid or no memory is available.

See also:

- 116.3.4 Constructor
- 116.3.5 Constructor(Mem as MemoryBlock)
- 116.3.6 Constructor(Mem as MemoryBlock, Size as Int64, Offset as Int64 = 0)
- 116.3.7 Constructor(Size as Int64)
- 116.3.8 Constructor(Str as String)
116.3.10 Create(size as Int64) as boolean

MBS Util Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new memoryblock.
**Example:**
```vbscript
dim m as MemoryBlockMBS
dim n as MemoryBlock
dim t as Integer

const size=2200000000

// RB: up to 1 GigaByte
// Plugin: up to 2 GigaByte - 1 Byte
m=New MemoryBlockMBS

if m.Create(size) then
    n=m.Memory
end if
```
```
MsgBox str(ticks-t)
```
```
t=ticks
if m.Create(size) then
    n=m.Memory
MsgBox str(ticks-t)
end if
```

**Notes:**
Returns true on success and false on failure.
Size can be any positive value up to &h7FFFFFFF (=2^31-1).

Size became 64bit to avoid integer overflows.

116.3.11 Resize(Size as Int64) as boolean

MBS Util Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Tries to resize the memoryblock to the new size.
**Example:**
116.3. CLASS MEMORYBLOCKMBS

dim m as new MemoryBlockMBS

if m.Create(1000) then
MsgBox str(m.Size)
if m.Resize(2000) then
MsgBox str(m.Size)
end if
end if

Notes:

Returns true on success.
If false is returned, the memoryblockMBS is not touched.

If the new size is smaller, data is lost as the memoryblock is cut.
If the new size is bigger, the memoryblock is resized. Or if that does not work, a new memoryblock is created
and data is copied. New bytes will be zero.

116.3.12 Properties

116.3.13 Address as Int64

MBS Util Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The address of the memory.
**Notes:**
This value became 64bit to avoid integer overflows.
(Read only property)

116.3.14 Memory as Memoryblock

MBS Util Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The memoryblock to access this memory.
**Notes:**
Keep a reference to the MemoryBlockMBS object as long as you use this memoryblock object.
(Read only property)
116.3.15  Size as Int64

MBS Util Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The size of this memoryblock.

**Notes:**
This value became 64bit to avoid integer overflows. (Read only property)
116.4.  CLASS MEMORYSTORAGEMBS

116.4  class MemoryStorageMBS

116.4.1  class MemoryStorageMBS

MBS Util Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class to store stuff in memory outside of the app memory.  
**Notes:**
The memory is stored using mapped memory in the system address space outside of the 32bit app memory of your app.

Normally a 32-bit app can only use 2 to 4 GB of memory. Using blocks of memory outside this address space, you can easily keep 10 GB of data in memory.

Be aware that a some point creating more storages may fail due to out of memory. The system may decide to swap memory to disk if you run out of physical memory.

Please have your app check free space on boot disk regularly and avoid running out of disk space for swap!

116.4.2  Methods

116.4.3  Constructor(Size as Int64 = 0)

MBS Util Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constructor.
**Notes:** If size >0, we allocate the memory for this size right away.

116.4.4  Destructor

MBS Util Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The destructor.

116.4.5  MemoryValue(Offset as Int64, Assigns s as MemoryBlock)

MBS Util Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets part of memory storage as string.
**Notes:**
Offset and Size are checked for range and an OutOfBoundsException can be raised. Please use constructor before to create memory storage with given size.
116.6  MemoryValue(Offset as Int64, Size as Int64) as MemoryBlock

MBS Util Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries part of memory storage as memory block. **Notes:** Offset and Size are checked for range and an OutOfBoundsException can be raised. See also:

- 116.4.10 MemoryValue as MemoryBlock
- 116.4.5 MemoryValue(Offset as Int64, Assigns s as MemoryBlock)

116.7  StringValue(Offset as Int64, Assigns s as String)

MBS Util Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries part of memory storage as string. **Notes:** Offset and Size are checked for range and an OutOfBoundsException can be raised. Please use constructor before to create memory storage with given size. See also:

- 116.4.13 StringValue as String
- 116.4.8 StringValue(Offset as Int64, Size as Int64) as String

116.8  StringValue(Offset as Int64, Size as Int64) as String

MBS Util Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries part of memory storage as string. **Notes:** Offset and Size are checked for range and an OutOfBoundsException can be raised. See also:

- 116.4.13 StringValue as String
- 116.4.7 StringValue(Offset as Int64, Assigns s as String)
116.4. CLASS MEMORYSTORAGEMBS

116.4.9 Properties

116.4.10 MemoryValue as MemoryBlock

MBS Util Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The content of this memory storage as a memoryblock. **Notes:** (Read and Write property) See also:

- 116.4.5 MemoryValue(Offset as Int64, Assigns s as MemoryBlock) 16623
- 116.4.6 MemoryValue(Offset as Int64, Size as Int64) as MemoryBlock 16624

116.4.11 Size as Integer

MBS Util Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The size of the data in bytes. **Notes:** (Read and Write property)

116.4.12 SizeAllocated as Integer

MBS Util Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The size of memory allocated. **Notes:** (Read and Write property)

116.4.13 StringValue as String

MBS Util Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The content of this memory storage as a string. **Notes:** (Read and Write property) See also:

- 116.4.7 StringValue(Offset as Int64, Assigns s as String) 16624
- 116.4.8 StringValue(Offset as Int64, Size as Int64) as String 16624
Chapter 117

Menu

117.1 Globals

117.1.1 MenuBarHeightMBS as Integer

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Function:** Returns the height of the menubar in pixels.  

**Example:**

```vba
msgbox "The menubar is " + str(MenuBarHeightMBS) + " pixels height."
```

**Notes:**

Requires the appearance manager.

Without plugin, you can use this:

```vba
declare function GetThemeMenuBarHeight lib "Carbon" (p as ptr) as Integer

dim l as Integer

dim p as memoryBlock

p = newmemoryBlock(10)

error = GetThemeMenuBarHeight(p)  // 0 if okay.

menuheight = p.short(0)  // in pixels. 22 on Mac OS X.
```

Added Cocoa support in plugin version 10.0.
117.2  class MenubarMBS

117.2.1  class MenubarMBS

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Gives access to the Mac menubar.
**Example:**

```ruby
dim mb as MenubarMBS
mb=new MenubarMBS
mb.PreferencesMenuVisible=false // hide Preferences MenuMBS
```

**Notes:** Don’t use this class with RB5 or newer.

117.2.2  Methods

117.2.3  close

MBS Util Plugin, Plugin Version: 4.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The destructor.
**Notes:**

There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

117.2.4  CreateStandardWindowMenu

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates the standard Carbon Window menu.
**Example:**

```ruby
dim mb as MenubarMBS
mb=new MenubarMBS
mb.CreateStandardWindowMenu
```

**Notes:**

Only works in Carbon.
This window has some bugs like that the menu is not working correctly before you click on a window. But I think this is because of RB not using Carbon Events.
Do not use this method with RB5 or newer.

### 117.2.5 Item(index as Integer) as MenuMBS

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the menu from the MenubarMBS at position index.

**Example:**
```pascal
dim mb as MenubarMBS
dim m as MenuMBS

mb=new MenubarMBS

m=mb.Item(4) // get MenuMBS number 4
```

### 117.2.6 Properties

#### 117.2.7 HideMenuCommandKey as string

MBS Util Plugin, Plugin Version: 9.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The command key of the Hide menu entry on Mac OS X.

**Notes:** (Read and Write computed property)

#### 117.2.8 HideMenuEnabled as boolean

MBS Util Plugin, Plugin Version: 9.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether the Mac OS X Hide menu item is enabled.

**Notes:** (Read and Write computed property)

#### 117.2.9 HideMenuText as string

MBS Util Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The text of the hide menu entry on Mac OS X.

**Example:**
```pascal
dim m as MenuBarMBS

m=new MenuBarMBS
```
m.HideMenuText="Hello "+m.HideMenuText
m.HideOthersMenuText="Hello "+m.HideOthersMenuText
m.ShowAllMenuText="Hello "+m.ShowAllMenuText
m.PreferencesMenuText="Hello "+m.PreferencesMenuText
m.QuitMenuText="Hello "+m.QuitMenuText

Notes: (Read and Write computed property)

117.2.10 HideMenuVisible as boolean

MBS Util Plugin, Plugin Version: 9.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Whether the Mac OS X Hide menu item is visible.
Notes: (Read and Write computed property)

117.2.11 HideOthersMenuCommandKey as string

Notes: (Read and Write computed property)

117.2.12 HideOthersMenuEnabled as boolean

MBS Util Plugin, Plugin Version: 9.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Whether the Mac OS X Hide Others menu item is enabled.
Notes: (Read and Write computed property)

117.2.13 HideOthersMenuText as string

MBS Util Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The text of the hide others menu entry on Mac OS X.
Example:

dim m as MenuBarMBS
m=new MenuBarMBS
m.HideMenuText="Hello "+m.HideMenuText
117.2. CLASS MENUBARMBS

m.HideOthersMenuText="Hello " + m.HideOthersMenuText
m.ShowAllMenuText="Hello " + m.ShowAllMenuText
m.PreferencesMenuText="Hello " + m.PreferencesMenuText
m.QuitMenuText="Hello " + m.QuitMenuText

Notes: (Read and Write computed property)

117.2.14 HideOthersMenuVisible as boolean

MBS Util Plugin, Plugin Version: 9.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Whether the Mac OS X Hide Others menu item is visible. Notes: (Read and Write computed property)

117.2.15 MenuBarVisible as Boolean

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Returns the menu from the menubar at position index.

Example:

dim mb as MenubarMBS
dim m as MenuMBS

mb=new MenubarMBS

m=mb.Item(4) // get MenuMBS number 4

Notes:
Requires Mac OS 8.5 or newer to work.
Returns always true on Windows.
(Read and Write computed property)

117.2.16 PreferencesMenuCommandKey as string

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The command key of the preferences menu entry on Mac OS X.

Example:

dim mb as MenubarMBS
mb=new MenubarMBS
mb.PreferencesMenuCommandKey="K"

Notes:
Don’t use this in RB 4.5 or newer. Use the PrefMenuItem class.
(Read and Write computed property)

117.2.17 PreferencesMenuEnabled as Boolean

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether the Mac OS X Preferences menu is enabled.

**Example:**
```lisp
dim mb as MenubarMBS
mb=new MenubarMBS
mb.PreferencesMenuEnabled=true // enable the pref MenuMBS
```

Notes:
Don’t use this in RB 4.5 or newer. Use the PrefMenuItem class.

For Mac OS 9 or Windows you need to make another Pref MenuMBS Entry which you hide if you are running on Mac OS X like this:

```
# if debugbuild then
# else
  // if not debugging
  # if targetcarbon then
    // if carbon
    if system.runningOnCarbonX then
      // if on Mac OS X
      EditPreferences.visible=False
      EditPreferencesLine.visible=False
      // Remove our lines from the Edit MenuMBS
    end if
  # endif
# endif
```

In the HandleAppleEvent Eventhandler in the application subclass you get an event of ID ”pref” if your
117.2.  CLASS MENUBARMBS

application is run on Mac OS X outside the Realbasic IDE.
(Read and Write computed property)

117.2.18  PreferencesMenuIconResID as Integer

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The ID of a CICN Resource in use as an icon for the preferences menu entry on Mac OS X.

**Example:**
```vbnet
Dim mb as MenubarMBS
mb=new MenubarMBS
mb.PreferencesMenuIconResID=257
```

**Notes:**
Don’t use this in RB 4.5 or newer. Use the PrefMenuItem class.
ID needs to be in Range between 256 and 511.
(Read and Write computed property)

117.2.19  PreferencesMenuSeparatorVisible as boolean

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** whether the line below the preferences menu entry on Mac OS X is visible.

**Example:**
```vbnet
Dim mb as MenubarMBS
mb=new MenubarMBS
mb.PreferencesMenuVisible=false // hide it
mb.PreferencesMenuSeparatorVisible=false // hide line below
```

**Notes:**
Don’t use this in RB 4.5 or newer. Use the PrefMenuItem class.
Returns always true on Windows.
(Read and Write computed property)
117.2.20 PreferencesMenuText as string

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The text of the preferences menu entry on Mac OS X.

**Example:**

```vba
dim mb as MenubarMBS
mb=new MenubarMBS
mb.PreferencesMenuText="My applications preferences..."
```

**Notes:**

Don’t use this in RB 4.5 or newer. Use the PrefMenuItem class.
(Read and Write computed property)

117.2.21 PreferencesMenuVisible as boolean

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** whether the preferences menu entry on Mac OS X is visible.

**Example:**

```vba
dim mb as MenubarMBS
mb=new MenubarMBS
mb.PreferencesMenuVisible=false // hide it
mb.PreferencesMenuSeparatorVisible=false // hide line below
```

**Notes:**

Don’t use this in RB 4.5 or newer. Use the PrefMenuItem class.
Returns always true on Windows.
(Read and Write computed property)

117.2.22 QuitMenuCommandKey as string

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The command key of the Quit menu entry on Mac OS X.

**Example:**
117.2. **CLASS MENUBARMBS**

```vbnet
dim mb as MenubarMBS

mb=new MenubarMBS

mb.QuitMenuCommandKey="K"
```

**Notes:**
Don’t use this in RB 4.5 or newer. Use the QuitMenuItem class.
(Read and Write computed property)

---

117.2.23 **QuitMenuEnabled as boolean**

MBS Util Plugin, Plugin Version: 9.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether the Mac OS X Quit menu item is enabled.
**Notes:** (Read and Write computed property)

117.2.24 **QuitMenuIconResID as Integer**

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The ID of a CICN Resource in use as an icon for the Quit menu entry on Mac OS X.
**Example:**
```vbnet
dim mb as MenubarMBS

mb=new MenubarMBS

mb.QuitMenuIconResID=257
```

**Notes:**
Don’t use this in RB 4.5 or newer. Use the PrefMenuItem class.
ID needs to be in Range between 256 and 511.
(Read and Write computed property)

---

117.2.25 **QuitMenuSeparatorVisible as boolean**

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** whether the line below the Quit menu entry on Mac OS X is visible.
**Example:**
dim mb as MenubarMBS

mb=new MenubarMBS

mb.QuitMenuVisible=false // hide it
mb.QuitMenuSeparatorVisible=false // hide line below

Notes:
Don’t use this in RB 4.5 or newer. Use the QuitMenuItem class.
Returns always true on Windows.
(Read and Write computed property)

117.2.26 QuitMenuText as string

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The text of the Quit menu entry on Mac OS X.
**Example:**

```ruby
dim mb as MenubarMBS

mb=new MenubarMBS

mb.QuitMenuText='"My applications Quit..."'
```

Notes:
Don’t use this in RB 4.5 or newer. Use the QuitMenuItem class.
(Read and Write computed property)

117.2.27 QuitMenuVisible as boolean

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** whether the Quit menu entry on Mac OS X is visible.
**Example:**

```ruby
dim mb as MenubarMBS

mb=new MenubarMBS

mb.QuitMenuVisible=false // hide it
mb.QuitMenuSeparatorVisible=false // hide line below
```
Notes:
Don’t use this in RB 4.5 or newer. Use the QuitMenuItem class.
Returns true on Windows.
(Read and Write computed property)

117.2.28 ServicesMenuCommandKey as string

MBS Util Plugin, Plugin Version: 9.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The command key of the Services menu entry on Mac OS X.
**Notes:** (Read and Write computed property)

117.2.29 ServicesMenuEnabled as boolean

MBS Util Plugin, Plugin Version: 9.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether the Mac OS X services menuitem is enabled.
**Notes:** (Read and Write computed property)

117.2.30 ServicesMenuText as string

MBS Util Plugin, Plugin Version: 9.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The text of the services menu entry on Mac OS X.
**Notes:** (Read and Write computed property)

117.2.31 ServicesMenuVisible as boolean

MBS Util Plugin, Plugin Version: 9.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether the Mac OS X Services menuitem is visible.
**Notes:** (Read and Write computed property)

117.2.32 ShowAllMenuCommandKey as string

MBS Util Plugin, Plugin Version: 9.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The command key of the Show All menu entry on Mac OS X.
**Notes:** (Read and Write computed property)
117.2.33 ShowAllMenuEnabled as boolean

MBS Util Plugin, Plugin Version: 9.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether the Mac OS X Show All menu item is enabled. **Notes:** (Read and Write computed property)

117.2.34 ShowAllMenuText as string

MBS Util Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The text of the show all menu entry on Mac OS X. **Example:**

```vba
dim m as MenuBarMBS
m= new MenuBarMBS
m.HideMenuText= "Hello "+m.HideMenuText
m.HideOthersMenuText= "Hello "+m.HideOthersMenuText
m.ShowAllMenuText= "Hello "+m.ShowAllMenuText
m.PreferencesMenuText= "Hello "+m.PreferencesMenuText
m.QuitMenuText= "Hello "+m.QuitMenuText
```

**Notes:** (Read and Write computed property)

117.2.35 ShowAllMenuVisible as boolean

MBS Util Plugin, Plugin Version: 9.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether the Mac OS X Show All menu item is visible. **Notes:** (Read and Write computed property)
117.3.  

class MenuMBS

117.3.1  

class MenuMBS

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No.  
**Function:** Gives access to a MenuMBS in the MenubarMBS.  
**Example:**

```vba
    dim mb as MenubarMBS
    dim m as MenuMBS
    mb=new MenubarMBS
    m=mb.item(2)  // second MenuMBS
    m.bold(1)=true  // make it bold
```

**Deprecated:** This item is deprecated and should no longer be used. You can use NSMenuMBS and NSMenuItemMBS for Cocoa projects instead.

117.3.2  

Methods

117.3.3  

**AppendItem(description as string)**

**Function:** Appends a new menu item to a menu, using a string for the item’s text.

117.3.4  

**AppendItems(description as string)**

**Function:** Appends a new menu item to a menu, using a string for the item’s text.

117.3.5  

**close**

**Function:** The destructor.  
**Notes:**

There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.  
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)
117.3.6 Count as Integer

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The number of items

**Example:**

```vba
dim mb as MenubarMBS
dim m as MenuMBS
mb=new MenubarMBS
m=mb.item(2)
msgbox str(m.count)+" items in the second MenuMBS."
```

117.3.7 DeleteItem(index as Integer)

MBS Util Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Deletes a menuitem in the menu.

117.3.8 DisableAllMenuItems

MBS Util Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Disables all menu items.

117.3.9 DisposeMenu

MBS Util Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Disposes the menu.

117.3.10 EnableAllMenuItems

MBS Util Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Enables all menu items.

117.3.11 InsertItem(description as string,afteritem as Integer)

MBS Util Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Inserts a menuitem in the menu.
117.3.12 InsertItems(description as string, afteritem as Integer)

MBS Util Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Inserts menuitems in the menu.

117.3.13 MenuHasEnabledItems as boolean

MBS Util Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if there is at least one enabled menu item.

117.3.14 NewMenu(id as Integer, name as string) as boolean

MBS Util Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new menu.

117.3.15 SetIconCFStringHandle(index as Integer, CFStringRef as Integer)

MBS Util Plugin, Plugin Version: 3.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The CFString Handle for the icon name of a menuitem.

**Notes:**
Use the handle property of a CFStringMBS object.
A CFString naming a resource in the main bundle of the process.
(Mac OS X 10.1 and later only)
This one works with the dock tile menus.

117.3.16 SetIconCGImageHandle(index as Integer, CGImageRef as Integer)

MBS Util Plugin, Plugin Version: 3.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The CGImage Handle for the icon name of a menuitem.

**Notes:** Use the handle property of a CGImageMBS object.

117.3.17 SetIconRefHandle(index as Integer, IconRef as Integer)

MBS Util Plugin, Plugin Version: 3.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The Icon Reference Handle for the icon name of a menuitem.

**Example:**
dim i as IconMBS
dim m as MenuMBS
dim b as MenuBarMBS

i=new IconMBS(SpecialFolder.Desktop)

b=new MenuBarMBS
m=b.Item(2+16) // Edit menu in RB 4.5
m.SetIconRefHandle 1, i.Handle // edit -> undo
m.SetIconRefHandle 3, i.Handle // edit -> cut

Notes: Use the handle property of a IconMBS object.

117.3.18 SetIconSelector(index as Integer, Selector as string)

Example:
dim m as MenuMBS
dim b as MenuBarMBS

b=new MenuBarMBS
m=b.Item(3) // Edit menu in RB 4.5
m.SetIconSelector 1, "FNDR" // Finder Icon

Notes: This one works with the dock tile menus.

117.3.19 Properties

117.3.20 Handle as Integer

Notes:
A MenuRef.
Value is 0 if there is no Mac OS menu.
(Read and Write property)
117.3.21 Popup as PopupMenu

MBS Util Plugin, Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The popupmenu this menu was made from.  
**Notes:**  
Only filled by the PopupMenu.MenuMBS function.  
(Read and Write property)

117.3.22 Bold(index as Integer) as boolean

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The font style to use for the MenuMBS item.  
**Example:**
```
dim mb as MenubarMBS  
dim m as MenuMBS  
mb=new MenubarMBS  
m=mb.item(2)  
m.Bold(1)=true
```

**Notes:** (Read and Write computed property)

117.3.23 CommandID(index as Integer) as Integer

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The command id for a menu entry.  
**Notes:**  
Used for Carbon Events.  
Index is from 1 to count.  
You should use codes which are created from 4 letter strings with the OSTypeFromStringMBS function. All low letter codes like "new" are reserved by Apple, but you can of course use them.  

Common codes defined by Apple:

(Read and Write computed property)
117.3.24  CommandKey(index as Integer) as string

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The command key code to use with the MenuMBS entry.

**Example:**
```vbnet
dim mb as MenubarMBS
dim m as MenuMBS
mb=new MenubarMBS
m=mb.item(2)
m.CommandKey(1)="K"
```

**Notes:** (Read and Write computed property)

117.3.25  Condense(index as Integer) as boolean

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The font style to use for the MenuMBS item.

**Example:**
```vbnet
dim mb as MenubarMBS
dim m as MenuMBS
mb=new MenubarMBS
m=mb.item(2)
m.Condense(1)=true
```

**Notes:** (Read and Write computed property)

117.3.26  Enabled(index as Integer) as boolean

MBS Util Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** whether the menu item is enabled.

**Notes:** (Read and Write computed property)

117.3.27  Extend(index as Integer) as boolean

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The font style to use for the MenuMBS item.

**Example:**
117.3. CLASS MENUMBS

```vbs
    dim mb as MenubarMBS
    dim m as MenuMBS
    mb=new MenubarMBS
    m=mb.item(2)
    m.Extend(1)=true
```

Notes: (Read and Write computed property)

117.3.28 FontName(index as Integer) as string

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The Font to use for the MenuMBS item.

**Example:**

```vbs
    dim mb as MenubarMBS
    dim m as MenuMBS
    mb=new MenubarMBS
    m=mb.item(2)
    m.FontName(1)="Comic sans ms"
```

Notes: (Read and Write computed property)

117.3.29 IconEnabled(index as Integer) as boolean

MBS Util Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** whether the menu item is enabled.

Notes: (Read and Write computed property)

117.3.30 IconResID(index as Integer) as Integer

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The ID of a CICN Resource in use as an icon for the MenuMBS entry.

**Example:**

```vbs
    dim mb as MenubarMBS
    dim m as MenuMBS
    mb=new MenubarMBS
    m=mb.item(2)
    m.IconResID(1)=257
```
Notes:

ID needs to be in Range between 256 and 511.
(Read and Write computed property)

117.3.31 Italic(index as Integer) as boolean

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The font style to use for the MenuMBS item.

**Example:**

```pascal
dim mb as MenubarMBS
dim m as MenuMBS
mb=new MenubarMBS
m=mb.item(2)
m.Italic(1)=true
```

Notes: (Read and Write computed property)

117.3.32 Mark(index as Integer) as Integer

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** whether to show a mark.

**Example:**

```pascal
dim mb as MenubarMBS
dim m as MenuMBS
mb=new MenubarMBS
m=mb.item(2)
m.mark(1)=& h12
```

Notes:

(Read and Write computed property)

117.3.33 MenuFont as string

MBS Util Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The font for the menu item.
117.3. **CLASS MENUMB S**

**Notes:** (Read and Write computed property)

### 117.3.34 MenuFontSize as Integer

MBS Util Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The font size of this menu item.  
**Notes:** (Read and Write computed property)

### 117.3.35 MenuIconHandle as Integer

MBS Util Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The icon of the given menu.  
**Example:**

```vbnet
dim b as MenuBarMBS
dim m as MenuMBS
dim i as Integer
dim ic as IconMBS

ic=new IconMBS(SpecialFolder.Desktop)
b=new MenuBarMBS
m=b.Item(3)
m.MenuTitle="Hello Edit Menu"
m=b.Item(2)
m.MenuIconHandle=ic.Handle
```

**Notes:**
You pass a handle of a IconMBS object (IconRef).  
(Read and Write computed property)

### 117.3.36 MenuTitle as string

MBS Util Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The title of the menu itself.  
**Example:**
dim b as MenuBarMBS
dim m as MenuMBS
dim i as Integer
dim ic as IconMBS

ic=new IconMBS(SpecialFolder.Desktop)

b=new MenuBarMBS

m=b.Item(3)
m.MenuTitle="Hello Edit Menu"

m=b.Item(2)
m.MenuIconHandle=ic.Handle

Notes:
As internally the string is converted to a CFString you may prefer to use MenuTitleCFString instead of MenuTitle if your string is already a CFString. (e.g. coming from the localization functions)
(Read and Write computed property)

117.3.37 MenuTitleCFString as object

Notes:
As internally the string is converted to a CFString you may prefer to use MenuTitleCFString instead of MenuTitle if your string is already a CFString. (e.g. coming from the localization functions)
(Read and Write computed property)

117.3.38 Outline(index as Integer) as boolean

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The font style to use for the MenuMBS item.
Example:

dim mb as MenubarMBS
dim m as MenuMBS
mb=new MenubarMBS
m=mb.item(2)
117.3. CLASS MENUMBS

m.Outline(1)=true

Notes:
Seems not to work for popupmenu on Mac OS X 10.1.5.
(Read and Write computed property)

117.3.39 Shadow(index as Integer) as boolean

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The font style to use for the MenuMBS item.
**Example:**
```vba
dim mb as MenubarMBS
dim m as MenuMBS
mb=new MenubarMBS
m=mb.item(2)
m.Shadow(1)=true
```

Notes:
Seems not to work for popupmenu on Mac OS X 10.1.5.
(Read and Write computed property)

117.3.40 SubMenu(index as Integer) as MenuMBS

MBS Util Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The submenu attached to the menu entry with the given index.
**Notes:**
Set to nil to remove a menu.
Returns nil if no menu is on the given position.
Works only in Carbon Mac OS applications.
(Read and Write computed property)

117.3.41 SubmenuParentChoosable(index as Integer) as boolean

MBS Util Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether the submenu parent menuitem can be choosed by the user.
**Notes:** (Read and Write computed property)
117.3.42  **Text(index as Integer) as string**

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The caption to use with the MenuMBS entry.

**Example:**

```vbs
dim mb as MenubarMBS
dim m as MenuMBS
mb=new MenubarMBS
m=mb.item(2)
m.Text(1)="A nice text"
```

**Notes:**
Set TextEncoding(index) to & h08000100 if you use UTF8 text!
(Read and Write computed property)

117.3.43  **TextEncoding(index as Integer) as UInt32**

MBS Util Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The Textencoding of the menu item.

**Notes:**
The text encoding script ID for the menu.
(Read and Write computed property)

117.3.44  **Underline(index as Integer) as boolean**

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The font style to use for the MenuMBS item.

**Example:**

```vbs
dim mb as MenubarMBS
dim m as MenuMBS
mb=new MenubarMBS
m=mb.item(2)
m.Underline(1)=true
```

**Notes:** (Read and Write computed property)
CHAPTER 117. MENU

kHICommandOK OSTYPEFromStringMBS("ok") The OK button in a dialog or alert.
kHICommandCancel OSTYPEFromStringMBS("not") The Cancel button in a dialog or alert.
kHICommandQuit OSTYPEFromStringMBS("quit") The application should quit.
kHICommandUndo OSTYPEFromStringMBS("undo") The last editing operation should be undone.
kHICommandRedo OSTYPEFromStringMBS("redo") The last editing operation should be redone.
kHICommandCut OSTYPEFromStringMBS("cut") The selected items should be cut.
kHICommandCopy OSTYPEFromStringMBS("copy") The selected items should be copied.
kHICommandPaste OSTYPEFromStringMBS("past") The contents of the clipboard should be pasted.
kHICommandClear OSTYPEFromStringMBS("clea") The selected items should be deleted.
kHICommandSelectAll OSTYPEFromStringMBS("all") All items in the active window should be selected.
kHICommandHide OSTYPEFromStringMBS("hidc") The application should be hidden. The Menu Manager will respond to this command automatically; your application does not need to handle it.
kHICommandHideOthers OSTYPEFromStringMBS("hidc") Other applications should be hidden. The Menu Manager will respond to this command automatically; your application does not need to handle it.
kHICommandShowAll OSTYPEFromStringMBS("shal") All applications should become visible. The Menu Manager will respond to this command automatically; your application does not need to handle it.
kHICommandPreferences OSTYPEFromStringMBS("ahlp") The Preferences menu item has been selected.
kHICommandZoomWindow OSTYPEFromStringMBS("zoom") The active window should be zoomed in or out. The Window Manager will respond to this event automatically; your application does not need to handle it, but you may want to install a Carbon event handler for kEventWindowGetIdealSize to return the ideal size for your document windows.
kHICommandMinimizeWindow OSTYPEFromStringMBS("mini") The active window should be minimized. The Window Manager will respond to this event automatically; your application does not need to handle it. All windows of the same class as the active window that have collapse boxes should be minimized. The Window Manager will respond to this event automatically; your application does not need to handle it.
kHICommandMaximizeWindow OSTYPEFromStringMBS("maxi") The active window should be maximized. Only sent on Mac OS 9. The Window Manager will respond to this event automatically; your application does not need to handle it.
kHICommandMaximizeAll OSTYPEFromStringMBS("maxa") All windows of the same class as the active window that have collapse boxes should be maximized. The Window Manager will respond to this event automatically; your application does not need to handle it.
kHICommandArrangeInFront OSTYPEFromStringMBS("frnt") All document-class windows should be arranged in a stack. The Window Manager will respond to this event automatically; your application does not need to handle it.
kHICommandBringAllToFront OSTYPEFromStringMBS("bfrt") All windows of this application should be brought in front of windows from other applications. Only sent on Mac OS X. The Window Manager will respond to this event automatically; your application does not need to handle it.
kHICommandWindowListSeparator OSTYPEFromStringMBS("wldv") This command ID is used as a placeholder to mark the separator item dividing the Zoom/Minimize/Maximize/Arrange menu items in the standard Window menu from the menu items listing the visible windows. If you need to add your own menu items to the standard Window menu before the window list section, you can look for the menu item with this command ID using GetIndMenuItemWithCommandID, and insert your menu items before the item with this ID.
kHICommandWindowListTerminator OSTYPEFromStringMBS("wlst") This command ID is used as a placeholder to mark the end of the window list section of the standard Window menu. If you need to add your own menu items to the standard Window menu after the window list section, you can look for the menu item with this command ID using GetIndMenuItemWithCommandID, and insert your menu items after the item with this ID.
kHICommandSelectWindow OSTYPEFromStringMBS("swin") A window in the standard Window menu has been selected and should be activated. The Window Manager will respond to this event automatically; your application does not need to handle it.
kHICommandAbout OSTYPEFromStringMBS("about") The About menu item has been selected.
kHICommandNew OSTYPEFromStringMBS("new") A new document or item should be created.
kHICommandOpen OSTYPEFromStringMBS("open") The user wants to open an existing document.
kHICommandClose OSTYPEFromStringMBS("cloa") The active window should be closed.
kHICommandSave OSTYPEFromStringMBS("save") The active document should be saved.
kHICommandSaveAs OSTYPEFromStringMBS("svas") The user wants to save the active document under a new name.
kHICommandRevert OSTYPEFromStringMBS("rvrt") The contents of the active document should be reverted to the last saved version.
kHICommandPrint OSTYPEFromStringMBS("prnt") The active window should be printed.
kHICommandPageSetup OSTYPEFromStringMBS("page") The user wants to configure the current page margins, formatting, and print options.
kHICommandAppHelp OSTYPEFromStringMBS("ahlp") The application’s help book should be displayed. Used by the Help Manager when it adds the ”<AppName>Help” menu item to the Help menu. The Help Manager will respond to this event automatically; your application does not need to handle it.
& h00  no mark
& h12  check mark
& h13  diamond mark
117.4 class Popupmenu

117.4.1 class Popupmenu

Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Gives access to the MenuMBS of the PopupMenu.

**Example:**
```vbscript
dim m as MenuMBS
m=popupmenu1.MenuMBS
m.italic(1)=true
m.bold(2)=true
m.underline(3)=true
m.Condense(4)=true
m.extend(5)=true
m.Outline(6)=true
m.shadow(7)=true
m.Enabled(8)=true
m.enabled(9)=false
```

117.4.2 Methods

117.4.3 MenuMBS as MenuMBS

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns a MenuMBS object to access the Menuitems.

**Example:**
```vbscript
dim m as MenuMBS
m=popupmenu1.MenuMBS
m.italic(1)=true
m.bold(2)=true
m.underline(3)=true
m.Condense(4)=true
m.extend(5)=true
m.Outline(6)=true
m.shadow(7)=true
m.Enabled(8)=true
m.enabled(9)=false
```

Notes:
It looks like there is a bug in RB5 which forces this function to always return nil. Seems not to work in RB 2007 well. See the "FontPopupMenu.rb" example for a different usage.

117.4.4 NSButtonMBS as NSButtonMBS

**Function:** Creates a NSButtonMBS object for the given control.
**Example:**

```
MsgBox PopupMenu1.NSButtonMBS.className
```

**Notes:** This way you can manipulate Cocoa controls directly.

117.4.5 NSPopUpButtonMBS as NSPopUpButtonMBS

**Function:** Creates a NSPopUpButtonMBS object for the given control.
**Example:**

```
// get cocoa view for the popupmenu
dim p as NSPopUpButtonMBS = PopupMenu1.NSPopUpButtonMBS

// find a menu entry
dim it as NS(MenuItemMBS = p.itemAtIndex(0)

// get a picture
dim pic as Picture = LogoMBS(500)
dim img as new NSImageMBS(pic)
img.setSize 16,16

// and assign icon
it.image = img
```

**Notes:** This way you can manipulate Cocoa controls directly.
Chapter 118

Midi

118.1 class AVMIDIPhlayerMBS

118.1.1 class AVMIDIPhlayerMBS

Function: The AVMIDIPhlayer class is a player for music file formats such as MIDI and iMelody.
Notes: Requires Mac OS X 10.10.

118.1.2 Methods

118.1.3 Constructor(Data as MemoryBlock, SoundBankFile as Folderitem = nil, byref error as NSErrorMBS)

Function: Initializes a newly allocated MIDI player with the contents of the String, using the specified sound bank.
Notes: Data: The data to play.
SoundBankFile: The folderitem of the sound bank. The sound bank must be a SoundFont2 or DLS bank.
Error: Returns, by-reference, a description of the error, if an error occurs.

For OS X the bank folderitem can be set to nil to use the default sound bank. However, iOS must always refer to a valid bank file.
See also:

• 118.1.4 Constructor(Data as String, SoundBankFile as Folderitem = nil, byref error as NSErrorMBS)

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118.1.4 Constructor(Data as String, SoundBankFile as Folderitem = nil, byref error as NSErrorMBS)

Function: Initializes a newly allocated MIDI player with the contents of the String, using the specified sound bank.
Notes:
Data: The data to play.
SoundBankFile: The folderitem of the sound bank. The sound bank must be a SoundFont2 or DLS bank.
Error: Returns, by-reference, a description of the error, if an error occurs.

For OS X the bank folderitem can be set to nil to use the default sound bank. However, iOS must always refer to a valid bank file.
See also:

- 118.1.3 Constructor(Data as MemoryBlock, SoundBankFile as Folderitem = nil, byref error as NSErrorMBS)
- 118.1.5 Constructor(File as Folderitem, SoundBankFile as Folderitem = nil, byref error as NSErrorMBS)

118.1.5 Constructor(File as Folderitem, SoundBankFile as Folderitem = nil, byref error as NSErrorMBS)

Function: Initializes a newly allocated MIDI player with the contents of the file, using the specified sound bank.
Notes:
File: The file to play.
SoundBankFile: The folderitem of the sound bank. The sound bank must be a SoundFont2 or DLS bank.
Error: Returns, by-reference, a description of the error, if an error occurs.

For OS X the bank folderitem can be set to nil to use the default sound bank. However, iOS must always refer to a valid bank file.
See also:

- 118.1.3 Constructor(Data as MemoryBlock, SoundBankFile as Folderitem = nil, byref error as NSErrorMBS)
118.1. Constructor

- 118.1.4 Constructor(Data as String, SoundBankFile as Folderitem = nil, byref error as NSErrorMBS)

118.1.6 Destructor

Function: The destructor.

118.1.7 play

Function: Plays the sequence.
Notes: If prepareToPlay has not been invocked, play may be delayed while the events are prerolled.

118.1.8 prepareToPlay

Function: Prepares to play the sequence by prerolling all events.
Notes: This happens automatically on play if it has not already been called, but may produce a delay in startup.

118.1.9 stop

Function: Stops playing the sequence.

118.1.10 Properties

118.1.11 CurrentPosition as Double

Function: The current playback position, in seconds.
Notes:
You can set the currentPosition of the player while the player is playing, in which case playback will resume at the new time.
Note: No range checking on the currentPosition value is done when you set it to a new value. It is your responsibility to ensure the position is valid relative to the duration.
(Read and Write property)

118.1.12 Duration as Double

**Function:** The length of the currently loaded file, in seconds.
**Notes:** (Read only property)

118.1.13 Handle as Integer

**Function:** The internal object reference.
**Notes:** (Read and Write property)

118.1.14 Playing as Boolean

**Function:** Whether the sequence is playing.
**Notes:**
The player may have reached the end of all the events in any of its tracks, but it will return true until it is stopped.
(Read only property)

118.1.15 Rate as Double

**Function:** The playback rate of the player.
**Notes:**
The default value is 1.0, normal playback rate.
(Read and Write property)
118.1. CLASS AVMIDIPLAYERMBS

118.1.16 Events

118.1.17 Completed

MBS AVFoundation Plugin, Plugin Version: 16.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function**: Called when a MIDI playback request is completed.
118.2  class MidiClientMBS

118.2.1  class MidiClientMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for the global MIDI stuff on Mac OS X.

**Notes:**
Only make one instance of this class in your application.

From Apple’s documentation:

**History:**

Apple’s MIDI Manager (ca. 1990) had a simple model of the world. There were application and driver clients, which had MIDI in/out ports, which could be interconnected in arbitrary ways. This model failed to provide a way for applications to make reasonable assumptions about how to make bi-directional connections to a MIDI device. MIDI Manager also had limitations on the number of ports per client, and became very unwieldy with the advent of large studios and multi-port MIDI interfaces such as the MIDI Time Piece and Studio 5.

Opcode’s OMS (1991) addressed some of the shortcomings of MIDI Manager. There was the concept of a studio setup document, where drivers detected their devices, and the user could define the characteristics of additional devices connected to the MIDI ports. Applications could view the studio both as a collection of MIDI source and destination ”nodes”, but also as a collection of devices. OMS collected information about, and made available to its clients, useful characteristics of the devices in the studio, such as their system-exclusive IDs, MIDI channels on which they were listening, which were controllers (as opposed to simple tone generators), etc.

**API Overview:**
This design expands slightly on OMS’s device/node hierarchy, inspired by the USB MIDI spec.

Drivers own and control devices, e.g. USB interfaces, PCI cards, etc. A device is defined as a physical object that would be represented by a single icon if there were a graphical view of the studio.

Devices may have multiple logically distinct sub-components, e.g. a MIDI synthesizer and a pair of MIDI ports, both addressable via a USB port. These are called Entities.

Entities have any number of Endpoints, sources and destinations of 16-channel MIDI streams. By grouping a device’s endpoints into entities, the system has enough information for an application to make reasonable assumptions about how to communicate in a bi-directional manner with each entity, as is necessary in MIDI librarian applications.
Third-party services like FreeMIDI or OMS can collect and report interesting properties of a device by attaching those properties to the devices' entities – CoreMIDI provides a central database, but no user interfaces. It's worth noting that some device characteristics are dynamic (e.g. MIDI receive channel and system-exclusive ID's), or a matter of user preference (choice of icon, whether the device should appear in lists of possible controllers), while other properties are static and could be looked up in a database, using the device's manufacturer and model names as a key.

Persistent configurations / Device Information:
There are a number of reasons why CoreMIDI has a persistent state.

Consider a USB MIDI interface driver, in the case where there are two instances of one model of interface present. The driver needs a way to permanently distinguish, to the system and its clients, between the two interfaces. Which is # 1 and which is # 2? If # 1 gets unplugged, # 2 should not automatically become # 1; the user's documents may be referring to devices which were attached to # 2.

The system needs a persistent concept of which driver's device is attached to a serial port.

These needs for persistent configuration information provide a rationale for having something akin to OMS's studio setup document, a saved configuration for the system. Mobile users who work in multiple environments could select between multiple saved configurations in a Location Manager-compatible manner.

Given services with which to store driver configuration information, we then have built the groundwork for a client studio setup editor application.

Such an application can define external MIDI devices (not to be confused with the driver-owned cards/interfaces/etc whose presence in the configuration is determined by the driver).

Implementation overview:
The client API is implemented as the CoreMIDI framework, which uses IPC to communicate with a server process, MIDIServer.

The server process loads, and manages all communication with, MIDI drivers. Most of its implementation is in the CoreMIDIServer framework, which drivers may import in order to access the API.

"Drivers" are not I/O Kit drivers. They are dynamic libraries, using CFPlugin.

Many MIDI drivers can simply be user-side I/O Kit clients (probably for serial, USB, Firewire).
But unlike OMS, the system is able to begin functioning immediately, using only the MIDI devices/endpoints detected by the drivers, without forcing the user to go through a somewhat lengthy and confusing initial configuration process. Definition of external MIDI devices can be a completely optional step, only made possible when a client application requests that they be added to the configuration.

PCI card drivers will need their MIDI drivers to communicate with a separate kernel extension.

If you have an old file named EmagicUSBMIDIDriver.plugin in your /Library/Audio/MIDI Drivers folder, please remove it. It makes trouble with our Midi classes.
Subclass of the MidiObjectMBS class.

118.2.2 Methods

118.2.3 Available as boolean

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
True if the MIDI stuff was successful loaded.

118.2.4 close

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The destructor.
**Notes:**
There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

118.2.5 CreateDestination(name as CFStringMBS, TargetEndpointObject as MidiEndpointMBS)

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Create a virtual destination in a client.
**Notes:**
Clients may use this to create virtual destinations.
Lasterror is set.
You must pass a valid new MidiEndpointMBS for TargetEndpointObject. Best is if you make a subclass from MidiEndpointMBS and fill the event. You can add there additional methods and properties. CreateDestination will than fill the handle property on success.
118.2. CLASS MIDICLIENTMBS

118.2.6 CreateInputPort(name as CFStringMBS, targetportobject as MidiPortMBS)

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create an input port through which the client may receive incoming MIDI messages from any MIDI source. **Example:**

```vba
dim mc as MidiClientMBS
dim mp as MidiPortMBS

mc=new MidiClientMBS
mc.Init NewCFStringRefMBS("Testapp")

mp=new MidiPortMBS
mc.CreateInputPort NewCFStringRefMBS("Testport"), mp

if mp.Handle=0 then
    MsgBox "There was an error: " +str(mc.Lasterror)
else
    MsgBox "ok"
end if
```

**Notes:**

After creating a port, use MIDIPortConnectSource to establish an input connection from any number of sources to your port.

Lasterror is set.

As you can subclass the MidiPortMBS class you must pass to this function a valid MidiPortMBS object so it can be filled.

118.2.7 CreateOutputPort(name as CFStringMBS, targetportobject as MidiPortMBS)

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Create an output port through which the client may send outgoing MIDI messages to any MIDI destination. **Example:**

```vba
dim mc as MidiClientMBS
dim mp as MidiPortMBS

mc=new MidiClientMBS
mc.Init NewCFStringRefMBS("Testapp")
```
Let mp = new MidiPortMBS
mc.CreateOutputPort NewCFStringMBS(”Testport”), mp

if mp.Handle=0 then
MsgBox ”There was an error: ” +str(mc.Lasterror)
else
MsgBox ”ok”
end if

**Notes:**

Output ports provide a mechanism for MIDI merging. The system assumes that each output port will be responsible for sending only a single MIDI stream to each destination, although a single port may address all of the destinations in the system.

Lasterror is set.

As you can subclass the MidiPortMBS class you must pass to this function a valid MidiPortMBS object so it can be filled.

### 118.2.8 CreateSource(name as CFStringMBS) as MidiEndpointMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new virtual Midi source. **Example:**

```vbnet
dim m as MidiClientMBS
dim e as MidiEndpointMBS

m=new MidiClientMBS
// Initialize
m.Init NewCFStringMBS(”Hallo”)

// Create device:
e=m.CreateSource(NewCFStringMBS(”Hallo”))
// if error is 0 and handle is not 0, it’s okay
MsgBox ”error: ”+str(m.Lasterror)+”, handle: ”+str(e.Handle)
```

**Notes:**

Lasterror is set.
118.2. CLASSTMIDICLIENTMBS

Returns nil on any error.

Clients may use this to create virtual sources.

After creating a virtual source, use Received to transmit MIDI messages from your virtual source to any clients connected to the virtual source.

118.2.9 FindObjectByUniqueID(id as Integer) as MidiObjectMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Locate a device, typedefal device, entity, or endpoint by its uniqueID.

**Notes:**

New for CoreMIDI 1.3.
You may cast the returned object to MidiEndpointMBS, MidiEntityMBS or MidiDeviceMBS. RB's "isa" command may help you.
Returns nil on any error. Lasterror is set.

118.2.10 GetDestination(index as Integer) as MidiEndpointMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return one of the destinations in the system.

**Notes:**

The index goes from 0 to NumberOfDestinations-1.
Lasterror is set.
Returns nil on any error.

118.2.11 GetDevice(index as Integer) as MidiDeviceMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return one of the devices in the system.

**Notes:**

To enumerate the entities in the system, you can walk through the devices, then walk through the devices' entities.

Note: If a client iterates through the devices and entities in the system, it will not ever visit any virtual sources and destinations created by other clients. Also, a device iteration will return devices which are "offline" (were present in the past but are not currently present), while iterations through the system's sources and destinations will not include the endpoints of offline devices.
Thus clients should usually prefer NumberOfSources, GetSource, NumberOfDestinations and GetDestination to iterating through devices and entities to locate endpoints.

LastError is set.
Returns nil on any error.

118.2.12 GetExternalDevice(index as Integer) as MidiDeviceMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Return one of the external devices in the system.
Notes:
The index goes from 0 to NumberOfDevices-1.
LastError is set.
Returns nil on any error.

118.2.13 GetSource(index as Integer) as MidiEndpointMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Return one of the sources in the system.
Notes:
The index goes from 0 to NumberOfSources-1.
LastError is set.
Returns nil on any error.

118.2.14 Init(name as CFStringMBS)

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Creates a new Client object with the given client name.
Notes: Lasterror is set.

118.2.15 NumberOfDestinations as Integer

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns the number of destinations in the system.
Example:
118.2. CLASS MIDICLIENTMBS

dim m as new MidiClientMBS
dim n as Integer = m.NumberOfDestinations

MsgBox "NumberOfDestinations: " + str(n)

Notes:

Returns 0 on any error.
Lasterror is set.

118.2.16 NumberOfDevices as Integer

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns the number of devices in the system.
Example:

dim m as new MidiClientMBS
dim n as Integer = m.NumberOfDevices

MsgBox "NumberOfDevices: " + str(n)

Notes:

Returns 0 on any error.
Lasterror is set.

118.2.17 NumberOfExternalDevices as Integer

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns the number of typedefal MIDI devices in the system.
Example:

dim m as new MidiClientMBS
dim n as Integer = m.NumberOfExternalDevices

MsgBox "NumberOfExternalDevices: " + str(n)

Notes:

External MIDI devices are MIDI devices connected to endpoints via a standard MIDI cable. Their presence is completely optional, only when a UI somewhere adds them.
New for CoreMIDI 1.1.

Returns 0 on any error.
Lasterror is set.

118.2.18  **NumberOfSources as Integer**

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the number of sources in the system.
**Example:**
```vbnet
dim m as new MidiClientMBS
dim n as Integer = m.NumberOfSources

MsgBox "NumberOfSources: " +str(n)
```

**Notes:**
Returns 0 on any error.
Lasterror is set.

118.2.19  **Restart as Integer**

MBS MacCF Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Stops and restarts MIDI I/O.
**Notes:**
This is useful for forcing CoreMIDI to ask its drivers to rescan for hardware.
Returns the Mac OS X error code.

118.2.20  **Send(port as MidiPortMBS, endpoint as MidiEndpointMBS, packets as MidiPacketListMBS)**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Sends midi data using the port to the given endpoint.
**Example:**
```vbnet
// Not 100% if this example works:
dim client as MIDIClientMBS
```
118.2. CLASS MIDIClientMBS

```
dim outport as MIDIPortMBS
dim dest as MIDIEndpointMBS
dim pack as MIDIEndpointMBS
dim list as MIDIPacketListMBS
dim packs(-1) as MIDIPacketMBS

client = new MidiClientMBS

if client <> nil then
    client.Init newcfstringmbs("CoreMIDI")
    outport = new MIDIPortMBS
    client.CreateOutputPort(NewCFStringMBS("outport"), outport)
    dest = client.getDestination(0)
    outport.connectSource dest

    pack = new MIDIPacketMBS
    list = new MIDIPacketListMBS
    pack.timeStamp = nil
    pack.datastring = charb(& h90) + charb(& h5A) + charb(& h7C)
    packs.append pack
    if not list.FillList(packs) then
        msgBox "bad"
    end

    client.Send(outport, dest, list)
end
```

Notes:
Events with future timestamps are scheduled for future delivery. The system performs any needed MIDI merging.

Lasterror is set.

118.2.21 Events

118.2.22 ObjectAdded(parent as MidiObjectMBS, child as MidiObjectMBS)

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Called when an object is added to a MidiObject.
Notes: Seems not to be called currently.
### 118.2.23 ObjectRemoved(parent as MidiObjectMBS, child as MidiObjectMBS)

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called when an object is removed from a MidiObject. **Notes:** Seems not to be called currently.

### 118.2.24 PropertyChanged(target as MidiObjectMBS, theProperty as CFStringMBS)

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called when a property was changed. **Notes:** Seems to be never called currently.

### 118.2.25 SerialPortOwnerChanged

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** A persistent MIDI Thru connection was created or destroyed. **Notes:** New for CoreMIDI 1.3.

### 118.2.26 SetupChanged

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Some aspect of the current MIDISetup has changed. **Notes:** You should ignore this message if you handle the other messages.

### 118.2.27 ThruConnectionsChanged

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** A persistent MIDI Thru connection was created or destroyed. **Notes:** New for CoreMIDI 1.3.

### 118.2.28 Constants

#### 118.2.29 kMIDIIDNotUnique = -10843

MBS MacCF Plugin, Plugin Version: 9.6. **Function:** One of the type constants for a MIDI error. **Notes:** Attempt to set a non-unique kMIDIPropertyUniqueID on an object.
118.2. CLASS MIDICLIENTMBS

118.2.30  kMIDIInvalidClient = -10830

MBS MacCF Plugin, Plugin Version: 9.6. **Function:** One of the type constants for a MIDI error.  
**Notes:** An invalid MIDIClientRef was passed.

118.2.31  kMIDIInvalidPort = -10831

MBS MacCF Plugin, Plugin Version: 9.6. **Function:** One of the type constants for a MIDI error.  
**Notes:** An invalid MIDIPortRef was passed.

118.2.32  kMIDIInvalidUniqueID = 0

MBS MacCF Plugin, Plugin Version: 9.6. **Function:** A constant for an invalid unique ID.

118.2.33  kMIDIMessageSendErr = -10838

MBS MacCF Plugin, Plugin Version: 9.6. **Function:** One of the type constants for a MIDI error.  
**Notes:** Communication with MIDIServer failed.

118.2.34  kMIDIMsgIOError = 7

MBS MacCF Plugin, Plugin Version: 9.6. **Function:** One of the type constants for a MIDI Notification.  
**Notes:** A driver I/O error occurred.

118.2.35  kMIDIMsgObjectAdded = 2

MBS MacCF Plugin, Plugin Version: 9.6. **Function:** One of the type constants for a MIDI Notification.  
**Notes:** A device, entity or endpoint was added.

118.2.36  kMIDIMsgObjectRemoved = 3

MBS MacCF Plugin, Plugin Version: 9.6. **Function:** One of the type constants for a MIDI Notification.  
**Notes:** A device, entity or endpoint was removed.
118.2.37  kMIDIMsgPropertyChanged = 4

MBS MacCF Plugin, Plugin Version: 9.6. **Function:** One of the type constants for a MIDI Notification. **Notes:** An object’s property was changed.

118.2.38  kMIDIMsgSerialPortOwnerChanged = 6

MBS MacCF Plugin, Plugin Version: 9.6. **Function:** One of the type constants for a MIDI Notification. **Notes:** A persistent MIDI Thru connection was created or destroyed. No data. New for CoreMIDI 1.3.

118.2.39  kMIDIMsgSetupChanged = 1

MBS MacCF Plugin, Plugin Version: 9.6. **Function:** One of the type constants for a MIDI Notification. **Notes:** Some aspect of the current MIDISetup has changed. No data. Should ignore this message if messages 2-6 are handled.

118.2.40  kMIDIMsgThruConnectionsChanged = 5

MBS MacCF Plugin, Plugin Version: 9.6. **Function:** One of the type constants for a MIDI Notification. **Notes:** A persistent MIDI Thru connection was created or destroyed. No data. New for CoreMIDI 1.3.

118.2.41  kMIDINoConnection = -10833

MBS MacCF Plugin, Plugin Version: 9.6. **Function:** One of the type constants for a MIDI error. **Notes:** Attempt to close a non-existant connection.

118.2.42  kMIDINoCurrentSetup = -10837

MBS MacCF Plugin, Plugin Version: 9.6. **Function:** One of the type constants for a MIDI error. **Notes:** Internal error; there is no current MIDI setup object.

118.2.43  kMIDIObjectNotFound = -10842

MBS MacCF Plugin, Plugin Version: 9.6. **Function:** One of the type constants for a MIDI error. **Notes:** The requested object does not exist.
118.2.44  kMIDIServerStartErr = -10839

MBS MacCF Plugin, Plugin Version: 9.6. **Function:** One of the type constants for a MIDI error.  
**Notes:** Unable to start MIDIServer.

118.2.45  kMIDISetupFormatErr = -10840

MBS MacCF Plugin, Plugin Version: 9.6. **Function:** One of the type constants for a MIDI error.  
**Notes:** Unable to read the saved state.

118.2.46  kMIDIUnknownEndpoint = -10834

MBS MacCF Plugin, Plugin Version: 9.6. **Function:** One of the type constants for a MIDI error.  
**Notes:** An invalid MIDIEndpointRef was passed.

118.2.47  kMIDIUnknownProperty = -10835

MBS MacCF Plugin, Plugin Version: 9.6. **Function:** One of the type constants for a MIDI error.  
**Notes:** Attempt to query a property not set on the object.

118.2.48  kMIDIWrongEndpointType = -10832

MBS MacCF Plugin, Plugin Version: 9.6. **Function:** One of the type constants for a MIDI error.  
**Notes:** A source endpoint was passed to a function expecting a destination, or vice versa.

118.2.49  kMIDIWrongPropertyType = -10836

MBS MacCF Plugin, Plugin Version: 9.6. **Function:** One of the type constants for a MIDI error.  
**Notes:** Attempt to set a property with a value not of the correct type.

118.2.50  kMIDIWrongThread = -10841

MBS MacCF Plugin, Plugin Version: 9.6. **Function:** One of the type constants for a MIDI error.  
**Notes:** A driver is calling a non-I/O function in the server from a thread other than the server’s main thread.
118.3  class MidiDeviceMBS

118.3.1  class MidiDeviceMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class for a MIDI device.
**Notes:**
A MIDI device, which either attaches directly to the computer and is controlled by a MIDI driver, or which is "external," meaning that it is connected to a driver-controlled device via a standard MIDI cable.
Subclass of the MidiObjectMBS class.

118.3.2  Methods

118.3.3  GetEntity(index as Integer) as MidiEntityMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Return one of a given device’s entities.
**Notes:**
The index goes from 0 to NumberOfEntities-1.
Lasterror is set.
Returns nil on any error.

118.3.4  NumberOfEntities as Integer

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the number of entities for this device.
**Notes:**
Returns nil on any error.
Lasterror is set.
118.4. CLASS MIDIENDPOINTMBS

118.4 class MidiEndpointMBS

118.4.1 class MidiEndpointMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the CoreMidi classes.
**Notes:**
Entities have any number of MIDIEndpointRef's, sources and destinations of 16-channel MIDI streams.
Subclass of the MidiObjectMBS class.

118.4.2 Methods

118.4.3 close

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The destructor.
**Notes:**
Frees the endpoint handle.
There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

118.4.4 Entity as MidiEntityMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:**
Returns an endpoint's entity.
**Notes:**
Returns nil on any error.
Lasterror is set.
New for CoreMIDI 1.3.

118.4.5 FlushOutput

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Unschedule previously-sent packets.
**Notes:**
Clients may use MIDIFlushOutput to cancel the sending of packets that were previously scheduled for future delivery.
New for CoreMIDI 1.1.
Lasterror is set.

118.4.6 Received(packets as MidiPacketListMBS)

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Distribute MIDI from a source to the client input ports which are connected to that source.

**Notes:**
Drivers should call this function when receiving MIDI from a source.
Clients which have created virtual sources, using MIDICreateSource, should call this function when the source is generating MIDI.
Lasterror is set.

118.4.7 Events

118.4.8 Read(endpoint as MidiEndpointMBS, list as MidiPacketListMBS)

MBS MacCF Plugin, Plugin Version: 4.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called when data arrives at an endpoint.

**Notes:**
If more than 256 bytes of data is received, it may be splitted and send in several events.

For some devices a Note Off is just a Note On with a zero velocity.
118.5. **CLASS MIDIENTITYMBS**

118.5 class MidiEntityMBS

118.5.1 class MidiEntityMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the CoreMidi classes.  

**Notes:**  
Devices may have multiple logically distinct sub-components, e.g. a MIDI synthesizer and a pair of MIDI ports, both addressable via a USB port.

By grouping a device’s endpoints into entities, the system has enough information for an application to make reasonable assumptions about how to communicate in a bi-directional manner with each entity, as is desirable in MIDI librarian applications.

These sub-components are MIDIEntityRef’s.  
Subclass of the MidiObjectMBS class.

118.5.2 Methods

118.5.3 Device as MidiDeviceMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns an entity’s device.  

**Notes:**  
Returns nil on any error.  
LastError is set.  
New for CoreMIDI 1.3.

118.5.4 GetDestination(index as Integer) as MidiEndpointMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Return one of a given entity’s destinations.  

**Notes:**  
LastError is set.  
Returns nil on any error.
118.5.5  GetSource(index as Integer) as MidiEndpointMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Return one of a given entity’s sources.

**Notes:**

Lasterror is set.

Returns nil on any error.

118.5.6  NumberOfDestinations as Integer

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Return the number of destinations in a given entity.

**Notes:**

Lasterror is set.

Returns 0 on any error.

118.5.7  NumberOfSources as Integer

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Return the number of sources in a given entity.

**Notes:**

Lasterror is set.

Returns 0 on any error.
118.6. **CLASS MIDIOBJECTMBS**

118.6  **class MidiObjectMBS**

118.6.1  **class MidiObjectMBS**

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** A class for a Mac OS X CoreMidi object.

118.6.2  **Methods**

118.6.3  **kMIDIPROPERTYAdvanceScheduleTimeMuSec as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** One of the properties for MIDI on Mac OS X.
**Notes:**
Only available after you called the Init Method.

device/entity/endpoint property, integer
Set by the owning driver; should not be touched by other clients.
If it is >0, then it is a recommendation of how many microseconds in advance clients should schedule output.
Clients should treat this value as a minimum. For devices with a >0 advance schedule time, drivers will receive outgoing messages to the device at the time they are sent by the client, via MIDISend, and the driver is responsible for scheduling events to be played at the right times according to their timestamps.
As of CoreMIDI 1.3, this property may also be set on virtual destinations (but only the creator of the destination should do so).
When a client sends to a virtual destination with an advance schedule time of 0, the virtual destination receives its messages at their scheduled delivery time. If a virtual destination has a non-zero advance schedule time, it receives timestamped messages as soon as they are sent, and must do its own scheduling of the events.

118.6.4  **kMIDIPROPERTYCanRoute as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** One of the properties for MIDI on Mac OS X.
**Notes:**
Only available after you called the Init Method.

New for CoreMIDI 1.3. This is set on devices/entities, and is a boolean property, 0/1
118.6.5  kMIDIPropertyConnectionUniqueID as CFStringRefMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the properties for MIDI on Mac OS X.

**Notes:**

Only available after you called the Init Method.

device/entity/endpoint property, integer or CFDataRef

UniqueID of an external device/entity/endpoint attached to this one (strongly recommended that it be an endpoint). This is for the use of a setup editor UI; not currently used internally. A driver-owned entity or endpoint has this property to refer to an external MIDI device that is connected to it.

The property is non-existent or 0 if there is no connection.

New for CoreMIDI 1.1.

Beginning with CoreMIDI 1.3, this property may be a CFDataRef containing an array of big-endian SInt32's, to allow specifying that a driver object connects to multiple external objects (via MIDI thru-ing or splitting).

This property may also exist for external devices/entities/endpoints, in which case it signifies a MIDI Thru connection to another external device/entity/endpoint (again, strongly recommended that it be an endpoint).

118.6.6  kMIDIPropertyDeviceID as CFStringRefMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the properties for MIDI on Mac OS X.

**Notes:**

Only available after you called the Init Method.

device/entity property, integer

The entity’s system-exclusive ID, in user-visible form

Drivers may set this property on their devices or entities.

Setup editors may allow the user to set this property on external devices.

118.6.7  kMIDIPropertyDisplayName as CFStringRefMBS

MBS MacCF Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the properties for MIDI on Mac OS X.

**Notes:**
118.6. CLASS MIDIOBJECTMBS

device/entity/endpoint property, string.

Provides the Apple-recommended user-visible name for an endpoint, by combining the device and endpoint
names.

For objects other than endpoints, the display name is the same as the name.

New for CoreMIDI 1.5.

118.6.8 kMIDIPropertyDriverDeviceEditorApp as CFStringMBS

MBS MacCF Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
One of the properties for MIDI on Mac OS X.
Notes:
device property, string, contains the full path to an application which knows how to configure this driver-
owned devices. Drivers may set this property on their owned devices. Applications must not write to it.

New for CoreMIDI 1.4.

118.6.9 kMIDIPropertyDriverOwner as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
One of the properties for MIDI on Mac OS X.
Notes:
Only available after you called the Init Method.

device/entity/endpoint property, string

Name of the driver that owns a device.
Set by the owning driver, on the device; should not be touched by other clients. Property is inherited from
the device by its entities and endpoints.

New for CoreMIDI 1.1.
118.6.10 kMIDIProp\(\text{driverVersion}\) as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the properties for MIDI on Mac OS X.

**Notes:**

Only available after you called the Init Method.

device/entity/endpoint property, integer, returns the driver version API of the owning driver (only for driver-owned devices). Drivers need not set this property; applications should not write to it.

New for CoreMIDI 1.3.

118.6.11 kMIDIProp\(\text{factoryPatchNameFile}\) as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the properties for MIDI on Mac OS X.

**Notes:**

Only available after you called the Init Method.

device/entity/endpoint property, CFData containing AliasHandle

An alias to the device’s current factory patch name file.

Added in CoreMIDI 1.1. DEPRECATED as of CoreMIDI 1.3. Use kMIDIProp\(\text{PropertyNameConfiguration}\) instead.

118.6.12 kMIDIProp\(\text{image}\) as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the properties for MIDI on Mac OS X.

**Notes:**

Only available after you called the Init Method.

device property, CFStringRef which is a full POSIX path to a device or external device’s icon, stored in any standard graphic file format such as JPEG, GIF, PNG and TIFF are all acceptable. (See CFURL for functions to convert between POSIX paths and other ways of specifying files.) The image’s maximum size should be 128x128.
Drivers should set the icon on the devices they add.
A studio setup editor should allow the user to choose icons for external devices.

New for CoreMIDI 1.3.

118.6.13  kMIDIPropertyIsBroadcast as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the properties for MIDI on Mac OS X.
**Notes:**
Only available after you called the Init Method.
entity/endpoint property, integer
1 if the endpoint broadcasts messages to all of the other endpoints in the device, 0 if not. Set by the owning
driver; should not be touched by other clients.
New for CoreMIDI 1.3.

118.6.14  kMIDIPropertyIsDrumMachine as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the properties for MIDI on Mac OS X.
**Notes:**
Only available after you called the Init Method.

New for CoreMIDI 1.3. This is set on devices/entities, and is an integer properties, 0/1

118.6.15  kMIDIPropertyIsEffectUnit as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the properties for MIDI on Mac OS X.
**Notes:**
Only available after you called the Init Method.

New for CoreMIDI 1.3. This is set on devices/entities, and is an integer properties, 0/1
118.6.16  kMIDIPROPERTYIsEmbeddedEntity as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the properties for MIDI on Mac OS X.
**Notes:**
Only available after you called the Init Method.

entity/endpoint property, integer
0 if there are external MIDI connectors, 1 if not.
New for CoreMIDI 1.1.

118.6.17  kMIDIPROPERTYIsMixer as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the properties for MIDI on Mac OS X.
**Notes:**
Only available after you called the Init Method.

New for CoreMIDI 1.3. This is set on devices/entities, and is an integer properties, 0/1

118.6.18  kMIDIPROPERTYIsSampler as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the properties for MIDI on Mac OS X.
**Notes:**
Only available after you called the Init Method.

New for CoreMIDI 1.3. This is set on devices/entities, and is an integer properties, 0/1

118.6.19  kMIDIPROPERTYManufacturer as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the properties for MIDI on Mac OS X.
**Example:**
```vbnet
dim m as MidiClientMBS
dim i, n as Integer
dim e as MIDIEndpointMBS
```
dim d as MIDIDeviceMBS
dim s as CFStringMBS

m = new MidiClientMBS
m.Init NewCFStringMBS("Test")
d = m.GetDevice(0)

s = d.StringProperty(d.kMIDIPropertyManufacturer)

MsgBox s.str

Notes:
Only available after you called the Init Method.

device/endpoint property, string
Drivers should set this property on their devices.
Setup editors may allow the user to set this property on external devices.
Creators of virtual endpoints may set this property on their endpoints.

118.6.20 kMIDIPropertyMaxReceiveChannels as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
One of the properties for MIDI on Mac OS X.
Notes:
Only available after you called the Init Method.

New for CoreMIDI 1.3. This is set on devices/entities, and is an integer properties, 0-16

118.6.21 kMIDIPropertyMaxSysExSpeed as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
One of the properties for MIDI on Mac OS X.
Notes:
Only available after you called the Init Method.
device/entity/endpoint property, integer
Set by the owning driver; should not be touched by other clients.
maximum bytes/second of sysex messages sent to it
(default is 3125, as with MIDI 1.0)
118.6.22 kMIDIPropertyMaxTransmitChannels as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the properties for MIDI on Mac OS X.
**Notes:** Only available after you called the Init Method.

New for CoreMIDI 1.3. This is set on devices/entities, and is an integer property, 0-16.

118.6.23 kMIDIPropertyModel as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the properties for MIDI on Mac OS X.
**Notes:** Only available after you called the Init Method.

device/endpoint property, string
Drivers should set this property on their devices.
Setup editors may allow the user to set this property on external devices.
Creators of virtual endpoints may set this property on their endpoints.

118.6.24 kMIDIPropertyName as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the properties for MIDI on Mac OS X.
**Example:**
```
// init midi
dim m as new MidiClientMBS
m.Init NewCFStringMBS("TestApp")

// create a source
dim name as CFStringMBS = NewCFStringMBS("TestSource")
dim source as MidiEndpointMBS = m.CreateSource(name)

// query name property
dim s as CFStringMBS = source.StringProperty(source.kMIDIPropertyName)
MsgBox "Name: " + s.str
```

**Notes:**
Only available after you called the Init Method.

device/entity/endpoint property, string
Devices, entities, and endpoints may all have names. The recommended way to display an endpoint’s name is to ask for the endpoint name, and display only that name if it is unique. If it is non-unique, prepend the device name.
A setup editor may allow the user to set the names of both driver-owned and external devices.

118.6.25  kMIDIPropertyNameConfiguration as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the properties for MIDI on Mac OS X.

**Notes:**
Only available after you called the Init Method.

device/entity/endpoint property, CFDictionary

This specifies the device’s current patch, note and control name values using the MIDINameDocument XML format. This specification requires the use of higher-level, OS-specific constructs outside of the specification, to fully define the current names for a device.

The MIDINameConfiguration property is implementated as a CFDictionary:

key "master" maps to a CFDataRef containing an AliasHandle referring to the device’s master name document.

key "banks" maps to a CFDictionaryRef. This dictionary’s keys are CFStringRef names of patchBank elements in the master document, and its values are each a CFDictionaryRef: key "file" maps to a CFDataRef containing an AliasHandle to a document containing patches that override those in the master document, and key "patchNameList" maps to a CFStringRef which is the name of the patchNameList element in the overriding document.

key "currentModes" maps to a 16-element CFArrayRef, each element of which is a CFStringRef of the name of the current mode for each of the 16 MIDI channels.

Clients setting this property must take particular care to preserve dictionary values other than the ones they are interested in changing, and to properly structure the dictionary.

New for CoreMIDI 1.3.
118.6.26  kMIDIPROPERTYOffline as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the properties for MIDI on Mac OS X.

**Notes:**
Only available after you called the Init Method.

device/entity/endpoint property, integer

1 = device is offline (is temporarily absent), 0 = present
Set by the owning driver, on the device; should not be touched by other clients. Property is inherited from
the device by its entities and endpoints.

New for CoreMIDI 1.1.

118.6.27  kMIDIPROPERTYPanDisruptsStereo as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the properties for MIDI on Mac OS X.

**Notes:**
Only available after you called the Init Method.

New for CoreMIDI 1.3. This is set on devices/entities, and is ab integer properties, 0/1

118.6.28  kMIDIPROPERTYPrivate as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the properties for MIDI on Mac OS X.

**Notes:**
Only available after you called the Init Method.

device/entity/endpoint property, integer

1 = endpoint is private, hidden from other clients.
May be set on a device or entity, but they will still appear in the API; only
affects whether the owned endpoints are hidden.

New for CoreMIDI 1.3.
118.6.29 kMIDIPropertyReceiveChannels as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
One of the properties for MIDI on Mac OS X.
Notes:
Only available after you called the Init Method.
endpoint property, integer
The value is a bitmap of channels on which the object receives, \((1<0)=ch\ 1...(1<15)=ch\ 16\).
Drivers may set this property on their entities or endpoints.
Setup editors may allow the user to set this property on external endpoints.
Virtual destination may set this property on their endpoints.

118.6.30 kMIDIPropertyReceivesBankSelectLSB as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
One of the properties for MIDI on Mac OS X.
Notes:
Only available after you called the Init Method.

New for CoreMIDI 1.3. This is set on devices/entities, and is an integer property, 0/1

118.6.31 kMIDIPropertyReceivesBankSelectMSB as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
One of the properties for MIDI on Mac OS X.
Notes:
Only available after you called the Init Method.

New for CoreMIDI 1.3. This is set on devices/entities, and is an integer property, 0/1

118.6.32 kMIDIPropertyReceivesClock as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
One of the properties for MIDI on Mac OS X.
Notes:
Only available after you called the Init Method.

New for CoreMIDI 1.3. This is set on devices/entities, and is an integer property, 0/1

**118.6.33 kMIDIPROPERTYRECEIVESMTC as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the properties for MIDI on Mac OS X.
**Notes:**
Only available after you called the Init Method.

New for CoreMIDI 1.3. This is set on devices/entities, and is an integer property, 0/1

**118.6.34 kMIDIPROPERTYRECEIVESNOTES as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the properties for MIDI on Mac OS X.
**Notes:**
Only available after you called the Init Method.

New for CoreMIDI 1.3. This is set on devices/entities, and is an integer property, 0/1

**118.6.35 kMIDIPROPERTYRECEIVESPROGRAMCHANGES as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the properties for MIDI on Mac OS X.
**Notes:**
Only available after you called the Init Method.

New for CoreMIDI 1.3. This is set on devices/entities, and is an integer property, 0/1

**118.6.36 kMIDIPROPERTYSINGLEREALTIMEENTITY as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the properties for MIDI on Mac OS X.
**Notes:**
118.6. **CLASS MIDIOBJECTMBS**

Only available after you called the Init Method.

device property, integer

Some MIDI interfaces cannot route MIDI realtime messages to individual outputs; they are broadcast. On such devices the inverse is usually also true – incoming realtime messages cannot be identified as originating from any particular source.

When this property is set on a driver device, it signifies the 0-based index of the entity on which incoming realtime messages from the device will appear to have originated from.

New for CoreMIDI 1.3.

118.6.37 **kMIDIPROPERTYSupportsGeneralMIDI as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the properties for MIDI on Mac OS X.

**Notes:**

Only available after you called the Init Method.

New for CoreMIDI 1.3. This is set on devices/entities, and is an integer properties, 0/1

118.6.38 **kMIDIPROPERTYSupportsMMC as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the properties for MIDI on Mac OS X.

**Notes:**

Only available after you called the Init Method.

New for CoreMIDI 1.3. This is set on devices/entities, and is an integer properties, 0/1

118.6.39 **kMIDIPROPERTYSupportsShowControl as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the properties for MIDI on Mac OS X.

**Notes:**
CHAPTER 118. MIDI

device/entity property, integer (0/1). Indicates whether the device implements the MIDI. New for CoreMIDI 1.5.

118.6.40 kMIDIPropertyTransmitChannels as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the properties for MIDI on Mac OS X.

**Notes:**
Only available after you called the Init Method.

endpoint property, integer
The value is a bitmap of channels on which the object transmits, \((1<<0)=ch\ 1...(1<<15)=ch\ 16\)
New for CoreMIDI 1.3.

118.6.41 kMIDIPropertyTransmitsBankSelectLSB as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the properties for MIDI on Mac OS X.

**Notes:**
Only available after you called the Init Method.

New for CoreMIDI 1.3. This is set on devices/entities, and is an integer property, 0/1

118.6.42 kMIDIPropertyTransmitsBankSelectMSB as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the properties for MIDI on Mac OS X.

**Notes:**
Only available after you called the Init Method.

New for CoreMIDI 1.3. This is set on devices/entities, and is an integer property, 0/1

118.6.43 kMIDIPropertyTransmitsClock as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the properties for MIDI on Mac OS X.

**Notes:**
Only available after you called the Init Method.

New for CoreMIDI 1.3. This is set on devices/entities, and is an integer property, 0/1

118.6.44 kMIDIPROPERTYTransmitsMTC as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the properties for MIDI on Mac OS X.
**Notes:**
Only available after you called the Init Method.

New for CoreMIDI 1.3. This is set on devices/entities, and is an integer property, 0/1

118.6.45 kMIDIPROPERTYTransmitsNotes as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the properties for MIDI on Mac OS X.
**Notes:**
Only available after you called the Init Method.

New for CoreMIDI 1.3. This is set on devices/entities, and is an integer property, 0/1

118.6.46 kMIDIPROPERTYTransmitsProgramChanges as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the properties for MIDI on Mac OS X.
**Notes:**
Only available after you called the Init Method.

New for CoreMIDI 1.3. This is set on devices/entities, and is an integer property, 0/1

118.6.47 kMIDIPROPERTYUniqueId as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the properties for MIDI on Mac OS X.
**Example:**
CHAPTER 118. MIDI

```plaintext
// init midi
dim m as new MidiClientMBS
m.Init NewCFStringMBS("TestApp")

// create a source
dim name as CFStringMBS = NewCFStringMBS("TestSource")
dim source as MidiEndpointMBS = m.CreateSource(name)

// query name property
dim s as Integer = source.IntegerProperty(source.kMIDIPropertyUniqueID)
MsgBox "UniqueID: " +str(s)
```

**Notes:**

Only available after you called the Init Method.

devices, entities, endpoints all have unique ID’s, integer

The system assigns unique ID’s to all objects. Creators of virtual endpoints may set this property on their endpoints, though doing so may fail if the chosen ID is not unique.

118.6.48  kMIDIPROPERTYUserPatchNameFile as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

One of the properties for MIDI on Mac OS X.

**Notes:**

Only available after you called the Init Method.

device/entity/endpoint property, CFData containing AliasHandle

An alias to the device’s current user patch name file.

Added in CoreMIDI 1.1. DEPRECATED as of CoreMIDI 1.3.

Use kMIDIPROPERTYNameConfiguration instead.

118.6.49  Properties(deep as boolean) as CFOBJECTMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Get all of an object’s properties.

**Notes:**

Deep parameter: true if the object’s child objects are to be included (e.g. a device’s entities, or an entity’s endpoints).
118.6. **CLASS MIDIOBJECTMBS**

Properties which an object inherits from its owning object (if any) are not included.

New for CoreMIDI 1.1.

Returns nil on any error.
Lasterror is set.

### 118.6.50 RemoveProperty(name as CFStringMBS)

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Remove an object’s property.
**Notes:** Lasterror is set.

### 118.6.51 Properties

### 118.6.52 DisplayName as String

MBS MacCF Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Provides the Apple-recommended user-visible name for an endpoint, by combining the device and endpoint names.
**Notes:**
For objects other than endpoints, the display name is the same as the name.
(Read only property)

### 118.6.53 Handle as Integer

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle of this object.
**Notes:** (Read and Write property)

### 118.6.54 Lasterror as Integer

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last error code reported.
**Notes:**
0 if the function was successful.
-1 if the function is not available or the RB parameters were bad. (e.g. nil)
else a Mac OS error code.

Some MIDI specific error codes:

- kMIDIInvalidClient -10830
- kMIDIInvalidPort -10831
- kMIDIWrongEndpointType -10832 want source, got destination, or vice versa
- kMIDINoConnection -10833 attempt to close a non-existent connection
- kMIDIUnknownEndpoint -10834
- kMIDIUnknownProperty -10835
- kMIDIWrongPropertyType -10836
- kMIDINoCurrentSetup -10837 there is no current setup, or it contains no devices
- kMIDIMessageSendErr -10838 communication with server failed
- kMIDIServerStartErr -10839 couldn’t start the server
- kMIDISetupFormatErr -10840 unparseable saved state
- kMIDIWrongThread -10841 driver is calling non I/O function in server from a thread other than server’s main one:
- kMIDOObjectNotFound -10842
- kMIDIDNotUnique -10843

(Read and Write property)

### 118.6.55 Manufacturer as String

MBS MacCF Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Drivers should set this property on their devices.  
**Notes:** Setup editors may allow the user to set this property on external devices.  
(Read only property)

### 118.6.56 Model as String

MBS MacCF Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The model name.  
**Notes:** (Read only property)

### 118.6.57 Name as String

MBS MacCF Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The item’s name.  
**Notes:**
Devices, entities, and endpoints may all have names. The recommended way to display an endpoint’s name is to ask for the endpoint name, and display only that name if it is unique. If it is non-unique, prepend the device name.

A setup editor may allow the user to set the names of both driver-owned and external devices.
(Read only property)

BinaryProperty(name as CFStringMBS) as CFBinaryDataMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Set or Get an object’s data-type property.
Notes:
Lasterror is set.
Returns nil on any error.
(Read and Write computed property)

IntegerProperty(name as CFStringMBS) as Integer

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Set or Get an object’s integer-type property.
Example:

// init midi
dim m as new MidiClientMBS
m.Init NewCFStringMBS("TestApp")

// create a source
dim name as CFStringMBS = NewCFStringMBS("TestSource")
dim source as MidiEndpointMBS = m.CreateSource(name)

// query name property
dim s as Integer = source.IntegerProperty(source.kMIDIPropertyUniqueID)
MsgBox "UniqueID: " + str(s)

// set it
source.IntegerProperty(source.kMIDIPropertyUniqueID) = 1234

// query again
dim t as Integer = source.IntegerProperty(source.kMIDIPropertyUniqueID)
MsgBox "UniqueID: " + str(t)
Notes:
Returns 0 on any error.
LastError is set.
(Read and Write computed property)

118.6.60 ObjectProperty(name as CFStringMBS) as CFObjectMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Get or Set an object’s dictionary-type property.

Notes:
LastError is set.
New for CoreMIDI 1.3.
Renamed from Property to ObjectProperty in v4.3 for REALbasic 6 compatibility.
(Read and Write computed property)

118.6.61 StringProperty(name as CFStringMBS) as CFStringMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Get or Set an object’s string-type property.

Example:
```
dim m as MidiClientMBS
dim i, n as Integer
dim e as MIDIMessageMBS
dim d as MIDIDeviceMBS
dim s as CFStringMBS

m = new MidiClientMBS
m.Init NewCFStringMBS("Test")
d = m.GetDevice(0)

s = d.StringProperty(d.kMIDIPropertyManufacturer)
```

Notes:
LastError is set.
(Read and Write computed property)
118.7  class MidiPacketListMBS

118.7.1  class MidiPacketListMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class to hold a list of MidiPackets.

118.7.2  Methods

118.7.3  FillList(packets() as MidiPacketMBS) as boolean

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Fills the list with the given Realbasic array of MidiPackets.

118.7.4  Item(index as Integer) as MidiPacketMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the item with the given index.

118.7.5  Properties

118.7.6  Count as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The number of items in the list.
**Notes:** (Read and Write property)
118.8 class MidiPacketMBS

118.8.1 class MidiPacketMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a midi packet.

118.8.2 Methods

118.8.3 AbsoluteToNanoseconds(value as UInt64) as UInt64

MBS MacCF Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Converts an absolute time value to a nanoseconds time value. **Example:**

```vba
dim x as UInt64 = MidiPacketMBS.CurrentTime
dim y as UInt64 = x + MidiPacketMBS.NanosecondsToAbsolute(5)
MsgBox str(x) + " + 5 ns = " + str(y)
```

118.8.4 CurrentTime as UInt64

MBS MacCF Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the current time of the computer as an absolute time value. **Example:**

```vba
dim u as uint64 = MidiPacketMBS.CurrentTime
dim n as uint64 = MidiPacketMBS.AbsoluteToNanoseconds(u)
dim x as Double = n / 1000000000.0
MsgBox str(u) + " " + str(n) + " " + str(x)
```

```vba
dim d as new date
d.Minute = 0
d.Hour = 0
d.Second = 0
d.TotalSeconds = d.TotalSeconds + x
MsgBox d.ShortTime // how long the mac is running.
```
Notes: While some Macs do have host clock time being in nanoseconds, this is not guaranteed. So use the function AbsoluteToNanoseconds to convert to nanoseconds.

118.8.5 NanosecondsToAbsolute(value as UInt64) as UInt64


Example:

```vbs
dim x as UInt64 = MidiPacketMBS.CurrentTime

dim y asUInt64 = MidiPacketMBS.NanosecondsToAbsolute(x)

dim seconds as uint64 = y / 1000000000

dim hours as uint64 = seconds / 3600

seconds = seconds - hours*3600

dim minutes as uint64 = seconds / 60

seconds = seconds - minutes*60

// shows how long the Mac is running:
MsgBox str(hours) + " hours, " + str(minutes) + " minutes, " + str(seconds) + " seconds"
```

118.8.6 Properties

118.8.7 DataMemory as MemoryBlock


Notes:
Setting this value will automatically fill the DataString property, so both are in sync.
(Read and Write property)

118.8.8 DataString as String


Notes:
Setting this value will automatically fill the DataMemory property, so both are in sync.
This will not work:
DataString="90 5A 7C"

But this is better:
DataString=chrb(& h90)+chrb(& h5A)+chrb(& h7C)

or with the DataMemory property:
m=newmemoryblock(3)
m.byte(0)=& h90
m.byte(1)=& h5A
m.byte(2)=& h7C
DataMemory=m
(Read and Write property)

118.8.9 TimeStamp as MemoryBlock


dim pack as MIDIPacketMBS
dim m as memoryblock

m=newmemoryblock(8)
m.Long(0) = 2345678 // some time value
m.Long(4) = 3456789
pack = new MIDIPacketMBS
pack.TimeStamp = m

Notes:
A host clock time (64 bit value) representing the time of an event, as returned by MidiPacketMBS.CurrentTime.

As a convenience, you can use zero to use the current time.
And using nil for the memoryblock represents a value of zero (=now).
(Read and Write property)
118.8.10 TimeStampValue as UInt64

MBS MacCF Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The timestamp of the packet.

**Notes:**

A host clock time (64 bit value) representing the time of an event, as returned by MidiPacketMBS.Current-Time.

As a convenience, you can use zero to use the current time.
(Read and Write property)
118.9 class MidiPlaybackMBS

118.9.1 class MidiPlaybackMBS

MBS MacOSX Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class to do Midi playback on Mac OS X.

**Notes:**
With sandbox, you need the com.apple.security.temporary-exception.audio-unit-host entitlement as of September 2013.

118.9.2 Methods

118.9.3 Callback as Integer

MBS MacOSX Plugin, Plugin Version: 6.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Needed for the MidiPortMBS class to know which function to call

**Example:**
```pascal
dim p as MidiPlaybackMBS
dim m as MidiPortMBS
// do something useful
m.SetCallback p.Callback, p
```

**Notes:**
Return the address of the callback method used to process Midi data.
The method is to be used together with the SetCallback method in the MidiPortMBS class.

118.9.4 Constructor(UsesInternalReverb as boolean=false, AutoStart as boolean=true)

MBS MacOSX Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes the midi playback.

**Notes:**
After calling the constructor the Inited flag is true on success.
If AutoStart is false the midi playback is not started.
118.9. CLASS MIDIPLAYBACKMBS

118.9.5 CPULoad as single

MBS MacOSX Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The CPU load of the graph.
**Notes:**
Returns a short-term running average of the current CPU load of the graph.

118.9.6 InstrumentCount as Integer

MBS MacOSX Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of instruments.

118.9.7 InstrumentID(index as Integer) as Integer

MBS MacOSX Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The ID of the instrument with the given index.

118.9.8 InstrumentName(index as Integer) as string

MBS MacOSX Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of the instrument with the given index.
**Example:**
```vba
// show list of all names
dim m as new MidiPlaybackMBS

dim u as Integer = m.InstrumentCount-1
for i as Integer = 0 to u
Listbox1.AddItem m.InstrumentName(i)
next
```

**Notes:** Index from 0 to InstrumentCount-1.

118.9.9 IsRunning as boolean

MBS MacOSX Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the midi playback is running.
118.9.10 LoadSoundBankFile(file as folderitem)

MBS MacOSX Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Loads a sound bank file.

**Example:**

```vba
Sub LoadSoundFont (SoundFontName as string)
    
    dim j as Integer
    dim f as folderitem
    dim e as string
    
    //GET SOUNDFONT
    f = Volume(0).Child("Library").Child("Audio").Child("Sounds").Child("Banks").Child(SoundFontName)
    
    if f <> Nil then
        //INSTALL SOUNDFONT
        me.LoadSoundBankFile(f)
        Window1.PopupMenu1.DeleteAllRows
        for j = 0 to 127
            if me.InstrumentName(j) <> "" then
                Window1.PopupMenu1.addrow me.InstrumentName(j)
            end if
        next
        Window1.PopupMenu1.ListIndex = 0
    else
        e = "Could not locate the SoundFont: " + SoundFontName
        e = e + " Please make sure the file is a valid soundfont file"
        e = e + " and is located in the folder YourHardDrive/Library/Audio/Sounds/Banks"
        e = e + " and has the extension .sf2"
        MsgBox e
        end if
    
End Sub
```

**Notes:**

This function can load files with .sf2 extension placed in the location: Library/Audio/Sounds/Banks.

Lasterror is set.

To avoid crashes on Mac OS X 10.5, the midi playback is stopped before loading is done and restarted if
necessary after loading completed.

As a side effect stopping the midi playback may reset volume, reverb and tuning.

118.9.11 MaxCPULoad as single

Notes: Returns the max CPU load of the graph since this call was last made or the graph was last started.

118.9.12 SendMidiEvent(Status as Integer, Data1 as Integer, Data2 as Integer, OffsetSampleFrame as Integer)


118.9.13 Start

Notes: Lasterror is set.

118.9.14 Stop

Notes:
Lasterror is set.

As a side effect stopping the midi playback may reset volume, reverb and tuning.
118.9.15 Properties

118.9.16 FilterNodeHandle as Integer

MBS MacOSX Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The internal reference for the filter graph node. Notes: (Read only property)

118.9.17 GraphHandle as Integer

MBS MacOSX Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The handle for the AUGraph. Notes: (Read only property)

118.9.18 Initied as boolean

MBS MacOSX Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether the constructor was successful. Notes: This property is false if the constructor failed to initialize. (Read only property)

118.9.19 Lasterror as Integer

MBS MacOSX Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The last error code. Notes: (Read only property)

118.9.20 OutputNodeHandle as Integer

MBS MacOSX Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The internal reference for the output graph node. Notes: (Read only property)
118.9. CLASS MIDIPLAYBACKMBS

118.9.21 SynthNodeHandle as Integer

MBS MacOSX Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The internal reference for the synth graph node. Notes: (Read only property)

118.9.22 SynthUnitHandle as Integer

MBS MacOSX Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The internal reference for the synth audio unit. Notes: (Read only property)

118.9.23 InstrumentIDOnChannel(Channel as Integer) as Integer

MBS MacOSX Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Which instrument is playing on which channel. Notes: (Read and Write computed property)

118.9.24 ReverbVolume as single

MBS MacOSX Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The reverb volume. Notes: The value range is -120 to 40 dB. (Read and Write computed property)

118.9.25 StreamFromDisk as boolean

MBS MacOSX Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether we are streaming from disk. Notes: Currently setting this value can crash the application. (Read and Write computed property)
118.9.26 Tuning as single

MBS MacOSX Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The tuning setting.
**Notes:**
Value is in cents from -1200 to 1200.
(Read and Write computed property)

118.9.27 UsesInternalReverb as boolean

MBS MacOSX Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the audio unit properties.
**Example:**
```
dim m as new MidiPlaybackMBS

MsgBox "UsesInternalReverb: "+str(m.UsesInternalReverb)
m.UsesInternalReverb=true
MsgBox "UsesInternalReverb: "+str(m.UsesInternalReverb)
```
**Notes:**
Lasterror is set.
(Read and Write computed property)

118.9.28 Volume as single

MBS MacOSX Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The volume.
**Notes:**
The value is in dB from -120 to 40.
(Read and Write computed property)
118.10. **CLASS MIDIPORTMBS**

**118.10 class MidiPortMBS**

**118.10.1 class MidiPortMBS**

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a MIDI port.

**Notes:**

A MIDIPortMBS, which may be an input port or output port, is an object through which a client may communicate with any number of MIDI sources or destinations.

Subclass of the MidiObjectMBS class.

**118.10.2 Methods**

**118.10.3 close**

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The destructor.

**Notes:**

There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.

(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

**118.10.4 ConnectSource(source as MidiEndpointMBS)**

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Establish a connection from a source to a client’s input port.

**Notes:** Lasterror is set.

**118.10.5 DisconnectSource(source as MidiEndpointMBS)**

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Close a previously-established source-to-input port connection.

**Notes:** Lasterror is set.

**118.10.6 SetCallback(callback as Integer, reference as object)**

MBS MacCF Plugin, Plugin Version: 6.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:**

Connects the MidiPort to send data to given MidiPlayback reference.
Example:

```plaintext
dim p as MidiPlaybackMBS
dim m as MidiPortMBS
// do something useful
m.SetCallback p.Callback, p
```

Notes:
The method is to be used together with the Callback function in the MidiPlaybackMBS class. Read event is still being called if needed.

118.10.7  Events

118.10.8  Read(endpoint as MidiEndpointMBS, list as MidiPacketListMBS)

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
Called when data arrives at this port.
Notes:
If more than 256 bytes of data is received, it may be splitted and send in several events.

For some devices a Note Off is just a Note On with a zero velocity.
118.11  class MIDISysexSendRequestMBS

118.11.1  class MIDISysexSendRequestMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
An asynchronous request to send a single system-exclusive MIDI event to a MIDI destination.

118.11.2  Methods

118.11.3  close

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The destructor.
**Notes:**
There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

118.11.4  Send

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Send a single system-exclusive event, asynchronously.
**Notes:** Keep a reference to this object until the call Completes.

118.11.5  Properties

118.11.6  BytesToSend as Integer

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Initially set when sending starts to the number of bytes to be sent.
**Notes:**
MIDISendSysex will decrement this counter as bytes are sent.
(Read and Write property)
118.11.7  Data as Memoryblock

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The memoryblock with the data you want to send.  
**Notes:** (Read and Write property)

118.11.8  Destination as MidiEndpointMBS

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The endpoint to which the event is to be sent.  
**Notes:** (Read and Write property)

118.11.9  IsComplete as boolean

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The client may set this to true at any time to abort transmission.  
**Notes:**  
The implementation sets this to true when all bytes have been sent.  
Renamed from Complete to IsComplete in v4.3 for REALbasic 6 compatibility.  
(Read and Write property)

118.11.10  Lasterror as Integer

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last error code.  
**Notes:**  
0 for success.  
(Read and Write property)

118.11.11  Length as Integer

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The length of the memoryblock.  
**Notes:**  
If 0, the memoryblock.size property is taken, but not all memoryblocks know their size.  
(Read and Write property)
118.11.12  Events

118.11.13  Complete

MBS MacCF Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** An event to notify the client of the completion of a call to MIDISendSysex.
118.12 class MidiThruConnectionControlTransformMBS

118.12.1 class MidiThruConnectionControlTransformMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** A class for a control transformation midi connection.

**Notes:**
Note: must order control transforms appropriately – first, filter out and remap. Further transforms can follow, and will apply to the remapped control number (if any).
N.B. All transformations are done using 14-bit control values, so, when doing an add/min/max transform on a 7-bit value, the parameter must be a 14-bit value, e.g. to add n, param must be n <<7.

118.12.2 Properties

118.12.3 ControlNumber as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The control number.

**Notes:** (Read and Write property)

118.12.4 ControlType as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The control type.

**Notes:**
implementation note: some code tests bits of these values

constants:

```
kMIDIControlType_7Bit  0  control numbers may be 0-127
kMIDIControlType_14Bit 1  control numbers may be 0-31
kMIDIControlType_7BitRPN 2  control numbers may be 0-16383
kMIDIControlType_14BitRPN 3
kMIDIControlType_7BitNRPN 4
kMIDIControlType_14BitNRPN 5
```

(Read and Write property)
118.12.5 Parameter as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The parameter for the transformation.
**Notes:** (Read and Write property)

118.12.6 RemappedControlType as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The Remapped Control Type.
**Notes:**
Only used when transform is kMIDITransform_MapControl
(Read and Write property)

118.12.7 Transform as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The transformation code to apply.
**Notes:**
Some constants:

```
  kMIDITransform_None         0  no param
  kMIDITransform_FilterOut    1  filter out event type, no param
  kMIDITransform_MapControl   2  param is remapped control number
  kMIDITransform_Add          8  param is value to add
  kMIDITransform_Scale        9  param is amount to scale by: fixed point bbbb.bbbb bbbb bbbb
  kMIDITransform_MinValue     10
  kMIDITransform_MaxValue     11
  kMIDITransform_MapValue     12  param is index of map in connection’s map array
```

(Read and Write property)
118.13 class MidiThruConnectionEndpointMBS

118.13.1 class MidiThruConnectionEndpointMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
A class for an endpoint specifications.
**Notes:**
When filling one of these out, clients can leave uniqueID 0 if the endpoint exists. When when one is provided back to the client, the endpoint may be null if it doesn’t exist, but the uniqueID will always be non-zero.

118.13.2 Methods

118.13.3 close

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The destructor.
**Notes:**
There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you. (e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

118.13.4 Properties

118.13.5 Endpoint as MidiEndpointMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The endpoint to use for a connection.
**Notes:** (Read and Write property)

118.13.6 UniqueID as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
An unique ID for an endpoint.
**Notes:** (Read and Write property)
118.14 class MidiThruConnectionMBS

118.14.1 class MidiThruConnectionMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
A class for a midi connection.

**Notes:**
This class defines functions to create MIDI play-through connections between the MIDI sources and destinations. These connections may be persistent or transitory, owned by a client.

By using connections instead of doing MIDI Thru operations themselves, the overhead of moving MIDI messages between the server and the client for thru-ing is reduced.

The aim of these functions is to permit as flexible a set of transformations as possible while keeping the API and data structures relatively simple.

118.14.2 Methods

118.14.3 close

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The destructor.

**Notes:**
There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

118.14.4 Create(PersistentOwnerID as CFStringMBS, params as MidiThruConnectionParamsMBS)

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new connection.

**Notes:**
If inPersistentOwnerID is nil, then the connection is marked as owned by the client and will be automatically disposed with the client.
If it is non-nil, then it should be a unique identifier, e.g. ”com.mycompany.MyCoolProgram".
118.14.5 Properties

118.14.6 Handle as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The handle for the Connection.
**Notes:** (Read and Write property)

118.14.7 Lasterror as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The last error code reported.
**Notes:** (Read and Write property)

118.14.8 Parameter as MidiThruConnectionParamsMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The parameters for the connection.
**Notes:**
Lasterror is set.
(Read and Write computed property)
118.15 class MidiThruConnectionParamsMBS

118.15.1 class MidiThruConnectionParamsMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The class for the parameters of a midi connection.

118.15.2 Methods

118.15.3 close

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The destructor.
**Notes:**
There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

118.15.4 Properties

118.15.5 ChannelPressure as MidiThruConnectionTransformMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the transformations.
**Notes:** (Read and Write property)

118.15.6 ControlTransformsCount as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The number of control transformations used.
**Notes:**
If you create a MidiThruConnectionParamsMBS object than this number is counted from the entries in the ControlTransform array.
(Read and Write property)
118.15.7 DestinationsCount as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The number of destinations.  
**Notes:** If you create a MidiThruConnectionParamsMBS object than this number is counted from the entries in the destination array.  
(Read and Write property)

118.15.8 FilterOutAllControls as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Unknown.  
**Notes:** (Read and Write property)

118.15.9 FilterOutBeatClock as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Unknown.  
**Notes:** (Read and Write property)

118.15.10 FilterOutMTC as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Unknown.  
**Notes:** (Read and Write property)

118.15.11 FilterOutSysEx as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Unknown.  
**Notes:** (Read and Write property)

118.15.12 FilterOutTuneRequest as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Unknown.
118.15. **CLASS MIDITHRUCONNECTIONPARAMSMBS**

**Notes:** (Read and Write property)

118.15.13 **HighNote as Integer**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The high note value.

**Notes:**
Ignored if mapping.
If highNote < lowNote, then 0..highNote and lowNote..127 are passed.
(Read and Write property)

118.15.14 **KeyPressure as MidiThruConnectionTransformMBS**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
One of the transformations.

**Notes:** (Read and Write property)

118.15.15 **LowNote as Integer**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The low note value.

**Notes:**
Ignored if mapping.
If highNote < lowNote, then 0..highNote and lowNote..127 are passed.
(Read and Write property)

118.15.16 **MapsCount as Integer**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The number of mappings used.

**Notes:**
If you create a MidiThruConnectionParamsMBS object than this number is counted from the entries in the Map array.
(Read and Write property)
118.15.17  NoteNumber as MidiThruConnectionTransformMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the transformations.  
**Notes:** (Read and Write property)

118.15.18  PitchBend as MidiThruConnectionTransformMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the transformations.  
**Notes:** (Read and Write property)

118.15.19  ProgramChange as MidiThruConnectionTransformMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the transformations.  
**Notes:** (Read and Write property)

118.15.20  SourcesCount as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The number of sources used.  
**Notes:** If you create a MidiThruConnectionParamsMBS object than this number is counted from the entries in the Source array.  
(Read and Write property)

118.15.21  Velocity as MidiThruConnectionTransformMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the transformations.  
**Notes:** (Read and Write property)

118.15.22  ChannelMap(index as Integer) as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The array with the value mappings.
Notes:
Map each of the source 16 MIDI channels to channel 0-15 (1-16) or 0xFF to filter out.
(Read and Write computed property)

118.15.23  ControlTransform(index as Integer) as MidiThruConnectionControlTransformMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
The array of control transformations.
Notes: (Read and Write computed property)

118.15.24  Destination(index as Integer) as MidiThruConnectionEndpointMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
The array of destination endpoints.
Notes: (Read and Write computed property)

118.15.25  Map(index as Integer) as MidiThruConnectionValueMapMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
The list of mappings for this midi connection.
Notes:
Index is from 0 to 15.
(if you need more, send me an email and I upper the limit.)
(Read and Write computed property)

118.15.26  Source(index as Integer) as MidiThruConnectionEndpointMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
The array of source endpoints.
Notes: (Read and Write computed property)
118.16 class MidiThruConnectionTransformMBS

118.16.1 class MidiThruConnectionTransformMBS

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The class for a Midi connection transformation.

118.16.2 Properties

118.16.3 Parameter as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The parameter of the transformation. **Notes:** (Read and Write property)

118.16.4 Transform as Integer

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The transformation code. **Notes:**

Some constants:

- kMIDITransform_None 0 no param
- kMIDITransform_FilterOut 1 filter out event type, no param
- kMIDITransform_MapControl 2 param is remapped control number
- kMIDITransform_Add 8 param is value to add
- kMIDITransform_Scale 9 param is amount to scale by: fixed point bbbb.bbbb bbbb bbbb bbbb
- kMIDITransform_MinValue 10
- kMIDITransform_MaxValue 11
- kMIDITransform_MapValue 12 param is index of map in connection’s map array

(Read and Write property)
118.17.  **MidiThruConnectionValueMapMBS**

118.17.1  **MidiThruConnectionValueMapMBS**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** A value map for a Midi connection.  
**Notes:** This is an array to map Midi values from 0 to 127 to new values from 0 to 127.

118.17.2  **Properties**

118.17.3  **Value(index as Integer) as Integer**

MBS MacCF Plugin, Plugin Version: 3.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The value Map.  
**Notes:**  
Index is from 0 to 127.  
Use only values from 0 to 127.  
(Read and Write computed property)
118.18 class PortMidiDeviceInfoMBS

118.18.1 class PortMidiDeviceInfoMBS

MBS Audio Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class for device information.

**118.18.2 Properties**

118.18.3 *HasInput* as Boolean

MBS Audio Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if input is available.  
**Notes:** (Read only property)

118.18.4 *HasOutput* as Boolean

MBS Audio Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if output is available.  
**Notes:** (Read only property)

118.18.5 *InterfaceName* as String

MBS Audio Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Underlying MIDI API.  
**Notes:**  
e.g. MMSystem, DirectX or CoreMidi.  
(Read only property)

118.18.6 *Name* as String

MBS Audio Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The device name.  
**Notes:**  
e.g. USB MidiSport 1x1  
(Read only property)
118.19. CLASS PORTMIDIEVENTMBS

118.19  class PortMidiEventMBS

118.19.1 class PortMidiEventMBS

MBS Audio Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for a piece of midi data.

118.19.2 Methods

118.19.3 Set(status as Integer, data1 as Integer, data2 as Integer)

MBS Audio Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the value to the given data.

118.19.4 SetRaw(data0 as Integer, data1 as Integer, data2 as Integer, data3 as Integer)

MBS Audio Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the raw data by setting all 4 bytes together.

118.19.5 Properties

118.19.6 CurrentEvent as PortMidiEventMBS

MBS Audio Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The current event played.
**Notes:**
You can use this to show current note playing.
(Read only property)

118.19.7 Data1 as Integer

MBS Audio Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The first data value in the midi event.
**Notes:** (Read and Write property)
118.19.8  Data2 as Integer

MBS Audio Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The second data value in the midi event.
**Notes:** (Read and Write property)

118.19.9  RawData0 as Integer

MBS Audio Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The first byte of the raw data in this event.
**Notes:**
Same as Status property.
(Read and Write property)

118.19.10  RawData1 as Integer

MBS Audio Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The second byte of the raw data in this event.
**Notes:**
Same as Data1 property.
(Read and Write property)

118.19.11  RawData2 as Integer

MBS Audio Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The third byte of the raw data in this event.
**Notes:**
Same as Data2 property.
(Read and Write property)

118.19.12  RawData3 as Integer

MBS Audio Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The forth byte of the raw data in this event.
**Notes:** (Read and Write property)
118.19.13 RawMessage as Integer

MBS Audio Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The raw content of the event as an integer.
**Notes:**
Take care about platform differences like the byte order.
(Read and Write property)

118.19.14 Status as Integer

MBS Audio Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The status value.
**Notes:** (Read and Write property)

118.19.15 When as Integer

MBS Audio Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The time value of this MIDI data.
**Notes:**
Should be milliseconds.
(Read and Write property)
118.20 class PortMidiMBS

118.20.1 class PortMidiMBS

MBS Audio Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The PortMidi library wrapped for use in Realbasic.

**Notes:**

Error codes:

- const pmNoError = 0
- const pmHostError = -10000
- const pmInvalidDeviceId = -9999
- const pmInsufficientMemory = -9998
- const pmBufferTooSmall = -9997
- const pmBufferOverflow = -9996
- const pmBadPtr = -9995
- const pmBadData = -9994
- const pmInternalError = -9993
- const pmBufferMaxSize = -9992

Requires libasound.so.2 on Linux to be installed.

118.20.2 Methods

118.20.3 CountDevices as Integer

MBS Audio Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Counts the devices.

**Example:**

```basic
dim pa as new PortMidiMBS

Dim u as Integer = pa.CountDevices-1
for i as Integer = 0 to u
    dim d as PortMidiDeviceInfoMBS = pa.DeviceInfo(i)
    MsgBox d.Name+", " +D.InterfaceName
next
```

**Notes:** Returns 0 on any error.
118.20.4 DefaultInputDeviceID as Integer

MBS Audio Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the default device ID or pmNoDevice (-1) if there are no devices.

**Notes:**
On the PC, the user can specify a default device by setting an environment variable. For example, to use device # 1.

set PM\_RECOMMENDED\_OUTPUT\_DEVICE=1

The user should first determine the available device ID by using the supplied application "testin" or "testout".

In general, the registry is a better place for this kind of info, and with USB devices that can come and go, using integers is not very reliable for device identification. Under Windows, if PM\_RECOMMENDED\_OUTPUT\_DEVICE (or PM\_RECOMMENDED\_INPUT\_DEVICE) is *NOT* found in the environment, then the default device is obtained by looking for a string in the registry under: HKEY\_LOCAL\_MACHINE/SOFTWARE/PortMidi/Recommended\_Input\_Device and HKEY\_LOCAL\_MACHINE/SOFTWARE/PortMidi/Recommended\_Output\_Device for a string. The number of the first device with a substring that matches the string exactly is returned. For example, if the string in the registry is "USB", and device 1 is named "In USB MidiSport 1x1", then that will be the default input because it contains the string "USB".

In addition to the name, PmDeviceInfo has the member "interf", which is the interface name. (The "interface" is the underlying software system an API used by PortMidi to access devices. Examples are MMSystem, DirectX (not implemented), ALSA, OSS (not implemented), etc.) As a result, the only Windows interface is "MMSystem", the only Linux interface is "ALSA", and the only Mac OS X interface is "CoreMIDI".

To specify both the interface and the device name in the registry, separate the two with a comma and a space, e.g.: MMSystem, In USB MidiSport 1x1
In this case, the string before the comma must be a substring of the "interf" string, and the string after the space must be a substring of the "name" name string in order to match the device.

Note: in the current release, the default is simply the first device (the input or output device with the lowest PmDeviceID).

118.20.5 DefaultOutputDeviceID as Integer

MBS Audio Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the default device ID or pmNoDevice (-1) if there are no devices.

**Notes:**
On the PC, the user can specify a default device by setting an environment variable. For example, to use device # 1.
set PM_RECOMMENDED_OUTPUT_DEVICE=1

The user should first determine the available device ID by using the supplied application "testin" or "testout".

In general, the registry is a better place for this kind of info, and with USB devices that can come and go, using integers is not very reliable for device identification. Under Windows, if PM_RECOMMENDED_OUTPUT_DEVICE (or PM_RECOMMENDED_INPUT_DEVICE) is *NOT* found in the environment, then the default device is obtained by looking for a string in the registry under: HKEY_LOCAL_MACHINE/SOFTWARE/PortMidi/Recommended_Input_Device and HKEY_LOCAL_MACHINE/SOFTWARE/PortMidi/Recommended_Output_Device for a string. The number of the first device with a substring that matches the string exactly is returned. For example, if the string in the registry is "USB", and device 1 is named "In USB MidiSport 1x1", then that will be the default input because it contains the string "USB".

In addition to the name, PmDeviceInfo has the member "interf", which is the interface name. (The "interface" is the underlying software system or API used by PortMidi to access devices. Examples are MMSystem, DirectX, and ALSA. In general, the only Mac OS X interface is "CoreMIDI".)

To specify both the interface and the device name in the registry, separate the two with a comma and a space, e.g.: MMSystem, In USB MidiSport 1x1
In this case, the string before the comma must be a substring of the "interf" string, and the string after the space must be a substring of the "name" name string in order to match the device.

Note: in the current release, the default is simply the first device (the input or output device with the lowest PmDeviceID).

118.20.6 DeviceInfo(DeviceID as Integer) as PortMidiDeviceInfoMBS


Example:

dim pa as new PortMidiMBS

Dim u as Integer = pa.CountDevices-1
for i as Integer = 0 to u
dim d as PortMidiDeviceInfoMBS = paDeviceInfo(i)
MsgBox d.Name+", "+D.InterfaceName
next

Notes: Returns nil on any error.
118.20.7  ErrorText(ErrorNumber as Integer) as string

MBS Audio Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The error text for the given error code.
**Notes:** Returns "" on any error.

118.20.8  Initialize as Integer

MBS Audio Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Initializes the PortMidi functions.
**Notes:**
You call this manually to trigger initialization now.
Or you just let the plugin do it automatically when you call one of the portmidi functions.
Returns the error code. (0 = okay)

118.20.9  ReInitialize as Integer

MBS Audio Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Shuts down PortMidi and initializes it again.
**Notes:**
As PortMidi does not recognize the attachment of new MIDI devices, you can only reinitialize.

Returns a PortMidi error code.

118.20.10  Constants

118.20.11  pmBadData = -9994

MBS Audio Plugin, Plugin Version: 9.4. **Function:** One of the PortMidi errors.
**Notes:** illegal midi data, e.g. missing EOX

118.20.12  pmBadPtr = -9995

MBS Audio Plugin, Plugin Version: 9.4. **Function:** One of the PortMidi errors.
118.20.13  pmBufferMaxSize = -9992
MBS Audio Plugin, Plugin Version: 9.4. **Function:** One of the PortMidi errors.  
**Notes:** buffer is already as large as it can be.

118.20.14  pmBufferOverflow = -9996
MBS Audio Plugin, Plugin Version: 9.4. **Function:** One of the PortMidi errors.

118.20.15  pmBufferTooSmall = -9997
MBS Audio Plugin, Plugin Version: 9.4. **Function:** One of the PortMidi errors.

118.20.16  pmHostError = -10000
MBS Audio Plugin, Plugin Version: 9.4. **Function:** One of the PortMidi errors.

118.20.17  pmInsufficientMemory = -9998
MBS Audio Plugin, Plugin Version: 9.4. **Function:** One of the PortMidi errors.

118.20.18  pmInternalError = -9993
MBS Audio Plugin, Plugin Version: 9.4. **Function:** One of the PortMidi errors.

118.20.19  pmInvalidDeviceId = -9999
MBS Audio Plugin, Plugin Version: 9.4. **Function:** One of the PortMidi errors.  
**Notes:** out of range or output device when input is requested or input device when output is requested or device is already opened.
118.20. CLASS PORTMIDIMBS

118.20.20  pmNoDevice = -1

MBS Audio Plugin, Plugin Version: 9.4. **Function:** One of the PortMidi errors.

118.20.21  pmNoError = 0

MBS Audio Plugin, Plugin Version: 9.4. **Function:** One of the PortMidi errors.
118.21 class PortMidiStreamMBS

118.21.1 class PortMidiStreamMBS

MBS Audio Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The Realbasic class to represent a PortMidi stream.
**Notes:** A single PortMidiStream is a descriptor for an open MIDI device.

118.21.2 Methods

118.21.3 Abort as Integer

MBS Audio Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Terminates outgoing messages immediately.
**Notes:**
The caller should immediately close the output port; this call may result in transmission of a partial midi message. There is no abort for Midi input because the user can simply ignore messages in the buffer and close an input device at any time.
Returns an error code.

118.21.4 Close

MBS Audio Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The destructor.
**Notes:**
There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

118.21.5 currentTimeStamp as Integer

MBS Audio Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries current time stamp.

118.21.6 ErrorText(ErrorNumber as Integer) as string

MBS Audio Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The error message for this error number.
118.21.7  **HostError as string**

MBS Audio Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries host error string.  
**Example:**

```vba
dim s as new PortMidiStreamMBS
// do something that causes an error
MsgBox "HostError: " + s.HostError
```

**Notes:** Clears error.

118.21.8  **OpenInput(DeviceID as Integer, Buffersize as Integer) as Integer**

MBS Audio Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Opens a device for reading.  
**Notes:**

DeviceID is the id of the device used for input.

For input, the buffersize specifies the number of input events to be buffered waiting to be read using Pm_Read().

(In some cases – see below – PortMidi does not buffer output at all and merely passes data to a lower-level API, in which case buffersize is ignored.)

**return value:**

Upon success OpenInput returns PmNoError.  
If a call to OpenInput fails a nonzero error code is returned (see PMError above) and the value of port is invalid.

118.21.9  **OpenOutput(DeviceID as Integer, Buffersize as Integer, Latency as Integer) as Integer**

MBS Audio Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Opens a device for writing.  
**Notes:**

DeviceID is the id of the device used for input.
For output, buffersize specifies the number of output events to be buffered waiting for output. (In some cases – see below – PortMidi does not buffer output at all and merely passes data to a lower-level API, in which case buffersize is ignored.)

Latency is the delay in milliseconds applied to timestamps to determine when the output should actually occur. (If latency is <0, 0 is assumed.) If latency is zero, timestamps are ignored and all output is delivered immediately. If latency is greater than zero, output is delayed until the message timestamp plus the latency. (NOTE: time is measured relative to the time source indicated by time_proc. Timestamps are absolute, not relative delays or offsets.) In some cases, PortMidi can obtain better timing than your application by passing timestamps along to the device driver or hardware. Latency may also help you to synchronize midi data to audio data by matching midi latency to the audio buffer latency. Due to the may timers work on Windows, the latency is limited there.

return value:
Upon success OpenInput returns PmNoError. If a call to OpenInput fails a nonzero error code is returned (see PMError above) and the value of port is invalid.

118.21.10  Poll as Integer

MBS Audio Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Tests whether input is available,
**Notes:** Returns 1 on success and 0 on failure.

118.21.11  Read(byref data as PortMidiEventMBS) as Integer

MBS Audio Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads midi data.
**Notes:**
Returns the number of read items.
(0 for error and 1 for success)

Read retrieves midi data into a buffer, and returns the number of events read. Result is a non-negative number unless an error occurs, in which case a PmError value will be returned.

Buffer Overflow

The problem: if an input overflow occurs, data will be lost, ultimately because there is no flow control all the way back to the data source. When data is lost, the receiver should be notified and some sort of
graceful recovery should take place, e.g. you shouldn’t resume receiving in the middle of a long sysex message.

With a lock-free fifo, which is pretty much what we’re stuck with to enable portability to the Mac, it’s tricky for the producer and consumer to synchronously reset the buffer and resume normal operation.

Solution: the buffer managed by PortMidi will be flushed when an overflow occurs. The consumer (Read()) gets an error message (pmBufferOverflow) and ordinary processing resumes as soon as a new message arrives. The remainder of a partial sysex message is not considered to be a ”new message” and will be flushed as well.

118.21.12 SetChannelMask(mask as Integer) as Integer

Example:

```
dim s as PortMidiStreamMBS // your midi stream

call s.SetChannelMask(1+4) // Channel 1 and 3.
```

Notes:
The mask is a 16-bit bitfield corresponding to appropriate channels
All channels are allowed by default.
Returns an error code.

118.21.13 SetFilter(filters as Integer) as Integer

Notes:
By default, only active sensing messages are filtered.
To prohibit, say, active sensing and sysex messages, call SetFilter(FilterActive + FilterSysEx);
Filtering is useful when midi routing or midi thru functionality is being provided by the user application.
For example, you may want to exclude timing messages (clock, MTC, start/stop/continue), while allowing note-related messages to pass.
Or you may be using a sequencer or drum-machine for MIDI clock information but want to exclude any notes it may play.

Returns an error code.
118.21.14  Write(data as PortMidiEventMBS) as Integer

MBS Audio Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes midi data from a buffer.  
**Notes:**
This may contain:
- short messages or
- sysex messages that are converted into a sequence of PortMidiStreamMBS objects, e.g. sending data from a file or forwarding them from midi input.

Use WriteSysEx() to write a sysex message stored as a contiguous array of bytes.

Sysex data may contain embedded real-time messages.
Returns an error code.

118.21.15  WriteShort(When as Integer, message as Integer) as Integer

MBS Audio Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes a timestamped non-system-exclusive midi message.  
**Notes:** Messages are delivered in order as received, and timestamps must be non-decreasing. (But timestamps are ignored if the stream was opened with latency = 0.)

118.21.16  WriteSysEx(When as Integer, message as memoryblock, offset as Integer) as Integer

MBS Audio Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes a timestamped system-exclusive midi message.  
**Notes:**
The data is taken from the memoryblock at the given offset.  
The message must be 0 terminated.

This message must be valid and contain the special start value and a EOX value on the end.
See also:

- 118.21.17  WriteSysEx(When as Integer, message as string) as Integer
118.21  CLASS PORTMIDISTREAMMBS

118.21.17  WriteSysEx(When as Integer, message as string) as Integer

MBS Audio Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes a timestamped system-exclusive midi message. **Notes:** This message must be valid and contain the special start value and a EOX value on the end. See also:

- 118.21.16 WriteSysEx(When as Integer, message as memoryblock, offset as Integer) as Integer 16744

118.21.18  Properties

118.21.19  ChannelMask as Integer

MBS Audio Plugin, Plugin Version: 5.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The channel mask used. **Notes:** Use SetChannelMask to change it. (Read only property)

118.21.20  DeviceID as Integer

MBS Audio Plugin, Plugin Version: 17.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The device ID. **Notes:** The ID of the device the stream is connected to. (Read only property)

118.21.21  DeviceName as String

MBS Audio Plugin, Plugin Version: 17.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The device name. **Notes:** The name of the device the stream is connected to. (Read only property)

118.21.22  Filters as Integer

MBS Audio Plugin, Plugin Version: 5.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The filters setting.
Notes:
Use SetFilters to change it.
(Read only property)

118.21.23  Constants

118.21.24  FilterActive = & h4000

Notes: filter active sensing messages (& hFE)

118.21.25  FilterAftertouch = & h6000000

Notes: filter both channel and poly aftertouch

118.21.26  FilterChannelAftertouch = & h2000000

Notes: filter channel aftertouch (most midi controllers use this) (& hD0-& hDF)

118.21.27  FilterClock = & h1D00

Notes: filter clock messages (CLOCK & hF8, START & hFA, STOP & hFC, and CONTINUE & hFB)

118.21.28  FilterControl = & h8000000

Notes: Control Changes (CC's) (& hB0-& hBF)

118.21.29  FilterFD = & h2000

Notes: filter undefined FD messages
118.21.30  FilterMTC = 2

MBS Audio Plugin, Plugin Version: 9.4. **Function**: One of the PortMidi filter constants.  
**Notes**: MIDI Time Code (& hF1)

118.21.31  FilterNote = & h3000000

MBS Audio Plugin, Plugin Version: 9.4. **Function**: One of the PortMidi filter constants.  
**Notes**: filter note-on and note-off (& h90-& h9F and & h80-& h8F)

118.21.32  FilterPitchBend = & h40000000

MBS Audio Plugin, Plugin Version: 9.4. **Function**: One of the PortMidi filter constants.  
**Notes**: Pitch Bender (& hE0-& hEF)

118.21.33  FilterPlay = & h400

MBS Audio Plugin, Plugin Version: 9.4. **Function**: One of the PortMidi filter constants.  
**Notes**: filter play messages (start & hFA, stop & hFC, continue & hFB)

118.21.34  FilterPolyAftertouch = & h4000000

MBS Audio Plugin, Plugin Version: 9.4. **Function**: One of the PortMidi filter constants.  
**Notes**: per-note aftertouch (& hA0-& hAF)

118.21.35  FilterProgram = & h10000000

MBS Audio Plugin, Plugin Version: 9.4. **Function**: One of the PortMidi filter constants.  
**Notes**: Program changes (& hC0-& hCF)
118.21.36 FilterRealTime = & hFF01

MBS Audio Plugin, Plugin Version: 9.4. **Function:** One of the PortMidi filter constants.  
**Notes:** filter all real-time messages.

118.21.37 FilterReset = & h8000

MBS Audio Plugin, Plugin Version: 9.4. **Function:** One of the PortMidi filter constants.  
**Notes:** filter reset messages (& hFF)

118.21.38 FilterSongPosition = 4

MBS Audio Plugin, Plugin Version: 9.4. **Function:** One of the PortMidi filter constants.  
**Notes:** Song Position (& hF2)

118.21.39 FilterSongSelect = 8

MBS Audio Plugin, Plugin Version: 9.4. **Function:** One of the PortMidi filter constants.  
**Notes:** Song Select (& hF3)

118.21.40 FilterSysEx = 1

MBS Audio Plugin, Plugin Version: 9.4. **Function:** One of the PortMidi filter constants.  
**Notes:** filter system exclusive messages (& hF0)

118.21.41 FilterSystemCommon = & h4E

MBS Audio Plugin, Plugin Version: 9.4. **Function:** One of the PortMidi filter constants.  
**Notes:** All System Common messages (mtc, song position, song select, tune request)

118.21.42 FilterTick = & h200

MBS Audio Plugin, Plugin Version: 9.4. **Function:** One of the PortMidi filter constants.  
**Notes:** filter tick messages (& hF9)
118.21.43 FilterTune = & h40

MBS Audio Plugin, Plugin Version: 9.4. **Function:** One of the PortMidi filter constants.  
**Notes:** Tuning request (& hF6)

118.21.44 FilterUndefined = & h2000

MBS Audio Plugin, Plugin Version: 9.4. **Function:** One of the PortMidi filter constants.  
**Notes:** filter undefined real-time messages
118.22 class WindowsMidiInputInfoMBS

118.22.1 class WindowsMidiInputInfoMBS

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A class for information about a certain Midi Device.

118.22.2 Properties

118.22.3 DriverVersion as Integer

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Version number of the device driver for the MIDI input device. **Notes:** The high-order byte is the major version number, and the low-order byte is the minor version number. (Read only property)

118.22.4 Flags as Integer

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Some flags. **Notes:** Currently unused in Windows XP. (Read only property)

118.22.5 ManufacturerID as Integer

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Manufacturer identifier of the device driver for the MIDI input device. **Notes:** (Read only property)

118.22.6 Name as String

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Product name. **Notes:**
Currently an ANSI string.
(Read only property)

118.22.7  **ProductID as Integer**

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Product identifier of the MIDI input device.
**Notes:** (Read only property)
118.23 class WindowsMidiInputMBS

118.23.1 class WindowsMidiInputMBS

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A class to represent an open Midi Input device in Realbasic. **Notes:** Subclass of the WindowsMidiMBS class.

118.23.2 Methods

118.23.3 Close

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Closes the device. **Notes:** First stops recording, second resets midi output device and third Closes the device with waiting till device is done. Handle is set to 0 and lasterror is set.

118.23.4 Idle

MBS Audio Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Processes events. **Notes:** Midi events are buffered in data structures. This method dispatches them to the Realbasic event handlers. Call this method as often as you need events to fire. For example every 100ms in a timer.

same as WindowsMidiMBS.Idle

118.23.5 InputErrorText(errorcode as Integer) as string

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Translates an error number into a human readable text. **Notes:** Returns "" on unknown errors. String returned has Windows ANSI text encoding.
118.23.6  Open(DeviceID as Integer, BufferSize as Integer)

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Opens a Midi device.

**Notes:**
- DeviceID is from 0 to NumberOfMidiInputDevices-1.
- Buffersize is the maximum size to allocate for each SysEx receive buffer.
- Minimum is 256 bytes. Windows does not handle SysEx messages bigger than 64K.
- Lasterror is set.
- On success the handle property is non zero.

118.23.7  Reset

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Resets the device.

**Notes:** Lasterror is set.

118.23.8  Start

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Starts listening for events.

**Notes:**
- Lasterror is set.
- Please do not call from Open event as that’s too early.

118.23.9  Stop

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Stops recording.

**Notes:**
- Lasterror is set.
- You should not need this and just call close or let the object die.
118.23.10  Events

118.23.11  DeviceClose

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
An event called whenever the output device is closed.
**Notes:** Called when you call close.

118.23.12  DeviceData(timestamp as Integer, status as Integer, data1 as Integer, data2 as Integer, RawData as Integer)

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
A simple Midi message has been received.
**Notes:**
Process this event fast to avoid losing events.
Status, Data1 and Data2 are all 8 bit values.
The time stamp is specified in milliseconds, beginning at zero when the Start function was called.

118.23.13  DeviceError(timestamp as Integer, status as Integer, data1 as Integer, data2 as Integer, RawData as Integer)

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
A bad Midi message has been received.
**Notes:**
Process this event fast to avoid losing events.
Status, Data1 and Data2 are all 8 bit values.
The time stamp is specified in milliseconds, beginning at zero when the Start function was called.

118.23.14  DeviceLongData(timestamp as Integer, data as string, dataMemory as memoryblock)

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
SysEx data was received.
**Notes:**
If data is "" no free buffer was available to store the data.
The time stamp is specified in milliseconds, beginning at zero when the Start function was called.
118.23.15  DeviceLongError(timestamp as Integer, data as string, dataMemory as memoryblock)

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Bad SysEx data was received.

**Notes:**
If data is "" no free buffer was available to store the data.
The time stamp is specified in milliseconds, beginning at zero when the Start function was called.

118.23.16  DeviceOpen

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
An event called whenever the output device is opened.

**Notes:**
Called when you call open.
Please do not call Start from Open event as that’s too early.
118.24 class WindowsMidiMBS

118.24.1 class WindowsMidiMBS

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Windows Midi base class.

**Example:**

```vba
dim midi as WindowsMidiMBS // your midi object

Sub Open()
    dim i as WindowsMidiInputInfoMBS
    dim o as WindowsMidiOutputInfoMBS
    dim c,n as Integer

    midi=new WindowsMidiMBS
    c=midi.NumberOfMidiInputDevices-1

    for n=0 to c
        i=midi.InputDevice(n)
        listbox1.AddRow str(n+1)
        listbox1.Cell(listbox1.LastIndex,1)=i.Name
        listbox1.Cell(listbox1.LastIndex,2)=hex(i.DriverVersion)
    next
    c=midi.NumberOfMidiOutputDevices-1
    for n=0 to c
        o=midi.OutputDevice(n)
        listbox2.AddRow str(n+1)
        listbox2.Cell(listbox2.LastIndex,1)=o.Name
        listbox2.Cell(listbox2.LastIndex,2)=hex(o.DriverVersion)
    next
End Sub
```
118.24.2 Methods

118.24.3 Connect(output as WindowsMidiOutputMBS)

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The Connect function connects a MIDI input device to a MIDI thru or output device, or connects a MIDI thru device to a MIDI output device.

**Notes:**
- `self` must be a MIDI input device or a MIDI thru device.
- `output` must be the MIDI output or thru device.

After calling this function, the MIDI input device receives event data in an DeviceData event whenever a message with the same event data is sent to the output device driver.

A thru driver is a special form of MIDI output driver. The system will allow only one MIDI output device to be connected to a MIDI input device, but multiple MIDI output devices can be connected to a MIDI thru device. Whenever the given MIDI input device receives event data in an DeviceData event, a message with the same event data is sent to the given output device driver (or through the thru driver to the output drivers).

Lasterror is set.

118.24.4 DataLost as Integer

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Number of data blocks lost.

**Notes:**
- The buffers in the plugins have a certain size.
- In case midi events are coming fast in and the Idle method is not called often enough events are lost.
- In that case increase the frequency of calling Idle or request the buffer size to be increased in the next plugin version.

118.24.5 Disconnect(output as WindowsMidiOutputMBS)

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The Disconnect function disconnects a MIDI input device from a MIDI thru or output device, or disconnects a MIDI thru device from a MIDI output device.

**Notes:**
- `self` must be a MIDI input device or a MIDI thru device.
- `output` must be the MIDI output device to be disconnected.
MIDI input, output, and thru devices can be connected by using the Connect function. Thereafter, whenever the MIDI input device receives event data in an DeviceData event, a message with the same event data is sent to the output device driver (or through the thru driver to the output drivers).

Lasterror is set.

### 118.24.6 EventsLost as Integer

**MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:** Number of events lost.  
**Notes:**  
The buffers in the plugins have a certain size.  
In case midi events are coming fast in and the Idle method is not called often enough events are lost.  
In that case increase the frequency of calling Idle or request the buffer size to be increased in the next plugin version.

### 118.24.7 Idle

**Notes:**  
Midi events are buffered in data structures. This method dispatches them to the Realbasic event handlers. 
Call this method as often as you need events to fire. For example every 100ms in a timer.

### 118.24.8 InputDevice(index as Integer) as WindowsMidiInputInfoMBS

**MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:** The InputDevice function queries a specified MIDI input device to determine its capabilities.  
**Example:**
```
dim midi as WindowsMidiMBS // your midi object  
dim n,c as Integer  
dim i as WindowsMidiInputInfoMBS  

c=midi.NumberOfMidiInputDevices-1  

for n=0 to c  
  i=midi.InputDevice(n)  
  listbox1.AddRow str(n+1)  
```
```vbnet
listbox1.Cell(listbox1.LastIndex,1)=i.Name
listbox1.Cell(listbox1.LastIndex,2)=hex(i.DriverVersion)
next

**Notes:** Index is from 0 to NumberOfMidiInputDevices-1.

### 118.24.9 NumberOfMidiInputDevices as Integer

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the number of MIDI input devices present in the system.  
**Example:**
```
    dim midi as new WindowsMidiMBS
    MsgBox str(midi.NumberOfMidiInputDevices)
```

**Notes:** A return value of zero means that there are no devices.

### 118.24.10 NumberOfMidiOutputDevices as Integer

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the number of MIDI output devices present in the system.  
**Example:**
```
    dim midi as new WindowsMidiMBS
    MsgBox str(midi.NumberOfMidiOutputDevices)
```

**Notes:** A return value of zero means that there are no devices.

### 118.24.11 OutputDevice(index as Integer) as WindowsMidiOutputInfoMBS

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The OutputDevice function queries a specified MIDI output device to determine its capabilities.  
**Example:**
```
    dim midi as WindowsMidiMBS ' // your midi object
    dim c,n as Integer
    dim o as WindowsMidiOutputInfoMBS
```
c=midi.NumberOfMidiOutputDevices-1

for n=0 to c
  o=midi.OutputDevice(n)
  listbox2.AddRow str(n+1)
  listbox2.Cell(listbox2.LastIndex,1)=o.Name
  listbox2.Cell(listbox2.LastIndex,2)=hex(o.DriverVersion)
next

Notes: Index is from 0 to NumberOfMidiOutputDevices-1.

118.24.12 Properties

118.24.13 Handle as Integer

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The handle for this Midi input or output port.
**Notes:**
Depending on which Realbasic class this is, value is a HMIDI, HMIDIIN or HMIDIOUT handle.
(Read only property)

118.24.14 Lasterror as Integer

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The last error code reported.
**Notes:**
0 is no error and -1 is parameter error from the plugin.
(Read only property)
118.25. CLASS WINDOWSMIDIOUTPUTINFOMBS

118.25 class WindowsMidiOutputInfoMBS

118.25.1 class WindowsMidiOutputInfoMBS

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
A class for information about a certain Midi Device.

118.25.2 Properties

118.25.3 ChannelMask as Integer

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Channels that an internal synthesizer device responds to, where the least significant bit refers to channel 0
and the most significant bit to channel 15.
**Notes:**
Port devices that transmit on all channels set this member to & hFFFF.
(Read only property)

118.25.4 DriverVersion as Integer

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Version number of the device driver for the MIDI input device.
**Notes:**
The high-order byte is the major version number, and the low-order byte is the minor version number.
(Read only property)

118.25.5 Flags as Integer

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Optional functionality supported by the device.
**Notes:**
It can be one or more of the following:

- MIDICAPS_CACHE = 4 Supports patch caching.
- MIDICAPS_LRVOLUME = 2 Supports separate left and right volume control.
- MIDICAPS_STREAM = 8 Provides direct support for the midiStreamOut function.
- MIDICAPS_VOLUME = 1 Supports volume control.
If a device supports volume changes, the MIDICAPS\_VOLUME flag will be set for the dwSupport member. If a device supports separate volume changes on the left and right channels, both the MIDICAPS\_VOLUME and the MIDICAPS\_LRVOLUME flags will be set for this member. (Read only property)

118.25.6 ManufacturerID as Integer

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Manufacturer identifier of the device driver for the MIDI input device. **Notes:** (Read only property)

118.25.7 Name as String

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Product name. **Notes:** Currently an ANSI string. (Read only property)

118.25.8 Notes as Integer

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Maximum number of simultaneous notes that can be played by an internal synthesizer device. **Notes:** If the device is a port, this member is not meaningful and is set to 0. (Read only property)

118.25.9 ProductID as Integer

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Product identifier of the MIDI input device. **Notes:** (Read only property)

118.25.10 Technology as Integer

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Type of the MIDI output device.
118.25. CLASS WINDOWSMIDIOUTPUTINFOMBS

Notes:

This value can be one of the following:

- MOD_MIDIPORT = 1 // output port
- MOD_SYNTH = 2 // generic internal synth
- MOD_SQSYNTH = 3 // square wave internal synth
- MOD_FMSYNTH = 4 // FM internal synth
- MOD_MAPPER = 5 // MIDI mapper
- MOD_WAVETABLE = 6 // hardware wavetable synth
- MOD_SWSYNTH = 7 // software synth

(Read only property)

118.25.11 Voices as Integer

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: Number of voices supported by an internal synthesizer device.
Notes:
If the device is a port, this member is not meaningful and is set to 0.
(Read only property)

118.25.12 Volume as Boolean

Notes:
True if yes and False if no.
(Read only property)

118.25.13 VolumeStereo as Boolean

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: Whether the device can control volume on two independent channels.
Notes:
True if stereo, False if mono.
(Read only property)
118.26  class WindowsMidiOutputMBS

118.26.1  class WindowsMidiOutputMBS

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A class to represent a Midi Output device.  
**Notes:** Subclass of the WindowsMidiMBS class.

118.26.2  Methods

118.26.3  Close

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Closes the output device.  
**Notes:** Closes the device with waiting till device is done.  
Handle is set to 0 and lasterror is set.

118.26.4  Open(DeviceID as Integer)

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Opens the midi device with the given index.  
**Notes:** DeviceID is from 0 to NumberOfMidiOutputDevices-1.  
Lasterror is set.

118.26.5  OpenDefault

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Opens the Midi mapper which opens the device the user selected as the default midi device.  
**Notes:** If only one midi output device is available this one is opened.  
On success the handle property is not zero.  
Lasterror is set.
118.26.6 OutputErrorText(errorcode as Integer) as string

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Translates an error number into a human readable text. **Notes:**

Returns "" on unknown errors.
String returned has Windows ANSI text encoding.

118.26.7 Reset

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Resets the output device. **Notes:** Lasterror is set.

118.26.8 SendData(data as memoryblock)

MBS Audio Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sends sysex data. **Notes:** Lasterror is set.

See also
See also:
- 118.26.9 SendData(data as memoryblock, size as Integer) 16765
- 118.26.10 SendData(data as string) 16766

118.26.9 SendData(data as memoryblock, size as Integer)

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Sends sysex data. **Example:**

```vbnet
dim m as MemoryBlock
dim o as WindowsMidiOutputMBS // your midi output
m=NewMemoryBlock(8)
m.Byte(0)=& hF0
```
m.Byte(1)=& h7F
m.Byte(2)=& h7F
m.Byte(3)=& h04
m.Byte(4)=& h01
m.Byte(5)=& h7F
m.Byte(6)=& h7F
m.Byte(7)=& hF7

o.SendData m

Notes:

Lasterror is set.
size is the size of the memoryblock to use. A wrong value will crash the application.

See also
See also:

• 118.26.8 SendData(data as memoryblock) 16765
• 118.26.10 SendData(data as string) 16766

118.26.10  SendData(data as string)


See also
The plugin prepares MIDIHDR structure and uses your data there. See also:

• 118.26.8 SendData(data as memoryblock) 16765
• 118.26.9 SendData(data as memoryblock, size as Integer) 16765

118.26.11  SendMessage(message as Integer)


Example:
dim o as WindowsMidiOutputMBS // your windows midi output
// & h90 = Note down
// & h43 = the note number
// & h40 = the velocity
o.SendMessage & h404390

Notes:
The message is stored in one 32bit integer.
lowest 8 bit is status, second 8 bit is data1, third 8 bit is data2 and highest 8 bit is left 0.

Between sending note on and off messages, you need to leave time for actual playback.
LastError is set.

See also

See also:
• 118.26.12 SendMessage(status as Integer, data1 as Integer, data2 as Integer)

118.26.12  SendMessage(status as Integer, data1 as Integer, data2 as Integer)

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
Sends a short midi message immediately.
Example:

dim o as WindowsMidiOutputMBS // your windows midi output
// & h90 = Note down
// & h3C = the note number
// & h40 = the velocity
o.SendMessage & h90, & h3C, & h40

Notes:
LastError is set.
Between sending note on and off messages, you need to leave time for actual playback.

See also

See also:
• 118.26.11 SendMessage(message as Integer)
118.26.13 Properties

118.26.14 Volume as Integer

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The volume to be used for this device. **Example:**

```vbnet
dim m as WindowsMidiOutputMBS // your midi output
m.Volume=0          // all silent
m.Volume=& hFFFFF000 // right only
m.Volume=& h0000FFFF // left only or max volume for mono device
m.Volume=& h7FFF7FFF // half volume for both channels
```

**Notes:**

Not all devices can set the volume. Lasterror is set.

The low-order word contains the left-channel volume setting, and the high-order word contains the right-channel setting. A value of & hFFFF represents full volume, and a value of & h0000 is silence.

If a device does not support both left and right volume control, the low-order word of dwVolume specifies the mono volume level, and the high-order word is ignored. (Read and Write computed property)

118.26.15 Events

118.26.16 DeviceClose

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** An event called when the device is closed. **Notes:** Should be called when you call close or the object dies.

118.26.17 DeviceDataSent

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** An event called whenever SysEx data was sent.
118.26. DeviceOpen

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** An event called whenever the device was opened successfully.

118.26.19 DevicePositionCallback

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Called when a MEVT_F_CALLBACK Midi event is about to be executed. **Notes:** A way to track progress in playback.
118.27 class WindowsMidiStreamMBS

118.27.1 class WindowsMidiStreamMBS

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
A class for a Windows Midi Stream.

118.27.2 Methods

118.27.3 Close

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Closes the Midi stream.

118.27.4 Open(DeviceID as Integer)

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Opens a MIDI stream for output.
**Notes:**
By default, the device is opened in paused mode.
LastError is set.
DeviceID: The device is opened on behalf of the stream and closed again when the stream is closed.

118.27.5 Pause

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Pauses playback of a specified MIDI stream.
**Notes:** Lasterror is set.

118.27.6 PositionBytes as Integer

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Position of the stream in bytes.
**Notes:** Lasterror is set.
118.27.7  PositionMS as Integer

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Position of the stream in milliseconds.

**Notes:** Lasterror is set.

118.27.8  PositionSamples as Integer

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Position of the stream in samples.
**Notes:** Lasterror is set.

118.27.9  PositionTicks as Integer

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Position of the stream in ticks.
**Notes:** Lasterror is set.

118.27.10  Restart

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The Restart function restarts a paused MIDI stream.
**Notes:** Lasterror is set.

118.27.11  SendMessage(message as Integer)

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Sends a short midi message immediately.
**Example:**

```vbnet
dim o as WindowsMidiStreamMBS ' your midi stream

' & h90 = Note down
' & h43 = the note number
' & h40 = the velocity
o.SendMessage & h404390
```
Notes:
The message is stored in one 32bit integer.
lowest 8 bit is status, second 8 bit is data1, third 8 bit is data2 and highest 8 bit is left 0.

Between sending note on and off messages, you need to leave time for actual playback.
Lasterror is set.
See also:

- 118.27.12 SendMessage(status as Integer, data1 as Integer, data2 as Integer)

118.27.12  SendMessage(status as Integer, data1 as Integer, data2 as Integer)

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
Sends a short midi message immediately.
Example:

dim o as WindowsMidiStreamMBS // your midi stream

// & h90 = Note down
// & h3C = the note number
// & h40 = the velocity
o.SendMessage & h90, & h3C, & h40

Notes:
Lasterror is set.
Between sending note on and off messages, you need to leave time for actual playback.
See also:

- 118.27.11 SendMessage(message as Integer)

118.27.13  Stop

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
The Stop function turns off all notes on all MIDI channels for the specified MIDI output device.
Notes: Lasterror is set.
118.27. Properties

118.27.15 Handle as Integer

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The handle for the midi stream. **Notes:** Type is HMIDISTRM. (Read only property)

118.27.16 Lasterror as Integer

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The last error code reported by one of the class functions. **Notes:** (Read only property)

118.27.17 Tempo as Integer

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Tempo of the stream, in microseconds per quarter note. **Notes:** The tempo is honored only if the time division for the stream is specified in quarter note format. Lasterror is set. (Read and Write computed property)

118.27.18 TimeDiv as Integer

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Time division for this stream, in the format specified in the Standard MIDI Files 1.0 specification. **Notes:** The low 16 bits of this integer value contain the time division. Lasterror is set. (Read and Write computed property)

118.27.19 Volume as Integer

MBS Audio Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The volume to be used for this stream.
Example:

```cpp
dim m as WindowsMidiStreamMBS // your midi stream

m.Volume=0 // all silent
m.Volume=& hFFFFFF0000 // right only
m.Volume=& h0000FFFF // left only or max volume for mono device
m.Volume=& h7FFF7FFF // half volume for both channels
```

Notes:

Not all devices can set the volume. Lasterror is set.

The low-order word contains the left-channel volume setting, and the high-order word contains the right-channel setting. A value of & hFFFF represents full volume, and a value of & h0000 is silence.

If a device does not support both left and right volume control, the low-order word of dwVolume specifies the mono volume level, and the high-order word is ignored. Lasterror is set.

(Read and Write computed property)
Chapter 119

Navigation

119.1 class NavigationDialogMBS

119.1.1 class NavigationDialogMBS

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** A class for a Carbon Navigation dialog.

**Example:**

// A very bad example:

dim n as NavigationDialogMBS

n=new NavigationDialogMBS
n.CreateChooseObjectDialog
n.ShowDialog

MsgBox n.Result.Selection(0).AbsolutePath

**Deprecated:** This item is deprecated and should no longer be used. You can use NSOpenPanelMBS or NSSavePanelMBS for Cocoa projects instead. **Notes:** If you are using this dialog for sheets, keep a reference on the dialog object so it is not destroyed by RB before the dialog closes.
119.1.2 Methods

119.1.3 CloseDialog

MBS MacOSX Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Closes the dialog. **Notes:** Called automatically by the destructor if needed.

119.1.4 CreateAskDiscardChangesDialog

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a dialog box. **Example:**

```vbnet
dim n as new NavigationDialogMBS
dim o as new NavigationDialogOptionsMBS

o.SaveFileName="Hello.txt"

n.Options=o
n.CreateAskDiscardChangesDialog
n.ShowDialog
```

**Notes:** Lasterror is set.

119.1.5 CreateAskReviewDocumentsDialog(DocumentCount as Integer)

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a dialog. **Notes:**

- Lasterror is set.
- DocumentCount is the number of documents. The text in the dialog will be adjusted for the given number of documents.

119.1.6 CreateAskSaveChangesDialog(QuittingApplication as boolean)

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a dialog box. **Notes:**
Lasterror is set.
Set QuittingApplication to true if the dialog text should be adjusted.

119.1.7  CreateChooseFileDialog(typelist as NavigationTypeListMBS)
MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a choose file dialog.
**Notes:**
Lasterror is set.
Typelist can be used to filter the shown files in the dialog.

119.1.8  CreateChooseFolderDialog
MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a choose folder dialog.
**Notes:** Lasterror is set.

119.1.9  CreateChooseObjectDialog
MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a choose object dialog.
**Example:**
```vbscript
dim n as NavigationDialogMBS
n=new NavigationDialogMBS
n.CreateChooseObjectDialog
n.ShowDialog
MsgBox n.Result.File.AbsolutePath
```
**Notes:** Lasterror is set.

119.1.10 CreateChooseVolumeDialog
MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a choose volume dialog.
**Example:**
dim n as NavigationDialogMBS
n=new NavigationDialogMBS
n.CreateChooseVolumeDialog
n.ShowDialog
MsgBox n.Result.File.AbsolutePath

Notes: Lasterror is set.

119.1.11 CreateNewFolderDialog

Notes: Lasterror is set.

119.1.12 CreateOpenFileDialog(typelist as NavigationTypeListMBS)

Notes:
Lasterror is set.
Typelist can be used to filter the shown files in the dialog.

119.1.13 CreateSaveFileDialog(FileType as string, FileCreator as string)

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Creates an save file dialog box.
Notes:
Lasterror is set.
Typelist can be used to filter the shown files in the dialog.

119.1.14 Result as NavigationDialogResultMBS

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The result of the dialog.
Example:
dim n as NavigationDialogMBS
n=new NavigationDialogMBS
n.CreateChooseObjectDialog
n.ShowDialog
MsgBox n.Result.File.AbsolutePath

Notes:
Only available after the user has choosen something.
Lasterror is set.
If you read this property, a new result object is created, so cache it in a local variable if you use it more than once.

119.1.15 ShowAskDiscardChangesDialog as Integer

Notes:
Lasterror is set.

constants for the result on Mac OS 9:

kNavAskDiscardChanges = 1
kNavAskDiscardChangesCancel = 2

On Carbon, use the UserAction property to find the result.

119.1.16 ShowAskSaveChangesDialog(QuittingApplication as boolean) as Integer

Notes:
Lasterror is set.
Set QuittingApplication to true if the dialog text should be adjusted.
constants for the result on Mac OS 9:

```
kNavAskSaveChangesSave   = 1
kNavAskSaveChangesCancel = 2
kNavAskSaveChangesDontSave = 3
```

On Carbon, use the UserAction property to find the result.

### 119.1.17 ShowChooseFileDialog(typelist as NavigationTypeListMBS)

MBS MacOSX Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates and shows a choose file dialog. **Notes:** Lasterror is set. Typelist can be used to filter the shown files in the dialog.

### 119.1.18 ShowChooseFolderDialog

MBS MacOSX Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates and shows a choose folder dialog. **Notes:** Lasterror is set.

### 119.1.19 ShowChooseObjectDialog

MBS MacOSX Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates and shows a choose object dialog. **Example:**

```vba
dim n as NavigationDialogMBS
n=new NavigationDialogMBS
n.CreateChooseObjectDialog
n.ShowDialog
MsgBox n.Result.File.AbsolutePath
```

**Notes:** Lasterror is set.
119.1.20  **ShowChooseVolumeDialog**

MBS MacOSX Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates and shows a choose volume dialog.  
**Example:**

```vba
Dim n As NavigationDialogMBS
n = New NavigationDialogMBS
n.ShowChooseVolumeDialog
MsgBox n.Result.File.AbsolutePath
```

**Notes:** Lasterror is set.

119.1.21  **ShowDialog**

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Shows the dialog.  
**Example:**

```vba
Dim n As NavigationDialogMBS
n = New NavigationDialogMBS
n.CreateChooseObjectDialog
n.ShowDialog
MsgBox n.Result.File.AbsolutePath
```

**Notes:** Lasterror is set.

119.1.22  **ShowNewFolderDialog**

MBS MacOSX Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates and shows a choose new folder dialog.  
**Notes:** Lasterror is set.
119.1.23  ShowOpenFileDialog(typelist as NavigationTypeListMBS)

MBS MacOSX Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Creates and shows an open file dialog box.
**Notes:**
Lasterror is set.
Typelist can be used to filter the shown files in the dialog.

119.1.24  ShowSaveFileDialog(FileType as string, FileCreator as string)

MBS MacOSX Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Creates and shows an save file dialog box.
**Notes:**
Lasterror is set.
Typelist can be used to filter the shown files in the dialog.

119.1.25  Properties

119.1.26  DialogHandle as Integer

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The internal used handle to the dialog.
**Notes:** (Read and Write property)

119.1.27  FileExtensionHidden as Boolean

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Whether the file extension is to be hidden.
**Notes:**
Can only be set after the dialog was created.
Lasterror is set.
(Read and Write property)

119.1.28  FileName as String

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The filename used in a save dialog.
**Notes:**
119.1. **CLASS NAVIGATIONDIALOGMBS**

Can only be set after the dialog was created.
LastError is set.
(Read and Write property)

### 119.1.29 Lasterror as Integer

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The last error code reported.
**Notes:**

0 for success, -1 for parameter error or low memory.
Else a Mac OS error code.
(Read and Write property)

### 119.1.30 Options as NavigationDialogOptionsMBS

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The Options to use in the Create methods.
**Notes:**

Can only be set before the dialog was created.
(Read and Write property)

### 119.1.31 PopupMenuSelection as NavigationTypeMBS

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The selection from the extension popup menu.
**Notes:**

Value is nil for default type or points to the selected type.
(Changed from Integer to NavigationTypeMBS in v5.3)
(Read and Write property)

### 119.1.32 StartLocation as FolderItem

MBS MacOSX Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The start location for a dialog.
**Notes:**

Used in the SaveFileDialog, NewFolderDialog, ChooseObjectDialog, ChooseVolumeDialog, ChooseFolderDialog and ChooseFileDialog.
119.1.33 UserAction as Integer

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Return the current user action taken by the user.

**Notes:**
A user action occurs when the user dismisses the dialog or otherwise does something generating a reply record
that the client needs to act upon. If the user has not taken such an action, NavDialogGetUserAction returns
kNavUserActionNone. If the dialog is terminated using the NavCustomControl selector kNavCtlTerminate,
the final user action is kNavUserActionNone.
For file dialogs, if the final user action is not kNavUserActionCancel, then there is a valid reply record which
can be obtained with NavDialogGetReply. Although the user action is sent to the client event proc as a
kNavCBUserAction event, this function is provided as a convenience for clients of modal dialogs who may
find it easier to get the user action immediately after NavDialogRun returns.

(Read only property)

119.1.34 WindowHandle as Integer

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The internal used handle to the dialog's window.

**Notes:**
Returns 0 on any error.

(Read only property)

119.1.35 Events

119.1.36 Accepted

MBS MacOSX Plugin, Plugin Version: 5.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The user clicked on the "OK" button.

119.1.37 Cancelled

MBS MacOSX Plugin, Plugin Version: 5.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The user clicked on the "Cancel" button.
119.1.38 Closed

MBS MacOSX Plugin, Plugin Version: 5.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The dialog was closed.

119.1.39 FilterItem(file as folderitem, filterMode as Integer) as boolean

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Called whenever a file is about to be displayed and you need to decide whether it should be enabled.
**Notes:**
Constants for which elements are being filtered for objects:

- kNavFilteringBrowserList 0
- kNavFilteringFavorites 1
- kNavFilteringRecents 2
- kNavFilteringShortCutVolumes 3
- kNavFilteringLocationPopup 4

119.1.40 FormatChanged(Selected as NavigationTypeMBS)

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The selection in the extension popup menu changed.
**Notes:** (Added selected parameter in v5.3)

119.1.41 Opened

MBS MacOSX Plugin, Plugin Version: 5.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The dialog was opened.
119.2  class NavigationDialogOptionsMBS

119.2.1  class NavigationDialogOptionsMBS

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** A class for the dialog options of a Navigation Dialog. **Notes:** All dialogs should work without options.

119.2.2  Properties

119.2.3  ActionButtonLabel as String

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The custom label for the default (Open/Save/Choose) button. **Notes:**

Use "" for the default label. (Read and Write property)

119.2.4  CancelButtonLabel as String

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The custom label for the Cancel button. **Notes:**

Use "" for the default label. (Read and Write property)

119.2.5  clientName as String

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The user-readable name of the client, usually the name of the current application. **Notes:**

This value is used to construct the default window title in the file dialogs, and the message text in the Ask dialogs. On Mac OS 9 and earlier, this value is used as a key to store persistent per-client dialog settings, so it’s always a good idea to set this field to a non "" value. (Read and Write property)
119.2.6  Flags as Integer

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Options for the dialog.
**Notes:**
Some possible values:

- `kNavDefaultNavDlogOptions` & h000000E4 use defaults for all the options
- `kNavNoTypePopup` & h00000001 don’t show file type/extension popup on Open/Save
- `kNavDontAutoTranslate` & h00000002 don’t automatically translate on Open
- `kNavDontAddTranslateItems` & h00000004 don’t add translation choices on Open/Save
- `kNavAllFilesInPopup` & h00000010 "All Files" menu item in the type popup on Open
- `kNavAllowStationery` & h00000020 allow saving of stationery files
- `kNavAllowPreviews` & h00000040 allow preview to show
- `kNavAllowMultipleFiles` & h00000080 allow multiple items to be selected
- `kNavAllowVisibleFiles` & h00000100 allow invisible items to be shown
- `kNavDontResolveAliases` & h00000200 don’t resolve aliases
- `kNavSelectDefaultLocation` & h00000400 make the default location the browser selection
- `kNavSelectAllReadableItem` & h00000800 make the dialog select "All Readable Documents" on open
- `kNavSupportPackages` & h00001000 recognize file system packages, v2.0 or greater
- `kNavAllowOpenPackages` & h00002000 allow opening of packages, v2.0 or greater
- `kNavDontAddRecents` & h00004000 don’t add chosen objects to the recent list, v2.0 or greater
- `kNavDontUseCustomFrame` & h00008000 don’t draw the custom area bevel frame, v2.0 or greater
- `kNavDontConfirmReplacement` & h00010000 don’t show the "Replace File?" alert on save conflict, v3.0 or greater
- `kNavPreserveSaveFileExtension` & h00020000 extension in default file name is preserved and initially hidden, v3.1 or greater

(Read and Write property)

119.2.7  Left as Integer

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The screen position at which to place the upper left corner of the dialog, in global coordinates.
**Notes:**
Specify (left=-1, top=-1) to use the default (persistent) location. Ignored for sheet dialogs.
(Read and Write property)

119.2.8  Message as String

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** For the file dialogs, a banner message appearing across the top of the dialog.
**Notes:**
Specify "" to provide no banner message.
For the Ask alerts, a custom message to replace the default message.
119.2.9  Modality as Integer

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The modality in which to present the dialog.
**Notes:**
The default modality for all dialogs is kWindowModalityAppModal. If kWindowModalityWindowModal is specified, then a valid parentWindow is required.

Constants for Window Modality:
- kWindowModalityNone
- kWindowModalityNonModal
- kWindowModalityModal
- kWindowModalityAppModal
- kWindowModalityWindowModal

119.2.10  Parent as Window

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The parent window.
**Notes:**
Used for sheets.
(Read and Write property)

119.2.11  PopupMenuExtension as NavigationTypeListMBS

MBS MacOSX Plugin, Plugin Version: 5.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The entries for the PopupMenu in the dialog.
**Notes:**
On this list, the NavigationTypeListMBS.Signature value is ignored.
(Read and Write property)

119.2.12  PreferenceKey as Integer

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** A key to uniquely identify the dialog’s usage context within the application.
Notes:

If an application uses the same class of dialog (e.g. GetFile or ChooseFile) for more than one purpose, set this field to a unique value for each usage in order to give each dialog its own persistent settings (e.g. screen rectangle, starting target folder).
(Read and Write property)

119.2.13 **SaveFileName as String**

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The initial value appearing in the edit text field for the file name to be saved (PutFile only).
**Notes:** (Read and Write property)

119.2.14 **Top as Integer**

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The screen position at which to place the upper left corner of the dialog, in global coordinates.
**Notes:**
Specify (left=-1, top=-1) to use the default (persistent) location. Ignored for sheet dialogs.
(Read and Write property)

119.2.15 **WindowTitle as String**

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The custom title for the dialog window.
**Notes:**
Specify "" to use the default title.
(Read and Write property)
119.3  class NavigationDialogResultMBS

119.3.1  class NavigationDialogResultMBS

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: A class for the result of a Navigation Dialog.

119.3.2  Methods

119.3.3  close

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The destructor. Notes: There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you. (e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

119.3.4  Selection(index as Integer) as folderitem

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The selection (files and folders). Notes: Index goes from 0 to count-1.

119.3.5  SelectionCount as Integer


119.3.6  Properties

119.3.7  File as FolderItem

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The selected file (if only one was selectable). Notes: (Read and Write property)
119.3. **CLASS NAVIGATIONDIALOGRESULTMBS**

### 119.3.8 isStationery as Boolean

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** True if this reply is from a PutFile dialog and the user wants to save the file as stationery. **Notes:** (Read and Write property)

### 119.3.9 Replacing as Boolean

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** True if this reply is from a PutFile dialog and the file to be saved already exists and needs to be replaced. **Notes:** The user has already been warned unless the kNavDontConfirmReplacement option flag is used. (Read and Write property)

### 119.3.10 SaveFileExtensionHidden as Boolean

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The extension on the name of the saved file should be hidden. **Notes:** Once the file has been saved, the client should call NavCompleteSave. NavCompleteSave will take care of hiding the extension on the file. However, the client needs to know that the extension is hidden so that it can display the document name correctly in the UI, such as in window titles and menus. This field is only used if the client has requested extension preservation using the kNavPreserveSaveFileExtension dialog option flag. (Read and Write property)

### 119.3.11 SaveFileName as String

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Carbon PutFile dialog only: the name of the file to be saved. **Notes:** This field contains the true file name to saved, even if the extension will be hidden from the user. (Read and Write property)

### 119.3.12 Valid as Boolean

MBS MacOSX Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** True if the reply contains a non-null selection.
Notes: (Read and Write property)
119.4. CLASS NAVIGATIONTYPELISTMBS

119.4 class NavigationTypeListMBS

119.4.1 class NavigationTypeListMBS

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The list of type/creator codes for the navigation dialog.

119.4.2 Methods

119.4.3 Add(NavType as NavigationTypeMBS)

MBS MacOSX Plugin, Plugin Version: 5.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Adds a type to the list.
**Notes:** (Changed from String to NavigationTypeMBS in plugin version 5.3)

119.4.4 clear

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Clears the type list.

119.4.5 close

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The destructor.
**Notes:**
There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

119.4.6 Count as Integer

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Counts the number of items in the list.
119.4.7 Get(index as Integer) as NavigationTypeMBS

MBS MacOSX Plugin, Plugin Version: 5.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns an item from the list.

**Notes:**
Index is from 0 to count-1.
(Changed from String to NavigationTypeMBS in plugin version 5.3)

119.4.8 Properties

119.4.9 Signature as String

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The Creator code of your Application.

**Notes:**
Specify "****" as a wildcard.
(Read and Write property)
119.5  class NavigationTypeMBS

119.5.1  class NavigationTypeMBS

MBS MacOSX Plugin, Plugin Version: 5.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** A class for a File Type definition.

119.5.2  Methods

119.5.3  Close

MBS MacOSX Plugin, Plugin Version: 5.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The destructor.

**Notes:**
There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

119.5.4  Properties

119.5.5  Creator as String

MBS MacOSX Plugin, Plugin Version: 5.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The Mac Creator code to use.

**Notes:**
String must be 4 characters long.
Used only on Mac OS Classic.
(Read and Write property)

119.5.6  Name as String

MBS MacOSX Plugin, Plugin Version: 5.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The name of this navigation type.

**Notes:**
Used on Mac OS Classic and Mac OS X.
(Read and Write property)
119.5.7 Type as String

MBS MacOSX Plugin, Plugin Version: 5.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The MacType code to use.

**Example:**

```vbnet
dim t as NavigationTypeMBS
  t=new NavigationTypeMBS
  t.Type="TIFF"
  t.Creator="GKON"
  t.Name="Graphicconverter TIFF file"
```

**Notes:**

String must be 4 characters long.
Used only on Mac OS Classic.
(Read and Write property)
119.6. CLASS NSOPENPANELMBS

119.6 class NSOpenPanelMBS

119.6.1 class NSOpenPanelMBS


119.6.2 Methods

119.6.3 beginForDirectory(path as folderitem, name as string, filetypes() as string)

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Presents a modeless Open panel. Notes:

path: Directory whose files the panel displays. When nil, the directory is the same directory used in the previous invocation of the panel; this is probably the best choice for most situations.

name: Specifies a particular file in absoluteDirectoryPath that is selected when the Open panel is presented to the user. When nil, no file is initially selected.

fileTypes: Array of file extensions and/or HFS file types. Specifies the files the panel allows the user to select. An empty array makes all files in path selectable by the user.

This method will later called the savePanelDidEnd event.

119.6.4 beginSheetForDirectory(path as folderitem, name as string, filetypes() as string, targetWindow as window)

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Presents a sheet Open panel on a given window. Notes:

path: Directory whose files the panel displays. When nil, the directory is the same directory used in the previous invocation of the panel; this is probably the best choice for most situations.
name:
Specifies a particular file in path that is selected when the Open panel is presented to the user. When "", no file is initially selected.

directory:
Array of file extensions and/or HFS file types. Specifies the files the panel allows the user to select. An empty array makes all files in absoluteDirectoryPath selectable by the user.

targetWindow:
Window to open the sheet on.

This method will later called the savePanelDidEnd event.

Seems like on Mac OS X 10.4 the usage of sheets will raise NSExceptions for missing methods in the NSCarbonWindowFrame class.

### 119.6.5 Constructor

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The constructor which initializes the panel with default values.

### 119.6.6 Files as Folderitem()

MBS MacCocoa Plugin, Plugin Version: 18.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Queries all folderitems.
See also:
- 119.6.7 Files(index as UInt32) as folderitem

### 119.6.7 Files(index as UInt32) as folderitem

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The array of files.
**Notes:** Index is zero based.
See also:
- 119.6.6 Files as Folderitem()
119.6.8  runModalForDirectory(path as folderitem, name as string, filetypes as string) as Integer

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** A convenience version of the runModalForDirectory function which passes one filetype instead of an array of file types.

See also:

- 119.6.9 runModalForDirectory(path as folderitem, name as string, filetypes() as string) as Integer

119.6.9  runModalForDirectory(path as folderitem, name as string, filetypes() as string) as Integer

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Runs the panel as a modal dialog with the given filetypes.

**Notes:**

path is the directory to use as a start point. Pass nil to use the last directory which has been used.

filetypes:
The filetypes you want to allow.

See also:

- 119.6.8 runModalForDirectory(path as folderitem, name as string, filetypes as string) as Integer

119.6.10  runModalForTypes(filetypes as string) as Integer

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** A convenience version of the runModalForTypes function which passes one filetype instead of an array of file types.

**Example:**

```
Dim dlg As New NSOpenPanelMBS
Dim iResult as Integer = dlg.runModalForTypes(“jpg”)
```

See also:

- 119.6.11 runModalForTypes(filetypes() as string) as Integer

119.6.11  runModalForTypes(filetypes() as string) as Integer

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Runs the panel as a modal dialog with the given filetypes.
Example:

```vbnet
Dim dlg As New NSOpenPanelMBS
Dim types() as string = array("jpg", "tif")
Dim iResult as Integer = dlg.runModalForTypes(types)
```

See also:

- 119.6.10 runModalForTypes(filetypes as string) as Integer

119.6.12 **URL(index as UInteger32) as string**

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The array of file URLs.

**Notes:** Index is zero based.

119.6.13 **URLs as String()**

MBS MacCocoa Plugin, Plugin Version: 18.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Queries all URLs.

119.6.14 **Properties**

119.6.15 **allowsMultipleSelection as boolean**

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the panel’s browser allows the user to open multiple files (and directories) at a time.

**Notes:** (Read and Write property)

119.6.16 **canChooseDirectories as boolean**

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the user can select directories in the pane’s browser.

**Notes:**

When a directory is selected, the OK button is enabled only if flag is true.

(Read and Write property)
119.6. **CLASS NSOPENPANELMBS**

119.6.17 **canChooseFiles as boolean**

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Whether the panel allows the user to choose files to open.
**Notes**: (Read and Write property)

119.6.18 **canDownloadUbiquitousContents as Boolean**

**Function**: Controls how the receiver responds to ubiquitous documents that aren’t yet fully downloaded locally.
**Notes**: If true, then the receiver will disallow opening non-local ubiquitous files. Also, if the user attempts to select a non-local file, the receiver will trigger or reprioritize downloading for that file so that it can be opened as soon as possible. If false, then the receiver will allow the user to select and open non-local files, giving your application responsibility for downloading and reporting progress. The default value is true, except for applications linked against the 10.9 SDK or earlier that have adopted iCloud by specifying a ubiquitous container identifier entitlement.

To provide the ideal user experience, you should set this property to NO and download the file’s contents (with NSFileCoordinator) and show downloading progress (with NSProgress or NSMetadataQuery) in the context of your application, instead of relying on the open panel to do it.

Available in Mac OS X 10.10 and newer.
(Read and Write property)

119.6.19 **canResolveUbiquitousConflicts as Boolean**

**Function**: Controls how the receiver responds to ubiquitous documents with conflicting versions.
**Notes**: If true, then when the user attempts to open one or more documents with conflicts, the receiver will first display conflict resolution UI, requiring the user to resolve those conflicts before the documents can be opened. If false, then the receiver does nothing in response to conflicts, allowing your application to handle them. The default value is true, except for applications linked against the 10.9 SDK or earlier that have adopted iCloud by specifying a ubiquitous container identifier entitlement.

To provide the ideal user experience, you should set this property to NO and do conflict detection and resolution (using NSURLUbiquitousItemHasUnresolvedConflictsKey and NSFileVersion) in the context of your application, instead of relying on the open panel to do it.
119.6.20  FilesCount as UInt32

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The number of selected files. Notes: (Read only property)

119.6.21  resolvesAliases as boolean

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether the receiver resolves aliases. Notes: If true, the effect is that dropping an alias on the panel or asking for filenames returns the resolved aliases. The default is true. (Read and Write property)
119.7. class NSSavePanelMBS

119.7.1 class NSSavePanelMBS

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The class for a Cocoa Save Panel.  
**Notes:** Subclass of the NSPanelMBS class.

119.7.2 Methods

119.7.3 allowedFileTypes as string()

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of the allowed file types.  
**Notes:**  
If the user specifies a file whose type is in the array of allowed types, the user is not presented with another dialog (see allowsOtherFileTypes for details about this dialog) when trying to save. Examples of common file types are "rtf", "tiff", and "ps". File type strings encoding HFS file types are not valid values for this attribute. A nil return value, which is the default, indicates that the user can save to any ASCII file.  

Available in Mac OS X v10.3 and later.

119.7.4 beginSheetForDirectory(path as folderitem, name as string, targetWindow as window)

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Presents a Save panel as a sheet with the directory specified by path and optionally, the file specified by name selected.  
**Notes:**  
If targetWindow is nil, the panel will be a modal dialog.  

This method will later called the savePanelDidEnd event.

Seems like on Mac OS X 10.4 the usage of sheets will raise NSExceptions for missing methods in the NSCarbonWindowFrame class.
119.7.5 Cancel

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** You can cancel the dialog using this method.

119.7.6 Constructor

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The constructor which initializes the panel with default values.

119.7.7 File as folderitem

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The file currently shown in the panel.
**Notes:** May be nil.

119.7.8 FileTypeForHFSType(hfstype as string) as string

MBS MacCocoa Plugin, Plugin Version: 8.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns a string encoding a file type code.
**Example:**
```
    dim n as new NSSavePanelMBS

    MsgBox n.FileTypeForHFSType("TEXT") // shows 'TEXT'
```

**Notes:** When using Mac Type codes, you need to use this function to convert them in a string the file manager understands.

119.7.9 HideNSNavNodePopUpButton

MBS MacCocoa Plugin, Plugin Version: 8.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Hides the navigation popup menu.
**Notes:** This is a function using undocumented features from the Apple NSSavePanel class, so there is not guarantee that it will work in future versions.
119.7.10 Ok

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function**: You can click ok in the dialog using this method.

119.7.11 runModal as Integer

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function**: Displays the panel and begins its event loop with the current working (or last selected) directory as the default starting point. **Notes**: Returns NSOKButton or NSCancelButton or -1 on any error.

119.7.12 runModalForDirectory(path as folderitem, name as string) as Integer

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function**: Initializes the panel to the directory specified by path and, optionally, the file specified by filename, then displays it and begins its modal event loop; path and filename can be empty strings. **Notes**: If path is nil, the previous directory the Save panel was in is used.

119.7.13 setAllowedFileTypes(filetype as string)

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function**: A convenience method for setAllowedFileTypes with only one file type. See also:

- 119.7.14 setAllowedFileTypes(filetypes() as string)

119.7.14 setAllowedFileTypes(filetypes() as string)

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function**: Specifies the allowed file types. **Notes**: A file type is an extension to be appended to any selected files that don’t already have that extension; ”nib” and ”rtf” are examples. The items in types should not include the period that begins the extension. File type strings encoding HFS file types are not valid values. Pass an empty array, to allow any file type, which is the default. See also:

- 119.7.13 setAllowedFileTypes(filetype as string)
119.7.15 validateVisibleColumns

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Validates and possibly reloads the browser columns visible in the receiver by invoking the delegate method shouldShowFilename.  
**Notes:** You might use this method if you want the browser to only allow selection of files with certain extensions based on the selection made in an accessory-view pop-up list. When the user changes the selection, you would invoke this method to revalidate the visible columns.

119.7.16 Properties

119.7.17 accessoryView as NSViewMBS

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The custom accessory view for the current application.  
**Notes:**  
You can place any Cocoa control on that panel.  
(Read and Write property)

119.7.18 allowsOtherFileTypes as boolean

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value that indicates whether the receiver allows the user to save files with an extension that’s not in the list of allowed types.  
**Notes:**  
If the user tries to save a filename with a recognized extension that’s not in the list of allowed types they are presented with a dialog. If this property is true, then the dialog presents the option of using the extension the user specified.  

The default setting is false.  
(Read and Write property)

119.7.19 canCreateDirectories as boolean

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the receiver allows the user to create directories.  
**Notes:** (Read and Write property)
119.7.20  canSelectHiddenExtension as boolean

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value that indicates whether the receiver allows the user to hide or show extensions. **Notes:** (Read and Write property)

119.7.21  Directory as folderitem

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The path of the directory currently shown in the panel. **Notes:** May be nil on any error. (Read and Write property)

119.7.22  directoryURL as string

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The directory shown in the panel as a URL. **Notes:** Available in Mac OS X v10.6 and later. (Read and Write property)

119.7.23  isExpanded as boolean

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the panel is expanded. **Notes:** (Read only property)

119.7.24  isExtensionHidden as boolean

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the extension-hiding checkbox is visible and checked. **Notes:** True to show the checkbox and false to hide. (Read and Write property)
119.7.25  **Message as string**

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The message displayed in the panel.

**Notes:**

The default message text is an empty string.

(Read and Write property)

119.7.26  **NameFieldLabel as string**

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The string displayed in front of the filename text field.

**Notes:**

By default the label is "Save As:"

(Read and Write property)

119.7.27  **nameFieldStringValue as string**

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The user-editable filename currently shown in the name field.

**Notes:**

Available in Mac OS X v10.6 and later.

(Read and Write property)

119.7.28  **Prompt as string**

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The prompt of the default button.

**Notes:**

This prompt appears on all SavePanel objects (or all OpenPanel objects if the panel of this message is an NSOpenPanel instance) in your application. By default the text in the default button is "Open" for an Open panel and "Save" for a Save panel.

It is intended that short words or phrases, such as "Open", "Save", "Set", or "Choose", be used on the button. The button is not resized to accommodate long prompts.

Since this method previously affected a title field, any colon at the end of prompt is removed.

(Read and Write property)
119.7.29  **requiredFileType as string**

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The required file type (if any).
**Notes:**
A file specified in the Save panel is saved with the designated filename and this file type as an extension. Examples of common file types are "rtf", "tiff", and "ps". File type strings encoding HFS file types are not valid values for this attribute. An "" return value indicates that the user can save to any ASCII file.

This method is equivalent to calling allowedFileTypes and returning the first element of the list of allowed types, or "" if there are none.
(Read and Write property)

119.7.30  **showsHiddenFiles as boolean**

MBS MacCocoa Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether to show or hide the invisible files.
**Notes:**
This is a function using undocumented features from the Apple NSSavePanel class, so there is not guarantee that it will work in future versions.
(Read and Write property)

119.7.31  **Title as string**

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The title of the panel.
**Notes:** (Read and Write property)

119.7.32  **treatsFilePackagesAsDirectories as boolean**

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value that indicates whether the panel displays file packages to the user as directories.
**Notes:** (Read and Write property)
119.7.33 Events

119.7.34 `compareFilename(name1 as string, name2 as string, caseSensitive as boolean) as Integer`

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Controls the ordering of files presented by the NSSavePanel.

**Notes:**
If this event has no code, the default behavior is used.

The caseSensitive argument, if true, indicates that the ordering is to be case-sensitive.

Don’t reorder filenames in the Save panel without good reason, because it may confuse the user to have files in one Save panel or Open panel ordered differently than those in other such panels or in the Finder. The default behavior of Save and Open panels is to order files as they appear in the Finder. Note also that by implementing this method you will reduce the operating performance of the panel.

**Constants:**
- `const NSOrderedAscending=-1` // The left operand is smaller than the right operand.
- `const NSOrderedSame=0` // The two operands are equal.
- `const NSOrderedDescending=1` // The left operand is greater than the right operand.

119.7.35 `directoryDidChange(path as string, folder as folderitem)`

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sent when the user has changed the selected directory in the panel.

**Notes:** If this event has no code, the default behavior is used.

119.7.36 `isValidFilename(path as string, item as folderitem) as boolean`

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Gives the delegate the opportunity to validate selected items.

**Notes:**
If this event has no code, the default behavior is used.

The NSSavePanel object sender sends this event just before the end of a modal session for each filename displayed or selected (including filenames in multiple selections). The event determines whether it wants the file identified by filename; it returns true if the filename is valid, or false if the save panel should stay in its modal loop and wait for the user to type in or select a different filename or names. If the event refuses a
filename in a multiple selection, none of the filenames in the selection is accepted.

119.7.37 panelSelectionDidChange

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event called whenever the selection changed in the dialog. **Notes:** If this event has no code, the default behavior is used.

119.7.38 savePanelDidEnd(ReturnCode as Integer)

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The save panel finished in sheet mode. **Notes:** Returncode is NSOKButton or NSCancelButton.

119.7.39 shouldShowFilename(path as string, item as folderitem) as boolean

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Gives the delegate the opportunity to filter items that it doesn’t want the user to choose. **Notes:** If this event has no code, the default behavior is used.

The NSSavePanel sends this event for each file or directory (filename) it is about to load in the browser. The delegate returns true if filename should be selectable, and false if the save panel should disable the file or directory.

119.7.40 userEnteredFilename(filename as string, confirmed as boolean) as string

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sent when the user confirms a filename choice by hitting OK or Return in the NSSavePanel. **Notes:** You can either leave the filename alone, return a new filename, or return "" to cancel the save (and leave the Save panel as is). This method is sent before any required extension is appended to the filename and before the Save panel asks the user whether to replace an existing file.

Note that in the future, this method may be called multiple times in the sessions as the user types. In those cases, okFlag will be false until the user confirms the choice, in which case okFlag will become true. If the
delegate does extensive validation or puts up alerts, it should do so only when okFlag is true.

If this event has no code, the default behavior is used.

119.7.41 willExpand(expanding as boolean)

MBS MacCocoa Plugin, Plugin Version: 7.8, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sent when the NSSavePanel is about to expand or collapse because the user clicked the disclosure triangle that displays or hides the file browser. **Notes:** If this event has no code, the default behavior is used.

119.7.42 Constants

119.7.43 NSCancelButton = 0

MBS MacCocoa Plugin, Plugin Version: 7.8. **Function:** One of the result codes you may need with this class.

119.7.44 NSOKButton = 1

MBS MacCocoa Plugin, Plugin Version: 7.8. **Function:** One of the result codes you may need with this class.
119.8  class OpenDialogFileTypeMBS

119.8.1  class OpenDialogFileTypeMBS

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class for a file type for the OpenDialog class.

**Notes:** For Cocoa, only the type field is used and can be an UTI or file extension.

119.8.2  Methods

119.8.3  Close

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The destructor.

**Notes:**
There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

119.8.4  Properties

119.8.5  Extension as String

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The extension for this filetype.

**Notes:**
Currently this value is only used on Windows.
Value e.g. "*.TXT" or "*.TXT;*.BMP".

Use a value like "*.TXT" or to match multiple types, list multiple extensions separated by semicolons like this: "*.TXT;*.BMP".

With version 8.2, we use extensions also for MacOS.
(Read and Write property)
119.8.6 Name as String

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The name of this file type.
**Notes:**
Currently this value is only used on Windows.
(Read and Write property)

119.8.7 Type as String

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The Mac OS type code for this file type.
**Notes:**
Currently this value is only used on Mac OS.
And check the documentation on the Navigation Manager if you use it as you will need a KIND Resource for
this.

For Cocoa, only the type field is used and can be an UTI or file extension.
(Read and Write property)
119.9. CLASS OPENDIALOGMBS

119.9  class OpenDialogMBS

119.9.1  class OpenDialogMBS


**Example:**

```vbnet
dim o as OpenDialogMBS
dim i,c as Integer
dim f as FolderItem

o=new OpenDialogMBS
o.ShowHiddenFiles=true
o.PromptText="Select one or more files:"
o.MultipleSelection=true
o.ActionButtonLabel="Open files"
o.CancelButtonLabel="no, thanks."
o.WindowTitle="This is a window title."
o.ClientName="Client Name?"
o.ShowDialog

```

```vbnet
for i=0 to c-1
f=o.Files(i)
Listbox1.AddRow f.AbsolutePath
next
```

```vbnet
```

**Notes:** OpenDialogMBS does not yet use NSOpenPanel yet. So for Cocoa applications you can use NSOpenPanelMBS class directly. For the Mac App Store, you must use NSOpenPanelMBS and avoid OpenDialogMBS.
119.9.2 Methods

119.9.3 AddType(t as OpenDialogFileTypeMBS)

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds a file type to the list.

119.9.4 ClearTypes

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Clears the file type list.

119.9.5 CountTypes as Integer

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of file types in the file type list.

119.9.6 Files(index as Integer) as folderitem

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The array with the selected files.
**Notes:** Index goes from 0 to filecount-1.

119.9.7 GetCustomImageHeight as Integer

MBS Util Plugin, Plugin Version: 11.0, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Returns the height of the custom picture in pixels.

**Example:**
```
dim o as new OpenDialogMBS
msgbox "GetCustomImageHeight: " + str(o.GetCustomImageHeight) // could show 72 as value.
```

**Notes:**
The height depends on the size of the Windows system font, so it's variable and this function calculates the size for you.
119.9. **CLASS OPENDIALOGMBS**

Returns 0 on any error.

### 119.9.8 **GetGetType(index as Integer) as OpenDialogFileTypeMBS**

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the file type with the given index. **Notes:** Returns nil on any error.

### 119.9.9 **RefreshCustomImage**

MBS Util Plugin, Plugin Version: 11.0, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Call this method after you set the custompicture property to update the window. **Notes:** The control is asked to redraw and will use the CustomPicture property for the picture content. Space around is colored with window background color.

### 119.9.10 **ShowDialog**

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Shows the dialog. **Example:**

```vbnet
dim o as new OpenDialogMBS
o.ShowDialog
```

**Notes:** Check the FileCount property to see whether something was selected.

### 119.9.11 **Properties**

### 119.9.12 **accessoryView as Variant**

MBS Util Plugin, Plugin Version: 14.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Customizes the panel for the application by adding a custom view to the panel. **Notes:** Only for Cocoa target. Must be a NSViewMBS or subclass.

The custom object that is added appears just above the OK and Cancel buttons at the bottom of the panel. The open panel automatically resizes itself to accommodate the view. You can invoke this method repeatedly.
to change the accessory view as needed. If view is nil, the panel removes the current accessory view.
(Read and Write property)

### 119.9.13 ActionButtonLabel as String

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The label of the action button.

**Example:**
```vbscript
dim o as new OpenDialogMBS

o.ActionButtonLabel = "Hello"
o.ShowDialog
```

**Notes:**
Used only on Mac OS.
For RB 4.5 and earlier you need to make sure the encoding is set correctly.
Can be set to "" to use the default value.
(Read and Write property)

### 119.9.14 AllowFolderSelection as Boolean

MBS Util Plugin, Plugin Version: 7.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Whether folders can be selected.

**Example:**
```vbscript
dim o as OpenDialogMBS
dim i,c as Integer
dim f as FolderItem

o=new OpenDialogMBS
o.ShowHiddenFiles=true
o.PromptText="Select one or more files/folders:"
o.MultipleSelection=true
o.ActionButtonLabel="Open files/folders"
o.CancelButtonLabel="no, thanks."
o.WindowTitle="This is a window title."
o.ClientName="Client Name?"
o.AllowFolderSelection=true
o.ShowDialog

c=o.FileCount
```
119.9. CLASS OPENDIALOGMBS

if c>0 then
    for i=0 to c-1
        f=o.Files(i)
        ListBox1.AddRow f.AbsolutePath
    next
end if

Notes:
Default is false.
Setting this to true on Windows or Linux has no effect there.
(Read and Write property)

119.9.15 CancelButtonLabel as String

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The text for the cancel button.
**Example:**

```vbs
dim o as new OpenDialogMBS

o.CancelButtonLabel = "Hello"

o.ShowDialog
```

Notes:
Used only on Mac OS.
For RB 4.5 and earlier you need to make sure the encoding is set correctly.
Can be set to "" to use the default value.
(Read and Write property)

119.9.16 ClientName as String

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The name of the client.
**Example:**

```vbs
dim o as new OpenDialogMBS

o.ClientName = "Hello"

o.ShowDialog
```
Notes:
Used only on Mac OS.
For RB 4.5 and earlier you need to make sure the encoding is set correctly.
Can be set to "" to use the default value.
(Read and Write property)

119.9.17 Creator as String

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The creator code of your application.
**Notes:**
This property is only used Mac OS if you specify one or more file types.
(Read and Write property)

119.9.18 CustomPicture as Picture

MBS Util Plugin, Plugin Version: 11.0, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The custom picture content.
**Notes:**
You need to call RefreshCustomImage to refresh the picture visible to the user.
(Read and Write property)

119.9.19 File as Folderitem

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The first file selected.
**Example:**
```vba
dim o as new OpenDialogMBS
o.MultipleSelection = true
o.ShowDialog

MsgBox o.File.displaypathmbs
```
**Notes:**
file = files(0)
Just for the cases where you only need the first file.
119.9. **CLASS OPENDIALOGMBS**

(Read only property)

119.9.20 **FileSyncount as Integer**

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of files selected.

**Example:**

```vbs
    dim o as new OpenDialogMBS
    o.MultipleSelection = true
    o.ShowDialog
    MsgBox str(o.FileCount)
```

**Notes:** (Read only property)

119.9.21 **InitialDirectory as FolderItem**

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The initial directory.

**Example:**

```vbs
    dim o as new OpenDialogMBS
    o.InitialDirectory = SpecialFolder.Desktop
    o.ShowDialog
```

**Notes:**

Set to nil to get the last directory used.
(Read and Write property)

119.9.22 **Lasterror as Integer**

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last error code reported.

**Notes:** (Read and Write property)
119.9.23  **Left as Integer**

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The horizontal position of the dialog.

**Notes:**
-1 is for the default position.
Used only on the Mac side.
(Read and Write property)

119.9.24  **MultipleSelection as Boolean**

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether you want to allow multiple file selection.

**Example:**
```vbnet
dim o as new OpenDialogMBS
o.MultipleSelection = true
o.ShowDialog
```

**Notes:** (Read and Write property)

119.9.25  **ParentWindow as Window**


**Example:**
```vbnet
dim o as new OpenDialogMBS
o.ParentWindow = window1
o.ShowDialog
```

**Notes:**
Only implemented for Windows and Linux.
(Read and Write property)
119.9. CLASS OPENDIALOGMBS

119.9.26 PromptText as String

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The prompt text.
**Example:**
```vbnet
dim o as new OpenDialogMBS
o.PromptText = "Hello"
o.ShowDialog
```

**Notes:**
For RB 4.5 and earlier you need to make sure the encoding is set correctly.
Can be set to "" to use the default value.
(Read and Write property)

119.9.27 ResolveAliases as Boolean

MBS Util Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether aliases should be resolved.
**Example:**
```vbnet
dim o as new OpenDialogMBS
o.ResolveAliases = false
o.ShowDialog
```

**Notes:**
This property is only used on Mac OS X.
Default is true.
Flag seems to be broken on Mac OS X 10.7.
(Read and Write property)

119.9.28 ShowHiddenFiles as Boolean

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether hidden files should be shown.
**Example:**
dim o as new OpenDialogMBS
o.ShowHiddenFiles = true
o.ShowDialog

Notes:
Default is false.
(Read and Write property)

### 119.9.29 Top as Integer

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The vertical position of the dialog.
**Notes:**
-1 is for the default position.
Used only on the Mac side.
(Read and Write property)

### 119.9.30 TreatFilePackagesAsDirectories as Boolean

MBS Util Plugin, Plugin Version: 14.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sets the panel’s behavior for displaying file packages (for example, MyApp.app) to the user.
**Notes:**
If true, the panel will display file packages as directories; if false, it will not.
(Read and Write property)

### 119.9.31 UseCustomPicture as Integer

MBS Util Plugin, Plugin Version: 11.0, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Whether to add a custom picture control.
**Notes:**
Specify the size of the area you want. As the size is relative to the font size of the system font on windows, the results can be interesting. For example a value of 50 gives here a 72 pixel height area. Value can be from 1 to 100. Or zero to disable.

This method was added for a client who needed to show a small preview of a project file in the open dialog on Windows.
For Mac OS X you can use the NSSavePanelMBS/NSOpenPanelMBS with an accessory view.
119.9.32 **WindowTitle as String**

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The window title to use.

**Example:**

```vbscript
dim o as new OpenDialogMBS

o.WindowTitle = "Hello World"
o.ShowDialog
```

**Notes:**
For RB 4.5 and earlier you need to make sure the encoding is set correctly.
Can be set to "" to use the default value.
(Read and Write property)

119.9.33 **Events**

119.9.34 **FilterItem(file as folderitem, filterMode as Integer) as boolean**

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** An event where you can filter the file list.

**Notes:**
Return true to disable the file.
The result of the event is ignored by Windows. But on Mac OS it works.
So use the event on Mac and the filetype objects on Windows.

119.9.35 **SelectionChanged(file as folderitem)**

MBS Util Plugin, Plugin Version: 11.0, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Called when the selection changes in the window.
**Notes:** This is currently only implemented for Windows and gives you only one file name.
Chapter 120

Network

120.1 class AvahiBrowserMBS

120.1.1 class AvahiBrowserMBS

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The class to browse for services.

120.1.2 Methods

120.1.3 Browse(InterfaceIndex as Integer, Protocol as Integer, servicetype as string, domain as string = "", flags as Integer = 0) as boolean

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Browse for services of a type on the network.

**Notes:**

In most cases you probably want to pass kInterfaceAny and kProtocolAny in InterfaceIndex, resp. protocol to browse on all local networks. The specified events will be called whenever a new service appears or is removed from the network. Please note that events may be collapsed to minimize traffic (i.e. a REMOVED followed by a NEW for the same service data is dropped because redundant). If you want to subscribe to service data changes, you should use AvahiResolverMBS class and keep it open, in which case you will be notified via Found event everytime the service data changes.

Only one browse call per AvahiBrowserMBS object please.

Returns true on success and false on failure.
120.1.4 Constructor(client as AvahiClientMBS)

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The constructor.

120.1.5 Destructor

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The destructor.

120.1.6 Properties

120.1.7 Client as AvahiClientMBS

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The reference to the parent client object.
**Notes:** (Read only property)

120.1.8 Handle as Integer

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The internal object reference.
**Notes:** (Read only property)

120.1.9 Events

120.1.10 AllForNow(type as string)

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** One-time event, to notify the user that more records will probably not show up in the near future, i.e. all cache entries have been read and all static servers been queried.

120.1.11 CacheExhausted(type as string)

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** One-time event, to notify the user that all entries from the caches have been sent.
120.1. CLASS AVAHIBROWSERMBS

120.1.12 Failure(error as string, errorcode as Integer)
MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Some error occurred.

120.1.13 ServiceFound(InterfaceIndex as Integer, protocol as Integer, name as string, type as string, domain as string, flags as Integer)
MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Found a new object on the network.

120.1.14 ServiceRemoved(InterfaceIndex as Integer, protocol as Integer, name as string, type as string, domain as string, flags as Integer)
MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The service has been removed from the network.

120.1.15 Constants

120.1.16 kInterfaceAny = -1
MBS Linux Plugin, Plugin Version: 12.4. **Function:** Special constant to use any interface available. **Notes:** Otherwise you would pass the index of the network interface you want to use.

120.1.17 kProtocolAny = -1
MBS Linux Plugin, Plugin Version: 12.4. **Function:** One of the IP protocol constants. **Notes:** Any protocol.

120.1.18 kProtocolIPv4 = 0
MBS Linux Plugin, Plugin Version: 12.4. **Function:** One of the IP protocol constants. **Notes:** Only IPv4.
120.1.19  kProtocolIPv6 = 1

MBS Linux Plugin, Plugin Version: 12.4. **Function:** One of the IP protocol constants.  
**Notes:** Only IPv6.
120.2. **CLASS AVAHICLIENTMBS**

### 120.2.1 class AvahiClientMBS

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The base class for avahi.

**Notes:**
Typically you create an object of your subclass of AvahiClientMBS at application launch and keep it running. If events are too slow in GUI events, please use a timer with 50ms and call the AvahiClientMBS.Poll method there.

### 120.2.2 Methods

#### 120.2.3 Available as boolean

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Whether the avahi library has been found and loaded.

#### 120.2.4 Constructor(flags as Integer = 0)

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Initializes the client.

#### 120.2.5 Destructor

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The destructor.

#### 120.2.6 DomainName as string

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Get domain name.
**120.2.7 HostName as string**

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Get host name.

---

**120.2.8 Poll**

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Polls for events.

**Example:**
```
// in a timer with 50ms
AvahiClientMBS.Poll
```

**Notes:**
This is automatically called by the plugin for GUI applications. If you call it in a timer, you can speedup avahi.
Console applications with their own event loop need to call Poll method regularly.

---

**120.2.9 Version as string**

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Get the version of the server.

---

**120.2.10 Properties**

**120.2.11 Handle as Integer**

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The internal object reference.

**Notes:** (Read only property)
120.2. CLASS AVAHICLIENMTMBS

120.2.12 Events

120.2.13 Collision

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** We’re still connecting. **Notes:** This state is only entered when kClientNoFail has been passed to Constructor() and the daemon is not yet available.

120.2.14 Connecting

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Client is connecting.

120.2.15 Failure(error as string, errorcode as Integer)

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Some kind of error happened on the client side.

120.2.16 Registering

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Client is registering.

120.2.17 Running

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Client is running.

120.2.18 Constants

120.2.19 kClientIgnoreUserConfig = 1

MBS Linux Plugin, Plugin Version: 12.4. **Function:** One of the client initialization flags. **Notes:** Don’t read user configuration
120.2.20 \( k_{\text{ClientNoFail}} = 2 \)

MBS Linux Plugin, Plugin Version: 12.4. **Function:** One of the client initialization flags.

**Notes:** Don’t fail if the daemon is not available when `avahi_client_new()` is called, instead enter `AVAHI_CLIENT_CONNECTING` state and wait for the daemon to appear.
120.3. class AvahiDomainBrowserMBS

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The class to browse for domains.

120.3.2 Methods

120.3.3 BrowseDomains(InterfaceIndex as Integer, Protocol as Integer, domain as string = "", BrowserType as Integer = 0, flags as Integer = 0) as boolean

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Browse for domains on the local network.
**Notes:**
Only one BrowseDomains call per AvahiDomainBrowserMBS object please.
Returns true on success and false on failure.

120.3.4 Constructor(client as AvahiClientMBS)

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The constructor.

120.3.5 Destructor

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The destructor.

120.3.6 Properties

120.3.7 Client as AvahiClientMBS

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The reference to the parent client object.
**Notes:** (Read only property)
120.3.8 Handle as Integer

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The internal object reference.
**Notes:** (Read only property)

120.3.9 Events

120.3.10 AllForNow

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** One-time event, to notify the user that more records will probably not show up in the near future, i.e. all cache entries have been read and all static servers been queried.

120.3.11 CacheExhausted

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** One-time event, to notify the user that all entries from the caches have been sent.

120.3.12 DomainFound(InterfaceIndex as Integer, protocol as Integer, domain as string, flags as Integer)

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Found a new domain on the network.

120.3.13 DomainRemoved(InterfaceIndex as Integer, protocol as Integer, domain as string, flags as Integer)

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The domain has been removed from the network.

120.3.14 Failure(error as string, errorcode as Integer)

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Some error occurred.
120.3.15 Constants

120.3.16 kBrowseTypeBrowse = 0

MBS Linux Plugin, Plugin Version: 12.4. Function: One of the browse modes for domain browsing. Notes: Browse for a list of available browsing domains.

120.3.17 kBrowseTypeBrowseDefault = 1

MBS Linux Plugin, Plugin Version: 12.4. Function: One of the browse modes for domain browsing. Notes: Browse for the default browsing domain.

120.3.18 kBrowseTypeBrowseLegacy = 4

MBS Linux Plugin, Plugin Version: 12.4. Function: One of the browse modes for domain browsing. Notes: Legacy browse domain - see DNS-SD spec for more information.

120.3.19 kBrowseTypeRegister = 2

MBS Linux Plugin, Plugin Version: 12.4. Function: One of the browse modes for domain browsing. Notes: Browse for a list of available registering domains.

120.3.20 kBrowseTypeRegisterDefault = 3

MBS Linux Plugin, Plugin Version: 12.4. Function: One of the browse modes for domain browsing. Notes: Browse for the default registering domain.

120.3.21 kInterfaceAny = -1

MBS Linux Plugin, Plugin Version: 12.4. Function: Special constant to use any interface available. Notes: Otherwise you would pass the index of the network interface you want to use.
120.3.22 kProtocolAny = -1

MBS Linux Plugin, Plugin Version: 12.4. **Function:** One of the IP protocol constants.  
**Notes:** Any protocol.

120.3.23 kProtocolIPv4 = 0

MBS Linux Plugin, Plugin Version: 12.4. **Function:** One of the IP protocol constants.  
**Notes:** Only IPv4.

120.3.24 kProtocolIPv6 = 1

MBS Linux Plugin, Plugin Version: 12.4. **Function:** One of the IP protocol constants.  
**Notes:** Only IPv6.
120.4. class AvahiResolverMBS

120.4.1 class AvahiResolverMBS

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The class to resolve service name to IP address.

120.4.2 Methods

120.4.3 Constructor(client as AvahiClientMBS)

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The constructor.

120.4.4 Destructor

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The destructor.

120.4.5 Resolve(InterfaceIndex as Integer, Protocol as Integer, name as string, servicetype as string, domain as string, flags as Integer = 0) as boolean

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Create a new service resolver object.
**Notes:**
Please make sure to pass all the service data you received via Found event, especially interface and protocol.
The protocol argument specifies the protocol (IPv4 or IPv6) to use as transport for the queries which are sent out by this resolver. The protocol argument specifies the address family (IPv4 or IPv6) of the address of the service we are looking for. Generally, on "protocol" you should only pass what was supplied to you as parameter to your Browse function. In protocol you should pass what your application code can deal with when connecting to the service. Or, more technically speaking: protocol specifies if the mDNS queries should be sent as UDP/IPv4 resp. UDP/IPv6 packets. protocol specifies whether the query is for a A resp. AAAA resource record.

Only one resolve call per AvahiResolverMBS object please.
Returns true on success and false on failure.
120.4.6 Properties

120.4.7 Client as AvahiClientMBS

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The reference to the parent client object.
**Notes:** (Read only property)

120.4.8 Handle as Integer

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The internal object reference.
**Notes:** (Read only property)

120.4.9 Events

120.4.10 Failure(error as string, errorcode as Integer)

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Some error occurred.

120.4.11 Found(interfaceIndex as Integer, Protocol as Integer, name as string, type as string, domain as string, hostname as string, port as Integer, address as string, txt as string, flags as Integer)

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
An address was found.

120.4.12 Constants

120.4.13 kResultCached = 1

MBS Linux Plugin, Plugin Version: 12.4. **Function:** One of the flags for events.
**Notes:** This response originates from the cache.
120.4.14  kResultLocal = 8

MBS Linux Plugin, Plugin Version: 12.4. **Function:** One of the flags for events.  
**Notes:** This record/service resides on and was announced by the local host. Only available in service and record browsers and only on Found event.

120.4.15  kResultMultiCast = 4

MBS Linux Plugin, Plugin Version: 12.4. **Function:** One of the flags for events.  
**Notes:** This response originates from multicast DNS.

120.4.16  kResultOurOwn = 16

MBS Linux Plugin, Plugin Version: 12.4. **Function:** One of the flags for events.  
**Notes:** This service belongs to the same local client as the browser object. Only available in avahi-client, and only for service browsers and only on Found event.

120.4.17  kResultStatic = 32

MBS Linux Plugin, Plugin Version: 12.4. **Function:** One of the flags for events.  
**Notes:** The returned data has been defined statically by some configuration option.

120.4.18  kResultWideArea = 2

MBS Linux Plugin, Plugin Version: 12.4. **Function:** One of the flags for events.  
**Notes:** This response originates from wide area DNS.
120.5  class AvahiTypeBrowserMBS

120.5.1  class AvahiTypeBrowserMBS

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The class to browse for types.

120.5.2  Methods

120.5.3  BrowseTypes(InterfaceIndex as Integer, Protocol as Integer, domain as string = "", flags as Integer = 0) as boolean

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Browse for service types on the local network.
**Notes:**
Only one BrowseTypes call per AvahiTypeBrowserMBS object please.
Returns true on success and false on failure.

120.5.4  Constructor(client as AvahiClientMBS)

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The constructor.

120.5.5  Destructor

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The destructor.

120.5.6  Properties

120.5.7  Client as AvahiClientMBS

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The reference to the parent client object.
**Notes:** (Read only property)
120.5. CLASS AVAHITYPEBROWSERMBS

120.5.8 Handle as Integer

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The internal object reference.
**Notes:** (Read only property)

120.5.9 Events

120.5.10 AllForNow

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** One-time event, to notify the user that more records will probably not show up in the near future, i.e. all cache entries have been read and all static servers been queried.

120.5.11 CacheExhausted

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** One-time event, to notify the user that all entries from the caches have been sent.

120.5.12 Failure(error as string, errorcode as Integer)

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Some error occurred.

120.5.13 TypeFound(InterfaceIndex as Integer, protocol as Integer, type as string, domain as string, flags as Integer)

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Found a new type on the network.

120.5.14 TypeRemoved(InterfaceIndex as Integer, protocol as Integer, type as string, domain as string, flags as Integer)

MBS Linux Plugin, Plugin Version: 12.4, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The type has been removed from the network.
120.5.15 Constants

120.5.16 kInterfaceAny = -1

MBS Linux Plugin, Plugin Version: 12.4. **Function:** Special constant to use any interface available. **Notes:** Otherwise you would pass the index of the network interface you want to use.

120.5.17 kProtocolAny = -1

MBS Linux Plugin, Plugin Version: 12.4. **Function:** One of the IP protocol constants. **Notes:** Any protocol.

120.5.18 kProtocolIPv4 = 0

MBS Linux Plugin, Plugin Version: 12.4. **Function:** One of the IP protocol constants. **Notes:** Only IPv4.

120.5.19 kProtocolIPv6 = 1

MBS Linux Plugin, Plugin Version: 12.4. **Function:** One of the IP protocol constants. **Notes:** Only IPv6.
120.6. **CLASS CW8021XPROFILEMBS**

120.6 class CW8021XProfileMBS

### 120.6.1 class CW8021XProfileMBS


**Function:** CoreWLAN 802.1X profile.

**Notes:**
Encapsulates an 802.1X profile providing accessors to various profile properties.

Requires Mac OS X 10.6 or newer.

### 120.6.2 Methods

#### 120.6.3 allUser8021XProfiles as CW8021XProfileMBS()


**Function:** Getting all stored 802.1X user profiles.

**Notes:**
An array object containing CW8021XProfile objects representing all stored 802.1X user profiles for the login user.

Retrieves the all the stored 802.1X profiles for the login user.

If there are no 802.1X user profiles for the login user, then this method will return an empty array object.

#### 120.6.4 Constructor


**Function:** Creates an CW8021XProfile object with default parameters.

**Notes:** The default EAP profile supports (in preferred order) TLS, PEAP, TTLS, and EAP-FAST. The profile will conditionally support TLS only if their is a certificate available. TTLS uses MSCHAPv2 inner authentication and EAP-FAST uses automatic PAC provisioning. Support for more advanced EAP profile options may be added in a future implementation.

#### 120.6.5 copy as CW8021XProfileMBS


**Function:** Creates a copy of this object.
120.6.6 isEqualToProfile(profile as CW8021XProfileMBS) as boolean

Function: The CW8021XProfile object for which to test equality.
Notes:
Returns true if two profiles are equal.

Two CW8021XProfile objects are considered equal if all their corresponding properties are equal.

120.6.7 Operator_Compare(profile as CW8021XProfileMBS) as Integer

Function: Compares two profiles.

120.6.8 profile as CWWirelessProfileMBS

Function: An CW8021XProfile object with default parameters for the given network.
Notes:
Convenience method for getting an CW8021XProfile object with default parameters.

The default EAP profile supports (in preferred order) TLS, PEAP, TTLS, and EAP-FAST. The profile will conditionally support TLS only if there is a certificate available. TTLS uses MSCHAPv2 inner authentication and EAP-FAST uses automatic PAC provisioning. Support for more advanced EAP profile options may be added in a future implementation.

120.6.9 Properties

120.6.10 alwaysPromptForPassword as boolean

Function: IEEE 802.1X client always prompts the user for the IEEE 802.1X password.
Notes: (Read and Write property)
120.6. CLASS CW8021XPROFILEMBS

120.6.11 description as string

Function: The object description
Notes: (Read only property)

120.6.12 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

120.6.13 password as string

Function: IEEE 802.1X password.
Notes: (Read and Write property)

120.6.14 ssid as string

Function: Wireless network name.
Notes: (Read and Write property)

120.6.15 userDefinedName as string

Function: User-defined name.
Notes: (Read and Write property)

120.6.16 username as string

Function: IEEE 802.1X username.
Notes: (Read and Write property)
120.7 class CWChannelMBS

120.7.1 class CWChannelMBS

Function: The CoreWLAN class for a channel.
Notes: Encapsulates an IEEE 802.11 channel.

Available on Mac OS X 10.7 or later.
Please also check the documentation from Apple for the CWChannel class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

120.7.2 Methods

120.7.3 Constructor

Function: The private constructor.

120.7.4 copy as CWChannelMBS

Function: Creates a copy of the object.

120.7.5 isEqualToChannel(channel as CWChannelMBS) as boolean

Function: Compares two channels.
Notes: Returns true if both are equal.

120.7.6 Operator_Compare(channel as CWChannelMBS) as Integer

Function: Compares two channels.
120.7. CLASS CWCHANNELMBS

120.7.7 Properties

120.7.8 channelBand as Integer

Function: The channel band.
Notes: (Read only property)

120.7.9 channelNumber as Integer

Function: The channel number.
Notes: (Read only property)

120.7.10 channelWidth as Integer

Function: The channel width.
Notes: (Read only property)

120.7.11 Handle as Integer

Function: The internal reference for this object.
Notes: (Read and Write property)
120.8  class CWConfigurationMBS

120.8.1  class CWConfigurationMBS

**Function:** CoreWLAN configuration.  
**Notes:**  
Encapsulates a static configuration for a given IEEE 802.11 wireless interface.  

Requires Mac OS X 10.6 or newer.

120.8.2  Methods

120.8.3  configuration as CWConfigurationMBS

**Function:** Convenience method for getting an CWConfiguration object.  
**Notes:**  
dim c as CWConfigurationMBS = CWConfigurationMBS.configuration  
MsgBox hex(c.Handle)  
See also:

* 120.8.4 configuration(config as CWConfigurationMBS) as CWConfigurationMBS

120.8.4  configuration(config as CWConfigurationMBS) as CWConfigurationMBS

**Function:** Convenience method for getting a CWConfiguration object initialized with the given CWConfiguration object.  
**Notes:** Available on Mac OS X 10.7 or later.  
See also:

* 120.8.3 configuration as CWConfigurationMBS

120.8.5  Constructor

**Function:** Creates an CWConfiguration.  
See:
120.8. CLASS CWCONFIGURATIONMBS

- 120.8.6 Constructor(configuration as CWConfigurationMBS)

120.8.6 Constructor(configuration as CWConfigurationMBS)

**Function:** Creates a CWConfigurationMBS object initialized with the given CWConfigurationMBS object.
**Notes:** Available on Mac OS X 10.7 or later.

See also:

- 120.8.5 Constructor

120.8.7 copy as CWConfigurationMBS

**Function:** Creates a copy of this object.

120.8.8 isEqualToConfiguration(configuration as CWConfigurationMBS) as boolean

**Function:** Test whether two configurations are equal.
**Notes:** Two CWConfiguration objects are considered equal if all their corresponding properties are equal.

120.8.9 mutableCopy as CWMutableConfigurationMBS

**Function:** Creates a mutable copy of this object.
**Notes:** Available on Mac OS X 10.7 or later.

120.8.10 networkProfiles as CWNetworkProfileMBS()

**Function:** An array of remembered CWNetworkProfileMBS objects.
**Notes:**
The order of this array corresponds to the order in which the the CWNetworkProfile objects participate in the auto-join process.

Available on Mac OS X 10.7 or later.
**120.8.11 Operator_Compare(configuration as CWConfigurationMBS) as Integer**

**Function:** Compares two profiles.

**120.8.12 preferredNetworks as CWWirelessProfileMBS()**

**Function:** Ordered array of CWWirelessProfile objects.  
**Notes:** The preferred networks list is a subset of the remembered networks set. It cannot contain duplicate entries and cannot contain any entries that are not present in the remembered networks set.

**120.8.13 rememberedNetworks as CWWirelessProfileMBS()**

**Function:** Array of stored CWWirelessProfile objects for the given CWConfiguration.

**120.8.14 setPreferredNetworks(profiles() as CWWirelessProfileMBS)**

**Function:** Sets the ordered array of CWWirelessProfile objects.  
**Notes:** The preferred networks list is a subset of the remembered networks set. It cannot contain duplicate entries and cannot contain any entries that are not present in the remembered networks set.

**120.8.15 setRememberedNetworks(profiles() as CWWirelessProfileMBS)**

**Function:** Sets the array of stored CWWirelessProfile objects for the given CWConfiguration.

**120.8.16 Properties**

**120.8.17 alwaysRememberNetworks as boolean**

**Function:** Preference to always remember networks joined.
120.8. **CLASS CWCONFIGURATIONMBS**

Notes: (Read and Write property)

### 120.8.18 disconnectOnLogout as boolean

**Function:** Preference to disconnect from the current network upon user logout.
**Notes:** (Read and Write property)

### 120.8.19 Handle as Integer

**Function:** The internal object reference.
**Notes:** (Read and Write property)

### 120.8.20 rememberJoinedNetworks as boolean

**Function:** AirPort client will remember all joined networks.
**Notes:**
Available on Mac OS X 10.7 or later.
(Read only property)

### 120.8.21 requireAdminForIBSSCreation as boolean

**Function:** Preference to require administrative privileges to create computer-to-computer networks.
**Notes:** (Read and Write property)

### 120.8.22 requireAdminForNetworkChange as boolean

**Function:** Preference to require administrative privileges to change networks.
**Notes:** (Read and Write property)
120.8.23  requireAdminForPowerChange as boolean

Function: Preference to require administrative privileges to change the CoreWLAN interface power state.
Notes: (Read and Write property)

120.8.24  requireAdministratorForAssociation as boolean

Function: Require an administrator password to change networks.
Notes: Available on Mac OS X 10.7 or later.
(Read only property)

120.8.25  requireAdministratorForIBSSMode as boolean

Function: Require an administrator password to create a computer-to-computer network.
Notes: Available on Mac OS X 10.7 or later.
(Read only property)

120.8.26  requireAdministratorForPower as boolean

Function: Require an administrator password to change the interface power state.
Notes: Available on Mac OS X 10.7 or later.
(Read only property)
120.9.  MODULE CWGLOBALSMBS

120.9  module CWGlobalsMBS

120.9.1  module CWGlobalsMBS

**Function:** The module for the global constants.  
**Notes:** Please note that MBS Plugin implements all methods from 10.6 to 10.9 in CoreWLAN. But Apple changes things often, so some methods are only for older system, some only for newer. e.g. kCWErrorDomain is for 10.6 and CWEErrorDomain for 10.7 and newer.

120.9.2  Methods

120.9.3  CWBSSIDDidChangeNotification as string

**Function:** One of the notification names for CoreWLAN.  
**Notes:**  
Please use with NSNotificationObserverMBS class.  
Posted when the BSSID of any WLAN interface changes. The object for this notification is the corresponding BSD interface name. This notification does not contain a userInfo dictionary.

120.9.4  CWCountryCodeDidChangeNotification as string

**Function:** One of the notification names for CoreWLAN.  
**Notes:**  
Please use with NSNotificationObserverMBS class.  
Posted when the country code of any WLAN interface changes. The object for this notification is the corresponding BSD interface name. This notification does not contain a userInfo dictionary.

120.9.5  CWEErrorDomain as string

**Function:** CoreWLAN Error Domain.
120.9.6  **CWLinkDidChangeNotification as string**


**Function:** One of the notification names for CoreWLAN.

**Notes:**

Please use with NSNotificationObserverMBS class.

Posted when the link state of any WLAN interface changes. The object for this notification is the corresponding BSD interface name. This notification does not contain a userInfo dictionary.

120.9.7  **CWLinkQualityDidChangeNotification as string**


**Function:** One of the notification names for CoreWLAN.

**Notes:**

Please use with NSNotificationObserverMBS class.

Posted when the link quality for any WLAN interface changes. The object for this notification is the corresponding BSD interface name. The userInfo dictionary for this notification contains the current RSSI and current transmit rate for the given CoreWLAN interface.

120.9.8  **CWLinkQualityNotificationRSSIKey as string**


**Function:** Dictionary key for link quality change details.

**Notes:** Number containing the current RSSI value for the WLAN interface. Found in the userInfo dictionary for the CWLinkQualityChangedNotification.

120.9.9  **CWLinkQualityNotificationTransmitRateKey as string**


**Function:** Dictionary key for link quality change details.

**Notes:** Number containing the current transmit rate value for the WLAN interface. Found in the userInfo dictionary for the CWLinkQualityChangedNotification.

120.9.10 **CWModeDidChangeNotification as string**


**Function:** One of the notification names for CoreWLAN.

**Notes:**
Module CWGLOBALSMBS

Please use with NSNotificationCenterMBS class.

Posted when the mode of any WLAN interface changes. The object for this notification is the corresponding BSD interface name. This notification does not contain a userInfo dictionary.

**120.9.11 CWPowerDidChangeNotification as string**

**Function:** One of the notification names for CoreWLAN. 
**Notes:** Please use with NSNotificationCenterMBS class. 
Posted when the power state of any WLAN interface changes. The object for this notification is the corresponding BSD interface name. This notification does not contain a userInfo dictionary.

**120.9.12 CWScanCacheDidUpdateNotification as string**

**Function:** One of the notification names for CoreWLAN.
**Notes:** Please use with NSNotificationCenterMBS class. 
Posted when new entries are added to the scan cache, or existing entries are updated with more current information. The object for this notification is the corresponding BSD interface name. This notification does not contain a userInfo dictionary.

**120.9.13 CWServiceDidChangeNotification as string**

**Function:** One of the notification names for CoreWLAN. 
**Notes:** Please use with NSNotificationCenterMBS class. 
Posted when the network service availability for any WLAN interface changes. The object for this notification is the corresponding BSD interface name. This notification does not contain a userInfo dictionary.

**120.9.14 CWSSIDDidChangeNotification as string**

**Function:** One of the notification names for CoreWLAN.
Notes:
Please use with NSNotificationObserverMBS class.
Posted when the SSID of any WLAN interface changes. The object for this notification is the corresponding BSD interface name. This notification does not contain a userInfo dictionary.

120.9.15 kCWAssocKey8021XProfile as string

Function: One of the Association Parameter Keys.
Notes: CW8021XProfile object containing the network IEEE 802.1X profile. Required for association to IEEE 802.1X dynamic WEP and WPA/WPA2 Enterprise networks.

120.9.16 kCWAssocKeyPassphrase as string

Function: One of the Association Parameter Keys.
Notes: String containing network passphrase or key. Required for association to WEP and WPA/WPA2 Personal networks.

120.9.17 kCWBSSIDDidChangeNotification as string

Function: One of the notification names for CoreWLAN.
Notes:
Posted when the BSSID of the wireless interface changes. This notification does not contain a userInfo dictionary.
As CoreWLAN has been deprecated, this events may not fire any more.

120.9.18 kCWCountryCodeDidChangeNotification as string

Function: One of the notification names for CoreWLAN.
Notes:
Posted when the country code of the CoreWLAN interface changes. This notification does not contain a userInfo dictionary.
As CoreWLAN has been deprecated, this events may not fire any more.
120.9. **MODULE CWGLOBALSMBS**

**120.9.19  kCWErrorDomain as string**


**Function:** Error domain for NSErrors returned by calls to CWInterface.

**Notes:** NSErrorMBS class has a domain property and there is this domain value used for errors from the CoreWLAN framework.

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**120.9.20  kCWIBSSKeyChannel as string**


**Function:** One of the IBSS Parameter Keys.

**Notes:** Number containing the channel number on which the network will be created. Defaults to channel 11.

---

**120.9.21  kCWIBSSKeyPassphrase as string**


**Function:** One of the IBSS Parameter Keys.

**Notes:** String containing network cipher key. 40-bit and 104-bit WEP modes are currently supported. Cipher mode is inferred from the key length. A cipher key that has 5 characters or has 10 hexadecimal characters corresponds to a 40-bit WEP key. A cipher key that has 13 characters or has 26 hexadecimal characters corresponds to a 104-bit WEP key. If this key is not present, then no cipher key will be used on the network.

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**120.9.22  kCWIBSSKeySSID as string**


**Function:** One of the IBSS Parameter Keys.

**Notes:** String containing the SSID of the network to be created.

---

**120.9.23  kCWLinkDidChangeNotification as string**


**Function:** One of the notification names for CoreWLAN.

**Notes:**

Posted when the link state of the CoreWLAN interface changes. This notification does not contain a userInfo dictionary. As CoreWLAN has been deprecated, this events may not fire any more.
120.9.24  **kCWModeDidChangeNotification as string**

**MBS MacFrameworks Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** One of the notification names for CoreWLAN.

**Notes:**

Posted when the op mode of the CoreWLAN interface changes. This notification does not contain a userInfo dictionary.

As CoreWLAN has been deprecated, this events may not fire any more.

120.9.25  **kCWPowerDidChangeNotification as string**

**MBS MacFrameworks Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** One of the notification names for CoreWLAN.

**Notes:**

Posted when the power state of the CoreWLAN interface changes. This notification does not contain a userInfo dictionary.

As CoreWLAN has been deprecated, this events may not fire any more.

120.9.26  **kCWScanKeyBSSID as string**

**MBS MacFrameworks Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** One of the Scan Parameter Keys.

**Notes:** String containing the target BSSID of a directed scan request.

120.9.27  **kCWScanKeyDwellTime as string**

**MBS MacFrameworks Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** One of the Scan Parameter Keys.

**Notes:** Number specifying the time in milliseconds that the interface will spend on each channel listening for beacon frames and probe responses. Defaults to driver default.

120.9.28  **kCWScanKeyMerge as string**

**MBS MacFrameworks Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** One of the Scan Parameter Keys.

**Notes:** Boolean value indicating whether or not duplicate SSID entries should be included in the scan results. A value evaluating to true will include the BSSID with the strongest signal strength and remove all
other duplicate SSID entries. Defaults to true.

120.9.29  kCWScanKeyRestTime as string

Function: One of the Scan Parameter Keys.  
Notes: Number specifying the time in milliseconds that the interface will spend on its home channels between intervals of off-channel activity during the scan request. Defaults to driver default.

120.9.30  kCWScanKeyScanType as string

Function: One of the Scan Parameter Keys.  
Notes: String indicating the type of scan to perform. Defaults to APScanTypeActive.

120.9.31  kCWScanKeySSID as string

Function: One of the Scan Parameter Keys.  
Notes: String containing the target SSID of a directed scan request.

120.9.32  kCWSSIDDidChangeNotification as string

Function: One of the notification names for CoreWLAN.  
Notes: Posted when the SSID of the CoreWLAN interface changes. This notification does not contain a userInfo dictionary.  
As CoreWLAN has been deprecated, this events may not fire any more.

120.9.33  KeychainDeleteEAPUsernameAndPassword(ssidData as memoryblock) as Integer

Function: Deletes the 802.1X username and password for the specified SSID.  
Notes:
ssidData: The service set identifier (SSID) which is used to uniquely identify the keychain item.

Returns an error code indicating whether or not a failure occurred. errSecSuccess indicates no error occurred.

The keychain used is determined by the SecPreferencesDomain of the caller as returned by KeychainManagerMBS.PreferenceDomain().
Available in Mac OS X 10.7, deprecated in 10.9. Please use KeychainDeleteWiFiEAPUsernameAndPassword instead.

120.9.34 KeychainDeletePassword(ssidData as memoryblock) as Integer

Function: Deletes the password for the specified SSID and keychain domain.
Notes:
ssidData: The service set identifier (SSID) which is used to uniquely identify the keychain item.

Returns an error code indicating whether or not a failure occurred. errSecSuccess indicates no error occurred.

The keychain used is determined by the SecPreferencesDomain of the caller as returned by KeychainManagerMBS.PreferenceDomain().
Available in Mac OS X 10.7, deprecated in 10.9. Please use KeychainDeleteWiFiPassword instead.

120.9.35 KeychainDeleteWiFiEAPUsernameAndPassword(KeychainDomain as Integer, ssidData as memoryblock) as Integer

Function: Deletes the 802.1X username and password for the specified SSID and keychain domain.
Notes:
domain: The keychain domain, which determines which keychain will be used.
ssid: The service set identifier (SSID) which is used to uniquely identify the keychain item.

Returns an OSStatus error code indicating whether or not a failure occurred. errSecSuccess indicates no error occurred.

Available on Mac OS X 10.9 or newer.
120.9.36 **KeychainDeleteWiFiPassword(KeychainDomain as Integer, ssidData as memoryblock) as Integer**


**Function:** Deletes the password for the specified SSID and keychain domain.

**Notes:**
- domain: The keychain domain, which determines which keychain will be used.
- ssid: The service set identifier (SSID) which is used to uniquely identify the keychain item.

Returns an OSStatus error code indicating whether or not a failure occurred.
- errSecSuccess indicates no error occurred.

Available on Mac OS X 10.9 or newer.

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120.9.37 **KeychainFindWiFiEAPUsernameAndPassword(KeychainDomain as Integer, ssidData as memoryblock, byref username as string, byref password as string) as Integer**


**Function:** Finds and returns the 802.1X username and password stored for the specified SSID and keychain domain.

**Notes:**
- domain: The keychain domain, which determines which keychain will be used.
- ssid: The service set identifier (SSID) which is used to uniquely identify the keychain item.
- username: a string passed by reference, which upon return will contain the 802.1X username for the specified SSID.
- password: a string passed by reference, which upon return will contain the 802.1X password for the specified SSID.

Returns an error code indicating whether or not a failure occurred.
- errSecSuccess indicates no error occurred.

Available on Mac OS X 10.9 or newer.

---

120.9.38 **KeychainFindWiFiPassword(KeychainDomain as Integer, ssidData as memoryblock, byref password as string) as Integer**


**Function:** Finds and returns (by reference) the password for the specified SSID and keychain domain.

---
Notes:

domain: The keychain domain, which determines which keychain will be used.
ssid: The service set identifier (SSID) which is used to uniquely identify the keychain item.
password: An string passed by reference, which upon return will contain the Wi-Fi keychain password for
the specified SSID. This parameter is optional.

Returns an error code indicating whether or not a failure occurred. errSecSuccess indicates no error occurred.
Available on Mac OS X 10.9 or newer.

120.9.39 KeychainGetEAPIdentity(ssidData as memoryblock, byref SecIdentityRef as Integer) as Integer

Function: Finds and returns the identity stored for the specified SSID and keychain domain.
Notes:

ssidData: The service set identifier (SSID) which is used to uniquely identify the keychain item.
identity: An Integer passed by reference, which upon return will contain the SecIdentityRef associated with
the specified SSID.
The returned value must be released by the caller.

Returns an OStatus error code indicating whether or not a failure occurred.
errSecSuccess indicates no error occurred.

Available in Mac OS X 10.7, deprecated in 10.9. Please use KeychainGetWiFiEAPIdentity instead.

120.9.40 KeychainGetEAPIdentityList(byref ListSecIdentityRef() as Integer) as Integer

Function: Finds and returns all available identities.
Notes:

ListSecIdentityRef: An array passed by reference, which upon return will be populated with a list of integers
(SecIdentityRef).

Returns an OStatus error code indicating whether or not a failure occurred.
errSecSuccess indicates no error occurred.

Available on Mac OS X 10.9 or newer.
120.9.41  KeychainGetEAPUsernameAndPassword(ssidData as memoryblock, byref username as string, byref password as string) as Integer

Function: Finds and returns the 802.1X username and password stored for the specified SSID.
Notes:
ssidData: The service set identifier (SSID) which is used to uniquely identify the keychain item.
username: A string passed by reference, which upon return will contain the 802.1X username for the specified SSID.
password: A string passed by reference, which upon return will contain the 802.1X password for the specified SSID.

Returns an error code indicating whether or not a failure occurred.
errSecSuccess indicates no error occurred.

The keychain used is determined by the SecPreferencesDomain of the caller as returned by KeychainManagerMBS.PreferenceDomain().

Available in Mac OS X 10.7, deprecated in 10.9. Please use FindWiFiEAPUsernameAndPassword instead.

120.9.42  KeychainGetPassword(ssidData as memoryblock, byref password as string) as Integer

Function: Finds and returns (by reference) the password for the specified SSID.
Notes:
ssidData: The service set identifier (SSID) which is used to uniquely identify the keychain item.
password: A string passed by reference, which upon return will contain the Wi-Fi keychain password for the specified SSID.

Returns an error code indicating whether or not a failure occurred.
errSecSuccess indicates no error occurred.

The keychain used is determined by the SecPreferencesDomain of the caller as returned by KeychainManagerMBS.PreferenceDomain().

Available in Mac OS X 10.7, deprecated in 10.9. Please use KeychainFindWiFiPassword instead.
120.9.43  KeychainGetWiFiEAPIdentity(KeychainDomain as Integer, ssidData as memoryblock, byref SecIdentityRef as Integer) as Integer

Function: Finds and returns the identity stored for the specified SSID and keychain domain.
Notes:
domain: The keychain domain, which determines which keychain will be used.
ssid: The service set identifier (SSID) which is used to uniquely identify the keychain item.
identity: An Integer passed by reference, which upon return will contain the SecIdentityRef associated with the specified SSID.
The returned value must be released by the caller.

Returns an OSStatus error code indicating whether or not a failure occurred.
errSecSuccess indicates no error occurred.

Available on Mac OS X 10.9 or newer.

120.9.44  KeychainSetEAPIdentity(ssidData as memoryblock, SecIdentityRef as Integer) as Integer

Function: Associates an identity to the specified SSID.
Notes:
ssidData: The service set identifier (SSID) which is used to uniquely identify the keychain item.
identity: The identity containing the certificate to use for 802.1X authentication.
Passing 0 clears any identity association for the specified SSID.

Returns an error code indicating whether or not a failure occurred.
errSecSuccess indicates no error occurred.

The keychain used is determined by the SecPreferencesDomain of the caller as returned by KeychainManagerMBS.PreferenceDomain().
Available in Mac OS X 10.7, deprecated in 10.9. Please use KeychainSetWiFiEAPIdentity instead.

120.9.45  KeychainSetEAPUsernameAndPassword(ssidData as memoryblock, username as string, password as string) as Integer

Function: Sets the 802.1X username and password for the specified SSID.
Notes:
ssidData: The service set identifier (SSID) which is used to uniquely identify the keychain item.
username: The 802.1X username.
password: The 802.1X password. This parameter is optional.

Returns an error code indicating whether or not a failure occurred.
errSecSuccess indicates no error occurred.

The keychain used is determined by the SecPreferencesDomain of the caller as returned by KeychainManagerMBS.PreferenceDomain().
Available in Mac OS X 10.7, deprecated in 10.9. Please use KeychainSetWiFiEAPUsernameAndPassword instead.

**120.9.46 KeychainSetPassword(ssidData as memoryblock, password as string) as Integer**

**Function:** Sets the Wi-Fi network keychain password for the specified SSID.
**Notes:**
ssidData: The service set identifier (SSID) which is used to uniquely identify the keychain item.
password: The Wi-Fi network password.

Returns an error code indicating whether or not a failure occurred.
errSecSuccess indicates no error occurred.

The keychain used is determined by the SecPreferencesDomain of the caller as returned by KeychainManagerMBS.PreferenceDomain().
Available in Mac OS X 10.7, deprecated in 10.9. Please use KeychainSetWiFiPassword instead.

**120.9.47 KeychainSetWiFiEAPIdentity(KeychainDomain as Integer, ssidData as memoryblock, SecIdentityRef as Integer) as Integer**

**Function:** Associates an identity to the specified SSID and keychain domain.
**Notes:**
domain: The keychain domain, which determines which keychain will be used.
ssid: The service set identifier (SSID) which is used to uniquely identify the keychain item.
identity: The identity containing the certificate to use for 802.1X authentication. a SecIdentityRef passed as Integer.

Passing 0 clears any identity association for the specified SSID.
Returns an OSStatus error code indicating whether or not a failure occurred. errSecSuccess indicates no error occurred.

Available on Mac OS X 10.9 or newer.

120.9.48 KeychainSetWiFiEAPUsernameAndPassword(KeychainDomain as Integer, ssidData as memoryblock, Username as string, Password as string) as Integer

Function: Sets the 802.1X username and password for the specified SSID and keychain domain.
Notes:
domain: The keychain domain, which determines which keychain will be used.
ssid: The service set identifier (SSID) which is used to uniquely identify the keychain item.
username: The 802.1X username.
password: The 802.1X password. This parameter is optional.

Returns an OSStatus error code indicating whether or not a failure occurred. errSecSuccess indicates no error occurred.

Available on Mac OS X 10.9 or newer.

120.9.49 KeychainSetWiFiPassword(KeychainDomain as Integer, ssidData as memoryblock, password as string) as Integer

Function: Sets the Wi-Fi network keychain password for the specified SSID and keychain domain.
Notes:
domain: The keychain domain, which determines which keychain will be used.
ssid: The service set identifier (SSID) which is used to uniquely identify the keychain item.
password: The Wi-Fi network password.

Returns an error code indicating whether or not a failure occurred. errSecSuccess indicates no error occurred.

Available on Mac OS X 10.9 or newer.
120.9.50  MergeNetworks(networks() as CWNetworkMBS) as CWNetworkMBS()

**Function:** Merges the specified set of CWNetwork objects.
**Notes:**

networks: The set of networks to merge.

Duplicate networks are defined as networks with the same SSID, security type, and BSS type (IBSS or Infrastructure).
When duplicate networks exist, the network with the best RSSI value will be chosen.

120.9.51  Constants

120.9.52  kCWAPFullErr = -3913

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the error constants in CoreWLAN.
**Notes:** Access point is unable to handle another associated station.

120.9.53  kCWAssociationDeniedErr = -3909

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the error constants in CoreWLAN.
**Notes:** Association was denied for an unspecified reason.

120.9.54  kCWAuthAlgUnsupportedErr = -3910

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the error constants in CoreWLAN.
**Notes:** Specified authentication algorithm is not supported.

120.9.55  kCWAuthenticationAlgorithmUnsupportedErr = -3910

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN Errors.
**Notes:** Specified authentication algorithm is not supported.
120.9.56  kCWChallengeFailureErr = -3912

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the error constants in CoreWLAN.  
**Notes:** Authentication was rejected because of a challenge failure.

120.9.57  kCWChannelBand2GHz = 1

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN channel bands used for CWChannel.  
**Notes:** 2 GHz channel band.

120.9.58  kCWChannelBand5GHz = 2

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN channel bands used for CWChannel.  
**Notes:** 5 GHz channel band.

120.9.59  kCWChannelBandUnknown = 0

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN channel bands used for CWChannel.  
**Notes:** Unknown channel band.

120.9.60  kCWChannelWidth160MHz = 4

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN channel widths used for CWChannel.  
**Notes:** 160MHz channel width.

120.9.61  kCWChannelWidth20MHz = 1

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN channel widths used for CWChannel.  
**Notes:** 20MHz channel width.
120.9.62  kCWChannelWidth40MHz = 2

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN channel widths used for CWChannel.
**Notes:** 40MHz channel width.

120.9.63  kCWChannelWidth80MHz = 3

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN channel widths used for CWChannel.
**Notes:** 80MHz channel width.

120.9.64  kCWChannelWidthUnknown = 0

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN channel widths used for CWChannel.
**Notes:** Unknown channel width.

120.9.65  kCWCipherKeyFlagsMulticast = 4

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN chipher key flags.
**Notes:** Cipher key will be used for multicast packets.

120.9.66  kCWCipherKeyFlagsNone = 0

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN chipher key flags.
**Notes:** Open System authentication.

120.9.67  kCWCipherKeyFlagsRx = 16

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN chipher key flags.
**Notes:** Cipher key will be used for packets received by the interface.
120.9.68  kCWCipherKeyFlagsTx = 8

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN cipher key flags.  
**Notes:** Cipher key will be used for packets sent from the interface.

120.9.69  kCWCipherKeyFlagsUnicast = 2

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN cipher key flags.  
**Notes:** Cipher key will be used for unicast packets.

120.9.70  kCWCipherSuiteRejectedErr = -3923

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the error constants in CoreWLAN.  
**Notes:** Cipher suite rejected due to network security policy.

120.9.71  kCWDSSSOFDMUnsupportedErr = -3916

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the error constants in CoreWLAN.  
**Notes:** Association denied because DSSS-OFDM is not supported by requesting station.

120.9.72  kCWEAPOLErr = 1

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN Errors.  
**Notes:** EAPOL-related error.

120.9.73  kCWErr = -3931

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN Errors.  
**Notes:** Generic error, no specific error code exists to describe the error condition.

120.9.74  kCWErro = -3931

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the error constants in CoreWLAN.  
**Notes:** Generic error.
120.9. **MODULE CWGLOBALSMBS**

120.9.75 **kCWFormatErr = -3904**

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the error constants in CoreWLAN. **Notes:** Invalid protocol element field detected.

120.9.76 **kCWHTFeaturesNotSupported = -3926**

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the error constants in CoreWLAN. **Notes:** Association was denied because the requesting station does not support HT features.

120.9.77 **kCWHTFeaturesNotSupportedErr = -3926**

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN Errors. **Notes:** Association was denied because the requesting station does not support HT features.

120.9.78 **kCWIBSSModeSecurityNone = 0**

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the IBSS mode security types. **Notes:** Open System authentication.

120.9.79 **kCWIBSSModeSecurityWEP104 = 2**

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the IBSS mode security types. **Notes:** WPA Personal authentication.

120.9.80 **kCWIBSSModeSecurityWEP40 = 1**

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the IBSS mode security types. **Notes:** WEP security.

120.9.81 **kCWIInterfaceModeHostAP = 3**

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN interface operation modes. **Notes:** Interface is participating in an infrastructure network as an access point.
120.9.82  kCWInterfaceModeIBSS = 2

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN interface operation modes.  
**Notes:** Interface is participating in an IBSS network.

120.9.83  kCWInterfaceModeNone = 0

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN interface operation modes.  
**Notes:** Interface is not in any mode.

120.9.84  kCWInterfaceModeStation = 1

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN interface operation modes.  
**Notes:** Interface is participating in an infrastructure network as a non-AP station.

120.9.85  kCWInterfaceStateAssociating = 3

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the interface state constants in CoreWLAN.  
**Notes:** CoreWLAN interface is associating.

120.9.86  kCWInterfaceStateAuthenticating = 2

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the interface state constants in CoreWLAN.  
**Notes:** CoreWLAN interface is authenticating.

120.9.87  kCWInterfaceStateInactive = 0

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the interface state constants in CoreWLAN.  
**Notes:** CoreWLAN interface is in the initial, inactive state.
120.9.88  kCWInterfaceStateRunning = 4

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the interface state constants in CoreWLAN.
**Notes:** CoreWLAN interface is running.

120.9.89  kCWInterfaceStateScanning = 1

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the interface state constants in CoreWLAN.
**Notes:** CoreWLAN interface is scanning.

120.9.90  kCWInvalidAKMPErr = -3920

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the error constants in CoreWLAN.
**Notes:** Invalid authentication selector requested.

120.9.91  kCWInvalidAuthenticationSequenceNumberErr = -3911

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN Errors.
**Notes:** Authentication frame received with an authentication sequence number out of expected sequence.

120.9.92  kCWInvalidAuthSeqNumErr = -3911

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the error constants in CoreWLAN.
**Notes:** Authentication frame received with an authentication sequence number out of expected sequence.

120.9.93  kCWInvalidFormatErr = -3904

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN Errors.
**Notes:** Invalid protocol element field detected.

120.9.94  kCWInvalidGroupCipherErr = -3918

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the error constants in CoreWLAN.
**Notes:** Invalid group cipher requested.
120.9.95  kCWInvalidInfoElementErr = -3917

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the error constants in CoreWLAN. **Notes:** Invalid information element included in association request.

120.9.96  kCWInvalidInformationElementErr = -3917

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN Errors. **Notes:** Invalid information element included in association request.

120.9.97  kCWInvalidPairwiseCipherErr = -3919

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the error constants in CoreWLAN. **Notes:** Invalid pairwise cipher requested.

120.9.98  kCWInvalidParameterErr = -3900

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN Errors. **Notes:** Parameter error.

120.9.99  kCWInvalidPMKErr = -3924

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the error constants in CoreWLAN. **Notes:** PMK rejected by the access point.

120.9.100  kCWInvalidRSNCapabilitiesErr = -3922

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the error constants in CoreWLAN. **Notes:** Invalid RSN capabilities specified in association request.
120.9.101  kCWIPCError = -3929
MBS MacFrameworks Plugin, Plugin Version: 11.0. Function: One of the error constants in CoreWLAN. Notes: Error communicating with a separate process.

120.9.102  kCWIPCFailureErr = -3929
MBS MacFrameworks Plugin, Plugin Version: 13.5. Function: One of the CoreWLAN Errors. Notes: Error communicating with a separate process.

120.9.103  kCWKeychainDomainNone = 0
MBS MacFrameworks Plugin, Plugin Version: 13.5. Function: One of the CoreWLAN keychain domains used in the CWKeychain API. Notes: No keychain domain specified.
120.9.104  kCWKeychainDomainSystem = 2

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN keychain domains used in the CWKeychain API.  
**Notes:** The system keychain domain.

120.9.105  kCWKeychainDomainUser = 1

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN keychain domains used in the CWKeychain API.  
**Notes:** The login (user) keychain domain.

120.9.106  kCWNoErr = 0

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the error constants in CoreWLAN.  
**Notes:** Success.

120.9.107  kCWNoMemErr = -3901

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the error constants in CoreWLAN.  
**Notes:** Memory allocation failed.

120.9.108  kCWNoMemoryErr = -3901

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN Errors.  
**Notes:** Memory allocation failed.

120.9.109  kCWNotSupportedErr = -3903

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the error constants in CoreWLAN.  
**Notes:** Operation not supported.

120.9.110  kCWOOperationNotPermittedErr = -3930

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN Errors.  
**Notes:** Calling process does not have permission to perform this operation.
120.9.111 kCWOpModeHostAP = 3

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the interface operation mode constants in CoreWLAN.
**Notes:** Interface is participating in an infrastructure network as an access point.

120.9.112 kCWOpModeIBSS = 1

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the interface operation mode constants in CoreWLAN.
**Notes:** Interface is participating in an IBSS network.

120.9.113 kCWOpModeMonitorMode = 2

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the interface operation mode constants in CoreWLAN.
**Notes:** Interface is in 802.11 monitor mode.

120.9.114 kCWOpModeStation = 0

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the interface operation mode constants in CoreWLAN.
**Notes:** Interface is participating in an infrastructure network as a non-AP station.

120.9.115 kCWOpNotPermitted = -3930

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the error constants in CoreWLAN.
**Notes:** Calling process does not have permission to perform this operation.

120.9.116 kCWParamErr = -3900

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the error constants in CoreWLAN.
**Notes:** Parameter error.
**120.9.117** kCWPCOTransitionTimeNotSupported = -3927

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the error constants in CoreWLAN. **Notes:** Association was denied because the requesting station does not support the PCO transition time required by the AP.

**120.9.118** kCWPCOTransitionTimeNotSupportedErr = -3927

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN Errors. **Notes:** Association was denied because the requesting station does not support the PCO transition time required by the AP.

**120.9.119** kCWPHYMode11a = 1

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN physical layer modes. **Notes:** IEEE 802.11a PHY.

**120.9.120** kCWPHYMode11ac = 5

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN physical layer modes. **Notes:** IEEE 802.11ac PHY.

**120.9.121** kCWPHYMode11b = 2

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN physical layer modes. **Notes:** IEEE 802.11b PHY.

**120.9.122** kCWPHYMode11g = 3

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN physical layer modes. **Notes:** IEEE 802.11g PHY.

**120.9.123** kCWPHYMode11n = 4

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN physical layer modes. **Notes:** IEEE 802.11n PHY.
120.9.124  kCWPHYModeNone = 0

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN physical layer modes. **Notes:** No PHY mode.

120.9.125  kCWReassociationDeniedErr = -3908

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the error constants in CoreWLAN. **Notes:** Reassociation was denied because the access point was unable to determine that an association exists.

120.9.126  kCWReferenceNotBoundErr = -3928

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN Errors. **Notes:** No interface is bound to the CWInterface.

120.9.127  kCWRefNotBoundErr = -3928

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the error constants in CoreWLAN. **Notes:** No interface is bound to the CWInterface.

120.9.128  kCWScanTypeActive = 0

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the scan type constants in CoreWLAN. **Notes:** In accordance with the supported channels for the active country code, the interface will transmit probe request frames and listen for probe responses.

120.9.129  kCWScanTypeFast = 2

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the scan type constants in CoreWLAN. **Notes:** The scan will return cached scan results.
120.9.130  kCWScanTypePassive = 1

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the scan type constants in CoreWLAN. **Notes:** The interface will listen for beacon frames on each channel irrespective of country code.

120.9.131  kCWSecurityDynamicWEP = 6

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN security types. **Notes:** Dynamic WEP security.

120.9.132  kCWSecurityEnterprise = 10

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN security types. **Notes:** Enterprise authentication.

120.9.133  kCWSecurityModeDynamicWEP = 7

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the security mode constants in CoreWLAN. **Notes:** Dynamic WEP 802.1X authentication.

120.9.134  kCWSecurityModeOpen = 0

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the security mode constants in CoreWLAN. **Notes:** Open System authentication.

120.9.135  kCWSecurityModeWEP = 1

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the security mode constants in CoreWLAN. **Notes:** WEP authentication.
120.9.136  **kCWSecurityModeWPA2_Enterprise = 5**

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the security mode constants in CoreWLAN.  
**Notes:** WPA2 Enterprise authentication.

120.9.137  **kCWSecurityModeWPA2_PSK = 3**

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the security mode constants in CoreWLAN.  
**Notes:** WPA2 Personal authentication.

120.9.138  **kCWSecurityModeWPA_Enterprise = 4**

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the security mode constants in CoreWLAN.  
**Notes:** WPA Enterprise authentication.

120.9.139  **kCWSecurityModeWPA_PSK = 2**

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the security mode constants in CoreWLAN.  
**Notes:** WPA Personal authentication.

120.9.140  **kCWSecurityModeWPS = 6**

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the security mode constants in CoreWLAN.  
**Notes:** WiFi Protected Setup authentication.

120.9.141  **kCWSecurityNone = 0**

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN security types.  
**Notes:** Open System authentication.
120.9.142 kCWSecurityPersonal = 5

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN security types. **Notes:** Personal authentication.

120.9.143 kCWSecurityUnknown = & h7FFFFFFF

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN security types. **Notes:** Unknown security type.

120.9.144 kCWSecurityWEP = 1

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN security types. **Notes:** WEP security.

120.9.145 kCWSecurityWPA2Enterprise = 9

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN security types. **Notes:** WPA2 Enterprise authentication.

120.9.146 kCWSecurityWPA2Personal = 4

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN security types. **Notes:** WPA2 Personal authentication.

120.9.147 kCWSecurityWPAEnterprise = 7

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN security types. **Notes:** WPA Enterprise authentication.

120.9.148 kCWSecurityWPAEnterpriseMixed = 8

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN security types. **Notes:** WPA/WPA2 Enterprise authentication.
120.9.149  kCWSecurityWPAPersonal = 2

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN security types.  
**Notes:** WPA Personal authentication.

120.9.150  kCWSecurityWPAPersonalMixed = 3

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN security types.  
**Notes:** WPA/WPA2 Personal authentication.

120.9.151  kCWShortSlotUnsupportedErr = -3915

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the error constants in CoreWLAN.  
**Notes:** Association denied because short slot time option is not supported by requesting station.

120.9.152  kCWSupplicantTimeoutErr = -3925

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the error constants in CoreWLAN.  
**Notes:** WPA/WPA2 handshake timed out.

120.9.153  kCWTimeoutErr = -3905

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the error constants in CoreWLAN.  
**Notes:** Authentication/Association timed out.

120.9.154  kCWUnknownErr = -3902

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the error constants in CoreWLAN.  
**Notes:** Unexpected error condition encountered for which no error code exists.

120.9.155  kCWUnknownErr = -3902

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** One of the CoreWLAN Errors.  
**Notes:** Unexpected error condition encountered for which no error code exists.
120.9.156  kCWUnspecifiedFailureErr = -3906

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the error constants in CoreWLAN.  
**Notes:** Access point did not specify a reason for authentication/association failure.

120.9.157  kCWUnsupportedCapabilitiesErr = -3907

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the error constants in CoreWLAN.  
**Notes:** Access point cannot support all requested capabilities.

120.9.158  kCWUnsupportedRateSetErr = -3914

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the error constants in CoreWLAN.  
**Notes:** Interface does not support all of the rates in the access point’s basic rate set.

120.9.159  kCWUnsupportedRSNVersionErr = -3921

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the error constants in CoreWLAN.  
**Notes:** Invalid WPA/WPA2 version specified.

120.9.160  kOldCWPHYMode11A = 0

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the physical layer mode constants in CoreWLAN.  
**Notes:** IEEE 802.11a

120.9.161  kOldCWPHYMode11B = 1

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the physical layer mode constants in CoreWLAN.  
**Notes:** IEEE 802.11b

120.9.162  kOldCWPHYMode11G = 2

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the physical layer mode constants in CoreWLAN.
120.9.163  kOldCWPHYMode11N = 3

MBS MacFrameworks Plugin, Plugin Version: 11.0. **Function:** One of the physical layer mode constants in CoreWLAN.
**Notes:** IEEE 802.11n
120.10  class CWInterfaceMBS

120.10.1  class CWInterfaceMBS

Function: CoreWLAN interface.
Notes:
Encapsulates an CoreWLAN interface providing controlled access to various interface operations such as
scanning, association, and IBSS creation, and providing a means to query and manipulate interface parame-
ters.

Requires Mac OS X 10.6 or newer.

Please note that MBS Plugin implements all methods from 10.6 to 10.9 in CoreWLAN. But Apple changes
things often, so some methods are only for older system, some only for newer. e.g. kCWErrorDomain is for
10.6 and CWErrorDomain for 10.7 and newer.

120.10.2  Methods

120.10.3  associateToEnterpriseNetwork(network as CWNetworkMBS, SecIdentityRef as Integer, username as string, password as string, byref error as NSErrorMBS) as boolean

Function: Connects to the given enterprise network.
Notes:

network: The network to which the interface will associate.
username: The username to use for IEEE 802.1X authentication.
password: The password to use for IEEE 802.1X authentication.
identity: The identity to use for IEEE 802.1X authentication. Holds the corresponding client certificate.
error: An NSError object passed by reference, which will be populated with the error code and the error
description if an error occurs during the execution of this method.

Returns a Boolean value which will indicate whether or not a failure occurred during execution. True indi-
cates no error occurred.

This method will block for the duration of the association. This operation may require an administrator
password.
120.10.4  `associateToNetwork(network as CWNetworkMBS, parameters as dictionary, byref error as NSErrorMBS) as boolean`

**Function:** Attempts to associate to the given CWNetworkMBS, with the given association parameters.

**Notes:**
- `parameters`: A dictionary object containing association parameters.
- `error`: An error object passed by reference, which will be populated with error code and error description if an error occurs during the execution of the method. This parameter is optional.

Returns a boolean value which will indicate whether or not a failure occurred. True indicates no error occurred.

See the association parameters defined in CWGlobalsMBS for more information. Certain networks will require specific authentication credentials for association (i.e. a network using WPA2 Personal authentication will require a passphrase). This method will block for the duration of the association. This method may prompt for an administrator password if the corresponding preference is enabled in the current configuration. See also:

- 120.10.5 associateToNetwork(network as CWNetworkMBS, password as string, byref error as NSErrorMBS) as boolean

120.10.5  `associateToNetwork(network as CWNetworkMBS, password as string, byref error as NSErrorMBS) as boolean`

**Function:** Associates to a given network using the given network passphrase.

**Notes:**
- `network`: The network to which the interface will associate.
- `password`: The network passphrase or key. Required for association to WEP, WPA Personal, and WPA2 Personal networks.
- `error`: An NSErrorMBS object passed by reference, which will be populated with the error code and the error description if an error occurs during the execution of this method. This parameter is optional and can be passed as nil.

Returns a boolean value which will indicate whether or not a failure occurred during execution. True indicates no error occurred.

This method will block for the duration of the association. This operation may require an administrator password.

Available on Mac OS X 10.7 or later.

See also:
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- 120.10.4 associateToNetwork(network as CWNetworkMBS, parameters as dictionary, byref error as NSErrorMBS) as boolean

120.10.6 cachedScanResults as CWNetworkMBS()

Function: The networks currently in the scan cache for the WLAN interface.
Notes:
Returns empty array in the case of an error.
Available on Mac OS X 10.7 or later.

120.10.7 commitConfiguration(config as CWConfigurationMBS, byref error as NSErrorMBS) as boolean

Function: Changing the interface configuration.
Notes:
config: An CWConfiguration object containing the desired changes to the current CW configuration preferences.
error: An error object passed by reference, which will be populated with error code and error description if an error occurs during the execution of the method. This parameter is optional.

Returns a boolean value which will indicate whether or not a failure occurred. True indicates no error occurred.

This method uses the SFAuthorization property of the given CWInterface object to commit the given configuration. The SFAuthorization property must be authorized with administrative privileges.
See also:

- 120.10.8 commitConfiguration(config as CWConfigurationMBS, SFAuthorizationRef as Integer, byref error as NSErrorMBS) as boolean

120.10.8 commitConfiguration(config as CWConfigurationMBS, SFAuthorizationRef as Integer, byref error as NSErrorMBS) as boolean

Function: Commit a configuration for the given WLAN interface.
Notes:
configuration: The configuration to commit.
authorization: An SFAuthorization object to use for authorizing the commit. This parameter is optional and can be passed as 0.
error: An NSError object passed by reference, which will be populated with the error code and the error description if an error occurs during the execution of this method.

Returns a Boolean value which will indicate whether or not a failure occurred during execution. True indicates no error occurred.

This method requires the caller have root privileges or obtain administrator privileges with the authorization parameter.
See also:

* 120.10.7 commitConfiguration(config as CWConfigurationMBS, byref error as NSErrorMBS) as boolean

### 120.10.9 Constructor


**Function:** Creates an CWInterface for the primary interface.

**Example:**

dim c as new CWInterfaceMBS

MsgBox c.description

See also:

* 120.10.10 Constructor(name as string)

### 120.10.10 Constructor(name as string)


**Function:** Creates an interface object linked to the interface of the given name.

**Example:**

dim c as new CWInterfaceMBS("en0")

MsgBox c.description

See also:

* 120.10.9 Constructor
120.10.11  disassociate


**Function:** Disassociates the CoreWLAN interface from the currently associated network.

**Notes:** This method is a no-op if the given CoreWLAN interface is not associated to a network. This method may prompt for an administrator password if the corresponding preference is enabled in the current configuration.

120.10.12  enableIBSSWithParameters as boolean


**Function:** Attempts to create a computer-to-computer network with the given parameters.

**Notes:**

- parameters: A dictionary object containing optional parameters for creating an IBSS network. This parameter is optional and may be passed as nil.
- error: An error object passed by reference, which will be populated with error code and error description if an error occurs during the execution of the method. This parameter is optional and can be passed as nil.

Return a boolean value which will indicate whether or not a failure occurred. True indicates no error occurred.

See the IBSS creation parameters defined in CWGlobals.h for more information. If no IBSS creation parameters are present, the default behavior is to create an open authentication computer-to-computer network using the machine name as the network name. This method may prompt for an administrator password if the corresponding preference is enabled in the current configuration.

See also:

- 120.10.13 enableIBSSWithParameters(byref error as NSErrorMBS) as boolean 16892
- 120.10.14 enableIBSSWithParameters(parameters as dictionary) as boolean 16893
- 120.10.15 enableIBSSWithParameters(parameters as dictionary, byref error as NSErrorMBS) as boolean 16893

120.10.13  enableIBSSWithParameters(byref error as NSErrorMBS) as boolean


**Function:** Attempts to create a computer-to-computer network with the given parameters.

**Notes:**

- parameters: A dictionary object containing optional parameters for creating an IBSS network. This parameter is optional and may be passed as nil.
- error: An error object passed by reference, which will be populated with error code and error description if an error occurs during the execution of the method. This parameter is optional and can be passed as nil.
Return a boolean value which will indicate whether or not a failure occurred. True indicates no error occurred.

See the IBSS creation parameters defined in CWGlobals.h for more information. If no IBSS creation parameters are present, the default behavior is to create an open authentication computer-to-computer network using the machine name as the network name. This method may prompt for an administrator password if the corresponding preference is enabled in the current configuration.

See also:

- 120.10.12 enableIBSSWithParameters as boolean
- 120.10.14 enableIBSSWithParameters(parameters as dictionary) as boolean
- 120.10.15 enableIBSSWithParameters(parameters as dictionary, byref error as NSErrorMBS) as boolean

**120.10.14 enableIBSSWithParameters(parameters as dictionary) as boolean**


**Function:** Attempts to create a computer-to-computer network with the given parameters.

**Notes:**

parameters: A dictionary object containing optional parameters for creating an IBSS network. This parameter is optional and may be passed as nil.
error: An error object passed by reference, which will be populated with error code and error description if an error occurs during the execution of the method. This parameter is optional and can be passed as nil.

Return a boolean value which will indicate whether or not a failure occurred. True indicates no error occurred.

See the IBSS creation parameters defined in CWGlobals.h for more information. If no IBSS creation parameters are present, the default behavior is to create an open authentication computer-to-computer network using the machine name as the network name. This method may prompt for an administrator password if the corresponding preference is enabled in the current configuration.

See also:

- 120.10.12 enableIBSSWithParameters as boolean
- 120.10.13 enableIBSSWithParameters(byref error as NSErrorMBS) as boolean
- 120.10.15 enableIBSSWithParameters(parameters as dictionary, byref error as NSErrorMBS) as boolean

**120.10.15 enableIBSSWithParameters(parameters as dictionary, byref error as NSErrorMBS) as boolean**


**Function:** Attempts to create a computer-to-computer network with the given parameters.
Notes:
parameters: A dictionary object containing optional parameters for creating an IBSS network. This parameter is optional and may be passed as nil.
error: An error object passed by reference, which will be populated with error code and error description if an error occurs during the execution of the method. This parameter is optional and can be passed as nil.

Return a boolean value which will indicate whether or not a failure occurred. True indicates no error occurred.

See the IBSS creation parameters defined in CWGlobals.h for more information. If no IBSS creation parameters are present, the default behavior is to create an open authentication computer-to-computer network using the machine name as the network name. This method may prompt for an administrator password if the corresponding preference is enabled in the current configuration.

See also:
• 120.10.12 enableIBSSWithParameters as boolean 16892
• 120.10.13 enableIBSSWithParameters(byref error as NSErrorMBS) as boolean 16892
• 120.10.14 enableIBSSWithParameters(parameters as dictionary) as boolean 16893

120.10.16  interfaceNames as String()

Function: Returns the list of BSD names for WLAN interfaces available on the current system.
Example:

dim names() as string = CWInterfaceMBS.interfaceNames
MsgBox Join(names,EndOfLine)

Notes:
Returns an array of strings representing the supported WLAN BSD interface names available on the current system (i.e. "en1", "en2"). If there are no supported interfaces for the current system, then this method will return an empty NSArray object.
Returns empty array in the case of an error.

Available on Mac OS X 10.7 or later.

120.10.17  interfaceWithName(name as string) as CWInterfaceMBS

Function: Queries the interface with the given name.
Example:
120.10. CLASS CWINTERFACEMBS

\[
dim c \text{ as } CWInterfaceMBS = CWInterfaceMBS.interfaceWithName("en0")
\]

MsgBox c.description

Notes: name: A string representing the name of an Airport interface.

120.10.18 isEqualToInterface(otherInterface as CWInterfaceMBS) as boolean

Function: Comparing interfaces.
Notes:
Two CWInterface objects are considered equal if their corresponding <i>name</i>and capabilities properties are equal.

Returns true if both interfaces are equal.

120.10.19 primaryInterface as CWInterfaceMBS

Function: Convenience method for getting an CWInterface object for the primary interface.
Example:
\[
dim c \text{ as } CWInterfaceMBS = CWInterfaceMBS.primaryInterface
\]

MsgBox c.name

120.10.20 scanForNetworksWithName(networkName as string, byref error as NSErrorMBS) as CWNetworkMBS()

Function: Scans for networks.
Notes:

networkName: The name (SSID) of the network for which to scan.
error: An NSErrorMBS object passed by reference, which will be populated with the error code and the error description if an error occurs during the execution of this method. This parameter is optional and can be passed as nil.
Returns an array of CWNetworkMBS objects.

If ssid parameter is present, a directed scan will be performed by the interface, otherwise a broadcast scan will be performed. This method will block for the duration of the scan.

Available on Mac OS X 10.7 or later.

120.10.21 scanForNetworksWithParameters as CWNetworkMBS()


Function: Performs a scan with the given CoreWLAN interface, returning any found networks.

Notes:
parameters: A dictionary object containing optional scan parameters which can be used to control the behavior of the scan. This parameter is optional.

error: A error object passed by reference, which will be populated with error code and error description if an error occurs during the execution of the method. This parameter is optional.

Returns an array containing CWNetworkMBS objects representing the networks found in the scan.

See the scan parameters defined in CWGlobalsMBS for controlling scan behavior. If no scan parameters are present, the default behavior is to perform a broadcast scan on active channels, for all supported PHY modes. This method will block for the duration of the scan.

See also:
- 120.10.22 scanForNetworksWithParameters(byref error as NSErrorMBS) as CWNetworkMBS() 16896
- 120.10.23 scanForNetworksWithParameters(parameters as dictionary) as CWNetworkMBS() 16897
- 120.10.24 scanForNetworksWithParameters(parameters as dictionary, byref error as NSErrorMBS) as CWNetworkMBS() 16898

120.10.22 scanForNetworksWithParameters(byref error as NSErrorMBS) as CWNetworkMBS()


Function: Performs a scan with the given CoreWLAN interface, returning any found networks.

Notes:
parameters: A dictionary object containing optional scan parameters which can be used to control the behavior of the scan. This parameter is optional.
error: A error object passed by reference, which will be populated with error code and error description if an error occurs during the execution of the method. This parameter is optional.

Returns an array containing CWNetworkMBS objects representing the networks found in the scan.

See the scan parameters defined in CWGlobalsMBS for controlling scan behavior. If no scan parameters are present, the default behavior is to perform a broadcast scan on active channels, for all supported PHY modes. This method will block for the duration of the scan.

See also:

- 120.10.21 scanForNetworksWithParameters as CWNetworkMBS() 16896
- 120.10.23 scanForNetworksWithParameters(parameters as dictionary) as CWNetworkMBS() 16897
- 120.10.24 scanForNetworksWithParameters(parameters as dictionary, byref error as NSErrorMBS) as CWNetworkMBS() 16898

120.10.23 scanForNetworksWithParameters(parameters as dictionary) as CWNetworkMBS()


Function: Performs a scan with the given CoreWLAN interface, returning any found networks.

Notes:

parameters: A dictionary object containing optional scan parameters which can be used to control the behavior of the scan. This parameter is optional.

error: A error object passed by reference, which will be populated with error code and error description if an error occurs during the execution of the method. This parameter is optional.

Returns an array containing CWNetworkMBS objects representing the networks found in the scan.

See the scan parameters defined in CWGlobalsMBS for controlling scan behavior. If no scan parameters are present, the default behavior is to perform a broadcast scan on active channels, for all supported PHY modes. This method will block for the duration of the scan.

See also:

- 120.10.21 scanForNetworksWithParameters as CWNetworkMBS() 16896
- 120.10.22 scanForNetworksWithParameters(byref error as NSErrorMBS) as CWNetworkMBS() 16896
- 120.10.24 scanForNetworksWithParameters(parameters as dictionary, byref error as NSErrorMBS) as CWNetworkMBS() 16898
120.10.24  \texttt{scanForNetworksWithParameters(parameters as dictionary, byref error as NSErrorMBS) as CWNetworkMBS()}

\textbf{Function:} Performs a scan with the given CoreWLAN interface, returning any found networks.
\textbf{Notes:}

parameters: A dictionary object containing optional scan parameters which can be used to control the behavior of the scan. This parameter is optional.

error: A error object passed by reference, which will be populated with error code and error description if an error occurs during the execution of the method. This parameter is optional.

Returns an array containing CWNetworkMBS objects representing the networks found in the scan.

See the scan parameters defined in CWGlobalsMBS for controlling scan behavior. If no scan parameters are present, the default behavior is to perform a broadcast scan on active channels, for all supported PHY modes. This method will block for the duration of the scan.
See also:

- 120.10.21 \texttt{scanForNetworksWithParameters as CWNetworkMBS()} 16896
- 120.10.22 \texttt{scanForNetworksWithParameters(byref error as NSErrorMBS) as CWNetworkMBS()} 16896
- 120.10.23 \texttt{scanForNetworksWithParameters(parameters as dictionary) as CWNetworkMBS()} 16897

120.10.25  \texttt{scanForNetworksWithSSID(ssid as memoryblock, byref error as NSErrorMBS) as CWNetworkMBS()}

\textbf{Function:} Scans for networks.
\textbf{Notes:}

ssid The SSID for which to scan.

error: An NSErrorMBS object passed by reference, which will be populated with the error code and the error description if an error occurs during the execution of this method. This parameter is optional and can be passed as nil.

Returns an array of CWNetworkMBS objects.

If ssid parameter is present, a directed scan will be performed by the interface, otherwise a broadcast scan will be performed. This method will block for the duration of the scan.

Available on Mac OS X 10.7 or later.
120.10. CLASS CWI\textsc{NFACEMBS}

120.10.26 setChannel(channel as UInt32) as boolean


**Function:** Sets the channel for the given CoreWLAN interface.

**Notes:**

channel: An integer representing the channel to which the CoreWLAN interface should be tuned.
error: A error object passed by reference, which will be populated with error code and error description if an error occurs during the execution of the method. This parameter is optional.

Returns a boolean value which will indicate whether or not a failure occurred. True indicates no error occurred.

The current channel cannot be changed if the CoreWLAN interface is associated to a network. channel must be supported by the given interface.

See also:

- 120.10.27 setChannel(channel as UInt32, byref error as NSErrorMBS) as boolean

120.10.27 setChannel(channel as UInt32, byref error as NSErrorMBS) as boolean


**Function:** Sets the channel for the given CoreWLAN interface.

**Notes:**

channel: An integer representing the channel to which the CoreWLAN interface should be tuned.
error: A error object passed by reference, which will be populated with error code and error description if an error occurs during the execution of the method. This parameter is optional.

Returns a boolean value which will indicate whether or not a failure occurred. True indicates no error occurred.

The current channel cannot be changed if the CoreWLAN interface is associated to a network. channel must be supported by the given interface.

See also:

- 120.10.26 setChannel(channel as UInt32) as boolean

120.10.28 setPairwiseMasterKey(key as Memoryblock, byref error as NSErrorMBS) as boolean


**Function:** Sets the interface pairwise master key (PMK).

**Notes:**

key: A memoryblock containing the pairwise master key (PMK).
error: An NSError object passed by reference, which will be populated with the error code and the error
description if an error occurs during the execution of this method.
Returns a Boolean value which will indicate whether or not a failure occurred during execution. True indi-
cates no error occurred.

Key must be 32 octets. If key is nil, this method clears the PMK for the interface.

### 120.10.29  `setPower(p as boolean) as boolean`

**Function:** Sets the power state for the given CoreWLAN interface.
**Notes:**

- power: A boolean value indicating the power state to which the CoreWLAN interface should be set. False
  indicates the "OFF" state.

- error: A error object passed by reference, which will be populated with error code and error description if
  an error occurs during the execution of the method. This parameter is optional.

Returns a boolean value which will indicate whether or not a failure occured. True indicates no error occured.

This method may prompt for an administrator password if the corresponding preference is enabled in the
current configuration.

See also:

- 120.10.30 `setPower(p as boolean, byref error as NSErrorMBS) as boolean`

### 120.10.30  `setPower(p as boolean, byref error as NSErrorMBS) as boolean`

**Function:** Sets the power state for the given CoreWLAN interface.
**Notes:**

- power: A boolean value indicating the power state to which the CoreWLAN interface should be set. False
  indicates the "OFF" state.

- error: A error object passed by reference, which will be populated with error code and error description if
  an error occurs during the execution of the method. This parameter is optional.

Returns a boolean value which will indicate whether or not a failure occured. True indicates no error occured.
This method may prompt for an administrator password if the corresponding preference is enabled in the current configuration.

See also:

- 120.10.29 setPower(p as boolean) as boolean

120.10.31 setWEPKey(key as Memoryblock, flags as Integer, index as Integer, byref error as NSErrorMBS) as boolean


**Function:** Sets the interface WEP key.

**Notes:**

- **key:** A memoryblock containing the WEP key.
- **flags:** The cipher key flags to use for the specified key. Combination of kWCipherKeyFlagsNone, kWCipherKeyFlagsUnicast, kWCipherKeyFlagsMulticast, kWCipherKeyFlagsTx or kWCipherKeyFlagsRx.
- **index:** Integer which default key index to use for the specified key.
- **error:** An NSError object passed by reference, which will be populated with the error code and the error description if an error occurs during the execution of this method.

Returns a boolean value which will indicate whether or not a failure occurred during execution. True indicates no error occurred.

Key must be 5 octets for WEP-40 or 13 octets for WEP-104. If key is nil, this method clears the WEP key for the interface. index must correspond to default key index 1-4.

120.10.32 setWLANChannel(channel as CWChannelMBS, byref error as NSErrorMBS) as boolean


**Function:** Sets the interface channel.

**Notes:**

- **channel:** A CWChannel object corresponding to the channel.
- **error:** An NSErrorMBS object passed by reference, which will be populated with the error code and the error description if an error occurs during the execution of this method. This parameter is optional and can be passed as nil.

A Boolean value which will indicate whether or not a failure occurred during execution. True indicates no error occurred.

The channel cannot be changed if the interface is associated to a network.
Available on Mac OS X 10.7 or later.

120.10.33  startIBSSModeWithSSID(ssidData as MemoryBlock, security as Integer, channel as Integer, password as string, byref error as NSErrorMBS) as boolean

Function: Creates a computer-to-computer (ad-hoc) network with the given network name, security type, and password on the specified channel.
Notes:
security: The security type to be used. kCWIBSSModeSecurityNone, kCWIBSSModeSecurityWEP40 or kCWIBSSModeSecurityWEP104.
channel: The channel on which the network will be created.
password: The password to be used. This parameter is not applicable to open system authentication.

Returns a Boolean value which will indicate whether or not a failure occurred during execution. True indicates no error occurred.

This operation may require an administrator password.

120.10.34  supportedChannels as Integer()

Function: Array of channels supported by the CoreWLAN interface for the active country code.
Notes: Dynamically queries the interface for the supported channels.

120.10.35  supportedInterfaces as String()

Function: Getting all supported interfaces
Notes: Returns an array containing strings representing the supported CoreWLAN interface names available on the current system (i.e. "en1", "en2"). If there are no supported interfaces for the current system, then this method will return an empty array.

120.10.36  supportedPHYModes as Integer()

Function: Array of PHY modes supported by the CoreWLAN interface.
Notes: Dynamically queries the interface for the supported PHY modes.

**120.10.37 supportedWLANChannels as CWChannelMBS()**


**Function:** An array of channels supported by the interface for the active country code.

**Example:**
```vbnet
dim c as CWInterfaceMBS = CWInterfaceMBS.interfaceWithName("en0")
dim channels() as CWChannelMBS = c.supportedWLANChannels
dim lines() as string
for each ch as CWChannelMBS in channels
    lines.append str(ch.channelNumber) + ":" + str(ch.channelBand)
next
MsgBox join(lines, ",")
```

Notes:
Dynamically queries the interface for the supported channels. Returns an array of CWChannel objects, or nil in the case of an error.

Available on Mac OS X 10.7 or later.

**120.10.38 Properties**

**120.10.39 activePHYMode as Integer**


**Function:** The current active PHY modes for the interface.

**Example:**
```vbnet
dim c as CWInterfaceMBS = CWInterfaceMBS.interfaceWithName("en0")
MsgBox str(c.activePHYMode)
```

Notes:
Dynamically queries the interface for the current active PHY mode. Returns kCWPHYModeNone in the case of an error, or if the interface is not participating in a network.

Available on Mac OS X 10.7 or later.
(Read only property)
120.10.40  bssid as string

Function: Current BSSID of the CoreWLAN interface.
Notes:
Dynamically queries the interface for the current BSSID.
(Read only property)

120.10.41  bssidData as Memoryblock

Function: Current BSSID of the CoreWLAN interface.
Notes:
Dynamically queries the interface for the current BSSID.
(Read only property)

120.10.42  channel as Integer

Function: Current channel of the CoreWLAN interface.
Notes:
Dynamically queries the interface for the current channel.
(Read only property)

120.10.43  configuration as CWConfigurationMBS

Function: Current stored configuration for the CoreWLAN interface.
Notes: (Read only property)

120.10.44  countryCode as string

Notes:
Dynamically queries the interface for the current country code.  
(Read only property)

120.10.45 description as string

Function: The object description.  
Notes: (Read only property)

120.10.46 deviceAttached as boolean

Function: The interface has its corresponding hardware attached.  
Example:  
```vbnet
dim c as CWInterfaceMBS = CWInterfaceMBS.interfaceWithName("en0")
MsgBox str(c.deviceAttached)
```
Notes:  
Returns false in the case of an error.  
Available on Mac OS X 10.7 or later.  
(Read only property)

120.10.47 Handle as Integer

Function: The internal object reference.  
Notes: (Read and Write property)

120.10.48 hardwareAddress as string

Function: The hardware media access control (MAC) address for the interface, returned as a UTF-8 string.  
Example:  
```vbnet
dim c as CWInterfaceMBS = CWInterfaceMBS.interfaceWithName("en0")
MsgBox c.hardwareAddress
```
Notes:
The standard format for printing a MAC-48 address <00:00:00:00:00:00> is used to represent the MAC address as a string. Returns "" in the case of an error.

Available on Mac OS X 10.7 or later.
(Read only property)

### 120.10.49 interfaceMode as Integer

**Function:** The current mode for the interface.  
**Example:**
```
dim c as CWInterfaceMBS = CWInterfaceMBS.interfaceWithName("en0")  
MsgBox str(c.interfaceMode)
```

Notes:
Dynamically queries the interface for the current mode. Returns kCWInterfaceModeNone in the case of an error, or if the interface is not participating in a network.

Available on Mac OS X 10.7 or later.  
(Read only property)

### 120.10.50 interfaceName as string

**Function:** The BSD name of the interface.  
**Example:**
```
dim c as CWInterfaceMBS = CWInterfaceMBS.interfaceWithName("en0")  
MsgBox c.interfaceName  
MsgBox str(c.noiseMeasurement)
```

Notes:
Available on Mac OS X 10.7 or later.  
(Read only property)
120.10.51  interfaceState as Integer

Function: Current state of the CoreWLAN interface.
Notes: Dynamically queries the interface for the current interface state.  
(Read only property)

120.10.52  name as string

Function: BSD name for the CoreWLAN interface.
Example:  
  dim c as CWInterfaceMBS = CWInterfaceMBS.primaryInterface
  MsgBox c.name

Notes: (Read only property)

120.10.53  noise as Double

Function: Current aggregate noise measurement (dBm) of the CoreWLAN interface.
Notes: Dynamically queries the interface for the current aggregate noise measurement.  
(Read only property)

120.10.54  noiseMeasurement as Integer

Function: The current aggregate noise measurement (dBm) for the interface.
Example:  
  dim c as CWInterfaceMBS = CWInterfaceMBS.interfaceWithName("en0")
  MsgBox str(c.noiseMeasurement)
Notes:
Dynamically queries the interface for the current aggregate noise measurement.
Returns 0 in the case of an error, or if the interface is not participating in a network.

Available on Mac OS X 10.7 or later.
(Read only property)

120.10.55  opMode as Integer

Function: Current operation mode of the CoreWLAN interface.
Notes:
Dynamically queries the interface for the current operation mode.
(Read only property)

120.10.56  phyMode as Integer

Function: Current active PHY mode of the CoreWLAN interface.
Notes:
Dynamically queries the interface for the current active PHY mode.
(Read only property)

120.10.57  power as boolean

Function: Current power state for the CoreWLAN interface.
Notes:
Dynamically queries the interface for the current power state.
(Read only property)
120.10. **CLASS CWINTERFACEMBS**

### 120.10.58 powerOn as boolean


**Function:** The interface power state is set to "ON".

**Example:**

```vba
dim c as CWInterfaceMBS = CWInterfaceMBS.interfaceWithName("en0")
MsgBox str(c.rssiValue)
```

**Notes:**

Available on Mac OS X 10.7 or later.
(Read only property)

### 120.10.59 powerSave as boolean


**Function:** Current power save state for the CoreWLAN interface.

**Notes:**

Dynamically queries the interface for the current power save state.
Introduced in 10.6, deprecated in 10.7 and gone in 10.9.
(Read only property)

### 120.10.60 rssi as Double


**Function:** Current aggregate RSSI measurement (dBm) of the CoreWLAN interface.

**Notes:**

Dynamically queries the interface for the current aggregate RSSI measurement.
(Read only property)

### 120.10.61 rssiValue as Integer


**Function:** The current aggregate received signal strength indication (RSSI) measurement (dBm) for the interface.

**Example:**

```vba
dim c as CWInterfaceMBS = CWInterfaceMBS.interfaceWithName("en0")
MsgBox str(c.rssiValue)
```
Notes:
Dynamically queries the interface for the current aggregate RSSI measurement.
Returns 0 in the case of an error, or if the interface is not participating in a network.
Available on Mac OS X 10.7 or later.
(Read only property)

120.10.62 security as Integer

Function: The current security mode for the interface.
Notes:
Dynamically queries the interface for the security mode. Returns kCWSecurityUnknown in the case of an
error, or if the interface is not participating in a network.
Available on Mac OS X 10.7 or later.
(Read only property)

120.10.63 securityMode as Integer

Function: Current security mode of the CoreWLAN interface.
Notes:
Dynamically queries the interface for the current security mode.
(Read only property)

120.10.64 serviceActive as boolean

Function: The interface has its corresponding network service enabled.
Example:

```vbscript
dim c as CWInterfaceMBS = CWInterfaceMBS.interfaceWithName("en0")
MsgBox str(c.serviceActive)
```
120.10. CLASS CWINTERFACEMBS

Notes:
Returns false in the case of an error.
Available on Mac OS X 10.7 or later.
(Read only property)

120.10.65 ssid as string

Function: Current SSID of the CoreWLAN interface.
Notes: Dynamically queries the interface for the current SSID.
(Read only property)

120.10.66 ssidData as Memoryblock

Function: The current service set identifier (SSID) for the interface, returned as data.
Notes: Dynamically queries the interface for the current SSID. The SSID is 1-32 octets.
Returns nil in the case of an error, or if the interface is not participating in a network.
Available on Mac OS X 10.7 or later.
(Read only property)

120.10.67 supportsAES_CCM as boolean

Function: CoreWLAN interface supports AES-CCM (IEEE 802.11i Advanced Encryption Standard -
Counter Mode with Cipher-Block Chaining Message Authentication Code).
Notes: (Read only property)

120.10.68 supportsHostAP as boolean

Function: CoreWLAN interface supports host access point mode.
120.10.69 supportsIBSS as boolean

**Function:** CoreWLAN interface supports IBSS networks (IEEE 802.11 Independent Basic Service Set).  
**Notes:** (Read only property)

120.10.70 supportsMonitorMode as boolean

**Function:** CoreWLAN interface supports monitor mode.  
**Notes:** (Read only property)

120.10.71 supportsPMGT as boolean

**Function:** CoreWLAN interface supports power save modes.  
**Notes:** (Read only property)

120.10.72 supportsShortGI20MHz as boolean

**Function:** CoreWLAN interface supports short guard interval in 20MHz channels.  
**Notes:** (Read only property)

120.10.73 supportsShortGI40MHz as boolean

**Function:** CoreWLAN interface supports short guard interval in 40MHz channels.  
**Notes:** (Read only property)

120.10.74 supportsTKIP as boolean

**Function:** CoreWLAN interface supports TKIP (IEEE 802.11i Temporal Key Integrity Protocol).
120.10. CLASS CWINTERFACEMBS

Notes: (Read only property)

120.10.75  supportsTSN as boolean

Function: CoreWLAN interface supports TSN authentication (Transitional Security Network).
Notes: (Read only property)

120.10.76  supportsWEP as boolean

Function: CoreWLAN interface supports WEP authentication (IEEE 802.11 Wired Equivalent Privacy).
Notes: (Read only property)

120.10.77  supportsWME as boolean

Function: CoreWLAN interface supports WME (IEEE 802.11e Wireless Multimedia Extensions).
Notes: (Read only property)

120.10.78  supportsWoW as boolean

Function: CoreWLAN interface supports wake on wireless capability.
Notes: (Read only property)

120.10.79  supportsWPA as boolean

Function: CoreWLAN interface supports WPA (Wi-Fi Alliance Wi-Fi Protected Access).
Notes: (Read only property)

120.10.80  supportsWPA2 as boolean

Function: CoreWLAN interface supports WPA2 (Wi-Fi Alliance Wi-Fi Protected Access 2).
120.10.81 transmitPower as Integer

Function: The current transmit power (mW) for the interface.
Notes: Dynamically queries the interface for the current transmit power.
Returns 0 in the case of an error.
Available on Mac OS X 10.7 or later.
(Read only property)

120.10.82 transmitRate as Double

Function: The current transmit rate (Mbps) for the interface.
Notes: Dynamically queries the interface for the current transmit rate.
Returns 0 in the case of an error, or if the interface is not participating in a network.
Available on Mac OS X 10.7 or later.
(Read only property)

120.10.83 txPower as Double

Function: Current target transmit power (mW) of the CoreWLAN interface.
Notes: Dynamically queries the interface for the current transmit power.
(Read only property)

120.10.84 txRate as Double

Function: Current transmit rate (Mbps) of the CoreWLAN interface.
Notes:
120.10. CLASS CWINTERFACE MBS

Dynamically queries the interface for the current transmit rate.
(Read only property)

120.10.85 wlanChannel as CWChannelMBS

Function: The current channel for the interface.
Notes: Dynamically queries the interface for the current channel. Returns nil in the case of an error, or if the interface is not participating in a network.

Available on Mac OS X 10.7 or later.
(Read only property)
120.11 class CWMutableConfigurationMBS

120.11.1 class CWMutableConfigurationMBS

Function: Encapsulates a mutable configuration for an AirPort WLAN interface.  
Notes: 
Available on Mac OS X 10.7 or later.  
Please also check the documentation from Apple for the CWMutableConfiguration class.  
Subclass of the CWConfigurationMBS class.

120.11.2 Methods

120.11.3 Constructor

Function: Creates a new mutable configuration.

120.11.4 setNetworkProfiles(values() as CWNetworkProfileMBS)

Function: An array of remembered CWNetworkProfileMBS objects.  
Notes: The order of this array corresponds to the order in which the CWNetworkProfileMBS objects participate in the auto-join process.

120.11.5 setRememberJoinedNetworks(value as boolean)

Function: AirPort client will remember all joined networks.

120.11.6 setRequireAdministratorForAssociation(value as boolean)

Function: Require an administrator password to change networks.
120.11.7 `setRequireAdministratorForIBSSMode(value as boolean)`

**Function:** Require an administrator password to create a computer-to-computer network.

120.11.8 `setRequireAdministratorForPower(value as boolean)`

**Function:** Require an administrator password to change the interface power state.
120.12 class CWMutableNetworkProfileMBS

120.12.1 class CWMutableNetworkProfileMBS

Function: Encapsulates a mutable network profile entry.
Notes:
Available on Mac OS X 10.7 or later.
Please also check the documentation from Apple for the CWMutableNetworkProfile class.
Subclass of the CWNetworkProfileMBS class.

120.12.2 Methods

120.12.3 Constructor

Function: The constructor.

120.12.4 setSecurity(value as Integer)

Function: Sets the security mode for the network profile.
Notes: See kCWSecurity* constants.

120.12.5 setSsidData(data as Memoryblock)

Function: Sets the service set identifier (SSID) for the network profile, returned as data.
Notes: The SSID is 1-32 octets.
120.13. class CWNetworkMBS

120.13.1. class CWNetworkMBS

Function: CoreWLAN wireless (IEEE 802.11) network.
Notes:
Encapsulates a wireless network providing read-only accessors to various properties of the network.

Requires Mac OS X 10.6 or newer.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

120.13.2. Methods

120.13.3. Constructor

Function: The private constructor.

120.13.4. copy as CWNetworkMBS

Function: Creates a copy of this object.

120.13.5. isEqualToNetwork(network as CWNetworkMBS) as boolean

Notes:
Returns true if the network objects are equal.

Two CWNetworkMBS objects are considered equal if their corresponding ssid, securityMode, and isIBSS properties are equal.
120.13.6  **Operator Compare(profile as CWNetworkMBS) as Integer**

**Function:** Compares two networks.

120.13.7  **supportsPHYMode(phyMode as Integer) as boolean**

**Function:** Method for determining which PHY modes a network supports.  
**Notes:** True if the network supports the specified PHY mode.  
Available on Mac OS X 10.7 or later.

120.13.8  **supportsSecurity(security as Integer) as boolean**

**Function:** Getting supported security types  
**Notes:** True if the network supports the specified security type.  
Method for determining which security types a network supports.  
Available on Mac OS X 10.7 or later.

120.13.9  **Properties**

120.13.10  **beaconInterval as Integer**

**Function:** The beacon interval (ms) for the network.  
**Notes:** Available on Mac OS X 10.7 or later.  
(Read only property)
120.13. CLASS CWNETWORKMBS

120.13.11  bssid as string

Function: Basic service set identifier for the given CWNetworkMBS.
Notes: (Read only property)

120.13.12  bssidData as Memoryblock

Function: Basic service set identifier for the given CWNetworkMBS.
Notes: (Read only property)

120.13.13  channel as Integer

Function: Channel number for the given CWNetworkMBS.
Notes: (Read only property)

120.13.14  countryCode as string

Notes: Available on Mac OS X 10.7 or later.
(Read only property)

120.13.15  description as string

Function: The object description.
Notes: (Read only property)

120.13.16  Handle as Integer

Function: The internal object reference.
120.13.17  **ibss as boolean**

**Function:** The network is an IBSS network.  
**Notes:**  
Available on Mac OS X 10.7 or later.  
(Read only property)

120.13.18  **ieData as Memoryblock**

**Function:** Information element data included in beacon or probe response.  
**Notes:**  
(Read only property)

120.13.19  **informationElementData as Memoryblock**

**Function:** Information element data included in beacon or probe response frames.  
**Notes:**  
Available on Mac OS X 10.7 or later.  
(Read only property)

120.13.20  **isIBSS as boolean**

**Function:** Whether or not the given CWNetworkMBS is a computer-to-computer network.  
**Notes:**  
(Read only property)

120.13.21  **noise as Double**

**Function:** Aggregate noise value for the given CWNetworkMBS.  
**Notes:**  
(Read only property)
120.13.22 noiseMeasurement as Integer

**Function:** The aggregate noise measurement (dBm) for the network.
**Notes:**
Available on Mac OS X 10.7 or later.
(Read only property)

120.13.23 phyMode as Integer

**Function:** Physical layer mode for the given CWNetworkMBS.
**Notes:** (Read only property)

120.13.24 rssi as Double

**Function:** Aggregate RSSI value for the given CWNetworkMBS.
**Notes:** (Read only property)

120.13.25 rssiValue as Integer

**Function:** The aggregate received signal strength indication (RSSI) measurement (dBm) for the network.
**Notes:**
Available on Mac OS X 10.7 or later.
(Read only property)

120.13.26 securityMode as Integer

**Function:** Security mode for the given CWNetworkMBS.
**Notes:** (Read only property)
120.13.27  ssid as string

Function: Service set identifier for the given CWNetworkMBS.
Notes: (Read only property)

120.13.28  ssidData as Memoryblock

Function: The service set identifier (SSID) for the network, returned as data.
Notes: The SSID is defined as 1-32 octets.
(Read only property)

120.13.29  wirelessProfile as CWWirelessProfileMBS

Function: Stored CWWirelessProfile for the given CWNetworkMBS.
Notes: (Read only property)

120.13.30  wlanChannel as CWChannelMBS

Function: The channel for the network.
Notes: Available on Mac OS X 10.7 or later.
(Read only property)
120.14. class CWNetworkProfileMBS

120.14.1 class CWNetworkProfileMBS

Function: The class for a network profile.
Notes:
Encapsulates an immutable network profile entry.

Available on Mac OS X 10.7 or later.
Please also check the documentation from Apple for the CWNetworkProfile class.

120.14.2 Methods

120.14.3 Constructor

Function: Convenience method for getting a CWNetworkProfile object.
See also:

- 120.14.4 Constructor(networkProfile as CWNetworkProfileMBS)

120.14.4 Constructor(networkProfile as CWNetworkProfileMBS)

Function: Convenience method for getting a CWNetworkProfile object initialized with the given CWNetworkProfile object.
See also:

- 120.14.3 Constructor

120.14.5 copy as CWNetworkProfileMBS

Function: Creates a copy of the object.
120.14.6 isEqualToNetworkProfile(networkProfile as CWNetworkProfileMBS) as boolean

**Function:** Comparing network profiles.
**Notes:**

networkProfile: The CWNetworkProfile object with which to compare the receiver.

CWNetworkMBS objects are considered equal if their corresponding ssidData and securityType properties are equal.

120.14.7 mutableCopy as CWMutableNetworkProfileMBS

**Function:** Creates a mutable copy of the object.

120.14.8 networkProfile as CWNetworkProfileMBS

**Function:** Convenience method for getting a CWNetworkProfile object.

120.14.9 networkProfileWithNetworkProfile(networkProfile as CWNetworkProfileMBS) as CWNetworkProfileMBS

**Function:** Convenience method for getting a CWNetworkProfile object initialized with the given CWNetworkProfile object.
**Notes:** networkProfile: The CWNetworkProfile object to use to initialize a new CWNetworkProfile object.

120.14.10 Operator_Compare(networkProfile as CWNetworkProfileMBS) as Integer

**Function:** Compares two network profiles.
120.14.11 Properties

120.14.12 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

120.14.13 security as Integer

Function: The security mode for the network profile.
Notes:
See kCWSecurity* constants.
(Read only property)

120.14.14 ssid as string

Function: The service set identifier (SSID) for the network profile, encoded as a string.
Notes:
If the SSID can not be encoded as a valid UTF-8 or WinLatin1 string, this method returns "".
(Read only property)

120.14.15 ssidData as Memoryblock

Function: The service set identifier (SSID) for the network profile, returned as data.
Notes:
The SSID is 1-32 octets.
(Read only property)
120.15  class CWWiFiClientMBS

120.15.1  class CWWiFiClientMBS

Function: The interface to the Wi-Fi subsystem on OS X.
Notes: Provides access to all Wi-Fi interfaces and allows Wi-Fi clients to setup event notifications.

CWWiFiClientMBS objects are heavy objects, therefore, clients of the CoreWLAN framework should use a
single, long-running instance rather than creating several short-lived instances.

The CWWiFiClientMBS object should be used to instantiate CWInterfaceMBS objects rather than using a
CWInterfaceMBS initializer directly.

MBS Plugin make sure that all events are routed to main thread.

Available on MacOS 10.10 or newer.

120.15.2  Methods

120.15.3  available as boolean

Function: Whether this class is available.
Notes: Returns true on MacOS 10.10 or newer.

120.15.4  Constructor

Function: Initializes a CWWiFiClient object.
Notes: Available on MacOS 10.10 or newer.

120.15.5  Destructor

Function: The destructor.
120.15. CLASS CWIFICLIENTMBS

120.15.6 interfaceNames as String()

**Function:** Returns the list of available Wi-Fi interface names (e.g. "en0").
**Notes:**
An Array of string corresponding to Wi-Fi interface names.
If no Wi-Fi interfaces are available, this method will return an empty array.
Returns nil if an error occurs.

120.15.7 interfaces as CWInterfaceMBS()

**Function:** Returns all available Wi-Fi interfaces.
**Notes:**
If no Wi-Fi interfaces are available, this method will return an empty array.
Returns nil if an error occurs.

120.15.8 interfaceWithName(name as string) as CWInterfaceMBS

**Function:** Get the CWInterface object bound to the Wi-Fi interface with a specific interface name.
**Notes:**
interfaceName: The name of an available Wi-Fi interface.

Use interfaceNames function to get a list of available Wi-Fi interface names.
Returns a CWInterface object for the default Wi-Fi interface if no interface name is specified.

120.15.9 startMonitoring(EventType as integer, byref error as NSErrorMBS) as boolean

**Function:** Register for specific Wi-Fi event notifications.
**Notes:**
type: A CWEventType value.
error: An NSError object passed by reference, which upon return will contain the error if an error occurs.

Return a boolean value indicating whether or not an error occurred. True indicates no error occurred.
120.15.10  stopMonitoring(EventType as integer, byref error as NSErrorMBS) as boolean

Function: Unregister for specific Wi-Fi event notifications.
Notes:
type: A CWEventType value.
error: An NSError object passed by reference, which upon return will contain the error if an error occurs.

Returns a boolean value indicating whether or not an error occurred. true indicates no error occurred.

120.15.11  stopMonitoringAllEvents(byref error as NSErrorMBS) as boolean

Function: Unregister for all Wi-Fi event notifications.
Notes:
error: An NSError object passed by reference, which upon return will contain the error if an error occurs.

Returns a boolean value indicating whether or not an error occurred. true indicates no error occurred.

120.15.12  Properties

120.15.13  CWInterface as CWInterfaceMBS

Function: Returns the CWInterface object for the default Wi-Fi interface.
Notes:
This method is named CWInterface as the name interface would cause an error in Xojo.
(Read only property)

120.15.14  Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)
120.15. Events

120.15.16 `bssidDidChangeForWiFiInterfaceWithName(interfaceName as String)`

Function: Invoked when the current BSSID changes.
Notes:

interfaceName: The name of the Wi-Fi interface.

Use `startMonitoring` with the CWEventTypeBSSIDDidChange event type to register for BSSID event notifications.
Use `CWInterfaceMBS.bssid` to query the current BSSID.

120.15.17 `clientConnectionInterrupted`

Function: Invoked if the connection to the Wi-Fi subsystem is temporarily interrupted.
Notes:

All event notifications for which the Wi-Fi client has registered will be automatically re-registered if the connection is interrupted.
The Wi-Fi client should re-sync any local state which is updated as a result of Wi-Fi event notifications.

120.15.18 `clientConnectionInvalidated`

Function: Invoked if the connection to the Wi-Fi subsystem is permanently invalidated.

120.15.19 `countryCodeDidChangeForWiFiInterfaceWithName(interfaceName as String)`

Function: Invoked when the currently adopted country code changes.
Notes:

interfaceName: The name of the Wi-Fi interface.

Use `startMonitoring` with the CWEventTypeCountryCodeDidChange event type to register for country code event notifications.
Use CWInterfaceMBS.countryCode to query the currently adopted country code.

120.15.20  linkDidChangeForWiFiInterfaceWithName(interfaceName as String)
Function: Invoked when the Wi-Fi link state changes.
Notes:
interfaceName: The name of the Wi-Fi interface.

Use startMonitoring with the CWEventTypeLinkDidChange event type to register for link event notifications.

120.15.21  linkQualityDidChangeForWiFiInterfaceWithName(interfaceName as String, rssi as Integer, transmitRate as double)
Function: Invoked when the Wi-Fi link quality changes.
Notes:
interfaceName: The name of the Wi-Fi interface.
rssi: The RSSI value for the currently associated network on the Wi-Fi interface.
transmitRate: The transmit rate for the currently associated network on the Wi-Fi interface.

Use startMonitoring with the CWEventTypeLinkQualityDidChange event type to register for link quality event notifications.
Use CWInterfaceMBS.rssiValue and CWInterfaceMBS.transmitRate to query the current RSSI and transmit rate, respectively.

120.15.22  modeDidChangeForWiFiInterfaceWithName(interfaceName as String)
Function: Invoked when the Wi-Fi operating mode changes.
Notes:
interfaceName: The name of the Wi-Fi interface.

Use startMonitoring with the CWEventTypeModeDidChange event type to register for interface mode event notifications.
Use CWInterfaceMBS.interfaceMode to query the current operating mode.
powerStateDidChangeForWiFiInterfaceWithName(interfaceName as String)

Function: Invoked when the Wi-Fi power state changes.

Notes:

interfaceName: The name of the Wi-Fi interface.

Use startMonitoring with the CWEventTypePowerDidChange event type to register for power event notifications.
Use CWInterfaceMBS.powerOn to query the current Wi-Fi power state.

rangingReportEventForWiFiInterfaceWithName(interfaceName as String, rangingData() as Dictionary, error as NSErrorMBS)

Function: Invoked when WiFi ranging measurement completed.

Notes:

interfaceName: The name of the Wi-Fi interface.
rangingData: Dictionary containing distance measurement data.

Use startMonitoring with the CWEventTypeRangingReportEvent event type to register for ranging event notifications.

scanCacheUpdatedForWiFiInterfaceWithName(interfaceName as String)

Function: Invoked when the Wi-Fi interface scan cache is updated with new scan results.

Notes:

interfaceName: The name of the Wi-Fi interface.

Use startMonitoring with the CWEventTypeScanCacheUpdated event type to register for scan cache event notifications.
Use CWInterfaceMBS.cachedScanResults to query scan cache results from the last scan.
**120.15.26 ssidDidChangeForWiFiInterfaceWithName(interfaceName as String)**

**Function:** Invoked when the current SSID changes.  
**Notes:**  
`interfaceName`: The name of the Wi-Fi interface.

Use `startMonitoring` with the `CWEventTypeSSIDDidChange` event type to register for SSID event notifications.  
Use `CWInterfaceMBS.ssidData` or `CWInterfaceMBS.ssid` to query the current SSID.

**120.15.27 virtualInterfaceStateChangedForWiFiInterfaceWithName(interfaceName as String)**

**Function:** Invoked when any state of WiFi virtual interface changes.  
**Notes:**  
`interfaceName`: The name of the Wi-Fi interface.

Use `startMonitoring` with the `CWEventTypeVirtualInterfaceStateChanged` event type to register for virtual interface state changed notifications.

**120.15.28 Constants**

**120.15.29 CWEventTypeBSSIDDidChange = 3**

MBS MacFrameworks Plugin, Plugin Version: 18.2. **Function:** One of the Wi-Fi event types used in `CWWiFiClientMBS.startMonitoring`.  
**Notes:** Posted when the current BSSID of any Wi-Fi interface changes.

**120.15.30 CWEventTypeCountryCodeDidChange = 4**

MBS MacFrameworks Plugin, Plugin Version: 18.2. **Function:** One of the Wi-Fi event types used in `CWWiFiClientMBS.startMonitoring`.  
**Notes:** Posted when the adopted country code of any Wi-Fi interface changes.
120.15.31  **CWEventTypeEnumlinkDidChange = 5**

MBS MacFrameworks Plugin, Plugin Version: 18.2. **Function:** One of the Wi-Fi event types used in CWWiFiClientMBS.startMonitoring.
**Notes:** Posted when the link state for any Wi-Fi interface changes.

120.15.32  **CWEventTypeEnumlinkQualityDidChange = 6**

MBS MacFrameworks Plugin, Plugin Version: 18.2. **Function:** One of the Wi-Fi event types used in CWWiFiClientMBS.startMonitoring.
**Notes:** Posted when the RSSI or transmit rate for any Wi-Fi interface changes.

120.15.33  **CWEventTypeEnummodeDidChange = 7**

MBS MacFrameworks Plugin, Plugin Version: 18.2. **Function:** One of the Wi-Fi event types used in CWWiFiClientMBS.startMonitoring.
**Notes:** Posted when the operating mode of any Wi-Fi interface changes.

120.15.34  **CWEventTypeEnumnone = 0**

MBS MacFrameworks Plugin, Plugin Version: 18.2. **Function:** One of the Wi-Fi event types used in CWWiFiClientMBS.startMonitoring.
**Notes:** No event type specified.

120.15.35  **CWEventTypeEnumpowerDidChange = 1**

MBS MacFrameworks Plugin, Plugin Version: 18.2. **Function:** One of the Wi-Fi event types used in CWWiFiClientMBS.startMonitoring.
**Notes:** Posted when the power state of any Wi-Fi interface changes.

120.15.36  **CWEventEnumTypeRangingReportEvent = 10**

MBS MacFrameworks Plugin, Plugin Version: 18.2. **Function:** One of the Wi-Fi event types used in CWWiFiClientMBS.startMonitoring.
**Notes:** Posted when WiFi ranging measurement completed.
120.15.37 CWEvnetTypeScanCacheUpdated = 8

MBS MacFrameworks Plugin, Plugin Version: 18.2. **Function:** One of the Wi-Fi event types used in CWWiFiClientMBS.startMonitoring.
**Notes:** Posted when the scan cache of any Wi-Fi interface is updated with new scan results.

120.15.38 CWEvnetTypeSSIDDidChange = 2

MBS MacFrameworks Plugin, Plugin Version: 18.2. **Function:** One of the Wi-Fi event types used in CWWiFiClientMBS.startMonitoring.
**Notes:** Posted when the current SSID of any Wi-Fi interface changes.

120.15.39 CWEvnetTypeVirtualInterfaceStateChanged = 9

MBS MacFrameworks Plugin, Plugin Version: 18.2. **Function:** One of the Wi-Fi event types used in CWWiFiClientMBS.startMonitoring.
**Notes:** Posted when any state of any Wi-Fi virtual interface changes.
class CWWirelessProfileMBS

class CWWirelessProfileMBS

Encapsulates a stored wireless profile entry.

Requires Mac OS X 10.6 or newer.

Methods

Constructor

Creates an CWWirelessProfile.

copy as CWWirelessProfileMBS

Creates a copy of this object.

isEqualToProfile(profile as CWWirelessProfileMBS) as boolean

Comparing wireless profiles.

Returns true if both profiles are equal.

Two CWWirelessProfile objects are considered equal if all their corresponding properties are equal.

Operator_Compare(profile as CWWirelessProfileMBS) as Integer

Compares two profiles.
120.16.7 profile as CWWirelessProfileMBS

**Function:** Convenience method for getting a new CWWirelessProfile object.

120.16.8 Properties

120.16.9 description as string

**Function:** The object description.
**Notes:** (Read only property)

120.16.10 Handle as Integer

**Function:** The internal object reference.
**Notes:** (Read and Write property)

120.16.11 passphrase as string

**Function:** The passphrase from the default login keychain for the given CWWirelessProfile.
**Notes:**
This method may prompt the user to allow access to their default login keychain.
(Read and Write property)

120.16.12 securityMode as Double

**Function:** Security mode for the given CWWirelessProfile.
**Notes:** (Read and Write property)
120.16. CLASS CWWIRELESSPROFILEMBS

120.16.13  ssid as string

Function: Wireless network name for the given CWWirelessProfile.
Notes: (Read and Write property)

120.16.14  user8021XProfile as CW8021XProfileMBS

Function: User CW8021XProfile for the given CWWirelessProfile.
Notes: (Read and Write property)
120.17 class DarwinPingMBS

120.17.1 class DarwinPingMBS

MBS Network Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class to do a ping on Mac OS X. **Deprecated:** This item is deprecated and should no longer be used. **Notes:** This class has still issues, so you may prefer to run ping in the shell class.

120.17.2 Methods

120.17.3 Ping(HostToPing as string, TimeOutMS as Integer, TimeToLife as Integer) as Integer

MBS Network Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Starts a syncron ping. **Notes:** This method does not return until the time passed or the ping response was received. Return value is a platform dependend error code. 0 is successful.

120.17.4 SimplePing(HostToPing as string, NumberOfPacketsToSend as Integer, PingTimeoutInSeconds as Integer, ReturnimmediatelyAfterReply as Integer) as Integer

MBS Network Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Starts an asyncron ping. **Notes:** This method will call the events and return when it finished. This method can be called in a thread. Return value is a platform dependend error code. 0 is successful.

120.17.5 Properties

120.17.6 HostToPing as String

MBS Network Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The value used in the Ping command. **Notes:** (Read only property)
120.17.7  **NumberOfPacketsToSend as Integer**

MBS Network Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The value used in the Ping method.  
**Notes:** (Read only property)

120.17.8  **PingTimeoutInSeconds as Integer**

MBS Network Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The ping timeout to use.  
**Notes:**  
0 for default.  
(Read only property)

120.17.9  **ReturnimmediatelyAfterReply as Integer**

MBS Network Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The value used in the Ping method.  
**Notes:** (Read only property)

120.17.10  **TimeToLife as Integer**

MBS Network Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The time to life value for the ping packets.  
**Notes:**  
a value between 0 and 255.  
(Read only property)

120.17.11  **Events**

120.17.12  **AddressResolved(ip as string)**

MBS Network Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The IP for the domain name was resolved.
120.17.13  **Finished(NumberPacketsSent as Integer, NumberPacketsReceived as Integer)**

MBS Network Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The pings have finished.

120.17.14  **NextPing(PacketSequenceNumber as Integer)**

MBS Network Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
We are starting the next ping now.

120.17.15  **Response(PacketSequenceNumber as Integer, ttl as Integer, RoundTripTimeInMS as Double)**

MBS Network Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Got a response for the given packet.

120.17.16  **SentError(PacketSequenceNumber as Integer)**

MBS Network Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
A packet could not be sent.

120.17.17  **SentSuccess(PacketSequenceNumber as Integer)**

MBS Network Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The packet has sent successfully.

120.17.18  **Timeout(PacketSequenceNumber as Integer)**

MBS Network Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
A timeout was reached for the given packet.
120.18. CLASS DATAGRAMMBS

120.18  class DatagramMBS

120.18.1  class DatagramMBS


120.18.2  Properties

120.18.3  Address as String

**Notes:**  
This is an IPv4.  
(Read and Write property)

120.18.4  Data as String

**Notes:** (Read and Write property)

120.18.5  Length as Integer

**Notes:** (Read and Write property)

120.18.6  Port as Integer

**Notes:** (Read and Write property)
120.18.7  rawAddress as MemoryBlock

**Function:** The raw address.
**Notes:**
This is socket address structure as used in C.
(Read and Write property)
120.19. CLASS DNSLOOKUPMBS

120.19 class DNSLookupMBS

120.19.1 class DNSLookupMBS

MBS Network Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class for the result of a Lookup query.

**Example:**

```vbscript
dim d as DNSLookupMBS = DNSLookupMBS.LookupHostbyName(“www.apple.com”) if d=nil then MsgBox "No DNS Server available?" else MsgBox DNSLookupMBS.FormatIP(d.Address) end if
```

120.19.2 Methods

120.19.3 Addresses(index as Integer) as string

MBS Network Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the address with the given index for this host.

**Example:**

```vbscript
dim d as DNSLookupMBS = DNSLookupMBS.LookupHostbyName(“www.apple.com”) if d=nil then MsgBox ”No DNS Server available?” else dim c as Integer = d.AddressesCount-1 for i as Integer = 0 to c MsgBox d.FormatIP(d.Addresses(i)) next end if
```

**Notes:** Index from 0 to count-1.

120.19.4 Aliases(index as Integer) as string

MBS Network Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the aliasname for the given index.
Example:

dim d as DNSLookupMBS = DNSLookupMBS.LookupHostByName("www.apple.com")

if d=nil then
    MsgBox "No DNS Server available?"
else
    dim c as Integer = d.AliasCount-1
    for i as Integer = 0 to c
        MsgBox d.Aliases(i)
    next
end if

Notes: Index is from 0 to count-1.

120.19.5 FormatIP(ip as string) as string

Function: Formats an IP from binary representation into string representation.
Example:

dim s as string = DNSLookupMBS.ParseIPv4("65.66.67.68")

MsgBox s // in binary representation of that IP

dim t as string = DNSLookupMBS.FormatIP(s)

MsgBox t

Notes:
Formats both IPv4 and IPv6 IP addresses in binary representation into human readable text.
On Windows IPv6 is only supported on Windows Vista and newer.
Returns empty string on failure.

120.19.6 LookupHostbyAddress(HostAddressBinary as string) as DNSLookupMBS

Function: Queries the DNS server for information about a host IP address.
Example:
dim l as DNSLookupMBS
dim a as string

a = DNSLookupMBS.ParseIPv4("17.254.0.91")

// try it...
l = DNSLookupMBS.LookupHostbyAddress(a)

// success...
MsgBox l.Name

Notes:
The address must be a 4 byte IP address like the ones returned by DNSLookupMBS.Address. Returns nil on any error.

120.19.7 LookupHostbyAddressMT(HostAddressBinary as string) as DNSLookupMBS

Function: Queries the DNS server for information about a host IP address.
Example:
dim l as DNSLookupMBS
dim a as string

a = DNSLookupMBS.ParseIPv4("17.254.0.91")

// try it...
l = DNSLookupMBS.LookupHostbyAddressMT(a)

// success...
MsgBox l.Name

Notes:
Same as LookupHostbyAddress, but with additional multithreading. Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.
The address must be a 4 byte IP address like the ones returned by DNSLookupMBS.Address. Returns nil on any error.
120.19.8  LookupHostbyName(HostName as string) as DNSLookupMBS


Function: Queries the DNS server for information about a host name.

Example:

    dim s as DNSLookupMBS = DNSLookupMBS.LookupHostbyName( "www.monkeybreadsoftware.de" )

    dim c as Integer = s.AddressesCount - 1
    for i as Integer = 0 to c
        dim ss as string = s.Addresses(i)
        print str(s.FormatIP(ss))
    next

Notes:

Will fail if you pass an IP as an host. (e.g. 10.20.30.40)
Returns nil on any error.

See also:

- 120.19.9 LookupHostbyName(HostName as string, AddressType as Integer) as DNSLookupMBS

120.19.9  LookupHostbyName(HostName as string, AddressType as Integer) as DNSLookupMBS


Function: Queries the DNS server for information about a host name.

Example:

    dim s as DNSLookupMBS = DNSLookupMBS.LookupHostbyName( "ipv6.google.com", DNSLookupMBS.AddressTypeIPv6 )

    if s<>nil then
        dim c as Integer = s.AddressesCount - 1
        for i as Integer = 0 to c
            dim ss as string = s.Addresses(i)
            print str(s.FormatIP(ss))
        next
    end if

    s = DNSLookupMBS.LookupHostbyName("www.six.heise.de", DNSLookupMBS.AddressTypeIPv6)

    if s<>nil then
        dim c as Integer = s.AddressesCount - 1
        for i as Integer = 0 to c
            dim ss as string = s.Addresses(i)
print str(s.FormatIP(ss))
next
end if

Notes:

Will fail if you pass an IP as an host. (e.g. 10.20.30.40)
Returns nil on any error.

IPv6 on Windows does not work with this method.
See also:

• 120.19.8 LookupHostbyName(HostName as string) as DNSLookupMBS

120.19.10  LookupHostbyNameMT(HostName as string) as DNSLookupMBS

Function: Queries the DNS server for information about a host name.
Example:

dim s as DNSLookupMBS = DNSLookupMBS.LookupHostbyNameMT("www.monkeybreadsoftware.de")

dim c as Integer = s.AddressesCount-1
for i as Integer = 0 to c
  dim ss as string = s.Addresses(i)
  print str(s.FormatIP(ss))
next

Notes:

Same as LookupHostbyName, but with additional multithreading.
Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI
running.

Will fail if you pass an IP as an host. (e.g. 10.20.30.40)
Returns nil on any error.
See also:

• 120.19.11 LookupHostbyNameMT(HostName as string, AddressType as Integer) as DNSLookupMBS
120.19.11  LookupHostNameMT(HostName as string, AddressType as Integer) as DNSLookupMBS

**Function:** Queries the DNS server for information about a host name.  

**Example:**

```vbs
dim s as DNSLookupMBS = DNSLookupMBS.LookupHostByNameMT(“ipv6.google.com”, DNSLookupMBS.AddressTypeIPv6)
if s<>nil then
    dim c as Integer = s.AddressesCount-1
    for i as Integer = 0 to c
        dim ss as string = s.Addresses(i)
        print str(s.FormatIP(ss))
    next
end if

s = DNSLookupMBS.LookupHostNameMT(“www.six.heise.de”, DNSLookupMBS.AddressTypeIPv6)
if s<>nil then
    dim c as Integer = s.AddressesCount-1
    for i as Integer = 0 to c
        dim ss as string = s.Addresses(i)
        print str(s.FormatIP(ss))
    next
end if
```

**Notes:**

Same as LookupHostName, but with additional multithreading.  
Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.

Will fail if you pass an IP as an host. (e.g. 10.20.30.40)  
Returns nil on any error.

IPv6 on Windows does not work with this method.  
See also:

- 120.19.10 LookupHostNameMT(HostName as string) as DNSLookupMBS
120.19. **CLASS DNSLOOKUPMBS**

120.19.12  **ParseIPv4(ip as string) as string**


**Function:** Parses an IP address in IPv4 format.

**Example:**

```vba
dim s as string = DNSLookupMBS.ParseIPv4("65.66.67.68")
```

MsgBox s // in binary representation of that IP

```vba
dim t as string = DNSLookupMBS.FormatIP(s)
```

MsgBox t

**Notes:**

Returns empty string on failure.
Works only for IPv4 strings.

120.19.13  **ParseIPv6(ip as string) as string**


**Function:** Parses an IP address in IPv6 format.

**Example:**

```vba
dim s as string = DNSLookupMBS.ParseIPv6("2001:0db8:85a3:08d3:1319:8a2e:0370:7344")
```

MsgBox s // in binary representation of that IP

```vba
dim t as string = DNSLookupMBS.FormatIP(s)
```

MsgBox t

**Notes:**

Returns empty string on failure.
Works only for IPv6 strings.
120.19.14 Properties

120.19.15 Address as String

MBS Network Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The primary address of the host.

**Example:**
```vbnet
dim d as DNSLookupMBS = DNSLookupMBS.LookupHostbyName("www.apple.com")

if d=nil then
    MsgBox "No DNS Server available?"
else
    MsgBox DNSLookupMBS.FormatIP(d.Address)
end if
```

**Notes:**
On TCP/IP based system the address is 4 bytes long binary string.
(Read and Write property)

120.19.16 AddressesCount as Integer

MBS Network Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The number of addresses for this host.

**Example:**
```vbnet
dim d as DNSLookupMBS = DNSLookupMBS.LookupHostbyName("www.apple.com")

if d=nil then
    MsgBox "No DNS Server available?"
else
    MsgBox str(d.AddressesCount)
end if
```

**Notes:** (Read and Write property)

120.19.17 AddressType as Integer

MBS Network Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The type of the address format.
Example:

```vbnet
dim d as DNSLookupMBS = DNSLookupMBS.LookupHostByName("www.apple.com")

if d=nil then
    MsgBox "No DNS Server available?"
else
    MsgBox str(d.AddressType) ' shows 2 for IPv4
end if
```

Notes:
- 2 for IPv2
- 10 for IPv10
(Read and Write property)

### 120.19.18 AliasCount as Integer

MBS Network Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of aliases for this host.

**Example:**

```vbnet
dim d as DNSLookupMBS = DNSLookupMBS.LookupHostByName("www.apple.com")

if d=nil then
    MsgBox "No DNS Server available?"
else
    MsgBox str(d.AliasCount)
end if
```

Notes: (Read and Write property)

### 120.19.19 Name as String

MBS Network Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The name of the host.

**Example:**

```vbnet
dim d as DNSLookupMBS = DNSLookupMBS.LookupHostByName("www.apple.com")

if d=nil then
    MsgBox "No DNS Server available?"
```
else
MsgBox d.Name
end if

Notes: (Read and Write property)

120.19.20  Constants

120.19.21  AddressTypeIPv4 = 2

MBS Network Plugin, Plugin Version: 10.4. **Function:** One of the address types.  
**Notes:** An IPv4 address.

120.19.22  AddressTypeIPv6 = 10

MBS Network Plugin, Plugin Version: 10.4. **Function:** One of the address types.  
**Notes:** An IPv6 address.
120.20. CLASS DNSSERVICEADDRINFOMBS

120.20 class DNSServiceAddrInfoMBS

120.20.1 class DNSServiceAddrInfoMBS

MBS Network Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The class to query IP Address for hostname asynchronously.

**Notes:**
Queries for the IP address of a hostname by using either Multicast or Unicast DNS.
Subclass of the DNNServiceBaseMBS class.

120.20.2 Methods

120.20.3 AddrInfo(IntefaceIndex as Integer, protocol as Integer, HostName as string) as boolean

MBS Network Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Queries for the IP address of a hostname by using either Multicast or Unicast DNS.

**Notes:**
interfaceIndex: The interface on which to issue the query. Passing 0 causes the query to be sent on all active interfaces via Multicast or the primary interface via Unicast.
protocol: Pass in kDNSServiceProtocolIPv4 to look up IPv4 addresses, or kDNSServiceProtocolIPv6 to look up IPv6 addresses, or both to look up both kinds. If neither flag is set, the system will apply an intelligent heuristic, which is (currently) that it will attempt to look up both, except:
If “hostname” is a wide-area unicast DNS hostname (i.e. not a ”.local.” name) but this host has no routable IPv6 address, then the call will not try to look up IPv6 addresses for “hostname”, since any addresses it found would be unlikely to be of any use anyway. Similarly, if this host has no routable IPv4 address, the call will not try to look up IPv4 addresses for “hostname”.

hostname: The fully qualified domain name of the host to be queried for.

Lasterror is set to kDNSServiceErr_NoError (0) on success (any subsequent, asynchronous errors are delivered to the callback), otherwise returns an error code indicating the error that occurred.

Returns false on any error and true on success. Please check lasterror property when false is returned.

120.20.4 Available as boolean

MBS Network Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Whether this class is available for use.
Notes: Older versions of Bonjour did not have such functions, so there it may not be available.

120.20.5 Events

120.20.6 ServiceAddrInfo(Flags as Integer, InterfaceIndex as Integer, ErrorCode as Integer, AddressFamily as Integer, IP as string, SockAddr as MemoryBlock, HostName as string, ttl as Integer)

MBS Network Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The event called when something is found. **Notes:**

Flags: Possible values are kDNSServiceFlagsMoreComing and kDNSServiceFlagsAdd.
interfaceIndex: The interface to which the answers pertain.
errorCode: Will be kDNSServiceErr_NoError (0) on success, otherwise will indicate the failure that occurred. Other parameters are undefined if errorCode is nonzero.
hostname: The fully qualified domain name of the host to be queried for.
address: IPv4 or IPv6 address.
ttl: If the client wishes to cache the result for performance reasons, the TTL indicates how long the client may legitimately hold onto this result, in seconds. After the TTL expires, the client should consider the result no longer valid, and if it requires this data again, it should be re-fetched with a new query. Of course, this only applies to clients that cancel the asynchronous operation when they get a result. Clients that leave the asynchronous operation running can safely assume that the data remains valid until they get another callback telling them otherwise.

120.20.7 Constants

120.20.8 kAddressFamilyIPv4 = 2

MBS Network Plugin, Plugin Version: 15.0. **Function:** One of the address family constants. **Notes:** IPv4 protocol

120.20.9 kAddressFamilyIPv6 = 30

MBS Network Plugin, Plugin Version: 15.0. **Function:** One of the address family constants. **Notes:** IPv6 protocol
120.20. CLASS DNNSERVICEADDRINFOMBS

120.20.10  kProtocolAuto = 0

MBS Network Plugin, Plugin Version: 15.0. **Function:** One of the protocols constants. **Notes:** Automatic decide.

120.20.11  kProtocolIPv4 = 1

MBS Network Plugin, Plugin Version: 15.0. **Function:** One of the protocols constants. **Notes:** IPv4 protocol

120.20.12  kProtocolIPv6 = 2

MBS Network Plugin, Plugin Version: 15.0. **Function:** One of the protocols constants. **Notes:** IPv6 protocol
120.21  class DNSServiceBaseMBS

120.21.1  class DNSServiceBaseMBS


120.21.2  Methods

120.21.3  Available as boolean

Notes: If this function returns true, all the needed stuff is installed and the function have been loaded.

120.21.4  Close

Notes: This is done automatically for you by the destructor.

120.21.5  ConstructFullName(Service as string, regtype as string, domain as string) as string

MBS Network Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. Function: Concatenate a three-part domain name (as returned by the above callbacks) into a properly-escaped full domain name.
Notes: Note that events in the above functions ALREADY ESCAPE strings where necessary.

service: The service name - any dots or backslashes must NOT be escaped. May be "" (to construct a PTR record name, e.g. ".ftp.tcp.apple.com.").
regtype: The service type followed by the protocol, separated by a dot (e.g. ".ftp.tcp").
domain: The domain name, e.g. "apple.com.". Literal dots or backslashes, if any, must be escaped, e.g. "1st\. Floor.apple.com."

Returns 0 on success, -1 on error.
120.21. CLASS DNSSERVICEBASEMBS

120.21.6 GetDaemonVersion as Integer

MBS Network Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Queries the version of the daemon. **Notes:** Value is zero on any error.

120.21.7 Initialize

MBS Network Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Initializes API. **Notes:**
- On Windows the plugin calls this internally at startup of application.
- Now if your app installs Bonjour while running, you can call this method to let the plugin load the bonjour dll.
- After successful call, the available functions return true.
- Does nothing on Mac OS X or Linux.

120.21.8 Running as boolean

MBS Network Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** True if there is a running request.

120.21.9 Properties

120.21.10 Handle as Integer

MBS Network Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The handle for this request. **Notes:** (Read and Write property)

120.21.11 Lasterror as Integer

MBS Network Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The last error code reported. **Notes:**
- 0 if the function succeeded.
- -1 if the function used was not available.
See the kError constants for possible errors.
(Read and Write property)

120.21.12 Constants

120.21.13 kClassIN = 1
MBS Network Plugin, Plugin Version: 10.1. **Function:** The DNS class for Internet services.

120.21.14 kErrorAlreadyRegistered = -65547
MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the error constants.

120.21.15 kErrorBadFlags = -65543
MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the error constants.

120.21.16 kErrorBadInterfaceIndex = -65552
MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the error constants.

120.21.17 kErrorBadParam = -65540
MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the error constants.

120.21.18 kErrorBadReference = -65541
MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the error constants.

120.21.19 kErrorBadState = -65542
MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the error constants.
120.21. CLASS DNNSERVICEBASEMBS

120.21.20 kErrorBadTime = -65559

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the error constants.

120.21.21 kErrorDoubleNAT = -65558

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the error constants.

120.21.22 kErrorFirewall = -65550

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the error constants.

120.21.23 kErrorIncompatible = -65551

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the error constants.

120.21.24 kErrorInvalid = -65549

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the error constants.

120.21.25 kErrorNameConflict = -65548

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the error constants.

120.21.26 kErrorNATTraversal = -65557

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the error constants.

120.21.27 kErrorNoAuth = -65555

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the error constants.
120.21.28 **kErrorNoError** = 0

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the error constants.

120.21.29 **kErrorNoMemory** = -65539

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the error constants.

120.21.30 **kErrorNoSuchKey** = -65556

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the error constants.

120.21.31 **kErrorNoSuchName** = -65538

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the error constants.

120.21.32 **kErrorNoSuchRecord** = -65554

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the error constants.

120.21.33 **kErrorNotInitialized** = -65545

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the error constants.

120.21.34 **kErrorRefused** = -65553

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the error constants.

120.21.35 **kErrorUnknown** = -65537

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the error constants.
120.21.36  kErrorUnsupported = -65544

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the error constants.

120.21.37  kFlagsAdd = 2

MBS Network Plugin, Plugin Version: 10.1. **Function:** A flag for domain enumeration and browse/query events.
**Notes:** "Default" applies only to enumeration and is only valid in conjunction with "Add". An enumeration callback with the "Add" flag NOT set indicates a "Remove", i.e. the domain is no longer valid.

120.21.38  kFlagsAllowRemoteQuery = &h200

MBS Network Plugin, Plugin Version: 10.1. **Function:** Flag for creating a record for which we will answer remote queries (queries from hosts more than one hop away; hosts not directly connected to the local link).

120.21.39  kFlagsBrowseDomains = &h40

MBS Network Plugin, Plugin Version: 10.1. **Function:** Flags for specifying domain enumeration type in DNSServiceEnumerateDomains.
**Notes:** BrowseDomains enumerates domains recommended for browsing, RegistrationDomains enumerates domains recommended for registration.

120.21.40  kFlagsDefault = 4

MBS Network Plugin, Plugin Version: 10.1. **Function:** A flag for domain enumeration and browse/query events.
**Notes:** "Default" applies only to enumeration and is only valid in conjunction with "Add". An enumeration callback with the "Add" flag NOT set indicates a "Remove", i.e. the domain is no longer valid.

120.21.41  kFlagsForceMulticast = &h400

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the flags.
**Notes:** Flag for signifying that a query or registration should be performed exclusively via multicast DNS, even for a name in a domain (e.g. foo.apple.com.) that would normally imply unicast DNS.
120.21.42 kFlagsLongLivedQuery = & h100

MBS Network Plugin, Plugin Version: 10.1. **Function:** Flag for creating a long-lived unicast query for the QueryRecord call.

120.21.43 kFlagsMoreComing = 1

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the flags used for the events. **Notes:** MoreComing indicates to a callback that at least one more result is queued and will be delivered following immediately after this one. Applications should not update their UI to display browse results when the MoreComing flag is set, because this would result in a great deal of ugly flickering on the screen. Applications should instead wait until MoreComing is not set, and then update their UI. When MoreComing is not set, that doesn’t mean there will be no more answers EVER, just that there are no more answers immediately available right now at this instant. If more answers become available in the future they will be delivered as usual.

120.21.44 kFlagsNoAutoRename = 8

MBS Network Plugin, Plugin Version: 10.1. **Function:** The flag for specifying renaming behavior on name conflict when registering non-shared records. **Notes:** By default, name conflicts are automatically handled by renaming the service. NoAutoRename overrides this behavior - with this flag set, name conflicts will result in a callback. The NoAutorename flag is only valid if a name is explicitly specified when registering a service (i.e. the default name is not used.)

120.21.45 kFlagsRegistrationDomains = & h80

MBS Network Plugin, Plugin Version: 10.1. **Function:** Flags for specifying domain enumeration type in DNSServiceEnumerateDomains. **Notes:** BrowseDomains enumerates domains recommended for browsing, RegistrationDomains enumerates domains recommended for registration.

120.21.46 kFlagsShared = & h10

MBS Network Plugin, Plugin Version: 10.1. **Function:** Flag for registering individual records on a connected DNSService. **Notes:** Shared indicates that there may be multiple records with this name on the network (e.g. PTR records). Unique indicates that the record’s name is to be unique on the network (e.g. SRV records).
120.21.  CLASS DNSSERVICEBASEMBS

120.21.47  kFlagsUnique = &h20

MBS Network Plugin, Plugin Version: 10.1. **Function:** Flag for registering individual records on a connected DNSService.
**Notes:** Shared indicates that there may be multiple records with this name on the network (e.g. PTR records). Unique indicates that the record’s name is to be unique on the network (e.g. SRV records).

120.21.48  kInterfaceIndexAny = 0

MBS Network Plugin, Plugin Version: 10.1. **Function:** The constant to use for interface index to target any interface.

120.21.49  kInterfaceIndexLocalOnly = -1

MBS Network Plugin, Plugin Version: 10.1. **Function:** The constant to use for interface index to target the local interface.

120.21.50  kMaxDomainName = 1005

MBS Network Plugin, Plugin Version: 10.1. **Function:** Maximum length, in bytes, of a domain name represented as an *escaped* C-String including the final trailing dot, and the C-String terminating NULL at the end.

120.21.51  kMaxServiceName = 64

MBS Network Plugin, Plugin Version: 10.1. **Function:** Maximum length, in bytes, of a service name represented as a literal C-String, including the terminating NULL at the end.

120.21.52  kTypeA = 1

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants.
**Notes:** Host address.
120.21.53 \( kTypeA6 = 38 \)

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants.  
**Notes:** IPv6 address (deprecates AAAA)

120.21.54 \( kTypeAAAA = 28 \)

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants.  
**Notes:** Ip6 Address.

120.21.55 \( kTypeAFSDB = 18 \)

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants.  
**Notes:** AFS cell database.

120.21.56 \( kTypeANY = 255 \)

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants.  
**Notes:** Wildcard match.

120.21.57 \( kTypeATMA = 34 \)

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants.  
**Notes:** ATM Address

120.21.58 \( kTypeAXFR = 252 \)

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants.  
**Notes:** Transfer zone of authority.

120.21.59 \( kTypeCERT = 37 \)

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants.  
**Notes:** Certification record.
120.21. CLASS DNNSERVICEBASEMBS

120.21.60 kTypeCNAME = 5
MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants. **Notes:** Canonical name.

120.21.61 kTypeDNAME = 39
MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants. **Notes:** Non-terminal DNAME (for IPv6)

120.21.62 kTypeEID = 31
MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants. **Notes:** Endpoint identifier.

120.21.63 kTypeGPOS = 27
MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants. **Notes:** Geographical position (withdrawn).

120.21.64 kTypeHINFO = 13
MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants. **Notes:** Host information.

120.21.65 kTypeISDN = 20
MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants. **Notes:** ISDN calling address.

120.21.66 kTypeIXFR = 251
MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants. **Notes:** Incremental zone transfer.
120.21.67   kTypeKEY = 25

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants. **Notes:** Security key.

120.21.68   kTypeKX = 36

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants. **Notes:** Key Exchange

120.21.69   kTypeLOC = 29

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants. **Notes:** Location Information.

120.21.70   kTypeMAILA = 254

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants. **Notes:** Transfer mail agent records.

120.21.71   kTypeMAILB = 253

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants. **Notes:** Transfer mailbox records.

120.21.72   kTypeMB = 7

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants. **Notes:** Mailbox domain name.

120.21.73   kTypeMD = 3

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants. **Notes:** Mail destination.
120.21. CLASS DNSSERVICEBASEMBS

120.21.74. kTypeMF = 4

MBS Network Plugin, Plugin Version: 10.1. **Function**: One of the DNS Service type constants. **Notes**: Mail forwarder.

120.21.75. kTypeMG = 8

MBS Network Plugin, Plugin Version: 10.1. **Function**: One of the DNS Service type constants. **Notes**: Mail group member.

120.21.76. kTypeMINFO = 14

MBS Network Plugin, Plugin Version: 10.1. **Function**: One of the DNS Service type constants. **Notes**: Mailbox information.

120.21.77. kTypeMR = 9

MBS Network Plugin, Plugin Version: 10.1. **Function**: One of the DNS Service type constants. **Notes**: Mail rename name.

120.21.78. kTypeMX = 15

MBS Network Plugin, Plugin Version: 10.1. **Function**: One of the DNS Service type constants. **Notes**: Mail routing information.

120.21.79. kTypeNAPTR = 35

MBS Network Plugin, Plugin Version: 10.1. **Function**: One of the DNS Service type constants. **Notes**: Naming Authority PoinTeR

120.21.80. kTypeNIMLOC = 32

MBS Network Plugin, Plugin Version: 10.1. **Function**: One of the DNS Service type constants. **Notes**: Nimrod Locator.
120.21.81 \ kTypeNS = 2

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants. **Notes:** Authoritative server.

120.21.82 \ kTypeNSAP = 22

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants. **Notes:** NSAP address.

120.21.83 \ kTypeNSAP_PTR = 23

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants. **Notes:** Reverse NSAP lookup (deprecated).

120.21.84 \ kTypeNULL = 10

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants. **Notes:** Null resource record.

120.21.85 \ kTypeNXT = 30

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants. **Notes:** Next domain (security).

120.21.86 \ kTypeOPT = 41

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants. **Notes:** EDNS0 option (meta-RR)

120.21.87 \ kTypePTR = 12

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants. **Notes:** Domain name pointer.
120.21. CLASS DNSSERVICEBASEMBS

120.21.88  kTypePX = 26

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants. **Notes:** X.400 mail mapping.

120.21.89  kTypeRP = 17

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants. **Notes:** Responsible person.

120.21.90  kTypeRT = 21

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants. **Notes:** Router.

120.21.91  kTypeSIG = 24

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants. **Notes:** Security signature.

120.21.92  kTypeSINK = 40

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants. **Notes:** Kitchen sink (experimental)

120.21.93  kTypeSOA = 6

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants. **Notes:** Start of authority zone.

120.21.94  kTypeSRV = 33

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants. **Notes:** Server Selection.
120.21.95  kTypeTKEY = 249

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants.  
**Notes:** Transaction key.

120.21.96  kTypeTSIG = 250

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants.  
**Notes:** Transaction signature.

120.21.97  kTypeTXT = 16

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants.  
**Notes:** One or more text strings.

120.21.98  kTypeWKS = 11

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants.  
**Notes:** Well known service.

120.21.99  kTypeX25 = 19

MBS Network Plugin, Plugin Version: 10.1. **Function:** One of the DNS Service type constants.  
**Notes:** X-25 calling address.
120.22. CLASSE DNSSERVICEBROWSEMBS

120.22  class DNSServiceBrowseMBS

120.22.1  class DNSServiceBrowseMBS


**Notes**:

This class allows you to browse for services on the local network using Rendezvous.

This class requires Mac OS X 10.3 or Windows (with installed Bonjour support and the dnssd.dll) to work. Use DNSServiceDiscoveryBrowseMBS if you want to support Mac OS X 10.2.

**common error codes**:

- kDNSServiceErr_NoError = 0
- kDNSServiceErr_Unknown = -65537 (=& hFFFE FFFF)
- kDNSServiceErr_NoSuchName = -65538
- kDNSServiceErr_NoMemory = -65539
- kDNSServiceErr_BadParam = -65540
- kDNSServiceErr_BadReference = -65541
- kDNSServiceErr_BadState = -65542
- kDNSServiceErr_BadFlags = -65543
- kDNSServiceErr_Unsupported = -65544
- kDNSServiceErr_NotInitialized = -65545
- kDNSServiceErr_AlreadyRegistered = -65547
- kDNSServiceErr_NameConflict = -65548
- kDNSServiceErr_Invalid = -65549
- kDNSServiceErr_Incompatible = -65551 (client library incompatible with daemon)
- kDNSServiceErr_BadInterfaceIndex = -65552

Subclass of the DNSServiceBaseMBS class.

120.22.2  Methods

120.22.3  Browse(InterfaceIndex as Integer, servicetype as string, domain as string) as boolean

MBS Network Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function**: Asynchronously create a DNS Service browser to search for matching services in the local network.

**Notes**:

- servicetype:
The type of service.
domain:
The domain in which to find the service.

Returns true if successful.
The ServiceBrowse event may be called till this browse request is closed.

You need to keep this object alive (keep a reference in a window, a module or your app class) so you can receive events.

In a perfect application you use DNSServiceDomainEnumerationMBS class to enumerate which domains you should use.

Returns false on any error and true on success. Please check lasterror property when false is returned.

### 120.22.4 Events

#### 120.22.5 ServiceBrowse(Flags as Integer, InterfaceIndex as Integer, ErrorCode as Integer, ServiceName as string, RegType as string, Domain as string)

MBS Network Plugin, Plugin Version: 5.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:**
New service found or lost one.

**Example:**

```vbnet
sub ServiceBrowse(Flags as Integer, InterfaceIndex as Integer, ErrorCode as Integer, ServiceName as string, RegType as string, Domain as string)
// example for event implementation

const kDNSServiceFlagsAdd = 2
const kDNSServiceFlagsRemove = 0
const kDNSServiceFlagsMoreComing = 1
const kDNSServiceFlagsFinished = 0

dim Added as boolean = bitwiseAnd(flags, kDNSServiceFlagsAdd) = kDNSServiceFlagsAdd
dim Removed as boolean = bitwiseAnd(flags, kDNSServiceFlagsRemove) = kDNSServiceFlagsRemove

dim MoreComing as boolean = bitwiseAnd(flags, kDNSServiceFlagsMoreComing) = kDNSServiceFlagsMoreComing
dim Finished as boolean = bitwiseAnd(flags, kDNSServiceFlagsFinished) = kDNSServiceFlagsFinished

// work with the booleans to decide what to do.
```
Notes:

Values for flags:

- kDNSServiceFlagsAdd = 2
- kDNSServiceFlagsRemove = 0 (i.e. bit not set)
- kDNSServiceFlagsMoreComing = 1
- kDNSServiceFlagsFinished = 0 (i.e. bit not set)

MoreComing indicates to a Browse callback that another result is queued. Applications should not update their UI to display browse results when the MoreComing flag is set, instead deferring the update until the callback’s flag is Finished.

Starting a new query from within this event on the same object can cause problems. Better you create a new instance for another query if you need one.

InterfaceIndex can be kInterfaceIndexLocalOnly, kInterfaceIndexAny or a positive index for the interface index (1 = first device).
For interface indexes, please also check NetworkInterfaceMBS class.
120.23 class DNSServiceDiscoveryBrowseMBS

120.23.1 class DNSServiceDiscoveryBrowseMBS

MBS MacOSX Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for Apple’s implementation of ZeroConfig named Bonjour. **Deprecated:** This item is deprecated and should no longer be used. You can use DNSServiceBrowseMBS instead. **Notes:**

This class allows you to browse for services on the local network using Bonjour.

Common error codes for Rendevouz:

- kDNSServiceDiscoveryUnknownErr: -65537
- kDNSServiceDiscoveryNoSuchNameErr: -65538
- kDNSServiceDiscoveryNoMemoryErr: -65539
- kDNSServiceDiscoveryBadParamErr: -65540
- kDNSServiceDiscoveryBadReferenceErr: -65541
- kDNSServiceDiscoveryBadStateErr: -65542
- kDNSServiceDiscoveryBadFlagsErr: -65543
- kDNSServiceDiscoveryUnsupportedErr: -65544
- kDNSServiceDiscoveryNotInitializedErr: -65545
- kDNSServiceDiscoveryNoCache: -65546
- kDNSServiceDiscoveryAlreadyRegistered: -65547
- kDNSServiceDiscoveryNameConflict: -65548
- kDNSServiceDiscoveryInvalid: -65549
- kDNSServiceDiscoveryMemFree: -65792

But several other Mac OS error codes may also be there. This class requires Mac OS X 10.2 to work. Use DNSServiceBrowseMBS if you want to support Mac OS X 10.3 and Windows.

Not available on Mac OS X 10.9.

120.23.2 Methods

120.23.3 Available as boolean

MBS MacOSX Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether Bonjour (zeroconfig) is installed. **Notes:** If this function returns true, all the needed stuff is installed and the function have been loaded.
120.23.4 **Browse** (servicetype as string, domain as string) as boolean

MBS MacOSX Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Asynchronously create a DNS Service browser to search for matching services in the local network.  
**Notes:**

- servicetype: The type of service.
- domain: The domain in which to find the service.

Returns true if successful.
The ServiceBrowse event may be called till this browse request is closed.

120.23.5 **Close**

MBS MacOSX Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Stops the current request and releases all used memory.

120.23.6 **Running as boolean**

MBS MacOSX Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** True if there is a running request.

120.23.7 **Properties**

120.23.8 **Handle as Integer**

MBS MacOSX Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle for this request.  
**Notes:** (Read only property)
120.23.9 Events

120.23.10 ServiceBrowse(message as Integer, name as string, type as string, domain as string, flags as Integer)

MBS MacOSX Plugin, Plugin Version: 5.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** New service found or lost one.

**Notes:**

If message=0 a new service was found. Message=1 means that a service was removed. Flags=1 means that more data is coming. Flags=0 means the end of the current list of services. But several minutes later when a new Mac connects to the network another ServiceBrowse Event may inform you, even if flags was 0.

Starting a new query from within this event on the same object can cause problems. Better you create a new instance for another query if you need one.
120.24. CLASS DNNSERVICEDISCOVERYDOMAINENUMERATIONMBS

120.24 class DNNServiceDiscoveryDomainEnumerationMBS

120.24.1 class DNNServiceDiscoveryDomainEnumerationMBS

MBS MacOSX Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A class for Apple's implementation of ZeroConfig named Bonjour. Deprecated: This item is deprecated and should no longer be used. You can use DNNServiceDomainEnumerationMBS instead. Notes:

This class allows you to enumerate domains.

Common error codes for Rendevouz:

- kDNNServiceDiscoveryUnknownErr -65537
- kDNNServiceDiscoveryNoSuchNameErr -65538
- kDNNServiceDiscoveryNoMemoryErr -65539
- kDNNServiceDiscoveryBadParamErr -65540
- kDNNServiceDiscoveryBadReferenceErr -65541
- kDNNServiceDiscoveryBadStateErr -65542
- kDNNServiceDiscoveryBadFlagsErr -65543
- kDNNServiceDiscoveryUnsupportedErr -65544
- kDNNServiceDiscoveryNotInitializedErr -65545
- kDNNServiceDiscoveryNoCache -65546
- kDNNServiceDiscoveryAlreadyRegistered -65547
- kDNNServiceDiscoveryNameConflict -65548
- kDNNServiceDiscoveryInvalid -65549
- kDNNServiceDiscoveryMemFree -65572

But several other Mac OS error codes may also be there.
This class requires Mac OS X 10.2 to work. Use DNNServiceDomainEnumerationMBS if you want to support Mac OS X 10.3 and Windows.

Not available on Mac OS X 10.9.

120.24.2 Methods

120.24.3 Available as boolean

MBS MacOSX Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether Bonjour (zeroconfig) is installed. Notes: If this function returns true, all the needed stuff is installed and the function have been loaded.
120.24.4 Close

MBS MacOSX Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Stops the current request and releases all used memory.

120.24.5 EnumerateDomains(domaintype as Integer) as boolean

MBS MacOSX Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Asynchronously create a DNS Domain Enumerator to search for domains in the local network. **Notes:**

- **domaintype:**
  A flag indicating whether you are looking for recommended registration domains (value=1, e.g. equivalent to the AppleTalk zone list in the AppleTalk Control Panel) or recommended browsing domains (value=0, e.g. equivalent to the AppleTalk zone list in the Chooser).

Returns true if successful.
The ServiceDomainEnumeration event may be called till this enumerate request is closed.

120.24.6 Running as boolean

MBS MacOSX Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** True if there is a running request.

120.24.7 Properties

120.24.8 Handle as Integer

MBS MacOSX Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle for this request. **Notes:** (Read only property)

120.24.9 Events

120.24.10 ServiceDomainEnumeration(message as Integer, domain as string, flags as Integer)

MBS MacOSX Plugin, Plugin Version: 5.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Domains changed.
Notes:

Meaning of message:

0: Domain found.
1: Domain found (and should be selected by default).
2: Domain has been removed from network.

Flags=1 means that more data is coming. Flags=0 means the end of the current list of services. But several minutes later when a new Mac connects to the network another ServiceLookup Event may inform you, even if flags was 0.

Starting a new query from within this event on the same object can cause problems. Better you create a new instance for another query if you need one.
120.25 class DNSServiceDiscoveryRegisterMBS

120.25.1 class DNSServiceDiscoveryRegisterMBS

MBS MacOSX Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for Apple’s implementation of ZeroConfig named Bonjour. **Deprecated:** This item is deprecated and should no longer be used. You can use DNSServiceRegisterMBS instead. **Notes:**

This class allows you to register names on the local network using Bonjour.

Common error codes for Rendevouz:

- `kDNSServiceDiscoveryUnknownErr` -65537
- `kDNSServiceDiscoveryNoSuchNameErr` -65538
- `kDNSServiceDiscoveryNoMemoryErr` -65539
- `kDNSServiceDiscoveryBadParamErr` -65540
- `kDNSServiceDiscoveryBadReferenceErr` -65541
- `kDNSServiceDiscoveryBadStateErr` -65542
- `kDNSServiceDiscoveryBadFlagsErr` -65543
- `kDNSServiceDiscoveryUnsupportedErr` -65544
- `kDNSServiceDiscoveryNotInitializedErr` -65545
- `kDNSServiceDiscoveryNoCache` -65546
- `kDNSServiceDiscoveryAlreadyRegistered` -65547
- `kDNSServiceDiscoveryNameConflict` -65548
- `kDNSServiceDiscoveryInvalid` -65549
- `kDNSServiceDiscoveryMemFree` -65792

But several other Mac OS error codes may also be there. This class requires Mac OS X 10.2 to work. Use DNSServiceRegisterMBS if you want to support Mac OS X 10.3 and Windows.

Not available on Mac OS X 10.9.

120.25.2 Methods

120.25.3 Available as boolean

MBS MacOSX Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether Bonjour (zeroconfig) is installed. **Notes:** If this function returns true, all the needed stuff is installed and the function have been loaded.
120.25.4 Close

MBS MacOSX Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Stops the current request and releases all used memory.

120.25.5 Register(servicename as string, servicetype as string, domain as string, port as Integer, text as string) as boolean

MBS MacOSX Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Register a named service with DNS Service Discovery. **Notes:**

- **servicename:**
  The name of this service instance (e.g. "Steve's Printer")

- **servicetype:**
  The service type (e.g. "_printer._tcp."
  See RFC 2782 (DNS SRV) and this website:
  http://www.iana.org/assignments/port-numbers

- **domain:**
  The domain in which to register the service (e.g. "apple.com.")

- **port:**
  The local port on which this service is being offered (in network byte order)

- **text:**
  Optional protocol-specific additional information

Returns true if successful.
The ServiceRegistration event may be called till this registration request is closed.

120.25.6 Running as boolean

MBS MacOSX Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** True if there is a running request.
120.25.7  UpdateText(data as string, ttl as Integer) as Integer

MBS MacOSX Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Changes the TXT Record.  
**Notes:**  
data is the TXT Record composed of Pascal Strings.  
ttl = time to live.  
Returns an error code. (0=success)

120.25.8  Properties

120.25.9  Handle as Integer

MBS MacOSX Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle for this request.  
**Notes:** (Read only property)

120.25.10  Text as String

MBS MacOSX Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last TXT Record text used.  
**Notes:** (Read only property)

120.25.11  Events

120.25.12  ServiceRegistration(errorcode as Integer)

MBS MacOSX Plugin, Plugin Version: 5.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Registration was done.  
**Notes:**  
errorcode is 0 if successfull.  
Starting a new query from within this event on the same object can cause problems. Better you create a new instance for another query if you need one.
120.26   class DNSServiceDiscoveryResolveMBS

120.26.1   class DNSServiceDiscoveryResolveMBS

MBS MacOSX Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for Apple’s implementation of ZeroConfig named Bonjour. **Deprecation:** This item is deprecated and should no longer be used. You can use DNSServiceResolveMBS instead. **Notes:**

This class allows you to lookup names on the local network using Bonjour.

Common error codes for Rendezvous:

- kDNSServiceDiscoveryUnknownErr: -65537
- kDNSServiceDiscoveryNoSuchNameErr: -65538
- kDNSServiceDiscoveryNoMemoryErr: -65539
- kDNSServiceDiscoveryBadParamErr: -65540
- kDNSServiceDiscoveryBadReferenceErr: -65541
- kDNSServiceDiscoveryBadStateErr: -65542
- kDNSServiceDiscoveryBadFlagsErr: -65543
- kDNSServiceDiscoveryUnsupportedErr: -65544
- kDNSServiceDiscoveryNotInitializedErr: -65545
- kDNSServiceDiscoveryNoCache: -65546
- kDNSServiceDiscoveryAlreadyRegistered: -65547
- kDNSServiceDiscoveryNameConflict: -65548
- kDNSServiceDiscoveryInvalid: -65549
- kDNSServiceDiscoveryMemFree: -65792

But several other Mac OS error codes may also be there.

This class requires Mac OS X 10.2 to work. Use DNSServiceResolveMBS if you want to support Mac OS X 10.3 and Windows.

Not available on Mac OS X 10.9.

120.26.2   Methods

120.26.3   Available as boolean

MBS MacOSX Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether Bonjour (zeroconfig) is installed. **Notes:** If this function returns true, all the needed stuff is installed and the function have been loaded.
120.26.4 Close

MBS MacOSX Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Stops the current request and releases all used memory.

120.26.5 Lookup(servicename as string, servicetype as string, domain as string) as boolean

MBS MacOSX Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Resolved a named instance of a service to its address, port, and (optionally) a text description.  
**Notes:**
- **servicename:** The name of the service instance.
- **servicetype:** The type of service.
- **domain:** The domain in which to find the service.

Returns true if successful. The ServiceLookup event may be called till this lookup request is closed.

120.26.6 Running as boolean

MBS MacOSX Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** True if there is a running request.

120.26.7 Properties

120.26.8 Handle as Integer

MBS MacOSX Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle for this request.  
**Notes:** (Read only property)
120.26.9 Events

120.26.10 ServiceLookup(ip as string, port as Integer, text as string, flags as Integer)

MBS MacOSX Plugin, Plugin Version: 5.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Lookup got something.
**Notes:**
IP is a string like "192.168.1.14".
Flags=1 means that more data is coming. Flags=0 means the end of the current list of services. But several minutes later when a new Mac connects to the network another ServiceLookup Event may inform you, even if flags was 0.

Starting a new query from within this event on the same object can cause problems. Better you create a new instance for another query if you need one.
120.27 class DNSServiceDomainEnumerationMBS

120.27.1 class DNSServiceDomainEnumerationMBS

MBS Network Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** A class for Apple’s implementation of ZeroConfig named Bonjour.  
**Notes:**  
This class allows you to enumerate domains.

This class requires Mac OS X 10.3 or Windows (with installed Bonjour support and the dnssd.dll) to work. Use DNSServiceDiscoveryBrowseMBS if you want to support Mac OS X 10.2.

common error codes:

- kDNSServiceErr_NoError = 0
- kDNSServiceErr_Unknown = -65537 (=& hFFFE FFFF)
- kDNSServiceErr_NoSuchName = -65538
- kDNSServiceErr_NoMemory = -65539
- kDNSServiceErr_BadParam = -65540
- kDNSServiceErr_BadReference = -65541
- kDNSServiceErr_BadState = -65542
- kDNSServiceErr_BadFlags = -65543
- kDNSServiceErr_Unsupported = -65544
- kDNSServiceErr_NotInitialized = -65545
- kDNSServiceErr_AlreadyRegistered = -65547
- kDNSServiceErr_NameConflict = -65548
- kDNSServiceErr_Invalid = -65549
- kDNSServiceErr_Incompatible = -65551 (client library incompatible with daemon)
- kDNSServiceErr_BadInterfaceIndex = -65552

Subclass of the DNSServiceBaseMBS class.

120.27.2 Methods

120.27.3 EnumerateDomains(Flags as Integer, InterfaceIndex as Integer) as boolean

MBS Network Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Asynchronously enumerate domains available for browsing and registration.  
**Notes:**  
Note that the names returned are (like all of DNS-SD) UTF-8 strings, and are escaped using standard DNS escaping rules.
A graphical browser displaying a hierarchical tree-structured view should cut the names at the bare dots to yield individual labels, then de-escape each label according to the escaping rules, and then display the resulting UTF-8 text.

Flags for specifying domain enumeration type in DNSServiceEnumerateDomains. BrowseDomains enumerates domains recommended for browsing, RegistrationDomains enumerates domains recommended for registration:

\[
\begin{align*}
\text{kDNSServiceFlagsBrowseDomains} & \quad = 64 \\
\text{kDNSServiceFlagsRegistrationDomains} & \quad = 128
\end{align*}
\]

You need to keep this object alive (keep a reference in a window, a module or your app class) so you can receive events.

For interface indexes, please also check NetworkInterfaceMBS class.

Returns false on any error and true on success. Please check lasterror property when false is returned.

### 120.27.4 Events

### 120.27.5 ServiceDomainEnumeration(flags as Integer, interfaceIndex as Integer, errorcode as Integer, Domain as string)

MBS Network Plugin, Plugin Version: 5.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Domains changed.

**Notes:**

Flags uses this flags: kFlagsAdd, kFlagsDefault.

"Default" applies only to enumeration and is only valid in conjunction with "Add"

Starting a new query from within this event on the same object can cause problems. Better you create a new instance for another query if you need one.

For interface indexes, please also check NetworkInterfaceMBS class.
120.28 class DNSServiceMetaQueryMBS

120.28.1 class DNSServiceMetaQueryMBS

MBS MacOSX Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries all Bonjour services.  
**Notes:** Useful to learn what services are available. This queries the bonjour cache.

120.28.2 Properties

120.28.3 Lasterror as Integer

MBS MacOSX Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last error code.  
**Notes:** (Read and Write property)

120.28.4 Events

120.28.5 AddService(type as string, domain as string, interfaceName as string, rrtype as Integer, rrclass as Integer)

MBS MacOSX Plugin, Plugin Version: 12.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** A service was found.

120.28.6 RemoveService(type as string, domain as string, interfaceName as string, rrtype as Integer, rrclass as Integer)

MBS MacOSX Plugin, Plugin Version: 12.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** A service was removed.  
**Notes:** Remove is only called when a network interface is disabled or if the record expires from the cache. For network efficiency reasons, clients do not send goodbye packets for meta-query PTR records when deregistering a service.
120.29. CLASS DNSSERVICEREGISTERMBS

120.29.1 class DNSServiceRegisterMBS

MBS Network Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:**
A class for Apple’s implementation of ZeroConfig named Bonjour.

**Notes:**
This class allows you to register names on the local network using Bonjour.

This class requires Mac OS X 10.3 or Windows (with installed Bonjour support and the dnssd.dll) to work. Use DNSServiceDiscoveryBrowseMBS if you want to support Mac OS X 10.2.

**common error codes:**

- kDNSServiceErr_NoError = 0
- kDNSServiceErr_Unknown = -65537 (=& hFFE FFFF)
- kDNSServiceErr_NoSuchName = -65538
- kDNSServiceErr_NoMemory = -65539
- kDNSServiceErr_BadParam = -65540
- kDNSServiceErr_BadReference = -65541
- kDNSServiceErr_BadState = -65542
- kDNSServiceErr_BadFlags = -65543
- kDNSServiceErr_Unsupported = -65544
- kDNSServiceErr_NotInitialized = -65545
- kDNSServiceErr_AlreadyRegistered = -65547
- kDNSServiceErr_NameConflict = -65548
- kDNSServiceErr_Invalid = -65549
- kDNSServiceErr_Incompatible = -65551 (client library incompatible with daemon)
- kDNSServiceErr_BadinterfaceIndex = -65552

Subclass of the DNSServiceBaseMBS class.

**120.29.2 Methods**

**120.29.3 AddRecord(rrType as Integer, TXTRecord as string, ttl as Integer)**

MBS Network Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:**
Add a record to a registered service.

**Notes:**
LastError is set.

The name of the record will be the same as the registered service’s name. The record can later be updated
or deregistered by UpdateRecord() or RemoveRecord().

rrtype: The type of the record (e.g. kTypeTXT, kTypeSRV, etc)
data: The raw rdata to be contained in the added resource record.
ttl: The time to live of the resource record, in seconds. Pass 0 to use a default value.

Returns false on any error and true on success. Please check lasterror property when false is returned.

120.29.4 Register(Flags as Integer, interfaceIndex as Integer, servicename as string, servicetype as string, domain as string, host as string, port as Integer, txtRecord as string) as boolean

MBS Network Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Register a service that is discovered via Browse() and Resolve() calls. **Notes:** Flag for specifying renaming behavior on name conflict when registering non-shared records. NoAutorename is only valid if a name is explicitly specified when registering a service (ie the default name is not used.)

\[ kDNSServiceFlagsNoAutoRename = 8, \]
\[ kDNSServiceFlagsAutoRename = 0 \text{ (i.e. bit not set)} \]

You need to keep this object alive (keep a reference in a window, a module or your app class) so you can receive events.

In a perfect application you use DNSServiceDomainEnumerationMBS class to enumerate which domains you should use.
For interface indexes, please also check NetworkInterfaceMBS class.

Returns false on any error and true on success. Please check lasterror property when false is returned.

120.29.5 RemoveRecord

MBS Network Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Remove a record previously added to a service record set via AddTextRecord. **Notes:** Returns false on any error and true on success. Please check lasterror property when false is returned.
120.29.6 UpdateRecord(TXTRecord as string, ttl as Integer)

MBS Network Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Changes the TXT Record.

**Notes:**

data is the TXT Record composed of Pascal Strings.
ttl = time to live.

Returns false on any error and true on success. Please check lasterror property when false is returned.

120.29.7 Events

120.29.8 ServiceRegistration(flags as Integer, errorcode as Integer, Name as string, RegType as string, Domain as string)

MBS Network Plugin, Plugin Version: 5.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Registration was done.

**Notes:** Starting a new query from within this event on the same object can cause problems. Better you create a new instance for another query if you need one.
120.30 class DNSServiceRegisterRecordMBS

120.30.1 class DNSServiceRegisterRecordMBS

MBS Network Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:**
A class for Apple’s implementation of ZeroConfig named Bonjour.

**Notes:**
This class is to register a name record with the dns service.
Subclass of the DNSServiceBaseMBS class.

120.30.2 Methods

120.30.3 RegisterRecord(Flags as Integer, interfaceIndex as Integer, fullname as string, rrtype as Integer, rrClass as Integer, data as string, ttl as Integer) as boolean

MBS Network Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:**
Registers a record on the DNS system.

**Example:**

```c
const kDNSServiceClass_IN = 1
const kDNSServiceType_SRV = 33
const kDNSServiceFlagsShared = & h10
const kDNSServiceFlagsUnique = & h20
```

**Notes:**
flags: Possible values are kDNSServiceFlagsShared or kDNSServiceFlagsUnique (see flag type definitions for details).
interfaceIndex: If non-zero, specifies the interface on which to register the record (the index for a given interface is determined via the if_nametoindex() family of calls.) Passing 0 causes the record to be registered on all interfaces. See ”Constants for specifying an interface index” for more details.
fullname: The full domain name of the resource record.
rrtype: The numerical type of the resource record (e.g. kDNSServiceType_PTR, kDNSServiceType_SRV, etc)
rrclass: The class of the resource record (usually kDNSServiceClass_IN)
data: the raw rdata, as it is to appear in the DNS record.
ttl: The time to live of the resource record, in seconds. Pass 0 to use a default value.

LastError is set. kDNSServiceErr_NoError on success (any subsequent, asynchronous errors are delivered to the event), otherwise returns an error code indicating the error that occurred (the event is never invoked)
You need to keep this object alive (keep a reference in a window, a module or your app class) so you can receive events.
For interface indexes, please also check NetworkInterfaceMBS class.

Returns false on any error and true on success. Please check lasterror property when false is returned.

120.30.4  **UpdateRecord**(TXTRecord as string, ttl as Integer)

MBS Network Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Changes the TXT Record.
**Notes:**
data is the TXT Record composed of Pascal Strings.
ttl = time to live.

Returns false on any error and true on success. Please check lasterror property when false is returned.

120.30.5  **Events**

120.30.6  **ServiceRegistration**(flags as Integer, errorcode as Integer)

MBS Network Plugin, Plugin Version: 8.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Registration was done.
**Notes:** Starting a new query from within this event on the same object can cause problems. Better you create a new instance for another query if you need one.
120.31 class DNSServiceResolveMBS

120.31.1 class DNSServiceResolveMBS

MBS Network Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:**
A class for Apple’s implementation of ZeroConfig named Bonjour.

**Notes:**
This class allows you to lookup names on the local network using Bonjour.

This class requires Mac OS X 10.3 or Windows (with installed Bonjour support and the dnssd.dll) to work. Use DNSServiceDiscoveryBrowseMBS if you want to support Mac OS X 10.2.

common error codes:

- kDNSServiceErr_NoError = 0
- kDNSServiceErr_Unknown = -65537 (=& hFFFE FFFF)
- kDNSServiceErr_NoSuchName = -65538
- kDNSServiceErr_NoMemory = -65539
- kDNSServiceErr_BadParam = -65540
- kDNSServiceErr_BadReference = -65541
- kDNSServiceErr_BadState = -65542
- kDNSServiceErr_BadFlags = -65543
- kDNSServiceErr_Unsupported = -65544
- kDNSServiceErr_NotInitialized = -65545
- kDNSServiceErr_AlreadyRegistered = -65547
- kDNSServiceErr_NameConflict = -65548
- kDNSServiceErr_Invalid = -65549
- kDNSServiceErr_Incompatible = -65551 (client library incompatible with daemon)
- kDNSServiceErr_BadInterfaceIndex = -65552

Subclass of the DNSServiceBaseMBS class.

120.31.2 Methods

120.31.3 Resolve(InterfaceIndex as Integer, servicename as string, servicetype as string, domain as string) as boolean

MBS Network Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:**
Resolves a named instance of a service to its address, port, and (optionally) a text description.

**Notes:**
You need to keep this object alive (keep a reference in a window, a module or your app class) so you can receive events.
If you call this method in response to a browse call, please pass the domain string you got in the Service-Browse event and do not replace it with something else.

For interface indexes, please also check NetworkInterfaceMBS class.

Returns false on any error and true on success. Please check lasterror property when false is returned.

**120.31.4 Events**

**120.31.5 ServiceResolve(flags as Integer, InterfaceIndex as Integer, ErrorCode as Integer, Fullname as string, Hosttarget as string, Port as Integer, TxtRecord as string)**


**Notes:**

Starting a new query from within this event on the same object can cause problems. Better you create a new instance for another query if you need one.

For interface indexes, please also check NetworkInterfaceMBS class.
120.32 class NetSNMPMBS

120.32.1 class NetSNMPMBS


Example:

```vbscript
dim s as new NetSNMPMBS
s.Community = "demopublic"
s.IP = "test.net-snmp.org"

dim r as string = s.Query("system.sysUpTime.0")

MsgBox r
```

Notes:
Performs a SNMP GET query.
Using version 1, no authentication and no security options.

120.32.2 Methods

120.32.3 Constructor


120.32.4 Destructor


120.32.5 Query(ObjectID as String) as String


Example:
dim s as new NetSNPMBS

s.Community = "demopublic"
s.IP = "test.net-snmp.org"

dim r as string = s.Query("system.sysUpTime.0")

MsgBox r

Notes:
Please set community and IP properties before.
Lasterror and ErrorMessage properties are set.

120.32.6  QueryMT(ObjectID as String) as String

Example:

dim s as new NetSNPMBS

s.Community = "demopublic"
s.IP = "test.net-snmp.org"

dim r as string = s.Query("system.sysUpTime.0")

MsgBox r

Notes:
Please set community and IP properties before.
Lasterror and ErrorMessage properties are set.

Same as Query, but thread friendly.
Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.
120.32.7 Properties

120.32.8 Community as String

MBS Network Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** The community name to use.  
**Notes:**  
e.g. "public"  
(Read and Write property)

120.32.9 ErrorMessage as String

MBS Network Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** The last error message as text.  
**Notes:** (Read and Write property)

120.32.10 IP as String

MBS Network Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** The IP and port to connect to.  
**Notes:**  
e.g. "192.168.2.5:1234"  
(Read and Write property)

120.32.11 LastError as Integer

MBS Network Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** The last error code.  
**Notes:** (Read and Write property)

120.32.12 MaximumReceiveBufferSize as Integer

MBS Network Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** The maximum bytes to allocate for receiving buffer.  
**Notes:**  
By default 100000 bytes.  
(Read and Write property)
120.32. CLASS NETSNMPMBS

120.32.13  Retries as Integer

MBS Network Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** Number of retries.

**Notes:**
Default is -1 to use system default.
(Read and Write property)

120.32.14  TimeOut as Integer


**Notes:**
Default is -1 to use system default.
(Read and Write property)
120.33  **Globals**

120.33.1  **DNSAddressToNameIPv6MBS(HostAddress as string) as string**

MBS Network Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Resolves an IP to it's name.
**Notes:**
Only for IPv6.
Returns "" on any error (like no name known).
Improved in 13.1 plugins to work on all platforms.

120.33.2  **DNSAddressToNameMBS(HostAddress as string) as string**

MBS Network Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Resolves an IP to it's name.
**Notes:**
Only for IPv4.
Returns "" on any error (like no name known).
Improved in 13.1 plugins to work on all platforms.

120.33.3  **DNSNameToAddressIPv6MBS(HostName as string) as string**

MBS Network Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Resolves the IP address for this name.
**Example:**

```c
msgBox dnsnameToAddressIPv6MBS("localhost") + endofLine + dnsnameToAddressMBS("localhost")
```

**Notes:**
Only for IPv6.
Returns "" on any error (like no name known).
Improved in 13.1 plugins to work on all platforms.

120.33.4  **DNSNameToAddressMBS(HostName as string) as string**

MBS Network Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Resolves the IP address for this name.
**Example:**

```c
msgBox dnsnameToAddressIPv6MBS("localhost") + endofLine + dnsnameToAddressMBS("localhost")

**Notes:**

Only for IPv4.

Returns "" on any error (like no name known).

Improved in 13.1 plugins to work on all platforms.

This may not work on Windows or Linux with Bonjour host names!

### 120.33.5 OptionReuseAddressMBS(extends s as SocketCore) as Boolean


**Function:** Queries whether to allow reuse of same port.

**Notes:**

Internally this uses SOL_SOCKET/SO_REUSEADDR option.

Raises UnsupportedOperationException in case of failure.

See also:

- 120.33.6 OptionReuseAddressMBS(extends s as SocketCore, assigns value as Boolean)

### 120.33.6 OptionReuseAddressMBS(extends s as SocketCore, assigns value as Boolean)


**Function:** Sets whether to allow reuse of same port.

**Notes:**

Internally this uses SOL_SOCKET/SO_REUSEADDR option.

see also


Raises UnsupportedOperationException in case of failure.

See also:

- 120.33.5 OptionReuseAddressMBS(extends s as SocketCore) as Boolean
120.33.7 OptionReusePortMBS(extends s as SocketCore) as Boolean

**Function:** Query whether reuse of same port and IP is allowed.  
**Notes:**  
Internally this uses SOL_SOCKET/SO_REUSEPORT option.  
On Windows, this is not supported, so this property sets ReuseAddress.  
Raises UnsupportedOperationException in case of failure.  
See also:  
- 120.33.8 OptionReusePortMBS(extends s as SocketCore, assigns value as Boolean)

120.33.8 OptionReusePortMBS(extends s as SocketCore, assigns value as Boolean)

**Function:** Sets whether to allow reuse of same port and IP.  
**Notes:**  
Internally this uses SOL_SOCKET/SO_REUSEPORT option.  
On Windows, this is not supported, so this property sets ReuseAddress.  
Raises UnsupportedOperationException in case of failure.  
See also:  
- 120.33.7 OptionReusePortMBS(extends s as SocketCore) as Boolean

120.33.9 VerifyEmailMBS(email as string, NetworkCheck as boolean) as Integer

**Function:** Checks if an email can be valid.  
**Example:**  
```vbscript  
// should be okay  
dim r1 as Integer = VerifyEmailMBS("testing@monkeybreadsoftware.de", true)  

// should fail  
dim r2 as Integer = VerifyEmailMBS("testing@monkeybreadsoftware.test", true)  
```

**Notes:**  
If NetworkCheck is true, the DNS server is queries for whether an email service is available (MX Record).  
Else we only do a syntax check.
Result is zero for success or one of this error codes:

1. Invalid character in local part of email address.
2. Missing dot in local part of email address.
3. Invalid character in local part of email address.
4. Unescaped special character in local part of email address.
5. No local part in email address.
6. Dot found before @ character.
7. No domain in email address.
8. Domain starting with dot.
9. Domain is not allowed to have two dots.
10. Invalid character in domain of email address.
11. Special character in domain of email address.
12. No dot in domain in email address.
13. Domain longer than allowed in email address.
14. DNS failed to find mail server for the domain in email address. (Windows)
15. DNS failed to find mail server for the domain in email address. (Mac/Linux)
16. DNS did not find a mail server for the domain in email address.
17. DNS failed to find mail server for the domain in email address.
18. DNS server answers try again too often.

IDN support is not included. You may need to preprocess email if you need that.

If you have a DNS server, which will redirect all mistyped domain names to a search website, this won’t really work well and detect too many valid domain names.

120.33.10 ClearOptionsMBS(extends s as SocketCore)

MBS Network Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Clears all options.

**Notes:**

Works only on BSD Sockets and if the socket handle value is valid. Raises UnsupportedOperationException in case of failure.
120.33.11 OptionKeepAliveMBS(extends s as SocketCore) as Integer

Function: Gets the keep alive.
Notes:
Works only on BSD Sockets and if the socket handle value is valid.
Returns -1 on any error.

Enables the periodic transmission of messages on a connected socket. Should the connected party fail to respond to these messages, the connection is considered broken and processes using the socket are notified via a SIGPIPE signal when attempting to send data.
See also:
- 120.33.12 OptionKeepAliveMBS(extends s as SocketCore, assigns value as Integer)

120.33.12 OptionKeepAliveMBS(extends s as SocketCore, assigns value as Integer)

Function: Sets the keep alive.
Notes:
Works only on BSD Sockets and if the socket handle value is valid.

Enables the periodic transmission of messages on a connected socket. Should the connected party fail to respond to these messages, the connection is considered broken and processes using the socket are notified via a SIGPIPE signal when attempting to send data.
See also:
- 120.33.11 OptionKeepAliveMBS(extends s as SocketCore) as Integer

120.33.13 OptionMaximumSegmentSizeMBS(extends s as SocketCore) as Integer

Function: Queries the maximum segment size.
Example:

```plaintext
dim s as new TCPSocket

s.Port = 0
s.listen

MsgBox str(s.OptionMaximumSegmentSizeMBS)
```
Notes:
Only for TCP sockets.
Raises UnsupportedOperationException in case of failure.
See also:

- 120.33.14 OptionMaximumSegmentSizeMBS(extends s as SocketCore, assigns value as Integer) 17007

120.33.14 OptionMaximumSegmentSizeMBS(extends s as SocketCore, assigns value as Integer)

MBS Network Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adjusts the maximum segment size. **Notes:** Raises UnsupportedOperationException in case of failure.
See also:

- 120.33.13 OptionMaximumSegmentSizeMBS(extends s as SocketCore) as Integer 17006

120.33.15 OptionMutliCastTTLMBS(extends s as SocketCore) as Integer

MBS Network Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the multicast time to live value. **Notes:** Works only on BSD Sockets and if the socket handle value is valid. Raises UnsupportedOperationException in case of failure.
See also:

- 120.33.16 OptionMutliCastTTLMBS(extends s as SocketCore, assigns value as Integer) 17007

120.33.16 OptionMutliCastTTLMBS(extends s as SocketCore, assigns value as Integer)

MBS Network Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the multicast time to live value. **Example:**

```plaintext
dim t as new UDPSocket
// create a socket
t.Port=80
t.Connect
```
// wait a second to connect
cp./AppEvents 1000

// shows handle
MsgBox str(t.Handle)

// shows current value
MsgBox str(t.OptionMultiCastTTLMBS)
t.OptionMultiCastTTLMBS=10

// shows new value
MsgBox str(t.OptionMultiCastTTLMBS)

Notes:
Works only on BSD Sockets and if the socket handle value is valid.
Raises UnsupportedOperationException in case of failure.
See also:
- 120.33.15 OptionMultiCastTTLMBS(extends s as SocketCore) as Integer

120.33.17 OptionReceiveBufferSizeMBS(extends s as SocketCore) as Integer

Function: Queries the receiving buffer size.
Notes:
The buffer size may be increased for high-volume connections, or may be decreased to limit the possible backlog of incoming data. The system places an absolute limit on these values.
Raises UnsupportedOperationException in case of failure.
See also:
- 120.33.18 OptionReceiveBufferSizeMBS(extends s as SocketCore, assigns value as Integer)

120.33.18 OptionReceiveBufferSizeMBS(extends s as SocketCore, assigns value as Integer)

Function: Adjusts the receiving buffer size.
Notes:
The buffer size may be increased for high-volume connections, or may be decreased to limit the possible backlog of incoming data. The system places an absolute limit on these values.
120.33. **GLOBALS**

Raises UnsupportedOperationException in case of failure.

See also:

- 120.33.17 OptionReceiveBufferSizeMBS(extends s as SocketCore) as Integer

---

120.33.19  **OptionSendBufferSizeMBS(extends s as SocketCore) as Integer**


**Function:** Queries the sending buffer size.

**Example:**

```dim s as new UDPSocket
s.Port = 0
s.Connect
MsgBox str(s.OptionSendBufferSizeMBS)
```

**Notes:**

The buffer size may be increased for high-volume connections, or may be decreased to limit the possible backlog of incoming data. The system places an absolute limit on these values.

Raises UnsupportedOperationException in case of failure.

See also:

- 120.33.20 OptionSendBufferSizeMBS(extends s as SocketCore, assigns value as Integer)

---

120.33.20  **OptionSendBufferSizeMBS(extends s as SocketCore, assigns value as Integer)**


**Function:** Adjusts the sending buffer size.

**Notes:**

The buffer size may be increased for high-volume connections, or may be decreased to limit the possible backlog of incoming data. The system places an absolute limit on these values.

Raises UnsupportedOperationException in case of failure.

See also:

- 120.33.19 OptionSendBufferSizeMBS(extends s as SocketCore) as Integer
120.33.21 OptionTOSMBS(extends s as SocketCore) as Integer

MBS Network Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the type of service value.

**Notes:**
Works only on BSD Sockets and if the socket handle value is valid.
 Raises UnsupportedOperationException in case of failure.
See also:

- 120.33.22 OptionTOSMBS(extends s as SocketCore, assigns value as Integer)

120.33.22 OptionTOSMBS(extends s as SocketCore, assigns value as Integer)

MBS Network Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the type of service value.

**Notes:**
Works only on BSD Sockets and if the socket handle value is valid.
Possible values:
- IPTOS_MINCOST = 2
- IPTOS_RELIABILITY = 4
- IPTOS_THROUGHPUT = 8
- IPTOS_LOWDELAY = 16

You may want to set it after connecting.
 Raises UnsupportedOperationException in case of failure.
See also:

- 120.33.21 OptionTOSMBS(extends s as SocketCore) as Integer

120.33.23 OptionTTLMBS(extends s as SocketCore) as Integer

MBS Network Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the time to live value.

**Notes:**
Works only on BSD Sockets and if the socket handle value is valid.
 Raises UnsupportedOperationException in case of failure.
See also:

- 120.33.24 OptionTTLMBS(extends s as SocketCore, assigns value as Integer)
120.33.24 **OptionTTLMBSExtends** s as SocketCore, assigns value as Integer

MBS Network Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the time to live value.

**Example:**

```vba
dim t as new TCPSocket

// create a socket
t.Port = 80
t.Address = "www.apple.com"
t.Connect

// wait a second to connect
app.DoEvents 1000

// shows handle
MsgBox str(t.Handle)

// shows current value
MsgBox str(t.OptionTTLMBSExtends) t.OptionTTLMBSExtends = 10

// shows new value
MsgBox str(t.OptionTTLMBSExtends)
```

**Notes:**
Works only on BSD Sockets and if the socket handle value is valid.
Raises UnsupportedOperationException in case of failure.
See also:

- 120.33.23 **OptionTTLMBSExtends** s as SocketCore as Integer

120.33.25 **OptionTypeMBS** extends s as SocketCore as Integer

MBS Network Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries the type of socket.

**Example:**

```vba
dim u as new UDPSocket

u.Port = 9000
t.Connect

// shows 2 for UDP
```
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MsgBox str(u.OptionTypeMBS)

Notes:
Type is 1 for stream socket, 2 for datagram socket, 3 for raw socket, 4 for reliably-delivered message socket and 5 for a sequenced packet stream.
Raises UnsupportedOperationException in case of failure.

120.34 class NetworkInterfaceMBS

120.34.1 class NetworkInterfaceMBS

Function: The class for unix network interfaces.
Example:
// show IPv4 addresses
dim interfaces() as NetworkInterfaceMBS = NetworkInterfaceMBS.AllInterfaces

for each n as NetworkInterfaceMBS in interfaces
MsgBox n.name + ": " + n.IPv4
next

Notes:
For Windows, please use WindowsEthernetMBS class.
The values are not updated for this class. Just when you create the interface objects, you get a snapshot of the current state.

120.34.2 Methods

120.34.3 AllInterfaces(Merge as boolean = true) as NetworkInterfaceMBS()

Function: Returns array with all interfaces.
Example:
// show IPv4 addresses
dim interfaces() as NetworkInterfaceMBS = NetworkInterfaceMBS.AllInterfaces

for each n as NetworkInterfaceMBS in interfaces
MsgBox n.name+" : "+n.IPv4
next

Notes:
By default we merge several records for the same interface.
You may see one record for each protocol (IPv4, IPv6, LINK layer).

120.34.4 IndexMap as Dictionary

Function: Builds a dictionary to map indexes to names.
Example:
	 dim d as Dictionary = NetworkInterfaceMBS.IndexMap
dim lines() as string
for each key as Variant in d.keys
  lines.Append key+" : "+d.Value(key)
next
MsgBox Join(lines,EndOfLine)

Notes:
This is convenient method for the case you need to show list to user.
On Windows requires Windows Vista or newer.

120.34.5 IndexToName(Index as Integer) as string

Function: Queries name for network interface with index.
Example:
	dim Name as string
Name = NetworkInterfaceMBS.IndexToName(1)
msgBox Name

Notes: On Windows requires Windows Vista or newer.
120.34.6 IPv4s as string()

MBS Network Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** All IPv4 addresses for this interface.

120.34.7 IPv6s as string()

MBS Network Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** All IPv6 addresses for this interface.

120.34.8 NameToIndex(Name as String) as Integer


**Example:**

```vbs
dim index as Integer
index = NetworkInterfaceMBS.NameToIndex("en0")
```

**Notes:** On Windows requires Windows Vista or newer.

120.34.9 Properties

120.34.10 Broadcast as Boolean

MBS Network Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** Whether a broadcast address exists for this interface.

**Notes:** (Read and Write property)

120.34.11 BroadcastAddress as String

MBS Network Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** The broadcast address.

**Notes:** (Read and Write property)
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120.34.12 Flags as Integer

MBS Network Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** The interface flags.
**Notes:**
See if.h file in C system headers.
(Read and Write property)

120.34.13 Index as Integer

MBS Network Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** The index of this interface.
**Notes:** (Read and Write property)

120.34.14 InterfaceIndex as Integer

MBS Network Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The index of this interface.
**Notes:**
Index counts by plugin from 0 on the interfaces.
But this is real index from operation system.
On Windows requires Windows Vista or newer.
(Read and Write property)

120.34.15 IPv4 as String

MBS Network Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** The IPv4 address for this interface.
**Example:**
```javascript
// show IPv4 addresses
dim interfaces() as NetworkInterfaceMBS = NetworkInterfaceMBS.AllInterfaces
for each n as NetworkInterfaceMBS in interfaces
MsgBox n.name+"": "+n.IPv4
next
```
**Notes:** (Read and Write property)
120.34.16  IPv4count as Integer

MBS Network Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of IPv4 addresses for this interface. **Notes:** (Read and Write property)

120.34.17  IPv6 as String

MBS Network Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** The IPv6 address for this interface. **Notes:** (Read and Write property)

120.34.18  IPv6count as Integer

MBS Network Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of IPv6 addresses for this interface. **Notes:** (Read and Write property)

120.34.19  Loopback as Boolean

MBS Network Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** Whether this interface is the loopback interface. **Notes:** (Read and Write property)

120.34.20  MAC as String

MBS Network Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** The ethernet hardware address (MAC). **Notes:** (Read and Write property)

120.34.21  Multicast as Boolean

MBS Network Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** Whether this interface supports multicast. **Notes:** (Read and Write property)
120.34. **CLASS NETWORKINTERFACE**

### Name as String

MBS Network Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** The name of the network interface. **Notes:** (Read and Write property)

### Netmask as String

MBS Network Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** The network mask. **Notes:**
- Returns the IPv4 netmask.
- If that one is undefined, returns the IPv6 netmask.
- This property is just kept for compatibility. (Read only property)

### NetmaskIPv4 as String

MBS Network Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The network mask for IPv4. **Notes:** (Read and Write property)

### NetmaskIPv6 as String

MBS Network Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The network mask for IPv6. **Notes:** (Read and Write property)

### Running as Boolean

MBS Network Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** Whether the interface is running (resources allocated). **Notes:** (Read and Write property)
120.34.27  Up as Boolean

MBS Network Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** Whether the interface is up. **Notes:** (Read and Write property)
120.35. **CLASS PACKETSOCKETMBS**

120.35  **class PacketSocketMBS**

120.35.1  **class PacketSocketMBS**

MBS Network Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
An extension to the socket class for easy sending packets through the net.
**Notes:**
A packet is made like this:
+0: Size of data block
+4: 4 byte code string
+8: 4 byte for ID
+12: variable data.

The numbers are send in low endian format so this is crossplatform.

This socket subclass can be easily made in Realbasic code itself. I did it for several of my applications, so if you like it decide between making it yourself or using this one which may even be faster, because it is written in C?

This class is only available in RB 4.0 or newer, because it crashes on RB 3.5.

As the strings are transferred as binary data you need to take care that you send text e.g. as UTF8 and restore this encoding setting on receiving.
Subclass of the TCPSocket class.

120.35.2  **Methods**

120.35.3  **SendPacket(data as string)**

MBS Network Plugin, Plugin Version: 8.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sends a packet.
**Notes:** Uses ID=0 and code="" as a shortcut for the long SendPacket call.
See also:

- 120.35.4 SendPacket(data as string,code as string) 17020

- 120.35.5 SendPacket(data as string,code as string,ID as Integer) 17020
**SendPacket(data as string, code as string)**

MBS Network Plugin, Plugin Version: 8.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sends a packet.
**Notes:** Uses ID=0 as a shortcut for the long SendPacket call.
See also:
- 120.35.3 SendPacket(data as string) 17019
- 120.35.5 SendPacket(data as string, code as string, ID as Integer) 17020

**SendPacket(data as string, code as string, ID as Integer)**

MBS Network Plugin, Plugin Version: 8.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sends a packet.
**Notes:**
- code and ID are optional.
- Code is a 4 byte string to identify the content.
  (e.g. "mess" for a message or "link" for a link.)
See also:
- 120.35.3 SendPacket(data as string) 17019
- 120.35.4 SendPacket(data as string, code as string) 17020

**Events**

**ReceivedPacket(data as string, code as string, ID as Integer)**

MBS Network Plugin, Plugin Version: 8.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A packet was received.
120.36  class RAWSocketMBS

**120.36.1  class RAWSocketMBS**

**Function:** A class for low level and raw sockets.  
**Example:**

```vba
dim sock as RAWSocketMBS

// create UDP socket
sock = new RAWSocketMBS(RAWSocketMBS.AddressFamilyINet, RAWSocketMBS.SocketTypeDatagram, RAWSocketMBS.ProtocolUDP)
```

**Notes:**

Similar to Xojo’s built in Socket class, but more low level and with more options.  
Raw sockets for things like PING may need root permissions.

**120.36.2  Methods**

**120.36.3  AddressFamilyINet6 as Integer**

**Function:** One of the address family constants.  
**Notes:**

IPv6  
This is a method as value is different.  
Mac 30, Windows 23 and Linux 10.

**120.36.4  Bind(DestAddr as Ptr, DestAddrByteSize as Integer) as Boolean**

**Function:** Binds the socket to the given destination address.  
**Notes:**

Set ReuseAddress to bind to an address which already a socket is bound to.  
LastError is set.  
Returns true on success and false on failure.  
Please specify with port and IP in destAddress where to bind against.  
Structure of DestAddress is OS and address family dependent.  
See also:
• 120.36.5 Bind(Port as Integer, IP as string = "")

120.36.5 Bind(Port as Integer, IP as string = "")


**Function:** Binds the socket to the given port.

**Notes:**

If IP is not empty, you can bind the socket to only the given network interface with that IPv4.

Set ReuseAddress to bind to an address which already a socket is bound to.

LastError is set.

See also:

• 120.36.4 Bind(DestAddr as Ptr, DestAddrByteSize as Integer) as Boolean

120.36.6 CalcChecksum(data as ptr, ByteCount as Integer) as UInt16


**Function:** Calculates checksum for IP header.

120.36.7 Connect(DestAddr as Ptr, DestAddrByteSize as Integer) as Boolean


**Function:** Connects to destination address.

**Notes:**

LastError is set.

Returns true on success and false on failure.

Please specify with port and IP in destAddress where package is sent to.

Structure of DestAddress is OS and address family dependent.

120.36.8 Constructor(AddressFamily as Integer, SocketType as Integer, Protocol as Integer)


**Function:** The constructor.

**Example:**

```vba
dim sock as RAWSocketMBS

// create UDP socket
sock = new RAWSocketMBS(RAWSocketMBS.AddressFamilyINet, RAWSocketMBS.SocketTypeDatagram, RAWSocketMBS.ProtocolUDP)
```
Notes:
Please pass valid combination of OS supported sockets.
Raises exception if creation is not possible.
Raw socket requires root access.

120.36.9 Destructor

MBS Network Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The destructor. **Notes:** Closes the socket.

120.36.10 htonl(value as UInt32) as UInt32

MBS Network Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Convert 32bit Integer from network to host byte order.

120.36.11 htons(value as UInt16) as UInt16

MBS Network Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Convert 16bit Integer from network to host byte order.

120.36.12 inet_addr(IPv4 as String) as UInt32

MBS Network Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Converts IPv4 to numerical representation.

120.36.13 inet_pton(IPv4 as UInt32) as String

MBS Network Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Converts IPv4 to string representation.
120.36.14 **ntohl(value as UInt32) as UInt32**

MBS Network Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Convert 32bit Integer from host to network byte order.

120.36.15 **ntohs(value as UInt16) as UInt16**

MBS Network Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Convert 16bit Integer from host to network byte order.

120.36.16 **Poll**

MBS Network Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Polls for activity. **Notes:**

Calls events if needed.
This is called automatically via timer by the plugin.

120.36.17 **Read(ByteSize as Integer, peek as boolean = false) as MemoryBlock**

MBS Network Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Read at maximum the given number of bytes in buffer. **Notes:**

Pass true for peek if data should not be removed from receiving buffer.
Lasterror is set.

Be aware that you may not get whole packages here, so data may come in several chunks.
For that, please collect the data and look for whether your package is complete or a required end mark arrived.

120.36.18 **ReadAll(peek as boolean = false) as MemoryBlock**

MBS Network Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Read all bytes in buffer. **Example:**

dim sock as RAWSocketMBS
dim data as MemoryBlock = sock.ReadAll
if data = nil then
// nothing read
else

end if

Notes:
Pass true for peek if data should not be removed from receiving buffer. Lasterror is set.

Be aware that you may not get whole packages here, so data may come in several chunks. For that, please collect the data and look for whether your package is complete or a required end mark arrived.

120.36.19 ReadDatagram(peek as boolean = false) as DatagramMBS

Function: Reads a datagram.
Notes:
If peek is true, the data is not removed from read buffer. On error returns nil.

120.36.20 Send(Data as Ptr, DataByteSize as Integer, Flags as Integer = 0) as Integer

Function: Sends data.
Notes:
Data is sent to address passed with Connect method. Returns number of bytes sent. Lasterror is set.

120.36.21 SendMessage(Data as DatagramMBS) as Integer

Function: Sends a datagram.
Notes:
Please specify with port and address of datagram where package is sent to. Returns number of bytes sent.
Lasterror is set.
See also:

- 120.36.22 SendMessage(Data as MemoryBlock, IP as String, Port as Integer) as Integer
- 120.36.23 SendMessage(Data as string, IP as String, Port as Integer) as Integer

**120.36.22  SendMessage(Data as MemoryBlock, IP as String, Port as Integer) as Integer**

**Function:** Sends a datagram.
**Notes:**
Please specify with port and IP where package is sent to.
Returns number of bytes sent.
Lasterror is set.
See also:

- 120.36.21 SendMessage(Data as DatagramMBS) as Integer
- 120.36.23 SendMessage(Data as string, IP as String, Port as Integer) as Integer

**120.36.23  SendMessage(Data as string, IP as String, Port as Integer) as Integer**

**Function:** Sends data to target.
**Notes:**
Please specify with port and IP where package is sent to.
Returns number of bytes sent.
Lasterror is set.
See also:

- 120.36.21 SendMessage(Data as DatagramMBS) as Integer
- 120.36.22 SendMessage(Data as MemoryBlock, IP as String, Port as Integer) as Integer

**120.36.24  SendTo(Data as Ptr, DataByteSize as Integer, Flags as Integer, DestAddr as Ptr, DestAddrByteSize as Integer) as Integer**

**Function:** Sends data to dest address.
**Example:**
```dim sock as RawSocketMBS
dim Flags as integer```
dim r as Integer

    // port
    dim port as integer = val(iPort.Text)
    if port <= 0 or port >= 65535 then
        break
        MsgBox "Wrong port: " +iPort.Text
        Return
    end if

    // dest address

    ' */
    ' * Socket address, internet style. C declaration for Mac
    ' */
    'struct sockaddr
    '    _uint8_t sin_len; // 1 byte, Mac only
    '    _sa_family_t sin_family; // 1 byte
    '    in_port_t sin_port; // 2 byte in Network byte order
    '    struct in_addr sin_addr; // 4 byte
    '    char sin_zero [ 8 ]; // 8 bytes filler
    ' }

    // convert IPv4 from text to numeric value
    dim IP as Uint32 = RAWSocketMBS.inet_addr(iIP.Text)

    // create destination address. This is for Mac! Windows and Linux have different structures
    dim dest as new MemoryBlock(16)
    dest.UInt8Value(0) = dest.size
    dest.UInt8Value(1) = RAWSocketMBS.AddressFamilyINet
    dest.UInt16Value(2) = RAWSocketMBS.htons(port)
    dest.UInt32Value(4) = IP

    // message
    dim m as string = ConvertEncoding(iMessage.Text, encodings.UTF8)
    dim data as MemoryBlock = m

    // send
    r = sock.SendTo(data, data.size, Flags, dest, dest.size)

Notes:

Please specify with port and IP in destAddress where package is sent to.
Returns number of bytes sent. Structure of DestAddress is OS and address family dependent.
LastError is set.
120.36.25 Properties

120.36.26 AvailableBytes as Integer


Function: Returns number of bytes available for reading.

Notes:
Lasterror is set.
(Read only property)

120.36.27 Broadcast as Boolean


Function: Whether broadcasts are allowed.

Notes:
Set to true before sending a broadcast message.
Internally this uses SOL_SOCKET/SO_BROADCAST option.
Lasterror is set.
(Read and Write property)

120.36.28 Handle as Integer


Function: The internal socket handle.

Notes: (Read and Write property)

120.36.29 IPHeaderIncluded as Boolean


Function: Whether the OS provides IP header or you.

Notes:
Default is false.
Set to true when you include IP header in data.
(Read and Write property)
120.36. CLASS RAWSOCKETMBS

120.36.30  Lasterror as Integer

**Function:** The last error code.
**Notes:**
Platform dependent.
(Read and Write property)

120.36.31  LocalIP as String

**Function:** Queries local IP.
**Notes:**
Can be 0.0.0.0 if unknown.
May only be set if connected or binded.
Lasterror is set.
(Read only property)

120.36.32  LocalPort as Integer

**Function:** Queries local port.
**Notes:**
Lasterror is set.
Can be -1 if unknown.
(Read only property)

120.36.33  ReceiveBufferSize as Integer

**Function:** Queries the receiving buffer size.
**Notes:**
The buffer size may be increased for high-volume connections, or may be decreased to limit the possible backlog of incoming data. The system places an absolute limit on these values.
Internally this uses SOL_SOCKET/SO_RCVBUF option.
Lasterror is set.
(Read and Write property)
120.36.34 ReuseAddress as Boolean

Function: Allows reuse of same port.
Notes: Internally this uses SOL_SOCKET/SO_REUSEADDR option.

see also http://stackoverflow.com/questions/14388706/socket-options-so-reuseaddr-and-so-reuseport-how-do-they-differ-do-they-mean-t

Lasterror is set.
(Read and Write property)

120.36.35 ReusePort as Boolean

Function: Allow reuse of same port and IP.
Notes: Internally this uses SOL_SOCKET/SO_REUSEPORT option.
On Windows, this is not supported, so this property sets ReuseAddress.
Lasterror is set.
(Read and Write property)

120.36.36 SendBufferSize as Integer

Function: The sending buffer size.
Notes: The buffer size may be increased for high-volume connections, or may be decreased to limit the possible backlog of incoming data. The system places an absolute limit on these values.
Internally this uses SOL_SOCKET/SO_SNDBUF option.
Lasterror is set.
(Read and Write property)

120.36.37 SocketError as Integer

Function: The native socket error.
Notes:
Internally this uses SOL_SOCKET/SO_ERROR option.
Lasterror is set.
(Read only property)

120.36.38  Events

120.36.39  DataAvailable

MBS Network Plugin, Plugin Version: 17.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This event is called when new data is available.
**Notes:** Requires the socket to be bound.

120.36.40  Error

MBS Network Plugin, Plugin Version: 17.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event called if socket is in error state.

120.36.41  SendComplete

MBS Network Plugin, Plugin Version: 17.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last write operation is done.

120.36.42  Constants

120.36.43  AddressFamilyINet = 2

MBS Network Plugin, Plugin Version: 17.4. **Function:** One of the address family constants.
**Notes:** IPv4

120.36.44  ProtocolICMP = 1

MBS Network Plugin, Plugin Version: 17.4. **Function:** One of the protocol constants.
**Notes:** ICMP
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120.36.45  **ProtocolIP = 0**

MBS Network Plugin, Plugin Version: 17.4. **Function:** One of the protocol constants.  
**Notes:** IPv4

120.36.46  **ProtocolIPv6 = 41**

MBS Network Plugin, Plugin Version: 17.4. **Function:** One of the protocol constants.  
**Notes:** IPv6

120.36.47  **ProtocolRaw = 255**

MBS Network Plugin, Plugin Version: 17.4. **Function:** One of the protocol constants.  
**Notes:** Raw protocol

120.36.48  **ProtocolTCP = 6**

MBS Network Plugin, Plugin Version: 17.4. **Function:** One of the protocol constants.  
**Notes:** TCP

120.36.49  **ProtocolUDP = 17**

MBS Network Plugin, Plugin Version: 17.4. **Function:** One of the protocol constants.  
**Notes:** UDP

120.36.50  **SocketTypeDatagram = 2**

MBS Network Plugin, Plugin Version: 17.4. **Function:** One of the socket types.  
**Notes:** Datagram, e.g. UDP.

120.36.51  **SocketTypeRaw = 3**

MBS Network Plugin, Plugin Version: 17.4. **Function:** One of the socket types.  
**Notes:** Raw socket, requires root permissions.
MBS Network Plugin, Plugin Version: 17.4. **Function:** One of the socket types. **Notes:** Stream socket, e.g. TCP/IP.
120.37 class SSH2ChannelMBS

120.37.1 class SSH2ChannelMBS

MBS Network Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for a SSH2 channel. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

120.37.2 Methods

120.37.3 Close(Wait as Boolean = true)

MBS Network Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Close a channel. **Notes:**

Lasterror is set. Close an active data channel. In practice this means sending an SSH_MSG_CLOSE packet to the remote host which serves as instruction that no further data will be sent to it. The remote host may still send data back until it sends its own close message in response. To wait for the remote end to close its connection as well, follow this command with WaitClosed. Lasterror is set to kErrorEAgain when it would otherwise block. While kErrorEAgain is an error, it isn’t really a failure per se.

If wait parameter is true, the plugin does a loop to try close until it receives an okay (and not EAGAIN).

120.37.4 Constructor


120.37.5 Destructor


**Function:** Check a channel’s EOF status.

**Example:**

```vba
dim s as string
dim channel as SSH2ChannelMBS // your channel

// read all till end of channel
s = ""
do
app.YieldToNextThread
dim r as string = channel.Read(50000)
s = s + r
if channel.LastError = SSH2SessionMBS.kErrorEagain then
    // no answer yet
    Continue
elseif channel.LastError = SSH2SessionMBS.kErrorNone then
    // we got something
    if channel.EOF then
        // done?
        MsgBox "Result: " + s
        exit
    end if
else
    exit
end if
loop
```

**Notes:**

Check if the remote host has sent an EOF status for the selected stream.
Returns true if the remote host has sent EOF, otherwise false.
LastError is set. On error, this function returns true.

**120.37.7 Execute(command as string)**


**Function:** Executes something on the server.

**Notes:**

LastError is set.
LastError is set to kErrorEAgain when it would otherwise block. While kErrorEAgain is an error, it isn’t
really a failure per se.

120.37.8 Flush

MBS Network Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Flush stream for this channel.  
**Notes:** Lasterror is set.

120.37.9 FlushAll

MBS Network Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Flush all streams for this channel.  
**Notes:** Lasterror is set.

120.37.10 FlushExtendedData

MBS Network Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Flush extended data stream for this channel.  
**Notes:** Lasterror is set.

120.37.11 FlushStdErr

MBS Network Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Flush stderr stream for this channel.  
**Notes:** Lasterror is set.

120.37.12 Read(length as Integer = 65536) as string

**Example:**

```
dim s as string
dim channel as SSH2ChannelMBS // your channel

// read all till end of channel
s = ""
do
```
app.YieldToNextThread

dim r as string = channel.Read(50000)
s = s + r

if channel.LastError = SSH2SessionMBS.kErrorEagain then
    // no answer yet
    Continue
elseif channel.LastError = SSH2SessionMBS.kErrorNone then
    // we got something
    if channel.EOF then
        // done?
        MsgBox "Result: " + s
        exit
    end if
else
    exit
end if

loop

Notes:

LastError is set.
Attempt to read data from a stdout channel stream.
Returns data read.
LastError is set to kErrorEAgain when it would otherwise block. While kErrorEAgain is an error, it isn’t really a failure per se.

120.37.13 ReadStdErr(length as Integer = 65536) as string

Function: Read data from a channel stream.
Notes:

LastError is set.
Attempt to read data from a stderr channel stream.
Returns data read.
LastError is set to kErrorEAgain when it would otherwise block. While kErrorEAgain is an error, it isn’t really a failure per se.

120.37.14 RequestPTY(term as string)

Function: Request a PTY on an established channel.
Notes:

Lasterror is set.
Note that this does not make sense for all channel types and may be ignored by the server despite returning success.
Lasterror is set to kErrorEAgain when it would otherwise block. While kErrorEAgain is an error, it isn’t really a failure per se.

120.37.15 SendEOF

Notes:

Lasterror is set.
Tell the remote host that no further data will be sent on the specified channel. Processes typically interpret this as a closed stdin descriptor.
Lasterror is set to kErrorEAgain when it would otherwise block. While kErrorEAgain is an error, it isn’t really a failure per se.

120.37.16 SetBlocking(blocking as boolean)


120.37.17 SetEnv(name as string, value as string)

Notes:

Lasterror is set.
Lasterror is set to kErrorEAgain when it would otherwise block. While kErrorEAgain is an error, it isn’t really a failure per se.

120.37.18 Shell

Notes:
120.37. CLASS SSH2CHANNELMBS

Let error is set.
Let error is set to kErrorEAgain when it would otherwise block. While kErrorEAgain is an error, it isn’t really a failure per se.

120.37.19  WaitClosed

Function: Wait for the remote to close the channel.
Notes:
Let error is set.

Enter a temporary blocking state until the remote host closes the named channel. Typically sent after Close in order to examine the exit status.
Let error is set to kErrorEAgain when it would otherwise block. While kErrorEAgain is an error, it isn’t really a failure per se.

120.37.20  WaitEOF

Function: Wait for the remote end to acknowledge an EOF request.
Notes:
Let error is set.
May give kErrorEAgain error which means you should try again later.

120.37.21  Write(data as MemoryBlock) as Integer

Function: Write data to a channel stdout stream.
Notes:
Let error is set.

Write functions will use as much as possible of the buffer and put it into a single SSH protocol packet. This means that to get maximum performance when sending larger files, you should try to always pass in at least 32K of data to this function.

Returns actual number of bytes written. Let error being kErrorEagain when it would otherwise block. While kErrorEagain is an error, it isn’t really a failure per se.
See also:
120.37.22  Write(text as string) as Integer

Function: Write data to a channel stdout stream.
Notes:
Lasterror is set.

Write functions will use as much as possible of the buffer and put it into a single SSH protocol packet. This means that to get maximum performance when sending larger files, you should try to always pass in at least 32K of data to this function.

Returns actual number of bytes written. Lasterror being kErrorEagain when it would otherwise block. While kErrorEagain is an error, it isn’t really a failure per se.
See also:

• 120.37.21 Write(data as MemoryBlock) as Integer

120.37.23  WriteStdErr(data as MemoryBlock) as Integer

Function: Write data to a channel stderr stream.
Notes:
Lasterror is set.

Write functions will use as much as possible of the buffer and put it into a single SSH protocol packet. This means that to get maximum performance when sending larger files, you should try to always pass in at least 32K of data to this function.

Returns actual number of bytes written. Lasterror being kErrorEagain when it would otherwise block. While kErrorEagain is an error, it isn’t really a failure per se.
See also:

• 120.37.24 WriteStdErr(text as string) as Integer

120.37.24  WriteStdErr(text as string) as Integer

Function: Write data to a channel stderr stream.
Notes:
Lasterror is set.

Write functions will use as much as possible of the buffer and put it into a single SSH protocol packet. This means that to get maximum performance when sending larger files, you should try to always pass in at least 32K of data to this function.

Returns actual number of bytes written. Lasterror being kErrorEagain when it would otherwise block. While kErrorEagain is an error, it isn’t really a failure per se.

See also:

- 120.37.23 WriteStdErr(data as MemoryBlock) as Integer

120.37.25 Properties

120.37.26 ExitStatus as Integer

MBS Network Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Get the remote exit code. Notes: Returns the exit code raised by the process running on the remote host at the other end of the named channel. Note that the exit status may not be available if the remote end has not yet set its status to closed. Returns 0 on failure, otherwise the Exit Status reported by remote host. (Read only property)

120.37.27 Handle as Integer


120.37.28 LastError as Integer

120.37.29  Session as SSH2SessionMBS

MBS Network Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The session this channel belongs to.  
**Notes:** (Read and Write property)

120.37.30  Tag as Variant

MBS Network Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tag value.  
**Notes:**

A property where you can store any value you like.  
(Read and Write property)
120.38 class SSH2ConnectFailedExceptionMBS

MBS Network Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The exception for an error in the SSH2SessionMBS.Constructor. **Notes:** Subclass of the RuntimeException class.
120.39 class SSH2SessionMBS

120.39.1 class SSH2SessionMBS

MBS Network Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for a SSH2 session.

120.39.2 Methods

120.39.3 Banner as string

MBS Network Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get the remote banner. **Notes:** Once the session has been setup and Handshake has completed successfully, this function can be used to get the server id from the banner each server presents.

120.39.4 Constructor(IP as string, Port as Integer = 22, TimeOut as Integer = 30)

MBS Network Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor for using a new socket. **Notes:**

The plugin creates a new socket, connects to the given IP& Port and than creates a new session for it. Lasterror is set.
Please check if Handle property is non zero after constructor finishes.

Timeout defines timeout for connection in seconds. While waiting, the plugin yields time to other threads. If timeout is zero, the connection will not yield and take up to the default TCP/IP timeout.

See also:

- 120.39.5 Constructor(socket as TCPSocket)
- 120.39.6 Constructor(socketHandle as Integer, CloseSocketLater as boolean = false)

120.39.5 Constructor(socket as TCPSocket)

MBS Network Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor for using an existing socket. **Notes:**
120.39. CLASS SSH2SESSIONMBS

Initializes a new session.

socket: The socket to use. The plugin keeps reference to this socket in socket property.

You can use a Xojo socket and connect it. Once connected, pass it here, so the session can use this socket for communication.

If you connect the xojo socket in a loop on a thread, be sure to call poll method of socket, so it processes events like connecting. In main thread with timer, you would get this automatically.

See also:

- 120.39.4 Constructor(IP as string, Port as Integer = 22, TimeOut as Integer = 30) 17044
- 120.39.6 Constructor(socketHandle as Integer, CloseSocketLater as boolean = false) 17045

120.39.6 Constructor(socketHandle as Integer, CloseSocketLater as boolean = false)


Function: The constructor for using an existing socket.

Notes:

Initializes a new session.

socketHandle: The socket to use. Can be TCPSocket’s handle property for a Xojo socket. Or a socket connected via declares.

You can put the socket in the socket property to keep it alive as long as session is in memory.

Set CloseSocketLater = true if you pass a socket which can be closed in destructor. For Xojo socket, pass false as Xojo closes socket later.

You can use a Xojo socket and connect it. Once connected, pass it here, so the session can use this socket for communication.

See also:

- 120.39.4 Constructor(IP as string, Port as Integer = 22, TimeOut as Integer = 30) 17044
- 120.39.5 Constructor(socket as TCPSocket) 17044

120.39.7 Destructor


Function: The destructor.

120.39.8 Disconnect(description as string)


Function: Terminate transport layer.
Notes:
Lasterror is set.
description: Human readable reason for disconnection.
See also:

- 120.39.9 Disconnect(reason as Integer, description as string, lang as string = "")

120.39.9 Disconnect(reason as Integer, description as string, lang as string = "")

Function: Terminate transport layer.
Notes:
Lasterror is set.

reason: One of the Disconnect Reason constants.
description: Human readable reason for disconnection.
lang: Localization string describing the language/encoding of the description provided.
See also:

- 120.39.8 Disconnect(description as string)

120.39.10 HostKey(byref Type as Integer) as string


120.39.11 HostKeyHash(HashType as Integer) as string

Notes:
HashType: kHostKeyHashSHA1 or kHostKeyHashMD5.
Returns the computed digest of the remote system’s hostkey. The length of the returned string is hash_type specific (e.g. 16 bytes for MD5, 20 bytes for SHA1).
Computed hostkey hash value, or empty string if the information is not available (either the session has not yet been started up, or the requested hash algorithm was not available). The hash consists of raw binary bytes, not hex digits, so it is not directly printable.
120.39.12 **OpenSession** as **SSH2ChannelMBS**


**Function:** Establish a generic session channel.

**Notes:**
- Lasterror is set.
- Returns nil if the session start fails.

120.39.13 **SessionFlag(Flag as Integer, Value as boolean)**


**Function:** Get/Set a session flag.

**Notes:**
- See kFlag* constants.
- Lasterror is set.

120.39.14 **SessionHandshake**


**Function:** Perform the SSH handshake.

**Notes:**
- Lasterror is set.

120.39.15 **SetBanner(Banner as string)**


**Function:** Set the SSH protocol banner for the local client.

**Notes:**
- Set the banner that will be sent to the remote host when the SSH session is started with Handshake. This is optional; a banner corresponding to the protocol and libssh2 version will be sent by default.
- Lasterror is set.

120.39.16 **UserAuthKeyboardInteractive(UserName as string)**


**Function:** Authenticate a session using keyboard-interactive authentication.

**Notes:**
- username: Name of user to attempt keyboard-interactive authentication for.
Lasterror is set.
Calls KeyboardCallback callback to query input from user.

120.39.17 UserAuthList(username as string) as string

Function: List supported authentication methods.
Notes: username: Username which will be used while authenticating. Note that most server implementations do not permit attempting authentication with different usernames between requests. Therefore this must be the same username you will use on later userauth calls.

Send a SSH_USERAUTHNONE request to the remote host. Unless the remote host is configured to accept none as a viable authentication scheme (unlikely), it will return SSH_USERAUTH_FAILURE along with a listing of what authentication schemes it does support. In the unlikely event that none authentication succeeds, this method with return NULL. This case may be distinguished from a failing case by examining Authenticated.

120.39.18 UserAuthPassword(UserName as string, Password as string)

Function: Authenticate a session with username and password.
Notes: username: Name of user to attempt plain password authentication for.
password: Password to use for authenticating username.

Attempt basic password authentication. Note that many SSH servers which appear to support ordinary password authentication actually have it disabled and use Keyboard Interactive authentication (routed via PAM or another authentication backed) instead.
Lasterror is set.

120.39.19 UserAuthPublicKeyFromFile(UserName as string, publickey as folderitem, privatekey as folderitem, Passphrase as string)

Function: Authenticate a session with a public key, read from a file.
Notes: Lasterror is set.
username: user name to authenticate as.
publickey: Path of the public key file. (e.g. /etc/ssh/hostkey.pub). If libssh2 is built against OpenSSL, this option can be set to ""/nil.

privatekey: Path of the private key file. (e.g. /etc/ssh/hostkey)

passphrase: Passphrase to use when decoding privatekey.

Attempt public key authentication using a PEM encoded private key file stored on disk
See also:

- 120.39.20 UserAuthPublicKeyFromFile(UserName as string, publickey as string, privatekey as string, Passphrase as string)

120.39.20 UserAuthPublicKeyFromFile(UserName as string, publickey as string, privatekey as string, Passphrase as string)

Function: Authenticate a session with a public key, read from a file.
Notes:

Lasterror is set.
username: user name to authenticate as.
publickey: Path of the public key file. (e.g. /etc/ssh/hostkey.pub). If libssh2 is built against OpenSSL, this option can be set to ""/nil.
privatekey: Path of the private key file. (e.g. /etc/ssh/hostkey)
passphrase: Passphrase to use when decoding privatekey.

Attempt public key authentication using a PEM encoded private key file stored on disk
See also:

- 120.39.19 UserAuthPublicKeyFromFile(UserName as string, publickey as folderitem, privatekey as folderitem, Passphrase as string)

120.39.21 UserAuthPublicKeyFromMemory(UserName as string, publickey as string, privatekey as string, Passphrase as string)

Function: Authenticate a session with a public key, read from memory
Notes:

This function allows to authenticate a session with a public key read from memory.
Lasterror is set.

username - Remote user name to authenticate as.
publickeydata - Buffer containing the contents of a public key file. Optional.
privatekeydata - Buffer containing the contents of a private key file.
passphrase - Passphrase to use when decoding private key file.

Keys must have LF as line ending, not CR.

Attempt public key authentication using a PEM encoded private key file stored in memory.

120.39.22 Version as string

MBS Network Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Queries the version for the SSH library. Example:

MsgBox SSH2SessionMBS.Version

120.39.23 WaitSocket


120.39.24 Properties

120.39.25 Authenticated as Boolean


Indicates whether or not the named session has been successfully authenticated. Returns true if authenticated and false if not. (Read only property)

120.39.26 Blocking as Boolean


blocking: Set to a non-zero value to make the channel block, or zero to make it non-blocking.
Set or clear blocking mode on the selected on the session. This will instantly affect any channels associated
with this session. If a read is performed on a session with no data currently available, a blocking session will
wait for data to arrive and return what it receives. A non-blocking session will return immediately with an
empty buffer. If a write is performed on a session with no room for more data, a blocking session will wait
for room. A non-blocking session will return immediately without writing anything.
(Read and Write property)

120.39.27  Handle as Integer

Notes: (Read and Write property)

120.39.28  LastErrNo as Integer

Notes: Returns a numeric error code corresponding to the Error Code constants.
(Read only property)

120.39.29  LastError as Integer

Notes: (Read and Write property)

120.39.30  Socket as TCPSocket

Notes: This is set by constructor if you base the session on an existing session. But you can assign a socket here if you like.
(Read and Write property)
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120.39.31 Tag as Variant

Function: The tag value.
Notes:
A property where you can store any value you like.
(Read and Write property)

120.39.32 TimeOut as Integer

Function: The timeout for blocking functions.
Notes:
In milliseconds.
(Read and Write property)

120.39.33 Events

120.39.34 KeyboardCallback(Name as string, Instruction as string, Prompt-Count as Integer, Prompts() as SSH2UserAuthKeyboardInteractivePromptMBS, responses() as SSH2UserAuthKeyboardInteractiveResponseMBS)

Function: Event to ask for user input on a UserAuthKeyboardInteractive run.
Notes:
You can ask user for password, e.g. with a modal dialog.
You find prompt text in SSH2UserAuthKeyboardInteractivePromptMBS object and place answer in SSH2User-
AuthKeyboardInteractiveResponseMBS objects.

120.39.35 Constants

120.39.36 kErrorAgentProtocol = -42

Notes: Invalid agent protocol.
120.39.37  kErrorAlloc = -6

MBS Network Plugin, Plugin Version: 14.0. **Function:** One of the SSH error codes.  
**Notes:** Out of memory.

120.39.38  kErrorAuthenticationFailed = -18

MBS Network Plugin, Plugin Version: 14.0. **Function:** One of the SSH error codes.  
**Notes:** Authentication failed.

120.39.39  kErrorBadSocket = -45

MBS Network Plugin, Plugin Version: 14.0. **Function:** One of the SSH error codes.  
**Notes:** Bad socket handle.

120.39.40  kErrorBadUse = -39

MBS Network Plugin, Plugin Version: 14.0. **Function:** One of the SSH error codes.  
**Notes:** Bad use.

120.39.41  kErrorBannerRecv = -2

MBS Network Plugin, Plugin Version: 14.0. **Function:** One of the SSH error codes.  
**Notes:** Failed to receive banner.

120.39.42  kErrorBannerSend = -3

MBS Network Plugin, Plugin Version: 14.0. **Function:** One of the SSH error codes.  
**Notes:** Failed to send banner.

120.39.43  kErrorBufferTooSmall = -38

MBS Network Plugin, Plugin Version: 14.0. **Function:** One of the SSH error codes.  
**Notes:** Memory buffer is too small.
**120.39.44**  \( \text{kErrorChannelClosed} = -26 \)

MBS Network Plugin, Plugin Version: 14.0. **Function:** One of the SSH error codes.  
**Notes:** Channel is already closed.

**120.39.45**  \( \text{kErrorChannelEofSent} = -27 \)

MBS Network Plugin, Plugin Version: 14.0. **Function:** One of the SSH error codes.  
**Notes:** Channel sent EOF.

**120.39.46**  \( \text{kErrorChannelFailure} = -21 \)

MBS Network Plugin, Plugin Version: 14.0. **Function:** One of the SSH error codes.  
**Notes:** Generic error on a channel.

**120.39.47**  \( \text{kErrorChannelOutoforder} = -20 \)

MBS Network Plugin, Plugin Version: 14.0. **Function:** One of the SSH error codes.  
**Notes:** Channel commands out of order.

**120.39.48**  \( \text{kErrorChannelPacketExceeded} = -25 \)

MBS Network Plugin, Plugin Version: 14.0. **Function:** One of the SSH error codes.  
**Notes:** Channel packet exceeded.

**120.39.49**  \( \text{kErrorChannelRequestDenied} = -22 \)

MBS Network Plugin, Plugin Version: 14.0. **Function:** One of the SSH error codes.  
**Notes:** Channel request denied.

**120.39.50**  \( \text{kErrorChannelUnknown} = -23 \)

MBS Network Plugin, Plugin Version: 14.0. **Function:** One of the SSH error codes.  
**Notes:** Unknown channel.
120.39.51  \texttt{kErrorChannelWindowExceeded} = -24


120.39.52  \texttt{kErrorCompress} = -40


120.39.53  \texttt{kErrorDecrypt} = -12


120.39.54  \texttt{kErrorEagain} = -37

MBS Network Plugin, Plugin Version: 14.0. \textbf{Function}: One of the SSH error codes. \textbf{Notes}: Please try again later.

120.39.55  \texttt{kErrorEncrypt} = -44


120.39.56  \texttt{kErrorFile} = -16


120.39.57  \texttt{kErrorHostkeyInit} = -10

MBS Network Plugin, Plugin Version: 14.0. \textbf{Function}: One of the SSH error codes. \textbf{Notes}: Failed to init host key.
120.39.58  kErrorHostkeySign = -11

MBS Network Plugin, Plugin Version: 14.0. **Function**: One of the SSH error codes.  
**Notes**: Failed to sign host key.

120.39.59  kErrorInval = -34

MBS Network Plugin, Plugin Version: 14.0. **Function**: One of the SSH error codes.  
**Notes**: Input value error.

120.39.60  kErrorInvalidMac = -4

MBS Network Plugin, Plugin Version: 14.0. **Function**: One of the SSH error codes.  
**Notes**: Invalid MAC address.

120.39.61  kErrorInvalidPollType = -35

MBS Network Plugin, Plugin Version: 14.0. **Function**: One of the SSH error codes.  
**Notes**: Invalid poll type.

120.39.62  kErrorKexFailure = -5

MBS Network Plugin, Plugin Version: 14.0. **Function**: One of the SSH error codes.  
**Notes**: Key exchange failed.

120.39.63  kErrorKeyExchangeFailure = -8

MBS Network Plugin, Plugin Version: 14.0. **Function**: One of the SSH error codes.  
**Notes**: Key exchange failed.

120.39.64  kErrorKnownHosts = -46

MBS Network Plugin, Plugin Version: 14.0. **Function**: One of the SSH error codes.  
**Notes**: Unknown host.
120.39. CLASS SSH2SESSIONMBS

120.39.65  kErrorMethodNone = -17

MBS Network Plugin, Plugin Version: 14.0. **Function:** One of the SSH error codes. **Notes:** No method.

120.39.66  kErrorMethodNotSupported = -33

MBS Network Plugin, Plugin Version: 14.0. **Function:** One of the SSH error codes. **Notes:** Method not supported.

120.39.67  kErrorNone = 0

MBS Network Plugin, Plugin Version: 14.0. **Function:** One of the SSH error codes. **Notes:** No error.

120.39.68  kErrorOutOfBoundary = -41

MBS Network Plugin, Plugin Version: 14.0. **Function:** One of the SSH error codes. **Notes:** Out of Boundary.

120.39.69  kErrorPasswordExpired = -15

MBS Network Plugin, Plugin Version: 14.0. **Function:** One of the SSH error codes. **Notes:** Password expired.

120.39.70  kErrorProto = -14

MBS Network Plugin, Plugin Version: 14.0. **Function:** One of the SSH error codes. **Notes:** Protocol error.

120.39.71  kErrorPublickeyProtocol = -36

MBS Network Plugin, Plugin Version: 14.0. **Function:** One of the SSH error codes. **Notes:** Publickey protocol failed.
120.39.72  kErrorPublicKeyUnverified = -19

MBS Network Plugin, Plugin Version: 14.0. **Function:** One of the SSH error codes.  
**Notes:** Publickey is not verified.

120.39.73  kErrorRequestDenied = -32

MBS Network Plugin, Plugin Version: 14.0. **Function:** One of the SSH error codes.  
**Notes:** Request denied.

120.39.74  kErrorScpProtocol = -28

MBS Network Plugin, Plugin Version: 14.0. **Function:** One of the SSH error codes.  
**Notes:** Error with SCP protocol.

120.39.75  kErrorSftpProtocol = -31

MBS Network Plugin, Plugin Version: 14.0. **Function:** One of the SSH error codes.  
**Notes:** Error with SFTP protocol.

120.39.76  kErrorSocketDisconnect = -13

MBS Network Plugin, Plugin Version: 14.0. **Function:** One of the SSH error codes.  
**Notes:** Socket got disconnected.

120.39.77  kErrorSocketNone = -1

MBS Network Plugin, Plugin Version: 14.0. **Function:** One of the SSH error codes.  
**Notes:** No socket error.

120.39.78  kErrorSocketRecv = -43

MBS Network Plugin, Plugin Version: 14.0. **Function:** One of the SSH error codes.  
**Notes:** Socket receive failed.
120.39.79  \texttt{kErrorSocketSend} = -7

MBS Network Plugin, Plugin Version: 14.0.  \textbf{Function:} One of the SSH error codes.  
\textbf{Notes:} Socket send failed.

120.39.80  \texttt{kErrorSocketTimeout} = -30

MBS Network Plugin, Plugin Version: 14.0.  \textbf{Function:} One of the SSH error codes.  
\textbf{Notes:} Socket timeout.

120.39.81  \texttt{kErrorTimeout} = -9

MBS Network Plugin, Plugin Version: 14.0.  \textbf{Function:} One of the SSH error codes.  
\textbf{Notes:} Timeout.

120.39.82  \texttt{kErrorZlib} = -29

MBS Network Plugin, Plugin Version: 14.0.  \textbf{Function:} One of the SSH error codes.  
\textbf{Notes:} Error with zlib (Compression).

120.39.83  \texttt{kFlagCompress} = 2

\textbf{Notes:}
Set options for the created session. flag is the option to set, while value is typically set to 1 or 0 to enable or disable the option.  
If set - before the connection negotiation is performed - libssh2 will try to negotiate compression enabling for this connection. By default libssh2 will not attempt to use compression.

120.39.84  \texttt{kFlagSigPipe} = 1

\textbf{Notes:}
Set options for the created session. flag is the option to set, while value is typically set to 1 or 0 to enable or disable the option.
If set, libssh2 will not attempt to block SIGPIPEs but will let them trigger from the underlying socket layer.

120.39.85  kHostKeyHashMD5 = 1

MBS Network Plugin, Plugin Version: 14.0. **Function:** One of the hash types.  
**Notes:** MD5

120.39.86  kHostKeyHashSHA1 = 2

MBS Network Plugin, Plugin Version: 14.0. **Function:** One of the hash types.  
**Notes:** SHA1
class SSH2UserAuthKeyboardInteractivePromptMBS

MBS Network Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for an interactive keyboard authentication prompt. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

### Methods

#### Constructor


#### Destructor


### Properties

#### Echo as Integer

MBS Network Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The echo flag. **Notes:** (not sure what this is) (Read and Write property)

#### Length as Integer

MBS Network Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The length of the text. **Notes:** (Read and Write property)
120.40.8 Text as String

**Notes:** (Read and Write property)
120.41 class SSH2UserAuthKeyboardInteractiveResponseMBS

120.41.1 class SSH2UserAuthKeyboardInteractiveResponseMBS

MBS Network Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for a response with interactive keyboard login. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

120.41.2 Methods

120.41.3 Constructor


120.41.4 Destructor


120.41.5 Properties

120.41.6 Text as String

MBS Network Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The response text. **Notes:** Usually a password. (Read and Write property)
120.42 class TCPSocket

120.42.1 class TCPSocket

Plugin Version: 8.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The Socket class in Realbasic which is the superclass of the PacketSocketMBS class.
120.43.  CLASS TXTRECORDMBS

120.43  class TXTRecordMBS

120.43.1  class TXTRecordMBS

**Function:** The class to represent a DNS-SD TXT record.

**Example:**

```vba
dim t as new TXTRecordMBS

call t.SetValue "Hello", "World"
```

MsgBox t.Bytes // show complete record
MsgBox t.Value("Hello") // lookup value

**Notes:** The constructor creates an empty TXTRecord where you can add values using TXTRecordSetValue.

120.43.2  Methods

120.43.3  Bytes as string

**Function:** Allows you to retrieve a copy of to the raw bytes within a TXTRecord.

**Example:**

```vba
dim t as new TXTRecordMBS

call t.SetValue "Hello", "World"
```

**Notes:** Returns a string with the raw bytes inside the TXTRecord which you can pass directly to DNNServiceRegisterMBS.Register() or to DNNServiceRegisterMBS.UpdateRecord().

120.43.4  ContainsKey(key as string) as boolean

**Function:** Allows you to determine if a given TXT Record contains a specified key.

**Example:**

```vba
dim t as new TXTRecordMBS

call t.SetValue "Hello", "World"
```
if t.ContainsKey("Hello") then
  MsgBox "Hello found."
else
  MsgBox "Hello not found - >bug."
end if

if t.ContainsKey("hallo") then
  MsgBox "hallo found - >bug."
else
  MsgBox "hallo not found."
end if

Notes:

key: An ASCII string containing the key name.

Returns true if the TXT Record contains the specified key. Otherwise, it returns false.

See also:

- 120.43.5 ContainsKey(txtRecord as string, key as string) as boolean

120.43.5 ContainsKey(txtRecord as string, key as string) as boolean


Example:

dim t as new TXTRecordMBS

call t.SetValue "Hello", "World"

dim s as string = t.Bytes // copy record to string

// now search in that string:
if TXTRecordMBS.ContainsKey(s, "Hello") then
  MsgBox "Hello found."
else
  MsgBox "Hello not found - >bug."
end if

if TXTRecordMBS.ContainsKey(s, "hallo") then
  MsgBox "hallo found - >bug."
else
  MsgBox "hallo not found."

Notes:

txtRecord: The txt record to search in as a string.
key: An ASCII string containing the key name.

Returns true if the TXT Record contains the specified key. Otherwise, it returns false.
See also:

- 120.43.4 ContainsKey(key as string) as boolean

120.43.6 Count as Integer

Function: Returns the number of keys stored in the TXT Record.
Example:

dim t as new TXTRecordMBS

call t.SetValue "Hello1", "World1"
call t.SetValue "Hello2", "World2"
call t.SetValue "Hello3", "World3"

MsgBox str(t.Count)

See also:

- 120.43.7 Count(txtRecord as string) as Integer

120.43.7 Count(txtRecord as string) as Integer

Function: Returns the number of keys stored in the TXT Record.
Example:

dim t as new TXTRecordMBS

call t.SetValue "Hello1", "World1"
call t.SetValue "Hello2", "World2"
call t.SetValue "Hello3", "World3"

dim s as string = t.Bytes // copy record
// now count in that record
MsgBox str(TXTRecordMBS.Count(s))

See also:

- 120.43.6 Count as Integer

120.43.8 KeyAtIndex(index as Integer) as string

MBS Network Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns the key with the given index from the txt record. Example:

dim t as new TXTRecordMBS
call t.SetValue "Hello", "World"

MsgBox t.KeyAtIndex(0) + EndOfLine + t.ValueAtIndex(0)

Notes:
index: the index you want in the range from zero to GetCount()-1.

It’s also possible to iterate through keys in a TXT record by simply calling KeyAtIndex() repeatedly, beginning with index zero and increasing until lasterror is set to kErrorInvalid. See also:

- 120.43.9 KeyAtIndex(txtRecord as string, index as Integer) as string

120.43.9 KeyAtIndex(txtRecord as string, index as Integer) as string

MBS Network Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. Function: Returns the key with the given index from the txt record. Example:

dim t as new TXTRecordMBS
call t.SetValue "Hello", "World"
dim s as string = t.Bytes // copy record to string

// now search in that string:
MsgBox TXTRecordMBS.KeyAtIndex(s,0) +EndOfLine + TXTRecordMBS.ValueAtIndex(s, 0)

Notes:

txtRecord: The txt record to search in as a string.
index: the index you want in the range from zero to GetCount()-1.

It’s also possible to iterate through keys in a TXT record by simply calling KeyAtIndex() repeatedly, beginning with index zero and increasing until lasterror is set to kErrorInvalid.
See also:

• 120.43.8 KeyAtIndex(index as Integer) as string

120.43.10 Length as Integer

Example:

dim t as new TXTRecordMBS
call t.SetValue "Hello1", "World1"
call t.SetValue "Hello2", "World2"
call t.SetValue "Hello3", "World3"
MsgBox str(t.Length) // shows 42

120.43.11 RemoveValue(key as string)

MBS Network Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. Function: Removes a key from a TXTRecordRef. The "key" must be an ASCII string which exists in the TXTRecord.
Example:

dim t as new TXTRecordMBS
call t.SetValue "Hello1", "World1"
call t.SetValue "Hello2", "World2"
call t.SetValue "Hello3", "World3"
t.RemoveValue "Hello2"
MsgBox t.Bytes
Notes:
key: A key name which exists in the TXTRecord.

Lasterror is kErrorNoError on success or kErrorNoSuchKey if the "key" does not exist in the TXTRecord.

120.43.12 SetValue(key as string, value as string) as Integer

Example:
dim t as new TXTRecordMBS
call t.SetValue "Hello1", "World1"
call t.SetValue "Hello2", "World2"
call t.SetValue "Hello3", "World3"

Notes:
If the "key" already exists in the TXTRecord, then the current value will be replaced with the new value.

Keys may exist in four states with respect to a given TXT record:

- Absent (key does not appear at all)
- Present with no value ("key" appears alone)
- Present with empty value ("key=" appears in TXT record)
- Present with non-empty value ("key=value" appears in TXT record)

For more details refer to "Data Syntax for DNS-SD TXT Records" in
http://files.dns-sd.org/draft-cheshire-dnsext-dns-sd.txt

key: A string which only contains printable ASCII values (& h20-& h7E), excluding '=' (& h3D). Keys should be 8 characters or less.
value: Any binary value. For values that represent textual data, UTF-8 is STRONGLY recommended.
Returns kErrorNoError on success. Returns kErrorInvalid if the ”key” string contains illegal characters.
Returns kErrorNoMemory if adding this key would exceed the available storage.

The plugin currently does not create keys with empty value. If you need that, please email us.

120.43.13  Value(key as string) as string

**Function:** Allows you to retrieve the value for a given key from a TXT Record.
**Example:**
```
dim t as new TXTRecordMBS

call t.SetValue ”Hello”, ”World”
MsgBox t.Value(”Hello”) // lookup value
```

**Notes:**

key: The ASCII string containing the key name.

Returns an empty string if the key does not exist in this TXT record, or exists with no value (to differentiate between these two cases use ContainsKey()).
See also:
- 120.43.14 Value(txtRecord as string, key as string) as string

120.43.14  Value(txtRecord as string, key as string) as string

**Function:** Allows you to retrieve the value for a given key from a TXT Record.
**Example:**
```
dim t as new TXTRecordMBS

call t.SetValue ”Hello”, ”World”

dim s as string = t.bytes
MsgBox TXTRecordMBS.Value(s, ”Hello”) // lookup value
```

**Notes:**

txtRecord: Pointer to the received TXT Record bytes.
key: The ASCII string containing the key name.

Returns an empty string if the key does not exist in this TXT record, or exists with no value (to differentiate between these two cases use ContainsKey()).

See also:

- 120.43.13 Value(key as string) as string

120.43.15 ValueAtIndex(index as Integer) as string


Function: Returns the key with the given index from the txt record.

Example:

dim t as new TXTRecordMBS

call t.SetValue "Hello", "World"

MsgBox t.KeyAtIndex(0) + EndOfLine + t.ValueAtIndex(0)

Notes:

index: the index you want in the range from zero to GetCount()-1.

It’s also possible to iterate through values in a TXT record by simply calling ValueAtIndex() repeatedly, beginning with index zero and increasing until lasterror is set to kErrorInvalid.

See also:

- 120.43.16 ValueAtIndex(txtRecord as string, index as Integer) as string

120.43.16 ValueAtIndex(txtRecord as string, index as Integer) as string


Function: Returns the key with the given index from the txt record.

Example:

dim t as new TXTRecordMBS

call t.SetValue "Hello", "World"

dim s as string = t.Bytes // copy record to string

// now search in that string:
MsgBox TXTRecordMBS.KeyAtIndex(s,0) + EndOfLine + TXTRecordMBS.ValueAtIndex(s,0)
Notes:

txtRecord: The txt record to search in as a string.
index: the index you want in the range from zero to GetCount()-1.

It’s also possible to iterate through values in a TXT record by simply calling GetValueAtIndex() repeatedly, beginning with index zero and increasing until lasterror is set to kErrorInvalid.
See also:

• 120.43.15 ValueAtIndex(index as Integer) as string
120.44 class UDPSocketMBS


120.44.2 Methods

120.44.3 AddMembership(MultiAddress as string, InterfaceAddress as string = ””)


MultiAddress: The IPv4 address of the group to join. InterfaceAddress: The IPv4 address of the network interface to use. Can be empty for any interface.

120.44.4 Bind(Port as Integer, IP as string = ””)

MBS Network Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Binds the socket to the given port. Notes: If IP is not empty, you can bind the socket to only the given network interface with that IPv4. Set ReuseAddress to bind to an address which already a socket is bound to. Lasterror is set.

120.44.5 Constructor

120.44. CLASS UDPSOCKETMBS

120.44.6 Destructor

**Notes:** Closes the socket.

120.44.7 DropMembership(MultiAddress as string, InterfaceAddress as string = ””)

**Notes:**  
Internally this uses IPPROTO_IP/IP_DROP_MEMBERSHIP option.  
LastError is set.  
MultiAddress: The IPv4 address of the group to join.  
InterfaceAddress: The IPv4 address of the network interface to use. Can be empty for any interface.

120.44.8 Poll

**Notes:**  
Calls events if needed.  
This is called automatically via timer by the plugin.

120.44.9 Read(peek as boolean = false) as DatagramMBS

**Notes:**  
If peek is true, the data is not removed from read buffer.  
On error returns nil.
120.44.10  **SendMessage(Data as DatagramMBS) as Integer**

**Function:** Sends a datagram.  
**Notes:**  
Please specify with port and address of datagram where package is sent to.  
Returns number of bytes sent.  
LastError is set.  
See also:  
- 120.44.11 SendMessage(Data as MemoryBlock, IP as String, Port as Integer) as Integer  
- 120.44.12 SendMessage(Data as string, IP as String, Port as Integer) as Integer

120.44.11  **SendMessage(Data as MemoryBlock, IP as String, Port as Integer) as Integer**

**Function:** Sends a datagram.  
**Notes:**  
Please specify with port and IP where package is sent to.  
Returns number of bytes sent.  
LastError is set.  
See also:  
- 120.44.10 SendMessage(Data as DatagramMBS) as Integer  
- 120.44.12 SendMessage(Data as string, IP as String, Port as Integer) as Integer

120.44.12  **SendMessage(Data as string, IP as String, Port as Integer) as Integer**

**Function:** Sends a datagram.  
**Notes:**  
Please specify with port and IP where package is sent to.  
Returns number of bytes sent.  
LastError is set.  
See also:  
- 120.44.10 SendMessage(Data as DatagramMBS) as Integer  
- 120.44.11 SendMessage(Data as MemoryBlock, IP as String, Port as Integer) as Integer
120.44. CLASS UDPSOCKETMBS

120.44.13 Properties

120.44.14 AvailableBytes as Integer

Function: Returns number of bytes available for reading.
Notes:
Lasterror is set.
(Read only property)

120.44.15 BindAddress as String

Function: The IP used for bind operation.
Notes:
This is set by Bind on success.
(Read and Write property)

120.44.16 BindPort as Integer

Function: The port used for bind operation.
Notes:
This is set by Bind on success.
(Read and Write property)

120.44.17 Broadcast as Boolean

Function: Whether broadcasts are allowed.
Notes:
Set to true before sending a broadcast message.
Internally this uses SOL_SOCKET/SO_BROADCAST option.
Lasterror is set.
(Read and Write property)
120.44.18 Handle as Integer

MBS Network Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal socket handle. **Notes:** (Read and Write property)

120.44.19 Lasterror as Integer

MBS Network Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last error code. **Notes:** Platform dependent. (Read and Write property)

120.44.20 LocalIP as String

MBS Network Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries local IP. **Notes:**

Can be 0.0.0.0 if unknown.
May only be set if connected or binded.
Lasterror is set.
(Read only property)

120.44.21 LocalPort as Integer

MBS Network Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries local port. **Notes:**

Lasterror is set.
Can be -1 if unknown.
(Read only property)

120.44.22 MulticastInterface as String

MBS Network Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The interface to use for multicast. **Notes:**
120.44. CLASS UDP_SOCKET_MBS

Internally this uses IPPROTO/IP/IP_MULTICAST_IF option. Lasterror is set.

Assign empty string to use all interfaces. May return 0.0.0.0 to indicate all interfaces. (Read and Write property)

120.44.23 MulticastLoop as Boolean

**Function:** Whether multicast packets are also sent to the sending socket. 
**Notes:**
Internally this uses IPPROTO/IP/IP_MULTICAST_LOOP option. Lasterror is set. (Read and Write property)

120.44.24 MulticastTimeToLive as Integer

**Function:** The multicast time to live value. 
**Notes:**
Internally this uses IPPROTO/IP/IP_MULTICAST_TTL option. Lasterror is set. Range from 0 to 255. (Read and Write property)

120.44.25 ReceiveBufferSize as Integer

**Function:** Queries the receiving buffer size. 
**Notes:**
The buffer size may be increased for high-volume connections, or may be decreased to limit the possible backlog of incoming data. The system places an absolute limit on these values. Internally this uses SOL_SOCKET/SO_RCVBUF option. Lasterror is set. (Read and Write property)
120.44.26 ReuseAddress as Boolean

Function: Allows reuse of same port.
Notes:
Internally this uses SOL_SOCKET/SO_REUSEADDR option.

see also

Lasterror is set.
(Read and Write property)

120.44.27 ReusePort as Boolean

Function: Allow reuse of same port and IP.
Notes:
Internally this uses SOL_SOCKET/SO_REUSEPORT option.
On Windows, this is not supported, so this property sets ReuseAddress.
Lasterror is set.
(Read and Write property)

120.44.28 SendBufferSize as Integer

Function: The sending buffer size.
Notes:
The buffer size may be increased for high-volume connections, or may be decreased to limit the possible backlog of incoming data. The system places an absolute limit on these values.
Internally this uses SOL_SOCKET/SO_SNDBUF option.
Lasterror is set.
(Read and Write property)

120.44.29 SocketError as Integer

Function: The native socket error.
**120.44. CLASS UDPSOCKETMBS**

**Notes:**
Internally this uses SOL_SOCKET/SO_ERROR option.
LastError is set.
(Read only property)

**120.44.30 TimeToLive as Integer**

**Function:** The time to live value.
**Notes:**
Internally this uses IPPROTO_IP/IP_TTL option.
LastError is set.
Range from 0 to 255.
(Read and Write property)

**120.44.31 Type as Integer**

**Function:** Socket type.
**Notes:**
Always 2 as this is a datagram socket.
Internally this uses SOL_SOCKET/SO_TYPE option.
LastError is set.
(Read only property)

**120.44.32 TypeOfService as Integer**

**Function:** The type of service value.
**Notes:**
Works only on BSD Sockets.

Possible values:
IPTOS_MINCOST = 2
IPTOS_RELIABILITY = 4
IPTOS_THROUGHPUT = 8
IPTOS_LOWDELAY = 16
Internally this uses IPPROTO_IP/IP_TOS option.
(May not work on Windows.

Lasterror is set.
(Read and Write property)

120.44.33 Events

120.44.34 DataAvailable

MBS Network Plugin, Plugin Version: 14.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This event is called when new data is available. 
**Notes:** Requires the socket to be bound.

120.44.35 Error

MBS Network Plugin, Plugin Version: 14.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event called if socket is in error state.

120.44.36 SendComplete

MBS Network Plugin, Plugin Version: 14.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last write operation is done.
120.45 module WebSocketHelperMBS

120.45.1 module WebSocketHelperMBS

Function: Helper functions for implementing web sockets.
Example:

// short packet
dim s as string = WebSocketHelperMBS.AddHeader("Hello")
dim b as Boolean = WebSocketHelperMBS.FrameMasked(s)
dim t as string = WebSocketHelperMBS.Unmask(s)

// long packet
dim text as string = "Hello World. This is just a sample text with a little bit more characters to make it at least 127 characters long for this test."
dim s2 as string = WebSocketHelperMBS.AddHeader(text)
dim b2 as Boolean = WebSocketHelperMBS.FrameMasked(s2)
dim t2 as string = WebSocketHelperMBS.Unmask(s2)

Break // look in debugger

Deprecated: This item is deprecated and should no longer be used. You can use WebSocketMBS instead.

120.45.2 Methods

120.45.3 AddHeader(data as Memoryblock, opCode as Integer = 7) as Memoryblock

Function: Adds header to a frame.
Notes: Depending on the length of the frame we add two to ten bytes in front with the opcode included and the length information.
See also:

• 120.45.4 AddHeader(data as string, opCode as Integer = 7) as string

120.45.4 AddHeader(data as string, opCode as Integer = 7) as string

Function: Adds header to a frame.
Notes: Depending on the length of the frame we add two to ten bytes in front with the opcode included and the length information.
120.45.5  FrameMasked(data as Memoryblock) as boolean

Function: Whether the frame is masked or not.
Notes: Returns true if the first bit of the first byte is set.
See also:

- 120.45.6 FrameMasked(data as string) as boolean

120.45.6  FrameMasked(data as string) as boolean

Function: Whether the frame is masked or not.
Notes: Returns true if the first bit of the first byte is set.
See also:

- 120.45.5 FrameMasked(data as Memoryblock) as boolean

120.45.7  Unmask(data as Memoryblock) as Memoryblock

Function: Unmasks a data packet.
Notes:
Does the reverse of AddHeader.
The string returned has no encoding defined.
For a text frame, you should use DefineEncoding with UTF-8.
See also:

- 120.45.8 Unmask(data as Memoryblock, byref Offset as Integer, byref Length as Integer, byref TotalLength as Integer) as Memoryblock

- 120.45.9 Unmask(data as string) as string

- 120.45.10 Unmask(data as string, byref Offset as Integer, byref Length as Integer, byref TotalLength as Integer) as string
120.45.8  Unmask(data as Memoryblock, byref Offset as Integer, byref Length as Integer, byref TotalLength as Integer) as Memoryblock

**Function:** Unmasks a data packet.  
**Notes:**  
Does the reverse of AddHeader.  
The string returned has no encoding defined.  
For a text frame, you should use DefineEncoding with UTF-8.  
This method also sets Offset, Length and TotalLength parameters.  
See also:  
- 120.45.7 Unmask(data as Memoryblock) as Memoryblock  
- 120.45.9 Unmask(data as string) as string  
- 120.45.10 Unmask(data as string, byref Offset as Integer, byref Length as Integer, byref TotalLength as Integer) as string

120.45.9  Unmask(data as string) as string

**Function:** Unmasks a data packet.  
**Notes:**  
Does the reverse of AddHeader.  
The string returned has no encoding defined.  
For a text frame, you should use DefineEncoding with UTF-8.  
See also:  
- 120.45.7 Unmask(data as Memoryblock) as Memoryblock  
- 120.45.8 Unmask(data as Memoryblock, byref Offset as Integer, byref Length as Integer, byref TotalLength as Integer) as Memoryblock  
- 120.45.10 Unmask(data as string, byref Offset as Integer, byref Length as Integer, byref TotalLength as Integer) as string

120.45.10  Unmask(data as string, byref Offset as Integer, byref Length as Integer, byref TotalLength as Integer) as string

**Function:** Unmasks a data packet.  
**Notes:**  
Does the reverse of AddHeader.  
The string returned has no encoding defined.
120.45.7 Unmask(data as Memoryblock) as Memoryblock
120.45.8 Unmask(data as Memoryblock, byref Offset as Integer, byref Length as Integer, byref Total-Length as Integer) as Memoryblock
120.45.9 Unmask(data as string) as string

120.45.11 Constants

120.45.12 kOpCodeBinaryFrame = 2

120.45.13 kOpCodeClose = 8

120.45.14 kOpCodeContinuation = 0

120.45.15 kOpCodeEnd = 7

120.45.16 kOpCodePing = 9
120.45.17  kOpCodePong = 10

MBS Network Plugin, Plugin Version: 12.5. **Function:** One of the OpCode values.  
**Notes:** Pong

120.45.18  kOpCodeTextFrame = 1

MBS Network Plugin, Plugin Version: 12.5. **Function:** One of the OpCode values.  
**Notes:** Text frame
class WindowsDNSRecordAAAAMBS

class WindowsDNSRecordAAAAMBS

Notes: Be aware that IPv6 is not available on Windows XP and older.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

Methods

Constructor

Notes: This constructor makes sure you don’t create useless WindowsDNSRecordAAAAMBS objects by error. The only way to create an object is to use the root method to get the object hierarchy.
This constructor is private to make sure you don’t create an object from this class by error. Please use designated functions to create objects.

Properties

Address as String

Notes: (Read and Write property)

RawAddress as String

Notes: (Read and Write property)
120.47 class WindowsDNSRecordAMBS

120.47.1 class WindowsDNSRecordAMBS

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The class for a DNS address (A) record. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

120.47.2 Methods

120.47.3 Constructor

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The private constructor. **Notes:** This constructor makes sure you don’t create useless WindowsDNSRecordAMBS objects by error. The only way to create an object is to use the root method to get the object hierarchy. This constructor is private to make sure you don’t create an object from this class by error. Please use designated functions to create objects.

120.47.4 Properties

120.47.5 Address as String

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The IPv4 address as a string. **Notes:** (Read and Write property)

120.47.6 IPAddress as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The raw address as an integer. **Notes:** (Read and Write property)
120.48  class WindowsDNSRecordMBS

120.48.1  class WindowsDNSRecordMBS

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The class for DNS query results on Windows. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

120.48.2  Methods

120.48.3  Constructor

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The private constructor. **Notes:** This constructor makes sure you don’t create useless WindowsDNSRecordMBS objects by error. The only way to create an object is to use the root method to get the object hierarchy. This constructor is private to make sure you don’t create an object from this class by error. Please use designated functions to create objects.

120.48.4  Query(name as string, type as Integer, options as Integer = 0) as WindowsDNSRecordMBS

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Performs a DNS query on Windows. **Notes:** The DnsQuery function type is the generic query interface to the DNS namespace, and provides application developers with a DNS query resolution interface.

name: a string that represents the name of the owner of the record set that is queried.
type: A value that represents the RR DNS Record Type that is queried.
Options: A value that contains a combination of kDNSQuery* constants.

Returns the record chain on success.

Applications that call the DnsQuery function build a query using a fully-qualified DNS name and Resource Record (RR) type, and set query options depending on the type of service desired. When the kDNSQuery-Standard option is set, DNS uses the resolver cache, queries first with UDP, then retries with TCP if the response is truncated, and requests that the server to perform recursive resolution on behalf of the client to
Note When calling one of the DnsQuery function types, be aware that a DNS server may return multiple records in response to a query. A computer that is multihomed, for example, will receive multiple A records for the same IP address. The caller must use as many of the returned records as necessary.

Consider the following scenario, in which multiple returned records require additional activity on behalf of the application: A Query function call is made for a multihomed computer and the application finds that the address associated with the first A record is not responding. The application should then attempt to use other IP addresses specified in the (additional) A records returned from the Query function call.

120.48.5 Properties

120.48.6 A as WindowsDNSRecordAMBS

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The address record. **Notes:** (Read and Write property)

120.48.7 AAAA as WindowsDNSRecordAAAAMBS

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The IPv6 address record. **Notes:** (Read and Write property)

120.48.8 AFSDB as WindowsDNSRecordMXMBS

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The data record. **Notes:** (Read and Write property)

120.48.9 CharSet as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** This value specifies the character set used in the associated function call. **Notes:** (Read and Write property)
120.48.10  CNAME as WindowsDNSRecordPTRMBS

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The data record.
**Notes:** (Read and Write property)

120.48.11  DataLength as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The length, in bytes, of Data.
**Notes:** (Read and Write property)

120.48.12  HINFO as WindowsDNSRecordTXTMBS

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The data record.
**Notes:** (Read and Write property)

120.48.13  ISDN as WindowsDNSRecordTXTMBS

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The data record.
**Notes:** (Read and Write property)

120.48.14  MB as WindowsDNSRecordPTRMBS

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The data record.
**Notes:** (Read and Write property)

120.48.15  MD as WindowsDNSRecordPTRMBS

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The data record.
**Notes:** (Read and Write property)
120.48.16  **MF as WindowsDNSRecordPTRMBS**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The data record. **Notes:** (Read and Write property)

120.48.17  **MG as WindowsDNSRecordPTRMBS**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The data record. **Notes:** (Read and Write property)

120.48.18  **MINFO as WindowsDNSRecordMInfoMBS**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The data record. **Notes:** (Read and Write property)

120.48.19  **MR as WindowsDNSRecordPTRMBS**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The data record. **Notes:** (Read and Write property)

120.48.20  **MX as WindowsDNSRecordMXMBS**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The data record. **Notes:** (Read and Write property)

120.48.21  **Name as String**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A pointer to a string that represents the domain name of the record set. **Notes:** (Read and Write property)
120.48.22  NextRecord as WindowsDNSRecordMBS

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The next record in the answer. Notes: (Read and Write property)

120.48.23  NS as WindowsDNSRecordPTRMBS

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The data record. Notes: (Read and Write property)

120.48.24  Null as WindowsDNSRecordNullMBS

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The data record. Notes: (Read and Write property)

120.48.25  RawData as String

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: the RAW data of this record. Notes: For debugging. (Read and Write property)

120.48.26  RP as WindowsDNSRecordMInfoMBS

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The data record. Notes: (Read and Write property)

120.48.27  RT as WindowsDNSRecordMXMBS

120.48.28 Section as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** This value specifies the section of interest returned from the DnsQuery function call.  
**Notes:** (Read and Write property)

120.48.29 SOA as WindowsDNSRecordSOAMBS

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The data record.  
**Notes:** (Read and Write property)

120.48.30 TTL as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The DNS RR’s Time To Live value (TTL), in seconds.  
**Notes:** (Read and Write property)

120.48.31 TXT as WindowsDNSRecordTXTMBS

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The data record.  
**Notes:** (Read and Write property)

120.48.32 Type as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The DNS record type for this record.  
**Notes:** If type is kDNSTypeA, the A property is filled.  
(Read and Write property)
120.48.33  X25 as WindowsDNSRecordTXTMBS

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The data record.  
**Notes:** (Read and Write property)

120.48.34  Constants

120.48.35  kCharSetAnsi = 3

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the constants for the CharSet property.  
**Notes:** The character set is ANSI.

120.48.36  kCharSetUnicode = 1

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the constants for the CharSet property.  
**Notes:** The character set is Unicode.

120.48.37  kCharSetUnknown = 0

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the constants for the CharSet property.  
**Notes:** The character set is unknown.

120.48.38  kCharSetUtf8 = 2

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the constants for the CharSet property.  
**Notes:** The character set is UTF8.

120.48.39  kDNSClassAll = & h00ff

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the DNS classes in native byte order (little endian on Windows).
120.48. CLASS WINOUSDNSRECORDMBS

120.48.40 kDNSClassAny = & h00ff

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the DNS classes in native byte order (little endian on Windows).

120.48.41 kDNSClassCHAOS = & h0003

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the DNS classes in native byte order (little endian on Windows).

120.48.42 kDNSClassCSNET = & h0002

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the DNS classes in native byte order (little endian on Windows).

120.48.43 kDNSClassHESIOD = & h0004

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the DNS classes in native byte order (little endian on Windows).

120.48.44 kDNSClassInternet = & h0001

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the DNS classes in native byte order (little endian on Windows).

120.48.45 kDNSClassNone = & h00fe

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the DNS classes in native byte order (little endian on Windows).

120.48.46 kDNSQueryAcceptTruncatedResponse = & h00000001

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the possible flags for the Query function. **Notes**: Returns truncated results. Does not retry under TCP.
120.48.47  kDNSQueryBypassCache = & h00000008

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible flags for the Query function. **Notes:** Bypasses the resolver cache on the lookup.

120.48.48  kDNSQueryDontResetTTLValues = & h00100000

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible flags for the Query function. **Notes:** If set, and if the response contains multiple records, records are stored with the TTL corresponding to the minimum value TTL from among all records. When this option is set, "Do not change the TTL of individual records" in the returned record set is not modified.

120.48.49  kDNSQueryMulticastOnly = & h00000400

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible flags for the Query function. **Notes:** Prevents the query from using DNS and uses only Local Link Multicast Name Resolution (LLMNR). Windows Vista and Windows Server 2008 or later.: This value is supported.

120.48.50  kDNSQueryNoHostsFile = & h00000040

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible flags for the Query function. **Notes:** Prevents the DNS query from consulting the HOSTS file. Windows 2000 Server and Windows 2000 Professional: This value is not supported.

120.48.51  kDNSQueryNoLocalName = & h00000020

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible flags for the Query function. **Notes:** Directs DNS to ignore the local name. Windows 2000 Server and Windows 2000 Professional: This value is not supported.
120.48.52 kDNSQueryNoMulticast = & h00000800

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible flags for the Query function.

**Notes:**

120.48.53 kDNSQueryNoNetBT = & h00000080

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible flags for the Query function.  
**Notes:**
Prevents the DNS query from using NetBT for resolution.  
Windows 2000 Server and Windows 2000 Professional: This value is not supported.

120.48.54 kDNSQueryNoRecursion = & h00000004

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible flags for the Query function.  
**Notes:** Directs the DNS server to perform an iterative query (specifically directs the DNS server not to perform recursive resolution to resolve the query).

120.48.55 kDNSQueryNoWireQuery = & h00000010

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible flags for the Query function.  
**Notes:** Directs DNS to perform a query on the local cache only.

120.48.56 kDNSQueryReserved = & hff000000

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible flags for the Query function.  
**Notes:** Reserved.

120.48.57 kDNSQueryReturnMessage = & h00000200

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible flags for the Query function.  
**Notes:**
Directs DNS to return the entire DNS response message.  
Windows 2000 Server and Windows 2000 Professional: This value is not supported.
120.48.58  kDNSQueryStandard = & h00000000

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible flags for the Query function.  
**Notes:** Standard query.

120.48.59  kDNSQueryTreatAsFQDN = & h00001000

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible flags for the Query function.  
**Notes:** Prevents the DNS response from attaching suffixes to the submitted name in a name resolution process.

120.48.60  kDNSQueryUseTCPOnly = & h00000002

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible flags for the Query function.  
**Notes:** Uses TCP only for the query.

120.48.61  kDNSQueryWireOnly = & h00000100

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible flags for the Query function.  
**Notes:** Directs DNS to perform a query using the network only, bypassing local information.  
Windows 2000 Server and Windows 2000 Professional: This value is not supported.

120.48.62  kDNSRClassAll = & hff00

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the DNS classes in network byte order.

120.48.63  kDNSRClassAny = & hff00

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the DNS classes in network byte order.

120.48.64  kDNSRClassCHAOS = & h0300

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the DNS classes in network byte order.
120.48. CLASS WINODS/DNSRECORDMBS

120.48.65  kDNSRClassCSNET = & h0200

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the DNS classes in network byte order.

120.48.66  kDNSRClassHESIOD = & h0400

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the DNS classes in network byte order.

120.48.67  kDNSRClassInternet = & h0100

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the DNS classes in network byte order.

120.48.68  kDNSRClassNone = & h0e00

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the DNS classes in network byte order.

120.48.69  kDNSRTypeA = & h0100

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).

120.48.70  kDNSRTypeAAAA = & h1c00

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).

120.48.71  kDNSRTypeAFSDB = & h1200

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).
120.48.72  kDNSRTypeALL = \& hff00

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).

120.48.73  kDNSRTypeANY = \& hff00

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).

120.48.74  kDNSRTypeATMA = \& h2200

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).

120.48.75  kDNSRTypeAXFR = \& hfc00

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).

120.48.76  kDNSRTypeCNAME = \& h0500

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).

120.48.77  kDNSRTypeGPOS = \& h1b00

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).

120.48.78  kDNSRTypeHINFO = \& h0d00

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).
120.48. CLASS WINDOWSDNSRECORDMBS

120.48.79 kDNSRTypeISDN = & h1400

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).

120.48.80 kDNSRTypeIXFR = & hfb00

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).

120.48.81 kDNSRTypeKEY = & h1900

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).

120.48.82 kDNSRTypeLOC = & h1d00

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).

120.48.83 kDNSRTypeMAILA = & hfe00

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).

120.48.84 kDNSRTypeMAILB = & hfd00

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).

120.48.85 kDNSRTypeMB = & h0700

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).
120.48.86  kDNSRTypeMD = & h0300

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).

120.48.87  kDNSRTypeMF = & h0400

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).

120.48.88  kDNSRTypeMG = & h0800

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).

120.48.89  kDNSRTypeMINFO = & h0e00

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).

120.48.90  kDNSRTypeMR = & h0900

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).

120.48.91  kDNSRTypeMX = & h0f00

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).

120.48.92  kDNSRTypeNS = & h0200

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).
120.48.93  kDNSRTypeNSAP = & h1600

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).

120.48.94  kDNSRTypeNSAPPTR = & h1700

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).

120.48.95  kDNSRTypeNULL = & h0a00

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).

120.48.96  kDNSRTypeNXT = & h1e00

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).

120.48.97  kDNSRTypePTR = & h0c00

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).

120.48.98  kDNSRTypePX = & h1a00

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).

120.48.99  kDNSRTypeRP = & h1100

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).
120.48.100  kDNSRTypeRT = & h1500

MBS Win Plugin, Plugin Version: 10.4.  **Function:** One of the possible DNS record type constants (in network byte order).

120.48.101  kDNSRTypeSIG = & h1800

MBS Win Plugin, Plugin Version: 10.4.  **Function:** One of the possible DNS record type constants (in network byte order).

120.48.102  kDNSRTypeSOA = & h0600

MBS Win Plugin, Plugin Version: 10.4.  **Function:** One of the possible DNS record type constants (in network byte order).

120.48.103  kDNSRTypeSRV = & h2100

MBS Win Plugin, Plugin Version: 10.4.  **Function:** One of the possible DNS record type constants (in network byte order).

120.48.104  kDNSRTypeTEXT = & h1000

MBS Win Plugin, Plugin Version: 10.4.  **Function:** One of the possible DNS record type constants (in network byte order).
120.48.105  kDNSRTypeTKEY = & hf900

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).

120.48.106  kDNSRTypeTSIG = & hfa00

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).

120.48.107  kDNSRTypeWINS = & h01ff

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).

120.48.108  kDNSRTypeWINSR = & h02ff

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).

120.48.109  kDNSRTypeWKS = & h0b00

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).

120.48.110  kDNSRTypeX25 = & h1300

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in network byte order).

120.48.111  kDNSTypeA = & h0001

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).
120.48.112  kDNSTypeAAAA = & h001c

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.113  kDNSTypeAFSDB = & h0012

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.114  kDNSTypeALL = & h00ff

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.115  kDNSTypeANY = & h00ff

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.116  kDNSTypeATMA = & h0022

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.117  kDNSTypeAXFR = & h00fc

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.118  kDNSTypeCNAME = & h0005

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).
120.48.119  kDNSTypeGPOS = & h001b

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.120  kDNSTypeHINFO = & h000d

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.121  kDNSTypeISDN = & h0014

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.122  kDNSTypeIXFR = & h00fb

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.123  kDNSTypeKEY = & h0019

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.124  kDNSTypeLOC = & h001d

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.125  kDNSTypeMAILA = & h00fe

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).
120.48.126 kDNSTypeMAILB = \& h00fd

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.127 kDNSTypeMB = \& h0007

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.128 kDNSTypeMD = \& h0003

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.129 kDNSTypeMF = \& h0004

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.130 kDNSTypeMG = \& h0008

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.131 kDNSTypeMINFO = \& h000e

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.132 kDNSTypeMR = \& h0009

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).
120.48. CLASS WINDOWS DNSRECORDMBS

120.48.133  kDNSTypeMX = & h000f

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.134  kDNSTypeNBSTAT = & hff02

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.135  kDNSTypeNS = & h0002

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.136  kDNSTypeNSAP = & h0016

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.137  kDNSTypeNSAPPTR = & h0017

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.138  kDNSTypeNULL = & h000a

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.139  kDNSTypeNXT = & h001e

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).
120.48.140  kDNSTypePTR = & h000c

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.141  kDNSTypePX = & h001a

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.142  kDNSTypeRP = & h0011

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.143  kDNSTypeRT = & h0015

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.144  kDNSTypeSIG = & h0018

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.145  kDNSTypeSOA = & h0006

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.146  kDNSTypeSRV = & h0021

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).
120.48.147  kDNSTypeTEXT = & h0010

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.148  kDNSTypeTKEY = & h00f9

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.149  kDNSTypeTSIG = & h00fa

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.150  kDNSTypeWINS = & hff01

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.151  kDNSTypeWINSR = & hff02

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.152  kDNSTypeWKS = & h000b

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.153  kDNSTypeX25 = & h0013

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).
120.48.154  kDNSTypeZERO = & h0000

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the possible DNS record type constants (in native byte order).

120.48.155  kSectionAddtional = 3

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the constants for the Section Property. **Notes:** The DNS section specified is additional DNS information.

120.48.156  kSectionAnswer = 1

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the constants for the Section Property. **Notes:** The DNS section specified is a DNS answer.

120.48.157  kSectionAuthority = 2

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the constants for the Section Property. **Notes:** The DNS section specified indicates a DNS authority.

120.48.158  kSectionQuestion = 0

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the constants for the Section Property. **Notes:** The DNS section specified is a DNS question.
120.49. **CLASS WINDOWS\DNSRECORD\MINFO\MBS**

120.49  **class** WindowsDNSRecordMInfoMBS

120.49.1  **class** WindowsDNSRecordMInfoMBS

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The class for a DNS mail information (MINFO) record. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

120.49.2  **Methods**

120.49.3  **Constructor**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The private constructor. **Notes:** This constructor makes sure you don’t create useless WindowsDNSRecordMInfoMBS objects by error. The only way to create an object is to use the root method to get the object hierarchy. This constructor is private to make sure you don’t create an object from this class by error. Please use designated functions to create objects.

120.49.4  **Properties**

120.49.5  **NameErrorsMailbox as String**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The string that represents the FQDN of the mailbox to receive error messages related to the mailing list. **Notes:** (Read and Write property)

120.49.6  **NameMailbox as String**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The string that represents the fully qualified domain name (FQDN) of the mailbox responsible for the mailing list or mailbox specified in the record’s owner name. **Notes:** (Read and Write property)
120.50 class WindowsDNSRecordMXMBS

120.50.1 class WindowsDNSRecordMXMBS

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The class for a DNS mail exchanger (MX) record.
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin
functions.

120.50.2 Methods

120.50.3 Constructor

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The private constructor.
**Notes:**
This constructor makes sure you don’t create useless WindowsDNSRecordMXMBS objects by error. The
only way to create an object is to use the root method to get the object hierarchy.
This constructor is private to make sure you don’t create an object from this class by error. Please use
designated functions to create objects.

120.50.4 Properties

120.50.5 NameExchange as String

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The string that represents the fully qualified domain name (FQDN) of the host willing to act as a mail
exchange.
**Notes:** (Read and Write property)

120.50.6 Preference as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
A preference given to this resource record among others of the same owner. Lower values are preferred.
**Notes:** (Read and Write property)
120.51 class WindowsDNSRecordNullMBS

120.51.1 class WindowsDNSRecordNullMBS

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The class for a NULL data DNS resource record

**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

120.51.2 Methods

120.51.3 Constructor

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The private constructor.

**Notes:**
This constructor makes sure you don’t create useless WindowsDNSRecordNullMBS objects by error. The only way to create an object is to use the root method to get the object hierarchy.
This constructor is private to make sure you don’t create an object from this class by error. Please use designated functions to create objects.

120.51.4 Properties

120.51.5 ByteCount as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The number of bytes represented in Data.

**Notes:** (Read and Write property)

120.51.6 Data as String

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The raw data as a string.

**Notes:** (Read and Write property)
120.52  class WindowsDNSRecordPTRMBS

120.52.1  class WindowsDNSRecordPTRMBS

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The class for a DNS pointer (PTR) record.
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

120.52.2  Methods

120.52.3  Constructor

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The private constructor.
**Notes:** This constructor makes sure you don’t create useless WindowsDNSRecordPTRMBS objects by error. The only way to create an object is to use the root method to get the object hierarchy. This constructor is private to make sure you don’t create an object from this class by error. Please use designated functions to create objects.

120.52.4  Properties

120.52.5  NameHost as String

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The named host.
**Notes:** (Read and Write property)
120.53  class WindowsDNSRecordSOAMBS

120.53.1  class WindowsDNSRecordSOAMBS

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The class for a DNS start of authority (SOA) record.  
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

120.53.2  Methods

120.53.3  Constructor

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The private constructor.  
**Notes:**  
This constructor makes sure you don’t create useless WindowsDNSRecordSOAMBS objects by error. The only way to create an object is to use the root method to get the object hierarchy.  
This constructor is private to make sure you don’t create an object from this class by error. Please use designated functions to create objects.

120.53.4  Properties

120.53.5  DefaultTTL as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The lower limit on the time, in seconds, that a DNS server or caching resolver are allowed to cache any resource records (RR) from the zone to which this record belongs.  
**Notes:** (Read and Write property)

120.53.6  Expire as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The time, in seconds, before an unresponsive zone is no longer authoritative.  
**Notes:** (Read and Write property)
120.53.7 NameAdministrator as String

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The string that represents the name of the responsible party for the zone to which the record belongs.
**Notes:** (Read and Write property)

120.53.8 NamePrimaryServer as String

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The string that represents the name of the authoritative DNS server for the zone to which the record belongs.
**Notes:** (Read and Write property)

120.53.9 Refresh as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The time, in seconds, before the zone containing this record should be refreshed.
**Notes:** (Read and Write property)

120.53.10 Retry as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The time, in seconds, before retrying a failed refresh of the zone to which this record belongs.
**Notes:** (Read and Write property)

120.53.11 SerialNo as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The serial number of the SOA record.
**Notes:** (Read and Write property)
**120.54. CLASS WINDOWS\DNSRECORD\TXTMBS**

**120.54  class WindowsDNSRecordTXTMBS**

**120.54.1  class WindowsDNSRecordTXTMBS**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The class for a DNS text (TXT) record.  
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

**120.54.2  Methods**

**120.54.3  Constructor**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The private constructor.  
**Notes:** This constructor makes sure you don’t create useless WindowsDNSRecordTXTMBS objects by error. The only way to create an object is to use the root method to get the object hierarchy. This constructor is private to make sure you don’t create an object from this class by error. Please use designated functions to create objects.

**120.54.4  Strings as String()**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** An array of strings representing the descriptive text of the TXT resource record.

**120.54.5  Properties**

**120.54.6  StringCount as Integer**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The number of strings represented in Strings array.  
**Notes:** (Read and Write property)
120.55 class WindowsEthernetAdapterMBS

120.55.1 class WindowsEthernetAdapterMBS

MBS Network Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A class for the properties of an ethernet adapter.

**120.55.2 Methods**

**120.55.3 Gateway(index as Integer) as WindowsIPAddressMBS**

MBS Network Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns one of the IP address of the default gateway for this adapter. 
**Notes:** Index goes from 0 to GatewayGount-1.

**120.55.4 IP(index as Integer) as WindowsIPAddressMBS**

MBS Network Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns one of the IP addresses associated with this adapter. 
**Notes:** Index goes from 0 to IPcount-1.

**120.55.5 Properties**

**120.55.6 AdapterName as String**

MBS Network Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Name of the adapter. 
**Notes:** (Read and Write property)

**120.55.7 Address as String**

MBS Network Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Hardware address for the adapter. 
**Notes:** (Read and Write property)
120.55. CLASS WINDOWSETHERNETADAPTERMBS

120.55.8 CurrentIpAddress as WindowsIPAddressMBS

MBS Network Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The current IP from within the IP list.

**Notes:**
This field is currently normally nil, but in the future it may point to the current IP inside the IP list. But currently on Windows 2000 it seems to be always nil.
(Read and Write property)

120.55.9 Description as String

MBS Network Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Description for the adapter.

**Notes:** (Read and Write property)

120.55.10 DhcpEnabled as Boolean

MBS Network Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Specifies whether dynamic host configuration protocol (DHCP) is enabled for this adapter.

**Notes:** (Read and Write property)

120.55.11 DhcpServer as WindowsIPAddressMBS

MBS Network Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** IP address of the DHCP server for this adapter.

**Notes:** (Read and Write property)

120.55.12 Gatewaycount as Integer

MBS Network Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** How many gateway IPs are allocated for this adapter.

**Notes:** (Read and Write property)

120.55.13 HaveWins as Boolean

MBS Network Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Specifies whether this adapter uses Windows Internet Name Service (WINS).
120.55.14  **Index as Integer**

MBS Network Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Adapter index.
**Notes:** (Read and Write property)

120.55.15  **IPcount as Integer**

MBS Network Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** How many IPs are allocated for this adapter.
**Notes:** (Read and Write property)

120.55.16  **LeaseExpires as Integer**

MBS Network Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Time when the current DHCP lease expires.
**Notes:** (Read and Write property)

120.55.17  **LeaseObtained as Integer**

MBS Network Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Time when the current DHCP lease was obtained.
**Notes:** (Read and Write property)

120.55.18  **PrimaryWinsServer as WindowsIPAddressMBS**

MBS Network Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** IP address of the primary WINS server.
**Notes:** (Read and Write property)

120.55.19  **SecondaryWinsServer as WindowsIPAddressMBS**

MBS Network Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** IP address of the secondary WINS server.
120.55.  CLASS WINDOWSETHERNETADAPTERMBS

Notes: (Read and Write property)

120.55.20  Type as Integer

MBS Network Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Adapter type.

Notes:

The type must be of the following values:

<table>
<thead>
<tr>
<th>MIB_IF_TYPE_OTHER</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIB_IF_TYPE ETHERNET</td>
<td>6</td>
</tr>
<tr>
<td>MIB_IF_TYPE_TOKENRING</td>
<td>9</td>
</tr>
<tr>
<td>MIB_IF_TYPE_FDDI</td>
<td>15</td>
</tr>
<tr>
<td>MIB_IF_TYPE_PPP</td>
<td>23</td>
</tr>
<tr>
<td>MIB_IF_TYPE_LOOPBACK</td>
<td>24</td>
</tr>
<tr>
<td>MIB_IF_TYPE_SLIP</td>
<td>28</td>
</tr>
</tbody>
</table>

(Read and Write property)
120.56  class WindowsEthernetMBS

120.56.1  class WindowsEthernetMBS

MBS Network Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A list of the Windows Ethernet Interfaces.  
**Notes:**  
Requires Windows 98 or 2000 or newer.  
Reports count=0 on Windows 95 and NT 4.0.  

Only activate adapters are listed.

120.56.2  Methods

120.56.3  Item(index as Integer) as WindowsEthernetAdapterMBS

MBS Network Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the Ethernet Adapter object for the given index.  
**Notes:** Index goes from 0 to count-1.

120.56.4  Update

MBS Network Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Updates the list.  
**Notes:** Calls the Destructor and than the Constructor so the list is completly rebuilt.

120.56.5  Properties

120.56.6  Count as Integer

MBS Network Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** How much ethernet adapters are available.  
**Notes:**  
Note that there may be dummy or virtual adapters.  
(Read and Write property)
120.57. CLASS WINDOWSIPADDRESSMBS

120.57 class WindowsIPAddressMBS

120.57.1 class WindowsIPAddressMBS

MBS Network Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
An IP address.

120.57.2 Properties

120.57.3 IP as String

MBS Network Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The IP as a string.
**Notes:**
Maximum 15 bytes long.
e.g. "192.168.0.1"
(Read and Write property)

120.57.4 Mask as String

MBS Network Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The mask for the IP.
**Notes:**
e.g. "255.255.255.0"
(Read and Write property)
class WindowsProxyMBS

120.58.1 class WindowsProxyMBS

MBS Win Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A class to query the current windows proxy settings.

### Properties

120.58.2 Properties

120.58.3 ByPass as String

MBS Win Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The proxy

Notes:

Example values:
"testserver:1234 apple.de <local>"
or
"testserver3:1234 testserver4:1234 testserver1:1234 testserver2:1234 apple.de <local>"
(Read and Write property)

120.58.4 Proxy as String

MBS Win Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The current proxy setting.

Notes:

Example values:
"testserver:1234"
or
"https=testserver2:1234 http=testserver1:1234 gopher=testserver4:1234 ftp=testserver3:1234"
(Read and Write property)

120.58.5 UsingProxy as Boolean

MBS Win Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Whether a proxy is in use.

Notes: (Read and Write property)
120.59. class WindowsQOSMBS

120.59.1. class WindowsQOSMBS

MBS Win Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The class for Quality Windows Audio/Video Experience (qWAVE).
**Notes:**
Quality Windows Audio/Video Experience (qWAVE) is the next generation Quality of Service (QOS) platform introduced in Windows Vista.
qWAVE provides new features focused on streaming multimedia and real-time content over variable bandwidth networks. These features include the following.

- Auto-discovery of end-to-end QOS compatibility.
- End-to-end bandwidth estimation of maximum link capacity (bottleneck bandwidth) and real-time available bandwidth.
- Intelligent packet prioritization.
- Congestion notification.
- Flow shaping.
- Distributed admission control, including caching to improve performance and minimize latency.

Requires Windows 6 (Vista).

120.59.2. Methods

120.59.3. AddSocketToFlow(Socket as Integer, DestAddr as string, DestPort as Integer, TrafficType as Integer, Flags as Integer, byref FlowId as UInt32) as boolean

MBS Win Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Adds a socket to a flow.
**Notes:**
Socket: Identifies the socket that the application will use to flow traffic.
DestAddr: The destination IP address to which the application will send traffic. DestAddr and DestPort are optional if the socket is already connected. If this parameter is specified, the remote IP address and port must match those used in the socket’s connect call.
If the socket is not connected, this parameter must be specified. If the socket is already connected, this parameter does not need to be specified. In this case, if the parameter is still specified, the destination host and port must match what was specified during the socket connect call.
Since, under TCP, the socket connect call can be delayed, AddSocketToFlow can be called before a connection is established, passing in the remote system’s IP address and port number in the DestAddr parameter. 

DestPort: The port for the connection. 

TrafficType: A QOSTrafficType* constant that specifies the type of traffic for which this flow will be used. 

Flags: Optional flag values. Can be QOSNonAdaptiveFlow. 

FlowID: Receives a flow identifier. On input, this value must be 0. On output, the buffer contains a flow identifier if the call succeeds. 

If a socket is being added to an existing flow, this parameter will be the identifier of that flow. 

An application can make use of this parameter if multiple sockets used can share the same QoS flow properties. The QoS subsystem, then does not have to incur the overhead of provisioning new flows for subsequent sockets with the same properties. Note that only non-adaptive flows can have multiple sockets attached to an existing flow. 

A FlowID is an unsigned 32-bit integer. 

The use of IPv4/v6 mixed addresses is not supported in qWAVE. The address specified by the DestAddr parameter must be either IPv4 or IPv6. 

If there is a requirement for network experiments over a specific network interface, the socket must be bound to that particular interface. Otherwise the most appropriate interface for the experiment, as indicated by the network stack, is assigned by the qWAVE subsystem. 

Network traffic associated with this flow is not affected by making this call alone. For example, packet prioritization does not occur immediately. 

There are two categories of applications that use this function: adaptive and non-adaptive. An adaptive application makes use of notifications and information in the FlowFundamentals for adapting to network changes such as congestion. The qWAVE service uses Link Layer Topology Discovery (LLTD) QoS extensions for adaptive flows which can be present on the destination device. 

After calling this function adaptive A/V applications should call the SetFlowRate function to affect network traffic. 

A non-adaptive application either does not adapt to changing network characteristics or is sending traffic to an endpoint that does not support adaptive capabilities as indicated by ERROR_NOT_SUPPORTED. 

Non-adaptive applications, or adaptive applications making non-adaptive flows, should call this function with the QOSNonAdaptiveFlow flag. After calling this function A/V applications should call the setOutgoingDSCPValue, setOutgoingRate or setTrafficType function with a Operation. They do not need to be called unless shaping is desired. 

See also: 

- 120.59.4 AddSocketToFlow(Socket as Integer, TrafficType as Integer, Flags as Integer, byref FlowId as UInt32) as boolean 

120.59.4 AddSocketToFlow(Socket as Integer, TrafficType as Integer, Flags as Integer, byref FlowId as UInt32) as boolean 


Notes:
Socket: Identifies the socket that the application will use to flow traffic.
DestAddr: The destination IP address to which the application will send traffic. DestAddr and DestPort are optional if the socket is already connected. If this parameter is specified, the remote IP address and port must match those used in the socket’s connect call.
If the socket is not connected, this parameter must be specified. If the socket is already connected, this parameter does not need to be specified. In this case, if the parameter is still specified, the destination host and port must match what was specified during the socket connect call.
Since, under TCP, the socket connect call can be delayed, AddSocketToFlow can be called before a connection is established, passing in the remote system’s IP address and port number in the DestAddr parameter.
DestPort: The port for the connection.
TrafficType: A QOSTrafficType* constant that specifies the type of traffic for which this flow will be used.
Flags: Optional flag values. Can be QOSNonAdaptiveFlow.
FlowID: Receives a flow identifier. On input, this value must be 0. On output, the buffer contains a flow identifier if the call succeeds.
If a socket is being added to an existing flow, this parameter will be the identifier of that flow.
An application can make use of this parameter if multiple sockets used can share the same QoS flow properties. The QoS subsystem, then does not have to incur the overhead of provisioning new flows for subsequent sockets with the same properties. Note that only non-adaptive flows can have multiple sockets attached to an existing flow.
A FlowID is an unsigned 32-bit integer.

LastError is set.

The use of IPv4/IPv6 mixed addresses is not supported in qWAVE. The address specified by the DestAddr parameter must be either IPv4 or IPv6.
If there is a requirement for network experiments over a specific network interface, the socket must be bound to that particular interface. Otherwise, the most appropriate interface for the experiment, as indicated by the network stack, is assigned by the qWAVE subsystem.
Network traffic associated with this flow is not affected by making this call alone. For example, packet prioritization does not occur immediately.
There are two categories of applications that use this function: adaptive and non-adaptive. An adaptive application makes use of notifications and information in the FlowFundamentals for adapting to network changes such as congestion. The qWAVE service uses Link Layer Topology Discovery (LLTD) QoS extensions for adaptive flows which can be present on the destination device.
After calling this function adaptive A/V applications should call the SetFlowRate function to affect network traffic.
A non-adaptive application either does not adapt to changing network characteristics or is sending traffic to an endpoint that does not support adaptive capabilities as indicated by ERROR_NOT_SUPPORTED.
Non-adaptive applications, or adaptive applications making non-adaptive flows, should call this function with the QOSNonAdaptiveFlow flag. After calling this function A/V applications should call the setOutgoingDSCPValue, setOutgoingRate or setTrafficType function with a Operation. They do not need to be called unless shaping is desired.
See also:

- 120.59.3 AddSocketToFlow(Socket as Integer, DestAddr as string, DestPort as Integer, TrafficType as Integer, Flags as Integer, byref FlowId as UInt32) as boolean
120.59.5 Constructor

MBS Win Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** This function initializes the QOS subsystem.

**Notes:**
On success Handle property is not zero.
Lasterror is set.

Every process intending to use qWAVE must first call Constructor.
If a machine enters a power save mode that interrupts connectivity such as sleep or standby, existing and active network experiments such as QOSStartTrackingClient must be reinitiated. This recreation of the flow mirrors the cleanup and creation activities also necessary for existing sockets. A new handle must be created, and the flow must be recreated and readmitted.

120.59.6 getFlowFundamentals(FlowID as Integer, byref BottleneckBandwidthSet as boolean, byref BottleneckBandwidth as UInt64, byref AvailableBandwidthSet as boolean, byref AvailableBandwidth as UInt64, byref RTTSet as boolean, byref RTT as UInt32, Flags as Integer = 0) as boolean

MBS Win Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries flow fundamentals.

**Notes:**
FlowID: A flow identifier. A flow id is an unsigned 32-bit integer.
Flags: Optional, can be QOSQueryFlowFresh.
BottleneckBandwidthSet: This Boolean value is set to true if the BottleneckBandwidth field contains a value.
BottleneckBandwidth: Indicates the maximum end-to-end link capacity between the source and sink device, in bits.
AvailableBandwidthSet: Set to true if the AvailableBandwidth field contains a value.
AvailableBandwidth: Indicates how much bandwidth is available for submitting traffic on the end-to-end network path between the source and sink device, in bits.
RTTSet: Set to true if the RTT field contains a value.
RTT: Measures the round-trip time between the source and sink device, in microseconds.

Lasterror is set. Returns true on success or false on failure.
120.59.7  getOutgoingRate(FlowID as Integer, byref Bandwidth as UInt64, Flags as Integer = 0) as boolean

MBS Win Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries flow rate.

**Notes:**
FlowID: A flow identifier. A flow id is an unsigned 32-bit integer.
Bandwidth: will contain a UINT64 value that indicates the flow rate specified when requesting the contract, in bits per second.
Flags: Optional, can be QOSQueryFlowFresh.
Lasterror is set. Returns true on success or false on failure.

120.59.8  getPacketPriority(FlowID as Integer, byref ConformantDSCPValue as Integer, byref NonConformantDSCPValue as Integer, byref ConformantL2Value as Integer, byref NonConformantL2Value as Integer, Flags as Integer = 0) as boolean

MBS Win Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries packet priorities.

**Notes:**
FlowID: A flow identifier. A flow id is an unsigned 32-bit integer.
Flags: Optional, can be QOSQueryFlowFresh.

ConformantDSCPValue: Differential Services Code Point (DSCP) mark used for flow traffic that conforms to the specified flow rate.
NonConformantDSCPValue: DSCP marking used for flow traffic that exceeds the specified flow rate. Non-conformant DSCP values are only applicable only if value is QOSUseNonConformantMarkings.
ConformantL2Value: Layer-2 (L2) tag used for flow traffic that conforms to the specified flow rate. L2 tags will not be added to packets if the end-to-end path between source and sink does not support them.
NonConformantL2Value: L2 tag used for flow traffic that exceeds the specified flow rate. Non-conformant L2 values are only applicable if value is QOSUseNonConformantMarkings.

Lasterror is set. Returns true on success or false on failure.

120.59.9  RemoveAllSocketsFromFlow(FlowID as Integer) as boolean

MBS Win Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The RemoveSocketFromFlow function notifies the QOS subsystem that a previously added flow has been terminated by the application, and that the subsystem must update its internal information accordingly.

**Notes:**
FlowId: A flow identifier. A QOS_FLOWID is an unsigned 32-bit integer.

LastError is set. Returns true on success or false on failure.
The plugin closes all flows in destructor.

120.59.10  RemoveSocketFromFlow(socketHandle as Integer, FlowID as Integer) as boolean

MBS Win Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The RemoveSocketFromFlow function notifies the QOS subsystem that a previously added flow has been
terminated by the application, and that the subsystem must update its internal information accordingly.
**Notes:**
Socket: Socket to be removed from the flow.
Only flows created with the QOSNonAdaptiveFlow flag may have multiple sockets added to the same flow.
By passing the Socket parameter in this call, each socket can be removed individually. If the Socket param-
eter is not passed, the entire flow will be destroyed. If only one socket was attached to the flow, passing this
socket as a parameter to this function and passing 0 as a socket are equivalent calls.
FlowId: A flow identifier. A QOS_FLOWID is an unsigned 32-bit integer.

LastError is set. Returns true on success or false on failure.
The plugin closes all flows in destructor.

120.59.11  setOutgoingDSCPValue(FlowID as Integer, OutgoingDSCPValue as Integer, Flags as Integer = 0) as boolean

MBS Win Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Sets the outgoing DSCP value.
**Notes:**
FlowID: A flow identifier. A flow id is an unsigned 32-bit integer.

LastError is set. Returns true on success or false on failure.

If StartTrackingClient has not already been called, calling QOSSetFlow will cause the QOS subsystem to perform the following:

- Discover whether the end-to-end network path supports prioritization.
- Track end-to-end network characteristics by way of network experiments. These experiments do not
  place any noteworthy stress on the network.
120.59.12 setOutgoingRate(FlowID as Integer, Bandwidth as UInt64, ShapingBehavior as Integer, Reason as Integer, Flags as Integer = 0) as boolean

MBS Win Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Sets a new outgoing rate.

**Notes:**
FlowID: A flow identifier. A flow id is an unsigned 32-bit integer.
Bandwidth: The rate at which data should be sent, in units of bits per second.
Note Traffic on the network is measured at the IP level, and not at the application level. The rate that is specified should account for the IP and protocol headers.
ShapingBehavior: A shaping constant that defines the shaping behavior of the flow.
Reason: A QOSFlowRate* constant that indicates the reason for a flow rate change.
Lasterror is set. Returns true on success or false on failure.

If StartTrackingClient has not already been called, calling QOSSetFlow will cause the QOS subsystem to perform the following.

- Discover whether the end-to-end network path supports prioritization.
- Track end-to-end network characteristics by way of network experiments. These experiments do not place any noteworthy stress on the network.

120.59.13 setTrafficType(FlowID as Integer, TrafficType as Integer, Flags as Integer = 0) as boolean

MBS Win Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Sets the type of traffic

**Notes:**
FlowID: A flow identifier. A flow id is an unsigned 32-bit integer.
TrafficType: One of the traffic type constants.
Lasterror is set. Returns true on success or false on failure.

If StartTrackingClient has not already been called, calling QOSSetFlow will cause the QOS subsystem to perform the following.

- Discover whether the end-to-end network path supports prioritization.
- Track end-to-end network characteristics by way of network experiments. These experiments do not place any noteworthy stress on the network.
120.59.14  **StartTrackingClient**(*DestAddr* as string, *flags* as Integer = 0) as boolean

MBS Win Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The *StartTrackingClient* function notifies the QoS subsystem of the existence of a new client. **Notes:**

Calling this function increases the likelihood that the QoS subsystem will have gathered sufficient information on the network path to assist when calling QOSSetFlow to set the flow.

Note This call is not required to add a flow with the QOSSetSocketToFlow function although it is highly recommended. Not calling this function may require network experiments to be started during the QOSSetFlow call and can result in QOSSetFlow failing with **ERROR_NETWORK_BUSY** on initial use.

*DestAddr:* The IP address of the client device. Clients are identified by their IP address and address family. Any port number specified in the sockaddr structure will be ignored.

*Flags:* Reserved for future use. Must be set to 0.

On receipt of a QOSStartTrackingClient call the QoS subsystem begins gathering information about the client such as the QoS capabilities and available bandwidth on the end-to-end path.

An application should call this function as soon as it becomes aware of a client device that may need QoS flow. For example this function should be called when a media player device first connects to a media server application.

Network experiments performed by QOSStartTrackingClient do not introduce noteworthy load on the network even if no stream is started for a long period of time. The qWAVE service dynamically adjusts experiment traffic based on QoS subsystem activity.

Link Layer Topology Discovery (LLTD) must be implemented on the sink PC or device for this function to work.

_Lasterror_ is set. Returns true on success or false on failure.

120.59.15  **StopTrackingClient**(*DestAddr* as string, *flags* as Integer = 0) as boolean

MBS Win Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The *StopTrackingClient* function notifies the QoS subsystem to stop tracking a client that has previously used the *StartTrackingClient* function. **Notes:**

If a flow is currently in progress, this function will not affect it.

*DestAddr:* The IP address of the client device. Clients are identified by their IP address and address family. A port number is not required and will be ignored.

*Flags:* Reserved for future use.
Lasterror is set. Returns true on success or false on failure.

120.59.16 Properties

120.59.17 Handle as Integer

MBS Win Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The internal object reference. **Notes:** (Read and Write property)

120.59.18 Lasterror as Integer

MBS Win Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The last error code. **Notes:** (Read and Write property)

120.59.19 LasterrorMessage as String

MBS Win Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The generic window error message for the error in lasterror property. **Notes:** (Read and Write property)

120.59.20 Constants

120.59.21 QOSFlowRateCongestion = 2

MBS Win Plugin, Plugin Version: 13.5. **Function:** One of the flow reason constants. **Notes:** Indicates that the flow has changed due to congestion.

120.59.22 QOSFlowRateContentChange = 1

MBS Win Plugin, Plugin Version: 13.5. **Function:** One of the flow reason constants. **Notes:** Indicates that the content of a flow has changed.
120.59.23 QOSFlowRateHigherContentEncoding = 3
Notes: Indicates that the user has caused the flow to change.

120.59.24 QOSFlowRateNotApplicable = 0
Notes: Indicates that there has not been a change in the flow.

120.59.25 QOSFlowRateUserCaused = 4
Notes: Indicates that the user has caused the flow to change.

120.59.26 QOSNonAdaptiveFlow = 2
MBS Win Plugin, Plugin Version: 13.5. Function: One of the flags.
Notes: If specified, the QoS subsystem will not gather data about the network path for this flow. As a result, functions which rely on bandwidth estimation techniques will not be available. For example, this would block QOSQueryFlow with an Operation value of QOSQueryFlowFundamentals and QOSNotifyFlow with an Operation value of QOSNotifyCongested, QOSNotifyUncongested, and QOSNotifyAvailable.

120.59.27 QOSQueryFlowFresh = 1
MBS Win Plugin, Plugin Version: 13.5. Function: One of the flags.
Notes:
The QOS subsystem will only return fresh, not cached, data. If fresh data is unavailable, it will try to obtain such data, at the expense of possibly taking more time. If this is not possible, the call will fail with the error code ERROR RETRY.
This flag is only applicable when the Operation parameter is set to QOSQueryFlowFundamentals.

120.59.28 QOSShapeAndMark = 1
MBS Win Plugin, Plugin Version: 13.5. Function: One of the constants for shaping behavior of a flow.
Notes: Indicates that the Windows Scheduler will be used to enforce the requested flow rate. Data packets
exceeding the rate are delayed accordingly. Packets receive conformant priority values.

120.59.29 QOSShapeOnly = 0

MBS Win Plugin, Plugin Version: 13.5. **Function:** One of the constants for shaping behavior of a flow. **Notes:** Indicates that the Windows packet scheduler (Pacer) will be used to enforce the requested flow rate. Data packets that exceed the rate are delayed until appropriate in order to maintain the specified flow rate. If the network supports prioritization, packets will always receive conformant priority values when QOSShapeFlow is specified.

120.59.30 QOSTrafficTypeAudioVideo = 3

MBS Win Plugin, Plugin Version: 13.5. **Function:** One of the traffic type constants. **Notes:**

Flow traffic has a network priority higher than QOSTrafficTypeExcellentEffort, yet lower than QOSTrafficTypeVoice. This traffic type should be used for A/V streaming scenarios such as MPEG2 streaming. Sent traffic will contain a DSCP mark with a value of 0x28 and an 802.1p tag with a value of 5.

120.59.31 QOSTrafficTypeBackground = 1

MBS Win Plugin, Plugin Version: 13.5. **Function:** One of the traffic type constants. **Notes:**

Flow traffic has a network priority lower than that of QOSTrafficTypeBestEffort. This traffic type could be used for traffic of an application doing data backup. Sent traffic will contain a DSCP mark with a value of 0x08 and an 802.1p tag with a value of 2.

120.59.32 QOSTrafficTypeBestEffort = 0

MBS Win Plugin, Plugin Version: 13.5. **Function:** One of the traffic type constants. **Notes:**

Flow traffic has the same network priority as regular traffic not associated with QOS. This traffic type is the same as not specifying priority, and as a result, the DSCP mark and 802.1p tag are not added to sent traffic.
120.59.33  **QOSTrafficTypeControl** = 5

MBS Win Plugin, Plugin Version: 13.5. **Function:** One of the traffic type constants.

**Notes:**

Flow traffic has the highest network priority. This traffic type should only be used for the most critical of data. For example, it may be used for data carrying user inputs. Sent traffic will contain a DSCP mark with a value of 0x38 and an 802.1p tag with a value of 7.

120.59.34  **QOSTrafficTypeExcellentEffort** = 2

MBS Win Plugin, Plugin Version: 13.5. **Function:** One of the traffic type constants.

**Notes:**

Flow traffic has a network priority higher than QOSTrafficTypeBestEffort, yet lower than QOSTrafficTypeAudioVideo. This traffic type should be used for data traffic that is more important than normal end-user scenarios, such as email. Sent traffic will contain a DSCP mark with value of 0x28 and 802.1p tag with a value of 5.

120.59.35  **QOSTrafficTypeVoice** = 4

MBS Win Plugin, Plugin Version: 13.5. **Function:** One of the traffic type constants.

**Notes:**

Flow traffic has a network priority higher than QOSTrafficTypeAudioVideo, yet lower than QOSTrafficTypeControl. This traffic type should be used for realtime voice streams such as VOIP. Sent traffic will contain a DSCP mark with a value of 0x38 and an 802.1p tag with a value of 7.

120.59.36  **QOSUseNonConformantMarkings** = 2

MBS Win Plugin, Plugin Version: 13.5. **Function:** One of the constants for shaping behavior of a flow.

**Notes:** Indicates that the flow rate requested will not be enforced. Data packets that would exceed the flow rate will receive a priority that indicates they are non-conformant. This may lead to lost and reordered packets.
class WinHTTPClientAutoProxyOptionsMBS

**Function:**
The WinHTTPClientAutoProxyOptionsMBS class is used to indicate to the WinHttpGetProxyForURL function whether to specify the URL of the Proxy Auto-Configuration (PAC) file or to automatically locate the URL with DHCP or DNS queries to the network.

**Notes:**

**Methods**

**Constructor**

The constructor.

**Properties**

**AutoConfigUrl as String**

The URL for the config URL.

**Notes:**
If Flags includes the kAutoProxyConfigURL flag, the AutoConfigUrl contains the URL of the proxy auto-configuration (PAC) file.
If Flags does not include the kAutoProxyConfigURL flag, then AutoConfigUrl must be "".
(Read and Write property)

**AutoDetectFlags as Integer**

The flags for auto detecting.

**Notes:**
If Flags includes the kAutoProxyAutoDetect flag, then AutoDetectFlags specifies what protocols are to be used to locate the PAC file. If both the DHCP and DNS auto detect flags are specified, then DHCP is used first; if no PAC URL is discovered using DHCP, then DNS is used.
If Flags does not include the kAutoProxyAutoDetect flag, then AutoDetectFlags must be zero.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>kAutoDetectTypeDHCP</td>
<td>Use DHCP to locate the proxy auto-configuration file.</td>
</tr>
<tr>
<td>kAutoDetectTypeDNSA</td>
<td>Use DNS to attempt to locate the proxy auto-configuration file at a well-known location on the domain of the local computer.</td>
</tr>
</tbody>
</table>

(Read and Write property)

120.60.7 AutoLogonIfChallenged as Boolean

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Specifies whether the client’s domain credentials should be automatically sent in response to an NTLM or Negotiate Authentication challenge when WinHTTP requests the PAC file. 
**Notes:** If this flag is true, credentials should automatically be sent in response to an authentication challenge. If this flag is false and authentication is required to download the PAC file, the WinHttpGetProxyForUrl function fails.
(Read and Write property)

120.60.8 Flags as Integer

**Notes:** (Read and Write property)

120.60.9 Constants

120.60.10 kAutoDetectTypeDHCP = 1

MBS Win Plugin, Plugin Version: 14.1. **Function:** The flags for auto detection types. 
**Notes:** Use DHCP to locate the proxy auto-configuration file.

120.60.11 kAutoDetectTypeDNSA = 2

MBS Win Plugin, Plugin Version: 14.1. **Function:** The flags for auto detection types. 
**Notes:** Use DNS to attempt to locate the proxy auto-configuration file at a well-known location on the
120.60. CLASS WINHTTPCLIENTAUTOPROXYOPTIONSMBS

domain of the local computer.

120.60.12  kAutoProxyAutoDetect = 1

MBS Win Plugin, Plugin Version: 14.1. **Function:** One of the proxy flags. **Notes:** Attempt to automatically discover the URL of the PAC file using both DHCP and DNS queries to the local network.

120.60.13  kAutoProxyConfigURL = 2

MBS Win Plugin, Plugin Version: 14.1. **Function:** One of the proxy flags. **Notes:** Download the PAC file from the URL specified by AutoConfigUrl in the WinHTTPClientAutoProxyOptionsMBS class.
120.61 class WinHTTPClientCurrentUserIEProxyConfigMBS

120.61.1 class WinHTTPClientCurrentUserIEProxyConfigMBS

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The class for Internet Explorer proxy configuration information.

**Notes:**
see also
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

120.61.2 Methods

120.61.3 Constructor

MBS Win Plugin, Plugin Version: 14.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The private constructor.

120.61.4 Properties

120.61.5 AutoConfigUrl as String

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The auto-configuration URL.

**Notes:**
The auto-configuration URL if the Internet Explorer proxy configuration for the current user specifies "Use automatic proxy configuration".
(Read and Write property)

120.61.6 AutoDetect as Boolean

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Whether to auto detect proxy settings.

**Notes:**
If true, indicates that the Internet Explorer proxy configuration for the current user specifies "automatically detect settings".
(Read and Write property)
120.61.7 Proxy as String

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Contains the proxy URL if the Internet Explorer proxy configuration for the current user specifies "use a proxy server".
**Notes:** (Read and Write property)

120.61.8 ProxyBypass as String

**Notes:** (Read and Write property)
120.62 class WinHTTPClientMBS

120.62.1 class WinHTTPClientMBS

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The class for Windows to do http requests.
**Notes:**
The plugin only implements proxy related functions.
But this class could be extended to work like HTTPSocket.

120.62.2 Methods

120.62.3 Close as boolean

MBS Win Plugin, Plugin Version: 14.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Closes the session.

120.62.4 Constructor

MBS Win Plugin, Plugin Version: 14.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The constructor.

120.62.5 CrackUrl(URL as string, Flags as Integer = 0) as WinHTTPClientURLComponentsMBS

MBS Win Plugin, Plugin Version: 14.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Separates a URL into its component parts such as host name and path.
**Notes:**
URL: the canonical URL to separate. WinHttpCrackUrl does not check this URL for validity or correct format before attempting to crack it.

see also
120.62.6 DetectAutoProxyConfigUrl(AutoDetectFlags as Integer, byref AutoConfigUrl as string) as Boolean

MBS Win Plugin, Plugin Version: 14.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Finds the URL for the Proxy Auto-Configuration (PAC) file. **Notes:** This function reports the URL of the PAC file, but it does not download the file.

AutoDetectFlags: A data type that specifies what protocols to use to locate the PAC file. If both the DHCP and DNS auto detect flags are set, DHCP is used first; if no PAC URL is discovered using DHCP, then DNS is used.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>kAutoDetectTypeDHCP</td>
<td>Use DHCP to locate the proxy auto-configuration file.</td>
</tr>
<tr>
<td>kAutoDetectTypeDNSA</td>
<td>Use DNS to attempt to locate the proxy auto-configuration file at a well-known location on the domain of the local computer.</td>
</tr>
</tbody>
</table>

AutoConfigUrl: String that contains the configuration URL that receives the proxy data.

Returns true if successful, or false otherwise. For extended error information, call LastError. Among the error codes returned are the following.

WinHTTP implements the Web Proxy Auto-Discovery (WPAD) protocol, often referred to as autoproxy. For more information about well-known locations, see the Discovery Process section of the WPAD protocol document. Note that because the DetectAutoProxyConfigUrl function takes time to complete its operation, it should not be called from a UI thread.

120.62.7 GetDefaultProxyConfiguration as WinHTTPClientProxyInfoMBS

MBS Win Plugin, Plugin Version: 14.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Retrieves the default WinHTTP proxy configuration from the registry. **Notes:** Returns the default proxy configuration.

120.62.8 GetIEProxyConfigForCurrentUser as WinHTTPClientCurrentUserIProxyConfigMBS

MBS Win Plugin, Plugin Version: 14.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Retrieves the Internet Explorer proxy configuration for the current user.
Notes:
Queries the Internet Explorer proxy settings for the current active network connection (for example, LAN, dial-up, or VPN connection).

see also

120.62.9 GetProxyForHost(URL as string, Host as string, byref proxy as string, byref proxyPort as string, AutoConfigURL as string = ””) as boolean

MBS Win Plugin, Plugin Version: 14.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Queries the proxy for a host.
**Notes:**
This is an universal functions using InternetGetProxyInfo, DetectAutoProxyUrl and InternetQueryOption.

URL: The target URL.
Host: The hostname of the target server.

Returns true on success and sets proxy and port. Returns false on failure.
AutoConfigURL is only used on first call instead of a configured auto config URL in Internet Explorer.

120.62.10 GetProxyForUrl(URL as string, AutoProxyOptions as WinHTTP-ClientAutoProxyOptionsMBS, byref ProxyInfo as WinHTTPClientProxyInfoMBS) as boolean

MBS Win Plugin, Plugin Version: 14.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Retrieves the proxy data for the specified URL.
**Notes:**
Url: Contains the URL of the HTTP request that the application is preparing to send.
AutoProxyOptions: Specifies the auto-proxy options to use.
ProxyInfo: Receives the proxy setting.

If the function succeeds, the function returns true.
If the function fails, it returns false. Lasterror is set.

This function implements the Web Proxy Auto-Discovery (WPAD) protocol for automatically configuring the proxy settings for an HTTP request. The WPAD protocol downloads a Proxy Auto-Configuration (PAC) file, which is a script that identifies the proxy server to use for a given target URL. PAC files are typically deployed by the IT department within a corporate network environment. The URL of the PAC file can
either be specified explicitly or GetProxyForUrl can be instructed to automatically discover the location of the PAC file on the local network.

GetProxyForUrl supports only ECMAScript-based PAC files. GetProxyForUrl must be called on a per-URL basis, because the PAC file can return a different proxy server for different URLs. This is useful because the PAC file enables an IT department to implement proxy server load balancing by mapping (hashing) the target URL (specified by the lpcwszUrl parameter) to a certain proxy in a proxy server array. GetProxyForUrl caches the autoproxy URL and the autoproxy script when auto-discovery is specified in the dwFlags member of the pAutoProxyOptions structure. For more information, see Autoproxy Cache.

see also

120.62.11 InternetGetProxyInfo(URL as string, Host as string) as String


Notes:
This function can only be called by dynamically linking to "JSProxy.dll" (plugin loads this for you). For better autoproxy support, use HTTP Services (WinHTTP) version 5.1 instead.

Url: Specifies the URL of the target HTTP resource.
HostName: Specifies the host name of the target URL.

Returns the URL of the proxy to use in an HTTP request for the specified resource.
Returns empty string on any error.

120.62.12 Open(UserAgent as string, AccessType as Integer, ProxyName as string = "", ProxyByPass as string = "") as boolean


Notes:
IUserAgent: Specifies the name of the application or entity calling the WinInet functions. This name is used as the user agent in the HTTP protocol.
AccessType: Type of access required. This parameter can be one of the following values.

ProxyName: String that specifies the name of the proxy server(s) to use when proxy access is specified
by setting `dwAccessType` to `INTERNET_OPEN_TYPE_PROXY`. Do not use an empty string, because `InternetOpen` will use it as the proxy name. The WinInet functions recognize only CERN type proxies (HTTP only) and the TIS FTP gateway (FTP only). If Microsoft Internet Explorer is installed, these functions also support SOCKS proxies. FTP requests can be made through a CERN type proxy either by changing them to an HTTP request or by using `InternetOpenUrl`. If `dwAccessType` is not set to `INTERNET_OPEN_TYPE_PROXY`, this parameter is ignored and should be NULL. For more information about listing proxy servers, see the Listing Proxy Servers section of Enabling Internet Functionality.

By default, WinInet will bypass the proxy for requests that use the host names "localhost", "loopback", "127.0.0.1", or " [::1] ". This behavior exists because a remote proxy server typically will not resolve these addresses properly.

Internet Explorer 9: You can remove the local computer from the proxy bypass list using the "<loopback>" macro.

If `dwAccessType` is not set to `INTERNET_OPEN_TYPE_PROXY`, this parameter is ignored and should be NULL.

Flags: Options. This parameter can be a combination of the following values.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>INTERNET_FLAG_ASYNC</code></td>
<td>Makes only asynchronous requests on handles descended from the handle returned from this function.</td>
</tr>
<tr>
<td><code>INTERNET_FLAG_FROM_CACHE</code></td>
<td>Does not make network requests. All entities are returned from the cache. If the requested item is not in the cache, a suitable error, such as ERROR_FILE_NOT_FOUND, is returned.</td>
</tr>
<tr>
<td><code>INTERNET_FLAG_OFFLINE</code></td>
<td>Identical to <code>INTERNET_FLAG_FROM_CACHE</code>. Does not make network requests. All entities are returned from the cache. If the requested item is not in the cache, a suitable error, such as ERROR_FILE_NOT_FOUND, is returned.</td>
</tr>
</tbody>
</table>

Returns a valid handle that the application passes to subsequent WinInet functions. If Open fails, it returns false. To retrieve a specific error message, call `GetLastError`.

see also
120.62. CLASS WINHTTPCLIENTMBS

120.62.13 SetDefaultProxyConfiguration(info as WinHTTPClientProxyInfoMBS) as boolean

MBS Win Plugin, Plugin Version: 14.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Sets the default WinHTTP proxy configuration in the registry.
**Notes:**
see also

SetDefaultProxyConfiguration changes the proxy configuration set by ProxyCfg.exe.
The default proxy configuration set by this function can be overridden for an existing WinHTTP session by
calling SetOption and specifying the OptionProxy flag. The default proxy configuration can be overridden
for a new session by specifying the configuration with the WinHttpOpen function.
The dwAccessType member of the WinHTTPClientProxyInfoMBS structure pointed to by pProxyInfo
should be set to kAccessTypeNamedProxy if a proxy is specified. Otherwise, it should be set to kAc-
cessTypeDefaultProxy.

Any new sessions created after calling this function use the new default proxy configuration.
Even when WinHTTP is used in asynchronous mode (that is, when WINHTTP
FLAG ASYNC has been
set in WinHttpOpen), this function operates synchronously. The return value indicates success or failure.
To get extended error information, call GetLastError.
Note For Windows XP and Windows 2000, see the Run-Time Requirements section of the WinHTTP start
page.

120.62.14 Properties

120.62.15 Handle as Integer

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The internal reference.
**Notes:**
This is a HINTERNET type.
(Read and Write property)

120.62.16 Lasterror as Integer

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The last error.
**Notes:**
see also error list:
(Read and Write property)
120.62.17  **LasterrorString as String**

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The error message for the last error.  
**Notes:** (Read and Write property)

120.62.18  **OptionConnectTimeOut as Integer**

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Get or set the connect timeout.  
**Notes:**  
Lasterror is set.  
Sets or retrieves an unsigned long integer value that contains the time-out value, in milliseconds. Setting this option to infinite (-1) will disable this timer. If a TCP connection request takes longer than this time-out value, the request is canceled. The default timeout is 60 seconds. When you are attempting to connect to multiple IP addresses for a single host (a multihomed host), the timeout limit is for each individual connection.  
(Read and Write property)

120.62.19  **OptionProxyPassword as String**

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Get or set the proxy password.  
**Notes:**  
Sets or retrieves a string value that contains the password used to access the proxy. Lasterror is set.  
(Read and Write property)

120.62.20  **OptionProxyUsername as String**

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Get or set the proxy user name.  
**Notes:**  
Sets or retrieves a string value that contains the user name used to access the proxy. Lasterror is set.
120.62.21 Constants

120.62.22 kAccessTypeDefaultProxy = 0

MBS Win Plugin, Plugin Version: 14.1. **Function:** One of the proxy access types. **Notes:** Applies only when setting proxy information.

120.62.23 kAccessTypeNamedProxy = 3

MBS Win Plugin, Plugin Version: 14.1. **Function:** One of the proxy access types. **Notes:** Internet accessed using a proxy.

120.62.24 kAccessTypeNoProxy = 1

MBS Win Plugin, Plugin Version: 14.1. **Function:** One of the proxy access types. **Notes:** Internet accessed through a direct connection.

120.62.25 kAutoDetectTypeDHCP = 1

MBS Win Plugin, Plugin Version: 14.1. **Function:** One of the auto detect type flags. **Notes:** Use DHCP to locate the proxy auto-configuration file.

120.62.26 kAutoDetectTypeDNSA = 2

MBS Win Plugin, Plugin Version: 14.1. **Function:** One of the auto detect type flags. **Notes:** Use DNS to attempt to locate the proxy auto-configuration file at a well-known location on the domain of the local computer.

120.62.27 kInternetSchemeHTTP = 1

MBS Win Plugin, Plugin Version: 14.1. **Function:** One of the scheme type constants. **Notes:** HTTP scheme.
MBS Win Plugin, Plugin Version: 14.1. **Function:** One of the scheme type constants. **Notes:** HTTPS scheme.
120.63  class WinHTTPClientProxyInfoMBS

120.63.1  class WinHTTPClientProxyInfoMBS

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The class for the session or default proxy configuration.
**Notes:**
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

120.63.2  Methods

120.63.3  Constructor

MBS Win Plugin, Plugin Version: 14.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The private constructor.

120.63.4  Properties

120.63.5  AccessType as Integer

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The access type.
**Notes:**
Can be kAccessTypeDefaultProxy, kAccessTypeNamedProxy or kAccessTypeNoProxy.
(Read and Write property)

120.63.6  Proxy as String

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The proxy server list.
**Notes:** (Read and Write property)
120.63.7 ProxyBypass as String

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The proxy bypass list. **Notes:** (Read and Write property)

120.63.8 Constants

120.63.9 kAccessTypeDefaultProxy = 0

MBS Win Plugin, Plugin Version: 14.1. **Function:** One of the proxy access types. **Notes:** Applies only when setting proxy information.

120.63.10 kAccessTypeNamedProxy = 3

MBS Win Plugin, Plugin Version: 14.1. **Function:** One of the proxy access types. **Notes:** Internet accessed using a proxy.

120.63.11 kAccessTypeNoProxy = 1

MBS Win Plugin, Plugin Version: 14.1. **Function:** One of the proxy access types. **Notes:** Internet accessed through a direct connection.
120.64.  **class WinHTTPClientURLComponentsMBS**

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  **Function:**
The class containing the constituent parts of an URL.

**Notes:**
see also
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

120.64.2  **Methods**

120.64.3  **Constructor**

MBS Win Plugin, Plugin Version: 14.1, Console & Web: No, Mac: No, Win: Yes, Linux: No.  **Function:**
The private constructor.

120.64.4  **Properties**

120.64.5  **ExtraInfo as String**

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  **Function:**
The extra information, for example, ?something or # something.

**Notes:** (Read and Write property)

120.64.6  **ExtraInfoLength as Integer**

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  **Function:**
The length of the extra information, in characters.

**Notes:** (Read and Write property)

120.64.7  **HostName as String**

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  **Function:**
The host name.

**Notes:** (Read and Write property)
**120.64.8 HostNameLength as Integer**

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Length of the host name, in characters.
**Notes:** (Read and Write property)

**120.64.9 Password as String**

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The password.
**Notes:** (Read and Write property)

**120.64.10 PasswordLength as Integer**

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Length of the password, in characters.
**Notes:** (Read and Write property)

**120.64.11 Port as Integer**

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Port number.
**Notes:** (Read and Write property)

**120.64.12 Scheme as String**

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The scheme name.
**Notes:** (Read and Write property)

**120.64.13 SchemeID as Integer**

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Internet protocol scheme.
**Notes:**
Normally 1 for HTTP and 2 for HTTPS.
(Read and Write property)
120.64.14  SchemeLength as Integer

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Length of the scheme name, in characters.
**Notes:** (Read and Write property)

120.64.15  UrlPath as String

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The URL path.
**Notes:** (Read and Write property)

120.64.16  UrlPathLength as Integer

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Length of the URL path, in characters.
**Notes:** (Read and Write property)

120.64.17  UserName as String

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The user name.
**Notes:** (Read and Write property)

120.64.18  UserNameLength as Integer

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Length of the user name, in characters.
**Notes:** (Read and Write property)
Chapter 121

Nikon Cameras

121.1 class NikonCapInfoMBS

121.1.1 class NikonCapInfoMBS

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The class for Capability Information.  
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

121.1.2 Methods

121.1.3 Constructor


121.1.4 Properties

121.1.5 Description as String

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The description of this capability.  
**Notes:** (Read only property)
121.1.6  ID as Integer

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The ID of this property.

**Notes:**
See eNkMAIDCapability in Nikon’s documentation.
(Read only property)

121.1.7  Operations as Integer

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The supported operations for this capability.

**Notes:**
See eNkCapOperations in Nikon’s documentation.
(Read only property)

121.1.8  OperationsString as String

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The operation value as a string for displaying.

**Notes:** (Read only property)

121.1.9  Type as Integer

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The type of this capability.

**Notes:**
See eNkMAIDCababilityType in Nikon’s documentation.
(Read only property)

121.1.10  TypeString as String

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The type value as a string for displaying.

**Notes:** (Read only property)
121.1. CLASS NIKONCAPINFOMBS

121.1.11 Visibility as Integer

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The visibility of this capability.  
**Notes:**  
See eNkCapVisibility in Nikon’s documentation.  
(Read only property)

121.1.12 VisibilityString as String

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The visibility value as a string for displaying.  
**Notes:** (Read only property)
121.2 class NikonFileInfoMBS

121.2.1 class NikonFileInfoMBS

**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

121.2.2 Methods

121.2.3 Constructor


121.2.4 Properties

121.2.5 DiskFile as Boolean

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** True if the file is delivered on disk.  
**Notes:** (Read and Write property)

121.2.6 FileDataType as Integer

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** One of eNkMAIDFileDataTypes.  
**Notes:** Possible values:

- kNkMAIDFileType_NotSpecified: 0
- kNkMAIDFileType_JPEG: 1
- kNkMAIDFileType_TIFF: 2
- kNkMAIDFileType_FlashPix: 3
- kNkMAIDFileType_NIF: 4
- kNkMAIDFileType_QuickTime: 5
- kNkMAIDFileType_UserType: & h100
121.2. **CLASS NIKONFILEINFOMBS**

(Read and Write property)

### 121.2.7 Length as Integer

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function**: Number of bytes in this delivery.
**Notes**: (Read and Write property)

### 121.2.8 RemoveObject as Boolean

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function**: True if the object should be removed.
**Notes**: (Read and Write property)

### 121.2.9 Start as Integer

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function**: Index of starting byte (0-based)
**Notes**: (Read and Write property)

### 121.2.10 TotalLength as Integer

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function**: Total number of bytes to be transferred.
**Notes**: (Read and Write property)
121.3 class NikonImageInfoMBS

121.3.1 class NikonImageInfoMBS

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The class for the Image Data Delivery structure. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

121.3.2 Methods

121.3.3 Bits(index as Integer) as Integer

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Number of bits per plane per pixel. **Notes:** Index from 0 to 3.

121.3.4 Constructor


121.3.5 Properties

121.3.6 ColorSpace as Integer

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The colorspace. **Notes:** Possible values:

(Read and Write property)

121.3.7 Plane as Integer

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The plane configuration.
121.3. **CLASS NIKONIMAGEINFOMBS**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kNkMAIDColorSpace.LineArt</td>
<td>0</td>
</tr>
<tr>
<td>kNkMAIDColorSpace.Grey</td>
<td>1</td>
</tr>
<tr>
<td>kNkMAIDColorSpace.RGB</td>
<td>2</td>
</tr>
<tr>
<td>kNkMAIDColorSpace.sRGB</td>
<td>3</td>
</tr>
<tr>
<td>kNkMAIDColorSpace.CMYK</td>
<td>4</td>
</tr>
<tr>
<td>kNkMAIDColorSpace_Lab</td>
<td>5</td>
</tr>
<tr>
<td>kNkMAIDColorSpace_LCH</td>
<td>6</td>
</tr>
<tr>
<td>kNkMAIDColorSpace_AppleRGB</td>
<td>7</td>
</tr>
<tr>
<td>kNkMAIDColorSpace_ColorMatchRGB</td>
<td>8</td>
</tr>
<tr>
<td>kNkMAIDColorSpace_NTSCRGB</td>
<td>9</td>
</tr>
<tr>
<td>kNkMAIDColorSpace_BruceRGB</td>
<td>10</td>
</tr>
<tr>
<td>kNkMAIDColorSpace_AdobeRGB</td>
<td>11</td>
</tr>
<tr>
<td>kNkMAIDColorSpace_CIERRGB</td>
<td>12</td>
</tr>
<tr>
<td>kNkMAIDColorSpace_AdobeWideRGB</td>
<td>13</td>
</tr>
<tr>
<td>kNkMAIDColorSpace_AppleRGB_Compensated</td>
<td>14</td>
</tr>
</tbody>
</table>

**Notes:** (Read and Write property)

### 121.3.8 Rect as NikonRectMBS

**Notes:** (Read and Write property)

### 121.3.9 RemoveObject as Boolean

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** True if the object should be removed.  
**Notes:** (Read and Write property)

### 121.3.10 RowBytes as Integer

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Number of bytes per row of pixels.  
**Notes:** (Read and Write property)

### 121.3.11 TotalPixels as NikonSizeMBS

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Total size of image to be transferred.
Notes: (Read and Write property)
121.4. **CLASS NIKONLIVEIMAGEMBS**

### 121.4 class NikonLiveImageMBS

#### 121.4.1 class NikonLiveImageMBS

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The class for the live image data structure. **Notes:** As there are 5 variants of the data structure for the different camera SDKs, some fields may not be filled for the camera you have.

#### 121.4.2 Methods

**121.4.3 AFframes(index as UInt32) as NikonRectMBS**

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The auto focus frames array. **Notes:**

- Index from 0 to 34 (fixed to 0 for D5100)
- Area of the AF frame size and the AF frame center coordinates for thirty-five persons

#### 121.4.4 Properties

**121.4.5 AFAreaIndex as Integer**

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The Autofocus area index. **Notes:**

- From 0 to 34 (fixed to 0 for D5100)
- (Read and Write property)

**121.4.6 AFstate as Integer**

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** AF mode status of the face detection system. **Notes:**

- 0: The face detection system is not set to AF.
- 1: The face detection system is set to AF.
- (Read and Write property)
121.4.7 Aperture as Double

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The aperture value.
**Notes:**
Aperture = F number*100
Only for type 2 and 3.
(Read only property)

121.4.8 AutoFocusHeight as Integer

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The height of the auto focus area.
**Notes:** (Read and Write property)

121.4.9 AutoFocusWidth as Integer

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The width of the auto focus area.
**Notes:** (Read and Write property)

121.4.10 AutoFocusX as Integer

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The x coordinate of the auto focus area.
**Notes:** (Read and Write property)

121.4.11 AutoFocusY as Integer

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The y coordinate of the auto focus area.
**Notes:** (Read and Write property)

121.4.12 CountDownTime as Integer

121.4. CLASS NIKONLIVEIMAGEMBS

Notes:
Countdown every one second starting from 3600 (one hour); countdown starting from thirty seconds with a rise in temperature.
(Read and Write property)

121.4.13 **DirectionOfRotation as Integer**

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The Rotation direction. **Notes:** (Read and Write property)

121.4.14 **DisplayCenterX as Integer**

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Display center coordinate. **Notes:** (Read and Write property)

121.4.15 **DisplayCenterY as Integer**

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Display center coordinate. **Notes:** (Read and Write property)

121.4.16 **DisplayHeight as Integer**

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The height of the display area size. **Notes:** (Read and Write property)

121.4.17 **DisplayWidth as Integer**

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The width of the display area size. **Notes:** (Read and Write property)
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121.4.18 FaceDetectionCount as Integer

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The number of persons whose faces are detected by the system. **Notes:** From 0 to 35 (Thirty-five is the maximum number of persons for D5100.) (Read and Write property)

121.4.19 FacePriorityAFMode as Integer

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Face priority AF mode. **Notes:**
0: Face priority AF is not active.
1: Face priority AF is active.
(Read and Write property)

121.4.20 FocusDriveState as Integer

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Focus driving status. **Notes:**
0: Not driving
1: Driving
(Read and Write property)

121.4.21 FocusResult as Integer

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Focusing judgment result. **Notes:**
0: No information
1: Not focused
2: Focused
(Read and Write property)
121.4. **CLASS NIKONLIVEIMAGEMBS**

### 121.4.22 Height as Integer

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Height of the JPEG image.  
**Notes:** (Read and Write property)

### 121.4.23 JPEGData as MemoryBlock

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The JPEG data of the live image.  
**Notes:**  
You can use JPEGStringToPictureMBS to decode it.  
(Read and Write property)

### 121.4.24 MovieRecordingInformation as Integer

**Notes:**  
0: During LV execution  
1: During movie recording  
(Read and Write property)

### 121.4.25 RawData as MemoryBlock

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The raw data used to build this image object and the fill the properties.  
**Notes:** (Read and Write property)

### 121.4.26 RemainingMovieRecordingTime as Integer

**Notes:**  
From 0 to 1200000 [ msec ].  
It is valid during the movie recording state.  
(Read and Write property)
121.4.27 SelectedFocusPoint as Integer

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The number of the selected focus area. **Notes:**
Range from 0 to 11. (Read and Write property)

121.4.28 ShutterSpeed as Double

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The shutter speed. **Notes:**
Only for type 2 and 3. (Read only property)

121.4.29 TotalHeight as Integer

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The total size of the image. **Notes:** (Read and Write property)

121.4.30 TotalWidth as Integer

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The total size of the image. **Notes:** (Read and Write property)

121.4.31 Width as Integer

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Width of the JPEG image. **Notes:** (Read and Write property)
121.4.32 Constants

121.4.33 kAFStateDriveImpossibility = 0

MBS Cameras Plugin, Plugin Version: 13.1. **Function:** One of the values for state that AF can be driven.  
**Notes:** AF drive impossibility.

121.4.34 kAFStateDrivePossible = 1

MBS Cameras Plugin, Plugin Version: 13.1. **Function:** One of the values for state that AF can be driven.  
**Notes:** AF drive possible.

121.4.35 kDirectionClockWise = 2

MBS Cameras Plugin, Plugin Version: 13.1. **Function:** One of the constants for rotation direction.  
**Notes:** Rotate clockwise

121.4.36 kDirectionCounterClockWise = 1

MBS Cameras Plugin, Plugin Version: 13.1. **Function:** One of the constants for rotation direction.  
**Notes:** Rotate counterclockwise

121.4.37 kDirectionNone = 0

MBS Cameras Plugin, Plugin Version: 13.1. **Function:** One of the constants for rotation direction.  
**Notes:** No rotation

121.4.38 kFacePriorityAFModeActive = 1

MBS Cameras Plugin, Plugin Version: 13.1. **Function:** One of the auto focus modes.  
**Notes:** Active
121.4.39  kFacePriorityAFModeNotActive = 0

MBS Cameras Plugin, Plugin Version: 13.1. **Function:** One of the auto focus modes.
**Notes:** Inactive

121.4.40  kFocusDriveStateDriving = 0

MBS Cameras Plugin, Plugin Version: 13.1. **Function:** One of the focus driving values.
**Notes:** Driving

121.4.41  kFocusDriveStateNotDriving = 1

MBS Cameras Plugin, Plugin Version: 13.1. **Function:** One of the focus driving values.
**Notes:** Not driving.

121.4.42  kFocusResultInFocus = 2

MBS Cameras Plugin, Plugin Version: 13.1. **Function:** One of the focus result values.
**Notes:** In Focus

121.4.43  kFocusResultNoInformation = 0

MBS Cameras Plugin, Plugin Version: 13.1. **Function:** One of the focus result values.
**Notes:** Focused

121.4.44  kFocusResultOutOfFocus = 1

MBS Cameras Plugin, Plugin Version: 13.1. **Function:** One of the focus result values.
**Notes:** Not focused.
121.5  CLASS NIKONMBS

121.5  class NikonMBS

121.5.1  class NikonMBS

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The class to talk to a Nikon camera. **Notes:** You need to get the SDKs yourself for the various cameras, so you have the PDF manuals, the C header files and the shared libraries.

121.5.2  Methods

121.5.3  Acquire as boolean


121.5.4  Async as boolean


121.5.5  AutoFocus as boolean

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Performs autofocus. **Notes:** Performs operation kNkMAIDCapability_AutoFocus.

121.5.6  AvailableDatatypes as UInt32


121.5.7  Capabilities(what as Integer) as NikonCapInfoMBS()

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Queries the list of capabilities.
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Notes: What: Selects what to query. Can be kModule, kSource, kItem or kData.

121.5.8 CapabilitiesCount(what as Integer) as UInt32

Notes: What: Selects what to query. Can be kModule, kSource, kItem or kData.

121.5.9 Capability(what as Integer, ID as Integer) as NikonCapInfoMBS

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. Function: Queries the capability with given ID.
Notes: What: Selects what to query. Can be kModule, kSource, kItem or kData.

121.5.10 Capture as boolean

Notes: Performs operation kNkMAIDCapability.Capture.

121.5.11 CloseData


121.5.12 CloseItem


121.5.13 CloseModule

121.5. CLASS NIKONMBS

121.5.14 CloseSource


121.5.15 GetCapBoolean(what as Integer, ID as Integer) as Boolean

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Queries a capability with a boolean value. **Notes:** What: Selects what to query. Can be kModule, kSource, kItem or kData.

121.5.16 GetCapDefaultBoolean(what as Integer, ID as Integer) as Boolean

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Queries the default value for a capability with a boolean value. **Notes:** What: Selects what to query. Can be kModule, kSource, kItem or kData.

121.5.17 GetCapDefaultDouble(what as Integer, ID as Integer) as Double

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Queries the default value for a capability with a double value. **Notes:** What: Selects what to query. Can be kModule, kSource, kItem or kData.

121.5.18 GetCapDefaultInt32(what as Integer, ID as Integer) as Int32

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Queries the default value for a capability with an Int32 value. **Notes:** What: Selects what to query. Can be kModule, kSource, kItem or kData.

121.5.19 GetCapDefaultPoint(what as Integer, ID as Integer) as NikonPointMBS

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Queries the default value for a capability with a point value. **Notes:** What: Selects what to query. Can be kModule, kSource, kItem or kData.
121.5.20  GetCapDefaultRect(what as Integer, ID as Integer) as NikonRectMBS


121.5.21  GetCapDefaultSize(what as Integer, ID as Integer) as NikonSizeMBS


121.5.22  GetCapDefaultString(what as Integer, ID as Integer) as String


121.5.23  GetCapDefaultUInt32(what as Integer, ID as Integer) as UInt32


121.5.24  GetCapDouble(what as Integer, ID as Integer) as Double


121.5.25  GetCapEnumPacketString(what as Integer, ID as Integer, byref current as UInt32) as string()

121.5. CLASS NIKONMBS

121.5.26 GetCapEnumString(what as Integer, ID as Integer, byref current as UInt32) as string()

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Queries a capability with a string enum value. **Notes:** What: Selects what to query. Can be kModule, kSource, kItem or kData.

121.5.27 GetCapEnumUInt32(what as Integer, ID as Integer, byref current as UInt32) as UInt32()

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Queries a capability with an enum UInt32 value. **Notes:** What: Selects what to query. Can be kModule, kSource, kItem or kData.

121.5.28 GetCapInt32(what as Integer, ID as Integer) as Int32

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Queries a capability with an Int32 value. **Notes:** What: Selects what to query. Can be kModule, kSource, kItem or kData.

121.5.29 GetCapPoint(what as Integer, ID as Integer) as NikonPointMBS

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Queries a capability with a point value. **Notes:** What: Selects what to query. Can be kModule, kSource, kItem or kData.

121.5.30 GetCapRange(what as Integer, ID as Integer, byref Value as Double, byref DefaultValue as Double, byref ValueIndex as UInt32, byref DefaultValueIndex as UInt32, byref LowerValue as Double, byref UpperValue as Double, byref Steps as UInt32) as boolean

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Queries a capability with a range value. **Notes:** What: Selects what to query. Can be kModule, kSource, kItem or kData.
121.5.31 GetCapRect(what as Integer, ID as Integer) as NikonRectMBS

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Queries a capability with a rectangle value.  
**Notes:** What: Selects what to query. Can be kModule, kSource, kItem or kData.

121.5.32 GetCapSize(what as Integer, ID as Integer) as NikonSizeMBS

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Queries a capability with a size value.  
**Notes:** What: Selects what to query. Can be kModule, kSource, kItem or kData.

121.5.33 GetCapString(what as Integer, ID as Integer) as String

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Queries a capability with a string value.  
**Notes:** What: Selects what to query. Can be kModule, kSource, kItem or kData.

121.5.34 GetCapUInt32(what as Integer, ID as Integer) as UInt32

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Queries a capability with an(UInt32) value.  
**Notes:** What: Selects what to query. Can be kModule, kSource, kItem or kData.

121.5.35 GetItemCount as UInt32

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Queries number of items.

121.5.36 GetLiveViewImage(type as Integer) as NikonLiveImageMBS

**Notes:** Performs kNkMAIDCapability_GetLiveViewImage and decodes data returned into a NikonLiveImageMBS object.
121.5. CLASS NIKONMBS

Type: Which type of device you have. Value from 1 to 5.

121.5.37 GetSourceCount as UInt32

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Queries the number of sources (cameras).

121.5.38 GetVideoImageData(Offset as UInt32, BlockSize as UInt32) as String

MBS Cameras Plugin, Plugin Version: 13.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Queries data of a video file. **Notes:** Please use OpenData before to open the video.

121.5.39 GetVideoImageDataSize as UInt32

MBS Cameras Plugin, Plugin Version: 13.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Queries data size of a video. **Notes:** Please use OpenData before to open the video.

121.5.40 LoadLibrary(file as folderitem) as boolean

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Loads the Nikon shard library. **Notes:** Returns true on success. Please pass folderitem pointing to dll on Windows and dylib on Mac OS X. See also:

- 121.5.41 LoadLibrary(path as string) as boolean

121.5.41 LoadLibrary(path as string) as boolean

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Loads the Nikon shard library. **Notes:** Returns true on success. Please pass string path pointing to dll on Windows and dylib on Mac OS X. See also:
**121.5.42 OpenData(type as UInt32) as boolean**


**Notes:**

**121.5.43 OpenItem(index as UInt32) as boolean**

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Opens the item with the given index.

**Notes:** Index is zero based.

**121.5.44 OpenModule as boolean**


**121.5.45 OpenSource(index as UInt32) as boolean**

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Opens the source with the given index.

**Notes:** Index is zero based.

**121.5.46 PreCapture as boolean**


**Notes:** Performs operation kNkMAIDCapability_PreCapture.

**121.5.47 SetCapBoolean(what as Integer, ID as Integer, value as Boolean)**

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Sets a capability with a boolean value.

**Notes:** What: Selects what to query. Can be kModule, kSource, kItem or kData.
121.5.48  SetCapDouble(what as Integer, ID as Integer, value as Double)

**Notes:** What: Selects what to query. Can be kModule, kSource, kItem or kData.

121.5.49  SetCapEnumPackedString(what as Integer, ID as Integer, EnumIndex as UInt32) as boolean

**Notes:**
What: Selects what to query. Can be kModule, kSource, kItem or kData.
You first query the enum to get the list of options, than you can set a new one by passing index here.

121.5.50  SetCapEnumUInt32(what as Integer, ID as Integer, Value as UInt32) as boolean

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Sets a capability with an enum UInt32 value.
**Notes:** What: Selects what to query. Can be kModule, kSource, kItem or kData.

121.5.51  SetCapInt32(what as Integer, ID as Integer, value as Int32)

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Sets a capability with an Int32 value.
**Notes:** What: Selects what to query. Can be kModule, kSource, kItem or kData.

121.5.52  SetCapPoint(what as Integer, ID as Integer, value as NikonPointMBS)

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Sets a capability with a point value.
**Notes:** What: Selects what to query. Can be kModule, kSource, kItem or kData.
121.5.53 SetCapRange(what as Integer, ID as Integer, Value as Double, ValueIndex as UInt32) as boolean


121.5.54 SetCapRect(what as Integer, ID as Integer, value as NikonRectMBS)


121.5.55 SetCapSize(what as Integer, ID as Integer, value as NikonSizeMBS)


121.5.56 SetCapString(what as Integer, ID as Integer, value as String)


121.5.57 SetCapUInt32(what as Integer, ID as Integer, value as UInt32)


121.5.58 Properties

121.5.59 FunctionPtr as Integer

121.5.60 Lasterror as Integer

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The last error code.
**Notes:** (Read only property)

121.5.61 LoadErrorMessage as String

MBS Cameras Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The error message from loading library.
**Notes:**
Set by LoadLibrary methods to help debugging.

Windows error 193 means that 64-bit Xojo app tried to load 32-bit library or 32-bit Xojo app tried to load 64-bit library. The bit level must match between app and library. For Mac OS X the error message will tell you about wrong architecture.
(Read only property)

121.5.62 Events

121.5.63 FileDownloadComplete(info as NikonFileInfoMBS, data as Memoryblock, length as Integer)

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Informs you about a finished file download.

121.5.64 ImageDownloadComplete(info as NikonImageInfoMBS, data as Memoryblock, length as Integer)

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** This event informs you about a finished event.
121.5.65  Progress(Command as Integer, Param as Integer, Done as UInt32, Total as UInt32, Percent as Double)

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** This event informs you about progress of an ongoing operation.

121.5.66  Constants

121.5.67  kData = 8

MBS Cameras Plugin, Plugin Version: 13.1. **Function:** One of the selector constants. **Notes:** Apply to data.

121.5.68  kDataObjTypeFile = 16

MBS Cameras Plugin, Plugin Version: 13.1. **Function:** One of the data object types. **Notes:** Other file

121.5.69  kDataObjTypeImage = 1

MBS Cameras Plugin, Plugin Version: 13.1. **Function:** One of the data object types. **Notes:** Image file

121.5.70  kDataObjTypeSound = 2

MBS Cameras Plugin, Plugin Version: 13.1. **Function:** One of the data object types. **Notes:** Sound file

121.5.71  kDataObjTypeThumbnail = 8

MBS Cameras Plugin, Plugin Version: 13.1. **Function:** One of the data object types. **Notes:** Picture thumbnail
121.5.72 \( \text{kDataObjTypeVideo} = 4 \)

MBS Cameras Plugin, Plugin Version: 13.1. **Function**: One of the data object types. 
**Notes**: Video file

121.5.73 \( \text{kDevice} = 2 \)

MBS Cameras Plugin, Plugin Version: 13.1. **Function**: One of the selector constants. 
**Notes**: Apply to device/source.

121.5.74 \( \text{kItem} = 4 \)

MBS Cameras Plugin, Plugin Version: 13.1. **Function**: One of the selector constants. 
**Notes**: Apply to item.

121.5.75 \( \text{kModule} = 1 \)

MBS Cameras Plugin, Plugin Version: 13.1. **Function**: One of the selector constants. 
**Notes**: Apply to module.

121.5.76 \( \text{kSource} = 2 \)

MBS Cameras Plugin, Plugin Version: 13.1. **Function**: One of the selector constants. 
**Notes**: Apply to device/source.
121.6  class NikonPointMBS

121.6.1  class NikonPointMBS

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No.  **Function:**  The class for a point.

121.6.2  Methods

121.6.3  Constructor(x as Integer = 0, y as Integer = 0)

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No.  **Function:**  The constructor.

121.6.4  Operator_Convert as String

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No.  **Function:**  Converts the point to a string for displaying.

121.6.5  Properties

121.6.6  x as Integer

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No.  **Function:**  The x coordinate.
**Notes:**  (Read and Write property)

121.6.7  y as Integer

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No.  **Function:**  The y coordinate.
**Notes:**  (Read and Write property)
121.7  class NikonRectMBS

121.7.1  class NikonRectMBS

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The class for a rectangle.

121.7.2  Methods

121.7.3  Constructor(x as Integer = 0, y as Integer = 0, w as Integer = 0, h as Integer = 0)

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The constructor.

121.7.4  Operator_Convert as String

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts the rectangle to a string for displaying.

121.7.5  Properties

121.7.6  h as Integer

**Notes:** (Read and Write property)

121.7.7  w as Integer

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The width of the rectangle.  
**Notes:** (Read and Write property)
121.7.8  x as Integer

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The x coordinate of the rectangle.  
**Notes:** (Read and Write property)

121.7.9  y as Integer

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The y coordinate of the rectangle.  
**Notes:** (Read and Write property)
121.8. CLASS NIKONSIZEMBS

121.8  class NikonSizeMBS

121.8.1  class NikonSizeMBS

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The class for a size.

121.8.2  Methods

121.8.3  Constructor(w as Integer = 0, h as Integer = 0)

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The constructor.

121.8.4  Operator_Convert as String

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Converts the size to a string for displaying.

121.8.5  Properties

121.8.6  h as Integer

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The height of the size object. 
**Notes:** (Read and Write property)

121.8.7  w as Integer

MBS Cameras Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The width of the size object. 
**Notes:** (Read and Write property)
Chapter 122

Notifications

122.1 class MacNotificationMBS

122.1.1 class MacNotificationMBS

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: A class to notify the user.

122.1.2 Methods

122.1.3 Show


Example:

```
    dim n as MacNotificationMBS ' in the window
    n=new MacNotificationMBS ' in the open event
    n.message="Hello world"
    n.show
```
122.1.4 Properties

122.1.5 FlashIcon as boolean

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Should the icon flash in the menubar?

**Example:**

```vbnet
dim n as MacNotificationMBS // in the window
n=new MacNotificationMBS // in the open event
n.message="Hello world"
n.FlashIcon=true
n.show
```

**Notes:** (Read and Write property)

122.1.6 IconID as Integer

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** An ID of a SICN Ressource in the app’s ressources to use when flashing the icon.

**Example:**

```vbnet
dim n as MacNotificationMBS // in the window
n=new MacNotificationMBS // in the open event
n.message="Hello world"
n.flashicon=true
n.iconid=128
n.show
```

**Notes:** (Read and Write property)

122.1.7 mark as boolean

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Should the app be marked in the application menu?

**Example:**

```vbnet
dim n as MacNotificationMBS // in the window
```
122.1. CLASS MACNOTIFICATIONMBS

n=new MacNotificationMBS // in the open event
n.message="Hello world"
n.mark=true
n.show

Notes: (Read and Write property)

122.1.8 Message as string

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The text to be displayed to the user.

**Example:**

```pascal
dim n as MacNotificationMBS // in the window
n=new MacNotificationMBS // in the open event
n.message="Hello world"
n.show
```

Notes:
May be empty to just bounce the Icon in the dock.
(Read and Write property)

122.1.9 PlaySystemSound as boolean

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Plays the system sound when the dialog is shown.

**Example:**

```pascal
dim n as MacNotificationMBS // in the window
n=new MacNotificationMBS // in the open event
n.PlaySystemSound=true
n.message="Hello world"
n.show
```

Notes:
other sounds will be supported in the next release.
(Read and Write property)
122.2. class NotificationCenterMBS

122.2.1 class NotificationCenterMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for notifications sent on Mac OS X.

**Notes:**

From Apple’s help, but modified:

Distributed notifications allow an application to broadcast a message to any number of other applications without needing to know who those other applications are, or even if the other applications exist. Every application type Cocoa, Carbon, BSD can use distributed notifications.

An application, the target application in this case, expresses an interest in receiving a broadcasted message by registering itself with the system’s distributed notification center, identifying exactly what message, or notification type, it wants to receive. The notification type is defined by an arbitrary string agreed upon by the sender and receiver of the notification. As an example, Cocoa’s NSWindow class defines the notification type "NSWindowDidCloseNotification", which an NSWindow instance broadcasts when its window closes. Any other object can register to receive this notification. (This notification, however, is internal to a single application and is not distributed to the rest of the system.)

In addition to the message, the application can identify the particular object sending the message. When the sender and receiver are in the same application in other words, using nondistributed notificationsthe observed object can be anything. When using distributed notifications, though, the object must be a string. A useful choice for the observed string is the bundle identifier of the target application.

In registering for the notification, the application provides a class with an Receive event, which will later be called.

Next, the broadcasting application your preference pane sends the notification. It calls the system’s notification center, tells the center what notification to send, and optionally passes a dictionary containing additional information. The dictionary can be used to pass the modified preferences directly to the application. Or, the preference pane can choose not to use the dictionary and instead write the changes out to disk. The notification is then used to tell the application to update its preferences from the disk.

The notification center looks up all the applications that registered to receive the given notification type from the particular instance. It then notifies each application’s run loop of the notification and gives it a copy of the dictionary. The selected callback function or method is executed during the application’s next pass through its run loop.

When using Preference Services, be certain to flush changes to the disk with the appropriate synchronize functions before sending notifications of changes. Otherwise, due to the caching performed by Preference...
Services, the disk may not accurately reflect the changes when the target receives the notification. Likewise, the target application must resynchronize its preferences after receiving the notification.

### 122.2.2 Methods

#### 122.2.3 Add(name as CFStringMBS, obj as CFObjectMBS, flags as Integer)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds a new callback. **Notes:**

This function costs around 24 bytes of memory per call which are never released (needed for the callback between framework and RB).

Values for the flags:

<table>
<thead>
<tr>
<th>CFNotificationSuspensionBehaviorDrop</th>
<th>1. The server will not queue any notifications with this name and object while the process/app is in the background.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFNotificationSuspensionBehaviorCoalesce</td>
<td>2. The server will only queue the last notification of the specified name and object; earlier notifications are dropped.</td>
</tr>
<tr>
<td>CFNotificationSuspensionBehaviorHold</td>
<td>3. The server will hold all matching notifications until the queue has been filled (queue size determined by the server) at which point the server may flush queued notifications.</td>
</tr>
<tr>
<td>CFNotificationSuspensionBehaviorDeliverImmediately</td>
<td>4. The server will deliver notifications matching this registration whether or not the process is in the background. When a notification with this suspension behavior is matched, it has the effect of first flushing any queued notifications.</td>
</tr>
</tbody>
</table>

#### 122.2.4 close(name as CFStringMBS, obj as CFObjectMBS)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Closes the given callback.

#### 122.2.5 closeAll

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Closes all registered callbacks. **Notes:** This is called by the destructor.
122.2. CLASS NOTIFICATIONCENTERMBS

122.2.6 Post(name as CFStringMBS, obj as CFObj ectMBS, userinfo as CFDictionaryMBS, deliverImmediately as Boolean)

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Posts a new notification.
**Notes:** Obj and userinfo may be nil.

See also:

- 122.2.7 Post(name as CFStringMBS, obj as CFObj ectMBS, userinfo as CFDictionaryMBS, options as Integer)

122.2.7 Post(name as CFStringMBS, obj as CFObj ectMBS, userinfo as CFDictionaryMBS, options as Integer)

MBS MacCF Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Posts a new notification.
**Example:**
```
dim n as new NotificationCenterMBS
n.Post(NewCFStringMBS("test"), nil, nil, n.kCFNotificationPostToAllSessions + n.kCFNotificationDeliverImmediately)
```

**Notes:**
Obj and userinfo may be nil.
Requires Mac OS X 10.3.
For options you can use a combination with kCFNotificationDeliverImmediately=1 and kCFNotificationPostToAllSessions=2.

See also:

- 122.2.6 Post(name as CFStringMBS, obj as CFObj ectMBS, userinfo as CFDictionaryMBS, deliverImmediately as Boolean)

122.2.8 Properties

122.2.9 Available as boolean

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the needed framework was successfully loaded.
**Notes:** (Read only property)
122.2.10 Events

122.2.11 Received(name as CFStringMBS, obj as CFObjectMBS, userinfo as CFDictionaryMBS)

MBS MacCF Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** A notification was received. **Notes:** All parameters may be for any reason nil.

122.2.12 Constants

122.2.13 kCFNotificationDeliverImmediately = 1

MBS MacCF Plugin, Plugin Version: 7.4. **Function:** One of the constant you can use for the Post Method.

122.2.14 kCFNotificationPostToAllSessions = 2

MBS MacCF Plugin, Plugin Version: 7.4. **Function:** One of the constant you can use for the Post Method.
122.3.  CLASS NOTIFICATIONMBS

122.3  class NotificationMBS

122.3.1  class NotificationMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The class for an application internal notification.
Example:

```
dim n as new NotificationMBS("DatabaseChangedNotification")
NotificationMBS.send(n)
```

Notes:

The point of notifications is to inform some other part of your application about something. For example a
chart updating if the user enters data in textfields.

So you register for notifications in existing classes/windows with the NotificationReceiverMBS interface. Or
you create a subclass of the NotificationObserverMBS class to receive notifications

All notifications are delivered on the same thread as the send method. If needed we could have an asyncron
notification system. Please email for that.

Other notifications:

NSNotification: Notifications send from the Cocoa frameworks within your application over NSNotificationCenterMBS class or send across all applications with NSDistributedNotificationCenterMBS.

MacNotificationMBS: A notification message to the user which may have a sound, a message box and/or a
jumping dock icon.

122.3.2  Methods

122.3.3  Constructor(name as string = "", ref as Variant = nil, tag as Variant = nil)

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Creates a new notification with the given values.
Example:

```
dim n as new NotificationMBS("DatabaseChangedNotification")
NotificationMBS.send(n)
```
122.3.4 RegisterReceiver(target as NotificationReceiverMBS, name as string = "", ref as Variant = nil)

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Registers a receiver.
Notes:
You have a class/window and you add NotificationReceiverMBS to the interfaces. Real Studio will add a ReceivedNotification method which looks like this:

ReceivedNotification(name as string, ref as Variant, tag as Variant, notification as NotificationMBS)

Don’t forget to call UnregisterReceiver later in the Close event or destructor.

If you register with name = "" and ref = nil, you receive all notifications. If you have a name, you get only notifications matching the name (case sensitive compare). If you have a reference object, you receive only objects for that object. And you can use both name and object.

122.3.5 Send(name as string, ref as object = nil, tag as Variant = nil)

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Sends a notification.
Example:
NotificationMBS.Send("DatabaseChangedNotification")

Notes:
This is a convenience method which creates a new NSNotificationMBS object and sends it.

All registered receivers will get the ReceivedNotification method called as well as all registered observers will get an ReceivedNotification event.
Of course notifications are filtered by name and/or referenced object.
See also:

• 122.3.6 Send(notification as NotificationMBS)
122.3. CLASS NOTIFICATIONMBS

122.3.6 Send(notification as NotificationMBS)

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Sends a notification.
Example:

```vbg
dim n as new NotificationMBS("DatabaseChangedNotification")
NotificationMBS.send(n)
```

Notes:
All registered receivers will get the ReceivedNotification method called as well as all registered observers will
get an ReceivedNotification event.
Of course notifications are filtered by name and/or referenced object.
See also:

- 122.3.5 Send(name as string, ref as object = nil, tag as Variant = nil)

122.3.7 SendDelayed(name as string, ref as object = nil, tag as Variant = nil)

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Sends a notification.
Example:

```vbg
NotificationMBS.SendDelayed("DatabaseChangedNotification")
```

Notes: Same as Send method, but the notification will be delivered later on the main thread. The notification
is queued and will wait until there is free CPU time.
See also:

- 122.3.8 SendDelayed(notification as NotificationMBS)

122.3.8 SendDelayed(notification as NotificationMBS)

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Sends a notification.
Example:

```vbg
dim n as new NotificationMBS("DatabaseChangedNotification", window1, "test")
NotificationMBS.SendDelayed(n)
```

Notes: Same as Send method, but the notification will be delivered later on the main thread. The notification
is queued and will wait until there is free CPU time.
122.3.9  **SendNotification**

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Sends this notification.
Example:

```vbs
dim n as new NotificationMBS("DatabaseChangedNotification")
n.SendNotification
```

Notes:
All registered receivers will get the ReceivedNotification method called as well as all registered observers will get an ReceivedNotification event.
Of course notifications are filtered by name and/or referenced object.

122.3.10  **SendNotificationDelayed**

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Sends a notification.
Example:

```vbs
dim n as new NotificationMBS("DatabaseChangedNotification")
n.SendNotificationDelayed
```

Notes: Same as SendNotification method, but the notification will be delivered later on the main thread.
The notification is queued and will wait until there is free CPU time.

122.3.11  **UnregisterReceiver(target as NotificationReceiverMBS)**

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Unregisters an receiver.
122.3.12 Properties

122.3.13 Name as String

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The name for the notification.
Example:
```vbnet
dim n as new NotificationMBS(”DatabaseChangedNotification”, window1, ”test”)
MsgBox n.Name
```
Notes: (Read and Write property)

122.3.14 Ref as Variant

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The reference object.
Notes:
Defines which object the notification references. If nil, you target all objects.
(Read and Write property)

122.3.15 Tag as Variant

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The attached value.
Example:
```vbnet
dim n as new NotificationMBS
n.Tag = ”Hello World”
```
Notes:
You can use this property as you like.
This value is sent to the receivers. It allows you to pass an additional value without needing to write a subclass of the NotificationMBS class.
(Read and Write property)
122.4 class NotificationObserverMBS

122.4.1 class NotificationObserverMBS

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** The class for receiving notifications.

122.4.2 Methods

122.4.3 Constructor(name as string = "", ref as object = nil, tag as Variant = nil)

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. 
**Function:** Creates a new notification observer. 
**Notes:** If you register with name = "" and ref = nil, you receive all notifications. If you have a name, you get only notifications matching the name (case sensitive compare). If you have a reference object, you receive only objects for that object. And you can use both name and object.

122.4.4 Properties

122.4.5 Name as String

**Function:** The name of the notification to listen for. 
**Notes:** (Read only property)

122.4.6 Ref as Object

**Function:** The target object to listen for. 
**Notes:** (Read only property)
122.4.7 Events

122.4.8 ReceivedNotification(name as string, ref as Variant, tag as Variant, notification as NotificationMBS)

MBS DataTypes Plugin, Plugin Version: 10.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes.
Function: The event called if a notification was received.
Notes:
This event is registered automatically, so do not call RegisterReceiver with the NotificationObserverMBS object.

If you register with name = "" and ref = nil, you receive all notifications. If you have a name, you get only notifications matching the name (case sensitive compare). If you have a reference object, you receive only objects for that object. And you can use both name and object.
122.5 class NSDistributedNotificationCenterMBS

122.5.1 class NSDistributedNotificationCenterMBS

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The NSDistributedNotificationCenter class provides a way to send notifications to objects in other tasks.
**Notes:**
It takes NSNotification objects and broadcasts them to any objects in other tasks that have registered for
the notification with their task’s default distributed notification center.

The NSDistributedNotificationCenter class implements a notification center that can distribute notifications
asynchronously to tasks other than the one in which the notification was posted. An instance of this class
are known as a distributed notification center.

Each task has a default distributed notification center that you access with the defaultCenter class method.
There may be different types of distributed notification centers. Currently there is a single typeNSLocal-
NotificationCenterType. This type of distributed notification center handles notifications that can be sent
between tasks on a single computer. For communication between tasks on different computers, use Dis-
tributed Objects Programming Topics.

Posting a distributed notification is an expensive operation. The notification gets sent to a system-wide
server that distributes it to all the tasks that have objects registered for distributed notifications. The la-
tency between posting the notification and the notification’s arrival in another task is unbounded. In fact,
when too many notifications are posted and the server’s queue fills up, notifications may be dropped.
Subclass of the NSNotificationCenterMBS class.

122.5.2 Methods

122.5.3 addObserver(observer as NSNotificationObserverMBS, name as string,
theObject as Variant, suspensionBehavior as Integer)

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Adds an entry to the receiver’s dispatch table with a specific observer and suspended-notifications behavior,
and optional notification name and sender.
**Notes:**
observer: Object registering as an observer. Must not be nil.
name: The name of the notification for which to register the observer; that is, only notifications with this
name are delivered to the observer. When nil, the notification center doesn’t use a notification’s name to
decide whether to deliver it to the observer.
theObject: The object whose notifications the observer wants to receive; that is, only notifications sent by
this sender are delivered to the observer. When nil, the notification center doesn’t use a notification’s sender
to decide whether to deliver it to the observer.
suspensionBehavior: Notification posting behavior when notification delivery is suspended.

The receiver does not retain notificationObserver. Therefore, you should always send removeObserver to the receiver before releasing notificationObserver.

122.5.4 Constructor

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new instance with the default distributed notification center, representing the local notification center for the computer.

**Notes:**

Default distributed notification center for the computer.

This method calls notificationCenterForType: with an argument of NSLocalNotificationCenterType.

122.5.5 defaultCenter as NSDistributedNotificationCenterMBS

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the default distributed notification center, representing the local notification center for the computer.

**Notes:**

Default distributed notification center for the computer.

This method calls notificationCenterForType: with an argument of NSLocalNotificationCenterType.

122.5.6 notificationCenterForType(name as string) as NSDistributedNotificationCenterMBS

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the distributed notification center for a particular notification center type.

**Notes:**

name: Notification center type being inquired about.

Currently only one type, NSLocalNotificationCenterType, is supported.
122.5.7 **NSLocalNotificationCenterType as string**

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
This constant specifies the notification center type.
**Notes:** Distributes notifications to all tasks on the sender’s computer.

122.5.8 **postNotificationName(name as string, theObject as string, userInfo as dictionary, deliverImmediately as boolean)**

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a notification with information and an immediate-delivery specifier, and posts it to the receiver.
**Notes:**
name: Name of the notification to post. Must not be nil.
theObject: Sender of the notification. May be "".
userInfo: Dictionary containing additional information. May be nil.
deliverImmediately: Specifies when to deliver the notification. When false, the receiver delivers notifications to their observers according to the suspended-notification behavior specified in the corresponding dispatch table entry. When true, the receiver delivers the notification immediately to its observers.

This is the preferred method for posting notifications.
The notificationInfo dictionary is serialized as a property list, so it can be passed to another task. In the receiving task, it is deserialized back into a dictionary. This serialization imposes some restrictions on the objects that can be placed in the notificationInfo dictionary. See XML Property Lists for details.
**See also:**
- 122.5.9 postNotificationName(name as string, theObject as string, userInfo as dictionary, options as UInt32)

122.5.9 **postNotificationName(name as string, theObject as string, userInfo as dictionary, options as UInt32)**

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a notification with information, and posts it to the receiver.
**Example:**
```dim notifyData as string = "Hello World"
dim notifyName as string = "Test"
Dim notifyDict As New Dictionary
notifyDict.Value("nData")=notifyData
NSDistributedNotificationCenterMBS.DefaultCenter.postNotificationName(notifyName, "", notifyDict, 2)```
name: Name of the notification to post. Must not be nil.
theObject: Sender of the notification. May be "".
userInfo: Dictionary containing additional information. May be nil.
options: Specifies how the notification is posted to the task and when to deliver it to its observers.

The userInfo dictionary is serialized as a property list, so it can be passed to another task. In the receiving
task, it is deserialized back into a dictionary. This serialization imposes some restrictions on the objects that
can be placed in the notificationInfo dictionary. See XML Property Lists for details.
See also:

- 122.5.8 postNotificationName(name as string, theObject as string, userInfo as dictionary, deliverImmediately as boolean)

122.5.10 Properties

122.5.11 suspended as boolean

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A boolean value that indicates whether notification delivery is suspended.

**Notes:**
The NSApplication class automatically suspends distributed notification delivery when the application is
not active. Applications based on the Application Kit framework should let AppKit manage the suspension
of notification delivery. Foundation-only programs may have occasional need to use this method.
(Read and Write computed property)

122.5.12 Constants

122.5.13 NSNotificationDeliverImmediately = 1

MBS MacBase Plugin, Plugin Version: 9.7. **Function:** One of the option constants to specify the behavior
of notifications posted using the postNotificationName method.

**Notes:** When set, the notification is delivered immediately to all observers, regardless of their suspension
behavior or suspension state. When not set, allows the normal suspension behavior of notification observers
to take place.

122.5.14 NSNotificationPostToAllSessions = 2

MBS MacBase Plugin, Plugin Version: 9.7. **Function:** One of the option constants to specify the behavior
of notifications posted using the postNotificationName method.
Notes: When set, the notification is posted to all sessions. When not set, the notification is sent only to applications within the same login session as the posting task.

122.5.15 NSNotificationSuspensionBehaviorCoalesce = 2

MBS MacBase Plugin, Plugin Version: 9.7. Function: One of the constants to specify the types of notification delivery suspension behaviors.
Notes: The server only queues the last notification of the specified name and object; earlier notifications are dropped. In cover methods for which suspension behavior is not an explicit argument, NSNotificationSuspensionBehaviorCoalesce is the default.

122.5.16 NSNotificationSuspensionBehaviorDeliverImmediately = 4

MBS MacBase Plugin, Plugin Version: 9.7. Function: One of the constants to specify the types of notification delivery suspension behaviors.
Notes: The server delivers notifications matching this registration irrespective of whether Suspended is set to true. When a notification with this suspension behavior is matched, it has the effect of first flushing any queued notifications. The effect is as if setSuspended: with an argument of false were first called if the application is suspended, followed by the notification in question being delivered, followed by a transition back to the previous suspended or unsuspended state.

122.5.17 NSNotificationSuspensionBehaviorDrop = 1

MBS MacBase Plugin, Plugin Version: 9.7. Function: One of the constants to specify the types of notification delivery suspension behaviors.
Notes: The server does not queue any notifications with this name and object until Suspended is set to false.

122.5.18 NSNotificationSuspensionBehaviorHold = 3

MBS MacBase Plugin, Plugin Version: 9.7. Function: One of the constants to specify the types of notification delivery suspension behaviors.
Notes: The server holds all matching notifications until the queue has been filled (queue size determined by the server), at which point the server may flush queued notifications.
122.6 class NSNotificationCenterMBS

122.6.1 class NSNotificationCenterMBS

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An NSNotificationCenter object (or simply, notification center) provides a mechanism for broadcasting information within a task.

**Notes:**

An NSNotificationCenter object is essentially a notification dispatch table.

This is for sending broadcast messages from one application to other application on same computer. For the notification center in Mac OS X 10.8, please use NSUserNotificationMBS class.

122.6.2 Methods

122.6.3 addObserver(observer as NSNotificationObserverMBS, name as string="", theObject as Variant=nil)

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Adds an entry to the receiver’s dispatch table with an observer and optional criteria: notification name and sender.

**Notes:**

observer: Object registering as an observer. This value must not be nil.
name: The name of the notification for which to register the observer; that is, only notifications with this name are delivered to the observer. If you pass nil, the notification center doesn’t use a notification’s name to decide whether to deliver it to the observer.
theObject: The object whose notifications the observer wants to receive; that is, only notifications sent by this sender are delivered to the observer. If you pass nil, the notification center doesn’t use a notification’s sender to decide whether to deliver it to the observer.

122.6.4 Constructor

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor to create a new instance of notification center pointing to the default notification center.

**Notes:** The current task’s default notification center, which is used for system notifications.
122.6.5 defaultCenter as NSNotificationCenterMBS

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the task’s default notification center.
**Notes:** The current task’s default notification center, which is used for system notifications.

122.6.6 postNotification(notification as NSNotificationMBS)

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Posts a given notification to the receiver.
**Notes:** notification: The notification to post. This value must not be nil.

122.6.7 postNotificationName(name as string)

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a notification with a given name and sender and posts it to the receiver.
**Notes:**
name: The name of the notification.
theObject: The object posting the notification.
See also:
- 122.6.8 postNotificationName(name as string, theObject as Variant) 17216
- 122.6.9 postNotificationName(name as string, theObject as Variant, userInfo as dictionary) 17217

122.6.8 postNotificationName(name as string, theObject as Variant)

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a notification with a given name and sender and posts it to the receiver.
**Notes:**
name: The name of the notification.
theObject: The object posting the notification.
See also:
- 122.6.7 postNotificationName(name as string) 17216
- 122.6.9 postNotificationName(name as string, theObject as Variant, userInfo as dictionary) 17217
### 122.6.9 postNotificationName(name as string, theObject as Variant, userInfo as dictionary)

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a notification with a given name, sender, and information and posts it to the receiver.

**Notes:**
- name: The name of the notification.
- theObject: The object posting the notification.
- userInfo: Information about the the notification. May be nil.

This method is the preferred method for posting notifications. 
See also:

- 122.6.7 postNotificationName(name as string)
- 122.6.8 postNotificationName(name as string, theObject as Variant)

### 122.6.10 removeObserver(observer as NSNotificationObserverMBS)

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes all the entries specifying a given observer from the receiver’s dispatch table.

**Notes:**
- observer: The observer to remove. Must not be nil.

Be sure to invoke this method before notificationObserver or any object specified in addObserver is deallocated.
See also:

- 122.6.11 removeObserver(observer as NSNotificationObserverMBS, name as string, theObject as Variant=\text{nil})

### 122.6.11 removeObserver(observer as NSNotificationObserverMBS, name as string, theObject as Variant=\text{nil})

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes matching entries from the receiver’s dispatch table.

**Notes:**
- notificationObserver: Observer to remove from the dispatch table. Specify an observer to remove only entries for this observer. Must not be nil, or message will have no effect.
- notificationName: Name of the notification to remove from dispatch table. Specify a notification name to remove only entries that specify this notification name. When nil, the receiver does not use notification names as criteria for removal.
notificationSender: Sender to remove from the dispatch table. Specify a notification sender to remove only entries that specify this sender. When nil, the receiver does not use notification senders as criteria for removal.

Be sure to invoke this method before the observer object or any object specified in addObserver is deallocated. See also:

- 122.6.10 removeObserver(observer as NSNotificationObserverMBS)

122.6.12 Properties

122.6.13 Handle as Integer

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal reference to the notification center. **Notes:** (Read and Write property)
122.7 class NSNotificationMBS

122.7.1 class NSNotificationMBS

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** NSNotification objects encapsulate information so that it can be broadcast to other objects by an NSNotificationCenter object. **Notes:**

An NSNotification object (referred to as a notification) contains a name, an object, and an optional dictionary. The name is a tag identifying the notification. The object is any object that the poster of the notification wants to send to observers of that notification (typically, it is the object that posted the notification). The dictionary stores other related objects, if any. NSNotification objects are immutable objects.

You can create a notification object with the class method notificationWithName. However, you don’t usually create your own notifications directly. The NSNotificationCenter method postNotificationName allow you to conveniently post a notification without creating it first.

On Windows you can use WinNotificationMBS class for similar functionality.

This is for sending broadcast messages from one application to other application on same computer. For the notification center in Mac OS X 10.8, please use NSUserNotificationMBS class.

122.7.2 Methods

122.7.3 Constructor(handle as Integer)

MBS MacBase Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a notification object with a NSNotification reference. **Notes:** The object is retained and later in destructor it is released.

See also:

- 122.7.4 Constructor(name as string, theObject as Variant = nil, userInfo as dictionary = nil)

122.7.4 Constructor(name as string, theObject as Variant = nil, userInfo as dictionary = nil)

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a notification object with a specified name, object, and user information. **Example:**

```dim n as new NSNotificationMBS("Hello") MsgBox n.name```
Notes:
name: The name for the new notification. May not be nil.
theObject: The object for the new notification. Can be nil.
userInfo: The user information dictionary for the new notification. May be nil.
See also:
- 122.7.3 Constructor(handle as Integer)

122.7.5 notificationWithName(name as string, theObject as Variant = nil, userInfo as dictionary = nil) as NSNotificationMBS

MBS MacBase Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a notification object with a specified name, object, and user information.

**Example:**

dim n as NSNotificationMBS = NSNotificationMBS.notificationWithName(“Hello”) 
MsgBox n.name

Notes:
name: The name for the new notification. May not be nil.
theObject: The object for the new notification. Can be nil.
userInfo: The user information dictionary for the new notification. May be nil.

122.7.6 Print

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Writes description for this event descriptor to the console.

**Notes:** You can see result in Console.app.

122.7.7 Properties

122.7.8 description as string

MBS MacBase Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The descriptor for this notification.

**Example:**
dim n as NSNotificationMBS = NSNotificationMBS.notificationWithName("Hello")
MsgBox n.description

Notes:
This is a text representation for debugging.
(Read only property)

### 122.7.9 Handle as Integer

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The internal reference to the NSNotification object.
Notes: (Read and Write property)

### 122.7.10 name as string

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the name of the notification.
Notes:
The name of the notification. Typically you use this method to find out what kind of notification you are dealing with when you receive a notification.
Notification names can be any string. To avoid name collisions, you might want to use a prefix that’s specific to your application.
(Read only property)

### 122.7.11 objectHandle as Integer

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The reference to the object.
Notes:
May be useful for declares.
(Read only property)

### 122.7.12 objectVariant as Variant

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the object associated with the notification.
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Notes:
The object associated with the notification. This is often the object that posted this notification. It may be nil.
Typically you use this method to find out what object a notification applies to when you receive a notification.

See the FAQ for the list of supported NSObject types for variant conversion.
(Read only property)

122.7.13 userInfo as dictionary

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns the user information dictionary associated with the receiver.
Example:

// tests dictionary conversion:

dim d as new Dictionary

dim x as new Dictionary
x.Value("Hello") = "World"

dim b as Boolean = true
dim s as Single = 2.3
dim dd as Double = 3.4
dim h as int64 = 1234

d.Value(1) = 1
d.Value(2) = 2.0
d.Value(3) = x
d.Value(4) = "Hello"
d.Value(5) = b
d.Value(6) = s
d.Value(7) = dd
d.Value(8) = h

dim n as new NSNotificationMBS("test", nil, d)

dim nd as Dictionary = n.userInfo

// check nd object
break

Notes:
122.7. CLASS NSNOTIFICATIONMBS

Returns the user information dictionary associated with the receiver. May be nil. The user information dictionary stores any additional objects that objects receiving the notification might use.

(Read only property)
122.8   class NSNotificationObserverMBS

122.8.1   class NSNotificationObserverMBS

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
The notification class which you use to receive notifications.

**Notes:**
To use this class, please create a subclass. There you can put code in the event handler to do whatever you
need in case your notification is received.

Than you create in code objects form this class. Normally only one. And you call addObserver on the NSNoti-
ficationCenterMBS or NSDistributedNotificationCenterMBS objects you have to tell the system which no-
tifications you want to receive.

Do not forget to call removeObserver on the notification center for all your observers to avoid crashes.

122.8.2   Methods

122.8.3   Constructor

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
The constructor which creates the observer.

**Notes:** On success the handle property is not zero.

122.8.4   Destructor

MBS MacBase Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
The Destructor.

**Notes:** Removes in plugin version 12.3 and newer the observer from the NSNotificationCenterMBS and
NSDistributedNotificationCenterMBS to avoid crashes.

122.8.5   Properties

122.8.6   Handle as Integer

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**
The internal handle to the observer object.

**Notes:** (Read and Write property)
122.8.7  Events

122.8.8  GotNotification(notification as NSNotificationMBS)

MBS MacBase Plugin, Plugin Version: 9.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event called if a new notification is received. **Notes:** The MBS Plugin makes sure you receive this event always on the main thread.
122.9 class WinNotificationMBS

122.9.1 class WinNotificationMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: This is a class to send broadcast message to all windows applications listening for this notification. Notes: If you have several applications, you can send notifications from one to another.

Windows Desktop application: Sending and receiving notification works. Windows Console application: Sending works. Windows Web application: Sending works. Receives notification of own application, but of others.

This class is useful to tell other instance of your application or other application about something. Like for example whether background process is done.

On Mac OS X you can use NSNotificationMBS class for similar functionality.

With 14.2 plugins we added possibility to listen for any windows broadcast message. Like for example for WM_TIMECHANGE.

122.9.2 Methods

122.9.3 Constructor

MBS Win Plugin, Plugin Version: 16.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: The default constructor. Notes: Creates an invisible dummy window to listen for notifications. See also:

- 122.9.4 Constructor(control as RectControl) 17226
- 122.9.5 Constructor(Window as window) 17227
- 122.9.6 Constructor(WindowHandle as Integer) 17227

122.9.4 Constructor(control as RectControl)

MBS Win Plugin, Plugin Version: 17.0, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: The control constructor. Notes:
122.9.  **CLASS WINNOTIFICATIONMBS**

Takes an existing Xojo control and intercepts messages going there to listen for the notifications you are interested for. The class keeps a reference to the control to make sure it is not destroyed before this object is destroyed. See also:

- 122.9.3 Constructor
- 122.9.5 Constructor(Window as window)
- 122.9.6 Constructor(WindowHandle as Integer)

### 122.9.5 Constructor(Window as window)

MBS Win Plugin, Plugin Version: 16.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The window constructor. **Notes:**

Takes an existing Xojo Window and intercepts messages going there to listen for the notifications you are interested for. If you listen for global notifications sent to all windows, we prefer the other constructor. The class keeps a reference to the window to make sure it is not destroyed before this object is destroyed. See also:

- 122.9.3 Constructor
- 122.9.4 Constructor(control as RectControl)
- 122.9.6 Constructor(WindowHandle as Integer)

### 122.9.6 Constructor(WindowHandle as Integer)

MBS Win Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The window constructor. **Notes:**

Takes an existing window and intercepts messages going there to listen for the notifications you are interested for. If you listen for global notifications sent to all windows, we prefer the other constructor. The class keeps a reference to the window to make sure it is not destroyed before this object is destroyed. See also:

- 122.9.3 Constructor
- 122.9.4 Constructor(control as RectControl)
- 122.9.5 Constructor(Window as window)
122.9.7 IsListeningFor(MessageID as Integer) as boolean

MBS Win Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether this object is listening for the given message ID.  
**Example:**

```vba
dim w as new WinNotificationMBS

const WM_TIMECHANGE = & h001E
if w.ListenForMessage(WM_TIMECHANGE) then
    MsgBox str(w.IsListeningFor(WM_TIMECHANGE))
end if
```

**Notes:** Returns true if we listen for this notification name or false if not.  
See also:

- 122.9.8 IsListeningFor(name as string) as boolean

122.9.8 IsListeningFor(name as string) as boolean

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether this object is listening for the given notification.  
**Example:**

```vba
dim w as new WinNotificationMBS

if w.ListenForMessage("Hello") then
    MsgBox str(w.IsListeningFor("Hello"))
end if
```

**Notes:** Returns true if we listen for this notification name or false if not.  
See also:

- 122.9.7 IsListeningFor(MessageID as Integer) as boolean

122.9.9 ListenForMessage(MessageID as Integer) as boolean

MBS Win Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Listens for given notification message id.  
**Notes:** Returns true on success and false on failure.  
See also:

- 122.9.10 ListenForMessage(name as string) as boolean
122.9. **CLASS WINNOTIFICATIONMBS**

122.9.10 **ListenForMessage(name as string) as boolean**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Listens for given notification name. **Notes:** Returns true on success and false on failure. **See also:**

- 122.9.9 ListenForMessage(MessageID as Integer) as boolean

122.9.11 **SendMessage(byref result as Integer, MessageID as Integer, Value1 as Integer = 0, Value2 as Integer = 0, TimeOut as Integer = 10) as boolean**

MBS Win Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Sends a message to all applications listening for it. **Notes:** Sends a message with given message ID. You can pass two integer parameters. Returns true if event was sent or false if it failed. This doesn't tell you whether it was received by someone, but your own application receives it, too. Timeout is in milliseconds and counts per receiving window. Result returns the result code from the message. **See also:**

- 122.9.12 SendMessage(name as string, Value1 as Integer = 0, Value2 as Integer = 0, TimeOut as Integer = 10) as boolean

122.9.12 **SendMessage(name as string, Value1 as Integer = 0, Value2 as Integer = 0, TimeOut as Integer = 10) as boolean**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Sends a message to all applications listening for it. **Notes:** You can pass two integer parameters. Returns true if event was sent or false if it failed. This doesn't tell you whether it was received by someone, but your own application receives it, too. Timeout is in milliseconds and counts per receiving window. **See also:**

- 122.9.11 SendMessage(byref result as Integer, MessageID as Integer, Value1 as Integer = 0, Value2 as Integer = 0, TimeOut as Integer = 10) as boolean
122.9.13  SendMessageToWindow(WindowHandle as Integer, byref result as Integer, MessageID as Integer, Value1 as Integer = 0, Value2 as Integer = 0, TimeOut as Integer = 10) as boolean

MBS Win Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Sends a message to all applications listening for it.  
**Notes:**  
Like SendMessage, but with a target window.  
You can pass two integer parameters.  
Returns true if event was sent or false if it failed.  
This doesn’t tell you whether it was received by someone, but your own application receives it, too.  
Timeout is in milliseconds and counts per receiving window.

122.9.14  StopListeningForMessage(MessageID as Integer) as boolean

MBS Win Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Stops listening for a given message ID.  
**Example:**

```vbscript
dim w as new WinNotificationMBS

const WM_TIMECHANGE = &h001E
if w.ListenForMessage(WM_TIMECHANGE) then
    if w.StopListeningForMessage(WM_TIMECHANGE) then
        MsgBox "OK"
    end if
end if
```

See also:

- 122.9.15 StopListeningForMessage(name as string) as boolean

122.9.15  StopListeningForMessage(name as string) as boolean

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Stops listening for a given notification name.  
**Example:**

```vbscript
dim w as new WinNotificationMBS

if w.ListenForMessage("Hello") then
    if w.StopListeningForMessage("Hello") then
        MsgBox "OK"
    end if
end if
```
122.9. CLASS WINNOTIFICATIONMBS

end if
end if

See also:

- 122.9.14 StopListeningForMessage(MessageID as Integer) as boolean

122.9.16 Properties

122.9.17 WindowHandle as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The internal window handle.
**Notes:** (Read only property)

122.9.18 Events

122.9.19 GotNotification(Message as Integer, Name as string, Value1 as Integer, Value2 as Integer, byref Result as Integer, byref Handled as boolean)

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
A notification was received.
**Notes:**
Message: The message ID.
Name: If you registered by name, this is the name for the message ID.
Value1 and Value2 are parameters provided with message. (WPARAM and LPARAM)

If Handled is set to true, we pass back Result to the Windows system (LRESULT).
Else the default handler is called.
Chapter 123

OCR

123.1  class TesseractChoiceIteratorMBS

123.1.1  class TesseractChoiceIteratorMBS


123.1.2  Methods

123.1.3  Confidence as Double

Notes: The number should be interpreted as a percent probability. (0.0 - 100.0)

123.1.4  Constructor(result as TesseractResultIteratorMBS)

Notes: Construction is from a ResultIterator that points to the symbol of interest. The ChoiceIterator allows a one-shot iteration over the choices for this symbol and after that is is useless.
123.1.5  NextItem as boolean

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Moves to the next choice for the symbol and returns false if there are none left.

123.1.6  Text as string


123.1.7  Properties

123.1.8  Handle as Integer

**Notes:** (Read only property)

123.1.9  Parent as TesseractResultIteratorMBS

**Notes:** (Read only property)
123.2. class TesseractErrorExceptionMBS

123.2.1 class TesseractErrorExceptionMBS

123.3  class TesseractMBS

123.3.1  class TesseractMBS

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The plugin class to provide OCR by using the tesseract open source library. **Notes:** See example projects on how to use it.

123.3.2  Methods

123.3.3  Clear

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Free up recognition results and any stored image data, without actually freeing any recognition data that would be time-consuming to reload. **Notes:** Afterwards, you must call SetImage or TesseractRect before doing any Recognize or Get* operation.

123.3.4  ClearAdaptiveClassifier

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Call between pages or documents etc to free up memory and forget adaptive data.

123.3.5  Constructor

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Constructor which calls only InitForAnalysePage. See also:

- 123.3.6 Constructor(folder as folderitem, lang as string) 17236
- 123.3.7 Constructor(path as string, lang as string) 17237

123.3.6  Constructor(folder as folderitem, lang as string)

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Initializes tesseract. **Notes:** Same as Init method. Pass folderitem to parent folder of tessdata folder and language you need.
Instances are now mostly thread-safe and totally independent, but some global parameters remain. Basically it is safe to use multiple TessBaseAPIs in different threads in parallel, UNLESS: you use SetVariable on some of the Params in classify and textord. If you do, then the effect will be to change it for all your instances.

Note that the only members that may be called before Init are: SetInputName, SetOutputName, SetVariable, Get*Variable and PrintVariables.

The language is (usually) an ISO 639-3 string or "" will default to eng.
To use multiple languages, please concat them with plus sign: e.g. "eng+deu"
See also:

• 123.3.5 Constructor
• 123.3.7 Constructor(path as string, lang as string)

123.3.7 Constructor(path as string, lang as string)

**Notes:**
Same as Init method.
Pass path to parent folder of tessdata folder and language you need.

Instances are now mostly thread-safe and totally independent, but some global parameters remain. Basically it is safe to use multiple TessBaseAPIs in different threads in parallel, UNLESS: you use SetVariable on some of the Params in classify and textord. If you do, then the effect will be to change it for all your instances.

Note that the only members that may be called before Init are: SetInputName, SetOutputName, SetVariable, Get*Variable and PrintVariables.

The language is (usually) an ISO 639-3 string or "" will default to eng.
To use multiple languages, please concat them with plus sign: e.g. "eng+deu"
See also:

• 123.3.5 Constructor
• 123.3.6 Constructor(folder as folderitem, lang as string)

123.3.8 GetBoolVariable(name as string, byref value as boolean) as boolean

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries a variable as boolean value.
**Notes:**
123.3.9 GetBoxText(page as Integer) as string

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The recognized text is returned as a char* which is coded in the same format as a box file used in training.
Notes: Constructs coordinates in the original image - not just the rectangle. page is a 0-based page index that will appear in the box file.

123.3.10 GetDoubleVariable(name as string, byref value as Double) as boolean

Notes: Returns true if the parameter was found among Tesseract parameters. Fills in value with the value of the parameter.

123.3.11 GetHOCRText(page as Integer) as string

Notes: Page is 0-based but will appear in the output as 1-based.

123.3.12 GetIntVariable(name as string, byref value as Integer) as boolean

Notes: Returns true if the parameter was found among Tesseract parameters. Fills in value with the value of the parameter.

123.3.13 GetLastInitLanguage as string

123.3.14 GetStringVariable(name as string) as string

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries variable’s value as string.

123.3.15 GetText as string

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns recognized text. **Notes:** Calls Recognize if needed internally.

123.3.16 GetVariableAsString(name as string) as string

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get value of named variable as a string, if it exists.

123.3.17 Init(folder as folderitem, lang as string)

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Initializes tesseract. **Notes:**

Pass folderitem to parent folder of tessdata folder and language you need.

Instances are now mostly thread-safe and totally independent, but some global parameters remain. Basically it is safe to use multiple TessBaseAPIs in different threads in parallel, UNLESS: you use SetVariable on some of the Params in classify and textord. If you do, then the effect will be to change it for all your instances.

Start tesseract. Returns zero on success and -1 on failure.

Note that the only members that may be called before Init are: SetInputName, SetOutputName, SetVariable, Get*Variable and PrintVariables.

The language is (usually) an ISO 639-3 string or "" will default to eng.

See also:

- 123.3.18 Init(path as string, lang as string)
123.3.18  Init(path as string, lang as string)

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Initializes tesseract.

**Notes:**
Pass path to parent folder of tessdata folder and language you need.

Instances are now mostly thread-safe and totally independent, but some global parameters remain. Basically it is safe to use multiple TessBaseAPIs in different threads in parallel, UNLESS: you use SetVariable on some of the Params in classify and textord. If you do, then the effect will be to change it for all your instances.

Start tesseract. Returns zero on success and -1 on failure.

Note that the only members that may be called before Init are: SetInputName, SetOutputName, SetVariable, Get*Variable and PrintVariables.

The language is (usually) an ISO 639-3 string or "" will default to eng.
See also:

- 123.3.17 Init(folder as folderitem, lang as string)

123.3.19  InitForAnalysePage

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Init only for page layout analysis.

**Notes:** Use only for calls to SetImage and AnalysePage. Calls that attempt recognition will generate an error.

123.3.20  MeanTextConf as Integer

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the (average) confidence value between 0 and 100.

123.3.21  NumDawgs as Integer

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Return the number of dawgs loaded.

**Notes:** Should be bigger than 0 if data files have been loaded.
123.3. CLASS TESSERACTMBS

123.3.22 PrintVariablesToStdErr


123.3.23 PrintVariablesToStdOut


123.3.24 Recognize as Integer


123.3.25 RecognizeMT as Integer

MBS Images Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Recognize the image. Notes: Returns 0 on success. Optional. The Get*Text functions below will call Recognize if needed. After Recognize, the output is kept internally until the next SetImage. Same as Recognize, but thread friendly. Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.

123.3.26 ResultIterator as TesseractResultIteratorMBS

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Get an iterator to the results of LayoutAnalysis and/or Recognize. Notes: This object points to data held within the TesseractMBS class, and therefore can only be used while the TesseractMBS class still exists and has not been subjected to a call of Init, SetImage, Recognize, Clear,
123.3.27  SetImage(buffer as memoryblock, width as Integer, height as Integer, BytesPerPixel as Integer, BytesPerLine as Integer) as boolean

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Provide an image for Tesseract to recognize as a memoryblock. **Notes:** Returns true on success and false on failure. **See also:**

- 123.3.28 SetImage(Pic as Picture) as boolean

123.3.28  SetImage(Pic as Picture) as boolean

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Provide an image for Tesseract to recognize. **Notes:**

The plugin makes a copy of the picture.

Returns true on success and false on failure. **See also:**

- 123.3.27 SetImage(buffer as memoryblock, width as Integer, height as Integer, BytesPerPixel as Integer, BytesPerLine as Integer) as boolean

123.3.29  SetInputName(name as string)

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set the name of the input file. Needed only for training and reading a UNLV zone file.

123.3.30  SetOutputName(name as string)

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set the name of the bonus output files. Needed only for debugging.

123.3.31  SetRectangle(left as Integer, top as Integer, width as Integer, height as Integer)

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Restrict recognition to a sub-rectangle of the image.
Notes: Call after SetImage. Each SetRectangle clears the recognition results so multiple rectangles can be recognized with the same image.

123.3.32  SetResolution(Resolution as Integer)

MBS Images Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set the resolution of the source image in pixels per inch so font size information can be calculated in results.
**Notes:** Call this after SetImage.

123.3.33  SetVariable(name as string, value as string) as boolean

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set the value of an internal "parameter."
**Notes:**
Supply the name of the parameter and the value as a string, just as you would in a config file.
Returns false if the name lookup failed.
E.g. SetVariable("tessedit_char_blacklist", "xyz"); to ignore x, y and z.
Or SetVariable("classify_blh_numeric_mode", "1"); to set numeric-only mode.
SetVariable may be used before Init, but settings will revert to defaults on End().

Note: Must be called after Init(). Only works for non-init variables (init variables should be passed to Init()).

123.3.34  Version as string


123.3.35  Properties

123.3.36  Handle as Integer

**Notes:** (Read only property)
123.3.37  PageSegMode as Integer

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The current page segmentation mode.

**Notes:**
Defaults to kPageSegModeSingleBlock.
The mode is stored as an IntParam so it can also be modified by ReadConfigFile or SetVariable("tessedit_pageseg_mode", mode as string).
(Read and Write computed property)

123.3.38  Constants

123.3.39  kPageSegModeAuto = 3

MBS Images Plugin, Plugin Version: 12.3. **Function:** One of the page segmentation mode constants.
**Notes:** Fully automatic page segmentation, but no OSD.

123.3.40  kPageSegModeAutoOnly = 2

MBS Images Plugin, Plugin Version: 12.3. **Function:** One of the page segmentation mode constants.
**Notes:** Automatic page segmentation, but no OSD, or OCR.

123.3.41  kPageSegModeAutoOSD = 1

MBS Images Plugin, Plugin Version: 12.3. **Function:** One of the page segmentation mode constants.
**Notes:** Automatic page segmentation with orientation and script detection. (OSD)

123.3.42  kPageSegModeCircleWord = 9

MBS Images Plugin, Plugin Version: 12.3. **Function:** One of the page segmentation mode constants.
**Notes:** Treat the image as a single word in a circle.

123.3.43  kPageSegModeOSDOnly = 0

MBS Images Plugin, Plugin Version: 12.3. **Function:** One of the page segmentation mode constants.
**Notes:** Orientation and script detection only.
123.3. CLASS TESSERACTMBS

123.3.44 kPageSegModeSingleBlock = 6

MBS Images Plugin, Plugin Version: 12.3. **Function:** One of the page segmentation mode constants. **Notes:** Assume a single uniform block of text. (Default.)

123.3.45 kPageSegModeSingleBlockVerticalText = 5

MBS Images Plugin, Plugin Version: 12.3. **Function:** One of the page segmentation mode constants. **Notes:** Assume a single uniform block of vertically aligned text.

123.3.46 kPageSegModeSingleChar = 10

MBS Images Plugin, Plugin Version: 12.3. **Function:** One of the page segmentation mode constants. **Notes:** Treat the image as a single character.

123.3.47 kPageSegModeSingleColumn = 4

MBS Images Plugin, Plugin Version: 12.3. **Function:** One of the page segmentation mode constants. **Notes:** Assume a single column of text of variable sizes.

123.3.48 kPageSegModeSingleLine = 7

MBS Images Plugin, Plugin Version: 12.3. **Function:** One of the page segmentation mode constants. **Notes:** Treat the image as a single text line.

123.3.49 kPageSegModeSingleWord = 8

MBS Images Plugin, Plugin Version: 12.3. **Function:** One of the page segmentation mode constants. **Notes:** Treat the image as a single word.
123.4  class TesseractNotInitializedExceptionMBS

123.4.1  class TesseractNotInitializedExceptionMBS

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The exception to report about calling tesseract methods without initialization.  
**Notes:** Subclass of the TesseractErrorExceptionMBS class.
123.5. class TesseractResultIteratorMBS

123.5.1. class TesseractResultIteratorMBS

**MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:** Class to iterate over tesseract results, providing access to all levels of the page hierarchy, without including any tesseract headers or having to handle any tesseract structures.

**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

123.5.2. Methods

123.5.3. Begin

**MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:** Moves the iterator to point to the start of the page to begin an iteration.

123.5.4. BoundingBox(Level as Integer, byref left as Integer, byref top as Integer, byref right as Integer, byref bottom as Integer) as boolean

**MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:** Returns the bounding rectangle of the current object at the given level.

**Notes:**
Returns false if there is no such object at the current position.
The returned bounding box is guaranteed to match the size and position of the image returned by GetBinaryImage, but may clip foreground pixels from a grey image. The padding argument to GetImage can be used to expand the image to include more foreground pixels. See GetImage.

Coordinate system:
Integer coordinates are at the cracks between the pixels.
The top-left corner of the top-left pixel in the image is at (0,0).
The bottom-right corner of the bottom-right pixel in the image is at (width, height).
Every bounding box goes from the top-left of the top-left contained pixel to the bottom-right of the bottom-right contained pixel, so the bounding box of the single top-left pixel in the image is: (0,0)->(1,1).
If an image rectangle has been set in the API, then returned coordinates relate to the original (full) image, rather than the rectangle.
123.5.5 Confidence(Level as Integer) as Double

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the mean confidence of the current object at the given level. **Notes:** The number should be interpreted as a percent probability. (0.0 - 100.0)

123.5.6 Constructor


123.5.7 IsAtBeginningOf(Level as Integer) as boolean

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if the iterator is at the start of an object at the given level. **Notes:** Possible uses include determining if a call to `Next(kLevelWord)` moved to the start of a `kLevelParagraph`.

123.5.8 IsAtFinalElement(Level as Integer, element as Integer) as boolean

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns whether the iterator is positioned at the last element in a given level. **Notes:** (e.g. the last word in a line, the last line in a block)

123.5.9 NextItem(Level as Integer) as boolean

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Moves to the start of the next object at the given level in the page hierarchy, and returns false if the end of the page was reached. **Notes:**

NOTE that `kLevelSymbol` will skip non-text blocks, but all other level values will visit each non-text block once. 
Think of non text blocks as containing a single paragraph, with a single line, with a single imaginary word. 
Calls to `Next` with different levels may be freely intermixed. 
This function iterates words in right-to-left scripts correctly, if the appropriate language has been loaded into Tesseract.
123.5.10  SymbolIsDropcap as boolean

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if the current symbol is a dropcap. **Notes:** If iterating at a higher level object than symbols, eg words, then this will return the attributes of the first symbol in that word.

123.5.11  SymbolIsSubscript as boolean

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if the current symbol is a subscript. **Notes:** If iterating at a higher level object than symbols, e.g. words, then this will return the attributes of the first symbol in that word.

123.5.12  SymbolIsSuperscript as boolean

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if the current symbol is a superscript. **Notes:** If iterating at a higher level object than symbols, eg words, then this will return the attributes of the first symbol in that word.

123.5.13  Text(Level as Integer) as string

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the text string for the current object at the given level.

123.5.14  WordFontAttributes(byref bold as boolean, byref italic as boolean, byref underlined as boolean, byref monospace as boolean, byref serif as boolean, byref smallcaps as boolean, byref fontsize as Integer, byref fontid as Integer) as string

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the font attributes of the current word. **Notes:**
If iterating at a higher level object than words, e.g. textlines, then this will return the attributes of the first word in that textline.
The actual return value is a string representing a font name.
Pointsize is returned in printers points (1/72 inch.)
123.5.15 WordIsFromDictionary as boolean

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if the current word was found in a dictionary.

123.5.16 WordIsNumeric as boolean

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if the current word is numeric.

123.5.17 Properties

123.5.18 Handle as Integer

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Internal Object reference. **Notes:** (Read only property)

123.5.19 Parent as TesseractMBS

MBS Images Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The parent tesseract object. **Notes:** (Read only property)

123.5.20 Constants

123.5.21 kLevelBlock = 0

MBS Images Plugin, Plugin Version: 12.3. **Function:** One of the level constants. **Notes:** Block of text/image/seperator line.

123.5.22 kLevelParagraph = 1

MBS Images Plugin, Plugin Version: 12.3. **Function:** One of the level constants. **Notes:** Paragraph within a block.
123.5.23 kLevelSymbol = 4

MBS Images Plugin, Plugin Version: 12.3. **Function**: One of the level constants.
**Notes**: Symbol/character within a word.

123.5.24 kLevelTextline = 2

MBS Images Plugin, Plugin Version: 12.3. **Function**: One of the level constants.
**Notes**: Line within a paragraph.

123.5.25 kLevelWord = 3

MBS Images Plugin, Plugin Version: 12.3. **Function**: One of the level constants.
**Notes**: Word within a textline.
Chapter 124

OpenCL

124.1 class CLCommandQueueMBS

124.1.1 class CLCommandQueueMBS


Function: The class for an OpenCL command queue.

Example:

```vbnet
dim devices(-1) as CLDeviceMBS = OpenCLMBS.AllDevices(CLDeviceMBS.kDeviceTypeGPU)
dim device as CLDeviceMBS = devices(0) // we use first one

// Create a context
dim context as new CLContextMBS(device, CLContextMBS.kErrorModeLogMessagesToSystemLog)

// Create a command queue
dim queue as new CLCommandQueueMBS(context, device, 0)
```

124.1.2 Methods

124.1.3 Constructor(context as CLContextMBS, device as CLDeviceMBS, flags as Integer = 0)


Function: Create a command-queue on a specific device.

Example:
dim devices(-1) as CLDeviceMBS = OpenCLMBS.AllDevices(CLDeviceMBS.kDeviceTypeGPU)
dim device as CLDeviceMBS = devices(0) // we use first one

// Create a context
dim context as new CLContextMBS(device, CLContextMBS.kErrorModeLogMessagesToSystemLog)

// Create a command queue
dim queue as new CLCommandQueueMBS(context, device, 0)

Notes:

context: Must be a valid OpenCL context.
device: Must be a device associated with context. It can either be in the list of devices specified when context
is created using CLContextMBS Constructor or have the same device type as the device type specified when
the context is created.
flags: Specifies a list of properties for the command-queue. This is a bit-field. Only command-queue prop-
erties specified in the table below can be set in properties; otherwise the value specified in properties is
considered to be not valid.

<table>
<thead>
<tr>
<th>Command-Queue Properties</th>
<th>Description</th>
</tr>
</thead>
</table>
| kQueueOutOfOrderExecModeEnable         | Determines whether the commands queued in the command-queue are exe-
                                            cuted in-order or out-of-order. If set, the commands in the command-queue
                                            are executed out-of-order. Otherwise, commands are executed in-order. |
| kQueueProfilingEnable                  | Enable or disable profiling of commands in the command-queue. If set, the   |
                                            profiling of commands is enabled. Otherwise profiling of commands is disabled. |

See clGetEventProfilingInfo for more information.

The OpenCL functions that are submitted to a command-queue are enqueued in the order the calls are
made but can be configured to execute in-order or out-of-order. The properties argument in clCreateCom-
mandQueue can be used to specify the execution order.

If the kQueueOutOfOrderExecModeEnable property of a command-queue is not set, the commands en-
queued to a command-queue execute in order. For example, if an application calls EnqueueNDRangeKernel
to execute kernel A followed by a EnqueueNDRangeKernel to execute kernel B, the application can assume
that kernel A finishes first and then kernel B is executed. If the memory objects output by kernel A are
inputs to kernel B then kernel B will see the correct data in memory objects produced by execution of
kernel A. If the kQueueOutOfOrderExecModeEnable property of a commandqueue is set, then there is no
guarantee that kernel A will finish before kernel B starts execution.

Applications can configure the commands enqueued to a command-queue to execute out-of-order by setting
the kQueueOutOfOrderExecModeEnable property of the command-queue. This can be specified when the
command-queue is created or can be changed dynamically using this Constructor. In out-of-order execution
mode there is no guarantee that the enqueued commands will finish execution in the order they were queued.
As there is no guarantee that kernels will be executed in order, i.e. based on when the EnqueueNDRangeKer-
nel calls are made within a command-queue, it is therefore possible that an earlier EnqueueNDRangeKernel
call to execute kernel A identified by event A may execute and/or finish later than a EnqueueNDRangeKernel call to execute kernel B which was called by the application at a later point in time. To guarantee a specific order of execution of kernels, a wait on a particular event (in this case event A) can be used. The wait for event A can be specified in the event_wait_list argument to EnqueueNDRangeKernel for kernel B.

In addition, a wait for events or a barrier command can be enqueued to the command-queue. The wait for events command ensures that previously enqueued commands identified by the list of events to wait for have finished before the next batch of commands is executed. The barrier command ensures that all previously enqueued commands in a command-queue have finished execution before the next batch of commands is executed.

Similarly, commands to read, write, copy or map memory objects that are enqueued after EnqueueNDRangeKernel, EnqueueTask or EnqueueNativeKernel commands are not guaranteed to wait for kernels scheduled for execution to have completed (if the kQueueOutOfOrderExecModeEnable property is set). To ensure correct ordering of commands, the event object returned by EnqueueNDRangeKernel, EnqueueTask or EnqueueNativeKernel can be used to enqueue a wait for event or a barrier command can be enqueued that must complete before reads or writes to the memory object(s) occur.

Lasterror is set.

124.1.4 Context as CLContextMBS

MBS MacFrameworks Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Return the context specified when the command-queue is created. Notes: Lasterror is set.

124.1.5 Device as CLDeviceMBS

MBS MacFrameworks Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Return the device specified when the command-queue is created. Notes: Lasterror is set.

124.1.6 EnqueueBarrier

MBS MacFrameworks Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A synchronization point that enqueues a barrier operation. Notes: EnqueueBarrier is a synchronization point that ensures that all queued commands in command_queue have finished execution before the next batch of commands can begin execution.
Lasterror is set.

### 124.1.7 EnqueueCopyBuffer(sourceBuffer as CLMemMBS, destBuffer as CLMemMBS, sourceOffset as Integer, destOffset as Integer, size as Integer)


**Function:** Enqueues a command to copy a buffer object to another buffer object.

**Notes:**

- sourceBuffer: the source memory object.
- destBuffer: the destination memory object.
- sourceOffset: The offset where to begin copying data from sourceBuffer.
- destOffset: The offset where to begin copying data into destBuffer.
- size: Refers to the size in bytes to copy.
- EventWaitList: Optional, Specify events that need to complete before this particular command can be executed. If EventWaitList is empty or not passed, then this particular command does not wait on any event to complete. The events specified in event_wait_list act as synchronization points. The context associated with events in EventWaitList and CLCommandQueueMBS must be the same.
- outEvent: Returns an event object that identifies this particular copy command and can be used to query or queue a wait for this particular command to complete.
- Lasterror is set.

See also:

- 124.1.8 EnqueueCopyBuffer(sourceBuffer as CLMemMBS, destBuffer as CLMemMBS, sourceOffset as Integer, destOffset as Integer, size as Integer, EventWaitList() as CLEventMBS, byref outEvent as CLEventMBS)

### 124.1.8 EnqueueCopyBuffer(sourceBuffer as CLMemMBS, destBuffer as CLMemMBS, sourceOffset as Integer, destOffset as Integer, size as Integer, EventWaitList() as CLEventMBS, byref outEvent as CLEventMBS)


**Function:** Enqueues a command to copy a buffer object to another buffer object.

**Notes:**

- sourceBuffer: the source memory object.
- destBuffer: the destination memory object.
- sourceOffset: The offset where to begin copying data from sourceBuffer.
- destOffset: The offset where to begin copying data into destBuffer.
- size: Refers to the size in bytes to copy.
- EventWaitList: Optional, Specify events that need to complete before this particular command can be executed. If EventWaitList is empty or not passed, then this particular command does not wait on any event to complete. The events specified in event_wait_list act as synchronization points. The context associated with events in EventWaitList and CLCommandQueueMBS must be the same.
with events in EventWaitList and CLCommandQueueMBS must be the same.

outEvent: Returns an event object that identifies this particular copy command and can be used to query or queue a wait for this particular command to complete. Lasterror is set.

See also:

- **124.1.7 EnqueueCopyBuffer(sourceBuffer as CLMemMBS, destBuffer as CLMemMBS, sourceOffset as Integer, destOffset as Integer, size as Integer)**

**124.1.9 EnqueueCopyBufferToImage(SourceBuffer as CLMemMBS, destImage as CLMemMBS, sourceOffset as Integer, destOriginX as Integer, destOriginY as Integer, destOriginZ as Integer, RegionWidth as Integer, RegionHeight as Integer, RegionDepth as Integer)**


**Function:** Enqueues a command to copy a buffer object to an image object.

**Notes:**

SourceBuffer: A valid buffer object.

destImage: A valid image object.

sourceOffset: The offset where to begin copying data from SourceBuffer.

destOrigin: The (x, y, z) offset in pixels where to begin copying data to destImage. If destImage is a 2D image object, the z value given by destOriginZ must be 0.

region: Defines the (width, height, depth) in pixels of the 2D or 3D rectangle to copy. If destImage is a 2D image object, the depth value given by RegionDepth must be 1.

The size in bytes of the region to be copied from SourceBuffer referred to as src_cb is computed as width * height * depth * bytes/image element if destImage is a 3D image object and is computed as width * height * bytes/image element if destImage is a 2D image object.

EventWaitList: Optionally, Specify events that need to complete before this particular command can be executed. The events specified in event_wait_list act as synchronization points. The context associated with events in event_wait_list and command_queue must be the same.

outEvent: Optional. Returns an event object that identifies this particular copy command and can be used to query or queue a wait for this particular command to complete.

Lasterror is set.

See also:
124.1.10 EnqueueCopyBufferToImage(SourceBuffer as CLMemMBS, destImage as CLMemMBS, sourceOffset as Integer, destOriginX as Integer, destOriginY as Integer, destOriginZ as Integer, RegionWidth as Integer, RegionHeight as Integer, RegionDepth as Integer, EventWaitList() as CLEventMBS, byref outEvent as CLEventMBS)

**Function:**
Enqueues a command to copy a buffer object to an image object.

**Notes:**
- SourceBuffer: A valid buffer object.
- destImage: A valid image object.
- sourceOffset: The offset where to begin copying data from SourceBuffer.
- destOrigin: The (x, y, z) offset in pixels where to begin copying data to destImage. If destImage is a 2D image object, the z value given by destOriginZ must be 0.
- region: Defines the (width, height, depth) in pixels of the 2D or 3D rectangle to copy. If destImage is a 2D image object, the depth value given by RegionDepth must be 1.

The size in bytes of the region to be copied from SourceBuffer referred to as src_cb is computed as width * height * depth * bytes/image element if destImage is a 3D image object and is computed as width * height * bytes/image element if destImage is a 2D image object.

- EventWaitList: Optionally, Specify events that need to complete before this particular command can be executed. The events specified in event_wait_list act as synchronization points. The context associated with events in event_wait_list and command_queue must be the same.
- outEvent: Optional. Returns an event object that identifies this particular copy command and can be used to query or queue a wait for this particular command to complete.

Lasterror is set.

See also:
- 124.1.9 EnqueueCopyBufferToImage(SourceBuffer as CLMemMBS, destImage as CLMemMBS, sourceOffset as Integer, destOriginX as Integer, destOriginY as Integer, destOriginZ as Integer, RegionWidth
124.1.11 EnqueueCopyImage(sourceImage as CLMemMBS, destImage as CLMemMBS, sourceOriginX as Integer, sourceOriginY as Integer, sourceOriginZ as Integer, destOriginX as Integer, destOriginY as Integer, destOriginZ as Integer, RegionWidth as Integer, RegionHeight as Integer, RegionDepth as Integer)


**Function:** Enqueues a command to copy image objects.

**Notes:**
- sourceImage: Source image.
- destImage: Dest image.

  sourceOrigin: Defines the starting (x, y, z) location in pixels in src_image from where to start the data copy. If src_image is a 2D image object, the z value given by sourceOriginZ must be 0.

  sourceOrigin: Defines the starting (x, y, z) location in pixels in dst_image from where to start the data copy. If dst_image is a 2D image object, the z value given by sourceOriginZ must be 0.

  region: Defines the (width, height, depth) in pixels of the 2D or 3D rectangle to copy. If src_image or dst_image is a 2D image object, the depth value given by RegionDepth must be 1.

  EventWaitList: Optional, Specify events that need to complete before this particular command can be executed. The events specified in EventWaitList act as synchronization points. The context associated with events in EventWaitList and CommandQueue must be the same.

  outEvent: Optional, Returns an event object that identifies this particular copy command and can be used to query or queue a wait for this particular command to complete.

  It is currently a requirement that the sourceImage and destImage image memory objects for EnqueueCopyImage must have the exact same image format (i.e. the cl_image_format descriptor specified when sourceImage and destImage are created must match).

  sourceImage and destImage can be 2D or 3D image objects allowing us to perform the following actions:

  - Copy a 2D image object to a 2D image object.
  - Copy a 2D image object to a 2D slice of a 3D image object.
  - Copy a 2D slice of a 3D image object to a 2D image object.
• Copy a 3D image object to a 3D image object.

LastError is set.
See also:

• 124.1.12 EnqueueCopyImage(sourceImage as CLMemMBS, destImage as CLMemMBS, sourceOriginX as Integer, sourceOriginY as Integer, sourceOriginZ as Integer, destOriginX as Integer, destOriginY as Integer, destOriginZ as Integer, RegionWidth as Integer, RegionHeight as Integer, RegionDepth as Integer, EventWaitList() as CLEventMBS, byref outEvent as CLEventMBS)

124.1.12 EnqueueCopyImage(sourceImage as CLMemMBS, destImage as CLMemMBS, sourceOriginX as Integer, sourceOriginY as Integer, sourceOriginZ as Integer, destOriginX as Integer, destOriginY as Integer, destOriginZ as Integer, RegionWidth as Integer, RegionHeight as Integer, RegionDepth as Integer, EventWaitList() as CLEventMBS, byref outEvent as CLEventMBS)


Function: Enqueues a command to copy image objects.

Notes:

sourceImage: Source image.
destImage: Dest image.

sourceOrigin: Defines the starting (x, y, z) location in pixels in src_image from where to start the data copy. If src_image is a 2D image object, the z value given by sourceOriginZ must be 0.

sourceOrigin: Defines the starting (x, y, z) location in pixels in dst_image from where to start the data copy. If dst_image is a 2D image object, the z value given by sourceOriginZ must be 0.

region: Defines the (width, height, depth) in pixels of the 2D or 3D rectangle to copy. If src_image or dst_image is a 2D image object, the depth value given by RegionDepth must be 1.

EventWaitList: Optional, Specify events that need to complete before this particular command can be executed. The events specified in EventWaitList act as synchronization points. The context associated with events in EventWaitList and CommandQueue must be the same.

outEvent: Optional, Returns an event object that identifies this particular copy command and can be used to query or queue a wait for this particular command to complete.

It is currently a requirement that the sourceImage and destImage image memory objects for EnqueueCopyImage must have the exact same image format (i.e. the cl_image_format descriptor specified when sourceImage
sourceImage and destImage can be 2D or 3D image objects allowing us to perform the following actions:

- Copy a 2D image object to a 2D image object.
- Copy a 2D image object to a 2D slice of a 3D image object.
- Copy a 2D slice of a 3D image object to a 2D image object.
- Copy a 3D image object to a 3D image object.

LastError is set.

See also:

- 124.1.11 EnqueueCopyImage(sourceImage as CLMemMBS, destImage as CLMemMBS, sourceOriginX as Integer, sourceOriginY as Integer, sourceOriginZ as Integer, destOriginX as Integer, destOriginY as Integer, destOriginZ as Integer, RegionWidth as Integer, RegionHeight as Integer, RegionDepth as Integer)

124.1.13 EnqueueCopyImageToBuffer(sourceImage as CLMemMBS, destBuffer as CLMemMBS, sourceOriginX as Integer, sourceOriginY as Integer, sourceOriginZ as Integer, RegionWidth as Integer, RegionHeight as Integer, RegionDepth as Integer, destOffset as Integer)


**Function:** Enqueues a command to copy an image object to a buffer object.

**Notes:**

- sourceImage: A valid image object.
- destBuffer: A valid buffer object.

sourceOrigin: Defines the (x, y, z) offset in pixels in the image from where to copy. If sourceImage is a 2D image object, the z value given by sourceOriginZ must be 0.

region: Defines the (width, height, depth) in pixels of the 2D or 3D rectangle to copy. If sourceImage is a 2D image object, the depth value given by RegionDepth must be 1.

destOffset: The offset where to begin copying data into destBuffer. The size in bytes of the region to be copied referred to as dst.cb is computed as width * height * depth * bytes/image element if sourceImage is a 3D image object and is computed as width * height * bytes/image element if sourceImage is a 2D image object.
EventWaitList: Specify events that need to complete before this particular command can be executed. The events specified in event_wait_list act as synchronization points. The context associated with events in event_wait_list and command_queue must be the same.

outEvent: Returns an event object that identifies this particular copy command and can be used to query or queue a wait for this particular command to complete.

Lasterror is set.

See also:

- 124.1.14 EnqueueCopyImageToBuffer(sourceImage as CLMemMBS, destBuffer as CLMemMBS, sourceOriginX as Integer, sourceOriginY as Integer, sourceOriginZ as Integer, RegionWidth as Integer, RegionHeight as Integer, RegionDepth as Integer, destOffset as Integer, EventWaitList() as CLEventMBS, byref outEvent as CLEventMBS)

124.1.14 EnqueueCopyImageToBuffer(sourceImage as CLMemMBS, destBuffer as CLMemMBS, sourceOriginX as Integer, sourceOriginY as Integer, sourceOriginZ as Integer, RegionWidth as Integer, RegionHeight as Integer, RegionDepth as Integer, destOffset as Integer, EventWaitList() as CLEventMBS, byref outEvent as CLEventMBS)


Function: Enqueues a command to copy an image object to a buffer object.

Notes:

sourceImage: A valid image object.

destBuffer: A valid buffer object.

sourceOrigin: Defines the (x, y, z) offset in pixels in the image from where to copy. If sourceImage is a 2D image object, the z value given by sourceOriginZ must be 0.

region: Defines the (width, height, depth) in pixels of the 2D or 3D rectangle to copy. If sourceImage is a 2D image object, the depth value given by RegionDepth must be 1.

destOffset: The offset where to begin copying data into destBuffer. The size in bytes of the region to be copied referred to as dst_cb is computed as width * height * depth * bytes/image element if sourceImage is a 3D image object and is computed as width * height * bytes/image element if sourceImage is a 2D image object.

EventWaitList: Specify events that need to complete before this particular command can be executed. The events specified in event_wait_list act as synchronization points. The context associated with events in event_wait_list and command_queue must be the same.
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outEvent: Returns an event object that identifies this particular copy command and can be used to query or queue a wait for this particular command to complete.

Lasterror is set.

See also:

- 124.1.13 EnqueueCopyImageToBuffer(sourceImage as CLMemMBS, destBuffer as CLMemMBS, source-OriginX as Integer, sourceOriginY as Integer, sourceOriginZ as Integer, RegionWidth as Integer, RegionHeight as Integer, RegionDepth as Integer, destOffset as Integer)

124.1.15 EnqueueMapBuffer(buffer as CLMemMBS, BlockingMap as boolean, MapFlags as Integer, offset as Integer, size as Integer, EventWaitList() as CLEventMBS, byref outEvent as CLEventMBS) as memoryblock


Function: Enqueues a command to map a region of the buffer object given by buffer into the host address space and returns a pointer to this mapped region.

Notes:

BlockingMap: Optional. Indicates if the map operation is blocking or non-blocking. If BlockingMap is true, EnqueueMapBuffer does not return until the specified region in buffer can be mapped. If BlockingMap is false i.e. map operation is non-blocking, the pointer to the mapped region returned by clEnqueueMapBuffer cannot be used until the map command has completed. The event argument returns an event object which can be used to query the execution status of the map command. When the map command is completed, the application can access the contents of the mapped region using the pointer returned by EnqueueMapBuffer.

MapFlags: Is a bit-field and can be set to kMapRead to indicate that the region specified by (offset, size) in the buffer object is being mapped for reading, and/or kMapWrite to indicate that the region specified by (offset, size) in the buffer object is being mapped for writing.

buffer: A valid buffer object. The OpenCL context associated with CLCommandQueueMBS and buffer must be the same.

offset, size: The offset in bytes and the size of the region in the buffer object that is being mapped.

EventWaitList: Optional. Specify events that need to complete before this particular command can be executed. The events specified in EventWaitList act as synchronization points. The context associated with events in event_wait_list and command_queue must be the same.

outEvent: Returns an event object that identifies this particular copy command and can be used to query or queue a wait for this particular command to complete.

Lasterror is set.

The contents of the regions of a memory object mapped for writing (i.e. kMapWrite is set in map_flags argument to EnqueueMapBuffer or EnqueueMapImage) are considered to be undefined until this region is unmapped. Reads and writes by a kernel executing on a device to a memory region(s) mapped for writing are undefined.

Multiple command-queues can map a region or overlapping regions of a memory object for reading (i.e.
MapFlags = kMapRead). The contents of the regions of a memory object mapped for reading can also be read by kernels executing on a device(s). The behavior of writes by a kernel executing on a device to a mapped region of a memory object is undefined. Mapping (and unmapping) overlapped regions of a buffer or image memory object for writing is undefined.

The behavior of OpenCL function calls that enqueue commands that write or copy to regions of a memory object that are mapped is undefined.

Lasterror is set.
See also:

- 124.1.16 EnqueueMapBuffer(buffer as CLMemMBS, MapFlags as Integer, offset as Integer, size as Integer) as memoryblock

**124.1.16 EnqueueMapBuffer(buffer as CLMemMBS, MapFlags as Integer, offset as Integer, size as Integer) as memoryblock**


**Function:** Enqueues a command to map a region of the buffer object given by buffer into the host address space and returns a pointer to this mapped region.

**Notes:**

- BlockingMap: Optional, Indicates if the map operation is blocking or non-blocking. If BlockingMap is true, EnqueueMapBuffer does not return until the specified region in buffer can be mapped. If BlockingMap is false i.e. map operation is non-blocking, the pointer to the mapped region returned by clEnqueueMapBuffer cannot be used until the map command has completed. The event argument returns an event object which can be used to query the execution status of the map command. When the map command is completed, the application can access the contents of the mapped region using the pointer returned by EnqueueMapBuffer.
- MapFlags: Is a bit-field and can be set to kMapRead to indicate that the region specified by (offset, size) in the buffer object is being mapped for reading, and/or kMapWrite to indicate that the region specified by (offset, size) in the buffer object is being mapped for writing.
- buffer: A valid buffer object. The OpenCL context associated with CLCommandQueueMBS and buffer must be the same.
- offset, size: The offset in bytes and the size of the region in the buffer object that is being mapped.
- EventWaitList: Optional, Specify events that need to complete before this particular command can be executed. The events specified in EventWaitList act as synchronization points. The context associated with events in event_wait_list and command_queue must be the same.
- outEvent: Returns an event object that identifies this particular copy command and can be used to query or queue a wait for this particular command to complete.

Lasterror is set.

The contents of the regions of a memory object mapped for writing (i.e. kMapWrite is set in map_flags argument to EnqueueMapBuffer or EnqueueMapImage) are considered to be undefined until this region is unmapped. Reads and writes by a kernel executing on a device to a memory region(s) mapped for writing
Multiple command-queues can map a region or overlapping regions of a memory object for reading (i.e. MapFlags = kMapRead). The contents of the regions of a memory object mapped for reading can also be read by kernels executing on a device(s). The behavior of writes by a kernel executing on a device to a mapped region of a memory object is undefined. Mapping (and unmapping) overlapped regions of a buffer or image memory object for writing is undefined.

The behavior of OpenCL function calls that enqueue commands that write or copy to regions of a memory object that are mapped is undefined.

Lasterror is set.

See also:

- 124.1.15 EnqueueMapBuffer(buffer as CLMemMBS, BlockingMap as boolean, MapFlags as Integer, offset as Integer, size as Integer, EventWaitList() as CLEventMBS, byref outEvent as CLEventMBS) as memoryblock

124.1.17 EnqueueMapImage(image as CLMemMBS, BlockingMap as boolean, MapFlags as Integer, sourceOriginX as Integer, sourceOriginY as Integer, sourceOriginZ as Integer, RegionWidth as Integer, RegionHeight as Integer, RegionDepth as Integer, byref RowPitch as Integer, byref SlicePitch as Integer, EventWaitList() as CLEventMBS, byref outEvent as CLEventMBS) as memoryblock


Function: Enqueues a command to map a region of an image object into the host address space and returns a pointer to this mapped region.

Notes:

- image: A valid image object. The OpenCL context associated with CLCommandQueueMBS and image must be the same.

- BlockingMap: Optional, Indicates if the map operation is blocking or non-blocking. If BlockingMap is true, EnqueueMapImage does not return until the specified region in image can be mapped. If BlockingMap is false i.e. map operation is non-blocking, the pointer to the mapped region returned by EnqueueMapImage cannot be used until the map command has completed. The event argument returns an event object which can be used to query the execution status of the map command. When the map command is completed, the application can access the contents of the mapped region using the pointer returned by EnqueueMapImage.

- MapFlags: Is a bit-field and can be set to kMapRead to indicate that the region specified by (origin, region) in the image object is being mapped for reading, and/or kMapWrite to indicate that the region specified by (origin, region) in the image object is being mapped for writing.
origin, region: Define the \((x, y, z)\) offset in pixels and \((\text{width}, \text{height}, \text{depth})\) in pixels of the 2D or 3D rectangle region that is to be mapped. If image is a 2D image object, the \(z\) value given by origin\(Z\) must be 0 and the depth value given by regionDepth must be 1.

RowPitch: Returns the scan-line pitch in bytes for the mapped region. This must be a non-nil value.
SlicePitch: Returns the size in bytes of each 2D slice for the mapped region. For a 2D image, zero is returned if this argument is not nil. For a 3D image, \(\text{image}\_\text{slice}\_\text{pitch}\) must be a non-nil value.

EventWaitList: Optional. Specify events that need to complete before EnqueueMapImage can be executed. The events specified in event_wait_list act as synchronization points. The context associated with events in event_wait_list and CLCommandQueueMBS must be the same.

outEvent: Optional. Returns an event object that identifies this particular copy command and can be used to query or queue a wait for this particular command to complete. event can be nil in which case it will not be possible for the application to query the status of this command or queue a wait for this command to complete.

LastError is set.

If the buffer or image object is created with kMemoryUseHostPtr set in mem_flags, the following will be true:

The HostPtr specified in Constructor is guaranteed to contain the latest bits in the region being mapped when the EnqueueMapBuffer or EnqueueMapImage command has completed.
The pointer value returned by EnqueueMapBuffer or EnqueueMapImage will be derived from the HostPtr specified when the buffer or image object is created.
The contents of the regions of a memory object mapped for writing (i.e. kMapWrite is set in MapFlags argument to EnqueueMapBuffer or EnqueueMapImage) are considered to be undefined until this region is unmapped. Reads and writes by a kernel executing on a device to a memory region(s) mapped for writing are undefined.

Multiple command-queues can map a region or overlapping regions of a memory object for reading (i.e. MapFlags = kMapRead). The contents of the regions of a memory object mapped for reading can also be read by kernels executing on a device(s). The behavior of writes by a kernel executing on a device to a mapped region of a memory object is undefined. Mapping (and unmapping) overlapped regions of a buffer or image memory object for writing is undefined.

The behavior of OpenCL function calls that enqueue commands that write or copy to regions of a memory object that are mapped is undefined.
See also:

- 124.1.18 EnqueueMapImage(image as CLMemMBS, MapFlags as Integer, sourceOriginX as Integer, sourceOriginY as Integer, sourceOriginZ as Integer, RegionWidth as Integer, RegionHeight as Integer, RegionDepth as Integer, byref RowPitch as Integer, byref SlicePitch as Integer) as memoryblock 17267
**124.1.18 EnqueueMapImage**

(image as CLMemMBS, MapFlags as Integer, source-OriginX as Integer, sourceOriginY as Integer, sourceOriginZ as Integer, RegionWidth as Integer, RegionHeight as Integer, RegionDepth as Integer, byref RowPitch as Integer, byref SlicePitch as Integer) as memoryblock

**Function:**
Enqueues a command to map a region of an image object into the host address space and returns a pointer to this mapped region.

**Notes:**
- **image:** A valid image object. The OpenCL context associated with CLCommandQueueMBS and image must be the same.
- **BlockingMap:** Optional, Indicates if the map operation is blocking or non-blocking. If BlockingMap is true, EnqueueMapImage does not return until the specified region in image can be mapped. If BlockingMap is false, i.e., map operation is non-blocking, the pointer to the mapped region returned by EnqueueMapImage cannot be used until the map command has completed. The event argument returns an event object which can be used to query the execution status of the map command. When the map command is completed, the application can access the contents of the mapped region using the pointer returned by EnqueueMapImage.
- **MapFlags:** Is a bit-field and can be set to kMapRead to indicate that the region specified by (origin, region) in the image object is being mapped for reading, and/or kMapWrite to indicate that the region specified by (origin, region) in the image object is being mapped for writing.
- **origin, region:** Define the (x, y, z) offset in pixels and (width, height, depth) in pixels of the 2D or 3D rectangle region that is to be mapped. If image is a 2D image object, the z value given by originZ must be 0 and the depth value given by regionDepth must be 1.
- **RowPitch:** Returns the scan-line pitch in bytes for the mapped region. This must be a non-nil value.
- **SlicePitch:** Returns the size in bytes of each 2D slice for the mapped region. For a 2D image, zero is returned if this argument is not nil. For a 3D image, image_slice_pitch must be a non-nil value.
- **EventWaitList:** Optional, Specify events that need to complete before EnqueueMapImage can be executed. The events specified in event_wait_list act as synchronization points. The context associated with events in event_wait_list and CLCommandQueueMBS must be the same.
- **outEvent:** Optional, Returns an event object that identifies this particular copy command and can be used to query or queue a wait for this particular command to complete. event can be nil in which case it will not be possible for the application to query the status of this command or queue a wait for this command to complete.

LastError is set.
If the buffer or image object is created with kMemoryUseHostPtr set in mem_flags, the following will be true:

The HostPtr specified in Constructor is guaranteed to contain the latest bits in the region being mapped when the EnqueueMapBuffer or EnqueueMapImage command has completed. The pointer value returned by EnqueueMapBuffer or EnqueueMapImage will be derived from the HostPtr specified when the buffer or image object is created.

The contents of the regions of a memory object mapped for writing (i.e. kMapWrite is set in MapFlags argument to EnqueueMapBuffer or EnqueueMapImage) are considered to be undefined until this region is unmapped. Reads and writes by a kernel executing on a device to a memory region(s) mapped for writing are undefined.

Multiple command-queues can map a region or overlapping regions of a memory object for reading (i.e. MapFlags = kMapRead). The contents of the regions of a memory object mapped for reading can also be read by kernels executing on a device(s). The behavior of writes by a kernel executing on a device to a mapped region of a memory object is undefined. Mapping (and unmapping) overlapped regions of a buffer or image memory object for writing is undefined.

The behavior of OpenCL function calls that enqueue commands that write or copy to regions of a memory object that are mapped is undefined.

See also:

- 124.1.17 EnqueueMapImage(image as CLMemMBS, BlockingMap as boolean, MapFlags as Integer, sourceOriginX as Integer, sourceOriginY as Integer, sourceOriginZ as Integer, RegionWidth as Integer, RegionHeight as Integer, RegionDepth as Integer, byref RowPitch as Integer, byref SlicePitch as Integer, EventWaitList() as CLEventMBS, byref outEvent as CLEventMBS) as memoryblock

124.1.19 EnqueueMarker(byref outEvent as CLEventMBS)

Enqueues a marker command to the command queue. The marker command returns an event which can be used to queue a wait on this marker event i.e. wait for all commands queued before the marker command to complete.

Lasterror is set.
124.1.20 EnqueueNativeKernel(FunctionPtr as ptr, args as memoryblock, argsSize as Integer, NumberOfMemoryObjects as Integer, MemList as memoryblock, ArgsMemoryLocations as memoryblock)


**Function:** Enqueues a command to execute a native C/C++ function not compiled using the OpenCL compiler.

**Notes:**

First a warning: Don’t use this with Real Studio methods. You can point to a function written in C which you made thread safe.

`self`: A valid command-queue. A native user function can only be executed on a command-queue created on a device that has kExceNativeKernel capability set in ExecutionCapabilities property.

`FunctionPtr`: A pointer to a host-callable user function.

`args`: A pointer to the args list that FunctionPtr should be called with.

`argsSize`: The size in bytes of the args list that args points to.

The data pointed to by args and argsSize bytes in size will be copied and a pointer to this copied region will be passed to FunctionPtr. The copy needs to be done because the memory objects (CLMemMBS.handle values) that args may contain need to be modified and replaced by appropriate pointers to global memory. When EnqueueNativeKernel returns, the memory region pointed to by args can be reused by the application.

`NumberOfMemoryObjects`: The number of buffer objects that are passed in args.

`MemList`: A list of valid buffer objects, if NumberOfMemoryObjects is greater than 0. The buffer object values specified in MemList are memory object handles (CLMemMBS.handle values) or nil.

`ArgsMemoryLocations`: A pointer to appropriate locations that args points to where memory object handles (CLMemMBS.handle values) are stored. Before the user function is executed, the memory object handles are replaced by pointers to global memory.

`EventWaitList`: Optionally, Specify events that need to complete before this particular command can be executed. The events specified in event_wait_list act as synchronization points. The context associated with events in event_wait_list and command_queue must be the same.

`outEvent`: Optionally, Returns an event object that identifies this particular kernel execution instance.

The data pointed to by args and argsSize bytes in size will be copied and a pointer to this copied region will be passed to FunctionPtr. The copy needs to be done because the memory objects (CLMemMBS.handle
values) that args may contain need to be modified and replaced by appropriate pointers to global memory. When EnqueueNativeKernel returns, the memory region pointed to by args can be reused by the application.

Lasterror is set.

See also:

- 124.1.21 EnqueueNativeKernel(FunctionPtr as ptr, args as memoryblock, argsSize as Integer, NumberOfMemoryObjects as Integer, MemList as memoryblock, ArgsMemoryLocations as memoryblock, EventWaitList() as CLEventMBS, byref outEvent as CLEventMBS)

124.1.21 EnqueueNativeKernel(FunctionPtr as ptr, args as memoryblock, argsSize as Integer, NumberOfMemoryObjects as Integer, MemList as memoryblock, ArgsMemoryLocations as memoryblock, EventWaitList() as CLEventMBS, byref outEvent as CLEventMBS)


**Function**: Enqueues a command to execute a native C/C++ function not compiled using the OpenCL compiler.

**Notes**: First a warning: Don’t use this with Real Studio methods. You can point to a function written in C which you made thread safe.

`self`: A valid command-queue. A native user function can only be executed on a command-queue created on a device that has kExceNativeKernel capability set in ExecutionCapabilities property.

`FunctionPtr`: A pointer to a host-callable user function.

`args`: A pointer to the args list that `FunctionPtr` should be called with.

`argsSize`: The size in bytes of the args list that `args` points to.

The data pointed to by `args` and `argsSize` bytes in size will be copied and a pointer to this copied region will be passed to `FunctionPtr`. The copy needs to be done because the memory objects (CLMemMBS.handle values) that `args` may contain need to be modified and replaced by appropriate pointers to global memory. When EnqueueNativeKernel returns, the memory region pointed to by `args` can be reused by the application.

`NumberOfMemoryObjects`: The number of buffer objects that are passed in `args`.

`MemList`: A list of valid buffer objects, if `NumberOfMemoryObjects` is greater than 0. The buffer object values specified in `MemList` are memory object handles (CLMemMBS.handle values) or nil.

`ArgsMemoryLocations`: A pointer to appropriate locations that `args` points to where memory object handles
(CLMemMBS.handle values) are stored. Before the user function is executed, the memory object handles are replaced by pointers to global memory.

EventWaitList: Optionally, Specify events that need to complete before this particular command can be executed. The events specified in event_wait_list act as synchronization points. The context associated with events in event_wait_list and command_queue must be the same.

outEvent: Optionally, Returns an event object that identifies this particular kernel execution instance.

The data pointed to by args and argsSize bytes in size will be copied and a pointer to this copied region will be passed to FunctionPtr. The copy needs to be done because the memory objects (CLMemMBS.handle values) that args may contain need to be modified and replaced by appropriate pointers to global memory. When EnqueueNativeKernel returns, the memory region pointed to by args can be reused by the application.

Lasterror is set.

See also:

- 124.1.20 EnqueueNativeKernel(FunctionPtr as ptr, args as memoryblock, argsSize as Integer, NumberOfMemoryObjects as Integer, MemList as memoryblock, ArgsMemoryLocations as memoryblock)

124.1.22 EnqueueNDRangeKernel(kernel as CLKernelMBS, GlobalWorkSize as Integer, LocalWorkSize as Integer)


Function: Enqueues a command to execute a kernel on a device.

Notes:

kernel: A valid kernel object. The OpenCL context associated with kernel and command_queue must be the same.

GlobalWorkSize: The number of global work-items.

LocalWorkSize: The number of work-items that make up a work-group (also referred to as the size of the work-group) that will execute the kernel specified by kernel.

The work-group size to be used for kernel can also be specified in the program source using the _attribute_((reqd_work_group_size(X, Y, Z))) qualifier. In this case the size of work group specified by local_work_size must match the value specified by the reqd_work_group_size _attribute_ qualifier.

EventWaitList: Optional, Specify events that need to complete before this particular command can be executed. If EventWaitList is empty or not passed, then this particular command does not wait on any event to complete. The events specified in EventWaitList act as synchronization points. The context associated with events in EventWaitList and CLCommandQueueMBS must be the same.

outEvent: Optional, Returns an event object that identifies this particular kernel execution instance. Event
objects are unique and can be used to identify a particular kernel execution instance later on.

Work-group instances are executed in parallel across multiple compute units or concurrently on the same compute unit.

Each work-item is uniquely identified by a global identifier. The global ID, which can be read inside the kernel, is computed using the value given by GlobalWorkSize and global_work_offset. In OpenCL 1.0, the starting global ID is always (0, 0, ... 0). In addition, a work-item is also identified within a work-group by a unique local ID. The local ID, which can also be read by the kernel, is computed using the value given by LocalWorkSize. The starting local ID is always (0, 0, ... 0).

LastError is set.

See also:

- 124.1.23 EnqueueNDRangeKernel(kernel as CLKernelMBS, GlobalWorkSize as Integer, LocalWorkSize as Integer, EventWaitList() as CLEventMBS, byref outEvent as CLEventMBS) 17272

**124.1.23 EnqueueNDRangeKernel(kernel as CLKernelMBS, GlobalWorkSize as Integer, LocalWorkSize as Integer, EventWaitList() as CLEventMBS, byref outEvent as CLEventMBS)**


**Function:** Enqueues a command to execute a kernel on a device.

**Notes:**

kernel: A valid kernel object. The OpenCL context associated with kernel and command_queue must be the same.

GlobalWorkSize: The number of global work-items.

LocalWorkSize: The number of work-items that make up a work-group (also referred to as the size of the work-group) that will execute the kernel specified by kernel.

The work-group size to be used for kernel can also be specified in the program source using the \_\_attribute\_\_\_\_((reqd_work_group_size(X, Y, Z))) qualifier. In this case the size of work group specified by local_work_size must match the value specified by the reqd_work_group_size \_\_attribute\_\_\_\_ qualifier.

EventWaitList: Optional, Specify events that need to complete before this particular command can be executed. If EventWaitList is empty or not passed, then this particular command does not wait on any event to complete. The events specified in EventWaitList act as synchronization points. The context associated with events in EventWaitList and CLCommandQueueMBS must be the same.

outEvent: Optional, Returns an event object that identifies this particular kernel execution instance. Event objects are unique and can be used to identify a particular kernel execution instance later on.

Work-group instances are executed in parallel across multiple compute units or concurrently on the same
Each work-item is uniquely identified by a global identifier. The global ID, which can be read inside the kernel, is computed using the value given by GlobalWorkSize and global_work_offset. In OpenCL 1.0, the starting global ID is always (0, 0, ..., 0). In addition, a work-item is also identified within a work-group by a unique local ID. The local ID, which can also be read by the kernel, is computed using the value given by LocalWorkSize. The starting local ID is always (0, 0, ..., 0).

LastError is set.

See also:

- 124.1.22 EnqueueNDRangeKernel(kernel as CLKernelMBS, GlobalWorkSize as Integer, LocalWorkSize as Integer)
- 124.1.24 EnqueueReadBuffer(buffer as CLMemMBS, BlockingRead as boolean, offset as Integer, size as Integer, mem as Memoryblock, EventWaitList() as CLEventMBS, byref outEvent as CLEventMBS)

**124.1.24 EnqueueReadBuffer**

*buffer as CLMemMBS, BlockingRead as boolean, offset as Integer, size as Integer, mem as Memoryblock, EventWaitList() as CLEventMBS, byref outEvent as CLEventMBS*


**Function:** Enqueue commands to read from a buffer object to host memory.

**Notes:**

- buffer: Refers to a valid buffer object.
- BlockingRead: Optional, Indicates if the read operations are blocking or non-blocking. If BlockingRead is true i.e. the read command is blocking, clEnqueueReadBuffer does not return until the buffer data has been read and copied into memory pointed to by ptr.

If BlockingRead is false i.e. the read command is non-blocking, EnqueueReadBuffer queues a non-blocking read command and returns. The contents of the buffer that ptr points to cannot be used until the read command has completed. The event argument returns an event object which can be used to query the execution status of the read command. When the read command has completed, the contents of the buffer that ptr points to can be used by the application.

- offset: The offset in bytes in the buffer object to read from.
- size: The size in bytes of data being read.
- mem: The pointer to buffer in host memory where data is to be read into.

EventWaitList: Optional, specifies events that need to complete before this particular command can be executed. If EventWaitList is empty or not passed, then this particular command does not wait on any event to complete. The events specified in EventWaitList act as synchronization points. The context associated with events in EventWaitList and command_queue must be the same.

outEvent: Optional, Returns an event object that identifies this particular read command and can be used
to query or queue a wait for this particular command to complete.

Calling EnqueueReadBuffer to read a region of the buffer object with the ptr argument value set to mem + offset, where mem is a pointer to the memory region specified when the buffer object being read is created with kMemoryUseHostPtr, must meet the following requirements in order to avoid undefined behavior:

All commands that use this buffer object have finished execution before the read command begins execution
The buffer object is not mapped
The buffer object is not used by any command-queue until the read command has finished execution

Lasterror is set.
See also:

- 124.1.25 EnqueueReadBuffer(buffer as CLMemMBS, offset as Integer, size as Integer, mem as Memoryblock)

### 124.1.25 EnqueueReadBuffer(buffer as CLMemMBS, offset as Integer, size as Integer, mem as Memoryblock)


**Function:** Enqueue commands to read from a buffer object to host memory.

**Notes:**

buffer: Refers to a valid buffer object.

BlockingRead: Optional, Indicates if the read operations are blocking or non-blocking. If BlockingRead is true i.e. the read command is blocking, clEnqueueReadBuffer does not return until the buffer data has been read and copied into memory pointed to by ptr.

If BlockingRead is false i.e. the read command is non-blocking, EnqueueReadBuffer queues a non-blocking read command and returns. The contents of the buffer that ptr points to cannot be used until the read command has completed. The event argument returns an event object which can be used to query the execution status of the read command. When the read command has completed, the contents of the buffer that ptr points to can be used by the application.

offset: The offset in bytes in the buffer object to read from.

size: The size in bytes of data being read.

mem: The pointer to buffer in host memory where data is to be read into.

EventWaitList: Optional, specifies events that need to complete before this particular command can be executed. If EventWaitList is empty or not passed, then this particular command does not wait on any event to complete. The events specified in EventWaitList act as synchronization points. The context associated with events in EventWaitList and command_queue must be the same.
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outEvent: Optional. Returns an event object that identifies this particular read command and can be used to query or queue a wait for this particular command to complete.

Calling EnqueueReadBuffer to read a region of the buffer object with the ptr argument value set to mem + offset, where mem is a pointer to the memory region specified when the buffer object being read is created with kMemoryUseHostPtr, must meet the following requirements in order to avoid undefined behavior:

All commands that use this buffer object have finished execution before the read command begins execution
The buffer object is not mapped
The buffer object is not used by any command-queue until the read command has finished execution

LastError is set.

See also:

- 124.1.24 EnqueueReadBuffer(buffer as CLMemMBS, BlockingRead as boolean, offset as Integer, size as Integer, mem as Memoryblock, EventWaitList() as CLEventMBS, byref outEvent as CLEventMBS)

124.1.26 EnqueueReadImage(image as CLMemMBS, BlockingRead as boolean, sourceOriginX as Integer, sourceOriginY as Integer, sourceOriginZ as Integer, RegionWidth as Integer, RegionHeight as Integer, RegionDepth as Integer, RowPitch as Integer, SlicePitch as Integer, mem as Memoryblock, EventWaitList() as CLEventMBS, byref outEvent as CLEventMBS)


Function: Enqueues a command to read from a 2D or 3D image object to host memory.

Notes:

image: Refers to a valid 2D or 3D image object.

BlockingRead: Optional. Indicates if the read operations are blocking or non-blocking.

If BlockingRead is true i.e. the read command is blocking, clEnqueueReadImage does not return until the buffer data has been read and copied into memory pointed to by mem.

If BlockingRead is false i.e. map operation is non-blocking, clEnqueueReadImage queues a non-blocking read command and returns. The contents of the buffer that mem points to cannot be used until the read command has completed. The event argument returns an event object which can be used to query the execution status of the read command. When the read command has completed, the contents of the buffer that mem points to can be used by the application.
origin: Defines the (x, y, z) offset in pixels in the image from where to read. If image is a 2D image object, the z value given by sourceOriginZ must be 0.

region: Defines the (width, height, depth) in pixels of the 2D or 3D rectangle being read. If image is a 2D image object, the depth value given by RegionDepth must be 1.

RowPitch: The length of each row in bytes. This value must be greater than or equal to the element size in bytes * width. If RowPitch is set to 0, the appropriate row pitch is calculated based on the size of each element in bytes multiplied by width.

SlicePitch: Size in bytes of the 2D slice of the 3D region of a 3D image being read. This must be 0 if image is a 2D image. This value must be greater than or equal to RowPitch * height. If SlicePitch is set to 0, the appropriate slice pitch is calculated based on the RowPitch * height.

mem: The pointer to a buffer in host memory where image data is to be read from.

EventWaitList: Optional, Specify events that need to complete before this particular command can be executed. The events specified in event_wait_list act as synchronization points. The context associated with events in event_wait_list and command_queue must be the same.

outEvent: Optional, Returns an event object that identifies this particular read command and can be used to query or queue a wait for this particular command to complete. event can be nil in which case it will not be possible for the application to query the status of this command or queue a wait for this command to complete.

Calling EnqueueReadImage to read a region of the image object with the mem argument value set to HostPtr + (sourceOriginZ * image slice pitch + sourceOriginY * image row pitch + sourceOriginX * bytes per pixel), where host_ptr is a pointer to the memory region specified when the image object being read is created with kMemoryUseHostPtr, must meet the following requirements in order to avoid undefined behavior:

- All commands that use this image object have finished execution before the read command begins execution.
- The RowPitch and SlicePitch argument values in EnqueueReadImage must be set to the image row pitch and slice pitch.
- The image object is not mapped.
- The image object is not used by any command-queue until the read command has finished execution.

Lasterror is set.
See also:
124.1.27 EnqueueReadImage(image as CLMemMBS, sourceOriginX as Integer, sourceOriginY as Integer, sourceOriginZ as Integer, RegionWidth as Integer, RegionHeight as Integer, RegionDepth as Integer, RowPitch as Integer, SlicePitch as Integer, mem as Memoryblock)

**Function:** Enqueues a command to read from a 2D or 3D image object to host memory.  
**Notes:**

- `image`: Refers to a valid 2D or 3D image object.
- `BlockingRead`: Optional. Indicates if the read operations are blocking or non-blocking.

If `BlockingRead` is true i.e. the read command is blocking, `clEnqueueReadImage` does not return until the buffer data has been read and copied into memory pointed to by `mem`.

If `BlockingRead` is false i.e. map operation is non-blocking, `clEnqueueReadImage` queues a non-blocking read command and returns. The contents of the buffer that `mem` points to cannot be used until the read command has completed. The event argument returns an event object which can be used to query the execution status of the read command. When the read command has completed, the contents of the buffer that `mem` points to can be used by the application.

- `origin`: Defines the (x, y, z) offset in pixels in the image from where to read. If image is a 2D image object, the z value given by `sourceOriginZ` must be 0.
- `region`: Defines the (width, height, depth) in pixels of the 2D or 3D rectangle being read. If image is a 2D image object, the depth value given by `RegionDepth` must be 1.

- `RowPitch`: The length of each row in bytes. This value must be greater than or equal to the element size in bytes * `width`. If `RowPitch` is set to 0, the appropriate row pitch is calculated based on the size of each element in bytes multiplied by width.

- `SlicePitch`: Size in bytes of the 2D slice of the 3D region of a 3D image being read. This must be 0 if image is a 2D image. This value must be greater than or equal to `RowPitch` * `height`. If `SlicePitch` is set to 0, the appropriate slice pitch is calculated based on the `RowPitch` * `height`.

- `mem`: The pointer to a buffer in host memory where image data is to be read from.
EventWaitList: Optional, Specify events that need to complete before this particular command can be executed. The events specified in event_wait_list act as synchronization points. The context associated with events in event_wait_list and command_queue must be the same.

outEvent: Optional, Returns an event object that identifies this particular read command and can be used to query or queue a wait for this particular command to complete. event can be nil in which case it will not be possible for the application to query the status of this command or queue a wait for this command to complete.

Calling EnqueueReadImage to read a region of the image object with the mem argument value set to HostPtr + (sourceOriginZ * image slice pitch + sourceOriginY * image row pitch + sourceOriginX * bytes per pixel), where host_ptr is a pointer to the memory region specified when the image object being read is created with kMemoryUseHostPtr, must meet the following requirements in order to avoid undefined behavior:

- All commands that use this image object have finished execution before the read command begins execution.
- The RowPitch and SlicePitch argument values in EnqueueReadImage must be set to the image row pitch and slice pitch.
- The image object is not mapped.
- The image object is not used by any command-queue until the read command has finished execution.

LastError is set.

See also:

- 124.1.26 EnqueueReadImage(image as CLMemMBS, BlockingRead as boolean, sourceOriginX as Integer, sourceOriginY as Integer, sourceOriginZ as Integer, RegionWidth as Integer, RegionHeight as Integer, RegionDepth as Integer, RowPitch as Integer, SlicePitch as Integer, mem as Memoryblock, EventWaitList() as CLEventMBS, byref outEvent as CLEventMBS)

124.1.28 EnqueueReadPicture(image as CLMemMBS, sourceOriginX as Integer, sourceOriginY as Integer, RegionWidth as Integer, RegionHeight as Integer, pic as picture)


**Function:** Enqueues a command to read from a 2D or 3D image object to a Real Studio picture object.

**Example:**

```plaintext
const size = 500

// create test picture
dim pic1 as Picture = LogoMBS(size)

// create destination picture
```
dim pic2 as new Picture(size, size, 32)

// get device list
dim devices() as CLDeviceMBS = OpenCLMBS.AllDevices(CLDeviceMBS.kDeviceTypeAll)
dim device as CLDeviceMBS = devices(0)

// Create context for that device
dim c as new CLContextMBS(device)

// query what format Real Studio uses for pictures
dim RowPitch as Integer
dim format as CLImageFormatMBS = OpenCLMBS.GetPictureImageFormat(pic1, RowPitch)

// create a matching memory object
dim m as new CLMemMBS(c, CLMemMBS.kMemoryReadWrite, format, size, size, RowPitch)

// create command queue
dim cq as new CLCommandQueueMBS(c, device, 0)

// copy picture content into CLMem object
cq.EnqueueWritePicture(m, 0, 0, size, size, pic1)

// and copy back to second picture
cq.EnqueueReadPicture(m, 0, 0, size, size, pic2)

// finally display it
Backdrop = pic2

Notes:
image: Refers to a valid 2D or 3D image object.

origin: Defines the (x, y) offset in pixels in the image from where to read.
region: Defines the (width, height) in pixels of the 2D or 3D rectangle being read.

pic: The Real Studio picture object to write pixel data to.

This command is always blocking.
Lasterror is set.
124.1.29 EnqueueTask(kernel as CLKernelMBS)


Function: Enqueues a command to execute a kernel on a device.

Notes:

kernel: A valid kernel object. The OpenCL context associated with kernel and command_queue must be the same.
EventWaitList: Optional, Specify events that need to complete before this particular command can be executed. If EventWaitList is not passed or empty, then this particular command does not wait on any event to complete. The events specified in EventWaitList act as synchronization points. The context associated with events in EventWaitList and CLCommandQueueMBS must be the same.
outEvent: Optional, Returns an event object that identifies this particular kernel execution instance. Event objects are unique and can be used to identify a particular kernel execution instance later on.

The kernel is executed using a single work-item.

EnqueueTask is equivalent to calling EnqueueNDRangeKernel with work_dim = 1, global_work_size set to 1, and local_work_size set to 1.

LastError is set.

See also:

• 124.1.30 EnqueueTask(kernel as CLKernelMBS, EventWaitList() as CLEventMBS, byref outEvent as CLEventMBS)

124.1.30 EnqueueTask(kernel as CLKernelMBS, EventWaitList() as CLEventMBS, byref outEvent as CLEventMBS)


Function: Enqueues a command to execute a kernel on a device.

Notes:

kernel: A valid kernel object. The OpenCL context associated with kernel and command_queue must be the same.
EventWaitList: Optional, Specify events that need to complete before this particular command can be executed. If EventWaitList is not passed or empty, then this particular command does not wait on any event to complete. The events specified in EventWaitList act as synchronization points. The context associated with events in EventWaitList and CLCommandQueueMBS must be the same.
outEvent: Optional, Returns an event object that identifies this particular kernel execution instance. Event objects are unique and can be used to identify a particular kernel execution instance later on.

The kernel is executed using a single work-item.

EnqueueTask is equivalent to calling EnqueueNDRangeKernel with work_dim = 1, global_work_size set to 1, and local_work_size set to 1.
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Lasterror is set.
See also:

- 124.1.29 EnqueueTask(kernel as CLKernelMBS)

124.1.31 EnqueueUnmapMemObject(buffer as CLMemMBS, mem as Memoryblock)


Function: Enqueues a command to unmap a previously mapped region of a memory object.

Notes:

memobj: A valid memory object. The OpenCL context associated with CLCommandQueueMBS and memobj must be the same.

mem: The host address returned by a previous call to EnqueueMapBuffer or EnqueueMapImage for memobj. Do not use this memoryblock after it has been unmapped.

EventWaitList: Optionally, Specify events that need to complete before EnqueueUnmapMemObject can be executed. The events specified in event_wait_list act as synchronization points. The context associated with events in EventWaitList and CLCommandQueueMBS must be the same.

outEvent: Optionally, Returns an event object that identifies this particular copy command and can be used to query or queue a wait for this particular command to complete.

Reads or writes from the host using the pointer returned by EnqueueMapBuffer or EnqueueMapImage are considered to be complete.

EnqueueMapBuffer and EnqueueMapImage increments the mapped count of the memory object. The initial mapped count value of a memory object is zero. Multiple calls to EnqueueMapBuffer or EnqueueMapImage on the same memory object will increment this mapped count by appropriate number of calls. EnqueueUnmapMemObject decrements the mapped count of the memory object.

EnqueueMapBuffer and clEnqueueMapImage act as synchronization points for a region of the memory object being mapped.
See also:

- 124.1.32 EnqueueUnmapMemObject(buffer as CLMemMBS, mem as Memoryblock, EventWaitList() as CLEventMBS, byref outEvent as CLEventMBS)
124.1.32  **EnqueueUnmapMemObject(buffer as CLMemMBS, mem as MemoryBlock, EventWaitList() as CLEventMBS, byref outEvent as CLEventMBS)**


**Function:** Enqueues a command to unmap a previously mapped region of a memory object.

**Notes:**
- **memobj:** A valid memory object. The OpenCL context associated with CLCommandQueueMBS and memobj must be the same.
- **mem:** The host address returned by a previous call to EnqueueMapBuffer or EnqueueMapImage for memobj. Do not use this memoryblock after it has been unmapped.
- **EventWaitList:** Optionally, Specify events that need to complete before EnqueueUnmapMemObject can be executed. The events specified in event_wait_list act as synchronization points. The context associated with events in EventWaitList and CLCommandQueueMBS must be the same.
- **outEvent:** Optionally, Returns an event object that identifies this particular copy command and can be used to query or queue a wait for this particular command to complete.
- Reads or writes from the host using the pointer returned by EnqueueMapBuffer or EnqueueMapImage are considered to be complete.
- EnqueueMapBuffer and EnqueueMapImage increments the mapped count of the memory object. The initial mapped count value of a memory object is zero. Multiple calls to EnqueueMapBuffer or EnqueueMapImage on the same memory object will increment this mapped count by appropriate number of calls. EnqueueUnmapMemObject decrements the mapped count of the memory object.
- EnqueueMapBuffer and clEnqueueMapImage act as synchronization points for a region of the memory object being mapped.

See also:
- 124.1.31 EnqueueUnmapMemObject(buffer as CLMemMBS, mem as MemoryBlock)

124.1.33  **EnqueueWaitForEvents(EventWaitList() as CLEventMBS)**


**Function:** Enqueues a wait for a specific event or a list of events to complete before any future commands queued in the command-queue are executed.

**Notes:**
- **EventWaitList:** Events specified in EventWaitList act as synchronization points.
The context associated with events in EventWaitList and CLCommandQueueMBS must be the same.

Lasterror is set.

124.1.34 EnqueueWriteBuffer(buffer as CLMemMBS, BlockingWrite as boolean, offset as Integer, size as Integer, mem as Memoryblock, EventWaitList() as CLEventMBS, byref outEvent as CLEventMBS)

Function: Enqueue commands to write to a buffer object from host memory.
Notes:
buffer: Refers to a valid buffer object.
BlockingWrite: Optional, Indicates if the write operations are blocking or nonblocking.

If blocking_write is true, the OpenCL implementation copies the data referred to by mem and enqueues the write operation in the command-queue. The memory pointed to by mem can be reused by the application after the EnqueueWriteBuffer call returns.

If blocking_write is false, the OpenCL implementation will use mem to perform a nonblocking write. As the write is non-blocking the implementation can return immediately. The memory pointed to by mem cannot be reused by the application after the call returns. The event argument returns an event object which can be used to query the execution status of the write command. When the write command has completed, the memory pointed to by mem can then be reused by the application.

offset: The offset in bytes in the buffer object to write to.
size: The size in bytes of data being written.
mem: The pointer to buffer in host memory where data is to be written from.

EventWaitList: Optional. Specifies events that need to complete before this particular command can be executed. If EventWaitList is empty or not passed, then this particular command does not wait on any event to complete. The events specified in EventWaitList act as synchronization points. The context associated with events in EventWaitList and CLCommandQueueMBS must be the same.

outEvent: Optional. Returns an event object that identifies this particular write command and can be used to query or queue a wait for this particular command to complete.

Calling EnqueueWriteBuffer to update the latest bits in a region of the buffer object with the mem argument value set to host_ptr + offset, where host_ptr is a pointer to the memory region specified when the buffer object being written is created with CL_MEM_USE_HOST_PTR, must meet the following requirements in order to avoid undefined behavior:
The host memory region given by (mem + offset, size) contains the latest bits when the enqueued write command begins execution.
The buffer object is not mapped.
The buffer object is not used by any command-queue until the write command has finished execution.

Lasterror is set.
See also:

- 124.1.35 EnqueueWriteBuffer(buffer as CLMemMBS, offset as Integer, size as Integer, mem as Memoryblock)

124.1.35 EnqueueWriteBuffer(buffer as CLMemMBS, offset as Integer, size as Integer, mem as Memoryblock)


**Function:** Enqueue commands to write to a buffer object from host memory.

**Notes:**
buffer: Refers to a valid buffer object.
BlockingWrite: Optional, Indicates if the write operations are blocking or nonblocking.

If blocking_write is true, the OpenCL implementation copies the data referred to by mem and enqueues the write operation in the command-queue. The memory pointed to by mem can be reused by the application after the EnqueueWriteBuffer call returns.

If blocking_write is false, the OpenCL implementation will use mem to perform a nonblocking write. As the write is non-blocking the implementation can return immediately. The memory pointed to by mem cannot be reused by the application after the call returns. The event argument returns an event object which can be used to query the execution status of the write command. When the write command has completed, the memory pointed to by mem can then be reused by the application.

offset: The offset in bytes in the buffer object to write to.
size: The size in bytes of data being written.
mem: The pointer to buffer in host memory where data is to be written from.

EventWaitList: Optional. Specifies events that need to complete before this particular command can be executed. If EventWaitList is empty or not passed, then this particular command does not wait on any event to complete. The events specified in EventWaitList act as synchronization points. The context associated with events in EventWaitList and CLCommandQueueMBS must be the same.

outEvent: Optional. Returns an event object that identifies this particular write command and can be used to query or queue a wait for this particular command to complete.
124.1. **CLASS CLCOMMANDQUEUEMBS**

Calling `EnqueueWriteBuffer` to update the latest bits in a region of the buffer object with the `mem` argument value set to `host_ptr + offset`, where `host_ptr` is a pointer to the memory region specified when the buffer object being written is created with `CL_MEM_USE_HOST_PTR`, must meet the following requirements in order to avoid undefined behavior:

- The host memory region given by `(mem + offset, size)` contains the latest bits when the enqueued write command begins execution.
- The buffer object is not mapped.
- The buffer object is not used by any command-queue until the write command has finished execution.

`Lasterror` is set.

See also:

- `EnqueueWriteBuffer(buffer as CLMemMBS, BlockingWrite as boolean, offset as Integer, size as Integer, mem as Memoryblock, EventWaitList() as CLEventMBS, byref outEvent as CLEventMBS)`

124.1.36 **EnqueueWriteImage**


**Function:** Enqueues a command to write from a 2D or 3D image object to host memory.

**Notes:**

- `image`: Refers to a valid 2D or 3D image object.
- `BlockingWrite`: Optional. Indicates if the write operation is blocking or non-blocking.

If `BlockingWrite` is true the OpenCL implementation copies the data referred to by `mem` and enqueues the write command in the command-queue. The memory pointed to by `mem` can be reused by the application after the `clEnqueueWriteImage` call returns. If `BlockingWrite` is false the OpenCL implementation will use `mem` to perform a nonblocking write. As the write is non-blocking the implementation can return immediately. The memory pointed to by `mem` cannot be reused by the application after the call returns. The event argument returns an event object which can be used to query the execution status of the write command. When the write command has completed, the memory pointed to by `mem` can then be reused by the application.

- `origin`: Defines the `(x, y, z)` offset in pixels in the image from where to write or write. If image is a 2D image object, the `z` value given by `sourceOriginZ` must be 0.
region: Defines the (width, height, depth) in pixels of the 2D or 3D rectangle being write or written. If image is a 2D image object, the depth value given by RegionDepth must be 1.

RowPitch
The length of each row in bytes. This value must be greater than or equal to the element size in bytes * width. If RowPitch is set to 0, the appropriate row pitch is calculated based on the size of each element in bytes multiplied by width.

RowPitch: Size in bytes of the 2D slice of the 3D region of a 3D image being written. This must be 0 if image is a 2D image. This value must be greater than or equal to RowPitch * height. If SlicePitch is set to 0, the appropriate slice pitch is calculated based on the RowPitch * height.

mem: The pointer to a buffer in host memory where image data is to be written to.

EventWaitList: Optional. Specify events that need to complete before this particular command can be executed. The events specified in event_wait_list act as synchronization points. The context associated with events in event_wait_list and command_queue must be the same.

outEvent: Optional. Returns an event object that identifies this particular write command and can be used to query or queue a wait for this particular command to complete.

Calling EnqueueWriteImage to update the latest bits in a region of the image object with the mem argument value set to mem + (sourceOriginZ * image slice pitch + sourceOriginY * image row pitch + sourceOriginX * bytes per pixel), where mem is a pointer to the memory region specified when the image object being written is created with kMemoryUseHostPtr, must meet the following requirements in order to avoid undefined behavior:

- The host memory region being written contains the latest bits when the enqueued write command begins execution.
- The RowPitch and SlicePitch argument values in EnqueueWriteImage must be set to the image row pitch and slice pitch.
- The image object is not mapped.
- The image object is not used by any command-queue until the write command has finished execution.

See also:

- 124.1.37 EnqueueWriteImage(image as CLMemMBS,sourceOriginX as Integer, sourceOriginY as Integer, sourceOriginZ as Integer, RegionWidth as Integer, RegionHeight as Integer, RegionDepth as Integer, RowPitch as Integer, SlicePitch as Integer, mem as Memoryblock)
124.1.37 **EnqueueWriteImage**

(image as CLMemMBS, sourceOriginX as Integer, sourceOriginY as Integer, sourceOriginZ as Integer, RegionWidth as Integer, RegionHeight as Integer, RegionDepth as Integer, RowPitch as Integer, SlicePitch as Integer, mem as Memoryblock)

**Function:**
Enqueues a command to write from a 2D or 3D image object to host memory.

**Notes:**
- **image:** Refers to a valid 2D or 3D image object.
- **BlockingWrite:** Optional. Indicates if the write operation is blocking or non-blocking.

If BlockingWrite is true the OpenCL implementation copies the data referred to by mem and enqueues the write command in the command-queue. The memory pointed to by mem can be reused by the application after the clEnqueueWriteImage call returns. If BlockingWrite is false the OpenCL implementation will use mem to perform a nonblocking write. As the write is non-blocking the implementation can return immediately. The memory pointed to by mem cannot be reused by the application after the call returns. The event argument returns an event object which can be used to query the execution status of the write command. When the write command has completed, the memory pointed to by mem can then be reused by the application.

- **origin:** Defines the (x, y, z) offset in pixels in the image from where to write or write. If image is a 2D image object, the z value given by sourceOriginZ must be 0.

- **region:** Defines the (width, height, depth) in pixels of the 2D or 3D rectangle being write or written. If image is a 2D image object, the depth value given by RegionDepth must be 1.

- **RowPitch**
The length of each row in bytes. This value must be greater than or equal to the element size in bytes * width. If RowPitch is set to 0, the appropriate row pitch is calculated based on the size of each element in bytes multiplied by width.

- **RowPitch:** Size in bytes of the 2D slice of the 3D region of a 3D image being written. This must be 0 if image is a 2D image. This value must be greater than or equal to RowPitch * height. If SlicePitch is set to 0, the appropriate slice pitch is calculated based on the RowPitch * height.

- **mem:** The pointer to a buffer in host memory where image data is to be written to.

- **EventWaitList:** Optional. Specify events that need to complete before this particular command can be executed. The events specified in event_wait_list act as synchronization points. The context associated with events in event_wait_list and command_queue must be the same.
outEvent: Optional. Returns an event object that identifies this particular write command and can be used to query or queue a wait for this particular command to complete.

Calling EnqueueWriteImage to update the latest bits in a region of the image object with the mem argument value set to mem + (sourceOriginZ * image slice pitch + sourceOriginY * image row pitch + sourceOriginX * bytes per pixel), where mem is a pointer to the memory region specified when the image object being written is created with kMemoryUseHostPtr, must meet the following requirements in order to avoid undefined behavior:

- The host memory region being written contains the latest bits when the enqueued write command begins execution.
- The RowPitch and SlicePitch argument values in EnqueueWriteImage must be set to the image row pitch and slice pitch.
- The image object is not mapped.
- The image object is not used by any command-queue until the write command has finished execution.

See also:

- 124.1.36 EnqueueWriteImage(image as CLMemMBS, BlockingWrite as boolean, sourceOriginX as Integer, sourceOriginY as Integer, sourceOriginZ as Integer, RegionWidth as Integer, RegionHeight as Integer, RegionDepth as Integer, RowPitch as Integer, SlicePitch as Integer, mem as Memoryblock, EventWaitList() as CLEventMBS, byref outEvent as CLEventMBS)

124.1.38 EnqueueWritePicture(image as CLMemMBS, sourceOriginX as Integer, sourceOriginY as Integer, RegionWidth as Integer, RegionHeight as Integer, pic as picture)


**Function:** Enqueues a command to write from a 2D or 3D image object to a Real Studio Picture.

**Example:**

```plaintext
const size = 500

// create test picture
dim pic1 as Picture = LogoMBS(size)

// create destination picture
dim pic2 as new Picture(size, size, 32)

// get device list
dim devices() as CLDeviceMBS = OpenCLMBS.AllDevices(CLDeviceMBS.kDeviceTypeAll)
dim device as CLDeviceMBS = devices(0)

// Create context for that device
```
dim c as new CLContextMBS(device)

// query what format Real Studio uses for pictures
dim RowPitch as Integer
dim format as CLImageFormatMBS = OpenCLMBS.GetPictureImageFormat(pic1, RowPitch)

// create a matching memory object
dim m as new CLMemMBS(c, CLMemMBS.kMemoryReadWrite, format, size, size, RowPitch)

// create command queue
dim cq as new CLCommandQueueMBS(c, device, 0)

// copy picture content into CLMem object
cq.EnqueueWritePicture(m, 0, 0, size, size, pic1)

// and copy back to second picture
cq.EnqueueReadPicture(m, 0, 0, size, size, pic2)

// finally display it
Backdrop = pic2

Notes:

image: Refers to a valid 2D or 3D image object.

BlockingWrite: Optional. Indicates if the write operation is blocking or non-blocking.

origin: Defines the (x, y) offset in pixels in the image from where to write or write.

region: Defines the (width, height) in pixels of the 2D or 3D rectangle being write or written.

pic: The target Real Studio picture object. This must match in the image format for the image object and the size you specified in region.

This operation is always performed blocked.
Lasterror is set.

124.1.39 Finish


Function: Blocks until all previously queued OpenCL commands in a command-queue are issued to the associated device and have completed.
Notes:
Blocks until all previously queued OpenCL commands in command_queue are issued to the associated device and have completed.

Finish does not return until all queued commands in command_queue have been processed and completed. clFinish is also a synchronization point.

Lasterror is set.

124.1.40 Flush

Function: Issues all previously queued OpenCL commands in a command-queue to the device associated with the command-queue.
Notes:
Issues all previously queued OpenCL commands in command_queue to the device associated with command_queue.

Flush only guarantees that all queued commands to command_queue get issued to the appropriate device. There is no guarantee that they will be complete after Flush returns.

Lasterror is set.

Any blocking commands queued in a command-queue such as EnqueueReadImage or EnqueueReadBuffer with BlockingRead set to true, EnqueueWriteImage or EnqueueWriteBuffer with BlockingWrite set to true, EnqueueMapImage or EnqueueMapBuffer with BlockingMap set to true or WaitForEvents perform an implicit flush of the command-queue.

To use event objects that refer to commands enqueued in a command-queue as event objects to wait on by commands enqueued in a different command-queue, the application must call a Flush or any blocking commands that perform an implicit flush of the command-queue where the commands that refer to these event objects are enqueued.
Lasterror is set.

124.1.41 Properties as UInt32

Function: Return the currently specified properties for the command-queue.
Notes: Lasterror is set.
124.1.42 ReferenceCount as UInt32

Function: Return the command-queue reference count.
Notes: Lasterror is set.

124.1.43 Properties

124.1.44 Handle as Integer

Function: The internal object reference.
Notes:
Not zero if this object is valid.
(Read and Write property)

124.1.45 LastError as Integer

Function: The last error code.
Notes:
See error constants in OpenCLMBS module.
The plugin uses lasterror = -1 for the case a function is not available.
(Read and Write property)
124.2 class CLContextMBS

124.2.1 class CLContextMBS


Function: The OpenCL class for a context.

Example:

```vba
Dim devices(-1) As CLDeviceMBS = OpenCLMBS.AllDevices(CLDeviceMBS.kDeviceTypeGPU)
Dim device As CLDeviceMBS = devices(0) // we use first one

// Create a context
Dim context As New CLContextMBS(device, CLContextMBS.kErrorModeLogMessagesToSystemLog)
```

Notes: Contexts are used by the OpenCL runtime for managing objects such as command-queues, memory, program and kernel objects and for executing kernels on one or more devices specified in the context.

124.2.2 Methods

124.2.3 Constructor(Device as CLDeviceMBS, ErrorHandlerMode as Integer = 0)


Function: Creates an OpenCL context.

Example:

```vba
Dim devices(-1) As CLDeviceMBS = OpenCLMBS.AllDevices(CLDeviceMBS.kDeviceTypeGPU)
Dim device As CLDeviceMBS = devices(0) // we use first one

// Create a context
Dim context As New CLContextMBS(device, CLContextMBS.kErrorModeLogMessagesToSystemLog)
```

Notes:
Platform: Optional, Specifies the platform to use.
Devices: The devices you want to use. Can be one or several devices. If you specify none, the default one is picked.
ErrorHandlerMode: The error handler mode. Check kErrorMode* constants.

LastError is set.
See also:
124.2. **CLASS CLCONTEXTMBS**

- 124.2.4 Constructor(Devices() as CLDeviceMBS, ErrorHandlerMode as Integer = 0) 17293
- 124.2.5 Constructor(DeviceType as Integer, ErrorHandlerMode as Integer = 0) 17293
- 124.2.6 Constructor(Platform as CLPlatformMBS, Device as CLDeviceMBS, ErrorHandlerMode as Integer = 0) 17294
- 124.2.7 Constructor(Platform as CLPlatformMBS, Devices() as CLDeviceMBS, ErrorHandlerMode as Integer = 0) 17295
- 124.2.8 Constructor(Platform as CLPlatformMBS, DeviceType as Integer, ErrorHandlerMode as Integer = 0) 17296

124.2.4 **Constructor(Devices() as CLDeviceMBS, ErrorHandlerMode as Integer = 0)**


**Function:** Creates an OpenCL context.

**Notes:**

- Platform: Optional, specifies the platform to use.
- Devices: The devices you want to use. Can be one or several devices. If you specify none, the default one is picked.
- ErrorHandlerMode: The error handler mode. Check kErrorMode* constants.

LastError is set.

See also:

- 124.2.3 Constructor(Device as CLDeviceMBS, ErrorHandlerMode as Integer = 0) 17292
- 124.2.5 Constructor(DeviceType as Integer, ErrorHandlerMode as Integer = 0) 17293
- 124.2.6 Constructor(Platform as CLPlatformMBS, Device as CLDeviceMBS, ErrorHandlerMode as Integer = 0) 17294
- 124.2.7 Constructor(Platform as CLPlatformMBS, Devices() as CLDeviceMBS, ErrorHandlerMode as Integer = 0) 17295
- 124.2.8 Constructor(Platform as CLPlatformMBS, DeviceType as Integer, ErrorHandlerMode as Integer = 0) 17296

124.2.5 **Constructor(DeviceType as Integer, ErrorHandlerMode as Integer = 0)**


**Function:** Create an OpenCL context from a device type that identifies the specific device(s) to use.

**Example:**
dim co as new CLContextMBS(CLDeviceMBS.kDeviceTypeAll)

Notes:
Platform: Optional, Specifies the platform to use.
DeviceType: A bit-field that identifies the type of device and is described in the table below.
ErrorHandlerMode: The error handler mode. Check kErrorMode* constants.

<table>
<thead>
<tr>
<th>Constants</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kDeviceTypeCPU</td>
<td>An OpenCL device that is the host processor. The host processor runs the OpenCL implementations and is a single or multi-core CPU.</td>
</tr>
<tr>
<td>kDeviceTypeGPU</td>
<td>An OpenCL device that is a GPU. By this we mean that the device can also be used to accelerate a 3D API such as OpenGL or DirectX.</td>
</tr>
<tr>
<td>kDeviceTypeAccelerator</td>
<td>Dedicated OpenCL accelerators (for example the IBM CELL Blade). These devices communicate with the host processor using a peripheral interconnect such as PCIe.</td>
</tr>
<tr>
<td>kDeviceTypeDefault</td>
<td>The default OpenCL device in the system.</td>
</tr>
<tr>
<td>kDeviceTypeAll</td>
<td>All OpenCL devices available in the system.</td>
</tr>
</tbody>
</table>

Lasterror is set.

See also:

- 124.2.3 Constructor(Device as CLDeviceMBS, ErrorHandlerMode as Integer = 0) 17292
- 124.2.4 Constructor(Devices() as CLDeviceMBS, ErrorHandlerMode as Integer = 0) 17293
- 124.2.6 Constructor(Platform as CLPlatformMBS, Device as CLDeviceMBS, ErrorHandlerMode as Integer = 0) 17294
- 124.2.7 Constructor(Platform as CLPlatformMBS, Devices() as CLDeviceMBS, ErrorHandlerMode as Integer = 0) 17295
- 124.2.8 Constructor(Platform as CLPlatformMBS, DeviceType as Integer, ErrorHandlerMode as Integer = 0) 17296

124.2.6 Constructor(Platform as CLPlatformMBS, Device as CLDeviceMBS, ErrorHandlerMode as Integer = 0)


Notes:
Platform: Specifies the platform to use.
Devices: The devices you want to use. Can be one or several devices. If you specify none, the default one is picked.
124.2. CLASS CLCONTEXTMBS

ErrorHandlerMode: The error handler mode. Check kErrorMode* constants.

LastError is set.
See also:

- 124.2.3 Constructor(Device as CLDeviceMBS, ErrorHandlerMode as Integer = 0) 17292
- 124.2.4 Constructor(Devices() as CLDeviceMBS, ErrorHandlerMode as Integer = 0) 17293
- 124.2.5 Constructor(DeviceType as Integer, ErrorHandlerMode as Integer = 0) 17293
- 124.2.7 Constructor(Platform as CLPlatformMBS, Devices() as CLDeviceMBS, ErrorHandlerMode as Integer = 0) 17295
- 124.2.8 Constructor(Platform as CLPlatformMBS, DeviceType as Integer, ErrorHandlerMode as Integer = 0) 17296

124.2.7 Constructor(Platform as CLPlatformMBS, Devices() as CLDeviceMBS, ErrorHandlerMode as Integer = 0)


Function: Creates an OpenCL context.

Notes:
Platform: Specifies the platform to use.
Devices: The devices you want to use. Can be one or several devices. If you specify none, the default one is picked.
ErrorHandlerMode: The error handler mode. Check kErrorMode* constants.

LastError is set.
See also:

- 124.2.3 Constructor(Device as CLDeviceMBS, ErrorHandlerMode as Integer = 0) 17292
- 124.2.4 Constructor(Devices() as CLDeviceMBS, ErrorHandlerMode as Integer = 0) 17293
- 124.2.5 Constructor(DeviceType as Integer, ErrorHandlerMode as Integer = 0) 17293
- 124.2.6 Constructor(Platform as CLPlatformMBS, Device as CLDeviceMBS, ErrorHandlerMode as Integer = 0) 17294
- 124.2.8 Constructor(Platform as CLPlatformMBS, DeviceType as Integer, ErrorHandlerMode as Integer = 0) 17296
124.2.8 Constructor(Platform as CLPlatformMBS, DeviceType as Integer, ErrorHandlerMode as Integer = 0)


**Function:** Create an OpenCL context from a device type that identifies the specific device(s) to use.

**Notes:**

Platform: Optional, Specifies the platform to use.
DeviceType: A bit-field that identifies the type of device and is described in the table below.
ErrorHandlerMode: The error handler mode. Check kErrorMode* constants.

<table>
<thead>
<tr>
<th>Constants</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kDeviceTypeCPU</td>
<td>An OpenCL device that is the host processor. The host processor runs the</td>
</tr>
<tr>
<td></td>
<td>OpenCL implementations and is a single or multi-core CPU.</td>
</tr>
<tr>
<td>kDeviceTypeGPU</td>
<td>An OpenCL device that is a GPU. By this we mean that the device can also</td>
</tr>
<tr>
<td></td>
<td>be used to accelerate a 3D API such as OpenGL or DirectX.</td>
</tr>
<tr>
<td>kDeviceTypeAccelerator</td>
<td>Dedicated OpenCL accelerators (for example the IBM CELL Blade). These</td>
</tr>
<tr>
<td></td>
<td>devices communicate with the host processor using a peripheral interconnect</td>
</tr>
<tr>
<td></td>
<td>such as PCIe.</td>
</tr>
<tr>
<td>kDeviceTypeDefault</td>
<td>The default OpenCL device in the system.</td>
</tr>
<tr>
<td>kDeviceTypeAll</td>
<td>All OpenCL devices available in the system.</td>
</tr>
</tbody>
</table>

LastError is set.

See also:

- 124.2.3 Constructor(Device as CLDeviceMBS, ErrorHandlerMode as Integer = 0) 17292
- 124.2.4 Constructor(Devices() as CLDeviceMBS, ErrorHandlerMode as Integer = 0) 17293
- 124.2.5 Constructor(DeviceType as Integer, ErrorHandlerMode as Integer = 0) 17293
- 124.2.6 Constructor(Platform as CLPlatformMBS, Device as CLDeviceMBS, ErrorHandlerMode as Integer = 0) 17294
- 124.2.7 Constructor(Platform as CLPlatformMBS, Devices() as CLDeviceMBS, ErrorHandlerMode as Integer = 0) 17295

124.2.9 Devices as CLDeviceMBS()


**Function:** Return the list of devices in context.

**Example:**

```c
// create context for all devices
dim co as new CLContextMBS(CLDeviceMBS.kDeviceTypeAll)

// and query it for it’s devices
```
for each d as CLDeviceMBS in co.Devices
MsgBox d.Name
next

124.2.10 GetSupportedImageFormats(flags as UInt64, type as UInt32) as CLImageFormatMBS()

**Function:** Get the list of image formats supported by an OpenCL implementation.

**Example:**

dim co as new CLContextMBS(CLDeviceMBS.kDeviceTypeAll)
dim formats(-1) as CLImageFormatMBS = co.GetSupportedImageFormats(CLMemMBS.kMemoryReadWrite, CLMemMBS.kMemoryTypeImage2D)
dim lines(-1) as string

for each f as CLImageFormatMBS in formats
   // see constants for what this values mean
   lines.Append hex(f.ImageChannelOrder)+" - " +hex(f.ImageChannelDataType)
next
MsgBox Join(lines,EndOfLine)

**Notes:**

self: A valid OpenCL context on which the image object(s) will be created.
flags: A bit-field that is used to specify allocation and usage information about the image memory object being created and is described in the List of supported cl_mem_flags values for clCreateBuffer
type: Describes the image type and must be either kMemoryTypeImage2D or kMemoryTypeImage3D.

Returns an array of imageformat objects.

124.2.11 ReferenceCount as UInt32

**Function:** Return the context reference count.

**Example:**

dim devices(-1) as CLDeviceMBS = OpenCLMBS.AllDevices(CLDeviceMBS.kDeviceTypeGPU)
dim device as CLDeviceMBS = devices(0) // we use first one
// Create a context
Dim context as New CLContextMBS(device, CLContextMBS.kErrorModeLogMessagesToSystemLog)
MsgBox str(context.ReferenceCount) // 1

// Create a command queue
Dim queue as New CLCommandQueueMBS(context, device, 0)
MsgBox str(context.ReferenceCount) // 2 as the command queue points to the context, too.

### 124.2.12 Properties

#### 124.2.13 Handle as Integer

**Function:** The internal object reference.
**Notes:**
Not zero if this object is valid.
(Read and Write property)

#### 124.2.14 LastError as Integer

**Function:** The last error code.
**Notes:**
See error constants in OpenCLMBS module.
The plugin uses lasterror = -1 for the case a function is not available.
(Read and Write property)

### 124.2.15 Constants

#### 124.2.16 kErrorModeIgnore = 0

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the error mode constants.
124.2. CLASS CLCONTEXTMBS

124.2.17 kErrorModeLogMessagesToStderr = 3

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function**: One of the error mode constants. **Notes**: Sends all log messages to the file descriptor stderr.

124.2.18 kErrorModeLogMessagesToStdout = 2

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function**: One of the error mode constants. **Notes**: Sends all log messages to the file descriptor stdout.

124.2.19 kErrorModeLogMessagesToSystemLog = 1

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function**: One of the error mode constants. **Notes**: Fowards on all log messages to the Apple System Logger.
124.3  class CLDeviceMBS

124.3.1  class CLDeviceMBS

Function: The class for an OpenCL Device.

124.3.2  Methods

124.3.3  AddressBits as UInt32

Function: The default compute device address space size specified as an unsigned integer value in bits.
Example:

dim Devices(-1) as CLDeviceMBS = OpenCLMBS.AllDevices(CLDeviceMBS.kDeviceTypeAll)

for each p as CLDeviceMBS in Devices
    MsgBox p.Name + " : " + str(p.AddressBits)
next

Notes:
Currently supported values are 32 or 64 bits.
LastError is set.

124.3.4  Available as Boolean

Function: Returns true if the device is available and false if the device is not available.
Notes: Lasterror is set.

124.3.5  CompilerAvailable as Boolean

Function: Returns false if the implementation does not have a compiler available to compile the program
source.
Notes:
Is true if the compiler is available. This can be false for the embedded platform profile only.
124.3. CLASS CLDEVICEMBS

Lasterror is set.

124.3.6 DeviceType as UInt64

Function: The OpenCL device type.
Notes:
Currently supported values are one of or a combination of: kDeviceTypeCPU, kDeviceTypeGPU, kDeviceTypeAccelerator, or kDeviceTypeDefault.
Lasterror is set.

124.3.7 DeviceVersion as String

Function: OpenCL version string.
Notes:
Returns the OpenCL version supported by the device. This version string has the following format:

OpenCL<space><major_version.minor_version><space><vendor-specific information>

The major_version.minor_version value returned will be 1.0.
Lasterror is set.

124.3.8 DriverVersion as String

Function: OpenCL software driver version string in the form major_number.minor_number.
Notes: Lasterror is set.

124.3.9 EndianLittle as Boolean

Function: Returns true if the OpenCL device is a little endian device and false otherwise.
Notes: Lasterror is set.
124.3.10 ErrorCorrectionSupport as Boolean

Function: Returns true if the device implements error correction for the memories, caches, registers etc. in
the device.
Notes:
Returns false if the device does not implement error correction. This can be a requirement for certain clients
of OpenCL.
Lasterror is set.

124.3.11 ExecutionCapabilities as UInt64

Function: Describes the execution capabilities of the device.
Notes:
This is a bit-field that describes one or more of the following values:

kExecKernel - The OpenCL device can execute OpenCL kernels.
kExecNativeKernel - The OpenCL device can execute native kernels.

The mandated minimum capability is kExecKernel.
Lasterror is set.

124.3.12 Extensions as String

Function: Returns a space separated list of extension names.
Example:

// show msgbox with all extensions for first device

dim devices(-1) as CLDeviceMBS = OpenCLMBS.AllDevices(CLDeviceMBS.kDeviceTypeAll)
dim device as CLDeviceMBS = devices(0)

dim extensions(-1) as string = split(device.Extensions, “ “)

dim lines(-1) as string

for each extension as string in extensions
    lines.append extension
next
**124.3. CLASS CLDEVICEMBS**

MsgBox Join(lines,EndOfLine)

**Notes:**

(the extension names themselves do not contain any spaces).
The list of extension names returned currently can include one or more of the following approved extension names:

- cl_khr_fp64
- cl_khr_select_fprounding_mode
- cl_khr_global_int32_base_atomics
- cl_khr_global_int32_extended_atomics
- cl_khr_local_int32_base_atomics
- cl_khr_local_int32_extended_atomics
- cl_khr_int64_base_atomics
- cl_khr_int64_extended_atomics
- cl_khr_3d_image_writes
- cl_khr_byte_addressable_store
- cl_khr_fp16

Lasterror is set.

**124.3.13 GlobalMemoryCacheLineSize as UInt32**

**Function:** Size of global memory cache line in bytes. 
**Notes:** Lasterror is set.

**124.3.14 GlobalMemoryCacheSize as UInt64**

**Function:** Size of global memory cache in bytes. 
**Notes:** Lasterror is set.

**124.3.15 GlobalMemoryCacheType as UInt32**

**Function:** Type of global memory cache supported. 
**Notes:**
See kCacheMemType* constants.
Lasterror is set.

124.3.16 GlobalMemorySize as UInt64

Function: Size of global device memory in bytes.
Notes: Lasterror is set.

124.3.17 Image2DMaxHeight as UInt32

Function: Max height of 2D image in pixels.
Notes:
The minimum value is 8192 if ImageSupport is true.
Lasterror is set.

124.3.18 Image2DMaxWidth as UInt32

Function: Max width of 2D image in pixels.
Notes:
The minimum value is 8192 if ImageSupport is true.
Lasterror is set.

124.3.19 Image3DMaxDepth as UInt32

Function: Max depth of 3D image in pixels.
Notes:
The minimum value is 2048 if ImageSupport is true.
Lasterror is set.
124.3. **CLASS CLDEVICEMBS**

124.3.20 **Image3DMaxHeight as UInt32**


**Function:** Max height of 3D image in pixels.

**Notes:**

The minimum value is 2048 if ImageSupport is true. Lasterror is set.

124.3.21 **Image3DMaxWidth as UInt32**


**Function:** Max width of 3D image in pixels.

**Notes:**

The minimum value is 2048 if ImageSupport is true. Lasterror is set.

124.3.22 **ImageSupport as Boolean**


**Function:** Returns true if images are supported by the OpenCL device and false otherwise.

**Notes:** Lasterror is set.

124.3.23 **LocalMemorySize as UInt64**


**Function:** Size of local memory arena in bytes.

**Notes:**

The minimum value is 16 KB. Lasterror is set.

124.3.24 **LocalMemType as UInt32**


**Function:** Type of local memory supported.

**Notes:**

This can be set to kMemTypeLocal implying dedicated local memory storage such as SRAM, or kMemType-Global.
124.3.25 MaxClockFrequency as UInt32

Function: Maximum configured clock frequency of the device in MHz.
Notes: Lasterror is set.

124.3.26 MaxComputeUnits as UInt32

Function: The number of parallel compute cores on the OpenCL device.
Notes:
The minimum value is 1.
Lasterror is set.

124.3.27 MaxConstantArgs as UInt32

Function: Max number of arguments declared with the __constant qualifier in a kernel.
Notes:
The minimum value is 8.
Lasterror is set.

124.3.28 MaxConstantBufferSize as UInt64

Function: Max size in bytes of a constant buffer allocation.
Notes:
The minimum value is 64 KB.
Lasterror is set.

124.3.29 MaxMemoryAllocSize as UInt64

Function: Max size of memory object allocation in bytes.
124.3. CLASS CLDEVICEMBS

Notes:
The minimum value is max (1/4th of GlobalMemorySize, 128*1024*1024)
Lasterror is set.

124.3.30 MaxParameterSize as UInt32

Function: Max size in bytes of the arguments that can be passed to a kernel.
Notes:
The minimum value is 256.
Lasterror is set.

124.3.31 MaxReadImageArgs as UInt32

Function: Max number of simultaneous image objects that can be read by a kernel.
Notes:
Lasterror is set.
The minimum value is 128 if ImageSupport is true.

124.3.32 MaxSamplers as UInt32

Function: Maximum number of samplers that can be used in a kernel.
Notes:
The minimum value is 16 if ImageSupport is true.
Lasterror is set.

124.3.33 MaxWorkGroupSize as UInt32

Function: Maximum number of work-items in a work-group executing a kernel using the data parallel execution model.
Notes:
(Refer to EnqueueNDRangeKernel). The minimum value is 1.
Lasterror is set.
124.3.34  MaxWorkItemDimensions as UInt32

Function: Maximum dimensions that specify the global and local work-item IDs used by the data parallel execution model.
Notes:
(Refer to EnqueueNDRangeKernel). The minimum value is 3.
LastError is set.

124.3.35  MaxWriteImageArgs as UInt32

Function: Max number of simultaneous image objects that can be written to by a kernel.
Notes:
The minimum value is 8 if ImageSupport is true.
LastError is set.

124.3.36  MemoryBaseAddressAlign as UInt32

Function: Describes the alignment in bits of the base address of any allocated memory object.
Notes: Lasterror is set.

124.3.37  MinDataTypeAlignSize as UInt32

Function: The smallest alignment in bytes which can be used for any data type.
Notes: Lasterror is set.

124.3.38  Name as String

Function: Device name string.
Example:

dim Devices(-1) as CLDeviceMBS = OpenCLMBS.AllDevices(CLDeviceMBS.kDeviceTypeAll)
for each p as CLDeviceMBS in Devices
MsgBox p.Name
Notes: Lasterror is set.

124.3.39 Platform as CLPlatformMBS

Function: The platform associated with this device.
Notes: Lasterror is set.

124.3.40 PreferredVectorWidthChar as UInt32

Function: Preferred native vector width size for built-in scalar types that can be put into vectors.
Notes: The vector width is defined as the number of scalar elements that can be stored in the vector.
Lasterror is set.

124.3.41 PreferredVectorWidthDouble as UInt32

Function: Preferred native vector width size for built-in scalar types that can be put into vectors.
Notes: The vector width is defined as the number of scalar elements that can be stored in the vector.

If the cl_khr_fp64 extension is not supported, this function must return 0.
Lasterror is set.

124.3.42 PreferredVectorWidthFloat as UInt32

Function: Preferred native vector width size for built-in scalar types that can be put into vectors.
Notes: The vector width is defined as the number of scalar elements that can be stored in the vector.
Lasterror is set.
124.3.43 PreferredVectorWidthInt as UInt32

Function: Preferred native vector width size for built-in scalar types that can be put into vectors.
Notes:
The vector width is defined as the number of scalar elements that can be stored in the vector.
Lasterror is set.

124.3.44 PreferredVectorWidthLong as UInt32

Function: Preferred native vector width size for built-in scalar types that can be put into vectors.
Notes:
The vector width is defined as the number of scalar elements that can be stored in the vector.
Lasterror is set.

124.3.45 PreferredVectorWidthShort as UInt32

Function: Preferred native vector width size for built-in scalar types that can be put into vectors.
Notes:
The vector width is defined as the number of scalar elements that can be stored in the vector.
Lasterror is set.

124.3.46 Profile as String

Function: OpenCL profile string.
Notes:
Returns the profile name supported by the device (see note). The profile name returned can be one of the following strings:

FULL_PROFILE - if the device supports the OpenCL specification (functionality defined as part of the core specification and does not require any extensions to be supported).

EMBEDDED_PROFILE - if the device supports the OpenCL embedded profile.
Lasterror is set.
124.3. CLASS CLDEVICEMBS

124.3.47 ProfilingTimerResolution as UInt32

Function: Describes the resolution of device timer. This is measured in nanoseconds.
Notes: Lasterror is set.

124.3.48 QueueProperties as UInt64

Function: Describes the command-queue properties supported by the device.
Notes:
See kQueueOutOfOrderExecModeEnable and kQueueProfilingEnable.
Lasterror is set.

124.3.49 SingleFPConfig as UInt64

Function: Describes single precision floating-point capability of the device.
Notes:
The mandated minimum floating-point capability is kFPRoundToNearest+kFPInfNAN.
Lasterror is set.

124.3.50 Vendor as String

Function: Vendor name string.
Notes: Lasterror is set.

124.3.51 VendorID as UInt32

Function: A unique device vendor identifier.
Notes:
An example of a unique device identifier could be the PCIe ID.
Lasterror is set.
124.3.52 Properties

124.3.53 Handle as Integer

Function: The internal object reference.
Notes:
Not zero if this object is valid.
(Read and Write property)

124.3.54 LastError as Integer

Function: The last error code.
Notes:
See error constants in OpenCLMBS module.
The plugin uses lasterror = -1 for the case a function is not available.
(Read and Write property)

124.3.55 Constants

124.3.56 kCacheMemTypeNone = 0


124.3.57 kCacheMemTypeReadOnlyCache = 1

Notes: Read Only Cache.

124.3.58 kCacheMemTypeReadWriteCache = 2

Notes: Read/Write Cache.
124.3. \texttt{CLASS CLDEVICEMBS}

124.3.59 \texttt{kDeviceTypeAccelerator} = 8

MBS MacFrameworks Plugin, Plugin Version: 11.1. \textbf{Function:} One of the device type constants.  
\textbf{Notes:} Accelerator = some special acceleration device

124.3.60 \texttt{kDeviceTypeAll} = \& \texttt{xffffffff}

MBS MacFrameworks Plugin, Plugin Version: 11.1. \textbf{Function:} One of the device type constants.  
\textbf{Notes:} This is the bitmask to catch all possible types.

124.3.61 \texttt{kDeviceTypeCPU} = 2

MBS MacFrameworks Plugin, Plugin Version: 11.1. \textbf{Function:} One of the device type constants.  
\textbf{Notes:} CPU = your processor

124.3.62 \texttt{kDeviceTypeDefault} = 1

MBS MacFrameworks Plugin, Plugin Version: 11.1. \textbf{Function:} One of the device type constants.  
\textbf{Notes:} Default device.

124.3.63 \texttt{kDeviceTypeGPU} = 4

MBS MacFrameworks Plugin, Plugin Version: 11.1. \textbf{Function:} One of the device type constants.  
\textbf{Notes:} GPU = your graphics card

124.3.64 \texttt{kExceNativeKernel} = 2

MBS MacFrameworks Plugin, Plugin Version: 11.1. \textbf{Function:} One of the execution capabilities constants.  
\textbf{Notes:} The OpenCL device can execute native kernels.

124.3.65 \texttt{kExecKernel} = 1

MBS MacFrameworks Plugin, Plugin Version: 11.1. \textbf{Function:} One of the execution capabilities constants.  
\textbf{Notes:} The OpenCL device can execute OpenCL kernels.
124.3.66  **kFPDenorm = 1**

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the floating point capabilities constants.
**Notes:** denorms are supported

124.3.67  **kFPFMA = 32**

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the floating point capabilities constants.
**Notes:** IEEE754-2008 fused multiply-add is supported

124.3.68  **kFPInfNAN = 2**

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the floating point capabilities constants.
**Notes:** INF and quiet NaNs are supported

124.3.69  **kFPRoundToInf = 16**

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the floating point capabilities constants.
**Notes:** Round to +ve and -ve infinity rounding modes supported

124.3.70  **kFPRoundToNearest = 4**

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the floating point capabilities constants.
**Notes:** Round to nearest even rounding mode supported

124.3.71  **kFPRoundToZero = 8**

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the floating point capabilities constants.
**Notes:** Round to zero rounding mode supported
124.3.72  kMemTypeGlobal = 2

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the memory type constants. **Notes:** Dedicated local memory storage such as SRAM.

124.3.73  kMemTypeLocal = 1

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the memory type constants.

124.3.74  kQueueOutOfOrderExecModeEnable = 1

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the queue properties constants. **Notes:** Out of order execution mode enabled.

124.3.75  kQueueProfilingEnable = 2

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the queue properties constants. **Notes:** Profiling enabled.
124.4 class CLEventMBS

124.4.1 class CLEventMBS

Function: The class for an OpenCL event.
Notes: You can chain several operations together inside a command queue. With events you can have an item execute after another item.

124.4.2 Methods

124.4.3 CommandExecutionStatus as Integer

Function: Return the execution status of the command identified by event.
Notes:
See kCommandExecutionStatus* constants.
Lasterror is set.

124.4.4 CommandQueue as CLCommandQueueMBS

Function: Return the command-queue associated with event.
Notes: Lasterror is set.

124.4.5 CommandType as(UInt32

Function: Return the command associated with event.
Notes:
See kCommand* constants.
Lasterror is set.

124.4.6 ProfilingCommandEnd as UInt64

Function: A 64-bit value that describes the current device time counter in nanoseconds when the command
identified by event has finished execution on the device.

Notes: Lasterror is set.

### 124.4.7 ProfilingCommandQueued as.UInt64


**Function:** A 64-bit value that describes the current device time counter in nanoseconds when the command identified by event is enqueued in a command-queue by the host.

**Notes:** Lasterror is set.

### 124.4.8 ProfilingCommandStart as UInt64


**Function:** A 64-bit value that describes the current device time counter in nanoseconds when the command identified by event starts execution on the device.

**Notes:** Lasterror is set.

### 124.4.9 ProfilingCommandSubmit as UInt64


**Function:** A 64-bit value that describes the current device time counter in nanoseconds when the command identified by event that has been enqueued is submitted by the host to the device associated with the commandqueue.

**Notes:** Lasterror is set.

### 124.4.10 ReferenceCount as UInt32


**Function:** Return the event reference count.

**Notes:**
The reference count returned should be considered immediately stale. It is unsuitable for general use in applications. This feature is provided for identifying memory leaks. Lasterror is set.
124.4.11 Properties

124.4.12 Handle as Integer

Function: The internal object reference.
Notes: Not zero if this object is valid.
(Read and Write property)

124.4.13 LastError as Integer

Function: The last error code.
Notes: See error constants in OpenCLMBS module.
The plugin uses lasterror = -1 for the case a function is not available.
(Read and Write property)

124.4.14 Constants

124.4.15 kCommandAcquireGLObjects = & h11FF

Notes: Acquire GL objects

124.4.16 kCommandCopyBuffer = & h11F5

Notes: Copy Buffer

124.4.17 kCommandCopyBufferToImage = & h11FA

Notes: Copy Buffer to Image
124.4. CLASS CLEVENTMBS

124.4.18  \( k\text{CommandCopyImage} = \& h11F8 \)

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the command type constants.
**Notes:** Copy Image

124.4.19  \( k\text{CommandCopyImageToBuffer} = \& h11F9 \)

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the command type constants.
**Notes:** Copy Image to Buffer

124.4.20  \( k\text{CommandExecutionStatusComplete} = 0 \)

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the command execution status constants.
**Notes:** The command has completed.

124.4.21  \( k\text{CommandExecutionStatusQueued} = 3 \)

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the command execution status constants.
**Notes:** command has been enqueued in the command-queue.

124.4.22  \( k\text{CommandExecutionStatusRunning} = 1 \)

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the command execution status constants.
**Notes:** Device is currently executing this command.

124.4.23  \( k\text{CommandExecutionStatusSubmitted} = 2 \)

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the command execution status constants.
**Notes:** enqueued command has been submitted by the host to the device associated with the command-queue.
124.4.24  kCommandMapBuffer = & h11FB

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the command type constants. 
**Notes:** Map Buffer

124.4.25  kCommandMapImage = & h11FC

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the command type constants. 
**Notes:** Map Image

124.4.26  kCommandMarker = & h11FE

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the command type constants. 
**Notes:** Marker

124.4.27  kCommandNativeKernel = & h11F2

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the command type constants. 
**Notes:** Execute Native Kernel

124.4.28  kCommandNDRangeKernel = & h11F0

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the command type constants. 
**Notes:** Execute a ND Range Kernel

124.4.29  kCommandReadBuffer = & h11F3

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the command type constants. 
**Notes:** Read Buffer

124.4.30  kCommandReadImage = & h11F6

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the command type constants. 
**Notes:** Read Image
124.4.31 kCommandReleaseGLObjects = & h1200

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the command type constants. **Notes:** Release GL objects

124.4.32 kCommandTask = & h11F1

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the command type constants. **Notes:** Execute task

124.4.33 kCommandUnmapMemObject = & h11FD

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the command type constants. **Notes:** Unmap memory object

124.4.34 kCommandWriteBuffer = & h11F4

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the command type constants. **Notes:** Write Buffer

124.4.35 kCommandWriteImage = & h11F7

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the command type constants. **Notes:** Write Image
124.5  class CLImageFormatMBS

124.5.1  class CLImageFormatMBS

Function: the OpenCL class for an image format.

124.5.2  Properties

124.5.3  ImageChannelDataType as Integer

Function: Describes the size of the channel data type. 
Notes: 
The number of bits per element determined by the ImageChannelDataType and ImageChannelOrder must 
be a power of two. The list of supported values is described in the table below.

<table>
<thead>
<tr>
<th>Image Channel Data Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kChannelTypeSNormInt8</td>
<td>Each channel component is a normalized signed 8-bit integer value.</td>
</tr>
<tr>
<td>kChannelTypeSNormInt16</td>
<td>Each channel component is a normalized signed 16-bit integer value.</td>
</tr>
<tr>
<td>kChannelTypeUNormInt8</td>
<td>Each channel component is a normalized unsigned 8-bit integer value.</td>
</tr>
<tr>
<td>kChannelTypeUNormInt16</td>
<td>Each channel component is a normalized unsigned 16-bit integer value.</td>
</tr>
<tr>
<td>kChannelTypeUNormShort565</td>
<td>Represents a normalized 5-6-5 3-channel RGB image. The channel order must</td>
</tr>
<tr>
<td></td>
<td>be kChannelOrderRGB.</td>
</tr>
<tr>
<td>kChannelTypeUNormShort555</td>
<td>Represents a normalized x-5-5-5 4-channel xRGB image. The channel order</td>
</tr>
<tr>
<td></td>
<td>must be kChannelOrderRGB.</td>
</tr>
<tr>
<td>kChannelTypeUNormInt101010</td>
<td>Represents a normalized x-10-10-10 4-channel xRGB image. The channel order</td>
</tr>
<tr>
<td></td>
<td>must be kChannelOrderRGB.</td>
</tr>
<tr>
<td>kChannelTypeSignedInt8</td>
<td>Each channel component is an unnormalized signed 8-bit integer value.</td>
</tr>
<tr>
<td>kChannelTypeSignedInt16</td>
<td>Each channel component is an unnormalized signed 16-bit integer value.</td>
</tr>
<tr>
<td>kChannelTypeSignedInt32</td>
<td>Each channel component is an unnormalized signed 32-bit integer value.</td>
</tr>
<tr>
<td>kChannelTypeUnsignedInt8</td>
<td>Each channel component is an unnormalized unsigned 8-bit integer value.</td>
</tr>
<tr>
<td>kChannelTypeUnsignedInt16</td>
<td>Each channel component is an unnormalized unsigned 16-bit integer value.</td>
</tr>
<tr>
<td>kChannelTypeUnsignedInt32</td>
<td>Each channel component is an unnormalized unsigned 32-bit integer value.</td>
</tr>
<tr>
<td>kChannelTypeHalfFloat</td>
<td>Each channel component is a 16-bit half-float value.</td>
</tr>
<tr>
<td>kChannelTypeFloat</td>
<td>Each channel component is a single precision floating-point value.</td>
</tr>
</tbody>
</table>

(Read and Write property)
124.5.4  ImageChannelOrder as Integer

Function: Specifies the number of channels and the channel layout i.e. the memory layout in which channels are stored in the image.

Notes:
Valid values are described in the table below.

<table>
<thead>
<tr>
<th>Format</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kChannelOrderR, or kChannelOrderA</td>
<td>This format can only be used if channel data type = kChannelTypeUNormInt8, kChannelTypeUNormInt16, kChannelTypeSNormInt8, kChannelTypeSNormInt16, kChannelTypeHalfFloat, or kChannelTypeFloat.</td>
</tr>
<tr>
<td>kChannelOrderIntensity</td>
<td>This format can only be used if channel data type = kChannelTypeUNormInt8, kChannelTypeUNormInt16, kChannelTypeSNormInt8, kChannelTypeSNormInt16, kChannelTypeHalfFloat, or kChannelTypeFloat.</td>
</tr>
<tr>
<td>kChannelOrderLuminance</td>
<td>This format can only be used if channel data type = kChannelTypeUNormInt8, kChannelTypeUNormInt16, kChannelTypeSNormInt8, kChannelTypeSNormInt16, kChannelTypeHalfFloat, or kChannelTypeFloat.</td>
</tr>
<tr>
<td>kChannelOrderRGB, or kChannelOrderRA</td>
<td>This format can only be used if channel data type = kChannelTypeUNormShort1565, kChannelTypeUNormShort1555 or kChannelTypeUNorm101010.</td>
</tr>
<tr>
<td>kChannelOrderRGBA</td>
<td>This format can only be used if channel data type = kChannelTypeUNormInt8, kChannelTypeSNormInt8, kChannelTypeSignedInt8 or kChannelTypeUnsignedInt8.</td>
</tr>
</tbody>
</table>

(Read and Write property)

124.5.5  Constants

124.5.6  kChannelOrderA = & h10B1

MBS MacFrameworks Plugin, Plugin Version: 11.1. Function: One of the channel order constants

124.5.7  kChannelOrderRGB = & h10B7

MBS MacFrameworks Plugin, Plugin Version: 11.1. Function: One of the channel order constants

124.5.8  kChannelOrderBGRA = & h10B6

MBS MacFrameworks Plugin, Plugin Version: 11.1. Function: One of the channel order constants
124.5.9  kChannelOrderIntensity = & h10B8

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the channel order constants  
**Notes:** This format can only be used if channel data type = kChannelTypeUNormInt8, kChannelTypeUNormInt16, kChannelTypeSNormInt8, kChannelTypeSNormInt16, kChannelTypeHalfFloat, or kChannelTypeFloat.

124.5.10  kChannelOrderLuminance = & h10B9

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the channel order constants  
**Notes:** This format can only be used if channel data type = kChannelTypeUNormInt8, kChannelTypeUNormInt16, kChannelTypeSNormInt8, kChannelTypeSNormInt16, kChannelTypeHalfFloat, or kChannelTypeFloat.

124.5.11  kChannelOrderR = & h10B0

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the channel order constants

124.5.12  kChannelOrderRA = & h10B3

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the channel order constants

124.5.13  kChannelOrderRG = & h10B2

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the channel order constants

124.5.14  kChannelOrderRGB = & h10B4

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the channel order constants  
**Notes:** This format can only be used if channel data type = kChannelTypeUNormShort565, kChannelTypeUNormShort555 or kChannelTypeUNormInt101010.

124.5.15  kChannelOrderRGBA = & h10B5

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the channel order constants
124.5.16  kChannelTypeFloat = & h10DE

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the channel data type constants. **Notes:** Each channel component is a single precision floating-point value.

124.5.17  kChannelTypeHalfFloat = & h10DD

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the channel data type constants. **Notes:** Each channel component is a 16-bit half-float value.

124.5.18  kChannelTypeSignedInt16 = & h10D8

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the channel data type constants. **Notes:** Each channel component is an unnormalized signed 16-bit integer value.

124.5.19  kChannelTypeSignedInt32 = & h10D9

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the channel data type constants. **Notes:** Each channel component is an unnormalized signed 32-bit integer value.

124.5.20  kChannelTypeSignedInt8 = & h10D7

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the channel data type constants. **Notes:** Each channel component is an unnormalized signed 8-bit integer value.

124.5.21  kChannelTypeSNormInt16 = & h10D1

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the channel data type constants. **Notes:** Each channel component is a normalized signed 16-bit integer value.

124.5.22  kChannelTypeSNormInt8 = & h10D0

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the channel data type constants. **Notes:** Each channel component is a normalized signed 8-bit integer value.
124.5.23  kChannelTypeUNormInt101010 = & h10D6

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the channel data type constants. **Notes:** Represents a normalized x-10-10-10 4-channel xRGB image. The channel order must be kChannelOrderRGB.

124.5.24  kChannelTypeUNormInt16 = & h10D3

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the channel data type constants. **Notes:** Each channel component is a normalized unsigned 16-bit integer value.

124.5.25  kChannelTypeUNormInt8 = & h10D2

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the channel data type constants. **Notes:** Each channel component is a normalized unsigned 8-bit integer value.

124.5.26  kChannelTypeUNormShort555 = & h10D5

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the channel data type constants. **Notes:** Represents a normalized x-5-5-5 4-channel xRGB image. The channel order must be kChannelOrderRGB.

124.5.27  kChannelTypeUNormShort565 = & h10D4

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the channel data type constants. **Notes:** Represents a normalized 5-6-5 3-channel RGB image. The channel order must be kChannelOrderRGB.

124.5.28  kChannelTypeUnsignedInt16 = & h10DB

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the channel data type constants. **Notes:** Each channel component is an unnormalized unsigned 16-bit integer value.
124.5.29  kChannelTypeUnsignedInt32 = & h10DC

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the channel data type constants. **Notes:** Each channel component is an unnormalized unsigned 32-bit integer value.

124.5.30  kChannelTypeUnsignedInt8 = & h10DA

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function:** One of the channel data type constants. **Notes:** Each channel component is an unnormalized unsigned 8-bit integer value.
124.6 class CLKernelMBS

124.6.1 class CLKernelMBS

Function: The class for an OpenCL Kernel.

124.6.2 Methods

124.6.3 Constructor( Program as CLProgramMBS, KernelName as string)

Function: Creates a kernel object.
Notes: Program: A program object with a successfully built executable.
KernelName: A function name in the program declared with the _kernel qualifier

A kernel is a function declared in a program. A kernel is identified by the _kernel qualifier applied to any
function in a program. A kernel object encapsulates the specific _kernel function declared in a program and
the argument values to be used when executing this _kernel function. Lasterror is set.

124.6.4 FunctionName as string

Function: Return the kernel function name.
Notes: Lasterror is set.

124.6.5 GetKernelCompileWorkGroupSize( device as CLDeviceMBS, byref X as Int64, byref Y as Int64, byref Z as Int64)

Function: Returns the work-group size specified by the _attribute((reqd_work_group_size(X, Y, Z)))
qualifier.
Notes: device: Identifies a specific device in the list of devices associated with kernel. The list of devices is the list
of devices in the OpenCL context that is associated with kernel. If the list of devices associated with kernel
is a single device, device can be a nil value.
If the work-group size is not specified using the above attribute qualifier (0, 0, 0) is returned. Lasterror is set.

### 124.6.6 GetKernelLocalMemorySize(device as CLDeviceMBS = nil) as UInt64


**Function:** Returns the amount of local memory in bytes being used by a kernel.

**Notes:**

device: Identifies a specific device in the list of devices associated with kernel. The list of devices is the list of devices in the OpenCL context that is associated with kernel. If the list of devices associated with kernel is a single device, device can be a nil value.

This includes local memory that may be needed by an implementation to execute the kernel, variables declared inside the kernel with the __local address qualifier and local memory to be allocated for arguments to the kernel declared as pointers with the __local address qualifier and whose size is specified with clSetKernelArg.

If the local memory size, for any pointer argument to the kernel declared with the __local address qualifier, is not specified, its size is assumed to be 0. Lasterror is set.

### 124.6.7 GetKernelWorkGroupSize(device as CLDeviceMBS = nil) as Int64


**Function:** This provides a mechanism for the application to query the work-group size that can be used to execute a kernel on a specific device given by device.

**Notes:**

device: Identifies a specific device in the list of devices associated with kernel. The list of devices is the list of devices in the OpenCL context that is associated with kernel. If the list of devices associated with kernel is a single device, device can be a nil value.

The OpenCL implementation uses the resource requirements of the kernel (register usage etc.) to determine what this work-group size should be. Lasterror is set.

### 124.6.8 NumberOfArguments as UInt32


**Function:** Return the number of arguments to kernel.
124.6.9 ReferenceCount as UInt32

Function: Return the kernel reference count.
Notes:
The reference count returned should be considered immediately stale. It is unsuitable for general use in applications. This feature is provided for identifying memory leaks.
Lasterror is set.

124.6.10 SetKernelArgDouble(index as Integer, value as Double)

Function: Sets the kernel argument with the given index.
Notes:
index: The argument index. Arguments to the kernel are referred by indices that go from 0 for the leftmost argument to n - 1, where n is the total number of arguments declared by a kernel.
value: the value.

We have currently setters for Int32, Int64, Float, Double and CLMemMBS. Please email for additional types. Lasterror is set.

124.6.11 SetKernelArgFloat(index as Integer, value as Single)

Function: Sets the kernel argument with the given index.
Notes:
index: The argument index. Arguments to the kernel are referred by indices that go from 0 for the leftmost argument to n - 1, where n is the total number of arguments declared by a kernel.
value: the value.

We have currently setters for Int32, Int64, Float, Double and CLMemMBS. Please email for additional types. Lasterror is set.
124.6. **CLASS CLKERNELMBS**

124.6.12 **SetKernelArgInt32(index as Integer, value as Int32)**


**Function:** Sets the kernel argument with the given index.

**Notes:**

index: The argument index. Arguments to the kernel are referred by indices that go from 0 for the leftmost argument to n - 1, where n is the total number of arguments declared by a kernel.

value: the value.

We have currently setters for Int32, Int64, Float, Double and CLMemMBS. Please email for additional types. Lasterror is set.

124.6.13 **SetKernelArgInt64(index as Integer, value as Int64)**


**Function:** Sets the kernel argument with the given index.

**Notes:**

index: The argument index. Arguments to the kernel are referred by indices that go from 0 for the leftmost argument to n - 1, where n is the total number of arguments declared by a kernel.

value: the value.

We have currently setters for Int32, Int64, Float, Double and CLMemMBS. Please email for additional types. Lasterror is set.

124.6.14 **SetKernelArgMem(index as Integer, mem as CLMemMBS)**


**Function:** Sets the kernel argument with the given index.

**Notes:**

index: The argument index. Arguments to the kernel are referred by indices that go from 0 for the leftmost argument to n - 1, where n is the total number of arguments declared by a kernel.

value: the memory object to set for argument.

We have currently setters for Int32, Int64, Float, Double and CLMemMBS. Please email for additional types. Lasterror is set.
124.6.15 Properties

124.6.16 Context as CLContextMBS

Function: Return the context associated with kernel.
Notes:
Lasterror is set.
(Read and Write property)

124.6.17 Handle as Integer

Function: The internel object reference.
Notes:
Not zero if this object is valid.
(Read and Write property)

124.6.18 LastError as Integer

Function: The last error code.
Notes:
See error constants in OpenCLMBS module.
The plugin uses lasterror = -1 for the case a function is not available.
(Read and Write property)

124.6.19 Program as CLProgramMBS

Function: Return the program object associated with kernel.
Notes:
Lasterror is set.
(Read and Write property)
124.7  class CLMemMBS


**Function:** The class for a OpenCL memory block.

**Example:**

```
const Size = 4096
dim context as CLContextMBS // your context
dim input as new CLMemMBS(context, CLMEMMBS.kMemoryReadOnly, 4096)
```

124.7.2  Methods

124.7.3  Constructor(Context as CLContextMBS, Flags as UInt64, ImageFormat as CLImageFormatMBS, Width as Integer, Height as Integer, Depth as Integer, RowPitch as Integer, SlicePitch as Integer, HostPtr as Memoryblock = nil)


**Function:** Creates a 3D image object.

**Notes:**

- context: A valid OpenCL context on which the image object is to be created.
- flags: A bit-field that is used to specify allocation and usage information about the image memory object being created. See kMemory* constants.
- ImageFormat: the image format properties of the image to be allocated.
- Width, Height: The width and height of the image in pixels. These must be values greater than or equal to 1.
- Depth: The depth of the image in pixels. This must be a value greater than 1.
- RowPitch: The scan-line pitch in bytes. This must be 0 if HostPtr is nil and can be either 0 or greater than or equal to Width * size of element in bytes if HostPtr is not nil. If HostPtr is not nil and RowPitch is equal to 0, RowPitch is calculated as Width * size of element in bytes. If RowPitch is not 0, it must be a multiple of the image element size in bytes.
- SlicePitch: The size in bytes of each 2D slice in the 3D image. This must be 0 if HostPtr is nil and can be either 0 or greater than or equal to RowPitch * Height if HostPtr is not nil. If HostPtr is not nil and SlicePitch is equal to 0, SlicePitch is calculated as RowPitch * Height. If SlicePitch is not 0, it must be a multiple of the RowPitch.
- HostPtr: A pointer to the image data that may already be allocated by the application. The size of the buffer that HostPtr points to must be greater than or equal to SlicePitch * image_depth. The size of each element in bytes must be a power of 2. The image data specified by HostPtr is stored as a linear sequence of adjacent 2D slices. Each 2D slice is a linear sequence of adjacent scanlines. Each scanline is a linear sequence of image elements.
Lasterror is set.

See also:

- 124.7.4 Constructor(Context as CLContextMBS, Flags as UInt64, ImageFormat as CLImageFormatMBS, Width as Integer, Height as Integer, RowPitch as Integer, HostPtr as Memoryblock = nil)

- 124.7.5 Constructor(Context as CLContextMBS, Flags as UInt64, Size as Integer, HostPtr as Memoryblock = nil)

124.7.4 Constructor(Context as CLContextMBS, Flags as UInt64, ImageFormat as CLImageFormatMBS, Width as Integer, Height as Integer, RowPitch as Integer, HostPtr as Memoryblock = nil)


**Function:** Creates a 2D image object.

**Notes:**

class: A valid OpenCL context on which the image object is to be created.
flags: A bit-field that is used to specify allocation and usage information about the image memory object being created. See kMemory* constants.
ImageFormat: The format properties of the image to be allocated.
Width and Height: The width and height of the image in pixels. These must be values greater than or equal to 1.
RowPitch: The scan-line pitch in bytes. This must be 0 if HostPtr is nil and can be either 0 or greater than or equal to Width * size of element in bytes if HostPtr is not nil. If HostPtr is not nil and RowPitch is equal to 0, RowPitch is calculated as Width * size of element in bytes. If RowPitch is not 0, it must be a multiple of the image element size in bytes.
HostPtr: A pointer to the image data that may already be allocated by the application. The size of the buffer that HostPtr points to must be greater than or equal to RowPitch * Height. The size of each element in bytes must be a power of 2. The image data specified by HostPtr is stored as a linear sequence of adjacent scanlines. Each scanline is stored as a linear sequence of image elements.

Lasterror is set.

See also:

- 124.7.3 Constructor(Context as CLContextMBS, Flags as UInt64, ImageFormat as CLImageFormatMBS, Width as Integer, Height as Integer, Depth as Integer, RowPitch as Integer, SlicePitch as Integer, HostPtr as Memoryblock = nil)

- 124.7.5 Constructor(Context as CLContextMBS, Flags as UInt64, Size as Integer, HostPtr as Memoryblock = nil)
124.7. Constructor(Context as CLContextMBS, Flags as UInt64, Size as Integer, HostPtr as Memoryblock = nil)

Function: Creates a new buffer object.

Notes:

context: A valid OpenCL context used to create the buffer object.
flags: A bit-field that is used to specify allocation and usage information such as the memory arena that should be used to allocate the buffer object and how it will be used. The following table describes the possible values for flags:
size: The size in bytes of the buffer memory object to be allocated.
HostPtr: A memoryblock that may already be allocated by the application. The size of the buffer that HostPtr points to must be greater than or equal to the size bytes.

<table>
<thead>
<tr>
<th>Flags</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kMemoryReadWrite</td>
<td>This flag specifies that the memory object will be read and written by a kernel. This is the default.</td>
</tr>
<tr>
<td>kMemoryWriteOnly</td>
<td>This flag specifies that the memory object will be written but not read by a kernel. Reading from a buffer or image object created with kMemoryWriteOnly inside a kernel is undefined.</td>
</tr>
<tr>
<td>kMemoryReadOnly</td>
<td>This flag specifies that the memory object is a read-only memory object when used inside a kernel. Writing to a buffer or image object created with kMemoryReadOnly inside a kernel is undefined.</td>
</tr>
<tr>
<td>kMemoryUseHostPtr</td>
<td>This flag is valid only if HostPtr is not nil. If specified, it indicates that the application wants the OpenCL implementation to use memory referenced by HostPtr as the storage bits for the memory object. OpenCL implementations are allowed to cache the buffer contents pointed to by HostPtr in device memory. This cached copy can be used when kernels are executed on a device. The result of OpenCL commands that operate on multiple buffer objects created with the same HostPtr or overlapping host regions is considered to be undefined.</td>
</tr>
<tr>
<td>kMemoryAllocHostPtr</td>
<td>This flag specifies that the application wants the OpenCL implementation to allocate memory from host accessible memory. kMemoryAllocHostPtr and kMemoryUseHostPtr are mutually exclusive.</td>
</tr>
<tr>
<td>kMemoryCopyHostPtr</td>
<td>This flag is valid only if HostPtr is not nil. If specified, it indicates that the application wants the OpenCL implementation to allocate memory for the memory object and copy the data from memory referenced by HostPtr. kMemoryCopyHostPtr and kMemoryUseHostPtr are mutually exclusive. kMemoryCopyHostPtr can be used with kMemoryAllocHostPtr to initialize the contents of the cl_mem object allocated using host-accessible (e.g. PCIe) memory.</td>
</tr>
</tbody>
</table>

Lasterror is set.

See also:

- 124.7.3 Constructor(Context as CLContextMBS, Flags as UInt64, ImageFormat as CLImageFormatMBS,
124.7.6  **Context as CLContextMBS**

**Function:** Return context specified when memory object is created.  
**Notes:** Lasterror is set.

124.7.7  **Flags as UInt64**

**Function:** Return the flags argument value specified with Constructor.  
**Notes:** Lasterror is set.

124.7.8  **ImageDepth as UInt64**

**Function:** Return depth of the image in pixels.  
**Notes:**  
For a 2D image, depth equals 0.  
Lasterror is set.

124.7.9  **ImageElementSize as UInt64**

**Function:** Return size of each element of the image memory object given by image.  
**Notes:**  
An element is made up of n channels. The value of n is given with image format descriptor.  
Lasterror is set.

124.7.10  **ImageFormat as CLImageFormatMBS**

**Function:** Return image format descriptor.
124.7. **CLASS CLMEMMBS**

**Notes:** Lasterror is set.

### 124.7.11 ImageHeight as UInt64

**Function:** Return height of image in pixels.  
**Notes:** Lasterror is set.

### 124.7.12 ImageRowPitch as UInt64

**Function:** Return size in bytes of a row of elements of the image object given by image.  
**Notes:** Lasterror is set.

### 124.7.13 ImageSlicePitch as UInt64

**Function:** Return size in bytes of a 2D slice for the 3D image object given by image.  
**Notes:**  
For a 2D image object this value will be 0.  
Lasterror is set.

### 124.7.14 ImageWidth as UInt64

**Function:** Return width of image in pixels.  
**Notes:** Lasterror is set.

### 124.7.15 ReferenceCount as UInt32

**Function:** Return memory object reference count.  
**Notes:**  
The reference count returned should be considered immediately stale. It is unsuitable for general use in applications. This feature is provided for identifying memory leaks.  
Lasterror is set.
124.7.16  Size as UInt64

Function: Return actual size of memory object in bytes.
Notes: Lasterror is set.

124.7.17  Type as UInt32

Function: Returns the memory type.
Notes:
Either normal buffer, image 2D or image 3D.
Lasterror is set.

124.7.18  Properties

124.7.19  Handle as Integer

Function: The internal object reference.
Notes:
Not zero if this object is valid.
(Read and Write property)

124.7.20  LastError as Integer

Function: The last error code.
Notes:
See error constants in OpenCLMBS module.
The plugin uses lasterror = -1 for the case a function is not available.
(Read and Write property)

124.7.21  Target as Memoryblock

Function: The reference to the memoryblock if you used kMemoryUseHostPtr to create this memory object.
124.7.22 Constants

124.7.23 kMapRead = 1

MBS MacFrameworks Plugin, Plugin Version: 11.1. Function: One of the mapping mode constants.

124.7.24 kMapWrite = 2

MBS MacFrameworks Plugin, Plugin Version: 11.1. Function: One of the mapping mode constants.

124.7.25 kMemoryAllocHostPtr = 16

MBS MacFrameworks Plugin, Plugin Version: 11.1. Function: One of the flag constants for creating a memory block.

124.7.26 kMemoryCopyHostPtr = 32

MBS MacFrameworks Plugin, Plugin Version: 11.1. Function: One of the flag constants for creating a memory block.

124.7.27 kMemoryReadOnly = 4

MBS MacFrameworks Plugin, Plugin Version: 11.1. Function: One of the flag constants for creating a memory block.

124.7.28 kMemoryReadWrite = 1

MBS MacFrameworks Plugin, Plugin Version: 11.1. Function: One of the flag constants for creating a memory block.
124.7.29  kMemoryTypeBuffer = & h10F0

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function**: One of the memory object types.  
**Notes**: A normal memory buffer.

124.7.30  kMemoryTypeImage2D = & h10F1

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function**: One of the memory object types.  
**Notes**: 2D Image

124.7.31  kMemoryTypeImage3D = & h10F2

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function**: One of the memory object types.  
**Notes**: 3D Image

124.7.32  kMemoryUseHostPtr = 8

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function**: One of the flag constants for creating a memory block.

124.7.33  kMemoryWriteOnly = 2

MBS MacFrameworks Plugin, Plugin Version: 11.1. **Function**: One of the flag constants for creating a memory block.  
**Notes**:  
This flags specifies that the memory object will be written but not read by a kernel.

Reading from a buffer or image object created with kMemoryWriteOnly inside a kernel is undefined.
124.8 class CLPlatformMBS

124.8.1 class CLPlatformMBS

**Function:** The OpenCL class for a platform.

124.8.2 Methods

124.8.3 DeviceCount(types as Int64) as Integer

**Function:** Queries number of devices with given types. 
**Example:**

```vbnet
dim Platforms(-1) as CLPlatformMBS = OpenCLMBS.Platforms

for each p as CLPlatformMBS in Platforms
    MsgBox p.Name+": " +str(p.DeviceCount(CLDeviceMBS.kDeviceTypeAll))+" devices"
next
```

**Notes:**

types: A bitfield that identifies the type of OpenCL device. The device_type can be used to query specific OpenCL devices or all OpenCL devices available. The valid values for device_type are specified in the following table.

<table>
<thead>
<tr>
<th>cl_device_type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kDeviceTypeCPU</td>
<td>An OpenCL device that is the host processor. The host processor runs the OpenCL implementations and is a single or multi-core CPU.</td>
</tr>
<tr>
<td>kDeviceTypeGPU</td>
<td>An OpenCL device that is a GPU. By this we mean that the device can also be used to accelerate a 3D API such as OpenGL or DirectX.</td>
</tr>
<tr>
<td>kDeviceTypeAccelerator</td>
<td>Dedicated OpenCL accelerators (for example the IBM CELL Blade). These devices communicate with the host processor using a peripheral interconnect such as PCIe.</td>
</tr>
<tr>
<td>kDeviceTypeDefault</td>
<td>The default OpenCL device in the system.</td>
</tr>
<tr>
<td>kDeviceTypeAll</td>
<td>All OpenCL devices available in the system.</td>
</tr>
</tbody>
</table>

LastError is set.
124.8.4 Devices(types as Int64) as CLDeviceMBS()

**Function:** Queries devices with given types.  
**Example:**

```plaintext
// check all platforms
dim Platforms(-1) as CLPlatformMBS = OpenCLMBS.Platforms

for each p as CLPlatformMBS in Platforms
    dim lines(-1) as string
    lines.Append p.Name
    lines.Append ""

    // and show device names
    for each d as CLDeviceMBS in p.Devices(CLDeviceMBS.kDeviceTypeAll)
        lines.Append d.name
    next

next

MsgBox Join(lines,EndOfLine)
```

**Notes:**

*types:* A bitfield that identifies the type of OpenCL device. The device.type can be used to query specific OpenCL devices or all OpenCL devices available. The valid values for device.type are specified in the following table.

<table>
<thead>
<tr>
<th>cl_device_type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kDeviceTypeCPU</td>
<td>An OpenCL device that is the host processor. The host processor runs the OpenCL implementations and is a single or multi-core CPU.</td>
</tr>
<tr>
<td>kDeviceTypeGPU</td>
<td>An OpenCL device that is a GPU. By this we mean that the device can also be used to accelerate a 3D API such as OpenGL or DirectX.</td>
</tr>
<tr>
<td>kDeviceTypeAccelerator</td>
<td>Dedicated OpenCL accelerators (for example the IBM CELL Blade). These devices communicate with the host processor using a peripheral interconnect such as PCIe.</td>
</tr>
<tr>
<td>kDeviceTypeDefault</td>
<td>The default OpenCL device in the system.</td>
</tr>
<tr>
<td>kDeviceTypeAll</td>
<td>All OpenCL devices available in the system.</td>
</tr>
</tbody>
</table>

LastError is set.
124.8. CLASS CLPLATFORMMBS

124.8.5 Extensions as string

MBS MacFrameworks Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a space-separated list of extension names (the extension names themselves do not contain any spaces) supported by the platform.

**Example:**

```vbnet
dim Platforms(-1) as CLPlatformMBS = OpenCLMBS.Platforms

for each p as CLPlatformMBS in Platforms
    MsgBox p.Name+"": "+p.Extensions
next
```

**Notes:**
Extensions defined here must be supported by all devices associated with this platform. Lasterror is set.

124.8.6 Name as string

MBS MacFrameworks Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Platform name string.

**Example:**

```vbnet
dim Platforms(-1) as CLPlatformMBS = OpenCLMBS.Platforms

for each p as CLPlatformMBS in Platforms
    MsgBox p.Name
next
```

**Notes:** Lasterror is set.

124.8.7 Profile as string

MBS MacFrameworks Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** OpenCL profile string.

**Example:**

```vbnet
dim Platforms(-1) as CLPlatformMBS = OpenCLMBS.Platforms

for each p as CLPlatformMBS in Platforms
    MsgBox p.Name+"": "+p.Profile
next
```
124.8.8 Vendor as string


**Function:** Platform vendor string.

**Example:**

```vba
dim Platforms(-1) as CLPlatformMBS = OpenCLMBS.Platforms
for each p as CLPlatformMBS in Platforms
    MsgBox p.Name+"": "+p.Vendor
next
```

**Notes:** Lasterror is set.

124.8.9 Version as string


**Function:** OpenCL version string.

**Example:**

```vba
dim Platforms(-1) as CLPlatformMBS = OpenCLMBS.Platforms
for each p as CLPlatformMBS in Platforms
    MsgBox p.Name+"": "+p.Version
next
```
Notes:
Returns the OpenCL version supported by the implementation. This version string has the following format:

OpenCL\(<space>\)<major_version\_.minor_version>\(<space>\)<platform-specific information>

The major\_.version\_.minor\_.version value returned will be 1.0.
LastError is set.

124.8.10 Properties

124.8.11 Handle as Integer

Function: The internal object reference.
Notes:
Not zero if this object is valid.
(Read and Write property)

124.8.12 LastError as Integer

Function: The last error code.
Notes:
See error constants in OpenCLMBS module.
The plugin uses lasterror = -1 for the case a function is not available.
(Read and Write property)
124.9  class CLProgramMBS

124.9.1  class CLProgramMBS

Function: The OpenCL class for a program.

124.9.2  Methods

124.9.3  Binaries as String()

Function: Return the program binaries for all devices associated with program.
Notes:
For each device in program, the binary returned can be the binary specified for the device when program
is created with Constructor or it can be the executable binary generated by BuildProgram. If program is
created with Constructor (with Source code), the binary returned is the binary generated by BuildProgram.
The bits returned can be an implementation-specific intermediate representation (a.k.a. IR) or device specific
executable bits or both. The decision on which information is returned in the binary is up to the OpenCL
implementation.

Each entry in this array is used by the implementation as the location in memory where to copy the program
binary for a specific device, if there is a binary available.

Lasterror is set.

124.9.4  BinarySizes as UInt64()

Function: Returns an array that contains the size in bytes of the program binary for each device associated
with program.
Notes:
The size of the array is the number of devices associated with program. If a binary is not available for a
device(s), a size of zero is returned.

Lasterror is set.
124.9.5  BuildLog(device as CLDeviceMBS) as string

**Function:** Return the build log when BuildProgram was called for device.
**Notes:**
If build status of program for device is kBuildNone, an empty string is returned.
LastError is set.

124.9.6  BuildOptions(device as CLDeviceMBS) as string

**Function:** Return the build options specified by the options argument in BuildProgram for device.
**Notes:**
If build status of program for device is kBuildNone, an empty string is returned.
LastError is set.

124.9.7  BuildProgram(device as CLDeviceMBS, options as string = "")

**Function:** Builds (compiles and links) a program executable from the program source or binary.
**Notes:** See other BuildProgram method for details
See also:

- 124.9.8 BuildProgram(devices() as CLDeviceMBS, options as string = "")
- 124.9.9 BuildProgram(options as string = "")

124.9.8  BuildProgram(devices() as CLDeviceMBS, options as string = "")

**Function:** Builds (compiles and links) a program executable from the program source or binary.
**Notes:**
- **devices** Optional, a list of devices you want to build for. If you specify no device, you build for all devices.
- **device** Optional, the device you want to build for. If you specify no device, you build for all devices.
- **options** A string that describes the build options to be used for building the program executable. The list of supported options is described in "Build Options" below.
OpenCL allows program executables to be built using the source or the binary.

The build options are categorized as pre-processor options, options for math intrinsics, options that control optimization and miscellaneous options. This specification defines a standard set of options that must be supported by an OpenCL compiler when building program executables online or offline. These may be extended by a set of vendor- or platform-specific options.

Preprocessor Options

These options control the OpenCL preprocessor which is run on each program source before actual compilation. -D options are processed in the order they are given in the options argument to clBuildProgram.

-D name
Predefine name as a macro, with definition 1.

-D name=definition
The contents of definition are tokenized and processed as if they appeared during translation phase three in a ‘# define’ directive. In particular, the definition will be truncated by embedded newline characters.

-I dir
Add the directory dir to the list of directories to be searched for header files.

Math Intrinsics Options

These options control compiler behavior regarding floating-point arithmetic. These options trade off between speed and correctness.

-cl-single-precision-constant
Treat double precision floating-point constant as single precision constant.

-cl-denorms-are-zero
This option controls how single precision and double precision denormalized numbers are handled. If specified as a build option, the single precision denormalized numbers may be flushed to zero and if the optional extension for double precision is supported, double precision denormalized numbers may also be flushed to zero. This is intended to be a performance hint and the OpenCL compiler can choose not to flush denorms to zero if the device supports single precision (or double precision) denormalized numbers.

This option is ignored for single precision numbers if the device does not support single precision denormalized numbers i.e. kFPDenorm bit is not set in SingleFPConfig.

This option is ignored for double precision numbers if the device does not support double precision or if it does support double precision but CL_FP_DENORM bit is not set in CL_DEVICE_DOUBLE_FP_CONFIG.
This flag only applies for scalar and vector single precision floating-point variables and computations on these floating-point variables inside a program. It does not apply to reading from or writing to image objects.

Optimization Options

These options control various sorts of optimizations. Turning on optimization flags makes the compiler attempt to improve the performance and/or code size at the expense of compilation time and possibly the ability to debug the program.

- **-cl-opt-disable**
  This option disables all optimizations. The default is optimizations are enabled.

- **-cl-strict-aliasing**
  This option allows the compiler to assume the strictest aliasing rules.

The following options control compiler behavior regarding floating-point arithmetic. These options trade off between performance and correctness and must be specifically enabled. These options are not turned on by default since it can result in incorrect output for programs which depend on an exact implementation of IEEE 754 rules/specifications for math functions.

- **-cl-mad-enable**
  Allow a * b + c to be replaced by a mad. The mad computes a * b + c with reduced accuracy. For example, some OpenCL devices implement mad as truncate the result of a * b before adding it to c.

- **-cl-no-signed-zeros**
  Allow optimizations for floating-point arithmetic that ignore the signedness of zero. IEEE 754 arithmetic specifies the behavior of distinct +0.0 and -0.0 values, which then prohibits simplification of expressions such as x+0.0 or 0.0*x (even with -clfinite-math only). This option implies that the sign of a zero result isn’t significant.

- **-cl-unsafe-math-optimizations**
  Allow optimizations for floating-point arithmetic that (a) assume that arguments and results are valid, (b) may violate IEEE 754 standard and (c) may violate the OpenCL numerical compliance requirements as defined in section 7.4 for single-precision floating-point, section 9.3.9 for double-precision floating-point, and edge case behavior in section 7.5. This option includes the -cl-no-signed-zeros and -cl-mad-enable options.

- **-cl-finite-math-only**
  Allow optimizations for floating-point arithmetic that assume that arguments and results are not NaNs or . This option may violate the OpenCL numerical compliance requirements defined in in section 7.4 for single-precision floating-point, section 9.3.9 for double-precision floating-point, and edge case behavior in section 7.5.

- **-cl-fast-relaxed-math**
Sets the optimization options `-cl-finite-math-only` and `-cl-unsafe-math-optimizations`. This allows optimizations for floating-point arithmetic that may violate the IEEE 754 standard and the OpenCL numerical compliance requirements defined in the specification in section 7.4 for single-precision floating-point, section 9.3.9 for double-precision floating-point, and edge case behavior in section 7.5. This option causes the preprocessor macro `__FAST_RELAXED_MATH__` to be defined in the OpenCL program.

Options to Request or Suppress Warnings

Warnings are diagnostic messages that report constructions which are not inherently erroneous but which are risky or suggest there may have been an error. The following language-independent options do not enable specific warnings but control the kinds of diagnostics produced by the OpenCL compiler.

- `w`
  Inhibit all warning messages.

- `Werror`
  Make all warnings into errors.

LastError is set.

See also:

- 124.9.7 BuildProgram(device as CLDeviceMBS, options as string = "") 17347
- 124.9.9 BuildProgram(options as string = ")") 17350

124.9.9 BuildProgram(options as string = ")")


**Function:** Builds (compiles and links) a program executable from the program source or binary.

**Notes:**

See other BuildProgram method for details

LastError is set.

See also:

- 124.9.7 BuildProgram(device as CLDeviceMBS, options as string = "") 17347
- 124.9.8 BuildProgram(devices() as CLDeviceMBS, options as string = ")") 17347

124.9.10 BuildStatus(device as CLDeviceMBS) as Int64


**Function:** Returns the build status of program for a specific device as given by device.

**Notes:**
124.9. CLASS CLPROGRAMMBS

See kBuild* constants.
Lasterror is set.

124.9.11 Constructor(context as CLContextMBS, devices() as CLDeviceMBS, binaries() as string, status() as Integer)

Function: Creates a program object for a context, and loads specified binary data into the program object.
Notes:
context: Must be a valid OpenCL context.
devices: a list of devices that are in context. The binaries are loaded for devices specified in this list.

The devices associated with the program object will be the list of devices specified by devices. The list of
devices specified by devices must be devices associated with context.

binaries: An array of strings containing the program binaries to be loaded for devices specified by devices.
For each device given by devices(i), the string with the program binary for that device is given by binaries(i).

The program binaries specified by binaries contain the bits that describe the program executable that will
be run on the device(s) associated with context. The program binary can consist of either or both of
device-specific executable(s), and/or implementation-specific intermediate representation (IR) which will be
converted to the device-specific executable.

status: Returns whether the program binary for each device specified in devices was loaded successfully or
not. It is an array of ubound -1 and is filled by the plugin.

Lasterror is set.

OpenCL allows applications to create a program object using the program source or binary and build
appropriate program executables. This allows applications to determine whether they want to use the pre-
built offline binary or load and compile the program source and use the executable compiled/linked online
as the program executable. This can be very useful as it allows applications to load and build program
executables online on its first instance for appropriate OpenCL devices in the system. These executables can
now be queried and cached by the application. Future instances of the application launching will no longer
need to compile and build the program executables. The cached executables can be read and loaded by the
application, which can help significantly reduce the application initialization time.
See also:

- 124.9.12 Constructor(context as CLContextMBS, line as string) 17352

- 124.9.13 Constructor(context as CLContextMBS, lines() as string) 17352
124.9.12 Constructor(context as CLContextMBS, line as string)


**Function:** Creates a program object for a context, and loads the source code specified by the line string into the program object.

**Notes:**

context: Must be a valid OpenCL context.

line: A string with all the lines of the program.

The devices associated with the program object are the devices associated with context.

OpenCL allows applications to create a program object using the program source or binary and build appropriate program executables. This allows applications to determine whether they want to use the pre-built offline binary or load and compile the program source and use the executable compiled/linked online as the program executable. This can be very useful as it allows applications to load and build program executables online on its first instance for appropriate OpenCL devices in the system. These executables can now be queried and cached by the application. Future instances of the application launching will no longer need to compile and build the program executables. The cached executables can be read and loaded by the application, which can help significantly reduce the application initialization time.

An OpenCL program consists of a set of kernels that are identified as functions declared with the __kernel qualifier in the program source. OpenCL programs may also contain auxiliary functions and constant data that can be used by __kernel functions. The program executable can be generated online or offline by the OpenCL compiler for the appropriate target device(s).

Lasterror is set.

See also:

- 124.9.11 Constructor(context as CLContextMBS, devices() as CLDeviceMBS, binaries() as string, status() as Integer) 17351
- 124.9.13 Constructor(context as CLContextMBS, lines() as string) 17352

124.9.13 Constructor(context as CLContextMBS, lines() as string)


**Function:** Creates a program object for a context, and loads the source code specified by the text strings in the lines array into the program object.

**Notes:**

context: Must be a valid OpenCL context.

lines: An array of strings that make up the source code.

The devices associated with the program object are the devices associated with context.
OpenCL allows applications to create a program object using the program source or binary and build appropriate program executables. This allows applications to determine whether they want to use the pre-built offline binary or load and compile the program source and use the executable compiled/linked online as the program executable. This can be very useful as it allows applications to load and build program executables online on its first instance for appropriate OpenCL devices in the system. These executables can now be queried and cached by the application. Future instances of the application launching will no longer need to compile and build the program executables. The cached executables can be read and loaded by the application, which can help significantly reduce the application initialization time.

An OpenCL program consists of a set of kernels that are identified as functions declared with the `_kernel` qualifier in the program source. OpenCL programs may also contain auxiliary functions and constant data that can be used by `_kernel` functions. The program executable can be generated online or offline by the OpenCL compiler for the appropriate target device(s).

Lasterror is set.
See also:

- 124.9.11 Constructor(context as CLContextMBS, devices() as CLDeviceMBS, binaries() as string, status() as Integer) 17351
- 124.9.12 Constructor(context as CLContextMBS, line as string) 17352

124.9.14 Context as CLContextMBS

**Function:** The context for this program.  
**Notes:** Lasterror is set.

124.9.15 CreateKernelsInProgram(maxKernels as Integer = 100) as CKernelMBS()

**Function:** Creates kernel objects for all kernel functions in program.  
**Notes:**  
maxKernels: maximum number of kernels to return.

Kernel objects are not created for any `_kernel` functions in program that do not have the same function definition across all devices for which a program executable has been successfully built.

Kernel objects can only be created once you have a program object with a valid program source or binary loaded into the program object and the program executable has been successfully built for one or more
devices associated with program. No changes to the program executable are allowed while there are kernel objects associated with a program object. This means that calls to BuildProgram return kInvalidOperation (in lasterror) if there are kernel objects attached to a program object. The OpenCL context associated with program will be the context associated with kernel. The list of devices associated with program are the devices associated with kernel. Devices associated with a program object for which a valid program executable has been built can be used to execute kernels declared in the program object.

Lasterror is set.

124.9.16 Devices as CLDeviceMBS()

**Function:** Return the list of devices associated with the program object.  
**Notes:** This can be the devices associated with context on which the program object has been created or can be a subset of devices that are specified when a program object is created.

124.9.17 NumDevices as UInt32

**Function:** Return the number of devices associated with program.  
**Notes:** Lasterror is set.

124.9.18 ReferenceCount as UInt32

**Function:** Return the program reference count.  
**Notes:** Lasterror is set.

124.9.19 Source as string

**Function:** Return the program source code specified in the Constructor.  
**Notes:** The source string returned is a concatenation of all source strings specified to Constructor.
124.9. **CLASS CLPROGRAMMBS**

124.9.20 **Properties**

124.9.21 **Handle as Integer**

*Function:* The internal object reference.
*Notes:* Not zero if this object is valid.
(Read and Write property)

124.9.22 **LastError as Integer**

*Function:* The last error code.
*Notes:* See error constants in OpenCLMBS module.
The plugin uses lasterror = -1 for the case a function is not available.
(Read and Write property)

124.9.23 **Constants**

124.9.24 **kBuildError = -2**

MBS MacFrameworks Plugin, Plugin Version: 11.1. *Function:* One of the build status constants
*Notes:* The build status returned if the last call to BuildProgram on the specified program object for device
generated an error.

124.9.25 **kBuildInProgress = -3**

MBS MacFrameworks Plugin, Plugin Version: 11.1. *Function:* One of the build status constants
*Notes:* The build status returned if the last call to BuildProgram on the specified program object for device
has not finished.

124.9.26 **kBuildNone = -1**

MBS MacFrameworks Plugin, Plugin Version: 11.1. *Function:* One of the build status constants
*Notes:* The build status returned if no build has been performed on the specified program object for device.
124.9.27  \textbf{kBuildSuccess} = 0

MBS MacFrameworks Plugin, Plugin Version: 11.1. \textbf{Function}: One of the build status constants  
\textbf{Notes}: The build status returned if the last call to BuildProgram on the specified program object for device was successful.
124.10. **CLASS CLSAMPLERMBS**

124.10 class CLSamplerMBS

124.10.1 class CLSamplerMBS

**Function:** The class for a Sampler.

124.10.2 Methods

124.10.3 AddressingMode as UInt32

**Function:** Return the value specified by addressingmode argument to Constructor.

124.10.4 Constructor(Context as CLContextMBS, NormalizedCoords as Boolean, AddressingMode as UInt32, FilterMode as UInt32)

**Function:** Creates a sampler object.
**Notes:**
context: Must be a valid OpenCL context.
NormalizedCoords: Determines if the image coordinates specified are normalized (if normalized_coords is true) or not (if normalized_coords is false).
AddressingMode: Specifies how out-of-range image coordinates are handled when reading from an image. This can be set to kAddressRepeat, kAddressClampToEdge, kAddressClamp, and kAddressNone.
FilterMode: Specifies the type of filter that must be applied when reading an image. This can be kFilterNearest or kFilterLinear.
Lasterror is set.

A sampler object describes how to sample an image when the image is read in the kernel. The built-in functions to read from an image in a kernel take a sampler as an argument. The sampler arguments to the image read function can be sampler objects created using OpenCL functions and passed as argument values to the kernel or can be samplers declared inside a kernel. In this section we discuss how sampler objects are created using OpenCL functions.
124.10.5 Context as CLContextMBS

Function: Return the context specified when the sampler is created.

124.10.6 FilterMode as UInt32

Function: Return the value specified by filterMode argument to Constructor.

124.10.7 NormalizedCoords as Boolean

Function: Return the value specified by normalizedCoords argument to Constructor.

124.10.8 ReferenceCount as UInt32

Function: Return the sampler reference count.
Notes: The reference count returned should be considered immediately stale. It is unsuitable for general use in applications. This feature is provided for identifying memory leaks.

124.10.9 Properties

124.10.10 Handle as Integer

Function: The internal object reference.
Notes: Not zero if this object is valid.
(Read and Write property)

124.10.11 LastError as Integer

Function: The last error code.
Notes:
See error constants in OpenCLMBS module.
The plugin uses lasterror = -1 for the case a function is not available.
(Read and Write property)

### 124.10.12 Constants

<table>
<thead>
<tr>
<th>124.10.13</th>
<th>kAddressClamp = &amp; h1132</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBS MacFrameworks Plugin, Plugin Version: 11.1. <strong>Function:</strong> One of the address modes.</td>
<td></td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>124.10.14</th>
<th>kAddressClampToEdge = &amp; h1131</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBS MacFrameworks Plugin, Plugin Version: 11.1. <strong>Function:</strong> One of the address modes.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>124.10.15</th>
<th>kAddressNone = &amp; h1130</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBS MacFrameworks Plugin, Plugin Version: 11.1. <strong>Function:</strong> One of the address modes.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>124.10.16</th>
<th>kAddressRepeat = &amp; h1133</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBS MacFrameworks Plugin, Plugin Version: 11.1. <strong>Function:</strong> One of the address modes.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>124.10.17</th>
<th>kFilterLinear = &amp; h1141</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBS MacFrameworks Plugin, Plugin Version: 11.1. <strong>Function:</strong> One of the filter mode constants.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>124.10.18</th>
<th>kFilterNearest = &amp; h1140</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBS MacFrameworks Plugin, Plugin Version: 11.1. <strong>Function:</strong> One of the filter mode constants.</td>
<td></td>
</tr>
</tbody>
</table>
124.11 module OpenCLMBS

124.11.1 module OpenCLMBS

Function: The module for OpenCL.
Notes:

from wikipedia:

OpenCL (Open Computing Language) is a framework for writing programs that execute across heterogeneous platforms consisting of CPUs, GPUs, and other processors. OpenCL includes a language (based on C99) for writing kernels (functions that execute on OpenCL devices), plus APIs that are used to define and then control the platforms. OpenCL provides parallel computing using task-based and data-based parallelism.

124.11.2 Methods

124.11.3 AllDeviceCount(types as Int64) as Integer

Function: Queries number of devices with given types.
Example:

```
dim c as Integer = OpenCLMBS.AllDeviceCount(CLDeviceMBS.kDeviceTypeCPU)
dim g as Integer = OpenCLMBS.AllDeviceCount(CLDeviceMBS.kDeviceTypeGPU)
MsgBox str(c)+" CPU and "+str(g)+" GPU"
```

Notes:

types: A bitfield that identifies the type of OpenCL device. The device_type can be used to query specific OpenCL devices or all OpenCL devices available. The valid values for device_type are specified in the following table.

Lasterror is set.

124.11.4 AllDevices(types as Int64) as CLDeviceMBS()

Function: Queries devices with given types.
Example:
124.11. MODULE OPENCLMBS

cl_device_type

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kDeviceTypeCPU An OpenCL device that is the host processor. The host processor runs the OpenCL implementations and is a single or multi-core CPU.</td>
</tr>
<tr>
<td>kDeviceTypeGPU An OpenCL device that is a GPU. By this we mean that the device can also be used to accelerate a 3D API such as OpenGL or DirectX.</td>
</tr>
<tr>
<td>kDeviceTypeAccelerator Dedicated OpenCL accelerators (for example the IBM CELL Blade). These devices communicate with the host processor using a peripheral interconnect such as PCIe.</td>
</tr>
<tr>
<td>kDeviceTypeDefault The default OpenCL device in the system.</td>
</tr>
<tr>
<td>kDeviceTypeAll All OpenCL devices available in the system.</td>
</tr>
</tbody>
</table>

Dim Devices(-1) As CLDeviceMBS = OpenCLMBS.AllDevices(CLDeviceMBS.kDeviceTypeAll)

For Each p As CLDeviceMBS In Devices
    MsgBox p.Name
Next

Notes:

types: A bitfield that identifies the type of OpenCL device. The device_type can be used to query specific OpenCL devices or all OpenCL devices available. The valid values for device_type are specified in the following table.

cl_device_type

<table>
<thead>
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<th>Description</th>
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<td>kDeviceTypeCPU An OpenCL device that is the host processor. The host processor runs the OpenCL implementations and is a single or multi-core CPU.</td>
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<td>kDeviceTypeAccelerator Dedicated OpenCL accelerators (for example the IBM CELL Blade). These devices communicate with the host processor using a peripheral interconnect such as PCIe.</td>
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<td>kDeviceTypeDefault The default OpenCL device in the system.</td>
</tr>
<tr>
<td>kDeviceTypeAll All OpenCL devices available in the system.</td>
</tr>
</tbody>
</table>

Lasterror is set.

124.11.5 GetExtensionFunctionAddress(name as string) as ptr


Function: Returns the address of the extension function named by funcname.

Notes:
The function GetExtensionFunctionAddress returns the address of the extension function named by func-
name. The pointer returned should be cast to a function pointer type matching the extension function’s
definition defined in the appropriate extension specification and header file. A return value of nil indicates
that the specified function does not exist for the implementation. A non-nil return value for GetExtensi-
ionFunctionAddress does not guarantee that an extension function is actually supported. The application
must also make a corresponding query using CLPlatformMBS.Extensions or CLDeviceMBS.Extensions to
determine if an extension is supported by the OpenCL implementation.

GetExtensionFunctionAddress may not be queried for core (non-extension) functions in OpenCL. For func-
tions that are queryable with clGetExtensionFunctionAddress, implementations may choose to also export
those functions statically from the object libraries implementing those functions. However, portable appli-
cations cannot rely on this behavior.

Since there is no way to qualify the query with a device, the function pointer returned must work for all
implementations of that extension on different devices. The behavior of calling a device extension function
on a device not supporting that extension is undefined.

124.11.6  GetPictureImageFormat(pic as picture, byref RowPitch as Integer) as
CLImageFormatMBS

Function: Queries the image format this picture would need when creating a storage object with
CLMemMBS.
Example:

  dim p as new Picture(100,100,32)
  dim rowbytes as Integer
  dim format as CLImageFormatMBS = OpenCLMBS.GetPictureImageFormat(p, rowbytes)

  MsgBox hex(format.ImageChannelOrder)+" " +hex(format.ImageChannelDataType)+" " +str(rowbytes)
  // shows 10B7 and 10D2 and 416 on Mac OS X Carbon

Notes: As Real Studio uses 4 bytes per pixel on Mac and Windows, the plugin returns ARGB (or other
byte order). The alpha channel is not used as Real Studio stores

124.11.7  isAvailable as boolean

Function: Whether OpenCL is available.
Example:
if not OpenCLMBS.isAvailable then
if TargetMachO and TargetX86 then
    MsgBox "OpenCL not available. Please install Mac OS X 10.6 to use it."
else
    MsgBox "OpenCL not available. You need a Mac with Intel processor running Mac OS X 10.6."
end if
end if

Notes: Should return true on Mac OS X 10.6 and false everywhere else.

124.11.8 PlatformCount as Int64

Function: Queries number of platforms available.
Example:
    MsgBox str(OpenCLMBS.PlatformCount)

Notes:
Typically you have two with modern Macs as you get both CPU and GPU listed.
Lasterror is set.

124.11.9 Platforms as CLPlatformMBS()

Function: Obtain the list of platforms available.
Example:
    dim Platforms(-1) as CLPlatformMBS = OpenCLMBS.Platforms
    for each p as CLPlatformMBS in Platforms
        MsgBox p.Name
    next

Notes: Lasterror is set.
124.11.10 UnloadCompiler


**Function:** Allows the implementation to release the resources allocated by the OpenCL compiler.

**Example:**

OpenCLMBS.UnloadCompiler
MsgBox OpenCLMBS.LastErrorMessage

**Notes:**

This is a hint from the application and does not guarantee that the compiler will not be used in the future or that the compiler will actually be unloaded by the implementation. Calls to BuildProgram after UnloadCompiler will reload the compiler, if necessary, to build the appropriate program executable. Lasterror is set.

124.11.11 WaitForEvents(events() as CLEventMBS)


**Function:** Waits on the host thread for commands identified by event objects to complete.

**Notes:**

events: The events specified in event_list act as synchronization points.

Waits on the host thread for commands identified by event objects in event_list to complete. A command is considered complete if its execution status is kCommandExecutionStatusComplete or a negative value.

Lasterror is set.

124.11.12 Properties

124.11.13 LastError as Integer


**Function:** The last error code.

**Example:**

MsgBox str(OpenCLMBS.LastError)

**Notes:**
All the functions in all the OpenCL classes set this property, too.
(Read only property)

124.11.14 LastErrorMessage as string

**Function:** The text message for the last error code.
**Example:**
MsgBox OpenCLMBS.LastErrorMessage

**Notes:** (Read only property)

124.11.15 Constants

124.11.16 kBuildProgramFailure = -11

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.17 kCompilerNotAvailable = -3

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.18 kDeviceNotAvailable = -2

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.19 kDeviceNotFound = -1

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.
124.11.20 kImageFormatMismatch = -9

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.21 kImageFormatNotSupported = -10

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.22 kInvalidArgIndex = -49

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.23 kInvalidArgSize = -51

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.24 kInvalidArgValue = -50

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.25 kInvalidBinary = -42

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.26 kInvalidBufferSize = -61

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.27 kInvalidBuildOptions = -43

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.
124.11. MODULE OPENCLMBS

124.11.28  kInvalidCommandQueue = -36

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.29  kInvalidContext = -34

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.30  kInvalidDevice = -33

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.31  kInvalidDeviceType = -31

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.32  kInvalidEvent = -58

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.33  kInvalidEventWaitList = -57

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.34  kInvalidGlobalOffset = -56

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.35  kInvalidGloObject = -60

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.
124.11.36  kInvalidHostPtr = -37

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.37  kInvalidImageFormatDescriptor = -39

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.38  kInvalidImageSize = -40

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.39  kInvalidKernel = -48

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.40  kInvalidKernelArgs = -52

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.41  kInvalidKernelDefinition = -47

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.42  kInvalidKernelName = -46

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.43  kInvalidMemObject = -38

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.
124.11.44 kInvalidMipLevel = -62

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.45 kInvalidOperation = -59

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.46 kInvalidPlatform = -32

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.47 kInvalidProgram = -44

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.48 kInvalidProgramExecutable = -45

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.49 kInvalidQueueProperties = -35

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.50 kInvalidSampler = -41

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.51 kInvalidValue = -30

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.
124.11.52  kInvalidWorkDimension = -53

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.53  kInvalidWorkGroupSize = -54

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.54  kInvalidWorkItemSize = -55

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.55  kMapFailure = -12

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.56  kMemCopyOverlap = -8

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.57  kMemObjectAllocationFailure = -4

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.58  kOutOfHostMemory = -6

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.59  kOutOfResources = -5

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.
124.11.60  kProfilingInfoNotAvailable = -7

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.

124.11.61  kSuccess = 0

MBS MacFrameworks Plugin, Plugin Version: 9.6. **Function:** One of the constants for OpenCL errors.
Chapter 125

PDFKit

125.1 class CustomPDFViewMBS

125.1.1 class CustomPDFViewMBS

Function: The class for a custom PDFView.
Notes: Subclass of the PDFViewMBS class.

125.1.2 Methods

125.1.3 ClearOverlay(page as PDFPageMBS, post as boolean = true)

Function: Clear overlay item for this page.
Notes: Is post = false, than we clear the item for pre page drawing, else for post page drawing.
The plugin does not trigger a redraw, so change takes effect on the next time the page is drawn.

125.1.4 ClearOverlays

Function: Clear all overlays.
Notes: The plugin does not trigger a redraw, so change takes effect on the next time the page is drawn.
125.1.5 Constructor

Function: The constructor for a new custom PDFView object.
See also:
- 125.1.6 Constructor(Handle as Integer) 17374
- 125.1.7 Constructor(left as Double, top as Double, width as Double, height as Double) 17374

125.1.6 Constructor(Handle as Integer)

Function: The constructor.
See also:
- 125.1.5 Constructor 17374
- 125.1.7 Constructor(left as Double, top as Double, width as Double, height as Double) 17374

125.1.7 Constructor(left as Double, top as Double, width as Double, height as Double)

Function: The constructor for a new custom PDFView object.
See also:
- 125.1.5 Constructor 17374
- 125.1.6 Constructor(Handle as Integer) 17374

125.1.8 Destructor

Function: The destructor.

125.1.9 Properties

125.1.10 Overlay(page as PDFPageMBS, post as boolean = true) as variant

Function: Get/Set overlay item.
Notes:
MBS Plugin can draw a picture, NSImageMBS or PDFPageMBS below/over the PDF page. The plugin does not trigger a redraw, so change takes effect on the next time the page is drawn. (Read and Write computed property)

125.1.11 Events

125.1.12 acceptsFirstMouse(e as NSEventMBS) as boolean

**Function:** Overridden by subclasses to return true if the receiver should be sent a mouseDown event for an initial mouse-down event, false if not.
**Notes:**
The receiver can either return a value unconditionally or use the location of event e to determine whether or not it wants the event. The default implementation ignores the event and returns false.

Implement this event in a subclass to allow instances to respond to click-through. This allows the user to click on a view in an inactive window, activating the view with one click, instead of clicking first to make the window active and then clicking the view. Most view objects refuse a click-through attempt, so the event simply activates the window. Many control objects, however, such as instances of NSButton and NSSlider, do accept them, so the user can immediately manipulate the control without having to release the mouse button.

125.1.13 acceptsFirstResponder as boolean

**Function:** Whether to accept first responder.
**Notes:** Return true if your control can have the focus and false if not.

125.1.14 AfterDrawPage(graphics as NSGraphicsMBS, page as PDFPageMBS)

**Function:** The draw event called after a page was drawn.
**Notes:**
This event may not be called on OS X 10.11 or newer. On macOS 10.12.2 or later, this event is called on a non-main thread. In that case the plugin will not call this event.
125.1.15  AfterDrawPagePost(graphics as NSGraphicsMBS, page as PDFPageMBS)

Function: The draw event called after a page annotations were drawn.
Notes: This event may not be called on OS X 10.11 or newer.
On macOS 10.12.2 or later, this event is called on a non-main thread. In that case the plugin will not call this event.

125.1.16  AfterDrawRect(graphics as NSGraphicsMBS, x as Double, y as Double, w as Double, h as Double)

Function: The draw event called after something was drawn.
Notes: This event may not be called on OS X 10.11 or newer.
On macOS 10.12.2 or later, this event is called on a non-main thread. In that case the plugin will not call this event.

125.1.17  becomeFirstResponder as boolean

Function: Called when the object gets focus.
Notes: Return true to accept.

125.1.18  BeforeDrawPage(graphics as NSGraphicsMBS, page as PDFPageMBS) as boolean

Function: The draw event called before a page was drawn.
Notes: This event may not be called on OS X 10.11 or newer.
On macOS 10.12.2 or later, this event is called on a non-main thread. In that case the plugin will not call this event.
125.1.19 BeforeDrawPagePost(graphics as NSGraphicsMBS, page as PDFPageMBS) as boolean

Function: The draw event called before a page annotations were drawn.
Notes: This event may not be called on OS X 10.11 or newer.
On macOS 10.12.2 or later, this event is called on a non-main thread. In that case the plugin will not call this event.

125.1.20 BeforeDrawRect(graphics as NSGraphicsMBS, x as Double, y as Double, w as Double, h as Double) as boolean

Function: The draw event called before a something was drawn.
Notes: This event may not be called on OS X 10.11 or newer.
On macOS 10.12.2 or later, this event is called on a non-main thread. In that case the plugin will not call this event.

125.1.21 beginGestureWithEvent(e as NSEventMBS) as boolean

Function: Informs the receiver that the user has begun a touch gesture.
Notes:
e: An event object representing the gesture beginning.
The event will be sent to the view under the touch in the key window.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.

125.1.22 canBecomeKeyView as boolean

Function: Returns whether the receiver can become key view.
Notes: Returns true if the receiver can become key view, false otherwise.
125.1.23 Close

Function: The event called when the custom NSView is destroyed.

125.1.24 concludeDragOperation(sender as NSDraggingInfoMBS)

Function: Invoked when the dragging operation is complete, signaling the receiver to perform any necessary clean-up.
Notes:
sender: The object sending the message; use it to get details about the dragging operation.

For this method to be invoked, the previous performDragOperation must have returned true.

The destination implements this method to perform any tidying up that it needs to do, such as updating its visual representation now that it has incorporated the dragged data. This message is the last message sent from sender to the destination during a dragging session.

If the sender object’s animatesToDestination property was set to true in prepareForDragOperation, then the drag image is still visible. At this point you should draw the final visual representation in the view. When this method returns, the drag image is removed form the screen. If your final visual representation matches the visual representation in the drag, this is a seamless transition.

125.1.25 draggingEnded(sender as NSDraggingInfoMBS)

Function: Implement this event to be notified when a drag operation ends in some other destination.
Notes:
sender: The object sending the message; use it to get details about the dragging operation.

This method might be used by a destination doing auto-expansion in order to collapse any auto-expands.

125.1.26 draggingEntered(sender as NSDraggingInfoMBS) as Integer

Function: Invoked when the dragged image enters destination bounds or frame; delegate returns dragging
operation to perform.

**Notes:**

sender: The object sending the message; use it to get details about the dragging operation.

Return one (and only one) of the dragging operation constants described in NSDragOperation in the NS-DraggingInfo reference. The default return value (if this method is not implemented by the destination) is the value returned by the previous draggingEntered message.

Invoked when a dragged image enters the destination but only if the destination has registered for the pasteboard data type involved in the drag operation. Specifically, this method is invoked when the mouse pointer enters the destination's bounds rectangle (if it is a view object) or its frame rectangle (if it is a window object).

This method must return a value that indicates which dragging operation the destination will perform when the image is released. In deciding which dragging operation to return, the method should evaluate the overlap between both the dragging operations allowed by the source (obtained from sender with the draggingSourceOperationMask method) and the dragging operations and pasteboard data types the destination itself supports.

If none of the operations is appropriate, this method should return NSDragOperationNone (this is the default response if the method is not implemented by the destination). A destination will still receive draggingUpdated and draggingExited even if NSDragOperationNone is returned by this method.

### 125.1.27 draggingExited(sender as NSDraggingInfoMBS)


**Function:** Invoked when the dragged image exits the destination’s bounds rectangle (in the case of a view object) or its frame rectangle (in the case of a window object).

**Notes:** sender: The object sending the message; use it to get details about the dragging operation.

### 125.1.28 draggingSessionEndedAtPoint(session as NSDraggingSessionMBS, screenPoint as NSPointMBS, operation as Integer)


**Function:** Invoked when the dragging session has completed.

**Notes:**

session: The dragging session.

screenPoint: The point where the drag ended, in screen coordinates.

operation: The drag operation. See constants for drag operation types.
125.1.29 draggingSessionMovedToPoint(session as NSDraggingSessionMBS, screenPoint as NSPointMBS)

Function: Invoked when the drag moves on the screen.
Notes:
session: The dragging session.
screenPoint: The point where the drag moved to, in screen coordinates.

Available in OS X v10.7 and later.

125.1.30 draggingSessionSourceOperationMaskForDraggingContext(session as NSDraggingSessionMBS, context as Integer) as Integer

Function: Declares the types of operations the source allows to be performed. (required)
Notes:
session: The dragging session.
context: The dragging context. See NSDraggingContext constants for the supported values.

Return the appropriate dragging operation as defined in constants.

In the future Apple may provide more specific "within" values in the future. To account for this, for unrecognized localities, return the operation mask for the most specific context that you are concerned with.

125.1.31 draggingSessionWillBeginAtPoint(session as NSDraggingSessionMBS, screenPoint as NSPointMBS)

Function: Invoked when the drag will begin.
Notes:
session: The dragging session.
screenPoint: The point where the drag will begin, in screen coordinates.

Available in OS X v10.7 and later.
125.1.32 draggingSourceOperationMaskForLocal(flag as boolean) as Integer


Function: Returns an integer bit mask indicating the types of dragging operations the source object will allow to be performed on the dragged image’s data.

Notes:

(Deprecated in OS X v10.7. This method is informally deprecated. It is only called if the source does not implement the NSDraggingSource protocol methods. This method will be formally deprecated in a future OS release.)

isLocal: True indicates that the candidate destination object (the window or view over which the dragged image is currently poised) is in the same application as the source, while a false value indicates that the destination object is in a different application.

A mask, created by combining the dragging operations listed in the NSDragOperation section of NSDraggingInfo protocol reference using the C bitwise OR operator. If the source does not permit any dragging operations, it should return NSDragOperationNone.

If not implemented, the default value is NSDragOperationCopy | NSDragOperationLink | NSDragOperationGeneric | NSDragOperationPrivate.

Available in OS X v10.0 and later. Deprecated in OS X v10.7.

125.1.33 draggingUpdated(sender as NSDraggingInfoMBS) as Integer


Function: Invoked periodically as the image is held within the destination area, allowing modification of the dragging operation or mouse-pointer position.

Notes:

sender: The object sending the message; use it to get details about the dragging operation.

Return one (and only one) of the dragging operation constants described in NSDragOperation in the NSDraggingInfo reference. The default return value (if this method is not implemented by the destination) is the value returned by the previous draggingEntered message.

For this to be invoked, the destination must have registered for the pasteboard data type involved in the drag operation. The messages continue until the image is either released or dragged out of the window or view.
This method provides the destination with an opportunity to modify the dragging operation depending on the position of the mouse pointer inside of the destination view or window object. For example, you may have several graphics or areas of text contained within the same view and wish to tailor the dragging operation, or to ignore the drag event completely, depending upon which object is underneath the mouse pointer at the time when the user releases the dragged image and the performDragOperation method is invoked.

You typically examine the contents of the pasteboard in the draggingEntered method, where this examination is performed only once, rather than in the draggingUpdated method, which is invoked multiple times.

Only one destination at a time receives a sequence of draggingUpdated messages. If the mouse pointer is within the bounds of two overlapping views that are both valid destinations, the uppermost view receives these messages until the image is either released or dragged out.

### 125.1.34 endGestureWithEvent(e as NSEventMBS) as boolean


**Function:** Informs the receiver that the user has ended a touch gesture.

**Notes:**

- `e`: An event object representing the gesture end.
- Available in Mac OS X v10.6 and later.
- Return true if you handled this event.

### 125.1.35 ignoreModifierKeysForDraggingSession(session as NSDraggingSessionMBS) as boolean


**Function:** Returns whether the modifier keys will be ignored for this dragging session.

**Notes:**

- `session`: The dragging session.
- Return true if the modifier keys will be ignored, false otherwise.
- Available in OS X v10.7 and later.

### 125.1.36 isOpaque as boolean


**Function:** Whether this view is opaque.
125.1. **CLASS CUSTOMPDFVIEWMBS**

125.1.37  **keyDown(e as NSEventMBS) as boolean**

**Function:** One of the key events.
**Notes:** Return true if you handled this event.

125.1.38  **keyUp(e as NSEventMBS) as boolean**

**Function:** One of the key events.
**Notes:** Return true if you handled this event.

125.1.39  **magnifyWithEvent(e as NSEventMBS) as boolean**

**Function:** Informs the receiver that the user has begun a pinch gesture.
**Notes:**
- `e`: An event object representing the magnify gesture.
- The event will be sent to the view under the touch in the key window.
- Available in Mac OS X v10.6 and later.
- Return true if you handled this event.

125.1.40  **menuForEvent(e as NSEventMBS, defaultMenu as NSMenuMBS) as NSMenuMBS**

**Function:** Overridden by subclasses to return a context-sensitive pop-up menu for a given mouse-down event.
**Notes:**
- `theEvent`: An object representing a mouse-down event.
- `defaultMenu`: The menu as constructed by super class.

The receiver can use information in the mouse event, such as its location over a particular element of the receiver, to determine what kind of menu to return. For example, a text object might display a text-editing menu when the cursor lies over text and a menu for changing graphics attributes when the cursor lies over an embedded image.

The default implementation returns the default menu.
125.1.41 mouseDown(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes: Return true if you handled this event.

125.1.42 mouseDownCanMoveWindow as boolean

Function: This event is called so you can decide what happens with mouse down.
Notes: Return true if you do not need to handle a mouse down and it can pass through to superviews; False if you need to handle the mouse down.

This allows iApp-type applications to determine the region by which a window can be moved. By default, this method returns false if the view is opaque; otherwise, it returns true. Subclasses can override this method to return a different value.

125.1.43 mouseDragged(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes: Return true if you handled this event.

125.1.44 mouseEntered(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes: Return true if you handled this event.

125.1.45 mouseExited(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes: Return true if you handled this event.
125.1.46  mouseMoved(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes: Return true if you handled this event.

125.1.47  mouseUp(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes: Return true if you handled this event.

125.1.48  Open

Function: The event called when the custom NSView is created.

125.1.49  otherMouseDown(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes:
Return true if you handled this event.
Third mouse button.

125.1.50  otherMouseDragged(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes:
Return true if you handled this event.
Third mouse button.
125.1.51  `otherMouseUp(e as NSEventMBS, x as Double, y as Double) as boolean`

**Function:** One of the mouse events.
**Notes:**
Return true if you handled this event.
Third mouse button.

125.1.52  `performDragOperation(sender as NSDraggingInfoMBS) as boolean`

**Function:** Invoked after the released image has been removed from the screen, signaling the receiver to import the pasteboard data.
**Notes:**
sender: The object sending the message; use it to get details about the dragging operation.
Return if the destination accepts the data, it returns true; otherwise it returns false. The default is to return false.
For this method to be invoked, the previous prepareForDragOperation message must have returned true. The destination should implement this method to do the real work of importing the pasteboard data represented by the image.
If the sender object’s animatesToDestination was set to true in prepareForDragOperation, then setup any animation to arrange space for the drag items to animate to. Also at this time, enumerate through the dragging items to set their destination frames and destination images.

125.1.53  `prepareForDragOperation(sender as NSDraggingInfoMBS) as boolean`

**Function:** Invoked when the image is released, allowing the receiver to agree to or refuse drag operation.
**Notes:**
sender: The object sending the message; use it to get details about the dragging operation.
Returns true if the receiver agrees to perform the drag operation and false if not.
This method is invoked only if the most recent draggingEntered or draggingUpdated message returned an acceptable drag-operation value.
If you want the drag items to animate from their current location on screen to their final location in your view, set the sender object’s animatesToDestination property to true in your implementation of this method.
125.1.54  pressureChange(e as NSEventMBS) as boolean

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes.
Function: Informs the current object that a pressure change occurred on a system that supports pressure sensitivity.
Notes: This method is invoked automatically in response to user actions. event is the event that initiated the change in pressure.
Available in OS X v10.10.3 and later.

125.1.55  resignFirstResponder as boolean

Function: Focus is going away.
Notes: Return true to accept.

125.1.56  rightMouseDown(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes: Return true if you handled this event.

125.1.57  rightMouseDragged(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes: Return true if you handled this event.

125.1.58  rightMouseUp(e as NSEventMBS, x as Double, y as Double) as boolean

Function: One of the mouse events.
Notes: Return true if you handled this event.
125.1.59 rotateWithEvent(e as NSEventMBS) as boolean

Function: Informs the receiver that the user has begun a rotation gesture.
Notes:
e: An event object representing the rotate gesture.
The event will be sent to the view under the touch in the key window.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.

125.1.60 scrollWheel(e as NSEventMBS) as boolean

Function: Informs the subclass that the mouse’s scroll wheel has moved.
Notes:
e: An object encapsulating information about the wheel-scrolling event.
The default implementation simply passes this message to the next responder.
Return true to not pass the event.

125.1.61 swipeWithEvent(e as NSEventMBS) as boolean

Function: Informs the receiver that the user has begun a swipe gesture.
Notes:
e: An event object representing the swipe gesture.
The event will be sent to the view under the touch in the key window.
Available in Mac OS X v10.6 and later.
Return true if you handled this event.

125.1.62 updateDraggingItemsForDrag(sender as NSDraggingInfoMBS)

Function: Invoked when the dragging images should be changed.
Notes:
sender: The object sending the message; use this object to get details about the dragging operation.

While a destination may change the dragging images at any time, it is recommended to wait until this
method is called before updating the dragging images.

This allows the system to delay changing the dragging images until it is likely that the user will drop on this destination. Otherwise, the dragging images will change too often during the drag which would be distracting to the user.

125.1.63 viewDidMoveToWindow

Function: Informs the receiver that it has been added to a new view hierarchy.
Notes: The default implementation does nothing; subclasses can implement this event to perform whatever actions are necessary.

window may return nil when this method is invoked, indicating that the receiver does not currently reside in any window. This occurs when the receiver has just been removed from its superview or when the receiver has just been added to a superview that does not itself have a window. Overrides of this method may choose to ignore such cases if they are not of interest.

125.1.64 wantsPeriodicDraggingUpdates as boolean

Function: Asks the destination object whether it wants to receive periodic draggingUpdated messages.
Notes: Return true if the destination wants to receive periodic draggingUpdated messages, false otherwise.

If the destination returns false, these messages are sent only when the mouse moves or a modifier flag changes. Otherwise the destination gets the default behavior, where it receives periodic dragging-updated messages even if nothing changes.
125.2 class PDFActionGoToMBS

125.2.1 class PDFActionGoToMBS

MBS MacControls Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** PDFActionGoTo, a subclass of PDFAction, defines methods for getting and setting the destination of a go-to action.

**Notes:**
A PDFActionGoTo object represents the action of going to a specific location within the PDF document. Subclass of the PDFActionMBS class.

125.2.2 Methods

125.2.3 Constructor(destination as PDFDestinationMBS)

MBS MacControls Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes the go-to action.

**Notes:**

destination: The destination with which to initialize the go-to action.
Available in Mac OS X v10.5 and later.

125.2.4 Properties

125.2.5 destination as PDFDestinationMBS

MBS MacControls Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The destination associated with the action.

**Notes:**
Available in Mac OS X v10.5 and later.
(Read and Write property)
125.3. CLASS PDFACTIONMBS

125.3 class PDFActionMBS

125.3.1 class PDFActionMBS

Function: PDFAction represents an action that is performed when, for example, a PDF annotation is activated or an outline item is clicked.
Notes:
A PDFAction object represents an action associated with a PDF element, such as an annotation or a link, that the viewer application can perform. See the Adobe PDF Specification for more about actions and action types.

PDFAction is an abstract superclass of the following concrete classes:

- PDFActionGoToMBS
- PDFActionNamedMBS
- PDFActionRemoteGoToMBS
- PDFActionResetFormMBS
- PDFActionURLMBS

This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

125.3.2 Methods

125.3.3 Constructor

Function: The private constructor.
Notes:
This class is the base class for a number of annotations. So this constructor is private to make sure you don’t create instances of PDFActionMBS. But you can still create instances of the subclasses. This constructor is private to make sure you don’t create an object from this class by error. Please use designated functions to create objects.

125.3.4 copy as PDFActionMBS

Function: Creates a copy of the action object.
### 125.3.5  type as string


**Function:** Returns the type of the action.

**Notes:**

The PDF action type returned by this method may not correspond precisely to the name of a PDFAction subclass. For example, a PDFActionURL object might return "URI" or "Launch," depending on the original action as defined by the Adobe PDF Specification. In the PDF Kit, these two actions are handled in the single PDFActionURL subclass, and the more familiar term "URL" is used instead.

Available in Mac OS X v10.5 and later.

### 125.3.6 Properties

#### 125.3.7  Handle as Integer


**Function:** The internal reference to the PDF action object.

**Notes:** (Read and Write property)
125.4  class PDFActionNamedMBS

125.4.1  class PDFActionNamedMBS

Function: PDFActionNamed defines methods used to work with actions in PDF documents, some of which are named in the Adobe PDF Specification.
Notes:
A PDFActionNamed object represents an action with a defined name, such as "Go back" or "Zoom in." Subclass of the PDFActionMBS class.

125.4.2  Methods

125.4.3  Constructor(name as Integer)

Function: Initializes the PDFActionName object with the specified named action.
Notes: Available in Mac OS X v10.5 and later.

125.4.4  Properties

125.4.5  name as Integer

Function: The name of the named action.
Notes:
Available in Mac OS X v10.5 and later. (Read and Write property)

125.4.6  Constants

125.4.7  kPDFActionNamedFind = 8

MBS MacControls Plugin, Plugin Version: 9.6. Function: One of the name constants for the action.
Notes:
The Find action. Available in Mac OS X v10.5 and later.
125.4.8  kPDFActionNamedFirstPage = 3

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the name constants for the action.
**Notes:**
The First Page action.
Available in Mac OS X v10.5 and later.

125.4.9  kPDFActionNamedGoBack = 5

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the name constants for the action.
**Notes:**
The Go Back action.
Available in Mac OS X v10.5 and later.

125.4.10  kPDFActionNamedGoForward = 6

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the name constants for the action.
**Notes:**
The Go Forward action.
Available in Mac OS X v10.5 and later.

125.4.11  kPDFActionNamedGoToPage = 7

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the name constants for the action.
**Notes:**
The Go to Page action.
Available in Mac OS X v10.5 and later.

125.4.12  kPDFActionNamedLastPage = 4

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the name constants for the action.
**Notes:**
The Last Page action.
Available in Mac OS X v10.5 and later.
125.4.13  kPDFActionNamedNextPage = 1

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the name constants for the action. **Notes:** The Next Page action. Available in Mac OS X v10.5 and later.

125.4.14  kPDFActionNamedNone = 0

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the name constants for the action. **Notes:** The action has no name. Available in Mac OS X v10.5 and later.

125.4.15  kPDFActionNamedPreviousPage = 2

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the name constants for the action. **Notes:** The Previous Page action. Available in Mac OS X v10.5 and later.

125.4.16  kPDFActionNamedPrint = 9

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the name constants for the action. **Notes:** The Print action. Available in Mac OS X v10.5 and later.

125.4.17  kPDFActionNamedZoomIn = 10

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the name constants for the action. **Notes:** The Zoom In action. Available in Mac OS X v10.5 and later.
125.4.18  kPDFActionNamedZoomOut = 11

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the name constants for the action.

**Notes:**
The Zoom Out action.
Available in Mac OS X v10.5 and later.
125.5  class PDFActionRemoteGoToMBS

125.5.1  class PDFActionRemoteGoToMBS

**Function:**  PDFActionRemoteGoTo, a subclass of PDFAction, defines methods for getting and setting the
destination of a go-to action that targets another document.

**Notes:**
Available in Mac OS X v10.5 and later.
Subclass of the PDFActionMBS class.

125.5.2  Methods

125.5.3  Constructor(PageIndex as Integer, atPoint as NSPointMBS, file as folderitem)

**Function:**  Initializes the remote go-to action with the specified page index, point, and document URL.

**Notes:**
pageIndex: The page index of the remote document.
point: The point on the page in the remote document.
file: The file of the remote PDF document.

The PDFActionRemoteGoTo object uses a zero-based page index, not a PDFPage object. This simplifies
the handling of remote destinations for documents that may not be instantiated yet.

Available in Mac OS X v10.5 and later.
See also:
• 125.5.4 Constructor(PageIndex as Integer, atPoint as NSPointMBS, url as string)

125.5.4  Constructor(PageIndex as Integer, atPoint as NSPointMBS, url as string)

**Function:**  Initializes the remote go-to action with the specified page index, point, and document URL.

**Notes:**
pageIndex: The page index of the remote document.
point: The point on the page in the remote document.
url: The URL of the remote PDF document.
The PDFActionRemoteGoTo object uses a zero-based page index, not a PDFPage object. This simplifies the handling of remote destinations for documents that may not be instantiated yet.

Available in Mac OS X v10.5 and later.

See also:

• 125.5.3 Constructor(PageIndex as Integer, atPoint as NSPointMBS, file as folderitem)

### 125.5.5 Properties

#### 125.5.6 pageIndex as Integer


**Function:** The zero-based page index referenced by the remote go-to action.

**Notes:**

Available in Mac OS X v10.5 and later.
(Read and Write property)

#### 125.5.7 point as NSPointMBS


**Function:** The point, in page space, on the page referenced by the remote go-to action.

**Notes:**

The point on the page of the remote document referenced by the action. If either the x value or the y value of the point is kPDFDestinationUnspecifiedValue, no position on the page is specified.

Page space is a 72-dpi coordinate system with the origin at the lower-left corner of the current page.

Available in Mac OS X v10.5 and later.
(Read and Write property)

#### 125.5.8 URL as string


**Function:** The URL of the document referenced by the remote go-to action.

**Notes:**

Available in Mac OS X v10.5 and later.
(Read and Write property)
125.6. class PDFActionResetFormMBS

125.6.1 class PDFActionResetFormMBS


Function: PDFActionResetForm, a subclass of PDFAction, defines methods for getting and clearing fields in a PDF form.
Notes:
A PDFActionResetForm object represents an action associated with a PDF form.
Subclass of the PDFActionMBS class.

125.6.2 Methods

125.6.3 Constructor


Function: Initializes a reset form action.
Notes:
Initially, there are no fields and fieldsIncludedAreCleared returns true.
Available in Mac OS X v10.5 and later.

125.6.4 fields as string()


Function: Returns an array of fields associated with the reset action.
Notes:
An array of strings that corresponds to the fieldNames property of widget annotations (such as PDFAnnotationButtonWidget) on the PDF page. This method can return an empty array.
Available in Mac OS X v10.5 and later.

125.6.5 setFields(fields() as string)


Function: Sets the array of fields associated with the reset action.
Notes: Available in Mac OS X v10.5 and later.
125.6.6 Properties

125.6.7 fieldsIncludedAreCleared as boolean


Function: Whether the fields associated with the reset action are cleared when the action is performed.

Notes:

If true, the reset action’s fields are cleared when the action is performed. If false, the fields are excluded from the reset action; that is, they are not cleared, but all other fields in the document are cleared.

Available in Mac OS X v10.5 and later.

(Read and Write property)
125.7. class PDFActionURLMBS

125.7.1 class PDFActionURLMBS

Function: PDFActionURL, a subclass of PDFAction, defines methods for getting and setting the URL associated with a URL action.  
Notes: Subclass of the PDFActionMBS class.

125.7.2 Methods

125.7.3 Constructor(url as string)

Function: Initializes a URL action with the specified URL.  
Notes: Available in Mac OS X v10.5 and later.

125.7.4 Properties

125.7.5 URL as string

Function: The URL associated with the URL action.  
Notes: Available in Mac OS X v10.5 and later.  
(Read and Write property)
125.8 class PDFAnnotationButtonWidgetMBS

125.8.1 class PDFAnnotationButtonWidgetMBS

**Function:** The class for an annotation button widget.
**Notes:** Subclass of the PDFAnnotationMBS class.

125.8.2 Methods

125.8.3 Constructor(left as single, top as single, width as single, height as single)

**Function:** The constructor which creates a new annotation widget.

125.8.4 Properties

125.8.5 allowsToggleToOff as boolean

**Function:** Returns a Boolean value indicating whether a radio button behaves in a toggling manner.
**Notes:**
True if clicking a radio button control that is already in the on state toggles it to the off state; otherwise false.
Available in Mac OS X v10.5 and later.
(Read only property)

125.8.6 backgroundColor as NSColorMBS

**Function:** The background color.
**Notes:** (Read and Write property)
125.8. **CLASS PDFANNOTATIONBUTTONWIDGETMBS**

125.8.7 **caption as string**


**Function:** The text of the label on a push button control.

**Notes:**

This method applies only to the label drawn on a control of type kPDFWidgetPushButtonControl.
Available in Mac OS X v10.5 and later.
(Read and Write property)

125.8.8 **controlType as Integer**


**Function:** The control type of this widget.

**Notes:**

Value is one of the following constants:

- kPDFWidgetUnknownControl
- kPDFWidgetPushButtonControl
- kPDFWidgetRadioButtonControl
- kPDFWidgetCheckBoxControl
- kPDFWidgetCheckBoxControl

(Read and Write property)

125.8.9 **fieldName as string**


**Function:** The internal name of a field (used for reset-form actions).

**Notes:**

Available in Mac OS X v10.5 and later.
(Read and Write property)

125.8.10 **font as NSFontMBS**


**Function:** The font used in the control’s label.

**Notes:**

Available in Mac OS X v10.5 and later.
(Read and Write property)
125.8.11 **fontColor as NSColorMBS**

**Function:** The font color used in the control’s label.
**Notes:**
Available in Mac OS X v10.5 and later.
(Read and Write property)

125.8.12 **Highlighted as boolean**

**Function:** A Boolean value that indicates whether the control is highlighted when it is drawn.
**Notes:**
Available in Mac OS X v10.5 and later.
(Read and Write property)

125.8.13 **onStateValue as string**

**Function:** The string associated with the on state of a radio button or checkbox control.
**Notes:**
This is a required string for controls of types kPDFWidgetRadioButtonControl and kPDFWidgetCheckBoxControl. The off state is always labeled "Off".
Available in Mac OS X v10.5 and later.
(Read and Write property)

125.8.14 **state as Integer**

**Function:** The state value.
**Notes:** (Read and Write property)
125.8. CLASS PDFANNOTATIONBUTTONWIDGETMBS

125.8.15 Events

125.8.16 drawWithBox(box as Integer, g as NSGraphicsMBS) as boolean

**Function:** The event called for a custom drawing.  
**Notes:**  
You can draw here what the annotation should show.  
Return true to disable the default drawing from PDFKit.

125.8.17 Constants

125.8.18 kPDFWidgetCheckBoxControl = 2

MBS MacControls Plugin, Plugin Version: 8.0. **Function:** One of the control types for this widget.

125.8.19 kPDFWidgetPushButtonControl = 0

MBS MacControls Plugin, Plugin Version: 8.0. **Function:** One of the control types for this widget.

125.8.20 kPDFWidgetRadioButtonControl = 1

MBS MacControls Plugin, Plugin Version: 8.0. **Function:** One of the control types for this widget.

125.8.21 kPDFWidgetUnknownControl = -1

MBS MacControls Plugin, Plugin Version: 8.0. **Function:** One of the control types for this widget.

125.8.22 NSOffState = 0

MBS MacControls Plugin, Plugin Version: 12.5. **Function:** One of the state constants.  
**Notes:** The corresponding feature is in effect nowhere.
125.8.23 NSOnState = 1

MBS MacControls Plugin, Plugin Version: 12.5. **Function:** One of the state constants.  
**Notes:** The corresponding feature is in effect everywhere.
125.9 class PDFAnnotationChoiceWidgetMBS

125.9.1 class PDFAnnotationChoiceWidgetMBS

Function: A PDFAnnotationChoiceWidget object provides user interactivity on a page of a PDF document, in the form of pop-up menus and lists.
Notes:
PDFAnnotationChoiceWidget inherits general annotation behavior from the PDFAnnotation class. If you use a PDFAnnotationChoiceWidget object, your application must handle hit testing, unless you are simply using PDFView to display content. This is because PDFView automatically handles hit testing for you. Subclass of the PDFAnnotationMBS class.

125.9.2 Methods

125.9.3 choices as string()

Function: Returns an array of strings that represent the items available in the list or pop-up menu of the choice widget annotation.
Notes: Available in Mac OS X v10.5 and later.

125.9.4 Constructor(left as single, top as single, width as single, height as single)

Function: Initializes a PDF annotation object.
Notes:
Page space is a 72 dpi coordinate system with the origin at the lower-left corner of the current page. Available in Mac OS X v10.4 and later.

125.9.5 setChoices(choices() as string)

Function: Sets the items available in the list or pop-up menu of the choice widget annotation.
Notes:
choices: Send an array of strings, each of which represents an item in the list or pop-up menu of the choice annotation widget.
125.9.6 Properties

125.9.7 backgroundColor as NSColorMBS

Function: The color of the widget annotation background.
Notes:
Available in Mac OS X v10.5 and later.
(Read and Write property)

125.9.8 fieldName as string

Function: The internal field name associated with the widget annotation’s value.
Notes:
If the widget annotation is backed by PDF form data, it can associate an optional field name with a value or other data.
Available in Mac OS X v10.5 and later.
(Read and Write property)

125.9.9 font as NSFontMBS

Function: The font used to display the text in the widget annotation.
Notes:
Available in Mac OS X v10.5 and later.
(Read and Write property)

125.9.10 fontColor as NSColorMBS

Function: The font color used to display the text in the widget annotation.
Notes:
125.9. **CLASS PDFANNOTATIONCHOICEWIDGETMBS**

Available in Mac OS X v10.5 and later.
(Read and Write property)

125.9.11 **isListChoice as boolean**

**Function:** Whether the widget annotation is a list.
**Notes:**
A choice widget annotation can be either a list or a pop-up menu.

Available in Mac OS X v10.5 and later.
(Read and Write property)

125.9.12 **stringValue as string**

**Function:** The selection in the widget annotation.
**Notes:**
If the widget annotation object is backed by PDF form data, this method returns the value associated with the appropriate field in the form object, if possible.

Available in Mac OS X v10.5 and later.
(Read and Write property)

125.9.13 **Events**

125.9.14 **drawWithBox(box as Integer, g as NSGraphicsMBS) as boolean**

**Function:** The event called for a custom drawing.
**Notes:**
You can draw here what the annotation should show.
Return true to disable the default drawing from PDFKit.
125.10 class PDFAnnotationCircleMBS

125.10.1 class PDFAnnotationCircleMBS


Function: The PDFKit class for an annotation circle.

Example:

```vba
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)

dim page as PDFPageMBS = doc.pageAtIndex(0)
dim a as new PDFAnnotationCircleMBS(100,100,100,100)

a.border.style = PDFBorderMBS.kPDFBorderStyleBeveled

page.addAnnotation(a)

dim o as FolderItem = SpecialFolder.Desktop.Child("testout.pdf")
call doc.write(o)
o.Launch
```

Notes: Subclass of the PDFAnnotationMBS class.

125.10.2 Methods

125.10.3 Constructor(left as single, top as single, width as single, height as single)


Function: The constructor to create a new annotation circle.

Example:

```vba
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)

dim page as PDFPageMBS = doc.pageAtIndex(0)
dim a as new PDFAnnotationCircleMBS(100,100,100,100)

page.addAnnotation(a)

dim o as FolderItem = SpecialFolder.Desktop.Child("testout.pdf")
call doc.write(o)
o.Launch
```
125.10.4 Properties

125.10.5 interiorColor as NSColorMBS

Function: Fill color used for drawing annotation.
Example:

```vbs
Dim f As FolderItem = SpecialFolder.Desktop.Child("test.pdf")
Dim doc As New PDFDocumentMBS(f)
Dim page As PDFPageMBS = doc.pageAtIndex(0)
Dim a As New PDFAnnotationCircleMBS(100, 100, 100, 100)
a.interiorColor = NSColorMBS.magentaColor
page.addAnnotation(a)

Dim o As FolderItem = SpecialFolder.Desktop.Child("testout.pdf")
call doc.write(o)
o.Launch
```

Notes: (Read and Write property)

125.10.6 Events

125.10.7 drawWithBox(box as Integer, g as NSGraphicsMBS) as boolean

Function: The event called for a custom drawing.
Notes:

You can draw here what the annotation should show.
Return true to disable the default drawing from PDFKit.
125.11 class PDFAnnotationFreeTextMBS

125.11.1 class PDFAnnotationFreeTextMBS

Function: The class for a free text annotation.
Example:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
dim page as PDFPageMBS = doc.pageAtIndex(0)
dim annotations(-1) as PDFAnnotationMBS = page.annotations

for each a as PDFAnnotationMBS in annotations
if a isa PDFAnnotationFreeTextMBS then
    dim ft as PDFAnnotationFreeTextMBS = PDFAnnotationFreeTextMBS(a)
    MsgBox ft.contents
end if
next

Notes: Subclass of the PDFAnnotationMBS class.

125.11.2 Methods

125.11.3 Constructor(left as single, top as single, width as single, height as single)

Function: The constructor to create a new free text annotation.

125.11.4 Properties

125.11.5 alignment as Integer

Function: Alignment of text within annotation bounds.
Example:

dim a as PDFAnnotationFreeTextMBS // an annotation

if a.alignment=a.NSLeftTextAlignment then
// left aligned
end if

Notes:
Supported: NSLeftTextAlignment, NSRightTextAlignment and NSCenterTextAlignment.
(Read and Write property)

125.11.6  font as NSFontMBS

Function: Font associated with the text field.
Notes: (Read and Write property)

125.11.7  fontColor as NSColorMBS

Function: The font color used in the text field of the annotation.
Notes: Available in Mac OS X v10.5 and later.
(Read and Write property)

125.11.8  Events

125.11.9  drawWithBox(box as Integer, g as NSGraphicsMBS) as boolean

Function: The event called for a custom drawing.
Notes: You can draw here what the annotation should show.
Return true to disable the default drawing from PDFKit.
125.11.10  Constants

125.11.11  NSCenterTextAlignment=2

MBS MacControls Plugin, Plugin Version: 8.0. **Function**: The Cocoa text alignment constant for center.

125.11.12  NSJustifiedTextAlignment=3

MBS MacControls Plugin, Plugin Version: 8.0. **Function**: The Cocoa text alignment constant for justified.

125.11.13  NSLeftTextAlignment=0

MBS MacControls Plugin, Plugin Version: 8.0. **Function**: The Cocoa text alignment constant for left.

125.11.14  NSNaturalTextAlignment=4

MBS MacControls Plugin, Plugin Version: 8.0. **Function**: The Cocoa text alignment constant for natural.

125.11.15  NSRightTextAlignment=1

MBS MacControls Plugin, Plugin Version: 8.0. **Function**: The Cocoa text alignment constant for right.
125.12. **class PDFAnnotInkMBS**

125.12.1 **class PDFAnnotInkMBS**

**Function:** The PDFKit class for an ink annotation.
**Notes:** Subclass of the PDFAnnotMBS class.

125.12.2 **Methods**

125.12.3 **addBezierPath(path as NSBezierPathMBS)**

**Function:** Adds a Bezier path to an annotation.

125.12.4 **Constructor(left as single, top as single, width as single, height as single)**

**Function:** The constructor to create a new ink annotation.

125.12.5 **paths as NSBezierPathMBS()**

**Function:** Returns an array containing the Bezier paths that make up an annotation.
**Example:**

```vbnet
dim a as new PDFAnnotInkMBS(0, 0, 100, 100)
dim b1 as NSBezierPathMBS = NSBezierPathMBS.bezierPathWithRect(NSMakeRectMBS(10, 10, 10, 10))
a.addBezierPath b1

dim b2 as NSBezierPathMBS = NSBezierPathMBS.bezierPathWithRect(NSMakeRectMBS(50, 50, 20, 30))
a.addBezierPath b2

dim paths() as NSBezierPathMBS = a.paths
break
```
125.12.6  removeBezierPath(path as NSBezierPathMBS)

Function: Removes a Bezier path from an annotation.

125.12.7  Events

125.12.8  drawWithBox(box as Integer, g as NSGraphicsMBS) as boolean

Function: The event called for a custom drawing.
Notes: You can draw here what the annotation should show.
Return true to disable the default drawing from PDFKit.
125.13.  CLASS PDFANNOTATIONLINEMBS

125.13  class PDFAnnotationLineMBS

125.13.1  class PDFAnnotationLineMBS

Function: The PDFKit class for a line annotation.
Example:

```vba
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
dim page as PDFPageMBS = doc.pageAtIndex(0)
dim annotations(-1) as PDFAnnotationMBS = page.annotations

// show lines on first page
for each a as PDFAnnotationMBS in annotations
    if a isa PDFAnnotationLineMBS then
        dim l as PDFAnnotationLineMBS = PDFAnnotationLineMBS(a)
        MsgBox "Line from " + l.startPoint.String + " to " + l.endPoint.String
    end if
next
```

Notes: Subclass of the PDFAnnotationMBS class.

125.13.2  Methods

125.13.3  Constructor(left as single, top as single, width as single, height as single)

Function: The constructor for a new annotation line.
Example:

```vba
dim a as new PDFAnnotationLineMBS(100,100,100,100)
```

125.13.4  Properties

125.13.5  endLineStyle as Integer

Function: Style used for ornaments at the line end.
Example:
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)

dim page as PDFPageMBS = doc.pageAtIndex(0)
dim a as new PDFAnnotationLineMBS(100,100,100,100)
a.colorValue = NSColorMBS.redColor
a.endLineStyle = a.kPDFLineStyleOpenArrow

page.addAnnotation(a)

dim o as FolderItem = SpecialFolder.Desktop.Child("testout.pdf")
call doc.write(o)

Notes: (Read and Write property)

125.13.6  endPoint as NSPointMBS

Function: A point specifying the end point for line annotation.
Example:
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
dim page as PDFPageMBS = doc.pageAtIndex(0)
dim annotations(-1) as PDFAnnotationMBS = page.annotations

// show lines on first page
for each a as PDFAnnotationMBS in annotations
if a isa PDFAnnotationLineMBS then
dim l as PDFAnnotationLineMBS = PDFAnnotationLineMBS(a)
MsgBox "Line from " +l.startPoint.String+" to "+l.endPoint.String
end if
next

Notes: (Read and Write property)

125.13.7  interiorColor as NSColorMBS

Function: The color used to fill the ornament at the ends of the line.
125.13. CLASS PDFANNOTATIONLINEMBS

Notes:
Available in Mac OS X v10.5 and later.
(Read and Write property)

125.13.8 startLineStyle as Integer

Function: Style used for ornaments at the line start.
Example:

```vbscript
dim a as new PDFAnnotationLineMBS(100,100,100,100)
a.startLineStyle = a.kPDFLineStyleSquare
```

Notes: (Read and Write property)

125.13.9 startPoint as NSPointMBS

Function: A point specifying the start point for line annotation.
Example:

```vbscript
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
dim page as PDFPageMBS = doc.pageAtIndex(0)
dim annotations(-1) as PDFAnnotationMBS = page.annotations
// show lines on first page
for each a as PDFAnnotationMBS in annotations
if a isa PDFAnnotationLineMBS then
    dim l as PDFAnnotationLineMBS = PDFAnnotationLineMBS(a)
    MsgBox "Line from " + l.startPoint.String + " to " + l.endPoint.String
end if
next
```

Notes: (Read and Write property)
125.13.10 Events

125.13.11 drawWithBox(box as Integer, g as NSGraphicsMBS) as boolean

Function: The event called for a custom drawing.
Notes:
You can draw here what the annotation should show.
Return true to disable the default drawing from PDFKit.

125.13.12 Constants

125.13.13 kPDFLineStyleCircle=2

MBS MacControls Plugin, Plugin Version: 8.0. Function: One of the constants for the styles used for line end caps.
Example:
```vbs
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)

dim page as PDFPageMBS = doc.pageAtIndex(0)
dim a as new PDFAnnotationLineMBS(100,100,100,100)
a.endLineStyle = a.kPDFLineStyleCircle
page.addAnnotation(a)

dim o as FolderItem = SpecialFolder.Desktop.Child("testout.pdf")
call doc.write(o)
o.Launch
```

125.13.14 kPDFLineStyleClosedArrow=5

MBS MacControls Plugin, Plugin Version: 8.0. Function: One of the constants for the styles used for line end caps.
Example:
```vbs
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
```
125.13. **CLASS PDFANNOTATIONLINEMBS**

```vbnet
dim page as PDFPageMBS = doc.pageAtIndex(0)
dim a as new PDFAnnotationLineMBS(100,100,100,100)

a.endLineStyle = a.kPDFLineStyleClosedArrow

page.addAnnotation(a)

dim o as FolderItem = SpecialFolder.Desktop.Child("testout.pdf")
call doc.write(o)

 o.Launch
```

125.13.15 **kPDFLineStyleDiamond=3**

MBS MacControls Plugin, Plugin Version: 8.0. **Function:** One of the constants for the styles used for line end caps.

**Example:**

```vbnet
dim a as new PDFAnnotationLineMBS(100,100,100,100)
a.startLineStyle = a.kPDFLineStyleDiamond
```

125.13.16 **kPDFLineStyleNone=0**

MBS MacControls Plugin, Plugin Version: 8.0. **Function:** One of the constants for the styles used for line end caps.

125.13.17 **kPDFLineStyleOpenArrow=4**

MBS MacControls Plugin, Plugin Version: 8.0. **Function:** One of the constants for the styles used for line end caps.

**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)

dim page as PDFPageMBS = doc.pageAtIndex(0)
dim a as new PDFAnnotationLineMBS(100,100,100,100)

a.endLineStyle = a.kPDFLineStyleOpenArrow

page.addAnnotation(a)
```
dim o as FolderItem = SpecialFolder.Desktop.Child("testout.pdf")
call doc.write(o)
o.Launch

125.13.18  kPDFLineStyleSquare=1

MBS MacControls Plugin, Plugin Version: 8.0. **Function:** On of the constants for the styles used for line end caps.

**Example:**

dim a as new PDFAnnotationLineMBS(100,100,100,100)
a.endLineStyle = a.kPDFLineStyleSquare
125.14. class PDFAnnotationLinkMBS


Function: The PDFKit class for a link annotation.

Example:

```vbscript
// load a PDF
dim sourceFile as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim p as new PDFDocumentMBS(sourceFile)

// get 4th page
dim page as PDFPageMBS = p.pageAtIndex(3)

// create a destination
dim dest as new PDFDestinationMBS(page, NSMakePointMBS(0,0))

// create the link annotation
dim LinkAnnotation as new PDFAnnotationLinkMBS(100,100,100,100)
LinkAnnotation.destination = dest

// add a color rect so we see the link
dim SquareAnnotation as new PDFAnnotationSquareMBS(100,100,100,100)
SquareAnnotation.colorValue = NSColorMBS.redColor

// add to the first page
p.pageAtIndex(0).addAnnotation(SquareAnnotation)
p.pageAtIndex(0).addAnnotation(LinkAnnotation)

// and write new PDF.
dim destfile as FolderItem = SpecialFolder.Desktop.Child("output.pdf")
call p.write(destfile)
```

Notes: Subclass of the PDFAnnotationMBS class.

125.14.2 Methods

125.14.3 Constructor(left as single, top as single, width as single, height as single)


Function: The constructor for a new annotation link.
125.14.4  setHighlighted(value as boolean)

**Function:** The highlight state dictates how the annotation is drawn.
**Notes:** If a user has clicked on a "Link" annotation, you should set highlighted to true and redraw it. When the user lets up, set highlighted to false and redraw again.

125.14.5  Properties

125.14.6  destination as PDFDestinationMBS

**Function:** Destination for the link.
**Notes:** (Read and Write property)

125.14.7  URL as string

**Function:** URL for the link.
**Notes:** (Read and Write property)

125.14.8  Events

125.14.9  drawWithBox(box as Integer, g as NSGraphicsMBS) as boolean

**Function:** The event called for a custom drawing.
**Notes:**
You can draw here what the annotation should show.
Return true to disable the default drawing from PDFKit.
125.15  class PDFAnnotationMarkupMBS

125.15.1 class PDFAnnotationMarkupMBS

Function: The class for a markup annotation.  
Example: 

dim f as FolderItem = SpecialFolder.Desktop.\Child("test.pdf")  
dim doc as new PDFDocumentMBS(f)  

    dim page as PDFPageMBS = doc.pageAtIndex(0)  
dim a as new PDFAnnotationMarkupMBS(100,100,100,100)  
    page.addAnnotation(a)  

    dim o as FolderItem = SpecialFolder.Desktop.\Child("testout.pdf")  
call doc.write(o)  
o.Launch

Notes: Subclass of the PDFAnnotationMBS class.

125.15.2 Methods

125.15.3 Constructor(left as single, top as single, width as single, height as single)

Function: The constructor to create a new markup annotation.  
Example: 

dim a as new PDFAnnotationMarkupMBS(100,100,100,100)

125.15.4 quadrilateralPoints as NSPointMBS()

Function: Get the quadrilateral points.  
Example: 

    dim m as new PDFAnnotationMarkupMBS(10, 20, 30, 40)  
dim points() as NSPointMBS = m.quadrilateralPoints
break // see points in debugger

Notes:
Array of (n * 4) NSPoints defining n quadrilaterals in page space where n is the number of quad points.
The points for each quad are ordered in a 'Z' pattern. That is, the first point should represent the upper left
point representing the start of the marked-up text, the next point will be the upper right, the third point
will represent the lower left of the text and the last point the lower right. Points are specified relative to the
annotation’s bound’s origin.

125.15.5 setQuadrilateralPoints(points() as NSPointMBS)

Function: Set the quadrilateral points.
Notes:
Array of (n * 4) NSPoints defining n quadrilaterals in page space where n is the number of quad points.
The points for each quad are ordered in a 'Z' pattern. That is, the first point should represent the upper left
point representing the start of the marked-up text, the next point will be the upper right, the third point
will represent the lower left of the text and the last point the lower right. Points are specified relative to the
annotation’s bound’s origin.

125.15.6 Properties

125.15.7 markupType as Integer

Function: Type of mark-up (highlight, strike-out or underline).
Example:

```vbs
    dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
    dim doc as new PDFDocumentMBS(f)

    dim page as PDFPageMBS = doc.pageAtIndex(0)
    dim a as new PDFAnnotationMarkupMBS(100,100,100,100)
    a.markupType = PDFAnnotationMarkupMBS.kPDFMarkupTypeUnderline
    page.addAnnotation(a)

    dim o as FolderItem = SpecialFolder.Desktop.Child("testout.pdf")
    call doc.write(o)
    o.Launch
```
Notes:
Changing the markup type also changes the annotations type to one of: "Highlight", "Strikeout", or "Underline" (these are three separate annotation types treated here as three separate flavors of the one PDFAnnotationMarkup class).
(Read and Write property)

125.15.8 Events

125.15.9 drawWithBox(box as Integer, g as NSGraphicsMBS) as boolean

Function: The event called for a custom drawing.
Notes:
You can draw here what the annotation should show.
Return true to disable the default drawing from PDFKit.

125.15.10 Constants

125.15.11 kPDFMarkupTypeHighlight=0

MBS MacControls Plugin, Plugin Version: 8.0. Function: A constant for the markup type.
Example:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)

dim page as PDFPageMBS = doc.pageAtIndex(0)
dim a as new PDFAnnotationMarkupMBS(100,100,100,100)
a.markupType = PDFAnnotationMarkupMBS.kPDFMarkupTypeHighlight
page.addAnnotation(a)

dim o as FolderItem = SpecialFolder.Desktop.Child("testout.pdf")
call doc.write(o)
o.Launch

125.15.12 kPDFMarkupTypeStrikeOut=1

MBS MacControls Plugin, Plugin Version: 8.0. Function: A constant for the markup type.
Example:
```dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)

dim page as PDFPageMBS = doc.pageAtIndex(0)
dim a as new PDFAnnotationMarkupMBS(100,100,100,100)
a.markupType = PDFAnnotationMarkupMBS.kPDFMarkupTypeStrikeOut
page.addAnnotation(a)

dim o as FolderItem = SpecialFolder.Desktop.Child("testout.pdf")
call doc.write(o)
o.Launch
```

**125.15.13**  
**kPDFMarkupTypeUnderline=2**

MBS MacControls Plugin, Plugin Version: 8.0. **Function:** A constant for the markup type.  
**Example:**

```dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)

dim page as PDFPageMBS = doc.pageAtIndex(0)
dim a as new PDFAnnotationMarkupMBS(100,100,100,100)
a.markupType = PDFAnnotationMarkupMBS.kPDFMarkupTypeStrikeOut
page.addAnnotation(a)

dim o as FolderItem = SpecialFolder.Desktop.Child("testout.pdf")
call doc.write(o)
o.Launch
```
125.16.  CLASS PDFANNOTATIONMBS

125.16  class PDFAnnotationMBS

125.16.1  class PDFAnnotationMBS

Function: This is the base class for all annotations.
Notes:
A PDFAnnotation object by itself is not useful, only the subclasses (like PDFAnnotationCircle, PDFAnnotationText) are interesting. In parsing a PDF however, any unknown or unsupported annotations will be represented as this base class. Its drawRect method merely frames the bounds of the annotation and prints the annotation type (like "TrapNet") within the box.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

125.16.2  Methods

125.16.3  Constructor

Function: The private constructor.
Notes:
This class is the base class for a number of annotations. So this constructor is private to make sure you don't create instances of PDFAnnotationMBS. But you can still create instances of the subclasses.
This constructor is private to make sure you don't create an object from this class by error. Please use designated functions to create objects.

125.16.4  copy as PDFAnnotationMBS

Function: Creates a copy of the annotation object.
Notes:
For Mac OS X 10.7 and newer this function uses the framework function.
For Mac OS X 10.6 and older this function uses our own copy function to duplicate the annotation.

125.16.5  Destructor

Function: The destructor.
125.16.6 drawWithBox(box as Integer)

Function: Draws the annotation on its associated page.
Notes:
The annotation is drawn relative to the origin of box in page space.

Page space is a 72 dpi coordinate system with the origin at the lower-left corner of the current page.

For additional information see the "Constants" section in the PDFPage class.

Available in Mac OS X v10.4 and later.

125.16.7 removeAllAppearanceStreams

Function: All appearance streams for the target annotation are removed.
Notes:
Without an appearance stream, annotations are drawn strictly according to their parameters (color, border, font, etc.). When a PDF is saved, PDF Kit will always write out an appearance stream(s) for each annotation. If the PDF is reloaded, you will need to remove the appearance streams in order to continue to edit the annotations parameters.

Requires Mac OS X 10.5.

125.16.8 Properties

125.16.9 border as PDFBorderMBS

Function: Optional border or border style that describes how to draw the annotation border (if any).
Example:

```javascript
Dim f As FolderItem = SpecialFolder.Desktop.Child("test.pdf")
Dim doc As New PDFDocumentMBS(f)
Dim page As PDFPageMBS = doc.pageAtIndex(0)
Dim a As New PDFAnnotationSquareMBS(100,100,100,100)
a.interiorColor = NSColorMBS.greenColor
```
125.16. **CLASS PDFANNOTATIONMBS**

```plaintext
a.colorValue = NSColorMBS.redColor
a.border.lineWidth=5
page.addAnnotation(a)
```

```plaintext
dim o as FolderItem = SpecialFolder.Desktop.Child("testout.pdf")
call doc.write(o)
o.Launch
```

**Notes:** (Read and Write property)

---

### 125.16.10  bounds as NSRectMBS


**Function:** The bounding box for the annotation in page space.

**Notes:**

Page space is a 72-dpi coordinate system with the origin at the lower-left corner of the current page.

Available in Mac OS X v10.4 and later.

(Read and Write property)

---

### 125.16.11  colorValue as NSColorMBS


**Function:** For many annotations ("Circle", "Square") the stroke color.

**Example:**

```plaintext
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)

dim page as PDFPageMBS = doc.pageAtIndex(0)
dim a as new PDFAnnotationLineMBS(100,100,100,100)

a.colorValue = NSColorMBS.redColor
a.endLineStyle = a.kPDFLineStyleOpenArrow

page.addAnnotation(a)
```

```plaintext
dim o as FolderItem = SpecialFolder.Desktop.Child("testout.pdf")
call doc.write(o)
```
Notes:

Used for other annotations as well.  
(Read and Write property)

125.16.12  contents as string

Function: A string of text associated with an annotation.  
Example:

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)

dim page as PDFPageMBS = doc.pageAtIndex(0)
dim a as new PDFAnnotationTextMBS(100,100,100,100)

a.contents="Hello"
a.colorValue = NSColorMBS.redColor

page.addAnnotation(a)

dim o as FolderItem = SpecialFolder.Desktop.Child("testout.pdf")
call doc.write(o)
o.Launch
```

Notes:

Often to be displayed in a pop-up when the annotation is clicked on ("FreeText" and "Text" especially).  
(Read and Write property)

125.16.13  Handle as Integer

Function: The handle used internally for the object reference.  
Notes: (Read and Write property)
125.16. **CLASS PDFANNOTATIONMBS**

125.16.14 **hasAppearanceStream as boolean**


**Function:** Returns true if the annotation has an appearance stream.

**Notes:**
Annotations with appearance streams are drawn using their stream. As a result, setting many parameters (like 'setColor' above), will have no visible effect.
(Read only property)

125.16.15 **modificationDate as date**


**Function:** The modification date of the annotation.

**Notes:**
Available in Mac OS X v10.5 and later.
(Read and Write property)

125.16.16 **mouseUpAction as PDFActionMBS**


**Function:** The action performed when a user releases the mouse button within an annotation.

**Notes:**
Available in Mac OS X v10.5 and later.
(Read and Write property)

125.16.17 **page as PDFPageMBS**


**Function:** Returns the page the annotation is associated with.

**Notes:** (Read only property)

125.16.18 **popup as Variant**


**Function:** The pop-up annotation associated with an annotation.

**Notes:**
The variant is a PDFAnnotationPopupMBS.

Pop-up annotations are not used with links or widgets. The bounds and open state of the pop-up annotation indicate the placement and open state of the pop-up window.

Available in Mac OS X v10.5 and later.
(Read and Write property)

125.16.19 shouldDisplay as boolean

Function: Specifies whether it should be drawn to the display or not.
Notes: (Read and Write property)

125.16.20 shouldPrint as boolean

Function: Specifies whether it should be printed or not.
Notes: (Read and Write property)

125.16.21 toolTip as string

Function: String used for tooltips.
Notes: The base class returns contents, sub-classes may override as appropriate.
(Read only property)

125.16.22 type as string

Function: Returns the annotation type (called "Subtype" in the PDF specification since "Annot" is the type).
Example:

```vbnet
dim a as new PDFAnnotationTextMBS(100,100,100,100)
MsgBox a.type // Text
```
Notes:
Examples include: "Text", "Link", "Line", etc.
(Read only property)

125.16.23  userName as string

Function: The name of the user who created the annotation.
Notes:
Available in Mac OS X v10.5 and later.
(Read and Write property)
125.17 class PDFAnnotationPopupMBS

125.17.1 class PDFAnnotationPopupMBS

MBS MacControls Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A PDFAnnotationPopup object provides user interactivity on a PDF page in the form of a pop-up menu. **Notes:** Subclass of the PDFAnnotationMBS class.

125.17.2 Methods

125.17.3 Constructor(left as single, top as single, width as single, height as single)

MBS MacControls Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new annotation popup annotation with the given size.

125.17.4 Properties

125.17.5 isOpen as boolean

MBS MacControls Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A Boolean value indicating whether the pop-up is open. **Notes:** Available in Mac OS X v10.5 and later.

125.17.6 Events

125.17.7 drawWithBox(box as Integer, g as NSGraphicsMBS) as boolean

MBS MacControls Plugin, Plugin Version: 12.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event called for a custom drawing. **Notes:** You can draw here what the annotation should show. Return true to disable the default drawing from PDFKit.
125.18. **CLASS PDFANNOTATIONSQUAREMBS**

### 125.18 class PDFAnnotationSquareMBS


**Function:** The class for a square annotation.

**Example:**

```plaintext
// load a PDF
dim sourceFile as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim p as new PDFDocumentMBS(sourceFile)

// get 4th page
dim page as PDFPageMBS = p.pageAtIndex(3)

// create a destination
dim dest as new PDFDestinationMBS(page, NSMakePointMBS(0,0))

// create the link annotation
dim LinkAnnotation as new PDFAnnotationLinkMBS(100,100,100,100)
LinkAnnotation.destination = dest

// add a color rect so we see the link
dim SquareAnnotation as new PDFAnnotationSquareMBS(100,100,100,100)
SquareAnnotation.colorValue = NSColorMBS.redColor

// add to the first page
p.pageAtIndex(0).addAnnotation(SquareAnnotation)
p.pageAtIndex(0).addAnnotation(LinkAnnotation)

// and write new PDF.
dim destfile as FolderItem = SpecialFolder.Desktop.Child("output.pdf")
call p.write(destfile)
```

**Notes:** Subclass of the PDFAnnotationMBS class.

### 125.18.2 Methods

### 125.18.3 Constructor(left as single, top as single, width as single, height as single)


**Function:** The constructor to create a square annotation.

**Example:**

```plaintext
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```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)

dim page as PDFPageMBS = doc.pageAtIndex(0)
dim a as new PDFAnnotationSquareMBS(100,100,100,100)

a.interiorColor = NSColorMBS.greenColor
a.colorValue = NSColorMBS.redColor
a.border.lineWidth=5

page.addAnnotation(a)

dim o as FolderItem = SpecialFolder.Desktop.Child("testout.pdf")
call doc.write(o)
o.Launch
```

125.18.4 Properties

125.18.5 interiorColor as NSColorMBS

Function: Fill color used for drawing annotation.
Example:

```
dim a as new PDFAnnotationSquareMBS(100,100,100,100)
a.interiorColor = NSColorMBS.greenColor
```

Notes: (Read and Write property)

125.18.6 Events

125.18.7 drawWithBox(box as Integer, g as NSGraphicsMBS) as boolean

Function: The event called for a custom drawing.
Notes:

You can draw here what the annotation should show.
Return true to disable the default drawing from PDFKit.

**Function:** A PDFAnnotationStamp object allows you to display a word or phrase, such as "Confidential," in a PDF page.

**Example:**

// create new document with blank page
dim doc as new PDFDocumentMBS
dim page as new PDFPageMBS
doc.appendPage page

// make new stamp annotation
dim stamp as new PDFAnnotationStampMBS(100, 100, 100, 100)

// Name of stamp annotation. Standard stamps include names like, "Approved", "Draft", "TopSecret", etc.
// The name must be representable as ASCII.
// Very little is rendered if the annotation has no appearance stream.
stamp.name = "Approved"

page.addAnnotation stamp

// save to file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")

if doc.write(f) then
    f.Launch
else
    MsgBox "write failed"
end if

**Notes:**

A PDFAnnotationStamp object should have an appearance stream associated with it; otherwise, nothing useful is rendered.

Subclass of the PDFAnnotationMBS class.
125.19.2 Methods

125.19.3 Constructor(left as single, top as single, width as single, height as single)

Function: Creates a new annotation stamp with the given size.

125.19.4 Properties

125.19.5 name as string

Function: The name associated with the stamp annotation.
Notes:
The name must be representable in ASCII. You can set a stamp annotation’s name to help you identify it,
but that name is not displayed on the PDF page. You must provide the string you want displayed on the
page, such as "Draft" or "Top Secret", in the appearance stream for the annotation.

Note that the name value of the stamp annotation is not necessarily identical to the user-visible appearance
of the stamp annotation. For example, a stamp annotation that displays "Confidential" on a PDF page may
not have a name value of "Confidential".

Available in Mac OS X v10.5 and later.
(Read and Write property)

125.19.6 Events

125.19.7 drawWithBox(box as Integer, g as NSGraphicsMBS) as boolean

Function: The event called for a custom drawing.
Notes:
You can draw here what the annotation should show.
Return true to disable the default drawing from PDFKit.
125.20. class PDFAnnotationTextMBS

125.20.1. class PDFAnnotationTextMBS

_**Function**_: The PDFKit class for an annotation text.
_**Notes**_: Subclass of the PDFAnnotationMBS class.

125.20.2. Methods

125.20.3. Constructor(left as single, top as single, width as single, height as single)

_**Function**_: The constructor to create a new annotation text.

125.20.4. Properties

125.20.5. iconType as Integer

_**Function**_: The type of icon displayed in the PDF.
_**Notes**_: Supported icons: "Comment", "Key", "Note", "Help", "NewParagraph", "Paragraph" and "Insert".
(Read and Write property)

125.20.6. Events

125.20.7. drawWithBox(box as Integer, g as NSGraphicsMBS) as boolean

_**Function**_: The event called for a custom drawing.
_**Notes**_: You can draw here what the annotation should show.
Return true to disable the default drawing from PDFKit.
125.20.8 Constants

125.20.9 kPDFTextAnnotationIconComment=0

MBS MacControls Plugin, Plugin Version: 8.0. **Function:** One of the constants for use with the icontype property.

125.20.10 kPDFTextAnnotationIconHelp=3

MBS MacControls Plugin, Plugin Version: 8.0. **Function:** One of the constants for use with the icontype property.

125.20.11 kPDFTextAnnotationIconInsert=6

MBS MacControls Plugin, Plugin Version: 8.0. **Function:** One of the constants for use with the icontype property.

125.20.12 kPDFTextAnnotationIconKey=1

MBS MacControls Plugin, Plugin Version: 8.0. **Function:** One of the constants for use with the icontype property.

125.20.13 kPDFTextAnnotationIconNewParagraph=4

MBS MacControls Plugin, Plugin Version: 8.0. **Function:** One of the constants for use with the icontype property.

125.20.14 kPDFTextAnnotationIconNote=2

MBS MacControls Plugin, Plugin Version: 8.0. **Function:** One of the constants for use with the icontype property.
MBS MacControls Plugin, Plugin Version: 8.0. **Function:** One of the constants for use with the icontype property.
125.21 class PDFAnnotationTextWidgetMBS

125.21.1 class PDFAnnotationTextWidgetMBS

Function: The PDFKit class for a text widget annotation.
Notes: Subclass of the PDFAnnotationMBS class.

125.21.2 Methods

125.21.3 Constructor(left as single, top as single, width as single, height as single)

Function: The constructor to create a new annotation.

125.21.4 Properties

125.21.5 alignment as Integer

Function: Alignment of text.
Notes:
Supported: NSLeftTextAlignment, NSRightTextAlignment and NSCenterTextAlignment. (Read and Write property)

125.21.6 attributedStringValue as NSAttributedStringMBS

Function: Attributed string associated with text field (font / fontColor).
Notes:
Available on Mac OS X 10.8 or newer. (Read and Write property)
125.21.7 backgroundColor as NSColorMBS

**Function:** The background color of the annotation text field.
**Notes:**
Available in Mac OS X v10.5 and later.
(Read and Write property)

125.21.8 fieldName as string

**Function:** The internal name for the annotation text field.
**Notes:**
Field names are optional, internal names that identify text fields in a PDF form. You use field names with the PDFActionResetForm action. Note that multiple PDFAnnotationTextWidget objects with the same field name always have the same text associated with that field name. When text is entered into one of the objects, the text associated with that field name is changed in all objects. If you need to ensure unique text for a PDFAnnotationTextWidget object, you must give it a unique field name.
Available in Mac OS X v10.5 and later.
(Read and Write property)

125.21.9 font as NSFontMBS

**Function:** Font associated with the text field.
**Notes:** (Read and Write property)

125.21.10 fontColor as NSColorMBS

**Function:** The font color used for the annotation’s text field.
**Notes:**
Available in Mac OS X v10.5 and later.
(Read and Write property)
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125.21.11 maximumLength as Integer

Function: The maximum number of characters allowed in the annotations string.
Notes:
A value of 0 means that there is no specified maximum.
Available in Mac OS X v10.5 and later.
(Read and Write property)

125.21.12 rotation as Integer

Function: The rotation angle of the annotation text field in degrees.
Notes:
The rotation angle to be applied to the annotation text field, in degrees. The rotation angle must be a positive or negative multiple of 90 (negative angles are converted to their positive equivalents; for example -90 is changed to 270).
Available in Mac OS X v10.5 and later.
(Read and Write property)

125.21.13 stringValue as string

Function: String value associated with text field.
Notes: (Read and Write property)

125.21.14 Events

125.21.15 drawWithBox(box as Integer, g as NSGraphicsMBS) as boolean

Function: The event called for a custom drawing.
Notes:
You can draw here what the annotation should show.
Return true to disable the default drawing from PDFKit.
125.21.16 Constants

125.21.17 NSCenterTextAlignment=2
MBS MacControls Plugin, Plugin Version: 8.0. **Function:** The Cocoa text alignment constant for center.

125.21.18 NSJustifiedTextAlignment=3
MBS MacControls Plugin, Plugin Version: 8.0. **Function:** The Cocoa text alignment constant for justified.

125.21.19 NSLeftTextAlignment=0
MBS MacControls Plugin, Plugin Version: 8.0. **Function:** The Cocoa text alignment constant for left.

125.21.20 NSNaturalTextAlignment=4
MBS MacControls Plugin, Plugin Version: 8.0. **Function:** The Cocoa text alignment constant for natural.

125.21.21 NSRightTextAlignment=1
MBS MacControls Plugin, Plugin Version: 8.0. **Function:** The Cocoa text alignment constant for right.
125.22 class PDFBorderMBS

125.22.1 class PDFBorderMBS

**Function:** The class for PDFKit borders.
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

125.22.2 Methods

125.22.3 Constructor

**Function:** The private constructor.

125.22.4 copy as PDFBorderMBS

**Function:** Creates a copy of the border object.
**Notes:** Not available in Mac OS X 10.6.

125.22.5 dashPattern as Double()

**Function:** Gets the dash pattern for the border.
**Notes:** Refer to the description for NSBezierPath for more information.

125.22.6 setDashPattern(values() as Double)

**Function:** Sets the dash pattern for the border.
**Notes:** Refer to the description for NSBezierPath for more information.
125.22.7 Properties

125.22.8 horizontalCornerRadius as single

Function: For rounded-rect borders, the corner radius.
Notes:
Deprecated in Mac OS X 10.7.
(Read and Write computed property)

125.22.9 lineWidth as single

Function: Width of line used to strok border.
Example:
```vbscript
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)

dim page as PDFPageMBS = doc.pageAtIndex(0)
dim a as new PDFAnnotationSquareMBS(100,100,100,100)
a.interiorColor = NSColorMBS.greenColor
a.colorValue = NSColorMBS.redColor
a.border.lineWidth=5

page.addAnnotation(a)

dim o as FolderItem = SpecialFolder.Desktop.Child("testout.pdf")
call doc.write(o)
o.Launch
```

Notes: (Read and Write computed property)

125.22.10 style as Integer

Function: Whether border is drawn solid, dashed etc.
Example:
```vbscript
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
```
dim page as PDFPageMBS = doc.pageAtIndex(0)
dim a as new PDFAnnotationSquareMBS(100,100,100,100)
a.border.style = PDFBorderMBS.kPDFBorderStyleDashed
page.addAnnotation(a)
dim o as FolderItem = SpecialFolder.Desktop.Child("testout.pdf")
call doc.write(o)
o.Launch

Notes:
Use this constants:

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kPDFBorderStyleSolid</td>
<td>0</td>
</tr>
<tr>
<td>kPDFBorderStyleDashed</td>
<td>1</td>
</tr>
<tr>
<td>kPDFBorderStyleBeveled</td>
<td>2</td>
</tr>
<tr>
<td>kPDFBorderStyleInset</td>
<td>3</td>
</tr>
<tr>
<td>kPDFBorderStyleUnderline</td>
<td>4</td>
</tr>
</tbody>
</table>

(Read and Write computed property)

### 125.22.11 verticalCornerRadius as single

**Function:** For rounded-rect borders, the corner radius.
**Notes:**
Deprecated in Mac OS X 10.7.
(Read and Write computed property)

### 125.22.12 Constants

#### 125.22.13 kPDFBorderStyleBeveled = 2

MBS MacControls Plugin, Plugin Version: 8.0. **Function:** One of the constants for the border style. 
**Example:**
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
```vbnet
dim page as PDFPageMBS = doc.pageAtIndex(0)
dim a as new PDFAnnotationSquareMBS(100,100,100,100)

a.border.style = PDFBorderMBS.kPDFBorderStyleBeveled

page.addAnnotation(a)

dim o as FolderItem = SpecialFolder.Desktop.Child("testout.pdf")
call doc.write(o)
o.Launch
```

**125.22.14 kPDFBorderStyleDashed = 1**

MBS MacControls Plugin, Plugin Version: 8.0. **Function:** One of the constants for the border style. **Example:**

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)

dim page as PDFPageMBS = doc.pageAtIndex(0)
dim a as new PDFAnnotationSquareMBS(100,100,100,100)

a.border.style = PDFBorderMBS.kPDFBorderStyleDashed

page.addAnnotation(a)

dim o as FolderItem = SpecialFolder.Desktop.Child("testout.pdf")
call doc.write(o)
o.Launch
```

**125.22.15 kPDFBorderStyleInset = 3**

MBS MacControls Plugin, Plugin Version: 8.0. **Function:** One of the constants for the border style.

**125.22.16 kPDFBorderStyleSolid = 0**

MBS MacControls Plugin, Plugin Version: 8.0. **Function:** One of the constants for the border style.
125.22.17 \texttt{kPDFBorderStyleUnderline} = 4

MBS MacControls Plugin, Plugin Version: 8.0. \textbf{Function:} One of the constants for the border style.
125.23.  CLASS PDFDESTINATIONMBS

125.23  class PDFDestinationMBS

125.23.1  class PDFDestinationMBS

Function: The class for a pdf destination.

125.23.2  Methods

125.23.3  compare(dest as PDFDestinationMBS) as Integer

Function: Returns a comparison result that indicates the location of the destination in the document, relative to the current position.
Notes:
A comparison result, indicating the position of the passed-in destination relative to the current position.

If destination is between the receiver’s position and the end of the document, compare returns NSOrderedAscending; if it is between the receiver’s position and the beginning of the document, compare returns NSOrderedDescending. Otherwise, if destination matches the receiver’s position, compare returns NSOrderedSame.

This method ignores the horizontal component of the destination point (the x value). If the destination’s vertical component (or y value) is kPDFDestinationUnspecifiedValue, compare treats the destination as if its y value is the top point on the destination page.

An exception is raised if destination does not have a page associated with it or if its page is associated with a document other than the receiver’s document.

Available in Mac OS X v10.5 and later.

125.23.4  Constructor(page as PDFPageMBS, point as NSPointMBS)

Function: Initializes the destination.
Notes:
page: The page of the destination.
point: The point of the destination, in page space.
Specify point in page space. Typically, there’s no need to initialize destinations. Instead, you get them from PDFAnnotationLink, PDFOutline, or PDFView objects.

Page space is a 72-dpi coordinate system with the origin at the lower-left corner of the current page.

Available in Mac OS X v10.4 and later.

**125.23.5 copy as PDFDestinationMBS**

**Function:** Creates a copy of the destination object.

**125.23.6 kPDFDestinationUnspecifiedValue as single**

**Function:** Value used for unspecified destination.  
**Example:**  
MsgBox str(PDFDestinationMBS.kPDFDestinationUnspecifiedValue)

**Notes:**  
Unspecified value used when a destination’s actual x or y value is unimportant.  
Available in Mac OS X v10.5 and later.

**125.23.7 page as PDFPageMBS**

**Function:** Page the destination refers to (destination page).

**125.23.8 point as NSPointMBS**

**Function:** Returns the point, in page space, that the destination refers to.  
**Notes:**  
Page space is a 72 dpi coordinate system with the origin at the lower-left corner of the current page.
125.23. CLASS PDFDESTINATIONMBS

Available in Mac OS X v10.4 and later.

125.23.9 Properties

125.23.10 Zoom as Double


Function: Specify the scale factor the PDF viewer should assume for this destination.

Notes:

kPDFDestinationUnspecifiedValue indicates the scale factor is unaffected.
Available in Mac OS X 10.7 and later.
(Read and Write computed property)
125.24 class PDFDocumentDelegateMBS

125.24.1 class PDFDocumentDelegateMBS

Notes: Subclass this class to handle document events.

125.24.2 Events

125.24.3 Close

MBS MacControls Plugin, Plugin Version: 8.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Called when the delegate is destroyed.

125.24.4 didMatchString(selection as PDFSelectionMBS)

MBS MacControls Plugin, Plugin Version: 8.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The event for an item found.
Notes: If implemented by the delegate, called for every search instance found during a find. PDFDocument’s implementation accumulates each PDFSelection in an array.

125.24.5 documentDidBeginDocumentFind


125.24.6 documentDidBeginPageFind(PageIndex as Integer)

Notes: PageIndex is zero based.

125.24.7 documentDidEndDocumentFind

125.24.8  documentDidEndPageFind(PageIndex as Integer)

MBS MacControls Plugin, Plugin Version: 8.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The page search finished on this page. **Notes:** PageIndex is zero based.

125.24.9  documentDidFindMatch(selection as PDFSelectionMBS)

MBS MacControls Plugin, Plugin Version: 8.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The search found an item.

125.24.10  documentDidUnlock

MBS MacControls Plugin, Plugin Version: 8.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The document has been unlocked.

125.24.11  Open

MBS MacControls Plugin, Plugin Version: 8.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called when the delegate is installed.
125.25 class PDFDocumentMBS

125.25.1 class PDFDocumentMBS

Function: The PDFKit class for a PDF document.
Notes:
Basicly this is the code used by Preview.app by Apple.

Destructor is dispatched to main thread to avoid bugs in OS X 10.12.

125.25.2 Methods

125.25.3 appendPage(page as PDFPageMBS)

Function: Appends a page to the document.

125.25.4 beginFindString(text as string, options as Integer)

Function: Begins a find, searching the document for string.
Notes: Search results are handled via a DidFindMatch event in the delegate. Supported options are: NSCaseInsensitiveSearch, NSLiteralSearch, and NSBackwardsSearch.

125.25.5 cancelFindString

Function: Method to cancel a search.
Notes: Can be called from a user method being serviced by a find notification.

125.25.6 Constructor

Function: The constructor to create a new pdf document in memory.
Example:
125.25.  CLASS PDFDOCUMENTMBS

dim doc as new PDFDocumentMBS // new empty document
dim page as new PDFPageMBS // new empty page

doc.Creator="Realbasic"
doc.Title="Test file"

doc.insertPage page,0

dim f as FolderItem=SpecialFolder.Desktop.Child("test.pdf")

if doc.write(f) then
f.launch
end if

See also:

• 125.25.7 Constructor(data as memoryblock)
• 125.25.8 Constructor(file as folderitem)

125.25.7  Constructor(data as memoryblock)

Function: The constructor to create a new pdf document based on a string.
Example:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim b as BinaryStream = f.OpenAsBinaryFile(false)
dim s as string = b.Read(b.Length)

dim doc as new PDFDocumentMBS(s)

MsgBox doc.Title

See also:

• 125.25.6 Constructor
• 125.25.8 Constructor(file as folderitem)

125.25.8  Constructor(file as folderitem)

Function: The constructor to create a new pdf document based on a file.
Example:

```vba
dim p as PDFDocumentMBS
dim f as FolderItem

f=SpecialFolder.Desktop.Child("test.pdf")
p=new PDFDocumentMBS(f)

MsgBox "Text from first page:" +EndOfLine+EndOfLine+p.pageAtIndex(0).stringValue
```

See also:

- 125.25.6 Constructor
- 125.25.7 Constructor(data as memoryblock)

### 125.25.9 copy as PDFDocumentMBS


**Function:** Creates a copy of the document object.

**Example:**

```vba
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim p as new PDFDocumentMBS(f)

// make a copy
dim c as PDFDocumentMBS = p.copy

// remove second page
c.removePageAtIndex 1

// c has one page less
MsgBox str(p.pageCount)+" "+str(c.pageCount)
```

**Notes:**

For Mac OS X 10.7 and newer this function uses the framework function.
For Mac OS X 10.6 and older this function uses our own copy function to duplicate the document.

### 125.25.10 dataRepresentation(QuartzFilter as Variant = nil) as memoryblock


**Function:** Methods to record the current state of the PDFDocument as data string.
Example:

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)

dim o as FolderItem = SpecialFolder.Desktop.Child("out.pdf")
dim b as BinaryStream = o.CreateBinaryFile"

b.Write doc.dataRepresentation
```

**Notes:** Optional for Mac OS X 10.6, you can pass a QuartzFilterMBS object to use that filter here.

### 125.25.11 documentRef as Integer

**Function:** Returns a CGPDFDocumentRef value for this document.  
**Notes:**  
This is the CGPDFDocument associated with the PDFDocument object. With this object you can call many CoreGraphics API. May return 0 if the document was not created from an existing PDF file or data.  
Use CGPDFDocumentMBS with Constructor taking a handle to call functions on this CGPDFDocument object.

### 125.25.12 exchangePageAtIndexWithPageAtIndex(indexA as Integer, indexB as Integer)

**Function:** Exchanges the two pages with the given index.  
**Notes:** Index is zero based.

### 125.25.13 findString(text as string, options as Integer) as PDFSelectionMBS()

**Function:** Searches entire document for string and returns an array of PDFSelections representing all instances found.  
**Example:**

```vbnet
dim p as PDFDocumentMBS
dim f as FolderItem
dim sa() as PDFSelectionMBS
```
dim i,c as Integer
dim s as PDFSelectionMBS

const NSCaseInsensitiveSearch=1

f=SpecialFolder.Desktop.Child("test.pdf")
p=new PDFDocumentMBS(f)

if p.pageCount=0 then
    MsgBox "Failed to load the PDF."
    Return
end if

sa=p.findString("Plugin",NSCaseInsensitiveSearch)

if ubound(sa)<0 then
    MsgBox "no item found."
else
    MsgBox str(ubound(sa)+1)+" items found."
end if

s=sa(0)
s.extendSelectionAtEnd(50)
s.extendSelectionAtStart(50)

MsgBox s.stringValue // shows a bit more text before and after the location found

Notes:
May return an empty array if nothing is found.
Returns nil on any error.

Supported options are:
NSCaseInsensitiveSearch, NSLiteralSearch, and NSBackwardsSearch.

125.25.14 findStringFromSelection(text as string, selection as PDFSelectionMBS, options as Integer) as PDFSelectionMBS

MBS MacControls Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Searches for only the next instance of string beginning after the last character of selection with options (or preceding the first character of the selection if NSBackwardsSearch is specified as a search option). Notes: Returns next instance as a PDFSelection or nil if the end of the document is reached. Supported options are: NSCaseInsensitiveSearch, NSLiteralSearch, and NSBackwardsSearch. Passing in nil for selection will start the search from the beginning of the document (or end if NSBackwardsSearch is specified).
125.25.15 indexForPage(page as PDFPageMBS) as Integer

Function: Given a PDFPage, returns the pages index within the document.
Notes: Indices are zero-based.

125.25.16 insertPage(page as PDFPageMBS, index as Integer)

Function: Inserts a page in the pdf on the given index.
Example:

```plaintext
dim file1, file2, file3, destfile as FolderItem
dim page1, page2, page3 as PDFPageMBS
dim doc1, doc2 as PDFDocumentMBS
dim img as NSImageMBS
dim doc as PDFDocumentMBS

file1=SpecialFolder.Desktop.Child("test1.pdf")
file2=SpecialFolder.Desktop.Child("test2.pdf")
file3=SpecialFolder.Desktop.Child("logo.jpg")

doc1=new PDFDocumentMBS(file1)
doc2=new PDFDocumentMBS(file2)
MsgBox str(doc1.pageCount)

img=new NSImageMBS(file3)
Backdrop=img.CopyPicture

page1=new PDFPageMBS(img)
page2=doc1.pageAtIndex(0)
page3=doc2.pageAtIndex(0)

doc=new PDFDocumentMBS
doc.insertPage page1, 0
doc.insertPage page2, 1
doc.insertPage page3, 2

destfile=SpecialFolder.Desktop.Child("test.pdf")
call doc.write(destfile)
```
Notes: Index is zero based.

125.25.17 Keywords as string()

Function: Array of Strings containing document keywords.
Example:
```
dim f as FolderItem = SpecialFolder.Desktop.Child(“test.pdf”)  
dim doc as new PDFDocumentMBS(f)  
MsgBox join(doc.Keywords)
```

125.25.18 outlineItemForSelection(selection as PDFSelectionMBS) as PDFOutlineMBS

Function: Given a PDFSelection, this method returns the child outline item the selection most closely falls beneath.
Notes:
Since a selection may span multiple outline items, only the point representing the first character of the PDFSelection is considered. Typically, outline’s indicate things like chapters for the PDF. Therefore, this method would help you identify the chapter the selection falls within.

For some PDFs this method returns nil.

125.25.19 pageAtIndex(index as Integer) as PDFPageMBS

Function: Returns a PDFPage object representing the page at index.
Example:
```
dim p as PDFDocumentMBS  
dim f as FolderItem  

p=new PDFDocumentMBS(f)  
MsgBox ”Text from first page:” + EndOfLine + p.pageAtIndex(0).stringValue
```
Notes: Will raise an exception if index is out of bounds. Indices are zero-based.

125.25.20  PrintOperation(PrintInfo as Variant, AutoRotate as boolean = true, scalingMode as Integer = 0) as Variant

Function: Creates print operation for PDF document.
Example:

```vba
// select a PDF
dim f as FolderItem = GetOpenFolderItem(""")
if f = nil then Return

// open PDF
dim doc as new PDFDocumentMBS(f)

// define some print setting via PrintInfo
dim PrintInfo as new NSPrintInfoMBS

// start print operation
dim printOperation as NSPrintOperationMBS = doc.PrintOperation(printinfo)

printOperation.showsPrintPanel = true
printOperation.showsProgressPanel = true

call printOperation.runOperation
```

Notes: Returns NSPrintOperationMBS object.

125.25.21  removePageAtIndex(index as Integer)

Function: Removes a page in the pdf on the given index.
Notes: Index is zero based.
125.25.22 selectionForEntireDocument as PDFSelectionMBS

Function: Returns a selection representing text for the entire document.

125.25.23 selectionFromPage(StartPage as PDFPageMBS, StartCharacterIndex as Integer, EndPage as PDFPageMBS, EndCharacterIndex as Integer) as PDFSelectionMBS

Function: Returns a selection representing text from page startPage and point StartCharacterIndex to page endPage and to point EndCharacterIndex on that page.
Notes: Start and end page can be the same.
See also:
  • 125.25.24 selectionFromPage(StartPage as PDFPageMBS, StartPointX as single, StartPointY as single, EndPage as PDFPageMBS, EndPointX as single, EndPointY as single) as PDFSelectionMBS

125.25.24 selectionFromPage(StartPage as PDFPageMBS, StartPointX as single, StartPointY as single, EndPage as PDFPageMBS, EndPointX as single, EndPointY as single) as PDFSelectionMBS

Function: Returns a selection representing text from page startPage and point startPt to page endPage and to point endPt on that page.
Notes: Points are in page-space and relative to their respective pages. Start and end page can be the same (and are then equivalent to calling selectionFromPointToPoint).
See also:
  • 125.25.23 selectionFromPage(StartPage as PDFPageMBS, StartCharacterIndex as Integer, EndPage as PDFPageMBS, EndCharacterIndex as Integer) as PDFSelectionMBS

125.25.25 SetDelegate(d as PDFDocumentDelegateMBS)

Function: If a PDFDocument has a delegate, delegate methods may be called for this document.

125.25.26 SetKeywords(keywords() as string)

Function: Sets the array of strings containing document keywords.
### 125.25.27 unlockWithPassword(password as string) as boolean

**MBS MacControls Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Unlocks an encrypted PDF with the given password.

**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
if doc.unlockWithPassword("mypassword") then
    MsgBox "OK"
end if
```

**Notes:** Means of passing in a password to unlock encrypted PDF’s. Calling unlockWithPassword will attempt to unlock the PDF. If successful, a DidUnlockDocument event is sent to the delegate. You cannot "re-lock" a PDF by passing in a bogus password. Returns true if the document is now unlocked, false otherwise (isLocked = false).

### 125.25.28 write(file as folderitem, QuartzFilter as Variant = nil) as boolean

**MBS MacControls Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Methods to record the current state of the PDFDocument as a file.

**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
// modify here

dim o as FolderItem = SpecialFolder.Desktop.Child("testout.pdf")
call doc.write(o)
```

**Notes:**

Returns true on success and false on failure.

There is a bug known in Mac OS X 10.4 that this function may return true even if the saving failed. So you may prefer to check the file whether it exists after write.

Optional for Mac OS X 10.6, you can pass a QuartzFilterMBS object to use that filter here.
125.25.29  Properties

125.25.30  allowsCopying as boolean

Function: Whether copying is allowed.
Example:

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
MsgBox str(doc.allowsCopying)
```

Notes:
Even unlocked, encrypted PDF’s may have certain restrictions regarding copying or printing placed upon them.
(Read only property)

125.25.31  allowsPrinting as boolean

Function: Whether printing is allowed.
Example:

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
MsgBox str(doc.allowsPrinting)
```

Notes:
Even unlocked, encrypted PDF’s may have certain restrictions regarding copying or printing placed upon them.
(Read only property)

125.25.32  Author as string

Function: String containing document author.
Example:
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
MsgBox doc.Author

**Notes:** (Read and Write property)

### 125.25.33 CreationDate as Date

**Function:** Date representing document creation date.
**Example:**

dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
MsgBox doc.CreationDate.LongDate

**Notes:** (Read and Write property)

### 125.25.34 Creator as string

**Function:** String containing name of app that created document content.
**Example:**

dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
MsgBox doc.Creator

**Notes:** (Read and Write property)

### 125.25.35 documentURL as string

**Function:** The document location.
**Example:**

dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
MsgBox doc.documentURL

Notes:
May return nil if the document was created from data.
(Read only property)

125.25.36   Handle as Integer

Function: The internal reference to the PDF Document.
Notes: (Read and Write property)

125.25.37   isEncrypted as boolean

Function: Whether the PDF is encrypted.
Example:

    dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
    dim doc as new PDFDocumentMBS(f)
    MsgBox str(doc.isEncrypted)

Notes:
With the right password, a PDF can be unlocked - nonetheless, the PDF still indicates that it is encrypted - just no longer locked. Some PDF’s may be encrypted but can be unlocked with the empty string.
These are unlocked automatically.
(Read only property)

125.25.38   isFinding as boolean

Function: Returns true if document is currently searching for a string.
Notes: (Read only property)
125.25. CLASS PDFDOCUMENTMBS

125.25.39  isLocked as boolean

Function: Whether the PDF is locked.
Example:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
MsgBox str(doc.isLocked)

Notes:
With the right password, a PDF can be unlocked - nonetheless, the PDF still indicates that it is encrypted - just no longer locked. Some PDF’s may be encrypted but can be unlocked with the empty string. These are unlocked automatically.
(Read only property)

125.25.40  majorVersion as Integer

Function: PDF version of the PDF file (example: major version = 1, minor = 4; PDF v1.4).
Example:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
MsgBox str(doc.majorVersion)+"."+str(Doc.minorVersion)

Notes:  (Read only property)

125.25.41  minorVersion as Integer

Function: PDF version of the PDF file (example: major version = 1, minor = 4; PDF v1.4).
Example:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
MsgBox str(doc.majorVersion)+"."+str(Doc.minorVersion)

Notes:  (Read only property)
125.25.42 ModificationDate as Date

**Function:** Date representing last document modification date.
**Example:**
```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
MsgBox doc.ModificationDate.LongDate
```

**Notes:** (Read and Write property)

125.25.43 outlineRoot as PDFOutlineMBS

**Function:** Returns the root outline object for the PDF (or nil if none).
**Notes:** (Read and Write property)

125.25.44 pageCount as Integer

**Function:** The number of pages in the document.
**Example:**
```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
MsgBox str(Doc.pageCount)
```

**Notes:** (Read only property)

125.25.45 permissionsStatus as Integer

**Function:** Returns the permissions status of the PDF document.
**Example:**
125.25. CLASS PDFDOCUMENTMBS

```vba
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)

Select case doc.permissionsStatus
case doc.kPDFDocumentPermissionsNone
MsgBox "None"
case doc.kPDFDocumentPermissionsOwner
MsgBox "Owner or no password"
case doc.kPDFDocumentPermissionsUser
MsgBox "User"
end Select
```

Notes:
You have kPDFDocumentPermissionsNone status for an encrypted document that you have not supplied either a valid user or owner password. For a document with no encryption, you automatically have kPDFDocumentPermissionsOwner status.

Requires Mac OS X 10.6.
(Read only property)

125.25.46 Producer as string

**Function:** String containing name of app that produced PDF data.
**Example:**
```vba
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
MsgBox doc.Producer
```

Notes: (Read and Write property)

125.25.47 stringValue as string

**Function:** The text of the document.
**Example:**
```vba
dim p as PDFDocumentMBS
dim f as FolderItem
```
f=SpecialFolder.Desktop.Child("test.pdf")
p=new PDFDocumentMBS(f)

MsgBox "Text from PDF Document:" + EndOfLine + EndOfLine + p.stringValue

Notes:
Convenience method. Returns a string representing the entire document (each page’s string concatenated with line feeds between pages).

If you need to extract the text of a PDF document cross platform or with more options, you may want to look on the DynaPDF plugin.

It seems like this string value is not always available. It works for PDF Documents created from a disc file, but not for files our test app created on runtime in memory by using PDFDocument constructor and insertpage.
(Read only property)

125.25.48 Subject as string

Function: String containing document subject.
Example:

    dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
    dim doc as new PDFDocumentMBS(f)
    MsgBox doc.Subject

Notes: (Read and Write property)

125.25.49 Title as string

Function: String containing document title.
Example:

    dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
    dim doc as new PDFDocumentMBS(f)
    MsgBox doc.Title
**Notes:** (Read and Write property)

### 125.25.50 documentAttributes as Dictionary

**Function:** The PDF meta data as a Real Studio Dictionary object.  
**Notes:**  
Returns a dictionary with PDF metadata. Metadata is optional for PDF’s and so some of the keys may be missing or the entire dictionary may be empty.  
(Read and Write computed property)

### 125.25.51 Constants

#### 125.25.52 kPDFDocumentPermissionsNone=0

**Function:** One of the permission status constants.  
**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)

Select case doc.permissionsStatus
    case doc.kPDFDocumentPermissionsNone
        MsgBox "None"
    case doc.kPDFDocumentPermissionsOwner
        MsgBox "Owner or no password"
    case doc.kPDFDocumentPermissionsUser
        MsgBox "User"
end Select
```

**Notes:** Document permissions status. For encrypted PDF’s, supplying the owner password will enable owner permission status.

#### 125.25.53 kPDFDocumentPermissionsOwner=2

**Function:** One of the permission status constants.  
**Example:**

```vbnet
```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)

Select case doc.permissionsStatus
    case doc.kPDFDocumentPermissionsNone
        MsgBox "None"
    case doc.kPDFDocumentPermissionsOwner
        MsgBox "Owner or no password"
    case doc.kPDFDocumentPermissionsUser
        MsgBox "User"
end Select
```

### 125.25.54 kPDFDocumentPermissionsUser=1

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the permission status constants. **Example:**

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)

Select case doc.permissionsStatus
    case doc.kPDFDocumentPermissionsNone
        MsgBox "None"
    case doc.kPDFDocumentPermissionsOwner
        MsgBox "Owner or no password"
    case doc.kPDFDocumentPermissionsUser
        MsgBox "User"
end Select
```

### 125.25.55 kPDFPrintPageScaleDownToFit=2

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the constants for printing page-scaling modes.

### 125.25.56 kPDFPrintPageScaleNone=0

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the constants for printing page-scaling modes.
125.25.57 kPDFPrintPageScaleToFit=1

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the constants for printing page-scaling modes.

125.25.58 NSBackwardsSearch=4

MBS MacControls Plugin, Plugin Version: 8.0. **Function:** One of the Cocoa search modes. **Notes:** Performs searching from the end of the range toward the beginning.

125.25.59 NSCaseInsensitiveSearch=1

MBS MacControls Plugin, Plugin Version: 8.0. **Function:** One of the Cocoa search modes. **Notes:** Ignores case distinctions among characters.

125.25.60 NSLiteralSearch=2

MBS MacControls Plugin, Plugin Version: 8.0. **Function:** One of the Cocoa search modes. **Notes:** Performs a byte-for-byte comparison. Differing literal sequences (such as composed character sequences) that would otherwise be considered equivalent are considered not to match. Using this option can speed some operations dramatically.
125.26 class PDFOutlineMBS

125.26.1 class PDFOutlineMBS

Function: The class for a pdf outline object.

125.26.2 Methods

125.26.3 childAtIndex(index as Integer) as PDFOutlineMBS

Function: PDFOutline child at index.
Notes: Will throw exception if index is out of range.

125.26.4 Constructor

Function: Initializes a PDFOutline object.
Notes:
If you want the PDFOutline object returned by this method to be the outline root, you must add additional
PDFOutline objects to create the outline hierarchy you desire. Then, you must add the root outline object
to your PDF document by assigning it to the PDFDocument OutlineRoot.

If you want the PDFOutline object returned by this method to be a child of an existing outline, you must
use setLabel: to give it a label and give it either a destination or action using setDestination: or setAction:,
respectively. In addition, you must add this outline object to the existing PDFOutline object as a new child,
using insertChild.

Available in Mac OS X v10.4 and later.

125.26.5 document as PDFDocumentMBS

Function: The PDFDocument the outline is assoicated with.
125.26.6  index as Integer

Function: Returns the index of the outline.
Notes:
The index of the outline object is relative to its siblings and from the perspective of the parent of the outline object. The root outline object, and any outline object without a parent, has an index value of 0.

Available in Mac OS X v10.5 and later.

125.26.7  insertChild(child as PDFOutlineMBS, index as Integer)

Function: Inserts the specified outline object at the specified index.
Notes:
To build a PDF outline hierarchy, use this method to add child outline objects. Before you call this method on a PDFOutline object that already has a parent, you should retain the object and call removeFromParent on it first.

Available in Mac OS X v10.5 and later.

125.26.8  numberOfChildren as Integer

Function: Number of PDFOutline children this PDFOutline has.

125.26.9  parent as PDFOutlineMBS

Function: The parent outline object of the outline.
Notes:
Can be nil for the root object.
Available in Mac OS X v10.5 and later.
125.26.10  **removeFromParent**

**Function:** Removes the outline object from its parent (does nothing if outline object is the root outline object).

**Notes:** Available in Mac OS X v10.5 and later.

125.26.11  **Properties**

125.26.12  **action as PDFActionMBS**

**Function:** The action performed when users click the outline.

**Notes:**

The root outline serves only as a container for the outlines it owns; it does not have an action. Note that a PDFOutline object can have either an action or a destination, not both.

If the PDFOutline object has a destination, instead of an action, action returns a PDFActionGoTo object (this is equivalent to calling destination on the PDFOutline object). For other action types, action returns the appropriate PDF Kit action type object, such as PDFActionURL.

Available in Mac OS X v10.5 and later.

(Read and Write computed property)

125.26.13  **destination as PDFDestinationMBS**

**Function:** The destination associated with the outline item.

**Notes:**

The root PDFOutline has no destination.

(Read and Write computed property)

125.26.14  **isOpen as boolean**

**Function:** Whether the outline object is initially disclosed.

**Notes:**

Calling isOpen on an outline object that has no children always returns false. Calling isOpen on the root
outline object always returns true.

Available in Mac OS X v10.5 and later.
(Read and Write computed property)

125.26.15 label as string

Function: The label for the outline.
Notes:
The root PDFOutline has no label and is only a container for children PDFOutlines.
(Read and Write computed property)
125.27 class PDFPageMBS

125.27.1 class PDFPageMBS


**Function:** The PDFKit class for a page in a pdf document.

**Example:**

```vbnet
dim file1, file2, file3, destfile as FolderItem
dim page1, page2, page3 as PDFPageMBS
dim doc1, doc2 as PDFDocumentMBS
dim img as NSImageMBS
dim doc as PDFDocumentMBS

file1 = SpecialFolder.Desktop.Child("test1.pdf")
file2 = SpecialFolder.Desktop.Child("test2.pdf")
file3 = SpecialFolder.Desktop.Child("logo.jpg")

doc1 = new PDFDocumentMBS(file1)
doc2 = new PDFDocumentMBS(file2)

MsgBox str(doc1.pageCount)

img = new NSImageMBS(file3)

Backdrop = img.CopyPicture

page1 = new PDFPageMBS(img)
page2 = doc1.pageAtIndex(0)
page3 = doc2.pageAtIndex(0)

doc = new PDFDocumentMBS

doc.insertPage page1, 0
doc.insertPage page2, 1
doc.insertPage page3, 2

destfile = SpecialFolder.Desktop.Child("test.pdf")
call doc.write(destfile)
```
125.27.2 Methods

125.27.3 `addAnnotation(annotation as PDFAnnotationMBS)`

Function: Methods allowing annotations to be added.

125.27.4 `annotationAtPoint(x as single, y as single) as PDFAnnotationMBS`

Function: Hit-testing method returns the annotation at point (or nil if none).
Notes: The point is in page-space.

125.27.5 `annotations as PDFAnnotationMBS()`

Function: Returns an array containing the page’s annotations.
Example:

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim doc as new PDFDocumentMBS(f)
dim page as PDFPageMBS = doc.pageAtIndex(0)
dim annotations(-1) as PDFAnnotationMBS = page.annotations

// show a msgbox with the types of all annotations
dim types(-1) as string
for each a as PDFAnnotationMBS in annotations
    types.Append a.type
next
MsgBox Join(types)
```

Notes:
The elements of the array will most likely be typed to subclasses of the PDFAnnotation class.

Available in Mac OS X v10.4 and later.
125.27.6 CalcTransformForBox(box as Integer) as Variant

Function: An utility function to calculate the transform needed to draw into a page.
Notes: Returns NSAffineTransformMBS object.

125.27.7 CGPDFPageHandle as Integer

Function: The CoreGraphics PDFPage handle.

125.27.8 characterBoundsAtIndex(index as Integer) as NSRectMBS

Function: Returns the bounds in page-space of the character at index.
Notes: In the unlikely event that more than one character are at the specified point, only the first character encountered is returned.

125.27.9 characterIndexAtPoint(x as single, y as single) as Integer

Function: Returns the index of the character at point (in page space).
Notes: Returns -1 if no character at point.

125.27.10 Constructor

Function: The constructor to create a custom PDF page.
Example:

```vba
Dim doc As New PDFDocumentMBS
Dim page As PDFPageMBS
Dim f As FolderItem

page = New MyPDFPageMBS

doc.Creator = "Realbasic"
doc.Title = "Test file"

doc.insertPage page, 0
```
125.27. CLASS PDFPAGEMBS

f=SpecialFolder.Desktop.Child("test.pdf")

if doc.write(f) then
f.launch
end if

Notes: You draw the content using drawRect event.
See also:

- 125.27.11 Constructor(image as NSImageMBS)

125.27.11 Constructor(image as NSImageMBS)

Function: Creates a PDFPage for the NSImage passed in.
Notes:
An easy way to create a PDFPage from an image to add to a PDFDocument.

Mac OS X 10.5 only.
See also:

- 125.27.10 Constructor

125.27.12 copy as PDFPageMBS

Function: Creates a copy of the page object.
Example:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim p as new PDFDocumentMBS(f)

// make a new PDF
dim c as new PDFDocumentMBS

// get first page
dim page as PDFPageMBS = p.pageAtIndex(0)

// add copy of page to new pdf
c.insertPage page.copy, 0

// c now has one page
125.27.13 Destructor

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The destructor.

125.27.14 Draw(g as NSGraphicsMBS, box as Integer = 0)

Function: Draws PDF page into graphics environment.
Notes: Use kPDFDisplay*Box constants for box parameter.

125.27.15 drawWithBox(box as Integer)

Function: Draws the page within the specified box.
Notes: This method takes into account the page rotation and draws clipped to the specified box. If the page
is set to display annotations, this method also draws them. This method does not clear the background. To
clear the background before drawing, use NSRectFill with NSColor set (typically) to white.

125.27.16 removeAnnotation(annotation as PDFAnnotationMBS)

Function: Methods allowing annotations to be removed.

125.27.17 Render(dpi as Double = 72.0, box as Integer = 0, background as NSColorMBS = nil) as NSImageMBS

Function: Renders a PDF Page into an image.
Example:

dim f as FolderItem = GetFolderItem("Castles.pdf")
dim doc as new PDFDocumentMBS(f)
dim page as PDFPageMBS = doc.pageAtIndex(0)
dim image as NSImageMBS = page.Render
Backdrop = image.CopyPicture

**Notes:**

dpi: The resolution you want to have on the image. Default 72.0. To get a scaled image with factor x, pass 72.0\*x.
box: The display box. Use one of the kPDFDisplayBox* constants.
background: optional NSColorMBS object to fill the background before drawing the PDF. This will affect only PDFs with transparent background.

Returns nil on any error.

Version 11.1pr8 adds code here to handle rotation better.
Due to bugs in Apples PDFKit you may see memory leaks with JPEG data from PDF pages (seen in macOS 10.12).

### 125.27.18 selectionForLineAtPoint(left as single, top as single) as PDFSelectionMBS


**Function:** Given a point in page-space, returns a selection representing a whole line at that point.

**Notes:** May return nil if no character (and by extension no line) under point.

### 125.27.19 selectionForRange(position as Integer, length as Integer) as PDFSelectionMBS


**Function:** Given a range, returns a selection representing text within that range.

**Example:**

```pascal
dim MyPDFView as PDFViewMBS // your view

dim doc as PDFDocumentMBS = MyPDFView.document
dim page as PDFPageMBS = doc.pageAtIndex(0)
dim sel as PDFSelectionMBS = page.selectionForRange(0,5)
MyPDFView.currentSelection = sel
```

**Notes:** Will raise an exception if the range length is zero or if the range is outside the range of the characters on the page.
125.27.20 \textbf{selectionForRect(left as single, top as single, width as single, height as single) as PDFSelectionMBS}

\textbf{Function:} Given a rect in page-space, returns a selection representing enclosed text on page.

125.27.21 \textbf{selectionForWordAtPoint(left as single, top as single) as PDFSelectionMBS}

\textbf{Function:} Given a point in page-space, returns a selection representing a whole word at that point.
\textbf{Notes:} May return nil if no character (and by extension no word) under point.

125.27.22 \textbf{selectionFromPointToPoint(startleft as single, starttop as single, endleft as single, endtop as single) as PDFSelectionMBS}

\textbf{Function:} Returns a selection representing text between startPt and endPt.
\textbf{Notes:} Point are sorted first top to bottom, left to right.

125.27.23 \textbf{transformContextForBox(box as Integer)}

\textbf{Function:} Given a display box, will transform the current context to take into account the rotation of the page as well as the origin of the box with repect to the page’s base coordinates system.
\textbf{Notes:} This is a convenient method to call from within drawPage or from within the draw method a PDFAnnotation subclass.

Mac OS X 10.5 only.
125.27.24 Properties

125.27.25 attributedString as NSAttributedStringMBS

**Function:** String (with linefeeds and in some cases spaces inserted) representing the text on the page.
**Notes:** (Read only property)

125.27.26 dataRepresentation as memoryblock

**Function:** Returns PDF data (a proper PDF document) consisting of a single page (this page).
**Notes:**
Note, external page links are not preserved.
(Read only property)

125.27.27 displaysAnnotations as boolean

**Function:** Method to turn on or off the display of annotations when the page is drawn.
**Notes:** (Read and Write property)

125.27.28 document as PDFDocumentMBS

**Function:** The PDFDocument the page is associated with.
**Notes:** (Read only property)

125.27.29 label as string

**Function:** The page label. Usually "1" for the first page, "2" for the second, etc.
**Notes:** (Read only property)
125.27.30  numberOfCharacters as Integer

Function: Number of characters on the page (including linefeeds and spaces inserted).
Notes: (Read only property)

125.27.31  rotation as Integer

Function: Rotation on a page.
Notes:
Must be 0, 90, 180 or 270 (negative rotations will be "normalized" to one of 0, 90, 180 or 270).
Some PDF's have an inherent rotation and so rotation may be non-zero when a PDF is first opened.
(Read and Write property)

125.27.32  stringValue as string

Function: String (with linefeeds and in some cases spaces inserted) representing the text on the page.
Example:

```vba
Dim p As PDFDocumentMBS
Dim f As FolderItem

f = SpecialFolder.Desktop.Child("test.pdf")
p = new PDFDocumentMBS(f)

MsgBox "Text from first page:" + EndOfLine + EndOfLine + p.pageAtIndex(0).stringValue
```

Notes:
If you need to extract the text of a PDF document page cross platform or with more options, you may want to look on the DynaPDF plugin.

It seems like this string value is not always available. It works for PDF Documents created from a disc file, but not for files our test app created on runtime in memory by using PDFDocument constructor and insertpage.
(Read only property)
125.27. **CLASS PDFPAGEMBS**

125.27.33 **boundsForBox**(box as Integer) as NSRectMBS


**Function:** Returns the bounds for the specified PDF display box.

**Notes:**

The PDFDisplayBox enumeration defines the various box types.

Note that only the media box is required for a PDF. If you request the bounds for the crop box, but the PDF does not include a crop box, the bounds for the media box are returned instead. If you request the bounds for other box types, and the PDF does not includes these types, the bounds for the crop box are returned instead.

The coordinates for the box are in page space, so you might need to transform the points if the page has a rotation on it. Also, note that the bounds boundsForBox returns are intersected with the page's media box.

boundsForBox throws a range exception if box is not in range.

(Read and Write computed property)

125.27.34 **Events**

125.27.35 **drawRect**(box as Integer, g as NSGraphicsMBS)

MBS MacControls Plugin, Plugin Version: 8.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.

**Function:** The event called when the PDFPage needs to be drawn.

**Example:**

```vcl
Sub drawRect(box as Integer, g as NSGraphicsMBS)
    if g.Valid then
        System.DebugLog "is valid"
    else
        System.DebugLog "not valid"
    end if

g.SetColorRGB 0,1,0

g.drawRect 200,200,200,200

g.SetColorRGB 1,0,0

g.fillRect 100,100,100,100
End Sub
```
Notes:
Do not store the graphics reference as it is only valid in this event.
Use the kPDFDisplayBox* constants for the box value.
You can draw another PDF page here with Draw command.

125.27.36  Constants

125.27.37  kPDFDisplayBoxArtBox=4

MBS MacControls Plugin, Plugin Version: 8.0. **Function:** One of the constants to use for page boxes.

125.27.38  kPDFDisplayBoxBleedBox=2

MBS MacControls Plugin, Plugin Version: 8.0. **Function:** One of the constants to use for page boxes.

125.27.39  kPDFDisplayBoxCropBox=1

MBS MacControls Plugin, Plugin Version: 8.0. **Function:** One of the constants to use for page boxes.

125.27.40  kPDFDisplayBoxMediaBox=0

MBS MacControls Plugin, Plugin Version: 8.0. **Function:** One of the constants to use for page boxes.

125.27.41  kPDFDisplayBoxTrimBox=3

MBS MacControls Plugin, Plugin Version: 8.0. **Function:** One of the constants to use for page boxes.
125.28.  CLASS PDFSELECTIONMBS

125.28  class PDFSelectionMBS

125.28.1  class PDFSelectionMBS

Function: The PDFKit class for selections.
Example:

dim MyPDFView as PDFViewMBS // your view

dim doc as PDFDocumentMBS = MyPDFView.document
dim page as PDFPageMBS = doc.pageAtIndex(0)
dim sel as PDFSelectionMBS = page.selectionForRange(0,5)
MyPDFView.currentSelection = sel

125.28.2  Methods

125.28.3  addSelection(selection as PDFSelectionMBS)

Function: Add a selection to this selection.
Notes: Selections do not have to be contiguous. If the selection added overlaps with this selection, overlaps
are removed.

125.28.4  addSelections(selection() as PDFSelectionMBS)

Function: Adds the specified array of selections to the receiving selection.
Notes:
This method provides better performance than multiple calls to addSelection if you need to add several
selections to an existing selection. This is because the normalization of the selection (the removal of any
overlaps between selections) occurs only once, after all selections have been added.
Available in Mac OS X v10.5 and later.

125.28.5  attributedString as NSAttributedStringMBS

Function: String representing the text covered by the selection.
Notes: May contain line-feeds.
125.28.6 boundsForPage(page as PDFPageMBS) as NSRectMBS

Function: Returns the bounds of the selection on the specified page.
Notes:
The selection rectangle is given in page space.
Page space is a 72 dpi coordinate system with the origin at the lower-left corner of the current page.

125.28.7 Constructor(doc as PDFDocumentMBS)

Function: Creates an empty PDFSelection object.
Notes:
Typically, you don’t need to create a PDFSelection object, but you can use an empty PDFSelection object
as a container into which you can place selections, using addSelection: and addSelections.
Available in Mac OS X v10.5 and later.

125.28.8 copy as PDFSelectionMBS

Function: Creates a copy of the selection object.

125.28.9 drawForPage(page as PDFPageMBS, active as boolean)

Function: Calls drawForPage with a default value for box parameter.
Notes: The default value is kPDFDisplayBoxCropBox. If active is true, drawing uses selectedTextBack-
groundColor. If false, it uses secondarySelectedControlColor.
See also:
- 125.28.10 drawForPage(page as PDFPageMBS, box as Integer, active as boolean)

125.28.10 drawForPage(page as PDFPageMBS, box as Integer, active as boolean)

Function: Draws the selection relative to the origin of the specified box in page space.
Notes:
The selection is drawn using the current highlight color. If active is true, drawing uses selectedTextBack-
groundColor. If false, it uses secondarySelectedControlColor. Refer to the PDFPage class for the list of
available box types.

Page space is a 72 dpi coordinate system with the origin at the lower-left corner of the current page. See also:

- 125.28.9 `drawForPage(page as PDFPageMBS, active as boolean)`

125.28.11 `extendSelectionAtEnd(chars as Integer)`


**Function:** Extends the selection at either end.

**Example:**

```javascript
dim s as PDFSelectionMBS // your selection

s.extendSelectionAtEnd(50)
```

**Notes:** Selections can be extended right off onto neighboring pages even to include the entire PDF document.

125.28.12 `extendSelectionAtStart(chars as Integer)`


**Function:** Extends the selection at either end.

**Example:**

```javascript
dim s as PDFSelectionMBS // your selection

s.extendSelectionAtStart(50)
```

**Notes:** Selections can be extended right off onto neighboring pages even to include the entire PDF document.

125.28.13 `numberOfTextRangesOnPage(page as PDFPageMBS) as UInt32`  


**Function:** Returns the number of contiguous ranges of text on the specified page.

**Notes:**

Returns zero if page is not in selection.
A typical, simple selection will contain a single range of text.
125.28.14  pages as PDFPageMBS()

Function: Array of pages covered by the selection.  
Notes: 
These are sorted by page index.  
Returns nil on any error.

125.28.15  rangeAtIndex(page as PDFPageMBS, index as Integer) as NSRangeMBS

Function: Returns a range of contiguous text at index on the specified page.  
Notes: 
A simple selection. A typical, simple selection will contain a single range of text.  
Available in Mac OS X 10.7 and later.

125.28.16  selectionsByLine as PDFSelectionMBS()

Function: Returns an array of selections, one for each line of text covered by the receiver.  
Notes: 
If you call this method on a PDFSelection object that represents a paragraph, for example, selectionsByLine returns an array that contains one PDFSelection object for each line of text in the paragraph.  
Available in Mac OS X v10.5 and later.

125.28.17  stringValue as string

Function: String representing the text covered by the selection.  
Notes: May contain line-feeds.
125.28. CLASS PDFSELECTIONMBS

125.28.18 Properties

125.28.19 Handle as Integer

Function: The handle used internally for the object reference.
Notes: (Read and Write property)

125.28.20 colorValue as NSColorMBS

Function: The color used to draw the selection.
Notes:
Note that when no color has been specified for the PDFSelection objects in a document, the selections are
drawn using NSColorMBS.selectedTextBackgroundColor for the active state and NSColorMBS.secondarySelectedControlColor for the inactive state.
(Read and Write computed property)
125.29 control PDFThumbnailViewControlMBS

125.29.1 control PDFThumbnailViewControlMBS

**Function:** The Xojo control for a PDFThumbnailView.
**Notes:**
This control embeds a special PDFThumbnailView subclass.
Designed for Xojo 2013r1 and newer. May work on Real Studio 2012, but not perfectly.
Please use view property to access the underlaying object and set properties.

Does no longer work well with MacOS 10.12 or 10.13 as focus can’t be set.

125.29.2 Properties

125.29.3 View as PDFThumbnailViewMBS

**Function:** The view used in the control.
**Notes:**
Use this object to set more options on the control.
(Read only property)

125.29.4 Events

125.29.5 BoundsChanged

**Function:** The event called when the bounds, but not the frame, changed.

125.29.6 EnableMenuItems

**Function:** The event where you can enable menu items.
125.29.7 **FrameChanged**

**Function:** The event called when the frame changed.

125.29.8 **GotFocus**

**Function:** The control itself got focus.  
**Notes:** This only fires if the control itself got focus and not a sub control.

125.29.9 **LostFocus**

**Function:** The control lost focus.  
**Notes:** This only fires if the control itself lost focus and not a sub control.

125.29.10 **MenuAction(HitItem as MenuItem) As Boolean**

**Function:** Called when a menuitem is choosen.  
**Notes:** This allows the control to react on its relevant menu items. Please return true if you handled it or false to give others a chance.

125.29.11 **MouseDown(x as Integer, y as Integer, Modifiers as Integer) As Boolean**

**Function:** The mouse button was pressed inside the controls region at the location passed in to x, y.  
**Notes:**  
The coordinates x and y are local to the control, i.e. they represent the position of the mouse click relative to the upper-left corner or the Control.  
Return True if you are going to handle the MouseDown. In such a case:

- The Action event, if any, will not execute and the state of the object will not change.  
- You will receive the MouseDrag and MouseUp events.
If you return False, the system handles the MouseDown so the above event handlers do not get called.

**125.29.12 MouseDrag(x as Integer, y as Integer)**


**Function:** This event fires continuously after the mouse button was pressed inside the Control.

**Notes:**
Mouse location is local to the control passed in to x, y.
As this event is fired continuously (hundreds of time per second), it is your responsibility to determine if the mouse has really moved.

**125.29.13 MouseUp(x as Integer, y as Integer)**


**Function:** The mouse button was released.

**Notes:** Use the x and y parameters to determine if the mouse button was released within the control’s boundaries.

**125.29.14 ScaleFactorChanged(NewFactor as Double)**


**Function:** The backing store scale factor has changed.

**Notes:** Please invalidate any cached bitmaps or other relevant state.
125.30. class PDFThumbnailViewMBS


**Function:** A PDFThumbnailView object contains a set of thumbnails, each of which represents a page in a PDF document.

**Notes:**
You can embed this view in a CustomNSViewMBS to get more events for mouse and keyboard. Subclass of the NSViewMBS class.

125.30.2 Methods

125.30.3 Constructor


**Function:** Creates a new PDF thumbnail view with size 100/100 and position 0/0

**Example:**
```
dim t as new PDFThumbnailViewMBS
```

**Notes:** On success the handle property is not zero.
See also:

- 125.30.4 Constructor(Handle as Integer)
- 125.30.5 Constructor(left as Double, top as Double, width as Double, height as Double)

125.30.4 Constructor(Handle as Integer)


**Function:** Creates an object based on the given PDFThumbnailView handle.

**Example:**
```
dim t as new PDFThumbnailViewMBS(0, 0, 100, 100)
dim v as new PDFThumbnailViewMBS(t.handle)
MsgBox str(v.Bounds.Width)+" x "+str(v.Bounds.Height)
```

**Notes:** The handle is casted to a PDFThumbnailView and the plugin retains this handle.
See also:
125.30.5 Constructor(left as Double, top as Double, width as Double, height as Double)


**Function:** Creates a new PDF thumbnail view with the given size and position.

**Example:**
```vba
dim x as new PDFThumbnailViewMBS(0, 0, 100, 100)
```

**Notes:** On success the handle property is not zero.

See also:

- 125.30.3 Constructor
- 125.30.4 Constructor(Handle as Integer)

125.30.6 selectedPages as PDFPageMBS()


**Function:** Returns an array of PDF pages that correspond to the selected thumbnails in the thumbnail view.

**Notes:**

If the thumbnail view allows multiple selections (if allowsMultipleSelection returns true), you can use this method to get the PDF pages that correspond to the selected thumbnails.

Available in Mac OS X v10.5 and later.

125.30.7 Properties

125.30.8 allowsDragging as boolean


**Function:** Whether users can drag thumbnails within the thumbnail view; that is, re-order pages in the document.

**Notes:**

Available in Mac OS X v10.5 and later.

(Read and Write property)
125.30.9  allowsMultipleSelection as boolean

**Function:** Whether the thumbnail view allows users to select more than one thumbnail at a time.  
**Notes:**  
By default, PDFThumbnailView allows only a single thumbnail to be selected at one time. When this is the case, you can get the PDF page that corresponds to the selected thumbnail using the PDFView method currentPage.

If you use setAllowsMultipleSelection to enable multiple selections, however, you must use selectedPages to get the pages that correspond to the set of selected thumbnails.  
Available in Mac OS X v10.5 and later.  
(Read and Write property)

125.30.10  backgroundColor as NSColorMBS

**Function:** The color used in the background of the thumbnail view.  
**Notes:**  
Available in Mac OS X v10.5 and later.  
(Read and Write property)

125.30.11  Bezeled as Boolean

**Function:** Whether to use bezel for control.  
**Notes:** (Read and Write property)

125.30.12  labelFont as NSFontMBS

**Function:** The font used to label the thumbnails.  
**Notes:**  
Typically, the label of a thumbnail is the page number of the page it represents.  
Available in Mac OS X v10.5 and later.  
(Read and Write property)
125.30.13 maximumNumberOfColumns as Integer

**Function:** Returns the maximum number of columns of thumbnails the thumbnail view can display.
**Notes:**
The thumbnail displays as many columns of thumbnails as fit in its size.
Available in Mac OS X v10.5 and later.
(Read and Write property)

125.30.14 PDFView as PDFViewMBS

**Function:** The PDFView object associated with the thumbnail view.
**Notes:**
Available in Mac OS X v10.5 and later.
(Read and Write property)

125.30.15 thumbnailSize as NSSizeMBS

**Function:** The maximum width and height of the thumbnails in the thumbnail view.
**Notes:**
Available in Mac OS X v10.5 and later.
(Read and Write property)
125.31. CONTROL PDFVIEWCONTROLMBS

125.31  control PDFViewControlMBS

125.31.1  control PDFViewControlMBS

Function: The Xojo control for a PDFView.
Notes:
This control embeds a special PDFView subclass.
Designed for Xojo 2013r1 and newer. May work on Real Studio 2012, but not perfectly.
Please use view property to access the underlaying object and set properties.

125.31.2  Methods

125.31.3  ClearOverlay(page as PDFPageMBS, post as boolean = true)

Function: Clear overlay item for this page.
Notes:
Is post = false, than we clear the item for pre page drawing, else for post page drawing.
The plugin does not trigger a redraw, so change takes effect on the next time the page is drawn.

125.31.4  ClearOverlays

Function: Clear all overlays.
Notes: The plugin does not trigger a redraw, so change takes effect on the next time the page is drawn.

125.31.5  Properties

125.31.6  View as PDFViewMBS

Function: The view used in the control.
Notes:
Use this object to set more options on the control.
(Read only property)
125.31.7 Overlay(page as PDFPageMBS, post as boolean = true) as variant

Function: Get/Set overlay item.
Notes:
MBS Plugin can draw a picture, NSImageMBS or PDFPageMBS below/over the PDF page.
The plugin does not trigger a redraw, so change takes effect on the next time the page is drawn.
(Read and Write computed property)

125.31.8 Events

125.31.9 AfterDrawPage(graphics as NSGraphicsMBS, page as PDFPageMBS)

Function: The draw event called after something was drawn.
Notes: On macOS 10.12.2 or later, this event is called on a non-main thread. In that case the plugin will not call this event.

125.31.10 AfterDrawPagePost(graphics as NSGraphicsMBS, page as PDFPageMBS)

Function: The draw event called after a page annotations were drawn.
Notes: On macOS 10.12.2 or later, this event is called on a non-main thread. In that case the plugin will not call this event.

125.31.11 AfterDrawRect(graphics as NSGraphicsMBS, x as Double, y as Double, w as Double, h as Double)

Function: The draw event called after a page was drawn.
Notes: On macOS 10.12.2 or later, this event is called on a non-main thread. In that case the plugin will not call this event.

125.31.12 BeforeDrawPage(graphics as NSGraphicsMBS, page as PDFPageMBS) as boolean

Function: The draw event called before a page was drawn.
BeforeDrawPagePost(graphics as NSGraphicsMBS, page as PDFPageMBS) as boolean

Function: The draw event called before a page annotations were drawn.
Notes: On macOS 10.12.2 or later, this event is called on a non-main thread. In that case the plugin will not call this event.

BeforeDrawRect(graphics as NSGraphicsMBS, x as Double, y as Double, w as Double, h as Double) as boolean

Function: The draw event called before a something was drawn.

BoundsChanged

Function: The event called when the bounds, but not the frame, changed.

EnableMenuItems

Function: The event where you can enable menu items.

FrameChanged

Function: The event called when the frame changed.
125.31.18  GotFocus

Function: The control itself got focus.
Notes: This only fires if the control itself got focus and not a sub control.

125.31.19  LostFocus

Function: The control lost focus.
Notes: This only fires if the control itself lost focus and not a sub control.

125.31.20  MenuAction(HitItem as MenuItem) As Boolean

Function: Called when a menuitem is choosen.
Notes: This allows the control to react on its relevant menu items. Please return true if you handled it or false to give others a chance.

125.31.21  MouseDown(x as Integer, y as Integer, Modifiers as Integer) As Boolean

Function: The mouse button was pressed inside the controls region at the location passed in to x, y.
Notes:
The coordinates x and y are local to the control, i.e. they represent the position of the mouse click relative to the upper-left corner or the Control.
Return True if you are going to handle the MouseDown. In such a case:

- The Action event, if any, will not execute and the state of the object will not change.
- You will receive the MouseDrag and MouseUp events.

If you return False, the system handles the MouseDown so the above event handlers do not get called.

125.31.22  MouseDrag(x as Integer, y as Integer)

Function: This event fires continuously after the mouse button was pressed inside the Control.
Notes:
Mouse location is local to the control passed in to x, y.
As this event is fired continuously (hundreds of time per second), it is your responsibility to determine if the mouse has really moved.

### 125.31.23 MouseUp(x as Integer, y as Integer)

**Function:** The mouse button was released.  
**Notes:** Use the x and y parameters to determine if the mouse button was released within the control's boundaries.

### 125.31.24 ScaleFactorChanged(NewFactor as Double)

**Function:** The backing store scale factor has changed.  
**Notes:** Please invalidate any cached bitmaps or other relevant state.
125.32 class PDFViewMBS

125.32.1 class PDFViewMBS


**Function:** A PDFView object encapsulates the functionality of PDF Kit into a single widget that you can add to your application.

**Notes:**

PDFView may be the only class you need to deal with for adding PDF functionality to your application. It lets you display PDF data and allows users to select content, navigate through a document, set zoom level, and copy textual content to the Pasteboard. PDFView also keeps track of page history.

You can subclass PDFView to create a custom PDF viewer or better use our CustomPDFViewMBS class.

You can also create a custom PDF viewer by using the PDF Kit utility classes directly and not using PDFView at all.

You can embed this view in a CustomNSViewMBS to get more events for mouse and keyboard. Subclass of the NSViewMBS class.

125.32.2 Methods

125.32.3 annotationsChangedOnPage(page as PDFPageMBS)


**Function:** Tells the PDF view that an annotation on the specified page has changed.

**Notes:**

When the PDFView object receives this message, it rescans for tool tips and pop-ups and informs the PDFThumbnailView objects so the thumbnail images can be redrawn. Available in Mac OS X v10.5 and later.

125.32.4 areaOfInterestForMouse(e as NSEventMBS) as Integer


**Function:** Returns the type of area the mouse cursor is over.

**Notes:** The PDFAreaOfInterest enumeration defines the various area types. This method is for custom subclasses of the PDFView class. Use it if you override the NSResponder class’s mouseMoved: method or related methods.
125.32.5 canGoBack as Boolean

**Function:** Returns a Boolean value indicating whether the user can navigate to the previous page in the page history.
**Notes:** The page history gets built as your application calls navigation methods such as goToDestination and goToLastPage.

125.32.6 canGoForward as Boolean

**Function:** Returns a Boolean value indicating whether the user can navigate to the next page in the page history.
**Notes:** The page history gets built as your application calls navigation methods such as goToDestination and goToLastPage.

125.32.7 canGoToFirstPage as Boolean

MBS MacControls Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value indicating whether the user can navigate to the first page of the document.
**Notes:** The return value will be true unless the view is already displaying the first page.

125.32.8 canGoToLastPage as Boolean

MBS MacControls Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value indicating whether the user can navigate to the last page of the document.
**Notes:** The return value will be true unless the view is already displaying the last page.

125.32.9 canGoToNextPage as Boolean

MBS MacControls Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value indicating whether the user can navigate to the next page of the document.
**Notes:** The return value will be true unless the view is displaying the last page.

125.32.10 canGoToPreviousPage as Boolean

MBS MacControls Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a Boolean value indicating whether the user can navigate to the previous page of the
**125.32.11 canZoomIn as Boolean**

**Function:** Returns a Boolean value indicating whether the user can magnify the view that is, zoom in.

**125.32.12 canZoomOut as Boolean**

**Function:** Returns a Boolean value indicating whether the user can view an expanded area that is, zoom out.

**125.32.13 clearSelection**

**Function:** Clears the selection.
**Notes:** The view redraws as necessary but does not scroll. This call is equivalent to setting CurrentSelection=nil.

**125.32.14 Constructor**

**Function:** Creates a new PDF view with size 100/100 and position 0/0
**Example:**

```dim t as new PDFViewMBS```

**Notes:** On success the handle property is not zero.
See also:

- **125.32.15 Constructor(Handle as Integer)**
- **125.32.16 Constructor(left as Double, top as Double, width as Double, height as Double)**
**125.32. CLASS PDFVIEWMBS**

**125.32.15 Constructor(Handle as Integer)**


**Function:** Creates an object based on the given PDFView handle.

**Example:**

```vba
dim t as new PDFViewMBS(0, 0, 100, 100)
dim v as new PDFViewMBS(t.handle)
```

**Notes:** The handle is casted to a NSButton and the plugin retains this handle.

See also:

- 125.32.14 Constructor
- 125.32.16 Constructor(left as Double, top as Double, width as Double, height as Double)

**125.32.16 Constructor(left as Double, top as Double, width as Double, height as Double)**


**Function:** Creates a new PDF view with the given size and position.

**Example:**

```vba
dim x as new PDFViewMBS(0, 0, 100, 100)
```

**Notes:** On success the handle property is not zero.

See also:

- 125.32.14 Constructor
- 125.32.15 Constructor(Handle as Integer)

**125.32.17 convertPointFromPage(point as NSPointMBS, page as PDFPageMBS) as NSPointMBS**


**Function:** Converts a point from page space to view space.

**Notes:** Page space is a 72 dpi coordinate system with the origin at the lower-left corner of the current page. View space is a coordinate system with the origin at the lower-left corner of the current PDF view.
125.32.18  `convertPointToPage(point as NSPointMBS, page as PDFPageMBS) as NSPointMBS`

**Function:** Converts a point from view space to page space.
**Notes:** Page space is a 72 dpi coordinate system with the origin at the lower-left corner of the current page. View space is a coordinate system with the origin at the lower-left corner of the current PDF view.

125.32.19  `convertRectFromPage(rect as NSRectMBS, page as PDFPageMBS) as NSRectMBS`

**Function:** Converts a rectangle from page space to view space.
**Notes:** Page space is a 72 dpi coordinate system with the origin at the lower-left corner of the current page. View space is a coordinate system with the origin at the lower-left corner of the current PDF view.

125.32.20  `convertRectToPage(rect as NSRectMBS, page as PDFPageMBS) as NSRectMBS`

**Function:** Converts a rectangle from view space to page space.
**Notes:** Page space is a 72 dpi coordinate system with the origin at the lower-left corner of the current page. View space is a coordinate system with the origin at the lower-left corner of the current PDF view.

125.32.21  `copy`

**Function:** Copies the text in the selection, if any, to the Pasteboard.

125.32.22  `currentDestination as PDFDestinationMBS`

**Function:** Returns a PDFDestination object representing the current page and the current point in the view specified in page space.
**Notes:** Page space is a 72 dpi coordinate system with the origin at the lower-left corner of the current page.
125.32.23 currentPage as PDFPageMBS

**Function:** Returns the current page.
**Notes:** When there are two pages in the view in a two-up mode, “current page” is the left page. For continuous modes, returns the page crossing a horizontal line halfway between the view’s top and bottom bounds.

125.32.24 documentView as NSViewMBS

**Function:** Returns the innermost view used by PDFView or by your PDFView subclass.
**Notes:** The innermost view is the one displaying the visible document pages. This method is useful when converting coordinates from one view to another.

125.32.25 drawPage(page as PDFPageMBS)

**Function:** For use by subclasses of PDFView for custom rendering of pages.
**Notes:**
Do not invoke this method, except by invoking it on super from a subclass.

The PDFView class calls drawPage: as necessary for each visible page that requires rendering. In the PDFView class, this method erases page to white, calls page.drawInRect(pageRect,self.displayBox), and then draws the selection, if any.

You can override this method to draw on top of a PDF page or to control how pages are drawn. In these cases, invoke this method on super and then perform custom drawing on top of the PDF page.

125.32.26 drawPagePost(page as PDFPageMBS)

**Function:** For use by subclasses of PDFView for post-page rendering.
**Notes:**
The default implementation of this method draws the text highlighting (if any) for the page. This method does not apply scaling or rotating to the current context to map to page space; instead, the context is in view-space coordinates (in which the origin is at the lower-left corner of the current PDF view). Available in Mac OS X v10.5 and later.
125.32.27  goBack

**Function:** Navigates back one step in the page history.
**Notes:** The page history gets built as your application calls navigation methods such as goToDestination and goToLastPage.

125.32.28  goForward

**Function:** Navigates forward one step in the page history.
**Notes:** The page history gets built as your application calls navigation methods such as goToDestination and goToLastPage.

125.32.29  goToDestination(page as PDFDestinationMBS)

**Function:** Navigates to the specified destination.
**Notes:**
Destinations include a page and a point on the page specified in page space.
Page space is a 72 dpi coordinate system with the origin at the lower-left corner of the current page.

125.32.30  goToFirstPage

**Function:** Navigates to the first page of the document.
**Notes:** PDF Kit records the move in its page history.

125.32.31  goToLastPage

**Function:** Navigates to the last page of the document.
**Notes:** PDF Kit records the move in its page history.
125.32.32  goToNextPage

Function: Navigates to the next page of the document.
Notes: PDF Kit records the move in its page history.

125.32.33  goToPage(page as PDFPageMBS)

Function: Scrolls to the specified page.
Notes: PDF Kit records the move in its page history.

125.32.34  goToPreviousPage

Function: Navigates to the previous page of the document.
Notes: PDF Kit records the move in its page history.

125.32.35  goToRect(rect as NSRectMBS, page as PDFPageMBS)

Function: Navigates to the specified rectangle on the specified page.
Notes:
If the specified rectangle is already visible, this method does nothing. This allows you to scroll the PDFView object to a specific PDFAnnotation or PDFSelection object, because both of these objects have bounds methods that return an annotation or selection position in page space.

Note that rect is specified in page-space coordinates. Page space is a 72 dpi coordinate system with the origin at the lower-left corner of the current page.
Available in Mac OS X v10.5 and later.

125.32.36  goToSelection(page as PDFSelectionMBS)

Function: Scrolls to the first character of the specified selection.
Notes: PDF Kit records the move in its page history.
125.32.37  layoutDocumentView

**Function:** Performs layout of the inner views.
**Notes:**
The PDFView actually contains several subviews, such as the document view (where the PDF is actually
drawn) and a "matte view" (which may appear as a gray area around the PDF content, depending on the
scaling). Changes to the PDF content may require changes to these inner views, so you must call this
method explicitly if you use PDF Kit utility classes to add or remove a page, rotate a page, or perform other
operations affecting visible layout.

This method is called automatically from PDFView methods that affect the visible layout (such as setDoc-
ument, setDisplayBox or zoomIn).

125.32.38  pageForPoint(point as NSPointMBS, nearest as boolean) as PDF-
PageMBS

**Function:** Returns the page containing a point specified in view coordinates.
**Notes:** Returns nil if there’s no page at the specified point and nearest is set to false.

125.32.39  PDFViewAnnotationHitNotification as string

**Function:** One of the notification names used with the PDF view.
**Notes:**
Posted when the user clicks on an annotation.

Use the "PDFAnnotationHit" key to obtain userinfo of type PDFAnnotation.

125.32.40  PDFViewAnnotationWillHitNotification as string

**Function:** One of the notification names used with the PDF view.
**Notes:**
Posted before the user clicks an annotation.
Available in Mac OS X v10.5 and later.
125.32.41 PDFViewChangedHistoryNotification as string

Function: One of the notification names used with the PDF view.
Notes: Posted when the page history changes.

125.32.42 PDFViewCopyPermissionNotification as string

Function: One of the notification names used with the PDF view.
Notes: Posted when the user attempts to copy to the pasteboard without the appropriate permissions.

125.32.43 PDFViewDisplayBoxChangedNotification as string

Function: One of the notification names used with the PDF view.
Notes:
Posted when the display box has changed.
Available in Mac OS X v10.5 and later.

125.32.44 PDFViewDisplayModeChangedNotification as string

Function: One of the notification names used with the PDF view.
Notes:
Posted when the display mode has changed.
Available in Mac OS X v10.5 and later.

125.32.45 PDFViewDocumentChangedNotification as string

Function: One of the notification names used with the PDF view.
Notes: Posted when a new document is associated with the view.
125.32.46 PDFViewPageChangedNotification as string

Function: One of the notification names used with the PDF view.
Notes: Posted when a new page becomes the current page.

125.32.47 PDFViewPrintPermissionNotification as string

Function: One of the notification names used with the PDF view.
Notes: Posted when the user attempts to print without the appropriate permissions.

125.32.48 PDFViewScaleChangedNotification as string

Function: One of the notification names used with the PDF view.
Notes: Posted when the scale factor changes.

125.32.49 PDFViewSelectionChangedNotification as string

Function: One of the notification names used with the PDF view.
Notes: Posted when the current selection has changed.
Available in Mac OS X v10.5 and later.

125.32.50 performAction(action as PDFActionMBS)

Function: Performs the specified action.
Notes: Available in Mac OS X v10.5 and later.

125.32.51 rowSizeForPage(page as PDFPageMBS) as NSSizeMBS

Function: Returns the size needed to display a row of the current document page.
Notes: The size is dependent on the current scale factor and display attributes.

125.32.52 scrollSelectionToVisible

Function: Scrolls the view until the selection is visible.

125.32.53 selectAll

Function: Selects all text in the document.

125.32.54 setCurrentSelection(selection as PDFSelectionMBS, animate as boolean)

Function: Sets the selection, in an animated way, if desired.
Notes:
This method behaves as setCurrentSelection, but with the addition of animation, if animate is true. The animation serves to draw the user’s attention to the new selection, which can be useful when implementing search.
Available in Mac OS X v10.5 and later.

125.32.55 setCursorForAreaOfInterest(area as Integer)

Function: Sets the type of mouse cursor according to the type of area the mouse cursor is over.
Notes: This method is especially useful for custom subclasses of the PDFView class.

125.32.56 visiblePages as PDFPageMBS()

Function: Returns an array of PDFPageMBS objects that represent the currently visible pages.
Notes: Available in Mac OS X v10.5 and later.
125.32.57  **zoomIn**

**Function:** Zooms in by increasing the scaling factor.
**Notes:**
Each invocation of zoomIn multiplies the scaling factor by the square root of 2.
Available in Mac OS X v10.4 and later.

125.32.58  **zoomOut**

**Function:** Zooms out by decreasing the scaling factor.
**Notes:**
Each invocation of zoomOut divides the scaling factor by the square root of 2.
Available in Mac OS X v10.4 and later.

125.32.59  **Properties**

125.32.60  **allowsDragging** as Boolean

**Function:** Determines whether the view can accept new PDF documents dragged into it by the user.
**Notes:** (Read and Write computed property)

125.32.61  **autoScales** as Boolean

**Function:** A Boolean value indicating whether autoscaling is set.
**Notes:** (Read and Write computed property)

125.32.62  **backgroundColor** as NSColorMBS

**Function:** Returns the view’s background color.
**Notes:**
A view’s background is the area displayed to either side of a PDF document’s pages. The background also appears between pages when page breaks are enabled. The default color is a 50% gray.
125.32.63 currentSelection as PDFSelectionMBS

Function: Returns the current selection.
Example:

```vbs
dim MyPDFView as PDFViewMBS // your view

dim doc as PDFDocumentMBS = MyPDFView.document

dim page as PDFPageMBS = doc.pageAtIndex(0)

dim sel as PDFSelectionMBS = page.selectionForRange(0,5)

MyPDFView.currentSelection = sel
```

Notes:

Returns NULL if no selection exists.

Note that this method returns the actual instance of the current PDFSelectionMBS object. Therefore, if you want to modify it, you should make a copy of the returned selection and modify that, instead.

(Read and Write computed property)

125.32.64 displayBox as Integer

Function: The current style of display box.
Notes:

The available values for display boxes are defined in the Constants section in the PDFPageMBS class.
(Read and Write computed property)

125.32.65 displayMode as Integer

Function: The current display mode.
Notes:

Value can be kPDFDisplaySinglePage, kPDFDisplaySinglePageContinuous, kPDFDisplayTwoUp and kPDFDisplayTwoUpContinuous.
(Read and Write computed property)
125.32.66  displaysAsBook as Boolean

MBS MacControls Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: A Boolean value indicating whether the view will display the first page as a book cover (meaningful only when the document is in two-up or two-up continuous display mode). **Notes**: (Read and Write computed property)

125.32.67  displaysPageBreaks as Boolean

MBS MacControls Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: A Boolean value indicating whether the view is displaying page breaks. **Notes**: (Read and Write computed property)

125.32.68  document as PDFDocumentMBS

MBS MacControls Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Returns the document associated with a PDFView object. **Notes**: (Read and Write computed property)

125.32.69  enableDataDetectors as Boolean

MBS MacControls Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Whether data detection is enabled. **Notes**: If enabled, page text will be scanned for URL’s as the page becomes visible. Where // URL’s are found, Link annotations are created in place. These are temporary annotations and are not saved.

Requires Mac OS X 10.6. (Read and Write computed property)

125.32.70  greekingThreshold as Double

MBS MacControls Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: The greeking threshold to use for displaying text. **Notes**: 
The default threshold is 3.0.
(Read and Write computed property)

125.32.71 interpolationQuality as Integer

Function: The interpolation quality for images drawn into the PDFView context.
Notes: Available in Mac OS X 10.7 or later.
(Read and Write computed property)

125.32.72 scaleFactor as Double

Function: The scale factor for the view.
Notes: The default value is 1.0, corresponding to actual size.
(Read and Write computed property)

125.32.73 shouldAntiAlias as Boolean

Function: Whether to use anti-aliasing in the view.
Notes: (Read and Write computed property)

125.32.74 Constants

125.32.75 kPDFAnnotationArea=4

MBS MacControls Plugin, Plugin Version: 9.6. Function: One of the constants to apply mouse position over PDF view areas.
Notes: The mouse is over an annotation.
125.32.76 kPDFControlArea=16

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the constants to apply mouse position over PDF view areas.  
**Notes:** The mouse is over a control.

125.32.77 kPDFDisplaySinglePage=0

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the PDF view display mode constants.  
**Notes:** The document displays one page at a time horizontally and vertically. Vertical and horizontal scrolling apply only to the current page.

125.32.78 kPDFDisplaySinglePageContinuous=1

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the PDF view display mode constants.  
**Notes:** The document displays in continuous mode vertically, with single-page width horizontally. Vertical scrolling applies to the entire document.

125.32.79 kPDFDisplayTwoUp=2

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the PDF view display mode constants.  
**Notes:** The document displays two pages side-by-side. Vertical and horizontal scrolling apply only to the pair of displayed pages.

125.32.80 kPDFDisplayTwoUpContinuous=3

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the PDF view display mode constants.  
**Notes:** The document displays in continuous mode vertically and displays two pages side-by-side horizontally. Vertical scrolling applies to the entire document.

125.32.81 kPDFIconArea=64

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the constants to apply mouse position over PDF view areas.  
**Notes:** The mouse is over an icon.  
Available in Mac OS X v10.5 and later.
125.32.82 kPDFInterpolationQualityHigh = 2

MBS MacControls Plugin, Plugin Version: 11.2. **Function:** One of the interpolation quality constants.  
**Notes:** high

125.32.83 kPDFInterpolationQualityLow = 1

MBS MacControls Plugin, Plugin Version: 11.2. **Function:** One of the interpolation quality constants.  
**Notes:** low

125.32.84 kPDFInterpolationQualityNone = 0

MBS MacControls Plugin, Plugin Version: 11.2. **Function:** One of the interpolation quality constants.

125.32.85 kPDFLinkArea=8

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the constants to apply mouse position over PDF view areas.  
**Notes:** The mouse is over a link.

125.32.86 kPDFNoArea=0

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the constants to apply mouse position over PDF view areas.  
**Notes:** The mouse is over an undefined area.

125.32.87 kPDFPageArea=1

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the constants to apply mouse position over PDF view areas.  
**Notes:** The mouse is over a page.
125.32.88  kPDFPopupArea=128

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the constants to apply mouse position over PDF view areas.  
**Notes:** The mouse is over a popup menu.

125.32.89  kPDFTextArea=2

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the constants to apply mouse position over PDF view areas.  
**Notes:** The mouse is over text.

125.32.90  kPDFTextFieldArea=32

MBS MacControls Plugin, Plugin Version: 9.6. **Function:** One of the constants to apply mouse position over PDF view areas.  
**Notes:** The mouse is over a text field.
Chapter 126

Phidgets

126.1 class PhidgetAccelerometerMBS

126.1.1 class PhidgetAccelerometerMBS

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The class for the phidget accelerometer. Notes: The PhidgetAccelerometer is a component that provides a high-level programmer interface to control a PhidgetAccelerometer device connected through a USB port. The product is available as a dual axis or a 3-axis module. With this component, the programmer can:

- Measure up to 5 Gravity (9.8 m/s²) change per axis, depending on unit purchased.
- Measures both dynamic acceleration (e.g., vibration) and static acceleration (e.g., gravity or tilt) on 2 or 3 axis.

Subclass of the PhidgetMBS class.

126.1.2 Methods

126.1.3 Constructor

126.1.4  getAcceleration(index as Integer) as Double

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the last acceleration value received from the PhidgetAccelerometer for a particular axis.
**Notes:** Lasterror is set.

126.1.5  getAccelerationChangeTrigger(index as Integer) as Double

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the amount of change that should exist between the last reported value and the current value before an OnAccelerationChange event is fired.
**Notes:** Lasterror is set.

126.1.6  getAccelerationMax(index as Integer) as Double

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the maximum acceleration supported by an axis.
**Notes:** The Lasterror property is set.

126.1.7  getAccelerationMin(index as Integer) as Double

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the minimum acceleration supported by an axis.
**Notes:** The Lasterror property is set.

126.1.8  getAxisCount as Integer

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the number of acceleration axes supported by this accelerometer.
**Notes:** The Lasterror property is set.

126.1.9  setAccelerationChangeTrigger(index as Integer, value as Double)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Specifies the amount of change that should exist between the last reported value and the current value before an AccelerationChange event is fired.
**Notes:**
If the AccelerationChangeTrigger is set to 0, an event will be triggered for every measurement of acceleration taken.

LastError is set.

126.1.10 Events

126.1.11 AccelerationChanged(index as Integer, value as Double)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The event called for each change on the Acceleration.
**Notes:**
- **Index:** Index of the Accelerometer posting event
- **Value:** Value of the Accelerometer

With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available. Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.
126.2 class PhidgetAdvancedServoMBS

126.2.1 class PhidgetAdvancedServoMBS

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class for a phidget advanced servo device.
**Notes:**
On the time the plugin was written the phidget documentation did not include this class so the documentation here is limited.
Subclass of the PhidgetMBS class.

126.2.2 Methods

126.2.3 Constructor

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor.
**Notes:** On success the handle value is not zero.

126.2.4 getAcceleration(index as Integer) as Double

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the acceleration for the given index.
**Notes:** The Lasterror property is set.

126.2.5 getAccelerationMax(index as Integer) as Double

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the maximum acceleration supported by a motor.
**Notes:** The Lasterror property is set.

126.2.6 getAccelerationMin(index as Integer) as Double

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the minimum acceleration supported by a motor.
**Notes:** The Lasterror property is set.
126.2.7  getCurrent(index as Integer) as Double

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the current value.
**Notes:** The Lasterror property is set.

126.2.8  getEngaged(index as Integer) as boolean

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the engaged state of a motor.
**Notes:**
This is whether the motor is powered or not.
The Lasterror property is set.

126.2.9  getMotorCount as Integer

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the number of motors supported by this controller.
**Notes:** The Lasterror property is set.

126.2.10 getPosition(index as Integer) as Double

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the current position of an encoder.
**Notes:** The Lasterror property is set.

126.2.11 getPositionMax(index as Integer) as Double

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the maximum position that a motor can go to.
**Notes:** The Lasterror property is set.

126.2.12 getPositionMin(index as Integer) as Double

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the minimum position that a motor can go to.
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Notes: The Lasterror property is set.

126.2.13 getServoType(index as Integer) as Integer

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Gets the servo type of a motor.
Notes:
The Lasterror property is set.
For the value, check the PHIDGET_SERVO_* constants.

126.2.14 getSpeedRampingOn(index as Integer) as boolean

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Gets the speed ramping state for a motor.
Notes:
This is whether or not velocity and acceleration are used.
The Lasterror property is set.

126.2.15 getStopped(index as Integer) as boolean

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Gets the stopped state of a motor.
Notes:
This is true when the motor is not moving and there are no outstanding commands.
The Lasterror property is set.

126.2.16 getVelocity(index as Integer) as Double

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Returns the current velocity.
Notes: The Lasterror property is set.

126.2.17 getVelocityLimit(index as Integer) as Double

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Gets the last set velocity limit for a motor.
126.2. CLASS PHIDGETADVANCEDSERVOMBS

Notes: The Lasterror property is set.

126.2.18 getVelocityMax(index as Integer) as Double

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Gets the maximum velocity that can be set for a motor. Notes: The Lasterror property is set.

126.2.19 getVelocityMin(index as Integer) as Double

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Gets the minimum velocity that can be set for a motor. Notes: The Lasterror property is set.

126.2.20 setAcceleration(index as Integer, value as Double)


126.2.21 setEngaged(index as Integer, value as boolean)

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Sets the engaged state of a motor. This is whether the motor is powered or not. Notes: The Lasterror property is set.

126.2.22 setPosition(index as Integer, value as Double)


126.2.23 setPositionMax(index as Integer, value as Double)

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Sets the maximum position that a motor can go to.
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Notes: The Lasterror property is set.

126.2.24 setPositionMin(index as Integer, value as Double)

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Sets the minimum position that a motor can go to. Notes: The Lasterror property is set.

126.2.25 setServoParameters(index as Integer, min_us as Double, max_us as Double, degrees as Double, velocity_max as Double)


- `index`: The motor index.
- `min_us`: The minimum supported PCM in microseconds.
- `max_us`: The maximum supported PCM in microseconds.
- `degrees`: The degrees of rotation defined by the given PCM range.
- `velocity_max`: The maximum velocity in degrees/second.

126.2.26 setServoType(index as Integer, value as Integer)

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Sets the servo type of a motor. Notes: The Lasterror property is set. For the value, check the PHIDGET_SERVO_* constants.

126.2.27 setSpeedRampingOn(index as Integer, value as boolean)

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Sets the speed ramping state for a motor. Notes:
This is whether or not velocity and acceleration are used. The Lasterror property is set.

126.2.28 setVelocityLimit(index as Integer, value as Double)

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the velocity limit for a motor. 
**Notes:** The Lasterror property is set.

126.2.29 Events

126.2.30 CurrentChanged(index as Integer, value as Double)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The current value changed. 
**Notes:**
With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available. 
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

126.2.31 PositionChanged(index as Integer, value as Double)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The position changed. 
**Notes:**
With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available. 
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

126.2.32 VelocityChanged(index as Integer, value as Double)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The velocity changed. 
**Notes:**
With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

126.2.33 Constants

126.2.34 PHIDGET_SERVO_DEFAULT = 1

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the servo type constants.

126.2.35 PHIDGET_SERVO_FIRGELLI_L12_100_100_06_R = 17

MBS USB Plugin, Plugin Version: 12.1. **Function:** One of the servo type constants.

126.2.36 PHIDGET_SERVO_FIRGELLI_L12_100_50_06_R = 16

MBS USB Plugin, Plugin Version: 12.1. **Function:** One of the servo type constants.

126.2.37 PHIDGET_SERVO_FIRGELLI_L12_30_50_06_R = 13

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the servo type constants.

126.2.38 PHIDGET_SERVO_FIRGELLI_L12_50_100_06_R = 14

MBS USB Plugin, Plugin Version: 12.1. **Function:** One of the servo type constants.

126.2.39 PHIDGET_SERVO_FIRGELLI_L12_50_210_06_R = 15

MBS USB Plugin, Plugin Version: 12.1. **Function:** One of the servo type constants.

126.2.40 PHIDGET_SERVO_HITEC_805BB = 5

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the servo type constants.
126.2.41 PHIDGET_SERVO_HITEC_815BB = 12

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the servo type constants.

126.2.42 PHIDGET_SERVO_HITEC_HS322HD = 3

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the servo type constants.

126.2.43 PHIDGET_SERVO_HITEC_HS422 = 6

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the servo type constants.

126.2.44 PHIDGET_SERVO_HITEC_HS485HB = 10

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the servo type constants.

126.2.45 PHIDGET_SERVO_HITEC_HS5245MG = 4

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the servo type constants.

126.2.46 PHIDGET_SERVO_HITEC_HS645MG = 11

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the servo type constants.

126.2.47 PHIDGET_SERVO_HITEC_HS785HB = 9

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the servo type constants.

126.2.48 PHIDGET_SERVO_HITEC_HSR1425CR = 8

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the servo type constants.
126.2.49  PHIDGET_SERVO_RAW_us_MODE = 2

MBS USB Plugin, Plugin Version: 11.0.  **Function:** One of the servo type constants.

126.2.50  PHIDGET_SERVO_SPRINGRC_SM_S2313M = 18

MBS USB Plugin, Plugin Version: 12.1.  **Function:** One of the servo type constants.

126.2.51  PHIDGET_SERVO_SPRINGRC_SM_S3317M = 19

MBS USB Plugin, Plugin Version: 13.4.  **Function:** One of the servo type constants.

126.2.52  PHIDGET_SERVO_SPRINGRC_SM_S3317SR = 20

MBS USB Plugin, Plugin Version: 13.4.  **Function:** One of the servo type constants.

126.2.53  PHIDGET_SERVO_TOWERPRO_MG90 = 7

MBS USB Plugin, Plugin Version: 11.0.  **Function:** One of the servo type constants.
126.3. CLASS PHIDGETANALOGMBS

126.3  class PhidgetAnalogMBS

126.3.1  class PhidgetAnalogMBS

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Class specific to the Phidget Analog.
**Notes:**
See the product manual for more specific API details, supported functionality, units, etc.
Subclass of the PhidgetMBS class.

126.3.2  Methods

126.3.3  Constructor

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new analog device instance.
**Notes:** Lasterror is set.

126.3.4  getEnabled(index as Integer) as boolean

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the enabled state for an output.
**Notes:** Lasterror is set.

126.3.5  getOutputCount as Integer

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the number of outputs supported by this phidget analog.
**Notes:** Lasterror is set.

126.3.6  getVoltage(index as Integer) as Double

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the currently set voltage for an output, in V.
**Notes:** Lasterror is set.
126.3.7 getVoltageMax(index as Integer) as Double

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the maximum settable output voltage, in V.
**Notes:** Lasterror is set.

126.3.8 getVoltageMin(index as Integer) as Double

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the minimum settable output voltage, in V.
**Notes:** Lasterror is set.

126.3.9 setEnabled(index as Integer, value as boolean)

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the enabled state for an output.
**Notes:** Lasterror is set.

126.3.10 setVoltage(index as Integer, value as Double)

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the voltage of an output, in V.
**Notes:** Lasterror is set.
126.4  class PhidgetBridgeMBS

126.4.1  class PhidgetBridgeMBS

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class specific to the Phidget Bridge.
**Notes:**
See the product manual for more specific API details, supported functionality, units, etc.
Subclass of the PhidgetMBS class.

126.4.2  Methods

126.4.3  Constructor

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new instance.
**Notes:** Lasterror is set.

126.4.4  getBridgeMax(index as Integer) as Double

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the maximum value supported by a bridge input, in mV/V. This is affected by Gain.
**Notes:** Lasterror is set.

126.4.5  getBridgeMin(index as Integer) as Double

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the minimum value supported by a bridge input, in mV/V. This is affected by Gain.
**Notes:** Lasterror is set.

126.4.6  getBridgeValue(index as Integer) as Double

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the current value of a bridge input, in mV/V.
**Notes:** Lasterror is set.
126.4.7 getDatosRate as Integer

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the the data rate for the Phidget Bridge, in milliseconds.
**Notes:** Lasterror is set.

126.4.8 getDataRateMax as Integer

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the the maximum data rate for the Phidget Bridge, in milliseconds.
**Notes:** Lasterror is set.

126.4.9 getDataRateMin as Integer

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the the minimum data rate for the Phidget Bridge, in milliseconds.
**Notes:** Lasterror is set.

126.4.10 getEnabled(index as Integer) as Boolean

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the enabled state for an input.
**Notes:** Lasterror is set.

126.4.11 getGain(index as Integer) as Integer

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the the Gain for an input.
**Notes:** Lasterror is set.

126.4.12 getInputCount as Integer

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the number of inputs supported by this phidget bridge.
**Notes:** Lasterror is set.
126.4. CLASS PHIDGETBRIDGEMBS

126.4.13  **setDataRate(milliseconds as Integer)**

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**
Sets the the data rate for the Phidget Bridge, in milliseconds.
**Notes:** Lasterror is set.

126.4.14  **setEnabled(index as Integer, value as Boolean)**

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**
Sets the enabled state for an input.
**Notes:** Lasterror is set.

126.4.15  **setGain(index as Integer, value as Integer)**

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**
Sets the the Gain for an input.
**Notes:** Lasterror is set.

126.4.16  **Events**

126.4.17  **BridgeDataReceived(index as Integer, value as Double)**

MBS USB Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**
The bridge data event handler.
**Notes:** This is called at a set rate as defined by data rate.

126.4.18  **Constants**

126.4.19  **PHIDGET_BRIDGE_GAIN_1 = 1**

MBS USB Plugin, Plugin Version: 11.1.  **Function:** One of the gain constants.
**Notes:** Gain of 1.

126.4.20  **PHIDGET_BRIDGE_GAIN_128 = 6**

MBS USB Plugin, Plugin Version: 11.1.  **Function:** One of the gain constants.
**Notes:** Gain of 128.
126.4.21 PHIDGET_BRIDGE_GAIN_16 = 3

MBS USB Plugin, Plugin Version: 11.1. Function: One of the gain constants.
Notes: Gain of 16.

126.4.22 PHIDGET_BRIDGE_GAIN_32 = 4

MBS USB Plugin, Plugin Version: 11.1. Function: One of the gain constants.
Notes: Gain of 32.

126.4.23 PHIDGET_BRIDGE_GAIN_64 = 5

MBS USB Plugin, Plugin Version: 11.1. Function: One of the gain constants.
Notes: Gain of 64.

126.4.24 PHIDGET_BRIDGE_GAIN_8 = 2

MBS USB Plugin, Plugin Version: 11.1. Function: One of the gain constants.
Notes: Gain of 8.

126.4.25 PHIDGET_BRIDGE_GAINUNKNOWN = 7

MBS USB Plugin, Plugin Version: 11.1. Function: One of the gain constants.
Notes: Unknown Gain.
126.5. **CLASS PHIDGETDICTIONARYMBS**

### 126.5.1 class PhidgetDictionaryMBS

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The Phidget Dictionary is a service provided by the Phidget Web service.  
**Notes:**
The Webservice maintains a centralized dictionary of key-value pairs that can be accessed and changed from 
any number of clients through the CPhidgetDictionary interface available in phidget21.

Note that the Webservice uses this dictionary to control access to Phidgets through the openRemote and 
openRemoteIP interfaces, and as such, you should never add or modify a key that starts with /PSK/ or 
/PCK/, unless you want to explicitly modify Phidget specific data and this is highly discouraged, as it’s 
very easy to break things. Listening to these keys is fine if so desired.

The intended use for the dictionary is as a central repository for communication and persistent storage of 
data between several client applications. As an example - a higher level interface exposed by one application 
which controls the Phidgets, for others to access rather then every client talking directly to the Phidgets 
themselves.

The dictionary makes use of extended regular expressions for key matching. See the end of this document 
for the rules of regular expressions.

See the Phidget manuals for help on regular expressions.

### 126.5.2 Methods

#### 126.5.3 addKey(key as string, value as string, persistent as Integer)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Adds a new key to the Dictionary, or modifies the value of an existing key.  
**Notes:**
The key can only contain numbers, letters, /', .', -., and must begin with a letter, _' or '/'. 
The value can contain any value.
The persistent value controls whether a key will stay in the dictionary after the client that created it dis- 
connects. If persistent == 0, the key is removed when the connection closes. Otherwise the key remains in 
the dictionary until it is explicitly removed.

Lasterror is set.
126.5.4 Close

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Closes the file handles for this device.
**Notes:**
You should always call this when finished with a Dictionary. Lasterror is set.

126.5.5 Constructor

**See also:**
- 126.5.6 Constructor(pattern as string)

126.5.6 Constructor(pattern as string)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor.
**Notes:**
The Lasterror property is set.
Pattern is a regular expression that matches the keys you want to listen for in the keychange event.
**See also:**
- 126.5.5 Constructor

126.5.7 GetDeviceStatus as Integer

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an integer indicating the status of the device.
**Notes:**
Returns:
PHIDGET_ATTACHED 0x1
PHIDGET_NOTATTACHED 0x0
Lasterror is set.
126.5.8  
**getServerAddress(byref port as Integer) as string**

**Function:** Gets the address and port.  
**Notes:** The Lasterror property is set.

126.5.9  
**getServerID as string**

**Function:** Gets the server ID.  
**Notes:** The Lasterror property is set.

126.5.10  
**GetServerStatus as Integer**

**Function:** Returns an integer indicating the connection status of a Webservice.  
**Notes:**  
Returns one of the following values:  
1 CONNECTED  
0 NOTCONNECTED

Lasterror is set.

126.5.11  
**openRemote(serverID as string, password as string)**

**Function:** This method is not yet implemented and will return EPHIDGET_UNSUPPORTED.  
**Notes:** The Lasterror property is set.

126.5.12  
**openRemoteIP(addr as string, port as Integer, password as string)**

**Function:** Opens a connection to a remote Phidget Dictionary.  
**Notes:**  
OpenRemoteIP will block until it connects to the server, which means that when it returns with EPHIDGET_OK, this means that the connection is active. If the server is unavailable, this will return an error code.
If the connection to a webservice is disrupted while in use, an error event will be thrown, and it is recommended that an error event listener be registered for this reason.

LastError is set.

### 126.5.13 removeKey(pattern as string)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Removes a key, or set of keys, from the Dictionary.

**Notes:**
The key name is a regular expressions pattern, and so care must be taken to only have it match the specific keys you want to remove.
LastError is set.

### 126.5.14 Properties

#### 126.5.15 Handle as Integer

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal used CPhidgetDictionaryHandle.

**Notes:** (Read and Write property)

#### 126.5.16 Lasterror as Integer

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last error code.

**Notes:** (Read and Write property)

### 126.5.17 Events

#### 126.5.18 Error(errorCode as Integer, errorDescription as string)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This error event is used for reporting asynchronous errors mostly related to opening remote Phidgets.

**Notes:**
With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

### 126.5.19 KeyChanged(key as string, value as string, reason as Integer)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** These event will be called on key add, remove, and change.

**Notes:**
- The Lasterror property is set.
- It will also fire once to give an initial key value as soon as it is registered, if the key already exists.

With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available.

Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

**Reason values:**

- PHIDGET_DICTIONARY_VALUE_CHANGED 1
- PHIDGET_DICTIONARY_ENTRY_ADDED 2
- PHIDGET_DICTIONARY_ENTRY_REMOVING 3
- PHIDGET_DICTIONARY_CURRENT_VALUE 4

### 126.5.20 ServerConnect

MBS USB Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This event is called when a connection to the sever has been made.

**Notes:**
- With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available.
- Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

### 126.5.21 ServerDisconnect

MBS USB Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This event is called when a connection to the server has been lost.

**Notes:**
With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available. Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.
126.6. class PhidgetEncoderMBS

126.6.1. class PhidgetEncoderMBS

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for the phidget encoder device.
**Notes:**
The PhidgetEncoder is a component that provides a high-level programmer interface to control a PhidgetEncoder device connected through a USB port.
With this component, the programmer can:

- Detect changes in position of incremental and absolute encoders.
- Easily track the changes with respect to time.

Subclass of the PhidgetMBS class.

126.6.2. Methods

126.6.3. Constructor

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constructor.
**Notes:**
On success the handle value is not zero.
The Lasterror property is set.

126.6.4. getEnabled(index as Integer) as boolean

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the enabled state of an encoder. This is whether the encoder is powered or not.
**Notes:** The Lasterror property is set.

126.6.5. getEncoderCount as Integer

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the number of encoder inputs supported by this board.
**Notes:** The Lasterror property is set.
126.6.6 `getIndexPosition(index as Integer) as Integer`

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries index position.  
**Notes:**  
Gets the position of the last index pulse, as referenced to `getPosition`.  
This will return EPHIDGET_UNKNOWN if there hasn’t been an index event, or if the encoder doesn’t support index.

The Lasterror property is set.

126.6.7 `getInputCount as Integer`

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the number of digital inputs supported by this board.  
**Notes:** The Lasterror property is set.

126.6.8 `getInputState(index as Integer) as boolean`

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the state of a digital input.  
**Notes:** The Lasterror property is set.

126.6.9 `getPosition(index as Integer) as Integer`

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the current position of an encoder.  
**Notes:** The Lasterror property is set.

126.6.10 `setEnabled(index as Integer, value as boolean)`

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the enabled state of an encoder. This is whether the encoder is powered or not.  
**Notes:** The Lasterror property is set.
126.6. CLASS PHIDGETENCODERMBS

126.6.11 setPosition(index as Integer, value as Integer)

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the current position of an encoder.  
**Notes:** The Lasterror property is set.

126.6.12 Events

126.6.13 InputChanged(index as Integer, value as Integer)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event for a change in the input.  
**Notes:**  
With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available.  
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

126.6.14 PositionChanged(index as Integer, position as Integer, time as Integer)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event called for every position change.  
**Notes:**  
Index: Index of the Encoder firing the Event  
Position: Position of the Encoder  
Time: Time of change  
With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available.  
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.
126.7 class PhidgetFrequencyCounterMBS

126.7.1 class PhidgetFrequencyCounterMBS

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Class specific to the Phidget Frequency Counter.

**Notes:**
See the product manual for more specific API details, supported functionality, units, etc.
Subclass of the PhidgetMBS class.

126.7.2 Methods

126.7.3 Constructor

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new instance.

**Notes:** Lasterror is set.

126.7.4 getEnabled(index as Integer) as Boolean

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the enabled state for an input.

**Notes:** Lasterror is set.

126.7.5 getFilter(index as Integer) as Integer

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the filter type for an input.

**Notes:** Lasterror is set.

126.7.6 getFrequency(index as Integer) as Double

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the measured frequency of an input, in Hz.

**Notes:** Lasterror is set.
126.7.7  **getFrequencyInputCount as Integer**

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the number of inputs supported by this phidget frequency counter.
**Notes:** Lasterror is set.

126.7.8  **getTimeout(index as Integer) as Integer**

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the timeout value for an input, in microseconds. This controls the lowest measurable frequency.
**Notes:** Lasterror is set.

126.7.9  **getTotalCount(index as Integer) as Int64**

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the total number of ticks that have happened since the last reset on this input.
**Notes:** Lasterror is set.

126.7.10  **getTotalTime(index as Integer) as Int64**

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the total time that has passed since the last reset on this input, in microseconds.
**Notes:** Lasterror is set.

126.7.11  **reset(index as Integer)**

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Resets total count and total time for an input.
**Notes:** Lasterror is set.

126.7.12  **setEnabled(index as Integer, value as Boolean)**

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the enabled state for an input.
**Notes:** Lasterror is set.
126.7.13  \texttt{setFilter(index as Integer, filter as Integer)}

\textbf{Notes:} Lasterror is set.

126.7.14  \texttt{setTimeout(index as Integer, filter as Integer)}

\textbf{Notes:} Lasterror is set.

126.7.15  Events

126.7.16  \texttt{Counted(index as Integer, time as Integer, counts as Integer)}

MBS USB Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. \textbf{Function:} This event is called when ticks have been counted on an input, or when the timeout has passed.

126.7.17  Constants

126.7.18  \texttt{PHIDGET\_FREQUENCYCOUNTER\_FILTERTYPE\_LOGIC\_LEVEL}  
\hspace{1cm} = 2

MBS USB Plugin, Plugin Version: 11.1. \textbf{Function:} One of the Filter Type Constants. 
\textbf{Notes:} Logic level signal filter.

126.7.19  \texttt{PHIDGET\_FREQUENCYCOUNTER\_FILTERTYPE\_UNKNOWN}  
\hspace{1cm} = 3

MBS USB Plugin, Plugin Version: 11.1. \textbf{Function:} One of the Filter Type Constants. 
\textbf{Notes:} Filter type unknown.
126.7.20 PHIDGET_FREQUENCYCOUNTER_FILTERTYPE_ZERO_CROSSING = 1

MBS USB Plugin, Plugin Version: 11.1. **Function:** One of the Filter Type Constants.  
**Notes:** Zero crossing signal filter.
126.8  class PhidgetGPGGAMBS

126.8.1  class PhidgetGPGGAMBS

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for a NMEA GGA Sentence.

126.8.2  Properties

126.8.3  altitude as Double

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The altitude value.  
**Notes:** (Read only property)

126.8.4  fixQuality as Integer

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The fix Quality.  
**Notes:** (Read and Write property)

126.8.5  heightOfGeoid as Double

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The height of GEO ID.  
**Notes:** (Read only property)

126.8.6  horizontalDilution as Double

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The horizontal dilution.  
**Notes:** (Read only property)

126.8.7  latitude as Double

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The latitude value.
126.8. CLASS PHIDGETGPPIAMBS

Notes: (Read only property)

126.8.8  longitude as Double

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The longitude value. Notes: (Read only property)

126.8.9  numSatellites as Integer

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The number of satellites. Notes: (Read and Write property)

126.8.10  time as PhidgetGPSTimeMBS

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The time value. Notes: (Read and Write property)
126.9 class PhidgetGPGSAMBS

126.9.1 class PhidgetGPGSAMBS

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The NMEA GSA Sentence class.

126.9.2 Methods

126.9.3 satUsed(index as Integer) as Integer

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** IDs of used sats in no real order, 0 means nothing.

126.9.4 Properties

126.9.5 fixType as Integer

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The fix type.
**Notes:** (Read and Write property)

126.9.6 horizDilution as Double

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Horizontal dilution.
**Notes:** (Read only property)

126.9.7 mode as Integer

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The mode.
**Notes:** (Read and Write property)
126.9. **CLASS PHIDGETGPGSAMBS**

### 126.9.8 posnDilution as Double

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Position dilution.  
**Notes:** (Read only property)

### 126.9.9 vertDilution as Double

**Notes:** (Read only property)

### 126.9.10 Constants

#### 126.9.11 kFixType2D = 2

MBS USB Plugin, Plugin Version: 11.1. **Function:** One of the Fix Type values.  
**Notes:** 2D

#### 126.9.12 kFixType3D = 3

MBS USB Plugin, Plugin Version: 11.1. **Function:** One of the Fix Type values.  
**Notes:** 3D

#### 126.9.13 kFixTypeNo = 1

MBS USB Plugin, Plugin Version: 11.1. **Function:** One of the Fix Type values.  
**Notes:** no fix.

#### 126.9.14 kModeAuto = 65

MBS USB Plugin, Plugin Version: 11.1. **Function:** One of the mode constants.  
**Notes:** Auto
MBS USB Plugin, Plugin Version: 11.1. **Function:** One of the mode constants.

**Notes:** Forced
126.10  class PhidgetGPGSVMBS

126.10.1  class PhidgetGPGSVMBS

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The NMEA GSV Sentence class.

126.10.2  Methods

126.10.3  satInfo(index as Integer) as PhidgetGPSSatInfoMBS

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Query the satellite information with the given index. **Notes:** Index from 0 to 11.

126.10.4  Properties

126.10.5  satsInView as Integer

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Number of satellites in view. **Notes:** (Read and Write property)
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126.11 class PhidgetGPRMCMBS

126.11.1 class PhidgetGPRMCMBS

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for NMEA RMC Sentence

126.11.2 Properties

126.11.3 date as PhidgetGPSDateMBS

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The date value.
**Notes:** (Read and Write property)

126.11.4 heading as Double

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The heading value.
**Notes:** (Read only property)

126.11.5 latitude as Double

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The latitude value.
**Notes:** (Read only property)

126.11.6 longitude as Double

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The longitude value.
**Notes:** (Read only property)

126.11.7 magneticVariation as Double

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The magnetic variation.
126.11. CLASS PHIDGETGPRMCMBST

Notes: (Read only property)

126.11.8 mode as Integer

Notes: (Read and Write property)

126.11.9 speedKnots as Double

Notes: (Read only property)

126.11.10 status as Integer

Notes: (Read and Write property)

126.11.11 time as PhidgetGPSTimeMBS

Notes: (Read and Write property)
126.12 class PhidgetGPSDateMBS

126.12.1 class PhidgetGPSDateMBS

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** GPS Date in UTC.

126.12.2 Properties

126.12.3 Day as Integer

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Day of the month (1-31).
**Notes:** (Read and Write property)

126.12.4 Month as Integer

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Month (1-12).
**Notes:** (Read and Write property)

126.12.5 Year as Integer

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Year.
**Notes:** (Read and Write property)
126.13 class PhidgetGPSMBS

126.13.1 class PhidgetGPSMBS

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Class specific to the Phidget GPS.
**Notes:**
See the product manual for more specific API details, supported functionality, units, etc.
Subclass of the PhidgetMBS class.

126.13.2 Methods

126.13.3 Constructor

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates an GPS instance.
**Notes:** Lasterror is set.

126.13.4 getAltitude as Double

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the current altitude, in meters.
**Notes:** Lasterror is set.

126.13.5 getDate as PhidgetGPSDateMBS

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the current GPS date, in UTC
**Notes:** Lasterror is set.

126.13.6 getHeading as Double

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the current heading, in degrees.
**Notes:** Lasterror is set.
126.13.7 getLatitude as Double

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the current latitude.
**Notes:** Lasterror is set.

126.13.8 getLongitude as Double

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the current longitude.
**Notes:** Lasterror is set.

126.13.9 getNMEAData as PhidgetNMEADataMBS

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets Raw NMEA Data.
**Notes:** Lasterror is set.

126.13.10 getPositionFixStatus as Integer

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the position fix status.
**Notes:** Lasterror is set.

126.13.11 getTime as PhidgetGPSTimeMBS

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the current GPS time, in UTC.
**Notes:** Lasterror is set.

126.13.12 getVelocity as Double

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the current velocity, in km/h.
**Notes:** Lasterror is set.
126.13.13 Events

126.13.14 PositionChanged(latitude as Double, longitude as Double, altitude as Double)

MBS USB Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The position change event. **Notes:** Called when any of latitude, longitude, or altitude change.

126.13.15 PositionFixStatusChanged(status as Integer)

MBS USB Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The position fix status change event. **Notes:** Called when a position fix is acquired or lost.
126.14 class PhidgetGPSSatInfoMBS

126.14.1 class PhidgetGPSSatInfoMBS

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A class for Satellite info - used in GSV sentence.

126.14.2 Properties

126.14.3 Azimuth as Integer

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The azimuth value.
**Notes:** (Read and Write property)

126.14.4 Elevation as Integer

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The elevation value.
**Notes:** (Read and Write property)

126.14.5 ID as Integer

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The ID.
**Notes:** (Read and Write property)

126.14.6 SNR as Integer

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The serial number.
**Notes:** (Read and Write property)
126.15 class PhidgetGPSTimeMBS

126.15.1 class PhidgetGPSTimeMBS

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** GPS Time in UTC.

126.15.2 Properties

126.15.3 Hour as Integer

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The hour value.
**Notes:** (Read and Write property)

126.15.4 Millisecond as Integer

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The Milliseconds value.
**Notes:** (Read and Write property)

126.15.5 Minute as Integer

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The minutes value.
**Notes:** (Read and Write property)

126.15.6 Second as Integer

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The seconds value.
**Notes:** (Read and Write property)
126.16 class PhidgetGPVTGMBS

126.16.1 class PhidgetGPVTGMBS

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class for a NMEA VTG Sentence.

126.16.2 Properties

126.16.3 magneticHeading as Double

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The magnetic heading.  
**Notes:** (Read only property)

126.16.4 mode as Integer

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The mode.  
**Notes:** (Read and Write property)

126.16.5 speed as Double

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The speed in km/hour.  
**Notes:** (Read only property)

126.16.6 speedKnots as Double

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The speed in knots.  
**Notes:** (Read only property)

126.16.7 trueHeading as Double

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The true heading.
126.16. CLASS PHIDGETGPVTGMBS

Notes: (Read only property)
126.17 class PhidgetInterfaceKitMBS

126.17.1 class PhidgetInterfaceKitMBS

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for a phidget interface kit.
**Notes:**
The PhidgetInterfaceKit is a component that provides a high-level programmer interface to control a PhidgetInterfaceKit device connected through a USB port.
With this component, the programmer can:

- Turn particular outputs on and off.
- Get notified of changes of state of the inputs as events.
- Configure events to fire when the analog inputs change.

The PhidgetInterfaceKit devices provide a combination of:

- Digital outputs.
- Digital inputs.
- Analog inputs.

Subclass of the PhidgetMBS class.

126.17.2 Methods

126.17.3 Constructor

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constructor.
**Notes:**
On success the handle value is not zero.
The Lasterror property is set.

126.17.4 getDataRate(index as Integer) as Integer

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the Data Rate for an analog input in milliseconds.
**Notes:**
The Lasterror property is set.

This is the event rate. Since we’re not going to run an extra thread, the accuracy of the data rate is limited by the interrupt endpoint data rate (>=8ms).

126.17.5 getDataRateMax(index as Integer) as Integer

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the maximum supported data rate for an analog input in milliseconds.
**Notes:** The Lasterror property is set.

126.17.6 getDataRateMin(index as Integer) as Integer

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the minimum supported data rate for an analog input in milliseconds.
**Notes:** The Lasterror property is set.

126.17.7 getInputCount as Integer

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the number of digital inputs supported by this board.
**Notes:** The Lasterror property is set.

126.17.8 getInputState(index as Integer) as boolean

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the state of a digital input.
**Notes:** The Lasterror property is set.

126.17.9 getOutputCount as Integer

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the number of digital outputs supported by this board.
**Notes:** The Lasterror property is set.
126.17.10  **getOutputState(index as Integer) as boolean**

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the state of a digital output.
**Notes:** The Lasterror property is set.

126.17.11  **getRatiometric as boolean**

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the ratiometric state for this board.
**Notes:** The Lasterror property is set.

126.17.12  **getSensorChangeTrigger(index as Integer) as Integer**

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the amount of change that should exist between the last reported value and the current value before
an OnSensorChange event is fired.
**Notes:**
To receive all events, set the SensorChangeTrigger to zero.
The Lasterror property is set.

126.17.13  **getSensorCount as Integer**

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the number of sensor (analog) inputs supported by this board.
**Notes:** The Lasterror property is set.

126.17.14  **getSensorRawValue(index as Integer) as Integer**

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the reported actual value of the sensor between 0 - 4095.
**Notes:**
This is directly proportional to the analog input, ranging from 0-5V (or 0-Vcc if Ratiometric is set to True).
Note that this value defaults to 65535 for an unitialised state. Applications that do not wish to encounter
this value should use ChangeTrigger event handlers as opposed to polling the device for new data.
The Lasterror property is set.
126.17.15  getSensorValue(index as Integer) as Integer

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the last reported sensor value for the given index as a value from 0-1000
**Notes:**
Note that this value defaults to 65535 for an unitialised state. Applications that do not wish to encounter
this value should use ChangeTrigger event handlers as opposed to polling the device for new data.
The Lasterror property is set.

126.17.16  setDataRate(index as Integer, milliseconds as Integer)

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the Data Rate for an analog input in milliseconds.
**Notes:** The Lasterror property is set.

126.17.17  setOutputState(index as Integer, value as boolean)

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the state of a digital output.
**Notes:** The Lasterror property is set.

126.17.18  setRatiometric(value as boolean)

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the ratiometric state for this board.
**Notes:** The Lasterror property is set.

126.17.19  setSensorChangeTrigger(index as Integer, value as Integer)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Specifies the amount of change that should exist between the last reported value and the current value before
an OnSensorChange event is fired.
**Notes:** Lasterror is set.
126.17.20  Events

126.17.21  InputChanged(index as Integer, value as Integer)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Called on any input change.

**Notes:**
With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

126.17.22  OutputChanged(index as Integer, value as Integer)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the number of digital outputs on this particular Phidget device.

**Notes:**
With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

126.17.23  SensorChanged(index as Integer, value as Integer)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Called on any sensor change.

**Notes:**
With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.
126.18. class PhidgetIRCodeInfoMBS

126.18.1. class PhidgetIRCodeInfoMBS

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for a code info for the IR receiver/sender.
**Notes:**
The PhidgetIR CodeInfo structure contains all information needed to transmit a code, apart from the actual
code data.
Some values can be set to null to select defaults. See the product manual for more information.

126.18.2. Properties

126.18.3. bitCount as Integer

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Number of bits in the code.
**Notes:** (Read and Write property)

126.18.4. carrierFrequency as Integer

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Carrier frequency in Hz - defaults to 38kHz.
**Notes:** (Read and Write property)

126.18.5. dutyCycle as Integer

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Duty Cycle in percent (10-50).
**Notes:**
Defaults to 33.
(Read and Write property)

126.18.6. encoding as Integer

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Encoding used to encode the data.
**Notes:**
126.18.7  gap as Integer

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gap time in us.
**Notes:** (Read and Write property)

126.18.8  length as Integer

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The length of the code.
**Notes:**
Constant or Variable length encoding.
See PHIDGET_IR_LENGTH_* constants.
(Read and Write property)

126.18.9  minRepeat as Integer

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Minium number of times to repeat a code on transmit.
**Notes:** (Read and Write property)

126.18.10  trail as Integer

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Trail time in us - can be 0 for none.
**Notes:** (Read and Write property)

126.18.11  header(index as Integer) as Integer

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The header value.
**Notes:**
Header pulse and space - can be 0 for none
Index from 0 to 1.
126.18.12 one(index as Integer) as Integer

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The one array.
**Notes:**
Pulse and Space times to represent a '1' bit, in us
Index from 0 to 1.
(Read and Write computed property)

126.18.13 repeat(index as Integer) as Integer

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A series or pulse and space times to represent the repeat code.
**Notes:**
Start and end with pulses and null terminate. Set to 0 for none.
Index from 0 to 25.
(Read and Write computed property)

126.18.14 toggleMask(index as Integer) as Integer

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Bit toggles, which are applied to the code after each transmit.
**Notes:** (Read and Write computed property)

126.18.15 zero(index as Integer) as Integer

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
One of the arrays.
**Notes:**
Index from 0 to 1.
Pulse and Space times to represent a '0' bit, in us.
(Read and Write computed property)
126.18.16 Constants

126.18.17 PHIDGET_IR_ENCODING_BIPHASE = 4

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the encoding constants.  
**Notes:** Bi-Phase, or Manchester encoding.

126.18.18 PHIDGET_IR_ENCODING_PULSE = 3

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the encoding constants.  
**Notes:** Pulse encoding, or Pulse Width Modulation.

126.18.19 PHIDGET_IR_ENCODING_RC5 = 5

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the encoding constants.  
**Notes:** RC5 - a type of Bi-Phase encoding.

126.18.20 PHIDGET_IR_ENCODING_RC6 = 6

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the encoding constants.  
**Notes:** RC6 - a type of Bi-Phase encoding.

126.18.21 PHIDGET_IR_ENCODING_SPACE = 2

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the encoding constants.  
**Notes:** Space encoding, or Pulse Distance Modulation.

126.18.22 PHIDGET_IR_ENCODING_UNKNOWN = 1

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the encoding constants.  
**Notes:** Unknown - the default value.
126.18.23 PHIDGET_IR_LENGTH_CONSTANT = 2

MBS USB Plugin, Plugin Version: 11.0. **Function**: One of the length constants. **Notes**: Constant - the bitstream + gap length is constant.

126.18.24 PHIDGET_IR_LENGTH_UNKNOWN = 1

MBS USB Plugin, Plugin Version: 11.0. **Function**: One of the length constants. **Notes**: Unknown - the default value.

126.18.25 PHIDGET_IR_LENGTH_VARIABLE = 3

MBS USB Plugin, Plugin Version: 11.0. **Function**: One of the length constants. **Notes**: Variable - the bitstream has a variable length with a constant gap.
126.19 class PhidgetIRMBS

126.19.1 class PhidgetIRMBS

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for an IR receiver/sender.
**Notes:**
Calls specific to the Phidget IR. See the product manual for more specific API details, supported functionality, units, etc.
Subclass of the PhidgetMBS class.

126.19.2 Methods

126.19.3 Constructor

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constructor.
**Notes:**
The Lasterror property is set.
On success the handle value is not zero.

126.19.4 getLastCode(byref bitCount as Integer) as MemoryBlock

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the last code that was received.
**Notes:**
The Lasterror property is set.

bitCount: set to the bit count of the code.

126.19.5 getLastLearnedCode(byref codeInfo as PhidgetIRCodeInfoMBS) as MemoryBlock

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the last code that was learned.
**Notes:** The Lasterror property is set.
126.19.6  getRawData as MemoryBlock

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Read any available raw data.  
**Notes:**  
This should be polled continuously (every 20ms) to avoid missing data. Read data always starts with a space and ends with a pulse.  
The Lasterror property is set.

126.19.7  Transmit(data as MemoryBlock, codeInfo as PhidgetIRCodeInfoMBS)

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Transmits a code according to the settings in a CodeInto object.  
**Notes:**  
The Lasterror property is set.

data: The code to send. Data is transmitted MSBit first. MSByte is in array index 0. LSBit is right justified, so MSBit may be in bit positions 0-7 in array index 0 depending on the bit count.  
codeInfo: The CodeInfo structure specifying to to send the code. Anything left as null to select default is filled in for the user.

126.19.8  TransmitRaw(data as MemoryBlock, length as Integer, carrierFrequency as Integer, dutyCycle as Integer, gap as Integer)

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Transmits RAW data as a series of pulses and spaces.  
**Notes:**  
The Lasterror property is set.

data: The data to send. The array (Int32) must start and end with a pulse and each element is a positive time in us.  
length: The length of the data array. Maximum length is 1024, but streams should be kept much shorter, i.e. <100ms between gaps.  
carrierFrequency: The Carrier Frequency in Hz. leave as 0 for default.  
dutyCycle: The Duty Cycle (10-50). Leave as 0 for default.  
gap: The gap time in us. This guarantees a gap time (no transmitting) after the data is sent, but can be set to 0.
126.19.9 TransmiteRepeat

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Transmits a repeat of the last transmitted code.  
**Notes:**  
The Lasterror property is set.  
Depending of the CodeInfo structure, this may be a retransmission of the code itself, or there may be a special repeat code.

126.19.10 Events

126.19.11 Code(data as memoryblock, bitcount as Integer, repeat as Integer)

MBS USB Plugin, Plugin Version: 11.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A code was received.  
**Notes:**  
This is called when a code has been received that could be automatically decoded.  
Data is return as an array with MSB in index 0. Bit count and a repeat flag are also returned. (Int32 values)  
Repeats are detected as either the same code repeated in <100ms or as a special repeat code.

126.19.12 Learn(data as memoryblock, code as PhidgetIRCodeInfoMBS)

MBS USB Plugin, Plugin Version: 11.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The learn event.  
**Notes:**  
This is called when a code has been received for long enough to be learned.  
The returned CodeInfo object can be used to retransmit the same code.

126.19.13 RawData(tag as memoryblock)

MBS USB Plugin, Plugin Version: 11.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This is called when raw data has been read from the device.  
**Notes:**  
Raw data always starts with a space and ends with a pulse.  
tag contains 4 byte integer values.
126.20. **CLASS PHIDGETLEDMBS**

### 126.20 class PhidgetLED

#### 126.20.1 class PhidgetLED

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for a phidget LED device.

**Notes:**
The PhidgetLED is a component that provides a high-level programmer interface to control a PhidgetLED device connected through a USB port.

With this component, the programmer can:

- Control each led individually, On/Off and Brightness.

Subclass of the PhidgetMBS class.

#### 126.20.2 Methods

#### 126.20.3 Constructor

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor.

**Notes:**
The Lasterror property is set.
On success the handle value is not zero.

#### 126.20.4 **getCurrentLimit as Integer**

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the current limit.

**Notes:**
This is for all outputs.
Lasterror is set.
See the `PHIDGET_LED_CURRENT_LIMIT_*` constants.
126.20.5  getDiscreteLED(index as Integer) as Integer

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the brightness of an individual LED.
**Notes:**
The Lasterror property is set.
Range of brightness is 0-100.

126.20.6  getLEDCount as Integer

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the number of LED positions available in this Phidget.
**Notes:**
The Lasterror property is set.
This property does not return the number of LEDs actually attached.

126.20.7  getVoltage as Integer

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Queries the voltage.
**Notes:**
Lasterror is set.
See the PHIDGET_LED_VOLTAGE_* constants.

126.20.8  setCurrentLimit(currentLimit as Integer)

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the current limit.
**Notes:**
Lasterror is set.
See the PHIDGET_LED_CURRENT_LIMIT_* constants.

126.20.9  setDiscreteLED(index as Integer, Brightness as Integer)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the brightness of an individual LED.
**Notes:**
The Lasterror property is set.
Range of brightness is 0-100.

126.20.10  setVoltage(Voltage as Integer)

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the current voltage.
**Notes:**
Lasterror is set.
See the PHIDGET_LED_VOLTAGE_* constants.

126.20.11  Constants

126.20.12  PHIDGET_LED_CURRENT_LIMIT_20mA = 1

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the limit constants.
**Notes:** 20mA

126.20.13  PHIDGET_LED_CURRENT_LIMIT_40mA = 2

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the limit constants.
**Notes:** 40mA

126.20.14  PHIDGET_LED_CURRENT_LIMIT_60mA = 3

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the limit constants.
**Notes:** 60mA

126.20.15  PHIDGET_LED_CURRENT_LIMIT_80mA = 4

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the limit constants.
**Notes:** 80mA
126.20.16  PHIDGET_LED_VOLTAGE_1_7V = 1

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the voltage constants.
**Notes:** 1.7V

126.20.17  PHIDGET_LED_VOLTAGE_2_75V = 2

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the voltage constants.
**Notes:** 2.75V

126.20.18  PHIDGET_LED_VOLTAGE_3_9V = 3

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the voltage constants.
**Notes:** 3.9V

126.20.19  PHIDGET_LED_VOLTAGE_5_0V = 4

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the voltage constants.
**Notes:** 5.0V
126.21. **CLASS PHIDGETMANAGERMBS**

126.21  class PhidgetManagerMBS

126.21.1  class PhidgetManagerMBS

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The Phidget manager is an interface that allows for monitoring of all phidgets connected to a system, without opening them.

126.21.2  Methods

126.21.3  Close

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Closes the file handles for this device. You should always call this when finished with a Manager.
**Notes:** Lasterror is set.

126.21.4  Constructor

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor.
**Notes:**
The Lasterror property is set.
On success the handle value is not zero.

126.21.5  Device(index as Integer) as PhidgetMBS

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The array of the attached devices.
**Notes:**
The Lasterror property is set.
You need to call getAttachedDevices before this property is valid.

126.21.6  getAttachedDevices

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies the list of attached devices into the Device and Count properties.
**Notes:** Lasterror is set.
126.21.7 GetDeviceStatus as Integer

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Returns an integer indicating the status of the device.
Notes:
Returns:
PHIDGET_ATTACHED 0x1
PHIDGET_NOTATTACHED 0x0

Lasterror is set.

126.21.8 getServerAddress(byref port as Integer) as string

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Gets the address and port.
Notes: The Lasterror property is set.

126.21.9 getServerID as string

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Gets the server ID.
Notes: The Lasterror property is set.

126.21.10 GetServerStatus as Integer

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Returns an integer indicating the connection status of a Webservice.
Notes:
Returns one of the following values:
1 CONNECTED
0 NOTCONNECTED

Lasterror is set.
126.21.11 Open

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Opens a connection to the local Phidget Manager.  
**Notes:** Lasterror is set.

126.21.12 openRemote(serverID as string, password as string)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This method is not yet implemented and will return EPHIDGET_UNSUPPORTED.  
**Notes:** Lasterror is set.

126.21.13 openRemoteIP(addr as string, port as Integer, password as string)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Opens a connection to a remote Phidget Manager.  
**Notes:**  
OpenRemoteIP will block until it connects to the server, which means that when it returns with EPHIDGET_OK, this means that the connection is active.  
If the server is unavailable, this will return an error code. If the connection to a webservice is disrupted while in use, an error event will be thrown.  
Lasterror is set.

Address is the address of the computer running the Phidget Webservice.  
This can be either an IP address or a hostname.  
Port specifies the port of the Webservice on the remote computer.  
Password specifies the password, which is required if authentication is active on the Webservice.  
If authentication is not active, this can be set to "".

126.21.14 Properties

126.21.15 Count as Integer

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Number of devices.  
**Notes:**
The Lasterror property is set. You need to call getAttachedDevices before this property is valid. (Read and Write property)

126.21.16 Handle as Integer

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal used CPhidgetManagerHandle.
**Notes:** (Read and Write property)

126.21.17 Lasterror as Integer

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last error code reported.
**Notes:** (Read and Write property)

126.21.18 Events

126.21.19 Attach(devicehandle as Integer)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event called when a device is attached.
**Notes:** With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

126.21.20 Detach(devicehandle as Integer)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event called when a device is detached.
**Notes:** With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.
126.21.21 Error(errorCode as Integer, errorDescription as string)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This event is used for reporting asynchronous errors mostly related to opening remote Phidgets.
**Notes:**
With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

126.21.22 ServerConnect

MBS USB Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This event is called when a connection to the sever has been made.
**Notes:**
With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

126.21.23 ServerDisconnect

MBS USB Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This event is called when a connection to the server has been lost.
**Notes:**
With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.
126.22 class PhidgetMBS

126.22.1 class PhidgetMBS

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The base class of all Phidget device classes.
**Notes:**
Check phidgets.com for information on this devices.
http://www.phidgets.com/

126.22.2 Methods

126.22.3 Close

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Closes the file handles for this device.
**Notes:**
You can call this while reads and writes are still outstanding; they will fail quickly.
LastError is set.
The destructor does a close if you forget it.

126.22.4 disableLogging

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Disables logging on the library.
**Notes:** The Lasterror property is set.

126.22.5 enableLogging(level as Integer, outputFile as string)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Enables logging on the library.
**Notes:**
The Lasterror property is set.
Data is written to the file specified with the output file path.
Not sure how the path must be specified. This is depending on the library used.

The levels:
126.22. CLASS PHIDGETMBS

| PHIDGET_LOG_CRITICAL  | 1 |
| PHIDGET_LOG_ERROR     | 2 |
| PHIDGET_LOG_WARNING   | 3 |
| PHIDGET_LOG_DEBUG     | 4 |
| PHIDGET_LOG_INFO      | 5 |
| PHIDGET_LOG_VERBOSE   | 6 |

126.22.6 GetDeviceClass as Integer

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the class of a Phidget.
**Notes:** See the PHIDCLASS_* constants.

126.22.7 GetDeviceID as Integer

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the device ID of a Phidget.
**Notes:** See the PHIDID_* constants.

126.22.8 GetDeviceLabel as string

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the Label for the Phidget.
**Notes:**
The Label is a user programmable serial number stored on the Phidget - it can be used to implement a serial numbering scheme, or describe the functionality of the Phidget in a specific application.

Lasterror is set.

126.22.9 GetDeviceName as string

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns string describing the name of the Phidget.
**Notes:**
For example, "Phidget InterfaceKit 8/8/8", "Phidget InterfaceKit 0/0/4", etc.
The Lasterror property is set.
126.22.10 GetDeviceStatus as Integer

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns an integer indicating the status of the device.

**Notes:**
Returns:
PHIDGET_ATTACHED 0x1
PHIDGET_NOTATTACHED 0x0

Lasterror is set.

126.22.11 GetDeviceType as string

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns a string describing the type of the Phidget.

**Notes:**
All PhidgetInterfaceKits will return "PhidgetInterfaceKit", PhidgetRFID returns "PhidgetRFID" and so on.

Lasterror is set.

126.22.12 GetDeviceVersion as Integer

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns a string describing the Device Version of the Phidget.

**Notes:**
Lasterror is set.

126.22.13 GetErrorDescription(errorcode as Integer) as string

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns a string describing the ErrorCode passed.

**Notes:**
Lasterror is set.

The list of the error codes:

0 EPHIDGET_OK
1 EPHIDGET_NOTFOUND
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2 EPHIDGET_NOMEMORY
3 EPHIDGET_UNEXPECTED
4 EPHIDGET_INVALIDARG
5 EPHIDGET_NOTATTACHED
6 EPHIDGET_INTERRUPTED
7 EPHIDGET_INVALID
8 EPHIDGET_NETWORK
9 EPHIDGET_UNKNOWNVAL
10 EPHIDGET_BADPASSWORD
11 EPHIDGET_UNSUPPORTED
12 EPHIDGET_DUPLICATE
13 EPHIDGET_TIMEOUT
14 EPHIDGET_OUTOFBOUNDS
15 EPHIDGET_EVENT
16 EPHIDGET_NETWORK_NOTCONNECTED
17 EPHIDGET_WRONGDEVICE

126.22.14  GetLibraryVersion as string

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** returns a string providing the version number of the API library. **Notes:** Lasterror is set.

126.22.15  GetSerialNumber as Integer

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the unique serial number of this Phidget. **Notes:**

Lasterror is set.
This number is set during manufacturing, and is unique across all Phidgets.

126.22.16  GetServerAddress(byref port as Integer) as string

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the IP Address and Port of a remote Phidget device. **Notes:**

This should only be called on Phidgets that were opened with openRemote or openRemoteIP. Lasterror is set.
126.22.17 GetServerID as string

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the Server ID for a remote Phidget device.  
**Notes:**  
This method is not yet implemented and will return EPHIDGET_UNSUPPORTED.  
This should only be called on Phidgets that were opened with openRemote or openRemoteIP. The Lasterror property is set.

126.22.18 GetServerStatus as Integer

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an integer indicating the connection status of a Webservice.  
**Notes:**  
Returns one of the following values:  
1 CONNECTED  
0 NOTCONNECTED  
Lasterror is set.

126.22.19 Open(serialNumber as Integer = -1)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a connection between an PhidgetMBS object and a physical Phidget.  
**Example:**

```vbnet
dim p as new PhidgetInterfaceKitMBS

p.open -1
p.waitForAttachment 0
// use the phidget
```

**Notes:**  
Open is pervasive. What this means is that you can call open on a device before it is plugged in, and keep the device opened across device dis- and re-connections.  
Open is Asynchronous. What this means is that open will return immediately - before the device being opened is actually available.  
What this means is that you need to either poll getDeviceStatus for an attached status, or handle the attach
event, in order to wait for the device to become available before trying to use it.

SerialNumber specifies the desired serial number, allowing the call to open a specific Phidget. Specifying -1 for the serial number will cause it to open the first available device. Lasterror is set.

126.22.20  OpenLabel(label as string = "")

MBS USB Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Opens a Phidget by label.

**Notes:**
Available with phidget library from December 2011.
Labels can be up to 10 characters (UTF-8 encoding). Specify "" to open any.
Lasterror is set.

126.22.21  openLabelRemote(label as string, serverID as string, password as string = "")

MBS USB Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Opens a Phidget remotely by ServerID. Note that this requires Bonjour (mDNS) to be running on both the host and the server.

**Notes:**
Available with phidget library from December 2011.
label: The label string. Labels can be up to 10 characters (UTF-8 encoding). Specify "" to open any.
serverID: Server ID. Specify "" to open any.
password: The Password. Can be "" if the server is running unsecured.
Lasterror is set.

126.22.22  openLabelRemoteIP(label as string, addr as string, port as Integer, password as string = "")

MBS USB Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Opens a Phidget remotely by address and port, with optional label.

**Notes:**
Available with phidget library from December 2011.
Lasterror is set.

label: Label string. Labels can be up to 10 characters (UTF-8 encoding). Specify "" to open any.
address: The Address. This can be a hostname or IP address.
port: The Port number. Default is 5001.
password: The Password. Can be NULL if the server is running unsecured.

126.22.23 openRemote(serial as Integer, serverID as string, password as string = "")

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This method is not yet implemented and will return EPHIDGET_UNSUPPORTED.
**Notes:** Lasterror is set.

126.22.24 openRemoteIP(serial as Integer, addr as string, port as Integer, password as string = "")

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Attempts to open a connection to a Phidget Webservice, and waits for a phidget on that connection.
**Notes:**
OpenRemoteIP will block until it connects to the server, which means that when it returns with EPHIDGET_OK, this means that the connection is active. If the server is unavailable, this will return an error code. If the connection to a webservice is disrupted while in use, an error event will be thrown, and it is recommended that an error event listener be registered for this reason.
As with the regular open, openRemoteIP is pervasive and asynchronous so long as the connection to the Webservice remains active.
SerialNumber specifies the desired serial number, allowing the call to open a specific Phidget. Specifying -1 for the serial number will cause it to open the first available device.
Address is the address of the computer running the Phidget Webservice. This can be either an IP address or a hostname.
Port specifies the port of the Webservice on the remote computer.
Password specifies the password, which is required if authentication is active on the Webservice. If authentication is not active, this can be set to "".
Lasterror is set.

126.22.25 PUNK_DBL as Double

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The value used for unknown values (Double).
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126.22.26  PUNK_FLT as single

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The value used for unknown values (Float).

126.22.27  SetDeviceLabel(label as string)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Writes a Label a string up to 10 characters long to the Phidget associated with this handle.
**Notes:**
SetDeviceLabel may not be available on all operating systems.
Currently it is available on MacOS X, Linux, and Windows CE.
Calling this on Windows will return EPHIDGET_UNSUPPORTED
Lasterror is set.

126.22.28  waitForAttachment(milliseconds as Integer)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Waits the given time till a device has been attached.
**Example:**
```pascal
dim p as new PhidgetInterfaceKitMBS
p.open -1
p.waitForAttachment 0
// use the phidget
```

**Notes:**
Lasterror is set to EPHIDGET_OK when the device is available, or to EPHIDGET_TIMEOUT if the device
is not attached before the timeout expires.
Timeouts below about 300ms cannot be trusted because of initialization time, and sometimes an even larger timeout is required ie. the first time a device is plugged into a windows machine.
A timeout of 0 is infinite.
This function can be used in conjunction with (or instead of) an attach event handler.
The Lasterror property is set.
126.22.29 Properties

126.22.30 Handle as Integer

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The internal used CPhidgetHandle. Notes: (Read and Write property)

126.22.31 Lasterror as Integer

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The last error code. Notes:

EPHIDGET_NOTFOUND 1 "A Phidget matching the type and or serial number could not be found." This indicates that a Phidget being searched for (ie. via Open) could not be located.
EPHIDGET_NOMEMORY 2 "Memory could not be allocated." This indicates that there is not enough memory for the Phidgets library to create the object requested.
EPHIDGET_UNEXPECTED 3 "Unexpected Error. Contact Phidgets Inc. for support." Indicates that a serious error has occurred, or a severe bug exists within the library.
EPHIDGET_INVALIDARG 4 "Invalid argument passed to function." An argument is not valid to the requirements of the function. In many cases this refers to an invalid Phidget Handle.
EPHIDGET_NOTATTACHED 5 "Phidget not physically attached." Indicates the function requires an attached Phidget to operate.
EPHIDGET_INTERRUPTED 6 "Read/Write operation was interrupted" An error occurred while attempting to communicate with the Phidget over USB.
EPHIDGET_INVALID 7 "The Error Code is not defined." Indicates that a serious error has occurred, or a severe bug exists within the library.
EPHIDGET_NETWORK 8 "Network Error." Attempting to communicate with the Phidget via the Network has failed.
EPHIDGET_UNKNOWNVAL 9 "Value is Unknown (State not yet received from device)." A query to a value on the Phidget device has failed as the Phidget has not returned data yet.
EPHIDGET_BADPASSWORD 10 "Authorization Failed." The remote access method has failed it’s authorization.
EPHIDGET_UNSUPPORTED 11 "Not Supported" This is a bad or unsupported function call.
EPHIDGET_DUPLICATE 12 "Duplicated request" A previous request to the device has already performed this function, and it is not valid to perform twice.
EPHIDGET_TIMEOUT 13 "Given timeout has been exceeded" A synchronous request has failed it’s time limits. Usually this is returned when attempting WaitForConnect.
EPHIDGET_OUTOFBOUNDS 14 "Index out of Bounds" An index into the function is above or below the recognized bounds of the device. ie. when accessing a single sensor on a multisensor device.
EPHIDGET_EVENT 15 "A non-null error code was returned from an event handler" An error code was passed to a function handler. Note that correct decoding of the actual error would have to be done within the event handler itself.
EPHIDGET_NETWORK_NOTCONNECTED 16 "A connection to the server does not exist." An attempt to connect to a remotely connected device or service failed due to network connectivity problems.
EPHIDGET_WRONGDEVICE 17 "Function is not applicable for this device." The wrong type of device handle was passed as an argument to a function. (ie. calling CPhidgetWeightSensor_getWeight with an Accelerometer handle)

(Read and Write property)
126.22.32  Events

126.22.33  Attach

MBS USB Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The event called when a device is attached.
**Notes:**
With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

126.22.34  Detach

MBS USB Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The event called when a device is detached.
**Notes:**
With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

126.22.35  Error(errorCode as Integer, errorDescription as string)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This event is used for reporting asynchronous errors - mostly related to opening remote Phidgets.
**Notes:**
With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

126.22.36  ServerConnect

MBS USB Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This event is used for opening Phidgets remotely, and is called when a connection to the sever has been made.
**Notes:**
With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

### 126.22.37 ServerDisconnect

**MBS USB Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes.** **Function:** This event is used for opening Phidgets remotely, and is called when a connection to the server has been lost.

**Notes:**
With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

### 126.22.38 Wakeup

**MBS USB Plugin, Plugin Version: 11.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes.** **Function:** This event is called when the device wakes up.

### 126.22.39 WillSleep

**MBS USB Plugin, Plugin Version: 11.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes.** **Function:** This event is called when the device will go to sleep.

### 126.22.40 Constants

#### 126.22.41 EPHIDGET_BADPASSWORD=10

**MBS USB Plugin, Plugin Version: 11.0.** **Function:** One of the error constants.
**Notes:** Authorization exception. "No longer used. Replaced by EEPHIDGET_BADPASSWORD"

#### 126.22.42 EPHIDGET_BADVERSION=19

**MBS USB Plugin, Plugin Version: 11.0.** **Function:** One of the error constants.
**Notes:** Version Mismatch. "No longer used. Replaced by EEPHIDGET_BADVERSION"
126.22.43  EPHIDGET_CLOSED=18

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the error constants.
**Notes:** Phidget Closed. "Phidget handle was closed."

126.22.44  EPHIDGET_DUPLICATE=12

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the error constants.
**Notes:** Duplicate request. "Duplicated request."

126.22.45  EPHIDGET_EVENT=15

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the error constants.
**Notes:** Event. "A non-null error code was returned from an event handler." This code is not currently used.

126.22.46  EPHIDGET_INTERRUPTED=6

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the error constants.
**Notes:** Interrupted. "Read/Write operation was interrupted." This code is not currently used.

126.22.47  EPHIDGET_INVALID=7

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the error constants.
**Notes:** Invalid error code. "The Error Code is not defined."

126.22.48  EPHIDGET_INVALIDARG=4

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the error constants.
**Notes:** Invalid argument. "Invalid argument passed to function."
<table>
<thead>
<tr>
<th>Error Code</th>
<th>Error Name</th>
<th>MBS USB Plugin, Plugin Version: 11.0. Function: One of the error constants.</th>
<th>Notes:</th>
</tr>
</thead>
<tbody>
<tr>
<td>126.22.49</td>
<td>EPHIDGET_NETWORK=8</td>
<td></td>
<td>Network. &quot;Network Error.&quot;</td>
</tr>
<tr>
<td>126.22.50</td>
<td>EPHIDGET_NETWORK_NOTCONNECTED=16</td>
<td></td>
<td>Network not connected. &quot;A connection to the server does not exist.&quot;</td>
</tr>
<tr>
<td>126.22.51</td>
<td>EPHIDGET_NOMEMORY=2</td>
<td></td>
<td>No memory. &quot;Memory could not be allocated.&quot;</td>
</tr>
<tr>
<td>126.22.52</td>
<td>EPHIDGET_NOTATTACHED=5</td>
<td></td>
<td>Phidget not attached. &quot;Phidget not physically attached.&quot;</td>
</tr>
<tr>
<td>126.22.53</td>
<td>EPHIDGET_NOTFOUND=1</td>
<td></td>
<td>Phidget not found. &quot;A Phidget matching the type and or serial number could not be found.&quot;</td>
</tr>
<tr>
<td>126.22.54</td>
<td>EPHIDGET_OK=0</td>
<td></td>
<td>Function completed successfully.</td>
</tr>
<tr>
<td>126.22.55</td>
<td>EPHIDGET_OUTOFBOUNDS=14</td>
<td></td>
<td>Out of bounds. &quot;Index out of Bounds.&quot;</td>
</tr>
</tbody>
</table>
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**126.22.56 EPHIDGET_TIMEOUT=13**

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the error constants. **Notes:** Timeout. "Given timeout has been exceeded."

**126.22.57 EPHIDGET_UNEXPECTED=3**

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the error constants. **Notes:** Unexpected. "Unexpected Error. Contact Phidgets Inc. for support."

**126.22.58 EPHIDGET_UNKNOWNVAL=9**

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the error constants. **Notes:** Value unknown. "Value is Unknown (State not yet received from device, or not yet set by user)."

**126.22.59 EPHIDGET_UNSUPPORTED=11**

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the error constants. **Notes:** Unsupported. "Not Supported."

**126.22.60 EPHIDGET_WRONGDEVICE=17**

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the error constants. **Notes:** Wrong device. "Function is not applicable for this device."

**126.22.61 PHIDCLASS_ACCELEROMETER = 2**

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID class constants.

**126.22.62 PHIDCLASS_ADVANCEDSERVO = 3**

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID class constants.
126.22.63  PHIDCLASS_ANALOG = 22

MBS USB Plugin, Plugin Version: 11.1.  **Function:** One of the HID class constants.

126.22.64  PHIDCLASS_BRIDGE = 23

MBS USB Plugin, Plugin Version: 11.1.  **Function:** One of the HID class constants.

126.22.65  PHIDCLASS_ENCODER = 4

MBS USB Plugin, Plugin Version: 11.0.  **Function:** One of the HID class constants.

126.22.66  PHIDCLASS_FREQUENCYCOUNTER = 21

MBS USB Plugin, Plugin Version: 11.1.  **Function:** One of the HID class constants.

126.22.67  PHIDCLASS_GPS = 5

MBS USB Plugin, Plugin Version: 11.1.  **Function:** One of the HID class constants.

126.22.68  PHIDCLASS_INTERFACEKIT = 7

MBS USB Plugin, Plugin Version: 11.0.  **Function:** One of the HID class constants.

126.22.69  PHIDCLASS_IR = 19

MBS USB Plugin, Plugin Version: 11.0.  **Function:** One of the HID class constants.

126.22.70  PHIDCLASS_LED = 8

MBS USB Plugin, Plugin Version: 11.0.  **Function:** One of the HID class constants.
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126.22.71  PHIDCLASS_MOTORCONTROL = 9

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID class constants.

126.22.72  PHIDCLASS_PHSENSOR = 10

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID class constants.

126.22.73  PHIDCLASS_RFID = 11

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID class constants.

126.22.74  PHIDCLASS_SERVO = 12

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID class constants.

126.22.75  PHIDCLASS_SPATIAL = 20

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID class constants.

126.22.76  PHIDCLASS_STEPPER = 13

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID class constants.

126.22.77  PHIDCLASS_TEMPERATURESENSOR = 14

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID class constants.

126.22.78  PHIDCLASS_TEXTLCD = 15

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID class constants.
126.22.79  **PHIDCLASS_TEXTLED = 16**

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID class constants.

126.22.80  **PHIDCLASS_WEIGHTSENSOR = 17**

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID class constants.

126.22.81  **PHIDDEF_ACCELEROMETER=& h11**

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID device definition constants.

126.22.82  **PHIDDEF_ADVANCEDSERVO=& h15**

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID device definition constants.

126.22.83  **PHIDDEF_ENCODER=& hE**

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID device definition constants.

126.22.84  **PHIDDEF_GPS=& h16**

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID device definition constants.

126.22.85  **PHIDDEF_GYROSCOPE=& h14**

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID device definition constants.

126.22.86  **PHIDDEF_HUMIDITYSENSOR=5**

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID device definition constants.
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126.22.87 PHIDDEF_INTERFACEKIT=3
MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID device definition constants.

126.22.88 PHIDDEF_LED=& hD
MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID device definition constants.

126.22.89 PHIDDEF_MOTORCONTROL=& hB
MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID device definition constants.

126.22.90 PHIDDEF_PHSENSOR=& h13
MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID device definition constants.

126.22.91 PHIDDEF_RFID=7
MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID device definition constants.

126.22.92 PHIDDEF_SERVO=4
MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID device definition constants.

126.22.93 PHIDDEF_STEPPER=& hF
MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID device definition constants.

126.22.94 PHIDDEF_TEMPERATURESENSOR=& h10
MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID device definition constants.
126.22.95  PHIDDEF_TEXTLCD=& hA

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID device definition constants.

126.22.96  PHIDDEF_TEXTLED=& h12

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID device definition constants.

126.22.97  PHIDDEF_WEIGHTSENSOR=8

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID device definition constants.

126.22.98  PHIDGET_ATTACHED=1

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the phidget constants.  
**Notes:**
Phidget attached.
Returned by getStatus() functions.

126.22.99  PHIDGET_LOG_CRITICAL=1

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the phidget constants.

126.22.100  PHIDGET_LOG_DEBUG=4

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the phidget constants.

126.22.101  PHIDGET_LOG_ERROR=2

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the phidget constants.
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126.22.102  PHIDGET_LOG_INFO=5

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the phidget constants.

126.22.103  PHIDGET_LOG_VERBOSE=6

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the phidget constants.

126.22.104  PHIDGET_LOG_WARNING=3

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the phidget constants.

126.22.105  PHIDGET_NOTATTACHED=0

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the phidget constants.

**Notes:**
Phidget not attached.
Returned by getStatus() functions.
126.22.106  PHIDID_ACCELEROMETER_2AXIS = & h071

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID ID constants.

126.22.107  PHIDID_ACCELEROMETER_3AXIS = & h07E

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID ID constants.

126.22.108  PHIDID_ADVANCEDSERVO_1MOTOR = & h082

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID ID constants.

126.22.109  PHIDID_ADVANCEDSERVO_8MOTOR = & h03A

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID ID constants.

126.22.110  PHIDID_ANALOG_4OUTPUT = & h037

MBS USB Plugin, Plugin Version: 11.1. **Function:** One of the HID ID constants.

126.22.111  PHIDID_BIPOLAR_STEPPER_1MOTOR = & h07B

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID ID constants.

126.22.112  PHIDID_BRIDGE_4INPUT = & h03B

MBS USB Plugin, Plugin Version: 11.1. **Function:** One of the HID ID constants.

126.22.113  PHIDID_ENCODER_1ENCODER_1INPUT = & h04B

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID ID constants.
126.22.114  PHIDID_ENCODER_HS_1ENCODER = & h080
MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID ID constants.

126.22.115  PHIDID_ENCODER_HS_4ENCODER_4INPUT = & h04F
MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID ID constants.

126.22.116  PHIDID_FREQUENCYCOUNTER_2INPUT = & h035
MBS USB Plugin, Plugin Version: 11.1. **Function:** One of the HID ID constants.

126.22.117  PHIDID_GPS = & h079
MBS USB Plugin, Plugin Version: 11.1. **Function:** One of the HID ID constants.

126.22.118  PHIDID_INTERFACEKIT_0_0_4 = & h040
MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID ID constants.

126.22.119  PHIDID_INTERFACEKIT_0_0_8 = & h081
MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID ID constants.

126.22.120  PHIDID_INTERFACEKIT_0_16_16 = & h044
MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID ID constants.

126.22.121  PHIDID_INTERFACEKIT_0_8_8_w_LCD = & h053
MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID ID constants.
126.22.122  PHIDID_INTERFACEKIT_2_2_2 = &h036

MBS USB Plugin, Plugin Version: 11.1. **Function:** One of the HID ID constants.

126.22.123  PHIDID_INTERFACEKIT_4_8_8 = 4

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID ID constants.

126.22.124  PHIDID_INTERFACEKIT_8_8_8 = &h045

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID ID constants.

126.22.125  PHIDID_INTERFACEKIT_8_8_8_w_LCD = &h07D

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID ID constants.

126.22.126  PHIDID_IR = &h04D

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID ID constants.

126.22.127  PHIDID_LED_64 = &h04A

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID ID constants.

126.22.128  PHIDID_LED_64_ADV = &h04C

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID ID constants.

126.22.129  PHIDID_LINEAR_TOUCH = &h076

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID ID constants.
126.22. CLASS PHIDGETMBS

126.22.130  PHIDID_MOTORCONTROL_1MOTOR = & h03E


126.22.131  PHIDID_MOTORCONTROL_HC_2MOTOR = & h059

MBS USB Plugin, Plugin Version: 11.0. Function: One of the HID ID constants.

126.22.132  PHIDID_MOTORCONTROL_LV_2MOTOR_4INPUT = & h058

MBS USB Plugin, Plugin Version: 11.0. Function: One of the HID ID constants.

126.22.133  PHIDID_PHSENSOR = & h074

MBS USB Plugin, Plugin Version: 11.0. Function: One of the HID ID constants.

126.22.134  PHIDID_RFID = & h030

MBS USB Plugin, Plugin Version: 11.0. Function: One of the HID ID constants.

126.22.135  PHIDID_RFID_2OUTPUT = & h031

MBS USB Plugin, Plugin Version: 11.0. Function: One of the HID ID constants.

126.22.136  PHIDID_ROTARY_TOUCH = & h077

MBS USB Plugin, Plugin Version: 11.0. Function: One of the HID ID constants.

126.22.137  PHIDID_SERVO_1MOTOR = & h039

MBS USB Plugin, Plugin Version: 11.0. Function: One of the HID ID constants.
126.22.138  PHIDID_SERVO_1MOTOR_OLD = 2

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID ID constants.

126.22.139  PHIDID_SERVO_4MOTOR = & h038

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID ID constants.

126.22.140  PHIDID_SERVO_4MOTOR_OLD = 3

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID ID constants.

126.22.141  PHIDID_SPATIAL_ACCEL_3AXIS = & h07F

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID ID constants.

126.22.142  PHIDID_SPATIAL_ACCEL_GYRO_COMPASS = & h033

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID ID constants.

126.22.143  PHIDID_TEMPERATURESENSOR = & h070

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID ID constants.

126.22.144  PHIDID_TEMPERATURESENSOR_4 = & h032

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID ID constants.

126.22.145  PHIDID_TEMPERATURESENSOR_IR = & h03C

MBS USB Plugin, Plugin Version: 11.1. **Function:** One of the HID ID constants.
126.22. CLASS PHIDGETMBS

126.22.146  PHIDID_TEXTLCD_2x20 = & h052
MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID ID constants.

126.22.147  PHIDID_TEXTLCD_2x20_w_0_8_8 = & h153
MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID ID constants.

126.22.148  PHIDID_TEXTLCD_2x20_w_8_8_8 = & h17D
MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID ID constants.

126.22.149  PHIDID_TEXTLCD_ADAPTER = & h03D
MBS USB Plugin, Plugin Version: 11.1. **Function:** One of the HID ID constants.

126.22.150  PHIDID_TEXTLED_1x8 = & h049
MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID ID constants.

126.22.151  PHIDID_TEXTLED_4x8 = & h048
MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID ID constants.

126.22.152  PHIDID_UNIPOLAR_STEPPER_4MOTOR = & h07A
MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID ID constants.

126.22.153  PHIDID_WEIGHTSENSOR = & h072
MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID ID constants.
126.22.154 PHIDSPEC_888_with_lcd=& h25
MBS USB Plugin, Plugin Version: 11.0. Function: One of the HID spec constants.

126.22.155 PHIDSPEC_ACCELEROMETER3=& h26
MBS USB Plugin, Plugin Version: 11.0. Function: One of the HID spec constants.

126.22.156 PHIDSPEC_ACCELEROMETER=& h07
MBS USB Plugin, Plugin Version: 11.0. Function: One of the HID spec constants.

126.22.157 PHIDSPEC_ACCELEROMETER_with_GYRO=& h27
MBS USB Plugin, Plugin Version: 11.0. Function: One of the HID spec constants.

126.22.158 PHIDSPEC_ADVANCEDSERVO8=& h19
MBS USB Plugin, Plugin Version: 11.0. Function: One of the HID spec constants.

126.22.159 PHIDSPEC_BIPOLAR_STEPPER=& h22
MBS USB Plugin, Plugin Version: 11.0. Function: One of the HID spec constants.

126.22.160 PHIDSPEC_ENCODER=& h11
MBS USB Plugin, Plugin Version: 11.0. Function: One of the HID spec constants.

126.22.161 PHIDSPEC_ENCODER_4=& h1E
MBS USB Plugin, Plugin Version: 11.0. Function: One of the HID spec constants.
126.22. CLASS PHIDGETMBS

126.22.162 PHIDSPEC_ENCODER_HS=& h20

MBS USB Plugin, Plugin Version: 11.0. Function: One of the HID spec constants.

126.22.163 PHIDSPEC_GPS=& h1F

MBS USB Plugin, Plugin Version: 11.0. Function: One of the HID spec constants.

126.22.164 PHIDSPEC_GYROSCOPE=& h18

MBS USB Plugin, Plugin Version: 11.0. Function: One of the HID spec constants.

126.22.165 PHIDSPEC_GYRO_with_ACCELEROMETER=& h28

MBS USB Plugin, Plugin Version: 11.0. Function: One of the HID spec constants.

126.22.166 PHIDSPEC_HUMIDITYSENSOR=& h16

MBS USB Plugin, Plugin Version: 11.0. Function: One of the HID spec constants.

126.22.167 PHIDSPEC_INTERFACEKIT_0_0_4=& h03

MBS USB Plugin, Plugin Version: 11.0. Function: One of the HID spec constants.

126.22.168 PHIDSPEC_INTERFACEKIT_0_0_8=& h2B

MBS USB Plugin, Plugin Version: 11.0. Function: One of the HID spec constants.

126.22.169 PHIDSPEC_INTERFACEKIT_0_16_16=& h04

MBS USB Plugin, Plugin Version: 11.0. Function: One of the HID spec constants.
126.22.170  PHIDSPEC_INTERFACEKIT_0_5_7=& h05

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID spec constants.

126.22.171  PHIDSPEC_INTERFACEKIT_0_8_8=& h06

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID spec constants.

126.22.172  PHIDSPEC_INTERFACEKIT_4_8_8=& h12

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID spec constants.

126.22.173  PHIDSPEC_INTERFACEKIT_8_8_8=& h02

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID spec constants.

126.22.174  PHIDSPEC_JOYSTICK=& h23

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID spec constants.

126.22.175  PHIDSPEC_LED = & h0C

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID spec constants.

126.22.176  PHIDSPEC_LINEAR_TOUCH=& h1C

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID spec constants.

126.22.177  PHIDSPEC_MOTORCONTROL=& h0E

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID spec constants.
126.22.178 PHIDSPEC_MOTORCONTROL_HC=& h2A
MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID spec constants.

126.22.179 PHIDSPEC_NOTHING=& h00
MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID spec constants.

126.22.180 PHIDSPEC_PHSENSOR=& h17
MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID spec constants.

126.22.181 PHIDSPEC_RFID=& h0B
MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID spec constants.

126.22.182 PHIDSPEC_RFIDB=& h1A
MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID spec constants.

126.22.183 PHIDSPEC_ROTARY_TOUCH=& h1D
MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID spec constants.

126.22.184 PHIDSPEC_SERVO_1MOTOR=& h01
MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID spec constants.

126.22.185 PHIDSPEC_SERVO_1MOTOR_OLD=& h14
MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID spec constants.
126.22.186  PHIDSPEC_SERVO_4MOTOR=& h29

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID spec constants.

126.22.187  PHIDSPEC_SERVO_4MOTOR_OLD=& h13

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID spec constants.

126.22.188  PHIDSPEC_STEPPER=& h10

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID spec constants.

126.22.189  PHIDSPEC_TEMPERATURESENSOR=& h0F

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID spec constants.

126.22.190  PHIDSPEC_TEXTLCD_2_20=& h08

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID spec constants.

126.22.191  PHIDSPEC_TEXTLCD_2_20_COMP1=& h0A

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID spec constants.

126.22.192  PHIDSPEC_TEXTLCD_2_20_CUSTOM=& h09

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID spec constants.

126.22.193  PHIDSPEC_TEXTLCD_with_888=& h24

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID spec constants.
126.22. CLASS PHIDGETMBS

126.22.194 PHIDSPEC_TEXTLED2=& h1B

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID spec constants.

126.22.195 PHIDSPEC_TEXTLED=& h0D

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID spec constants.

126.22.196 PHIDSPEC_UNIPOLAR_STEPPER=& h21

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID spec constants.

126.22.197 PHIDSPEC_WEIGHTSENSOR=& h15

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the HID spec constants.

126.22.198 PUNK_BOOL = 2

MBS USB Plugin, Plugin Version: 11.1. **Function:** The value used for unknown values (Boolean).

126.22.199 PUNK_INT = & H7FFFFFFF

MBS USB Plugin, Plugin Version: 11.1. **Function:** The value used for unknown values (Integer).

126.22.200 PUNK_INT64 = & h7FFFFFFFFFFFFFFFF

MBS USB Plugin, Plugin Version: 11.1. **Function:** The value used for unknown values (Int64).

126.22.201 PUNK_SHRT = & h7FF

MBS USB Plugin, Plugin Version: 11.1. **Function:** The value used for unknown values (Short).
126.23 class PhidgetMissingFunctionExceptionMBS

126.23.1 class PhidgetMissingFunctionExceptionMBS

MBS USB Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class used to report that a given phidget function was not loaded from the library.

**Notes:**
Check the message property.
Subclass of the RuntimeException class.
class PhidgetMotorControlMBS

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for the phidget motor control device.

**Notes:**
The PhidgetMotorControl is a component that provides a high-level programmer interface to control a PhidgetMotorControl device connected through a USB port.

With this component, the programmer can:

- Control direction, and start and stop DC motors.
- Control the velocity and acceleration of each DC motor.
- Read the limit switch.

Subclass of the PhidgetMBS class.

**126.24.2 Methods**

**126.24.3 Constructor**

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor.

**Notes:**
On success the handle value is not zero.
Lasterror is set.

**126.24.4 getAcceleration(index as Integer) as Double**

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the current acceleration.

**Notes:**
Note that this value defaults to 10 upon initialisation.
The Lasterror property is set.
126.24.5  getAccelerationMax(index as Integer) as Double

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the maximum acceleration supported by a motor.
**Notes:** The Lasterror property is set.

126.24.6  getAccelerationMin(index as Integer) as Double

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the minimum acceleration supported by a motor.
**Notes:** The Lasterror property is set.

126.24.7  getBackEMF(index as Integer) as Double

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the Back EMF voltage for a motor.
**Notes:** Lasterror is set.

126.24.8  getBackEMFSensingState(index as Integer) as Integer

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
 Gets the Back EMF sensing state for a motor.
**Notes:** Lasterror is set.

126.24.9  getBraking(index as Integer) as Double

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the Braking value for a motor.
**Notes:**
Lasterror is set.
Returns the braking value, in percent.

126.24.10  getCurrent(index as Integer) as Double

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
get the current motor current consumption.
**126.24.11  getEncoderCount as Integer**

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Gets the number of encoder inputs supported by this board.

**Notes:** Lasterror is set.

**126.24.12  getEncoderPosition(index as Integer) as Integer**

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Gets the position of an encoder. This position starts at 0 every time the phidget is opened.

**Notes:** Lasterror is set.

**126.24.13  getInputCount as Integer**

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Gets the number of digital inputs supported by this board.

**Notes:** The Lasterror property is set.

**126.24.14  getInputState(index as Integer) as boolean**

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Gets the state of a digital input.

**Notes:** The Lasterror property is set.

**126.24.15  getMotorCount as Integer**

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Gets the number of motors supported by this controller.

**Notes:** The Lasterror property is set.

**126.24.16  getRatiometric as Integer**

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Gets the ratiometric state.
126.24.17  getSensorCount as Integer

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the number of sensor inputs supported by this board.
**Notes:** Lasterror is set.

126.24.18  getSensorRawValue(index as Integer) as Integer

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the raw value of a sensor (12-bit).
**Notes:** Lasterror is set.

126.24.19  getSensorValue(index as Integer) as Integer

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the value of a sensor.
**Notes:** Lasterror is set.

126.24.20  getSupplyVoltage as Double

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the Supply voltage for the motors.
**Notes:**
This could be higher than the actual supply voltage.
Returns the supply voltage, in volts.
Lasterror is set.

126.24.21  getVelocity(index as Integer) as Double

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the current velocity of a motor.
**Notes:** The Lasterror property is set.
126.24.22 setAcceleration(index as Integer, value as Double)

**Notes:**  
Valid values are 0-100.  
The Lasterror property is set.

126.24.23 setBackEMFSensingState(index as Integer, EMFState as Integer)

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the Back EMF sensing state for a motor.  
**Notes:** Lasterror is set.

126.24.24 setBraking(index as Integer, value as Double)

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the Braking value for a motor.  
**Notes:**  
This is applied when velocity is 0. Default is 0%.  
value: The braking value, in percent.  
Lasterror is set.

126.24.25 setEncoderPosition(index as Integer, position as Integer)

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the encoder position.  
**Notes:**  
This can be used to set the position to a known value, and should only be called when the encoder is not moving.  
Lasterror is set.

126.24.26 setRatiometric(value as Integer)

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the ratiometric state.  
**Notes:**
This control the voltage reference used for sampling the analog sensors. Lasterror is set.

126.24.27  setVelocity(index as Integer, value as Double)

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the velocity of a motor. **Notes:** The Lasterror property is set.

126.24.28  Events

126.24.29  BackEMFUpdated(index as Integer, voltage as Double)

MBS USB Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This event is called at a constant rate; every 16ms, when back EMF sensing is enabled for that motor.

126.24.30  CurrentChanged(index as Integer, value as Double)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The current motor current consumption changed. **Notes:**

Index: Index of the Motor firing the Event
Value: Value of the Motor Current

With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

126.24.31  CurrentUpdated(index as Integer, current as Double)

MBS USB Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The current update event. **Notes:** This is called at a constant rate; every 8ms.
126.24.32  EncoderPositionChanged(index as Integer, time as Integer, positionChange as Integer)

MBS USB Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: The encoder position change event. Notes: This is called when the encoder position changes.

126.24.33  EncoderPositionUpdated(index as Integer, positionChange as Integer)

MBS USB Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: The encoder position update event. Notes: This is called at a constant rate; every 8ms, whether the encoder position has changed or not.

126.24.34  InputChanged(index as Integer, value as Integer)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: The input value changed. Notes:

Index: Index of the Input firing the Event
State: State of the Input

With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available. Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

126.24.35  SensorUpdated(index as Integer, sensorValue as Integer)

MBS USB Plugin, Plugin Version: 11.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: The sensor update event. Notes: This is called at a constant rate; every 8ms.

126.24.36  VelocityChanged(index as Integer, value as Double)

MBS USB Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: This event is called when the velocity changes. Notes:
With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.
126.25 class PhidgetNMEADatambs

126.25.1 class PhidgetNMEADatambs

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** NMEA Data Structure. Contains a set of supported NMEA sentences.

126.25.2 Properties

126.25.3 GGA as PhidgetGPGGAMBS

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** GPS Fix and position data.  
**Notes:** (Read and Write property)

126.25.4 GSA as PhidgetGPGSAMBS

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** GPS DOP and active satellites.  
**Notes:** (Read and Write property)

126.25.5 GSV as PhidgetGPGSVMBS

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Detailed satellite information.  
**Notes:** (Read and Write property)

126.25.6 RMC as PhidgetGPRMCBMBS

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Recommended minimum data.  
**Notes:** (Read and Write property)

126.25.7 VTG as PhidgetGPVTGMBBS

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Heading and Speed over the Ground.
Notes: (Read and Write property)
class PhidgetNotInitializedExceptionMBS

MBS USB Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The class used to report that a given phidget object was not initialized properly.

Notes:
Check the message property.
Subclass of the RuntimeException class.
126.27 class PhidgetPHSensorMBS

126.27.1 class PhidgetPHSensorMBS

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for a phidget PH sensor device.

**Notes:**
The PhidgetPHSensor is a component that provides a high-level programmer interface to control a PhidgetPHSensor device connected through a USB port.

With this component, the programmer can:

- Read the pH of a liquid with a pH sensor.

Subclass of the PhidgetMBS class.

126.27.2 Methods

126.27.3 Constructor

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constructor.

**Notes:**
On success the handle value is not zero.
The Lasterror property is set.

126.27.4 getPH as Double

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the current pH.

**Notes:**
The Lasterror property is set.
Valid range is -10 to 10.
Note that this value defaults to -20. Applications not wishing to encounter this value should use Change Handlers instead of polling the device for data.
126.27.5  getPHChangeTrigger as Double

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the amount of change that should exist between the last reported value and the current value before an PHChange event is fired.
**Notes:** The Lasterror property is set.

126.27.6  getPHMax as Double

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the maximum PH that the sensor could report.
**Notes:** The Lasterror property is set.

126.27.7  getPHMin as Double

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the minimum PH that the sensor could report.
**Notes:** The Lasterror property is set.

126.27.8  getPotential as Double

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the current potential in volts.
**Notes:**
The Lasterror property is set.
Range is 0-5v.
2.5v corresponds to a pH of 7.0.

126.27.9  getPotentialMax as Double

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the maximum potential that can be sensed.
**Notes:** The Lasterror property is set.
126.27.10  getPotentialMin as Double

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the minimum potential that can be sensed.
**Notes:** The Lasterror property is set.

126.27.11  setPHChangeTrigger(value as Double)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Specifies the amount of change that should exist between the last reported value and the current value before an OnPHChange event is fired.
**Notes:** The Lasterror property is set.

126.27.12  setTemperature(value as Double)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the ambient temperature of the PH sensor for increased accuracy.
**Notes:**
This value defaults to 20 degrees celsius which is applicable for most applications.
The Lasterror property is set.

126.27.13  Events

126.27.14  PHChanged(value as Double)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This event is called if the pH changes by more than the PH trigger.
**Notes:**
With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.
126.28 class PhidgetRFIDMBS

126.28.1 class PhidgetRFIDMBS

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for a phidget RFID device.

**Notes:**
The PhidgetRFID is a component that provides a high-level programmer interface to control a PhidgetRFID
device connected through a USB port.
With this component, the programmer can:

- Read Radio Frequency Identification tags.

Radio Frequency Identification or RFID, is a non-contact identification technology which uses a reader to
read data stored on low cost tags.

The particular instance of the technology we use stores a 40-bit number on the tag. Every tag that is pur-
chased from Phidgets Inc. is guaranteed unique.

When a RFID tag is read, the component returns the unique number contained in the RFID tag.
Subclass of the PhidgetMBS class.

126.28.2 Methods

126.28.3 Constructor

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constructor.

**Notes:**
On success the handle value is not zero.
The Lasterror property is set.

126.28.4 getAntennaOn as boolean

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the state of the antenna.

**Notes:** The Lasterror property is set.
126.28.5  getLastTag(m as memoryblock) as memoryblock

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Stores the last tag in a memoryblock.
**Notes:**
You need to pass in a memoryblock of the correct size for your tags.
For convenience the memoryblock is returned.

The Lasterror property is set.

126.28.6  getLEDOn as boolean

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the state of the onboard LED.
**Notes:** The Lasterror property is set.

126.28.7  getOutputCount as Integer

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the number of outputs supported by this board.
**Notes:** The Lasterror property is set.

126.28.8  getOutputState(index as Integer) as boolean

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the state of an output.
**Notes:** The Lasterror property is set.

126.28.9  getTagStatus as boolean

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the tag present status.
**Notes:**
This is whether or not a tag is being read by the reader.
The Lasterror property is set.
**126.28. CLASS PHIDGETRFIDMBS**

**126.28.10 setAntennaOn(value as boolean)**

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the state of the antenna.

**Notes:**
Note that the antenna must be enabled before tags will be read.
The Lasterror property is set.

**126.28.11 setLEDOn(value as boolean)**

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the state of the onboard LED.

**Notes:** The Lasterror property is set.

**126.28.12 setOutputState(index as Integer, value as boolean)**

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the state of an output.

**Notes:** The Lasterror property is set.

**126.28.13 Events**

**126.28.14 OutputChanged(index as Integer, value as Integer)**

MBS USB Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This event is called if an output changes.

**Notes:**
Index: Index of the Output firing the Event
Value: State of the Output.

With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.
126.28.15 Tag (tag as memoryblock)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An RFID Tag is read.

**Notes:**
Current plugins expect a maximum tag size of 20 bytes. Not all 20 bytes may be used for the given tag.

With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available. Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

126.28.16 TagLost (tag as memoryblock)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A RFID Tag is removed from the field.

**Notes:**
Current plugins expect a maximum tag size of 20 bytes. Not all 20 bytes may be used for the given tag.

With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available. Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.
126.29. **GLOBALS**

126.29  **Globals**

126.29.1  **LoadPhidgetFrameworkMBS(framework as folderitem) as boolean**

**Function:** Loads the phidget framework.  
**Notes:** Returns true on success and false on failure.  
Path a folderitem for the phidget.framework in /library/frameworks.  
Deprecated in plugin version 10.4.

126.29.2  **LoadPhidgetLibraryMBS(file as folderitem) as boolean**

**Function:** Loads the Phidgets shared library.  
**Notes:** Returns true on success and false on failure.

Loads a Windows DLL, a Linux shared library, a Mac OS X shared library or a Mac OS X framework from the given path.  
See also:

- 126.29.3 LoadPhidgetLibraryMBS(path as string) as boolean

126.29.3  **LoadPhidgetLibraryMBS(path as string) as boolean**

**Function:** Loads the Phidgets shared library.  
**Notes:** Returns true on success and false on failure.  
Path can be an absolute, a relative or just a file name.

Loads a Windows DLL, a Linux shared library, a Mac OS X shared library or a Mac OS X framework from the given path.  
See also:

- 126.29.2 LoadPhidgetLibraryMBS(file as folderitem) as boolean
126.29.4 LoadPhidgetLinuxLibraryMBS(path as string) as boolean

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads the phidget library.

**Notes:**
Returns true on success and false on failure.
Pass in the path to a .so file.
Deprecated in plugin version 10.4.

126.29.5 LoadPhidgetWindowsDLLMBS(dllpath as string) as boolean

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads the windows dll.

**Notes:**
Returns true on success and false on failure.
Path can be an absolute, a relative or just a file name.
Deprecated in plugin version 10.4.

126.30 class PhidgetServoMBS

126.30.1 class PhidgetServoMBS

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for a phidget servo device.

**Notes:**
The PhidgetServo is a component that provides a high-level programmer interface to control a PhidgetServo device connected through a USB port.

With this component, the programmer can:

- Set the desired position for a servo motor, ranging from 0 to 180 degrees.

Subclass of the PhidgetMBS class.
126.30.2 Methods

126.30.3 Constructor

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor.
**Notes:**
On success the handle value is not zero.
The Lasterror property is set.

126.30.4 getEngaged(index as Integer) as boolean

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the engaged state of a motor. This is whether the motor is powered or not.
**Notes:**
The Lasterror property is set.

index: The motor index.

126.30.5 getMotorCount as Integer

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the number of motors supported by this controller
**Notes:** The Lasterror property is set.

126.30.6 getPosition(index as Integer) as Double

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the current position of a motor.
**Notes:**
index: The motor index.
The Lasterror property is set.
126.30.7  getPositionMax(index as Integer) as Double

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the maximum position that a motor can be set to. **Notes:**

index: The motor index.

The Lasterror property is set.

126.30.8  getPositionMin(index as Integer) as Double

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the minimum position that a motor can be set to. **Notes:**

index: The motor index.

The Lasterror property is set.

126.30.9  getServoType(index as Integer) as Integer

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the servo type of a motor. **Notes:**

The Lasterror property is set. For the value, check the PHIDGET_SERVO_* constants.

126.30.10  setEngaged(index as Integer, value as boolean)

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the engaged state of a motor. This is whether the motor is powered or not. **Notes:**

index: The motor index.

The Lasterror property is set.
126.30. **CLASS PHIDGETSERVOMBS**

### 126.30.11 setPosition(index as Integer, value as Double)

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the current position of a motor.  
**Notes:**
The Lasterror property is set.

- **index:** The motor index.  
- **position:** The motor position.

### 126.30.12 setServoParameters(index as Integer, min_us as Double, max_us as Double, degrees as Double)

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the servo parameters of a motor.  
**Notes:**
The Lasterror property is set.

- **index**  The motor index.  
- **min_us**  The minimum supported PCM in microseconds.  
- **max_us**  The maximum supported PCM in microseconds.  
- **degrees**  The degrees of rotation defined by the given PCM range.

### 126.30.13 setServoType(index as Integer, value as Integer)

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the servo type of a motor.  
**Notes:**
The Lasterror property is set.  
For the value, check the PHIDGET\_SERVO\_* constants.

### 126.30.14 Events

### 126.30.15 MotorPositionChanged(index as Integer, value as Double)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This event is called if the motor position is changed.
Notes:

With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available. Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.
126.31. **CLASS PHIDGETSPATIALEVENTDATAMBS**

126.31  **class PhidgetSpatialEventDataMBS**

126.31.1  **class PhidgetSpatialEventDataMBS**

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for event data on a spatial device.
**Notes:** Timestamped position data returned by the PhidgetSpatialMBS.SpatialData event.

126.31.2  **Properties**

126.31.3  **TimestampMicroseconds as Integer**

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The microseconds part of the Hardware timestamp.
**Notes:** (Read and Write property)

126.31.4  **TimestampSeconds as Integer**

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The seconds part of the Hardware timestamp.
**Notes:** (Read and Write property)

126.31.5  **acceleration(index as Integer) as Double**

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Acceleration data for up to 3 axes.
**Notes:**
Index from 0 to 2.
(Read and Write computed property)

126.31.6  **angularRate(index as Integer) as Double**

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Angular rate data (Gyroscope) for up to 3 axes.
**Notes:**
Index from 0 to 2.
(Read and Write computed property)
126.31.7  magneticField(index as Integer) as Double

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Magnetic field data (Compass) for up to 3 axes.
**Notes:**
Index from 0 to 2.
(Read and Write computed property)
126.32  class PhidgetSpatialMBS

126.32.1  class PhidgetSpatialMBS

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class to control the spatial phidget device.
**Notes:**
Calls specific to the Phidget Spatial. See the product manual for more specific API details, supported functionality, units, etc.
Subclass of the PhidgetMBS class.

126.32.2  Methods

126.32.3  Constructor

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constructor.
**Notes:**
On success the handle value is not zero.
Lasterror is set.

126.32.4  getAcceleration(index as Integer) as Double

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the current acceleration of an axis.
**Notes:**
index: The acceleration index.
Returns the acceleration in gs.
Lasterror is set.

126.32.5  getAccelerationAxisCount as Integer

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the number of acceleration axes supplied by this board.
126.32.6  getAccelerationMax(index as Integer) as Double

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the maximum acceleration supported by an axis.
**Notes:**
index: The acceleration index.
LastError is set.

126.32.7  getAccelerationMin(index as Integer) as Double

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the minimum acceleration supported by an axis.
**Notes:** index: The acceleration index.

126.32.8  getAngularRate(index as Integer) as Double

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the current angular rate of an axis.
**Notes:**
Returns the angular rate in degrees/second.
index: The angular rate index.
LastError is set.

126.32.9  getAngularRateMax(index as Integer) as Double

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the maximum angular rate supported by an axis.
**Notes:**
index: The angular rate index.
LastError is set.

126.32.10  getAngularRateMin(index as Integer) as Double

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the minimum angular rate supported by an axis.
**Notes:**
index: The angular rate index.
126.32. **CLASS PHIDGETSPATIALMBS**

Lasterror is set.

### 126.32.11 getCompassAxisCount as Integer

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Gets the number of compass axes supplied by this board.

**Notes:** Lasterror is set.

### 126.32.12 getDataRate as Integer

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Queries the data rate in milliseconds.

**Notes:** Lasterror is set.

### 126.32.13 getDataRateMax as Integer

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Gets the maximum supported data rate in milliseconds.

**Notes:** Lasterror is set.

### 126.32.14 getDataRateMin as Integer

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Gets the minimum supported data rate in milliseconds.

**Notes:** Lasterror is set.

### 126.32.15 getGyroAxisCount as Integer

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Gets the number of gyroscope axes supplied by this board.

**Notes:** Lasterror is set.

### 126.32.16 getMagneticField(index as Integer) as Double

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Gets the current magnetic field strenght of an axis.
**Notes:**

index: The magnetic field index.
Returns the magnetic field strength in Gauss.
Lasterror is set.

### 126.32.17  
getMagneticFieldMax(index as Integer) as Double

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the maximum magnetic field strength supported by an axis.

**Notes:**

index: The magnetic field index.
Lasterror is set.

### 126.32.18  
getMagneticFieldMin(index as Integer) as Double

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the minimum magnetic field strength supported by an axis.

**Notes:**

index: The magnetic field index.
Lasterror is set.

### 126.32.19  
resetCompassCorrectionParameters

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Resets the compass correction factors.

**Notes:**

Magnetic field data will be presented directly as reported by the sensor.
Lasterror is set.

### 126.32.20  
setCompassCorrectionParameters(magField as Double, offset0 as Double, offset1 as Double, offset2 as Double, gain0 as Double, gain1 as Double, gain2 as Double, T0 as Double, T1 as Double, T2 as Double, T3 as Double, T4 as Double, T5 as Double)

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the compass correction factors. This can be used to correcting any sensor errors, including hard and
126.32. CLASS PHIDGETSPATIALMBS

soft iron offsets and sensor error factors.

Notes:
Lasterror is set.

magField: Local magnetic field strength.
offset0: Axis 0 offset correction.
offset1: Axis 1 offset correction.
offset2: Axis 2 offset correction.
gain0: Axis 0 gain correction.
gain1: Axis 1 gain correction.
gain2: Axis 2 gain correction.
T0: Non-orthogonality correction factor 0.
T1: Non-orthogonality correction factor 1.
T2: Non-orthogonality correction factor 2.
T3: Non-orthogonality correction factor 3.
T4: Non-orthogonality correction factor 4.
T5: Non-orthogonality correction factor 5.

126.32.21 setDataRate(milliseconds as Integer)

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Sets the data rate in milliseconds.

Notes:
Lasterror is set.
Note that data at rates faster then 8ms will be delivered to events as an array of data.

126.32.22 zeroGyro

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Zeroes the gyroscope.

Notes:
This takes about two seconds and the gyro zxes will report 0 during the process.
This should only be called when the board is not moving.

Lasterror is set.
126.32.23 Events

126.32.24 SpatialData(data() as PhidgetSpatialEventDataMBS, dataCount as Integer)

MBS USB Plugin, Plugin Version: 11.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This event is called when new data has been received.

**Notes:**
This is called at getDataRate, up to 8ms, for faster than 8ms data, multiple sets of data are supplied in a single event.
Lasterror is set.
126.33. **CLASS PHIDGETSTEPPERMBS**

**126.33 class PhidgetStepperMBS**

126.33.1 **class PhidgetStepperMBS**

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A class for a phidget stepper device.
**Notes:**
On the time the plugin was written the phidget documentation did not include this class so the documentation here is limited.
Subclass of the PhidgetMBS class.

**126.33.2 Methods**

**126.33.3 Constructor**

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constructor.
**Notes:** On success the handle value is not zero.

**126.33.4 getAcceleration(index as Integer) as Double**

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the acceleration value.
**Notes:** The Lasterror property is set.

**126.33.5 getAccelerationMax(index as Integer) as Double**

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the maximum acceleration supported by a motor.
**Notes:**
index: The motor index.
The Lasterror property is set.
126.33.6 getAccelerationMin(index as Integer) as Double

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the minimum acceleration supported by a motor.
**Notes:**
index: The motor index.
The Lasterror property is set.

126.33.7 getCurrent(index as Integer) as Double

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the current value.
**Notes:** The Lasterror property is set.

126.33.8 getCurrentLimit(index as Integer) as Double

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the minimum position that a motor can go to.
**Notes:**
index: The motor index.
The Lasterror property is set.

126.33.9 getCurrentMax(index as Integer) as Double

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the maximum current limit.
**Notes:**
index: The motor index.
The Lasterror property is set.
126.33.10  getCurrentMin(index as Integer) as Double

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the minimum current limit.
**Notes:**
index: The motor index.

The Lasterror property is set.

126.33.11  getCurrentPosition(index as Integer) as int64

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the current position of a motor.
**Notes:** The Lasterror property is set.

126.33.12  getEngaged(index as Integer) as boolean

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the engaged state of a motor. This is whether the motor is powered or not.
**Notes:**
index: The motor index.

The Lasterror property is set.

126.33.13  getInputCount as Integer

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the number of digital inputs supported by this board.
**Notes:** The Lasterror property is set.

126.33.14  getInputState(index as Integer) as boolean

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the state of a digital input.
**Notes:** The Lasterror property is set.
126.33.15 getMotorCount as Integer

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the number of motors supported by this controller. **Notes:** The Lasterror property is set.

126.33.16 getPositionMax(index as Integer) as int64

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the maximum velocity that can be set for a motor. **Notes:** The Lasterror property is set.

126.33.17 getPositionMin(index as Integer) as int64

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the minimum position that a motor can go to. **Notes:** The Lasterror property is set.

126.33.18 getStopped(index as Integer) as boolean

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the stopped state of a motor. This is true when the motor is not moving and there are no outstanding commands. **Notes:**

- index: The motor index.

The Lasterror property is set.

126.33.19 getTargetPosition(index as Integer) as int64

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the last set target position of a motor. **Notes:**

- index: The motor index.

The Lasterror property is set.
126.33.20 getVelocity(index as Integer) as Double

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the current velocity of a motor.

**Notes:**

index: The motor index.

The Lasterror property is set.

126.33.21 getVelocityLimit(index as Integer) as Double

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the last set velocity limit for a motor.

**Notes:**

index: The motor index.

The Lasterror property is set.

126.33.22 getVelocityMax(index as Integer) as Double

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the minimum velocity that can be set for a motor.

**Notes:**

index: The motor index.

The Lasterror property is set.

126.33.23 getVelocityMin(index as Integer) as Double

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the minimum velocity that can be set for a motor.

**Notes:** The Lasterror property is set.
126.33.24  setAcceleration(index as Integer, value as Double)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the acceleration. **Notes:** The Lasterror property is set.

126.33.25  setCurrentLimit(index as Integer, value as Double)

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the current limit for a motor. **Notes:**

index: The motor index.

The Lasterror property is set.

126.33.26  setCurrentPosition(index as Integer, value as int64)

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the current position of a motor. **Notes:**

This will not move the motor, just update the position value.

index: The motor index.

value: The position.

The Lasterror property is set.

126.33.27  setEngaged(index as Integer, value as boolean)

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the engaged state of a motor. This is whether the motor is powered or not. **Notes:**

index: The motor index.

value: The engaged state. Possible values are true and false.

The Lasterror property is set.
126.33.28  setTargetPosition(index as Integer, value as int64)

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the target position of a motor.
**Notes:**

index: The motor index.

The Lasterror property is set.

126.33.29  setVelocityLimit(index as Integer, value as Double)

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the velocity limit for a motor.
**Notes:**

index: The motor index.

The Lasterror property is set.

126.33.30  Events

126.33.31  CurrentChanged(index as Integer, value as Double)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The current value changed.
**Notes:**

With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

126.33.32  InputChanged(index as Integer, value as Integer)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The input value changed.
**Notes:**

With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available.
Older plugins execute the event on the thread where the event was created which may lead into problems
described in the ThreadMBS class documentation.

### 126.33.33 ServoChanged(index as Integer, value as int64)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The servo value changed.

**Notes:**
With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available. 
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.

### 126.33.34 VelocityChanged(index as Integer, value as Double)

MBS USB Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This event is called when the velocity changes.

**Notes:**
With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available. 
Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.
126.34  class PhidgetTemperatureSensorMBS

126.34.1  class PhidgetTemperatureSensorMBS

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for a phidget temperature sensor.
**Notes:**
The PhidgetTemperatureSensor is a component that provides a high-level programmer interface to control
a PhidgetTemperatureSensor device connected through a USB port.

With this component, the programmer can:

- Read the temperature of Thermocouple device.
- Read cold junction temperature.
- Get notification of temperature change.

Subclass of the PhidgetMBS class.

126.34.2  Methods

126.34.3  Constructor

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constructor.
**Notes:** On success the handle value is not zero.

126.34.4  getAmbientTemperature as Double

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the ambient (board) temperature.
**Notes:** The Lasterror property is set.

126.34.5  getAmbientTemperatureMax as Double

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the maximum temperature that the ambient onboard temperature sensor can measure.
**Notes:** The Lasterror property is set.
**126.34.6 getAmbientTemperatureMin as Double**

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the minimum temperature that the ambient onboard temperature sensor can measure.
**Notes:** The Lasterror property is set.

**126.34.7 getPotential(index as Integer) as Double**

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the potential value for the temperature sender with the given index.
**Notes:** The Lasterror property is set.

**126.34.8 getPotentialMax(index as Integer) as Double**

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the maximum potential that a thermocouple input can measure.
**Notes:** The Lasterror property is set.

**126.34.9 getPotentialMin(index as Integer) as Double**

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the minimum potential that a thermocouple input can measure.
**Notes:** The Lasterror property is set.

**126.34.10 getTemperature(index as Integer) as Double**

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the current temperature in Celsius or Fahrenheit (depending on UseImperial property).
**Notes:**
Index = 0 returns the temperature of the cold junction.
Index = 1 returns the temperature of the thermocouple.

Note that this value defaults to -500. Applications that do not wish to see this value should use Change Handlers instead of polling the device for data.

The Lasterror property is set.
126.34.11  getTemperatureChangeTrigger(index as Integer) as Double

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the amount of change that should exist between the last reported value and the current value before an TemperatureChange event is fired.
**Notes:** The Lasterror property is set.

126.34.12  getTemperatureInputCount as Integer

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the number of thermocouple inputs supported by this board.
**Notes:** The Lasterror property is set.

126.34.13  getTemperatureMax(index as Integer) as Double

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the maximum temperature that can be measured by a thermocouple input. This depends on the type of thermocouple attached.
**Notes:** The Lasterror property is set.

126.34.14  getTemperatureMin(index as Integer) as Double

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the minimum temperature that can be measured by a thermocouple input.
**Notes:**
This depends on the type of thermocouple attached.
The Lasterror property is set.

126.34.15  getThermocoupleType(index as Integer) as Integer

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the type of thermocouple set to be at a thermocouple input. By default this is K-Type.
**Notes:**
The Lasterror property is set.
type: The thermocouple type.
126.34.16  setTemperatureChangeTrigger(index as Integer, value as Double)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Specifies the amount of change that should exist between the last reported value and the current value before an TemperatureChange event is fired. **Notes:** The Lasterror property is set.

126.34.17  setThermocoupleType(index as Integer, value as Integer)

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the type of thermocouple plugged into a thermocouple input. By default this is K-Type. **Example:**

dim t as PhidgetTemperatureSensorMBS

    const PHIDGET_TEMPERATURE_SENSOR_K_TYPE = 1 // K-Type thermocouple
    const PHIDGET_TEMPERATURE_SENSOR_J_TYPE = 2 // J-Type thermocouple
    const PHIDGET_TEMPERATURE_SENSOR_E_TYPE = 3 // E-Type thermocouple
    const PHIDGET_TEMPERATURE_SENSOR_T_TYPE = 4 // T-Type thermocouple

    t.setThermocoupleType 0, PHIDGET_TEMPERATURE_SENSOR_T_TYPE

**Notes:** The Lasterror property is set.

126.34.18  Events

126.34.19  TemperatureChanged(index as Integer, value as Double)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The temperatur changed. **Notes:**

Index: Index of the Temperature Sensor firing the Event
Value: Value of the Temperature Sensor

With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available. Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.
126.34.20 Constants

126.34.21 PHIDGET_TEMPERATURE_SENSOR_E_TYPE = 3

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the sensor type constants.  
**Notes:** E-Type thermocouple

126.34.22 PHIDGET_TEMPERATURE_SENSOR_J_TYPE = 2

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the sensor type constants.  
**Notes:** J-Type thermocouple

126.34.23 PHIDGET_TEMPERATURE_SENSOR_K_TYPE = 1

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the sensor type constants.  
**Notes:** K-Type thermocouple

126.34.24 PHIDGET_TEMPERATURE_SENSOR_T_TYPE = 4

MBS USB Plugin, Plugin Version: 11.0. **Function:** One of the sensor type constants.  
**Notes:** T-Type thermocouple
126.35  class PhidgetTextLCDMBS

126.35.1  class PhidgetTextLCDMBS

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for the phidget text LCD.
**Notes:**
The PhidgetTextLCD is a component that provides a high-level programmer interface to control a Phidget-
TextLCD device connected through a USB port.

With this component, the programmer can:

- Display text on a PhidgetTextLCD module.

Subclass of the PhidgetMBS class.

126.35.2  Methods

126.35.3  Constructor

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constructor.
**Notes:**
On success the handle value is not zero.
Lasterror is set.

126.35.4  getBacklight as boolean

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the state of the backlight.
**Notes:** The Lasterror property is set.

126.35.5  getBrightness as Integer

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the brightness of the backlight. Not supported on all TextLCDs
**Notes:**
The backlight brightness has a range of 0 to 255.
The Lasterror property is set.

126.35.6 getColumnCount as Integer

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the number of columns per supported by this display.
**Notes:** The Lasterror property is set.

126.35.7 getContrast as Integer

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the contrast value from 0-255.
**Notes:**
Note that this defaults to 0.
The Lasterror property is set.

126.35.8 getCursorBlink as Integer

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Determines if the cursor’s blinking is on or off.
**Notes:**
Note that this defaults to False.
The Lasterror property is set.

126.35.9 getCursorOn as Integer

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Determines if the cursor is on or off.
**Notes:**
Note that this defaults to False.
The Lasterror property is set.
126.35.10  getRowCount as Integer

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the number of rows supported by this display.
**Notes:** The Lasterror property is set.

126.35.11  getScreen as Integer

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the active screen.
**Notes:** Lasterror is set.

126.35.12  getScreenCount as Integer

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the number of Display supported by this TextLCD.
**Notes:** Lasterror is set.

126.35.13  getScreenSize as Integer

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the screen size.
**Notes:**
See PHIDGET_TEXTLCD_SCREEN_* constants.
Lasterror is set.

126.35.14  initialize

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Initializes the active screen.
**Notes:**
Only supported on the TextLCD adapter.
This should be called if a screen is attached after power up, or to clear the screen after setting the size.
Lasterror is set.
126.35.15  setBacklight(backlightState as boolean)

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the state of the backlight.
**Notes:** The Lasterror property is set.

126.35.16  setBrightness(Brightness as Integer)

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the brightness of the backlight. Not supported on all TextLCDs
**Notes:**
The backlight brightness has a range of 0 to 255.
The Lasterror property is set.

126.35.17  setContrast(Contrast as Integer)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the contrast from 0-255.
**Notes:** The Lasterror property is set.

126.35.18  setCursorBlink(CursorBlink as Integer)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the cursor’s blinking on or off.
**Notes:** The Lasterror property is set.

126.35.19  setCursorOn(CursorOn as Integer)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the cursor on or off.
**Notes:**
This cursor is displayed at the last location that was changed.

The Lasterror property is set.
**126.35.20 setCustomCharacter(index as Integer, val1 as Integer, val2 as Integer)**

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets a custom character.

**Notes:**
With existing hardware, there is space for 8 custom characters: Index can range from 8 to 15.
Each character is described by a set of integers.
For more information, have a look at the TextLCD example in the examples.zip for Phidget21.

The Lasterror property is set.

**126.35.21 setDisplayCharacter(index as Integer, column as Integer, character as Integer)**

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets a single character on the display.

**Notes:**
index: The row index.
column: The column index.
character: The character to display.

The Lasterror property is set.

**126.35.22 setDisplayString(row as Integer, displayString as string)**

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the text to display on a particular row of the display.

**Notes:**
Row: Row to set on display
DisplayString: String to set on display. The text will be clipped at the right edge of the display.
The Lasterror property is set.

**126.35.23 setScreen(screenIndex as Integer)**

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the active screen.

**Notes:**
This is the screen that all subsequent API calls will apply to. Lasterror is set.

126.35.24  setScreenSize(screenSize as Integer)

MBS USB Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the active screen size. Only supported on the TextLCD Adapter. **Notes:** Lasterror is set.

126.35.25  Constants

126.35.26  PHIDGETTEXTLCD_SCREEN_1x16 = 4

MBS USB Plugin, Plugin Version: 11.1. **Function:** One of the screen size constants for the Phidget TextLCD Adapter. **Notes:** 1 row, 16 column screen

126.35.27  PHIDGETTEXTLCD_SCREEN_1x40 = 10

MBS USB Plugin, Plugin Version: 11.1. **Function:** One of the screen size constants for the Phidget TextLCD Adapter. **Notes:** 1 row, 40 column screen

126.35.28  PHIDGETTEXTLCD_SCREEN_1x8 = 2

MBS USB Plugin, Plugin Version: 11.1. **Function:** One of the screen size constants for the Phidget TextLCD Adapter. **Notes:** 1 row, 8 column screen

126.35.29  PHIDGETTEXTLCD_SCREEN_2x16 = 5

MBS USB Plugin, Plugin Version: 11.1. **Function:** One of the screen size constants for the Phidget TextLCD Adapter. **Notes:** 2 row, 16 column screen
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126.35.30 PHIDGET_TEXTLCD_SCREEN_2x20 = 7

MBS USB Plugin, Plugin Version: 11.1. **Function:** One of the screen size constants for the Phidget TextLCD Adapter.
**Notes:** 2 row, 20 column screen

126.35.31 PHIDGET_TEXTLCD_SCREEN_2x24 = 9

MBS USB Plugin, Plugin Version: 11.1. **Function:** One of the screen size constants for the Phidget TextLCD Adapter.
**Notes:** 2 row, 24 column screen

126.35.32 PHIDGET_TEXTLCD_SCREEN_2x40 = 11

MBS USB Plugin, Plugin Version: 11.1. **Function:** One of the screen size constants for the Phidget TextLCD Adapter.
**Notes:** 2 row, 40 column screen

126.35.33 PHIDGET_TEXTLCD_SCREEN_2x8 = 3

MBS USB Plugin, Plugin Version: 11.1. **Function:** One of the screen size constants for the Phidget TextLCD Adapter.
**Notes:** 2 row, 8 column screen

126.35.34 PHIDGET_TEXTLCD_SCREEN_4x16 = 6

MBS USB Plugin, Plugin Version: 11.1. **Function:** One of the screen size constants for the Phidget TextLCD Adapter.
**Notes:** 4 row, 16 column screen

126.35.35 PHIDGET_TEXTLCD_SCREEN_4x20 = 8

MBS USB Plugin, Plugin Version: 11.1. **Function:** One of the screen size constants for the Phidget TextLCD Adapter.
**Notes:** 4 row, 20 column screen
126.35. PHIDGETTEXTLCDMBS

126.35.36 PHIDGET_TEXTLCD_SCREEN_4x40 = 12

MBS USB Plugin, Plugin Version: 11.1. **Function:** One of the screen size constants for the Phidget TextLCD Adapter.
**Notes:** 4 row, 40 column screen (special case, requires both screen connections)

126.35.37 PHIDGET_TEXTLCD_SCREEN_NONE = 1

MBS USB Plugin, Plugin Version: 11.1. **Function:** One of the screen size constants for the Phidget TextLCD Adapter.
**Notes:** no screen attached

126.35.38 PHIDGET_TEXTLCD_SCREEN_UNKNOWN = 13

MBS USB Plugin, Plugin Version: 11.1. **Function:** One of the screen size constants for the Phidget TextLCD Adapter.
**Notes:** Unknown
126.36 class PhidgetTextLEDMBS

126.36.1 class PhidgetTextLEDMBS

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for a phidget text LED.
**Notes:**
On the time the plugin was written the phidget documentation did not include this class so the documentation here is limited.
Subclass of the PhidgetMBS class.

126.36.2 Methods

126.36.3 Constructor

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor.
**Notes:** On success the handle value is not zero.

126.36.4 getBrightness as Integer

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the current brightness.
**Notes:** The Lasterror property is set.

126.36.5 getColumnCount as Integer

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the number of columns per supported by this display.
**Notes:** The Lasterror property is set.

126.36.6 getRowCount as Integer

MBS USB Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the number of rows supported by this display.
**Notes:** The Lasterror property is set.
126.36.7 setBrightness(Brightness as Integer)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the brightness. **Notes:** The Lasterror property is set.

126.36.8 setDisplayString(row as Integer, displayString as string)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the display string for the given row. **Notes:** The Lasterror property is set.
126.37 class PhidgetWeightSensorMBS

126.37.1 class PhidgetWeightSensorMBS

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for a phidget weight sensor.
**Notes:**
On the time the plugin was written the phidget documentation did not include this class so the documentation here is limited.
Subclass of the PhidgetMBS class.

126.37.2 Methods

126.37.3 Constructor

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor.
**Notes:**
On success the handle value is not zero.
The Lasterror property is set.

126.37.4 getWeight as Double

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the current weight.
**Notes:** The Lasterror property is set.

126.37.5 getWeightChangeTrigger as Double

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the amount of change that should exist between the last reported value and the current value before an WeightChange event is fired.
**Notes:** The Lasterror property is set.

126.37.6 setWeightChangeTrigger(value as Double)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the amount of change that should exist between the last reported value and the current value before an
WeightChange event is fired.

**Notes:** The Lasterror property is set.

### 126.37.7 Events

### 126.37.8 WeightChanged(value as Double)

MBS USB Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The weight changed.

**Notes:**

With plugin version 8.5 and newer this event is executed on the main thread of your application to avoid crashes with REALbasic. Events are buffered until you the main thread has time available. Older plugins execute the event on the thread where the event was created which may lead into problems described in the ThreadMBS class documentation.
Chapter 127

PHP

127.1 class PHPMBS

127.1.1 class PHPMBS

Notes: For Linux and Mac OS X the PHP library is included in the plugin.
Plugin version 15.3 is built for PHP 5.6.12.

127.1.2 Methods

127.1.3 CallbackArgumentCount as Integer

MBS Tools Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns the number of arguments to the callback event.
Notes: Returns 0 on any error.

127.1.4 CallbackArgumentDouble(index as Integer) as Double

MBS Tools Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Converts the parameter with the given index to double and returns it.
Notes: Returns 0 on any error.
127.1.5 CallbackArgumentInteger(index as Integer) as Integer

MBS Tools Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Converts the parameter with the given index to integer and returns it. **Notes:** Returns 0 on any error.

127.1.6 CallbackArgumentString(index as Integer) as string

MBS Tools Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Converts the parameter with the given index to string and returns it. **Notes:** Returns an empty string on any error.

127.1.7 Constructor

MBS Tools Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Initializes the PHP engine. **Example:**

```vbnet
const path="php.dll"
call PHPMBS.LoadLibrary(path) // load the dll
dim p as new PHPMBS // initialize
if p.inited then // worked?
    messagebox "ok"
end if
```

**Notes:** In older plugins this work was done by the method Init.

127.1.8 Execute(code as string) as string

MBS Tools Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Runs php code. **Example:**

```vbnet
dim p as PHPMBS
p=new PHPMBS
MsgBox p.Execute("echo ""Hello"";")
```
127.1. CLASS PHPMBS

**Notes:** Same as run, but does not call the write event, but return the whole output as one big string.

127.1.9  **existsVariable(name as string) as boolean**

MBS Tools Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Checks whether variable exists or not. **Notes:** getVariable returns "" for variables which don’t exist, but your variable may just be an empty string so this function lets you know whether the variable actually exists.

127.1.10  **getVariable(name as string) as string**

MBS Tools Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns value of the variable with the given name. **Notes:** Returns an empty string if the variable name is wrong.

127.1.11  **INI as String**

MBS Tools Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The PHP Ini to use. **Notes:** Must be called before initialization.

Default is:
- html_errors=0
- register_argc_argv=1
- implicit_flush=1
- output_buffering=0
- max_execution_time=0
- max_input_time=-1
(Read and Write computed property)

127.1.12  **LoadExtension(Path as string) as boolean**

MBS Tools Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads an extension. **Notes:** Returns true on success. Will write errors to stderr which you see in console apps.
127.1.13 LoadLibrary(file as folderitem) as boolean

MBS Tools Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads the PHP shared library.
**Notes:**
Loads a Windows DLL, a Linux shared library, a Mac OS X shared library from the given path.
Returns true on success and false on any error.
It may be possible that your PHP library is not compatible with this way of loading which results in crashes.
See also:
- 127.1.14 LoadLibrary(path as string) as boolean

127.1.14 LoadLibrary(path as string) as boolean

MBS Tools Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads the PHP shared library.
**Notes:**
Loads a Windows DLL, a Linux shared library, a Mac OS X shared library from the given path.
Returns true on success and false on any error.
It may be possible that your PHP library is not compatible with this way of loading which results in crashes.
See also:
- 127.1.13 LoadLibrary(file as folderitem) as boolean

127.1.15 Run(code as string) as boolean

**Example:**

```
dim php as PHPMBS // your php object

if php.run("echo 1+2;") then
    // ok
else
    // failed
end if
```

**Notes:**
127.1.  CLASS PHPMBS

Returns true on success.
Returns false on any compilation error or the library is not loaded/available.

You need to wrap your code into exception handlers as the plugin will ignore all exceptions and if you want to find errors, you need to catch them yourself.

127.1.16  setVariable(name as string, value as string)

MBS Tools Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the variable with the given name to the given value.

127.1.17  Properties

127.1.18  Inited as Boolean

MBS Tools Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether the PHP library has been initialized.
**Notes:**
Returns true on success.
(Read only property)

127.1.19  LastErrorFile as String

MBS Tools Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The last error file name.
**Notes:** (Read and Write property)

127.1.20  LastErrorLine as Integer

MBS Tools Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The last error line.
**Notes:** (Read and Write property)
127.1.21 LastErrorMessage as String

MBS Tools Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The last error message.
**Notes:** (Read and Write property)

127.1.22 LastExitStatus as Integer

MBS Tools Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The last exit status.
**Notes:** (Read and Write property)

127.1.23 Loaded as Boolean

MBS Tools Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether the PHP library has been loaded.
**Notes:**
Returns true on success.
(Read only property)

127.1.24 UseUTF8 as Boolean

MBS Tools Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether to use UTF-8 text encoding.
**Notes:**
By default we use ISO Latin1 encoding.
But you can ask for passing UTF-8 to/from PHP.
If enabled and a text is passed back from PHP which is not valid UTF-8, we still returned it marked as
Latin1.
(Read and Write property)

127.1.25 Events

127.1.26 Callback(ArgumentCount as Integer) as Variant

MBS Tools Plugin, Plugin Version: 12.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The event called when you call the php function callReaIbasic()
127.1. CLASS PHPMBS

Notes:
Return a variant with double, float, string or integer value.
Parameters are available using CallbackArgument* functions.

127.1.27 LogMessage(message as string)
Notes: Normally written by apache to the log files.

127.1.28 Write(data as string)
Notes:
This text is normally the result, e.g. the content of the website the php code produces.
If php.ini file is used, you need to disable the output_buffering option to have this callback working.
Chapter 128

Pictures Import and Export

128.1  Globals

128.1.1  BMPStringtoPictureMBS(data as string) as picture

Example:
```
dim p as Picture = LogoMBS(500)
dim s as string = p.BMPDataMBS
dim q as Picture = BMPStringtoPictureMBS(s)
window1Backdrop = q
```

Notes:
This function is endian safe and supports 1, 4, 8, 16, 24, 32 bit BMP images.
For 32bit images the alpha value is ignored.
Returns nil on any error.
Only uncompressed BMP files are supported.

128.1.2  Split1BitFileMBS(f as folderitem, fc as folderitem, fm as folderitem, fy as folderitem, fk as folderitem, width as Integer, height as Integer, CallbackTarget as object, CacheSizeRead as Integer, CacheSizeWrite as Integer) as Integer

Notes:

Source file has 1 bit for each channel.
Error code is returned which is 0 for no error.
CacheSize can be set to a value greater than 0. And it may make the process faster or slower depending on what you do.

CallbackTarget can be nil or must be an object with a method with the following declaration: "Progress(RowIndex as Integer, RowCount as Integer)"

Errorcodes:

1   not used
2   Failed to open f
3   Failed to open fc
4   Failed to open fm
5   Failed to open fy
6   Failed to open fk
7   Width<1
8   Height<1
9   Allocating read buffer failed
10  Allocating write buffer failed for c
11  Allocating write buffer failed for m
12  Allocating write buffer failed for y
13  Allocating write buffer failed for k
14  Read failed
15  Write failed for c
16  Write failed for m
17  Write failed for y
18  Write failed for k

See also:

- 128.1.3 Split1BitFileMBS(f as folderitem, fc as folderitem, fm as folderitem, fy as folderitem, fk as folderitem, width as Integer, height as Integer, CallbackTarget as object, CacheSizeRead as Integer, CacheSizeWrite as Integer, ReadLines as Integer, WriteLines as Integer) as Integer
128.1.3  Split1BitFileMBS(f as folderitem, fc as folderitem, fm as folderitem, 
fy as folderitem, fk as folderitem, width as Integer, height as Integer, 
CallbackTarget as object, CacheSizeRead as Integer, CacheSizeWrite 
as Integer, ReadLines as Integer, WriteLines as Integer) as Integer

MBS Images Plugin, Plugin Version: 6.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Splits a one bit CMYK file into different files.

**Notes:**
Source file has 1 bit for each channel.
Error code is returned which is 0 for no error.
CacheSize can be set to a value greater than 0. And it may make the process faster or slower depending on 
what you do.

CallbackTarget can be nil or must be an object with a method with the following declaration: "Progress(RowIndex 
as Integer, RowCount as Integer)"

ReadLines and WriteLines define how many rows to read in one I/O operation.

**Error codes:**

1  not used
2  Failed to open f
3  Failed to open fc
4  Failed to open fm
5  Failed to open fy
6  Failed to open fk
7  Width<1
8  Height<1
9  Allocating read buffer failed
10 Allocating write buffer failed for c
11 Allocating write buffer failed for m
12 Allocating write buffer failed for y
13 Allocating write buffer failed for k
14 Read failed
15 Write failed for c
16 Write failed for m
17 Write failed for y
18 Write failed for k
128.2 class PNGOptimizerMBS

128.2.1 class PNGOptimizerMBS

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This class is a wrapper for the OptiPNG command line tool.

**Example:**

```vba
dim p as Picture = LogoMBS(500)

dim fi as FolderItem = SpecialFolder.Desktop.Child("test unoptimized.png")
if not fi.SaveAsPNGMBS(p,0) then
    MsgBox "Failed to save PNG file."
    Return
end if

dim fo as FolderItem = SpecialFolder.Desktop.Child("test optimized.png")
fo.Delete // delete if existed before

dim o as new PNGOptimizerMBS

o.YieldTicks=10 // give time for other threads
o.InputFile=fi
o.OutputFile=fo

if o.Optimize then
    MsgBox "OK: Saved " + str(o.BytesSaved)
    fo.Launch
else
    MsgBox "failed"
end if
```

**Notes:**

OptiPNG: Advanced PNG optimization program.
http://optipng.sourceforge.net/

Copyright (C) 2001-2008 Cosmin Truta.
OptiPNG is open-source software, and is distributed under the same licensing and warranty terms as libpng.

PNG optimization is described in detail in the PNG-Tech article "A guide to PNG optimization"
http://www.cs.toronto.edu/~cosmin/pngtech/optipng.html

The idea of running multiple compression trials with different PNG filters and zlib parameters is inspired from the pngcrush program by Glenn Randers-Pehrson.
The idea of performing lossless image reductions is inspired from the pngrewrite program by Jason Summers.

128.2.2 Methods

128.2.3 Optimize as boolean

Notes: Returns true on success and false on failure.

128.2.4 Properties

128.2.5 BytesSaved as Integer

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: After the optimization this property shows how many bytes were saved.
Notes: (Read and Write property)

128.2.6 Force as Boolean

Notes: If the input image has a digital signature, the library will not optimize the file unless force=true.
(Read and Write property)
128.2.7  full as Boolean

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to produce a full report on IDAT (might reduce speed).
**Notes:** (Read and Write property)

128.2.8  InputFile as Folderitem

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The file to process.
**Notes:** (Read and Write property)

128.2.9  interlace as Integer

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The interlace type (0-1).
**Notes:** (Read and Write property)

128.2.10 KeepBackup as Boolean

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to keep a backup of the modified files.
**Notes:**
If the file exists and KeepBackup=false an error is reported. If you set KeepBackup=True the old file is renamed.
(Read and Write property)

128.2.11  NoBitDepthReduction as Boolean

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to not do a bit depth reduction.
**Notes:**
Reducing the bit depth of the image data can reduce the file size.
(Read and Write property)
128.2.12 NoColorTypeReduction as Boolean

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to not do a color type reduction.

**Notes:**

If your PNG file has only 256 colors in use, the optimizer can use a color palette to save space.
(Read and Write property)

128.2.13 NoIDATRecompression as Boolean

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to not recompress the image data.

**Notes:** (Read and Write property)

128.2.14 NoPaletteReduction as Boolean

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to not reduce the palette.

**Notes:**

If not all colors are used, the palette can be reduced in its size.
(Read and Write property)

128.2.15 OptimizationLevel as Integer

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The optimization level.

**Notes:**

A value between 0 and 7.
Default is 2.
(Read and Write property)

128.2.16 OutputFile as Folderitem


**Notes:** (Read and Write property)
128.2.17 Preserve as Boolean

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to preserve file attributes if possible. **Notes:** (Read and Write property)

128.2.18 simulate as Boolean

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the optimization runs only in simulation mode. **Notes:** No file is written in simulation mode. (Read and Write property)

128.2.19 YieldTicks as Integer

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** How much time is given back to REALbasic for other ticks.  
**Example:**

```plaintext
dim p as new PNGOptimizerMBS
p.YieldTicks=6 // only use 1/10th of a second
```

**Notes:** If value is greater than zero, the application will yield to another RB thread after the given number of ticks have passed. 60 ticks are one second. Using a small value can slow down processing a lot while a big value keeps your application not responding to mouse clicks. If you use this property with e.g. 6 as the value, you may also want to use this method in a thread so you can handle mouse events or let REALbasic redraw a progressbar. (Read and Write property)

128.2.20 Events

128.2.21 Log(message as string)

MBS Images Plugin, Plugin Version: 8.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event to output a message to the log file. **Notes:** You may want to show that to your advantaged users.
128.2.22 Panic(message as string)

MBS Images Plugin, Plugin Version: 10.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Called if something really bad happen and the app needs to quit.

128.2.23 Progress(index as Integer, count as Integer)

MBS Images Plugin, Plugin Version: 8.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event called for reporting ongoing process in the trials. **Notes:** The library will try several PNG settings and report progress so you can update a progress bar.

128.2.24 ProgressBegin

MBS Images Plugin, Plugin Version: 8.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This event is called before the library starts to optimize. **Notes:** You may want to show a progress dialog here.

128.2.25 ProgressEnd

MBS Images Plugin, Plugin Version: 8.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This event is called after the library finished. **Notes:** You may want to hide your progress dialog here.
Chapter 129

PNG

129.1  Globals

129.1.1  PictureToPNGStringMBS(pic as picture, gamma as single = 0.0) as string

MBS Images Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Saves a picture to a PNG string.

**Notes:**
If the picture has no mask, no alpha channel is written to the file. Returns "" on any error.

The gamma parameter defines what gamma correction is applied:
- positive value: use the value as the gamma correction
- zero: use default value (or value saved in file itself)
- negative value: do not correct gamma

See also:

- 129.1.2 PictureToPNGStringMBS(pic as picture, gamma as single, Interlace as Boolean, FilterType as Integer) as string 17708

- 129.1.3 PictureToPNGStringMBS(pic as picture, mask as picture, gamma as single = 0.0) as string 17708

- 129.1.4 PictureToPNGStringMBS(pic as picture, mask as picture, gamma as single, Interlace as Boolean, FilterType as Integer) as string 17709
129.1.2 PictureToPNGStringMBS(pic as picture, gamma as single, Interlace as Boolean, FilterType as Integer) as string


Notes:
If the picture has no mask, no alpha channel is written to the file. Colors must be an array with 256 values defining the palette.

Returns true on success and false on failure.

The gamma parameter defines what gamma correction is applied:
- positive value: use the value as the gamma correction
- zero: use default value (or value saved in file itself)
- negative value: do not correct gamma

If Interlace is true the Adam7 interlacing is used. FilterType specifies the filter:

```plaintext
const PNG_NO_FILTERS   = 0
const PNG_FILTER_NONE  = 8
const PNG_FILTER_SUB   = 16
const PNG_FILTER_UP    = 32
const PNG_FILTER_AVG   = 64
const PNG_FILTER_PAETH = 128
const PNG_FILTER_ALL   = 248
```

See also:
- 129.1.1 PictureToPNGStringMBS(pic as picture, gamma as single = 0.0) as string
- 129.1.3 PictureToPNGStringMBS(pic as picture, mask as picture, gamma as single = 0.0) as string
- 129.1.4 PictureToPNGStringMBS(pic as picture, mask as picture, gamma as single, Interlace as Boolean, FilterType as Integer) as string

129.1.3 PictureToPNGStringMBS(pic as picture, mask as picture, gamma as single = 0.0) as string


Notes:
Returns "" on any error.

It uses the mask passed. If nil, no alpha channel is written to the file.
The mask from the picture is ignored.

The gamma parameter defines what gamma correction is applied:
positive value: use the value as the gamma correction
zero: use default value (or value saved in file itself)
negative value: do not correct gamma

See also:

- 129.1.1 PictureToPNGStringMBS(pic as picture, gamma as single = 0.0) as string 17707
- 129.1.2 PictureToPNGStringMBS(pic as picture, gamma as single, Interlace as Boolean, FilterType as Integer) as string 17708
- 129.1.4 PictureToPNGStringMBS(pic as picture, mask as picture, gamma as single, Interlace as Boolean, FilterType as Integer) as string 17709

129.1.4 PictureToPNGStringMBS(pic as picture, mask as picture, gamma as single, Interlace as Boolean, FilterType as Integer) as string

MBS Images Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Saves a picture to a PNG string.

**Notes:**
Returns "" on any error.

It uses the mask passed. If nil, no alpha channel is written to the file.
The mask from the picture is ignored.

The gamma parameter defines what gamma correction is applied:
positive value: use the value as the gamma correction
zero: use default value (or value saved in file itself)
negative value: do not correct gamma

If Interlace is true the Adam7 interlacing is used.
FilterType specifies the filter:

See also:

- 129.1.1 PictureToPNGStringMBS(pic as picture, gamma as single = 0.0) as string 17707
- 129.1.2 PictureToPNGStringMBS(pic as picture, gamma as single, Interlace as Boolean, FilterType as Integer) as string 17708
const PNG_NO_FILTERS = 0
const PNG_FILTER_NONE = 8
const PNG_FILTER_SUB = 16
const PNG_FILTER_UP = 32
const PNG_FILTER_AVG = 64
const PNG_FILTER_PAETH = 128
const PNG_FILTER_ALL = 248

• 129.1.3 PictureToPNGStringMBS(pic as picture, mask as picture, gamma as single = 0.0) as string

129.1.5 PNGStringToPictureMBS(data as string, gamma as single = 0.0, AllowDamaged as boolean = false) as picture

**Notes:**
If the picture has an alpha channel the returned picture will have a mask.

Returns picture on success and nil on failure.

The gamma parameter defines what gamma correction is applied:
positive value: use the value as the gamma correction
zero: use default value (or value saved in file itself)
negative value: do not correct gamma

AllowDamaged: Whether to allow damaged PNG files to return a part of the image as picture.

129.1.6 PNGStringToPNGPictureMBS(data as string, gamma as single = 0.0, AllowDamaged as boolean = false) as PNGPictureMBS

**Notes:**
Returns PNGPictureMBS object on success and nil on failure.

The gamma parameter defines what gamma correction is applied:
positive value: use the value as the gamma correction
zero: use default value (or value saved in file itself)
negative value: do not correct gamma
AllowDamaged: Whether to allow damaged PNG files to return a part of the image as picture.

129.2   class PNGpictureMBS

129.2.1   class PNGpictureMBS

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** A class for a PNG picture.

**Notes:** Based on LibPNG.

129.2.2   Methods

129.2.3   CombinePictureWithMask as picture

MBS Images Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a new picture which is created using the picture and it’s mask.

**Example:**

```
    dim t as TiffPictureMBS
    ' ...
    canvas1.backdrop=t.CombinePictureWithMask
```

129.2.4   PNGLibVersion as string

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The version of the PNG library compiled into the plugin.

**Notes:** Please ask if you need a newer version.

129.2.5   Properties

129.2.6   height as Integer

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The height of the picture.

**Notes:** (Read and Write property)
129.2.7  mask as picture

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The mask of the picture.  
**Notes:**  
May be nil.  
(Read and Write property)

129.2.8  pict as picture

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The picture data of the picture.  
**Notes:**  
If this image is all black, you may use a different gamma setting.  
(Read and Write property)

129.2.9  width as Integer

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The width of the picture.  
**Notes:** (Read and Write property)

129.2.10  Constants

129.2.11  kDefaultGamma = 0

MBS Images Plugin, Plugin Version: 11.3. **Function:** The default gamma constant.  
**Notes:** Pass this value to get the default gamma.
129.3. class PNGReaderMBS

129.3.1 class PNGReaderMBS

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for reading PNG files.

**Example:**
```pascal
  dim Current as PictureMBS // global
dim f as FolderItem

  f=GetopenFolderItem(FileTypes.Png)
  if f<>Nil then
    Current=nil

    dim p as new PNGReaderMBS
    if p.OpenFile(f) then
      if p.ApplyOptions(0) then
        Current=new PictureMBS(p.Width,p.Height,PictureMBS.ImageFormatRGB)
        dim i,c as Integer
        c=p.Height-1
        for i=0 to c
          Current.RowInFormat(i, PictureMBS.ImageFormatRGBA)=p.ReadRow
        next
      end if
    end if
  end if
```

**Notes:**
Use this class to read PNG files row by row as memoryblock.

Based on LibPNG.
129.3.2 Methods

129.3.3 ApplyOptions(gamma as Double = 0.0, ScreenGamma as Double = -1.0) as boolean

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Applies various options.

**Notes:**
The gamma parameter defines what gamma correction is applied:
- positive value: use the value as the gamma correction
- zero: use default value (or value saved in file itself)
- negative value: do not correct gamma

Added ScreenGamma parameter in plugin version 15.2. If you set both gamma and ScreenGamma to a value >0.0, the plugin will use those gamma values. If both are equal, no gamma correction is made.

129.3.4 CombinePictureWithMask as picture

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Combines the pict and the mask property to a picture with mask.

129.3.5 Open(file as folderitem, data as string) as boolean

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Opens either the data string or the file.

**Notes:** Returns true on success.

129.3.6 OpenData(data as string) as boolean

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Opens a PNG file from the data string.

**Notes:** Returns true on success.

129.3.7 OpenFile(file as folderitem) as boolean

129.3.8  OpenSpecialData(data as string) as boolean

MBS Images Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Same as OpenData but with special handling of the png data.

**Example:**

```rbs
dim f as FolderItem = getfolderitem("mbs.png")
dim b as BinaryStream = f.OpenAsBinaryFile(false) // BinaryStream.Open(f) in newer RB versions
dim s as string = b.Read(B.Length)

dim p as new PNGReaderMBS
if p.OpenSpecialData(s) then
  if p.ApplyOptions(0) then
    if p.ReadPicture then
      Backdrop = p.Pict
      Title = "OK"
    else
      Title = "Failed to read picture."
    end if
  else
    Title = "Failed to apply options."
  end if
else
  Title = "Failed to open picture."
end if
```

**Notes:**
This function can be used to read PNG files made for the Apple iPhone. The PNG is converted from the Apple format to the normal PNG format and passed to OpenData. In the SourceData property you can get the modified PNG data. Still this modified PNG data has the channels swapped, so you should read the image with the pict property.

On Mac OS X 10.8, the NSImage class also reads iOS optimized PNG files.

129.3.9  PNGLibVersion as string

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The version of the PNG library compiled into the plugin.
129.3.10  ReadICCProfile(byref name as string, byref compression as Integer, byref profile as string) as boolean

MBS Images Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the ICC Profile from the PNG file. **Notes:**
Name is the profile name, compression the method used to compress the profile data and profile a string with the content of the profile as binary data. Returns true on success.

129.3.11  ReadPicture as boolean

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the picture into the pict and mask properties. **Notes:** Returns true on success.

129.3.12  ReadRow as memoryblock

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the next row as a memoryblock. **Example:**
```vba
dim fSource as FolderItem = SpecialFolder.Desktop.Child("test.png") // some png with alpha
dim oPNGInput as new PNGReaderMBS
If oPNGInput.OpenFile(fSource) Then
    If oPNGInput.ApplyOptions(0) Then
        dim imgSource as New PictureMBS(oPNGInput.Width, oPNGInput.Height, PictureMBS.ImageFormatRGBA)
        ' Read row by row the file and puts it in a PictureMBS instance
        dim nMax as Integer = oPNGInput.Height - 1
        For nInd as Integer = 0 To nMax
            imgSource.RowInFormat(nInd, PictureMBS.ImageFormatRGBA, true) = oPNGInput.ReadRow()
        Next
        ' show only alpha/mask channel
        Backdrop=imgSource.AlphaChannel.CopyPicture
        ' show Picture without mask
        Backdrop=imgSource.CopyPicture
```
129.3. CLASS PNGREADERMBS

' show picture with mask
Backdrop=imgSource.CopyPictureWithMask

End If
End If

Notes:
Returns nil on any error.
Format is RGBA as in the example with 4 bytes per pixel.
See also:

• 129.3.13 ReadRow(mem as memoryblock) as boolean

129.3.13 ReadRow(mem as memoryblock) as boolean

MBS Images Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Reads the next row into the given memoryblock.
Notes:
Returns false on any error and true on success.
Format is RGBA as in the example with 4 bytes per pixel.
Make sure the memoryblock is big enough. Else you risk a crash.

See also PNGReaderMBS.RowBytes.

ReadRow with reusing memoryblock is faster than allocating a new one for each row.
See also:

• 129.3.12 ReadRow as memoryblock

129.3.14 ReadRowAlphaOnly(mem as memoryblock) as boolean

Reads the next row into the given memoryblock.
Notes:
Returns false on any error and true on success.
Format is alpha channel as in the example with one byte per pixel.
Make sure the memoryblock has size from RowBytes property. Else you risk a crash.
The data in memoryblock is width bytes long, 1/4 of the size of the memoryblock.

See also PNGReaderMBS.RowBytes.
ReadRow with reusing memoryblock is faster than allocating a new one for each row.

129.3.15 **ReadRowMaskOnly(mem as memoryblock) as boolean**

MBS Images Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the next row into the given memoryblock.  
**Notes:**  
Returns false on any error and true on success.  
Format is mask (inverse alpha) as in the example with one byte per pixel.  
Make sure the memoryblock has size from RowBytes property. Else you risk a crash.  
The data in memoryblock is width bytes long, 1/4 of the size of the memoryblock.  
See also PNGReaderMBS.RowBytes.  
ReadRow with reusing memoryblock is faster than allocating a new one for each row.

129.3.16 **ReadsRGBTag(byref file_srgb_intent as Integer) as boolean**

MBS Images Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the sRGB tag.  
**Notes:** Returns true if the value was read into the given variable.

129.3.17 **RowBytes as Integer**

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The length of each row in bytes.

129.3.18 **Properties**

129.3.19 **AllowDamaged as Boolean**

MBS Images Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to return picture for files with damaged content.  
**Notes:**  
e.g. a half downloaded PNG file can still be processed and may give you a preview for the file.  
(Read and Write property)
129.3. **CLASS PNGREADERMBS**

### 129.3.20 BitDepth as Integer

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The bit depth of the PNG file. **Notes:** (Read and Write property)

### 129.3.21 ColorType as Integer

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The color type of the PNG file.  
**Notes:**  
The value is a combination of this constants:

```
PNG_COLOR_MASK_PALETTE  = 1
PNG_COLOR_MASK_COLOR    = 2
PNG_COLOR_MASK_ALPHA    = 4
```

The PNG library will convert on reading every row into 32bit RGBA, so don’t worry about this.  
(Read and Write property)

### 129.3.22 Height as Integer

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The height of the picture in pixels. **Notes:** (Read and Write property)

### 129.3.23 InterlaceType as Integer

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The interlace setting. **Notes:** (Read and Write property)

### 129.3.24 Interlacing as Integer

MBS Images Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the png file is interlaced. 
**Notes:**
Value is 1 if not interlaced and 7 if interlaced.
(Read and Write property)

### 129.3.25 Mask as Picture

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The mask of the picture.
**Notes:** (Read and Write property)

### 129.3.26 Pict as Picture

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The picture read.
**Notes:** (Read and Write property)

### 129.3.27 SourceData as String

MBS Images Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The source data used in Open functions.
**Example:**
```
dim p as PNGReaderMBS // your reader

// write data to file
dim fo as FolderItem = SpecialFolder.Desktop.Child("mbsout.png")
dim bo as BinaryStream = fo.CreateBinaryFile("") // BinaryStream.Create(fo,true) in newer RB Versions
bo.Write p.SourceData
```

**Notes:**
If you used OpenSpecialData, the data here is the PNG without the Apple modifications, but still with swapped colors.
This property is set by the OpenSpecialData, Open and OpenData functions.
(Read and Write property)
129.3.28 SourceFile as FolderItem

MBS Images Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The folderitem passed to the Open functions.
**Notes:**
This property is set by the Open and OpenFile functions.
(Read and Write property)

129.3.29 SwapRB as Boolean

MBS Images Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether to swap red and blue channels.
**Example:**
```vbnet
dim p as new PNGReaderMBS
p.SwapRB = true
```

**Notes:**
The PNG files for the iPhone have swapped channels so the iPhone does not need to swap them for display.
One of the tricks Apple uses for making the iPhone faster.
This flag is set to true by OpenSpecialData.
(Read and Write property)

129.3.30 Width as Integer

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The width of the picture in pixels.
**Notes:** (Read and Write property)

129.3.31 Events

129.3.32 Error(msg as string)

MBS Images Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The PNG library has an error message for you.
**Notes:** Processing will stop soon.
129.3.33 Warning(msg as string)

MBS Images Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The PNG library has a warning for you.
129.4. class PNGWriterMBS

129.4.1 class PNGWriterMBS

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class to write a PNG file.

**Example:**

```vbp
dim Current as PictureMBS ' your picture
dim f as FolderItem

f=GetsaveFolderItem(FileTypes.Png,"test.png")

if f<>Nil then
const PNG_COLOR_MASK_PALETTE = 1
const PNG_COLOR_MASK_COLOR = 2
const PNG_COLOR_MASK_ALPHA = 4

dim p as new PNGWriterMBS

p.Width=Current.Width
p.Height=Current.Height
p.Type=PNG_COLOR_MASK_COLOR
p.bpc=3
p.Rowbytes=p.Width*p.bpc

if p.OpenWriteDestination(f) then
if p.SetHeader(false, -1) then
if p.SetGamma(0) then
if p.WriteInfo then
    dim i,c as Integer
    
c=p.Height-1
    for i=0 to c
        p.WriteRow current.RowInFormat(i, Current.ImageFormatRGB)
    next
    
    if p.WriteEnd then
        MsgBox "OK"
    end if
end if
end if
end if
end if
end if
```
Notes:
You can use this class to write PNG files by row.

Based on LibPNG.

129.4.2 Methods

129.4.3 CloseDestination


129.4.4 Finish as string

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Finishes the PNG file and returns the PNG file content as string.
**Notes:** Returns "" on any error.

129.4.5 OpenWriteDestination(file as folderitem) as boolean

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Opens the file to write.
**Notes:** If you pass nil for the file, the data is collected in memory and you can get it on the end using the Finish method.

129.4.6 PNGLibVersion as string

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The version of the PNG library compiled into the plugin.

129.4.7 SetAlphaData(alphas() as Integer, colors() as color) as boolean

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the alpha data and the color palette.
**Notes:**
The array can have up to 256 colors. The color and the alpha arrays must have the same size. Returns true on success.

129.4.8 SetAlphas as boolean

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes the alpha data to the file.  
**Notes:**  
You must call SetAlphaData before. Returns true on success.

129.4.9 SetGamma(gamma as Double = 0.0) as boolean

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Defines the gamma value and other options for the PNG file. 
**Notes:**  
Returns on success.

The gamma parameter defines what gamma correction is applied:  
positive value: use the value as the gamma correction  
zero: use default value (or value saved in file itself)  
negative value: do not correct gamma

Default for Mac is 1.8 and for Windows 2.2. If you use SRGB, the Gamma must be 2.2.

129.4.10 SetGrayPicture(pict as picture, mask as picture = nil) as boolean

MBS Images Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies a picture into the internal buffers for writing a Grayscale image file. 
**Notes:**  
This method sets width, height, type and bpc properties. Returns true on success.

Mask can be nil.
129.4.11  SetHeader(Interlace as boolean = false, Filter as Integer = -1, Compression as Integer = -1) as boolean

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Defines the header options for the PNG file.
**Notes:**
Interlace is true the Adam7 interlacing is used.
FilterType specifies the filter:

```plaintext
const PNG_NO_FILTERS = 0
const PNG_FILTER_NONE = 8
const PNG_FILTER_SUB = 16
const PNG_FILTER_UP = 32
const PNG_FILTER_Avg = 64
const PNG_FILTER_PAETH = 128
const PNG_FILTER_ALL = 248
```

Compression can be between 0 (none) to 9 (max). Default is 6. Value -1 means the plugin will not change from default of PNG library. Normally you have no better compression for setting higher than 6, but only burn more CPU power.

129.4.12  SetICCProfile(name as string, CompressionType as Integer, Profile as string) as boolean

MBS Images Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds a ICC Profile to the PNG.
**Notes:**
Name is the profile name as an ASCII string.
CompressionType is always 0 (PNG_COMPRESSION_TYPE_BASE).

129.4.13  SetPalette as boolean

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the palette data.
**Notes:** Returns true on success.
129.4.14 SetPaletteData(colors() as color) as boolean

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the color palette.

**Notes:**
The array can have up to 256 colors.
Returns true on success.

129.4.15 SetPalettePicture(pict as picture) as boolean

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies a picture into the internal buffers.

**Notes:**
You need to define the color palette before calling this method.

This method sets width, height, type and bpc properties.
Returns true on success.

129.4.16 SetResolution(ResolutionHorizontal as Integer, ResolutionVertical as Integer, Unit as Integer) as boolean

MBS Images Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the resolution of the PNG.

**Notes:**
Unit is ResolutionUnknown, ResolutionMeter or ResolutionDPI.
Internally the PNG saves only in dots per meter, so the plugin converts DPI to DPM for you.

129.4.17 SetRGBPicture(pict as picture, mask as picture = nil) as boolean

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies a picture into the internal buffers.

**Example:**

```// Write a RGBA PNG file```
```
dim current as Picture = LogoMBS(500)
```

```// create a mask```
```
dim g as Graphics = current.Mask.Graphics
```
```
g.ForeColor = & c FFFFFF
```
CHAPTER 129. PNG

```vbnet
g.FillRect 0,0,500,500
g.ForeColor = & c000000
g.FillOval 0,0,500,500

// show in window
window1.Backdrop = current

// and write to file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.png")

dim p as new PNGWriterMBS

if p.OpenWriteDestination(f) then // open file
if p.SetRGBPicture(current, current.mask) then // set picture to write
if p.SetHeader(false, -1) then // setup file header
if p.SetGamma(0) then // and default gamma
if p.WriteInfo then // write file header
if p.WriteRows then // write pixels
if p.WriteEnd then // and write file end
p = nil // cleanup
f.Launch
end if
end if
end if
end if
end if

Notes:
This method sets width, height, type and bpc properties.
Returns true on success.

Mask can be nil.

129.4.18 SetRows(rows() as memoryblock) as boolean

MBS Images Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Uses the given memoryblocks for row data.
Notes:
The memory is not copied, so keep the array alive!
This method sets height. You need to set width, bpc, type and rowbytes.
129.4. CLASS PNGWRITERMBS

Returns true on success.

129.4.19 SetsRGB(intent as Integer) as boolean

MBS Images Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Sets the sRGB intent.
Notes:
Possible values:

- const PNG_sRGB_INTENT_PERCEPTUAL = 0
- const PNG_sRGB_INTENT_RELATIVE = 1
- const PNG_sRGB_INTENT_SATURATION = 2
- const PNG_sRGB_INTENT_ABSOLUTE = 3

129.4.20 WriteEnd as boolean

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Finishes the writing.
Notes:
Returns true on success.
Do not call if you use WriteRows.

129.4.21 WriteInfo as boolean

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Writes the PNG file header.
Notes:
Returns true on success.
Do not call if you use WriteRows.

129.4.22 WriteRow(row as memoryblock)

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Writes one row of image data.
Notes:
The data must be in the RGBA format with one byte per value.
(4 bytes per Pixel)

Returns true on success.

Do not call if you use WriteRows.

129.4.23 WriteRows as boolean


Example:

```vbscript
// Write a RGB PNG file
dim current as Picture = LogoMBS(500)
dim f as FolderItem = SpecialFolder.Desktop.Child(“test.png”)
dim p as new PNGWriterMBS

if p.OpenWriteDestination(f) then // open file
if p.SetRGBPicture(current) then // set picture to write
if p.SetHeader(false, -1) then // setup file header
if p.SetGamma(0) then // and default gamma
if p.WriteInfo then // write file header
if p.WriteRows then // write pixels
if p.WriteEnd then // and write file end
  p = nil // cleanup
f.Launch
end if
end if
end if
end if
end if
end if
```

Notes: If you call this method, you need to call SetRGBPicture or SetPalettePicture before and you can’t call WriteInfo, WriteRow and WriteEnd.
129.4.24 Properties

129.4.25 bpc as Integer

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The bytes per pixel.

**Notes:**
Should be 3 for RGB, 1 for palette pictures and 4 for RGB with Alpha.
(Read and Write property)

129.4.26 Height as Integer

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The height of the picture to write.

**Notes:** (Read and Write property)

129.4.27 Rowbytes as Integer

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The bytes per row.

**Notes:** (Read and Write property)

129.4.28 Type as Integer

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The color type.

**Notes:**
The value is a combination of this constants:

- PNG_COLOR_MASK_PALETTE = 1
- PNG_COLOR_MASK_COLOR = 2
- PNG_COLOR_MASK_ALPHA = 4

(Read and Write property)
129.4.29 Width as Integer

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The width of the picture to write. **Notes:** (Read and Write property)

129.4.30 Events

129.4.31 Error(msg as string)

MBS Images Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The PNG library has an error message for you. **Notes:** Processing will stop soon.

129.4.32 Warning(msg as string)

MBS Images Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The PNG library has a warning for you.

129.4.33 Constants

129.4.34 ResolutionDPI = 2

MBS Images Plugin, Plugin Version: 10.1. **Function:** One of the resolution unit type constants. **Notes:** The unit for points per inch.

129.4.35 ResolutionMeter = 1

MBS Images Plugin, Plugin Version: 10.1. **Function:** One of the resolution unit type constants. **Notes:** The unit for points per meter.

129.4.36 ResolutionUnknown = 0

MBS Images Plugin, Plugin Version: 10.1. **Function:** One of the resolution unit type constants.
129.4.37 TypeGray = 0

MBS Images Plugin, Plugin Version: 12.5. **Function:** One of the type constants.  
**Notes:** Gray

129.4.38 TypeGrayA = 4

MBS Images Plugin, Plugin Version: 12.5. **Function:** One of the type constants.  
**Notes:** Gray with Alpha

129.4.39 TypePalette = 1

MBS Images Plugin, Plugin Version: 12.5. **Function:** One of the type constants.  
**Notes:** Palette

129.4.40 TypeRGB = 2

MBS Images Plugin, Plugin Version: 12.5. **Function:** One of the type constants.  
**Notes:** RGB

129.4.41 TypeRGBA = 6

MBS Images Plugin, Plugin Version: 12.5. **Function:** One of the type constants.  
**Notes:** RGB with Alpha.
Chapter 130

Power

130.1 class IOPMAssertionMBS

130.1.1 class IOPMAssertionMBS

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for PowerManagement assertions. **Notes:** You use this class to block a Mac from sleeping display, disk or whole machine.

130.1.2 Methods

130.1.3 AssertionsByProcess as Dictionary

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a dictionary listing all assertions, grouped by their owning process. **Notes:**

Notes: One process may have multiple assertions. Several processes may have asserted the same assertion to different levels.

On success, this returns a dictionary of assertions per process. At the top level, keys to the Dictionary are pids stored as Integer. The value associated with each pid is an array of active assertions. Each entry in the array is an assertion represented as a Dictionary. See the keys kIOPMAssertionTypeKey and kIOPMAssertionLevelKey.
130.1.4 AssertionsStatus as Dictionary


Notes:
The system-wide level is the maximum of all individual assertions’ levels.

On success, this returns a Dictionary of all assertions currently available. The keys in the dictionary are the assertion types, and the value of each is a CFNumber that represents the aggregate level for that assertion.

130.1.5 Constructor(type as string, level as Integer, name as string)


130.1.6 CreateWithDescription(AssertionType as string, Name as string, Details as string = "", HumanReadableReason as string = "", LocalizationBundlePath as string = "", Timeout as Double = 0, TimeoutAction as string = "") as IOPMAssertionMBS


Notes:
This is the preferred API to call to create an assertion. It allows the caller to specify the Name, Details, and HumanReadableReason at creation time. There are other keys that can further describe an assertion, but most developers don’t need to use them. Use SetProperty or CreateWithProperties if you need to specify properties that aren’t available here.

AssertionType: An assertion type constant. Caller must specify this argument.
Name: A String value to correspond to key kIOPMAssertionNameKey. Caller must specify this argument.
Details: A String value to correspond to key kIOPMAssertionDetailsKey. Caller my pass "", but it helps power users and administrators identify the reasons for this assertion.
HumanReadableReason: A String value to correspond to key kIOPMAssertionHumanReadableReasonKey. Caller may pass "", but if it’s specified OS X may display it to users to describe the active assertions on their system.
LocalizationBundlePath: A String value to correspond to key kIOPMAssertionLocalizationBundlePathKey. This bundle path should include a localization for the string HumanReadableReason. Caller may pass "", but this argument is required if caller specifies HumanReadableReason.
Timeout: Specifies a timeout for this assertion. Pass 0 for no timeout.
TimeoutAction: Specifies a timeout action. Caller my pass "". If a timeout is specified but a TimeoutAction
130.1. **CLASS IOPMASSERTIONMBS**

is not, the default timeout action is kIOPMAssertionTimeoutActionTurnOff.

On success this function returns a new assertion.

### 130.1.7 **CreateWithHandle(Handle as Integer) as IOPMAssertionMBS**

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new object with retaining given handle.

### 130.1.8 **CreateWithName(type as string, level as Integer, name as string) as IOPMAssertionMBS**

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Dynamically requests a system behavior from the power management system. **Notes:** Create is deprecated in favor of CreateWithProperties. Please use that version of this API instead.

No special privileges are necessary to make this call - any process may activate a power assertion. Caller must specify an AssertionName - ”” is not a valid input.

- **Type**  The String assertion type to request from the PM system.
- **Level** Pass kIOPMAssertionLevelOn or kIOPMAssertionLevelOff.
- **Name** A string that describes the name of the caller and the activity being handled by this assertion (e.g. ”Mail Compacting Mailboxes”). Name may be no longer than 128 characters.

On success, returns an IOPMAssertionMBS object.

### 130.1.9 **CreateWithProperties(AssertionProperties as Dictionary) as IOPMAssertionMBS**

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates an IOPMAssertion with more flexibility than CreateWithDescription. **Notes:** AssertionProperties: Dictionary providing the properties of the assertion that need to be created. On successful return, returns the assertion.
Create a new PM assertion - the caller must specify the type of assertion, initial level, and its properties as IOPMAssertionDictionaryKeys keys in the AssertionProperties dictionary. The following keys are recommend and/or required to be specified in the AssertionProperties dictionary argument.

- Required kIOPMAssertionTypeKey define the assertion type.
- Required kIOPMAssertionValueKey define an initial value.
- Required kIOPMAssertionNameKey Caller must describe the name for the activity that requires the change in behavior provided by the assertion.
- Optional kIOPMAssertionDetailsKey Caller may describe context-specific data about the assertion.
- Optional kIOPMAssertionHumanReadableReasonKey Caller may describe the reason for creating the assertion in a localizable String. This should be a human readable phrase that describes the actions the calling process is taking while the assertion is held, like "Downloading TV episodes", or "Compiling Projects"
- Optional kIOPMAssertionLocalizationBundlePathKey Caller may provide its bundle's path, where OS X can localize for GUI display the String specified by kIOPMAssertionHumanReadableReasonKey.
- Optional kIOPMAssertionPlugInIDKey if the caller is a plugin with a different identity than the process it's loaded in.
- Optional kIOPMAssertionFrameworkIDKey if the caller is a framework acting on behalf of a process.
- Optional The caller may specify a timeout.

130.1.10 DeclareUserActivity(AssertionName as string, userType as Integer, byref AssertionID as Integer) as Integer

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Declares that the user is active on the system.

Notes:
This causes the display to power on and postpone display sleep up to the user’s display sleep Energy Saver settings. If you prefer to hold the display awake for a longer period and you know how long you’d like to hold it, consider taking assertion kIOPMAssertionTypePreventUserIdleDisplaySleep using CreateWithDescription instead.

No special privileges are necessary to make this call - any process may call this API. Caller must specify an AssertionName.

AssertionName: A string that describes the name of the caller and the activity being handled by this assertion (e.g. "Mail Compacting Mailboxes"). Name may be no longer than 128 characters.
userType: This parameter specifies if the active user is located locally in front of the system or connected
to the system over the network. Various components of the system are maintained at different power levels depending on user location.

On Success, unique id will be returned in this parameter. Caller may call this function again with the unique id returned previously to report continuous user activity. The unique id returned by this function may change on each call depending on how frequently this function call is repeated and the current display sleep timer value. If you make this call more than once, track the returned value for assertionID, and pass it in as an argument on each call.

Returns kIOReturnSuccess (0) on success, any other return indicates PM could not successfully activate the specified assertion.

130.1.11 Properties as Dictionary


130.1.12 SetProperty(key as string, value as Variant) as boolean


```vba
dim t as string = IOPMAssertionMBS.kIOPMAssertionTypePreventUserIdleDisplaySleep
dim l as Integer = IOPMAssertionMBS.kIOPMAssertionLevelOn
dim a as IOPMAssertionMBS = IOPMAssertionMBS.CreateWithName(t, l, "Working")
if a.SetProperty(IOPMAssertionMBS.kIOPMAssertionNameKey, "test") then
    MsgBox a.name
end if
```

Notes:

Only the process that created an assertion may change its properties.
key: The string key to modify.
Value: The property to set. It must be a number or string, as specified by the property key named in key.
Returns false on any error and true on success.
130.1.13 Properties

130.1.14 Details as String

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The details for this assertion. Notes: You may provide extra, contextual information about an assertion for admins and for debugging in this key. Setting this key in an assertion dictionary is optional.

Please name your assertion something unique with kIOPMAssertionNameKey first. If you have more data to describe this assertion, put it here as a String.

Example: OS X creates an assertion named com.apple.powermanagement.tty to prevent sleep for remote-logged in users. To identify the cause for these assertions, OS X sets kIOPMAssertionDetailsKey to the String device path of the active remote session(s), e.g. "/dev/ttys000" or "/dev/ttys004"

The String you associate with this key does not have to be localizable (OS X will not attempt to localize it.) (Read and Write property)

130.1.15 Handle as Integer

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The internal handle to the assertion. Notes: Zero is not a valid ID. (Read only property)

130.1.16 HumanReadableReason as String

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Optional value that provides a localizable string for OS X to display PM Assertions in the GUI. Notes: The caller should specify this string in CreateWithProperties. If present, OS X may display this string, localized to the user’s language, to explain changes in system behavior caused by the assertion.

If set, the caller must also specify a bundle path for the key kIOPMAssertionLocalizationBundlePathKey. The bundle at that path should contain localization info for the specified string.
130.1.17  **Level as Integer**

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The assertion level.  
**Notes:** (Read and Write property)

130.1.18  **LocalizationBundlePath as String**

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Refers to a string, identifying the path to the caller’s bundle, which contains localization info.  
**Notes:** (Read and Write property)

130.1.19  **Name as String**

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of the assertion.  
**Example:**

```vba
dim t as string = IOPMAssertionMBS.kIOPMAssertionTypePreventUserIdleDisplaySleep
dim l as Integer = IOPMAssertionMBS.kIOPMAssertionLevelOn
dim a as IOPMAssertionMBS = IOPMAssertionMBS.CreateWithName(t, l, "Working")
MsgBox a.Name
```

**Notes:**

kIOPMAssertionNameKey describes the the activity the assertion is protecting. The creator should specify a String value for this key in the dictionary passed to CreateWithProperties.

The assertion name is separate from the assertion type’s behavior - specify a String like "Checking mail" or "Compiling" that describes the task that this assertion protects.

The String you associate with this key does not have to be localizable (OS X will not attempt to localize it.) (Read and Write property)
130.1.20 **RetainCount as Integer**

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The retain count of the object.
**Notes:** (Read only property)

130.1.21 **Timeout as Double**

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Specifies an outer bound, in seconds, that this assertion should be asserted.
**Notes:**
If your application hangs, or is unable to complete its assertion task in a reasonable amount of time, specifying a timeout allows PM to disable your assertion so the system can resume normal activity. Once a timeout with the kIOPMAssertionTimeoutActionTurnOff assertion fires, the level will be set to kIOPMAssertionTimeoutActionTurnOff. The assertion may be re-armed by calling IOPMAssertionSetLevel. (Read and Write property)

130.1.22 **TimeoutAction as String**

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Specifies the action to take upon timeout expiration.
**Notes:**
Specifying the timeout action only has meaning if you also specify an kIOPMAssertionTimeoutKey. If the caller does not specify a timeout action, the default action is kIOPMAssertionTimeoutActionTurnOff. (Read and Write property)

130.1.23 **Type as String**

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The assertion type.
**Notes:**
The value for this key will be a CFStringRef, with the value of the assertion type specified at creation time. Note that OS X may substitute a support assertion type string if the caller specifies a deprecated assertion type; in that case the value for this key could differ from the caller-provided assertion type. (Read and Write property)
130.1.24 Constants

130.1.25 kIOPMAssertionDetailsKey = ”Details”

MBS MacOSX Plugin, Plugin Version: 13.2. **Function:** One of the keys for the properties dictionary. **Notes:**

You may provide extra, contextual information about an assertion for admins and for debugging in this key. Setting this key in an assertion dictionary is optional.

Please name your assertion something unique with kIOPMAssertionNameKey first. If you have more data to describe this assertion, put it here as a String.

Example: OS X creates an assertion named com.apple.powermanagement.tty to prevent sleep for remote-logged in users. To identify the cause for these assertions, OS X sets kIOPMAssertionDetailsKey to the String device path of the active remote session(s), e.g. ”/dev/tty000” or ”/dev/tty004”

The String you associate with this key does not have to be localizable (OS X will not attempt to localize it.)

Describe your assertion as thoroughly as possible. See these other keys that can you can set to add explanation to an assertion:

- Optional kIOPMAssertionNameKey
- Optional kIOPMAssertionHumanReadableReasonKey
- Optional kIOPMAssertionLocalizationBundlePathKey

130.1.26 kIOPMAssertionFrameworkIDKey = ”FrameworkBundleID”

MBS MacOSX Plugin, Plugin Version: 13.2. **Function:** One of the keys for the properties dictionary.

130.1.27 kIOPMAssertionHumanReadableReasonKey = ”HumanReadableReason”

MBS MacOSX Plugin, Plugin Version: 13.2. **Function:** One of the keys for the properties dictionary. **Notes:**

Optional key that provides a localizable string for OS X to display PM Assertions in the GUI.

The caller should specify this string in CreateWithProperties. If present, OS X may display this string, localized to the user’s language, to explain changes in system
behavior caused by the assertion.

If set, the caller must also specify a bundle path for the key `kIOPMAssertionLocalizationBundlePathKey`. The bundle at that path should contain localization info for the specified string.

This key may be specified in the dictionary passed to `CreateWithProperties`. This key may be present in the dictionary returned from `Properties`.

Describe your assertion as thoroughly as possible. See these other keys that can you can set to add explanation to an assertion:

- Required `kIOPMAssertionNameKey`
- Optional `kIOPMAssertionDetailsKey`

### 130.1.28 `kIOPMAssertionLevelKey` = ”AssertLevel”

MBS MacOSX Plugin, Plugin Version: 13.2. **Function:** One of the keys for the properties dictionary. **Notes:** The Dictionary key for assertion level in an assertion info dictionary.

The value for this key will be an integer with value `kIOPMAssertionLevelOff` or `kIOPMAssertionLevelOn`. The level reflects the assertion’s level set at creation, or adjusted via `IOPMAssertionSetLevel`.

### 130.1.29 `kIOPMAssertionLevelOff` = 0

MBS MacOSX Plugin, Plugin Version: 13.2. **Function:** Level for a disabled assertion, passed as an argument to `Create`.

### 130.1.30 `kIOPMAssertionLevelOn` = 255

MBS MacOSX Plugin, Plugin Version: 13.2. **Function:** Level for an enabled assertion, passed as an argument to `Create`. **Example:**

```vbnet
dim t as string = IOPMAssertionMBS.kIOPMAssertionTypePreventUserIdleDisplaySleep
dim l as Integer = IOPMAssertionMBS.kIOPMAssertionLevelOn
dim a as IOPMAssertionMBS = IOPMAssertionMBS.CreateWithName(t, l, ”Working”)
MsgBox a.Name
```
130.1.31 kIOPMAssertionLocalizationBundlePathKey = "BundlePath"

MBS MacOSX Plugin, Plugin Version: 13.2. **Function:** One of the keys for the properties dictionary. **Notes:** Refers to a string, identifying the path to the caller’s bundle, which contains localization info.

130.1.32 kIOPMAssertionNameKey = "AssertName"

MBS MacOSX Plugin, Plugin Version: 13.2. **Function:** One of the keys for the properties dictionary.  
**Example:**
```vba
    dim t as string = IOPMAssertionMBS.kIOPMAssertionTypePreventUserIdleDisplaySleep
    dim l as Integer = IOPMAssertionMBS.kIOPMAssertionLevelOn
    dim a as IOPMAssertionMBS = IOPMAssertionMBS.CreateWithName(t, l, "Working")
    dim d as Dictionary = a.Properties
    dim v as String = d.Value(IOPMAssertionMBS.kIOPMAssertionNameKey)
    MsgBox v
```

**Notes:**  
The Dictionary key for assertion name. Setting this key is required when you’re creating an assertion.

kIOPMAssertionNameKey describes the the activity the assertion is protecting. The creator should specify a String value for this key in the dictionary passed to CreateWithProperties.

The assertion name is separate from the assertion type’s behavior - specify a String like "Checking mail" or "Compiling" that describes the task that this assertion protects.

The String you associate with this key does not have to be localizable (OS X will not attempt to localize it.)

Describe your assertion as thoroughly as possible. See these other keys that can you can also set to add explanation to an assertion:

- Optional kIOPMAssertionDetailsKey
- Optional kIOPMAssertionHumanReadableReasonKey
- Optional kIOPMAssertionLocalizationBundlePathKey
130.1.33 kIOPMAssertionPlugInIDKey = "PlugInBundleID"

MBS MacOSX Plugin, Plugin Version: 13.2. **Function:** One of the keys for the properties dictionary.

130.1.34 kIOPMAssertionRetainCountKey = "RetainCount"

MBS MacOSX Plugin, Plugin Version: 13.2. **Function:** One of the keys for the properties dictionary. **Notes:** The retain count of the object.

130.1.35 kIOPMAssertionTimeoutActionKey = "TimeoutAction"

MBS MacOSX Plugin, Plugin Version: 13.2. **Function:** One of the keys for the properties dictionary. **Notes:** Specifies the action to take upon timeout expiration. Specifying the timeout action only has meaning if you also specify an kIOPMAssertionTimeoutKey. If the caller does not specify a timeout action, the default action is kIOPMAssertionTimeoutActionTurnOff. This key may be specified in the dictionary passed to CreateWithProperties. This key may be present in the dictionary returned from Properties.

130.1.36 kIOPMAssertionTimeoutActionLog = "TimeoutActionLog"

MBS MacOSX Plugin, Plugin Version: 13.2. **Function:** One of the values for kIOPMAssertionTimeoutActionKey. **Notes:** When this timeout action is specified, PM will log the timeout event but will not turn off or affect the setting of the assertion in any way.

130.1.37 kIOPMAssertionTimeoutActionRelease = "TimeoutActionRelease"

MBS MacOSX Plugin, Plugin Version: 13.2. **Function:** One of the values for kIOPMAssertionTimeoutActionKey. **Notes:** When a timeout expires with this action, Power Management will log the timeout event, and will release the assertion.
130.1.38  kIOPMAssertionTimeoutActionTurnOff = ”TimeoutActionTurnOff”

MBS MacOSX Plugin, Plugin Version: 13.2. Function: One of the values for kIOPMAssertionTimeoutActionKey.
Notes: When a timeout expires with this action, Power Management will log the timeout event, and will set the assertion’s level to kIOPMAssertionLevelOff.

130.1.39  kIOPMAssertionTimeoutKey = ”TimeoutSeconds”

MBS MacOSX Plugin, Plugin Version: 13.2. Function: One of the keys for the properties dictionary.
Notes: Specifies an outer bound, in seconds, that this assertion should be asserted.

If your application hangs, or is unable to complete its assertion task in a reasonable amount of time, specifying a timeout allows PM to disable your assertion so the system can resume normal activity. Once a timeout with the kIOPMAssertionTimeoutActionTurnOff assertion fires, the level will be set to kIOPMAssertionTimeoutActionTurnOff. The assertion may be re-armed by calling IOPMAssertionSetLevel.

This key may be specified in the dictionary passed to CreateWithProperties. This key may be present in the dictionary returned from Properties.

130.1.40  kIOPMAssertionTypeKey = ”AssertType”

MBS MacOSX Plugin, Plugin Version: 13.2. Function: One of the keys for the properties dictionary.
Example:

```vbnet
dim t as string = IOPMAssertionMBS.kIOPMAssertionTypePreventUserIdleDisplaySleep
dim l as Integer = IOPMAssertionMBS.kIOPMAssertionLevelOn
dim a as IOPMAssertionMBS = IOPMAssertionMBS.CreateWithName(t, l, ”Working”)  
dim d as Dictionary = a.Properties
dim v as String = d.Value(IOPMAssertionMBS.kIOPMAssertionTypeKey)
MsgBox v
```

Notes: The dictionary key for assertion type in an assertion info dictionary.

The value for this key will be a CFStringRef, with the value of the assertion type specified at creation time. Note that OS X may substitute a support assertion type string if the caller specifies a deprecated assertion type; in that case the value for this key could differ from the caller-provided assertion type.
130.1.41 kIOPMAssertionTypePreventSystemSleep = "PreventSystemSleep"

MBS MacOSX Plugin, Plugin Version: 13.2. Function: One of the assertion types.
Notes:
Prevents the system from sleeping and allows the system to reside in Dark Wake for an arbitrary length of
time.

When asserted and set to level kIOPMAssertionLevelOn, the system will prefer to enter the Dark Wake state, or remain in Dark Wake if already there, rather than go to sleep.

Assertions are just suggestions to the OS, and the OS can only honor them to the best of its ability. In the case of low power or a thermal emergency, the system may sleep anyway despite the assertion.

An assertion must publish the AssertionType in its assertion properties dictionary. The AssertionType should be a key in the properties dictionary, with a value of a CFNumber containing the kCFNumberIntegerType value kIOPMAssertionLevelOff or kIOPMAssertionLevelOn.

130.1.42 kIOPMAssertionTypePreventUserIdleDisplaySleep = "PreventUserIdleDisplaySleep"

MBS MacOSX Plugin, Plugin Version: 13.2. Function: One of the assertion types.
Notes:
Prevents the display from dimming automatically.

When asserted and set to level kIOPMAssertionLevelOn, will prevent the display from turning off due to a period of idle user activity. Note that the display may still sleep from other reasons, like a user closing a portable’s lid or the machine sleeping. If the display is already off, this assertion does not light up the display. If display needs to be turned on, then consider calling function IOPMAssertionDeclareUserActivity. While the display is prevented from dimming, the system cannot go into idle sleep.
This assertion has no effect if the system is in Dark Wake.

130.1.43 kIOPMAssertionTypePreventUserIdleSystemSleep = "PreventUserIdleSystemSleep"

MBS MacOSX Plugin, Plugin Version: 13.2. Function: One of the assertion types.
Notes:
130.1. CLASS IOPMASSERTIONMBS

Prevents the system from sleeping automatically due to a lack of user activity. When asserted and set to level kIOPMAssertionLevelOn, will prevent the system from sleeping due to a period of idle user activity.

The display may dim and idle sleep while kIOPMAssertionTypePreventUserIdleSystemSleep is enabled, but the system may not idle sleep. The system may still sleep for lid close, Apple menu, low battery, or other sleep reasons.

This assertion has no effect if the system is in Dark Wake.

130.1.44 kIOPMAssertPreventDiskIdle = "PreventDiskIdle"

MBS MacOSX Plugin, Plugin Version: 13.2. Function: One of the assertion types. Notes: Prevent attached disks from idling into lower power states.

When asserted and set to level kIOPMAssertionLevelOn, will prevent attached disks and optical media from idling into lower power states. Apps who rely on real-time access to disks should create this assertion to avoid latencies caused by disks changing power states. For example, audio and video performance or recording apps may benefit from this assertion. Most Apps should not take this assertion; preventing disk idle consumes battery life, and most apps don’t require the low latency disk access that this provides. This assertion doesn’t increase a disk’s power state (it just prevents that device from idling). After creating this assertion, the caller should perform disk I/O on the necessary drives to ensure that they’re in a usable power state. The system may still sleep while this assertion is active. Callers should also take kIOPMAssertionTypePreventUserIdleSystemSleep if necessary, to prevent idle system sleep.

130.1.45 kIOPMUserActiveLocal = 0

MBS MacOSX Plugin, Plugin Version: 13.2. Function: One of the user activity constants. Notes: User is local on the system

130.1.46 kIOPMUserActiveRemote = 1

MBS MacOSX Plugin, Plugin Version: 13.2. Function: One of the user activity constants. Notes: Remote User connected to the system.
130.2  class IOPMMBS

130.2.1  class IOPMMBS

MBS MacOSX Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Mac OS X class which can control the energy settings.

**Example:**

```vbnet
dim p as new IOPMMBS
Listbox1.AddRow "EthernetWakeOnLANSettings: " + str(p.EthernetWakeOnLANSettings)
Listbox1.AddRow "GeneralAggressiveness: " + str(p.GeneralAggressiveness)
Listbox1.AddRow "MinutesToDim: " + str(p.MinutesToDim)
Listbox1.AddRow "MinutesToSleep: " + str(p.MinutesToSleep)
Listbox1.AddRow "MinutesToSpinDown: " + str(p.MinutesToSpinDown)
Listbox1.AddRow "MotionSensor: " + str(p.MotionSensor)
Listbox1.AddRow "PowerSource: " + str(p.PowerSource)
Listbox1.AddRow "SetProcessorSpeed: " + str(p.SetProcessorSpeed)
```

**Notes:** The functions and properties are not described from Apple.

130.2.2  Properties

130.2.3  Handle as Integer

MBS MacOSX Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal reference for the power manager.

**Notes:**

If this value is zero, the properties will not work.

(Read and Write property)

130.2.4  EthernetWakeOnLANSettings as Integer

MBS MacOSX Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The setting for whether ethernet wake on LAN.

**Notes:**

Value is 1 if you enable this option in the energy system control panel and 0 if you disable it.

(Read and Write computed property)
130.2.5 GeneralAggressiveness as Integer

MBS MacOSX Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The general aggressiveness.  
**Notes:** (Read and Write computed property)

130.2.6 MinutesToDim as Integer

MBS MacOSX Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The minutes until the display is dimmed.  
**Example:**
```
dim p as new IOPMMBS  
p.MinutesToDim=10 // dim display in 10 minutes  
```

**Notes:**  
This value is the same as in the energy system control panel.  
(Read and Write computed property)

130.2.7 MinutesToSleep as Integer

MBS MacOSX Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The time in minutes until the Mac goes to sleep.  
**Example:**
```
dim p as new IOPMMBS  
p.MinutesToSleep=10 // sleep display in 10 minutes  
```

**Notes:** (Read and Write computed property)

130.2.8 MinutesToSpinDown as Integer

MBS MacOSX Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The time in minutes until the hard discs spin down.  
**Notes:**  
If you enable the spin down option in the energy system control panel, this value is 10 and if you disable it, it is 180.
(Read and Write computed property)

130.2.9 MotionSensor as Integer

MBS MacOSX Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The setting for the motion sensor. **Notes:** (Read and Write computed property)

130.2.10 PowerSource as Integer

MBS MacOSX Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The power source settings. **Notes:**

Constants for this property:

```plaintext
const kIOPMInternalPower = 1
const kIOPMExternalPower = 2
```

(Read and Write computed property)

130.2.11 SetProcessorSpeed as Integer

MBS MacOSX Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The setting for the processor speed. **Notes:** (Read and Write computed property)
130.3  class IOPowerSourcesMBS

130.3.1  class IOPowerSourcesMBS

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class to look on all the power sources on a Mac OS X based computer.

**Example:**

```vbs
Dim i As IOPowerSourcesMBS
Dim j, n As Integer

i = New IOPowerSourcesMBS
n = i.Count - 1
For j = 0 To n
    CFShowMBS i.Item(j)  // Print battery info to console.
Next
```

**Notes:** Requires Mac OS X.

130.3.2  Methods

130.3.3  ExternalPowerAdapterDetails as CFDictionaryMBS

MBS MacCF Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a CFDictionary that describes the attached (AC) external power adapter (if any external power adapter is attached).

**Example:**

```vbs
Dim d As CFDictionaryMBS = IOPowerSourcesMBS.ExternalPowerAdapterDetails
Dim dic As Dictionary = d.Dictionary

Dim lines() As String
lines.Append "AdapterRevision: " + dic.Lookup("AdapterRevision", ")
lines.Append "AdapterID: " + dic.Lookup("AdapterID", ")
lines.Append "FamilyCode: " + dic.Lookup("FamilyCode", ")
lines.Append "SerialNumber: " + dic.Lookup("SerialNumber", ")
lines.Append "Watts: " + dic.Lookup("Watts", ")
```

MsgBox Join(lines, EndOfLine)

**Notes:**
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Returns a CFDictionary on success.
If no adapter is attached, or if there's an error, returns nil.

130.3.4 Item(index as Integer) as CFDictionaryMBS

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Ask for the power source description with the given index.
Example:
```
dim i as new IOPowerSourcesMBS
i.Update
MsgBox i.Item(0).XML.Str // shows dictionary for first power source
```

Notes: Index is from 0 to count-1.

130.3.5 Update

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Queries for new power sources and updates the item array.
Example:
```
dim i as new IOPowerSourcesMBS
i.Update
MsgBox str(i.Count)
```

130.3.6 Properties

130.3.7 Count as Integer

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The number of registered power sources.
Example:
```
dim i as new IOPowerSourcesMBS
i.Update
MsgBox str(i.Count)
```

Notes: (Read only property)
130.3.8 Events

130.3.9 Changed

MBS MacCF Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The state of one power source changed.

**Notes:** Whenever something changes around the power sources, you are notified with this event.
130.4 class SleepNotificationMBS

130.4.1 class SleepNotificationMBS

MBS MacOSX Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The class to listen for sleep notifications on Mac OS X.
**Notes:**
Uses IOKit.

Your application can use the sleep event to deny idle sleep, i.e. sleep after a period of inactivity. Applications should not deny idle sleep unless absolutely necessary.

The kIOMessage* constants in this class are declared in the Mac OS X headers, but they are not all used by the system.

In the plugins is the WakeNotifierMBS class and the SleepNotificationMBS class. WakeNotifierMBS uses the API coming from Mac OS and it can delay sleep. SleepNotificationMBS works on the lower Next APIs.

130.4.2 Properties

130.4.3 running as Boolean

MBS MacOSX Plugin, Plugin Version: 8.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Whether this notification class is working.
**Notes:**
Value is true on MachO targets.
(Read and Write property)

130.4.4 Events

130.4.5 Sleep(message as int64) as boolean

MBS MacOSX Plugin, Plugin Version: 8.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
A message was received.
**Notes:**
Use the constants to check what message you got.

Return true to deny or false to allow.
On the Can Messages the plugin informs the system about Deny or Allow, but on the Will messages, it will not answer if you return true, so the system will wait for an answer and delay sleep. There seems to be no way to delay more than 30 seconds when the user selects the sleep menu command.

The message parameter is an int64 in Plugin version 9.7 so the integer comparison to the constants works better.

130.4.6 Constants

130.4.7 kIOMessageCanSystemPowerOff = & he0000240

MBS MacOSX Plugin, Plugin Version: 8.0. Function: One of the message constants.

130.4.8 kIOMessageCanSystemSleep = & he0000270

MBS MacOSX Plugin, Plugin Version: 8.0. Function: One of the message constants.
Notes:
Idle sleep is about to kick in.
Applications have a chance to prevent sleep by returning true in the sleep event. Most applications should not prevent idle sleep.

Power Management waits up to 30 seconds for you to either allow or deny idle sleep. If you don’t acknowledge this power change by returning true or false, the system will wait 30 seconds then go to sleep.

130.4.9 kIOMessageSystemHasPoweredOn = & he0000300

MBS MacOSX Plugin, Plugin Version: 8.0. Function: One of the message constants.

130.4.10 kIOMessageSystemWillNotPowerOff = & he0000260

MBS MacOSX Plugin, Plugin Version: 8.0. Function: One of the message constants.
130.4.11  kIOMessageSystemWillNotSleep = \& he0000290

MBS MacOSX Plugin, Plugin Version: 8.0. **Function:** One of the message constants.

130.4.12  kIOMessageSystemWillPowerOff = \& he0000250

MBS MacOSX Plugin, Plugin Version: 8.0. **Function:** One of the message constants.

130.4.13  kIOMessageSystemWillPowerOn = \& he0000320

MBS MacOSX Plugin, Plugin Version: 8.0. **Function:** One of the message constants.

130.4.14  kIOMessageSystemWillRestart = \& he0000310

MBS MacOSX Plugin, Plugin Version: 8.0. **Function:** One of the message constants.

130.4.15  kIOMessageSystemWillSleep = \& he0000280

MBS MacOSX Plugin, Plugin Version: 8.0. **Function:** One of the message constants.
class WakeNotifierMBS


Function: Notification and statistics about sleeping off a Mac.

Notes:
For Mac OS X 10.5.6 you see the SleepDemand and the WakeUp events when your Mac sleeps and wakes up.

In the plugins is the WakeNotifierMBS class and the SleepNotificationMBS class. WakeNotifierMBS uses the API coming from Mac OS and it can delay sleep. SleepNotificationMBS works on the lower Next APIs.

Properties

CallEvents as boolean

Function: whether or not to call the events of this class.

Notes:
Default is false.
(Read and Write property)

DisableSleep as boolean

Function: Disabled sleep if a sleep request comes?

Notes:
Not used if you have code in the SleepRequest event handler.
(Read and Write property)

HadSleeped as boolean

Function: Slept since last reset?

Notes:
You can set this value to false to reset it.
(Read and Write property)
130.5.6 LastSleepTime as Double

Function: Last time in absolute seconds when fell asleep.
Notes:
Changed type from integer to double in version 4.2.
Value is the same as in date.totalseconds.
(Read and Write property)

130.5.7 LastWakeTime as Double

Function: Last time in absolute seconds when waken up.
Notes:
Changed type from integer to double in version 4.2.
Value is the same as in date.totalseconds.
(Read and Write property)

130.5.8 SleepCount as Integer

Function: Count of sleep demands.
Notes: (Read only property)

130.5.9 SleepEventCount as Integer

Function: Counts how often the Power Manager calls the sleep notification function.
Notes:
For debugging so you know that sleep requests are handled.
(Read and Write property)
130.5. CLASS WAKENOTIFIERMBS

130.5.10 Valid as boolean

**Function:** Returns True if the sleep event handler could be installed.
**Notes:**
False, if no Power Manager is installed.
(Read only property)

130.5.11 WakeCount as Integer

**Function:** Count of waking up.
**Notes:** (Read only property)

130.5.12 Events

130.5.13 SleepDemand

MBS MacClassic Plugin, Plugin Version: 2.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. 
**Function:** Called just before falling asleep.

130.5.14 SleepRequest as boolean

MBS MacClassic Plugin, Plugin Version: 2.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. 
**Function:** Can be go sleeping?
**Notes:**
Return true to deny sleeping.
Returning nothing or false will put the Mac to sleep.

130.5.15 SleepRevoke

MBS MacClassic Plugin, Plugin Version: 2.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. 
**Function:** Called when a sleep request was denied by an application or a device driver.
130.5.16 WakeUp

MBS MacClassic Plugin, Plugin Version: 2.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called when the Mac wakes up.
130.6  class WindowsPowerStateMBS

130.6.1  class WindowsPowerStateMBS

MBS Win Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A class to watch for power changes on a computer using Microsoft Windows as operation system.  
**Notes:**
Not all Windows versions call the same/all events.

This function listens for WM_POWERBROADCAST sent to all applications.

see

130.6.2  Events

130.6.3  BatteryLow

MBS Win Plugin, Plugin Version: 6.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The BatteryLow event is broadcast to notify applications that battery power is low.

130.6.4  OEMEvent(eventcode as Integer)

MBS Win Plugin, Plugin Version: 6.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The OEMEvent event is broadcast when an APM BIOS signals an APM OEM event.  
**Notes:**
eventcode: A DWORD value that specifies the OEM-defined event code that was signaled by the system's APM BIOS. OEM event codes are in the range &h0200 - &h02FF.

Because not all APM BIOS implementations provide OEM event notifications, this event may never be broadcast on some computers.

130.6.5  PowerStatusChange

MBS Win Plugin, Plugin Version: 6.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The PowerStatusChange event is broadcast when a change in the power status of the computer is detected, such as a switch from battery power to A/C.  
**Notes:** The system also broadcasts this event when remaining battery power slips below the threshold
specified by the user or if the battery power changes by a specified percentage.

130.6.6 QueryStandby(PromptUser as boolean) as boolean

MBS Win Plugin, Plugin Version: 6.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The QueryStandby event is broadcast to request permission to set the computer into standby mode.
**Notes:**
An application that grants permission should carry out preparations for the suspension before returning.

PromptUser: If true, the application can prompt the user for directions on how to prepare for the suspension; otherwise, the application must prepare without user interaction.

Return true to deny the request, false to grant the request.

An application should process this event by first determining whether permission to go to standby mode can be granted. It must not grant permission if doing so would cause a loss of data. The application can prompt the user for directions on how to prepare for suspension only if PromptUser is set.

The system allows approximately 20 seconds for an application to remove the message that is sending the QueryStandby event from the application’s message queue. If an application does not remove the message from its queue in less than 20 seconds, the system will assume that the application is in a non-responsive state, and that the application agrees to the sleep request. Applications that do not process their message queues may have their operations interrupted. After it removes the message from the message queue, an application can take as much time as needed to perform any required operations before entering the sleep state. Any operations that could take longer than 20 seconds should be performed at this time, since the system allows only 20 seconds for operations to complete during standby processing.

130.6.7 QueryStandbyFailed

MBS Win Plugin, Plugin Version: 6.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The QueryStandbyFailed event is broadcast as a notification that permission to go to standby mode was denied.
**Notes:** This event is broadcast if any application or driver returned false to a previous QueryStandby event.

130.6.8 QuerySuspend(PromptUser as boolean) as boolean

MBS Win Plugin, Plugin Version: 6.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The QuerySuspend event is broadcast to request permission to suspend the computer.
**Notes:**
An application that grants permission should carry out preparations for the suspension before returning.

PromptUser: If true, the application can prompt the user for directions on how to prepare for the suspension; otherwise, the application must prepare without user interaction.

Return true to deny the request, false to grant the request.

An application should process this event by first determining whether permission to suspend can be granted. It must not grant permission if doing so would cause a loss of data. The application can prompt the user for directions on how to prepare for suspension only if PromptUser is set.

The system allows approximately 20 seconds for an application to remove the message that is sending the QuerySuspend event from the application’s message queue. If an application does not remove the message from its queue in less than 20 seconds, the system will assume that the application is in a non-responsive state, and that the application agrees to the sleep request. Applications that do not process their message queues may have their operations interrupted. After it removes the message from the message queue, an application can take as much time as needed to perform any required operations before entering the sleep state. Any operations that could take longer than 20 seconds should be performed at this time, since the system allows only 20 seconds for operations to complete during Suspend processing.

130.6.9 QuerySuspendFailed

MBS Win Plugin, Plugin Version: 6.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The QuerySuspendFailed event is broadcast as a notification that permission to suspend the computer was denied.

**Notes:** This event is broadcast if any application or driver returned false to a previous QuerySuspend event.

130.6.10 ResumeAutomatic

MBS Win Plugin, Plugin Version: 6.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The ResumeAutomatic event is broadcast when the computer wakes up automatically to handle an event.

**Notes:** An application will not generally respond unless it is handling the event, because the user is not present.

130.6.11 ResumeCritical

MBS Win Plugin, Plugin Version: 6.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The ResumeCritical event is broadcast as a notification that the system has resumed operation.

**Notes:** This event can indicate that some or all applications did not receive a Suspend event. For example,
this event can be broadcast after a critical suspension caused by a failing battery.

130.6.12 ResumeStandby

MBS Win Plugin, Plugin Version: 6.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The ResumeStandby event is broadcast as a notification that the system has resumed operation after being put to standby.

130.6.13 ResumeSuspend

MBS Win Plugin, Plugin Version: 6.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The ResumeSuspend event is broadcast as a notification that the system has resumed operation after being suspended.

130.6.14 Standby

MBS Win Plugin, Plugin Version: 6.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The Standby event is broadcast immediately before the computer enters a standby state.
**Notes:** This event is typically broadcast when all applications and installable drivers have returned okay to a previous QueryStandby event.

130.6.15 Suspend

MBS Win Plugin, Plugin Version: 6.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The Suspend event is broadcast immediately before the computer enters a suspended state.
**Notes:** This event is typically broadcast when all applications and installable drivers have returned okay to a previous QuerySuspend event.
Chapter 131

Printing

131.1  Globals

131.1.1  NewCPMPageFormatMBS as CPMPageFormatMBS

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
Creates a new page format object.
Notes: Returns nil on any error.

131.1.2  NewCPMPrintSessionMBS as CPMPrintSessionMBS

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
Creates a new print session object.
Example:

'get a print session

// print this PDF
    dim pathPrinted as FolderItem=GetFolderItem("test.pdf")

    dim thePrintSession as CPMPrintSessionMBS = NewCPMPrintSessionMBS
    if thePrintSession = nil then Return

    'get default page format and print settings and attach it to the print settings
    dim thePageFormat as CPMPageFormatMBS = NewCPMPageFormatMBS
    dim thePrintSettings as CPMPrintSettingsMBS = NewCPMPrintSettingsMBS
    thePrintSession.DefaultPageFormat thePageFormat
    thePrintSession.DefaultPrintSettings thePrintSettings
show the print dialog if not thePrintSession.PrintDialog(thePrintSettings, thePageFormat) then return

open the file which will be printed dim thePdfDocument as CGPDFDocumentMBS = pathPrinted.OpenAsCGPDFDocumentMBS

limit page counts to the one we have dim LastPage as Integer = thePdfDocument.PageCount if thePrintSettings.LastPage<lastpage then lastpage=thePrintSettings.LastPage end if

you get better progress bar if you tell how many pages will come thePrintSettings.LastPage=lastpage

begin the printing thePrintSession.BeginDocument(thePrintSettings, thePageFormat)

loop over the number of copies for currentCopy as Integer = 1 to thePrintSettings.Copies

loop over the pages for currentPage as Integer = thePrintSettings.FirstPage to LastPage

prepage the page dim PrintRect as CPMRectMBS =thePageFormat.AdjustedPageSize dim CGRect as CGRectMBS =CGMakeRectMBS(PrintRect.left, PrintRect.top, PrintRect.Width, PrintRect.Height) thePrintSession.BeginPage(thePageFormat, nil) dim thePrintContext as CGContextMBS = thePrintSession.PageContext if thePrintContext = Nil then return

print the page thePrintContext.DrawCGPDFDocument thePdfDocument, CGRect, currentPage

end the page thePrintContext = nil thePrintSession.EndPage next

end the printing thePrintSession.EndDocument
131.2. **CLASS CPMLANGUAGEINFOMBS**

**Notes:** Returns nil on any error.

131.1.3 **NewCPMPrintSettingsMBS as CPMPrintSettingsMBS**

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new print settings object. **Notes:** Returns nil on any error.

131.2 **class CPMLanguageInfoMBS**

131.2.1 **class CPMLanguageInfoMBS**

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a language info. **Notes:** Only a data class.

131.2.2 **Properties**

131.2.3 **Level as String**

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The level string of the printer. **Notes:** (Read and Write property)

131.2.4 **Release as String**

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The release string of the printer. **Notes:** (Read and Write property)

131.2.5 **Version as String**

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The version string of the printer. **Notes:** (Read and Write property)
131.3   class CPMPageFormatMBS

131.3.1   class CPMPageFormatMBS

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class for a page format.

131.3.2   Methods

131.3.3   AdjustedPageSize as CPMRectMBS

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The adjusted page size.
**Notes:** Lasterror is set.

131.3.4   AdjustedPaperSize as CPMRectMBS

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The adjusted page size.
**Notes:** Lasterror is set.

131.3.5   Constructor

MBS MacCG Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new page format object.

131.3.6   CopySettings(Destination as CPMPageFormatMBS)

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Copies the settings to another pageformat object.

131.3.7   CreateDataRepresentation(Format as Integer = 0) as String

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a data representation of a PMPageFormat object as a data string.
**Example:**
131.3. CLASS CPMPAGEFORMATMBS

```vbscript
dim p as new CPMPageFormatMBS
p.orientation = p.kPMLandscape
dim d as string = p.CreateDataRepresentation
break // check in debugger
```

Notes:
Use CreateWithDataRepresentation to create a CPMPageFormatMBS from a string created by this call. Format can be kPMDataFormatXMLDefault, kPMDataFormatXMLMinimal or kPMDataFormatXMLCompressed.

131.3.8 CreateWithDataRepresentation(Data as String) as CPMPageFormatMBS

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Creates a PMPageFormat object from a data representation created with CreateDataRepresentation.
Example:
```vbscript
dim p as new CPMPageFormatMBS
p.orientation = p.kPMLandscape
dim d as string = p.CreateDataRepresentation

dim other as CPMPageFormatMBS = CPMPageFormatMBS.CreateWithDataRepresentation(d)
MsgBox str(other.Orientation)
```

Notes: Returns nil in case of error.

131.3.9 PrinterID as String

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Obtains the formatting printer for the pageformat.
Notes: Will either return the formatting printer for the pageformat or will return nil if the pageformat doesn’t have that information.

131.3.10 UnadjustedPageSize as CPMRectMBS

Notes: Lasterror is set.
131.3.11 UnadjustedPaperSize as CPMRectMBS

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The unadjusted page size. **Notes:** Lasterror is set.

131.3.12 Properties

131.3.13 handle as Integer

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The handle for the page format. **Notes:** It’s a PMPageFormat which you find in CMTypes.h in the Toolbox. (Read and Write property)

131.3.14 Lasterror as Integer

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The error code from the last command. **Notes:** 0 if successful, -1 if function is not available or a required parameter was not set. Else a Mac OS error code. (Read and Write property)

131.3.15 release as boolean

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** whether the destructor will release the handle. **Notes:** (Read and Write property)

131.3.16 Orientation as Integer

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The page orientation. **Example:**

```vba
dim p as new CPMPageFormatMBS
p.orientation = p.kPMLandscape
```
Notes:
Lasterror is set.

Possible values:

- kPMPortrait: 1
- kPMLandscape: 2
- kPMReversePortrait: 3 (will revert to kPortrait for current drivers)
- kPMReverseLandscape: 4 (will revert to kLandscape for current drivers)

(Read and Write computed property)

### 131.3.17 Scale as Double

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The page scaling.

**Notes:**
- Lasterror is set.
- Value is 100 for 100%.
  (Read and Write computed property)

### 131.3.18 Constants

#### 131.3.19 kPMDataFormatXMLCompressed = 2

MBS MacCG Plugin, Plugin Version: 15.1. **Function:** One of the data formats constants.

**Notes:** kPMDataFormatXMLCompressed is only compatible and usable with Mac OS X version 10.5 and later. Data in this format can be only be reconstituted into the equivalent printing manager object with the appropriate PMXXXCreateWithDataRepresentation function. The data representation produced when using kPMDataFormatXMLCompressed is approximately 20 times smaller than kPMDataFormatXMLDefault. This format is a good choice when execution on versions of Mac OS X prior to 10.5 is not necessary and the minimum data size is important.
131.3.20  kPMDataFormatXMLDefault = 0

MBS MacCG Plugin, Plugin Version: 15.1. **Function:** One of the data formats constants. **Notes:** Specifies a data format that is compatible with all Mac OS X versions. Data in this format can be used with the PMUnflattenXXX routines present in all versions of Mac OS X prior to 10.5. However, this data representation is much larger than the more modern data representations described below.

131.3.21  kPMDataFormatXMLMinimal = 1

MBS MacCG Plugin, Plugin Version: 15.1. **Function:** One of the data formats constants. **Notes:** XMLMinimal is only compatible and usable with Mac OS X version 10.5 and later. Data in this format can be only be reconsistuted into the equivalent printing manager object with the appropriate CreateWithDataRepresentation function. The data representation produced when using kPMDataFormatXMLMinimal is approximately 3-5 times smaller than kPMDataFormatXMLDefault. This format is a good choice when execution on versions of Mac OS X prior to 10.5 is not necessary and an uncompressed XML representation of the data is needed.

131.3.22  kPMLandscape = 2

MBS MacCG Plugin, Plugin Version: 15.1. **Function:** One of the orientation constants. **Notes:** Landscape

131.3.23  kPMPortrait = 1

MBS MacCG Plugin, Plugin Version: 15.1. **Function:** One of the orientation constants. **Notes:** Portrait

131.3.24  kPMReverseLandscape = 4

MBS MacCG Plugin, Plugin Version: 15.1. **Function:** One of the orientation constants. **Notes:** Reverse Landscape

131.3.25  kPMReversePortrait = 3

MBS MacCG Plugin, Plugin Version: 15.1. **Function:** One of the orientation constants. **Notes:** Reverse Portrait
131.4  class CPMPrinterMBS

131.4.1  class CPMPrinterMBS

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class for a printer.

131.4.2  Methods

131.4.3  Constructor(name as string)

MBS MacCG Plugin, Plugin Version: 12.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Initializes a new printer object given the printer name.
**Notes:**
Raises exception if lookup fails.
This accepts both CUPS names and the Mac GUI names in printing control panel.

131.4.4  CreateFromPrinterID(PrinterID as String) as CPMPrinterMBS

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Create a PMPrinter instance from the supplied printerID.
**Example:**
```vbscript
dim p as CPMPrinterMBS = CPMPrinterMBS.CreateFromPrinterID("Brother DCP 8085DN")
MsgBox p.name
```

131.4.5  CreateGenericPrinter as CPMPrinterMBS

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a generic PMPrinter.

131.4.6  CreateLocalPrinterList as CPMPrinterMBS()

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Queries list of local printers.
**Example:**
dim a() as CPMPrinterMBS = CPMPrinterMBS.CreateLocalPrinterList
for each p as CPMPrinterMBS in a
    MsgBox p.Name
next

131.4.7 DescriptionURL as string

MBS MacCG Plugin, Plugin Version: 12.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
Returns the description URL for this printer.
Example:

dim session as CPMPrintSessionMBS = NewCPMPrintSessionMBS
dim printer as CPMPrinterMBS = session.CurrentPrinter

MsgBox printer.DescriptionURL

Notes:
Should be the path to a PPD file for a laser printer.
Lasterror is set.

131.4.8 DeviceURI as string

MBS MacCG Plugin, Plugin Version: 12.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
Hand back the URI of the printer’s device.
Example:

dim session as CPMPrintSessionMBS = NewCPMPrintSessionMBS
dim printer as CPMPrinterMBS = session.CurrentPrinter

MsgBox printer.DeviceURI

Notes:
On success returns a CFURLMBS object describing the printer’s device.
Lasterror is set.
131.4.9  DriverCreator as String

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns a 4 letter code for the creator of the printer.

**Example:**

```vba
    dim session as CPMPrintSessionMBS = NewCPMPrintSessionMBS
    dim printer as CPMPrinterMBS = session.CurrentPrinter
    MsgBox "DriverCreator: "+str(printer.DriverCreator)
```

**Notes:** Lasterror is set.

131.4.10  DriverReleaseInfo as CPMVersionMBS

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Queries printer driver version.

131.4.11  HostName as string

MBS MacCG Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Hand back the host name of the print server hosting the printer’s print queue.

**Example:**

```vba
    dim session as CPMPrintSessionMBS = NewCPMPrintSessionMBS
    dim printer as CPMPrinterMBS = session.CurrentPrinter
    MsgBox "HostName: "+str(printer.HostName)
```

**Notes:** Lasterror is set.

131.4.12  ID as string

MBS MacCG Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the ID of the string.
131.4.13 IndexedPrinterResolution(index as Integer) as CPMResolutionMBS

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns a printer resolution.  
**Notes:**  
Lasterror is set.  
Index is from 1 to ResolutionCount.

131.4.14 IsDefault as boolean

MBS MacCG Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether this printer is the default printer.  
**Example:**

dim session as CPMPrintSessionMBS = NewCPMPrintSessionMBS  
dim printer as CPMPrinterMBS = session.CurrentPrinter  
MsgBox "IsDefault: " + str(printer.IsDefault)

131.4.15 IsFavorite as boolean

MBS MacCG Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Return true if the printer is in the user’s favorite printer list.  
**Example:**

dim session as CPMPrintSessionMBS = NewCPMPrintSessionMBS  
dim printer as CPMPrinterMBS = session.CurrentPrinter  
MsgBox "IsFavorite: " + str(printer.IsFavorite)

131.4.16 IsPostScriptCapable as boolean

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Can this printer do postscript?  
**Example:**

dim session as CPMPrintSessionMBS = NewCPMPrintSessionMBS  
dim printer as CPMPrinterMBS = session.CurrentPrinter  
MsgBox "IsPostScriptCapable: " + str(printer.IsPostScriptCapable)
Notes: Lasterror is set.

131.4.17  **IsPostScriptPrinter as boolean**

MBS MacCG Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
If the result is true if the printer is a PostScript printer.  
**Example:**
```vbscript
dim session as CPMPrintSessionMBS = NewCPMPrintSessionMBS
dim printer as CPMPrinterMBS = session.CurrentPrinter

MsgBox "IsPostScriptPrinter: " + str(printer.IsPostScriptPrinter)
```

Notes: A PostScript printer is one whose driver takes PostScript directly.

131.4.18  **IsRemote as boolean**

MBS MacCG Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Hand back a boolean indicating whether the printer is hosted by remote print server.  
**Example:**
```vbscript
dim session as CPMPrintSessionMBS = NewCPMPrintSessionMBS
dim printer as CPMPrinterMBS = session.CurrentPrinter

MsgBox "IsRemote: " + str(printer.IsRemote)
```

Notes:
If result is true, the print queue represents a printer hosted and managed by a remote print server.

If result is false, the print queue represents a directly connected printer, a network printer, or a remote printer that is locally managed. Consult the queue’s device URI to determine the type of connection that is used to communicate with the printer.

Whether a printer is remote is derived from the CUPS printer-type attribute for the print queue.
131.4.19  **LanguageInfo as CPMLanguageInfoMBS**

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns language information about the printer.  
**Notes:** Lasterror is set.

131.4.20  **Location as string**

MBS MacCG Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the location of the printer.

131.4.21  **MakeAndModelName as string**

MBS MacCG Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** A string with the name for the model and the maker.  
**Notes:**  
Lasterror is set.  
Returns "" on any error.

131.4.22  **Name as string**

MBS MacCG Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the name of the string.  
**Example:**
```vbscript
dim session as CPMPrintSessionMBS = NewCPMPrintSessionMBS
dim printer as CPMPrinterMBS = session.CurrentPrinter
MsgBox printer.name
```

131.4.23  **ResolutionCount as Integer**

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns how much resolutions are supported by the printer.  
**Notes:** Lasterror is set.
131.4.24 SetDefault

MBS MacCG Plugin, Plugin Version: 9.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Set the default printer for the current user.
**Notes:**
It is not typical for an application to set the current default printer for the user; the printing system itself
takes care of managing the default printer.
This function should be used only in rare circumstances.

Requires Mac OS X 10.5.

131.4.25 State as Integer

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Queries printer state.
**Example:**
```vba
dim p as CPMPrinterMBS = CPMPrinterMBS.CreateFromPrinterID("Brother DCP 8085DN")
MsgBox str(p.State)
```
**Notes:** Can be kPMPrinterIdle, kPMPrinterProcessing or kPMPrinterStopped.

131.4.26 Properties

131.4.27 handle as Integer

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The handle for the printer.
**Notes:**
It’s a PMPrinter which you find in CMTypes.h in the Toolbox.
(Read and Write property)

131.4.28 Lasterror as Integer

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The error code from the last command.
**Notes:**
0 if successfull, -1 if function is not available or a required parameter was not set. Else a Mac OS error code.
131.4.29 release as boolean

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** whether the destructor will release the handle. **Notes:** (Read and Write property)

131.4.30 Constants

131.4.31 kPMPrinterIdle = 3

MBS MacCG Plugin, Plugin Version: 15.1. **Function:** One of the printer state constants. **Notes:** Printer is idle.

131.4.32 kPMPrinterProcessing = 4

MBS MacCG Plugin, Plugin Version: 15.1. **Function:** One of the printer state constants. **Notes:** Printer is processing.

131.4.33 kPMPrinterStopped = 5

MBS MacCG Plugin, Plugin Version: 15.1. **Function:** One of the printer state constants. **Notes:** Printer is stopped.
131.5 class CPMPrintSessionMBS

131.5.1 class CPMPrintSessionMBS

Notes: Works only in Carbon Stuff and can only be used with CGContext which works only on Mac OS X.

131.5.2 Methods

131.5.3 BeginDocument(settings as CPMPrintSettingsMBS, pageformat as CPMPageFormatMBS)

Notes: Lasterror is set.

131.5.4 BeginDocumentNoDialog(settings as CPMPrintSettingsMBS, pageformat as CPMPageFormatMBS)

Notes: Doesn’t use the print progress dialog.
Lasterror is set.

131.5.5 BeginPage(pageformat as CPMPageFormatMBS, rect as CPMRectMBS)

Notes: Lasterror is set.

131.5.6 BeginPageNoDialog(pageformat as CPMPageFormatMBS, rect as CPMRectMBS)

Notes:
Doesn’t use the print progress dialog.
LastError is set.

131.5.7 Constructor

MBS MacCG Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new print session object.

131.5.8 CreatePrinterList(list() as string)

MBS MacCG Plugin, Plugin Version: 12.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a list of all printers.
**Example:**

```vba
dim session as CPMPrintSessionMBS = NewCPMPrintSessionMBS

dim list() as string
session.CreatePrinterList(list)
MsgBox join(list, EndOfLine)
```

**Notes:**
List is an array of strings with the names of the printers.
LastError is set.
See also:

- 131.5.9 CreatePrinterList(list() as string, byref index as Integer, byref currentprinter as CPMPrinterMBS)

131.5.9 CreatePrinterList(list() as string, byref index as Integer, byref currentprinter as CPMPrinterMBS)

MBS MacCG Plugin, Plugin Version: 12.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a list of all printers.
**Example:**

```vba
dim session as CPMPrintSessionMBS = NewCPMPrintSessionMBS

dim list() as string
dim currentprinter as CPMPrinterMBS
dim index as Integer
```
131.5. **CLASS CPMPRINTSESSIONMBS**

```vbnet
session.CreatePrinterList(list, index, currentprinter)

MsgBox join(list, EndOfLine)
```

**Notes:**
List is an array of strings with the names of the printers.
Index is the index of the current printer inside this list.
CurrentPrinter is the current printer selected.
Lasterror is set.
See also:

- 131.5.8 `CreatePrinterList(list() as string)`

### 131.5.10 **DefaultPageFormat(pageformat as CPMPPageFormatMBS)**

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sets the page format object to the default settings.
**Notes:** Lasterror is set.

### 131.5.11 **DefaultPrintSettings(printsettings as CPMPrintSettingsMBS)**

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sets the settings object to the default settings.
**Notes:** Lasterror is set.

### 131.5.12 **EndDocument**

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Ends the current document.
**Notes:** Lasterror is set.

### 131.5.13 **EndDocumentNoDialog**

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Ends the current document.
**Notes:** Doesn’t use the print progress dialog.
Lasterror is set.
131.5.14  EndPage

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Ends the current page.
**Notes:** Lasterror is set.

131.5.15  EndPageNoDialog

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Ends the current page.
**Notes:**
Doesn’t use the print progress dialog.
Lasterror is set.

131.5.16  GetDestinationFormat(printsettings as CPMPrintSettingsMBS) as String

MBS MacCG Plugin, Plugin Version: 12.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the destination format value.
**Notes:** Lasterror is set.

131.5.17  GetDestinationLocation(printsettings as CPMPrintSettingsMBS) as String

MBS MacCG Plugin, Plugin Version: 12.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the destination location value.
**Notes:** Lasterror is set.

131.5.18  GetDestinationType(printsettings as CPMPrintSettingsMBS) as Integer

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the destination type value.
**Notes:** Lasterror is set.
131.5. CLASS CPMPRINTSESSIONMBS

131.5.19  kPMDocumentFormatDefault as String

MBS MacCG Plugin, Plugin Version: 12.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the document format.

131.5.20  kPMDocumentFormatPDF as String

MBS MacCG Plugin, Plugin Version: 12.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the document format.

131.5.21  kPMDocumentFormatPostScript as string

MBS MacCG Plugin, Plugin Version: 12.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the document format.

131.5.22  kPMGraphicsContextCoreGraphics as string

MBS MacCG Plugin, Plugin Version: 12.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the graphics context.

131.5.23  kPMGraphicsContextDefault as string

MBS MacCG Plugin, Plugin Version: 12.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the graphics context.

131.5.24  PageContext as CGContextMBS

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new CGContext object for the current page. **Notes:** Lasterror is set.

131.5.25  PageSetupDialog(pageformat as CPMPageFormatMBS) as boolean

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Shows the page setup dialog.
131.5.26  PrintDialog(settings as CPM::PrintSettingsMBS, pageformat as CPM::PageFormatMBS) as boolean

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Shows the print dialog.
**Notes:** Lasterror is set.

131.5.27  SetDestination(printsettings as CPM::PrintSettingsMBS, desttype as Integer, destformat as String, desturl as String)

MBS MacCG Plugin, Plugin Version: 12.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sets a new destination.
**Notes:**
Some destinations so you may need to specify a format, else you can pass "" for the default format. Some destinations require a URL to a file.

Destination type codes:

- kPMDestinationInvalid 0
- kPMDestinationPrinter 1
- kPMDestinationFile 2
- kPMDestinationFax 3
- kPMDestinationPreview 4

Destformat strings:

- kPMDocumentFormatPDF application/pdf
- kPMDocumentFormatPICT application/vnd.apple.printing-pict
- kPMDocumentFormatPICTPS application/vnd.apple.printing-pict-ps
- kPMDocumentFormatPostScript application/postscript

Lasterror is set.
131.5.28 **UseSheets**(docWindow as window)

MBS MacCG Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Specifies that a printing dialog should be displayed as a sheet.
**Notes:**
docWindow: The window to which the sheet dialog should be attached.
LastError is set. (-1 for the docWindow parameter being nil)

131.5.29 **ValidatePageFormat**(pageformat as CPMPageFormatMBS) as boolean

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Validates the page format.
**Notes:** Lasterror is set.

131.5.30 **ValidatePrintSettings**(printsettings as CPMPrintSettingsMBS) as boolean

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Validates the print settings.
**Notes:** Lasterror is set.

131.5.31 **Properties**

131.5.32 **handle** as Integer

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The handle for the print session.
**Notes:**
It’s a PMPrintSession which you find in CMTypes.h in the Toolbox.
(Read and Write property)

131.5.33 **LastError** as Integer

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The error code from the last command.
**Notes:**
0 if successful, -1 if function is not available or a required parameter was not set. Else a Mac OS error code.
(Read and Write property)
131.5.34 release as boolean

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** whether the destructor will release the handle. **Notes:** (Read and Write property)

131.5.35 SheetTarget as Window

MBS MacCG Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The window set by UseSheets. **Notes:** This property is to reference the window used for the sheets so REALbasic does not destroy the window too early. (Read and Write property)

131.5.36 CurrentPrinter as CPMPrinterMBS

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The current printer for this session. **Notes:** Lasterror is set. Setting this can only be done on Mac OS X. (Read and Write computed property)

131.5.37 CurrentPrinterName as string

MBS MacCG Plugin, Plugin Version: 12.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The current printer for this session by name. **Notes:** Lasterror is set. (Read and Write computed property)

131.5.38 Events

131.5.39 SheetDone( WindowHandle as Integer, accepted as boolean)

MBS MacCG Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** This event is called for a finished print sheet.
131.5. CLASS CPMPRINTSESSIONMBS

Notes: Accepted is false if the cancel button was used. True if OK was clicked.

131.5.40 Constants

131.5.41 kPMDestinationFax = 3
MBS MacCG Plugin, Plugin Version: 15.1. **Function:** One of the destination types. **Notes:** Fax

131.5.42 kPMDestinationFile = 2
MBS MacCG Plugin, Plugin Version: 15.1. **Function:** One of the destination types. **Notes:** File

131.5.43 kPMDestinationInvalid = 0
MBS MacCG Plugin, Plugin Version: 15.1. **Function:** One of the destination types. **Notes:** Invalid

131.5.44 kPMDestinationPreview = 4
MBS MacCG Plugin, Plugin Version: 15.1. **Function:** One of the destination types. **Notes:** Preview

131.5.45 kPMDestinationPrinter = 1
MBS MacCG Plugin, Plugin Version: 15.1. **Function:** One of the destination types. **Notes:** Printer

131.5.46 kPMDestinationProcessPDF = 5
MBS MacCG Plugin, Plugin Version: 15.1. **Function:** One of the destination types. **Notes:** Process to PDF
131.5.47 kPMDestinationTypeDefault = 1

MBS MacCG Plugin, Plugin Version: 15.1. **Function:** One of the destination types. **Notes:** Default is printer.
131.6. CLASS CPMPRINTSETTINGSMBS

131.6. class CPMPrintSettingsMBS

131.6.1. class CPMPrintSettingsMBS


131.6.2. Methods

131.6.3. Constructor


131.6.4. CopyPrintSettings(dest as CPMPrintSettingsMBS)

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Copes the settings to the other settings.

131.6.5. CreateDataRepresentation(Format as Integer = 0) as String

Example:
```vba
dim p as new CPMPrintSettingsMBS
p.Collate = true
p.Duplex = p.kPMDuplexTumble
dim data as string = p.CreateDataRepresentation
Break // check in debugger
```

131.6.6. CreateWithDataRepresentation(Data as String) as CPMPrintSettingsMBS

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Creates a PMPageFormat object from a data representation created with CreateDataRepresentation.
131.6.7 Dictionary as Dictionary

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Represent these print settings as a dictionary.

131.6.8 GetPageRange(byref minPage as UInt32, byref maxPage as UInt32)

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Queries the page range to print.
**Notes:**
Obtains the valid range of pages that can be printed.
The default page range is 1 - (all pages). The page range is something that is set by the application. It is NOT the first and last page to print. It serves as limits for setting the first and last page.

131.6.9 Keys as String()

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Queries list of keys.
**Example:**
```vbnet
dim p as new CPMPrintSettingsMBS
p.Collate = true
p.Duplex = p.kPMDuplexTumble
dim keys() as string = p.keys
Break // check in debugger
```

131.6.10 SetPageRange(minPage as UInt32, maxPage as UInt32)

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Sets the page range to print.

131.6.11 Properties

131.6.12 handle as Integer

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The handle for the print settings.
**Notes:**
131.6. **CLASS CPMPRINTSETTINGSMBS**

It’s a PMPrintSettings which you find in CMTypes.h in the Toolbox.

(Read and Write property)

### 131.6.13 Lasterror as Integer

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The error code from the last command.

**Notes:**
0 if successful, -1 if function is not available or a required parameter was not set. Else a Mac OS error code.
(Read and Write property)

### 131.6.14 release as boolean

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
whether the destructor will release the handle.

**Notes:** (Read and Write property)

### 131.6.15 Collate as boolean

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The collate setting.

**Notes:** (Read and Write computed property)

### 131.6.16 Copies as Integer

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The number of copies that the user requests to be printed.

**Notes:**
Lasterror is set.
(Read and Write computed property)

### 131.6.17 Duplex as Integer

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The duplex setting.

**Notes:** (Read and Write computed property)
131.6.18 FirstPage as Integer

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The number of the first page to print.
**Notes:**
Lasterror is set.
(Read and Write computed property)

131.6.19 JobName as String

MBS MacCG Plugin, Plugin Version: 12.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Specifies the name of a print job.
**Notes:**
Lasterror is set.
(Read and Write computed property)

131.6.20 LastPage as Integer

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The number of the last page to print.
**Example:**
'get a print session

// print this PDF
dim pathPrinted as FolderItem=GetFolderItem("test.pdf")

dim thePrintSession as CPMPrintSessionMBS = NewCPMPrintSessionMBS
if thePrintSession = nil then Return

'get default page format and print settings and attach it to the print settings
dim thePageFormat as CPMPageFormatMBS = NewCPMPageFormatMBS
dim thePrintSettings as CPMPrintSettingsMBS = NewCPMPrintSettingsMBS
thePrintSession.DefaultPageFormat thePageFormat
thePrintSession.DefaultPrintSettings thePrintSettings

'show the print dialog
if not thePrintSession.PrintDialog(thePrintSettings,thePageFormat) then return

'open the file which will be printed
dim thePdfDocument as CGPDFDocumentMBS = pathPrinted.OpenAsCGPDFDocumentMBS

' limit page counts to the one we have
dim LastPage as Integer = thePdfDocument.PageCount
if thePrintSettings.LastPage < lastpage then
lastpage = thePrintSettings.LastPage
end if

' you get better progress bar if you tell how many pages will come
thePrintSettings.LastPage = lastpage

' begin the printing
thePrintSession.BeginDocument(thePrintSettings, thePageFormat)

' loop over the number of copies
for currentCopy as Integer = 1 to thePrintSettings.Copies

' loop over the pages
for currentPage as Integer = thePrintSettings.FirstPage to LastPage

' prepage the page
dim PrintRect as CPMRectMBS = thePageFormat.AdjustedPageSize
dim CGRect as CGRectMBS = CGMakeRectMBS(PrintRect.left, PrintRect.top, PrintRect.Width, PrintRect.Height)
thePrintSession.BeginPage(thePageFormat, nil)
dim thePrintContext as CGContextMBS = thePrintSession.PageContext
if thePrintContext = Nil then return

' print the page
thePrintContext.DrawCGPDFDocument thePdfDocument, CGRect, currentPage

' end the page
thePrintContext = nil
thePrintSession.EndPage
next

next

' end the printing
thePrintSession.EndDocument

Notes:
Lasterror is set.
(Read and Write computed property)
131.6.21  **Value(key as String) as Variant**

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The value in settings.

**Example:**

```vba
dim p as new CPMPrintSettingsMBS
p.Collate = true
dim value as Variant = p.value("com.apple.print.PrintSettings.PMCopyCollate")
Break // check in debugger
```

**Notes:** (Read and Write computed property)

131.6.22  **Constants**

131.6.23  **kPMDuplexNone = 1**

MBS MacCG Plugin, Plugin Version: 15.1. **Function:** One of the duplex mode constants.

**Notes:** Duplex off.

131.6.24  **kPMDuplexNoTumble = 2**

MBS MacCG Plugin, Plugin Version: 15.1. **Function:** One of the duplex mode constants.

**Notes:** Duplex with no tumble.

131.6.25  **kPMDuplexTumble = 3**

MBS MacCG Plugin, Plugin Version: 15.1. **Function:** One of the duplex mode constants.

**Notes:** Duplex with tumble.

131.6.26  **kPMSimplexTumble = 4**

MBS MacCG Plugin, Plugin Version: 15.1. **Function:** One of the duplex mode constants.

**Notes:** No duplex.
131.7  CLASS CPMRECTMBS

131.7  class CPMRectMBS

131.7.1  class CPMRectMBS

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a rectangle.  
**Notes:** Only a data class.

131.7.2  Properties

131.7.3  Bottom as Double

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The bottom distance to the border.  
**Notes:** (Read and Write property)

131.7.4  Height as Double

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The height of the rectangle.  
**Notes:** Setting the height changes the bottom property.  
(Read and Write property)

131.7.5  Left as Double

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The left distance to the border.  
**Notes:** (Read and Write property)

131.7.6  Right as Double

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The right distance to the border.  
**Notes:** (Read and Write property)
131.7.7  Top as Double

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The top distance to the border.  
**Notes:** (Read and Write property)

131.7.8  Width as Double

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The width of the rectangle.  
**Notes:** Setting the height changes the right property.  
(Read and Write property)
131.8. **CLASS CPMRESOLUTIONMBS**

131.8 **class CPMResolutionMBS**

131.8.1 **class CPMResolutionMBS**

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class for a resolution.
**Notes:** Only a data class.

131.8.2 **Properties**

131.8.3 **Horizontal as Double**

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The horizontal resolution.
**Notes:** (Read and Write property)

131.8.4 **Vertical as Double**

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The vertical resolution.
**Notes:** (Read and Write property)
131.9 class CPMVersionMBS

131.9.1 class CPMVersionMBS

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The class for version information.

131.9.2 Properties

131.9.3 CountryCode as Integer

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The country code.
**Notes:** (Read and Write property)

131.9.4 LongVersion as String

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The long version string.
**Notes:** (Read and Write property)

131.9.5 ShortVersion as String

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The short version string.
**Notes:** (Read and Write property)

131.9.6 VersionMajor as Integer

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The major version number.
**Notes:** (Read and Write property)

131.9.7 VersionMinor as Integer

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The minor version number.
131.9. CLASS CPMVERSIONMBS

Notes: (Read and Write property)

131.9.8 VersionRevision as Integer

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The reversion number.
**Notes:** (Read and Write property)

131.9.9 VersionStage as Integer

MBS MacCG Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The version stage.
**Notes:** (Read and Write property)
131.10 class WindowsAddPrintJobMBS

131.10.1 class WindowsAddPrintJobMBS

MBS Win Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A class to send raw data to a printer.

**Example:**

```vbs
// Print Postscript directly to Postscript printer
const PrinterName = "Brother DCP-8085DN"

dim w as new WindowsAddPrintJobMBS

if not w.OpenPrinter(PrinterName) then
MsgBox "OpenPrinter failed. Is the printer name correct in the source code?"
Return
end if

const DocName = "My Document"

if not w.StartDocPrinter("My Document", w.kDataFormatRAW) then
MsgBox "StartDocPrinter failed."
Return
end if

MsgBox "Print Job ID: " +str(w.JobID)

call w.StartPagePrinter

dim PostScript as string = "% !PS" +EndOfLine.UNIX +".1 setgray" +EndOfLine.UNIX +"0 0 100 100 rect-fill" +EndOfLine.UNIX +"showpage" +EndOfLine.UNIX

dim BytesSent as Integer = w.WritePrinter(PostScript)

MsgBox str(BytesSent) +" bytes of " +str(lenb(PostScript)) +" bytes sent."

call w.EndPagePrinter
call w.EndDocPrinter

w = nil // close printer
```

**Notes:**

Perfect for printing postscript data to a postscript printer.
You can use this class in several ways:
131.10. CLASS WINDOWSADDPRINTJOBMBS

1. OpenPrinter, AddJob, WriteJob and ScheduleJob.

131.10.2 Methods

131.10.3 AddJob as boolean

MBS Win Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
Creates a new print job.
Notes: Returns true on success and false on failure.

131.10.4 ClosePrinter

MBS Win Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
Closes printer connection.

131.10.5 EndDocPrinter as boolean

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
The EndDocPrinter function ends a print job for the specified printer.
Notes:
If the function succeeds, the return value is a true.

The EndDocPrinter function returns an error if the print job was not started by calling the StartDocPrinter function.

The sequence for a print job is as follows:

1. To begin a print job, call StartDocPrinter.
2. To begin each page, call StartPagePrinter.
3. To write data to a page, call WritePrinter.
4. To end each page, call EndPagePrinter.
5. Repeat 2, 3, and 4 for as many pages as necessary.
6. To end the print job, call EndDocPrinter.

When a page in a spooled file exceeds approximately 350 MB, it may fail to print and not send an error message. For example, this can occur when printing large EMF files. The page size limit depends on many
factors including the amount of virtual memory available, the amount of memory allocated by calling processes, and the amount of fragmentation in the process heap.

### 131.10.6 EndPagePrinter as boolean

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The EndPagePrinter function notifies the print spooler that the application is at the end of a page in a print job.  
**Notes:**  
If the function succeeds, the return value is a true.

The sequence for a print job is as follows:

1. To begin a print job, call StartDocPrinter.
2. To begin each page, call StartPagePrinter.
3. To write data to a page, call WritePrinter.
4. To end each page, call EndPagePrinter.
5. Repeat 2, 3, and 4 for as many pages as necessary.
6. To end the print job, call EndDocPrinter.

When a page in a spooled file exceeds approximately 350 MB, it can fail to print and not send an error message. For example, this can occur when printing large EMF files. The page size limit depends on many factors including the amount of virtual memory available, the amount of memory allocated by calling processes, and the amount of fragmentation in the process heap.

### 131.10.7 OpenPrinter(PrinterName as string) as boolean

MBS Win Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Opens the printer for printing.  
**Notes:**  
Returns true on success and false on failure.  
PrinterName can be "" for the default printer.

### 131.10.8 ScheduleJob as boolean

MBS Win Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Schedules the printing.  
**Notes:** Returns true on success and false on failure.
131.10. CLASS WINDOWSADDPRINTJOBMBS

131.10.9 StartDocPrinter(DocName as string, Datatype as string) as boolean

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The StartDocPrinter function notifies the print spooler that a document is to be spooled for printing.

**Example:**

```vbnet
// Print Postscript directly to Postscript printer
const PrinterName = "Brother DCP-8085DN"

dim w as new WindowsAddPrintJobMBS

if not w.OpenPrinter(PrinterName) then
    MsgBox "OpenPrinter failed. Is the printer name correct in the source code?"
    Return
end if

const DocName = "My Document"

if not w.StartDocPrinter("My Document", w.kDataFormatRAW) then
    MsgBox "StartDocPrinter failed."
    Return
end if

MsgBox "Print Job ID: " + str(w.JobID)

call w.StartPagePrinter

dim PostScript as string = "% !PS" + EndOfLine.UNIX + ".1 setgray" + EndOfLine.UNIX + "0 0 100 100 rect-fill" + EndOfLine.UNIX + "showpage" + EndOfLine.UNIX

dim BytesSent as Integer = w.WritePrinter(PostScript)

MsgBox str(BytesSent) + " bytes of " + str(lenb(PostScript)) + " bytes sent."

call w.EndPagePrinter

call w.EndDocPrinter

w = nil // close printer
```

**Notes:**

DocName: A string that specifies the name of the document.

OutputFile: Optional a path string or a folderitem that specifies the name of an output file. To print to a printer, set this to "" or nil or leave away.

Datatype: A string that identifies the type of data used to record the document.
If the function succeeds, the return value is true and the JobID property is set.

The sequence for a print job is as follows:

1. To begin a print job, call StartDocPrinter.
2. To begin each page, call StartPagePrinter.
3. To write data to a page, call WritePrinter.
4. To end each page, call EndPagePrinter.
5. Repeat 2, 3, and 4 for as many pages as necessary.
6. To end the print job, call EndDocPrinter.

When a page in a spooled file exceeds approximately 350 MB, it can fail to print and not send an error message. For example, this can occur when printing large EMF files. The page size limit depends on many factors including the amount of virtual memory available, the amount of memory allocated by calling processes, and the amount of fragmentation in the process heap.

See also:

- 131.10.10 StartDocPrinter(DocName as string, OutputFile as folderitem, Datatype as string) as boolean 17808
- 131.10.11 StartDocPrinter(DocName as string, OutputFilePath as string, Datatype as string) as boolean 17810

### 131.10.10 StartDocPrinter(DocName as string, OutputFile as folderitem, Datatype as string) as boolean

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**

The StartDocPrinter function notifies the print spooler that a document is to be spooled for printing.

**Example:**

```vbnet
// Print Postscript directly to Postscript printer
const PrinterName = "Brother DCP-8085DN"

dim w as new WindowsAddPrintJobMBS

if not w.OpenPrinter(PrinterName) then
    MsgBox "OpenPrinter failed. Is the printer name correct in the source code?"
    Return
end if

const DocName = "My Document"

// output to a file
dim file as FolderItem = SpecialFolder.Desktop.Child("test.ps")

if not w.StartDocPrinter("My Document", file, w.kDataFormatRAW) then
```
MsgBox "StartDocPrinter failed."
Return
end if

MsgBox "Print Job ID: " + str(w.JobID)
call w.StartPagePrinter

dim PostScript as string = "% !PS" + EndOfLine.UNIX +".1 setgray" + EndOfLine.UNIX +"0 0 100 100 rect-fill" + EndOfLine.UNIX +"showpage" + EndOfLine.UNIX

dim BytesSent as Integer = w.WritePrinter(PostScript)

MsgBox str(BytesSent) + " bytes of " + str(lenb(PostScript)) + " bytes sent."
call w.EndPagePrinter
call w.EndDocPrinter

w = nil // close printer

Notes:

DocName: A string that specifies the name of the document.
OutputFile: Optional a path string or a folderitem that specifies the name of an output file. To print to a printer, set this to "" or nil or leave away.
Datatype: A string that identifies the type of data used to record the document.

If the function succeeds, the return value is true and the JobID property is set.

The sequence for a print job is as follows:

1. To begin a print job, call StartDocPrinter.
2. To begin each page, call StartPagePrinter.
3. To write data to a page, call WritePrinter.
4. To end each page, call EndPagePrinter.
5. Repeat 2, 3, and 4 for as many pages as necessary.
6. To end the print job, call EndDocPrinter.

When a page in a spooled file exceeds approximately 350 MB, it can fail to print and not send an error message. For example, this can occur when printing large EMF files. The page size limit depends on many factors including the amount of virtual memory available, the amount of memory allocated by calling processes, and the amount of fragmentation in the process heap.

See also:
131.10.11 StartDocPrinter(DocName as string, OutputFilePath as string, Datatype as string) as boolean

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The StartDocPrinter function notifies the print spooler that a document is to be spooled for printing. **Example:**

```vbnet
// Print Postscript directly to Postscript printer
const PrinterName = "Brother DCP-8085DN"

dim w as new WindowsAddPrintJobMBS

if not w.OpenPrinter(PrinterName) then
    MsgBox "OpenPrinter failed. Is the printer name correct in the source code?"
    Return
end if

const DocName = "My Document"

// output to a file
dim file as string = "C:\test.ps"

if not w.StartDocPrinter("My Document", file, w.kDataFormatRAW) then
    MsgBox "StartDocPrinter failed."
    Return
end if

MsgBox "Print Job ID: " + str(w.JobID)

call w.StartPagePrinter

dim PostScript as string = "% !PS" + EndOfLine.UNIX + "1 setgray" + EndOfLine.UNIX + "0 0 100 100 rect-fill" + EndOfLine.UNIX + "showpage" + EndOfLine.UNIX

dim BytesSent as Integer = w.WritePrinter(PostScript)

MsgBox str(BytesSent) + " bytes of " + lenb(PostScript) + " bytes sent."

call w.EndPagePrinter

call w.EndDocPrinter

w = nil // close printer
```
Notes:

DocName: A string that specifies the name of the document.
OutputFile: Optional a path string or a folderitem that specifies the name of an output file. To print to a
printer, set this to "" or nil or leave away.
Datatype: A string that identifies the type of data used to record the document.

If the function succeeds, the return value is true and the JobID property is set.

The sequence for a print job is as follows:

1. To begin a print job, call StartDocPrinter.
2. To begin each page, call StartPagePrinter.
3. To write data to a page, call WritePrinter.
4. To end each page, call EndPagePrinter.
5. Repeat 2, 3, and 4 for as many pages as necessary.
6. To end the print job, call EndDocPrinter.

When a page in a spooled file exceeds approximately 350 MB, it can fail to print and not send an error
message. For example, this can occur when printing large EMF files. The page size limit depends on
many factors including the amount of virtual memory available, the amount of memory allocated by calling
processes, and the amount of fragmentation in the process heap.
See also:

- 131.10.9 StartDocPrinter(DocName as string, Datatype as string) as boolean
- 131.10.10 StartDocPrinter(DocName as string, OutputFile as folderitem, Datatype as string) as boolean

131.10.12 StartPagePrinter as boolean

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
The StartPagePrinter function notifies the spooler that a page is about to be printed on the specified printer.
Notes:

If the function succeeds, the return value is a true.

The sequence for a print job is as follows:

1. To begin a print job, call StartDocPrinter.
2. To begin each page, call StartPagePrinter.
3. To write data to a page, call WritePrinter.
4. To end each page, call EndPagePrinter.
5. Repeat 2, 3, and 4 for as many pages as necessary.
6. To end the print job, call EndDocPrinter.

When a page in a spooled file exceeds approximately 350 MB, it can fail to print and not send an error message. For example, this can occur when printing large EMF files. The page size limit depends on many factors including the amount of virtual memory available, the amount of memory allocated by calling processes, and the amount of fragmentation in the process heap.

### 131.10.13 WriteJob(data as string) as Integer

**MBS Win Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.** **Function:** Adds data to the spool file.

**Notes:**

You need to pass raw data for the printer, e.g. postscript data.

Returns the number of bytes written.

So lenb(data) should be equal to the result.

Only available between a call to AddJob and ScheduleJob.

### 131.10.14 WritePrinter(data as string) as Integer

**MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.** **Function:** The WritePrinter function notifies the print spooler that data should be written to the specified printer.

**Notes:**

- data: The data that should be written to the printer.

If the function succeeds, the return value is a true.

The sequence for a print job is as follows:

1. To begin a print job, call StartDocPrinter.
2. To begin each page, call StartPagePrinter.
3. To write data to a page, call WritePrinter.
4. To end each page, call EndPagePrinter.
5. Repeat 2, 3, and 4 for as many pages as necessary.
6. To end the print job, call EndDocPrinter.

When a high-level document (such as an Adobe PDF or Microsoft Word file) or other printer data (such as PCL, PS, or HPGL) is sent directly to a printer, the print settings defined in the document take precedent
over Windows print settings.

When a page in a spooled file exceeds approximately 350 MB, it can fail to print and not send an error message. For example, this can occur when printing large EMF files. The page size limit depends on many factors including the amount of virtual memory available, the amount of memory allocated by calling processes, and the amount of fragmentation in the process heap.

131.10.15 Properties

131.10.16 JobID as Integer

MBS Win Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The JobID of this print. **Notes:** For information only. Maybe be useful for the user to find this print job later. (Read and Write property)

131.10.17 JobPath as String

MBS Win Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The file name of the temporary file used. **Notes:** Just for information and only available between a call to AddJob and ScheduleJob. (Read and Write property)

131.10.18 lastError as Integer

MBS Win Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The last error code. **Notes:** Zero for no error. -1 if the plugin has a problem like invalid parameter or called on Mac/Linux. others are Windows error codes. (Read and Write property)
131.10.19 lastErrorMessage as String

MBS Win Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The localized text message for LastError property.
**Notes:** (Read and Write property)

131.10.20 PrinterHandle as Integer

MBS Win Plugin, Plugin Version: 6.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The handle to the printer.
**Notes:** (Read and Write property)

131.10.21 Constants

131.10.22 kDataFormatRAW = ”RAW”

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the data format constants.
**Notes:** Use this constant if you send to both local and networked printers that use GDI-based printer drivers.

131.10.23 kDataFormatXPS_PASS = ”XPS_PASS”

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the data format constants.
**Notes:** Use this constant to send printer control data directly to printers that use XPSDrv printer drivers.
**131.11. class WindowsDeviceModeMBS**

**131.11.1. class WindowsDeviceModeMBS**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The class for device mode information for a Windows printer.

**Example:**

```vbs
dim d as new WindowsDeviceModeMBS
dim name as string = "My printer"

// here we define which values we want to change
d.Fields = d.DM_ORIENTATION

// and change value
//d.Orientation = d.DMORIENT PORTRAIT

dim w as WindowsPrinterMBS = WindowsPrinterMBS.OpenPrinter(name)
if w.ChangePrinterSettings(d, 2) then
    MsgBox "OK"
else
    MsgBox "Failed"
end if
```

**Notes:**

Basicly this class wraps the Windows DEVMODE structure.

For more information on the DEVMODE structure, visit this website:

**131.11.2. Methods**

**131.11.3. ApplyToSetupString(SetupString as String) as string**

MBS Win Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Applies current device mode to the given setup string.

**Example:**

```vbs
dim p as new PrinterSetup
if p.PageSetupDialog then
    dim w as WindowsDeviceModeMBS = WindowsDeviceModeMBS.FromSetupString(s)
```
w.Copies = 3
w.Fields = BitwiseOr(w.Fields, w.DM_COPIES)

dim s as string = w.SetupString
dim t as string = w.ApplyToSetupString(s)

Break // check
end if

Notes:
The setup string contains a device mode and we replace the one from Xojo with our own.
The other information is kept the same.

131.11.4 Constructor

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Creates a new empty device mode.
**Notes:** Size is set for you to default name of the data structure.

131.11.5 FromRawData(data as memoryblock, Unicode as boolean = true) as WindowsDeviceModeMBS

MBS Win Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Creates a new WindowsDeviceModeMBS object with given data.
**Notes:**
The data is expected to the in format of DEVMODEW structure with some extra data and the right values inside.
If Unicode is true, we use DEVMODEW and if Unicode is false, we use DEVMODEA structure.
See also:

- 131.11.6 FromRawData(data as string, Unicode as boolean = true) as WindowsDeviceModeMBS

131.11.6 FromRawData(data as string, Unicode as boolean = true) as WindowsDeviceModeMBS

MBS Win Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Creates a new WindowsDeviceModeMBS object with given data.
**Notes:**
The data is expected to be in the format of DEVMODEW structure with some extra data and the right values inside.
If Unicode is true, we use DEVMODEW and if Unicode is false, we use DEVMODEA structure.
See also:

- 131.11.5 FromRawData(data as memoryblock, Unicode as boolean = true) as WindowsDeviceModeMBS
  17816

131.11.7 FromSetupString(SetupString as String) as WindowsDeviceModeMBS

MBS Win Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Initialized DevMode object from setup string.
**Example:**

dim p as new PrinterSetup

// setup something
call p.PageSetupDialog

// now we have nice setupstring
dim ss as string = p.SetupString

// parse it in device mode
dim d as WindowsDeviceModeMBS = WindowsDeviceModeMBS.FromSetupString(ss)

// duplex is?
MsgBox "Duplex: " +str(d.Duplex)

// change printer
d.DeviceName = "Deskjet 2540 series# :2"

// enable duplex
d.Fields = BitwiseOr(d.Fields, d.DM DUPLEX)
d.Duplex = d.DMDUP HORIZONTAL

// now duplex is?
MsgBox "Duplex: " +str(d.Duplex)

// get back as setup string
dim da as string = d.SetupString

if da = "" then
  MsgBox "failed to create setup string"
  Return
end if

// assign back
p.SetupString = da

// take a look
call p.PageSetupDialog

// and print something
dim g as Graphics = OpenPrinter(p)

g.DrawString "Page 1", 20, 20

g.NextPage

g.DrawString "Page 2", 20, 20

Notes:
You can pass string from PrinterSetup.SetupString.

Supports Xojo 2017r1 with 17.3 plugins.

131.11.8 RawData(Unicode as boolean = true) as memoryblock

Notes:
Returns nil on any error.
If Unicode is true, we use DEVMODEW and if Unicode is false, we use DEVMODEA structure.

131.11.9 SetupString(ActualHorizontalResolution as integer, ActualVerticalResolution as integer, MaxHorizontalResolution as integer, MaxVerticalResolution as integer, MarginLeft as integer = 2500, MarginRight as integer = 2500, MarginTop as integer = 2500, MarginBottom as integer = 2500, MinMarginLeft as integer = 0, MinMarginRight as integer = 0, MinMarginTop as integer = 0, MinMarginBottom as integer = 0, PageSetupFlags as integer = 8) as string

Notes:
This setupstring is empty on error.
If not empty, you can assign to PrinterSetup.SetupString.
Please pass reasonable flags.
Check existing SetupStrings from Xojo for possible values.
Resolution parameters can e.g. be 72.

Supports Xojo 2017r1 with 17.3 plugins.
See also:

- 131.11.10 SetupString(Margin as Integer = 2500) as string

131.11.10  SetupString(Margin as Integer = 2500) as string

MBS Win Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Creates a setup string from devmode.

**Example:**

```pascal
dim p as new PrinterSetup

// setup something
call p.PageSetupDialog

// now we have nice setupstring
dim ss as string = p.SetupString

// parse it in device mode
dim d as WindowsDeviceModeMBS = WindowsDeviceModeMBS.FromSetupString(ss)

// duplex is?
MsgBox "Duplex: " + str(d.Duplex)

// change printer
d.DeviceName = "Deskjet 2540 series# :2"

// enable duplex
d.Fields = BitwiseOr(d.Fields, d.DM_DUPLEX)
d.Duplex = d.DMDUP_HORIZONTAL

// now duplex is?
MsgBox "Duplex: " + str(d.Duplex)

// get back as setup string
dim da as string = d.SetupString

if da = "" then
MsgBox "failed to create setup string"
Return
end if
```
CHAPTER 131. PRINTING

// assign back
p.SetupString = da

// take a look
call p.PageSetupDialog

// and print something
dim g as Graphics = OpenPrinter(p)

  g.DrawString "Page 1", 20, 20
  g.NextPage
  g.DrawString "Page 2", 20, 20

Notes:
This setupstring is empty on error.
If not empty, you can assign to PrinterSetup.SetupString.

Supports Xojo 2017r1 with 17.3 plugins.
See also:

• 131.11.9 SetupString(ActualHorizontalResolution as integer, ActualVerticalResolution as integer, Max-HorizontalResolution as integer, MaxVerticalResolution as integer, MarginLeft as integer = 2500,
  MarginRight as integer = 2500, MarginTop as integer = 2500, MarginBottom as integer = 2500,
  MinMarginLeft as integer = 0, MinMarginRight as integer = 0, MinMarginTop as integer = 0, Min-
  MarginBottom as integer = 0, PageSetupFlags as integer = 8) as string

131.11.11 Properties

131.11.12 Collate as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
Specifies whether collation should be used when printing multiple copies.
Notes:
(This member is ignored unless the printer driver indicates support for collation by setting the dmFields
member to DM_COLLATE.) This member can be one of the following values.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMCOLLATE_TRUE</td>
<td>Collate when printing multiple copies.</td>
</tr>
<tr>
<td>DMCOLLATE_FALSE</td>
<td>Do not collate when printing multiple copies.</td>
</tr>
</tbody>
</table>

(Read and Write property)
131.11. **CLASS WINDOWSDEVICEMODEMBS**

### 131.11.13 Color as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Switches between color and monochrome on color printers. **Notes:**

The following are the possible values:

- DMCOLOR_COLOR
- DMCOLOR_MONOCHROME

(Read and Write property)

### 131.11.14 Copies as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Selects the number of copies printed if the device supports multiple-page copies. **Notes:** (Read and Write property)

### 131.11.15 Data as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The raw data pointer to the DEVMODEW structure. **Notes:** (Read only property)

### 131.11.16 DefaultSource as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Specifies the paper source. **Notes:**

Use the DMBIN_* constants. (Read and Write property)

### 131.11.17 DeviceName as String

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A string that specifies the "friendly" name of the printer or display; for example, "PCL/HP LaserJet" in the case of PCL/HP LaserJet. **Notes:**

This string is unique among device drivers. Note that this name may be truncated to fit in the dmDeviceName field.
131.11.18  DitherType as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Specifies how dithering is to be done.

**Notes:**

The member can be one of the following predefined values, or a driver-defined value greater than or equal to the value of DMDITHER_USER.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMDITHER_NONE</td>
<td>No dithering.</td>
</tr>
<tr>
<td>DMDITHER_COARSE</td>
<td>Dithering with a coarse brush.</td>
</tr>
<tr>
<td>DMDITHER_FINE</td>
<td>Dithering with a fine brush.</td>
</tr>
<tr>
<td>DMDITHER_LINEART</td>
<td>Line art dithering, a special dithering method that produces well defined borders between black, white, and gray scaling. It is not suitable for images that include continuous graduations in intensity and hue, such as scanned photographs.</td>
</tr>
<tr>
<td>DMDITHER_GraySCALE</td>
<td>Device does gray scaling.</td>
</tr>
</tbody>
</table>

(Read and Write property)

131.11.19  DriverExtra as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Contains the number of bytes of private driver-data that follow this structure. If a device driver does not use device-specific information, set this member to zero.

**Notes:** (Read and Write property)

131.11.20  DriverVersion as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The driver version number assigned by the driver developer.

**Notes:** (Read and Write property)
### 131.11.21 Duplex as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Selects duplex or double-sided printing for printers capable of duplex printing.
**Notes:**
Following are the possible values.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMDUP_SIMPLEX</td>
<td>Normal (nonduplex) printing.</td>
</tr>
<tr>
<td>DMDUP_HORIZONTAL</td>
<td>Short-edge binding, that is, the long edge of the page is horizontal.</td>
</tr>
<tr>
<td>DMDUP_VERTICAL</td>
<td>Long-edge binding, that is, the long edge of the page is vertical.</td>
</tr>
</tbody>
</table>

(Read and Write property)

### 131.11.22 Fields as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Specifies whether certain properties have been initialized.
**Notes:**
If a property is initialized, its corresponding bit is set, otherwise the bit is clear. A driver supports only those properties that are appropriate for the printer or display technology.

Use the DM_* constants which match by name their property. So the DM_ORIENTATION bit value is related to the Orientation property.
(Read and Write property)

### 131.11.23 FormName as String

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
A string array that specifies the name of the form to use; for example, "Letter" or "Legal".
**Notes:**
A complete set of names can be retrieved by using the GetPrinterFormats function on the WindowsPrinterListMBS class.
(Read and Write property)
131.11.24 ICMIntent as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Specifies which color matching method, or intent, should be used by default.

**Notes:**
This member is primarily for non-ICM applications. ICM applications can establish intents by using the ICM functions. This member can be one of the following predefined values, or a driver defined value greater than or equal to the value of DMICM_USER.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMICM_ABS_COLORIMETRIC</td>
<td>Color matching should optimize to match the exact color requested without white point mapping. This value is most appropriate for use with proofing.</td>
</tr>
<tr>
<td>DMICM_COLORIMETRIC</td>
<td>Color matching should optimize to match the exact color requested. This value is most appropriate for use with business logos or other images when an exact color match is desired.</td>
</tr>
<tr>
<td>DMICM_CONTRAST</td>
<td>Color matching should optimize for color contrast. This value is the most appropriate choice for scanned or photographic images when dithering is desired.</td>
</tr>
<tr>
<td>DMICM_SATURATE</td>
<td>Color matching should optimize for color saturation. This value is the most appropriate choice for business graphs when dithering is not desired.</td>
</tr>
</tbody>
</table>

(Read and Write property)

131.11.25 ICMMethod as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Specifies how ICM is handled.

**Notes:**
For a non-ICM application, this member determines if ICM is enabled or disabled. For ICM applications, the system examines this member to determine how to handle ICM support. This member can be one of the following predefined values, or a driver-defined value greater than or equal to the value of DMICM-METHOD_USER.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMICMMETHOD_NONE</td>
<td>Specifies that ICM is disabled.</td>
</tr>
<tr>
<td>DMICMMETHOD_SYSTEM</td>
<td>Specifies that ICM is handled by Windows.</td>
</tr>
<tr>
<td>DMICMMETHOD_DRIVER</td>
<td>Specifies that ICM is handled by the device driver.</td>
</tr>
<tr>
<td>DMICMMETHODDEVICE</td>
<td>Specifies that ICM is handled by the destination device.</td>
</tr>
</tbody>
</table>

The printer driver must provide a user interface for setting this member. Most printer drivers support only the DMICMMETHOD_SYSTEM or DMICMMETHOD_NONE value. Drivers for PostScript printers support all values.
131.11. CLASS WINDOWSDEVICEMODEMBS

(Read and Write property)

131.11.26 LogPixels as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The number of pixels per logical inch. **Notes:** Printer drivers do not use this member. (Read and Write property)

131.11.27 MediaType as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Specifies the type of media being printed on. **Notes:** The member can be one of the following predefined values, or a driver-defined value greater than or equal to the value of DMMEDIA_USER.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMMEDIA_STANDARD</td>
<td>Plain paper.</td>
</tr>
<tr>
<td>DMMEDIA_GLOSSY</td>
<td>Glossy paper.</td>
</tr>
<tr>
<td>DMMEDIA_TRANSPARENCY</td>
<td>Transparent film.</td>
</tr>
</tbody>
</table>

(Read and Write property)

131.11.28 Nup as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Specifies where the NUP is done. **Notes:** It can be one of the following.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMNUP_SYSTEM</td>
<td>The print spooler does the NUP.</td>
</tr>
<tr>
<td>DMNUP.ONEUP</td>
<td>The application does the NUP.</td>
</tr>
</tbody>
</table>
131.11.29 Orientation as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
For printer devices only, selects the orientation of the paper.

**Example:**

```vbs
' Here we define which values we want to change
Dim d As New WindowsDeviceModeMBS
Dim name As String = "My printer"

// and change value
Dim d As New WindowsDeviceModeMBS
Dim name As String = "My printer"

// here we define which values we want to change
Dim d As New WindowsDeviceModeMBS
Dim name As String = "My printer"

// and change value
Dim d As New WindowsDeviceModeMBS
Dim name As String = "My printer"

Dim w As WindowsPrinterMBS = WindowsPrinterMBS.OpenPrinter(name)
If w.ChangePrinterSettings(d, 2) Then
    MsgBox "OK"
Else
    MsgBox "Failed"
End If

**Notes:**
This member can be either DMORIENT_PORTRAIT (1) or DMORIENT_LANDSCAPE (2).
(Read and Write property)

131.11.30 PaperLength as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
For printer devices only, overrides the length of the paper specified by the PaperSize member, either for custom paper sizes or for devices such as dot-matrix printers that can print on a page of arbitrary length.

**Notes:**
These values, along with all other values in this structure that specify a physical length, are in tenths of a millimeter.
(Read and Write property)
131.11. CLASS WINDOWSDEVICEMODEMBS

131.11.31 PaperSize as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
For printer devices only, selects the size of the paper to print on.
**Notes:**
This member can be set to zero if the length and width of the paper are both set by the PaperLength and PaperWidth members. Otherwise, the PaperSize member can be set to a device specific value greater than or equal to DMPAPER_USER or to one of the following predefined values with DMPAPER_* constants.
(Read and Write property)

131.11.32 PaperWidth as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
For printer devices only, overrides the width of the paper specified by the PaperSize member.
**Notes:**
Unit is tenths of a millimeter.
(Read and Write property)

131.11.33 PrintQuality as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Specifies the printer resolution.
**Notes:**
There are four predefined device-independent values:

DMRES_HIGH
DMRES_MEDIUM
DMRES_LOW
DMRES_DRAFT

If a positive value is specified, it specifies the number of dots per inch (DPI) and is therefore device dependent.
(Read and Write property)

131.11.34 Scale as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Specifies the factor by which the printed output is to be scaled.
**Notes:**
The apparent page size is scaled from the physical page size by a factor of Scale \( /100 \). For example, a letter-sized page with a dmScale value of 50 would contain as much data as a page of 17- by 22-inches because the output text and graphics would be half their original height and width.

(Read and Write property)

### 131.11.35 Size as Integer

**Function:** Specifies the size, in bytes, of the DEVMODE structure, not including any private driver-specific data that might follow the structure’s public members.

**Notes:**
You don’t need to set this field normally as the plugin does that for you.
(Read and Write property)

### 131.11.36 SpecVersion as Integer

**Function:** The version number of the initialization data specification on which the structure is based.

**Notes:**
You don’t need to set this field normally as the plugin does that for you.
(Read and Write property)

### 131.11.37 TTOption as Integer

**Function:** Specifies how TrueType fonts should be printed.

**Notes:**
This member can be one of the following values:

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMTT_BITMAP</td>
<td>Prints TrueType fonts as graphics. This is the default action for dot-matrix printers.</td>
</tr>
<tr>
<td>DMTT_DOWNLOAD</td>
<td>Downloads TrueType fonts as soft fonts. This is the default action for Hewlett-Packard printers that use Printer Control Language (PCL).</td>
</tr>
<tr>
<td>DMTT_DOWNLOAD_OUTLINE</td>
<td>Downloads TrueType fonts as outline soft fonts.</td>
</tr>
<tr>
<td>DMTT_SUBDEV</td>
<td>Substitutes device fonts for TrueType fonts. This is the default action for PostScript printers.</td>
</tr>
</tbody>
</table>

(Read and Write property)
131.11.38  YResolution as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Specifies the y-resolution, in dots per inch, of the printer.

**Notes:**
If the printer initializes this member, the PrintQuality member specifies the x-resolution, in dots per inch, of the printer.
(Read and Write property)

131.11.39  Constants

131.11.40  DMBIN_AUTO = 7

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the source bin constants.
**Notes:** Auto

131.11.41  DMBIN_CASSETTE = 14

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the source bin constants.
**Notes:** Cassette

131.11.42  DMBIN_ENVELOPE = 5

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the source bin constants.
**Notes:** Envelope

131.11.43  DMBIN_ENVMANUAL = 6

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the source bin constants.
**Notes:** Envelope Manual.
131.11.44  DMBIN_FORMSOURCE = 15
MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the source bin constants.  
**Notes:** Form Source.

131.11.45  DMBIN_LARGECAPACITY = 11
MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the source bin constants.  
**Notes:** Large Capacity

131.11.46  DMBIN_LARGEFMT = 10
MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the source bin constants.  
**Notes:** Large Format

131.11.47  DMBIN_LOWER = 2
MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the source bin constants.  
**Notes:** Lower

131.11.48  DMBIN_MANUAL = 4
MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the source bin constants.  
**Notes:** Manual

131.11.49  DMBIN_MIDDLE = 3
MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the source bin constants.  
**Notes:** Middle

131.11.50  DMBIN_ONLYONE = 1
MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the source bin constants.  
**Notes:** Only One.
131.11.  CLASS WINDOWSDEVICEMODEMBS

131.11.51  DMBIN_SMALLFMT = 9

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the source bin constants.  
**Notes:** Small Format

131.11.52  DMBIN_TRACTOR = 8

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the source bin constants.  
**Notes:** Tractor

131.11.53  DMBIN_UPPER = 1

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the source bin constants.  
**Notes:** Upper

131.11.54  DMBIN_USER = 256

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the source bin constants.  
**Notes:** User

131.11.55  DMCOLLATE_FALSE = 0

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the collate mode constants.  
**Notes:** Do not collate when printing multiple copies.

131.11.56  DMCOLLATE_TRUE = 1

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the collate mode constants.  
**Notes:** Collate when printing multiple copies.

131.11.57  DMCOLOR_COLOR = 2

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the color mode constants.  
**Notes:** Color
131.11.58  DMCOLOR_MONOCHROME = 1

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the color mode constants.  
**Notes**: Monochrome.

131.11.59  DMDITHER_COARSE = 2

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the dither constants.  
**Notes**: Dithering with a coarse brush.

131.11.60  DMDITHER_ERRORDIFFUSION = 5

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the dither constants.

131.11.61  DMDITHER_FINE = 3

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the dither constants.  
**Notes**: Dithering with a fine brush.

131.11.62  DMDITHER_GRAYSCALE = 10

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the dither constants.  
**Notes**: Device does gray scaling.

131.11.63  DMDITHER_LINEART = 4

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the dither constants.  
**Notes**: Line art dithering, a special dithering method that produces well defined borders between black, white, and gray scaling. It is not suitable for images that include continuous graduations in intensity and hue, such as scanned photographs.

131.11.64  DMDITHER_NONE = 1

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the dither constants.  
**Notes**: No dithering.
131.11. CLASS WINDOWSDEVICEMODEMBS

131.11.65  DMDITHER_RESERVED6 = 6

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the dither constants.

131.11.66  DMDITHER_RESERVED7 = 7

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the dither constants.

131.11.67  DMDITHER_RESERVED8 = 8

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the dither constants.

131.11.68  DMDITHER_RESERVED9 = 9

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the dither constants.

131.11.69  DMDITHER_USER = 256

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the dither constants.

131.11.70  DMDUP_HORIZONTAL = 3

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the duplex mode constants. **Notes:** Horizontal duplex.

131.11.71  DMDUP_SIMPLEX = 1

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the duplex mode constants. **Notes:** No duplex = simplex.

131.11.72  DMDUP_VERTICAL = 2

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the duplex mode constants. **Notes:** Vertical duplex.
131.11.73  DMICMMETHOD_DEVICE = 4

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the ICM method constants. **Notes**: Specifies that ICM is handled by the destination device.

131.11.74  DMICMMETHOD_DRIVER = 3

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the ICM method constants. **Notes**: Specifies that ICM is handled by the device driver.

131.11.75  DMICMMETHOD_NONE = 1

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the ICM method constants. **Notes**: Specifies that ICM is disabled.

131.11.76  DMICMMETHOD_SYSTEM = 2

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the ICM method constants. **Notes**: Specifies that ICM is handled by Windows.

131.11.77  DMICMMETHOD_USER = 256

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the ICM method constants.

131.11.78  DMICM_ABS_COLORIMETRIC = 4

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the ICM intent constants. **Notes**: Color matching should optimize to match the exact color requested without white point mapping. This value is most appropriate for use with proofing.
131.11. CLASS WINDOWS

131.11.79  DMICM_COLORIMETRIC = 3

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the ICM intent constants.
**Notes:** Color matching should optimize to match the exact color requested. This value is most appropriate for use with business logos or other images when an exact color match is desired.

131.11.80  DMICM_CONTRAST = 2

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the ICM intent constants.
**Notes:** Color matching should optimize for color contrast. This value is the most appropriate choice for scanned or photographic images when dithering is desired.

131.11.81  DMICM_SATURATE = 1

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the ICM intent constants.
**Notes:** Color matching should optimize for color saturation. This value is the most appropriate choice for business graphs when dithering is not desired.

131.11.82  DMICM_USER = 256

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the ICM intent constants.

131.11.83  DMMEDIA_GLOSSY = 3

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the media type constants.
**Notes:** Glossy paper.

131.11.84  DMMEDIA_STANDARD = 1

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the media type constants.
**Notes:** Plain paper.

131.11.85  DMMEDIA_TRANSPARENCY = 2

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the media type constants.
**Notes:** Transparent film.
131.11.86  DMMEDIA_USER = 256

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the media type constants.

131.11.87  DMNUP_ONEUP = 2

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the NUP constants.  
**Notes:** The application does the NUP.

131.11.88  DMNUP_SYSTEM = 1

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the NUP constants.  
**Notes:** The print spooler does the NUP.

131.11.89  DMORIENT_LANDSCAPE = 2

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the orientation constants.  
**Example:**

```vbnet
dim d as new WindowsDeviceModeMBS
dim name as string = "My printer"

// here we define which values we want to change
d.Fields = d.DM_ORIENTATION
// and change value
d.Orientation = d.DMORIENT_LANDSCAPE

dim w as WindowsPrinterMBS = WindowsPrinterMBS.OpenPrinter(name)
if w.ChangePrinterSettings(d, 2) then
    MsgBox "OK"
else
    MsgBox "Failed"
end if
```

**Notes:** Landscape mode.
131.11. **CLASS WINDOWSDEVICEMODEMBS**

131.11.90 **DMORIENT_PORTRAIT = 1**

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the orientation constants. **Example**:

```vbc
' here we define which values we want to change
d.Fields = d.DM_ORIENTATION
' and change value
'd.Orientation = d.DMORIENT_PORTRAIT

notes: portrait mode.
```

131.11.91 **DMPAPER_10x11 = 45**

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the paper format constants. **Notes**: 10- by 11-inch sheet

131.11.92 **DMPAPER_10x14 = 16**

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the paper format constants. **Notes**: 10- by 14-inch sheet

131.11.93 **DMPAPER_11X17 = 17**

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the paper format constants. **Notes**: 11- by 17-inch sheet
131.11.94  **DMPAPER_12X11 = 90**

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** 12- by 11-inch sheet

131.11.95  **DMPAPER_15X11 = 46**

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** 15- by 11-inch sheet

131.11.96  **DMPAPER_9X11 = 44**

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** 9- by 11-inch sheet

131.11.97  **DMPAPER_A2 = 66**

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** A2 sheet, 420 x 594-millimeters

131.11.98  **DMPAPER_A3 = 8**

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** A3 sheet, 297- by 420-millimeters

131.11.99  **DMPAPER_A3_EXTRA = 63**

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** A3 Extra 322 x 445-millimeters

131.11.100  **DMPAPER_A3_EXTRA_TRANSVERSE = 68**

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** A3 Extra Transverse 322 x 445-millimeters
131.11.101  DMPAPER_A3_ROTATED = 76

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants. **Notes:** A3 rotated sheet, 420- by 297-millimeters

131.11.102  DMPAPER_A3_TRANSVERSE = 67

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants. **Notes:** A3 Transverse 297 x 420-millimeters

131.11.103  DMPAPER_A4 = 9

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants. **Notes:** A4 sheet, 210- by 297-millimeters

131.11.104  DMPAPER_A4_EXTRA = 53

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants. **Notes:** A4 sheet, 9.27 x 12.69 inches
131.11.105  DMPAPER_A4_PLUS = 60

MBS Win Plugin, Plugin Version: 10.4.  **Function:** One of the paper format constants.  
**Notes:** A4 Plus 210 x 330-millimeters

131.11.106  DMPAPER_A4_ROTATED = 77

MBS Win Plugin, Plugin Version: 10.4.  **Function:** One of the paper format constants.  
**Notes:** A4 rotated sheet, 297- by 210-millimeters

131.11.107  DMPAPER_A4_SMALL = 10

MBS Win Plugin, Plugin Version: 10.4.  **Function:** One of the paper format constants.  
**Notes:** A4 small sheet, 210- by 297-millimeters

131.11.108  DMPAPER_A4_TRANSVERSE = 55

MBS Win Plugin, Plugin Version: 10.4.  **Function:** One of the paper format constants.  
**Notes:** A4 Transverse 210 x 297 millimeters

131.11.109  DMPAPER_A5 = 11

MBS Win Plugin, Plugin Version: 10.4.  **Function:** One of the paper format constants.  
**Notes:** A5 sheet, 148- by 210-millimeters

131.11.110  DMPAPER_A5_EXTRA = 64

MBS Win Plugin, Plugin Version: 10.4.  **Function:** One of the paper format constants.  
**Notes:** A5 Extra 174 x 235-millimeters

131.11.111  DMPAPER_A5_ROTATED = 78

MBS Win Plugin, Plugin Version: 10.4.  **Function:** One of the paper format constants.  
**Notes:** A5 rotated sheet, 210- by 148-millimeters
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131.11.112  DMPAPER_A5_TRANSVERSE = 61

MBS Win Plugin, Plugin Version: 10.4.  **Function**: One of the paper format constants.  
**Notes**: A5 Transverse 148 x 210-millimeters

131.11.113  DMPAPER_A6 = 70

MBS Win Plugin, Plugin Version: 10.4.  **Function**: One of the paper format constants.  
**Notes**: A6 sheet, 105- by 148-millimeters

131.11.114  DMPAPER_A6_ROTATED = 83

MBS Win Plugin, Plugin Version: 10.4.  **Function**: One of the paper format constants.  
**Notes**: A6 rotated sheet, 148- by 105-millimeters

131.11.115  DMPAPER_A_PLUS = 57

MBS Win Plugin, Plugin Version: 10.4.  **Function**: One of the paper format constants.  
**Notes**: SuperA/A4 227 x 356 -millimeters

131.11.116  DMPAPER_B4 = 12

MBS Win Plugin, Plugin Version: 10.4.  **Function**: One of the paper format constants.  
**Notes**: B4 sheet, 250- by 354-millimeters

131.11.117  DMPAPER_B4_JIS_ROTATED = 79

MBS Win Plugin, Plugin Version: 10.4.  **Function**: One of the paper format constants.  
**Notes**: B4 (JIS) rotated sheet, 364- by 257-millimeters

131.11.118  DMPAPER_B5 = 13

MBS Win Plugin, Plugin Version: 10.4.  **Function**: One of the paper format constants.  
**Notes**: B5 sheet, 182- by 257-millimeter paper
131.11.119  DMPAPER_B5_EXTRA = 65

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** B5 (ISO) Extra 201 x 276-millimeters

131.11.120  DMPAPER_B5_JIS_ROTATED = 80

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** B5 (JIS) rotated sheet, 257- by 182-millimeters

131.11.121  DMPAPER_B5_TRANSVERSE = 62

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  

131.11.122  DMPAPER_B6_JIS = 88

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** B6 (JIS) sheet, 128- by 182-millimeters

131.11.123  DMPAPER_B6_JIS_ROTATED = 89

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** B6 (JIS) rotated sheet, 182- by 128-millimeters

131.11.124  DMPAPER_B_PLUS = 58

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** SuperB/A3 305 x 487-millimeters

131.11.125  DMPAPER_CSHEET = 24

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** C Sheet, 17- by 22-inches
131.11.126  DMPAPER_DBL_JAPANESE_POSTCARD = 69


131.11.127  DMPAPER_DBL_JAPANESE_POSTCARD_ROTATED = 82


131.11.128  DMPAPER_DSHEET = 25

MBS Win Plugin, Plugin Version: 10.4. Function: One of the paper format constants. Notes: D Sheet, 22- by 34-inches

131.11.129  DMPAPER_ENV_10 = 20

MBS Win Plugin, Plugin Version: 10.4. Function: One of the paper format constants.

131.11.130  DMPAPER_ENV_11 = 21

MBS Win Plugin, Plugin Version: 10.4. Function: One of the paper format constants.

131.11.131  DMPAPER_ENV_12 = 22

MBS Win Plugin, Plugin Version: 10.4. Function: One of the paper format constants.

131.11.132  DMPAPER_ENV_14 = 23

MBS Win Plugin, Plugin Version: 10.4. Function: One of the paper format constants.
131.11.133  DMPAPER_ENV_9 = 19

MBS Win Plugin, Plugin Version: 10.4. Function: One of the paper format constants.

131.11.134  DMPAPER_ENV_B4 = 33

MBS Win Plugin, Plugin Version: 10.4. Function: One of the paper format constants.
Notes: B4 Envelope, 250- by 353-millimeters

131.11.135  DMPAPER_ENV_B5 = 34

MBS Win Plugin, Plugin Version: 10.4. Function: One of the paper format constants.
Notes: B5 Envelope, 176- by 250-millimeters

131.11.136  DMPAPER_ENV_B6 = 35

MBS Win Plugin, Plugin Version: 10.4. Function: One of the paper format constants.
Notes: B6 Envelope, 176- by 125-millimeters

131.11.137  DMPAPER_ENV_C3 = 29

MBS Win Plugin, Plugin Version: 10.4. Function: One of the paper format constants.
Notes: C3 Envelope, 324- by 458-millimeters

131.11.138  DMPAPER_ENV_C4 = 30

MBS Win Plugin, Plugin Version: 10.4. Function: One of the paper format constants.
Notes: C4 Envelope, 229- by 324-millimeters

131.11.139  DMPAPER_ENV_C5 = 28

MBS Win Plugin, Plugin Version: 10.4. Function: One of the paper format constants.
Notes: C5 Envelope, 162- by 229-millimeters
131.11.140  **DMPAPER_ENV_C6 = 31**

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** C6 Envelope, 114- by 162-millimeters

131.11.141  **DMPAPER_ENV_C65 = 32**

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** C65 Envelope, 114- by 229-millimeters

131.11.142  **DMPAPER_ENV_DL = 27**

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** DL Envelope, 110- by 220-millimeters

131.11.143  **DMPAPER_ENV_INVITE = 47**

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** Envelope Invite 220 x 220 mm

131.11.144  **DMPAPER_ENV_ITALY = 36**

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** Italy Envelope, 110- by 230-millimeters

131.11.145  **DMPAPER_ENV_MONARCH = 37**

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** Monarch Envelope, 3 7/8- by 7 1/2-inches

131.11.146  **DMPAPER_ENV_PERSONAL = 38**

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** 6 3/4 Envelope, 3 5/8- by 6 1/2-inches
131.11.147  DMPAPER_ESHEET  =  26

MBS Win Plugin, Plugin Version: 10.4. Function: One of the paper format constants.
Notes: E Sheet, 34- by 44-inches

131.11.148  DMPAPER_EXECUTIVE  =  7

MBS Win Plugin, Plugin Version: 10.4. Function: One of the paper format constants.
Notes: Executive, 7 1/4- by 10 1/2-inches

131.11.149  DMPAPER_FANFOLD_LGL_GERMAN  =  41

MBS Win Plugin, Plugin Version: 10.4. Function: One of the paper format constants.
Notes: German Legal Fanfold, 8 - by 13-inches

131.11.150  DMPAPER_FANFOLD_STD_GERMAN  =  40

MBS Win Plugin, Plugin Version: 10.4. Function: One of the paper format constants.
Notes: German Std Fanfold, 8 1/2- by 12-inches

131.11.151  DMPAPER_FANFOLD_US  =  39

MBS Win Plugin, Plugin Version: 10.4. Function: One of the paper format constants.
Notes: US Std Fanfold, 14 7/8- by 11-inches

131.11.152  DMPAPER_FOLIO  =  14

MBS Win Plugin, Plugin Version: 10.4. Function: One of the paper format constants.
Notes: Folio, 8 1/2- by 13-inch paper

131.11.153  DMPAPER_ISO_B4  =  42

MBS Win Plugin, Plugin Version: 10.4. Function: One of the paper format constants.
Notes: B4 (ISO) 250- by 353-millimeters paper
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#### 131.11.154 DMPAPER_JAPANESE_POSTCARD = 43

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** Japanese Postcard, 100- by 148-millimeters

#### 131.11.155 DMPAPER_JAPANESE_POSTCARD_ROTATED = 81

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** Japanese Postcard Rotated, 148- by 100-millimeters

#### 131.11.156 DMPAPER_JENV_CHOU3 = 73

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** Japanese Envelope Chou # 3

#### 131.11.157 DMPAPER_JENV_CHOU3_ROTATED = 86

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** Japanese Envelope Chou # 3 Rotated

#### 131.11.158 DMPAPER_JENV_CHOU4 = 74

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** Japanese Envelope Chou # 4

#### 131.11.159 DMPAPER_JENV_CHOU4_ROTATED = 87

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** Japanese Envelope Chou # 4 Rotated

#### 131.11.160 DMPAPER_JENV_KAKU2 = 71

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** Japanese Envelope Kaku # 2
131.11.161  **DMPAPER_JENV_KAKU2_ROTATED = 84**

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the paper format constants.  
**Notes**: Japanese Envelope Kaku # 2 Rotated

131.11.162  **DMPAPER_JENV_KAKU3 = 72**

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the paper format constants.  
**Notes**: Japanese Envelope Kaku # 3

131.11.163  **DMPAPER_JENV_KAKU3_ROTATED = 85**

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the paper format constants.  
**Notes**: Japanese Envelope Kaku # 3 Rotated

131.11.164  **DMPAPER_JENV_YOU4 = 91**

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the paper format constants.  
**Notes**: Japanese Envelope You # 4

131.11.165  **DMPAPER_JENV_YOU4_ROTATED = 92**

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the paper format constants.  
**Notes**: Japanese Envelope You # 4 Rotated

131.11.166  **DMPAPER_LEDGER = 4**

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the paper format constants.  
**Notes**: Ledger, 17- by 11-inches

131.11.167  **DMPAPER_LEGAL = 5**

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the paper format constants.  
**Notes**: Legal, 8 1/2- by 14-inches
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131.11.168  DMPAPER_LEGAL_EXTRA = 51

MBS Win Plugin, Plugin Version: 10.4.  **Function:** One of the paper format constants.  
**Notes:** Legal Extra 9 1/2 x 15 inches.

131.11.169  DMPAPER_LETTER = 1

MBS Win Plugin, Plugin Version: 10.4.  **Function:** One of the paper format constants.  
**Notes:** Letter, 8 1/2- by 11-inches

131.11.170  DMPAPER_LETTERS_SMALL = 2

MBS Win Plugin, Plugin Version: 10.4.  **Function:** One of the paper format constants.  
**Notes:** Letter Small, 8 1/2- by 11-inches

131.11.171  DMPAPER_LETTER_EXTRA = 50

MBS Win Plugin, Plugin Version: 10.4.  **Function:** One of the paper format constants.  
**Notes:** Letter Extra 9 1/2 x 12 inches.

131.11.172  DMPAPER_LETTER_EXTRA_TRANSVERSE = 56

MBS Win Plugin, Plugin Version: 10.4.  **Function:** One of the paper format constants.  
**Notes:** Letter Extra Transverse 9 1/2 x 12 inches.

131.11.173  DMPAPER_LETTER_PLUS = 59

MBS Win Plugin, Plugin Version: 10.4.  **Function:** One of the paper format constants.

131.11.174  DMPAPER_LETTER_ROTATED = 75

MBS Win Plugin, Plugin Version: 10.4.  **Function:** One of the paper format constants.  
**Notes:** Letter Rotated 11 by 8 1/2 inches
131.11.175  DMPAPER.LETTER_TRANSVERSE = 54

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the paper format constants.
**Notes**: Letter Transverse 8 1/2 x 11-inches

131.11.176  DMPAPER_NOTE = 18

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the paper format constants.
**Notes**: Note, 8 1/2- by 11-inches

131.11.177  DMPAPER_P16K = 93

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the paper format constants.
**Notes**: PRC 16K, 146- by 215-millimeters

131.11.178  DMPAPER_P16K_ROTATED = 106

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the paper format constants.
**Notes**: PRC 16K Rotated, 215- by 146-millimeters

131.11.179  DMPAPER_P32K = 94

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the paper format constants.
**Notes**: PRC 32K, 97- by 151-millimeters

131.11.180  DMPAPER_P32K_BIG = 95

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the paper format constants.
**Notes**: PRC 32K(Big) 97- by 151-millimeters

131.11.181  DMPAPER_P32K_BIG_ROTATED = 108

MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the paper format constants.
**Notes**: PRC 32K(Big) Rotated, 151- by 97-millimeters
131.11.182  \textbf{DMPAPER\_P32K\_ROTATED} = 107

MBS Win Plugin, Plugin Version: 10.4. \textbf{Function}: One of the paper format constants.  
\textbf{Notes}: PRC 32K Rotated, 151- by 97-millimeters

131.11.183  \textbf{DMPAPER\_PENV\_1} = 96

MBS Win Plugin, Plugin Version: 10.4. \textbf{Function}: One of the paper format constants.  
\textbf{Notes}: PRC Envelope \# 1, 102- by 165-millimeters

131.11.184  \textbf{DMPAPER\_PENV\_10} = 105

MBS Win Plugin, Plugin Version: 10.4. \textbf{Function}: One of the paper format constants.  
\textbf{Notes}: PRC Envelope \# 10, 324- by 458-millimeters

131.11.185  \textbf{DMPAPER\_PENV\_10\_ROTATED} = 118

MBS Win Plugin, Plugin Version: 10.4. \textbf{Function}: One of the paper format constants.  
\textbf{Notes}: PRC Envelope \# 10 Rotated, 458- by 324-millimeters

131.11.186  \textbf{DMPAPER\_PENV\_1\_ROTATED} = 109

MBS Win Plugin, Plugin Version: 10.4. \textbf{Function}: One of the paper format constants.  
\textbf{Notes}: PRC Envelope \# 1 Rotated, 165- by 102-millimeters

131.11.187  \textbf{DMPAPER\_PENV\_2} = 97

MBS Win Plugin, Plugin Version: 10.4. \textbf{Function}: One of the paper format constants.  
\textbf{Notes}: PRC Envelope \# 2, 102- by 176-millimeters

131.11.188  \textbf{DMPAPER\_PENV\_2\_ROTATED} = 110

MBS Win Plugin, Plugin Version: 10.4. \textbf{Function}: One of the paper format constants.  
\textbf{Notes}: PRC Envelope \# 2 Rotated, 176- by 102-millimeters
131.11.189  DMPAPER_PENV_3 = 98

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** PRC Envelope # 3, 125- by 176-millimeters

131.11.190  DMPAPER_PENV_3_ROTATED = 111

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** PRC Envelope # 3 Rotated, 176- by 125-millimeters

131.11.191  DMPAPER_PENV_4 = 99

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** PRC Envelope # 4, 110- by 208-millimeters

131.11.192  DMPAPER_PENV_4_ROTATED = 112

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** PRC Envelope # 4 Rotated, 208- by 110-millimeters

131.11.193  DMPAPER_PENV_5 = 100

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** PRC Envelope # 5, 110- by 220-millimeters

131.11.194  DMPAPER_PENV_5_ROTATED = 113

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** PRC Envelope # 5 Rotated, 220- by 110-millimeters

131.11.195  DMPAPER_PENV_6 = 101

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** PRC Envelope # 6, 120- by 230-millimeters
131.11.196  DMPAPER_PENV_6_ROTATED = 114

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** PRC Envelope # 6 Rotated, 230- by 120-millimeters

131.11.197  DMPAPER_PENV_7 = 102

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** PRC Envelope # 7, 160- by 230-millimeters

131.11.198  DMPAPER_PENV_7_ROTATED = 115

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** PRC Envelope # 7 Rotated, 230- by 160-millimeters

131.11.199  DMPAPER_PENV_8 = 103

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** PRC Envelope # 8, 120- by 309-millimeters

131.11.200  DMPAPER_PENV_8_ROTATED = 116

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** PRC Envelope # 8 Rotated, 309- by 120-millimeters

131.11.201  DMPAPER_PENV_9 = 104

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** PRC Envelope # 9, 229- by 324-millimeters

131.11.202  DMPAPER_PENV_9_ROTATED = 117

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** PRC Envelope # 9 Rotated, 324- by 229-millimeters
131.11.203  **DMPAPER_QUARTO = 15**

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** Quarto, 215- by 275-millimeter paper.

131.11.204  **DMPAPER_RESERVED_48 = 48**

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.

131.11.205  **DMPAPER_RESERVED_49 = 49**

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.

131.11.206  **DMPAPER_STATEMENT = 6**

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** Statement, 5 1/2- by 8 1/2-inches.

131.11.207  **DMPAPER_TABLOID = 3**

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** Tabloid, 11- by 17-inches.

131.11.208  **DMPAPER_TABLOID_EXTRA = 52**

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the paper format constants.  
**Notes:** Tabloid, 11.69 x 18-inches.

131.11.209  **DMPAPER_USER = 256**

MBS Win Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.  
**Notes:** user defined size.  
Set PaperWidth and PaperLength fields.
Use all flags DM_PAPERLENGTH, DM_PAPERWIDTH and DM_PAPERSIZE combined for Fields property.

131.11.210  DMRES_DRAFT = -1

MBS Win Plugin, Plugin Version: 10.4.  Function: One of the print quality constants. Notes: Draft

131.11.211  DMRES_HIGH = -4

MBS Win Plugin, Plugin Version: 10.4.  Function: One of the print quality constants. Notes: High

131.11.212  DMRES_LOW = -2

MBS Win Plugin, Plugin Version: 10.4.  Function: One of the print quality constants. Notes: Low

131.11.213  DMRES_MEDIUM = -3

MBS Win Plugin, Plugin Version: 10.4.  Function: One of the print quality constants. Notes: Medium

131.11.214  DMTT_BITMAP = 1

MBS Win Plugin, Plugin Version: 10.4.  Function: One of the true type option mode constants. Notes: Prints TrueType fonts as graphics. This is the default action for dot-matrix printers.

131.11.215  DMTT_DOWNLOAD = 2

MBS Win Plugin, Plugin Version: 10.4.  Function: One of the true type option mode constants. Notes: Downloads TrueType fonts as soft fonts. This is the default action for Hewlett-Packard printers that use Printer Control Language (PCL).
131.11.216  DMTT_DOWNLOAD_OUTLINE = 4

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the true type option mode constants.  
**Notes:** Downloads TrueType fonts as outline soft fonts.

131.11.217  DMTT_SUBDEV = 3

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the true type option mode constants.  
**Notes:** Substitutes device fonts for TrueType fonts. This is the default action for PostScript printers.

131.11.218  DM_BITSPERPEL = & h00040000

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the flag constants to use with the fields property.  
**Notes:** This value is related to the BitsperPel property.

131.11.219  DM_COLLATE = & h00008000

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the flag constants to use with the fields property.  
**Notes:** This value is related to the Collate property.

131.11.220  DM_COLOR = & h00000800

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the flag constants to use with the fields property.  
**Notes:** This value is related to the Color property.

131.11.221  DM_COPIES = & h00000100

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the flag constants to use with the fields property.  
**Notes:** This value is related to the Copies property.

131.11.222  DM_DEFAULTSOURCE = & h00000200

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the flag constants to use with the fields property.  
**Notes:** This value is related to the DefaultSource property.
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131.11.223  DM_DISPLAYFLAGS = & h00200000

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the flag constants to use with the fields property. **Notes:** This value is related to the DisplayFlags property.

131.11.224  DM_DISPLAYFREQUENCY = & h00400000

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the flag constants to use with the fields property. **Notes:** This value is related to the DisplayFrequency property.

131.11.225  DM_DITHERTYPE = & h04000000

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the flag constants to use with the fields property. **Notes:** This value is related to the DitherType property.

131.11.226  DM_DUPLEX = & h00001000

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the flag constants to use with the fields property. **Notes:** This value is related to the Duplex property.

131.11.227  DM_FORMNAME = & h00010000

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the flag constants to use with the fields property. **Notes:** This value is related to the Formname property.

131.11.228  DM_ICMIINTENT = & h01000000

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the flag constants to use with the fields property. **Notes:** This value is related to the ICMIntent property.

131.11.229  DM_ICMMETHOD = & h00800000

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the flag constants to use with the fields property. **Notes:** This value is related to the ICMMMethod property.
131.11.230  DM_LOGPIXELS = & h00020000

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the flag constants to use with the fields property. **Notes:** This value is related to the LogPixels property.

131.11.231  DM_MEDIATYPE = & h02000000

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the flag constants to use with the fields property. **Notes:** This value is related to the MediaType property.

131.11.232  DM_NUP = & h00000040

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the flag constants to use with the fields property. **Notes:** This value is related to the NUP property.

131.11.233  DM_ORIENTATION = & h00000001

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the flag constants to use with the fields property. **Notes:** This value is related to the Orientation property.

131.11.234  DM_PANNINGHEIGHT = & h10000000

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the flag constants to use with the fields property. **Notes:** This value is related to the Panningheight property.

131.11.235  DM_PANNINGWIDTH = & h08000000

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the flag constants to use with the fields property. **Notes:** This value is related to the Panningwidth property.

131.11.236  DM_PAPERLENGTH = & h00000004

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the flag constants to use with the fields property. **Notes:** This value is related to the Paperlength property.
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131.11.237 DM_PAPERSIZE = &h00000002

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the flag constants to use with the fields property. **Notes:** This value is related to the Papersize property.

131.11.238 DM_PAPERWIDTH = &h00000008

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the flag constants to use with the fields property. **Notes:** This value is related to the Paperwidth property.

131.11.239 DM_PELSHIGHT = &h00100000

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the flag constants to use with the fields property. **Notes:** This value is related to the Pelsheight property.

131.11.240 DM_PELSWIDTH = &h00080000

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the flag constants to use with the fields property. **Notes:** This value is related to the Pelswidth property.

131.11.241 DM_POSITION = &h00000020

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the flag constants to use with the fields property. **Notes:** This value is related to the Position property.

131.11.242 DM_PRINTQUALITY = &h00000400

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the flag constants to use with the fields property. **Notes:** This value is related to the PrintQuality property.

131.11.243 DM_SCALE = &h00000010

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the flag constants to use with the fields property. **Notes:** This value is related to the Scale property.
131.11.244  DM_TTOPTION = & h00004000

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the flag constants to use with the fields property. **Notes:** This value is related to the TTOption property.

131.11.245  DM_YRESOLUTION = & h00002000

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the flag constants to use with the fields property. **Notes:** This value is related to the YResolution property.
131.12.  CLASS WINDOWSGRAPHICSINFOMBS

131.12  class WindowsGraphicsInfoMBS

131.12.1  class WindowsGraphicsInfoMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
This class gives information for Windows Device contexts.

**Example:**

```vbnet
dim g as Graphics = OpenPrinter
dim info as WindowsGraphicsInfoMBS = g.WindowsGraphicsInfoMBS

MsgBox _
"Printer physical page size: " + str(info.PhysicalWidth) + " " + str(info.PhysicalHeight) + _
EndOfLine + _
"Useable paper size: " + str(info.ResolutionX) + " x " + str(info.ResolutionY) + _
EndOfLine + _
"Paper size: " + str(info.SizeX) + " x " + str(info.SizeY) + " mm"
```

**Notes:** Main use currently is to learn about native resolution of a printer graphics object.

131.12.2  Methods

131.12.3  Constructor(g as graphics)

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Initializes properties for this graphics object.

131.12.4  Properties

131.12.5  AspectX as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Relative width of a device pixel used for line drawing.
**Notes:** (Read and Write property)

131.12.6  AspectXY as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Diagonal width of the device pixel used for line drawing.
131.12.7 AspectY as Integer

Notes: (Read and Write property)

131.12.8 BitsPerPixel as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: Number of adjacent color bits for each pixel.
Example:
```
dim p as new Picture(200, 200, 32)
dim info as new WindowsGraphicsInfoMBS(p.Graphics)
```

MsgBox ”Color Depth: ”+str(info.BitsPerPixel)

Notes:
As example gives a display device context, the bits per pixel is the screen depth.
(Read and Write property)

131.12.9 BrushesCount as Integer

Notes: (Read and Write property)

131.12.10 ColorCount as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: Number of entries in the device’s color table, if the device has a color depth of no more than 8 bits per pixel.
Notes:
For devices with greater color depths, 1 is returned.
(Read and Write property)
131.12. **CLASS WINDOWSGRAPHICSINFOMBS**

131.12.11 **DesktopResolutionX as Integer**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Horizontal width of entire desktop in pixels.

**Example:**

```vba
Dim p As New Picture(200, 200, 32)
Dim info As New WindowsGraphicsInfoMBS(p.Graphics)
MsgBox "Size of Windows Desktop: "+Str(info.DesktopResolutionX)+" x "+Str(info.DesktopResolutionY)
```

**Notes:** (Read and Write property)

131.12.12 **DesktopResolutionY as Integer**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Vertical height of entire desktop in pixels.

**Example:**

```vba
Dim p As New Picture(200, 200, 32)
Dim info As New WindowsGraphicsInfoMBS(p.Graphics)
MsgBox "Size of Windows Desktop: "+Str(info.DesktopResolutionX)+" x "+Str(info.DesktopResolutionY)
```

**Notes:** (Read and Write property)

131.12.13 **DriverVersion as Integer**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The device driver version.

**Notes:** (Read and Write property)

131.12.14 **FontCount as Integer**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Number of device-specific fonts.

**Notes:** (Read and Write property)
131.12.15 LogPixelsX as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Number of pixels per logical inch along the screen width.

**Example:**

```vba
dim g as Graphics = OpenPrinter
dim info as WindowsGraphicsInfoMBS = g.WindowsGraphicsInfoMBS
MsgBox "Printer resolution: " +str(info.LogPixelsX)+” x ”+str(info.LogPixelsY)
```

**Notes:**

In a system with multiple display monitors, this value is the same for all monitors.
(Read and Write property)

131.12.16 LogPixelsY as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Number of pixels per logical inch along the screen height.

**Example:**

```vba
dim g as Graphics = OpenPrinter
dim info as WindowsGraphicsInfoMBS = g.WindowsGraphicsInfoMBS
MsgBox "Printer resolution: " +str(info.LogPixelsX)+” x ”+str(info.LogPixelsY)
```

**Notes:**

In a system with multiple display monitors, this value is the same for all monitors.
(Read and Write property)

131.12.17 MakersCount as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Number of markers the device has.

**Notes:** (Read and Write property)
131.12. PenCount as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Number of device-specific pens.  
**Notes:** (Read and Write property)

131.12. PhysicalHeight as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** For printing devices: the height of the physical page, in device units.  
**Notes:** 
For example, a printer set to print at 600 dpi on 8.5-by-11-inch paper has a physical height value of 6600 device units. Note that the physical page is almost always greater than the printable area of the page, and never smaller.  
(Read and Write property)

131.12. PhysicalOffsetX as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** For printing devices: the distance from the left edge of the physical page to the left edge of the printable area, in device units.  
**Notes:** 
For example, a printer set to print at 600 dpi on 8.5-by-11-inch paper, that cannot print on the leftmost 0.25-inch of paper, has a horizontal physical offset of 150 device units.  
(Read and Write property)

131.12. PhysicalOffsetY as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** For printing devices: the distance from the top edge of the physical page to the top edge of the printable area, in device units.  
**Notes:** 
For example, a printer set to print at 600 dpi on 8.5-by-11-inch paper, that cannot print on the topmost 0.5-inch of paper, has a vertical physical offset of 300 device units.  
(Read and Write property)
131.12.22 PhysicalWidth as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
For printing devices: the width of the physical page, in device units.

**Notes:**
For example, a printer set to print at 600 dpi on 8.5-x11-inch paper has a physical width value of 5100 device units. Note that the physical page is almost always greater than the printable area of the page, and never smaller.

(Read and Write property)

131.12.23 Planes as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Number of color planes.

**Notes:** (Read and Write property)

131.12.24 ResolutionX as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Width, in pixels, of the screen; or for printers, the width, in pixels, of the printable area of the page.

**Notes:** (Read and Write property)

131.12.25 ResolutionY as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Height, in raster lines, of the screen; or for printers, the height, in pixels, of the printable area of the page.

**Notes:** (Read and Write property)

131.12.26 ScalingFactorX as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Scaling factor for the x-axis of the printer.

**Notes:** (Read and Write property)
131.12.27  ScalingFactorY as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Scaling factor for the y-axis of the printer.
**Notes:** (Read and Write property)

131.12.28  SizeX as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Width, in millimeters, of the physical screen.
**Notes:** (Read and Write property)

131.12.29  SizeY as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Height, in millimeters, of the physical screen.
**Notes:** (Read and Write property)

131.12.30  Technology as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Device technology. It can be any one of the kTechnology* constants.
**Notes:** (Read and Write property)

131.12.31  VRefresh as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
For display devices: the current vertical refresh rate of the device, in cycles per second (Hz).
**Notes:** (Read and Write property)

131.12.32  Constants

131.12.33  kTechnologyCharStream = 4

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the technology constants.
**Notes:** Character stream
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131.12.34  kTechnologyDisplayFile = 6

MBS Win Plugin, Plugin Version: 12.1. Function: One of the technology constants. Notes: Display file

131.12.35  kTechnologyMetaFile = 5

MBS Win Plugin, Plugin Version: 12.1. Function: One of the technology constants. Notes: Metafile

131.12.36  kTechnologyPlotter = 0

MBS Win Plugin, Plugin Version: 12.1. Function: One of the technology constants. Notes: Vector plotter

131.12.37  kTechnologyRasterCamera = 3

MBS Win Plugin, Plugin Version: 12.1. Function: One of the technology constants. Notes: Raster camera

131.12.38  kTechnologyRasterDisplay = 1

MBS Win Plugin, Plugin Version: 12.1. Function: One of the technology constants. Notes: Raster display

131.12.39  kTechnologyRasterPrinter = 2

MBS Win Plugin, Plugin Version: 12.1. Function: One of the technology constants. Notes: Raster printer
131.13  class WindowsPageFormatMBS

131.13.1  class WindowsPageFormatMBS

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The class for a page format.

**Example:**

```vba
// change the printer name to your printer's name
dim w as new WindowsPrinterMBS(WindowsPrinterMBS.GetDefaultPrinter)
dim formats(-1) as WindowsPageFormatMBS = w.GetPrinterFormats

for each p as WindowsPageFormatMBS in formats
    MsgBox p.Name
next
```

**Notes:**
This class wraps the FORM_INFO_1 structure. You can find more information here:

131.13.2  Properties

131.13.3  DisplayName as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The form’s display name in the language specified by LangId.

**Notes:**
Only available in Windows Vista and newer and only valid if mode = 2.
(Read and Write property)

131.13.4  Flags as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The flags for this page format.

**Notes:**
The following values are defined.

(Read and Write property)
<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>FORM_USER</td>
<td>If this bit flag is set, the form has been defined by the user. Forms with this flag set are defined in the registry.</td>
</tr>
<tr>
<td>FORM_BUILTIN</td>
<td>If this bit-flag is set, the form is part of the spooler. Form definitions with this flag set do not appear in the registry.</td>
</tr>
<tr>
<td>FORM_PRINTER</td>
<td>If this bit flag is set, the form is associated with a certain printer, and its definition appears in the registry.</td>
</tr>
</tbody>
</table>

131.13.5 **ImageableAreaBottom as Integer**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The imageable area, in thousandths of millimeters, of the form.  
**Notes:** (Read and Write property)  

131.13.6 **ImageableAreaHeight as Integer**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The imageable area, in thousandths of millimeters, of the form.  
**Notes:** (Read and Write property)  

131.13.7 **ImageableAreaLeft as Integer**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The imageable area, in thousandths of millimeters, of the form.  
**Notes:** (Read and Write property)  

131.13.8 **ImageableAreaRight as Integer**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The imageable area, in thousandths of millimeters, of the form.  
**Notes:** (Read and Write property)  

131.13.9 **ImageableAreaTop as Integer**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The imageable area, in thousandths of millimeters, of the form.  
**Notes:** (Read and Write property)
131.13.10  ImageableAreaWidth as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The imageable area, in thousandths of millimeters, of the form.
**Notes:** (Read and Write property)

131.13.11  Keyword as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
A non-localizable string identifier of the form.
**Notes:**
When passed to AddForm or SetForm, this gives the caller a means of identifying the form in all locales.
Only available in Windows Vista and newer and only valid if mode = 2.
(Read and Write property)

131.13.12  LangId as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The language of the DisplayName.
**Notes:**
Only available in Windows Vista and newer and only valid if mode = 2.
(Read and Write property)

131.13.13  Mode as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The mode.
**Notes:**
Value can be 1 (Windows 2000 and newer) or 2 (Windows Vista and newer).
(Read and Write property)

131.13.14  MuiDll as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The Multilingual User Interface localized resource DLL that contains the localized display name.
**Notes:**
Only available in Windows Vista and newer and only valid if mode = 2.
131.13.15 Name as String

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The name of the form.
**Notes:** (Read and Write property)

131.13.16 ResourceId as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The resource ID of the form’s display name in MuiDll.
**Notes:**
Only available in Windows Vista and newer and only valid if mode = 2.
(Read and Write property)

131.13.17 SizeHeight as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The height, in thousandths of millimeters, of the form.
**Notes:** (Read and Write property)

131.13.18 SizeWidth as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The width, in thousandths of millimeters, of the form.
**Notes:** (Read and Write property)

131.13.19 StringType as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Specifies how a localized display name for the form is obtained at runtime.
**Notes:**
The following values are defined. Only one can be set in any given call to AddForm or SetForm. Both STRING_MUIDLL and STRING_LANGPAIR can be set in the WindowsPageFormatMBS (s) returned by GetForm or GetPrinterFormats.
Can be STRING_LANGPAIR, STRING_MUIDLL or STRING_NONE. Only available in Windows Vista and newer and only valid if mode = 2. (Read and Write property)

### 131.13.20 Constants

#### 131.13.21 FORM_BUILTIN = 1

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the flag constants.  
**Notes:** If this bit-flag is set, the form is part of the spooler. Form definitions with this flag set do not appear in the registry.

#### 131.13.22 FORM_PRINTER = 2

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the flag constants.  
**Notes:** If this bit flag is set, the form is associated with a certain printer, and its definition appears in the registry.

#### 131.13.23 FORM_USER = 0

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the flag constants.  
**Notes:** If this bit flag is set, the form has been defined by the user. Forms with this flag set are defined in the registry.

#### 131.13.24 STRING_LANGPAIR = 4

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the constants for the StringType property.  
**Notes:** The display name and language ID are provided directly by DisplayName and the language is specified by LangId.

#### 131.13.25 STRING_MUIDLL = 2

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the constants for the StringType property.  
**Notes:** The display name is extracted from the Multilingual User Interface localized resources DLL specified in MuiDll. The ID is in the ResourceId member.
131.13.26 STRING_NONE = 1

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the constants for the StringType property. **Notes:** There is no localized display name.
131.14 class WindowsPageSetupDialogMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The class to run the Windows Page Setup dialog.

### 131.14.2 Methods

#### 131.14.3 Constructor

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The constructor.

#### 131.14.4 GetDevNames(byref DriverName as string, byref DeviceName as string, 
byref OutputName as string, byref flags as Integer) as boolean

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Queries the strings that identify the driver, device, and output port names for a printer.
**Notes:**
Returns true if values are available and false if not.

DriverName: The file name (without the extension) of the device driver. On input, this string is used to determine the printer to display initially in the dialog box.
OutputName: The device name for the physical output medium (output port).
Flags: Indicates whether the strings here identify the default printer. This string is used to verify that the default printer has not changed since the last print operation. If any of the strings do not match, a warning message is displayed informing the user that the document may need to be reformatted. On output, the Flags member is changed only if the Print Setup dialog box was displayed and the user chose the OK button. The DN_DEFAULTPRN flag is used if the default printer was selected. If a specific printer is selected, the flag is not used. All other flags in this member are reserved for internal use by the dialog box procedure for the Print property sheet or Print dialog box.

#### 131.14.5 PageSetupDialog as boolean

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Creates a Page Setup dialog box that enables the user to specify the attributes of a printed page.
**Notes:**
These attributes include the paper size and source, the page orientation (portrait or landscape), and the width of the page margins.

If the user clicks the OK button, the return value is true. The members of the object indicate the user’s selections. If the user cancels or closes the Page Setup dialog box or an error occurs, the return value is false. To get extended error information, use the lasterror property.

Starting with Windows Vista, the PageSetupDialog does not contain the Printer button. To switch printer selection other functions.

### 131.14.6 `SetDevNames(DriverName as string, DeviceName as string, OutputName as string, flags as Integer) as boolean`

**MBS Win Plugin, Plugin Version:** 12.1, **Console & Web:** Yes, **Mac:** No, **Win:** Yes, **Linux:** No. **Function:** Sets the strings that identify the driver, device, and output port names for a printer.

**Notes:**
Returns true on success and false on failure.

- **DriverName:** The file name (without the extension) of the device driver. On input, this string is used to determine the printer to display initially in the dialog box.
- **OutputName:** The device name for the physical output medium (output port).
- **Flags:** Indicates whether the strings here identify the default printer. This string is used to verify that the default printer has not changed since the last print operation. If any of the strings do not match, a warning message is displayed informing the user that the document may need to be reformatted. On output, the Flags member is changed only if the Print Setup dialog box was displayed and the user chose the OK button. The DN_DEFAULTTPRN flag is used if the default printer was selected. If a specific printer is selected, the flag is not used. All other flags in this member are reserved for internal use by the dialog box procedure for the Print property sheet or Print dialog box.

### 131.14.7 Properties

### 131.14.8 `DevMode as WindowsDeviceModeMBS`

**MBS Win Plugin, Plugin Version:** 12.1, **Console & Web:** No, **Mac:** No, **Win:** Yes, **Linux:** No. **Function:** The device mode object.

**Notes:**
On input, if an object is specified, the values in the corresponding DEVMODE structure are used to initialize the controls in the dialog box. On output, the dialog box sets DevMode to a new object that contains values specifying the user’s selections. If the user’s selections are not available, the dialog box sets DevMode to nil.
131.14.9 Flags as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** A set of bit flags that you can use to initialize the Page Setup dialog box.

**Notes:**
When the dialog box returns, it sets these flags to indicate the user's input.
See the PSD_* constants for possible values.
(Read and Write property)

131.14.10 Lasterror as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The last error code.

**Notes:** (Read and Write property)

131.14.11 MarginBottom as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The widths of the bottom margin.

**Notes:**
If you set the PSD_MARGINS flag, rtMargin specifies the initial margin values. When PageSetupDlg returns, rtMargin contains the margin widths selected by the user. The PSD_INHUNDREDTHSOFMILLIMETERS or PSD_INTHOUSANDTHSOFINCHES flag indicates the units of measurement.
(Read and Write property)

131.14.12 MarginLeft as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The widths of the left margin.

**Notes:**
If you set the PSD_MARGINS flag, rtMargin specifies the initial margin values. When PageSetupDlg returns, rtMargin contains the margin widths selected by the user. The PSD_INHUNDREDTHSOFMILLIMETERS or PSD_INTHOUSANDTHSOFINCHES flag indicates the units of measurement.
(Read and Write property)
131.14.13 MarginRight as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The widths of the right margin.  
**Notes:**  
If you set the PSD_MARGINS flag, rtMargin specifies the initial margin values. When PageSetupDlg returns, rtMargin contains the margin widths selected by the user. The PSD_INHUNDREDTHSOFMILLIMETERS or PSD_INTHOUSANDTHSOFINCHES flag indicates the units of measurement.  
(Read and Write property)

131.14.14 MarginTop as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The widths of the top margin.  
**Notes:**  
If you set the PSD_MARGINS flag, rtMargin specifies the initial margin values. When PageSetupDlg returns, rtMargin contains the margin widths selected by the user. The PSD_INHUNDREDTHSOFMILLIMETERS or PSD_INTHOUSANDTHSOFINCHES flag indicates the units of measurement.  
(Read and Write property)

131.14.15 MinMarginBottom as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The minimum allowable widths for the bottom margin.  
**Notes:**  
The system ignores this member if the PSD_MINMARGINS flag is not set. These values must be less than or equal to the values specified in the Margin* member. The PSD_INTHOUSANDTHSOFINCHES or PSD_INHUNDREDTHSOFMILLIMETERS flag indicates the units of measurement.  
(Read and Write property)

131.14.16 MinMarginLeft as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The minimum allowable widths for the left margin.  
**Notes:**  
The system ignores this member if the PSD_MINMARGINS flag is not set. These values must be less than or equal to the values specified in the Margin* member. The PSD_INTHOUSANDTHSOFINCHES or PSD_INHUNDREDTHSOFMILLIMETERS flag indicates the units of measurement.
131.14. **CLASS WINDOWSPAGESETUPDIALOGMBS**

(Read and Write property)

131.14.17 **MinMarginRight as Integer**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The minimum allowable widths for the right margin.
**Notes:**
The system ignores this member if the PSD_MINMARGINS flag is not set. These values must be less than or equal to the values specified in the Margin* member. The PSD_INTHOUSANDTHSOFINCHES or PSD_INHUNDREDTHSOFMILLIMETERS flag indicates the units of measurement.
(Read and Write property)

131.14.18 **MinMarginTop as Integer**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The minimum allowable widths for the top margin.
**Notes:**
The system ignores this member if the PSD_MINMARGINS flag is not set. These values must be less than or equal to the values specified in the Margin* member. The PSD_INTHOUSANDTHSOFINCHES or PSD_INHUNDREDTHSOFMILLIMETERS flag indicates the units of measurement.
(Read and Write property)

131.14.19 **PaperSizeX as Integer**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The dimensions of the paper selected by the user.
**Notes:**
The PSD_INTHOUSANDTHSOFINCHES or PSD_INHUNDREDTHSOFMILLIMETERS flag indicates the units of measurement.
(Read and Write property)

131.14.20 **PaperSizeY as Integer**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The dimensions of the paper selected by the user.
**Notes:**
The PSD_INTHOUSANDTHSOFINCHES or PSD_INHUNDREDTHSOFMILLIMETERS flag indicates the
units of measurement.
(Read and Write property)

131.14.21 Parent as Window

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The window that owns the dialog box.

**Notes:**
This member can be any valid window, or it can be nil if the dialog box has no owner.
(Read and Write property)

131.14.22 Constants

131.14.23 DN_DEFAULTPRN = 1

MBS Win Plugin, Plugin Version: 12.1. **Function:** The flag for default printer on the SetDevNames/GetDevNames flag parameter.

131.14.24 PSD_DEFAULTMINMARGINS = & h00000000

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flag constants. **Notes:** Sets the minimum values that the user can specify for the page margins to be the minimum margins allowed by the printer. This is the default. This flag is ignored if the PSD_MARGINS and PSD_MINMARGINS flags are also specified.

131.14.25 PSD_DISABLEMARGINS = & h00000010

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flag constants. **Notes:** Disables the margin controls, preventing the user from setting the margins.

131.14.26 PSD_DISABLEORIENTATION = & h00000100

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flag constants. **Notes:** Disables the orientation controls, preventing the user from setting the page orientation.
131.14.27 PSD_DISABLEPAPER = & h00000200

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flag constants. **Notes:** Disables the paper controls, preventing the user from setting page parameters such as the paper size and source.

131.14.28 PSD_DISABLEPRINTER = & h00000200

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flag constants. **Notes:**

Obsolete.
Windows XP/2000: Disables the Printer button, preventing the user from invoking a dialog box that contains additional printer setup information.

131.14.29 PSD_INHUNDREDTHSOFMILLIMETERS = & h00000008

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flag constants. **Notes:** Indicates that hundredths of millimeters are the unit of measurement for margins and paper size. The values in the Margin, MinMargin, and PaperSize members are in hundredths of millimeters. You can set this flag on input to override the default unit of measurement for the user’s locale. When the function returns, the dialog box sets this flag to indicate the units used.

131.14.30 PSD_INTHOUSANDTHSOFINCHES = & h00000004

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flag constants. **Notes:** Indicates that thousandths of inches are the unit of measurement for margins and paper size. The values in the Margin, MinMargin, and PaperSize members are in thousandths of inches. You can set this flag on input to override the default unit of measurement for the user’s locale. When the function returns, the dialog box sets this flag to indicate the units used.

131.14.31 PSD_MARGINS = & h00000002

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flag constants. **Notes:** Causes the system to use the values specified in the Margin members as the initial widths for the left, top, right, and bottom margins. If PSD_MARGINS is not set, the system sets the initial widths to one inch for all margins.
**131.14.32**  **PSD_MINMARGINS = & h00000001**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flag constants.  
**Notes:** Causes the system to use the values specified in the MinMargin members as the minimum allowable widths for the left, top, right, and bottom margins. The system prevents the user from entering a width that is less than the specified minimum. If PSD_MINMARGINS is not specified, the system sets the minimum allowable widths to those allowed by the printer.

**131.14.33**  **PSD_NONETWORKBUTTON = & h00200000**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flag constants.  
**Notes:** Hides and disables the Network button.

**131.14.34**  **PSD_NOWARNING = & h00000080**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flag constants.  
**Notes:** Prevents the system from displaying a warning message when there is no default printer.

**131.14.35**  **PSD_RETURNDEFAULT = & h00000400**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flag constants.  
**Notes:** PageSetupDialog does not display the dialog box. Instead, it sets the DevNames and DevMode members to objects that are initialized for the system default printer. PageSetupDlg returns an error if either DevNames or DevMode is not nil.

**131.14.36**  **PSD_SHOWHELP = & h00000800**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the flag constants.  
**Notes:** Causes the dialog box to display the Help button. The hwndOwner member must specify the window to receive the HELPMSGSTRING registered messages that the dialog box sends when the user clicks the Help button.
131.15. CLASS WINDOWSPRINTDIALOGMBS

131.15 class WindowsPrintDialogMBS

131.15.1 class WindowsPrintDialogMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The class for showing the windows print dialog.

131.15.2 Methods

131.15.3 Constructor

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The constructor.

131.15.4 GetDevNames(byref DriverName as string, byref DeviceName as string, byref OutputName as string, byref flags as Integer) as boolean

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Queries the strings that identify the driver, device, and output port names for a printer.
**Notes:**
Returns true if values are available and false if not.

DriverName: The file name (without the extension) of the device driver. On input, this string is used to
determine the printer to display initially in the dialog box.
OutputName: The device name for the physical output medium (output port).
Flags: Indicates whether the strings here identify the default printer. This string is used to verify that the
default printer has not changed since the last print operation. If any of the strings do not match, a warning
message is displayed informing the user that the document may need to be reformatted. On output, the
Flags member is changed only if the Print Setup dialog box was displayed and the user chose the OK button.
The DN_DEFAULTPRN flag is used if the default printer was selected. If a specific printer is selected, the
flag is not used. All other flags in this member are reserved for internal use by the dialog box procedure for
the Print property sheet or Print dialog box.

131.15.5 getPageSizeRange(index as Integer, byref fromPage as Integer, byref toPage as Integer)

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Queries a page range entry.
131.15.6 PrintDialog as boolean

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Displays a Print Dialog Box or a Print Setup dialog box.

**Notes:**

The Print dialog box enables the user to specify the properties of a particular print job.

If the user clicks the OK button, the return value is true. The members of the object indicate the user’s selections.

If the user canceled or closed the Print or Printer Setup dialog box or an error occurred, the return value is zero. To get extended error information, use the lasterror property. If the user canceled or closed the dialog box, lasterror returns zero.

This is the older function. PrintDialogEx is the newer function. see also http://msdn.microsoft.com/en-us/library/windows/desktop/ms646940(v=vs.85).aspx

131.15.7 PrintDialogEx as boolean

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Displays a Print property sheet that enables the user to specify the properties of a particular print job.

**Notes:**

A Print property sheet has a General page that contains controls similar to the Print dialog box. The property sheet can also have additional application-specific and driver-specific property pages as well as the General page.

If the function succeeds, the return value is S_OK (0) and the ResultAction member contains one of the following values.

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD_RESULT_APPLY</td>
<td>2</td>
<td>The user clicked the Apply button and later clicked the Cancel button. This</td>
</tr>
<tr>
<td></td>
<td></td>
<td>indicates that the user wants to apply the changes made in the property sheet,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>but does not yet want to print. The WindowsPrintDialogMBS contains the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>information specified by the user at the time the Apply button was clicked.</td>
</tr>
<tr>
<td>PD_RESULT_CANCEL</td>
<td>0</td>
<td>The user clicked the Cancel button. The information in the WindowsPrintDia-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>logMBS is unchanged.</td>
</tr>
<tr>
<td>PD_RESULT_PRINT</td>
<td>1</td>
<td>The user clicked the Print button. The WindowsPrintDialogMBS contains the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>information specified by the user.</td>
</tr>
</tbody>
</table>

Lasterror is set.

The values of DevMode and DevNames in WindowsPrintDialogMBS may change when they are passed into PrintDialog. This is because these members are filled on both input and output.
131.15. CLASS WINDOWS\PRINTDIALOGMBS

If PD\RETURNDC is set but PD\USEDEVMODECOPIESANDCOLLATE flag is not set, the PrintDialog functions return incorrect number of copies. To get the correct number of copies, ensure that the calling application always uses PD\USEDEVMODECOPIESANDCOLLATE with PD\RETURNDC.

see also

131.15.8 SetDevNames(DriverName as string, DeviceName as string, OutputName as string, flags as Integer) as boolean

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: Sets the strings that identify the driver, device, and output port names for a printer.
Notes:
Returns true on success and false on failure.

DriverName: The file name (without the extension) of the device driver. On input, this string is used to determine the printer to display initially in the dialog box.
OutputName: The device name for the physical output medium (output port).
Flags: Indicates whether the strings here identify the default printer. This string is used to verify that the default printer has not changed since the last print operation. If any of the strings do not match, a warning message is displayed informing the user that the document may need to be reformatted. On output, the Flags member is changed only if the Print Setup dialog box was displayed and the user chose the OK button. The DN_DEFAULTPRN flag is used if the default printer was selected. If a specific printer is selected, the flag is not used. All other flags in this member are reserved for internal use by the dialog box procedure for the Print property sheet or Print dialog box.

131.15.9 setPageRange(index as Integer, fromPage as Integer, toPage as Integer)

Notes: Index from 0 to 19.

131.15.10 Properties

131.15.11 Copies as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: Contains the initial number of copies for the Copies edit control if DevMode is nil; otherwise, the Copies
member of the DEVMODE contains the initial value.

Notes:
When PrintDlgEx returns, nCopies contains the actual number of copies the application must print. This value depends on whether the application or the printer driver is responsible for printing multiple copies. If the PD_USEDEVMODECOPIESANDCOLLATE flag is set in the Flags member, nCopies is always 1 on return, and the printer driver is responsible for printing multiple copies. If the flag is not set, the application is responsible for printing the number of copies specified by nCopies. For more information, see the description of the PD_USEDEVMODECOPIESANDCOLLATE flag.
(Read and Write property)

131.15.12 DC as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: The device context or an information context, depending on whether the Flags member specifies the PD_RETURNDC or PC_RETURNIC flag.

Notes:
If neither flag is specified, the value of this member is undefined. If both flags are specified, PD_RETURNDC has priority.
(Read and Write property)

131.15.13 DevMode as WindowsDeviceModeMBS


Notes:
On input, if an object is specified, the values in the corresponding DEVMODE structure are used to initialize the controls in the dialog box. On output, the dialog box sets DevMode to a new object that contains values specifying the user’s selections. If the user’s selections are not available, the dialog box sets DevMode to nil.
(Read and Write property)

131.15.14 ExclusionFlags as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: A set of bit flags that can exclude items from the printer driver property pages in the Print property sheet.

Notes:
This value is used only if the PD_EXCLUSIONFLAGS flag is set in the Flags member. Exclusion flags should be used only if the item to be excluded will be included on either the General page or on an application-defined page in the Print property sheet. This member can specify the following flag:
PD_EXCL_COPIESANDCOLLATE: Excludes the Copies and Collate controls from the printer driver prop-
131.15. **CLASS WINDOWS\PRINTDIALOGMBS**

Property pages in a Print property sheet. This flag should always be set when the application uses the default Copies and Collate controls provided by the lower portion of the General page of the Print property sheet. (Read and Write property)

### 131.15.15 Flags as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** A set of bit flags that you can use to initialize the Print property sheet.

**Notes:**

When the PrintDialog function returns, it sets these flags to indicate the user’s input. This member can be one or more of the following values.

To ensure that PrintDialog returns the correct values in the Copies and Collate members of the DeviceMode, set PD\_RETURNDC = TRUE and PD\_USEDEVMODECOPIESANDCOLLATE = TRUE. In so doing, the Copies member of the PRINTDLG structure is always 1 and PD\_COLLATE is always false.

To ensure that PrintDialog returns the correct values in nCopies and PD\_COLLATE, set PD\_RETURNDC = TRUE and PD\_USEDEVMODECOPIESANDCOLLATE = FALSE. In so doing, dmCopies is always 1 and dmCollate is always FALSE.

Starting with Windows Vista, when you call PrintDlg or PrintDlgEx with PD\_RETURNDC set to TRUE and PD\_USEDEVMODECOPIESANDCOLLATE set to FALSE, the PrintDlg or PrintDlgEx function sets the number of copies in the nCopies member of the PRINTDLG structure, and it sets the number of copies in the structure represented by the hDC member of the PRINTDLG structure.

When making calls to GDI, you must ignore the value of nCopies, consider the value as 1, and use the returned hDC to avoid printing duplicate copies. (Read and Write property)

### 131.15.16 FromPage as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The initial value for the starting page edit control.

**Notes:**

When PrintDialog returns, nFromPage is the starting page specified by the user. If the Pages radio button is selected when the user clicks the Okay button, PrintDialog sets the PD\_PAGENUMS flag and does not return until the user enters a starting page value that is within the minimum to maximum page range.

If the input value for either FromPage or nToPage is outside the minimum/maximum range, PrintDlg returns an error only if the PD\_PAGENUMS flag is specified; otherwise, it displays the dialog box but changes the out-of-range value to the minimum or maximum value.

This is only for PrintDialog, not for PrintDialogEx. (Read and Write property)
131.15.17  Lasterror as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The last error code.
**Notes:**
Typical errors:
E_OUTOFMEMORY = & h8007000E // Insufficient memory.
E_INVALIDARG = & h80070057 // One or more arguments are invalid.
E_POINTER = & h80000005 // Invalid pointer.
E_HANDLE = & h80000006 // Invalid handle.
E_FAIL = & h80000008 // Unspecified error.
(Read and Write property)

131.15.18  MaxPage as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The maximum value for the page ranges specified in the Pages edit control.
**Notes:**
If the PD_NOPAGENUMS flag is specified, this value is not valid.
(Read and Write property)

131.15.19  MaxPageRanges as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The size, in array elements, of the PageRanges buffer.
**Notes:**
This value indicates the maximum number of page ranges that can be stored in the array. If the PD_NOPAGENUMS flag is specified, this value is not valid. If the PD_NOPAGENUMS flag is not specified, this value must be greater than zero.
The plugin supports up to 20 page ranges.
(Read and Write property)

131.15.20  MinPage as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The minimum value for the page ranges specified in the Pages edit control.
**Notes:**
If the PD_NOPAGENUMS flag is specified, this value is not valid.
(Read and Write property)
131.15.21  **PageRanges as Integer**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**

On input, set this member to the initial number of page ranges specified.

**Notes:**

When the PrintDialog function returns, PageRanges indicates the number of user-specified page ranges. If the PD_NOPAGENUMS flag is specified, this value is not valid. Use getPageRange to query page ranges or setPageRange to set them.

(Read and Write property)

131.15.22  **Parent as Window**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**

The window that owns the dialog box.

**Notes:**

The window that owns the property sheet. This member must be a valid window handle; it cannot be nil.

(Read and Write property)

131.15.23  **ResultAction as Integer**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**

If the PrintDlgEx function returns S_OK (0), ResultAction contains the outcome of the dialog.

**Notes:**

If PrintDialog returns an error, this member should be ignored. The ResultAction member can be one of the following values:

- **PD_RESULT_APPLY** The user clicked the Apply button and later clicked the Cancel button. This indicates that the user wants to apply the changes made in the property sheet, but does not want to print yet. The PRINTDLGEX structure contains the information specified by the user at the time the Apply button was clicked.

- **PD_RESULT_CANCEL** The user clicked the Cancel button. The information in the PRINTDLGEX structure is unchanged.

- **PD_RESULT_PRINT** The user clicked the Print button. The PRINTDLGEX structure contains the information specified by the user.

(Read and Write property)
131.15.24  **StartPanel** as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The property page that is initially displayed. **Notes:**

To display the General page, specify `START_PAGE_GENERAL`. For consistency, it is recommended that the property sheet always be started on the General page. The plugin sets `START_PAGE_GENERAL` for default value. (Read and Write property)

131.15.25  **ToPage** as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The initial value for the ending page edit control. **Notes:**

When PrintDialog returns, ToPage is the ending page specified by the user. If the Pages radio button is selected when the user clicks the Okay button, PrintDialog sets the PD_PAGENUMS flag and does not return until the user enters an ending page value that is within the minimum to maximum page range. This is only for PrintDialog, not for PrintDialogEx. (Read and Write property)

131.15.26  **Constants**

131.15.27  **PD_ALLPAGES** = 0

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the constants for the flags property. **Notes:**

The default flag that indicates that the All radio button is initially selected. This flag is used as a placeholder to indicate that the PD_PAGENUMS, PD_SELECTION, and PD_CURRENTPAGE flags are not specified.

131.15.28  **PD_COLLATE** = &h00000010

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the constants for the flags property. **Notes:**

If this flag is set, the Collate check box is selected. If this flag is set when the PrintDlgEx function returns, the application must simulate collation of multiple copies. For more information, see the description of the PD_USEDEVMODECOPIESANDCOLLATE flag.
131.15.29  **PD_CURRENTPAGE** = & h00400000

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the constants for the flags property.  
**Notes:** If this flag is set, the Current Page radio button is selected. If none of the PD_PAGENUMS, PD_SELECTION, or PD_CURRENTPAGE flags is set, the All radio button is selected.

131.15.30  **PD_DISABLEPRINTTOFILE** = & h00080000

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the constants for the flags property.  
**Notes:** Disables the Print to File check box.

131.15.31  **PD_EXCLUSIONFLAGS** = & h01000000

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the constants for the flags property.  
**Notes:** Indicates that the ExclusionFlags member identifies items to be excluded from the printer driver property pages.  
If this flag is not set, items will be excluded by default from the printer driver property pages. The exclusions prevent the duplication of items among the General page, any application-specified pages, and the printer driver pages.

131.15.32  **PD_EXCL_COPIESANDCOLLATE** = & h00008100

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the constants for the flags property.  
**Notes:** Excludes the Copies and Collate controls from the printer driver property pages in a Print property sheet. This flag should always be set when the application uses the default Copies and Collate controls provided by the lower portion of the General page of the Print property sheet.

131.15.33  **PD_HIDEPRINTTOFILE** = & h00100000

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the constants for the flags property.  
**Notes:** Hides the Print to File check box.
131.15.34  PD_NOCURRENTPAGE = & h00800000

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the constants for the flags property.
**Notes:** Disables the Current Page radio button.

131.15.35  PD_NONETWORKBUTTON = & h00200000

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the constants for the flags property.
**Notes:** Hides and disables the Network button.

131.15.36  PD_NOPAGENUMS = 8

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the constants for the flags property.
**Notes:**
Disables the Pages radio button and the associated edit controls.
Also, it causes the Collate check box to appear in the dialog.

131.15.37  PD_NOSELECTION = 4

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the constants for the flags property.
**Notes:** Disables the Selection radio button.

131.15.38  PD_NOWARNING = & h00000080

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the constants for the flags property.
**Notes:** Prevents the warning message from being displayed when an error occurs.

131.15.39  PD_PAGENUMS = 2

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the constants for the flags property.
**Notes:** If this flag is set, the Pages radio button is selected. If none of the PD_PAGENUMS, PD_SELECTION, or PD_CURRENTPAGE flags is set, the All radio button is selected. If this flag is set when the PrintDialog function returns, the PageRanges member indicates the page ranges specified by the user.
131.15. **CLASS WINDOWSPRINTDIALOGMBS**

131.15.40 **PD_PRINTSETUP = & h00000040**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the constants for the flags property. **Notes:** Causes the system to display the Print Setup dialog box rather than the Print dialog box.

131.15.41 **PD_PRINTTOFILE = & h00000020**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the constants for the flags property. **Notes:**
If this flag is set, the Print to File check box is selected.
If this flag is set when PrintDialog returns, the OutputName of DevNames contains the string "FILE:".
When you call the StartDoc function to start the printing operation, specify this "FILE:" string in the Output parameter member of the DOCINFO structure. Specifying this string causes the print subsystem to query the user for the name of the output file.
StartDoc is available in our plugins through StartDocPrinter in WindowsAddPrintJobMBS class.

131.15.42 **PD_RESULT_APPLY = 2**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the ResultAction value constants. **Notes:** The user clicked the Apply button and later clicked the Cancel button. This indicates that the user wants to apply the changes made in the property sheet, but does not yet want to print. The WindowsPrintDialogMBS contains the information specified by the user at the time the Apply button was clicked.

131.15.43 **PD_RESULTCANCEL = 0**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the ResultAction value constants. **Notes:** The user clicked the Cancel button. The information in the WindowsPrintDialogMBS is unchanged.

131.15.44 **PD_RESULTPRINT = 1**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the ResultAction value constants. **Notes:** The user clicked the Print button. The WindowsPrintDialogMBS contains the information specified by the user.
131.15.45  **PD_RETURNDC = & h00000100**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the constants for the flags property.  
**Notes:**
Causes PrintDialog to return a device context matching the selections the user made in the property sheet. The device context is returned in DC property.

131.15.46  **PD_RETURNDEFAULT = & h00000400**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the constants for the flags property.  
**Notes:**
If this flag is set, the PrintDialog function does not display the property sheet. Instead, it sets the DevNames and DevMode members to the default for the system default printer. Both DevNames and DevMode must be empty, or PrintDialog returns an error.

131.15.47  **PD_RETURNIC = & h00000200**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the constants for the flags property.  
**Notes:**
Similar to the PD_RETURNDC flag, except this flag returns an information context rather than a device context. If neither PD_RETURNDC nor PD_RETURNIC is specified, hDC is undefined on output.

131.15.48  **PD_SELECTION = 1**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the constants for the flags property.  
**Notes:**
If this flag is set, the Selection radio button is selected. If none of the PD_PAGENUMS, PD_SELECTION, or PD_CURRENTPAGE flags is set, the All radio button is selected.

131.15.49  **PD_SHOWHELP = & h00000800**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the constants for the flags property.  
**Notes:** Causes the dialog box to display the Help button.
131.15. **CLASS WINDOWSPRINTDIALOĞMBS**

131.15.50 **PD_USEDEVMODECOPIES = & h00040000**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the constants for the flags property. **Notes:** Same as PD_USEDEVMODECOPIESANDCOLLATE.

131.15.51 **PD_USEDEVMODECOPIESANDCOLLATE = & h00040000**

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the constants for the flags property. **Notes:**

This flag indicates whether your application supports multiple copies and collation. Set this flag on input to indicate that your application does not support multiple copies and collation. In this case, the Copies member of the class always returns 1, and PD_COLLATE is never set in the Flags member.

If this flag is not set, the application is responsible for printing and collating multiple copies. In this case, the Copies property indicates the number of copies the user wants to print, and the PD_COLLATE flag in the Flags member indicates whether the user wants collation.

Regardless of whether this flag is set, an application can determine from Copies and PD_COLLATE how many copies to render and whether to print them collated.

If this flag is set and the printer driver does not support multiple copies, the Copies edit control is disabled. Similarly, if this flag is set and the printer driver does not support collation, the Collate check box is disabled.

In Windows versions prior to Windows Vista, if this flag is not set by the calling application and the dm-Copies member of the WindowsDeviceModeMBS object is greater than 1, use that value for the number of copies; otherwise, use the value of the Copies member of this class.

131.15.52 **START_PANEL_GENERAL = & hffffffff**

MBS Win Plugin, Plugin Version: 12.1. **Function:** Special value for StartPanel property to select general panel.
131.16  class WindowsPrinterInfoMBS

131.16.1  class WindowsPrinterInfoMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The class for details on printer information.

**Example:**

dim printers(-1) as WindowsPrinterInfoMBS = WindowsPrinterInfoMBS.LocalPrinters

for each p as WindowsPrinterInfoMBS in printers
    MsgBox p.PrinterName
next

**Notes:**
This class wraps the PRINTER_INFO_2 structure on windows which you find documented here:
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

131.16.2  Methods

131.16.3  Constructor

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The private constructor.

131.16.4  LocalPrinters as WindowsPrinterInfoMBS()

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Returns the printers as an array.

**Example:**

dim printers(-1) as WindowsPrinterInfoMBS = WindowsPrinterInfoMBS.LocalPrinters

for each p as WindowsPrinterInfoMBS in printers
    MsgBox p.PrinterName
next

**Notes:** On any error the array will be empty.
131.16. **OpenPrinter(admin as boolean = false) as WindowsPrinterMBS**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Opens the printer so you can operate on it.

**Example:**

```vba
dim name as string = WindowsPrinterMBS.GetDefaultPrinter
dim p as WindowsPrinterMBS = WindowsPrinterMBS.OpenPrinter(name)
MsgBox p.PrinterName
```

**Notes:**

Admin: whether you want to get permissions to administrate.
Returns nil on any error.

131.16. **Printers(flags as Integer, Name as Variant = nil) as WindowsPrinterInfoMBS()**

MBS Win Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The Printers function enumerates available printers, print servers, domains, or print providers.

**Notes:**

If you call this with flags = kPrinterFlagsLocal + kPrinterFlagsConnections and name = nil, you get same as LocalPrinters function.

see also


131.16. **Properties**

131.16. **AttributeFlags as Integer**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Specifies the printer attributes.

**Notes:**

This member can be one of the following values:

Renamed Attributes parameter to AttributeFlags in plugin version 8.2.

(Read and Write property)
PRINTERS\_ATTRIBUTE\_QUEUED & h00000001
PRINTERS\_ATTRIBUTE\_DIRECT & h00000002
PRINTERS\_ATTRIBUTE\_DEFAULT & h00000004 (Windows 95)
PRINTERS\_ATTRIBUTE\_SHARED & h00000008
PRINTERS\_ATTRIBUTE\_NETWORK & h00000010
PRINTERS\_ATTRIBUTE\_HIDDEN & h00000020
PRINTERS\_ATTRIBUTE\_LOCAL & h00000040
PRINTERS\_ATTRIBUTE\_ENABLE\_DEVQ & h00000080
PRINTERS\_ATTRIBUTE\_KEEP\_PRINTED\_JOBS & h00000100
PRINTERS\_ATTRIBUTE\_DO\_COMPLETE\_FIRST & h00000200
PRINTERS\_ATTRIBUTE\_WORK\_OFFLINE & h00000400 (Windows 95)
PRINTERS\_ATTRIBUTE\_ENABLE\_BIDI & h00000800 (Windows 95)
PRINTERS\_ATTRIBUTE\_RAW\_ONLY & h00001000
PRINTERS\_ATTRIBUTE\_PUBLISHED & h00002000 (Windows 2000) Indicates whether the printer is published in the directory service.

131.16.9 AveragePPM as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Specifies the average number of pages per minute that have been printed on the printer. **Notes:** (Read and Write property)

131.16.10 Comment as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A string that provides a brief description of the printer. **Example:**

dim printers(-1) as WindowsPrinterInfoMBS = WindowsPrinterInfoMBS.LocalPrinters

for each p as WindowsPrinterInfoMBS in printers
MsgBox p.PrinterName + "+" + p.Comment
next

**Notes:** (Read and Write property)

131.16.11 CountJobs as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Specifies the number of print jobs that have been queued for the printer. **Notes:** (Read and Write property)
131.16.12  Datatype as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A string that specifies the data type used to record the print job. **Notes:** (Read and Write property)

131.16.13  DefaultPriority as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Specifies the default priority value assigned to each print job. **Notes:** (Read and Write property)

131.16.14  DevMode as WindowsDeviceModeMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The WindowsDeviceModeMBS object that defines default printer data such as the paper orientation and the resolution. **Notes:** (Read and Write property)

131.16.15  DriverName as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A string that specifies the name of the printer driver. **Example:**

```vbs
    dim printers(-1) as WindowsPrinterInfoMBS = WindowsPrinterInfoMBS.LocalPrinters

    for each p as WindowsPrinterInfoMBS in printers
        MsgBox p.PrinterName + " : " + p.DriverName
    next
```

**Notes:** (Read and Write property)

131.16.16  Location as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A string that specifies the physical location of the printer. 

**Notes:**
for example, "Bldg. 38, Room 1164".
(Read and Write property)

131.16.17 Parameters as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A string that specifies the default print-processor parameters. **Notes:** (Read and Write property)

131.16.18 PortName as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A string that identifies the port(s) used to transmit data to the printer. **Example:**

```vba
dim printers(-1) as WindowsPrinterInfoMBS = WindowsPrinterInfoMBS.LocalPrinters

for each p as WindowsPrinterInfoMBS in printers
    MsgBox p.PrinterName + ": " + p.PortName
next
```

**Notes:**
If a printer is connected to more than one port, the names of each port must be separated by commas (for example, "LPT1:,LPT2:,LPT3:").
(Read and Write property)

131.16.19 PrinterName as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A string that specifies the name of the printer. **Example:**

```vba
dim printers(-1) as WindowsPrinterInfoMBS = WindowsPrinterInfoMBS.LocalPrinters

for each p as WindowsPrinterInfoMBS in printers
    MsgBox p.PrinterName
next
```
131.16. CLASS WINDOWSPRINTERINFOMBS

Notes: (Read and Write property)

131.16.20 PrintProcessor as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
A string that specifies the name of the print processor used by the printer.

**Example:**
```vba
dim printers(-1) as WindowsPrinterInfoMBS = WindowsPrinterInfoMBS.LocalPrinters
for each p as WindowsPrinterInfoMBS in printers
    MsgBox p.PrintProcessor
next
```

Notes: (Read and Write property)

131.16.21 Priority as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Specifies a priority value that the spooler uses to route print jobs.

**Notes:**
Possible values:

- NO_PRIORITY 0
- MAX_PRIORITY 99
- MIN_PRIORITY 1
- DEF_PRIORITY 1

(Read and Write property)

131.16.22 SeparatorPageFile as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
A string that specifies the name of the file used to create the separator page.

**Notes:**
This page is used to separate print jobs sent to the printer.
(Read and Write property)
131.16.23 ServerName as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
A string identifying the server that controls the printer.

**Example:**

```vbscript
dim printers(-1) as WindowsPrinterInfoMBS = WindowsPrinterInfoMBS.LocalPrinters
for each p as WindowsPrinterInfoMBS in printers
    MsgBox p.PrinterName + ": " + p.ServerName
next
```

**Notes:**
If this string is "", the printer is controlled locally.
(Read and Write property)

131.16.24 ShareName as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
A string that identifies the sharepoint for the printer.

**Example:**

```vbscript
dim printers(-1) as WindowsPrinterInfoMBS = WindowsPrinterInfoMBS.LocalPrinters
for each p as WindowsPrinterInfoMBS in printers
    MsgBox p.PrinterName + ": " + p.ShareName
next
```

**Notes:**
This string is used only if the PRINTER_ATTRIBUTE_SHARED constant was set for the Attributes mem-
ber.
(Read and Write property)

131.16.25 StartTime as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Specifies the earliest time at which the printer will print a job.

**Notes:**
This value is expressed as minutes elapsed since 12:00 A.M. GMT (Greenwich Mean Time).
131.16. CLASS WINDOWS.PRINTERINFO.MBS

(Read and Write property)

131.16.26 Status as Integer


Notes: This member can be one of the following values:

<table>
<thead>
<tr>
<th>PRINTER_STATUS_PAUSED</th>
<th>&amp; h00000001</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRINTER_STATUS_ERROR</td>
<td>&amp; h00000002</td>
</tr>
<tr>
<td>PRINTER_STATUS_PENDING_DELETION</td>
<td>&amp; h00000004</td>
</tr>
<tr>
<td>PRINTER_STATUS_PAPER_JAM</td>
<td>&amp; h00000008</td>
</tr>
<tr>
<td>PRINTER_STATUS_PAPER_OUT</td>
<td>&amp; h00000010</td>
</tr>
<tr>
<td>PRINTER_STATUS_MANUAL_FEED</td>
<td>&amp; h00000020</td>
</tr>
<tr>
<td>PRINTER_STATUS_PAPER_PROBLEM</td>
<td>&amp; h00000040</td>
</tr>
<tr>
<td>PRINTER_STATUS_OFFLINE</td>
<td>&amp; h00000080</td>
</tr>
<tr>
<td>PRINTER_STATUS_IO_ACTIVE</td>
<td>&amp; h00000100</td>
</tr>
<tr>
<td>PRINTER_STATUS_BUSY</td>
<td>&amp; h00000200</td>
</tr>
<tr>
<td>PRINTER_STATUS_PRINTING</td>
<td>&amp; h00000400</td>
</tr>
<tr>
<td>PRINTER_STATUS_OUTPUT_BIN_FULL</td>
<td>&amp; h00000800</td>
</tr>
<tr>
<td>PRINTER_STATUS_NOT_AVAILABLE</td>
<td>&amp; h00001000</td>
</tr>
<tr>
<td>PRINTER_STATUS_WAITING</td>
<td>&amp; h00002000</td>
</tr>
<tr>
<td>PRINTER_STATUS_PROCESSING</td>
<td>&amp; h00004000</td>
</tr>
<tr>
<td>PRINTER_STATUS_INITIALIZING</td>
<td>&amp; h00008000</td>
</tr>
<tr>
<td>PRINTER_STATUS_WARMING_UP</td>
<td>&amp; h00010000</td>
</tr>
<tr>
<td>PRINTER_STATUS_TONER_LOW</td>
<td>&amp; h00020000</td>
</tr>
<tr>
<td>PRINTER_STATUS_NO_TONER</td>
<td>&amp; h00040000</td>
</tr>
<tr>
<td>PRINTER_STATUS_PAGE_PUNT</td>
<td>&amp; h00080000</td>
</tr>
<tr>
<td>PRINTER_STATUS_USER_INTERVENTION</td>
<td>&amp; h01000000</td>
</tr>
<tr>
<td>PRINTER_STATUS_OUT_OF_MEMORY</td>
<td>&amp; h02000000</td>
</tr>
<tr>
<td>PRINTER_STATUS_DOOR_OPEN</td>
<td>&amp; h04000000</td>
</tr>
<tr>
<td>PRINTER_STATUS_SERVER_UNKNOWN</td>
<td>&amp; h08000000</td>
</tr>
<tr>
<td>PRINTER_STATUS_POWER_SAVE</td>
<td>&amp; h10000000</td>
</tr>
</tbody>
</table>

Windows 95: The PRINTER_STATUS_PAGE_PUNT value specifies that the page is being ”punted” (that is, not printed) because it is too complex for the printer to print.

(Read and Write property)

131.16.27 UntilTime as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: Specifies the latest time at which the printer will print a job.

Notes: This value is expressed as minutes elapsed since 12:00 A.M. GMT (Greenwich Mean Time).
131.16.28 Constants

131.16.29 kPrinterFlagsConnections = 4

MBS Win Plugin, Plugin Version: 15.2. **Function:** One of the flags for Printer function.
**Notes:** The function enumerates the list of printers to which the user has made previous connections.

131.16.30 kPrinterFlagsDefault = 1

MBS Win Plugin, Plugin Version: 15.2. **Function:** One of the flags for Printer function.
**Notes:** Default printer.

131.16.31 kPrinterFlagsLocal = 2

MBS Win Plugin, Plugin Version: 15.2. **Function:** One of the flags for Printer function.
**Notes:** If the kPrinterFlagsName flag is not also passed, the function ignores the Name parameter, and enumerates the locally installed printers. If kPrinterFlagsName is also passed, the function enumerates the local printers on Name.

131.16.32 kPrinterFlagsName = 8

MBS Win Plugin, Plugin Version: 15.2. **Function:** One of the flags for Printer function.
**Notes:** The function enumerates the printer identified by Name. This can be a server, a domain, or a print provider. If Name is nil, the function enumerates available print providers.

131.16.33 kPrinterFlagsNetwork = 64

MBS Win Plugin, Plugin Version: 15.2. **Function:** One of the flags for Printer function.
**Notes:** Network printers?

131.16.34 kPrinterFlagsRemote = 16

MBS Win Plugin, Plugin Version: 15.2. **Function:** One of the flags for Printer function.
**Notes:** Remote (non Local) printers?
131.16.35  kPrinterFlagsShared = 32

MBS Win Plugin, Plugin Version: 15.2. **Function:** One of the flags for Printer function.  
**Notes:** The function enumerates printers that have the shared attribute. Cannot be used in isolation; use an OR operation to combine with another constants.
131.17 class WindowsPrinterJobMBS

131.17.1 class WindowsPrinterJobMBS


131.17.2 Properties

131.17.3 Datatype as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The type of data used to record the print job.
Notes: (Read and Write property)

131.17.4 DevMode as WindowsDeviceModeMBS

Notes: (Read and Write property)

131.17.5 Document as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The name of the user who owns the print job.
Notes: (Read and Write property)

131.17.6 DriverName as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The name of the printer driver that should be used to process the print job.
Notes: (Read and Write property)

131.17.7 JobID as Integer

131.17.8 MachineName as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The name of the machine that created the print job.
**Notes:** (Read and Write property)

131.17.9 NotifyName as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The name of the user who should be notified when the job has been printed or when an error occurs while
printing the job.
**Notes:** (Read and Write property)

131.17.10 PagesPrinted as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The number of pages that have printed.
**Notes:**
This value may be zero if the print job does not contain page delimiting information.
(Read and Write property)

131.17.11 Parameters as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Print-processor parameters.
**Notes:** (Read and Write property)

131.17.12 Position as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The job's position in the print queue.
**Notes:** (Read and Write property)
131.17.13 PrinterName as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The name of the printer for which the job is spooled.
**Notes:** (Read and Write property)

131.17.14 PrintProcessor as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The name of the print processor that should be used to print the job.
**Notes:** (Read and Write property)

131.17.15 Priority as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The job priority.
**Notes:**
This member can be one of the following values or in the range between 1 through 99 (kPriorityMin through kPriorityMax).
(Read and Write property)

131.17.16 Size as Int64

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The size, in bytes, of the job.
**Notes:** (Read and Write property)

131.17.17 StartTime as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The earliest time that the job can be printed.
**Notes:** (Read and Write property)

131.17.18 Status as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The job status.
Notes:
Check kJobStatus* constants for possible values.
(Read and Write property)

131.17.19 StatusString as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
The status of the print job.
Notes:
This member should be checked prior to Status and, if StatusString is "", the status is defined by the contents
of the Status member.
(Read and Write property)

131.17.20 Submitted as Date

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
The time when the job was submitted.
Notes:
This time value is in Universal Time Coordinate (UTC) format.
(Read and Write property)

131.17.21 Time as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
The total time, in milliseconds, that has elapsed since the job began printing.
Notes: (Read and Write property)

131.17.22 TotalPages as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
The number of pages required for the job.
Notes:
This value may be zero if the print job does not contain page delimiting information.
(Read and Write property)
131.17.23 UntilTime as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The latest time that the job can be printed.  
**Notes:** (Read and Write property)

131.17.24 UserName as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The name of the user who owns the print job.  
**Notes:** (Read and Write property)

131.17.25 Constants

131.17.26 kJobStatusBlockedDeviceQueue = &h200

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the job status constants.  
**Notes:** The driver cannot print the job.

131.17.27 kJobStatusComplete = &h1000

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the job status constants.  
**Notes:** The job is sent to the printer, but may not be printed yet.  
(Windows XP and later)

131.17.28 kJobStatusDeleted = &h100

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the job status constants.  
**Notes:** Job has been deleted.

131.17.29 kJobStatusDeleting = 4

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the job status constants.  
**Notes:** Job is being deleted.
131.17.30 kJobStatusError = 2

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the job status constants.  
**Notes:** An error is associated with the job.

131.17.31 kJobStatusOffline = & h20

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the job status constants.  
**Notes:** Printer is offline.

131.17.32 kJobStatusPaperOut = & h40

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the job status constants.  
**Notes:** Printer is out of paper.

131.17.33 kJobStatusPaused = 1

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the job status constants.  
**Notes:** Job is paused.

131.17.34 kJobStatusPrinted = & h80

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the job status constants.  
**Notes:** Job has printed.

131.17.35 kJobStatusPrinting = & h10

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the job status constants.  
**Notes:** Job is printing.

131.17.36 kJobStatusRenderingLocally = & h4000

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the job status constants.  
**Notes:** Rendering.
131.17.37  \texttt{kJobStatusRestart} = \& \texttt{h800}

MBS Win Plugin, Plugin Version: 12.1. \textbf{Function}: One of the job status constants.  
\textbf{Notes}: Job has been restarted.

131.17.38  \texttt{kJobStatusRetained} = \& \texttt{h2000}

MBS Win Plugin, Plugin Version: 12.1. \textbf{Function}: One of the job status constants.  
\textbf{Notes}:  
The job has been retained in the print queue following printing.  
(Windows XP and later)

131.17.39  \texttt{kJobStatusSpooling} = 8

MBS Win Plugin, Plugin Version: 12.1. \textbf{Function}: One of the job status constants.  
\textbf{Notes}: Job is spooling.

131.17.40  \texttt{kJobStatusUserIntervention} = \& \texttt{h400}

MBS Win Plugin, Plugin Version: 12.1. \textbf{Function}: One of the job status constants.  
\textbf{Notes}: Printer has an error that requires the user to do something.

131.17.41  \texttt{kPriorityDefault} = 1

MBS Win Plugin, Plugin Version: 12.1. \textbf{Function}: One of the priority constants.  
\textbf{Notes}: Default priority.

131.17.42  \texttt{kPriorityMax} = 99

MBS Win Plugin, Plugin Version: 12.1. \textbf{Function}: One of the priority constants.  
\textbf{Notes}: Maximum priority.
MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the priority constants. **Notes:** Minimum priority.

131.17.44  kPriorityNo = 0

MBS Win Plugin, Plugin Version: 12.1. **Function:** One of the priority constants. **Notes:** No priority.
131.18 class WindowsPrinterMBS

131.18.1 class WindowsPrinterMBS

MBS Win Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The class for an open connection to a windows printer.

Notes: Objects of this class can operate on printers. Some operations need administrative permissions. If you don’t have them, lasterror is set to 5.

131.18.2 Methods

131.18.3 AddForm(form as WindowsPageFormatMBS) as boolean

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The AddForm function adds a form to the list of available forms that can be selected for the specified printer.

Example:

// query default printer
dim w as new WindowsPrinterMBS(WindowsPrinterMBS.GetDefaultPrinter)

dim form as new WindowsPageFormatMBS

form.Mode = 1
form.Name = "MyTest"
form.DisplayName = "MyTest"
form.Flags = 0
form.SizeHeight = 100000
form.SizeWidth = 100000
form.ImageableAreaLeft = 0
form.ImageableAreaTop = 0
form.ImageableAreaRight = 100000
form.ImageableAreaBottom = 100000

if w.AddForm(form) then
    MsgBox "OK"
else
    MsgBox "Failed"
end if

Notes: Form.Mode gives level of the data. Must be either 1 (old version) or 2 (newer version).
Form: The form details.

Returns true if the function succeeds and false if the function fails.

Note: This is a blocking or synchronous function and might not return immediately. How quickly this function returns depends on run-time factors such as network status, print server configuration, and printer driver implementation factors that are difficult to predict when writing an application. Calling this function from a thread that manages interaction with the user interface could make the application appear to be unresponsive.

An application can determine which forms are available for a printer by calling the GetPrinterFormats function.
If form points to a Mode 2 form, then AddForm will fail if either a form with the specified name already exists or the Keyword value already exists.

131.18.4 AdvancedDocumentProperties(InputDevMode as WindowsDeviceModeMBS, byref OutputDevMode as WindowsDeviceModeMBS, parent as window = nil) as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Displays a printer-configuration dialog box for the specified printer, allowing the user to configure that printer.
**Notes:**
This function is a special case of the DocumentProperties function.

parent: The parent window of the printer-configuration dialog box.

OutputDevMode: The device mode structure that will contain the configuration data specified by the user.
InputDevMode: The device mode structure that contains the configuration data used to initialize the controls of the printer-configuration dialog box.

If the DocumentProperties function with these parameters is successful, the return value of AdvancedDocumentProperties is 1. Otherwise, the return value is zero.

This is a blocking or synchronous function and might not return immediately. How quickly this function returns depends on run-time factors such as network status, print server configuration, and printer driver implementation factors that are difficult to predict when writing an application. Calling this function from a thread that manages interaction with the user interface could make the application appear to be unresponsive.
This function can only display the printer-configuration dialog box so a user can configure it. For more control, use DocumentProperties.

### 131.18.5 AllJobs as WindowsPrinterJobMBS()

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries all jobs for the printer.  
**Example:**
```
dim w as new WindowsPrinterMBS( WindowsPrinterMBS.GetDefaultPrinter)
dim jobs() as WindowsPrinterJobMBS = w.AllJobs
MsgBox str(UBound(jobs)+1)+" jobs"
```

**Notes:** PrinterName property must be set, so the function knows which printer.

### 131.18.6 CanPrinterPassThroughPostScript as boolean

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether this printer can pass through postscript data.  
**Notes:** Returns true for Postscript printers and false for other printers.  
For more information on this function, visit this website:  

### 131.18.7 ChangePrinterSettings(value as WindowsDeviceModeMBS, Mode as Integer=2) as boolean

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Changes printer settings.  
**Notes:**  
This function opens the printer, queries current settings using GetPrinter, applies all your changes, calls DocumentProperties to verify those settings are valid for the printer and uses SetPrinter to apply the changes. To indicate which fields in the WindowsDeviceModeMBS object are set by you, use the fields integer value with a combination of the DM_* constants.  
Returns true on success and false on failure.  
Mode can be 2 (general printer information), 8 (global settings) or 9 (user settings).
For more information on the GetPrinter function, check this website:

For more information on the SetPrinter function, check this website:

For more information on the DocumentProperties function, check this website:

131.18.8 ConfigurePort(name as string = "", parent as window = nil, PortName as string = "") as boolean

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Displays the port-configuration dialog box for a port on the specified server.

**Notes:**
Name: The name of the server on which the specified port exists. If this parameter is "", the port is local.
parent: The parent window of the port-configuration dialog box.
PortName: The name of the port to be configured.

Returns true on success and false on failure.

This is a blocking or synchronous function and might not return immediately. How quickly this function returns depends on run-time factors such as network status, print server configuration, and printer driver implementation factors that are difficult to predict when writing an application. Calling this function from a thread that manages interaction with the user interface could make the application appear to be unresponsive.

Before calling the ConfigurePort function, an application should call the EnumPorts function to determine valid port names.

131.18.9 ConnectToPrinterDialog(parent as window = nil) as boolean

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Displays a dialog box that lets users browse and connect to printers on a network.

**Notes:**
If the user selects a printer, the function attempts to create a connection to it; if a suitable driver is not installed on the server, the user is given the option of creating a printer locally.
parent: Specifies the parent window of the dialog box.

If the function succeeds and the user selects a printer, this object points to the new printer and return value
is true.
If the function fails, or the user cancels the dialog box without selecting a printer, the return value is true.

This is a blocking or synchronous function and might not return immediately. How quickly this function
returns depends on run-time factors such as network status, print server configuration, and printer driver
implementation factors that are difficult to predict when writing an application. Calling this function from a
thread that manages interaction with the user interface could make the application appear to be unresponsive.

The ConnectToPrinterDialog function attempts to create a connection to the selected printer. However, if
the server on which the printer resides does not have a suitable driver installed, the function offers the user
the option of creating a printer locally.

An application should call DeletePrinter to delete a local printer. An application should call DeletePrinter-
Connection to delete a connection to a printer.

### 131.18.10 Constructor(PrinterName as string, admin as boolean = false)

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Opens the printer so you can operate on it.

**Notes:**
Admin: whether you want to get permissions to administrate.
Raises exception if printer can’t be opened. Use OpenPrinter function to avoid exception.

### 131.18.11 DeleteForm(name as string) as boolean

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The DeleteForm function removes a form name from the list of supported forms.

**Notes:**
name: The form name to be removed.

Returns true on success and false on failure.

This is a blocking or synchronous function and might not return immediately. How quickly this function
returns depends on run-time factors such as network status, print server configuration, and printer driver
implementation factors that are difficult to predict when writing an application. Calling this function from a
thread that manages interaction with the user interface could make the application appear to be unresponsive.
DeleteForm can only delete form names that were added by using the AddForm function.

**131.18.12  DeleteJob(JobID as Integer) as boolean**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Delete the print job.
**Notes:** Returns true on success and false on failure.

**131.18.13  DeletePrinter as boolean**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Deletes the specified printer object.
**Notes:**
Returns true on success and false on failure.

This is a blocking or synchronous function and might not return immediately. How quickly this function returns depends on run-time factors such as network status, print server configuration, and printer driver implementation factors that are difficult to predict when writing an application. Calling this function from a thread that manages interaction with the user interface could make the application appear to be unresponsive.

If there are print jobs remaining to be processed for the specified printer, DeletePrinter marks the printer for pending deletion, and then deletes it when all the print jobs have been printed. No print jobs can be added to a printer that is marked for pending deletion. A printer marked for pending deletion cannot be held, but its print jobs can be held, resumed, and restarted. If the printer is held and there are jobs for the printer, DeletePrinter fails with ERROR_ACCESS_DENIED.

LastError is set.

**131.18.14  DeletePrinterConnection(name as string) as boolean**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Deletes a connection to a printer that was established by a call to AddPrinterConnection or ConnectToPrinterDialog.
**Notes:**
name: The name of the printer connection to delete.
Returns true on success and false on failure.
This is a blocking or synchronous function and might not return immediately. How quickly this function returns depends on run-time factors such as network status, print server configuration, and printer driver implementation factors that are difficult to predict when writing an application. Calling this function from a thread that manages interaction with the user interface could make the application appear to be unresponsive.

The DeletePrinterConnection function does not delete any printer driver files that were copied to the server to which the printer is attached.

### 131.18.15 DocumentProperties

**DocumentProperties(InputDevMode as WindowsDeviceModeMBS, byref OutputDevMode as WindowsDeviceModeMBS, Prompt as boolean = false, parent as window = nil) as Integer**

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The DocumentProperties function retrieves or modifies printer initialization information or displays a printer-configuration property sheet for the specified printer.

**Example:**

```plaintext
// get default printer
dim p as WindowsPrinterMBS = WindowsPrinterMBS.OpenPrinter(WindowsPrinterMBS.GetDefaultPrinter)

// ask for printer settings
dim s as new WindowsDeviceModeMBS
dim n as Integer = p.DocumentProperties(nil, s, true, window1)
```

**Notes:**

Printername property must be set.


Prompt: Whether to show dialog.

OutputDevMode: Devmode variable that receives the printer configuration data specified by the user.

InputDevMode: Optional input data which the operating system uses to initialize the property sheet controls.

Prompt: Whether the function presents the printer driver’s Print Setup property sheet and then changes the settings in the printer’s DeviceMode data structure to those values specified by the user.

If you provide object for InputDevMode, the function will read settings from there. If you don’t pass an object (nil) or you pass incomplete settings, default settings are used to complete.

If prompt is true, the dialog is shown and user can change settings.

On the end, the current new data is stored in OutputDevMode where you can find it.
If the function displays the property sheet, the return value is either IDOK (1) or IDCANCEL (2), depending on which button the user selects.
If the function does not display the property sheet and is successful, the return value is IDOK (1).
If the function fails, the return value is less than zero.

This is a blocking or synchronous function and might not return immediately. How quickly this function returns depends on run-time factors such as network status, print server configuration, and printer driver implementation-factors that are difficult to predict when writing an application. Calling this function from a thread that manages interaction with the user interface could make the application appear to be unresponsive.

see also

131.18.16 GetDefaultPrinter as string

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
The GetDefaultPrinter function retrieves the printer name of the default printer for the current user on the local computer.
Example:
msgbox WindowsPrinterMBS.GetDefaultPrinter

Notes:
For more details on the GetDefaultPrinter function, check this website:

Returns an empty string on any error.

131.18.17 GetForm(name as string) as WindowsPageFormatMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
The GetForm function retrieves information about a specified form.
Example:
    // query default printer
    dim w as new WindowsPrinterMBS(WindowsPrinterMBS.GetDefaultPrinter)
    
    // get a page format
    dim f as WindowsPageFormatMBS = w.GetForm("Letter")
    
    // and show details
MsgBox f.DisplayName+” ”+str(F.SizeWidth/10000,"0.0")+” x ”+str(f.SizeHeight/10000,"0.0")

Notes:

name: The string that specifies the name of the form. To get the names of the forms supported by the printer, call the GetPrinterFormats function.

On failure returns nil, on success the form details.

This is a blocking or synchronous function and might not return immediately. How quickly this function returns depends on run-time factors such as network status, print server configuration, and printer driver implementation factors that are difficult to predict when writing an application. Calling this function from a thread that manages interaction with the user interface could make the application appear to be unresponsive.

If the caller is remote, and the Form Mode is 2, the StringType value of the returned WindowsPageFormatMBS will always be STRING_LANGPAIR.

131.18.18 GetJob(JobID as Integer) as WindowsPrinterJobMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Query job with given ID from printer.

**Notes:**

Returns nil on any error.
PrinterName property must be set, so the function knows which printer.

131.18.19 GetPrinterFormats as WindowsPageFormatMBS()

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries the page formats supported by this printer.

**Notes:**

On failure the array is empty.

This function uses the EnumForms for which you can find more information on this website: http://msdn.microsoft.com/en-us/library/dd162624(v=VS.85).aspx
131.18.20 GetPrinterSettings(Mode as Integer=2) as WindowsDeviceModeMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries printer settings.

**Example:**
```vbs
    dim w as new WindowsPrinterMBS(WindowsPrinterMBS.GetDefaultPrinter)
    dim dm as WindowsDeviceModeMBS = w.GetPrinterSettings
```

**Notes:**
Mode can be 2 (general printer information), 8 (global settings) or 9 (user settings).

For more information on the GetPrinter function, check this website:

131.18.21 GetPrinterTechnology as string

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries the printer technology.

**Example:**
```vbs
    dim w as new WindowsPrinterMBS(“my printer”)
    msgbox w.GetPrinterTechnology
```

**Notes:**
Opens the printer, queries the print technology and returns that string.
For postscript printers the string should contain the word “postscript”.
Returns an empty string on any error.

For details on this function, check the following website:

131.18.22 OpenPrinter(PrinterName as string, admin as boolean = false) as WindowsPrinterMBS

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Opens the printer so you can operate on it.

**Notes:**
Admin: whether you want to get permissions to administrate.
Returns nil on any error.

### 131.18.23  PauseJob(JobID as Integer) as boolean

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Pause the print job.
**Notes:** Returns true on success and false on failure.

### 131.18.24  PausePrinter as boolean

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Pauses the printer.
**Example:**
```vba
dim name as string = WindowsPrinterMBS.GetDefaultPrinter
dim p as WindowsPrinterMBS = WindowsPrinterMBS.OpenPrinter(name, true)
if p.PausePrinter then
    MsgBox "OK"
else
    MsgBox "Failed: " + p.LasterrorMessage + " " + str(p.Lasterror)
end if
```
**Notes:**
Requires application to be run by administrator and printer opened with admin option. Else you get error 5.
Returns true on success and false on failure.

### 131.18.25  PrinterProperties(parent as window = nil) as boolean

MBS Win Plugin, Plugin Version: 12.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The PrinterProperties function displays a printer-properties property sheet for the specified printer.
**Example:**
```vba
// get default printer
dim w as new WindowsPrinterMBS(WindowsPrinterMBS.GetDefaultPrinter)

// open properties dialog
if w.PrinterProperties(window1) then
```

MsgBox "OK"
else
MsgBox "Failed"
end if

Notes:
Returns true on success (dialog shows) or false on error.
Parent is the parent window for the new dialog. Can be nil.

131.18.26  PurgePrinter as boolean

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Purges the printer.
**Example:**

```pascal
dim name as string = WindowsPrinterMBS.GetDefaultPrinter
dim p as WindowsPrinterMBS = WindowsPrinterMBS.OpenPrinter(name, true)

if p.PurgePrinter then
    MsgBox "OK"
else
    MsgBox "Failed: " + p.LasterrorMessage + " " + str(p.Lasterror)
end if
```

Notes:
Requires application to be run by administrator and printer opened with admin option. Else you get error 5.
Returns true on success and false on failure.

131.18.27  ResumeJob(JobID as Integer) as boolean

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Resume a paused print job.
**Notes:** Returns true on success and false on failure.
131.18.28 ResumePrinter as boolean

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Resumes the printer.

**Example:**

```vba
dim name as string = WindowsPrinterMBS.GetDefaultPrinter
dim p as WindowsPrinterMBS = WindowsPrinterMBS.OpenPrinter(name, true)
if p.ResumePrinter then
    MsgBox "OK"
else
    MsgBox "Failed: " + p.LasterrorMessage + " " + str(p.Lasterror)
end if
```

**Notes:**

Requires application to be run by administrator and printer opened with admin option. Else you get error 5.

Returns true on success and false on failure.

131.18.29 SetDefaultPrinter(PrinterName as string) as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Changes the default printer to the given one.

**Example:**

```vba
call WindowsPrinterMBS.SetDefaultPrinter("My Printer")
```

**Notes:**

Returns a Windows error code. (0 for success)


131.18.30 SetForm(name as string, form as WindowsPageFormatMBS) as boolean

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The SetForm function sets the form information for the specified printer.

**Notes:**
name: The string that specifies the form name for which the form information is set.
Form: The form data. Mode property must be either 1 (older format) or 2 (newer format).

Returns true on success and false on failure.

This is a blocking or synchronous function and might not return immediately. How quickly this function
returns depends on run-time factors such as network status, print server configuration, and printer driver
implementation factors that are difficult to predict when writing an application. Calling this function from a
thread that manages interaction with the user interface could make the application appear to be unresponsive.

SetForm can be called multiple times for an existing WindowsPageFormatMBS, each call adding additional
pairs of DisplayName and LangId values. All languages versions of the form will get the Size and Image-
ableArea values of the WindowsPageFormatMBS in the most recent call to SetForm.
If the caller is remote and the form’s Mode is 2, the StringType value of the WindowsPageFormatMBS
cannot be STRING_MUIDLL.

131.18.31 SetJob(JobID as Integer, job as WindowsPrinterJobMBS) as boolean

MBS Win Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Sets job parameters.
**Example:**
```vbnet
dim w as new WindowsPrinterMBS(WindowsPrinterMBS.GetDefaultPrinter, true)
dim jobs() as WindowsPrinterJobMBS = w.AllJobs
MsgBox str(UBound(jobs)+1)+” jobs”

// pick first
dim j as WindowsPrinterJobMBS = jobs(0)
j.Document = ”Hello World”

// write back values
call w.SetJob(j.JobID, j)

// error?
if w.Lasterror<>0 then
MsgBox w.LasterrorMessage
end if
```

**Notes:**
see also
131.18.32 SetPrinterSettings(value as WindowsDeviceModeMBS, Mode as Integer=2) as boolean

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Sets printer settings.  
**Example:**

```vbs
// switch default printer to A5 landscape paper

dim name as string = WindowsPrinterMBS.GetDefaultPrinter
dim p as WindowsPrinterMBS = WindowsPrinterMBS.OpenPrinter(name, false)
dim d as WindowsDeviceModeMBS = p.GetPrinterSettings(9)

if d = nil then
    MsgBox p.LasterrorMessage
else
    d.PaperSize = d.DMPAPER_A5
    d.Fields = BitwiseOr(d.Fields, d.DM_PAPERSIZE)
    d.Orientation = d.DMORIENT_LANDSCAPE
    d.Fields = BitwiseOr(d.Fields, d.DM_ORIENTATION)

    if p.SetPrinterSettings(d, 9) then
        MsgBox "OK"
    else
        MsgBox "Failed: " + p.LasterrorMessage
    end if
end if
```

**Notes:**

Mode can be 2 (general printer information), 8 (global settings) or 9 (user settings).

For more information on the GetPrinter function, check this website:

131.18.33 Properties

131.18.34 Handle as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The internal handle to the printer.  
**Notes:** (Read and Write property)
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131.18.35  Lasterror as Integer

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The last windows error code.
**Notes:** (Read and Write property)

131.18.36  LasterrorMessage as String

MBS Win Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The text message for the last error code.
**Notes:** (Read and Write property)

131.18.37  PrinterName as String

MBS Win Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The name of the open printer in this object.
**Example:**
```vba
dim name as string = WindowsPrinterMBS.GetDefaultPrinter
dim p as WindowsPrinterMBS = WindowsPrinterMBS.OpenPrinter(name)
MsgBox p.PrinterName
```
**Notes:** (Read and Write property)
Chapter 132

Process

132.1 class Application

132.1.1 class Application

Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Extends the Application class inside Realbasic.

132.1.2 Methods

132.1.3 ApplicationCreatorCodeMBS as string

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Creator Code of the application.

**Example:**

`msgbox "Hi. This application has the creator code "+app.ApplicationCreatorCodeMBS`

**Notes:**

Only useful on Mac OS.
If you run your app inside the Realbasic IDE it will return "RBv2" which is Realbasic's Creator code in Realbasic 2.0.
132.1.4 ApplicationFileMBS as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Gives a folderitem to the applications file.

**Example:**

msgbox "Hi. The file of this application is named " + app.ApplicationFileMBS.name

**Notes:**

Inside Realbasic points to the Realbasic application.

This item may go in the future. Please use app.executablefile in new Realbasic versions.

132.1.5 ApplicationNameMBS as string

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the name of the application.

**Example:**

msgbox "Hi. This application is named " + app.ApplicationNameMBS

**Notes:**

This may not be the exact same name than the filename.

132.1.6 ArgumentsMBS as String()

MBS Util Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries arguments of process.

**Notes:**

Returns nil in case of any error (low memory).
First entry in result is path to current app.
Other entries are parameters, without any quotes.

132.1.7 BundleFolderMBS as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to the bundle’s mail folder.
132.1.8 BundleLocalizedStringMBS(key as string) as string

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the localized string for the given key from the default table.
Notes: A short version for BundleLocalizedString which uses the default table.
See also:

- 132.1.9 BundleLocalizedStringMBS(key as string,fromtable as string) as string

132.1.9 BundleLocalizedStringMBS(key as string,fromtable as string) as string

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the localized string for the given key and table.
Example:

```vba
// You may make yourself a function to look up for the key and return
// This function was not tested in a real application. May contain a bug.

function Localize(key as string, default as string) as string
    dim s as string
    s=app.BundleLocalizedStringMBS(key)
    if s="" then
        s=default // For Mac OS Classic and Windows
    elseif s=key then // returns key for not localized items
        msgbox "For developer: the key ""+key+"" was not localized for any language."
    end if
    return s
end sub

// use like this
FileOpen.text=Localize("FileOpenLabel", "Open...")
```

Notes:
The table parameter is optional to specify which ".strings"-file to use.
without table or table="" the "Localizable.strings" file is used by Mac OS X.

Returns "" (empty string) on Mac OS Classic or Windows.
See also:

- 132.1.8 BundleLocalizedStringMBS(key as string) as string
132.1.10  BundleResourceFolderItemLocalizedMBS(ResourceName as string, ResourceType as string, SubDirectory as string) as folderitem

MBS Util Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Searches inside the application bundle for a file.  
**Example:**

```vba
dim f as FolderItem
f=app.BundleResourceFolderItemLocalizedMBS(”logo”,”jpg”,””)
MsgBox f.AbsolutePath
```

**Notes:**  
ResourceName is the filename of the resource file.  
ResourceType is the file extension.  
SubDirectory is the name of the directory.  
This function will take care for localization folders.

132.1.11  BundleResourceFolderMBS as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to the resource file inside the bundle.

132.1.12  GotoHelpBookPageMBS(bookname as string, path as string, anchor as string) as Integer

MBS Util Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Shows a page of an helpbook.  
**Notes:**  
Delivers a request to load a specific text/html file to the Help Viewer application.

**Bookname:**  
Optionally, the AppleTitle of an installed Help book. If ””, the path parameter must be a full file: URL to the file to be opened.

**Path:**  
Optionally, one of two types of paths:  
1) a URL-style path to a file that is relative to the main folder of the book supplied in the bookname parameter, or  
2) if bookname is ””, a full file: URL to the file to be opened. If this parameter is ””, then bookname must not be NULL, and is used to open the Help Viewer to the main page of Help content for the specified book.
Anchor:
Optionally, the name of anchor tag to scroll to in the newly opened file. Can be "."

Result:
An operating system result code that indicates whether the request was successfully sent to the Help Viewer application.

Possible error values:

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>noErr</td>
<td>0 No Error</td>
</tr>
<tr>
<td>paramErr</td>
<td>-50 Wrong parameter</td>
</tr>
<tr>
<td>dirNFErr</td>
<td>-120 Folder not found error</td>
</tr>
<tr>
<td>AHInternalErr</td>
<td>-10790 Apple Help Internal error</td>
</tr>
<tr>
<td>AHInternetConfigPrefErr</td>
<td>-10791 Apple Help Config error</td>
</tr>
<tr>
<td>No</td>
<td>-1 Function not available on this platform.</td>
</tr>
</tbody>
</table>

For Cocoa use NSHelpManagerMBS class.

132.1.13  GotoMainHelpBookTOCMBS(developer as boolean) as Integer

MBS Util Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Shows the main table of contents page.
Notes:
Delivers a request to load the main table of contents of installed help books to the Help Viewer application.

Toctype:
The type of table of contents to be loaded: user or developer.

Result:
An operating system result code that indicates whether the request was successfully sent to the Help Viewer application.

Possible error values:

For Cocoa use NSHelpManagerMBS class.
noErr 0  No Error
paramErr -50 Wrong parameter
dirNFErr -120 Folder not found error
AHInternalErr -10790 Apple Help Internal error
AHInternetConfigPrefErr -10791 Apple Help Config error
No -1  Function not available on this platform.

132.1.14  HideMeMBS as boolean

MBS Util Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Hides the current application.

**Notes:**
- Returns true if the current application was hidden.
- Returns false on Carbon running on Mac OS 9 or Windows.

132.1.15  HideOthersMBS as boolean

MBS Util Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Hides all applications except the current one.

**Notes:**
- Returns true if the other applications were hidden.
- Returns false on Carbon running on Mac OS 9 of Windows.

132.1.16  IsBundleMBS as boolean

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if the application is a bundle.

132.1.17  LaunchTimeMBS as Double

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the ticks value at launch time.

**Example:**

```plaintext
dim d as date

d=new date
d.totalSeconds=d.totalSeconds-(ticks-app.launchTimeMBS)/60

msgbox d.longdate+” ”+d.longtime
```
Notes:
This value must be converted to the seconds value like in the example.
-1 on Windows.
For Mac OS X see the DarwinResourceUsageMBS class.

132.1.18  LookupHelpBookAnchorMBS(bookname as string, anchor as string) as Integer

MBS Util Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Lookups an anchor in an helpbook.
**Notes:**
Delivers a request to perform an anchor lookup to the Help Viewer application.
Note: anchor lookups will fail unless you have indexed your help content with anchor indexing turned on in
the indexing tool’s preferences panel.

Bookname:
Optionally, the AppleTitle of the Help book to searched. If “”, the anchor lookup is performed using all
installed Help books.

Anchor:
The name of the anchor tag to look up.

Result:
An operating system result code that indicates whether the request was successfully sent to the Help Viewer
application.

Possible error values:

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>noErr 0</td>
<td>No Error</td>
</tr>
<tr>
<td>paramErr -50</td>
<td>Wrong parameter</td>
</tr>
<tr>
<td>dirNFErr -120</td>
<td>Folder not found error</td>
</tr>
<tr>
<td>AHInternalErr-10790</td>
<td>Apple Help Internal error</td>
</tr>
<tr>
<td>AHInternetConfigPrefErr -10791</td>
<td>Apple Help Config error</td>
</tr>
<tr>
<td>No -1</td>
<td>Function not available on this platform.</td>
</tr>
</tbody>
</table>

For Cocoa use NSHelpManagerMBS class.
132.1.19 MainBundleMBS as CFBundleMBS

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** If your application is a bundle, this function returns your own bundle. **Notes:** Returns nil on any error.

132.1.20 NSApplicationMBS as NSApplicationMBS

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the shared NSApplication object. **Notes:**

This method gives easy access to the NSApplicationMBS class.

The plugin makes sure that there is only one application object by returning the same object each time.

132.1.21 OverlayApplicationDockTileImageMBS(pic as CGImageMBS) as boolean

MBS MacCG Plugin, Plugin Version: 2.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**

Adds a picture on top of the application dock title.

**Example:**

```plaintext
static n as Integer // global property
dim p as picture
dim m as picture
dim g as graphics
dim s as string
dim w,h,x as Integer

n=n+1 // add one
s=str(n)
m=newpicture(128,128,32)
p=newpicture(128,128,32)

g=p.graphics
g.textsize=24
w=g.stringwidth(s)
h=g.stringheight(s,0)
x=125-w-10
g.foreColor=rgb(255,0,0)
g.fillRoundRect x,10,10+w,10+h,20,20
g.foreColor=rgb(0,0,0)
g.drawstring s,x+5,15+g.textascent
```
g=m.graphics
g.foreColor=rgb(0,0,0)
g.fillRoundRect x,10,10+w,10+h,20,20

if app.OverlayApplicationDockTileImageMBS(CGCreateImageMBS(p,m)) then
end if

Notes:
Changed in MBS Plugin 2.7 to use CGImages directly.
Added support for 64-bit in plugin version 16.0.

132.1.22 ProcessTimeMBS as Double

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the current CPU time for the process.

**Example:**

```plaintext
msgbox "I got "+format(app.ProcessTimeMBS/100,"0.00")+" seconds CPU time till now."
```

Notes:
On Mac OS X, the OS counts how much CPU time in given to the current process.
On Mac OS 9 you can get this information for any process using the ProcessMBS class.
Returns -1 in case of an error.

You can do this function yourself if you like:

```plaintext
dim s as SoftDeclareMBS
s=new SoftDeclareMBS
if s.LoadLibrary("System.Framework") then
if s.LoadFunction("clock") then
if s.Call(0,nil) then
MsgBox "clock: "+str(s.Result)+chr(13)+"app.ProcessTime: "+str(app.ProcessTime)
end if
end if
end if

You may need to add Error Checking code.
```
132.1.23 RegisterHelpBookMBS as Integer

MBS Util Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Registers a help book which is inside the bundle.

**Notes:**

Registers a book of Help content such that the book will appear in the current user’s main table of contents (Help Center) in the Help Viewer application. To be used when help books reside outside of the known help folders (i.e. help books that are kept inside of application bundles).

**Result:**

An operating system result code that indicates whether all help books contained within the specified bundle were registered.

**Possible error values:**

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>noErr</td>
<td>0      No Error</td>
</tr>
<tr>
<td>paramErr</td>
<td>-50    Wrong parameter</td>
</tr>
<tr>
<td>dirNFErr</td>
<td>-120   Folder not found error</td>
</tr>
<tr>
<td>AHInternalErr</td>
<td>-10790 Apple Help Internal error</td>
</tr>
<tr>
<td>AHInternetConfigPrefErr</td>
<td>-10791 Apple Help Config error</td>
</tr>
<tr>
<td>No</td>
<td>-1     Function not available on this platform.</td>
</tr>
</tbody>
</table>

For Cocoa, please declare your help book in the info.plist.

132.1.24 RestoreApplicationDockTileImageMBS as boolean

MBS MacCG Plugin, Plugin Version: 2.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Restores the application dock tile image.

**Example:**

```plaintext
if app.RestoreApplicationDockTileImageMBS then
  // ok
end if
```

**Notes:** Added support for 64-bit in plugin version 16.0.

132.1.25 SearchHelpBookMBS(bookname as string, query as string) as Integer

132.1.  CLASS APPLICATION

Notes:
Delivers a request to perform the specified search to the Help Viewer application.

Bookname:
Optionally, the AppleTitle of the Help book to be searched. If "", all installed Help books are searched.

Query:
The query to be made. This string can, if desired, have boolean operators or be a natural language phrase.

Result:
An operating system result code that indicates whether the request was successfully sent to the Help Viewer application.

Possible error values:

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>noErr</td>
<td>0</td>
</tr>
<tr>
<td>paramErr</td>
<td>-50</td>
</tr>
<tr>
<td>dirNFErr</td>
<td>-120</td>
</tr>
<tr>
<td>AHInternalErr</td>
<td>-10790</td>
</tr>
<tr>
<td>AHInternetConfigPrefErr</td>
<td>-10791</td>
</tr>
<tr>
<td>No</td>
<td>-1</td>
</tr>
</tbody>
</table>

For Cocoa use NSHelpManagerMBS class.

132.1.26  SetApplicationDockTileImageMBS(pic as CGImageMBS) as boolean

MBS MacCG Plugin, Plugin Version: 2.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
Sets the application dock tile image.

Example:

```c
dim p as CGImageMBS = CGImageMBS.CreateImage(LogoMBS(500))

if app.SetApplicationDockTileImageMBS(p) then
  // ok
end if
```

Notes:
Changed in MBS Plugin 2.7 to use CGIimages directly.
Added support for 64-bit in plugin version 16.0.
132.1.27  Properties

132.1.28  DockTileMenuMBS as MenuMBS

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The menu used for the dock tile menu.
**Notes:** (Read and Write computed property)

132.1.29  FrontmostMBS as boolean

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if the application is frontmost.
**Example:**

app.frontmostmbs=True 'bring app to front

**Notes:**
This property is for read and write. Writing to it brings the app to front. Setting this property to false does nothing.

If you need to make some other application frontmost, you can use app.HideMeMBS or use the ProcessMBS class.
(Read and Write computed property)
132.2. **CLASS BACKGROUNDTHREADMBS**

## 132.2 class BackgroundThreadMBS

### 132.2.1 class BackgroundThreadMBS

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The thread subclass we use for the CallMethodOnThreadMBS functions.

**Example:**

```vbnet
if CallMethodOnThreadMBS(new BackgroundThreadMBS, window1, "Test") then
    msgbox "OK"
else
    msgbox "Failed"
end if
```

**Notes:** Subclass of the Thread class.
132.3 module CallDelegatesMBS

132.3.1 module CallDelegatesMBS

MBS Util Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The module for the call delegate methods. **Notes:** Only supported on Xojo 2013r1 and newer.

132.3.2 Methods

132.3.3 CallDelegateOnMainThreadMBS(m as _delegateMBS)

MBS Util Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calls a delegate on the main thread. **Example:**

CallDelegateOnMainThreadMBS AddressOf testString, "Hello"
CallDelegateOnMainThreadMBS AddressOf testNumbers, 5, 6
CallDelegateOnMainThreadMBS AddressOf TestNoParameters
CallDelegateOnMainThreadMBS AddressOf Test, "4th call", 4

**Notes:**

We call the delegate on the main thread later with passing a parameter
Our plugin supports various combinations of up to 2 parameters of type string, variant, boolean, double, integer and object.
If you need more, please contact us.
Only supported on Xojo 2013r1 and newer.

If the method you call has optional parameters, you must pass all values or Xojo will throw a compile error.
132.4.1 CallMethodLaterMBS(target as object, name as string, afterDelay as Double) as boolean

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a method on the target object on the main thread after the given delay in seconds.

**Example:**
```vbnet
if CallMethodLaterMBS(window1, "Test", 5.0) then
    msgbox "OK"
else
    msgbox "Failed"
end if
```

**Notes:**
The method must be declared on the given class for the target object with no parameters and no return values.

The method will be called later (Asyncronously) on the main thread. Useful for performing non thread safe stuff like GUI functions on the main thread after the given delay in seconds.

Returns true on success and false on failure.
The time given is just a roughly suggestions. Actual time on the method call depends on how busy your application is.

See also:
- 132.4.2 CallMethodLaterMBS(target as object, name as string, afterDelay as Double, value1 as Variant) as boolean
- 132.4.3 CallMethodLaterMBS(target as object, name as string, afterDelay as Double, value1 as Variant, value2 as Variant) as boolean
- 132.4.4 CallMethodLaterMBS(target as object, name as string, afterDelay as Double, value1 as Variant, value2 as Variant, value3 as Variant) as boolean

132.4.2 CallMethodLaterMBS(target as object, name as string, afterDelay as Double, value1 as Variant) as boolean

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a method on the target object on the main thread after the given delay in seconds.

**Example:**
```vbnet
if CallMethodLaterMBS(window1, "Test", 4.0, "Hello") then
    msgbox "OK"
```

else
msgbox "Failed"
end if

Notes:
The method must be declared on the given class for the target object with one variant parameter and no
return values.

The method will be called later (Asynchronous) on the main thread after the given delay in seconds. Useful
for performing non thread safe stuff like GUI functions on the main thread.

Returns true on success and false on failure.
The time given is just a roughly suggestions. Actual time on the method call depends on how busy your
application is.
See also:

- 132.4.1 CallMethodLaterMBS(target as object, name as string, afterDelay as Double) as boolean
- 132.4.3 CallMethodLaterMBS(target as object, name as string, afterDelay as Double, value1 as Variant,
  value2 as Variant) as boolean
- 132.4.4 CallMethodLaterMBS(target as object, name as string, afterDelay as Double, value1 as Variant,
  value2 as Variant, value3 as Variant) as boolean

132.4.3 CallMethodLaterMBS(target as object, name as string, afterDelay as Double, value1 as Variant,
  value2 as Variant) as boolean

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a method on the target object on the main thread after the given delay in seconds.
**Example:**

if CallMethodLaterMBS(window1, "Test", 3.0, "Hello", "World") then
msgbox "OK"
else
msgbox "Failed"
end if

Notes:
The method must be declared on the given class for the target object with two variant parameters and no
return values.
The method will be called later (Asyncronously) on the main thread. Useful for performing non thread safe stuff like GUI functions on the main thread after the given delay in seconds.

Returns true on success and false on failure.
The time given is just a roughly suggestions. Actual time on the method call depends on how busy your application is.
See also:

- 132.4.1 CallMethodLaterMBS(target as object, name as string, afterDelay as Double) as boolean
- 132.4.2 CallMethodLaterMBS(target as object, name as string, afterDelay as Double, value1 as Variant) as boolean
- 132.4.4 CallMethodLaterMBS(target as object, name as string, afterDelay as Double, value1 as Variant, value2 as Variant, value3 as Variant) as boolean

### 132.4.4 CallMethodLaterMBS(target as object, name as string, afterDelay as Double, value1 as Variant, value2 as Variant, value3 as Variant) as boolean

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a method on the target object on the main thread after the given delay in seconds. **Example:**

```plaintext
if CallMethodLaterMBS(window1, "Test", 3.0, "Hello", "World", 5) then
    msgbox "OK"
else
    msgbox "Failed"
end if
```

**Notes:**
The method must be declared on the given class for the target object with three variant parameters and no return values.

The method will be called later (Asyncronously) on the main thread. Useful for performing non thread safe stuff like GUI functions on the main thread after the given delay in seconds.

Returns true on success and false on failure.
The time given is just a roughly suggestions. Actual time on the method call depends on how busy your application is.
See also:

- 132.4.1 CallMethodLaterMBS(target as object, name as string, afterDelay as Double) as boolean
132.4.5 CallMethodMBS(target as object, name as string) as boolean

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a method on the target object.

**Example:**

```basic
if CallMethodMBS(window1, "Test") then
  msgbox "OK"
else
  msgbox "Failed"
end if
```

**Notes:**
The method must be declared on the given class for the target object with no parameters and no return values.

Returns true on success and false on failure.

See also:

- 132.4.6 CallMethodMBS(target as object, name as string, value1 as Variant) as boolean
- 132.4.7 CallMethodMBS(target as object, name as string, value1 as Variant, value2 as Variant) as boolean
- 132.4.8 CallMethodMBS(target as object, name as string, value1 as Variant, value2 as Variant, value3 as Variant) as boolean

132.4.6 CallMethodMBS(target as object, name as string, value1 as Variant) as boolean

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a method on the target object.

**Example:**

```basic
if CallMethodMBS(window1, "Test", "Hello") then
  msgbox "OK"
else
  msgbox "Failed"
end if
```
Notes:
The method must be declared on the given class for the target object with one variant parameter and no return values.

Returns true on success and false on failure.
See also:

- 132.4.5 CallMethodMBS(target as object, name as string) as boolean
- 132.4.7 CallMethodMBS(target as object, name as string, value1 as Variant, value2 as Variant) as boolean
- 132.4.8 CallMethodMBS(target as object, name as string, value1 as Variant, value2 as Variant, value3 as Variant) as boolean

132.4.7 CallMethodMBS(target as object, name as string, value1 as Variant, value2 as Variant) as boolean

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a method on the target object.

**Example:**

```vbnet
if CallMethodMBS(window1, "Test", "Hello", "World") then
    messagebox "OK"
else
    messagebox "Failed"
end if
```

Notes:
The method must be declared on the given class for the target object with two variant parameters and no return values.

Returns true on success and false on failure.
See also:

- 132.4.5 CallMethodMBS(target as object, name as string) as boolean
- 132.4.6 CallMethodMBS(target as object, name as string, value1 as Variant) as boolean
- 132.4.8 CallMethodMBS(target as object, name as string, value1 as Variant, value2 as Variant, value3 as Variant) as boolean
132.4.8  CallMethodMBS(target as object, name as string, value1 as Variant, value2 as Variant, value3 as Variant) as boolean

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a method on the target object.

**Example:**

```vbnet
if CallMethodMBS(window1, "Test", "Hello", "World", 5) then
    msgbox "OK"
else
    msgbox "Failed"
end if
```

**Notes:**
The method must be declared on the given class for the target object with three variant parameters and no return values.

Returns true on success and false on failure.

See also:
- 132.4.5 CallMethodMBS(target as object, name as string) as boolean
- 132.4.6 CallMethodMBS(target as object, name as string, value1 as Variant) as boolean
- 132.4.7 CallMethodMBS(target as object, name as string, value1 as Variant, value2 as Variant) as boolean

132.4.9  CallMethodOnMainThreadMBS(target as object, name as string) as boolean

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a method on the target object on the main thread.

**Example:**

```vbnet
if CallMethodOnMainThreadMBS(window1, "Test") then
    msgbox "OK"
else
    msgbox "Failed"
end if
```

**Notes:**
The method must be declared on the given class for the target object with no parameters and no return values.
The method will be called later (Asyncronously) on the main thread. Useful for performing non thread safe stuff like GUI functions on the main thread.

Returns true on success and false on failure. Deprecated, please use CallDelegatesMBS.CallDelegateOnMainThreadMBS instead.

See also:

- 132.4.10 CallMethodOnMainThreadMBS(target as object, name as string, value1 as Variant) as boolean
- 132.4.11 CallMethodOnMainThreadMBS(target as object, name as string, value1 as Variant, value2 as Variant) as boolean
- 132.4.12 CallMethodOnMainThreadMBS(target as object, name as string, value1 as Variant, value2 as Variant, value3 as Variant) as boolean

### 132.4.10 CallMethodOnMainThreadMBS(target as object, name as string, value1 as Variant) as boolean

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calls a method on the target object on the main thread.

**Example:**

```lisp
if CallMethodOnMainThreadMBS(window1, "Test", "Hello") then
    msgbox "OK"
else
    msgbox "Failed"
end if
```

**Notes:**

The method must be declared on the given class for the target object with one variant parameter and no return values.

The method will be called later (Asyncronously) on the main thread. Useful for performing non thread safe stuff like GUI functions on the main thread.

Returns true on success and false on failure. Deprecated, please use CallDelegatesMBS.CallDelegateOnMainThreadMBS instead.

See also:

- 132.4.9 CallMethodOnMainThreadMBS(target as object, name as string) as boolean
- 132.4.11 CallMethodOnMainThreadMBS(target as object, name as string, value1 as Variant, value2 as Variant) as boolean
• 132.4.12 CallMethodOnMainThreadMBS(target as object, name as string, value1 as Variant, value2 as Variant, value3 as Variant) as boolean

132.4.11 CallMethodOnMainThreadMBS(target as object, name as string, value1 as Variant, value2 as Variant) as boolean


Example:

if CallMethodOnMainThreadMBS(window1, "Test", "Hello", "World") then
msgbox "OK"
else
msgbox "Failed"
end if

Notes:
The method must be declared on the given class for the target object with two variant parameters and no return values.

The method will be called later (Asynchronously) on the main thread. Useful for performing non thread safe stuff like GUI functions on the main thread.

Returns true on success and false on failure.

Deprecated, please use CallDelegatesMBS.CallDelegateOnMainThreadMBS instead.

See also:

• 132.4.9 CallMethodOnMainThreadMBS(target as object, name as string) as boolean
• 132.4.10 CallMethodOnMainThreadMBS(target as object, name as string, value1 as Variant) as boolean
• 132.4.12 CallMethodOnMainThreadMBS(target as object, name as string, value1 as Variant, value2 as Variant, value3 as Variant) as boolean

132.4.12 CallMethodOnMainThreadMBS(target as object, name as string, value1 as Variant, value2 as Variant, value3 as Variant) as boolean


Example:

if CallMethodOnMainThreadMBS(window1, "Test", "Hello", "World", 5) then
msgbox "OK"
else
msgbox "Failed"
end if

Notes:
The method must be declared on the given class for the target object with three variant parameters and no return values.

The method will be called later (Asynchronously) on the main thread. Useful for performing non thread safe stuff like GUI functions on the main thread.

Returns true on success and false on failure.
Deprecated, please use CallDelegatesMBS.CallDelegateOnMainThreadMBS instead.
See also:

- 132.4.9 CallMethodOnMainThreadMBS(target as object, name as string) as boolean
- 132.4.10 CallMethodOnMainThreadMBS(target as object, name as string, value1 as Variant) as boolean
- 132.4.11 CallMethodOnMainThreadMBS(target as object, name as string, value1 as Variant, value2 as Variant) as boolean

132.4.13 CallMethodOnThreadMBS(BackgroundThread as BackgroundThreadMBS, target as object, name as string) as boolean

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calls a method on the target object on a new thread.

**Example:**

```vbs
if CallMethodOnThreadMBS(new BackgroundThreadMBS, window1, "Test") then
msgbox "OK"
else
msgbox "Failed"
end if
```

Notes:
The method must be declared on the given class for the target object with no parameters and no return values.

Pass in "new BackgroundThreadMBS" for the thread to use. Execution will be done later (Asynchronously) on that thread. Useful for perform some code in the background without creating a thread yourself.
Returns true on success and false on failure.

See also:

- 132.4.14 CallMethodOnThreadMBS(BackgroundThread as BackgroundThreadMBS, target as object, name as string, value1 as Variant) as boolean  
- 132.4.15 CallMethodOnThreadMBS(BackgroundThread as BackgroundThreadMBS, target as object, name as string, value1 as Variant, value2 as Variant) as boolean  
- 132.4.16 CallMethodOnThreadMBS(BackgroundThread as BackgroundThreadMBS, target as object, name as string, value1 as Variant, value2 as Variant, value3 as Variant) as boolean

132.4.14 CallMethodOnThreadMBS(BackgroundThread as BackgroundThreadMBS, target as object, name as string, value1 as Variant) as boolean


Example:

```plaintext
if CallMethodOnThreadMBS(new BackgroundThreadMBS, window1, "Test", "Hello") then
    msgbox "OK"
else
    msgbox "Failed"
end if
```

Notes:

The method must be declared on the given class for the target object with one variant parameter and no return values.

Pass in "new BackgroundThreadMBS" for the thread to use. Execution will be done later (Asynchronously) on that thread. Useful for perform some code in the background without creating a thread yourself.

Returns true on success and false on failure.

See also:

- 132.4.13 CallMethodOnThreadMBS(BackgroundThread as BackgroundThreadMBS, target as object, name as string) as boolean  
- 132.4.15 CallMethodOnThreadMBS(BackgroundThread as BackgroundThreadMBS, target as object, name as string, value1 as Variant, value2 as Variant) as boolean  
- 132.4.16 CallMethodOnThreadMBS(BackgroundThread as BackgroundThreadMBS, target as object, name as string, value1 as Variant, value2 as Variant, value3 as Variant) as boolean
132.4.15 CallMethodOnThreadMBS(BackgroundThread as BackgroundThreadMBS, target as object, name as string, value1 as Variant, value2 as Variant) as boolean


Example:

```plaintext
if CallMethodOnThreadMBS(new BackgroundThreadMBS, window1, "Test", "Hello", "World") then
    msgbox "OK"
else
    msgbox "Failed"
end if
```

Notes:
The method must be declared on the given class for the target object with two variant parameters and no return values.

Pass in "new BackgroundThreadMBS" for the thread to use. Execution will be done later (Asynchronously) on that thread. Useful for perform some code in the background without creating a thread yourself.

Returns true on success and false on failure.

See also:

- 132.4.13 CallMethodOnThreadMBS(BackgroundThread as BackgroundThreadMBS, target as object, name as string) as boolean
- 132.4.14 CallMethodOnThreadMBS(BackgroundThread as BackgroundThreadMBS, target as object, name as string, value1 as Variant) as boolean
- 132.4.16 CallMethodOnThreadMBS(BackgroundThread as BackgroundThreadMBS, target as object, name as string, value1 as Variant, value2 as Variant, value3 as Variant) as boolean

132.4.16 CallMethodOnThreadMBS(BackgroundThread as BackgroundThreadMBS, target as object, name as string, value1 as Variant, value2 as Variant, value3 as Variant) as boolean


Example:

```plaintext
if CallMethodOnThreadMBS(new BackgroundThreadMBS, window1, "Test", "Hello", "World", 5) then
    msgbox "OK"
else
    msgbox "Failed"
end if
```
msgbox "Failed"
end if

Notes:
The method must be declared on the given class for the target object with three variant parameters and no
return values.

Pass in "new BackgroundThreadMBS" for the thread to use. Execution will be done later (Asynchronously)
on that thread. Useful for perform some code in the background without creating a thread yourself.

Returns true on success and false on failure.
See also:

- 132.4.13 CallMethodOnThreadMBS(BackgroundThread as BackgroundThreadMBS, target as object,
    name as string) as boolean
- 132.4.14 CallMethodOnThreadMBS(BackgroundThread as BackgroundThreadMBS, target as object,
    name as string, value1 as Variant) as boolean
- 132.4.15 CallMethodOnThreadMBS(BackgroundThread as BackgroundThreadMBS, target as object,
    name as string, value1 as Variant, value2 as Variant) as boolean

132.4.17 GetDarwinVMStatisticsMBS as DarwinVMStatisticsMBS

MBS MacCF Plugin, Plugin Version: 2.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns information about the current memory status on Mac OS X.
Example:

dim d as DarwinVMStatisticsMBS

d=GetDarwinVMStatisticsMBS

if d=nil then
    msgBox "No Darwin running :-("
    quit
else
    dim lines(-1) as string

    lines.Append format(d.pageins, "0")+" pageins"
    lines.Append format(d.pageouts, "0")+" pageouts"
    lines.Append format(d.pagesize, "0")+" pagesize"
    lines.Append format(d.freepages, "0")+" freepages"
    lines.Append format(d.activepages, "0")+" activepages"
    lines.Append format(d.inactivepages, "0")+" inactivepages"
    lines.Append format(d.wiredpages, "0")+" wiredpages"
lines.Append format(d.zerofillpages,"0") + " zerofillpages"
lines.Append format(d.reactivations,"0") + " reactivations"
lines.Append format(d.faults,"0") + " faults"
lines.Append format(d.cowfaults,"0") + " cowfaults"
lines.Append format(d.lookups,"0") + " lookups"
lines.Append format(d.hits,"0") + " hits"

MsgBox Join(lines,EndOfLine)
end if

### 132.4.18 GetDarwinResourceUsageMBS as DarwinResourceUsageMBS

MBS MacCF Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Get information about resource utilization. **Example:**

```vbs
dim d as DarwinResourceUsageMBS = GetDarwinResourceUsageMBS
MsgBox str(d.IntegralMaxResidentSetSize)
```

**Notes:**

Returns nil on any error.
For more information type ”man getrusage” in the Mac OS X Terminal.

### 132.4.19 SetThreadNameMBS(name as string)

MBS Util Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the name of current thread. **Example:**

```
SetThreadNameMBS "SQL Query Thread"
```

**Notes:** This is useful to see thread name in crash reports or sample reports.

### 132.4.20 CountProcessesMBS as Integer

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Counts how many processes are running. **Notes:**
Short for this function:

function CountProcesses as Integer
dim n as Integer
dim p as ProcessMBS

p=new ProcessMBS
p.getfirstProcess
n=1
while p.getnextProcess
n=n+1
wend

return n
end if

132.4.21 GetWindowsVMStatisticsMBS as WindowsVMStatisticsMBS

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns information about the current memory status on Windows.

**Example:**

dim w as WindowsVMStatisticsMBS

w=GetWindowsVMStatisticsMBS
if w<>nil then

list.AddRow format(w.pagesize,"0")
list.AddRow format(w.memoryLoad,"0")
list.AddRow format(w.availablePageFileMemory,"0")
list.AddRow format(w.availablePhysicalMemory,"0")
list.AddRow format(w.availableVirtualMemory,"0")
list.AddRow format(w.totalPageFileMemory,"0")
list.AddRow format(w.totalPhysicalMemory,"0")
list.AddRow format(w.totalVirtualMemory,"0")

else

msgBox "No Windows memory statistics..."
quit
end if
132.5  class DarwinGroupListMBS

132.5.1  class DarwinGroupListMBS

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The list of Groups on a Mac OS X system.
**Example:**
```vba
dim l as new DarwinGroupListMBS
MsgBox str(l.Count)+" groups"
```

132.5.2  Methods

132.5.3  CurrentEffectiveUserID as Integer

MBS MacCF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The effective user ID of the calling process.
**Example:**
```vba
dim l as new DarwinGroupListMBS
MsgBox str(l.CurrentEffectiveUserID)
```

**Notes:** The real user ID is that of the user who has invoked the program. As the effective user ID gives the
process additional permissions during execution of 'set-user-ID' mode processes, getuid() is used to determine the real-user-id of the calling process.

132.5.4  CurrentGroupID as Integer

MBS MacCF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The real group ID of the calling process.
**Example:**
```vba
dim l as new DarwinGroupListMBS
MsgBox "CurrentGroupID: "+str(l.CurrentGroupID)
```

**Notes:** The real group ID is specified at login time.
132.5.5 CurrentUserID as Integer

MBS MacCF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The real user ID of the calling process.

**Example:**
```vba
dim l as new DarwinGroupListMBS
MsgBox "CurrentUserID: " + str(l.CurrentUserID)
```

**Notes:** The real user ID is that of the user who has invoked the program. As the effective user ID gives the process additional permissions during execution of 'set-user-ID' mode processes, getuid() is used to determine the real-user-id of the calling process.

132.5.6 Group(index as Integer) as DarwinGroupMBS

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the Group with the given index.

**Example:**
```vba
dim l as new DarwinGroupListMBS
dim c as Integer = l.Count - 1
dim names(-1) as string
for i as Integer = 0 to c
    dim g as DarwinGroupMBS = l.Group(i)
names.Append g.Name
next
MsgBox Join(names, EndOfLine)
```

132.5.7 Properties

**132.5.8 Count as Integer**

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The number of Groups on this Mac OS X system.

**Example:**
```vba
dim l as new DarwinGroupListMBS
MsgBox str(l.Count) + " groups"
```

**Notes:** (Read only property)
132.6  class DarwinGroupMBS

132.6.1  class DarwinGroupMBS

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class with information about a Group on Mac OS X.

**Example:**
```
dim g as new DarwinGroupMBS
g.LoadGroupByID g.CurrentGroupID
MsgBox g.Name
```

132.6.2  Methods

132.6.3  CurrentEffectiveUserID as Integer

MBS MacCF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The effective user ID of the calling process.

**Example:**
```
dim g as new DarwinGroupMBS
MsgBox "CurrentEffectiveUserID: " +str(G.CurrentEffectiveUserID)
```

**Notes:** The real user ID is that of the user who has invoked the program. As the effective user ID gives the process additional permissions during execution of 'set-user-ID' mode processes, getuid() is used to determine the real-user-id of the calling process.

132.6.4  CurrentGroupID as Integer

MBS MacCF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The real group ID of the calling process.

**Example:**
```
dim g as new DarwinGroupMBS
MsgBox "CurrentGroupID: " +str(G.CurrentGroupID)
```

**Notes:** The real group ID is specified at login time.
132.6. **CLASS DARWINGROUPMBS**

132.6.5 **CurrentUserID as Integer**

MBS MacCF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The real user ID of the calling process.  
**Example:**
```vba
dim g as new DarwinGroupMBS  
MsgBox "CurrentUserID: " + str(G.CurrentUserID)
```

**Notes:** The real user ID is that of the user who has invoked the program. As the effective user ID gives the process additional permissions during execution of 'set-user-ID' mode processes, getuid() is used to determine the real-user-id of the calling process.

132.6.6 **LoadGroupByID(Groupid as Integer)**

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Fills the properties of this class with the values for the Group with the given ID.  
**Example:**
```vba
dim g as new DarwinGroupMBS  
g.LoadGroupByID g.CurrentGroupID  
MsgBox g.Name
```

132.6.7 **LoadGroupByName(name as string)**

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Fills the properties of this class with the values for the given Group.  
**Example:**
```vba
dim g as new DarwinGroupMBS  
g.LoadGroupByName "staff"  
MsgBox g.Name
```

132.6.8 **UserName(index as Integer) as string**

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The Group ID of this Group.  
**Example:**
```vba
```vbnet
dim g as new DarwinGroupMBS
g.LoadGroupByID g.CurrentGroupID

dim c as Integer = g.UserCount - 1
for i as Integer = 0 to c
    MsgBox g.UserName(i)
next
```

### 132.6.9 Properties

#### 132.6.10 GroupID as Integer

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The group ID of the Group. **Example:**

```vbnet
dim g as new DarwinGroupMBS
g.LoadGroupByID g.CurrentGroupID
MsgBox "GroupID: " + str(G.GroupID)
```

**Notes:** (Read only property)

#### 132.6.11 Name as string

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of the Group. **Example:**

```vbnet
dim g as new DarwinGroupMBS
g.LoadGroupByID g.CurrentGroupID
MsgBox "Name: " + g.Name
```

**Notes:** (Read only property)

#### 132.6.12 Password as string

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The password for this group.
132.6. CLASS DARWINGROUPMBS

Notes: (Read only property)

132.6.13 Ready as Boolean

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** whether the values in this class were filled correctly.

Notes: (Read only property)

132.6.14 UserCount as Integer

MBS MacCF Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of users in this group.

Example:

```vbnet
dim g as new DarwinGroupMBS
g.LoadGroupByID g.CurrentGroupId
MsgBox "UserCount: " + str(G.UserCount)
```

Notes: (Read only property)
132.7 class DarwinResourceUsageMBS

132.7.1 class DarwinResourceUsageMBS

MBS MacCF Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for information about resource utilization.
**Example:**
```vba
dim d as DarwinResourceUsageMBS = GetDarwinResourceUsageMBS
MsgBox str(d.IntegralMaxResidentSetSize)
```

**Notes:** For more information type "man getrusage" in the Mac OS X Terminal.

132.7.2 Properties

132.7.3 BlockInputOperations as Int64

MBS MacCF Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Number of block input operations.
**Example:**
```vba
dim d as DarwinResourceUsageMBS = GetDarwinResourceUsageMBS
MsgBox str(d.BlockInputOperations)
```

**Notes:** (Read only property)

132.7.4 BlockOutputOperations as Int64

MBS MacCF Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Number of block output operations.
**Example:**
```vba
dim d as DarwinResourceUsageMBS = GetDarwinResourceUsageMBS
MsgBox str(d.BlockOutputOperations)
```

**Notes:** (Read only property)
132.7. **CLASS DARWINRESOURCEUSAGEMBS**

### 132.7.5 IntegralMaxResidentSetSize as Int64

MBS MacCF Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Integral max resident set size.

**Example:**
```
dim u as DarwinResourceUsageMBS = GetDarwinResourceUsageMBS
dim t as new DarwinTaskInfoMBS

MsgBox "Application Resident Size: " + str(t.ResidentSize) + vbCrLf + "Application Virtual Size: " + str(t.VirtualSize) + vbCrLf + "Application Integral Max Resident Size: " + str(u.IntegralMaxResidentSetSize)
```

**Notes:** (Read only property)

### 132.7.6 IntegralSharedTextMemorySize as Int64

MBS MacCF Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Integral shared text memory size.

**Example:**
```
dim d as DarwinResourceUsageMBS = GetDarwinResourceUsageMBS
MsgBox str(d.IntegralSharedTextMemorySize)
```

**Notes:** (Read only property)

### 132.7.7 IntegralUnsharedDataSize as Int64

MBS MacCF Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Integral unshared data size.

**Example:**
```
dim d as DarwinResourceUsageMBS = GetDarwinResourceUsageMBS
MsgBox str(d.IntegralUnsharedDataSize)
```

**Notes:** (Read only property)
132.7.8 **IntegralUnsharedStackSize as Int64**

MBS MacCF Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Integral unshared stack size.

**Example:**
```vba
    dim d as DarwinResourceUsageMBS = GetDarwinResourceUsageMBS
    MsgBox str(d.IntegralUnsharedStackSize)
```

**Notes:** (Read only property)

132.7.9 **InvoluntaryContextSwitches as Int64**

MBS MacCF Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Number of involuntary context switches.

**Example:**
```vba
    dim d as DarwinResourceUsageMBS = GetDarwinResourceUsageMBS
    MsgBox str(d.InvoluntaryContextSwitches)
```

**Notes:** (Read only property)

132.7.10 **MessagesReceived as Int64**

MBS MacCF Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Number of messages received.

**Example:**
```vba
    dim d as DarwinResourceUsageMBS = GetDarwinResourceUsageMBS
    MsgBox str(d.MessagesReceived)
```

**Notes:** (Read only property)

132.7.11 **MessagesSent as Int64**

MBS MacCF Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Number of messages sent.

**Example:**
132.7. CLASS DARWINRESOURCEUSAGEMBS

`dim d as DarwinResourceUsageMBS = GetDarwinResourceUsageMBS`  
`MsgBox str(d.MessagesSent)`

**Notes:** (Read only property)

### 132.7.12 PageFaults as Int64

MBS MacCF Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Number of page faults.  
**Example:**

```vba
dim d as DarwinResourceUsageMBS = GetDarwinResourceUsageMBS
MsgBox str(d.PageFaults)
```

**Notes:** (Read only property)

### 132.7.13 PageReclaims as Int64

MBS MacCF Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Number of page reclaims.  
**Example:**

```vba
dim d as DarwinResourceUsageMBS = GetDarwinResourceUsageMBS
MsgBox str(d.PageReclaims)
```

**Notes:** (Read only property)

### 132.7.14 SignalsReceived as Int64

MBS MacCF Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Number of signals received.  
**Example:**

```vba
dim d as DarwinResourceUsageMBS = GetDarwinResourceUsageMBS
MsgBox str(d.SignalsReceived)
```
132.7.15 Swaps as Int64

MBS MacCF Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Number of swaps.

**Example:**

```vba
dim d as DarwinResourceUsageMBS = GetDarwinResourceUsageMBS
MsgBox str(d.Swaps)
```

**Notes:** (Read only property)

132.7.16 SystemTimeUsed as Double

MBS MacCF Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Seconds of system time used.

**Example:**

```vba
dim d as DarwinResourceUsageMBS = GetDarwinResourceUsageMBS
MsgBox str(d.SystemTimeUsed)
```

**Notes:** (Read only property)

132.7.17 UserTimeUsed as Double

MBS MacCF Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Seconds of user time used.

**Example:**

```vba
dim d as DarwinResourceUsageMBS = GetDarwinResourceUsageMBS
MsgBox str(d.UserTimeUsed)
```

**Notes:** (Read only property)
MBS MacCF Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Number of voluntary context switches.

**Example:**

```vba
dim d as DarwinResourceUsageMBS = GetDarwinResourceUsageMBS
MsgBox str(d.VoluntaryContextSwitches)
```

**Notes:** (Read only property)
132.8 class DarwinTaskInfoMBS

132.8.1 class DarwinTaskInfoMBS

MBS MacCF Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for your applications memory/resource usage.  
**Example:**
```vbnet
dim u as DarwinResourceUsageMBS = GetDarwinResourceUsageMBS  
dim t as new DarwinTaskInfoMBS  
MsgBox "Application Resident Size: " + str(t.ResidentSize) + EndOfLine +  
"Application Virtual Size: " + str(t.VirtualSize) + EndOfLine +  
"Application Integral Max Resident Size: " + str(u.IntegralMaxResidentSetSize)
```

132.8.2 Methods

132.8.3 Update as boolean

MBS MacCF Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Updates the values and returns true on success.  
**Example:**
```vbnet
dim d as new DarwinTaskInfoMBS  
MsgBox str(d.UserTime)  
call d.Update  
MsgBox str(d.UserTime)
```

**Notes:** The constructor updates the values on creation of the object.

132.8.4 Properties

132.8.5 ContextSwitches as Double

MBS MacCF Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Number of context switches.  
**Example:**
```vbnet
dim d as new DarwinTaskInfoMBS  
MsgBox str(d.ContextSwitches)
```
132.8. CLASS DARWINTASKINFOMBS

Notes: (Read and Write property)

132.8.6 COWFaults as Double

Example:

```vbnet
dim d as new DarwinTaskInfoMBS
MsgBox str(d.COWFaults)
```

Notes: (Read and Write property)

132.8.7 Faults as Double

Example:

```vbnet
dim d as new DarwinTaskInfoMBS
MsgBox str(d.Faults)
```

Notes: (Read and Write property)

132.8.8 MessagesReceived as Double

MBS MacCF Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Number of messages received.
Example:

```vbnet
dim d as new DarwinTaskInfoMBS
MsgBox str(d.MessagesReceived)
```

Notes: (Read and Write property)
132.8.9  MessagesSent as Double

MBS MacCF Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Number of messages sent.  
**Example:**
```vba
dim d as new DarwinTaskInfoMBS
MsgBox str(d.MessagesSent)
```

**Notes:** (Read and Write property)

132.8.10  PageIns as Double

MBS MacCF Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Number of actual pageins.  
**Example:**
```vba
dim d as new DarwinTaskInfoMBS
MsgBox str(d.PageIns)
```

**Notes:** (Read and Write property)

132.8.11  ResidentSize as Double

MBS MacCF Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Number of resident pages.  
**Example:**
```vba
dim d as DarwinTaskInfoMBS
d=new DarwinTaskInfoMBS
MsgBox "This application uses " + Format(d.ResidentSize,"0") + " Bytes of physical memory."
```

**Notes:** (Read and Write property)
132.8. CLASS DARWINTASKINFOMBS

132.8.12 SuspendCount as Double

MBS MacCF Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Suspend count for task.
**Example:**

```vbnet
dim d as new DarwinTaskInfoMBS
MsgBox str(d.SuspendCount)
```

**Notes:** (Read and Write property)

132.8.13 SystemCallsMach as Double

MBS MacCF Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Number of mach system calls.
**Example:**

```vbnet
dim d as DarwinTaskInfoMBS
d=new DarwinTaskInfoMBS
MsgBox "This application has done so far " + Format(d.SystemCallsMach,"0") + " system calls using the Mach Interface."
```

**Notes:** (Read and Write property)

132.8.14 SystemCallsUnix as Double

MBS MacCF Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Number of unix system calls.
**Example:**

```vbnet
dim d as DarwinTaskInfoMBS
d=new DarwinTaskInfoMBS
MsgBox "This application has done so far " + Format(d.SystemCallsUnix,"0") + " system calls using the Unix Interface."
```

**Notes:** (Read and Write property)
132.8.15 SystemTime as Double

MBS MacCF Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Total system run time.  
**Example:**
```vba
dim d as DarwinTaskInfoMBS
d=new DarwinTaskInfoMBS
MsgBox "This application has used so far "+Format(d.SystemTime,"0")+" seconds of CPU time."
```

**Notes:** (Read and Write property)

132.8.16 UserTime as Double

MBS MacCF Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Total user run time.  
**Example:**
```vba
dim d as DarwinTaskInfoMBS
d=new DarwinTaskInfoMBS
MsgBox "This application has used so far "+Format(d.UserTime,"0")+" seconds of CPU time."
```

**Notes:** (Read and Write property)

132.8.17 VirtualSize as Double

MBS MacCF Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Number of virtual pages.  
**Example:**
```vba
dim d as DarwinTaskInfoMBS
d=new DarwinTaskInfoMBS
MsgBox "This application uses "+Format(d.VirtualSize,"0")+" Bytes of the 4 GB address space."
```
Notes: (Read and Write property)
132.9 class DarwinUserListMBS

132.9.1 class DarwinUserListMBS

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The list of users on a Mac OS X system.

**Example:**

```vba
// find the short user name
dim d as DarwinUserListMBS
dim u as string
dim p as DarwinUserMBS
dim uid,i,c as Integer

// requires MachO target
declare function getuid lib "System" () as Integer
uid=getuid

d=new DarwinUserListMBS

for i=0 to c
  p=d.User(i)
  if p.UserID=uid then
    MsgBox p.Name
    end if
next
```

132.9.2 Methods

132.9.3 CurrentEffectiveUserID as Integer

MBS MacCF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The effective user ID of the calling process.

**Example:**

```vba
dim l as new DarwinUserListMBS
MsgBox "CurrentEffectiveUserID: "+str(l.CurrentEffectiveUserID)
```

**Notes:** The real user ID is that of the user who has invoked the program. As the effective user ID gives the process additional permissions during execution of 'set-user-ID' mode processes, getuid() is used to determine the real-user-id of the calling process.
132.9.4 **CurrentGroupID as Integer**

MBS MacCF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The real group ID of the calling process.

**Example:**

```vba
Dim l As New DarwinUserListMBS
MsgBox "CurrentGroupID: "+Str(l.CurrentGroupID)
```

**Notes:** The real group ID is specified at login time.

132.9.5 **CurrentUserID as Integer**

MBS MacCF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The real user ID of the calling process.

**Example:**

```vba
Dim l As New DarwinUserListMBS
MsgBox "CurrentUserID: "+Str(l.CurrentUserID)
```

**Notes:** The real user ID is that of the user who has invoked the program. As the effective user ID gives the process additional permissions during execution of ‘set-user-ID’ mode processes, getuid() is used to determine the real-user-id of the calling process.

132.9.6 **User(index as Integer) as DarwinUserMBS**

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the user with the given index.

**Example:**

```vba
// find short user name
Dim d As DarwinUserListMBS
Dim u As String
Dim p As DarwinUserMBS
Dim uid, i, c As Integer

u=SystemInformationMBS.Username
d=new DarwinUserListMBS
c=d.Count-1
for i=0 to c
p=d.User(i)
if p.LongName=u then
MsgBox p.Name
end if
next

### 132.9.7 Properties

### 132.9.8 Count as Integer

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of users on this Mac OS X system.

**Example:**

```vb
dim l as new DarwinUserListMBS
MsgBox "Number of users: " +str(l.Count)
```

**Notes:** (Read only property)
132.10. **CLASS DARWINUSERMBS**

**132.10 class DarwinUserMBS**

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class with information about a user on Mac OS X.  
**Example:**
```vbs
Dim l As New DarwinUserMBS
l.LoadUserByID l.CurrentUserID
MsgBox l.Name + ": " + l.LongName
```

**132.10.2 Methods**

**132.10.3 CurrentEffectiveUserID as Integer**

MBS MacCF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The effective user ID of the calling process.  
**Example:**
```vbs
Dim l As New DarwinUserMBS
MsgBox Str(l.CurrentEffectiveUserID)
```

**Notes:** The real user ID is that of the user who has invoked the program. As the effective user ID gives the process additional permissions during execution of 'set-user-ID' mode processes, getuid() is used to determine the real-user-id of the calling process.

**132.10.4 CurrentGroupID as Integer**

MBS MacCF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The real group ID of the calling process.  
**Example:**
```vbs
Dim l As New DarwinUserMBS
MsgBox Str(l.CurrentGroupID)
```

**Notes:** The real group ID is specified at login time.
132.10.5 **CurrentUserID as Integer**

MBS MacCF Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The real user ID of the calling process.

**Example:**

```vbs```
    dim l as new DarwinUserMBS
    MsgBox str(l.CurrentUserID)
```

**Notes:** The real user ID is that of the user who has invoked the program. As the effective user ID gives the process additional permissions during execution of 'set-user-ID' mode processes, getuid() is used to determine the real-user-id of the calling process.

132.10.6 **LoadUserByID(userid as Integer)**

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Fills the properties of this class with the values for the user with the given ID.

**Example:**

```vbs```
    dim l as new DarwinUserMBS
    l.LoadUserByID l.CurrentUserID
    MsgBox l.Name
```

132.10.7 **LoadUserByName(name as string)**

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Fills the properties of this class with the values for the given user.

**Example:**

```vbs```
    dim l as new DarwinUserMBS
    l.LoadUserByName "cs"
    MsgBox l.LongName
```
132.10.8 Properties

132.10.9 AccountExpireTime as Integer

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The time when the account will expire. **Notes:** (Read only property)

132.10.10 GroupID as Integer

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The group ID of the user. **Example:**

```vba
dim l as new DarwinUserMBS
l.LoadUserByID l.CurrentUserID
MsgBox str(l.GroupID)
```

**Notes:** (Read only property)

132.10.11 HomePath as string

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The home path of the user. **Example:**

```vba
dim l as new DarwinUserMBS
l.LoadUserByName "cs"
MsgBox l.HomePath
```

**Notes:** (Read only property)

132.10.12 LastPasswordChangeTime as Integer

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last time when the user changed the password.
132.10.13 LongName as string

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The long name of the user.

**Example:**

```vba
dim l as new DarwinUserMBS
l.LoadUserByName "cs"
MsgBox l.LongName
```

**Notes:** (Read only property)

132.10.14 Name as string

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The short name of the user.

**Example:**

```vba
dim l as new DarwinUserListMBS

dim c as Integer = l.Count-1
for i as Integer = 0 to c
  dim u as DarwinUserMBS = l.User(i)
  if u.UserID = l.CurrentUserID then
    MsgBox "our user name: " + u.Name
  end if
next
```

**Notes:** (Read only property)

132.10.15 Ready as Boolean

MBS MacCF Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
whether the values in this class were filled correctly.

**Notes:** (Read only property)
### 132.10.16 Shell as string

**Function:** The path to the default shell for this user.

**Example:**

```vbnet
dim l as new DarwinUserMBS
l.LoadUserByID l.CurrentUserID
MsgBox l.Shell
```

**Notes:** (Read only property)

### 132.10.17 UserID as Integer

**Function:** The user ID of this user.

**Example:**

```vbnet
dim l as new DarwinUserMBS
l.LoadUserByID l.CurrentUserID
MsgBox str(l.UserID)
```

**Notes:** (Read only property)
132.11 class DarwinVMStatisticsMBS

MBS MacCF Plugin, Plugin Version: 2.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Holds information about the current Mac OS X memory status.
**Example:**
```
dim d as DarwinVMStatisticsMBS = GetDarwinVMStatisticsMBS
MsgBox str(d.pageins) + " page ins"
```

132.11.2 Properties

132.11.3 ActivePages as Integer

MBS MacCF Plugin, Plugin Version: 2.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The total number of pages currently in use and pageable.
**Example:**
```
dim d as DarwinVMStatisticsMBS = GetDarwinVMStatisticsMBS
MsgBox str(d.ActivePages)
```

**Notes:** (Read only property)

132.11.4 CowFaults as Integer

MBS MacCF Plugin, Plugin Version: 2.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The number of faults that caused a page to be copied (generally caused by copy-on-write faults).
**Example:**
```
dim d as DarwinVMStatisticsMBS = GetDarwinVMStatisticsMBS
MsgBox str(d.CowFaults)
```

**Notes:** (Read only property)
### 132.11.5 CPUTicksIdle as Integer

MBS MacCF Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of time slices used by the Idle process.

**Example:**
```vbs
dim d as DarwinVMStatisticsMBS = GetDarwinVMStatisticsMBS
MsgBox str(d.CPUTicksIdle)
```

**Notes:**
Calculate deltas like in the example to see usage of CPU time.
(Read only property)

### 132.11.6 CPUTicksNice as Integer

MBS MacCF Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of time slices used by the task switcher process.

**Example:**
```vbs
dim d as DarwinVMStatisticsMBS = GetDarwinVMStatisticsMBS
MsgBox str(d.CPUTicksNice)
```

**Notes:**
Calculate deltas like in the example to see usage of CPU time.
(Read only property)

### 132.11.7 CPUTicksSystem as Integer

MBS MacCF Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of time slices used by the system processes.

**Example:**
```vbs
dim d as DarwinVMStatisticsMBS = GetDarwinVMStatisticsMBS
MsgBox str(d.CPUTicksSystem)
```

**Notes:**
Calculate deltas like in the example to see usage of CPU time.
(Read only property)
132.11.8  CPUITicksUser as Integer

MBS MacCF Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The number of time slices used by the user application processes.
**Example:**
```vba
dim d as DarwinVMStatisticsMBS = GetDarwinVMStatisticsMBS
MsgBox str(d.CPUITicksUser)
```

**Notes:**
Calculate deltas like in the example to see usage of CPU time.
(Read only property)

132.11.9  Faults as Integer

MBS MacCF Plugin, Plugin Version: 2.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The number of times the "vm_fault" routine has been called.
**Example:**
```vba
dim d as DarwinVMStatisticsMBS = GetDarwinVMStatisticsMBS
MsgBox str(d.Faults)
```

**Notes:** (Read only property)

132.11.10  FreePages as Integer

MBS MacCF Plugin, Plugin Version: 2.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The total number of free pages in the system.
**Example:**
```vba
dim d as DarwinVMStatisticsMBS = GetDarwinVMStatisticsMBS
MsgBox str(d.FreePages)
```

**Notes:** (Read only property)
132.11.  CLASS DARWINVMSTATISTICSMBS

132.11.11  Hits as Integer

MBS MacCF Plugin, Plugin Version: 2.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The hit count.
**Example:**

```vbs
dim d as DarwinVMStatisticsMBS = GetDarwinVMStatisticsMBS
MsgBox str(d.Hits)
```

**Notes:** (Read only property)

132.11.12  InactivePages as Integer

MBS MacCF Plugin, Plugin Version: 2.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The total number of pages on the inactive list.
**Example:**

```vbs
dim d as DarwinVMStatisticsMBS = GetDarwinVMStatisticsMBS
MsgBox str(d.InactivePages)
```

**Notes:** (Read only property)

132.11.13  Lookups as Integer

MBS MacCF Plugin, Plugin Version: 2.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The count of lookups.
**Example:**

```vbs
dim d as DarwinVMStatisticsMBS = GetDarwinVMStatisticsMBS
MsgBox str(d.Lookups)
```

**Notes:** (Read only property)

132.11.14  PageIns as Integer

MBS MacCF Plugin, Plugin Version: 2.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of requests for pages from a pager (such as the inode pager).
**Example:**

```vbs
```
132.11.15  **PageOuts as Integer**

MBS MacCF Plugin, Plugin Version: 2.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The number of pages that have been paged out.
**Example:**
```vbs
dim d as DarwinVMStatisticsMBS = GetDarwinVMStatisticsMBS
MsgBox str(d.PageOuts)
```

**Notes:** (Read only property)

132.11.16  **Pagesize as Integer**

MBS MacCF Plugin, Plugin Version: 2.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The size of one memory page in memory.
**Example:**
```vbs
dim d as DarwinVMStatisticsMBS = GetDarwinVMStatisticsMBS
MsgBox str(d.Pagesize)
```

**Notes:**
On PowerPC CPUs, it should be 4096 Bytes.
(Read only property)

132.11.17  **Reactivations as Integer**

MBS MacCF Plugin, Plugin Version: 2.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
the total number of pages that have been moved from the inactive list to the active list (reactivated).
**Example:**
```vbs
dim d as DarwinVMStatisticsMBS = GetDarwinVMStatisticsMBS
MsgBox str(d.Reactivations)
```
Notes: (Read only property)

132.11.18 WiredPages as Integer

MBS MacCF Plugin, Plugin Version: 2.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The total number of pages wired down. That is, pages that cannot be paged out.

**Example:**

```vbnet
dim d as DarwinVMStatisticsMBS = GetDarwinVMStatisticsMBS
MsgBox str(d.WiredPages)
```

Notes: (Read only property)

132.11.19 ZeroFillPages as Integer

MBS MacCF Plugin, Plugin Version: 2.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The total number of pages that have been zero-filled on demand.

**Example:**

```vbnet
dim d as DarwinVMStatisticsMBS = GetDarwinVMStatisticsMBS
MsgBox str(d.ZeroFillPages)
```

Notes: (Read only property)
132.12 class EnvironmentMBS

132.12.1 class EnvironmentMBS

MBS Util Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Allows you to access system wide environment properties.

132.12.2 Methods

132.12.3 Add(name as string, value as string) as boolean

MBS Util Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Add a property to the list.

**Example:**

```
dim e as EnvironmentMBS

e = new EnvironmentMBS
if e.add("authorname", "Christian") then
    msgbox "ok"
else
    msgbox "fail"
end if
```

**Notes:** Setting this value to some new value will currently only change this value for your application and all child applications.

132.12.4 Get(name as string) as string

MBS Util Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the value for a named property.

**Example:**

```
dim e as EnvironmentMBS

e = new EnvironmentMBS
msgbox e.get("windir") // normally c:\windows
```
132.12.5  Lines as string()

MBS Util Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns array of definition lines of environment variables.  
**Example:**
```
dim e as new EnvironmentMBS
msgbox join(e.lines, endofline)
```

**Notes:** Returned strings are in format "name=value".

132.12.6  Name(Index as Integer) as string

MBS Util Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the name of the environment property number n.

132.12.7  Names as string()

MBS Util Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns array of names of environment variables.  
**Example:**
```
dim e as new EnvironmentMBS
msgbox join(e.lines, endofline)
```

132.12.8  Update

MBS Util Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Updates the object to the current environment properties.  
**Notes:** This method is called by the constructor and the methods which change the environment properties.

132.12.9  Properties

132.12.10  Count as Integer

MBS Util Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the number of environment properties.  
**Example:**
dim e as EnvironmentMBS

e=new EnvironmentMBS
msgbox str(e.count)

Notes: (Read only property)

132.12.11 Value(Index as Integer) as string

MBS Util Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the value of the environment property number n. **Notes:** Setting this value to some new value will currently only change this value for your application and all child applications. (Read and Write computed property)
132.13   CLASS MUTEXMBS

132.13 class MutexMBS

132.13.1 class MutexMBS

MBS Util Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A class for a mutex.

**Notes:**
This is the mutex class the threadMBS class is using internally.
A mutex is not locked by default.

132.13.2 Methods

132.13.3 Lock

MBS Util Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Locks the mutex.

**Example:**

```vba
dim m as new MutexMBS

m.Lock
MsgBox "Got mutex."

m.Unlock
MsgBox "Released mutex."
```

**Notes:**
The function returns as soon as it has access to the mutex.

Always use Lock and Unlock in a pair.

132.13.4 TryLock as boolean

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Locks the mutex if possible.

**Example:**

```vba
dim m as new MutexMBS

if m.TryLock then
```

```vba
```

```vba```
MsgBox "Got mutex."

m.Unlock
else
MsgBox "Failed to get mutex."
end if

Notes:
Returns true if we got a lock and false if not. Always use Lock and Unlock in a pair.

132.13.5 Unlock

MBS Util Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Unlocks the mutex.
**Example:**

dim m as new MutexMBS
m.Lock
MsgBox "Got mutex."

m.Unlock
MsgBox "Released mutex."

Notes: Always use Lock and Unlock in a pair.

132.13.6 Properties

132.13.7 Handle as Integer

MBS Util Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal used reference to the native mutex object.
**Example:**

dim m as new MutexMBS
MsgBox "Handle: " + hex(m.Handle)

Notes:
132.13. **CLASS MUTEXMBS**

Windows Mutex or PThread Mutex.
(Read and Write property)

### 132.13.8 Tag as Variant

MBS Util Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
An object reference for your use.
**Notes:**
Just for convenience.
This property was added so you can use this property for a reference so you won’t need to subclass this class and add custom properties.
(Read and Write property)
132.14 class NSProcessInfoActivityMBS

132.14.1 class NSProcessInfoActivityMBS

Function: The class for an activity.
Example:

dim Activity as NSProcessInfoActivityMBS // property in your window, control, thread, app
dim AllowAppNap as boolean // allow or not?

dim ProcessInfo as NSProcessInfoMBS = NSProcessInfoMBS.processInfo
if AllowAppNap then
    Activity = nil
else
    // disable sleep to let us make something...
    Activity = ProcessInfo.beginActivity(NSProcessInfoMBS.NSActivityBackground, "Backup running")
end if

Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

132.14.2 Methods

132.14.3 Constructor

Function: Private constructor.

132.14.4 Destructor

Function: The destructor.
Notes: If you missed to call endActivity, the destructor will do it.
132.14.5 Properties

132.14.6 Handle as Integer


132.14.7 Options as Integer

MBS MacCocoa Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The options used to create activity. Notes: (Read and Write property)

132.14.8 Reason as String

MBS MacCocoa Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The reason used to create the activity. Notes: (Read and Write property)
132.15 class NSProcessInfoMBS

132.15.1 class NSProcessInfoMBS

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The NSProcessInfo class provides methods to access information about the current process. **Notes:**

Each process has a single, shared NSProcessInfo object, known as process information agent.

The process information agent can return such information as the arguments, environment variables, host name, or process name. The processInfo class method returns the shared agent for the current process that is, the process whose object sent the message. For example, the following line returns the NSProcessInfo object, which then provides the name of the current process:

```dim processInfo as new NSProcessInfoMBS
dim processName as string = processInfo.processName```

The NSProcessInfo class also includes the operatingSystem method, which returns an enum constant identifying the operating system on which the process is executing.

NSProcessInfo objects attempt to interpret environment variables and command-line arguments in the user’s default C string encoding if they cannot be converted to Unicode as UTF-8 strings. If neither conversion works, these values are ignored by the NSProcessInfo object.

132.15.2 Methods

132.15.3 argument(index as Integer) as string

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the command-line argument for the process with the given index. **Example:**

```dim p as new NSProcessInfoMBS
dim i,c as Integer
c=p.argumentCount-1
for i=0 to c
    MsgBox p.argument(i)
next```
132.15. **CLASS NSPROCESSINFOMBS**

132.15.4 **arguments as string()**

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the command-line arguments for the process. **Notes:** Returns array of strings with the process’s command-line arguments.

132.15.5 **beginActivity(options as Integer, reason as string) as NSProcessInfoActivityMBS**

MBS MacCocoa Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Begin an activity using the given options and reason. **Example:**

```lisp
dim Activity as NSProcessInfoActivityMBS // property in your window, control, thread, app
dim AllowAppNap as boolean // allow or not?

dim ProcessInfo as NSProcessInfoMBS = NSProcessInfoMBS.processInfo
if AllowAppNap then
    Activity = nil
else
    // disable sleep to let us make something...
    Activity = ProcessInfo.beginActivity(NSProcessInfoMBS.NSActivityBackground, "Backup running")
end if
```

**Notes:**

- options: Options for the activity. See constants for possible values.
- reason: A string used in debugging to indicate the reason the activity began.

Returns an object token representing the activity.

Indicate completion of the activity by calling endActivity passing the returned object as the argument. Available in OS X v10.9 and later.

132.15.6 **Constructor**

MBS MacCocoa Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor.
132.15.7 disableAutomaticTermination(Reason as string)


Function: Decrement the counter tracking the number of automatic quit opt-out requests.

Notes:
When this counter is greater than zero, the app will be considered 'active' and ineligible for automatic termination.
An example of using this would be disabling autoquitting when the user of an instant messaging application signs on, due to it requiring a background connection to be maintained even if the app is otherwise inactive.
Each pair of calls should have a matching "reason" argument, which can be used to easily track why an application is or is not automatically terminable.
A given reason can be used more than once at the same time (for example: two files are transferring over the network, each one disables automatic termination with the reason "file transfer in progress")

132.15.8 disableSuddenTermination


Function: Disables the application for quickly killing using sudden termination.

Notes:
This method increments the sudden termination counter. When the termination counter reaches 0 the application allows sudden termination.

By default the sudden termination counter is set to 1. This can be overridden in your application Info.plist. See "Sudden Termination" for more information and debugging suggestions.

Available in Mac OS X v10.6 and later.

132.15.9 enableAutomaticTermination(Reason as string)


Function: Increment the counter tracking the number of automatic quit opt-out requests.

Notes:
When this counter is greater than zero, the app will be considered 'active' and ineligible for automatic termination.
An example of using this would be disabling autoquitting when the user of an instant messaging application signs on, due to it requiring a background connection to be maintained even if the app is otherwise inactive.
Each pair of calls should have a matching "reason" argument, which can be used to easily track why an application is or is not automatically terminable.
A given reason can be used more than once at the same time (for example: two files are transferring over the network, each one disables automatic termination with the reason "file transfer in progress")
132.15. **CLASS NSPROCESSINFOMBS**

132.15.10 **enableSuddenTermination**

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Enables the application for quick killing using sudden termination. **Notes:**

This method decrements the sudden termination counter. When the termination counter reaches 0 the application allows sudden termination.

By default the sudden termination counter is set to 1. This can be overridden in your application Info.plist. See "Sudden Termination" for more information and debugging suggestions.

Available in Mac OS X v10.6 and later.

132.15.11 **endActivity(activity as NSProcessInfoActivityMBS)**

MBS MacCocoa Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Ends the given activity. **Notes:**

activity: An activity object returned by beginActivity. Available in OS X v10.9 and later.

132.15.12 **NSActivityLatencyCritical as UInt64**

MBS MacCocoa Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the activity option constants. **Notes:**

Flag to indicate the activity requires the highest amount of timer and I/O precision available. Important: Very few applications should need to use this constant. Available in OS X v10.9 and later. Value is &hFF00000000.

132.15.13 **NSProcessInfoThermalStateChangedNotification as String**

MBS MacCocoa Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The notification name to use with NSNotificationObserverMBS. **Notes:**

This notification is posted once the thermal state of the system has changed. Once the notification is posted, use the thermalState property to retrieve the current thermal state of the system.
You can use this opportunity to take corrective action in your application to help cool the system down. Work that could be done in the background or at opportunistic times should be using the Quality of Service levels in NSOperation or the NSBackgroundActivityScheduler API.

This notification is posted on the global dispatch queue. Register for it using the default notification center. The object associated with the notification is NSProcessInfoMBS:processInfo.

### 132.15.14 processInfo as NSProcessInfoMBS

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the process information agent for the process.

### 132.15.15 Properties

#### 132.15.16 activeProcessorCount as Integer

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Provides the number of active processing cores available on the computer.  
**Example:**
```vba
dim p as new NSProcessInfoMBS
MsgBox str(p.activeProcessorCount)
```

**Notes:**
Available in Mac OS X v10.5 and later.  
(Read only property)

#### 132.15.17 argumentsCount as Integer

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of the command-line arguments.  
**Example:**
```vba
dim p as new NSProcessInfoMBS
dim i,c as Integer
```
c=p.argumentCount-1
for i=0 to c
MsgBox p.argument(i)
next

Notes: (Read only property)

132.15.18 automaticTerminationSupportEnabled as boolean

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Marks the calling app as supporting automatic termination. Notes:
Without calling this or setting the equivalent Info.plist key (NSSupportsAutomaticTermination), the above methods (disableAutomaticTermination/enableAutomaticTermination) have no effect, although the counter tracking automatic termination opt-outs is still kept up to date to ensure correctness if this is called later. Currently, passing false has no effect. This should be called during applicationDidFinishLaunching or earlier.
(Read and Write property)

132.15.19 environment as dictionary

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the variable names and their values in the environment from which the process was launched. Example:

dim p as new NSProcessInfoMBS
dim d as Dictionary = p.environment
MsgBox str(d.Count)

Notes: (Read only property)

132.15.20 globallyUniqueString as string

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a global unique identifier for the process. Example:

dim p as new NSProcessInfoMBS
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MsgBox p.globallyUniqueString // shows for example "072EC09A-4825-11DD-BDC0-001D4F46F5E0-18405-00000CA853EB5B46"

Notes:
Returns the Global ID for the process. The ID includes the host name, process ID, and a time stamp, which ensures that the ID is unique for the network.

This method generates a new string each time it is invoked, so it also uses a counter to guarantee that strings created from the same process are unique.
(Read only property)

132.15.21 Handle as Integer

Notes: (Read and Write property)

132.15.22 hostName as string

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the name of the host computer.
Example:

dim p as new NSProcessInfoMBS

MsgBox p.hostName // for example "iMac.local"

Notes: (Read only property)

132.15.23 operatingSystem as Integer

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a constant to indicate the operating system on which the process is executing.
Example:

dim p as new NSProcessInfoMBS

MsgBox str(p.operatingSystem) // shows 5 = NSMACHOperatingSystem
Notes:
Operating system identifier. See "Constants" for a list of possible values. In Mac OS X, it’s NSMACHOOperatingSystem.
(Read only property)

132.15.24 operatingSystemName as string

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a string containing the name of the operating system on which the process is executing.
Example:

dim p as new NSProcessInfoMBS

MsgBox p.operatingSystemName // shows "NSMACHOOperatingSystem"

Notes:
Operating system name. In Mac OS X, it’s "NSMACHOOperatingSystem"
(Read only property)

132.15.25 operatingSystemVersionString as string

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a string containing the version of the operating system on which the process is executing.
Example:

dim p as new NSProcessInfoMBS

MsgBox p.operatingSystemVersionString // "Version 10.5.4 (Build 9E17)"

Notes:
Returns the Operating system version. This string is human readable, localized, and is appropriate for displaying to the user. This string is not appropriate for parsing.
(Read only property)
132.15.26  physicalMemory as UInt64

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Provides the amount of physical memory on the computer.  
**Example:**  
```vba
dim p as new NSProcessInfoMBS

MsgBox str(p.physicalMemory)
```

**Notes:**  
Available in Mac OS X v10.5 and later.  
*(Read only property)*

132.15.27  processIdentifier as Integer

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the identifier of the process.  
**Example:**  
```vba
dim p as new NSProcessInfoMBS

MsgBox str(p.processIdentifier)
```

**Notes:**  
*(Read only property)*

132.15.28  processName as string

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of the process.  
**Example:**  
```vba
dim p as new NSProcessInfoMBS

MsgBox p.processName
```

**Notes:**  
The process name is used to register application defaults and is used in error messages. It does not uniquely identify the process.
You can assign a new value, but:
User defaults and other aspects of the environment might depend on the process name, so be very careful if you change it. Setting the process name in this manner is not thread safe.
(Read and Write property)

**132.15.29 processorCount as Integer**

MBS MacCocoa Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Provides the number of processing cores available on the computer.

**Example**:

```vba
dim p as new NSProcessInfoMBS

MsgBox str(p.processorCount)
```

**Notes**:
Available in Mac OS X v10.5 and later.
(Read only property)

**132.15.30 systemUptime as Double**

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Returns the how long it has been since the computer has been restarted.

**Notes**:
Returns an NSTimeInterval indicating how long system the computer has been restarted.
Available in Mac OS X v10.6 and later.
(Read only property)

**132.15.31 thermalState as Integer**

MBS MacCocoa Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Retrieve the current thermal state of the system.

**Example**:

```vba
dim n as NSProcessInfoMBS = NSProcessInfoMBS.processInfo

Select case n.thermalState
case n.NSProcessInfoThermalStateNominal
```
MsgBox "Thermal State: Nominal"
case n.NSProcessInfoThermalStateFair
MsgBox "Thermal State: Fair"
case n.NSProcessInfoThermalStateSerious
MsgBox "Thermal State: Serious"
case n.NSProcessInfoThermalStateCritical
MsgBox "Thermal State: Critical"
else
MsgBox "Thermal State: Unknown"
end Select

Notes:
On systems where thermal state is unknown or unsupported, the value returned from the thermalState property is always NSProcessInfoThermalStateNominal.

Available in Mac OS X 10.10.3 and newer.
Returns -1 if function is called on older Mac OS X versions, Linux or Windows.
(Read only property)

132.15.32 Constants

132.15.33 NSActivityAutomaticTerminationDisabled = & h8000

Notes:
Flag to prevent automatic termination.
Available in OS X v10.9 and later.

132.15.34 NSActivityBackground = & h000000FF

Notes:
Flag to indicate the app has initiated some kind of work, but not as the direct result of user request.
Available in OS X v10.9 and later.
132.15.35  **NSActivityIdleDisplaySleepDisabled = & h10000000000**

MBS MacCocoa Plugin, Plugin Version: 13.5. **Function:** One of the activity option constants. **Notes:**

Flag to require the screen to stay powered on.
Available in OS X v10.9 and later.

132.15.36  **NSActivityIdleSystemSleepDisabled = & h100000**

MBS MacCocoa Plugin, Plugin Version: 13.5. **Function:** One of the activity option constants. **Notes:**

Flag to prevent idle sleep.
This is included in NSActivityUserInitiatedAllowingIdleSystemSleep.
Available in OS X v10.9 and later.

132.15.37  **NSActivitySuddenTerminationDisabled = & h4000**

MBS MacCocoa Plugin, Plugin Version: 13.5. **Function:** One of the activity option constants. **Notes:**

Flag to prevent sudden termination.
This is included in NSActivityUserInitiatedAllowingIdleSystemSleep.
Available in OS X v10.9 and later.

132.15.38  **NSActivityUserInitiated = & h00FFFFFF**

MBS MacCocoa Plugin, Plugin Version: 13.5. **Function:** One of the activity option constants. **Notes:**

Flag to indicate the app is performing a user-requested action.
Available in OS X v10.9 and later.

132.15.39  **NSActivityUserInitiatedAllowingIdleSystemSleep = & h00EFFFFF**

MBS MacCocoa Plugin, Plugin Version: 13.5. **Function:** One of the activity option constants. **Notes:**

Flag to indicate the app is performing a user-requested action, but that the system can sleep on idle.
Available in OS X v10.9 and later.
132.15.40  NSHPUXOperatingSystem=4

MBS MacCocoa Plugin, Plugin Version: 8.4. **Function:** One of the following constants are provided by the NSProcessInfo class as return values for operatingSystem.
**Notes:** Indicates the HP UX operating system.

132.15.41  NSMACHOperatingSystem=5

MBS MacCocoa Plugin, Plugin Version: 8.4. **Function:** One of the following constants are provided by the NSProcessInfo class as return values for operatingSystem.
**Example:**
```dim p as new NSProcessInfoMBS
MsgBox str(p.operatingSystem) // shows 5 = NSMACHOperatingSystem```
**Notes:** Indicates the Mac OS X operating system.

132.15.42  NSOSF1OperatingSystem=7

MBS MacCocoa Plugin, Plugin Version: 8.4. **Function:** One of the following constants are provided by the NSProcessInfo class as return values for operatingSystem.
**Notes:** Indicates the OSF/1 operating system.

132.15.43  NSProcessInfoThermalStateCritical = 3

MBS MacCocoa Plugin, Plugin Version: 15.1. **Function:** One of the constants describing the current thermal state of the system.
**Notes:** System performance is significantly impacted and the Mac needs to cool down. Recommendation: reduce application’s usage of CPU, GPU, and I/O to the minimum level needed to respond to user actions. Consider stopping use of camera and other peripherals if your application is using them.

132.15.44  NSProcessInfoThermalStateFair = 1

MBS MacCocoa Plugin, Plugin Version: 15.1. **Function:** One of the constants describing the current thermal state of the system.
**Notes:** The system has reached a state where fans may become audible.
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132.15.45  NSProcessInfoThermalStateNominal = 0

MBS MacCocoa Plugin, Plugin Version: 15.1. **Function:** One of the constants describing the current thermal state of the system.  
**Notes:** No corrective action is needed.

132.15.46  NSProcessInfoThermalStateSerious = 2

MBS MacCocoa Plugin, Plugin Version: 15.1. **Function:** One of the constants describing the current thermal state of the system.  
**Notes:** Fans are running at maximum speed, system performance maybe impacted. Recommendation: reduce application’s usage of CPU, GPU and I/O, if possible. Switch to lower quality visual effects, reduce frame rates.

132.15.47  NSSolarisOperatingSystem=3

MBS MacCocoa Plugin, Plugin Version: 8.4. **Function:** One of the following constants are provided by the NSProcessInfo class as return values for operatingSystem.  
**Notes:** Indicates the Solaris operating system.

132.15.48  NSSunOSOperatingSystem=6

MBS MacCocoa Plugin, Plugin Version: 8.4. **Function:** One of the following constants are provided by the NSProcessInfo class as return values for operatingSystem.  
**Notes:** Indicates the Sun OS operating system.

132.15.49  NSWindows95OperatingSystem=2

MBS MacCocoa Plugin, Plugin Version: 8.4. **Function:** One of the following constants are provided by the NSProcessInfo class as return values for operatingSystem.  
**Notes:** Indicates the Windows 95 operating system.

132.15.50  NSWindowsNTOperatingSystem=1

MBS MacCocoa Plugin, Plugin Version: 8.4. **Function:** One of the following constants are provided by the NSProcessInfo class as return values for operatingSystem.  
**Notes:** Indicates the Windows NT operating system.
132.16 class NSRunningApplicationMBS

132.16.1 class NSRunningApplicationMBS

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: NSRunningApplication is a class to manipulate and provide information for a single instance of an application.

Example:

```plaintext
dim n as new NSRunningApplicationMBS

MsgBox n.localizedNome
```

Notes:

Only user applications are tracked; this does not provide information about every process on the system. Some properties of an application are fixed, such as the bundle identifier. Other properties may vary over time, such as whether the app is hidden. Properties that vary can be observed with key-value observing, in which case the description comment for the method notes this capability.

Properties that vary over time are inherently race-prone. For example, a hidden app may unhide itself at any time. To ameliorate this, properties persist until the next turn of the main run loop in a common mode. For example, if you repeatedly poll an unhidden app for its hidden property without allowing the run loop to run, it will continue to return false, even if the app hides, until the next turn of the run loop.

NSRunningApplication is thread safe, in that its properties are returned atomically. However, it is still subject to the main run loop policy described above. If you access an instance of NSRunningApplication from a background thread, be aware that its time-varying properties may change from under you as the main run loop runs (or not).

An NSRunningApplication instance remains valid after the application exits. However, most properties lose their significance, and some properties may not be available on a terminated application.

Requires Mac OS X 10.6.

132.16.2 Methods

132.16.3 activateWithOptions(options as Integer) as boolean


Notes:

options: The options to use when activating the application. See "NSApplicationActivationOptions" for the possible values.
Returns true if the application was activated successfully, otherwise false.

This method will return false if the application has quit, or is not a type of application than can be activated.

Available in Mac OS X v10.6 and later.

**132.16.4 Constructor**


**Example:**

```dim n as new NSRunningApplicationMBS
MsgBox n.localized Name```

**Notes:**

Initializes the object with the current application.
Available in Mac OS X v10.6 and later.

**132.16.5 currentApplication as NSRunningApplicationMBS**

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an NSRunningApplication representing this application.

**Example:**

```dim n as NSRunningApplicationMBS = NSRunningApplicationMBS.currentApplication
MsgBox n.localized Name```

**Notes:** Available in Mac OS X v10.6 and later.

**132.16.6 forceTerminate as boolean**

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Attempts to force the receiver to quit.

**Notes:**
Returns true if the application successfully terminated, otherwise false.

This method will return false if the application is no longer running when the forceTerminate message is sent to the receiver.

This method may return before the receiver exits; you should observe the terminated property to determine when the application terminates.

Available in Mac OS X v10.6 and later.

132.16.7 hide as boolean

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Attempts to hide or the application.

**Example:**

```vbnet
dim n as NSRunningApplicationMBS = NSRunningApplicationMBS.currentApplication
MsgBox str(n.hide) // hide me
```

**Notes:**

The property of this value will be false if the application has already quit, or if of a type that is unable to be hidden.

Available in Mac OS X v10.6 and later.

132.16.8 runningApplications as NSRunningApplicationMBS()


**Example:**

```vbnet
dim n(-1) as NSRunningApplicationMBS = NSRunningApplicationMBS.runningApplications
dim s(-1) as string
for each r as NSRunningApplicationMBS in n
    s.Append r.localizedName
next
MsgBox Join(s,EndOfLine)
```
132.16. **CLASS NSRUNNINGAPPLICATIONMBS**  

**Notes:**  
Returns an array of NSRunningApplication instances.

The order of the array is unspecified, but it is stable, meaning that the relative order of particular applications will not change across multiple calls to runningApplications. See NSRunningApplication Class Reference for more information on NSRunningApplication.  
Similar to the NSRunningApplication classes's properties, this property will only change when the main run loop is run in a common mode. Instead of polling, use key-value observing to be notified of changes to this array property.  
This property is thread safe, in that it may be called from background threads and the result is returned atomically.  

This list is not updated in a tight loop. For receiving updates, you need to have the runloop run (e.g. check regularly in a timer).

### 132.16.9 `runningApplicationsWithBundleIdentifier(bundleID as string) as NSRunningApplicationMBS()`  

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of currently running applications with the specified bundle identifier.  
**Example:**

```vba  
dim n(-1) as NSRunningApplicationMBS = NSRunningApplicationMBS.runningApplicationsWithBundleIdentifier("com.apple.iTunes")  
if UBound(n)>0 then  
    MsgBox n(0).localizedName  
else  
    MsgBox "iTunes is not running?"  
end if  
```

**Notes:**  
An array of NSRunningApplications, or an empty array if no applications match the bundle identifier.  
Available in Mac OS X v10.6 and later.

### 132.16.10 `runningApplicationWithProcessIdentifier(pid as Integer) as NSRunningApplicationMBS`  

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the running application with the given process identifier, or nil if no application has that pid.
Example:

```swift
dim n as NSRunningApplicationMBS
dim pid as Integer

while n=nil
pid=pid+1
n=NSRunningApplicationMBS.runningApplicationWithProcessIdentifier(pid)
wend

MsgBox n.localizedName+" has PID "+str(pid)
```

Notes:

pid: The process identifier.

Returns an instance of NSRunningApplication for the specified pid, or nil if the application has no process identifier.

Applications that do not have PIDs cannot be returned from this method.

Available in Mac OS X v10.6 and later.

132.16.11 terminate as boolean

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Attempts to quit the receiver normally.

**Notes:**

Returns true if the application successfully terminated, otherwise false.

This method will return false if the application is no longer running when the terminate message is sent to the receiver.

This method may return before the receiver exits; you should observe the terminated property to determine when the application terminates.

Available in Mac OS X v10.6 and later.

132.16.12 unhide as boolean

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Attempts to unhide or the application.
Notes:

Returns true if the application was successfully shown, otherwise false.

The property of this value will be false if the application has already quit, or if of a type that is unable to be hidden.

Available in Mac OS X v10.6 and later.

132.16.13 Properties

132.16.14 activationPolicy as Integer

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Indicates the activation policy of the application. (read-only)

Notes:

The value returned by this property is usually fixed, but it may change through a call to activateWithOptions.

Available in Mac OS X v10.6 and later.

(Read only property)

132.16.15 active as boolean

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Indicates whether the application is currently frontmost. (read-only)

Example:

```dim n as new NSRunningApplicationMBS
MsgBox str(n.active)`

Notes:

Available in Mac OS X v10.6 and later.

(Read only property)
132.16.16  bundleIdentifier as string

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates the CFBundleIdentifier of the application. (read-only)

**Example:**

```vbscript
dim n as new NSRunningApplicationMBS
MsgBox n.bundleIdentifier
```

**Notes:**
The value of this property will be nil if the application does not have an Info.plist.
(Read only property)

132.16.17  bundleURL as string

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates the URL to the application’s bundle. (read-only)

**Example:**

```vbscript
dim n as new NSRunningApplicationMBS
MsgBox n.bundleURL
```

**Notes:**
Available in Mac OS X v10.6 and later.
(Read only property)

132.16.18  executableArchitecture as Integer

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates the URL to the application’s executable. (read-only)

**Example:**

```vbscript
dim n as new NSRunningApplicationMBS
MsgBox str(n.executableArchitecture) // shows 7
```

**Notes:**
Available in Mac OS X v10.6 and later.
(Read only property)

132.16.19 executableURL as string

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates the URL to the application’s executable. (read-only)

**Example:**

```plaintext
dim n as new NSRunningApplicationMBS

MsgBox n.executableURL
```

**Notes:**

Available in Mac OS X v10.6 and later.
(Read only property)

132.16.20 finishedLaunching as boolean

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates whether the receiver’s process has finished launching, (read-only)

**Notes:**

The value of this property corresponds to the running application having received an NSApplicationDidFinishLaunchingNotification notification internally. Some applications do not post this notification (applications that do not rely on NSApplication) and so are never reported as finished launching.

Available in Mac OS X v10.6 and later.
(Read only property)

132.16.21 Handle as Integer

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal reference to the NSRunningApplication object.

**Notes:** (Read and Write property)
132.16.22  hidden as boolean

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates whether the application is currently hidden. (read-only)

**Example:**

```vbs
Dim n As New NSRunningApplicationMBS
MsgBox Str(n.hidden)
```

**Notes:**

Available in Mac OS X v10.6 and later.
(Read only property)

132.16.23  icon as NSImageMBS

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the icon for the receiver’s application. (read-only)

**Example:**

```vbs
Dim n As New NSRunningApplicationMBS
Dim i As NSImageMBS = n.icon

// without this call the size is 32x32 Pixel
i.setSize 512,512
Backdrop = i.CopyPictureWithMask
```

**Notes:**

Available in Mac OS X v10.6 and later.
(Read only property)

132.16.24  launchDate as date

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates the date when the application was launched. (read-only)

**Example:**
132.16. CLASS NSRUNNINGAPPLICATIONMBS

dim n as new NSRunningApplicationMBS

MsgBox n.launchDate.ShortTime

Notes:
This property is not available for all applications. Specifically, it is not available for applications that were launched not launched by LaunchServices. Available in Mac OS X v10.6 and later. (Read only property)

132.16.25  localizedName as string

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Indicates the localized name of the application. (read-only)

Example:

dim n as new NSRunningApplicationMBS

MsgBox n.localizedDescription

Notes:
The value of this property is dependent on the current localization of the application and is suitable for presentation to the user. Available in Mac OS X v10.6 and later. (Read only property)

132.16.26  ownsMenuBar as boolean


Example:

// put in a timer...
dim r as NSRunningApplicationMBS = NSRunningApplicationMBS.currentApplication
window1.Title = str(r.ownsMenuBar)

Notes:
Available in Mac OS X v10.7 and later.
132.16.27  processIdentifier as Integer

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates the process identifier (pid) of the application. (read-only)

**Example:**

```dim n as new NSRunningApplicationMBS
MsgBox str(n.processIdentifier)`
```

**Notes:**

Not all applications have a pid. Applications without a return a value of -1. Do not rely on this for comparing processes, instead compare NSRunningApplication instances using isEqual:

Available in Mac OS X v10.6 and later.

(Read only property)

132.16.28  terminated as boolean

MBS MacCocoa Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates that the receiver’s application has terminated. (read-only)

**Notes:**

The value of terminated is true if the receiver’s application has terminated, otherwise false. This property is observable using key-value observing.

Available in Mac OS X v10.6 and later.

(Read only property)

132.16.29  Constants

132.16.30  NSApplicationActivateAllWindows = 1

MBS MacCocoa Plugin, Plugin Version: 9.7. **Function:** One of the flag constants for activateWithOptions.

**Notes:**

By default, activation brings only the main and key windows forward. If you specify NSApplicationActivateAllWindows, all of the application’s windows are brought forward.

Available in Mac OS X v10.6 and later.
132.16.31  NSApplicationActivateIgnoringOtherApps = 2

MBS MacCocoa Plugin, Plugin Version: 9.7. **Function:** One of the flag constants for activateWithOptions. **Notes:**
By default, activation deactivates the calling app (assuming it was active), and then the new app is activated only if there is no currently active application. This prevents the new app from stealing focus from the user, if the app is slow to activate and the user has switched to a different app in the interim. However, if you specify NSApplicationActivateIgnoringOtherApps, the application is activated regardless of the currently active app, potentially stealing focus from the user. You should rarely pass this flag because stealing key focus produces a very bad user experience. Available in Mac OS X v10.6 and later.

132.16.32  NSApplicationActivationPolicyAccessory = 1

MBS MacCocoa Plugin, Plugin Version: 9.7. **Function:** One of the constants used for following activation policies. **Notes:**
The application does not appear in the Dock and does not have a menu bar, but it may be activated programmatically or by clicking on one of its windows. This corresponds to value of the LSUIElement key in the application’s Info.plist being 1. Available in Mac OS X v10.6 and later.

132.16.33  NSApplicationActivationPolicyProhibited = 2

MBS MacCocoa Plugin, Plugin Version: 9.7. **Function:** One of the constants used for following activation policies. **Notes:**
The application does not appear in the Dock and may not create windows or be activated. This corresponds to the value of the LSBackgroundOnly key in the application’s Info.plist being 1. This is also the default for unbundled executables that do not have Info.plists. Available in Mac OS X v10.6 and later.

132.16.34  NSApplicationActivationPolicyRegular = 0

MBS MacCocoa Plugin, Plugin Version: 9.7. **Function:** One of the constants used for following activation policies. **Notes:**
The application is an ordinary app that appears in the Dock and may have a user interface. This is the default for bundled apps, unless overridden in the Info.plist.
Available in Mac OS X v10.6 and later.
132.17. CLASS NSXPCCONNECTIONMBS

132.17 class NSXPCConnectionMBS

132.17.1 class NSXPCConnectionMBS


Notes:
This class is the primary means of creating and configuring the communication mechanism between two processes. Each process has one instance of this class to represent the endpoint in the communication channel.

Requires a setup with info.plist entries, correct permissions and code signing.

132.17.2 Methods

132.17.3 Available as boolean


132.17.4 CallMethod(name as string, tag as Variant, params() as Variant)

Notes: Returns array of variant.

132.17.5 Close


132.17.6 Constructor(endpoint as NSXPCListenrEndpointMBS)

Notes:
endpoint: The desired listener endpoint for the service. Available in OS X v10.8 and later.

See also:

- 132.17.7 Constructor(MachOServiceName as string, flags as Integer)
- 132.17.8 Constructor(ServiceName as string)

### 132.17.7 Constructor(MachOServiceName as string, flags as Integer)


**Function:** Initializes an NSXPCConnection object to connect to a LaunchAgent or LaunchDaemon with a name advertised in a launchd.plist.

**Notes:**
For example, if an agent is managed with launchd and has a launchd.plist in textasciitilde /Library/LaunchAgents, this method would create a connection to that agent. The agent should use NSXPCListener to wait for new connections.

If the connection is being made to a process that is running in a privileged Mach bootstrap context (for example, a daemon started by a launchd property list in /Library/LaunchDaemons), then pass the NSXPCConnectionPrivileged option.

Available in OS X v10.8 and later.

See also:

- 132.17.6 Constructor(endpoint as NSXPCListenerEndpointMBS)
- 132.17.8 Constructor(ServiceName as string)

### 132.17.8 Constructor(ServiceName as string)


**Function:** Initializes an NSXPCConnection object to connect to an NSXPCListener object in an XPC service, identified by a service name.

**Notes:**
XPC services are helper processes that are usually part of your application bundle. The service should use NSXPCListener to wait for new connections.

Available in OS X v10.8 and later.

See also:

- 132.17.6 Constructor(endpoint as NSXPCListenerEndpointMBS)
- 132.17.7 Constructor(MachOServiceName as string, flags as Integer)
132.17.9 Destructor

Function: The destructor.

132.17.10 invalidate

Function: Invalidates the connection.
Notes: When you call this method, all outstanding reply blocks, error handling blocks, and invalidation blocks are called on the message handling queue. The connection must be invalidated before it is deallocated. After a connection is invalidated, no more messages may be sent or received.

132.17.11 resume

Function: Starts or resumes handling of messages on a connection.
Notes: All connections start suspended. You must resume them before they start processing received messages or sending messages through the remoteObjectProxy object.
Available in OS X v10.8 and later.

132.17.12 suspend

Function: Suspends the connection.
Notes: Suspend and resumes must be balanced before the connection may be invalidated.
Available in OS X v10.8 and later.

132.17.13 Properties

132.17.14 auditSessionIdentifier as Integer

Function: The BSM audit session identifier for the connecting process.
Notes:
This attribute may be used by the listener delegate to accept or reject connections.  
(Read only property)

132.17.15 effectiveGroupIdentifier as Integer

Function: The effective group ID (EGID) of the connecting process.  
Notes:  
This attribute may be used by the listener delegate to accept or reject connections.  
(Read only property)

132.17.16 effectiveUserIdentifier as Integer

Function: The effective user ID (EUID) of the connecting process.  
Notes:  
This attribute may be used by the listener delegate to accept or reject connections.  
(Read only property)

132.17.17 endpoint as NSXPCListenerEndpointMBS

Function: If the connection was created with an NSXPCListenerEndpoint object, returns the endpoint object used.  
Notes: (Read only property)

132.17.18 Handle as Integer

Function: The internal object reference.  
Notes: (Read and Write property)

132.17.19 processIdentifier as Integer

Function: The process ID (PID) of the connecting process.  
Notes:
This attribute may be used by the listener delegate to accept or reject connections. Available in OS X v10.8 and later. (Read only property)

**132.17.20**  
**serviceName as String**

**Function:** The name of the XPC service that this connection was configured to connect to.  
**Notes:** (Read only property)

**132.17.21**  
**Events**

**132.17.22**  
**CallMethodReturned(name as string, tag as Variant, Parameters() as Variant, Results() as Variant)**

**Function:** The event called when method returns.

**132.17.23**  
**ErrorHandler(error as NSErrorMBS)**

**Function:** The error event for errors happening when calling method.

**132.17.24**  
**InterruptionHandler**

**Function:** The event is called if the remote process exits or crashes.  
**Notes:** It may be possible to re-establish the connection by simply sending another message. The handler is invoked on the same queue as reply messages and other handlers, and it is always executed after any other messages or reply block handlers (except for the invalidation handler).

**132.17.25**  
**InvalidationHandler**

**Function:** This event is invoked on the same queue as reply messages and other handlers, and is always executed last (after the interruption handler, if required).
Notes: You may not send messages over the connection from within an invalidation handler block.

132.17.26 Constants

132.17.27 NSXPCConnectionPrivileged = 1

MBS MacFrameworks Plugin, Plugin Version: 14.2. **Function:** One of the options that you can pass to a connection.

**Notes:**

Use this option if connecting to a service in the privileged Mach bootstrap (for example, a daemon with a launchd.plist in /Library/LaunchDaemons).
Available in OS X v10.8 and later.
132.18. class NSXPCLISTENERENDPOINTMBS

132.18.1 class NSXPCLISTENERENDPOINTMBS

**Function:** Class that "names" a specific NSXPCLISTENER object.
**Notes:**
An instance may be retrieved from an NSXPCLISTENER and sent over existing NSXPCCONNECTIONS. A process may then use it to create a new NSXPCCONNECTION to the original NSXPCLISTENER.

This pattern is useful if you have a service which multiplexes work to other services. The service can act as an intermediate helper. The requesting application does not need to know specifically which service it is connecting to, just that it implements a known NSXPInterface.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

132.18.2 Methods

132.18.3 Available as boolean

**Function:** Whether this class is available.

132.18.4 Constructor

**Function:** The private constructor.

132.18.5 Properties

132.18.6 Handle as Integer

**Function:** The internal object reference.
**Notes:** (Read and Write property)
class NSXPCListenerMBS

class NSXPCListenerMBS

MBS MacFrameworks Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The NSXPCListener class and its delegate are responsible for waiting for new incoming connections, configuring them, and accepting or rejecting them.

**Notes:**

Each XPC service, launchd agent, or launchd daemon typically has at least one NSXPCListener object that listens for connections to a specified service name.

When the listener receives a new connection request, it creates a new NSXPCConnection object, then asks the delegate to inspect, configure, and resume the connection object by calling the delegate's shouldAcceptNewConnection event.

Methods

Available as boolean

MBS MacFrameworks Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this class is available.

Close


Constructor(Anonymous as boolean = false)


**Notes:**

If Anonymous is true: Initializes with a new anonymous listener connection.

If false: Initializes with the singleton listener used to listen for incoming connections in an XPC service.

see also:


See also:

- 132.19.6 Constructor(Name as string)
132.19. **CLASS NSXPCLISTENERMBS**

132.19.6 **Constructor(Name as string)**

**Function:** Initializes a listener in a LaunchAgent or LaunchDaemon which has a name advertised in a launchd.plist file.

**Notes:**
For example, you might use this in an agent launched by launchd with a launchd.plist contained in textasciitilde /Library/LaunchAgents, or a daemon launched by launchd with a launchd.plist contained in /Library/LaunchDaemons.

Available in OS X v10.8 and later.
See also:
- 132.19.5 Constructor(Anonymous as boolean = false)

132.19.7 **Destructor**

**Function:** The destructor.

132.19.8 **invalidate**

**Function:** Invalidates the listener.

**Notes:**
After calling this method, no more connections are created. Once a listener is invalidated it may not be resumed or suspended.
Available in OS X v10.8 and later.

132.19.9 **resume**

**Function:** Starts processing of incoming requests.

**Notes:**
All listeners start suspended and must be resumed before they begin processing incoming requests.

If called on the serviceListener object, this method never returns. Therefore, you should call it as the last step inside the XPC service’s main function after setting up any desired initial state and configuring the listener itself.
If called on any other NSXPCListener, the connection is resumed, and the method returns immediately.
Available in OS X v10.8 and later.

132.19.10 suspend

Function: Suspends the listener.
Notes:
Suspends and resumes must be balanced before the listener may be invalided.
Available in OS X v10.8 and later.

132.19.11 Properties

132.19.12 endpoint as NSXPCListenerEndpointMBS

Function: Returns an endpoint object that may be sent over an existing connection.
Notes:
The receiver of the endpoint can use this object to create a new connection to this NSXPCListener object.
The resulting NSXPCListenerEndpoint object uniquely names this listener object across connections.
(Read only property)

132.19.13 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

132.19.14 Events

132.19.15 CallMethod(Name as string, Parameters() as Variant) as Variant()

Function: Called on the listener side when a method was called on the connection.
Notes: Return array of variant for the results.
132.19.16   shouldAcceptNewConnection(newConnection as NSXPCConnectionMBS) as boolean


Function: Accepts or rejects a new connection to the listener.

Notes:
To accept the connection, first configure the connection if desired, then call resume on the new connection, then return true.
To reject the connect, return a value of false. This causes the connection object to be invalidated.
In this method, you can also set up properties on the connection object, such as its exported object and interfaces. Be sure to call resume when you are finished configuring the connection object and are ready for it to receive messages.
132.20 class ProcessMBS

132.20.1 class ProcessMBS

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Adds the class ProcessMBS to Realbasic to get details about all running applications.

**Example:**

```
// Shows how to use the processInformationCFDictionary function to
// decide on Mac OS X whether an application is a background only one.

dim myProcess as ProcessMBS
dim myCFDictionary as CFDictionaryMBS
dim myCFBoolean as CFBooleanMBS
dim myCFObject as CFObjectMBS

myProcess = new ProcessMBS
myProcess.GetCurrentProcess
myCFDictionary = CFDictionaryMBS(myProcess.processInformationCFDictionary)
myCFObject = myCFDictionary.Value(newcfstringmbs("LSBackgroundOnly"))
myCFBoolean = CFBooleanMBS(myCFObject)

if myCFBoolean.Value then
    MsgBox "is background"
else
    MsgBox "is not background"
end if
```

**Notes:**

Requires Windows 95 or Windows 2000 to run on Windows.

To find all windows on Windows, use the WindowsListMBS class.
To find all windows on Mac OS X, use the CGSWindowListMBS class.

132.20.2 Methods

132.20.3 Bundle as folderitem

MBS Util Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the bundle path.

**Notes:**

Maybe nil if not available.
132.20. **CLASS PROCESSMBS**

Returns on Mac OS X the path to the main bundle of the process.

### 132.20.4 BundleID as string

MBS Util Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the bundle identifier.  
**Notes:**  
Maybe "" if not available.  
Returns on Mac OS X the identifier to the main bundle of the process.

### 132.20.5 CurrentProcessID as Integer

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the process ID of the application.  
**Example:**  
MsgBox str(ProcessMBS.CurrentProcessID)

### 132.20.6 GetCurrentProcess

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Load the current Process' information into the class.  
**Notes:** This should always be your Realbasic application.

### 132.20.7 GetfirstProcess

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Load the first Process into the class.  
**Example:**  
```vbs
    dim p as ProcessMBS
    p=new ProcessMBS
    p.GetfirstProcess ' get first
    do
        MsgBox p.name
    loop until not p.GetNextProcess ' get next till no more
```
132.20.8 GetFrontProcess

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Load the frontmost Process’ information into the class.

132.20.9 GetNextProcess as boolean

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Load the next Process into the class.

**Example:**

```plaintext
dim p as ProcessMBS
p=new ProcessMBS
p.GetfirstProcess ' get first
do
msgBox p.name
loop until not p.GetNextProcess ' get next till no more
```

**Notes:** Returns true if successfull.

132.20.10 GetProcess(serial as memoryblock)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Load the process information for the process with the given serial.

132.20.11 KillProcess as Integer

MBS Util Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Kills a Process on Mac OS X or Windows.

**Example:**

```plaintext
dim p as ProcessMBS
p=new ProcessMBS
p.getCurrentprocess
msgbox str(p.killprocess)
```

**Notes:**

Returns -1 if function is not available. Else returns a Mac OS error code where 0 equals "no error".
132.20. CLASS PROCESSMBS

Sets the lasterror property.

Lasterror codes on Windows:
0 - failed
1 - normal exit
2 - forced exit

If you kill the main process of a task, this can kill the sub processes, too.
See also:

- 132.20.12 KillProcess(ProcessID as Integer, timeout as Integer) as Integer
- 132.20.13 KillProcess(timeoutms as Integer) as Integer

132.20.12 KillProcess(ProcessID as Integer, timeout as Integer) as Integer


**Example:**
```plaintext
cost pid = 12345 // put the PID here
call ProcessMBS.KillProcess pid, 100
```

**Notes:**
Returns -1 if function is not available. Else returns a Mac OS error code where 0 equals "no error".

Returns on Windows:
0 - failed
1 - normal exit
2 - forced exit

The timeout is in milliseconds.
If you kill the main process of a task, this can kill the sub processes, too.
See also:

- 132.20.11 KillProcess as Integer
- 132.20.13 KillProcess(timeoutms as Integer) as Integer

132.20.13 KillProcess(timeoutms as Integer) as Integer

MBS Util Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Kills a Process on Mac OS X or Windows.
Example:

dim p as ProcessMBS
p=new ProcessMBS
p.getcurrentprocess
msgbox str(p.killprocess)

Notes:
Returns -1 if function is not available. Else returns a Mac OS error code where 0 equals "no error".

Sets the lasterror property.

Lasterror codes on Windows:
0 - failed
1 - normal exit
2 - forced exit

The timeout is in milliseconds. If you don’t specify a timeout, 1000 ms are used.
If you kill the main process of a task, this can kill the sub processes, too.
See also:

- 132.20.11 KillProcess as Integer 18040
- 132.20.12 KillProcess(ProcessID as Integer, timeout as Integer) as Integer 18041

132.20.14 MacProcessSerial as memoryblock

MBS Util Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns the serial number for this process as a memoryblock with binary content.
Notes:
On Mac OS every process as its own unique ID. (If you launch one application two times, they may have everything equal except the process serial.)

The serial itself is a 8byte long memoryblock (two integer).

Returns nil on any error.
132.20.15  Priority(ProcessID as Integer) as Integer

MBS Util Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** Sets or gets priority for a process on Mac and Linux.

**Notes:**
Value is in the range -20 to 20. The default priority is 0; lower priorities cause more favorable scheduling.
For Windows, please use WinSetPriorityClass and WinGetPriorityClass.
(Read and Write computed property)

See also:
- 132.20.44 Priority as Integer

132.20.16  ProcessInformationCFDictionary as object

MBS Util Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a CFDictionaryMBS object with the properties of the process.

**Example:**
```vbs
dim p as ProcessMBS
dim d as CFDictionaryMBS

p=new ProcessMBS
p.GetCurrentProcess

d=CFDictionaryMBS(p.ProcessInformationCFDictionary)

if d=nil then
    MsgBox "This example works only on Mac OS X 10.2!"
else
    // use information in dictionary
end if
```

**Notes:**
Only available on Mac OS X 10.2 or newer.
(And in Mac OS X 10.2 is a bug which may lead into a crash by using this function. Fixed in Mac OS X 10.3)
The function returns a CFDictionaryMBS, but to avoid plugin dependencies, the function is declared as Object, so RB 4.5 don’t crash when an application uses the process plugin and dosn’t use the CF Plugin.

**Result:**
An immutable CFDictionary containing these keys and their values. Keys marked with an '*' are optional. Over time more keys may be added.
Key Name          Type
"PSN"             CFNumber, kCFNumberLongLongType
"Flavor"          CFNumber, kCFNumberSInt32
"Attributes"      CFNumber, kCFNumberSInt32
"ParentPSN"       CFNumber, kCFNumberLongLong
"FileType"        CFString, file type
"FileCreator"     CFString, file creator
"pid"             CFNumber, kCFNumberLongType
"LSBackgroundOnly" CFBoolean
"LSUIElement"     CFBoolean
"IsHiddenAttr"    CFBoolean
"IsCheckedInAttr" CFBoolean
"RequiresClassic" CFBoolean
"RequiresCarbon"  CFBoolean
"LSUserQuitOnly"  CFBoolean
"LSUIPresentationMode" CFNumber, kCFNumberShortType
"BundlePath"      CFString
kIOBundleExecutableKey CFString
kIOBundleNameKey   CFString
kIOBundleIdentifierKey CFString

132.20.17  QuitProcess as Integer

MBS Util Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Quits a Process on Mac OS.

**Example:**

```dim p as ProcessMBS
p=new ProcessMBS
p.getcurrentprocess
msgbox str(p.QuitProcess)```

**Notes:**

Returns -1 if function is not available. Else returns a Mac OS error code where 0 equals "no error". Sets the lasterror property.

132.20.18  SameAs(other as ProcessMBS) as boolean

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if two ProcessMBS objects have the same Process.
132.20.19 SetFrontProcessWithOptions(options as Integer)

MBS Util Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Moves the current process to the front.

**Example:**

```vba
dim p as ProcessMBS

// move my front window to the front
p=new ProcessMBS
p.GetCurrentProcess
p.SetFrontProcessWithOptions 1
```

**Notes:**

If you pass 0 in the options parameter, the process is activated and all process windows are brought forward.

If you pass kSetFrontProcessFrontWindowOnly (value 1), the process is activated and the frontmost non-floating window is brought forward. (Mac OS X only)

132.20.20 SetServiceMode(ismode as boolean) as boolean

MBS Util Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** If an application is a service, it is not listed inside the Windows force quit window.

**Notes:** Works only on Windows 95, 98 and ME.

132.20.21 TransformProcessType(mode as Integer) as Integer

MBS Util Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Changes the 'type' of the process specified in the psn parameter.

**Notes:**

Given a psn for an application, this call transforms that application into the given type. Foreground applications have a menu bar and appear in the Dock. Background applications do not appear in the Dock, do not have a menu bar (and should not have windows or other user interface). UIElement applications do not have a menu bar, do not appear in the dock, but may in limited circumstances present windows and user interface. If a foreground application is frontmost when transformed into a background application, it is first hidden and another application is made frontmost. A UIElement or background-only application which is transformed into a foreground application is not brought to the front (use SetFrontProcess() after the transform if this is required) nor will it be shown if it is hidden (even if hidden automatically by being transformed into a background-only application), so the caller should use ShowHideProcess() to show the application after it is transformed into a foreground application. Applications can only transform themselves;
this call cannot change the type of another application.

Returns error code (0 for success).

### 132.20.22 TransformToForegroundApplication as Integer

MBS Util Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Transforms a background application to a foreground application.

**Notes:**

Returns a Mac OS error code. Returns -1 if the function is not available. You need to select a process first with Get*Process functions.

Requires Mac OS X 10.3.

You can use this call to transform a background-only application into a foreground application. A foreground application appears in the Dock (and in the Force Quit dialog) and contains a menu bar. This function does not cause the application to be brought to the front; you must set FrontProcess=true to do so.

While available starting in 10.3 "Panther," calling TransformProcessType on a UIElement application in 10.3 or 10.4 will return paramErr (-50), rendering it only usable on a full BackgroundOnly application. Leopard supports foregrounding both UIElement and BackgroundOnly applications.

### 132.20.23 Update

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Updates the classes information.

**Notes:** Use it if you want the current CPUtiltime value after some time.

### 132.20.24 WinFullProcessImagePath as string

MBS Util Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Retrieves the full name of the executable image for the specified process.

**Notes:**

Returns empty string on any error like missing permissions.

The path is in the device style "Device\Harddisk0\Partition1\WINNT\System32\test.exe".

Requires Windows Vista or Windows Server 2008 or newer.
WinGetPriorityClass(ProcessID as Integer) as Integer

MBS Util Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Retrieves the priority class for the specified process.

**Notes:**

You can pass ProcessID -1 to get the current process. This value, together with the priority value of each thread of the process, determines each thread’s base priority level.

If the function succeeds, the return value is the priority class of the specified process.

The process’s priority class is one of the following values:

<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABOVE_NORMAL_PRIORITY_CLASS</td>
<td>&amp; h00008000</td>
<td>Process that has priority above NORMAL_PRIORITY_CLASS but below HIGH_PRIORITY_CLASS.</td>
</tr>
<tr>
<td>BELOW_NORMAL_PRIORITY_CLASS</td>
<td>&amp; h00004000</td>
<td>Process that has priority above IDLE_PRIORITY_CLASS but below NORMAL_PRIORITY_CLASS.</td>
</tr>
<tr>
<td>HIGH_PRIORITY_CLASS</td>
<td>&amp; h00000800</td>
<td>Process that performs time-critical tasks that must be executed immediately for it to run correctly. The threads of a high-priority class process preempt the threads of normal or idle priority class processes. An example is the Task List, which must respond quickly when called by the user, regardless of the load on the operating system. Use extreme care when using the high-priority class, because a high-priority class CPU-bound application can use nearly all available cycles.</td>
</tr>
<tr>
<td>IDLE_PRIORITY_CLASS</td>
<td>&amp; h00000400</td>
<td>Process whose threads run only when the system is idle and are preempted by the threads of any process running in a higher priority class. An example is a screen saver. The idle priority class is inherited by child processes.</td>
</tr>
<tr>
<td>NORMAL_PRIORITY_CLASS</td>
<td>&amp; h00000200</td>
<td>Process with no special scheduling needs.</td>
</tr>
<tr>
<td>REALTIME_PRIORITY_CLASS</td>
<td>&amp; h00000100</td>
<td>Process that has the highest possible priority. The threads of a real-time priority class process preempt the threads of all other processes, including operating system processes performing important tasks. For example, a real-time process that executes for more than a very brief interval can cause disk caches not to flush or cause the mouse to be unresponsive.</td>
</tr>
</tbody>
</table>

Every thread has a base priority level determined by the thread’s priority value and the priority class of its process. The operating system uses the base priority level of all executable threads to determine which thread gets the next slice of CPU time. Threads are scheduled in a round-robin fashion at each priority level, and only when there are no executable threads at a higher level will scheduling of threads at a lower level take place.

For a table that shows the base priority levels for each combination of priority class and thread priority value, see Scheduling Priorities.

Priority class is maintained by the executive, so all processes have a priority class that can be queried.

For Mac and Linux, please use Priority.
132.20.26 WinModulePath as string

MBS Util Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
Returns the path the first code file in this process.
Notes:
Returns empty string on any error like missing permissions.
The path is in the typical style "C:\path\name.exe".

132.20.27 WinProcessImagePath as string

MBS Util Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
Retrieves the name of the executable file for the specified process.
Notes:
Returns empty string on any error like missing permissions.
The path is in the device style "Device\Harddisk0\Partition1\WINNT\System32\test.exe".
Requires Windows XP or Windows Server 2003 or newer.

132.20.28 WinSetPriorityClass(ProcessID as Integer, PriorityClass as Integer) as Integer

MBS Util Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
Sets the priority class for the specified process.
Notes:
You can pass ProcessID -1 to get the current process.
This value together with the priority value of each thread of the process determines each thread’s base priority level.

The process’s priority class is one of the following values:

Every thread has a base priority level determined by the thread’s priority value and the priority class of its process. The operating system uses the base priority level of all executable threads to determine which thread gets the next slice of CPU time. Threads are scheduled in a round-robin fashion at each priority level, and only when there are no executable threads at a higher level will scheduling of threads at a lower level take place.
For a table that shows the base priority levels for each combination of priority class and thread priority value, see Scheduling Priorities.
Priority class is maintained by the executive, so all processes have a priority class that can be queried.
<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABOVE_NORMAL_PRIORITY_CLASS</td>
<td>&amp; h00008000</td>
<td>Process that has priority above NORMAL_PRIORITY_CLASS but below HIGH_PRIORITY_CLASS.</td>
</tr>
<tr>
<td>BELOW_NORMAL_PRIORITY_CLASS</td>
<td>&amp; h00004000</td>
<td>Process that has priority above IDLE_PRIORITY_CLASS but below NORMAL_PRIORITY_CLASS.</td>
</tr>
<tr>
<td>HIGH_PRIORITY_CLASS</td>
<td>&amp; h00000080</td>
<td>Process that performs time-critical tasks that must be executed immediately for it to run correctly. The threads of a high-priority class process preempt the threads of normal or idle priority class processes. An example is the Task List, which must respond quickly when called by the user, regardless of the load on the operating system. Use extreme care when using the high-priority class, because a high-priority class CPU-bound application can use nearly all available cycles.</td>
</tr>
<tr>
<td>IDLE_PRIORITY_CLASS</td>
<td>&amp; h00000040</td>
<td>Process whose threads run only when the system is idle and are preempted by the threads of any process running in a higher priority class. An example is a screen saver. The idle priority class is inherited by child processes.</td>
</tr>
<tr>
<td>NORMAL_PRIORITY_CLASS</td>
<td>&amp; h00000020</td>
<td>Process with no special scheduling needs.</td>
</tr>
<tr>
<td>REALTIME_PRIORITY_CLASS</td>
<td>&amp; h00000100</td>
<td>Process that has the highest possible priority. The threads of a real-time priority class process preempt the threads of all other processes, including operating system processes performing important tasks. For example, a real-time process that executes for more than a very brief interval can cause disk caches not to flush or cause the mouse to be unresponsive.</td>
</tr>
</tbody>
</table>

Every thread has a base priority level determined by the thread’s priority value and the priority class of its process. The system uses the base priority level of all executable threads to determine which thread gets the next slice of CPU time. The SetThreadPriority function enables setting the base priority level of a thread relative to the priority class of its process. For more information, see Scheduling Priorities.

The *_PRIORITY_CLASS values affect the CPU scheduling priority of the process. For processes that perform background work such as file I/O, network I/O, or data processing, it is not sufficient to adjust the CPU scheduling priority; even an idle CPU priority process can easily interfere with system responsiveness when it uses the disk and memory. Processes that perform background work should use the PROCESS_MODE_BACKGROUND_BEGIN and PROCESS_MODE_BACKGROUND_END values to adjust their resource scheduling priorities; processes that interact with the user should not use PROCESS_MODE_BACKGROUND_BEGIN.

If a process is in background processing mode, the new threads it creates will also be in background processing mode. When a thread is in background processing mode, it should minimize sharing resources such as critical sections, heaps, and handles with other threads in the process, otherwise priority inversions can occur. If there are threads executing at high priority, a thread in background processing mode may not be scheduled promptly, but it will never be starved.

Each thread can enter background processing mode independently using SetThreadPriority. Do not call SetPriorityClass to enter background processing mode after a thread in the process has called SetThreadPriority to enter background processing mode. After a process ends background processing mode, it resets all threads in the process; however, it is not possible for the process to know which threads were already in background processing mode.

On any error the value is zero.

For Mac and Linux, please use Priority.
132.20.29 Properties

132.20.30 CPUTime as Integer

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the number of ticks this Process did get to calculate.

**Notes:**

Unit is 1/60 of a second.
On Mac OS X this value is not available and normally 0.
(Read only property)

132.20.31 CurrentProcess as boolean

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if the application is in the current Process.

**Notes:**

This should always be true because you are running Realbasic as the current ProcessMBS while you ask for this.
(Read only property)

132.20.32 flags as Integer

MBS Util Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The flags for this process on Mac OS.

**Example:**

```vbnet
Sub Open()
    // List all visible processes

    dim s as string
    dim p as ProcessMBS
    dim d As CFDictionaryMBS
    dim LSBackgroundOnly, LSUIElement As CFStringMBS
    dim b As CFBooleanMBS
    dim obj As CObjectMBS
    dim visible as Boolean

    const modeOnlyBackground=& h00000400

    LSUIElement=NewCFStringMBS("LSUIElement")
    LSBackgroundOnly = NewCFStringMBS("LSBackgroundOnly")

    p = new ProcessMBS
```

p.getfirstProcess

do
visible=True

// Mac OS X
d = CFDictionaryMBS(p.ProcessInformationCFDictionary)

if d <> nil Then
    obj = d.Value(LSBackgroundOnly)
    if obj isa CFBooleanMBS then
        b=CFBooleanMBS(obj)

        if b.value Then
            visible=false
        end
    end if

    obj= d.Value(LSUIElement)
    if obj isa CFBooleanMBS then
        b=CFBooleanMBS(obj)

        if b.value Then
            visible=false
        end
    end if

// Mac OS 9

if BitwiseAnd(p.Flags,modeOnlyBackground)<>0 then
    visible=False
end if

if visible then
    ListBox1.AddRow p.Name
end if

loop until not p.GetNextProcess
End Sub

Notes:

Returns 0 on any error.

Process mode flags. These flags indicate whether the process is an application or desk accessory. For appli-
cations, this field also returns information specified in the application’s 'SIZE' resource. This information is returned as flags. You can refer to these flags by using these constants:

- `modeDeskAccessory` & h00020000
- `modeMultiLaunch` & h00010000
- `modeNeedSuspendResume` & h00004000
- `modeCanBackground` & h00001000
- `modeDoesActivateOnFGSwitch` & h00000800
- `modeOnlyBackground` & h00000400
- `modeGetFrontClicks` & h00000200
- `modeGetAppDiedMsg` & h00000100
- `mode32BitCompatible` & h00000080
- `modeHighLevelEventAware` & h00000040
- `modeLocalAndRemoteHLEvents` & h00000020
- `modeStationeryAware` & h00000010
- `modeUseTextEditServices` & h00000008

(Read only property)

132.20.33 FrontProcess as boolean

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if the application is in the front of all others.

**Example:**

```vba
dim p as new ProcessMBS
p.GetCurrentProcess
p.FrontProcess=true "bring app to front"
```

**Notes:**

This property is for read and write. Writing to it brings the Process to front.

(Read and Write property)

132.20.34 lasterror as Integer

MBS Util Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last error code.

**Notes:**

As this property is introduced with MBS Plugin 3.1, only a few functions set it. 0 means no error, -1 means not available and anything else is a Mac OS error code.
132.20. CLASS PROCESSMBS

(Read and Write property)

132.20.35 LaunchProcess as ProcessMBS

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the application which launched the current one.

**Notes:**

For some applications like the ”loginwindow” it is nil, because there was no app to launch it other than the system itself.

(Read only property)

132.20.36 MacCreator as string

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Mac Creator code for the application.

**Notes:** (Read only property)

132.20.37 MacType as string

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Mac Type code for the application.

**Notes:**

Possible values:

"APPL" normal application
"appe" background application (Classic)
"APPC" Control panel application (Classic)
"APPD" Desktop Accessory (Classic)
"FNDR" Finder

others may be possible.

(Read only property)
132.20.38 MemoryFree as Integer

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the size of the free space in the Process’ memory partition.

**Notes:**

On Mac OS X normally 0.

(Read only property)

132.20.39 MemorySize as Integer

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns size of the Process’ memory partition.

**Notes:**

On Mac OS X normally 0.

(Read only property)

132.20.40 Name as string

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns the name of this application.

**Notes:**

Added Windows support in MBS Plugin 2.7 for this property.

(Read only property)

132.20.41 Path as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the path of the Process’ executable file.

**Notes:**

Maybe nil if not available.

Use this folderitem to get an icon for the Process.

(and this icon may be nil!)

(Read only property)
132.20.42  ProcessID as Integer

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns the PID of the process for use in unix command line tools.

**Example:**

```plaintext
Function LoginWindowPID() as Integer
// returns Process ID of Loginwindow on Mac OS X.
// or 0 on error

dim p as ProcessMBS

p=new ProcessMBS
p.GetFirstProcess

do
if p.Name="loginwindow" then
Return p.ProcessID
end if
loop until not p.GetNextProcess
End Function
```

**Notes:**

Works only on Mac OS X.
See the "CPU Focus" application for an example.

Note that this call does not make sense for Classic applications, since they all share a single UNIX process ID.
(Read only property)

132.20.43  Visible as boolean

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if the application is visible.

**Example:**

```plaintext
// hide iTunes

dim p as new ProcessMBS

p.GetFirstProcess
do
if p.BundleID="com.apple.iTunes" then
p.Visible=false
```

exit
end if
loop until not p.GetNextProcess

Notes:
Works only on Mac OS X.
Returns false if not supported.
Sets the lasterror property.
(Read and Write property)

132.20.44 Priority as Integer

Example:

dim p as new ProcessMBS

p.GetCurrentProcess

MsgBox str(p.priority) // shows 0

p.priority = 5

MsgBox str(p.priority) // shows 5

Notes:
20 (least) to -20 (max). Setting the value may be limited due to permissions.
(Read and Write computed property)
See also:

* 132.20.15 Priority(ProcessID as Integer) as Integer

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132.20.45 Constants

132.20.46 kProcessTransformToBackgroundApplication = 2

MBS Util Plugin, Plugin Version: 15.2. Function: One of the process transformation types.
Notes:
Turn application in a background application.
functional in Mac OS X 10.7 and later

**132.20.47 kProcessTransformToForegroundApplication = 1**

MBS Util Plugin, Plugin Version: 15.2. **Function:** One of the process transformation types. **Notes:** Turn application in a foreground application.

**132.20.48 kProcessTransformToUIElementApplication = 4**

MBS Util Plugin, Plugin Version: 15.2. **Function:** One of the process transformation types. **Notes:**
Turn application in a user interface element application.
functional in Mac OS X 10.7 and later
132.21 class WindowsProcessMemoryInfoMBS

132.21.1 class WindowsProcessMemoryInfoMBS

MBS Win Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A class to get information about the memory usage of a process on Windows.

132.21.2 Methods

132.21.3 Constructor

MBS Win Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The constructor which fills the values into the properties.
**Example:**
```
dim w as new WindowsProcessMemoryInfoMBS
msgbox "This application uses currently " + str(w.WorkingSetSize) + " Bytes of memory."
```

**Notes:** Queries the current process memory information.
See also:

- 132.21.4 Constructor(ProcessID as Integer)

132.21.4 Constructor(ProcessID as Integer)

MBS Win Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The constructor which fills the values into the properties.
**Notes:** Queries the process memory information of the process with the given ID.
See also:

- 132.21.3 Constructor

132.21.5 Properties

132.21.6 PageFaultCount as Integer

MBS Win Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The number of page faults.
**Notes:** (Read only property)
132.21.7  PagefileUsage as Int64

MBS Win Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The current space allocated for the pagefile, in bytes. Those pages may or may not be in memory. **Notes:** (Read only property)

132.21.8  PeakPagefileUsage as Int64

MBS Win Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The peak space allocated for the pagefile, in bytes. **Notes:** (Read only property)

132.21.9  PeakWorkingSetSize as Int64

MBS Win Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The peak working set size, in bytes. **Notes:** (Read only property)

132.21.10  ProcessID as Integer

MBS Win Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The process ID of the process queried. **Notes:** Value is 0 if the query failed. (Read only property)

132.21.11  QuotaNonPagedPoolUsage as Int64

MBS Win Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The peak nonpaged pool usage, in bytes. **Notes:** (Read only property)

132.21.12  QuotaPagedPoolUsage as Int64

MBS Win Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The current paged pool usage, in bytes.
132.21.13 QuotaPeakNonPagedPoolUsage as Int64

MBS Win Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The current nonpaged pool usage, in bytes. **Notes:** (Read only property)

132.21.14 QuotaPeakPagedPoolUsage as Int64

MBS Win Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The peak paged pool usage, in bytes. **Notes:** (Read only property)

132.21.15 WorkingSetSize as Int64

MBS Win Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The current working set size, in bytes. **Notes:** This is the memory your application uses. (Read only property)
132.22. CLASS WINDOWSPROCESSSTATISTICSMBS

132.22 class WindowsProcessStatisticsMBS

132.22.1 class WindowsProcessStatisticsMBS

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
A class to get information about process statistics on Windows.
Example:

dim c as new WindowsProcessStatisticsMBS
MsgBox str(C.PeakWorkingSetSize)

132.22.2 Methods

132.22.3 Constructor(ProcessID as Integer = -1, Mode as Integer = 255)

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
Creates a new object for given process and with given mode.
Example:

dim pid as Integer = -1
dim c as new WindowsProcessStatisticsMBS(pid, WindowsProcessStatisticsMBS.ModeMemoryCounters)
MsgBox str(C.PeakWorkingSetSize)

Notes:
If ProcessID is -1, the current process is queried.
Mode can be a combination of the Mode* constants you want to query. The Mode property will later contain
the Mode* constants combination of the values which are valid.

132.22.4 Properties

132.22.5 CreationTime as UInt64

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
A file time that receives the creation time of the process.
Notes:
Property is valid if Mode contains ModeTimes.
(Read only property)
132.22.6 CycleTime as UInt64

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The sum of the cycle time of all threads of the specified process.

**Notes:**
Property is valid if Mode contains ModeTimes.
This value can only be queried on Windows Vista or newer.
(Read only property)

132.22.7 ExitTime as UInt64

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A file time that receives the exit time of the process. If the process has not exited, the content of this structure is undefined.

**Notes:**
Property is valid if Mode contains ModeTimes.
(Read only property)

132.22.8 HandleCount as Integer

MBS Win Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The number of handles in use by the process.

**Example:**
```vbnet
dim w as new WindowsProcessStatisticsMBS
dim n1 as Integer = w.HandleCount

dim x as new window1 // make a new window

w = new WindowsProcessStatisticsMBS
dim n2 as Integer = w.HandleCount

MsgBox str(n2)+" handles in used, "+str(n2-n1)+" used by second window"
```

**Notes:**
Value is -1 on an error.
(Read only property)
132.22.9  **KernelTime as UInt64**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
A file time structure that receives the amount of time that the process has executed in kernel mode.
**Notes:**
The time that each of the threads of the process has executed in kernel mode is determined, and then all of
those times are summed together to obtain this value.
Property is valid if Mode contains ModeTimes.
(Read only property)

132.22.10  **Mode as Integer**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Which values have been queried.
**Notes:**
This value is a combination of the Mode* constants.
(Read only property)

132.22.11  **OtherOperationCount as UInt64**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The number of I/O operations performed, other than read and write operations.
**Notes:**
Property is valid if Mode contains ModeIOCounters.
(Read only property)

132.22.12  **OtherTransferCount as UInt64**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The number of bytes transferred during operations other than read and write operations.
**Notes:**
Property is valid if Mode contains ModeIOCounters.
(Read only property)
132.22.13  PageFaultCount as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  **Function:**
The number of page faults.
**Notes:**
Property is valid if Mode contains ModeMemoryCounters.
(Read only property)

132.22.14  PagefileUsage as Int64

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  **Function:**
The current space allocated for the pagefile, in bytes. Those pages may or may not be in memory.
**Notes:**
Property is valid if Mode contains ModeMemoryCounters.
(Read only property)

132.22.15  PeakPagefileUsage as Int64

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  **Function:**
The peak space allocated for the pagefile, in bytes.
**Notes:**
Property is valid if Mode contains ModeMemoryCounters.
(Read only property)

132.22.16  PeakWorkingSetSize as Int64

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  **Function:**
The peak working set size, in bytes.
**Notes:**
Property is valid if Mode contains ModeMemoryCounters.
(Read only property)

132.22.17  ProcessID as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  **Function:**
The process ID of the process queried.
132.22. **CLASS WINDOWS
PROCESSSTATISTICSMBS**

**Notes:** (Read only property)

### 132.22.18 QuotaNonPagedPoolUsage as Int64

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The peak nonpaged pool usage, in bytes. **Notes:** Property is valid if Mode contains ModeMemoryCounters. (Read only property)

### 132.22.19 QuotaPagedPoolUsage as Int64

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The current paged pool usage, in bytes. **Notes:** Property is valid if Mode contains ModeMemoryCounters. (Read only property)

### 132.22.20 QuotaPeakNonPagedPoolUsage as Int64

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The current nonpaged pool usage, in bytes. **Notes:** Property is valid if Mode contains ModeMemoryCounters. (Read only property)

### 132.22.21 QuotaPeakPagedPoolUsage as Int64

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The peak paged pool usage, in bytes. **Notes:** Property is valid if Mode contains ModeMemoryCounters. (Read only property)
132.22.22  ReadOperationCount as UInt64

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The number of read operations performed.

**Notes:**
Property is valid if Mode contains ModelIOCounters.
(Read only property)

132.22.23  ReadTransferCount as UInt64

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The number of bytes read.

**Notes:**
Property is valid if Mode contains ModelIOCounters.
(Read only property)

132.22.24  TotalIdleTime as UInt64

MBS Win Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The amount of time that the system has been idle.

**Notes:** (Read only property)

132.22.25  TotalKernelTime as UInt64

MBS Win Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The amount of time that the system has spent executing in Kernel mode (including all threads in all processes, on all processors).

**Notes:**
This time value also includes the amount of time the system has been idle. So you may want to subtract idle time to get real kernel time.
(Read only property)

132.22.26  TotalUserTime as UInt64

MBS Win Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The amount of time that the system has spent executing in User mode (including all threads in all processes, on all processors).

**Notes:**
If you need to know what is the percentage of the CPU time spent for user applications, you need to read this value two times and calculate the delta.

(Read only property)

132.22.27  **UserTime as UInt64**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A file time structure that receives the amount of time that the process has executed in user mode.

**Notes:**

The time that each of the threads of the process has executed in user mode is determined, and then all of those times are summed together to obtain this value. 
Property is valid if Mode contains ModeMemoryCounters.

(Read only property)

132.22.28  **WorkingSetSize as Int64**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The current working set size, in bytes.

**Notes:**

This is the memory your application uses. 
Property is valid if Mode contains ModeMemoryCounters.

(Read only property)

132.22.29  **WriteOperationCount as UInt64**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The number of write operations performed.

**Notes:**

Property is valid if Mode contains ModeIOCounters.

(Read only property)

132.22.30  **WriteTransferCount as UInt64**

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The number of bytes written.

**Notes:**

Property is valid if Mode contains ModeIOCounters.
132.22.31 Constants

132.22.32 ModeCycleTime = 8

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the mode constants. **Notes:** Whether to query the cycle time.

132.22.33 ModeHandles = 32

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the mode constants. **Notes:** Whether to query the handle count.

132.22.34 ModeIOCounters = 2

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the mode constants. **Notes:** Whether to query the IOCounters.

132.22.35 ModeMemoryCounters = 1

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the mode constants. **Notes:** Whether to query the memory counters.

132.22.36 ModeTimes = 4

MBS Win Plugin, Plugin Version: 10.3. **Function:** One of the mode constants. **Notes:** Whether to query the time values.

132.22.37 ModeTotalTime = 16

MBS Win Plugin, Plugin Version: 11.2. **Function:** One of the mode constants. **Notes:**
Whether to query the total CPU time values.
Requires Windows XP with SP1.
132.23 class WindowsVMStatisticsMBS

132.23.1 class WindowsVMStatisticsMBS

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Holds information about the current Windows memory status.

132.23.2 Methods

132.23.3 Constructor

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Creates a new statistics object with current values.

**Example:**

```vbscript
// show values in a listbox:
dim w as new WindowsVMStatisticsMBS
list.AddRow "Pagesize: " + format(w.Pagesize,"0")
list.AddRow "MemoryLoad: " + format(w.MemoryLoad,"0")
list.AddRow "AvailablePageFileMemory: " + format(w.AvailablePageFileMemory,"0")
list.AddRow "AvailablePhysicalMemory: " + format(w.AvailablePhysicalMemory,"0")
list.AddRow "AvailableVirtualMemory: " + format(w.AvailableVirtualMemory,"0")
list.AddRow "TotalPageFileMemory: " + format(w.TotalPageFileMemory,"0")
list.AddRow "TotalPhysicalMemory: " + format(w.TotalPhysicalMemory,"0")
list.AddRow "TotalVirtualMemory: " + format(w.TotalVirtualMemory,"0")
```

132.23.4 Properties

132.23.5 AllocationGranularity as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The granularity for the starting address at which virtual memory can be allocated.

**Notes:**

Typically 64 KB.

(Read only property)
132.23.6 AvailablePageFileMemory as Int64

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Indicates the number of bytes available in the paging file.
**Notes:** (Read only property)

132.23.7 AvailablePhysicalMemory as Int64

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Indicates the number of bytes of physical memory available.
**Notes:** (Read only property)

132.23.8 AvailableVirtualMemory as Int64

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Indicates the number of bytes of unreserved and uncommitted memory in the user mode portion of the virtual address space of the calling process.
**Notes:** (Read only property)

132.23.9 Memoryload as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Specifies a number between 0 and 100 that gives a general idea of current memory utilization, in which 0 indicates no memory use and 100 indicates full memory use.
**Notes:** (Read only property)

132.23.10 Pagesize as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The size of one memory page in memory.
**Notes:**
On Intel 80386 or newer CPUs, it should be 4096 Bytes.
(Read only property)
132.23.11  TotalPageFileMemory as Int64

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Indicates the total number of bytes that can be stored in the paging file. Note that this number does not represent the actual physical size of the paging file on disk.  
**Notes:** (Read only property)

132.23.12  TotalPhysicalMemory as Int64

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Indicates the total number of bytes of physical memory.  
**Notes:** (Read only property)

132.23.13  TotalVirtualMemory as Int64

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Indicates the total number of bytes that can be described in the user mode portion of the virtual address space of the calling process.  
**Notes:**  
Value is 0 on any error.  
(Read only property)
Chapter 133

Quartz Composer

133.1 class QCCompositionMBS

133.1.1 class QCCompositionMBS

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The composition class.
Notes:
The QCComposition class represents a Quartz Composer composition that either:

- comes from the system-wide composition repository (/Library/Compositions and
  ~ /Library/Compositions) where it can be accessed by any application through the methods
  of the QCCompositionRepository class
- is created from an arbitrary source (typically a file on disk) using one of its methods

This class cannot be subclassed.

A QCComposition object has the following information associated with it and that you can obtain by using
the appropriate method of the QCComposition class:

- Attributes include the name and description of the composition, copyright information, and whether
  or not its provided by OS X (built-in).
- The protocols that the composition conforms to. A composition protocol defines a set of required and
  optional input parameters and output results.

Many methods of the QCRenderer, QCCompositionLayer, and QCView classes take a QCComposition object as a parameter.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

133.1.2 Methods

133.1.3 compositionWithData(data as MemoryBlock) as QCCompositionMBS

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Returns a composition object initialized with the contents of a Quartz Composer composition file.
Example:

```qcode
dim data as MemoryBlock // composition file content in MemoryBlock variable
dim q as QCCompositionMBS = QCCompositionMBS.compositionWithData(data)
```

Notes:

data: The contents of a file created with the Quartz Composer developer tool.

Returns a Quartz Composer composition object or nil if there is an error.
See also:

- 133.1.4 compositionWithData(data as string) as QCCompositionMBS

133.1.4 compositionWithData(data as string) as QCCompositionMBS

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Returns a composition object initialized with the contents of a Quartz Composer composition file.
Example:

```qcode
dim data as string // composition file content in string variable
dim q as QCCompositionMBS = QCCompositionMBS.compositionWithData(data)
```

Notes:

data: The contents of a file created with the Quartz Composer developer tool.

Returns a Quartz Composer composition object or nil if there is an error.
See also:

- 133.1.3 compositionWithData(data as MemoryBlock) as QCCompositionMBS
133.1.5 compositionWithFile(file as folderitem) as QCCompositionMBS

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Returns a composition object initialized with a Quartz Composer composition file.
Example:

dim file as folderitem // your folderitem
dim q as QCCompositionMBS = QCCompositionMBS.compositionWithFile(file)

Notes:

file: A path to a file created with the Quartz Composer developer tool (.qtz extension).

Returns a Quartz Composer composition object or nil if there is an error.
See also:

• 133.1.6 compositionWithFile(path as string) as QCCompositionMBS

133.1.6 compositionWithFile(path as string) as QCCompositionMBS

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Returns a composition object initialized with a Quartz Composer composition file.
Example:

dim path as string = ""/System/Library/Compositions/Rollercoaster.qtz"" // your path
dim q as QCCompositionMBS = QCCompositionMBS.compositionWithFile(path)

Notes:

file: A path to a file created with the Quartz Composer developer tool (.qtz extension).

Returns a Quartz Composer composition object or nil if there is an error.
See also:

• 133.1.5 compositionWithFile(file as folderitem) as QCCompositionMBS

133.1.7 Constructor

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The private constructor.
133.1.8 copy as QCCompositionMBS

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** Creates a copy of the composition.

133.1.9 getAttributes as dictionary

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** Returns the attributes of the composition.

133.1.10 inputKeys as string()

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** Returns an array listing the keys that identify the input ports of the root patch of the composition.

133.1.11 outputKeys as string()

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** Returns an array listing the keys that identify the output ports of the root patch of the composition.

133.1.12 protocols as string()

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** Returns the list of protocols to which the composition conforms.

133.1.13 QCCompositionAttributeBuiltInKey as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
**Function:** One of the standard attribute names.
**Example:**
```vba
dim c as QCCompositionMBS = QCCompositionMBS.compositionWithFile("/System/Library/Compositions/Rollercoaster.qtz")
dim d as Dictionary = c.getattributes
dim b as Boolean = d.Value(c.QCCompositionAttributeBuiltInKey)
MsgBox str(b)
```
Notes:
The key for the composition origin. The associated value is a Boolean value. True indicates the composition is built-in (provided by OS X).

133.1.14 QCCompositionAttributeCategoryKey as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: One of the standard attribute names.
Example:
```vba
dim c as QCCompositionMBS = QCCompositionMBS.compositionWithFile("/System/Library/Compositions/Rollercoaster.qtz")
dim d as Dictionary = c.getattributes
dim b as string = d.Lookup(c.QCCompositionAttributeCategoryKey, "?")
MsgBox b
```

Notes: The composition category. The associated value is a category constant. See Categories.

133.1.15 QCCompositionAttributeCopyrightKey as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: One of the standard attribute names.
Example:
```vba
dim c as QCCompositionMBS = QCCompositionMBS.compositionWithFile("/System/Library/Compositions/Rollercoaster.qtz")
dim d as Dictionary = c.getattributes
dim b as string = d.Value(c.QCCompositionAttributeCopyrightKey)
MsgBox b
```

Notes:
The key for composition copyright information. The associated value is a string.
133.1.16 QCCompositionAttributeDescriptionKey as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: One of the standard attribute names.
Notes:
The key for the composition description.
The associated value is a string.

133.1.17 QCCompositionAttributeHasConsumersKey as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: One of the standard attribute names.
Notes:
The key for a composition that has consumer patches. The associated value is a Boolean value.
True indicates that the composition has consumers.

133.1.18 QCCompositionAttributeIsTimeDependentKey as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: One of the standard attribute names.
Notes: The key for the composition time dependency. The associated value is a Boolean value. True indicates that the composition is time dependent.

133.1.19 QCCompositionAttributeNameKey as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: One of the standard attribute names.
Example:

dim c as QCCompositionMBS = QCCompositionMBS.compositionWithFile("/System/Library/Compositions/Rollercoaster.qtz")
dim d as Dictionary = c.getattributes
MsgBox d.Value(c.QCCompositionAttributeNameKey)

Notes:
The key for the composition name.
The associated value is a string.
133.1.20 QCCompositionCategoryDistortion as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: One of the category names.
Notes: A composition that produces a distortion effect.

133.1.21 QCCompositionCategoryStylize as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: One of the category names.
Notes: A composition that produces a stylize effect.

133.1.22 QCCompositionCategoryUtility as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: One of the category names.
Notes: A utility composition.

133.1.23 QCCompositionInputAudioPeakKey as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: One of the standard input key names.
Notes: A number input port whose key is inputAudioPeak. The value must be in the \([0,1]\) range as a mono signal with no decay applied.

133.1.24 QCCompositionInputAudioSpectrumKey as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: One of the standard input key names.
Notes: A structure input port whose key is inputAudioSpectrum. The structure must contain 16 values in the \([0,1]\) range representing 16 spectrum bands of the mono signal from low to high frequencies with no decay applied.

133.1.25 QCCompositionInputDestinationImageKey as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: One of the standard input key names.
Notes: An image input port whose key is inputDestinationImage.

133.1.26 QCCompositionInputImageKey as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: One of the standard input key names.
Notes: An image input port whose key is inputImage.

133.1.27 QCCompositionInputPaceKey as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: One of the standard input key names.
Notes: A number input port whose key is inputPace. The value must be in the [0,1] range.

133.1.28 QCCompositionInputPreviewModeKey as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: One of the standard input key names.
Notes: A Boolean input port whose key is inputPreviewMode. When the value of this input port is set to TRUE, the composition that provides this port must be able to run in a low-quality mode that produces a preview of the composition.

133.1.29 QCCompositionInputPrimaryColorKey as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: One of the standard input key names.
Notes: A color input port whose key is inputPrimaryColor.

133.1.30 QCCompositionInputRSSArticleDurationKey as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: One of the standard input key names.
Notes: A number input port whose key is inputRSSArticleDuration. The value must be expressed in seconds.
133.1.31 QCCompositionInputRSSFeedURLKey as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: One of the standard input key names.
Notes: A string input port whose key is inputRSSFeedURL. This port must be passed an http or feed scheme URL.

133.1.32 QCCompositionInputScreenImageKey as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: One of the standard input key names.
Notes: An image input port whose key is inputScreenImage.

133.1.33 QCCompositionInputSecondaryColorKey as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: One of the standard input key names.
Notes: A color input port whose key is inputSecondaryColor.

133.1.34 QCCompositionInputSourceImageKey as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: One of the standard input key names.
Notes: An image input port whose key is inputSourceImage.

133.1.35 QCCompositionInputTrackInfoKey as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: One of the standard input key names.
Notes: A structure input port whose key is inputTrackInfo. The structure contains optional entries, such as "name", "artist", "album", "duration", "artwork", and so on.

133.1.36 QCCompositionInputTrackPositionKey as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: One of the standard input key names.
Notes: A number input port whose key is inputTrackPosition. The value must be expressed in seconds.
133.1.37 QCCompositionInputTrackSignalKey as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: One of the standard input key names.
Notes: A Boolean input port whose key is inputTrackSignal.

133.1.38 QCCompositionInputXKey as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: One of the standard input key names.
Notes: A number input port whose key is inputX. The value must be normalized to the image width with the origin on the left.

133.1.39 QCCompositionInputYKey as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: One of the standard input key names.
Notes: A number input port whose key is inputY. The value must be normalized to the image height with the origin at the bottom.

133.1.40 QCCompositionOutputImageKey as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: One of the standard output key names.
Notes: An image output port whose key is outputImage.

133.1.41 QCCompositionOutputWebPageURLKey as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: One of the standard output key names.
Notes: A string output port whose key is outputWebPageURL.

133.1.42 QCCompositionProtocolGraphicAnimation as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: One of the standard protocol names.
Notes:
A composition that renders a generic graphical animation. It has the option to use QCCompositionInputPrimaryColorKey for the primary color of the animation, QCCompositionInputSecondaryColorKey for the secondary color of the animation, QCCompositionInputPaceKey for the global pace of the animation, and QCCompositionInputPreviewModeKey to indicate if the animation should run in lower-quality for preview purposes.

Available in OS X v10.5 and later.

133.1.43 QCCompositionProtocolGraphicTransition as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

Function: One of the standard protocol names.

Notes: A composition that performs a transition between two images, using a transition time in range of 0 to 1. A conforming composition must use the input keys QCCompositionInputSourceImageKey for the starting image and QCCompositionInputDestinationImageKey for the image to transition to. The composition can optionally use QCCompositionInputPreviewModeKey to indicate if the animation should run in lower-quality for preview purposes.

133.1.44 QCCompositionProtocolImageFilter as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

Function: One of the standard protocol names.

Notes: A composition that applies an effect to a source image. A conforming composition must use the input key QCCompositionInputImageKey for the source image and QCCompositionOutputImageKey for the output image. The composition can optionally use QCCompositionInputXKey to specify the X position of the center point of the effect, QCCompositionInputYKey to specify the Y position of the center point of the effect, and QCCompositionInputPreviewModeKey to indicate if the animation should run in lower-quality for preview purposes.

133.1.45 QCCompositionProtocolMusicVisualizer as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

Function: One of the standard protocol names.

Notes:

A composition that acts as a visualizer for music. A conforming composition must use the input key QCCompositionInputAudioPeakKey for the instantaneous audio peak and the QCCompositionInputAudioSpectrumKey for the instantaneous audio spectrum. It can optionally use the QCCompositionInputTrackInfoKey to indicate it receives information about the current track and the QCCompositionInputTrackSignalKey to indicate the start of a new track.
CHAPTER 133. QUARTZ COMPOSER

Available in OS X v10.5 and later.

133.1.46 QCCompositionProtocolRSSVisualizer as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: One of the standard protocol names.
Notes:
A composition that acts as a visualizer for an RSS feed. A conforming composition must use the input key QCCompositionInputRSSFeedURLKey for the URL to use for the RSS feed. It can optionally use QCCompositionInputRSSArticleDurationKey to specify the duration of each feed article.

Available in OS X v10.5 and later.

133.1.47 QCCompositionProtocolScreenSaver as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: One of the standard protocol names.
Notes:
A composition that can be used as a screen saver. The composition has the option to use QCCompositionInputScreenImageKey for a screenshot image of the screen that the screen saver runs on, QCCompositionInputPreviewModeKey to indicate if the animation should run in lower-quality for preview purposes, and QCCompositionOutputWebPageURLKey for a URL to open in the default web browser when screen saver exits (only allowed if screen saver password is disabled).

Available in OS X v10.5 and later.

133.1.48 Properties

133.1.49 Description as String

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The description for the composition.
Notes: (Read only property)
133.1. CLASS QCCOMPOSITIONMBS

133.1.50 Handle as Integer

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The internal object reference.
Notes: (Read and Write property)

133.1.51 identifier as String

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The identifier for the composition.
Example:
```vbnet
dim r as QCCompositionRepositoryMBS = QCCompositionRepositoryMBS.sharedCompositionRepository
dim a() As QCCompositionMBS = r.allCompositions
MsgBox a(0).identifier
```
Notes: The unique identifier for the composition if it comes from the composition repository; "" otherwise.
(Read only property)

133.1.52 Name as String

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The name for the composition.
Example:
```vbnet
dim c as QCCompositionMBS = QCCompositionMBS.compositionWithFile("/System/Library/Compositions/Rollercoaster.qtz")
MsgBox c.name
```
Notes: (Read only property)
133.2 class QCCompositionRepositoryMBS

133.2.1 class QCCompositionRepositoryMBS

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  
Function: The system-wide Quartz Composer composition repository.  
Example:

dim r as QCCompositionRepositoryMBS = QCCompositionRepositoryMBS.sharedCompositionRepository  
dim a() As QCCompositionMBS = r.allCompositions  
MsgBox str(a.Ubound+1)+” compositions installed”

Notes:  
The QCCompositionRepository class represents a system-wide centralized repository of built-in and installed  
Quartz Composer compositions (/Library/Compositions and  
textasciitilde /Library/Compositions). The QCCompositionRepository class cannot be subclassed.  
Compositions in the repository are represented by the QCComposition class. You can use the methods of  
the QCCompositionRepository class to fetch all compositions or only those that meet specific criteria.  
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

133.2.2 Methods

133.2.3 allCompositions as QCCompositionMBS()

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  
Function: Returns an array that contains all compositions currently in the composition repository.  
Example:

dim r as QCCompositionRepositoryMBS = QCCompositionRepositoryMBS.sharedCompositionRepository  
dim a() As QCCompositionMBS = r.allCompositions  
MsgBox str(a.Ubound+1)+” compositions installed”

133.2.4 Compositions(protocols() as String = nil, attributes as Dictionary = nil) as QCCompositionMBS()

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  
Function: Returns an array of compositions that match a set of criteria.  
Example:
133.2. **CLASS QCCompositionRepositoryMBS**

```vbs
dim r as QCCompositionRepositoryMBS = QCCompositionRepositoryMBS.sharedCompositionRepository
dim a() As QCCompositionMBS = r.Compositions( array( QCCompositionMBS.QCCompositionProtocolImageFilter))
MsgBox str(a.Ubound+1)+" compositions found"
```

**Notes:**

**Protocols:** The protocols that you want compositions to conform to. Pass nil if you don’t want to filter based on the protocol. You can pass any of these protocols: QCCompositionProtocolAnimation, QCCompositionProtocolImageProducer, QCCompositionProtocolImageFilter, QCCompositionProtocolImageComposer, QCCompositionProtocolImageTransition, and QCCompositionProtocolScreenSaverRSS.

**Attributes:** A dictionary that contains the attributes, and their associated values, that you want compositions to match. Pass nil if you don’t want to filter based on the attributes. For example, you can pass any of these attributes: QCCompositionAttributeNameKey, QCCompositionAttributeDescriptionKey, QCCompositionAttributeCopyrightKey, QCCompositionAttributeBuiltInKey, and QCCompositionAttributeTimeDependentKey.

Returns an array of QCComposition objects that meet the supplied criteria.

### 133.2.5 compositionWithIdentifier(identifier as string) as QCCompositionMBS

**MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Returns the composition that corresponds to the identifier.

**Example:**

```vbs
dim r as QCCompositionRepositoryMBS = QCCompositionRepositoryMBS.sharedCompositionRepository
dim c as QCCompositionMBS = r.compositionWithIdentifier("/swing")
MsgBox c.Name
```

**Notes:**

**Identifier:** A string that uniquely identifies the composition to retrieve.

Returns the composition identified by the provided string, or nil if there is no composition with that identifier in the composition repository.

### 133.2.6 Constructor

**MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** The private constructor.
133.2.7 loadPlugIn(file as folderitem) as Boolean

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Attempts to load a Quartz Composer plug-in from a .plugin bundle at the specified path and returns true on success.
Example:

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("test.plugin")
dim r as Boolean = QCCompositionRepositoryMBS.loadPlugIn(f)
if r then
    MsgBox "OK"
else
    MsgBox "Failed"
end if
```

Notes: This method will do nothing if the plug-in was already loaded.
See also:

• 133.2.8 loadPlugIn(path as string) as Boolean

133.2.8 loadPlugIn(path as string) as Boolean

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Attempts to load a Quartz Composer plug-in from a .plugin bundle at the specified path and returns true on success.
Notes: This method will do nothing if the plug-in was already loaded.
See also:

• 133.2.7 loadPlugIn(file as folderitem) as Boolean

133.2.9 QCCompositionRepositoryDidUpdateNotification as string

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The new of the notification which is posted whenever the list of compositions in the composition repository is updated.

133.2.10 sharedCompositionRepository as QCCompositionRepositoryMBS

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Returns the shared instance of the composition repository.
133.2.11 Properties

133.2.12 Handle as Integer

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The internal object reference.
Notes: (Read and Write property)
133.3 control QCViewControlMBS

133.3.1 control QCViewControlMBS

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. 
**Function:** The control to host a QCView properly.

133.3.2 Properties

133.3.3 View as QCViewMBS

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. 
**Function:** The QCView in use by this control. 
**Notes:** Please use this property to access the actual view and make your settings and load the data to render. (Read only property)

133.3.4 Events

133.3.5 BoundsChanged

**Function:** The event called when the bounds, but not the frame, changed.

133.3.6 DidStartRendering

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. 
**Function:** Rendering did start notification.

133.3.7 DidStopRendering

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. 
**Function:** Rendering did stop notification.
133.3. **CONTROL QCVIEWCONTROLMBS**

133.3.8 **EnableMenuItems**

Function: The event where you can enable menu items.

133.3.9 **FrameChanged**

Function: The event called when the frame changed.

133.3.10 **GotFocus**

Function: The control itself got focus.
Notes: This only fires if the control itself got focus and not a sub control.

133.3.11 **LostFocus**

Function: The control lost focus.
Notes: This only fires if the control itself lost focus and not a sub control.

133.3.12 **MenuAction(HitItem as MenuItem) As Boolean**

Function: Called when a menuitem is choosen.
Notes: This allows the control to react on its relevant menu items. Please return true if you handled it or false to give others a chance.

133.3.13 **MouseDown(x as Integer, y as Integer, Modifiers as Integer) As Boolean**

Function: The mouse button was pressed inside the controls region at the location passed in to x, y.
Notes: The coordinates x and y are local to the control, i.e. they represent the position of the mouse click relative to the upper-left corner or the Control.
Return True if you are going to handle the MouseDown. In such a case:

- The Action event, if any, will not execute and the state of the object will not change.
- You will receive the MouseDrag and MouseUp events.

If you return False, the system handles the MouseDown so the above event handlers do not get called.

133.3.14 MouseDrag(x as Integer, y as Integer)

Function: This event fires continuously after the mouse button was pressed inside the Control.
Notes: Mouse location is local to the control passed in to x, y.
As this event is fired continuously (hundreds of time per second), it is your responsibility to determine if the mouse has really moved.

133.3.15 MouseUp(x as Integer, y as Integer)

Function: The mouse button was released.
Notes: Use the x and y parameters to determine if the mouse button was released within the control’s boundaries.

133.3.16 ScaleFactorChanged(NewFactor as Double)

Function: The backing store scale factor has changed.
Notes: Please invalidate any cached bitmaps or other relevant state.
133.4. class QCViewMBS

133.4.1 class QCViewMBS


**Function:** The QCView class is a custom NSView class that loads, plays, and controls Quartz Composer compositions.

**Notes:**

It is an autonomous view that is driven by an internal timer running on the main thread.

The view can be set to render a composition automatically when it is placed onscreen. The view stops rendering when it is placed offscreen. When not rendering, the view is filled with the current erase color. The rendered composition automatically synchronizes to the vertical retrace of the monitor.

You can embed this view in a CustomNSViewMBS to get more events for mouse and keyboard. Subclass of the NSViewMBS class.

133.4.2 Methods

133.4.3 Constructor


**Function:** Creates a new Quartz composer view with size 100/100 and position 0/0

**Example:**

```
    dim t as new QCViewMBS
```

**Notes:** On success the handle property is not zero.

See also:

- 133.4.4 Constructor(Handle as Integer) 18093
- 133.4.5 Constructor(left as Double, top as Double, width as Double, height as Double) 18094

133.4.4 Constructor(Handle as Integer)


**Function:** Creates an object based on the given QCView handle.

**Example:**

```
    dim t as new QCViewMBS(0, 0, 100, 100)
    dim v as new QCViewMBS(t.handle)
```
MsgBox str(v.Bounds.Width)+" x "+str(v.Bounds.Height)

Notes: The handle is casted to a QCView and the plugin retains this handle.
See also:

- 133.4.3 Constructor
- 133.4.5 Constructor(left as Double, top as Double, width as Double, height as Double)

133.4.5 Constructor(left as Double, top as Double, width as Double, height as Double)

Function: Creates a new Quartz composer view with the given size and position.
Example:

```vbnet
dim x as new QCViewMBS(0, 0, 100, 100)
```

Notes: On success the handle property is not zero.
See also:

- 133.4.3 Constructor
- 133.4.4 Constructor(Handle as Integer)

133.4.6 erase

Function: Clears the view using the current erase color.

133.4.7 getAttributes as dictionary

Function: Returns the attributes of the composition associated with the renderer.
Notes:

Returns a dictionary that contains the attributes that describe the composition, including the input and output ports of the root patch.
The dictionary can define any of the attributes that are specified by the composition attribute keys. See QCCompositionAttributeNameKey, QCCompositionAttributeDescriptionKey, and QCCompositionAttributeCopyrightKey.

The dictionary can also contain dictionaries that correspond to the keys that identify the input and output ports of the root patch of the composition. See QCPortAttributeTypeKey, QCPortAttributeNameKey, QCPortAttributeMinimumValueKey, QCPortAttributeMaximumValueKey, and QCPortAttributeMenuItemsKey.

Available in Mac OS X v10.4 and later.

133.4.8 `inputKeys as string()`

Function: Returns an array that contains the keys that identify the input ports of the root patch of the composition.

133.4.9 `loadComposition(composition as QCCompositionMBS) as boolean`

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Loads a QCComposition object into the view.
Notes:
Returns true if successful; otherwise false.
If unsuccessful, any composition that’s already loaded in the view remains loaded.

133.4.10 `loadCompositionFromData(data as MemoryBlock) as boolean`

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Loads the composition from memoryblock.
Notes:
If unsuccessful, returns false; any composition that’s already loaded in the view remains loaded.
Available in Mac OS X v10.4 and later.
See also:

- 133.4.11 `loadCompositionFromData(data as string) as boolean`
133.4.11 loadCompositionFromData(data as string) as boolean

MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Loads the composition from data string.
Notes:
If unsuccessful, returns false; any composition that’s already loaded in the view remains loaded.
Available in Mac OS X v10.4 and later.
See also:
• 133.4.10 loadCompositionFromData(data as MemoryBlock) as boolean

133.4.12 loadCompositionFromFile(file as folderitem) as boolean

Function: Loads the composition file located at the specified path.
Notes:
file: A folderitem that specifies the location of a Quartz Composer composition file.
If unsuccessful, returns false; any composition that’s already loaded in the view remains loaded.
Available in Mac OS X v10.4 and later.
See also:
• 133.4.13 loadCompositionFromFile(filepath as string) as boolean

133.4.13 loadCompositionFromFile(filepath as string) as boolean

Function: Loads the composition file located at the specified path.
Notes:
filepath: A string that specifies the location of a Quartz Composer composition file.
If unsuccessful, returns false; any composition that’s already loaded in the view remains loaded.
Available in Mac OS X v10.4 and later.
See also:
• 133.4.12 loadCompositionFromFile(file as folderitem) as boolean
133.4.14 outputKeys as string()

Function: Returns an array that contains the keys that identify the output ports of the root patch of the composition.

133.4.15 pauseRendering

Function: Pauses rendering in the view.
Notes:
You can nest calls to this method.
Available in Mac OS X v10.5 and later.

133.4.16 resumeRendering

Function: Resumes rendering a paused composition.
Notes:
You can nest calls to this method.
Available in Mac OS X v10.5 and later.

133.4.17 setValueForInputKey(value as Variant, key as string) as boolean

Function: Sets the value for an input port of a composition.
Notes:
value: The value to set for the input port. The input port must be at the root patch of the composition. The data type of the value argument must match the input port.
key: The key associated with the input port of the composition. This method throws an exception if key is invalid.

Returns false if it cannot set the value.
Available in Mac OS X v10.4 and later.
133.4.18  startRendering as boolean

Function: Starts rendering the composition that is in the view.
Notes: Returns false if the composition fails to start rendering; true otherwise.
Available in Mac OS X v10.4 and later.

133.4.19  stopRendering

Function: Stops rendering the composition that is in the view.
Notes: Available in Mac OS X v10.4 and later.

133.4.20  unloadComposition

Function: Unloads the composition from the view.
Notes: If necessary, this method calls stopRendering prior to unloading the composition.
Available in Mac OS X v10.5 and later.

133.4.21  valueForInputKey(key as string) as Variant

Function: Returns the value for an input port of a composition.
Notes: key: The key associated with an input port for the root patch of a composition. This method throws an exception if key is invalid.
Returns the value. The data type of returned value depends on the type of the input port.
Available in Mac OS X v10.4 and later.

133.4.22  valueForOutputKey(key as string) as Variant

Function: Returns the value for an output port of a composition.
key
The key associated with an output port for the root patch of a composition. This method throws an exception if key is invalid.

Returns the value as REALbasic variant. The data type of returned value depends on the type of the output port.

133.4.23 Properties

133.4.24 autostartsRendering as boolean

Function: Whether the composition that is in the view starts rendering automatically when the view is put on the screen.
Notes:
Available in Mac OS X v10.4 and later.
(Read and Write property)

133.4.25 eraseColor as NSColorMBS

Function: The color used to erase the view.
Notes:
Available in Mac OS X v10.4 and later.
(Read and Write property)

133.4.26 eventForwardingMask as Integer

Function: The mask used to filter which types of events are forwarded from the view to the composition during rendering.
Notes:
mask: An event filtering mask. The mask can be a combination of any of the mask constants listed in Table below (defined in NSEventMBS) or the constant NSAnyEventMask.

(Read and Write property)
### Constant Description

- **NSLeftMouseDownMask**: The user pressed the left button.
- **NSLeftMouseDraggedMask**: The user moved the mouse with the left button down.
- **NSLeftMouseUpMask**: The user released the left button.
- **NSRightMouseDownMask**: The user pressed the right button.
- **NSRightMouseDraggedMask**: The user moved the mouse with the right button down.
- **NSRightMouseUpMask**: The user released the right button.
- **NSOtherMouseDownMask**: The user pressed the middle button, or some button other than the left or right button.
- **NSOtherMouseDraggedMask**: The user moved the mouse with the middle button down, or some button other than the left or right button.
- **NSOtherMouseUpMask**: The user released the middle button, or some button other than the left or right button.
- **NSMouseMovedMask**: The user moved the mouse without holding down a mouse button.
- **NSScrollWheelMask**: The user moved the mouse scroll wheel.
- **NSKeyDownMask**: The user generated a character or characters by pressing a key.
- **NSKeyUpMask**: The user released a key.
- **NSFlagsChangedMask**: The user pressed or released a modifier key, or toggled the Caps Lock key.

### 133.4.27 isPausedRendering as boolean

**MBS MacControls Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Returns whether or not the rendering in the view is paused.

**Notes:**

- True if the rendering is paused; otherwise false.
- Available in Mac OS X v10.5 and later.
  *(Read only property)*

### 133.4.28 isRendering as boolean

**MBS MacControls Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Checks whether a composition is rendering in the view.

**Notes:**

- Returns true if a composition is rendering in the view; false otherwise.
- Available in Mac OS X v10.5 and later.
  *(Read only property)*

### 133.4.29 loadedComposition as QCCompositionMBS

**MBS MacControls Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.**

**Function:** Returns the composition loaded in the view.

**Notes:** *(Read only property)*
133.4.30  \texttt{maxRenderingFrameRate} as \texttt{Double}

\textbf{Function:} The maximum rendering frame rate.
\textbf{Notes:}
- Pass 0.0 to specify that there is no limit.
- Available in Mac OS X v10.4 and later.
  (Read and Write property)

133.4.31  \texttt{snapshotImage} as \texttt{NSImageMBS}

\textbf{Function:} Returns an \texttt{NSImage} object of the current image in the view.
\textbf{Notes:}
- Available in Mac OS X v10.5 and later.
  (Read only property)
Chapter 134

QuickLook

134.1 class QLPreviewPanelMBS

134.1.1 class QLPreviewPanelMBS

Function: The QLPreviewPanel class implements the Preview Panel - a user interface object that displays
the preview of a list of items.
Notes:
Every application only has an instance of QLPreviewPanel.
Subclass of the NSPanelMBS class.

134.1.2 Methods

134.1.3 Available as boolean

Function: Whether this panel is available.
Notes: Returns true on Snow Leopard.

134.1.4 Constructor

Function: The constructor for a new panel.
CHAPTER 134. QUICKLOOK

134.1.5 currentPreviewItem as folderitem

Function: The currently previewed item in the preview panel or nil if there is none.

134.1.6 enterFullScreenMode(screen as NSScreenMBS)

Function: Enters full screen mode.
Notes: If panel is not on-screen, the panel will go directly to full screen mode.

134.1.7 exitFullScreenMode

Function: Exits full screen mode.

134.1.8 refreshCurrentPreviewItem

Function: Asks the Preview Panel to recompute the preview of the currently previewed item.

134.1.9 reloadData

Function: Asks the Preview Panel to reload its data from its data source.
Notes: This method does not refresh the visible item if it has not changed.

134.1.10 updateController

Function: Asks the Preview Panel to update its current controller.
Notes: The Preview Panel automatically updates its controller (by searching the responder chain) whenever
the main or key window changes. Invoke updateController if the responder chain changes without explicit
notice.
134.1.11 Properties

**134.1.12 currentPreviewItemIndex as Integer**

**Function:** The index of the currently previewed item in the preview panel or NSNotFound (-1) if there is none.  
**Notes:** (Read and Write property)

**134.1.13 inFullScreenMode as boolean**

**Function:** True if the panel is currently open and in full screen mode.  
**Notes:** (Read only property)

**134.1.14 PreviewView as QLPreviewViewMBS**

**Function:** Returns the preview view in the panel.  
**Notes:** (Read only property)

**134.1.15 Events**

**134.1.16 didLoadPreviewItem(file as folderitem)**

**Function:** This event is called after an item has been loaded.

**134.1.17 handleEvent(e as NSEventMBS) as boolean**

**Function:** Invoked by the preview panel when it receives an event it doesn’t handle.  
**Notes:** Returns true if you did not handle this event.
134.1.18  **numberOfPreviewItems as Integer**

**Function:** The event called to ask you for the number of items that the preview panel should preview.

134.1.19  **previewItemAtIndex(index as Integer) as folderitem**

**Function:** The event is called to ask you for the item with the given index.

134.1.20  **sourceFrameOnScreenForPreviewItem(file as folderitem) as NSRectMBS**

**Function:** Invoked when the preview panel opens or closes to provide a zoom effect.
**Notes:** Return a zero rect if there is no origin point, this will produce a fade of the panel. The coordinates are screen based.

134.1.21  **transitionImageForPreviewItem(file as folderitem, byref contentRect as NSRectMBS) as NSImageMBS**

**Function:** Called to ask you for the transition image for a given preview item.
**Notes:**
Invoked when the preview panel opens or closes to provide a smooth transition when zooming.

contentRect: The rect within the image that actually represents the content of the document. For example, for icons the actual rect is generally smaller than the icon itself.

Return an image the panel will crossfade with when opening or closing. You can specify the actual "document" content rect in the image in contentRect.

134.1.22  **willLoadPreviewItem(file as folderitem)**

**Function:** This event is called before an item is loaded.
134.2. CONTROL QLPreviewViewControlMBS

134.2 control QLPreviewViewControlMBS

MBS MacFrameworks Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The Xojo control for a QLPreviewViewMBS.

134.2.2 Properties

134.2.3 View as QLPreviewViewMBS

MBS MacFrameworks Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The view this control shows.
Notes: (Read only property)

134.2.4 Events

134.2.5 BoundsChanged

Function: The event called when the bounds, but not the frame, changed.

134.2.6 EnableMenuItems

Function: The event where you can enable menu items.

134.2.7 FrameChanged

Function: The event called when the frame changed.

134.2.8 GotFocus

Function: The control itself got focus.
Notes: This only fires if the control itself got focus and not a sub control.

134.2.9 LostFocus

Function: The control lost focus.
Notes: This only fires if the control itself lost focus and not a sub control.

134.2.10 MenuAction(HitItem as MenuItem) As Boolean

Function: Called when a menuitem is choosen.
Notes: This allows the control to react on its relevant menu items. Please return true if you handled it or false to give others a chance.

134.2.11 MouseDown(x as Integer, y as Integer, Modifiers as Integer) As Boolean

Function: The mouse button was pressed inside the controls region at the location passed in to x, y.
Notes: The coordinates x and y are local to the control, i.e. they represent the position of the mouse click relative to the upper-left corner or the Control.
Return True if you are going to handle the MouseDown. In such a case:

- The Action event, if any, will not execute and the state of the object will not change.
- You will receive the MouseDrag and MouseUp events.

If you return False, the system handles the MouseDown so the above event handlers do not get called.

134.2.12 MouseDrag(x as Integer, y as Integer)

Function: This event fires continuously after the mouse button was pressed inside the Control.
Notes: Mouse location is local to the control passed in to x, y.
As this event is fired continuously (hundreds of time per second), it is your responsibility to determine if the
Mouse has really moved.

134.2.13  **MouseUp(x as Integer, y as Integer)**

**Function:** The mouse button was released.
**Notes:** Use the x and y parameters to determine if the mouse button was released within the control’s boundaries.

134.2.14  **ScaleFactorChanged(NewFactor as Double)**

**Function:** The backing store scale factor has changed.
**Notes:** Please invalidate any cached bitmaps or other relevant state.
134.3 class QLPreviewViewMBS

134.3.1 class QLPreviewViewMBS

**Function:** The class for using a preview view from QuickLook in Real Studio. 
**Notes:** 
If you want to show previews of files in your application, use this view. For example if you not just want to show previews of pictures, but also from Movies, PDF, Office and iWork files. Requires Mac OS X 10.6 or newer. 

You can embed this view in a CustomNSViewMBS to get more events for mouse and keyboard. Subclass of the NSViewMBS class.

134.3.2 Methods

134.3.3 Available as boolean

**Function:** Whether this class is available. 
**Notes:** Returns true on Mac OS X 10.6 or newer. 

134.3.4 close

**Function:** Closes the receiver, releasing the current preview item. 
**Notes:** 
The application is required to call close when the receiver is no longer needed if shouldCloseWithWindow is false. The close method will be called automatically when the window closes if shouldCloseWithWindow is true. 

134.3.5 Constructor

**Function:** Creates a new quicklook preview view with size 100/100 and position 0/0 
**Example:**
134.3. CLASS QLPreviewViewMBS

```
dim t as new QLPreviewViewMBS
```

Notes: On success the handle property is not zero.
See also:

- 134.3.6 Constructor(Handle as Integer)
- 134.3.7 Constructor(left as Double, top as Double, width as Double, height as Double)
- 134.3.8 Constructor(left as Double, top as Double, width as Double, height as Double, style as Integer)

### 134.3.6 Constructor(Handle as Integer)


**Function:** Creates an object based on the given QLPreviewView handle.

**Example:**

```
dim t as new QLPreviewViewMBS(0, 0, 100, 100)
dim v as new QLPreviewViewMBS(t.handle)
```

Notes: The handle is casted to a QLPreviewView and the plugin retains this handle.
See also:

- 134.3.5 Constructor
- 134.3.7 Constructor(left as Double, top as Double, width as Double, height as Double)
- 134.3.8 Constructor(left as Double, top as Double, width as Double, height as Double, style as Integer)

### 134.3.7 Constructor(left as Double, top as Double, width as Double, height as Double)


**Function:** Creates a new QuickLook preview view with the given size and position.

**Example:**

```
dim x as new QLPreviewViewMBS(0, 0, 100, 100)
```

Notes: On success the handle property is not zero.
See also:
CHAPTER 134. QUICKLOOK

- 134.3.5 Constructor
- 134.3.6 Constructor(Handle as Integer)
- 134.3.8 Constructor(left as Double, top as Double, width as Double, height as Double, style as Integer)

134.3.8 Constructor(left as Double, top as Double, width as Double, height as Double, style as Integer)

Function: Creates a new QuickLook preview view with the given size and position.
Example:

```vba
dim view as new QLPreviewViewMBS(0, 0, 200, 200, QLPreviewViewMBS.StyleCompact)
```

Notes:
On success the handle property is not zero.

On Mac OS X 10.7 or later we use the new style parameter to create a Preview view with the given style.
See also:

- 134.3.5 Constructor
- 134.3.6 Constructor(Handle as Integer)
- 134.3.7 Constructor(left as Double, top as Double, width as Double, height as Double)

134.3.9 refreshPreviewItem

Function: Asks the Preview view to recompute the preview of the currently previewed item.

134.3.10 Properties

134.3.11 autostarts as boolean

Function: Whether playback of audio/video files automatically starts.
Notes: (Read and Write computed property)
134.3. **CLASS QLPREVIEWVIEWMBS**

### 134.3.12 previewItem as folderitem

**Function:** The current visible item in the view.
**Notes:** (Read and Write computed property)

### 134.3.13 shouldCloseWithWindow as boolean

**Function:** Set whether the receiver closes when its window closes.
**Notes:**
See close method.
(Read and Write computed property)

### 134.3.14 Constants

#### 134.3.15 StyleCompact = 1

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the style constants.
**Notes:** Use in inspectors.

#### 134.3.16 StyleNormal = 0

MBS MacFrameworks Plugin, Plugin Version: 11.2. **Function:** One of the style constants.
**Notes:** Use in full previews.
Chapter 135

QuickTime

135.1 class QTAudioChannelDescriptionMBS

135.1.1 class QTAudioChannelDescriptionMBS

MBS Main Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The description for an audio channel.

135.1.2 Properties

135.1.3 ChannelFlags as UInt32

MBS Main Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Flags that control the interpretation of Coordinates. **Notes:** (Read and Write property)

135.1.4 ChannelLabel as UInt32

MBS Main Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The AudioChannelLabel that describes the channel. **Notes:** (Read and Write property)
135.1.5 Coordinates(index as Integer) as Double

MBS Main Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** An ordered triple that specifies a precise speaker location.  
**Notes:**  
Index from 0 to 2.  
(Read and Write computed property)

135.1.6 Constants

135.1.7 kAudioChannelCoordinates_Azimuth = 0

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the constants for indexing the Coordinates array.  
**Notes:** For spherical coordinates, 0 is front center, positive is right, negative is left. This is measured in degrees.

135.1.8 kAudioChannelCoordinates_BackFront = 1

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the constants for indexing the Coordinates array.  
**Notes:** For rectangulare coordinates, negative is back and positive is front.

135.1.9 kAudioChannelCoordinates_Distance = 2

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the constants for indexing the Coordinates array.  
**Notes:** For spherical coordinates, the units are described by flags.

135.1.10 kAudioChannelCoordinates_DownUp = 2

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the constants for indexing the Coordinates array.  
**Notes:** For rectangulare coordinates, negative is below ground level, 0 is ground level, and positive is above ground level.
135.1.11 kAudioChannelCoordinates_Elevation = 1

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the constants for indexing the Coordinates array.  
**Notes:** For spherical coordinates, +90 is zenith, 0 is horizontal, -90 is nadir. This is measured in degrees.

135.1.12 kAudioChannelCoordinates_LeftRight = 0

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the constants for indexing the Coordinates array.  
**Notes:** For rectangular coordinates, negative is left and positive is right.

135.1.13 kAudioChannelFlags_AllOff = 0

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the constants for the ChannelFlags property.  
**Notes:** All flags off.

135.1.14 kAudioChannelFlags_Meters = 4

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the constants for the ChannelFlags property.  
**Notes:** Set to indicate the units are in meters, clear to indicate the units are relative to the unit cube or unit sphere.

135.1.15 kAudioChannelFlags_RectangularCoordinates = 1

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the constants for the ChannelFlags property.  
**Notes:** The channel is specified by the cartesian coordinates of the speaker position. This flag is mutually exclusive with kAudioChannelFlags_SphericalCoordinates.

135.1.16 kAudioChannelFlags_SphericalCoordinates = 2

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the constants for the ChannelFlags property.  
**Notes:** The channel is specified by the spherical coordinates of the speaker position. This flag is mutually exclusive with kAudioChannelFlags_RectangularCoordinates.
135.1.17 \texttt{kAudioChannelLabel\_Ambisonic\_W = 200}

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function:} One of the channel label constants.

135.1.18 \texttt{kAudioChannelLabel\_Ambisonic\_X = 201}

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function:} One of the channel label constants.

135.1.19 \texttt{kAudioChannelLabel\_Ambisonic\_Y = 202}

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function:} One of the channel label constants.

135.1.20 \texttt{kAudioChannelLabel\_Ambisonic\_Z = 203}

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function:} One of the channel label constants.

135.1.21 \texttt{kAudioChannelLabel\_Center = 3}

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function:} One of the channel label constants.

135.1.22 \texttt{kAudioChannelLabel\_CenterSurround = 9}

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function:} One of the channel label constants. \textbf{Notes:} WAVE: "Back Center" or plain "Rear Surround"

135.1.23 \texttt{kAudioChannelLabel\_CenterSurroundDirect = 44}

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function:} One of the channel label constants. \textbf{Notes:} back center, non diffuse

135.1.24 \texttt{kAudioChannelLabel\_ClickTrack = 304}

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function:} One of the channel label constants.
135.1.25  kAudioChannelLabel_DialogCentricMix = 43

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.

135.1.26  kAudioChannelLabel_Discrete = 400

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.

135.1.27  kAudioChannelLabel_Discrete_0 = & h10000

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.

135.1.28  kAudioChannelLabel_Discrete_1 = & h10001

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.

135.1.29  kAudioChannelLabel_Discrete_10 = & h1000A

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.

135.1.30  kAudioChannelLabel_Discrete_11 = & h1000B

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.

135.1.31  kAudioChannelLabel_Discrete_12 = & h1000C

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.

135.1.32  kAudioChannelLabel_Discrete_13 = & h1000D

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.
135.1.33  kAudioChannelLabel_Discrete_14 = & h1000E

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.

135.1.34  kAudioChannelLabel_Discrete_15 = & h1000F

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.

135.1.35  kAudioChannelLabel_Discrete_2 = & h10002

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.

135.1.36  kAudioChannelLabel_Discrete_3 = & h10003

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants. **Example:**

```plaintext
// build 2 channels to go on channel 3& 4
dim d1 as new QTAudioChannelDescriptionMBS
dim d2 as new QTAudioChannelDescriptionMBS

d1.ChannelFlags = QTAudioChannelDescriptionMBS.kAudioChannelFlags_AllOff
d1.ChannelLabel = QTAudioChannelDescriptionMBS.kAudioChannelLabel_Discrete_3
d2.ChannelFlags = QTAudioChannelDescriptionMBS.kAudioChannelFlags_AllOff
d2.ChannelLabel = QTAudioChannelDescriptionMBS.kAudioChannelLabel_Discrete_4

dim a as new QTAudioChannelLayoutMBS

a.NumberChannelDescriptions = 2
a.ChannelDescriptions(0) = d1
a.ChannelDescriptions(1) = d2
a.ChannelLayoutTag = QTAudioChannelLayoutMBS.kAudioChannelLayoutTag_DiscreteInOrder + 2
```

135.1.37  kAudioChannelLabel_Discrete_4 = & h10004

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.
135.1.38  kAudioChannelLabel_Discrete_5 = & h10005

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.

135.1.39  kAudioChannelLabel_Discrete_6 = & h10006

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.

135.1.40  kAudioChannelLabel_Discrete_65535 = & h1FFFF

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.

135.1.41  kAudioChannelLabel_Discrete_7 = & h10007

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.

135.1.42  kAudioChannelLabel_Discrete_8 = & h10008

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.

135.1.43  kAudioChannelLabel_Discrete_9 = & h10009

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.

135.1.44  kAudioChannelLabel_ForeignLanguage = 305

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.

135.1.45  kAudioChannelLabel_Haptic = 45

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.
135.1.46  kAudioChannelLabel_HeadphonesLeft = 301

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.

135.1.47  kAudioChannelLabel_HeadphonesRight = 302

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.

135.1.48  kAudioChannelLabel_HearingImpaired = 40

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.

135.1.49  kAudioChannelLabel_Left = 1

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.

135.1.50  kAudioChannelLabel_LeftCenter = 7

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.

135.1.51  kAudioChannelLabel_LeftSurround = 5

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.  
**Notes:** WAVE: "Back Left"

135.1.52  kAudioChannelLabel_LeftSurroundDirect = 10

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.  
**Notes:** WAVE: "Side Left"

135.1.53  kAudioChannelLabel_LeftTotal = 38

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.  
**Notes:** matrix encoded 4 channels
135.1.54 kAudioChannelLabel_LeftWide = 35

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.

135.1.55 kAudioChannelLabel_LFE2 = 37

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.

135.1.56 kAudioChannelLabel_LFEScreen = 4

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.

135.1.57 kAudioChannelLabel_Mono = 42

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.

135.1.58 kAudioChannelLabel_MS_Mid = 204

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.

135.1.59 kAudioChannelLabel_MS_Side = 205

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.

135.1.60 kAudioChannelLabel_Narration = 41

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.
135.1.61  \texttt{kAudioChannelLabel\_RearSurroundLeft} = 33

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function:} One of the channel label constants.

135.1.62  \texttt{kAudioChannelLabel\_RearSurroundRight} = 34

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function:} One of the channel label constants.

135.1.63  \texttt{kAudioChannelLabel\_Right} = 2

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function:} One of the channel label constants.

135.1.64  \texttt{kAudioChannelLabel\_RightCenter} = 8

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function:} One of the channel label constants.

135.1.65  \texttt{kAudioChannelLabel\_RightSurround} = 6

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function:} One of the channel label constants.
\textbf{Notes:} WAVE: "Back Right"

135.1.66  \texttt{kAudioChannelLabel\_RightSurroundDirect} = 11

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function:} One of the channel label constants.
\textbf{Notes:} WAVE: "Side Right"

135.1.67  \texttt{kAudioChannelLabel\_RightTotal} = 39

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function:} One of the channel label constants.
\textbf{Notes:} matrix encoded 4 channels
MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.

135.1.68 kAudioChannelLabel_RightWide = 36

135.1.69 kAudioChannelLabel_TopBackCenter = 17

135.1.70 kAudioChannelLabel_TopBackLeft = 16

135.1.71 kAudioChannelLabel_TopBackRight = 18

135.1.72 kAudioChannelLabel_TopCenterSurround = 12

135.1.73 kAudioChannelLabel_Unknown = & hFFFFFFFF

Notes: Unknown or unspecified other use.

135.1.74 kAudioChannelLabel_Unused = 0

Notes: Channel is present, but has no intended use or destination.

135.1.75 kAudioChannelLabel_UseCoordinates = 100

Notes: Channel is described by the Coordinates fields.
135.1.76 \( \text{kAudioChannelLabel\_VerticalHeightCenter} = 14 \)

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.  
**Notes:** WAVE: "Top Front Center"

135.1.77 \( \text{kAudioChannelLabel\_VerticalHeightLeft} = 13 \)

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.  
**Notes:** WAVE: "Top Front Left"

135.1.78 \( \text{kAudioChannelLabel\_VerticalHeightRight} = 15 \)

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.  
**Notes:** WAVE: "Top Front Right"

135.1.79 \( \text{kAudioChannelLabel\_XY\_X} = 206 \)

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.

135.1.80 \( \text{kAudioChannelLabel\_XY\_Y} = 207 \)

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel label constants.
135.2. **CLASS QTAUDIOCHANNELLAYOUTMBS**

135.2 class QTAudioChannelLayoutMBS

135.2.1 class QTAudioChannelLayoutMBS

MBS Main Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:**
The class is used to specify channel layouts in files and hardware.

**Notes:**
This class does not use QuickTime functions as it only wraps data structures. And it can be used with Mac App Store and AVFoundation.

Some channel abbreviations used for the constants:

- L - left
- R - right
- C - center
- Ls - left surround
- Rs - right surround
- Cs - center surround
- Rls - rear left surround
- Rrs - rear right surround
- Lw - left wide
- Rw - right wide
- Lsd - left surround direct
- Rs - right surround direct
- Lc - left center
- Rc - right center
- Ts - top surround
- Vhl - vertical height left
- Vhc - vertical height center
- Vhr - vertical height right
- Lt - left matrix total. for matrix encoded stereo.
- Rt - right matrix total. for matrix encoded stereo.
135.2.2 Methods

135.2.3 GetNumberOfChannels(layoutTag as UInt32) as UInt32

MBS Main Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Function to get the number of channels out of an AudioChannelLayoutTag. **Notes:** The low 16 bits of an AudioChannelLayoutTag gives the number of channels except for kAudioChannelLayoutTag.UseChannelDescriptions and kAudioChannelLayoutTag.UseChannelBitmap.

135.2.4 Memory as Memoryblock

MBS Main Plugin, Plugin Version: 13.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns the audio channel layout as memoryblock, so you can pass it for declares.

135.2.5 Properties

135.2.6 ChannelBitmap as UInt32

MBS Main Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** If ChannelLayoutTag is set to kAudioChannelLayoutTag.UseChannelBitmap, this field is the channel usage bitmap. **Notes:** (Read and Write property)

135.2.7 ChannelLayoutTag as UInt32

MBS Main Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The AudioChannelLayoutTag that indicates the layout. **Notes:** (Read and Write property)

135.2.8 NumberChannelDescriptions as UInt32

MBS Main Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The number of items in the ChannelDescriptions array. **Notes:** (Read and Write property)
135.2.9 ChannelDescriptions(index as Integer) as QTAudioChannelDescription-MBS

MBS Main Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** An array of AudioChannelDescriptions that describe the layout.  
**Notes:** Index from 0 to NumberChannelDescriptions-1.  
(Read and Write computed property) 

135.2.10 Constants

135.2.11 kAudioChannelBit_Center = 4

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel bitmap constants. 

135.2.12 kAudioChannelBit_CenterSurround = 256

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel bitmap constants.  
**Notes:** WAVE: "Back Center" 

135.2.13 kAudioChannelBit_Left = 1

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel bitmap constants. 

135.2.14 kAudioChannelBit_LeftCenter = 64

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel bitmap constants. 

135.2.15 kAudioChannelBit_LeftSurround = 16

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel bitmap constants.  
**Notes:** WAVE: "Back Left"
135.2.16  kAudioChannelBit_LeftSurroundDirect = 512

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel bitmap constants.
**Notes:** WAVE: "Side Left"

135.2.17  kAudioChannelBit_LFEScreen = 8

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel bitmap constants.

135.2.18  kAudioChannelBit_Right = 2

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel bitmap constants.

135.2.19  kAudioChannelBit_RightCenter = 128

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel bitmap constants.

135.2.20  kAudioChannelBit_RightSurround = 32

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel bitmap constants.
**Notes:** WAVE: "Back Right"

135.2.21  kAudioChannelBit_RightSurroundDirect = 1024

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel bitmap constants.
**Notes:** WAVE: "Side Right"

135.2.22  kAudioChannelBit_TopBackCenter = 65536

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the channel bitmap constants.
135.2. CLASS QTAUDIOCHANNELLAYOUTMBS

135.2.23  kAudioChannelBit_TopBackLeft = 32768
MBS Main Plugin, Plugin Version: 11.3. Function: One of the channel bitmap constants.

135.2.24  kAudioChannelBit_TopBackRight = 131072
MBS Main Plugin, Plugin Version: 11.3. Function: One of the channel bitmap constants.

135.2.25  kAudioChannelBit_TopCenterSurround = 2048
MBS Main Plugin, Plugin Version: 11.3. Function: One of the channel bitmap constants.
Notes: WAVE: "Top Front Center"

135.2.26  kAudioChannelBit_VerticalHeightCenter = 8192
MBS Main Plugin, Plugin Version: 11.3. Function: One of the channel bitmap constants.
Notes: WAVE: "Top Front Center"

135.2.27  kAudioChannelBit_VerticalHeightLeft = 4096
MBS Main Plugin, Plugin Version: 11.3. Function: One of the channel bitmap constants.
Notes: WAVE: "Top Front Left"

135.2.28  kAudioChannelBit_VerticalHeightRight = 16384
MBS Main Plugin, Plugin Version: 11.3. Function: One of the channel bitmap constants.
Notes: WAVE: "Top Front Right"

135.2.29  kAudioChannelLayoutTag_AAC_3_0 = & h720003
MBS Main Plugin, Plugin Version: 11.3. Function: One of the AAC layout constants.
Notes: C L R
135.2.30  kAudioChannelLayoutTag_AAC_4_0 = & h740004

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the AAC layout constants.
**Notes:** C L R Cs

135.2.31  kAudioChannelLayoutTag_AAC_5_0 = & h780005

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the AAC layout constants.
**Notes:** C L R Ls Rs

135.2.32  kAudioChannelLayoutTag_AAC_5_1 = & h7C0006

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the AAC layout constants.
**Notes:** C L R Ls Rs Lfe

135.2.33  kAudioChannelLayoutTag_AAC_6_0 = & h8D0006

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the AAC layout constants.
**Notes:** C L R Ls Rs Cs

135.2.34  kAudioChannelLayoutTag_AAC_6_1 = & h8E0007

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the AAC layout constants.
**Notes:** C L R Ls Rs Cs Lfe

135.2.35  kAudioChannelLayoutTag_AAC_7_0 = & h8F0007

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the AAC layout constants.
**Notes:** C L R Ls Rs Rls Rrs

135.2.36  kAudioChannelLayoutTag_AAC_7_1 = & h7F0008

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the AAC layout constants.
**Notes:** C Lc Rc L R Ls Rs Lfe
135.2. CLASS QTAUDIOCHANNELLAYOUTMBS

135.2.37 kAudioChannelLayoutTag_AAC_Octagonal = & h900008

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the AAC layout constants. 
**Notes:** C L R Ls Rs Rls Rrs Cs

135.2.38 kAudioChannelLayoutTag_AAC_Quadraphonic = & h6C0004

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the AAC layout constants. 
**Notes:** L R Ls Rs

135.2.39 kAudioChannelLayoutTag_AC3_1_0_1 = & h950002

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the AC3 layout constants. 
**Notes:** C LFE

135.2.40 kAudioChannelLayoutTag_AC3_2_1_1 = & h990004

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the AC3 layout constants. 
**Notes:** L R Cs LFE

135.2.41 kAudioChannelLayoutTag_AC3_3_0 = & h960003

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the AC3 layout constants. 
**Notes:** L C R

135.2.42 kAudioChannelLayoutTag_AC3_3_0_1 = & h980004

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the AC3 layout constants. 
**Notes:** L C R LFE

135.2.43 kAudioChannelLayoutTag_AC3_3_1 = & h970004

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the AC3 layout constants. 
**Notes:** L C R Cs
135.2.44  kAudioChannelLayoutTag_AC3_3_1_1 = & h9A0005

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the AC3 layout constants.
**Notes:** L C R Cs LFE

135.2.45  kAudioChannelLayoutTag_Ambisonic_B_Format = & h6B0004

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the general layout constants.
**Notes:** W, X, Y, Z

135.2.46  kAudioChannelLayoutTag_AudioUnit_4 = & h6C0004

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the symmetrical layouts layout constants for AudioUnit usage.

135.2.47  kAudioChannelLayoutTag_AudioUnit_5 = & h6D0005

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the symmetrical layouts layout constants for AudioUnit usage.

135.2.48  kAudioChannelLayoutTag_AudioUnit_5_0 = & h760005

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the surround-based layout constants for AudioUnit usage.
**Notes:** L R Ls Rs C

135.2.49  kAudioChannelLayoutTag_AudioUnit_5_1 = & h790006

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the surround-based layout constants for AudioUnit usage.
**Notes:** L R C LFE Ls Rs

135.2.50  kAudioChannelLayoutTag_AudioUnit_6 = & h6E0006

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the symmetrical layouts layout constants for AudioUnit usage.
135.2.51  \texttt{kAudioChannelLayoutTag\_AudioUnit\_6\_0} = \& h8B0006

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function}: One of the surround-based layout constants for AudioUnit usage.
\textbf{Notes}: L R Ls Rs C Cs

135.2.52  \texttt{kAudioChannelLayoutTag\_AudioUnit\_6\_1} = \& h7D0007

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function}: One of the surround-based layout constants for AudioUnit usage.
\textbf{Notes}: L R C LFE Ls Rs Cs

135.2.53  \texttt{kAudioChannelLayoutTag\_AudioUnit\_7\_0} = \& h8C0007

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function}: One of the surround-based layout constants for AudioUnit usage.
\textbf{Notes}: L R Ls Rs C Lc Rc

135.2.54  \texttt{kAudioChannelLayoutTag\_AudioUnit\_7\_0\_Front} = \& h940007

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function}: One of the surround-based layout constants for AudioUnit usage.
\textbf{Notes}: L R Ls Rs C Lc Rc

135.2.55  \texttt{kAudioChannelLayoutTag\_AudioUnit\_7\_1} = \& h800008

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function}: One of the surround-based layout constants for AudioUnit usage.
\textbf{Notes}: L R C LFE Ls Rs Rls Rrs

135.2.56  \texttt{kAudioChannelLayoutTag\_AudioUnit\_7\_1\_Front} = \& h7E0008

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function}: One of the surround-based layout constants for AudioUnit usage.
135.2.57  \texttt{kAudioChannelLayoutTag\_AudioUnit\_8} = \& \texttt{h6F0008}

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function}: One of the symmetrical layouts layout constants for AudioUnit usage.

135.2.58  \texttt{kAudioChannelLayoutTag\_Binaural} = \& \texttt{h6A0002}

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function}: One of the general layout constants. \textbf{Notes}: Binaural stereo (left, right)

135.2.59  \texttt{kAudioChannelLayoutTag\_Cube} = \& \texttt{h700008}

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function}: One of the general layout constants. \textbf{Notes}: left, right, rear left, rear right, top left, top right, top rear left, top rear right

135.2.60  \texttt{kAudioChannelLayoutTag\_DiscreteInOrder} = \& \texttt{h930000}

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function}: One of the general layout constants. \textbf{Example}:

```bash
// build 2 channels to go on channel 3 & 4
dim d1 as new QTAudioChannelDescriptionMBS
dim d2 as new QTAudioChannelDescriptionMBS
d1.ChannelFlags = QTAudioChannelDescriptionMBS.kAudioChannelFlags\_AllOff
d1.ChannelLabel = QTAudioChannelDescriptionMBS.kAudioChannelLabel\_Discrete\_3
d2.ChannelFlags = QTAudioChannelDescriptionMBS.kAudioChannelFlags\_AllOff
d2.ChannelLabel = QTAudioChannelDescriptionMBS.kAudioChannelLabel\_Discrete\_4

dim a as new QTAudioChannelLayoutMBS

a.NumberChannelDescriptions = 2
a.ChannelDescriptions(0) = d1
a.ChannelDescriptions(1) = d2
a.ChannelLayoutTag = QTAudioChannelLayoutMBS.kAudioChannelLayoutTag\_DiscreteInOrder + 2
```
Notes: Needs to be ORed with the actual number of channels.

135.2.61  kAudioChannelLayoutTag_DTS_3_1 = & hA80004

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the DTS layout constants.  
**Notes:** C L R LFE

135.2.62  kAudioChannelLayoutTag_DTS_4_1 = & hA90005

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the DTS layout constants.  
**Notes:** C L R Cs LFE

135.2.63  kAudioChannelLayoutTag_DTS_6_0_A = & hAA0006

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the DTS layout constants.  
**Notes:** Lc Re L R Ls Rs

135.2.64  kAudioChannelLayoutTag_DTS_6_0_B = & hAB0006

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the DTS layout constants.  
**Notes:** C L R Rs Rrs Ts

135.2.65  kAudioChannelLayoutTag_DTS_6_0_C = & hAC0006

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the DTS layout constants.  
**Notes:** C Cs L R Rs Rrs

135.2.66  kAudioChannelLayoutTag_DTS_6_1_A = & hAD0007

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the DTS layout constants.  
**Notes:** Lc Re L R Ls Rs LFE
135.2.67  \texttt{kAudioChannelLayoutTag\_DTS\_6\_1\_B} = \& \texttt{hAE0007}

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function:} One of the DTS layout constants.  
\textbf{Notes:} C L R Rs Rls Ts LFE

135.2.68  \texttt{kAudioChannelLayoutTag\_DTS\_6\_1\_C} = \& \texttt{hAF0007}

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function:} One of the DTS layout constants.  
\textbf{Notes:} C Cs L R Rs Rls LFE

135.2.69  \texttt{kAudioChannelLayoutTag\_DTS\_6\_1\_D} = \& \texttt{hB60007}

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function:} One of the DTS layout constants.  
\textbf{Notes:} C L R Ls Rs LFE Cs

135.2.70  \texttt{kAudioChannelLayoutTag\_DTS\_7\_0} = \& \texttt{hB00007}

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function:} One of the DTS layout constants.  
\textbf{Notes:} Lc C Rc L R Ls Rs

135.2.71  \texttt{kAudioChannelLayoutTag\_DTS\_7\_1} = \& \texttt{hB10008}

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function:} One of the DTS layout constants.  
\textbf{Notes:} Lc C Rc L R Ls Rs LFE

135.2.72  \texttt{kAudioChannelLayoutTag\_DTS\_8\_0\_A} = \& \texttt{hB20008}

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function:} One of the DTS layout constants.  
\textbf{Notes:} Lc Re L R Ls Rs Rls Rrs

135.2.73  \texttt{kAudioChannelLayoutTag\_DTS\_8\_0\_B} = \& \texttt{hB30008}

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function:} One of the DTS layout constants.  
\textbf{Notes:} Lc C Re L R Ls Cs Rs
135.2. CLASS QTAUDIOCHANNELLAYOUTMBS

135.2.74 kAudioChannelLayoutTag_DTS_8_1_A = & hB40009

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the DTS layout constants.  
**Notes:** Lc Rc L R Ls Rs Rls Rrs LFE

135.2.75 kAudioChannelLayoutTag_DTS_8_1_B = & hB50009

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the DTS layout constants.  
**Notes:** Lc C Rc L R Ls Cs Rs LFE

135.2.76 kAudioChannelLayoutTag_DVD_0 = & h640001

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.  
**Notes:** C (mono)

135.2.77 kAudioChannelLayoutTag_DVD_1 = & h650002

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.  
**Notes:** L R

135.2.78 kAudioChannelLayoutTag_DVD_10 = & h880004

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.  
**Notes:** L R C LFE

135.2.79 kAudioChannelLayoutTag_DVD_11 = & h890005

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.  
**Notes:** L R C LFE Cs

135.2.80 kAudioChannelLayoutTag_DVD_12 = & h790006

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.  
**Notes:** L R C LFE Ls Rs
135.2.81 kAudioChannelLayoutTag_DVD_13 = & h730004

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.  
**Notes:** L R C Cs

135.2.82 kAudioChannelLayoutTag_DVD_14 = & h750005

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.  
**Notes:** L R C Ls Rs

135.2.83 kAudioChannelLayoutTag_DVD_15 = & h880004

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.  
**Notes:** L R C LFE

135.2.84 kAudioChannelLayoutTag_DVD_16 = & h890005

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.  
**Notes:** L R C LFE Cs

135.2.85 kAudioChannelLayoutTag_DVD_17 = & h790006

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.  
**Notes:** L R C LFE Ls Rs

135.2.86 kAudioChannelLayoutTag_DVD_18 = & h8A0005

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.  
**Notes:** L R Ls Rs LFE

135.2.87 kAudioChannelLayoutTag_DVD_19 = & h760005

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.  
**Notes:** L R Ls Rs C
135.2.88  kAudioChannelLayoutTag_DVD_2 = & h830003

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.  
**Notes:** L R Cs

135.2.89  kAudioChannelLayoutTag_DVD_20 = & h7A0006

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.  
**Notes:** L R Ls Rs C LFE

135.2.90  kAudioChannelLayoutTag_DVD_3 = & h840004

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.  
**Notes:** L R Ls Rs

135.2.91  kAudioChannelLayoutTag_DVD_4 = & h850003

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.  
**Notes:** L R LFE

135.2.92  kAudioChannelLayoutTag_DVD_5 = & h860004

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.  
**Notes:** L R LFE Cs

135.2.93  kAudioChannelLayoutTag_DVD_6 = & h870005

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.  
**Notes:** L R LFE Ls Rs

135.2.94  kAudioChannelLayoutTag_DVD_7 = & h710003

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the DVD defined layout constants.  
**Notes:** L R C
135.2.95  kAudioChannelLayoutTag_DVD_8 = & h730004

MBS Main Plugin, Plugin Version: 11.3. Function: One of the DVD defined layout constants.
Notes: L R C Cs

135.2.96  kAudioChannelLayoutTag_DVD_9 = & h750005

MBS Main Plugin, Plugin Version: 11.3. Function: One of the DVD defined layout constants.
Notes: L R C Ls Rs

135.2.97  kAudioChannelLayoutTag_EAC3_6_1_A = & h9D0007

MBS Main Plugin, Plugin Version: 11.3. Function: One of the EAC layout constants.
Notes: L C R Ls Rs LFE Cs

135.2.98  kAudioChannelLayoutTag_EAC3_6_1_B = & h9E0007

MBS Main Plugin, Plugin Version: 11.3. Function: One of the EAC layout constants.
Notes: L C R Ls Rs LFE Ts

135.2.99  kAudioChannelLayoutTag_EAC3_6_1_C = & h9F0007

MBS Main Plugin, Plugin Version: 11.3. Function: One of the EAC layout constants.
Notes: L C R Ls Rs LFE Vhc

135.2.100 kAudioChannelLayoutTag_EAC3_7_1_A = & hA00008

MBS Main Plugin, Plugin Version: 11.3. Function: One of the EAC layout constants.
Notes: L C R Ls Rs LFE Rls Rrs

135.2.101 kAudioChannelLayoutTag_EAC3_7_1_B = & hA10008

MBS Main Plugin, Plugin Version: 11.3. Function: One of the EAC layout constants.
Notes: L C R Ls Rs LFE Le Rc
135.2.102  \texttt{kAudioChannelLayoutTag\_EAC3\_7\_1\_C} = \& hA20008

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function:} One of the EAC layout constants.  
\textbf{Notes:} L C R Ls Rs LFE Lsd Rsd

135.2.103  \texttt{kAudioChannelLayoutTag\_EAC3\_7\_1\_D} = \& hA30008

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function:} One of the EAC layout constants.  
\textbf{Notes:} L C R Ls Rs LFE Lw Rw

135.2.104  \texttt{kAudioChannelLayoutTag\_EAC3\_7\_1\_E} = \& hA40008

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function:} One of the EAC layout constants.  
\textbf{Notes:} L C R Ls Rs LFE Vhl Vhr
135.2.105  kAudioChannelLayoutTag_EAC3_7_1_F = & hA50008

MBS Main Plugin, Plugin Version: 11.3.  **Function:** One of the EAC layout constants.  
**Notes:** L C R Ls Rs LFE Cs Ts

135.2.106  kAudioChannelLayoutTag_EAC3_7_1_G = & hA60008

MBS Main Plugin, Plugin Version: 11.3.  **Function:** One of the EAC layout constants.  
**Notes:** L C R Ls Rs LFE Cs Vhc

135.2.107  kAudioChannelLayoutTag_EAC3_7_1_H = & hA70008

MBS Main Plugin, Plugin Version: 11.3.  **Function:** One of the EAC layout constants.  
**Notes:** L C R Ls Rs LFE Ts Vhc

135.2.108  kAudioChannelLayoutTag_EAC_6_0_A = & h9B0006

MBS Main Plugin, Plugin Version: 11.3.  **Function:** One of the EAC layout constants.  
**Notes:** L C R Ls Rs Cs

135.2.109  kAudioChannelLayoutTag_EAC_7_0_A = & h9C0007

MBS Main Plugin, Plugin Version: 11.3.  **Function:** One of the EAC layout constants.  
**Notes:** L C R Ls Rs Rs Lc Rc

135.2.110  kAudioChannelLayoutTag_Emagic_Default_7_1 = & h810008

MBS Main Plugin, Plugin Version: 11.3.  **Function:** One of the MPEG defined layout constants.  
**Notes:** L R Ls Rs C LFE Le Rc

135.2.111  kAudioChannelLayoutTag_Hexagonal = & h6E0006

MBS Main Plugin, Plugin Version: 11.3.  **Function:** One of the general layout constants.  
**Notes:** L R Ls Rs C Cs – 60 degree speaker separation
135.2. CLASS QTAUDIOCHANNELLAYOUTMBS

135.2.112 kAudioChannelLayoutTag_ITU_1_0 = & h640001

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the ITU defined layout constants. **Notes:** C

135.2.113 kAudioChannelLayoutTag_ITU_2_0 = & h650002

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the ITU defined layout constants. **Notes:** L R

135.2.114 kAudioChannelLayoutTag_ITU_2_1 = & h830003

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the ITU defined layout constants. **Notes:** L R Cs

135.2.115 kAudioChannelLayoutTag_ITU_2_2 = & h840004

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the ITU defined layout constants. **Notes:** L R Ls Rs

135.2.116 kAudioChannelLayoutTag_ITU_3_0 = & h710003

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the ITU defined layout constants. **Notes:** L R C

135.2.117 kAudioChannelLayoutTag_ITU_3_1 = & h730004

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the ITU defined layout constants. **Notes:** L R C Cs

135.2.118 kAudioChannelLayoutTag_ITU_3_2 = & h750005

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the ITU defined layout constants. **Notes:** L R C Ls Rs
135.2.119  kAudioChannelLayoutTag_ITU_3_2_1 = & h790006

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the ITU defined layout constants.  
**Notes:** L R C LFE Ls Rs

135.2.120  kAudioChannelLayoutTag_ITU_3_4_1 = & h800008

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the ITU defined layout constants.  
**Notes:** L R C LFE Ls Rs Rs Rs Rs

135.2.121  kAudioChannelLayoutTag_MatrixStereo = & h670002

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the general layout constants.  
**Notes:** A matrix encoded stereo stream (Lt, Rt)

135.2.122  kAudioChannelLayoutTag_MidSide = & h680002

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the general layout constants.  
**Notes:** mid/side recording

135.2.123  kAudioChannelLayoutTag_Mono = & h640001

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the general layout constants.  
**Notes:** a standard mono stream

135.2.124  kAudioChannelLayoutTag_MPEG_1_0 = & h640001

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the MPEG defined layout constants.  
**Notes:** C

135.2.125  kAudioChannelLayoutTag_MPEG_2_0 = & h650002

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the MPEG defined layout constants.  
**Notes:** L R
135.2.126  kAudioChannelLayoutTag_MPEG_3_0_A = & h710003

MBS Main Plugin, Plugin Version: 11.3. Function: One of the MPEG defined layout constants. Notes: L R C

135.2.127  kAudioChannelLayoutTag_MPEG_3_0_B = & h720003

MBS Main Plugin, Plugin Version: 11.3. Function: One of the MPEG defined layout constants. Notes: C L R

135.2.128  kAudioChannelLayoutTag_MPEG_4_0_A = & h730004

MBS Main Plugin, Plugin Version: 11.3. Function: One of the MPEG defined layout constants. Notes: L R C Cs

135.2.129  kAudioChannelLayoutTag_MPEG_4_0_B = & h740004

MBS Main Plugin, Plugin Version: 11.3. Function: One of the MPEG defined layout constants. Notes: C L R Cs

135.2.130  kAudioChannelLayoutTag_MPEG_5_0_A = & h750005

MBS Main Plugin, Plugin Version: 11.3. Function: One of the MPEG defined layout constants. Notes: L R C Ls Rs

135.2.131  kAudioChannelLayoutTag_MPEG_5_0_B = & h760005

MBS Main Plugin, Plugin Version: 11.3. Function: One of the MPEG defined layout constants. Notes: L R Ls Rs C

135.2.132  kAudioChannelLayoutTag_MPEG_5_0_C = & h770005

MBS Main Plugin, Plugin Version: 11.3. Function: One of the MPEG defined layout constants. Notes: L C R Ls Rs
135.2.133  \texttt{kAudioChannelLayoutTag\_MPEG\_5\_0\_D = \& h780005}

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function:} One of the MPEG defined layout constants. 
\textbf{Notes:} C L R Ls Rs

135.2.134  \texttt{kAudioChannelLayoutTag\_MPEG\_5\_1\_A = \& h790006}

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function:} One of the MPEG defined layout constants. 
\textbf{Notes:} L R C LFE Ls Rs

135.2.135  \texttt{kAudioChannelLayoutTag\_MPEG\_5\_1\_B = \& h7A0006}

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function:} One of the MPEG defined layout constants. 
\textbf{Notes:} L R Ls Rs C LFE

135.2.136  \texttt{kAudioChannelLayoutTag\_MPEG\_5\_1\_C = \& h7B0006}

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function:} One of the MPEG defined layout constants. 
\textbf{Notes:} L C R Ls Rs LFE

135.2.137  \texttt{kAudioChannelLayoutTag\_MPEG\_5\_1\_D = \& h7C0006}

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function:} One of the MPEG defined layout constants. 
\textbf{Notes:} C L R Ls Rs LFE

135.2.138  \texttt{kAudioChannelLayoutTag\_MPEG\_6\_1\_A = \& h7D0007}

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function:} One of the MPEG defined layout constants. 
\textbf{Notes:} L R C LFE Ls Rs Cs

135.2.139  \texttt{kAudioChannelLayoutTag\_MPEG\_7\_1\_A = \& h7E0008}

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function:} One of the MPEG defined layout constants. 
\textbf{Notes:} L R C LFE Ls Rs Le Rc
135.2.140  \texttt{kAudioChannelLayoutTag\_MPEG\_7\_1\_B} = \& \texttt{h7F0008}

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function}: One of the MPEG defined layout constants.  
\textbf{Notes}: C Lc Re L R Ls Rs LFE

135.2.141  \texttt{kAudioChannelLayoutTag\_MPEG\_7\_1\_C} = \& \texttt{h800008}

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function}: One of the MPEG defined layout constants.  
\textbf{Notes}: L R C LFE Ls Rs Rls Rrs

135.2.142  \texttt{kAudioChannelLayoutTag\_Octagonal} = \& \texttt{h6F0008}

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function}: One of the general layout constants.  
\textbf{Notes}: L R Ls Rs C Cs Lw Rw – 45 degree speaker separation

135.2.143  \texttt{kAudioChannelLayoutTag\_Pentagonal} = \& \texttt{h6D0005}

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function}: One of the general layout constants.  
\textbf{Notes}: L R Ls Rs C – 72 degree speaker separation

135.2.144  \texttt{kAudioChannelLayoutTag\_Quadraphonic} = \& \texttt{h6C0004}

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function}: One of the general layout constants.  
\textbf{Notes}: L R Ls Rs – 90 degree speaker separation

135.2.145  \texttt{kAudioChannelLayoutTag\_SMPTE\_DTV} = \& \texttt{h820008}

MBS Main Plugin, Plugin Version: 11.3. \textbf{Function}: One of the MPEG defined layout constants.  
\textbf{Notes}:  
L R C LFE Ls Rs Lt Rt  
(kAudioChannelLayoutTag\_ITU\_5\_1 plus a matrix encoded stereo mix)
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135.2.146  kAudioChannelLayoutTag_Stereo = & h650002

MBS Main Plugin, Plugin Version: 11.3. **Function**: One of the general layout constants.
**Notes**: A standard stereo stream (L R) - implied playback

135.2.147  kAudioChannelLayoutTag_StereoHeadphones = & h660002

MBS Main Plugin, Plugin Version: 11.3. **Function**: One of the general layout constants.
**Notes**: A standard stereo stream (L R) - implied headphone playback

135.2.148  kAudioChannelLayoutTag_TMH_10_2_full = & h920015

MBS Main Plugin, Plugin Version: 11.3. **Function**: One of the TMH layout constants.
**Notes**: TMH_10_2_std plus: Le Rc HI VI Haptic

135.2.149  kAudioChannelLayoutTag_TMH_10_2_std = & h910010

MBS Main Plugin, Plugin Version: 11.3. **Function**: One of the TMH layout constants.
**Notes**: L R C Vhc Lsd RsL RsRs Vhl Vhr Lw Rw CsL CsLFE1 LFE2

135.2.150  kAudioChannelLayoutTag_Unknown = & hFFFF0000

MBS Main Plugin, Plugin Version: 11.3. **Function**: One of the general layout constants.
**Notes**: needs to be ORed with the actual number of channels

135.2.151  kAudioChannelLayoutTag_UseChannelBitmap = & h10000

MBS Main Plugin, Plugin Version: 11.3. **Function**: One of the general layout constants.
**Notes**: Use the bitmap to define the mapping.

135.2.152  kAudioChannelLayoutTag_UseChannelDescriptions = 0

MBS Main Plugin, Plugin Version: 11.3. **Function**: One of the general layout constants.
**Notes**: Use the array of AudioChannelDescriptions to define the mapping.
135.2.153  kAudioChannelLayoutTag_XY = & h690002

MBS Main Plugin, Plugin Version: 11.3. **Function:** One of the general layout constants. **Notes:** Coincident mic pair (often 2 figure 8’s)
class QTSoundStreamMBS

Chapter 135. QuickTime

135.3 class QTSoundStreamMBS

135.3.1 class QTSoundStreamMBS

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A class for the QTSoundOutput component which outputs sound using a given AudioUnit. Notes: Not supported for 64 bit targets.

135.3.2 Methods

135.3.3 AttachToAudioUnitComponent(componenthandle as Integer) as Integer

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Attaches the Sound Output component to a given Audio Unit component. Notes: Returns the error code. (0 for success) You may call AudioUnitInitialize and AudioOutputUnitStart after this to start the output unit. See also:

- 135.3.4 AttachToAudioUnitComponent(componenthandle as Integer, element as Integer) as Integer

135.3.4 AttachToAudioUnitComponent(componenthandle as Integer, element as Integer) as Integer

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Attaches the Sound Output component to a given Audio Unit component. Notes: Returns the error code. (0 for success) You may call AudioUnitInitialize and AudioOutputUnitStart after this to start the output unit. See also:

- 135.3.3 AttachToAudioUnitComponent(componenthandle as Integer) as Integer

135.3.5 AudioOutputUnitStart(componenthandle as Integer) as Integer

135.3.6 AudioUnitInitialize(componenthandle as Integer) as Integer

MBS MacOSX Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes the output unit. **Notes:** Returns a Mac OS error code (0 for success).

135.3.7 closeComponent

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Closes the Sound Output component.

135.3.8 InitComponent

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes the sound output component. **Notes:** Allocates memory for example.

135.3.9 OpenComponent

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Opens the SoundOutput component.

135.3.10 OpenDefaultAudioUnitOutputComponent as Integer

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Opens the default audio unit component and returns the handle. **Notes:** Returns 0 on any error. The component is only available on Mac OS X, so this function will return 0 on all other platforms.

135.3.11 Properties

135.3.12 Handle as Integer

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The component handle.
135.3.13  IsOpen as Boolean

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether the sound output component has been opened yet.
Notes:
Returns false on any error.
(Read only property)

135.3.14  IsStreamActive as Boolean

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: True in case the stream is active.
Notes:
Returns false on any error.
(Read only property)

135.3.15  PostsStatusNotifications as Boolean

Notes: (Read and Write property)

135.3.16  Release as Boolean

MBS MacOSX Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether the constructor should release the handle.
Notes: (Read and Write property)

135.3.17  SoundOutputComponentHandle as Integer

Notes: (Read only property)
Chapter 136

RAMStream

136.1 class RAMStreamMBS

136.1.1 class RAMStreamMBS


Notes:
If you need to concat lot’s of streams, just make a RAMstream and write to it.

In the example folder is a project called "test ramstream speed" which tests the speed on concating 10000 strings which each 1000 bytes in length.

On my G4 Dual 1000 Mhz, I get this result:
String only: 22063 ticks
RAMStream: 18 ticks

136.1.2 Methods

136.1.3 close


Notes:
There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)
136.1.4 Constructor(InitialSize as Integer=0)


**Example:**
```vbnet
dim r as RAMStreamMBS
r=new RAMStreamMBS(1000000)
r.write "Hello"
```

**Notes:**
To avoid memory fragmentation the memory grows in 32 KByte chunks.

The parameter you give is the size for the first allocation. So if you only need 2 KByte, you just pass 2048. If you don’t know the size, you can pass 0 or a negative number to get the default initial size which is 32 KByte.

You can change the GrowSize property to use a different growing size.
Performance is better if resizing the memory buffer is minimized.

The stream can grow to around 2 GB.
On low memory, the initial resize will fail and length will be 0.

136.1.5 Look(count as Integer) as string

MBS Util Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads bytes, but does not move the current position.

**Example:**
```vbnet
dim r as RamStreamMBS // your stream
dim s as string
s=r.look(100)
```

**Notes:** Like the lookahead property in a socket.
136.1. CLASS RAMSTREAMMBS

136.1.6 LookBlock(count as Integer) as memoryblock

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads bytes into a memoryblock, but leaves the current position untouched.

**Example:**

```plaintext
dim b as RAMStreamMBS
dim s as memoryblock
'...
s=b.LookBlock(5)
```

136.1.7 LookByte as Integer

MBS Util Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads a byte, but leaves the current position untouched.

136.1.8 LookLong as Integer

MBS Util Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads an integer, but leaves the current position untouched.

136.1.9 LookShort as Integer

MBS Util Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads a short, but leaves the current position untouched.

136.1.10 Read(count as Integer) as string

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads bytes into a string.

**Example:**

```plaintext
dim b as RAMStreamMBS
dim s as string
'...
s=b.read(5)
```
136.1.11  ReadBlock(count as Integer) as memoryblock

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads bytes into a memoryblock.

**Example:**

```vbnet
dim b as RAMStreamMBS
dim s as memoryblock
'...
s=b.ReadBlock(5)
```

136.1.12  Readbyte as Integer

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads an 8bit Byte from the stream.

**Example:**

```vbnet
dim b as RAMStreamMBS
dim i as Integer
'...
i=B.readbyte
```

136.1.13  ReadLong as Integer

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads a signed 32bit Integer from the stream.

**Example:**

```vbnet
dim b as RAMStreamMBS
dim i as Integer
'...
i=B.readlong
```

**Notes:** This function is affected by the LittleEndian Setting.

136.1.14  ReadShort as Integer

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads a signed 16bit Integer from the stream.
Example:

```vbs
dim b as RAMStreamMBS
dim i as integer
...
i = B.readlong
```

**Notes:** This function is affected by the LittleEndian Setting.

### 136.1.15 Write(data as string)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes bytes from a string to file.

### 136.1.16 WriteBlock(data as memoryblock, count as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes count bytes from a memoryblock to file.

Example:

```vbs
dim b as RAMStreamMBS
dim m as memoryblock
...
b.writeblock m, m.size
```

### 136.1.17 WriteByte(data as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes a byte to file.

### 136.1.18 WriteLong(data as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes an 32bit integer to file.

**Notes:** This method is affected by the LittleEndian Setting.
136.1.19 WriteShort(data as Integer)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes an 16bit integer to file.
**Notes:** This method is affected by the LittleEndian Setting.

136.1.20 Properties

136.1.21 EOF as boolean

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if you are at the end of the stream.
**Notes:** (Read only property)

136.1.22 GrowSize as Integer

MBS Util Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The size in bytes used to grow the ramstream backbuffer.
**Notes:**
Default is 32 Kilobytes.
If the value is bigger than zero, it will be used as the allocation increase. Else the default value is used.
(Read and Write property)

136.1.23 Length as Integer

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the current length of the stream.
**Notes:**
You can truncate the stream by setting this property.
(Read and Write property)

136.1.24 LittleEndian as boolean

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Decides whether to convert integers read or wrote to the file.
**Notes:**
See Realbasics binarystream for more details.
For native platform you may set "littleendian=targetwin32".
136.1. CLASS RAMSTREAMMBS

(Read and Write property)

136.1.25 MemoryUsed as Integer

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** How much memory is currently used for this Stream.  
**Notes:** (Read and Write property)

136.1.26 Position as Integer

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns current position.  
**Notes:**

You can set the current file stream position using this property. 
(Read and Write property)
136.2Globals

136.2.1 CreateRamStreamMBS(InitialSize as Integer = 0) as RamStreamMBS

Example:

```vbnet
dim r as RAMStreamMBS
r=CreateRamStreamMBS(1000000)
r.write "Hello"
```

Notes:

To avoid memory fragmentation the memory grows in 32 KByte chunks.

The parameter you give is the size for the first allocation. So if you only need 2 KByte, you just pass 2048. If you don’t know the size, you can pass 0 or a negative number to get the default initial size which is 32 KByte.

You can change the GrowSize property to use a different growing size.
Performance is better if resizing the memory buffer is minimized.

The stream can grow to around 2 GB.
Returns nil on low memory.
Chapter 137

RaspberryPiCamera

137.1 class RaspberryPiCameraFormatDescriptionMBS

137.1.1 class RaspberryPiCameraFormatDescriptionMBS

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The class for a format description.
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

137.1.2 Methods

137.1.3 Constructor

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The private constructor.

137.1.4 Properties

137.1.5 Description as String

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The format description.
**Notes:** (Read only property)
137.1.6 Flags as Integer

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The flags.  
**Notes:** Currently can be 1 for compressed and 2 for emulated. (Read only property)

137.1.7 Index as Integer

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Format number.  
**Notes:** (Read only property)

137.1.8 Pixelformat as Integer

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The pixel format.  
**Notes:** (Read only property)

137.1.9 PixelformatString as String

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The pixel format as text.  
**Notes:** (Read only property)

137.1.10 Type as Integer

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The buffer type.  
**Notes:** Usually 1 for video capture. (Read only property)
137.2. class RaspberryPiCameraFormatMBS

137.2.1 class RaspberryPiCameraFormatMBS

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The class for format settings.

**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

137.2.2 Methods

137.2.3 Constructor

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The private constructor.

137.2.4 Properties

137.2.5 BytesPerRow as Integer

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The number of bytes per row.

**Notes:**
For padding, zero if unused.
(Read and Write property)

137.2.6 ColorSpace as Integer

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The colorspace.

**Example:**

// ITU-R 601 – broadcast NTSC/PAL
const V4L2_COLORSPACE_SMPTE170M = 1

// 1125-Line (US) HDTV
const V4L2_COLORSPACE_SMPTE240M = 2

// HD and modern captures.
const V4L2_COLORSPACE_REC709 = 3
// broken BT878 extents (601, luma range 16-253 instead of 16-235)
const V4L2.COLORSPACE_BT878 = 4

// These should be useful. Assume 601 extents.
const V4L2.COLORSPACE_470_SYSTEM_M = 5
const V4L2.COLORSPACE_470_SYSTEM_BG = 6

// I know there will be cameras that send this. So, this is
// unspecified chromaticities and full 0-255 on each of the
// Y’CbCr components
const V4L2.COLORSPACE_JPEG = 7

// For RGB colourspaces, this is probably a good start.
const V4L2.COLORSPACE_SRGB = 8

Notes:
Normally zero for default.
(Read and Write property)

137.2.7 Field as Integer

Example:

const V4L2.FIELD_ANY = 0
// driver can choose from none, top, bottom, interlaced
// depending on whatever it thinks is approximate ... 
const V4L2.FIELD_NONE = 1
// this device has no fields ...
const V4L2.FIELD_TOP = 2
// top field only
const V4L2.FIELD_BOTTOM = 3
// bottom field only
const V4L2.FIELD_INTERLACED = 4
// both fields interlaced
const V4L2.FIELD_SEQ_TB = 5
// both fields sequential into one
// buffer, top-bottom order
const V4L2.FIELD_SEQ_BT = 6
// same as above + bottom-top order
const V4L2.FIELD_ALTERNATE = 7
// both fields alternating into separate buffers
137.2. CLASS RASPBERRYPICAMERAFORMATMBS

```c
const V4L2_FIELD_INTERLACED_TB = 8
// both fields interlaced, top field
// first and the top field is transmitted first
const V4L2_FIELD_INTERLACED_BT = 9
// both fields interlaced, top field
// first and the bottom field is transmitted first
```

**Notes:** (Read and Write property)

### 137.2.8 Height as Integer

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The height of image in pixels.  
**Notes:** (Read and Write property)

### 137.2.9 Pixelformat as Integer

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The pixel format.  
**Notes:** (Read and Write property)

### 137.2.10 PixelformatString as String

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The pixel format as text.  
**Notes:** (Read only property)

### 137.2.11 SizeImage as Integer

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The size of image.  
**Notes:** (Read and Write property)
137.2.12 Type as Integer

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The type of data stream.

**Notes:**
With plugin we always use 1 for video capture (V4L2_BUF_TYPE_VIDEO_CAPTURE).
(Read and Write property)

137.2.13 Width as Integer

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The width of image in pixels.
**Notes:** (Read and Write property)
137.3  class RaspberryPiCameraMBS

137.3.1  class RaspberryPiCameraMBS

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The class to get pictures from Raspberry Pi camera and similar Linux cameras.

137.3.2  Methods

137.3.3  AvailableFormats as RaspberryPiCameraFormatDescriptionMBS()

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Queries available formats.
**Notes:**
Lasterror and ErrorMessage are set.
Can return nil in case of error.

137.3.4  Capture(WithPicture as boolean = true) as Boolean

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Captures a new picture.
**Notes:**
If WithPicture is true and pixel format is compatible (RGB 24 or 32bit), we set the picture property.
If capturing JPEG, we copy the JPEG data into the JPEG property.
Returns true on success.
Lasterror and ErrorMessage are set.

137.3.5  Close

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Closes camera device.
**Notes:** Lasterror and ErrorMessage are set.
137.3.6 Constructor

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The constructor.

137.3.7 CurrentFormat as RaspberryPiCameraFormatMBS

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Queries current format. **Notes:**

Returns nil in case of error. Lasterror and ErrorMessage are set.

137.3.8 InitBuffer as Boolean

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Initializes buffer. **Notes:**

This is done automatically if you capture. Returns true on success. Lasterror and ErrorMessage are set.

137.3.9 Open(Device as string = "/dev/video0") as Boolean

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Opens the camera device. **Notes:**

You need

- a Raspberry Pi computer
- to attach the camera module
- to enable the video camera
- run a command: sudo modprobe bcm2835-v4l2
- to check if you see /dev/video0 in file system.
137.3. CLASS RASPBERYPICAMERAMBS

Returns true on success.
Lasterror and ErrorMessage are set.

137.3.10 SetCurrentFormat(format as RaspberryPiCameraFormatMBS) as boolean

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Sets current format.
**Notes:**
This allows to use any format, even if we can’t transform it to picture for you.

Returns true on success.
Lasterror and ErrorMessage are set.

137.3.11 SetJPEGSize(Width as Integer, Height as Integer) as Boolean

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Sets size and format to capture.
**Notes:**
Sets JPEG format with given size.

Returns true on success.
Lasterror and ErrorMessage are set.

137.3.12 SetSize(Width as Integer, Height as Integer) as Boolean

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Sets size and format to capture.
**Notes:**
Sets to capture RGB picture with given size.

Returns true on success.
Lasterror and ErrorMessage are set.
137.3.13 Properties

137.3.14 AutoExposureBias as Integer

MBS Linux Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
One of the camera configuration properties.
**Notes:**
Lasterror is set.
e.g. 12.
(Read and Write property)

137.3.15 AutoFocusRange as Integer

MBS Linux Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
One of the camera configuration properties.
**Notes:**
See kAutoFocusRange* constants
(Read and Write property)

137.3.16 AutoFocusStart as Integer

MBS Linux Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
One of the camera configuration properties.
**Notes:**
Lasterror is set.
(Read and Write property)

137.3.17 AutoFocusStatus as Integer

MBS Linux Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
One of the camera configuration properties.
**Notes:**
See kAutoFocusStatus* constants
(Read and Write property)
137.3. CLASS RASPERRYPICAMERAMBS

137.3.18  AutoFocusStop as Integer

MBS Linux Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
One of the camera configuration properties.
**Notes:**
Lasterror is set.  
(Read and Write property)

137.3.19  AutoNPresetWhiteBalance as Integer

MBS Linux Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
One of the camera configuration properties.
**Notes:**
See kWhiteBalance* constants.  
e.g. value is 1 for kWhiteBalanceAuto.  
(Read and Write property)

137.3.20  Buffer as Ptr

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The pointer to the buffer.  
**Notes:**
For the case you want to convert yourself pixel values to a picture.  
(Read only property)

137.3.21  BufferLength as Integer

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The length of the buffer.  
**Notes:**  
(Read only property)

137.3.22  BusInfo as String

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The device bus info.  
**Notes:**
e.g. ”PCI:1”
137.3.23 BytesPerRow as Integer

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The bytes per row for current image.
**Notes:** (Read only property)

137.3.24 CanCapture as Boolean

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Whether the device can capture video.
**Notes:**
This is queried by checking if bitwiseAnd(capabilities,1) = 1.
(Read only property)

137.3.25 Capabilities as Integer

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Device capabilities bitmap.
**Notes:** (Read only property)

137.3.26 Card as String

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The name of the card.
**Notes:**
e.g. "Hauppauge WinTV"
(Read only property)

137.3.27 Driver as String

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The name of the driver.
**Notes:**
137.3. CLASS RASPBERRYPICAMERAMBS

e.g. "bttv"
(Read only property)

137.3.28 ErrorMessage as String

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The error message for lasterror property.
**Notes:** (Read only property)

137.3.29 ExposureAbsolute as Integer

MBS Linux Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
One of the camera configuration properties.
**Notes:**
Lasterror is set.
e.g. 1000
(Read and Write property)

137.3.30 ExposureAuto as Integer

MBS Linux Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
One of the camera configuration properties.
**Notes:**
See kExposure* constants.
Value is e.g. 0 for kExposureAuto.
(Read and Write property)

137.3.31 ExposureAutoPriority as Integer

MBS Linux Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
One of the camera configuration properties.
**Notes:**
Lasterror is set.
(Read and Write property)
137.3.32 ExposureMetering as Integer

MBS Linux Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** One of the camera configuration properties. **Notes:**
See kExposureMetering* constants (Read and Write property)

137.3.33 FocusAbsolute as Integer

MBS Linux Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** One of the camera configuration properties. **Notes:**
Lasterror is set.
May not work if you don’t have a controllable focus on the camera. (Read and Write property)

137.3.34 FocusAuto as Integer

MBS Linux Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** One of the camera configuration properties. **Notes:**
Lasterror is set.
May not work if you don’t have a controllable focus on the camera. (Read and Write property)

137.3.35 FocusRelative as Integer

MBS Linux Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** One of the camera configuration properties. **Notes:**
Lasterror is set.
May not work if you don’t have a controllable focus on the camera. (Read and Write property)
137.3. **CLASS RASPBERRYPICAMERAMBS**

---

### 137.3.36 Handle as Integer

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The internal file handle. **Notes:** (Read only property)

---

### 137.3.37 Height as Integer

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The height in pixel used for capture. **Notes:** (Read only property)

---

### 137.3.38 ImageStabilization as Integer

MBS Linux Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** One of the camera configuration properties. **Notes:**

Lasterror is set. (Read and Write property)

---

### 137.3.39 IrisAbsolute as Integer

MBS Linux Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** One of the camera configuration properties. **Notes:**

Lasterror is set. May not work if you don’t have a controllable iris on the camera. (Read and Write property)

---

### 137.3.40 IrisRelative as Integer

MBS Linux Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** One of the camera configuration properties. **Notes:**

Lasterror is set. May not work if you don’t have a controllable iris on the camera. (Read and Write property)
137.3.41 **IsoSensitivity as Integer**

MBS Linux Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** One of the camera configuration properties. **Notes:** Lasterror is set. (Read and Write property)

137.3.42 **IsoSensitivityAuto as Integer**

MBS Linux Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** One of the camera configuration properties. **Notes:** See kISOSensitivity* constants. Usually set to kISOSensitivityAuto for auto mode (1). (Read and Write property)

137.3.43 **JPEG as String**

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The last JPEG image data block. **Notes:** (Read only property)

137.3.44 **LastError as Integer**

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The last error code. **Notes:** (Read only property)

137.3.45 **Lock3A as Integer**

MBS Linux Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** One of the camera configuration properties. **Notes:** See kLock* constants. (Read and Write property)
137.3. CLASS RASPBERRYPICAMERAMBS

137.3.46 Opened as Boolean

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Whether device is opened. **Notes:** (Read only property)

137.3.47 PanAbsolute as Integer

MBS Linux Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** One of the camera configuration properties. **Notes:** Lasterror is set. (Read and Write property)

137.3.48 PanRelative as Integer

MBS Linux Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** One of the camera configuration properties. **Notes:** Lasterror is set. (Read and Write property)

137.3.49 PanReset as Integer

MBS Linux Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** One of the camera configuration properties. **Notes:** Lasterror is set. (Read and Write property)

137.3.50 PanSpeed as Integer

MBS Linux Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** One of the camera configuration properties. **Notes:** Lasterror is set. (Read and Write property)
137.3.51 Picture as Picture

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The last captured picture. 
**Notes:** (Read only property)

137.3.52 PixelFormat as Integer

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The pixel format. 
**Notes:** (Read only property)

137.3.53 PixelformatString as String

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The pixel format as text. 
**Notes:** (Read only property)

137.3.54 Privacy as Integer

MBS Linux Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** One of the camera configuration properties. 
**Notes:**
Lasterror is set.
(Read and Write property)

137.3.55 Recording as Boolean

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Whether we are recording currently. 
**Notes:** (Read only property)
137.3. **CLASS RASPBERRYPICAMERAMBS**

137.3.56 **SceneMode as Integer**

MBS Linux Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** One of the camera configuration properties.

**Notes:**

See kSceneMode* constants

(Read and Write property)

137.3.57 **TiltAbsolute as Integer**

MBS Linux Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** One of the camera configuration properties.

**Notes:**

Lasterror is set.

(Read and Write property)

137.3.58 **TiltRelative as Integer**

MBS Linux Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** One of the camera configuration properties.

**Notes:**

Lasterror is set.

(Read and Write property)

137.3.59 **TiltReset as Integer**

MBS Linux Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** One of the camera configuration properties.

**Notes:**

Lasterror is set.

(Read and Write property)

137.3.60 **TiltSpeed as Integer**

MBS Linux Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** One of the camera configuration properties.

**Notes:**
Lasterror is set.
(Read and Write property)

137.3.61 Version as String

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The version of the driver.
**Notes:** (Read only property)

137.3.62 WideDynamicRange as Integer

MBS Linux Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
One of the camera configuration properties.
**Notes:**
Lasterror is set.
(Read and Write property)

137.3.63 Width as Integer

MBS Linux Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The width in pixel used for capture.
**Notes:** (Read only property)

137.3.64 ZoomAbsolute as Integer

MBS Linux Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
One of the camera configuration properties.
**Notes:**
Lasterror is set.
(Read and Write property)

137.3.65 ZoomContinuous as Integer

MBS Linux Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
One of the camera configuration properties.
**Notes:**
137.3. CLASS RASPBERRYPICAMERAMBS

Lasterror is set.
(Read and Write property)

137.3.66  **ZoomRelative as Integer**

MBS Linux Plugin, Plugin Version: 18.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** One of the camera configuration properties.

**Notes:**
Lasterror is set.
(Read and Write property)

137.3.67  **Constants**

137.3.68  **kAutoFocusRangeAuto = 0**

MBS Linux Plugin, Plugin Version: 18.0. **Function:** One of the constants for AutoFocusRange property.

137.3.69  **kAutoFocusRangeInfinity = 3**

MBS Linux Plugin, Plugin Version: 18.0. **Function:** One of the constants for AutoFocusRange property.

137.3.70  **kAutoFocusRangeMacro = 2**

MBS Linux Plugin, Plugin Version: 18.0. **Function:** One of the constants for AutoFocusRange property.

137.3.71  **kAutoFocusRangeNormal = 1**

MBS Linux Plugin, Plugin Version: 18.0. **Function:** One of the constants for AutoFocusRange property.

137.3.72  **kAutoFocusStatusBusy = 1**

MBS Linux Plugin, Plugin Version: 18.0. **Function:** One of the constants for AutoFocusStatus property.
137.3.73  kAutoFocusStatusFailed = 4

MBS Linux Plugin, Plugin Version: 18.0. **Function:** One of the constants for AutoFocusStatus property.

137.3.74  kAutoFocusStatusIdle = 0

MBS Linux Plugin, Plugin Version: 18.0. **Function:** One of the constants for AutoFocusStatus property.

137.3.75  kAutoFocusStatusReached = 2

MBS Linux Plugin, Plugin Version: 18.0. **Function:** One of the constants for AutoFocusStatus property.

137.3.76  kExposureAperturePriority = 3

MBS Linux Plugin, Plugin Version: 18.0. **Function:** One of the constants for ExposureAuto property.

137.3.77  kExposureAuto = 0

MBS Linux Plugin, Plugin Version: 18.0. **Function:** One of the constants for ExposureAuto property.

137.3.78  kExposureManual = 1

MBS Linux Plugin, Plugin Version: 18.0. **Function:** One of the constants for ExposureAuto property.

137.3.79  kExposureMeteringAverage = 0

MBS Linux Plugin, Plugin Version: 18.0. **Function:** One of the constants for ExposureMetering property.

137.3.80  kExposureMeteringCenterWeighted = 1

MBS Linux Plugin, Plugin Version: 18.0. **Function:** One of the constants for ExposureMetering property.
137.3. CLASS RASPBERRYPICAMERAMBS

137.3.81  
\textit{kExposureMeteringMatrix} = 3  
MBS Linux Plugin, Plugin Version: 18.0. \textbf{Function}: One of the constants for ExposureMetering property.

137.3.82  
\textit{kExposureMeteringSpot} = 2  
MBS Linux Plugin, Plugin Version: 18.0. \textbf{Function}: One of the constants for ExposureMetering property.

137.3.83  
\textit{kExposureShutterPriority} = 2  
MBS Linux Plugin, Plugin Version: 18.0. \textbf{Function}: One of the constants for ExposureAuto property.

137.3.84  
\textit{kISOSensitivityAuto} = 1  
MBS Linux Plugin, Plugin Version: 18.0. \textbf{Function}: One of the constants for IsoSensitivityAuto property.

137.3.85  
\textit{kISOSensitivityManual} = 0  
MBS Linux Plugin, Plugin Version: 18.0. \textbf{Function}: One of the constants for IsoSensitivityAuto property.

137.3.86  
\textit{kLockExposure} = 1  
MBS Linux Plugin, Plugin Version: 18.0. \textbf{Function}: One of the constants for Lock3A property.

137.3.87  
\textit{kLockFocus} = 4  
MBS Linux Plugin, Plugin Version: 18.0. \textbf{Function}: One of the constants for Lock3A property.

137.3.88  
\textit{kLockWhiteBalance} = 2  
MBS Linux Plugin, Plugin Version: 18.0. \textbf{Function}: One of the constants for Lock3A property.
137.3.89  kSceneModeBacklight = 1
MBS Linux Plugin, Plugin Version: 18.0. **Function:** One of the constants for ScreenMode property.

137.3.90  kSceneModeBeachSnow = 2
MBS Linux Plugin, Plugin Version: 18.0. **Function:** One of the constants for ScreenMode property.

137.3.91  kSceneModeCandleLight = 3
MBS Linux Plugin, Plugin Version: 18.0. **Function:** One of the constants for ScreenMode property.

137.3.92  kSceneModeDawnDusk = 4
MBS Linux Plugin, Plugin Version: 18.0. **Function:** One of the constants for ScreenMode property.

137.3.93  kSceneModeFallColors = 5
MBS Linux Plugin, Plugin Version: 18.0. **Function:** One of the constants for ScreenMode property.

137.3.94  kSceneModeFireworks = 6
MBS Linux Plugin, Plugin Version: 18.0. **Function:** One of the constants for ScreenMode property.

137.3.95  kSceneModeLandscape = 7
MBS Linux Plugin, Plugin Version: 18.0. **Function:** One of the constants for ScreenMode property.

137.3.96  kSceneModeNight = 8
MBS Linux Plugin, Plugin Version: 18.0. **Function:** One of the constants for ScreenMode property.
137.3.97  kSceneModeNone = 0

MBS Linux Plugin, Plugin Version: 18.0. **Function:** One of the constants for ScreenMode property.

137.3.98  kSceneModePartyIndoor = 9

MBS Linux Plugin, Plugin Version: 18.0. **Function:** One of the constants for ScreenMode property.

137.3.99  kSceneModePortrait = 10

MBS Linux Plugin, Plugin Version: 18.0. **Function:** One of the constants for ScreenMode property.

137.3.100 kSceneModeSports = 11

MBS Linux Plugin, Plugin Version: 18.0. **Function:** One of the constants for ScreenMode property.

137.3.101 kSceneModeSunset = 12

MBS Linux Plugin, Plugin Version: 18.0. **Function:** One of the constants for ScreenMode property.

137.3.102 kSceneModeText = 13

MBS Linux Plugin, Plugin Version: 18.0. **Function:** One of the constants for ScreenMode property.

137.3.103 kWhiteBalanceAuto = 1

MBS Linux Plugin, Plugin Version: 18.0. **Function:** One of the constants for AutoNPresetWhiteBalance property.

137.3.104 kWhiteBalanceCloudy = 8

MBS Linux Plugin, Plugin Version: 18.0. **Function:** One of the constants for AutoNPresetWhiteBalance property.
137.3.105 \( \text{kWhiteBalanceDaylight} = 6 \)

MBS Linux Plugin, Plugin Version: 18.0. **Function**: One of the constants for AutoNPresetWhiteBalance property.

137.3.106 \( \text{kWhiteBalanceFlash} = 7 \)

MBS Linux Plugin, Plugin Version: 18.0. **Function**: One of the constants for AutoNPresetWhiteBalance property.

137.3.107 \( \text{kWhiteBalanceFluorescent} = 3 \)

MBS Linux Plugin, Plugin Version: 18.0. **Function**: One of the constants for AutoNPresetWhiteBalance property.

137.3.108 \( \text{kWhiteBalanceFluorescentH} = 4 \)

MBS Linux Plugin, Plugin Version: 18.0. **Function**: One of the constants for AutoNPresetWhiteBalance property.

137.3.109 \( \text{kWhiteBalanceHorizon} = 5 \)

MBS Linux Plugin, Plugin Version: 18.0. **Function**: One of the constants for AutoNPresetWhiteBalance property.

137.3.110 \( \text{kWhiteBalanceIncandescent} = 2 \)

MBS Linux Plugin, Plugin Version: 18.0. **Function**: One of the constants for AutoNPresetWhiteBalance property.

137.3.111 \( \text{kWhiteBalanceManual} = 0 \)

MBS Linux Plugin, Plugin Version: 18.0. **Function**: One of the constants for AutoNPresetWhiteBalance property.
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137.3.112 kWhiteBalanceShade = 9

MBS Linux Plugin, Plugin Version: 18.0. **Function:** One of the constants for AutoNPresetWhiteBalance property.
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Chapter 138

Registration

138.1 module MBS

138.1.1 module MBS

MBS Main Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The module with version details.

138.1.2 Methods

138.1.3 Target as string

MBS Main Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the target where the plugin was compiled for.

**Example:**

MsgBox mbs.Target

**Notes:** Can be Win32, Linux, Carbon, Carbon-PPC or Cocoa.
138.1.4 Constants

138.1.5 BuildNumber = 19645

MBS Main Plugin, Plugin Version: 9.5. **Function:** The build number of the plugins.

**Example:**

```
# if mbs.BuildNumber>15000 then

// use some new MBS feature

MsgBox "OK"

# endif
```

**Notes:** The constant value is not in this documentation as it changes too often.

138.1.6 CompileDate = ”May 20 2018”

MBS Main Plugin, Plugin Version: 9.5. **Function:** The compilation date of the plugin.

**Notes:** The constant value is not in this documentation as it changes too often.

138.1.7 CompileTime = ”16:56:54”

MBS Main Plugin, Plugin Version: 9.5. **Function:** The compilation time of the plugin.

**Example:**

```
MsgBox mbs.CompileTime
```

**Notes:** The constant value is not in this documentation as it changes too often.

138.1.8 ComputerName = ”MyMac”

MBS Main Plugin, Plugin Version: 14.0. **Function:** The computer the IDE was launched on for building an app.

**Example:**

```
MsgBox mbs.ComputerName
```
Notes:

Using this constant allows you to include details on who build the app in the application itself, e.g. for documentation.
The constant value is not in this documentation as it changes too often.

138.1.9 Copyright = " 2017 by Monkeybread Software"

MBS Main Plugin, Plugin Version: 9.5. Function: The plugin copyright string.
Example:
MsgBox mbs.Copyright

138.1.10 HasAudioPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the Audio plugin is installed.
Example:

```plaintext
# if MBS.HasAudioPlugin then
MsgBox "Audio Plugin is installed."
# endif
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.11 HasAVFoundationPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the AVFoundation plugin is installed.
Example:

```plaintext
# if MBS.HasAVFoundationPlugin then
MsgBox "AVFoundation Plugin is installed."
# endif
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants...
138.1.12 HasBarcodePlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the Barcode plugin is installed.
Example:

```cpp
# if MBS.HasBarcodePlugin then
MsgBox "Barcode Plugin is installed."
# endif
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.13 HasCanonEOSDigitalPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the CanonEOSDigital plugin is installed.
Example:

```cpp
# if MBS.HasCanonEOSDigitalPlugin then
MsgBox "CanonEOSDigital Plugin is installed."
# endif
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.14 HasChartDirectorPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the ChartDirector plugin is installed.
Example:

```cpp
# if MBS.HasChartDirectorPlugin then
MsgBox "ChartDirector Plugin is installed."
# endif
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are is
138.1. MODULE MBS

installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.15 HasCocoaBasePlugin = true

MBS Main Plugin, Plugin Version: 16.4. **Function:** Whether the CocoaBase plugin is installed.  
**Example:**

```
# if MBS.HasCocoaBasePlugin then
MsgBox "CocoaBase Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are is installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.16 HasCocoaControlsPlugin = true

MBS Main Plugin, Plugin Version: 16.4. **Function:** Whether the CocoaControls plugin is installed.  
**Example:**

```
# if MBS.HasCocoaControlsPlugin then
MsgBox "CocoaControls Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are is installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.17 HasCocoaExtrasPlugin = true

MBS Main Plugin, Plugin Version: 16.4. **Function:** Whether the CocoaExtras plugin is installed.  
**Example:**

```
# if MBS.HasCocoaExtrasPlugin then
MsgBox "CocoaExtras Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are is installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.
138.1.18 HasCocoaPlugin = true

MBS Main Plugin, Plugin Version: 16.4. **Function:** Whether the Cocoa plugin is installed.

**Example:**

```csharp
#if MBS.HasCocoaPlugin then
MsgBox "Cocoa Plugin is installed."
#endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.19 HasCompressionPlugin = true

MBS Main Plugin, Plugin Version: 16.4. **Function:** Whether the Compression plugin is installed.

**Example:**

```csharp
#if MBS.HasCompressionPlugin then
MsgBox "Compression Plugin is installed."
#endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.20 HasComputerControlPlugin = true

MBS Main Plugin, Plugin Version: 16.4. **Function:** Whether the ComputerControl plugin is installed.

**Example:**

```csharp
#if MBS.HasComputerControlPlugin then
MsgBox "ComputerControl Plugin is installed."
#endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.
Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.21 HasControlsPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the Controls plugin is installed.
Example:

```# if MBS.HasControlsPlugin then
MsgBox "Controls Plugin is installed."
# endif
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.22 HasCUPSPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the CUPS plugin is installed.
Example:

```# if MBS.HasCUPSPlugin then
MsgBox "CUPS Plugin is installed."
# endif
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.23 HasCURLPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the CURL plugin is installed.
Example:

```# if MBS.HasCURLPlugin then
MsgBox "CURL Plugin is installed."
# endif
```
Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.24 HasDataTypesPlugin = true

MBS Main Plugin, Plugin Version: 16.4. **Function:** Whether the DataTypes plugin is installed.

*Example:*

```plaintext
# if MBS.HasDataTypesPlugin then
MsgBox "DataTypes Plugin is installed."
# endif
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.25 HasDirectShowPlugin = true

MBS Main Plugin, Plugin Version: 16.4. **Function:** Whether the DirectShow plugin is installed.

*Example:*

```plaintext
# if MBS.HasDirectShowPlugin then
MsgBox "DirectShow Plugin is installed."
# endif
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.26 HasDonglePlugin = true

MBS Main Plugin, Plugin Version: 16.4. **Function:** Whether the Dongle plugin is installed.

*Example:*

```plaintext
# if MBS.HasDonglePlugin then
MsgBox "Dongle Plugin is installed."
# endif
```
Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.27 HasDynaPDFPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the DynaPDF plugin is installed.
Example:

# if MBS.HasDynaPDFPlugin then
MsgBox "DynaPDF Plugin is installed."
# endif

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.28 HasEncryptionPlugin = true

Example:

# if MBS.HasEncryptionPlugin then
MsgBox "Encryption Plugin is installed."
# endif

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.29 HasGIFPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the GIF plugin is installed.
Example:

# if MBS.HasGIFPlugin then
MsgBox "GIF Plugin is installed."
# endif
Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.30 HasGraphicsMagickPlugin = true

Example:

```bash
# if MBS.HasGraphicsMagickPlugin then
MsgBox "GraphicsMagick Plugin is installed."
# endif
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.31 HasImageMagickPlugin = true

Example:

```bash
# if MBS.HasImageMagickPlugin then
MsgBox "ImageMagick Plugin is installed."
# endif
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.32 HasJavaPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the Java plugin is installed.
Example:

```bash
# if MBS.HasJavaPlugin then
MsgBox "Java Plugin is installed."
# endif
```
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Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.33 HasJPEGPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the JPEG plugin is installed.
Example:

```#
if MBS.HasJPEGPlugin then
MsgBox "JPEG Plugin is installed."
# endif```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.34 HasLargePicturePlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the LargePicture plugin is installed.
Example:

```#
if MBS.HasLargePicturePlugin then
MsgBox "LargePicture Plugin is installed."
# endif```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.35 HasLCMS2Plugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the LCMS2 plugin is installed.
Example:

```#
if MBS.HasLCMS2Plugin then
MsgBox "LCMS2 Plugin is installed."
# endif```
Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.36 HasLCMSPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the LCMS plugin is installed.
Example:

```plaintext
# if MBS.HasLCMSPlugin then
MsgBox "LCMS Plugin is installed."
# endif
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.37 HasLeopardPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the Leopard plugin is installed.
Example:

```plaintext
# if MBS.HasLeopardPlugin then
MsgBox "Leopard Plugin is installed."
# endif
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.38 HasLinuxPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the Linux plugin is installed.
Example:

```plaintext
# if MBS.HasLinuxPlugin then
MsgBox "Linux Plugin is installed."
# endif
```
Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.39 HasLionPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the Lion plugin is installed.
Example:

``````
# if MBS.HasLionPlugin then
MsgBox "Lion Plugin is installed."
# endif
```
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.40 HasMac64bitPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the Mac64bit plugin is installed.
Example:

``````
# if MBS.HasMac64bitPlugin then
MsgBox "Mac64bit Plugin is installed."
# endif
```
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.41 HasMacOSXCFPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the MacOSXCF plugin is installed.
Example:

``````
# if MBS.HasMacOSXCFPlugin then
MsgBox "MacOSXCF Plugin is installed."
# endif
```
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.
Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.42 HasMacOSXCGPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the MacOSXCG plugin is installed.
Example:

```plaintext
# if MBS.HasMacOSXCGPlugin then
MsgBox "MacOSXCG Plugin is installed."
# endif
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.43 HasMacOSXPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the MacOSX plugin is installed.
Example:

```plaintext
# if MBS.HasMacOSXPlugin then
MsgBox "MacOSX Plugin is installed."
# endif
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.44 HasMacPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the Mac plugin is installed.
Example:

```plaintext
# if MBS.HasMacPlugin then
MsgBox "Mac Plugin is installed."
# endif
```
Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.45 HasMainPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the Main plugin is installed.
Example:

```markdown
# if MBS.HasMainPlugin then
MsgBox "Main Plugin is installed."
# endif
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.46 HasMarkDownPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the MarkDown plugin is installed.
Example:

```markdown
# if MBS.HasMarkDownPlugin then
MsgBox "MarkDown Plugin is installed."
# endif
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.47 HasMavericksPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the Mavericks plugin is installed.
Example:

```markdown
# if MBS.HasMavericksPlugin then
MsgBox "Mavericks Plugin is installed."
# endif
```
Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.48 HasMountainLionPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the MountainLion plugin is installed.
Example:

# if MBS.HasMountainLionPlugin then
MsgBox "MountainLion Plugin is installed."
# endif

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.49 HasNetworkPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the Network plugin is installed.
Example:

# if MBS.HasNetworkPlugin then
MsgBox "Network Plugin is installed."
# endif

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.50 HasNikonCameraPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the NikonCamera plugin is installed.
Example:

# if MBS.HasNikonCameraPlugin then
MsgBox "NikonCamera Plugin is installed."
# endif
**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 138.1.51 HasOCRPlugin = true

MBS Main Plugin, Plugin Version: 16.4. **Function:** Whether the OCR plugin is installed.  
**Example:**

```plaintext
# if MBS.HasOCRPlugin then
MsgBox "OCR Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 138.1.52 HasOverlayPlugin = true

MBS Main Plugin, Plugin Version: 16.4. **Function:** Whether the Overlay plugin is installed.  
**Example:**

```plaintext
# if MBS.HasOverlayPlugin then
MsgBox "Overlay Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 138.1.53 HasPHPPlugin = true

MBS Main Plugin, Plugin Version: 16.4. **Function:** Whether the PHP plugin is installed.  
**Example:**

```plaintext
# if MBS.HasPHPPlugin then
MsgBox "PHP Plugin is installed."
# endif
```
Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.54 HasPicturePlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the Picture plugin is installed.
Example:

```plaintext
# if MBS.HasPicturePlugin then
MsgBox "Picture Plugin is installed."
# endif
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.55 HasPNGPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the PNG plugin is installed.
Example:

```plaintext
# if MBS.HasPNGPlugin then
MsgBox "PNG Plugin is installed."
# endif
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.56 HasQTKitPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the QTKit plugin is installed.
Example:

```plaintext
# if MBS.HasQTKitPlugin then
MsgBox "QTKit Plugin is installed."
# endif
```
Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.57 HasQuickTimePlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the QuickTime plugin is installed.
Example:

```lua
# if MBS.HasQuickTimePlugin then
MsgBox "QuickTime Plugin is installed."
# endif
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.58 HasRegExPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the RegEx plugin is installed.
Example:

```lua
# if MBS.HasRegExPlugin then
MsgBox "RegEx Plugin is installed."
# endif
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.59 HasSmartCardPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the SmartCard plugin is installed.
Example:

```lua
# if MBS.HasSmartCardPlugin then
MsgBox "SmartCard Plugin is installed."
# endif
```
Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.60 HasSnowLeopardPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the SnowLeopard plugin is installed.
Example:

```#
if MBS.HasSnowLeopardPlugin then
MsgBox "SnowLeopard Plugin is installed."
# endif
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.61 HasSQLPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the SQL plugin is installed.
Example:

```#
if MBS.HasSQLPlugin then
MsgBox "SQL Plugin is installed."
# endif
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.62 HasTAPIPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the TAPI plugin is installed.
Example:

```#
if MBS.HasTAPIPlugin then
MsgBox "TAPI Plugin is installed."
# endif
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.
138.1. **MODULE MBS**

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 138.1.63 HasTidyPlugin = true

MBS Main Plugin, Plugin Version: 16.4. **Function:** Whether the Tidy plugin is installed.  
**Example:**

```plaintext
# if MBS.HasTidyPlugin then
MsgBox "Tidy Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 138.1.64 HasTiffPlugin = true

MBS Main Plugin, Plugin Version: 16.4. **Function:** Whether the Tiff plugin is installed.  
**Example:**

```plaintext
# if MBS.HasTiffPlugin then
MsgBox "Tiff Plugin is installed."
# endif
```

**Notes:** The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

### 138.1.65 HasTwainPlugin = true

MBS Main Plugin, Plugin Version: 16.4. **Function:** Whether the Twain plugin is installed.  
**Example:**

```plaintext
# if MBS.HasTwainPlugin then
MsgBox "Twain Plugin is installed."
# endif
```
Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.66 HasUSBPlugin = true

MBS Main Plugin, Plugin Version: 16.4. **Function:** Whether the USB plugin is installed.

**Example:**

```plaintext
# if MBS.HasUSBPlugin then
MsgBox "USB Plugin is installed."
# endif
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.67 HasUtilPlugin = true

MBS Main Plugin, Plugin Version: 16.4. **Function:** Whether the Util plugin is installed.

**Example:**

```plaintext
# if MBS.HasUtilPlugin then
MsgBox "Util Plugin is installed."
# endif
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.68 HasVLCPlugin = true

MBS Main Plugin, Plugin Version: 16.4. **Function:** Whether the VLC plugin is installed.

**Example:**

```plaintext
# if MBS.HasVLCPlugin then
MsgBox "VLC Plugin is installed."
# endif
```
Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.69 HasWIAPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the WIA plugin is installed.
Example:

```pascal
# if MBS.HasWIAPlugin then
MsgBox "WIA Plugin is installed."
# endif
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.70 HasWinDragDropPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the WinDragDrop plugin is installed.
Example:

```pascal
# if MBS.HasWinDragDropPlugin then
MsgBox "WinDragDrop Plugin is installed."
# endif
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.71 HasWinICMPlugin = true

MBS Main Plugin, Plugin Version: 16.4. Function: Whether the WinICM plugin is installed.
Example:

```pascal
# if MBS.HasWinICMPlugin then
MsgBox "WinICM Plugin is installed."
# endif
```
Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.72  HasWinPlugin = true

MBS Main Plugin, Plugin Version: 16.4. **Function:** Whether the Win plugin is installed.  
**Example:**

```
# if MBS.HasWinPlugin then
MsgBox "Win Plugin is installed."
# endif
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.73  HasXLPlugin = true

MBS Main Plugin, Plugin Version: 16.4. **Function:** Whether the XL plugin is installed.  
**Example:**

```
# if MBS.HasXLPlugin then
MsgBox "XL Plugin is installed."
# endif
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.74  HasXMPPlugin = true

MBS Main Plugin, Plugin Version: 16.4. **Function:** Whether the XMP plugin is installed.  
**Example:**

```
# if MBS.HasXMPPlugin then
MsgBox "XMP Plugin is installed."
# endif
```

Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.
Notes: The MBS Main Plugin will check on startup of the Xojo or Real Studio IDE what plugins are installed. This constant will be true if plugin is installed. If no plugins are found by our plugin, the constants will be missing.

138.1.75 HostName = ”MyMac”

MBS Main Plugin, Plugin Version: 14.0. **Function:** The host the IDE was launched on for building an app.

Example:

MsgBox mbs.HostName

Notes:
Using this constant allows you to include details on who build the app in the application itself, e.g. for documentation.
The constant value is not in this documentation as it changes too often.

138.1.76 UserName = ”Christian Schmitz”

MBS Main Plugin, Plugin Version: 14.0. **Function:** The user name of the user who launched the IDE.

Example:

MsgBox mbs.UserName

Notes:
Using this constant allows you to include details on who build the app in the application itself, e.g. for documentation.
The constant value is not in this documentation as it changes too often.

138.1.77 Version = ”MBS Xojo Plugin 18.2 (build 19645) Sun May 20 14:02:01 2018 (GMT)”

MBS Main Plugin, Plugin Version: 9.5. **Function:** The plugin version string.

Example:

MsgBox mbs.Version
138.1.78  VersionString = ”18.2”

MBS Main Plugin, Plugin Version: 11.1. **Function:** The plugin version string (only, the number part).
**Example:**
MsgBox mbs.VersionString

**Notes:** e.g. ”11.1”

138.1.79  Website = ”http://www.monkeybreadsoftware.de”

MBS Main Plugin, Plugin Version: 9.5. **Function:** The URL for the Monkeybread Software website.
**Notes:** ShowURL mbs.Website

138.1.80  Year = 2018

MBS Main Plugin, Plugin Version: 9.5. **Function:** The year of the plugin.
**Example:**
MsgBox str(mbs.Year)
138.2  Globals

138.2.1  LogoMBS(size as Integer = 0, WithAlphaChannel as boolean = false) as Picture

MBS Main Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the MBS logo picture. **Example:**

window1Backdrop = LogoMBS(500)

**Notes:**
Best size is 500 pixel.
This function exists to provide a sample picture for examples.
If WithAlphaChannel is true and alpha channel pictures are supported, the plugin returns a picture with alpha channel. (Cocoa, Windows or Linux target on Real Studio 2011r4).

Due to a bug in console runtime from Real Software this function can only produce useful pictures with 500 pixel size in console or web applications.

138.2.2  MBSPluginCompileDate as string

MBS Main Plugin, Plugin Version: 6.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Compilation date of the plugins. **Example:**

MsgBox MBSPluginCompileDate

**Notes:**
E.g. "Aug 27 2006"
Actually the compilation date of the Version Plugin part which defines this function.

138.2.3  MBSPluginCompileTime as string

MBS Main Plugin, Plugin Version: 6.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Compilation Time of the plugins. **Example:**
CHAPTER 138. REGISTRATION

MsgBox MBSPluginCompileTime

Notes:
e.g. "19:40:16"
Actually the compilation date of the Version Plugin part which defines this function.

138.2.4 MBSPluginVersion as string

MBS Main Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns a version string from the plugin.
Example:
MsgBox "Build with Real Studio " + RBVersionString + " and " + MBSPluginVersion

Notes: You can show that in your about box so your users can tell you which plugin they use.

138.2.5 RegisterMBSPlugin(name as string, product as string, enddate as Integer, serial as Integer) as boolean

Example:
const name = "Joe Smith"
const serialnumber = 123456789
const enddate = 200710
if not RegisterMBSPlugin(name,"MBS2007", enddate, serialnumber) then
    MsgBox "something wrong with the serial number of the plugins!"
end if

Notes:
Returns true if name and serial number is accepted.

While you are running your project in Xojo (or Real Studio) you don’t need to register, but if you compile for any target, you should or nice popup windows will show that the app is not registered.
Register in an application subclass to make registering as early as possible.

In case you get this message: "RegisterMBSPlugin()", giving the message "This item conflicts with another item of the same name" you have something else in your plugins folder, e.g. a html file.

Possible reasons for this failing:
- The calculations you make on the strings or serial number do not create the same value on every machine (Intel vs. PPC, e.g. endian problems)
- You use MBS functions before calling registration function (e.g. you register in window.open event and use the plugin for a control.)
- You mix different plugin versions in your Realbasic folder.

This function works only for 2007 and newer serial numbers.

See also:

- 138.2.6 RegisterMBSPlugin(name as string, product as string, enddate as Integer, serial as string) as boolean

138.2.6 RegisterMBSPlugin(name as string, product as string, enddate as Integer, serial as string) as boolean

MBS Main Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The function to register the plugins.

**Example:**

```
const name = "Joe Smith"
const serialnumber = "123456"
const enddate = 200710

if not RegisterMBSPlugin(name, "MBS Complete", enddate, serialnumber) then
    msgBox "something wrong with the serial number of the plugins!"
end if
```

**Notes:**

Returns true if name and serial number is accepted.

While you are running your project in Xojo (or Real Studio) you don’t need to register, but if you compile for any target, you should or nice popup windows will show that the app is not registered.

Register in an application subclass to make registering as early as possible.
In case you get this message: "RegisterMBSPlugin()", giving the message "This item conflicts with another item of the same name" you have something else in your plugins folder, e.g. a html file.

Possible reasons for this failing:
- The calculations you make on the strings or serial number do not create the same value on every machine (Intel vs. PPC, e.g. endian problems)
- You use MBS functions before calling registration function (e.g. you register in window.open event and use the plugin for a control.)
- You mix different plugin versions in your Realbasic folder.

This function works only for 2015 and newer serial numbers.

See also:

- 138.2.5 RegisterMBSPlugin(name as string, product as string, enddate as Integer, serial as Integer) as boolean

138.2.7 SetRegistrationMessageMBS(ID as Integer, message as string)

MBS Main Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Defines what messages to show.

**Example:**

SetRegistrationMessageMBS(0, "This application is broken. Please reinstall!")

**Notes:**

ID currently can only be 0 and is reserved for future flags.

Currently this changes the message which is shown if plugins of different versions are found. This typically happens if installers mix old and new libraries in an app and the user should be asked to reinstall the application.

138.3 class RegistrationEngineMBS

138.3.1 class RegistrationEngineMBS

MBS Util Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
An engine to add serial number generation to your application.

**Example:**
138.3. CLASS REGISTRATIONENGINE MBS

```vbnet
dim r as new RegistrationEngineMBS

r.Field(0)="Hello World"
r.Field(1)="MyProduct 2008"

MsgBox r.Calc  // shows: ICYR-RES4-UXQ1
```

**Notes:**

If you want to add serial numbers to your application, you can use this class to write yourself a serial number generator application. You can later in your application use this class to verify the serial number.

You may want to design your application so that the serial number is written to your preferences file so you can verify it every time your application is launched. But if you do this, also save some computer-related value there so you can avoid people cloning the system. For example the MAC ID, the user name, the system folder creation date. This way you detect whenever a preferences file is copied to another machine.

For generate and later verify serial numbers the setup of the class must match. So carefully check how your serial number should look like. A format like "MA-1234-5678-9012-V1" can be good. Use a prefix and suffix so make serial numbers from different products and different major versions look different. 12 letters are normally enough for a serial number. Especially if you use alphanumeric characters. You can of course change the alphabet string and use lower case letters.

### 138.3.2 Methods

#### 138.3.3 Calc as string

MBS Util Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calculates the serial number.

#### 138.3.4 Verify(s as string) as boolean

MBS Util Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Verifies the serial number.

**Notes:**

If you only use upper case letter for your serial numbers, use a function like `uppercase` before calling `verify`. This way you avoid that a serial number "abc" is invalid because it is not "ABC". Returns true on success and false on failure.
138.3.5 Properties

138.3.6 Alphabet as String

MBS Util Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The characters to use for serial numbers.

**Example:**
```vba
dim r as new RegistrationEngineMBS
r.Field(0)="Hello World"
r.Field(1)="MyProduct 2008"
r.Alphabet="ABC123"
MsgBox r.Calc // shows: A1AC-2312-12CC
```
```
r.Alphabet="0123456789"
MsgBox r.Calc // shows: 4308-2905-4013
```

**Notes:**
Must have at least two characters.
Characters must be unique.
Default is "0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ".
(Read and Write property)

138.3.7 BlockLength as Integer

MBS Util Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The Length of the blocks in the serial number.

**Example:**
```vba
dim r as new RegistrationEngineMBS
r.Field(0)="Hello World"
r.Field(1)="MyProduct 2008"
r.NumberLength=10
r.BlockLength=5
MsgBox r.Calc // shows: ICYRR-ES4UX
```
```
r.NumberLength=16
r.BlockLength=4
MsgBox r.Calc // shows: ICYR-RES4-UXQ1
```
Notes:
If this value is 0, no delimiters are used.
(Read and Write property)

138.3.8  Delimiter as String

MBS Util Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
The delimiter string to use for separating blocks in the serial number.
Notes:
Default is ".".
(Read and Write property)

138.3.9  Mode as Integer

MBS Util Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
The mode of operation.
Notes:
Currently always 0.
Set to 1 to use 128bit instead of 64bit number.
(Read and Write property)

138.3.10 NumberLength as Integer

MBS Util Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
The maximum length of the number.
Example:

dim r as new RegistrationEngineMBS
r.Field(0)="Hello World"
r.Field(1)="MyProduct 2008"
r.NumberLength=10
r.BlockLength=5
MsgBox r.Calc // shows: ICYRR-ES4UX
r.NumberLength=16
r.BlockLength=4
MsgBox r.Calc // shows: ICYR-RES4-UXQ1
138.3.11 Platform as Integer

MBS Util Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Which platform to use for platform specific keys.

**Notes:**
Value is set in the constructor to current platform, but you can change it if you want to run the key generator on a different platform.

Values are:

1  Mac
2  Windows
3  Linux

All other values behave like PlatformSpecificKeys is false.
This value is only used if PlatformSpecificKeys is true.
(Read and Write property)

138.3.12 PlatformSpecificKeys as Boolean

MBS Util Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether you want platform specific keys.

**Notes:**
Set to false if you want to have Windows, Mac OS X and Linux all use the same serial numbers.
Set to true if you want to different serial numbers depending on the platform.

Default is false.
(Read and Write property)
138.3.13 Prefix as String

MBS Util Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The prefix for the serial number string.
**Notes:** (Read and Write property)

138.3.14 Seed as Integer

MBS Util Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A seed value you can set to get your serial number more unique.
**Notes:** (Read and Write property)

138.3.15 Suffix as String

MBS Util Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The suffix for the serial number string.
**Example:**
```vba
dim r as new RegistrationEngineMBS
r.Field(0)="Hello World"
r.Field(1)="REALbasic"
r.suffix="-RB600CPFUSA-MAC"
r.BlockLength=8
r.NumberLength=32
MsgBox r.Calc
// shows: EV6GG9P2-DI533EV6-GG9P2DI5-33EV6GG9-RB600CPFUSA-MAC
// looks like a REALbasic serial number ;-)```
**Notes:** (Read and Write property)

138.3.16 Field(index as Integer) as string

MBS Util Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The data fields you can use for personalized serial numbers.
**Notes:**
Fill this fields with all the values you want to use for personalized serial numbers. You should use the name of the user, maybe the postal address. You can use hardware values like the MAC address or software values
Like the system folder creation date. Also you may have serial numbers different between version 1.x and 2.x of your application. So you pass version information like "1" or "2". Do not pass values like "1.2.3" as this serial number won’t work on "1.2.4".

Index is from 0 to 7.
(Read and Write computed property)
Chapter 139

Regular Expressions

139.1 class RegExMBS

139.1.1 class RegExMBS

MBS Tools Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A class for fast Regular Expression Search in a perl compatible way.

**Example:**

```vbscript
dim r as new RegExMBS
dim searchString as string = ".o"

if r.Compile(searchString) then

dim s as string="Hello World"

dim start as Integer = 0
while r.Execute(s,start)>0

    dim p as Integer = r.OffsetCharacters(0)
dim l as Integer = r.OffsetCharacters(1)-r.OffsetCharacters(0)

    MsgBox ",Found "+searchString+" on position ",str(p)," with length ",str(l)," in "",s,""

    start = r.Offset(1)
wend
else
    MsgBox "failed to compile"
end if
```

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Notes:

uses the PCRE library. You may check the PCRE documentation.

The RegExMBS class has different defaults as the built in RegEx class in Real Studio.

You may want to set options like this:

RB: CaseSensitive = false
MBS: CompileOptionCaseLess = true

RB: DotMatchAll = false
MBS: CompileOptionDotAll = false

RB: Greedy = true
MBS: CompileOptionUngreedy = false

RB: LineEndType = 0
MBS: CompileOptionNewLineAnyCRLF = true and ExecuteOptionNewLineAnyCRLF = true

RB: MatchEmpty = true
MBS: ExecuteOptionNotEmpty = false

and you want to set CompileOptionMultiline to true for multi line match.

139.1.2 Methods

139.1.3 Compile(pattern as string) as boolean


**Example:**

```vbnet
dim r as new RegExMBS
dim searchString as string = ".o"

if r.Compile(searchString) then
    msgbox "OK"
else
    MsgBox "failed to compile"
end if
```
Notes:
Some predefined patterns like \b do not support Unicode well, so you may work around that by using your own pattern.

Returns true on success and false on failure.
ErrorMessage, Lasterror, ErrorOffset and Handle are set.

The following table lists the error codes than may be returned by Compile(), along with the error messages that may be returned by both compiling functions.

139.1.4 CompileMemory(pattern as memoryblock, ByteOffset as Integer) as boolean

**Notes:**
Same as Compile, but the text is stored in a memoryblock and must be a 0 terminated C string.
Be careful to use valid UTF8 input and provide offset in byte units and not in characters.

139.1.5 ConfigBSR as boolean

MBS Tools Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns an integer whose value indicates what character sequences the \R escape sequence matches by default.
**Notes:** A value of 0 means that \R matches any Unicode line ending sequence; a value of 1 means that \R matches only CR, LF, or CRLF. The default can be overridden when a pattern is compiled or matched.

139.1.6 ConfigLinkSize as Integer

MBS Tools Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns an integer that contains the number of bytes used for internal linkage in compiled regular expressions.
**Notes:** The value is 2, 3, or 4. Larger values allow larger regular expressions to be compiled, at the expense of slower matching. The default value of 2 is sufficient for all but the most massive patterns, since it allows the compiled pattern to be up to 64K in size.
139.1.7 ConfigMallocThreshold as Integer

MBS Tools Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The output is an integer that contains the threshold above which the POSIX interface uses malloc() for output vectors.

139.1.8 ConfigMatchLimit as Integer

MBS Tools Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns an integer that gives the default limit for the number of internal matching function calls in a Execute execution.

139.1.9 ConfigMatchLimitRecursion as Integer

MBS Tools Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns an integer that gives the default limit for the depth of recursion when calling the internal matching function in a Execute() execution.

139.1.10 ConfigNewLine as Integer

MBS Tools Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
What newline character is used as default.
**Notes:** The output is an integer whose value specifies the default character sequence that is recognized as meaning "newline". The four values that are supported are: 10 for LF, 13 for CR, 3338 for CRLF, -2 for ANYCRLF, and -1 for ANY. Though they are derived from ASCII, the same values are returned in EBCDIC environments. The default should normally correspond to the standard sequence for your operating system.

139.1.11 ConfigStackRecurse as boolean

MBS Tools Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns an integer that is set to one if internal recursion when running Execute() is implemented by recursive function calls that use the stack to remember their state.
**Notes:** This is the usual way that PCRE is compiled. The output is zero if PCRE was compiled to use blocks of data on the heap instead of recursive function calls. In this case, malloc and free are called to manage memory blocks on the heap, thus avoiding the use of the stack.
139.1.12 ConfigUnicodeProperties as boolean

MBS Tools Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if unicode properties are available. **Notes:** Should be true for the plugin.

139.1.13 ConfigUTF8 as boolean

MBS Tools Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether UTF8 is supported. **Notes:** If this ever is false, please complain. This plugin is designed to work only on UTF8 strings for best performance.

139.1.14 Constructor(VecSize as Integer = 0)

MBS Tools Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor. **Notes:** You pass here the internal vector size which limits how many substrings you can find. For 20 substrings, you need to pass (20+1)*3 for vector size.

139.1.15 Escape(text as string) as string

MBS Tools Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Escapes the string. **Example:**

```vbnet
dim r as new RegExMBS

dim s as string = "Hello [ ] "
dim e as string = r.Escape(s)
MsgBox e // shows Hello \[ \]

dim d as string = r.Unescape(e)
MsgBox d // shows original string
```

**Notes:** The string is converted to UTF8 and all the RegEx special characters are escaped. Returns "" on low memory.
### 139.1.16 Execute(start as Integer = 0) as Integer

MBS Tools Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Performs a search with the compiled pattern again. **Notes:** You can use this variant of execute to continue a search in the same string/memoryblock at a new starting offset. See also:

- 139.1.17 Execute(text as string, start as Integer = 0) as Integer

### 139.1.17 Execute(text as string, start as Integer = 0) as Integer

MBS Tools Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Performs a search with the compiled pattern. **Example:**

```vba
dim r as RegExMbs
dim s as string
dim c as Integer

s="123 ABC 456"

r=new RegExMBS
if r.Compile(" \D+ ") then
c=r.Execute(s,0)
MsgBox str(c)+" "+str(r.Offset(0))+" "+str(r.Offset(1))
// shows: 1 3 8
// 1 for number of results
// 3 for 3 bytes before the matched pattern
// 8 for the 8 bytes before the end of the matched pattern
end if
```

**Notes:**

Returns the number of found offsets. 
text must be in UTF-8 text encoding. 
Start must be 0 for the first character and the byte offset for other characters. Do not pass values from OffsetCharacters here!

Return values from Execute:
If Execute() fails, it returns a negative number. The following are defined in the header file:
139.1.18 ExecuteMemory(text as memoryblock, ByteOffset as Integer = 0, ByteLength as Integer = 0) as Integer

MBS Tools Plugin, Plugin Version: 6.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Performs a search with the compiled pattern.

**Notes:**
Same as Execute, but the text is stored in a memoryblock.
Be careful to use valid UTF8 input and provide offset and length in byte units and not in characters.
If ByteLength is zero, we take the length of the memoryblock.

139.1.19 ExecuteMemoryMT(text as memoryblock, ByteOffset as Integer = 0, ByteLength as Integer = 0) as Integer

MBS Tools Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Performs a search with the compiled pattern.

**Notes:**
Same as ExecuteMemory, but more thread friendly.
The work is performed on an extra thread, so this function can yield time to other Xojo (Real Studio) threads. For best user experience run this command on a Xojo (Real Studio) thread, so your GUI stays responsive. But all the thread overhead is only useful if the execution takes long.

139.1.20 ExecuteMT(start as Integer = 0) as Integer

MBS Tools Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Performs a search with the compiled pattern.

**Notes:**
Same as Execute, but more thread friendly.
The work is performed on an extra thread, so this function can yield time to other Xojo (Real Studio) threads. For best user experience run this command on a Xojo (Real Studio) thread, so your GUI stays responsive. But all the thread overhead is only useful if the execution takes long.

See also:

- 139.1.21 ExecuteMT(text as string, start as Integer = 0) as Integer
139.1.21 **ExecuteMT(text as string, start as Integer = 0) as Integer**

MBS Tools Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Performs a search with the compiled pattern.

**Notes:**
Same as Execute, but more thread friendly. 
The work is performed on an extra thread, so this function can yield time to other Xojo (Real Studio) threads. 
For best user experience run this command on a Xojo (Real Studio) thread, so your GUI stays responsive. 
But all the thread overhead is only useful if the execution takes long.

See also:
- 139.1.20 ExecuteMT(start as Integer = 0) as Integer

139.1.22 **InfoNameEntry(Index as Integer) as string**

MBS Tools Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries a name entry in the list of captures.

**Notes:** Only valid after pattern was compiled.

139.1.23 **Match(text as string) as boolean**

MBS Tools Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Checks if current search pattern matches against given text.

**Example:**
```
    dim r as new RegExMBS
    if r.Compile("e.l") then
        if r.Match("Hello") then
            MsgBox "match"
        end if
        if r.Match("Heiro") then
            MsgBox "wrong match"
        end if
    end if
```

See also:
- 139.1.24 Match(text() as string, inverse as boolean = false) as string()
- 139.1.25 Match(text() as Variant, inverse as boolean = false) as string()
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139.1.24 Match(text() as string, inverse as boolean = false) as string()

MBS Tools Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Checks if current search pattern matches against given text array.

**Example:**

```vba
dim r as new RegExMBS
r.CompileOptionCaseLess = true
if r.Compile("e.l") then
    dim t() as string = array("Hello", "World", "Xojo", "REALbasic")
    dim match1() as string = r.Match(t)
    dim match2() as string = r.Match(t, true)
    MsgBox "Matching: " + Join(match1, " ") + EndOfLine + "Other: " + Join(match2, " ")
end if
```

**Notes:**

Returns the list of matching values.
If inverse is set to true, it returns the list of non matching values.

See also:
- 139.1.23 Match(text as string) as boolean
- 139.1.25 Match(text() as Variant, inverse as boolean = false) as string()

139.1.25 Match(text() as Variant, inverse as boolean = false) as string()

MBS Tools Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Checks if current search pattern matches against given variant array.

**Example:**

```vba
dim r as new RegExMBS
r.CompileOptionCaseLess = true
if r.Compile("e.l") then
    dim dic as new Dictionary
dic.Value("Hello") = 1
dic.Value("World") = 2
dic.Value("Xojo") = 3
dic.Value("REALbasic") = 4
```

dim match1() as string = r.Match(dic.keys)
dim match2() as string = r.Match(dic.keys, true)

MsgBox ”Matching: ”+Join(match1, ”, ”)+EndOfLine+”Other: ”+Join(match2, ”, ”)
end if

Notes:
The variant array should have entries which convert well to string.
Returns the list of matching values.
If inverse is set to true, it returns the list of non matching values.
See also:

• 139.1.23 Match(text as string) as boolean 18234
• 139.1.24 Match(text() as string, inverse as boolean = false) as string() 18235

139.1.26 Offset(index as Integer) as Integer

Example:

dim r as RegExMbs
dim s as string
dim c as Integer

s=”123 ABC 456”

r=new RegExMBS
if r.Compile(“..”) then

c=r.Execute(s,0)
MsgBox str(c)+” ”+str(r.Offset(0))+” ”+str(r.Offset(1))
// shows: 1 4 10
// 1 for ubound of the offset array
// 4 for 4 bytes before the matched pattern
// 10 for the 10 bytes before the end of the matched pattern
end if

r=new RegExMBS
if r.Compile(“\xF6.”) then // finds using Unicode codepoint

c=r.Execute(s,0)
MsgBox str(c)+” ”+str(r.Offset(0))+” ”+str(r.Offset(1))
// shows: 1 4 10
// 1 for ubound of the offset array
// 4 for 4 bytes before the matched pattern
// 10 for the 10 bytes before the end of the matched pattern
end if

Notes:
If you found a pattern in a string you get here:

Invalid indexes return 0.
Count is the number of entries here.

139.1.27 OffsetCharacters(index as Integer) as Integer

Get the offset in the offset list with given index in characters.

Example:

```
dim r as new RegExMBS
dim searchString as string = ".o"
if r.Compile(searchString) then

dim s as string=" Hello World"
if r.Execute(s,0)>0 then

dim lines(-1) as string
lines.Append str(R.Count)+" offset found."
lines.Append "In Bytes:"
lines.Append " Start of matched patern: "+str(R.Offset(0))
lines.Append " End of matched patern: "+str(R.Offset(1))
lines.Append " Length of matched patern: "+str(R.Offset(1)-r.Offset(0))

lines.Append "In Characters:"
lines.Append " Start of matched patern: "+str(R.OffsetCharacters(0))
lines.Append " End of matched patern: "+str(R.OffsetCharacters(1))
lines.Append " Length of matched patern: "+str(R.OffsetCharacters(1)-r.OffsetCharacters(0))

MsgBox Join(lines,EndOfLine)
end if
else
MsgBox "failed to compile"
end if
```
Notes:
This function is identical to Offset(), but returns characters instead of bytes.
Works only with valid UTF-8 strings as input.
Value is calculated on each function call based on Offset(index) and current text.

If you found a pattern in a string you get here:

Invalid indexes return 0.
Count is the number of entries here.

Please note that if you just need offsets for calling Mid() function, you can get better performance by using just Offset and MidB function. Than neither Mid and OffsetCharacters need to calculate the character offset.

139.1.28 Replace(NewText as string) as string

Replaces the text on the current found position and returns the complete new text.
Notes:
You need to call Execute before.
Lasterror is set.
NewText must have UTF-8 text encoding.

\0 references the whole found pattern, \1 to \15 the subexpressions.
\t is replaced with chr(9), \r and \n with chr(13) and \\\ with \\.

139.1.29 ReplaceAll(Target as string, NewText as string = ””) as string

Searches the target string for current pattern and replaces all occurrences with the new text.
Notes:
You need to call Compile before to initialize the pattern and you should call Study before to optimize the pattern.
Lasterror is set.
Target and NewText must have UTF-8 text encoding.

\0 references the whole found pattern, \1 to \15 the subexpressions.
\t is replaced with chr(9), \r and \n with chr(13) and \\ with \.

### 139.1.30 ReplaceSelection(NewText as string) as string

MBS Tools Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Replaces the text on the current found position and returns new text for that selection. **Notes:**

This method is for text editors where you will store result in editfield.seltext to replace the current selection. Lasterror is set.
You need to call Execute before.
NewText must have UTF-8 text encoding.

\0 references the whole found pattern, \1 to \15 the subexpressions.
\t is replaced with chr(9), \r and \n with chr(13) and \\ with \\.

### 139.1.31 StringNumber(name as string) as Integer

MBS Tools Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This convenience function finds the number of a named substring capturing parenthesis in a compiled pattern. **Notes:**

name: Name whose number is required
The yield of the function is the number of the parenthesis if the name is found, or PCRE_ERROR_NOSUBSTRING otherwise.

### 139.1.32 Study as boolean

MBS Tools Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** After you compiled a pattern study can optimize it. **Notes:**

Only useful if you use Execute several times.
In that case you call one time Compile, one time Study and several times Execute.
Errormessage is set.

### 139.1.33 Substring(index as Integer) as string

MBS Tools Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the subexpression found with the given index.
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Notes:

Returns "" on any error.
Lasterror is set.
See also:

- 139.1.34 Substring(name as string) as string

139.1.34 Substring(name as string) as string

MBS Tools Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the subexpression found with the given name.

Notes:

Returns "" on any error.
Lasterror is set.
See also:

- 139.1.33 Substring(index as Integer) as string

139.1.35 Unescape(text as string) as string

MBS Tools Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Unescapes the string.

**Example:**

```vba
dim r as new RegExMBS

dim s as string = "Hello \[ \] 

dim e as string = r.Escape(s)
MsgBox e // shows Hello \[ \]

dim d as string = r.Unescape(e)
MsgBox d // shows original string
```

Notes:

The string is converted to UTF8 and all the RegEx special characters are escaped.
Returns "" on low memory.

139.1.36 Version as string

MBS Tools Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The version of the PCRE library as an ASCII string.
139.1.37 Properties

139.1.38 CompileOptionAnchored as Boolean

**Notes:** (Read and Write property)

139.1.39 CompileOptionAutoCallOut as Boolean

MBS Tools Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Option for Compile: Compile automatic callouts  
**Notes:** (Read and Write property)

139.1.40 CompileOptionBSRAnyCRLF as Boolean

MBS Tools Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This option and CompileOptionBSRUnicode (which are mutually exclusive) control what the \R escape sequence matches.  
**Notes:** The choice is either to match only CR, LF, or CRLF, or to match any Unicode newline sequence. The default is specified when PCRE is built. It can be overridden from within the pattern, or by setting an option when a compiled pattern is matched.  
(Read and Write property)

139.1.41 CompileOptionBSRUnicode as Boolean

MBS Tools Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This option and CompileOptionBSRAnyCRLF (which are mutually exclusive) control what the \R escape sequence matches.  
**Example:**
```plaintext
dim rg As new RegExMBS  
rg.CompileOptionUngreedy = false  
rg.CompileOptionBSRUnicode = true

dim ts as string = ”one” + EndOfLine.UNIX + ”test” + chr(& h2028) + ”more”
```
// replace all end lines with #
if rg.Compile(”\R+”) then
    ts = rg.ReplaceAll(ts,” # ”)
end if

MsgBox ts

Notes:
The choice is either to match only CR, LF, or CRLF, or to match any Unicode newline sequence. The default is specified when PCRE is built. It can be overridden from within the pattern, or by setting an option when a compiled pattern is matched.
(Read and Write property)

139.1.42 CompileOptionCaseLess as Boolean


Example:

dim r as new RegExMBS
dim searchString as string = ”hello”
	r.CompileOptionCaseLess=True

if r.Compile(searchString) then
    dim s as string= ”Hello World”

    if r.Execute(s,0) >0 then
        MsgBox ”Found: ”+mid(s, r.OffsetCharacters(0)+1, r.OffsetCharacters(1)-r.OffsetCharacters(0))
    else
        MsgBox ”nothing found”
    end if
else
    MsgBox ”failed to compile”
end if

Notes: (Read and Write property)
139.1.43 CompileOptionDollarEndOnly as Boolean

MBS Tools Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Option for Compile: $ not to match newline at end  
**Notes:** (Read and Write property)

139.1.44 CompileOptionDotAll as Boolean

MBS Tools Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Option for Compile: . matches anything including endofline  
**Example:**
```vbs
dim r as new RegExMBS
dim searchString as string = "<.+

r.CompileOptionDotAll = false // finds only if true

if r.Compile(searchString) then
    dim s as string="\<Step enable=""True""+EndOfLine.unix+"id=""93"" name=""Beep""/>"
    if r.Execute(s,0) >0 then
        MsgBox "Found: "+mid(s, r.OffsetCharacters(0)+1, r.OffsetCharacters(1)-r.OffsetCharacters(0))
    else
        MsgBox "nothing found"
    end if
else
    MsgBox "failed to compile"
end if
```

**Notes:** (Read and Write property)

139.1.45 CompileOptionDuplicateNames as Boolean

MBS Tools Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
If this bit is set, names used to identify capturing subpatterns need not be unique.  
**Notes:**
This can be helpful for certain types of pattern when it is known that only one instance of the named sub-
pattern can ever be matched. There are more details of named subpatterns below; see also the pcrepattern
documentation.  
(Read and Write property)
139.1.46 CompileOptionExtended as Boolean

MBS Tools Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Option for Compile: Ignore whitespace and # comments
**Notes:** (Read and Write property)

139.1.47 CompileOptionFirstLine as Boolean

MBS Tools Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Option for Compile: Force matching to be before newline
**Notes:** (Read and Write property)

139.1.48 CompileOptionJavaScriptCompat as Boolean

MBS Tools Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** If this option is set, PCRE’s behaviour is changed in some ways so that it is compatible with JavaScript rather than Perl.
**Notes:**
The changes are as follows:

1. A lone closing square bracket in a pattern causes a compile-time error, because this is illegal in JavaScript (by default it is treated as a data character). Thus, the pattern AB ] CD becomes illegal when this option is set.

2. At run time, a back reference to an unset subpattern group matches an empty string (by default this causes the current matching alternative to fail). A pattern such as \((1)(a) succeeds when this option is set (assuming it can find an ”a” in the subject), whereas it fails by default, for Perl compatibility.
**Notes:** (Read and Write property)

139.1.49 CompileOptionMultiline as Boolean

MBS Tools Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Option for Compile: ˆ and $ match newlines within data

**Example:**
```plaintext
dim r as RegExMBS
dim n,i,c as Integer
```
dim s as string

s=ReplaceLineEndings(EditField1.text,EndOfLine.UNIX)

r=new RegExMBS

' r.CompileOptionFirstLine=True
r.CompileOptionMultiline=True

if r.Compile("ˆ....$ ") then
 n=0
 do
  c=r.Execute(s,n)
 if c>0 then
  MsgBox r.Substring(0)
  n=r.Offset(1)
 end if
 loop until c=0
 end if

**Notes:** (Read and Write property)

### 139.1.50 CompileOptionNewLineAny as Boolean

MBS Tools Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This option override the default newline definition that was chosen when PCRE was built.

**Notes:**

Setting CompileOptionNewLineCR or CompileOptionNewLineLF specifies that a newline is indicated by a single character (CR or LF, respectively). Setting CompileOptionNewLineCRLF specifies that a newline is indicated by the two-character CRLF sequence. Setting CompileOptionNewLineAnyCRLF specifies that any of the three preceding sequences should be recognized. Setting CompileOptionNewLineAny specifies that any Unicode newline sequence should be recognized. The Unicode newline sequences are the three just mentioned, plus the single characters VT (vertical tab, U+000B), FF (formfeed, U+000C), NEL (next line, U+0085), LS (line separator, U+2028), and PS (paragraph separator, U+2029). The last two are recognized only in UTF-8 mode.

The newline setting in the options word uses three bits that are treated as a number, giving eight possibilities. Currently only six are used (default plus the five values above). This means that if you set more than one newline option, the combination may or may not be sensible. For example, CompileOptionNewLineCR with CompileOptionNewLineLF is equivalent to CompileOptionNewLineCRLF, but other combinations may yield unused numbers and cause an error.
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The only time that a line break in a pattern is specially recognized when compiling is when PCRE_EXTENDED is set. CR and LF are whitespace characters, and so are ignored in this mode. Also, an unescaped # outside a character class indicates a comment that lasts until after the next line break sequence. In other circumstances, line break sequences in patterns are treated as literal data.

139.1.51 CompileOptionNewLineAnyCRLF as Boolean

MBS Tools Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This option override the default newline definition that was chosen when PCRE was built.
**Notes:**
See CompileOptionNewLineAny for more details.
(Read and Write property)

139.1.52 CompileOptionNewLineCR as Boolean

MBS Tools Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This option override the default newline definition that was chosen when PCRE was built.
**Notes:**
See CompileOptionNewLineAny for more details.
(Read and Write property)

139.1.53 CompileOptionNewLineCRLF as Boolean

MBS Tools Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This option override the default newline definition that was chosen when PCRE was built.
**Notes:**
See CompileOptionNewLineAny for more details.
(Read and Write property)

139.1.54 CompileOptionNewLineLF as Boolean

MBS Tools Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This option override the default newline definition that was chosen when PCRE was built.
**Notes:**
See CompileOptionNewLineAny for more details.
(Read and Write property)
139.1.55  CompileOptionNoAutoCapture as Boolean

**Notes:** (Read and Write property)

139.1.56  CompileOptionNoStartOptimize as Boolean

MBS Tools Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This is an option that acts at matching time; that is, it is really an option for Execute.
**Notes:**
If it is set at compile time, it is remembered with the compiled pattern and assumed at matching time. (Read and Write property)

139.1.57  CompileOptionNoUTF8Check as Boolean

**Notes:** (Read and Write property)

139.1.58  CompileOptions as Integer

MBS Tools Plugin, Plugin Version: 6.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal value of all the compile options.
**Notes:**
You can get and set the bits using the CompileOption* Boolean properties. (Read and Write property)

139.1.59  CompileOptionUngreedy as Boolean

**Notes:**
Basically this is about whether to find the next matching item or the last matching item in the whole string. Matching the next item is always much faster.
139.1.60  CompileOptionUnicodeCodePoints as Boolean

MBS Tools Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to support unicode code points for character classes.

**Notes:**
This option changes the way PCRE processes `\B`, `\b`, `\D`, `\d`, `\S`, `\s`, `\W`, `\w`, and some of the POSIX character classes. By default, only ASCII characters are recognized, but if PCRE_UCP is set, Unicode properties are used instead to classify characters. More details are given in the section on generic character types in the pcrepattern page. If you set PCRE_UCP, matching one of the items it affects takes much longer. The option is available only if PCRE has been compiled with Unicode property support.

(Read and Write property)

139.1.61  CompileOptionUTF8 as Boolean


**Notes:** (Read and Write property)

139.1.62  Count as Integer

MBS Tools Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Number of offsets found.

**Example:**

```vbscript
dim r as new RegExMBS
dim searchString as string = ".o"
if r.Compile(searchString) then
dim s as string=" Hello World"
if r.Execute(s,0) > 0 then
dim lines(-1) as string
lines.Append str(R.Count)+" offset found."
lines.Append "In Bytes:"
lines.Append " Start of matched patern: "+str(R.Offset(0))
lines.Append " End of matched patern: "+str(R.Offset(1))
lines.Append " Length of matched patern: "+str(R.Offset(1)-r.Offset(0))
```

lines.Append "In Characters:"
lines.Append " Start of matched pattern: " + str(R.OffsetCharacters(0))
lines.Append " End of matched pattern: " + str(R.OffsetCharacters(1))
lines.Append " Length of matched pattern: " + str(R.OffsetCharacters(1)-R.OffsetCharacters(0))

MsgBox Join(lines, EndOfLine)
end if

else
MsgBox "failed to compile"
end if

Notes: (Read only property)

139.1.63  ErrorMessage as String

MBS Tools Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last message reported.
**Notes:**
Set by Study and Compile.
(Read only property)

139.1.64  ErrorOffset as Integer

MBS Tools Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last error offset from the compile function.
**Notes:** (Read only property)

139.1.65  ExecuteOptionAnchored as Boolean

MBS Tools Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Option for Execute: Match only at the first position
**Notes:** (Read and Write property)

139.1.66  ExecuteOptionBSRAnyCRLF as Boolean

MBS Tools Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This option and ExecuteOptionBSRUnicode (which are mutually exclusive) control what the \R escape
sequence matches.

Notes:
The choice is either to match only CR, LF, or CRLF, or to match any Unicode newline sequence. The default is specified when PCRE is built. It can be overridden from within the pattern, or by setting an option when a compiled pattern is matched.

(Read and Write property)

139.1.67 ExecuteOptionBSRUnicode as Boolean

MBS Tools Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This option and ExecuteOptionBSRAnyCRLF (which are mutually exclusive) control what the \R escape sequence matches.

**Example:**

```vbnet
dim rg As new RegExMBS
rg.CompileOptionUngreedy = false
rg.ExecuteOptionBSRUnicode = true

dim ts as string = ”one” + EndOfLine.UNIX + ”test” + chr(& h2028) + ”more”

// replace all end lines with #
if rg.Compile(”\\R+”) then

ts = rg.ReplaceAll(ts,” # ”)
end if

MsgBox ts
```

Notes:
The choice is either to match only CR, LF, or CRLF, or to match any Unicode newline sequence. The default is specified when PCRE is built. It can be overridden from within the pattern, or by setting an option when a compiled pattern is matched.

(Read and Write property)

139.1.68 ExecuteOptionNewLineAny as Boolean

MBS Tools Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This option override the default newline definition that was chosen when PCRE was built.

Notes:
Setting ExecuteOptionNewLineCR or ExecuteOptionNewLineLF specifies that a newline is indicated by a
single character (CR or LF, respectively). Setting `ExecuteOptionNewLineCRLF` specifies that a newline is indicated by the two-character CRLF sequence. Setting `ExecuteOptionNewLineAnyCRLF` specifies that any of the three preceding sequences should be recognized. Setting `ExecuteOptionNewLineAny` specifies that any Unicode newline sequence should be recognized. The Unicode newline sequences are the three just mentioned, plus the single characters VT (vertical tab, U+000B), FF (formfeed, U+000C), NEL (next line, U+0085), LS (line separator, U+2028), and PS (paragraph separator, U+2029). The last two are recognized only in UTF-8 mode. The newline setting in the options word uses three bits that are treated as a number, giving eight possibilities. Currently only six are used (default plus the five values above). This means that if you set more than one newline option, the combination may or may not be sensible. For example, `ExecuteOptionNewLineCR` with `ExecuteOptionNewLineLF` is equivalent to `ExecuteOptionNewLineCRLF`, but other combinations may yield unused numbers and cause an error.

The only time that a line break in a pattern is specially recognized when compiling is when `PCRE_EXTENDED` is set. CR and LF are whitespace characters, and so are ignored in this mode. Also, an unescaped # outside a character class indicates a comment that lasts until after the next line break sequence. In other circumstances, line break sequences in patterns are treated as literal data.

(Read and Write property)

### 139.1.69 ExecuteOptionNewLineAnyCRLF as Boolean

MBS Tools Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This option override the default newline definition that was chosen when PCRE was built. **Notes:** See `ExecuteOptionNewLineAny` for more details. (Read and Write property)

### 139.1.70 ExecuteOptionNewLineCR as Boolean

MBS Tools Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This option override the default newline definition that was chosen when PCRE was built. **Notes:** See `ExecuteOptionNewLineAny` for more details. (Read and Write property)

### 139.1.71 ExecuteOptionNewLineCRLF as Boolean

MBS Tools Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This option override the default newline definition that was chosen when PCRE was built. **Notes:**
139.1.72 **ExecuteOptionNewLineLF as Boolean**

MBS Tools Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This option override the default newline definition that was chosen when PCRE was built.

**Notes:**
See ExecuteOptionNewLineAny for more details.
(Read and Write property)

139.1.73 **ExecuteOptionNoStartOptimize as Boolean**

MBS Tools Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
There are a number of optimizations that Execute uses at the start of a match, in order to speed up the process.

**Notes:**
For example, if it is known that an unanchored match must start with a specific character, it searches the subject for that character, and fails immediately if it cannot find it, without actually running the main matching function. This means that a special item such as (*COMMIT) at the start of a pattern is not considered until after a suitable starting point for the match has been found. When callouts or (*MARK) items are in use, these "start-up" optimizations can cause them to be skipped if the pattern is never actually used. The start-up optimizations are in effect a pre-scan of the subject that takes place before the pattern is run.

The ExecuteOptionNoStartOptimize option disables the start-up optimizations, possibly causing performance to suffer, but ensuring that in cases where the result is "no match", the callouts do occur, and that items such as (*COMMIT) and (*MARK) are considered at every possible starting position in the subject string. If ExecuteOptionNoStartOptimize is set at compile time, it cannot be unset at matching time.

Setting ExecuteOptionNoStartOptimize can change the outcome of a matching operation. Consider the pattern

(*COMMIT)ABC
When this is compiled, PCRE records the fact that a match must start with the character "A". Suppose the subject string is "DEFABC". The start-up optimization scans along the subject, finds "A" and runs the first match attempt from there. The (*COMMIT) item means that the pattern must match the current starting position, which in this case, it does. However, if the same match is run with ExecuteOptionNoStartOptimize set, the initial scan along the subject string does not happen. The first match attempt is run starting from "D" and when this fails, (*COMMIT) prevents any further matches being tried, so the overall result is "no match". If the pattern is studied, more start-up optimizations may be used. For example, a minimum length for the subject may be recorded. Consider the pattern.

(*COMMIT)ABC
139.1. CLASS REGEXMBS

(*MARK:A)(X | Y)
The minimum length for a match is one character. If the subject is "ABC", there will be attempts to match "ABC", "BC", "C", and then finally an empty string. If the pattern is studied, the final attempt does not take place, because PCRE knows that the subject is too short, and so the (*MARK) is never encountered. In this case, studying the pattern does not affect the overall match result, which is still "no match", but it does affect the auxiliary information that is returned.

(Read and Write property)

139.1.74 ExecuteOptionNotBOL as Boolean

MBS Tools Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Option for Execute: Subject is not the beginning of a line

**Notes:** (Read and Write property)

139.1.75 ExecuteOptionNotEmpty as Boolean

MBS Tools Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Option for Execute: An empty string is not a valid match

**Notes:** (Read and Write property)

139.1.76 ExecuteOptionNotEmptyAtStart as Boolean

MBS Tools Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the options.

**Notes:**

This is like ExecuteOptionNotEmpty, except that an empty string match that is not at the start of the subject is permitted. If the pattern is anchored, such a match can occur only if the pattern contains \K. Perl has no direct equivalent of ExecuteOptionNotEmpty or ExecuteOptionNotEmptyAtStart, but it does make a special case of a pattern match of the empty string within its split() function, and when using the /g modifier. It is possible to emulate Perl's behaviour after matching a null string by first trying the match again at the same offset with ExecuteOptionNotEmptyAtStart and ExecuteOptionAnchored, and then if that fails, by advancing the starting offset (see below) and trying an ordinary match again. There is some code that demonstrates how to do this in the peredemo sample program. In the most general case, you have to check to see if the newline convention recognizes CRLF as a newline, and if so, and the current character is CR followed by LF, advance the starting offset by two characters instead of one.

(Read and Write property)
139.1.77  **ExecuteOptionNotEOL as Boolean**

MBS Tools Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Option for Execute: Subject is not the end of a line  
**Notes:** (Read and Write property)

139.1.78  **ExecuteOptionNoUTF8Check as Boolean**

MBS Tools Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Option for Execute: Do not check the subject for UTF-8 validity  
**Notes:** (Read and Write property)

139.1.79  **ExecuteOptionPartial as Boolean**

**Notes:** (Read and Write property)

139.1.80  **ExecuteOptionPartialHard as Boolean**

MBS Tools Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**  
This option (and ExecuteOptionPartial) turn on the partial matching feature.  
**Notes:**

A partial match occurs if the end of the subject string is reached successfully, but there are not enough subject characters to complete the match. If this happens when ExecuteOptionPartial (but not ExecuteOptionPartialHard) is set, matching continues by testing any remaining alternatives. Only if no complete match can be found is ErrorPartial returned instead of PCRE_ERROR_NOMATCH. In other words, ExecuteOptionPartial says that the caller is prepared to handle a partial match, but only if no complete match can be found.
If ExecuteOptionPartialHard is set, it overrides ExecuteOptionPartial. In this case, if a partial match is found, Execute() immediately returns ErrorPartial, without considering any other alternatives. In other words, when ExecuteOptionPartialHard is set, a partial match is considered to be more important that an alternative complete match.

In both cases, the portion of the string that was inspected when the partial match was found is set as the first matching string. There is a more detailed discussion of partial and multi-segment matching, with examples, in the pcrepartial documentation.  
(Read and Write property)
139.1. **ExecuteOptions as Integer**

MBS Tools Plugin, Plugin Version: 6.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal value of all the execute options.

**Notes:**
You can get and set the bits using the CompileOption* Boolean properties.
(Read and Write property)

139.1.82 **Handle as Integer**

MBS Tools Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The handle to the pattern data structure.

**Notes:** (Read only property)

139.1.83 **InfoCaptureCount as Integer**

MBS Tools Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries number of captures defined in the pattern.

**Notes:**
Only valid after pattern was compiled.
(Read only property)

139.1.84 **InfoNameCount as Integer**

MBS Tools Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries number of names defined in the pattern.

**Notes:**
Only valid after pattern was compiled.
(Read only property)

139.1.85 **InfoSize as Integer**

MBS Tools Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries the size of the compiled pattern.

**Notes:**
Only valid after pattern was compiled.
(Read only property)
139.1.86  InfoStudySize as Integer

MBS Tools Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries the study details size.  
**Notes:** Only valid after calling Study.  
(Read only property)

139.1.87  Lasterror as Integer

MBS Tools Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last error code reported.  
**Notes:** 0 is no error and -1 is some parameter error. See Error* constants for other values.  
(Read only property)

139.1.88  MatchLimit as Integer

**Notes:** You can set it to a limit value. If set to zero, the plugin will use the default.  
The default value for the limit can be set when PCRE is built; the default default is 10 million, which handles all but the most extreme cases. You can override the default by setting this property.  
(Read and Write property)

139.1.89  MatchLimitRecursion as Integer

**Notes:** The MatchLimitRecursion field is similar to MatchLimit, but instead of limiting the total number of times that match() is called, it limits the depth of recursion. The recursion depth is a smaller number than the total number of calls, because not all calls to match() are recursive. This limit is of use only if it is set.
139.1. CLASS REGEXMBS

smaller than MatchLimit.

Limiting the recursion depth limits the amount of stack that can be used.

The default value for MatchLimitRecursion can be set when PCRE is built; the default default is the same value as the default for MatchLimit. You can override the default by setting this property. If value is zero, the plugin uses the default.

(Read and Write property)

139.1.90 Text as String

MBS Tools Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The text used for the last successfull compile call.
**Notes:** (Read only property)

139.1.91 TextMemory as Memoryblock

MBS Tools Plugin, Plugin Version: 6.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The text used for the last successfull compiletext call.
**Notes:** (Read only property)

139.1.92 VectorSize as Integer

MBS Tools Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal vector size.
**Notes:** (Read only property)

139.1.93 Constants

139.1.94 ErrorBadCount = -15

MBS Tools Plugin, Plugin Version: 11.2. **Function:** One of the RegEx error constants.
**Notes:** This error is given if the value of the ovecsize argument is negative.
139.1.95  ErrorBadMagic = -4

MBS Tools Plugin, Plugin Version: 11.2. **Function:** One of the RegEx error constants.  
**Notes:** PCRE stores a 4-byte "magic number" at the start of the compiled code, to catch the case when it is passed a junk pointer and to detect when a pattern that was compiled in an environment of one endianness is run in an environment with the other endianness. This is the error that PCRE gives when the magic number is not present.

139.1.96  ErrorBadNewLine = -23

MBS Tools Plugin, Plugin Version: 11.2. **Function:** One of the RegEx error constants.  
**Notes:** An invalid combination of Newline options was given.

139.1.97  ErrorBadOffset = -24

MBS Tools Plugin, Plugin Version: 11.2. **Function:** One of the RegEx error constants.  
**Notes:** The value of startoffset was negative or greater than the length of the subject, that is, the value in length.

139.1.98  ErrorBadOption = -3

MBS Tools Plugin, Plugin Version: 11.2. **Function:** One of the RegEx error constants.  
**Notes:** An unrecognized bit was set in the options argument.

139.1.99  ErrorBadPartial = -13

MBS Tools Plugin, Plugin Version: 11.2. **Function:** One of the RegEx error constants.  
**Notes:** This code is no longer in use. It was formerly returned when the PCRE_PARTIAL option was used with a compiled pattern containing items that were not supported for partial matching. From release 8.00 onwards, there are no restrictions on partial matching.

139.1.100  ErrorBadUTF8 = -10

MBS Tools Plugin, Plugin Version: 11.2. **Function:** One of the RegEx error constants.  
**Notes:** A string that contains an invalid UTF-8 byte sequence was passed as a subject. However, if PCRE_PARTIAL_HARD is set and the problem is a truncated UTF-8 character at the end of the subject, ErrorShortUTF8 is used instead.
139.1. **CLASS REGEXMBS**

139.1.101 **ErrorBadUTF8Offset** = -11

MBS Tools Plugin, Plugin Version: 11.2. **Function:** One of the RegEx error constants. **Notes:** The UTF-8 byte sequence that was passed as a subject was valid, but the value of startoffset did not point to the beginning of a UTF-8 character or the end of the subject.

139.1.102 **ErrorCallOut** = -9

MBS Tools Plugin, Plugin Version: 11.2. **Function:** One of the RegEx error constants.

139.1.103 **ErrorDFARecurse** = -20

MBS Tools Plugin, Plugin Version: 11.2. **Function:** One of the RegEx error constants.

139.1.104 **ErrorDFAUCond** = -17

MBS Tools Plugin, Plugin Version: 11.2. **Function:** One of the RegEx error constants.
0 no error
1 \ at end of pattern
2 \c at end of pattern
3 unrecognized character follows \n
4 numbers out of order in \{ \} quantifier
5 number too big in \{ \} quantifier
6 missing terminating ] for character class
7 invalid escape sequence in character class
8 range out of order in character class
9 nothing to repeat
10 operand of unlimited repeat could match the empty string
11 internal error: unexpected repeat
12 unrecognized character after (?)
13 POSIX named classes are supported only within a class
14 missing )
15 reference to non-existent subpattern
16 erroffset passed as NULL
17 unknown option bit(s) set
18 missing ) after comment
19 parentheses nested too deeply
20 regular expression too large
21 failed to get memory
22 unmatched parentheses
23 internal error: code overflow
24 unrecognized character after (?<
25 lookbehind assertion is not fixed length
26 malformed number after (?(
27 conditional group contains more than two branches
28 assertion expected after (?(
29 (?R or (?digits must be followed by )
30 unknown POSIX class name
31 POSIX collating elements are not supported
32 this version of PCRE is not compiled with PCRE_UTF8 support
33 spare error
34 character value in \x \{ ... \} sequence is too large
35 invalid condition (?(0)
36 \C not allowed in lookbehind assertion
37 PCRE does not support \L, \l, \N, \U, or \u
38 number after (?C is >255
39 closing ) for (?C expected
40 recursive call could loop indefinitely
41 unrecognized character after (?P
42 syntax error after (?P
43 two named groups have the same name
44 invalid UTF-8 string
45 support for \P, \p, and \X has not been compiled
46 malformed \P or \p sequence
47 unknown property name after \P or \p
139.1. CLASS REGEXMBS

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCRE_ERROR_NOMATCH</td>
<td>-1 The subject string did not match the pattern.</td>
</tr>
<tr>
<td>PCRE_ERROR_NULL</td>
<td>-2 Either code or subject was passed as &quot;&quot;.</td>
</tr>
<tr>
<td>PCRE_ERROR_BADOPTION</td>
<td>-3 An unrecognized bit was set in the options argument.</td>
</tr>
<tr>
<td>PCRE_ERROR_BADMAGIC</td>
<td>-4 PCRE stores a 4-byte &quot;magic number&quot; at the start of the compiled code, to catch the case when it is passed a junk pointer and to detect when a pattern that was compiled in an environment of one endianness is run in an environment with the other endianness. This is the error that PCRE gives when the magic number is not present.</td>
</tr>
<tr>
<td>PCRE_ERROR_UNKNOWN_NODE</td>
<td>-5 While running the pattern match, an unknown item was encountered in the compiled pattern. This error could be caused by a bug in PCRE or by overwriting of the compiled pattern.</td>
</tr>
<tr>
<td>PCRE_ERROR_NOMEMORY</td>
<td>-6 If a pattern contains back references, but the ovector that is passed to Execute() is not big enough to remember the referenced substrings, PCRE gets a block of memory at the start of matching to use for this purpose. If the call via pcre_malloc() fails, this error is given. The memory is automatically freed at the end of matching.</td>
</tr>
<tr>
<td>PCRE_ERROR_MATCHLIMIT</td>
<td>-8 The backtracking limit, as specified by the match_limit field in a pcre_extra structure (or defaulted) was reached.</td>
</tr>
<tr>
<td>PCRE_ERROR_RECURSIONLIMIT</td>
<td>-21 The internal recursion limit, as specified by the match_limit_recursion field in a pcre_extra structure (or defaulted) was reached.</td>
</tr>
<tr>
<td>PCRE_ERROR_CALLOUT</td>
<td>-9 This error is never generated by Execute() itself. It is provided for use by callout functions that want to yield a distinctive error code. See the pcrecallout documentation for details.</td>
</tr>
<tr>
<td>PCRE_ERROR_BADUTF8</td>
<td>-10 A string that contains an invalid UTF-8 byte sequence was passed as a subject.</td>
</tr>
<tr>
<td>PCRE_ERROR_BADUTF8_OFFSET</td>
<td>-11 The UTF-8 byte sequence that was passed as a subject was valid, but the value of startoffset did not point to the beginning of a UTF-8 character.</td>
</tr>
<tr>
<td>PCRE_ERROR_PARTIAL</td>
<td>-12 The subject string did not match, but it did match partially. See the pcrepartial documentation for details of partial matching.</td>
</tr>
<tr>
<td>PCRE_ERROR_BADPARTIAL</td>
<td>-13 The PCRE_PARTIAL option was used with a compiled pattern containing items that are not supported for partial matching. See the pcrepartial documentation for details of partial matching.</td>
</tr>
<tr>
<td>PCRE_ERROR_INTERNAL</td>
<td>-14 An unexpected internal error has occurred. This error could be caused by a bug in PCRE or by overwriting of the compiled pattern.</td>
</tr>
<tr>
<td>PCRE_ERROR_BADCOUNT</td>
<td>-15 This error is given if the value of the ovecsize argument is negative.</td>
</tr>
</tbody>
</table>

**index offset**

<table>
<thead>
<tr>
<th>index</th>
<th>offset</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>start of matched pattern</td>
</tr>
<tr>
<td>1</td>
<td>end of matched pattern</td>
</tr>
<tr>
<td>2</td>
<td>start of subexpression 1</td>
</tr>
<tr>
<td>3</td>
<td>end of subexpression 1</td>
</tr>
<tr>
<td>2*n</td>
<td>start of subexpression n</td>
</tr>
<tr>
<td>2*n+1</td>
<td>end of subexpression n</td>
</tr>
<tr>
<td>index</td>
<td>offset</td>
</tr>
<tr>
<td>-------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>0</td>
<td>start of matched pattern</td>
</tr>
<tr>
<td>1</td>
<td>end of matched pattern</td>
</tr>
<tr>
<td>2</td>
<td>start of subexpression 1</td>
</tr>
<tr>
<td>3</td>
<td>end of subexpression 1</td>
</tr>
<tr>
<td>2*n</td>
<td>start of subexpression n</td>
</tr>
<tr>
<td>2*n+1</td>
<td>end of subexpression n</td>
</tr>
</tbody>
</table>
139.1.105  ErrorDFAUItem = -16

MBS Tools Plugin, Plugin Version: 11.2. **Function:** One of the RegEx error constants.

139.1.106  ErrorDFAUMLimit = -18

MBS Tools Plugin, Plugin Version: 11.2. **Function:** One of the RegEx error constants.

139.1.107  ErrorDFAWSSize = -19

MBS Tools Plugin, Plugin Version: 11.2. **Function:** One of the RegEx error constants.

139.1.108  ErrorInternal = -14

MBS Tools Plugin, Plugin Version: 11.2. **Function:** One of the RegEx error constants. **Notes:** An unexpected internal error has occurred. This error could be caused by a bug in PCRE or by overwriting of the compiled pattern.

139.1.109  ErrorMatchLimit = -8

MBS Tools Plugin, Plugin Version: 11.2. **Function:** One of the RegEx error constants. **Notes:** The backtracking limit, as specified by the match_limit field in a pcre_extra structure (or defaulted) was reached.

139.1.110  ErrorNoMatch = -1

MBS Tools Plugin, Plugin Version: 11.2. **Function:** One of the RegEx error constants. **Notes:** The subject string did not match the pattern.

139.1.111  ErrorNoSubstring = -7

MBS Tools Plugin, Plugin Version: 11.2. **Function:** One of the RegEx error constants. **Notes:** This error is used by the substring functions.
139.1.112  ErrorNull = -2

MBS Tools Plugin, Plugin Version: 11.2. **Function:** One of the RegEx error constants.  
**Notes:** Either code or subject was passed as """, or ovector was """" and ovecsize was not zero.

139.1.113  ErrorNullWSLimit = -22

MBS Tools Plugin, Plugin Version: 11.2. **Function:** One of the RegEx error constants.

139.1.114  ErrorPartial = -12

MBS Tools Plugin, Plugin Version: 11.2. **Function:** One of the RegEx error constants.  
**Notes:** The subject string did not match, but it did match partially.

139.1.115  ErrorPlugin = -99

MBS Tools Plugin, Plugin Version: 13.1. **Function:** One of the RegEx error constants.  
**Notes:** Generic error for something wrong with the plugin state.  
Like no current regex object internally or wrong function parameters.

139.1.116  ErrorRecursionLimit = -21

MBS Tools Plugin, Plugin Version: 11.2. **Function:** One of the RegEx error constants.  
**Notes:** The internal recursion limit, as specified by the match_limit_recursion field in a pcre_extra structure (or defaulted) was reached. See the description above.

139.1.117  ErrorShortUTF8 = -25

MBS Tools Plugin, Plugin Version: 11.2. **Function:** One of the RegEx error constants.  
**Notes:** The subject string ended with an incomplete (truncated) UTF-8 character, and the PCRE_PARTIAL_HARD option was set. Without this option, ErrorBadUTF8 is returned in this situation.
139.1.118  **ErrorUnknownNode = -6**

MBS Tools Plugin, Plugin Version: 11.2. **Function:** One of the RegEx error constants.

139.1.119  **ErrorUnknownOpcode = -5**

MBS Tools Plugin, Plugin Version: 11.2. **Function:** One of the RegEx error constants.  
**Notes:** While running the pattern match, an unknown item was encountered in the compiled pattern. This error could be caused by a bug in PCRE or by overwriting of the compiled pattern.
Chapter 140

Remote Control

140.1 class GammaFadeMBS

140.1.1 class GammaFadeMBS

Function: A class to perform gamma fades on Mac OS X and Windows.
Notes: On Mac OS X a system API is used. On Windows the GammaMBS class is used internally.

140.1.2 Methods

140.1.3 Constructor

Function: Initializes the gamma fade class and queries the current gamma values.
Notes:
On Windows a window is needed to get the exclusive access to the gamma controls.

The Available property is set to true if the constructor was successful.
See also:

- 140.1.4 Constructor(mainwindow as window) 18267

140.1.4 Constructor(mainwindow as window)

Function: Initializes the gamma fade class and queries the current gamma values.
Notes:

On Windows a window is needed to get the exclusive access to the gamma controls.

The Available property is set to true if the constructor was successful.

See also:

- 140.1.3 Constructor

140.1.5 GammaFadeIn(seconds as Double) as boolean


**Function:** Fades back to the normal screen.

**Notes:**

Seconds is the duration of the fade in seconds. Typical 0.3 seconds.

Returns true on success and false on failure.

140.1.6 GammaFadeOut(seconds as Double) as boolean


**Function:** Fades to a solid color.

**Notes:**

Seconds is the duration of the fade in seconds. Typical 0.5 seconds.

Returns true on success and false on failure.

140.1.7 Properties

140.1.8 Available as Boolean


**Function:** Whether the constructor was successful.

**Notes:**

True if the initialization code worked.

On Mac OS X the constructor fails to get access if there is another gamma fade running.
On Windows the access to the gamma controls can fail if you don’t provide a window, the hardware can't do gamma fades (e.g. running in VMWare) or DirectX is not available.

(Read and Write property)
140.1.9  FadeColor as Color

Function: The color to use for the fade.
Example:

```vbs
dim g as new GammaFadeMBS
g.FadeColor=& c0000FF // blue
```

Notes:

Default is black.
(Read and Write property)
140.2 class GammaMBS

140.2.1 class GammaMBS

Function: A class to change the gamma settings of the display.
Notes:
You can use that class to change the gamma table. For example to invert the screen or increase/decrease one of the colors.

Works on Mac OS X and Windows.

140.2.2 Methods

140.2.3 Constructor(mainWindow as window = nil, displayIndex as Integer = 0)

Function: Initializes the gamma class and queries the current gamma values.
Notes:
On Windows a window is needed to get the exclusive access to the gamma controls.

The Available property is set to true if the constructor was successful.
Added displayIndex parameter in plugin version 14.1 to specify on Mac which display to handle.

140.2.4 SetGamma(gammaScale as Double = 1.0) as boolean

Function: Sets the gamma values.
Notes:
The current table assigned to the main screen.
All values are multiplied with gammaScale
140.2. CLASS GAMMAMBS

140.2.5 Properties

140.2.6 Available as Boolean

Function: Whether the constructor was successful.
Notes: True if the initialization code worked.

On Mac OS X the constructor fails to get access if it does not find a display with gamma controls.

On Windows the access to the gamma controls can fail if you don’t provide a window, the hardware can’t do gamma fades (e.g. running in VMWare) or DirectX is not available.
(Read and Write property)

140.2.7 Lasterror as Integer

Function: The last error code.
Notes: (Read and Write property)

140.2.8 Size as Integer

Function: The number of entries in the gamma table.
Notes: Should be 256 for Windows.
And 256 or 1024 for Mac.
(Read only property)

140.2.9 Blue(Index as Integer) as Double

Function: The blue value with the given index.
Notes: Index is from 0 to 255 and value from 0.0 to 1.0.
(Read and Write computed property)
140.2.10  **Green(Index as Integer) as Double**

**Function:** The green value with the given index.
**Notes:**
Index is from 0 to 255 and value from 0.0 to 1.0.
(Read and Write computed property)

140.2.11  **Red(Index as Integer) as Double**

**Function:** The red value with the given index.
**Notes:**
Index is from 0 to 255 and value from 0.0 to 1.0.
(Read and Write computed property)
140.3  CLASS KEYCODESMBS

140.3  class KeyCodesMBS

140.3.1  class KeyCodesMBS


Function: A class for translating between key codes and ASCII characters.

Notes:

This class is outdated, please use RemoteControlMBS module.

The list of key codes on a Mac is the same as the one used in the RB documentation for the sprite surface.

Some special keys:

Modifier keys
- kVirtualCapsLockKey & h039
- kVirtualShiftKey & h038
- kVirtualControlKey & h03B
- kVirtualOptionKey & h03A
- kVirtualCommandKey & h037

Editing/utility keys
- kVirtualHelpKey & h072
- kVirtualDeleteKey & h033
- kVirtualTabKey & h030
- kVirtualEnterKey & h04C
- kVirtualReturnKey & h024
- kVirtualEscapeKey & h035
- kVirtualForwardDeleteKey & h075

Navigation keys
- kVirtualHomeKey & h073
- kVirtualEndKey & h002
- kVirtualPageUpKey & h074
- kVirtualPageDownKey & h079
- kVirtualLeftArrowKey & h07B
- kVirtualRightArrowKey & h07C
- kVirtualUpArrowKey & h07E
- kVirtualDownArrowKey & h07D

Key codes for Windows:
140.3.2 Methods

140.3.3 AsciiToKeyCode(ascii as Integer) as Integer

Function: Returns the keycode which is needed to be pressed to create this ASCII character.
Notes: You get the main key, not any modifier which may also be pressed.

140.3.4 KeyCodeToAscii(keycode as Integer) as Integer

Function: Returns the ASCII code which matches the key code.
Example:

```vbs
dim k as KeyCodesMBS
k=new KeyCodesMBS

// makes a big A on a german keyboard:
MsgBox chr(k.KeyCodeToAsciiWithSecondKeyCode(0+512))
```

Notes:
Note on a Mac:
Bit 0 to 6 are the keycode, bit 7 is 1 if key goes up and 0 if key goes down.
Bit 8 to 15 are modifier keys:

Constants for the modifier keys:

Not available in 64-bit.
See MacTextForKeyCode method in RemoteControlMBS module.

140.3.5 KeyCodeToAsciiWithSecondKeyCode(keycode as Integer) as Integer

Function: Returns the ASCII code which matches the key code with the current state.
Example:

```vbs
dim k as KeyCodesMBS
k=new KeyCodesMBS
```
 MsgBox str(k.KeyCodeToAscii(& h0A))
 MsgBox chr(k.KeyCodeToAsciiWithSecondKeyCode(0))

// gives on a German Keyboard

Notes:

On the first call of KeyCodeToAscii you get the ASCII char, but if you call KeyCodeToAsciiWithSecondKeyCode and the state property is not changed, you can get what the user gets if he presses several keys. KeyCodeToAscii resets state to 0 before calling.

On Windows, KeyCodeToAscii and KeyCodeToAsciiWithSecondKeyCode are equal.

Note on a Mac:
Bit 0 to 6 are the keycode, bit 7 is 1 if key goes up and 0 if key goes down.
Bit 8 to 15 are modifier keys:

Constants for the modifier keys:

Not available in 64-bit.

140.3.6 TestForAsciiKeyDown(ascii as Integer) as boolean

Function: Returns true if the key with the given ascii code is pressed.

140.3.7 TestForKeyDown(keycode as Integer) as boolean

Function: Returns true if the key with the given key code is pressed.

140.3.8 Update

Function: Updates the layout so it is the current one.
140.3.9 Properties

140.3.10 LastError as Integer

Function: The last error code.
Notes:
The last function was successful if lasterror is 0.
If the last function was not available on this machine, the value is set to -1.
Other values are Mac OS error codes.
(Read and Write property)

140.3.11 Name as String

Function: The name for the current keyboard layout.
Notes:
On Mac OS 9 e.g. ”Deutsch”.
On Mac OS X e.g. ”German”.
On Windows 98 e.g. ”00020407”.
(Read only property)

140.3.12 State as Integer

Function: The last state.
Notes:
The function KeyCodeToAscii stores a code here which the function KeyCodeToAsciiWithSecondKeyCode
will use on further calls.
(Read and Write property)
140.3. CLASS KEYCODES

<table>
<thead>
<tr>
<th>KeyCode</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>VK_LBUTTON</td>
<td>&amp; h01</td>
</tr>
<tr>
<td>VK_RBUTTON</td>
<td>&amp; h02</td>
</tr>
<tr>
<td>VK_CANCEL</td>
<td>&amp; h03</td>
</tr>
<tr>
<td>VK MBUTTON</td>
<td>&amp; h04</td>
</tr>
<tr>
<td>VK_XBUTTON1</td>
<td>&amp; h05 (Windows 2000 and newer)</td>
</tr>
<tr>
<td>VK_XBUTTON2</td>
<td>&amp; h06 (Windows 2000 and newer)</td>
</tr>
<tr>
<td>VK_BACK</td>
<td>&amp; h08</td>
</tr>
<tr>
<td>VK_TAB</td>
<td>&amp; h09</td>
</tr>
<tr>
<td>VK_CLEAR</td>
<td>&amp; h0C</td>
</tr>
<tr>
<td>VK_RETURN</td>
<td>&amp; h0D</td>
</tr>
<tr>
<td>VK_SHIFT</td>
<td>&amp; h10</td>
</tr>
<tr>
<td>VK_CONTROL</td>
<td>&amp; h11</td>
</tr>
<tr>
<td>VK_MENU</td>
<td>&amp; h12</td>
</tr>
<tr>
<td>VK_PAUSE</td>
<td>&amp; h13</td>
</tr>
<tr>
<td>VK_CAPITAL</td>
<td>&amp; h14</td>
</tr>
<tr>
<td>VK_KANA</td>
<td>&amp; h15</td>
</tr>
<tr>
<td>VK_HANGUL</td>
<td>&amp; h15</td>
</tr>
<tr>
<td>VK_JUNJA</td>
<td>&amp; h17</td>
</tr>
<tr>
<td>VK_FINAL</td>
<td>&amp; h18</td>
</tr>
<tr>
<td>VK_HANJA</td>
<td>&amp; h19</td>
</tr>
<tr>
<td>VK_KANJI</td>
<td>&amp; h19</td>
</tr>
<tr>
<td>VK_ESCAPE</td>
<td>&amp; h1B</td>
</tr>
<tr>
<td>VK_CONVERT</td>
<td>&amp; h1C</td>
</tr>
<tr>
<td>VK_NONCONVERT</td>
<td>&amp; h1D</td>
</tr>
<tr>
<td>VK_ACCEPT</td>
<td>&amp; h1E</td>
</tr>
<tr>
<td>VK_MODECHANGE</td>
<td>&amp; h1F</td>
</tr>
<tr>
<td>VK_SPACE</td>
<td>&amp; h20</td>
</tr>
<tr>
<td>VK_PRIOR</td>
<td>&amp; h21</td>
</tr>
<tr>
<td>VK_NEXT</td>
<td>&amp; h22</td>
</tr>
<tr>
<td>VK_END</td>
<td>&amp; h23</td>
</tr>
<tr>
<td>VK_HOME</td>
<td>&amp; h24</td>
</tr>
<tr>
<td>VK_LEFT</td>
<td>&amp; h25</td>
</tr>
<tr>
<td>VK_UP</td>
<td>&amp; h26</td>
</tr>
<tr>
<td>VK_RIGHT</td>
<td>&amp; h27</td>
</tr>
<tr>
<td>VK_DOWN</td>
<td>&amp; h28</td>
</tr>
<tr>
<td>VK_SELECT</td>
<td>&amp; h29</td>
</tr>
<tr>
<td>VK_PRINT</td>
<td>&amp; h2A</td>
</tr>
<tr>
<td>VK_EXECUTE</td>
<td>&amp; h2B</td>
</tr>
<tr>
<td>VK_SNAPSHOT</td>
<td>&amp; h2C</td>
</tr>
<tr>
<td>VK_INSERT</td>
<td>&amp; h2D</td>
</tr>
<tr>
<td>VK_DELETE</td>
<td>&amp; h2E</td>
</tr>
<tr>
<td>VK_HELP</td>
<td>&amp; h2F</td>
</tr>
</tbody>
</table>

VK.0 - VK.9 are the same as ASCII “0” - “9” (& h30 - & h39)

VK.A - VK.Z are the same as ASCII “A” - “Z” (& h41 - & h5A)

<table>
<thead>
<tr>
<th>KeyCode</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>VK_LWIN</td>
<td>&amp; h5B</td>
</tr>
<tr>
<td>VK_RWIN</td>
<td>&amp; h5C</td>
</tr>
<tr>
<td>VK_APPS</td>
<td>&amp; h5D</td>
</tr>
<tr>
<td>VK_SLEEP</td>
<td>&amp; h5F</td>
</tr>
<tr>
<td>VK_NUMPAD0</td>
<td>&amp; h60</td>
</tr>
<tr>
<td>VK_NUMPAD1</td>
<td>&amp; h61</td>
</tr>
<tr>
<td>VK_NUMPAD2</td>
<td>&amp; h62</td>
</tr>
<tr>
<td>VK_NUMPAD3</td>
<td>&amp; h63</td>
</tr>
<tr>
<td>VK_NUMPAD4</td>
<td>&amp; h64</td>
</tr>
<tr>
<td>Key</td>
<td>Value</td>
</tr>
<tr>
<td>--------------------</td>
<td>--------</td>
</tr>
<tr>
<td>shiftKey</td>
<td>512</td>
</tr>
<tr>
<td>alphaLock</td>
<td>1024</td>
</tr>
<tr>
<td>optionKey</td>
<td>2048</td>
</tr>
<tr>
<td>controlKey</td>
<td>4096</td>
</tr>
<tr>
<td>rightShiftKey</td>
<td>8192</td>
</tr>
<tr>
<td>rightOptionKey</td>
<td>16384</td>
</tr>
<tr>
<td>rightControlKey</td>
<td>32768</td>
</tr>
</tbody>
</table>
## 140.4 class PresskeyMBS

### 140.4.1 class PresskeyMBS

MBS ComputerControl Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** This class allows you to simulate keyboard activity.

**Deprecated:** This item is deprecated and should no longer be used. You can use RemoteControlMBS instead. **Notes:** This class is deprecated, please use RemoteControlMBS module.

### 140.4.2 Methods

#### 140.4.3 clear

MBS ComputerControl Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Resets this object.

#### 140.4.4 mouseclick(down as boolean)

MBS ComputerControl Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Clicks the mouse button.

**Notes:**
Clicks the mouse at current position.
Left button is used.
If you forget the mouseup you may lose control about a Mac with Mac OS X, but if you have enabled external terminal login you can login via SSH and quit Realbasic from outside.

The Mac version sets the lasterror property.

See also:
- 140.4.5 MouseClick(down as boolean, rightdown as boolean)

#### 140.4.5 MouseClick(down as boolean, rightdown as boolean)

MBS ComputerControl Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Clicks the mouse with the given buttons.

**Notes:** Same as MouseClick, but with an additional rightdown parameter.
See also:
- 140.4.4 mouseclick(down as boolean)
140.4.6  **MouseMove**(globalx as Integer, globaly as Integer)

MBS ComputerControl Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Moves the mouse.

**Example:**

```vbs
Dim x, y As Integer
Dim p As PresskeyMBS
p = New PresskeyMBS
x = System.MouseX
y = System.MouseY + 10 ' move ten pixels down
p.MouseMove x, y
```

**Notes:**

Moves the mouse on screen.
The destination must be specified in global screen coordinates.
Requires Mac OS 8.5 or newer for Mac OS Classic.

140.4.7  **MouseMoveClick**(globalx as Integer, globaly as Integer, down as boolean)

MBS ComputerControl Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Moves the mouse.

**Notes:**

Moves the mouse on screen and clicks.
The destination must be specified in global screen coordinates.
Requires Mac OS 8.5 or newer for Mac OS Classic.

The Mac version sets the lasterror property.

Mac OS X only:
Based on the values entered, the appropriate mouse-down, mouse-up, mouse-move, or mouse-drag events are generated, by comparing the new state with the current state.

See also:

- 140.4.8 **MouseMoveClick**(globalx as Integer, globaly as Integer, down as boolean, rightdown as boolean)
140.4. **CLASS PRESSKEYMBS**

### 140.4.8 MouseMoveClick(globalx as Integer, globaly as Integer, down as boolean, rightdown as boolean)

**Function:** Moves the mouse cursor and clicks the mouse with the given buttons.  
**Notes:** Same as MouseMoveClick, but with an additional rightdown parameter.  
See also:

- 140.4.7 MouseMoveClick(globalx as Integer, globaly as Integer, down as boolean)

### 140.4.9 press

**Function:** Presses a key.  
**Example:**

```vbnet
' example for Mac OS X:
dim p as PresskeyMBS

p=new PresskeyMBS
p.shift=true
p.charcode=asc("H")
p.keycode=4
p.press 'press H
p.shift=false
p.charcode=asc("e")
p.keycode=14
p.press 'press e
p.charcode=asc("l")
p.keycode=37
p.press 'press l
p.press 'press l
p.charcode=asc("o")
p.keycode=31
p.press 'press o

' example for Windows:

editfield1.setfocus 'so we get something in it!

p=new PresskeyMBS
p.shift=true
p.charcode=asc("H")
p.virtualCode=-1 'automatically try to get this code
p.press 'press H
p.shift=false
p.virtualCode=-1 'after a call you find the virtualCode there
```
p.charcode=asc("e")
p.press 'press e
p.virtualCode=-1
p.charcode=asc("l")
p.press 'press 1
p.press 'press 1
p.virtualCode=-1
p.charcode=asc("o")
p.press 'press o

Notes:
Simulates a keypress and handles the Settings for Shift, Control, Command and Option key.
Command shows no reaction in my tests for Mac OS Classic
On Windows, if you set virtualcode=-1 this method will set it to the code matching the charcode property.

The Mac version sets the lasterror property.

140.4.10   pressraw(down as boolean)

MBS ComputerControl Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Presses a key.
**Example:**
' Works perfectly on Mac OS X but Shift can’t be done Raw on Mac OS 9:
dim p as PresskeyMBS

p=new PresskeyMBS

p.charcode=0
p.keycode=&h38
p.pressraw true 'shift down

p.charcode=asc("H")
p.keycode=4
p.pressraw true 'press H
p.pressraw false

p.charcode=0
p.keycode=&h38
p.pressraw false 'shift up

p.charcode=asc("e")
p.keycode=14
140.4. CLASS PRESSKEYMBS

p.pressraw true 'press e
p.pressraw false
p.charcode=asc("l")
p.keycode=37
p.pressraw true 'press l
p.pressraw false
p.pressraw true 'press l
p.pressraw false
p.charcode=asc("o")
p.keycode=31
p.pressraw true 'press o
p.pressraw false

Notes:
Simulates a keypress and doesn’t handle the Settings for Shift, Control, Command and Option key. On Windows, if you set virtualcode=-1 this method will set it to the code matching the charcode property.

The Mac version sets the lasterror property.

140.4.11 Properties

140.4.12 Charcode as Integer

MBS ComputerControl Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The character you want to press.  
**Example:**

dim p as PresskeyMBS

p=new PresskeyMBS
p.charcode=8
p.keycode=& h33
p.press  // press backspace on Mac OS

Notes:
On Mac OS Classic the final printed charcode inside an editfield is the one you pass.  
(Read and Write property)
140.4.13 Command as boolean

MBS ComputerControl Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Tells the Press method to press down command key before and release it after it simulates the key press.

**Example:**

```vba
dim p as new PresskeyMBS
p.command=True
```

**Notes:**

It looks like the command key is not working for Mac OS Classic.
On Windows the control key is pressed if control or command properties are true.
(Read and Write property)

140.4.14 Control as boolean

MBS ComputerControl Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Tells the Press method to press down control key before and release it after it simulates the key press.

**Example:**

```vba
dim p as new PresskeyMBS
p.Control=True
```

**Notes:**

On Windows the control key is pressed if control or command properties are true.
(Read and Write property)

140.4.15 Keycode as Integer

MBS ComputerControl Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** For Mac OS the number of the key on the keyboard which is pressed.

**Example:**

```vba
dim p as PresskeyMBS
p=new PresskeyMBS
p.keycode=2
p.charcode=asc("d")
p.press 'shows a "d" on Mac OS
```
Notes:
You find this codes in that nice tables for the codes of the Spritesurface in the Realbasic books.
(Read and Write property)

140.4.16  Lasterror as Integer

Function: The last error code.
Notes:
Not all functions of this class fill this property!
(Read and Write property)

140.4.17  Option as boolean

MBS ComputerControl Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. Function: Tells the
Press method to press down option key before and release it after it simulates the key press.
Example:
    dim p as PresskeyMBS
    p.option=True

Notes: (Read and Write property)

140.4.18  Shift as boolean

MBS ComputerControl Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. Function: Tells the
Press method to press down shift before and release it after it simulates the key press.
Example:
    dim p as PresskeyMBS

    p=new PresskeyMBS
    p.shift=true
    p.charcode=asc("1")
    p.keycode=18
    p.press 'press !
CHAPTER 140. REMOTE CONTROL

Notes: (Read and Write property)

140.4.19 VirtualCode as Integer


Example:

```
dim p as PresskeyMBS
p=new PresskeyMBS
p.charcode=asc(“m”)  
p.virtualcode=-1
p.press ' makes a ”m” on Windows.
```

Notes:

If you don’t know this code, just pass -1 and this value will be filled automatically using the charcode property.
After you call press or pressraw you’ll find the matching virtualcode in this property.
(Read and Write property)
140.5  **module RemoteControlMBS**

140.5.1  **module RemoteControlMBS**


**Function:** This module collects methods for simulating user input with mouse and keyboard.

**Notes:**
You can use this class for GUI scripting.
Requires libXtst.so.6 on Linux to be installed.

140.5.2  **Methods**

140.5.3  **LinuxConvertCase(keysymbol as Integer, byref lowerSymbol as Integer, byref upperSymbol as Integer) as boolean**


**Function:** Converts the case of the given keysymbol.

**Notes:**
In lowerSymbol you will receive the key symbol for a lower case key and in upperSymbol the uppercase keys.

So passing in the key symbol of "a" or "A" will both return "a" and "A".

140.5.4  **LinuxKeyCodeToKeySymbol(keycode as Integer, index as Integer) as Integer**


**Function:** Returns from the keyboard mapping tables the key symbol for the given key code.

**Notes:** Index is the offset in the tables. 0 for the first key symbol and 1 for the second. If the user presses
shift the keyboard driver uses index=1 to access the capital letters.

140.5.5  **LinuxKeyNameToKeySymbol(keyname as string) as Integer**


**Function:** Searches the key mapping list for the key symbol for a given name.

**Notes:** Returns 0 on failure.
140.5.6  LinuxKeySymbolToKeyCode(keysymbol as Integer) as Integer

Function: Searches the hardware dependend key code for the given key symbol.
Notes: Returns 0 on any error.

140.5.7  LinuxKeySymbolToKeyName(keysymbol as Integer) as string

Function: Returns the name of the key symbol.
Notes: Can return "" on an invalide keysymbol value.

140.5.8  LinuxMouseClick(ButtonID as Integer, ButtonDown as boolean) as boolean

Function: Simulates a mouse click with the given button.
Notes:
ButtonID=1 is the left mouse button.
Returns true on success.

Be aware that the user may get into trouble if you forget to release a mouse button you pressed before. So always call this method another time to release the mouse buttons.

140.5.9  LinuxMousePositionX as Integer

Function: Queries the current mouse position.

140.5.10  LinuxMousePositionY as Integer

Function: Queries the current mouse position.
140.5.11 LinuxMoveMouse(x as Integer, y as Integer) as boolean

**Function:** Moves the mouse to the given position.
**Notes:** Returns true on success.

140.5.12 LinuxPressControlKey(keydown as boolean) as boolean

**Function:** Presses the ctrl key.
**Notes:**
Returns true on success.

Be aware that the user may get into trouble if you forget to release a key you pressed before. So always call this method another time to release the key.

140.5.13 LinuxPressKey(Keycode as Integer) as boolean

**Function:** Presses the key with the given keycode.
**Notes:**
Performs a key down and a key up event.
Returns true on success.
See also:

• 140.5.14 LinuxPressKey(Keycode as Integer, ButtonDown as boolean) as boolean

140.5.14 LinuxPressKey(Keycode as Integer, ButtonDown as boolean) as boolean

**Function:** Performs a key event.
**Notes:**
Returns true on success.

Be aware that the user may get into trouble if you forget to release a key you pressed before. So always call this method another time to release the key.
See also:

• 140.5.13 LinuxPressKey(Keycode as Integer) as boolean
140.5.15 LinuxPressOptionKey(keydown as boolean) as boolean

**Function:** Presses the alt key.
**Notes:**
Returns true on success.

Be aware that the user may get into trouble if you forget to release a key you pressed before. So always call this method another time to release the key.

140.5.16 LinuxPressShiftKey(keydown as boolean) as boolean

**Function:** Presses the shift key.
**Notes:**
Returns true on success.

Be aware that the user may get into trouble if you forget to release a key you pressed before. So always call this method another time to release the key.

140.5.17 LinuxSupported as boolean

**Function:** Whether the functions are available for simulation of keyboard and mouse events.
**Notes:** Returns true if the Xtest extension is installed.

140.5.18 MacCurrentProcessID as Integer

**Function:** Returns the process ID of your application.
**Notes:** Returns 0 on any error.

140.5.19 MacCurrentProcessName as string

**Function:** Returns the name of the current process.
**Example:**
Notes: This is the name of your application.

140.5.20  MacDescriptionForKeyCode(keycode as Integer) as string

Function: Translates a keycode to a string for displaying.
Notes: Keycodes which match a special key like "Return", "F1" or "Backspace" are returned as descriptive strings.

140.5.21  MacDisplayNameForKeyCode(keycode as Integer) as string

Function: Translates a keycode to a string for displaying.
Notes: Same as MacTextForKeyCode(keycode, 4)

140.5.22  MacForegroundProcessID as Integer

Function: Returns the process ID of the application in the foreground.
Notes: Returns 0 on any error.

140.5.23  MacFrontProcessName as string

Function: The name of the front process.
Example:
RemoteControlMBS.MacFrontProcessName="iChat"  // move iChat to front

Notes: (Read and Write computed property)
140.5.24 MacKeyboardLocalizedName as string

Function: The localized name of the current keyboard layout.
Notes: Returns "" on any error.

140.5.25 MacKeyboardName as string

Function: The name of the current keyboard layout.
Notes:
Returns "" on any error.

Added 64-bit support for version 17.0.

140.5.26 MacMouseClick(x as Double, y as Double, updateMouseCursorPosition as boolean, MouseButton1 as boolean) as boolean

Function: Clicks the mouse buttons on the given position.
Example:

// doing a context menu click with control key:

dim x,y as Integer
x=System.MouseX
y=System.MouseY

call RemoteControlMBS.PressControlKey true
call RemoteControlMBS.MacMouseClick x, y, true, true
call RemoteControlMBS.MacMouseClick x, y, true, false
call RemoteControlMBS.PressControlKey false

Notes:
Returns true on success.
If updateMouseCursorPosition is true the mouse position is updated on screen.

Be aware that the user may get into trouble if you forget to release a mouse button you pressed before. So always call this method another time to release the mouse buttons.
See also:
140.5. MODULE REMOTECONTROLMBS

- 140.5.27 MacMouseClick(x as Double, y as Double, updateMouseCursorPosition as boolean, MouseButton1 as boolean, MouseButton2 as boolean) as boolean
- 140.5.28 MacMouseClick(x as Double, y as Double, updateMouseCursorPosition as boolean, MouseButton1 as boolean, MouseButton2 as boolean, MouseButton3 as boolean) as boolean

140.5.27 MacMouseClick(x as Double, y as Double, updateMouseCursorPosition as boolean, MouseButton1 as boolean, MouseButton2 as boolean) as boolean


Function: Clicks the mouse buttons on the given position.

Example:

```vbnet
// do a right click:

dim x,y as Integer
x=System.MouseX
y=System.MouseY

call RemoteControlMBS.MacMouseClick x, y, true, false, true
call RemoteControlMBS.MacMouseClick x, y, true, false, false
```

Notes:

Returns true on success.
If updateMouseCursorPosition is true the mouse position is updated on screen.

Be aware that the user may get into trouble if you forget to release a mouse button you pressed before. So always call this method another time to release the mouse buttons.

See also:

- 140.5.26 MacMouseClick(x as Double, y as Double, updateMouseCursorPosition as boolean, MouseButton1 as boolean) as boolean
- 140.5.28 MacMouseClick(x as Double, y as Double, updateMouseCursorPosition as boolean, MouseButton1 as boolean, MouseButton2 as boolean, MouseButton3 as boolean) as boolean

140.5.28 MacMouseClick(x as Double, y as Double, updateMouseCursorPosition as boolean, MouseButton1 as boolean, MouseButton2 as boolean, MouseButton3 as boolean) as boolean


Function: Clicks the mouse buttons on the given position.

Notes:
Returns true on success. If updateMouseCursorPosition is true the mouse position is updated on screen.

Be aware that the user may get into trouble if you forget to release a mouse button you pressed before. So always call this method another time to release the mouse buttons.

See also:

- 140.5.26 MacMouseClick(x as Double, y as Double, updateMouseCursorPosition as boolean, MouseButton1 as boolean) as boolean

- 140.5.27 MacMouseClick(x as Double, y as Double, updateMouseCursorPosition as boolean, MouseButton1 as boolean, MouseButton2 as boolean) as boolean

140.5.29 MacMousePositionX as Integer

Function: Queries the current mouse position.

140.5.30 MacMousePositionY as Integer

Function: Queries the current mouse position.

140.5.31 MacMouseWheel(wheel1 as Integer) as boolean

Function: Performs a wheel event.
Example:

```
call RemoteControlMBS.MacMouseWheel 1
```

Notes:

Returns true on success.
A typical value for the wheel changes are in range from -10 to 10.
See also:

- 140.5.32 MacMouseWheel(wheel1 as Integer, wheel2 as Integer) as boolean
140.5.32  MacMouseWheel(wheel1 as Integer, wheel2 as Integer) as boolean

Function: Performs a wheel event.
Example:
call RemoteControlMBS.MacMouseWheel 10,5

Notes:
Returns true on success.
A typical value for the wheel changes are in range from -10 to 10.
See also:
• 140.5.31 MacMouseWheel(wheel1 as Integer) as boolean

140.5.33  MacMoveMouse(x as Double, y as Double) as boolean

Function: Moves the mouse to the given position.
Example:
call RemoteControlMBS.MacMoveMouse(100,100)

Notes:
Returns true on success.
On Mac does not generate mouse events.

140.5.34  MacPressCommandKey(keydown as boolean) as boolean

Function: Presses the command key.
Notes:
Returns true on success.

Be aware that the user may get into trouble if you forget to release a key you pressed before. So always call this method another time to release the key.
140.5.35  MacPressControlKey(keydown as boolean) as boolean

Function: Presses the ctrl key.
Notes:
Returns true on success.

Be aware that the user may get into trouble if you forget to release a key you pressed before. So always call this method another time to release the key.

140.5.36  MacPressKey(keychar as Integer, virtualkey as Integer) as boolean

Function: Presses the given key.
Notes:
keychar is the ASCII code of the key you press and virtualkey is the key code.
Returns true on success.
Perform a key down and a key up event.
See also:
  • 140.5.37 MacPressKey(keychar as Integer, virtualkey as Integer, keydown as boolean) as boolean

140.5.37  MacPressKey(keychar as Integer, virtualkey as Integer, keydown as boolean) as boolean

Function: Presses the given key.
Notes:
keychar is the ASCII code of the key you press and virtualkey is the key code.
Returns true on success.

Be aware that the user may get into trouble if you forget to release a key you pressed before. So always call this method another time to release the key.
See also:
  • 140.5.36 MacPressKey(keychar as Integer, virtualkey as Integer) as boolean

140.5.38  MacPressOptionKey(keydown as boolean) as boolean

Function: Presses the option key. (labeled with alt)
Notes:
Returns true on success.

Be aware that the user may get into trouble if you forget to release a key you pressed before. So always call this method another time to release the key.

140.5.39  MacPressShiftKey(keydown as boolean) as boolean

Function: Presses the shift key.
Notes:
Returns true on success.

Be aware that the user may get into trouble if you forget to release a key you pressed before. So always call this method another time to release the key.

140.5.40  MacProcessCount as Integer

Function: Counts the high level processes.
Example:
msgBox str(remoteControlMBS.macprocessCount)

140.5.41  MacProcessName(index as Integer) as string

Function: The name of the process with the given index.
Example:

dim i,c as Integer

// search iChat and make it visible
c=remoteControlMBS.macprocesscount
for i=0 to c-1
if remoteControlMBS.macprocessname(i)="iChat" then
remoteControlMBS.macprocessVisible(i)=true
end if
next
140.5.42 MacProcessVisible(index as Integer) as boolean


Function: Whether a process is visible or not.

Example:

```vbs
Dim i, c as Integer

// search Safari and make it invisible
C = remoteControlMBS.macProcessCount
For i = 0 To c - 1
    If remoteControlMBS.macProcessName(i) = "Safari" Then
        remoteControlMBS.macProcessVisible(i) = False
    End If
Next
```

Notes:
Index is from 0 to MacProcessCount-1.
(Read and Write computed property)

140.5.43 MacTextForKeyCode(keycode as Integer, KeyAction as Integer, ModifierState as Integer) as string


Function: Translates a keycode to a string.

Example:

```vbs
// try some keycodes like e, E, or
Dim key as string = "@"

Const kCommandKey = 1
Const kShift = 2
Const kCapsLock = 4
Const kOption = 8
Const kControl = 16

// with no modifiers
For i As Integer = 0 To 127
```

Notes:
Index is from 0 to MacProcessCount-1.
dim s as string = RemoteControlMBS.MacTextForKeyCode(i, 3, 0)

if StrComp(key, s, 0) = 0 then
  MsgBox "Found with keycode " + str(i)
  Return
end if

next

// with shift
for i as Integer = 0 to 127

  dim s as string = RemoteControlMBS.MacTextForKeyCode(i, 3, kShift)

  if StrComp(key, s, 0) = 0 then
    MsgBox "Found with keycode " + str(i) + " with Shift"
    Return
  end if

next

// with option
for i as Integer = 0 to 127

  dim s as string = RemoteControlMBS.MacTextForKeyCode(i, 3, kOption)

  if StrComp(key, s, 0) = 0 then
    MsgBox "Found with keycode " + str(i) + " with Option"
    Return
  end if

next

Notes:
Works only with Unicode keyboard layouts which need Mac OS X 10.5.

Modifier values:

Possible constants for the Key Action:
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Command Key  1
Shift  2
CapsLock  4
Option  8
Control  16

kUCKeyActionDown  0  The user is pressing the key.
kUCKeyActionUp  1  The user is releasing the key.
kUCKeyActionAutoKey  2  The user has the key in an “auto-key” pressed state that is, the user is holding down the key for an extended period of time and is thereby generating multiple key strokes from the single key.
kUCKeyActionDisplay  3  The user is requesting information for key display, as in the Key Caps application.

140.5.44 MouseClick(x as Integer, y as Integer, down as boolean) as boolean

Function: Performs a mouse click.
Notes:
The mouse cursor is moved to the given position and the first mouse button is pressed.
Returns true on success.

140.5.45 MousePositionX as Integer

Function: Queries the current mouse position.

140.5.46 MousePositionY as Integer

Function: Queries the current mouse position.

140.5.47 MoveMouse(x as Integer, y as Integer) as boolean

Function: Moves the mouse to the given location.
Notes:
Returns true on success.
On Mac does not generate mouse events.

**140.5.48 PressControlKey(keydown as boolean) as boolean**

**Function:** Presses the ctrl key.
**Notes:** Returns true on success.

**140.5.49 PressOptionKey(keydown as boolean) as boolean**

**Function:** Presses the option key.
**Notes:** Returns true on success.

**140.5.50 PressShiftKey(keydown as boolean) as boolean**

**Function:** Presses the shift key.
**Notes:** Returns true on success.

**140.5.51 WinBringProcessToTop(ProcessID as Integer) as boolean**

**Function:** Brings all windows of process to the front.
**Notes:** Returns true if function found at least one window.

**140.5.52 WinBringWindowToTop(WindowHandle as Integer, SetFocus as boolean = true) as boolean**

**Function:** Brings a given window to front.
**Example:**

```vba
dim h as Integer = RemoteControlMBS.WinFindWindow("", "Calculator")
call RemoteControlMBS.WinBringWindowToTop h
```
Notes:
Pass any window handle, including windows from other applications.
If SetFocus is true, we also set the focus.
Returns true on success.

140.5.53 WinCurrentProcessID as Integer

Function: Returns the process ID of your application.
Notes: Returns 0 on any error.

140.5.54 WinFindWindow(ClassName as string, WindowName as string) as Integer

Function: Finds a window based on the classname and/or the window name.
Example:
```vbnet
dim h as Integer = RemoteControlMBS.WinFindWindow("SciCalc","")
msgbox hex(h)
```

Notes:
One of the names can be an empty string so only the other name is used. Normally you should prefer
the class name as it is not localized. The WindowsListMBS class can help you finding the class name of a
window.
Returns 0 on any error.

140.5.55 WinForegroundProcessID as Integer

Function: Returns the process ID of the application which owns the foreground window.
Notes: Returns 0 on any error.

140.5.56 WinFrontWindowTitle as string

Function: The title of the window which has the focus.
Example:

```
title=remoteControlMBS.winfrontWindowTitle
```

Notes: May return "" on any error.

### 140.5.57 WinIsWindowMinimized(WindowHandle as Integer) as Boolean


**Function:** Checks whether the specified window is minimized.

**Notes:**
- Returns true if minimized.
- Use RemoteControlMBS.WinFindWindow if you need to find a window handle.

### 140.5.58 WinIsWindowVisible(WindowHandle as Integer) as Boolean


**Function:** Checks the visibility state of the specified window.

**Notes:**
- Returns true if visible or false if not.
- Use RemoteControlMBS.WinFindWindow if you need to find a window handle.

### 140.5.59 WinKeyboardName as string


**Function:** Returns the name of the current Windows keyboard layout.

### 140.5.60 WinKeyIsDown(virtualkey as Integer) as boolean


**Function:** Tests whether a given key is currently pressed.
140.5.61  **WinMouseClick(x as Integer, y as Integer, AbsolutePosition as boolean, MouseButton1 as boolean) as boolean**

**Function:** Performs a mouse click on the given position.
**Notes:**
If AbsolutePosition is false the given coordinates are relative to the current position.
Returns true on success.

Be aware that the user may get into trouble if you forget to release a mouse button you pressed before. So always call this method another time to release the mouse buttons.
See also:

- 140.5.62  **WinMouseClick(x as Integer, y as Integer, AbsolutePosition as boolean, MouseButton1 as boolean, MouseButton2 as boolean) as boolean**  

- 140.5.63  **WinMouseClick(x as Integer, y as Integer, AbsolutePosition as boolean, MouseButton1 as boolean, MouseButton2 as boolean, MouseButton3 as boolean) as boolean**

140.5.62  **WinMouseClick(x as Integer, y as Integer, AbsolutePosition as boolean, MouseButton1 as boolean, MouseButton2 as boolean) as boolean**

**Function:** Performs a mouse click on the given position.
**Notes:**
If AbsolutePosition is false the given coordinates are relative to the current position.
Returns true on success.

Be aware that the user may get into trouble if you forget to release a mouse button you pressed before. So always call this method another time to release the mouse buttons.
See also:

- 140.5.61  **WinMouseClick(x as Integer, y as Integer, AbsolutePosition as boolean, MouseButton1 as boolean) as boolean**  

- 140.5.63  **WinMouseClick(x as Integer, y as Integer, AbsolutePosition as boolean, MouseButton1 as boolean, MouseButton2 as boolean, MouseButton3 as boolean) as boolean**

140.5.63  **WinMouseClick(x as Integer, y as Integer, AbsolutePosition as boolean, MouseButton1 as boolean, MouseButton2 as boolean, MouseButton3 as boolean) as boolean**

**Function:** Performs a mouse click on the given position.
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**Notes:**

If AbsolutePosition is false the given coordinates are relative to the current position.
Returns true on success.

Be aware that the user may get into trouble if you forget to release a mouse button you pressed before. So always call this method another time to release the mouse buttons.

See also:

- 140.5.61 WinMouseClick(x as Integer, y as Integer, AbsolutePosition as boolean, MouseButton1 as boolean) as boolean
- 140.5.62 WinMouseClick(x as Integer, y as Integer, AbsolutePosition as boolean, MouseButton1 as boolean, MouseButton2 as boolean) as boolean

### 140.5.64 WinMousePositionX as Integer

**Function:** Queries the current mouse position.

### 140.5.65 WinMousePositionY as Integer

**Function:** Queries the current mouse position.

### 140.5.66 WinMoveMouse(x as Integer, y as Integer) as boolean

**Function:** Moves the mouse cursor to the given position.

**Notes:**

Returns true on success.
Internally the coordinates are converted to normalized absolute coordinates which can lead to have the mouse one pixel off the requested position due to rounding.

### 140.5.67 WinPressControlKey(keydown as boolean) as boolean

**Function:** Presses the ctrl key.

**Notes:**
Returns true on success.

Be aware that the user may get into trouble if you forget to release a key you pressed before. So always call this method another time to release the key.

140.5.68 WinPressKey(ScanCode as Integer) as boolean

Function: Performs a key event with the given data. 
Notes: 
This method creates a keydown and a keyup event.
Returns true on success.
See also:

- 140.5.69 WinPressKey(ScanCode as Integer, keydown as boolean) as boolean
- 140.5.70 WinPressKey(virtualkey as Integer, ScanCode as Integer) as boolean
- 140.5.71 WinPressKey(virtualkey as Integer, ScanCode as Integer, keydown as boolean) as boolean

140.5.69 WinPressKey(ScanCode as Integer, keydown as boolean) as boolean

Function: Performs a key event with the given data. 
Notes: 
Returns true on success.
Be aware that the user may get into trouble if you forget to release a key you pressed before. So always call this method another time to release the key.
See also:

- 140.5.68 WinPressKey(ScanCode as Integer) as boolean
- 140.5.70 WinPressKey(virtualkey as Integer, ScanCode as Integer) as boolean
- 140.5.71 WinPressKey(virtualkey as Integer, ScanCode as Integer, keydown as boolean) as boolean

140.5.70 WinPressKey(virtualkey as Integer, ScanCode as Integer) as boolean

Function: Performs a key event with the given data. 
Notes: 
This method creates a keydown and a keyup event.
Returns true on success.
See also:

- 140.5.68 WinPressKey(ScanCode as Integer) as boolean
- 140.5.69 WinPressKey(ScanCode as Integer, keydown as boolean) as boolean
- 140.5.71 WinPressKey(virtualkey as Integer, ScanCode as Integer, keydown as boolean) as boolean

140.5.71 WinPressKey(virtualkey as Integer, ScanCode as Integer, keydown as boolean) as boolean

Function: Performs a key event with the given data.
Notes:
Returns true on success.

Be aware that the user may get into trouble if you forget to release a key you pressed before. So always call this method another time to release the key.
See also:

- 140.5.68 WinPressKey(ScanCode as Integer) as boolean
- 140.5.69 WinPressKey(ScanCode as Integer, keydown as boolean) as boolean
- 140.5.70 WinPressKey(virtualkey as Integer, ScanCode as Integer) as boolean

140.5.72 WinPressOptionKey(keydown as boolean) as boolean

Function: Presses the alt key.
Notes:
Returns true on success.

Be aware that the user may get into trouble if you forget to release a key you pressed before. So always call this method another time to release the key.

140.5.73 WinPressShiftKey(keydown as boolean) as boolean

Function: Presses the shift key.
Notes:
Returns true on success.

Be aware that the user may get into trouble if you forget to release a key you pressed before. So always call this method another time to release the key.

140.5.74 WinScanCodeToVirtualKeyCode(ScanCode as Integer) as Integer

Function: Searches the virtual key code for the given scancode.
Notes:
Each key has a hardware dependend scan code. For each scancode you can get the virtual key code which is hardware independend.

Returns 0 on failure.

140.5.75 WinSendMessage(Win as window, Msg as Integer, lParam as Integer, WParam as Integer) as Integer

Function: Sends a Windows message to a given window.
Example:
const WM_CLOSE = & h0010
call RemoteControlMBS.WinSendMessage(window1, WM_CLOSE, 0, 0)

Notes: The result depends on the message command.
See also:
• 140.5.76 WinSendMessage(WindowHandle as Integer, Msg as Integer, lParam as Integer, WParam as Integer) as Integer

140.5.76 WinSendMessage(WindowHandle as Integer, Msg as Integer, lParam as Integer, WParam as Integer) as Integer

Function: Sends a Windows message to a given window.
Example:
const WM_CLOSE = & h0010

dim h as Integer = RemoteControlMBS.WinFindWindow("SciCalc","")

call RemoteControlMBS.WinSendMessage(h, WM_CLOSE, 0, 0) // Closes Calc

Notes: The result depends on the message command.
See also:

• 140.5.75 WinSendMessage(Win as window, Msg as Integer, lParam as Integer, WParam as Integer) as Integer

140.5.77 WinShowWindow(WindowHandle as Integer, CmdShow as Integer) as Boolean

Function: Shows or hides a window.
Notes:
CmdShow can be:

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Hide</td>
</tr>
<tr>
<td>1</td>
<td>Show normal</td>
</tr>
<tr>
<td>2</td>
<td>Show minimized</td>
</tr>
<tr>
<td>3</td>
<td>Maximize</td>
</tr>
<tr>
<td>4</td>
<td>Show without activating</td>
</tr>
<tr>
<td>5</td>
<td>Show</td>
</tr>
<tr>
<td>6</td>
<td>Minimize</td>
</tr>
<tr>
<td>7</td>
<td>Show minimized without activating</td>
</tr>
<tr>
<td>8</td>
<td>Show normal without activating</td>
</tr>
<tr>
<td>9</td>
<td>Restore</td>
</tr>
<tr>
<td>10</td>
<td>Show default</td>
</tr>
<tr>
<td>11</td>
<td>Force minimized</td>
</tr>
</tbody>
</table>

Use RemoteControlMBS.WinFindWindow if you need to find a window handle.
140.5.78  WinVirtualKeyCodeToCharCode(VirtualKeyCode as Integer) as Integer

Function: Queries the char code for a virtual key code.
Notes: Returns 0 on failure.

140.5.79  WinVirtualKeyCodeToScanCode(VirtualKeyCode as Integer) as Integer

Function: Finds the scan code to match the given virtual key code.
Notes: Returns 0 on failure.

140.5.80  WinVirtualKeyForASCII(Character as Integer, byref VirtualKeyCode as Integer, byref ShiftKey as boolean, byref ControlKey as Boolean, byref AltKey as boolean) as boolean

Function: Returns for a given character which combination of key code and modifiers created the character.
Notes:
For Character, you should use asc(string), but you may need to convert the string to Windows ANSI text encoding.

Returns 0 on failure.
Chapter 141

Resolution

141.1 class DisplayMBS

141.1.1 class DisplayMBS

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Defines a class for accessing the displays of the screen.

141.1.2 Methods

141.1.3 CanDepth(depth as Integer) As Boolean

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns true if the monitor supports the given color depth at the current ResolutionMBS. **Notes:** none.

141.1.4 FadeGamma(intensity as Integer, col As Color)

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Sets the gamma of the DisplayMBS. **Notes:**

Intensity has to be between 0 and 1000. 1000 is normal, when it is 0, the whole DisplayMBS is in the color GammaColor. Direct color display modes do not use color lookup tables and are usually 16, 24, or 32 bit. Not all direct color video boards support loadable gamma ramps.
See the NativeGamma documentation for more details on Windows Gamma details.

141.1.5  **FadeGammaTo(intensity as Integer, col As Color, ticks as Integer)**

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Fades the intensity and color of the gamma slowly in the given number of milliseconds.

**Notes:**
Intensity has to be between 0 and 1000. 1000 is normal, when it is 0, the whole display is in the color GammaColor.
Direct color display modes do not use color lookup tables and are usually 16, 24, or 32 bit. Not all direct color video boards support loadable gamma ramps.
See the NativeGamma documentation for more details on Windows Gamma details.

141.1.6  **GetBestResolution(width as Integer, height as Integer, depth as Integer, safe As Boolean) As ResolutionMBS**

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Searches for the best matching resolution.

**Notes:**
Returns the best resolution which size is not smaller that the dimensions given, which has the given depth and, if safe is true, which is safe. If safe is not true, be sure that the frequency works, if you want to switch to it (for example by asking the user).
On Mac OS X till now no resolution can be called safe.
See also:

- 141.1.7 GetBestResolution(width as Integer, height as Integer, safe As Boolean) As ResolutionMBS

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141.1.7  **GetBestResolution(width as Integer, height as Integer, safe As Boolean) As ResolutionMBS**

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Searches for the best matching resolution.

**Notes:**
Returns the best resolution which size is not smaller that the dimensions given, which has the highest depth and, if safe is true, which is safe. If safe is not true, be sure that the frequency works, if you want to switch to it (for example by asking the user).
On Mac OS X till now no resolution can be called safe.
See also:
141.1. CLASS DISPLAYMBS

- **141.1.6 GetBestResolution(width as Integer, height as Integer, depth as Integer, safe As Boolean) As ResolutionMBS**

141.1.8 GetCurrentResolution As ResolutionMBS

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns the current resolution.
**Notes:** Returns the resolution the display is currently set to. This is useful if you want to switch back to the old resolution after you switched to another resolution.

141.1.9 GetLargestResolution(depth as Integer, safe As Boolean) As ResolutionMBS

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Searches for the largest resolution with the given depth.
**Notes:**
The same as GetBestResolution(width, height, depth, safe), the only difference is that it does not search for the smallest resolution but for the biggest one.
On Mac OS X till now no resolution can be called safe.
See also:

- **141.1.10 GetLargestResolution(safe As Boolean) As ResolutionMBS**

141.1.10 GetLargestResolution(safe As Boolean) As ResolutionMBS

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Searches for the largest resolution.
**Notes:**
If safe is true, this method returns only safe resolutions.
On Mac OS X till now no resolution can be called safe.
See also:

- **141.1.9 GetLargestResolution(depth as Integer, safe As Boolean) As ResolutionMBS**

141.1.11 GetResolution(num as Integer) As ResolutionMBS

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns a resolution.
**Notes:** Num has to be between 0 and ResolutionCount(safe)-1.
141.1.12 ResolutionCount(depth as Integer, safe As Boolean) as Integer

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns the number of resolutions for a given depth.

**Notes:**
This method returns the number of resolutions that have the given depth and, if safe is true, which are safe. On Mac OS X till now no ResolutionMBS can be called safe.

See also:
- 141.1.13 ResolutionCount(safe As Boolean) as Integer

141.1.13 ResolutionCount(safe As Boolean) as Integer

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns the number of resolutions.

**Notes:**
This method returns the total number of resolutions this monitor supports and, if safe is true, which are safe. Safe resolutions are resolutions which will always work. On Mac OS X till now no ResolutionMBS can be called safe.

See also:
- 141.1.12 ResolutionCount(depth as Integer, safe As Boolean) as Integer

141.1.14 SetDepth(depth as Integer) As Boolean

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Switches the color depth to the depth given. Returns true if attempt was successful.

**Notes:** none.

141.1.15 SwitchTo(width as Integer, height as Integer, depth as Integer, safe As Boolean) As Boolean

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Switches to the given ResolutionMBS if possible.

**Notes:**
This method tries to switch directly to the best ResolutionMBS which size is bigger or the same as the given dimensions and which depth is the same as the given parameter. It returns true if it was successful. Try this function first with safe set to true. If that fails, try again with false, but after that show a dialog asking the user if that ResolutionMBS is okay. If the user presses escape or clicks cancel, you should immediately switch back to the old ResolutionMBS. On Mac OS X till now no ResolutionMBS can be called safe.
141.1. CLASS DISPLAYMBS

141.1.16 Update

MBS Util Plugin, Plugin Version: 3.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Updates the properties in this class.

**Notes:**
Call it whenever you detect a screen resolution change to update the content of this class. In general you should not keep DisplayMBS classes around too long because the display described may go away (one a Powerbook the external display).

141.1.17 Properties

141.1.18 Depth as Integer

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Depth of the DisplayMBS.

**Notes:**
Can be 8, 16 or 32. Other screen depths are not well supported.
(Read only property)

141.1.19 displaynum as Integer

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** DisplayNum is the number of the DisplayMBS.

**Notes:**
The number is always between 0 and DisplayCount-1, where 0 is the main monitor.
(Read only property)

141.1.20 GammaColor as color

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The color for fading the DisplayMBS.

**Notes:**
This property is read-only. To change it, use the methods of the DisplayMBS class and the Switch method of the ResolutionMBS class.
There is no fading for Windows.
(Read only property)
141.1.21 GammaIntensity as Integer

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** GammaIntensity is the intensity of the monitor.

**Notes:**
1000 is normal, if it is 0, the whole DisplayMBS is in the color GammaColor. This property is read-only. To change it, use the methods of the DisplayMBS class and the Switch method of the ResolutionMBS class.
There is no fading for Windows.
(Read only property)

141.1.22 Height as Integer

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Height of the monitor. **Notes:** (Read only property)

141.1.23 hz as Integer

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** frequency in Hz of that DisplayMBS

**Example:**

```vbscript
dim d as DisplayMBS

d=GetDisplayMBS(0)

msgBox str(d.Hz)
```

**Notes:**
On Windows:
Sometimes Hz is 0, this is when Windows itself does not know the frequency (at least it is so in my emulation, Virtual PC 3.0 with Win95).
The value should never be greater as the real frequency, so you can just ignore this.
(Read only property)

141.1.24 Left as Integer

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The relative left offset to the other monitors.
141.1. CLASS DISPLAYMBS

Notes:
Should be 0 for the main monitor.
(Read only property)

### 141.1.25 Top as Integer

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The relative top offset to the other monitors.

Notes:
Should be 0 for the main monitor.
(Read only property)

### 141.1.26 Width as Integer

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Width of this screen.

Notes: (Read only property)

### 141.1.27 NativeGamma as memoryblock

MBS Util Plugin, Plugin Version: 3.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The native gamma values.

**Example:**

```plaintext
dim d as DisplayMBS // your display
d.nativegamma=newmemoryblock(3072) // all black
```

Notes:
3072 bytes big is this array a 256 RGB values saved in 3 single properties.

Some notes for SetDeviceGammaRamp, which is the Windows function used by the plugin:

SetDeviceGammaRamp doesn’t allow all gamma ramps. It checks the gamma ramp; if it is too complex, such as the red flash when the player is shot in Quake, it rejects it.

SetDeviceGammaRamp will not currently make use of a gamma calibrator. This may change in future versions of Image Color Management (ICM), but for Windows 2000, only the DirectDraw API supports the gamma calibrators.

The existing gamma entry points is already used by GetDeviceGammaRamp and SetDeviceGammaRamp. Therefore, the display driver doesn’t need to do anything special to support this new interface, as long as it
already supports the Win32 Get/SetDeviceGammaRamp functions. In addition to getting and setting gamma ramps, the new DirectDraw interface allows the new gamma ramp to be calibrated if a gamma calibrator is installed. The mechanism that DirectDraw uses to register and communicate with the gamma calibrator is an interim mechanism that will be changed in future releases. DirectDraw looks for an installed software calibrator and passes the gamma value to the software calibrator; the software calibrator in turn adjusts the gamma ramp according to the measured response of the monitor. The calibrator passes the gamma ramp back to DirectDraw, which passes it to the SetDeviceGammaRamp device driver interface (DDI). The result is that the game looks as intended. For DirectDraw to use the gamma calibrator, the calibrator must register itself with DirectDraw using a registry key; DirectDraw will call it if the application wants the gamma ramp to be calibrated. In the future, both the method by which DirectDraw communicates with the gamma calibrator, through the DDI, and the method gamma calibrators use to register themselves in the registry will change. But every part of the DirectDraw API is permanent. ICM is the color management system in Windows; all system-level color management should be handled by ICM. For this reason, downloadable gamma ramp support will be rolled into ICM in the future, making current solutions for gamma calibrators obsolete. Until such time, we have provided a method by which applications can take advantage of the installed base of software calibrators and graphics adapters that support downloadable gamma ramps. (Read and Write computed property)
141.2  Globals

141.2.1  DisplayCountMBS as Integer

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** DisplayCount returns the number of displays connected.

**Example:**

```
msgbox "You have " +str(DisplayCountMBS)+" screens."
```

141.2.2  GetDisplayMBS(num as Integer) As DisplayMBS

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns an object of class DisplayMBS for the given DisplayMBS.

**Example:**

```vbnet
dim d as DisplayMBS
d=GetDisplayMBS(0)
msgBox str(d.width)+" x " +str(d.height)+" @ " +str(pow(2,d.depth))+" colors"
```

**Notes:** num must be: 0 <= num <displaycount

141.2.3  ResolutionLibraryPresentMBS as boolean

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if the DisplayManager library file was found.

**Example:**

```vbnet
if not ResolutionLibraryPresentMBS then
    msgbox "I'm missing the shared library 'DisplayManager'."
end if
```

**Notes:**

This library should be present on all Mac OS Classic versions. (It is in the system suitcase.)

Returns always true on Windows.
141.2.4 UpdateDisplayCountMBS

MBS Util Plugin, Plugin Version: 8.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Rebuilds the display list. **Notes:** If new displays are attached or removed, this method needs to be called.

141.3 class ResolutionMBS

141.3.1 class ResolutionMBS

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Defines a class for accessing the resolutions a screen.

141.3.2 Methods

141.3.3 Switch As Boolean

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** This function switches the DisplayMBS to the ResolutionMBS and returns true if the attempt was successful. **Notes:**

If IsSafe is false, show a dialog after the switch asking the user if that ResolutionMBS is okay. If the user presses escape or clicks cancel, you should immediately switch back to the old ResolutionMBS. Especially on VGA-Monitors not all listed frequencies work.
On Mac OS X till now no ResolutionMBS can be called safe.

141.3.4 Properties

141.3.5 Depth as Integer

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Depth of the ResolutionMBS. **Notes:**

Can be 8, 16 or 32. Other screen depths are not well supported.  
(Read only property)
141.3. **CLASS RESOLUTIONMBS**

### 141.3.6 displaynum as Integer

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** DisplayNum is the number of the DisplayMBS

**Notes:**
The number is always between 0 and DisplayCount-1, where 0 is the main monitor.
(Read only property)

### 141.3.7 Height as Integer

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Height of the ResolutionMBS.

**Notes:** (Read only property)

### 141.3.8 hz as Integer

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** frequency in Hz of that ResolutionMBS

**Notes:**
Sometimes Hz is 0, this is when Windows itself does not know the frequency (at least it is so in my emulation, Virtual PC 3.0 with Win95).
(Read only property)

### 141.3.9 issafe as boolean

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Is it a safe ResolutionMBS?

**Notes:**
On Mac OS X till now no ResolutionMBS can be called safe.
(Read only property)

### 141.3.10 Left as Integer

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The relative left offset to that ResolutionMBS.

**Notes:**
Should be 0 for the main monitor.
141.3.11  ResolutionNum as Integer

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** DisplayNum is the number of the DisplayMBS.

**Notes:**
ResolutionNum is the number of the DisplayMBS which always is between 0 and GetDisplayMBS(DisplayNum).ResolutionCount(false)-1.

On Windows: dis.GetCurrentResolution.resolutionNum is sometimes also -1.

(Read only property)

141.3.12  Top as Integer

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The relative top offset to the other monitors.

**Notes:**
Should be 0 for the main monitor.

(Read only property)

141.3.13  Width as Integer

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Width of this ResolutionMBS.

**Notes:** (Read only property)
Chapter 142

Screenshot

142.1 Globals

142.1.1 ScreenshotDisplayMBS(index as Integer) as picture

MBS Picture Plugin, Plugin Version: 3.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the Screenshot from the display with the given index.  
**Example:**  
Backdrop = ScreenshotDisplayMBS(0)

**Notes:**
Index starts at 0 for the main display.  
Works on Linux only for first screen.

Plugin version 10.4 added support for multiple displays on Windows.

142.1.2 ScreenshotFromStringMBS(Width as Integer, Height as Integer, Row-Bytes as Integer, data as string) as picture

MBS Picture Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates the picture from a string returned by ScreenshotStringMBS.  
**Example:**  
```vbs
    dim p as Picture
    dim s as string
```
dim w,h,r as Integer

s=ScreenshotStringMBS(w,h,r)
p=ScreenshotFromStringMBS(w,h,r,s)
Backdrop=p

Notes:
Returns nil on any error.
(for example if width, height and rowwidth doesn’t fit together.)

142.1.3 ScreenshotMBS as picture

MBS Picture Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a picture of the screen content in screen resolution.

**Example:**

dim p as picture
p=screenshotMBS

Notes:
For a rectangle only you can use ScreenShotRectMBS.

Plugin Version 7.2 adds Windows Vista Support.

142.1.4 ScreenshotRectMBS(left as Integer, top as Integer, width as Integer, height as Integer) as picture

MBS Picture Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a picture of the screen rectangle in screen resolution.

**Example:**

dim p as picture
p=ScreenshotRectMBS(100,100,200,200)

Notes:
Improved in Version 3.2 to support multiple displays on Mac OS.

Plugin Version 10.4 adds Windows support.
See also:

- 142.1.5 ScreenshotRectMBS(left as Integer, top as Integer, width as Integer, height as Integer, destwidth as Integer, destheight as Integer) as picture

142.1.5 ScreenshotRectMBS(left as Integer, top as Integer, width as Integer, height as Integer, destwidth as Integer, destheight as Integer) as picture

MBS Picture Plugin, Plugin Version: 6.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns a picture of the screen rectangle in screen resolution and scales it down to the requested size.
**Example:**
```vbs
dim p as picture
p=ScreenshotRectMBS(100,100,200,200,50,50)
```

**Notes:**
Only for Mac OS.
On Windows or Linux, please use the other ScreenshotRectMBS without the extra parameters and scale the image yourself with the scale method needed.
This function is just to do the grab and scale in one rush to save CPU time.

Does not work on Mac OS X 10.7.
See also:

- 142.1.4 ScreenshotRectMBS(left as Integer, top as Integer, width as Integer, height as Integer) as picture

142.1.6 ScreenshotStringDisplayMBS(byref Width as Integer, byref Height as Integer, byref RowBytes as Integer, index as Integer) as string

MBS Picture Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a picture of the screen content in screen resolution.
**Example:**
```vbs
dim s as string
dim w,h,r as Integer
dim index as Integer=0
s=ScreenshotStringDisplayMBS(w,h,r, index)
```
Notes:
Returns nil on any error.
Use ScreenshotFromStringMBS to get the picture from the string.

142.1.7 ScreenshotStringMBS(byref Width as Integer, byref Height as Integer, byref RowBytes as Integer) as string

MBS Picture Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns a picture of the screen content in screen resolution.
**Example:**
```vbnet
dim s as string
dim w,h,r as Integer
s=ScreenshotStringMBS(w,h,r)
```

Notes:
Returns nil on any error.
Use ScreenshotFromStringMBS to get the picture from the string.
Chapter 143

SFPassword

143.1 class SFPasswordAssistantMBS

143.1.1 class SFPasswordAssistantMBS

MBS MacExtras Plugin, Plugin Version: 7.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The class to help the user to create a new password.

Notes:
This is an Apple internal class with no public interface. It works for Mac OS X 10.4 and should work on 10.3 and 10.5.

You need to keep the reference to the SFPasswordAssistantMBS object in a global property. If the object in Realbasic is destroyed while the panel is still visible, it will crash.

Do not call Close or PerformClose methods to close this window, use BaseWindowWillClose.
Not supported for 64 bit target.
Subclass of the NSPanelMBS class.

143.1.2 Methods

143.1.3 BaseWindowWillClose

MBS MacExtras Plugin, Plugin Version: 7.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Tells the panel that the base window will close.

Notes: If your window which uses the panel will close, you should call that method from the CancelClose method of your window.
143.1.4 Constructor

MBS MacExtras Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The constructor to create a new password assistant panel.

143.1.5 ShowPanel

MBS MacExtras Plugin, Plugin Version: 7.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Shows the panel.
**Notes:**
This method does a bit more than just show. It will create the panel, create a new password and run the password quality check.

143.1.6 Properties

143.1.7 Password as string

MBS MacExtras Plugin, Plugin Version: 7.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The current password.
**Notes:**
If you set the value, the new password is checked for quality and the TextChanged event may be fired. (Read and Write computed property)

143.1.8 Events

143.1.9 TextChanged(text as string)

MBS MacExtras Plugin, Plugin Version: 7.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The text was changed.
**Notes:**
This event fires often. It fires if the text changed (e.g. a letter was added) or sometimes it fires if the text was not changed.

So best if you need to update GUI, to check the text parameter and use timer. Restart the timer every time you get an event with a period of maybe 500 ms. So in case you don’t get new events and the timer fires, you can update your GUI.
Chapter 144

SmartCard

144.1 class SmartCardContextMBS

144.1.1 class SmartCardContextMBS

MBS Tools Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for a SmartCard context.

**Example:**
```
    dim c as new SmartCardContextMBS
    dim list() as string = c.Readers
    MsgBox Join(list, EndOfLine)
```

144.1.2 Methods

144.1.3 Cancel

MBS Tools Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Terminates all outstanding actions within a specific resource manager context.

**Notes:**
The only requests that you can cancel are those that require waiting for external action by the smart card or user. Any such outstanding action requests will terminate with a status indication that the action was canceled. This is especially useful to force outstanding GetStatusChange calls to terminate.

Lasterror is set.
144.1.4 Connect(reader as string, ShareMode as UInt32, PreferredProtocols as UInt32) as SmartCardMBS


**Example:**

```vbnet
dim c as new SmartCardContextMBS

dim s as SmartCardMBS
s = c.Connect("MyReader", SmartCardMBS.kShareShared, SmartCardMBS.kProtocolAny)
if s <> nil then
    MsgBox "Connected"
else
    MsgBox "Error: " + str(c.Lasterror)
end if
```

**Notes:**

Establishes a connection (using a specific resource manager context) between the calling application and a smart card contained by a specific reader. If no card exists in the specified reader, an error is returned.

- **Reader:** The name of the reader that contains the target card.
- **ShareMode:** A flag that indicates whether other applications may form connections to the card. Use one of SmartCardMBS.kShare* constants. e.g. kShareExclusive
- **PreferredProtocols:** A bitmask of acceptable protocols for the connection. Possible values may be combined with the OR operation. Use SmartCardMBS.kProtocol* constants. e.g. kProtocolT1

Lasterror and ActiveProtocol are set.
Returns on success a smartcard object, else returns nil.

144.1.5 Constructor


144.1.6 IsValid as boolean

MBS Tools Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Determines whether a smart card context handle is valid.

**Notes:** Returns true if valid or false if not valid.
144.1.7 ReaderGroups as string()

MBS Tools Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Provides the list of reader groups that have previously been introduced to the system.
**Notes:**
The groups may be SCard$ AllReaders, SCard$ DefaultReaders, SCard$ LocalReaders and SCard$ SystemReaders.
Lasterror is set.

144.1.8 Readers as string()

MBS Tools Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Provides the list of readers within a set of named reader groups, eliminating duplicates.
**Example:**
```vbnet
dim c as new SmartCardContextMBS
dim list() as string = c.Readers
MsgBox Join(list, EndOfLine)
```
**Notes:** Lasterror is set.
See also:
- 144.1.8 Readers as string()

144.1.9 Readers(ReaderGroups() as string) as string()

MBS Tools Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Provides the list of readers within a set of named reader groups, eliminating duplicates.
**Notes:**
The caller supplies a list of reader groups, and receives the list of readers within the named groups. Unrecognized group names are ignored. This function only returns readers within the named groups that are currently attached to the system and available for use.
**ReaderGroups:** The reader groups you like to query.
Lasterror is set.
See also:
- 144.1.9 Readers(ReaderGroups() as string) as string()
144.1.10 Properties

144.1.11 Available as Boolean

MBS Tools Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the smartcard API is available. 
**Notes:**
This should be available on Mac and Windows.

Loads on Mac the PCSC.framework. 
For Linux you need pcsclite library installed. We try to load libpcsclite.so or /usr/lib/libpcsclite.so. 
On Windows we use winscard.dll built into Windows. 
(Read only property)

144.1.12 Handle as Integer

**Notes:** (Read and Write property)

144.1.13 Lasterror as Integer

**Notes:** (Read and Write property)

144.1.14 Constants

144.1.15 kErrorBadSeek = & H80100029

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes. 
**Notes:** An error occurred in setting the smart card file object pointer.

144.1.16 kErrorCancelled = & H80100002

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes. 
**Notes:** The action was canceled by an Cancel request.
144.1. CLASS SMARTCARDCONTEXTMBS

144.1.17 kErrorCancelledByUser = & H8010006E

MBS Tools Plugin, Plugin Version: 16.3. Function: One of the error codes. Notes: The action was canceled by the user.

144.1.18 kErrorCantDispose = & H8010000E

MBS Tools Plugin, Plugin Version: 16.3. Function: One of the error codes. Notes: The system could not dispose of the media in the requested manner.

144.1.19 kErrorCardNotAuthenticated = & H8010006F

MBS Tools Plugin, Plugin Version: 16.3. Function: One of the error codes. Notes: No PIN was presented to the smart card.

144.1.20 kErrorCardUnsupported = & H8010001C

MBS Tools Plugin, Plugin Version: 16.3. Function: One of the error codes. Notes: The smart card does not meet minimal requirements for support.

144.1.21 kErrorCertificateUnavailable = & H8010002D

MBS Tools Plugin, Plugin Version: 16.3. Function: One of the error codes. Notes: The requested certificate could not be obtained.

144.1.22 kErrorChvBlocked = & H8010006C

MBS Tools Plugin, Plugin Version: 16.3. Function: One of the error codes. Notes: The card cannot be accessed because the maximum number of PIN entry attempts has been reached.

144.1.23 kErrorCommDataLost = & H8010002F

MBS Tools Plugin, Plugin Version: 16.3. Function: One of the error codes. Notes: A communications error with the smart card has been detected.
144.1.24  **kErrorCommError = & H80100013**

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes.  
**Notes:** An internal communications error has been detected.

144.1.25  **kErrorDirNotFound = & H80100023**

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes.  
**Notes:** The specified directory does not exist in the smart card.

144.1.26  **kErrorDuplicateReader = & H8010001B**

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes.  
**Notes:** The reader driver did not produce a unique reader name.

144.1.27  **kErrorEof = & H8010006D**

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes.  
**Notes:** The end of the smart card file has been reached.

144.1.28  **kErrorFileNotFound = & H80100024**

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes.  
**Notes:** The specified file does not exist in the smart card.

144.1.29  **kErrorIccCreateorder = & H80100021**

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes.  
**Notes:** The requested order of object creation is not supported.

144.1.30  **kErrorIccInstallation = & H80100020**

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes.  
**Notes:** No primary provider can be found for the smart card.
144.1.31 kErrorInsufficientBuffer = & H80100008

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes. **Notes:** The data buffer for returned data is too small for the returned data.

144.1.32 kErrorInternalError = & H80100001

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes. **Notes:** An internal consistency check failed.

144.1.33 kErrorInvalidAtr = & H80100005

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes. **Notes:** An ATR string obtained from the registry is not a valid ATR string.

144.1.34 kErrorInvalidChv = & H8010000A

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes. **Notes:** The supplied PIN is incorrect.

144.1.35 kErrorInvalidHandle = & H80100003

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes. **Notes:** The supplied handle was not valid.

144.1.36 kErrorInvalidParameter = & H80100004

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes. **Notes:** One or more of the supplied parameters could not be properly interpreted.

144.1.37 kErrorInvalidTarget = & H80100005

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes. **Notes:** Registry startup information is missing or not valid.
144.1.38  \texttt{kErrorInvalidValue} = \& H80100011

MBS Tools Plugin, Plugin Version: 16.3. \textbf{Function}: One of the error codes. \textbf{Notes}: One or more of the supplied parameter values could not be properly interpreted.

144.1.39  \texttt{kErrorNoAccess} = \& H80100027


144.1.40  \texttt{kErrorNoDir} = \& H80100025

MBS Tools Plugin, Plugin Version: 16.3. \textbf{Function}: One of the error codes. \textbf{Notes}: The supplied path does not represent a smart card directory.

144.1.41  \texttt{kErrorNoFile} = \& H80100026

MBS Tools Plugin, Plugin Version: 16.3. \textbf{Function}: One of the error codes. \textbf{Notes}: The supplied path does not represent a smart card file.

144.1.42  \texttt{kErrorNoKeyContainer} = \& H80100030

MBS Tools Plugin, Plugin Version: 16.3. \textbf{Function}: One of the error codes. \textbf{Notes}: The requested key container does not exist on the smart card.

144.1.43  \texttt{kErrorNoMemory} = \& H80100006

MBS Tools Plugin, Plugin Version: 16.3. \textbf{Function}: One of the error codes. \textbf{Notes}: Not enough memory available to complete this command.

144.1.44  \texttt{kErrorNoReadersAvailable} = \& H8010002E

MBS Tools Plugin, Plugin Version: 16.3. \textbf{Function}: One of the error codes. \textbf{Notes}: No smart card reader is available.
144.1.45  kErrorNoService = & H8010001D

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes.  
**Notes:** The smart card resource manager is not running.

144.1.46  kErrorNoSmartcard = & H8010000C

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes.  
**Notes:** The operation requires a smart card, but no smart card is currently in the device.

144.1.47  kErrorNoSuchCertificate = & H8010002C

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes.  
**Notes:** The requested certificate does not exist.

144.1.48  kErrorNotReady = & H80100010

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes.  
**Notes:** The reader or card is not ready to accept commands.

144.1.49  kErrorNotTransacted = & H80100016

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes.  
**Notes:** An attempt was made to end a nonexistent transaction.

144.1.50  kErrorPciTooSmall = & H80100019

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes.  
**Notes:** The PCI receive buffer was too small.

144.1.51  kErrorProtoMismatch = & H8010000F

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes.  
**Notes:** The requested protocols are incompatible with the protocol currently in use with the card.
144.1.52 kErrorReaderUnavailable = & H80100017

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes. **Notes:** The specified reader is not currently available for use.

144.1.53 kErrorReaderUnsupported = & H8010001A

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes. **Notes:** The reader driver does not meet minimal requirements for support.

144.1.54 kErrorRemovedCard = & H80100069

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes. **Notes:** The smart card has been removed, so further communication is not possible.

144.1.55 kErrorResetCard = & H80100068

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes. **Notes:** The smart card was reset.

144.1.56 kErrorSecurityViolation = & H8010006A

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes. **Notes:** Access was denied because of a security violation.

144.1.57 kErrorServerTooBusy = & H80100031

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes. **Notes:** The smart card resource manager is too busy to complete this operation.

144.1.58 kErrorServiceStopped = & H8010001E

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes. **Notes:** The smart card resource manager has shut down.
144.1.59  kErrorSharingViolation = & H8010000B

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes.  
**Notes:** The smart card cannot be accessed because of other outstanding connections.

144.1.60  kErrorShutdown = & H80100018

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes.  
**Notes:** The operation has been aborted to allow the server application to exit.

144.1.61  kErrorSuccess = 0

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes.  
**Notes:** No error.

144.1.62  kErrorSystemCancelled = & H80100012

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes.  
**Notes:** The action was canceled by the system, presumably to log off or shut down.

144.1.63  kErrorTimeout = & H8010000A

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes.  
**Notes:** The user-specified time-out value has expired.

144.1.64  kErrorUnexpected = & H8010001F

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes.  
**Notes:** An unexpected card error has occurred.

144.1.65  kErrorUnknownCard = & H8010000D

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes.  
**Notes:** The specified smart card name is not recognized.
144.1.66  kErrorUnknownError = & H80100014

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes.  
**Notes:** An internal error has been detected, but the source is unknown.

144.1.67  kErrorUnknownReader = & H80100009

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes.  
**Notes:** The specified reader name is not recognized.

144.1.68  kErrorUnknownResMng = & H8010002B

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes.  
**Notes:** An unrecognized error code was returned.

144.1.69  kErrorUnpoweredCard = & H80100067

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes.  
**Notes:** Power has been removed from the smart card, so that further communication is not possible.

144.1.70  kErrorUnresponsiveCard = & H80100066

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes.  
**Notes:** The smart card is not responding to a reset.

144.1.71  kErrorUnsupportedCard = & H80100065

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes.  
**Notes:** The reader cannot communicate with the card, due to ATR string configuration conflicts.

144.1.72  kErrorUnsupportedFeature = & H80100022

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes.  
**Notes:** This smart card does not support the requested feature.
144.1. CLASS SMARTCARDCONTEXTMBS

144.1.73  kErrorWaitedTooLong = & H80100007

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes.  
**Notes:** An internal consistency timer has expired.

144.1.74  kErrorWriteTooMany = & H80100028

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes.  
**Notes:** An attempt was made to write more data than would fit in the target object.

144.1.75  kErrorWrongChv = & H8010006B

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the error codes.  
**Notes:** The card cannot be accessed because the wrong PIN was presented.
class SmartCardMBS

MBS Tools Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for a smartcard.
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

### 144.2.2 Methods

#### 144.2.3 BeginTransaction

MBS Tools Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Starts a transaction.
**Notes:**
The function waits for the completion of all other transactions before it begins. After the transaction starts, all other applications are blocked from accessing the smart card while the transaction is in progress.

If a transaction is held on the card for more than five seconds with no operations happening on that card, then the card is reset. Calling any of the Smart Card and Reader Access Functions or Direct Card Access Functions on the card that is transacted results in the timer being reset to continue allowing the transaction to be used.

The BeginTransaction function is a smart card and reader access function. For more information about other access functions, see Smart Card and Reader Access Functions.

Lasterror is set.

#### 144.2.4 CancelTransaction

MBS Tools Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Cancels current transaction.
**Notes:** Lasterror is set.

#### 144.2.5 Constructor

MBS Tools Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.
144.2. CLASS SMARTCARDMBS

144.2.6 Control(ControlCode as Integer, input as ptr, inputLength as UInt32, output as ptr, byref outputLength as UInt32)


**Notes:**
You can call it any time after a successful call to SmartCard.Connect and before a successful call to SmartCard.Disconnect. The effect on the state of the reader depends on the control code.

**ControlCode:** Control code for the operation. This value identifies the specific operation to be performed.

**Input:** Pointer to a buffer that contains the data required to perform the operation. This parameter can be nil if the ControlCode parameter specifies an operation that does not require input data.

**inputLength:** Size, in bytes, of the buffer pointed to by Input.

**Output:** Pointer to a buffer that receives the operation’s output data. This parameter can be nil if the ControlCode parameter specifies an operation that does not produce output data.

**outputLength:** On input the size, in bytes, of the buffer pointed to by output. On output the receives the size, in bytes, of the data stored into the buffer pointed to by output.

Lasterror is set.

144.2.7 Disconnect(Disposition as Integer = 0)

MBS Tools Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Terminates a connection previously opened between the calling application and a smart card in the target reader.

**Notes:**
Disposition: Action to take on the card in the connected reader on close.

can be:

- kUnpowerCard: Power down the card and reset it (Cold Reset).
- kResetCard: Reset the card (Warm Reset).
- kLeaveCard: Do not do anything special on reconnect.
- kEjectCard: Eject card.

Lasterror is set.
144.2.8 EndTransaction(Disposition as Integer = 0)

MBS Tools Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Ends transaction.

**Notes:**
Completes a previously declared transaction, allowing other applications to resume interactions with the card.

Disposition: Action to take on the card in the connected reader on close. Can be Eject, Leave, Reset or Unpower. See constants.

LastError is set.

144.2.9 GetAttrib(AttrId as UInt32) as Memoryblock

MBS Tools Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Retrieves the current reader attributes for the given handle.

**Notes:**
It does not affect the state of the reader, driver, or card.
The plugin first queries for size of attribute and on success queries again to get the data and return it as a memoryblock.

AttrId: The attribute ID. See kAttribute* constants.

LastError is set.

144.2.10 Reconnect(ShareMode as UInt32, PreferredProtocols as UInt32, Initialization as UInt32)

MBS Tools Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The Reconnect function reestablishes an existing connection between the calling application and a smart card.

**Notes:**
This function moves a card handle from direct access to general access, or acknowledges and clears an error condition that is preventing further access to the card.

Initialization can be one of the following:

ShareMode: A flag that indicates whether other applications may form connections to the card. Use one of
144.2.  CLASS SMARTCARDMBS

kUnpowerCard  Power down the card and reset it (Cold Reset).
kResetCard    Reset the card (Warm Reset).
kLeaveCard    Do not do anything special on reconnect.

SmartCardMBS.kShare* constants. e.g. kShareExclusive
PreferredProtocols: A bitmask of acceptable protocols for the connection. Possible values may be combined
with the OR operation. Use SmartCardMBS.kProtocol* constants. e.g. kProtocolT1

Lasterror and ActiveProtocol are set.

144.2.11  SetAttrib(AttrId as UInt32, mem as Memoryblock)

Sets the given reader attribute.
Notes:
It does not affect the state of the reader, reader driver, or smart card. Not all attributes are supported by all
readers (nor can they be set at all times) as many of the attributes are under direct control of the transport
protocol.

AttrId: The attribute ID. See kAttribute* constants.
Mem: The data to store.

Lasterror is set.

144.2.12  Status(byref Reader as string, byref State as Integer, byref Protocol
as Integer, byref CardID as string)

Provides the current status of a smart card in a reader.
Notes:
You can call it any time after a successful call to SCardConnect and before a successful call to SCardDis-
connect. It does not affect the state of the reader or reader driver.

Provides reader name, state of card (see kState constants), Protocol (see kProtocol constants) and CardID.

State: Current state of the smart card in the reader. Upon success, it receives one of the following state
indicators.
Protocol: Current protocol, if any. The returned value is meaningful only if the returned value of pdwState is kCardStateSpecific.
CardID: 32-byte buffer that receives the ATR string from the currently inserted card, if available.

LastError is set.
See also:

- 144.2.13 Status(byref State as Integer, byref Protocol as Integer, byref CardID as string)

### 144.2.13 Status(byref State as Integer, byref Protocol as Integer, byref CardID as string)

MBS Tools Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Provides the current status of a smart card in a reader.

**Notes:**
Same as other Status function, but without querying the name.
LastError is set.
See also:

- 144.2.12 Status(byref Reader as string, byref State as Integer, byref Protocol as Integer, byref CardID as string)

### 144.2.14 Transmit(ioSendPci as Ptr, SendBuffer as ptr, SendLength as UInt32, ioRecvPci as ptr, RecvBuffer as Ptr, byref RecvLength as UInt32)

MBS Tools Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sends a service request to the smart card and expects to receive data back from the card.

**Example:**
```vbnet
dim card as SmartCardMBS // your card

dim header as new memoryBlock(8)
header.Int32Value(0) = 2 // T1
header.Int32Value(4) = 8 // size of this block

dim command as new MemoryBlock(5)
command.Int8Value(0) = 0
command.Int8Value(1) = & hCA
command.Int8Value(2) = 1
command.Int8Value(3) = & h82
command.Int8Value(4) = 2

dim buffer as new MemoryBlock(512)
```
144.2. CLASS SMARTCARDMBS

`dim` ReceiveHeader as new MemoryBlock(8)

dim RecvLength as UInt32

card.Transmit(header, command, command.Size, ReceiveHeader, buffer, RecvLength)

MsgBox "Received "+str(RecvLength)+" bytes"

Notes:

ioSendPci:
A pointer to the protocol header structure for the instruction. This buffer is in the format of an SCARD_IO_REQUEST structure, followed by the specific protocol control information (PCI).
For the T=0, T=1, and Raw protocols, the PCI structure is constant. The smart card subsystem supplies a global T=0, T=1, or Raw PCI structure, which you can reference by using the symbols SCARD_PCI_T0, SCARD_PCI_T1, and SCARD_PCI_RAW respectively.

SendBuffer:
A pointer to the actual data to be written to the card. For T=0, the data parameters are placed into the address pointed to by pbSendBuffer according to the following structure:

<table>
<thead>
<tr>
<th>Type</th>
<th>name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Byte</td>
<td>Cla</td>
<td>The instruction class</td>
</tr>
<tr>
<td>Byte</td>
<td>Ins</td>
<td>The instruction code</td>
</tr>
<tr>
<td>Byte</td>
<td>P1</td>
<td>Parameter to the instruction</td>
</tr>
<tr>
<td>Byte</td>
<td>P2</td>
<td>Parameter to the instruction</td>
</tr>
<tr>
<td>Byte</td>
<td>P3</td>
<td>Size of I/O transfer</td>
</tr>
</tbody>
</table>

The data sent to the card should immediately follow the send buffer. In the special case where no data is sent to the card and no data is expected in return, P3 is not sent.

SendLength:
The length, in bytes, of the SendBuffer parameter. For T=0, in the special case where no data is sent to the card and no data expected in return, this length must reflect that the P3 member is not being sent; the length should be 4.

ioRecvPci:
Pointer to the protocol header structure for the instruction, followed by a buffer in which to receive any returned protocol control information (PCI) specific to the protocol in use. This parameter can be nil if no PCI is returned.

RecvBuffer:
Pointer to any data returned from the card.
For T=0, the data is immediately followed by the SW1 and SW2 status bytes. If no data is returned from
the card, then this buffer will only contain the SW1 and SW2 status bytes.

RecvLength:
Supplies the length, in bytes, of the RecvBuffer parameter and receives the actual number of bytes received
from the smart card. This value cannot be SCARD_AUTOALLOCATE because Transmit does not support
SCARD_AUTOALLOCATE.
For T=0, the receive buffer must be at least two bytes long to receive the SW1 and SW2 status bytes.

see also

Lasterror is set.

144.2.15 Properties

144.2.16 ActiveProtocol as Integer

The active protocol.
Notes: (Read and Write property)

144.2.17 Handle as Integer

The internal object reference.
Notes: (Read and Write property)

144.2.18 Lasterror as Integer

The last error code.
Notes: (Read and Write property)
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144.2.19 Constants

144.2.20 kAttributeAtrString = 590595

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the attribute ID constants. **Notes:** Answer to reset (ATR) string.

144.2.21 kAttributeChannelId = 131344

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the attribute ID constants. **Notes:**

DWORD encoded as &hDDDDCCCC, where DDDD = data channel type and CCCC = channel number.

The following encodings are defined for DDDD:
&h01 serial I/O; CCCC is a port number.
&h02 parallel I/O; CCCC is a port number.
&h04 PS/2 keyboard port; CCCC is zero.
&h08 SCSI; CCCC is SCSI ID number.
&h10 IDE; CCCC is device number.
&h20 USB; CCCC is device number.
&hFy vendor-defined interface with y in the range zero through 15; CCCC is vendor defined.

144.2.22 kAttributeCharacteristics = 393552

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the attribute ID constants. **Notes:**

Integer indicating which mechanical characteristics are supported. If zero, no special characteristics are supported. Note that multiple bits can be set:
&h00000001 Card swallowing mechanism
&h00000002 Card ejection mechanism
&h00000004 Card capture mechanism
All other values are reserved for future use (RFU).

144.2.23 kAttributeCurrentBwt = 524809

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the attribute ID constants. **Notes:** Current block waiting time.
144.2.24  \textit{kAttributeCurrentClk} = 524802


144.2.25  \textit{kAttributeCurrentCwt} = 524810


144.2.26  \textit{kAttributeCurrentD} = 524804


144.2.27  \textit{kAttributeCurrentEbcEncoding} = 524811

MBS Tools Plugin, Plugin Version: 16.3. \textbf{Function:} One of the attribute ID constants. \textbf{Notes:}

Current error block control encoding. 
0 = longitudinal redundancy check (LRC) 
1 = cyclical redundancy check (CRC)

144.2.28  \textit{kAttributeCurrentF} = 524803


144.2.29  \textit{kAttributeCurrentIfsc} = 524807

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144.2.30  kAttributeCurrentIfsd = 524808

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the attribute ID constants.  
**Notes:** Current byte size for information field size device.

144.2.31  kAttributeCurrentIoState = 590594

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the attribute ID constants.  
**Notes:** Current IO state

144.2.32  kAttributeCurrentN = 524805

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the attribute ID constants.  
**Notes:** Current guard time.

144.2.33  kAttributeCurrentProtocolType = 524801

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the attribute ID constants.  
**Notes:** Integer encoded as 0x0rrrpppp where rrr is RFU and should be 0x000. pppp encodes the current protocol type. Whichever bit has been set indicates which ISO protocol is currently in use. (For example, if bit zero is set, T=0 protocol is in effect.)

144.2.34  kAttributeCurrentW = 524806

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the attribute ID constants.  
**Notes:** Current work waiting time.

144.2.35  kAttributeDefaultClk = 196897

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the attribute ID constants.  
**Notes:** Default clock rate, in kHz.

144.2.36  kAttributeDefaultDataRate = 196899

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the attribute ID constants.  
**Notes:** Default data rate, in bps.
144.2.37  **kAttributeDeviceFriendlyNameA = 2147418115**

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the attribute ID constants.  
**Notes:** Reader’s display name. Windows ANSI encoding.

144.2.38  **kAttributeDeviceFriendlyNameW = 2147418117**

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the attribute ID constants.  
**Notes:** Reader’s display name. Unicode encoding.

144.2.39  **kAttributeDeviceInUse = 2147418114**

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the attribute ID constants.  
**Notes:** Reserved for future use.

144.2.40  **kAttributeDeviceSystemNameA = 2147418116**

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the attribute ID constants.  
**Notes:** Reader’s system name. Windows ANSI encoding.

144.2.41  **kAttributeDeviceSystemNameW = 2147418118**

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the attribute ID constants.  
**Notes:** Reader’s system name. Unicode encoding.

144.2.42  **kAttributeDeviceUnit = 2147418113**

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the attribute ID constants.  
**Notes:** Instance of this vendor’s reader attached to the computer. The first instance will be device unit 0, the next will be unit 1 (if it is the same brand of reader) and so on. Two different brands of readers will both have zero for this value.
144.2. CLASS SMARTCARDMBS

144.2.43 \texttt{kAttributeEscAuthrequest} = 499717

MBS Tools Plugin, Plugin Version: 16.3. \textbf{Function}: One of the attribute ID constants. \textbf{Notes}: Esc authentication request

144.2.44 \texttt{kAttributeEscCancel} = 499715

MBS Tools Plugin, Plugin Version: 16.3. \textbf{Function}: One of the attribute ID constants. \textbf{Notes}: Esc cancel

144.2.45 \texttt{kAttributeEscReset} = 499712

MBS Tools Plugin, Plugin Version: 16.3. \textbf{Function}: One of the attribute ID constants. \textbf{Notes}: Esc reset

144.2.46 \texttt{kAttributeExtendedBwt} = 524812


144.2.47 \texttt{kAttributeIccInterfaceStatus} = 590593

MBS Tools Plugin, Plugin Version: 16.3. \textbf{Function}: One of the attribute ID constants. \textbf{Notes}: Single byte. Zero if smart card electrical contact is not active; nonzero if contact is active.

144.2.48 \texttt{kAttributeIccPresence} = 590592

MBS Tools Plugin, Plugin Version: 16.3. \textbf{Function}: One of the attribute ID constants. \textbf{Notes}:

Single byte indicating smart card presence:
0 = not present
1 = card present but not swallowed (applies only if reader supports smart card swallowing)
2 = card present (and swallowed if reader supports smart card swallowing)
4 = card confiscated.
144.2.49  kAttributeIccTypePerAtr = 590596

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the attribute ID constants.  
**Notes:**  
Single byte indicating smart card type.  
0 = unknown type  
1 = 7816 Asynchronous  
2 = 7816 Synchronous  
Other values RFU.

144.2.50  kAttributeMaxClk = 196898

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the attribute ID constants.  
**Notes:** Maximum clock rate, in kHz.

144.2.51  kAttributeMaxDataRate = 196900

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the attribute ID constants.  
**Notes:** Maximum data rate, in bps.

144.2.52  kAttributeMaxIfsd = 196901

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the attribute ID constants.  
**Notes:** Maximum bytes for information file size device.

144.2.53  kAttributeMaxInput = 499719

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the attribute ID constants.  
**Notes:** Maximum input

144.2.54  kAttributePowerMgmtSupport = 262449

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the attribute ID constants.  
**Notes:** Zero if device does not support power down while smart card is inserted. Nonzero otherwise.
144.2. CLASS SMARTCARDMBS

144.2.55  \texttt{kAttributeProtocolTypes} = 196896

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the attribute ID constants.
**Notes:**
Integer encoded as 0x0rrrpppp where rrr is RFU and should be 0x000.
pppp encodes the supported protocol types. A '1' in a given bit position indicates support for the associated
ISO protocol, so if bits zero and one are set, both T=0 and T=1 protocols are supported.

144.2.56  \texttt{kAttributeSupressT1IfsRequest} = 2147418119

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the attribute ID constants.
**Notes:** Supress T1 information file size request.

144.2.57  \texttt{kAttributeUserAuthInputDevice} = 328002

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the attribute ID constants.
**Notes:** User authentication input device.

144.2.58  \texttt{kAttributeUserToCardAuthDevice} = 328000

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the attribute ID constants.
**Notes:** User to card authentication device.

144.2.59  \texttt{kAttributeVendorIfdSerialNo} = 65795

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the attribute ID constants.
**Notes:** Vendor-supplied interface device serial number.

144.2.60  \texttt{kAttributeVendorIfdType} = 65793

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the attribute ID constants.
**Notes:** Vendor-supplied interface device type (model designation of reader).
**144.2.61**  \( \text{kAttributeVendorIfdVersion} = 65794 \)

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the attribute ID constants.
**Notes:** Vendor-supplied interface device version (DWORD in the form 0xMMmmmbbbb where MM = major version, mm = minor version, and bbbb = build number).

**144.2.62**  \( \text{kAttributeVendorName} = 65792 \)

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the attribute ID constants.
**Notes:** Vendor name.

**144.2.63**  \( \text{kCardStateAbsent} = 2 \)

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the card state constants.
**Notes:** There is no card in the reader.

**144.2.64**  \( \text{kCardStateNegotiable} = 32 \)

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the card state constants.
**Notes:** The card has been reset and is awaiting PTS negotiation.

**144.2.65**  \( \text{kCardStatePowered} = 16 \)

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the card state constants.
**Notes:** Power is being provided to the card, but the reader driver is unaware of the mode of the card.

**144.2.66**  \( \text{kCardStatePresent} = 4 \)

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the card state constants.
**Notes:** There is a card in the reader, but it has not been moved into position for use.

**144.2.67**  \( \text{kCardStateSpecific} = 64 \)

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the card state constants.
**Notes:** The card has been reset and specific communication protocols have been established.
144.2. CLASS SMARTCARDMBS

144.2.68 kCardStateSwallowed = 8

MBS Tools Plugin, Plugin Version: 16.3. **Function**: One of the card state constants. **Notes**: There is a card in the reader in position for use. The card is not powered.

144.2.69 kCardStateUnknown = 1

MBS Tools Plugin, Plugin Version: 16.3. **Function**: One of the card state constants. **Notes**: Unknown state.

144.2.70 kEjectCard = 3

MBS Tools Plugin, Plugin Version: 16.3. **Function**: One of the card initialization modes. **Notes**: Eject card.

144.2.71 kLeaveCard = 0

MBS Tools Plugin, Plugin Version: 16.3. **Function**: One of the card initialization modes. **Notes**: Do not do anything special on reconnect.

144.2.72 kProtocolAny = 3

MBS Tools Plugin, Plugin Version: 16.3. **Function**: One of the protocol constants. **Notes**: Any protocol is welcome.

144.2.73 kProtocolRAW = 4

MBS Tools Plugin, Plugin Version: 16.3. **Function**: One of the protocol constants. **Notes**: Raw protocol.

144.2.74 kProtocolT0 = 1

MBS Tools Plugin, Plugin Version: 16.3. **Function**: One of the protocol constants. **Notes**: T=0 is the active protocol.
144.2.75  \( k_{ProtocolT1} = 2 \)

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the protocol constants.
**Notes:** \( T=1 \) is the active protocol.

144.2.76  \( k_{ProtocolT15} = 8 \)

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the protocol constants.
**Notes:** \( T=15 \) protocol (not on Windows)

144.2.77  \( k_{ProtocolUndefined} = 0 \)

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the protocol constants.
**Notes:** \( kShareDirect \) has been specified, so that no protocol negotiation has occurred. It is possible that there is no card in the reader.

144.2.78  \( k_{ProtocolUnset} = 0 \)

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the protocol constants.
**Notes:** Unset

144.2.79  \( k_{ResetCard} = 1 \)

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the card initialization modes.
**Notes:** Reset the card (Warm Reset).

144.2.80  \( k_{ShareDirect} = 3 \)

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the flags that indicates whether other applications may form connections to the card.
**Notes:** This application is allocating the reader for its private use, and will be controlling it directly. No other applications are allowed access to it.
144.2. CLASS SMARTCARDMBS

144.2.81 kShareExclusive = 1

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the flags that indicates whether other applications may form connections to the card.
**Notes:** This application is not willing to share the card with other applications.

144.2.82 kShareShared = 2

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the flags that indicates whether other applications may form connections to the card.
**Notes:** This application is willing to share the card with other applications.

144.2.83 kUnpowerCard = 2

MBS Tools Plugin, Plugin Version: 16.3. **Function:** One of the card initialization modes.
**Notes:** Power down the card and reset it (Cold Reset).
Chapter 145

Social

145.1 class ACAccountCredentialMBS

145.1.1 class ACAccountCredentialMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: An ACAccountCredential object encapsulates the information needed to authenticate a user. Notes: To create an account credential that uses the OAuth open authentication standard, use the Constructor.

145.1.2 Methods

145.1.3 Constructor(token as string, refreshToken as string, expiryDate as date)


Accounts can optionally use the OAuth open authentication standard to authenticate your client application. Instead of the user giving their username and password to log in, the server authenticates the user, and your client application receives a token that grants it access to specific resources for a defined duration. The authentication mechanism uses a key and secret scheme similar to the public and private keys used by ssh. A token is a unique, random string of letters and numbers that is paired with a secret to protect the token from being abused. You initialize account credentials using this token and secret token.
To learn more about OAuth, go to Hueniverse OAuth.
http://hueniverse.com/oauth/
See also:

- 145.1.4 Constructor(token as string, tokenSecret as string)

145.1.4 Constructor(token as string, tokenSecret as string)

Notes:
Accounts can optionally use the OAuth open authentication standard to authenticate your client application. Instead of the user giving their username and password to log in, the server authenticates the user, and your client application receives a token that grants it access to specific resources for a defined duration. The authentication mechanism uses a key and secret scheme similar to the public and private keys used by ssh. A token is a unique, random string of letters and numbers that is paired with a secret to protect the token from being abused. You initialize account credentials using this token and secret token.

To learn more about OAuth, go to Hueniverse OAuth.
http://hueniverse.com/oauth/
See also:

- 145.1.3 Constructor(token as string, refreshToken as string, expiryDate as date)

145.1.5 Properties

145.1.6 Handle as Integer

Notes: (Read and Write property)

145.1.7 oauthToken as String

Notes: (Read and Write property)
145.2. CLASS ACACCOUNTMBS

145.2 class ACAccountMBS

145.2.1 class ACAccountMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The account class.
Notes:
An ACAccount object encapsulates information about a user account stored in the Accounts database. You can create and retrieve accounts using an ACAccountStore object. The ACAccountStore object provides an interface to the persistent Accounts database. For each user, all account objects belong to a single ACAccountStore object.

Available in OS X v10.8 and later in 64-bit applications.

145.2.2 Methods

145.2.3 Constructor(type as ACAccountTypeMBS)

Notes: Available in OS X v10.8 and later.

145.2.4 Destructor


145.2.5 Properties

145.2.6 accountDescription as String

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: A human-readable description of the account.
Notes:
This property is available if the user grants the application access to this account; otherwise it is "". (Read and Write property)
145.2.7 accountType as ACAccountTypeMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 
**Function:** The type of service account. 
**Notes:** 
This property is required. You specify the account type using the Constructor. You can use the accountsWithAccountType method to retrieve all accounts of a particular type. 
(Read and Write property)

145.2.8 credential as ACAccountCredentialMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 
**Function:** The credential used to authenticate the user of this account. 
**Notes:** 
This property is required and must be set before the account is saved. For privacy reasons, this property is inaccessible after the account is saved. 
(Read and Write property)

145.2.9 Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 
**Function:** Internal object reference. 
**Notes:** (Read and Write property)

145.2.10 identifier as String

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 
**Function:** A unique identifier for this account. 
**Notes:** 
Use the accountWithIdentifier method to get an account with the specified identifier. 
(Read only property)

145.2.11 Parent as ACAccountStoreMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 
**Function:** The account store for this account. 
**Notes:** (Read only property)
145.2. CLASS ACACCOUNTMBS

145.2.12 username as String

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The username for this account.
Notes:
This property must be set before the account is saved. After the account is saved, this property is available if the user grants the application access to this account; otherwise it is "".
(Read and Write property)
145.3  class ACAccountStoreMBS

145.3.1  class ACAccountStoreMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The ACAccountStore class provides an interface for accessing, manipulating, and storing accounts. **Notes:**

To create and retrieve accounts from the Accounts database, you must create an ACAccountStore object. Each ACAccount object belongs to a single ACAccountStore object.

Available on Mac OS X 10.8 and later in 64-bit applications.

145.3.2  Methods

145.3.3  ACAccountStoreDidChangeNotification as string

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the notification names. **Notes:**

Posted when the accounts managed by this account store changed in the database. There is no userInfo dictionary associated with this notification.

This notification is sent if an account is saved or removed locally or externally. If you receive this notification, you should refetch all account objects.

The plugin automatically registeres this for the Changed event.

145.3.4  accounts as ACAccountMBS()

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The accounts managed by this account store.

145.3.5  accountsWithAccountType(type as ACAccountTypeMBS) as ACAccountMBS()

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns all accounts of the specified type.
145.3.6 accountTypeWithAccountTypeIdentifier(identifier as string) as ACAccountTypeMBS


145.3.7 accountWithIdentifier(identifier as string) as ACAccountMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the account with the specified identifier.

145.3.8 ACErrorDomain as string


145.3.9 available as boolean

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether class is available. Notes: Returns true on Mac OS X 10.8 in a 64-bit application.

145.3.10 Constructor


145.3.11 Destructor

145.3.12 removeAccount(account as ACAccountMBS, tag as Variant = nil)

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Removes an account from the account store.
Notes:
account: The account to remove.

This call will fail if you don’t have sufficient rights to remove the account.

145.3.13 renewCredentialsForAccount(account as ACAccountMBS, tag as Variant = nil)

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Renews account credentials when the credentials are no longer valid.
Notes:
account: The account to renew credentials.

For Twitter and Sina Weibo accounts, this method will prompt the user to go to Settings to re-enter their password.
For Facebook accounts, if the access token has become invalid due to a regular expiration, this method will obtain a new one.
If the user has deauthorized your app, this renewal request will return ACAccountCredentialRenewResultRejected.

145.3.14 requestAccessToAccountsWithTypeInfo(accountType as ACAccountTypeMBS, dic as dictionary, tag as Variant = nil)

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Obtains permission to access protected user properties.
Notes:
accountType: The account type.
options: The account options.

Certain account types (such as Facebook) require an options dictionary. This method will throw an NSInvalidArgumentException if the options dictionary is not provided for such account types. Conversely, if the account type does not require an options dictionary, the options parameter must be nil.
145.3. CLASS ACACCOUNTSTOREMBS

145.3.15 saveAccount(account as ACAccountMBS, tag as Variant = nil)

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Saves an account to the Accounts database.
Notes:
account: The account to save.

If the account type supports authentication and the account is not authenticated, the account server uses the
account’s credentials to authenticate it. If the authentication is successful, the account is saved; otherwise
it is not saved.

145.3.16 Properties

145.3.17 Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The internal object reference.
Notes: (Read and Write property)

145.3.18 Events

145.3.19 Changed

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: Event called when database changed.
Notes:
Posted when the accounts managed by this account store changed in the database. There is no userInfo
dictionary associated with this notification.

This notification is sent if an account is saved or removed locally or externally. If you receive this notification,
you should refetch all account objects.

145.3.20 removeAccountCompleted(account as ACAccountMBS, success as boolean, error as NSErrorMBS, tag as Variant)

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: The event called when account removing completed.
145.3.21 `renewCredentialsForAccountCompleted(account as ACAccountMBS, 
renewResult as Integer, error as NSErrorMBS, tag as Variant)`

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Event called when renew credentials completed.

145.3.22 `requestAccessCompleted(granted as boolean, error as NSErrorMBS, 
accountType as ACAccountTypeMBS, tag as Variant)`

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event called when requestAccessToAccountsWithtype completed.

145.3.23 `saveAccountCompleted(success as boolean, error as NSErrorMBS, 
account as ACAccountMBS, tag as Variant)`

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The account save completed.

145.3.24 **Constants**

145.3.25 `ACAccountCredentialRenewResultFailed = 2`

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the status codes of credential renewal requests.
**Notes:** A non-user-initiated cancel of the prompt. Try again.

145.3.26 `ACAccountCredentialRenewResultRejected = 1`

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the status codes of credential renewal requests.
**Notes:** Renewal failed because the user revoked your access to their account.

145.3.27 `ACAccountCredentialRenewResultRenewed = 0`

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the status codes of credential renewal requests.
145.3. CLASS ACACCOUNTSTOREMBS

Notes: The accounts credentials have been renewed and are now associated with the account.

145.3.28   ACErrorAccessDeniedByProtectionPolicy = 10

MBS Mac64bit Plugin, Plugin Version: 15.3. Function: One of the error constants. Notes: Due to the current protection policy in effect, we couldn’t fetch a credential

145.3.29   ACErrorAccessInfoInvalid = 8

MBS Mac64bit Plugin, Plugin Version: 15.3. Function: One of the error constants. Notes: The client’s access info dictionary has incorrect or missing values.

145.3.30   ACErrorAccountAlreadyExists = 5

MBS Mac64bit Plugin, Plugin Version: 15.3. Function: One of the error constants. Notes: Account wasn’t added because it already exists.

145.3.31   ACErrorAccountAuthenticationFailed = 3

MBS Mac64bit Plugin, Plugin Version: 15.3. Function: One of the error constants. Notes: Account wasn’t saved because authentication of the supplied credential failed.

145.3.32   ACErrorAccountMissingRequiredProperty = 2

MBS Mac64bit Plugin, Plugin Version: 15.3. Function: One of the error constants. Notes: Account wasn’t saved because it is missing a required property.

145.3.33   ACErrorAccountNotFound = 6

MBS Mac64bit Plugin, Plugin Version: 15.3. Function: One of the error constants. Notes: Account wasn’t deleted because it could not be found.
145.3.34  **ACErrorAccountTypeInvalid = 4**

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the error constants.  
**Notes:** Account wasn’t saved because the account type is invalid.

145.3.35  **ACErrorClientPermissionDenied = 9**

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the error constants.  
**Notes:** Your client does not have access to the requested data.

145.3.36  **ACErrorCredentialNotFound = 11**

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the error constants.  
**Notes:** Yo, I tried to find your credential, but it must have run off!

145.3.37  **ACErrorFetchCredentialFailed = 12**

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the error constants.  
**Notes:** Something bad happened on the way to the keychain.

145.3.38  **ACErrorInvalidClientBundleID = 16**

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the error constants.  
**Notes:** The client making the request does not have a valid bundle ID.

145.3.39  **ACErrorPermissionDenied = 7**

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the error constants.  
**Notes:** The operation didn’t complete because the user denied permission.

145.3.40  **ACErrorRemoveCredentialFailed = 14**

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the error constants.  
**Notes:** Unable to remove credential.
145.3. **CLASS ACACCOUNTSTOREMBS**

145.3.41 **ACErrorStoreCredentialFailed = 13**

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the error constants.  
**Notes:** Unable to store credential

145.3.42 **ACErrorUnknown = 1**

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the error constants.  
**Notes:** Unknown error

145.3.43 **ACErrorUpdatingNonexistentAccount = 15**

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function:** One of the error constants.  
**Notes:** Account save failed because the account being updated has been removed.
145.4 class ACAccountTypeMBS

145.4.1 class ACAccountTypeMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 
**Function:** An ACAccountType object encapsulates information about all accounts of a particular type. 
**Notes:**
You do not create account type objects directly. To obtain an account type, use the Constructor or the accountType property of an account object. Account Type Identifiers describes the identifiers for currently supported account types. You can also use the accountsWithAccountType method to obtain all accounts of a particular type.

Available in OS X v10.8 and later in 64-bit applications.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

145.4.2 Methods

145.4.3 ACAccountTypeIdentifierFacebook as string

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 
**Function:** Identifier for the Facebook account type.

145.4.4 ACAccountTypeIdentifierLinkedIn as string

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 
**Function:** Identifier for the LinkedIn account type.
**Notes:** Available in OS X v10.9 and later.

145.4.5 ACAccountTypeIdentifierSinaWeibo as string

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 
**Function:** Identifier for the Sina Weibo account type.

145.4.6 ACAccountTypeIdentifierTencentWeibo as string

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 
**Function:** Identifier for the Tencent Weibo account type.
145.4. CLASS ACACCOUNTTYPEMBS

Notes: Available in OS X v10.9 and later.

145.4.7 ACAccountTypeIdentifierTwitter as string

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 

Function: Identifier for the Twitter account type.

145.4.8 accessGranted as boolean

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 

Function: A Boolean value indicating whether the user granted the application access to accounts of this type. 
Notes: True if the application has access to accounts of this type; otherwise false.

145.4.9 accountTypeDescription as string

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 

Function: A human-readable description of the account type.

145.4.10 ACFacebookAppIdKey as string

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 

Function: Your Facebook App ID, as it appears on the Facebook website.

145.4.11 ACFacebookAudienceEveryone as string

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 

Function: Posts from your app are visible to everyone.

145.4.12 ACFacebookAudienceFriends as string

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 

Function: Posts are visible only to friends.
145.4.13 **ACFacebookAudienceKey** as string

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Only required when posting permissions are requested.

145.4.14 **ACFacebookAudienceOnlyMe** as string

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Posts are visible to the user only.

145.4.15 **ACFacebookPermissionsKey** as string

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An array of of the permissions you’re requesting.

145.4.16 **ACLLinkedInAppIdKey** as string

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Your LinkedIn App ID (or API Key), as it appears on the LinkedIn website.

145.4.17 **ACLLinkedInPermissionsKey** as string

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An array of of the LinkedIn permissions you’re requesting.

145.4.18 **ACTencentWeiboAppIdKey** as string

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Tencent App ID

145.4.19 **Constructor**

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.
145.4.20 identifier as string

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The unique identifier for the account type.

145.4.21 Properties

145.4.22 Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference.  
**Notes:** (Read and Write property)
145.5  class CustomNSSharingServiceMBS

145.5.1  class CustomNSSharingServiceMBS

Function: The class for a custom sharing service.
Notes:
You only use it to get your own service inside your app into sharing picker.

Please call Close method when you want to stop the service.
Subclass of the NSSharingServiceMBS class.

145.5.2  Methods

145.5.3  Constructor(title as string, image as NSImageMBS, alternateImage as NSImageMBS = nil, delegate as NSSharingServiceDelegateMBS = nil, tag as Variant = nil)

Function: Creates a custom sharing service object.
Notes:
title: The custom sharing service name.
image: The image that represents the sharing service
alternateImage: The alternate image that represents the sharing service
Delegate: The delegate where events are called for this service.

Custom sharing services can be added to the NSSharingServicePicker with the sharingServicesForItems event.
Available in OS X v10.8 and later.

Please call Close method when you want to stop the service.

145.5.4  Events

145.5.5  performCustomService(tag as Variant)

Function: Called when user selected this service and you need to perform your work.
145.6. class NSSharingServiceDelegateMBS

145.6.1 class NSSharingServiceDelegateMBS

**Function:** The NSSharingServiceDelegate protocol allows customization of the position and animation of the share sheet as well as be notified of the success or failure of the item being shared.
**Notes:** Available in OS X v10.8 and later.

145.6.2 Methods

145.6.3 Constructor

**Function:** The constructor.

145.6.4 Destructor

**Function:** The destructor.

145.6.5 Properties

145.6.6 Handle as Integer

**Function:** The internal object reference.
**Notes:** (Read and Write property)

145.6.7 Events

145.6.8 didFailToShareItems(service as NSSharingServiceMBS, items as NSSharingServiceItemsMBS, error as NSErrorMBS)

**Function:** Invoked when the sharing service encountered an error when sharing items.
**Notes:**
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sharingService: The sharing service.
items: The items being shared.
error: The error that was encountered when trying to share the item. If the error is NSUserCancelledError, the user simply cancelled the error.

Available in OS X v10.8 and later.

145.6.9 didShareItems(service as NSSharingServiceMBS, items as NSSharingServiceItemsMBS)

Function: Invoked when the sharing service has finished sharing the items.
Notes:
sharingService: The sharing service.
items: The items being shared.

Available in OS X v10.8 and later.

145.6.10 sourceFrameOnScreenForShareItem(service as NSSharingServiceMBS, item as Variant) as NSRectMBS

Function: Invoked when the sharing service is performed and the sharing window is displayed, to present a transition between the original items and the sharing window.
Notes:
sharingService: The sharing service.
item: The item being shared.

Return the rectangle, in screen coordinates, to display the transition.

145.6.11 sourceWindowForShareItems(service as NSSharingServiceMBS, items as NSSharingServiceItemsMBS, scope as Integer) as NSWindowMBS

Function: Returns the window that contained the share items.
Notes:
sharingService: The sharing service.
items: The items being shared.
sharingContentScope: The sharing content scope. The sharing scope can be modified from the default value of NSSharingContentScopeItem by setting a different value in the out parameter sharingContentScope.

Return the window of the shared items.

145.6.12 transitionImageForShareItem(service as NSSharingServiceMBS, item as Variant, contentRect as NSRectMBS) as NSImageMBS

**Function:** Invoked to allow returning a custom transition image when sharing an item.
**Notes:**
- sharingService: The sharing service.
- item: The shared item.
- contentRect: The content rectangle is the frame of the actual content inside the transition image, excluding all decorations. For example, if the transition image is a QuickLook thumbnail, the value would be QLThumbnailGetContentRect.

Return the image to display for the sharing transition. Its size should exactly match that of the original image.

145.6.13 willShareItems(service as NSSharingServiceMBS, items as NSSharingServiceItemsMBS)

**Function:** Invoked when the sharing service will share the specified items.
**Notes:**
- sharingService: The sharing service.
- items: The items being shared.
Available in OS X v10.8 and later.

145.6.14 Constants

145.6.15 NSSharingContentScopeFull = 2

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the sharing scope constants to specify the nature of the things you are sharing.
**Notes:**
- Used when sharing the whole content of the current document, for example, the URL of the webpage.
Available in OS X v10.8 and later.
145.6.16 **NSSharingContentScopeItem = 0**

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the sharing scope constants to specify the nature of the things you are sharing.

**Notes:**

Used when sharing a clearly identified item, for example, a file represented by its icon.
Available in OS X v10.8 and later.

145.6.17 **NSSharingContentScopePartial = 1**

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the sharing scope constants to specify the nature of the things you are sharing.

**Notes:**

Used when sharing a portion of a more global content, for example, part of a webpage.
Available in OS X v10.8 and later.
class NSHaringServiceItemsMBS

Function: A collection class for files, images, texts and URLs.

Example:

```vbnet
dim p as Picture = LogoMBS(500)
dim t as new NSHaringServiceItemsMBS
dim image as new NSImageMBS(p)
t.AddImage image
t.AddText "Hello World. This is a great app!"
```

Notes: Create an object from this class, add some items and pass to the share methods.

### 145.7.2 Methods

#### 145.7.3 AddAttributedString(AttributedString as NSAttributedStringMBS)


Function: Adds one attributed string to the collection.

See also:

- 145.7.4 AddAttributedString(AttributedString as NSAttributedStringMBS)

#### 145.7.4 AddAttributedString(AttributedString() as NSAttributedStringMBS)


Function: Adds attributed strings to the collection.

See also:

- 145.7.3 AddAttributedString(AttributedString as NSAttributedStringMBS)

#### 145.7.5 AddFile(file as folderitem)


Function: Adds one file to the collection.
145.7.6 AddFiles(files() as folderitem)

**Function:** Adds an array of files to the collection.

145.7.7 AddImage(image as NSImageMBS)

**Function:** Adds one image to the collection.

145.7.8 AddImages(images() as NSImageMBS)

**Function:** Adds an array of images to the collection.

145.7.9 AddText(text as string)

**Function:** Adds one text to the collection.
See also:

- 145.7.10 AddText(texts() as string) 18384

145.7.10 AddText(texts() as string)

**Function:** Adds an array of texts to the collection.
See also:

- 145.7.9 AddText(text as string) 18384

145.7.11 AddURL(URL as string)

**Function:** Add one URL to the collection.
See also:

- 145.7.12 AddURL(URLs() as string) 18385
145.7. CLASS NSSHARINGSERVICEITEMSMBS

145.7.12 AddURL(Urls() as string)

Function: Adds an array of URLs to the collection.
See also:

- 145.7.11 AddURL(URL as string)

145.7.13 Constructor

Function: The constructor.

145.7.14 count as Integer

Function: Returns the number of items in this collection.

145.7.15 Images as NSImageMBS()

Function: Returns all images in the collection.

145.7.16 objectAtIndex(index as Integer) as Variant

Function: Returns object at the given index.
Notes:
Index is from 0 to count-1.
Returns URLs and files as string with URL.

145.7.17 Texts as string()

Function: Returns array with all texts in this collection.
145.7.18  URLs as string()

Function: Returns array with all URLs.
Notes: As files are also handled as URLs, the array contains also files in the collections as URLs.

145.7.19  Properties

145.7.20  Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)
145.8 class NSSharingServiceMBS

145.8.1 class NSSharingServiceMBS

Function: The NSSharingService class is used to provide a consistent user experience when sharing items on OS X.
Notes:
For example, items can be: NSURL objects, NSString objects, NSImage objects, video (through file URLs), or any object which implements the NSPasteboardWriting protocol.

For any item or group of items, the NSSharingServiceMBS will display a sharing sheet to allow the user to pre-visualize what will be shared to the service. A sharing service can: create a post on a social network like Twitter or Facebook, send a message by email or iMessage, upload videos to viewing services, or send a file by AirDrop.

145.8.2 Methods

145.8.3 alternateImage as NSImageMBS

Function: The alternate image representing the sharing service. (read-only)
Notes: Available in OS X v10.8 and later.

145.8.4 Available as boolean

Function: Whether sharing services are available.
Notes: Returns true on Mac OS X 10.8.

145.8.5 canPerformWithItems(items as NSSharingServiceItemsMBS) as Boolean

Function: Returns whether the service can share all the specified items.
Notes:
items: The items to share.

Return true if the service can share all the items; false otherwise. If items is nil, the method will return true.
when the service is configured.

This method can be used to validate a custom user interface such as a dedicated Twitter button. Therefore you could call it once at launch time with nil items to check whether to display the button or not, and then with real items to enable and disable the button depending on the context or selection.

Available in OS X v10.8 and later.

### 145.8.6 Close

**Function:** Closes the sharing services.
**Notes:** Same as destructor, but closes now, not later.

### 145.8.7 Constructor(name as string)

**Function:** Create a sharing service instance representing the specified service name.
**Notes:** name: The service name. See NSSharingServiceName* methods.

### 145.8.8 Destructor

**Function:** The destructor.

### 145.8.9 image as NSImageMBS

**Function:** The primary image representing the sharing service. (read-only)

### 145.8.10 NSSharingServiceNameAddToAperture as string

**Function:** One of the sharing service names.
**Notes:**
145.8. CLASS NSSHARINGSERVICEMBS

Adds the content to Aperture.
Available in OS X v10.8 and later.

145.8.11 NSSharingServiceNameAddToIPhoto as string

Function: One of the sharing service names. 
Notes: 
Adds the content to iPhoto. 
Available in OS X v10.8 and later.

145.8.12 NSSharingServiceNameAddToSafariReadingList as string

Function: One of the sharing service names. 
Notes: 
Add the content to the Safari Reading List. 
Available in OS X v10.8 and later.

145.8.13 NSSharingServiceNameComposeEmail as string

Function: One of the sharing service names. 
Notes: 
Creates an email messages with the content. 
Available in OS X v10.8 and later.

145.8.14 NSSharingServiceNameComposeMessage as string

Function: One of the sharing service names. 
Notes: 
Creates a Messages methods with the content. 
Available in OS X v10.8 and later.
145.8.15  NSSharingServiceNamePostImageOnFlickr as string

Function: One of the sharing service names.
Notes:
Posts the image on Flickr.
Available in OS X v10.8 and later.

145.8.16  NSSharingServiceNamePostOnFacebook as string

Function: One of the sharing service names.
Notes:
Posts the content to Facebook.
Available in OS X v10.8 and later.

145.8.17  NSSharingServiceNamePostOnSinaWeibo as string

Function: One of the sharing service names.
Notes:
Posts the content on a Sina Weibo, Chinese microblogging (weibo) website. Akin to a hybrid of Twitter and Facebook.
Available in OS X v10.8 and later.

145.8.18  NSSharingServiceNamePostOnTwitter as string

Function: One of the sharing service names.
Notes:
Posts the content on Twitter.
Available in OS X v10.8 and later.

145.8.19  NSSharingServiceNamePostVideoOnTudou as string

Function: One of the sharing service names.
Notes:
Posts the video on the video sharing service Tudou, based in the People's Republic of China.
Available in OS X v10.8 and later.

145.8.20  **NSSharingServiceNamePostVideoOnVimeo** as string

**Function:** One of the sharing service names.
**Notes:**
Posts the video on the video sharing service Vimeo.
Available in OS X v10.8 and later.

145.8.21  **NSSharingServiceNamePostVideoOnYouku** as string

**Function:** One of the sharing service names.
**Notes:**
Posts the video on the video sharing service Youku, based in the People's Republic of China.
Available in OS X v10.8 and later.

145.8.22  **NSSharingServiceNameSendViaAirDrop** as string

**Function:** One of the sharing service names.
**Notes:**
Sends the file via Air Drop.
Available in OS X v10.8 and later.

145.8.23  **NSSharingServiceNameUseAsDesktopPicture** as string

**Function:** One of the sharing service names.
**Notes:**
Replaces the user's desktop image with the content.
Available in OS X v10.8 and later.
145.8.24  NSSharingServiceNameUseAsTwitterProfileImage as string

**Function:** One of the sharing service names.
**Notes:**
Replaces the Twitter profile image with the content.
Available in OS X v10.8 and later.

145.8.25  performWithItems(items as NSSharingServiceItemsMBS)

**Function:** Manually performs the service on the provided items.
**Notes:**
items: The items to share.
In most cases this will display a sharing window.
Available in OS X v10.8 and later.

145.8.26  SetDelegate(delegate as NSSharingServiceDelegateMBS)

**Function:** Specifies the delegate of the sharing service.

145.8.27  sharingServiceNamed(name as string) as NSSharingServiceMBS

**Function:** Returns a sharing service instance representing the specified service name.
**Notes:**
serviceName: The service name. See NSSharingServiceName* methods.
Returns an instance of NSSharingService for the specified service name.
Available in OS X v10.8 and later.
145.8.28 sharingServicesForItems(items as NSSharingServiceItemsMBS) as NSSharingServiceMBS()


**Function:** Returns a list of sharing services which could share all the provided items together.

**Example:**

```vba
// get an image
dim logo as Picture = LogoMBS(500)
Dim nsi as new NSImageMBS( logo )

// make items object
Dim nshi as new NSSharingServiceItemsMBS
nshi.AddImage nsi

// query services which are supported
Dim ssl(-1) as NSSharingServiceMBS = NSSharingServiceMBS.sharingServicesForItems( nshi )

// show services
for each s as NSSharingServiceMBS in ssl
    msgBox s.title
next
```

**Notes:**

- items: The items to share.

Returns an array of sharing services to allow for items.
This method can be used to build a custom user interface or to populate a contextual menu.
Available in OS X v10.8 and later.

145.8.29 title as string


**Function:** The title of the sharing service. (read-only)

**Example:**

```vba
// get an image
dim logo as Picture = LogoMBS(500)
Dim nsi as new NSImageMBS( logo )

// make items object
Dim nshi as new NSSharingServiceItemsMBS
nshi.AddImage nsi
```
// query services which are supported
Dim ssl(-1) as NSSharingServiceMBS = NSSharingServiceMBS.sharingServicesForItems(nshi)

// show services
for each s as NSSharingServiceMBS in ssl
    msgBox s.title
next

145.8.30 Properties

145.8.31 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)
145.9. **CLASS NSSHARINGSERVICEPICKERMBS**

145.9  **class NSSharingServicePickerMBS**

145.9.1  **class NSSharingServicePickerMBS**


**Function:** The NSSharingServicePicker class presents a list of sharing services, so that the user can choose a service to share an item.

**Notes:**

When a service is chosen, the picker automatically executes it, which presents the sharing window.

The events in this class allows customizing the picker’s available services, where it appears, and allows assigning the delegate object for the NSSharingService delegate.

Available in OS X v10.8 and later.

145.9.2  **Methods**

145.9.3  **Available as boolean**


**Function:** Whether sharing services are available.

**Notes:** Returns true on Mac OS X 10.8.

145.9.4  **Constructor(items as NSSharingServiceItemsMBS)**


**Function:** Initializes a new sharing service picker for the selected items.

**Notes:** Available in OS X v10.8 and later.

145.9.5  **Destructor**


**Function:** The destructor.
145.9.6 showRelativeToRect(r as NSRectMBS, view as NSViewMBS, preferredEdge as Integer)

Function: Shows the picker, populated with sharing services related to the instance items.
Notes:
rect: The rectangle the picker should be shown relative to. The coordinates are in the view coordinate system. Passing NSRectMBS.Zero causes the view bounds to be used.
view: The view.
preferredEdge: The preferred edge of the view to display the picker. See edge constants for the possible values.

When the user selects one of the sharing services, the sharing service will be performed. This method must be called on mouseDown.

Available in OS X v10.8 and later.

145.9.7 Properties

145.9.8 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

145.9.9 Events

145.9.10 delegateForSharingService(service as NSSharingServiceMBS) as NSSharingServiceDelegateMBS

Function: Invoked to provide the delegate to the sharing service when the user has selected a service.
Notes:
sharingServicePicker: The sharing service picker.
sharingService: The selected sharing service.

Return a NSSharingServiceDelegateMBS object the sharing service should use for this item’s transfer.
Available in OS X v10.8 and later.
145.9. **CLASS NSSHARINGSERVICEPICKERMBS**

145.9.11 **didChooseSharingService(service as NSSharingServiceMBS)**


**Function:** Invoked when the user has selected a service and before it is executed.

**Notes:**

sharingServicePicker: The sharing service picker.

service: The sharing service the user selected. Invoked to give the delegate to the sharing service that is about to be executed.

Available in OS X v10.8 and later.

145.9.12 **sharingServicesForItems(items as NSSharingServiceItemsMBS, proposedServices() as NSSharingServiceMBS) as NSSharingServiceMBS()**


**Function:** Invoked to allow the delegate to customize exactly what appears in the sharing service picker before it is presented.

**Notes:**

sharingServicePicker: The sharing service picker.

items: The items to share.

proposedServices: The proposed services to share the content.

Return the sharing services to use.

If you have no code in the event, the proposedServices are returned automatically.

The delegate can reorder, remove default services or add custom services before the picker is presented. It’s possible to add custom services by mutating the proposedSharingServices array and adding new NSSharingService instances.

Available in OS X v10.8 and later.

145.9.13 **Constants**

145.9.14 **NSMaxXEdge = 2**

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the Cocoa edge constants. **Notes:** the maximum X edge. Typically right side.
145.9.15  **NSMaxYEdge = 3**

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the Cocoa edge constants.  
**Notes:** The maximum Y edge. Topically the top edge of a window.

145.9.16  **NSMinXEdge = 0**

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the Cocoa edge constants.  
**Notes:** the minimum X edge. Typically left side.

145.9.17  **NSMinYEdge = 1**

MBS MacFrameworks Plugin, Plugin Version: 12.3. **Function:** One of the Cocoa edge constants.  
**Notes:** Minimum Y. As coordinates are upside down in the Cocoa world, this is the bottom edge of a window.
145.10. class SLRequestMBS

145.10.1 class SLRequestMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.

**Function:** The SLRequest object encapsulates the properties of an HTTP request, providing a convenient template for you to make requests.

**Notes:**
You send a request to a social networking service to perform some operation on behalf of the user or to retrieve user information.

HTTP requests have these common components: an HTTP request method (GET, POST, PUT, or DELETE), a URL identifying the operation to perform, a set of query parameters, and an optional multipart POST body containing additional data. The values for these properties depend on the request you are sending and the target service provider. Refer to each supported social networking sites documentation for possible values. Links to documentation are provided in Table 1.

Use the requestForServiceType:requestMethod:URL:parameters: method to initialize a newly created SLRequest object passing the required property values. Use the addMultipartData:withName:type: to optionally specify a multipart POST body. After you create your request, use the performRequestWithHandler: method to send the request, specifying the handler to call when the request is done.

If you already have a sending mechanism, you can use the preparedURLRequest method to create the request that you send using an NSURLConnection object. If the request requires user authorization, set the account property to an ACAccount object.

Available in OS X v10.8 and later. 64bit only.

145.10.2 Methods

145.10.3 addMultipartData(data as memoryblock, name as string, type as string, filename as string)

**Function:** Specifies a named multipart POST body for this request.

**Notes:**
data: The data for the multipart POST body, such as an image or text.
name: The name of the multipart POST body. This is the name that a specific social service expects.
type: The type of the multipart POST body. This is the MIME content type of the multipart data.
filename: The filename of the attachment that you want to POST. Many social services require a filename in order to accept certain POST requests, such as uploading an image or video. If your multipart data does
not require a filename, pass in nil.

Possible parameter values are dependent on the target service. This information, as well as guidance on when to use a multipart POST body, is documented by the service provider.

### 145.10.4 Available as boolean

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this class is available. **Notes:** Returns true on OS X 10.8 and newer in a 64-bit app.

### 145.10.5 Constructor(serviceType as string, requestMethod as Integer, URL as string, parameters as dictionary)

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes a newly created request object with the specified properties. **Notes:**

- **serviceType:** The social networking service type. e.g. SLServiceTypeTwitter
- **requestMethod:** The method to use for this HTTP request. e.g. SLRequestMethodPOST
- **url:** The destination URL for this HTTP request. The values and formatting for the URL are dependent on the target service and are documented by the service provider.
- **parameters:** The parameters for this HTTP request. The values and formatting are dependent on the target service and are documented by the service provider.

The newly initialized request object.
Use this method to initialize an SLRequest. The value and formatting of each parameter is dependent on the target service.

### 145.10.6 performRequest(tag as Variant = nil)

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Performs an asynchronous request and calls the RequestHandler event when done.

### 145.10.7 preparedURLRequest as NSURLRequestMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an authorized URL request that can be sent using an NSURLConnectionMBS object. **Notes:**
An OAuth-compatible NSURLRequest object that allows an app to act on behalf of the user while keeping the
users password private. The NSURLRequest is signed as OAuth1 by default, or OAuth2 by adding the
appropriate token based on the users account.

Use this method to modify your request before sending. By setting the account correctly, this method will
automatically add any necessary tokens.

145.10.8 SLServiceTypeFacebook as string

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A string constant that identifies the social networking site, Facebook.

145.10.9 SLServiceTypeLinkedIn as string

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A string constant that identifies the social networking site, LinkedIn.

145.10.10 SLServiceTypeSinaWeibo as string

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A string constant that identifies the social networking site, Sina Weibo.

145.10.11 SLServiceTypeTencentWeibo as string

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A string constant that identifies the social networking site, Tencent Weibo.

145.10.12 SLServiceTypeTwitter as string

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A string constant that identifies the social networking site, Twitter.
145.10.13 Properties

145.10.14 account as ACAccountMBS

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Account information used to authenticate the request.
Notes:
The account is used to sign a request with OAuth1 services or to add an access token for OAuth2 services. By associating the account with the request, the necessary tokens are added automatically. The default value is nil.
(Read and Write property)

145.10.15 Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The internal object reference.
Notes: (Read and Write property)

145.10.16 parameters as Dictionary

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The parameters for this request.
Notes:
Use this property to look up the query parameters of the HTTP request that was set in Constructor. Possible values are dependent on the target service and are documented by the service provider.
(Read only property)

145.10.17 requestMethod as Integer

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The method to use for this request.
Notes:
Use this property to look up the method of the HTTP request that was set in requestForServiceType.
(Read only property)
145.10. **CLASS SLREQUESTMBS**

145.10.18 **URL as String**

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: The destination URL for this request.

**Notes**: (Read only property)

145.10.19 **Events**

145.10.20 **performRequestCompleted**(responseData as memoryblock, urlResponse as NSURLResponseMBS, error as NSErrorMBS, tag as Variant)

MBS Mac64bit Plugin, Plugin Version: 15.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function**: The callback handler for a request.

**Notes**:
- responseData: The data returned by the request. The format of this data is dependent on the target service.
- urlResponse: The URL response returned by the request that includes the HTTP response codes.
- error: An error identifier. Possible values are dependent on the target service and are documented by the service provider.

145.10.21 **Constants**

145.10.22 **SLRequestMethodDELETE** = 2

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function**: One of the request types.

**Notes**:
- Deletes the specified resource.

Available in OS X v10.8 and later.

145.10.23 **SLRequestMethodGET** = 0

MBS Mac64bit Plugin, Plugin Version: 15.3. **Function**: One of the request types.

**Notes**:
- Requests information from the specified resource. Use a GET request to fetch information from the specified server such as character limits or a users timeline.

Available in OS X v10.8 and later.
145.10.24  SLRequestMethodPOST = 1

MBS Mac64bit Plugin, Plugin Version: 15.3. Function: One of the request types.
Notes:
Submits data to be processed. Use a POST request to submit information to the specified server such as a
status update or an image.

Available in OS X v10.8 and later.

145.10.25  SLRequestMethodPUT = 3

MBS Mac64bit Plugin, Plugin Version: 15.3. Function: One of the request types.
Notes:
Uses a PUT request to submit the data.

Available in OS X v10.9 and later.
Chapter 146

Spamsum

146.1 class SpamSumMBS

146.1.1 class SpamSumMBS

MBS Util Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class for the spamsum tool.

**Notes:**

Overview

spamsum is a tool for generating and testing signatures on files. The signature is designed to be particularly suitable for producing a result that can be used to compare two emails and see if they are 'similar'. This can provide the core of a SPAM detection system.

The algorithms in spamsum are in two parts. The first part generates a signature which is encoded as a string of ascii characters less than 72 characters long. The second part takes a new signature and a database of existing signatures (actually just a text file with one signature per line) and finds the existing signature that best matches the new signature. A match result in the range of 0 to 100 is generated, where 100 is a perfect match and 0 is a complete mismatch.

**Signature Algorithm**

The signature algorithm in spamsum has a number of interesting properties that make is especially suitable for SPAM detection.
• non-propogation

In most hash algorithms a change in any part of a plaintext will either change the resulting hash completely or will change all parts of the hash after the part corresponding with the changed plaintext. In the spamsum algorithm only the part of the spamsum signature that corresponds linearly with the changed part of the plaintext will be changed. This means that small changes in any part of the plaintext will leave most of the signature the same. This is essential for SPAM detection as it is common for variants of the same SPAM to have small changes in their body and we need to ensure that the matching algorithm can cope with these changes.

• alignment robustness

Most hash algorithms are very alignment sensitive. If you shift the plaintext by a byte (say by inserting a character at the start) then a completely different hash is generated. The spamsum algorithm is robust to alignment changes, and will automatically re-align the resulting signature after insertions or deletions. This works in combination with the non-propogation property to make spamsum suitable for telling if two emails are 'similar'.

The core of the spamsum algorithm is a rolling hash similar to the rolling hash used in 'rsync'. The rolling hash is used to produce a series of 'reset points' in the plaintext that depend only on the immediate context (with a default context width of seven characters) and not on the earlier or later parts of the plaintext. A stronger hash based on the FNV algorithm is then used to produce hash values of the areas between two reset points. The resulting signature comes from the concatenation of a single character from the FNV hash per reset point.

The frequency of the reset points determines how many characters in the plaintext will be used for each character of output in the signature. At startup spamsum scans the plaintext to determine how many valid input characters are in the plaintext (whitespace is ignored). The algorithm then estimates the reset frequency needed to produce a signature of length 64 and starts producing the signature. If after the signature is produced the result is less than a third of the desired length then the reset frequency is adjusted and the signature re-generated.

Similarity Testing

Once a set of signatures has been generated you need to be able to take a new plaintext and see if it matches one of the signatures. The way this is done is to generate a spamsum signature of the new plaintext then compute a distance measure between each of the existing signatures and the new signature.

The distance measure that spamsum uses is based on the 'string edit distance'. The string edit distance is a measure of how many edit operations are required to take one of the signatures and turn it into the other. In spamsum the 'insert' and 'delete' edit operations are given a weight of 1 while substitution is given a weight of 3 and transposition is given a weight of 5.
The resulting string edit distance is then scaled to produce a 'score' in the range 0-100. A score of 100 indicates a perfect match and a score of 0 indicates a complete mismatch. If the two signatures used a different 'reset frequency' (also known as block_size) then the score is automatically set as 0.

The score is weighted so that a value of 50 is a reasonable threshold to use for a 'good match'.

Dual hashes

A significant problem with the above algorithm is the sensitivity to the chosen hash strength of the rolling hash. The initial implementation used a single hash strength chosen based on the file size and rounded to a power of 2. This works, but it means that if the two files being compared cross over a boundary then they will not be able to be compared. To reduce this problem the current implementation chooses two different hash strengths and generates two hashes for each file. This means that the two files will have to have very different lengths for their respected spamsum signatures not to share a common hash strength.

Infrastructure

spamsum is useless without a good quality database of signatures for known spam. I am hoping that the spamsum algorithm will be incorporated into an online system for capturing known SPAM (such as razor).

Author

spamsum was written by Andrew Tridgell tridge @ samba.org

146.1.2 Methods

146.1.3 Match(sum1 as string, sum2 as string) as Integer

MBS Util Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Calculates a percent value representing

Example:

```vbnet
dim s as SpamSumMBS
dim t1,t2 as string

s=new SpamSumMBS

t1=S.Spamsum("Hello Welt, wie geht es? Mir geht es manchmal gut.",0,0)
t2=S.Spamsum("Hallo Welt, wie geht es? Mir geht es manchmal gut.",0,0)
```
MsgBox t1+" "+t2+" "+str(s.Match(t1,t2))
// 17 percent here. This needs longer texts...

Notes: Returns a value from 0 (not equal) to 100 (equal).

146.1.4 Spamsum(text as string, flags as Integer, blocksize as Integer) as string

MBS Util Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Calculates a checksum for a given text.
Notes:
You can specify for flags a combination of FlagsIgnoreWhitespace=1 and FlagsIgnoreHeaders=2.
Blocksize is linked to the length of the checksum. You can try values like 0, 3 or 90 and check what is best for you.
The text strings must be longer than just a few words as they are designed to take whole emails.

146.1.5 Properties

146.1.6 FlagsIgnoreHeaders as Integer

MBS Util Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
The value used for the Spamsum call as flags.
Notes:
Value is 2.
(Read only property)

146.1.7 FlagsIgnoreWhitespace as Integer

MBS Util Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
The value used for the Spamsum call as flags.
Notes:
Value is 1.
(Read only property)
Chapter 147

Sparkle

147.1  class SUAppcastItemMBS

147.1.1  class SUAppcastItemMBS

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for items in the appcast file.

147.1.2  Methods

147.1.3  Constructor

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor to create a new appcast item object.

See also:

- 147.1.4 Constructor(dict as dictionary) 18409
- 147.1.5 Constructor(dict as dictionary, byref error as string) 18410

147.1.4  Constructor(dict as dictionary)

MBS MacExtras Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes with data from a dictionary provided by the RSS class.

See also:

- 147.1.3 Constructor 18409
- 147.1.5 Constructor(dict as dictionary, byref error as string) 18410
147.1.5 Constructor(dict as dictionary, byref error as string)

**Function:** Initializes with data from a dictionary provided by the RSS class. 
See also:

- 147.1.3 Constructor
- 147.1.4 Constructor(dict as dictionary)

147.1.6 Properties

147.1.7 CriticalUpdate as Boolean

**Function:** Whether this is a critical update. 
**Notes:** (Read only property)

147.1.8 date as date

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 
**Function:** The release date for this app cast item. 
**Notes:** (Read only property)

147.1.9 DeltaUpdate as Boolean

**Function:** Whether this is a delta update. 
**Notes:** (Read only property)

147.1.10 DeltaUpdates as Dictionary

**Function:** Dictionary with properties about delta updates. 
**Notes:** (Read only property)
147.1.11 displayVersionString as string

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The display version number for this app cast item. **Notes:**

Maybe "1.1de"
(Read only property)

147.1.12 DSASignature as string

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The file signature for this app cast item. **Notes:** (Read only property)

147.1.13 fileURL as string

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The file URL for this app cast item. **Notes:** (Read only property)

147.1.14 Handle as Integer

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal handle used for this object. **Notes:** (Read and Write property)

147.1.15 InformationOnlyUpdate as Boolean

MBS MacExtras Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this is only an information only update. **Notes:**

Only available in newer Sparkle in 64-bit.
For older version this is always false.
(Read only property)
147.1.16 InfoURL as String

MBS MacExtras Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The info URL.  
**Notes:** (Read only property)

147.1.17 itemDescription as string

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The description for this app cast item.  
**Notes:** (Read only property)

147.1.18 MaximumSystemVersion as String

MBS MacExtras Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The maximum system version for this app cast item.  
**Notes:**
The update will not be offered to users with newer system versions.  
(Read only property)

147.1.19 minimumSystemVersion as string

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The minimum system version for this app cast item.  
**Notes:**
The update will not be offered to users with older system versions.  
(Read only property)

147.1.20 propertiesDictionary as dictionary

MBS MacExtras Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A dictionary with all the properties for this item.  
**Notes:** (Read only property)
147.1.21 releaseNotesURL as string

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The release notes URL for this app cast item.  
**Notes:** (Read only property)

147.1.22 title as string

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  
**Function:** The title for this app cast item.  
**Example:**

dim a as SUAppcastItemMBS

// get item somehow
MsgBox a.title

**Notes:** (Read only property)

147.1.23 versionString as string

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  
**Function:** The version string for this app cast item.  
**Notes:** (Read only property)
147.2 class SUAppcastMBS

147.2.1 class SUAppcastMBS


147.2.2 Methods

147.2.3 Constructor


147.2.4 fetchAppcastFromURL(url as string)

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Fetches the appcast from the given URL.
Example:

dim a as SUAppcastMBS

a.fetchAppcastFromURL "http://www.monkeybreadsoftware.de/SparkleTest/appcast.xml"

147.2.5 incrementalData as Memoryblock

Notes:
This is the XML data with the appcast.xml file content.
Only available on 32 bit target.

147.2.6 items as SUAppcastItemMBS()

147.2.7 Properties

147.2.8 Handle as Integer

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: The internal handle for the appcast. **Notes**: (Read and Write property)

147.2.9 httpHeaders as Dictionary

MBS MacExtras Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: The HTTP headers. **Notes**: You can check this dictionary for HTTP headers. Or make a new dictionary and assign it to this property to set http headers to include in transfer. (Read and Write property)

147.2.10 UserAgentString as string

MBS MacExtras Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Which user agent string to use for the http download. **Notes**: (Read and Write property)
147.3 class SUUpdaterMBS

147.3.1 class SUUpdaterMBS

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for Sparkle.

**Notes:** This class is for use with the Sparkle 1.5b6 framework and implements the Cocoa classes inside this framework.

147.3.2 Methods

147.3.3 checkForUpdateInformation

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Checks for new update information.

**Notes:** This begins a “probing” check for updates which will not actually offer to update to that version. The events, though, (up to didFindValidUpdate and updaterDidNotFindUpdate), are called, so you can use that information in your UI.

147.3.4 checkForUpdates

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Performs a check for updates.

**Notes:** Call this method from a menu item where the user can check for updates manually. Sparkle will check for updates and report back its findings verbosely.

147.3.5 checkForUpdatesInBackground

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This kicks off an update meant to be programmatically initiated.

**Notes:** That is, it will display no UI unless it actually finds an update, in which case it proceeds as usual. If the fully automated updating is turned on, however, this will invoke that behavior, and if an update is found, it will be downloaded and prepped for installation.

147.3.6 Constructor

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The constructor for the updater.
147.3. CLASS SUUPDATERMBS

Notes: Please create only one instance of the SUUpdaterMBS class in your application using this constructor.
See also:

- 147.3.7 Constructor(Bundle as folderitem)

147.3.7 Constructor(Bundle as folderitem)

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The constructor for the updater.
Notes:
Targets for the update the bundle you specify. This can be used to update a preference panel for example.

Please create only one instance of the SUUpdaterMBS class in your application using this constructor.
See also:

- 147.3.6 Constructor

147.3.8 installUpdatesIfAvailable

Function: Checks for updates and, if available, immediately downloads and installs them.
Notes:
A progress dialog is shown but the user will never be prompted to read the release notes.

You may want to respond to the userDidCancelDownload event in case the user clicks the "Cancel" button while the update is downloading.

Only available in newer Sparkle version for 64-bit.

147.3.9 InvokeImmediateInstallation

Function: If installation was moved to quit of app, you can call this method to update now.
Notes: New in version 1.6 of Sparkle.

147.3.10 InvokeUpdate

Function: Invokes a postponed updated.
147.3.11 IsFrameworkLoaded as boolean

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the framework has been loaded.  
**Notes:** Returns true if the Sparkle framework has been loaded.

147.3.12 LoadFramework(path as folderitem) as boolean

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Loads the Sparkle framework from the given folderitem.  
**Notes:** Returns false on Windows and Linux or on Mac OS X if the framework failed to load.  
Return true if the framework was loaded already or was loaded successfully.

Be aware that the Sparkle Framework needs correct file permissions:

```
{$APPFILENAME}/Contents/Frameworks/Sparkle.framework/Versions/A/Sparkle"
{$APPFILENAME}/Contents/Frameworks/Sparkle.framework/Versions/A/Resources/relaunch"
```

If the permissions are set wrong the relaunch does not work.

147.3.13 resetUpdateCycle

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Resets the update cycle.  
**Notes:** Call this to appropriately schedule or cancel the update checking timer according to the preferences for time interval and automatic checks. This call does not change the date of the next check, but only the internal timer.
147.3.14 Properties

147.3.15 automaticallyChecksForUpdates as boolean

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether update checks are performed automatically. Notes: (Read and Write property)

147.3.16 automaticallyDownloadsUpdates as boolean

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether downloads should be downloaded automatically. Notes: (Read and Write property)

147.3.17 feedURL as string

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The URL of the appcast feed. Notes: (Read and Write property)

147.3.18 Handle as Integer

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The internal handle to the object used. Notes: (Read and Write property)

147.3.19 hostBundle as Variant

MBS MacExtras Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The target application to update. Notes: Value is a NSBundleMBS object. You can query BundleFolder on the NSBundle object to know where your app is. (Read only property)
147.3.20 httpHeaders as Dictionary

Function: The HTTP headers to include with fetchAppcastFromURL call.
Notes: You can check this dictionary for HTTP headers.
Or make a new dictionary and assign it to this property to set http headers to include in transfer.
(Read and Write property)

147.3.21 lastUpdateCheckDate as date

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The date of the last update check.
Notes: Returns nil if no check has been performed.
(Read only property)

147.3.22 sendsSystemProfile as boolean

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Whether the system profile is sent to the server.
Notes: (Read and Write property)

147.3.23 sparkleBundle as Variant

Function: The sparkle bundle.
Notes: Value is a NSBundleMBS object.
You can query BundleFolder on the NSBundle object to know where your app is.
(Read only property)

147.3.24 updateCheckInterval as Double

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: After which time the next update check is performed.
Notes: (Read and Write property)
147.3. **CLASS SUUPDATERMBS**

### 147.3.25 updateInProgress as boolean

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether an update is in progress.  
**Notes:** (Read only property)

### 147.3.26 userAgentString as String

MBS MacExtras Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Which user agent string to use for the http download.  
**Notes:** (Read and Write property)

### 147.3.27 Events

#### 147.3.28 bestValidUpdateInAppcast(appcast as SUAppcastMBS) as SUAppcastItemMBS

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event called to decide which appcast item is the best to use.  
**Notes:**  
If you’re using special logic or extensions in your appcast, implement this to use your own logic for finding a valid update, if any, in the given appcast.  
If you leave this event empty the default handler will be called. If you add code here, the default handle will not be called!

#### 147.3.29 didAbortWithError(error as NSErrorMBS)

MBS MacExtras Plugin, Plugin Version: 16.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called after an update is aborted due to an error.  
**Notes:**  
error: The error that caused the abort  
This is a newer event which is only called in 64-bit version.
147.3.30 didCancelInstallUpdateOnQuit(update as SUAppcastItemMBS)

MBS MacExtras Plugin, Plugin Version: 14.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called when an update is scheduled to be silently installed on quit and cancelled. **Notes:** New in version 1.6 of Sparkle.

147.3.31 didFindValidUpdate(update as SUAppcastItemMBS)

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** This event is called when a valid update is found by the update driver. **Notes:** If you leave this event empty the default handler will be called. If you add code here, the default handle will not be called!

Plugin version 8.7 makes sure this method is executed on the main thread.

147.3.32 didFinishLoadingAppcast(update as SUAppcastMBS)

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event called when the appcast has been loaded. **Notes:** Implement this if you want to do some special handling with the appcast once it finishes loading.

If you leave this event empty the default handler will be called. If you add code here, the default handle will not be called!

Plugin version 8.7 makes sure this method is executed on the main thread.

147.3.33 failedToDownloadUpdate(item as SUAppcastItemMBS, error as NSErrorMBS)

MBS MacExtras Plugin, Plugin Version: 16.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called after the specified update failed to download. **Notes:**

item: The appcast item corresponding to the update that failed to download. error: The error generated by the failed download.
This is a newer event which is only called in 64-bit version.

147.3.34 **feedParametersForUpdater(sendingProfile as boolean) as dictionary()**

MBS MacExtras Plugin, Plugin Version: 14.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Provide additional parameters for updater. **Notes:** This method allows you to add extra parameters to the appcast URL, potentially based on whether or not Sparkle will also be sending along the system profile. This method should return an array of dictionaries with keys: "key", "value", "displayKey", "displayValue", the latter two being specifically for display to the user.

147.3.35 **feedURLStringForUpdater as String**

MBS MacExtras Plugin, Plugin Version: 14.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Override this to dynamically specify the entire feed URL. **Notes:** New in version 1.6 of Sparkle.

147.3.36 **pathToRelaunchForUpdater as string**

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** This event is called so you can customize the installation destination of the update. **Notes:** This event returns the path which is used to relaunch the client after the update is installed. By default, the path of the host bundle. If you leave this event empty the default handler will be called. If you add code here, the default handle will not be called!

147.3.37 **shouldPostponeRelaunchForUpdate(sendingProfile as SUAppcastItemMBS) as boolean**

MBS MacExtras Plugin, Plugin Version: 14.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Return true to delay the relaunch until you do some processing. **Notes:** Invoke the update later by calling InvokeUpdate method. This is not called if the user didn’t relaunch on the previous update, in that case it will immediately restart.
147.3.38  **updateDidNotFindUpdate**

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event called when a valid update is not found.  **Notes:** Plugin version 8.7 makes sure this method is executed on the main thread.

147.3.39  **updateDidShowModalAlert**

MBS MacExtras Plugin, Plugin Version: 14.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called after an updater shows a modal alert window, to give the host the opportunity to hide attached windows etc. that may get in the way.  **Notes:** New in version 1.6 of Sparkle.

147.3.40  **updateMayCheckForUpdates as boolean**

MBS MacExtras Plugin, Plugin Version: 14.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Use this to keep Sparkle from popping up e.g. while your setup assistant is showing.  **Notes:** New in version 1.6 of Sparkle.

147.3.41  **updateShouldPromptForPermissionToCheckForUpdates as boolean**

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event to decide whether the updater should prompt for permission to check for updates.  **Notes:** Use this to override the default behavior for Sparkle prompting the user about automatic update checks.

If you leave this event empty the default handler will be called. If you add code here, the default handle will not be called!

147.3.42  **updateShouldRelaunchApplication as boolean**

MBS MacExtras Plugin, Plugin Version: 14.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether app should be relaunched.  **Notes:** Some apps *can not* be relaunched in certain circumstances. They can use this method to prevent a relaunch "hard". New in version 1.6 of Sparkle.
147.3. **CLASS SUUPDATERMBS**

147.3.43 **updaterWillRelaunchApplication**

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The event called immediately before relaunching.

**Notes:**

Plugin version 8.7 makes sure this method is executed on the main thread.

The current Sparkle (1.5b6) implementation seems to force quit the application so this method is the last chance for your application to clean up.

147.3.44 **updaterWillShowModalAlert**

MBS MacExtras Plugin, Plugin Version: 14.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called before an updater shows a modal alert window, to give the host the opportunity to hide attached windows etc. that may get in the way.

**Notes:** New in version 1.6 of Sparkle.

147.3.45 **userDidCancelDownload**

MBS MacExtras Plugin, Plugin Version: 16.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called when the user clicks the cancel button while an update is being downloaded.

**Notes:** This is a newer event which is only called in 64-bit version.

147.3.46 **versionComparatorForUpdater as SUVersionComparisonMBS**

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** This event allows you to provide a custom version comparator.

**Notes:**

If you don’t implement this event or return nil, the standard version comparator will be used.

Please make sure that the SUVersionComparisonMBS object lives longer, so it can be used later. e.g. keep a reference in an app property.
147.3.47 willDownloadUpdate(item as SUAppcastItemMBS, request as Variant)

Function: Called immediately before downloading the specified update.
Notes:
item: The appcast item corresponding to the update that is proposed to be downloaded.
request: The mutable URL request that will be used to download the update. (NSMutableURLRequestMBS object)

This is a newer event which is only called in 64-bit version.

147.3.48 willInstallUpdate(update as SUAppcastItemMBS)

MBS MacExtras Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No.
Function: This event is called immediately before installing the specified update.
Notes:
If you leave this event empty the default handler will be called. If you add code here, the default handle will not be called!

Plugin version 8.7 makes sure this method is executed on the main thread.

147.3.49 willInstallUpdateOnQuit(update as SUAppcastItemMBS)

Function: Called when an update is scheduled to be silently installed on quit.
Notes:
New in version 1.6 of Sparkle.
If you like to install now instead, you can call InvokeImmediateInstallation method.

147.3.50 Constants

147.3.51 SUAppcastError = 1002

Notes: An error occurred in retrieving update information.
147.3.52 SUAppcastParseError = 1000

MBS MacExtras Plugin, Plugin Version: 16.1. **Function:** One of the Sparkle error codes.  
**Notes:**  
An error occurred while parsing the update feed.  
The appcast must be valid xml.

147.3.53 SUAuthenticationFailure = 4001

MBS MacExtras Plugin, Plugin Version: 16.1. **Function:** One of the Sparkle error codes.  
**Notes:** Unable to grant authorization to perform action because it is explicitly turned off.

147.3.54 SUDowngradeError = 4006

MBS MacExtras Plugin, Plugin Version: 16.1. **Function:** One of the Sparkle error codes.  
**Notes:** The update contains an older version.

147.3.55 SUFileCopyFailure = 4000

MBS MacExtras Plugin, Plugin Version: 16.1. **Function:** One of the Sparkle error codes.  
**Notes:** File copy failed.

147.3.56 SUInstallationError = 4005

MBS MacExtras Plugin, Plugin Version: 16.1. **Function:** One of the Sparkle error codes.  
**Notes:** An error occurred while installing the update.

147.3.57 SUMissingInstallerToolError = 4003

MBS MacExtras Plugin, Plugin Version: 16.1. **Function:** One of the Sparkle error codes.  
**Notes:** The installer tool is missing.
147.3.58  **SUMissingUpdateError** = 4002

MBS MacExtras Plugin, Plugin Version: 16.1. **Function:** One of the Sparkle error codes.  
**Notes:**  
Couldn’t find an appropriate update in the downloaded package.  
App name or bundle ID must match to current app.

147.3.59  **SUNoUpdateError** = 1001

MBS MacExtras Plugin, Plugin Version: 16.1. **Function:** One of the Sparkle error codes.  
**Notes:** You already have the newest version.

147.3.60  **SURelaunchError** = 4004

MBS MacExtras Plugin, Plugin Version: 16.1. **Function:** One of the Sparkle error codes.  
**Notes:** Failed to relaunch.

147.3.61  **SURunningFromDiskImageError** = 1003

MBS MacExtras Plugin, Plugin Version: 16.1. **Function:** One of the Sparkle error codes.  
**Notes:** The app runs from disk image and can’t update.

147.3.62  **SUSignatureError** = 3001

MBS MacExtras Plugin, Plugin Version: 16.1. **Function:** One of the Sparkle error codes.  
**Notes:** The signature doesn’t match.

147.3.63  **SUSparkleErrorDomain** = "SUSparkleErrorDomain"

MBS MacExtras Plugin, Plugin Version: 16.1. **Function:** The error domain for all Sparkle errors.

147.3.64  **SUSystemPowerOffError** = 5000

MBS Mac Extras Plugin, Plugin Version: 16.1. **Function:** One of the Sparkle error codes.  
**Notes:** The update will not be installed because the user requested for the system to power off.
147.3.65  **SUTemporaryDirectoryError = 2000**

MBS MacExtras Plugin, Plugin Version: 16.1. **Function:** One of the Sparkle error codes.  
**Notes:** Failed to get temp file.

147.3.66  **SUUnarchivingError = 3000**

MBS MacExtras Plugin, Plugin Version: 16.1. **Function:** One of the Sparkle error codes.  
**Notes:** Failed to unarchive the update.

147.3.67  **SUUpdaterAppcastItemNotificationKey = "SUUpdaterAppcastItemNotificationKey"**

MBS MacExtras Plugin, Plugin Version: 14.4. **Function:** One of the keys for user info dictionary.  
**Notes:** Key for the SUAppcastItem object in the SUUpdaterDidFindValidUpdateNotification & SUUpdaterWillInstallUpdateNotification userInfo dictionaries.

147.3.68  **SUUpdaterAppcastNotificationKey = "SUUpdaterAppcastNotificationKey"**

MBS MacExtras Plugin, Plugin Version: 14.4. **Function:** Key for the SUAppcast object in the SUUpdaterDidFinishLoadingAppCastNotification userInfo.

147.3.69  **SUUpdaterDidFindValidUpdateNotification = "SUUpdaterDidFindValidUpdateNotification"**

MBS MacExtras Plugin, Plugin Version: 14.4. **Function:** One of the notification constants for use with NSNotificationObserverMBS class.  
**Notes:** Object for this notification is the updater.
147.3.70 SUUpdaterDidFinishLoadingAppCastNotification = "SUUpdaterDidFinishLoadingAppCastNotification"

MBS MacExtras Plugin, Plugin Version: 14.4. Function: One of the notification constants for use with NSNotificationObserverMBS class. Notes: Object for this notification is the updater.

147.3.71 SUUpdaterDidNotFindUpdateNotification = "SUUpdaterDidNotFindUpdateNotification"

MBS MacExtras Plugin, Plugin Version: 14.4. Function: One of the notification constants for use with NSNotificationObserverMBS class. Notes: Object for this notification is the updater.

147.3.72 SUUpdaterWillInstallUpdateNotification = "SUUpdaterWillInstallUpdateNotification"

MBS MacExtras Plugin, Plugin Version: 14.4. Function: One of the notification constants for use with NSNotificationObserverMBS class. Notes: Object for this notification is the updater.

147.3.73 SUUpdaterWillRelaunchApplicationNotification = "SUUpdaterWillRelaunchApplicationNotification"

MBS MacExtras Plugin, Plugin Version: 14.4. Function: One of the notification constants for use with NSNotificationObserverMBS class. Notes: Object for this notification is the updater.

147.3.74 SUUpdaterWillRestartNotification = "SUUpdaterWillRestartNotification"

147.4. **class SUVersionComparisonMBS**

147.4.1 **class SUVersionComparisonMBS**

MBS Mac Extras Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Implement this class to provide version comparison facilities for Sparkle. **Notes:** Or use the default implementation by not implementing the versionComparatorForUpdater event.

147.4.2 **Methods**

147.4.3 **Constructor**

MBS Mac Extras Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor.

147.4.4 **Destructor**

MBS Mac Extras Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The destructor.

147.4.5 **Properties**

147.4.6 **Handle as Integer**

MBS Mac Extras Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal handle for this object. **Notes:** (Read and Write property)

147.4.7 **Events**

147.4.8 **compareVersion(VersionA as string, VersionB as string) as Integer**

MBS Mac Extras Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The method to compare two version strings. **Notes:** Should return NSOrderedAscending if b > a, NSOrderedDescending if b < a, and NSOrderedSame if they are equivalent.
This function may be called on the main thread or some other thread, so disable stack checking in your event.

147.4.9 Constants

147.4.10 NSOrderedAscending = -1

MBS MacExtras Plugin, Plugin Version: 8.6. **Function:** One of the order constants.

147.4.11 NSOrderedDescending = 1

MBS MacExtras Plugin, Plugin Version: 8.6. **Function:** One of the order constants.

147.4.12 NSOrderedSame = 0

MBS MacExtras Plugin, Plugin Version: 8.6. **Function:** One of the order constants.
147.5  class WinSparkleMBS

147.5.1  class WinSparkleMBS

MBS Win Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for WinSparkle library.
**Notes:**
Please first use LoadLibrary, than set properties and finally call Initialize.
Optionally you can later call Check methods.

147.5.2  Methods

147.5.3  CheckUpdateWithoutUI

MBS Win Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Checks if an update is available.
**Example:**
WinSparkleMBS.CheckUpdateWithoutUI

**Notes:**
No progress UI is shown to the user when checking. If an update is available, the usual "update available"
window is shown; this function is *not* completely UI-less.
Use with caution, it usually makes more sense to use the automatic update checks on interval option or
manual check with visible UI.
This function returns immediately.
This function respects "Skip this version" choice by the user.

147.5.4  CheckUpdateWithUI

MBS Win Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Checks if an update is available, showing progress UI to the user.
**Example:**
WinSparkleMBS.CheckUpdateWithUI

**Notes:**
Normally, WinSparkle checks for updates on startup and only shows its UI when it finds an update. If the
application disables this behavior, it can hook this function to "Check for updates..." menu item.
When called, background thread is started to check for updates. A small window is shown to let the user know the progress. If no update is found, the user is told so. If there is an update, the usual "update available" window is shown. This function returns immediately.

Because this function is intended for manual, user-initiated checks for updates, it ignores "Skip this version" even if the user checked it previously.

### 147.5.5 CheckUpdateWithUIAndInstall

**MBS Win Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**  
**Function:** Checks if an update is available, showing progress UI to the user and immediately installing the update if one is available.  
**Example:**  
`WinSparkleMBS.CheckUpdateWithUIAndInstall`

**Notes:**  
This is useful for the case when users should almost always use the newest version of your software. When called, WinSparkle will check for updates showing a progress UI to the user. If an update is found the update prompt will be skipped and the update will be installed immediately. If your application expects to do something after checking for updates you may wish to use DidNotFindUpdate and UpdateCancelled events.

### 147.5.6 Cleanup

**MBS Win Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.**  
**Function:** Cleans up after WinSparkle.  
**Example:**  
`WinSparkleMBS.Cleanup`

**Notes:** Should be called by the app when it’s shutting down. Cancels any pending Sparkle operations and shuts down its helper threads.
147.5. Initialize

MBS Win Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Starts WinSparkle.
**Example:**
WinSparkleMBS.Initialize

**Notes:**
If WinSparkle is configured to check for updates on startup, proceeds to perform the check. You should only call this function when your app is initialized and shows its main window.

This call doesn’t block and returns almost immediately. If an update is available, the respective UI is shown later from a separate thread.

147.5.8 LoadLibrary(File as folderitem) as boolean

MBS Win Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads the WinSparkle DLL.
**Example:**

```vba
dim f as FolderItem = GetFolderItem("WinSparkle.dll")
if WinSparkleMBS.LoadLibrary(f) then
    MsgBox "OK"
else
    MsgBox "Failed to load DLL."
end if
```

**Notes:** Returns true on success.
See also:

- 147.5.9 LoadLibrary(Path as string) as boolean

147.5.9 LoadLibrary(Path as string) as boolean

MBS Win Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads the WinSparkle DLL.
**Example:**

```vba
if WinSparkleMBS.LoadLibrary("Libs\WinSparkle.dll") then
    MsgBox "OK"
```

else
MsgBox "Failed to load DLL."
end if

**Notes:** Returns true on success.
See also:
- 147.5.8 LoadLibrary(File as folderitem) as boolean

### 147.5.10 Properties

#### 147.5.11 AppCastURL as String

**Function:** Sets URL for the app’s appcast.

**Example:**

```
WinSparkleMBS.AppCastURL = "https://www.monkeybreadsoftware.test/test/test.xml"
```

**Notes:**

Only http and https schemes are supported.

If this function isn’t called by the app, the URL is obtained from Windows resource named "FeedURL" of type "APPCAST".

Always use HTTPS feeds, do not use unencrypted HTTP! This is necessary to prevent both leaking user information and preventing various MITM attacks.

See https://github.com/vslavik/winsparkle/wiki/Appcast-Feeds for more information about appcast feeds.  
(Read and Write property)

#### 147.5.12 AppName as String

**Function:** Application name.

**Example:**

```
WinSparkleMBS.CompanyName = "Monkeybread Software"
WinSparkleMBS.AppName = "Test App"
WinSparkleMBS.AppVersion = "1.2.3"
```
Notes:
This is both shown to the user and used in HTTP User-Agent header.

CompanyName and AppName are used to determine the location of WinSparkle settings in registry. (HK-CU\Software\<CompanyName>\<AppName>\WinSparkle is used.)

If not set, this value is read from VERSIONINFO/StringFileInfo resources.
(Read and Write property)

147.5.13 AppVersion as String

MBS Win Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Version of the app, as string (e.g. "1.2" or "1.2rc1").

**Example:**

WinSparkleMBS.CompanyName = "Monkeybread Software"
WinSparkleMBS.AppName = "Test App"
WinSparkleMBS.AppVersion = "1.2.3"

Notes:
If not set, this value is read from VERSIONINFO/StringFileInfo resources.
(Read and Write property)

147.5.14 AutomaticCheckForUpdates as Boolean

MBS Win Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether updates are checked automatically or only through a manual call.

**Example:**

WinSparkleMBS.AutomaticCheckForUpdates = true

Notes:
If disabled, CheckUpdateWithUI must be used explicitly.

True to have updates checked automatically, false otherwise.
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Defaults to false when not yet configured (as happens on first start).
(Read and Write property)

147.5.15 BuildVersion as String

Example:
WinSparkleMBS.BuildVersion = "123"

Notes:
This is the internal version number that is not normally shown to the user. It can be used for finer granularity that official release versions, e.g. for interim builds.

If this function is called, then the provided *build* number is used for comparing versions; it is compared to the "version" attribute in the appcast and corresponds to OS X Sparkle’s CFBundleVersion handling. If used, then the appcast must also contain the "shortVersionString" attribute with human-readable display version string. The version passed to AppVersion property corresponds to this and is used for display.
(Read and Write property)

147.5.16 CanShutdown as Boolean

Example:
WinSparkleMBS.CanShutdown = false

Notes:
By default true.
Set to false when you have something like an open edited document.
(Read and Write property)

147.5.17 CompanyName as String

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Example:

WinSparkleMBS.CompanyName = "Monkeybread Software"
WinSparkleMBS.AppName = "Test App"
WinSparkleMBS.AppVersion = "1.2.3"

Notes:
CompanyName and AppName are used to determine the location of WinSparkle settings in registry. (HK-CU\Software\<CompanyName>\<AppName>\WinSparkle is used.) If not set, this value is read from VERSIONINFO/StringFileInfo resources. (Read and Write property)

147.5.18 Language as String

MBS Win Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets UI language from its ISO code.
**Example:**

WinSparkleMBS.Language = "en-US"

Notes:
Language and LanguageID properties set user interface language. One must be set before Initialize to have any effect. If none of them is called, WinSparkle detects the UI language automatically.

ISO 639 language code with an optional ISO 3116 country code, e.g. "fr", "pt-PT", "pt-BR" or "pt_BR", (Read and Write property)

147.5.19 LanguageID as Integer

MBS Win Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets UI language from its Win32 LANGID code.
**Notes:**
Language and LanguageID properties set user interface language. One must be set before Initialize to have any effect. If none of them is called, WinSparkle detects the UI language automatically. (Read and Write property)
147.5.20 LastCheckTime as Integer

MBS Win Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the time for the last update check.  
**Notes:**  
Default value is -1, indicating that the update check has never run.  
(Read only property)

147.5.21 RegistryPath as String

MBS Win Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The registry path where settings will be stored.  
**Example:**  
WinSparkleMBS.RegistryPath = "Software\My App\Updates"  
**Notes:**  
Normally, these are stored in "HKCU\Software\<company_name>\<app_name>\WinSparkle" but if your application needs to store the data elsewhere for some reason, using this function is an alternative. Note that path is relative to HKCU/HKLM root and the root is not part of it. For example:  
(Read and Write property)

147.5.22 UpdateCheckInterval as Integer

MBS Win Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The automatic update interval.  
**Example:**  
WinSparkleMBS.UpdateCheckInterval = 7200  
**Notes:**  
The interval in seconds between checks for updates. The minimum update interval is 3600 seconds (1 hour).  
(Read and Write property)
147.5.23 Events

147.5.24 DidFindUpdate

MBS Win Plugin, Plugin Version: 17.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Called when an update was found.

147.5.25 DidNotFindUpdate

MBS Win Plugin, Plugin Version: 17.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Called when an update was not found.

147.5.26 Error

MBS Win Plugin, Plugin Version: 17.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Called when an update failed due to an error.

147.5.27 ShutdownRequest

MBS Win Plugin, Plugin Version: 17.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event to ask the host to shut down immediately after launching the installer. **Notes:** Its implementation should gracefully terminate the application.

147.5.28 UpdateCancelled

MBS Win Plugin, Plugin Version: 17.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The update was cancelled.
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Special Folders

148.1  Globals

148.1.1  ALMLocationsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = ALMLocationsFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

- -32768 On System Disk
- -32767 On Appropriate Disk
- -32766 System Domain, on Mac OS X mostly inside the folder /System.
- -32765 Local Domain (on Netbooting for example)
- -32764 Network Domain (on Netbooting for example)
- -32763 User Domain, on Mac OS X mostly inside the users folder.
- -32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateALMLocationsFolder function.
148.1.2 ALMModulesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:***

```vba
const kUserDomain = -32763
dim f as folderitem = ALMModulesFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateALMModulesFolder function.

148.1.3 ALMPreferencesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = ALMPreferencesFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateALMPreferencesFolder function.
-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

### 148.1.4 AppearanceFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbnet
const kUserDomain = -32763
dim f as folderitem = AppearanceFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateAppearanceFolder function.

### 148.1.5 AppleExtrasFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
const kUserDomain = -32763
dim f as folderitem = AppleExtrasFolderMBS(kUserDomain)

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateAppleExtrasFolder function.

### 148.1.6 AppleMenuFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbnet
const kUserDomain = -32763
dim f as folderitem = AppleMenuFolderMBS(kUserDomain)
```

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

Also take a look on the CreateAppleMenuFolder function.

### 148.1.7 AppleShareAuthenticationFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.
148.1. **GLOBALS**

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder `/System`.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

**Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = AppleShareAuthenticationFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder `/System`.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the `CreateAppleShareAuthenticationFolder` function.

**148.1.8** `AppleshareAutomountServerAliasesFolderMBS(domain as Integer) as folderitem`  

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.  

**Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = AppleshareAutomountServerAliasesFolderMBS(kUserDomain)
```
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Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateAppleshareAutomountServerAliasesFolderMBS function.

148.1.9 AppleShareSupportFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem to this folder if it exists on that system.
Example:
const kUserDomain = -32763
dim f as folderitem = AppleShareSupportFolderMBS(kUserDomain)

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateAppleShareSupportFolder function.
148.1.10 ApplicationsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbs
const kUserDomain = -32763
dim f as folderitem = ApplicationsFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

- -32768 On System Disk
- -32767 On Appropriate Disk
- -32766 System Domain, on Mac OS X mostly inside the folder /System.
- -32765 Local Domain (on Netbooting for example)
- -32764 Network Domain (on Netbooting for example)
- -32763 User Domain, on Mac OS X mostly inside the users folder.
- -32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateApplicationsFolder function.
On Windows, only the System Domain is supported.

148.1.11 ApplicationSupportFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbs
dim f as folderitem
f=preferencesFolderMBS(-32763)
if f=nil then // On Windows always nil
    f=applicationsupportFolderMBS(-32763)
end if
msgBox f.absolutePath
```

// example output:
// ”Mac OS X:Users:cs:Library:Preferences:” on Mac OS X
// “Mac OS 9:Systemordner:Preferences” on a german Mac OS 9
// “C:\Dokumente und Einstellungen\Christian\Anwendungsdaten\” on a german Windows XP.

Notes:

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateApplicationSupportFolder function.

Realbasic ApplicationSupport function points to ”/Library/Application Support” while ApplicationSupport-
FolderMBS points to different locations on my test system depending on the domain code:

-32768 ->”/Library/Application Support”
-32767 ->”/Library/Application Support”
-32766 ->nil
-32765 ->”/Library/Application Support”
-32764 ->nil
-32763 ->”/Users/cs/Library/Application Support”
-32762 ->”/Volumes/Mac OS 9/Systemordner/Application Support”
0 ->”/Library/Application Support”

At last it is your decision to use the correct one!

148.1.12 AssistantsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem
to this folder if it exists on that system.
Example:

const kUserDomain = -32763
dim f as folderitem = AssistantsFolderMBS(kUserDomain)
Notes:

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateAssistantsFolder function.

148.1.13 AudioAlertSoundsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = AudioAlertSoundsFolderMBS(kUserDomain)
```

Notes:

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.
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Also take a look on the CreateAudioAlertSoundsFolder function.

148.1.14 AudioComponentsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem to this folder if it exists on that system.

Example:

```
const kUserDomain = -32763
dim f as folderitem = AudioComponentsFolderMBS(kUserDomain)
```

Notes:

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateAudioComponentsFolder function.

148.1.15 AudioDigidesignFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem to this folder if it exists on that system.

Example:

```
const kUserDomain = -32763
dim f as folderitem = AudioDigidesignFolderMBS(kUserDomain)
```

Notes:

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):
148.1. GLOBALS

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateAudioDigitdesignFolderMBS function.

148.1.16 AudioPlugInsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
```
const kUserDomain = -32763
dim f as folderitem = AudioPlugInsFolderMBS(kUserDomain)
```

**Notes:**
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateAudioPlugInsFolder function.
148.1.17 AudioPresetsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.  
**Example:**

```vbnet
const kUserDomain = -32763
dim f as folderitem = AudioPresetsFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!  
The codes for domain are (The Demo includes a module for these):

- 32768 On System Disk
- 32767 On Appropriate Disk
- 32766 System Domain, on Mac OS X mostly inside the folder /System.
- 32765 Local Domain (on Netbooting for example)
- 32764 Network Domain (on Netbooting for example)
- 32763 User Domain, on Mac OS X mostly inside the users folder.
- 32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateAudioPresetsFolderMBS function.

148.1.18 AudioSoundBanksFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.  
**Example:**

```vbnet
const kUserDomain = -32763
dim f as folderitem = AudioSoundBanksFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!  
The codes for domain are (The Demo includes a module for these):

Also take a look on the CreateAudioSoundBanksFolder function.
148.1. **GLOBALS**

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

### 148.1.19 AudioSoundsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbnet
const kUserDomain = -32763
dim f as folderitem = AudioSoundsFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateAudioSoundsFolder function.

### 148.1.20 AudioSupportFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
const kUserDomain = -32763
dim f as folderitem = AudioSupportFolderMBS(kUserDomain)

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateAudioSupportFolder function.

148.1.21  AudioVSTFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem to this folder if it exists on that system.
Example:
const kUserDomain = -32763
dim f as folderitem = AudioVSTFolderMBS(kUserDomain)

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

Also take a look on the CreateAudioVSTFolderMBS function.

148.1.22  AutomatorWorkflowsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem to this folder if it exists on that system.
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-32768 On System Disk  
-32767 On Appropriate Disk  
-32766 System Domain, on Mac OS X mostly inside the folder /System.  
-32765 Local Domain (on Netbooting for example)  
-32764 Network Domain (on Netbooting for example)  
-32763 User Domain, on Mac OS X mostly inside the users folder.  
-32762 Classic Domain, the current used Classic System folder.

Example:

```plaintext
const kUserDomain = -32763
dim f as folderitem = AutomatorWorkflowsFolderMBS(kUserDomain)
```

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk  
-32767 On Appropriate Disk  
-32766 System Domain, on Mac OS X mostly inside the folder /System.  
-32765 Local Domain (on Netbooting for example)  
-32764 Network Domain (on Netbooting for example)  
-32763 User Domain, on Mac OS X mostly inside the users folder.  
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateAutomatorWorkflowsFolderMBS function.

### 148.1.23 **AutosaveInformationFolderMBS**

**Function:**

Returns a folderitem to this folder if it exists on that system.

**Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = AutosaveInformationFolderMBS(kUserDomain)
```

**Notes:**
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder `/System`
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateAutosaveInformationFolderMBS function.

148.1.24 **BootTimeStartupItemsFolderMBS**(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system. **Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = BootTimeStartupItemsFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder `/System`
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateBootTimeStartupItemsFolderMBS function.
148.1.25  CachedDataFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
```vba
const kUserDomain = -32763
dim f as folderitem = CachedDataFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateCachedDataFolder function.

148.1.26  CarbonLibraryFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
```vba
const kUserDomain = -32763
dim f as folderitem = CarbonLibraryFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

Also take a look on the CreateCarbonLibraryFolder function.
-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

148.1.27  ChewableItemsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbnet
const kUserDomain = -32763
dim f as folderitem = ChewableItemsFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateChewableItemsFolder function.

148.1.28  classicDesktopFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbnet
```
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```
const kUserDomain = -32763
dim f as folderitem = ClassicDesktopFolderMBS(kUserDomain)
```

Notes:

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateClassicDesktopFolder function.

148.1.29  ClassicPreferencesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem to this folder if it exists on that system.

Example:

```
const kUserDomain = -32763
dim f as folderitem = ClassicPreferencesFolderMBS(kUserDomain)
```

Notes:

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

Also take a look on the CreateClassicPreferencesFolderMBS function.

148.1.30  ColorPickersFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem to this folder if it exists on that system.
-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Example:

```javascript
const kUserDomain = -32763
dim f as folderitem = ColorPickersFolderMBS(kUserDomain)
```

Notes:

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateColorPickersFolderMBS function.

148.1.31  ColorSyncCMMFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

Example:

```javascript
const kUserDomain = -32763
dim f as folderitem = ColorSyncCMMFolderMBS(kUserDomain)
```

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateColorSyncCMMFolder function.

148.1.32 ColorSyncFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vb
const kUserDomain = -32763
dim f as folderitem = ColorSyncFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateColorSyncFolder function.
148.1.33  ColorSyncProfilesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = ColorSyncProfilesFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk  
-32767  On Appropriate Disk  
-32766  System Domain, on Mac OS X mostly inside the folder /System.  
-32765  Local Domain (on Netbooting for example)  
-32764  Network Domain (on Netbooting for example)  
-32763  User Domain, on Mac OS X mostly inside the users folder.  
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateColorSyncProfilesFolder function.

148.1.34  ColorSyncScriptingFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = ColorSyncScriptingFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk  
-32767  On Appropriate Disk  
-32766  System Domain, on Mac OS X mostly inside the folder /System.  
-32765  Local Domain (on Netbooting for example)  
-32764  Network Domain (on Netbooting for example)  
-32763  User Domain, on Mac OS X mostly inside the users folder.  
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateColorSyncScriptingFolder function.
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-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

148.1.35 ComponentsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vb
const kUserDomain = -32763
dim f as folderitem = ComponentsFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateComponentsFolder function.

148.1.36 CompositionsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
const kUserDomain = -32763

```vbnet
dim f as folderitem = CompositionsFolderMBS(kUserDomain)
```

Notes:

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateCompositionsFolderMBS function.

### 148.1.37 ContextualMenuItemsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbnet
const kUserDomain = -32763

```vbnet
dim f as folderitem = ContextualMenuItemsFolderMBS(kUserDomain)
```

Notes:

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

Also take a look on the CreateContextualMenuItemsFolder function.

### 148.1.38 ControlPanelDisabledFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Returns a folderitem to this folder if it exists on that system.
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-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Example:

```vbs
const kUserDomain = -32763
dim f as folderitem = ControlPanelDisabledFolderMBS(kUserDomain)
```

Notes:

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateControlPanelDisabledFolder function.

148.1.39  ControlPanelFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem
to this folder if it exists on that system.

Example:

```vbs
const kUserDomain = -32763
dim f as folderitem = ControlPanelFolderMBS(kUserDomain)
```

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateControlPanelFolder function.

148.1.40 ControlStripModulesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = ControlStripModulesFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateControlStripModulesFolder function.
148.1.41  CoreServicesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbnet
const kUserDomain = -32763
dim f as folderitem = CoreServicesFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateCoreServicesFolder function.

148.1.42  CreateALMLocationsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbnet
const kUserDomain = -32763
dim f as folderitem = CreateALMLocationsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):
-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the ALMLocationsFolder function.

148.1.43 CreateALMModulesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateALMModulesFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the ALMModulesFolder function.
148.1.44 CreateALMPreferencesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
```vba
const kUserDomain = -32763
dim f as folderitem = CreateALMPreferencesFolderMBS(kUserDomain)
```

**Notes:**
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk  
-32767 On Appropriate Disk  
-32766 System Domain, on Mac OS X mostly inside the folder /System.  
-32765 Local Domain (on Netbooting for example)  
-32764 Network Domain (on Netbooting for example)  
-32763 User Domain, on Mac OS X mostly inside the users folder.  
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the ALMPreferencesFolder function.

148.1.45 CreateAppearanceFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
```vba
const kUserDomain = -32763
dim f as folderitem = CreateAppearanceFolderMBS(kUserDomain)
```

**Notes:**
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):
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-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the AppearanceFolder function.

148.1.46 CreateAppleExtrasFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem to this folder if it exists on that system.
Example:
const kUserDomain = -32763
dim f as folderitem = CreateAppleExtrasFolderMBS(kUserDomain)

Notes:
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the AppleExtrasFolder function.
148.1.47 CreateAppleMenuFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
cnst kUserDomain = -32763
dim f as folderitem = CreateAppleMenuFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

- 32768 On System Disk
- 32767 On Appropriate Disk
- 32766 System Domain, on Mac OS X mostly inside the folder /System.
- 32765 Local Domain (on Netbooting for example)
- 32764 Network Domain (on Netbooting for example)
- 32763 User Domain, on Mac OS X mostly inside the users folder.
- 32762 Classic Domain, the current used Classic System folder.

Also take a look on the AppleMenuFolder function.

148.1.48 CreateAppleShareAuthenticationFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
cnst kUserDomain = -32763
dim f as folderitem = CreateAppleShareAuthenticationFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):
-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the AppleShareAuthenticationFolder function.

148.1.49 CreateAppleshareAutomountServerAliasesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system. **Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = CreateAppleshareAutomountServerAliasesFolderMBS(kUserDomain)
```

**Notes:**
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder allready exists, it is just returned. Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the AppleshareAutomountServerAliasesFolderMBS function.
148.1.50 CreateAppleShareSupportFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
```
const kUserDomain = -32763
dim f as folderitem = CreateAppleShareSupportFolderMBS(kUserDomain)
```

**Notes:**
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the AppleShareSupportFolder function.

148.1.51 CreateApplicationsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
```
const kUserDomain = -32763
dim f as folderitem = CreateApplicationsFolderMBS(kUserDomain)
```

**Notes:**
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):
CHAPTER 148. SPECIAL FOLDERS

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the ApplicationsFolder function.
On Windows, only the System Domain is supported.

148.1.52 CreateApplicationSupportFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. Function: Returns a folderitem
to this folder if it exists on that system.
Example:
const kUserDomain = -32763
dim f as folderitem = CreateApplicationSupportFolderMBS(kUserDomain)

Notes:
If this folder is supported by the operation system version, the folder is created and returned. If the folder
could not be created or is not supported, nil is returned. If the folder allready exists, it is just returned.
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the ApplicationSupportFolder function.
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Realbasic ApplicationSupport function points to "/Library/Application Support" while ApplicationSupportFolderMBS points to different locations on my test system depending on the domain code:

-32768 ->"/Library/Application Support"
-32767 ->"/Library/Application Support"
-32766 ->nil
-32765 ->"/Library/Application Support"
-32764 ->nil
-32763 ->"/Users/cs/Library/Application Support"
-32762 ->"/Volumes/Mac OS 9/Systemordner/Application Support"
0 ->"/Library/Application Support"

At last it is your decision to use the correct one!

148.1.53 CreateAssistantsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = CreateAssistantsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the AssistantsFolder function.
148.1.54  CreateAudioAlertSoundsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateAudioAlertSoundsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the AudioAlertSoundsFolder function.

148.1.55  CreateAudioComponentsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateAudioComponentsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):
-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the AudioComponentsFolder function.

148.1.56 CreateAudioDigidesignFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateAudioDigidesignFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the AudioDigidesignFolderMBS function.
148.1.57  CreateAudioPlugInsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbnet
const kUserDomain = -32763
dim f as folderitem = CreateAudioPlugInsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the AudioPlugInsFolder function.

148.1.58  CreateAudioPresetsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbnet
const kUserDomain = -32763
dim f as folderitem = CreateAudioPresetsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):
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-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the AudioPresetsFolderMBS function.

148.1.59  CreateAudioSoundBanksFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbnet
const kUserDomain = -32763
dim f as folderitem = CreateAudioSoundBanksFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the AudioSoundBanksFolder function.
148.1.60 CreateAudioSoundsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

Example:

```dim f as folderitem = CreateAudioSoundsFolderMBS(kUserDomain)```

Notes:

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the AudioSoundsFolder function.

148.1.61 CreateAudioSupportFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

Example:

```dim f as folderitem = CreateAudioSupportFolderMBS(kUserDomain)```

Notes:

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):
148.1. GLOBALS

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the AudioSupportFolder function.

148.1.62 CreateAudioVSTFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system. **Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateAudioVSTFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the AudioVSTFolderMBS function.
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148.1.63 CreateAutomatorWorkflowsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateAutomatorWorkflowsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder allready exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the AutomatorWorkflowsFolderMBS function.

148.1.64 CreateAutosaveInformationFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateAutosaveInformationFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder allready exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):
148.1. GLOBALS

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the AutosaveInformationFolderMBS function.

148.1.65 CreateBootTimeStartupItemsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a folderitem to this folder if it exists on that system.

**Example:**

const kUserDomain = -32763
dim f as folderitem = CreateBootTimeStartupItemsFolderMBS(kUserDomain)

**Notes:**
If this folder is supported by the operation system version, the folder is created and returned. If the folder
could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the BootTimeStartupItemsFolderMBS function.
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148.1.66 CreateCachedDataFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem to this folder if it exists on that system. Example:

const kUserDomain = -32763
dim f as folderitem = CreateCachedDataFolderMBS(kUserDomain)

Notes:

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CachedDataFolder function.

148.1.67 CreateCarbonLibraryFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem to this folder if it exists on that system. Example:

const kUserDomain = -32763
dim f as folderitem = CreateCarbonLibraryFolderMBS(kUserDomain)

Notes:

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):
-32768 On System Disk  
-32767 On Appropriate Disk  
-32766 System Domain, on Mac OS X mostly inside the folder /System.  
-32765 Local Domain (on Netbooting for example)  
-32764 Network Domain (on Netbooting for example)  
-32763 User Domain, on Mac OS X mostly inside the users folder.  
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CarbonLibraryFolder function.

148.1.68 CreateChewableItemsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system. **Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = CreateChewableItemsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version! The codes for domain are (The Demo includes a module for these):

-32768 On System Disk  
-32767 On Appropriate Disk  
-32766 System Domain, on Mac OS X mostly inside the folder /System.  
-32765 Local Domain (on Netbooting for example)  
-32764 Network Domain (on Netbooting for example)  
-32763 User Domain, on Mac OS X mostly inside the users folder.  
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the ChewableItemsFolder function.
148.1.69  **CreateClassicDesktopFolderMBS**(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbnet
const kUserDomain = -32763
dim f as folderitem = CreateClassicDesktopFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

- -32768 On System Disk
- -32767 On Appropriate Disk
- -32766 System Domain, on Mac OS X mostly inside the folder /System.
- -32765 Local Domain (on Netbooting for example)
- -32764 Network Domain (on Netbooting for example)
- -32763 User Domain, on Mac OS X mostly inside the users folder.
- -32762 Classic Domain, the current used Classic System folder.

Also take a look on the ClassicDesktopFolder function.

148.1.70  **CreateClassicPreferencesFolderMBS**(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbnet
const kUserDomain = -32763
dim f as folderitem = CreateClassicPreferencesFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):
-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the ClassicPreferencesFolderMBS function.

### 148.1.71 CreateColorPickersFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbnet
const kUserDomain = -32763
dim f as folderitem = CreateColorPickersFolderMBS(kUserDomain)
```

**Notes:**
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the ColorPickersFolderMBS function.
148.1.72 CreateColorSyncCMMFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbnet
const kUserDomain = -32763
dim f as folderitem = CreateColorSyncCMMFolderMBS(kUserDomain)
```

**Notes:**
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the ColorSyncCMMFolder function.

148.1.73 CreateColorSyncFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbnet
const kUserDomain = -32763
dim f as folderitem = CreateColorSyncFolderMBS(kUserDomain)
```

**Notes:**
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):
-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the ColorSyncFolder function.

### 148.1.74 CreateColorSyncProfilesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbnet
const kUserDomain = -32763
dim f as folderitem = CreateColorSyncProfilesFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder alrready exists, it is just returned.

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the ColorSyncProfilesFolder function.
148.1.75  CreateColorSyncScriptingFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns a folderitem to this folder if it exists on that system.  

**Example:**

```
const kUserDomain = -32763
dim f as folderitem = CreateColorSyncScriptingFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned.  If the folder could not be created or is not supported, nil is returned.  If the folder already exists, it is just returned.  

Note that not every folder exists on every Mac OS Version!  

The codes for domain are (The Demo includes a module for these):

- -32768  On System Disk  
- -32767  On Appropriate Disk  
- -32766  System Domain, on Mac OS X mostly inside the folder /System.  
- -32765  Local Domain (on Netbooting for example)  
- -32764  Network Domain (on Netbooting for example)  
- -32763  User Domain, on Mac OS X mostly inside the users folder.  
- -32762  Classic Domain, the current used Classic System folder.  

Also take a look on the ColorSyncScriptingFolder function.

148.1.76  CreateComponentsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns a folderitem to this folder if it exists on that system.  

**Example:**

```
const kUserDomain = -32763
dim f as folderitem = CreateComponentsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned.  If the folder could not be created or is not supported, nil is returned.  If the folder already exists, it is just returned.  

Note that not every folder exists on every Mac OS Version!  

The codes for domain are (The Demo includes a module for these):
148.1. GLOBALS

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the ComponentsFolder function.

148.1.77  CreateCompositionsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a folderitem to this folder if it exists on that system.

**Example:**

const kUserDomain = -32763
dim f as folderitem = CreateCompositionsFolderMBS(kUserDomain)

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CompositionsFolderMBS function.
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148.1.78 CreateContextualMenuItemsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbscript
const kUserDomain = -32763
dim f as folderitem = CreateContextualMenuItemsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

- -32768 On System Disk
- -32767 On Appropriate Disk
- -32766 System Domain, on Mac OS X mostly inside the folder /System.
- -32765 Local Domain (on Netbooting for example)
- -32764 Network Domain (on Netbooting for example)
- -32763 User Domain, on Mac OS X mostly inside the users folder.
- -32762 Classic Domain, the current used Classic System folder.

Also take a look on the ContextualMenuItemsFolder function.

148.1.79 CreateControlPanelDisabledFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbscript
const kUserDomain = -32763
dim f as folderitem = CreateControlPanelDisabledFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):
-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the ControlPanelDisabledFolder function.

148.1.80 CreateControlPanelFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
```
cost kUserDomain = -32763
dim f as folderitem = CreateControlPanelFolderMBS(kUserDomain)
```

**Notes:**
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the ControlPanelFolder function.
148.1.81 CreateControlStripModulesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.  
**Example:**
```
const kUserDomain = -32763
dim f as folderitem = CreateControlStripModulesFolderMBS(kUserDomain)
```

**Notes:**
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

- -32768 On System Disk  
- -32767 On Appropriate Disk  
- -32766 System Domain, on Mac OS X mostly inside the folder /System.  
- -32765 Local Domain (on Netbooting for example)  
- -32764 Network Domain (on Netbooting for example)  
- -32763 User Domain, on Mac OS X mostly inside the users folder.  
- -32762 Classic Domain, the current used Classic System folder.

Also take a look on the ControlStripModulesFolder function.

148.1.82 CreateCoreServicesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.  
**Example:**
```
const kUserDomain = -32763
dim f as folderitem = CreateCoreServicesFolderMBS(kUserDomain)
```

**Notes:**
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.  
Note that not every folder exists on every Mac OS Version!  
The codes for domain are (The Demo includes a module for these):
-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CoreServicesFolder function.

148.1.83 CreateCurrentUserFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.  
**Example:**

```vbscript
const kUserDomain = -32763
dim f as folderitem = CreateCurrentUserFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CurrentUserFolder function.
148.1.84 CreateCurrentUserRemoteFolderLocationFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem to this folder if it exists on that system.

Example:

```
const kUserDomain = -32763
dim f as folderitem = CreateCurrentUserRemoteFolderMBS(kUserDomain)
```

Notes:

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CurrentUserRemoteFolder function.

148.1.85 CreateCurrentUserRemoteFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem to this folder if it exists on that system.

Example:

```
const kUserDomain = -32763
dim f as folderitem = CreateCurrentUserRemoteFolderMBS(kUserDomain)
```

Notes:

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CurrentUserRemoteFolder function.

### 148.1.86 CreateDesktopFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = CreateDesktopFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the SpecialFolder.Desktop function.
148.1.87  CreateDesktopPicturesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateDesktopPicturesFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder allready exists, it is just returned. Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the DesktopPicturesFolder function.

148.1.88  CreateDeveloperApplicationsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

The developer application folder.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateDeveloperApplicationsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder allready exists, it is just returned. Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):
148.1. GLOBALS

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the DeveloperApplicationsFolderMBS function.

148.1.89  CreateDeveloperDocsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = CreateDeveloperDocsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the DeveloperDocsFolder function.
148.1.90 CreateDeveloperFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateDeveloperFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768 On System Disk  
-32767 On Appropriate Disk  
-32766 System Domain, on Mac OS X mostly inside the folder /System.  
-32765 Local Domain (on Netbooting for example)  
-32764 Network Domain (on Netbooting for example)  
-32763 User Domain, on Mac OS X mostly inside the users folder.  
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the DeveloperFolder function.

148.1.91 CreateDeveloperHelpFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateDeveloperHelpFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):
-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the DeveloperHelpFolder function.

148.1.92 CreateDictionariesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The folder for the dictionaries.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateDictionariesFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the DictionariesFolderMBS function.
148.1.93  CreateDirectoryServicesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```lisp
const kUserDomain = -32763
dim f as folderitem = CreateDirectoryServicesFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768  On System Disk  
-32767  On Appropriate Disk  
-32766  System Domain, on Mac OS X mostly inside the folder /System.  
-32765  Local Domain (on Netbooting for example)  
-32764  Network Domain (on Netbooting for example)  
-32763  User Domain, on Mac OS X mostly inside the users folder.  
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the DirectoryServicesFolder function.

148.1.94  CreateDirectoryServicesPlugInsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```lisp
const kUserDomain = -32763
dim f as folderitem = CreateDirectoryServicesPlugInsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):
148.1. GLOBALS

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the DirectoryServicesPlugInsFolder function.

148.1.95 CreateDisplayExtensionsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = CreateDisplayExtensionsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the DisplayExtensionsFolder function.
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148.1.96 CreateDocumentationFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbnet
const kUserDomain = -32763
dim f as folderitem = CreateDocumentationFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

- 32768 On System Disk
- 32767 On Appropriate Disk
- 32766 System Domain, on Mac OS X mostly inside the folder /System.
- 32765 Local Domain (on Netbooting for example)
- 32764 Network Domain (on Netbooting for example)
- 32763 User Domain, on Mac OS X mostly inside the users folder.
- 32762 Classic Domain, the current used Classic System folder.

Also take a look on the DocumentationFolder function.

148.1.97 CreateDocumentsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbnet
const kUserDomain = -32763
dim f as folderitem = CreateDocumentsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):
148.1.98  CreateDomainLibraryFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  Function: Returns a folderitem to this folder if it exists on that system.  
Example:
const kUserDomain = -32763
dim f as folderitem = CreateDomainLibraryFolderMBS(kUserDomain)

Notes:
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the DomainLibraryFolder function.
CHAPTER 148. SPECIAL FOLDERS

148.1.99  CreateDomainTopLevelFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
```
const kUserDomain = -32763

dim f as folderitem = CreateDomainTopLevelFolderMBS(kUserDomain)
```

**Notes:**
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the DomainTopLevelFolder function.

148.1.100  CreateDownloadsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
```
const kUserDomain = -32763

dim f as folderitem = CreateDownloadsFolderMBS(kUserDomain)
```

**Notes:**
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):
148.1.101  CreateEditorsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = CreateEditorsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the DownloadsFolderMBS function.
148.1.102 CreateExtensionDisabledFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```
const kUserDomain = -32763
dim f as folderitem = CreateExtensionDisabledFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

- `-32768` On System Disk
- `-32767` On Appropriate Disk
- `-32766` System Domain, on Mac OS X mostly inside the folder /System.
- `-32765` Local Domain (on Netbooting for example)
- `-32764` Network Domain (on Netbooting for example)
- `-32763` User Domain, on Mac OS X mostly inside the users folder.
- `-32762` Classic Domain, the current used Classic System folder.

Also take a look on the ExtensionDisabledFolder function.

148.1.103 CreateExtensionFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```
const kUserDomain = -32763
dim f as folderitem = CreateExtensionFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):
-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the ExtensionFolder function.

148.1.104 CreateFavoritesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```bc
const kUserDomain = -32763
dim f as folderitem = CreateFavoritesFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the FavoritesFolder function.
148.1.105  CreateFileSystemSupportFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateFileSystemSupportFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

- -32768  On System Disk
- -32767  On Appropriate Disk
- -32766  System Domain, on Mac OS X mostly inside the folder /System.
- -32765  Local Domain (on Netbooting for example)
- -32764  Network Domain (on Netbooting for example)
- -32763  User Domain, on Mac OS X mostly inside the users folder.
- -32762  Classic Domain, the current used Classic System folder.

Also take a look on the FileSystemSupportFolder function.

148.1.106  CreateFindByContentFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateFindByContentFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):
-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the FindByContentFolder function.

148.1.107 CreateFindByContentIndexesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system. **Example:**

```vbs
const kUserDomain = -32763
dim f as folderitem = CreateFindByContentIndexesFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the FindByContentIndexesFolderMBS function.
148.1.108 CreateFindByContentPluginsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateFindByContentPluginsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder allready exists, it is just returned. Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

- -32768 On System Disk
- -32767 On Appropriate Disk
- -32766 System Domain, on Mac OS X mostly inside the folder /System.
- -32765 Local Domain (on Netbooting for example)
- -32764 Network Domain (on Netbooting for example)
- -32763 User Domain, on Mac OS X mostly inside the users folder.
- -32762 Classic Domain, the current used Classic System folder.

Also take a look on the FindByContentPluginsFolder function.

148.1.109 CreateFindSupportFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateFindSupportFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder allready exists, it is just returned. Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):
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-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the FindSupportFolder function.

148.1.110  CreateFolderActionsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```
const kUserDomain = -32763
dim f as folderitem = CreateFolderActionsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the FolderActionsFolder function.
148.1.111  CreateFontCollectionsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem to this folder if it exists on that system.

Example:

const kUserDomain = -32763
dim f as folderitem = CreateFontCollectionsFolderMBS(kUserDomain)

Notes:
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder allready exists, it is just returned.
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the FontCollectionsFolderMBS function.

148.1.112  CreateFontsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem to this folder if it exists on that system.

Example:

const kUserDomain = -32763
dim f as folderitem = CreateFontsFolderMBS(kUserDomain)

Notes:
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder allready exists, it is just returned.
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):
-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the FontsFolder function.

148.1.113  CreateFrameworksFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.  
**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateFrameworksFolderMBS(kUserDomain)
```

**Notes:**
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the FrameworksFolder function.
148.1.114  CreateGenEditorsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns a folderitem
to this folder if it exists on that system.

**Example:**

```
const kUserDomain = -32763
dim f as folderitem = CreateGenEditorsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder
could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

- -32768 On System Disk
- -32767 On Appropriate Disk
- -32766 System Domain, on Mac OS X mostly inside the folder /System.
- -32765 Local Domain (on Netbooting for example)
- -32764 Network Domain (on Netbooting for example)
- -32763 User Domain, on Mac OS X mostly inside the users folder.
- -32762 Classic Domain, the current used Classic System folder.

Also take a look on the GenEditorsFolder function.

148.1.115  CreateHelpFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns a folderitem
to this folder if it exists on that system.

**Example:**

```
const kUserDomain = -32763
dim f as folderitem = CreateHelpFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder
could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

- -32768 On System Disk
- -32767 On Appropriate Disk
- -32766 System Domain, on Mac OS X mostly inside the folder /System.
- -32765 Local Domain (on Netbooting for example)
- -32764 Network Domain (on Netbooting for example)
- -32763 User Domain, on Mac OS X mostly inside the users folder.
- -32762 Classic Domain, the current used Classic System folder.
-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the HelpFolder function.

### 148.1.116 CreateiMovieFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateiMovieFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the iMovieFolderMBS function.
148.1.117  CreateiMoviePlugInsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a folderitem to this folder if it exists on that system.
**Example:**
```vba
const kUserDomain = -32763
dim f as folderitem = CreateiMoviePlugInsFolderMBS(kUserDomain)
```

**Notes:**
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768    On System Disk
-32767    On Appropriate Disk
-32766    System Domain, on Mac OS X mostly inside the folder /System.
-32765    Local Domain (on Netbooting for example)
-32764    Network Domain (on Netbooting for example)
-32763    User Domain, on Mac OS X mostly inside the users folder.
-32762    Classic Domain, the current used Classic System folder.

Also take a look on the iMoviePlugInsFolderMBS function.

148.1.118  CreateiMovieSoundEffectsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a folderitem to this folder if it exists on that system.
**Example:**
```vba
const kUserDomain = -32763
dim f as folderitem = iMovieSoundEffectsFolderMBS(kUserDomain)
```

**Notes:**
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768    On System Disk
-32767    On Appropriate Disk
-32766    System Domain, on Mac OS X mostly inside the folder /System.
-32765    Local Domain (on Netbooting for example)
-32764    Network Domain (on Netbooting for example)
-32763    User Domain, on Mac OS X mostly inside the users folder.
-32762    Classic Domain, the current used Classic System folder.
-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateIndexFilesFolderMBS function.

148.1.119  CreateIndexFilesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
```
const kUserDomain = -32763
dim f as folderitem = IndexFilesFolderMBS(kUserDomain)
```

**Notes:**
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateIndexFilesFolderMBS function.
148.1.120  CreateInputManagersFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```
const kUserDomain = -32763
dim f as folderitem = CreateInputManagersFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk  
-32767  On Appropriate Disk  
-32766  System Domain, on Mac OS X mostly inside the folder /System.  
-32765  Local Domain (on Netbooting for example)  
-32764  Network Domain (on Netbooting for example)  
-32763  User Domain, on Mac OS X mostly inside the users folder.  
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the InputManagersFolderMBS function.

148.1.121  CreateInputMethodsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```
const kUserDomain = -32763
dim f as folderitem = InputMethodsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):
### 148.1.1.122 CreateInstallerLogsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateInstallerLogsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder allready exists, it is just returned. Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

- `32768` On System Disk
- `32767` On Appropriate Disk
- `32766` System Domain, on Mac OS X mostly inside the folder `/System`
- `32765` Local Domain (on Netbooting for example)
- `32764` Network Domain (on Netbooting for example)
- `32763` User Domain, on Mac OS X mostly inside the users folder.
- `32762` Classic Domain, the current used Classic System folder.

Also take a look on the CreateInputMethodsFolderMBS function.
148.1.123 **CreateInstallerReceiptsFolderMBS**(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```
const kUserDomain = -32763
dim f as folderitem = CreateInstallerReceiptsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk  
-32767 On Appropriate Disk  
-32766 System Domain, on Mac OS X mostly inside the folder /System.  
-32765 Local Domain (on Netbooting for example)  
-32764 Network Domain (on Netbooting for example)  
-32763 User Domain, on Mac OS X mostly inside the users folder.  
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the InstallerReceiptsFolder function.

148.1.124 **CreateInternetFolderMBS**(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```
const kUserDomain = -32763
dim f as folderitem = CreateInternetFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):
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-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the InternetFolder function.

148.1.125 CreateInternetPlugInFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbscript
const kUserDomain = -32763
dim f as folderitem = CreateInternetPlugInFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS version!

The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the InternetPlugInFolder function.
148.1.126 CreateInternetSearchSitesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = CreateInternetSearchSitesFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder allready exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the InternetSearchSitesFolder function.

148.1.127 CreateInternetSitesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = CreateInternetSitesFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder allready exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):
148.1. GLOBALS

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the InternetSitesFolder function.

148.1.128  CreateISSDownloadsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = CreateISSDownloadsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the ISSDownloadsFolder function.
148.1.129  CreateKernelExtensionsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbs
const kUserDomain = -32763
dim f as folderitem = CreateKernelExtensionsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768  On System Disk  
-32767  On Appropriate Disk  
-32766  System Domain, on Mac OS X mostly inside the folder /System.  
-32765  Local Domain (on Netbooting for example)  
-32764  Network Domain (on Netbooting for example)  
-32763  User Domain, on Mac OS X mostly inside the users folder.  
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the KernelExtensionsFolder function.

148.1.130  CreateKeyboardLayoutsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbs
const kUserDomain = -32763
dim f as folderitem = KeyboardLayoutsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):
148.1. GLOBALS

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateKeyboardLayoutsFolderMBS function.

148.1.131  CreateKeychainFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem to this folder if it exists on that system.
Example:

const kUserDomain = -32763
dim f as folderitem = CreateKeychainFolderMBS(kUserDomain)

Notes:

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the KeychainFolder function.
148.1.132 CreateLauncherItemsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system. 
**Example:**
```
const kUserDomain = -32763
dim f as folderitem = CreateLauncherItemsFolderMBS(kUserDomain)
```

**Notes:**
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk  
-32767 On Appropriate Disk  
-32766 System Domain, on Mac OS X mostly inside the folder /System.  
-32765 Local Domain (on Netbooting for example)  
-32764 Network Domain (on Netbooting for example)  
-32763 User Domain, on Mac OS X mostly inside the users folder.  
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the LauncherItemsFolder function.

148.1.133 CreateLibraryAssistantsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.  
**Example:**
```
const kUserDomain = -32763
dim f as folderitem = LibraryAssistantsFolderMBS(kUserDomain)
```

**Notes:**
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. 
Note that not every folder exists on every Mac OS Version! 
The codes for domain are (The Demo includes a module for these):
-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateLibraryAssistantsFolderMBS function.

148.1.134  CreateLocalesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = CreateLocalesFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the LocalesFolder function.
148.1.135 CreateLogsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The log files folder.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateLogsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk  
-32767 On Appropriate Disk  
-32766 System Domain, on Mac OS X mostly inside the folder /System.  
-32765 Local Domain (on Netbooting for example)  
-32764 Network Domain (on Netbooting for example)  
-32763 User Domain, on Mac OS X mostly inside the users folder.  
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the LogsFolderMBS function.

148.1.136 CreateMacOSReadMesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateMacOSReadMesFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):
-32768  On System Disk  
-32767  On Appropriate Disk  
-32766  System Domain, on Mac OS X mostly inside the folder /System.  
-32765  Local Domain (on Netbooting for example)  
-32764  Network Domain (on Netbooting for example)  
-32763  User Domain, on Mac OS X mostly inside the users folder.  
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the MacOSReadMesFolder function.

148.1.137  CreateMagicTemporaryItemsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.  
**Example:**

```vbnet
const kUserDomain = -32763
dim f as folderitem = MagicTemporaryItemsFolderMBS(kUserDomain)
```

**Notes:**
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.  
Note that not every folder exists on every Mac OS Version!  
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk  
-32767  On Appropriate Disk  
-32766  System Domain, on Mac OS X mostly inside the folder /System.  
-32765  Local Domain (on Netbooting for example)  
-32764  Network Domain (on Netbooting for example)  
-32763  User Domain, on Mac OS X mostly inside the users folder.  
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateMagicTemporaryItemsFolderMBS function.
148.1.138 CreateManagedItemsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = CreateManagedItemsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the ManagedItemsFolderMBS function.

148.1.139 CreateMIDIDriversFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = CreateMIDIDriversFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):
148.1. GLOBALS

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the MIDIDriversFolder function.

148.1.140  CreateModemScriptsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.  

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateModemScriptsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the ModemScriptsFolder function.
148.1.141  
CreateMovieDocumentsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns a folderitem to this folder if it exists on that system.  
**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateMovieDocumentsFolderMBS(kUserDomain)
```

**Notes:**
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version! The codes for domain are (The Demo includes a module for these):

-32768  On System Disk  
-32767  On Appropriate Disk  
-32766  System Domain, on Mac OS X mostly inside the folder /System.  
-32765  Local Domain (on Netbooting for example)  
-32764  Network Domain (on Netbooting for example)  
-32763  User Domain, on Mac OS X mostly inside the users folder.  
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the MovieDocumentsFolder function.

148.1.142  
CreateMultiprocessingFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns a folderitem to this folder if it exists on that system.  
**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateMultiprocessingFolderMBS(kUserDomain)
```

**Notes:**
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version! The codes for domain are (The Demo includes a module for these):
GLOBALS

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the MultiprocessingFolder function.

148.1.143  CreateMusicDocumentsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = CreateMusicDocumentsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the MusicDocumentsFolder function.
148.1.144  CreateOpenDocEditorsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbnet
const kUserDomain = -32763
dim f as folderitem = CreateOpenDocEditorsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768  On System Disk  
-32767  On Appropriate Disk  
-32766  System Domain, on Mac OS X mostly inside the folder /System.  
-32765  Local Domain (on Netbooting for example)  
-32764  Network Domain (on Netbooting for example)  
-32763  User Domain, on Mac OS X mostly inside the users folder.  
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the OpenDocEditorsFolder function.

148.1.145  CreateOpenDocFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbnet
const kUserDomain = -32763
dim f as folderitem = CreateOpenDocFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):
-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the OpenDocFolder function.

148.1.146 CreateOpenDocLibrariesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```
const kUserDomain = -32763
dim f as folderitem = CreateOpenDocLibrariesFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the OpenDocLibrariesFolder function.
148.1.147  CreateOpenDocShellPlugInsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```javascript
const kUserDomain = -32763
dim f as folderitem = CreateOpenDocShellPlugInsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768  On System Disk  
-32767  On Appropriate Disk  
-32766  System Domain, on Mac OS X mostly inside the folder /System.  
-32765  Local Domain (on Netbooting for example)  
-32764  Network Domain (on Netbooting for example)  
-32763  User Domain, on Mac OS X mostly inside the users folder.  
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the OpenDocShellPlugInsFolder function.

148.1.148  CreatePictureDocumentsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```javascript
const kUserDomain = -32763
dim f as folderitem = CreatePictureDocumentsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):
-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the PictureDocumentsFolder function.
As there is no such folder on Mac OS Classic, you always get null there.

148.1.149 CreatePreferencePanesFolderMBS(domain as Integer) as folderitem

Example:
const kUserDomain = 32763
dim f as folderitem = CreatePreferencePanesFolderMBS(kUserDomain)

Notes:
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the PreferencePanesFolderMBS function.
148.1.150  CreatePreferencesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```python
const kUserDomain = -32763
dim f as folderitem = CreatePreferencesFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768  On System Disk  
-32767  On Appropriate Disk  
-32766  System Domain, on Mac OS X mostly inside the folder /System.  
-32765  Local Domain (on Netbooting for example)  
-32764  Network Domain (on Netbooting for example)  
-32763  User Domain, on Mac OS X mostly inside the users folder.  
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the PreferencesFolder function.

148.1.151  CreatePrinterDescriptionFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```python
const kUserDomain = -32763
dim f as folderitem = CreatePrinterDescriptionFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):
148.1.152 CreatePrinterDriverFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbscript
const kUserDomain = -32763
dim f as folderitem = CreatePrinterDriverFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

```
-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.
```

Also take a look on the PrinterDriverFolder function.
148.1.153 CreatePrintersFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem to this folder if it exists on that system.
Example:

const kUserDomain = -32763
dim f as folderitem = CreatePrintersFolderMBS(kUserDomain)

Notes:
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the PrintersFolder function.

148.1.154 CreatePrintingPlugInsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem to this folder if it exists on that system.
Example:

const kUserDomain = -32763
dim f as folderitem = CreatePrintingPlugInsFolderMBS(kUserDomain)

Notes:
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):
-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the PrintingPlugInsFolder function.

**148.1.155 CreatePrintMonitorDocsFolderMBS***(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreatePrintMonitorDocsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the PrintMonitorDocsFolder function.
148.1.156 CreatePrivateFrameworksFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Returns a folderitem to this folder if it exists on that system.

**Example**:

```vbnet
const kUserDomain = -32763
dim f as folderitem = CreatePrivateFrameworksFolderMBS(kUserDomain)
```

**Notes**:

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the PrivateFrameworksFolder function.

148.1.157 CreatePublicFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Returns a folderitem to this folder if it exists on that system.

**Example**:

```vbnet
const kUserDomain = -32763
dim f as folderitem = CreatePublicFolderMBS(kUserDomain)
```

**Notes**:

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):
-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the PublicFolder function.

148.1.158 CreateQuickLookFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a folderitem to this folder if it exists on that system.

**Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = CreateQuickLookFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the QuickLookFolderMBS function.
148.1.159  **CreateQuickTimeComponentsFolderMBS**(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateQuickTimeComponentsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk  
-32767  On Appropriate Disk  
-32766  System Domain, on Mac OS X mostly inside the folder /System.  
-32765  Local Domain (on Netbooting for example)  
-32764  Network Domain (on Netbooting for example)  
-32763  User Domain, on Mac OS X mostly inside the users folder.  
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the QuickTimeComponentsFolder function.

148.1.160  **CreateQuickTimeExtensionsFolderMBS**(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateQuickTimeExtensionsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):
148.1. GLOBALS

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the QuickTimeExtensionsFolder function.

148.1.161  CreateRecentApplicationsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```pascal
const kUserDomain = -32763
dim f as folderitem = CreateRecentApplicationsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the RecentApplicationsFolder function.
148.1.162 CreateRecentDocumentsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateRecentDocumentsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768 On System Disk  
-32767 On Appropriate Disk  
-32766 System Domain, on Mac OS X mostly inside the folder /System.  
-32765 Local Domain (on Netbooting for example)  
-32764 Network Domain (on Netbooting for example)  
-32763 User Domain, on Mac OS X mostly inside the users folder.  
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the RecentDocumentsFolder function.

148.1.163 CreateRecentServersFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateRecentServersFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the RecentServersFolder function.

148.1.164  CreateScriptingAdditionsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateScriptingAdditionsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the ScriptingAdditionsFolder function.
148.1.165  CreateScriptsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```dim f as folderitem = CreateScriptsFolderMBS(kUserDomain)```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the ScriptsFolder function.

148.1.166  CreateSharedLibrariesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```const kUserDomain = -32763
dim f as folderitem = CreateSharedLibrariesFolderMBS(kUserDomain)```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):
148.1. GLOBALS

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the SharedLibrariesFolder function.

148.1.167  CreateSharedUserDataFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateSharedUserDataFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the SharedUserDataFolder function.
148.1.168  CreateShutdownFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem to this folder if it exists on that system.

Example:

```
const kUserDomain = -32763
dim f as folderitem = CreateShutdownFolderMBS(kUserDomain)
```

Notes:
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder allready exists, it is just returned.
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the ShutdownFolder function.

148.1.169  CreateShutdownItemsDisabledFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem to this folder if it exists on that system.

Example:

```
const kUserDomain = -32763
dim f as folderitem = CreateShutdownItemsDisabledFolderMBS(kUserDomain)
```

Notes:
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder allready exists, it is just returned.
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):
148.1.170  CreateSoundSetsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = CreateSoundSetsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the SoundSetsFolder function.
148.1.171 CreateSpeakableItemsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = CreateSpeakableItemsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the SpeakableItemsFolder function.

148.1.172 CreateSpeechFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = CreateSpeechFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):
148.1.173 CreateSpotlightImportersFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
```
const kUserDomain = -32763
dim f as folderitem = SpotlightImportersFolderMBS(kUserDomain)
```

**Notes:**
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateSpotlightImportersFolderMBS function.
148.1.174  **CreateSpotlightMetadataCacheFolderMBS(domain as Integer) as folderitem**

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system. **Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = SpotlightMetadataCacheFolderMBS(kUserDomain)
```

**Notes:**
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version! The codes for domain are (The Demo includes a module for these):

-32768  On System Disk  
-32767  On Appropriate Disk  
-32766  System Domain, on Mac OS X mostly inside the folder /System. 
-32765  Local Domain (on Netbooting for example) 
-32764  Network Domain (on Netbooting for example) 
-32763  User Domain, on Mac OS X mostly inside the users folder. 
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateSpotlightMetadataCacheFolderMBS function.

148.1.175  **CreateSpotlightSavedSearchesFolderMBS(domain as Integer) as folderitem**

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system. **Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateSpotlightSavedSearchesFolderMBS(kUserDomain)
```

**Notes:**
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version! The codes for domain are (The Demo includes a module for these):
148.1. GLOBALS

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the SpotlightSavedSearchesFolderMBS function.

148.1.176 CreateStartupFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```pascal
const kUserDomain = -32763
dim f as folderitem = CreateStartupFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the StartupFolder function.
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148.1.177 CreateStartupItemsDisabledFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbs
const kUserDomain = -32763
dim f as folderitem = CreateStartupItemsDisabledFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

- `-32768` On System Disk
- `-32767` On Appropriate Disk
- `-32766` System Domain, on Mac OS X mostly inside the folder `/System`
- `-32765` Local Domain (on Netbooting for example)
- `-32764` Network Domain (on Netbooting for example)
- `-32763` User Domain, on Mac OS X mostly inside the users folder.
- `-32762` Classic Domain, the current used Classic System folder.

Also take a look on the StartupItemsDisabledFolder function.

148.1.178 CreateStationeryFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbs
const kUserDomain = -32763
dim f as folderitem = CreateStationeryFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):
-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the StationeryFolder function.

148.1.179 CreateSystemControlPanelFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem to this folder if it exists on that system.

Example:

```
cost kUserDomain = -32763
dim f as folderitem = CreateSystemControlPanelFolderMBS(kUserDomain)
```

Notes:

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the SystemControlPanelFolder function.
148.1.180  CreateSystemDesktopFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateSystemDesktopFolderMBS(kUserDomain)
```

**Notes:**
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the SystemDesktopFolder function.

148.1.181  CreateSystemExtensionDisabledFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateSystemExtensionDisabledFolderMBS(kUserDomain)
```

**Notes:**
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):
-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the SystemExtensionDisabledFolder function.

148.1.182 CreateSystemFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem to this folder if it exists on that system.

Example:

const kUserDomain = -32763
dim f as folderitem = CreateSystemFolderMBS(kUserDomain)

Notes:

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder allready exists, it is just returned. Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the SystemFolder function.
148.1.183  CreateSystemPreferencesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.  
**Example:**

```swift
const kUserDomain = -32763
dim f as folderitem = CreateSystemPreferencesFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.  
Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768  On System Disk  
-32767  On Appropriate Disk  
-32766  System Domain, on Mac OS X mostly inside the folder /System.  
-32765  Local Domain (on Netbooting for example)  
-32764  Network Domain (on Netbooting for example)  
-32763  User Domain, on Mac OS X mostly inside the users folder.  
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the SystemPreferencesFolder function.

148.1.184  CreateSystemSoundsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.  
**Example:**

```swift
const kUserDomain = -32763
dim f as folderitem = CreateSystemSoundsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.  
Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):
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-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the SystemSoundsFolder function.

148.1.185 CreateSystemTrashFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = CreateSystemTrashFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the SystemTrashFolder function.
148.1.186  CreateTemporaryFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system. **Example:**

```vbnet
const kUserDomain = -32763
dim f as folderitem = CreateTemporaryFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the TemporaryFolder function.

148.1.187  CreateTemporaryItemsInCacheDataFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system. **Example:**

```vbnet
const kUserDomain = -32763
dim f as folderitem = CreateTemporaryItemsInCacheDataFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!
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The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the TemporaryItemsInCacheDataFolderMBS function.

148.1.188 CreateTemporaryItemsInUserDomainFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a folderitem to this folder if it exists on that system.

**Example:**
const kUserDomain = -32763
dim f as folderitem = CreateTemporaryItemsInUserDomainFolderMBS(kUserDomain)

**Notes:**
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder allready exists, it is just returned. Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the TemporaryItemsInUserDomainFolderMBS function.
148.1.189  CreateTextEncodingsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = CreateTextEncodingsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768 On System Disk  
-32767 On Appropriate Disk  
-32766 System Domain, on Mac OS X mostly inside the folder /System.  
-32765 Local Domain (on Netbooting for example)  
-32764 Network Domain (on Netbooting for example)  
-32763 User Domain, on Mac OS X mostly inside the users folder.  
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the TextEncodingsFolder function.

148.1.190  CreateThemesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = CreateThemesFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):
-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the ThemesFolder function.

148.1.191  CreateTrashFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
```
const kUserDomain = -32763
dim f as folderitem = CreateTrashFolderMBS(kUserDomain)
```

**Notes:**
If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the TrashFolder function.
148.1.192  CreateUserSpecificTmpFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```pascal
const kUserDomain = -32763
dim f as folderitem = CreateUserSpecificTmpFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

- `-32768` On System Disk
- `-32767` On Appropriate Disk
- `-32766` System Domain, on Mac OS X mostly inside the folder `/System`
- `-32765` Local Domain (on Netbooting for example)
- `-32764` Network Domain (on Netbooting for example)
- `-32763` User Domain, on Mac OS X mostly inside the users folder.
- `-32762` Classic Domain, the current used Classic System folder.

Also take a look on the UsersFolder function.

148.1.193  CreateUserSpecificTmpFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```pascal
const kUserDomain = -32763
dim f as folderitem = CreateUserSpecificTmpFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):
-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the UserSpecificTmpFolder function.

### 148.1.194 CreateUtilitiesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateUtilitiesFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned.

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the UtilitiesFolder function.
148.1.195  CreateVoicesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```pascal
const kUserDomain = -32763
dim f as folderitem = CreateVoicesFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768  On System Disk  
-32767  On Appropriate Disk  
-32766  System Domain, on Mac OS X mostly inside the folder /System.  
-32765  Local Domain (on Netbooting for example)  
-32764  Network Domain (on Netbooting for example)  
-32763  User Domain, on Mac OS X mostly inside the users folder.  
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the VoicesFolder function.

148.1.196  CreateVolumeRootFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```pascal
const kUserDomain = -32763
dim f as folderitem = CreateVolumeRootFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):
-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the VolumeRootFolder function.

148.1.197  CreateVolumeSettingsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**  Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CreateVolumeSettingsFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder allready exists, it is just returned. Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the VolumeSettingsFolder function.
CHAPTER 148. SPECIAL FOLDERS

148.1.198 CreateWhereToEmptyTrashFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbs
const kUserDomain = -32763
dim f as folderitem = CreateWhereToEmptyTrashFolderMBS(kUserDomain)
```

**Notes:**

If this folder is supported by the operation system version, the folder is created and returned. If the folder could not be created or is not supported, nil is returned. If the folder already exists, it is just returned. Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

- -32768 On System Disk
- -32767 On Appropriate Disk
- -32766 System Domain, on Mac OS X mostly inside the folder /System.
- -32765 Local Domain (on Netbooting for example)
- -32764 Network Domain (on Netbooting for example)
- -32763 User Domain, on Mac OS X mostly inside the users folder.
- -32762 Classic Domain, the current used Classic System folder.

Also take a look on the WhereToEmptyTrashFolder function.

148.1.199 CurrentUserFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbs
const kUserDomain = -32763
dim f as folderitem = CurrentUserFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):
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-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateCurrentUserFolder function.

148.1.200  

CurrentUserRemoteFolderLocationFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  
**Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```
const kUserDomain = -32763
dim f as folderitem = CurrentUserRemoteFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateCurrentUserRemoteFolder function.
148.1.201 CurrentUserRemoteFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = CurrentUserRemoteFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateCurrentUserRemoteFolder function.

148.1.202 DesktopFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = DesktopFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateDesktopFolder function.
-32788 On System Disk
-32787 On Appropriate Disk
-32786 System Domain, on Mac OS X mostly inside the folder /System.
-32785 Local Domain (on Netbooting for example)
-32784 Network Domain (on Netbooting for example)
-32783 User Domain, on Mac OS X mostly inside the users folder.
-32782 Classic Domain, the current used Classic System folder.

148.1.203 DesktopPicturesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
```
const kUserDomain = -32763
dim f as folderitem = DesktopPicturesFolderMBS(kUserDomain)
```

**Notes:**
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32788 On System Disk
-32787 On Appropriate Disk
-32786 System Domain, on Mac OS X mostly inside the folder /System.
-32785 Local Domain (on Netbooting for example)
-32784 Network Domain (on Netbooting for example)
-32783 User Domain, on Mac OS X mostly inside the users folder.
-32782 Classic Domain, the current used Classic System folder.

Also take a look on the CreateDesktopPicturesFolder function.

148.1.204 DeveloperApplicationsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The developer application folder.

**Example:**
const kUserDomain = -32763
dim f as folderitem = DeveloperApplicationsFolderMBS(kUserDomain)

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateDeveloperApplicationsFolderMBS function.

### 148.1.205 DeveloperDocsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

const kUserDomain = -32763
dim f as folderitem = DeveloperDocsFolderMBS(kUserDomain)

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

Also take a look on the CreateDeveloperDocsFolder function.

### 148.1.206 DeveloperFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.
-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Example:

```javascript
const kUserDomain = -32763
dim f as folderitem = DeveloperFolderMBS(kUserDomain)
```

Notes:

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateDeveloperFolder function.

148.1.207  DeveloperHelpFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

Example:

```javascript
const kUserDomain = -32763
dim f as folderitem = DeveloperHelpFolderMBS(kUserDomain)
```

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateDeveloperHelpFolder function.

**148.1.208 DictionariesFolderMBS(domain as Integer) as folderitem**

MBS Util Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The folder for the dictionaries.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = DictionariesFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateDictionariesFolderMBS function.
148.1.209  DirectoryServicesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
```cpp
const kUserDomain = -32763
dim f as folderitem = DirectoryServicesFolderMBS(kUserDomain)
```

**Notes:**
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateDirectoryServicesFolder function.

148.1.210  DirectoryServicesPlugInsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
```cpp
const kUserDomain = -32763
dim f as folderitem = DirectoryServicesPlugInsFolderMBS(kUserDomain)
```

**Notes:**
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

Also take a look on the CreateDirectoryServicesPlugInsFolder function.
-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

148.1.211 DisplayExtensionsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbnet
const kUserDomain = -32763
dim f as folderitem = DisplayExtensionsFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateDisplayExtensionsFolder function.

148.1.212 DocumentationFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
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```vba
const kUserDomain = -32763
```

```vba
dim f as folderitem = DocumentationFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateDocumentationFolder function.
On Windows only the user and the system domain are supported.

148.1.213 DocumentsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
```

```vba
dim f as folderitem = DocumentsFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

Also take a look on the CreateDocumentsFolder function.
-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

148.1.214 DomainLibraryFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbscript
const kUserDomain = -32763
dim f as folderitem = DomainLibraryFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateDomainLibraryFolder function.

148.1.215 DomainTopLevelFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
const kUserDomain = -32763

\[
\text{dim f as folderitem = DomainTopLevelFolderMBS(kUserDomain)}
\]

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateDomainTopLevelFolder function.

148.1.216 DownloadsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

\[
\text{const kUserDomain = -32763}
\]
\[
\text{dim f as folderitem = DownloadsFolderMBS(kUserDomain)}
\]

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

Also take a look on the CreateDownloadsFolderMBS function.

148.1.217 EditorsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.
-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Example:

```javascript
const kUserDomain = -32763
dim f as folderitem = EditorsFolderMBS(kUserDomain)
```

Notes:

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateEditorsFolder function.

148.1.218  ExtensionDisabledFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

Example:

```javascript
const kUserDomain = -32763
dim f as folderitem = ExtensionDisabledFolderMBS(kUserDomain)
```

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk  
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateExtensionDisabledFolder function.

148.1.219  ExtensionFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem to this folder if it exists on that system.

Example:

const kUserDomain = -32763
dim f as folderitem = ExtensionFolderMBS(kUserDomain)

Notes:

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk  
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateExtensionFolder function.
148.1.220  FavoritesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
```
const kUserDomain = -32763
dim f as folderitem = FavoritesFolderMBS(kUserDomain)
```

**Notes:**
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk  
-32767  On Appropriate Disk  
-32766  System Domain, on Mac OS X mostly inside the folder /System.  
-32765  Local Domain (on Netbooting for example)  
-32764  Network Domain (on Netbooting for example)  
-32763  User Domain, on Mac OS X mostly inside the users folder.  
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateFavoritesFolder function.

148.1.221  FileSystemSupportFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
```
const kUserDomain = -32763
dim f as folderitem = FileSystemSupportFolderMBS(kUserDomain)
```

**Notes:**
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk  
-32767  On Appropriate Disk  
-32766  System Domain, on Mac OS X mostly inside the folder /System.  
-32765  Local Domain (on Netbooting for example)  
-32764  Network Domain (on Netbooting for example)  
-32763  User Domain, on Mac OS X mostly inside the users folder.  
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateFileSystemSupportFolder function.
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-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

148.1.222 FindByContentFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```
const kUserDomain = -32763
dim f as folderitem = FindByContentFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateFindByContentFolder function.

148.1.223 FindByContentIndexesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```
const kUserDomain = -32763

Dim f As FolderItem = FindByContentIndexesFolderMBS(kUserDomain)

Notes:

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateFindByContentIndexesFolderMBS function.

148.1.224 FindByContentPluginsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

Const kUserDomain = -32763
Dim f As FolderItem = FindByContentPluginsFolderMBS(kUserDomain)

Notes:

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

Also take a look on the CreateFindByContentPluginsFolderMBS function.

148.1.225 FindSupportFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.
148.1. **GLOBALS**

-32768 On System Disk  
-32767 On Appropriate Disk  
-32766 System Domain, on Mac OS X mostly inside the folder /System.  
-32765 Local Domain (on Netbooting for example)  
-32764 Network Domain (on Netbooting for example)  
-32763 User Domain, on Mac OS X mostly inside the users folder.  
-32762 Classic Domain, the current used Classic System folder.

**Example:**

```javascript
const kUserDomain = -32763
dim f as folderitem = FindSupportFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk  
-32767 On Appropriate Disk  
-32766 System Domain, on Mac OS X mostly inside the folder /System.  
-32765 Local Domain (on Netbooting for example)  
-32764 Network Domain (on Netbooting for example)  
-32763 User Domain, on Mac OS X mostly inside the users folder.  
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateFindSupportFolder function.

### 148.1.226 `FolderActionsFolderMBS(domain as Integer) as folderitem`

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.  

**Example:**

```javascript
const kUserDomain = -32763
dim f as folderitem = FolderActionsFolderMBS(kUserDomain)
```

**Notes:**
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateFolderActionsFolder function.

148.1.227  FontCollectionsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```
const kUserDomain = -32763
dim f as folderitem = FontCollectionsFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateFontCollectionsFolderMBS function.
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148.1.228  FontsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbnet
const kUserDomain = -32763
dim f as folderitem = FontsFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

- -32768  On System Disk
- -32767  On Appropriate Disk
- -32766  System Domain, on Mac OS X mostly inside the folder /System.
- -32765  Local Domain (on Netbooting for example)
- -32764  Network Domain (on Netbooting for example)
- -32763  User Domain, on Mac OS X mostly inside the users folder.
- -32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateFontsFolder function.

148.1.229  FrameworksFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbnet
const kUserDomain = -32763
dim f as folderitem = FrameworksFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

Also take a look on the CreateFrameworksFolder function.
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148.1.230 GenEditorsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem to this folder if it exists on that system.

Example:

const kUserDomain = -32763
dim f as folderitem = GenEditorsFolderMBS(kUserDomain)

Notes:

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateGenEditorsFolder function.

148.1.231 HelpFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem to this folder if it exists on that system.

Example:
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const kUserDomain = -32763
dim f as folderitem = HelpFolderMBS(kUserDomain)

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateHelpFolder function.

148.1.232 iMovieFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns a folderitem to this folder if it exists on that system.
Example:
const kUserDomain = -32763
dim f as folderitem = iMovieFolderMBS(kUserDomain)

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

Also take a look on the CreateiMovieFolderMBS function.

148.1.233 iMoviePlugInsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns a folderitem to this folder if it exists on that system.
CHAPTER 148. SPECIAL FOLDERS

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Example:

```
const kUserDomain = -32763
dim f as folderitem = iMoviePlugInsFolderMBS(kUserDomain)
```

Notes:

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateiMoviePlugInsFolderMBS function.

148.1.234 iMovieSoundEffectsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem to this folder if it exists on that system.

Example:

```
const kUserDomain = -32763
dim f as folderitem = iMovieSoundEffectsFolderMBS(kUserDomain)
```

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateiMovieSoundEffectsFolderMBS function.

148.1.235  IndexFilesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbnet
const kUserDomain = -32763
dim f as folderitem = IndexFilesFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateIndexFilesFolderMBS function.
148.1.236 InputManagersFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = InputManagersFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

- -32768 On System Disk
- -32767 On Appropriate Disk
- -32766 System Domain, on Mac OS X mostly inside the folder /System.
- -32765 Local Domain (on Netbooting for example)
- -32764 Network Domain (on Netbooting for example)
- -32763 User Domain, on Mac OS X mostly inside the users folder.
- -32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateInputManagersFolderMBS function.

148.1.237 InputMethodsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = InputMethodsFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

Also take a look on the CreateInputMethodsFolderMBS function.
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-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

148.1.238  InstallerLogsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbnet
cnst kUserDomain = -32763
dim f as folderitem = InstallerLogsFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateInstallerLogsFolder function.

148.1.239  InstallerReceiptsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
CHAPTER 148. SPECIAL FOLDERS

const kUserDomain = -32763
dim f as folderitem = InstallerReceiptsFolderMBS(kUserDomain)

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateInstallerReceiptsFolder function.

148.1.240  InternetFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem
to this folder if it exists on that system.
Example:
const kUserDomain = -32763
dim f as folderitem = InternetFolderMBS(kUserDomain)

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

Also take a look on the CreateInternetFolder function.

148.1.241  InternetPlugInFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem
to this folder if it exists on that system.
148.1. GLOBALS

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Example:

const kUserDomain = -32763
dim f as folderitem = InternetPlugInFolderMBS(kUserDomain)

Notes:

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateInternetPlugInFolder function.

148.1.242 InternetSearchSitesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem
to this folder if it exists on that system.
Example:

const kUserDomain = -32763
dim f as folderitem = InternetSearchSitesFolderMBS(kUserDomain)

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateInternetSearchSitesFolder function.

148.1.243  InternetSitesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.  
**Example:**

```pascal
const kUserDomain = -32763
dim f as folderitem = InternetSitesFolderMBS(kUserDomain)
```

**Notes:**
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateInternetSitesFolder function.
148.1.244  **ISSDownloadsFolderMBS**(*domain as Integer*) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbnet
cnst kUserDomain = -32763
dim f as folderitem = ISSDownloadsFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateISSDownloadsFolder function.

148.1.245  **KernelExtensionsFolderMBS**(*domain as Integer*) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbnet
cnst kUserDomain = -32763
dim f as folderitem = KernelExtensionsFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateKernelExtensionsFolder function.
148.1.246 KeyboardLayoutsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
cnst kUserDomain = -32763
dim f as folderitem = KeyboardLayoutsFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateKeyboardLayoutsFolderMBS function.

148.1.247 KeychainFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
148.1. GLOBALS

const kUserDomain = -32763
dim f as folderitem = KeychainFolderMBS(kUserDomain)

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateKeychainFolder function.

148.1.248 LauncherItemsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem
to this folder if it exists on that system.
Example:
const kUserDomain = -32763
dim f as folderitem = LauncherItemsFolderMBS(kUserDomain)

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

Also take a look on the CreateLauncherItemsFolder function.

148.1.249 LibraryAssistantsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns a folderitem to this folder if it exists on that system.
-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Example:

```plaintext
const kUserDomain = -32763
dim f as folderitem = LibraryAssistantsFolderMBS(kUserDomain)
```

Notes:

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateLibraryAssistantsFolderMBS function.

148.1.250 LocalesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = LocalesFolderMBS(kUserDomain)
```

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateLocalesFolder function.

148.1.251 LogsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The log files folder.

**Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = LogsFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateLogsFolderMBS function.
148.1.252 MacOSReadMesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbs
const kUserDomain = -32763
dim f as folderitem = MacOSReadMesFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateMacOSReadMesFolder function.

148.1.253 MagicTemporaryItemsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbs
const kUserDomain = -32763
dim f as folderitem = MagicTemporaryItemsFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateMagicTemporaryItemsFolderMBS function.
148.1. GLOBALS

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

148.1.254 ManagedItemsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = ManagedItemsFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateManagedItemsFolderMBS function.

148.1.255 MIDIDriversFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
const kUserDomain = -32763
dim f as folderitem = MIDIDriversFolderMBS(kUserDomain)

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateMIDIDriversFolder function.

148.1.256  ModemScriptsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

Example:
const kUserDomain = -32763
dim f as folderitem = ModemScriptsFolderMBS(kUserDomain)

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

Also take a look on the CreateModemScriptsFolder function.

148.1.257  MovieDocumentsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.
148.1.  GLOBALS

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Example:

```vba
const kUserDomain = -32763
dim f as folderitem = MovieDocumentsFolderMBS(kUserDomain)
```

Notes:

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateMovieDocumentsFolder function.

148.1.258  MultiprocessingFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = MultiprocessingFolderMBS(kUserDomain)
```

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateMultiprocessingFolder function.

148.1.259 MusicDocumentsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```text
const kUserDomain = -32763
dim f as folderitem = MusicDocumentsFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateMusicDocumentsFolder function.
148.1.260 OpenDocEditorsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbnet
const kUserDomain = -32763
dim f as folderitem = OpenDocEditorsFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateOpenDocEditorsFolder function.

148.1.261 OpenDocFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbnet
const kUserDomain = -32763
dim f as folderitem = OpenDocFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateOpenDocFolder function.
CHAPTER 148. SPECIAL FOLDERS

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

148.1.262 OpenDocLibrariesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
cnst kUserDomain = -32763
dim f as folderitem = OpenDocLibrariesFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateOpenDocLibrariesFolder function.

148.1.263 OpenDocShellPlugInsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
148.1. GLOBALS

const kUserDomain = -32763
dim f as folderitem = OpenDocShellPlugInsFolderMBS(kUserDomain)

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateOpenDocShellPlugInsFolder function.

148.1.264 PictureDocumentsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

const kUserDomain = -32763
dim f as folderitem = PictureDocumentsFolderMBS(kUserDomain)

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

Also take a look on the CreatePictureDocumentsFolder function.

As there is no such folder on Mac OS Classic, you always get nil there.
CHAPTER 148. SPECIAL FOLDERS

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

148.1.265 PreferencePanesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The preferences panes folder.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = PreferencePanesFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreatePreferencePanesFolderMBS function.

148.1.266 PreferencesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
148.1. GLOBALS

```vbs
dim f as folderitem

f = preferencesFolderMBS(-32763)
if f=nil then // On Windows always nil
f = applicationsupportFolderMBS(-32763)
end if

msgBox f.absolutePath
```

// example output:
// "Mac OS X:Users:cs:Library:Preferences:" on Mac OS X
// "Mac OS 9:Systemordner:Preferences" on a german Mac OS 9
// "C:\Dokumente und Einstellungen\Christian\Anwendungsdaten\" on a german Windows XP.

**Notes:**

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreatePreferencesFolder function.

148.1.267 PrinterDescriptionFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbs
const kUserDomain = -32763
dim f as folderitem = PrinterDescriptionFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreatePrinterDescriptionFolder function.

148.1.268  PrinterDriverFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem to this folder if it exists on that system.
Example:
const kUserDomain = -32763
dim f as folderitem = PrinterDriverFolderMBS(kUserDomain)

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreatePrinterDriverFolder function.
148.1.269  PrintersFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
```
const kUserDomain = -32763
dim f as folderitem = PrintersFolderMBS(kUserDomain)
```

**Notes:**
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

- -32768  On System Disk
- -32767  On Appropriate Disk
- -32766  System Domain, on Mac OS X mostly inside the folder /System.
- -32765  Local Domain (on Netbooting for example)
- -32764  Network Domain (on Netbooting for example)
- -32763  User Domain, on Mac OS X mostly inside the users folder.
- -32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreatePrintersFolder function.

148.1.270  PrintingPlugInsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
```
const kUserDomain = -32763
dim f as folderitem = PrintingPlugInsFolderMBS(kUserDomain)
```

**Notes:**
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

Also take a look on the CreatePrintingPlugInsFolder function.
-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

148.1.271 PrintMonitorDocsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = PrintMonitorDocsFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreatePrintMonitorDocsFolder function.

148.1.272 PrivateFrameworksFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
148.1. GLOBALS

const kUserDomain = -32763
dim f as folderitem = PrivateFrameworksFolderMBS(kUserDomain)

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreatePrivateFrameworksFolder function.

148.1.273  PublicFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

Example:
const kUserDomain = -32763
dim f as folderitem = PublicFolderMBS(kUserDomain)

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

Also take a look on the CreatePublicFolder function.

148.1.274  QuickLookFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.
-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Example:

const kUserDomain = -32763
dim f as folderitem = QuickLookFolderMBS(kUserDomain)

Notes:

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateQuickLookFolderMBS function.

148.1.275 QuickTimeComponentsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.  
**Example:**

const kUserDomain = -32763
dim f as folderitem = QuickTimeComponentsFolderMBS(kUserDomain)

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateQuickTimeComponentsFolder function.

148.1.276 QuickTimeExtensionsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = QuickTimeExtensionsFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateQuickTimeExtensionsFolder function.
148.1.277  RecentApplicationsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem to this folder if it exists on that system.

Example:

const kUserDomain = -32763
dim f as folderitem = RecentApplicationsFolderMBS(kUserDomain)

Notes:

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateRecentApplicationsFolder function.

148.1.278  RecentDocumentsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem to this folder if it exists on that system.

Example:

const kUserDomain = -32763
dim f as folderitem = RecentDocumentsFolderMBS(kUserDomain)

Notes:

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateRecentDocumentsFolder function.
148.1. **GLOBALS**

-32768 On System Disk  
-32767 On Appropriate Disk  
-32766 System Domain, on Mac OS X mostly inside the folder /System.  
-32765 Local Domain (on Netbooting for example)  
-32764 Network Domain (on Netbooting for example)  
-32763 User Domain, on Mac OS X mostly inside the users folder.  
-32762 Classic Domain, the current used Classic System folder.

### 148.1.279 `RecentServersFolderMBS(domain as Integer) as folderitem`

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.  
**Example:**

```vbnet
const kUserDomain = -32763
dim f as folderitem = RecentServersFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!  
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk  
-32767 On Appropriate Disk  
-32766 System Domain, on Mac OS X mostly inside the folder /System.  
-32765 Local Domain (on Netbooting for example)  
-32764 Network Domain (on Netbooting for example)  
-32763 User Domain, on Mac OS X mostly inside the users folder.  
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the `CreateRecentServersFolder` function.

### 148.1.280 `ScriptingAdditionsFolderMBS(domain as Integer) as folderitem`

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.  
**Example:**
const kUserDomain = -32763
dim f as folderitem = ScriptingAdditionsFolderMBS(kUserDomain)

Notes:

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateScriptingAdditionsFolder function.

148.1.281 ScriptsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

const kUserDomain = -32763
dim f as folderitem = ScriptsFolderMBS(kUserDomain)

Notes:

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

Also take a look on the CreateScriptsFolder function.

148.1.282 SharedLibrariesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.
148.1. GLOBALS

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Example:

```javascript
const kUserDomain = -32763
dim f as folderitem = SharedLibrariesFolderMBS(kUserDomain)
```

Notes:

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateSharedLibrariesFolder function.

148.1.283 SharedUserDataFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem to this folder if it exists on that system.

Example:

```javascript
const kUserDomain = -32763
dim f as folderitem = SharedUserDataFolderMBS(kUserDomain)
```

Notes:
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Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateSharedUserDataFolder function.

### 148.1.284 ShutdownFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbnet
const kUserDomain = -32763
dim f as folderitem = ShutdownFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateShutdownFolder function.
148.1.285  **ShutdownItemsDisabledFolderMBS(domain as Integer) as folderitem**

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = ShutdownItemsDisabledFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768  On System Disk  
-32767  On Appropriate Disk  
-32766  System Domain, on Mac OS X mostly inside the folder /System.  
-32765  Local Domain (on Netbooting for example)  
-32764  Network Domain (on Netbooting for example)  
-32763  User Domain, on Mac OS X mostly inside the users folder.  
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateShutdownItemsDisabledFolder function.

148.1.286  **SoundSetsFolderMBS(domain as Integer) as folderitem**

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = SoundSetsFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768  On System Disk  
-32767  On Appropriate Disk  
-32766  System Domain, on Mac OS X mostly inside the folder /System.  
-32765  Local Domain (on Netbooting for example)  
-32764  Network Domain (on Netbooting for example)  
-32763  User Domain, on Mac OS X mostly inside the users folder.  
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateSoundSetsFolder function.
-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

148.1.287 SpeakableItemsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = SpeakableItemsFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateSpeakableItemsFolder function.

148.1.288 SpeechFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
const kUserDomain = -32763
dim f as folderitem = SpeechFolderMBS(kUserDomain)

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateSpeechFolder function.

148.1.289  SpotlightImportersFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a folderitem to this folder if it exists on that system.
**Example:**

const kUserDomain = -32763
dim f as folderitem = SpotlightImportersFolderMBS(kUserDomain)

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

Also take a look on the CreateSpotlightImportersFolderMBS function.

148.1.290  SpotlightMetadataCacheFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns a folderitem to this folder if it exists on that system.
-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Example:

```
const kUserDomain = -32763
dim f as folderitem = SpotlightMetadataCacheFolderMBS(kUserDomain)
```

Notes:

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateSpotlightMetadataCacheFolderMBS function.

### 148.1.291  SpotlightSavedSearchesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```
const kUserDomain = -32763
dim f as folderitem = SpotlightSavedSearchesFolderMBS(kUserDomain)
```

**Notes:**
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateSpotlightSavedSearchesFolderMBS function.

148.1.292 StartupFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = StartupFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateStartupFolder function.
148.1.293  **StartupItemsDisabledFolderMBS**(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = StartupItemsDisabledFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateStartupItemsDisabledFolder function.

148.1.294  **StationeryFolderMBS**(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = StationeryFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateStationeryFolder function.
148.1. **GLOBALS**

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

---

### 148.1.295 SystemControlPanelFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vbnet
const kUserDomain = -32763
dim f as folderitem = SystemControlPanelFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateSystemControlPanelFolder function.

---

### 148.1.296 SystemDesktopFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
const kUserDomain = -32763
dim f as folderitem = SystemDesktopFolderMBS(kUserDomain)

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateSystemDesktopFolder function.

148.1.297  SystemExtensionDisabledFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

Example:

const kUserDomain = -32763
dim f as folderitem = SystemExtensionDisabledFolderMBS(kUserDomain)

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

Also take a look on the CreateSystemExtensionDisabledFolder function.

148.1.298  SystemFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.
148.1. GLOBALS

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Example:

```plaintext
const kUserDomain = -32763
dim f as folderitem = SystemFolderMBS(kUserDomain)
```

Notes:

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateSystemFolder function.

148.1.299 SystemPreferencesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = SystemPreferencesFolderMBS(kUserDomain)
```

**Notes:**
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateSystemPreferencesFolder function.

148.1.300  SystemSoundsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem to this folder if it exists on that system.
Example:

const kUserDomain = -32763
dim f as folderitem = SystemSoundsFolderMBS(kUserDomain)

Notes:

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateSystemSoundsFolder function.
148.1.301  **SystemTrashFolderMBS**(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = SystemTrashFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

- `-32768`  On System Disk
- `-32767`  On Appropriate Disk
- `-32766`  System Domain, on Mac OS X mostly inside the folder `/System`
- `-32765`  Local Domain (on Netbooting for example)
- `-32764`  Network Domain (on Netbooting for example)
- `-32763`  User Domain, on Mac OS X mostly inside the users folder.
- `-32762`  Classic Domain, the current used Classic System folder.

Also take a look on the CreateSystemTrashFolder function.

148.1.302  **TemporaryFolderMBS**(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = TemporaryFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

Also take a look on the CreateTemporaryFolder function.
148.1.303 TemporaryItemsInCacheDataFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```vba
const kUserDomain = -32763
dim f as folderitem = TemporaryItemsInCacheDataFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version! The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateTemporaryItemsInCacheDataFolderMBS function.

148.1.304 TemporaryItemsInUserDomainFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
148.1. GLOBALS

const kUserDomain = -32763

dim f as folderitem = TemporaryItemsInUserDomainFolderMBS(kUserDomain)

Notes:

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateTemporaryItemsInUserDomainFolderMBS function.

148.1.305 TextEncodingsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

const kUserDomain = -32763

dim f as folderitem = TextEncodingsFolderMBS(kUserDomain)

Notes:

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

Also take a look on the CreateTextEncodingsFolder function.

148.1.306 ThemesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.
CHAPTER 148. SPECIAL FOLDERS

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Example:

const kUserDomain = -32763
dim f as folderitem = ThemesFolderMBS(kUserDomain)

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768  On System Disk
-32767  On Appropriate Disk
-32766  System Domain, on Mac OS X mostly inside the folder /System.
-32765  Local Domain (on Netbooting for example)
-32764  Network Domain (on Netbooting for example)
-32763  User Domain, on Mac OS X mostly inside the users folder.
-32762  Classic Domain, the current used Classic System folder.

Also take a look on the CreateThemesFolder function.

148.1.307  TrashFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem
to this folder if it exists on that system.
Example:

const kUserDomain = -32763
dim f as folderitem = TrashFolderMBS(kUserDomain)

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateTrashFolder function.

148.1.308 UsersFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = UsersFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateUserStorageFolder function.
148.1.309 **UserSpecificTmpFolderMBS**(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```dim f as folderitem = UserSpecificTmpFolderMBS(kUserDomain)```

**Notes:**

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768 On System Disk  
-32767 On Appropriate Disk  
-32766 System Domain, on Mac OS X mostly inside the folder /System.  
-32765 Local Domain (on Netbooting for example)  
-32764 Network Domain (on Netbooting for example)  
-32763 User Domain, on Mac OS X mostly inside the users folder.  
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateUserSpecificTmpFolder function.

148.1.310 **UtilitiesFolderMBS**(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```dim f as folderitem = UtilitiesFolderMBS(kUserDomain)```

**Notes:**

Note that not every folder exists on every Mac OS Version!

The codes for domain are (The Demo includes a module for these):

-32768 On System Disk  
-32767 On Appropriate Disk  
-32766 System Domain, on Mac OS X mostly inside the folder /System.  
-32765 Local Domain (on Netbooting for example)  
-32764 Network Domain (on Netbooting for example)  
-32763 User Domain, on Mac OS X mostly inside the users folder.  
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateUtilitiesFolder function.
148.1. GLOBALS

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

148.1.311 VoicesFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

```plaintext
const kUserDomain = -32763
dim f as folderitem = VoicesFolderMBS(kUserDomain)
```

**Notes:**

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateVoicesFolder function.

148.1.312 VolumeRootFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**
const kUserDomain = -32763
dim f as folderitem = VolumeRootFolderMBS(kUserDomain)

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateVolumeRootFolder function.

148.1.313 VolumeSettingsFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem to this folder if it exists on that system.
Example:
const kUserDomain = -32763
dim f as folderitem = VolumeSettingsFolderMBS(kUserDomain)

Notes:
Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

Also take a look on the CreateVolumeSettingsFolder function.

148.1.314 WhereToEmptyTrashFolderMBS(domain as Integer) as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a folderitem to this folder if it exists on that system.
-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Example:

```javascript
const kUserDomain = -32763
dim f as folderitem = WhereToEmptyTrashFolderMBS(kUserDomain)
```

Notes:

Note that not every folder exists on every Mac OS Version!
The codes for domain are (The Demo includes a module for these):

-32768 On System Disk
-32767 On Appropriate Disk
-32766 System Domain, on Mac OS X mostly inside the folder /System.
-32765 Local Domain (on Netbooting for example)
-32764 Network Domain (on Netbooting for example)
-32763 User Domain, on Mac OS X mostly inside the users folder.
-32762 Classic Domain, the current used Classic System folder.

Also take a look on the CreateWhereToEmptyTrashFolder function.

148.1.315 WindowsBurnAreaFolderMBS as folderitem

MBS Util Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the folder which Windows uses to store temporary data for burning a CD/DVD. **Notes:** Returns nil on any error.
148.1.316  WindowsFolderMBS as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

dim f as folderitem
f=WindowsFolderMBS

148.1.317  WindowsSystemFolderMBS as folderitem

MBS Util Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns a folderitem to this folder if it exists on that system.

**Example:**

dim f as folderitem
f=WindowsSystemFolderMBS
Chapter 149

Speech

149.1 class NSSpeechRecognizerMBS

149.1.1 class NSSpeechRecognizerMBS

MBS MacCocoa Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class to handle the cocoa speech recognition. **Notes:** Available in Mac OS X v10.3 and later.

149.1.2 Methods

149.1.3 commands as string()

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the current list of commands.

149.1.4 Destructor


149.1.5 SetCommands(commands() as string)

MBS MacCocoa Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the list of commands for which the receiver should listen to commands.
Notes: If the receiver is already listening, the current command list is updated and listening continues. commands should be an array of strings. The commands must be in U.S. English.

### 149.1.6 StartListening

MBS MacCocoa Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Tells the speech recognition engine to begin listening for commands.  
**Notes:** When a command is recognized the message didRecognizeCommand is called.

### 149.1.7 StopListening

MBS MacCocoa Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Tells the speech recognition engine to suspend listening for commands.

### 149.1.8 Properties

#### 149.1.9 BlocksOtherRecognizers as boolean

MBS MacCocoa Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the receiver should block all other recognizers (that is, other applications attempting to understand spoken commands) when listening.  
**Notes:** (Read and Write property)

#### 149.1.10 DisplayedCommandsTitle as string

MBS MacCocoa Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the title of the commands section or "" if there is no title.  
**Notes:** Commands are displayed in the Speech Commands window indented under a section with this title. (Read and Write property)

#### 149.1.11 ListensInForegroundOnly as boolean

MBS MacCocoa Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the receiver should only enable its commands when the receiver’s application is the frontmost one.
149.1. CLASS NSSPEECHRECOGNIZERMBS

Notes: (Read and Write property)

149.1.12 Events

149.1.13 DidRecognizeCommand(command as string)

MBS MacCocoa Plugin, Plugin Version: 6.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Invoked when the recognition engine has recognized the application command command. **Notes:** command is one of the strings from the array passed to setCommands. The delegate typically evaluates which command was recognized and performs the related action.
149.2  class NSSpeechSynthesizerMBS

149.2.1  class NSSpeechSynthesizerMBS

**Function:** The class to handle the cocoa speech synthesizing.  
**Notes:**  
Available in Mac OS X v10.3 and later.

More details on Apple’s website:  

149.2.2  Methods

149.2.3  addSpeechDictionary(speechDictionary as dictionary)

**Function:** Registers the given speech dictionary with the receiver.  
**Notes:**  
speechDictionary: Speech dictionary to add to the receiver’s dictionaries.  

See the discussion of UseSpeechDictionary in Speech Synthesis Manager Reference for more information.  
Available in OS X v10.5 and later.

149.2.4  attributesForVoice(voice as String) as NSVoiceMBS

**Function:** Returns information about a voice or nil.

149.2.5  availableVoice(index as Integer) as String

**Function:** Returns name of a voice.  
**Notes:**  
The available voices can be listed using this function.  
Index is from 0 to count-1.
149.2. CLASS NSSpeechSynthesizerMBS

149.2.6 availableVoices as String()

Function: Returns the array with the identifiers for the available voices.
Example:
MsgBox Join(NSSpeechSynthesizerMBS.availableVoices)

Notes: Same as availableVoice() and availableVoicesCount, but this function returns an array which is very useful for for-each-loops.

149.2.7 availableVoicesCount as Integer


149.2.8 Constructor

Notes:
This constructor is needed for the events to fire.
The given voice must be valid!
See also:
  • 149.2.9 Constructor(voice as string)

149.2.9 Constructor(voice as string)

Notes: This constructor is needed for the events to fire.
See also:
  • 149.2.8 Constructor

149.2.10 continueSpeaking

MBS MacCocoa Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Continues speaking after it has been paused.
CHAPTER 149. SPEECH

Notes: Mac OS X 10.5 only.

149.2.11 defaultVoice as String

Example:

```plaintext
dim s as NSSpeechSynthesizerMBS
s=new NSSpeechSynthesizerMBS
MsgBox s.defaultVoice
```

149.2.12 Destructor


149.2.13 isAnyApplicationSpeaking as boolean

MBS MacCocoa Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Indicates whether any other application is currently speaking through the sound output device.

149.2.14 NSSpeechCharacterModeProperty as String

MBS MacCocoa Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the constants used with setObjectForProperty and objectForProperty to get or set the characteristics of a synthesizer.
Example:

```plaintext
dim s as new NSSpeechSynthesizerMBS
dim e as NSErrorMBS
call s.setObjectForProperty(s.NSSpeechModeLiteral, s.NSSpeechCharacterModeProperty, e)
msgBox s.objectForProperty(s.NSSpeechCharacterModeProperty, e)
call s.setObjectForProperty(s.NSSpeechModeNormal, s.NSSpeechCharacterModeProperty, e)
msgBox s.objectForProperty(s.NSSpeechCharacterModeProperty, e)
```
Notes:
Get or set the synthesizer’s current text-processing mode. A string that specifies whether the channel is currently in text input mode or phoneme input mode. When the character-processing mode is NSSpeechModeNormal, input characters are spoken as you would expect to hear them. When the mode is NSSpeechModeLiteral, each character is spoken literally, so that the word "cat" is spoken "CAT".
Available in OS X v10.5 and later.

149.2.15 NSSpeechCommandDelimiterProperty as String

Function: One of the constants used with setObjectForProperty and objectForProperty to get or set the characteristics of a synthesizer.
Notes:
Set the embedded speech command delimiter characters to be used for the synthesizer. A dictionary that contains the delimiter information. See "Command Delimiter Keys" for the keys you can use to specify values in this dictionary.
By default, the opening delimiter is " [ [ " and the closing delimiter is " ] ] ". Your application might need to change these delimiters temporarily if those character sequences occur naturally in a text buffer that is to be spoken. Your application can also disable embedded command processing by passing empty delimiters (as empty strings). See "Speech Command Delimiter" for the keys you can use to specify values in this dictionary.
Available in OS X v10.5 and later.

149.2.16 NSSpeechCommandPrefix as String

Function: One of the constants speech-command delimiters keys used in NSSpeechCommandDelimiterProperty.
Notes:
The command delimiter string that prefixes a command, by default, this is [ [ .
Available in OS X v10.5 and later.

149.2.17 NSSpeechCommandSuffix as String

Function: One of the constants speech-command delimiters keys used in NSSpeechCommandDelimiterProperty.
Notes:
The command delimiter string that suffices a command, by default, this is ]] . Available in OS X v10.5 and later.

**149.2.18 NSSpeechCurrentVoiceProperty as String**


**Function:** One of the constants used with setObjectForProperty and objectForProperty to get or set the characteristics of a synthesizer.

**Notes:**
Set the current voice on the synthesizer to the specified voice. A dictionary that contains the phoneme symbols and example words defined for the current synthesizer. Your application might use this information to show the user what symbols to use when entering phonemic text directly. See "NSSpeechPhonemeSymbolsProperty Dictionary Keys" for the keys you can use to specify values in this dictionary.
Available in OS X v10.5 and later.

**149.2.19 NSSpeechDictionaryAbbreviations as String**


**Function:** One of the constants identify key-value pairs used to add vocabulary to the dictionary using addSpeechDictionary.

**Notes:**
An array of dictionary objects containing the keys NSSpeechDictionaryEntrySpelling and NSSpeechDictionaryEntryPhonemes.
Available in OS X v10.5 and later.

**149.2.20 NSSpeechDictionaryEntryPhonemes as String**


**Function:** One of the constants identify key-value pairs used to add vocabulary to the dictionary using addSpeechDictionary.

**Notes:**
The phonemic representation of an entry. A string.
Available in OS X v10.5 and later.
149.2.21 NSSpeechDictionaryEntrySpelling as String

Function: One of the constants identify key-value pairs used to add vocabulary to the dictionary using addSpeechDictionary.
Notes:
The spelling of an entry. A string.
Available in OS X v10.5 and later.

149.2.22 NSSpeechDictionaryLocaleIdentifier as String

Function: One of the constants identify key-value pairs used to add vocabulary to the dictionary using addSpeechDictionary.
Notes:
The canonical locale identifier string describing the dictionary’s locale. A locale is generally composed of three pieces of ordered information: a language code, a region code, and a variant code. Refer to documentation about NSLocale or Locales Programming Guide for more information
Available in OS X v10.5 and later.

149.2.23 NSSpeechDictionaryModificationDate as String

Function: One of the constants identify key-value pairs used to add vocabulary to the dictionary using addSpeechDictionary.
Notes:
A string representation of the dictionary’s last modification date in the international format (YYYY-MM-DD HH:MM:SS HHMM). If the same word appears across multiple dictionaries, the one from the dictionary with the most recent date will be used.
Available in OS X v10.5 and later.

149.2.24 NSSpeechDictionaryPronunciations as String

Function: One of the constants identify key-value pairs used to add vocabulary to the dictionary using addSpeechDictionary.
Notes: An array of dictionary objects containing the keys NSSpeechDictionaryEntrySpelling and NSSpeechDictionaryEntryPhonemes.
149.2.25 NSSpeechErrorCount as String

Function: One of the key constants identify errors that may occur during speech synthesis. They are used with NSSpeechErrorsProperty.
Notes:
The number of errors that have occurred in processing the current text string, since the last call to objectForProperty with the NSSpeechErrorsProperty property. A Number
Using the NSSpeechErrorOldestCode keys and the NSSpeechErrorNewestCode keys, you can get information about the oldest and most recent errors that occurred since the last call to objectForProperty, but you cannot get information about any intervening errors.
Available in OS X v10.5 and later.

149.2.26 NSSpeechErrorNewestCharacterOffset as String

Function: One of the key constants identify errors that may occur during speech synthesis. They are used with NSSpeechErrorsProperty.
Notes:
The position in the text string of the most recent error that occurred since the last call to objectForProperty with the NSSpeechErrorsProperty property. A Number.
Available in OS X v10.5 and later.

149.2.27 NSSpeechErrorNewestCode as String

Function: One of the key constants identify errors that may occur during speech synthesis. They are used with NSSpeechErrorsProperty.
Notes:
The error code of the most recent error that occurred since the last call to objectForProperty with the NSSpeechErrorsProperty property. A number
Available in OS X v10.5 and later.

149.2.28 NSSpeechErrorOldestCharacterOffset as String

Function: One of the key constants identify errors that may occur during speech synthesis. They are used with NSSpeechErrorsProperty.
Notes:
The position in the text string of the first error that occurred since the last call to objectForProperty with the NSSpeechErrorsProperty property. A number
Available in OS X v10.5 and later.

149.2.29 NSSpeechErrorOldestCode as String

Function: One of the key constants identify errors that may occur during speech synthesis. They are used with NSSpeechErrorsProperty.
Notes:
The error code of the first error that occurred since the last call to objectForProperty with the NSSpeechErrorsProperty property. A Number
Available in OS X v10.5 and later.

149.2.30 NSSpeechErrorsProperty as String

Function: One of the constants used with setObjectForProperty and objectForProperty to get or set the characteristics of a synthesizer.
Notes:
This property lets you get information about various run-time errors that occur during speaking, such as the detection of badly formed embedded commands. Errors returned directly by the Speech Synthesis Manager are not reported here.
If your application implements the didEncounterErrorAtIndex event, the event can use this property to get error information.
Available in OS X v10.5 and later.

149.2.31 NSSpeechInputModeProperty as String

Function: One of the constants used with setObjectForProperty and objectForProperty to get or set the characteristics of a synthesizer.
Notes:
Get or set the synthesizer’s current text-processing mode. A string that specifies whether the channel is currently in text input mode or phoneme input mode. The supported values are listed in "Speaking Modes for NSSpeechInputModeProperty."
When in phoneme-processing mode, a text string is interpreted to be a series of characters representing various phonemes and prosodic controls. Some synthesizers might support additional input-processing modes
and define constants for these modes.
Available in OS X v10.5 and later.

149.2.32 NSSpeechModeLiteral as String

Function: One of the constants defining the available text-processing and number-processing modes for a
synthesizer. This key is used with NSSpeechInputModeProperty and NSSpeechNumberModeProperty.
Notes:
Indicates that each digit or character is spoken literally (so that 12 is spoken as "one, two", or the word
"cat" is spoken as "C A T").
Available in OS X v10.5 and later.

149.2.33 NSSpeechModeNormal as String

Function: One of the constants defining the available text-processing and number-processing modes for a
synthesizer. This key is used with NSSpeechInputModeProperty and NSSpeechNumberModeProperty.
Notes:
Indicates that the synthesizer assembles digits into numbers (so that 12 is spoken as "twelve") and text into
words.
Available in OS X v10.5 and later.

149.2.34 NSSpeechModePhoneme as String

Function: One of the constants identify input modes are used with NSSpeechInputModeProperty.
Notes:
Indicates that the synthesizer is in phoneme-processing mode. When in phoneme-processing mode, a text
buffer is interpreted to be a series of characters representing various phonemes and prosodic controls.
Available in OS X v10.5 and later.

149.2.35 NSSpeechModeText as String

Function: One of the constants identify input modes are used with NSSpeechInputModeProperty.
Notes:
Indicates that the synthesizer is in text-processing mode.
Available in OS X v10.5 and later.

149.2.36 NSSpeechNumberModeProperty as String

Function: One of the constants used with setObjectForProperty and objectForProperty to get or set the
characteristics of a synthesizer.
Example:

dim s as new NSSpeechSynthesizerMBS
dim e as NSErrorMBS

call s.setObjectForProperty(s.NSSpeechModeLiteral, s.NSSpeechNumberModeProperty, e)
msgBox s.objectForProperty(s.NSSpeechNumberModeProperty, e)

call s.setObjectForProperty(s.NSSpeechModeNormal, s.NSSpeechNumberModeProperty, e)
msgBox s.objectForProperty(s.NSSpeechNumberModeProperty, e)

Notes:
Get or set the synthesizer’s current number-processing mode. A string that specifies whether the synthe-
sizer is currently in normal or literal number-processing mode. The constants NSSpeechModeNormal and
NSSpeechModeLiteral are the possible values of this string.
When the number-processing mode is NSSpeechModeNormal, the synthesizer assembles digits into numbers
(so that ”12” is spoken as ”twelve”). When the mode is NSSpeechModeLiteral, each digit is spoken literally
(so that ”12” is spoken as ”one, two”).
Available in OS X v10.5 and later.

149.2.37 NSSpeechOutputToFileURLProperty as String

Function: One of the constants used with setObjectForProperty and objectForProperty to get or set the
characteristics of a synthesizer.
Notes:
Set the speech output destination to a file or to the computer’s speakers. A NSURL object. To write the
speech output to a file, use the file’s NSURL; to generate the sound through the computer’s speakers, use
nil.
Available in OS X v10.5 and later.
149.2.38 NSSpeechPhonemeInfoExample as String

**Function:** One of the keys used in the NSSpeechPhonemeSymbolsProperty dictionary.
**Notes:**
An example word that illustrates the use of the phoneme.
Available in OS X v10.5 and later.

149.2.39 NSSpeechPhonemeInfoHiliteEnd as String

**Function:** One of the keys used in the NSSpeechPhonemeSymbolsProperty dictionary.
**Notes:**
The character offset into the example word that identifies the location of the end of the phoneme.
Available in OS X v10.5 and later.

149.2.40 NSSpeechPhonemeInfoHiliteStart as String

**Function:** One of the keys used in the NSSpeechPhonemeSymbolsProperty dictionary.
**Notes:**
The character offset into the example word that identifies the location of the beginning of the phoneme.
Available in OS X v10.5 and later.

149.2.41 NSSpeechPhonemeInfoOpcode as String

**Function:** One of the keys used in the NSSpeechPhonemeSymbolsProperty dictionary.
**Notes:**
The opcode as Number.
Available in OS X v10.5 and later.

149.2.42 NSSpeechPhonemeInfoSymbol as String

**Function:** One of the keys used in the NSSpeechPhonemeSymbolsProperty dictionary.
**Notes:**
149.2. CLASS NSSPEECHSYNTHESIZERMBS

149.2.43 NSSpeechPhonemeSymbolsProperty as String

**Function:** One of the constants used with setObjectForProperty and objectForProperty to get or set the characteristics of a synthesizer.
**Notes:**
Get a list of phoneme symbols and example words defined for the synthesizer. A Dictionary object that contains the phoneme symbols and example words defined for the current synthesizer.
Your application might use this information to show the user what symbols to use when entering phonemic text directly. See "NSSpeechPhonemeSymbolsProperty Dictionary Keys" for a description of the keys present in the dictionary.
Available in OS X v10.5 and later.

149.2.44 NSSpeechPitchBaseProperty as String

**Function:** One of the constants used with setObjectForProperty and objectForProperty to get or set the characteristics of a synthesizer.
**Example:**
```
dim s as new NSSpeechSynthesizerMBS
dim e as NSErrorMBS

dim n as Integer = s.objectForProperty(s.NSSpeechPitchBaseProperty, e)
msgBox str(n)
```
**Notes:**
Get or set a synthesizer’s baseline speech pitch. An number that specifies the baseline speech pitch.
Typical voice frequencies range from around 90 hertz for a low-pitched male voice to perhaps 300 hertz for a high-pitched child’s voice. These frequencies correspond to approximate pitch values in the ranges of 30.000 to 40.000 and 55.000 to 65.000, respectively.
Note: The change in speech pitch may not be noticeable until the next sentence or paragraph is spoken.
Available in OS X v10.5 and later.
149.2.45 NSSpeechPitchModProperty as String

**Function:** One of the constants used with setObjectForProperty and objectForProperty to get or set the characteristics of a synthesizer.  
**Example:**
```vbscript
dim s as new NSSpeechSynthesizerMBS  
dim e as NSErrorMBS  

dim n as Double = s.objectForProperty(s.NSSpeechPitchModProperty, e)  
msgBox str(n)
```

**Notes:**  
Get or set a synthesizer’s pitch modulation. A number object that specifies the synthesizer’s pitch modulation.  
Pitch modulation is also expressed as a floating-point value in the range of 0.000 to 127.000. These values correspond to MIDI note values, where 60.000 is equal to middle C on a piano scale. The most useful speech pitches fall in the range of 40.000 to 55.000. A pitch modulation value of 0.000 corresponds to a monotone in which all speech is generated at the frequency corresponding to the speech pitch. Given a speech pitch value of 46.000, a pitch modulation of 2.000 would mean that the widest possible range of pitches corresponding to the actual frequency of generated text would be 44.000 to 48.000.

Note: The change in pitch modulation may not be noticeable until the next sentence or paragraph is spoken. Available in OS X v10.5 and later.

149.2.46 NSSpeechRateProperty as String

**Function:** One of the constants used with setObjectForProperty and objectForProperty to get or set the characteristics of a synthesizer.  
**Example:**
```vbscript
dim s as new NSSpeechSynthesizerMBS  
dim e as NSErrorMBS  

dim value as Double = s.objectForProperty(s.NSSpeechRateProperty, e)  
MsgBox str(value)
```

**Notes:**  
Get or set the synthesizer’s baseline speech pitch. A number that specifies the synthesizer’s baseline speech pitch.
Typical voice frequencies range from around 90 hertz for a low-pitched male voice to perhaps 300 hertz for a high-pitched child's voice. These frequencies correspond to approximate pitch values in the ranges of 30,000 to 40,000 and 55,000 to 65,000, respectively.
Available in OS X v10.5 and later.

### 149.2.47 NSSpeechRecentSyncProperty as String

**Function:** One of the constants used with setObjectForProperty and objectForProperty to get or set the characteristics of a synthesizer.
**Notes:**
Get the message code for the most recently encountered synchronization command. A number that specifies the most recently encountered synchronization command.

Available in OS X v10.5 and later.

### 149.2.48 NSSpeechResetProperty as String

**Function:** One of the constants used with setObjectForProperty to get or set the characteristics of a synthesizer.
**Notes:**
Set a synthesizer back to its default state. There is no value associated with this property; to reset the channel to its default state, set the key to nil.
You can use this function to, for example, set speech pitch and speech rate to default values.
Available in OS X v10.5 and later.

### 149.2.49 NSSpeechStatusNumberOfCharactersLeft as String

**Function:** One of the constants identify speech status keys used with NSSpeechStatusProperty.
**Notes:**
The number of characters left in the input string of text.
When the value of this key is zero, you can destroy the input string.
Available in OS X v10.5 and later.
149.2.50 NSSpeechStatusOutputBusy as String

Function: One of the constants identify speech status keys used with NSSpeechStatusProperty.
Notes:
Indicates whether the synthesizer is currently producing speech.
A synthesizer is considered to be producing speech even at some times when no audio data is being produced through the computer’s speaker. This occurs, for example, when the synthesizer is processing input, but has not yet initiated speech or when speech output is paused.
Available in OS X v10.5 and later.

149.2.51 NSSpeechStatusOutputPaused as String

Function: One of the constants identify speech status keys used with NSSpeechStatusProperty.
Notes:
Indicates whether speech output in the synthesizer has been paused by sending the message pauseSpeakingAt-Boundary.
Available in OS X v10.5 and later.

149.2.52 NSSpeechStatusPhonemeCode as String

Function: One of the constants identify speech status keys used with NSSpeechStatusProperty.
Notes:
Indicates that the synthesizer is in phoneme-processing mode. When in phoneme-processing mode, a text buffer is interpreted to be a series of characters representing various phonemes and prosodic controls.
Available in OS X v10.5 and later.

149.2.53 NSSpeechStatusProperty as String

Function: One of the constants used with setObjectForProperty and objectForProperty to get or set the characteristics of a synthesizer.
Example:

```dim s as new NSSpeechSynthesizerMBS
dim e as NSErrorMBS

call s.startSpeakingString "Hello"
```
149.2. CLASS NSSPEECHSYNTHESIZERMBS

```vbnet
dim status as Dictionary = s.objectForProperty(s.NSSpeechStatusProperty, e)
dim CharactersLeft as Integer = status.Value(s.NSSpeechStatusNumberOfCharactersLeft)

MsgBox str(CharactersLeft)+" Characters left"
```

Notes:
Get speech-status information for the synthesizer. A dictionary that contains speech-status information for
the synthesizer. See "NSSpeechStatusProperty Dictionary Keys" for a description of the keys present in the
dictionary.
Available in OS X v10.5 and later.

149.2.54 NSSpeechSynthesizerInfoIdentifier as String

Function: One of the constants are keys used in the NSSpeechSynthesizerInfoProperty dictionary.
Notes: The identifier of the speech synthesizer.
Available in OS X v10.5 and later.

149.2.55 NSSpeechSynthesizerInfoProperty as String

Function: One of the constants used with setObjectForProperty and objectForProperty to get or set the
characteristics of a synthesizer.
Notes: Get information about the speech synthesizer being used on the specified synthesizer. A dictionary object
that contains information about the speech synthesizer being used on the specified synthesizer. See "Speech
Synthesizer Property Keys" for a description of the keys present in the dictionary.
Available in OS X v10.5 and later.

149.2.56 NSSpeechSynthesizerInfoVersion as String

Function: One of the constants are keys used in the NSSpeechSynthesizerInfoProperty dictionary.
Notes: The version of the speech synthesizer.
Available in OS X v10.5 and later.
149.2.57 NSSpeechVolumeProperty as String

**Function:** One of the constants used with setObjectForProperty and objectForProperty to get or set the characteristics of a synthesizer.  
**Example:**

```vbnet
dim s as new NSSpeechSynthesizerMBS  
dim e as NSErrorMBS  
dim value as Double = s.objectForProperty(s.NSSpeechVolumeProperty, e)  
MsgBox str(value)
```

**Notes:**

Get or set the speech volume for a synthesizer. A Number that specifies the synthesizer’s speech volume. Volumes are expressed in floating-point values ranging from 0.0 through 1.0. A value of 0.0 corresponds to silence, and a value of 1.0 corresponds to the maximum possible volume. Volume units lie on a scale that is linear with amplitude or voltage. A doubling of perceived loudness corresponds to a doubling of the volume. Available in OS X v10.5 and later.

You may prefer to simply use the volume property.

149.2.58 objectForProperty(PropertyName as string, byref error as NSErrorMBS) as Variant

**Function:** Provides the value of a receiver’s property.  
**Notes:**

PropertyName: Property to get.  
error: On output, error that occurred while obtaining the value of speechProperty.

Returns the value of speechProperty.  
Available in OS X v10.5 and later.

149.2.59 pauseSpeakingAtBoundary(boundary as Integer)

**Function:** Pauses the speaking on the given boundary.
149.2. CLASS NSSPEECHSYNTHESIZERMBS

Example:

```vba
dim s as NSSpeechSynthesizerMBS // your synthesizer
s.pauseSpeakingAtBoundary s.NSSpeechSentenceBoundary // pause on end of sentence.
```

Notes:

Mac OS X 10.5 only.
boundary can be NSSpeechImmediateBoundary, NSSpeechSentenceBoundary or NSSpeechWordBoundary.

### 149.2.60 phonemesFromText(text as string) as string

**Function:** Returns the phonems from a given text.

**Example:**

```vba
dim s as new NSSpeechSynthesizerMBS
MsgBox s.phonemesFromText("Hello")
// shows ".hEHl1OW."
```

Notes: Mac OS X 10.5 only.

### 149.2.61 setObjectForProperty(value as Variant, PropertyName as string, byref error as NSErrorMBS) as boolean


**Function:** Specifies the value of a receiver’s property.

**Notes:**

PropertyName: Property to set.
Error: On output, error that occurred while setting speechProperty.

Returns true when the speechProperty was set. False when there was an error, specified in error.
Available in OS X v10.5 and later.
149.2.62  **SetVoice(voice as string) as boolean**

MBS MacCocoa Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Sets the receiver’s current voice.  
**Notes:** Returns true on success.

149.2.63  **StartSpeakingString(text as string) as boolean**

MBS MacCocoa Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Begins speaking synthesized text through the system’s default sound output device.  
**Example:**
```
dim s as new NSSpeechSynthesizerMBS
s.rate=300 // not slow
s.volume=0.5 // not loud
call s.startSpeakingString "Hello World"
```

**Notes:**  
Returns true when synthesis starts successfully, false otherwise.

If the receiver is currently speaking synthesized speech when startSpeakingString is called, that process is stopped before text is spoken.

When synthesis of text finishes normally or is stopped, the message didFinishSpeaking(true) is called.  
**See also:**
- 149.2.64 StartSpeakingString(text as string, file as folderitem) as boolean
- 149.2.65 startSpeakingString(Text as String, URL as string) as boolean

149.2.64  **StartSpeakingString(text as string, file as folderitem) as boolean**

MBS MacCocoa Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Begins synthesizing text into a sound (AIFF) file.  
**Notes:**  
Returns true when synthesis starts successfully, false otherwise.

When synthesis of text finishes normally or is stopped, the message didFinishSpeaking(True) is called.
One example of how you might use this method is in an email program that automatically converts new messages into sound files that can be stored on an iPod for later listening.

See also:

- 149.2.63 StartSpeakingString(text as string) as boolean
- 149.2.65 startSpeakingString(Text as String, URL as string) as boolean

149.2.65 startSpeakingString(Text as String, URL as string) as boolean

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Begins synthesizing text into a sound (AIFF) file. **Notes:**
Returns true when synthesis starts successfully, false otherwise.

When synthesis of text finishes normally or is stopped, the message didFinishSpeaking(True) is called.

One example of how you might use this method is in an email program that automatically converts new messages into sound files that can be stored on an iPod for later listening.

See also:

- 149.2.63 StartSpeakingString(text as string) as boolean
- 149.2.64 StartSpeakingString(text as string, file as folderitem) as boolean

149.2.66 StopSpeaking

MBS MacCocoa Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Stops synthesis in progress. **Notes:** If the receiver is currently generating speech, synthesis is halted, and the message didFinishSpeaking(false) is called.

149.2.67 stopSpeakingAtBoundary(boundary as Integer)

MBS MacCocoa Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Stops speech on the next w **Notes:** Mac OS X 10.5 only.
149.2.68 Properties

149.2.69 IsSpeaking as boolean

MBS MacCocoa Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates whether the receiver is currently generating synthesized speech. **Notes:**

true when the receiver is generating synthesized speech, false otherwise.
(Read only property)

149.2.70 rate as Double

MBS MacCocoa Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The current rate of the speech. **Example:**

```plaintext
dim s as NSSpeechSynthesizerMBS
s=new NSSpeechSynthesizerMBS
MsgBox str(s.rate)
// shows e.g. "160"
```

**Notes:**

Mac OS X 10.5 only.
The range of supported rates is not predefined by the Speech Synthesis framework; but the synthesizer may only respond to a limited range of speech rates. Average human speech occurs at a rate of 180 to 220 words per minute.
(Read and Write property)

149.2.71 UsesFeedbackWindow as boolean

MBS MacCocoa Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Indicates whether the receiver uses the speech feedback window. **Notes:** (Read and Write property)

149.2.72 Voice as string

MBS MacCocoa Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The current voice. **Example:**
149.2. CLASS NSSPEECHSYNTHESIZERMBS

```vbscript
dim s as new NSSpeechSynthesizerMBS
MsgBox s.voice
// shows e.g. "com.apple.speech.synthesis.voice.Zarvox"
```

**Notes:** (Read and Write property)

### 149.2.73 volume as Double

MBS MacCocoa Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The volume of the speech.  
**Example:**

```vbscript
dim s as new NSSpeechSynthesizerMBS
MsgBox str(s.volume)
// shows e.g. 1
```

**Notes:**

No sound is zero, full sound one.  
Mac OS X 10.5 only.

Volumes are expressed in floating-point units ranging from 0.0 through 1.0. A value of 0.0 corresponds to silence, and a value of 1.0 corresponds to the maximum possible volume. Volume units lie on a scale that is linear with amplitude or voltage. A doubling of perceived loudness corresponds to a doubling of the volume.

Setting a value outside this range is undefined.  
(Read and Write property)

### 149.2.74 Events

#### 149.2.75 didEncounterErrorAtIndex(characterIndex as Integer, text as string, message as string)

MBS MacCocoa Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** An event called when an error has been found in the text while speaking.  
**Notes:** Mac OS X 10.5 only.
**149.2.76  didEncounterSyncMessage(message as string)**

MBS MacCocoa Plugin, Plugin Version: 7.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** A sync message was found in the text.

**Notes:**
See Apple Speech documentation about the special tags you need to place in the text to get this event. Mac OS X 10.5 only.

**149.2.77  didFinishSpeaking(finishedSpeaking as boolean)**

MBS MacCocoa Plugin, Plugin Version: 6.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called when speaking through the sound output device is done.

**Notes:** finishedSpeaking is true when finished normally and false when StopSpeaking was called.

**149.2.78  willSpeakPhoneme(phonemeOpcode as Integer)**

MBS MacCocoa Plugin, Plugin Version: 6.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sent just before a synthesized phoneme is spoken through the sound output device.

**Notes:**
phonemeOpcode: Phoneme that sender is about to speak into the sound output device.

One use of this method might be to animate a mouth on screen to match the generated speech.

Important: The delegate is not sent this message when the SpeechSynthesizer object is synthesizing speech to a file (startSpeakingString).

**149.2.79  willSpeakWord(Position as Integer, Length as Integer, Text as String)**

MBS MacCocoa Plugin, Plugin Version: 6.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sent just before a synthesized word is spoken through the sound output device.

**Notes:**
Position and Length: Word that sender is about to speak into the sound output device.
text: Text that is being synthesized by sender.

One use of this method might be to visually highlight the word being spoken.

Important: The delegate is not sent this message when the SpeechSynthesizer object is synthesizing speech
149.2. \textit{CLASS NSSPEECHSYNTHESIZERMBS} to a file \((\text{startSpeakingString})\).

149.2.80 \textbf{Constants}

149.2.81 \textbf{NSSpeechImmediateBoundary}=0

MBS MacCocoa Plugin, Plugin Version: 7.7. \textbf{Function:} One of the constants for the pauseSpeakingAt-Boundary method.

\textbf{Notes:} Mac OS X 10.5 only.

149.2.82 \textbf{NSSpeechSentenceBoundary}=2

MBS MacCocoa Plugin, Plugin Version: 7.7. \textbf{Function:} One of the constants for the pauseSpeakingAt-Boundary method.

\textbf{Notes:} Mac OS X 10.5 only.

149.2.83 \textbf{NSSpeechWordBoundary}=1

MBS MacCocoa Plugin, Plugin Version: 7.7. \textbf{Function:} One of the constants for the pauseSpeakingAt-Boundary method.

\textbf{Notes:} Mac OS X 10.5 only.
149.3 class NSVoiceMBS

149.3.1 class NSVoiceMBS

MBS MacCocoa Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A voice on Mac OS X with its attributes.

**Notes:**
Available in Mac OS X v10.3 and later.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

149.3.2 Methods

149.3.3 Age as Integer

MBS MacCocoa Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The perceived age (in years) of the voice.

149.3.4 Constructor


149.3.5 Demotext as String

MBS MacCocoa Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A demonstration string to speak.

149.3.6 Gender as String

MBS MacCocoa Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The perceived gender of the voice.

**Notes:** May be either GenderNeuter ("VoiceGenderNeuter"), GenderFemale ("VoiceGenderFemale"), or GenderMale ("VoiceGenderMale").
149.3.7 GenderFemale as String

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the possible values for the gender property.

149.3.8 GenderMale as String

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the possible values for the gender property.

149.3.9 GenderNeuter as String

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the possible values for the gender property.

149.3.10 Identifier as String

MBS MacCocoa Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A unique string identifying the voice. The identifiers of the system voices are listed below. **Notes:**

Identifiers of the Mac OS X system voices
- com.apple.speech.synthesis.voice.Agnes
- com.apple.speech.synthesis.voice.Albert
- com.apple.speech.synthesis.voice.BadNews
- com.apple.speech.synthesis.voice.Bahh
- com.apple.speech.synthesis.voice.Bells
- com.apple.speech.synthesis.voice.Boing
- com.apple.speech.synthesis.voice.Bruce
- com.apple.speech.synthesis.voice.Bubbles
- com.apple.speech.synthesis.voice.Cellos
- com.apple.speech.synthesis.voice.Deranged
- com.apple.speech.synthesis.voice.Fred
- com.apple.speech.synthesis.voice.GoodNews
- com.apple.speech.synthesis.voice.Hysterical
- com.apple.speech.synthesis.voice.Junior
- com.apple.speech.synthesis.voice.Kathy
- com.apple.speech.synthesis.voice.Organ
- com.apple.speech.synthesis.voice.Princess
- com.apple.speech.synthesis.voice.Ralph
- com.apple.speech.synthesis.voice.Trinoids
- com.apple.speech.synthesis.voice.Vicki
149.3.11 Language as String

MBS MacCocoa Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The language of the voice (currently US English only). **Notes:** Language has been replaced by LocaleIdentifier in Mac OS X 10.5.

149.3.12 LocaleIdentifier as String

MBS MacCocoa Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The locale identifier. **Example:**

```vbnet
dim v as NSVoiceMBS
dim s as NSSpeechSynthesizerMBS
dim n as string

s=new NSSpeechSynthesizerMBS

n=s.voice
v=s.attributesForVoice(n)

MsgBox n+EndOfLine+v.LocaleIdentifier
// shows for example ”en_US”
```

**Notes:**

Mac OS X 10.5 only.

Language has been replaced by LocaleIdentifier in Mac OS X 10.5.

149.3.13 Name as String

MBS MacCocoa Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of the voice suitable for display.
149.3. CLASS NSVOICEMBS

149.3.14 NSVoiceAge as String

MBS MacCocoa Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the properties names. **Notes:** The perceived age (in years) of the voice. A string.

149.3.15 NSVoiceDemoText as String

MBS MacCocoa Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the properties names. **Notes:** A demonstration string to speak. A String.

149.3.16 NSVoiceGender as String

MBS MacCocoa Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the properties names. **Notes:** The perceived gender of the voice.

149.3.17 NSVoiceIdentifier as String

MBS MacCocoa Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the properties names. **Notes:** A unique string identifying the voice.

Identifiers of the OS X system voices:
- com.apple.speech.synthesis.voice.Agnes
- com.apple.speech.synthesis.voice.Albert
- com.apple.speech.synthesis.voice.Alex
- com.apple.speech.synthesis.voice.BadNews
- com.apple.speech.synthesis.voice.Bahh
- com.apple.speech.synthesis.voice.Bells
- com.apple.speech.synthesis.voice.Boing
- com.apple.speech.synthesis.voice.Bruce
- com.apple.speech.synthesis.voice.Bubbles
- com.apple.speech.synthesis.voice.Cellos
- com.apple.speech.synthesis.voice.Deranged
- com.apple.speech.synthesis.voice.Fred
- com.apple.speech.synthesis.voice.GoodNews
- com.apple.speech.synthesis.voice.Hysterical
149.3.18 **NSVoiceIndividuallySpokenCharacters as String**


**Function:** One of the properties names.

**Notes:**
A list of unicode character id ranges that define the unicode characters that can be spoken in character-by-character mode by this voice. Each list entry is a dictionary containing two keys: "UnicodeCharBegin", an integer value containing the beginning unicode id of this range; and "UnicodeCharBegin", an integer value containing the ending unicode id of this range.
These ranges can be used by your application to determine if the voice can speak the name of an individual character when spoken in character-by-character mode. Some voices may not provide this attribute.
Available in OS X v10.5 and later.

149.3.19 **NSVoiceLanguage as String**


**Function:** One of the properties names.

**Notes:**
The language of the voice (currently US English only). A string
Deprecated: Use NSVoiceLocaleIdentifier instead.
Deprecated in OS X v10.5.

149.3.20 **NSVoiceLocaleIdentifier as String**


**Function:** One of the properties names.

**Notes:**
The language of the voice. A string
149.3. CLASS NSVOICEMBS

The canonical locale identifier string describing the voice’s locale. A locale is generally composed of three pieces of ordered information: a language code, a region code, and a variant code. Refer to documentation about the NSLocale class or Locales Programming Guide for more information. Available in OS X v10.5 and later.

149.3.21 NSVoiceName as String


149.3.22 NSVoiceSupportedCharacters as String

MBS MacCocoa Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the properties names. Notes: A list of unicode character id ranges that define the unicode characters supported by this voice. a dictionary containing two keys: "UnicodeCharBegin", an integer value containing the beginning unicode id of this range; and "UnicodeCharBegin", an integer value containing the ending unicode id of this range. The synthesizer will convert or ignore any characters not contained in the range of supported characters. Some voices may not provide this attribute. Available in OS X v10.5 and later.

149.3.23 Properties as Dictionary

MBS MacCocoa Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns dictionary with all the properties for this voice. Notes: This dictionary may contain additional information if Apple adds more features in newer Mac OS X versions.
149.4 class SpeechChannelMBS

149.4.1 class SpeechChannelMBS

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A SpeechMBS channel.

**Example:**

```vbs
dim s as new SpeechMBS
dim c as SpeechChannelMBS = s.Voice(1).NewChannel

call c.Speak("Hello")

MsgBox str(c.TextBytesToSpeak)
```

**Deprecated:** This item is deprecated and should no longer be used. You can use NSSpeechSynthesizerMBS instead.

149.4.2 Methods

149.4.3 close

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The destructor.

**Notes:**

There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.

(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

149.4.4 ContinueSpeech as Boolean

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Continue speaking.

**Example:**

```vbs
dim c as SpeechChannelMBS // your channel

MsgBox str(C.ContinueSpeech)
```

**Notes:** Renamed from Continue to ContinueSpeech in v5.3 to fix a problem with Realbasic 2005r3.
149.4. CLASS SPEECHCHANNELMBS

149.4.5 PauseEndOfSentence as Boolean

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Pauses speaking at the end of the current sentence.

**Example:**

```vba
dim c as SpeechChannelMBS // your channel
MsgBox str(C.PauseEndOfSentence)
```

149.4.6 PauseEndOfWord as Boolean

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Pauses speaking at the end of the current word.

**Example:**

```vba
dim c as SpeechChannelMBS // your channel
MsgBox str(C.PauseEndOfWord)
```

149.4.7 PauseImmediate as Boolean

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Pauses speaking.

**Example:**

```vba
dim c as SpeechChannelMBS // your channel
MsgBox str(C.PauseImmediate)
```

149.4.8 Reset

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Resets the SpeechMBS channel to some default values.

**Example:**

```vba
dim c as SpeechChannelMBS // your channel

c.reset
```
Notes: Resets e.g. pitchbase, pitchmodulation, volume, rate.

149.4.9 SetOutputFile(file as folderitem) as boolean

Function: Sets the destination file.
Example:

dim s as new SpeechMBS
dim c as SpeechChannelMBS = s.Voice(1).NewChannel
dim f as FolderItem = SpecialFolder.Desktop.Child(“test.aiff”)

call c.SetOutputFile(f)
call c.Speak(“Hello”)

MsgBox str(c.TextBytesToSpeak)

Notes:
Returns true on success and false on any error.
Requires Mac OS X 10.3.

149.4.10 Speak(s as string) as Boolean

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Speak the given text.
Example:

dim s as new SpeechMBS
dim c as SpeechChannelMBS = s.Voice(1).NewChannel

MsgBox str(c.Speak(“Hello”))

Notes: v5.1: Now encoding safe and stores result in lasterror property.
149.4. CLASS SPEECHCHANNELMBS

149.4.11 SpeechBusy as Integer

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns how much SpeechChannels are currently in use of your application.

**Example:**

```pascal
dim c as SpeechChannelMBS // your channel
MsgBox str(c.SpeechBusy)
```

149.4.12 SpeechBusySystemWide as Integer

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns how much SpeechChannels are currently in use on this Mac.

**Example:**

```pascal
dim c as SpeechChannelMBS // your channel
MsgBox str(c.SpeechBusySystemWide)
```

149.4.13 Stop as Boolean

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Stops speaking.

**Example:**

```pascal
dim c as SpeechChannelMBS // your channel
MsgBox str(c.Stop)
```

149.4.14 StopEndOfSentence as Boolean

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Stops speaking at the end of the current sentence.

**Example:**

```pascal
dim c as SpeechChannelMBS // your channel
MsgBox str(c.StopEndOfSentence)
```
149.4.15 StopEndOfWord as Boolean

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Stops speaking at the end of the current word.

**Example:**

```vbs
dim c as SpeechChannelMBS // your channel
MsgBox str(c.StopEndOfWord)
```

149.4.16 StopImmediate as Boolean

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Stops speaking.

**Example:**

```vbs
dim c as SpeechChannelMBS // your channel
MsgBox str(c.StopImmediate)
```

149.4.17 Properties

149.4.18 Lasterror as Integer

MBS MacClassic Plugin, Plugin Version: 5.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The last error code.

**Example:**

```vbs
dim c as SpeechChannelMBS // your channel
MsgBox str(c.Lasterror)
```

**Notes:**

A Mac OS error code.
From the plugin -1 is bad parameter and 0 is success.
(Read only property)
149.4. CLASS SPEECHCHANNELMBS

149.4.19 Paused as boolean

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Are we paused?  
**Example:**

```vbs
    dim s as new SpeechMBS
    dim c as SpeechChannelMBS = s.Voice(1).NewChannel

    MsgBox str(c.Paused)
```

**Notes:** (Read only property)

149.4.20 PitchBase as Double

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The pitch base used for speaking.  
**Example:**

```vbs
    dim c as SpeechChannelMBS // your channel

    MsgBox str(C.PitchBase)
```

**Notes:** (Read and Write property)

149.4.21 PitchModulation as Double

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The pitch modulation used for speaking.  
**Example:**

```vbs
    dim c as SpeechChannelMBS // your channel

    MsgBox str(C.PitchModulation)
```

**Notes:** (Read and Write property)
149.4.22 Playing as boolean

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Are we playing?  
**Example:**

```vbs
dim c as SpeechChannelMBS // your channel
MsgBox str(c.Playing)
```

**Notes:** (Read only property)

149.4.23 Rate as Double

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The rate used for speaking.  
**Example:**

```vbs
dim c as SpeechChannelMBS // your channel
MsgBox str(c.Rate)
```

**Notes:**  
Normally around 175 words/minute.  
(Read and Write property)

149.4.24 SpeakCharactersLiteral as Boolean

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** whether to speak characters literal.  
**Example:**

```vbs
dim c as SpeechChannelMBS // your channel
MsgBox str(c.SpeakCharactersLiteral)
```

**Notes:**  
Speaks Hello like "H-E-L-L-O"  
(Read and Write property)
149.4.25 SpeakNumbersLiteral as Boolean

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** whether to speak numbers literal.

**Example:**

```plaintext
dim c as SpeechChannelMBS // your channel

MsgBox str(c.SpeakNumbersLiteral)
```

**Notes:**

Speaks 11 not like "elven", but like "one, one".
(Read and Write property)

149.4.26 TextBytesToSpeak as Integer

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** How much text is left in the text buffer?

**Example:**

```plaintext
dim s as new SpeechMBS
dim c as SpeechChannelMBS = s.Voice(1).NewChannel

call c.Speak("Hello")

MsgBox str(c.TextBytesToSpeak)
```

**Notes:** (Read only property)

149.4.27 Voice as VoiceMBS

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The VoiceMBS used for that SpeechChannelMBS.

**Example:**

```plaintext
dim c as SpeechChannelMBS // your channel

MsgBox c.Voice.Name
```
149.4.28 Volume as Double

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The current volume.

**Example:**

```plaintext
dim c as SpeechChannelMBS // your channel

MsgBox str(c.Volume)
```

**Notes:**

From 0 to 65535.
(Read and Write property)
149.5. CLASS SPEECHMBS

149.5  class SpeechMBS

149.5.1  class SpeechMBS

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for the Mac OS speech synthesizer.

**Deprecated:** This item is deprecated and should no longer be used. You can use NSSpeechSynthesizerMBS instead. **Notes:**

For Mac OS X you can also use the NSSpeechSynthesizerMBS class and for recognition the NSSpeechRecognizerMBS class.

You can try Speech with some declares, but your app won’t start if the Speech extension is not installed. This plugin won’t stop, but simply will just tell you that the Speech is not available, so you can react in your application.

149.5.2  Methods

149.5.3  close

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The destructor.

**Notes:**

There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.

(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

149.5.4  DefaultVoice as VoiceMBS

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the default VoiceMBS.

**Example:**

```plaintext
dim s as new SpeechMBS
dim v as VoiceMBS = s.DefaultVoice
MsgBox v.Name
```
149.5.5  **Speak(s as string) as Boolean**

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Speaks a text using the default settings.

**Example:**

```vbnet
dim s as new SpeechMBS

call s.Speak("Hello")

MsgBox "you hear me?"
```

**Notes:**

Returns directly to caller.
Returns true if speaking is working.

v5.1: Now encoding safe and stores result in lasterror property.

149.5.6  **SpeechBusy as Integer**

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns how much SpeechChannels are currently in use of your application.

**Example:**

```vbnet
dim s as new SpeechMBS

MsgBox str(s.SpeechBusy)
```

149.5.7  **SpeechBusySystemWide as Integer**

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns how much SpeechChannels are currently in use on this Mac.

**Example:**

```vbnet
dim s as new SpeechMBS

MsgBox str(s.SpeechBusySystemWide)
```
149.5. CLASS SPEECHMBS

149.5.8 Voice(index as Integer) as VoiceMBS

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the VoiceMBS with this number.

**Example:**

```plaintext
dim s as new SpeechMBS
MsgBox s.Voice(1).Name
```

**Notes:** Index is from 1 to VoiceCount.

149.5.9 Properties

149.5.10 Available as Boolean

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Is SpeechMBS available?

**Notes:** (Read only property)

149.5.11 Lasterror as Integer

MBS MacClassic Plugin, Plugin Version: 5.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The last error code.

**Notes:**
A Mac OS error code.
from the plugin -1 is bad parameter and 0 is success.
(Read only property)

149.5.12 VersionMajor as Integer

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The major Version number.

**Example:**

```plaintext
dim s as SpeechMBS
s=new SpeechMBS
msgbox hex(s.VersionMajor)+"."+hex(s.versionMinor\16)+"."+hex(s.versionMinor mod 16)
```
149.5.13 versionMinor as Integer

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The minor Version number.
**Example:**
```
dim s as SpeechMBS
s=new SpeechMBS
msgbox hex(s.VersionMajor)+"."+hex(s.versionMinor\16)+"."+hex(s.versionMinor mod 16)
```

**Notes:** (Read only property)

149.5.14 VersionRev as Integer

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The revision Version number.
**Example:**
```
dim s as new SpeechMBS
MsgBox str(s.VersionRev)
```

**Notes:** (Read only property)

149.5.15 VersionStage as Integer

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The Stage Version number.
**Example:**
```
dim s as new SpeechMBS
MsgBox str(s.VersionStage)
```

**Notes:**
Some constants:

developStage & h20
alphaStage & h40
betaStage & h60
finalStage & h80

(Read only property)

149.5.16 VoiceCount as Integer

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** How much voices are present?

**Example:**

```vbnet
dim s as new SpeechMBS
MsgBox str(s.VoiceCount)
```

**Notes:**

If you add or remove VoiceMBS files, please call this function as SpeechMBS can then recognize those changes.

(Read only property)
149.6  class VoiceMBS

149.6.1  class VoiceMBS

MBS MacClassic Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This class represents a voice.

**Example:**

```plaintext
dim s as new SpeechMBS

MsgBox s.Voice(2).name
```

**Deprecated:** This item is deprecated and should no longer be used. You can use NSVoiceMBS instead.

149.6.2  Methods

149.6.3  close

MBS MacClassic Plugin, Plugin Version: 3.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The destructor.

**Notes:**

There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.

(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

149.6.4  NewChannel as SpeechChannelMBS

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new SpeechChannel using the given voice.

**Example:**

```plaintext
dim s as new SpeechMBS
dim c as SpeechChannelMBS = s.Voice(1).NewChannel

MsgBox str(c.Speak("Hello"))
```

**Notes:** Returns nil on any error.
149.6. CLASS VOICEMBS

149.6.5 Properties

149.6.6 age as Integer

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The approximate age in years of the individual represented by the VoiceMBS.

**Example:**

```vbs
Dim s As New SpeechMBS
MsgBox Str(s.Voice(1).Age)
```

**Notes:** (Read only property)

149.6.7 comment as string

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Additional text information about the VoiceMBS. The information might indicate how much memory the VoiceMBS requires. Some synthesizers use this field to store a phrase that can be spoken.

**Example:**

```vbs
Dim s As New SpeechMBS
MsgBox s.Voice(1).Comment
```

**Notes:** (Read only property)

149.6.8 file as folderitem

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The file of this VoiceMBS.

**Notes:**
May be nil.
(Read only property)

149.6.9 gender as Integer

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The gender of this VoiceMBS.
Example:

dim s as new SpeechMBS

MsgBox str(s.Voice(1).gender)

Notes:
Some constants for this property:

kNeuter 0
kMale 1
kFemale 2

(Read only property)

149.6.10 language as Integer

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** A code that indicates the language of VoiceMBS output.

Example:

dim s as new SpeechMBS

MsgBox str(s.Voice(1).language)

Notes:
Language constants:

(Read only property)

149.6.11 name as string

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The name of this VoiceMBS.

Example:

dim s as new SpeechMBS

MsgBox s.Voice(1).name
Notes: (Read only property)

149.6.12 region as Integer

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** A code that indicates the region represented by the VoiceMBS.

**Example:**

dim s as new SpeechMBS

MsgBox str(s.Voice(1).region)

Notes:

Some region constants:

(Read only property)

149.6.13 ResID as Integer

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** There can be several voices in one file, but this VoiceMBS has this ResID.

**Example:**

dim s as new SpeechMBS

MsgBox str(s.Voice(1).ResID)

Notes: (Read only property)

149.6.14 script as Integer

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The script code of text that the VoiceMBS can process.

**Example:**
dim s as new SpeechMBS

MsgBox str(s.Voice(1).script)

Notes:
Script constants:

(Read only property)

149.6.15 version as Integer

MBS MacClassic Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The version of this VoiceMBS.

Example:

dim s as new SpeechMBS

MsgBox str(s.Voice(1).Version)

Notes: (Read only property)
<table>
<thead>
<tr>
<th>Language</th>
<th>Script</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>smRoman script</td>
</tr>
<tr>
<td>French</td>
<td>smRoman script</td>
</tr>
<tr>
<td>German</td>
<td>smRoman script</td>
</tr>
<tr>
<td>Italian</td>
<td>smRoman script</td>
</tr>
<tr>
<td>Dutch</td>
<td>smRoman script</td>
</tr>
<tr>
<td>Swedish</td>
<td>smRoman script</td>
</tr>
<tr>
<td>Spanish</td>
<td>smRoman script</td>
</tr>
<tr>
<td>Danish</td>
<td>smRoman script</td>
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<tr>
<td>Portuguese</td>
<td>smRoman script</td>
</tr>
<tr>
<td>Norwegian</td>
<td>smRoman script</td>
</tr>
<tr>
<td>Hebrew</td>
<td>smHebrew script</td>
</tr>
<tr>
<td>Japanese</td>
<td>smJapanese script</td>
</tr>
<tr>
<td>Arabic</td>
<td>smArabic script</td>
</tr>
<tr>
<td>Finnish</td>
<td>smRoman script</td>
</tr>
<tr>
<td>Greek</td>
<td>Greek script using smRoman script code</td>
</tr>
<tr>
<td>Icelandic</td>
<td>modified smRoman/Icelandic script</td>
</tr>
<tr>
<td>Maltese</td>
<td>Roman script</td>
</tr>
<tr>
<td>Turkish</td>
<td>modified smRoman/Turkish script</td>
</tr>
<tr>
<td>Croatian</td>
<td>modified smRoman/Croatian script</td>
</tr>
<tr>
<td>TradChinese</td>
<td>Chinese (Mandarin) in traditional characters</td>
</tr>
<tr>
<td>Urdu</td>
<td>smArabic script</td>
</tr>
<tr>
<td>Hindi</td>
<td>smDevanagari script</td>
</tr>
<tr>
<td>Thai</td>
<td>smThai script</td>
</tr>
<tr>
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<td>smKorean script</td>
</tr>
<tr>
<td>Lithuanian</td>
<td>smCentralEuroRoman script</td>
</tr>
<tr>
<td>Polish</td>
<td>smCentralEuroRoman script</td>
</tr>
<tr>
<td>Hungarian</td>
<td>smCentralEuroRoman script</td>
</tr>
<tr>
<td>Estonian</td>
<td>smCentralEuroRoman script</td>
</tr>
<tr>
<td>Latvian</td>
<td>smCentralEuroRoman script</td>
</tr>
<tr>
<td>Sami</td>
<td>language of the Sami people of N. Scandinavia</td>
</tr>
<tr>
<td>Faroese</td>
<td>modified smRoman/Icelandic script</td>
</tr>
<tr>
<td>Farsi</td>
<td>modified smArabic/Farsi script</td>
</tr>
<tr>
<td>Persian</td>
<td>Synonym for langFarsi</td>
</tr>
<tr>
<td>Russian</td>
<td>smCyrillic script</td>
</tr>
<tr>
<td>SimpChinese</td>
<td>Chinese (Mandarin) in simplified characters</td>
</tr>
<tr>
<td>Flemish</td>
<td>smRoman script</td>
</tr>
<tr>
<td>IrishGaelic</td>
<td>smRoman or modified smRoman/Celtic script (without dot above)</td>
</tr>
<tr>
<td>Albanian</td>
<td>smRoman script</td>
</tr>
<tr>
<td>Romanian</td>
<td>modified smRoman/Romanian script</td>
</tr>
<tr>
<td>Czech</td>
<td>smCentralEuroRoman script</td>
</tr>
<tr>
<td>Slovak</td>
<td>smCentralEuroRoman script</td>
</tr>
<tr>
<td>Slovenian</td>
<td>modified smRoman/Croatian script</td>
</tr>
<tr>
<td>Yiddish</td>
<td>smHebrew script</td>
</tr>
<tr>
<td>Serbian</td>
<td>smCyrillic script</td>
</tr>
<tr>
<td>Macedonian</td>
<td>smCyrillic script</td>
</tr>
<tr>
<td>Bulgarian</td>
<td>smCyrillic script</td>
</tr>
<tr>
<td>Ukrainian</td>
<td>modified smCyrillic/Ukrainian script</td>
</tr>
<tr>
<td>Belorussian</td>
<td>smCyrillic script</td>
</tr>
<tr>
<td>Uzbek</td>
<td>Cyrillic script</td>
</tr>
<tr>
<td>Kazakh</td>
<td>Cyrillic script</td>
</tr>
<tr>
<td>Azerbaijani</td>
<td>Azerbaijani in Cyrillic script</td>
</tr>
<tr>
<td>AzerbaijanAr</td>
<td>Azerbaijani in Arabic script</td>
</tr>
<tr>
<td>Armenian</td>
<td>smArmenian script</td>
</tr>
<tr>
<td>Georgian</td>
<td>smGeorgian script</td>
</tr>
<tr>
<td>Moldavian</td>
<td>smCyrillic script</td>
</tr>
<tr>
<td>Kirghiz</td>
<td>Cyrillic script</td>
</tr>
<tr>
<td>Tajik</td>
<td>Cyrillic script</td>
</tr>
<tr>
<td>Turkmen</td>
<td>Cyrillic script</td>
</tr>
<tr>
<td>Mongolian</td>
<td>Mongolian in smMongolian script</td>
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<tr>
<td>MongolianCyr</td>
<td>Mongolian in Cyrillic script</td>
</tr>
<tr>
<td>Pashto</td>
<td>Arabic script</td>
</tr>
<tr>
<td>Code</td>
<td>Language</td>
</tr>
<tr>
<td>-------</td>
<td>-------------------</td>
</tr>
<tr>
<td>verUS</td>
<td>en_US</td>
</tr>
<tr>
<td>verFrance</td>
<td>Fr_FR</td>
</tr>
<tr>
<td>verBritain</td>
<td>Ben_GB</td>
</tr>
<tr>
<td>verGermany</td>
<td>Dde_DE</td>
</tr>
<tr>
<td>verItaly</td>
<td>Tit_IT</td>
</tr>
<tr>
<td>verNetherlands</td>
<td>Nnl_NL</td>
</tr>
<tr>
<td>verFlemish</td>
<td>nl_BE Flemish (Dutch) for Belgium</td>
</tr>
<tr>
<td>verSweden</td>
<td>Ssv_SE</td>
</tr>
<tr>
<td>verSpain</td>
<td>Ees_ES Spanish for Spain</td>
</tr>
<tr>
<td>verDenmark</td>
<td>DK da_DK</td>
</tr>
<tr>
<td>verPortugal</td>
<td>PO pt_PT Portuguese for Portugal</td>
</tr>
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<td>verFrCanada</td>
<td>Cfr_CA French for Canada</td>
</tr>
<tr>
<td>verNorgey</td>
<td>Hno_NO,ab_NOBokml</td>
</tr>
<tr>
<td>verIsrael</td>
<td>HB he_IL,iw_IL Hebrew</td>
</tr>
<tr>
<td>verJapan</td>
<td>Jja_JP</td>
</tr>
<tr>
<td>verAustralia</td>
<td>Xen_AU English for Australia</td>
</tr>
<tr>
<td>verArabic</td>
<td>ar arab for N Africa, Arabian peninsula, Levant</td>
</tr>
<tr>
<td>verFinland</td>
<td>Kfi_FI</td>
</tr>
<tr>
<td>verFrSwiss</td>
<td>SF fr_CH French Swiss</td>
</tr>
<tr>
<td>verGrSwiss</td>
<td>SD de_CH German Swiss</td>
</tr>
<tr>
<td>verGreece</td>
<td>el_GR Monotonic Greek (modern)</td>
</tr>
<tr>
<td>verIceland</td>
<td>IS is_IS</td>
</tr>
<tr>
<td>verMalta</td>
<td>MA mt_MT</td>
</tr>
<tr>
<td>verCyprus</td>
<td>CY _CY Greek or Turkish language? Checking...</td>
</tr>
<tr>
<td>verTurkey</td>
<td>TU tr_TR</td>
</tr>
<tr>
<td>verYugoCroatian</td>
<td>YU Croatia for Yugoslavia; now use verCroatia (68)</td>
</tr>
<tr>
<td>verNetherlandsComma</td>
<td>ID for KCHR resource - Dutch</td>
</tr>
<tr>
<td>verBelgiumLuxPoint</td>
<td>ID for KCHR resource - Belgium</td>
</tr>
<tr>
<td>verCanadaComma</td>
<td>ID for KCHR resource - Canadian ISO</td>
</tr>
<tr>
<td>verCanadaPoint</td>
<td>ID for KCHR resource - Canadian; now unused</td>
</tr>
<tr>
<td>vervariantPortugal</td>
<td>ID for resource; now unused</td>
</tr>
<tr>
<td>vervariantNorway</td>
<td>ID for resource; now unused</td>
</tr>
<tr>
<td>vervariantDenmark</td>
<td>ID for KCHR resource - Danish Mac Plus</td>
</tr>
<tr>
<td>verIndiaHindi</td>
<td>hi_IN Hindi for India</td>
</tr>
<tr>
<td>verPakistanUrdu</td>
<td>UR ur_PK Urdu for Pakistan</td>
</tr>
<tr>
<td>verTurkishModified</td>
<td>ID for KCHR resource - Catalan ISO</td>
</tr>
<tr>
<td>verItalianSwiss</td>
<td>ST it_CH Italian Swiss</td>
</tr>
<tr>
<td>verInternational</td>
<td>Zen English for international use</td>
</tr>
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<td>verRomania</td>
<td>RO ro_RO</td>
</tr>
<tr>
<td>verGreecePoly</td>
<td>grcPolytonic Greek (classical)</td>
</tr>
<tr>
<td>verLithuania</td>
<td>LT lt_LT</td>
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<td>PL pl_PL</td>
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<td>verEstonia</td>
<td>EE et_EE</td>
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<td>verLatvia</td>
<td>LV lv_LV</td>
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<td>verIran</td>
<td>PS fa_IR Persian/Farsi</td>
</tr>
<tr>
<td>verRussia</td>
<td>RS ru_RU Russian</td>
</tr>
<tr>
<td>verIreland</td>
<td>GA ga_IE Irish Gaelic for Ireland (without dot above)</td>
</tr>
<tr>
<td>verKorea</td>
<td>KH ko_KR</td>
</tr>
<tr>
<td>verChina</td>
<td>CH zh_CN Simplified Chinese</td>
</tr>
<tr>
<td>verTaiwan</td>
<td>TA zh_TW Traditional Chinese</td>
</tr>
<tr>
<td>verThailand</td>
<td>TH th_TH</td>
</tr>
<tr>
<td>verScriptGeneric</td>
<td>SSGeneric script system (no language or script)</td>
</tr>
<tr>
<td>verCzech</td>
<td>CZ cs_CZ</td>
</tr>
<tr>
<td>verSlovak</td>
<td>SL sk_SK</td>
</tr>
<tr>
<td>verFarEastGeneric</td>
<td>FEGeneric Far East system (no language or script)</td>
</tr>
<tr>
<td>verMagyar</td>
<td>Unused; see verHungary</td>
</tr>
<tr>
<td>verBengali</td>
<td>bn Bangladesh or India</td>
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<tr>
<td>verByelorussian</td>
<td>BY be_BY</td>
</tr>
<tr>
<td>verRomanian</td>
<td>Unused; see verUkraine</td>
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<tr>
<td>Language Code</td>
<td>Value</td>
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<td>smRoman</td>
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<td>smGreek</td>
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<td>smCyrillic</td>
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<td>smGeorgian</td>
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<td>smArmenian</td>
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<td>smSimpChinese</td>
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<td>smMongolian</td>
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<td>smGeez</td>
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<td>smCentralEuroRoman</td>
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<td>smVietnamese</td>
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<td>smExtArabic</td>
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<td>smUninterp</td>
<td>32</td>
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<tr>
<td>smUnicodeScript</td>
<td>&amp; h7E</td>
</tr>
</tbody>
</table>
149.7  class WinSpeechMBS

149.7.1  class WinSpeechMBS

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A class for speech on Windows.

**Notes:**

You need to install the ”Microsoft Reader” to get this working.

see also:


149.7.2  Methods

149.7.3  close

MBS Win Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The destructor.

**Notes:**

There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.

(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

149.7.4  DisplayUI(type as string, title as string, parent as window)

MBS Win Plugin, Plugin Version: 8.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Displays the UI from the underlying text-to-speech engine’s object token.

**Notes:**

Type specifies which UI you want.
Title is optional the title of the window.
You can optionally specify a parent window.
Lasterror is set.
See also:

• 149.7.5 DisplayUI(type as string, title as string=””)
149.7. CLASS WINSPEECHMBS

149.7.5 DisplayUI(type as string, title as string ="")

MBS Win Plugin, Plugin Version: 8.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Displays the UI from the underlying text-to-speech engine’s object token.

**Notes:**
- Type specifies which UI you want.
- Title is optional the title of the window.
- You can optionally specify a parent window.
- Lasterror is set.
- See also:
  - 149.7.4 DisplayUI(type as string, title as string, parent as window)

149.7.6 IsUISupported(type as string) as boolean

MBS Win Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Checks if the underlying text-to-speech engine’s object token supports the requested UI.

**Notes:**
- Returns whether the specified UI is supported. True indicates the UI is supported, and false indicates the UI is not supported.
- Lasterror is set.

149.7.7 ListVoices as boolean

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Makes a list of voices which is later returned using the NextVoice function.

149.7.8 NextVoice as WinVoiceMBS

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the next voice in the list.

**Notes:** Returns nil on the end of the list.

149.7.9 Pause

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Pauses speech.
149.7.10 Resume

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Resumes speech.

149.7.11 Skip(sentenceCount as Integer) as Integer

MBS Win Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Causes the voice to skip forward or backward the specified number of items within the text of the current speak call.
**Notes:**

- sentenceCount is the number of sentences to skip. If negative, you skip backward.
- Returns the actual number of items skipped.
- Lasterror is set.

149.7.12 Speak(text as string, Purge as Boolean = false, ContainsXML as boolean = false)

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Speaks a string.
**Notes:**

- The string must be a 16bit unicode string.
- Version 7.8 of the plugins convert to unicode automatically.
- If Purge is true an existing speech will be stopped.
- If ContainsXML is true, you can include xml commands in the text. See MSDN page: http://msdn.microsoft.com/en-us/library/ms717077%28v=vs.85%29.aspx

149.7.13 SpeakFile(file as folderitem, unicodestring as string, AudioFormat as Integer = 0, ContainsXML as boolean = false)

MBS Win Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Speaks a string to a file.
**Notes:**

- The string must be a 16bit unicode string.
- File is a valid folderitem where the WAV file is stored.
The function will not return before the speaking is complete. Lasterror is set.

Version 7.8 of the plugins convert to unicode automatically.

For AudioFormat, please use kAudioFormat* constants. Default is 22Khz Mono which is default format for speech API.

If ContainsXML is true, you can include xml commands in the text. See MSDN page: http://msdn.microsoft.com/en-us/library/ms717077(v=vs.85).aspx

149.7.14 WaitUntilDone(msTimeout as Integer)

MBS Win Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Blocks the caller until either the voice has completed speaking or the specified time interval has elapsed. **Notes:**

msTimeout: Timeout period in milliseconds. INFINITE may be used to prevent this method from timing out.

INFINITE is -1.

Lasterror is set.

149.7.15 Properties

149.7.16 Handle as Integer

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The handle to the speech object. **Notes:**

If handle is 0 there is no Speech software installed. (Read only property)

149.7.17 IsDone as Boolean

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns true if the voice has finished speaking. **Notes:**
149.7.18 **IsSpeaking as Boolean**

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns true if the voice is speaking.

**Notes:**

Lasterror is set.

(Read only property)

149.7.19 **Lasterror as Integer**

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The last error code reported.

**Notes:**

You may get the Speech SDK from Microsoft for more details.

(Read only property)

149.7.20 **Priority as Integer**

MBS Win Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The current voice priority level.

**Notes:**

The default priority is SPVPRI_NORMAL.

Lasterror is set.

Assuming an output object which implements ISpAudio, speak requests of similar priority voices are queued, and are spoken one at a time in the order they are issued. That is, speak requests from normal priority voices are put in one queue, while speak requests from alert priority voices (with priority SPVPRI_ALERT) are put in another queue.

Alert priority voices take priority over normal voices. If one or more speak requests from alert priority voices are pending, a normal voice that is speaking will be interrupted on the next alert boundary (see ISpVoice::SetAlertBoundary). When all the queued alert priority voice speak requests have been processed, the normal voice will continue.

Voices with the SPVPRI_OVER priority speak over (mix with) all other audio in the system with no syn-
chronization. SPVRI_OVER priority voices only mix on Windows 2000.

If the output object does not implement ISpAudio, no serialization will occur, and all voices will be treated as if their priority is SPVRI_OVER.
(Read and Write property)

149.7.21 Rate as Integer

Notes: Ranges from kMinRate to kMaxRate.
(Read and Write property)

149.7.22 SyncSpeakTimeout as Integer

MBS Win Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The timeout interval in milliseconds after which, synchronous Speak calls to this instance of the voice will timeout.
Notes: Timeouts occur when waiting for access to the output object. This means that for a normal priority voice (see Priority for more information on priorities) and an output device which implements ISpAudio, a timeout may occur while waiting to reacquire the output object after an interruption by an alert priority voice. For voices of both normal and alert priorities, a timeout may also occur while waiting to reacquire the output object after the voice has been paused and resumed (see Pause and Resume).

Wait times are not accumulated - that is, if a voice waits for n milliseconds to initially acquire the output object, and is then paused and resumed, it will again wait for up to msTimeout milliseconds to reacquire the output object, not msTimeout - n milliseconds.
(Read and Write property)

149.7.23 Voice as WinVoiceMBS

Notes: Set to nil to use the default voice.
(Read and Write property)
149.7.24 Volume as Integer

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The volume for the voice.
**Notes:**
Ranges from kMinVolume to kMaxVolume.
(Read and Write property)

149.7.25 Constants

149.7.26 kAudioFormat_11kHz16BitMono = 10

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants.
**Notes:** 11 kHz, 16 Bit, Mono

149.7.27 kAudioFormat_11kHz16BitStereo = 11

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants.
**Notes:** 11 kHz, 16 Bit, Stereo

149.7.28 kAudioFormat_11kHz8BitMono = 8

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants.
**Notes:** 11 kHz, 8 Bit, Mono

149.7.29 kAudioFormat_11kHz8BitStereo = 9

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants.
**Notes:** 11 kHz, 8 Bit, Stereo

149.7.30 kAudioFormat_12kHz16BitMono = 14

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants.
**Notes:** 12 kHz, 16 Bit, Mono
149.7. CLASS WINSPEECHMBS

149.7.31 kAudioFormat_12kHz16BitStereo = 15

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants. **Notes:** 12 kHz, 16 Bit, Stereo

149.7.32 kAudioFormat_12kHz8BitMono = 12

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants. **Notes:** 12 kHz, 8 Bit, Mono

149.7.33 kAudioFormat_12kHz8BitStereo = 13

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants. **Notes:** 12 kHz, 8 Bit, Stereo

149.7.34 kAudioFormat_16kHz16BitMono = 18

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants. **Notes:** 16 kHz, 16 Bit, Mono

149.7.35 kAudioFormat_16kHz16BitStereo = 19

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants. **Notes:** 16 kHz, 16 Bit, Stereo

149.7.36 kAudioFormat_16kHz8BitMono = 16

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants. **Notes:** 16 kHz, 8 Bit, Mono

149.7.37 kAudioFormat_16kHz8BitStereo = 17

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants. **Notes:** 16 kHz, 8 Bit, Stereo
149.7.38  \texttt{kAudioFormat\_22kHz16BitMono} = 22

MBS Win Plugin, Plugin Version: 14.3.  \textbf{Function}: One of the audio format constants.  
\textbf{Notes}: 22 kHz, 16 Bit, Mono

149.7.39  \texttt{kAudioFormat\_22kHz16BitStereo} = 23

MBS Win Plugin, Plugin Version: 14.3.  \textbf{Function}: One of the audio format constants.  
\textbf{Notes}: 22 kHz, 16 Bit, Stereo

149.7.40  \texttt{kAudioFormat\_22kHz8BitMono} = 20

MBS Win Plugin, Plugin Version: 14.3.  \textbf{Function}: One of the audio format constants.  
\textbf{Notes}: 22 kHz, 8 Bit, Mono

149.7.41  \texttt{kAudioFormat\_22kHz8BitStereo} = 21

MBS Win Plugin, Plugin Version: 14.3.  \textbf{Function}: One of the audio format constants.  
\textbf{Notes}: 22 kHz, 8 Bit, Stereo

149.7.42  \texttt{kAudioFormat\_24kHz16BitMono} = 26

MBS Win Plugin, Plugin Version: 14.3.  \textbf{Function}: One of the audio format constants.  
\textbf{Notes}: 24 kHz, 16 Bit, Mono

149.7.43  \texttt{kAudioFormat\_24kHz16BitStereo} = 27

MBS Win Plugin, Plugin Version: 14.3.  \textbf{Function}: One of the audio format constants.  
\textbf{Notes}: 24 kHz, 16 Bit, Stereo

149.7.44  \texttt{kAudioFormat\_24kHz8BitMono} = 24

MBS Win Plugin, Plugin Version: 14.3.  \textbf{Function}: One of the audio format constants.  
\textbf{Notes}: 24 kHz, 8 Bit, Mono
149.7. CLASS WINSPEECHMBS

149.7.45  \texttt{kAudioFormat\_24kHz8BitStereo} = 25

MBS Win Plugin, Plugin Version: 14.3. \textbf{Function}: One of the audio format constants.  
\textbf{Notes}: 24 kHz, 8 Bit, Stereo

149.7.46  \texttt{kAudioFormat\_32kHz16BitMono} = 30

MBS Win Plugin, Plugin Version: 14.3. \textbf{Function}: One of the audio format constants.  
\textbf{Notes}: 32 kHz, 16 Bit, Mono

149.7.47  \texttt{kAudioFormat\_32kHz16BitStereo} = 31

MBS Win Plugin, Plugin Version: 14.3. \textbf{Function}: One of the audio format constants.  
\textbf{Notes}: 32 kHz, 16 Bit, Stereo

149.7.48  \texttt{kAudioFormat\_32kHz8BitMono} = 28

MBS Win Plugin, Plugin Version: 14.3. \textbf{Function}: One of the audio format constants.  
\textbf{Notes}: 32 kHz, 8 Bit, Mono

149.7.49  \texttt{kAudioFormat\_32kHz8BitStereo} = 29

MBS Win Plugin, Plugin Version: 14.3. \textbf{Function}: One of the audio format constants.  
\textbf{Notes}: 32 kHz, 8 Bit, Stereo

149.7.50  \texttt{kAudioFormat\_44kHz16BitMono} = 34

MBS Win Plugin, Plugin Version: 14.3. \textbf{Function}: One of the audio format constants.  
\textbf{Notes}: 44 kHz, 16 Bit, Mono

149.7.51  \texttt{kAudioFormat\_44kHz16BitStereo} = 35

MBS Win Plugin, Plugin Version: 14.3. \textbf{Function}: One of the audio format constants.  
\textbf{Notes}: 44 kHz, 16 Bit, Stereo
149.7.52  \( \text{kAudioFormat\_44kHz8BitMono} = 32 \)

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants.  
**Notes:** 44 kHz, 8 Bit, Mono

149.7.53  \( \text{kAudioFormat\_44kHz8BitStereo} = 33 \)

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants.  
**Notes:** 44 kHz, 8 Bit, Stereo

149.7.54  \( \text{kAudioFormat\_48kHz16BitMono} = 38 \)

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants.  
**Notes:** 48 kHz, 16 Bit, Mono

149.7.55  \( \text{kAudioFormat\_48kHz16BitStereo} = 39 \)

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants.  
**Notes:** 48 kHz, 16 Bit, Stereo

149.7.56  \( \text{kAudioFormat\_48kHz8BitMono} = 36 \)

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants.  
**Notes:** 48 kHz, 8 Bit, Mono

149.7.57  \( \text{kAudioFormat\_48kHz8BitStereo} = 37 \)

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants.  
**Notes:** 48 kHz, 8 Bit, Stereo

149.7.58  \( \text{kAudioFormat\_8kHz16BitMono} = 6 \)

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants.  
**Notes:** 8 kHz, 16 Bit, Mono
149.7. CLASS WINSPEECHMBS

149.7.59 kAudioFormat_8kHz16BitStereo = 7

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants.  
**Notes:** 8 kHz, 16 Bit, Stereo

149.7.60 kAudioFormat_8kHz8BitMono = 4

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants.  
**Notes:** 8 KHz, 8 Bit, Mono

149.7.61 kAudioFormat_8kHz8BitStereo = 5

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants.  
**Notes:** 8 kHz, 8 Bit, Stereo

149.7.62 kAudioFormat_ADPCM_11kHzMono = 59

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants.  
**Notes:** ADPCM, 11 kHz, Mono

149.7.63 kAudioFormat_ADPCM_11kHzStereo = 60

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants.  
**Notes:** ADPCM, 11 kHz, Stereo

149.7.64 kAudioFormat_ADPCM_22kHzMono = 61

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants.  
**Notes:** ADPCM, 22 kHz, Mono

149.7.65 kAudioFormat_ADPCM_22kHzStereo = 62

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants.  
**Notes:** ADPCM, 22 kHz, Stereo
149.7.66   kAudioFormat_ADPCM_44kHzMono = 63

MBS Win Plugin, Plugin Version: 14.3.  **Function:** One of the audio format constants.
**Notes:** ADPCM, 44 kHz, Mono

149.7.67   kAudioFormat_ADPCM_44kHzStereo = 64

MBS Win Plugin, Plugin Version: 14.3.  **Function:** One of the audio format constants.
**Notes:** ADPCM, 44 kHz, Stereo

149.7.68   kAudioFormat_ADPCM_8kHzMono = 57

MBS Win Plugin, Plugin Version: 14.3.  **Function:** One of the audio format constants.
**Notes:** ADPCM, 8 kHz, Mono

149.7.69   kAudioFormat_ADPCM_8kHzStereo = 58

MBS Win Plugin, Plugin Version: 14.3.  **Function:** One of the audio format constants.
**Notes:** ADPCM, 8 kHz, Stereo

149.7.70   kAudioFormat_CCITT_ALaw_11kHzMono = 43

MBS Win Plugin, Plugin Version: 14.3.  **Function:** One of the audio format constants.
**Notes:** CCITT, ALaw, 11 kHz, Mono

149.7.71   kAudioFormat_CCITT_ALaw_11kHzStereo = 44

MBS Win Plugin, Plugin Version: 14.3.  **Function:** One of the audio format constants.
**Notes:** CCITT, ALaw, 11 kHz, Stereo

149.7.72   kAudioFormat_CCITT_ALaw_22kHzMono = 45

MBS Win Plugin, Plugin Version: 14.3.  **Function:** One of the audio format constants.
**Notes:** CCITT, ALaw, 22 kHz, Mono
149.7. CLASS WINSPEECHMBS

149.7.73  \texttt{kAudioFormat\_CCITT\_ALaw\_22kHzStereo} = 46

MBS Win Plugin, Plugin Version: 14.3. \textbf{Function}: One of the audio format constants.  
\textbf{Notes}: CCITT, ALaw, 22 kHz, Stereo

149.7.74  \texttt{kAudioFormat\_CCITT\_ALaw\_44kHzMono} = 47

MBS Win Plugin, Plugin Version: 14.3. \textbf{Function}: One of the audio format constants.  
\textbf{Notes}: CCITT, ALaw, 44 kHz, Mono

149.7.75  \texttt{kAudioFormat\_CCITT\_ALaw\_44kHzStereo} = 48

MBS Win Plugin, Plugin Version: 14.3. \textbf{Function}: One of the audio format constants.  
\textbf{Notes}: CCITT, ALaw, 44 kHz, Stereo

149.7.76  \texttt{kAudioFormat\_CCITT\_ALaw\_8kHzMono} = 41

MBS Win Plugin, Plugin Version: 14.3. \textbf{Function}: One of the audio format constants.  
\textbf{Notes}: CCITT, ALaw, 8 kHz, Mono

149.7.77  \texttt{kAudioFormat\_CCITT\_ALaw\_8kHzStereo} = 42

MBS Win Plugin, Plugin Version: 14.3. \textbf{Function}: One of the audio format constants.  
\textbf{Notes}: CCITT, ALaw, 8 kHz, Stereo

149.7.78  \texttt{kAudioFormat\_CCITT\_uLaw\_11kHzMono} = 51

MBS Win Plugin, Plugin Version: 14.3. \textbf{Function}: One of the audio format constants.  
\textbf{Notes}: CCITT, uLaw, 11 kHz, Mono

149.7.79  \texttt{kAudioFormat\_CCITT\_uLaw\_11kHzStereo} = 52

MBS Win Plugin, Plugin Version: 14.3. \textbf{Function}: One of the audio format constants.  
\textbf{Notes}: CCITT, uLaw, 11 kHz, Stereo
149.7.80  \( \text{kAudioFormat\_CCITT\_uLaw\_22kHzMono} = 53 \)

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants.
**Notes:** CCITT, uLaw, 22 kHz, Mono

149.7.81  \( \text{kAudioFormat\_CCITT\_uLaw\_22kHzStereo} = 54 \)

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants.
**Notes:** CCITT, uLaw, 22 kHz, Stereo

149.7.82  \( \text{kAudioFormat\_CCITT\_uLaw\_44kHzMono} = 55 \)

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants.
**Notes:** CCITT, uLaw, 44 kHz, Mono

149.7.83  \( \text{kAudioFormat\_CCITT\_uLaw\_44kHzStereo} = 56 \)

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants.
**Notes:** CCITT, uLaw, 44 kHz, Stereo

149.7.84  \( \text{kAudioFormat\_CCITT\_uLaw\_8kHzMono} = 49 \)

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants.
**Notes:** CCITT, uLaw, 8 kHz, Mono

149.7.85  \( \text{kAudioFormat\_CCITT\_uLaw\_8kHzStereo} = 50 \)

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants.
**Notes:** CCITT, uLaw, 8 kHz, Stereo

149.7.86  \( \text{kAudioFormat\_GSM610\_11kHzMono} = 66 \)

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants.
**Notes:** GSM 610, 11 kHz, Mono
149.7. CLASS WinspeechMBS

149.7.87 \( \text{kAudioFormat\_GSM610\_22kH} \text{zMono} = 67 \)

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants.  
**Notes:** GSM 610, 22 kHz, Mono

149.7.88 \( \text{kAudioFormat\_GSM610\_44kH} \text{zMono} = 68 \)

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants.  
**Notes:** GSM 610, 44 kHz Mono

149.7.89 \( \text{kAudioFormat\_GSM610\_8kH} \text{zMono} = 65 \)

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants.  
**Notes:** GSM 610, 8 kHz, Mono

149.7.90 \( \text{kAudioFormat\_TrueSpeech\_8kH} \text{z1B} \text{iMono} = 40 \)

MBS Win Plugin, Plugin Version: 14.3. **Function:** One of the audio format constants.  
**Notes:** TrueSpeech, 8 kHz, 1 Bit, Mono

149.7.91 \( \text{kMaxRate} = 10 \)

MBS Win Plugin, Plugin Version: 3.3. **Function:** The maximum for the rate property.

149.7.92 \( \text{kMaxVolume} = 100 \)

MBS Win Plugin, Plugin Version: 3.3. **Function:** The maximum for the volume property.

149.7.93 \( \text{kMinRate} = -10 \)

MBS Win Plugin, Plugin Version: 3.3. **Function:** The minimum for the rate property.
149.7.94  \( \text{kMinVolume} = 0 \)

MBS Win Plugin, Plugin Version: 3.3. **Function:** The minimum for the volume property.

149.7.95  \( \text{PriorityAlert} = 1 \)

MBS Win Plugin, Plugin Version: 8.1. **Function:** One of the priority constants.

149.7.96  \( \text{PriorityNormal} = 0 \)

MBS Win Plugin, Plugin Version: 8.1. **Function:** One of the priority constants.

149.7.97  \( \text{PriorityOver} = 2 \)

MBS Win Plugin, Plugin Version: 8.1. **Function:** One of the priority constants.

149.7.98  \( \text{SPDUI\_AddRemoveWord = ”AddRemoveWord”} \)

MBS Win Plugin, Plugin Version: 8.1. **Function:** One of the constants for the User Interfaces used with IsUISupported and DisplayUI.

149.7.99  \( \text{SPDUI\_AudioProperties = ”AudioProperties”} \)

MBS Win Plugin, Plugin Version: 8.1. **Function:** One of the constants for the User Interfaces used with IsUISupported and DisplayUI.

149.7.100  \( \text{SPDUI\_AudioVolume = ”AudioVolume”} \)

MBS Win Plugin, Plugin Version: 8.1. **Function:** One of the constants for the User Interfaces used with IsUISupported and DisplayUI.
149.7. CLASS WINSPEECHMBS

149.7.101  **SPDUI_EngineProperties = ”EngineProperties”**

MBS Win Plugin, Plugin Version: 8.1. **Function:** One of the constants for the User Intefaces used with IsUISupported and DisplayUI.

149.7.102  **SPDUI_MicTraining = ”MicTraining”**

MBS Win Plugin, Plugin Version: 8.1. **Function:** One of the constants for the User Intefaces used with IsUISupported and DisplayUI.

149.7.103  **SPDUI_RecoProfileProperties = ”RecoProfileProperties”**

MBS Win Plugin, Plugin Version: 8.1. **Function:** One of the constants for the User Intefaces used with IsUISupported and DisplayUI.

149.7.104  **SPDUI_UserTraining = ”UserTraining”**

MBS Win Plugin, Plugin Version: 8.1. **Function:** One of the constants for the User Intefaces used with IsUISupported and DisplayUI.
149.8 class WinVoiceMBS

149.8.1 class WinVoiceMBS

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A class for a voice.

149.8.2 Methods

149.8.3 Description as string

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The name of the voice.
**Notes:** Returns a 16bit unicode string.

149.8.4 Properties

149.8.5 Handle as Integer

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The handle to the voice.
**Notes:** (Read only property)

149.8.6 Lasterror as Integer

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The last error code reported.
**Notes:** (Read only property)
Chapter 150

Spell Checking

150.1 class NSSpellCheckerMBS

150.1.1 class NSSpellCheckerMBS

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The spell checker class.

Notes:
The NSSpellChecker object is used by a client (e.g. a document in an application) to spell-check a given String.
There is only one NSSpellChecker instance per application (since spell-checking is interactive and you only have one mouse and one keyboard).

The string being spell-checked need only be valid for the duration of the call to checkSpellingOfString or countWordsInString.

Requires Mac OS X 10.2.

150.1.2 Methods

150.1.3 availableLanguages as string()

MBS MacCocoa Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a list of the available languages.

Notes: Requires Mac OS X 10.5.
150.1.4 checkGrammarOfString(text as string, start as Integer, language as string, wrap as boolean) as NSRangeMBS

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initiates a grammatical analysis of a given string.

**Notes:**

text: String to analyze.
start: Location within string at which to start the analysis.
language: Language use in string. When nil, the language selected in the Spelling panel is used.
wrap: true to specify that the analysis continue to the beginning of string when the end is reached. false to have the analysis stop at the end of string.
outDetails: Optional. On output, dictionaries describing grammar-analysis details within the flagged grammatical unit. See the NSSpellServer class for information about these dictionaries.

Returns Location of the first flagged grammatical unit.

Available in Mac OS X v10.5 and later.

See also:

- 150.1.5 checkGrammarOfString(text as string, start as Integer, language as string, wrap as boolean, Details() as dictionary) as NSRangeMBS

150.1.5 checkGrammarOfString(text as string, start as Integer, language as string, wrap as boolean, Details() as dictionary) as NSRangeMBS

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initiates a grammatical analysis of a given string.

**Notes:**

text: String to analyze.
start: Location within string at which to start the analysis.
language: Language use in string. When nil, the language selected in the Spelling panel is used.
wrap: true to specify that the analysis continue to the beginning of string when the end is reached. false to have the analysis stop at the end of string.
outDetails: Optional. On output, dictionaries describing grammar-analysis details within the flagged grammatical unit. See the NSSpellServer class for information about these dictionaries.

Returns Location of the first flagged grammatical unit.

Available in Mac OS X v10.5 and later.

See also:

- 150.1.4 checkGrammarOfString(text as string, start as Integer, language as string, wrap as boolean) as NSRangeMBS
150.1. CLASS NSSPELLCHECKERMBS

150.1.6 checkSpellingOfString(text as string, start as Integer) as NSRangeMBS

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initiates a spell-check of a string.
**Notes:** Returns the range of the first misspelled word.
See also:

- 150.1.7 checkSpellingOfString(text as string, start as Integer, language as string, wrap as boolean) as NSRangeMBS
- 150.1.8 checkSpellingOfString(text as string, start as Integer, language as string, wrap as boolean, byref WordCount as Integer) as NSRangeMBS

150.1.7 checkSpellingOfString(text as string, start as Integer, language as string, wrap as boolean) as NSRangeMBS

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initiates a spell-check of a string.
**Notes:** Returns the range of the first misspelled word.
See also:

- 150.1.6 checkSpellingOfString(text as string, start as Integer) as NSRangeMBS
- 150.1.8 checkSpellingOfString(text as string, start as Integer, language as string, wrap as boolean, byref WordCount as Integer) as NSRangeMBS

150.1.8 checkSpellingOfString(text as string, start as Integer, language as string, wrap as boolean, byref WordCount as Integer) as NSRangeMBS

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initiates a spell-check of a string.
**Notes:** Returns the range of the first misspelled word (and optionally the wordCount by reference).
See also:

- 150.1.6 checkSpellingOfString(text as string, start as Integer) as NSRangeMBS
- 150.1.7 checkSpellingOfString(text as string, start as Integer, language as string, wrap as boolean) as NSRangeMBS

150.1.9 completionsForPartialWordRange(start as Integer, length as Integer, text as string, language as string=”)” as string()

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Searches possible completions for the given word.
**Notes:**
Returns an array of strings, in the order in which they should be presented, representing complete words that the user might be trying to type when starting by typing the partial word at the given range in the given string.

Within the text, length characters are picked starting at at position (0 based) and matched agains the dictionary defined by language.
Up to around 100 words are returned.

Requires Mac OS X 10.3.
Returns an empty string on any error.

150.1.10  countWordsInString(word as string, language as string=“”) as Integer

Example:

dim text as string = "Hello World"
dim spell as NSpellCheckerMBS // your spellchecker

msgBox str(spell.countWordsInString(text,"en"))

Notes:
Returns the number of words in text. The language argument specifies the language used in the string. If language is the empty string, the current selection in the Spelling panel’s pop-up menu is used.

Returns -1 if text is nil or this spellchecker function is not available.

Returns -1 if counting words isn’t supported by the spell server selected.

150.1.11  forgetWord(word as string)

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Removes the given word from the user dictionary.
150.1.12 guessesForWord(range as NSRangeMBS, word as string, language as string) as string()

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of possible substitutions for the specified string. **Notes:**

- range: The range of the string to check.
- word: The string to guess
- language: The language of the string

Returns an array of strings containing possible replacement words. Available in Mac OS X v10.6 and later. See also:

- 150.1.13 guessesForWord(word as string) as string()

150.1.13 guessesForWord(word as string) as string()

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array with words matching the given word. **Example:**

```vbs
' Example:
dim a() as string
dim s as new NSSpellCheckerMBS
a=s.guessesForWord("Hell")
msgbox str(ubound(a)+1)+" suggestions."
```

**Notes:**

- Returns nil on any error.

Returns an array of suggested spellings for the misspelled word word. If word contains all capital letters, or its first letter is capitalized, the suggested words are capitalized in the same way. See also:

- 150.1.12 guessesForWord(range as NSRangeMBS, word as string, language as string) as string()

150.1.14 hasLearnedWord(word as string) as boolean

MBS MacCocoa Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Checks whether a word has been learned. **Notes:**
CHAPTER 150. SPELL CHECKING

Returns true if the word is known. Requires Mac OS X 10.5.

150.1.15  ignoredWords as string()

Example:

```vbscript
dim spell as new NSSpellCheckerMBS
dim f as FolderItem
dim i,c as Integer
dim t as TextOutputStream
dim n(-1) as string

f=SpecialFolder.Preferences.Child("SpellCheck RB.pref")
t=f.CreateTextFile
if t<>nil and spell<>nil then
    n=spell.ignoredWords
    MsgBox Join(n,EndOfLine)
end if
```

Notes: Returns nil on any error.

150.1.16  ignoreWord(word as string)

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Adds the word to the ignore list so it will be ignored for spell checking in this NSSpellCheckerMBS object.
Notes: Requires Mac OS X 10.2.

150.1.17  isAutomaticSpellingCorrectionEnabled as boolean

Notes: Available in Mac OS X v10.6 and later.
150.1.18  isAutomaticTextReplacementEnabled as boolean

MBS MacCocoa Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether automatic spelling replacement is enabled.  
**Notes:** Available in Mac OS X v10.6 and later.

150.1.19  languageMenuEntries as string()

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The entries from the language menu of the panel.  
**Notes:**  
Copies the list of menu entries from the panel.

Currently you can use this names to show to the user and see what languages are available. It uses a private property which works for Mac OS X 10.4 and 10.5.  
For the language function you need the short names:

- Australian English en_AU
- British English en_GB
- Canadian English en_CA
- Deutsch de
- English en
- Espaol es
- Franais fr
- Italiano it
- Multilingual Multilingual
- Nederlands nl
- Portugus pt
- Portugus do Brasil pt_BR
- Svenska sv

150.1.20  learnWord(word as string)

MBS MacCocoa Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Learns the given word.  
**Notes:** Requires Mac OS X 10.5.
CHAPTER 150. SPELL CHECKING

150.1.21 NSSpellCheckerDidChangeAutomaticSpellingCorrectionNotification as string

Function: One of the notification names.
Notes:
Use with NSNotificationObserverMBS class.
This notification is posted when the spell checker did change text using automatic spell checking correction.
The are posted application’s to the default notification center.
Available in Mac OS X v10.7 and later.

150.1.22 NSSpellCheckerDidChangeAutomaticTextReplacementNotification as string

Function: One of the notification names.
Notes:
Use with NSNotificationObserverMBS class.
This notification is posted when the spell checker changed text using automatic text replacement. The are posted application’s to the default notification center.
Available in Mac OS X v10.7 and later.

150.1.23 NSTextCheckingDocumentAuthorKey as string

Notes:
An string containing the name of an author to be associated with the document

Available in Mac OS X v10.6 and later.

150.1.24 NSTextCheckingDocumentTitleKey as string

Notes:
A string containing the title to be associated with the document.
150.1.25 **NSTextCheckingDocumentURLKey as string**

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the options dictionary. 
**Notes:** 
An NSURL to be associated with the document.

Available in Mac OS X v10.6 and later.

150.1.26 **NSTextCheckingOrthographyKey as string**

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the options dictionary. 
**Notes:** 
An NSOrthography instance indicating an orthography to be used as a starting point for orthography checking, or as the orthography if orthography checking is not enabled.

Available in Mac OS X v10.6 and later.

150.1.27 **NSTextCheckingQuotesKey as string**

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the options dictionary. 
**Notes:** 
An NSArray containing four strings to be used with NSTextCheckingTypeQuote (opening double quote, closing double quote, opening single quote, and closing single quote in that order); if not specified, values will be taken from user’s preferences.

Available in Mac OS X v10.6 and later.

150.1.28 **NSTextCheckingReferenceDateKey as string**

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the constants for the options dictionary.
Notes:
An NSDate to be associated with the document, used as a referent for relative dates; if not specified, the current date will be used.

Available in Mac OS X v10.6 and later.

150.1.29 NSTextCheckingReferenceTimeZoneKey as string

Notes: An NSTimeZone to be associated with the document, used as a reference for dates without time zones; if not specified, the current time zone will be used.

Available in Mac OS X v10.6 and later.

150.1.30 NSTextCheckingRegularExpressionsKey as string

Notes: Available in Mac OS X 10.7 or newer.
Currently not directly supported with our plugins.

150.1.31 NSTextCheckingReplacementsKey as string

Notes: A dictionary containing replacements to be used with NSTextCheckingTypeReplacement; if not specified, values will be taken from user’s preferences.

Available in Mac OS X v10.6 and later.
150.1.32  setIgnoredWords(words() as string)

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the ignored word list.

**Example:**

```vba
dim spell as NSSpellCheckerMBS // your spellchecker

dim f as FolderItem
dim t as TextInputStream
dim words(-1), line as string

f=SpecialFolder.Preferences.Child("SpellCheck RB.pref")
t=f.OpenAsTextFile
if t<>nil and spell<>nil then
    while not t.eof
        line=t.ReadLine(encodings.UTF8)
        if line<>"" then
            words.Append line
        end if
    wend

    spell.setIgnoredWords words
end if
```

150.1.33  setLanguage(language as string) as boolean

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Allows programmatic setting of the language to spell-check in.

**Notes:**

Normally chosen by a pop-up-list in the spelling panel and defaulted to the user’s preferred language, so call this with care.
Set to "" to use the language from the panel popup menu.

150.1.34  sharedSpellCheckerExists as boolean

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns whether the application’s NSSpellChecker has already been created.

**Notes:** Returns true if the shared spell checker already exists, otherwise false.
150.1.35 spellingPanel as NSPanelMBS

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The spelling panel used for spell checking.

150.1.36 unlearnWord(word as string)

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Tells the spell checker to unlearn a given word. **Notes:**
Available in Mac OS X v10.5 and later.
Same as the older forgetWord.

150.1.37 updatePanels

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Updates the available panels to account for user changes. **Notes:**
This method should be called when a client changes some relevant setting, such as what kind of spelling, grammar checking, or substitutions it uses.
Available in Mac OS X v10.6 and later.

150.1.38 updateSpellingPanelWithGrammarString(lang as string, detail as dictionary)

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Specifies a grammar-analysis detail to highlight in the Spelling panel. **Notes:**
problemString: Problematic grammatical unit identified by checkGrammarOfString.
detail: One of the grammar-analysis details provided by checkGrammarOfString.
Available in Mac OS X v10.5 and later.
150.1.39  updateSpellingPanelWithMisspelledWord(word as string)

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Updates the panel with the word. **Notes:** The checkSpellingOfString methods return the range of the misspelled word found. It is up to the client to select that word in their document and to cause the spelling panel to update itself to reflect the found misspelling. Clients can call updateSpellPanelWithMisspelledWord to insure that the spell panel is up to date.

150.1.40  userPreferredLanguages as string()

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Provides a subset of the available languages to be used for spell checking. **Notes:**

Returns an array containing the user’s preferred languages for spell checking. The order is set in the system preferences.

If automaticallyIdentifiesLanguages is true, then text checking will automatically use this method as appropriate; otherwise, it will use the language set by Language property.

The older checkSpellingOfString and checkGrammarOfString methods will use the language set by Language property, if they are called with an empty language argument.

Available in Mac OS X v10.6 and later.

150.1.41  userQuotesArrayForLanguage(lang as string) as string()

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the default values for quote replacement. **Example:**

```dim n as new NSSpellCheckerMBS
dim en(-1) as string = n.userQuotesArrayForLanguage("en")
MsgBox Join(en," ")```

**Notes:**

An array of quote replacements used by the NSTextCheckingQuotesKey key-value pair.
Available in Mac OS X v10.6 and later.

150.1.42  userReplacementsDictionary as dictionary

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the dictionary used when replacing words.
Notes:
The key-value pairs in this dictionary are used by the NSTextCheckingQuotesKey when replacing characters and words.

Available in Mac OS X v10.6 and later.

150.1.43  Properties

150.1.44  accessoryView as NSViewMBS

Notes:
The accessory view can be any custom view you want to display with the spelling panel. The accessory view is displayed below the spelling checker and the panel automatically resizes to accommodate the accessory view.

This method posts a notification named NSWindowDidResizeNotification with the Spelling panel object to the default notification center.

The accessory view or nil if there is none.
(Read and Write property)

150.1.45  automaticallyIdentifiesLanguages as boolean

Notes:
Available in Mac OS X v10.6 and later.
(Read and Write property)
150.1.46 Handle as Integer

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The handle to the used NSSpellChecker reference.  
**Notes:** (Read and Write property)

150.1.47 language as string

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The current language used.  
**Example:**
```
dim c as NSSpellCheckerMBS

C=new NSSpellCheckerMBS

C.Language="en"

MsgBox C.Language // shows en

C.Language="Dutch"

MsgBox C.Language // shows nl

C.Language="Multilingual"

MsgBox C.Language // shows Multilingual
```

**Notes:** (Read and Write property)

150.1.48 Length as Integer

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last length of the position where an error was found.  
**Notes:**

Length is 0 if no location was found.  
(Read and Write property)
150.1.49 Location as Integer

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The last location where an error was found. **Notes:** (Read and Write property)

150.1.50 substitutionsPanel as NSPanelMBS

MBS MacCocoa Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The substitutions panel. **Notes:** (Read only property)

150.1.51 Tag as Integer

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The document tag for the current document. **Notes:**

Every NSSpellCheckerMBS gets a new tag. The tag identifies which ignore list is used. This value is set automatically. (Read and Write property)

150.1.52 WordFieldValue as string

MBS MacCocoa Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The word textfield content string. **Notes:** (Read and Write computed property)

150.1.53 Events

150.1.54 Correct

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** An event sent whenever the Correct button is pressed.
150.1. FindNext

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: An event sent whenever the Find Next button is pressed.

150.1. Ignore

MBS MacCocoa Plugin, Plugin Version: 7.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: An event sent whenever the Ignore button is pressed.

150.1. Constants

150.1. NSCorrectionIndicatorTypeDefault = 0

MBS MacCocoa Plugin, Plugin Version: 11.3. Function: One of the correction indicator type constants. Notes: The default indicator that shows a proposed correction. Available in Mac OS X v10.7 and later.

150.1. NSCorrectionIndicatorTypeGuesses = 2

MBS MacCocoa Plugin, Plugin Version: 11.3. Function: One of the correction indicator type constants. Notes: Shows multiple alternatives from which the user may choose the appropriate spelling. Available in Mac OS X v10.7 and later.

150.1. NSCorrectionIndicatorTypeReversion = 1

MBS MacCocoa Plugin, Plugin Version: 11.3. Function: One of the correction indicator type constants. Notes: Provides the option to revert to the original form after a correction has been made. Available in Mac OS X v10.7 and later.
150.1.61 NSCorrectionResponseAccepted = 1

MBS MacCocoa Plugin, Plugin Version: 11.3. **Function:** One of the constants passed to recordresponse method.
**Notes:**
The user accepted the correction.
Available in Mac OS X v10.7 and later.

150.1.62 NSCorrectionResponseEdited = 4

MBS MacCocoa Plugin, Plugin Version: 11.3. **Function:** One of the constants passed to recordresponse method.
**Notes:**
After the correction was accepted, the user edited the corrected word (to something other than its original form.
Available in Mac OS X v10.7 and later.

150.1.63 NSCorrectionResponseIgnored = 3

MBS MacCocoa Plugin, Plugin Version: 11.3. **Function:** One of the constants passed to recordresponse method.
**Notes:**
The user continued in such a way as to ignore the correction.
Available in Mac OS X v10.7 and later.

150.1.64 NSCorrectionResponseNone = 0

MBS MacCocoa Plugin, Plugin Version: 11.3. **Function:** One of the constants passed to recordresponse method.
**Notes:**
No response was received from the user.
Available in Mac OS X v10.7 and later.

150.1.65 NSCorrectionResponseRejected = 2

MBS MacCocoa Plugin, Plugin Version: 11.3. **Function:** One of the constants passed to recordresponse method.
Notes:
The user rejected the correction by dismissing the correction indicator.
Available in Mac OS X v10.7 and later.

150.1.66 NSCorrectionResponseReverted = 5
MBS MacCocoa Plugin, Plugin Version: 11.3. **Function:** One of the constants passed to recordresponse method.
**Notes:**
After the correction was accepted, the user reverted the correction back to the original word.
Available in Mac OS X v10.7 and later.

150.1.67 NSGrammarCorrections = ”NSGrammarCorrections”
MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the key constants for the dictionaries in the details array.

150.1.68 NSGrammarRange = ”NSGrammarRange”
MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the key constants for the dictionaries in the details array.

150.1.69 NSGrammarUserDescription = ”NSGrammarUserDescription”
MBS MacCocoa Plugin, Plugin Version: 9.6. **Function:** One of the key constants for the dictionaries in the details array.
Chapter 151

Spotlight

151.1 class MDItemMBS

151.1.1 class MDItemMBS

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: This is the class that represents a file and the metadata associated with the file. Notes: Available in Mac OS X version 10.4 and later.

151.1.2 Methods

151.1.3 AllAttributes as string()

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns a list with all possible attribute names in the system. Notes:
dim item as new MDItemMBS(SpecialFolder.Desktop)
MsgBox join(item.AllAttributes, EndOfLine)

151.1.4 AttributeBoolean(name as string) as boolean

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the value for this attribute.
151.1.5 AttributeDouble(name as string) as Double

**Function:** Returns the value for this attribute.

151.1.6 AttributeMultiValued(name as string) as boolean

**Function:** Whether the given attribute is an array of multiple values.

151.1.7 AttributeNames as string()

**Function:** Returns an array containing the attribute names existing in the metadata item.  
**Example:**
```
dim item as new MDItemMBS(SpecialFolder.Desktop)
MsgBox join(item.AttributeNames, EndOfLine)
```

**Notes:** Available in Mac OS X version 10.4 and later.

151.1.8 AttributeString(name as string) as string

**Function:** Returns the value for this attribute.  
**Example:**
```
dim item as new MDItemMBS(SpecialFolder.Desktop)
MsgBox item.AttributeString(item.kMDItemFSName)
```

151.1.9 AttributeStringArray(name as string) as string()

**Function:** Returns the value for this attribute.
151.1.10  **AttributeType(name as string) as string**

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The type of the attribute.
**Example:**
```
dim item as new MDItemMBS(SpecialFolder.Desktop)
```
```
MsgBox item.AttributeType(item.kMDItemFSName)  //"String"
```

**Notes:** Returns "Boolean", "Number", "Date" or "String".

151.1.11  **Constructor(path as folderitem)**

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates an MDItem object for a file at the specified path.
**Example:**
```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.rtf")
dim m as new MDItemMBS(f)
```
```
MsgBox m.DisplayName
```

**Notes:**
path: A path to the file from which to create the MDItem.

Available in Mac OS X version 10.4 and later.

151.1.12  **DisplayDescriptionForAttribute(name as string) as string**

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The display description for the attribute.
**Notes:**
```
dim item as new MDItemMBS(SpecialFolder.Desktop)
```
```
MsgBox item.DisplayDescriptionForAttribute(item.kMDItemDisplayName)
// shows "Lokalisiert angezeigter Name der Datei" in German
```
151.1.13 DisplayNameForAttribute(name as string) as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The display name for this attribute.

**Example:**
```vba
dim item as new MDItemMBS(SpecialFolder.Desktop)
MsgBox item.DisplayNameForAttribute(item.kMDItemDisplayName)
// shows "Anzeigename" in German
```

151.1.14 GetAttribute(name as string) as Variant

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the value of the given attribute for the item.

**Notes:**
name: The name of the desired attribute.

A variant, or nil on failure, or if the attribute does not exist, or if the attribute is not readable.

151.1.15 GetAttributes as dictionary

MBS MacOSX Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Queries all attributes with all names and values.

See also:

- 151.1.16 GetAttributes(names() as string) as dictionary

151.1.16 GetAttributes(names() as string) as dictionary

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the values of the given attributes for the item.

**Notes:**
names: An array of the names of the desired attributes.
A dictionary where the keys are the attribute names, and the values are the attribute values, or nil on failure.
If an attribute does not exist, or is unreadable, there will be no key-value pair for it in the dictionary.
See also:

- 151.1.15 GetAttributes as dictionary
151.1.17 kMDItemAcquisitionMake as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the item attribute constants. Notes: The manufacturer of the device used to acquire the document contents. A string.

151.1.18 kMDItemAcquisitionModel as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the item attribute constants. Notes: The model of the device used to acquire the document contents. For example, 100, 200, 400, etc. A string.

151.1.19 kMDItemAlbum as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the item attribute constants. Notes: The title for a collection of media. This is analogous to a record album, or photo album. A string.

151.1.20 kMDItemAltitude as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the item attribute constants. Notes: The altitude of the item in meters above sea level, expressed using the WGS84 datum. Negative values lie below sea level. A number.

151.1.21 kMDItemAperture as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the item attribute constants. Notes: The aperture setting used to acquire the document contents. This unit is the APEX value. A number.

151.1.22 kMDItemAppleLoopDescriptors as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the item attribute constants. Notes:
Specifies multiple pieces of descriptive information about a loop. An array of strings.

Besides genre and instrument, files can contain descriptive information that help users in refining searches.

151.1.23  kMDItemAppleLoopsKeyFilterType as string


Notes:
Specifies key filtering information about a loop. Loops are matched against projects that often in a major or minor key. A string.

To assist users in identifying loops that will "fit" with their compositions, loops can be tagged with one of the following key filters: "AnyKey" "Minor" "Major" "NeitherKey" "BothKeys". "AnyKey" means that it fits with anything (whether in a major key, minor key or neither). "Minor" fits with compositions in a minor key. "NeitherKey" doesn’t work well with compositions that are in major or minor key. "BothKeys" means it fits with major or minor key.

151.1.24  kMDItemAppleLoopsLoopMode as string


Notes:
Specifies how a file should be played. A string.

Tagged files can either be loops or non-loops (e.g., a cymbal crash). "Looping" indicates if the file should be treated as a loop. "Non-looping" indicates the file should not be treated as a loop.

151.1.25  kMDItemAppleLoopsRootKey as string


Notes: Specifies the loop’s original key. The key is the root note or tonic for the loop, and does not include the scale type. A string.
151.1. CLASS MDITEMMBS

151.1.26 kMDItemApplicationCategories as string

MBS MacOSX Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.  
**Notes:** Available in Mac OS X 10.7 and later.

151.1.27 kMDItemAttributeChangeDate as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.  
**Notes:** The date and time of the last change made to a metadata attribute. A date.

151.1.28 kMDItemAudiences as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.  
**Notes:** The audience for which the file is intended. The audience may be determined by the creator or the publisher or by a third party. An array of strings.

151.1.29 kMDItemAudioBitRate as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.  
**Notes:** The audio bit rate. A number.

151.1.30 kMDItemAudioChannelCount as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.  
**Notes:** Number of channels in the audio data contained in the file. A number.

This integer value only represents the number of discreet channels of audio data found in the file. It does not indicate any configuration of the data in regards to a user’s speaker setup.
151.1.31 kMDItemAudioEncodingApplication as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.  
**Notes:** The name of the application that encoded the data contained in the audio file. A string.

151.1.32 kMDItemAudioSampleRate as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.  
**Notes:** Sample rate of the audio data contained in the file. The sample rate is a float value representing hz (audio_frames/second). For example: 44100.0, 22254.54. A number.

151.1.33 kMDItemAudioTrackNumber as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.  
**Notes:** The track number of a song or composition when it is part of an album. A number (integer).

151.1.34 kMDItemAuthorAddresses as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.  
**Notes:** This attribute indicates the author addresses of the document. An array of string. Requires Mac OS X 10.6.

151.1.35 kMDItemAuthorEmailAddresses as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.  
**Notes:** This attribute indicates the author of the emails message addresses. (This is always the email address, and not the human readable version). An array of string. Requires Mac OS X 10.5.
151.1. **CLASS MDITEMMBS**

151.1.36 **kMDItemAuthors as string**

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.

**Notes:**
The author, or authors, of the contents of the file. An array of strings.
The order of the authors is preserved, but does not represent the main author or relative importance of the authors.

151.1.37 **kMDItemBitsPerSample as string**

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.

**Notes:** The number of bits per sample. For example, the bit depth of an image (8-bit, 16-bit etc...) or the bit depth per audio sample of uncompressed audio data (8, 16, 24, 32, 64, etc...). A number.

151.1.38 **kMDItemCameraOwner as string**

MBS MacOSX Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.

**Notes:** Available in Mac OS X 10.7 and later.

151.1.39 **kMDItemCFBundleIdentifier as string**

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.

**Notes:** If this item is a bundle, then this is the CFBundleIdentifier. A string.

151.1.40 **kMDItemCity as string**

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.

**Notes:**
Identifies city of origin according to guidelines established by the provider. A string.

For example, "New York", "Cupertino", or "Toronto".
151.1.41 kMDItemCodecs as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** The codecs used to encode/decode the media. An array of strings.

151.1.42 kMDItemColorSpace as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** The color space model used by the document contents. For example, "RGB", "CMYK", "YUV", or "YCbCr". A string.

151.1.43 kMDItemComment as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** A comment related to the file. This differs from the Finder comment, kMDItemFinderComment. A string.

151.1.44 kMDItemComposer as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** The composer of the music contained in the audio file. A string.

151.1.45 kMDItemContactKeywords as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** A list of contacts that are associated with this document, not including the authors. An array of strings.

151.1.46 kMDItemContentCreationDate as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:**
The date that the contents of the file were created. A date.

This is different than the file creation date. Its can be used to store when the file contents were first created, or first modified.

151.1.47 kMDItemContentModificationDate as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.

**Notes:**
The date and time that the contents of the file were last modified. A date.

This is not necessarily the file modification date.

151.1.48 kMDItemContentType as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.

**Notes:** For example, a jpeg image file will have a value of public.jpeg/public.image/public.data. The value of this attribute is set by the MDImporter. Changes to this value are lost when the file attributes are next imported.

151.1.49 kMDItemContentTypeTree as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.

**Notes:** Array of string

151.1.50 kMDItemContributors as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.

**Notes:**
The entities responsible for making contributions to the content of the resource. An array of strings.

Examples of a contributor include a person, an organization or a service.
151.1.51  **kMDItemCopyright as string**

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** The copyright owner of the file contents. A string.

151.1.52  **kMDItemCountry as string**

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** The full, publishable name of the country or primary location where the intellectual property of the item was created, according to guidelines of the provider. A string.

151.1.53  **kMDItemCoverage as string**

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:**

The extent or scope of the content of the resource. A string.

Coverage will typically include spatial location (a place name or geographic co-ordinates), temporal period (a period label, date, or date range) or jurisdiction (such as a named administrative entity).

Recommended best practice is to select a value from a controlled vocabulary, and that, where appropriate, named places or time periods be used in preference to numeric identifiers such as sets of co-ordinates or date ranges.

151.1.54  **kMDItemCreator as string**

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** Application used to create the document content (e.g. "Word", "AppleWorks", etc.). A string.

151.1.55  **kMDItemDateAdded as string**

MBS MacOSX Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:**
This is the date that the file was moved into the current location.
Not all files will have this attribute.
Not all file systems support this attribute.

151.1.56  kMDItemDeliveryType as string

Notes: The delivery type. Values are "Fast start" or "RTSP". A string.

151.1.57  kMDItemDescription as string

Notes: A description of the content of the resource. The description may include an abstract, table of contents, reference to a graphical representation of content or a free-text account of the content. A string.

151.1.58  kMDItemDirector as string

Notes: Director of the movie. A string. Requires Mac OS X 10.5.

151.1.59  kMDItemDisplayName as string

Notes: The localized version of the file name. A string.

151.1.60  kMDItemDownloadedDate as string

Notes: Available in Mac OS X 10.7 and later.
151.1.61 kMDItemDueDate as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the item attribute constants. Notes: Date this item is due. A date.

151.1.62 kMDItemDurationSeconds as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the item attribute constants. Notes: The duration, in seconds, of the content of file. A value of 10.5 represents media that is 10 and 1/2 seconds long. A number.

151.1.63 kMDItemEditors as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the item attribute constants. Notes: The list of editor/editors that has worked on this file. There could be 0 or more editors of a particular file. The order of the editors in the array is preserved, but is not intended to represent the main editor or relative importance of the editors. Type is An array of strings.

151.1.64 kMDItemEmailAddresses as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the item attribute constants. Notes: Email addresses related to this item. An array of strings.

151.1.65 kMDItemEncodingApplications as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the item attribute constants. Notes: Application used to convert the original content into it’s current form. For example, a PDF file might have an encoding application set to ”Distiller”. An array of strings.

151.1.66 kMDItemExecutableArchitectures as string

151.1. CLASS MDITEMMBS

Notes: Available in Mac OS X 10.7 and later.

151.1.67 kMDItemEXIFGPSVersion as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the item attribute constants. Notes: The version of GPSInfoIFD header that was used to generate the metadata. A string. Requires Mac OS X 10.5.

151.1.68 kMDItemEXIFVersion as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the item attribute constants. Notes: The version of the EXIF header used to generate the metadata. A string.

151.1.69 kMDItemExposureMode as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the item attribute constants. Notes: The exposure mode used to acquire the document contents. A number. Possible values are 0 (auto exposure), 1 (manual exposure) and 2 (auto bracket).

151.1.70 kMDItemExposureProgram as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the item attribute constants. Notes: The class of the exposure program used by the camera to set exposure when the image is taken. Possible values include: Manual, Normal, and Aperture priority. A string.

151.1.71 kMDItemExposureTimeSeconds as string

151.1.72 kMDItemExposureTimeString as string


151.1.73 kMDItemFinderComment as string


151.1.74 kMDItemFlashOnOff as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the item attribute constants. Notes: Indicates if a camera flash was used. A number.

151.1.75 kMDItemFNumber as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the item attribute constants. Notes: The diameter of the diaphragm aperture in terms of the effective focal length of the lens.

151.1.76 kMDItemFocalLength as string


151.1.77 kMDItemFocalLength35mm as string

151.1. CLASS MDITEMMBS

151.1.78 kMDItemFonts as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** Fonts used in this item. You should store the font’s full name, the postscript name, or the font family name, based on the available information. An array of strings.

151.1.79 kMDItemFSContentChangeDate as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** The date the file contents last changed. A date.

151.1.80 kMDItemFSCreationDate as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** The date and time that the file was created. A date.

151.1.81 kMDItemFSExists as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** This attribute is deprecated and was never implemented.

151.1.82 kMDItemFSHasCustomIcon as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** Boolean indicating if this file has a custom icon. Type is a boolean.

151.1.83 kMDItemFSInvisible as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** Indicates whether the file is invisible. A boolean.
**151.1.84 kMDItemFSIsExtensionHidden as string**

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** Indicates whether the file extension of the file is hidden. A boolean.

**151.1.85 kMDItemFSIsReadable as string**

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** This attribute is deprecated and was never implemented.

**151.1.86 kMDItemFSIsStationery as string**

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** Boolean indicating if this file is stationery. Type is a boolean.

**151.1.87 kMDItemFSIsWriteable as string**

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** This attribute is depreciated and was never implemented.

**151.1.88 kMDItemFSLabel as string**

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** Index of the Finder label of the file. Possible values are 0 through 7. A number.

**151.1.89 kMDItemFSName as string**

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** The file name of the item. A string.
151.1.90  kMDItemFSNodeCount as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** Number of files in a directory. A number.

151.1.91  kMDItemFSOwnerGroupID as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** The group ID of the owner of the file. A number.

151.1.92  kMDItemFSOwnerUserID as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** The user ID of the owner of the file. A number.

151.1.93  kMDItemFSSize as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** The size, in bytes, of the file on disk. A number.

151.1.94  kMDItemGenre as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** Genre of the movie. A string. Requires Mac OS X 10.5.

151.1.95  kMDItemGPSAreaInformation as string

MBS MacOSX Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.
151.1.96  kMDItemGPSDateStamp as string


151.1.97  kMDItemGPSDestBearing as string


151.1.98  kMDItemGPSDestDistance as string


151.1.99  kMDItemGPSDestLatitude as string


151.1.100  kMDItemGPSDestLongitude as string


151.1.101  kMDItemGPSDifferential as string

151.1  CLASS MDITEMMBS

Notes: Available in Mac OS X 10.7 and later.

151.1.102  kMDItemGPSDOP as string

151.1.103  kMDItemGPSMapDatum as string

MBS MacOSX Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.
**Notes:** Available in Mac OS X 10.7 and later.

151.1.104  kMDItemGPSMeasureMode as string

MBS MacOSX Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.
**Notes:** Available in Mac OS X 10.7 and later.

151.1.105  kMDItemGPSProcessingMethod as string

MBS MacOSX Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.
**Notes:** Available in Mac OS X 10.7 and later.

151.1.106  kMDItemGPSStatus as string

MBS MacOSX Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.
**Notes:** Available in Mac OS X 10.7 and later.

151.1.107  kMDItemGPSTrack as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.
**Notes:**
The direction of travel of the item, in degrees from true north. A number.
Requires Mac OS X 10.5.

151.1.108  kMDItemHasAlphaChannel as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.
Notes: Indicates if this image file has an alpha channel. A boolean.

151.1.109  kMDItemHeadline as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.  
**Notes:** A publishable entry providing a synopsis of the contents of the file. For example, "Apple Introduces the iPod Photo". A string.

151.1.110  kMDItemIdentifier as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.  
**Notes:** A formal identifier used to reference the resource within a given context. A string.

151.1.111  kMDItemImageDirection as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.  
**Notes:** The direction of the item’s image, in degrees from true north. A number.  
Requires Mac OS X 10.5.

151.1.112  kMDItemInformation as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.  
**Notes:** Information about the item. A string.  
Requires Mac OS X 10.5.

151.1.113  kMDItemInstantMessageAddresses as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.  
**Notes:** Instant message addresses related to this item. An array of strings.
151.1.114  kMDItemInstructions as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** Editorial instructions concerning the use of the item, such as embargoes and warnings. For example, "Second of four stories". A string.

151.1.115  kMDItemIsApplicationManaged as string

MBS MacOSX Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** Available in Mac OS X 10.7 and later.

151.1.116  kMDItemIsGeneralMIDISequence as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** Indicates whether the MIDI sequence contained in the file is setup for use with a General MIDI device. A boolean.

151.1.117  kMDItemIsLikelyJunk as string

MBS MacOSX Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** Available in Mac OS X 10.7 and later.

151.1.118  kMDItemISOSpeed as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** The ISO speed used to acquire the document contents. A number.

151.1.119  kMDItemKeySignature as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** The key of the music contained in the audio file. For example: C, Dm, F# m, Bb. A string.
151.1.120  kMDItemKeywords as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**  One of the item attribute constants.  
**Notes:**  Keywords associated with this file.  For example, ”Birthday”, ”Important”, etc.  An array of strings.

151.1.121  kMDItemKind as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**  One of the item attribute constants.  
**Notes:**  A description of the kind of item this file represents.  A string.

151.1.122  kMDItemLabelIcon as string

MBS MacOSX Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**  One of the item attribute constants.  
**Notes:**  Available in Mac OS X 10.7 and later.

151.1.123  kMDItemLabelID as string

MBS MacOSX Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**  One of the item attribute constants.  
**Notes:**  Available in Mac OS X 10.7 and later.

151.1.124  kMDItemLabelKind as string

MBS MacOSX Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**  One of the item attribute constants.  
**Notes:**  Available in Mac OS X 10.7 and later.

151.1.125  kMDItemLabelUUID as string

MBS MacOSX Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:**  One of the item attribute constants.  
**Notes:**  Available in Mac OS X 10.7 and later.
151.1.126 kMDItemLanguages as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** Indicates the languages of the intellectual content of the resource. Recommended best practice for the values of the Language element is defined by RFC 3066. An array of strings.

151.1.127 kMDItemLastUsedDate as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** The date and time that the file was last used. This value is updated automatically by LaunchServices everytime a file is opened by double clicking, or by asking LaunchServices to open a file. A date.

151.1.128 kMDItemLatitude as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** The latitude of the item in degrees north of the equator, expressed using the WGS84 datum. Negative values lie south of the equator. A number. Requires Mac OS X 10.5.

151.1.129 kMDItemLayerNames as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** The names of the layers in the file. An array of strings.

151.1.130 kMDItemLensModel as string

MBS MacOSX Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** Available in Mac OS X 10.7 and later.
151.1. CLASS MDITEMMBS

151.1.131 kMDItemLongitude as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** The longitude of the item in degrees east of the prime meridian, expressed using the WGS84 datum. Negative values lie west of the prime meridian. A number. Requires Mac OS X 10.5.

151.1.132 kMDItemLyricist as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** The lyricist, or text writer, of the music contained in the audio file. A string.

151.1.133 kMDItemMaxAperture as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** The smallest f-number of the lens. Ordinarily it is given in the range of 00.00 to 99.99. A number.

151.1.134 kMDItemMediaTypes as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** The media types present in the content. An array of strings.

151.1.135 kMDItemMeteringMode as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** The metering mode used to take the image. A string. Possible values are: Unknown, Average, CenterWeightedAverage, Spot, MultiSpot, Pattern, and Partial.
151.1.136 kMDItemMusicalGenre as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.  
**Notes:** The musical genre of the song or composition contained in the audio file. For example: Jazz, Pop, Rock, Classical. A string.

151.1.137 kMDItemMusicalInstrumentCategory as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.  
**Notes:** Specifies the category of an instrument. A string.

Files should have an instrument associated with them ("Other Instrument" is provided as a catch-all). For some categories, such as "Keyboards", there are instrument names which provide a more detailed instrument definition, for example "Piano" or "Organ".

151.1.138 kMDItemMusicalInstrumentName as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.  
**Notes:** Specifies the name of instrument relative to the instrument category. A string.

Files can have an instrument name associated with them if they have certain instrument categories. For example, the "Percussion" category has multiple instruments, including "Conga" and "Bongo".

151.1.139 kMDItemNamedLocation as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.  
**Notes:** The name of the location or point of interest associated with the item. The name may be user provided. A string
151.1.140  kMDItemNumberOfPages as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** Number of pages in the document. A number.

151.1.141  kMDItemOrganizations as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** The company or organization that created the document. An array of strings.

151.1.142  kMDItemOrientation as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** The orientation of the document contents. Possible values are 0 (landscape) and 1 (portrait). A number.

151.1.143  kMDItemOriginalFormat as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:**
Original format of the movie.
A string.
Requires Mac OS X 10.5

151.1.144  kMDItemOriginalSource as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:**
Original source of the movie. A string.
Requires Mac OS X 10.5.
151.1.145 kMDItemPageHeight as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** Height of the document page, in points (72 points per inch). For PDF files this indicates the height of the first page only. A number.

151.1.146 kMDItemPageWidth as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** Width of the document page, in points (72 points per inch). For PDF files this indicates the width of the first page only. A number.

151.1.147 kMDItemParticipants as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** The list of people who are visible in an image or movie or written about in a document. Type is array of strings. Requires Mac OS X 10.6.

151.1.148 kMDItemPath as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** The complete path to the file. A string.

151.1.149 kMDItemPerformers as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** Performers in the movie. An array of string. Requires Mac OS X 10.5.
151.1. CLASS MDITEMMBS

151.1.150 kMDItemPhoneNumbers as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** Phone numbers related to this item. An array of strings.

151.1.151 kMDItemPixelCount as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** The total number of pixels in the contents. Same as kMDItemPixelWidth x kMDItemPixelHeight. A number.

151.1.152 kMDItemPixelHeight as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** The height, in pixels, of the contents. For example, the image height or the video frame height. A number.

151.1.153 kMDItemPixelWidth as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** The width, in pixels, of the contents. For example, the image width or the video frame width. A number.

151.1.154 kMDItemProducer as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** Producer of the content. A string. Requires Mac OS X 10.5.

151.1.155 kMDItemProfileName as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.
Notes: The name of the color profile used by the document contents. A string.

151.1.156 kMDItemProjects as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the item attribute constants. Notes: The list of projects that this file is part of. For example, if you were working on a movie all of the files could be marked as belonging to the project "My Movie". An array of strings.

151.1.157 kMDItemPublishers as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the item attribute constants. Notes: The entity responsible for making the resource available. For example, a person, an organization, or a service. Typically, the name of a publisher should be used to indicate the entity. An array of strings.

151.1.158 kMDItemRecipientAddresses as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the item attribute constants. Notes: This attribute indicates the recipient addresses of the document. array of string. Requires Mac OS X 10.6.

151.1.159 kMDItemRecipientEmailAddresses as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: One of the item attribute constants. Notes: This attribute indicates the recipients email addresses. (This is always the email address, and not the human readable version). An array of string. Requires Mac OS X 10.5.

151.1.160 kMDItemRecipients as string

151.1. CLASS MDITEMMBS

Notes: Recipients of this item. An array of strings.

151.1.161 kMDItemRecordingDate as string

Notes: The recording date of the song or composition. A date.

This is in contrast to kMDItemContentCreationDate which, could indicate the creation date of an edited or 'mastered' version of the original art.

151.1.162 kMDItemRecordingYear as string

Notes: Indicates the year the item was recorded. For example, 1964, 2003, etc. A number.

151.1.163 kMDItemRedEyeOnOff as string

Notes: Indicates if red-eye reduction was used to take the picture. A boolean.

Possible values are 0 (no red-eye reduction mode or unknown) and 1 (red-eye reduction used).

151.1.164 kMDItemResolutionHeightDPI as string

Notes: Resolution height of this image in DPI. A number.
151.1.165 kMDItemResolutionWidthDPI as string

Notes: Resolution width, in DPI, of this image. A number.

151.1.166 kMDItemRights as string

Notes: Provides a link to information about rights held in and over the resource. A string.

Contains a rights management statement for the resource, or reference a service providing such information. Rights information often encompasses Intellectual Property Rights (IPR), Copyright, and various Property Rights.

If this attribute is absent, no assumptions can be made about the status of these and other rights with respect to the resource.

151.1.167 kMDItemSecurityMethod as string

Notes: The security or encryption method used for the file. A number.

151.1.168 kMDItemSpeed as string

Notes: The speed of the item, in kilometers per hour. A number.

Requires Mac OS X 10.5
151.1.169  kMDItemStarRating as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** User rating of this item. For example, the stars rating of an iTunes track. A number.

151.1.170  kMDItemStateOrProvince as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** Identifies the province or state of origin according to guidelines established by the provider. For example, "CA", "Ontario", or "Sussex". A string.

151.1.171  kMDItemStreamable as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** Whether the content is prepared for streaming. A boolean.

151.1.172  kMDItemSubject as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** Subject of the this item. Type is a string.

151.1.173  kMDItemSupportFileType as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** array of strings

151.1.174  kMDItemTempo as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants. **Notes:** A float value that specifies the beats per minute of the music contained in the audio file. A number.
151.1.175 kMDItemTextContent as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.

**Notes:**
Contains a text representation of the content of the document. Data in multiple fields should be combined using a whitespace character as a separator. A string.

An application’s Spotlight importer provides the content of this attribute. Applications can search for values in this attribute, but are not able to read the content of this attribute directly.

151.1.176 kMDItemTheme as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.

**Notes:** Theme of the this item. Type is a string.

151.1.177 kMDItemTimeSignature as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.

**Notes:** The time signature of the musical composition contained in the audio/MIDI file. For example: ”4/4”, ”7/8”. A string.

151.1.178 kMDItemTimestamp as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.

**Notes:**
The timestamp on the item. This generally is used to indicate the time at which the event captured by the item took place.

Mac OS X 10.5
151.1. CLASS MITEMMBS

151.1.179  kMDItemTitle as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.  
**Notes:** The title of the file. For example, this could be the title of a document, the name of a song, or the subject of an email message. A string.

151.1.180  kMDItemTotalBitRate as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.  
**Notes:** The total bit rate, audio and video combined, of the media. A number.

151.1.181  kMDItemURL as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.  
**Notes:** URL of the item.

Mac OS X 10.5

151.1.182  kMDItemVersion as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.  
**Notes:** The version number of this file. A string

151.1.183  kMDItemVideoBitRate as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** One of the item attribute constants.  
**Notes:** The video bit rate. A number.
151.1.184 kMDItemWhereFroms as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the item attribute constants.
**Example:**
```vba
    dim file as FolderItem = DownloadsFolderMBS(0).Child("test.html")
    dim item as new MDItemMBS(file)
    dim value as Variant = item.GetAttribute(MDItemMBS.kMDItemWhereFroms)
    if value <> nil then
        dim values() as Variant = value
        dim Link as String = values(0)
        MsgBox Link
    end if
```

**Notes:**
Describes where the file was obtained from. An array of strings.

For example, a downloaded file may refer to the URL, files received by email may indicate the sender’s email address, message subject, etc.

151.1.185 kMDItemWhiteBalance as string

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
One of the item attribute constants.
**Notes:** The white balance setting used to acquire the document contents. Possible values are 0 (auto white balance) and 1 (manual). A number.

151.1.186 Properties

151.1.187 DisplayName as String

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The localized version of the file name.
**Example:**
```vba
    dim item as new MDItemMBS(SpecialFolder.Desktop)
    MsgBox item.DisplayName // shows "Schreibtisch"
```
Notes:
This is a shortcut for AttributeString(kMDItemDisplayName).
(Read only property)

151.1.188  FSName as String

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The file name of the item.
**Example:**
```
dim item as new MDItemMBS(SpecialFolder.Desktop)
MsgBox item.FSName  // shows "Desktop"
```

Notes:
This is a shortcut for AttributeString(kMDItemFSName).
(Read only property)

151.1.189  FSSize as Int64

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The size, in bytes, of the file on disk.
**Example:**
```
dim item as new MDItemMBS(SpecialFolder.Desktop)
MsgBox str(item.FSSize)  // shows 0
```

Notes:
This is a shortcut for AttributeString(kMDItemFSSize).
(Read only property)

151.1.190  Handle as Integer

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The internal reference to the item.
151.1.191  Path as String

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The complete path to the file.

**Example:**

```
dim item as new MDItemMBS(SpecialFolder.Desktop)

MsgBox item.path // shows ”/Users/cs/Desktop”
```

**Notes:**
This is a shortcut for AttributeString(kMDItemPath).
(Read only property)

151.1.192  Tag as Variant

MBS MacOSX Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The attached value.

**Notes:**
You can use this property as you like.
(Read and Write property)
151.2. **CLASS MDQUERYBATCHINGPARAMSMBS**

151.2  **class MDQueryBatchingParamsMBS**

151.2.1  **class MDQueryBatchingParamsMBS**

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This class containing the progress notification batching parameters of an MDQuery. **Notes:** The first notification can be triggered by either firstmaxnum or firstmaxms limit being exceeded. Subsequent notifications are triggered by either the progressmaxnum or progressmaxms limit. The default batching parameters are undefined and subject to change.

151.2.2  **Properties**

151.2.3  **firstMaxMS as Integer**

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The maximum number of milliseconds that can pass before a progress notification is sent out. **Notes:**

This value is advisory, in that the notification will be triggered "at some point after firstmaxms milliseconds have passed since the query began accumulating results", but generally not very long after, for the first progress notification. (Read and Write property)

151.2.4  **firstMaxNum as Integer**

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The maximum number of results that can accumulate before a progress notification is sent out by the MDQuery, for the first notification. **Notes:** (Read and Write property)

151.2.5  **progressMaxMS as Integer**

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The maximum number of milliseconds that can pass before a progress notification is sent out. **Notes:**

This value is advisory, in that the notification will be triggered "at some point after firstmaxms milliseconds have passed since the query began accumulating results", but generally not very long after, for progress notifications after the first, during the initial gathering phase of the query. (Read and Write property)
151.2.6 progressMaxNum as Integer

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The maximum number of results that can accumulate before a progress notification is sent out by the MDQuery, for notifications after the first, during the initial gathering phase of the query. **Notes:** (Read and Write property)

151.2.7 updateMaxMS as Integer

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The maximum number of milliseconds that can pass before a progress notification is sent out. **Notes:**

This value is advisory, in that the notification will be triggered "at some point after firstmaxms milliseconds have passed since the query began accumulating results", but generally not very long after, for update notifications after the gathering phase of the query has finished. (Read and Write property)

151.2.8 updateMaxNum as Integer

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The maximum number of results that can accumulate before an update notification is sent out by the MDQuery, for update notifications after the gathering phase of the query has finished. **Notes:** (Read and Write property)
151.3 class MDQueryMBS

MDQueryMBS encapsulates all queries against the MetaData database.

Example:

dim m as new MDQueryMBS("* == ""Hello"")
call m.Execute(m.kMDQuerySynchronous)
MsgBox str(m.ResultCount) // shows a lot of results

Notes:

Depending on what and how you want to search, you can decide whether MDQueryMBS or CatSearchMBS is the better choice.

Available in Mac OS X version 10.4 and later.

Queries gather results or process updates only while the current thread’s run loop is running. Queries normally operate asynchronously, and only send out progress notifications as the list is being collected. The query list is kept up to date with respect to value lists and sorting as the progress notifications are sent out, so the query is in a good state during those events.

An MDQuery presents its results as if it were a simple array object. The results are MDItem.

Query Sorting: Sorting the results from a query can be performed in one of two ways. First is to let the library sort the results for you by passing an array of attributes to sort on to constructor. The default sort provided by the constructor is an ascending sort strings are compared using CFStringCompare() with the options kCFCompareNonliteral | kCFCompareLocalized | kCFCompareNumerically.

If used in a thread, please use a loop with calling NSRunLoopMBS.currentRunLoop.runUntilDate(nil) to give time for update events to fire.
151.3.2 Methods

151.3.3 AttributeValueOfResultAtIndex(name as string, index as UInt32) as Variant

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the value of the named attribute for the result at the given index.

**Notes:**

name: The attribute name for which to return the values. If the attribute is not one of those requested in
the valueListAttrs or sortingAttrs parameters to one of the query creation functions, the result will be nil.

index: The index into the query’s result list. If the index is negative, or is equal to or larger than the current
number of results in the query, the behavior is undefined.

Returns the value of the attribute, or nil if the attribute doesn’t exist in the query on that result.

151.3.4 Constructor(query as MDQueryMBS, queryString as string)

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Creates a new query, which is a subset of the given query.

**Notes:**

Only results matched by the given query can be matched by the query expression of this query.

query: The parent query of the new query.

queryString: The query expression string for this query. This expression in effect may further restrict the
matches found by the parent query. If the string is empty the behavior is undefined.

valueListAttributes: An optional array of attribute names. The query will collect the values of these at-
tributes into uniqued lists, which can be used or displayed to summarize the results of the query, or allow
a user to further qualify the items for which they are searching. This parameter may be empty if no value
lists are desired. Value list collection increases CPU usage and significantly increases the memory usage of
an MDQuery. The attribute names are strings.

sortingAttributes: An optional array of attribute names. The query will results of the query based on the
values of these attributes. The first name in the array is used as the primary sort key, the second as the
secondary key, and so on. The comparison of like-typed values is a simple, literal comparison. This param-
eter may be empty if no sorting is desired. Sorting increases memory usage and significantly increases the
CPU usage of an MDQuery. However, when possible, it is almost always cheaper to have the MDQuery do
the sorting, rather than you fetching all the results and attributes from each of them and doing the sorting
yourself. The attribute names are strings.

See also:

- 151.3.5 Constructor(query as MDQueryMBS, queryString as string, valueListAttributes() as string)
- 151.3.6 Constructor(query as MDQueryMBS, queryString as string, valueListAttributes() as string,
sortingAttributes() as string)
151.3. CLASS MDQUERYMBS

- 151.3.7 Constructor(queryString as string) 18788
- 151.3.8 Constructor(queryString as string, valueListAttributes() as string) 18789
- 151.3.9 Constructor(queryString as string, valueListAttributes() as string, sortingAttributes() as string) 18790

151.3.5 Constructor(query as MDQueryMBS, queryString as string, valueListAttributes() as string)

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new query, which is a subset of the given query.

**Notes:**
Only results matched by the given query can be matched by the query expression of this query.

query: The parent query of the new query.
queryString: The query expression string for this query. This expression in effect may further restrict the matches found by the parent query. If the string is empty the behavior is undefined.
valueListAttributes: An optional array of attribute names. The query will collect the values of these attributes into uniqued lists, which can be used or displayed to summarize the results of the query, or allow a user to further qualify the items for which they are searching. This parameter may be empty if no value lists are desired. Value list collection increases CPU usage and significantly increases the memory usage of an MDQuery. The attribute names are strings.
sortingAttributes: An optional array of attribute names. The query will results of the query based on the values of these attributes. The first name in the array is used as the primary sort key, the second as the secondary key, and so on. The comparison of like-typed values is a simple, literal comparison. This parameter may be empty if no sorting is desired. Sorting increases memory usage and significantly increases the CPU usage of an MDQuery. However, when possible, it is almost always cheaper to have the MDQuery do the sorting, rather than you fetching all the results and attributes from each of them and doing the sorting yourself. The attribute names are strings.

See also:
- 151.3.4 Constructor(query as MDQueryMBS, queryString as string) 18786
- 151.3.6 Constructor(query as MDQueryMBS, queryString as string, valueListAttributes() as string, sortingAttributes() as string) 18788
- 151.3.7 Constructor(queryString as string) 18788
- 151.3.8 Constructor(queryString as string, valueListAttributes() as string) 18789
- 151.3.9 Constructor(queryString as string, valueListAttributes() as string, sortingAttributes() as string) 18790
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151.3.6 Constructor(query as MDQueryMBS, queryString as string, valueListAttributes() as string, sortingAttributes() as string)

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new query, which is a subset of the given query.

**Notes:**

Only results matched by the given query can be matched by the query expression of this query.

query: The parent query of the new query.
queryString: The query expression string for this query. This expression in effect may further restrict the matches found by the parent query. If the string is empty the behavior is undefined.
valueListAttributes: An optional array of attribute names. The query will collect the values of these attributes into uniqued lists, which can be used or displayed to summarize the results of the query, or allow a user to further qualify the items for which they are searching. This parameter may be empty if no value lists are desired. Value list collection increases CPU usage and significantly increases the memory usage of an MDQuery. The attribute names are strings.
sortingAttributes: An optional array of attribute names. The query will results of the query based on the values of these attributes. The first name in the array is used as the primary sort key, the second as the secondary key, and so on. The comparison of like-typed values is a simple, literal comparison. This parameter may be empty if no sorting is desired. Sorting increases memory usage and significantly increases the CPU usage of an MDQuery. However, when possible, it is almost always cheaper to have the MDQuery do the sorting, rather than you fetching all the results and attributes from each of them and doing the sorting yourself. The attribute names are strings.

See also:

- 151.3.4 Constructor(query as MDQueryMBS, queryString as string) 18786
- 151.3.5 Constructor(query as MDQueryMBS, queryString as string, valueListAttributes() as string) 18787
- 151.3.7 Constructor(queryString as string) 18788
- 151.3.8 Constructor(queryString as string, valueListAttributes() as string) 18789
- 151.3.9 Constructor(queryString as string, valueListAttributes() as string, sortingAttributes() as string) 18790

151.3.7 Constructor(queryString as string)

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new query with the given query expression.

**Notes:**

queryString: The query expression string for this query. The syntax for query expressions is explained above in the header overview documentation.
valueListAttributes: An optional array of attribute names. The query will collect the values of these attributes into uniqued lists, which can be used or displayed to summarize the results of the query, or allow a user to further qualify the items for which they are searching. This parameter may be empty if no value lists are desired. Value list collection increases CPU usage and significantly increases the memory usage of an MDQuery. The attribute names are string.

sortingAttributes: An optional array of attribute names. The query will results of the query based on the values of these attributes. The first name in the array is used as the primary sort key, the second as the secondary key, and so on. The comparison of like-typed values is a simple, literal comparison. This parameter may be empty if no sorting is desired. Sorting increases memory usage and significantly increases the CPU usage of an MDQuery. However, when possible, it is almost always cheaper to have the MDQuery do the sorting, rather than you fetching all the results and attributes from each of them and doing the sorting yourself. The attribute names are strings.

The handle value is zero on failure.

See also:

- 151.3.4 Constructor(query as MDQueryMBS, queryString as string) 18786
- 151.3.5 Constructor(query as MDQueryMBS, queryString as string, valueListAttributes() as string) 18787
- 151.3.6 Constructor(query as MDQueryMBS, queryString as string, valueListAttributes() as string, sortingAttributes() as string) 18788
- 151.3.8 Constructor(queryString as string, valueListAttributes() as string) 18789
- 151.3.9 Constructor(queryString as string, valueListAttributes() as string, sortingAttributes() as string) 18790

### 151.3.8 Constructor(queryString as string, valueListAttributes() as string)

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new query with the given query expression.

**Notes:**

queryString: The query expression string for this query. The syntax for query expressions is explained above in the header overview documentation.

valueListAttributes: An optional array of attribute names. The query will collect the values of these attributes into uniqued lists, which can be used or displayed to summarize the results of the query, or allow a user to further qualify the items for which they are searching. This parameter may be empty if no value lists are desired. Value list collection increases CPU usage and significantly increases the memory usage of an MDQuery. The attribute names are string.

sortingAttributes: An optional array of attribute names. The query will results of the query based on the values of these attributes. The first name in the array is used as the primary sort key, the second as the...
secondary key, and so on. The comparison of like-typed values is a simple, literal comparison. This parameter may be empty if no sorting is desired. Sorting increases memory usage and significantly increases the CPU usage of an MDQuery. However, when possible, it is almost always cheaper to have the MDQuery do the sorting, rather than you fetching all the results and attributes from each of them and doing the sorting yourself. The attribute names are strings.

The handle value is zero on failure.

See also:

- 151.3.4 Constructor(query as MDQueryMBS, queryString as string) 18786
- 151.3.5 Constructor(query as MDQueryMBS, queryString as string, valueListAttributes() as string) 18787
- 151.3.6 Constructor(query as MDQueryMBS, queryString as string, valueListAttributes() as string, sortingAttributes() as string) 18788
- 151.3.7 Constructor(queryString as string) 18788
- 151.3.9 Constructor(queryString as string, valueListAttributes() as string, sortingAttributes() as string) 18790

151.3.9 Constructor(queryString as string, valueListAttributes() as string, sortingAttributes() as string)

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new query with the given query expression.

**Notes:**

queryString: The query expression string for this query. The syntax for query expressions is explained above in the header overview documentation.

valueListAttributes: An optional array of attribute names. The query will collect the values of these attributes into uniqued lists, which can be used or displayed to summarize the results of the query, or allow a user to further qualify the items for which they are searching. This parameter may be empty if no value lists are desired. Value list collection increases CPU usage and significantly increases the memory usage of an MDQuery. The attribute names are string.

sortingAttributes: An optional array of attribute names. The query will results of the query based on the values of these attributes. The first name in the array is used as the primary sort key, the second as the secondary key, and so on. The comparison of like-typed values is a simple, literal comparison. This parameter may be empty if no sorting is desired. Sorting increases memory usage and significantly increases the CPU usage of an MDQuery. However, when possible, it is almost always cheaper to have the MDQuery do the sorting, rather than you fetching all the results and attributes from each of them and doing the sorting yourself. The attribute names are strings.
151.3. **CLASS MDQUERYMBS**

The handle value is zero on failure.

See also:

- 151.3.4 Constructor(query as MDQueryMBS, queryString as string)
- 151.3.5 Constructor(query as MDQueryMBS, queryString as string, valueListAttributes() as string)
- 151.3.6 Constructor(query as MDQueryMBS, queryString as string, valueListAttributes() as string, sortingAttributes() as string)
- 151.3.7 Constructor(queryString as string)
- 151.3.8 Constructor(queryString as string, valueListAttributes() as string)

151.3.10 **CountOfResultsWithAttributeValue(name as string, Value as Variant) as UInt32**

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the number of results which have the given attribute and attribute value. Note that this count may change over time, as the query’s result list is updated.

**Notes:**

name: The attribute name for which to return the number of results with the given value. If the attribute is not one of those requested in the valueListAttrs parameter to one of the query creation functions, the behavior is undefined.

value: The attribute value for which to return the number of results with that value. This parameter may be nil, in which case the number of results that do not contain the named attribute is returned.

Returns the number of results with that attribute and value.

151.3.11 **DisableUpdates**

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Disables updates to the query result list.

**Notes:** This should be called before iterating through the list of results to prevent the result list from changing during the iteration. The disabled state is a counter, and disabling can be done recursively and from different threads.

151.3.12 **EnableUpdates**

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Re-enables updates to the query result list.
Notes: This should be called when finished iterating through the list of results, to allow changes to the result list to occur. Changes will be allowed when all the disables have been matched by a corresponding enable.

151.3.13  Execute(flags as Integer) as boolean

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Run the query, and populate the query with the results.
Example:

```vbscript
dim q as new MDQueryMBS("kMDItemContentModificationDate>=$ time.now")
// you will want to use a MDQueryMBS subclass here to catch the events
if not q.Execute(q.kMDQueryWantsUpdates) then
    MsgBox "Failed to query"
end if
```

Notes:

Queries only gather results or process updates while the current thread’s run loop is running. Queries normally operate asynchronously, and send out progress and update notifications to report changes to the list of results that has been collected. Queries have two phases: the initial gathering of all currently matching results, and a second live-update phase where queries monitor the state of the system and update themselves to external changes in files or the operating environment (for example, as time advances, files which did not match the query when it was started may later match the query). Query notifications are posted within the context of the same thread which executes the query.

Here are three operational modes: (1) synchronous static queries, which collect the list of current results and then do not watch for updates to the results, (2) asynchronous static queries, which collect the results asynchronously after this function returns, and then do not watch for updates to the results, and (3) asynchronous live queries which collect the initial results asynchronously after this function returns, and then do watch for updates to the results, until the query is destroyed. There is little reason not to allow the fourth case, synchronous collection of initial results, followed by asynchronous monitoring for updates, so this may change in the future.

Flags: Options for the query.

Returns true if the query was started (executed in the case of a synchronous query), false otherwise. Queries cannot be executed more than once.
151.3.14 GetSortOptionFlagsForAttribute(fieldName as string) as Integer


**Function:** Gets the sort option flags for a sorting attribute. 

**Notes:** 

fieldName: The attribute name for which sort option flags are to be fetched. 

Returns an integer with flags. Currently can be 0 or 1. 

Available on Mac OS X 10.7 or later. 

151.3.15 IndexOfResult(it as MDItemMBS) as Integer


**Function:** Returns the current index of the given result. 

**Notes:** 

Note that the index of a result will change over time, as the query’s result list is updated. 

Returns the index of the given result, or -1 if the value is not one of the query’s existing results. 

151.3.16 IsGatheringComplete as boolean


**Function:** Returns true if the first phase of a query, the initial result gathering, has finished. 

**Notes:** A boolean indicating whether or not the first phase of a query has completed. 

151.3.17 QueryString as string


**Function:** Returns the query string of the query. 

151.3.18 ResultAtIndex(index as Integer) as MDItemMBS


**Function:** Returns the current result at the given index. 

**Notes:** 

This function causes the result object to be created if it hasn’t been created already. For performance reasons, it is not advisable to ask for results that you don’t need, to avoid the cost of creating them. If possible,
call this function to fetch only the results you need to display or otherwise process. Note that the index of
a particular result will change over time, as the query’s result list is updated.

index: The index into the query’s result list.

If the index is negative, or is equal to or larger than the current number of results in the query, the behavior
is undefined.

Returns the MDItem currently at the given index, or if a result-create function has been set, returns the
result returned by that function.

151.3.19 ResultCount as Integer

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns the number of results currently collected by the query.
Example:

```vbs
Dim m As New MDQueryMBS("kMDItemContentModificationDate>$ time.today")
Call m.Execute(m.kMDQuerySynchronous)
MsgBox str(m.ResultCount)+" files modified today"
```

Notes: Note that the number of results in a query will change over time as the query’s result list is updated.

151.3.20 Results(limit as Integer = -1) as MDItemMBS()

MBS MacOSX Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Queries result items.
Notes:
Internally does what ResultAtIndex does for up to limit entries.
Limit with -1 will cause no limit.
If possible, call this function to fetch only the results you need to display or otherwise process.

151.3.21 SetMaxCount(size as Integer)

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Use SetMaxCount to limit the number of results returned by the query engine.
151.3. CLASS MDQUERYMBS

Notes:
This must be called before the query is executed.
size: The maximum number of results desired.

151.3.22 SetSearchScope(paths() as folderitem, options() as string)

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Use SetSearchScope to limit the results returned by the query engine to those MDItem that appear within the specified directories.

Notes:
This may be used to limit searching to particular volumes. Tilde paths, or environment variables are not expanded. Calling this multiple times will replace the previous options. This must be called before the query is executed.

paths: An array of directories where you want to search. This array can be empty.
options: An array of scope options. Pass the kMDQueryScope* constants. This array can be empty.

151.3.23 SetSortOptionFlagsForAttribute(fieldName as string, flags as UInt32) as Boolean

MBS MacOSX Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the sort flags for a query.

Notes:
fieldName: The attribute name for which sort option flags are to be set.

The attribute name must have been part of the sortingFlags when the query was created.

flags: An integer containing MDQuerySortOptionFlags to be applied to the attribute

Returns a boolean, true on success, false on failure.

Available on Mac OS X 10.7 or later.

151.3.24 SetSortOrder(sortingAttrs() as string) as Boolean

MBS MacOSX Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the sort order for a query.
Notes:

sortingAttrs An array of attribute names, as in MDQueryCreate. The query’s result set will be sorted according to the order of these attributes. All names in the array have to have been passed as sortingAttrs when the query was created. The attribute names are strings.

Returns a boolean, true on success, false on failure.

Available on Mac OS X 10.7 or later.

151.3.25  **SortingAttributes as string()**

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the list of attribute names the query is using to sort the results.

151.3.26  **Stop**

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Stops the query from ever generating more results.

**Notes:** Queries may be executed only once, so a stopped query cannot be restarted. The query will also not generate any result updates. The query is static after this function returns. The query will do final processing of results that have come in but not yet been processed (because, say, the batching parameters hasn’t triggered that yet). That may trigger a progress notification, so be aware of that if you are stopping a query from within your progress note handler; that is, during this function, a recursive progress and/or finished notification might occur, which might recursively call your notification handler. It is safe to call this function recursively. You would call this function to stop a query that is generating way too many results to be useful, but still want to access the results that have come in so far. If a query is stopped before the gathering phase finishes, it will not report itself as finished, nor will it send out a finished notification.

151.3.27  **ValueListAttributes as string()**

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the list of attribute names for which the query is collecting the lists of values.

151.3.28  **ValuesOfAttribute(name as string) as Variant()**

MBS MacOSX Plugin, Plugin Version: 9.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the list of values, from the results of the query, of the named attribute.

**Notes:**
151.3. CLASS MDQUERYMBS

The list is not ordered in any way. The list contains only one occurrence of each value. Note that this list may change over time, as the query's result list is updated.

name: The attribute name for which to return the values. If the attribute is not one of those requested in the valueListAttrs parameter to one of the query creation functions, the behavior is undefined.

Returns an array holding the value objects for that attribute.

151.3.29 Properties

151.3.30 Handle as Integer

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The internal reference for the MDQuery. Notes: (Read and Write property)

151.3.31 Tag as Variant

MBS MacOSX Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The attached value. Notes: You can use this property as you like. (Read and Write property)

151.3.32 BatchingParameters as MDQueryBatchingParamsMBS

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The query whose batching parameters are to be set. Notes: (Read and Write computed property)

151.3.33 Events

151.3.34 Finish()

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The event called when the query has finished. Notes: Called when the query has finished with the initial result-gathering phase, and may now proceed
into the live-update phase (if that option was chosen when the query was executed). This event often shortly
follows after the last progress notification. It is usually not necessary to update any displayed UI in response
to this event, since it doesn’t indicate any change in the result list of a query.

151.3.35 Progress(AddedItems() as MDItemMBS, ChangedItems() as MDItemMBS,
RemovedItems() as MDItemMBS)

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
The event sent to indicate changes to the query’s results list during the initial gathering phase of a query’s
execution.
Notes:
Mostly adds will occur during this phase, but removals and changes can also occur, as in any update.
For performance reasons the arrays are empty in newer Mac OS X SDK versions.
In that case please use the result functions.

151.3.36 Update(AddedItems() as MDItemMBS, ChangedItems() as MDItemMBS,
RemovedItems() as MDItemMBS)

MBS MacOSX Plugin, Plugin Version: 9.6, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
The event is sent to indicate changes to the query’s results list during the second, live-update, phase of a
query’s execution.

151.3.37 Constants

151.3.38 kMDQueryReverseSortOrderFlag=1

MBS MacOSX Plugin, Plugin Version: 11.2. Function: A flag constant for calling SetSortOptionFlagsFor-
Attribute.
Notes:
Sort the attribute in reverse order.
Available on Mac OS X 10.7 or later.

151.3.39 kMDQueryScopeAllIndexed=”kMDQueryScopeAllIndexed”

MBS MacOSX Plugin, Plugin Version: 9.6. Function: One of the option constants for the search scope.
Notes: A constant, which can be passed in the scopeDirectories array, to specify that the search should be
restricted to indexed, locally mounted volumes and indexed user mounted remote volumes, plus the user’s
151.3. CLASS MDQUERYMBS

home directory.

151.3.40  kMDQueryScopeComputer=”kMDQueryScopeComputer”

MBS MacOSX Plugin, Plugin Version: 9.6. **Function:** One of the option constants for the search scope.  
**Notes:** A constant, which can be passed in the scopeDirectories array, to specify that the search should be restricted to all locally mounted volumes, plus the user’s home directory (which may be on a remote volume).

151.3.41  kMDQueryScopeComputerIndexed=”kMDQueryScopeComputerIndexed”

MBS MacOSX Plugin, Plugin Version: 9.6. **Function:** One of the option constants for the search scope.  
**Notes:** A constant, which can be passed in the scopeDirectories array, to specify that the search should be restricted to indexed, locally mounted volumes, plus the user’s home directory (which may be on a remote volume).

151.3.42  kMDQueryScopeHome=”kMDQueryScopeHome”

MBS MacOSX Plugin, Plugin Version: 9.6. **Function:** One of the option constants for the search scope.  
**Notes:** A constant, which can be passed in the scopeDirectories array, to specify that the search should be restricted to the volume and directory that contains the current user’s home directory.

151.3.43  kMDQueryScopeNetwork=”kMDQueryScopeNetwork”

MBS MacOSX Plugin, Plugin Version: 9.6. **Function:** One of the option constants for the search scope.  
**Notes:** A constant, which can be passed in the scopeDirectories array, to specify that the search should include all user mounted remote volumes.

151.3.44  kMDQueryScopeNetworkIndexed=”kMDQueryScopeNetworkIndexed”

MBS MacOSX Plugin, Plugin Version: 9.6. **Function:** One of the option constants for the search scope.  
**Notes:** A constant, which can be passed in the scopeDirectories array, to specify that the search should include indexed user mounted remote volumes.
151.3.45 kMDQuerySynchronous=1

MBS MacOSX Plugin, Plugin Version: 9.6. **Function**: One of the constants for executing a query.
**Notes**: Block during the gathering phase. If this parameter is true, the function will not return until the query has finished gathering the initial results. The run loop will run in the default mode, which will allow anything registered in that mode with this run loop to execute as well. If this parameter is false, the function returns immediately after starting the query asychronously.

151.3.46 kMDQueryWantsUpdates=4

MBS MacOSX Plugin, Plugin Version: 9.6. **Function**: One of the constants for executing a query.
**Notes**: When set, after gathering the initial results the query will watch for changes in the system which should update the list of results. This can be changes which cause new files to now match the query, or changes which cause files in the result list to continue to match, or no longer match, the query. Files which begin to match the query are added to the result list, and files which no longer match the query expression are removed from the result list.
Currently, this parameter is ignored if the synchronous parameter is true. This is subject to change, and you should always pass in the value you want here.
151.4.1 ShotlightMBS(searchString as string) as Integer

MBS MacOSX Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Displays a Spotlight search window.

**Example:**

`call ShotlightMBS("Hello")`

**Notes:**

searchString: An initial query string. Pass "" to open the search window with no initial query string.

Returns a Mac OS error code and -1 if the function is not available and 0 on success. Requires Mac OS X 10.4.
Chapter 152

SQL

152.1 class DB2MBS

152.1.1 class DB2MBS

MBS SQL Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for some DB2 related API commands.

**Example:**

```vba
dim cmd as new SqlCommandMBS ' your command
dim con as new SQLConnectionMBS ' your connection
dim api as DB2MBS = con.NativeAPI

// now use an API function
MsgBox str(api.SQLRowCount(cmd))
```

**Notes:**

More commands are added as requested.
Subclass of the SQLAPIMBS class.

152.1.2 Methods

152.1.3 SQLExecDirect(cmd as SQLCommandMBS, text as string)

MBS SQL Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Executes an SQL command directly without any preprocessing in the plugin.

**Example:**

```vba
18803
```
dim cmd as new SQLCommandMBS // your command
dim con as new SQLConnectionMBS // your connection
dim api as DB2MBS = con.NativeAPI

// now use an API function
const sql = "some sql command"
api.SQLExecDirect cmd, sql

Notes: Lasterror is set.

152.1.4 SQLRowCount(cmd as SQLCommandMBS) as Int64

MBS SQL Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries the affected number of rows for the last operation.
**Notes:** Lasterror is set.

152.1.5 Properties

152.1.6 Lasterror as Integer

MBS SQL Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last error code.
**Notes:** (Read and Write property)

152.1.7 LibraryLoaded as Boolean

MBS SQL Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether DB2 library is loaded.
**Notes:** (Read only property)
152.2  class InformixMBS

152.2.1  class InformixMBS

MBS SQL Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for Informix specific functions.
**Notes:** Subclass of the SQLAPIMBS class.

152.2.2  Methods

152.2.3  Error(cmd as SQLCommandMBS, byref SQLState as string, byref NativeError as Integer, byref ErrorMsg as string) as Integer

MBS SQL Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Queries the error status.

152.2.4  GetCursorName(cmd as SQLCommandMBS) as string

MBS SQL Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Queries cursor name for given recordset.

152.2.5  HDBC as Integer

MBS SQL Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns Database Connection handle.

152.2.6  HENV as Integer

MBS SQL Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The environment handle.

152.2.7  HSTMT(cmd as SQLCommandMBS) as Integer

MBS SQL Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the statement handle for the command object.
**Notes:** Returns 0 on any error.
**152.2.8 SetCursorName(cmd as SQLCommandMBS, name as string) as boolean**

MBS SQL Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets cursor name for given recordset.
**Notes:** Returns true on success.

**152.2.9 Properties**

**152.2.10 LibraryLoaded as Boolean**

MBS SQL Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether Informix library is loaded.
**Notes:** (Read only property)
152.3. **MODULE INTERNALPOSTGRESQLLIBRARYMBS**

152.3  **module InternalPostgreSQLLibraryMBS**

152.3.1  **module InternalPostgreSQLLibraryMBS**

MBS SQL Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:**
The module for our internal PostgreSQL engine.
**Example:**

```pascal
if InternalPostgreSQLLibraryMBS.Use then
    MsgBox "Using internal PostgreSQL."
else
    MsgBox "Failed, so please use library file."
end if
```

**Notes:** This is a PostgreSQL library built into a plugin, so you can decide with use of MBS SQL Plugin to use this plugin instead of providing your own external copy of PostgreSQL shared library.

152.3.2  **Methods**

152.3.3  **OpenSSLVersion as String**

MBS SQL Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:**
Returns the version of the OpenSSL library.
**Example:**

```pascal
MsgBox InternalPostgreSQLLibraryMBS.OpenSSLVersion
```

152.3.4  **Use as boolean**

MBS SQL Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:**
Registers the built in PostgreSQL client library for use.
**Example:**

```pascal
if InternalPostgreSQLLibraryMBS.Use then
    MsgBox "Using internal PostgreSQL."
else
    MsgBox "Failed, so please use library file."
end if
```

**Notes:** So instead of having SQL Plugin load libpg shared library from file, we use the one built into this
152.3.5 Version as Integer

MBS SQL Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:**
Returns version of PostgreSQL version.

**Example:**

MsgBox str(InternalPostgreSQLLibraryMBS.Version)
// e.g. 90501 for 9.5.1
152.4. MODULE INTERNALSQLITELIBRARYMBS

152.4 module InternalSQLiteLibraryMBS

152.4.1 module InternalSQLiteLibraryMBS

MBS SQL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The module for our internal SQLite3 engine.

**Example:**

```plaintext
if InternalSQLiteLibraryMBS.Use then
    MsgBox "Using internal SQLite"
else
    MsgBox "Failed, so please use library file."
end if
```

**Notes:** This is a SQLite3 library built into a plugin, so you can decide with use of MBS SQL Plugin to use
this plugin instead of providing your own external copy of SQLite shared library.

152.4.2 Methods

152.4.3 CompileOption(index as Integer) as String

MBS SQL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Queries name of a compile option.

**Example:**

```plaintext
dim list() as string
for i as Integer = 0 to 100
    dim s as string = InternalSQLiteLibraryMBS.CompileOption(i)
    if s = "" then exit
    dim b as Boolean = InternalSQLiteLibraryMBS.CompileOptionUsed(s)
    dim t as string
    if b then
        t = ": yes"
    else
        t = ": no"
    end if
    list.Append s + t
next
MsgBox Join(list, EndOfLine)
```
152.4.4 CompileOptionUsed(optionName as String) as Boolean

MBS SQL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries if a given compile option was set on or off.

**Example:**

```vbs
dim list() as string
for i as Integer = 0 to 100
    dim s as string = InternalSQLiteLibraryMBS.CompileOption(i)
    if s = "" then exit
    dim b as Boolean = InternalSQLiteLibraryMBS.CompileOptionUsed(s)
    dim t as string
    if b then t = ": yes"
    else t = ": no"
    end if
    list.Append s + t
next
MsgBox Join(list, EndOfLine)
```

**Notes:** If you need a specific option set, please contact MBS support.

152.4.5 Shell(arguments() as string) as Integer

MBS SQL Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Runs a SQLite shell command.

**Example:**

```vbs
dim arguments() as string

dim f as FolderItem = SpecialFolder.Desktop.Child("test.sqlite")
dim o as FolderItem = SpecialFolder.Desktop.Child("out.csv")
arguments.Append "sqlite3" // path to app
arguments.Append f.NativePath
arguments.Append ":-csv"
arguments.Append ":-header"
arguments.Append ":-cmd"
```
arguments.Append ".output " + o.NativePath
arguments.Append "-cmd"
arguments.Append "select * from Documentation;"

\[\text{dim n as Integer } = \text{InternalSQLiteLibraryMBS.Shell(arguments)}\]
\[\text{Break}\]

**Notes:**

Using the SQLite library inside the plugin.
For this the plugin includes the code from the SQLite command line tool.
The tool may print to stdout/stderr and could possibly read from stdin.

### 152.4.6 SourceID as String

MBS SQL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The source code ID.
**Example:**
MsgBox InternalSQLiteLibraryMBS.SourceID

### 152.4.7 Use as boolean

MBS SQL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Registers the built in SQLite library for use.
**Example:**
if InternalSQLiteLibraryMBS.Use then
MsgBox "Using internal SQLite"
else
MsgBox "Failed, so please use library file."
end if

**Notes:** So instead of having SQL Plugin load sqlite3 shared library from file, we use the one built into this plugin.
152.4.8 Version as String

MBS SQL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries the version number.

**Example:**

MsgBox InternalSQLiteLibraryMBS.Version

152.4.9 VersionNumber as Integer

MBS SQL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries the sqlite version number.

**Example:**

MsgBox str(InternalSQLiteLibraryMBS.VersionNumber)
152.5. **CLASS MYSQLMBS**

152.5 **class MySQLMBS**

152.5.1 **class MySQLMBS**

MBS SQL Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for MySQL specific functionality.
**Notes:** Subclass of the SQLAPIMBS class.

152.5.2 **Methods**

152.5.3 **AffectedRows(Conn as SQLConnectionMBS) as UInt64**

MBS SQL Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries the number of affected rows in the last statement.
**Notes:**
see also

152.5.4 **Error(Conn as SQLConnectionMBS) as string**

MBS SQL Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries the last error text.
**Notes:**
see also

152.5.5 **ErrorNumber(Conn as SQLConnectionMBS) as UInt32**

MBS SQL Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries the last error code.
**Notes:**
see also
### 152.5.6 FieldCount(Conn as SQLConnectionMBS) as UInt32

MBS SQL Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of columns for the most recent query on the connection.  
**Notes:**  
see also  

### 152.5.7 Info(Conn as SQLConnectionMBS) as string

MBS SQL Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves an info string providing information about the most recently executed statement.  
**Notes:**  
see also  

### 152.5.8 InsertID(Conn as SQLConnectionMBS) as Int64

MBS SQL Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the last auto increment value from last insert command.  
**Notes:**  
see also  

### 152.5.9 NumberOfRows(cmd as SQLCommandMBS) as UInt64

MBS SQL Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries number of records in a command.

### 152.5.10 SetSSL(Conn as SQLConnectionMBS, keyPath as string, CertificatePath as string, AuthorityPath as string, authorityFolderPath as string, Cipher as string)

MBS SQL Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets SSL connection parameters.  
**Notes:**
152.5. CLASS MYSQLMBS

Calls mysql_ssl_set internally.
Used for establishing secure connections using SSL. It must be called before Connect(). It does nothing unless SSL support is enabled in the client library.

keyPath is the path name to the key file.
CertificatePath is the path name to the certificate file.
AuthorityPath is the path name to the certificate authority file.
authorityFolderPath is the path name to a directory that contains trusted SSL CA certificates in PEM format.
Cipher is a list of permissible ciphers to use for SSL encryption.

Any unused SSL parameters may be given as empty string.
For paths, please use folderitem.UnixPathMBS and not folderitem.ShellPath.

Please switch to using the following options on the connection:

MYSQL_SSL_KEY
MYSQL_SSL_CERT
MYSQL_SSL_CA
MYSQL_SSL_CAPATH
MYSQL_SSL_CIPHER

They should be specified before the connection is made.
e.g.

db.Option("MYSQL_SSL_CIPHER") = "DHE-RSA-AES256-SHA"

Allows to specify MySQL SSL parameters that will be used with mysql_ssl_set. MySQL API method called only when at least one parameter specified. See MySQL documentation for more information about these options.

152.5.11 Properties

152.5.12 LibraryLoaded as Boolean

MBS SQL Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Whether mysql library is loaded.
Notes: (Read only property)
152.6 class PostgreSQLAPIMBS

152.6.1 class PostgreSQLAPIMBS

MBS SQL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for PostgreSQL specific functions.

**Notes:**
The Listen method and Notification event are in the SQLDatabaseMBS/SQLConnectionMBS classes directly.
Subclass of the SQLAPIMBS class.

152.6.2 Methods

152.6.3 DB(conn as SQLConnectionMBS) as string

MBS SQL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The database name used to create the connection.

152.6.4 ErrorMessage(conn as SQLConnectionMBS) as string

MBS SQL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last error message.

152.6.5 Field(cmd as SQLCommandMBS, RecordIndex as Integer, FieldIndex as Integer) as string

MBS SQL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries a field by index for the row with the RecordIndex.

See also:

- 152.6.6 Field(cmd as SQLCommandMBS, RecordIndex as Integer, FieldName as string) as string

152.6.6 Field(cmd as SQLCommandMBS, RecordIndex as Integer, FieldName as string) as string

MBS SQL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries a field by name for the row with the RecordIndex.

See also:
152.6.7 FieldCount(cmd as SQLCommandMBS) as Integer

MBS SQL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The number of fields in the result.

152.6.8 Host(conn as SQLConnectionMBS) as string

MBS SQL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The host used to create the connection.

152.6.9 Options(conn as SQLConnectionMBS) as string

MBS SQL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The options used to create the connection.

152.6.10 Password(conn as SQLConnectionMBS) as string

MBS SQL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The password used to create the connection.

152.6.11 Port(conn as SQLConnectionMBS) as string

MBS SQL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The port used to create the connection.

152.6.12 RecordCount(cmd as SQLCommandMBS) as Integer

MBS SQL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The number of records in the result.
152.6.13  **TTY(conn as SQLConnectionMBS) as string**

MBS SQL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tty used to create the connection.

152.6.14  **User(conn as SQLConnectionMBS) as string**

MBS SQL Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The user name used to create the connection.

152.6.15  **Properties**

152.6.16  **LibraryLoaded as Boolean**

MBS SQL Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether postgres library is loaded. **Notes:** (Read only property)
152.7  Globals

152.7.1  BuildRecordSetMBS(fieldNames() as string, values() as string) as RecordSet

MBS SQL Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Builds a recordset from strings.

**Example:**

```
dim names() as string = array(“Firstname”, “Lastname”)
dim values() as string
values.append “Stefan”
values.append “Miller”
values.append “Patrick”
values.append “Maier”

dim r as RecordSet = BuildRecordSetMBS(names, values)
```

**Notes:**
- First array has field names. Second array has all values.
- As plugin can’t access multi dimensional arrays, we have to flatten it into one dimension and concat all rows.
- Returns nil on low memory.
- Array sizes should be like: Ubound(values)+1 = (ubound(fieldNames)+1) * RecordCount

152.7.2  CloneRecordSetMBS(rec as RecordSet) as RecordSet

MBS SQL Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates an in memory copy of the RecordSet.

**Notes:** This copied record set can be used instead of the original one and even after the original database connection is closed.

152.8  class RecordSet

152.8.1  class RecordSet

Plugin Version: 12.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The built in recordset class in Real Studio.
152.8.2 Methods

152.8.3 CloneMBS as RecordSet

MBS SQL Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates an in memory copy of the RecordSet. **Notes:** This copied record set can be used instead of the original one and even after the original database connection is closed.
152.9. **CLASS SQLAPIMBS**

**152.9 class SQLAPIMBS**

**152.9.1 class SQLAPIMBS**

MBS SQL Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This is a class for the native APIs.
**Notes:** The plugin does not imple

**152.9.2 Properties**

**152.9.3 ClassName as String**

MBS SQL Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class name of the underlying C++ class.
**Notes:**
Sometimes useful to see which API currently is used.
(Read only property)

**152.9.4 Connection as SQLConnectionMBS**

MBS SQL Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The database connection this API is used with.
**Notes:** (Read only property)
152.10 class SQLBLobMBS

152.10.1 class SQLBLobMBS


**Notes:**

Basically this is a SQLStringMBS which is always marked to contain binary data. You only need this class to use the constructor with dataprovider to stream data to the database.

Subclass of the SQLLongOrLobMBS class.

152.10.2 Methods

152.10.3 Constructor

MBS SQL Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The private constructor.

See also:

- 152.10.4 Constructor(Data as MemoryBlock)
- 152.10.5 Constructor(data as SQLStringMBS)
- 152.10.6 Constructor(Data as string, isText as Boolean = True)
- 152.10.7 Constructor(dataProvider as SQLDataProviderMBS, BlockSize as UInt32)

152.10.4 Constructor(Data as MemoryBlock)

MBS SQL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new string object with data, e.g. for blob.

See also:

- 152.10.3 Constructor
- 152.10.5 Constructor(data as SQLStringMBS)
- 152.10.6 Constructor(Data as string, isText as Boolean = True)
- 152.10.7 Constructor(dataProvider as SQLDataProviderMBS, BlockSize as UInt32)
152.10. **CLASS SQLBLOBMBS**

152.10.5 **Constructor(data as SQLStringMBS)**

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new blob object from a string object. See also:

- 152.10.3 Constructor
- 152.10.4 Constructor(Data as MemoryBlock)
- 152.10.6 Constructor(Data as string, isText as Boolean = True)
- 152.10.7 Constructor(dataProvider as SQLDataProviderMBS, BlockSize as UInt32)

152.10.6 **Constructor(Data as string, isText as Boolean = True)**

MBS SQL Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new string object with data or text copied from the data string. **Notes:** If isText is true, the data is interpreted as text and string encoding conversion may modify it. If isText is false the bytes are copied raw. See also:

- 152.10.3 Constructor
- 152.10.4 Constructor(Data as MemoryBlock)
- 152.10.5 Constructor(data as SQLStringMBS)
- 152.10.7 Constructor(dataProvider as SQLDataProviderMBS, BlockSize as UInt32)

152.10.7 **Constructor(dataProvider as SQLDataProviderMBS, BlockSize as UInt32)**

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new blob object from a data provider. **Notes:** The blocksize specifies in which sizes data is requested from the provider. You must make sure that the data provider and this new blob object life long enough. Because the actual data is requested later when you do the update on the database. If BlockSize is 0, the default block size is used. See also:

- 152.10.3 Constructor
- 152.10.4 Constructor(Data as MemoryBlock)
- 152.10.5 Constructor(data as SQLStringMBS)
- 152.10.6 Constructor(Data as string, isText as Boolean = True)
152.11 class SQLBytesMBS

152.11.1 class SQLBytesMBS

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for a string of bytes. **Notes:** Subclass of the SQLStringMBS class.

152.11.2 Methods

152.11.3 Constructor

MBS SQL Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The private constructor. **See also:**

- 152.11.4 Constructor(Data as MemoryBlock)
- 152.11.5 Constructor(data as SQLStringMBS)
- 152.11.6 Constructor(Data as string, isText as Boolean = True)

152.11.4 Constructor(Data as MemoryBlock)

MBS SQL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new string object with data, e.g. for blob. **See also:**

- 152.11.3 Constructor
- 152.11.5 Constructor(data as SQLStringMBS)
- 152.11.6 Constructor(Data as string, isText as Boolean = True)

152.11.5 Constructor(data as SQLStringMBS)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new bytes object based on the given string object. **See also:**

- 152.11.3 Constructor
- 152.11.4 Constructor(Data as MemoryBlock)
- 152.11.6 Constructor(Data as string, isText as Boolean = True)
152.11. CLASS SQLBYTESMBS

152.11.6 Constructor(Data as string, isText as Boolean = True)

MBS SQL Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new string object with data or text copied from the data string.

**Notes:** If isText is true, the data is interpreted as text and string encoding conversion may modify it. If isText is false the bytes are copied raw.

See also:

- 152.11.3 Constructor
- 152.11.4 Constructor(Data as MemoryBlock)
- 152.11.5 Constructor(data as SQLStringMBS)
152.12 class SQLCLobMBS

152.12.1 class SQLCLobMBS

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A class for a clob (character large object).

**Notes:**
Basicly this is a SQLStringMBS which is always marked to contain text. You only need this class to use the
constructor with dataprovider to stream data to the database.
Subclass of the SQLLongOrLobMBS class.

152.12.2 Methods

152.12.3 Constructor

MBS SQL Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

See also:
- 152.12.4 Constructor(data as SQLStringMBS)
- 152.12.5 Constructor(Data as string, isText as boolean=true)
- 152.12.6 Constructor(dataProvider as SQLDataProviderMBS, BlockSize as UInt32)

152.12.4 Constructor(data as SQLStringMBS)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new clob object from a string object.

See also:
- 152.12.3 Constructor
- 152.12.5 Constructor(Data as string, isText as boolean=true)
- 152.12.6 Constructor(dataProvider as SQLDataProviderMBS, BlockSize as UInt32)

152.12.5 Constructor(Data as string, isText as boolean=true)

MBS SQL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new string object with data or text copied from the data string.

**Notes:** If isText is true, the data is interpreted as text and string encoding conversion may modify it. If
isText is false the bytes are copied raw.

See also:
152.12. CLASS SQLCLOBMBS

- 152.12.3 Constructor
- 152.12.4 Constructor(data as SQLStringMBS)
- 152.12.6 Constructor(dataProvider as SQLDataProviderMBS, BlockSize as UInt32)

152.12.6 Constructor(dataProvider as SQLDataProviderMBS, BlockSize as UInt32)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new clob object from a data provider.

**Notes:**
The blocksize specifies in which sizes data is requested from the provider.
You must make sure that the data provider and this new clob object life long enough. Because the actual
data is requested later when you do the update on the database.

If BlockSize is 0, the default block size is used.
See also:

- 152.12.3 Constructor
- 152.12.4 Constructor(data as SQLStringMBS)
- 152.12.5 Constructor(Data as string, isText as boolean=true)
152.13 class SQLCommandMBS

152.13.1 class SQLCommandMBS

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This is the central class for the using the SQL database access.

**Example:**

```vbscript
dim con as SQLConnectionMBS
dim cmd as SQLCommandMBS

try
    con = new SQLConnectionMBS // connection object
    cmd = new SQLCommandMBS // create command object

    // where is the library?
    con.SetFileOption con.kOptionLibraryMySQL, SpecialFolder.UserHome.Child("libmysqlclient.dylib")

    // connect to database (mySQL in our example)
    // server: 192.168.1.80
    // port: 3306
    // database: test
    // name: root
    // no password
    con.Connect("192.168.1.80:3306@test","root","",SQLConnectionMBS.kMySQLClient)
    // associate a command with connection
    // connection can also be specified in SACommand constructor
    cmd.Connection = con

    // create table
    cmd.setCommandText("Create table test_tbl(fid integer, fvarchar20 varchar(20), fblob blob")
    cmd.Execute

    // insert value
    cmd.setCommandText("Insert into test_tbl(fid, fvarchar20) values (1, 'Some string (1)')")
    cmd.Execute

    // commit changes on success
    con.Commit

    MsgBox("Table created, row inserted!")

catch r as SQLErrorExceptionMBS
    // SACommand::Rollback()
    // can also throw an exception
    // (if a network error for example),
    // we will be ready
```

try

// on error rollback changes
if con<>nil then
  con.rollback
end if
catch x as SQLErrorExceptionMBS
  // ignore
end try

// show error message
MsgBox r.message
end try

Notes: The plugin can cache the recordset locally. To enable you can call SQLCommandMBS.Cache or use the Option("AutoCache") = "true" on either command or connection or database objects. The plugin will then fetch all records and store them in memory. After this you can walk over the recordset and use FetchPos, FetchFirst, FetchLast, FetchPrev and FetchNext to locate the rows you need. When you call Field() you always get last row, but to read from cached result set, please use Value() function. When using RecordSet, the values are read via Value() functions automatically.

152.13.2 Methods

152.13.3 AsRecordSet as RecordSet

MBS SQL Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a recordset using the command to query fields.

**Notes:**
You can use normal RecordSet functions to walk through fields and they simply control the command object. This is for convenience like passing RecordSet to report functions in Real Studio.

For this method to work, you need to have somewhere a property with SQLDatabaseMBS so Real Studio includes our SQLDatabase plugin which provides the RecordSet functionality.

The record set may not have a valid RecordCount or have working movefirst/movelast/moveprev methods unless the underlaying database supports those and Scrollable result sets is enabled/supported.
152.13.4 Cache

MBS SQL Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Caches values.

**Notes:**
The plugin will load the whole recordset and store it in memory. Now you can move forward/backward as needed to read data.

If you set Option("AutoCache") = "true", the plugin will call Cache automatically for all result sets.

152.13.5 Cancel

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Attempts to cancel the pending result set, or current statement execution.

**Notes:**
Only if isExecuting is true, doing cancel makes sense.

Cancel can cancel the following types of processing on a statement:

A function running asynchronously on the statement.
A function running on the statement on another thread.
After an application calls a function asynchronously, it checks repeatedly to determine whether it has finished processing. While the function is processing, an application can call Cancel to cancel the function.

In a multithread application, the application can cancel a function that is running synchronously on a statement.

see also

152.13.6 Close

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Closes the specified command object.

**Notes:**
Use the Close method to close the command explicitly.

A command will be implicitly closed in destructor, so you don’t have to call Close method explicitly.
152.13.7 Constructor

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Creates a new command object with no connection and no command text.

See also:

- 152.13.8 Constructor(connection as SQLConnectionMBS, SQLCommand as String, CommandType as Integer = 0)

152.13.8 Constructor(connection as SQLConnectionMBS, SQLCommand as String, CommandType as Integer = 0)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

This constructor initializes a new SQLCommandMBS object.

**Example:**

```vbs
// your connection
dim con as SQLConnectionMBS
dim SQL as string = "Insert into test_tbl(fid, fvarchar20) values(:id, :name)"

// create command object
dim cmd as new SQLCommandMBS(con, sql)

// assign values by name of parameter:
    cmd.Param("id").setAsLong(2)
    cmd.Param("name").setAsString(new SQLStringMBS("Some string (2)"))

// Insert first row
    cmd.Execute
```

**Notes:**

- Connection: the connection to associated with the command.
- SQLCommand: A string which represents command text string (an SQL statement or a stored procedure name). If it is an empty string, no command text is associated with the command, and you have to call setCommandText method later.
- CommandType: The type of command like kCommandTypeUnknown, kCommandTypeSQLStatement, kCommandTypeSQLStatementRaw or kCommandTypeStoredProcedure.

All text strings sent to the plugin must have a defined encoding. Else the internal text encoding conversions will fail.

See also:
152.13.9 CreateParam(name as string, ParamType as Integer, DirType as Integer=0) as SQLParamMBS

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates parameter associated with the specified command.

**Notes:**
Parameters

- **name:** A string representing the name of parameter.
- **ParamType:** Type of the parameter’s value. Use the kDataType constants.
- **ParamSize:** An integer value represents parameter’s value size.
- **ParamPrecision:** An integer value represents parameter’s value precision.
- **ParamScale:** An integer value represents parameter’s value scale.
- **DirType:** Type of the parameter. Use the kParamDirType* constants.

Returns a new SQLParamMBS object on success or nil on any error.

Normally you should not create parameters by yourself. The Library automatically detects whether the command has parameters in terms of the command text and implicitly creates a set of SAParam objects.

Nevertheless, if you call CreateParam explicitly you have to delete all SAParam objects created automatically by the Library before. Use DestroyParams method before the first call of CreateParam method.

See also:

- 152.13.10 CreateParam(name as string, ParamType as Integer, NativeType as Integer, ParamSize as Integer, ParamPrecision as Integer, ParamScale as Integer, DirType as Integer=0) as SQLParamMBS

152.13.10 CreateParam(name as string, ParamType as Integer, NativeType as Integer, ParamSize as Integer, ParamPrecision as Integer, ParamScale as Integer, DirType as Integer=0) as SQLParamMBS

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates parameter associated with the specified command.

**Notes:**
Parameters
name: A string representing the name of parameter.
ParamType: Type of the parameter’s value. Use the kDataType constants.
ParamSize: An integer value represents parameter’s value size.
ParamPrecision: An integer value represents parameter’s value precision.
ParamScale: An integer value represents parameter’s value scale.
DirType: Type of the parameter. Use the kParamDirType* constants.

Returns a new SQLParamMBS object on success or nil on any error.

Normally you should not create parameters by yourself. The Library automatically detects whether the command has parameters in terms of the command text and implicitly creates a set of SAParam objects.

Nevertheless, if you call CreateParam explicitly you have to delete all SAParam objects created automatically by the Library before. Use DestroyParams method before the first call of CreateParam method.
See also:

- 152.13.9 CreateParam(name as string, ParamType as Integer, DirType as Integer=0) as SQLParamMBS

152.13.11 DestroyParams


Notes:
DestroyParams method destroys all parameters either created automatically by the Library or by user.

Normally you should not create and delete parameters by yourself. The Library automatically detects whether the command has parameters, implicitly creates a set of SAParam objects and then deletes them in SACommanddestructor. But if you have some reason to create parameters explicitly use CreateParam method and then call DestroyParams method to delete all parameters after your work with parameters is over.

152.13.12 Execute


Example:

// your connection
dim con as SQLConnectionMBS
dim SQL as string = "Insert into test_tbl(fid, fvarchar20) values(:id, :name)"
// create command object
dim cmd as new SQLCommandMBS(con, sql)

// assign values by name of parameter:
cmd.Param("id").setAsLong(2)
cmd.Param("name").setAsString(new SQLStringMBS("Some string (2)"))

// Insert first row
cmd.Execute

Notes:
Use the Execute method to execute the query or stored procedure specified in the command text. Execute method calls Prepare method implicitly if needed. If the command has input parameters, they should be bound before calling Execute method. Input parameters represented by SAParam object. To bind input variables assign a value to SAParam object returning by Param or ParamByIndex methods.

A command (an SQL statement or procedure) can have a result set after executing. To check whether a result set exists use isResultSet method. If result set exists, a set of SAField objects is created after command execution. Rows from the result set can be fetched one by one using FetchNext method. To get field description or value use Field method.

Output parameters represented by SAParam objects. They are available after command execution. To get parameter description or value use Param or ParamByIndex methods.

152.13.13 ExecuteCommand(SQLCommand as string, CommandType as Integer=0)


Notes:
This is a convenience function.
Internally it calls setCommandText with the given command and calls Execute.

All text strings sent to the plugin must have a defined encoding. Else the internal text encoding conversions will fail.
152.13. **CLASS SQLCOMMANDMBS**

152.13.14 **ExecuteCommandMT**(SQLCommand as string, CommandType as Integer=0)

MBS SQL Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Executes the given command.

**Notes:**
This is a convenience function.
Internally it calls setCommandText with the given command and calls Execute.

The work is performed on an extra thread, so this function can yield time to other Xojo (Real Studio) threads. And it calls the Working event regularly. For best user experience run this command on a Xojo (Real Studio) thread, so your GUI stays responsive.

All text strings sent to the plugin must have a defined encoding. Else the internal text encoding conversions will fail.

152.13.15 **ExecuteMT**

MBS SQL Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Executes the current command.

**Notes:**
Use the Execute method to execute the query or stored procedure specified in the command text. Execute method calls Prepare method implicitly if needed. If the command has input parameters, they should be bound before calling Execute method. Input parameters represented by SAParam object. To bind input variables assign a value to SAParam object returning by Param or ParamByIndex methods.

A command (an SQL statement or procedure) can have a result set after executing. To check whether a result set exists use isResultSet method. If result set exists, a set of SAField objects is created after command execution. Rows from the result set can be fetched one by one using FetchNext method. To get field description or value use Field method.

Output parameters represented by SAParam objects. They are available after command execution. To get parameter description or value use Param or ParamByIndex methods.

The work is performed on an extra thread, so this function can yield time to other Xojo (Real Studio) threads. And it calls the Working event regularly. For best user experience run this command on a Xojo (Real Studio) thread, so your GUI stays responsive.
152.13.16  FetchFirst as boolean

MBS SQL Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Fetches first row from a result set.
**Notes:**
Same as FetchNext, but jumps to the first row.
Returns true if the row was fetched; otherwise false.

Not supported for Interbase and SQLite.

When you cache the result set, you can always move within the result set.

152.13.17  FetchLast as boolean

MBS SQL Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Fetches last row from a result set.
**Notes:**
Same as FetchNext, but jumps to the last row.
Returns true if the row was fetched; otherwise false.

Not supported for Interbase and SQLite.

When you cache the result set, you can always move within the result set.

152.13.18  FetchNext as boolean

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Fetches next row from a result set.
**Notes:**
Returns true if the next row was fetched; otherwise false.

Use FetchNext method to fetch row by row from the result set.

Each column of fetched row is represented by SAField object. If a result set exists after the last command execution, a set of SAField objects is created implicitly. To check whether a result set exists use isResultSet method. FetchNext method updates value parts of SAField objects.

To get field description or value use Field method.
When you cache the result set, you can always move within the result set.

152.13.19  **FetchPos(offset as Integer, relative as boolean = false) as boolean**

MBS SQL Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Fetches a row by index.

**Notes:**
Returns true if the row was fetched; otherwise false.
You may need to request recordset to be scrollable to have this work.
For that, please set Option("Scrollable") = "true" before doing the query.

When you cache the result set, you can always move within the result set.

152.13.20  **FetchPrior as boolean**

MBS SQL Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Fetches previous row from a result set.

**Notes:**
Returns true if the row was fetched; otherwise false.
Same as FetchNext, just going back inside the result set.

Not supported for Interbase and SQLite.

When you cache the result set, you can always move within the result set.

152.13.21  **Field(index as Integer) as SQLFieldMBS**

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the column specified by its position in the result set.

**Example:**

```vbnet
dim c as SQLCommandMBS // your command object

// get field by name
dim f1 as SQLFieldMBS = c.Field("FirstName")

// get field by Index
dim f2 as SQLFieldMBS = c.Field(1)
```
Notes:

index: A one-based field number in a result set.

Use Field method to access a field by its name or position in the result set.
For Cached result sets, please use Value() function to get values.

Using an index smaller than 1 and greater then the value returned by FieldCount method will result in a failed assertion.

A set of SAField objects creates implicitly after the command execution if the result set exists. SAField object contains full information about a column: name, type, size, value.
See also:

- 152.13.22 Field(name as string) as SQLFieldMBS

152.13.22 Field(name as string) as SQLFieldMBS

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Returns the column specified by its name in the result set.
Example:

dim c as SQLCommandMBS // your command object

    // get field by name
dim f1 as SQLFieldMBS = c.Field("FirstName")

    // get field by Index
    dim f2 as SQLFieldMBS = c.Field(1)

Notes:

name: A string that represents a name of the requested field.

Returns a reference to a SAField object.

Use Field method to access a field by its name or position in the result set.
For Cached result sets, please use Value() function to get values.

Using a non-existent field name will throw an exception.
A set of SAField objects creates implicitly after the command execution if the result set exists. SAField object contains full information about a column: name, type, size, value.

See also:

- 152.13.21 Field(index as Integer) as SQLFieldMBS

152.13.23 FieldNames as String()

MBS SQL Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns an array with all the field names for quick inspection.

152.13.24 Open

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Opens the specified command object.

**Notes:**

Use the Open method to open the command explicitly.

A command will be implicitly opened by any method that needs an open command, therefore you don’t have to call it explicitly.

To test whether a command is opened use isOpened method.

152.13.25 Param(ID as Integer) as SQLParamMBS

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the command parameter specified by its position.

**Notes:**

ID: A position of parameter specified in the command text. Normally position is a number stated in the command text after a colon (for example, 1 for :1, 5 for :5).

Returns a reference to a SAParam object which is only valid as long as the param object is not deleted by the library.

Use Param method to access a parameter by its name or position (in SQL statement). If, for example, you want to walk through all the parameters use ParamByIndex method.
If parameters were not created before calling Param method the Library creates them implicitly (can query native API if needed and therefore can throw exception on error) and then returns the specified parameter.

Passing a value of name or position which does not specified in the command text will throw an exception.

SAParam object contains full information about a parameter: name, type, size, etc. Values for the input parameters can be assigned to SAParam object. See also:

- 152.13.26 Param(name as string) as SQLParamMBS

152.13.26  Param(name as string) as SQLParamMBS


Example:

```vbs
// your connection
dim con as SQLConnectionMBS
dim SQL as string = "Insert into test_tbl(fid, fvarchar20) values(:id, :name)"

// create command object
dim cmd as new SQLCommandMBS(con, sql)

// assign values by name of parameter:
cmd.Param("id").setAsLong(2)
cmd.Param("name").setAsString(new SQLStringMBS("Some string (2)"))

// Insert first row
cmd.Execute
```

Notes:

Name: A string that represents a name of the requested parameter. Normally name is a string stated in the command text after a colon (for example, 'city' for :city, 'my city' for :"my city") or a parameter name in a stored procedure or function.

Returns a reference to a SAParam object which is only valid as long as the param object is not deleted by the library.

Use Param method to access a parameter by its name or position (in SQL statement). If, for example, you want to walk through all the parameters use ParamByIndex method.
If parameters were not created before calling Param method the Library creates them implicitly (can query native API if needed and therefore can throw exception on error) and then returns the specified parameter.

Passing a value of name or position which does not specified in the command text will throw an exception.

SAParam object contains full information about a parameter: name, type, size, etc. Values for the input parameters can be assigned to SAParam object.

See also:

- 152.13.25 Param(ID as Integer) as SQLParamMBS

152.13.27  ParamByIndex(index as Integer) as SQLParamMBS

Returns the command parameter specified by index.

Notes:
Index: A zero-based index of the requested parameter in the array of SAParam objects. It must be greater than or equal to 0 and 1 less than the value returned by ParamCount method.

Returns a reference to a SAParam object.

Normally you should use Param method to access a parameter by its name or position (in SQL statement). ParamByIndex method can be used if, for example, you want to walk through all the parameters.

If parameters were not created before calling ParamByIndex method the Library creates them implicitly (can query native API if needed and therefore can throw exception on error) and then returns the specified parameter.

Passing a negative value of index or a value greater or equal than the value returned by ParamCount method will result in a failed assertion.

SAParam object contains full information about a parameter: name, type, size, etc. Values for the input parameters can be assigned to SAParam object.

152.13.28  Prepare

Prepares command before execution.
Prepare method compiles the command, but does not execute it. The method detects syntax errors in command text and verifies the existence of database objects.

Execute method calls Prepare method implicitly if needed, therefore you don’t have to call it explicitly.

152.13.29  setCommandText(SQLCommand as string, CommandType as Integer = 0)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the command text.

**Example:**

```vbnet
dim s as new SQLCommandMBS
s.setCommandText "select * from test"
MsgBox s.CommandText
```

**Notes:**

SQLCommand: A string which represents command text string (an SQL statement or a stored procedure name).
CommandType: The type of command like kCommandTypeUnknown, kCommandTypeSQLStatement, kCommandTypeSQLStatementRaw or kCommandTypeStoredProcedure.

It's not necessary to set a command type explicitly, because it is defined automatically in terms of command text string. But if you still have any reason to do it, use one of the kCommandType* constants. To get command type use CommandType method.

152.13.30  SetParameters(Params as dictionary)

MBS SQL Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the parameters based on the keys and values in the dictionary.

**Example:**

```vbnet
dim con as SQLConnectionMBS  // your connection
dim pic as picture  // some picture

// get picture data
dim jpegData as MemoryBlock = pic.GetData(Picture.FormatJPEG, 80)

// parse a SQL command
```
dim sql as string = "Insert into BlobTest(name, image) values (:name, :image)"
dim cmd as new SQLCommandMBS(con, sql)

dim d as new Dictionary
    // set by param index
d.Value(0) = "test.jpg"
    // set by param name
d.Value("image") = jpegData

    // set all parameters together
    cmd.SetParameters d
    cmd.Execute

Notes:
Keys can be String, Text or numeric types. Text and String are used to pick parameters by name. Numeric values are used to pick parameter by index (zero based). MemoryBlock and Strings without text encoding are converted to byte values (BLOB). Texts and Strings with encoding are converted to text values. Raises exceptions if you pass anything which is not recognized. Other types are translated as good as possible.

152.13.31 Value(index as Integer) as SQLValueReadMBS

MBS SQL Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value specified by its position in the result set.

**Example:**

dim c as SQLCommandMBS // your command object

    // get field by name
dim f1 as SQLValueReadMBS = c.Value("FirstName")

    // get field by Index
dim f2 as SQLValueReadMBS = c.Value(1)

Notes:
You can use Value() to get values for normal or cached result sets.

index: A one-based field number in a result set.

Use Value method to access a field by its name or position in the result set.
For Cached result sets, please use Value() function to get values.

Using an index smaller than 1 and greater then the value returned by FieldCount method will result in a failed assertion.

A set of SAField objects creates implicitly after the command execution if the result set exists. SAField object contains full information about a column: name, type, size, value.

See also:

- 152.13.32 Value(name as string) as SQLValueReadMBS

### 152.13.32 Value(name as string) as SQLValueReadMBS

MBS SQL Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value specified by its name in the result set.

**Example:**

```vbs
dim c as SQLCommandMBS // your command object

// get value by name
dim f1 as SQLValueReadMBS = c.Value("FirstName")

// get value by Index
dim f2 as SQLValueReadMBS = c.Value(1)
```

**Notes:**

You can use Value() to get values for normal or cached result sets.

name: A string that represents a name of the requested field.

Returns a reference to a SAValueRead object.

Use Value method to access a field by its name or position in the result set. Using a non-existent field name will throw an exception.

A set of SAField objects creates implicitly after the command execution if the result set exists. SAField object contains full information about a column: name, type, size, value.

See also:

- 152.13.31 Value(index as Integer) as SQLValueReadMBS
152.13.33 Properties

152.13.34 CommandCount as Integer

MBS SQL Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries number of current command objects.

**Notes:**
- This method should help you find leaked objects by keeping track of current count from the plugin perspective.
- This includes SQLCommandMBS and RecordSet objects.
  (Read only property)

152.13.35 CommandText as string

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the command text associated with the SACommand object.

**Example:**

```vbnet
dim s as new SQLCommandMBS(nil, "select * from test")
MsgBox s.CommandText
```

**Notes:**
- Use the CommandText method to return the command text declared in SACommand constructor or set-CommandText method.
- All text strings sent to the plugin must have a defined encoding. Else the internal text encoding conversions will fail.
  (Read and Write property)

152.13.36 CommandType as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the command type currently associated with the SACommand object.

**Notes:**
- One of the following values from SACommandType_t enum:
  - kCommandTypeUnknown Command type is not defined. Library will detect command type automatically when needed.
- `kCommandTypeSQLStmt` Command is an SQL statement.
- `kCommandTypeSQLStmtRaw` Command is an SQL statement that mustn’t be interpreted by SQLAPI++.
- `kCommandTypeStoredProc` Command is a stored procedure or a function.

Remarks

The command type can be explicitly set in `SACommand` constructor and `setCommandText` method, but it’s not necessary to do it.

The `CommandType` method returns the command type value that was specified in `SACommand` constructor or `setCommandText` method. If you declared the command type value as `kCommandTypeUnknown` (the default value) then command type is detected by the Library and the `CommandType` method returns this detected value.

(Read only property)

### 152.13.37  Connection as `SQLConnectionMBS`


**Notes:**

When you set the connection on a command object that already has associated connection, the previous association will be correctly discarded (with closing opened command if needed) and new connection will be set.

If you attempt to call any method on a `SACommand` object that requires database access with no valid connection, an error occurs.

(Read and Write property)

### 152.13.38  FieldCount as `Integer`

**MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:** Returns the number of fields (columns) in a result set.

**Notes:**

FieldCount method returns the number of fields created implicitly after the command execution if a result set exists.

A field is represented by `SAField` object. You can get field value and description using `Field` method.

(Read only property)
152.13. **CLASS SQLCOMMANDMBS**

### 152.13.39 Fields as Dictionary

MBS SQL Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Provides dictionary with all fields.

**Notes:**
This dictionary should help for debugging to inspect all fields and their text value.
(Read only property)

### 152.13.40 hasCache as Boolean

MBS SQL Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether cache is active.

**Notes:** (Read only property)

### 152.13.41 isExecuted as boolean

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this command was already executed.

**Notes:** (Read only property)

### 152.13.42 isExecuting as Boolean

MBS SQL Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this command is executing.

**Notes:**
You only see this true if you use threaded queries and look on the property from another thread.
(Read only property)

### 152.13.43 isOpened as boolean

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if the SACommand object is opened; otherwise false.

**Notes:** (Read only property)
152.13.44  isResultSet as boolean

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Tests whether a result set exists after the command execution.  
**Notes:**  
Returns true if the result set exists; otherwise false.  
(Read only property)

152.13.45  Options as Dictionary

MBS SQL Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a dictionary with all options.  
**Notes:**  
For debugging, it may be useful to inspect options in debugger.  
(Read only property)

152.13.46  ParamCount as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of parameters associated with the SACommand object.  
**Notes:**  
ParamCount method returns the number of parameters created explicitly by using CreateParam method or (if parameters were not created before) creates them implicitly (can query native API if needed and therefore can throw exception on error) and returns the number of created parameters.  
Command parameter is represented by SAParam object. You can look SAParam objects through and assign their values with Param and ParamByIndex methods.  
(Read only property)

152.13.47  Parameters as Dictionary

MBS SQL Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Provides dictionary with all parameters.  
**Notes:**  
This dictionary should help for debugging to inspect all parameters and their text value.  
(Read only property)
152.13. **CLASS SQLCOMMANDMBS**

### RowsAffected as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of rows affected by the last insert/update/delete command execution.

**Example:**

```vbnet
dim con as SQLConnectionMBS // your connection

dim sql as string = "UPDATE Test SET MyField=1"
dim c as new SQLCommandMBS(con, sql)

c.Execute

MsgBox str(c.RowsAffected)
```

**Notes:** (Read only property)

### Tag as Variant

MBS SQL Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tag property.

**Example:**

```vbnet
dim c as SQLCommandMBS // your command object

// store reference to window/control, so we have it available in events
c.Tag = self
```

**Notes:**

You can store here whatever you like.

(Read and Write property)

### Option(name as string) as string

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A string value of a specific command option.

**Example:**

```vbnet
dim cmd as SQLCommandMBS // your command

// turn on auto cache
```
cmd.Option("AutoCache") = "true"

Notes:
see also:
(Read and Write computed property)

152.13.51 Events

152.13.52 Trace(traceInfo as Integer, SQL as string)

MBS SQL Plugin, Plugin Version: 13.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The event to trace SQL commands.

152.13.53 Working

MBS SQL Plugin, Plugin Version: 10.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The event called while the ExecuteMT and ExecuteCommandMT methods are running.

152.13.54 Constants

152.13.55 kCommandTypeSQLStatement = 1

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the constants for the command type.
**Notes:** Command is an SQL statement.

152.13.56 kCommandTypeSQLStatementRaw = 2

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the constants for the command type.
**Notes:** Command is an SQL statement that mustn’t be interpreted by SQLAPI.

152.13.57 kCommandTypeStoredProcedure = 3

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the constants for the command type.
**Notes:** Command is a stored procedure or a function.
152.13.58  kCommandTypeUnknown = 0

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the constants for the command type. **Notes:** Used by default. Library detects command type automatically.

152.13.59  kOptionPreFetchRows = ”PreFetchRows”

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the option constants. **Example:**

```vbs
    dim cmd as new SQLCommandMBS
    // do something

    dim nBulkSize as Integer = 1000
    cmd.Option(SQLCommandMBS.kOptionPreFetchRows) = str(nBulkSize)
```

152.13.60  kParamDirTypeInput = 0

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the parameter direction type constants. **Notes:** Input parameter.

152.13.61  kParamDirTypeInputOutput = 1

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the parameter direction type constants. **Notes:** Input/output parameter.

152.13.62  kParamDirTypeOutput = 2

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the parameter direction type constants. **Notes:** Output parameter.
152.13.63  kParamDirTypeReturn = 3

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the parameter direction type constants.  
**Notes:** Returning parameter.
152.14.  **CLASS SQLCONNECTIONMBS**

152.14  **class SQLConnectionMBS**

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:** The class for a SQL Plugin Database connection.

**Example:**

```vbnet
dim con as new SQLConnectionMBS

try

    // where is the library?
    con.SetFileOption con.kOptionLibraryMySQL, SpecialFolder.UserHome.Child(“libmysqlclient.dylib”)

    // connect to database
    // in this example it is Oracle,
    // but can also be Sybase, Informix, DB2
    // SQLServer, InterBase, SQLBase and ODBC

dim server as string = ”192.168.1.80:3306@test”

    con.Connect(server,”root”,””,SQLConnectionMBS.kMySQLClient)

    MsgBox ”We are connected!”

    // Disconnect is optional
    // autodisconnect will occur in destructor if needed
    con.Disconnect

    msgbox ”We are disconnected!”

catch r as RuntimeException

    MsgBox r.message

    // SAConnection::Rollback()
    // can also throw an exception
    // (if a network error for example),
    // we will be ready

try

    // on error rollback changes
    con.Rollback

catch rr as runtimeexception

    MsgBox rr.message

end try

end try
```
Notes:

Supported databases: Oracle, Microsoft SQL Server, DB2, Sybase, Informix, InterBase/Firebird, SQLBase, MySQL, PostgreSQL and ODBC and SQLite.

With Xojo 2013r1, you only need a database server license from Xojo, Inc. if you use the SQLDatabaseMBS class. The SQLConnectionMBS class does not require this license. But some features like getting a recordset do need the license as they refer to the SQLDatabaseMBS class.

Please free all RecordSets and SQLCommand objects before you close the SQLConnection or the SQL-Database. The plugin keeps references from RecordSets and SQLCommand to prevent automatic destruction of the database connection. If you close a database connection while you have RecordSets and SQLCommand in use, things may go wrong.

The plugin can cache the recordset locally. To enable you can call SQLCommandMBS.Cache or use the Option("AutoCache") = "true" on either command or connection or database objects. The plugin will than fetch all records and store them in memory. After this you can walk over the recordset and use FetchPos, FetchFirst, FetchLast, FetchPrev and FetchNext to locate the rows you need. When you call Field() you always get last row, but to read from cached result set, please use Value() function. When using RecordSet, the values are read via Value() functions automatically.

You can use InternalPostgreSQLLibraryMBS or InternalSQLiteLibraryMBS if you like to use our built in SQLite or PostgreSQL database libraries.

152.14.2 Methods

152.14.3 Commit

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Saves any changes and ends the current transaction.

**Notes:**

Use Commit method to write transaction changes permanently to a database. It commits the work of all commands that associated with that connection.

All changes to the database since the last commit are made permanent and cannot be undone. Before a commit, all changes made since the start of the transaction can be rolled back using Rollback method.
**152.14. CLASS SQLCONNECTIONMBS**

**152.14.4 Connect(DBString as string, UserID as string, Password as string, client as Integer = 0)**

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Opens the connection to a data source.

**Example:**

```vbnet
dim con as SQLConnectionMBS ' your connection

// some calls for MS SQL Server:
con.Connect("srv2@pubs", "", "", SQLConnectionMBS.kSQLServerClient)
con.Connect("@pubs", "", "", SQLConnectionMBS.kSQLServerClient)
con.Connect("BEDLAM\SQL2005EX_EN@pubs", "", "", SQLConnectionMBS.kSQLServerClient)
con.Connect("BEDLAM\SQLEXPRESS@master", "", "", SQLConnectionMBS.kSQLServerClient)

// for MySQL:

con.Connect("192.168.1.80:3306@test", "root", "password", SQLConnectionMBS.kMySQLClient)

// for PostgreSQL:

con.Connect("somedb", "name", "password", SQLConnectionMBS.kPostgreSQLClient)

// with options
con.Connect("PostgreSQL:127.0.0.1,5432@dbname=postgres connection_timeout=10 sslmode=require", "name", "password", SQLConnectionMBS.kPostgreSQLClient)

// for SQLite:

con.Connect("/test.db", "", "", SQLConnectionMBS.kSQLiteClient)
```

**Notes:**

- **DBString:** Name of database this connection will connect to (see Server specific notes).
- **UserID:** A string containing a user name to use when establishing the connection (see Server specific notes).
- **Password:** A string containing a password to use when establishing the connection.
- **client:** Optional. One of the following values from k*Client constants.

Using the Connect method on a SAConnection object establishes the physical connection to a data source. After this method successfully completes, the connection is live and you can issue commands against it and process the results.

If you use the default value of Client parameter, you should set Client before using Connect.
To check whether a connection established use isConnected method. To check whether a connection is broken or not use isAlive method.

see also for server specific notes:

For IPv6 we changed plugin to use , instead of : for the port separator. So please use , to separate port from IP or host.

For Firebird, if you connect to a database and you have 32/64bit mismatch, you get error number 3.

152.14.5  ConnectMT(DBString as string, UserID as string, Password as string, 
client as Integer = 0)

MBS SQL Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Opens the connection to a data source.
Notes:

DBString:  Name of database this connection will connect to (see Server specific notes).
UserID:  A string containing a user name to use when establishing the connection (see Server specific notes).
Password:  A string containing a password to use when establishing the connection.
client:  Optional. One of the following values from k*Client constants.

Using the Connect method on a SAConnection object establishes the physical connection to a data source. After this method successfully completes, the connection is live and you can issue commands against it and process the results.

If you use the default value of Client parameter, you should set Client before using Connect.

To check whether a connection established use isConnected method. To check whether a connection is broken or not use isAlive method.

see also for server specific notes:

For IPv6 we changed plugin to use , instead of : for the port separator. So please use , to separate port from IP or host.
The work is performed on an extra thread, so this function can yield time to other Xojo (Real Studio) threads. And it calls the Working event regularly. For best user experience run this command on a Xojo (Real Studio) thread, so your GUI stays responsive.

The MT method will not trigger WillConnect and DidConnect events.

### 152.14.6 Disconnect

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Disconnects the connection from the database.

### 152.14.7 InsertRecord(TableName as String, Record as Dictionary)

MBS SQL Plugin, Plugin Version: 17.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Convenience function to insert a record. **Notes:** The plugin builds for you SQL statement with prepared statement and runs the insert command with values. Please note that it does not work if field names contain spaces.

### 152.14.8 Listen

MBS SQL Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Start listening for notifications. **Notes:** Works only for PostgreSQL Client. Please set client or connect before calling this method.

### 152.14.9 Rollback

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Cancels any changes made during the current transaction and ends the transaction. **Notes:** Rollback method rolls back the database to the state it was in at the completion of the last commit operation. All uncommitted work is undone. Rollback method rolls back the work of all commands that associated with that connection.
To commit all changes made since the start of the transaction use Commit method.

152.14.10 SetFileOption(name as string, file as folderitem)

MBS SQL Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets an option with passing a file path.

**Example:**
```
dim db as new SQLConnectionMBS
    // where is the library?
    db.SetFileOption SQLConnectionMBS.kOptionLibraryMySQL, SpecialFolder.UserHome.Child("libmysqlclient.dylib")
```

**Notes:** Makes sure the path is correct and you have a 32bit library. 64 bit libraries will not work with Real Studio.

152.14.11 SQLExecute(command as string, CommandType as Integer = 0)

MBS SQL Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Executes a SQL command and ignores result.

**Notes:**
This is a convenience function.
Internally it creates a SQLCommandMBS with the given command and calls Execute.

All text strings sent to the plugin must have a defined encoding. Else the internal text encoding conversions will fail.

152.14.12 SQLExecuteMT(command as string, CommandType as Integer = 0)

MBS SQL Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Executes a SQL command and ignores result.

**Notes:**
This is a convenience function.
Internally it creates a SQLCommandMBS with the given command and calls Execute.

The work is performed on an extra thread, so this function can yield time to other Xojo (Real Studio) threads. And it calles the Working event regularly. For best user experience run this command on a Xojo (Real Studio) thread, so your GUI stays responsive.
All text strings sent to the plugin must have a defined encoding. Else the internal text encoding conversions will fail.

152.14.13  SQLSelect(command as string, CommandType as Integer = 0) as string

MBS SQL Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Executes a SQL command and returns the first field’s string value. **Notes:**
This is a convenience function. Internally it creates a SQLCommandMBS with the given command and calls Execute. If the result is a record set, the first field from the first row is returned. This is basically useful for commands like "select sqlite_version()".

All text strings sent to the plugin must have a defined encoding. Else the internal text encoding conversions will fail.

152.14.14  SQLSelectAsRecordSet(command as string, CommandType as Integer = 0) as RecordSet

MBS SQL Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Executes a SQL command and returns the result as RecordSet object. **Notes:**
This is a convenience function. Internally it creates a SQLCommandMBS with the given command and calls Execute.

For this method to work, you need to have somewhere a property with SQLDatabaseMBS so Real Studio includes our SQLDatabase plugin which provides the RecordSet functionality.

If Scrollable property is true, the recordset will be requested to be scrollable.

The record set may not have a valid RecordCount or have working movefirst/movelast/moveprev methods unless the underlaying database supports those and Scrollable result sets is enabled/supported.
152.14.15  SQLSelectAsRecordSetMT(command as string, CommandType as Integer = 0) as RecordSet

MBS SQL Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Executes a SQL command and returns the result as RecordSet object. Notes: This is a convenience function. Internally it creates a SQLCommandMBS with the given command and calls Execute.

The work is performed on an extra thread, so this function can yield time to other Xojo (Real Studio) threads. And it calles the Working event regularly. For best user experience run this command on a Xojo (Real Studio) thread, so your GUI stays responsive.

For this method to work, you need to have somewhere a property with SQLDatabaseMBS so Real Studio includes our SQLDatabase plugin which provides the RecordSet functionality.

If Scrollable property is true, the recordset will be requested to be scrollable.

The record set may not have a valid RecordCount or have working movefirst/movelast/moveprev methods unless the underlaying database supports those and Scrollable result sets is enabled/supported.

152.14.16  SQLSelectMT(command as string, CommandType as Integer = 0) as string

MBS SQL Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Executes a SQL command and returns the first field’s string value. Notes: This is a convenience function. Internally it creates a SQLCommandMBS with the given command and calls Execute. If the result is a record set, the first field from the first row is returned. This is basically useful for commands like "select sqlite_version()".

The work is performed on an extra thread, so this function can yield time to other Xojo (Real Studio) threads. And it calles the Working event regularly. For best user experience run this command on a Xojo (Real Studio) thread, so your GUI stays responsive.

All text strings sent to the plugin must have a defined encoding. Else the internal text encoding conversions will fail.
152.14.17 Properties

152.14.18 AutoCommit as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether autocommit is enabled or disabled for the current connection.  
**Example:**

```vbnet
Dim con as SQLConnectionMBS // your database connection
con.AutoCommit = SQLConnectionMBS.kAutoCommitOn
```

**Notes:**  
If autocommit is on, the database is committed automatically after each SQL command. Otherwise, transaction is committed only after Commit calling.  
(Read and Write property)

152.14.19 Client as Integer

**Notes:** (Read and Write property)

152.14.20 ClientVersion as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the DBMS client API version number.  
**Notes:**  
The higher word contains the major client version (the XX value in the XX.YY version number); the lower word contains the minor client version (the YY value in the XX.YY version number).  
If an DBMS client was not set calling ClientVersion method will throw an exception.  
(Read only property)

152.14.21 ConnectionCount as Integer

MBS SQL Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries number of current connection objects.  
**Notes:**
This method should help you find leaked objects by keeping track of current count from the plugin perspective.
This includes SQLConnectionMBS and SQLDatabaseMBS objects.
(Read only property)

### 152.14.22 Error as Boolean

MBS SQL Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether an error occurred.
**Notes:**
This is set always when an error occurs and cleared if no error happened.
Be aware that the next call to a plugin function may reset error status.
If you look on this property in debugger, it’s probably already cleared by the debugger querying a property.
(Read only property)

### 152.14.23 ErrorCode as Integer

MBS SQL Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last error code.
**Notes:**
This is set always when an error occurs and cleared if no error happened.
(Read only property)

### 152.14.24 ErrorMessage as string

MBS SQL Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last error message.
**Notes:**
This is set always when an error occurs and cleared if no error happened.
(Read only property)

### 152.14.25 isAlive as boolean

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the database server connection status for a particular connection object.
**Notes:**
Returns true if the database server is active and accessible; otherwise false.
This method uses the safe query execution for most supported DBMS-es. The query uses the well known database table or procedure (mysql_ping is used for MySQL). If the query fails the method returns false. (Read only property)

152.14.26 isConnected as boolean

Notes: Returns true if connected; otherwise false.
(Read only property)

152.14.27 IsolationLevel as Integer

Notes: Use the kReadCommitted, kReadUncommitted, kRepeatableRead, kSerializable and kLevelUnknown constants.
(Read and Write property)

152.14.28 LastStatement as String

Notes: (Read only property)

152.14.29 NativeAPI as Variant

Notes: Returns a SQLAPIMBS object.
(Read only property)
152.14.30 Options as Dictionary

MBS SQL Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a dictionary with all options.

**Notes:**
For debugging, it may be useful to inspect options in debugger.
(Read only property)

152.14.31 RaiseExceptions as Boolean

MBS SQL Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to raise exceptions.

**Notes:**
Default is true which means we set error, ErrorCode and ErrorMessage properties and than raise SQLExceptionMBS exception.
If you set to false, we don’t raise the exception and you have similar behavior as with database class.
We recommend to use exceptions as they are not so easily ignored like an error property being true.
(Read and Write property)

152.14.32 Scrollable as Boolean

MBS SQL Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to make internally created SQLCommand objects scrollable.

**Notes:**
Since plugin version 15.0, Scrollable is false by default.
(Read and Write property)

152.14.33 ServerVersion as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the currently connected DBMS server version number.

**Notes:**
The higher word contains the major server version (the XX value in the XX.YY version number); the lower word contains the minor server version (the YY value in the XX.YY version number).
(Read only property)
152.14.34 ServerVersionString as string

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the currently connected DBMS server version string.

**Notes:**
A server version string may contain some useful information about server brand, configuration and so on. It is a good idea to display this information in all your applications.

(Read only property)

152.14.35 SQLiteEncryptionKey as String

MBS SQL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The encryption key to use.

**Example:**
```vbnet
dim db as new SQLConnectionMBS
db.SQLiteEncryptionKey = "Hello"
```

**Notes:**
This key is applied to the database after connecting. In case of an error, the plugin raises an exception. An empty key can be used for having no encryption. Alternatively you can use SQLite3MBS.SetKey yourself.

The amount of key material actually used by the encryption extension depends on which variant of SEE you are using. With RC4, the first 256 byte of key are used. With the AES128, the first 16 bytes of the key are used. With AES256, the first 32 bytes of key are used.

If you specify a key that is shorter than the maximum key length, then the key material is repeated as many times as necessary to complete the key. If you specify a key that is larger than the maximum key length, then the excess key material is silently ignored.

The key must begin with an ASCII prefix to specify which algorithm to use. The prefix must be one of "rc4:“, "aes128:“, or "aes256:“. The prefix is not used as part of the key sent into the encryption algorithm. So the real key should begin on the first byte after the prefix. If no prefix is given, we default to AES 128. To be compatible to Xojo (Real Studio), you can use AES128.

The string provided to the plugin is used with it’s current encoding. So be sure you use right text encoding for what you want. e.g. using "Miller" as key in text encoding Windows ANSI will not open a database which used that key in UTF-8 encoding.
The Xojo database encryption in SQLiteDatabase class uses AES-128 OFB.
(Read and Write property)

152.14.36  Tag as Variant

MBS SQL Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The tag property.
**Notes:**
You can store here whatever you like.
(Read and Write property)

152.14.37  VariantsKeepSQLObjects as Boolean

MBS SQL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether variants should use SQL types.
**Notes:**
If set to true, we return datetime and numeric as SQLDateTimeMBS and SQLNumericMBS objects.
If false, we return them as date and double.
(Read and Write property)

152.14.38  Option(name as string) as string

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A string value of a specific connection or command option.
**Example:**

dim c as SQLConnectionMBS // your connection

// for Microsoft SQL use OLEDB, so you don’t need native SQL drivers installed...
c.Option("UseAPI") = "OLEDB"
c.Option("SQLNCLI.LIBS") = "sqlsrv32.dll" // Library included in Windows Vista and newer

// for SQLite, set flag to open database file read only:
c.Option("SQLiteVFSFlags") = "1"

// set 10 seconds timeout for MySQL
c.Option("MYSQL_OPT_CONNECT_TIMEOUT") = "10"

// turn on auto cache
c.Option("AutoCache") = "true"
// set connection timeout for ODBC:
c.Option("SQL_ATTR_CONNECTION_TIMEOUT") = "10"

Notes:
see also:
(Read and Write computed property)

152.14.39  Events

152.14.40  DidConnect

MBS SQL Plugin, Plugin Version: 14.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**
Event called after connection was made.
**Notes:** After we got connected, you can apply various options on the new connection here.

152.14.41  PostgresNotification(NotificationName as string, PID as Integer, Extras as String)

MBS SQL Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**
A postgresSQL notification was received.
**Notes:** Provides notification name, process ID of app and optional extra information.

152.14.42  Trace(traceInfo as Integer, SQL as string, Command as SQLCommandMBS)

MBS SQL Plugin, Plugin Version: 13.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**
The event to trace SQL commands.

152.14.43  WillConnect

MBS SQL Plugin, Plugin Version: 14.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**
Event called before connection is established.
**Notes:** Last chance to set connection options.
152.14.44 Working

MBS SQL Plugin, Plugin Version: 10.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event called while the SQLExecuteMT and SQLSelectMT methods are running.

152.14.45 Constants

152.14.46 \( \text{kANSILevel0} = 0 \)

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the ANSI level constants. **Notes:** ANSI Level 0

152.14.47 \( \text{kANSILevel1} = 1 \)

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the ANSI level constants. **Notes:** ANSI Level 1

152.14.48 \( \text{kANSILevel2} = 2 \)

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the ANSI level constants. **Notes:** ANSI Level 2

152.14.49 \( \text{kANSILevel3} = 3 \)

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the ANSI level constants. **Notes:** ANSI Level 3

152.14.50 \( \text{kAutoCommitOff} = 0 \)

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the constants for the autocommit property. **Notes:** Autocommit is off.
152.14.51 kAutoCommitOn = 1

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the constants for the autocommit property.  
**Notes:** Autocommit is on.

152.14.52 kAutoCommitUnknown = -1

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the constants for the autocommit property.  
**Notes:** Autocommit unknown

152.14.53 kClientNotSpecified = 0

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the database client constants.  
**Notes:** Client is not specified.

152.14.54 kCubeSQLClient = 13

MBS SQL Plugin, Plugin Version: 18.0. **Function:** One of the database client constants.  
**Notes:** CubeSQL client. (coming soon)

152.14.55 kDB2Client = 6

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the database client constants.  
**Notes:** DB2 client.

152.14.56 kErrorBindVarNotFound = 7

MBS SQL Plugin, Plugin Version: 16.0. **Function:** One of the SQL Plugin error codes.  
**Notes:** Bind variable not found.

152.14.57 kErrorClientInitFails = 6

MBS SQL Plugin, Plugin Version: 16.0. **Function:** One of the SQL Plugin error codes.  
**Notes:** Initialization failed for client.
152.14.58  kErrorClientNotSet = 1

MBS SQL Plugin, Plugin Version: 16.0. **Function:** One of the SQL Plugin error codes.  
**Notes:** Client not set.

152.14.59  kErrorClientNotSupported = 2

MBS SQL Plugin, Plugin Version: 16.0. **Function:** One of the SQL Plugin error codes.  
**Notes:** Unsupported client type for this platform.

152.14.60  kErrorClientVersionOld = 5

MBS SQL Plugin, Plugin Version: 16.0. **Function:** One of the SQL Plugin error codes.  
**Notes:** Library file is too old.

152.14.61  kErrorFieldNotFound = 8

MBS SQL Plugin, Plugin Version: 16.0. **Function:** One of the SQL Plugin error codes.  
**Notes:** Field not found.

152.14.62  kErrorGetLibraryVersionFails = 4

MBS SQL Plugin, Plugin Version: 16.0. **Function:** One of the SQL Plugin error codes.  
**Notes:** Failed to query library version.

152.14.63  kErrorLoadLibraryFails = 3

MBS SQL Plugin, Plugin Version: 16.0. **Function:** One of the SQL Plugin error codes.  
**Notes:** Failed to load a library. For example path could be wrong or 32/64bit mismatch.

152.14.64  kErrorNoMemory = 0

MBS SQL Plugin, Plugin Version: 16.0. **Function:** One of the SQL Plugin error codes.  
**Notes:** Out of memory.
152.14.\ CLASS SQLCONNECTIONMBS

152.14.65 \ kErrorUnknownColumnType = 11
MBS SQL Plugin, Plugin Version: 16.0. Function: One of the SQL Plugin error codes.
Notes: Unknown column type.

152.14.66 \ kErrorUnknownDataType = 9
MBS SQL Plugin, Plugin Version: 16.0. Function: One of the SQL Plugin error codes.
Notes: Unknown data type.

152.14.67 \ kErrorUnknownParameterType = 10
MBS SQL Plugin, Plugin Version: 16.0. Function: One of the SQL Plugin error codes.
Notes: Unknown parameter type.

152.14.68 \ kErrorWrongConversion = 12
MBS SQL Plugin, Plugin Version: 16.0. Function: One of the SQL Plugin error codes.
Notes: Failed to convert a value, e.g. string to number.

152.14.69 \ kErrorWrongDatetime = 13
MBS SQL Plugin, Plugin Version: 16.0. Function: One of the SQL Plugin error codes.
Notes: Can’t convert text to date.

152.14.70 \ kFirebirdClient = 4
MBS SQL Plugin, Plugin Version: 10.4. Function: One of the database client constants.
Notes: InterBase/Firebird client.

152.14.71 \ kInformixClient = 7
MBS SQL Plugin, Plugin Version: 9.3. Function: One of the database client constants.
Notes: Informix client.
152.14.72  kInterBaseClient = 4

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the database client constants.  
**Notes:** InterBase/Firebird client.

152.14.73  kLevelUnknown = -1

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the isolation level constants.  
**Notes:** Unknown

152.14.74  kMySQLClient = 9

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the database client constants.  
**Notes:** MySQL client.

152.14.75  kODBCClient = 1

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the database client constants.  
**Notes:** ODBC client.

152.14.76  kOptionAPPNAME = ”APPNAME”

MBS SQL Plugin, Plugin Version: 9.3. **Function:** A constant for the options.

152.14.77  kOptionLibraryDB2 = ”DB2CLI.LIBS”

MBS SQL Plugin, Plugin Version: 10.5. **Function:** One of the option constant to specify the library with the SetFileOption method.  
**Example:**

```vbnet
dim con as SQLConnectionMBS ' your connection

dim f as FolderItem = GetFolderItem("db2cli.dll")
con.SetFileOption con.kOptionLibraryDB2, f
```
**152.14. CLASS SQLCONNECTIONMBS**

Notes: for DB2.

**152.14.78 kOptionLibraryFirebird = ”IBASE.LIBS”**

MBS SQL Plugin, Plugin Version: 10.5. **Function:** One of the option constant to specify the library with the SetFileOption method.

**Example:**

```vbs
dim con as SQLConnectionMBS // your connection

dim f as FolderItem = GetFolderItem("fbclient.dll")
con.SetFileOption con.kOptionLibraryFirebird, f
```

Notes: for Firebird.

**152.14.79 kOptionLibraryInformix = ”INFCLI.LIBS”**

MBS SQL Plugin, Plugin Version: 10.5. **Function:** One of the option constant to specify the library with the SetFileOption method.

**Example:**

```vbs
dim con as SQLConnectionMBS // your connection

dim f as FolderItem = GetFolderItem("ICLIT09B.dll")
con.SetFileOption con.kOptionLibraryInformix, f
```

Notes: for Informix.

**152.14.80 kOptionLibraryInterbase = ”IBASE.LIBS”**

MBS SQL Plugin, Plugin Version: 10.5. **Function:** One of the option constant to specify the library with the SetFileOption method.

**Example:**

```vbs
dim con as SQLConnectionMBS // your connection

dim f as FolderItem = GetFolderItem("ibclient64.dll")
con.SetFileOption con.kOptionLibraryInterbase, f
```
Notes: for Interbase.

152.14.81  kOptionLibraryMySQL = ”MYSQL.LIBS”

MBS SQL Plugin, Plugin Version: 10.5. Function: One of the option constant to specify the library with the SetFileOption method.
Example:

```vba
dim con as SQLConnectionMBS // your connection

dim f as FolderItem = GetFolderItem("libmysqlclient.18.dylib")
con.SetFileOption con.kOptionLibraryMySQL, f
```

Notes: for MySQL. Library extension on Mac is ".dylib", on Linux ".so" and on Windows ".dll". You get this library with the MySQL download on their homepage.

152.14.82  kOptionLibraryODBC = ”ODBC.LIBS”

MBS SQL Plugin, Plugin Version: 10.5. Function: One of the option constant to specify the library with the SetFileOption method.
Example:

```vba
dim con as SQLConnectionMBS // your connection

dim f as FolderItem = GetFolderItem("odbc32.dll")
con.SetFileOption con.kOptionLibraryODBC, f
```

Notes: for ODBC.

152.14.83  kOptionLibraryOracle = ”OCI8.LIBS”

MBS SQL Plugin, Plugin Version: 10.5. Function: One of the option constant to specify the library with the SetFileOption method.
Example:

```vba
dim con as SQLConnectionMBS // your connection

dim f as FolderItem = GetFolderItem("oci.dll")
con.SetFileOption con.kOptionLibraryOracle, f
```
Notes: for Oracle.

152.14.84  kOptionLibraryPostgreSQL = "LIBPQ.LIBS"

MBS SQL Plugin, Plugin Version: 10.5. **Function:** One of the option constant to specify the library with the SetFileOption method.

**Example:**

dim con as SQLConnectionMBS // your connection

dim f as FolderItem = GetFolderItem("libpq.dll")
con.SetFileOption con.kOptionLibraryPostgreSQL, f

Notes: for Postgre SQL.

152.14.85  kOptionLibrarySeparator = ":;"

MBS SQL Plugin, Plugin Version: 10.5. **Function:** One of the option constant to specify the platform specific path separator.

**Notes:**
Use with SetFileOption to specify multiple file paths for a library. Has a different value on the different platforms.

152.14.86  kOptionLibrarySQLAnywhere = "SQLANY.LIBS"

MBS SQL Plugin, Plugin Version: 15.2. **Function:** One of the option constant to specify the library with the SetFileOption method.

**Example:**

dim con as SQLConnectionMBS // your connection

dim f as FolderItem = GetFolderItem("dbcapi.dll")
con.SetFileOption con.kOptionLibrarySQLAnywhere, f

Notes: for SQL Anywhere.
152.14.87  kOptionLibrarySQLBase = "SQLBASE.LIBS"

MBS SQL Plugin, Plugin Version: 10.5. **Function:** One of the option constant to specify the library with the SetFileOption method.

**Example:**

```vbscript
dim con as SQLConnectionMBS // your connection

dim f as FolderItem = GetFolderItem("sqlwntm.dll")
con.SetFileOption con.kOptionLibrarySQLBase, f
```

**Notes:** for SQLbase.

152.14.88  kOptionLibrarySQLite = "SQLITE.LIBS"

MBS SQL Plugin, Plugin Version: 10.5. **Function:** One of the option constant to specify the library with the SetFileOption method.

**Example:**

```vbscript
dim con as SQLConnectionMBS // your connection

dim f as FolderItem = GetFolderItem("sqlite.dylib")
con.SetFileOption con.kOptionLibrarySQLite, f
```

**Notes:** for SQLite. Can also be the spatialite library.

152.14.89  kOptionLibrarySybaseComn = "SYBCOMN.LIBS"

MBS SQL Plugin, Plugin Version: 10.5. **Function:** One of the option constant to specify the library with the SetFileOption method.

**Notes:** for Sybase.

152.14.90  kOptionLibrarySybaseCS = "SYBCS.LIBS"

MBS SQL Plugin, Plugin Version: 10.5. **Function:** One of the option constant to specify the library with the SetFileOption method.
dim f as FolderItem = GetFolderItem("libsybcs.dll")
con.SetFileOption con.kOptionLibrarySybaseCS, f

Notes: for Sybase.

**152.14.91 kOptionLibrarySybaseCT = "SYBCT.LIBS"**

MBS SQL Plugin, Plugin Version: 10.5. **Function:** One of the option constant to specify the library with the SetFileOption method.

**Example:**
```vbscript
dim con as SQLConnectionMBS // your connection

dim f as FolderItem = GetFolderItem("libsybct.dll")
con.SetFileOption con.kOptionLibrarySybaseCT, f
```

Notes: for Sybase.

**152.14.92 kOptionLibrarySybaseIntl = "SYBINTL.LIBS"**

MBS SQL Plugin, Plugin Version: 10.5. **Function:** One of the option constant to specify the library with the SetFileOption method.

Notes: for Sybase.

**152.14.93 kOptionLibrarySybaseTCL = "SYBTCL.LIBS"**

MBS SQL Plugin, Plugin Version: 10.5. **Function:** One of the option constant to specify the library with the SetFileOption method.

Notes: for Sybase.

**152.14.94 kOptionWSID = "WSID"**

MBS SQL Plugin, Plugin Version: 9.3. **Function:** A constant for the options.
152.14.95  kOracleClient = 2

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the database client constants.  
**Notes:** Oracle client.

For Windows the file is "oci.dll", for Linux libclntsh.so and for Mac OS X libclntsh.dylib.

152.14.96  kPostgreSQLClient = 10

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the database client constants.  
**Notes:** PostgreSQL client.

152.14.97  kReadCommitted = 1

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the isolation level constants.  
**Notes:** Read committed.

152.14.98  kReadUncommitted = 0

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the isolation level constants.  
**Notes:** Read uncommitted.

152.14.99  kRepeatableRead = 2

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the isolation level constants.  
**Notes:** Repeatable read.

152.14.100  kSerializable = 3

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the isolation level constants.  
**Notes:** Serializable.
152.14.101  kSQLAnywhereClient = 12

MBS SQL Plugin, Plugin Version: 18.0. **Function:** One of the database client constants.
**Notes:** SQL Anywhere client.

152.14.102  kSQLBaseClient = 5

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the database client constants.
**Notes:** SQLbase client.

152.14.103  kSQLiteClient = 11

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the database client constants.
**Notes:** SQLite client. Or spatialite.

152.14.104  kSQLServerClient = 3

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the database client constants.
**Notes:**
Mircosoft SQL Server client.

You may need to download the client packages for accessing SQL Server. Files like the SQLNCLI dll may be missing. You can download for example the Feature Pack for Microsoft SQL Server 2005 from the microsoft download page.

152.14.105  kSybaseClient = 8

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the database client constants.
**Notes:** Sybase client.
152.15 class SQLDatabaseMBS

152.15.1 class SQLDatabaseMBS


Example:

dim db as new SQLDatabaseMBS

// where is the library?
db.SetFileOption SQLConnectionMBS.kOptionLibrarySQLite, getfolderitem("/usr/lib/libsqlite3.0.dylib", folderitem.PathType-Shell)

// connect to database
// in this example it is SQLite,
// but can also be Sybase, Oracle, Informix, DB2, SQLServer, InterBase, MySQL, SQLBase and ODBC

dim path as string

if TargetMacOS then
    path = "/tmp/test.db" // put the database in the temporary folder
else
    path = "test.db" // for Windows and Linux in the current folder the application is inside.
end if

db.DatabaseName = "sqlite:"+path

if db.Connect then
    MsgBox "We are connected!"

    // Disconnect is optional
    // autodisconnect will ocur in destructor if needed
    db.close

    msgbox "We are disconnected!"
end if

Notes:

You can use the SQL plugin without using Xojo (Real Studio) built in database classes if you use the SQL-ConnectionMBS and SQLCommandMBS classes.

Or you use the SQLDatabaseMBS class which is a subclass of the database class and can be used with REALbasics RecordSet class. The current implementation is not complete. You can connect with passing
the database URL in the DatabaseName property of the SQLDatabaseMBS class. You prefix this URL with the database type you are using.

You can use Execute and Select to run SQL statements. Errors can be queries with the lasterror properties. For the RecordSet, you can get the column count, the column names and values and move to the next row. All the other methods like deleting a record or updating a value are not implemented and you need to use SQL commands to do this.

Supported databases: Oracle, Microsoft SQL Server, DB2, Sybase, Informix, InterBase/Firebird, SQLBase, MySQL, PostgreSQL and ODBC and SQLite.

As field and table schema functions are not implemented, you can’t use this database with the database browser features in the Xojo (Real Studio) IDE. The plugin does not provide RecordCount on RecordSet class. For that you need to make a extra SELECT count(*) query.

With Xojo 2013r1, you only need a database server license from Xojo, Inc. if you use the SQLDatabaseMBS class. The SQLConnectionMBS class does not require this license. But some features like getting a recordset do need the license as they refer to the SQLDatabaseMBS class.

Please free all RecordSets and SQLCommand objects before you close the SQLConnection or the SQL-Database. The plugin keeps references from RecordSets and SQLCommand to prevent automatic destruction of the database connection. If you close a database connection while you have RecordSets and SQLCommand in use, things may go wrong.

The plugin can cache the recordset locally. To enable you can call SQLCommandMBS.Cache or use the Option(“AutoCache”) = "true” on either command or connection or database objects. The plugin will than fetch all records and store them in memory. After this you can walk over the recordset and use FetchPos, FetchFirst, FetchLast, FetchPrev and FetchNext to locate the rows you need. When you call Field() you always get last row, but to read from cached result set, please use Value() function. When using RecordSet, the values are read via Value() functions automatically.

You can use InternalPostgreSQLLibraryMBS or InternalSQLiteLibraryMBS if you like to use our built in SQLite or PostgreSQL database libraries. Subclass of the Database class.
152.15.2 Methods

152.15.3 Connect as boolean


**Example:**

```plaintext
dim db as new SQLDatabaseMBS

// where is the library?
db.SetFileOption SQLConnectionMBS.kOptionLibraryMySQL, SpecialFolder.UserHome.Child("libmysqlclient.dylib")

// connect to database
// in this example it is MySQL,
// but can also be Sybase, Informix, Oracle, DB2
// SQLServer, InterBase, SQLBase and ODBC

db.DatabaseName="mysql:192.168.1.80:3306@test"
db.UserName="root"
db.Password=""

// or postgreSQL with timeout and ssl mode
db.DatabaseName="PostgreSQL:127.0.0.1,5432@dbname=postgres connection_timeout=10 sslmode=require"

if db.Connect then

MsgBox "We are connected!"


// Disconnect is optional
// autodisconnect will ocur in destructor if needed
else

MsgBox db.ErrorMessage

end if
```

**Notes:**

Returns true on success and false on failure.

Please set the DatabaseName, UserName and Password properties. The Host property is ignored. The database name must contain the complete information and a prefix for the kind of database.
Use this prefixes: "ODBC:“, "Oracle:“, "SQLServer:“, "Firebird:“, "InterBase:“, "SQLBase:“, "DB2:“, "Informix:“, "Sybase:“, "MySQL:“, "PostgreSQL:“ or "SQLite:“.

For IPv6 we changed plugin to use , instead of : for the port separator. So please use , to separate port from IP or host.

For Firebird, if you connect to a database and you have 32/64bit mismatch, you get error number 3.

152.15.4 ConnectMT as Boolean

MBS SQL Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Connects to the database. **Notes:**

Returns true on success and false on failure.

Please set the DatabaseName, UserName and Password properties. The Host property is ignored.

The database name must contain the complete information and a prefix for the kind of database.

Use this prefixes: "ODBC:“, "Oracle:“, "SQLServer:“, "Firebird:“, "InterBase:“, "SQLBase:“, "DB2:“, "Informix:“, "Sybase:“, "MySQL:“, "PostgreSQL:“ or "SQLite:“.

For IPv6 we changed plugin to use , instead of : for the port separator. So please use , to separate port from IP or host.

Same as Connect, but if you run this on a thread, the plugin gives time to other threads so the rest of your application runs just fine.

The MT method will not trigger WillConnect and DidConnect events.

152.15.5 Constructor(globals as SQLGlobalsMBS = nil)

MBS SQL Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor. **Notes:** Please don’t call this directly as it’s called automatically with using new command.
152.15.6 Listen

MBS SQL Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Start listening for notifications.
**Notes:**
Works only for PostgresSQL Client.
Please set client or connect before calling this method.

152.15.7 Prepare(SQL as string) as SQLPreparedStatementMBS

MBS SQL Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Prepares a statement.
**Notes:**
Returns prepared statement or nil in case of error.
Please check ErrorMessage property for errors.

152.15.8 SetFileOption(name as string, file as folderitem)

MBS SQL Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets an option with passing a file path.
**Example:**
```
Dim db As New SQLDatabaseMBS

// where is the library?
db.SetFileOption SQLConnectionMBS.kOptionLibraryMySQL, SpecialFolder.UserHome.Child("libmysqlclient.dylib")
```

**Notes:** Makes sure the path is correct and you have a 32bit library. 64 bit libraries will not work with Real Studio.

152.15.9 SQLExecute(Sql as string, CommandType as Integer)

MBS SQL Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Runs the SQLExecute threaded.
**Notes:** Same as SQLExecute, but with additional CommandType parameter.
152.15.10  SQLExecuteMT(Sql as string, CommandType as Integer = 0)

MBS SQL Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Runs the SQLExecute threaded. **Notes:** Same as SQLExecute, but if you run this on a thread, the plugin gives time to other threads so the rest of your application runs just fine.

152.15.11  SQLSelect(Sql as string, CommandType as Integer) as RecordSet

MBS SQL Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Runs the SQLSelect threaded. **Notes:**

Same as SQLSelect, but with additional CommandType parameter.

For this method to work, you need to have somewhere a property with SQLDatabaseMBS so Real Studio includes our SQLDatabase plugin which provides the RecordSet functionality.

If Scrollable property is true, the recordset will be requested to be scrollable.

The record set may not have a valid RecordCount or have working movefirst/movelast/moveprev methods unless the underlying database supports those and Scrollable result sets is enabled/supported.

152.15.12  SQLSelectMT(Sql as string, CommandType as Integer = 0) as RecordSet

MBS SQL Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Runs the SQLSelect threaded. **Notes:**

Same as SQLSelect, but if you run this on a thread, the plugin gives time to other threads so the rest of your application runs just fine.

For this method to work, you need to have somewhere a property with SQLDatabaseMBS so Real Studio includes our SQLDatabase plugin which provides the RecordSet functionality.

If Scrollable property is true, the recordset will be requested to be scrollable.

The record set may not have a valid RecordCount or have working movefirst/movelast/moveprev methods unless the underlying database supports those and Scrollable result sets is enabled/supported.
152.15.13 Properties

152.15.14 AutoCommit as Integer

MBS SQL Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether autocommit is enabled or disabled for the current connection.

**Example:**

```vbnet
dim db as SQLDatabaseMBS // your database connection
db.AutoCommit = SQLDatabaseMBS.kAutoCommitOn
```

**Notes:**

If autocommit is on, the database is committed automatically after each SQL command. Otherwise, transaction is committed only after Commit calling.

(Read and Write property)

152.15.15 Client as Integer

MBS SQL Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The current DBMS client assigned for the connection.

**Notes:** (Read and Write property)

152.15.16 ClientVersion as Integer

MBS SQL Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the DBMS client API version number.

**Notes:**

The higher word contains the major client version (the XX value in the XX.YY version number); the lower word contains the minor client version (the YY value in the XX.YY version number).

If an DBMS client was not set calling ClientVersion method will throw an exception.

(Read only property)

152.15.17 Connection as SQLConnectionMBS

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The connection for this database used in the background.

**Notes:**
Note that methods on this connection object can raise exceptions while methods on the SQLDatabaseMBS class sets the error properties.
(Read only property)

152.15.18 isAlive as boolean

MBS SQL Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the database server connection status for a particular connection object.  
**Notes:**
Returns true if the database server is active and accessible; otherwise false.  
This method uses the safe query execution for most supported DBMS-es. The query uses the well known database table or procedure (mysql_ping is used for MySQL). If the query fails the method returns false.  
(Read only property)

152.15.19 isConnected as boolean

MBS SQL Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the connection state for a particular connection object.  
**Notes:**
Returns true if connected; otherwise false.  
(Read only property)

152.15.20 IsolationLevel as Integer

MBS SQL Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The transaction isolation level.  
**Notes:**
Use the kReadCommitted, kReadUncommitted, kRepeatableRead, kSerializable and kLevelUnknown constants.  
(Read and Write property)

152.15.21 LastStatement as String

**Notes:** (Read only property)
152.15.22 NativeAPI as Variant

MBS SQL Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns a set of functions of native DBMS client API.
**Notes:**
Returns a SQLAPI.MBS object.
(Read only property)

152.15.23 Options as Dictionary

MBS SQL Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns a dictionary with all options.
**Notes:**
For debugging, it may be useful to inspect options in debugger.
(Read only property)

152.15.24 RaiseExceptions as Boolean

MBS SQL Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether to raise exceptions.
**Notes:**
Default is false which means we set error, ErrorCode and ErrorMessage properties and not raise SQLErrorExceptionMBS exception.
If you set to true, we do raise the exception and you have similar behavior as with SQLConnection class.
We recommend to use exceptions as they are not so easily ignored like an error property being true.
(Read and Write property)

152.15.25 Scrollable as Boolean

MBS SQL Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether to make internally created SQLCommand objects scrollable.
**Notes:**
Since plugin version 15.0, Scrollable is false by default.
(Read and Write property)
152.15. **CLASS SQLDATABASEMBS**

### 152.15.26 ServerVersion as Integer

MBS SQL Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the currently connected DBMS server version number.

**Notes:**
The higher word contains the major server version (the XX value in the XX.YY version number); the lower word contains the minor server version (the YY value in the XX.YY version number).
(Read only property)

### 152.15.27 ServerVersionString as string

MBS SQL Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the currently connected DBMS server version string.

**Notes:**
A server version string may contain some useful information about server brand, configuration and so on. It is a good idea to display this information in all your applications.
(Read only property)

### 152.15.28 SQLiteEncryptionKey as String

MBS SQL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The encryption key to use.

**Example:**
```plaintext
dim db as new SQLDatabaseMBS
db.SQLiteEncryptionKey = "Hello"
```

**Notes:**
This key is applied to the database after connecting. In case of an error, the plugin raises an exception. An empty key can be used for having no encryption. Alternatively you can use SQLite3MBS.SetKey yourself.

The amount of key material actually used by the encryption extension depends on which variant of SEE you are using. With RC4, the first 256 byte of key are used. With the AES128, the first 16 bytes of the key are used. With AES256, the first 32 bytes of key are used.

If you specify a key that is shorter than the maximum key length, then the key material is repeated as many times as necessary to complete the key. If you specify a key that is larger than the maximum key length, then the excess key material is silently ignored.
The key must begin with an ASCII prefix to specify which algorithm to use. The prefix must be one of "rc4:", "aes128:“, or "aes256:“. The prefix is not used as part of the key sent into the encryption algorithm. So the real key should begin on the first byte after the prefix. If no prefix is given, we default to AES 128. To be compatible to Xojo (Real Studio), you can use AES128.

The string provided to the plugin is used with it’s current encoding. So be sure you use right text encoding for what you want. e.g. using "Mller" as key in text encoding Windows ANSI will not open a database which used that key in UTF-8 encoding.

The Xojo database encryption in SQLiteDatabase class uses AES-128 OFB.

152.15.29 Tag as Variant

MBS SQL Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The tag property.
**Notes:**
You can store here whatever you like.
(Read and Write property)

152.15.30 Option(name as string) as string

MBS SQL Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets an option for the connection.
**Example:**
```vba
dim c as SQLDatabaseMBS // your database connection

// for Microsoft SQL use OLEDB, so you don’t need native SQL drivers installed...
c.Option("UseAPI") = "OLEDB"
c.Option("SQLNCLILIBS") = "sqlsrv32.dll" // Library included in Windows Vista and newer

// for SQLite, set flag to open database file read only:
c.Option("SQLiteVFSFlags") = "1"

// turn on auto cache
c.Option("AutoCache") = "true"

// set connection timeout for ODBC:
c.Option("SQL_ATTR_CONNECTION_TIMEOUT") = "10"
```
152.15.31  **Events**

152.15.32  **DidConnect**

MBS SQL Plugin, Plugin Version: 14.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Event called after connection was made. **Notes:** After we got connected, you can apply various options on the new connection here.

152.15.33  **PostgresNotification** *(NotificationName as string, PID as Integer, Extras as String)*

MBS SQL Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A postgresSQL notification was received. **Notes:** Provides notification name, process ID of app and optional extra information.

152.15.34  **Trace** *(traceInfo as Integer, SQL as string, Command as SQLCommandMBS)*

MBS SQL Plugin, Plugin Version: 15.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event to trace SQL commands.

152.15.35  **WillConnect**

MBS SQL Plugin, Plugin Version: 14.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Event called before connection is established. **Notes:** Last chance to set connection options.

152.15.36  **Constants**

152.15.37  **kANSILevel0 = 0**

MBS SQL Plugin, Plugin Version: 12.3. **Function:** One of the ANSI level constants. **Notes:** ANSI Level 0
152.15.38 \quad \text{kANSILevel1} = 1

MBS SQL Plugin, Plugin Version: 12.3. \textbf{Function:} One of the ANSI level constants.
\textbf{Notes:} ANSI Level 1

152.15.39 \quad \text{kANSILevel2} = 2

MBS SQL Plugin, Plugin Version: 12.3. \textbf{Function:} One of the ANSI level constants.
\textbf{Notes:} ANSI Level 2

152.15.40 \quad \text{kANSILevel3} = 3

MBS SQL Plugin, Plugin Version: 12.3. \textbf{Function:} One of the ANSI level constants.
\textbf{Notes:} ANSI Level 3

152.15.41 \quad \text{kAutoCommitOff} = 0

MBS SQL Plugin, Plugin Version: 12.3. \textbf{Function:} One of the constants for the autocommit property.
\textbf{Notes:} Autocommit is off.

152.15.42 \quad \text{kAutoCommitOn} = 1

MBS SQL Plugin, Plugin Version: 12.3. \textbf{Function:} One of the constants for the autocommit property.
\textbf{Notes:} Autocommit is on.

152.15.43 \quad \text{kAutoCommitUnknown} = -1

MBS SQL Plugin, Plugin Version: 12.3. \textbf{Function:} One of the constants for the autocommit property.
\textbf{Notes:} Autocommit unknown
152.15.44  kCommandTypeSQLStatement = 1

MBS SQL Plugin, Plugin Version: 14.1. **Function:** One of the constants for the command type.  
**Notes:** Command is an SQL statement.

152.15.45  kCommandTypeSQLStatementRaw = 2

MBS SQL Plugin, Plugin Version: 14.1. **Function:** One of the constants for the command type.  
**Notes:** Command is an SQL statement that mustn’t be interpreted by SQLAPI.

152.15.46  kCommandTypeStoredProcedure = 3

MBS SQL Plugin, Plugin Version: 14.1. **Function:** One of the constants for the command type.  
**Notes:** Command is a stored procedure or a function.

152.15.47  kCommandTypeUnknown = 0

MBS SQL Plugin, Plugin Version: 14.1. **Function:** One of the constants for the command type.  
**Notes:** Used by default. Library detects command type automatically.

152.15.48  kErrorBindVarNotFound = 7

MBS SQL Plugin, Plugin Version: 16.0. **Function:** One of the SQL Plugin error codes.  
**Notes:** Bind variable not found.

152.15.49  kErrorClientInitFails = 6

MBS SQL Plugin, Plugin Version: 16.0. **Function:** One of the SQL Plugin error codes.  
**Notes:** Initialization failed for client.

152.15.50  kErrorClientNotSet = 1

MBS SQL Plugin, Plugin Version: 16.0. **Function:** One of the SQL Plugin error codes.  
**Notes:** Client not set.
152.15.51  kErrorClientNotSupported = 2

MBS SQL Plugin, Plugin Version: 16.0. **Function:** One of the SQL Plugin error codes.  
**Notes:** Unsupported client type for this platform.

152.15.52  kErrorClientVersionOld = 5

MBS SQL Plugin, Plugin Version: 16.0. **Function:** One of the SQL Plugin error codes.  
**Notes:** Library file is too old.

152.15.53  kErrorFieldNotFound = 8

MBS SQL Plugin, Plugin Version: 16.0. **Function:** One of the SQL Plugin error codes.  
**Notes:** Field not found.

152.15.54  kErrorGetLibraryVersionFails = 4

MBS SQL Plugin, Plugin Version: 16.0. **Function:** One of the SQL Plugin error codes.  
**Notes:** Failed to query library version.

152.15.55  kErrorLoadLibraryFails = 3

MBS SQL Plugin, Plugin Version: 16.0. **Function:** One of the SQL Plugin error codes.  
**Notes:** Failed to load a library. For example path could be wrong or 32/64bit mismatch.

152.15.56  kErrorNoMemory = 0

MBS SQL Plugin, Plugin Version: 16.0. **Function:** One of the SQL Plugin error codes.  
**Notes:** Out of memory.

152.15.57  kErrorUnknownColumnType = 11

MBS SQL Plugin, Plugin Version: 16.0. **Function:** One of the SQL Plugin error codes.  
**Notes:** Unknown column type.
152.15.58  kErrorUnknownDataType = 9

MBS SQL Plugin, Plugin Version: 16.0. **Function:** One of the SQL Plugin error codes.  
**Notes:** Unknown data type.

152.15.59  kErrorUnknownParameterType = 10

MBS SQL Plugin, Plugin Version: 16.0. **Function:** One of the SQL Plugin error codes.  
**Notes:** Unknown parameter type.

152.15.60  kErrorWrongConversion = 12

MBS SQL Plugin, Plugin Version: 16.0. **Function:** One of the SQL Plugin error codes.  
**Notes:** Failed to convert a value, e.g. string to number.

152.15.61  kErrorWrongDatetime = 13

MBS SQL Plugin, Plugin Version: 16.0. **Function:** One of the SQL Plugin error codes.  
**Notes:** Can’t convert text to date.

152.15.62  kLevelUnknown = -1

MBS SQL Plugin, Plugin Version: 12.3. **Function:** One of the isolation level constants.  
**Notes:** Unknown

152.15.63  kOptionLibraryDB2 = ”DB2CLI.LIBS”

MBS SQL Plugin, Plugin Version: 12.3. **Function:** One of the option constant to specify the library with the SetFileOption method.  
**Notes:** for DB2.

152.15.64  kOptionLibraryFirebird = ”IBASE.LIBS”

MBS SQL Plugin, Plugin Version: 12.3. **Function:** One of the option constant to specify the library with the SetFileOption method.
152.15.65  \texttt{kOptionLibraryInformix = "INFCLI.LIBS"}

MBS SQL Plugin, Plugin Version: 12.3. \textbf{Function:} One of the option constant to specify the library with the \texttt{SetFileOption} method.  
\textbf{Notes:} for Informix.

152.15.66  \texttt{kOptionLibraryInterbase = "IBASE.LIBS"}

MBS SQL Plugin, Plugin Version: 12.3. \textbf{Function:} One of the option constant to specify the library with the \texttt{SetFileOption} method.  
\textbf{Notes:} for Interbase.

152.15.67  \texttt{kOptionLibraryMySQL = "MYSQL.LIBS"}

MBS SQL Plugin, Plugin Version: 12.3. \textbf{Function:} One of the option constant to specify the library with the \texttt{SetFileOption} method.  
\textbf{Notes:} for MySQL. Library extension on Mac is ".dylib", on Linux ".so" and on Windows ".dll". You get this library with the MySQL download on their homepage.

152.15.68  \texttt{kOptionLibraryODBC = "ODBC.LIBS"}

MBS SQL Plugin, Plugin Version: 12.3. \textbf{Function:} One of the option constant to specify the library with the \texttt{SetFileOption} method.  
\textbf{Notes:} for ODBC.

152.15.69  \texttt{kOptionLibraryOracle = "OCI8.LIBS"}

MBS SQL Plugin, Plugin Version: 12.3. \textbf{Function:} One of the option constant to specify the library with the \texttt{SetFileOption} method.  
\textbf{Notes:} for Oracle.
152.15. CLASS SQLDATABASEMBS

152.15.70 kOptionLibraryPostgreSQL = "LIBPQ.LIBS"

MBS SQL Plugin, Plugin Version: 12.3. **Function:** One of the option constant to specify the library with the SetFileOption method. 
**Notes:** for PostgreSQL.

152.15.71 kOptionLibrarySQLAnywhere = "SQLANY.LIBS"

MBS SQL Plugin, Plugin Version: 15.2. **Function:** One of the option constant to specify the library with the SetFileOption method. 
**Notes:** for SQL Anywhere.

152.15.72 kOptionLibrarySQLBase = "SQLBASE.LIBS"

MBS SQL Plugin, Plugin Version: 12.3. **Function:** One of the option constant to specify the library with the SetFileOption method. 
**Notes:** for SQLbase.

152.15.73 kOptionLibrarySQLite = "SQLITE.LIBS"

MBS SQL Plugin, Plugin Version: 12.3. **Function:** One of the option constant to specify the library with the SetFileOption method. 
**Notes:** for SQLite. Can also be the spatialite or SQLcipher library.

152.15.74 kOptionLibrarySybaseComn = "SYBCOMN.LIBS"

MBS SQL Plugin, Plugin Version: 12.3. **Function:** One of the option constant to specify the library with the SetFileOption method. 
**Notes:** for Sybase.

152.15.75 kOptionLibrarySybaseCS = "SYBCS.LIBS"

MBS SQL Plugin, Plugin Version: 12.3. **Function:** One of the option constant to specify the library with the SetFileOption method. 
**Notes:** for Sybase.
152.15.76  kOptionLibrarySybaseCT = ”SYBCT.LIBS”

MBS SQL Plugin, Plugin Version: 12.3. **Function:** One of the option constant to specify the library with the SetFileOption method.  
**Notes:** for Sybase.

152.15.77  kOptionLibrarySybaseIntl = ”SYBINTL.LIBS”

MBS SQL Plugin, Plugin Version: 12.3. **Function:** One of the option constant to specify the library with the SetFileOption method.  
**Notes:** for Sybase.

152.15.78  kOptionLibrarySybaseTCL = ”SYBTCL.LIBS”

MBS SQL Plugin, Plugin Version: 12.3. **Function:** One of the option constant to specify the library with the SetFileOption method.  
**Notes:** for Sybase.

152.15.79  kReadCommitted = 1

MBS SQL Plugin, Plugin Version: 12.3. **Function:** One of the isolation level constants.  
**Notes:** Read committed.

152.15.80  kReadUncommitted = 0

MBS SQL Plugin, Plugin Version: 12.3. **Function:** One of the isolation level constants.  
**Notes:** Read uncommitted.

152.15.81  kRepeatableRead = 2

MBS SQL Plugin, Plugin Version: 12.3. **Function:** One of the isolation level constants.  
**Notes:** Repeatable read.
152.15. CLASS SQLDATABASEMBS

152.15.82 kSerializable = 3

MBS SQL Plugin, Plugin Version: 12.3. **Function:** One of the isolation level constants. **Notes:** Serializable.
152.16  class SQLDataConsumerMBS

152.16.1  class SQLDataConsumerMBS

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for a data consumer.
**Notes:** If you query a clob/blob value, that value may not fit into memory, so you may prefer to get a
callback for data and write it to a file in small chunks.

152.16.2  Events

152.16.3  Write(PieceType as Integer, data as string, Length as UInt32, BlobSize as UInt32)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The event called to process data.
**Notes:**
PieceType is kOnePiece, kFirstPiece, kLastPiece or kNextPiece.
Data is the raw data in a binary string.
Length is the number of bytes and BlobSize the size of data blocks used.

152.16.4  Constants

152.16.5  kFirstPiece = 1

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the piece type constants.
**Notes:** The first piece is processed. You may setup everything you need to handle the data.

152.16.6  kLastPiece = 3

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the piece type constants.
**Notes:** The last piece is processed. You can close files/network connections.

152.16.7  kNextPiece = 2

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the piece type constants.
**Notes:** The next piece is processed. Not the first one or the last one, but one between.
MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the piece type constants.  
**Notes:** The whole data stream is delivered in one call of the event.
152.17 class SQLDataProviderMBS

152.17.1 class SQLDataProviderMBS

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for a data provider.  
**Notes:** Use this to set a blob/clob object with streaming data. For example if you want to add a 1 GB big file to the database without loading it into RAM in one piece, you can use this class to read it in small chunks.

152.17.2 Events

152.17.3 Read(byref PieceType as Integer, Length as UInt32) as string

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event called whenever new data is needed.  
**Notes:**  
PieceType is kOnePiece, kFirstPiece, kLastPiece or kNextPiece.  
If your stream is on the end, you set this to kLastPiece.  
Return the raw data in a string.  
Length is the number of bytes.

152.17.4 Constants

152.17.5 kFirstPiece = 1

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the piece type constants.  
**Notes:** The first piece is processed. You may setup everything you need to handle the data.

152.17.6 kLastPiece = 3

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the piece type constants.  
**Notes:** The last piece is processed. You can close files/network connections.

152.17.7 kNextPiece = 2

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the piece type constants.  
**Notes:** The next piece is processed. Not the first one or the last one, but one between.
MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the piece type constants. **Notes:** The whole data stream is delivered in one call of the event.
152.18 class SQLDateTimeMBS

152.18.1 class SQLDateTimeMBS

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The SQL date/time value class.

**Example:**

```vbs
dim d as new SQLDateTimeMBS(2008, 3, 4, 23, 10, 20)
MsgBox d.StringValue // shows "2008-03-04T23:10:20"
```

152.18.2 Methods

152.18.3 Constructor(Hour as Integer, Minute as Integer, Second as Integer = 0, Fraction as Integer = 0)

MBS SQL Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new SQL Datetime with the given values.

**See also:**

- 152.18.4 Constructor(other as SQLDateTimeMBS)
- 152.18.5 Constructor(value as Date)
- 152.18.6 Constructor(value as Double)
- 152.18.7 Constructor(Year as Integer, Month as Integer, Day as Integer, Hour as Integer, Minute as Integer, Second as Integer = 0, Fraction as Integer = 0, TimeZone as String = "")
- 152.18.8 Constructor(Year as Integer, Month as Integer, Day as Integer, Hour as Integer, Minute as Integer, Second as Integer, TimeZone as String)

152.18.4 Constructor(other as SQLDateTimeMBS)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a copy of the SQL Date Time.

**Example:**

```vbs
dim d as new SQLDateTimeMBS(2008, 3, 4, 23, 10, 20)
dim e as new SQLDateTimeMBS(d)
MsgBox e.StringValue // shows "2008-03-04T23:10:20"
```
152.18. CLASS SQLDATETIMEMBS

See also:

- 152.18.3 Constructor(Hour as Integer, Minute as Integer, Second as Integer = 0, Fraction as Integer = 0)  
- 152.18.5 Constructor(value as Date)  
- 152.18.6 Constructor(value as Double)  
- 152.18.7 Constructor(Year as Integer, Month as Integer, Day as Integer, Hour as Integer, Minute as Integer, Second as Integer = 0, Fraction as Integer = 0, TimeZone as String = "")  
- 152.18.8 Constructor(Year as Integer, Month as Integer, Day as Integer, Hour as Integer, Minute as Integer, Second as Integer, TimeZone as String)

152.18.5 Constructor(value as Date)

MBS SQL Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Initializes the datetime value with the given date.  

See also:

- 152.18.3 Constructor(Hour as Integer, Minute as Integer, Second as Integer = 0, Fraction as Integer = 0)  
- 152.18.4 Constructor(other as SQLDateTimeMBS)  
- 152.18.6 Constructor(value as Double)  
- 152.18.7 Constructor(Year as Integer, Month as Integer, Day as Integer, Hour as Integer, Minute as Integer, Second as Integer = 0, Fraction as Integer = 0, TimeZone as String = "")  
- 152.18.8 Constructor(Year as Integer, Month as Integer, Day as Integer, Hour as Integer, Minute as Integer, Second as Integer, TimeZone as String)

152.18.6 Constructor(value as Double)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new SQL date time value based on the double value.  

**Example:**

    dim d as new SQLDateTimeMBS(2008, 3, 4, 23, 10, 20)  
    dim e as new SQLDateTimeMBS(d.DoubleValue+1) // clone with one day more  
    MsgBox e.StringValue // shows "2008-03-05T23:10:20"

See also:
152.18.7 Constructor(Year as Integer, Month as Integer, Day as Integer, Hour as Integer, Minute as Integer, Second as Integer = 0, Fraction as Integer = 0, TimeZone as String = "")

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new SQL Datetime with the given values.

**Example:**

```vbnet
dim d as new SQLDateTimeMBS(2008, 3, 4, 23, 10, 20)
MsgBox d.StringValue // shows "2008-03-04T23:10:20"
```

See also:

- 152.18.3 Constructor(Hour as Integer, Minute as Integer, Second as Integer = 0, Fraction as Integer = 0) 18904
- 152.18.4 Constructor(other as SQLDateTimeMBS) 18904
- 152.18.5 Constructor(value as Date) 18905
- 152.18.6 Constructor(value as Double) 18905
- 152.18.8 Constructor(Year as Integer, Month as Integer, Day as Integer, Hour as Integer, Minute as Integer, Second as Integer, TimeZone as String) 18906

152.18.8 Constructor(Year as Integer, Month as Integer, Day as Integer, Hour as Integer, Minute as Integer, Second as Integer, TimeZone as String)

MBS SQL Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new SQL Datetime with the given values.

See also:
152.18. CLASS SQLDATETIMEMBS

- 152.18.3 Constructor(Hour as Integer, Minute as Integer, Second as Integer = 0, Fraction as Integer = 0) 18904
- 152.18.4 Constructor(other as SQLDateTimeMBS) 18904
- 152.18.5 Constructor(value as Date) 18905
- 152.18.6 Constructor(value as Double) 18905
- 152.18.7 Constructor(Year as Integer, Month as Integer, Day as Integer, Hour as Integer, Minute as Integer, Second as Integer = 0, Fraction as Integer = 0, TimeZone as String = "") 18906

152.18.9  Set(value as Date)

MBS SQL Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Assigns the datetime value with the given date.

152.18.10  Properties

152.18.11  DateValue as Date

MBS SQL Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries the value of this datetime object as a date object.
**Notes:** (Read only property)

152.18.12  Day as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the day this SADateTime object represents (1 31).
**Notes:** (Read only property)

152.18.13  DayOfWeek as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the day of the week this SADateTime object represents (Sunday = 1).
**Notes:** (Read only property)

152.18.14  DayOfYear as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the day of the year this SADateTime object represents (Jan 1 = 1).
152.18.15 DoubleValue as Double

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The double value of this date/time.

**Notes:**
Use these operators to get current date/time value using standard double representation. Days are represented by whole number increments starting with 30 December 1899, midnight as time zero. Hour values are expressed as the absolute value of the fractional part of the number.

<table>
<thead>
<tr>
<th>Date and time</th>
<th>Representation</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 December 1899, midnight</td>
<td>0.00</td>
</tr>
<tr>
<td>1 January 1900, midnight</td>
<td>2.00</td>
</tr>
<tr>
<td>4 January 1900, midnight</td>
<td>5.00</td>
</tr>
<tr>
<td>4 January 1900, 6 A.M.</td>
<td>5.25</td>
</tr>
<tr>
<td>4 January 1900, noon</td>
<td>5.50</td>
</tr>
<tr>
<td>4 January 1900, 9 P.M.</td>
<td>5.875</td>
</tr>
</tbody>
</table>

(Read only property)

152.18.16 Fraction as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value of the fraction of second (0 to 999,999,999) this SQLDateTime object represents.

**Notes:**
The value of the fraction field is the number of billionths of a second and ranges from 0 through 999,999,999 (1 less than 1 billion). For example, the value of the fraction field for a half-second is 500,000,000, for a thousandth of a second (one millisecond) is 1,000,000, for a millionth of a second (one microsecond) is 1,000, and for a billionth of a second (one nanosecond) is 1.

(Read only property)

152.18.17 Hour as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the hour this SADateTime object represents (0–23).

**Notes:** (Read only property)
152.18. CLASS SQLDATETIMEMEMBS

152.18.18  Minute as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the minute this SADateTime object represents (0  59).
**Notes:** (Read only property)

152.18.19  Month as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the month this SADateTime object represents (1  12).
**Notes:** (Read only property)

152.18.20  Second as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the second this SADateTime object represents (0  59).
**Notes:** (Read only property)

152.18.21  StringValue as string

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The string value for this date/time.
**Notes:** (Read only property)

152.18.22  TimeZone as String

MBS SQL Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The time zone.
**Notes:**
Should be in format "00:00" and should be supported for Oracle and Postgres.
(Read and Write property)

152.18.23  Year as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the year this SADateTime object represents.
**152.19. CLASS SQLERROREXCEPTIONMBS**

**152.19 class SQLErrorExceptionMBS**

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The error exception class to report SQL errors.

**Notes:**
The SQLDatabaseMBS class sets its error properties on an error. All other SQL classes raise exceptions where you can check the message property.
Subclass of the RuntimeException class.

**152.19.2 Properties**

**152.19.3 ErrorClass as Integer**

MBS SQL Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns a class of error.

**Notes:**
Returns one of the following values:

<table>
<thead>
<tr>
<th>ErrorClass</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA_No_Error</td>
<td>0</td>
<td>No error occurred</td>
</tr>
<tr>
<td>SA_UserGenerated_Error</td>
<td>1</td>
<td>User-generated error</td>
</tr>
<tr>
<td>SA_Library_Error</td>
<td>2</td>
<td>The Library error occurred</td>
</tr>
<tr>
<td>SA_DBMS_API_Error</td>
<td>3</td>
<td>DBMS API error occurred</td>
</tr>
</tbody>
</table>

A SQLErrorExceptionMBS object handles the next error classes:

- User-generated errors
- Library errors
- DBMS API errors

The Library errors are generated by the Library itself. It can be like detecting some mistake in passing arguments to the function or referencing the parameter with an inappropriate name. To get a Library-defined error text call ErrorMessage method.

The DBMS API errors come to the Library from the DBMS Client or Server. In this case the Library returns an error code and text Client- or Server-defined. To get error code and error text returned by the server call NativeError and ErrorMessage methods.
The User-generated exception is "SQLAPI++ compatible" exception thrown by the user. To throw user exception use throwUserException method.

(Read and Write property)

152.19.4 ErrorMessage as String

MBS SQL Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets an error text.

**Notes:**
A error text depends on a class of error.

If error class is Library error the ErrorMessage method returns Library-defined error text. If error class is DBMS API error the ErrorMessage method returns an error text gotten from DBMS Server or Client. If error class is User-defined error the ErrorMessage method returns an error text specified by user (see throwUserException method).

To get the error class call ErrorClass method.
(same as Message property)
(Read and Write property)

152.19.5 ErrorPosition as Integer

MBS SQL Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets an error position in SQL statement.

**Notes:**
Returns an integer value representing error position.
Not all DBMS servers allow to get error position. See Server specific notes to get detailed information about returned value.

If a command object’s associated SQL statement contains any syntax errors, an exception will be thrown when you try to compile. ErrorPosition method returns the error position within the command string.

Server specific notes

(Read and Write property)
### 152.19. CLASS SQLERROREXCEPTIONMBS

<table>
<thead>
<tr>
<th>DBMS server</th>
<th>ErrorPosition method returned value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle</td>
<td>ErrorPosition returns parse error offset.</td>
</tr>
<tr>
<td>SQL Server</td>
<td>ErrorPosition returns the number of line within SQL statement where error occurred.</td>
</tr>
<tr>
<td>Sybase</td>
<td>ErrorPosition returns the number of line within SQL statement where error occurred.</td>
</tr>
<tr>
<td>DB2</td>
<td>ErrorPosition returns -1. DB2 does not support this function.</td>
</tr>
<tr>
<td>Informix</td>
<td>ErrorPosition returns -1. Informix does not support this function.</td>
</tr>
<tr>
<td>InterBase</td>
<td>ErrorPosition returns -1. InterBase does not support this function.</td>
</tr>
<tr>
<td>SQLBase</td>
<td>ErrorPosition returns character position of the syntax error within an SQL statement. The first character is position 0.</td>
</tr>
<tr>
<td>MySQL</td>
<td>ErrorPosition returns -1. MySQL does not support this function.</td>
</tr>
<tr>
<td>PostgreSQL</td>
<td>ErrorPosition returns -1. PostgreSQL does not support this function.</td>
</tr>
<tr>
<td>ODBC</td>
<td>ErrorPosition returns -1. ODBC does not support this function.</td>
</tr>
</tbody>
</table>

### 152.19.6 NativeError as Integer

MBS SQL Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Gets a native code associated with current error.

**Notes:**

Returns an integer value represents a native code associated with current error.

If error class is DBMS API error the NativeError method returns error code received from DBMS Server or Client. If error class is User-defined error the NativeError method returns an error code specified by user (see throwUserException method). If error class is Library error the NativeError method returns -1.

To get the error class call ErrorClass method.

See server specific documentation to get more information about DBMS API error code.

(same as ErrorNumber property)

(Read and Write property)
152.20 class SQLFieldMBS

152.20.1 class SQLFieldMBS

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This is the class for a SQL field in a record.
Notes:
Be aware that field objects exists only as long as their SQLCommand exists.
Subclass of the SQLValueReadMBS class.

152.20.2 Methods

152.20.3 ReadLongOrLob(toConsumer as SQLDataConsumerMBS, BlockSize as Integer)

Notes:
BlockSize: Size of piece of data you want to get to the consumer event.

After a command execution all output parameters are updated by their values, including Long and BLob(CLob) parameters. If you want to control piecewise reading of Long or BLob(CLob) data you should do the following:

Before a command execution set kLongOrLobReaderManual reading mode (see LongOrLobReaderMode) for Long or BLob(CLob) parameters you want to process by a data consumer. After that SQLAPI++ will skip reading output Long and BLob(CLob) parameters that you set to be read manually.
After command execution use ReadLongOrLob method for each output parameter defined to be read manually.
Note, that if the command has result set(s) (it is possible in some servers, see Server specific notes) then output parameters are available only after all result sets are completely processed using FetchNext method.
See also:

• 152.20.4 ReadLongOrLob(toFile as FolderItem) 18914
• 152.20.5 ReadLongOrLob(toStream as Writeable) 18915

152.20.4 ReadLongOrLob(toFile as FolderItem)

Example:
152.20. CLASS SQLFIELDMBS

```vba
dim cmd as SQLCommandMBS // your command
dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim field as SQLFieldMBS = cmd.Field("image")
// read blob content to binarystream
field.ReadLongOrLob(f)
```

**Notes:** May raise IOExceptions if things go wrong.
See also:

- 152.20.3 ReadLongOrLob(toConsumer as SQLDataConsumerMBS, BlockSize as Integer) 18914
- 152.20.5 ReadLongOrLob(toStream as Writeable) 18915

### 152.20.5 ReadLongOrLob(toStream as Writeable)

MBS SQL Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Starts reading of Long or BLob(CLob) value to the given writeable stream.

**Example:**

```vba
dim cmd as SQLCommandMBS // your command
dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim b as BinaryStream = BinaryStream.Create(f, true)
dim field as SQLFieldMBS = cmd.Field("image")
// read blob content to binarystream
field.ReadLongOrLob(b)
```

**Notes:** This allows you to read in chunks the data to a stream, e.g. binarystream, textoutputstream or socket.
See also:

- 152.20.3 ReadLongOrLob(toConsumer as SQLDataConsumerMBS, BlockSize as Integer) 18914
- 152.20.4 ReadLongOrLob(toFile as FolderItem) 18914

### 152.20.6 Properties

### 152.20.7 FieldNativeType as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns native type code of the field.

**Deprecated:** This item is deprecated and should no longer be used. **Notes:**
Deprecated. Please use NativeType property instead.
(Read only property)

152.20.8 FieldPrecision as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Returns precision of the field value (the total number of allowable digits).
Deprecated: This item is deprecated and should no longer be used. Notes:

Deprecated. Please use Precision property instead.
(Read only property)

152.20.9 FieldScale as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Returns scale of the field value (the number of digits to the right of the decimal point).
Deprecated: This item is deprecated and should no longer be used. Notes:

Deprecated. Please use Scale property instead.
(Read and Write property)

152.20.10 FieldSize as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Returns field data size.
Deprecated: This item is deprecated and should no longer be used. Notes:

Deprecated. Please use Size property instead.
(Read only property)

152.20.11 FieldType as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Returns field data type.
Deprecated: This item is deprecated and should no longer be used. Notes:

Value is one of the kDataType* constants.
Deprecated. Please use Type property instead.
(Read and Write property)
152.20. CLASS SQLFIELDMBS

152.20.12 isFieldRequired as boolean

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Shows if it is possible for the field value to be null.
**Notes:**
Returns true if the field value can be null; false otherwise. (Read only property)

152.20.13 Name as string

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns name of the field.
**Notes:** (Read only property)

152.20.14 NativeType as Integer

MBS SQL Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns native type code of the field.
**Notes:** (Read only property)

152.20.15 Pos as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a one-based position of the field in a result set.
**Notes:** (Read only property)

152.20.16 Precision as Integer

MBS SQL Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns precision of the field value (the total number of allowable digits).
**Notes:** (Read only property)

152.20.17 Scale as Integer

MBS SQL Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns scale of the field value (the number of digits to the right of the decimal point).
CHAPTER 152. SQL

Notes: (Read and Write property)

152.20.18 Size as Integer

Notes: (Read only property)

152.20.19 Type as Integer

Example:

```vba
dim db as SQLConnectionMBS
dim cmd as new SQLCommandMBS(db, ”select * from test”)

cmd.Execute

dim f as SQLFieldMBS = cmd.Field(”test”)

if f.Type = f.kDataTypeLong then
MsgBox ”type is long”
end if
```

Notes:
Value is one of the kDataType* constants.
(Read and Write property)

152.20.20 Option(name as string) as string

Notes:
See for more details:
(Read and Write computed property)
152.21.1 class SQLGlobalsMBS


152.21.2 Methods

152.21.3 GetEnv(name as string) as string


152.21.4 GetVersion as String


152.21.5 GetVersionBuild as Integer


152.21.6 GetVersionMajor as Integer


152.21.7 GetVersionMinor as Integer

152.21.8  **PutEnv(line as string) as boolean**

MBS SQL Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets environment variable.  
**Notes:** Line format should be "key=value" and returns true on success and false on failure.

152.21.9  **RaiseException(message as string)**

MBS SQL Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Raises an exception to test exception handling in SQL Plugin.  
**Notes:** Raises directly a SQLErrorExceptionMBS with the given message.

152.21.10  **RaiseSQLErrorException(UserCode as Integer, message as string)**

MBS SQL Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Raises an exception to test exception handling in SQL Plugin.  
**Notes:** Raises a SAUserException which the plugin catches and translates to a SQLErrorExceptionMBS in Real Studio.

152.21.11  **SetCurrentWorkingDirectory(path as folderitem) as boolean**

MBS SQL Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the current working directory.  
**Notes:** This is often useful to make sure the DLLs in that folder are found.  
See also:

- 152.21.12  **SetCurrentWorkingDirectory(path as String) as boolean**

152.21.12  **SetCurrentWorkingDirectory(path as String) as boolean**

MBS SQL Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the current working directory.  
**Notes:** This is often useful to make sure the DLLs in that folder are found.  
See also:

- 152.21.11  **SetCurrentWorkingDirectory(path as folderitem) as boolean**
152.21.13 SetEnv(name as string, value as string) as boolean

MBS SQL Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets an environment variable.
**Notes:**
Existing variable with same name will be overwritten.
Returns true on success and false on failure.

152.21.14 SetLicenseCode(n as string, enddate as Integer, v1 as Integer, v2 as Integer)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Registeres the SQL plugin and library.
**Notes:** Once you ordered a license, you receive details on how to call this method.

152.21.15 Setlocale(category as Integer, locale as string)

MBS SQL Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the locale to use.
**Notes:**
The Setlocale function sets the C library’s notion of natural language formatting style for particular sets of routines. Each such style is called a ’locale’ and is invoked using an appropriate name passed as a C string.

The setlocale() function recognizes several categories of routines. These are the categories and the sets of routines they select:

- **LocaleAll**
  Set the entire locale generically.

- **LocaleCollate**
  Set a locale for string collation routines. This controls alphabetic ordering in strcoll() and strxfrm().

- **LocaleCType**
  Set a locale for the ctype and multibyte functions. This controls recognition of upper and lower case, alphabetic or non-alphabetic characters, and so on.

- **LocaleMessages**
  Set a locale for message catalogs, see catopen function.

- **LocaleMonetary**
  Set a locale for formatting monetary values; this affects the localeconv() function.

- **LocaleNumeric**
  Set a locale for formatting numbers. This controls the formatting of decimal points in input and output of floating point numbers in functions such as printf() and scanf(), as well as values returned by localeconv().

- **LocaleTime**
  Set a locale for formatting dates and times using the strftime() function.
Only three locales are defined by default: the empty string "" (which denotes the native environment) and the "C" and "POSIX" locales (which denote the C-language environment). By default, C programs start in the "C" locale.

152.21.16  UnSetEnv(name as string) as boolean


152.21.17  Events

152.21.18  Trace(traceInfo as Integer, SQL as string, Connection as SQLConnectionMBS, Command as SQLCommandMBS)


152.21.19  Constants

152.21.20  LocaleAll=0

MBS SQL Plugin, Plugin Version: 9.3. Function: One of the locale category constants for SetLocale. Notes: Set the entire locale generically.

152.21.21  LocaleCollate=1

MBS SQL Plugin, Plugin Version: 9.3. Function: One of the locale category constants for SetLocale. Notes: Set a locale for string collation routines. This controls alphabetic ordering in strcoll() and strxfrm().

152.21.22  LocaleCType=2

MBS SQL Plugin, Plugin Version: 9.3. Function: One of the locale category constants for SetLocale. Notes: Set a locale for the ctype(3) and multibyte(3) functions. This controls recognition of upper and lower case, alphabetic or non-alphabetic characters, and so on.
152.21.23  LocaleMessages=6

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the locale category constants for SetLocale.  
**Notes:** Set a locale for message catalogs, see catopen(3) function.

152.21.24  LocaleMonetary=3

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the locale category constants for SetLocale.  
**Notes:** Set a locale for formatting monetary values; this affects the localeconv() function.

152.21.25  LocaleNumeric=4

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the locale category constants for SetLocale.  
**Notes:** Set a locale for formatting numbers. This controls the formatting of decimal points in input and output of floating point numbers in functions such as printf() and scanf(), as well as values returned by localeconv().

152.21.26  LocaleTime=5

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the locale category constants for SetLocale.  
**Notes:** Set a locale for formatting dates and times using the strftime() function.
152.22 class SQLIntervalMBS

152.22.1 class SQLIntervalMBS

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class in the SQL Plugin for an interval.

152.22.2 Methods

152.22.3 Constructor

See also:

- 152.22.4 Constructor(days as Integer, hours as Integer, minutes as Integer, seconds as Integer = 0, NanoSeconds as Integer = 0)
- 152.22.5 Constructor(value as Double)

152.22.4 Constructor(days as Integer, hours as Integer, minutes as Integer, seconds as Integer = 0, NanoSeconds as Integer = 0)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new interval with the given values.
See also:

- 152.22.3 Constructor
- 152.22.5 Constructor(value as Double)

152.22.5 Constructor(value as Double)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new interval with the given time delta.
**Example:**

```lisp
dim n as new SQLIntervalMBS(5)
```

MsgBox n.StringValue // shows "120:00:00" for 120 hours

See also:
152.22.  CLASS SQLINTERVALMBS

- 152.22.3 Constructor

- 152.22.4 Constructor(days as Integer, hours as Integer, minutes as Integer, seconds as Integer = 0, NanoSeconds as Integer = 0)

152.22.6  Dec(interval as SQLIntervalMBS)


152.22.7  Inc(interval as SQLIntervalMBS)


152.22.8  SetInterval(days as Integer, hours as Integer, minutes as Integer, seconds as Integer = 0, NanoSeconds as Integer = 0)


152.22.9  Properties

152.22.10  Days as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The days in this interval. Notes: (Read only property)

152.22.11  DoubleValue as Double


```
dim n as new SQLIntervalMBS(1,2,3,4)
MsgBox str(n.DoubleValue) // shows ”1.085463” for 1 day, 2 hours, 3 minutes and 4 seconds
```
Notes: (Read only property)

152.22.12 Fraction as Integer

MBS SQL Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The fraction of a second in nano seconds.

**Notes:**
Range 0..999999999.
(Read only property)

152.22.13 Hours as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The hours value.

**Notes:** (Read only property)

152.22.14 Minutes as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The minutes value.

**Notes:** (Read only property)

152.22.15 Seconds as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The seconds value.

**Notes:** (Read only property)

152.22.16 StringValue as string

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The interval as a string.

**Example:**
152.22. CLASS SQLINTERVALMBS

dim n as new SQLIntervalMBS(5)

MsgBox n.StringValue  // shows "120:00:00" for 120 hours

Notes: (Read only property)

152.22.17 TotalDays as Double

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The total days value.
**Example:**
dim n as new SQLIntervalMBS(1,2,3,4)

MsgBox str(n.TotalDays)  // shows "1"

Notes: (Read only property)

152.22.18 TotalHours as Double

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The total hours value.
**Example:**
dim n as new SQLIntervalMBS(1,2,3,4)

MsgBox str(n.TotalHours)  // shows "26"

Notes: (Read only property)

152.22.19 TotalMinutes as Double

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The total minutes value.
**Example:**
dim n as new SQLIntervalMBS(1,2,3,4)
MsgBox str(n.TotalMinutes) // shows "1563"

Notes: (Read only property)

152.22.20 TotalSeconds as Double

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The total seconds value. **Notes:**

dim n as new SQLIntervalMBS(1,2,3,4)

MsgBox str(n.GetTotalSeconds) // shows "93784" (Read only property)
152.23. **CLASS SQLITE3BACKUPMBS**

152.23  **class SQLite3BackupMBS**

152.23.1  **class SQLite3BackupMBS**

MBS SQL Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The object for a running backup.

**Notes:**
The backup object records state information about an ongoing online backup operation. The sqlite3_backup object is created by a call to BackupInit() and is destroyed by a call to BackupFinish().
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

152.23.2  **Methods**

152.23.3  **Constructor**

MBS SQL Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

152.23.4  **Properties**

152.23.5  **Handle as Integer**

MBS SQL Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The internal object reference.
**Notes:** (Read only property)
152.24  class SQLite3MBS

152.24.1  class SQLite3MBS

MBS SQL Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for the native SQLite API. 
**Example:**

```vba
dim con as new SQLConnectionMBS
dim path as string = "/tmp/test.db" // change path for Windows!

con.Connect(path,"","",SQLConnectionMBS.kSQLiteClient)

dim api as SQLAPIMBS = con_NativeAPI
if api isa SQLite3MBS then
    dim s as SQLite3MBS = SQLite3MBS(api)
    MsgBox s.Version
end if
```

**Notes:** Subclass of the SQLAPIMBS class.

152.24.2  Methods

152.24.3  BackupFinish(Backup as SQLite3BackupMBS) as Integer

MBS SQL Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Finishes a backup run.
**Notes:**

When BackupStep has returned kErrorDone, or when the application wishes to abandon the backup operation, the application should destroy the SQLite3BackupMBS by passing it to BackupFinish. The BackupFinish interfaces releases all resources associated with the SQLite3BackupMBS object. If BackupStep has not yet returned kErrorDone, then any active write-transaction on the destination database is rolled back. The SQLite3BackupMBS object is invalid and may not be used following a call to BackupFinish. The value returned by BackupFinish is kErrorOK if no BackupStep errors occurred, regardless or whether or not BackupStep completed. If an out-of-memory condition or IO error occurred during any prior BackupStep call on the same SQLite3BackupMBS object, then BackupFinish returns the corresponding error code. A return of kErrorBusy or kErrorLocked from BackupStep is not a permanent error and does not affect the return value of BackupFinish.
BackupInit(Dest as SQLConnectionMBS, DestName as String, Source as SQLConnectionMBS, SourceName as String) as SQLite3BackupMBS

MBS SQL Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Initializes a backup.

**Notes:**
The backup API copies the content of one database into another. It is useful either for creating backups of databases or for copying in-memory databases to or from persistent files.

See also
http://www.sqlite.org/c3ref/backup_finish.html

Exclusive access is required to the destination database for the duration of the operation. However the source database is only read-locked while it is actually being read; it is not locked continuously for the entire backup operation. Thus, the backup may be performed on a live source database without preventing other users from reading or writing to the source database while the backup is underway.

To perform a backup operation:

- BackupInit is called once to initialize the backup,
- BackupStep is called one or more times to transfer the data between the two databases, and finally
- BackupFinish is called to release all resources associated with the backup operation.

There should be exactly one call to BackupFinish for each successful call to BackupInit.

The D and N arguments to BackupInit(D,N,S,M) are the database connection associated with the destination database and the database name, respectively. The database name is "main" for the main database, "temp" for the temporary database, or the name specified after the AS keyword in an ATTACH statement for an attached database. The S and M arguments passed to BackupInit(D,N,S,M) identify the database connection and database name of the source database, respectively. The source and destination database connections (parameters S and D) must be different or else BackupInit(D,N,S,M) will file with an error. If an error occurs within BackupInit(D,N,S,M), then nil is returned and an error code and error message are store3d in the destination database connection D. The error code and message for the failed call to BackupInit can be retrieved using the ErrCode and ErrorMessage functions. A successful call to BackupInit returns a SQLite3BackupMBS object. The SQLite3BackupMBS object may be used with the BackupStep and BackupFinish functions to perform the specified backup operation.

Concurrent Usage of Database Handles
The source database connection may be used by the application for other purposes while a backup operation is underway or being initialized. If SQLite is compiled and configured to support threadsafe database connections, then the source database connection may be used concurrently from within other threads. However, the application must guarantee that the destination database connection is not passed to any other
API (by any thread) after BackupInit is called and before the corresponding call to BackupFinish. SQLite does not currently check to see if the application incorrectly accesses the destination database connection and so no error code is reported, but the operations may malfunction nevertheless. Use of the destination database connection while a backup is in progress might also also cause a mutex deadlock.

If running in shared cache mode, the application must guarantee that the shared cache used by the destination database is not accessed while the backup is running. In practice this means that the application must guarantee that the disk file being backed up to is not accessed by any connection within the process, not just the specific connection that was passed to BackupInit.

The SQLite3BackupMBS object itself is partially threadsafe. Multiple threads may safely make multiple concurrent calls to BackupStep. However, the BackupRemaining and BackupPageCount APIs are not strictly speaking threadsafe. If these are invoked at the same time as another thread is invoking BackupStep it is possible that they return invalid values.

/*

152.24.5 BackupPageCount(Backup as SQLite3BackupMBS) as Integer

MBS SQL Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Returns the number of pages in total.
Notes:
Each call to BackupStep sets two values inside the SQLite3BackupMBS object: the number of pages still to be backed up and the total number of pages in the source database file. The BackupRemaining and BackupPageCount interfaces retrieve these two values, respectively.
The values returned by these functions are only updated by BackupStep. If the source database is modified during a backup operation, then the values are not updated to account for any extra pages that need to be updated or the size of the source database file changing.

152.24.6 BackupRemaining(Backup as SQLite3BackupMBS) as Integer

MBS SQL Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Returns the number of pages remaining.
Notes:
Each call to BackupStep sets two values inside the SQLite3BackupMBS object: the number of pages still to be backed up and the total number of pages in the source database file. The BackupRemaining and BackupPageCount interfaces retrieve these two values, respectively.
The values returned by these functions are only updated by BackupStep. If the source database is modified during a backup operation, then the values are not updated to account for any extra pages that need to be updated or the size of the source database file changing.
152.24.7 BackupStep(Backup as SQLite3BackupMBS, Pages as Integer) as Integer

MBS SQL Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Copies up to Pages pages between the source and destination databases specified by SQLite3BackupMBS object.

**Notes:**

If N is negative, all remaining source pages are copied. If BackupStep(B,N) successfully copies N pages and there are still more pages to be copied, then the function returns kErrorOK. If BackupStep(B,N) successfully finishes copying all pages from source to destination, then it returns kErrorDone. If an error occurs while running BackupStep(B,N), then an error code is returned. As well as kErrorOK and kErrorDone, a call to BackupStep may return kErrorReadOnly, kErrorNoMem, kErrorBusy, kErrorLocked, or an kErrorIOACCESS | kErrorIOXXX extended error code.

The BackupStep might return kErrorReadOnly if the destination database was opened read-only or if the destination is an in-memory database with a different page size from the source database.

If BackupStep cannot obtain a required file-system lock, then the sqlite3_busy_handler | busy-handler function is invoked (if one is specified). If the busy-handler returns non-zero before the lock is available, then kErrorBusy is returned to the caller. In this case the call to BackupStep can be retried later. If the source database connection is being used to write to the source database when BackupStep is called, then kErrorLocked is returned immediately. Again, in this case the call to BackupStep can be retried later on. (If kErrorIOACCESS | kErrorIOXXX, kErrorNoMem, or kErrorReadOnly is returned, then there is no point in retrying the call to BackupStep. These errors are considered fatal.) The application must accept that the backup operation has failed and pass the backup operation handle to the BackupFinish to release associated resources.

The first call to BackupStep obtains an exclusive lock on the destination file. The exclusive lock is not released until either BackupFinish is called or the backup operation is complete and BackupStep returns kErrorDone. Every call to BackupStep obtains a shared lock on the source database that lasts for the duration of the BackupStep call. Because the source database is not locked between calls to BackupStep, the source database may be modified mid-way through the backup process. If the source database is modified by an external process or via a database connection other than the one being used by the backup operation, then the backup will be automatically restarted by the next call to BackupStep. If the source database is modified by the using the same database connection as is used by the backup operation, then the backup database is automatically updated at the same time.

152.24.8 EnableLoadExtension(Conn as SQLConnectionMBS, OnOff as boolean)

MBS SQL Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Enables/disables extension loading for the given connection.

152.24.9 ErrCode(Conn as SQLConnectionMBS) as Integer

MBS SQL Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The ErrCode function returns the numeric result code or extended result code for the most recent failed
sqlite3 API call associated with a database connection.

**Notes:** If a prior API call failed but the most recent API call succeeded, the return value from ErrCode is undefined.

### 152.24.10 `ErrMsgMessage(Conn as SQLConnectionMBS) as string`

MBS SQL Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the most recent error message in english for the given connection.

### 152.24.11 `LastInsertRowID(Conn as SQLConnectionMBS) as Int64`

MBS SQL Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns Last Insert Rowid.

**Notes:**

Each entry in an SQLite table has a unique 64-bit signed integer key called the ROWID. The rowid is always available as an undeclared column named ROWID, OID, or _ROWID_ as long as those names are not also used by explicitly declared columns. If the table has a column of type INTEGER PRIMARY KEY then that column is another alias for the rowid.

This routine returns the rowid of the most recent successful INSERT into the database from the database connection in the first argument. If no successful INSERTs have ever occurred on that database connection, zero is returned.

(If an INSERT occurs within a trigger, then the rowid of the inserted row is returned by this routine as long as the trigger is running. But once the trigger terminates, the value returned by this routine reverts to the last value inserted before the trigger fired.)

An INSERT that fails due to a constraint violation is not a successful INSERT and does not change the value returned by this routine. `^Thus INSERT OR FAIL, INSERT OR IGNORE, INSERT OR ROLLBACK, and INSERT OR ABORT make no changes to the return value of this routine when their insertion fails. `^ (When INSERT OR REPLACE encounters a constraint violation, it does not fail. The INSERT continues to completion after deleting rows that caused the constraint problem so INSERT OR REPLACE will always change the return value of this interface.)`

For the purposes of this routine, an INSERT is considered to be successful even if it is subsequently rolled back.

This function is accessible to SQL statements via the `last_insert_rowid()` SQL function.

If a separate thread performs a new INSERT on the same database connection while the LastInsertRowID
function is running and thus changes the last insert rowid, then the value returned by LastInsertRowID is unpredictable and might not equal either the old or the new last insert rowid.

### 152.24.12 LoadExtension(Conn as SQLConnectionMBS, file as FolderItem, ByRef ErrorMessage as String) as Integer

MBS SQL Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads an SQLite extension library from the named file. 
**Notes:**
The LoadExtension interface attempts to load an SQLite extension library contained in the file.

Returns kErrorOk on success and kErrorError if something goes wrong.
Extension loading must be enabled using EnableLoadExtension prior to calling this API, otherwise an error will be returned.
See also:

- 152.24.13 LoadExtension(Conn as SQLConnectionMBS, path as String, ByRef ErrorMessage as String) as Integer

### 152.24.13 LoadExtension(Conn as SQLConnectionMBS, path as String, ByRef ErrorMessage as String) as Integer

MBS SQL Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads an SQLite extension library from the named file.
**Notes:**
The LoadExtension interface attempts to load an SQLite extension library contained in the file.

Returns kErrorOk on success and kErrorError if something goes wrong.
Extension loading must be enabled using EnableLoadExtension prior to calling this API, otherwise an error will be returned.
See also:

- 152.24.12 LoadExtension(Conn as SQLConnectionMBS, file as FolderItem, ByRef ErrorMessage as String) as Integer

### 152.24.14 MemoryHighwater(reset as boolean) as Int64

MBS SQL Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries maximum memory usage so far.
**Notes:** Can be reset with reset parameter being true.
See also:
152.24.15  ReKey(Conn as SQLConnectionMBS, Key as String) as Integer

MBS SQL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
You can change the key on a database using the Rekey Function.

**Notes:**
An empty key decrypts the database.

Rekeying requires that every page of the database file be read, decrypted, reencrypted with the new key, then written out again. Consequently, rekeying can take a long time on a larger database.

Most SEE variants allow you to encrypt an existing database that was created using the public domain version of SQLite. This is not possible when using the authenticating version of the encryption extension in see-aes128-ccm. If you do encrypt a database that was created with the public domain version of SQLite, no nonce will be used and the file will be vulnerable to a chosen-plaintext attach. If you call SetKey() immediately after Open when you are first creating the database, space will be reserved in the database for a nonce and the encryption will be much stronger. If you do not want to encrypt right away, call SetKey() anyway, with an empty key, and the space for the nonce will be reserved in the database even though no encryption is done initially.

A public domain version of the SQLite library can read and write an encrypted database with an empty key. You only need the encryption extension if the key is non-empty.

Returns a SQLite error code.

152.24.16  SetBusyHandler(Conn as SQLConnectionMBS, MaxAttempts as Integer = 5)

MBS SQL Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Installs busy handler for this connection.

**Notes:**
This routine sets a callback function that might be invoked whenever an attempt is made to open a database table that another thread or process has locked.

The plugin has an busy handler which will wait up to MaxAttempts and yield to other Xojo threads while waiting. Passing 5 should wait up to 100ms.

There can only be a single busy handler defined for each database connection. Setting a new busy handler
clears any previously set handler.) Note that calling SetBusyTimeout will also set or clear the busy handler.

The busy callback should not take any actions which modify the database connection that invoked the busy handler. Any such actions result in undefined behavior.

### 152.24.17 SetBusyTimeout(Conn as SQLConnectionMBS, TimeOutMS as Integer = 20)

MBS SQL Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This routine sets a busy handler that sleeps for a specified amount of time when a table is locked.

**Notes:**
The handler will sleep multiple times until at least "ms" milliseconds of sleeping have accumulated. After at least "ms" milliseconds of sleeping, the handler returns 0 which causes SQLite query to return SQLite Busy or IO Blocked error.

Calling this routine with an argument less than or equal to zero turns off all busy handlers.

(There can only be a single busy handler for a particular database connection any any given moment. If another busy handler was defined (using SetBusyHandler prior to calling this routine, that other busy handler is cleared.)

### 152.24.18 SetKey(Conn as SQLConnectionMBS, Key as String) as Integer

MBS SQL Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Applies encryption to a database connection.

**Notes:**
Returns a SQLite error code.

The amount of key material actually used by the encryption extension depends on which variant of SEE you are using. With RC4, the first 256 byte of key are used. With the AES128, the first 16 bytes of the key are used. With AES256, the first 32 bytes of key are used.

If you specify a key that is shorter than the maximum key length, then the key material is repeated as many times as necessary to complete the key. If you specify a key that is larger than the maximum key length, then the excess key material is silently ignored.

The key must begin with an ASCII prefix to specify which algorithm to use. The prefix must be one of "rc4:," "aes128:," or "aes256:". The prefix is not used as part of the key sent into the encryption algorithm. So the real key should begin on the first byte after the prefix.
The string provided to the plugin is used with it’s current encoding. So be sure you use right text encoding for what you want. e.g. using ”Mller” as key in text encoding Windows ANSI will not open a database which used that key in UTF-8 encoding.

The Xojo database encryption in SQLiteDatabase class uses AES-128 OFB.

### 152.24.19 TableColumnMetaData

```c
TableColumnMetaData(Conn as SQLConnectionMBS, DBName as string, TableName as string, ColumnName as string, byref DataType as string, byref CollationSequence as string, byref NotNull as boolean, byref PrimaryKey as boolean, byref AutoIncrement as Boolean) as Integer
```

MBS SQL Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Extract Metadata About A Column Of A Table  
**Notes:**  
Not available in all sqlite libraries!

This routine returns metadata about a specific column of a specific database table accessible using the database connection handle passed as the first function argument. The column is identified by the second, third and fourth parameters to this function. The second parameter is either the name of the database (i.e. ”main”, ”temp”, or an attached database) containing the specified table or NULL. If it is NULL, then all attached databases are searched for the table using the same algorithm used by the database engine to resolve unqualified table references. The third and fourth parameters to this function are the table and column name of the desired column, respectively. Neither of these parameters may be NULL. Metadata is returned by writing to the memory locations passed as the 5th and subsequent parameters to this function. Any of these arguments may be NULL, in which case the corresponding element of metadata is omitted.

CollationSequence is assigned the Name of default collation sequence. NotNull is set to true if column has a NOT NULL constraint. PrimaryKey is set to true if column is part of the PRIMARY KEY and AutoIncrement is set to true if column is AUTOINCREMENT.

If the specified table is actually a view, an error code is returned.

If the specified column is "rowid", "oid" or "_rowid," and an INTEGER PRIMARY KEY column has been explicitly declared, then the output parameters are set for the explicitly declared column. (If there is no explicitly declared INTEGER PRIMARY KEY column, then the output parameters are set as follows:
152.24. CLASS SQLITE3MBS

data type: "INTEGER"
collation sequence: "BINARY"
not null: false
primary key: true
auto increment: false

(This function may load one or more schemas from database files. If an error occurs during this process, or if the requested table or column cannot be found, an error code is returned and an error message left in the database connection (to be retrieved using ErrMessage).)

This API is only available if the library was compiled with the SQLITE_ENABLE_COLUMN_METADATA C-preprocessor symbol defined.

152.24.20 Threadsafe as Integer

MBS SQL Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Test To See If The Library Is Threadsafe.

**Notes:**
The threadsafe() function returns zero if and only if SQLite was compiled muting code omitted due to the SQLITE_THREADSAFE compile-time option being set to 0.

SQLite can be compiled with or without mutexes. When the SQLITE_THREADSAFE C preprocessor macro is 1 or 2, mutexes are enabled and SQLite is threadsafe. When the SQLITE_THREADSAFE macro is 0, the mutexes are omitted. Without the mutexes, it is not safe to use SQLite concurrently from more than one thread.

Enabling mutexes incurs a measurable performance penalty. So if speed is of utmost importance, it makes sense to disable the mutexes. But for maximum safety, mutexes should be enabled. The default behavior is for mutexes to be enabled.

This interface can be used by an application to make sure that the version of SQLite that it is linking against was compiled with the desired setting of the SQLITE_THREADSAFE macro.

This interface only reports on the compile-time mutex setting of the SQLITE_THREADSAFE flag. If SQLite is compiled with SQLITE_THREADSAFE=1 or =2 then mutexes are enabled by default but can be fully or partially disabled using a call to sqlite3_config() with the verbs SQLITE_CONFIG_SINGLETHREAD, SQLITE_CONFIG_MULTITHREAD, or SQLITE_CONFIG_MUTEX. *(The return value of the sqlite3_threadsafe() function shows only the compile-time setting of thread safety, not any run-time changes to that setting made by sqlite3_config(). In other words, the return value from sqlite3_threadsafe() is unchanged by calls to sqlite3_config().)*
See the threading mode documentation for additional information.

### 152.24.21 Properties

#### 152.24.22 LibraryLoaded as Boolean

MBS SQL Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether SQLite library is loaded. 
**Notes:** (Read only property)

#### 152.24.23 MemoryHighwater as Int64

MBS SQL Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries maximum memory usage so far. 
**Notes:** Can be reset with reset parameter. 
(Read only property) 
See also:

- 152.24.14 MemoryHighwater(reset as boolean) as Int64

#### 152.24.24 MemoryUsed as Int64

MBS SQL Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries memory in use by SQLite. 
**Notes:** This is memory allocated, but not yet freed. Value is zero until SQLite3 initialized. 
(Read only property)

#### 152.24.25 Version as string

MBS SQL Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The version string of the SQLite library. 
**Notes:** (Read only property)
152.24.26  VersionNumber as Integer

MBS SQL Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The version number of the SQLite library.
**Notes:** (Read only property)

152.24.27  Constants

152.24.28  kErrorAbort = 4

MBS SQL Plugin, Plugin Version: 12.4. **Function:** One of the error codes.
**Notes:** Callback routine requested an abort.

152.24.29  kErrorAuth = 23

MBS SQL Plugin, Plugin Version: 12.4. **Function:** One of the error codes.
**Notes:** Authorization denied

152.24.30  kErrorBusy = 5

MBS SQL Plugin, Plugin Version: 12.4. **Function:** One of the error codes.
**Notes:** The database file is locked.

152.24.31  kErrorCantopen = 14

MBS SQL Plugin, Plugin Version: 12.4. **Function:** One of the error codes.
**Notes:** Unable to open the database file.

152.24.32  kErrorConstraint = 19

MBS SQL Plugin, Plugin Version: 12.4. **Function:** One of the error codes.
**Notes:** Abort due to constraint violation.
152.24.33 kErrorCorrupt = 11

MBS SQL Plugin, Plugin Version: 12.4. **Function:** One of the error codes. **Notes:** The database disk image is malformed.

152.24.34 kErrorDone = 101

MBS SQL Plugin, Plugin Version: 12.4. **Function:** One of the error codes. **Notes:** sqlite3::step() has finished executing.

152.24.35 kErrorEmpty = 16

MBS SQL Plugin, Plugin Version: 12.4. **Function:** One of the error codes. **Notes:** Database is empty

152.24.36 kErrorError = 1

MBS SQL Plugin, Plugin Version: 12.4. **Function:** One of the error codes. **Notes:** SQL error or missing database.

152.24.37 kErrorFormat = 24

MBS SQL Plugin, Plugin Version: 12.4. **Function:** One of the error codes. **Notes:** Auxiliary database format error.

152.24.38 kErrorFull = 13

MBS SQL Plugin, Plugin Version: 12.4. **Function:** One of the error codes. **Notes:** Insertion failed because database is full.

152.24.39 kErrorInternal = 2

MBS SQL Plugin, Plugin Version: 12.4. **Function:** One of the error codes. **Notes:** Internal logic error in SQLite
152.24.40  kErrorInterrupt = 9

MBS SQL Plugin, Plugin Version: 12.4. **Function:** One of the error codes. **Notes:** Operation terminated by sqlite3Interrupt().

152.24.41  kErrorIoerr = 10

MBS SQL Plugin, Plugin Version: 12.4. **Function:** One of the error codes. **Notes:** Some kind of disk I/O error occurred.

152.24.42  kErrorLocked = 6

MBS SQL Plugin, Plugin Version: 12.4. **Function:** One of the error codes. **Notes:** A table in the database is locked.

152.24.43  kErrorMismatch = 20

MBS SQL Plugin, Plugin Version: 12.4. **Function:** One of the error codes. **Notes:** Data type mismatch.

152.24.44  kErrorMisuse = 21

MBS SQL Plugin, Plugin Version: 12.4. **Function:** One of the error codes. **Notes:** Library used incorrectly.

152.24.45  kErrorNolfs = 22

MBS SQL Plugin, Plugin Version: 12.4. **Function:** One of the error codes. **Notes:** Uses OS features not supported on host.

152.24.46  kErrorNoMem = 7

MBS SQL Plugin, Plugin Version: 12.4. **Function:** One of the error codes. **Notes:** Out of memory.
152.24.47  kErrorNotADB = 26

MBS SQL Plugin, Plugin Version: 12.4. **Function:** One of the error codes.  
**Notes:** File opened that is not a database file.

152.24.48  kErrorNotFound = 12

MBS SQL Plugin, Plugin Version: 12.4. **Function:** One of the error codes.  
**Notes:** NOT USED. Table or record not found.

152.24.49  kErrorOk = 0

MBS SQL Plugin, Plugin Version: 12.4. **Function:** One of the error codes.  
**Notes:** Successful result

152.24.50  kErrorPerm = 3

MBS SQL Plugin, Plugin Version: 12.4. **Function:** One of the error codes.  
**Notes:** Access permission denied.

152.24.51  kErrorProtocol = 15

MBS SQL Plugin, Plugin Version: 12.4. **Function:** One of the error codes.  
**Notes:** NOT USED. Database lock protocol error.

152.24.52  kErrorRange = 25

MBS SQL Plugin, Plugin Version: 12.4. **Function:** One of the error codes.  
**Notes:** 2nd parameter to sqlite3_bind out of range.

152.24.53  kErrorReadonly = 8

MBS SQL Plugin, Plugin Version: 12.4. **Function:** One of the error codes.  
**Notes:** Attempt to write a readonly database.
152.24. **CLASS SQLITE3MBS**

152.24.54  kErrorRow = 100

MBS SQL Plugin, Plugin Version: 12.4. **Function:** One of the error codes. **Notes:** sqlite3_step() has another row ready.

152.24.55  kErrorSchema = 17

MBS SQL Plugin, Plugin Version: 12.4. **Function:** One of the error codes. **Notes:** The database schema changed.

152.24.56  kErrorToobig = 18

MBS SQL Plugin, Plugin Version: 12.4. **Function:** One of the error codes. **Notes:** String or BLOB exceeds size limit.
152.25 class SQLLongBinaryMBS

152.25.1 class SQLLongBinaryMBS

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A class for a long binary object.

**Notes:**
Basicly this is a SQLStringMBS which is always marked to contain binary data. You only need this class to use the constructor with dataprovider to stream data to the database.
Subclass of the SQLLongOrLobMBS class.

152.25.2 Methods

152.25.3 Constructor

MBS SQL Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

See also:

- 152.25.4 Constructor(Data as MemoryBlock) 18946
- 152.25.5 Constructor(data as SQLStringMBS) 18947
- 152.25.6 Constructor(Data as string, isText as Boolean = True) 18947
- 152.25.7 Constructor(dataProvider as SQLDataProviderMBS, BlockSize as UInt32) 18947

152.25.4 Constructor(Data as MemoryBlock)

MBS SQL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new string object with data, e.g. for blob.

See also:

- 152.25.3 Constructor 18946
- 152.25.5 Constructor(data as SQLStringMBS) 18947
- 152.25.6 Constructor(Data as string, isText as Boolean = True) 18947
- 152.25.7 Constructor(dataProvider as SQLDataProviderMBS, BlockSize as UInt32) 18947
152.25. CLASS SQLLONGBINARYMBS

152.25.5 Constructor(data as SQLStringMBS)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Creates a new long binary object from a string object.
See also:

- 152.25.3Constructor  
- 152.25.4 Constructor(Data as MemoryBlock)  
- 152.25.6 Constructor(Data as string, isText as Boolean = True)  
- 152.25.7 Constructor(dataProvider as SQLDataProviderMBS, BlockSize as UInt32)

152.25.6 Constructor(Data as string, isText as Boolean = True)

MBS SQL Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Creates a new string object with data or text copied from the data string.
Notes: If isText is true, the data is interpreted as text and string encoding conversion may modify it. If
isText is false the bytes are copied raw.
See also:

- 152.25.3 Constructor  
- 152.25.4 Constructor(Data as MemoryBlock)  
- 152.25.5 Constructor(data as SQLStringMBS)  
- 152.25.7 Constructor(dataProvider as SQLDataProviderMBS, BlockSize as UInt32)

152.25.7 Constructor(dataProvider as SQLDataProviderMBS, BlockSize as UInt32)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Creates a new long binary object from a data provider.
Notes:
The blocksize specifies in which sizes data is requested from the provider.
You must make sure that the data provider and this new blob object life long enough. Because the actual
data is requested later when you do the update on the database.

If BlockSize is 0, the default block size is used.
See also:

- 152.25.3 Constructor  
- 152.25.4 Constructor(Data as MemoryBlock)  
- 152.25.5 Constructor(data as SQLStringMBS)  
- 152.25.6 Constructor(Data as string, isText as Boolean = True)
152.26 class SQLLongCharMBS

152.26.1 class SQLLongCharMBS

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A class for the long character data type.

**Notes:**

Basically this is a SQLStringMBS which is always marked to contain text. You only need this class to use the constructor with dataprovider to stream data to the database.

Subclass of the SQLLongOrLobMBS class.

152.26.2 Methods

152.26.3 Constructor

MBS SQL Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

See also:

- 152.26.4 Constructor(data as SQLStringMBS) 18948
- 152.26.5 Constructor(Data as string, isText as boolean=true) 18948
- 152.26.6 Constructor(dataProvider as SQLDataProviderMBS, BlockSize as UInt32) 18949

152.26.4 Constructor(data as SQLStringMBS)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new long character object from a string object.

See also:

- 152.26.3 Constructor 18948
- 152.26.5 Constructor(Data as string, isText as boolean=true) 18948
- 152.26.6 Constructor(dataProvider as SQLDataProviderMBS, BlockSize as UInt32) 18949

152.26.5 Constructor(Data as string, isText as boolean=true)

MBS SQL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new string object with data or text copied from the data string.

**Notes:** If isText is true, the data is interpreted as text and string encoding conversion may modify it. If isText is false the bytes are copied raw.

See also:
152.26. CLASS SQLLONGCHARMBS

- 152.26.3 Constructor
- 152.26.4 Constructor(data as SQLStringMBS)
- 152.26.6 Constructor(dataProvider as SQLDataProviderMBS, BlockSize as UInt32)

152.26.6 Constructor(dataProvider as SQLDataProviderMBS, BlockSize as UInt32)


**Notes:**

The blocksize specifies in which sizes data is requested from the provider.
You must make sure that the data provider and this new long character object life long enough. Because the actual data is requested later when you do the update on the database.

If BlockSize is 0, the default block size is used.

See also:

- 152.26.3 Constructor
- 152.26.4 Constructor(data as SQLStringMBS)
- 152.26.5 Constructor(Data as string, isText as boolean=true)
152.27 class SQLLongOrLobMBS

152.27.1 class SQLLongOrLobMBS

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The super class for Long Binary/Text and BLOB/CLOB classes. **Notes:** Subclass of the SQLStringMBS class.
152.28 class SQLNotInitializedExceptionMBS

152.28.1 class SQLNotInitializedExceptionMBS

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The exception raised if you call a method on an object which was not properly initialized. **Notes:** Subclass of the RuntimeException class.
152.29.1 class SQLNullMBS

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class used internally for null values.
152.30.  CLASS SQLNUMERICMBS

152.30  class SQLNumericMBS

152.30.1  class SQLNumericMBS

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for numeric values.

152.30.2  Methods

152.30.3  Constructor

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates an empty numeric object.
See also:

- 152.30.4 Constructor(value as Double) 18953
- 152.30.5 Constructor(value as string) 18953

152.30.4  Constructor(value as Double)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new numeric object based on the given double value.
See also:

- 152.30.3 Constructor 18953
- 152.30.5 Constructor(value as string) 18953

152.30.5  Constructor(value as string)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new numeric object based on the given string.
See also:

- 152.30.3 Constructor 18953
- 152.30.4 Constructor(value as Double) 18953

152.30.6  NumericWithCurrency(value as Currency) as SQLNumericMBS

MBS SQL Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new numeric value object with given currency value.
Example:

```vbs
// test code for currency
dim c1 as Currency = 12345678.
dim c2 as Currency = 1234567.8
dim c3 as Currency = 123456.78
dim c4 as Currency = 12345.678
dim c5 as Currency = 1234.5678
dim c6 as Currency = 123.45678

dim n1 as SQLNumericMBS = SQLNumericMBS.NumericWithCurrency(c1)
dim n2 as SQLNumericMBS = SQLNumericMBS.NumericWithCurrency(c2)
dim n3 as SQLNumericMBS = SQLNumericMBS.NumericWithCurrency(c3)
dim n4 as SQLNumericMBS = SQLNumericMBS.NumericWithCurrency(c4)
dim n5 as SQLNumericMBS = SQLNumericMBS.NumericWithCurrency(c5)
dim n6 as SQLNumericMBS = SQLNumericMBS.NumericWithCurrency(c6)

dim s1 as string = n1.StringValue
dim s2 as string = n2.StringValue
dim s3 as string = n3.StringValue
dim s4 as string = n4.StringValue
dim s5 as string = n5.StringValue
dim s6 as string = n6.StringValue

dim d1 as Double = n1.DoubleValue
dim d2 as Double = n2.DoubleValue
dim d3 as Double = n3.DoubleValue
dim d4 as Double = n4.DoubleValue
dim d5 as Double = n5.DoubleValue
dim d6 as Double = n6.DoubleValue

dim x1 as Currency = n1.CurrencyValue
dim x2 as Currency = n2.CurrencyValue
dim x3 as Currency = n3.CurrencyValue
dim x4 as Currency = n4.CurrencyValue
dim x5 as Currency = n5.CurrencyValue
dim x6 as Currency = n6.CurrencyValue

// check for errors
if x1 <> c1 then break
if x2 <> c2 then break
if x3 <> c3 then break
if x4 <> c4 then break
if x5 <> c5 then break
if x6 <> c6 then break

if x1*10000 <> round(d1 * 10000) then Break
if x2*10000 <> round(d2 * 10000) then Break
```
if x3*10000 <> round(d3 * 10000) then Break
if x4*10000 <> round(d4 * 10000) then Break
if x5*10000 <> round(d5 * 10000) then Break
if x6*10000 <> round(d6 * 10000) then Break

Break // if no break before, it’s okay.

152.30.7  NumericWithDouble(value as Double) as SQLNumericMBS

MBS SQL Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new number with the given double value.

152.30.8  NumericWithInt64(value as Int64) as SQLNumericMBS

MBS SQL Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new number with the given Int64 value.

152.30.9  NumericWithString(value as string) as SQLNumericMBS

MBS SQL Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new number with the given string value.
Notes: If string is empty, we return a number with zero as value.

152.30.10  NumericWithUInt64(value as UInt64) as SQLNumericMBS

MBS SQL Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new number with the given unsigned integer value.

152.30.11  Properties

152.30.12  CurrencyValue as Currency

MBS SQL Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The currency value.
Example:
// test code for currency
dim c1 as Currency = 12345678.
dim c2 as Currency = 1234567.8
dim c3 as Currency = 123456.78
dim c4 as Currency = 12345.678
dim c5 as Currency = 1234.5678
dim c6 as Currency = 123.45678

dim n1 as SQLNumericMBS = SQLNumericMBS.NumericWithCurrency(c1)
dim n2 as SQLNumericMBS = SQLNumericMBS.NumericWithCurrency(c2)
dim n3 as SQLNumericMBS = SQLNumericMBS.NumericWithCurrency(c3)
dim n4 as SQLNumericMBS = SQLNumericMBS.NumericWithCurrency(c4)
dim n5 as SQLNumericMBS = SQLNumericMBS.NumericWithCurrency(c5)
dim n6 as SQLNumericMBS = SQLNumericMBS.NumericWithCurrency(c6)

dim s1 as string = n1.StringValue
dim s2 as string = n2.StringValue
dim s3 as string = n3.StringValue
dim s4 as string = n4.StringValue
dim s5 as string = n5.StringValue
dim s6 as string = n6.StringValue

dim d1 as Double = n1.DoubleValue
dim d2 as Double = n2.DoubleValue
dim d3 as Double = n3.DoubleValue
dim d4 as Double = n4.DoubleValue
dim d5 as Double = n5.DoubleValue
dim d6 as Double = n6.DoubleValue

dim x1 as Currency = n1.CurrencyValue
dim x2 as Currency = n2.CurrencyValue
dim x3 as Currency = n3.CurrencyValue
dim x4 as Currency = n4.CurrencyValue
dim x5 as Currency = n5.CurrencyValue
dim x6 as Currency = n6.CurrencyValue

// check for errors
if x1<>c1 then break
if x2<>c2 then break
if x3<>c3 then break
if x4<>c4 then break
if x5<>c5 then break
if x6<>c6 then break

if x1*10000 <> round(d1 * 10000) then Break
if x2*10000 <> round(d2 * 10000) then Break
if x3*10000 <> round(d3 * 10000) then Break
if x4*10000 <> round(d4 * 10000) then Break
if x5*10000 <> round(d5 * 10000) then Break
if x6*10000 <> round(d6 * 10000) then Break

Break // if no break before, it’s okay.

**Notes:** (Read and Write property)

**152.30.13 DoubleValue as Double**

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The double value for this number.  
**Notes:** (Read and Write property)

**152.30.14 Int64Value as Int64**

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The number value as an int64.  
**Notes:** (Read and Write property)

**152.30.15 precision as Integer**

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The maximum number of digits in base 10.  
**Notes:** (Read only property)

**152.30.16 scale as Integer**

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The number of digits to the right of the decimal point.  
**Notes:** (Read only property)

**152.30.17 sign as Integer**

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The sign: 1 for positive numbers, 0 for negative numbers.
152.30.18  **StringValue as string**

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The string value of this number.
**Notes:** (Read and Write property)

152.30.19  **UInt64Value as UInt64**

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The number value as an uint64.
**Notes:** (Read and Write property)
152.31  class SQLParamMBS

152.31.1  class SQLParamMBS

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The SQL class for parameters. **Notes:** Subclass of the SQLValueMBS class.

152.31.2  Methods

152.31.3  ReadLongOrLob(toConsumer as SQLDataConsumerMBS, BlockSize as Integer)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The Long or Lob data reading mode. **Notes:**

SQLAPI++ Library provides two ways to read Long or BLOB(CLOB) object’s value (usually SQLField or SQLParam objects):

1. reading of Long or Lob data at once into an internal buffer (like ordinary string or binary values);
2. piecewise reading of Long or Lob data using user defined callback.

kLongOrLobReaderDefault reading mode used by default.

If you want to control piecewise reading of Long or BLOB(CLOB) data you should set LongOrLobReaderMode and use kLongOrLobReaderManual reading mode for Long or BLOB(CLOB) parameters or fields you want to process with your data consumer. After that each fetch will skip reading Long and BLOB(CLOB) parameters that you set to be read manually. To read field or parameter defined to be read manually you should call ReadLongOrLob method for each of them after the fetch. ReadLongOrLob method will repeatedly call the data consumer Write event.

See also:

- 152.31.4 ReadLongOrLob(toFile as FolderItem)
- 152.31.5 ReadLongOrLob(toStream as Writeable)

152.31.4  ReadLongOrLob(toFile as FolderItem)

MBS SQL Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Starts reading of Long or BLOB(CLOB) value to the given file. **Example:**

```javascript
dim cmd as SQLCommandMBS // your command
dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
```
```vbnet
dim Param as SQLParamMBS = cmd.Param("image")
    // read blob content to binarystream
Param.ReadLongOrLob(f)
```

**Notes:** May raise IOExceptions if things go wrong.
See also:

- 152.31.3 ReadLongOrLob(toConsumer as SQLDataConsumerMBS, BlockSize as Integer) 18959
- 152.31.5 ReadLongOrLob(toStream as Writeable) 18960

### 152.31.5 ReadLongOrLob(toStream as Writeable)

MBS SQL Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Starts reading of Long or BLob(CLob) value to the given writeable stream.

**Example:**
```vbnet
dim cmd as SQLCommandMBS // your command
dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")
dim b as BinaryStream = BinaryStream.Create(f, true)
dim param as SQLParamMBS = cmd.param("image")
    // read blob content to binarystream
param.ReadLongOrLob(b)
```

**Notes:** This allows you to read in chunks the data to a stream, e.g. binarystream, textoutputstream or socket.
See also:

- 152.31.3 ReadLongOrLob(toConsumer as SQLDataConsumerMBS, BlockSize as Integer) 18959
- 152.31.4 ReadLongOrLob(toFile as FolderItem) 18959

### 152.31.6 Properties

#### 152.31.7 DirType as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The direction type of parameter (input, output, etc.).

**Notes:**
Use the kParamDirType* constants.
Usually the Library automatically detects parameter’s direction type and implicitly creates an appropriate SAParam object. But not all of DBMS clients/servers provide complete parameters information. In that situation programmer need to describe parameter’s direction type explicitly. See Server specific notes for details.

http://www.sqlapi.com/OnLineDoc/Param_ParamDirType.html
(Read and Write property)

152.31.8 Name as string

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The name of the parameter.
**Notes:** (Read only property)

152.31.9 NativeType as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The native type code of the parameter.
**Notes:** (Read and Write property)

152.31.10 Precision as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The precision of the parameter value (the total number of allowable digits).
**Notes:** (Read and Write property)

152.31.11 Scale as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The scale of the parameter value (the number of digits to the right of the decimal point).
**Notes:** (Read and Write property)

152.31.12 Size as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The parameter’s data size.
**Notes:** (Read and Write property)
152.31.13  Type as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The parameter’s data type.
**Notes:**
See the kDataType constants.
(Read and Write property)

152.31.14  Option(name as string) as string

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The string value of a specific parameter option.
**Notes:**
see also:
(Read and Write computed property)

152.31.15  Constants

152.31.16  kParamDirTypeInput=0

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the parameter direction type constants.
**Notes:** Input parameter.

152.31.17  kParamDirTypeInputOutput=1

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the parameter direction type constants.
**Notes:** Input/output parameter.

152.31.18  kParamDirTypeOutput=2

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the parameter direction type constants.
**Notes:** Output parameter.
MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the parameter direction type constants. **Notes:** Returning parameter.
152.32 class SQLPositionMBS

152.32.1 class SQLPositionMBS

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for a position value.

152.32.2 Methods

152.32.3 Constructor(withID as Integer)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new Position value with an ID.
See also:

- 152.32.4 Constructor(withName as string)

152.32.4 Constructor(withName as string)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new Position value with a name.
See also:

- 152.32.3 Constructor(withID as Integer)
152.33. **CLASS SQLPREPAREDSTATEMENTMBS**

152.33  **class SQLPreparedStatementMBS**

MBS SQL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for prepared statements if you work with SQLDatabaseMBS class.

**Notes:**
If you work with SQLCommandMBS class, you can set parameters there directly.

For the SQL string you number parameters with colon and number. Like this: :1, :2, :3.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

152.33.2  **Methods**

152.33.3  **Bind(name As String, value as Variant)**

MBS SQL Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Defines the value for one parameter.

**Example:**
```plaintext
dim db as SQLDatabaseMBS // your db connection
dim sql as string = "Insert into test_tbl(fid, fvarchar20) values(:fid, :fvarchar20)"
dim v as Variant = db.Prepare(sql)
dim p as SQLPreparedStatementMBS = v

p.BindType("fid", SQLPreparedStatementMBS.kTypeLong)
p.BindType("fvarchar20", SQLPreparedStatementMBS.kTypeString)
p.Bind("fid", 2345)
p.Bind("fvarchar20", "Hello World by name")
p.SQLExecute
```

**Notes:**
Version 16.4 and newer allow you to bind BLOB fields using a Memoryblock or a String value.
Older versions only accepted string.

When passing variant for value, MemoryBlock and Strings without text encoding are converted to byte values (BLOB).
Texts and Strings with encoding are converted to text values. Other types are translated as good as possible. Raises exceptions if you pass anything which is not recognized.

See also:
152.33.4  Bind(name As String, value as Variant, type as Integer)

MBS SQL Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Defines one parameter with value and type.

**Example:**
```
dim db as SQLDatabaseMBS // your db connection
dim sql as string = "Insert into test_tbl(fid, fvarchar20) values(:fid, :fvarchar20)"
dim v as Variant = db.Prepare(sql)
dim p as SQLPreparedStatementMBS = v

p.Bind("fid", 2345, SQLPreparedStatementMBS.kTypeLong)
p.Bind("fvarchar20", "Hello World by name", SQLPreparedStatementMBS.kTypeString)
```

**p.SQLExecute**

**Notes:**
Version 16.4 and newer allow you to bind BLOB fields using a Memoryblock or a String value. Older versions only accepted string.

When passing variant for value, MemoryBlock and Strings without text encoding are converted to byte values (BLOB). Texts and Strings with encoding are converted to text values. Other types are translated as good as possible. Raises exceptions if you pass anything which is not recognized.

With plugin version 16.4 and newer binding type is optional. In that case the type is determined from the value type.

See also:

- 152.33.3 Bind(name As String, value as Variant)
- 152.33.5 Bind(Values as Dictionary)
- 152.33.6 Bind(values() as Variant)
- 152.33.7 Bind(zeroBasedIndex as Integer, value as Variant)
- 152.33.8 Bind(zeroBasedIndex as Integer, value as Variant, type as Integer)
152.33.5  **Bind(Values as Dictionary)**

MBS SQL Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the parameters based on the keys and values in the dictionary.

**Example:**

```vba
' Get an insert command
   dim sql as string = "Insert into BlobTest(name, image) values (:name, :image)"
   dim p as SQLPreparedStatementMBS = db.Prepare(sql)

   ' Put parameter values in a dictionary
   dim d as new Dictionary
   d.Value(0) = "logo.jpg"
   d.Value("image") = jpegData

   ' Bind values and run it
   p.Bind(d)
   p.SQLExecute
```

**Notes:**

- The dictionary is saved to fill parameters later.
- Keys can be String, Text or numeric types. Text and String are used to pick parameters by name. Numeric values are used to pick parameter by index (zero based).
- MemoryBlock and Strings without text encoding are converted to byte values (BLOB).
- Texts and Strings with encoding are converted to text values.
- Raises exceptions if you pass anything which is not recognized.
- Other types are translated as good as possible.

See also:

- 152.33.3 Bind(name As String, value as Variant) 18965
- 152.33.4 Bind(name As String, value as Variant, type as Integer) 18966
- 152.33.6 Bind(values() as Variant) 18968
- 152.33.7 Bind(zeroBasedIndex as Integer, value as Variant) 18968
- 152.33.8 Bind(zeroBasedIndex as Integer, value as Variant, type as Integer) 18969
152.33.6 Bind(values() as Variant)

MBS SQL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the value list with the given values.

**Notes:**
You can either pass values to the SQLExecute/SQLSelect method or call Bind methods to set values. You have to define for each parameter both the type and the value.

Version 16.4 and newer allow you to bind BLOB fields using a Memoryblock or a String value. Older versions only accepted string.

When passing variant for value, MemoryBlock and Strings without text encoding are converted to byte values (BLOB). Texts and Strings with encoding are converted to text values. Other types are translated as good as possible. Raises exceptions if you pass anything which is not recognized.

See also:
- 152.33.3 Bind(name As String, value as Variant) 18965
- 152.33.4 Bind(name As String, value as Variant, type as Integer) 18966
- 152.33.5 Bind(Values as Dictionary) 18967
- 152.33.7 Bind(zeroBasedIndex as Integer, value as Variant) 18968
- 152.33.8 Bind(zeroBasedIndex as Integer, value as Variant, type as Integer) 18969

152.33.7 Bind(zeroBasedIndex as Integer, value as Variant)

MBS SQL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Defines the value for one parameter.

**Notes:**
You can either pass values to the SQLExecute/SQLSelect method or call Bind methods to set values. You have to define for each parameter both the type and the value.

Version 16.4 and newer allow you to bind BLOB fields using a Memoryblock or a String value. Older versions only accepted string.

When passing variant for value, MemoryBlock and Strings without text encoding are converted to byte values (BLOB). Texts and Strings with encoding are converted to text values. Other types are translated as good as possible. Raises exceptions if you pass anything which is not recognized.

See also:
- 152.33.3 Bind(name As String, value as Variant) 18965
- 152.33.4 Bind(name As String, value as Variant, type as Integer) 18966
152.33. **CLASS SQLPREPAREDSTATEMENTMBS**

- 152.33.5 Bind(Values as Dictionary)  
- 152.33.6 Bind(values() as Variant)  
- 152.33.8 Bind(zeroBasedIndex as Integer, value as Variant, type as Integer)

152.33.8 **Bind(zeroBasedIndex as Integer, value as Variant, type as Integer)**

MBS SQL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Defines one parameter with value and type.
**Notes:**
You can either pass values to the SQLExecute/SQLSelect method or call Bind methods to set values. You have to define for each parameter both the type and the value.

Version 16.4 and newer allow you to bind BLOB fields using a Memoryblock or a String value. Older versions only accepted string.

When passing variant for value, MemoryBlock and Strings without text encoding are converted to byte values (BLOB). Texts and Strings with encoding are converted to text values. Other types are translated as good as possible. Raises exceptions if you pass anything which is not recognized.

With plugin version 16.4 and newer binding type is optional. In that case the type is determined from the value type.

See also:
- 152.33.3 Bind(name As String, value as Variant)  
- 152.33.4 Bind(name As String, value as Variant, type as Integer)  
- 152.33.5 Bind(Values as Dictionary)  
- 152.33.6 Bind(values() as Variant)  
- 152.33.7 Bind(zeroBasedIndex as Integer, value as Variant)

152.33.9 **BindType(name As String, type as Integer)**

MBS SQL Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Defines the type of one value.
**Example:**
```vbnet
dim db as SQLDatabaseMBS '// your db connection
dim sql as string = "Insert into test_tbl(fid, fvarchar20) values(:fid, :fvarchar20)"
dim v as Variant = db.Prepare(sql)
dim p as SQLPreparedStatementMBS = v
```
p.BindType("fid", SQLPreparedStatementMBS.kTypeLong)
p.BindType("fvarchar20", SQLPreparedStatementMBS.kTypeString)
p.Bind("fid", 2345)
p.Bind("fvarchar20", "Hello World by name")
p.SQLExecute

Notes: With plugin version 16.4 and newer binding type is optional. In that case the type is determined from the value type.
See also:

- 152.33.10 BindType(types() as Integer) 18970
- 152.33.11 BindType(zeroBasedIndex as Integer, type as Integer) 18970

152.33.10  BindType(types() as Integer)

MBS SQL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Defines the types for all values.

Notes:
You can either pass values to the SQLExecute/SQLSelect method or call Bind methods to set values. You have to define for each parameter both the type and the value.

With plugin version 16.4 and newer binding type is optional. In that case the type is determined from the value type.
See also:

- 152.33.9 BindType(name As String, type as Integer) 18969
- 152.33.11 BindType(zeroBasedIndex as Integer, type as Integer) 18970

152.33.11  BindType(zeroBasedIndex as Integer, type as Integer)

MBS SQL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Defines the type of one value.

Notes:
You can either pass values to the SQLExecute/SQLSelect method or call Bind methods to set values. You have to define for each parameter both the type and the value.

With plugin version 16.4 and newer binding type is optional. In that case the type is determined from the value type.
See also:
152.33. **CLASS SQLPREPARESTATEMENTMBS**

- 152.33.9 **BindType(name As String, type as Integer)**
- 152.33.10 **BindType(types() as Integer)**

152.33.12 **Clear**

MBS SQL Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Cleans all parameters for reusing the SQL Prepared statement.

152.33.13 **Constructor**

MBS SQL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

**Notes:**
This constructor makes sure you don’t create useless SQLPreparedStatementMBS objects by error. The only way to create an object is to use the prepare method in the database class.
This constructor is private to make sure you don’t create an object from this class by error. Please use designated functions to create objects.

152.33.14 **SQLExecute(ParamArray bindItems as Variant)**

MBS SQL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Runs the SQL command with the given parameters.

**Notes:**
You can decide whether you pass values here or call Bind methods.

When passing variant for value, MemoryBlock and Strings without text encoding are converted to byte values (BLOB). Texts and Strings with encoding are converted to text values. Other types are translated as good as possible. Raises exceptions if you pass anything which is not recognized.

152.33.15 **SQLExecuteMT(ParamArray bindItems as Variant)**

MBS SQL Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Runs the SQL command with the given parameters.

**Notes:**
You can decide whether you pass values here or call Bind methods.
The work is performed on an extra thread, so this function can yield time to other Xojo (Real Studio) threads. And it calls the Working event regularly. For best user experience run this command on a Xojo (Real Studio) thread, so your GUI stays responsive.

When passing variant for value, MemoryBlock and Strings without text encoding are converted to byte values (BLOB). Texts and Strings with encoding are converted to text values. Other types are translated as good as possible. Raises exceptions if you pass anything which is not recognized.

152.33.16 SQLSelect(ParamArray bindItems as Variant) As RecordSet

MBS SQL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Runs the query with the given parameters.

**Notes:**
Returns the recordset object or nil on error.
You can decide whether you pass values here or call Bind methods.

For this method to work, you need to have somewhere a property with SQLDatabaseMBS so Real Studio includes our SQLDatabase plugin which provides the RecordSet functionality.

The record set may not have a valid RecordCount or have working movefirst/movelast/moveprev methods unless the underlaying database supports those and Scrollable result sets is enabled/supported.

When passing variant for value, MemoryBlock and Strings without text encoding are converted to byte values (BLOB). Texts and Strings with encoding are converted to text values. Other types are translated as good as possible. Raises exceptions if you pass anything which is not recognized.

152.33.17 SQLSelectMT(ParamArray bindItems as Variant) As RecordSet

MBS SQL Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Runs the query with the given parameters.

**Notes:**
Returns the recordset object or nil on error.
You can decide whether you pass values here or call Bind methods.

For this method to work, you need to have somewhere a property with SQLDatabaseMBS so Real Studio includes our SQLDatabase plugin which provides the RecordSet functionality.

The record set may not have a valid RecordCount or have working movefirst/movelast/moveprev methods unless the underlaying database supports those and Scrollable result sets is enabled/supported.
The work is performed on an extra thread, so this function can yield time to other Xojo (Real Studio) threads. And it calles the Working event regularly. For best user experience run this command on a Xojo (Real Studio) thread, so your GUI stays responsive.

When passing variant for value, MemoryBlock and Strings without text encoding are converted to byte values (BLOB). Texts and Strings with encoding are converted to text values. Other types are translated as good as possible. Raises exceptions if you pass anything which is not recognized.

### 152.33.18 Properties

#### 152.33.19 Scrollable as Boolean

MBS SQL Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the plugin will ask for a scrollable recordset when doing SQLSelect. **Notes:** Since plugin version 15.0, Scrollable is false by default. (Read and Write property)

### 152.33.20 SQL as String

MBS SQL Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The SQL command for this prepared statement. **Notes:** (Read and Write property)

### 152.33.21 Constants

#### 152.33.22 kTypeBlob = 14

MBS SQL Plugin, Plugin Version: 11.2. **Function:** One of the data type constants. **Notes:** Binary large Object. Pass a string or memoryblock.

#### 152.33.23 kTypeBool = 1

MBS SQL Plugin, Plugin Version: 11.2. **Function:** One of the data type constants. **Notes:** Boolean
152.33.24  kTypeBytes = 11

MBS SQL Plugin, Plugin Version: 11.2. **Function:** One of the data type constants.
**Notes:**
a binary string.
(which is a string without text encoding)

152.33.25  kTypeClob = 15

MBS SQL Plugin, Plugin Version: 11.2. **Function:** One of the data type constants.
**Notes:** Character Large Object

152.33.26  kTypeDateTime = 8

MBS SQL Plugin, Plugin Version: 11.2. **Function:** One of the data type constants.
**Notes:** Date and/or Time.

152.33.27  kTypeDouble = 6

MBS SQL Plugin, Plugin Version: 11.2. **Function:** One of the data type constants.
**Notes:** double float value.

152.33.28  kTypeInterval = 9

MBS SQL Plugin, Plugin Version: 13.5. **Function:** One of the data type constants.
**Notes:**
An interval.
Please pass SQLIntervalMBS in the variant. If the variant contains anything else, the plugin will pass nil value.

When passing variant for value, MemoryBlock and Strings without text encoding are converted to byte values (BLOB). Texts and Strings with encoding are converted to text values. Other types are translated as good as possible. Raises exceptions if you pass anything which is not recognized.
152.33. **CLASS SQLPREPAREDSTATEMENTMBS**

152.33.29  **kTypeLong = 4**

MBS SQL Plugin, Plugin Version: 11.2. **Function:** One of the data type constants. **Notes:** signed 32 bit integer

152.33.30  **kTypeLongBinary = 12**

MBS SQL Plugin, Plugin Version: 11.2. **Function:** One of the data type constants. **Notes:** Long binary.

152.33.31  **kTypeLongChar = 13**

MBS SQL Plugin, Plugin Version: 11.2. **Function:** One of the data type constants. **Notes:** Long string.

152.33.32  **kTypeNull = 99**

MBS SQL Plugin, Plugin Version: 14.3. **Function:** One of the data type constants. **Notes:** NULL value

152.33.33  **kTypeNumeric = 7**

MBS SQL Plugin, Plugin Version: 13.5. **Function:** One of the data type constants. **Notes:**

A number (Int64 or double). This can be used for Int64 or Double values. Depending of the type of number in the variant, the plugin will either make an Int64 or a double internally.

When passing variant for value, MemoryBlock and Strings without text encoding are converted to byte values (BLOB). Texts and Strings with encoding are converted to text values. Other types are translated as good as possible. Raises exceptions if you pass anything which is not recognized.

152.33.34  **kTypeShort = 2**

MBS SQL Plugin, Plugin Version: 11.2. **Function:** One of the data type constants. **Notes:** signed 16 bit integer
152.33.35  kTypeString  =  10
MBS SQL Plugin, Plugin Version: 11.2. **Function:** One of the data type constants.
**Notes:** String

152.33.36  kTypeULong  =  5
MBS SQL Plugin, Plugin Version: 11.2. **Function:** One of the data type constants.
**Notes:** unsigned 32 bit integer

152.33.37  kTypeUnknown  =  0
MBS SQL Plugin, Plugin Version: 11.2. **Function:** One of the data type constants.
**Notes:** unknown type

152.33.38  kTypeUShort  =  3
MBS SQL Plugin, Plugin Version: 11.2. **Function:** One of the data type constants.
**Notes:** unsigned 16 bit integer
152.34. CLASS SQLSTRINGMBS

152.34 class SQLStringMBS

152.34.1 class SQLStringMBS

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for strings in this plugin.

**Example:**

```vbscript
dim s as new SQLStringMBS("Hello ")
MsgBox "Characters: "+str(s.GetLength)+" Bytes: "+str(s.GetBinaryLength)

dim a as string= s.CopyBinaryData
dim b as string= s.CopyText

MsgBox a // RB shows garbage as it tries to display bytes as UTF8 which does not work
MsgBox b // displays correct
```

**Notes:** A string can be text (with text encoding) or bytes (raw binary data).

152.34.2 Methods

152.34.3 Compare(text as SQLStringMBS) as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Compares this string object with another string.

**Notes:**
Function performs a case-sensitive comparison of the strings, and is not affected by locale.

Returns zero if the strings are identical, <0 if this string object is less than text, or >0 if this string object is greater than text.

See also:

- 152.34.4 Compare(text as string) as Integer

152.34.4 Compare(text as string) as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Compares this string object with another string.

**Notes:**
Function performs a case-sensitive comparison of the strings, and is not affected by locale.

Returns zero if the strings are identical, <0 if this string object is less than text, or >0 if this string object is greater than text.

See also:

- 152.34.3 Compare(text as SQLStringMBS) as Integer

152.34.5 CompareNoCase(text as SQLStringMBS) as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Compares this string object with another string.

**Notes:**

Function performs a case-insensitive comparison of the strings, and is not affected by locale.

Returns zero if the strings are identical (ignoring case), <0 if this string object is less than text (ignoring case), or >0 if this string object is greater than text (ignoring case).

See also:

- 152.34.6 CompareNoCase(text as string) as Integer

152.34.6 CompareNoCase(text as string) as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Compares this string object with another string.

**Notes:**

Function performs a case-insensitive comparison of the strings, and is not affected by locale.

Returns zero if the strings are identical (ignoring case), <0 if this string object is less than text (ignoring case), or >0 if this string object is greater than text (ignoring case).

See also:

- 152.34.5 CompareNoCase(text as SQLStringMBS) as Integer

152.34.7 Constructor


See also:

- 152.34.8 Constructor(Data as MemoryBlock)
152.34. **CLASS SQLSTRINGMBS**

- 152.34.9 Constructor(Data as string, isText as Boolean = True)
- 152.34.10 Constructor(other as SQLStringMBS)

152.34.8 **Constructor(Data as MemoryBlock)**

MBS SQL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new string object with data, e.g. for blob.
See also:
- 152.34.7 Constructor
- 152.34.9 Constructor(Data as string, isText as Boolean = True)
- 152.34.10 Constructor(other as SQLStringMBS)

152.34.9 **Constructor(Data as string, isText as Boolean = True)**

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new string object with data or text copied from the data string.
**Notes:** If isText is true, the data is interpreted as text and string encoding conversion may modify it. If isText is false the bytes are copied raw.
See also:
- 152.34.7 Constructor
- 152.34.8 Constructor(Data as MemoryBlock)
- 152.34.10 Constructor(other as SQLStringMBS)

152.34.10 **Constructor(other as SQLStringMBS)**

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new string object with data copied from the other string object.
See also:
- 152.34.7 Constructor
- 152.34.8 Constructor(Data as MemoryBlock)
- 152.34.9 Constructor(Data as string, isText as Boolean = True)

152.34.11 **CopyBinaryData as string**

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Copies the bytes from the internal buffer ignoring any text encoding.
152.34.12 CopyText as string
MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies the characters of this string as text. **Notes:** Text encoding conversion may happen.

152.34.13 Empty
MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Forces a string to have 0 length.

152.34.14 GetBinaryLength as UInt32
MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a count of the bytes in the binary data buffer. **Deprecated:** This item is deprecated and should no longer be used. You can use BinaryLength instead. **Notes:** Deprecated. Please use BinaryLength property.

152.34.15 GetLength as UInt32
MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of characters in a SAString object. **Deprecated:** This item is deprecated and should no longer be used. You can use Length instead. **Notes:** Deprecated. Please use Length property.
For multibyte character sets, GetLength counts each 8-bit character; that is, a lead and trail byte in one multibyte character are counted as two bytes.

152.34.16 Left(count as Integer) as SQLStringMBS
MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Extracts the left part of a string.

152.34.17 MakeLower
MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Changes all characters in the string to lower case.
152.34. CLASS SQLSTRINGMBS

152.34.18 MakeUpper

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Changes all characters in the string to upper case.

152.34.19 Mid(first as Integer) as SQLStringMBS

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Extracts the middle part of a string.
**Notes:** first: The zero-based index of the first character in this string object that is to be included in the extracted substring.
See also:

- 152.34.20 Mid(first as Integer, Count as Integer) as SQLStringMBS

152.34.20 Mid(first as Integer, Count as Integer) as SQLStringMBS

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Extracts the middle part of a string.
**Notes:**
first: The zero-based index of the first character in this string object that is to be included in the extracted substring.
count: The number of characters to extract from this string object. If this parameter is not supplied, then the remainder of the string is extracted.
See also:

- 152.34.19 Mid(first as Integer) as SQLStringMBS

152.34.21 Operator_Convert as string

MBS SQL Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Convert operation for assignment to string.
See also:

- 152.34.22 Operator_Convert(text as string)

152.34.22 Operator_Convert(text as string)

MBS SQL Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Convert operation for assigning text string.
See also:
152.34.23  Right(count as Integer) as SQLStringMBS

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Extracts the right part of a string.

152.34.24  TrimLeft

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Trim leading whitespace characters from the string.

152.34.25  TrimRight

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Trim trailing whitespace characters from the string.

152.34.26  Properties

152.34.27  BinaryLength as UInt32

MBS SQL Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns a count of the bytes in the binary data buffer.
**Notes:** (Read only property)

152.34.28  DebugText as String

MBS SQL Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Text content for debugging.
**Notes:**
We show up to 1000 characters here for debugger.
(Read only property)
152.34. CLASS SQLSTRINGMBS

152.34.29  IsEmpty as boolean

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**
Tests whether a String object contains no characters.
**Notes:**
Returns true if length is zero.
(Read only property)

152.34.30  Length as UInt32

MBS SQL Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**
Returns the number of characters in a SAString object.
**Notes:**
For multibyte character sets, GetLength counts each 8-bit character; that is, a lead and trail byte in one
multibyte character are counted as two bytes.
(Read only property)
152.35 class SQLUnsupportedExceptionMBS

152.35.1 class SQLUnsupportedExceptionMBS

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for an exception to report that the function is not supported on this platform. **Notes:** This one raises only if the plugin is compiled for Mac OS Classic. Subclass of the RuntimeException class.
152.36. CLASS SQLVALUEMBS

152.36   class SQLValueMBS

152.36.1   class SQLValueMBS

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The SQL class for mutable values.
**Notes:** Subclass of the SQLValueReadMBS class.

152.36.2   Methods

152.36.3   Constructor(DataType as Integer)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new empty value object with the given data type.

152.36.4   setAsBlob(data as MemoryBlock)

MBS SQL Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets parameter’s value as BLOB data using a memoryblock.
**See also:**
- 152.36.5 setAsBlob(data as SQLDataProviderMBS, BlockSize as UInt32)
- 152.36.6 setAsBlob(data as SQLStringMBS)
- 152.36.7 setAsBlob(data as string)
- 152.36.8 setAsBlob(file as folderItem)
- 152.36.9 setAsBlob(stream as Readable)

152.36.5   setAsBlob(data as SQLDataProviderMBS, BlockSize as UInt32)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets parameter’s value as BLOB data (SQLString)
**Notes:**
When you call the SQLCommandMBS.Execute method all input parameters are bound with their values,
including Long and BLOB(CLob) parameters.
That is the time when the data provider Read event runs to get the values in the block size you specify.

The default value for the block size is 0. If you use the default value, SQLAPI++ Library will automatically
use the most appropriate size for current DBMS.
**See also:**
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• 152.36.4 setAsBlob(data as MemoryBlock) 18985
• 152.36.6 setAsBlob(data as SQLStringMBS) 18986
• 152.36.7 setAsBlob(data as string) 18986
• 152.36.8 setAsBlob(file as folderItem) 18987
• 152.36.9 setAsBlob(stream as Readable) 18987

152.36.6 setAsBlob(data as SQLStringMBS)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets parameter’s value as BLOB data (SQLString)
See also:

• 152.36.4 setAsBlob(data as MemoryBlock) 18985
• 152.36.5 setAsBlob(data as SQLDataProviderMBS, BlockSize as UInt32) 18985
• 152.36.7 setAsBlob(data as string) 18986
• 152.36.8 setAsBlob(file as folderItem) 18987
• 152.36.9 setAsBlob(stream as Readable) 18987

152.36.7 setAsBlob(data as string)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets parameter’s value as BLOB data (SQLString)
**Example:**

dim c as SQLCommandMBS // your command object
dim JPEGData as string // some data

c.Param("imageData").setAsBlob JPEGData

See also:

• 152.36.4 setAsBlob(data as MemoryBlock) 18985
• 152.36.5 setAsBlob(data as SQLDataProviderMBS, BlockSize as UInt32) 18985
• 152.36.6 setAsBlob(data as SQLStringMBS) 18986
• 152.36.8 setAsBlob(file as folderItem) 18987
• 152.36.9 setAsBlob(stream as Readable) 18987
**152.36.8 setAsBlob(file as folderItem)**


**Example:**

```dim cmd as SQLCommandMBS  // your command object```

```// pass folderitem to BLOB field```
```dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")```
```cmd.Param("image").setAsBlob(f)```

**Notes:**
The file will be read later when statement is executed.
May not work when using preemptive threads.

See also:

- 152.36.4 setAsBlob(data as MemoryBlock)
- 152.36.5 setAsBlob(data as SQLDataProviderMBS, BlockSize as UInt32)
- 152.36.6 setAsBlob(data as SQLStringMBS)
- 152.36.7 setAsBlob(data as string)
- 152.36.9 setAsBlob(stream as Readable)

**152.36.9 setAsBlob(stream as Readable)**

MBS SQL Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets field with content of stream.

**Example:**

```dim cmd as SQLCommandMBS  // your command object```

```// pass BinaryStream to BLOB field```
```dim f as FolderItem = SpecialFolder.Desktop.Child("test.jpg")```
```dim b as BinaryStream = BinaryStream.open(f)```
```cmd.Param("image").setAsBlob(b)```

**Notes:**
The stream will be read later when statement is executed.
May not work when using preemptive threads.

See also:
152.36.10  setAsBool(value as boolean)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets parameter’s value as bool data.

152.36.11  setAsBytes(data as MemoryBlock)

MBS SQL Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets parameter’s value as binary data from memoryblock.
See also:

- 152.36.12 setAsBytes(data as string) 18988
- 152.36.13 setAsBytes(value as SQLBytesMBS) 18989
- 152.36.14 setAsBytes(value as SQLStringMBS) 18989

152.36.12  setAsBytes(data as string)

MBS SQL Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Set the value to be bytes with content of given string.
**Notes:**
For BLOB fields or parameters.
Same as the other variant, but avoids creating extra SQLStringMBS object.
See also:

- 152.36.11 setAsBytes(data as MemoryBlock) 18988
- 152.36.13 setAsBytes(value as SQLBytesMBS) 18989
- 152.36.14 setAsBytes(value as SQLStringMBS) 18989
152.36. **CLASS SQLVALUEMBS**

152.36.13  **setAsBytes(value as SQLBytesMBS)**

MBS SQL Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set the value to be bytes with content of given Bytes object. **Notes:**
For BLOB fields or parameters.
Same as the other variant, but avoids creating extra SQLStringMBS object.

See also:

- 152.36.11  **setAsBytes(data as MemoryBlock)**
- 152.36.12  **setAsBytes(data as string)**
- 152.36.14  **setAsBytes(value as SQLStringMBS)**

152.36.14  **setAsBytes(value as SQLStringMBS)**

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets parameter’s value as binary string data (SQLString).
See also:

- 152.36.11  **setAsBytes(data as MemoryBlock)**
- 152.36.12  **setAsBytes(data as string)**
- 152.36.13  **setAsBytes(value as SQLBytesMBS)**

152.36.15  **setAsClob(data as MemoryBlock)**

**Notes:** This method should make sure you don’t accidentally a memoryblock instead of a text.
See also:

- 152.36.16  **setAsClob(data as SQLDataProviderMBS, BlockSize as UInt32)**
- 152.36.17  **setAsClob(file as folderItem)**
- 152.36.18  **setAsClob(stream as Readable)**
- 152.36.19  **setAsClob(text as SQLStringMBS)**
- 152.36.20  **setAsClob(text as string)**
152.36.16  setAsClob(data as SQLDataProviderMBS, BlockSize as UInt32)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets parameter’s value as Clob data (SQLString)
**Notes:**

When you call the SQLCommandMBS.Execute method all input parameters are bound with their values, including Long and BLOB(Clob) parameters.
That is the time when the data provider Read event runs to get the values in the block size you specify.

The default value for the block size is 0. If you use the default value, SQLAPI++ Library will automatically use the most appropriate size for current DBMS.
See also:

- 152.36.15 setAsClob(data as MemoryBlock) 18989
- 152.36.16 setAsClob(data as SQLDataProviderMBS, BlockSize as UInt32) 18990
- 152.36.17 setAsClob(file as folderItem) 18990
- 152.36.18 setAsClob(stream as Readable) 18990
- 152.36.19 setAsClob(text as SQLStringMBS) 18991
- 152.36.20 setAsClob(text as string) 18991

152.36.17  setAsClob(file as folderItem)

MBS SQL Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets field with content of file.
**Notes:**
The file will be read later when statement is executed.
May not work when using preemptive threads.
See also:

- 152.36.15 setAsClob(data as MemoryBlock) 18989
- 152.36.16 setAsClob(data as SQLDataProviderMBS, BlockSize as UInt32) 18990
- 152.36.18 setAsClob(stream as Readable) 18990
- 152.36.19 setAsClob(text as SQLStringMBS) 18991
- 152.36.20 setAsClob(text as string) 18991

152.36.18  setAsClob(stream as Readable)

MBS SQL Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets field with content of stream.
**Notes:**
The stream will be read later when statement is executed. May not work when using preemptive threads. See also:

- 152.36.15 setAsClob(data as MemoryBlock)
- 152.36.16 setAsClob(data as SQLDataProviderMBS, BlockSize as UInt32)
- 152.36.17 setAsClob(file as folderItem)
- 152.36.18 setAsClob(stream as Readable)
- 152.36.19 setAsClob(text as SQLStringMBS)
- 152.36.20 setAsClob(text as string)

**152.36.19 setAsClob(text as SQLStringMBS)**

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets parameter’s value as CLOB data (SQLString) See also:

- 152.36.15 setAsClob(data as MemoryBlock)
- 152.36.16 setAsClob(data as SQLDataProviderMBS, BlockSize as UInt32)
- 152.36.17 setAsClob(file as folderItem)
- 152.36.18 setAsClob(stream as Readable)
- 152.36.20 setAsClob(text as string)

**152.36.20 setAsClob(text as string)**

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets parameter’s value as CLOB data (SQLString) See also:

- 152.36.15 setAsClob(data as MemoryBlock)
- 152.36.16 setAsClob(data as SQLDataProviderMBS, BlockSize as UInt32)
- 152.36.17 setAsClob(file as folderItem)
- 152.36.18 setAsClob(stream as Readable)
- 152.36.19 setAsClob(text as SQLStringMBS)
### 152.36.21 setAsDate(value as date)

MBS SQL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets parameter’s value with a date.

**Example:**

```plaintext
dim cmd as SQLCommandMBS // your command object
dim d as new date(2012,12,24,16,0,0) // some date
cmd.Param(3).setAsDate(d) // set third parameter
```

**Notes:** Same as setAsDateTime, but here we take a date object to make it more convenient.

### 152.36.22 setAsDateTime(value as SQLDateTimeMBS)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets parameter’s value as SQLDateTime data.

### 152.36.23 setAsDefault

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Forces to use the default parameter’s value.

**Notes:**

Forces DBMS API to use the default parameter value as the input value for an input or input/output parameter in a procedure.

If DBMS API does not support the concept of "default parameter values" in stored procedures, this setting will be ignored.

If you set this flag for the parameter that doesn’t have a default value, the effect is DBMS defined (e.g. an error can be returned or NULL can be bound).

To cancel using the default parameter value you should call any other SQLValue::setAs... method to bind a parameter value.

To check whether this flag is set or not use isDefault method.
152.36. **CLASS SQLVALUEMBS**

152.36.24  **setAsDouble(value as Double)**

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets parameter’s value as Double data.

152.36.25  **setAsInterval(value as SQLIntervalMBS)**


152.36.26  **setAsLong(value as Int32)**

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets parameter’s value as long data.

152.36.27  **setAsLongBinary(data as MemoryBlock)**

MBS SQL Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets parameter’s value as long binary data from memoryblock. See also:

- 152.36.28 setAsLongBinary(data as SQLDataProviderMBS, BlockSize as UInt32) 18993
- 152.36.29 setAsLongBinary(data as SQLStringMBS) 18994
- 152.36.30 setAsLongBinary(data as string) 18994
- 152.36.31 setAsLongBinary(file as folderItem) 18995
- 152.36.32 setAsLongBinary(stream as Readable) 18995

152.36.28  **setAsLongBinary(data as SQLDataProviderMBS, BlockSize as UInt32)**

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets parameter’s value as long binary data (SQLString) **Notes:**

When you call the SQLCommandMBS.Execute method all input parameters are bound with their values, including Long and BLob(CLob) parameters. That is the time when the data provider Read event runs to get the values in the block size you specify.
The default value for the block size is 0. If you use the default value, SQLAPI++ Library will automatically use the most appropriate size for current DBMS.

See also:

- 152.36.27 setAsLongBinary(data as MemoryBlock)
- 152.36.29 setAsLongBinary(data as SQLStringMBS)
- 152.36.30 setAsLongBinary(data as string)
- 152.36.31 setAsLongBinary(file as folderItem)
- 152.36.32 setAsLongBinary(stream as Readable)

152.36.29 setAsLongBinary(data as SQLStringMBS)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets parameter’s value as long binary data (SQLString)

See also:

- 152.36.27 setAsLongBinary(data as MemoryBlock)
- 152.36.28 setAsLongBinary(data as SQLDataProviderMBS, BlockSize as UInt32)
- 152.36.30 setAsLongBinary(data as string)
- 152.36.31 setAsLongBinary(file as folderItem)
- 152.36.32 setAsLongBinary(stream as Readable)

152.36.30 setAsLongBinary(data as string)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets parameter’s value as long binary data (SQLString)

See also:

- 152.36.27 setAsLongBinary(data as MemoryBlock)
- 152.36.28 setAsLongBinary(data as SQLDataProviderMBS, BlockSize as UInt32)
- 152.36.29 setAsLongBinary(data as SQLStringMBS)
- 152.36.31 setAsLongBinary(file as folderItem)
- 152.36.32 setAsLongBinary(stream as Readable)
152.36. CLASS SQLVALUEMBS

152.36.31 setAsLongBinary(file as folderItem)

MBS SQL Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets field with content of file.

**Notes:**
The file will be read later when statement is executed.
May not work when using preemptive threads.
See also:

- 152.36.27 setAsLongBinary(data as MemoryBlock) 18993
- 152.36.28 setAsLongBinary(data as SQLDataProviderMBS, BlockSize as UInt32) 18993
- 152.36.29 setAsLongBinary(data as SQLStringMBS) 18994
- 152.36.30 setAsLongBinary(data as string) 18994
- 152.36.32 setAsLongBinary(stream as Readable) 18995

152.36.32 setAsLongBinary(stream as Readable)

MBS SQL Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets field with content of stream.

**Notes:**
The stream will be read later when statement is executed.
May not work when using preemptive threads.
See also:

- 152.36.27 setAsLongBinary(data as MemoryBlock) 18993
- 152.36.28 setAsLongBinary(data as SQLDataProviderMBS, BlockSize as UInt32) 18993
- 152.36.29 setAsLongBinary(data as SQLStringMBS) 18994
- 152.36.30 setAsLongBinary(data as string) 18994
- 152.36.31 setAsLongBinary(stream as Readable) 18995

152.36.33 setAsLongChar(data as MemoryBlock)

MBS SQL Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Private method.
**Notes:** This method should make sure you don’t accidentally a memoryblock instead of a text.
See also:

- 152.36.34 setAsLongChar(data as SQLDataProviderMBS, BlockSize as UInt32) 18996
152.36.34  setAsLongChar(data as SQLDataProviderMBS, BlockSize as UInt32)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets parameter’s value as long character data (SQLString)
**Notes:**
When you call the SQLCommandMBS.Execute method all input parameters are bound with their values, including Long and BLob(LOB) parameters.
That is the time when the data provider Read event runs to get the values in the block size you specify.

The default value for the block size is 0. If you use the default value, SQLAPI++ Library will automatically use the most appropriate size for current DBMS.
See also:

- 152.36.33 setAsLongChar(data as MemoryBlock) 18995
- 152.36.35 setAsLongChar(file as folderItem) 18996
- 152.36.36 setAsLongChar(stream as Readable) 18997
- 152.36.37 setAsLongChar(text as SQLStringMBS) 18997
- 152.36.38 setAsLongChar(text as string) 18997

152.36.35  setAsLongChar(file as folderItem)

MBS SQL Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets field with content of file.
**Notes:**
The file will be read later when statement is executed.
May not work when using preemptive threads.
See also:

- 152.36.33 setAsLongChar(data as MemoryBlock) 18995
- 152.36.34 setAsLongChar(data as SQLDataProviderMBS, BlockSize as UInt32) 18996
- 152.36.36 setAsLongChar(stream as Readable) 18997
- 152.36.37 setAsLongChar(text as SQLStringMBS) 18997
- 152.36.38 setAsLongChar(text as string) 18997
152.36.  CLASS SQLVALUEMBS

152.36.36  setAsLongChar(stream as Readable)

MBS SQL Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets field with content of stream.

**Notes:**
The stream will be read later when statement is executed.
May not work when using preemptive threads.
See also:

- 152.36.33 setAsLongChar(data as MemoryBlock) 18995
- 152.36.34 setAsLongChar(data as SQLDataProviderMBS, BlockSize as UInt32) 18996
- 152.36.35 setAsLongChar(file as folderItem) 18996
- 152.36.37 setAsLongChar(text as SQLStringMBS) 18997
- 152.36.38 setAsLongChar(text as string) 18997

152.36.37  setAsLongChar(text as SQLStringMBS)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets parameter's value as long character data (SQLString)
See also:

- 152.36.33 setAsLongChar(data as MemoryBlock) 18995
- 152.36.34 setAsLongChar(data as SQLDataProviderMBS, BlockSize as UInt32) 18996
- 152.36.35 setAsLongChar(file as folderItem) 18996
- 152.36.36 setAsLongChar(stream as Readable) 18997
- 152.36.38 setAsLongChar(text as string) 18997

152.36.38  setAsLongChar(text as string)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets parameter's value as long character data (SQLString)
See also:

- 152.36.33 setAsLongChar(data as MemoryBlock) 18995
- 152.36.34 setAsLongChar(data as SQLDataProviderMBS, BlockSize as UInt32) 18996
- 152.36.35 setAsLongChar(file as folderItem) 18996
- 152.36.36 setAsLongChar(stream as Readable) 18997
- 152.36.37 setAsLongChar(text as SQLStringMBS) 18997
152.36.39 setAsNull

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets value to null.

152.36.40 setAsNumeric(value as SQLNumericMBS)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets parameter's value as SQLNumeric data.

152.36.41 setAsShort(value as Int16)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets parameter's value as short data.

152.36.42 setAsString(data as MemoryBlock)

MBS SQL Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Private method. **Notes:** This method should make sure you don’t accidentally a memoryblock instead of a text. See also:

- 152.36.43 setAsString(value as SQLStringMBS)
- 152.36.44 setAsString(value as string)

152.36.43 setAsString(value as SQLStringMBS)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets parameter’s value as character string data (SQLString) See also:

- 152.36.42 setAsString(data as MemoryBlock)
- 152.36.44 setAsString(value as string)

152.36.44 setAsString(value as string)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets parameter’s value as character string data.
152.36. CLASS SQLVALUEMBS

Notes: Same as setAsString, but for your convenience with a REALbasic string instead of a SQLStringMBS object.
See also:

• 152.36.42 setAsString(data as MemoryBlock) 18998
• 152.36.43 setAsString(value as SQLStringMBS) 18998

152.36.45 setAsText(value as text)

MBS SQL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Sets the value using text value.
Notes: Available on Xojo 2015 and newer.

152.36.46 setAsULong(value as UInt32)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Sets parameter’s value as unsigned long data.

152.36.47 setAsUnknown

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Sets parameter’s type as unknown.

152.36.48 setAsUShort(value as UInt16)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Sets parameter’s value as unsigned short data.
Notes: Sets value as unsigned short data.

152.36.49 setAsValueRead(value as SQLValueReadMBS)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Sets parameter’s value from SQLParam or SQLField objects.
Notes: This method allows using SQLField or SQLParam object received from one SQL statement as a parameter for another SQL statement.
152.36.50 setVariant(value as Variant)

MBS SQL Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the value based on a variant.

**Example:**

dim con as SQLConnectionMBS // your connection
dim pic as picture // some picture

    // get picture data
dim jpegData as MemoryBlock = pic.GetData(Picture.FormatJPEG, 80)

    // get a command for an Insert command
dim sql as string = "Insert into BlobTest(name, image) values (:name, :image)"
dim cmd as new SQLCommandMBS(con, sql)

    // set values by variant
    cmd.Param("name").setVariant "logo.jpg"
    cmd.Param("image").setVariant jpegData

    // do the insert
    cmd.Execute

**Notes:**
MemoryBlock and Strings without text encoding are converted to byte values (BLOB).
Texts and Strings with encoding are converted to text values.
Raises exceptions if you pass anything which is not recognized.
Other types are translated as good as possible.

152.36.51 Properties

152.36.52 isDefault as boolean

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if the plugin has been forced to use parameter’s default value by calling setAsDefault method; false otherwise.

**Notes:** (Read only property)
152.37. CLASS SQLVALUEREADMBS

152.37 class SQLValueReadMBS

152.37.1 class SQLValueReadMBS

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class used in the SQL Plugin for value objects which can be read.

152.37.2 Methods

152.37.3 asBLob as SQLStringMBS

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value as BLob (SQLString) data. **Notes:** If the value of current object is NULL, asBLob method returns an empty string. Use isNull method to make sure if the value is NULL or not.

If the value’s type of current object is string (kDataTypeString), bytes (kDataTypeBytes), long binary (kDataTypeLongBinary), long character (kDataTypeLongChar), BLob (kDataTypeBLob) or CLOB (kDataTypeCLOB), asBLob method returns the object’s value as SQLString object.

If the value’s type of current object is bool (kDataTypeBool), short (kDataTypeShort), long (kDataTypeLong), double (kDataTypeDouble), numeric (kDataTypeNumeric), date-time (kDataTypeDateTime) or cursor (kDataTypeCursor), the result is undefined and debug version asserts.

Use DataType method to get the value’s type of SQLValueRead object.

152.37.4 asBLobMemory as MemoryBlock

MBS SQL Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value as BLob data in a memoryblock.

152.37.5 asBLobString as String

MBS SQL Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value as BLob data in a string.
152.37.6 \textit{asBytes as SQLStringMBS}


\textbf{Notes:}

If the value of current object is NULL, asBytes method returns an empty string. Use isNull method to make sure if the value is NULL or not.

If the value’s type of current object is string (kDataTypeString), bytes (kDataTypeBytes), long binary (kDataTypeLongBinary), long character (kDataTypeLongChar), BLOB (kDataTypeBLOB) or CLOB (kDataTypeCLOB), asBytes method returns the object’s value as SQLString object.

If the value’s type of current object is bool (kDataTypeBool), short (kDataTypeShort), long (kDataTypeLong), double (kDataTypeDouble), numeric (kDataTypeNumeric) or date-time (kDataTypeDateTime), asBytes method returns a block of data with size sizeof(value’s type) as SQLString object.

If the value’s type of current object is cursor (kDataTypeCursor), the result is undefined and debug version asserts.

Use DataType method to get the value’s type of SQLValueRead object.

152.37.7 \textit{asCLOB as SQLStringMBS}


\textbf{Notes:}

If the value of current object is NULL, asCLOB method returns an empty string. Use isNull method to make sure if the value is NULL or not.

If the value’s type of current object is string (kDataTypeString), bytes (kDataTypeBytes), long binary (kDataTypeLongBinary), long character (kDataTypeLongChar), BLOB (kDataTypeBLOB) or CLOB (kDataTypeCLOB), asCLOB method returns the object’s value as SQLString object.

If the value’s type of current object is bool (kDataTypeBool), short (kDataTypeShort), long (kDataTypeLong), double (kDataTypeDouble), numeric (kDataTypeNumeric), date-time (kDataTypeDateTime) or cursor (kDataTypeCursor), the result is undefined and debug version asserts.

Use DataType method to get the value’s type of SQLValueRead object.
152.37. CLASS SQLVALUEREADMBS

152.37.8 asDate as Date

MBS SQL Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value as date.

**Example:**
```vbnet
dim cmd as SQLCommandMBS // your command object
dim d as date = cmd.Field("mydate").asDate // read date value
```

**Notes:**
If the value of current object is NULL, asDate method returns an empty date object. Use isNull method to make sure if the value is NULL or not.

If the value’s type of current object is kDataTypeDateTime, asDate method returns date object.

If the value’s type of current object is any data type except kDataTypeDateTime, the result is undefined and debug version asserts.

Use DataType method to get the value’s type of SQLValueRead object.

152.37.9 asDateTime as SQLDateTimeMBS

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value as SQLDateTimeMBS object.

**Notes:**
If the value of current object is NULL, asDateTime method returns an empty SQLDateTime object. Use isNull method to make sure if the value is NULL or not.

If the value’s type of current object is kDataTypeDateTime, asDateTime method returns SQLDateTime object.

If the value’s type of current object is any data type except kDataTypeDateTime, the result is undefined and debug version asserts.

Use DataType method to get the value’s type of SQLValueRead object.
152.37.10  asInterval as SQLIntervalMBS

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value as interval (SQLIntervalMBS).

152.37.11  asLongBinary as SQLStringMBS

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value as long binary (SQLString) data. **Notes:**

If the value of current object is NULL, asLongBinary method returns an empty string. Use isNull method to make sure if the value is NULL or not.

If the value’s type of current object is string (kDataTypeString), bytes (kDataTypeBytes), long binary (kDataTypeLongBinary), long character (kDataTypeLongChar), BLOB (kDataTypeBLOB) or CLOB (kDataTypeCLOB), asLongBinary method returns the object’s value as SQLString object.

If the value’s type of current object is bool (kDataTypeBool), short (kDataTypeShort), long (kDataTypeLong), double (kDataTypeDouble), numeric (kDataTypeNumeric), date-time (kDataTypeDateTime) or cursor (kDataTypeCursor), the result is undefined and debug version asserts.

Use DataType method to get the value’s type of SQLValueRead object.

152.37.12  asLongChar as SQLStringMBS

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value as long character (SQLString) data. **Notes:**

If the value of current object is NULL, asLongChar method returns an empty string. Use isNull method to make sure if the value is NULL or not.

If the value’s type of current object is string (kDataTypeString), bytes (kDataTypeBytes), long binary (kDataTypeLongBinary), long character (kDataTypeLongChar), BLOB (kDataTypeBLOB) or CLOB (kDataTypeCLOB), asLongChar method returns the object’s value as SQLString object.

If the value’s type of current object is bool (kDataTypeBool), short (kDataTypeShort), long (kDataTypeLong), double (kDataTypeDouble), numeric (kDataTypeNumeric), date-time (kDataTypeDateTime) or cursor (kDataTypeCursor), the result is undefined and debug version asserts.
Use `DataType` method to get the value’s type of `SQLValueRead` object.

**152.37.13 asNumeric as SQLNumericMBS**

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value as SQLNumeric data.

**Notes:**

If the value of current object is NULL, `asNumeric` method returns 0. Use `isNull` method to make sure if the value is NULL or not.

If the value’s type of current object is exact numeric value (kDataTypeNumeric), `asNumeric` method returns the original value with no conversion.

If the value’s type of current object is bool (kDataTypeBool), short (kDataTypeShort), double (kDataTypeDouble) or long (kDataTypeLong), `asNumeric` method converts it to SQLNumeric.

If the value’s type of current object is string (kDataTypeString), `asNumeric` method tries to convert it from SQLChar* value. If the conversion is possible and correct, `asNumeric` converts to SQLNumeric from SQLChar* value. If conversion is incorrect `asNumeric` method throws an exception.

If the value’s type of current object is any data type except the described above, the result is undefined and debug version asserts.

Use `DataType` method to get the value’s type of `SQLValueRead` object.

**152.37.14 asString as SQLStringMBS**

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** returns the value as string (SQLString) data.

**Notes:**

If the value of current object is NULL, `asString` method returns an empty string. Use `isNull` method to make sure if the value is NULL or not.

If the value’s type of current object is bool (kDataTypeBool), `asString` method returns "true" or "false" string (SQLString object).

If the value’s type of current object is short (kDataTypeShort), `asString` method converts it to decimal string (SQLString object) like function printf("%hd", ...) does.
If the value’s type of current object is long (kDataTypeLong), asString method converts it to decimal string (SQLString object) like function printf("% ld", ...) does.

If the value’s type of current object is double (kDataTypeDouble), asString method converts it to decimal string (SQLString object) like function printf("% g", ...) does.

If the value’s type of current object is numeric (kDataTypeNumeric), asString method converts it to decimal string (SQLString object) without precision loss.

If the value’s type of current object is date-time (kDataTypeDateTime), asString method converts it to string (SQLString object) like function asctime(...) does.

If the value’s type of current object is string (kDataTypeString, kDataTypeLongChar, kDataTypeClob), asString method returns the original object’s value as SQLString object.

If the value’s type of current object is binary (kDataTypeBytes, kDataTypeLongBinary, kDataTypeBLOB), asString method converts it to hexadecimal string (SQLString object).

If the value’s type of current object is cursor (kDataTypeCursor), the result is undefined and debug version asserts.

Use DataType method to get the value’s type of SQLValueRead object. For numbers, this may give english decimal separator. For getting localized one, please use AsDoubleValue and use cstr() function.

### 152.37.15 Constructor(DataType as Integer)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new empty value object for the given data type. See also:

- 152.37.16 Constructor(value as SQLValueReadMBS)

### 152.37.16 Constructor(value as SQLValueReadMBS)

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new value object by copying the given one. See also:
152.37. **CLASS SQLVALUEREADMBS**

- 152.37.15 Constructor(DataType as Integer)

152.37.17 **Properties**

152.37.18 **asBool as boolean**

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value of current object as bool data.

**Notes:**

- If the value of current object is NULL, asBool method returns false. Use isNull method to make sure if the value is NULL or not.

- If the value’s type of current object is bool (kDataTypeBool), asBool method returns the original value with no conversion.

- If the value’s type of current object is short (kDataTypeShort), long (kDataTypeLong) or double (kDataTypeDouble), asBool method converts it to bool data type. Conversion returns false if the value is 0; true otherwise.

- If the value’s type of current object is any data type except the described above, the result is undefined and debug version asserts.

Use DataType method to get the value’s type of SQLValueRead object.

(Read only property)

152.37.19 **asDouble as Double**

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** returns the value as Double data.

**Notes:**

- If the value of current object is NULL, asDouble method returns 0. Use isNull method to make sure if the value is NULL or not.

- If the value’s type of current object is double (kDataTypeDouble), asDouble method returns the original value with no conversion.

- If the value’s type of current object is bool (kDataTypeBool), short (kDataTypeShort), long (kDataTypeLong) or numeric (kDataTypeNumeric), asDouble method converts it to double (kDataTypeDouble) data type.
If the value’s type of current object is string (kDataTypeString), asDouble method tries to convert it to double value. If the conversion is possible and correct, asDouble returns kDataTypeDouble value. If conversion is incorrect asDouble method throws an exception.

If the value’s type of current object is kDataTypeDateTime, asDouble method converts it to standard double representation. Days are represented by whole number increments starting with 30 December 1899, midnight as time zero. Hour values are expressed as the absolute value of the fractional part of the number. See SQLDateTime::operator double() for more details.

If the value’s type of current object is any data type except the described above, the result is undefined and debug version asserts.

Use DataType method to get the value’s type of SQLValueRead object.
(Read only property)

152.37.20  asLong as Integer

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value as long data.

**Notes:**
If the value of current object is NULL, asLong method returns 0. Use isNull method to make sure if the value is NULL or not.

If the value’s type of current object is long ( kDataTypeLong), asLong method returns the original value with no conversion.

If the value’s type of current object is bool (kDataTypeBool), short (kDataTypeShort), double (kDataTypeDouble) or numeric (kDataTypeNumeric), asLong method converts it to long data type. Note, that in this case the returned value can be truncated.

If the value’s type of current object is string (kDataTypeString), asLong method tries to convert it to long ( kDataTypeLong) value. If the conversion is possible and correct, asLong returns kDataTypeLong value. If conversion is incorrect asLong method throws an exception.

If the value’s type of current object is any data type except the described above, the result is undefined and debug version asserts.

Use DataType method to get the value’s type of SQLValueRead object.
(Read only property)
152.37. **CLASS SQLVALUEREADMBS**

**152.37.21 asShort as Int16**

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the value as short.

**Notes:**
- If the value of current object is NULL, asShort method returns 0. Use isNull method to make sure if the value is NULL or not.
- If the value’s type of current object is short, asShort method returns the original value with no conversion.
- If the value’s type of current object is bool (kDataTypeBool), long (kDataTypeLong), unsigned long (kDataTypeULong), double (kDataTypeDouble) or numeric (kDataTypeNumeric), asShort method converts it to short data type. Note, that in this case the returned value can be truncated.
- If the value’s type of current object is string (kDataTypeString), asShort method tries to convert it to short value. If the conversion is possible and correct, asShort returns the value. If conversion is incorrect asShort method throws an exception.
- If the value’s type of current object is any data type except the described above, the result is undefined and debug version asserts.

Use DataType method to get the value’s type of SAValueRead object.
(Read only property)

**152.37.22 asStringValue as String**

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the value string.

**Notes:**
- Same as asString but returns a REALbasic string.
- Please use SQLStringMBS and CopyBinaryData if the string you want to read is a BLOB value, else text encoding will change your data!
- For numbers, this may give english decimal separator. For getting localized one, please use AsDoubleValue and use cstr() function.
(Read only property)
152.37.23  asText as Text

MBS SQL Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the value as text.
**Notes:**
Only intended for text, not for blobs.
Available on Xojo 2015 and newer.
(Read only property)

152.37.24  asULong as UInt32

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the value as an unsigned 32 bit integer value.
**Notes:**
If the value of current object is NULL, asULong method returns 0. Use isNull method to make sure if the
value is NULL or not.

If the value’s type of current object is long (kDataTypeLong), asULong method returns the original value
with no conversion.

If the value’s type of current object is bool (kDataTypeBool), short (kDataTypeShort), double (kDataType-
Double) or numeric (kDataTypeNumeric), asULong method converts it to long data type. Note, that in this
case the returned value can be truncated.

If the value’s type of current object is string (kDataTypeString), asULong method tries to convert it to long
( kDataTypeLong) value. If the conversion is possible and correct, asULong returns kDataTypeLong value.
If conversion is incorrect asULong method throws an exception.

If the value’s type of current object is any data type except the described above, the result is undefined and
debug version asserts.

Use DataType method to get the value’s type of SQLValueRead object.
(Read only property)

152.37.25  asUShort as UInt16

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the value as unsigned short.
**Notes:**
If the value of current object is NULL, asUShort method returns 0. Use isNull method to make sure if the value is NULL or not.

If the value’s type of current object is unsigned short, asUShort method returns the original value with no conversion.

If the value’s type of current object is bool (kDataTypeBool), long (kDataTypeLong), unsigned long (kDataTypeULong), double (kDataTypeDouble) or numeric (kDataTypeNumeric), asUShort method converts it to unsigned short data type. Note, that in this case the returned value can be truncated.

If the value’s type of current object is string (kDataTypeString), asUShort method tries to convert it to unsigned short value. If the conversion is possible and correct, asUShort returns the value. If conversion is incorrect asUShort method throws an exception.

If the value’s type of current object is any data type except the described above, the result is undefined and debug version asserts.

Use DataType method to get the value’s type of SAValueRead object. (Read only property)

**152.37.26  asVariant as Variant**

MBS SQL Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the value as a variant. **Notes:** This is a convenience function. May return nil, date, number or string. BLOB strings without encoding and text strings as UTF-8. (Read only property)

**152.37.27  DataType as Integer**

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns SAValueRead object’s data type. **Notes:** One of the kDataType constants. (Read only property)
152.37.28  **isNull as boolean**

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if the value of current object is NULL; otherwise false. **Notes:** (Read only property)

152.37.29  **LongOrLobReaderMode as Integer**

MBS SQL Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The Long or Lob data reading mode. **Notes:**

SQLAPI++ Library provides two ways to read Long or BLOB(CLOB) object’s value (usually SQLField or SQLParam objects):

1. reading of Long or Lob data at once into an internal buffer (like ordinary string or binary values);
2. piecewise reading of Long or Lob data using user defined callback.

kLongOrLobReaderDefault reading mode used by default.

If you want to control piecewise reading of Long or BLOB(CLOB) data you should set LongOrLobReaderMode and use kLongOrLobReaderManual reading mode for Long or BLOB(CLOB) parameters or fields you want to process with your data consumer. After that each fetch will skip reading Long and BLOB(CLOB) parameters that you set to be read manually. To read field or parameter defined to be read manually you should call ReadLongOrLob method for each of them after the fetch. ReadLongOrLob method will repeatedly call the data consumer Write event. **(Read and Write property)**

152.37.30  **Constants**

152.37.31  **kDataTypeBLOB=14**

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the field type constants  
**Notes:** Data type is BLOB data (SQLStringMBS).

152.37.32  **kDataTypeBool=1**

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the field type constants  
**Notes:** Data type is a boolean.
152.37.33  kDataTypeBytes=11

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the field type constants  
**Notes:** Data type is binary string (SQLStringMBS).

152.37.34  kDataTypeCLob=15

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the field type constants  
**Notes:** Data type is CLob data (SQLStringMBS).

152.37.35  kDataTypeCursor=16

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the field type constants  
**Notes:** Data type is Oracle REF CURSOR (SQLCommand).

152.37.36  kDataTypeDateTime=8

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the field type constants  
**Notes:** Data type is SQLDateTime.

152.37.37  kDataTypeDouble=6

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the field type constants  
**Notes:** This is a normal double variable.

152.37.38  kDataTypeInterval=9

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the field type constants  
**Notes:** Data type is an interval (SQLIntervalMBS).

152.37.39  kDataTypeLong=4

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the field type constants  
**Notes:** A 32 bit integer.
152.37.40  kDataTypeLongBinary=12

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the field type constants **Notes:** Data type is long binary data (SQLStringMBS).

152.37.41  kDataTypeLongChar=13

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the field type constants **Notes:** Data type is long character data (SQLStringMBS).

152.37.42  kDataTypeNumeric=7

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the field type constants **Notes:** Data type is SQLNumeric (used internally).

152.37.43  kDataTypeShort=2

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the field type constants **Notes:** Data type is a 16 bit signed integer.

152.37.44  kDataTypeSpecificToDBMS=17

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the field type constants **Notes:** Data type is server-specific.

152.37.45  kDataTypeString=10

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the field type constants **Notes:** Data type is character string (SQLString).

152.37.46  kDataTypeULong=5

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the field type constants **Notes:** Data type is a 32 bit unsigned integer.
152.37. CLASS SQLVALUEREADMBS

152.37.47 kDataTypeUnknown=0

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the field type constants
**Notes:** Data type is unknown.

152.37.48 kDataTypeUShort=3

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the field type constants
**Notes:** A 16 bit unsigned integer.

152.37.49 kLongOrLobReaderModeDefault=0

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the read modes.
**Notes:** Long or Lob(CLob) data reading mode is default (automatic).

152.37.50 kLongOrLobReaderModeManual=1

MBS SQL Plugin, Plugin Version: 9.3. **Function:** One of the read modes.
**Notes:** Long or Lob(CLob) data reading mode is manual.
Chapter 153

StandardAlert

153.1 class StandardAlertMBS

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** This class offers you customized standard alert dialogs. **Deprecated:** This item is deprecated and should no longer be used. You can use NSAalertMBS for Cocoa projects instead. **Notes:**

You may create your own module around to give yourself some nice functions like this:

```vba
Sub ErrorAlert(error as string, explanation as string)
    dim s as StandardAlertMBS
    s=new StandardAlertMBS
    s.Type=2
    s.Error=error
    s.explanation=explanation
    s.UseDefaultDefaultButtonCaption=true
    s.whichisCancelButton=0
    s.whichisDefaultButton=1
    s.Moveable=true
    s.position=0
    s.run

    msgBox str(s.resultError)
End Sub
```

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153.1.2 Methods

153.1.3 close

MBS Util Plugin, Plugin Version: 4.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The destructor.

**Notes:**

There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.

(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

153.1.4 Run

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Shows the alert dialog.

153.1.5 Properties

153.1.6 CancelButtonCaption as String

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The button caption to use for the cancel button.

**Notes:**

On Mac OS Classic, a MacRoman encoded string is needed.

(Read and Write property)

153.1.7 DefaultButtonCaption as String

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The button caption to use for the default button.

**Notes:**

On Mac OS Classic, a MacRoman encoded string is needed.

(Read and Write property)

153.1.8 Error as string

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The error message.

**Notes:**
153.1. CLASS STANDARDALERTMBS

Limited to 255 characters.
On Mac OS Classic, a MacRoman encoded string is needed.
(Read and Write property)

153.1.9  **Explanation as string**

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The explanation to the error message.
**Notes:**
Limited to 255 characters.
On Mac OS Classic, a MacRoman encoded string is needed.
(Read and Write property)

153.1.10  **HelpButton as boolean**

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** whether the dialog should have an help button.
**Notes:** (Read and Write property)

153.1.11  **Moveable as boolean**

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** whether the dialog should be moveable.
**Notes:** (Read and Write property)

153.1.12  **OtherButtonCaption as String**

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The button caption to use for the third button.
**Example:**
```
dim s as StandardAlertMBS  // your StandardAlertMBS

If s.OtherButtonCaption="" and not s.UseDefaultOtherButtonCaption then
   ' no third button will be shown
end if
```

**Notes:**
On Mac OS Classic, a MacRoman encoded string is needed.
(Read and Write property)

153.1.13 Position as Integer

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Which position the dialog should have.

**Notes:**

Possible values:

0 Defaultposition
1 Center on main screen
2 Main screen
3 Stagger on main screen
4 Center on parent window
5 Parent Window
6 Stagger on parent window
7 Center on parent screen
8 Parent screen
9 Stagger on parent screen

(Read and Write property)

153.1.14 ResultButton as Integer

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The code for the button which was pressed.

**Notes:**

e.g. it may return 1 for ok and 2 for cancel if you have this two buttons.
(Read and Write property)

153.1.15 ResultError as Integer

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The error code of the Run method.

**Notes:**
StandardAlertMBS was introduced with Mac OS 8.1 so it may be not available. In this case the ResultError property has the value -1.

You get Error -50 if the properties of the object are out of range.
(Read and Write property)

153.1.16 Type as Integer

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Which type of alert.

**Notes:**
Possible values:

- 0  Stop
- 1  Note
- 2  Caution
- 3  Plain

(Read and Write property)

153.1.17 UseDefaultCancelButtonCaption as Boolean

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** whether to use the default caption for the cancel button.

**Notes:** (Read and Write property)

153.1.18 UseDefaultDefaultButtonCaption as Boolean

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** whether to use the default caption for the default button.

**Notes:** (Read and Write property)

153.1.19 UseDefaultOtherButtonCaption as Boolean

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** whether to use the default caption for the button.

**Notes:**
Should show "Don’t save".
(Read and Write property)

153.1.20 WhichisCancelButton as Integer

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Which button should be the cancel button.

**Notes:**
Possible values on Mac:

- 0 Default
- 1 OK Button
- 2 Cancel Button
- 3 Other Button
- 4 Help Button

(Read and Write property)

153.1.21 WhichisDefaultButton as Integer

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Which button should be the default button.

**Notes:**
Possible values on Mac:

- 0 Default
- 1 OK Button
- 2 Cancel Button
- 3 Other Button
- 4 Help Button

On Windows it is the number of the default button.
(Read and Write property)
153.1.22  WindowsButtons as Integer

MBS Util Plugin, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Which buttons to show on Windows.

**Notes:**

Possible values:

- 0  OK
- 1  OK Cancel
- 2  Retry Cancel
- 3  Yes No
- 4  Yes No Cancel
- 5  Abort Retry Ignore

(Read and Write property)

153.1.23  WindowsTitle as string

MBS Util Plugin, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The title for the dialog on Win32.

**Notes:** (Read and Write property)
Chapter 154

Statusitem

154.1  class NSStatusBarButtonMBS

154.1.1  class NSStatusBarButtonMBS

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: StatusBarButtons are the visual representation of NSStatusItems, and are primarily displayed
on the right side of the menu bar.
Notes:
When a template image is set as the `c image property of the status bar button, it is rendered with the
correct menu bar style. This guarantees that the button will look correct in various button states and ap-
pearances (such as dark menu bar).

Available on Mac OS X 10.10 and newer.
Subclass of the NSButtonMBS class.

154.1.2  Methods

154.1.3  Available as boolean

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Whether this class is available.
Notes: Returns true on OS X 10.10.
154.1.4 Properties

154.1.5 appearsDisabled as Boolean

MBS MacControls Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Whether icon appears disabled.
Notes:
When true the status bar icon has a disabled/off appearance while still being functional, such as allowing
selection and actions. Defaults to false.
(Read and Write property)
154.2. class NSStatusItemMBS

154.2.1 class NSStatusItemMBS

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: A class to handle a NSStatusItem which is a tiny little item in the menubar. Notes: All methods in this class will catch exceptions from Cocoa and raise a NSExceptionMBS instead. Using the message, name and reason properties you can see what was the reason for this exception. Please report if you find a method which does not handle exceptions correct.

154.2.2 Methods

154.2.3 Available as boolean


154.2.4 Close

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The destructor. Notes: There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you. (e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

154.2.5 CreateMenu as boolean

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Creates a new menu. Notes: Handle is not 0 after this call was successfull.

If the NSGrayBackground option is set in the system defaults, Mac OS X 10.5 will raise an NSImageCacheException, so please install an exception handle to catch NSExceptionMBS so your application can handle that. See also:
154.2.6 CreateMenu(length as single) as boolean

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates the StatusItem menu with the given width.

**Example:**

```plaintext
dim e as new NSStatusItemMBS
call e.CreateMenu(24) // best for a 16x16 picture
```

**Notes:**

**Constants:**

- NSVariableStatusItemLength = -1
- NSSquareStatusItemLength = -2

Other values between 0 and 10000 are used for the length. Bad values like 20000 will crash the application.

Handle is not 0 after this call was successful.

If the NSGrayBackground option is set in the system defaults, Mac OS X 10.5 will raise an NSImageCacheException, so please install an exception handle to catch NSExceptionMBS so your application can handle that.

See also:

- 154.2.5 CreateMenu as boolean

154.2.7 CreateMenuMiddle(length as single) as boolean

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Same as CreateMenu but tries to place Statusitem on the right side.

**Deprecated:** This item is deprecated and should no longer be used. You can use CreateMenu instead.

**Notes:**

Uses private Apple API which may break on future Mac OS X versions. Returns false if Apple changes something in the future and the function we use will not be available. So if this function returns false, you can call CreateMenu to continue. Works on Mac OS X 10.4 to 10.6 and make the new statusitem being the rightmost one (left to Apples MenuItems).
154.2. **CLASS NSSTATUSITEMMBS**

Constants:

```plaintext
NSVariableStatusItemLength  -1
NSSquareStatusItemLength    -2
```

Other values between 0 and 10000 are used for the length. Bad values like 20000 will crash the application.

Handle is not 0 after this call was successful.

If the NSGrayBackground option is set in the system defaults, Mac OS X 10.5 will raise an NSImageCacheException, so please install an exception handle to catch NSExceptionMBS so your application can handle that.

Deprecated.

### 154.2.8 **CreateMenuRight**(length as single) as boolean

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Same as CreateMenu but tries to place Statusitem on the right side. **Deprecated:** This item is deprecated and should no longer be used. You can use CreateMenu instead. **Notes:**

Uses private Apple API which may break on future Mac OS X versions. Returns false if Apple changes something in the future and the function we use will not be available. So if this function returns false, you can call CreateMenu to continue. Works on Mac OS X 10.4 to 10.6 and make the new statusitem being the rightmost one.

If you run this code after you used CreateMenuRight, the new menu will be right of all other statusitems:

```plaintext
dim sh as new Shell
sh.Execute "killall", "SystemUIServer"
```

Constants:

```plaintext
NSVariableStatusItemLength  -1
NSSquareStatusItemLength    -2
```

Other values between 0 and 10000 are used for the length. Bad values like 20000 will crash the application.
Handle is not 0 after this call was successful.

If the NSGrayBackground option is set in the system defaults, Mac OS X 10.5 will raise an NSImageCacheException, so please install an exception handle to catch NSExceptionMBS so your application can handle that.

Deprecated.

154.2.9 DrawStatusBarBackground(x as Double, y as Double, width as Double, height as Double, highlight as boolean)

MBS MacCocoa Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Draws the menu background pattern for a custom status-bar item in regular or highlight pattern. **Notes:**

- x, y, width and height: A rectangle defining the area of a custom status-bar item.
- highlight: true to draw the background pattern in the standard highlight pattern, false to not highlight the pattern.

You can use this method to help a custom status-bar item emulate the behavior of a standard item.

Available in Mac OS X v10.3 and later.

154.2.10 MenuIsVertical as boolean

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if the statusitem has a vertical orientation. **Example:**

MsgBox str(NSStatusItemMBS.MenuIsVertical)

154.2.11 MenuThickness as Double

MBS MacCocoa Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The thickness of the status bar. **Example:**

MsgBox str(NSStatusItemMBS.MenuThickness)
### 154.2.12 popUpStatusItemMenu(menu as NSMenuMBS)

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Displays a menu under a custom status bar item. **Notes:** You can use this method to cause a popup menu to appear under a custom status bar item when the user clicks the item. Note that view must exist (that is, it must not be nil).

### 154.2.13 SendActionOn(mode as Integer)

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the conditions on which action event is called. **Notes:**

mask is set with one or more of the following bit masks described in NSEvent Constants: NSLeftMouseDownMask, NSLeftMouseUpMask, NSLeftMouseDraggedMask, and NSPeriodicMask.

mode is set with one or more of the following bit masks:

```plaintext
const NSLeftMouseDownMask  = & h00002
const NSLeftMouseUpMask    = & H00004
const NSLeftMouseDraggedMask = & h00040
const NSPeriodicMask       = & h10000
```

### 154.2.14 Properties

#### 154.2.15 alternateImage as NSImageMBS

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An alternate image to be displayed when a status bar item is highlighted. **Notes:** (Read and Write property)

#### 154.2.16 attributedTitle as NSAttributedStringMBS

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The attributed string that is displayed at the status item’s position in the status bar. **Notes:**
If an image is also set, the title appears to the right of the image.
(Read and Write property)

154.2.17 Button as Variant

MBS MacCocoa Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The button that is displayed in the status bar.
Notes:
Value is a NSStatusBarButtonMBS object. Returned as Variant to reduce plugin dependencies.
This is created automatically on the creation of the StatusItem. Behavior customization for the button, such as image, target/action, tooltip, can be set with this property.
Available on Mac OS X 10.10 and newer.
(Read only property)

154.2.18 Enabled as boolean

Function: Whether this status item is enabled.
Notes: (Read and Write property)

154.2.19 Handle as Integer

Function: The handle of the NSStatusItem object used internally.
Notes: (Read and Write property)

154.2.20 Height as single

Function: The height of the status item.
Notes:
Should be 22 pixels.
This is a function using undocumented features from the Apple NSStatusItem class, so there is not guarantee that it will work in future versions.
154.2. CLASS NSSTATUSITEMMBS

(Read only property)

154.2.21 HighlightMode as boolean

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether the receiver is highlighted when clicked.

Notes:
If you use HighlightMode and Menu, you need to first assign the menu and later set HighlightMode to true. (Read and Write property)

154.2.22 image as NSImageMBS

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The image that is displayed at the statusitem’s position in the status bar.

Notes:
nil if an image has not been set. (Read and Write property)

154.2.23 Left as single


Notes:
Valid only after item was drawn the first time. This is a function using undocumented features from the Apple NSStatusItem class, so there is not guarantee that it will work in future versions. (Read only property)

154.2.24 Length as single


Notes:
Constants for special values:

(Read and Write property)
154.2.25 Menu as NSMenuMBS

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The menu attached to this statusitem.

**Notes:**
Nil if no menu is attached.
(Read and Write property)

154.2.26 Title as String

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The title of the status item.

**Notes:** (Read and Write property)

154.2.27 ToolTip as String

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The help tag for a menu item.

**Notes:** (Read and Write property)

154.2.28 Top as single

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The top position of the status item.

**Notes:**
Always 0.
This is a function using undocumented features from the Apple NSStatusItem class, so there is not guarantee that it will work in future versions.
(Read only property)

154.2.29 View as NSViewMBS

MBS MacCocoa Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the view to be used for this status menuitem.
Notes:
Using a custom view you can draw whatever you like in the menu item.
You can set it to nil to remove the view.
(Read and Write property)

154.2.30 Width as single

Notes:
This is a function using undocumented features from the Apple NSStatusItem class, so there is not guarantee that it will work in future versions.
(Read only property)

154.2.31 Window as NSWindowMBS

Notes:
This is a function using undocumented features from the Apple NSStatusItem class, so there is not guarantee that it will work in future versions.
Returns nil on 64 bit target.
(Read only property)

154.2.32 Events

154.2.33 Action

Notes:
Mouse position can be calculated based on System.MouseX/System.MouseY relative to Left/Top. Mouse status can be read using System.MouseDown.

This event is limited. You can’t for example do everything like quit an application. For using quit, start a timer which will remove the menu 500ms later and than quit 500ms later.
This event is coming from the Cocoa event system. What you can do is a bit limited when using GUI functions from Realbasic. To avoid some redraw errors, you may want to start a timer and let your Realbasic code run a millisecond after the menu code has finished. Depending on what you do, you can see the menu not redrawing properly (staying highlighted) and crashes if the Realbasic code modifies some global Cocoa states.

154.2.34 DoubleAction

MBS MacCocoa Plugin, Plugin Version: 7.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The event called when the user double clicks on the statusitem. Notes:

If two Action Events happen very fast, this one is called the second time so you can e.g. react on double clicks. Mouse position can be calculated based on System.MouseX/System.MouseY relative to Left/Top. Mouse status can be read using System.MouseDown.

This event is coming from the Cocoa event system. What you can do is a bit limited when using GUI functions from Realbasic. To avoid some redraw errors, you may want to start a timer and let your Realbasic code run a millisecond after the menu code has finished. Depending on what you do, you can see the menu not redrawing properly (staying highlighted) and crashes if the Realbasic code modifies some global Cocoa states.

154.2.35 Screenshots

154.2.36 NSStatusItem.jpg

Function: The NSStatusItem running a menu on the top right of the menubar.
Chapter 155

StoreKit

155.1 class AppReceiptIAPMBS

155.1.1 class AppReceiptIAPMBS

Function: The class to represent an in-app purchase in the app receipt. 
Example:

```vbs
// open a receipt
dim f as FolderItem = SpecialFolder.Desktop.Child("receipt")
dim r as AppReceiptMBS = AppReceiptMBS.receiptForFile(f)

// show purchases
dim inAppPurchases() as AppReceiptIAPMBS = r.inAppPurchases
for each p as AppReceiptIAPMBS in inAppPurchases
    MsgBox str(p.quantity)+”x”+p.productIdentifier+” ”+p.purchaseDate.AbbreviatedDate
next
```

Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

155.1.2 Methods

155.1.3 Constructor

Function: The private constructor.
155.1.4 isActiveAutoRenewableSubscriptionForDate(d as Date) as boolean

**Function:** Returns whether the auto renewable subscription is active for the given date.
**Notes:**
- `date`: The date in which the auto-renewable subscription should be active. If you are using the current date, you might not want to take it from the device in case the user has changed it.
- Returns true if the auto-renewable subscription is active for the given date, false otherwise.

Auto-renewable subscription lapses are possible. If you are checking against the current date, you might want to deduct some time as tolerance.
If this method fails Apple recommends to refresh the receipt and try again once.

155.1.5 Properties

155.1.6 cancellationDate as Date

**Function:** For a transaction that was canceled by Apple customer support, the date of the cancellation.
**Notes:** (Read only property)

155.1.7 originalPurchaseDate as Date

**Function:** For a transaction that restores a previous transaction, the date of the original transaction.
**Notes:**
- This value corresponds to the original transaction’s transactionDate property.
- In an auto-renewable subscription receipt, this indicates the beginning of the subscription period, even if the subscription has been renewed.
  (Read only property)

155.1.8 originalTransactionIdentifier as String

**Function:** For a transaction that restores a previous transaction, the transaction identifier of the original transaction.
**Notes:**
Otherwise, identical to the transaction identifier.
This value corresponds to the original transaction’s transactionIdentifier property.
All receipts in a chain of renewals for an auto-renewable subscription have the same value for this field.
(Read only property)

155.1.9  productIdentifier as String

Function: The product identifier of the item that was purchased.
Example:

```vbs
// open a receipt
dim f as FolderItem = SpecialFolder.Desktop.Child("receipt")
dim r as AppReceiptMBS = AppReceiptMBS.receiptForFile(f)

// show purchases
dim inAppPurchases() as AppReceiptIAPMBS = r.inAppPurchases
for each p as AppReceiptIAPMBS in inAppPurchases
    MsgBox str(p.quantity)+"x " +p.productIdentifier+" " +p.purchaseDate.AbbreviatedDate
next
```

Notes:
This value corresponds to the productIdentifier property of the SKPayment object stored in the transactions payment property.
(Read only property)

155.1.10  purchaseDate as Date

Function: The date and time that the item was purchased.
Notes:
This value corresponds to the transactions transactionDate property.

For a transaction that restores a previous transaction, the purchase date is the date of the restoration. Use originalPurchaseDate to get the date of the original transaction.

In an auto-renewable subscription receipt, this is always the date when the subscription was purchased or renewed, regardless of whether the transaction has been restored.
(Read only property)
155.1.11 quantity as Integer

Function: The number of items purchased.
Example:

```vbnet
// open a receipt
dim f as FolderItem = SpecialFolder.Desktop.Child("receipt")
dim r as AppReceiptMBS = AppReceiptMBS.receiptForFile(f)

// show purchases
dim inAppPurchases() as AppReceiptIAPMBS = r.inAppPurchases
for each p as AppReceiptIAPMBS in inAppPurchases
    MsgBox str(p.quantity) + "x " + p.productIdentifier + " " + p.purchaseDate.AbbreviatedDate
next
```

Notes:
This value corresponds to the quantity property of the SKPayment object stored in the transactions payment property.
(Read only property)

155.1.12 subscriptionExpirationDate as Date

Function: The expiration date for the subscription.
Notes:
Only present for auto-renewable subscription receipts.
(Read only property)

155.1.13 transactionIdentifier as String

Function: The transaction identifier of the item that was purchased.
Notes:
This value corresponds to the transaction’s transactionIdentifier property.
(Read only property)
155.1.14  webOrderLineItemID as Integer

MBS MacCloud Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The primary key for identifying subscription purchases. **Notes:** (Read only property)
155.2 class AppReceiptMBS

155.2.1 class AppReceiptMBS

**Function:** The class for an app receipt.

**Example:**

```vbscript
// open a receipt
dim f as FolderItem = SpecialFolder.Desktop.Child("receipt")
dim r as AppReceiptMBS = AppReceiptMBS.receiptForFile(f)

// show value
MsgBox r.bundleIdentifier
```

**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

155.2.2 Methods

155.2.3 bundleReceipt as AppReceiptMBS

**Function:** Returns the app receipt contained in the bundle, if any and valid.

**Notes:**

Extracts the receipt in ASN1 from the PKCS # 7 container, and then parses the ASN1 data into a AppReceiptMBS instance. If an Apple Root certificate is available, it will also verify that the signature of the receipt is valid.

Returns the app receipt contained in the bundle, or nil if there is no receipt or if it is invalid.

155.2.4 Constructor

155.2.5  containsActiveAutoRenewableSubscriptionOfProductIdentifier(productIdentifier as string, d as date) as boolean


**Function:** Returns whether the receipt contains an active auto-renewable subscription for the given product identifier and for the given date.

**Notes:**

- **productIdentifier:** The identifier of the auto-renewable subscription.
- **date:** The date in which the latest auto-renewable subscription should be active. If you are using the current date, you might not want to take it from the device in case the user has changed it.
- Returns true if the latest auto-renewable subscription is active for the given date, false otherwise.

Auto-renewable subscription lapses are possible. If you are checking against the current date, you might want to deduct some time as tolerance.
If this method fails Apple recommends to refresh the receipt and try again once.

155.2.6  containsInAppPurchaseOfProductIdentifier(productIdentifier as string) as boolean


**Function:** Returns whether there is an in-app purchase in the receipt for the given product.

**Notes:**

- **productIdentifier:** The identifier of the product.
- True if there is an in-app purchase for the given product, false otherwise.

155.2.7  inAppPurchases as AppReceiptIAPMBS()


**Function:** Array of in-app purchases contained in the receipt.

155.2.8  receiptForFile(file as folderitem) as AppReceiptMBS


**Function:** Returns the app receipt contained in the given file, if any and valid.

**Example:**

```
    dim a as new AppReceiptVerificatorMBS
    dim f as FolderItem = SpecialFolder.Desktop.Child("receipt")
    dim r as AppReceiptMBS = AppReceiptMBS.receiptForFile(f)
```
// testing with receipt from current Dash app
a.bundleIdentifier = "com.kapeli.dash"
a.bundleVersion = "2.1.2"

if a.verifyReceipt(r) then
  MsgBox "My receipt is valid"
else
  MsgBox "My receipt is invalid."
end if

Notes:
Extracts the receipt in ASN1 from the PKCS # 7 container, and then parses the ASN1 data into a AppReceiptMBS instance. If an Apple Root certificate is available, it will also verify that the signature of the receipt is valid.
Returns the receipt contained in the given file, or nil if there is no receipt or if it is invalid.

155.2.9 setAppleRootCertificate(Data as Memoryblock)
Function: Sets the certificate data of the Apple Root certificate that will be used to verify the signature of the bundle receipt.
Notes:
If none is provided, the resource AppleIncRootCertificate.cer will be used. If no certificate is available, no signature verification will be performed.
Data: The contents of the Apple Root certificate file to use.
See also:
• 155.2.10 setAppleRootCertificate(File as FolderItem)

155.2.10 setAppleRootCertificate(File as FolderItem)
Function: Sets the file of the Apple Root certificate that will be used to verify the signature of the bundle receipt.
Notes:
If none is provided, the resource AppleIncRootCertificate.cer will be used. If no certificate is available, no signature verification will be performed.
File: The folderitem of the Apple Root certificate.
See also:
• 155.2.9 setAppleRootCertificate(Data as Memoryblock)
155.2. CLASS APPRECEIPTMBS

155.2.11 verifyReceiptHash as boolean

MBS MacCloud Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns whether the receipt hash corresponds to the device’s GUID by calculating the expected hash using the GUID, bundleIdentifierData and opaqueValue. **Notes:** Returns true if the hash contained in the receipt corresponds to the device’s GUID, false otherwise.

155.2.12 Properties

155.2.13 appVersion as String

MBS MacCloud Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The app’s version number. **Example:**

```
// open a receipt
dim f as FolderItem = SpecialFolder.Desktop.Child("receipt")
dim r as AppReceiptMBS = AppReceiptMBS.receiptForFile(f)

// show value
MsgBox r.appVersion
```

**Notes:**

This corresponds to the value of CFBundleVersion (in iOS) or CFBundleShortVersionString (in OS X) in the Info.plist. (Read only property)

155.2.14 bundleIdentifier as String

MBS MacCloud Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The bundle identifier. **Example:**

```
// open a receipt
dim f as FolderItem = SpecialFolder.Desktop.Child("receipt")
dim r as AppReceiptMBS = AppReceiptMBS.receiptForFile(f)

// show value
MsgBox r.bundleIdentifier
```
Notes:
This corresponds to the value of CFBundleIdentifier in the Info.plist file.
(Read only property)

155.2.15 bundleIdentifierData as Memoryblock

Function: The bundle identifier as data.
Notes: The bundle identifier as data, as contained in the receipt. Used to verify the receipt’s hash.
(Read only property)

155.2.16 creationDate as Date

Function: The creation date of the receipt.
Notes: (Read only property)

155.2.17 expirationDate as Date

Function: The date that the app receipt expires.
Notes: Only for apps purchased through the Volume Purchase Program. If nil, the receipt does not expire. When 
validating a receipt, compare this date to the current date to determine whether the receipt is expired. Do 
not try to use this date to calculate any other information, such as the time remaining before expiration. 
(Read only property)

155.2.18 opaqueValue as Memoryblock

Function: An opaque value used as part of the SHA-1 hash.
Notes: (Read only property)
155.2. CLASS APPRECEIPTMBS

155.2.19 originalAppVersion as String

Function: The version of the app that was originally purchased.
Example:

```vbs
// open a receipt
dim f as FolderItem = SpecialFolder.Desktop.Child("receipt")
dim r as AppReceiptMBS = AppReceiptMBS.receiptForFile(f)

// show value
MsgBox r.originalAppVersion
```

Notes:
This corresponds to the value of CFBundleVersion (in iOS) or CFBundleShortVersionString (in OS X) in the Info.plist file when the purchase was originally made. In the sandbox environment, the value of this field is always "1.0".
(Read only property)

155.2.20 purchaseDate as Date

Function: Another date.
Notes:
Digging in a receipt we found this field and assume it is the original purchase date.
(Read only property)

155.2.21 receiptHash as Memoryblock

Function: A SHA-1 hash, used to validate the receipt.
Notes: (Read only property)

155.2.22 transactionDate as Date

Function: Another date.
Notes:
Digging in a receipt we found this field and assume it is the transaction date.
(Read only property)
155.3.  **CLASS APPRECEIPTVERIFICATORMBS**

### 155.3.1  **class AppReceiptVerificatorMBS**

MBS MacCloud Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Reference implementation of an app receipt verificator. **Example:**

```vbs
dim a as new AppReceiptVerificatorMBS
if a.verifyAppReceipt then
MsgBox "My receipt is valid"
else
MsgBox "My receipt is invalid."
end if
```

**Notes:** If security is a concern you might want to avoid using a verificator whose code is open source.

### 155.3.2  Methods

#### 155.3.3  Constructor


#### 155.3.4  ExitApp(code as Integer = 173)

MBS MacCloud Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Quits the application directly. **Example:**

```vbs
AppReceiptVerificatorMBS.ExitApp 173
```

**Notes:**

This does not call the destructors and CancelClose events. The app is quit right away.
If you use code 173 the Finder will show error message that app needs to be downloaded again from Mac App Store.
155.3.5 GUID as string

Function: Reads the GUID of the Mac.
Example:
```vba
Dim g As String = AppReceiptVerificatorMBS.GUID
MsgBox EncodeHex(g)
```

Notes: This is normally build from the MAC ID of the ethernet card.

155.3.6 verifyAppReceipt as boolean

Function: Verifies the app’s receipt file.
Example:
```vba
Dim a As New AppReceiptVerificatorMBS
If a.verifyAppReceipt Then
    MsgBox "My receipt is valid"
Else
    MsgBox "My receipt is invalid."
End If
```

Notes:
Verifies the receipt by checking the integrity of the receipt, comparing its bundle identifier and bundle version to the values returned by the corresponding properties and verifying the receipt hash.

Returns true if the receipt is verified, false otherwise.
If validation fails, Apple recommends to refresh the receipt and try again.

If you set bundleVersion and/or bundleIdentifier properties, we use those values. Else we pick them from the info.plist of the app.

155.3.7 verifyReceipt(Receipt as AppReceiptMBS) as boolean

Function: Verifies the given receipt file.
Example:

dim a as new AppReceiptVerificatorMBS
dim f as FolderItem = SpecialFolder.Desktop.Child("receipt")
dim r as AppReceiptMBS = AppReceiptMBS.receiptForFile(f)

// testing with receipt from current Dash app
a.bundleIdentifier = "com.kapeli.dash"
a.bundleVersion = "2.1.2"

if a.verifyReceipt(r) then
    MsgBox "My receipt is valid"
else
    MsgBox "My receipt is invalid."
end if

Notes:

Verifies the receipt by checking the integrity of the receipt, comparing its bundle identifier and bundle version
to the values returned by the corresponding properties and verifying the receipt hash.

Returns true if the receipt is verified, false otherwise.
If validation fails, Apple recommends to refresh the receipt and try again.

155.3.8 Properties

155.3.9 bundleIdentifier as String

Function: The value that will be used to validate the bundle identifier included in the app receipt.
Notes:

Given that it is possible to modify the app bundle in jailbroken devices, setting this value from a hardcoded
string might provide better protection.
Returns the given value, or the app’s bundle identifier by default.
(Read and Write property)

155.3.10 bundleVersion as String

Function: The value that will be used to validate the bundle version included in the app receipt.
Notes:
Given that it is possible to modify the app bundle in jailbroken devices, setting this value from a hardcoded string might provide better protection.
Returns the given value, or the app’s bundle version by default.
(Read and Write property)

155.3.11 FailReason as String

Function: The reason for a failure.
Notes:
This is for debugging and to help you to find the reason for why a verification fails.
(Read only property)

155.3.12 MACAddress as MemoryBlock

Function: The MAC Address to use.
Example:

// get the one of this Mac
dim m as MemoryBlock = AppReceiptVerificatorMBS.MACAddress

// now set a fake one
dim x as MemoryBlock = DecodeHex("12347890ABCD")
AppReceiptVerificatorMBS.MACAddress = x

// and display
MsgBox EncodeHex(m)+EndOfLine+EncodeHex(AppReceiptVerificatorMBS.MACAddress)

Notes:
Can be queried to automatically get the one we detect.
Or set to use a custom one for testing.
(Read and Write property)
155.4  class SKDownloadMBS

155.4.1  class SKDownloadMBS

**Function:** This storeKit class gives you information about the download status of a content file.

**Notes:**
Available in Mac OS X 10.8 and newer.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

155.4.2  Methods

155.4.3  Constructor

**Function:** The private constructor.

155.4.4  contentURLForProductID(productID as string) as string

**Function:** Queries content URL for a product.

155.4.5  deleteContentForProductID(productID as string)

**Function:** Deletes the content for that identifier from disk.

155.4.6  Properties

155.4.7  contentIdentifier as string

**Function:** Product identifier entered in iTunesConnect.
**Notes:** (Read only property)
155.4.8  contentLength as Int64

MBS MacCloud Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Filesize of the asset. Notes: (Read only property)

155.4.9  contentURL as string

MBS MacCloud Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Content URL. Notes: (Read only property)

155.4.10  contentVersion as string


155.4.11  error as NSErrorMBS

MBS MacCloud Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Last error, can be nil. Notes: (Read only property)

155.4.12  Handle as Integer


155.4.13  progress as Double

MBS MacCloud Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Download progress. Notes: (Read only property)
155.4. CLASS SKDOWNLOADMBS

155.4.14 state as Integer

**Notes:** (Read only property)

155.4.15 timeRemaining as Double

MBS MacCloud Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Estimated number of seconds remaining in the download.  
**Notes:** (Read only property)

155.4.16 Transaction as SKPaymentTransactionMBS

MBS MacCloud Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The transaction associated with the downloadable file  
**Notes:**  
Available in MacOS 10.11 or newer.  
(Read only property)

155.4.17 Constants

155.4.18 kStateActive = 1

MBS MacCloud Plugin, Plugin Version: 12.3. **Function:** One of the download state constants.  
**Notes:** Active

155.4.19 kStateCancelled = 5

MBS MacCloud Plugin, Plugin Version: 12.3. **Function:** One of the download state constants.  
**Notes:** Cancelled

155.4.20 kStateFailed = 4

MBS MacCloud Plugin, Plugin Version: 12.3. **Function:** One of the download state constants.  
**Notes:** Failed
155.4.21  \textbf{kStateFinished} = 3

MBS MacCloud Plugin, Plugin Version: 12.3. \textbf{Function:} One of the download state constants. 
\textbf{Notes:} Finished

155.4.22  \textbf{kStatePaused} = 2

MBS MacCloud Plugin, Plugin Version: 12.3. \textbf{Function:} One of the download state constants. 
\textbf{Notes:} Paused

155.4.23  \textbf{kStateWaiting} = 0

MBS MacCloud Plugin, Plugin Version: 12.3. \textbf{Function:} One of the download state constants. 
\textbf{Notes:} Waiting
155.5. **CLASS SKMUTABLEPAYMENTMBS**

**155.5  class SKMutablePaymentMBS**

**155.5.1  class SKMutablePaymentMBS**


**Function:** The mutable class for SKPaymentMBS.

**Notes:**

The SKMutablePayment class defines a request to the Apple App Store to process payment for additional functionality offered by your application. A payment encapsulates a string that identifies a particular product and the quantity of that item the user would like to purchase.

When a mutable payment is added to the payment queue, the payment queue copies the contents into an immutable request before queueing the request. Your application can safely change the contents of the mutable payment object.

Please also check the documentation from Apple for the SKMutablePayment class.

Subclass of the SKPaymentMBS class.

**155.5.2  Methods**

**155.5.3  Constructor(payment as SKPaymentMBS)**


**Function:** Creates a mutable copy of the given payment.

See also:

- 155.5.4 Constructor(product as SKProductMBS)

**155.5.4  Constructor(product as SKProductMBS)**


**Function:** Creates a new payment for the specified product.

**Example:**

```pascal
dim product as SKProductMBS  // your product
dim queue as SKPaymentQueueMBS  // your queue

dim payment as new SKMutablePaymentMBS(product)
payment.quantity = 5

MsgBox str(payment.quantity) + " units of " + product.localizedDescription
```
queue.addPayment payment

See also:

- 155.5.3 Constructor(payment as SKPaymentMBS)

155.5.5 paymentWithProduct(product as SKProductMBS) as SKMutablePaymentMBS

Function: Returns a new payment for the specified product with the given quantity.
Example:

```dim product as SKProductMBS // your product
dim payment as SKMutablePaymentMBS = SKMutablePaymentMBS.paymentWithProduct(product)
```

MsgBox str(payment.quantity) + " units of " + product.localizedDescription

Notes:

product: The product the user wishes to purchase.
quantity: Optional quantity. If you don’t pass it, we default to 1.

This factory Method in Cocoa Core Competencies uses the productIdentifier property obtained from the product parameter to create and return a new payment with that identifier.

Available in Mac OS X v10.7 and later.
See also:

- 155.5.6 paymentWithProduct(product as SKProductMBS, quantity as Integer) as SKMutablePaymentMBS

155.5.6 paymentWithProduct(product as SKProductMBS, quantity as Integer) as SKMutablePaymentMBS

Function: Returns a new payment for the specified product with the given quantity.
Example:

```dim product as SKProductMBS // your product
dim payment as SKMutablePaymentMBS = SKMutablePaymentMBS.paymentWithProduct(product, 5)
```
MsgBox str(payment.quantity) + " units of " + product.localizedTitle

Notes:
product: The product the user wishes to purchase.
quantity: Optional quantity. If you don’t pass it, we default to 1.

This factory Method in Cocoa Core Competencies uses the productIdentifier property obtained from the
product parameter to create and return a new payment with that identifier.

Available in Mac OS X v10.7 and later.
See also:
• 155.5.5 paymentWithProduct(product as SKProductMBS) as SKMutablePaymentMBS

155.5.7 Properties

155.5.8 applicationUsername as String

Notes: (Read and Write property)

155.5.9 productIdentifier as string

Function: A string that identifies a product that can be purchased from within your application.
Notes:
The product identifier is a string previously agreed on between your application and the Apple App Store.

Available in Mac OS X v10.7 and later.
(Read and Write property)

155.5.10 quantity as Integer

Function: The number of items the user wants to purchase.
Notes:
The quantity property must be greater than 0.
Available in Mac OS X v10.7 and later.
(Read and Write property)

155.5.11 `requestData` as `Memoryblock`

**Function:** Reserved for future use.
**Notes:**
The default value is nil. If `requestData` is not nil, your payment will be rejected by the Apple App Store.

Available in Mac OS X v10.7 and later.
(Read and Write property)
155.6. CLASS SKPAYMENTMBS

155.6 class SKPaymentMBS

155.6.1 class SKPaymentMBS

Function: The class for a payment in the App Store.
Notes:
The SKPayment class defines a request to the Apple App Store to process payment for additional functionality offered by your application. A payment encapsulates a string that identifies a particular product and the quantity of those items the user would like to purchase.

Please also check the documentation from Apple for the SKPayment class.
Available in Mac OS X v10.7 and later.

155.6.2 Methods

155.6.3 Constructor(product as SKProductMBS)

Function: Creates a new payment for the specified product.
Example:

```
dim product as SKProductMBS // your product
dim queue as SKPaymentQueueMBS // your queue

dim payment as new SKPaymentMBS(product)
MsgBox str(payment.quantity) + " units of " + product.localizedTitle
queue.addPayment payment
```

155.6.4 copy as SKPaymentMBS


155.6.5 mutableCopy as SKMutablePaymentMBS

155.6.6 paymentWithProduct(product as SKProductMBS) as SKPaymentMBS


**Function:** Returns a new payment for the specified product.

**Example:**

```vbnet
dim product as SKProductMBS // your product
dim queue as SKPaymentQueueMBS // your queue

dim payment as SKPaymentMBS = SKPaymentMBS.paymentWithProduct(product)
MsgBox str(payment.quantity) + " units of " + product.localizedDescription
queue.addPayment payment
```

**Notes:**

- **product:** The product the user wishes to purchase.

This factory method in Cocoa Core Competencies uses the `productIdentifier` property obtained from the `product` parameter to create and return a new payment with that identifier. The `quantity` property defaults to 1.

To create a `SKPaymentMBS` object with a `quantity` greater than 1, create a `SKMutablePaymentMBS` object, adjust its `quantity` property and then add it to the payment queue.

Available in Mac OS X v10.7 and later.

155.6.7 Properties

155.6.8 applicationUsername as String


**Function:** Application-specific user identifier. Optional.

**Notes:** (Read only property)
155.6.9 Handle as Integer

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal reference to the SKPayment object. **Notes:** (Read and Write property)

155.6.10 productIdentifier as string

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A string used to identify a product that can be purchased from within your application. (read-only) **Notes:** The product identifier is a string previously agreed on between your application and the Apple App Store. Available in Mac OS X v10.7 and later. (Read only property)

155.6.11 quantity as Integer

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of items the user wants to purchase. (read-only) **Notes:** Default value is 1. Available in Mac OS X v10.7 and later. (Read only property)

155.6.12 requestData as Memoryblock

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Reserved for future use. (read-only) **Notes:** The default value is nil. If requestData is not nil, your payment will be rejected by the Apple App Store. Available in Mac OS X v10.7 and later. (Read only property)
155.7 class SKPaymentQueueMBS

155.7.1 class SKPaymentQueueMBS

Function: The SKPaymentQueue class defines a queue of payment transactions to send to the Apple App Store.
Notes: To use the payment queue, you add one or more payments. When payments are added to the queue, Store Kit connects to the Apple App Store and presents a user interface so that the user can authorize payment. As payments are fulfilled, the payment queue updates transactions and delivers them through events.

Available in Mac OS X v10.7 and later.
Please also check the documentation from Apple for the SKPaymentQueue class.
The plugin installs a transaction observer for you.

155.7.2 Methods

155.7.3 addPayment(payment as SKPaymentMBS)

Function: Adds a payment request to the queue.
Notes: payment: A payment request.

The payment request must have a product identifier registered with the Apple App Store and a quantity greater than 0. If either property is invalid, addPayment throws an exception.

When a payment request is added to the queue, the payment queue processes that request with the Apple App Store and arranges for payment from the user. When that transaction is complete or if a failure occurs, the payment queue sends the SKPaymentTransaction object that encapsulates the request to all transaction observers.

155.7.4 cancelDownload(download as SKDownloadMBS)

Notes: Available in Mac OS X 10.8 and newer.
155.7.5  cancelDownloads(downloads() as SKDownloadMBS)

MBS MacCloud Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Cancel a few downloads.  
**Notes:** Available in Mac OS X 10.8 and newer.

155.7.6  canMakePayments as boolean

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns whether the user is allowed to make payments.  
**Example:**

```plaintext
if SKPaymentQueueMBS.canMakePayments then
    MsgBox "can make payments"
else
    MsgBox "not available"
end if
```

**Notes:** A Mac can be restricted from accessing the Apple App Store. For example, parents can restrict their children’s ability to purchase additional content. Your application should confirm that the user is allowed to authorize payments before adding a payment to the queue. Your application may also want to alter its behavior or appearance when the user is not allowed to authorize payments.

155.7.7  Constructor

**Notes:**

Please make a subclass of this class to fill code into the events.  
And please only have one instance of this class.

155.7.8  Destructor

MBS MacCloud Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The destroyer.
155.7.9 finishTransaction(transaction as SKPaymentTransactionMBS)

Function:Completes a pending transaction. 
Notes: 
transaction: The transaction to finish. 

Your application should call this method from a transaction observer that received a notification from the payment queue. Calling finishTransaction on a transaction removes it from the queue. Your application should call finishTransaction only after it has successfully processed the transaction and unlocked the functionality purchased by the user. 

Calling finishTransaction on a transaction that is in the SKPaymentTransactionMBS.StatePurchasing state throws an exception.

155.7.10 pauseDownload(download as SKDownloadMBS)

Notes: Available in Mac OS X 10.8 and newer. 

155.7.11 pauseDownloads(downloads() as SKDownloadMBS)

Notes: Available in Mac OS X 10.8 and newer. 

155.7.12 restoreCompletedTransactions

Notes: 
Your application calls this method to restore transactions that were previously finished so that you can process them again. For example, your application would use this to allow a user to unlock previously purchased content onto a new device. 

When you create a new product to be sold in your store, you choose whether that product can be restored or not. See the In App Purchase Programming Guide for more information.
The payment queue will deliver a new transaction for each previously completed transaction that can be restored. Each transaction includes a copy of the original transaction.

After the transactions are delivered, the payment queue calls the observer’s `paymentQueueRestoreCompletedTransactionsFinished` event. If an error occurred while restoring transactions, the observer will be notified through its `paymentQueue:restoreCompletedTransactionsFailedWithError` event.

### 155.7.13 `resumeDownload(download as SKDownloadMBS)`

MBS MacCloud Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Resumes one download. **Notes:** Available in Mac OS X 10.8 and newer.

### 155.7.14 `resumeDownloads(downloads() as SKDownloadMBS)`

MBS MacCloud Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Resumes a few downloads. **Notes:** Available in Mac OS X 10.8 and newer.

### 155.7.15 `startDownload(download as SKDownloadMBS)`

MBS MacCloud Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Start one download. **Notes:** Available in Mac OS X 10.8 and newer.

### 155.7.16 `startDownloads(downloads() as SKDownloadMBS)`

MBS MacCloud Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Starts a few downloads. **Notes:** Available in Mac OS X 10.8 and newer.

### 155.7.17 `transactions as SKPaymentTransactionMBS()`

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an array of pending transactions. **Notes:** The value of this property is undefined when there are no observers attached to the payment queue.
155.7.18  Properties

155.7.19  Handle as Integer


155.7.20  Events

155.7.21  paymentQueueRestoreCompletedTransactionsFinished

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Tells the observer that the payment queue has finished sending restored transactions. Notes: This method is called after all restorable transactions have been processed by the payment queue. Your application is not required to do anything in this method.

155.7.22  removedTransactions(transactions() as SKPaymentTransactionMBS)

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Tells an observer that one or more transactions have been removed from the queue. Notes: transactions: An array of the transactions that were removed.

Your application does not typically need to implement this event but might implement it to update its own user interface to reflect that a transaction has been completed.

155.7.23  restoreCompletedTransactionsFailedWithError(Error as NSErrorMBS)

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Tells the observer that an error occurred while restoring transactions.

155.7.24  updatedDownloads(downloads() as SKDownloadMBS)

**updatedTransactions(transactions() as SKPaymentTransactionMBS)**

**Function:** Tells an observer that one or more transactions have been updated.
**Notes:**

transactions: An array of the transactions that were updated.

The application should process each transaction by examining the transaction’s transactionState property. If transactionState is SKPaymentTransactionStatePurchased, payment was successfully received for the desired functionality. The application should make the functionality available to the user. If transactionState is SKPaymentTransactionStateFailed, the application can read the transaction’s error property to return a meaningful error to the user.

Once a transaction is processed, it should be removed from the payment queue by calling the payment queue’s finishTransaction: method, passing the transaction as a parameter.

Important: Once the transaction is finished, Store Kit can not tell you that this item is already purchased. It is important that applications process the transaction completely before calling finishTransaction:. 
155.8  class SKPaymentTransactionMBS

155.8.1  class SKPaymentTransactionMBS

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The SKPaymentTransactionMBS class defines objects residing in the payment queue. **Notes:**

A payment transaction is created whenever a payment is added to the payment queue. Transactions are delivered to your application when the App Store has finished processing the payment. Completed transactions provide a receipt and transaction identifier that your application can use to save a permanent record of the processed payment.

Please also check the documentation from Apple for the SKPaymentTransaction class. Available in Mac OS X v10.7 and later. This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

155.8.2  Methods

155.8.3  Constructor


155.8.4  downloads as SKDownloadMBS()

MBS MacCloud Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the downloads for this transaction. **Notes:** Available in Mac OS X 10.8 and newer.

155.8.5  Properties

155.8.6  error as NSErrorMBS

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An object describing the error that occurred while processing the transaction. **Notes:**

The error property is undefined except when transactionState is set to StateFailed. Your application can read the error property to determine why the transaction failed.
155.8. **CLASS SKPAYMENTTRANSACTIONMBS**

(Read only property)

155.8.7 **Handle as Integer**

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal reference to the SKPaymentTransaction object. **Notes:** (Read and Write property)

155.8.8 **originalTransaction as SKPaymentTransactionMBS**

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The transaction that was restored by the App Store. **Notes:** The contents of this property are undefined except when transactionState is set to StateRestored. When a transaction is restored, the current transaction holds a new transaction identifier, receipt, and so on. Your application will read this property to retrieve the restored transaction. (Read only property)

155.8.9 **payment as SKPaymentMBS**

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The payment for the transaction. **Notes:** Each payment transaction is created in response to a payment that your application added to the payment queue. (Read only property)

155.8.10 **transactionDate as date**

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The date the transaction was added to the App Store’s payment queue. **Notes:** The contents of this property are undefined except when transactionState is set to StatePurchased or StateRestored. (Read only property)
155.8.11  transactionIdentifier as string

**Function:** A string that uniquely identifies a successful payment transaction.  
**Notes:**  
The contents of this property are undefined except when transactionState is set to StatePurchased or StateRestored. The transactionIdentifier is a string that uniquely identifies the processed payment. Your application may wish to record this string as part of an audit trail for App Store purchases. See In App Purchase Programming Guide for more information.  
(Read only property)

155.8.12  transactionState as Integer

**Function:** The current state of the transaction.  
**Notes:**  
see State* constants.  
(Read only property)

155.8.13  Constants

155.8.14  StateDeferred = 4

MBS MacCloud Plugin, Plugin Version: 18.1. **Function:** One of the transaction state constants.  
**Notes:** Transaction is neither purchased nor failed, yet.

155.8.15  StateFailed = 2

MBS MacCloud Plugin, Plugin Version: 11.2. **Function:** One of the transaction state constants.  
**Notes:** The transaction failed. Check the error property to determine what happened.

155.8.16  StatePurchased = 1

MBS MacCloud Plugin, Plugin Version: 11.2. **Function:** One of the transaction state constants.  
**Notes:** The App Store successfully processed payment. Your application should provide the content the user purchased.
155.8. **CLASS SKPAYMENTTRANSACTIONMBS**

### 155.8.17 StatePurchasing = 0

MBS MacCloud Plugin, Plugin Version: 11.2. **Function:** One of the transaction state constants. **Notes:** The transaction is being processed by the App Store.

### 155.8.18 StateRestored = 3

MBS MacCloud Plugin, Plugin Version: 11.2. **Function:** One of the transaction state constants. **Notes:** This transaction restores content previously purchased by the user. Read the originalTransaction property to obtain information about the original purchase.
155.9 class SKProductDiscountMBS

155.9.1 class SKProductDiscountMBS

MBS MacCloud Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for product discounts. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

155.9.2 Methods

155.9.3 Constructor

MBS MacCloud Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.

155.9.4 Properties

155.9.5 Handle as Integer

MBS MacCloud Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference. **Notes:** (Read and Write property)

155.9.6 NumberOfPeriods as Integer

MBS MacCloud Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of periods this price is valid. **Notes:** (Read only property)

155.9.7 PaymentMode as Integer

MBS MacCloud Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The payment mode. **Notes:** (Read only property)
155.9. **CLASS SKPRODUCTDISCOUNTMBS**

### 155.9.8 Price as Double

MBS MacCloud Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The price of the product. **Notes:** (Read only property)

### 155.9.9 priceLocale as NSLocaleMBS

MBS MacCloud Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The price locale. **Notes:** (Read only property)

### 155.9.10 PriceString as String

MBS MacCloud Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The price as formatted string. **Notes:** (Read only property)

### 155.9.11 subscriptionPeriod as SKProductSubscriptionPeriodMBS

MBS MacCloud Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The subscription period. **Notes:** (Read only property)

### 155.9.12 Constants

#### 155.9.13 kPaymentModeFreeTrial = 2

MBS MacCloud Plugin, Plugin Version: 18.1. **Function:** One of the payment modes. **Notes:** Free trial

#### 155.9.14 kPaymentModePayAsYouGo = 0

MBS MacCloud Plugin, Plugin Version: 18.1. **Function:** One of the payment modes. **Notes:** Pay as you go
155.9.15  kPaymentModePayUpFront = 1

MBS MacCloud Plugin, Plugin Version: 18.1. **Function:** One of the payment modes.  
**Notes:** Pay Upfront
155.10.1 class SKProductMBS

Function: The App Store class for a product.
Notes:
SKProductMBS objects are returned as part of an didReceiveResponse event in SKProductsRequestMBS class and are used to provide information about a product previously registered with the Apple App Store.

Please also check the documentation from Apple for the SKProduct class.
Available in Mac OS X v10.7 and later.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

155.10.2 Methods

155.10.3 Constructor


155.10.4 contentLengths as Int64()

Notes: Available in Mac OS X 10.8 and newer.

155.10.5 Properties

155.10.6 contentLength as Int64

Function: Total filesize of the assets.
Notes:
Available in Mac OS X 10.8 and newer.
(Read only property)
155.10.7 **contentVersion as string**

**Notes:**
Available in Mac OS X 10.8 and newer. 
(Read only property)

155.10.8 **downloadable as boolean**

MBS MacCloud Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether this is a download item. 
**Notes:**
Available in Mac OS X 10.8 and newer. 
(Read only property)

155.10.9 **Handle as Integer**

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal reference to the SKProduct object. 
**Notes:** (Read and Write property)

155.10.10 **introductoryPrice as SKProductDiscountMBS**

**Notes:**
Available on MacOS 10.13.2 or later. 
Value is nil on older systems. 
(Read only property)

155.10.11 **localizedDescription as string**

**Notes:**
The description is localized based on the currentLocale property.
155.10. **CLASS SKPRODUCTMBS**

(Read only property)

### 155.10.12 localizedTitle as string

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The name of the product. **Notes:** The description is localized based on the currentLocale property. (Read only property)

### 155.10.13 price as Double

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The cost of the product in the local currency. **Notes:** Use PriceString to get a localized formatted price. (Read only property)

### 155.10.14 priceLocale as NSLocaleMBS

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The locale used to format the price of the product. **Notes:** (Read only property)

### 155.10.15 priceString as string

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The cost of the product in the local currency. **Notes:** We format the price in the locale currency format. (Read only property)

### 155.10.16 productIdentifier as string

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The string that identifies the product to the Apple App Store.
155.10.17  subscriptionPeriod as SKProductSubscriptionPeriodMBS

Function: Subscription period.
Notes:
Available on MacOS 10.13.2 or later.
Value is nil on older systems.
(Read only property)
155.11. CLASS SKPRODUCTSREQUESTMBS

155.11 class SKProductsRequestMBS

155.11.1 class SKProductsRequestMBS

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** An SKProductsRequestMBS object is used to retrieve localized information about a list of products from the Apple App Store. **Notes:** Your application uses this request to present localized prices and other information to the user without having to maintain that list itself.

To use an SKProductsRequest object, you initialize it with a list of product identifier strings, attach a delegate, and then call the request’s start method. When the request completes, you receive the didReceiveResponse event.

Please also check the documentation from Apple for the SKProductsRequest class. Available in Mac OS X v10.7 and later.

155.11.2 Methods

155.11.3 cancel

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Cancels a previously started request. **Notes:** When you cancel a request, the events are not called with an error.

155.11.4 Constructor(productIdentifiers() as string)

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Initializes the request with the set of product identifiers. **Notes:** productIdentifiers: The list of product identifiers for the products you wish to retrieve descriptions of.

155.11.5 Destructor

MBS MacCloud Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The destructor.
155.11.6 start

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sends the request to the Apple App Store.  
**Notes:** The results for a request are sent to the events.

155.11.7 Properties

155.11.8 Handle as Integer

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal reference to the SKProductsRequest object.  
**Notes:** (Read and Write property)

155.11.9 Events

155.11.10 didFailWithError(error as NSErrorMBS)

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called if the request failed to execute.  
**Notes:**

error: The error that caused the request to fail.

When the request fails, your application should release the request. The requestDidFinish event is not called after this method is called.

155.11.11 didFinish

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called when the request has completed.  
**Notes:** This method is called after all processing of the request has been completed.

155.11.12 didReceiveResponse(products() as SKProductMBS, invalidProductIdentifiers() as string)

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Called when the Apple App Store responds to the product request.  
**Notes:**
products: A list of products, one product for each valid product identifier provided in the original request.
invalidProductIdentifiers: An array of product identifier strings that were not recognized by the Apple App Store. This array should typically be empty.
155.12 class SKProductSubscriptionPeriodMBS

155.12.1 class SKProductSubscriptionPeriodMBS

Function: The class for a subscription period.
Notes:
Available on MacOS 10.13.2.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

155.12.2 Methods

155.12.3 Constructor

Function: The private constructor.

155.12.4 Properties

155.12.5 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

155.12.6 numberOfUnits as Integer

Function: The number of units.
Notes: (Read only property)

155.12.7 unit as Integer

Function: The unit of the period from day to year.
Notes: (Read only property)
155.12. **CLASS SKPRODUCTSUBSCRIPTIONPERIODMBS**

155.12.8  **Constants**

155.12.9  **PeriodUnitDay = 0**

MBS MacCloud Plugin, Plugin Version: 18.1. **Function:** One of the period units.  **Notes:** Day

155.12.10  **PeriodUnitMonth = 2**

MBS MacCloud Plugin, Plugin Version: 18.1. **Function:** One of the period units.  **Notes:** Month

155.12.11  **PeriodUnitWeek = 1**

MBS MacCloud Plugin, Plugin Version: 18.1. **Function:** One of the period units.  **Notes:** Week

155.12.12  **PeriodUnitYear = 3**

MBS MacCloud Plugin, Plugin Version: 18.1. **Function:** One of the period units.  **Notes:** Year
155.13   class SKReceiptRefreshRequestMBS

155.13.1  class SKReceiptRefreshRequestMBS

Function: The SKReceiptRefreshRequest class allows an app to refresh its receipt.
Notes:
With this API, the app can request a new receipt if the receipt is invalid or missing. In the sandbox environment, you can request a receipt with any combination of properties to test the state transitions related to Volume Purchase Plan receipts.
Requires Mac OS X 10.9.

155.13.2  Methods

155.13.3  cancel

Notes: When you cancel a request, the events are not called with an error.

155.13.4  Constructor(properties as dictionary = nil)

Notes: In the test enviroment, the properties that the new receipt should have. For keys, see SKReceiptProperty* methods.
In the production environment, set this parameter to nil.

155.13.5  Destructor


155.13.6  SKReceiptPropertyIsExpired as string

155.13.  CLASS SK RECEIPT REFRESHREQUESTMBS

Notes: A key whose value is a Boolean value, indicating whether the receipt is expired.

155.13.7  SKReceiptPropertyIsRevoked as string

Notes: A key whose value is a Boolean value, indicating whether the receipt has been revoked.

155.13.8  SKReceiptPropertyIsVolumePurchase as string

Notes: A key whose value is a Boolean value, indicating whether the receipt is a Volume Purchase Plan receipt.

155.13.9  start

Notes: The results for a request are sent to the events.

155.13.10  Properties

155.13.11  Handle as Integer

Notes: (Read and Write property)

155.13.12  receiptProperties as Dictionary

Notes: (Read only property)
155.13.13 Events

155.13.14 `didFailWithError(error as NSErrorMBS)`

**Function:** Called if the request failed to execute.  
**Notes:**  
error: The error that caused the request to fail.  

When the request fails, your application should release the request. The requestDidFinish event is not called after this method is called.

155.13.15 `didFinish`

**Function:** Called when the request has completed.  
**Notes:** This method is called after all processing of the request has been completed.
## 155.14.1 module StoreKitMBS

**Notes:** Be aware that StoreKit requires your app to be signed.

### 155.14.2 Methods

#### 155.14.3 available as Boolean

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether the StoreKit framework is available.  
**Example:**

```plaintext```
msgbox "StoreKit available: " +str(StoreKitMBS.available)
```

**Notes:** Should always be true on Mac OS X 10.7 and newer.

#### 155.14.4 SKErrorDomain as string


#### 155.14.5 Constants

#### 155.14.6 SKErrorClientInvalid = 1

MBS MacCloud Plugin, Plugin Version: 11.2. **Function:** One of the StoreKit error codes.  
**Notes:** client is not allowed to issue the request, etc.

#### 155.14.7 SKErrorPaymentCancelled = 2

MBS MacCloud Plugin, Plugin Version: 11.2. **Function:** One of the StoreKit error codes.  
**Notes:** user cancelled the request, etc.
155.14.8 SKErrorPaymentInvalid = 3

MBS MacCloud Plugin. **Function:** One of the StoreKit error codes. **Notes:** purchase identifier was invalid, etc.

155.14.9 SKErrorPaymentNotAllowed = 4

MBS MacCloud Plugin, Plugin Version: 11.2. **Function:** One of the StoreKit error codes. **Notes:** this machine is not allowed to make the payment

155.14.10 SKErrorUnknown = 0

MBS MacCloud Plugin, Plugin Version: 11.2. **Function:** One of the StoreKit error codes. **Notes:** unknown error
Chapter 156

String

156.1 Globals

156.1.1 InStrByteRangeMBS(target as string, find as string, StartValue as Integer, EndValue as Integer) as Integer

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Finds bytes or byte ranges in a string.

**Example:**

// search for question mark or uppercase letters A to Z
MsgBox str(InStrByteRangeMBS("Hello?", ",?", 65, 90)) // shows 1 as H is found.

MsgBox str(InStrByteRangeMBS("hello?", ",?", 65, 90)) // shows 6 as ? is found.

**Notes:**

You may want to make sure target and find are both in the same 8bit encoding (UTF-8, MacRoman, Windows ANSI, Latin 1, ASCII, etc. but not UTF16/UTF32).

The optional find string defines the bytes to search. This gives you a way to see whether one of those bytes is inside or to find the first byte matching a certain value.

The StartValue/EndValue parameters define ranges of values which you consider to match.

Returns 0 if nothing is found or the position of the found character.

See also:

19091
156.1.2 InStrByteRangeMBS(target as string, find as string, StartValue as Integer, EndValue as Integer, StartValue2 as Integer, EndValue2 as Integer) as Integer

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Finds bytes or byte ranges in a string.

**Example:**

```vba
// search for question mark or uppercase letters A to Z or numbers from 0 to 9
MsgBox str(InStrByteRangeMBS("Hello?", "?", 65, 90, 48, 57)) // shows 1 as H is found.
MsgBox str(InStrByteRangeMBS("hello?", "?", 65, 90, 48, 57)) // shows 6 as ? is found
MsgBox str(InStrByteRangeMBS("Hello 123", "?", 65, 90, 48, 57)) // shows 1 as H is found.
MsgBox str(InStrByteRangeMBS("hello 123", "?", 65, 90, 48, 57)) // shows 7 as 1 is found.
```

**Notes:**

You may want to make sure target and find are both in the same 8bit encoding (UTF-8, MacRoman, Windows ANSI, Latin 1, ASCII, etc. but not UTF16/UTF32).

The optional find string defines the bytes to search. This gives you a way to see whether one of those bytes is inside or to find the first byte matching a certain value.

The StartValue/EndValue parameters define ranges of values which you consider to match.

Returns 0 if nothing is found or the position of the found character.

See also:

- 156.1.1 InStrByteRangeMBS(target as string, find as string, StartValue as Integer, EndValue as Integer) as Integer
156.1.3 InStrByteRangeMBS(target as string, find as string, StartValue as Integer, EndValue as Integer, StartValue2 as Integer, EndValue2 as Integer, StartValue3 as Integer, EndValue3 as Integer) as Integer

Example:

// search for question mark, low byte values, high byte values or numbers from 0 to 9
MsgBox str(InStrByteRangeMBS("Hello?", ",?", 0, 31, 127, 255, 48, 57 )) // shows 6 as ? is found.
MsgBox str(InStrByteRangeMBS("123", ,?", 0, 31, 127, 255, 48, 57 )) // shows 1 as 1 is found.
MsgBox str(InStrByteRangeMBS(EndOfLine.Windows, ,?", 0, 31, 127, 255, 48, 57 )) // shows 1 as chr(13) is found.
MsgBox str(InStrByteRangeMBS("Hello", ,?", 0, 31, 127, 255, 48, 57 )) // shows 0 as nothing is found.

Notes:

You may want to make sure target and find are both in the same 8bit encoding (UTF-8, MacRoman, Windows ANSI, Latin 1, ASCII, etc. but not UTF16/UTF32).

The optional find string defines the bytes to search. This gives you a way to see whether one of those bytes is inside or to find the first byte matching a certain value.

The StartValue/EndValue parameters define ranges of values which you consider to match.

Returns 0 if nothing is found or the position of the found character.

See also:

• 156.1.1 InStrByteRangeMBS(target as string, find as string, StartValue as Integer, EndValue as Integer) as Integer

• 156.1.2 InStrByteRangeMBS(target as string, find as string, StartValue as Integer, EndValue as Integer, StartValue2 as Integer, EndValue2 as Integer) as Integer
156.1.4 InStrByteRangeMBS(target as string, StartValue as Integer, EndValue as Integer) as Integer

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Finds bytes or byte ranges in a string.

**Example:**
```
// search for uppercase letters A to Z
MsgBox str(InStrByteRangeMBS(“Hello?”, 65, 90)) // shows 1 as H is found.

MsgBox str(InStrByteRangeMBS(“hello?”, 65, 90)) // shows 0 as nothing is found.
```

**Notes:**
You may want to make sure target and find are both in the same 8bit encoding (UTF-8, MacRoman, Windows ANSI, Latin 1, ASCII, etc. but not UTF16/UTF32).

The optional find string defines the bytes to search. This gives you a way to see whether one of those bytes is inside or to find the first byte matching a certain value.

The StartValue/EndValue parameters define ranges of values which you consider to match.

Returns 0 if nothing is found or the position of the found character.

See also:
- 156.1.1 InStrByteRangeMBS(target as string, find as string, StartValue as Integer, EndValue as Integer) as Integer
- 156.1.2 InStrByteRangeMBS(target as string, find as string, StartValue as Integer, EndValue as Integer, StartValue2 as Integer, EndValue2 as Integer) as Integer
- 156.1.3 InStrByteRangeMBS(target as string, find as string, StartValue as Integer, EndValue as Integer, StartValue2 as Integer, EndValue2 as Integer, StartValue3 as Integer, EndValue3 as Integer) as Integer
- 156.1.5 InStrByteRangeMBS(target as string, StartValue as Integer, EndValue as Integer, StartValue2 as Integer, EndValue2 as Integer) as Integer
156.1.6 `InStrByteRangeMBS(target as string, StartValue as Integer, EndValue as Integer, StartValue2 as Integer, EndValue2 as Integer, StartValue3 as Integer, EndValue3 as Integer) as Integer`

**156.1.5 `InStrByteRangeMBS(target as string, StartValue as Integer, EndValue as Integer, StartValue2 as Integer, EndValue2 as Integer) as Integer`**

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Finds bytes or byte ranges in a string.

**Example:**

```vbnet
// search for uppercase letters A to Z or numbers from 0 to 9
MsgBox str(InStrByteRangeMBS(“Hello?”, 65, 90, 48, 57)) // shows 1 as H is found.
MsgBox str(InStrByteRangeMBS(“hello?”, 65, 90, 48, 57)) // shows 0 as nothing is found.
MsgBox str(InStrByteRangeMBS(“Hello 123”, 65, 90, 48, 57)) // shows 1 as H is found.
MsgBox str(InStrByteRangeMBS(“hello 123”, 65, 90, 48, 57)) // shows 7 as 1 is found.
```

**Notes:**

You may want to make sure target and find are both in the same 8bit encoding (UTF-8, MacRoman, Windows ANSI, Latin 1, ASCII, etc. but not UTF16/UTF32).

The optional find string defines the bytes to search. This gives you a way to see whether one of those bytes is inside or to find the first byte matching a certain value.

The StartValue/EndValue parameters define ranges of values which you consider to match.

Returns 0 if nothing is found or the position of the found character.

See also:

- **156.1.1 `InStrByteRangeMBS(target as string, find as string, StartValue as Integer, EndValue as Integer) as Integer`**
- **156.1.2 `InStrByteRangeMBS(target as string, find as string, StartValue as Integer, EndValue as Integer, StartValue2 as Integer, EndValue2 as Integer) as Integer`**
- **156.1.3 `InStrByteRangeMBS(target as string, find as string, StartValue as Integer, EndValue as Integer, StartValue2 as Integer, EndValue2 as Integer, StartValue3 as Integer, EndValue3 as Integer) as Integer`**
- **156.1.4 `InStrByteRangeMBS(target as string, StartValue as Integer, EndValue as Integer) as Integer`**
- **156.1.6 `InStrByteRangeMBS(target as string, StartValue as Integer, EndValue as Integer, StartValue2 as Integer, EndValue2 as Integer, StartValue3 as Integer, EndValue3 as Integer) as Integer`**
156.1.6  InStrByteRangeMBS(target as string, StartValue as Integer, EndValue as Integer, StartValue2 as Integer, EndValue2 as Integer, StartValue3 as Integer, EndValue3 as Integer) as Integer

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Finds bytes or byte ranges in a string.

**Example:**

// search for low byte values, high byte values or numbers from 0 to 9
MsgBox str(InStrByteRangeMBS(“Hello?”, 0, 31, 127, 255, 48, 57 )) // shows 0 as nothing is found.
MsgBox str(InStrByteRangeMBS(“123”, 0, 31, 127, 255, 48, 57 )) // shows 1 as 1 is found.
MsgBox str(InStrByteRangeMBS(EndOfLine.Windows, 0, 31, 127, 255, 48, 57 )) // shows 1 as chr(13) is found.
MsgBox str(InStrByteRangeMBS(“Hello”, 0, 31, 127, 255, 48, 57 )) // shows 0 as nothing is found.

**Notes:**

You may want to make sure target and find are both in the same 8bit encoding (UTF-8, MacRoman, Windows ANSI, Latin 1, ASCII, etc. but not UTF16/UTF32).

The optional find string defines the bytes to search. This gives you a way to see whether one of those bytes is inside or to find the first byte matching a certain value.

The StartValue/EndValue parameters define ranges of values which you consider to match.

Returns 0 if nothing is found or the position of the found character.

See also:

- 156.1.1 InStrByteRangeMBS(target as string, find as string, StartValue as Integer, EndValue as Integer) as Integer 19091
- 156.1.2 InStrByteRangeMBS(target as string, find as string, StartValue as Integer, EndValue as Integer, StartValue2 as Integer, EndValue2 as Integer) as Integer 19092
- 156.1.3 InStrByteRangeMBS(target as string, find as string, StartValue as Integer, EndValue as Integer, StartValue2 as Integer, EndValue2 as Integer, StartValue3 as Integer, EndValue3 as Integer) as Integer 19093
- 156.1.4 InStrByteRangeMBS(target as string, StartValue as Integer, EndValue as Integer) as Integer 19094
- 156.1.5 InStrByteRangeMBS(target as string, StartValue as Integer, EndValue as Integer, StartValue2 as Integer, EndValue2 as Integer) as Integer 19095
156.1.7 InStrBytesMBS(target as string, find as string) as Integer

MBS Util Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the first position of one of the bytes given in the find string in the target string.
**Example:**
```
MsgBox str(InStrBytesMBS(“Hello”, ”e”)) // shows 2, as e is found
MsgBox str(InStrBytesMBS(“Hello”, ”abcd”)) // shows 0, as nothing is found
MsgBox str(InStrBytesMBS(“Hello World”, ”abcd”)) // shows 11, as d is found
```

**Notes:**
You may want to make sure target and find are both in the same 8bit encoding (UTF-8, MacRoman, Windows ANSI, Latin 1, ASCII, etc. but not UTF16/UTF32).
The find string defines the bytes to search. This gives you a way to see whether one of those bytes is inside or to find the first byte matching a certain value.

Returns 0 if nothing is found or the position of the found character.

156.1.8 EncodingNameMBS(extends Text as string) as string

MBS Util Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Queries the text encoding name for this string.
**Example:**
```vba
dim t as string = ”Hello World”
MsgBox ”InternetName: ” + t.Encoding.InternetName
MsgBox ”InternetNameMBS: ” + t.Encoding.InternetNameMBS
MsgBox ”EncodingNameMBS: ” + t.EncodingNameMBS
```

156.1.9 RemoveAccentsMBS(text as string, IgnoreCase as boolean = false) as string

MBS Util Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Removes accents from text.
**Example:**
```vba
dim s as string = ”L’lve prfr”
dim a as string = RemoveAccentsMBS(s)
dim b as string = RemoveAccentsMBS(s, true)
// check values in debugger
```
Notes:
Optionally also ignores case and outputs text in capital letters.
The plugin has a long replacement list of unicode code points to do this.

Useful as a preparation to convert to ASCII text, so all accents are removed before conversion.

156.1.10 SplitCommaSeparatedValuesMBS(text as string, delimiter as string = " ", quote as string = "") as string()

Example:

// 1. read a CSV file:

dim file as FolderItem = SpecialFolder.Desktop.Child("test.csv")
dim t as TextInputStream = TextInputStream.open(file)

// use right encoding for your file!
t.Encoding = encodings.MacRoman

while not t.EOF
    dim line as string = t.ReadLine
    dim items() as string = SplitCommaSeparatedValuesMBS(line)

    // process items array
wend

// 2. compare with split:

dim test as string = "Hello,""World,test"",end"

dim a() as string = split(test, ",")
dim b() as string = SplitCommaSeparatedValuesMBS(test, ",")

MsgBox Join(a,EndOfLine)+EndOfLine+EndOfLine+Join(b,EndOfLine)

Notes:
This function is better for CSV data than the Split function as it handles quoted text right.
For 17.5 we rewrote this function. Now auto detects the delimiter (comma or semicolon) if none passed.
Default quote character is " if nothing is passed. Please only one character for delimiter.

Version 18.0 can detect tab character, too.

156.1.11 CheckUTF8MBS(data as ptr, size as Integer, Placeholder as string) as string

MBS Util Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns string as UTF-8 and replacing invalid UTF-8 sequences with placeholder.

**Notes:**
This function is more save than simply DefineEncoding as it makes sure the returned text actually is valid UTF-8.
You can replace missing characters with empty text, question mark or any other symbol.

This function is overloaded, so you can directly pass in string, memoryblock or ptr+size.
Checks byte sequence with up to 4 byte long sequences. Does not verify whether code points are valid.
See also:
- 156.1.12 CheckUTF8MBS(data as string, Placeholder as string) as string
- 156.1.13 CheckUTF8MBS(mem as MemoryBlock, Placeholder as string) as string

156.1.12 CheckUTF8MBS(data as string, Placeholder as string) as string

MBS Util Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns string as UTF-8 and replacing invalid UTF-8 sequences with placeholder.

**Example:**
```vba
// some random bytes
dim t as string = RandomBytesStringMBS(20, false)

// and some text
t = t + " "

// checked
dim s as string = CheckUTF8MBS(t, ""

MsgBox s
```

**Notes:**
This function is more save than simply DefineEncoding as it makes sure the returned text actually is valid UTF-8.
You can replace missing characters with empty text, question mark or any other symbol.

This function is overloaded, so you can directly pass in string, memoryblock or ptr+size. Checks byte sequence with up to 4 byte long sequences. Does not verify whether code points are valid. See also:

- 156.1.11 CheckUTF8MBS(data as ptr, size as Integer, Placeholder as string) as string
- 156.1.13 CheckUTF8MBS(mem as MemoryBlock, Placeholder as string) as string

156.1.13 CheckUTF8MBS(mem as MemoryBlock, Placeholder as string) as string

MBS Util Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns string as UTF-8 and replacing invalid UTF-8 sequences with placeholder.

**Example:**

```vbnet
// some random bytes
dim t as string = RandomBytesStringMBS(20, false)

// and some text
t = t + " "

// checked in memoryblock
dim m as MemoryBlock = t
dim s as string = CheckUTF8MBS(m, "")

MsgBox s
```

**Notes:**

This function is more save than simply DefineEncoding as it makes sure the returned text actually is valid UTF-8.

You can replace missing characters with empty text, question mark or any other symbol.

This function is overloaded, so you can directly pass in string, memoryblock or ptr+size. Checks byte sequence with up to 4 byte long sequences. Does not verify whether code points are valid. See also:

- 156.1.11 CheckUTF8MBS(data as ptr, size as Integer, Placeholder as string) as string
- 156.1.12 CheckUTF8MBS(data as string, Placeholder as string) as string
156.1.14 ConcatBinaryStringsMBS(a as string, b as string) as string

MBS Util Plugin, Plugin Version: 6.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Concats the given strings with binary encoding.

**Example:**

```vbscript
dim a as string = "Hello"
dim b as string = "World"
dim c as string = ConcatBinaryStringsMBS(a, b)
dim d as string = ConvertEncoding(b, encodings.UTF16)
dim e as string = ConcatBinaryStringsMBS(a, d)

MsgBox "ConcatBinaryStringsMBS" + vbCrLf + vbCrLf + c + vbCrLf + EncodingToHexMBS(c) + vbCrLf + vbCrLf + e + vbCrLf + EncodingToHexMBS(e)
```

**Notes:** If RB concats strings the encoding is changed before concating to match the other strings.

See also:

- 156.1.15 ConcatBinaryStringsMBS(a as string, b as string, c as string) as string
- 156.1.16 ConcatBinaryStringsMBS(a as string, b as string, c as string, d as string) as string
- 156.1.17 ConcatBinaryStringsMBS(a as string, b as string, c as string, d as string, e as string) as string
- 156.1.18 ConcatBinaryStringsMBS(a as string, b as string, c as string, d as string, e as string, f as string) as string

156.1.15 ConcatBinaryStringsMBS(a as string, b as string, c as string) as string

MBS Util Plugin, Plugin Version: 6.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Concats the given strings with binary encoding.

**Notes:** If RB concats strings the encoding is changed before concating to match the other strings.

See also:

- 156.1.14 ConcatBinaryStringsMBS(a as string, b as string) as string
- 156.1.16 ConcatBinaryStringsMBS(a as string, b as string, c as string, d as string) as string
- 156.1.17 ConcatBinaryStringsMBS(a as string, b as string, c as string, d as string, e as string) as string
- 156.1.18 ConcatBinaryStringsMBS(a as string, b as string, c as string, d as string, e as string, f as string) as string
156.1.16 **ConcatBinaryStringsMBS**(a as string, b as string, c as string, d as string) as string

MBS Util Plugin, Plugin Version: 6.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Concats the given strings with binary encoding. **Notes:** If RB concats strings the encoding is changed before concating to match the other strings. See also:

- 156.1.14 ConcatBinaryStringsMBS(a as string, b as string) as string 19101
- 156.1.15 ConcatBinaryStringsMBS(a as string, b as string, c as string) as string 19101
- 156.1.16 ConcatBinaryStringsMBS(a as string, b as string, c as string, d as string) as string 19102
- 156.1.18 ConcatBinaryStringsMBS(a as string, b as string, c as string, d as string, e as string, f as string) as string 19102

156.1.17 **ConcatBinaryStringsMBS**(a as string, b as string, c as string, d as string, e as string) as string

MBS Util Plugin, Plugin Version: 6.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Concats the given strings with binary encoding. **Notes:** If RB concats strings the encoding is changed before concating to match the other strings. See also:

- 156.1.14 ConcatBinaryStringsMBS(a as string, b as string) as string 19101
- 156.1.15 ConcatBinaryStringsMBS(a as string, b as string, c as string) as string 19101
- 156.1.16 ConcatBinaryStringsMBS(a as string, b as string, c as string, d as string) as string 19102
- 156.1.18 ConcatBinaryStringsMBS(a as string, b as string, c as string, d as string, e as string, f as string) as string 19102

156.1.18 **ConcatBinaryStringsMBS**(a as string, b as string, c as string, d as string, e as string, f as string) as string

MBS Util Plugin, Plugin Version: 6.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Concats the given strings with binary encoding. **Notes:** If RB concats strings the encoding is changed before concating to match the other strings. See also:

- 156.1.14 ConcatBinaryStringsMBS(a as string, b as string) as string 19101
- 156.1.15 ConcatBinaryStringsMBS(a as string, b as string, c as string) as string 19101
- 156.1.16 ConcatBinaryStringsMBS(a as string, b as string, c as string, d as string) as string 19102
### 156.1.19  **CountOccurancesMBS(s as string, find as string) as Integer**

MBS Util Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Counts the occurrences of a string.

**Example:**

```vba
dim s as string
s="111110001110101010111"

MsgBox str(CountOccurancesMBS(s,"1")) // 14
MsgBox str(CountOccurancesMBS(s,"0")) // 7
MsgBox str(len(s)) // 21
```

**Notes:** Returns the number of occurrences of a substring in a string.

### 156.1.20  **CreateStringMBS(Length as Integer, Content as String) as string**

MBS Util Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a string based on a pattern.

**Example:**

```vba
dim c as string = CreateStringMBS( 20, "Hello")
dim t as string = CreateStringMBS( 10, chrb( 255))
```

**Notes:**
The content string is repeated until size is matched and returned.
The string returned has the same encoding set as the content string.

### 156.1.21  **DecodingFromHTTLMBS(s as string) as string**

MBS Util Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Decodes a string with HTML escaped characters.

**Example:**

```vba
```
```
dim html as string = "<p><B>Grüße</B></p>"

dim htmltext as string = RemoveHTMLTagsMBS(html)

dim text as string = DecodingFromHTMLMBS(htmltext)

MsgBox text // shows: Gre
```

**Notes:**
The source string is converted to a native string if it is not already in ASCII. Than for every character the functions looks for the unescaped character code and returns a normal unicode string.

e.g. "München" -> "Mnchen"

This functions uses Realbasic unicode strings, so you may need to convert back to a NativeString before saving the string to a file. (using e.g. ConvertEncoding(string, encodings.UTF8))

May return "" on low memory conditions.
Strings and encoding work only perfectly for RB 4.5 or newer.

Speed optimized in version 2.8 to be a hundred times faster.
Added Linux support in v5.1.

The result of this function is unpredictable on bad input strings.
(e.g. no encoding, or encoding does not match the content of the string)

---

**156.1.22 DecodingFromMySQLMBS(s as string) as string**

MBS Util Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Decodes a string from MySQL.

**Example:**

MsgBox DecodingFromMySQLMBS("test\t\test\% 2.doc")

**Notes:** Replaces all the escapes in a mysql string like (\0, \t or \%) to their binary replacement.
156.1.23 DecodingFromQuotedPrintableMBS(s as string) as string

MBS Util Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Decodes a string with quoted printable encoding.  
**Example:**

```vcl
msgbox DecodingFromQuotedPrintableMBS("Hi, =A1=92")
```

**Notes:**
The decoded string is marked to have an ASCII encoding, but you may need to set the encoding to something like ISO. Than you need a text converter to make something printable from it.

May return "" on low memory conditions.

156.1.24 DecodingFromURLMBS(s as string) as string

MBS Util Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Decodes a string with URL escaped characters.  
**Example:**

```vcl
dim s as string
dim t as string
dim u as string
t="Hello World 

s= EncodingToURLMBS(t,0)
u=DecodingFromURLMBS(s,0)

SetEncodingOfStringMBS u,GetEncodingOfStringMBS(t) // restore encoding

// Hello World
MsgBox t
// Hello% 20World% 20% C3% A4% C3% B6% C3% BC
MsgBox s
// Hello World
MsgBox u
```

**Notes:**
Decodes an URL encoded ASCII string. The string returned is marked as a binary string (without encoding).
You need to set the encoding to whatever the original was (ISO-9660 or UTF8 for example).

e.g. "Wie%20geht’s%3F" ->"Wie geht’s?"

May return "" on low memory conditions.
Strings and encoding work only perfectly for RB 4.5 or newer.
Added Linux support in v5.1.
See also:

- 156.1.25 DecodingFromURLMBS(s as string, options as Integer) as string

156.1.25 DecodingFromURLMBS(s as string, options as Integer) as string


Example:

dim s as string
dim t as string
dim u as string
t="Hello World"
s= EncodingToURLMBS(t,1)
u=DecodingFromURLMBS(s,1)
SetEncodingOfStringMBS u,GetEncodingOfStringMBS(t) // restore encoding

// Hello World
MsgBox t
// Hello+World+% C3% A4% C3% BC
MsgBox s
// Hello World
MsgBox u

Notes:

Decodes an URL encoded ASCII string. The string returned is marked as a binary string (without encoding).
You need to set the encoding to whatever the original was (ISO-9660 or UTF8 for example).

e.g. "Wie%20geht’s%3F" ->"Wie geht’s?"

May return "" on low memory conditions.
Strings and encoding work only perfectly for RB 4.5 or newer.

Pass 1 for the options parameter to get PHP/Perl compatible output (+ instead of spaces and % 20 for spaces).
Added Linux support in v5.1.
See also:

• 156.1.24 DecodingFromURLMBS(s as string) as string

156.1.26 DecodingFromXMLMBS(s as string) as string

MBS Util Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Decodes a string with XML escaped characters.
**Notes:** see DecodingFromHTMLMBS.

156.1.27 DetectUnicodeMarkersMBS(s as string) as Integer

MBS Util Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Tries to get the unicode marker from the string.
**Example:**

```plaintext
const EncodingUnknown=0
const EncodingUTF8=1
const EncodingUTF16be=3
const EncodingUTF16le=4
const EncodingUTF32be=6
const EncodingUTF32le=7

dim text as string = "Hello World" // this text does not have a marker..

msgbox str(DetectUnicodeMarkersMBS(text))
```

**Notes:** For some UTF16 LittleEndian strings this function may return UTF32.

156.1.28 EncodeEmailSubjectMBS(s as string) as string

MBS Util Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Encodes an email subject.
Text is encoded with UTF-8 Quoted Printable encoding.
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If text does not need to be encoded (pure ASCII), we return the input text.

**Example:**

MsgBox EncodeEmailSubjectMBS("Hello World") + EndOfLine + EncodeEmailSubjectMBS("Test ")

156.1.29  **EncodingToHTMLMBS(s as string, options as Integer = 0) as string**

MBS Util Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a string with HTML escaped characters.

**Example:**

```basic
dim f as folderItem
dim b as binaryStream

f = getsaveFolderItem("text/html","new.html")
if f<>nil then
    b = f.createBinaryFile("text/html")
    if b<>nil then
        b.write nativeStringMBS(EncodingToHTMLMBS(editfield1.text))
        b.close
    end if
end if
```

**Notes:**

The source string is converted to unicode if it is not already in unicode. Then for every character the function looks for the escaped character code and returns a HTML encoded string.

e.g. "Mnchen" -> "M &uuml;nchen"

This function uses Realbasic unicode strings, so you may need to convert back to a NativeString before saving the string to a file.

Return characters (chr(10) and chr(13)) are not converted to `<BR>` codes.

May return "" on low memory conditions.

The result of this function is unpredictable on bad input strings.
(e.g. no encoding, or encoding does not match the content of the string)

Options can be 1 to not encode ASCII values <128, so quotes, <, >and & are not encoded.
156.1.30 EncodingToQuotedPrintableMBS(s as string, LineLen as Integer = 72) as string

MBS Util Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns a string with quoted printable characters.
**Example:**
```vbs
dim a as string = "Hello !"
dim b as string = EncodingToQuotedPrintableMBS(a)
dim c as string = ConvertEncoding(a, encodings.ISOLatin1)
dim d as string = EncodingToQuotedPrintableMBS(c)
dim e as string = EncodeQuotedPrintable(a)
dim f as string = EncodeQuotedPrintable(c)

MsgBox b+EndOfLine+d+EndOfLine+e+EndOfLine+f
```

**Notes:**
Line wrap is per default at 72 characters but you can pass some other positive value here.
Quoted printable encoded strings have some ISO encoding as base, you need to pass a valid ISO string to
this function to get the correct result.
May return "" on low memory conditions.

156.1.31 EncodingToURLMBS(s as string) as string

MBS Util Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns a string with URL escaped characters.
**Example:**
```vbs
msgbox EncodingToURLMBS("Wie geht's?")
```

**Notes:**
Encodings a string for an URL. Use with UTF8 or ISO-9660 encoded strings. This function does not work
correctly with UTF16 strings.

E.g. "Wie geht's?" ->"Wie% 20geht's% 3F"

May return "" on low memory conditions.
Strings and encoding work only perfectly for RB 4.5 or newer.
Added Linux support in v5.1.

See also:

- 156.1.32 EncodingToURLMBS(s as string, options as Integer) as string

156.1.32 EncodingToURLMBS(s as string, options as Integer) as string

MBS Util Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a string with URL escaped characters.

**Example:**
```vbs
    dim s as string = "20101210 1244 - Sky Cinema +24 - Wen die Geister lieben"
    MsgBox EncodingToURLMBS(s)
    MsgBox EncodingToURLMBS(s,1)
    // gives: 20101210%201244+%20Sky%20Cinema%20%2B24%20%20Wen%20die%20Geister%20lieben
    MsgBox EncodingToURLMBS(s,2)
```

**Notes:**
Encodings a string for an URL. Use with UTF8 or ISO-9660 encoded strings. This function does not work correctly with UTF16 strings.

e.g. "Wie geht’s?” -> ”% 20geht’s% 3F”

May return ”” on low memory conditions.
Strings and encoding work only perfectly for RB 4.5 or newer.

Pass 1 for the options parameter to get PHP/Perl compatible output (+ instead of spaces and % 20 for spaces).
Pass 2 for the options parameter to get plus to % 2B and space to % 20. Added in plugin version 10.6.
See also:

- 156.1.31 EncodingToURLMBS(s as string) as string
156.1.33 EncodingToXMLMBS(s as string, options as Integer = 0) as string

MBS Util Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a string with XML escaped characters. **Notes:** see EncodingToHTMLEMBS.

156.1.34 GetStringsFromDataMBS(data as MemoryBlock, MinLength as Integer = 0) as string()

MBS Util Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Looks for strings within a data block. **Notes:**

| Looks over the bytes in the data block to see if there are useful byte sequences which could be text. Returns an array with all text fragments found.

This function is UTF8 aware and will work well for UTF-8 encoded text fragments. See also:

- 156.1.35 GetStringsFromDataMBS(data as ptr, size as Integer, MinLength as Integer = 0) as string() 19111
- 156.1.36 GetStringsFromDataMBS(data as String, MinLength as Integer = 0) as string() 19112

156.1.35 GetStringsFromDataMBS(data as ptr, size as Integer, MinLength as Integer = 0) as string()

MBS Util Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Looks for strings within a data block. **Notes:**

| Looks over the bytes in the data block to see if there are useful byte sequences which could be text. Returns an array with all text fragments found.

This function is UTF8 aware and will work well for UTF-8 encoded text fragments. See also:

- 156.1.34 GetStringsFromDataMBS(data as MemoryBlock, MinLength as Integer = 0) as string() 19111
- 156.1.36 GetStringsFromDataMBS(data as String, MinLength as Integer = 0) as string() 19112
156.1.36  **GetStringFromDataMBS**(data as String, MinLength as Integer = 0) as string()

MBS Util Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Looks for strings within a data block.

**Example:**
```
    dim f as FolderItem = SpecialFolder.Desktop.Child("test.txt")
    dim b as BinaryStream = BinaryStream.Open(f)
    dim s as string = b.Read(b.Length)
    dim texts() as string = GetStringsFromDataMBS(s, 3)
```

**Notes:**
Looks over the bytes in the data block to see if there are useful byte sequences which could be text.
Returns an array with all text fragments found.

This function is UTF8 aware and will work well for UTF-8 encoded text fragments.
See also:

- 156.1.34 GetStringsFromDataMBS(data as MemoryBlock, MinLength as Integer = 0) as string() 19111
- 156.1.35 GetStringsFromDataMBS(data as ptr, size as Integer, MinLength as Integer = 0) as string() 19111

156.1.37  **GetUnicodeMarkersMBS**(kind as Integer) as string

MBS Util Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the unicode marker with the given code.

**Example:**
```
    const EncodingUnknown=0
    const EncodingUTF8=1
    const EncodingUTF16=2  // native
    const EncodingUTF16be=3
    const EncodingUTF16le=4
    const EncodingUTF32=5  // native
    const EncodingUTF32be=6
    const EncodingUTF32le=7

    msgbox EncodingToHexMBS(GetUnicodeMarkersMBS(EncodingUTF8))
```
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Notes: If you concat strings, RB may convert the string to UTF8.

156.1.38 HexstringMBS(input as string, hexlen as Integer, linelen as Integer, linestart as string, lineend as string, spacer as string, filler as string) as string

MBS Util Plugin, Plugin Version: 2.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Creates a hexadecimal string. Example:

```vba
dim s as string
s=HexstringMBS("Hello World",2,10,"<",">"+endofline,"","0")
```

Notes:
Fails if input="" or hexlen<1 or linelen<1 or on low memory conditions. If filler is "", filler is set to "0".

Memory requirement is around 5 times the memory for input.
Or exactly:

```
mem=20+linelen*hexlen*(1+len(filler))+2*(linelen*hexlen*len(filler)+len(lineend)+len(linestart))*len(input)/2/hexlen)
```

All strings must be in the encoding you want to have. Can raise OutOfMemoryException on low memory.

156.1.39 IsASCIIStringMBS(s as string) as boolean

MBS Util Plugin, Plugin Version: 7.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Checks if this string is an ASCII string. Notes:
False if one of the characters of the string has a numeric value of 128 or higher. (->string is not a 7 bit ASCII string)
True if all bytes are in the valid ASCII range.
See also:

- 156.1.40 IsASCIIStringMBS(s as string, mode as Integer) as boolean
156.40  IsASCIIStringMBS(s as string, mode as Integer) as boolean

MBS Util Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Checks if this string is an ASCII string.

**Notes:**
Does not work for 16bit unicode strings.
But it works fine with UTF8.

Mode values:

0  False if one of the characters of the string has a numeric value of 128 or higher.
   (->string is not a 7 bit ASCII string)
1  False if one of the characters of the string has a numeric value >128 or <32.
   (->string may not be printable in ASCII, which may require some kind of Base64 encoding to transfer it.)
2  False if one of the characters of the string has a numeric value below 32.
   (->string may contain line breaks or other control characters)

Added Linux support in v5.1.
See also:

- 156.39 IsASCIIStringMBS(s as string) as boolean

156.41  JaroWinklerDistanceMBS(a as string, b as string) as Double

MBS Util Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Calculates the string distance.

**Example:**
```vba
dim s1 as string = "Hello"
dim s2 as string = "Hallo"
dim s3 as string = "Helo"
dim s4 as string = "Helllo"

dim d1 as Double = levenshteinDistanceMBS(s1,s1)
dim d2 as Double = levenshteinDistanceMBS(s1,s2)
dim d3 as Double = levenshteinDistanceMBS(s1,s3)
dim d4 as Double = levenshteinDistanceMBS(s1,s4)

dim d5 as Double = jaroWinklerDistanceMBS(s1,s1)
```

// 0 for equal, the more it goes to 1.0
dim d6 as Double = jaroWinklerDistanceMBS(s1,s2)
dim d7 as Double = jaroWinklerDistanceMBS(s1,s3)
dim d8 as Double = jaroWinklerDistanceMBS(s1,s4)

break // check values in debugger

Notes:
Value is normalized, so 0.0 is equal text and 1.0 is totally unequal.

see also

156.1.42 LevenshteinDistanceMBS(a as string, b as string) as Double

MBS Util Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Calculates the string distance. **Example:**

dim s1 as string = ”Hello”
dim s2 as string = ”Hallo”
dim s3 as string = ”Helo”
dim s4 as string = ”Hello”

// 0 for equal, the more it goes to 1.0

dim d1 as Double = levenshteinDistanceMBS(s1,s1)
dim d2 as Double = levenshteinDistanceMBS(s1,s2)
dim d3 as Double = levenshteinDistanceMBS(s1,s3)
dim d4 as Double = levenshteinDistanceMBS(s1,s4)

dim d5 as Double = jaroWinklerDistanceMBS(s1,s1)
dim d6 as Double = jaroWinklerDistanceMBS(s1,s2)
dim d7 as Double = jaroWinklerDistanceMBS(s1,s3)
dim d8 as Double = jaroWinklerDistanceMBS(s1,s4)

break // check values in debugger

Notes:
Value is normalized, so 0.0 is equal text and 1.0 is totally unequal.

see also
156.1.43 NativeStringMBS(s as string) as string

MBS Util Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a native string with the given string as content.  
**Notes:**  
If the string in the parameter s is already native it is returned unchanged and without allocating additional memory. Else the string is copied into a new string with native characters.  
On Mac OS Classic native means MacRoman encoding, on Mac OS X it’s UTF8 and on Windows the ANSI Codepage.  
May return "" on low memory conditions.  
Strings and encoding work only perfectly for RB 4.5 or newer.  
Added Linux support in v5.1.

156.1.44 RandomBytesStringMBS(Length as Integer, ASCII as boolean=false) as string

MBS Util Plugin, Plugin Version: 9.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a string with random content.  
**Example:**
```vbnet
dim s as string

s = RandomBytesStringMBS(10, true)
MsgBox s

s = RandomBytesStringMBS(10, false)
MsgBox s
```

**Notes:**  
Length is the number of bytes in the string.  
If ASCII is true the string returned is in an ASCII string.
156.1.45 RemoveHTMLTagsMBS(AsciiTextWithTags as string) as string

MBS Util Plugin, Plugin Version: 4.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Removes all html tags from the string.

**Example:**
msgbox RemoveHTMLTagsMBS("<P>Hello</P>") // returns "Hello"

**Notes:**
Returns "" on low memory.
Written to be used with UTF8 strings.
Added Linux support in v5.1.

156.1.46 RemoveHTMLTagsWithMBS(AsciiTextWithTags as string, Replacement as string) as string

MBS Util Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Removes all html tags from the string and replaces them with the replacement string.

**Example:**
msgbox RemoveHTMLTagsWithMBS("<P>Hello</P>",") // returns " Hello"

**Notes:**
Returns "" on low memory.
Written to be used with UTF8 strings.

156.1.47 ReplaceNonPrintableCharactersMBS(s as string, replacevalue as Integer=46) as string

MBS Util Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Replaces bytes in the string which are not printable with the given byte value.

**Example:**
MsgBox ReplaceNonPrintableCharactersMBS("Hello World")
MsgBox ReplaceNonPrintableCharactersMBS("Hello World")
MsgBox ReplaceNonPrintableCharactersMBS("Hello World",32)

**Notes:**
All bytes in range 32 to 127 are copied and all others replaces with the given byte value. Default is 46 which is a dot.
Returns always an ASCII string.
On low memory this function returns an empty string.

### 156.1.48 ScientificStrMBS(d as Double, digits as Integer) as string

MBS Util Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the given value formatted as scientific number with the given number of digits.

**Example:**
```vbnet
dim d as Double = 3.1415926535897
MsgBox ScientificStrMBS(d,6)+EndOfLine+ScientificStrMBS(d,9)
```

### 156.1.49 SplitMBS(value as String, delimiter as String = “ ”) as String()

MBS DataTypes Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Splits string.

**Example:**
```vbnet
dim a() as string = SplitMBS(”Hello World Test”, ” ”)
dim b() as string = SplitMBS(”Gre”, ””)
dim c() as string = SplitMBS(”Just$ test$ a$ test$ test”, ”$ test$ ”)
```

**Notes:**
Similar to the Split() function, but without the problems we see with Split function. See feedback cases for Split.

If delimiter is “”, we return an array with all characters in string.
Else we split given string with delimiter.

### 156.1.50 SQLReplaceBooleanMBS(SQL as string) as string

MBS Util Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Replaces all false/true strings with 0/1 and handles quotes correctly.

**Example:**
MsgBox SQLReplaceBooleanMBS("INSERT INTO criteria VALUES ('1','9999','0001','000001557',false);")

Notes:
SQLite used in REALSQLDatabase does not like false and true literals for boolean values. You need to use 0 and 1. So this function helps you converting old queries using false/true.
false and true inside a quoted string are not changed.

156.1.51 StrCompBytesMBS(a as string, b as string) as Integer

MBS Util Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Compares two strings.
Example:
msgbox str(StrCompBytesMBS("Hello","hello"))

Notes:
Returns zero if the two strings are identical.
Returns 1 or -1 if the strings are different.
Empty strings are equal.

Compares the bytes of both strings independend of the text encoding.
So if a="A" in UTF-8 and b="A" in UTF-16 they will not be equal!

156.1.52 StrCompCharactersMBS(a as string, b as string) as Integer

MBS Util Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Compares two strings.
Example:
msgbox str(StrCompCharactersMBS("Hello","hello"))

Notes:
Returns zero if the two strings are identical.
Returns 1 or -1 if the strings are different.
Empty strings are equal.
Compares the characters of both strings. If the text encodings are not equal, they are both converted to UTF-8 before comparing them.

So if a="A" in UTF-8 and b="A" in UTF-16 they will be equal!

**156.1.53 StringANDMBS(a as string,b as string) as string**

MBS Util Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Applies a binary AND on the bytes from the both strings.

**Notes:**
- If a is "" or memory is low, the result is "".
- If b is shorter as a the b string is used several times.
- The function is optimized for several cases, e.g. the case where b is only one, two or four bytes long.
- Returns a string with binary encoding. Before using this function, make sure both strings have the same encoding.
- Added Linux support in v5.1.

**156.1.54 StringIsHTMLreadyMBS(s as string) as boolean**

MBS Util Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Test whether a string is html safe.

**Example:**

```plaintext
Function html(t as string) As string
    # pragma disablebackgroundtasks
    # pragma disableautowaitcursor

    if StringIsHTMLreadyMBS(t) then
        Return t
    else
        t=EncodingToHTMLMBS(t)
        Return ConvertEncoding(t,encodings.UTF8)
    end if
End Function
```

**Notes:**
- String which are not html safe, need to go through EncodingToHTMLMBS.
- Using this function saves a lot of time!

Returns true for strings which are html safe.
156.1.55  **StringIsXMLreadyMBS** (s as string) as boolean

MBS Util Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Test whether a string is xml safe.  
**Notes:**  
String which are not html safe, need to go through EncodingToXMLMBS. Using this function saves a lot of time!  

Returns true for strings which are xml safe.

156.1.56  **StringORMBS** (a as string, b as string) as string

MBS Util Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Applies a binary OR on the bytes from the both strings.  
**Notes:**  
If a is "" or memory is low, the result is "".  
If b is shorter as a the b string is used several times.  
The function is optimized for several cases, e.g. the case where b is only one, two or four bytes long.  
Returns a string with binary encoding. Before using this function, make sure both strings have the same encoding.  
Added Linux support in v5.1.

156.1.57  **StringXOR2MBS** (data as string, XorMask as string, MaskOffset as Integer = 0) as string

MBS Util Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Applies a binary XOR on the bytes from the both strings.  
**Example:**  
```vba  
dim s as string = StringXORMBS("Hello", "World")  
dim t as string = StringXOR2MBS("Hello", "World")  
MsgBox EncodeHex(S)+" " +EncodeHex(t)  
```
```vba  
dim ss as string = StringXORMBS(s, "World")  
dim tt as string = StringXOR2MBS(t, "World")  
MsgBox ss+" " +tt  
```
Notes:

If data is "" or memory is low, the result is "".
If XorMask is shorter as data the XorMask string is used several times.
Returns a string with binary encoding. Before using this function, make sure both strings have the same encoding.

The difference between StringXORMBS and StringXOR2MBS is that the second version xors also with position of byte in string, so your text looks a little bit more random.
MaskOffset specifies where in the XorMask string to start. This is useful for partial blocks.

156.1.58 StringXORMBS(data as string, XorMask as string, MaskOffset as Integer = 0) as string

MBS Util Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Applies a binary XOR on the bytes from the both strings.
**Notes:**

If data is "" or memory is low, the result is "".
If XorMask is shorter as data the XorMask string is used several times.
The function is optimized for several cases, e.g. the case where b is only one, two or four bytes long.
Returns a string with binary encoding. Before using this function, make sure both strings have the same encoding.
MaskOffset specifies where in the XorMask string to start. This is useful for partial blocks.

156.1.59 StrMBS(d as Double) as string

MBS Util Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Formats numbers more human readable

**Example:**

// shows: 0.000000012339 1.234560e-8
MsgBox StrMBS(0.00000001234)+" "+str(0.00000001234)

// shows 123456789.0 1.234568e+8
MsgBox StrMBS(123456789.0)+" "+str(123456789.0)

**Notes:** The idea is to have a dynamically changing number of digits. We have no scientific notation and up to 15 digits visible (not counting zeros).
156.1.60  UnicodeStringMBS(s as string) as string

MBS Util Plugin, Plugin Version: 2.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a unicode string with the given string as content.

**Notes:**
- If the string in the parameter s is already unicode it is returned unchanged and without allocating additional memory. Else the string is copied into a new string with unicode (16bit) characters.
- May return "" on low memory conditions.
- Strings and encoding work only perfectly for RB 4.5 or newer.
- Added Linux support in v5.1.

The result of this function is unpredictable on bad input strings.
(e.g. no encoding, or encoding does not match the content of the string)

156.1.61  ConvertUnicodeToCharacterCompositionMBS(text as string) as string

MBS Util Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Converts unicode characters to composed normalization form.

**Example:**

```vbs
dim s1 as string = ConvertUnicodeToCharacterDecompositionMBS(""
MsgBox s1+": " + EncodeHex(s1)

dim s2 as string = ConvertUnicodeToCharacterCompositionMBS(""
MsgBox s2+": " + EncodeHex(s2)
```

**Notes:**
- This function replaces character represented by decomposed representation with the composed representation.

see also

156.1.62  ConvertUnicodeToCharacterDecompositionMBS(text as string) as string

MBS Util Plugin, Plugin Version: 15.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Converts unicode characters to decomposed normalization form.

**Example:**
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```vbs
Dim s1 As String = ConvertUnicodeToCharacterDecompositionMBS(""")
MsgBox s1 + ": " + EncodeHex(s1)

Dim s2 As String = ConvertUnicodeToCharacterCompositionMBS(""")
MsgBox s2 + ": " + EncodeHex(s2)
```

**Notes:**
This function replaces character represented by one unicode character by the decomposed variant.

See also

### 156.1.63 DecodingFromCP1252MBS(s as string) as string

MBS Util Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Decodes a string with ISO 8859 encoding.

**Notes:**
The source string must be really an CP1252 string!
The string returned is Unicode and you may try NativeString to make a string you can display better.

May return "" on low memory conditions.
Strings and encoding work only perfectly for RB 4.5 or newer.
Added Linux support in v5.1.

### 156.1.64 DecodingFromHexMBS(s as string) as string

MBS Util Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Decodes a Hex string to a binary string.

**Example:**
```vbs
Dim s As String

s = EncodingToHexMBS("Hallo")
MsgBox DecodingFromHexMBS(s)
```

**Notes:**
May return "" on low memory conditions.
Added Linux support in v5.1.
The string returned has no defined string encoding, so use DefineEncoding on the result if needed.

156.1.65 DecodingFromISO8859MBS(s as string) as string

MBS Util Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Decodes a string with ISO 8859 encoding.
Example:

```
dim s as String

s=EncodingToISO8859MBS("hallo ")

MsgBox s
s=DecodingFromISO8859MBS(s)
MsgBox s
s=NativeStringMBS(s)
MsgBox s
```

Notes:
The source string must be really an ISO 8859-1 string!
The string returned is Unicode and you may try NativeString to make a string you can display better.

May return "" on low memory conditions.
Strings and encoding work only perfectly for RB 4.5 or newer.
Added Linux support in v5.1.

156.1.66 EncodingToCP1252MBS(s as string) as string

MBS Util Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Returns a string encoded with Codepage 1252.
Notes:
The string is converted to Unicode (if it’s not already Unicode) and than encoded to a CP 1252 string which is returned with encoding set to binary.
(other encodings are available, but currently not in the plugin)
May return "" on low memory conditions.
Strings and encoding work only perfectly for RB 4.5 or newer.
Added Linux support in v5.1.

156.1.67 EncodingToHexMBS(s as string) as string

MBS Util Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Encodes a binary string to a hex string.

**Example:**

```
dim s1 as string = "Hello World"
dim s2 as string = EncodingToHexMBS(s1)

dim t1 as string = "Umlauts "
dim t2 as string = EncodingToHexMBS(t1)

dim u as new UUIDMBS
dim u1 as string = u.ValueString
dim u2 as string = EncodingToHexMBS(u1)
```

```
break // see variables in debugger
```

**Notes:**
May return "" on low memory conditions.
Added Linux support in v5.1.

156.1.68 EncodingToISO8859MBS(s as string) as string

MBS Util Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a string encoded with ISO 8859-1.

**Example:**

```
dim s as String
s = EncodingToISO8859MBS("hallo ")

MsgBox s
```

```
s = DecodingFromISO8859MBS(s)

MsgBox s
```
156.1.  **GLOBALS**

s=NativeStringMBS(s)

MsgBox s

**Notes:**
The string is converted to Unicode (if it’s not already Unicode) and then encoded to a ISO 8859-1 string which is returned with encoding set to binary. (other encodings are available, but currently not in the plugin)

May return "" on low memory conditions.
Strings and encoding work only perfectly for RB 4.5 or newer.
Added Linux support in v5.1.

---

156.1.69  **JoinDataMBS(blocks() as memoryblock) as string**

**Function:** Joins an array of memoryblocks in new string.
**Example:**

```vbscript
dim s() as MemoryBlock

// make memoryblock with a space character
dim m as MemoryBlock = "Hello"

s.Append m
s.Append m
s.Append m

// now join
dim r as string = JoinDataMBS(s)

// define to be ASCII:
r = DefineEncoding(r, encodings.ASCII)

// and show
MsgBox r
```

**Notes:**
Returned string has no encoding defined.
Raises OutOfMemoryException in case of low memory.
See also:
• 156.1.70 JoinDataMBS(strings() as string) as string
• 156.1.71 JoinDataMBS(values() as Variant) as string

156.1.70  JoinDataMBS(strings() as string) as string

Function: Joins an array of strings in new string.
Example:

```vba
dim s() as string
s.Append "Hello"
s.Append " "
s.Append "World"

// now join
dim r as string = JoinDataMBS(s)

// define to be ASCII:
r = DefineEncoding(r, encodings.ASCII)

// and show
MsgBox r
```

Notes:
Returned string has no encoding defined.
Raises OutOfMemoryException in case of low memory.
See also:
• 156.1.69 JoinDataMBS(blocks() as memoryblock) as string
• 156.1.71 JoinDataMBS(values() as Variant) as string

156.1.71  JoinDataMBS(values() as Variant) as string

Function: Joins an array of variants in new string.
Example:

```vba
dim s() as Variant

// make memoryblock with a space character
dim m as new MemoryBlock(1)
m.Int8Value(0) = 32
```
s.Append "Hello"
s.Append m
s.Append "World"

// now join
dim r as string = JoinDataMBS(s)

// define to be ASCII:
r = DefineEncoding(r, encodings.ASCII)

// and show
MsgBox r

Notes:
Variants can be memoryblocks or strings or normal objects which can give stringValue.
Returned string has no encoding defined.
Raises OutOfMemoryException in case of low memory.
See also:

• 156.1.69 JoinDataMBS(blocks() as memoryblock) as string
• 156.1.70 JoinDataMBS(strings() as string) as string

156.1.72 JoinStringMBS(strings() as string) as string

Function: Joins an array of strings in new string.
Example:

dim s() as string

s.Append "Hello"
s.Append "   
s.Append "World"

dim r as string = JoinStringMBS(s)

MsgBox r

Notes:
Converts all strings if necessary into UTF-8. If you want to join them as they are, please use JoinDataMBS.
Raises OutOfMemoryException in case of low memory.
156.1.73  JoinStringMBS(values() as Variant) as string


Function: Joins an array of strings in new string.

Example:

dim s() as Variant
s.Append "Hello"
s.Append " "
s.Append "World"

dim r as string = JoinStringMBS(s)

Notes:
Converts all strings if necessary into UTF-8.
Raises OutOfMemoryException in case of low memory.

See also:

- 156.1.72 JoinStringMBS(strings() as string) as string

156.2  class StringHandleMBS

156.2.1  class StringHandleMBS

MBS DataTypes Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

Function: A class for attaching strings together very fast.

Example:

dim s as StringHandleMBS
s=new StringHandleMBS

// Add some text
s.Add "Hello"
s.Add " "
s.Add "World"
// Insert a string
s.Insert " great",6

// check it
MsgBox s.Copy

// Delete the great from above
s.Delete 6,7

// check
MsgBox s.Copy

// Insert again
s.Insert " great ",6

// check
MsgBox s.Copy

// Now we extract the middle, so it’s deleted
MsgBox s.Extract(6,7)

// check again
MsgBox s.copy

Notes: The class initialized itself on the first use.

156.2.2 Methods

156.2.3 Add(data as string)

MBS DataTypes Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Adds the string at the end of the current data.
Notes: Note that all strings added must have the same encoding.

156.2.4 clone as StringHandleMBS

MBS DataTypes Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Creates a new StringHandleMBS object with the same content.
156.2.5 Constructor

MBS DataTypes Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor of this class.

See also:

- 156.2.6 Constructor(initvalue as string)

156.2.6 Constructor(initvalue as string)

MBS DataTypes Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The second constructor of this class which sets the value directly to the given REALbasic string.

**Example:**

```realbasic
// An utility function you can define in a module:

Function BinaryReplaceAll(s as string, a as string, b as string) As string
    dim h as StringHandleMBS
    h=new StringHandleMBS(s)
    h.ReplaceAll(a, b)
    Return h.Copy
End Function
```

See also:

- 156.2.5 Constructor

156.2.7 Copy as string

MBS DataTypes Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the content as a REALbasic string.

**Notes:** This string will have the encoding set in the encoding property.

156.2.8 Delete(start as Integer, length as Integer)

MBS DataTypes Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Deletes the bytes within the range.

**Notes:**

One based like RB’s string functions.

The start and length parameters use bytes not characters as unit. You can use the Copy method to get a RB
### 156.2.9 Extract(start as Integer, length as Integer) as string

MBS DataTypes Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Returns a part of the string.

**Notes:**

One based and the returned part is removed form the string data.
The start and length parameters use bytes not charcters as unit. You can use the Copy method to get a RB string for characterwise editing.

### 156.2.10 Insert(data as string, position as Integer)

MBS DataTypes Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Inserts the string data at the given byte position.

**Notes:**

One based.

Note that on Unicode the character position and the byte position are not equal!
(On 16bit Unicode charpos=2*bytepos and on US ASCII charpos=bytepos)

The position parameter uses bytes not charcters as unit. You can use the Copy method to get a RB string for characterwise editing.

### 156.2.11 InStr(srcOfs as Integer, target as String) as Integer

MBS DataTypes Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Searches for a binary string inside the StringHandle.

**Notes:**

The same as InStr but with a second parameter to specify the start of the search inside the string handle.

The srcOfs parameter uses bytes not charcters as unit. You can use the Copy method to get a RB string for characterwise editing.

See also:

- 156.2.12 InStr(target as String) as Integer
156.2.12  **Instr(target as String) as Integer**

MBS DataTypes Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Searches for a binary string inside the StringHandle.
**Example:**

```vbs
// We test if RB returns the same values as the plugin

dim s as String
dim h as StringHandleMBS

s="Christian"
h=new StringHandleMBS

h.Add s

MsgBox "MBS: " +str(h.InStr(5,"ia"))+", RB: " +str(InStr(s,"ia"))
MsgBox "MBS: " +str(h.InStr("xy"))+", RB: " +str(InStr(s,"xy"))
```

**Notes:**

Works like InstrB in RB which searches in binary mode.
Note that the string you use for searching must have the same encoding as the strings inside the stringhandle or you won’t find stuff like ”ü” (umlauts).
The search is case sensitive.
See also:

- 156.2.11 Instr(srcOfs as Integer, target as String) as Integer

156.2.13  **Left(length as Integer) as String**

MBS DataTypes Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Returns a copy of the first left bytes of the string.
**Notes:**

May return less strings if the stored string is not long enough.

The length parameter uses bytes not charcters as unit. You can use the Copy method to get a RB string for characterwise editing.
156.2. CLASS STRINGHANDLEMBS

156.2.14 Mid(start as Integer, length as Integer) as string

MBS DataTypes Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Returns a part of the string.

**Notes:**
- One based.
- The length parameter uses bytes not characters as unit. You can use the Copy method to get a RB string for characterwise editing.

156.2.15 Replace(a as String, b as string)

MBS DataTypes Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Replaces the first string found with content of a with the content of b.

**Example:**
```vba
dim s as StringHandleMBS
s=new StringHandleMBS
s.Add "Hallo Leutle, Hellau"
s.Replace("H","h")
s.Replace("l","i")
MsgBox s.Copy+" "+str(s.Len)
```

**Notes:**
- Note that all strings are compared binary and must have the same encoding.
- Basically this is just a call to instr, one to delete and one to insert.

See also:

- 156.2.16 Replace(startpos as Integer, a as String, b as string)

156.2.16 Replace(startpos as Integer, a as String, b as string)

MBS DataTypes Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Replaces the first string found with content of a with the content of b.

**Notes:**
- If you don’t give a startpos parameter the call uses one and is equal to Replace(a,b).
- Startpos is one based like all indexes in this class.
- The startpos parameter uses bytes not characters as unit. You can use the Copy method to get a RB string for characterwise editing.
for characterwise editing.
See also:

- 156.2.15 Replace(a as String, b as string)

### 156.2.17 ReplaceAll(a as String, b as string)

MBS DataTypes Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Replaces all strings with content of a with the content of b.
**Example:**
```vba
dim s as StringHandleMBS
s=new StringHandleMBS
s.Add "Hallo Leutle, Hellau"
s.Replaceall("H","h")
s.Replaceall("l","i")
MsgBox s.Copy+" "+str(s.Len)
```

**Notes:**
Note that all strings are compared binary and must have the same encoding.
Basicly this is just a loop with calls to instr, to delete and to insert.
See also:

- 156.2.18 ReplaceAll(startpos as Integer, a as String, b as string)

### 156.2.18 ReplaceAll(startpos as Integer, a as String, b as string)

MBS DataTypes Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
**Function:** Replaces all strings with content of a with the content of b.
**Notes:**
If you don’t give a startpos parameter the call uses one and is equal to ReplaceAll(a,b).
Startpos is one based like all indexes in this class.

The startpos parameter uses bytes not charcters as unit. You can use the Copy method to get a RB string
for characterwise editing.
See also:

- 156.2.17 ReplaceAll(a as String, b as string)
156.2. CLASS STRINGHANDLEMBS

156.2.19 Right(length as Integer) as string

MBS DataTypes Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.

**Function:** Returns a copy of the first right bytes of the string.

**Example:**

```
// There was a small bug in the Right and the Mid function for the version 3.1 of this plugin.
// This test failed in 3.1, but works in 3.2:

dim Text as StringHandleMBS
dim Part as String

Text = New StringHandleMBS
Text.Add "." + chr(13) + chr(10)

Part = Text.Copy
' Now Part is ".<CR><LF" which is correct

if lenb(Part)<>3 then
    MsgBox ",Failed on Copy ",+str(lenb(Part))
end if

Part = Text.Right(1)
' Now Part is ",<LF>" which is correct

if lenb(Part)<>1 then
    MsgBox ",Failed on Right(1 )",+str(lenb(Part))
end if

Part = Text.Right(2)
' Now Part is ",<CR><LF>" which is correct

if lenb(Part)<>2 then
    MsgBox ",Failed on Right(2 )",+str(lenb(Part))
end if

Part = Text.Right(3)
' Now Part is " which is wrong!

if lenb(Part)<>3 then
    MsgBox ",Failed on Right(3 )",+str(lenb(Part))
end if
```

**Notes:**

May return less strings if the stored string is not long enough.
The length parameter uses bytes not characters as unit. You can use the Copy method to get a RB string for
characterwise editing.

156.2.20 Truncate(length as Integer)

MBS DataTypes Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: Truncates the string handle content.
Notes:
Sets the length of the string back to the given value if it’s greater.

The length parameter uses bytes not characters as unit. You can use the Copy method to get a RB string for characterwise editing.

156.2.21 Properties

156.2.22 BlockLen as Int64

MBS DataTypes Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The size of the memory currently used for this class.
Notes:
This value increases by BlockSize if more memory is needed. (Read only property)

156.2.23 BlockSize as Int64

MBS DataTypes Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The size of the blocks to allocate for storing the data.
Notes: (Read and Write property)

156.2.24 Encoding as Int64

MBS DataTypes Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.
Function: The encoding to use for returned strings.
Notes:
Only useful on Realbasic 4.5 and newer.

Some example values for encoding:
156.2. CLASS STRINGHANDLEMBS

MacRoman 0 Also for ASCII or binary data used.
WindowsLatin1 \& h0500 ANSI codepage 1252
ISOLatin1 \& h0201 ISO 8859-1
NextStepLatin \& h0B01 NextStep encoding
Unicode \& h0100 16 bit Unicode
UTF8 \& h08000100 8 bit Unicode
Invalid \& hFFFFFFFF (Binary)
Invalid \& hFFFF (Binary)

(Read and Write property)

156.2.25 Len as Int64

MBS DataTypes Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns the len in bytes of the stored string.
Notes: (Read only property)

156.2.26 ReplaceCount as Int64

MBS DataTypes Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: After a call to one of the Replace functions the number of items replaced.
Notes: (Read and Write property)
156.3 class StyledText

156.3.1 class StyledText


156.3.2 Properties

156.3.3 RTFDataMBS as string


Notes:
This is a replacement for the built-in RTFData property. We tried to make the results exactly like the original. Speed should be a little bit faster than the official method. (Read and Write computed property)
156.4 class TextEncoding

156.4.1 class TextEncoding

Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Built in class from Xojo for text encodings.

156.4.2 Methods

156.4.3 InternetNameMBS as string

MBS Util Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries the name of this text encoding. **Notes:** We have this method in MBS Plugin as InternetName function does not work on Linux/Windows. (See feedback case 30712)
Chapter 157

Sudden Motion Sensor

157.1 module UniMotionMBS

157.1.1 module UniMotionMBS

MBS MacOSX Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
This module handles communication with the UniMotion library.

**Notes:**
UniMotion - Unified Motion detection for Apple portables.

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157.1.2 Methods

157.1.3 DetectSMS as Integer

MBS MacOSX Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Returns the value of SMS hardware present or unknown if no hardware is detected.

**Example:**

```vba
dim type as Integer = UniMotionMBS.DetectSMS

if type=0 then
 MsgBox "Unknown motion hardware or none found."
 quit
end if
```

**Notes:**

Use the constants powerbook, ibook, highrespb and macbookpro.

Use the value returned from DetectSMS as the type for the other functions.

Don’t call readsms(detectsms...) as this will do extra work.

If you can’t save the type between calls pass 0 as type to avoid extra work.

157.1.4 LoadLibrary(file as folderitem) as boolean

MBS MacOSX Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Loads the library from the folderitem.

**Example:**

```vba
dim f as FolderItem

f=GetFolderItem("libUniMotion.dylib")
if UniMotionMBS.LoadLibrary(f) then
 'ok
MainWindow.Show
else
 MsgBox "Failed to load the UniMotion library."
 quit
end if
```

**Notes:** Returns true on success and false on failure.
157.1.5 ReadSMS(type as Integer, byref x as Integer, byref y as Integer, byref z as Integer) as boolean

**Function:** Reads the "calibrated" values (same as raw if no calibration data exists)  
**Notes:** Returns true on success and false on failure.

157.1.6 ReadSMSraw(type as Integer, byref x as Integer, byref y as Integer, byref z as Integer) as boolean

**Function:** Reads the raw, unmodified values.  
**Notes:** Returns true on success and false on failure.

157.1.7 ReadSMSrawBytes(type as Integer) as memoryblock

**Function:** Reads the raw data bytes.  
**Notes:**  
The raw SMS data (useful for debugging)  
Note that endian issues make reading the raw bytes non-trivial.  
Returns nil or a memoryblock with the data.

157.1.8 ReadSMSreal(type as Integer, byref x as Double, byref y as Double, byref z as Double) as boolean

**Function:** Reads the real (1.0 = 1G) values (requires calibration data).  
**Notes:**  
Note that this is the preferred API as it need not change with new machines.  
If no "scale" calibration data exists defaults will be used based on the machine type.  

Returns true on success and false on failure.
157.1.9  ReadSMSscaled(type as Integer, byref x as Integer, byref y as Integer, byref z as Integer) as boolean

MBS MacOSX Plugin, Plugin Version: 9.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the scaled values, like real but easier to handle. **Notes:** This reverses the backwards polarity of x and increases the range of the older machines to match the MacBook [Pro] sensor. Returns true on success and false on failure.

157.1.10  Constants

157.1.11  highrespb=3

MBS MacOSX Plugin, Plugin Version: 9.1. **Function:** One of the constants used by DetectSMS.

157.1.12  ibook=2

MBS MacOSX Plugin, Plugin Version: 9.1. **Function:** One of the constants used by DetectSMS.

157.1.13  macbookpro=4

MBS MacOSX Plugin, Plugin Version: 9.1. **Function:** One of the constants used by DetectSMS.

157.1.14  powerbook=1

MBS MacOSX Plugin, Plugin Version: 9.1. **Function:** One of the constants used by DetectSMS.

157.1.15  unknown=0

MBS MacOSX Plugin, Plugin Version: 9.1. **Function:** One of the constants used by DetectSMS.
Chapter 158

System

158.1  Globals

158.1.1  GetHelpTagDelayMBS as Integer

MBS MacOSX Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the delay time for the help tags.

**Example:**

```
msgbox str(GetHelpTagDelayMBS)
```

**Notes:**
A positive value is for milliseconds and a negative value for microseconds.
It looks like the setting of this property is not recognized always.
This setting is also per application and not saved between sessions.

158.1.2  GetHelpTagDisplayedMBS as boolean

MBS MacOSX Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** whether the help tags are displayed.

**Notes:** This setting is per application and not saved between sessions.
158.1.3  SetHelpTagDelayMBS(value as Integer)

MBS MacOSX Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the delay time for the help tags.

**Example:**

```basic
if GetHelpTagDelayMBS<>5000 then // change to 5 seconds
SetHelpTagDelayMBS 5000
end if
```

**Notes:**

A positive value is for milliseconds and a negative value for microseconds.
It looks like the setting of this property is not recognized always.
This setting is also per application and not saved between sessions.

Realbasic 2006r3 does set this value whenever a window comes to front, so if you want to set it really, use some code like in the example above in a timer to change it to your need.

158.1.4  SetHelpTagDisplayedMBS(value as boolean)

MBS MacOSX Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets whether the help tags are displayed.

**Notes:** This setting is per application and not saved between sessions.

158.1.5  GetWindowsColorProfileMBS as folderitem

MBS Win Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the path to the color profile for the main screen on Windows.

**Example:**

```basic
dim f as folderitem
f=getwindowsColorProfileMBS
msgBox f.absolutePath
```

**Notes:** Returns nil on any error.
158.1.6 GetWindowsDisplayColorProfileMBS(DisplayIndex as Integer) as folderitem

MBS Win Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the path to the color profile for the given screen on Windows.  
**Example:**
```vbscript
dim f as folderitem
f=GetWindowsDisplayColorProfileMBS(1)
msgBox f.absolutePath
```

**Notes:**
- Index is zero based.
- Returns nil on any error.
- See also:
  - 158.1.7 GetWindowsDisplayColorProfileMBS(DisplayName as String) as folderitem

158.1.7 GetWindowsDisplayColorProfileMBS(DisplayName as String) as folderitem

MBS Win Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the path to the color profile for the given screen on Windows.  
**Notes:** Same as GetWindowsDisplayColorProfileMBS, but without index and taking a name.  
See also:
  - 158.1.6 GetWindowsDisplayColorProfileMBS(DisplayIndex as Integer) as folderitem

158.1.8 CrashNiceMBS

MBS Util Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Crashes the application.  
**Notes:** Does a nil object dereference which leads to a crash.

158.1.9 CrashUglyMBS

MBS Util Plugin, Plugin Version: 4.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Crashes the application.  
**Notes:** This function should hide the stack list so it should be impossible to know what function crashed.
It may take a second to finish it, but CrashReporter (on Mac OS X) and other tools will not be able to show you which function crashed.

### 158.1.10 DelayMBS(time as Double)

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Stopps the application for the given time.  

**Example:**

```
DelayMBS 1.5 // wait one and a half seconds
```

**Notes:**

The application should take nearly 0% CPU Power till time has gone.  
If you need more options like blocking other RB threads, check the DelayMBS method with mode parameter.

Another example from Kirk Clendinning:

```
Property: lastupdate as Integer

Sub YieldProcessorTime(periodticks as Integer, widthmilliseconds as Integer)
    // use the Monkeybread Software delay to yield time for a screen update
    // every period*ticks for a pulse width of width milliseconds
    if ticks > lastupdate + periodTicks then
        delayMBS widthmilliseconds/1000
        lastupdate = ticks
    end if

    exception err
    ExceptionReport(err, "Utils:Methods:YieldProcessorTime")
end sub
```

`YieldProcessorTime(15, 20)` gives me a delay of 20ms every 250ms. But, since the delayMBS yields time more efficiently than using a RB thread, this turns out to be a much more effective way to update progress bars etc.  
I don’t need the delay per se, but since RB still hasn’t written a good yield function (that I know of) your delayMSB works instead.

Please use optional mode flags with DelayDontWaitNextEvent when using on thread.
158.1.  GLOBALS

Using DelayMBS on Web Applications can cause problems as the server is paused than for all clients, a really bad thing.

See also:

- 158.1.11 DelayMBS(time as Double, mode as Integer)

158.1.11  DelayMBS(time as Double, mode as Integer)

MBS Util Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Stops the application for the given time.

**Example:**

DelayMBS 1.5, 0  // wait one and a half seconds

**Notes:**

Like DelayMBS with one parameter but additional mode parameter:

combine the following constants:

```plaintext
const DelayDontMPYield = 1  // Don't give additional time for other OS threads
const DelayDontRBYield = 2  // Don't give REALbasic time for other REALbasic threads
const DelayDontThreadYield = 4 // Don't give addition time for other OS threads
const DelayDontQuickTimeYield = 8 // Don't give time for QuickTime Movieplayer
const DelayDontWait = 16     // Don't give CPU time for other OS threads
const DelayDontWaitNextEvent = 32 // Don't give CPU time to handle events on Mac OS X to avoid beachball cursor
const DelayDontSleep = 64    // Don't give CPU time for other OS threads (Windows)
```

Using DelayDontWaitNextEvent may show the beach ball cursor, but will have the OpenDocument event working as other AppleEvents. Please use DelayDontWaitNextEvent option for running on threads.

Using DelayMBS on Web Applications can cause problems as the server is paused than for all clients, a really bad thing.

See also:

- 158.1.10 DelayMBS(time as Double)

158.1.12  SleepMBS(time as Double)

MBS Util Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sleeps the current thread for the given time in seconds.

**Example:**

DelayMBS 1.5  // wait one and a half seconds
dim sock as TCPSocket  // some socket
dim done as Boolean  // some global property

do

SleepMBS(0.1)  // 100 ms
sock.poll

loop until done

Notes:
Sleep does not yield CPU time to other functions, so you really sleep the whole process. Useful for console projects which sleep for a few milliseconds in a loop polling a socket.

If you need to give CPU time to socket, other threads or for quicktime movie playback, please use DelayMBS.

158.1.13  InstallSystemExceptionHandlerMBS(Message as string = "")

MBS Main Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. Function: Installs an exception handler to show a message dialog with custom message before the app crashes.
Example:
InstallSystemExceptionHandlerMBS "My message"

Notes:
If message is empty, the default message is "An unhandled C++ exception occurred. The application will now quit. A common reason for this is simply running out of memory.".

The plugin allocates some memory which we release later to make sure there is free memory for the message box.

On Windows this method does not work as currently we use static runtime on Windows which does not allow the plugin to access the runtime inside the RB framework.

158.1.14  AbortMBS

Notes:
Any open streams are flushed and closed.
The abort function never returns.

158.1.15 ExitMBS(code as Integer)

MBS Util Plugin, Plugin Version: 8.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Perform normal program termination.

**Notes:**
See "man 3 exit" on the terminal on Mac OS X or Linux for details.
You define your own error codes. Zero is no error by convention.

158.1.16 GlobalIdleTimeMBS as Double

MBS MacOSX Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Queries the current global idle time on a Mac.

**Example:**
MsgBox Format(GlobalIdleTimeMBS,"0.0")+" seconds idle"

**Notes:**
The return value is the number of seconds the user did not use mouse or keyboard.
Returns 0 on any error.

158.1.17 MacGlobalIdleTimeMBS as UInt64

MBS MacOSX Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries the current global idle time on a Mac.

**Example:**
MsgBox Format(MacGlobalIdleTimeMBS/1000000000.0,"0.0")+" seconds idle"

**Notes:**
The return value is the number of nanoseconds the user did not use mouse or keyboard.
Returns 0 on any error.
Depreciated in 13.2 plugins in favor of GlobalIdleTimeMBS.

158.1.18 MacMountServerVolumeMBS(URL as string, MountDir as String, User as String, Password as String, byref Disk as FolderItem, flags as Integer) as Integer

MBS MacOSX Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: This routine will mount the server specified by url at mountDir (or the default location if mountDir is empty).

Example:

dim flags as Integer = 0
dim disk as FolderItem
dim URL as string = ”smb://Test.local”
dim user as string = ”root”
dim pass as string = ”xxx”

dim e as Integer = MacMountServerVolumeMBS(URL, ””, user, pass, disk, flags)

if e = 0 then
  MsgBox ”OK”
else
  MsgBox disk.NativePath
end if

Notes:

An optional user and password can be passed in for authentication. If no user or password is provided then the underlying file system will handle authentication if required. This routine returns after the mount is complete.

url: The server to mount.
mountDir: The directory to mount the server to (default if empty).
user: String to pass as user for authentication.
password: String to pass as password for authenticated log in.
Disk: The folderItem of the newly mounted volume.
Flags: Options (such as kFSMountServerMarkDoNotDisplay and kFSMountServerMountOnMountDir).

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kFSMountServerMarkDoNotDisplay</td>
<td>1</td>
<td>Specify this option if you do want the volume displayed as a stand along volume in the UI.</td>
</tr>
</tbody>
</table>
**158.1.19  MacUnmountVolumeMBS(volume as folderItem, Force as Boolean, byref dissenter as Integer) as Integer**

MBS MacOSX Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This routine unmounts the volume specified by FolderItem.

**Example:**

```vba
dim u as Integer = VolumeCount-1
for i as Integer = 0 to u
    dim v as FolderItem = volume(i)
    if v.Name = "TestServer" then
        dim dissenter as Integer = 0
        dim e as Integer = MacUnmountVolumeMBS(v, false, dissenter)
        if e = 0 then
            MsgBox "Unmounted"
        else
            MsgBox "Failed to unmount with error " + str(e) + ". The app with PID " + str(dissenter) + " blocks it."
        end if
    end if
next
```

**Notes:**

If the volume cannot be unmounted the pid of the process which denied the unmount will be returned in the dissenter parameter. This routine returns after the unmount is complete.

**Force:** Specify true if you want the volume forcibly unmounted. Force unmounting a volume will very likely result in data loss since the volume will be ejected even if there are open files on it. This option should be reserved for situations such as the backing store for a volume is gone (so the data is lost regardless).

**dissenter:** pid of the process which denied the unmount if the unmount is denied.

Returns Mac OS X error code. Zero for success.
158.1.20 StartDictationMBS

MBS MacOSX Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Starts dictation. 
**Notes:** This is for Carbon application. For Cocoa use methods on NSApplicationMBS.

158.1.21 ArrayIsAMBS(v as Variant, ClassName as string) as boolean

MBS Util Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Checks if variant contains an array of the given class type. 
**Example:**
```vba
dim w() as MouseCursor
w.Append System.Cursors.ArrowEastWest
w.Append System.Cursors.ArrowNorthSouth

dim v as Variant = w

if ArrayIsAMBS(w, "MouseCursor") then
    MsgBox "OK"
end if
```

**Notes:** 
If the variant contains an array of some class, variant or object and has at least one value, the plugin checks this first value for being of type of the same class. Like an ISA check. 
This helps to solve feedback case 12213. 
Returns false if variant has no array, if variant is nil, if array is not an array of objects or if first object is nil.

158.1.22 BacktraceMBS(MaxFrames as Integer = 0, skip as Integer = 2) as string()

MBS Util Plugin, Plugin Version: 13.0, Console & Web: No, Mac: Yes, Win: No, Linux: Yes. **Function:** Queries the stack trace of the current function. 
**Example:**
```
MsgBox Join(BacktraceMBS, EndOfLine)
```

**Notes:**
MaxFrames: How many steps to show at maximum. Default is 128 currently.
skip: How many entries to skip. Default is 2 to not show this function.
Requires Mac OS X 10.5 or Linux.
Skip is 2 to hide this plugin function in the list.

158.1.23 GetAutoMemoryAddressMBS(o as auto) as integer

MBS Util Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries memory address of auto object. **Notes:** Allows you to compare if two variables refer same object.

158.1.24 GetObjectMemoryAddressMBS(o as object) as integer

MBS Util Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries memory address of object. **Notes:** Allows you to compare if two variables refer same object.

158.1.25 GetStringMemoryAddressMBS(s as string) as integer

MBS Util Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries memory address of string. **Notes:** Allows you to compare if two variables refer same string.

158.1.26 GetTextMemoryAddressMBS(s as text) as integer

MBS Util Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries memory address of text object. **Notes:** Allows you to compare if two variables refer same text.

158.1.27 GetVariantArrayMBS(VariantContainingArray as Variant) as Variant()

MBS Util Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries a variant containing array for an array and returns it as an array of variant. **Example:**

```vbnet
dim test() as Dictionary
test.Append new Dictionary
```
dim v() as Variant = GetVariantArrayMBS(test)
dim dic as Dictionary = v(0)
Break

Notes:
Works with all arrays of objects (any type).
Raises exception if the array can’t be converted or the variant contains no array.

158.1.28 GetVariantArrayUboundMBS(v as Variant) as Integer

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries array ubound for an array inside a variant.

Notes:
If you have an array in the variant, you’d normally assign it to an array to query values from array.
This function queries ubound directly.
Returns -3 if variant is nil and -2 if variant contains not an object array.
Updated in 13.5 plugins to raise exception is array is nil.

158.1.29 GetVariantArrayValueMBS(v as Variant, index as Integer) as Variant

MBS Util Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries an object from an array of objects inside a variant.

Example:

```vbnet
// some part of app builds an array
dim a() as pair
a.Append 1: "Hello"
a.Append 2: "World"

// passes it as Variant somewhere else

dim v as Variant = a

// and later you may want to get values back without knowing the array type

// this raises TypeMismatchException
'dim o() as Object = v

// so use plugin to get objects:
dim v1 as Variant = GetVariantArrayValueMBS(v, 0)
```
158.1. GLOBALS

```vba
Dim v2 As Variant = GetVariantArrayValueMBS(v, 1)

// now you can check type and cast to the object type
Dim p1 As pair = v1
Dim p2 As pair = v2

MsgBox p1.Right + " " + p2.Right
```

Notes:
This function is to allow getting objects from an array inside a variant without known the class used to
declare array.
Returns nil on any error.
Updated in 13.5 plugins to raise exception is array is nil.
Also updated to work with object, variant, string, date, integer, double, single, boolean, Int64 arrays. Other
array types will raise exception.

158.1.30 MillisecondsMBS as Double

MBS Util Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Queries current milliseconds time.
**Notes:** Like Microseconds in Xojo (Real Studio), but queries system functions for milliseconds counter.

158.1.31 ObjectIsAMBS(o as object, ClassName as string) as boolean

MBS Util Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Checks if a given object is of a given class.
**Example:**
```vba
// you must know exact name of class

Dim v As Variant = window1

If ObjectIsAMBS(v, "window1.window1") Then
    MsgBox "OK"
End If

V = System.Cursors.MagnifyLarger

If ObjectIsAMBS(v, "MouseCursor") Then
    MsgBox "OK"
End If
```
Notes:
Like ISA operator, but with class name as string.
Returns false if o is nil.

158.1.32  SetVariantArrayValueMBS(v as Variant, index as Integer, value as Variant)

MBS Util Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets an object from an array of objects inside a variant.
**Example:**
```plaintext
// some part of app builds an array
dim a() as pair

// passes it as Variant somewhere else

dim v as Variant = a

// and later you may want to put values in array without knowing object type for array

// this raises TypeMismatchException
'dim o() as Object = v

// so use plugin

SetVariantArrayValueMBS(v, 0, "Hello")
SetVariantArrayValueMBS(v, 1, "World")

MsgBox a(0).Right + " " + a(1).Right
```

Notes:
This function is to allow setting objects in an array inside a variant without known the class used to declare array.
Also updated to work with object, variant, string, date, integer, double, single, boolean, Int64 arrays. Other array types will raise exception.
Be sure to only put objects of right class in the array! Else you risk crashes.

If index is 1 bigger than ubound, we append an element.
158.1.33  ExitWindowsMBS(mode as Integer) as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Shutdown a Windows PC.

**Example:**

```vba
dim b as boolean
b=ExitWindowsMBS(0)
```

**Notes:**

Mode constants:

<table>
<thead>
<tr>
<th>Mode</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOGOFF</td>
<td>0</td>
<td>Shuts down all processes running in the security context of the process that called the ExitWindows function. Then it logs the user off.</td>
</tr>
<tr>
<td>SHUTDOWN</td>
<td>1</td>
<td>Shuts down the system to a point at which it is safe to turn off the power. All file buffers have been flushed to disk, and all running processes have stopped.</td>
</tr>
<tr>
<td>REBOOT</td>
<td>2</td>
<td>Shuts down the system and then restarts the system.</td>
</tr>
<tr>
<td>FORCE</td>
<td>4</td>
<td>Forces processes to terminate. When this flag is set, the system does not send the <code>WM_QUERYENDSESSION</code> and <code>WM_ENDSESSION</code> messages. This can cause the applications to lose data. Therefore, you should only use this flag in an emergency.</td>
</tr>
<tr>
<td>POWEROFF</td>
<td>8</td>
<td>Shuts down the system and turns off the power. The system must support the power-off feature.</td>
</tr>
<tr>
<td>FORCEIFHUNG</td>
<td>16</td>
<td>(Windows 2000) Forces processes to terminate if they do not respond to the <code>WM_QUERYENDSESSION</code> or <code>WM_ENDSESSION</code> message. This flag is ignored if FORCE is used.</td>
</tr>
</tbody>
</table>

Returns true if successfull.

The ExitWindows function returns as soon as it has initiated the shutdown. The shutdown or logoff then proceeds asynchronously.

During a shutdown or log-off operation, applications that are shut down are allowed a specific amount of time to respond to the shutdown request. If the time expires, the system displays a dialog box that allows the user to forcibly shut down the application, to retry the shutdown, or to cancel the shutdown request. If the FORCE value is specified, the system always forces applications to close and does not display the dialog box. If the FORCEIFHUNG value is specified, the system forces hung applications to close and does not display the dialog box.

Windows NT: To shut down or restart the system, the calling process must use the AdjustTokenPrivileges function to enable the SE_SHUTDOWN_NAME privilege.
158.1.34 GetDoubleClickIntervalMBS as Integer

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the time in ticks which makes two clicks to one double click.

**Example:**

```vbs
sub MouseUp(X as Integer, Y as Integer)
    dim currentClickTicks as Integer
    currentClickTicks = ticks

    if (currentClickTicks - lastClickTicks) <= GetDoubleClickIntervalMBS then
        if abs(x - lastClickX) <= 5 and abs (y - lastClickY) <= 5 then
            DoubleClick //Fire new Doubleclick event
            return
        end
    end
    lastClickTicks = currentClickTicks
    lastClickX = x
    lastClickY = y
    MouseUp
End sub
```

**Notes:** Time returned in ticks. One tick is 1/60 of a second.

158.1.35 GetMaximumOpenFileCountMacOSXMBS as Integer

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** The number of simultan open files

**Example:**

```vbs
msgbox str(GetMaximumOpenFileCountMacOSXMBS)
```

**Notes:**

On Mac OS X per default a process can have 256 files open at the same time.
This function allows you to increase the number of open files. It seems that you can't have more than 10240 files open on Mac OS X.
Returns -2 if the function is not available and -1 if the current number of open files is unknown.
158.1.36 GetSystemUIModeMBS as Integer

MBS MacOSX Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the current Mac OS X System UI Mode for your application.
**Notes:**
Returns -1 on any error.
See SetSystemUIModeMBS for more details.
Please use presentationOptions in NSApplicationMBS for Cocoa applications.

158.1.37 GetSystemUIModeOptionsMBS as Integer

MBS MacOSX Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the current Mac OS X System UI Mode options for your application.
**Notes:**
Returns -1 on any error.
See SetSystemUIModeMBS for more details.
Please use presentationOptions in NSApplicationMBS for Cocoa applications.

158.1.38 IsWindows95MBS as boolean

MBS Win Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Checks whether operation system is Windows 95/98/ME.
**Example:**
```
if IsWindows95MBS then
MsgBox "Windows 95/98/ME"
else
MsgBox "no Windows 95/98/ME"
end if
```
**Notes:** Returns true or false on Windows and alway false on other platforms.

158.1.39 IsWindowsAdminUserMBS as boolean

MBS Win Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Checks whether the current user is an Admin User on Windows.
**Example:**
```
if IsWindowsAdminUserMBS then
MsgBox "Is admin user."
```
else
MsgBox "no admin user."
end if

Notes: Returns true or false on Windows and alway false on other platforms.

158.1.40   IsWindowsNTMBS as boolean

MBS Win Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: Checks whether operation system is Windows NT/2000/XP.
Example:
if IsWindowsNTMBS then
MsgBox "Windows NT/2000/XP"
else
MsgBox "no Windows NT/2000/XP"
end if

Notes: Returns true or false on Windows and alway false on other platforms.

158.1.41   MacCountryCodeMBS as string

MBS MacClassic Plugin, Plugin Version: 3.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Returns the country code for
Example:
msgbox MacCountryCodeMBS // Shows DE in Germany.

Notes:
On any error returns "".
Requires Mac OS 8.6 or newer (or Mac OS X).
Fix in Plugin version 4.0 to no longer return random strings, but now you must accept that this function may fail on Mac if it has nothing to report. (unkown reason)
158.1.42  OpenMacOSXPreferencesPaneMBS(name as string) as Integer

MBS MacOSX Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Opens a named preference pane on Mac OS X.

**Example:**

```vba
dim e as Integer
e=OpenMacOSXPreferencesPaneMBS("Network")
```

**Notes:**

Returns a Mac OS X error code. For example -43 if file not found, -1 if function is not available or 0 if successfull.

Possible values for Mac OS X:
- UniversalAccessPref
- StartupDisk
- Speech
- Sound
- Network
- MyAccount
- Mouse
- LoginItems
- Localization
- Keyboard
- Internet
- Ink
- General
- EnergySaver
- DigiHubDiscs
- DesktopPictures
- Dock
- ColorSync
- QuickTime
- Classic
- Bluetooth
- ARDPref
- DateAndTime
- Accounts
- Displays
- SoftwareUpdate
- SharingPref
- ScreenSaver
158.1.43  **RunningOnCarbonXMBS as boolean**

MBS MacOSX Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if we are running Carbon on Mac OS X.

**Example:**

```plaintext
defining RunningOnCarbonXMBS as boolean

if RunningOnCarbonXMBS then
    ' do Stuff for Mac OS X only
end if
```

**Notes:** Does always return false on Windows and Mac OS Classic.

158.1.44  **SetMaximumOpenFileCountMacOSXMBS(Value as Integer)**

MBS MacCF Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** The number of simultaneous open files

**Example:**

```plaintext
SetMaximumOpenFileCountMacOSXMBS 500
```

**Notes:**

On Mac OS X per default a process can have 256 files open at the same time.
This function allows you to increase the number of open files. It seems that you can’t have more than 10240 files open on Mac OS X.

158.1.45  **SetSystemUIModeMBS(mode as Integer, Options as Integer)**

MBS MacOSX Plugin, Plugin Version: 2.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the current System UI mode for your application.

**Notes:**

Details from Apple’s documentation:

Sets the presentation mode for system-provided user interface elements.

The presentation mode of an application determines which system-provided user interface elements are visible on the screen. When the frontmost application changes its presentation mode, a kEventAppSystemUIModeChanged Carbon event is sent to all applications that have registered for the event. This event is also sent when an application is activated; it contains the newly active application’s presentation mode.
Note that the system UI mode is a per-process state. Switching from a process that is suppressing system UI to another process that is not will cause system UI elements to become visible automatically. Switching back to the first process will suppress system UI elements again.

The modes available:

- **kUIModeNormal** 0: In this mode, all standard system UI elements are visible.
- **kUIModeContentSuppressed** 1: In this mode, system UI elements which cover the "content area" of the screen (the area other than the menu bar) are hidden. However, these elements may automatically show themselves in response to mouse movements or other user activity; specifically, the Dock will still show itself automatically when the mouse moves into the Dock’s auto-show region.
- **kUIModeContentHidden** 2: In this mode, system UI elements which cover the "content area" of the screen (the area other than the menu bar) are hidden. Unlike kUIModeContentSuppressed, most UI elements will not automatically show themselves in this mode.
- **kUIModeAllHidden** 3: In this mode, all system UI elements, including the menu bar, are hidden. Most system UI elements will not automatically show themselves in this mode. The application may request that the menu bar automatically show itself while in this mode by passing the kUIOptionAutoShowMenuBar flag to SetSystemUIMode.

The options which you can combine:

- **kUIOptionAutoShowMenuBar** 1: Requests that the menu bar automatically show itself when the user moves the mouse into the screen area that would ordinarily be occupied by the menu bar. Only valid with kUIModeAllHidden.
- **kUIOptionAnimateMenuBar** 2: Requests that the menu bar animate on or offscreen, if the UIMode is also being changed such that the menu bar will change visibility. Unlike other UI options, this option is not stored and only affects the behavior of this call to SetSystemUIMode. Valid for all modes. Available in Mac OS X 10.7 and later.
- **kUIOptionDisableAppleMenu** 4: Disables all items in the Apple menu. Valid for all modes.
- **kUIOptionDisableProcessSwitch** 8: The active application may not be changed while this process is active. Currently disables the Command-Tab and Command-Shift-Tab key sequences to switch the active process, and the global window rotation key sequence selected by the user in the Keyboard preference pane. SetFrontProcess may still be used to explicitly switch the active process. Only valid with modes other than kUIModeNormal.
- **kUIOptionDisableForceQuit** 16: The Force Quit window may not be displayed while this process is active. Currently disables the Command-Option-Escape key sequence to open the Force Quit window and the Force Quit menu item in the Apple menu. Only valid with modes other than kUIModeNormal.
- **kUIOptionDisableSessionTerminate** 32: The current login session may not be terminated while this process is active. Currently disables the Power key and the Restart, Shut Down, and Log Out menu items in the Apple menu. Only valid with modes other than kUIModeNormal.

Please use presentationOptions in NSApplicationMBS for Cocoa applications.
158.1.46  ShowCharacterPaletteMBS

**Function:**  
Shows the character palette.  
**Example:**  
ShowCharacterPaletteMBS

**Notes:**  
Works on Mac OS X 10.3 and newer.  
We have no way to close this window.

158.1.47  SystemControlByNameMBS(name as string) as memoryblock

**Function:**  
The SystemControlByNameMBS function retrieves system information and allows processes with appropriate privileges to set system information.  
**Example:**  
```vbnet
dim m1 as MemoryBlock = SystemControlByNameMBS("hw.physicalcpu")
dim m2 as MemoryBlock = SystemControlByNameMBS("hw.logicalcpu")
MsgBox "physicalcpu: " +str(m1.Long(0))+EndOfLine+"logicalcpu: " +str(m2.Long(0))
```

**Notes:**  
The name is given as an ASCII string.  
Returns nil on any error.  
See also:  
- 158.1.48 SystemControlByNameMBS(name as string, input as memoryblock) as memoryblock

158.1.48  SystemControlByNameMBS(name as string, input as memoryblock) as memoryblock

**Function:**  
The SystemControlByNameMBS function retrieves system information and allows processes with appropriate privileges to set system information.  
**Notes:**  
The name is given as an ASCII string.  
Returns nil on any error.
158.1. **GLOBALS**

See also:

- 158.1.47 SystemControlByNameMBS(name as string) as memoryblock
- 158.1.49 SystemControlMBS(name as memoryblock) as memoryblock
- 158.1.50 SystemControlMBS(name as memoryblock, input as memoryblock) as memoryblock

---

### 158.1.49 SystemControlMBS(name as memoryblock) as memoryblock

MBS MacCF Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** The SystemControlMBS function retrieves system information and allows processes with appropriate privileges to set system information.

**Example:**

```vba
Function IsRosetta() As boolean
    Const CTL_HW = 6
    Const HW_MODEL = 2

    Dim mib, m As MemoryBlock
    mib = newMemoryBlock(8)
    mib.Long(0) = CTL_HW
    mib.Long(4) = HW_MODEL

    m = SystemControlMBS(mib)
    If m <> nil Then
        If m.CString(0) = "PowerMac" Then
            Return true
        End If
    End If
End Function
```

**Notes:**

- name is a MIB which can be constructed or queried with SystemControlNameToMIBMBS.
- Returns nil on any error.

See also:

- 158.1.50 SystemControlMBS(name as memoryblock, input as memoryblock) as memoryblock

---

### 158.1.50 SystemControlMBS(name as memoryblock, input as memoryblock) as memoryblock

MBS MacCF Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** The SystemControlMBS function retrieves system information and allows processes with appropriate privileges to set system information.

**Notes:**
Returns nil on any error.
name is a MIB which can be constructed or queried with SystemControlNameToMIBMBS.
See also:

- 158.1.49 SystemControlMBS(name as memoryblock) as memoryblock

158.1.51 SystemControlNameToMIBMBS(name as string) as memoryblock

MBS MacCF Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** Searches the given MIB for the given name.
**Notes:**
Name is an ASCII string.
Returns nil on any error.

158.1.52 WindowsSystemMetricsMBS(what as Integer) as Integer

MBS Win Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The WindowsSystemMetrics function retrieves various system metrics (widths and heights of display elements) and system configuration settings.
**Example:**

cost SM_CYSMICON = 50

MsgBox str(WindowsSystemMetricsMBS(SM_CYSMICON))

**Notes:**
All dimensions retrieved by GetSystemMetrics are in pixels.
If the function fails, the return value is zero.

Values for the what parameter:

The SM_ALLOW setting specifies how the system arranges minimized windows, and consists of a starting position and a direction. The starting position can be one of the following values:

The direction in which to arrange can be one of the following values:

see also
158.1.53 **WindowsGetProcessIntegrityLevelMBS as Integer**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The function gets the integrity level of the current process.

**Example:**

```plaintext
msgbox str(WindowsGetProcessIntegrityLevelMBS)
```

**Notes:**
Integrity level is only available on Windows Vista and newer operating systems, thus GetProcessIntegrityLevel throws a C++ exception if it is called on systems prior to Windows Vista.

Returns the integrity level of the current process. It is usually one of these values:

158.1.54 **WindowsIsApplicationRunAsAdminMBS as boolean**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The function checks whether the current process is run as administrator.

**Example:**

```plaintext
msgbox str(WindowsIsApplicationRunAsAdminMBS)
```

**Notes:**
In other words, it dictates whether the primary access token of the process belongs to user account that is a member of the local Administrators group and it is elevated.

Returns true if the primary access token of the process belongs to user account that is a member of the local Administrators group and it is elevated. Returns false if the token does not.

158.1.55 **WindowsIsProcessElevatedMBS as boolean**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The function gets the elevation information of the current process.

**Example:**

```plaintext
msgbox str(WindowsIsProcessElevatedMBS)
```

**Notes:**
It dictates whether the process is elevated or not. Token elevation is only available on Windows Vista and newer operating systems, thus IsProcessElevated returns always false if it is called on systems prior to Windows Vista. It is not appropriate to use this function to determine whether a process is run as administrator.

Returns true if the process is elevated. Returns false if it is not.

158.1.56  **WindowsIsUserInAdminGroupMBS as boolean**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The function checks whether the primary access token of the process belongs to user account that is a member of the local Administrators group, even if it currently is not elevated.

**Example:**
```
msgbox str(WindowsIsUserInAdminGroupMBS)
```

**Notes:** Returns true if the primary access token of the process belongs to user account that is a member of the local Administrators group. Returns false if the token does not.

158.2  **module BuildConstantsMBS**

158.2.1  **module BuildConstantsMBS**

MBS Main Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A module with build constants for you.

**Example:**
```
MsgBox BuildConstantsMBS.DateTime
```

158.2.2  **Constants**

158.2.3  **Date = ”21. 5.2018”**

MBS Main Plugin, Plugin Version: 11.0. **Function:** The constant for the date.

**Example:**
```
MsgBox BuildConstantsMBS.Date
```
Notes:
Format is dd.mm.yyyy like 24.12.2010.
This is the date when the plugin was loaded to the Real Studio IDE. You can use this constant to know in your application when it was built. Not exactly, but within a few hours exact.

158.2.4  **DateTime = ”Mon May 21 08:16:51 2018”**

MBS Main Plugin, Plugin Version: 11.0. **Function:** The constant for the date and time.

**Example:**

MsgBox BuildConstantsMBS.DateTime

Notes: This is the time when the plugin was loaded to the Real Studio IDE. You can use this constant to know in your application when it was built. Not exactly, but within a few hours exact.

158.2.5  **Day = 21**

MBS Main Plugin, Plugin Version: 11.0. **Function:** The day.

158.2.6  **Hour = 8**

MBS Main Plugin, Plugin Version: 11.0. **Function:** The hour.

158.2.7  **Minute = 16**

MBS Main Plugin, Plugin Version: 11.0. **Function:** The minute.

158.2.8  **Month = 5**

MBS Main Plugin, Plugin Version: 11.0. **Function:** The month.
158.2.9 Second = 51

MBS Main Plugin, Plugin Version: 11.0. **Function:** The second.

158.2.10 Time = ”8:16:51”

MBS Main Plugin, Plugin Version: 11.0. **Function:** The constant for the time.
**Example:**
MsgBox BuildConstantsMBS.Time

**Notes:**
Format is like hh:mm:ss like 11:22:33.
This is the time when the plugin was loaded to the Real Studio IDE. You can use this constant to know in your application when it was built. Not exactly, but within a few hours exact.

158.2.11 Year = 2018

MBS Main Plugin, Plugin Version: 11.0. **Function:** The year.
158.2. **MODULE BUILDCONSTANTS**

**SM.ARRANGE**

Flags specifying how the system arranged minimized windows. For more information about minimized windows, see the following Remarks section.

**SM.CLEANBOOT**

Value that specifies how the system was started: 0 Normal boot; 1 Fail-safe boot; 2 Fail-safe with network boot; Fail-safe boot (also called SafeBoot) bypasses the user's startup files.

**SM.CMETERS**

Value that specifies the layout of the monitor on the desktop. (Windows 2000 or newer)

**SM.CMONITORS**

Number of display monitors on the desktop. (Windows 2000 or newer)

**SM.CMOUSEBUTTONS**

Number of buttons on mouse, or zero if no mouse is installed.

**SM.CXBOARD**

Width, in pixels, of a window border.

**SM.CXCURSOR**

Width, in pixels, of a cursor. The system cannot create cursors of other sizes.

**SM.CXDLFRAME**

Thickness, in pixels, of the sizing border around the perimeter of a window that can be resized. (or SM.CXFIXEDFRAME)

**SM.CXDOUBLECLK**

Width, in pixels, of the rectangle around the location of a first click in a double-click sequence. The second click must occur within this rectangle for the system to consider the two clicks a double-click. (The two clicks must also occur within a specified time.)

**SM.CXDRAG**

Width, in pixels, of a rectangle centered on a drag point to allow for limited movement of the mouse pointer before a drag operation begins. This allows the user to click and release the mouse button easily without unintentionally starting a drag operation.

**SM.CXEDGE**

Width, in pixels, of a 3-D border.

**SM.CXFRAME**

Thickness, in pixels, of the sizing border around the perimeter of a window that can be resized. (or SM.CXSIZEFRAME)

**SM.CXFULLSCREEN**

Width of the client area for a full-screen window on the primary display monitor.

**SM.CXHSCROLL**

Width, in pixels, of the arrow bitmap on a horizontal scroll bar.

**SM.CXHTHUMB**

Width, in pixels, of the thumb box in a horizontal scroll bar.

**SM.CXICON**

The default width, in pixels, of an icon. The LoadIcon function can load only icons of these dimensions.

**SM.CXICONSPACING**

Width, in pixels, of a grid cell for items in large icon view. Each item fits into a rectangle of this size when arranged. These values are always greater than or equal to SM.CXICON and SM.CYICON.

**SM.CXMAXIFIED**

Default maximum width, in pixels, of a maximized top-level window on the primary display monitor.

**SM.CXMAXTRACK**

Default maximum width, in pixels, of a window that has a caption and sizing borders. This metric refers to the entire desktop. The user cannot drag the window frame to a size larger than these dimensions.

**SM.CXMENUCHECK**

Width, in pixels, of the default menu check-mark bitmap.

**SM.CXMENUKSIZE**

Width, in pixels, of menu bar buttons, such as the child window close button used in the multiple document interface.

**SM.CXMIN**

Minimum width, in pixels, of a window.

**SM.CXMINIMIZED**

Width, in pixels, of a normal minimized window.

**SM.CXMINSPACING**

Width, in pixels, of a grid cell for minimized windows. Each minimized window fits into a rectangle this size when arranged. These values are always greater than or equal to SM.CXMINIMIZED and SM.CYMINIMIZED.

**SM.CXMINTRACK**

Minimum tracking width, in pixels, of a window. The user cannot drag the window frame to a size smaller than these dimensions. A window can override these values by processing the WM_GETMINMAXINFO message.

**SM.CXSCREEN**

Width, in pixels, of the screen of the primary display monitor.

**SM.CXSIZE**

Width, in pixels, of a button in a window’s caption or title bar.

**SM.CXSMSIZE**

Recommended width, in pixels, of a small icon. Small icons typically appear in window captions and in small icon view.

**SM.CXVSCREEN**

Width, in pixels, of the virtual screen. The virtual screen is the bounding rectangle of all display monitors. (Windows 98/ME and 2000 or newer)

**SM.CXVSCROLL**

Width, in pixels, of a vertical scroll bar; and height, in pixels, of the arrow bitmap on a vertical scroll bar.

**SM.CYBOARD**

Height, in pixels, of a window border.

**SM.CYCAPTION**

Height, in pixels, of a normal caption area.

**SM.CYCOURCE**

Height, in pixels, of a cursor. The system cannot create cursors of other sizes.

**SM.CYDLFRAME**

Thickness, in pixels, of the frame around the perimeter of a window that has a caption but is not sizable. (or SM.CYFIXEDFRAME)

**SM.CYDOUBLECLK**

Height, in pixels, of the rectangle around the location of a first click in a double-click sequence. The second click must occur within this rectangle for the system to consider the two clicks a double-click. (The two clicks must also occur within a specified time.)

**SM.CYDRAG**

Height, in pixels, of a rectangle centered on a drag point to allow for limited movement of the mouse pointer before a drag operation begins. This allows the user to click and release the mouse button easily without unintentionally starting a drag operation.

**SM.CYEDGE**

Thickness, in pixels, of the frame around the perimeter of a window that has a 3-D border.

**SM.CYFRAME**

Thickness, in pixels, of the sizing border around the perimeter of a window that can be resized. (or SM.CYSIZEFRAME)

**SM.CYFULLSCREEN**

Width of the client area for a full-screen window on the primary display monitor.

**SM.CYHSCROLL**

Width, in pixels, of the arrow bitmap on a horizontal scroll bar.

**SM.CYHTHUMB**

Width, in pixels, of the thumb box in a horizontal scroll bar.

**SM.CYICON**

The default width, in pixels, of an icon. The LoadIcon function can load only icons of these dimensions.

**SM.CYICONSPACING**

Width, in pixels, of a grid cell for items in large icon view. Each item fits into a rectangle of this size when arranged. These values are always greater than or equal to SM.CYICON and SM.CXICON.

**SM.CYMAXIFIED**

Default maximum width, in pixels, of a maximized top-level window on the primary display monitor.

**SM.CYMAXTRACK**

Default maximum width, in pixels, of a window that has a caption and sizing borders. This metric refers to the entire desktop. The user cannot drag the window frame to a size larger than these dimensions.

**SM.CYMENUCHECK**

Width, in pixels, of the default menu check-mark bitmap.

**SM.CYMENUKSIZE**

Width, in pixels, of menu bar buttons, such as the child window close button used in the multiple document interface.

**SM.CYMIN**

Minimum width, in pixels, of a window.

**SM.CYMINIMIZED**

Width, in pixels, of a normal minimized window.

**SM.CYMINSPACING**

Width, in pixels, of a grid cell for minimized windows. Each minimized window fits into a rectangle this size when arranged. These values are always greater than or equal to SM.CYMINIMIZED and SM.CYCYNIMIZED.

**SM.CYMINTRACK**

Minimum tracking width, in pixels, of a window. The user cannot drag the window frame to a size smaller than these dimensions. A window can override these values by processing the WM_GETMINMAXINFO message.

**SM.CYSCREEN**

Width, in pixels, of the screen of the primary display monitor.

**SM.CYSIZE**

Width, in pixels, of a button in a window’s caption or title bar.

**SM.CYSMSIZE**

Recommended width, in pixels, of a small icon. Small icons typically appear in window captions and in small icon view.

**SM.CXSMICON**

Width, in pixels, of small caption buttons.

**SM.CXVSCREEN**

Width, in pixels, of the virtual screen. The virtual screen is the bounding rectangle of all display monitors. (Windows 98/ME and 2000 or newer)
ARW_BOTTOMLEFT  0x0000L Start at the lower-left corner of the screen (default position).
ARW_BOTTOMRIGHT 0x0001L Start at the lower-right corner of the screen. Equivalent to ARW_STARTRIGHT.
ARW_HIDE         0x0008L Hide minimized windows by moving them off the visible area of the screen.
ARW_TOPLEFT      0x0002L Start at the upper-left corner of the screen. Equivalent to ARW_STARTTOP.
ARW_TOPRIGHT     0x0003L Start at the upper-right corner of the screen. Equivalent to ARW_STARTTOP | SRW_STARTRIGHT.

ARW_DOWN         0x0004L Arrange vertically, top to bottom.
ARW_LEFT         0x0000L Arrange horizontally, left to right.
ARW_RIGHT        0x0000L Arrange horizontally, right to left.
ARW_UP           0x0004L Arrange vertically, bottom to top.

SECURITY_MANDATORY_UNTRUSTED_RID  = & h0  Means untrusted level. It is used by processes started by the Anonymous group. Blocks most write access.
SECURITY_MANDATORY_LOW_RID         = & h1000 Means low integrity level. It is used by Protected Mode Internet Explorer. Blocks write access to most objects (such as files and registry keys) on the system.
SECURITY_MANDATORY_MEDIUM_RID      = & h2000 Means medium integrity level. It is used by normal applications being launched while UAC is enabled.
SECURITY_MANDATORY_HIGH_RID        = & h3000 Means high integrity level. It is used by administrative applications launched through elevation when UAC is enabled, or normal applications if UAC is disabled and the user is an administrator.
SECURITY_MANDATORY_SYSTEM_RID      = & h4000 Means system integrity level. It is used by services and other system-level applications (such as Wininit, Winlogon, Smss, etc.).
158.3 class GlobalExceptionHandlerMBS

158.3.1 class GlobalExceptionHandlerMBS

MBS Main Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Installs an exception handler to show a message dialog with custom message before the app crashes. **Notes:**
The plugin allocates some memory which we release later to make sure there is free memory for the message box.

On Windows this method does not work as currently we use static runtime on Windows which does not allow the plugin to access the runtime inside the RB framework.

158.3.2 Events

158.3.3 GotException

MBS Main Plugin, Plugin Version: 11.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Called when an unhandled C++ exception was raised. **Notes:** Your application is in a very instable state when this event is called. Don’t do much here and quit soon with ExitMBS/AbortMBS.
158.4 class LinuxSysInfoMBS

158.4.1 class LinuxSysInfoMBS

MBS Linux Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The class to query memory and processor statistics.

**Example:**

```vbnet
dim l as new LinuxSysInfoMBS

MsgBox str(l.FreeRam) + “ bytes free.”
```

158.4.2 Methods

158.4.3 Constructor

MBS Linux Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Queries values and fills properties.

158.4.4 loads(index as Integer) as Double

MBS Linux Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** 1, 5, and 15 minute load averages.

158.4.5 Properties

158.4.6 availablePhysicalPages as Integer

MBS Linux Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Return number of available physical pages of memory in the system.

**Notes:** (Read only property)

158.4.7 BufferRam as UInt64

MBS Linux Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Memory used by buffers.

**Notes:** (Read only property)
158.4. CLASS LINUXSYSINFOMBS

158.4.8 FreeHigh as UInt64

MBS Linux Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Available high memory size. **Notes:** (Read only property)

158.4.9 FreeRam as UInt64

MBS Linux Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Available memory size. **Example:**

```vba
dim l as new LinuxSysInfoMBS
MsgBox str(l.FreeRam)+" bytes free."
```

**Notes:** (Read only property)

158.4.10 FreeSwap as UInt64

MBS Linux Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Swap space still available. **Notes:** (Read only property)

158.4.11 MemoryUnit as UInt64

MBS Linux Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Memory unit size in bytes. **Notes:** (Read only property)

158.4.12 NumberOfProcesses as Integer

MBS Linux Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Number of current processes. **Example:**

```vba
dim l as new LinuxSysInfoMBS
MsgBox str(l.NumberOfProcesses)+" processes"
```
158.4.13 **NumberOfProcessors as Integer**

MBS Linux Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Return number of available processors.

**Example:**

```vba
dim l as new LinuxSysInfoMBS
MsgBox str(l.NumberOfProcessors) + " processors"
```

**Notes:** (Read only property)

158.4.14 **NumberOfProcessorsConfigured as Integer**

MBS Linux Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Return number of configured processors.

**Notes:** (Read only property)

158.4.15 **PhysicalPages as Integer**

MBS Linux Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Return number of physical pages of memory in the system.

**Notes:** (Read only property)

158.4.16 **SharedRam as UInt64**

MBS Linux Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Amount of shared memory.

**Notes:** (Read only property)
158.4. **CLASS LINUXSYSINFOMBS**

158.4.17 **TotalHigh as UINT64**

MBS Linux Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Total high memory size.  
**Notes:** (Read only property)

158.4.18 **TotalRam as UINT64**

MBS Linux Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Total usable main memory size.  
**Notes:** (Read only property)

158.4.19 **TotalSwap as UINT64**

MBS Linux Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Total swap space size.  
**Notes:** (Read only property)

158.4.20 **upTime as Integer**

MBS Linux Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Seconds since boot.  
**Notes:** (Read only property)

158.4.21 **Valid as Boolean**

MBS Linux Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Whether constructor got values.  
**Notes:** Should be true on Linux and false on other platforms.  
(Read only property)
158.5  class SignalHandlerMBS

158.5.1  class SignalHandlerMBS

MBS Util Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** A signal handler for an unix signal.

**Notes:**

You can use this class to catch signals like SIGALRM oder SIGQUIT.

See


158.5.2  Methods

158.5.3  alarm(seconds as Integer)

MBS Util Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** Set signal timer alarm.

**Example:**

SignalHandlerMBS.alarm 1

**Notes:**

The alarm() function sets a timer to deliver the signal SIGALRM to the calling process after the specified number of seconds. If an alarm has already been set with alarm() but has not been delivered, another call to alarm() will supersede the prior call. The request alarm(0) voids the current alarm and the signal SIGALRM will not be delivered.

Due to setitimer restriction the maximum number of seconds allowed is 100000000.

alarm sends signal 14 after the time out.

158.5.4  ClearFlag(signalIndex as Integer)

MBS Util Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Clears the flag with given index.

**Notes:** Please call this after you got IsFlagSet.
158.5. **CLASS SIGNALHANDLERMBS**

### 158.5.5 ClearFlags

MBS Util Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Clears all flags.

### 158.5.6 ClearStacktrace(signalIndex as Integer)

MBS Util Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** Clears stored stack trace for the signal with given index.

### 158.5.7 Close

MBS Util Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** Releases this object’s resources.

### 158.5.8 IsFlagSet(signalIndex as Integer) as boolean

MBS Util Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Checks if a given flag was set.

### 158.5.9 QueryStacktrace(signalIndex as Integer, skip as Integer = 2) as string()

MBS Util Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** Queries stack at the time the signal handler was triggered. **Notes:**

Useful to know later which code got the signal. Works for flag handlers and for the event handlers if enabled.

### 158.5.10 SendSignal(PID as Integer, Signal as Integer) as boolean

MBS Util Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** Sends a signal. **Example:**

```c
// send signal to a process
// PID is 17779 here
// 9 means kill on Mac OS X
```
call SignalHandlerMBS.SendSignal(17779, 9)

Notes:
Returns true on success and false on failure.
Without a signal handler the target app could quit.

Lookup signal.h for the list of signals. They can be different on Mac and Linux.

158.5.11 SendSignalToSelf(Signal as Integer) as boolean

MBS Util Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** Send a signal to the current process
**Notes:**
Returns true on success and false on failure.
Without a signal handler the target app could quit.

158.5.12 SetDefaultHandler(signalIndex as Integer) as boolean

MBS Util Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** Defines to use the default handler for the given signal number.
**Example:**
```
Const SIGALRM = 14
if SignalHandlerMBS.SetDefaultHandler(SIGALRM) then
    MsgBox "Done"
else
    MsgBox "Failed"
end if
```
**Notes:** Returns true on success and false on failure.

158.5.13 SetEventHandler(signalIndex as Integer, CollectStackTrace as boolean = false) as boolean

MBS Util Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** Defines to call the Signal Event whenever a signal with the given number is received.
**Notes:**
158.5. **CLASS SIGNALHANDLERMBS**

Returns true on success and false on failure.
If CollectStackTrace is true, you can later use QueryStacktrace to get the stack trace from the time the signal was captured.

### 158.5.14 SetFlagHandler(signalIndex as Integer, CollectStackTrace as boolean = false) as boolean

MBS Util Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** Defines to set the flag whenever a signal with the given number is received.  
**Notes:**
Returns true on success and false on failure.  
Please use IsFlagSet in your app regularly to check if the flag was set.
If CollectStackTrace is true, you can later use QueryStacktrace to get the stack trace from the time the signal was captured.

### 158.5.15 SetIgnore(signalIndex as Integer) as boolean

MBS Util Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** Defines to ignore the event with the given number.  
**Example:**

```vbnet
Const SIGALRM = 14  
if SignalHandlerMBS.SetIgnore(SIGALRM) then  
 MsgBox "Done"  
else  
 MsgBox "Failed"  
end if
```

**Notes:** Returns true on success and false on failure.

### 158.5.16 SignalStatus(signalIndex as Integer) as Integer

MBS Util Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: Yes. **Function:** Queries the signal state.  
**Notes:** Returns 0 (unknown), kSignalDefault, kSignalEvent, kSignalFlag or kSignalIgnored.
158.5.17 Events

158.5.18 Signal(n as Integer)

MBS Util Plugin, Plugin Version: 8.5, Console & Web: No, Mac: Yes, Win: No, Linux: Yes. **Function:** A signal was called and you set an event handler.

**Example:**

```vba
Sub Signal(n as Integer)
    // restore system handler in case we get that crash again!
    MySignalHandlerMBS.SetDefaultHandler n

    // Mac and Linux can have different signal numbers:

    # if TargetMacOS then
    dim c as string = "Signal " +str(n)+" on Mac OS X"
    # elseif TargetLinux then
    dim c as string = "Signal " +str(n)+" on Linux"
    # else
    dim c as string = "Signal " +str(n)+" on ?"
    # endif

    dim BackTraceLines() as string
    # if mbs.BuildNumber>17662 and not TargetWin32 then // new in 13.0 plugins
    BackTraceLines = BacktraceMBS
    # endif

    // show your bug reporter (or the MBS one)
    'dim b as new Bugreporter
    'b.ShowExceptionReporter c, BackTraceLines

    // quit now without cleaning up the RB runtime which may crash again
    ExitMBS 1
End Sub
```

**Notes:** This function may be called at any time, so you need to use code which is thread safe. (see ThreadMBS class)
158.5.19 Constants

158.5.20 kSignalDefault = 1

MBS Util Plugin, Plugin Version: 8.5. **Function:** One of the signal state values. **Notes:** The signal calls default handler.

158.5.21 kSignalEvent = 3

MBS Util Plugin, Plugin Version: 8.5. **Function:** One of the signal state values. **Notes:** The signal raises an event and sets the flag.

158.5.22 kSignalFlag = 4

MBS Util Plugin, Plugin Version: 14.0. **Function:** One of the signal state values. **Notes:** The signal sets a flag.

158.5.23 kSignalIgnored = 2

MBS Util Plugin, Plugin Version: 8.5. **Function:** One of the signal state values. **Notes:** The signal is ignored.
158.6 module SystemInformationMBS

158.6.1 module SystemInformationMBS

MBS Util Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A module to collect all the system information functions.

**Example:**

```msgbox "Welcome "+SystemInformationMBS.Username+"!"
```

158.6.2 Methods

158.6.3 AvailableRAM as Double

MBS Util Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the size of the available memory.

**Example:**

```msgBox format(SystemInformationMBS.AvailableRAM/1024/1024,"0")+" MB of RAM free."
```

**Notes:**

This function is useful if you want to know how much memory you can allocate without the system swapping.

On Windows, Mac OS X and Linux you can normally allocate up to 2 or 3 GB of memory in your address-room. A swap file on disc is used to cache memory which does not fit into physical memory.

So if you need to allocate a buffer to store temporary data, you can use this function to calculate a good size.

For example a file copy function could use something like this:

```// a quarter of free memory is good to leave room for some OS buffers:
buffersize=SystemInformationMBS.AvailableRAM/4
```

```// minimum 4 MB
if buffersize<1024*1024*4 then
buffersize<1024*1024*4
end if
```

```// maximum 128 MB to make chunks not too big and application too unresponsive
```
if buffersize < 1024*1024*128 then
buffersize < 1024*1024*128
end if

In older plugins this function was named AvailableRAMMBS.

158.6.4 BusSpeed as Double

MBS Util Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the speed of the System bus in Hz.
**Example:**
msgbox "Your main CPU has " + format(SystemInformationMBS.BusSpeed/1000000.0,"0") + " MHz"

158.6.5 Computername as string

MBS Util Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the name of the computer.
**Example:**
msgbox "Hi, I'm " + SystemInformationMBS.Computername + "."

**Notes:**
On Mac OS, the name is queried in this order:
1. Try to ask the Mac OS X Corefoundation for the name.
2. Try to ask via AppleEvents the Finder or FileSharing.
3. Read it from the system resources.

On Linux or Windows the system name.

In older plugins this function was named ComputerNameMBS.

158.6.6 CPUBrandString as string

MBS Util Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the CPU brand string.
**Example:**
MsgBox SystemInformationMBS.CPUBrandString

Notes:
If it is an Intel x86 Chip or something compatible, you get strings like this: "Intel(R) Core(TM) i7 CPU M 620 @ 2.67GHz" (Same as CPUIDMBS.BrandString). But on PowerPC chips we return strings like "PowerPC G5 (970MP)" (same as CPUInfoMBS.CPUName).

May return "" if the processor is unknown.

158.6.7 CPUSpeed as Double

MBS Util Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns the Speed of the main CPU in Hz.
Example:
msgbox "Your main CPU has " + format(SystemInformationMBS.CPUSpeed/1000000.0,"0") + " MHz"

158.6.8 DomainName as string

MBS Util Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
Returns the domain name of a Windows PC.
Example:
msgbox SystemInformationMBS.DomainName

Notes: Returns an empty string on any error.

158.6.9 HardDiscSerial as string

MBS Util Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. Function:
Returns the hard disc serial number of the first hard disc which has a serial number.
Example:
MsgBox SystemInformationMBS.HardDiscSerial

Notes:
This function can return "" if nothing is found. Seems to return always empty string on Mac OS X 10.4 as the system properties dictionary does not contain the serial number there.

On Windows this function sometimes returns empty string, but later works again on the same machine. Reason unknown.

158.6.10  **HostName as string**

MBS Util Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**  Returns the hostname for this computer.  
**Example:**  
MsgBox SystemInformationMBS.HostName

158.6.11  **Is64bitWindows as boolean**

MBS Util Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**  Whether the Windows you are using is a 64bit Windows.  
**Example:**  
msgbox str(SystemInformationMBS.Is64bitWindows)

**Notes:**  
Returns true for x64 Windows editions.  
This function could also be named isWoW64 for "is Windows on Windows 64 bit."

Returns always true on 64bit target.

158.6.12  **isElCapitan(orHigher as boolean = true) as boolean**

MBS Util Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**  Whether the operation system is Mac OS X 10.11 El Capitan or newer.  
**Example:**  
MsgBox str(SystemInformationMBS.isElCapitan)
### 158.6.13 `isHighSierra(orHigher as boolean = true) as boolean` 

MBS Util Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the operation system is macOS 10.13 High Sierra or newer.  
**Example:**  
```ObjC 
MsgBox str(SystemInformationMBS.isHighSierra) 
```

**Notes:**  
Returns true on Mac OS X 10.11.  
If orHigher is set, it will also return true on 10.12.

### 158.6.14 `isLeopard(orHigher as boolean = true) as boolean` 

MBS Util Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the operation system is Mac OS X 10.5 Leopard or newer.  
**Example:**  
```ObjC 
MsgBox str(SystemInformationMBS.isLeopard) 
```

**Notes:** Returns true on Mac OS X 10.13.  
If orHigher is set, it will also return true on 10.14.

### 158.6.15 `isLion(orHigher as boolean = true) as boolean` 

MBS Util Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the operation system is Mac OS X 10.7 Lion or newer.  
**Example:**  
```ObjC 
MsgBox str(SystemInformationMBS.isLion) 
```

**Notes:** Returns true on Mac OS X 10.7 or newer.
158.6.  MODULE SystemInformationMBS

158.6.16  isMacOSX as Boolean

MBS Util Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**
Returns true if being called on Mac OS X.
**Example:**
msgbox str(SystemInformationMBS.isMacOSX)

158.6.17  isMavericks(orHigher as boolean = true) as boolean

MBS Util Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**
Whether the operation system is Mac OS X 10.9 Mavericks or newer.
**Example:**
MsgBox str(SystemInformationMBS.isMavericks)

**Notes:** Returns true on Mac OS X 10.9 or newer.

158.6.18  isMountainLion(orHigher as boolean = true) as boolean

MBS Util Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**
Whether the operation system is Mac OS X 10.8 Mountain Lion or newer.
**Example:**
MsgBox str(SystemInformationMBS.isMountainLion)

**Notes:** Returns true on Mac OS X 10.8 or newer.

158.6.19  isSierra(orHigher as boolean = true) as boolean

MBS Util Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**
Whether the operation system is macOS 10.12 Sierra or newer.
**Example:**
MsgBox str(SystemInformationMBS.isSierra)

**Notes:**
158.6.20  **isSnowLeopard**(or Higher as boolean = true) as boolean

MBS Util Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether the operation system is Mac OS X 10.6 Snow Leopard or newer.
**Example:**
MsgBox str(SystemInformationMBS.isSnowLeopard)

**Notes:** Returns true on Mac OS X 10.6 or newer.

158.6.21  **isWindows10**(or Higher as boolean = false) as Boolean

MBS Util Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns true if called on Windows 10.
**Example:**
msgbox str(SystemInformationMBS.isWindows10)

**Notes:**
If orHigher, than it returns true if OS Version is newer.

158.6.22  **isWindows2000**(or Higher as boolean = false) as Boolean

MBS Util Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns true if called on Windows 2000.
**Example:**
msgbox str(SystemInformationMBS.isWindows2000)

**Notes:**
And False on Mac OS X, Linux, Windows 7/XP/Vista/ME/98/95.
If orHigher, than it returns true if OS Version is newer.
158.6.23  isWindows7(orHigher as boolean = false) as Boolean

MBS Util Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if called on Windows 7.
**Example:**
msgbox str(SystemInformationMBS.isWindows7)

**Notes:**
And False on Mac OS X, Linux, Windows Vista/XP/2000/ME/98/95. If orHigher, than it returns true if OS Version is newer.

158.6.24  isWindows8(orHigher as boolean = false) as Boolean

**Example:**
msgbox str(SystemInformationMBS.isWindows8)

**Notes:**
And False on Mac OS X, Linux, Windows 7/Vista/XP/2000/ME/98/95. If orHigher, than it returns true if OS Version is newer.

158.6.25  isWindows81(orHigher as boolean = false) as Boolean

MBS Util Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns true if called on Windows 8.1
**Example:**
msgbox str(SystemInformationMBS.isWindows81)

**Notes:**
And False on Mac OS X, Linux, Windows 7/Vista/XP/2000/ME/98/95/8/10. If orHigher, than it returns true if OS Version is newer.
158.6.26  isWindowsVista(orHigher as boolean = false) as Boolean

MBS Util Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns true if called on Windows Vista.

**Example:**
msgbox str(SystemInformationMBS.isWindowsVista)

**Notes:**
And False on Mac OS X, Linux, Windows 7/XP/2000/ME/98/95. If orHigher, than it returns true if OS Version is newer.

158.6.27  isWindowsXP(orHigher as boolean = false) as Boolean

MBS Util Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns true if called on Windows XP.

**Example:**
msgbox str(SystemInformationMBS.isWindowsXP)

**Notes:**
And False on Mac OS X, Linux, Windows 7/Vista/2000/ME/98/95. If orHigher, than it returns true if OS Version is newer.

158.6.28  isYosemite(orHigher as boolean = true) as boolean

MBS Util Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether the operation system is Mac OS X 10.10 Yosemite or newer.

**Example:**
MsgBox str(SystemInformationMBS.isYosemite)

**Notes:** Returns true on Mac OS X 10.10 or newer.
158.6.29 LogicalRAM as Double

MBS Util Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the size of the logical installed memory. **Example:**

```plaintext
msgBox format(SystemInformationMBS.LogicalRAM/1024/1024,"0")+" MB of RAM built in."
```

**Deprecated:** This item is deprecated and should no longer be used. **Notes:**

On Mac OS Classic the virtual memory used or the physical memory. The virtual memory includes the memory used for filemapping. You’ll have some MB more than you might exspect, because the Mac OS ROM needs for example 3 MB and this is added. So 320 MB physical RAM can lead into 330 MB logical RAM. 320 MB physical plus 1 MB minimum for virtual memory plus 3 MB for the Mac ROM and around 6 MB for some application file mapping.

Result changed from integer to double in plugin version 3.4 to return correct results on 2 GB RAM.

On Windows the total virtual memory size.
On Linux always 4 GB.

In older plugins this function was named LogicalRAMMBS.

158.6.30 MACAddress as string

MBS Util Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the hardware ethernet address of the first ethernet card. **Example:**

```plaintext
msgBox SystemInformationMBS.MACAddress
```

**Notes:**

It returns a string with 6 bytes.
Works now with MBS Plugin 2.6 for Mac OS Classic, Carbon inside Classic and Mac OS X, but may not work for a Classic application running on Mac OS X. And may fail on some machines if no OpenTransport is running.

On Windows and Mac OS X you can have multiple ethernet cards and you should use a command line tool with the shell class to find what you need.
For example on Windows:

ipconfig /all

or on Mac OS X:

ifconfig -a

You can replace this function with usage of the NetworkInterface class in newer RB versions.

Added Linux support in version 16.4.

158.6.31 MACAddressString as string

MBS Util Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the hardware ethernet address of the first ethernet card.

**Example:**

msgBox SystemInformationMBS.MACAddressString

**Notes:**

Same as MACAddress, but with different format of output.

You can replace this function with usage of the NetworkInterface class in newer RB versions.

The plugin asks on Mac OS X the IOKit framework for the primary ethernet interface. We are not sure what Apple really defines for being the primary one, so let’s test it:

- Ethernet on and Airport off -> Ethernet MAC Address
- Ethernet off and Airport on -> Ethernet MAC Address

Added Linux support in version 16.4.
158.6.32 MacBugFixVersion as Integer

MBS Util Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The BugFix part of the Mac OS version number.

**Example:**

MsgBox str(SystemInformationMBS.MacBugFixVersion)

**Notes:** The bug fix system version number; in 10.4.17 this would be the decimal value 17.

158.6.33 MacHasHardwareAcceleratedCoreImage as boolean

MBS Util Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries whether hardware acceleration is used for CoreImage.

**Example:**

```
if SystemInformationMBS.MacHasHardwareAcceleratedCoreImage then
    MsgBox "CoreImage should be very fast."
else
    MsgBox "CoreImage may be slow."
end if
```

**Notes:** Queries OpenGL whether programmable fragments are supported.

158.6.34 MachineID(flags as Integer = 15) as string


**Example:**

```
// this is how we build it.
Dim t As String = "MachineID" + SystemInformationMBS.HardDiscSerial + SystemInformationMBS.MacSerialNumber + SystemInformationMBS.MacModel + SystemInformationMBS.CPUBrandString

// you could extend it with SystemInformationMBS.WinProductKey

Dim m As String = MD5StringMBS(t)

MsgBox "Machine ID:" + SystemInformationMBS.MachineID + EndOfLine + "My Machine ID:" + m
```
CHAPTER 158. SYSTEM

Notes:
Returns a 32 byte long hex string with a Machine ID.
Example value: "EE53748365B25996B51B7F4C99F9083".

This ID is based on the results of the MacSerialNumber, MacModel, CPUBrandString and HardDiscSerial functions. If all 4 functions have no value, the result is always "A2254DEF74608D76B1A49BD2E82A". Also the result could change in future if we fix a bug in one of the functions so that the result values differ.

It is not based on the MACAddressString function as your MAC Address can change when switching between wired and wireless networks. Also we do not check the PhysicalRAM as RAM is a typical thing which changes over time.

You can store this value in some preferences/license file and later compare it against the current value to see if the machine may have changed. In that case ask user to revalidate license, for example by asking for the serial number.

It can happen that 2 PCs have the same MachineID, typical two virtual machines. So this ID is not unique. But it is very likely that two different computers produce different MachineIDs.

Added flags parameter in 14.1:

flagHardDiscSerial 1 Use hard disk serial.
flagMacSerialNumber 2 Use Mac Serial number (on Mac)
flagMacModel 4 Use Mac Model (on Mac)
flagCPUBrandString 8 Use CPU Brand String.
flagWinProductKey 16 Use Product Key (on Windows only)

The Machine ID may be different if one of the components returns a different result. Result may be different in whether app runs as admin or not on Windows.

158.6.35 MacMajorVersion as Integer

MBS Util Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
The major Mac OS version number.
Example:

// show major version number
MsgBox str(SystemInformationMBS.MacMajorVersion)

// and show all three version numbers together:
MsgBox str(SystemInformationMBS.MacMajorVersion)+"."+str(SystemInformationMBS.MacMinorVersion)+"."+str(Sys-
158.6.  **MODULE SYSTEMINFORMATIONMBS**

```vbs
Dim SystemInformationMBS, MacBugFixVersion
```

**Notes:** The major system version number; in 10.4.17 this would be the decimal value 10.

### 158.6.36  MacMinorVersion as Integer

MBS Util Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The minor Mac OS version number.

**Example:**

```vbs
MsgBox str(SystemInformationMBS.MacMinorVersion)
```

**Notes:** The minor system version number; in 10.4.17 this would be the decimal value 4.

### 158.6.37  MacModel as string

MBS Util Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Mac model string.

**Example:**

```vbs
msgbox SystemInformationMBS.MacModel
```

**Notes:** for example "<powermac7,3>".

### 158.6.38  MacSerialNumber as string

MBS Util Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the serial number of your local Mac.

**Example:**

```vbs
msgbox SystemInformationMBS.MacSerialNumber
```

**Notes:**
May return an empty string in case of an error.
(e.g. when being user on Windows or if the Mac does not know its serialnumber)
158.6.39 MacUUID as string

MBS Util Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the unique identifier for the given Mac.

**Example:**

```
msgbox SystemInformationMBS.MacUUID
```

**Notes:** Returns "" on any error.

158.6.40 MacVRAMSize as Int64

MBS Util Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Queries the size of the main video graphics memory size.

**Example:**

```
msgbox format(SystemInformationMBS.MacVRAMSize, "0") + " Bytes VRAM."
```

**Notes:**

Walks over the list of displays, asks on each display for its VRAM size and returns the first value found.

For some reason this seems not to return more than 256 MB of memory.

158.6.41 OSName as string

MBS Util Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a string to display which OS Version you have.

**Example:**

```
msgBox SystemInformationMBS.OSName
' may show: Mac OS X
```

**Notes:**

Return values possible:
Windows NT
Windows 2000
Windows XP
Windows Vista
and a few other Windows versions like 6.2 alias 8.

In older plugins this function was named OSNameMBS.

### 158.6.42 OSVersionString as string

MBS Util Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a string to display which OS Version you have.

**Example:**

```plaintext
msgBox SystemInformationMBS.OSVersionString
' may show: Mac OS X 10.1.2
```

**Notes:**

GetOSVersionStr returns the version string of the OS.
Some Possible values:

"System 7.5.3",
"MacOS 8",
"MacOS 9.1",
"MacOS X 10.4.1",
"Windows NT 3.5",
"Windows 2000 (Service Pack 3)".

In older plugins this function was named OSVersionStrMBS.

### 158.6.43 PhysicalRAM as Double

MBS Util Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the size of the physical installed memory.

**Example:**

```plaintext
msgBox format(SystemInformationMBS.PhysicalRAM/1024/1024,"0")+" MB of RAM built in."
```

**Notes:**
On old Windows versions some hundred KBs less for DOS.

Result changed from integer to double in plugin version 3.4 to return correct results on 2 GB RAM. In v5.2 changed to return correct values on Macs with more than 4 GB of RAM.

On Windows the total physical memory size.

In older plugins this function was named PhysicalRAMMBS.

### 158.6.44 ProcessorCount(Mode as Integer = 0) as Integer

MBS Util Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of processors on the target system. **Example:**

```vb
MsgBox _
str(SystemInformationMBS.ProcessorCount(SystemInformationMBS.kProcessorCountDefault ))+” default” + EndOfLine + _
str(SystemInformationMBS.ProcessorCount(SystemInformationMBS.kProcessorCountLogical ))+” logical” + EndOfLine + _
str(SystemInformationMBS.ProcessorCount(SystemInformationMBS.kProcessorCountPhysical)) +” physical"
```

**Notes:**

With plugin version 18.0, we added mode parameter. Pass 1 for physical CPU (kProcessorCountPhysical) and 2 for logical CPU count (kProcessorCountLogical) on Mac/Win.

On Windows or Mac OS the number of cores.
On Linux the number of configured CPUs.

Returns 1 on any error.

### 158.6.45 ShortUsername as string

MBS Util Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the short name of the current user. **Example:**

```vb
msgbox ”Welcome ” + SystemInformationMBS.ShortUsername+”!”
```
Notes:
On Linux and Mac OS X the short user name.
On all other cases the same as UserName function.

158.6.46 SystemFont as string

MBS Util Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the name of the used system font.

**Example:**

```plaintext
msgbox "You are using the system font "+SystemInformationMBS.SystemFont+"."
```

Notes:
On Windows the system function returns "System" for our tests. Please tell us if this function is not working for you correct on Windows.
On Linux something like "Sans 10" is returned.

In older plugins this function was named SystemFontMBS.

158.6.47 Username as string

MBS Util Plugin, Plugin Version: 8.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the name of the current user.

**Example:**

```plaintext
msgbox "Welcome "+SystemInformationMBS.Username+"!"
```

Notes:
Code for Multiple User on Mac OS 9 is build in, but I can’t test it.

This is tried on Mac OS:
1. Mac OS X Username function.
3. Mulitple User Username (Mac OS 9)
4. System username from system resource.

In older plugins this function was named UserNameMBS.

158.6.48  **WinBuildNumber as Integer**

MBS Util Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The build number of the operating system.

**Example:**

MsgBox str(SystemInformationMBS.WinBuildNumber)

**Notes:** For example returns 2600 on Windows XP Build 2600.

158.6.49  **WinCSDVersion as string**

MBS Util Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
A string, such as "Service Pack 3", that indicates the latest Service Pack installed on the system.

**Example:**

MsgBox SystemInformationMBS.WinCSDVersion

**Notes:**
Shows here "Service Pack 3" on a Windows XP installation.
If no Service Pack has been installed, the string is empty.

158.6.50  **WindowsAero as boolean**

MBS Util Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Whether Windows is using the Aero Interface?

**Example:**

msgbox str(SystemInformationMBS.WindowsAero)

**Notes:** True if Aero is used. False if the status is unknown (e.g. on Windows XP) or Aero is not used.
158.6.  MODULE SYSTEMINFORMATIONMBS

158.6.51  WinMajorVersion as Integer

MBS Util Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The major version number of the operating system.
**Example:**
MsgBox str(SystemInformationMBS.WinMajorVersion)

**Notes:** Returns 5 on Windows 2000/XP and 6 on Windows Vista/7/8.

158.6.52  WinMinorVersion as Integer

MBS Util Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The minor version number of the operating system.
**Example:**
MsgBox str(SystemInformationMBS.WinMinorVersion)

**Notes:** Returns 0 on Windows 2000/Vista and 1 on Windows XP/7 and 2 on Windows 8.

158.6.53  WinPlatformId as Integer

MBS Util Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The operating system platform.
**Example:**
MsgBox str(SystemInformationMBS.WinPlatformId)

**Notes:**
This member can be VER_PLATFORM_WIN32_NT (2).
e.g. 2 on Windows XP.

158.6.54  WinProductKey as string

MBS Util Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Returns the product key of the Windows installation.
**Notes:** Returns "" on any error.
158.6.55 WinProductKey(path as string, name as string, keyStartIndex as Integer = 52) as string

MBS Util Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the product key of the Windows installation.

**Notes:**
- Returns "" on any error.
- With the right path and name you can read also the office versions.

For Office 10, it looks like you need to use 808 as offset.

See also:

- 158.6.54 WinProductKey as string

158.6.56 WinProductType as Integer

MBS Util Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Any additional information about the system.

**Example:**

MsgBox str(SystemInformationMBS.WinProductType)

**Notes:**
- e.g. 1 on Windows XP.

This member can be one of the following values:

- **VER_NT_DOMAIN_CONTROLLER** 2 The system is a domain controller and the operating system is Windows Server 2008, Windows Server 2003, or Windows 2000 Server.
- **VER_NT_SERVER** 3 The operating system is Windows Server 2008, Windows Server 2003, or Windows 2000 Server. Note that a server that is also a domain controller is reported as **VER_NT_DOMAIN_CONTROLLER**, not **VER_NT_SERVER**.
158.6. **MODULE SYSTEMINFORMATIONMBS**

### 158.6.57 WinServicePackMajor as Integer

MBS Util Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The major version number of the latest Service Pack installed on the system. **Example:**

```
MsgBox str(SystemInformationMBS.WinServicePackMajor)
```

**Notes:** For example, for Service Pack 3, the major version number is 3. If no Service Pack has been installed, the value is zero.

### 158.6.58 WinServicePackMinor as Integer

MBS Util Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The minor version number of the latest Service Pack installed on the system. **Example:**

```
MsgBox str(SystemInformationMBS.WinServicePackMinor)
```

**Notes:** For example, for Service Pack 3, the minor version number is 0.

### 158.6.59 WinSuiteMask as Integer

MBS Util Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A bit mask that identifies the product suites available on the system. **Example:**

```
MsgBox str(SystemInformationMBS.WinSuiteMask)
```

**Notes:**

e.g. 256 on Windows XP.

This member can be a combination of the following values.
CHAPTER 158. SYSTEM

VER_SUITE_BACKOFFICE & h4000 Microsoft BackOffice components are installed.
VER_SUITE_EMBEDDEDNT & h0040 Windows XP Embedded is installed.
VER_SUITE_SINGLEUSERS & h0100 Remote Desktop is supported, but only one interactive session is supported. This value is set unless the system is running in application server mode.
VER_SUITE_SMALLBUSINESS & h0020 Microsoft Small Business Server was once installed on the system, but may have been upgraded to another version of Windows. Refer to the Remarks section for more information about this bit flag.
VER_SUITE_SMALLBUSINESS_RESTRICTED & h0020 Microsoft Small Business Server is installed with the restrictive client license in force. Refer to the Remarks section for more information about this bit flag.
VER_SUITE TERMINAL & h0010 Terminal Services is installed. This value is always set. If VER_SUITE_TERMINAL is set but VER_SUITE_SINGLEUSERS is not set, the system is running in application server mode.
VER_SUITE_WH_SERVER & h8000 Windows Home Server is installed.

158.6.60 Constants

158.6.61 kProcessorCountDefault = 0

MBS Util Plugin, Plugin Version: 13.0. **Function:** One of the mode values for ProcessorCount function. **Notes:** Default behavior.

158.6.62 kProcessorCountLogical = 1

MBS Util Plugin, Plugin Version: 13.0. **Function:** One of the mode values for ProcessorCount function. **Notes:** Logical Processors

158.6.63 kProcessorCountPhysical = 2

MBS Util Plugin, Plugin Version: 13.0. **Function:** One of the mode values for ProcessorCount function. **Notes:** Physical Processors
Chapter 159

SystemConfiguration

159.1 class SCNetworkReachabilityMBS

159.1.1 class SCNetworkReachabilityMBS


Notes:
The SCNetworkReachability class allow an application to determine the status of a system’s current network configuration and the reachability of a target host. In addition, the reachability can be monitored with a notification being provided when/if the status has changed.

The term "reachable" reflects whether a data packet, sent by an application into the network stack, can be sent to the target host/address. Please note that there is no guarantee that the data packet will actually be received by the host.

Requires Mac OS X 10.3 or newer.
Subclass of the CFObjectMBS class.

159.1.2 Methods

159.1.3 CreateWithAddress(ip as string) as boolean

Notes: Returns true on success.
159.1.4 CreateWithAddressPair(LocalIP as string, RemoteIP as string) as boolean

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a reference to the specified network address.  
**Notes:**  
Returns true on success.  
LocalIP: The local address associated with a network connection.  
RemoteIP: The remote address associated with a network connection.  
One of the IP addresses can be empty.

159.1.5 CreateWithName(name as string) as boolean

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a reference to the specified network host/node name.  
**Notes:** Returns true on success.

159.1.6 ErrorString(errorcode as Integer) as string

**Notes:** A utility function which works at any time.

159.1.7 Properties

159.1.8 Error as Integer

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the last error code.  
**Notes:**  
A utility function which works with all SystemConfiguration methods.  
(Read only property)

159.1.9 Flags as Integer

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Determines if the given target is reachable using the current network configuration.  
**Notes:**
### 159.1. CLASS SCNETWORKREACHABILITYMBS

<table>
<thead>
<tr>
<th>constant</th>
<th>value</th>
<th>description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kSCStatusOK</td>
<td>0</td>
<td>Success</td>
</tr>
<tr>
<td>kSCStatusFailed</td>
<td>1001</td>
<td>Non-specific failure</td>
</tr>
<tr>
<td>kSCStatusInvalidArgument</td>
<td>1002</td>
<td>Invalid argument</td>
</tr>
<tr>
<td>kSCStatusAccessError</td>
<td>1003</td>
<td>Permission denied - must be root to obtain lock - could not create access/create preferences</td>
</tr>
<tr>
<td>kSCStatusNoKey</td>
<td>1004</td>
<td>No such key</td>
</tr>
<tr>
<td>kSCStatusKeyExists</td>
<td>1005</td>
<td>Key already defined</td>
</tr>
<tr>
<td>kSCStatusLocked</td>
<td>1006</td>
<td>Lock already held</td>
</tr>
<tr>
<td>kSCStatusNeedLock</td>
<td>1007</td>
<td>Lock required for this operation</td>
</tr>
<tr>
<td>kSCStatusNoStoreSession</td>
<td>2001</td>
<td>Configuration daemon session not active</td>
</tr>
<tr>
<td>kSCStatusNoStoreServer</td>
<td>2002</td>
<td>Configuration daemon not (no longer) available</td>
</tr>
<tr>
<td>kSCStatusNotifierActive</td>
<td>2003</td>
<td>Notifier is currently active</td>
</tr>
<tr>
<td>kSCStatusNoPrefsSession</td>
<td>3001</td>
<td>Preference session not active</td>
</tr>
<tr>
<td>kSCStatusPrefsBusy</td>
<td>3002</td>
<td>Preferences update currently in progress</td>
</tr>
<tr>
<td>kSCStatusNoConfigFile</td>
<td>3003</td>
<td>Configuration file not found</td>
</tr>
<tr>
<td>kSCStatusNoLink</td>
<td>3004</td>
<td>No such link</td>
</tr>
<tr>
<td>kSCStatusStale</td>
<td>3005</td>
<td>Write attempted on stale version of object</td>
</tr>
<tr>
<td>kSCStatusMaxLink</td>
<td>3006</td>
<td>Maximum link count exceeded</td>
</tr>
<tr>
<td>kSCStatusReachabilityUnknown</td>
<td>4001</td>
<td>Network reachability cannot be determined</td>
</tr>
</tbody>
</table>

Returns 0 on any error.

See the event for the flag constants.

(Read only property)

### 159.1.10 Events

### 159.1.11 Changed(flags as Integer)


**Function:**
The reachability changed.

**Notes:**
useful constants:

<table>
<thead>
<tr>
<th>constant</th>
<th>value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kSCNetworkFlagsTransientConnection</td>
<td>1</td>
</tr>
<tr>
<td>kSCNetworkFlagsReachable</td>
<td>2</td>
</tr>
<tr>
<td>kSCNetworkFlagsConnectionRequired</td>
<td>4</td>
</tr>
<tr>
<td>kSCNetworkFlagsConnectionAutomatic</td>
<td>8</td>
</tr>
<tr>
<td>kSCNetworkFlagsInterventionRequired</td>
<td>5</td>
</tr>
<tr>
<td>kSCNetworkFlagsIsLocalAddress</td>
<td>65536</td>
</tr>
<tr>
<td>kSCNetworkFlagsIsDirect</td>
<td>131072</td>
</tr>
</tbody>
</table>

Flags that indicate whether the specified network nodename/address is reachable, requires a connection, requires some user intervention in establishing the connection, and whether the calling application must
initiate the connection using the (TBD???) API.

kSCNetworkFlagsTransientConnection
This flag indicates that the specified nodename/address can be reached via a transient (e.g. PPP) connection.

kSCNetworkFlagsReachable
This flag indicates that the specified nodename/address can be reached using the current network configuration.

kSCNetworkFlagsConnectionRequired
This flag indicates that the specified nodename/address can be reached using the current network configuration but a connection must first be established.

As an example, this status would be returned for a dialup connection that was not currently active but could handle network traffic for the target system.

kSCNetworkFlagsConnectionAutomatic
This flag indicates that the specified nodename/address can be reached using the current network configuration but a connection must first be established. Any traffic directed to the specified name/address will initiate the connection.

kSCNetworkFlagsInterventionRequired
This flag indicates that the specified nodename/address can be reached using the current network configuration but a connection must first be established. In addition, some form of user intervention will be required to establish this connection (e.g. providing a password, authentication token, etc.).

kSCNetworkFlagsIsLocalAddress
This flag indicates that the specified nodename/address is one associated with a network interface on the current system.

kSCNetworkFlagsIsDirect
This flag indicates that network traffic to the specified nodename/address will not go through a gateway but is routed directly to one of the interfaces in the system.
159.2. CLASS SCPREFERENCESMBS

159.2 class SCPreferencesMBS

159.2.1 class SCPreferencesMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class for System Configuration Preferences.

**Notes:**
Please remember that you may need root access to change something.

The SCPReferences classes allow an application to load and store XML configuration data in a controlled
manner and provide the necessary notifications to other applications that need to be aware of configuration
changes.

The stored XML configuration data is accessed using a prefsID. A nil value indicates that the default system preferences are to be accessed.
A string which starts with a leading "/" character specifies the path to the file containing the preferences to be accessed. A string which does not start with a leading "/" character specifies a file relative to the default system preferences directory.

The Path APIs make certain assumptions about the layout of the preferences data. These APIs view the
data as a collection of dictionaries of key/value pairs and an associated path name. The root path ("/")
identifies the top-level dictionary. Additional path components specify the keys for sub-dictionaries.

For example, the following dictionary can be accessed via two paths. The root ("/") path would return a
dictionary with all keys and values. The path "/path1" would only return the dictionary with the "key3"
and "key4" properties.

```xml
<dict>
 <key>key1</key>
 <string>val1</string>
 <key>key2</key>
 <string>val2</string>
 <key>path1</key>
 <dict>
  <key>key3</key>
  <string>val3</string>
  <key>key4</key>
  <string>val4</string>
 </dict>
</dict>
```

Each dictionary can also include the kSCResvLink key. The value associated with this key is interpreted as
a "link" to another path. If this key is present, a call to the GetPathValue() API will return the dictionary
specified by the link.
Subclass of the CFObjectMBS class.

159.2.2 Methods

159.2.3 AddValue(key as CFStringMBS, value as CFObjectMBS) as boolean

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Adds data for a preference key.
**Notes:**
This function associates new data with the specified key. In order to commit these changes to permanent
storage a call must be made to CommitChanges.

Returns true if the value was added; false if the key already exists or if an error occurred.

159.2.4 ApplyChanges as boolean

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Requests that the currently stored configuration preferences be applied to the active configuration.
**Notes:** Returns true if the lock was obtained; false if an error occurred.

159.2.5 CommitChanges as boolean

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Commits changes made to the configuration preferences to persistent storage.
**Notes:**
This function commits any changes to permanent storage. An implicit call to Lock/Unlock will be made if
exclusive access has not already been established.

Note: This routine commits changes to persistent storage. Call ApplyChanges to apply the changes to the
running system.

Returns true if the lock was obtained; false if an error occurred.
159.2.6 Create(name as CFStringMBS, prefid as CFStringMBS) as boolean

Notes:
name: A string that describes the name of the calling process.
prefID: A string that identifies the name of the group of preferences to be accessed/upated.

159.2.7 CreateUniquePathChild(prefix as CFStringMBS) as CFStringMBS

Notes:
prefix: A string that represents the parent path.
Returns a string representing the new (unique) child path; nil if the specified path does not exist.

159.2.8 CreateWithAuthorization(name as CFStringMBS, prefid as CFStringMBS, AuthorizationHandle as Integer) as boolean

Notes:
name: A string that describes the name of the calling process.
prefID: A string that identifies the name of the group of preferences to be accessed/upated.
AuthorizationHandle: Handle to authorization object for root access.

159.2.9 ErrorString(errorcode as Integer) as string

Notes: A utility function which works at any time.

159.2.10 GetPathLink(path as CFStringMBS) as CFObjectMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Returns the link (if one exists) associated with the specified path.
Notes:
path: A string that represents the path to be returned.
The dictionary associated with the specified path; nil if the path is not a link or does not exist.

159.2.11 GetPathValue(path as CFStringMBS) as CFDictionaryMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns the dictionary associated with the specified path.
Notes:
path: A string that represents the path to be returned.
Returns the dictionary associated with the specified path; nil if the path does not exist.

159.2.12 GetValue(key as CFStringMBS) as CFObjectMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns the data associated with a preference key.
Notes:
This function retrieves data associated with a key for the prefsID.
You could read stale data and not know it, unless you first call Lock.
Returns the value associated with the specified preference key; If no value was located, nil is returned.

159.2.13 KeyList as CFArrayMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Returns an array of currently defined preference keys.
Notes: Returns nil on any error.

159.2.14 Lock(wait as boolean) as boolean

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Locks access to the configuration preferences.
Notes:
This function obtains exclusive access to the configuration preferences associated with this prefsID. Clients attempting to obtain exclusive access to the preferences will either receive an kSCStatusPrefsBusy error or block waiting for the lock to be released.
wait: A boolean flag indicating whether the calling process should block waiting for another process to complete its update operation and release its lock.

Returns true if the lock was obtained; false if an error occurred.

159.2.15 RemovePathValue(path as CFStringMBS) as boolean


Notes:
path: A string that represents the path to be returned.
Returns a boolean indicating the success (or failure) of the call.

159.2.16 RemoveValue(key as CFStringMBS) as boolean


Notes:
This function removes the data associated with the specified key. In order to commit these changes to permanent storage a call must be made to CommitChanges.

Returns true if the value was removed; false if the key did not exist or if an error occurred.

159.2.17 SetComputerName(name as CFStringMBS) as boolean


Notes:
In order to commit these changes to permanent storage a call must be made to CommitChanges. A call to ApplyChanges is also required for the new name to become active. A boolean indicating the success (or failure) of the call.

159.2.18 SetLocalHostName(name as CFStringMBS) as boolean


Notes:
In order to commit these changes to permanent storage a call must be made to CommitChanges.

A call to ApplyChanges is also required for the new name to become active.

### 159.2.19 SetPathLink(path as CFStringMBS, link as CFObj ectMBS) as boolean

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Associates a link to a second dictionary at the specified path.

**Notes:**
- path: A string that represents the path to be updated.
- link: A string that represents the link to be stored at the specified path.

Returns a boolean indicating the success (or failure) of the call.

### 159.2.20 SetPathValue(path as CFStringMBS, value as CFDictionaryMBS) as boolean

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Associates a dictionary with the specified path.

**Notes:**
- path: A string that represents the path to be updated.
- value: A dictionary that represents the data to be stored at the specified path.

Returns a boolean indicating the success (or failure) of the call.

### 159.2.21 SetValue(key as CFStringMBS, value as CFObj ectMBS) as boolean

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Updates the data associated with a preference key.

**Notes:**

This function adds or replaces the value associated with the specified key. In order to commit these changes to permanent storage a call must be made to CommitChanges.

Returns true if the value was set; false if an error occurred.

### 159.2.22 Signature as CFBinaryDataMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns a sequence of bytes that can be used to determine if the saved configuration preferences have
159.2. CLASS SCPREFERENCESMBS

changed.
Notes: A CFBinaryDataMBS that reflects the signature of the configuration preferences at the time of the call to Create.

159.2.23 Unlock as boolean

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Releases exclusive access to the configuration preferences.
**Notes:**
This function releases the exclusive access "lock" for this prefsID. Other clients will be now be able to establish exclusive access to the preferences.

Returns true if the lock was obtained; false if an error occurred.

159.2.24 Properties

159.2.25 Error as Integer

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the last error code.
**Notes:**
A utility function which works with all SystemConfiguration methods.

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kSCStatusOK</td>
<td>= 0 Success</td>
</tr>
<tr>
<td>kSCStatusFailed</td>
<td>= 1001 Non-specific failure</td>
</tr>
<tr>
<td>kSCStatusInvalidArgument</td>
<td>= 1002 Invalid argument</td>
</tr>
<tr>
<td>kSCStatusAccessError</td>
<td>= 1003 Permission denied - must be root to obtain lock - could not create access/create preferences</td>
</tr>
<tr>
<td>kSCStatusNoKey</td>
<td>= 1004 No such key</td>
</tr>
<tr>
<td>kSCStatusKeyExists</td>
<td>= 1005 Key already defined</td>
</tr>
<tr>
<td>kSCStatusLocked</td>
<td>= 1006 Lock already held</td>
</tr>
<tr>
<td>kSCStatusNeedLock</td>
<td>= 1007 Lock required for this operation</td>
</tr>
<tr>
<td>kSCStatusNoStoreSession</td>
<td>= 2001 Configuration daemon session not active</td>
</tr>
<tr>
<td>kSCStatusNoStoreServer</td>
<td>= 2002 Configuration daemon not (no longer) available</td>
</tr>
<tr>
<td>kSCStatusNotifierActive</td>
<td>= 2003 Notifier is currently active</td>
</tr>
<tr>
<td>kSCStatusNoPrefsSession</td>
<td>= 3001 Preference session not active</td>
</tr>
<tr>
<td>kSCStatusPrefsBusy</td>
<td>= 3002 Preferences update currently in progress</td>
</tr>
<tr>
<td>kSCStatusNoConfigFile</td>
<td>= 3003 Configuration file not found</td>
</tr>
<tr>
<td>kSCStatusNoLink</td>
<td>= 3004 No such link</td>
</tr>
<tr>
<td>kSCStatusStale</td>
<td>= 3005 Write attempted on stale version of object</td>
</tr>
<tr>
<td>kSCStatusMaxLink</td>
<td>= 3006 Maximum link count exceeded</td>
</tr>
<tr>
<td>kSCStatusReachabilityUnknown</td>
<td>= 4001 Network reachability cannot be determined</td>
</tr>
</tbody>
</table>
(Read only property)
159.3  Globals

159.3.1  kSCNetworkReachabilityMBSTypeID as Integer

MBS MacCF Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the CoreFoundation TypeID for SCNetworkReachability.

159.3.2  kSCPreferencesMBSTypeID as Integer

MBS MacCF Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the CoreFoundation TypeID for SCPreferences.

159.4  class SystemConfigurationMBS

159.4.1  class SystemConfigurationMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
A class for the global System Configuration framework functions.
**Notes:** See the file "SCSchemaDefinitions.h" for details on the constants.

159.4.2  Methods

159.4.3  ComputerName as string

MBS MacCF Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Gets the current computer name.
**Example:**
```
dim s as new SystemConfigurationMBS
msgbox s.ComputerName
```

**Notes:** Returns "" on an error.

159.4.4  ComputerNameEncoding as Integer

MBS MacCF Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The encoding of the computer name.
159.4.5 ConsoleUser as string

MBS MacCF Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Gets the name of the currently logged-in user.

**Example:**

```vbscript
dim s as new SystemConfigurationMBS
msgbox s.ConsoleUser
```

**Notes:** Returns the user currently logged into the system; ”” if no user is logged in or if an error was encountered.

159.4.6 ConsoleUserGID as Integer

MBS MacCF Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Gets the group ID of the currently logged-in user.

**Notes:** The group ID of the current console user.

159.4.7 ConsoleUserUID as Integer

MBS MacCF Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Gets the user ID of the currently logged-in user.

**Notes:** The user ID of the current console user.

159.4.8 kSCCompAnyRegex as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Just a constant for the System Configuration API functions.

159.4.9 kSCCompGlobal as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**

Just a constant for the System Configuration API functions.
159.4. CLASS SYSTEMCONFIGURATIONMBS

159.4.10 kSCCompHostNames as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.11 kSCCompInterface as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.12 kSCCompNetwork as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.13 kSCCompService as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.14 kSCCompSystem as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.15 kSCCompUsers as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.16 kSCDynamicStoreDomainFile as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.
159.4.17  kSCDynamicStoreDomainPlugin as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.18  kSCDynamicStoreDomainPrefs as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.19  kSCDynamicStoreDomainSetup as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.20  kSCDynamicStoreDomainState as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.21  kSCDynamicStorePropNetInterfaces as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.22  kSCDynamicStorePropNetPrimaryInterface as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.23  kSCDynamicStorePropNetPrimaryService as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.
159.4.24 kSCDynamicStorePropNetServiceIDs as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.25 kSCDynamicStorePropSetupCurrentSet as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.26 kSCDynamicStorePropSetupLastUpdated as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.27 kSCEntNet6to4 as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.28 kSCEntNetAirPort as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.29 kSCEntNetDHCP as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.30 kSCEntNetDNS as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.
159.4.31 kSCEntNetEthernet as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.32 kSCEntNetFireWire as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.33 kSCEntNetInterface as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.34 kSCEntNetIPv4 as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.35 kSCEntNetIPv6 as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.36 kSCEntNetL2TP as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.37 kSCEntNetLink as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.
159.4. CLASS SYSTEMCONFIGURATIONMBS

159.4.38 kSCEntNetModem as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Just a constant for the System Configuration API functions.

159.4.39 kSCEntNetPPP as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Just a constant for the System Configuration API functions.

159.4.40 kSCEntNetPPPoE as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Just a constant for the System Configuration API functions.

159.4.41 kSCEntNetPPPSerial as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Just a constant for the System Configuration API functions.

159.4.42 kSCEntNetPPTP as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Just a constant for the System Configuration API functions.

159.4.43 kSCEntNetProxies as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Just a constant for the System Configuration API functions.

159.4.44 kSCEntUsersConsoleUser as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function:
Just a constant for the System Configuration API functions.
159.4.45  kSCPrefCurrentSet as CFStringRefMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.46  kSCPrefNetworkServices as CFStringRefMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.47  kSCPrefSets as CFStringRefMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.48  kSCPrefSystem as CFStringRefMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.49  kSCPropInterfaceName as CFStringRefMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.50  kSCPropMACAddress as CFStringRefMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.51  kSCPropNet6to4Relay as CFStringRefMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.
159.4.52  kSCPropNetAirPortAllowNetCreation as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.53  kSCPropNetAirPortAuthPassword as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.54  kSCPropNetAirPortAuthPasswordEncryption as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.55  kSCPropNetAirPortJoinMode as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.56  kSCPropNetAirPortPowerEnabled as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.57  kSCPropNetAirPortPreferredNetwork as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.58  kSCPropNetAirPortSavePasswords as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.
159.4.59 kSCPropNetDNSDomainName as CFStringMBS
MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.60 kSCPropNetDNSSearchDomains as CFStringMBS
MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.61 kSCPropNetDNSServerAddresses as CFStringMBS
MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.62 kSCPropNetDNSSortList as CFStringMBS
MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.63 kSCPropNetEthernetMediaOptions as CFStringMBS
MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.64 kSCPropNetEthernetMediaSubType as CFStringMBS
MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.65 kSCPropNetEthernetMTU as CFStringMBS
MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.
159.4.66  kSCPropNetInterfaceDeviceName as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.67  kSCPropNetInterfaceHardware as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.68  kSCPropNetInterfaces as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.69  kSCPropNetInterfaceSubType as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.70  kSCPropNetInterfaceSupportsModemOnHold as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.71  kSCPropNetInterfaceType as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.72  kSCPropNetIPv4Addresses as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.
159.4.73  kSCPropNetIPv4BroadcastAddresses as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.74  kSCPropNetIPv4ConfigMethod as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.75  kSCPropNetIPv4DestAddresses as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.76  kSCPropNetIPv4DHCPClientID as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.77  kSCPropNetIPv4Router as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.78  kSCPropNetIPv4SubnetMasks as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.79  kSCPropNetIPv6Addresses as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.
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159.4.80 kSCPropNetIPv6ConfigMethod as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.81 kSCPropNetIPv6DestAddresses as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.82 kSCPropNetIPv6Flags as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.83 kSCPropNetIPv6PrefixLength as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.84 kSCPropNetIPv6Router as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.85 kSCPropNetL2TPIPSecSharedSecret as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.86 kSCPropNetL2TPIPSecSharedSecretEncryption as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.
159.4.87 kSCPropNetL2TPTransport as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Just a constant for the System Configuration API functions.

159.4.88 kSCPropNetLinkActive as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Just a constant for the System Configuration API functions.

159.4.89 kSCPropNetLinkDetaching as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Just a constant for the System Configuration API functions.

159.4.90 kSCPropNetLocalHostName as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Just a constant for the System Configuration API functions.

159.4.91 kSCPropNetModemConnectionScript as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Just a constant for the System Configuration API functions.

159.4.92 kSCPropNetModemConnectSpeed as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Just a constant for the System Configuration API functions.

159.4.93 kSCPropNetModemDataCompression as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Just a constant for the System Configuration API functions.
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159.4.94 kSCPropNetModemDialMode as CFStringMBS
MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.95 kSCPropNetModemErrorCorrection as CFStringMBS
MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.96 kSCPropNetModemHoldCallWaitingAudibleAlert as CFStringMBS
MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.97 kSCPropNetModemHoldDisconnectOnAnswer as CFStringMBS
MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.98 kSCPropNetModemHoldEnabled as CFStringMBS
MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.99 kSCPropNetModemHoldReminder as CFStringMBS
MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.100 kSCPropNetModemHoldReminderTime as CFStringMBS
MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.
159.4.101  kSCPropNetModemNote as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Just a constant for the System Configuration API functions.

159.4.102  kSCPropNetModemPulseDial as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Just a constant for the System Configuration API functions.
159.4.103  kSCPropNetModemSpeaker as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.104  kSCPropNetModemSpeed as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.105  kSCPropNetOverridePrimary as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.106  kSCPropNetPPPACSPEnabled as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.107  kSCPropNetPPPAuthEAPPlugins as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.108  kSCPropNetPPPAuthName as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.109  kSCPropNetPPPAuthPassword as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.
159.4.110 kSCPropNetPPPAuthPasswordEncryption as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.111 kSCPropNetPPPAuthPrompt as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.112 kSCPropNetPPPAuthProtocol as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.113 kSCPropNetPPPCCPEnabled as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.114 kSCPropNetPPPCommAlternateRemoteAddress as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.115 kSCPropNetPPPCommConnectDelay as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.116 kSCPropNetPPPCommDisplayTerminalWindow as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.
159.4.117 kSCPropNetPPPCommRedialCount as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.118 kSCPropNetPPPCommRedialEnabled as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.119 kSCPropNetPPPCommRedialInterval as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.120 kSCPropNetPPPCommRemoteAddress as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.121 kSCPropNetPPPCommTerminalScript as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.122 kSCPropNetPPPCommUseTerminalScript as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.123 kSCPropNetPPPConnectTime as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.
159.4.124  kSCPropNetPPPDeviceLastCause as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.125  kSCPropNetPPPDPialOnDemand as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.126  kSCPropNetPPPDPconnectOnIdle as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.127  kSCPropNetPPPDPconnectOnIdleTimer as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.128  kSCPropNetPPPDPconnectOnLogout as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.129  kSCPropNetPPPDPconnectOnSleep as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.130  kSCPropNetPPPDPconnectTime as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.
159.4. CLASS SYSTEMCONFIGURATIONMBS

159.4.131  kSCPropNetPPPIIdleReminder as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Just a constant for the System Configuration API functions.

159.4.132  kSCPropNetPPPIIdleReminderTimer as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Just a constant for the System Configuration API functions.

159.4.133  kSCPropNetPPPIPCPCPCompressionVJ as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Just a constant for the System Configuration API functions.

159.4.134  kSCPropNetPPPLastCause as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Just a constant for the System Configuration API functions.

159.4.135  kSCPropNetPPPLCPCPCompressionACField as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Just a constant for the System Configuration API functions.

159.4.136  kSCPropNetPPPLCPCPCompressionPField as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Just a constant for the System Configuration API functions.

159.4.137  kSCPropNetPPPLCPEchoEnabled as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Just a constant for the System Configuration API functions.
159.4.138  kSCPropNetPPPLCEchoFailure as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Just a constant for the System Configuration API functions.

159.4.139  kSCPropNetPPPLCEchoInterval as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Just a constant for the System Configuration API functions.

159.4.140  kSCPropNetPPPLCPMRU as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Just a constant for the System Configuration API functions.

159.4.141  kSCPropNetPPPLCPMTU as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Just a constant for the System Configuration API functions.

159.4.142  kSCPropNetPPPLCPRReceiveACCM as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Just a constant for the System Configuration API functions.

159.4.143  kSCPropNetPPPLCPTTransmitACCM as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Just a constant for the System Configuration API functions.

159.4.144  kSCPropNetPPPLLogfile as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Just a constant for the System Configuration API functions.
159.4.145  kSCPropNetPPPOverridePrimary as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.146  kSCPropNetPPPPlugins as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.147  kSCPropNetPPPRetryConnectTime as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.148  kSCPropNetPPPSessionTimer as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.149  kSCPropNetPPPStatus as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.150  kSCPropNetPPPUseSessionTimer as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.151  kSCPropNetPPPVerboseLogging as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.
159.4.152  kSCPropNetProxiesExceptionsList as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.153  kSCPropNetProxiesFTPEnable as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.154  kSCPropNetProxiesFTPPassive as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.155  kSCPropNetProxiesFTPPort as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.156  kSCPropNetProxiesFTPPProxy as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.157  kSCPropNetProxiesGopherEnable as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.158  kSCPropNetProxiesGopherPort as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.
159.4. CLASS SYSTEMCONFIGURATIONMBS

159.4.159 kSCPropNetProxiesGopherProxy as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.160 kSCPropNetProxiesHTTPEnable as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.161 kSCPropNetProxiesHTTPPPort as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.162 kSCPropNetProxiesHTTPProxy as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.163 kSCPropNetProxiesHTTPSEnable as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.164 kSCPropNetProxiesHTTPSPPort as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.165 kSCPropNetProxiesHTTPSProxy as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.
159.4.166  kSCPropNetProxiesRTSPEnable as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.167  kSCPropNetProxiesRTSPPort as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.168  kSCPropNetProxiesRTSPProxy as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.169  kSCPropNetProxiesSOCKSEnable as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.170  kSCPropNetProxiesSOCKSPort as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.171  kSCPropNetProxiesSOCKSProxy as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.172  kSCPropNetServiceOrder as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.
159.4. CLASS SYSTEMCONFIGURATIONMBS

159.4.173 kSCPropSystemComputerName as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.174 kSCPropSystemComputerNameEncoding as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.175 kSCPropUserDefinedName as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.176 kSCPropVersion as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.177 kSCResvInactive as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions. **Notes:** Value should be "_INACTIVE_

159.4.178 kSCResvLink as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions. **Notes:** Value should be "_LINK_

159.4.179 kSCValNetAirPortAuthPasswordEncryptionKeychain as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.
159.4.180  kSCValNetAirPortJoinModeAutomatic as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Just a constant for the System Configuration API functions.

159.4.181  kSCValNetAirPortJoinModePreferred as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Just a constant for the System Configuration API functions.

159.4.182  kSCValNetAirPortJoinModeRecent as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Just a constant for the System Configuration API functions.

159.4.183  kSCValNetAirPortJoinModeStrongest as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Just a constant for the System Configuration API functions.

159.4.184  kSCValNetInterfaceSubTypeL2TP as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Just a constant for the System Configuration API functions.

159.4.185  kSCValNetInterfaceSubTypePPPoE as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Just a constant for the System Configuration API functions.
159.4.186 kSCValNetInterfaceSubTypePPPSerial as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.187 kSCValNetInterfaceSubTypePPTP as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.188 kSCValNetInterfaceType6to4 as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.189 kSCValNetInterfaceTypeEthernet as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.190 kSCValNetInterfaceTypeFireWire as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.191 kSCValNetInterfaceTypePPP as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.192 kSCValNetIPv4ConfigMethodBOOTP as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.
159.4.193  kSCValNetIPv4ConfigMethodDHCP as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.194  kSCValNetIPv4ConfigMethodINFORM as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.195  kSCValNetIPv4ConfigMethodLinkLocal as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.196  kSCValNetIPv4ConfigMethodManual as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.197  kSCValNetIPv4ConfigMethodPPP as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.198  kSCValNetIPv6ConfigMethod6to4 as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.199  kSCValNetIPv6ConfigMethodAutomatic as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.
**159.4. CLASS SYSTEMCONFIGURATIONMBS**

**159.4.200 kSCValNetIPv6ConfigMethodManual as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

**159.4.201 kSCValNetIPv6ConfigMethodRouterAdvertisement as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

**159.4.202 kSCValNetL2TPIPSecSharedSecretEncryptionKeychain as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

**159.4.203 kSCValNetL2TPTransportIP as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

**159.4.204 kSCValNetL2TPTransportIPSec as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

**159.4.205 kSCValNetModemDialModeIgnoreDialTone as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

**159.4.206 kSCValNetModemDialModeManual as CFStringMBS**

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.
159.4.207 kSCValNetModemDialModeWaitForDialTone as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.208 kSCValNetPPPAuthPasswordEncryptionKeychain as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.209 kSCValNetPPPAuthPromptAfter as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.210 kSCValNetPPPAuthPromptBefore as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.211 kSCValNetPPPAuthProtocolCHAP as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.212 kSCValNetPPPAuthProtocolEAP as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.

159.4.213 kSCValNetPPPAuthProtocolMSCHAP1 as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Just a constant for the System Configuration API functions.
159.4. CLASS SYSTEMCONFIGURATIONMBS

159.4.214 kSCValNetPPPAuthProtocolMSCHAP2 as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Just a constant for the System Configuration API functions.

159.4.215 kSCValNetPPPAuthProtocolPAP as CFStringMBS

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Just a constant for the System Configuration API functions.

159.4.216 LocalHostName as string

MBS MacCF Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Gets the current local host name.
**Example:**
```vbscript
dim s as new SystemConfigurationMBS
msgbox s.LocalHostName
```

**Notes:** Returns the current local host name; "" if the name has not been set or if an error was encountered.

159.4.217 Location as string

MBS MacCF Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Gets the current location identifier.
**Example:**
```vbscript
dim s as new SystemConfigurationMBS
msgbox s.Location
```

**Notes:** Returns a string representing the current location identifier; "" if no location identifier has been defined or if an error was encountered.

159.4.218 MachineName as string

MBS MacCF Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The local machine name.
159.4.219  NetworkCheckReachabilityByAddress(ip as string, byref flags as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Determines if the given network address is reachable using the current network configuration. **Notes:**

d: The network address of the desired host.
flags: An integer that will be filled with a set of SCNetworkConnectionFlags detailing the reachability of the specified address.
Returns true if the network connection flags are valid; false if the status could not be determined.
(see the SCNetworkReachabilityMBS class for more details)

159.4.220  NetworkCheckReachabilityByName(nodename as string, byref flags as Integer) as boolean

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Determines if the given network host/node name is reachable using the current network configuration. **Notes:**

odename: The node name of the desired host.
flags: An integer that will be filled with a set of SCNetworkConnectionFlags detailing the reachability of the specified node name.
Returns true if the network connection flags are valid; false if the status could not be determined.
(see the SCNetworkReachabilityMBS class for more details)

159.4.221  NetworkInterfaceRefreshConfiguration(ifname as CFStringMBS) as boolean

MBS MacCF Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sends a notification to interested configuration agents to have them immediately retry their configuration over a particular network interface. **Notes:**

This API must be invoked by root (uid == 0).
ifname: The BSD name of the network interface e.g. NewCFStringMBS("en0").
Returns true if the notification was sent; false otherwise.
159.4.222 ShortUserName as string

MBS MacCF Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The short user name.

159.4.223 UserName as string

MBS MacCF Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The user name.

**Notes:** The function UserName returns a string based on the read UID (RUID, as returned by getuid) of the calling process. This can result in unexpected behavior (that is, Name returning different results than ConsoleUser) for processes that manipulate their UID.
Chapter 160

Tapi

160.1 class ITAddressMBS

160.1.1 class ITAddressMBS

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The class for an address.
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

160.1.2 Methods

160.1.3 Calls as ITCallInfoMBS()

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Creates an array of calls currently active on the address.
**Notes:** Sets lasterror property.

160.1.4 Constructor

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The private constructor.
160.1.5 **CreateCall(DestAddress as string = "", AddressType as Integer = 1, MediaTypes as Integer = 0)** as TAPICallControlMBS


**Notes:**

Creates a new Call object that can be used to make an outgoing call and returns a TAPICallControlMBS object. The newly created call is in the StateIdle state and has no media or terminals selected.

See also MediaTypes and LineAddressType constants.

160.1.6 **Properties**

160.1.7 **AddressName as String**

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Gets the displayable name of the address.

**Notes:**

Returns the containing a displayable address name.
Sets lasterror property.
(Read only property)

160.1.8 **DialableAddress as String**

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Gets the text which can be used to connect to this address.

**Notes:**

The text corresponds to the destination address string that another application would use to connect to this address, such as a phone number or an e-mail name.
You can use this address with the CreateCall method.
Sets lasterror property.
(Read only property)

160.1.9 **DoNotDisturb as Boolean**

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Gets the current status of the do not disturb feature on the address.

**Notes:**
The do not disturb feature may not be available on all addresses. If true, the do not disturb feature has been activated. If false, the do not disturb feature is not active. Sets lasterror property. (Read and Write property)

### 160.1.10 Handle as Integer

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The internal object reference. **Notes:** This is an ITAddress* pointer. (Read and Write property)

### 160.1.11 Lasterror as Integer

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The last error code. **Notes:** Set by all the methods to indicate the last error. Value is 0 if no error. (Read and Write property)

### 160.1.12 LasterrorMessage as String

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The error message for the last error. **Notes:** (Read and Write property)

### 160.1.13 MessageWaiting as Boolean

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Determines if the address has a message waiting. **Notes:** Returns true if a message is waiting; false, if no message is waiting. Sets lasterror property. (Read and Write property)
160.1.14 ServiceProviderName as String

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Gets the name of the Telephony Service Provider (TSP) that supports this address.
**Notes:**
For example, Unimdm.tsp for the Unimodem service provider or H323.tsp for the H323 service provider.
Sets lasterror property.
(Read only property)

160.1.15 State as Integer

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Gets the current state of the address.
**Notes:**
Sets lasterror property.
Can be StateInService or StateOutOfService.
(Read only property)

160.1.16 Constants

160.1.17 LineAddressTypeDomainName = 8

MBS Win Plugin, Plugin Version: 14.4. **Function:** One of the line address types.
**Notes:** Address type is a domain name.

160.1.18 LineAddressTypeEmailName = 4

MBS Win Plugin, Plugin Version: 14.4. **Function:** One of the line address types.
**Notes:** Address type is an e-mail name.

160.1.19 LineAddressTypeIPAddress = 16

MBS Win Plugin, Plugin Version: 14.4. **Function:** One of the line address types.
**Notes:** Address type is an IP address.
160.1.20  **LineAddressTypePhoneNumber = 1**

MBS Win Plugin, Plugin Version: 14.4. **Function:** One of the line address types.  
**Notes:** Address type is a standard phone number.

160.1.21  **LineAddressTypeSDP = 2**

MBS Win Plugin, Plugin Version: 14.4. **Function:** One of the line address types.  
**Notes:** Address type is Session Description Protocol (SDP) conference.

160.1.22  **MediaTypeAudio = 8**

MBS Win Plugin, Plugin Version: 14.4. **Function:** One of the media types.  
**Notes:** An audio media stream that is entering or leaving the computer. An entering media stream would typically be played on speakers, or sent to a handset device and a leaving stream would typically be captured through a microphone or handset device.

160.1.23  **MediaTypeDataModem = 16**

MBS Win Plugin, Plugin Version: 14.4. **Function:** One of the media types.  
**Notes:** A data media stream that is associated with a data modem.

160.1.24  **MediaTypeG3Fax = 32**

MBS Win Plugin, Plugin Version: 14.4. **Function:** One of the media types.  
**Notes:** A data media stream that is associated with a G3 protocol fax.

160.1.25  **MediaTypeMultiTrack = & h10000**

MBS Win Plugin, Plugin Version: 14.4. **Function:** One of the media types.  
**Notes:** A stream is on a multitrack terminal.

160.1.26  **MediaTypeVideo = & h8000**

MBS Win Plugin, Plugin Version: 14.4. **Function:** One of the media types.  
**Notes:** A video media stream that is entering or leaving the computer. An entering media stream would
typically be rendered in a video window and a leaving media stream would typically be captured with a video camera.

160.1.27 StateInService = 0

MBS Win Plugin, Plugin Version: 14.4. **Function:** One of the address state constants. **Notes:** Normal state; the address can be used.

160.1.28 StateOutOfService = 1

MBS Win Plugin, Plugin Version: 14.4. **Function:** One of the address state constants. **Notes:** The address is temporarily out of service, but may go back into service at some time.
160.2. class ITCallInfoMBS

160.2.1 class ITCallInfoMBS

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The class for information about a call. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

160.2.2 Methods

160.2.3 Constructor

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The private constructor. **Notes:** Lasterror is set. This constructor is private to make sure you don’t create an object from this class by error. Please use designated functions to create objects.

160.2.4 Properties

160.2.5 Address as ITAddressMBS

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries the address of the call. **Notes:** Lasterror is set. (Read only property)

160.2.6 CalledIDName as String

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The name of the called location. **Notes:** Lasterror is set. (Read only property)
**160.2.7 CalledIDNumber as String**

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The number of the called location. **Notes:** Lasterror is set. (Read only property)

**160.2.8 CalledPartyFriendlyName as String**

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The called party friendly name. **Notes:** Lasterror is set. (Read only property)

**160.2.9 CallerIDName as String**

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The name of the caller. **Notes:** Lasterror is set. (Read only property)

**160.2.10 CallerIDNumber as String**

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The number of the caller. **Notes:** Lasterror is set. (Read only property)

**160.2.11 CallingPartyID as String**

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The identifier of the calling party. **Notes:**
Lasterror is set.  
(Read only property)

### 160.2.12 Comment as String

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A comment about the call provided by the application that originated the call. The call state must be StateIdle when setting the comment.  
**Notes:**  
Lasterror is set.  
(Read only property)

### 160.2.13 ConnectedIDName as String

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The name of the connected location.  
**Notes:**  
Lasterror is set.  
(Read only property)

### 160.2.14 ConnectedIDNumber as String

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The number of the connected location.  
**Notes:**  
Lasterror is set.  
(Read only property)

### 160.2.15 DisplayableAddress as String

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A displayable version of the called or calling address.  
**Notes:**  
Lasterror is set.  
(Read only property)
160.2.16 Handle as Integer

**Notes:**
This is an ITCallInfo* pointer.
(Read and Write property)

160.2.17 Lasterror as Integer

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The last error code.
**Notes:**
Set by all the methods to indicate the last error.
Value is 0 if no error.
(Read and Write property)

160.2.18 LasterrorMessage as String

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The error message for the last error.
**Notes:** (Read and Write property)

160.2.19 RedirectingIDName as String

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The name of the location that redirected the call.
**Notes:**
Lasterror is set.
(Read only property)

160.2.20 RedirectingIDNumber as String

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The number of the location that redirected the call.
**Notes:**
Lasterror is set.
160.2.21 RedirectionIDName as String

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The name of the location to which a call has been redirected.
**Notes:**
Lasterror is set.
(Read only property)

160.2.22 RedirectionIDNumber as String

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The number of the location to which a call has been redirected.
**Notes:**
Lasterror is set.
(Read only property)

160.2.23 State as Integer

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The current state call.
**Notes:**
Can be StateConnected, StateDisconnected, StateHold, StateIdle, StateInProgress, StateOffering or StateQueued.
Lasterror is set.
(Read only property)

160.2.24 Constants

160.2.25 StateConnected = 2

MBS Win Plugin, Plugin Version: 14.4. **Function:** One of the state constants.
**Notes:** Call has been connected to the remote end and communication can take place.
160.2.26  **StateDisconnected = 3**

MBS Win Plugin, Plugin Version: 14.4.  **Function:** One of the state constants.
**Notes:** Call has been disconnected. There are several causes for disconnection. See the table of valid call state transitions below.

160.2.27  **StateHold = 5**

MBS Win Plugin, Plugin Version: 14.4.  **Function:** One of the state constants.
**Notes:** The call is in the hold state.

160.2.28  **StateIdle = 0**

MBS Win Plugin, Plugin Version: 14.4.  **Function:** One of the state constants.
**Notes:** The call has been created, but Connect has not been called yet. A call can never transition into the idle state. This is the initial state for both incoming and outgoing calls.

160.2.29  **StateInProgress = 1**

MBS Win Plugin, Plugin Version: 14.4.  **Function:** One of the state constants.
**Notes:** Connect has been called, and the service provider is working on making a connection. This state is valid only on outgoing calls. This message is optional, because a service provider may have a call transition directly to the connected state.

160.2.30  **StateOffering = 4**

MBS Win Plugin, Plugin Version: 14.4.  **Function:** One of the state constants.
**Notes:** A new call has appeared, and is being offered to an application. If the application has owner privileges on the call, it can either call Answer or Disconnect while the call is in the offering state. Current call privilege can be determined by calling Privilege.

160.2.31  **StateQueued = 6**

MBS Win Plugin, Plugin Version: 14.4.  **Function:** One of the state constants.
**Notes:** The call is queued.
160.3  class TAPICallControlMBS

160.3.1  class TAPICallControlMBS

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The interface used by the application to connect, answer, and perform basic telephony operations on a call object.

**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

160.3.2  Methods

160.3.3  Answer


**Notes:**
This method can succeed only if the call state is StateOffering.
Lasterror is set.

160.3.4  BlindTransfer(DestAddress as String)

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** performs a blind or single-step transfer of the specified call to the specified destination address.

**Notes:**
The application must be the owner of the call. After a successful transfer, the call state transitions to StateDisconnected.

DestAddress: Text containing destination address for the transfer.
Lasterror is set.

160.3.5  Conference(otherCall as TAPICallControlMBS, sync as boolean)

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Adds a consultation call to the conference in which the current call is a participant.

**Notes:**
If an associated ITCallHub object does not exist, it is created.
otherCall: The consultation call.
Sync: Indicates whether the call should be conferenced synchronously (true) or asynchronously (false). See Connect method for additional explanation. Lasterror is set.

160.3.6 Connect(sync as boolean)

Notes:
Sync: Boolean indicating whether connection is to be performed synchronously (true) or asynchronously (false).

If the call is asynchronous, the application will receive information about the call’s progress through the TAPIMBS CallStateChanged event. Connect may return no error, but the actual connection may fail (and the application will be notified through the event).
If the call is synchronous, this method will not return until the call is in the connected state or fails. Lasterror is set.

To make a call, please find the ITAddressMBS for the line, use CreateCall there. Than use TAPICallControlMBS.Connect here.

160.3.7 Constructor


160.3.8 Dial(DestAddress as String)

Notes:
DestAddress: Representation of address to be dialed. The format must conform to a standard dialable address. Lasterror is set.
160.3.9  **Disconnect(Mode as Integer)**

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Disconnects the call.

**Notes:**

The call state will transition to StateDisconnected after the method completes successfully. Pass DisconnectModeNoAnswer, DisconnectModeNormal or DisconnectModeReject. Lasterror is set.

160.3.10  **Finish(Mode as Integer)**

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Called on a consultation call to finish a conference or a transfer.

**Notes:**

Pass FinishModeAsConference or FinishModeAsTransfer. Lasterror is set.

160.3.11  **HandoffDirect(ApplicationName as String)**

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Hands off the call to another application.

**Notes:**

This indicates that the application no longer requires ownership of the call.

ApplicationName: Text containing the specific application name to hand off call to. Can be full path name or executable name. Lasterror is set.

160.3.12  **HandoffIndirect(MediaType as Integer)**

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Hands off the call to another application based on the media type of the call.

**Notes:**

If multiple applications have registered as able to handle the types involved, TAPI will hand off to the highest-priority application, which is usually the one that registered first. This indicates that the application no longer requires ownership of the call.

for media types, please check constants in ITAddressMBS class and this website:
160.3.13 Hold(hold as boolean)

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Places or removes the call from the hold.
**Notes:**
If Hold is true and the method succeeds, the call state transitions to the StateHold state. If Hold is false, the call state transitions to StateConnected.
Lasterror is set.

160.3.14 ParkDirect(ParkAddress as String)

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Parks the call at a specified address.
**Notes:**
ParkAddress: Text containing the address where the call is to be parked.
Lasterror is set.

160.3.15 ParkIndirect as string

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Parks the call and returns the parked address.
**Notes:**
Returns representation of the address where the call was parked.
Lasterror is set.

160.3.16 Pickup(GroupID as String)

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Picks up a call alerting at the specified group identification.
**Notes:**
GroupID: The group identifier to which the alerting station belongs.
Lasterror is set.
160.3. CLASS TAPICALLCONTROLMBS

160.3.17 RemoveFromConference

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Removes the call from a conference if it is involved in one. **Notes:** Lasterror is set.

160.3.18 SetQOS(MediaType as Integer, ServiceLevel as Integer)

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Sets the quality of service level for the call. **Notes:**

for media types, please check constants in ITAddressMBS class and this website:

Lasterror is set.

160.3.19 SwapHold(otherCall as TAPICallControlMBS)

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Swaps the call (which is active) with the specified call on hold. **Notes:**

Swapping the active call with the call on consultation hold allows the application to toggle between these two calls. This is typical in call waiting. OtherCall: Call, currently on hold, that is to be made active. Lasterror is set.

160.3.20 Transfer(otherCall as TAPICallControlMBS, sync as boolean)

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Transfers the current call to the destination address. **Notes:**

otherCall: Other interface of consultation call created for the transfer. Sync: Indicates whether the method should be completed synchronously (true) or asynchronously (false). Lasterror is set.
160.3.21 Unpark

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Gets the call from park.
**Notes:**
To unpark a call, CreateCall must be called using as the destination address the current parked location of the call.
LastError is set.

160.3.22 Properties

160.3.23 Handle as Integer

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The internal object reference.
**Notes:**
This is an ITBasicCallControl* pointer.
(Read and Write property)

160.3.24 Lasterror as Integer

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The last error code.
**Notes:**
Set by all the methods to indicate the last error.
Value is 0 if no error.
(Read and Write property)

160.3.25 LasterrorMessage as String

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The error message for the last error.
**Notes:** (Read and Write property)
160.3.26 Constants

160.3.27 DisconnectModeNoAnswer = 1

Notes: The call is being disconnected because it has not been answered.
(For example, an application may set a certain amount of time for the user to answer the call. If the user
does not answer, the application can call Disconnect with the NOANSWER code.)
Lasterror is set.

160.3.28 DisconnectModeNormal = 0

Notes: The call is being disconnected as part of the normal cycle of the call.
Lasterror is set.

160.3.29 DisconnectModeReject = 2

Notes: The user rejected the offered call.
Lasterror is set.

160.3.30 FinishModeAsConference = 1

Notes: A call is being added to a conference call.
Lasterror is set.

160.3.31 FinishModeAsTransfer = 0

Notes:
A call transfer is being finished.
Lasterror is set.

160.3.32   QualityOfServerLevelBestEffort = 2

Notes: Quality of service level desired is ”best effort”.

160.3.33   QualityOfServerLevelIfAvailable = 1

Notes: Quality of service level desired if available.

160.3.34   QualityOfServerLevelNeeded = 0

Notes: Quality of service level required.
160.4  class TAPIMBS

160.4.1 class TAPIMBS

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The central class for TAPI. **Notes:** MBS Plugin implements TAPI (telephone API) on Windows to catch incoming calls, so you can display e.g. customer data for the phone number when customer calls. Also you can create new call objects to dial or query information on calls or addresses.

160.4.2 Methods

160.4.3 Addresses as ITAddressMBS()

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns an array with all addresses. **Notes:** Lasterror is set.

160.4.4 Available as boolean

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether TAPI is available. **Notes:** Returns true on Windows and false elsewhere.

160.4.5 Constructor

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The constructor.

160.4.6 Destructor

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The destructor.
160.4.7 ListenOnAllAddresses

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries list of addresses and registers event handlers to receive events.

**Notes:**
Please call this method to get the IncomingCall event working. Lasterror is set.

160.4.8 Properties

160.4.9 EventFilter as Integer

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The event filter.

**Notes:**
The plugin sets this to EventCallNotification + EventCallState automatically.

See constants:
(Read and Write property)

160.4.10 Handle as Integer


**Notes:**
This is an ITTAPI* pointer.
(Read and Write property)

160.4.11 Lasterror as Integer

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The last error code.

**Notes:**
Set by all the methods to indicate the last error.
Value is 0 if no error.
(Read and Write property)
160.4.12 LasterrorMessage as String

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The error message for the last error.  **Notes:** (Read and Write property)

160.4.13 Events

160.4.14 CallStateChanged(CallInfo as ITCallInfoMBS)

MBS Win Plugin, Plugin Version: 14.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The call state changed.  **Notes:** The Call state has changed.

160.4.15 IncomingCall(CallInfo as ITCallInfoMBS, BasicCallControl as TAPI-CallControlMBS)

MBS Win Plugin, Plugin Version: 14.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
A new call is incoming.

160.4.16 Constants

160.4.17 EventCallNotification = & h4

MBS Win Plugin, Plugin Version: 14.4. **Function:** One of the event types. **Notes:** A new communications session has appeared on the address and the TAPI DLL has created a new call object. This could be a result from an incoming session, a session handed off by another application, or a session being parked on the address.

160.4.18 EventCallState = & h8

MBS Win Plugin, Plugin Version: 14.4. **Function:** One of the event types. **Notes:** The Call state has changed.
Chapter 161

Tidy

161.1 class TidyAttributeMBS

161.1.1 class TidyAttributeMBS


161.1.2 Properties

161.1.3 Document as TidyDocumentMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The document of this attribute. Notes: (Read only property)

161.1.4 ID as Integer

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The attribute ID. Notes: (Read only property)

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161.1.5 IsABBR as Boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the ABBR attribute. **Notes:** (Read only property)

161.1.6 IsALINK as Boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the ALINK attribute. **Notes:** (Read only property)

161.1.7 IsALT as Boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the ALT attribute. **Notes:** (Read only property)

161.1.8 IsBGCOLOR as Boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the BGCOLOR attribute. **Notes:** (Read only property)

161.1.9 IsCHECKED as Boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the CHECKED attribute. **Notes:** (Read only property)

161.1.10 IsCOLSPAN as Boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the COLSPAN attribute. **Notes:** (Read only property)
161.1. CLASS TIDYATTRIBUTEMBS

161.1.11 IsCONTENT as Boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the CONTENT attribute. **Notes:** (Read only property)

161.1.12 IsDATAFLD as Boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the DATAFLD attribute. **Notes:** (Read only property)

161.1.13 IsEvent as Boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the Event attribute. **Notes:** (Read only property)

161.1.14 IsFOR as Boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the FOR attribute. **Notes:** (Read only property)

161.1.15 IsHEIGHT as Boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the HEIGHT attribute. **Notes:** (Read only property)

161.1.16 IsHREF as Boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the HREF attribute. **Notes:** (Read only property)
161.1.17  **IsHTTP_EQUIV as Boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the HTTP_EQUIV attribute. **Notes:** (Read only property)

161.1.18  **IsID as Boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the ID attribute. **Notes:** (Read only property)

161.1.19  **IsISMAP as Boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the ISMAP attribute. **Notes:** (Read only property)

161.1.20  **IsLANG as Boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the LANG attribute. **Notes:** (Read only property)

161.1.21  **IsLANGUAGE as Boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the LANGUAGE attribute. **Notes:** (Read only property)

161.1.22  **IsLINK as Boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the LINK attribute. **Notes:** (Read only property)
161.1.23 IsLONGDESC as Boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the LONGDESC attribute.

**Notes:** (Read only property)

161.1.24 IsNAME as Boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the NAME attribute.

**Notes:** (Read only property)

161.1.25 IsOnBLUR as Boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the OnBLUR attribute.

**Notes:** (Read only property)

161.1.26 IsOnCLICK as Boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the OnCLICK attribute.

**Notes:** (Read only property)

161.1.27 IsOnFOCUS as Boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the OnFOCUS attribute.

**Notes:** (Read only property)

161.1.28 IsOnKEYDOWN as Boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the OnKEYDOWN attribute.

**Notes:** (Read only property)
161.1.29  **IsOnKEYPRESS as Boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the OnKEYPRESS attribute.
**Notes:** (Read only property)

161.1.30  **IsOnKEYUP as Boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the OnKEYUP attribute.
**Notes:** (Read only property)

161.1.31  **IsOnMOUSEDOWN as Boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the OnMOUSEDOWN attribute.
**Notes:** (Read only property)

161.1.32  **IsOnMOUSEMOVE as Boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the OnMOUSEMOVE attribute.
**Notes:** (Read only property)

161.1.33  **IsOnMOUSEOUT as Boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the OnMOUSEOUT attribute.
**Notes:** (Read only property)

161.1.34  **IsOnMOUSEOVER as Boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the OnMOUSEOVER attribute.
**Notes:** (Read only property)
161.1. CLASS TIDYATTRIBUTEMBS

161.1.35 IsOnMOUSEUP as Boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the OnMOUSEUP attribute. **Notes:** (Read only property)

161.1.36 IsProp as Boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the Prop attribute. **Notes:** (Read only property)

161.1.37 IsREL as Boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the REL attribute. **Notes:** (Read only property)

161.1.38 IsROWSPAN as Boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the ROWSPAN attribute. **Notes:** (Read only property)

161.1.39 IsSELECTED as Boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the SELECTED attribute. **Notes:** (Read only property)

161.1.40 IsSRC as Boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the SRC attribute. **Notes:** (Read only property)
161.1.41  IsSTYLE as Boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the STYLE attribute.  
**Notes:** (Read only property)

161.1.42  IsSUMMARY as Boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the SUMMARY attribute.  
**Notes:** (Read only property)

161.1.43  IsTARGET as Boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the TARGET attribute.  
**Notes:** (Read only property)

161.1.44  IsTEXT as Boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the TEXT attribute.  
**Notes:** (Read only property)

161.1.45  IsTITLE as Boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the TITLE attribute.  
**Notes:** (Read only property)

161.1.46  IsTYPE as Boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the TYPE attribute.  
**Notes:** (Read only property)
161.1. **CLASS TIDYATTRIBUTEMBS**

161.1.47 **IsUSEMAP as Boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the USEMAP attribute. **Notes:** (Read only property)

161.1.48 **IsVALUE as Boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the VALUE attribute. **Notes:** (Read only property)

161.1.49 **IsVLINK as Boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the VLINK attribute. **Notes:** (Read only property)

161.1.50 **IsWIDTH as Boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the WIDTH attribute. **Notes:** (Read only property)

161.1.51 **IsXMLNS as Boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this attribute is the XMLNS attribute. **Notes:** (Read only property)

161.1.52 **Name as string**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The name of the attribute. **Notes:** (Read only property)
161.1.53 NextAttribute as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The next attribute in the attribute list of the node.
**Notes:** (Read only property)

161.1.54 Value as string

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The value of the attribute.
**Notes:** (Read only property)
161.2 module TidyAttrIdMBS

161.2.1 module TidyAttrIdMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A module with constants for use with the Tidy classes.

161.2.2 Constants

161.2.3 TidyAttrABBR=1

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.2.4 TidyAttrABOUT=315

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.5 TidyAttrACCEPT=2

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.2.6 TidyAttrACCEPT_CHARSET=3

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.2.7 TidyAttrACCESSKEY=4

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.2.8 TidyAttrACTION=5

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.
161.2.9  TidyAttrADD_DATE=6

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.2.10  TidyAttrALIGN=7

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.2.11  TidyAttrALINK=8

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.2.12  TidyAttrALLOWFULLSCREEN=9

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.13  TidyAttrALT=10

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.14  TidyAttrARCHIVE=11

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.15  TidyAttrARIA_ACTIVEDESCendant=271

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.16  TidyAttrARIA_ATOMIC=272

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.2. MODULE TIDYATTRIDMBS

161.2.17 TidyAttrARIA_AUTOCOMPLETE=273

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.18 TidyAttrARIA_BUSY=274

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.19 TidyAttrARIA_CHECKED=275

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.20 TidyAttrARIA_CONTROLS=276

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.21 TidyAttrARIA_DESCRIBEDBY=277

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.22 TidyAttrARIA_DISABLED=278

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.23 TidyAttrARIA_DROPEFFECT=279

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.24 TidyAttrARIA_EXPANDED=280

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
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161.2.25  TidyAttrARIA_FLOWTO=281

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.26  TidyAttrARIA_GRABBED=282

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.27  TidyAttrARIA_HASPOPUP=283

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.28  TidyAttrARIA_HIDDEN=284

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.29  TidyAttrARIA_INVALID=285

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.30  TidyAttrARIA_LABEL=286

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.31  TidyAttrARIA_LABELLEDBY=287

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.32  TidyAttrARIA_LEVEL=288

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.2. MODULE TIDYATTRIDMBS

161.2.33 TidyAttrARIA_LIVE=289

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.34 TidyAttrARIA_MULTILINE=290

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.35 TidyAttrARIA_MULTISELECTABLE=291

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.36 TidyAttrARIA_ORIENTATION=292

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.37 TidyAttrARIA_OWNS=293

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.38 TidyAttrARIA_POSINSET=294

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.39 TidyAttrARIA_PRESSED=295

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.40 TidyAttrARIA_READONLY=296

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.2.41 TidyAttrARIA_RELEVANT=297
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.42 TidyAttrARIA_REQUIRED=298
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.43 TidyAttrARIA_SELECTED=299
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.44 TidyAttrARIA_SETSIZE=300
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.45 TidyAttrARIA_SORT=301
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.46 TidyAttrARIA_VALUEMAX=302
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.47 TidyAttrARIA_VALUEMIN=303
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.48 TidyAttrARIA_VALUENOW=304
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.2. **MODULE TIDYATTRIDMBS**

161.2.49 **TidyAttrARIA\_VALUETEXT=305**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.50 **TidyAttrAS=324**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.51 **TidyAttrASYNC=171**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.52 **TidyAttrAUTOCOMPLETE=172**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.53 **TidyAttrAUTOFOCUS=173**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.54 **TidyAttrAUTOPLAY=174**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.55 **TidyAttrAXIS=12**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.56 **TidyAttrBACKGROUND=13**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.2.57  **TidyAttrBASEPROFILE=311**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.58  **TidyAttrBGCOLOR=14**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.59  **TidyAttrBGPROPERTIES=15**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.60  **TidyAttrBORDER=16**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.61  **TidyAttrBORDERCOLOR=17**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.62  **TidyAttrBOTTOMMARGIN=18**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.63  **TidyAttrCELLPADDING=19**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.64  **TidyAttrCELLSPACING=20**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.2. MODULE TIDYATTRIDMBS

161.2.65 TidyAttrCHALLENGE=175

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.66 TidyAttrCHAR=21

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.67 TidyAttrCHAROFF=22

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.68 TidyAttrCHARSET=23

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.69 TidyAttrCHECKED=24

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.70 TidyAttrCITE=25

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.71 TidyAttrCLASS=26

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.72 TidyAttrCLASSID=27

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.2.73  TidyAttrCLEAR=28

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.74  TidyAttrCODE=29

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.75  TidyAttrCODEBASE=30

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.76  TidyAttrCODETYPE=31

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.77  TidyAttrCOLOR=32

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.78  TidyAttrCOLS=33

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.79  TidyAttrCOLSPAN=34

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.80  TidyAttrCOMPACT=35

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.2. Module TidyAttrIDMBS

161.2.81 TidyAttrCONTENT=36

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.82 TidyAttrCONTENTEDITABLE=176

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.83 TidyAttrCONTENTSCRIPTTYPE=312

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.84 TidyAttrCONTENTSTYLETYPE=313

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.85 TidyAttrCONTEXTMENU=177

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.86 TidyAttrCONTROLS=178

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.87 TidyAttrCOORDS=37

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.88 TidyAttrCROSSORIGIN=179

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.2.89  TidyAttrDATA=38

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.90  TidyAttrDATAFLD=39

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.91  TidyAttrDATAFORMATAS=40

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.92  TidyAttrDATAPAGESIZE=41

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.93  TidyAttrDATASRC=42

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.94  TidyAttrDATATYPE=316

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.95  TidyAttrDATETIME=43

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.96  TidyAttrDECLARE=44

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.2.  

**MODULE TIDYATTRIDMBS**

161.2.97  

**TidyAttrDEFAULT=180**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.98  

**TidyAttrDEFER=45**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.99  

**TidyAttrDIR=46**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.100  

**TidyAttrDIRNAME=181**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.101  

**TidyAttrDISABLED=47**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.102  

**TidyAttrDISPLAY=314**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.2.103  **TidyAttrDRAGGABLE**=182

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.104  **TidyAttrDROPZONE**=183

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.105  **TidyAttrENCODING**=48

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.106  **TidyAttrENCTYPE**=49

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.107  **TidyAttrEVENT**=164

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.108  **TidyAttrFACE**=50

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.109  **TidyAttrFOR**=51

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.110  **TidyAttrFORM**=184

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.2. MODULE TIDYATTRIDMBS

161.2.111  TidyAttrFORMACTION=185
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.112  TidyAttrFORMENCTYPE=186
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.113  TidyAttrFORMMETHOD=187
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.114  TidyAttrFORMNOVALIDATE=188
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.115  TidyAttrFORMTARGET=189
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.116  TidyAttrFRAME=52
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.117  TidyAttrFRAMEBORDER=53
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.118  TidyAttrFRAMESpacing=54
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.2.119  TidyAttrGRIDX=55

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.120  TidyAttrGRIDY=56

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.121  TidyAttrHEADERS=57

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.122  TidyAttrHEIGHT=58

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.123  TidyAttrHIDDEN=190

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

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MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.2.311  TidyAttrUSEMAP=152

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.312  TidyAttrVALIGN=153

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.313  TidyAttrVALUE=154

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.314  TidyAttrVALUETYPE=155

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.315  TidyAttrVERSION=156

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.316  TidyAttrVIEWBOX=308

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.317  TidyAttrVLINK=157

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.318  TidyAttrVOCAB=322

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.2. MODULE TIDYATTRIDMBS

161.2.319 TidyAttrVSPACE=158

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.320 TidyAttrWIDTH=159

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.321 TidyAttrWRAP=160

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.322 TidyAttrX=306

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.323 TidyAttrXMLNS=163

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.324 TidyAttrXMLNSXLINK=325

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.325 TidyAttrXML_LANG=161

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.326 TidyAttrXML_SPACE=162

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.2.327 TidyAttrY=307

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.2.328 TidyAttrZOOMANDPAN=310

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.3 module TidyConfigCategoryMBS

161.3.1 module TidyConfigCategoryMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A module with constants for use with the Tidy classes.

161.3.2 Constants

161.3.3 TidyDiagnostics=1

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.3.4 TidyEncoding=3

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.3.5 TidyMarkup=0

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.3.6 TidyMiscellaneous=4

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.3.7 TidyPrettyPrint=2

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.
161.4 module TidyDoctypeModesMBS

161.4.1 module TidyDoctypeModesMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A module with constants for use with the Tidy classes.

161.4.2 Constants

161.4.3 TidyDoctypeAuto=2

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.4.4 TidyDoctypeHtml5=0

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.4.5 TidyDoctypeLoose=4

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.4.6 TidyDoctypeOmit=1

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.4.7 TidyDoctypeStrict=3

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.4.8 TidyDoctypeUser=5

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.5. CLASS TIDYDOCUMENTMBS

161.5  class TidyDocumentMBS

161.5.1  class TidyDocumentMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A document in the tidy library.

**Example:**

```vbnet
dim t as new TidyDocumentMBS

call t.ParseString("<p>Hello World</p>") // pass here bad html
call t.CleanAndRepair

dim s As String=t.SaveString
MsgBox s // show fixed html
```

**Notes:** The main class for using the tidy library in Realbasic.

161.5.2  Methods

161.5.3  AccessWarningCount as Integer

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Number of Tidy accessibility warnings encountered.

161.5.4  Body as TidyNodeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The body node in the html tree.

161.5.5  CleanAndRepair as Integer

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Execute configured cleanup and repair operations on parsed markup.

**Example:**

```vbnet
dim t as new TidyDocumentMBS

call t.ParseString("<p>Hello World</p>") // pass here bad html
call t.CleanAndRepair
```
161.5.6 ConfigErrorCount as Integer

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Number of Tidy configuration errors encountered.

161.5.7 CopyConfig(otherDocument as TidyDocumentMBS) as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copy current configuration settings from one document to another.

161.5.8 DetectedGenericXml as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Input is generic XML (not HTML or XHTML)?

161.5.9 DetectedHtmlVersion as Integer

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Detected HTML version: 0, 2, 3 or 4.

161.5.10 DetectedXhtml as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Input is XHTML?

161.5.11 ErrorBuffer as string

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies the error text save in the error buffer. **Notes:** You need to use InstallErrorBuffer before using this function.
**161.5.12 ErrorCount as Integer**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Number of Tidy errors encountered. **Notes:** If >0, output is suppressed unless ForceOutput is set.

**161.5.13 ErrorSummary**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Write more complete information about errors to current error sink.

**161.5.14 FileExists(filename as string) as boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the file with that name exists.

**161.5.15 GeneralInfo**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Write more general information about markup to current error sink.

**161.5.16 GetBooleanOption(OptionID as Integer) as boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries the value of a boolean option.

**161.5.17 GetIntegerOption(OptionID as Integer) as Integer**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries the value of an integer option.

**161.5.18 GetStringOption(OptionID as Integer) as string**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries the value of a string option.
161.5.19  **Head as TidyNodeMBS**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The head node in the html tree.

161.5.20  **Html as TidyNodeMBS**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The html node in the html tree.

161.5.21  **InstallErrorBuffer**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Installs an error buffer.
**Notes:** Use ErrorBuffer to get the text later.

161.5.22  **LibraryVersion as string**

MBS Tools Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The version number of the library.

161.5.23  **LoadConfigFile(filename as string) as Integer**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Load an ASCII Tidy configuration file.

161.5.24  **LoadConfigFileWithEncoding(Filename as string, CharacterEncoding as string) as Integer**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Load a Tidy configuration file with the specified character encoding.

161.5.25  **NextOption(Iterator as TidyIteratorMBS) as TidyOptionMBS**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Finds the next option in the list.
161.5.26 NextRelatedOption(Iterator as TidyIteratorMBS) as TidyOptionMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get next related option.

161.5.27 NextUserDeclaredTag(OptionID as Integer, Iterator as TidyIteratorMBS) as string

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get next declared tag of specified type: TidyInlineTags, TidyBlockTags, TidyEmptyTags or TidyPreTags.
**Notes:** See TidyOptionIdMBS for constants.

161.5.28 OptionCharcterEncodingName(OptionID as Integer) as String

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get character encoding name.
**Notes:** Used with TidyCharEncoding, TidyOutCharEncoding, TidyInCharEncoding options.

161.5.29 OptionCurrentPick(OptionID as Integer) as String

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get current pick list value for option by ID.
**Notes:** Useful for enum types.

161.5.30 OptionForID(OptionID as Integer) as TidyOptionMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Finds option based on given ID.
**Notes:** Returns nil on failure.

161.5.31 OptionForName(OptionName as string) as TidyOptionMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Finds option by name.
161.5.32 OptionIDForName(OptionName as string) as Integer

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Finds Option by name. **Notes:** Returns nil on failure.

161.5.33 OptionList as TidyIteratorMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An iterator running through all the options available.

161.5.34 OptionResetToDefault(OptionID as Integer) as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Resets the option to default value.

161.5.35 OptionsDifferentThanDefault as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Any settings different than default?

161.5.36 OptionsDifferentThanSnapshot as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Any settings different than snapshot?

161.5.37 OptionsResetAllToDefault as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reset all options to their default values.

161.5.38 OptionsResetToSnapshot as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reset config settings to snapshot (after document processing).
161.5. **CLASS TIDYDOCUMENTMBS**

161.5.39 **OptionsSnapshot as boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Take a snapshot of current config settings.

161.5.40 **ParseFile(filename as string) as Integer**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Parse markup in named file.

161.5.41 **ParseSource(theInput as TidyInputMBS) as Integer**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Parse markup in given generic input source.

161.5.42 **ParseString(data as string) as Integer**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Parse markup in given string.

**Example:**
```vba
dim t as new TidyDocumentMBS

call t.ParseString("<p>Hello World</p>") // pass here bad html
call t.CleanAndRepair

dim s As String=t.SaveString
MsgBox s // show fixed html
```

161.5.43 **ParseStringOption(OptionName as string, value as string) as boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Parses a string to set an option.

**Example:**
```vba
dim t as new TidyDocumentMBS

MsgBox str(t.OptionQuiet)
dim b1 as boolean = t.ParseStringOption("Quiet","true")
```
MsgBox str(t.OptionQuiet)

dim b2 as boolean = t.ParseStringOption("Quiet","false")
MsgBox str(t.OptionQuiet)

Notes:
Useful if you don’t know the type of the option.
Returns true on success and false on failure.

161.5.44  RelatedOptionsList(Option as TidyOptionMBS) as TidyIteratorMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Iterate over a list of related options.

161.5.45  ReleaseDate as string

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Get release date (version) for current library.

161.5.46  ReportDoctype as Integer

MBS Tools Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
The report document type.

161.5.47  Root as TidyNodeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
The root node in the html tree.

161.5.48  RunDiagnostics as Integer

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Run configured diagnostics on parsed and repaired markup.
Notes: Must call CleanAndRepair first.
161.5. SaveConfig(theOutput as TidyOutputMBS) as Integer

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Save current settings to given output sink.
**Notes:** Only non-default values are written.

161.5.50 SaveConfigFile(filename as string) as Integer

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Save current settings to named file.
**Notes:** Only non-default values are written.

161.5.51 SaveFile(filename as string) as Integer

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Save to named file.

161.5.52 SaveOutput(theOutput as TidyOutputMBS) as Integer

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Save to given generic output.

161.5.53 SaveString as string

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Save to a string.
**Example:**
```vbscript
dim t as new TidyDocumentMBS
call t.ParseString("<p>Hello World</p>")  // pass here bad html
call t.CleanAndRepair
dim s As String=t.SaveString
MsgBox s  // show fixed html
```

**Notes:**
Returns "" on failure.

The returned string has no encoding set. You need to use DefineEncoding.

### 161.5.54 SetBooleanOption(OptionID as Integer, value as boolean) as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets an option with a given boolean value.  
**Notes:** Returns true on success and false on failure.

### 161.5.55 SetCharacterEncoding(encodingName as string) as Integer

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set the input/output character encoding for parsing markup.  
**Notes:** Values include: ascii, latin1, raw, utf8, iso2022, mac, win1252, utf16le, utf16be, utf16, big5 and shiftjis. Case in-sensitive.

### 161.5.56 SetErrorFile(filename as string) as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Redirects error output to named file.  
**Notes:** Returns true on success.

### 161.5.57 SetInputCharacterEncoding(encodingName as string) as Integer

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set the input character encoding for parsing markup.  
**Example:**

```vba
dim t as new TidyDocumentMBS
MsgBox str(t.OptionInCharEncoding)
call t.SetInputCharacterEncoding "utf8"
MsgBox str(t.OptionInCharEncoding)
```

**Notes:** Values include: ascii, latin1, raw, utf8, iso2022, mac, win1252, utf16le, utf16be, utf16, big5 and shiftjis. Case in-sensitive.
### 161.5.58  SetIntegerOption(OptionID as Integer, value as Integer) as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets an option with a given integer value. **Notes:** Returns true on success and false on failure.

### 161.5.59  SetOutputCharacterEncoding(encodingName as string) as Integer

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set the output character encoding for parsing markup. **Notes:** Values include: ascii, latin1, raw, utf8, iso2022, mac, win1252, utf16le, utf16be, utf16, big5 and shiftjis. Case in-sensitive.

### 161.5.60  SetStringOption(OptionID as Integer, value as string) as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets an option with a given string value. **Notes:** Returns true on success and false on failure.

### 161.5.61  Status as Integer


### 161.5.62  UserDeclaredTagList as TidyIteratorMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Iterate over user declared tags.

### 161.5.63  WarningCount as Integer

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Number of warnings encountered.
161.5.64 Properties

161.5.65 ErrorOutput as TidyOutputMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The output where the error report is written to. Notes: (Read and Write property)

161.5.66 Handle as Integer

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The internal reference to the tidy document object. Notes: (Read only property)

161.5.67 OptionAccessibilityCheck as Integer

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The tidy option accessibility-check. Notes: This option specifies what level of accessibility checking, if any, that Tidy should perform. Level 0 (Tidy Classic) is equivalent to Tidy Classic’s accessibility checking. For more information on Tidy’s accessibility checking, visit Tidy’s Accessibility Page (http://www.html-tidy.org/accessibility/). (Read and Write property)

161.5.68 OptionAccessibilityCheckLevel as Integer

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This option specifies what level of accessibility checking, if any, that Tidy should do. Deprecated: This item is deprecated and should no longer be used. Notes: Level 0 is equivalent to Tidy Classic’s accessibility checking. For more information on Tidy’s accessibility checking, visit the Adaptive Technology Resource Centre at the University of Toronto. :

http://www.aprompt.ca/Tidy/accessibilitychecks.html (Read and Write property)
161.5.69  **OptionAddXmlDecl as Boolean**


**Notes:**
This option specifies if Tidy should add the XML declaration when outputting XML or XHTML.
Note that if the input already includes an &lt;?xml ... ?&gt; declaration then this option will be ignored.
If the encoding for the output is different from ascii, one of the utf* encodings, or raw, then the declaration is always added as required by the XML standard.
(Read and Write property)

161.5.70  **OptionAddXmlSpace as Boolean**

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option add-xml-space.

**Notes:**
This option specifies if Tidy should add xml:space="preserve" to elements such as &lt;pre&gt;, &lt;style&gt; and &lt;script&gt; when generating XML.
This is needed if the whitespace in such elements is to be parsed appropriately without having access to the DTD.
(Read and Write property)

161.5.71  **OptionAltText as String**

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option alt-text.

**Notes:**
This option specifies the default alt= text Tidy uses for &lt;img&gt; attributes when the alt= attribute is missing.
Use with care, as it is your responsibility to make your documents accessible to people who cannot see the images.
(Read and Write property)

161.5.72  **OptionAnchorAsName as Boolean**

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option anchor-as-name.

**Notes:**
This option controls the deletion or addition of the name attribute in elements where it can serve as anchor.
If set to yes a name attribute, if not already existing, is added along an existing id attribute if the DTD allows it. If set to no any existing name attribute is removed if an id attribute exists or has been added. (Read and Write property)

161.5.73 OptionAsciiChars as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option ascii-chars.

**Notes:**
Can be used to modify behavior of the clean option when set to yes. If set to yes when using clean, &amp;emdash;, &amp;rdquo;, and other named character entities are down-graded to their closest ASCII equivalents. (Read and Write property)

161.5.74 OptionAssumeXmlProcins as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option assume-xml-procins.

**Notes:**
This option specifies if Tidy should change the parsing of processing instructions to require ?&gt; as the terminator rather than &gt;. This option is automatically set if the input is in XML. (Read and Write property)

161.5.75 OptionBare as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option bare.

**Notes:**
This option specifies if Tidy should strip Microsoft specific HTML from Word 2000 documents, and output spaces rather than non-breaking spaces where they exist in the input. (Read and Write property)

161.5.76 OptionBlockTags as String

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This option specifies new block-level tags.
161.5. CLASS TIDYDOCUMENTMBS

**Deprecated:** This item is deprecated and should no longer be used. **Notes:**

This option takes a space or comma separated list of tag names. Unless you declare new tags, Tidy will refuse to generate a tidied file if the input includes previously unknown tags. Note you can’t change the content model for elements such as `<TABLE>`, `<UL>`, `<OL>` and `<DL>`. This option is ignored in XML mode.

(Read and Write property)

### 161.5.77 OptionBodyOnly as Integer

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

This option specifies if Tidy should print only the contents of the body tag as an HTML fragment. **Deprecated:** This item is deprecated and should no longer be used. **Notes:**

If set to "auto", this is performed only if the body tag has been inferred. Useful for incorporating existing whole pages as a portion of another page. This option has no effect if XML output is requested.

Value is 0 for no, 1 for yes and 2 for auto.

(Read and Write property)

### 161.5.78 OptionBreakBeforeBr as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

The tidy option break-before-br. **Notes:**

This option specifies if Tidy should output a line break before each `<br>` element.

(Read and Write property)

### 161.5.79 OptionCharEncoding as Integer

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

The tidy option char-encoding. **Notes:**

This option specifies the character encoding Tidy uses for both the input and output. For ascii Tidy will accept Latin-1 (ISO-8859-1) character values, but will use entities for all characters whose value > 127.

For raw, Tidy will output values above 127 without translating them into entities.

For latin1, characters above 255 will be written as entities.

For utf8, Tidy assumes that both input and output are encoded as UTF-8.

You can use iso2022 for files encoded using the ISO-2022 family of encodings e.g. ISO-2022-JP.

For mac and win1252, Tidy will accept vendor specific character values, but will use entities for all characters.
whose value &gt; 127.
For unsupported encodings, use an external utility to convert to and from UTF-8.
(Read and Write property)

161.5.80 OptionClean as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option clean.
**Notes:**
This option specifies if Tidy should perform cleaning of some legacy presentational tags (currently &lt;i&gt;, &lt;b&gt;, &lt;center&gt; when enclosed within appropriate inline tags, and &lt;font&gt;). If set to yes then legacy tags will be replaced with CSS &lt;style&gt; tags and structural markup as appropriate.
(Read and Write property)

161.5.81 OptionCoerceEndtags as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option coerce-endtags.
**Notes:**
This option specifies if Tidy should coerce a start tag into an end tag in cases where it looks like an end tag was probably intended; for example, given
&lt;span&gt;foo &lt;b&gt;bar&lt;/b&gt; baz&lt;/span&gt;
Tidy will output
&lt;span&gt;foo &lt;b&gt;bar&lt;/b&gt; baz&lt;/span&gt;
(Read and Write property)

161.5.82 OptionCssPrefix as String

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option css-prefix.
**Notes:**
This option specifies the prefix that Tidy uses for styles rules.
By default, c will be used.
(Read and Write property)
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161.5.83 **OptionDecorateInferredUl as Boolean**

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The tidy option decorate-inferred-ul.
**Notes:**
This option specifies if Tidy should decorate inferred `<ul>` elements with some CSS markup to avoid indentation to the right.
(Read and Write property)

161.5.84 **OptionDoctype as String**

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The tidy option doctype.
**Notes:**
This option specifies the DOCTYPE declaration generated by Tidy.
If set to omit the output won't contain a DOCTYPE declaration. Note this this also implies numeric-entities is set to yes.
If set to html5 the DOCTYPE is set to `<!DOCTYPE html>`.
If set to auto (the default) Tidy will use an educated guess based upon the contents of the document.
If set to strict, Tidy will set the DOCTYPE to the HTML4 or XHTML1 strict DTD.
If set to loose, the DOCTYPE is set to the HTML4 or XHTML1 loose (transitional) DTD.
Alternatively, you can supply a string for the formal public identifier (FPI).
For example:
doctype: "-//ACME//DTD HTML 3.14159//EN"
If you specify the FPI for an XHTML document, Tidy will set the system identifier to an empty string. For an HTML document, Tidy adds a system identifier only if one was already present in order to preserve the processing mode of some browsers. Tidy leaves the DOCTYPE for generic XML documents unchanged.
This option does not offer a validation of document conformance.
(Read and Write property)

161.5.85 **OptionDoctypeMode as Integer**

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The tidy option doctype-mode.
**Notes:**
(Read only property)
161.5.86  **OptionDropEmptyElements as Boolean**

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option drop-empty-elements.

**Notes:**
This option specifies if Tidy should discard empty elements.
(Read and Write property)

161.5.87  **OptionDropEmptyParas as Boolean**

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option drop-empty-paras.

**Notes:**
This option specifies if Tidy should discard empty paragraphs.
(Read and Write property)

161.5.88  **OptionDropFontTags as Boolean**

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option drop-font-tags.

**Notes:**
Deprecated; do not use. This option is destructive to &lt;font&gt; tags, and it will be removed from future versions of Tidy. Use the clean option instead.
If you do set this option despite the warning it will perform as clean except styles will be inline instead of put into a CSS class. &lt;font&gt; tags will be dropped completely and their styles will not be preserved. If both clean and this option are enabled, &lt;font&gt; tags will still be dropped completely, and other styles will be preserved in a CSS class instead of inline.
See clean for more information.
(Read and Write property)

161.5.89  **OptionDropPropAttrs as Boolean**

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This option specifies if Tidy should strip out proprietary attributes, such as MS data binding attributes.
**Deprecated:** This item is deprecated and should no longer be used. **Notes:** (Read and Write property)
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161.5.90 OptionDropProprietaryAttributes as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option drop-proprietary-attributes. 
**Notes:**
This option specifies if Tidy should strip out proprietary attributes, such as Microsoft data binding attributes. Additionally attributes that aren’t permitted in the output version of HTML will be dropped if used with strict-tags-attributes. 
(Read and Write property)

161.5.91 OptionDuplicateAttrs as Integer

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the options. 
**Deprecated:** This item is deprecated and should no longer be used. **Notes:** (Read and Write property)

161.5.92 OptionEmacs as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This option specifies if Tidy should change the format for reporting errors and warnings to a format that is more easily parsed by GNU Emacs. 
**Deprecated:** This item is deprecated and should no longer be used. **Notes:** (Read and Write property)

161.5.93 OptionEmacsFile as String

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Used internally. 
**Deprecated:** This item is deprecated and should no longer be used. **Notes:** (Read and Write property)

161.5.94 OptionEmptyTags as String

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This option specifies new empty inline tags. 
**Deprecated:** This item is deprecated and should no longer be used. **Notes:** 
This option takes a space or comma separated list of tag names. Unless you declare new tags, Tidy will refuse to generate a tidied file if the input includes previously unknown tags. Remember to also declare empty tags as either inline or blocklevel. This option is ignored in XML mode.
161.5.95 OptionEncloseBlockText as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option enclose-block-text.

**Notes:**
This option specifies if Tidy should insert a `<p>` element to enclose any text it finds in any element that allows mixed content for HTML transitional but not HTML strict.

(Read and Write property)

161.5.96 OptionEncloseBodyText as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This option specifies if Tidy should enclose any text it finds in the body element within a `<p>` element.

**Deprecated:** This item is deprecated and should no longer be used. **Notes:**
This is useful when you want to take existing HTML and use it with a style sheet.

(Read and Write property)

161.5.97 OptionEncloseText as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option enclose-text.

**Notes:**
This option specifies if Tidy should enclose any text it finds in the body element within a `<p>` element. This is useful when you want to take existing HTML and use it with a style sheet.

(Read and Write property)

161.5.98 OptionErrFile as String

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This option specifies the error file Tidy uses for errors and warnings.

**Deprecated:** This item is deprecated and should no longer be used. **Notes:**
Normally errors and warnings are output to "stderr".

(Read and Write property)
161.5.99 OptionErrorFile as String

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The tidy option error-file.
**Notes:**
This option specifies the error file Tidy uses for errors and warnings. Normally errors and warnings are
output to stderr.
(Read and Write property)

161.5.100 OptionEscapeCdata as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The tidy option escape-cdata.
**Notes:**
This option specifies if Tidy should convert \&lt;! [ CDATA [ ] ] &gt; sections to normal text.
(Read and Write property)

161.5.101 OptionEscapeScripts as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The tidy option escape-scripts.
**Notes:**
This option causes items that look like closing tags, like &lt;/g to be escaped to &lt;/g. Set this option
to 'no' if you do not want this.
(Read and Write property)

161.5.102 OptionFixBackslash as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The tidy option fix-backslash.
**Notes:**
This option specifies if Tidy should replace backslash characters \\ in URLs with forward slashes /.
(Read and Write property)
161.5.103 OptionFixBadComments as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option fix-bad-comments.  
**Notes:**  
This option specifies if Tidy should replace unexpected hyphens with = characters when it comes across adjacent hyphens.  
The default is yes.  
This option is provided for users of Cold Fusion which uses the comment syntax: &lt;!— —&gt;.  
(Read and Write property)
161.5.104 OptionFixComments as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This option specifies if Tidy should replace unexpected hyphens with "=" characters when it comes across adjacent hyphens.
**Deprecated:** This item is deprecated and should no longer be used. **Notes:**
The default is yes. This option is provided for users of Cold Fusion which uses the comment syntax: <!— —>
(Read and Write property)

161.5.105 OptionFixUri as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The tidy option fix-uri.
**Notes:**
This option specifies if Tidy should check attribute values that carry URIs for illegal characters and if such are found, escape them as HTML4 recommends.
(Read and Write property)

161.5.106 OptionForceOutput as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The tidy option force-output.
**Notes:**
This option specifies if Tidy should produce output even if errors are encountered.
Use this option with care; if Tidy reports an error, this means Tidy was not able to (or is not sure how to) fix the error, so the resulting output may not reflect your intention.
(Read and Write property)

161.5.107 OptionGdoc as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The tidy option gdoc.
**Notes:**
This option specifies if Tidy should enable specific behavior for cleaning up HTML exported from Google Docs.
(Read and Write property)
### 161.5.108 OptionGnuEmacs as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option gnu-emacs.

**Notes:**
This option specifies if Tidy should change the format for reporting errors and warnings to a format that is more easily parsed by GNU Emacs.
(Read and Write property)

### 161.5.109 OptionGnuEmacsFile as String


**Notes:**
Used internally.
(Read and Write property)

### 161.5.110 OptionHideComments as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option hide-comments.

**Notes:**
This option specifies if Tidy should print out comments.
(Read and Write property)

### 161.5.111 OptionHideEndtags as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option hide-endtags.

**Notes:**
This option is an alias for omit-optional-tags.
(Read and Write property)

### 161.5.112 OptionHtmlOut as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This option specifies if Tidy should generate pretty printed output, writing it as HTML.
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**Deprecated:** This item is deprecated and should no longer be used. **Notes:** (Read and Write property)

### 161.5.113 OptionInCharEncoding as Integer

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This option specifies the character encoding Tidy uses for the input.
**Deprecated:** This item is deprecated and should no longer be used. **Notes:**
See char-encoding for more info.
(Read and Write property)

### 161.5.114 OptionIndent as Integer

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The tidy option indent.
**Notes:**
This option specifies if Tidy should indent block-level tags.
If set to auto Tidy will decide whether or not to indent the content of tags such as &lt;title&gt;, &lt;h1-&gt;.&lt;h6&gt;, &lt;li&gt;, &lt;td&gt;, or &lt;p&gt; based on the content including a block-level element.
Setting indent to yes can expose layout bugs in some browsers.
Use the option indent-spaces to control the number of spaces or tabs output per level of indent, and indent-with-tabs to specify whether spaces or tabs are used.
(Read and Write property)

### 161.5.115 OptionIndentAttributes as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The tidy option indent-attributes.
**Notes:**
This option specifies if Tidy should begin each attribute on a new line.
(Read and Write property)

### 161.5.116 OptionIndentCdata as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The tidy option indent-cdata.
**Notes:**
This option specifies if Tidy should indent &lt;! [ CDATA [ ] ] &gt; sections.
161.5.117 OptionIndentContent as Integer

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
One of the options.
**Deprecated:** This item is deprecated and should no longer be used. **Notes:** (Read and Write property)

161.5.118 OptionIndentSpaces as Integer

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The tidy option indent-spaces.
**Notes:**
This option specifies the number of spaces or tabs that Tidy uses to indent content when indent is enabled.
Note that the default value for this option is dependent upon the value of indent-with-tabs (see also).
(Read and Write property)

161.5.119 OptionIndentWithTabs as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The tidy option indent-with-tabs.
**Notes:**
This option specifies if Tidy should indent with tabs instead of spaces, assuming indent is yes.
Set it to yes to indent using tabs instead of the default spaces.
Use the option indent-spaces to control the number of tabs output per level of indent. Note that when indent-with-tabs is enabled the default value of indent-spaces is reset to 1.
Note tab-size controls converting input tabs to spaces. Set it to zero to retain input tabs.
(Read and Write property)

161.5.120 OptionInlineTags as String

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This option specifies new non-empty inline tags. This option takes a space or comma separated list of tag names.
**Deprecated:** This item is deprecated and should no longer be used. **Notes:**
Unless you declare new tags, Tidy will refuse to generate a tidied file if the input includes previously unknown tags. This option is ignored in XML mode.
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(Read and Write property)

### 161.5.121 OptionInputEncoding as Integer

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option input-encoding.

**Notes:**

This option specifies the character encoding Tidy uses for the input. See char-encoding for more info.

(Read and Write property)

### 161.5.122 OptionInputXml as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option input-xml.

**Notes:**

This option specifies if Tidy should use the XML parser rather than the error correcting HTML parser.

(Read and Write property)

### 161.5.123 OptionJoinClasses as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option join-classes.

**Notes:**

This option specifies if Tidy should combine class names to generate a single, new class name if multiple class assignments are detected on an element.

(Read and Write property)

### 161.5.124 OptionJoinStyles as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option join-styles.

**Notes:**

This option specifies if Tidy should combine styles to generate a single, new style if multiple style values are detected on an element.

(Read and Write property)
161.5.125  **OptionKeepFileTimes as Boolean**

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This option specifies if Tidy should keep the original modification time of files that Tidy modifies in place. **Deprecated:** This item is deprecated and should no longer be used. **Notes:**

The default is no. Setting the option to yes allows you to tidy files without causing these files to be uploaded to a web server when using a tool such as SiteCopy. Note this feature is not supported on some platforms. (Read and Write property)

161.5.126  **OptionKeepTime as Boolean**

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option keep-time. **Notes:**

This option specifies if Tidy should keep the original modification time of files that Tidy modifies in place. Setting the option to yes allows you to tidy files without changing the file modification date, which may be useful with certain tools that use the modification date for things such as automatic server deployment. Note this feature is not supported on some platforms. (Read and Write property)

161.5.127  **OptionLanguage as String**

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option language. **Notes:**

Currently not used, but this option specifies the language Tidy would use if it were properly localized. For example: en. (Read and Write property)

161.5.128  **OptionLiteralAttribs as Boolean**

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This option specifies if Tidy should ensure that whitespace characters within attribute values are passed through unchanged. **Deprecated:** This item is deprecated and should no longer be used. **Notes:** (Read and Write property)
161.5. OptionLiteralAttributes as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option literal-attributes.

**Notes:**
This option specifies how Tidy deals with whitespace characters within attribute values. If the value is no Tidy normalizes attribute values by replacing any newline or tab with a single space, and further by replacing any contiguous whitespace with a single space. To force Tidy to preserve the original, literal values of all attributes and ensure that whitespace within attribute values is passed through unchanged, set this option to yes.

(Read and Write property)

161.5.130 OptionLogicalEmphasis as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option logical-emphasis.

**Notes:**
This option specifies if Tidy should replace any occurrence of &lt;i&gt; with &lt;em&gt; and any occurrence of &lt;b&gt; with &lt;strong&gt; and any occurrence of &lt;i&gt; &lt;b&gt; and any occurrence of &lt;strong&gt; &lt;i&gt; with &lt;strong&gt;&lt;em&gt; and &lt;em&gt;&lt;strong&gt; for any attributes are preserved unchanged. This option can be set independently of the clean option.

(Read and Write property)

161.5.131 OptionLowerLiterals as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option lower-literals.

**Notes:**
This option specifies if Tidy should convert the value of an attribute that takes a list of predefined values to lower case. This is required for XHTML documents.

(Read and Write property)

161.5.132 OptionMakeBare as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This option specifies if Tidy should strip Microsoft specific HTML from Word 2000 documents, and output spaces rather than non-breaking spaces where they exist in the input.

**Deprecated:** This item is deprecated and should no longer be used. **Notes:** (Read and Write property)
161.5.133  OptionMakeClean as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This option specifies if Tidy should strip out surplus presentational tags and attributes replacing them by style rules and structural markup as appropriate. **Deprecation**: This item is deprecated and should no longer be used. **Notes:**

It works well on the HTML saved by Microsoft Office products.
(Read and Write property)

161.5.134  OptionMark as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This option specifies if Tidy should add a meta element to the document head to indicate that the document has been tidied. **Deprecation**: This item is deprecated and should no longer be used. **Notes:**

Tidy won’t add a meta element if one is already present.
(Read and Write property)

161.5.135  OptionMarkup as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option markup. **Notes:**

This option specifies if Tidy should generate a pretty printed version of the markup. Note that Tidy won’t generate a pretty printed version if it finds significant errors (see force-output).
(Read and Write property)

161.5.136  OptionMergeDivs as Integer

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option merge-divs. **Notes:**

This option can be used to modify the behavior of clean when set to yes. This option specifies if Tidy should merge nested &lt;div&gt; such as &lt;div&gt;&lt;div&gt;...&lt;/div&gt;&lt;/div&gt;.
If set to auto the attributes of the inner &lt;div&gt; are moved to the outer one. Nested &lt;div&gt; with id attributes are not merged.
If set to yes the attributes of the inner &lt;div&gt; are discarded with the exception of class and style.
161.5.137  **OptionMergeEmphasis** as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option merge-emphasis.

**Notes:**
This option specifies if Tidy should merge nested &lt;b&gt; and &lt;i&gt; elements; for example, for the case
&lt;b class="rtop-2"&gt;foo &lt;b class="r2-2"&gt;bar&lt;/b&gt; baz&lt;/b&gt;,
Tidy will output &lt;b class="rtop-2"&gt;foo bar baz&lt;/b&gt;.
(Read and Write property)

161.5.138  **OptionMergeSpans** as Integer

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option merge-spans.

**Notes:**
This option can be used to modify the behavior of clean when set to yes.
This option specifies if Tidy should merge nested &lt;span&gt; such as &lt;span&gt;&lt;span&gt;...&lt;/span&gt;&lt;/span&gt;.
The algorithm is identical to the one used by merge-divs.
(Read and Write property)

161.5.139  **OptionNcr** as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option ncr.

**Notes:**
This option specifies if Tidy should allow numeric character references.
(Read and Write property)

161.5.140  **OptionNewBlocklevelTags** as String


**Notes:**
This option specifies new block-level tags. This option takes a space or comma separated list of tag names. Unless you declare new tags, Tidy will refuse to generate a tidied file if the input includes previously unknown tags.

Note you can’t change the content model for elements such as &lt;table&gt;, &lt;ul&gt;, &lt;ol&gt; and &lt;dl&gt;.

This option is ignored in XML mode.

(Read and Write property)

### 161.5.141 OptionNewEmptyTags as String

*Function:* The tidy option new-empty-tags.

*Notes:*

This option specifies new empty inline tags. This option takes a space or comma separated list of tag names. Unless you declare new tags, Tidy will refuse to generate a tidied file if the input includes previously unknown tags.

Remember to also declare empty tags as either inline or blocklevel.

This option is ignored in XML mode.

(Read and Write property)

### 161.5.142 OptionNewInlineTags as String

*Function:* The tidy option new-inline-tags.

*Notes:*

This option specifies new non-empty inline tags. This option takes a space or comma separated list of tag names. Unless you declare new tags, Tidy will refuse to generate a tidied file if the input includes previously unknown tags.

This option is ignored in XML mode.

(Read and Write property)

### 161.5.143 OptionNewline as Integer

*Function:* The tidy option newline.

*Notes:*

The default is appropriate to the current platform.

Generally CRLF on PC-DOS, Windows and OS/2; CR on Classic Mac OS; and LF everywhere else (Linux, Mac OS X, and Unix).
161.5.144 OptionNewPreTags as String

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The tidy option new-pre-tags.

**Notes:**
This option specifies new tags that are to be processed in exactly the same way as HTML’s `&lt;pre&gt;` element. This option takes a space or comma separated list of tag names. Unless you declare new tags, Tidy will refuse to generate a tidied file if the input includes previously unknown tags.

Note you cannot as yet add new CDATA elements.
This option is ignored in XML mode.
(Read and Write property)

161.5.145 OptionNumEntities as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This option specifies if Tidy should output entities other than the built-in HTML entities (`&amp;`, `&lt;`, `&gt;`, and `&quot;`) in the numeric rather than the named entity form.

**Deprecated:** This item is deprecated and should no longer be used. **Notes:**
Only entities compatible with the DOCTYPE declaration generated are used. Entities that can be represented in the output encoding are translated correspondingly.
(Read and Write property)

161.5.146 OptionNumericEntities as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The tidy option numeric-entities.

**Notes:**
This option specifies if Tidy should output entities other than the built-in HTML entities (`&amp;amp;`, `&amp;lt;`, `&amp;gt;`, and `&amp;quot;`) in the numeric rather than the named entity form.
Only entities compatible with the DOCTYPE declaration generated are used.
Entities that can be represented in the output encoding are translated correspondingly.
(Read and Write property)
161.5.147 OptionOmitOptionalTags as Boolean

**Notes:**  
This option specifies if Tidy should omit optional start tags and end tags when generating output. Setting this option causes all tags for the &lt;html&gt;, &lt;head&gt; and &lt;body&gt; elements to be omitted from output, as well as such end tags as &lt;/p&gt;, &lt;/li&gt;, &lt;/dt&gt;, &lt;/dd&gt;, &lt;/option&gt;, &lt;/tr&gt;, &lt;/td&gt; and &lt;/th&gt;. This option is ignored for XML output.  
(Read and Write property)

161.5.148 OptionOutCharEncoding as Integer

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This option specifies the character encoding Tidy uses for the output. **Deprecated:** This item is deprecated and should no longer be used.  
**Notes:**  
See char-encoding for more info. May only be different from input-encoding for Latin encodings (ascii, latin0, latin1, mac, win1252, ibm858).  
(Read and Write property)

161.5.149 OptionOutFile as String

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This option specifies the output file Tidy uses for markup. **Deprecated:** This item is deprecated and should no longer be used.  
**Notes:**  
Normally markup is written to "stdout".  
(Read and Write property)

161.5.150 OptionOutputBom as Integer

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option output-bom.  
**Notes:**  
This option specifies if Tidy should write a Unicode Byte Order Mark character (BOM; also known as Zero Width No-Break Space; has value of U+FEFF) to the beginning of the output, and only applies to UTF-8 and UTF-16 output encodings. If set to auto this option causes Tidy to write a BOM to the output only if a BOM was present at the beginning of the input.
A BOM is always written for XML/XHTML output using UTF-16 output encodings.
(Read and Write property)

161.5.151 OptionOutputEncoding as Integer

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The tidy option output-encoding.
**Notes:**
This option specifies the character encoding Tidy uses for the output.
Note that this may only be different from input-encoding for Latin encodings (ascii, latin0, latin1, mac, win1252, ibm858).
See char-encoding for more information
(Read and Write property)

161.5.152 OptionOutputFile as String

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The tidy option output-file.
**Notes:**
This option specifies the output file Tidy uses for markup. Normally markup is written to stdout.
(Read and Write property)

161.5.153 OptionOutputHtml as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The tidy option output-html.
**Notes:**
This option specifies if Tidy should generate pretty printed output, writing it as HTML.
(Read and Write property)

161.5.154 OptionOutputXhtml as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The tidy option output-xhtml.
**Notes:**
This option specifies if Tidy should generate pretty printed output, writing it as extensible HTML.
This option causes Tidy to set the DOCTYPE and default namespace as appropriate to XHTML, and will
use the corrected value in output regardless of other sources.
For XHTML, entities can be written as named or numeric entities according to the setting of numeric-entities.
The original case of tags and attributes will be preserved, regardless of other options.
(Read and Write property)

161.5.155 OptionOutputXml as Boolean

Notes:
This option specifies if Tidy should pretty print output, writing it as well-formed XML.
Any entities not defined in XML 1.0 will be written as numeric entities to allow them to be parsed by an XML parser.
The original case of tags and attributes will be preserved, regardless of other options.
(Read and Write property)

161.5.156 OptionPreserveEntities as Boolean

Notes:
This option specifies if Tidy should preserve well-formed entities as found in the input.
(Read and Write property)

161.5.157 OptionPreTags as String

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This option specifies new tags that are to be processed in exactly the same way as HTML’s <PRE>element. Deprecated: This item is deprecated and should no longer be used. Notes:
This option takes a space or comma separated list of tag names. Unless you declare new tags, Tidy will refuse to generate a tidied file if the input includes previously unknown tags. Note you can not as yet add new CDATA elements (similar to <SCRIPT>). This option is ignored in XML mode.
(Read and Write property)

161.5.158 OptionPunctuationWrap as Boolean

Notes:
This option specifies if Tidy should line wrap after some Unicode or Chinese punctuation characters. (Read and Write property)

161.5.159 OptionPunctWrap as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This option specifies if Tidy should line wrap after some Unicode or Chinese punctuation characters. Deprecated: This item is deprecated and should no longer be used. Notes: (Read and Write property)

161.5.160 OptionQuiet as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The tidy option quiet. Notes: This option specifies if Tidy should output the summary of the numbers of errors and warnings, or the welcome or informational messages. (Read and Write property)

161.5.161 OptionQuoteAmpersand as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The tidy option quote-ampersand. Notes: This option specifies if Tidy should output unadorned & amp; characters as & amp;amp;.
(Read and Write property)

161.5.162 OptionQuoteMarks as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The tidy option quote-marks. Notes: This option specifies if Tidy should output & quot; characters as & amp;quot; as is preferred by some editing environments. The apostrophe character ' is written out as & amp;# 39; since many web browsers don’t yet support & amp;apos;.
161.5.163  OptionQuoteNbsp as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option quote-nbsp.

**Notes:**
This option specifies if Tidy should output non-breaking space characters as entities, rather than as the Unicode character value 160 (decimal).
(Read and Write property)

161.5.164  OptionRepeatedAttributes as Integer

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option repeated-attributes.

**Notes:**
This option specifies if Tidy should keep the first or last attribute, if an attribute is repeated, e.g. has two align attributes.
(Read and Write property)

161.5.165  OptionReplaceColor as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option replace-color.

**Notes:**
This option specifies if Tidy should replace numeric values in color attributes with HTML/XHTML color names where defined, e.g. replace # ffffff with white.
(Read and Write property)

161.5.166  OptionShowBodyOnly as Integer

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option show-body-only.

**Notes:**
This option specifies if Tidy should print only the contents of the body tag as an HTML fragment.
If set to auto, this is performed only if the body tag has been inferred.
Useful for incorporating existing whole pages as a portion of another page.
This option has no effect if XML output is requested.  
(Read and Write property)

161.5.167  **OptionShowErrors as Integer**

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**  
The tidy option show-errors.  
**Notes:**  
This option specifies the number Tidy uses to determine if further errors should be shown. If set to 0, then no errors are shown.  
(Read and Write property)

161.5.168  **OptionShowInfo as Boolean**

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**  
The tidy option show-info.  
**Notes:**  
This option specifies if Tidy should display info-level messages.  
(Read and Write property)

161.5.169  **OptionShowMarkup as Boolean**

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**  
This option specifies if Tidy should generate a pretty printed version of the markup.  
**Deprecated:** This item is deprecated and should no longer be used.  
**Notes:**  
Note that Tidy won’t generate a pretty printed version if it finds significant errors (see force-output).  
(Read and Write property)

161.5.170  **OptionShowWarnings as Boolean**

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**  
The tidy option show-warnings.  
**Notes:**  
This option specifies if Tidy should suppress warnings. This can be useful when a few errors are hidden in a flurry of warnings.  
(Read and Write property)
161.5.171  **OptionSkipNested as Boolean**

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option skip-nested.  
**Notes:**  
This option specifies that Tidy should skip nested tags when parsing script and style data.  
(Read and Write property)

161.5.172  **OptionSlideStyle as String**

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option slide-style.  
**Notes:**  
This option has no function and is deprecated.  
(Read and Write property)

161.5.173  **OptionSortAttributes as Integer**

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option sort-attributes.  
**Notes:**  
This option specifies that Tidy should sort attributes within an element using the specified sort algorithm.  
If set to alpha, the algorithm is an ascending alphabetic sort.  
(Read and Write property)

161.5.174  **OptionSplit as Boolean**

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option split.  
**Notes:**  
This option has no function and is deprecated.  
(Read and Write property)

161.5.175  **OptionStrictTagsAttributes as Boolean**

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option strict-tags-attributes.
Notes:

This option ensures that tags and attributes are applicable for the version of HTML that Tidy outputs. When set to yes (the default) and the output document type is a strict doctype, then Tidy will report errors. If the output document type is a loose or transitional doctype, then Tidy will report warnings. Additionally if drop-proprietary-attributes is enabled, then not applicable attributes will be dropped, too. When set to no, these checks are not performed.

(Read and Write property)

161.5.176 OptionTabSize as Integer

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option tab-size.

**Notes:**

This option specifies the number of columns that Tidy uses between successive tab stops. It is used to map tabs to spaces when reading the input.

(Read and Write property)

161.5.177 OptionTidyMark as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option tidy-mark.

**Notes:**

This option specifies if Tidy should add a meta element to the document head to indicate that the document has been tidied.

Tidy won’t add a meta element if one is already present.

(Read and Write property)

161.5.178 OptionUppercaseAttributes as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option uppercase-attributes.

**Notes:**

This option specifies if Tidy should output attribute names in upper case.

The default is no, which results in lower case attribute names, except for XML input, where the original case is preserved.

(Read and Write property)
161.5.179  **OptionUpperCaseAttrs as Boolean**

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This option specifies if Tidy should output attribute names in upper case.

**Deprecated:** This item is deprecated and should no longer be used. **Notes:**

The default is no, which results in lower case attribute names, except for XML input, where the original case is preserved.

(Read and Write property)

161.5.180  **OptionUppercaseTags as Boolean**

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option uppercase-tags.

**Notes:**

This option specifies if Tidy should output tag names in upper case. The default is no which results in lower case tag names, except for XML input where the original case is preserved.

(Read and Write property)

161.5.181  **OptionVerticalSpace as Integer**

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option vertical-space.

**Notes:**

This option specifies if Tidy should add some extra empty lines for readability. The default is no. If set to auto Tidy will eliminate nearly all newline characters.

(Read and Write property)

161.5.182  **OptionVertSpace as Integer**

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This option specifies if Tidy should add some empty lines for readability.

**Deprecated:** This item is deprecated and should no longer be used. **Notes:** (Read and Write property)
161.5. OptionWord2000 as Boolean


**Notes:**

This option specifies if Tidy should go to great pains to strip out all the surplus stuff Microsoft Word 2000 inserts when you save Word documents as "Web pages". It doesn’t handle embedded images or VML. You should consider using Word’s "Save As: Web Page, Filtered".

(Read and Write property)

161.5. OptionWrap as Integer

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option wrap.

**Notes:**

This option specifies the right margin Tidy uses for line wrapping. Tidy tries to wrap lines so that they do not exceed this length. Set wrap to 0(zero) if you want to disable line wrapping.

(Read and Write property)

161.5. OptionWrapAsp as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option wrap-asp.

**Notes:**

This option specifies if Tidy should line wrap text contained within ASP pseudo elements, which look like: &lt;% ... %&gt;.

(Read and Write property)

161.5. OptionWrapAttributes as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option wrap-attributes.

**Notes:**

This option specifies if Tidy should line-wrap attribute values, meaning that if the value of an attribute causes a line to exceed the width specified by wrap, Tidy will add one or more line breaks to the value, causing it to be wrapped into multiple lines. Note that this option can be set independently of wrap-script-literals. By default Tidy replaces any newline or tab with a single space and replaces any sequences of whitespace with a single space.
To force Tidy to preserve the original, literal values of all attributes, and ensure that whitespace characters within attribute values are passed through unchanged, set literal-attributes to yes.
(Read and Write property)

### 161.5.187 OptionWrapAttVals as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This option specifies if Tidy should line wrap attribute values, for easier editing.
**Deprecated:** This item is deprecated and should no longer be used. **Notes:** This option can be set independently of wrap-script-literals.
(Read and Write property)

### 161.5.188 OptionWrapJste as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tidy option wrap-jste.
**Notes:** This option specifies if Tidy should line wrap text contained within JSTE pseudo elements, which look like:
& lt;# ... # & gt;.
(Read and Write property)

### 161.5.189 OptionWrapLen as Integer

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This option specifies the right margin Tidy uses for line wrapping.
**Deprecated:** This item is deprecated and should no longer be used. **Notes:** Tidy tries to wrap lines so that they do not exceed this length. Set wrap to zero if you want to disable line wrapping.
(Read and Write property)

### 161.5.190 OptionWrapPhp as Boolean

**Notes:** This option specifies if Tidy should line wrap text contained within PHP pseudo elements, which look like:
& lt;?php ... ?& gt;.
161.5.191 OptionWrapScriptlets as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This option specifies if Tidy should line wrap string literals that appear in script attributes.
**Deprecated:** This item is deprecated and should no longer be used. **Notes:**
Tidy wraps long script string literals by inserting a backslash character before the line break.
(Read and Write property)

161.5.192 OptionWrapScriptLiterals as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The tidy option wrap-script-literals.
**Notes:**
This option specifies if Tidy should line wrap string literals that appear in script attributes.
Tidy wraps long script string literals by inserting a backslash character before the line break.
(Read and Write property)

161.5.193 OptionWrapSection as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This option specifies if Tidy should line wrap text contained within `< ![ ... ] >` section tags.
**Deprecated:** This item is deprecated and should no longer be used. **Notes:** (Read and Write property)

161.5.194 OptionWrapSections as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The tidy option wrap-sections.
**Notes:**
This option specifies if Tidy should line wrap text contained within `&lt; ![ ... ] &gt;` section tags.
(Read and Write property)
161.5.195 OptionWriteBack as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The tidy option write-back.
**Notes:**
This option specifies if Tidy should write back the tidied markup to the same file it read from.
You are advised to keep copies of important files before tidying them, as on rare occasions the result may
not be what you expect.
(Read and Write property)

161.5.196 OptionXhtmlOut as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This option specifies if Tidy should generate pretty printed output, writing it as extensible HTML.
**Deprecated:** This item is deprecated and should no longer be used. **Notes:**
This option causes Tidy to set the DOCTYPE and default namespace as appropriate to XHTML. If a DOCT-
TYPE or namespace is given they will checked for consistency with the content of the document. In the
case of an inconsistency, the corrected values will appear in the output. For XHTML, entities can be written
as named or numeric entities according to the setting of the "numeric-entities" option. The original case of
tags and attributes will be preserved, regardless of other options.
(Read and Write property)

161.5.197 OptionXmlDecl as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This option specifies if Tidy should add the XML declaration when outputting XML or XHTML.
**Deprecated:** This item is deprecated and should no longer be used. **Notes:**
Note that if the input already includes an "<?xml ... ?>" declaration then this option will be ignored. If the
encoding for the output is different from "ascii", one of the utf encodings or "raw", the declaration is always
added as required by the XML standard.
(Read and Write property)

161.5.198 OptionXmlOut as Boolean

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This option specifies if Tidy should pretty print output, writing it as well-formed XML.
**Deprecated:** This item is deprecated and should no longer be used. **Notes:**
Any entities not defined in XML 1.0 will be written as numeric entities to allow them to be parsed by a
XML parser. The original case of tags and attributes will be preserved, regardless of other options.
161.5. **CLASS TIDYDOCUMENTMBS**

(Read and Write property)

161.5.199 **OptionXmlPIs as Boolean**

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the options. **Deprecated:** This item is deprecated and should no longer be used. **Notes:** (Read and Write property)

161.5.200 **OptionXmlSpace as Boolean**

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This option specifies if Tidy should add xml:space=’preserve’ to elements such as <PRE>, <STYLE> and <SCRIPT> when generating XML. **Deprecated:** This item is deprecated and should no longer be used. **Notes:**

This is needed if the whitespace in such elements is to be parsed appropriately without having access to the DTD. (Read and Write property)

161.5.201 **OptionXmlTags as Boolean**

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set this option if the input is xml. **Deprecated:** This item is deprecated and should no longer be used. **Notes:** (Read and Write property)

161.5.202 **Events**

161.5.203 **Filter(level as Integer, line as Integer, column as Integer, message as string) as boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The filter called for every error and warning. **Notes:**

Callback to filter messages by diagnostic level: info, warning, etc. Just set diagnostic output handler to redirect all diagnostics output.

Return false to proceed with output, true to cancel.
PrettyPrintProgress(line as Integer, column as Integer, destLine as Integer)

MBS Tools Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reports progress on the print process.
161.6. module TidyDupAttrModesMBS

161.6.1 module TidyDupAttrModesMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A module with constants for use with the Tidy classes.

161.6.2 Constants

161.6.3 TidyKeepFirst=0

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.6.4 TidyKeepLast=1

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.
161.7  class TidyInputMBS

161.7.1  class TidyInputMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Delivers raw bytes of input.

161.7.2  Events

161.7.3  EndOfFile as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Return true if all your data is processed. **Notes:** Return false if more data is available for the GetByte call.

161.7.4  GetByte as Integer

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Read one byte and returns it to the tidy library.

161.7.5  UngetByte(value as Integer)

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a byte to the buffer for later processing.
161.8. class TidyIteratorMBS

161.8.1 class TidyIteratorMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
An iterator for various uses.

161.8.2 Properties

161.8.3 Handle as Integer

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The internal reference to the tidy iterator object.
**Notes:** (Read only property)
161.9 module TidyLineEndingMBS

161.9.1 module TidyLineEndingMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A module with constants for use with the Tidy classes.

161.9.2 Constants

161.9.3 TidyCR=2

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.9.4 TidyCRLF=1

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.9.5 TidyLF=0

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.
161.10. **CLASS TIDYNODEMBS**

161.10  **class TidyNodeMBS**

161.10.1  **class TidyNodeMBS**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A node in the document parse tree.

161.10.2  **Properties**

161.10.3  **Child as TidyNodeMBS**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The child node of this node.
**Example:**

dim t as TidyDocumentMBS  // the tidy document
dim n as TidyNodeMBS
dim c as TidyNodeMBS

// iterating over root and its children (for more children you need recursion)
n=t.Root
while n<>nil
MsgBox n.Text

c=n.Child
while c<>nil
MsgBox c.Text

c=c.NextNode
wend

n=n.NextNode
wend

**Notes:** (Read only property)

161.10.4  **Column as Integer**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The position of this node.
**Notes:** (Read only property)
161.10.5 Document as TidyDocumentMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The document of this node.
**Notes:** (Read only property)

161.10.6 FirstAttribute as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The first attribute for this node.
**Notes:** (Read only property)

161.10.7 GetABBR as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The first ABBR attribute for this node.
**Notes:** (Read only property)

161.10.8 GetALINK as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The first ALINK attribute for this node.
**Notes:** (Read only property)

161.10.9 GetALT as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The first ALT attribute for this node.
**Notes:** (Read only property)

161.10.10 GetBGCOLOR as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The first BGCOLOR attribute for this node.
**Notes:** (Read only property)
161.10.11  GetCHECKED as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The first CHECKED attribute for this node.
**Notes:** (Read only property)

161.10.12  GetCOLSPAN as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The first COLSPAN attribute for this node.
**Notes:** (Read only property)

161.10.13  GetCONTENT as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The first CONTENT attribute for this node.
**Notes:** (Read only property)

161.10.14  GetDataFLD as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The first DATAFLD attribute for this node.
**Notes:** (Read only property)

161.10.15  GetFOR as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The first FOR attribute for this node.
**Notes:** (Read only property)

161.10.16  GetHEIGHT as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The first HEIGHT attribute for this node.
**Notes:** (Read only property)
161.10.17  GetHREF as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The first HREF attribute for this node.
**Notes:** (Read only property)

161.10.18  GetHTTP_EQUIV as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The first HTTP_EQUIV attribute for this node.
**Notes:** (Read only property)

161.10.19  GetID as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The first ID attribute for this node.
**Notes:** (Read only property)

161.10.20  GetISMAP as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The first ISMAP attribute for this node.
**Notes:** (Read only property)

161.10.21  GetLANG as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The first LANG attribute for this node.
**Notes:** (Read only property)

161.10.22  GetLANGUAGE as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The first LANGUAGE attribute for this node.
**Notes:** (Read only property)
161.10. CLASS TIDYNODEMBS

161.10.23  GetLINK as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The first LINK attribute for this node. **Notes:** (Read only property)

161.10.24  GetLONGDESC as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The first LONGDESC attribute for this node. **Notes:** (Read only property)

161.10.25  GetName as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The first NAME attribute for this node. **Notes:** (Read only property)

161.10.26  GetOnBLUR as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The first OnBLUR attribute for this node. **Notes:** (Read only property)

161.10.27  GetOnCLICK as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The first OnCLICK attribute for this node. **Notes:** (Read only property)

161.10.28  GetOnFOCUS as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The first OnFOCUS attribute for this node. **Notes:** (Read only property)
161.10.29  GetOnKEYDOWN as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The first OnKEYDOWN attribute for this node.  
**Notes:** (Read only property)

161.10.30  GetOnKEYPRESS as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The first OnKEYPRESS attribute for this node.  
**Notes:** (Read only property)

161.10.31  GetOnKEYUP as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The first OnKEYUP attribute for this node.  
**Notes:** (Read only property)

161.10.32  GetOnMOUSEDOWN as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The first OnMOUSEDOWN attribute for this node.  
**Notes:** (Read only property)

161.10.33  GetOnMOUSEMOVE as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The first OnMOUSEMOVE attribute for this node.  
**Notes:** (Read only property)

161.10.34  GetOnMOUSEOUT as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The first OnMOUSEOUT attribute for this node.  
**Notes:** (Read only property)
161.10.35 GetOnMOUSEOVER as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The first OnMOUSEOVER attribute for this node. **Notes:** (Read only property)

161.10.36 GetOnMOUSEUP as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The first OnMOUSEUP attribute for this node. **Notes:** (Read only property)

161.10.37 GetREL as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The first REL attribute for this node. **Notes:** (Read only property)

161.10.38 GetROWSPAN as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The first ROWSPAN attribute for this node. **Notes:** (Read only property)

161.10.39 GetSELECTED as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The first SELECTED attribute for this node. **Notes:** (Read only property)

161.10.40 GetSRC as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The first SRC attribute for this node. **Notes:** (Read only property)
161.10.41 GetSTYLE as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The first STYLE attribute for this node. **Notes:** (Read only property)

161.10.42 GetSUMMARY as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The first SUMMARY attribute for this node. **Notes:** (Read only property)

161.10.43 GetTARGET as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The first TARGET attribute for this node. **Notes:** (Read only property)

161.10.44 GetTEXT as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The first TEXT attribute for this node. **Notes:** (Read only property)

161.10.45 GetTITLE as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The first TITLE attribute for this node. **Notes:** (Read only property)

161.10.46 GetTYPE as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The first TYPE attribute for this node. **Notes:** (Read only property)
161.10.47   GetUSEMAP as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The first USEMAP attribute for this node.
**Notes:** (Read only property)

161.10.48   GetVALUE as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The first VALUE attribute for this node.
**Notes:** (Read only property)

161.10.49   GetVLINK as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The first VLINK attribute for this node.
**Notes:** (Read only property)

161.10.50   GetWIDTH as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The first WIDTH attribute for this node.
**Notes:** (Read only property)

161.10.51   GetXMLNS as TidyAttributeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The first XMLNS attribute for this node.
**Notes:** (Read only property)

161.10.52   Handle as Integer

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The internal reference to the tidy node object.
**Notes:** (Read only property)
161.10.53 HasText as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether there is text attached to this node.
**Notes:**
Returns true if yes.
(Read only property)

161.10.54 ID as Integer

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The node ID.
**Notes:** (Read only property)

161.10.55 IsDATALIST as Boolean

MBS Tools Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this node is a data list.
**Notes:** (Read only property)

161.10.56 IsProperty as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the node is a property.
**Notes:** (Read only property)

161.10.57 Line as Integer

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The position of this node.
**Notes:** (Read only property)

161.10.58 Name as string

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The name of this node.
161.10. **CLASS TIDYNODEMBS**

**Notes:** (Read only property)

161.10.59 **NextNode as TidyNodeMBS**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The next node in the node list of the parent node. 
**Notes:** (Read only property)

161.10.60 **NodeIsA as boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a A node. 
**Notes:** (Read only property)

161.10.61 **NodeIsADDRESS as boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a ADDRESS node. 
**Notes:** (Read only property)

161.10.62 **NodeIsAPPLET as boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a APPLET node. 
**Notes:** (Read only property)

161.10.63 **NodeIsAREA as boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a AREA node. 
**Notes:** (Read only property)

161.10.64 **NodeIsB as boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a B node.
161.10.65 NodeIsBASE as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a BASE node.
**Notes:** (Read only property)

161.10.66 NodeIsBASEFONT as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a BASEFONT node.
**Notes:** (Read only property)

161.10.67 NodeIsBIG as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a BIG node.
**Notes:** (Read only property)

161.10.68 NodeIsBLINK as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a BLINK node.
**Notes:** (Read only property)

161.10.69 NodeIsBLOCKQUOTE as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a BLOCKQUOTE node.
**Notes:** (Read only property)

161.10.70 NodeIsBODY as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a BODY node.
161.10. **CLASS TIDYNODEMBS**

**Notes:** (Read only property)

### 161.10.71 NodeIsBR as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a BR node.

**Notes:** (Read only property)

### 161.10.72 NodeIsCAPTION as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a CAPTION node.

**Notes:** (Read only property)

### 161.10.73 NodeIsCENTER as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a CENTER node.

**Notes:** (Read only property)

### 161.10.74 NodeIsCOL as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a COL node.

**Notes:** (Read only property)

### 161.10.75 NodeIsCOLGROUP as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a COLGROUP node.

**Notes:** (Read only property)

### 161.10.76 NodeIsDD as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a DD node.
161.10.77  **NodeIsDIR** as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a DIR node.
**Notes:** (Read only property)

161.10.78  **NodeIsDIV** as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a DIV node.
**Notes:** (Read only property)

161.10.79  **NodeIsDL** as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a DL node.
**Notes:** (Read only property)

161.10.80  **NodeIsDT** as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a DT node.
**Notes:** (Read only property)

161.10.81  **NodeIsEM** as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a EM node.
**Notes:** (Read only property)

161.10.82  **NodeIsEMBED** as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a EMBED node.
161.10. CLASS TIDYNODEMBS

Notes: (Read only property)

161.10.83 NodeIsFONT as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a FONT node.
Notes: (Read only property)

161.10.84 NodeIsFORM as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a FORM node.
Notes: (Read only property)

161.10.85 NodeIsFRAME as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a FRAME node.
Notes: (Read only property)

161.10.86 NodeIsFRAMESET as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a FRAMESET node.
Notes: (Read only property)

161.10.87 NodeIsH1 as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a H1 node.
Notes: (Read only property)

161.10.88 NodeIsH2 as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a H2 node.
161.10.89  **NodeIsH3** as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a H3 node. **Notes:** (Read only property)

161.10.90  **NodeIsH4** as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a H4 node. **Notes:** (Read only property)

161.10.91  **NodeIsH5** as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a H5 node. **Notes:** (Read only property)

161.10.92  **NodeIsH6** as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a H6 node. **Notes:** (Read only property)

161.10.93  **NodeIsHEAD** as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a HEAD node. **Notes:** (Read only property)

161.10.94  **NodeIsHeader** as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a Header node.
161.10. CLASS TIDYNODEMBS

Notes: (Read only property)

161.10.95 NodeIsHR as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a HR node. **Notes:** (Read only property)

161.10.96 NodeIsHTML as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a HTML node. **Notes:** (Read only property)

161.10.97 NodeIsI as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a I node. **Notes:** (Read only property)

161.10.98 NodeIsIFRAME as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a IFRAME node. **Notes:** (Read only property)

161.10.99 NodeIsIMG as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a IMG node. **Notes:** (Read only property)

161.10.100 NodeIsINPUT as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a INPUT node.
161.10.101  NodeIsISINDEX as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a ISINDEX node. **Notes:** (Read only property)

161.10.102  NodeIsLABEL as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a LABEL node. **Notes:** (Read only property)
161.10.103  **NodeIsLAYER as boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a LAYER node.  
**Notes:** (Read only property)

161.10.104  **NodeIsLI as boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a LI node.  
**Notes:** (Read only property)

161.10.105  **NodeIsLINK as boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a LINK node.  
**Notes:** (Read only property)

161.10.106  **NodeIsLISTING as boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a LISTING node.  
**Notes:** (Read only property)

161.10.107  **NodeIsMAP as boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a MAP node.  
**Notes:** (Read only property)

161.10.108  **NodeIsMARQUEE as boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a MARQUEE node.  
**Notes:** (Read only property)
161.10.109 NodeIsMENU as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a MENU node. **Notes:** (Read only property)

161.10.110 NodeIsMETA as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a META node. **Notes:** (Read only property)

161.10.111 NodeIsNOBR as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a NOBR node. **Notes:** (Read only property)

161.10.112 NodeIsNOFRAMES as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a NOFRAMES node. **Notes:** (Read only property)

161.10.113 NodeIsNOSCRIPy as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a NOSCRIPy node. **Notes:** (Read only property)

161.10.114 NodeIsOBJECT as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a OBJECT node. **Notes:** (Read only property)
161.10. CLASS TIDYNODEMBS

161.10.115 NodeIsOL as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a OL node.  
**Notes:** (Read only property)

161.10.116 NodeIsOPTGROUP as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a OPTGROUP node.  
**Notes:** (Read only property)

161.10.117 NodeIsOPTION as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a OPTION node.  
**Notes:** (Read only property)

161.10.118 NodeIsP as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a P node.  
**Notes:** (Read only property)

161.10.119 NodeIsPARAM as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a PARAM node.  
**Notes:** (Read only property)

161.10.120 NodeIsPRE as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a PRE node.  
**Notes:** (Read only property)
161.10.121  **NodeIsQ** as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a Q node. **Notes:** (Read only property)

161.10.122  **NodeIsS** as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a S node. **Notes:** (Read only property)

161.10.123  **NodeIsSCRIPT** as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a SCRIPT node. **Notes:** (Read only property)

161.10.124  **NodeIsSELECT** as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a SELECT node. **Notes:** (Read only property)

161.10.125  **NodeIsSMALL** as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a SMALL node. **Notes:** (Read only property)

161.10.126  **NodeIsSPACER** as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a SPACER node. **Notes:** (Read only property)
161.10. CLASS TIDYNODEMBS

161.10.127  NodeIsSPAN as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a SPAN node.  
**Notes:** (Read only property)

161.10.128  NodeIsSTRIKE as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a STRIKE node.  
**Notes:** (Read only property)

161.10.129  NodeIsSTRONG as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a STRONG node.  
**Notes:** (Read only property)

161.10.130  NodeIsSTYLE as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a STYLE node.  
**Notes:** (Read only property)

161.10.131  NodeIsTABLE as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a TABLE node.  
**Notes:** (Read only property)

161.10.132  NodeIsTD as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a TD node.  
**Notes:** (Read only property)
161.10.133  NodeIsText as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a Text node. **Notes:** (Read only property)

161.10.134  NodeIsTEXTAREA as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a TEXTAREA node. **Notes:** (Read only property)

161.10.135  NodeIsTH as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a TH node. **Notes:** (Read only property)

161.10.136  NodeIsTITLE as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a TITLE node. **Notes:** (Read only property)

161.10.137  NodeIsTR as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a TR node. **Notes:** (Read only property)

161.10.138  NodeIsU as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a U node. **Notes:** (Read only property)
161.10. CLASS TIDYNODEMBS

161.10.139  NodeIsUL as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a UL node. **Notes:** (Read only property)

161.10.140  NodeIsWBR as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a WBR node. **Notes:** (Read only property)

161.10.141  NodeIsXMP as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this is a XMP node. **Notes:** (Read only property)

161.10.142  Parent as TidyNodeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The parent node of this node. **Notes:** (Read only property)

161.10.143  PrevNode as TidyNodeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The previous node in the node list of the parent node. **Notes:** (Read only property)

161.10.144  Text as string

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The text of this node. **Example:**

```dim t as new TidyDocumentMBS```
call t.ParseString("<p>Hello World</p>") // pass here bad html
call t.CleanAndRepair

dim s As TidyNodeMBS = t.Root

MsgBox s.Text

Notes:
This text has no encoding defined.
(Read only property)

161.10.145 Type as Integer

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The type of this node.
**Notes:** (Read only property)

161.10.146 Value as string

MBS Tools Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The decoded value of the node as UTF-8 String.
**Example:**
dim t as new TidyDocumentMBS
call t.ParseString("<p>Hello World</p>") // pass here bad html
call t.CleanAndRepair
dim nodes(-1) as TidyNodeMBS
dim root as TidyNodeMBS = t.Root

// we iterate over all child nodes
nodes.Append root.Child
nodes.Append root.NextNode

while UBound(nodes) >= 0
dim n as TidyNodeMBS = nodes.Pop
if n<>Nil then
    nodes.Append n.Child // maybe a child?
nodes.Append n.NextNode // maybe a sibling?

if n.HasText then
MsgBox n.Value // Shows "Hello World"
end if
end if
wend

**Notes:** (Read only property)
161.11 module TidyNodeTypeMBS

161.11.1 module TidyNodeTypeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A module with constants for use with the Tidy classes.

161.11.2 Constants

161.11.3 TidyNodeAsp=10

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.11.4 TidyNodeCDATA=8

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.11.5 TidyNodeComment=2

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.11.6 TidyNodeDocType=1

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.11.7 TidyNodeEnd=6

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.11.8 TidyNodeJste=11

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.
161.11. Module TIDYNODETYPEMBS

161.11.9 TidyNodePhp=12

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.11.10 TidyNodeProcIns=3

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.11.11 TidyNodeRoot=0

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.11.12 TidyNodeSection=9

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.11.13 TidyNodeStart=5

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.11.14 TidyNodeStartEnd=7

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.11.15 TidyNodeText=4

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.11.16 TidyNodeXmlDecl=13

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.
module TidyOptionIdMBS

161.12.1 module TidyOptionIdMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A module with constants for use with the Tidy classes.

161.12.2 Constants

161.12.3 TidyAccessibilityCheckLevel=84

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.4 TidyAltText=11

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.12.5 TidyAnchorAsName=93

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.6 TidyAsciiChars=71

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.7 TidyBlockTags=81

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.8 TidyBodyOnly=64

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.12. MODULE TIDY OPTION ID MBS

161.12.9 TidyBreakBeforeBR=40

MBS Tools Plugin, Plugin Version: 17.1. **Function**: A constant for use with the Tidy classes.

161.12.10 TidyBurstSlides=41

MBS Tools Plugin, Plugin Version: 17.1. **Function**: A constant for use with the Tidy classes.

161.12.11 TidyCharEncoding=4

MBS Tools Plugin, Plugin Version: 5.4. **Function**: A constant for use with the Tidy classes.

161.12.12 TidyCoerceEndTags=21

MBS Tools Plugin, Plugin Version: 17.1. **Function**: A constant for use with the Tidy classes.

161.12.13 TidyCSSPrefix=79

MBS Tools Plugin, Plugin Version: 17.1. **Function**: A constant for use with the Tidy classes.

161.12.14 TidyDecorateInferredUL=89

MBS Tools Plugin, Plugin Version: 17.1. **Function**: A constant for use with the Tidy classes.

161.12.15 TidyDoctype=9

MBS Tools Plugin, Plugin Version: 5.4. **Function**: A constant for use with the Tidy classes.

161.12.16 TidyDoctypeMode=8

MBS Tools Plugin, Plugin Version: 5.4. **Function**: A constant for use with the Tidy classes.
161.12.17  TidyDropEmptyElems=37

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.18  TidyDropEmptyParas=38

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.19  TidyDropFontTags=36

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.20  TidyDropPropAttrs=35

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.21  TidyDuplicateAttrs=10

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.12.22  TidyEmacs=61

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.23  TidyEmacsFile=62

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.24  TidyEmptyTags=82

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.12.25  TidyEncloseBlockText=57

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.26  TidyEncloseBodyText=56

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.27  TidyErrFile=13

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.12.28  TidyEscapeCdata=74

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.29  TidyEscapeScripts=97

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.30  TidyFixBackslash=52

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.31  TidyFixComments=39

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.32  TidyFixUri=65

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
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161.12.33  TidyForceOutput=69

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.34  TidyGDocClean=33

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.35  TidyHideComments=67

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.36  TidyHideEndTags=23

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.37  TidyHtmlOut=27

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.38  TidyInCharEncoding=5

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.12.39  TidyIndentAttributes=53

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.40  TidyIndentCdata=68

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.12. MODULE TIDYOPTIONIDMBS

161.12.41  TidyIndentContent=20

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.42  TidyIndentSpaces=1

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.12.43  TidyInlineTags=80

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.44  TidyJoinClasses=72

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.45  TidyJoinStyles=73

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.46  TidyKeepFileTimes=58

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.47  TidyLanguage=75

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.48  TidyLiteralAttribs=63

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.12.49  TidyLogicalEmphasis=34

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.50  TidyLowerLiterals=66

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.51  TidyMakeBare=31

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.52  TidyMakeClean=32

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.53  TidyMark=60

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.54  TidyMergeDivs=88

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.55  TidyMergeEmphasis=87

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.56  TidyMergeSpans=92

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.12.  MODULE TIDYOPTIONIDMBS

161.12.57  TidyNCR=76

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.58  TidyNewline=7

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.12.59  TidyNumEntities=42

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.60  TidyOmitOptionalTags=22

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.61  TidyOutCharEncoding=6

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.12.62  TidyOutFile=14

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.12.63  TidyOutputBOM=77

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.64  TidyPPrintTabs=94

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.12.65  TidyPreserveEntities=90


161.12.66  TidyPreTags=83


161.12.67  TidyPunctWrap=86


161.12.68  TidyQuiet=19


161.12.69  TidyQuoteAmpersand=45


161.12.70  TidyQuoteMarks=43


161.12.71  TidyQuoteNbsp=44


161.12.72  TidyReplaceColor=78

161.12. MODULE TIDYOPTIONIDMBS

161.12.73  TidyShowErrors=70
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.74  TidyShowInfo=17
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.75  TidyShowMarkup=16
MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.12.76  TidyShowWarnings=18
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.77  TidySkipNested=95
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.78  TidySlideStyle=12
MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.12.79  TidySortAttributes=91
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.80  TidyStrictTagsAttr=96
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.12.81 TidyTabSize=3
MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.12.82 TidyUnknownOption=0
MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.12.83 TidyUpperCaseAttrs=30
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.84 TidyUpperCaseTags=29
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.85 TidyVertSpace=85
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.86 TidyWord2000=59
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.87 TidyWrapAsp=49
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.88 TidyWrapAttVals=46
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.12.89  TidyWrapJste=50

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.90  TidyWrapLen=2

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.12.91  TidyWrapPhp=51

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.92  TidyWrapScriptlets=47

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.93  TidyWrapSection=48

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.94  TidyWriteBack=15

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.12.95  TidyXhtmlOut=26

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.96  TidyXmlDecl=28

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.12.97  TidyXmlOut=25

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.98  TidyXmlPIs=54

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.99  TidyXmlSpace=55

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.12.100 TidyXmlTags=24

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.13. **CLASS TIDYOPTIONMBS**

161.13  **class TidyOptionMBS**

161.13.1 **class TidyOptionMBS**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An option in the tidy preferences.

161.13.2 **Methods**

161.13.3 **Category as Integer**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Category of the option.

161.13.4 **DefaultBoolean as boolean**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The default value for a boolean property.

161.13.5 **DefaultInteger as Integer**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The default value for an integer property.

161.13.6 **DefaultString as String**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The default value for a string property.

161.13.7 **Description as string**

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Description of the option.
161.13.8  ID as Integer

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get ID of given Option.

161.13.9  IsReadOnly as boolean

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Is Option read-only?

161.13.10 Name as string

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get name of given Option.

161.13.11  Type as Integer

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get datatype of given Option.

161.13.12 Properties

161.13.13 Document as TidyDocumentMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The document of this option.
**Notes:** (Read only property)

161.13.14  Handle as Integer

MBS Tools Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The internal reference to the tidy option object.
**Notes:** (Read only property)
161.14.  MODULE TIDYOPTIONTYPEMBS

161.14  module TidyOptionTypeMBS

161.14.1  module TidyOptionTypeMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A module with constants for use with the Tidy classes.

161.14.2  Constants

161.14.3  TidyBoolean=2

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.14.4  TidyInteger=1

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.14.5  TidyString=0

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.
161.15 class TidyOutputMBS

161.15.1 class TidyOutputMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Accepts raw bytes of output from the tidy library.

161.15.2 Events

161.15.3 WriteByte(value as Integer)

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds one byte to the output buffer.
161.16. **MODULE TIDYREPORTLEVELKEYSMBS**

161.16  **module TidyReportLevelKeysMBS**

161.16.1  **module TidyReportLevelKeysMBS**

MBS Tools Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The module for report level keys.

161.16.2  **Constants**

161.16.3  **TidyAccessString=603**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.16.4  **TidyBadDocumentString=605**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.16.5  **TidyConfigString=602**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.16.6  **TidyErrorString=604**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.16.7  **TidyFatalString=606**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.16.8  **TidyInfoString=600**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.16.9  TidyWarningString=601

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
module TidyReportLevelMBS

161.17.1 module TidyReportLevelMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A module with constants for use with the Tidy classes.

161.17.2 Constants

161.17.3 TidyAccess=3

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.17.4 TidyBadDocument=5

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.17.5 TidyConfig=2

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.17.6 TidyError=4

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.17.7 TidyFatal=6

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.17.8 TidyInfo=0

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.
161.17.9 TidyWarning=1

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.
161.18.  MODULE TIDYTAGIDMBS

161.18  module TidyTagIdMBS

161.18.1  module TidyTagIdMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A module with constants for use with the Tidy classes.

161.18.2  Constants

161.18.3  TidyTagA=1

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.4  TidyTagABBR=2

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.5  TidyTagACRONYM=3

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.6  TidyTagADDRESS=4

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.7  TidyTagALIGN=5

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.8  TidyTagAPPLET=6

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.
161.18.9  TidyTagAREA=7
MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.10  TidyTagARTICLE=123
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.11  TidyTagASIDE=124
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.12  TidyTagAUDIO=125
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.13  TidyTagB=8
MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.14  TidyTagBASE=9
MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.15  TidyTagBASEFONT=10
MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.16  TidyTagBDI=126
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.18.17 TidyTagBDO=11

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.18 TidyTagBGSOUND=12

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.19 TidyTagBIG=13

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.20 TidyTagBLINK=14

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.21 TidyTagBLOCKQUOTE=15

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.22 TidyTagBODY=16

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.23 TidyTagBR=17

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.24 TidyTagBUTTON=18

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.
161.18.25  TidyTagCANVAS=127

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.26  TidyTagCAPTION=19

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.27  TidyTagCENTER=20

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.28  TidyTagCITE=21

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.29  TidyTagCODE=22

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.30  TidyTagCOL=23

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.31  TidyTagCOLGROUP=24

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.32  TidyTagCOMMAND=128

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.18. Module TidyTagIDMBS

161.18.33  TidyTagCOMMENT=25

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.34  TidyTagDATALIST=129

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.35  TidyTagDD=26

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.36  TidyTagDEL=27

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.37  TidyTagDETAILS=130

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.38  TidyTagDFN=28

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.39  TidyTagDIALOG=131

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.40  TidyTagDIR=29

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.
161.18.41 TidyTagDIV=30

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.42 TidyTagDL=31

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.43 TidyTagDT=32

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.44 TidyTagEM=33

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.45 TidyTagEMBED=34

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.46 TidyTagFIELDSET=35

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.47 TidyTagFIGCAPTION=132

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.48 TidyTagFIGURE=133

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.
161.18.57 TidyTagH4=43

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.58 TidyTagH5=44

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.59 TidyTagH6=45

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.60 TidyTagHEAD=46

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.61 TidyTagHEADER=135

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.62 TidyTagHGROUP=136

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.63 TidyTagHR=47

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.64 TidyTagHTML=48

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.
161.18. MODULE TIDYTAGIDMBS

161.18.65 TidyTagI=49

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.66 TidyTagIFRAME=50

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.67 TidyTagILAYER=51

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.68 TidyTagIMG=52

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.69 TidyTagINPUT=53

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.70 TidyTagINS=54

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.71 TidyTagISINDEX=55

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.72 TidyTagKBD=56

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.
161.18.73  TidyTagKEYGEN=57
MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.74  TidyTagLABEL=58
MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.75  TidyTagLAYER=59
MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.76  TidyTagLEGEND=60
MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.77  TidyTagLI=61
MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.78  TidyTagLINK=62
MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.79  TidyTagLISTING=63
MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.80  TidyTagMAIN=137
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.18. MODULE TIDYTAGIDMBS

161.18.81  TidyTagMAP=64

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

161.18.82  TidyTagMARK=138

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.83  TidyTagMARQUEE=66

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.84  TidyTagMATHML=65

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.85  TidyTagMENU=67

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.86  TidyTagMENUITEM=139

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.87  TidyTagMETA=68

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.88  TidyTagMETER=140

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.18.89  TidyTagMULTICOL=69

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.90  TidyTagNAV=141

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.91  TidyTagNEXTID=122

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.92  TidyTagNOBR=70

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.93  TidyTagNOEMBED=71

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.94  TidyTagNOFRAMES=72

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.95  TidyTagNOLAYER=73

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.96  TidyTagNOSAVE=74

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

**161.18.97 TidyTagNOSCRipt=75**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

**161.18.98 TidyTagOBJECT=76**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

**161.18.99 TidyTagOL=77**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

**161.18.100 TidyTagOPTGROUP=78**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

**161.18.101 TidyTagOPTION=79**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

**161.18.102 TidyTagOUTPUT=142**

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.18.103  TidyTagP=80
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.104  TidyTagPARAM=81
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.105  TidyTagPICTURE=82
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.106  TidyTagPLAINTEXT=83
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.107  TidyTagPRE=84
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.108  TidyTagPROGRESS=143
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.109  TidyTagQ=85
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.110  TidyTagRB=86
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.18.111  TidyTagRBC=87

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.112  TidyTagRP=88

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.113  TidyTagRT=89

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.114  TidyTagRTC=90

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.115  TidyTagRUBY=91

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.116  TidyTagS=92

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.117  TidyTagSAMP=93

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.118  TidyTagSCRIPT=94

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.18.119  TidyTagSECTION=144

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.120  TidyTagSELECT=95

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.121  TidyTagSERVER=96

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.122  TidyTagSERVLET=97

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.123  TidyTagSMALL=98

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.124  TidyTagSOURCE=145

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.125  TidyTagSPACER=99

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.126  TidyTagSPAN=100

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.18. MODULE TIDYTAGIDMBS

161.18.127  TidyTagSTRIKE=101

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.128  TidyTagSTRONG=102

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.129  TidyTagSTYLE=103

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.130  TidyTagSUB=104

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.131  TidyTagSUMMARY=146

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.132  TidyTagSUP=105

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.133  TidyTagSVG=106

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.134  TidyTagTABLE=107

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
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161.18.135  TidyTagTBODY=108
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.136  TidyTagTD=109
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.137  TidyTagTEMPLATE=147
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.138  TidyTagTEXTAREA=110
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.139  TidyTagTFOOT=111
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.140  TidyTagTH=112
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.141  TidyTagTHEAD=113
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.142  TidyTagTIME=148
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
161.18.151  TidyTagVIDEO=150

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.152  TidyTagWBR=120

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.

161.18.153  TidyTagXMP=121

MBS Tools Plugin, Plugin Version: 17.1. **Function:** A constant for use with the Tidy classes.
module TidyTriStateMBS

MBS Tools Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A module with constants for use with the Tidy classes.

**161.19.2 Constants**

**161.19.3 TidyAutoState=2**

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

**161.19.4 TidyNoState=0**

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.

**161.19.5 TidyYesState=1**

MBS Tools Plugin, Plugin Version: 5.4. **Function:** A constant for use with the Tidy classes.
Chapter 162

TIFF

162.1 Globals

162.1.1  CombineBitCMYKtoRGBMBS(CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, Files() as FolderItem, scale as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, byref output as picture, CacheSizeRead as Integer) as Integer

MBS Images Plugin, Plugin Version: 6.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Combines 1bit raw image files to one 8bit RGB tiff.

**Example:**

```vbs
    dim t(4) as FolderItem
    dim dC(4), dM(4), dY(4), dK(4) as Double
    dim nC(4), nM(4), nY(4), nK(4) as Integer
    dim i as Integer
    dim p as Picture

    //Cyan
dK(0)=0.0
dC(0)=1.0
dM(0)=0.0
dY(0)=0.0
    //Magenta
dK(1)=0.00
dC(1)=0.0
    dM(1)=1.0
dY(1)=0.0
    //Yellow
    dK(2)=0.00
```

19461
\[ dC(2)=0.0 \\
\][\( dM(2)=0.0 \) ]
\[ dY(2)=1.0 \\
\] 
//Black
\[ dK(3)=1.00 \]
\[ dC(3)=0.0 \]
\[ dM(3)=0.0 \]
\[ dY(3)=0.0 \]
//Pantone, Sonderfarbe, S0
\[ dK(4)=0.00 \]
\[ dC(4)=0.60 \]
\[ dM(4)=0.35 \]
\[ dY(4)=0.15 \]
//Bilder
\[ t(0)=GetFolderItem("test.Cyan.bit") \]
\[ t(1)=GetFolderItem("test.Magenta.bit") \]
\[ t(2)=GetFolderItem("test.Yellow.bit") \]
\[ t(3)=GetFolderItem("test.Black.bit") \]
\[ t(4)=GetFolderItem("test.S0.bit") \]
for i=0 to 4
\[ nC(i)=dC(i)\times1000.0 \]
\[ nM(i)=dM(i)\times1000.0 \]
\[ nY(i)=dY(i)\times1000.0 \]
\[ nK(i)=dK(i)\times1000.0 \]
next
// Scale 1/n, 1/3, 1/2, 1, 2, 3, n
Title=str(CombineBitCMYKtoRGBMBS(nC,nM,nY,nK, t, 1, 545,567,0,0,545,567,p,0))
Backdrop=p
Width=p.Width
Height=p.Height

Notes:
All arrays have the same size specifying for each 1bit grayscale source image the colors to be used in the final image.
Result image is written to the output picture which is created. Error code is returned which is 0 for no error.
CacheSize can be set to a value greater than 0. And it may make the process faster or slower depending on what you do.
162.1.2  TIFFStringToPictureMBS(data as string) as picture

MBS Images Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Opens a tiff string and returns the RGB image for this tiff file.
**Notes:**
Returns nil on any error.

This function works with most Tiff formats, but has problems with some like 16 bit CMYK.

162.1.3  TIFFStringToTiffPictureMBS(data as string) as TiffPictureMBS

MBS Images Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Opens a tiff string and returns a TiffPictureMBS object.
**Notes:**
if you want to read the picture after this line you need to call ReadBW, ReadRGB or use the Scanline methods.
Returns nil on any error.

162.1.4  CombineTiff1BitCMYKtoTiffMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, TiffData() as TiffPictureMBS, scale as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, ditherMode as Integer = 0) as Integer

MBS Images Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Combines 1bit tiff image files to one CMYK tiff.
**Notes:**
All arrays have the same size specifying for each 1bit grayscale source image the colors to be used in the final image.
Result image is written to the output picture which is created. Error code is returned which is 0 for no error.
Compression can be set before data is written to current tiff which is for output. The tiff object for output must be perfectly setup before using this function.
162.1.5 CombineBitCMYKtoCMYKMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, Files() as FolderItem, scale as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, CacheSizeRead as Integer) as Integer

MBS Images Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Combines 1bit raw image files to one CMYK tiff.

**Notes:**
All arrays have the same size specifying for each 1bit grayscale source image the colors to be used in the final image.
Result image is written to the output picture which is created. Error code is returned which is 0 for no error. CacheSize can be set to a value greater than 0. And it may make the process faster or slower depending on what you do.

162.1.6 CombineTiffCMYKtoCMYKMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, TiffData() as TiffPictureMBS) as Integer

MBS Images Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Combines grayscale tiff images to one CMYK tiff.

**Example:**
```plaintext
class PLANARCONFIG
  CONTIG=1
  CONTIG=2
  CONTIG=3
  CONTIG=4
end class

class PHOTOMETRIC
  RGB=1
  RGB=2
  RGB=3
end class

class FILLORDER
  MSB2LSB=1
  MSB2LSB=2
end class

class PHOTOMETRIC
  SEPARATED=1
  SEPARATED=2
end class

const PLANARCONFIG_CONTIG=1
const PHOTOMETRIC_RGB=2
const FILLORDER_MSB2LSB=1
const PHOTOMETRIC_SEPARATED=5

dim u,v,ot,t(4) as TiffPictureMBS
dim f as FolderItem
dim pnach as Picture
dim dC(4), dM(4), dY(4), dK(4) as Double
dim nC(4), nM(4), nY(4), nK(4) as Integer

dim i as Integer

//Cyan
dK(0)=0.0
dC(0)=1.0
dM(0)=0.0
dY(0)=0.0
//Magenta
dK(1)=0.00
dC(1)=0.0
```
162.1. GLOBALS

dM(1)=1.0
dY(1)=0.0
//Yellow

dK(2)=0.00
dC(2)=0.0
dM(2)=0.0
dY(2)=1.0
//Black

dK(3)=1.00
dC(3)=0.0
dM(3)=0.0
dY(3)=0.0
//Pantone, S0

dK(4)=0.00
dC(4)=0.60
dM(4)=0.35
dY(4)=0.15

//Bilder

f=GetFolderItem("test.Cyan.tif")
t(0)=f.OpenAsTiffMBS
f=GetFolderItem("test.Magenta.tif")
t(1)=f.OpenAsTiffMBS
f=GetFolderItem("test.Yellow.tif")
t(2)=f.OpenAsTiffMBS
f=GetFolderItem("test.Black.tif")
t(3)=f.OpenAsTiffMBS
f=GetFolderItem("test.S0.tif")
t(4)=f.OpenAsTiffMBS

for i=0 to 4
nC(i)=dC(i)*1000.0
nM(i)=dM(i)*1000.0
nY(i)=dY(i)*1000.0
nK(i)=dK(i)*1000.0
next

f=GetFolderItem("resultCMYK.tif")
.ot=new TiffPictureMBS

if .ot.Create(f) then
v=t(0)
u=.ot
u.Width=v.Width
u.Height=v.Height
u.RowsPerStrip=v.Height
u.BitsPerSample=8
u.SamplesPerPixel=4
u.ResolutionUnit=v.ResolutionUnit
u.HorizontalPosition=v.HorizontalPosition
u.HorizontalResolution=v.HorizontalResolution
u.VerticalPosition=v.VerticalPosition
u.VerticalResolution=v.VerticalResolution
u.Orientation=v.Orientation
u.PlanarConfig=PLANARCONFIG_CONTIG
u.Photometric=PHOTOMETRIC_SEPARATED
u.FillOrder=MSB2LSB
Title=str(CombineTiffCMYKtoCMYKMBS(ot, nC,nM,nY,nK,t))
ot.Close
end if

//Neues Bild anzeigen
pnach=f.OpenAsPicture
if pnach<>Nil then
Window1.Width=pNach.Width
Window1.Height=pNach.Height
Window1.Backdrop=pNach
end if

Notes:
All arrays have the same size specifying for each 8bit grayscale source image the colors to be used in the final image.
Result image is written to the current tiff picture. Error code is returned which is 0 for no error.
You need to set yourself all needed tiff picture parameters for the output image and you must create it before.
The plugin sets width and height for the output tiff.

162.1.7 CombineTiffCMYKtoRGBMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, TiffData() as TiffPictureMBS) as Integer

Example:
const PLANARCONFIG_CONTIG=1
const PHOTOMETRIC_RGB=2
const FILLORDER_MSB2LSB=1
dim u,v,ot,t(4) as TiffPictureMBS
dim f as FolderItem
dim pnach as Picture
dim dC(4), dM(4), dY(4), dK(4) as Double
dim nC(4), nM(4), nY(4), nK(4) as Integer
dim i as Integer

//Cyan
dK(0)=0.0
dC(0)=1.0
dM(0)=0.0
dY(0)=0.0
//Magenta
dK(1)=0.00
\n\n//Yellow
dK(2)=0.00
dC(2)=0.0
\n\n//Black
dK(3)=1.00
dC(3)=0.0
\n\n//Pantone, S0
dK(4)=0.00
dC(4)=0.60
\n\n//Bilder
f=GetFolderItem("test.Cyan.tif")
t(0)=f.OpenAsTiffMBS
f=GetFolderItem("test.Magenta.tif")
t(1)=f.OpenAsTiffMBS
f=GetFolderItem("test.Yellow.tif")
t(2)=f.OpenAsTiffMBS
f=GetFolderItem("test.Black.tif")
t(3)=f.OpenAsTiffMBS
f=GetFolderItem("test.S0.tif")
t(4)=f.OpenAsTiffMBS
for i=0 to 4
  nC(i)=dC(i)*1000.0
  nM(i)=dM(i)*1000.0
  nY(i)=dY(i)*1000.0
  nK(i)=dK(i)*1000.0
next

f=GetFolderItem("resultRGB.tif")
if f then
  v=t(0)
  u=ot
  u.Width=v.Width
  u.Height=v.Height
  u.RowsPerStrip=v.Height
  u.BitsPerSample=8
  u.SamplesPerPixel=3
  u.ResolutionUnit=v.ResolutionUnit
  u.HorizontalPosition=v.HorizontalPosition
  u.HorizontalResolution=v.HorizontalResolution
  u.VerticalPosition=v.VerticalPosition
  u.VerticalResolution=v.VerticalResolution
  u.Orientation=v.Orientation
  u.PlanarConfig=PLANARCONFIG_CONTIG
  u.Photometric=PHOTOMETRIC_RGB
  u.FillOrder=MSB2LSB
  Title=str(CombineTiffCMYKtoRGBMBS(ot, nC, nM, nY, nK, t))
  ot.Close
end if

//Neues Bild anzeigen
pnach=f.OpenAsPicture
if pnach<>Nil then
  Window1.Width=pNach.Width
  Window1.Height=pNach.Height
  Window1.Backdrop=pNach
end if

Notes:
All arrays have the same size specifying for each 8bit grayscale source image the colors to be used in the final image.
Result image is written to the current tiffpicture. Error code is returned which is 0 for no error.
You need to set yourself all needed tiffpicture parameters for the output image and you must create it before.
CombineTiff1BitCMYKtoTiffMBS(dest as TiffPictureMBS, TiffData as TiffPictureMBS, scalex as Double, scaley as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, ditherMode as Integer = 0) as Integer

CombineTiff8BitCMYKtoTiffMBS(dest as TiffPictureMBS, CyanChannel() as Integer, MagentaChannel() as Integer, YellowChannel() as Integer, BlackChannel() as Integer, TiffData() as TiffPictureMBS, scale as Double, width as Integer, height as Integer, X1 as Integer, Y1 as Integer, X2 as Integer, Y2 as Integer, ditherMode as Integer = 0) as Integer

class TiffPictureMBS

162.2.3 AddCustomTag(Tag as Integer, FieldReadCount as Integer, FieldWriteCount as Integer, FieldType as Integer, FieldBit as Integer, OkToChange as Integer, PassCount as Integer, FieldName as string) as boolean


**Example:**

```vba
const TIFFTAG_ASCII = 40666
const TIFFTAG_LONG = 40667
const TIFFTAG_SHORT = 40668
const TIFFTAG_RATIONAL = 40669
const TIFFTAG_FLOAT = 40670
const TIFFTAG_DOUBLE = 40671
const TIFFTAG_BYTE = 40672

const TIFFTAG_SOFTWARE = 305
const TIFF_BYTE = 1
const TIFF_ASCII = 2
const TIFF_SHORT = 3 // integer 16 bit signed
const TIFF_LONG = 4 // integer 32 bit
const TIFF_FLOAT = 11
const TIFF_DOUBLE = 12

const FIELD_CUSTOM = 65

dim t as new TiffPictureMBS

// open tiff

if not t.AddCustomTag(TIFFTAG_ASCII, -1, -1, TIFF_ASCII, FIELD_CUSTOM, 1, 0, "MyString") then
    MsgBox "AddCustomTag failed1."
end if
```

**Notes:** See tiff documentation for details.
162.2. **CLASS TIFFPICTUREMBS**

### 162.2.4 AddImage as boolean

MBS Images Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Writes existing picture and header information to file and starts a new one.

**Example:**

```vbs
dim t as TiffPictureMBS
dim f as FolderItem
dim p as Picture

f=SpecialFolder.Desktop.Child(“test.tif”)
t=new TiffPictureMBS
if t.Create(f) then
  p=NewPicture(100,100,32)
p.Graphics.ForeColor=rgb(255,0,0)
p.Graphics.FillOval 0,0,100,100
t.Pict=p
  if t.WriteRGB then
    if t.AddImage then
      p=NewPicture(100,100,32)
p.Graphics.ForeColor=rgb(0,0,255)
p.Graphics.FillOval 0,0,100,100
t.Pict=p
      if t.WriteRGB then
        MsgBox “Written multi picture tiff.”
    end if
  end if
  end if
end if
```

**Notes:**

Returns true on success and false on any error.

Calls TIFFWriteDirectory internally.

### 162.2.5 close

MBS Images Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Closes the Tiff handle.

**Notes:**

In 5.1 and older the destructor.
In 5.2 and later only closes the tiff handle so you can still read the pictures, the output or input buffer.
162.2.6 CombinePictureWithMask as picture

MBS Images Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a new picture which is created using the picture and it’s mask.

**Example:**

```vbs
dim t as TiffPictureMBS
' ...
canvas1.backdrop=t.CombinePictureWithMask
```

162.2.7 Create(file as folderitem) as boolean


**Example:**

```vbs
dim p as Picture
dim f as FolderItem
dim t as TiffPictureMBS

p=NewPicture(100,100,32)
f=SpecialFolder.Desktop.Child("test.tif")

t=new TiffPictureMBS
t.Pict=p
if t.Create(f) then
if t.WriteRGB then
t.Close
MsgBox "Ok"
f.Launch
end if
end if
```

**Notes:**

Returns true on success.

This function uses paths like all Tiff functions, so be sure there are not two volumes named equal on a Mac OS Classic system.
162.2. CLASS TIFFPICTUREMBS

See also:

- 162.2.8 Create(file as folderitem, endian as Integer) as boolean

162.2.8 Create(file as folderitem, endian as Integer) as boolean


Endian settings:

- 0 Default (System)
- 1 BigEndian (Mac)
- 2 LittleEndian (Win)

This function uses paths like all Tiff functions, so be sure there are not two volumes named equal on a Mac OS Classic system.

See also:

- 162.2.7 Create(file as folderitem) as boolean

162.2.9 CreateString(Size as Integer) as boolean

MBS Images Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new string based tiff writer. **Example:**

```vbs
Function PictureToTiffStringMBS(pic as picture) As string
dim t as TIFFPictureMBS

t=new TIFFPictureMBS
if t.CreateString(& h100000) then
    t.Pict=pic
    if t.WriteRGB then
        t.Close
    Return t.OutputBuffer
end if
end if
End Function
```
Notes:
Same as the Create() function, but memory based. You can now use functions like Scanline(), WriteSW() or WriteRGB() to put the picture data.

Returns true on success.
The Warning and Error events may show you reasons why it does not work.

The size parameter you pass in is a guess for the initial size of the memory block used. If more data is written, the memory block is resized, but it is quite slow to resize a memory block, so make a good guess!

You can and should use this function to write yourself a PictureToTiffString function. The plugin can not well make such a function as there are thousands of possible parameters combination you may want to use. (compared to the JPEG library where you only have the compression level parameter.)
See also:

* 162.2.10 CreateString(Size as Integer, Mode as string) as boolean

162.2.10 CreateString(Size as Integer, Mode as string) as boolean

MBS Images Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new string based tiff writer.
**Notes:**
Same as the other CreateString method, but you can pass a mode string to the library.

mode="wb" for big endian and mode="wl" for little endian.
See also:

* 162.2.9 CreateString(Size as Integer) as boolean

162.2.11 Flush as boolean

MBS Images Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Flush causes any pending writes for the specified file (including writes for the current directory) to be done.
**Notes:** In normal operation this call is never needed - the library automatically does any flushing required.
162.2. CLASS TIFFPICTUREMBS

162.2.12 FlushData as boolean

MBS Images Plugin, Plugin Version: 5.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: FlushData flushes any pending image data for the specified file to be written out; directory-related data are not flushed. Notes: In normal operation this call is never needed | the library automatically does any flushing required.

162.2.13 GetColorMap(byref red as memoryblock, byref green as memoryblock, byref blue as memoryblock) as boolean


162.2.14 GetColorProfile as string


```vbnet
dim f as FolderItem
dim t as TiffPictureMBS
dim s as string
dim p as LCMS2ProfileMBS
f=SpecialFolder.Desktop.Child("horsehead_steinberg_big.tif")
t=f.OpenAsTiffMBS
s=t.GetColorProfile
p = LCMS2ProfileMBS.OpenProfileFromString(s)
MsgBox p.Name
```

Notes: Returns "" on any error.
162.2.15 GetData(Tag as Integer) as string

MBS Images Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the string stored for this tag.

162.2.16 GetField(Tag as Integer, mem as memoryblock) as boolean

MBS Images Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the value associated with the given tag id.

**Notes:**
- Please look for Tag values in the tiff specification.
- Returns true on success.
- Please make sure to use the correct setter depending on data type associated with the tag.
- The memoryblock you pass in must be big enough to hold whatever data the library stores there.

162.2.17 GetFieldByte(Tag as Integer, byref value as Integer) as boolean

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the value associated with the given tag id.

**Notes:**
- Please look for Tag values in the tiff specification.
- Returns true on success.
- Please make sure to use the correct setter depending on data type associated with the tag.

162.2.18 GetFieldCount(Tag as Integer, byref count as Integer, mem as memoryblock) as boolean

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the value associated with the given tag id.

**Example:**

'TIFF Tag ImageID

'TIFD Image
'Code 32781 (hex 0x800D)
'Name ImageID
'Type ASCII
'Count N
'Default None
'Description

','
162.2. CLASS TIFFPICTUREMBS

'OPI-related.
'
'ImageID is the full pathname of the original, high-resolution image, or any other identifying string that
uniquely identifies the original image.
'
'The high-resolution image is not required to be in TIFF format. It can be in any format that an OPI
Consumer wishes to support.

Dim tiffImport As TiffPictureMBS
Dim xx as string

tiffImport = New TiffPictureMBS
Call tiffImport.Open(SpecialFolder.Desktop.Child("test.tif"))

// the memoryblock is a storage for the data. In this case a pointer to the CString
dim m as MemoryBlock=NewMemoryBlock(4)
dim count as Integer

if tiffImport.GetFieldCount(32781, count, m) then
    MsgBox str(count)
    MsgBox m.Ptr(0).CString(0)
end if

tiffImport.close

Notes:

This is the special version using memoryblock so you can use it for reading values with a count value.

Please look for Tag values in the tiff specification.
Returns true on success.
Please make sure to use the correct setter depending on data type associated with the tag.

162.2.19 GetFieldDefaultedByte(Tag as Integer, byref value as Integer) as boolean

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Reads the value associated with the given tag id.

Notes:

Please look for Tag values in the tiff specification.
Returns true on success. May return a default value.
Please make sure to use the correct setter depending on data type associated with the tag.

GetFieldDefaulted* is identical to GetField*, except that if a tag is not defined in the current directory and
it has a default value, then the default value is returned.

162.2.20 GetFieldDefaultedDouble(Tag as Integer, byref value as Double) as boolean

MBS Images Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the value associated with the given tag id. **Notes:**
Please look for Tag values in the tiff specification. Returns true on success. May return a default value. Please make sure to use the correct setter depending on data type associated with the tag.

GetFieldDefaulted* is identical to GetField*, except that if a tag is not defined in the current directory and it has a default value, then the default value is returned.

162.2.21 GetFieldDefaultedInteger(Tag as Integer, byref value as Integer) as boolean

MBS Images Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the value associated with the given tag id. **Notes:**
Please look for Tag values in the tiff specification. Returns true on success. May return a default value. Please make sure to use the correct setter depending on data type associated with the tag.

GetFieldDefaulted* is identical to GetField*, except that if a tag is not defined in the current directory and it has a default value, then the default value is returned.

162.2.22 GetFieldDefaultedShort(Tag as Integer, byref value as Integer) as boolean

MBS Images Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the value associated with the given tag id. **Notes:**
Please look for Tag values in the tiff specification. Returns true on success. May return a default value. Please make sure to use the correct setter depending on data type associated with the tag.

GetFieldDefaulted* is identical to GetField*, except that if a tag is not defined in the current directory and it has a default value, then the default value is returned.
162.2. CLASS TIFFPICTUREMBS

GetFieldDefaulted* is identical to GetField*, except that if a tag is not defined in the current directory and it has a default value, then the default value is returned.

162.2.23 GetFieldDefaultedSingle(Tag as Integer, byref value as Single) as boolean

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the value associated with the given tag id. **Notes:**

Please look for Tag values in the tiff specification.

Returns true on success. May return a default value.

Please make sure to use the correct setter depending on data type associated with the tag.

GetFieldDefaulted* is identical to GetField*, except that if a tag is not defined in the current directory and it has a default value, then the default value is returned.

162.2.24 GetFieldDefaultedString(Tag as Integer, byref value as String) as boolean

MBS Images Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the value associated with the given tag id. **Example:**

```vbnet
dim t as TiffPictureMBS
dim f as FolderItem
dim s as string

f=SpecialFolder.Desktop.Child("ChristianSchmitz.tif")
t=f.OpenAsTiffMBS

const TIFFTAGSOFTWARE=305

if t.GetFieldDefaultedString(TIFFTAGSOFTWARE, s) then
    MsgBox "TIFFTAGSOFTWARE"+EndOfLine+s
end if
```

**Notes:**

Please look for Tag values in the tiff specification.

Returns true on success. May return a default value.

Please make sure to use the correct setter depending on data type associated with the tag.

The string is returned with ascii encoding. You may need to define a different encoding if this is not correct.
GetFieldDefaulted* is identical to GetField*, except that if a tag is not defined in the current directory and it has a default value, then the default value is returned.

162.2.25  GetFieldDouble(Tag as Integer, byref value as Double) as boolean

MBS Images Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Reads the value associated with the given tag id.
**Notes:**
Please look for Tag values in the tiff specification.
Returns true on success.
Please make sure to use the correct setter depending on data type associated with the tag.

162.2.26  GetFieldInteger(Tag as Integer, byref value as Integer) as boolean

MBS Images Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Reads the value associated with the given tag id.
**Notes:**
Please look for Tag values in the tiff specification.
Returns true on success.
Please make sure to use the correct setter depending on data type associated with the tag.

162.2.27  GetFieldMemory(Tag as Integer, byref ItemCount as Integer) as memoryblock

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Reads the value associated with the given tag id.
**Notes:**
This is the special version using memoryblock so you can use it for reading values with a count value.
Please look for Tag values in the tiff specification.
Returns true on success.
Please make sure to use the correct setter depending on data type associated with the tag.

162.2.28  GetFieldShort(Tag as Integer, byref value as Integer) as boolean

MBS Images Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Reads the value associated with the given tag id.
162.2. CLASS TIFFPICTUREMBS

Notes:
Please look for Tag values in the tiff specification.
Returns true on success.
Please make sure to use the correct setter depending on data type associated with the tag.

162.2.29 GetFieldSingle(Tag as Integer, byref value as Single) as boolean

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Reads the value associated with the given tag id.
Notes:
Please look for Tag values in the tiff specification.
Returns true on success.
Please make sure to use the correct setter depending on data type associated with the tag.

162.2.30 GetFieldString(Tag as Integer, byref value as string) as boolean

MBS Images Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Reads the value associated with the given tag id.
Example:

dim t as TiffPictureMBS
dim f as FolderItem
dim s as string

f=SpecialFolder.Desktop.Child("test.tif")
t=f.OpenAsTiffMBS

const TIFFTAGSOFTWARE=305

if t.GetFieldString(TIFFTAGSOFTWARE, s) then
MsgBox "TIFFTAGSOFTWARE"+EndOfLine+s
end if

const TIFFTAGHOSTCOMPUTER=316

if t.GetFieldString(TIFFTAGHOSTCOMPUTER, s) then
MsgBox "TIFFTAGHOSTCOMPUTER"+EndOfLine+s
end if

const TIFFTAGIMAGEDESCRIPITION=270

if t.GetFieldString(TIFFTAGIMAGEDESCRIPITION, s) then
MsgBox "TIFFTAGIMAGEDESCRIPITION"+EndOfLine+s
end if

const TIFFTAG_MAKE=271

if t.GetFieldString(TIFFTAG_MAKE, s) then
MsgBox "TIFFTAG_MAKE"+EndOfLine+s
end if

const TIFFTAG_ARTIST=315

if t.GetFieldString(TIFFTAG_ARTIST, s) then
MsgBox "TIFFTAG_ARTIST"+EndOfLine+s
end if

Notes:

Please look for Tag values in the tiff specification.
Returns true on success. May return a default value.
Please make sure to use the correct setter depending on data type associated with the tag.
The string is returned with ascii encoding. You may need to define a different encoding if this is not correct.

162.2.31 GetXMP as string

Example:

dim f as FolderItem
dim t as TiffPictureMBS
dim s as string

f=SpecialFolder.Desktop.Child("test.tif")

t=f.OpenAsTiffMBS

s=tGetXMP

MsgBox left(s,500)

Notes: Returns "" on any error.
162.2. CLASS TIFFPICTUREMBS

162.2.32 ImageCount as Integer

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of images in the TIFF file. **Notes:** Returns 0 on any error.

162.2.33 ImageIndex as Integer

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The current image index. **Notes:** 0 based.

162.2.34 IsLastImage as boolean

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the current picture is the last picture. **Notes:** Useful if you walk through all pictures using NextImage.

162.2.35 MirrorVertical(output as TiffPictureMBS) as boolean

MBS Images Plugin, Plugin Version: 7.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Mirrors the current picture to another tiff object. **Notes:** You may be able to pass the current tiff file as the output one if you have it open for read and write. Returns true on success and false on failure. Works for any color depth or color mode.

162.2.36 NextImage as boolean

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads the next image in the TIFF file. **Notes:** Returns true on success and false on any error. See also:

- 162.2.37 NextImage(HeaderOnly as boolean) as boolean
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162.2.37  NextImage(HeaderOnly as boolean) as boolean

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the next image.
**Notes:** If HeaderOnly is false the current picture is read into the picture & mask properties.
See also:

• 162.2.36 NextImage as boolean

162.2.38  Open(file as folderitem) as boolean

MBS Images Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Opens a tiff file for readonly access.
**Notes:**
You need to use the ReadRGB method or the Scanline property to get data from this file.
Returns true on success.
See also:

• 162.2.39 Open(file as folderitem, Mode as string) as boolean

162.2.39  Open(file as folderitem, Mode as string) as boolean

MBS Images Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Opens a tiff file for readonly access.
**Example:**
```vba
dim file as folderitem = SpecialFolder.desktop.child("test.tif")
dim st as new MyTiff
// open for appending
if not st.Open(file,"r+") then
    MsgBox "Open Tiff failed!"
else
    // change one setting
    st.Copyright = "Hello World"

    // and save
    call st.SaveImage
    st.Close
end if
```

**Notes:**
162.2. CLASS TIFFPICTUREMBS

Same as the other Open method, but you can pass a mode string to the library.

The open mode parameter can include the following flags in addition to the "r" (Read), "w" (Write), and "a" (Append) flags. Note however that option flags must follow the read-write-append specification.

See also:

- 162.2.38 Open(file as folderitem) as boolean

162.2.40 OpenString(data as string) as boolean

MBS Images Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Opens a tiff image located in a binary string.

**Example:**

```vba
Function TiffStringToPicture(data as string) As picture
  Dim t as MyTiffPictureMBS
  t = new MyTiffPictureMBS
  If t.OpenString(data) Then
    If t.ReadRGB Then
      Return t.Pict
    End If
  End If
  Return nil // failed
End Function
```

**Notes:**

Same as the Open() function, but memory based. You can now use functions like Scanline(), ReadSW() or ReadRGB() to get the picture data.

Returns true on success.

The Warning and Error events may show you reasons why it does not work.

The string you pass is saved in the data property of the class for later use.

You can and should use this function to write yourself a TiffStringToPicture function.

See also:

- 162.2.41 OpenString(data as string, Mode as string) as boolean
162.2.41  **OpenString(data as string, Mode as string) as boolean**

MBS Images Plugin, Plugin Version: 5.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Opens a tiff image located in a binary string.  
**Notes:** Same as the other OpenString method, but you can pass a mode string to the library.  
See also:

- 162.2.40 OpenString(data as string) as boolean

162.2.42  **RawStripSize(strip as UInt32) as UInt64**

MBS Images Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of bytes in a raw strip (i.e. not decoded).

162.2.43  **ReadBW as boolean**

MBS Images Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the current picture in BW mode.  
**Example:**

```vba
dim f as FolderItem  
dim p as Picture  
dim t as TiffPictureMBS  

f=SpecialFolder.Desktop.Child("Multipage fax.tif")  
t=f.OpenAsTiffMBS(true)  

if t.ReadBW then  
title=str(t.ImageCount)  
p=t.pict  
Title=str(p.Depth)  
Canvas1.Backdrop=p  
end if
```

**Notes:**  
Returns true on success and false on any error.  
Only if the current picture is a 1bit black& white picture, a new picture is created in the pict property and the data is copied inside.  
Data in the TIFF file must be in 1 bit BW mode. Else use ReadRGB which does a lot of converting.
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This method uses the YieldTicks property and may yield time to other threads.
See also:

- 162.2.44 ReadBW(left as Integer, top as Integer, width as Integer, height as Integer) as boolean

162.2.44 ReadBW(left as Integer, top as Integer, width as Integer, height as Integer) as boolean

MBS Images Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the current picture in BW mode.

**Example:**

dim f as FolderItem
dim p as Picture
dim t as TiffPictureMBS

f=SpecialFolder.Desktop.Child("Multipage fax.tif")
t=f.OpenAsTiffMBS(true)

if t.ReadBW(0,0,t.width/2,t.height/2) then
title=str(t.ImageCount)
p=t.pict
Title=str(p.Depth)
Canvas1.Backdrop=p
end if

**Notes:**

Returns true on success and false on any error.
Only if the current picture is a 1bit black& white picture, a new picture is created in the pict property and the data is copied inside.

Data in the TIFF file must be in 1 bit BW mode. Else use ReadRGB which does a lot of converting.

This method uses the YieldTicks property and may yield time to other threads.
See also:

- 162.2.43 ReadBW as boolean
162.2.45 ReadEncodedStrip(strip as UInt32, byref data as Memoryblock) as UInt32

MBS Images Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Read and decode a strip of data from an open TIFF file.

**Notes:**
Read the specified strip of data and place up to size bytes of decompressed information in the (user supplied) data buffer.

The value of strip is a "raw strip number". That is, the caller must take into account whether or not the data are organized in separate planes (PlanarConfiguration=2). To read a full strip of data the data buffer should typically be at least as large as the number returned by StripSize.

The library attempts to hide bit- and byte-ordering differences between the image and the native machine by converting data to the native machine order. Bit reversal is done if the FillOrder tag is opposite to the native machine bit order. 16- and 32-bit samples are automatically byte-swapped if the file was written with a byte order opposite to the native machine byte order.

Returns the actual number of bytes of data that were placed in buf is returned; ReadEncodedStrip returns -1 if an error was encountered.

162.2.46 ReadEncodedTile(tile as UInt32, byref data as Memoryblock) as Integer

MBS Images Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Read and decode a tile of data from an open TIFF file.

**Notes:**
Read the specified tile of data and place up to size bytes of decompressed information in the (user supplied) data buffer.

The value of tile is a "raw tile number". That is, the caller must take into account whether or not the data are organized in separate planes (PlanarConfiguration=2). ComputeTile automatically does this when converting an (x,y,z,sample) coordinate quadruple to a tile number. To read a full tile of data the data buffer should be at least as large as the value returned by TileSize.

The library attempts to hide bit- and byte-ordering differences between the image and the native machine by converting data to the native machine order. Bit reversal is done if the FillOrder tag is opposite to the native machine bit order. 16- and 32-bit samples are automatically byte-swapped if the file was written with a byte order opposite to the native machine byte order.

Returns the actual number of bytes of data that were placed in buf is returned; ReadEncodedTile returns 1 if an error was encountered.
162.2.47 ReadPreviewBW as boolean

MBS Images Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the current picture in BW mode as a preview.

**Notes:**
This method is faster than ReadBW, because it reads only every 8th line and every 8th pixel in each row. So the picture you get is much smaller, but may be enough for a preview.

Returns true on success and false on any error.
Only if the current picture is a 1bit black & white picture, a new picture is created in the pict property and the data is copied inside.

Data in the TIFF file must be in 1 bit BW mode. Else use ReadRGB which does a lot of converting.

This method uses the YieldTicks property and may yield time to other threads.

See also:
- 162.2.48 ReadPreviewBW(left as Integer, top as Integer, width as Integer, height as Integer) as boolean

162.2.48 ReadPreviewBW(left as Integer, top as Integer, width as Integer, height as Integer) as boolean

MBS Images Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the current picture in BW mode as a preview.

**Notes:**
This method is faster than ReadBW, because it reads only every 8th line and every 8th pixel in each row. So the picture you get is much smaller, but may be enough for a preview.

Returns true on success and false on any error.
Only if the current picture is a 1bit black & white picture, a new picture is created in the pict property and the data is copied inside.

Data in the TIFF file must be in 1 bit BW mode. Else use ReadRGB which does a lot of converting.

This method uses the YieldTicks property and may yield time to other threads.

See also:
- 162.2.47 ReadPreviewBW as boolean
162.2.49  ReadPreviewRGB(ReduceFactor as Integer) as boolean

MBS Images Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Reads a CMYK or RGB picture and stores it in the pict and name properties.
**Notes:**
This method is faster than ReadRGB, because it reads only every ReduceFactor-th line and every Reduce-
Factor-th pixel in each row. So the picture you get is much smaller, but may be enough for a preview.

Returns true on success.
ReadRGB does converting on the picture data if needed so you can read CMYK, RGB, BW and other image
data using this function.

This function works with most Tiff formats, but has problems with some like 16 bit CMYK.

162.2.50  ReadRawStrip(strip as UInt32, byref data as Memoryblock) as UInt32

MBS Images Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Return the undecoded contents of a strip of data from an open TIFF file.
**Notes:**
Read the contents of the specified strip into the (user supplied) data buffer. Note that the value of strip is a "raw strip number". That is, the caller must take into account whether or not the data is organized in separate planes (PlanarConfiguration=2). To read a full strip of data the data buffer should typically be at least as large as the number returned by StripSize.

Returns the actual number of bytes of data that were placed in buf is returned; ReadEncodedStrip returns -1 if an error was encountered.

162.2.51  ReadRawTile(tile as UInt32, byref data as Memoryblock) as Integer

MBS Images Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Return an undecoded tile of data from an open TIFF file.
**Notes:**
Read the contents of the specified tile into the (user supplied) data buffer. Note that the value of tile is a "raw tile number". That is, the caller must take into account whether or not the data is organized in separate planes (PlanarConfiguration=2). ComputeTile automatically does this when converting an (x,y,z,sample) coordinate quadruple to a tile number. To read a full tile of data the data buffer should typically be at least as large as the value returned by TileSize.

Returns the actual number of bytes of data that were placed in buf is returned; ReadEncodedTile returns 1
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if an error was encountered.

162.2.52 ReadRGB as boolean

MBS Images Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Reads a CMYK or RGB picture and stores it in the pict and name properties.
**Notes:**
Returns true on success.
ReadRGB does converting on the picture data if needed so you can read CMYK, RGB, BW and other image data using this function.

This function works with most Tiff formats, but has problems with some like 16 bit CMYK.
See also:

- 162.2.53 ReadRGB(byref ErrorMessage as string, Dest as MemoryBlock = nil) as memoryblock 19491

162.2.53 ReadRGB(byref ErrorMessage as string, Dest as MemoryBlock = nil) as memoryblock

MBS Images Plugin, Plugin Version: 9.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Reads the image into a memoryblock as RGB.
**Notes:**
The Scanline() array gives you the raw uncompressed data. But this method decodes the data into a RGBA image.

The Memoryblock has the size of 4*width*height. Each pixel has one byte for red, one byte for green, one byte for blue and one byte for alpha. If no alpha is in the file, all pixels have the same alpha of 255.

If the decompression fails the function returns nil. (e.g. out of memory).
If the decoding fails, you also get an error message.

This function works with most Tiff formats, but has problems with some like 16 bit CMYK.

If dest is not nil and big enough, the plugin will use it and return it on success. This can avoid additional memory allocations which can cost CPU time (especially to clear the bytes).
See also:

- 162.2.52 ReadRGB as boolean 19491
162.2.54  ReadRGBMemoryBegin(byref ErrorMessage as string) as boolean

MBS Images Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Starts a RGBA reader for the given TIFF picture.

**Notes:**
Like ReadRGB, but with ReadRGBMemoryBegin, ReadRGBMemoryEnd and ReadRGBMemoryStep you can read the RGBA data in portions.

The Memoryblock returned by ReadRGBMemoryStep has the size of 4\times width\times height. Each pixel has one byte for red, one byte for green, one byte for blue and one byte for alpha. If no alpha is in the file, all pixels have the same alpha of 255.

If the decompression fails the function returns false. (e.g. out of memory).
If the decoding fails, you also get an error message.

This function works with most Tiff formats, but has problems with some like 16 bit CMYK.

162.2.55  ReadRGBMemoryEnd

MBS Images Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Cleans up the internal data structures created by ReadRGBMemoryBegin.

162.2.56  ReadRGBMemoryStep(x as Integer, y as Integer, width as Integer, height as Integer, Dest as MemoryBlock = nil) as memoryblock

MBS Images Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the image into a memoryblock as RGBA.

**Example:**

```vba
dim t as new TiffPictureMBS
dim f as FolderItem = SpecialFolder.Desktop.Child("test.tif")
dim e as string
if t.Open(f) then
    if t.ReadRGBMemoryBegin(e) then
        dim w as Integer = t.Width
        dim h as Integer = t.Height
        dim p as new PictureMBS(w, h, PictureMBS.ImageFormatRGB)
        for y as Integer = 0 to h-1 step 100
```
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```vbnet
dim m as MemoryBlock = t.ReadRGBMemoryStep(0, y, w, 100)
for i as Integer = 0 to 99
p.RowInFormat(i+y, PictureMBS.ImageFormatRGBA)=m
next
next
t.ReadRGBMemoryEnd
Backdrop = p.copypicture(0,0,1000,1000) // display a portion
end if
end if
```

Notes:
As you see in the example, you can use this method to easily read huge TIFF files into a PictureMBS object.

If the decompression fails the function returns nil. (e.g. out of memory).
Please make sure that the range in x and y, width and height is right.

If dest is not nil and big enough, the plugin will use it and return it on success. This can avoid additional memory allocations which can cost CPU time (especially to clear the bytes).

162.2.57 ReadWithLUT(ColorLookupTable() as color) as boolean

MBS Images Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Reads the current picture with a Color Lookup Table.
**Notes:**
Returns true on success and false on any error.
Works with 8, 16 and 32 bits per sample. And with 1 or 3 samples per pixels (Gray or RGB). The lookup table has 256 entries for 8 bit and 65536 entries for 16/32 bit.
This method uses the YieldTicks property and may yield time to other threads.
See also:
- 162.2.58 ReadWithLUT(ColorLookupTable() as color, left as Integer, top as Integer, width as Integer, height as Integer) as boolean
162.2.58 **ReadWithLUT**(ColorLookupTable() as color, left as Integer, top as Integer, width as Integer, height as Integer) as boolean

MBS Images Plugin, Plugin Version: 9.8, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads the current picture with a Color Lookup Table. **Notes:**

Returns true on success and false on any error.

Works with 8, 16 and 32 bits per sample. And with 1 or 3 samples per pixel (Gray or RGB). The lookup table has 256 entries for 8 bit and 65536 entries for 16/32 bit.

This method uses the YieldTicks property and may yield time to other threads.

See also:

- 162.2.57 ReadWithLUT(ColorLookupTable() as color) as boolean

162.2.59 **RewriteDirectory** as boolean

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes existing picture and header information to file replacing the old data. **Notes:**

Returns true on success and false on any error.

As the data is added to the file and just the reference to the old data is deleted, the filesize will grow.

Calls TIFFReWriteDirectory internally. Same as SaveImage.

162.2.60 **SaveImage** as boolean

MBS Images Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes existing picture and header information to file replacing the old data. **Notes:**

Returns true on success and false on any error.

As the data is added to the file and just the reference to the old data is deleted, the filesize will grow.

Calls TIFFReWriteDirectory internally. Same as RewriteDirectory.

162.2.61 **Scanline**(mem as Ptr, index as Integer, sample as Integer = 0) as boolean

MBS Images Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads an image scanline in a memoryblock.
Notes:
Returns false on any error. The Memoryblock must be big enough. The BytesPerRow functions returns the number of bytes needed. The first scanline has the index of 0. This is the fastest way to read scanlines. You provide the memoryblock and you can reuse it for all calls to this method for one tiff. See also:

- 162.2.127 Scanline(index as Integer, sample as Integer = 0) as memoryblock

162.2.62 SetColorMap(red as memoryblock, green as memoryblock, blue as memoryblock) as boolean

MBS Images Plugin, Plugin Version: 9.6, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Sets the color map for a paletten image. Notes:
The memoryblock must be 2^bitspersample * 2 bytes big. Returns true on success and false on failure.

162.2.63 SetColorProfile(ProfileData as String) as boolean

MBS Images Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Sets the color profile for this tiff file. Notes: Returns true on success and false on failure.

162.2.64 SetData(Tag as Integer, data as string) as boolean

MBS Images Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Writes the string for this tag.

162.2.65 SetFieldByte(Tag as Integer, value as Integer) as boolean

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Sets the tiff data field with the given tag to the given value. Notes:
Please look for Tag values in the tiff specification. Returns true on success. Please make sure to use the correct setter depending on data type associated with the tag.
162.2.66 SetFieldDouble(Tag as Integer, value as Double) as boolean

MBS Images Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Sets the tiff data field with the given tag to the given value.
Notes:
Please look for Tag values in the tiff specification.
Returns true on success.
Please make sure to use the correct setter depending on data type associated with the tag.

162.2.67 SetFieldInteger(Tag as Integer, value as Integer) as boolean

MBS Images Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Sets the tiff data field with the given tag to the given value.
Example:
```vba
dim t as TiffPictureMBS
dim f as FolderItem

const TIFFTAG_IMAGELENGTH=257 // integer
const TIFFTAG_IMAGEWIDTH=256 // integer

f=GetTemporaryFolderItem
t=new TiffPictureMBS
if t.Create(f) then
    if t.SetFieldInteger(TIFFTAG_IMAGELENGTH,100) then
        if t.Height=100 then
            MsgBox "ok"
        end if
    end if
end if
```
Notes:
Please look for Tag values in the tiff specification.
Returns true on success.
Please make sure to use the correct setter depending on data type associated with the tag.
162.2.68  SetFieldMemory(Tag as Integer, ItemCount as Integer, data as memoryblock) as boolean

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the tiff data field with the given tag to the given value.

**Notes:**
This is the special version of the setter which passes a memoryblock and a count value so you can set an array using this method.

Please look for Tag values in the tiff specification.
Returns true on success.
Please make sure to use the correct setter depending on data type associated with the tag.

162.2.69  SetFieldShort(Tag as Integer, value as Integer) as boolean

MBS Images Plugin, Plugin Version: 7.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the tiff data field with the given tag to the given value.

**Notes:**
Please look for Tag values in the tiff specification.
Returns true on success.
Please make sure to use the correct setter depending on data type associated with the tag.

162.2.70  SetFieldSingle(Tag as Integer, value as Single) as boolean

MBS Images Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the tiff data field with the given tag to the given value.

**Notes:**
Please look for Tag values in the tiff specification.
Returns true on success.
Please make sure to use the correct setter depending on data type associated with the tag.

162.2.71  SetFieldString(Tag as Integer, value as string) as boolean

MBS Images Plugin, Plugin Version: 8.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets one of the fields to the value of the string.

**Example:**

```vbnet
dim m,p as Picture
dim f as FolderItem
```
dim t as TiffPictureMBS
dim g as Graphics
dim s as string

// make pictures
p=NewPicture(100,100,32)
m=NewPicture(100,100,32)

p.Graphics.ForeColor=Rgb(0,255,0) // fill green
p.Graphics.FillRect 0,0,100,100

p.Graphics.ForeColor=Rgb(255,0,0) // fill red
p.Graphics.FillOval 0,0,100,100

m.Graphics.ForeColor=Rgb(0,0,0) // fill black (invisible so green not seen)
m.Graphics.FillRect 0,0,100,100

m.Graphics.ForeColor=Rgb(255,255,255) // fill white (Visible)
m.Graphics.FillOval 0,0,100,100

// save
f=SpecialFolder.Desktop.Child("test.tif")

t=new TiffPictureMBS
t.Pict=p
t.Mask=m

if t.Create(f) then
if t.WriteRGB then

const TIFFTAG_SOFTWARE=305
s="Example Software"
call t.SetFieldString TIFFTAG_SOFTWARE,s

const TIFFTAG_HOSTCOMPUTER=316
s="Example HostComputer"
call t.SetFieldString TIFFTAG_HOSTCOMPUTER,s

const TIFFTAG_IMAGEDESCRIPTION=270
s="Example ImageDescription"
call t.SetFieldString TIFFTAG_IMAGEDESCRIPTION,s

const TIFFTAG_MAKE=271
s="Example Make"
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call t.SetFieldString TIFFTAG_MAKE,s

const TIFFTAG_ARTIST=315

s="Example Artist"
call t.SetFieldString TIFFTAG_ARTIST,s

t.Close
MsgBox "Ok"
f.Launch
end if
end if

Notes:
Please look for Tag values in the tiff specification.
Returns true on success.
Please make sure to use the correct setter depending on data type associated with the tag.
You have to pass in the string with the correct encoding.

162.2.72 SetImageIndex(index as Integer) as boolean

Example:

dim t as TiffPictureMBS // your tiff picture

if t.SetImageIndex(1) then
Canvas1.Backdrop=t.pict
end if

Notes:
Reads automatically a RGB picture for you, so the pict property is filled on success.
Returns true on success.
Index is zero based.
See also:

• 162.2.73 SetImageIndex(index as Integer, HeaderOnly as boolean) as boolean
162.2.73 SetImageIndex(index as Integer, HeaderOnly as boolean) as boolean

Notes:
If HeaderOnly is false the current picture is read into the pict & mask properties.
Returns true on success.
See also:
- 162.2.72 SetImageIndex(index as Integer) as boolean

162.2.74 SetXMP(ProfileData as String) as boolean

Notes: Returns true on success and false on failure.

162.2.75 VStripSize(nrows as UInt32) as UInt64


162.2.76 VTileSize(nrows as UInt32) as UInt64


162.2.77 WriteBW as boolean

Example:
```
dim p as Picture
dim f as FolderItem
dim t as TiffPictureMBS

p=NewPicture(100,100,32)
p.Graphics.ForeColor=rgb(0,0,0)
p.Graphics.FillOval 0,0,100,100
```
f=SpecialFolder.Desktop.Child("test.tif")

t=new TiffPictureMBS

if t.Create(f) then
  t.Pict=p
if t.WriteBW then
  MsgBox "ok"
  end if
  end if

Backdrop=p

Notes:

Uses the pictures in the pict property to write a picture.
Currently masks are not supported.

The following settings are made before the image data is written:
PlanarConfig = PLANARCONFIG_CONTIG
Photometric = PHOTOMETRIC_MINISBLACK
BitsPerSample = 1
SamplesPerPixel = 1
FillOrder = FILLODER_MSB2LSB
VerticalResolution = 72
HorizontalResolution = 72
Orientation = ORIENTATION_TOPLEFT
ResolutionUnit = RESUNIT_INCH
Compression = COMPRESSION_NONE

You may change settings before or later. For example if you set Compression before it should be used for
writing image data to the file.
Returns true on success.

This method uses the YieldTicks property and may yield time to other threads.

162.2.78  WriteEncodedStrip(strip as UInt32, data as Memoryblock, size as Integer = 0) as Integer

MBS Images Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Compress and write a strip of data to an open TIFF file.

Notes:
Compress size bytes of raw data from buf and write the result to the specified strip; replacing any previously written data. Note that the value of strip is a raw strip number.” That is, the caller must take into account whether or not the data are organized in separate planes (PlanarConfiguration=2).

The library writes encoded data using the native machine byte order. Correctly implemented TIFF readers are expected to do any necessary byte-swapping to correctly process image data with BitsPerSample greater than 8.

The strip number must be valid according to the current settings of the ImageLength and RowsPerStrip tags. An image may be dynamically grown by increasing the value of ImageLength prior to each call to WriteEncodedStrip.

Returns 1 is returned if an error was encountered. Otherwise, the value of size is returned. If size is zero, we use the size of memoryblock.

162.2.79 WriteEncodedTile(tile as UInt32, data as Memoryblock, size as Integer = 0) as Integer

MBS Images Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Compress and write a tile of data to an open TIFF file. **Notes:** Compress size bytes of raw data from buf and append the result to the end of the specified tile. Note that the value of tile is a "raw tile number". That is, the caller must take into account whether or not the data are organized in separate planes (PlanarConfiguration=2). ComputeTile automatically does this when converting an (x,y,z,sample) coordinate quadruple to a tile number.

The library writes encoded data using the native machine byte order. Correctly implemented TIFF readers are expected to do any necessary byte-swapping to correctly process image data with BitsPerSample greater than 8.

Returns 1 is returned if an error was encountered. Otherwise, the value of size is returned. If size is zero, we use the size of memoryblock.

162.2.80 WriteGray as boolean

MBS Images Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Write a grayscale image with 256 colors. **Example:**
dim t as TiffPictureMBS
dim f as FolderItem

f=SpecialFolder.Desktop.Child("test.tif")

t=new TiffPictureMBS
if t.Create(f) then
    t.Pict=LogoMBS(500)
call t.WriteGray
t.Close
end if

Notes:
Uses the pictures in the pict property to write a picture.
Currently masks are not supported.

The following settings are made before the image data is written:
PlanarConfig = PLANARCONFIG_CONTIG
Photometric = PHOTOMETRIC_MINISBLACK
BitsPerSample = 8
SamplesPerPixel = 1
FillOrder = FILLORDER_MSB2LSB
VerticalResolution = 72
HorizontalResolution = 72
Orientation = ORIENTATION_TOPLEFT
ResolutionUnit = RESUNIT_INCH
Compression = COMPRESSION_NONE

You may change settings before or later. For example if you set Compression before it should be used for
writing image data to the file.
Returns true on success.

This method uses the YieldTicks property and may yield time to other threads.
Version 13.1 of our plugins writes a 16 bit Gray image if you set BitsPerSample to 16 before calling this
method.

162.2.81 WriteRawStrip(strip as UInt32, data as Memoryblock, size as Integer = 0) as Integer

MBS Images Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Write a strip of raw data to an open TIFF file.
Notes:
Append size bytes of raw data to the specified strip.

The strip number must be valid according to the current settings of the ImageLength and RowsPerStrip tags. An image may be dynamically grown by increasing the value of ImageLength prior to each call to WriteRawStrip.

Returns -1 is returned if an error occurred. Otherwise, the value of size is returned.

If size is zero, we use the size of memoryblock.

**162.2.82 WriteRawTile(tile as UInt32, data as Memoryblock, size as Integer = 0) as Integer**

MBS Images Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Write a tile of raw data to an open TIFF file  
**Notes:**  
Append size bytes of raw data to the specified tile.  
Returns 1 is returned if an error occurred. Otherwise, the value of size is returned.  
If size is zero, we use the size of memoryblock.

**162.2.83 WriteRGB as boolean**

MBS Images Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes a RGB image.  
**Example:**

```vbnet
dim m,p as Picture  
dim f as FolderItem  
dim t as TiffPictureMBS  
dim g as Graphics  

p=NewPicture(100,100,32)  
m=NewPicture(100,100,32)  

p.Graphics.ForeColor=Rgb(0,255,0) // fill green  
p.Graphics.Fillrect 0,0,100,100  

p.Graphics.ForeColor=Rgb(255,0,0) // fill red  
p.Graphics.FillOval 0,0,100,100  

m.Graphics.ForeColor=Rgb(0,0,0) // fill black (invisible so green not seen)  
m.Graphics.Fillrect 0,0,100,100
```
m.Graphics.ForeColor=Rbg(255,255,255) // fill white (Visible)
m.Graphics.FillOval 0,0,100,100

f=SpecialFolder.Desktop.Child("test.tif")

t=new TiffPictureMBS
t.Pict=p
t.Mask=m

if t.Create(f) then
if t.WriteRGB then
  t.Close
  MsgBox "Ok"
  f.Launch
end if
end if

Notes:

Uses the pictures in the mask and pict properties to write a picture. If mask is set, the picture is saved with an alpha channel.

The following settings are made before the image data is written:
PlanarConfig = PLANARCONFIG_CONTIG
Photometric = PHOTOMETRIC_RGB
BitsPerSample = 8
SamplesPerPixel = 3
FillOrder = FILLORDER_MSB2LSB
VerticalResolution = 72
HorizontalResolution = 72
Orientation = ORIENTATION_TOPLEFT
ResolutionUnit = RESUNIT_INCH
Compression = COMPRESSION_NONE

You may change settings before or later. For example if you set Compression before it should be used for writing image data to the file.
Returns true on success.

This method uses the YieldTicks property and may yield time to other threads.
162.2.84  Properties

162.2.85  BitsPerSample as Integer

MBS Images Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The count of bits for each pixel component.
**Notes:**
Should normally by 8 for RGB images.
(Read and Write property)

162.2.86  BytesPerRow as Int64

MBS Images Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The number of bytes needed for each row in a scan line.
**Notes:**
0 on any error.
(Read only property)

162.2.87  Compression as Integer

MBS Images Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The compression used.
**Notes:**
some constants:
The data for this property is stored in the Tiff file.
(Read and Write property)

162.2.88  Copyright as String

MBS Images Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The copyright notice of this image.
**Example:**
```vba
dim file as folderitem = SpecialFolder.desktop.child("test.tif")
dim st as new MyTiff

// open for appending
if not st.Open(file,"r+") then
```

CHAPTER 162. TIFF
MsgBox "Open Tiff failed!"
else
    // change one setting
    st.Copyright = "Hello World"
    // and save
call st.SaveImage
st.Close
end if

Notes:
The data for this property is stored in the Tiff file.
(Read and Write property)

162.2.89  DateTime as String

MBS Images Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Date and time of the TIFF file.
Notes:
Check some TIFF files for the format used.

The data for this property is stored in the Tiff file.
(Read and Write property)

162.2.90  DocumentName as String

MBS Images Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The name of the document.
Notes:
The data for this property is stored in the Tiff file.
(Read and Write property)

162.2.91  ExtraSamples as MemoryBlock

MBS Images Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The settings for the extra samples.
Notes:
A memory block filled with an array of shorts (16bit integers).

Constants:

The data for this property is stored in the Tiff file.
(Read and Write property)

### 162.2.92 FillOrder as Integer

MBS Images Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The fill order of the bits in a byte.

**Notes:**

Constants:

- (MSB = Most significant bit, LSB = Least significant bit)

The data for this property is stored in the Tiff file.
(Read and Write property)

### 162.2.93 height as Integer

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The height of the picture.

**Notes:** (Read and Write property)

### 162.2.94 HorizontalPosition as Single

MBS Images Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The x Offset of this image in the drawing area.

**Notes:**

The data for this property is stored in the Tiff file.
(Read and Write property)
162.2.95 **HorizontalResolution as Single**

MBS Images Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The horizontal resolution used.  
**Notes:**  
Value depends on ResolutionUnit value.

The data for this property is stored in the Tiff file.  
(Read and Write property)

162.2.96 **HostComputer as String**

MBS Images Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Name of the machine where the tiff file was created.  
**Notes:**  
The data for this property is stored in the Tiff file.  
(Read and Write property)

162.2.97 **ImageDescription as String**

MBS Images Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Information about the image.  
**Notes:**  
The data for this property is stored in the Tiff file.  
(Read and Write property)

162.2.98 **InputBuffer as String**

MBS Images Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The string passed for OpenString.  
**Notes:**  
Used for the read requests from the Tiff library.  
(Read only property)
162.2.99 IsTiled as Boolean

MBS Images Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a non-zero value if the image data has a tiled organization.

**Notes:**
Zero is returned if the image data is organized in strips.
(Read only property)

162.2.100 JPEGQuality as Integer

MBS Images Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The JPEG quality.

**Example:**

```plaintext
dim logo as Picture = LogoMBS(500)
dim pic as new PictureMBS(logo)

// save tiff with jpeg compression
dim f as FolderItem = SpecialFolder.Desktop.Child("test.tif")
dim t as TiffPictureMBS

if pic <> nil then
t = new TiffPictureMBS

if t.Create(F) then
t.Height = pic.Height
t.Width = pic.Width

t.RowsPerStrip = 1
t.PlanarConfig = t.kPlanarConfigContig
t.Photometric = t.kPhotometricRGB
t.BitsPerSample = 8
t.SamplesPerPixel = 3
t.FillOrder = t.kFillOrderMSB2LSB
t.Orientation = t.kOrientationTopLeft
t.ResolutionUnit = t.kResUnitInch
t.VerticalResolution = 72.0
t.HorizontalResolution = 72.0
t.Compression = t.kCompressionJPEG
t.RowsPerStrip = 32
t.JPEGQuality = 75

// copy lines
for i as Integer = 0 to t.Height - 1
```
162.2. CLASS TIFFPICTUREMBS

```
t.Scanline(i) = pic.RowInFormat(i, PictureMBS.ImageFormatRGB)
next

t.Close
end if
end if
```

Notes:
Default is 75.
(Read and Write property)

162.2.101 Make as String

MBS Images Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Scanner manufacturer name.
Notes:
The data for this property is stored in the Tiff file.
(Read and Write property)

162.2.102 mask as picture

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The mask of the picture.
Notes:
May be nil.
(Read and Write property)

162.2.103 Model as String

MBS Images Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Scanner model name/number.
Notes:
The data for this property is stored in the Tiff file.
(Read and Write property)
When creating a new file force information be written with Little-Endian byte order (but see below). By default the library will create new files using the native CPU byte order.

When creating a new file force information be written with Big-Endian byte order (but see below). By default the library will create new files using the native CPU byte order.

Force image data that is read or written to be treated with bits filled from Least Significant Bit (LSB) to Most Significant Bit (MSB). Note that this is the opposite to the way the library has worked from its inception.

Force image data that is read or written to be treated with bits filled from Most Significant Bit (MSB) to Least Significant Bit (LSB); this is the default.

Force image data that is read or written to be treated with bits filled in the same order as the native CPU.

Enable the use of memory-mapped files for images opened read-only. If the underlying system does not support memory-mapped files or if the specific image being opened cannot be memory-mapped then the library will fallback to using the normal system interface for reading information. By default the library will attempt to use memory-mapped files.

Disable the use of memory-mapped files.

Enable the use of "strip chopping" when reading images that are comprised of a single strip or tile of uncompressed data. Strip chopping is a mechanism by which the library will automatically convert the single-strip image to multiple strips, each of which has about 8 Kilobytes of data. This facility can be useful in reducing the amount of memory used to read an image because the library normally reads each strip in its entirety. Strip chopping does however alter the apparent contents of the image because when an image is divided into multiple strips it looks as though the underlying file contains multiple separate strips. Finally, note that default handling of strip chopping is a compile-time configuration parameter. The default behaviour, for backwards compatibility, is to enable strip chopping.

Disable the use of strip chopping when reading images.
### 162.2. CLASS TIFFPICTUREMBS

<table>
<thead>
<tr>
<th>COMPRESSION</th>
<th>ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPRESSION_NONE</td>
<td>1</td>
<td>dump mode</td>
</tr>
<tr>
<td>COMPRESSION_CCTTRLE</td>
<td>2</td>
<td>CCITT modified Huffman RLE</td>
</tr>
<tr>
<td>COMPRESSION_CCTTFFAX3</td>
<td>3</td>
<td>CCITT Group 3 fax encoding</td>
</tr>
<tr>
<td>COMPRESSION_CCTTT_T4</td>
<td>3</td>
<td>CCITT T.4 (TIFF 6 name)</td>
</tr>
<tr>
<td>COMPRESSION_CCTTFFAX4</td>
<td>4</td>
<td>CCITT Group 4 fax encoding</td>
</tr>
<tr>
<td>COMPRESSION_CCTTT_T6</td>
<td>4</td>
<td>CCITT T.6 (TIFF 6 name)</td>
</tr>
<tr>
<td>COMPRESSION_LZW</td>
<td>5</td>
<td>Lempel-Ziv &amp; Welch</td>
</tr>
<tr>
<td>COMPRESSION_OJPEG</td>
<td>6</td>
<td>JPEG DCT compression</td>
</tr>
<tr>
<td>COMPRESSION_NEXT</td>
<td>32766</td>
<td>NeXT 2-bit RLE</td>
</tr>
<tr>
<td>COMPRESSION_CCTTTRLEW</td>
<td>32771</td>
<td># 1 w/ word alignment</td>
</tr>
<tr>
<td>COMPRESSION_PACKBITS</td>
<td>32773</td>
<td>Macintosh RLE</td>
</tr>
<tr>
<td>COMPRESSION_THUNDERSCAN</td>
<td>32809</td>
<td>ThunderScan RLE</td>
</tr>
<tr>
<td>COMPRESSION_IT8CTPAD</td>
<td>32895</td>
<td>IT8 CT w/padding</td>
</tr>
<tr>
<td>COMPRESSION_IT8SLW</td>
<td>32896</td>
<td>IT8 Linework RLE</td>
</tr>
<tr>
<td>COMPRESSION_IT8MP</td>
<td>32897</td>
<td>IT8 Monochrome picture</td>
</tr>
<tr>
<td>COMPRESSION_IT8SLIB</td>
<td>32898</td>
<td>IT8 Binary line art</td>
</tr>
<tr>
<td>COMPRESSION_PIXARFILM</td>
<td>32908</td>
<td>Pixar companded 10bit LZW</td>
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<tr>
<td>COMPRESSION_PIXARLOG</td>
<td>32909</td>
<td>Pixar companded 11bit ZIP</td>
</tr>
<tr>
<td>COMPRESSION_DEFLATE</td>
<td>32946</td>
<td>Deflate compression, as recognized by Adobe</td>
</tr>
<tr>
<td>COMPRESSION_ADOBE_DEFLATE</td>
<td>32947</td>
<td>Kodak DCS encoding</td>
</tr>
<tr>
<td>COMPRESSION_JBIG</td>
<td>34661</td>
<td>ISO JBIG</td>
</tr>
<tr>
<td>COMPRESSION_SGILOG</td>
<td>34676</td>
<td>SGI Log Luminance RLE</td>
</tr>
<tr>
<td>COMPRESSION_SGILOG24</td>
<td>34677</td>
<td>SGI Log 24-bit packed</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EXTRASAMPLE</th>
<th>ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXTRASAMPLE_UNSPECIFIED</td>
<td>0</td>
<td>unspecified data</td>
</tr>
<tr>
<td>EXTRASAMPLE_ASSOCALPHA</td>
<td>1</td>
<td>associated alpha data (pre multiplied)</td>
</tr>
<tr>
<td>EXTRASAMPLE_UNASSALPHA</td>
<td>2</td>
<td>unassociated alpha data (mask in RB)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FILLORDER</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FILLORDER_MSB2LSB</td>
<td>1</td>
<td>(default)</td>
</tr>
<tr>
<td>FILLORDER_LSB2MSB</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>
162.2.104  NumberOfStrips as UInt32

MBS Images Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of strips in the image.  
**Notes:** (Read only property)

162.2.105  NumberOfTiles as UInt32

MBS Images Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of tiles in the image.  
**Notes:** (Read only property)

162.2.106  Orientation as Integer

MBS Images Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The orientation of this image.  
**Example:**

// creates a tif file with a horizontal flipped image  
// red rectangle is on the left in the image data, but with orientation tag it should be displayed on the right side.  
// Mac OS X Preview.app shows it correctly.

```vbs
dim p as Picture
dim t as TiffPictureMBS
dim f as FolderItem

cnst ORIENTATION_TOPLEFT = 1  /* row 0 top, col 0 lhs */
cnst ORIENTATION_TOPRIGHT = 2  /* row 0 top, col 0 rhs */
cnst ORIENTATION_BOTRIGHT = 3  /* row 0 bottom, col 0 rhs */
cnst ORIENTATION_BOTLEFT = 4  /* row 0 bottom, col 0 lhs */
cnst ORIENTATION_LEFTTOP = 5  /* row 0 lhs, col 0 top */
cnst ORIENTATION_RIGHTTOP = 6  /* row 0 rhs, col 0 top */
cnst ORIENTATION_RIGHTBOT = 7  /* row 0 rhs, col 0 bottom */
cnst ORIENTATION_LEFTBOT = 8  /* row 0 lhs, col 0 bottom */
p=NewPicture(150,100,32)
p.Graphics.ForeColor=rgb(255,0,0)
p.Graphics.FillRect 0,0,10,10
t=new TiffPictureMBS
f=SpecialFolder.Desktop.Child("test.tif")
```
if t.Create(f) then
  t.Pict=p
  t.Orientation=ORIENTATION_TOPRIGHT
if t.WriteRGB then
  end if
  t.Orientation=ORIENTATION_TOPRIGHT
end if

Notes:

Orientation:

The orientation of the image with respect to the rows and columns.
Tag = 274 (112.H)
Type = SHORT
N = 1
1 = The 0th row represents the visual top of the image, and the 0th column represents the visual left-hand side.
2 = The 0th row represents the visual top of the image, and the 0th column represents the visual right-hand side.
3 = The 0th row represents the visual bottom of the image, and the 0th column represents the visual right-hand side.
4 = The 0th row represents the visual bottom of the image, and the 0th column represents the visual left-hand side.
5 = The 0th row represents the visual left-hand side of the image, and the 0th column represents the visual top.
6 = The 0th row represents the visual right-hand side of the image, and the 0th column represents the visual top.
7 = The 0th row represents the visual right-hand side of the image, and the 0th column represents the visual bottom.
8 = The 0th row represents the visual left-hand side of the image, and the 0th column represents the visual bottom.

Default is 1.
Support for orientations other than 1 is not a Baseline TIFF requirement.
(This text was sent in by David Austin)
(Read and Write property)
162.2.107 OutputBuffer as String

MBS Images Plugin, Plugin Version: 5.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The current output data from the CreateString function. **Notes:** Between CreateString and Close the plugin will record all the output data and you can get a copy using this property. (Read only property)

162.2.108 PageName as String

MBS Images Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The name of the current page. **Notes:** The data for this property is stored in the Tiff file. (Read and Write property)

162.2.109 Photometric as Integer

MBS Images Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A property of the TIFF image. **Example:**

```vbnet
// read and write a BW fax tiff with compression

dim d as new OpenDialog()
dim f as FolderItem = GetFolderItem(“myfax.tiff”)if f = nil then return end if

dim tiff as new TiffPictureMBS()if not tiff.Open(f) then MsgBox(“Error while opening.”) return end if

if not tiff.ReadBW() then MsgBox(“Error reading.”) end if

dim tiff2 as TiffPictureMBS = new TiffPictureMBS()```
162.2. CLASS TIFFPICTUREMBS

`dim f2 as FolderItem = SpecialFolder.Desktop.Child("Copy.tiff")
if not tiff2.Create(f2) then
MsgBox("Error creating file.")
end if

const COMPRESSION_CCITTFFAX3=3
const WhiteIsZero=0
const BlackIsZero=1

tiff2.Pict = tiff.pict
tiff2.Photometric=WhiteIsZero
tiff2.Compression=COMPRESSION_CCITTFFAX3
if not tiff2.WriteBW() then
MsgBox("Error writing.") // Error
end if

tiff2.Close()

Notes:

PhotometricInterpretation:
The color space of the image data.
Tag = 262 (106.H)
Type = SHORT
N = 1

0 = WhiteIsZero. For bilevel and grayscale images: 0 is imaged as white. 2**BitsPerSample-1 is imaged as black. This is the normal value for Compression=2.

1 = BlackIsZero. For bilevel and grayscale images: 0 is imaged as black. 2**BitsPerSample-1 is imaged as white. If this value is specified for Compression=2, the image should display and print reversed.

2 = RGB. In the RGB model, a color is described as a combination of the three primary colors of light (red, green, and blue) in particular concentrations. For each of the three components, 0 represents minimum intensity, and 2**BitsPerSample - 1 represents maximum intensity. Thus an RGB value of (0,0,0) represents black, and (255,255,255) represents white, assuming 8-bit components. For PlanarConfiguration = 1, the components are stored in the indicated order: first Red, then Green, then Blue. For PlanarConfiguration = 2, the StripOffsets for the component planes are stored in the indicated order: first the Red component plane StripOffsets, then the Green plane StripOffsets, then the Blue plane StripOffsets.

3= Palette color. In this model, a color is described with a single component. The value of the component is used as an index into the red, green and blue curves in the ColorMap field to retrieve an RGB triplet that defines the color. When PhotometricInterpretation=3 is used, ColorMap must be present and SamplesPerPixel must be 1.
4 = Transparency Mask. This means that the image is used to define an irregularly shaped region of another image in the same TIFF file. SamplesPerPixel and BitsPerSample must be 1. PackBits compression is recommended. The 1-bits define the interior of the region; the 0-bits define the exterior of the region. A reader application can use the mask to determine which parts of the image to display. Main image pixels that correspond to 1-bits in the transparency mask are imaged to the screen or printer, but main image pixels that correspond to 0-bits in the mask are not displayed or printed. The image mask is typically at a higher resolution than the main image, if the main image is grayscale or color so that the edges can be sharp.

There is no default for PhotometricInterpretation, and it is required. Do not rely on applications defaulting to what you want.

(This text was sent in by David Austin)

For more details see:
(Read and Write property)

162.2.110  pict as picture

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The picture data of the picture.
**Notes:** (Read and Write property)

162.2.111  PlanarConfig as Integer

MBS Images Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The storage organization used.
**Notes:**
Value is 1 for a single image plane and 2 for separated planes.

The data for this property is stored in the Tiff file.
(Read and Write property)

162.2.112  RasterScanlineSize as UInt64

**Notes:**
162.2. CLASS TIFFPICTUREMBS

Returns the size in bytes of a complete decoded and packed raster scanline. Note that this value may be different from the value returned by ScanlineSize if data is stored as separate planes.
(Read only property)

162.2.113 ResolutionUnit as Integer

Notes:
constants:

RESUNIT_NONE     1  no meaningful units
RESUNIT_INCH     2  english
RESUNIT_CENTIMETER 3  metric

The data for this property is stored in the Tiff file.
(Read and Write property)

162.2.114 RowsPerStrip as Integer

Notes:
Should be same as the height for our uses. (with one strip)
(Read and Write property)

162.2.115 SampleFormat as Integer

Notes:
Value is 1 for unsigned integer, 2 for signed integer, 3 for IEEE floating point, 4 for untyped data (e.g. JPEG compressed), 5 for complex signed int and 6 for complex IEEE floating point.
(Read and Write property)
162.2.116  **SamplesPerPixel as Integer**

MBS Images Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:** The count of components used for each pixel.

**Notes:**

SamplesPerPixel = 1 = Grayscale, 3 = RGB, 4 = CMYK, ...
Photometric = 0 or 1 = Grayscale depending on white point, 2 = RGB, 5 = CMYK, ...

For other formats see:
(Read and Write property)

162.2.117  **Software as String**

MBS Images Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:** The software name used to make this image.

**Notes:**

The data for this property is stored in the Tiff file.
(Read and Write property)

162.2.118  **StripSize as UInt64**

MBS Images Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:** Returns the equivalent size for a strip of data as it would be returned in a call to ReadEncodedStrip or as it would be expected in a call to WriteEncodedStrip.

**Notes:** (Read only property)

162.2.119  **TileRowSize as UInt64**

MBS Images Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:** Returns the number of bytes of a row of data in a tile.

**Notes:** (Read only property)

162.2.120  **TileSize as UInt64**

MBS Images Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:** Returns the equivalent size for a tile of data as it would be returned in a call to ReadTile or as it would be expected in a call to WriteTile.
162.2. CLASS TIFFPICTUREMBS

Notes: (Read only property)

162.2.121 Version as Integer

MBS Images Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The version of the Tiff library used. **Notes:** Updated to 3.7.1 in plugin version 5.0. (Read only property)

162.2.122 VersionString as String

MBS Images Plugin, Plugin Version: 5.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The version of the Tiff library used. **Example:**

```vbs
dim z as new TiffPictureMBS

MsgBox z.VersionString

// shows for example:
// LIBTIFF, Version 3.9.4
// Copyright (c) 1988-1996 Sam Leffler
// Copyright (c) 1991-1996 Silicon Graphics, Inc.
```

Notes: (Read only property)

162.2.123 VerticalPosition as Single

MBS Images Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The y Offset of this image in the drawing area. **Notes:** The data for this property is stored in the Tiff file. (Read and Write property)
162.2.124 VerticalResolution as Single

MBS Images Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The vertical resolution used.

**Notes:**
Value depends on ResolutionUnit value.

The data for this property is stored in the Tiff file.
(Read and Write property)

162.2.125 width as Integer

MBS Images Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The width of the picture.

**Notes:** (Read and Write property)

162.2.126 YieldTicks as Integer

MBS Images Plugin, Plugin Version: 7.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** How much time is given back to REALbasic for other ticks.

**Example:**

```basic
dim t as new TiffPictureMBS
t.YieldTicks=6 // only use 1/10th of a second
```

**Notes:**
If value is greater than zero, the application will yield to another RB thread after the given number of ticks have passed. 60 ticks are one second. Using a small value can slow down processing a lot while a big value keeps your application not responding to mouse clicks.
If you use this property with e.g. 6 as the value, you may also want to use this method in a thread so you can handle mouse events or let REALbasic redraw a progressbar.
(Read and Write property)

162.2.127 Scanline(index as Integer, sample as Integer = 0) as memoryblock


**Notes:**
162.2. CLASS TIFFPICTUREMBS

Returns nil on any error.
If you set the value, make sure the Memoryblock is big enough. The BytesPerRow functions returns the number of bytes needed.

The data for this property is stored in the Tiff file.
The first scanline has the index of 0.
(Read and Write computed property)
See also:

- 162.2.61 Scanline(mem as Ptr, index as Integer, sample as Integer = 0) as boolean

162.2.128 Scanlines(index as Integer, count as Integer, sample as Integer = 0, lineStepScanlines as Integer = 1, lineStepReturn as Integer = 1) as memoryblock

Notes:
Returns nil on any error.
If you set the value, make sure the Memoryblock is big enough. The BytesPerRow functions returns the number of bytes needed.

The data for this property is stored in the Tiff file.
The first scanline has the index of 0. Count is the number of scanlines you want to read/write.

If lineStepScanlines is >1, we skip scan lines so we read less data.
If lineStepReturn is >1, we return only every nth row.

If rows can be read with skipping, you should try lineStepScanlines = 2 or more for skipping lines.
If that doesn’t work due to tiled data, you can use lineStepReturn = 2 or more.
This skipping is to quicker get preview pictures.
(Read and Write computed property)

162.2.129 Events

162.2.130 Error(libModule as string, message as string)

MBS Images Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: An event called whenever an error is to be reported.
162.2.131  Progress(line as Integer, total as Integer)

**Notes:** Used in CombineBitCMYKtoCMYK, CombineTiffCMYKtoRGB and CombineTiffCMYKtoCMYK methods.

162.2.132  Warning(libModule as string, message as string)

MBS Images Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An event called whenever a warning is to be reported.

162.2.133  Constants

162.2.134  kCompressionAdobeDeflate = 8

MBS Images Plugin, Plugin Version: 13.0. **Function:** One of the compression constants.  
**Notes:** Deflate compression, as recognized by Adobe

162.2.135  kCompressionCCITTFAX3 = 3

MBS Images Plugin, Plugin Version: 13.0. **Function:** One of the compression constants.  
**Notes:** CCITT Group 3 fax encoding

162.2.136  kCompressionCCITTFAX4 = 4

MBS Images Plugin, Plugin Version: 13.0. **Function:** One of the compression constants.  
**Notes:** CCITT Group 4 fax encoding

162.2.137  kCompressionCCITTTRLE = 2

MBS Images Plugin, Plugin Version: 13.0. **Function:** One of the compression constants.  
**Notes:** CCITT modified Huffman RLE
162.2. CLASS TIFFPICTUREMBS

162.2.138 kCompressionCCITTRLEW = 32771

MBS Images Plugin, Plugin Version: 13.0. **Function**: One of the compression constants.

162.2.139 kCompressionCCITT_T4 = 3

MBS Images Plugin, Plugin Version: 13.0. **Function**: One of the compression constants. 
**Notes**: CCITT T.4 (TIFF 6 name)

162.2.140 kCompressionCCITT_T6 = 4

MBS Images Plugin, Plugin Version: 13.0. **Function**: One of the compression constants. 
**Notes**: CCITT T.6 (TIFF 6 name)

162.2.141 kCompressionDCS = 32947

MBS Images Plugin, Plugin Version: 13.0. **Function**: One of the compression constants. 
**Notes**: Kodak DCS encoding

162.2.142 kCompressionDeflate = 32946

MBS Images Plugin, Plugin Version: 13.0. **Function**: One of the compression constants. 
**Notes**: Deflate compression

162.2.143 kCompressionIT8BL = 32898

MBS Images Plugin, Plugin Version: 13.0. **Function**: One of the compression constants. 
**Notes**: IT8 Binary line art

162.2.144 kCompressionIT8CTPAD = 32895

MBS Images Plugin, Plugin Version: 13.0. **Function**: One of the compression constants. 
**Notes**: IT8 CT w/padding
162.2.145  \text{kCompressionIT8LW} = 32896

MBS Images Plugin, Plugin Version: 13.0. \textbf{Function}: One of the compression constants.  
\textbf{Notes}: IT8 Linework RLE

162.2.146  \text{kCompressionIT8MP} = 32897

MBS Images Plugin, Plugin Version: 13.0. \textbf{Function}: One of the compression constants.  
\textbf{Notes}: IT8 Monochrome picture

162.2.147  \text{kCompressionJBIG} = 34661

MBS Images Plugin, Plugin Version: 13.0. \textbf{Function}: One of the compression constants.  
\textbf{Notes}: ISO JBIG

162.2.148  \text{kCompressionJP2000} = 34712

MBS Images Plugin, Plugin Version: 13.0. \textbf{Function}: One of the compression constants.  
\textbf{Notes}: Leadtools JPEG2000

162.2.149  \text{kCompressionJPEG} = 7

MBS Images Plugin, Plugin Version: 13.0. \textbf{Function}: One of the compression constants.  
\textbf{Example}:

```vbscript
dim logo as Picture = LogoMBS(500)
dim pic as new PictureMBS/logo

// save tiff with jpeg compression
dim f as FolderItem = SpecialFolder.Desktop.Child("test.tif")
dim t as TiffPictureMBS

if pic <> nil then
  t = new TiffPictureMBS
  if t.Create(F) then
    t.Height = pic.Height
    t.Width = pic.Width
```
162.2. CLASS TIFFPICTUREMBS

```
t.PlanarConfig = t.kPlanarConfigContig
t.Photometric = t.kPhotometricRGB
t.BitsPerSample = 8
t.SamplesPerPixel = 3
t.FillOrder = t.kFillOrderMSB2LSB
t.Orientation = t.kOrientationTopLeft
t.ResolutionUnit = t.kResUnitInch
t.VerticalResolution = 72.0
t.HorizontalResolution = 72.0
t.Compression = t.kCompressionJPEG
t.RowsPerStrip = 32 // 8 works also, but not 1
t.JPEGQuality = 75
```

// copy lines
for i as Integer = 0 to t.Height - 1
t.Scanline(i) = pic.RowInFormat(i, PictureMBS.ImageFormatRGB)
next

t.Close
end if
end if

Notes: JPEG DCT compression

162.2.150 kCompressionLZMA = 34925

Notes: LZMA2

162.2.151 kCompressionLZW = 5

Notes: Lempel-Ziv & Welch

162.2.152 kCompressionNeXT = 32766

Notes: NeXT 2-bit RLE
162.2.153 kCompressionNone = 1

MBS Images Plugin, Plugin Version: 13.0. **Function:** One of the compression constants.  
**Notes:** No compression.

162.2.154 kCompressionOJPEG = 6

MBS Images Plugin, Plugin Version: 13.0. **Function:** One of the compression constants.  
**Notes:** 6.0 JPEG

162.2.155 kCompressionPackBits = 32773

MBS Images Plugin, Plugin Version: 13.0. **Function:** One of the compression constants.  
**Notes:** Macintosh RLE

162.2.156 kCompressionPixarFilm = 32908

MBS Images Plugin, Plugin Version: 13.0. **Function:** One of the compression constants.  
**Notes:** Pixar companded 10bit LZW

162.2.157 kCompressionPixarLog = 32909

MBS Images Plugin, Plugin Version: 13.0. **Function:** One of the compression constants.  
**Notes:** Pixar companded 11bit ZIP

162.2.158 kCompressionSGILOG = 34676

MBS Images Plugin, Plugin Version: 13.0. **Function:** One of the compression constants.  
**Notes:** SGI Log Luminance RLE

162.2.159 kCompressionSGILOG24 = 34677

MBS Images Plugin, Plugin Version: 13.0. **Function:** One of the compression constants.  
**Notes:** SGI Log 24-bit packed
162.2. CLASS TIFFPICTUREMBS

162.2.160 kCompressionThunderScan = 32809

MBS Images Plugin, Plugin Version: 13.0. **Function:** One of the compression constants.  
**Notes:** ThunderScan RLE

162.2.161 kFillOrderLSB2MSB = 2

MBS Images Plugin, Plugin Version: 13.0. **Function:** One of the fill order constants.  
**Notes:** Least significant ->most

162.2.162 kFillOrderMSB2LSB = 1

MBS Images Plugin, Plugin Version: 13.0. **Function:** One of the fill order constants.  
**Notes:** Most significant ->least

162.2.163 kOrientationBottomLeft = 4

MBS Images Plugin, Plugin Version: 13.0. **Function:** One of the orientation constants.  
**Notes:** row 0 bottom, col 0 lhs

162.2.164 kOrientationBottomRight = 3

MBS Images Plugin, Plugin Version: 13.0. **Function:** One of the orientation constants.  
**Notes:** row 0 bottom, col 0 rhs

162.2.165 kOrientationLeftBottom = 8

MBS Images Plugin, Plugin Version: 13.0. **Function:** One of the orientation constants.  
**Notes:** row 0 lhs, col 0 bottom

162.2.166 kOrientationLeftTop = 5

MBS Images Plugin, Plugin Version: 13.0. **Function:** One of the orientation constants.  
**Notes:** row 0 lhs, col 0 top
162.2.167  kOrientationRightBottom = 7

MBS Images Plugin, Plugin Version: 13.0. **Function:** One of the orientation constants.
**Notes:** row 0 rhs, col 0 bottom

162.2.168  kOrientationRightTop = 6

MBS Images Plugin, Plugin Version: 13.0. **Function:** One of the orientation constants.
**Notes:** row 0 rhs, col 0 top

162.2.169  kOrientationTopLeft = 1

MBS Images Plugin, Plugin Version: 13.0. **Function:** One of the orientation constants.
**Notes:** row 0 top, col 0 lhs

162.2.170  kOrientationTopRight = 2

MBS Images Plugin, Plugin Version: 13.0. **Function:** One of the orientation constants.
**Notes:** row 0 top, col 0 rhs

162.2.171  kPhotometricCIELab = 8

MBS Images Plugin, Plugin Version: 13.0. **Function:** One of the Photometric Constants.
**Notes:** !1976 CIE L*a*b*

162.2.172  kPhotometricICCLab = 9

MBS Images Plugin, Plugin Version: 13.0. **Function:** One of the Photometric Constants.
**Notes:** ICC L*a*b* [ Adobe TIFF Technote 4 ]

162.2.173  kPhotometricITULab = 10

MBS Images Plugin, Plugin Version: 13.0. **Function:** One of the Photometric Constants.
**Notes:** ITU L*a*b*
162.2.174  \texttt{kPhotometricLogL} = 32844

MBS Images Plugin, Plugin Version: 13.0. \textbf{Function}: One of the Photometric Constants. \textbf{Notes}: CIE Log2(L)

162.2.175  \texttt{kPhotometricLogLUV} = 32845

MBS Images Plugin, Plugin Version: 13.0. \textbf{Function}: One of the Photometric Constants. \textbf{Notes}: CIE Log2(L) (u',v')

162.2.176  \texttt{kPhotometricMask} = 4

MBS Images Plugin, Plugin Version: 13.0. \textbf{Function}: One of the Photometric Constants. \textbf{Notes}: $^*$ holdout mask

162.2.177  \texttt{kPhotometricMinIsBlack} = 1

MBS Images Plugin, Plugin Version: 13.0. \textbf{Function}: One of the Photometric Constants. \textbf{Notes}: Min value is black.

162.2.178  \texttt{kPhotometricMinIsWhite} = 0

MBS Images Plugin, Plugin Version: 13.0. \textbf{Function}: One of the Photometric Constants. \textbf{Notes}: Min value is white.

162.2.179  \texttt{kPhotometricPalette} = 3

MBS Images Plugin, Plugin Version: 13.0. \textbf{Function}: One of the Photometric Constants. \textbf{Notes}: color map indexed

162.2.180  \texttt{kPhotometricRGB} = 2

MBS Images Plugin, Plugin Version: 13.0. \textbf{Function}: One of the Photometric Constants. \textbf{Notes}: RGB color model
162.2.181  \( k_{\text{PhotometricSeparated}} = 5 \)

MBS Images Plugin, Plugin Version: 13.0. **Function:** One of the Photometric Constants.
**Notes:** color separations

162.2.182  \( k_{\text{PhotometricYCBCR}} = 6 \)

MBS Images Plugin, Plugin Version: 13.0. **Function:** One of the Photometric Constants.
**Notes:** CCIR 601

162.2.183  \( k_{\text{PlanarConfigContig}} = 1 \)

MBS Images Plugin, Plugin Version: 13.0. **Function:** One of the planar config constants.
**Notes:** Single image plane.

162.2.184  \( k_{\text{PlanarConfigSeparate}} = 2 \)

MBS Images Plugin, Plugin Version: 13.0. **Function:** One of the planar config constants.
**Notes:** Separate planes of data.

162.2.185  \( k_{\text{PredictorFloatingPoint}} = 3 \)

MBS Images Plugin, Plugin Version: 15.1. **Function:** One of the possible predictor settings.
**Notes:** Floating point predictor

162.2.186  \( k_{\text{PredictorHorizontal}} = 2 \)

MBS Images Plugin, Plugin Version: 15.1. **Function:** One of the possible predictor settings.
**Notes:** Horizontal differencing

162.2.187  \( k_{\text{PredictorNone}} = 1 \)

MBS Images Plugin, Plugin Version: 15.1. **Function:** One of the possible predictor settings.
**Notes:** no prediction scheme used
162.2. CLASS TIFFPICTUREMBS

162.2.188  kResUnitCentimeter = 3

MBS Images Plugin, Plugin Version: 13.0. **Function:** One of the Resolution Unit constants.  
**Notes:** Metric

162.2.189  kResUnitInch = 2

MBS Images Plugin, Plugin Version: 13.0. **Function:** One of the Resolution Unit constants.  
**Notes:** English

162.2.190  kResUnitNone = 1

MBS Images Plugin, Plugin Version: 13.0. **Function:** One of the Resolution Unit constants.  
**Notes:** no meaningful units
Chapter 163

TimeZone

163.1 class TimeZoneMBS

163.1.1 class TimeZoneMBS

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Allows you to access information about the current time zone.

**Example:**

```vbnet
dim t as new TimeZoneMBS
MsgBox str(t.GmtDeltaTotalseconds)
```

**Notes:** on Mac OS Cocoa applications, better use newer NSTimezoneMBS class.

163.1.2 Properties

163.1.3 DaylightName as String


**Example:**

```vbnet
dim t as new TimeZoneMBS
MsgBox t.DaylightName
```

**Notes:**

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For example, "PDT" could indicate Pacific Daylight Time. This string can be empty. e.g. "Mitteleuropische Sommerzeit"
On Mac, please use NSTimeZoneMBS class.
(Read only property)

163.1.4 GmtDeltaHours as Integer

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns the GMT offset in hours.
**Example:**
```vbnet
dim t as TimeZoneMBS

t=new TimeZoneMBS

msgbox format(t.GmtDeltaHours,"+00")+ ":" +format(t.GmtDeltaminutes,"00")+ ":" +format(t.GmtDeltaseconds,"00")
```

**Notes:**
On Windows this information is not available.
(Read only property)

163.1.5 GmtDeltaMinutes as Integer

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns the GMT offset in minutes.
**Example:**
```vbnet
dim t as TimeZoneMBS

t=new TimeZoneMBS

msgbox format(t.GmtDeltaHours,"+00")+ ":" +format(t.GmtDeltaminutes,"00")+ ":" +format(t.GmtDeltaseconds,"00")
```

**Notes:**
On Windows this information is not available.
(Read only property)
163.1. **CLASS TIMEZONEMBS**

### 163.1.6 GmtDeltaSeconds as Integer

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns the GMT offset in seconds.

**Example:**

```vbnet
dim t as TimeZoneMBS
t=new TimeZoneMBS

msgbox format(t.GmtDeltaHours,"+00")+":"+format(t.GmtDeltaMinutes,"00")+":"+format(t.GmtDeltaSeconds,"00")
```

**Notes:** (Read only property)

### 163.1.7 GmtDeltaTotalSeconds as Integer

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Returns the GMT offset in seconds.

**Example:**

```vbnet
dim t as new TimeZoneMBS

MsgBox str(t.GmtDeltaTotalSeconds)
```

**Notes:** (Read only property)

### 163.1.8 Latitude as Double

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the latitude of the current position on earth.

**Example:**

```vbnet
dim longdeg,longmin as Integer
dim t as TimeZoneMBS
t=new TimeZoneMBS

longdeg=floor(t.longitude*90)
longmin=floor((t.longitude*90-longdeg)*60)
statictext1.text=format(longdeg,"0")+""
```
163.1.9 Longitude as Double

MBS Util Plugin, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the longitude of the current position on earth.

**Example:**

```vbscript
dim latdeg, latmin as Integer
dim t as TimeZoneMBS
t = new TimeZoneMBS
latdeg = floor(t.latitude * 90)
latmin = floor((t.latitude * 90 - latdeg) * 60)
```

**Notes:**

On Windows this information is not available.
(Read only property)

163.1.10 StandardName as String


**Example:**

```vbscript
dim t as new TimeZoneMBS
MsgBox t.StandardName
```

**Notes:**

For example, "EST" could indicate Eastern Standard Time. This string can be empty.
163.1. CLASS TIMEZONEMBS

e.g. "Mitteleuropische Zeit"
On Mac, please use NSTimeZoneMBS class.
(Read only property)
Chapter 164

TouchBar

164.1 class LAContextMBS

164.1.1 class LAContextMBS

MBS Mac64bit Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The class for local authentication via password or TouchID.

164.1.2 Methods

164.1.3 Available as Boolean

MBS Mac64bit Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Whether the class is available.
Notes: Returns true on OS X 10.10 and newer in 64-bit application.

164.1.4 canEvaluatePolicy(Policy as Integer, byref Error as NSErrorMBS) as Boolean

MBS Mac64bit Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Determines if a particular policy can be evaluated.
Example:

```plaintext
try
dim e as NSErrorMBS

if lc.canEvaluatePolicy(lc.PolicyDeviceOwnerAuthenticationWithBiometrics, e) then
```

19541
List.AddItem "Can authenticate with biometrics."
else
List.AddItem "Can’t authenticate with biometrics."
end if
if e <> nil then
List.AddItem "Error: " + e.localizedDescription
end if

catch ex as NSError
List.AddItem "Exception: " + ex.localizedDescription
end try

Notes:

Policies can have certain requirements which, when not satisfied, would always cause the policy evaluation to fail. Examples can be a passcode set or a fingerprint enrolled with Touch ID. This method allows easy checking for such conditions.

Applications should consume the returned value immediately and avoid relying on it for an extensive period of time. At least, it is guaranteed to stay valid until the application enters background.

policy: Policy for which the preflight check should be run.

error: contains error information if policy evaluation is not possible.

Returns true if the policy can be evaluated, false otherwise.

164.1.5 Constructor


164.1.6 evaluatePolicy(Policy as Integer, localizedReason as String, Tag as Variant = nil)


Example:
dim lc as LAContextMBS // your context

try

lc.evaluatePolicy(lc.PolicyDeviceOwnerAuthenticationWithBiometrics, "We need to test.")

catch ex as NSExceptionMBS

List.AddRow "Exception: " + ex.Message

end try

Notes:

Policy evaluation may involve prompting user for various kinds of interaction or authentication. Actual behavior is dependent on evaluated policy, device type, and can be affected by installed configuration profiles.

Be sure to keep a strong reference to the context while the evaluation is in progress. Otherwise, an evaluation would be canceled when the context is being deallocated.

The method does not block. Instead the event is called asynchronously when evaluation finishes.

Implications of successful policy evaluation are policy specific. In general, this operation is not idempotent. Policy evaluation may fail for various reasons, including user cancel, system cancel and others, see error codes.

policy: Policy to be evaluated.
localizedReason: Application reason for authentication. This string must be provided in correct localization and should be short and clear. It will be eventually displayed in the authentication dialog subtitle. A name of the calling application will be already displayed in title, so it should not be duplicated here.

164.1.7 invalidate

MBS Mac64bit Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Invalidates the context.
Notes:

The context is invalidated automatically when it is (auto)released. This method allows invalidating it manually while it is still in scope.

Invalidation terminates any existing policy evaluation and the respective call will fail with LAErrorAppCancel. After the context has been invalidated, it can not be used for policy evaluation and an attempt to do
so will fail with LAErrorInvalidContext.

Invalidating a context that has been already invalidated has no effect.

164.1.8 Properties

164.1.9 evaluatedPolicyDomainState as MemoryBlock

MBS Mac64bit Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Contains policy domain state.
Notes:
This property is set only when evaluatePolicy is called and successful Touch ID authentication was performed, or when canEvaluatePolicy succeeds for a biometric policy. It stays nil for all other cases. If finger database was modified (fingers were removed or added), evaluatedPolicyDomainState data will change. Nature of such database changes cannot be determined but comparing data of evaluatedPolicyDomainState after different evaluatePolicy will reveal the fact database was changed between calls.
(Read only property)

164.1.10 Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: The internal object handle.
Notes: (Read and Write property)

164.1.11 localizedFallbackTitle as String

MBS Mac64bit Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.
Function: Fallback button title.
Example:

dim lc as new MyLAContextMBS
lc.localizedFallbackTitle = "Just a test"

Notes:
Allows fallback button title customization. A default title "Enter Password" is used when this property is left nil. If set to empty string, the button will be hidden.
(Read and Write property)
164.1.12 touchIDAuthenticationAllowableReuseDuration as Double

MBS Mac64bit Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. 
**Function:** Time interval for accepting a successful Touch ID unlock from the past. 
**Notes:**
This property can be set with a time interval in seconds. If the device was successfully unlocked by Touch ID within this time interval, then Touch ID authentication on this context will succeed automatically and the reply block will be called without prompting user for Touch ID.

The default value is 0, meaning that no previous TouchID authentication can be reused.

The maximum supported interval is 5 minutes and setting the value beyond 5 minutes does not increase the accepted interval.
(Read and Write property)

164.1.13 Events

164.1.14 evaluatePolicyResult(Success as Boolean, error as NSErrorMBS, Policy as Integer, localizedReason as String, tag as Variant)

MBS Mac64bit Plugin, Plugin Version: 17.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. 
**Function:** The event called for the result of evaluatePolicy method. 
**Notes:**
success: Reply parameter that is true if the policy has been evaluated successfully or false if the evaluation failed.

error: Reply parameter that is nil if the policy has been evaluated successfully, or it contains error information about the evaluation failure.

Typical error codes returned by this call are: 
ErrorUserFallback if user tapped the fallback button 
ErrorUserCancel if user has tapped the Cancel button 
ErrorSystemCancel if some system event interrupted the evaluation (e.g. Home button pressed).
164.1.15 Constants

164.1.16 CredentialTypeApplicationPassword = 0

MBS Mac64bit Plugin, Plugin Version: 17.0. Function: The credential type for an application password.

164.1.17 kErrorAppCancel = -9

MBS Mac64bit Plugin, Plugin Version: 17.0. Function: One of the error codes. Notes: Authentication was canceled by application (e.g. invalidate was called while authentication was in progress).

164.1.18 kErrorAuthenticationFailed = -1

MBS Mac64bit Plugin, Plugin Version: 17.0. Function: One of the error codes. Notes: Authentication was not successful, because user failed to provide valid credentials.

164.1.19 kErrorInvalidContext = -10

MBS Mac64bit Plugin, Plugin Version: 17.0. Function: One of the error codes. Notes: LAContext passed to this call has been previously invalidated.

164.1.20 kErrorPasscodeNotSet = -5

MBS Mac64bit Plugin, Plugin Version: 17.0. Function: One of the error codes. Notes: Authentication could not start, because passcode is not set on the device.

164.1.21 kErrorSystemCancel = -4

MBS Mac64bit Plugin, Plugin Version: 17.0. Function: One of the error codes. Notes: Authentication was canceled by system (e.g. another application went to foreground).
164.1. CLASS LACONTEXTMBS

164.1.22  kErrorTouchIDLockout = -8

MBS Mac64bit Plugin, Plugin Version: 17.0. **Function:** One of the error codes.  
**Notes:** Authentication was not successful, because there were too many failed Touch ID attempts and Touch ID is now locked. Passcode is required to unlock Touch ID, e.g. evaluating PolicyDeviceOwnerAuthenticationWithBiometrics will ask for passcode as a prerequisite.

164.1.23  kErrorTouchIDNotAvailable = -6

MBS Mac64bit Plugin, Plugin Version: 17.0. **Function:** One of the error codes.  
**Notes:** Authentication could not start, because Touch ID is not available on the device.

164.1.24  kErrorTouchIDNotEnrolled = -7

MBS Mac64bit Plugin, Plugin Version: 17.0. **Function:** One of the error codes.  
**Notes:** Authentication could not start, because Touch ID has no enrolled fingers.

164.1.25  kErrorUserCancel = -2

MBS Mac64bit Plugin, Plugin Version: 17.0. **Function:** One of the error codes.  
**Notes:** Authentication was canceled by user (e.g. tapped Cancel button).

164.1.26  kErrorUserFallback = -3

MBS Mac64bit Plugin, Plugin Version: 17.0. **Function:** One of the error codes.  
**Notes:** Authentication was canceled, because the user tapped the fallback button (Enter Password).

164.1.27  kLAErrorDomain = ”com.apple.LocalAuthentication”

MBS Mac64bit Plugin, Plugin Version: 17.0. **Function:** The error domain for Local Authentication.

164.1.28  PolicyDeviceOwnerAuthentication = 2

MBS Mac64bit Plugin, Plugin Version: 17.0. **Function:** The policy for owner authentication.
164.1.29 PolicyDeviceOwnerAuthenticationWithBiometrics = 1

MBS Mac64bit Plugin, Plugin Version: 17.0. **Function:** The policy for owner authentication with biometrics.
164.2. CLASS NSCOLORPICKERTOUCHBARITEMMBS

164.2 class NSColorPickerTouchBarItemMBS

164.2.1 class NSColorPickerTouchBarItemMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for a TouchBar item showing a color picker. **Notes:** Subclass of the NSTouchBarItemMBS class.

164.2.2 Methods

164.2.3 colorPicker(identifier as string) as NSColorPickerTouchBarItemMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a bar item containing a button with the standard color picker icon that invokes the color picker. **Example:**

```dim t as NSColorPickerTouchBarItemMBS = NSColorPickerTouchBarItemMBS.colorPicker("test")
t.customizationLabel = "Drawing Color"
```

**Notes:** You may want to use AddHandler method to add an event handler to this object. See also:

- 164.2.4 colorPicker(identifier as string, buttonImage as NSImageMBS) as NSColorPickerTouchBarItemMBS

164.2.4 colorPicker(identifier as string, buttonImage as NSImageMBS) as NSColorPickerTouchBarItemMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a bar item containing a button with the provided image that invokes the color picker. **Notes:** You may want to use AddHandler method to add an event handler to this object. See also:

- 164.2.3 colorPicker(identifier as string) as NSColorPickerTouchBarItemMBS

164.2.5 Constructor(identifier as string)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The designated initializer. **Example:**
dim t as new NSColorPickerTouchBarItemMBS("test")
t.customizationLabel = "Drawing Color"

Notes: This instantiates a new touch bar item with the specified initializer.

164.2.6  strokeLinePicker(identifier as string) as NSColorPickerTouchBarItemMBS

Function: Creates a bar item containing a button with the standard stroke color picker icon that invokes
the color picker.
Notes:
You may want to use AddHandler method to add an event handler to this object.
Should be used when the item is used for picking stroke colors.

164.2.7  textColorPicker(identifier as string) as NSColorPickerTouchBarItemMBS

Function: Creates a bar item containing a button with the standard text color picker icon that invokes the
color picker.
Notes:
You may want to use AddHandler method to add an event handler to this object.
Should be used when the item is used for picking text colors.

164.2.8  Properties

164.2.9  color as NSColorMBS

Function: The selected color of the picker.
Notes: (Read and Write property)

164.2.10  colorList as NSColorListMBS

Function: The color list displayed in the list color picker.
Notes:
Defaults to the standard system color list. Setting a custom color list will disable the additional tints/shades that appear on long-press.
(Read and Write property)

### 164.2.11 customizationLabel as String

**Function:** The localized string labelling this item during user customization.
**Example:**
```
dim t as new NSColorPickerTouchBarItemMBS("test")
t.customizationLabel = "Drawing Color"
```

**Notes:**
The default value is empty string.
(Read and Write property)

### 164.2.12 enabled as Boolean

**Function:** Enables or disabled the color picker.
**Notes:**
If it is currently being shown in a popover, it will be dismissed.
(Read and Write property)

### 164.2.13 showsAlpha as Boolean

**Function:** Whether or not the picker should allow picking a color with non-1.0 alpha.
**Notes:**
Defaults to "not NSColor.ignoresAlpha".
(Read and Write property)
164.2.14 Events

164.2.15 Action

164.3 class NSCustomTouchBarItemMBS

164.3.1 class NSCustomTouchBarItemMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The class for a TouchBar item showing a custom view.
Notes: Subclass of the NSTouchBarItemMBS class.

164.3.2 Methods

164.3.3 Constructor(identifier as string)

Example:

```
dim t as new NSCustomTouchBarItemMBS("test")
t.customizationLabel = "My Test"
```

Notes: This instantiates a new touch bar item with the specified initializer.

164.3.4 Properties

164.3.5 customizationLabel as String

Example:

```
dim t as new NSCustomTouchBarItemMBS("test")
t.customizationLabel = "Drawing Color"
```

Notes:
The default value is empty string.
(Read and Write property)
164.3.6 view as NSViewMBS

Function: A view to be displayed in the touch bar in the location corresponding to this item.
Notes: By default, the getter for this property will return this item’s view controller’s view. If this property is set explicitly, the view controller will be set to nil.
(Read and Write property)

164.3.7 viewController as NSViewControllerMBS

Function: A view controller whose view is to be displayed in the touch bar in the location corresponding to this item.
Notes: By default, this property is nil.
When set, this item’s view property will automatically return the view associated with this view controller.
(Read and Write property)
164.4  class NSGroupTouchBarItemMBS

164.4.1  class NSGroupTouchBarItemMBS

**Function:**  The class for a TouchBar item showing a group.  
**Notes:**  Subclass of the NSTouchBarItemMBS class.

164.4.2  Methods

164.4.3  Constructor(identifier as string)

**Function:**  The designated initializer.  
**Example:**

```vbnet
dim t as new NSGroupTouchBarItemMBS("test")
t.customizationLabel = "My Group"
```

**Notes:**  This instantiates a new touch bar item with the specified initializer.

164.4.4  groupItemWithIdentifier(identifier as string, items() as NSTouchBarItemMBS) as NSGroupTouchBarItemMBS

**Function:**  Returns an autoreleased NSGroupTouchBarItem with a groupTouchBar built from the given items array.  
**Example:**

```vbnet
dim t as NSGroupTouchBarItemMBS = NSGroupTouchBarItemMBS.groupItemWithIdentifier("test")
t.customizationLabel = "My Group"
```

**Notes:**  Customization is not enabled by default when creating a NSGroupTouchBarItem this way.
164.4.5 Properties

164.4.6 `customizationLabel` as String

**Function:** The localized string labelling this item during user customization.
**Notes:**
The default value is empty string.
(Read and Write property)

164.4.7 `groupTouchBar` as NSViewControllerMBS

**Function:** A touch bar, presented seamlessly as part of the touch bar this item is hosted in.
**Notes:**
This touch bar may have its own principal item, and can be customized (or not) per the normal touch bar customization rules.
By default this is an empty touch bar that cannot be customized.
(Read and Write property)
164.5. **CLASS NSPOPOVERTOUCHBARITEMMBS**

164.5  **class NSPopoverTouchBarItemMBS**

164.5.1  **class NSPopoverTouchBarItemMBS**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for a TouchBar item showing a popover.  
**Notes:** Subclass of the NSTouchBarItemMBS class.

164.5.2  **Methods**

164.5.3  **Constructor(identifier as string)**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The designated initializer.  
**Notes:** This instantiates a new touch bar item with the specified initializer.

164.5.4  **dismissPopover**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** This method will restore the previously visible main touch bar.  
**Notes:** This method can be invoked explicitly to order out a popover if interacting with an item inside it should close it.

164.5.5  **showPopover**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Replaces the main touch bar with this item’s popover touch bar.  
**Notes:** If this item is not visible, this method will have no effect. If this item ceases to be visible, the popover touch bar will automatically be ordered out.

164.5.6  **Properties**

164.5.7  **collapsedRepresentation as NSViewMBS**

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The view displayed when the item is in its hosted touch bar.  
**Notes:**
By default, this is an NSButton whose target is this popover item, whose action is showPopover, and whose image and title are bound to this item’s collapsedRepresentationImage and collapsedRepresentationLabel respectively.
(Read and Write property)

### 164.5.8 collapsedRepresentationImage as NSImageMBS

**Function:** The image displayed by the button used by default for the default collapsed representation.
**Notes:**
If the collapsedRepresentation button has been replaced by a different view, this property may not have any effect.
(Read and Write property)

### 164.5.9 collapsedRepresentationLabel as String

**Function:** The localized string displayed by the button used by default for the default collapsed representation.
**Notes:**
If the collapsedRepresentation button has been replaced by a different view, this property may not have any effect. This property is archived.
(Read and Write property)

### 164.5.10 customizationLabel as String

**Function:** The localized string labelling this item during user customization.
**Notes:**
The default value is empty string.
(Read and Write property)

### 164.5.11 popoverTouchBar as NSTouchBarMBS

**Function:** The touch bar displayed when this item is "popped."
**Notes:**
By default this is an empty touch bar that cannot be customized. This property is archived.
164.5. **pressAndHoldTouchBar** as NSTouchBarMBS


**Function:** A touchbar to be used exclusively for press-and-hold popovers.

**Notes:**
This touch bar can be the same as the one used for ”popoverTouchBar” property, but does not have to be. When non-nil this touch bar will be displayed while the user holds their finger down on the collapsed representation and released when the user raises their finger. This tracking behavior is automatic, but popovers with custom collapsed representations will still need to send showPopover to start tracking.

(Read and Write property)

164.5.13 **showsCloseButton** as Boolean


**Function:** When true, automatically displays a close button in the popover.

**Notes:**
When false it is the responsibility of the client to dismiss the popover.

(Read and Write property)
164.6 class NSSliderTouchBarItemMBS

164.6.1 class NSSliderTouchBarItemMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class for a TouchBar item showing a slider.
**Notes:** Subclass of the NSTouchBarItemMBS class.

164.6.2 Methods

164.6.3 Constructor(identifier as string)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The designated initializer.
**Example:**
```
Dim t As NSSliderTouchBarItemMBS = New NSSliderTouchBarItemMBS("test")
t.customizationLabel = "My Slider"
```

**Notes:** This instantiates a new touch bar item with the specified initializer.

164.6.4 Properties

164.6.5 customizationLabel as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The localized string labelling this item during user customization.
**Notes:**
The default value is empty string.
(Read and Write property)

164.6.6 label as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The text label displayed along with the slider.
**Example:**
```
Dim t As NSSliderTouchBarItemMBS = New NSSliderTouchBarItemMBS("test")
t.label = "Pen Size"
```
Notes:
If set to nil, the label will not have space reserved in the item.
(Read and Write property)

164.6.7 maxValue as Double

Function: The maximum value of the slider.
Example:

```javascript
  dim t as NSSliderTouchBarItemMBS = new NSSliderTouchBarItemMBS("test")
  t.minValue = 0.0
  t.maxValue = 1.0
  t.value = 0.5
```

Notes: (Read and Write property)

164.6.8 minValue as Double

Function: The minimum value of the slider.
Example:

```javascript
  dim t as NSSliderTouchBarItemMBS = new NSSliderTouchBarItemMBS("test")
  t.minValue = 0.0
  t.maxValue = 1.0
  t.value = 0.5
```

Notes: (Read and Write property)

164.6.9 slider as NSSliderMBS

Function: The slider displayed by the bar item.
Example:
```
dim t as NSSliderTouchBarItemMBS = new NSSliderTouchBarItemMBS("test")
t.minValue = 0.0
t.maxValue = 1.0
t.value = 0.5
```

Notes:

It is automatically created, but can be set to a custom subclass.
Value, minValue, maxValue, etc can all be read and set through the slider.
(Read and Write property)

164.6.10 value as Double

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The current value of the slider.
**Notes:** (Read and Write property)

164.6.11 Events

164.6.12 Action

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The slider changed.
164.7  class NSTouchBarItemMBS

164.7.1  class NSTouchBarItemMBS

Function: The class for a touch bar item.

164.7.2  Methods

164.7.3  Available as Boolean

Function: Whether this class is available.
Example:
if NSTouchBarItemMBS.Available then
    MsgBox "This Mac may have a TouchBar or not."
else
    MsgBox "This Mac is too old for a TouchBar."
end if

Notes: Returns true on macOS 10.12.1 and newer, if the version with TouchBar support is installed.

164.7.4  Constructor(identifier as string)

Function: The designated initializer.
Notes: This instantiates a new touch bar item with the specified initializer.

164.7.5  NSTouchBarItemIdentifierFixedSpaceLarge as String

Function: The identifier of an item appropriate for use as a large space in the touch bar.
Example:
// create flexible space item
dim t as new NSTouchBarItemMBS(NSTouchBarItemMBS.NSTouchBarItemIdentifierFixedSpaceLarge)
Notes: Generally, you can use this identifier in a touch bar’s itemIdentifiers array, and it will instantiate that space for you.

164.7.6 NSTouchBarItemIdentifierFixedSpaceSmall as String

Function: The identifier of an item appropriate for use as a small space in the touch bar.
Example:

// create fixed space item
dim t as new NSTouchBarItemMBS(NSTouchBarItemMBS.NSTouchBarItemIdentifierFixedSpaceSmall)

Notes: Generally, you can use this identifier in a touch bar’s itemIdentifiers array, and it will instantiate that space for you.

164.7.7 NSTouchBarItemIdentifierFlexibleSpace as String

Function: The identifier of an item appropriate for use as a flexible space in the touch bar.
Example:

// create flexible space item
dim t as new NSTouchBarItemMBS(NSTouchBarItemMBS.NSTouchBarItemIdentifierFlexibleSpace)

Notes: Generally, you can use this identifier in a touch bar’s itemIdentifiers array, and it will instantiate that space for you.

164.7.8 NSTouchBarItemIdentifierOtherItemsProxy as String

Function: The identifier of the special "other items proxy."
Example:

// create proxy item
dim t as new NSTouchBarItemMBS(NSTouchBarItemMBS.NSTouchBarItemIdentifierOtherItemsProxy)

Notes:
Generally, you can use this identifier in a touch bar’s itemIdentifiers array, and a special proxy item will be instantiated for you. When the touch bar containing this item is visible, touch bars provided by items closer to the first responder will be nested inside the space denoted for this item. Space items on either side of this item will be automatically massaged to handle cases where the touch bar containing this identifier is itself the bar closest to the first responder (or closer bars are empty.) Note that a touch bar lacking this item identifier will be replaced in its entirety by touch bars closer to the first responder.

164.7.9 Properties

164.7.10 customizationLabel as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The localized string labelling this item during user customization. Notes: The default value is empty string. (Read only property)

164.7.11 Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The internal object reference. Notes: (Read and Write property)

164.7.12 identifier as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The identifier of this item. Notes: Apart from spaces, item identifiers should be globally unique. (Read only property)

164.7.13 view as NSViewMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Intended for subclassing. Notes:
By default, this method returns this item’s view controller’s view. (Read only property)

164.7.14 viewController as NSViewControllerMBS

Function: Intended for subclassing.
Notes:
By default, this method returns nil. (Read only property)

164.7.15 visibilityPriority as Single

Function: If there are more items in the touch bar than can be displayed, some will be hidden.
Example:
```
dim t as NSSliderTouchBarItemMBS = new NSSliderTouchBarItemMBS("test")
t.visibilityPriority = t.PriorityLow
```
Notes:
Items with high visibility priority will be hidden after items with low visibility priority. (Read and Write property)

164.7.16 visible as Boolean

Function: When true, this item is attached to a visible touch bar, and is being displayed.
Notes:
Note that some types of items are never considered visible, for example spaces, other items proxys, and groups.
This property is key value observable. (Read only property)
164.7.17 Events

164.7.18 Hidden

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event called when the item is hidden.

164.7.19 Shown

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event called when the item is shown.

164.7.20 Constants

164.7.21 PriorityHigh = 1000

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the values for visibilityPriority property. **Notes:** Items with high visibility priority will be hidden after items with low visibility priority.

164.7.22 PriorityLow = -1000

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the values for visibilityPriority property. **Notes:** Items with high visibility priority will be hidden after items with low visibility priority.

164.7.23 PriorityNormal = 0

MBS Mac64bit Plugin, Plugin Version: 16.5. **Function:** One of the values for visibilityPriority property. **Notes:** Items with high visibility priority will be hidden after items with low visibility priority.
164.8  class NSTouchBarMBS

164.8.1  class NSTouchBarMBS


164.8.2  Methods

164.8.3  AssignToApp

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Assigns the TouchBar to be the main TouchBar for the whole app.

164.8.4  AssignToWindow(window as NSWindowMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Assigns the TouchBar to be the given window. **Notes**: The TouchBar on MacBook Pro will show this entries, if the given window is the front window. See also:

• 164.8.5 AssignToWindow(window as window)

164.8.5  AssignToWindow(window as window)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function**: Assigns the TouchBar to be the given window. **Notes**: The TouchBar on MacBook Pro will show this entries, if the given window is the front window. See also:

• 164.8.4 AssignToWindow(window as NSWindowMBS)

164.8.6  Available as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function**: Whether this class is available. **Example**:

```javascript
if NSTouchBarMBS.Available then
    MsgBox "This Mac may have a TouchBar or not."
else
```
164.8. CLASS NSTOUCHBARMBS

MsgBox "This Mac is too old for a TouchBar."
end if

Notes: Returns true on macOS 10.12.1 and newer, if the version with TouchBar support is installed.

164.8.7 Constructor


164.8.8 customizationAllowedItemIdentifiers as String()

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The items that are presented in the customization palette for the user to add to the touch bar. Notes: These items will be presented to the user in the order specified in this array.

164.8.9 customizationRequiredItemIdentifiers as String()

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Some items are too important to be removed. Notes: The corresponding item identifiers should be listed here. During customization the user will be prevented from removing these items from the touch bar.

164.8.10 defaultItemIdentifiers as String()

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: An array of identifiers specifying the items in this touch bar. Notes: When constructing the instantiated items array, the identifiers in this array will be fed through the item-ForIdentifier method. Item identifiers should be globally unique, excepting NSTouchBarItemIdentifierFixedSpaceSmall, NSTouchBarItemIdentifierFixedSpaceLarge, NSTouchBarItemIdentifierFlexibleSpace, and NSTouchBarItemIdentifierOtherItemsProxy.

This array also corresponds to the item ordering for the receiver in the default set in the customization palette.
164.8.11 itemForIdentifier(identifier as string) as NSTouchBarItemMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns an instantiated NSTouchBarItem for the given identifier. **Notes:** Items are resolved from the following locations, in order:

- items already in the instantiated items array
- items in the defaultTouchBarItems set
- items returned from the delegate’s -touchBar:makeItemForIdentifier: method
- some special identifiers are handled automatically

NSTouchBarItemIdentifierFixedSpaceSmall -> NSTouchBar will automatically create a standard small space
NSTouchBarItemIdentifierFixedSpaceLarge -> NSTouchBar will automatically create a standard large space
NSTouchBarItemIdentifierFlexibleSpace -> NSTouchBar will automatically create a standard flexible space
NSTouchBarItemIdentifierOtherItemsProxy -> NSTouchBar will automatically create a special item that acts as a proxy for the items of touch bars closer to the first responder.

164.8.12 itemIdentifiers as String()

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The resolved array of item identifiers. If the bar has not been customized this will match the defaultItemIdentifiers.

164.8.13 RemoveTouchBarFromApp

MBS Mac64bit Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes TouchBar for app.

164.8.14 RemoveTouchBarFromWindow(window as NSWindowMBS)

MBS Mac64bit Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Removes TouchBar for window. **See also:**

- 164.8.15 RemoveTouchBarFromWindow(window as window)
164.8. CLASS NSTOUCHBARMBS

164.8.15 RemoveTouchBarFromWindow(window as window)

MBS Mac64bit Plugin, Plugin Version: 17.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Removes TouchBar for window.

See also:

- 164.8.14 RemoveTouchBarFromWindow(window as NSWindowMBS)

164.8.16 setCustomizationAllowedItemIdentifiers(Identifiers() as String)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the items that are presented in the customization palette for the user to add to the touch bar.

**Notes:** These items will be presented to the user in the order specified in this array.

164.8.17 setCustomizationRequiredItemIdentifiers(Identifiers() as String)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the items are too important to be removed.

**Notes:** The corresponding item identifiers should be listed here. During customization the user will be prevented from removing these items from the touch bar.

164.8.18 setDefaultItemIdentifiers(Identifiers() as String)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the array of identifiers specifying the items in this touch bar.

164.8.19 setTemplateItems(Identifiers() as NSTouchBarItemMBS)

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sets the template item identifiers.

**Notes:**

Items in this set are the first step in resolving instantiated items from their identifiers. If an item identifier is specified in the itemIdentifiers array, and an item with that identifier is in this set, it will be added to the items array in the corresponding location.
164.8.20 templateItems as NSTouchBarItemMBS()

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Items in this set are the first step in resolving instantiated items from their identifiers. **Notes:** If an item identifier is specified in the itemIdentifiers array, and an item with that identifier is in this set, it will be added to the items array in the corresponding location.

164.8.21 toggleTouchBarCustomizationPalette

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Show or dismiss the customization palette for the currently displayed touch bars. **Notes:** NSApplication validates this selector against whether the current touch bars are customizable and, if configured on a menu item, will standardize and localize the title. If the current system does not have touch bar support, the menu item will be automatically hidden.

164.8.22 Properties

164.8.23 automaticCustomizeTouchBarMenuItemEnabled as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Whether or not a menu item to customize the touch bar can be automatically added to the main menu. **Notes:** It will only actually be added when a touch bar hardware or simulator is present. Defaults to false. Setting this property to True is the recommended way to add the customization menu item. But if non-standard placement of the menu item is needed, creating a menu item with an action of toggleTouchBarCustomizationPalette can be used instead. (Read and Write property)

164.8.24 customizationIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A string uniquely identifying this bar for customization purposes. **Notes:** All bars with this identifier will have their items coordinated automatically during customization or instantiation. Touch bars lacking a customizationIdentifier are not customizable. (Read and Write property)
164.8. CLASS NSTOUCHBARMBS

164.8.25 Handle as Integer

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The internal object reference.  
**Notes:** (Read and Write property)

164.8.26 principalItemIdentifier as String

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Specifying a principal item identifier communicates that the item with that identifier has special significance to this touch bar. 
**Notes:**  
Currently, that item will be placed in the center of the resolved touch row. Note that multiple visible bars may each specify a principal item identifier - but only one of them can have the request honored.  
(Read and Write property)

164.8.27 visible as Boolean

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** When true, the touch bar is attached to an eligible touch bar provider, and its items are displayable, assuming adequate space.  
**Notes:** (Read only property)

164.8.28 Events

164.8.29 DidEnterCustomization

MBS Mac64bit Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The customization did start.

164.8.30 DidExitCustomization

MBS Mac64bit Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The customization did exit.
164.8.31 Hidden

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event called when the bar is hidden.

164.8.32 makeItemForIdentifier(identifier as string) as NSTouchBarItemMBS

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** When constructing the items array, this event will be invoked to construct a touch bar item if that item cannot be found in the defaultItems set.

164.8.33 Shown

MBS Mac64bit Plugin, Plugin Version: 16.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The event called when the bar is shown.

164.8.34 WillEnterCustomization

MBS Mac64bit Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The customization will start soon.

164.8.35 WillExitCustomization

MBS Mac64bit Plugin, Plugin Version: 17.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The customization will exit soon.
Chapter 165

Twain

165.1 class TwainIdentityMBS

165.1.1 class TwainIdentityMBS

Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

165.1.2 Methods

165.1.3 Constructor


165.1.4 Properties

165.1.5 Id as Integer

Notes: This field is only filled by the Source Manager. Neither an application nor a Source should fill this field. The Source uses the contents of this field to "identify" which application is invoking the operation sent to
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the Source.
(Read and Write property)

165.1.6 Manufacturer as String

MBS Picture Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. Function: String identifying the manufacturer of the application or Source. e.g. "Aldus". Notes: (Read and Write property)

165.1.7 ProductFamily as String

MBS Picture Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. Function: Tells an application that performs device-specific operations which product family the Source supports. Notes: This is useful when a new Source has been released and the application doesn’t know about the particular Source but still wants to perform Custom operations with it. e.g. "ScanMan". (Read and Write property)

165.1.8 ProductName as String

MBS Picture Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. Function: A string uniquely identifying the Source. Notes: This is the string that will be displayed to the user at Source select-time. This string must uniquely identify your Source for the user, and should identify the application unambiguously for Sources that care. e.g. "ScanJet Iic". (Read and Write property)

165.1.9 ProtocolMajor as Integer

MBS Picture Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. Function: Major number of latest TWAIN version that this element supports. Notes: (Read and Write property)
165.1.10 ProtocolMinor as Integer

MBS Picture Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Minor number of latest TWAIN version that this element supports. **Notes:** (Read and Write property)

165.1.11 SupportedGroups as Integer

MBS Picture Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Supported groups.

**Notes:**

The application will normally set this field to specify which Data Group(s) it wants the Source Manager to sort Sources by when presenting the Select Source dialog, or returning a list of available Sources. The application sets this prior to invoking a SelectDS operation.

- The application may also set this field to specify which Data Group(s) it wants the Source to be able to acquire and transfer. The application must do this prior to sending the Source its EnableDS operation.
- The Source must set this field to specify which Data Group(s) it can acquire. It will do this in response to a OpenDS.
- Beginning with TWAIN 2.0 the Source Manager reserves the most significant two bytes in the SupportedGroups for the Data Flags (& h0001000 to & hFFFF0000).

DF_DSM2 identifies the Source Manager as TWAIN 2.0 compliant DF_APP2 is set by an Application that is TWAIN 2.0 compliant DF_DS2 is set by a Source that is TWAIN 2.0 compliant

(Read and Write property)

165.1.12 Version as TwainVersionMBS


**Notes:** (Read and Write property)
165.2 class TwainImageInfoMBS

165.2.1 class TwainImageInfoMBS

MBS Picture Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Describes the "real" image data, that is, the complete image being transferred between the Source and application.

**Notes:**

The Source may transfer the data in a different format—the information may be transferred in "strips" or "tiles" in either compressed or uncompressed form. See the TW_IMAGEEMEMXFER structure for more information.

The term "sample" is referred to a number of times in this structure. It holds the same meaning as in the TIFF specification. A sample is a contiguous body of image data that can be categorized by the channel or "ink color" it was captured to describe. In an R-G-B (Red-Green-Blue) image, such as on your TV or computer's CRT, each color channel is composed of a specific color. There are 3 samples in an R-G-B: Red, Green, and Blue. A C-Y-M-K image has 4 samples. A Grayscale or Black and White image has a single sample.

Note: The value -1 in ImageWidth and ImageLength are special cases. It is possible for a Source to not know either its Width or Length. Applications need to consider this when allocating memory or otherwise dealing with the size of the Image.

This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

165.2.2 Methods

165.2.3 BitsPerSample(index as Integer) as Integer

MBS Picture Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** For each sample, the number of bits of information.

**Notes:**

24-bit R-G-B will typically have 8 bits of information in each sample (8+8+8). Some 8-bit color is sampled at 3 bits Red, 3 bits Green, and 2 bits Blue. Such a scheme would put 3, 3, and 2 into the first 3 elements of this array. The supplied array allows up to 8 samples. Samples are not limited to 8 bits. However, both the application and Source must simultaneously support sample sizes greater than 8 bits per color.

Index from 0 to 7.

165.2.4 Constructor

165.2. CLASS TWAINIMAGEINFOMBS

165.2.5 Properties

165.2.6 BitsPerPixel as Integer

MBS Picture Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:**
The number of bits in each image pixel (or bit depth).

**Notes:**
This value is invariant across the image. 24-bit R-G-B has BitsPerPixel = 24. 40-bit C-M-Y-K has BitsPer-
Pixel=40. 8-bit Grayscale has BitsPerPixel = 8. Black and White has BitsPerPixel = 1.
(Read and Write property)

165.2.7 Compression as Integer

MBS Picture Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:**
The compression method used to process the data being transferred.

**Notes:**
Default is no compression.
(plugin currently only supports no compression)
(Read and Write property)

165.2.8 ImageLength as Integer

MBS Picture Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:**
How tall/long, in pixels, the image to be transferred is.

**Notes:**
If the Source doesn’t know, set this field to -1 (hand scanners may do this).
-1 can only be used if the application has set ICAP_UNDEFINEDIMAGESIZE to TRUE.
(the plugin doesn’t support undefined image size)
(Read and Write property)

165.2.9 ImageWidth as Integer

MBS Picture Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:**
How wide, in pixels, the entire image to be transferred is.

**Notes:**
If the Source doesn’t know, set this field to -1 (hand scanners may do this).
-1 can only be used if the application has set ICAP_UNDEFINEDIMAGESIZE to TRUE.
(the plugin doesn’t support undefined image size)
165.2.10  **PixelType as Integer**

MBS Picture Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** This is the highest categorization for how the data being transferred should be interpreted by the application. **Notes:**

This is how the application can tell if the data is Black and White, Grayscale, or Color. Currently, the only color type defined is "tri-stimulus", or color described by three characteristics. Most popular color description methods use tri-stimulus descriptors. For simplicity, the constant used to identify tri-stimulus color is called TWPT_RB, for R-G-B color. There is no default for this value. Fill this field with the appropriate TWPT_xxxx constant.

The plugin does currently only support RGB, GRAY, BW and PALETTE.  

(Read and Write property)

165.2.11  **Planar as Boolean**

MBS Picture Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** Whether image is planar. **Notes:**

If SamplesPerPixel >1, indicates whether the samples follow one another on a pixel-by-pixel basis (R-G-B-R-G-B-R-G-B...) as is common with a one-pass scanner or all the pixels for each sample are grouped together (complete group of R, complete group of G, complete group of B) as is common with a three-pass scanner. If the pixel-by-pixel method (also known as "chunky") is used, the Source should set Planar = false. If the grouped method (also called "planar") is used, the Source should set Planar = true.  

(Read and Write property)

165.2.12  **RowBytes as Integer**

MBS Picture Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The number of bytes in a row. **Notes:**

This is not exactly the value as you may expect as Twain needs some rounding.  

(Read and Write property)
165.2. CLASS TWAINIMAGEINFOMBS

165.2.13 SamplesPerPixel as Integer

MBS Picture Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The number of samples being returned.
**Notes:**
For R-G-B, this field would be set to 3. For C-M-Y-K, 4. For Grayscale or Black and White, 1.
(Read and Write property)

165.2.14 XResolution as Double

**Notes:**
In pixels per inch.
(Read and Write property)

165.2.15 YResolution as Double

**Notes:**
In pixels per inch.
(Read and Write property)
165.3 class TwainImageLayoutMBS

165.3.1 class TwainImageLayoutMBS

MBS Picture Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The class for an image layout.  
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

165.3.2 Methods

165.3.3 Constructor


165.3.4 Properties

165.3.5 Bottom as Double

MBS Picture Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The bottom coordinate of the item.  
**Notes:** (Read and Write property)

165.3.6 DocumentNumber as Integer

**Notes:** (Read and Write property)

165.3.7 FrameNumber as Integer

MBS Picture Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The frame number.  
**Notes:** (Read and Write property)
165.3.8 Height as Double

MBS Picture Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The height of the item.  
**Notes:** (Read only property)

165.3.9 Left as Double

MBS Picture Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The left coordinate of the item.  
**Notes:** (Read and Write property)

165.3.10 PageNumber as Integer

**Notes:** (Read and Write property)

165.3.11 Right as Double

MBS Picture Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The right coordinate of the item.  
**Notes:** (Read and Write property)

165.3.12 Top as Double

MBS Picture Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The top coordinate of the item.  
**Notes:** (Read and Write property)

165.3.13 Width as Double

MBS Picture Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The width of the item.  
**Notes:** (Read only property)
165.4  class TwainMBS

165.4.1  class TwainMBS

MBS Picture Plugin, Plugin Version: 12.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:**
The plugin class for scanning with TWAIN compatible scanners.

**Notes:**
Use is like this:

- Declare subclass of TwainMBS so you can get events.
- Create new instance of your subclass and store object in some window/app/module property.
- For Windows call InstallEvent.
- To scan, call Acquire method.
- If driver runs synchronously, a modal window shows and you get back a picture object right away when scanning is done.
- If driver runs asynchronously, it shows a non modal window and you receive events.
- In TransferReady event you can call TransferImage method. In example a timer is triggered so this runs in the window.
- To cleanup, use DisableDS and CloseDS methods.
- We recommend only to have one instance of the TwainMBS object.

When Xojo or Real Studio is used (32 bit), we can of course only see and use devices with 32 bit drivers. Once Xojo will be ported to 64bit, we can only talk to 64bit drivers.

For 64-bit on Windows you can find 64-bit TwainDSM.dll here:
https://sourceforge.net/projects/twain-dsm/

165.4.2  Methods

165.4.3  **Acquire(modal as boolean = false, showUI as boolean = true) as picture**

MBS Picture Plugin, Plugin Version: 12.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:**
Acquires a new picture.

**Notes:**
Lasterror is set.
Plugin asks for asynchronously operation, so this function returns nil and success in lasterror.
If data source must be used with modal UI, this function returns with picture.

Modal can be true to ask for modal dialog. Seems to be only supported on Mac.

### 165.4.4 AllDevices as TwainIdentityMBS()


**Example:**

```vbnet
dim twain as TwainMBS ' your twain object
dim devices() as TwainIdentityMBS = twain.AllDevices
dim found as Boolean
dim NameToFind as string = "MyScanner123"

for each device as TwainIdentityMBS in devices
    if device.ProductName = NameToFind then
        found = true
        // lets use this one
        twain.SelectDS(device)
    endif
end for

if not found then
    MsgBox "No scanner found named: " + NameToFind
end if
```

### 165.4.5 AppIdentity as TwainIdentityMBS


**Notes:** That’s the identity the plugin used to register with twain library.
165.4.6 CanBW as boolean

MBS Picture Plugin, Plugin Version: 12.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:**
Whether device supports black and white pixel type.
**Notes:** Lasterror is set.

165.4.7 CanGray as boolean

MBS Picture Plugin, Plugin Version: 12.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:**
Whether device supports gray pixel type.
**Notes:** Lasterror is set.

165.4.8 CanPalette as boolean

MBS Picture Plugin, Plugin Version: 12.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:**
Whether current device supports palette pixel type.
**Notes:** Lasterror is set.

165.4.9 CanRGB as boolean

MBS Picture Plugin, Plugin Version: 12.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:**
Whether current device supports RGB pixel type.
**Notes:** Lasterror is set.

165.4.10 CloseDS

MBS Picture Plugin, Plugin Version: 12.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:**
Close data source.
**Notes:** Lasterror is set.

165.4.11 CloseDSM

MBS Picture Plugin, Plugin Version: 12.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:**
Closes the data source manager.
**Notes:** Lasterror is set.
165.4.12 Constructor(Country as Integer, Language as Integer)

MBS Picture Plugin, Plugin Version: 12.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:**
Initializes Twain engine with given localization.
**Notes:** Lasterror is set.

165.4.13 DisableDS

MBS Picture Plugin, Plugin Version: 12.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:**
Diables data source.
**Notes:** Lasterror is set.

165.4.14 DontUnload

MBS Picture Plugin, Plugin Version: 12.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:**
Informs the plugin to not unload the twain library.
**Notes:** This avoids a crash for some people.

165.4.15 DSIdentity as TwainIdentityMBS

MBS Picture Plugin, Plugin Version: 12.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:**
Queries the details on the data source.
**Notes:** Lasterror is set.

165.4.16 GetEnumerationCapability(ID as Integer, byref ItemType as Integer, byref Count as Integer, byref CurrentIndex as Integer, byref DefaultIndex as Integer) as Integer()

MBS Picture Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:**
Queries an enum capability.
**Example:**
```pascal
    dim t as TwainMBS // your twain object

    // check supported sizes
    const ICAP_SUPPORTEDSIZES = & h1122
    dim type5 as Integer
    dim EnumCount as Integer = 0
    dim EnumItemType as Integer = 0
```
dim EnumCurrentIndex as Integer = 0
dim EnumDefaultValue as Integer = 0
dim EnumValues() as Integer = t.GetEnumerationCapability(ICAP_SUPPORTEDSIZES, EnumItemType, EnumCount, EnumCurrentIndex, EnumDefaultValue)
dim e5 as Integer = t.LastError
dim c5 as Integer = t.ConditionCode

Notes:
Please review Twain Documentation for details.
Please open data source before via OpenDS method.
This should work fine for all integer enum types like boolean, 8, 16 or 32 bit integers.
Sets last error and condition code.
(if last error is 1 and condition code is 13, the capability is not supported)

165.4.17 GetIntegerCapability(ID as Integer, byref Type as Integer) as Integer

Example:

dim t as TwainMBS // your twain object

t.OpenDS

if t.LastError <> 0 then
MsgBox "Failed to open device: " + str(t.Lasterror)
Return
end if

const CAP_FEEDERENABLED = & h1002
const CAP_FEEDERLOADED = & h1003
const TWRC_FAILURE = 1
const TWCC_CAPUNSUPPORTED = 13

// query before
dim type1 as Integer
dim n1 as Integer = t.GetIntegerCapability(CAP_FEEDERENABLED, type1)
dim e1 as Integer = t.LastError
dim c1 as Integer = t.ConditionCode

// set on
t.SetBoolCapability CAP_FEEDERENABLED, true
dim e2 as Integer = t.LastError
dim c2 as Integer = t.ConditionCode
// query after
dim type3 as Integer
dim n3 as Integer = t.GetIntegerCapability(CAP_FEEDERENABLED, type3)
dim e3 as Integer = t.Lasterror
dim c3 as Integer = t.ConditionCode

// now query loaded?
dim type4 as Integer
dim n4 as Integer = t.GetIntegerCapability(CAP_FEEDERLOADED, type4)
dim e4 as Integer = t.Lasterror
dim c4 as Integer = t.ConditionCode

if e4 = TWRC_FAILURE AND c4 = TWCC_CAPUNSUPPORTED then
    // not supported!
    Break
end if

Notes:
Please review Twain Documentation for details.
Please open data source before via OpenDS method.
This should work fine for all integer types like boolean, 8, 16 or 32 bit integers.
Sets lasterror and condition code.
(if lasterror is 1 and condition code is 13, the capability is not supported)

165.4.18 ImageInfo as TwainImageInfoMBS

MBS Picture Plugin, Plugin Version: 12.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Queries information about current image. **Notes:** Lasterror is set.

165.4.19 IsDSEnabled as boolean

MBS Picture Plugin, Plugin Version: 12.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Whether data source is enabled.

165.4.20 OpenDS

MBS Picture Plugin, Plugin Version: 12.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Opens the data source.
165.4.21 OpenDSM

MBS Picture Plugin, Plugin Version: 12.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:**
Opens Data source Manager.
**Notes:** Lasterror is set.

165.4.22 ProcessEvents

MBS Picture Plugin, Plugin Version: 12.5, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Process events in plugin.
**Notes:**
Only for Windows needed for some Twain drivers. You call it after you run Acquire to let the plugin wait for the events to start the transfer.
When transfer is ready or dialog is cancelled, this method ends.
On Mac OS X or Linux this method does nothing so it’s no problem calling it.

165.4.23 SelectDS

MBS Picture Plugin, Plugin Version: 12.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:**
Queries dialog to ask the user to select a data source.
**Notes:** Lasterror is set.
See also:

- 165.4.24 SelectDS(device as TwainIdentityMBS)

165.4.24 SelectDS(device as TwainIdentityMBS)

MBS Picture Plugin, Plugin Version: 12.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:**
Selects the given device without dialog.
**Example:**
```
dim twain as TwainMBS // your twain object
dim devices() as TwainIdentityMBS = twain.AllDevices
dim found as Boolean
dim NameToFind as string = "MyScanner123"
for each device as TwainIdentityMBS in devices
    if device.ProductName = NameToFind then
```
found = true

// lets use this one
twain.SelectDS(device)

if twain.Lasterror <> 0 then
    MsgBox "Failed to select " + device.ProductName
else
    'MsgBox "OK"
    exit
end if
next

if not found then
    MsgBox "No scanner found named: " + NameToFind
end if

Notes: Lasterror is set.
See also:

• 165.4.23 SelectDS

165.4.25 SetBoolCapability(ID as Integer, Value as Boolean)

MBS Picture Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. Function:
Sets a capability with boolean.
Example:

dim t as TwainMBS // your twain object

t.OpenDS

if t.Lasterror <> 0 then
    MsgBox "Failed to open device: " + str(t.Lasterror)
    Return
end if

const CAP_FEEDERENABLED = & h1002
const CAP_FEEDERLOADED = & h1003
const TWRC_FAILURE = 1
const TWCC_CAPUNSUPPORTED = 13

// query before

dim type1 as Integer

dim n1 as Integer = t.GetIntegerCapability(CAP_FEEDERENABLED, type1)
dim e1 as Integer = t.Lasterror
dim c1 as Integer = t.ConditionCode

// set on
t.SetBoolCapability CAP_FEEDERENABLED, true
dim e2 as Integer = t.Lasterror
dim c2 as Integer = t.ConditionCode

// query after
dim type3 as Integer
dim n3 as Integer = t.GetIntegerCapability(CAP_FEEDERENABLED, type3)
dim e3 as Integer = t.Lasterror
dim c3 as Integer = t.ConditionCode

// now query loaded?
dim type4 as Integer
dim n4 as Integer = t.GetIntegerCapability(CAP_FEEDERLOADED, type4)
dim e4 as Integer = t.Lasterror
dim c4 as Integer = t.ConditionCode

if e4 = TWRC_FAILURE AND c4 = TWCC_CAPUNSUPPORTED then
  // not supported!
  Break
end if

Notes:

Please review Twain Documentation for details.
Please open data source before via OpenDS method.
You may see problems if you use this method on a capability which is not a boolean.
Sets lasterror and condition code.
(if lasterror is 1 and condition code is 13, the capability is not supported)

165.4.26 SetFloatCapability(ID as Integer, Value as Double)

MBS Picture Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:**
Sets a capability with floating point value.

Notes:

Please review Twain Documentation for details.
Please open data source before via OpenDS method.
You may see problems if you use this method on a capability which is not a floating point value (FIX32).
Sets lasterror and condition code.
(if lasterror is 1 and condition code is 13, the capability is not supported)
165.4.27 SetInt32Capability(ID as Integer, Value as Int32)

MBS Picture Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:**
Sets a capability with 32 bit integer.
**Notes:**
Please review Twain Documentation for details.
Please open data source before via OpenDS method.
You may see problems if you use this method on a capability which is not a 32 bit integer.
Sets lasterror and condition code.
(if lasterror is 1 and condition code is 13, the capability is not supported)

165.4.28 SetUInt16Capability(ID as Integer, Value as UInt16)

MBS Picture Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:**
Sets a capability with 16 bit integer.
**Notes:**
Please review Twain Documentation for details.
Please open data source before via OpenDS method.
You may see problems if you use this method on a capability which is not a 16 bit integer.
Sets lasterror and condition code.
(if lasterror is 1 and condition code is 13, the capability is not supported)

165.4.29 SupportsMemoryTransfer as boolean

MBS Picture Plugin, Plugin Version: 12.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:**
Whether the twain data source supports memory transfers.
**Notes:** As our plugin uses only memory transfers, the source must support this in order to work with our plugin.

165.4.30 TransferImage as picture

MBS Picture Plugin, Plugin Version: 12.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:**
Transfers an image.
**Notes:**
Lasterror is set.
Image data is converted to a normal RGB picture.
Can return nil on any error.
The events TransferStarted, TransferEnded and TransferProgress are called when a transfer is running.
165.4.31 Properties

165.4.32 AutoFeed as Integer

MBS Picture Plugin, Plugin Version: 13.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Whether plugin should auto feed (if feeder is enabled). **Notes:** Value is -1 if you didn’t set it before. This value is stored and next time you call Acquire the plugin will ask the scanner to enable/disable auto feed. If the scanner does not support auto feeding, the scanner will ignore this setting. (Read and Write property)

165.4.33 AutomaticBorderDetection as Integer

MBS Picture Plugin, Plugin Version: 13.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Whether plugin should enable automatic border detection. **Notes:** Value is -1 if you didn’t set it before. This value is stored and next time you call Acquire the plugin will ask the scanner to enable/disable auto border detection. If the scanner does not support this feature, the scanner will ignore this setting. 0 = off, 1 = on, -1 = default/undefined. (Read and Write property)

165.4.34 AutomaticBrightness as Integer

MBS Picture Plugin, Plugin Version: 13.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Enables or disables the Source’s Auto-brightness function (if any). **Notes:** The plugin will apply this setting on the next scan. Value is 0 to disable, 1 to enable or -1 if undefined/default. (Read and Write property)

165.4.35 AutomaticRotate as Integer

MBS Picture Plugin, Plugin Version: 13.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Whether to enable automatic rotation when next scan starts. **Notes:** Value is -1 if you didn’t set it before. This value is stored and next time you call Acquire the plugin will ask the scanner to enable/disable auto-
matic rotation. If the scanner does not support this feature, the scanner will ignore this setting.
(Read and Write property)

165.4.36 Brightness as Double

MBS Picture Plugin, Plugin Version: 13.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The brightness setting to use.
**Notes:**
The plugin will apply this setting on the next scan.
Source should normalize the values into the range. Make sure that a '0' value is available as the Current Value when the Source starts up. If the Source’s range is asymmetric about the '0' value, set range maxima to 1000 and scale homogeneously from the '0' value in each direction. This will yield a positive range whose step size differs from the negative range’s step size.
Plugin uses value -10000 for undefined/default.
(Read and Write property)

165.4.37 ConditionCode as Integer

MBS Picture Plugin, Plugin Version: 14.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The condition code.
**Notes:**
If error code in Lasterror is 1, this Condition value is set. (-1 if unknown)

Possible codes:

(Read and Write property)

165.4.38 Contrast as Double

MBS Picture Plugin, Plugin Version: 13.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The contrast setting to use.
**Notes:**
The plugin will apply this setting on the next scan.
Scale the values available internally into a homogeneous range between -1000 and 1000. Make sure that a '0' value is available as the Current value when the Source starts up. If the Source’s range is asymmetric about the '0' value, set range maxima to 1000 and scale homogeneously from the '0' value in each direction. This will yield a positive range whose step size differs from the negative range’s step size.
TWCC_SUCCESS 0 Success
TWCC_BUMMER 1 Failure due to unknown causes
TWCC_LOWMEMORY 2 Not enough memory to perform operation
TWCC_NODS 3 No Data Source
TWCC_MAXCONNECTIONS 4 DS is connected to max possible applications
TWCC_OPERATIONERROR 5 DS or DSM reported error, application shouldn't
TWCC_BADCAP 6 Unknown capability
TWCC_BADPROTOCOL 9 Unrecognized MSG DG DAT combination
TWCC_BADVALUE 10 Data parameter out of range
TWCC_SEQERROR 11 DG DAT MSG out of expected sequence
TWCC_BADDEST 12 Unknown destination Application/Source in DSM_Entry
TWCC_CAPUNSUPPORTED 13 Capability not supported by source
TWCC_CAPBADOPERATION 14 Operation not supported by capability
TWCC_CAPSEQERROR 15 Capability has dependency on other capability
TWCC_FILEEXISTS 16 File System operation is denied (file is protected)
TWCC_DENIED 17 Operation failed because file already exists.
TWCC_FILENOTFOUND 18 File not found
TWCC_NOTEMPTY 19 Operation failed because directory is not empty
TWCC_PAPERJAM 20 The feeder is jammed
TWCC_PAPERDOUBLEFEED 21 The feeder detected multiple pages
TWCC_FILEWRITEERROR 22 Error writing the file (meant for things like disk full conditions)
TWCC_CHECKDEVICEONLINE 23 The device went offline prior to or during this operation

(Read and Write property)

165.4.39 DiscardBlankPages as Integer

MBS Picture Plugin, Plugin Version: 13.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Whether to have the scanner ask to discard blank pages.

**Notes:**
Value is -1 if you didn’t set it before.
This value is stored and next time you call Acquire the plugin will ask the scanner to enable/disable blank pages discarding. If the scanner does not support this feature, the scanner will ignore this setting.
(Read and Write property)

165.4.40 Duplex as Integer

MBS Picture Plugin, Plugin Version: 13.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to enable duplex when next scan starts.

**Notes:**
This value is stored and next time you call Acquire the plugin will ask the scanner to enable/disable duplex. If the scanner does not support duplex, the scanner will ignore this setting.
Value is -1 if not set, 0 to disable and 1 to enable.
(Read and Write property)
165.4.41 FeederEnabled as Integer

MBS Picture Plugin, Plugin Version: 13.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Whether to enable feeder when next scan starts. 
**Notes:**
This value is stored and next time you call Acquire the plugin will ask the scanner to enable/disable feeder. If the scanner does not support the feeder, the scanner will ignore this setting. 
Value is -1 if not set, 0 to disable and 1 to enable. 
(Read and Write property)

165.4.42 Gamma as Double

MBS Picture Plugin, Plugin Version: 13.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gamma correction value for the image data. 
**Notes:**
The plugin will apply this setting on the next scan. 
Default value 2.2. The setting is -10000 if not set. 
(Read and Write property)

165.4.43 Highlight as Double

MBS Picture Plugin, Plugin Version: 13.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Specifies which value in an image should be interpreted as the lightest highlight. 
**Notes:**
The plugin will apply this setting on the next scan. 
All values lighter than this value will be clipped to this value. Whether lighter values are smaller or larger can be determined by examining the Current value of PixelFlavor. 
If more or less than 8 bits are used to describe the image, the actual data values should be normalized to fit within the 0-255 range. The normalization need not result in a homogeneous distribution if the original distribution was not homogeneous. 
Value can be between 0 and 255. 
Value can be between 0 and 255. 
Plugin uses value -10000 for undefined/default. 
(Read and Write property)
165.4.44 Lasterror as Integer

MBS Picture Plugin, Plugin Version: 12.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The last error code.  
**Notes:** (Read and Write property)

165.4.45 Orientation as Integer

MBS Picture Plugin, Plugin Version: 13.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The orientation for the scanner.  
**Notes:**  
This value is stored and next time you call Acquire the plugin will ask the scanner to enable/disable feeder. If the scanner does not support the feeder, the scanner will ignore this setting.  
Value can be:

- 0 0 degree
- 1 90 degree
- 2 180 degree
- 3 270 degree
- 0 Portrait
- 3 Landscape

(Read and Write property)

165.4.46 Parent as Window

**Notes:** (Read and Write property)

165.4.47 PendingTransferCount as Integer

MBS Picture Plugin, Plugin Version: 13.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** How many pages are pending.  
**Notes:**
So when you transfer you can make a loop and run until PendingTransferCount is zero. PendingTransferCount may be -1 or 65535 for unknown number of pages. (Read and Write property)

**165.4.48 PixelType as Integer**

MBS Picture Plugin, Plugin Version: 13.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The pixel type requested. **Notes:** Value can be 0 for BW, 1 for Gray, 2 for RGB, 3 for Palette. The plugin can request als CMY (4), CMYK (5), YUV (6), YUVK (7) and CIEXYZ (8), but can’t currently decode those. Value is -1 if you didn’t set it before. This value is stored and next time you call Acquire the plugin will ask the scanner to use the given pixel type. If the scanner does not support this feature, the scanner will ignore this setting. (Read and Write property)

**165.4.49 ProvideSliceData as Boolean**

MBS Picture Plugin, Plugin Version: 12.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Whether to pass Memoryblock with data with Progress event for new rows arrived. **Notes:** (Read and Write property)

**165.4.50 ProvideSlicePicture as Boolean**

MBS Picture Plugin, Plugin Version: 12.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Whether to pass picture with Progress event for new rows arrived. **Notes:** (Read and Write property)

**165.4.51 ResX as Double**

MBS Picture Plugin, Plugin Version: 13.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The horizontal resolution for scanning. **Notes:** This value is stored and next time you call Acquire the plugin will ask the scanner to use this resolution. If the scanner does not support the resolution, the scanner will use the last valid setting. Use -1 to use the default setting.
165.4.52  ResY as Double

Notes: This value is stored and next time you call Acquire the plugin will ask the scanner to use this resolution. If the scanner does not support the resolution, the scanner will use the last valid setting. Use -1 to use the default setting.
(Read and Write property)

165.4.53 Shadow as Double

MBS Picture Plugin, Plugin Version: 13.5, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: Specifies which value in an image should be interpreted as the darkest shadow.
Notes: The plugin will apply this setting on the next scan. All values darker than this value will be clipped to this value.
Whether darker values are smaller or larger can be determined by examining the Current value of PixelFlavor.
Source
If more or less than 8 bits are used to describe the image, the actual data values should be normalized to fit within the 0-255 range. The normalization need not result in a homogeneous distribution if the original distribution was not homogeneous.
(Read and Write property)

165.4.54 DefaultDevice as TwainIdentityMBS

Notes: (Read and Write computed property)
165.4. CLASS TWAINMBS

165.4.55 Imagelayout as TwainImageLayoutMBS

MBS Picture Plugin, Plugin Version: 15.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:**
Get/Set the image layout.
**Notes:**
LastError is set. DataSource must be open.
(Read and Write computed property)

165.4.56 Events

165.4.57 CloseRequest

MBS Picture Plugin, Plugin Version: 12.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:**
Closes a request.
**Notes:** Lasterror is set.

165.4.58 TransferEnded(pic as picture, ImageInfo as TwainImageInfoMBS, sliced as boolean, layout as TwainImageLayoutMBS)

MBS Picture Plugin, Plugin Version: 12.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:**
The transfer finished.
**Notes:**
Pic: The final picture. Nil if sliced is true.
ImageInfo: Details about the image format.
Sliced: Whether the image was transferred in slices.

165.4.59 TransferProgress(percent as Double, dataRead as Int64, DataSize as Int64, ImageInfo as TwainImageInfoMBS, NewDataSize as Integer, NewData as Memoryblock, NewPicture as Picture, layout as TwainImageLayoutMBS, Columns as Integer, Rows as Integer, XOffset as Integer, YOffset as Integer)

MBS Picture Plugin, Plugin Version: 12.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:**
The progress event.
**Notes:**
Percent: The percent value (0 to 100) of the progress.
dataRead: Number of bytes read.
DataSize: Total size of image in bytes.
ImageInfo: Details about the image format.
NewDataSize: The number of bytes received.
NewData: The memoryblock for the new data. Use NewDataSize to copy right amount of data as this memoryblock has no size value set.
NewPicture: The picture for the new data.
Layout: The image layout.
Columns: Number of columns got in this slice.
Rows: Number of rows got in this slice.
XOffset: Column start for this slice.
YOffset: Row start for this slice.

NewData is only valid if you set ProvideSliceData to true.
NewPicture is only valid if you set ProvideSlicePicture to true.

165.4.60 TransferReady

MBS Picture Plugin, Plugin Version: 12.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:**
Called to tell you that a transfer is waiting.
**Notes:**
The user pressed button to start scan.
Please call TransferImage method when you are ready.

165.4.61 TransferStarted(DataSize as Int64, ImageInfo as TwainImageInfoMBS, layout as TwainImageLayoutMBS) as boolean

MBS Picture Plugin, Plugin Version: 12.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:**
A transfer started.
**Notes:**
DataSize total number of bytes expected.
ImageInfo: details on the image we receive.

You can return true to have the plugin not created one big picture.
A 42 inch scanner normally creates huge images, so you only can process them in slices.

165.4.62 Constants

165.4.63 TWCY_AFGHANISTAN = 1001

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.
165.4.64  TWCY_ALBANIA = 355
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.65  TWCY_ALGERIA = 213
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.66  TWCY_AMERICAN_SAMOA = 684
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.67  TWCY_ANDORRA = 033
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.68  TWCY_ANGOLA = 1002
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.69  TWCY_ANGUILLA = 8090
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.70  TWCY_ANTIGUA = 8091
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.71  TWCY_ARGENTINA = 54
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.
165.4.72  TWCY_ARMENIA = 374

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.73  TWCY_ARUBA = 297

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.74  TWCY_ASCENSIONI = 247

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.75  TWCY AUSTRALIA = 61

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.76  TWCY_AUSTRIA = 43

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.77  TWCY_AZERBAIJAN = 994

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.78  TWCY_BAHAMAS = 8092

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.79  TWCY_BAHRAIN = 973

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.
165.4. CLASS TWAINMBS

165.4.80  TWCY_BANGLADESH = 880

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.81  TWCY_BARBADOS = 8093

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.82  TWCY_BELARUS = 375

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.83  TWCYBELGIUM = 32

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.84  TWCY_BELIZE = 501

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.85  TWCY_BENIN = 229

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.86  TWCY_BERMUDA = 8094

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.87  TWCY_BHUTAN = 1003

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.
165.4.88  TWCY_BOLIVIA = 591

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.89  TWCY_BOSNIAHERZGO = 387

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.90  TWCY_BOTSWANA = 267

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.91  TWCY_BRAZIL = 55

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.92  TWCY_BRITAIN = 6

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.93  TWCY_BRITVIRGINIS = 8095

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.94  TWCY_BRUNEI = 673

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.95  TWCY_BULGARIA = 359

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.
165.4.  CLASS TWAINMBS

165.4.96  TWCY_BURKINAFASO = 1004

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.97  TWCY_BURMA = 1005

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.98  TWCY_BURUNDI = 1006

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.99  TWCY_CAMAROON = 237

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.100  TWCY_CAMBODIA = 855

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.101  TWCY_CANADA = 2

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.102  TWCYCAPEVERDEIS = 238

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.103  TWCY_CAYMANIS = 8096

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.
165.4.104 TWCY_CENTRALAFREP = 1007

MBS Picture Plugin, Plugin Version: 12.2. **Function**: One of the country codes.

165.4.105 TWCY_CHAD = 1008

MBS Picture Plugin, Plugin Version: 12.2. **Function**: One of the country codes.
165.4. CLASS TWAINMBS

165.4.106 TWCY_CHILE = 56
MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.107 TWCY_CHINA = 86
MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.108 TWCY_CHRISTMASIS = 1009
MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.109 TWCY_COCOSIS = 1009
MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.110 TWCY_COLOMBIA = 57
MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.111 TWCY_COMOROS = 1010
MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.112 TWCY_CONGO = 1011
MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.113 TWCY_COOKIS = 1012
MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.
165.4.114  TWCY_COSTARICA = 506

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.115  TWCY_CROATIA = 385

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.116  TWCY_CUBA = 005

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.117  TWCY_CYPRUS = 357

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.118  TWCY_CZECHOSLOVAKIA = 42

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.119  TWCY_CZECHREPUBLIC = 420

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.120  TWCY_DENMARK = 45

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.121  TWCY_DIEGOGARCIA = 246

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.
165.4. CLASS TWAINMBS

165.4.122  TWCY_DJIBOUTI = 1013

MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.123  TWCY_DOMINCANREP = 8098

MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.124  TWCY_DOMINICA = 8097

MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.125  TWCY_EASTERIS = 1014

MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.126  TWCY_ECUADOR = 593

MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.127  TWCY_EGYPT = 20

MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.128  TWCY_ELSALVADOR = 503

MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.129  TWCY_EQGUINEA = 1015

MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.
165.4.130  **TWCY_ERITREA** = 291

MBS Picture Plugin, Plugin Version: 12.2. **Function**: One of the country codes.

165.4.131  **TWCY_ESTONIA** = 372

MBS Picture Plugin, Plugin Version: 12.2. **Function**: One of the country codes.

165.4.132  **TWCY_ETHIOPIA** = 251

MBS Picture Plugin, Plugin Version: 12.2. **Function**: One of the country codes.

165.4.133  **TWCY_FAEROEIS** = 298

MBS Picture Plugin, Plugin Version: 12.2. **Function**: One of the country codes.

165.4.134  **TWCY_FALKLANDIS** = 1016

MBS Picture Plugin, Plugin Version: 12.2. **Function**: One of the country codes.

165.4.135  **TWCY_FIJIISLANDS** = 679

MBS Picture Plugin, Plugin Version: 12.2. **Function**: One of the country codes.

165.4.136  **TWCY_FINLAND** = 358

MBS Picture Plugin, Plugin Version: 12.2. **Function**: One of the country codes.

165.4.137  **TWCY_FRANCE** = 33

MBS Picture Plugin, Plugin Version: 12.2. **Function**: One of the country codes.
165.4.138  TWCY_FRANTILLES = 596
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.139  TWCY_FRGUIANA = 594
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.140  TWCY_FRPOLYNEISA = 689
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.141  TWCY_FUTANAIS = 1043
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.142  TWCY_GABON = 241
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.143  TWCY_GAMBIA = 220
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.144  TWCY_GEORGIA = 995
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.145  TWCY_GERMANY = 49
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.
165.4.146  TWCY_Ghana = 233

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.147  TWCY_Gibraltar = 350

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.148  TWCY_Greece = 30

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.149  TWCY_Greenland = 299

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.150  TWCY_Grenada = 8099

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.151  TWCY_Grenedines = 8015

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.152  TWCY_Guadeloupe = 590

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.153  TWCY_Guam = 671

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.
165.4.154  TWCY_GUANTANAMOBAY = 5399

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.155  TWCY_GUATEMALA = 502

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.156  TWCY_GUINEA = 224

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.157  TWCY_GUINEABISSAU = 1017

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.158  TWCY_GUYANA = 592

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.159  TWCY_HAITI = 509

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.160  TWCY_HONDURAS = 504

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.161  TWCY_HONGKONG = 852

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.
165.4.162  TWCY_HUNGARY = 36

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.163  TWCY_ICELAND = 354

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.164  TWCY_INDIA = 91

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.165  TWCY_INDONESIA = 62

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.166  TWCY_IRAN = 98

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.167  TWCY IRAQ = 964

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.168  TWCY_Ireland = 353

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.169  TWCY_ISRAEL = 972

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.
165.4. CLASS TWAINMBS

165.4.170  TWCY_ITALY = 39

MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.171  TWCY_IVORYCOAST = 225

MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.172  TWCY_JAMAICA = 8010

MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.173  TWCY_JAPAN = 81

MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.174  TWCY_JORDAN = 962

MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.175  TWCY_KENYA = 254

MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.176  TWCY_KIRIBATI = 1018

MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.177  TWCY_KOREA = 82

MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.
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165.4. CLASS TWAINMBS

165.4.186  TWCY_LITHUANIA = 370
MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.187  TWCY_LUXENBOURG = 352
MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.188  TWCY_MACAO = 853
MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.189  TWCY_MACEDONIA = 389
MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.190  TWCY_MADAGASCAR = 1021
MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.191  TWCY_MALAWI = 265
MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.192  TWCY_MALAYSIA = 60
MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.193  TWCY_MALDIVES = 960
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165.4.194  **TWCY_MALI = 1022**

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.195  **TWCY_MALTA = 356**

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165.4.196  **TWCY_MARSHALLIS = 692**

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165.4.197  **TWCY_MAURITANIA = 1023**

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165.4.198  **TWCY_MAURITIUS = 230**

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165.4.199  **TWCY_MAYOTTEIS = 269**

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.200  **TWCY_MEXICO = 3**

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.201  **TWCY_MICRONESIA = 691**

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.
165.4.202  TWCY_MIQUELON = 508

MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.203  TWCY_MOLDOVA = 373

MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.204  TWCY_MONACO = 33

MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.205  TWCY_MONGOLIA = 1024

MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.206  TWCY_MONTSERRAT = 8011

MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.207  TWCY_MOROCCO = 212

MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.208  TWCY MOZAMBIQUE = 1025

MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.209  TWCY_MYANMAR = 95

MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.
165.4.210  TWCY_NAMIBIA = 264

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.211  TWCY_NAURU = 1026

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165.4.212  TWCY_NEPAL = 977

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.213  TWCY_NETHERLANDS = 599

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.214  TWCY_NETHERLANDS = 31

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.215  TWCY_NEVIS = 8012

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165.4.216  TWCY_NEWCALEDONIA = 687

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.217  TWCY_NEWZEALAND = 64

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.
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165.4.218  TWCY_NICARAGUA = 505
MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.219  TWCY_NIGER = 227
MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.220  TWCY_NIGERIA = 234
MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.221  TWCY_NIUE = 1027
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165.4.222  TWCY_NORFOLKI = 1028
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165.4.223  TWCY_NORTHKOREA = 850
MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.224  TWCY_NORWAY = 47
MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.

165.4.225  TWCY_OMAN = 968
MBS Picture Plugin, Plugin Version: 12.2. Function: One of the country codes.
165.4.226  TWCY_PAKISTAN = 92

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.227  TWCY_PALAU = 1029

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.228  TWCY_PANAMA = 507

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.229  TWCY_PARAGUAY = 595

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.230  TWCY_PERU = 51

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.231  TWCY_PHILLIPPINES = 63

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.232  TWCY_PITCAIRNIS = 1030

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.233  TWCY_PNEWGUINEA = 675

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.
165.4. CLASS TWAINMBS

165.4.234  TWCY_POLAND = 48

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.235  TWCY_PORTUGAL = 351

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.236  TWCY PUERTORICO = 787

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.237  TWCY_QATAR = 974

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the country codes.

165.4.238  TWCY_REUNIONI = 1031

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165.4.239  TWCY_ROMANIA = 40

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165.4.241  TWCY_RWANDA = 250

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165.4.242  TWCY_SAIPAN = 670

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165.4.243  TWCY_SANMARINO = 39

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165.4.244  TWCY_SAOTOME = 1033

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165.4.245  TWCY_SAUDIARABIA = 966

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165.4.246  TWCY_SENEGAL = 221

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165.4.247  TWCY_SERBIA = 381

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165.4.248  TWCY_SEYCHELLESIS = 1034

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165.4.249  TWCY_SIERRALEONE = 1035

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165.4. CLASS TWAINMBS

165.4.250  TWCY_SINGAPORE = 65

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165.4.251  TWCY_SLOVAKIA = 421

MBS Picture Plugin, Plugin Version: 12.2. **Function**: One of the country codes.

165.4.252  TWCY_SLOVENIA = 386

MBS Picture Plugin, Plugin Version: 12.2. **Function**: One of the country codes.

165.4.253  TWCY_SOLOMONIS = 1036

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165.4.254  TWCY_SOMALI = 1037

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165.4.255  TWCY_SOUTHAFRICA = 27

MBS Picture Plugin, Plugin Version: 12.2. **Function**: One of the country codes.

165.4.256  TWCY_SOUTHKOREA = 82

MBS Picture Plugin, Plugin Version: 12.2. **Function**: One of the country codes.

165.4.257  TWCY_SPAIN = 34

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165.4.258  TWCY_SRILANKA = 94

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165.4. CLASS TWAINMBS

165.4.266  TWCY_SWAZILAND = 268

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165.4.267  TWCY_SWEDEN = 46

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165.4.268  TWCY_SWITZERLAND = 41

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165.4.270  TWCY_TAIWAN = 886

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165.4. CLASS TWAINMBS

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165.4.291  TWCV_VENEZUELA = 58

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165.4.294  TWCV_WALLISIS = 1043

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165.4.308  TWLG_ARABICIRAQ = 20


165.4.309  TWLG_ARABIC_JORDAN = 21


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165.4.311  TWLG_ARABIC_LEBANON = 23


165.4.312  TWLG_ARABIC_LIBYA = 24


165.4.313  TWLG_ARABIC_MOROCCO = 25

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165.4.314 TWLG_ARABIC_OMAN = 26

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.315 TWLG_ARABIC_QATAR = 27

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.316 TWLG_ARABIC_SAUDIARABIA = 28

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.317 TWLG_ARABIC_SYRIA = 29

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.318 TWLG_ARABIC_TUNISIA = 30

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165.4.319 TWLG_ARABIC_UAE = 31

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165.4.320 TWLG_ARABIC_YEMEN = 32

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165.4.324  TWLG_BIHARI = 89

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165.4.325  TWLG_BODO = 90

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MBS Picture Plugin, Plugin Version: 12.2. **Function**: One of the language codes.

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165.4.332  TWLG_CHINESE_SIMPLIFIED = 41

MBS Picture Plugin, Plugin Version: 12.2. **Function**: One of the language codes.

165.4.333  TWLG_CHINESE_SINGAPORE = 40

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165.4.334  TWLG_CHINESE_TAIWAN = 42

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165.4.335  TWLG_CHINESE_TRADITIONAL = 43

MBS Picture Plugin, Plugin Version: 12.2. **Function**: One of the language codes.

165.4.336  TWLG_CROATIA = 44

MBS Picture Plugin, Plugin Version: 12.2. **Function**: One of the language codes.

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165.4.342  TWLG_DUTCH = 1

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165.4.343  TWLG_DUTCH BELGIAN = 46

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

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165.4.345  TWLG_ENGLISH = 2

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165.4.347  TWLG_ENGLISH_CANADIAN = 48
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165.4.348  TWLG_ENGLISH_IRELAND = 49
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165.4.349  TWLG_ENGLISH_NEWZEALAND = 50
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.350  TWLG_ENGLISH_SOUTHAFRICA = 51
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.351  TWLG_ENGLISH_UK = 52
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.352  TWLG_ENGLISH_USA = 13
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.353  TWLG_ESTONIAN = 53
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165.4.354 TWLG_FAEROESE = 54

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.355 TWLG_FARSI = 55

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165.4.356 TWLG_FCF = 3

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165.4.360 TWLG_FRENCH_BELGIAN = 56

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165.4.361 TWLG_FRENCH_CANADIAN = 3

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.
165.4. CLASS TWAINMBS

165.4.362 TWLG_FRENCH_LUXEMBOURG = 57
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.363 TWLG_FRENCH_SWISS = 58
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.364 TWLG_FRN = 5
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

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165.4.366 TWLG_GERMAN = 6
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.367 TWLG_GERMAN_AUSTRIAN = 59
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.368 TWLG_GERMAN_LIECHTENSTEIN = 61
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.369 TWLG_GERMAN_LUXEMBOURG = 60
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.
165.4.370  TWLG_GERMAN_SWISS = 62

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.371  TWLG_GREEK = 63

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.372  TWLG_GUJARATI = 92

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.373  TWLG_HARYANVI = 93

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.374  TWLG_HEBREW = 64

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.375  TWLG_HINDI = 94

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.376  TWLG_HUNGARIAN = 65

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.377  TWLG_ICE = 7

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.
165.4.378  TWLG_ICELANDIC = 7
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.379  TWLG_INDONESIAN = 66
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.380  TWLG_ITALIAN = 8
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.381  TWLG_ITALIAN_SWISS = 67
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.382  TWLG_ITN = 8
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.383  TWLG_JAPANESE = 68
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.384  TWLG_KANNADA = 95
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.385  TWLG_KASHMIRI = 96
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.
165.4.386  TWLG_KOREAN = 69

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.387  TWLG_KOREAN_JOHAB = 70

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.388  TWLG_LATVIAN = 71

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.389  TWLG_LITHUANIAN = 72

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.390  TWLG_MALAYALAM = 97

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.391  TWLG_MARATHI = 98

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.392  TWLG_MARWARI = 99

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.393  TWLG_MEGHALAYAN = 100

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.
165.4. CLASS TWAINMBS

165.4.394 TWLG_MIZO = 101
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.395 TWLG_NAGA = 102
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.396 TWLG_NOR = 9
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.397 TWLG_NORWEGIAN = 9
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.398 TWLG_NORWEGIAN_BOKMAL = 73
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.399 TWLG_NORWEGIAN_NYNORSK = 74
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.400 TWLG_ORISSI = 103
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.401 TWLG_POLISH = 75
MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.
165.4.402 TWLG_POR = 10

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.403 TWLG_PORTUGUESE = 10

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.404 TWLG_PORTUGUESE_BRAZIL = 76

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.405 TWLG_PUNJABI = 104

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.406 TWLG_PUSHTU = 105

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.407 TWLG_ROMANIAN = 77

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.408 TWLG_RUSSIAN = 78

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.409 TWLG_SERBIAN_CYRILLIC = 106

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.
165.4. CLASS TWAINMBS

165.4.410 TWLG_SERBIAN_LATIN = 79


165.4.411 TWLG_SIKKIMI = 107


165.4.412 TWLG_SLOVAK = 80


165.4.413 TWLG_SLOVENIAN = 81


165.4.414 TWLG_SPA = 11


165.4.415 TWLG_SPANISH = 11


165.4.416 TWLG_SPANISH_MEXICAN = 82


165.4.417 TWLG_SPANISH_MODERN = 83

165.4.418  TWLG_SWE = 12

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.419  TWLG_SWEDISH = 12

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.420  TWLG_SWEDISH_FINLAND = 108

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.421  TWLG_TAMIL = 109

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.422  TWLG_TELUGU = 110

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.423  TWLG_THAI = 84

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.424  TWLG_TRIPURI = 111

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.425  TWLG_TURKISH = 85

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.
165.4  CLASS TWAINMBS

165.4.426  TWLG_UKRANIAN = 86

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.427  TWLG_URDU = 112

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.428  TWLG_USA = 13

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.429  TWLG_USERLOCALE = -1

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.430  TWLG_VIETNAMESE = 113

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the language codes.

165.4.431  TWPT_BW = 0

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the pixel format constants. **Notes:** Black & White

165.4.432  TWPT_CIEXYZ = 8

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the pixel format constants. **Notes:** CIEXYZ

165.4.433  TWPT_CMY = 4

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the pixel format constants. **Notes:** CMY
165.4.434  TWPT_CMYK = 5

MBS Picture Plugin, Plugin Version: 12.2. Function: One of the pixel format constants. Notes: CMYK

165.4.435  TWPT_GRAY = 1

MBS Picture Plugin, Plugin Version: 12.2. Function: One of the pixel format constants. Notes: Grayscale

165.4.436  TWPT_PALETTE = 3

MBS Picture Plugin, Plugin Version: 12.2. Function: One of the pixel format constants. Notes: Indexed color Palette

165.4.437  TWPT_RGB = 2

MBS Picture Plugin, Plugin Version: 12.2. Function: One of the pixel format constants. Notes: RGB

165.4.438  TWPT_YUV = 6

MBS Picture Plugin, Plugin Version: 12.2. Function: One of the pixel format constants. Notes: YUV

165.4.439  TWPT_YUVK = 7

MBS Picture Plugin, Plugin Version: 12.2. Function: One of the pixel format constants. Notes: YUVK
165.4. CLASS TWAINMBS

165.4.440  TWRC_CANCEL = 3

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the error codes.  
**Notes:** Operation has been canceled.

165.4.441  TWRC_CHECKSTATUS = 2

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the error codes.  
**Notes:**  
Intended for use with Capability and ImageLayout. Operation failed to completely perform the desired operation. For example, setting Brightness to 3 when its range is -1000 to 1000 with a step of 200. The data source may opt to set the value to 0 and return this status. The application should confirm its last setting, if it depends on getting the exact value it requested.

165.4.442  TWRC_DATANOTAVAILABLE = 9

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the error codes.  
**Notes:**  
Intended for use with extended ImageInfo. There is no data available for the requested item. Scanning may continue. The decision to continue with scanning is at the discretion of the application, depending on which field reported this status.

165.4.443  TWRC_DSEVENT = 4

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the error codes.  
**Notes:**  
Intended for use with DAT_EVENT. The data source processed the event. The application must not take any further action on this message.

165.4.444  TWRC_ENDOFLIST = 7

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the error codes.  
**Notes:**  
Intended for use with DAT_IDENTITY and DAT_FILESYSTEM. There are no more items to enumerate in this list. If a call is needed to close the list, it must be called next.
165.4.445  TWRC_FAILURE = 1

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the error codes.
**Notes:**
May be returned by any operation. An error has occurred.
The application must call status functions, and refer to the condition code for more information.

165.4.446  TWRC_INFONOTSUPPORTED = 8

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the error codes.
**Notes:**
Intended for use with DAT_EXTIMAGEINFO. The requested TWEI data is either not supported by this data source, or is not supported for this particular image.
Scanning may continue. The decision to continue with scanning is at the discretion of the application, depending on which field reported this status.

165.4.447  TWRC_NOTDSEVENT = 5

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the error codes.
**Notes:**
Intended for use with DAT_EVENT. The data source did not process the event.
The application passes the message to its own dialogs.

165.4.448  TWRC_SUCCESS = 0

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the error codes.
**Notes:**
Operation was successful.
The application continues as normal.

165.4.449  TWRC_XFERDONE = 6

MBS Picture Plugin, Plugin Version: 12.2. **Function:** One of the error codes.
**Notes:**
Intended for use with the Image Transfer operations. The image has been fully transferred.
The application must be in state 7. It should call GetImageInfo, if it needs to collect metadata for this image.
165.5  class TwainVersionMBS

165.5.1  class TwainVersionMBS

MBS Picture Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The class for version details.  
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

165.5.2  Methods

165.5.3  Constructor


165.5.4  Properties

165.5.5  Country as Integer

MBS Picture Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The primary country where your Source or application is intended to be distributed.  
**Notes:**  
e.g. Germany.  
(Read and Write property)

165.5.6  Info as String

**Notes:**  
e.g. ”1.0b3 Beta release”.  
(Read and Write property)
165.5.7 Language as Integer

MBS Picture Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:**
The primary language for your Source or application.
**Notes:**
e.g. TWLG_GER.
(Read and Write property)

165.5.8 MajorNum as Integer

MBS Picture Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:**
This refers to your application or Source’s major revision number.
**Notes:**
e.g. The 2 in ”version 2.1”.
(Read and Write property)

165.5.9 MinorNum as Integer

MBS Picture Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:**
The incremental revision number of your application or Source.
**Notes:**
e.g. The 1 in ”version 2.1”.
(Read and Write property)
Chapter 166

Unsanity Smart Crash Reporter

166.1 module UnsanitySmartCrashReporterMBS

166.1.1 module UnsanitySmartCrashReporterMBS

MBS MacOSX Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Contains API definitions to use with Smart Crash Reports.

**Notes:**

See the Unsanity Smart Crash Reports SDK for more details.

Smart Crash Reports is an enhancement for the Apple’s CrashReporter application introduced in Mac OS X 10.4. It allows 3rd party developers to register their own match specifiers, and if the crash log the user is about to submit contains the match specifier, the crash log will be sent to the developer as well as Apple. This greatly enhances the user experience of the OS, and allows developers to receive crashes and improve their software in a timely manner.

Smart Crash Reports requires no Application Enhancer or similar “patching” frameworks users have to install; they operate on the InputManager mechanism that built-in Mac OS X.

Smart Crash Reports is completely free to use for both users and developers; Unsanity is providing it as a service to the community being certain it will benefit all the users on the platform.

How does Smart Crash Reports work?
Whenever an application crashes on user’s computer and they click on the Report... button, Smart Crash Reports analyzes the crash log that is about to be submitted to Apple. If the crash log is determined to be related to a developer that registered the application or product (Contextual Menu Module, InputManager, or any other type of system plugin), then the user is given an option to submit the bug report to both that developer and Apple, thus giving the developer the chance to fix the bug in the crashed product in a timely manner.

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manner. For developers, there is two ways to make Smart Crash Reports recognize your product. First, and probably the simplest one, is to add a couple of new keys into the application’s Info.plist file that instruct Smart Crash Reports what to do in case that application crashes. However, this method only works for stand-alone applications and not plugins. Second method involves using of the supplied API calls to register a MatchSpecifier with the system. A match specifier is a simple string (no wildcards or regexp) that contains full or partial name of developer product(s) CFBundleIdentifier (for example, "com.somecompany."). When an application crashes on user’s computer, Smart Crash Reports system analyzes the crashed thread of the crash log to determine if it contains any of the match specifiers registered with it. If so, the crash is likely related to the developer who registered the match specifier, so Smart Crash Reports takes the appropriate action from there on.

How Developer Receives The Crash Reports
Developer can receive the crash reports that Smart Crash Reports detected as belonging to them in either of two ways:

- By E-Mail to the address provided during the match specifier registration (Unsanity server will handle the mailing for you)
- By a custom CGI script on your web server that processes CrashReporter logs

So, How to Make My Application Work With Smart Crash Reports so I Receive Crash Logs?
If you develop an application and would like to simply receive all the crash logs related to it, do this:

Obtain an E-mail Ticket ID for the E-mail you wish to receive reports at by going to the following URL: http://www.unsanity.com/goto/email-ticket/.
Add the following keys to your application Info.plist:

```xml
<key>SmartCrashReports_CompanyName</key>
<string>Your Company Name</string>
<key>SmartCrashReports_EmailTicket</key>
<string>SCR-XXXXXXXX</string>
```
Replace "Your Company Name" with a readable (short) company name, and "SCR-XXXXXXXX" with the Email Ticket ID you will receive in the E-mail after performing Step 1.
You're all done! If you’d like to use your own CGI to process the crash logs, replace SmartCrashReports_EmailTicket key with the SmartCrashReports_URL key.
Now your application is successfully registered with the Smart Crash Reports system and you will receive crash logs for it in the mail.

If you are developing a plugin, InputManager, and whatnot, you have to use the API provided to register your MatchSpecifier:

Download the Smart Crash Reports SDK. It will contain two files (among others), SmartCrashReportsAPI.o and SmartCrashReportsAPI.h. Add them to your project.
Obtain an E-mail Ticket ID for the E-mail you wish to receive reports at by going to the following URL: http://www.unsanity.com/goto/email-ticket/.
Somewhere in your application, or plugin, add the following line:
RegisterMatchSpecifier("", "Your Company Name", ",", "SCR-XXXXXXXX", ",");
Replace "Your Company Name" with a readable (short) company name, and "SCR-XXXXXXXX" with the
Email Ticket ID you will receive in the E-mail after performing Step 2.
Note: The best way to call this is after your application has finished launching, such as applicationDidFinishLaunching: in the NSApp delegate for Cocoa apps, or
whatever for any other types of projects.
There’s no Step 4! Now your product is successfully registered with the Smart Crash Reports system and
you will receive crash logs containing the match specifier in the crashed thread in the mail.

Notes: It is not necessary to register with Smart Crash Reports on every application launch; once you reg-
ister, it is permanent and will exist until user deletes the SCR database somehow. However, it takes little
speed/memory overhead so you can safely call it on every launch to avoid doing ’is registered already’ checks
and whatnot.

How to Make a CGI to Accept Crash Reports On Your Site?
If you wish to receive crash reports on your Web site, you can implement the custom Submit URL script
that user’s CrashReporter.app will contact directly. However, keep in mind that the following criteria should
be met:

Your web server script has to be in the same place over next several years, at the very least, to allow delivery
of crash reports to you.
You are responsible for adjusting the web script if the format CrashReporter.app sends crash reports in
changes.
Your web server should be accessible 24/7 and be on a reasonably fast connection to not delay user’s sub-
mission process.

For the above reasons, it is recommended to obtain the E-mail ticket from Unsanity and use the E-mail
feature of Smart Crash Reports. Unsanity will make sure the server is accessible, knows how to parse all
formats of submissions, and will safely redirect the crash reports to the email you provide.
If your own Web script is still the way you want to go, here is the list of keys currently known to be passed
to the script by the CrashReporter.app in a POST form data:

url_from: contains the subject of the crash report, usually "<Some Application>crash"
feedback_comments: user comments they entered in the additional info fields
bug_type: unknown constant, probably determines which POST elements are available; presently 9.
app_name: full crashed application name
app_version: version of the crashed application
os_version: Mac OS X version, in form 10.X.X:BUILD (for example, "10.4.2:8C46")
machine_config: Computer configuration string, for example, "PowerMac7,2 (2048 MB)"
page_source: Contains BASE64-encoded crash report
system_profile: Contains BASE64-encoded property list with a brief system profile of the user’s system.

Please note that these form keys are subject to change by Apple, so it is your responsibility to adjust the
scripts on your Web servers if such thing happens.

What Are The Licensing Terms for Smart Crash Reports and its SDK?
You are free to use and distribute Smart Crash Reports enabled products freely in any form without prior
permission from Unsanity, LLC. If you like the system and would like to return the favor Unsanity is doing
to the developer community, link to Smart Crash Reports somewhere on your SCR-enabled product page:
This product uses http://www.unsanity.com/smartcrashreports/ by Unsanity.

166.1.2 Methods

166.1.3 CanInstall as Integer

MBS MacOSX Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Check whether this library can install Smart Crash Reports on user’s system.
**Notes:**
Returns TRUE if Smart Crash Reports can be installed, or FALSE if they are already installed (of the same
or newer version).
See the Unsanity Smart Crash Reports SDK for more details.
See also:

- 166.1.4 CanInstall(byref AuthenticationWillBeRequired as boolean) as Integer

166.1.4 CanInstall(byref AuthenticationWillBeRequired as boolean) as Integer

MBS MacOSX Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Check whether this library can install Smart Crash Reports on user’s system.
**Notes:**
outOptionalAuthenticationWillBeRequired: the Boolean the param points to will be set to TRUE if an
authentication will be required to install Smart Crash Reports.
Returns TRUE if Smart Crash Reports can be installed, or FALSE if they are already installed (of the same
or newer version).
See the Unsanity Smart Crash Reports SDK for more details.
See also:

- 166.1.3 CanInstall as Integer

166.1.5 Install(inInstallFlags as Integer) as Integer

MBS MacOSX Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Attempt to install Smart Crash Reports on user’s system.
**Notes:**
166.1. MODULE UNSANITYSMARTCRASHREPORTERMBS

Presents a dialog asking the user if he/she want to install Smart Crash Reports, along with a link for more information, and Don’t Show Again checkbox, and, if confirmed by the user, installs Smart Crash Reports from the library’s archive, if possible. The confirmation dialog will block the host application until the user makes the choice.

inInstallFlags: A bit mask containing the installation options.
Returns an error code.

See the Unsanity Smart Crash Reports SDK for more details.

166.1.6 InstallableVersion as Integer

MBS MacOSX Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Get the version of Smart Crash Reports that this library can install.
**Notes:**
Returns an unsigned integer containing the version of Smart Crash Reports (in CFBundleGetVersionNumber() format) bundled in this library.
See the Unsanity Smart Crash Reports SDK for more details.

166.1.7 InstalledVersion as Integer

MBS MacOSX Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Get the version of Smart Crash Reports installed on user’s system.
**Notes:**
Returns an unsigned integer containing the version of Smart Crash Reports (in CFBundleGetVersionNumber() format), or 0 if Smart Crash Reports are not installed.
See the Unsanity Smart Crash Reports SDK for more details.
See also:
• 166.1.8 InstalledVersion(byref IsInstalledGlobally as boolean) as Integer

166.1.8 InstalledVersion(byref IsInstalledGlobally as boolean) as Integer

MBS MacOSX Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Get the version of Smart Crash Reports installed on user’s system.
**Notes:**
IsInstalledGlobally: The Boolean the param points to will hold TRUE if Smart Crash Reports are installed for all users, or FALSE if they are installed for the current user only.
Returns an unsigned integer containing the version of Smart Crash Reports (in CFBundleGetVersionNumber() format), or 0 if Smart Crash Reports are not installed.
See the Unsanity Smart Crash Reports SDK for more details.

See also:

- 166.1.7 InstalledVersion as Integer

166.1.9  IsMatchSpecifierRegistered(inMatchString as string) as Integer

MBS MacOSX Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Query whether the match specifier is registered with the Smart Crash Reports system.

**Notes:**
Queries whether the product is registered with the Smart Crash Reports system.

inMatchString: The match string to query for. Note that SCR will perform partial matches search, too, so for example if you have "com.mycompany" registered, and you query against "com.mycompany.otherapp", this function will return positive result.

See the Unsanity Smart Crash Reports SDK for more details.
See also:

- 166.1.10 IsMatchSpecifierRegistered(inMatchString as string, byref RealMatchString as string) as Integer

166.1.10  IsMatchSpecifierRegistered(inMatchString as string, byref RealMatchString as string) as Integer

MBS MacOSX Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Query whether the match specifier is registered with the Smart Crash Reports system.

**Notes:**
Queries whether the product is registered with the Smart Crash Reports system.

inMatchString: The match string to query for. Note that SCR will perform partial matches search, too, so for example if you have "com.mycompany" registered, and you query against "com.mycompany.otherapp", this function will return positive result.

outOptionalRealMatchString: This variable will contain the "real" match string that SCR contains in the database. You can use it in calls to UnregisterProduct later, if you want.

**Result:**
0: The match string you have provided is not registered with SCR.
1: The match string you have provided is registered with SCR.
-1: inMatchString is "" or function not available.
See the Unsanity Smart Crash Reports SDK for more details.

See also:

- 166.1.9 IsMatchSpecifierRegistered(inMatchString as string) as Integer

166.1.11 RegisterMatchSpecifier(inMatchString as string, inCompanyName as string, inSubmissionURL as string, inSubmissionEmailTicket as string, inOptionalCommentsTemplate as string="") as Integer

MBS MacOSX Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Registers your match specifier with the Smart Crash Reports system.

**Notes:**

Register your match specifier with the Smart Crash Reports system. Once this call is done, crash reports containing inMatchString in the crashed thread will be submitted to you, either to the submission URL (you have to implement the script on your web server), or to the submission email (Unsanity server will forward the report to you).

- **inMatchString:** The product ID string to match or "" to use the current bundle identifier. Normally, this is a part of a CFBundleIdentifier of your product. For example, if your product CFBundleIdentifier is "com.mycompany.myapp", it is a good idea to set inProductIDMatchString to "com.mycompany.", since it will catch all of the products of your company. If you pass "" to this argument, an attempt to use CFBundleIdentifier from the main bundle will be used, which is handy for most applications out there, but not acceptable for Contextual Menu Modules, Preference Panes and other plugins.

- **inCompanyName:** The company name in user-readable format. Smart Crash Reports will substitute "Apple" with this string, so make sure it's not too long. Example: "My Company"

- **inSubmissionURL:** The full URL to the script on your Web server that will handle the submissions, or "" if you prefer the crash report to be sent to you via email (in this case, inSubmissionEmail must be not ""). Example: "http://www.mycompany.com/cgi-bin/processor.cgi"

- **inSubmissionEmailTicket:** The email ticket for email you wish to receive crash report at, or "" if you are handling it yourself on your web server. If this is set, Unsanity server will handle the submission and email you the crash log. Important: this is NOT the email address. It is a unique email ticket that you have to register with Unsanity by going to http://www.unsanity.com/goto/email-ticket/. This is done for email verification purposes, and also to not expose your real email to end users, if they peek inside of the SCR database somehow.

- **inOptionalCommentsTemplate:** this string will be inserted into the "Description" field of the CrashReporter dialog. This can be useful if you want to put something like "Put your email here if you wish to be contacted by the developer regarding this crash log", or anything else.

Result codes:
noErr=0 Registration successful. If there is already such a match specifier registered, it is replaced with the fresh information supplied to this call.

paramErr=-50 inSubmissionURL and inSubmissionEmailTicket are "", or inMatchString is "", or inCompanyName is ""

cNoMemErr=-152 Not enough memory to perform selected operation.

permErr=-54 Not enough permissions to write changes to disk.

bdNamErr=37 The match string is malformed, or too wide to be accepted (don’t try to register "com.", etc!)

See the Unsanity Smart Crash Reports SDK for more details.

166.1.12 UnregisterMatchSpecifier(inMatchString as string) as Integer

MBS MacOSX Plugin, Plugin Version: 8.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Unregisters your product(s) with the Smart Crash Reports system.

**Notes:**

Unregisters your product(s) with the Smart Crash Reports system. Performing this call will cause Smart Crash Reports to stop submitting bug reports for the inMatchString provided. Note that for this call to succeed, inMatchString must exactly match the one used in call to RegisterProduct.

inMatchString: The match string to unregister. This must be the same match string as used in the RegisterProduct call before.

**Result:**

noErr=0 Unregistration successful.

paramErr=-50 inMatchString is ""

cNoMemErr=-152 Not enough memory to perform selected operation.

permErr=-54 Not enough permissions to write changes to disk.

fnfErr=-43 The provided inMatchString was not found in the mart Crash Reports database. You can safely ignore this error, as it means that the match string you’ve provided does not exist already.

See the Unsanity Smart Crash Reports SDK for more details.
166.1.3  Constants

166.1.14  kUnsanitySCR_DoNotPresentInstallUI=4

MBS MacOSX Plugin, Plugin Version: 8.2. **Function:** One of the install flags.

**Notes:**
If set, the confirmation dialog shown to the user will not be used and the silent installation will be attempted.
If not set, the confirmation dialog will be shown to the user asking whether he/she wants to install Smart Crash Reports or not. The confirmation dialog will block the application until dismissed.

See the Unsanity Smart Crash Reports SDK for more details.

166.1.15  kUnsanitySCR_GlobalInstall=2

MBS MacOSX Plugin, Plugin Version: 8.2. **Function:** One of the install flags.

**Notes:**
If set, a global installation will be attempted (provided the user can authenticate). If not set, Smart Crash Reports will be installed for current user only.

See the Unsanity Smart Crash Reports SDK for more details.

166.1.16  kUnsanitySCR_InfoPlist_CommentsTemplate="SmartCrashReports_CommentsTemplate"

MBS MacOSX Plugin, Plugin Version: 8.2. **Function:** One of the keys defined for the Info.plist of the Application.

**Notes:** See the Unsanity Smart Crash Reports SDK for more details.

166.1.17  kUnsanitySCR_InfoPlist_CompanyName="SmartCrashReports_CompanyName"

MBS MacOSX Plugin, Plugin Version: 8.2. **Function:** One of the keys defined for the Info.plist of the Application.

**Notes:** See the Unsanity Smart Crash Reports SDK for more details.

166.1.18  kUnsanitySCR_InfoPlist_SubmissionEmailTicket="SmartCrashReports_EmailTicket"

MBS MacOSX Plugin, Plugin Version: 8.2. **Function:** One of the keys defined for the Info.plist of the Application.
Notes: See the Unsanity Smart Crash Reports SDK for more details.

166.1.19  kUnsanitySCR_InfoPlist_SubmissionURL="SmartCrashReports_URL"

MBS MacOSX Plugin, Plugin Version: 8.2. Function: One of the keys defined for the Info.plist of the Application.
Notes: See the Unsanity Smart Crash Reports SDK for more details.

166.1.20  kUnsanitySCR_Install_AuthFailure=-111

MBS MacOSX Plugin, Plugin Version: 8.2. Function: One of the result codes returned from the Install() function.
Notes:
Could not install because user failed to authenticate for the global install.

See the Unsanity Smart Crash Reports SDK for more details.

166.1.21  kUnsanitySCR_Install_InstalledGlobally=-13

MBS MacOSX Plugin, Plugin Version: 8.2. Function: One of the result codes returned from the Install() function.
Notes:
Smart Crash Reports are already installed globally and this API can not install into /Library as it would require additional fiddling with the authorization which is beyond the scope of this API.

See the Unsanity Smart Crash Reports SDK for more details.

166.1.22  kUnsanitySCR_Install_NoError=0

MBS MacOSX Plugin, Plugin Version: 8.2. Function: One of the result codes returned from the Install() function.
Notes:
No error. Installation succeeded.

See the Unsanity Smart Crash Reports SDK for more details.
166.1.23  kUnsanitySCR_Install_NoPermissions=-54

MBS MacOSX Plugin, Plugin Version: 8.2. **Function:** One of the result codes returned from the Install() function.
**Notes:**
Could not install because of file permission issues.

See the Unsanity Smart Crash Reports SDK for more details.

166.1.24  kUnsanitySCR_Install_OutOfMemory=-108

MBS MacOSX Plugin, Plugin Version: 8.2. **Function:** One of the result codes returned from the Install() function.
**Notes:**
Could not allocate needed memory for the installation.

See the Unsanity Smart Crash Reports SDK for more details.

166.1.25  kUnsanitySCR_Install_UserCancelled=-15

MBS MacOSX Plugin, Plugin Version: 8.2. **Function:** One of the result codes returned from the Install() function.
**Notes:**
The user cancelled.

See the Unsanity Smart Crash Reports SDK for more details.

166.1.26  kUnsanitySCR_Install_WillNotInstall=-14

MBS MacOSX Plugin, Plugin Version: 8.2. **Function:** One of the result codes returned from the Install() function.
**Notes:**
Could not install because a newer or same version of Smart Crash Reports is already installed.

See the Unsanity Smart Crash Reports SDK for more details.
Chapter 167

USB

167.1 class HIDAPIDeviceInfoMBS

167.1.1 class HIDAPIDeviceInfoMBS

MBS USB Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for device information.

167.1.2 Properties

167.1.3 InterfaceNumber as Integer

MBS USB Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The USB interface which this logical device represents.
**Notes:**
Valid on both Linux implementations in all cases, and valid on the Windows implementation only if the device contains more than one interface.
(Read only property)

167.1.4 ManufacturerString as String

**Notes:** (Read only property)
167.1.5  NextDevice as HIDAPIDeviceInfoMBS

MBS USB Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Next device.
**Notes:** (Read only property)

167.1.6  Path as String

MBS USB Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Platform-specific device path.
**Notes:** (Read only property)

167.1.7  ProductID as Integer

MBS USB Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Device Product ID.
**Notes:** (Read only property)

167.1.8  ProductString as String

MBS USB Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Product string.
**Notes:** (Read only property)

167.1.9  ReleaseNumber as Integer

MBS USB Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Device Release Number in binary-coded decimal, also known as Device Version Number.
**Notes:** (Read only property)

167.1.10  SerialNumber as String

MBS USB Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Serial Number.
**Notes:** (Read only property)
167.1.11 Usage as Integer

MBS USB Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Usage for this Device/Interface (Windows/Mac only).
**Notes:** (Read only property)

167.1.12 UsagePage as Integer

MBS USB Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Usage Page for this Device/Interface (Windows/Mac only).
**Notes:** (Read only property)

167.1.13 VendorID as Integer

MBS USB Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Device Vendor ID.
**Notes:** (Read only property)
167.2 class HIDAPIDeviceMBS

167.2.1 class HIDAPIDeviceMBS

MBS USB Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for a HIDAPI device.
**Notes:**
For HIDAPI see website:
https://github.com/signal11/hidapi

The MBS Plugin includes a copy of hidapi for Mac, Windows and Linux.
The linux version needs libudev installed.

You can optionally load a different version of hidapi with LoadLibrary methods.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

167.2.2 Methods

167.2.3 Close

MBS USB Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Close a HID device.

167.2.4 Constructor

MBS USB Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

167.2.5 Enumerate(VendorID as Integer = 0, ProduceID as Integer = 0) as HIDAPIDeviceInfoMBS

MBS USB Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Enumerate the HID Devices.
**Notes:** This function returns a linked list of all the HID devices attached to the system which match VendorID and ProduceID. If VendorID is set to 0 then any vendor matches. If ProduceID is set to 0 then any product matches. If VendorID and ProduceID are both set to 0, then all HID devices will be returned.
167.2.6 GetFeatureReport(ReportID as Integer, MaxLength as Integer) as MemoryBlock

MBS USB Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get a feature report from a HID device.

**Notes:**
Set the first byte of Data to the Report ID of the report to be read. Make sure to allow space for this extra byte in data. Upon return, the first byte will still contain the Report ID, and the report data will start in data.UInt8(1).

ReportID: The report ID to read.

This function returns the number of bytes read plus one for the report ID (which is still in the first byte), or -1 on error.

167.2.7 IndexedString(Index as Integer, MaxLen as Integer = 1024) as String

MBS USB Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get a string from a HID device, based on its string index.

**Notes:**
Index: The index of the string to get.
maxlen: The maximum length for read buffer.
Returns text read.

167.2.8 Init as Integer

MBS USB Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Initialize the HIDAPI library.

**Notes:**
This function initializes the HIDAPI library. Calling it is not strictly necessary, as it will be called automatically by Enumerate() and any of the Open*() functions if it is needed. This function should be called at the beginning of execution however, if there is a chance of HIDAPI handles being opened by different threads simultaneously.
This function returns 0 on success and -1 on error.

167.2.9 LoadError as String

MBS USB Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The load error message.
167.2.10  LoadLibrary(File as FolderItem) as boolean

MBS USB Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads the library.
**Notes:**
Returns true on success.
You can load a custom libhidapi.dylib (Mac), libhidapi.so (Linux) or libhidapi.dll (Windows).
See also:

- 167.2.11 LoadLibrary(Path as string) as boolean

167.2.11  LoadLibrary(Path as string) as boolean

MBS USB Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads the library.
**Notes:**
Returns true on success.
You can load a custom libhidapi.dylib (Mac), libhidapi.so (Linux) or libhidapi.dll (Windows).
See also:

- 167.2.10 LoadLibrary(File as FolderItem) as boolean

167.2.12  Open(VendorID as Integer, ProduceID as Integer, SerialNumber as String = "") as HIDAPIDeviceMBS

MBS USB Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Open a HID device using a Vendor ID (VID), Product ID (PID) and optionally a serial number.
**Notes:**
If SerialNumber is "", the first device with the specified VID and PID is opened.
VendorID: The Vendor ID (VID) of the device to open.
ProduceID: The Product ID (PID) of the device to open.
SerialNumber: The Serial Number of the device to open (Optionally ")

This function returns a pointer to a HIDAPIDeviceMBS object on success or nil on failure.

167.2.13  OpenPath(path as string) as HIDAPIDeviceMBS

MBS USB Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Open a HID device by its path name.
**Notes:**
The path name be determined by calling Enumerate(), or a platform-specific path name can be used (eg: /dev/hidraw0 on Linux).
Path: The path name of the device to open.
This function returns a pointer to a HIDAPIDeviceMBS object on success or nil on failure.

167.2.14 Read(MaxLength as Integer) as MemoryBlock

Notes:
Input reports are returned to the host through the INTERRUPT IN endpoint. The first byte will contain the Report number if the device uses numbered reports.
MaxLength: The number of bytes to read. For devices with multiple reports, make sure to read an extra byte for the report number.
This function returns the actual number of bytes read and -1 on error. If no packet was available to be read and the handle is in non-blocking mode, this function returns 0.

167.2.15 ReadTimeOut(MaxLength as Integer, TimeoutMS as Integer) as MemoryBlock

Notes:
Input reports are returned to the host through the INTERRUPT IN endpoint. The first byte will contain the Report number if the device uses numbered reports.
MaxLength: The number of bytes to read. For devices with multiple reports, make sure to read an extra byte for the report number.
TimeoutMS: timeout in milliseconds or -1 for blocking wait.
This function returns the actual number of bytes read and -1 on error. If no packet was available to be read within the timeout period, this function returns 0.
167.2.16 SendFeatureReport(data as MemoryBlock) as Integer

MBS USB Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Send a Feature report to the device. **Notes:**

Feature reports are sent over the Control endpoint as a Set_Report transfer. The first byte of Data must contain the Report ID. For devices which only support a single report, this must be set to 0. The remaining bytes contain the report data. Since the Report ID is mandatory, calls to SendFeatureReport() will always contain one more byte than the report contains. For example, if a hid report is 16 bytes long, 17 bytes must be passed to SendFeatureReport(): the Report ID (or 0, for devices which do not use numbered reports), followed by the report data (16 bytes). In this example, the length passed in would be 17.

data The data to send, including the report number as the first byte.

This function returns the actual number of bytes written and -1 on error. See also:

- 167.2.17 SendFeatureReport(data as String) as Integer

167.2.17 SendFeatureReport(data as String) as Integer

MBS USB Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Send a Feature report to the device. **Notes:**

Feature reports are sent over the Control endpoint as a Set_Report transfer. The first byte of Data must contain the Report ID. For devices which only support a single report, this must be set to 0. The remaining bytes contain the report data. Since the Report ID is mandatory, calls to SendFeatureReport() will always contain one more byte than the report contains. For example, if a hid report is 16 bytes long, 17 bytes must be passed to SendFeatureReport(): the Report ID (or 0, for devices which do not use numbered reports), followed by the report data (16 bytes). In this example, the length passed in would be 17.

data The data to send, including the report number as the first byte.

This function returns the actual number of bytes written and -1 on error. See also:

- 167.2.16 SendFeatureReport(data as MemoryBlock) as Integer

167.2.18 Shutdown as Integer

MBS USB Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Finalize the HIDAPI library.
167.2. CLASS HIDAPIDeviceMBS

Notes:
This function frees all of the static data associated with HIDAPI. It should be called at the end of execution to avoid memory leaks.
This function returns 0 on success and -1 on error.

167.2.19 Write(data as MemoryBlock) as Integer

Notes:
The first byte of data must contain the Report ID. For devices which only support a single report, this must be set to 0x0. The remaining bytes contain the report data. Since the Report ID is mandatory, calls to Write() will always contain one more byte than the report contains. For example, if a hid report is 16 bytes long, 17 bytes must be passed to Write(), the Report ID (or 0x0, for devices with a single report), followed by the report data (16 bytes). In this example, the length passed in would be 17.
Write() will send the data on the first OUT endpoint, if one exists. If it does not, it will send the data through the Control Endpoint (Endpoint 0).

data: The data to send, including the report number as the first byte.

This function returns the actual number of bytes written and -1 on error.
See also:

- 167.2.20 Write(data as String) as Integer

167.2.20 Write(data as String) as Integer

Notes:
The first byte of data must contain the Report ID. For devices which only support a single report, this must be set to 0x0. The remaining bytes contain the report data. Since the Report ID is mandatory, calls to Write() will always contain one more byte than the report contains. For example, if a hid report is 16 bytes long, 17 bytes must be passed to Write(), the Report ID (or 0x0, for devices with a single report), followed by the report data (16 bytes). In this example, the length passed in would be 17.
Write() will send the data on the first OUT endpoint, if one exists. If it does not, it will send the data through the Control Endpoint (Endpoint 0).

data: The data to send, including the report number as the first byte.
This function returns the actual number of bytes written and -1 on error.

See also:

- 167.2.19 Write(data as MemoryBlock) as Integer

167.2.21 Properties

167.2.22 DeviceHandle as Integer

MBS USB Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The device handle used.
**Notes:**
For Windows a HANDLE to the open device, for Mac a IOHIDDeviceRef reference and Linux the handle from open function.
(Read only property)

167.2.23 Error as String

MBS USB Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get a string describing the last error which occurred.
**Notes:**
This function returns a string containing the last error which occurred or "" if none has occurred.
(Read only property)

167.2.24 FeatureReportLength as Integer

MBS USB Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:**
The length of a feature report.
**Notes:**
Not implemented for Linux.
Returns -1 if unknown.
On Mac this is more the maximum report length.
(Read only property)

167.2.25 Handle as Integer

MBS USB Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The internal object reference.
167.2. CLASS HIDAPIDEVICEMBS

Notes: (Read only property)

167.2.26 InputReportLength as Integer

MBS USB Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The length of an input report.
**Notes:**
Not implemented for Linux.
Returns -1 if unknown.
On Mac this is more the maximum report length.
(Read only property)

167.2.27 ManufacturerString as String

MBS USB Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The Manufacturer String from a HID device.
**Notes:** (Read only property)

167.2.28 NonBlocking as Boolean

MBS USB Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set the device handle to be non-blocking.
**Notes:**
In non-blocking mode calls to Read() will return immediately with a value of 0 if there is no data to be read.
In blocking mode, Read() will wait (block) until there is data to read before returning.
Nonblocking can be turned on and off at any time.

Value true: enable or not the nonblocking reads.
Value false: to disable nonblocking.
(Read and Write property)

167.2.29 OutputReportLength as Integer

MBS USB Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: No. **Function:** The length of an output report.
**Notes:**
Not implemented for Linux.
Returns -1 if unknown.
On Mac this is more the maximum report length.
(Read only property)

167.2.30  ProductString as String

MBS USB Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The Product String from a HID device.
**Notes:** (Read only property)

167.2.31  SerialNumber as String

MBS USB Plugin, Plugin Version: 16.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The Serial Number String from a HID device.
**Notes:** (Read only property)
167.3. CLASS LIBUSBCONFIGDESCRIPTORMBS

167.3 class LibUSBConfigDescriptorMBS

167.3.1 class LibUSBConfigDescriptorMBS

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class representing the standard USB configuration descriptor. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

167.3.2 Methods

167.3.3 Constructor

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The private constructor.

167.3.4 GetInterface(index as Integer) as LibUSBInterfaceMBS

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries interface by index.

167.3.5 Properties

167.3.6 AttributesBitmap as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Configuration characteristics. **Notes:** (Read only property)

167.3.7 Configuration as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Index of string descriptor describing this configuration. **Notes:** (Read only property)
167.3.8 ConfigurationValue as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Identifier value for this configuration. **Notes:** (Read only property)

167.3.9 DescriptorType as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Descriptor type. **Notes:** (Read only property)

167.3.10 extra as MemoryBlock

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Extra descriptors. **Notes:** (Read only property)

167.3.11 extraLength as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Length of the extra descriptors, in bytes. **Notes:** (Read only property)

167.3.12 InterfaceDescriptors as Variant

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Array of interfaces supported by this configuration. **Notes:** (Read only property)

167.3.13 Length as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Size of this descriptor (in bytes) **Notes:** (Read only property)
167.3.14 MaxPower as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Maximum power consumption of the USB device from this bus in this configuration when the device is fully operation.

**Notes:**
Expressed in units of 2 mA when the device is operating in high-speed mode and in units of 8 mA when the device is operating in super-speed mode.
(Read only property)

167.3.15 NumInterfaces as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Number of interfaces supported by this configuration.

**Notes:** (Read only property)

167.3.16 TotalLength as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Total length of data returned for this configuration.

**Notes:** (Read only property)
167.4 class LibUSBDeviceDescriptorMBS

167.4.1 class LibUSBDeviceDescriptorMBS

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A class representing the standard USB device descriptor.
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

167.4.2 Methods

167.4.3 Constructor

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

167.4.4 Properties

167.4.5 DescriptorType as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Descriptor type.
**Notes:** (Read only property)

167.4.6 DeviceClass as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
USB-IF class code for the device.
**Notes:** (Read only property)

167.4.7 DeviceProtocol as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
USB-IF protocol code for the device, qualified by the DeviceClass and DeviceSubClass values.
**Notes:** (Read only property)
167.4.8 DeviceReleaseNumber as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Device release number in binary-coded decimal.
**Notes:** (Read only property)

167.4.9 DeviceSubClass as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** USB-IF subclass code for the device, qualified by the DeviceClass value.
**Notes:** (Read only property)

167.4.10 IndexManufacturer as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Index of string descriptor describing manufacturer.
**Notes:** (Read only property)

167.4.11 IndexProduct as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Index of string descriptor describing product.
**Notes:** (Read only property)

167.4.12 IndexSerialNumber as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Index of string descriptor containing device serial number.
**Notes:** (Read only property)

167.4.13 Length as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Size of this descriptor (in bytes).
**Notes:** (Read only property)
167.4.14 MaxPacketSize0 as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Maximum packet size for endpoint 0.  
**Notes:** (Read only property)

167.4.15 NumConfigurations as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Number of possible configurations.  
**Notes:** (Read only property)

167.4.16 ProductID as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** USB-IF product ID.  
**Notes:** (Read only property)

167.4.17 USBReleaseNumber as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** USB specification release number in binary-coded decimal.  
**Notes:** (Read only property)

167.4.18 VendorID as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** USB-IF vendor ID.  
**Notes:** (Read only property)

167.4.19 Constants

167.4.20 kClassApplication = & hfe

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the USB class constants.  
**Notes:** Application
167.4.21  kClassAudio = 1

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the USB class constants.  
**Notes:** Audio

167.4.22  kClassComm = 2

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the USB class constants.  
**Notes:** Comm

167.4.23  kClassContentSecurity = 13

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the USB class constants.  
**Notes:** Security

167.4.24  kClassData = 10

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the USB class constants.  
**Notes:** Data

167.4.25  kClassDiagnosticDevice = & hdc

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the USB class constants.  
**Notes:** Diagnostic Device

167.4.26  kClassHID = 3

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the USB class constants.  
**Notes:** HID

167.4.27  kClassHUB = 9

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the USB class constants.  
**Notes:** HUB
167.4.28  \( \text{kClassImage} = 6 \)

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the USB class constants.  
**Notes:** Image

167.4.29  \( \text{kClassMassStorage} = 8 \)

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the USB class constants.  
**Notes:** Storage

167.4.30  \( \text{kClassPerInterface} = 0 \)

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the USB class constants.  
**Notes:** Classes per Interface

167.4.31  \( \text{kClassPersonalHealthcare} = 15 \)

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the USB class constants.  
**Notes:** Personal Healthcare

167.4.32  \( \text{kClassPhysical} = 5 \)

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the USB class constants.  
**Notes:** Physical

167.4.33  \( \text{kClassPrinter} = 7 \)

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the USB class constants.  
**Notes:** Printer

167.4.34  \( \text{kClassPTP} = 6 \)

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the USB class constants.  
**Notes:** PTP
167.4. CLASS LIBUSBDEVICESERSCRIPTORMBS

167.4.35  kClassSmartCard = 11

MBS USB Plugin, Plugin Version: 18.1. Function: One of the USB class constants. Notes: SmartCard

167.4.36  kClassVendorSpecific = 255

MBS USB Plugin, Plugin Version: 18.1. Function: One of the USB class constants. Notes: Vendor Specific

167.4.37  kClassVideo = 14

MBS USB Plugin, Plugin Version: 18.1. Function: One of the USB class constants. Notes: Video

167.4.38  kClassWireless = & he0

MBS USB Plugin, Plugin Version: 18.1. Function: One of the USB class constants. Notes: Wireless
167.5 class LibUSBDeviceMBS

167.5.1 class LibUSBDeviceMBS

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for a device.

**Notes:**

This is both for a device as general and an open connection.

LibUSB abstracts on Mac, Windows and Linux for using USB devices. So far it’s the best generic USB interface we have.

You need libUSB dylib (mac), dll (Windows) and so (Linux) files from LibUSB. For Linux the LibUSB library is usually preinstalled with a LibUSB package, so the plugin finds it automatically.

167.5.2 Methods

167.5.3 AttachKernelDriver(interfaceNumber as Integer)

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Re-attach an interface’s kernel driver, which was previously detached using libusb_detach_kernel_driver().

**Notes:**

This call is only effective on Linux and returns kErrorNotSupported on all other platforms.

This functionality is not available on Darwin or Windows.

**Parameters:**

interfaceNumber: the interface to attach the driver from

LastError is set:

0 on success
kErrorNotFound if no kernel driver was active
kErrorInvalidParam if the interface does not exist
kErrorNoDevice if the device has been disconnected
kErrorNotSupported on platforms where the functionality is not available
kErrorBusy if the driver cannot be attached because the interface is claimed by a program or driver
another error code on other failure
167.5.4 BulkTransfer(endpoint as Integer, data as Ptr, Length as Integer, byref ActualLength as Integer, Timeout as Integer)

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Perform a USB bulk transfer.

**Notes:**

The direction of the transfer is inferred from the direction bits of the endpoint address.

For bulk reads, the length field indicates the maximum length of data you are expecting to receive. If less data arrives than expected, this function will return that data, so be sure to check the transferred output parameter.

You should also check the transferred parameter for bulk writes. Not all of the data may have been written.

Also check transferred when dealing with a timeout error code. libusb may have to split your transfer into a number of chunks to satisfy underlying O/S requirements, meaning that the timeout may expire after the first few chunks have completed. libusb is careful not to lose any data that may have been transferred; do not assume that timeout conditions indicate a complete lack of I/O.

**Parameters:**

- **endpoint** the address of a valid endpoint to communicate with
- **data** a suitably-sized data buffer for either input or output (depending on endpoint)
- **length** for bulk writes, the number of bytes from data to be sent. for bulk reads, the maximum number of bytes to receive into the data buffer.
- **transferred** output location for the number of bytes actually transferred.
- **timeout** timeout (in milliseconds) that this function should wait before giving up due to no response being received. For an unlimited timeout, use value 0.

Lasterror is set to:
- 0 on success (and populates transferred)
- kErrorTimeout if the transfer timed out (and populates transferred)
- kErrorPipe if the endpoint halted
- kErrorOverflow if the device offered more data, see Packets and overflows
- kErrorNoDevice if the device has been disconnected
- another error code on other failures
167.5.5 ClaimInterface(interfaceNumber as Integer)

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Claim an interface on a given device handle.

**Notes:**
You must claim the interface you wish to use before you can perform I/O on any of its endpoints.

It is legal to attempt to claim an already-claimed interface, in which case libusb just returns 0 without doing anything.

Claiming of interfaces is a purely logical operation; it does not cause any requests to be sent over the bus. Interface claiming is used to instruct the underlying operating system that your application wishes to take ownership of the interface.

This is a non-blocking function.

**Parameters:**

- **interfaceNumber:** the bInterfaceNumber of the interface you wish to claim

**LastError is set:**

- 0 on success
- kErrorNotFound if the requested interface does not exist
- kErrorBusy if another program or driver has claimed the interface
- kErrorNoDevice if the device has been disconnected
- a error code on other failure

167.5.6 ClearHalt(endpoint as Integer)

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Clear the halt/stall condition for an endpoint.

**Notes:**
Endpoints with halt status are unable to receive or transmit data until the halt condition is stalled.

You should cancel all pending transfers before attempting to clear the halt condition.

This is a blocking function.

**Parameters:**

- **endpoint:** the endpoint to clear halt status
Returns:
0 on success
kErrorNotFound if the endpoint does not exist
kErrorNoDevice if the device has been disconnected
another error code on other failure

167.5.7 Close

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Close a device handle.
Notes:
Should be called on all open handles before your application exits.
Internally, this function destroys the reference that was added by Open on the given device.
This is a non-blocking function; no requests are sent over the bus.

167.5.8 ControlTransfer(requestType as Integer, Request as Integer, Value as Integer, Index as Integer, data as Ptr, Length as Integer, Timeout as Integer) as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Perform a USB control transfer.
Notes:
The direction of the transfer is inferred from the RequestType field of the setup packet.
The Value, Index and Length fields values should be given in host-endian byte order.

Parameters:

RequestType the request type field for the setup packet
Request the request field for the setup packet
Value the value field for the setup packet
Index the index field for the setup packet
data a suitably-sized data buffer for either input or output (depending on direction bits within bmRequestType)
Length the length field for the setup packet. The data buffer should be at least this size.
timeout timeout (in milliseconds) that this function should wait before giving up due to no response being received. For an unlimited timeout, use value 0.
on success, the number of bytes actually transferred is returned.

LastError is set to:
- kErrorTimeout if the transfer timed out
- kErrorPipe if the control request was not supported by the device
- kErrorNoDevice if the device has been disconnected
- another error code on other failures

167.5.9 DetachKernelDriver(interfaceNumber as Integer)

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Detach a kernel driver from an interface.

**Notes:**
If successful, you will then be able to claim the interface and perform I/O.
This functionality is not available on Darwin or Windows.

**Parameters:**
- interfaceNumber: the interface to detach the driver from

LastError is set:
- 0 on success
- kErrorNotFound if no kernel driver was active
- kErrorInvalidParam if the interface does not exist
- kErrorNoDevice if the device has been disconnected
- kErrorNotSupported on platforms where the functionality is not available
- another error code on other failure

167.5.10 Devices as LibUSBDeviceMBS()

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns a list of USB devices currently attached to the system.

**Notes:**
This is your entry point into finding a USB device to operate.

This return value of this function indicates the number of devices in the resultant list.

The number of devices in the outputted list.
LastError is set to zero on success or or any error codes according to errors encountered by the backend.
167.5.11 ErrorName(ErrorCode as Integer) as String

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns a constant string with the ASCII name of a libusb error code.

167.5.12 GetActiveConfigDescriptor as LibUSBConfigDescriptorMBS

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get the USB configuration descriptor for the currently active configuration.

**Notes:**
This is a non-blocking function which does not involve any requests being sent to the device.

Lasterror is set to:
0 on success
kErrorNotFound if the device is in unconfigured state
another error code on error.

167.5.13 GetConfigDescriptor(Index as Integer) as LibUSBConfigDescriptorMBS

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get a USB configuration descriptor based on its index.

**Notes:**
This is a non-blocking function which does not involve any requests being sent to the device.

**Parameters:**

Index the index of the configuration you wish to retrieve

Lasterror is set to:
0 on success
kErrorNotFound if the configuration does not exist
another error code on error
167.5.14 GetConfigDescriptorByValue(Value as Integer) as LibUSBConfigDescriptorMBS

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get a USB configuration descriptor with a specific ConfigurationValue.

**Notes:**
This is a non-blocking function which does not involve any requests being sent to the device.

Value: the bConfigurationValue of the configuration you wish to retrieve.

LastError is set to:
- 0 on success
- kErrorNotFound if the configuration does not exist
- another error code on error

167.5.15 GetConfiguration as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Determine the bConfigurationValue of the currently active configuration.

**Notes:**
You could formulate your own control request to obtain this information, but this function has the advantage that it may be able to retrieve the information from operating system caches (no I/O involved).

If the OS does not cache this information, then this function will block while a control transfer is submitted to retrieve the information.

This function will return a value of 0 in the config output parameter if the device is in unconfigured state.

Returns Configuration value of the active configuration (only valid for return code 0)

The lasterror is set to:
- 0 on success
- kErrorNoDevice if the device has been disconnected
- another error code on other failure
167.5.16 GetDescriptor(descType as Integer, descIndex as Integer, data as Ptr, Length as Integer) as Integer

Notes: This is a convenience function which formulates the appropriate control message to retrieve the descriptor.

Parameters:
- descType: the descriptor type, see libusb_descriptor_type
- descIndex: the index of the descriptor to retrieve
- data: output buffer for descriptor
- length: size of data buffer

Returns number of bytes returned in data or zero.
Sets lasterror to error code on failure.

167.5.17 GetDeviceDescriptor as LibUSBDeviceDescriptorMBS

Notes: This is a non-blocking function; the device descriptor is cached in memory.

Returns 0 on success or a error code on failure.

167.5.18 GetMaxISOPacketSize(EndPoint as Integer) as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Calculate the maximum packet size which a specific endpoint is capable is sending or receiving in the duration of 1 microframe.
Notes: Only the active configuration is examined. The calculation is based on the wMaxPacketSize field in the endpoint descriptor as described in section 9.6.6 in the USB 2.0 specifications.

If acting on an isochronous or interrupt endpoint, this function will multiply the value found in bits 0:10 by the number of transactions per microframe (determined by bits 11:12). Otherwise, this function just returns
the numeric value found in bits 0:10.

This function is useful for setting up isochronous transfers, for example you might pass the return value from this function to libusb_set_iso_packet_lengths() in order to set the length field of every isochronous packet in a transfer.

Since v1.0.3.

Parameters:
endpoint: address of the endpoint in question

Returns the maximum packet size which can be sent/received on this endpoint.

The lasterror is set to:
0 for success.
kErrorNotFound if the endpoint does not exist
kErrorOther on other failure

167.5.19 GetMaxPacketSize(EndPoint as Integer) as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Convenience function to retrieve the wMaxPacketSize value for a particular endpoint in the active device configuration.

Notes:
This function was originally intended to be of assistance when setting up isochronous transfers, but a design mistake resulted in this function instead. It simply returns the wMaxPacketSize value without considering its contents. If you’re dealing with isochronous transfers, you probably want libusb_get_max_iso_packet_size() instead.

Parameters:
endpoint: address of the endpoint in question

Returns the Max Packet Size value.

The lasterror is set:
0 for success.
kErrorNotFound if the endpoint does not exist
kErrorOther on other failure
167.5.20 **GetStringDescriptor**(descIndex as Integer, LangID as Integer = 0) as String

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieve a descriptor from a device.

**Notes:**
This is a convenience function which formulates the appropriate control message to retrieve the descriptor. The string returned is Unicode, as detailed in the USB specifications.

**Parameters:**
- descIndex: the index of the descriptor to retrieve
- LangID: the language ID for the string descriptor

Returns string.
Lasterror is set to zero or error code on failure.
See also:
- 167.5.21 **GetStringDescriptor**(descIndex as Integer, LangID as Integer = 0, data as Ptr, Length as Integer) as Integer

167.5.21 **GetStringDescriptor**(descIndex as Integer, LangID as Integer = 0, data as Ptr, Length as Integer) as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieve a descriptor from a device.

**Notes:**
This is a convenience function which formulates the appropriate control message to retrieve the descriptor. The string returned is Unicode, as detailed in the USB specifications.

**Parameters:**
- descIndex: the index of the descriptor to retrieve
- LangID: the language ID for the string descriptor
- data: output buffer for descriptor
- length: size of data buffer

Returns number of bytes returned in data.
Lasterror is set to zero or error code on failure.
167.5.22 **GetStringDescriptorAscii(descIndex as Integer) as String**

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieve a string descriptor in ASCII.

**Notes:**
Wrapper around GetStringDescriptor(). Uses the first language supported by the device.

**Parameters:**

- descIndex  the index of the descriptor to retrieve

Returns string.
Lasterror is set to error code on failure and zero on success.
See also:

- 167.5.23 GetStringDescriptorAscii(descIndex as Integer, data as Ptr, Length as Integer) as Integer

167.5.23 **GetStringDescriptorAscii(descIndex as Integer, data as Ptr, Length as Integer) as Integer**

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieve a string descriptor in ASCII.

**Notes:**
Wrapper around GetStringDescriptor(). Uses the first language supported by the device.

**Parameters:**

- descIndex  the index of the descriptor to retrieve
- data  output buffer for ASCII string descriptor
- length  size of data buffer

Returns number of bytes returned in data.
Lasterror is set to error code on failure and zero on success.
See also:
167.5. CLASS LIBUSBDEVICEMBS

- 167.5.22 GetStringDescriptorAscii(descIndex as Integer) as String

167.5.24 HasCapability(Capability as UInt32) as Boolean

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Check at runtime if the loaded library has a given capability.  
**Notes:** Returns true if the running library has the capability, false otherwise.

167.5.25 Initialize as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Initialize libusb.

167.5.26 InterruptTransfer(endpoint as Integer, data as Ptr, Length as Integer, byref ActualLength as Integer, Timeout as Integer)

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Perform a USB interrupt transfer.  
**Notes:**  
The direction of the transfer is inferred from the direction bits of the endpoint address.

For interrupt reads, the length field indicates the maximum length of data you are expecting to receive. If less data arrives than expected, this function will return that data, so be sure to check the transferred output parameter.

You should also check the transferred parameter for interrupt writes. Not all of the data may have been written.

Also check transferred when dealing with a timeout error code. libusb may have to split your transfer into a number of chunks to satisfy underlying O/S requirements, meaning that the timeout may expire after the first few chunks have completed. libusb is careful not to lose any data that may have been transferred; do not assume that timeout conditions indicate a complete lack of I/O.

The default endpoint bInterval value is used as the polling interval.

**Parameters:**

The lasterror property is set to:
The endpoint the address of a valid endpoint to communicate with.

Data a suitably-sized data buffer for either input or output (depending on endpoint).

Length for bulk writes, the number of bytes from data to be sent. For bulk reads, the maximum number of bytes to receive into the data buffer.

Transferred output location for the number of bytes actually transferred.

Timeout timeout (in milliseconds) that this function should wait before giving up due to no response being received. For an unlimited timeout, use value 0.

0 on success (and populates transferred)
kErrorTimeout if the transfer timed out
kErrorPipe if the endpoint halted
kErrorOverflow if the device offered more data, see Packets and overflows
kErrorNoDevice if the device has been disconnected
another error code on other error

167.5.27 KernelDriverActive(interfaceNumber as Integer) as Boolean

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Determine if a kernel driver is active on an interface.

**Notes:**

If a kernel driver is active, you cannot claim the interface, and libusb will be unable to perform I/O.

This functionality is not available on Windows.

**Parameters:**

interfaceNumber: the interface to check

LastError is set:

0 if no kernel driver is active
1 if a kernel driver is active
kErrorNoDevice if the device has been disconnected
kErrorNotSupported on platforms where the functionality is not available
another error code on other failure

167.5.28 LibraryLoaded as Boolean

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether library is loaded.
167.5.29 LibraryLoadErrorMessage as String

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The last error message from loading library.

167.5.30 LibVersion as LibUSBVersionMBS

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Queries version of library.

167.5.31 LoadLibrary(file as folderitem) as boolean

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Loads the libusb library.
**Notes:**
Returns true on success or false on failure.
The LibraryLoadErrorMessage function returns error message on failure.
See also:
- 167.5.32 LoadLibrary(path as string) as boolean

167.5.32 LoadLibrary(path as string) as boolean

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Loads the libusb library.
**Notes:**
Returns true on success or false on failure.
The LibraryLoadErrorMessage function returns error message on failure.
See also:
- 167.5.31 LoadLibrary(file as folderitem) as boolean

167.5.33 Open as Boolean

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Open a device and obtain a device handle.
**Notes:**
A handle allows you to perform I/O on the device in question.
Internally, this function adds a reference to the device. This reference is removed during Close().

This is a non-blocking function; no requests are sent over the bus.

The last error to:
0 on success
kErrorNoMemory on memory allocation failure
kErrorAccess if the user has insufficient permissions
kErrorNoDevice if the device has been disconnected
another error code on other failure

167.5.34 **OpenDevice(VID as Integer, PID as Integer) as LibUSBDeviceMBS**

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Convenience function for finding a device with a particular VID/PID combination. **Notes:**

This function is intended for those scenarios where you are using libusb to knock up a quick test application - it allows you to avoid calling libusb_get_device_list() and worrying about traversing/freeing the list.

This function has limitations and is hence not intended for use in real applications: if multiple devices have the same IDs it will only give you the first one, etc.

**Parameters:**

- **VID** the idVendor value to search for
- **PID** the idProduct value to search for

**Returns:**
a handle for the first found device, or NULL on error or if the device could not be found.

167.5.35 **ReleaseInterface(interfaceNumber as Integer)**

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Release an interface previously claimed with ClaimInterface. **Notes:**

You should release all claimed interfaces before closing a device handle.
This is a blocking function. A SET_INTERFACE control request will be sent to the device, resetting interface state to the first alternate setting.

Parameters:
interfaceNumber: the bInterfaceNumber of the previously-claimed interface

The lasterror:
0 on success
kErrorNotFound if the interface was not claimed
kErrorNoDevice if the device has been disconnected
another error code on other failure

167.5.36  Reset

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Perform a USB port reset to reinitialize a device.

**Notes:**
The system will attempt to restore the previous configuration and alternate settings after the reset has completed.

If the reset fails, the descriptors change, or the previous state cannot be restored, the device will appear to be disconnected and reconnected. This means that the device handle is no longer valid (you should close it) and rediscover the device. An error code of kErrorNotFound indicates when this is the case.

This is a blocking function which usually incurs a noticeable delay.

Lasterror is set:
0 on success
kErrorNotFound if re-enumeration is required, or if the device has been disconnected
another error code on other failure

167.5.37  SetConfiguration(configuration as Integer)

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set the active configuration for a device.

**Notes:**
The operating system may or may not have already set an active configuration on the device. It is up to your application to ensure the correct configuration is selected before you attempt to claim interfaces and perform other operations.
If you call this function on a device already configured with the selected configuration, then this function will act as a lightweight device reset: it will issue a SET_CONFIGURATION request using the current configuration, causing most USB-related device state to be reset (altsetting reset to zero, endpoint halts cleared, toggles reset).

You cannot change/reset configuration if your application has claimed interfaces - you should free them with libusb_release_interface() first. You cannot change/reset configuration if other applications or drivers have claimed interfaces.

A configuration value of -1 will put the device in unconfigured state. The USB specifications state that a configuration value of 0 does this, however buggy devices exist which actually have a configuration 0.

You should always use this function rather than formulating your own SET_CONFIGURATION control request. This is because the underlying operating system needs to know when such changes happen.

This is a blocking function.

Parameters:
configuration: the bConfigurationValue of the configuration you wish to activate, or -1 if you wish to put the device in unconfigured state

The lasterror is set to:
0 on success
kErrorNotFound if the requested configuration does not exist
kErrorBusy if interfaces are currently claimed
kErrorNoDevice if the device has been disconnected
another error code on other failure

167.5.38 SetDebug(level as integer)

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set message verbosity.

**Notes:**
Level 0: no messages ever printed by the library (default)
Level 1: error messages are printed to stderr
Level 2: warning and error messages are printed to stderr
Level 3: informational messages are printed to stdout, warning and error messages are printed to stderr
The default level is 0, which means no messages are ever printed. If you choose to increase the message verbosity level, ensure that your application does not close the stdout/stderr file descriptors.

You are advised to set level 3. libusb is conservative with its message logging and most of the time, will only
log messages that explain error conditions and other oddities. This will help you debug your software.

If the LIBUSB_DEBUG environment variable was set when libusb was initialized, this function does nothing: the message verbosity is fixed to the value in the environment variable.

If libusb was compiled without any message logging, this function does nothing: you’ll never get any messages.
If libusb was compiled with verbose debug message logging, this function does nothing: you’ll always get messages from all levels.

167.5.39 SetInterfaceAltSetting(interfaceNumber as Integer, alternateSetting as Integer)

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Activate an alternate setting for an interface.

**Notes:**
The interface must have been previously claimed with ClaimInterface().

You should always use this function rather than formulating your own SET_INTERFACE control request. This is because the underlying operating system needs to know when such changes happen.

This is a blocking function.

**Parameters:**

- interfaceNumber: the InterfaceNumber of the previously-claimed interface
- alternateSetting: the AlternateSetting of the alternate setting to activate

The lasterror:
- 0 on success
- kErrorNotFound if the interface was not claimed, or the requested alternate setting does not exist
- kErrorNoDevice if the device has been disconnected
- another error code on other failure

167.5.40 Shutdown

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Deinitialize libusb.
Notes: Should be called after closing all open devices and before your application terminates.

167.5.41 Properties

167.5.42 BusNumber as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get the number of the bus that a device is connected to.
Notes: (Read only property)

167.5.43 DeviceAddress as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get the address of the device on the bus it is connected to.
Notes: (Read only property)

167.5.44 DeviceHandle as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The handle to the device.
Notes: (Read only property)

167.5.45 DeviceSpeed as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get the negotiated connection speed for a device.
Notes:
a speed value, where kSpeedUnknown means that the OS doesn’t know or doesn’t support returning the negotiated speed.
(Read only property)

167.5.46 Handle as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The handle to the open device.
Notes: (Read only property)
167.5.47 IsOpen as Boolean

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether device is open. **Notes:** True if you called OpenDevice successful. (Read only property)

167.5.48 Lasterror as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The last error code. **Notes:** (Read and Write property)

167.5.49 Constants

167.5.50 kCapabilitiesHasCapabilities = 0

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the capabilities constants. **Notes:** The HasCapability() API is available.

167.5.51 kCapabilitiesHasHIDAccess = 256

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the capabilities constants. **Notes:** The library can access HID devices without requiring user intervention. Note that before being able to actually access an HID device, you may still have to call additional libusb functions such as DetachKernelDriver.

167.5.52 kCapabilitiesHasHotplug = 1

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the capabilities constants. **Notes:** Hotplug support is available on this platform.
167.5.53  \textbf{kCapabilitiesSupportsDetachKernelDriver = 257}

MBS USB Plugin, Plugin Version: 18.1. \textbf{Function:} One of the capabilities constants.  
\textbf{Notes:} The library supports detaching of the default USB driver, using DetachKernelDriver, if one is set by the OS kernel.

167.5.54  \textbf{kDescriptorTypeBOS = 6}

MBS USB Plugin, Plugin Version: 18.1. \textbf{Function:} One of the descriptor type constants.  
\textbf{Notes:} BOS descriptor

167.5.55  \textbf{kDescriptorTypeConfig = 2}

MBS USB Plugin, Plugin Version: 18.1. \textbf{Function:} One of the descriptor type constants.  
\textbf{Notes:} Configuration descriptor.

167.5.56  \textbf{kDescriptorTypeDevice = 1}

MBS USB Plugin, Plugin Version: 18.1. \textbf{Function:} One of the descriptor type constants.  
\textbf{Notes:} Device descriptor.

167.5.57  \textbf{kDescriptorTypeDeviceCapabilities = 16}

MBS USB Plugin, Plugin Version: 18.1. \textbf{Function:} One of the descriptor type constants.  
\textbf{Notes:} Device Capability descriptor

167.5.58  \textbf{kDescriptorTypeEndpoint = 5}

MBS USB Plugin, Plugin Version: 18.1. \textbf{Function:} One of the descriptor type constants.  
\textbf{Notes:} Endpoint descriptor.

167.5.59  \textbf{kDescriptorTypeHID = \& h21}

MBS USB Plugin, Plugin Version: 18.1. \textbf{Function:} One of the descriptor type constants.  
\textbf{Notes:} HID descriptor.
167.5.60  kDescriptorTypeHub = & h29

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the descriptor type constants.  
**Notes:** Hub descriptor.

167.5.61  kDescriptorTypeInterface = 4

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the descriptor type constants.  
**Notes:** Interface descriptor.

167.5.62  kDescriptorTypePhysical = & h23

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the descriptor type constants.  
**Notes:** Physical descriptor.

167.5.63  kDescriptorTypeReport = & h22

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the descriptor type constants.  
**Notes:** HID report descriptor.

167.5.64  kDescriptorTypeString = 3

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the descriptor type constants.  
**Notes:** String descriptor.

167.5.65  kDescriptorTypeSuperSpeedEndpointCompanion = & h30

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the descriptor type constants.  
**Notes:** SuperSpeed Endpoint Companion descriptor

167.5.66  kDescriptorTypeSuperSpeedHub = & h2A

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the descriptor type constants.  
**Notes:** SuperSpeed Hub descriptor
167.5.67 \textbf{kErrorAccess} = -3

MBS USB Plugin, Plugin Version: 18.1. \textbf{Function}: One of the error constants.  
\textbf{Notes}: Access

167.5.68 \textbf{kErrorBusy} = -6

MBS USB Plugin, Plugin Version: 18.1. \textbf{Function}: One of the error constants.  
\textbf{Notes}: Busy

167.5.69 \textbf{kErrorInterrupted} = -10

MBS USB Plugin, Plugin Version: 18.1. \textbf{Function}: One of the error constants.  
\textbf{Notes}: Interrupted

167.5.70 \textbf{kErrorInvalidParam} = -2

MBS USB Plugin, Plugin Version: 18.1. \textbf{Function}: One of the error constants.  
\textbf{Notes}: Invalid parameter

167.5.71 \textbf{kErrorIO} = -1

MBS USB Plugin, Plugin Version: 18.1. \textbf{Function}: One of the error constants.  
\textbf{Notes}: I/O Error

167.5.72 \textbf{kErrorNoDevice} = -4

MBS USB Plugin, Plugin Version: 18.1. \textbf{Function}: One of the error constants.  
\textbf{Notes}: No device.

167.5.73 \textbf{kErrorNoMemory} = -11

MBS USB Plugin, Plugin Version: 18.1. \textbf{Function}: One of the error constants.  
\textbf{Notes}: Out of Memory
167.5. **CLASS LIBUSBDEVICEMBS**

167.5.74  **kErrorNotFound = -5**

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the error constants.  
**Notes:** Not found

167.5.75  **kErrorNotSupported = -12**

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the error constants.  
**Notes:** Function not supported

167.5.76  **kErrorOther = -99**

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the error constants.  
**Notes:** Other errors

167.5.77  **kErrorOverflow = -8**

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the error constants.  
**Notes:** Overflow

167.5.78  **kErrorPipe = -9**

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the error constants.  
**Notes:** Pipe

167.5.79  **kErrorTimeout = -7**

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the error constants.  
**Notes:** Timeout

167.5.80  **kLogLevelDebug = 4**

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the debug log level constants.  
**Notes:** debug and informational messages are printed to stdout, warnings and errors to stderr
167.5.81 \( \text{kLogLevelError} = 1 \)

MBS USB Plugin, Plugin Version: 18.1. \textbf{Function}: One of the debug log level constants.  
\textbf{Notes}: error messages are printed to stderr

167.5.82 \( \text{kLogLevelInfo} = 3 \)

MBS USB Plugin, Plugin Version: 18.1. \textbf{Function}: One of the debug log level constants.  
\textbf{Notes}: informational messages are printed to stdout, warning and error messages are printed to stderr

167.5.83 \( \text{kLogLevelNone} = 0 \)

MBS USB Plugin, Plugin Version: 18.1. \textbf{Function}: One of the debug log level constants.  
\textbf{Notes}: no messages ever printed by the library (default)

167.5.84 \( \text{kLogLevelWarning} = 2 \)

MBS USB Plugin, Plugin Version: 18.1. \textbf{Function}: One of the debug log level constants.  
\textbf{Notes}: warning and error messages are printed to stderr

167.5.85 \( \text{kSpeedFull} = 2 \)

MBS USB Plugin, Plugin Version: 18.1. \textbf{Function}: One of the constants indicates the speed at which the device is operating.  
\textbf{Notes}: The device is operating at full speed (12MBit/s).

167.5.86 \( \text{kSpeedHigh} = 3 \)

MBS USB Plugin, Plugin Version: 18.1. \textbf{Function}: One of the constants indicates the speed at which the device is operating.  
\textbf{Notes}: The device is operating at high speed (480MBit/s).

167.5.87 \( \text{kSpeedLow} = 1 \)

MBS USB Plugin, Plugin Version: 18.1. \textbf{Function}: One of the constants indicates the speed at which the device is operating.
Notes: The device is operating at low speed (1.5MBit/s).

167.5.88  kSpeedSuper = 4

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the constants indicates the speed at which the device is operating.
**Notes:** The device is operating at super speed (5000MBit/s).

167.5.89  kSpeedUnknown = 0

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the constants indicates the speed at which the device is operating.
**Notes:** The OS doesn’t report or know the device speed.
167.6 class LibUSBEndpointDescriptorMBS

167.6.1 class LibUSBEndpointDescriptorMBS

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class representing the standard USB endpoint descriptor. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

167.6.2 Methods

167.6.3 Constructor

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The private constructor.

167.6.4 Properties

167.6.5 AttributesBitmap as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Attributes which apply to the endpoint when it is configured using the bConfigurationValue. **Notes:** (Read only property)

167.6.6 DescriptorType as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Descriptor type. **Notes:** (Read only property)

167.6.7 EndpointAddress as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The address of the endpoint described by this descriptor. **Notes:** (Read only property)
167.6.8  **EndpointDirection as Integer**

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The transfer direction.  
**Notes:** (Read only property)

167.6.9  **extra as MemoryBlock**

**Notes:** (Read only property)

167.6.10  **extraLength as Integer**

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Length of the extra descriptors, in bytes.  
**Notes:** (Read only property)

167.6.11  **Interval as Integer**

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Interval for polling endpoint for data transfers.  
**Notes:** (Read only property)

167.6.12  **Length as Integer**

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Size of this descriptor (in bytes)  
**Notes:** (Read only property)

167.6.13  **MaxPacketSize as Integer**

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Maximum packet size this endpoint is capable of sending/receiving.  
**Notes:** (Read only property)
167.6.14 Refresh as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** For audio devices only: the rate at which synchronization feedback is provided. **Notes:** (Read only property)

167.6.15 SynchAddress as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** For audio devices only: the address if the synch endpoint. **Notes:** (Read only property)

167.6.16 TransferType as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The transfer type. **Notes:** (Read only property)

167.6.17 Constants

167.6.18 kEndpointDirectionIn = 0

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the Endpoint Directions constants. **Notes:** In: device-to-host

167.6.19 kEndpointDirectionOut = 128

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the Endpoint Directions constants. **Notes:** Out: host-to-device.

167.6.20 kTransferTypeBulk = 2

MBS USB Plugin, Plugin Version: 18.1. **Function:** One of the Transfer Type constants. **Notes:** Bulk endpoint.
167.6.21  \texttt{kTransferTypeBulkStream} = 4

MBS USB Plugin, Plugin Version: 18.1. \textbf{Function:} One of the Transfer Type constants. 
\textbf{Notes:} Bulk stream transfer.

167.6.22  \texttt{kTransferTypeControl} = 0

MBS USB Plugin, Plugin Version: 18.1. \textbf{Function:} One of the Transfer Type constants. 
\textbf{Notes:} Control endpoint.

167.6.23  \texttt{kTransferTypeInterrupt} = 3

MBS USB Plugin, Plugin Version: 18.1. \textbf{Function:} One of the Transfer Type constants. 
\textbf{Notes:} Interrupt endpoint.

167.6.24  \texttt{kTransferTypeISOChronous} = 1

MBS USB Plugin, Plugin Version: 18.1. \textbf{Function:} One of the Transfer Type constants. 
\textbf{Notes:} Isochronous endpoint.
167.7 class LibUSBInterfaceDescriptorMBS

167.7.1 class LibUSBInterfaceDescriptorMBS

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: A class representing the standard USB interface descriptor. Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

167.7.2 Methods

167.7.3 Constructor


167.7.4 EndpointDescriptor(index as Integer) as LibUSBEndpointDescriptorMBS


167.7.5 Properties

167.7.6 AlternateSetting as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Value used to select this alternate setting for this interface. Notes: (Read only property)

167.7.7 DescriptorType as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Descriptor type. Notes: (Read only property)
167.7. **CLASS LIBUSBINTERFACEDESCRIPTEMBS**

167.7.8 **Endpoints as Variant**

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Array of endpoint descriptors.
**Notes:** (Read only property)

167.7.9 **extra as MemoryBlock**

**Notes:** (Read only property)

167.7.10 **ExtraLength as Integer**

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Length of the extra descriptors, in bytes.
**Notes:** (Read only property)

167.7.11 **IndexInterface as Integer**

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Index of string descriptor describing this interface.
**Notes:** (Read only property)

167.7.12 **InterfaceClass as Integer**

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** USB-IF class code for this interface.
**Notes:** (Read only property)

167.7.13 **InterfaceNumber as Integer**

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Number of this interface.
**Notes:** (Read only property)
167.7.14 InterfaceProtocol as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** USB-IF protocol code for this interface, qualified by the InterfaceClass and InterfaceSubClass values. **Notes:** (Read only property)

167.7.15 InterfaceSubClass as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** USB-IF subclass code for this interface, qualified by the InterfaceClass value. **Notes:** (Read only property)

167.7.16 Length as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Size of this descriptor (in bytes) **Notes:** (Read only property)

167.7.17 NumEndpoints as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Number of endpoints used by this interface (excluding the control endpoint). **Notes:** (Read only property)
167.8. CLASS LIBUSBINTERFACEMBS

167.8  class LibUSBInterfaceMBS

167.8.1  class LibUSBInterfaceMBS

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A collection of alternate settings for a particular USB interface.
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

167.8.2  Methods

167.8.3  Constructor

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The private constructor.

167.8.4  InterfaceDescriptor(index as Integer) as LibUSBInterfaceDescriptorMBS

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries interface descriptor by index.

167.8.5  Properties

167.8.6  Count as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of alternate settings that belong to this interface.
**Notes:** (Read only property)

167.8.7  InterfaceDescriptors as Variant

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Array of interface descriptors.
**Notes:** (Read only property)
167.9 class LibUSBVersionMBS

167.9.1 class LibUSBVersionMBS

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Class representing the libusb version.

167.9.2 Methods

167.9.3 Constructor

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor.
**Notes:** Queries library version if possible.

167.9.4 Properties

167.9.5 Describe as String

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Output of git describe tags at library build time.
**Notes:** (Read only property)

167.9.6 Major as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Library major version.
**Notes:**
Currently 1.
(Read only property)

167.9.7 Micro as Integer

**Notes:** (Read only property)
167.9.8 Minor as Integer

**Notes:** (Read only property)

167.9.9 Nano as Integer

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Library nano version. 
**Notes:** (Read only property)

167.9.10 RC as String

MBS USB Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Library release candidate suffix string, e.g. "-rc4". 
**Notes:** (Read only property)
167.10 class LinuxHIDInterfaceMBS

167.10.1 class LinuxHIDInterfaceMBS

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The class for linux to connect to USB HID devices.

**Notes:**
For newer development, please use our HIDAPIMBS class.

The constructor does the initialisation of the HID Library and the destructor does the cleanup. This works
with several instances, too.

The plugin tries to load one of libhid.so, libhid.so.0 or libhid.so.0.0.0 and one of libusb.so or libusb-0.1.so.4
from your /usr/lib folder (or where else the path environment variable points to). If the libraries are missing,
this class will not work properly.

167.10.2 Methods

167.10.3 Available as boolean

MBS USB Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Whether libhid is available.

**Notes:** Not all Linux distribution have libusb and libhid installed by default.

167.10.4 Close as Integer

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Closes the device.

**Notes:** Returns error code. See kError* constants.

167.10.5 DumpTreeToStderr as Integer

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Dumps the device tree to stderr.

**Example:**

```
dim h as LinuxHIDInterfaceMBS
// open device
call h.DumpTreeToStderr
```
Notes: Returns error code. See kError* constants.

167.10.6 DumpTreeToStdout as Integer

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Dumps the device tree to stdout.

**Example:**

```plaintext
dim h as LinuxHIDInterfaceMBS
// open device
call h.DumpTreeToStdout
```

Notes: Returns error code. See kError* constants.

167.10.7 ForceOpen(theInterface as Integer, Vendor as Integer, Product as Integer, retries as Integer) as Integer

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Opens the USB device with the given interface index, vendor and product codes.

**Example:**

```plaintext
dim h as new LinuxHIDInterfaceMBS

const vendor = & h7C0
const product = & h1500
const retries = 3

dim e as Integer = h.ForceOpen(0, vendor, product, retries)
```

Notes:
Vendor or Product code can be kMatchAny (0) to match all devices.
You can use the MatchDevice event to learn which devices are there and return true there to select one.
Returns error code. See kError* constants.
167.10.8  GetInputReport(path() as Integer, data as memoryblock, offset as Integer, size as Integer) as Integer

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. Function:
Reads an input report.
Notes:
Path: The path to the endpoint.
Data: the memoryblock to store the data.
Offset: The offset where to start inside the memoryblock.
Size: the length of the data int he memoryblock.

Returns error code. See kError* constants.

167.10.9  InterruptRead(EndPoint as Integer, mem as memoryblock, size as Integer, timeout as Integer) as Integer

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. Function:
Reads data from an endpoint with timeout.
Notes:
EndPoint: The index of the endpoint.
mem: the memoryblock where to store the data.
size: the length of the data block to read.
timeout: the timeout in milliseconds.

Returns error code. See kError* constants.

167.10.10 InterruptWrite(EndPoint as Integer, mem as memoryblock, size as Integer, timeout as Integer) as Integer

MBS USB Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. Function:
Writes data from an endpoint with timeout.
Notes:
EndPoint: The index of the endpoint.
mem: the memoryblock where to store the data.
size: the length of the data block to read.
timeout: the timeout in milliseconds.

Returns error code. See kError* constants.
167.10.11 IsInitialised as boolean

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Whether the HID library was initialised in the constructor. **Notes:** Should always be true on linux.

167.10.12 IsOpen as boolean

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Whether the device is opened. **Notes:** True if open, false if closed.

167.10.13 Open(theInterface as Integer, Vendor as Integer, Product as Integer) as Integer

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Opens the USB device with the given interface index, vendor and product codes. **Example:**

```plaintext
dim h as new LinuxHIDInterfaceMBS

const vendor = & h7C0
const product = & h1500

dim e as Integer = h.Open(0, vendor, product)
```

**Notes:**
Vendor or Product code can be kMatchAny (0) to match all devices. You can use the MatchDevice event to learn which devices are there and return true there to select one. Returns error code. See kError* constants.

167.10.14 Reset

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Resets the device. **Notes:** Returns error code. See kError* constants.
167.10.15  SetDebugLevel(level as Integer)

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Sets the debug level.
**Example:**
```vbnet
dim h as new LinuxHIDInterfaceMBS
h.SetDebugLevel(h.kDebugWarnings)
```

167.10.16  SetDebugOutputToStderr

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Tells HID library to write debug output to stderr.
**Example:**
```vbnet
dim h as new LinuxHIDInterfaceMBS
h.SetDebugOutputToStderr
```

167.10.17  SetDebugOutputToStdout

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Tells HID library to write debug output to stdout.
**Example:**
```vbnet
dim h as new LinuxHIDInterfaceMBS
h.SetDebugOutputToStdout
```

167.10.18  SetOutputReport(path() as Integer, data as memoryblock, offset as Integer, size as Integer) as Integer

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Writes data to the output.
**Example:**
```vbnet
dim h as LinuxHIDInterfaceMBS // your interface
dim n as Integer // some value
const IOW_PIPE_IO_PINS=0

dim m as MemoryBlock = NewMemoryBlock(4) // a device with 4 byte packets
```
m.Byte(3)=n
m.Byte(0)=IOW_PIPE_IO_PINS

dim path(-1) as Integer

path.Append & h00010000
path.Append 0

dim e as Integer = h.SetOutputReport(path, m, 0, m.size)

Notes:
Path: The path to the endpoint.
Data: the data to write.
Offset: The offset where to start inside the memoryblock.
Size: the length of the data inside the memoryblock.

Returns error code. See kError* constants.

See also:

• 167.10.19 SetOutputReport(path() as Integer, data as string) as Integer

167.10.19  SetOutputReport(path() as Integer, data as string) as Integer

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. Function:
Writes data to the output.

Notes:
Path: The path to the endpoint.
Data: the data to write.

Returns error code. See kError* constants.

See also:

• 167.10.18 SetOutputReport(path() as Integer, data as memoryblock, offset as Integer, size as Integer) as Integer

167.10.20  WriteIdentificationToStderr as Integer

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. Function:
Writes identification to stderr.

Notes: Returns error code. See kError* constants.
167.10.21  **WriteIdentificationToStdout as Integer**

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Writes identification to stdout.  
**Notes:** Returns error code. See kError* constants.

167.10.22  **Properties**

167.10.23  **Handle as Integer**

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The internal handle to the device connection.  
**Notes:** (Read and Write property)

167.10.24  **Events**

167.10.25  **MatchDevice(usbdev as LinuxUSBDeviceHandleMBS) as boolean**

MBS USB Plugin, Plugin Version: 10.3, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The event called to decide whether you want to connect to this device.  
**Example:**

```vbnet
Function MatchDevice(usbdev as LinuxUSBDeviceHandleMBS) As boolean
MsgBox usbdev.Device.Descriptor.SerialNumber
End Function
```

**Notes:**  
If several devices match the given vendor/product codes in Open/ForceOpen, you can decide here which one you accept.  
Return true to accept a device.

167.10.26  **Constants**

167.10.27  **kDebugAll = 31**

MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the debug level constants.  
**Notes:** same as kDebugWarnings + kDebugTraces + kDebugNotices + kDebugErrors + kDebugAsserts
167.10.28  kDebugAsserts = 16
MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the debug level constants.

167.10.29  kDebugErrors = 1
MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the debug level constants.

167.10.30  kDebugNone = 0
MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the debug level constants.

167.10.31  kDebugNotices = 4
MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the debug level constants.

167.10.32  kDebugNoTraces = 23
MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the debug level constants. **Notes:** same as kDebugWarnings + kDebugNotices + kDebugErrors + kDebugAsserts

167.10.33  kDebugTraces = 8
MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the debug level constants.

167.10.34  kDebugWarnings = 2
MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the debug level constants.

167.10.35  kErrorAlreadyInitialised = 3
MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the error codes. **Notes:** Device already initialised.
167.10.36  kErrorDeviceAlreadyOpened = 9

MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the error codes. **Notes:** Device already opened.

167.10.37  kErrorDeviceNotFound = 7

MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the error codes. **Notes:** Device is not found.

167.10.38  kErrorDeviceNotOpened = 8

MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the error codes. **Notes:** Device is not opened.

167.10.39  kErrorFailAlloc = 17

MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the error codes. **Notes:** Failed to allocate.

167.10.40  kErrorFailClaimIFace = 11

MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the error codes. **Notes:** Failed to claim the interface.

167.10.41  kErrorFailCloseDevice = 10

MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the error codes. **Notes:** Failed to close device.

167.10.42  kErrorFailDetachDriver = 12

MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the error codes. **Notes:** Failed to detach driver.
167.10. CLASS LINUXHIDINTERFACEMBS

167.10.43 kErrorFailFindBusses = 4
MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the error codes. **Notes:** Failed to find buses.

167.10.44 kErrorFailFindDevices = 5
MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the error codes. **Notes:** Failed to find devices.

167.10.45 kErrorFailGetReport = 20
MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the error codes. **Notes:** Get Report failed.

167.10.46 kErrorFailIntRead = 21
MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the error codes.

167.10.47 kErrorFailOpenDevice = 6
MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the error codes. **Notes:** Failed to open device.

167.10.48 kErrorFailSetReport = 19
MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the error codes. **Notes:** Set Report failed.

167.10.49 kErrorHIDDescShort = 14
MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the error codes.
**167.10.50 kErrorInvalidParameter = 1**

MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the error codes. **Notes:** Invalid Parameter.

**167.10.51 kErrorNotFound = 22**

MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the error codes. **Notes:** Device not found.

**167.10.52 kErrorNotHIDDevice = 13**

MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the error codes. **Notes:** Not a HID Device.

**167.10.53 kErrorNotInitialised = 2**

MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the error codes. **Notes:** Not initialised.

**167.10.54 kErrorOutOfSpace = 18**

MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the error codes. **Notes:** Out of space.

**167.10.55 kErrorReportDescLong = 16**

MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the error codes.

**167.10.56 kErrorReportDescShort = 15**

MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the error codes.
MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the error codes.  
**Notes:** Success. No error.

MBS USB Plugin, Plugin Version: 10.3. **Function:** The vendor/product ID to match any device.
167.11 class LinuxUSBBusMBS

167.11.1 class LinuxUSBBusMBS

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The class for an USB Bus on Linux.

**Notes:** This class only works, if the plugin could load one of libusb.so or libusb-0.1.so.4 from your /usr/lib folder (or where else the path environment variable points to). If the libraries are missing, this class will not work properly.

167.11.2 Methods

167.11.3 Buses as LinuxUSBBusMBS

MBS USB Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Returns the buses list.

**Notes:**
This function allows you to query the current buses and devices.
No device is opened and you just read through libusb data structures.

167.11.4 RescanBusses as Integer

MBS USB Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Finds all USB busses on system.

**Notes:**
RescanBusses will find all of the busses on the system.
Returns the number of changes since previous call to this function (total of new busses and busses removed).

The plugin performs RescanBusses and RescanDevices automatically on application launch.

167.11.5 RescanDevices as Integer

MBS USB Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Find all devices on all USB devices.

**Notes:**
RescanDevices will find all of the devices on each bus.
This should be called after RescanBusses.
Returns the number of changes since the previous call to this function (total of new device and devices
The plugin performs RescanBusses and RescanDevices automatically on application launch. So you can call RescanDevices at any time.

167.11.6 Properties

167.11.7 Devices as LinuxUSBDeviceMBS

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The devices attached to this bus. **Notes:** (Read and Write property)

167.11.8 DirName as String

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The dir name. **Notes:** (Read and Write property)

167.11.9 Location as Integer

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The location value. **Notes:** (Read and Write property)

167.11.10 NextBus as LinuxUSBBusMBS

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The next bus. **Notes:** (Read and Write property)

167.11.11 PrevBus as LinuxUSBBusMBS

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The previous bus. **Notes:** (Read and Write property)
167.11.12 RootDevice as LinuxUSBDeviceMBS

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The root device on this device. **Notes:** (Read and Write property)
167.12. class LinuxUSBDeviceDescriptionMBS

167.12.1. class LinuxUSBDeviceDescriptionMBS

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** A class for an USB device description.
**Notes:** Some linux installations require app to be run with sudo to allow reading USB device strings.

167.12.2. Properties

167.12.3. cdDevice as Integer

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The device version.
**Notes:**
Identifies the version of the device. This value is a binary-coded decimal number.
(Read and Write property)

167.12.4. cdUSB as Integer

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The USB version.
**Notes:**
Identifies the version of the USB specification that this descriptor structure complies with. This value is a binary-coded decimal number.
(Read and Write property)

167.12.5. DescriptorType as Integer

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The descriptor type.
**Notes:**
Specifies the descriptor type. Must be set to USB_DEVICE_DESCRIPTOR_TYPE.
(Read and Write property)
167.12.6  DeviceClass as Integer

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The device class.
**Notes:**
Specifies the class code of the device as assigned by the USB specification group.
See the kDeviceClass* constants.
(Read and Write property)

167.12.7  DeviceProtocol as Integer

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The device protocol.
**Notes:**
Specifies the protocol code of the device as assigned by the USB specification group.
(Read and Write property)

167.12.8  DeviceSubClass as Integer

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The device sub class.
**Notes:**
Specifies the subclass code of the device as assigned by the USB specification group.
(Read and Write property)

167.12.9  Manufacturer as String

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The manufacturer name string.
**Notes:**
A string containing the name of the manufacturer of this device.
Some linux installations require app to be run with sudo to allow reading USB device strings.
(Read and Write property)
167.12.10  MaxPacketSize0 as Integer

Notes:
Specifies the maximum packet size, in bytes, for endpoint zero of the device. The value must be set to 8, 16, 32, or 64.
(Read and Write property)

167.12.11  NumConfigurations as Integer

Notes:
Specifies the total number of possible configurations for the device.
(Read and Write property)

167.12.12  Product as Integer

Notes:
Specifies the product identifier. This value is assigned by the manufacturer and is device-specific. Only available when the device has been opened.
(Read and Write property)

167.12.13  ProductName as String

Notes:
A string that contains a description of the device. Some linux installations require app to be run with sudo to allow reading USB device strings.
(Read and Write property)
167.12.14 SerialNumber as String

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The serial number string for this device.

**Notes:**
A string that contains a manufacturer-determined serial number for the device. Can be empty if the library does not know it. Some linux installations require app to be run with sudo to allow reading USB device strings. (Read and Write property)

167.12.15 Vendor as Integer

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The vendor code for this device.

**Notes:**
Specifies the vendor identifier for the device as assigned by the USB specification committee. Only available when the device has been opened. (Read and Write property)

167.12.16 Constants

167.12.17 kDeviceClassAudio = 1

MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the device class constants. **Notes:** Audio device.

167.12.18 kDeviceClassCOMM = 2

MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the device class constants. **Notes:** COMM device.

167.12.19 kDeviceClassDATA = 10

MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the device class constants. **Notes:** DATA device.
167.12.20  kDeviceClassHID = 3

MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the device class constants. **Notes:** HID device.

167.12.21  kDeviceClassHUB = 9

MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the device class constants. **Notes:** The device is an USB HUB.

167.12.22  kDeviceClassMassStorage = 8

MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the device class constants. **Notes:** A mass storage device.

167.12.23  kDeviceClassPerInterface = 0

MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the device class constants.

167.12.24  kDeviceClassPrinter = 7

MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the device class constants. **Notes:** Printer device.

167.12.25  kDeviceClassVendorSpecific = 255

MBS USB Plugin, Plugin Version: 10.3. **Function:** One of the device class constants. **Notes:** Some vendor specific device.
167.13 class LinuxUSBDeviceHandleMBS

167.13.1 class LinuxUSBDeviceHandleMBS

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The class for a device handle.

167.13.2 Properties

167.13.3 AltSetting as Integer

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Some alt setting value.
**Notes:** (Read and Write property)

167.13.4 Bus as LinuxUSBBusMBS

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The bus for this device handle.
**Notes:** (Read and Write property)

167.13.5 Config as Integer

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
A config value.
**Notes:** (Read and Write property)

167.13.6 Device as LinuxUSBDeviceMBS

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The device.
**Notes:** (Read and Write property)

167.13.7 InterfaceIndex as Integer

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The interface index.
167.13. CLASS LINUXUSBDEVICEHANDLEMBS

Notes: (Read and Write property)
**167.14** class LinuxUSBDeviceMBS

**167.14.1** class LinuxUSBDeviceMBS

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The class for an USB device information on Linux.

**167.14.2** Methods

**167.14.3** Children(index as Integer) as LinuxUSBDeviceMBS

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Returns the child device with the given index. **Notes:** Index is zero based and from 0 to ChildrenCount-1.

**167.14.4** Properties

**167.14.5** Bus as LinuxUSBBusMBS

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The bus this device is attached to. **Notes:** (Read and Write property)

**167.14.6** ChildrenCount as Integer

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The number of child devices. **Notes:** (Read and Write property)

**167.14.7** Descriptor as LinuxUSBDeviceDescriptionMBS

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The description for this device. **Notes:** (Read and Write property)
167.14.8 Filename as String

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The filename for this device. **Notes:** (Read and Write property)

167.14.9 NextDevice as LinuxUSBDeviceMBS

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The next device on the same level. **Notes:** (Read and Write property)

167.14.10 PrevDevice as LinuxUSBDeviceMBS

MBS USB Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The previous device on the same level. **Notes:** (Read and Write property)
167.15  class MacHIDMBS

167.15.1  class MacHIDMBS

MBS USB Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class to work with HID devices on Mac OS X.  
**Notes:** For newer development, please use our HIDAPIMBS class.

167.15.2  Methods

167.15.3  Close

MBS USB Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Closes the active connection.

167.15.4  Connect

MBS USB Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates a connection to the current device.  
**Example:**

```vba
Function OpenUSBDevice() As boolean
    dim i as Integer
    dim h as MacHIDMBS
    h=FindDevice  // see FindFirst example
    if h=nil then
        MsgBox "No XYZ device found."
        Return false
    end if
    h.Connect
    if h.Lasterror<>0 then
        MsgBox "Failed to connect to USB Device."
        Return false
    end if
    h.InstallCallback
    Return true
```


**167.15. CLASS MACHIDMBS**

End Function

**Notes:**
Lasterror is set.

Lasterror values for this function:

-1  Not supported (Windows and Linux).
  0   Everything okay.
  1   Failed to get IOKit Plugin Interface for this IO object.
  2   Failed to query interface
  3   Failed to open interface
  4   Failed to create async port
  5   Failed to create async event source
  6   no longer used
  7   Failed to start queue

**167.15.5  Disconnect**

MBS USB Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Disconnects current USB device.

**Notes:** Lasterror is set.

**167.15.6  FindFirstDevice as boolean**

MBS USB Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Finds the first device and loads the properties.

**Example:**

Function FindDevice() As MyMacHIDMBS
  dim h as MyMacHIDMBS
  dim p as string

  h=new MyMacHIDMBS  // your own subclass of MacHIDMBS so you can get events

  if h.FindFirstDevice then
    p=h.Product
if p="MyProduct" then
Return h
end if

while h.FindNextDevice

p=h.Product
if p="MyProduct" then
Return h
end if

wend

end if
End Function

Notes: Returns true on success and false on failure.

167.15.7 FindNextDevice as boolean


167.15.8 HIDProperties as Variant


The plugin queries this dictionary to return SerialNumber, ProductID, Manufacturer, Product, VendorID and VersionNumber.

167.15.9 InstallCallback

167.15. CLASS MACHIDMBS

Notes:
Lasterror is set.
Please use after connect. For use with ReceivedData event.

167.15.10 Manufacturer as string

MBS USB Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The manufacturer name.
**Notes:** On any error an empty string is returned.

167.15.11 Product as string

MBS USB Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The product string of the selected device.
**Notes:** Lasterror is set.

167.15.12 ProductID as Integer

MBS USB Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The product ID of the selected device.
**Notes:** Lasterror is set.

167.15.13 ReadMessage(ReportID as Integer, reportType as Integer, length as Integer) as string

MBS USB Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Reads a message from usb device.
**Notes:**
This is for synchronously operation without the event/callback.
You can specify report id, report type and the maximum length to read.
Also set timeout property.

**Doesn’t work if InstallCallback with event is used.**
**167.15.14 ReadMessageMemory(ReportID as Integer, reportType as Integer, length as Integer) as memoryblock**

MBS USB Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Reads a message from usb device.
**Notes:**
This is for synchronously operation without the event/callback.
You can specify report id, report type and the maximum length to read.
Also set timeout property.

Doesn’t work if InstallCallback with event is used.

**167.15.15 SendMessage(data as string)**

MBS USB Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Sends a message to the USB device.
**Notes:**
A connection must be open.
Lasterror is set. Lasterror -536854447 is an USB timeout.
Uses kIOHIDReportTypeOutput.
See also:

- 167.15.16 SendMessage(ReportID as Integer, reportType as Integer, data as string)

**167.15.16 SendMessage(ReportID as Integer, reportType as Integer, data as string)**

MBS USB Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Sends a message to the USB device.
**Notes:**
A connection must be open.
Lasterror is set. Lasterror -536854447 is an USB timeout.
ReportType can be kIOHIDReportTypeOutput or kIOHIDReportTypeFeature.
See also:

- 167.15.15 SendMessage(data as string)
167.15. CLASS MACHIDMBS

167.15.17  SendMessageMemory(data as memoryblock, offset as Integer, length as Integer)

MBS USB Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sends a message to the USB device.

**Notes:**
A connection must be open.
LastError is set. Lasterror -536854447 is an USB timeout.
Internally ReportID=0 is used.

While writing a crossplatform application for one specific device we saw the following thing: The data buffer for the SendMessageMemory call must be 8 bytes long on Mac (with MacHIDMBS) and 61 bytes long for Windows (with WinHIDMBS) for our HID device. We have 1 byte for the ReportID and 60 data bytes where the first 8 are set like on the Mac. So if the calls fail on Windows, try with a higher length and check the WinHIDMBS.OutputReportByteLength property. Uses kIOHIDReportTypeOutput.

See also:

- 167.15.18 SendMessageMemory(ReportID as Integer, reportType as Integer, data as memoryblock, offset as Integer, length as Integer)

167.15.18  SendMessageMemory(ReportID as Integer, reportType as Integer, data as memoryblock, offset as Integer, length as Integer)

MBS USB Plugin, Plugin Version: 8.6, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Sends a message to the USB device.

**Notes:**
A connection must be open.
LastError is set. Lasterror -536854447 is an USB timeout.
ReportType can be kIOHIDReportTypeOutput or kIOHIDReportTypeFeature.
See also:

- 167.15.17 SendMessageMemory(data as memoryblock, offset as Integer, length as Integer)

167.15.19  SerialNumber as string

MBS USB Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The serial number of the current selected device.

**Notes:** Lasterror is set.
167.15.20  VendorID as Integer

MBS USB Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The vendor ID of the selected device.
**Notes:** Lasterror is set.

167.15.21  VersionNumber as Integer

MBS USB Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The device specific version number.
**Notes:**
Value can be anything.
On any error, 0 is returned.

167.15.22  Properties

167.15.23  IOHIDDeviceInterface122Handle as Integer

MBS USB Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The internal handle for the device interface object.
**Notes:**
This is of type IOHIDDeviceInterface122** from IOKit.
(Read only property)

167.15.24  IOHIDObjectIteratorHandle as Integer

MBS USB Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The iterator used to find USB devices.
**Notes:**
This is of type io_iterator_t from IOKit.
(Read only property)

167.15.25  IOObjectHandle as Integer

MBS USB Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The internal object reference for current device.
**Notes:**
This is of type io_object_t from IOKit.
(Read only property)

**167.15.26 Lasterror as Integer**

MBS USB Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Last error code.
**Notes:**
- 0 is success.
- -1 means that the function is not available.
- else Mac OS USB error codes.
- error -536854447 is an USB timeout.
(Read and Write property)

**167.15.27 OnlyOneEventPerTick as Boolean**

MBS USB Plugin, Plugin Version: 14.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Whether to limit ReceivedData event.
**Notes:**
- Some devices send a lot of measurement data.
- This option allows to slow down and limit to 60 events per second.
- So if device sends a thousand data records per second, we can ignore over 90% and just pick a few to display.
(Read and Write property)

**167.15.28 TimeOut as Integer**

MBS USB Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Timeout value to use for sending/reading USB data.
**Notes:**
- Please specify time in Milliseconds. Default is 500ms.
(Read and Write property)

**167.15.29 Events**

**167.15.30 DeviceRemoved(result as Integer)**

MBS USB Plugin, Plugin Version: 8.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The event called whenever the device is removed.
Notes: You need to call connect to install the callback which raises this event.

167.15.31  ReceivedData(data as string, size as Integer)

MBS USB Plugin, Plugin Version: 6.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Data was received and is available for processing. Example:

Sub ReceivedData(data as string, size as Integer)
    dim m as MemoryBlock
    dim s as string
    dim n,i as Integer

    // Debug Output data received:
    m=data
    n=lenb(data)-1
    for i=0 to n
        s=s+str(m.Byte(i))+” ”
    next
    s=s+”= ”+data
    System.DebugLog s
End Sub

Notes: Event is only called when InstallCallback was used and a connection is open.

167.15.32  Constants

167.15.33  kIOHIDReportTypeFeature = 2

167.15.34  kIOHIDReportTypeInput = 0

MBS USB Plugin, Plugin Version: 14.0. **Function:** One of the report type constants.
**Notes:** Input report.

167.15.35  kIOHIDReportTypeOutput = 1

MBS USB Plugin, Plugin Version: 14.0. **Function:** One of the report type constants.
**Notes:** Output report.
167.16 class MacUSBDeviceMBS

167.16.1 class MacUSBDeviceMBS

MBS MacOSX Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The class for an USB Device on Mac OS X.

Example:

```vbs
// iterate over all devices without recursion and count devices
dim devices(-1) as MacUSBDeviceMBS

devices.Append MacUSBDeviceMBS.root

dim count as Integer = -1 // do not count Mac itself

while UBound(devices) >= 0
    dim dev as MacUSBDeviceMBS = devices.Pop

    count = count + 1

    for each child as MacUSBDeviceMBS in dev.children
        devices.Append child
    next
wend

MsgBox str(Count) + " USB devices."
```

Notes:

Use the root method to get the device hierarchy.

For Windows you can take a look on the WindowsDeviceMBS class.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

167.16.2 Methods

167.16.3 children as MacUSBDeviceMBS()

MBS MacOSX Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The array with all the USB device having the current device as parent.
167.16. CLASS MACUSBDEVICEMBS

167.16.4 Constructor

MBS MacOSX Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The private constructor.  
**Notes:**  
This constructor makes sure you don’t create useless MacUSBDeviceMBS objects by error. The only way to create an object is to use the root method to get the object hierarchy.  
This constructor is private to make sure you don’t create an object from this class by error. Please use designated functions to create objects.

167.16.5 root as MacUSBDeviceMBS

MBS MacOSX Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The root of the device tree.  
**Example:**

```vbscript
// display devices with serialnumbers.  
dim devices(-1) as MacUSBDeviceMBS  
devices.Append MacUSBDeviceMBS.root

dim lines(-1) as string

while UBound(devices) >= 0  
dim dev as MacUSBDeviceMBS = devices.Pop

if len(dev.SerialNumber) > 0 then  
lines.Append dev.name +": " + dev.serialnumber
end if

for each child as MacUSBDeviceMBS in dev.children  
devices.Append child
next
wend

MsgBox Join(lines, EndOfLine)
```

**Notes:** Root is the Mac itself. Below root you find the built in USB hubs.
167.16.6 Properties

167.16.7 Address as Integer

MBS MacOSX Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The device address number.  
**Notes:** (Read and Write property)

167.16.8 BusPowerAvailable as Integer

MBS MacOSX Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The available bus power.  
**Notes:**  
Value is in milli ampere.  
(Read and Write property)

167.16.9 ClassName as String

MBS MacOSX Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The class name for this device.  
**Notes:**  
Basicly this is what driver Apple uses.  
(Read and Write property)

167.16.10 DeviceClass as Integer

MBS MacOSX Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The device class.  
**Notes:**  
See kUSB*Class constants.  

And read here:  
http://www.usb.org/developers/defined_class  
(Read and Write property)
167.16. CLASS MACUSBDEVICEMBS

167.16.11 DeviceMaxPacketSize as Integer

MBS MacOSX Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The maximum device packet size. **Notes:** (Read and Write property)

167.16.12 DeviceNumConfigs as Integer

MBS MacOSX Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of configurations for this device. **Notes:** (Read and Write property)

167.16.13 DeviceProtocol as Integer

MBS MacOSX Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The device protocol. **Notes:** (Read and Write property)

167.16.14 DeviceReleaseNumber as Integer

MBS MacOSX Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The device release number. **Notes:** (Read and Write property)

167.16.15 DeviceSpeed as Integer

MBS MacOSX Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The device speed. **Notes:** (Read and Write property)

167.16.16 DeviceSubClass as Integer

MBS MacOSX Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The device sub class. **Notes:** See kUSB*SubClass constants. (Read and Write property)
167.16.17  ExtraPowerForPorts as Integer

Notes:
Value is in milli ampere.
(Read and Write property)

167.16.18  Name as String

MBS MacOSX Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: The name of this device node.
Example:

```vbnet
// show all names of all devices in a msgbox
dim names(-1) as string

// iterate over all devices without recursion
dim devices(-1) as MacUSBDeviceMBS

devices.Append MacUSBDeviceMBS.root

while UBound(devices)>0
dim dev as MacUSBDeviceMBS = devices.Pop
names.Append dev.name

for each child as MacUSBDeviceMBS in dev.children
devices.Append child
next
wend

MsgBox Join(names,"",""
```

Notes: (Read and Write property)

167.16.19  NumEndpoints as Integer

**167.16. CLASS MACUSBDEVICEMBS**

**Notes:** (Read and Write property)

---

### 167.16.20 Path as String

MBS MacOSX Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The object path.

**Notes:**

This is internally used by the kernel.

(Read and Write property)

---

### 167.16.21 Ports as Integer

MBS MacOSX Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The number of ports on an USB hub.

**Notes:** (Read and Write property)

---

### 167.16.22 ProductID as Integer

MBS MacOSX Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The product ID

**Notes:** (Read and Write property)

---

### 167.16.23 ProductName as String

MBS MacOSX Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The product name.

**Notes:** (Read and Write property)

---

### 167.16.24 Properties as Dictionary

MBS MacOSX Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Creates dictionary with all the properties associated for this USB device in IORegistry.

**Notes:** (Read and Write property)
167.16.25  RequestedPower as Integer

MBS MacOSX Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Requested power.  
**Notes:**  
Value is in milli ampere.  
(Read and Write property)

167.16.26  SerialNumber as String

MBS MacOSX Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The device serial number.  
**Notes:** (Read and Write property)

167.16.27  VendorID as Integer

MBS MacOSX Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The vendor ID.  
**Notes:**  
Assigned by USB Org.  
(Read and Write property)

167.16.28  VendorName as String

MBS MacOSX Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The vendor name.  
**Notes:** (Read and Write property)

167.16.29  Constants

167.16.30  kUSBApplicationSpecificClass = 254

MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device class constants.
167.16. **CLASS MACUSBDEVICEMBS**

167.16.31 **kUSBATMNetworkingSubClass = 7**

MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device sub class constants. 
**Notes:** For kUSBCommunicationDataInterfaceClass.

167.16.32 **kUSBAudioControlSubClass = 1**

MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device sub class constants. 
**Notes:** For kUSBAudioInterfaceClass.

167.16.33 **kUSBAudioStreamingSubClass = 2**

MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device sub class constants. 
**Notes:** For kUSBAudioInterfaceClass.

167.16.34 **kUSBCommAbstractSubClass = 2**

MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device sub class constants. 
**Notes:** For kUSBCommunicationDataInterfaceClass.

167.16.35 **kUSBCommCAPISubClass = 5**

MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device sub class constants. 
**Notes:** For kUSBCommunicationDataInterfaceClass.

167.16.36 **kUSBCommDirectLineSubClass = 1**

MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device sub class constants. 
**Notes:** For kUSBCommunicationDataInterfaceClass.

167.16.37 **kUSBCommEthernetNetworkingSubClass = 6**

MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device sub class constants. 
**Notes:** For kUSBCommunicationDataInterfaceClass.
167.16.38  kUSBCommMultiChannelSubClass = 4

MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device sub class constants. **Notes:** For kUSBCommunicationDataInterfaceClass.

167.16.39  kUSBCommonClassSubClass = 2

MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device sub class constants. **Notes:** For kUSBMiscellaneousClass.

167.16.40  kUSBCommTelephoneSubClass = 3

MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device sub class constants. **Notes:** For kUSBCommunicationDataInterfaceClass.

167.16.41  kUSBCommunicationClass = 2

MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device class constants.

167.16.42  kUSBCompositeClass = 0

MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device class constants.

167.16.43  kUSBCompositeSubClass = 0

MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device sub class constants.

167.16.44  kUSBDataClass = 10

MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device class constants.
167.16.45 kUSBDFUSubClass = 1

MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device sub class constants.  
**Notes:** For kUSBApplicationSpecificInterfaceClass.

167.16.46 kUSBDiagnosticClass = 220

MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device class constants.

167.16.47 kUSBHIDBootInterfaceSubClass = 1

MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device sub class constants.  
**Notes:** For kUSBHIDBootInterfaceSubClass.

167.16.48 kUSBHubClass = 9

MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device class constants.

167.16.49 kUSBHubSubClass = 0

MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device sub class constants.

167.16.50 kUSBIrDABridgeSubClass = 2

MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device sub class constants.  
**Notes:** For kUSBApplicationSpecificInterfaceClass.

167.16.51 kUSBMassStorageATAPISubClass = 2

MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device sub class constants.  
**Notes:** For kUSBMassStorageInterfaceClass.
167.16.52  kUSBMassStorageQIC157SubClass = 3

MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device sub class constants.  
**Notes:** For kUSBMassStorageInterfaceClass.

167.16.53  kUSBMassStorageRBCSubClass = 1

MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device sub class constants.  
**Notes:** For kUSBMassStorageInterfaceClass.

167.16.54  kUSBMassStorageSCSISubClass = 6

MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device sub class constants.  
**Notes:** For kUSBMassStorageInterfaceClass.

167.16.55  kUSBMassStorageSFF8070iSubClass = 5

MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device sub class constants.  
**Notes:** For kUSBMassStorageInterfaceClass.

167.16.56  kUSBMassStorageUFISubClass = 4

MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device sub class constants.  
**Notes:** For kUSBMassStorageInterfaceClass.

167.16.57  kUSBMIDISTreamingSubClass = 3

MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device sub class constants.  
**Notes:** For kUSBAudioInterfaceClass.

167.16.58  kUSBMiscellaneousClass = 239

MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device class constants.
167.16. CLASS MACUSBDEVICEMBS

167.16.59  kUSBPersonalHealthcareClass = 15
MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device class constants.

167.16.60  kUSBReprogrammableDiagnosticSubClass = 1
MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device sub class constants. **Notes:** For kUSBDiagnosticDeviceInterfaceClass.

167.16.61  kUSBRFControllerSubClass = 1
MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device sub class constants. **Notes:** For kUSBWirelessControllerInterfaceClass.

167.16.62  kUSBTestMeasurementSubClass = 3
MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device sub class constants. **Notes:** For kUSBApplicationSpecificInterfaceClass.

167.16.63  kUSBVendorSpecificClass = 255
MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device class constants.

167.16.64  kUSBVideoControlSubClass = 1
MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device sub class constants.

167.16.65  kUSBVideoInterfaceCollectionSubClass = 3
MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device sub class constants.
167.16.66  kUSBVideoStreamingSubClass = 2

MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device sub class constants.

167.16.67  kUSBWirelessControllerClass = 224

MBS MacOSX Plugin, Plugin Version: 10.4. **Function:** One of the USB device class constants.
167.17  class MacUSBMBS

Function: A class to talk to an USB device.
Notes: Written for a client and probably not yet universally useable, so it may not work with your device.

167.17.2  Methods

167.17.3  AbortPipe(PipeRef as Integer) as boolean

Function: Aborts any outstanding transactions on the pipe with status kIOReturnAborted.
Notes: If there are outstanding asynchronous transactions on the pipe, the callbacks will happen.
Note that this command will also clear the halted bit on the endpoint in the controller, but will NOT clear 
the data toggle bit. If you want to clear the data toggle bit as well, see ClearPipeStall or ClearPipeStall- 
BothEnds for more information. The interface must be open for the pipe to exist.
pipeRef: Index for the desired pipe (1 - GetNumEndpoints).
LastError is set to kIOReturnSuccess if successful, kIOReturnNoDevice if there is no connection to an IOSer-
vice, or kIOReturnNotOpen if the interface is not open for exclusive access.

167.17.4  ClearPipeStall(PipeRef as Integer) as boolean

Function: Clears the halted bit and the data toggle bit on the pipe's endpoint in the controller.
Notes: This function also returns any outstanding transactions on the pipe with status kIOUSBTransactionRe-
turned.
If there are outstanding asynchronous transactions on the pipe, the callbacks will happen. The data toggle 
may need to be resynchronized. The driver may handle this by sending a ClearFeature(ENDPOINT_HALT) 
to the default control pipe, specifying the device's endpoint for this pipe.
pipeRef: Index for the desired pipe (1 - NumEndpoints).
LastError is set to kIOReturnSuccess if successful, kIOReturnNoDevice if there is no connection to an IOSer-
vice, or kIOReturnNotOpen if the interface is not open for exclusive access.
167.17.5  **Close**

MBS USB Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Closes connection to the device.

167.17.6  **ConfigurationValue as Integer**

MBS USB Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the current configuration value set in the device (the interface will be part of that configuration.)

**Notes:**
The interface does not have to be open to use this function. Lasterror is set.

167.17.7  **Connect as boolean**

MBS USB Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Connects to the first device matching product and vendor IDs.

**Notes:** Returns true on success.

167.17.8  **DeviceProduct as Integer**

MBS USB Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the USB Product ID (idProduct) of the device.

**Notes:**
The device does not have to be open to use this function. Lasterror is set. Returns the actual product ID of the device.

167.17.9  **DeviceReleaseNumber as Integer**

MBS USB Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Returns the Device Release Number (bcdDevice) of the device.

**Notes:**
The device does not have to be open to use this function. Lasterror is set.
**167.17. DeviceVendor as Integer**

MBS USB Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the USB Vendor ID (idVendor) of the device.
**Notes:**
The device does not have to be open to use this function.
Lasterror is set. Returns the actual vendor ID of the device.

**167.17.11 InterfaceClass as Integer**

MBS USB Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the USB Class of the interface.
**Notes:** Lasterror is set.

**167.17.12 InterfaceNumber as Integer**

MBS USB Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the interface number (zero-based index) of this interface within the current configuration of the device.
**Notes:** Lasterror is set.

**167.17.13 InterfaceProtocol as Integer**

MBS USB Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the USB Protocol of the interface.
**Notes:** Lasterror is set.

**167.17.14 InterfaceSubClass as Integer**

MBS USB Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the USB Subclass of the interface.
**Notes:** Lasterror is set.

**167.17.15 LocationID as Integer**

MBS USB Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Returns the location ID.
Notes:

The location ID is a 32 bit number which is unique among all USB devices in the system, and which will not change on a system reboot unless the topology of the bus itself changes. The interface does not have to be open to use this function. Lasterror is set.

167.17.16  NumEndpoints as Integer


Notes: The interface does not have to be open to use this function. Lasterror is set.

167.17.17  ReadPacket(PipeRef as Integer, MaxSize as Integer = 1024) as Memoryblock


Notes: We developed this function for a client, so it’s probably useless for everyone else.

167.17.18  ReadRaw(PipeRef as Integer, MaxSize as Integer = 1024) as Memoryblock


Notes: Reads up to MaxSize bytes from the given pipe. Pipe is in range 1 to GetNumEndpoints.

167.17.19  ResetPipe(PipeRef as Integer) as boolean


Notes: The interface must be open for the pipe to exist.

pipeRef: Index for the desired pipe (1 - GetNumEndpoints).
Lasterror is set to kIOReturnSuccess if successful, kIOReturnNoDevice if there is no connection to an IOService, or kIOReturnNotOpen if the interface is not open for exclusive access.
167.17.20  **WritePacket(PipeRef as Integer, Data as Memoryblock) as boolean**

**Notes:**  
We developed this function for a client, so it’s probably useless for everyone else. Lasterror is set.  
See also:

- 167.17.21 WritePacket(PipeRef as Integer, Data as string) as boolean

167.17.21  **WritePacket(PipeRef as Integer, Data as string) as boolean**

**Notes:**  
We developed this function for a client, so it’s probably useless for everyone else. Lasterror is set.  
See also:

- 167.17.20 WritePacket(PipeRef as Integer, Data as Memoryblock) as boolean

167.17.22  **WriteRaw(PipeRef as Integer, Data as Memoryblock) as boolean**

MBS USB Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Writes data on a BULK OUT or INTERRUPT OUT pipe.  
**Notes:**  
The interface must be open for the pipe to exist.  
PipeRef: Index for the desired pipe (1 - GetNumEndpoints).  
Data: the buffer of data to send.  
Lasterror is set.  
See also:

- 167.17.23 WriteRaw(PipeRef as Integer, Data as string) as boolean

167.17.23  **WriteRaw(PipeRef as Integer, Data as string) as boolean**

MBS USB Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Writes data on a BULK OUT or INTERRUPT OUT pipe.  
**Notes:**  
The interface must be open for the pipe to exist.  
PipeRef: Index for the desired pipe (1 - GetNumEndpoints).
Data: the buffer of data to send.
LastError is set.
See also:

- 167.17.22 WriteRaw(PipeRef as Integer, Data as Memoryblock) as boolean

**167.17.24 Properties**

**167.17.25 completionTimeout as Integer**

MBS USB Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The completion timeout.
**Notes:**
Specifies a time value in milliseconds. Once the request is queued on the bus, if the entire request is not completed in this amount of time, the request will be aborted and returned.
Default is 1000.
(Read and Write property)

**167.17.26 LastError as Integer**

MBS USB Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The last error code.
**Notes:**  (Read and Write property)

**167.17.27 noDataTimeout as Integer**

MBS USB Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The timeout for no data.
**Notes:**
Specifies a time value in milliseconds. Once the request is queued on the bus, if no data is transferred in this amount of time, the request will be aborted and returned.
Default is 1000.
(Read and Write property)

**167.17.28 ProductID as Integer**

MBS USB Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The product ID for connecting to the device.
167.17.29  **VendorID as Integer**

MBS USB Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** The vendor ID for connecting to the device.
**Notes:** (Read and Write property)

167.17.30  **Constants**

167.17.31  **kIOReturnSuccess = 0**

MBS USB Plugin, Plugin Version: 12.5. **Function:** The error constant for no error.

167.17.32  **kIOUSBConfigNotFound = & he0004056**

MBS USB Plugin, Plugin Version: 13.5. **Function:** One of the error constants. **Notes:** Configuration Not found.

167.17.33  **kIOUSBDeviceNotHighSpeed = & he0004049**

MBS USB Plugin, Plugin Version: 13.5. **Function:** One of the error constants. **Notes:** The device is not a high speed device, so the EHCI driver returns an error.

167.17.34  **kIOUSBDevicePortWasNotSuspended = & he0004050**

MBS USB Plugin, Plugin Version: 13.5. **Function:** One of the error constants. **Notes:** Port was not suspended.

167.17.35  **kIOUSBEndpointNotFound = & he0004057**

MBS USB Plugin, Plugin Version: 13.5. **Function:** One of the error constants. **Notes:** Endpoint Not found.
167.17.36  kIOUSBHighSpeedSplitError = & he000404b

MBS USB Plugin, Plugin Version: 13.5. **Function:** One of the error constants.  
**Notes:** Error to hub on high speed bus trying to do split transaction.

167.17.37  kIOUSBInterfaceNotFound = & he000404e

MBS USB Plugin, Plugin Version: 13.5. **Function:** One of the error constants.  
**Notes:** Interface ref not recognized.

167.17.38  kIOUSBLowLatencyBufferNotPreviouslyAllocated = & he000404d

MBS USB Plugin, Plugin Version: 13.5. **Function:** One of the error constants.  
**Notes:** Attempted to use user land low latency isoc calls w/out calling PrepareBuffer (on the data buffer) first.

167.17.39  kIOUSBLowLatencyFrameListNotPreviouslyAllocated = & he000404c

MBS USB Plugin, Plugin Version: 13.5. **Function:** One of the error constants.  
**Notes:** Attempted to use user land low latency isoc calls w/out calling PrepareBuffer (on the frame list) first.

167.17.40  kIOUSBNoAsyncPortErr = & he000405f

MBS USB Plugin, Plugin Version: 13.5. **Function:** One of the error constants.  
**Notes:** No async port.

167.17.41  kIOUSBNotEnoughPipesErr = & he000405e

MBS USB Plugin, Plugin Version: 13.5. **Function:** One of the error constants.  
**Notes:** Not enough pipes in interface.

167.17.42  kIOUSBNotEnoughPowerErr = & he000405d

MBS USB Plugin, Plugin Version: 13.5. **Function:** One of the error constants.  
**Notes:** Not enough power for selected configuration.
167.17. CLASS MACUSBMBS

167.17.43  kIOUSBPipeStalled = & he000404f

MBS USB Plugin, Plugin Version: 13.5. Function: One of the error constants. Notes: Pipe has stalled, error needs to be cleared.

167.17.44  kIOUSBSyncRequestOnWLThread = & he000404a

MBS USB Plugin, Plugin Version: 13.5. Function: One of the error constants. Notes: A synchronous USB request was made on the workloop thread (from a callback?). Only async requests are permitted in that case.

167.17.45  kIOUSBTooManyPipesErr = & he0004060


167.17.46  kIOUSBTransactionReturned = & he0004050

MBS USB Plugin, Plugin Version: 13.5. Function: One of the error constants. Notes: The transaction has been returned to the caller.

167.17.47  kIOUSBTransactionTimeout = & he0004051


167.17.48  kIOUSBUnknownPipeErr = & he0004061

MBS USB Plugin, Plugin Version: 13.5. Function: One of the error constants. Notes: Pipe ref not recognized.
167.18 class MacUSBNotificationMBS

167.18.1 class MacUSBNotificationMBS

MBS USB Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
The class for receiving notifications if an USB device has been attached or removed.
**Notes:**
Please make a subclass so you can put your own code in the events.

Use WinUSBNotificationMBS for Windows.

167.18.2 Methods

167.18.3 Constructor(vendor as Integer = 0, product as Integer = 0)

MBS USB Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Setup the notification system so you are informed about USB devices being attached or removed.
**Example:**

```vba
// look only for device with this vendor/product ID
dim m as new MyMacUSBNotificationMBS(& h5AC, & h263)
```

**Notes:**
You can use vendor and product IDs to limit the class to look only for devices with matching IDs.
Lasterror is set.

167.18.4 GetUSBDeviceInfo(DeviceHandle as Integer, byref Vendor as string, byref Product as string, byref SerialNumber as string, byref Revision as Integer) as boolean

MBS USB Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:**
Queries USB details for a given handle.
**Notes:**
This is a convenience function to query details on the devices found within the events.
Returns true on success.
167.18.5  **QueryBSDName(DeviceHandle as Integer) as string**

MBS USB Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Function to query BSDName of a given device.

**Notes:**
If the device is a disk or USB stick and has been mounted, this would give the bsd name of the disk. Returns "" on any error.

167.18.6  **Release(DeviceHandle as Integer)**

MBS USB Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Releases an object reference when you don’t need it any longer.

**Notes:**
Please call Retain and Release in pairs.
Does nothing if handle is zero or when called on Linux/Windows.

167.18.7  **Retain(DeviceHandle as Integer)**

MBS USB Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: No, Linux: No.  **Function:** Retains an object reference so it is available later.

**Notes:**
Please call Retain and Release in pairs.
Does nothing if handle is zero or when called on Linux/Windows.

167.18.8  **Properties**

167.18.9  **LastError as Integer**

MBS USB Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:** The last error code.

**Notes:**
Zero is no error while other values are Mac OS error codes.
(Read and Write property)
167.18.10 Events

167.18.11 DeviceAdded(properties as dictionary, NewDevice as boolean, ClassName as string, DeviceName as string, DeviceHandle as Integer)

MBS USB Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** This event is called when the device is added.

**Notes:**
You find properties like product and vendor in the dictionary. This event can be called from the constructor for existing devices with NewDevice = false. Later events have NewDevice = true so you see that this is a new device.

DeviceName and ClassName give details on the USB item found. DeviceHandle is the internal object reference which can be used with other helper functions in this class (io_service_t).

167.18.12 DeviceRemoved(properties as dictionary, NewDevice as boolean, ClassName as string, DeviceName as string, DeviceHandle as Integer)

MBS USB Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** This event is called when the device is removed.

**Notes:**
You find properties like product and vendor in the dictionary. This event can be called from the constructor for existing devices with NewDevice = false. Later events have NewDevice = true so you see that this is a new device.

DeviceName and ClassName give details on the USB item found. DeviceHandle is the internal object reference which can be used with other helper functions in this class (io_service_t).
167.19. class WinHIDMBS

167.19.1 class WinHIDMBS

MBS USB Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A class to work with HID devices on Windows.

**Example:**

```vbnet
dim m as new WinHIDMBS
dim s as string

# if not TargetWin32
MsgBox "This example requires Windows."
# endif

if m.FindFirstDevice then

do
ListBox1.AddRow ""

ListBox1.Cell(ListBox1.LastIndex,0)=hex(m.ProductID)
ListBox1.Cell(ListBox1.LastIndex,1)=hex(m.VendorID)
ListBox1.Cell(ListBox1.LastIndex,2)=m.Product
ListBox1.Cell(ListBox1.LastIndex,3)=m.Manufacturer
ListBox1.Cell(ListBox1.LastIndex,4)=m.SerialNumber
ListBox1.Cell(ListBox1.LastIndex,5)=hex(m.VersionNumber)

if left(m.Product,3)="RF1" then // my test device

if m.Connect then
    // write 9 bytes report
    // first byte is report ID plus 8 byte data
    s=chr(0)+"P"+chr(0)+chr(0)+chr(0)+chr(0)+chr(0)+chr(0)+chr(0) + chr(0)
    MsgBox "Send bytes: "+str(m.SendMessage(s))

    do
s=m.ReadMessage(17)
loop until lenb(s)>0 // until we got something
MsgBox midb(s,2) // shows result. First byte is ReportID again

m.Disconnect
end if
end if

loop until not m.FindNextDevice

end if
```
Notes:
For newer development, please use our HIDAPIMBS class.

Updated in version 10.4 of plugins to ignore devices which you don’t have permissions to access them. So you will now see devices with VendorID=0 and ProductID=0.

This class can be used in three different ways. First normal with Connect and ReadMessage/SendMessage. Second with InstallListener and SendMessage/Poll functions. Third low level via GetInputReport and SetOutputReport.

167.19.2 Methods

167.19.3 Close

MBS USB Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Closes the active connection.

167.19.4 Connect as boolean

MBS USB Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Creates a connection to the current device.

**Example:**

```vba
Function OpenUSBDevice() As boolean
    dim i as Integer
    dim h as WinHIDMBS

    h=FindDevice // see FindFirst example

    if h=nil then
        MsgBox "No XYZ device found."
        Return false
    end if

    call h.Connect

    if h.Lasterror<>0 then
        MsgBox "Failed to connect to USB Device."
    end if

    return true
End Function
```
Return false
end if

Return true

End Function

Notes:
Lasterror is set.
Returns true on success and false on failure.

The plugin tries to open a read and a write connection. If both fail, connect returns false. If one is okay, it returns true.

Some devices don’t allow read or write because of missing permissions.

167.19.5 DevicePath as string

MBS USB Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The internal path used by Windows to identify the device.
**Notes:** Only for debugging.

167.19.6 Disconnect

MBS USB Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Disconnects current USB device.
**Notes:** Lasterror is set.

167.19.7 FindFirstDevice as boolean

MBS USB Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Finds the first device and loads the properties.
**Example:**

```vbnet
Function FindDevice() As MyWinHIDMBS
    dim h as MyWinHIDMBS
    dim p as string

    h=new MyWinHIDMBS 'your own subclass of MacHIDMBS so you can get events
```
if h.FindFirstDevice then

p=h.Product
if p="MyProduct" then
Return h
end if

while h.FindNextDevice

p=h.Product
if p="MyProduct" then
Return h
end if
wend

end if
End Function

Notes:
Returns true on success and false on failure.
On Windows finds only devices which can be opened for Read/Write.

167.19.8 FindNextDevice as boolean


167.19.9 GetInputReport(data as MemoryBlock, Offset as Integer = 0, Length as Integer = 0) as boolean

MBS USB Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: Returns an input reports from a top-level collection. Notes: This is very low level. First byte of data block is report ID. If Length is 0, we use size of memoryblock. Returns true on success.
167.19. **CLASS WINHIDMBS**

see also:

167.19.10  **InstallListener(PollSize as Integer) as boolean**

MBS USB Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Installs a second thread which performs Read.  
**Example:**

dim h as new WinHIDMBS

call h.InstallListener 9 // 8 bytes + Report ID

**Notes:**
Use PollString or PollMemory in a timer or a loop to get the data.  
This is an alternative way compared to ReadMessage functions.

167.19.11  **Manufacturer as string**

MBS USB Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The manufacturer name.  
**Notes:**
On any error an empty string is returned.  
Lasterror is set.

167.19.12  **PollMemory as memoryblock**

MBS USB Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Reads a message from the device.  
**Notes:**
A connection must be open and InstallListener must be used.  
Lasterror is set.  
You may want to try this function in a loop or a timer till you get data.
167.19.13 PollString as string

MBS USB Plugin, Plugin Version: 7.8, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Reads a message from the device.

**Example:**
```
dim m as WinHIDMBS // your WinHIDMBS object
dim s as string

do
s=m.PollString
loop until lenb(s)>0 // until we got something
MsgBox midb(s,2) // shows result. First byte is ReportID again
```

**Notes:**
A connection must be open and InstallListener must be used.
Lasterror is set.
You may want to try this function in a loop or a timer till you get data.

167.19.14 Product as string

MBS USB Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The product string of the selected device.

**Notes:**
Lasterror is set.

167.19.15 ProductID as Integer

MBS USB Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The product ID of the selected device.

**Notes:**
Lasterror is set.

167.19.16 ReadMessage(length as Integer, timeOut as Integer = 0) as string

MBS USB Plugin, Plugin Version: 13.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Reads a message from the device.

**Example:**
```
dim m as WinHIDMBS
dim s as string
```
do
s=m.ReadMessage(48)
loop until lenb(s)>0 // until we got something
MsgBox midb(s,2) // shows result. First byte is ReportID again

Notes:
Length is the length of the receive buffer you want to use.
The string returned is 0 to length bytes long.
A connection must be open.
LastError is set.
You may want to try this function in a loop till you get data.
Timeout is a timeout value in milliseconds.

167.19.17  ReadMessageMemory(length as Integer, timeOut as Integer = 0) as memoryblock

MBS USB Plugin, Plugin Version: 13.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
Reads a message from the device.
Example:

    dim m as WinHIDMBS
    dim s as memoryblock

    do
        s=m.ReadMessageMemory(48)
        loop until s<>nil // until we got something
        MsgBox midb(s,2) // shows result. First byte is ReportID again
    
Notes:
Length is the length of the receive buffer you want to use.
The memoryblock returned has a size of 0 to length bytes.
A connection must be open.
LastError is set.
You may want to try this function in a loop till you get data.
Timeout is a timeout value in milliseconds.

167.19.18  SendMessage(data as string) as Integer

MBS USB Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
Sends a message to the USB device.
Example:

```vbs
dim m as WinHIDMBS // your hid object
dim s as string
// write 9 bytes report
// first byte is report ID plus 8 byte data
s=chr(0)+"P"+chr(0)+chr(0)+chr(0)+chr(0)+chr(0)+chr(0)+chr(0)
MsgBox "Send bytes: " +str(m.SendMessage(s))
```

Notes:

A connection must be open.
Returns number of bytes sent.

The first byte must be the Report ID which seems to be zero for most devices.

167.19.19  **SendMessageMemory** (data as memoryblock, Offset as Integer = 0, length as Integer = 0) as Integer

MBS USB Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Sends a message to the USB device. **Notes:**

A connection must be open.
Lasterror is set.
Returns number of bytes sent.

While writing a crossplatform application we saw the following thing: The data buffer for the SendMessageMemory call must be 8 bytes long on Mac for our device (with MacHIDMBS) and 61 bytes long for Windows (with WinHIDMBS) for our HID device. We have 1 byte for the ReportID and 60 data bytes where the first 8 are set like on the Mac. So if the calls fail on Windows, try with a higher length and check the WinHIDMBS.OutputReportByteLength property.

The first byte must be the Report ID which seems to be zero for most devices.
If length is zero, we use the length of memoryblock.

167.19.20  **SerialNumber** as string

MBS USB Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The serial number of the current selected device. **Notes:** Lasterror is set.
167.19.21 SetOutputReport(data as MemoryBlock, Offset as Integer = 0, Length as Integer = 0) as boolean

MBS USB Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Sends an output report.  
**Notes:**  
This is very low level.  
First byte of data block is report ID.  
If Length is 0, we use size of memoryblock.  
Returns true on success.

see also  

167.19.22 VendorID as Integer

MBS USB Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The vendor ID of the selected device.  
**Notes:** Lasterror is set.

167.19.23 VersionNumber as Integer

MBS USB Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The device specific version number.  
**Notes:**  
Value can be anything.  
On any error, 0 is returned.  
Lasterror is set.

167.19.24 Properties

167.19.25 FeatureReportByteLength as Integer

MBS USB Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Maximum length, in bytes, of all the feature reports, including the report identifier, if report identifiers are used, which is added to the beginning of the report data.
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167.19.26 HidHandle as Integer

MBS USB Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The handle for the HID device.
**Notes:** (Read and Write property)

167.19.27 InputReportByteLength as Integer

MBS USB Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Maximum size, in bytes, of the input reports, including the report identifier, if report identifiers are used,
which is added to the beginning of the report data.
**Notes:** (Read and Write property)

167.19.28 Lasterror as Integer

MBS USB Plugin, Plugin Version: 7.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Last error code.
**Notes:**
0 is success.
-1 means that the function is not available.
else Windows error codes like 5 for Access Denied.
(Read and Write property)

167.19.29 LasterrorString as String

MBS USB Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The last error code in a formatted and localized string.
**Notes:**
This does not work for plugin error codes.
Like -1 if the function is not available.
(Read only property)
167.19.30  **OutputReportByteLength as Integer**

MBS USB Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Maximum size, in bytes, of all the output reports, including the report identifier, if report identifiers are used, which is added to the beginning of the report data.
**Notes:** (Read and Write property)

167.19.31  **PnPHandle as Integer**

MBS USB Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The handle for Plug and Play.
**Notes:** (Read and Write property)

167.19.32  **ReadHandle as Integer**

MBS USB Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The handle of the stream for reading data from the USB device.
**Notes:** (Read and Write property)

167.19.33  **ThreadHandle as Integer**

MBS USB Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The handle for the thread which waits in the background for new data.
**Notes:** (Read and Write property)

167.19.34  **WriteHandle as Integer**

MBS USB Plugin, Plugin Version: 9.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The handle of the stream for writing data to the USB device.
**Notes:** (Read and Write property)
167.20 class WinUSBDeviceMBS

167.20.1 class WinUSBDeviceMBS

MBS USB Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The class to query USB devices.
**Example:**
```vba
    dim devices(-1) as WinUSBDeviceMBS = WinUSBDeviceMBS.Devices

    for each d as WinUSBDeviceMBS in devices
        MsgBox d.Vendor + " - " + d.Product
        next
```

167.20.2 Methods

167.20.3 Devices as WinUSBDeviceMBS()

MBS USB Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Queries a list of all USB Devices.
**Example:**
```vba
    dim devices() as WinUSBDeviceMBS = WinUSBDeviceMBS.devices

    for each d as WinUSBDeviceMBS in devices
        msgbox d.vendor + " " + d.product + " " + d.serialnumber
        next
```

**Notes:** Returns an empty array on errors.

167.20.4 Properties

167.20.5 cdUSB as Integer

MBS USB Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The device USB version.
**Notes:**
USB Specification Number which device complies too.

The cdUSB field reports the highest version of USB the device supports. The value is in binary coded
decimal with a format of 0xJJMN where JJ is the major version number, M is the minor version number and N is the sub minor version number. e.g. USB 2.0 is reported as &h0200, USB 1.1 as 0x0110 and USB 1.0 as &h0100.
(Read and Write property)

167.20.6 DescriptorType as Integer

MBS USB Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The device descriptor type.
**Notes:**
Device Descriptor (0x01)
(Read and Write property)

167.20.7 DeviceClass as Integer

MBS USB Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The device class.
**Notes:**
See constants in MacUSBDeviceMBS class.
Assigned by USB Org
(Read and Write property)

167.20.8 DeviceID as Integer

MBS USB Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The device ID.
**Notes:** (Read and Write property)

167.20.9 DeviceProtocol as Integer

MBS USB Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The device protocol.
**Notes:**
Assigned by USB Org
(Read and Write property)
167.20.10  DeviceSubClass as Integer

MBS USB Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The device sub class.
**Notes:**
See constants in MacUSBDeviceMBS class.
Assigned by USB Org
(Read and Write property)

167.20.11  MaxEP0Size as Integer

MBS USB Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Maximum Packet Size for Zero Endpoint.
**Notes:**
Valid Sizes are 8, 16, 32, 64
(Read and Write property)

167.20.12  Product as String

MBS USB Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The product name.
**Notes:** (Read and Write property)

167.20.13  ProductID as Integer

MBS USB Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The product ID of the device.
**Notes:** (Read and Write property)

167.20.14  SerialNumber as String

MBS USB Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The serial number of the USB device.
**Example:**
```vbnet
dim devices(-1) as WinUSBDeviceMBS = WinUSBDeviceMBS.Devices
for each d as WinUSBDeviceMBS in devices
    MsgBox d.Vendor+" - " + d.Product+": " + d.SerialNumber
```
167.20. CLASS WINUSBDEVICEMBS

Notes:
Not all vendors save the serial number in the device. (Read and Write property)

167.20.15 Vendor as String

MBS USB Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The vendor name of the USB device. **Notes:** (Read and Write property)

167.20.16 VendorID as Integer

MBS USB Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The vendor ID of the USB device. **Notes:** Assigned by USB Org. (Read and Write property)
167.21 class WinUSBInterfaceDescriptionMBS

167.21.1 class WinUSBInterfaceDescriptionMBS

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
This class is used by USB clients to retrieve a USB-defined interface descriptor.

167.21.2 Properties

167.21.3 AlternateSetting as Integer

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The index number of the alternate setting of the interface.
**Notes:** (Read and Write property)

167.21.4 DescriptorType as Integer

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The descriptor type.
**Notes:**
Descriptor must be set to USB_INTERFACE_DESCRIPTOR_TYPE.
(Read and Write property)

167.21.5 InterfaceClass as Integer

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The class code of the device that the USB specification group assigned.
**Notes:** (Read and Write property)

167.21.6 InterfaceIndex as Integer

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The index of a string descriptor that describes the interface.
**Notes:**
For information about this field, see section 9.6.5 in the "Universal Serial Bus Revision 2.0" specification at USB Technology.
(Read and Write property)
167.21.7 InterfaceNumber as Integer

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The index number of the interface.  
**Notes:** (Read and Write property)

167.21.8 InterfaceProtocol as Integer

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The protocol code of the device that the USB specification group assigned.  
**Notes:** (Read and Write property)

167.21.9 InterfaceSubClass as Integer

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The subclass code of the device that the USB specification group assigned.  
**Notes:** (Read and Write property)

167.21.10 Length as Integer

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The length, in bytes, of the descriptor.  
**Notes:** (Read and Write property)

167.21.11 NumEndpoints as Integer

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The number of endpoints that are used by the interface, excluding the default status endpoint.  
**Notes:** (Read and Write property)
167.22 class WinUSBMBS

167.22.1 class WinUSBMBS

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Provides access to any USB device on Windows.

**Notes:**

This class provides functions exposed by Winusb.dll, which user-mode client drivers and applications can use to communicate with USB devices. WinUSB functions require Windows XP or later.

see also
and

For PipeIDs, please use 1, 2, 3... for output pipe IDs and & h81, & h82, & h83... for input pipes.

167.22.2 Methods

167.22.3 AbortPipe(PipeID as Integer)

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Aborts all of the pending transfers for a pipe. This is a synchronous operation.

**Notes:**

To reset a pipe associated with an endpoint in the first interface, use the WinUSBMBS object created with constructor. For all other interfaces, use the WinUSBMBS objects to the target interface, retrieved by GetAssociatedInterface.

PipeID: The identifier (ID) of the control pipe. The PipeID parameter is an 8-bit value that consists in a 7-bit address and a direction bit. This parameter corresponds to the EndpointAddress field in the endpoint descriptor.

Lasterror is zero on success and false on failure.

167.22.4 Available as boolean

MBS USB Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns true if winusb.dll has been found and loaded.
167.22. CLASS WINUSBMBS

Notes: Always false on Linux and Mac OS X.

167.22.5 Constructor(path as string)

Notes: Use WindowsDeviceMBS class to find USB devices and their device paths.
Lasterror is set.
On success DeviceHandle and Handle properties are not nil.

When Constructor is called, the policy settings of the interface are reset to the default values. The Constructor call queries the underlying USB stack for various descriptors and allocates enough memory to store the retrieved descriptor data. Constructor first retrieves the device descriptor and then gets the associated configuration descriptor. From the configuration descriptor, the call derives the associated interface descriptors and stores them in an array. The interfaces in the array are identified by zero-based indexes. An index value of 0 indicates the first interface (the default interface), a value of 1 indicates the second associated interface, and so on. Constructor parses the default interface descriptor for the endpoint descriptors and caches information such as the associated pipes or state specific data. The handle received in the InterfaceHandle parameter is a pointer to the memory block allocated for the first interface in the array.

If an application wants to use another interface on the device, it must call GetAssociatedInterface, specify the index of the interface, and retrieve a handle to the memory block allocated for the specified interface.

167.22.6 ControlTransfer(SetupPacket as WinUSBSetupPacketMBS, Buffer as MemoryBlock) as Integer

Notes: To send a control request to the entire device or the first interface, use the WinUSBMBS object created with constructor. For all other interfaces, use the WinUSBMBS objects to the target interface, retrieved by GetAssociatedInterface.

SetupPacket: The 8-byte setup packet of type WinUSBSetupPacketMBS.
Buffer: A buffer that contains the data to transfer. Can be empty.

Returns the actual number of transferred bytes.
Lasterror property is set.
167.22.7  **ControlTransfer(SetupPacket as WinUSBSsetupPacketMBS, Buffer as String) as Integer**

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Transmits control data over a default control endpoint.

**Notes:**
To send a control request to the entire device or the first interface, use the WinUSBMBS object created with constructor. For all other interfaces, use the WinUSBMBS objects to the target interface, retrieved by GetAssociatedInterface.

SetupPacket: The 8-byte setup packet of type WinUSBSsetupPacketMBS.
Buffer: A buffer that contains the data to transfer. Can be empty.

Returns the actual number of transferred bytes.
Lastererror property is set.

See also:

- 167.22.6 ControlTransfer(SetupPacket as WinUSBSsetupPacketMBS, Buffer as MemoryBlock) as Integer

167.22.8  **DeviceSpeed as Integer**

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries device speed.

**Notes:**
Lastererror is set.
Use constants LowSpeed, HighSpeed and FullSpeed.

167.22.9  **FlushPipe(PipeID as Integer)**

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Discards any data that is cached in a pipe. This is a synchronous operation.

**Notes:**
To reset a pipe associated with an endpoint in the first interface, use the WinUSBMBS object created with constructor. For all other interfaces, use the WinUSBMBS objects to the target interface, retrieved by GetAssociatedInterface.
PipeID: The identifier (ID) of the control pipe. The PipeID parameter is an 8-bit value that consists in a 7-bit address and a direction bit. This parameter corresponds to the EndpointAddress field in the endpoint descriptor.

Lasterror is zero on success and false on failure.

167.22.10 GetAssociatedInterface(index as Integer) as WinUSBMBS

**Notes:**  
This is a synchronous operation.

AssociatedInterfaceIndex: An index that specifies the associated interface to retrieve. A value of 0 indicates the first associated interface, a value of 1 indicates the second associated interface, and so on.

Returns new WinUSBMBS object.

The first associated interface is the interface that immediately follows the interface whose handle the WinUsbInitialize routine retrieves.

Callers of GetAssociatedInterface can retrieve only one handle for each interface. If a caller attempts to retrieve more than one handle for the same interface, the routine will fail with an error of ERROR_ALREADY_EXISTS.

167.22.11 QueryInterfaceSettings(index as Integer) as WinUSBInterfaceDescriptionMBS

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Retrieves the interface descriptor for the specified alternate interface settings for a particular interface handle.  
**Notes:**  
To retrieve the settings of the first interface, use the WinUSBMBS object created with constructor. For all other interfaces, use the WinUSBMBS objects to the target interface, retrieved by GetAssociatedInterface.

AlternateSettingNumber: A value that indicates which alternate settings to return. A value of 0 indicates the first alternate setting, a value of 1 indicates the second alternate setting, and so on.

Returns WinUSBInterfaceDescriptionMBS object on success or nil on any error.
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167.22.12 QueryPipe(AlternateInterfaceNumber as Integer, PipeIndex as Integer) as WinUSBPipeInformationMBS

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Retrieves information about the specified endpoint and the associated pipe for an interface. **Notes:**

To query a pipe associated with an endpoint in the first interface, use the WinUSBMBS object created with constructor. For all other interfaces, use the WinUSBMBS objects to the target interface, retrieved by GetAssociatedInterface.

AlternateInterfaceNumber: A value that specifies the alternate interface to return the information for.
PipeIndex: A value that specifies the pipe to return information about. This value is not the same as the bEndpointAddress field in the endpoint descriptor. A PipeIndex value of 0 signifies the first endpoint that is associated with the interface, a value of 1 signifies the second endpoint, and so on. PipeIndex must be less than the value in the NumEndpoints field of the interface descriptor.

Returns pipe information or nil on error. Also sets Lasterror property.

The QueryPipe function does not retrieve information about the control pipe.

Each interface on the USB device can have multiple endpoints. To communicate with each of these endpoints, the bus driver creates pipes for each endpoint on the interface. The pipe indices are zero-based. Therefore for n number of endpoints, the pipes’ indices are set from n-1. WinUsb_QueryPipe parses the configuration descriptor to get the interface specified by the caller. It searches the interface descriptor for the endpoint descriptor associated with the caller-specified pipe. If the endpoint is found, the function populates a WinUSBPipeInformationMBS object with information from the endpoint descriptor.

167.22.13 ReadPipeMemory(PipeID as Integer, BufferLength as Integer) as Memoryblock

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Reads data from the specified pipe. **Notes:**

To read a pipe associated with an endpoint in the first interface, use the WinUSBMBS object created with constructor. For all other interfaces, use the WinUSBMBS objects to the target interface, retrieved by GetAssociatedInterface.

PipeID: PipeID corresponds to the EndpointAddress field in the endpoint descriptor. For information about the layout of this field, see Table 9-13 in “Universal Serial Bus Specification Revision 2.0” at USB Technology. In the EndpointAddress field, Bit 7 indicates the direction of the endpoint: 0 for OUT; 1 for IN.
BufferLength: The maximum number of bytes to read.
Returns memory block with the data read. This may be shorter than BufferLength. Lasterror is set.

LastError is 0 if the operation succeeds. Otherwise, lasterror has the Windows error code.

If the data returned by the device is greater than a maximum transfer length, WinUSB divides the request into smaller requests of maximum transfer length and submits them serially. If the transfer length is not a multiple of the endpoint’s maximum packet size (retrievable through the WinUSBPipeInformationMBS class's MaximumPacketSize member), WinUSB increases the size of the transfer to the next multiple of MaximumPacketSize.

USB packet size does not factor into the transfer for a read request. If the device responds with a packet that is too large for the client buffer, the behavior of the read request corresponds to the type of policy set on the pipe. If policy type for the pipe is ALLOW_PARTIAL_READS, WinUSB adds the remaining data to the beginning of the next transfer. If ALLOW_PARTIAL_READS is not set, the read request fails. For more information about policy types, see WinUSB Functions for Pipe Policy Modification.

When no data is available in the endpoint (pipe is empty), ReadPipe does not return until there is data in the pipe. If an error condition occurs or the application-specified timeout expires, ReadPipe always returns false. To determine the actual reason for that return value, always check LastError. For example, in these cases the GetLastError error value indicates the actual reason:

- If the application specified a timeout value in the pipe policy and that timeout expires, ReadPipe returns false and LastError is ERROR_SEM_TIMEOUT.
- If an error condition occurs while reading data from the pipe, ReadPipe returns false and LastError is ERROR_GEN_FAILURE.

### 167.22.14 ReadPipePacket(PipeID as Integer, MaxSize as Integer = 1024) as Memoryblock

MBS USB Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Reads a data packet. **Notes:** We developed this function for a client, so it’s probably useless for everyone else.

### 167.22.15 ReadPipeString(PipeID as Integer, BufferLength as Integer) as string

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Reads data from the specified pipe. **Notes:** To read a pipe associated with an endpoint in the first interface, use the WinUSBMBS object created with constructor. For all other interfaces, use the WinUSBMBS objects to the target interface, retrieved by GetAssociatedInterface.
PipeID: PipeID corresponds to the EndpointAddress field in the endpoint descriptor. For information about the layout of this field, see Table 9-13 in “Universal Serial Bus Specification Revision 2.0” at USB Technology. In the EndpointAddress field, Bit 7 indicates the direction of the endpoint: 0 for OUT; 1 for IN.

BufferLength: The maximum number of bytes to read.

Returns string with the data read. This may be shorter than BufferLength. Lasterror is set.

Lasterror is 0 if the operation succeeds. Otherwise, lasterror has the Windows error code.

If the data returned by the device is greater than a maximum transfer length, WinUSB divides the request into smaller requests of maximum transfer length and submits them serially. If the transfer length is not a multiple of the endpoint’s maximum packet size (retrievable through the WinUSBPipeInformationMBS class’s MaximumPacketSize member), WinUSB increases the size of the transfer to the next multiple of MaximumPacketSize.

USB packet size does not factor into the transfer for a read request. If the device responds with a packet that is too large for the client buffer, the behavior of the read request corresponds to the type of policy set on the pipe. If policy type for the pipe is ALLOW_PARTIAL_READS, WinUSB adds the remaining data to the beginning of the next transfer. If ALLOW_PARTIAL_READS is not set, the read request fails. For more information about policy types, see WinUSB Functions for Pipe Policy Modification.

When no data is available in the endpoint (pipe is empty), ReadPipe does not return until there is data in the pipe. If an error condition occurs or the application-specified timeout expires, ReadPipe always returns false. To determine the actual reason for that return value, always check LastError. For example, in these cases the GetLastError error value indicates the actual reason:
- If the application specified a timeout value in the pipe policy and that timeout expires, ReadPipe returns false and LastError is ERROR_SEM_TIMEOUT.
- If an error condition occurs while reading data from the pipe, ReadPipe returns false and LastError is ERROR_GEN_FAILURE.

167.22.16 ResetPipe(PipeID as Integer)

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Resets the data toggle and clears the stall condition on a pipe.

**Notes:**

To reset a pipe associated with an endpoint in the first interface, use the WinUSBMBS object created with constructor. For all other interfaces, use the WinUSBMBS objects to the target interface, retrieved by GetAssociatedInterface.

PipeID: The identifier (ID) of the control pipe. The PipeID parameter is an 8-bit value that consists in a 7-bit address and a direction bit. This parameter corresponds to the EndpointAddress field in the endpoint
Lasterror is zero on success and false on failure.

167.22.17 WritePipe(PipeID as Integer, Buffer as MemoryBlock) as Integer

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Writes data to a pipe.

**Notes:**

To write to a pipe associated with an endpoint in the first interface, use the WinUSBMBS object created with constructor. For all other interfaces, use the WinUSBMBS objects to the target interface, retrieved by GetAssociatedInterface.

PipeID: PipeID corresponds to the EndpointAddress field in the endpoint descriptor. For information about the layout of this field, see Table 9-13 in “Universal Serial Bus Specification Revision 2.0” at USB Technology. In the bEndpointAddress field, Bit 7 indicates the direction of the endpoint: 0 for OUT; 1 for IN.

Buffer: A buffer that contains the data to write.

Returns the actual number of bytes that were written to the pipe.

Lasterror is set. Zero for success.

To create a write request, your the application must allocate a buffer, fill it with the data that you want to write to the device, and send the buffer to the host controller by calling WritePipe.

The following restrictions apply to the size of the buffer if RAW_IO is set:

- The buffer length must be a multiple of the maximum endpoint packet size.
- The length must be less than or equal to the value of MAXIMUM_TRANSFER_SIZE retrieved by GetPipePolicy.

There are no restrictions on the size of the buffer if RAW_IO is not set as the pipe’s policy type. If the size of the buffer is greater than the maximum transfer length reported by MAXIMUM_TRANSFER_SIZE, WinUSB divides the request into smaller requests and submits them serially to the host controller.

A write request that contains zero-length data is forwarded down the USB stack.

See also:

- 167.22.18 WritePipe(PipeID as Integer, Buffer as String) as Integer

167.22.18 WritePipe(PipeID as Integer, Buffer as String) as Integer

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Writes data to a pipe.
Notes:

To write to a pipe associated with an endpoint in the first interface, use the WinUSBMBS object created with constructor. For all other interfaces, use the WinUSBMBS objects to the target interface, retrieved by GetAssociatedInterface.

PipeID: PipeID corresponds to the EndpointAddress field in the endpoint descriptor. For information about the layout of this field, see Table 9-13 in "Universal Serial Bus Specification Revision 2.0" at USB Technology. In the bEndpointAddress field, Bit 7 indicates the direction of the endpoint: 0 for OUT; 1 for IN.

Buffer: A buffer that contains the data to write.

Returns the actual number of bytes that were written to the pipe. Lasterror is set. Zero for success.

To create a write request, your the application must allocate a buffer, fill it with the data that you want to write to the device, and send the buffer to the host controller by calling WritePipe.

The following restrictions apply to the size of the buffer if RAW_IO is set:

- The buffer length must be a multiple of the maximum endpoint packet size.
- The length must be less than or equal to the value of MAXIMUM_TRANSFER_SIZE retrieved by GetPipePolicy.

There are no restrictions on the size of the buffer if RAW_IO is not set as the pipe’s policy type. If the size of the buffer is greater than the maximum transfer length reported by MAXIMUM_TRANSFER_SIZE, WinUSB divides the request into smaller requests and submits them serially to the host controller. A write request that contains zero-length data is forwarded down the USB stack.

See also:

- 167.22.17 WritePipe(PipeID as Integer, Buffer as MemoryBlock) as Integer
- 167.22.20 WritePipePacket(PipeID as Integer, Buffer as String) as Integer
167.22. **CLASS WINUSBMBS**

### 167.22.20 WritePipePacket(PipeID as Integer, Buffer as String) as Integer

**Notes:** We developed this function for a client, so it’s probably useless for everyone else.  
See also:

- 167.22.19 WritePipePacket(PipeID as Integer, Buffer as MemoryBlock) as Integer

### 167.22.21 Properties

#### 167.22.22 DeviceHandle as Integer

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The internal handle to the device.  
**Notes:** (Read and Write property)

#### 167.22.23 Lasterror as Integer

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The last error code.  
**Notes:** (Read and Write property)

#### 167.22.24 LasterrorMessage as String

MBS USB Plugin, Plugin Version: 16.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The last error message.  
**Notes:** (Read and Write property)

#### 167.22.25 Parent as WinUSBMBS

**Notes:** Objects created with GetAssociatedInterface have here the parent object, so you can go back to main interface.  
(Read and Write property)
167.22.26 Tag as Variant

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The attached value.  
**Notes:**  
You can use this property as you like.  
(Read and Write property)

167.22.27 USBHandle as Integer

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The internal handle to the USB device.  
**Notes:** (Read and Write property)

167.22.28 CurrentAlternateSetting as Integer

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The current alternate interface setting for an interface.  
**Notes:**  
To get the current alternate setting in the first (default) interface on the device, use the WinUSBMBS object created with constructor. For all other interfaces, use the WinUSBMBS objects to the target interface, retrieved by GetAssociatedInterface.  
Lasterror is set. You can set and get the value.  
(Read and Write computed property)

167.22.29 PipePolicyAllowPartialReads(PipeID as Integer) as boolean

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to allow partial reads.  
**Notes:**  
The default value is true. To disable set to false.  
Disabling AllowPartialReads causes the read requests to fail whenever the device returns more data (on bulk and interrupt IN endpoints) than the caller requested.  
Enabling AllowPartialReads causes WinUSB to save or discard the extra data when the device returns more data (on bulk and interrupt IN endpoints) than the caller requested. This behavior is defined by setting the auto flush value.  
Lasterror is set.
167.22.30  PipePolicyAutoClearStall(PipeID as Integer) as boolean

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether WinUSB resets the pipe in order to automatically clear the stall condition.  
**Notes:**  
Data continues to flow on the bulk and interrupt IN endpoints again as soon as a new or a queued transfer arrives on the endpoint. This policy parameter does not affect control pipes. Disabling AutoClearStall causes all transfers (that arrive to the endpoint after the stalled transfer) to fail until the caller manually resets the endpoint’s pipe by calling ResetPipe.  
LastError is set.  
(Read and Write computed property)

167.22.31  PipePolicyAutoFlush(PipeID as Integer) as boolean

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to use auto flush.  
**Notes:**  
The default value is false (zero). To enable auto flush set to true. auto flush must be used with AllowPartialReads enabled. If AllowPartialReads is TRUE, the value of auto flush determines the action taken by WinUSB when the device returns more data than the caller requested. Disabling AllowPartialReads causes WinUSB to ignore the auto flush value. Disabling auto flush with AllowPartialReads enabled causes WinUSB to save the extra data, add the data to the beginning of the caller’s next read request, and send it to the caller in the next read operation. Enabling auto flush with AllowPartialReads enabled causes WinUSB to discard the extra data remaining from the read request.  
LastError is set.  
(Read and Write computed property)

167.22.32  PipePolicyIgnoreShortPackets(PipeID as Integer) as boolean

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Enabling IgnoreShortPackets causes the host controller to not complete a read operation after it receives a short packet.  
**Notes:**  
Instead, the host controller completes the operation only after the host has read the specified number of bytes. Disabling IgnoreShortPackets causes the host controller to complete a read operation when either the host has read the specified number of bytes or the host has received a short packet.
The default value is false. To enable set to true. Lasterror is set.
(Read and Write computed property)

167.22.33 PipePolicyMaximumTransferSize(PipeID as Integer) as Integer

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
Gets the maximum size of a USB transfer supported by WinUSB.
Notes:
This is a read-only policy.
Lasterror is set.
(Read and Write computed property)

167.22.34 PipePolicyPipeTransferTimeout(PipeID as Integer) as UInt32

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
Specifies the time-out interval.
Notes:
The default value is zero.
The PipeTransferTimeout value specifies the time-out interval, in milliseconds. The host controller cancels
transfers that do not complete within the specified time-out interval.
A value of zero (default) indicates that transfers do not time out because the host controller never cancels
the transfer.
Lasterror is set.
(Read and Write computed property)

167.22.35 PipePolicyRawIO(PipeID as Integer) as boolean

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
Whether to use Raw IO.
Notes:
The default value is false.
Enabling raw IO causes WinUSB to send data directly to the USB driver stack, bypassing WinUSB’s queuing
and error handling mechanism.
The buffers that are passed to ReadPipe must be configured by the caller as follows:

- The buffer length must be a multiple of the maximum endpoint packet size.
- The length must be less than or equal to the value of PipePolicyMaximumTransferSize.
Disabling raw IO (false) does not impose any restriction on the buffers that are passed to ReadPipe. Lasterror is set. (Read and Write computed property)

167.22.36   PipePolicyResetPipeOnResume(PipeID as Integer) as boolean

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to reset pipe on resume. **Notes:** True indicates that on resume from suspend, WinUSB resets the endpoint before it allows the caller to send new requests to the endpoint. Lasterror is set. (Read and Write computed property)

167.22.37   PipePolicyShortPacketTerminate(PipeID as Integer) as boolean

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether the driver sends a zero-length packet at the end of every write request to the host controller. **Notes:** Lasterror is set. (Read and Write computed property)

167.22.38   Constants

167.22.39   AutoSuspend = & h81

MBS USB Plugin, Plugin Version: 12.2. **Function:** One of the power policy type constants.

167.22.40   FullSpeed = 2

MBS USB Plugin, Plugin Version: 12.2. **Function:** One of the Device Speed Constants **Notes:** Full Speed
167.22.41  HighSpeed = 3
MBS USB Plugin, Plugin Version: 12.2. **Function:** One of the Device Speed Constants  
**Notes:** High Speed

167.22.42  LowSpeed = 1
MBS USB Plugin, Plugin Version: 12.2. **Function:** One of the Device Speed Constants  
**Notes:** Low Speed

167.22.43  SuspendDelay = & h83
MBS USB Plugin, Plugin Version: 12.2. **Function:** One of the power policy type constants.
167.23. **CLASS WINUSBNOTIFICATIONMBS**

167.23. class **WinUSBNotificationMBS**

167.23.1 class **WinUSBNotificationMBS**

MBS USB Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The class for getting notifications about USB devices being connected or removed. **Notes:** Use MacUSBNotificationMBS for Mac OS X.

167.23.2 Methods

167.23.3 Constructor

MBS USB Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The constructor initializes the notification engine. **Notes:** On success WindowHandle and NotifyHandle is not zero.

167.23.4 Properties

167.23.5 NotifyHandle as Integer

MBS USB Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Internal handle to the notification system. **Notes:** (Read and Write property)

167.23.6 WindowHandle as Integer

MBS USB Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Internal handle to the dummy window for receiving notification. **Notes:** (Read only property)

167.23.7 Events

167.23.8 DeviceAdded(Name as string)

MBS USB Plugin, Plugin Version: 11.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** This event is called when a device has been attached. **Notes:**
Name is typically for an USB device: \\?\USB# Vid_05ac& Pid_8403# 00000009833# { a5dcbf10-6530-11d2-901f-00c04fb951ed } ".
That means you can get Vendor ID and Product ID from this string. Also the unique ID and finally the class GUID.

167.23.9 DeviceRemoved(Name as string)

MBS USB Plugin, Plugin Version: 11.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: This event is called when a device has been removed.
Notes: Name is typically for an USB device: \\?\USB# Vid_05ac& Pid_8403# 00000009833# { a5dcbf10-6530-11d2-901f-00c04fb951ed } ".
That means you can get Vendor ID and Product ID from this string. Also the unique ID and finally the class GUID.
167.24 class WinUSBPipeInformationMBS

167.24.1 class WinUSBPipeInformationMBS

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The class for pipe details.

167.24.2 Properties

167.24.3 Interval as Integer

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The pipe interval.
**Notes:** (Read and Write property)

167.24.4 MaximumPacketSize as Integer

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The maximum size, in bytes, of the packets that are transmitted on the pipe.
**Notes:** (Read and Write property)

167.24.5 PipeId as Integer

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The pipe identifier (ID).
**Notes:** (Read and Write property)

167.24.6 PipeType as Integer

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The pipe type.
**Notes:** (Read and Write property)
167.24.7 Constants

167.24.8 UsbdPipeTypeBulk = 2
MBS USB Plugin, Plugin Version: 12.2. **Function**: One of the pipe type constants. **Notes**: Indicates that the pipe is a bulk transfer pipe.

167.24.9 UsbdPipeTypeControl = 0
MBS USB Plugin, Plugin Version: 12.2. **Function**: One of the pipe type constants. **Notes**: Indicates that the pipe is a control pipe.

167.24.10 UsbdPipeTypeInterrupt = 3
MBS USB Plugin, Plugin Version: 12.2. **Function**: One of the pipe type constants. **Notes**: Indicates that the pipe is an interrupt pipe.

167.24.11 UsbdPipeTypeIsochronous = 1
MBS USB Plugin, Plugin Version: 12.2. **Function**: One of the pipe type constants. **Notes**: Indicates that the pipe is an isochronous transfer pipe.
167.25 class WinUSBSetupPacketMBS

167.25.1 class WinUSBSetupPacketMBS

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The metadata needed to create an USB packet.

167.25.2 Properties

167.25.3 Index as Integer

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The meaning of this member varies according to the request.
**Notes:**
For an explanation of this member, see the Universal Serial Bus (USB) specification.
(Read and Write property)

167.25.4 Length as Integer

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The number of bytes to transfer.
**Notes:** (Read and Write property)

167.25.5 Request as Integer

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The device request.
**Notes:**
The values that are assigned to this member are defined in Table 9.3 of section 9.4 of the Universal Serial Bus (USB) specification.
(Read and Write property)

167.25.6 RequestType as Integer

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The request type.
**Notes:**
The values that are assigned to this member are defined in Table 9.2 of section 9.3 of the Universal Serial Bus (USB) specification (www.usb.org).

(Read and Write property)

167.25.7  Value as Integer

MBS USB Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The meaning of this member varies according to the request.

**Notes:**

For an explanation of this member, see the Universal Serial Bus (USB) specification.

(Read and Write property)
Chapter 168

User Notifications

168.1 class NSUserNotificationActionMBS

168.1.1 class NSUserNotificationActionMBS

Function: An action shown to the user as part of a NSUserNotification in the additionalActions property.
Notes: Available on Mac OS X 10.10 and newer.

168.1.2 Methods

168.1.3 Available as boolean

Function: Whether this class is available.
Notes: Returns true on Mac OS X 10.10 or newer. False in all other cases.

168.1.4 Constructor(identifier as string, title as string)

Function: The constructor.
168.1.5  copy as NSUserNotificationActionMBS

Function: Creates a copy of this object.

168.1.6  Properties

168.1.7  Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

168.1.8  Identifier as String

Function: The internal identifier for this action.
Notes: (Read only property)

168.1.9  Title as String

Function: The localized title of the action.
Notes: (Read only property)
168.2. CLASS NSUSERNOTIFICATIONCENTERDELEGATEMBS

168.2 class NSUserNotificationCenterDelegateMBS

168.2.1 class NSUserNotificationCenterDelegateMBS

Function: This class allows you to react to events from the user notification center.
Notes: This is for sending user notifications to the Mac your Real Studio application runs on. Not for remote notifications or notifications to iOS devices.

168.2.2 Methods

168.2.3 Constructor

Function: The constructor.
Notes: Must be called to have the class register itself.

168.2.4 Destructor

Function: The destructor.

168.2.5 Properties

168.2.6 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

168.2.7 Events

168.2.8 didActivateNotification(center as NSUserNotificationCenterMBS, notification as NSUserNotificationMBS)

Function: Sent to the delegate when a user clicks on a user notification presented by the user notification
center.

**Example:**

```vbscript
Sub applicationDidFinishLaunching(Notification as NSNotificationMBS)
    dim userInfo as Dictionary = Notification.userInfo
    dim key as string = NSApplicationMBS.NSApplicationLaunchUserNotificationKey
    dim UserNotification as NSUserNotificationMBS = userInfo.Lookup(key, nil)

    if UserNotification <> nil then
        MsgBox UserNotification.identifier + ": " + UserNotification.informativeText
    end if
End Sub
```

**Notes:**

- center: The user notification center.
- notification: The user notification object.

This would be a good time to take action in response to user interacting with a specific notification.

To take an action when your application is launched as a result of a user clicking on a notification, be sure to implement the `applicationDidFinishLaunching` method in the application class that implements the `NSApplicationDelegateMBS` class. The notification parameter to that method has a `userInfo` dictionary, and if that dictionary has the `NSApplicationLaunchUserNotificationKey` key. The value of that key is the `NSUserNotification` object that caused the application to launch. The `NSUserNotification` object is delivered to the `NSApplication` delegate because that message will be sent before your application has a chance to set a delegate for the `NSUserNotificationCenter`.

Available in OS X v10.8 and later.

### 168.2.9 `didDeliverNotification(center as NSUserNotificationCenterMBS, notification as NSUserNotificationMBS)`

**Function:** Sent to the delegate when a notification delivery date has arrived.

**Notes:**

- center: The user notification center.
- notification: The user notification object.

This method is always called, regardless of your application state and even if you deliver the user notification yourself using `deliverNotification:`.
This event is invoked before the `shouldPresentNotification` event. Available in OS X v10.8 and later.

168.2.10 `shouldPresentNotification(center as NSUserNotificationCenterMBS, notification as NSUserNotificationMBS) as boolean`


**Function:** Sent to the delegate when the user notification center has decided not to present your notification.

**Notes:**
- `center`: The user notification center.
- `notification`: The user notification object.

Return true if the user notification should be displayed regardless; false otherwise. Available in OS X v10.8 and later.
168.3  class NSUserNotificationCenterMBS

168.3.1  class NSUserNotificationCenterMBS


**Function:** The NSUserNotificationCenterMBS class delivers user notifications to the user from applications or helper applications.

**Example:**

```vbnet
dim u as new NSUserNotificationMBS
u.Title = "Hello World"
u.subtitle = "from Real Studio."
u.informativeText = "Our first Notification from Real Studio."

dim d as new date
d.Second = d.Second + 10
u.deliveryDate = d

dim c as new NSUserNotificationCenterMBS
 c.scheduleNotification u
```

**Notes:**

When a user notifications is delivery date has been reached, or it is manually delivered, the notification center it may display the notification to the user. The user notification center reserves the right to decide if a delivered user notification is presented to the user. For example, it may suppress the notification if the application is already frontmost (the delegate can override this action). The application can check the result of this decision by examining the presented property of a delivered user notification.

NSUserNotificationMBS instances the NSUserNotificationCenterMBS are tracking will be in one of two states: scheduled or delivered. A scheduled user notification has a deliveryDate. On that delivery date, the notification will move from being scheduled to being delivered. Note that the user notification may be displayed later than the delivery date depending on a number of factors.

A delivered user notification has an actualDeliveryDate. That is the date when it moved from being scheduled to delivered, or when it was manually delivered using the deliverNotification method.

The application and the user notification center are both ultimately subject to the user’s preferences. If the user decides to hide all alerts from your application, the presented property will still behave as above, but the user will not see any animation or hear any sound.

The NSUserNotificationCenterDelegateMBS class provides more information about the delivered user notification and allows forcing the display of a user notification even if the application is frontmost.
Note: It the user wakes more than 15 minutes after a scheduled notification is scheduled to fire, it is discarded. If the notification repeats with an interval less than 15 minutes, then it expires in 1 minute. Expired notifications are just discarded, unless they repeat, in which case, they stay in the scheduled list and just fire again later.

Important Many of the NSUserNotificationCenterMBS class's methods involve talking to a server process, so calling them repeatedly can have a negative effect on performance.

This is for sending user notifications to the Mac your Real Studio application runs on. Not for remote notifications or notifications to iOS devices.

The NSUserNotificationCenterMBS class and the NSUserNotificationMBS class are both thread safe.

### 168.3.2 Methods

#### 168.3.3 Available as boolean


Function: Whether user notification framework is available.

Notes: Returns true on Mac OS X 10.8 and false otherwise.

#### 168.3.4 Constructor


Function: The constructor.

Notes: Initializes this object to point to the default user notification center.

Available in OS X v10.8 and later.

#### 168.3.5 defaultUserNotificationCenter as NSUserNotificationCenterMBS


Function: Returns the default user notification center.

Notes: Available in OS X v10.8 and later.
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168.3.6 deliveredNotifications as NSUserNotificationCenterMBS()


Function: An array of all user notifications delivered to the notification center.

Notes:

The number of notifications the user actually sees in the user interface may be less than the size of this array.

Note that these may or may not have been actually presented to the user. See the presented property in the NSUserNotificationCenterMBS class.

Note: A scheduled user notification that specifies a deliveryRepeatInterval remains in the scheduledNotifications list, even though it has been delivered. The item that goes into the deliveredNotifications list is a copy of the user notification item.

Available in OS X v10.8 and later.

168.3.7 deliverNotification(notification as NSUserNotificationCenterMBS)


Function: Deliver the specified user notification.

Example:

dim u as new NSUserNotificationCenterMBS

u.Title = "Hello World"
u.subtitle = "just a test"

dim c as new NSUserNotificationCenterMBS
c.deliverNotification u

Notes:

notification: The user notification.

The notification will be presented to the user (subject to the user’s preferences). The presented property of the NSUserNotificationCenter object will always be set to true if a notification is delivered using this method.

Available in OS X v10.8 and later.
### 168.3.8 removeAllDeliveredNotifications

**Function:** Remove all delivered user notifications from the user notification center.  
**Notes:** Available in OS X v10.8 and later.

### 168.3.9 removeDeliveredNotification(notification as NSUserNotificationMBS)

**Function:** Remove a delivered user notification from the user notification center.  
**Notes:**  
notification: The user notification.  
If the user notification is not in deliveredNotifications, nothing happens.  
Available in OS X v10.8 and later.

### 168.3.10 removeScheduledNotification(notification as NSUserNotificationMBS)

**Function:** Removes the specified user notification for the scheduled notifications.  
**Notes:**  
notification: The user notification.  
If the user notification’s deliveryDate occurs before the cancellation finishes, the notification may still be delivered.  
If the notification is not in the scheduled list, nothing happens.  
Available in OS X v10.8 and later.

### 168.3.11 scheduledNotifications as NSUserNotificationMBS()

**Function:** Specifies an array of scheduled user notifications that have not yet been delivered.  
**Notes:**  
Newly scheduled notifications are added to the end of the array. You may also bulk-schedule notifications by setting this array. Bulk setting new scheduled notifications unschedules existing notifications.
Note: The scheduled user notification could be changing to a delivered notification at the time you are calling this method. and if that case the user notification will still be delivered.

Available in OS X v10.8 and later.

168.3.12 scheduleNotification(notification as NSUserNotificationMBS)

Function: Schedules the specified user notification.
Notes:
notification: The user notification.

Scheduled notifications are added to the end of the notification queue.
Available in OS X v10.8 and later.

168.3.13 Properties

168.3.14 Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)
168.4.1 class NSUserNotificationCenterMBS


**Function:** The NSUserNotificationCenterMBS class is used to configure a notification that is scheduled for display by the NSUserNotificationCenterMBS class.  

**Example:**

```vbnet
dim u as new NSUserNotificationCenterMBS

u.Title = "Hello World"
u.subtitle = "from Real Studio."
u.informativeText = "Our first Notification from Real Studio."

dim d as new date
d.Second = d.Second + 10
u.deliveryDate = d

dim c as new NSUserNotificationCenterMBS
c.scheduleNotification u
```

**Notes:**

The NSUserNotificationCenterMBS object not only configures the notification, when the notification is delivered information about when the notification was actually presented to the user (if at all) and other details are provided in the notification object. User applications can create NSUserNotification objects and register them with the NSUserNotificationCenterMBS object to notify the user when an application requires attention.

See NSUserNotificationCenterMBS Class Reference for more information.

**Threading Information**  
The NSUserNotificationCenterMBS class and the NSUserNotificationCenterMBS class are both thread safe.

This is for sending user notifications to the Mac your Real Studio application runs on. Not for remote notifications or notifications to iOS devices.
168.4.2 Methods

168.4.3 additionalActions as NSUserNotificationActionMBS()

Function: Queries the array of additional actions.
Notes:
For Mac OS X 10.10 and newer. Will not cause exception if called on older versions, but simply return empty array.

An array of NSUserNotificationActionMBS objects that describe the different actions that can be taken on a notification in addition to the default action described by actionButtonTitle.

168.4.4 Available as boolean

Function: Whether this class is available.
Notes:
Returns true on Mac OS X 10.8 and newer.
Returns false on other operation systems, e.g. older OS X, Windows or Linux.

168.4.5 Constructor

Function: The constructor to create a new notification.

168.4.6 copy as NSUserNotificationMBS

Function: Creates a clone of the notification object.

168.4.7 NSUserNotificationDefaultSoundName as string

Function: The default sound played by the user notification center for this notification.
Notes:
The default notification sound.
Available in OS X v10.8 and later.

168.4.8 Print

Function: Prints description of notification object to console for debugging.

168.4.9 setAdditionalActions(additionalActions() as NSUserNotificationActionMBS)

Function: Sets the array of additional actions.
Notes:
For Mac OS X 10.10 and newer. Will not cause exception if called on older versions.
An array of NSUserNotificationActionMBS objects that describe the different actions that can be taken on a notification in addition to the default action described by actionButtonTitle.

168.4.10 Properties

168.4.11 actionButtonTitle as string

Function: Specifies the title of the action button displayed in the notification.
Notes:
This value should localized as it will be presented to the user. The string will be truncated to a length appropriate for display and the property will be modified to reflect the truncation.
Available in OS X v10.8 and later.
(Read and Write property)

168.4.12 activationType as Integer

Function: Specifies what caused a user notification to occur.
Notes:
This property specifies why the user notification was sent to the NSUserNotificationCenterDelegateMBS didActivateNotification event. The supported values are described in constants.

Available in OS X v10.8 and later.
(Read only property)

### 168.4.13 actualDeliveryDate as date

**Function:** The date this notification was actually delivered.
**Notes:**
The notification center will set this value if a notification is put in the scheduled list and the delivery time arrives.

If the notification is delivered directly using the deliverNotification: method of the NSUserNotificationCenterMBS class, this value will be set to the deliveryDate value. If the deliveryDate value nil this value is set to the current date.

This value is used to sort the list of notifications in the user interface.

Available in OS X v10.8 and later.
(Read only property)

### 168.4.14 additionalActivationAction as NSUserNotificationActionMBS

**Function:** Queries which additional action was selected.
**Notes:**
For Mac OS X 10.10 and newer. Will not cause exception if called on older versions, but always return nil.

When a user selects an additional action that action will be set on the notification’s additionalActivationAction property when passed into the delegate event didActivateNotification.
(Read only property)

### 168.4.15 contentImage as NSImageMBS

**Function:** Image shown in the content of the notification.
168.4.16  deliveryDate as date

Function: Specifies when the notification should be delivered.
Notes:
The delivery date is specified in an absolute time.
After a notification is delivered, it may be presented to the user.
Available in OS X v10.8 and later.
(Read and Write property)

168.4.17  deliveryRepeatInterval as NSDateComponentsMBS

Function: Specifies the date components that control how often a user notification is repeated.
Notes:
This value may be nil if the notification should not repeat.

The date component values are relative to the date the notification was delivered.

If the calendar value of the deliveryRepeatInterval is nil, the current calendar will be used to calculate the repeat interval. For example, if a notification should repeat every hour, set the hour property of the deliveryRepeatInterval to 1.

This value is ignored unless the user notification is scheduled with the NSUserNotificationCenterMBS object. Available in OS X v10.8 and later.
(Read and Write property)

168.4.18  deliveryTimeZone as NSTimeZoneMBS

Function: Specify the time zone to interpret the delivery date in.
Notes:
If this value is nil and the user switches time zones, the notification center will adjust the time of presentation to account for the time zone change.
If a notification should be delivered at a time in a specific time zone (regardless of whether the user switches time zones), set this value to the specific time zone, for example the current time zone.

Available in OS X v10.8 and later.
(Read and Write property)

168.4.19  description as string

Function: Description of notification object for debugging.
Notes: (Read only property)

168.4.20  Handle as Integer

Function: The internal object reference.
Notes: (Read and Write property)

168.4.21  hasActionButton as boolean

Function: Specifies whether the notification displays an action button.
Notes: Set to false if the notification has no action button. This will be the case for notifications that are purely for informational purposes and have no user action.

The default value is true.

Available in OS X v10.8 and later.
(Read and Write property)

168.4.22  hasReplyButton as boolean

Function: Set to true if the notification has a reply button.
Notes:
The default value is false. If both this and hasActionButton are true, the reply button will be shown. (Read and Write property)

168.4.23 identifier as string

Function: This identifier is used to uniquely identify a notification.
Notes:
A notification delivered with the same identifier as an existing notification will replace that notification, rather then display a new one.

Available in OS X 10.9 and newer. (Read and Write property)

168.4.24 informativeText as string

Function: The body text of the notification.
Notes:
This value should localized as it will be presented to the user. The string will be truncated to a length appropriate for display and the property will be modified to reflect the truncation.
Available in OS X v10.8 and later.
(Read and Write property)

168.4.25 otherButtonTitle as string

Function: Specifies a custom title for the close button in an alert-style notification.
Notes:
This value should localized as it will be presented to the user. The string will be truncated to a length appropriate for display and the property will be modified to reflect the truncation.
An empty string will cause the default localized text to be used.

Available in OS X v10.8 and later.
(Read and Write property)
168.4.26 Presented as boolean

Function: Specifies whether the user notification has been presented.
Notes:
In some cases, for example when your application is frontmost, the notification center may decide not to actually present a delivered notification. In that case, the value of this property will be false. It will be set to true if the notification was presented according to user preferences.

Available in OS X v10.8 and later.
(Read only property)

168.4.27 remote as boolean

Function: Specifies whether the remote was generated by a push notification.
Notes:
If this property is true then the user notification was generated by a push notification (that is, remotely); if false it was generated locally.
Available in OS X v10.8 and later.
(Read only property)

168.4.28 response as NSAttributedStringMBS

Function: The response text.
Notes:
When a notification has been responded to, the NSUserNotificationCenter event didActivateNotification will be called with the notification with the activationType set to NSUserNotificationCenterActivationTypeReplied and the response set on the response property.
(Read only property)

168.4.29 responsePlaceholder as string

Function: Optional placeholder for inline reply field.
Notes: (Read and Write property)
168.4.30 soundName as string

**Function:** Specifies the name of the sound to play when the notification is delivered.
**Notes:**
Passing the NSUserNotificationCenterDefaultSoundName constant causes the default notification center sound to be played.
A value of nil means no sound is played.
Available in OS X v10.8 and later.
(Read and Write property)

168.4.31 subtitle as string

**Function:** Specifies the subtitle of the notification.
**Notes:**
This value should localized as it will be presented to the user. The string will be truncated to a length appropriate for display and the property will be modified to reflect the truncation.
Available in OS X v10.8 and later.
(Read and Write property)

168.4.32 title as string

**Function:** Specifies the title of the notification.
**Notes:**
This value should localized as it will be presented to the user. The string will be truncated to a length appropriate for display and the property will be modified to reflect the truncation.
Available in OS X v10.8 and later.
(Read and Write property)

168.4.33 userInfo as dictionary

**Function:** Application-specific user info that can be attached to the notification.
**Example:**
```
dim u as new NSUserNotificationMBS
dim d as new dictionary
d.value("Key") = "Value"
```
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u.userinfo = d

Notes:
All items must be property list types or an exception will be thrown.
The userInfo content must be of reasonable serialized size (less than 1k) or an exception will be thrown.
Available in OS X v10.8 and later.
(Read and Write property)

168.4.34 Constants

168.4.35 NSUserNotificationCenterActivationTypeActionButtonClicked = 2

MBS MacFrameworks Plugin, Plugin Version: 12.3. Function: One of the activation type constants.
Notes:
The user clicked on the action button of the notification alert.
Available in OS X v10.8 and later.

168.4.36 NSUserNotificationCenterActivationTypeAdditionalActionClicked = 4

MBS MacFrameworks Plugin, Plugin Version: 14.3. Function: One of the activation type constants.
Notes:
The user did select an additional action.
Only for Mac OS X 10.10 and newer.

168.4.37 NSUserNotificationCenterActivationTypeContentsClicked = 1

MBS MacFrameworks Plugin, Plugin Version: 12.3. Function: One of the activation type constants.
Notes:
The user clicked on the contents of the notification alert.
Available in OS X v10.8 and later.

168.4.38 NSUserNotificationCenterActivationTypeNone = 0

MBS MacFrameworks Plugin, Plugin Version: 12.3. Function: One of the activation type constants.
Notes:
The user did not interact with the notification alert.
Available in OS X v10.8 and later.

168.4.39  NSUserNotificationCenterActivationTypeReplied = 3

MBS MacFrameworks Plugin, Plugin Version: 13.5. **Function:** The activation type for a notification which got a reply.
168.5 class WinUserNotificationCenterMBS

168.5.1 class WinUserNotificationCenterMBS

MBS Win Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The class for the window notification center.

168.5.2 Methods

168.5.3 Available as Boolean

MBS Win Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Whether this Windows version has required functions.
**Notes:** Returns true on Windows 8.1 and Windows 10.

168.5.4 `configureAUMI(Company as String, Name as String, SurName as String, VersionInfo as String) as String`

MBS Win Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Configures the AppUserModelID for Constructor.
**Notes:**
Concats strings with dot between,
Please be aware of maximum ID length of 128 characters.

168.5.5 `Constructor(appName as string, aumi as string)`

MBS Win Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The constructor.
**Notes:** Please pass your AppUserModelID and application name.

168.5.6 Destructor

MBS Win Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The destructor.
168.5.7  HideNotification(notification as WinUserNotificationMBS) as boolean

MBS Win Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Hides a notification.
**Notes:** Returns true on success.

168.5.8  ShowNotification(notification as WinUserNotificationMBS) as boolean

MBS Win Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Shows a notification.
**Notes:** Returns true on success.

168.5.9  Properties

168.5.10  appName as String

MBS Win Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The application name used.
**Notes:** (Read only property)

168.5.11  aumi as String

MBS Win Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The unique id.
**Notes:** (Read only property)

168.5.12  Handle as Integer

MBS Win Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The internal object handle.
**Notes:** (Read only property)
168.5.13 Events

168.5.14 Activated(Notification as WinUserNotificationMBS)

MBS Win Plugin, Plugin Version: 17.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: The notification was activated.

168.5.15 Dismissed(Notification as WinUserNotificationMBS, Reason as Integer)


168.5.16 Failed(Notification as WinUserNotificationMBS, ErrorCode as Integer)


168.5.17 Constants

168.5.18 DismissalReasonApplicationHidden = 1


168.5.19 DismissalReasonTimedOut = 2

MBS Win Plugin, Plugin Version: 17.2. Function: One of the dismissal reasons. Notes: The notification has expired.

168.5.20 DismissalReasonUserCanceled = 0

MBS Win Plugin, Plugin Version: 17.2. Function: One of the dismissal reasons. Notes: The user dismissed the notification.
168.6 class WinUserNotificationMBS

168.6.1 class WinUserNotificationMBS

MBS Win Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The class for the notification.

**Example:**

```vba
dim n as new WinUserNotificationMBS
n.Image = "C:\test.png"
n.text(0) = "Hello World"
n.text(1) = "Greetings from Xojo"
```

168.6.2 Properties

168.6.3 Image as String

MBS Win Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The image file path.

**Notes:**
Leave empty if you don’t need a picture.

May not be a network path as system needs to load it independent of your permissions.
Maybe better use image coming with application or put one in temp folder.
(Read and Write property)

168.6.4 Text as String

MBS Win Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The text to display.

**Notes:**
Same as text(0).
(Read and Write property)
See also:

- 168.6.6 Text(Index as Integer) as String
168.6.5 XMLUsed as String

MBS Win Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The XML template used.
**Notes:**
For debugging.
(Read only property)

168.6.6 Text(Index as Integer) as String

MBS Win Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The text lines to display.
**Notes:**
Index from 0 to 3.
Windows may not show 4th text.
(Read and Write computed property)
See also:

- 168.6.4 Text as String
Chapter 169

VLC

169.1 class VLCAudioOutputDeviceMBS

169.1.1 class VLCAudioOutputDeviceMBS

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for details on audio output devices.

**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

169.1.2 Methods

169.1.3 Constructor

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The private constructor.

169.1.4 Destructor

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The destructor.
169.1.5 Properties

169.1.6 Description as String

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The User-friendly device description. **Notes:** (Read and Write property)

169.1.7 Device as String

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The output device ID. **Notes:** (Read and Write property)

169.1.8 NextOutput as VLCAudioOutputDeviceMBS

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The next entry in the list. **Notes:** You can loop over entries. Last one has nil in this property. (Read and Write property)
169.2. **CLASS VLCAUDIOOUTPUTMBS**

169.2  **class VLCAudioOutputMBS**

169.2.1  **class VLCAudioOutputMBS**

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Description for audio output.
**Notes:**
It contains name, description and pointer to next record.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

169.2.2  **Methods**

169.2.3  **Constructor**

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

169.2.4  **Destructor**

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The destructor.

169.2.5  **Properties**

169.2.6  **Description as String**

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The description for this audio output.
**Notes:** (Read and Write property)

169.2.7  **Name as String**

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The name of this audio output.
**Notes:** (Read and Write property)
169.2.8 NextOutput as VLCAudioOutputMBS

**Notes:** (Read and Write property)
169.3. class VLCEqualizerMBS

169.3.1 class VLCEqualizerMBS

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for equalizer in VLC.
**Notes:** Requires VLC 2.2.

169.3.2 Methods

169.3.3 BandFrequency(index as Integer) as Double

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get a particular equalizer band frequency.
**Notes:**
This value can be used, for example, to create a label for an equalizer band control in a user interface.

Index: index of the band, counting from zero
Returns equalizer band frequency (Hz), or -1 if there is no such band

Requires LibVLC 2.2.0 or later

169.3.4 Constructor(index as Integer, vlc as VLCInstanceMBS = nil)

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Create a new equalizer, with initial frequency values copied from an existing preset.
**Notes:**
The new equalizer can subsequently be applied to a media player by invoking
VLCMediaPlayerMBS.SetEqualizer.

Index: index of the preset, counting from zero.

Requires VLC 2.2.
See also:

- 169.3.5 Constructor(vlc as VLCInstanceMBS = nil)
169.3.5 Constructor(vlc as VLCInstanceMBS = nil)

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Create a new default equalizer, with all frequency values zeroed.
**Notes:**
The new equalizer can subsequently be applied to a media player by invoking VLCMediaPlayerMBS.SetE-
qualizer.
Requires VLC 2.2.
See also:

- 169.3.4 Constructor(index as Integer, vlc as VLCInstanceMBS = nil)

169.3.6 Destructor

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The destructor.

169.3.7 PresetName(index as Integer) as string

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get the name of a particular equalizer preset.
**Notes:**
This name can be used, for example, to prepare a preset label or menu in a user interface.

index: index of the preset, counting from zero
Returns name, or "" if there is no such preset
Requires LibVLC 2.2.0 or later.

169.3.8 Properties

169.3.9 BandCount as Integer

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get the number of distinct frequency bands for an equalizer.
**Notes:**
Requires LibVLC 2.2.0 or later.
(Read only property)
169.3.10 Handle as Integer

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The internal object reference.
**Notes:** (Read and Write property)

169.3.11 Preamp as Single

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get/Set a new pre-amplification value for an equalizer.
**Notes:**
The new equalizer settings are subsequently applied to a media player by invoking
VLCMediaPlayer.SetEqualizer.
The supplied amplification value will be clamped to the -20.0 to +20.0 range.

preamp value (-20.0 to 20.0 Hz)
Returns zero on success, -1 on error.

Requires LibVLC 2.2.0 or later
(Read and Write property)

169.3.12 PresetCount as Integer

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get the number of equalizer presets.
**Notes:**
Requires LibVLC 2.2.0 or later
(Read only property)

169.3.13 VLC as VLCInstanceMBS

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The reference to the parent VLC instance object.
**Notes:** (Read only property)
169.3.14 Map(Index as Integer) as Single

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set a new amplification value for a particular equalizer frequency band.

**Notes:**
The new equalizer settings are subsequently applied to a media player by invoking VLCMediaPlayerMBS.SetEqualizer.

The supplied amplification value will be clamped to the -20.0 to +20.0 range.

**Value:** amplification value (-20.0 to 20.0 Hz)
index, counting from zero, of the frequency band to set

Requires LibVLC 2.2.0 or later
(Read and Write computed property)
169.4. CLASS VLCEVENTMANAGERMBS

169.4 class VLCEventManagerMBS

169.4.1 class VLCEventManagerMBS


Notes:
Only the events which the parent object sends are delivered.
With 12.3pr5 and newer plugins, this function sends events to main thread as it should be.

169.4.2 Methods

169.4.3 Constructor(Media as VLCMediaMBS)

See also:

- 169.4.4 Constructor(MediaDiscoverer as VLCMediaDiscovererMBS)
- 169.4.5 Constructor(MediaList as VLCMediaListMBS)
- 169.4.6 Constructor(MediaListPlayer as VLCMediaListPlayerMBS)
- 169.4.7 Constructor(MediaPlayer as VLCMediaPlayerMBS)

169.4.4 Constructor(MediaDiscoverer as VLCMediaDiscovererMBS)

See also:

- 169.4.3 Constructor(Media as VLCMediaMBS)
- 169.4.5 Constructor(MediaList as VLCMediaListMBS)
- 169.4.6 Constructor(MediaListPlayer as VLCMediaListPlayerMBS)
- 169.4.7 Constructor(MediaPlayer as VLCMediaPlayerMBS)

169.4.5 Constructor(MediaList as VLCMediaListMBS)

See also:
169.4.6 Constructor(MediaListPlayer as VLCMediaListPlayerMBS)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Initializes event manager for media list player.

See also:

- 169.4.3 Constructor(Media as VLCMediaMBS)
- 169.4.4 Constructor(MediaDiscoverer as VLCMediaDiscovererMBS)
- 169.4.5 Constructor(MediaList as VLCMediaListMBS)
- 169.4.7 Constructor(MediaPlayer as VLCMediaPlayerMBS)

169.4.7 Constructor(MediaPlayer as VLCMediaPlayerMBS)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Initializes event manager for media player.

See also:

- 169.4.3 Constructor(Media as VLCMediaMBS)
- 169.4.4 Constructor(MediaDiscoverer as VLCMediaDiscovererMBS)
- 169.4.5 Constructor(MediaList as VLCMediaListMBS)
- 169.4.6 Constructor(MediaListPlayer as VLCMediaListPlayerMBS)

169.4.8 Destructor

169.4.9 Listen

MBS VLC Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Registers internally events.  
**Notes:**  
This is normally called in the constructor.  
If you add event handlers later via AddHandler command, you need to call this method to have those event handlers also registered.

169.4.10 Properties

169.4.11 Handle as Integer

**Notes:** (Read and Write property)

169.4.12 Parent as Variant

**Notes:** Just a reference back, so the target object is not released too early.  
(Read and Write property)

169.4.13 VLC as VLCInstanceMBS

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The reference to the VLC instance.  
**Notes:** (Read only property)

169.4.14 Events

169.4.15 Log(Message as String, level as Integer, Name as String, Header as String, ModuleName as String, FileName as String, Line as Integer)

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A log message arrived.
Notes:
message: The message to log.
level: message level, e.g. kLogLevelError
Name: object name
Header: object header or empty.
ModuleName: module name
FileName: The source code file name.
Line: The source code line number.

Enable this event using VLCInstanceMBS.SetLogEvent method.

169.4.16 MediaDiscovererEnded

169.4.17 MediaDiscovererStarted
MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Media discoverer started.

169.4.18 MediaDurationChanged(newDuration as Int64)
MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Duration of media changed.

169.4.19 MediaFreed(media as VLCMediaMBS)
MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Media was released.

169.4.20 MediaListItemAdded(item as VLCMediaMBS, index as Integer)
MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Media list item added.
169.4. CLASS VLCEVENTMANAGERMBS

169.4.21 MediaListItemDeleted(item as VLCMediaMBS, index as Integer)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Media list item deleted.

169.4.22 MediaListPlayerNextItemSet(item as VLCMediaMBS)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the events.

169.4.23 MediaListPlayerPlayed

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Media list player played.

169.4.24 MediaListPlayerStopped

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Media list player stopped.

169.4.25 MediaListWillAddItem(item as VLCMediaMBS, index as Integer)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Media list will add item.

169.4.26 MediaListWillDeleteItem(item as VLCMediaMBS, index as Integer)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Media list will delete item.

169.4.27 MediaMetaChanged(metatype as Integer)

169.4.28  **MediaPlayerParsedChanged(newStatus as Integer)**

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Parsed status changed.

169.4.29  **MediaPlayerBackward**

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Media player moved backwards.

169.4.30  **MediaPlayerBuffering**

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
One of the events.

169.4.31  **MediaPlayerEncounteredError**

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
One of the events.

169.4.32  **MediaPlayerEndReached**

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Media player reached end of media.

169.4.33  **MediaPlayerForward**

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Player moved forward.

169.4.34  **MediaPlayerLengthChanged(NewLength as Int64)**

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The length of the media changed.
169.4. CLASS VLCEVENTMANAGERMBS

169.4.35 MediaPlayerMediaChanged(item as VLCMediaMBS)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The media changed in the media player.

169.4.36 MediaPlayerNothingSpecial

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the events.

169.4.37 MediaPlayerOpening

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The Media player is opening.

169.4.38 MediaPlayerPausableChanged(pausable as boolean)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Media player’s pausable state changed.

169.4.39 MediaPlayerPaused

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The player was paused.

169.4.40 MediaPlayerPlaying

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The player is playing.

169.4.41 MediaPlayerPositionChanged(newPosition as Double)


**Notes:** This event does not fire if you assigned new position. It is only to inform you that position changed.
due to playing video.

169.4.42 MediaPlayerScrambledChanged(newScrambled as Integer)

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The scrambled property changed.

169.4.43 MediaPlayerSeekableChanged(seekable as boolean)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Media Player’s seekable status changed.

169.4.44 MediaPlayerSnapshotTaken(filename as string)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A snapshot has been taken.

169.4.45 MediaPlayerStopped


169.4.46 MediaPlayerTimeChanged(newTime as Int64)


169.4.47 MediaPlayerTitleChanged(newTitle as Integer)

169.4.48 MediaPlayerVout(newCount as Integer)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
One of the events.

169.4.49 MediaStateChanged(newState as Integer)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
State changed on media.

169.4.50 MediaSubItemAdded(media as VLCMediaMBS)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Media got a new subitem.

169.4.51 MediaSubItemTreeAdded(media as VLCMediaMBS)

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
A media item got new sub items.

169.4.52 VlmMediaAdded(MediaName as string, InstanceName as string)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
One of the events.

169.4.53 VlmMediaChanged(MediaName as string, InstanceName as string)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
One of the events.

169.4.54 VlmMediaInstanceStarted(MediaName as string, InstanceName as string)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
One of the events.
169.4.55  \texttt{VlmMediaInstanceStatusEnd(MediaName as string, InstanceName as string)}


169.4.56  \texttt{VlmMediaInstanceStatusError(MediaName as string, InstanceName as string)}


169.4.57  \texttt{VlmMediaInstanceStatusInit(MediaName as string, InstanceName as string)}


169.4.58  \texttt{VlmMediaInstanceStatusOpening(MediaName as string, InstanceName as string)}


169.4.59  \texttt{VlmMediaInstanceStatusPause(MediaName as string, InstanceName as string)}


169.4.60  \texttt{VlmMediaInstanceStatusPlaying(MediaName as string, InstanceName as string)}

169.4.61  VlmMediaInstanceStopped(MediaName as string, InstanceName as string)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** One of the events.

169.4.62  VlmMediaRemoved(MediaName as string, InstanceName as string)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Media was removed.

169.4.63  Constants

169.4.64  kLogLevelDebug = 0

MBS VLC Plugin, Plugin Version: 15.3. **Function:** One of the log levels. **Notes:** Debug message

169.4.65  kLogLevelError = 4

MBS VLC Plugin, Plugin Version: 15.3. **Function:** One of the log levels. **Notes:** Error message.

169.4.66  kLogLevelNotice = 2

MBS VLC Plugin, Plugin Version: 15.3. **Function:** One of the log levels. **Notes:** Important informational message

169.4.67  kLogLevelWarning = 3

MBS VLC Plugin, Plugin Version: 15.3. **Function:** One of the log levels. **Notes:** Warning (potential error) message
class VLCExitHandlerMBS

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A class to receive exit events from VLC user interface. **Notes:** As you probably use this plugin with your own user interface, you don’t need this class.

**Events**

**ExitEvent**

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An exit event was received from VLC user interface.
169.6. class VLCInstanceMBS

169.6.1 class VLCInstanceMBS

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The main VLC class.

**Notes:**
Keep the instance in memory as long as you use any other VLC classes.
Only one instance per app, please.

169.6.2 Methods

169.6.3 AddUserInterface(name as string) as boolean

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Try to start a user interface for the libvlc instance.

**Notes:**
name: interface name, or nil for default.
Return true on success, false on error.

169.6.4 AudioOutputDevices(ModuleName as string) as VLCAudioOutputDeviceMBS

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets a list of audio output devices for a given audio output module.

**Notes:**
Not all audio outputs support this. In particular, an empty (nil) list of devices does not imply that the specified audio output does not work.

The list might not be exhaustive.

Some audio output devices in the list might not actually work in some circumstances. By default, it is recommended to not specify any explicit audio device.

ModuleName: audio output name.

Returns a nil-terminated linked list of potential audio output devices.
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Requires VLC 2.1.

169.6.5 ClearError

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Clears the LibVLC error status for the current thread.

**Notes:**
This is optional.
By default, the error status is automatically overridden when a new error occurs, and destroyed when the thread exits.

169.6.6 ClearLog

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Unsets the logging callback for a LibVLC instance.

**Notes:**
This is rarely needed: the callback is implicitly unset when the instance is destroyed.
This function will wait for any pending callbacks invocation to complete
(causing a deadlock if called from within the callback).

Requires VLC 2.1.

169.6.7 Clock as Int64

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Return the current time as defined by LibVLC.

**Notes:**
The unit is the microsecond.
Time increases monotonically (regardless of time zone changes and RTC adjustments).
The origin is arbitrary but consistent across the whole system (e.g. the system uptime, the time since the system was booted). On systems that support it, the POSIX monotonic clock is used.

169.6.8 Constructor(args() as string)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Create and initialize a libvlc instance.

**Notes:**
This function accepts a list of "command line" arguments similar to the main(). These arguments affect the LibVLC instance default configuration.

Arguments are meant to be passed from the command line to LibVLC, just like VLC media player does. The list of valid arguments depends on the LibVLC version, the operating system and platform, and set of available LibVLC plugins. Invalid or unsupported arguments will cause the function to fail (i.e. return nil). Also, some arguments may alter the behaviour or otherwise interfere with other LibVLC functions.

There is absolutely no warranty or promise of forward, backward and cross-platform compatibility with regards to this Constructor() arguments. We recommend that you do not use them, other than when debugging.

On success handle property is not nil.

### 169.6.9 Destructor


### 169.6.10 ErrorMessage as string

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a human-readable error message for the last VLC error in the calling thread.

### 169.6.11 GetAudioFilterList as VLCModuleDescriptionMBS

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a list of audio filters that are available. **Notes:** Return a list of module descriptions.

### 169.6.12 GetAudioOutputDeviceCount(AudioOutputName as string) as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get count of devices for audio output, these devices are hardware oriented like analog or digital output of sound card. **Notes:** AudioOutputName: name of audio output.
Returns number of devices.

169.6.13 GetAudioOutputDeviceID(AudioOutputName as string, index as Integer) as string


169.6.14 GetAudioOutputDeviceLongName(AudioOutputName as string, index as Integer) as string


169.6.15 GetAudioOutputList as VLCAudioOutputMBS


169.6.16 GetChangeset as string

169.6. CLASS VLCINSTANCEMBS

169.6.17 GetCompiler as string

**Notes:**  
Example: "gcc version 4.2.3 (Ubuntu 4.2.3-2ubuntu6)"
Return a string containing the libvlc compiler version.

169.6.18 getenv(name as string) as string

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries the environment variable with given name.

169.6.19 GetLoadError as string

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns error string from LoadLibrary function.

169.6.20 GetVersion as string

**Notes:**  
Example: "1.1.0-git The Luggage"
Return a string containing the libvlc version.

169.6.21 GetVideoFilterList as VLCModuleDescriptionMBS

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a list of video filters that are available.  
**Notes:** Return a list of module descriptions.

169.6.22 LoadLibrary(path as folderitem) as boolean

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads the vlc library.
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Notes:

Returns true on success and false on failure.
Please point to libVLC.dylib on Mac and libVLC.dll on Windows.
See also:

- 169.6.23 LoadLibrary(path as string) as boolean

169.6.23 LoadLibrary(path as string) as boolean

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Loads the vlc library.
Notes:
Returns true on success and false on failure.
Please point to libVLC.dylib on Mac and libVLC.dll on Windows.
See also:

- 169.6.22 LoadLibrary(path as folderitem) as boolean

169.6.24 SetAppID(ID as string, Version as string, Icon as String)

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Sets some meta-information about the application.
Notes:
See also SetUserAgent().

id: Java-style application identifier, e.g. "com.acme.foobar"
version: application version numbers, e.g. "1.2.3"
icon: application icon name, e.g. "foobar"

Requires VLC 2.1.

169.6.25 setlocale(category as Integer, locale as string) as string

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Sets the locale to use.
Notes:
The Setlocale function sets the C library’s notion of natural language formatting style for particular sets of routines. Each such style is called a 'locale' and is invoked using an appropriate name passed as a C string.
The setlocale() function recognizes several categories of routines. These are the categories and the sets of routines they select:

- **LocaleAll**: Set the entire locale generically.
- **LocaleCollate**: Set a locale for string collation routines. This controls alphabetic ordering in `strcoll()` and `strxfrm()`.
- **LocaleCType**: Set a locale for the `ctype` and multibyte functions. This controls recognition of upper and lower case, alphabetic or non-alphabetic characters, and so on.
- **LocaleMessages**: Set a locale for message catalogs, see `catopen` function.
- **LocaleMonetary**: Set a locale for formatting monetary values; this affects the `localeconv()` function.
- **LocaleNumeric**: Set a locale for formatting numbers. This controls the formatting of decimal points in input and output of floating point numbers in functions such as `printf()` and `scanf()`, as well as values returned by `localeconv()`.
- **LocaleTime**: Set a locale for formatting dates and times using the `strftime()` function.

Only three locales are defined by default: the empty string "" (which denotes the native environment) and the "C" and "POSIX" locales (which denote the C-language environment). By default, C programs start in the "C" locale.

### 169.6.26 SetLogEvent

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the logging callback for a LibVLC instance.  
**Notes:**
This function is thread-safe: it will wait for any pending callbacks invocation to complete.

Some log messages (especially debug) are emitted by LibVLC while is being initialized. These messages cannot be captured with this interface.

A deadlock may occur if this function is called from the event.

Requires VLC 2.1.

### 169.6.27 SetLogFile(File as FolderItem)

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets up logging to a file.
CHAPTER 169. VLC

Notes: Requires VLC 2.1.

169.6.28 SetUserAgent(AppName as string, httpUserAgent as string)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Sets the application name.
Notes:
VLC passes this as the user agent string when a protocol requires it.

name: human-readable application name, e.g. "FooBar player 1.2.3"
http: HTTP User Agent, e.g. "FooBar/1.2.3 Python/2.6.0"

169.6.29 WaitUserInterface

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Waits until an interface causes the instance to exit.
Notes: You should start at least one interface first, using AddUserInterface.

169.6.30 Properties

169.6.31 Handle as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
The internal object reference.
Notes: (Read and Write property)

169.6.32 ExitHandler as VLCExitHandlerMBS

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Registers a callback for the LibVLC exit event.
Notes:
This is mostly useful if you have started at least one interface with AddUserInterface. Typically, this function
will wake up your application main loop (from another thread).

This function and WaitUserInterface() cannot be used at the same time.
Use either or none of them but not both.
169.6. CLASS VLCINSTANCEMBS

(Read and Write computed property)
169.7 class VLCMediaDiscovererMBS

169.7.1 class VLCMediaDiscovererMBS

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The plugin class for the VLC media discovery.
**Notes:**
LibVLC media discovery finds available media via various means.
This corresponds to the service discovery functionality in VLC media player.
Different plugins find potential medias locally (e.g. user media directory), from peripherals (e.g. video capture device), on the local network (e.g. SAP) or on the Internet (e.g. Internet radios).

169.7.2 Methods

169.7.3 Constructor(vlc as VLCInstanceMBS, name as string)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Discover media service by name.
**Notes:**
vlc: The VLC instance.
Name: service name.
Handle is not nil on success.

169.7.4 Destructor

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The destructor.

169.7.5 IsRunning as boolean

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Query if media service discover object is running.
**Notes:** Returns true if running, false if not.

169.7.6 LocalizedName as string

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get the localized name.
169.7.7 MediaList as VLCMediaListMBS


169.7.8 Properties

169.7.9 Handle as Integer

**Notes:** (Read and Write property)

169.7.10 VLC as VLCInstanceMBS

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The reference to the VLC instance.  
**Notes:** (Read only property)
169.8  class VLCMediaLibraryMBS

169.8.1  class VLCMediaLibraryMBS

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for VLC media library.

169.8.2  Methods

169.8.3  Constructor(vlc as VLCInstanceMBS)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Create an new Media Library object.
**Notes:** On success handle property is not nil.

169.8.4  Destructor

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The destructor.

169.8.5  Load as boolean

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Load media library.
**Notes:** Return true on success, false on error.

169.8.6  MediaList as VLCMediaListMBS

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get media library subitems.
169.8.7  Properties

169.8.8  Handle as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The internal object reference.
**Notes:** (Read and Write property)

169.8.9  VLC as VLCInstanceMBS

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The reference to the VLC instance.
**Notes:** (Read only property)
169.9 class VLCMediaListMBS

169.9.1 class VLCMediaListMBS

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for a media list.

169.9.2 Methods

169.9.3 AddMedia(item as VLCMediaMBS) as boolean

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Add media instance to media list.
**Notes:**
item: a media instance
Return true on success, false if the media list is read-only.
The Lock should be held upon entering this function.

169.9.4 Constructor(vlc as VLCInstanceMBS)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Create an empty media list.
**Notes:** On success the handle property is not zero.

169.9.5 Count as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get count on media list items.
**Notes:**
The Lock should be held upon entering this function.
Return number of items in media list.

169.9.6 Destructor

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The destructor.
169.9. **CLASS VLCMEDIALISTMBS**

### 169.9.7 GetMedia as VLCMediaMBS

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get media instance from this media list instance.  
**Notes:** The Lock should NOT be held upon entering this function. Returns media instance or nil.

### 169.9.8 IndexOfItem(item as VLCMediaMBS) as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Find index position of List media instance in media list.  
**Notes:** Warning: the function will return the first matched position. The Lock should be held upon entering this function.  
Returns position of media instance or -1 if media not found.

### 169.9.9 InsertMedia(item as VLCMediaMBS, index as Integer) as boolean

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Insert media instance in media list on a position.  
**Notes:** The Lock should be held upon entering this function.  
item: a media instance  
index: position in array where to insert  
Return true on success, false if the media list is read-only.

### 169.9.10 isReadOnly as boolean

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether this media list is read-only from a user point of view.  
**Notes:** Returns true if readonly and false if read/write.
169.9.11 ItemAtIndex(index as Integer) as VLCMediaMBS

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** List media instance in media list at a position.

**Notes:**
The Lock should be held upon entering this function.
index: position in array where to get item.
Returns instance at position index, or nil if not found.

169.9.12 Lock

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get lock on media list items.

169.9.13 Remove(index as Integer) as boolean

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Remove media instance from media list on a position.

**Notes:**
The Lock should be held upon entering this function.
index: position in array where to insert
Returns true on success, false if the list is read-only or the item was not found.

169.9.14 SetMedia(item as VLCMediaMBS)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Associate media instance with this media list instance.

**Notes:**
If another media instance was present it will be released.
The Lock should NOT be held upon entering this function.

169.9.15 Unlock

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Release lock on media list items.

**Notes:** The Lock should be held upon entering this function.
169.9. CLASS VLCMEDIALISTMBS

169.9.16 Properties

169.9.17 Handle as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Internal object reference. **Notes:** (Read and Write property)

169.9.18 VLC as VLCInstanceMBS

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The reference to the VLC instance. **Notes:** (Read only property)
169.10 class VLCMediaListPlayerMBS

169.10.1 class VLCMediaListPlayerMBS

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for a VLC media list player.
**Notes:**
This is required to especially support playlist files.
The normal media player can only play a single media, and does not handle playlist files properly.

169.10.2 Methods

169.10.3 Constructor(vlc as VLCInstanceMBS)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Create new media list player.

169.10.4 Destructor


169.10.5 IsPlaying as boolean

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Is media list playing?
**Notes:** Return true for playing and false for not playing.

169.10.6 MoveNext as boolean

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Play next item from media list.
**Notes:** Return true upon success false if there is no next item.
169.10. **CLASS VLCMEDIALISTPLAYERMBS**

169.10.7  **MovePrevious as Boolean**

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Play previous item from media list.
**Notes:** Return true upon success false if there is no previous item.

169.10.8  **Pause**

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Pause media list

169.10.9  **Play**

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Play media list.

169.10.10  **PlayItem(item as VLCMediaMBS) as Boolean**

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Play the given media item.
**Notes:** Return true upon success, false if the media is not part of the media list.

169.10.11  **PlayItemAtIndex(index as Integer) as Boolean**

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Play media list item at position index.
**Notes:**
- index: index in media list to play.
  Return true upon success false if the item wasn’t found.

169.10.12  **SetMediaList(list as VLCMediaListMBS)**

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Set the media list associated with the player.
169.10.13  **SetMediaPlayer(player as VLCMediaPlayerMBS)**

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Replace media player in media list player with this instance.

169.10.14  **SetPlaybackMode(mode as Integer)**

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the playback mode for the playlist.
**Notes:** See kPlaybackMode* constants.

169.10.15  **State as Integer**


169.10.16  **Stop**

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Stop playing media list.

169.10.17  **Properties**

169.10.18  **Handle as Integer**

**Notes:** (Read and Write property)

169.10.19  **List as VLCMediaListMBS**

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The list assigned to this media list player.
**Notes:** (Read and Write property)
169.10.20  Player as VLCMediaPlayerMBS

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The player assigned to this media list player.  
**Notes:** (Read and Write property)

169.10.21  VLC as VLCInstanceMBS

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The reference to the VLC instance.  
**Notes:** (Read only property)

169.10.22  Constants

169.10.23  kPlaybackModeDefault = 0

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the playback mode constants.  
**Notes:** Default

169.10.24  kPlaybackModeLoop = 1

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the playback mode constants.  
**Notes:** Loop

169.10.25  kPlaybackModeRepeat = 2

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the playback mode constants.  
**Notes:** Repeat
169.11  class VLCMediaMBS

169.11.1  class VLCMediaMBS

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The VLC class for a media item.

169.11.2  Methods

169.11.3  AddOption(options as string)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Add an option to the media. **Notes:** This option will be used to determine how the media player will read the media. This allows to use VLC’s advanced reading/streaming options on a per-media basis.

The options are detailed in vlc --long-help, for instance "--sout-all"

169.11.4  AddOptionFlag(options as string, flags as UInt32)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Add an option to the media with configurable flags. **Notes:** This option will be used to determine how the media player will read the media. This allows to use VLC’s advanced reading/streaming options on a per-media basis.

The options are detailed in vlc --long-help, for instance "--sout-all"

169.11.5  Clone as VLCMediaMBS

169.11. CLASS VLCMEDIAMBS

169.11.6 Constructor(original as VLCMediaMBS)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a copy of the media object.
See also:

- 169.11.7 Constructor(vlc as VLCInstanceMBS, URL as string)

169.11.7 Constructor(vlc as VLCInstanceMBS, URL as string)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Create a media with a certain given media resource location, for instance a valid URL.
**Notes:**
Do not pass a file path here! This is for URLs.

URL: the media location

To refer to a local file with this function, the file://... URI syntax must be used (see IETF RFC3986).
We recommend using MediaWithPath() instead when dealing with local files.
See also:

- 169.11.6 Constructor(original as VLCMediaMBS)

169.11.8 Destructor

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The destructor to cleanup the media.

169.11.9 Duration as Int64

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get duration (in ms) of media descriptor object item.
**Notes:** Return duration of media item or -1 on error.

169.11.10 IsParsed as Boolean

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get Parsed status for media descriptor object.
**Notes:** Returns true if media object has been parsed otherwise it returns false.
169.11.11 MediaWithData(vlc as VLCInstanceMBS, data as memoryblock) as VLCMediaMBS

MBS VLC Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Create a media for a certain data.
**Notes:**
Internally creates temp file for the data and opens the file.
File is later deleted when VLCMediaMBS goes out of scope.
Returns new media object or nil.
See also:

- 169.11.12 MediaWithData(vlc as VLCInstanceMBS, data as string) as VLCMediaMBS

169.11.12 MediaWithData(vlc as VLCInstanceMBS, data as string) as VLCMediaMBS

MBS VLC Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Create a media for a certain data.
**Notes:**
Internally creates temp file for the data and opens the file.
File is later deleted when VLCMediaMBS goes out of scope.
Returns new media object or nil.
See also:

- 169.11.11 MediaWithData(vlc as VLCInstanceMBS, data as memoryblock) as VLCMediaMBS

169.11.13 MediaWithFile(vlc as VLCInstanceMBS, file as folderitem) as VLCMediaMBS

MBS VLC Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Create a media for a certain file path.
**Notes:**
file: local filesystem path as folderitem.
Returns new media object or nil.

169.11.14 MediaWithFileDescriptor(vlc as VLCInstanceMBS, fd as Integer) as VLCMediaMBS

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Create a media for an already open file descriptor.
**Notes:**
The file descriptor shall be open for reading (or reading and writing).

Regular file descriptors, pipe read descriptors and character device descriptors (including TTYs) are supported on all platforms. Block device descriptors are supported where available. Directory descriptors are supported on systems that provide `fdopendir()`. Sockets are supported on all platforms where they are file descriptors, i.e., all except Windows.

This library will not automatically close the file descriptor under any circumstance. Nevertheless, a file descriptor can usually only be rendered once in a media player. To render it a second time, the file descriptor should probably be rewound to the beginning with `lseek()`.

Returns new media object or nil.

169.11.15 MediaWithPath(vlc as VLCInstanceMBS, Path as string) as VLCMediaMBS

Function:
Create a media for a certain file path.

Notes:
- path: local filesystem path
Returns new media object or nil.

169.11.16 MediaWithURL(vlc as VLCInstanceMBS, URL as string) as VLCMediaMBS

Function:
Create a media with a certain given media resource location, for instance a valid URL.

Example:
```vbscript
dim v as VLCInstanceMBS // your vlc object
dim m as VLCMediaMBS

// load with URL
m = VLCMediaMBS.MediaWithURL(v, "http://www.mbsplugins.com/WriteInvoice-iPhone.m4v")

// or with file URL:
m = VLCMediaMBS.MediaWithURL(v, moviefile.URLPath)
```

Notes:
URL: the media location
Returns the new media object or nil.
To refer to a local file with this function, the file://... URI syntax must be used (see IETF RFC3986).
We recommend using MediaWithPath() instead when dealing with local files.

**169.11.17 Meta(type as Integer) as string**

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Read the meta of the media.
**Notes:**
If the media has not yet been parsed this will return an empty string.
This methods automatically calls ParseAsync(), so after calling it you may receive a MediaMetaChanged event. If you prefer a synchronous version ensure that you call Parse() before get_meta().

**169.11.18 MRL as string**

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get the media resource locator (mrl) from a media descriptor object.

**169.11.19 NewAsNode(vlc as VLCInstanceMBS, name as string) as VLCMediaMBS**

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Create a media as an empty node with a given name.
**Notes:**
Name: The name of the new node.
Returns new media object or nil.

**169.11.20 Parse**

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Parse a media.
**Notes:**
This fetches (local) meta data and tracks information.
The method is synchronous.
169.11.21 ParseAsync

**Notes:**
This fetches (local) meta data and tracks information.  
The method is the asynchronous of Parse.  
To track when this is over you can listen to MediaParsedChanged event. However if the media was already parsed you will not receive this event.

169.11.22 SaveMeta as Boolean

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**  
Save the meta previously set.  
**Notes:** Return true if the write operation was successfull.

169.11.23 SetMeta(meta as Integer, value as string)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**  
Set the meta of the media  
**Notes:**
This function will not save the meta, call SaveMeta in order to save the meta.

meta: Which meta data. See kMeta* constants.  
Value: the media's meta

169.11.24 State as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**  
Get current state of media descriptor object.  
**Notes:** See kState* constants.

169.11.25 Stats as VLCMediaStatsMBS

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**  
Get the current statistics about the media.  
**Notes:** Returns statistics for media.
169.11.26  **SubItems as VLCMediaListMBS**


169.11.27  **TrackInfos as VLCMediaTrackInfoMBS()**

**Notes:**
Note, you need to call Parse or play the media at least once before calling this function. 
Not doing this will result in an empty array.

169.11.28  **Tracks as VLCMediaTrackMBS()**

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get media descriptor’s elementary streams description.  
**Notes:**
Note, you need to call Parse or play the media at least once before calling this function. 
Not doing this will result in an empty array.

Requires LibVLC 2.1.0 and later.

Returns an array of track objects.

169.11.29  **Properties**

169.11.30  **Handle as Integer**

**Notes:** (Read and Write property)

169.11.31  **Tag as Integer**

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The media descriptor’s user_data.
Notes:
This is a value you can use as you like.
This value survives even if the VLCMediaMBS object is destroyed and later recreated with the same VLC media object behind.
(Read and Write property)

169.11.32 VLC as VLCInstanceMBS

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The reference to the VLC instance.
**Notes:** (Read only property)

169.11.33 Constants

169.11.34 kMetaActors = 22

MBS VLC Plugin, Plugin Version: 15.3. **Function:** One of the Metadata Types Constants
**Notes:** Actors

169.11.35 kMetaAlbum = 4

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the Metadata Types Constants
**Notes:** Album

169.11.36 kMetaAlbumArtist = 23

MBS VLC Plugin, Plugin Version: 18.2. **Function:** One of the Metadata Types Constants
**Notes:** Album artist

169.11.37 kMetaArtist = 1

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the Metadata Types Constants
**Notes:** Artist
169.11.38  kMetaArtworkURL = 15
MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the Metadata Types Constants  
**Notes:** Artwork URL

169.11.39  kMetaCopyright = 3
MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the Metadata Types Constants  
**Notes:** Copyright

169.11.40  kMetaDate = 8
MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the Metadata Types Constants  
**Notes:** Date

169.11.41  kMetaDescription = 6
MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the Metadata Types Constants  
**Notes:** Description

169.11.42  kMetaDirector = 18
MBS VLC Plugin, Plugin Version: 15.3. **Function:** One of the Metadata Types Constants  
**Notes:** Director

169.11.43  kMetaDiscNumber = 24
MBS VLC Plugin, Plugin Version: 18.2. **Function:** One of the Metadata Types Constants  
**Notes:** Disc number

169.11.44  kMetaDiscTotal = 25
MBS VLC Plugin, Plugin Version: 18.2. **Function:** One of the Metadata Types Constants  
**Notes:** Disc total
169.11.45  kMetaEncodedBy = 14

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the Metadata Types Constants
**Notes:** Encode By

169.11.46  kMetaEpisode = 20

MBS VLC Plugin, Plugin Version: 15.3. **Function:** One of the Metadata Types Constants
**Notes:** Episode

169.11.47  kMetaGenre = 2

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the Metadata Types Constants
**Notes:** Genre

169.11.48  kMetaLanguage = 11

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the Metadata Types Constants
**Notes:** Language

169.11.49  kMetaNowPlaying = 12

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the Metadata Types Constants
**Notes:** Now Playing

169.11.50  kMetaPublisher = 13

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the Metadata Types Constants
**Notes:** Publisher

169.11.51  kMetaRating = 7

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the Metadata Types Constants
**Notes:** Rating
169.11.52  kMetaSeason = 19

MBS VLC Plugin, Plugin Version: 15.3. **Function**: One of the Metadata Types Constants
**Notes**: Season

169.11.53  kMetaSetting = 9

MBS VLC Plugin, Plugin Version: 12.2. **Function**: One of the Metadata Types Constants
**Notes**: Setting

169.11.54  kMetaShowName = 21

MBS VLC Plugin, Plugin Version: 15.3. **Function**: One of the Metadata Types Constants
**Notes**: ShowName

169.11.55  kMetaTitle = 0

MBS VLC Plugin, Plugin Version: 12.2. **Function**: One of the Metadata Types Constants
**Notes**: Title

169.11.56  kMetaTrackID = 16

MBS VLC Plugin, Plugin Version: 12.2. **Function**: One of the Metadata Types Constants
**Notes**: Track ID

169.11.57  kMetaTrackNumber = 5

MBS VLC Plugin, Plugin Version: 12.2. **Function**: One of the Metadata Types Constants
**Notes**: Track Number

169.11.58  kMetaTrackTotal = 17

MBS VLC Plugin, Plugin Version: 15.3. **Function**: One of the Metadata Types Constants
**Notes**: Total
MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the Metadata Types Constants
**Notes:** URL

**Function:** One of the media option constants.
**Notes:** Trusted

**Function:** One of the media option constants.
**Notes:** Unique

**Function:** One of the state constants.
**Notes:** Buffering

**Function:** One of the state constants.
**Notes:** Ended

**Function:** One of the state constants.
**Notes:** Error

**Function:** One of the state constants.
**Notes:** Nothing special. Video closed for example.
169.11.66  kStateOpening = 1

MBS VLC Plugin, Plugin Version: 12.2. Function: One of the state constants.
Notes: Opening

169.11.67  kStatePaused = 4

MBS VLC Plugin, Plugin Version: 12.2. Function: One of the state constants.
Notes: Paused

169.11.68  kStatePlaying = 3

MBS VLC Plugin, Plugin Version: 12.2. Function: One of the state constants.
Notes: Playing

169.11.69  kStateStopped = 5

MBS VLC Plugin, Plugin Version: 12.2. Function: One of the state constants.
Notes: Stopped

169.11.70  kTrackTypeAudio = 0

MBS VLC Plugin, Plugin Version: 12.2. Function: One of the track type constants.
Notes: Audio

169.11.71  kTrackTypeText = 2

MBS VLC Plugin, Plugin Version: 12.2. Function: One of the track type constants.
Notes: Text

169.11.72  kTrackTypeUnknown = -1

MBS VLC Plugin, Plugin Version: 12.2. Function: One of the track type constants.
Notes: Unknown type
169.11. CLASS VLCMEDIAMBS

169.11.73 kTrackTypeVideo = 1

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the track type constants.  
**Notes:** Video
169.12 class VLCMediaPlayerMBS

169.12.1 class VLCMediaPlayerMBS

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The VLC class for video playback.

169.12.2 Methods

169.12.3 Constructor(media as VLCMediaMBS)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Create a Media Player object from a Media.
**Notes:** On success handle is not nil.
See also:
- 169.12.4 Constructor(VLCInstance as VLCInstanceMBS)

169.12.4 Constructor(VLCInstance as VLCInstanceMBS)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Create an empty Media Player object.
**Notes:** On success handle is not nil.
See also:
- 169.12.3 Constructor(media as VLCMediaMBS)

169.12.5 CopyMemory as memoryblock

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Covers current frame as memoryblock.
**Notes:**
This method set HasNewFrame to false.
The format depends on what you passed to VideoSetFormat.
Byte order usually is BGRA.

169.12.6 CopyPicture as Variant

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Copies current frame as picture.
Notes:
This method set HasNewFrame to false.
If using CGContext, this returns a CGImageMBS. Else a Picture.

169.12.7 CopyToMemory(dest as Ptr, offset as Integer, RowBytes as Integer) as boolean

MBS VLC Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies current frame into a given memory block.
**Notes:**
Offset: Position of first byte in memory block.
RowBytes: The row size in bytes of your memory block.

This way you can have your frame go into a buffer of bigger width/height representing an OpenGL texture for example.
Byte order usually is BGRA.

169.12.8 Destructor

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The destructor.

169.12.9 GetChapterCountForTitle(title as Integer) as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get title chapter count.
**Notes:** Return number of chapters in title, or -1.

169.12.10 GetChapterDescription(index as Integer) as VLCTrackDescription-MBS

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get the description of available chapters for specific title.
**Notes:** Return list containing description of available chapter for title with index.
169.12.11 GetMemory as Ptr

MBS VLC Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns pointer to memory with current frame.  
**Notes:**  
This method set HasNewFrame to false.  
The format depends on what you passed to VideoSetFormat.

169.12.12 Navigate(Navigate as Integer)


169.12.13 NextChapter

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set next chapter (if applicable)

169.12.14 NextFrame

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Display the next frame (if supported)

169.12.15 Pause

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Toggle pause (no effect if there is no media)  
See also:

- 169.12.16 Pause(pause as boolean)

169.12.16 Pause(pause as boolean)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Pause or resume (no effect if there is no media)  
**Notes:** pause: play/resume if false, pause if true.  
See also:
169.12.17 Play as Boolean

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Plays video. **Notes:** Return true if playback started (and was already started), or false on error.

169.12.18 PreviousChapter

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set previous chapter (if applicable)

169.12.19 SetAudioOutput(AudioOutputName as string) as boolean

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set the audio output. **Notes:** Change will be applied after stop and play. Name: name of audio output. Return true on success.

169.12.20 SetAudioOutputDevice(AudioOutputName as string, deviceID as string)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set audio output device. Changes are only effective after stop and play. **Notes:** AudioOutputName: name of audio output. deviceID: device ID.

169.12.21 SetEqualizer(Equalizer as VLCEqualizerMBS = nil)

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Apply new equalizer settings to a media player. **Notes:** It is possible to apply new equalizer settings to a media player whether the media player is currently playing media or not.
Invoking this method will immediately apply the new equalizer settings to the audio output of the currently playing media if there is any. If there is no currently playing media, the new equalizer settings will be applied later if and when new media is played.

Equalizer settings will automatically be applied to subsequently played media.

To disable the equalizer for a media player invoke this method passing nil for the equalizer parameter.

The media player does not keep a reference to the supplied equalizer so it is safe for an application to release the equalizer reference any time after this method returns.

Requires VLC 2.2.

169.12.22 SetSubtitleFile(filename as string) as boolean

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set new video subtitle file. **Notes:**

filename: new video subtitle file
Returns the success status.

169.12.23 SetVideoTitleDisplay(position as Integer, timeout as Integer)

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set if, and how, the video title will be shown when media is played. **Notes:**

position: position at which to display the title, or kVideoTitleDisplayPositionDisable to prevent the title from being displayed.
timeout: title display timeout in milliseconds (ignored if libvlc_position_disable)

Requires VLC 2.1.

169.12.24 Stop

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Stop (no effect if there is no media)
169.12.25  **ToggleFullScreen**

**Notes:** See also Fullscreen property.

169.12.26  **ToggleMute**


169.12.27  **ToggleTeletext**


169.12.28  **VideoGetCursor(num as Integer, byref px as Integer, byref py as Integer) as Boolean**

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get the mouse pointer coordinates over a video.  
**Notes:** Coordinates are expressed in terms of the decoded video resolution, not in terms of pixels on the screen/viewport (to get the latter, you can query your windowing system directly). Either of the coordinates may be negative or larger than the corresponding dimension of the video, if the cursor is outside the rendering area. The coordinates may be out-of-date if the pointer is not located on the video rendering area. LibVLC does not track the pointer if it is outside of the video widget. LibVLC does not support multiple pointers (it does of course support multiple input devices sharing the same pointer) at the moment.  

num: number of the video (starting from, and most commonly 0)  
px: get the abscissa.  
py: get the ordinate.  
Returns true on success, false if the specified video does not exist.
169.12.29  VideoGetSize(num as Integer, byref px as UInt32, byref py as UInt32) as Boolean


**Notes:**

- num: number of the video (starting from, and most commonly 0)
- px: get the pixel width [OUT]
- py: get the pixel height [OUT]

Return true on success, false if the specified video does not exist.

169.12.30  VideoSetCallback(width as Integer, height as Integer)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets video callbacks, so the plugin can provide current frame with CopyPicture method.

**Notes:**

You can use CopyPicture and CopyMemory methods to query new frame content.

The hasNewFrame property tells you whether a new frame is available.

See also:

- 169.12.31 VideoSetCallback(width as Integer, height as Integer, CGContextHandle as Integer)

169.12.31  VideoSetCallback(width as Integer, height as Integer, CGContextHandle as Integer)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets video callbacks, so the plugin can provide current frame with CopyPicture method.

**Notes:**

The plugin will draw the frames into the CGContext you provide.

You can use CopyPicture and CopyMemory methods to query new frame content.

The hasNewFrame property tells you whether a new frame is available.

See also:

- 169.12.30 VideoSetCallback(width as Integer, height as Integer)

169.12.32  VideoSetDeinterlace(Mode as string)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Enable or disable deinterlace filter.

**Notes:** Mode: Type of deinterlace filter, """" to disable.
169.12.33 VideoSetFormat(\text{chroma as string, width as UInt32, height as UInt32, pitch as UInt32})

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set decoded video chroma and dimensions. **Notes:**

This only works in combination with SetVideoCallbacks().

- chroma: a four-characters string identifying the chroma (e.g. "RV32" or "YUYV")
- width: pixel width
- height: pixel height
- pitch: line pitch (in bytes)

All pixel planes are expected to have the same pitch.

169.12.34 VideoSetKeyInput(on as boolean)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Enable or disable key press events handling, according to the LibVLC hotkeys configuration. **Notes:**

By default and for historical reasons, keyboard events are handled by the LibVLC video widget.

On X11, there can be only one subscriber for key press and mouse click events per window. If your application has subscribed to those events for the X window ID of the video widget, then LibVLC will not be able to handle key presses and mouse clicks in any case.

This function is only implemented for X11 and Win32 at the moment.

- on: true to handle key press events, false to ignore them.

169.12.35 VideoSetLogoString(option as Integer, logo as String)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set logo option as string. **Notes:** Options that take a different type value are ignored.
169.12.36 VideoSetMouseInput(on as boolean)

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Enable or disable mouse click events handling.  
**Notes:**  
By default, those events are handled. This is needed for DVD menus to work, as well as a few video filters such as "puzzle".

This function is only implemented for X11 and Win32 at the moment.

on: true to handle mouse click events, false to ignore them.

169.12.37 VideoTakeSnapshot(num as Integer, path as string, width as Integer, height as Integer) as boolean

**Notes:**  
If width AND height is 0, original size is used.  
If width XOR height is 0, original aspect-ratio is preserved. (e.g. width = 0 and height = -1)

num: number of video output (typically 0 for the first/only one)  
Path: the path where to save the screenshot to  
Width: the snapshot’s width  
Height: the snapshot’s height

Returns true on success, false if the video was not found

169.12.38 Properties

169.12.39 AGL as UInt32

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get/Set the agl handler where the media player should render its video output.  
**Notes:**  
Returns the agl handler or 0 if none where set.  
(Read and Write property)
169.12. CLASS VLCMEDIAPLAYERMBS

169.12.40 AspectRatio as string

Notes: Set new video aspect-ratio or "" to reset to default. Invalid aspect ratios are ignored. Get the video aspect ratio or "" if unspecified.
The value must be something like "4:3", "16:9", "16:10", ...
(Read and Write property)

169.12.41 AudioChannel as Integer

Notes: (Read and Write property)

169.12.42 AudioDelay as Int64

Notes: The audio delay will be reset to zero each time the media changes.
(Read and Write property)

169.12.43 AudioOutputDevices as VLCAudioOutputDeviceMBS

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Gets a list of potential audio output devices,
Notes: See also SetAudioOutputDevice method.
Not all audio outputs support enumerating devices.
The audio output may be functional even if the list is empty (nil).
The list may not be exhaustive.
Some audio output devices in the list might not actually work in some circumstances. By default, it is recommended to not specify any explicit audio device.

Returns a nil-terminated linked list of potential audio output devices. Requires LibVLC 2.2.0 or later. (Read only property)

169.12.44 AudioOutputDeviceType as Integer

**Notes:**
Device type describes something like character of output sound - stereo sound, 2.1, 5.1 etc. (Read and Write property)

169.12.45 AudioTrack as Integer

**Notes:**
Get or set current audio track. (Read and Write property)

169.12.46 AudioTrackCount as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get number of available audio tracks. 
**Notes:**
Returns the number of available audio tracks (int), or -1 if unavailable. (Read only property)

169.12.47 CanPause as boolean

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Can this media player be paused? 
**Notes:**
169.12. CLASS VLCMEDIAPLAYERMBS

Returns true if the media player can pause.
(Read only property)

169.12.48 Chapter as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get/set movie chapter.

**Notes:**
Returns chapter number currently playing, or -1 if there is no media.
Sets movie chapter (if applicable).
(Read and Write property)

169.12.49 ChapterCount as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get movie chapter count.

**Notes:**
Returns number of chapters in movie, or -1.
(Read only property)

169.12.50 CropGeometry as string

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get/Set current crop filter geometry.

**Notes:**
Returns the crop filter geometry or "" if unset.
Set with new crop filter geometry ("" to unset).

Seems to be broken in our tests inside libVLC.
(Read and Write property)

169.12.51 FPS as Double

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get movie fps rate

**Notes:**
Returns frames per second (fps) for this playing movie, or 0 if unspecified.
(Read only property)

169.12.52 FullScreen as boolean

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Enable or disable fullscreen.

**Notes:**
With most window managers, only a top-level windows can be in full-screen mode. Hence, this function will not operate properly if XWindow property was used to embed the video in a non-top-level window. In that case, the embedding window must be reparented to the root window before full-screen mode is enabled. You will want to reparent it back to its normal parent when disabling full-screen.
(Read and Write property)

169.12.53 GetAudioTrackDescription as VLCTrackDescriptionMBS


**Notes:**
Returns list with description of available audio tracks, or nil.
(Read only property)

169.12.54 GetSPUDescription as VLCTrackDescriptionMBS


**Notes:**
Return list containing description of available video subtitles or nil.
(Read only property)

169.12.55 GetVideoTitleDescription as VLCTrackDescriptionMBS


**Notes:**
Return list containing description of available titles.
(Read only property)
169.12.56 Handle as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal object reference. **Notes:** (Read and Write property)

169.12.57 HasNewFrame as Boolean

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether a new frame is available. **Notes:** (Read and Write property)

169.12.58 HasVOut as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** How many video outputs does this media player have? **Notes:** Return the number of video outputs. (Read only property)

169.12.59 Height as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get current video height. **Notes:** Returns the video pixel height or 0 if not applicable. (Read only property)

169.12.60 HWND as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get/Set a Win32/Win64 API window handle (HWND) where the media player should render its video output. **Notes:**
If LibVLC was built without Win32/Win64 API output support, then this has no effects.

Get the Windows API window handle (HWND) previously set with this property. The handle will be returned even if LibVLC is not currently outputting any video to it. Currently not supported by our plugin.
(Read and Write property)

169.12.61  IsPlaying as boolean

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether player is playing.
**Notes:** (Read only property)

169.12.62  IsSeekable as boolean

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Is this media player seekable?
**Notes:**
Returns true if the media player can seek.
(Read only property)

169.12.63  Length as Int64

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get the current movie length (in ms).
**Notes:**
Return the movie length (in ms), or -1 if there is no media.
(Read only property)

169.12.64  Media as VLCMediaMBS

**Notes:** (Read and Write property)
169.12.65  Mute as boolean

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Current mute status.
**Notes:**
If true then mute, otherwise unmute.
(Read and Write property)

169.12.66  NSObject as Ptr

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get/Set the NSView handler where the media player should render its video output.
**Notes:**
Currently not supported by our plugin.
(Read and Write property)

169.12.67  Position as Double

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get/Set movie position.
**Notes:**
Movie position as percentage between 0.0 and 1.0.
Returns movie position, or -1. in case of error.
Set movie position. This has no effect if playback is not enabled. This might not work depending on the underlying input format and protocol.
(Read and Write property)

169.12.68  ProgramScrambled as boolean

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Check if the current program is scrambled.
**Notes:**
ture if the current program is scrambled.
Requires VLC 2.2.
(Read only property)
169.12.69  Rate as Double


**Notes:**
Depending on the underlying media, the requested rate may be different from the real playback rate.
(Read and Write property)

169.12.70  Scale as Double


**Notes:**
That is the ratio of the number of pixels on screen to the number of pixels in the original decoded video in each dimension. Zero is a special value; it will adjust the video to the output window/drawable (in windowed mode) or the entire screen.

Note that not all video outputs support scaling.
(Read and Write property)

169.12.71  SPU as Integer


**Notes:**
Returns the video subtitle selected, or -1 if none.
(Read and Write property)

169.12.72  SPUCount as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get the number of available video subtitles.

**Notes:** (Read only property)
**169.12.73  SPUDelay as Int64**

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get/Set the current subtitle delay.

**Notes:**
This affects the timing of when the subtitle will be displayed. Positive values means subtitles are being displayed later, while negative values will result in subtitles being displayed earlier. The subtitle delay will be reset to zero each time the media changes. (Read and Write property)

**169.12.74  State as Integer**


**Notes:**
Returns the current state of the media player (playing, paused, ...)
(Read only property)

**169.12.75  Tag as Variant**

MBS VLC Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tag value.

**Notes:**
You can store whatever you like in this property.
(Read only property)

**169.12.76  Time as Int64**

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get/Set the current movie time (in ms).

**Notes:**
Return the movie time (in ms), or -1 if there is no media. Set the movie time (in ms). This has no effect if no media is being played. Not all formats and protocols support this. (Read and Write property)
169.12.77  Title as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Set/Get movie title.
**Notes:**
Returns title number currently playing, or -1.
(Read and Write property)

169.12.78  TitleCount as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get movie title count.
**Notes:**
Returns title number count, or -1.
(Read only property)

169.12.79  VideoTeleText as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get/Set current teletext page requested.
**Notes:** (Read and Write property)

169.12.80  VideoTrack as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get/Set video track.
**Notes:** (Read and Write property)

169.12.81  VideoTrackCount as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get number of available video tracks.
**Notes:**
Returns the number of available video tracks.
(Read only property)
169.12.82 VideoTrackDescription as VLCTrackDescriptionMBS

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get the description of available video tracks.
**Notes:**
Returns list with description of available video tracks, or nil on error.
(Read only property)

169.12.83 VLC as VLCInstanceMBS

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The reference to the VLC instance.
**Notes:** (Read only property)

169.12.84 Volume as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Current software audio volume.
**Notes:**
The volume in percents.
0 = mute, 100 = nominal / 0dB.
(Read and Write property)

169.12.85 Width as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get current video width.
**Notes:**
Returns the video pixel width or 0 if not applicable.
(Read only property)

169.12.86 WillPlay as boolean

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Is the player able to play.
**Notes:** (Read only property)
169.12.87  XWindow as UInt32

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get/Set an X Window System drawable where the media player should render its video output.

**Notes:**
If LibVLC was built without X11 output support, then this has no effects.

The specified identifier must correspond to an existing Input/Output class X11 window. Pixmaps are not
supported. The caller shall ensure that the X11 server is the same as the one the VLC instance has been
configured with. This function must be called before video playback is started; otherwise it will only take
effect after playback stop and restart.

Get the X Window System window identifier previously set with this property. Note that this will return
the identifier even if VLC is not currently using it (for instance if it is playing an audio-only input).
Currently not supported by our plugin.
(Read and Write property)

169.12.88  VideoAdjust(option as Integer) as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get/set adjust option as Integer.

**Notes:**
option: See kAdjust* constants.
Options that take a different type value are ignored.

Using kAdjustEnable with value 0 stops adjust filter. With other values you start adjust filter.
(Read and Write computed property)

169.12.89  VideoAdjustFloat(option as Integer) as single

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Get/set adjust option as float.

**Notes:**
option: See kAdjust* constants.
Options that take a different type value are ignored.
(Read and Write computed property)
169.12.90 VideoLogo(option as Integer) as Integer

**Notes:**
Options that take a different type value are ignored.
Passing kLogoEnable as option value has the side effect of starting (arg not 0) or stopping (arg 0) the logo filter.
(Read and Write computed property)

169.12.91 VideoMarquee(option as Integer) as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get, Enable, disable or set an integer marquee option.
**Notes:**
Setting kMarqueeEnable has the side effect of enabling (arg not 0) or disabling (arg 0) the marq filter.
(Read and Write computed property)

169.12.92 VideoMarqueeString(option as Integer) as String

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Get/Set a string marquee option value
**Notes:** (Read and Write computed property)

169.12.93 Constants

169.12.94 kAdjustBrightness = 2

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the adjust parameter constants.
**Notes:** Brightness

169.12.95 kAdjustContrast = 1

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the adjust parameter constants.
**Notes:** Contrast
169.12.96  \text{kAdjustEnable} = 0

MBS VLC Plugin, Plugin Version: 12.2. \textbf{Function}: One of the adjust parameter constants.
\textbf{Notes}: Enable

169.12.97  \text{kAdjustGamma} = 5

MBS VLC Plugin, Plugin Version: 12.2. \textbf{Function}: One of the adjust parameter constants.
\textbf{Notes}: Gamma

169.12.98  \text{kAdjustHue} = 3

MBS VLC Plugin, Plugin Version: 12.2. \textbf{Function}: One of the adjust parameter constants.
\textbf{Notes}: Hue

169.12.99  \text{kAdjustSaturation} = 4

MBS VLC Plugin, Plugin Version: 12.2. \textbf{Function}: One of the adjust parameter constants.
\textbf{Notes}: Saturation

169.12.100  \text{kAudioChannelDolbys} = 5

MBS VLC Plugin, Plugin Version: 12.2. \textbf{Function}: One of the audio channels constants.
\textbf{Notes}: Dolbys

169.12.101  \text{kAudioChannelError} = -1

MBS VLC Plugin, Plugin Version: 12.2. \textbf{Function}: One of the audio channels constants.
\textbf{Notes}: Error

169.12.102  \text{kAudioChannelLeft} = 3

MBS VLC Plugin, Plugin Version: 12.2. \textbf{Function}: One of the audio channels constants.
\textbf{Notes}: Left channel
169.12.103  kAudioChannelRight = 4

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the audio channels constants. **Notes:** Right channel

169.12.104  kAudioChannelRStereo = 2

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the audio channels constants. **Notes:** RStereo
169.12.105  kAudioChannelStereo = 1

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the audio channels constants.  
**Notes:** Stereo

169.12.106  kAudioOutputDevice_2F2R = 4

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the Audio device type constants.  
**Notes:** 2F2R

169.12.107  kAudioOutputDevice_3F2R = 5

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the Audio device type constants.  
**Notes:** 3F2R

169.12.108  kAudioOutputDevice_5_1 = 6

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the Audio device type constants.  
**Notes:** 5/1

169.12.109  kAudioOutputDevice_6_1 = 7

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the Audio device type constants.  
**Notes:** 6/1

169.12.110  kAudioOutputDevice_7_1 = 8

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the Audio device type constants.  
**Notes:** 7/1

169.12.111  kAudioOutputDevice_Error = -1

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the Audio device type constants.  
**Notes:** Error
169.12. CLASS VLCMEDIAPLAYERMBS

169.12.112 kAudioOutputDevice_Mono = 1

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the Audio device type constants. **Notes:** Mono

169.12.113 kAudioOutputDevice_SPDIF = 10

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the Audio device type constants. **Notes:** SPDIF

169.12.114 kAudioOutputDevice_Stereo = 2

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the Audio device type constants. **Notes:** Stereo

169.12.115 kLogoDelay = 4

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the Option Parameters for VideoLogo. **Notes:** Delay

169.12.116 kLogoEnable = 0

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the Option Parameters for VideoLogo. **Notes:** Enable/Disable

169.12.117 kLogoFile = 1

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the Option Parameters for VideoLogo. **Notes:**

File path.
Use with VideoSetLogoString: "file,d,t;file,d,t;..."
**169.12.118 kLogoOpacity = 6**

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the Option Parameters for VideoLogo. **Notes:** Opacity

**169.12.119 kLogoPosition = 7**

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the Option Parameters for VideoLogo. **Notes:** Position

**169.12.120 kLogoRepeat = 5**

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the Option Parameters for VideoLogo. **Notes:** Repeat

**169.12.121 kLogoX = 2**

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the Option Parameters for VideoLogo. **Notes:** X Position

**169.12.122 kLogoY = 3**

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the Option Parameters for VideoLogo. **Notes:** Y Position

**169.12.123 kMarqueeColor = 2**

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the Marq options definition constants. **Notes:** Color

**169.12.124 kMarqueeEnable = 0**

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the Marq options definition constants. **Notes:** Enable
169.12. CLASS VLCMEDIAPLAYERMBS

169.12.125  kMarqueeOpacity = 3

MBS VLC Plugin, Plugin Version: 12.2. **Function**: One of the Marq options definition constants.  
**Notes**: Opacity

169.12.126  kMarqueePosition = 4

MBS VLC Plugin, Plugin Version: 12.2. **Function**: One of the Marq options definition constants.  
**Notes**: Position

169.12.127  kMarqueeRefresh = 5

MBS VLC Plugin, Plugin Version: 12.2. **Function**: One of the Marq options definition constants.  
**Notes**: Refresh

169.12.128  kMarqueeSize = 6

MBS VLC Plugin, Plugin Version: 12.2. **Function**: One of the Marq options definition constants.  
**Notes**: Size

169.12.129  kMarqueeText = 1

MBS VLC Plugin, Plugin Version: 12.2. **Function**: One of the Marq options definition constants.  
**Notes**: Text

169.12.130  kMarqueeTimeout = 7

MBS VLC Plugin, Plugin Version: 12.2. **Function**: One of the Marq options definition constants.  
**Notes**: Timeout

169.12.131  kMarqueeX = 8

MBS VLC Plugin, Plugin Version: 12.2. **Function**: One of the Marq options definition constants.  
**Notes**: X
169.12.132  kMarqueeY = 9
MBS VLC Plugin, Plugin Version: 12.2. Function: One of the Marq options definition constants. Notes: Y

169.12.133  kNavigateActivate = 0
MBS VLC Plugin, Plugin Version: 12.2. Function: One of the navigation modes. Notes: Activate

169.12.134  kNavigateDown = 2
MBS VLC Plugin, Plugin Version: 12.2. Function: One of the navigation modes. Notes: Down

169.12.135  kNavigateLeft = 3
MBS VLC Plugin, Plugin Version: 12.2. Function: One of the navigation modes. Notes: Left

169.12.136  kNavigateRight = 4
MBS VLC Plugin, Plugin Version: 12.2. Function: One of the navigation modes. Notes: Right

169.12.137  kNavigateUp = 1
MBS VLC Plugin, Plugin Version: 12.2. Function: One of the navigation modes. Notes: Up

169.12.138  kStateBuffering = 2
MBS VLC Plugin, Plugin Version: 12.2. Function: One of the state constants. Notes: Buffering
169.12.139  kStateEnded = 6

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the state constants. **Notes:** Ended

169.12.140  kStateError = 7

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the state constants. **Notes:** Error

169.12.141  kStateNothingSpecial = 0

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the state constants. **Notes:** Nothing special. Video closed for example.

169.12.142  kStateOpening = 1

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the state constants. **Notes:** Opening

169.12.143  kStatePaused = 4

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the state constants. **Notes:** Paused

169.12.144  kStatePlaying = 3

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the state constants. **Notes:** Playing

169.12.145  kStateStopped = 5

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the state constants. **Notes:** Stopped
169.12.146  kVideoTitleDisplayPositionBottom = 6

MBS VLC Plugin, Plugin Version: 15.3. **Function:** One of the video title display positions.  
**Notes:** Bottom

169.12.147  kVideoTitleDisplayPositionBottomLeft = 7

MBS VLC Plugin, Plugin Version: 15.3. **Function:** One of the video title display positions.  
**Notes:** Bottom Left

169.12.148  kVideoTitleDisplayPositionBottomRight = 8

MBS VLC Plugin, Plugin Version: 15.3. **Function:** One of the video title display positions.  
**Notes:** Bottom Right

169.12.149  kVideoTitleDisplayPositionCenter = 0

MBS VLC Plugin, Plugin Version: 15.3. **Function:** One of the video title display positions.  
**Notes:** Center

169.12.150  kVideoTitleDisplayPositionDisable = -1

MBS VLC Plugin, Plugin Version: 15.3. **Function:** One of the video title display positions.  
**Notes:** Disabled

169.12.151  kVideoTitleDisplayPositionLeft = 1

MBS VLC Plugin, Plugin Version: 15.3. **Function:** One of the video title display positions.  
**Notes:** Left

169.12.152  kVideoTitleDisplayPositionRight = 2

MBS VLC Plugin, Plugin Version: 15.3. **Function:** One of the video title display positions.  
**Notes:** Right
169.12. CLASS VLCMEDIAPLAYERMBS

169.12.153 \text{kVideoTitleDisplayPositionTop} = 3

MBS VLC Plugin, Plugin Version: 15.3. \textbf{Function:} One of the video title display positions.
\textbf{Notes:} Top

169.12.154 \text{kVideoTitleDisplayPositionTopLeft} = 4

MBS VLC Plugin, Plugin Version: 15.3. \textbf{Function:} One of the video title display positions.
\textbf{Notes:} Top Left

169.12.155 \text{kVideoTitleDisplayPositionTopRight} = 5

MBS VLC Plugin, Plugin Version: 15.3. \textbf{Function:} One of the video title display positions.
\textbf{Notes:} Top Right
169.13  class VLCMediaStatsMBS

169.13.1  class VLCMediaStatsMBS

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for media statistics.

169.13.2  Properties

169.13.3  DecodedAudio as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Decoded audio.
**Notes:** (Read and Write property)

169.13.4  DecodedVideo as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Decoded video.
**Notes:** (Read and Write property)

169.13.5  DemuxBitrate as Single

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Bitrate for demux input.
**Notes:** (Read and Write property)

169.13.6  DemuxCorrupted as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Demux corrupted.
**Notes:** (Read and Write property)

169.13.7  DemuxDiscontinuity as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The demux discontinuity.
169.13.8 DemuxRead_bytes as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Number of read bytes by demuxer. **Notes:** (Read and Write property)

169.13.9 DisplayedPictures as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Number of displayed video frames. **Notes:** (Read and Write property)

169.13.10 InputBitrate as Single

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The input bit rate. **Notes:** (Read and Write property)

169.13.11 LostAbuffers as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Number of lost audio buffers. **Notes:** (Read and Write property)

169.13.12 LostPictures as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Number of lost video frames. **Notes:** (Read and Write property)

169.13.13 PlayedAbuffers as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Number of played Audio buffers.
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Notes: (Read and Write property)

169.13.14  ReadBytes as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Number of bytes read from input.
**Notes:** (Read and Write property)

169.13.15  SendBitrate as Single

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The sending bit rate.
**Notes:** (Read and Write property)

169.13.16  SentBytes as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Number of bytes sent.
**Notes:** (Read and Write property)

169.13.17  SentPackets as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Number of packets sent.
**Notes:** (Read and Write property)
169.14. class VLCMediaTrackInfoMBS

169.14.1. class VLCMediaTrackInfoMBS

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for track information. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

169.14.2. Methods

169.14.3. Constructor

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The private constructor.

169.14.4. Destructor

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The destructor.

169.14.5. Properties

169.14.6. Channels as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The number of channels in an audio track. **Notes:** (Read and Write property)

169.14.7. Codec as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The track’s codec identifier. **Notes:** (Read and Write property)
169.14.8 CodecString as String

MBS VLC Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The track’s codec identifier as string. 
**Notes:** (Read and Write property)

169.14.9 Height as Integer

**Notes:** (Read and Write property)

169.14.10 ID as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The track’s ID. 
**Notes:** (Read and Write property)

169.14.11 Level as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The codec’s level. 
**Notes:** (Read and Write property)

169.14.12 Profile as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The codec’s profile. 
**Notes:** (Read and Write property)

169.14.13 Rate as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The rate for an audio track. 
**Notes:** e.g. 44000 Hz. 
(Read and Write property)
169.14.14 Type as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The track type.

**Notes:**
Can be TrackAudio, TrackText, TrackVideo or TrackUnknown.
(Read and Write property)

169.14.15 Width as Integer


**Notes:** (Read and Write property)

169.14.16 Constants

169.14.17 TrackAudio = 0

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the track types.

**Notes:** Audio

169.14.18 TrackText = 2

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the track types.

**Notes:** Text track, e.g. subtitles.

169.14.19 TrackUnknown = -1

MBS VLC Plugin, Plugin Version: 12.2. **Function:** One of the track types.

**Notes:** Unknown
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169.14.20  TrackVideo = 1

MBS VLC Plugin, Plugin Version: 12.2. **Function**: One of the track types. **Notes**: Video
169.15. CLASS VLCMEDIATRACKMBS

169.15  class VLCMediaTrackMBS

169.15.1  class VLCMediaTrackMBS

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for the media track.
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

169.15.2  Methods

169.15.3  Constructor

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constructor.

169.15.4  Destructor

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The destructor.

169.15.5  Properties

169.15.6  Bitrate as Integer

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The bitrate.
**Notes:** (Read and Write property)

169.15.7  Channels as Integer

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The number of channels.
**Notes:** (Read and Write property)
169.15.8   Codec as Integer

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The codec ID.  
**Notes:** (Read and Write property)

169.15.9   CodecString as String

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The codec ID as 4 letter text. 
**Notes:** (Read and Write property)

169.15.10   Description as String

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The track description.  
**Notes:** (Read and Write property)

169.15.11   Encoding as String

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The text encoding for subtitles.  
**Notes:** (Read and Write property)

169.15.12   FrameRate as Double

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The framerate.  
**Notes:** (Read and Write property)

169.15.13   FrameRateDen as Integer

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The framerate.  
**Notes:** (Read and Write property)
169.15.14  FrameRateNum as Integer

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The framerate. **Notes:** (Read and Write property)

169.15.15  Height as Integer

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The height of a video track. **Notes:** (Read and Write property)

169.15.16  ID as Integer

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The ID of the track. **Notes:** (Read and Write property)

169.15.17  Language as String

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The language for this track. **Notes:** (Read and Write property)

169.15.18  Level as Integer

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The codec specific level value. **Notes:** (Read and Write property)

169.15.19  OriginalCode as Integer

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The original code for codec. **Notes:** (Read and Write property)
169.15.20 Profile as Integer

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Codec specific profile value.
**Notes:** (Read and Write property)

169.15.21 Rate as Integer

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The sound rate in Hz.
**Notes:** (Read and Write property)

169.15.22 Sar as Double

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The aspect ratio.
**Notes:** (Read and Write property)

169.15.23 SarDen as Integer

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The aspect ratio.
**Notes:** (Read and Write property)

169.15.24 SarNum as Integer

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The aspect ratio.
**Notes:** (Read and Write property)

169.15.25 Type as Integer

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The track type.
**Notes:** (Read and Write property)
169.15.26 Width as Integer

MBS VLC Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The width of a video track. **Notes:** (Read and Write property)

169.15.27 Constants

169.15.28 TrackAudio = 0

MBS VLC Plugin, Plugin Version: 15.3. **Function:** One of the track types. **Notes:** Audio

169.15.29 TrackText = 2

MBS VLC Plugin, Plugin Version: 15.3. **Function:** One of the track types. **Notes:** Text

169.15.30 TrackUnknown = -1

MBS VLC Plugin, Plugin Version: 15.3. **Function:** One of the track types. **Notes:** Unknown type

169.15.31 TrackVideo = 1

MBS VLC Plugin, Plugin Version: 15.3. **Function:** One of the track types. **Notes:** Video
class VLCMissingFunctionExceptionMBS

Function: The exception which is raised if you call a function which is not available.
Notes: Either your VLC shared library does not have the function or you did not yet load the library.
Subclass of the RuntimeException class.
169.17. class VLCModuleDescriptionMBS

169.17.1. class VLCModuleDescriptionMBS

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for a module description.

169.17.2. Methods

169.17.3. Destructor

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The destructor.

169.17.4. Properties

169.17.5. Help as String

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The help text.
**Notes:** (Read and Write property)

169.17.6. LongName as String

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The long name.
**Notes:** (Read and Write property)

169.17.7. Name as String

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The name of the module.
**Notes:** (Read and Write property)
169.17.8  NextModule as VLCModuleDescriptionMBS

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The link to the next module.  
**Notes:** (Read and Write property)

169.17.9  ShortName as String

**Notes:** (Read and Write property)
169.18.  class VLCNotInitializedExceptionMBS

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
This exception is raised if you call a method on an uninitialized object.

**Notes:**
Should not happen. And if it happens, you have a bug in your code.
Subclass of the RuntimeException class.
169.19  class VLCTrackDescriptionMBS

169.19.1  class VLCTrackDescriptionMBS

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Description for video, audio tracks and subtitles.
**Notes:** It contains id, name (description string) and reference to next record.

169.19.2  Methods

169.19.3  Destructor

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The destructor.

169.19.4  Properties

169.19.5  ID as Integer

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The track ID.
**Notes:** (Read and Write property)

169.19.6  Name as String

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The track name.
**Notes:** (Read and Write property)

169.19.7  NextTrack as VLCTrackDescriptionMBS

MBS VLC Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The next track in the list.
**Notes:** (Read and Write property)
Chapter 170

Window

170.1 class GrowIconMBS

170.1.1 class GrowIconMBS

MBS MacCG Plugin, Plugin Version: 8.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
A class to replace the growicon on a composite window on Mac OS X with your own growicon.
**Deprecated:** This item is deprecated and should no longer be used. **Notes:** The grow icon is the bottom right part of the window where users can change the window size.

170.1.2 Methods

170.1.3 Constructor(target as window)

MBS MacCG Plugin, Plugin Version: 8.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The constructor to link this class to the given window.
**Notes:** The class keeps a reference to this window.

170.1.4 Properties

170.1.5 ControlHandle as Integer

MBS MacCG Plugin, Plugin Version: 8.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The handle to the growicon control used.
**Notes:** (Read and Write property)
170.1.6  TargetWindow as Window

MBS MacCG Plugin, Plugin Version: 8.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The window being used.
**Notes:** (Read and Write property)

170.1.7  Events

170.1.8  Draw(context as CGContextMBS, x as Double, y as Double, width as Double, height as Double)

MBS MacCG Plugin, Plugin Version: 8.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The draw event where you can draw your own growicon.
**Example:**
```
Sub Draw(context as CGContextMBS, x as Double, y as Double, width as Double, height as Double)
Context.SetRGBFillColor 1,0,0,1
context.FillRect CGMakeRectMBS(x,y,width,height)
End Sub
```
170.2  class GTKWindowMBS

170.2.1  class GTKWindowMBS

MBS Linux Plugin, Plugin Version: 13.0, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** The class to control a GTKWindow.
**Notes:**
We can directly modify a window on Linux using this class.
If you need methods to do something special, please do not hesitate to email us.

170.2.2  Methods

170.2.3  Constructor(win as window)

MBS Linux Plugin, Plugin Version: 13.0, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Creates a new GTKWindow object pointing to a given window.
**Notes:** Raises exception on Mac/Win to prevent you from creating invalid object.

170.2.4  Deiconify

MBS Linux Plugin, Plugin Version: 13.0, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Asks to deiconify (i.e. unminimize) the specified window.
**Notes:** Note that you shouldn’t assume the window is definitely deiconified afterward, because other entities (e.g. the user or window manager) could iconify it again before your code which assumes deiconification gets to run.

170.2.5  Fullscreen

MBS Linux Plugin, Plugin Version: 13.0, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Asks to place window in the fullscreen state.
**Notes:** Note that you shouldn’t assume the window is definitely full screen afterward, because other entities (e.g. the user or window manager) could unfullscreen it again, and not all window managers honor requests to fullscreen windows. But normally the window will end up fullscreen. Just don’t write code that crashes if not.

170.2.6  Iconify

MBS Linux Plugin, Plugin Version: 13.0, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Asks to iconify (i.e. minimize) the specified window.
Notes:
Note that you shouldn’t assume the window is definitely iconified afterward, because other entities (e.g. the user or window manager) could deiconify it again, or there may not be a window manager in which case iconification isn’t possible, etc. But normally the window will end up iconified. Just don’t write code that crashes if not.

It’s permitted to call this function before showing a window, in which case the window will be iconified before it ever appears onscreen.

### 170.2.7 IsComposited as Boolean

MBS Linux Plugin, Plugin Version: 13.0, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Whether this window can rely on having its alpha channel drawn correctly. **Notes:** On X11 this function returns whether a compositing manager is running for window’s screen.

### 170.2.8 Maximize

MBS Linux Plugin, Plugin Version: 13.0, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Asks to maximize window, so that it becomes full-screen. **Notes:**
Note that you shouldn’t assume the window is definitely maximized afterward, because other entities (e.g. the user or window manager) could unmaximize it again, and not all window managers support maximization. But normally the window will end up maximized. Just don’t write code that crashes if not.

It’s permitted to call this function before showing a window, in which case the window will be maximized when it appears onscreen initially.

### 170.2.9 SetIcon(pic as picture)

MBS Linux Plugin, Plugin Version: 14.0, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Assigns an icon to the picture. 
**Notes:**
The operation system will scale the picture to required size, so please use bigger images. Please use picture with alpha channel for best result.
170.2. **CLASS GTKWINDOWMBS**

### 170.2.10 SetKeepAbove(setting as boolean)

MBS Linux Plugin, Plugin Version: 13.0, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Asks to keep window above, so that it stays on top.

**Notes:**

Note that you shouldn’t assume the window is definitely above afterward, because other entities (e.g. the user or window manager) could not keep it above, and not all window managers support keeping windows above. But normally the window will end kept above. Just don’t write code that crashes if not.

It’s permitted to call this function before showing a window, in which case the window will be kept above when it appears onscreen initially.

Note that, according to the Extended Window Manager Hints specification, the above state is mainly meant for user preferences and should not be used by applications e.g. for drawing attention to their dialogs.

### 170.2.11 SetKeepBelow(setting as boolean)

MBS Linux Plugin, Plugin Version: 13.0, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Asks to keep window below, so that it stays in bottom.

**Notes:**

Note that you shouldn’t assume the window is definitely below afterward, because other entities (e.g. the user or window manager) could not keep it below, and not all window managers support putting windows below. But normally the window will be kept below. Just don’t write code that crashes if not.

It’s permitted to call this function before showing a window, in which case the window will be kept below when it appears onscreen initially.

Note that, according to the Extended Window Manager Hints specification, the above state is mainly meant for user preferences and should not be used by applications e.g. for drawing attention to their dialogs.

### 170.2.12 Stick

MBS Linux Plugin, Plugin Version: 13.0, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Asks to stick window, which means that it will appear on all user desktops.

**Notes:**

Note that you shouldn’t assume the window is definitely stuck afterward, because other entities (e.g. the user or window manager) could unstick it again, and some window managers do not support sticking windows. But normally the window will end up stuck. Just don’t write code that crashes if not.
170.2.13 Unfullscreen

MBS Linux Plugin, Plugin Version: 13.0, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Asks to toggle off the fullscreen state for window.
**Notes:** Note that you shouldn’t assume the window is definitely not full screen afterward, because other entities (e.g., the user or window manager) could fullscreen it again, and not all window managers honor requests to unfullscreen windows. But normally the window will end up restored to its normal state. Just don’t write code that crashes if not.

170.2.14 Unmaximize

MBS Linux Plugin, Plugin Version: 13.0, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Asks to unmaximize window.
**Notes:** Note that you shouldn’t assume the window is definitely unmaximized afterward, because other entities (e.g., the user or window manager) could maximize it again, and not all window managers honor requests to unmaximize. But normally the window will end up unmaximized. Just don’t write code that crashes if not.

170.2.15 Unstick

MBS Linux Plugin, Plugin Version: 13.0, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
Asks to unstick window, which means that it will appear on only one of the user’s desktops.
**Notes:** Note that you shouldn’t assume the window is definitely unstuck afterward, because other entities (e.g., the user or window manager) could stick it again. But normally the window will end up stuck. Just don’t write code that crashes if not.

170.2.16 Properties

170.2.17 Handle as Integer

MBS Linux Plugin, Plugin Version: 13.0, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:**
The internal window handle.
**Notes:** (Read and Write property)
170.2. AcceptFocus as Boolean

MBS Linux Plugin, Plugin Version: 13.0, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Get/Set whether window should receive focus.

**Notes:**
Windows may set a hint asking the desktop environment not to receive the input focus. This function sets this hint.
(Read and Write computed property)

170.2.19 Opacity as Double

MBS Linux Plugin, Plugin Version: 13.0, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Get or set the Opacity of this window.

**Notes:**
Request the windowing system to make window partially transparent, with opacity 0 being fully transparent and 1 fully opaque. (Values of the opacity parameter are clamped to the [ 0,1 ] range.) On X11 this has any effect only on X screens with a compositing manager running. See isComposited.
(Read and Write computed property)

170.2.20 Resizable as Boolean

MBS Linux Plugin, Plugin Version: 13.0, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Get or set whether the user can resize a window.

**Notes:** (Read and Write computed property)

170.2.21 Title as string

MBS Linux Plugin, Plugin Version: 13.0, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Get or set the window title.

**Notes:**
The title of a window will be displayed in its title bar; on the X Window System, the title bar is rendered by the window manager, so exactly how the title appears to users may vary according to a user’s exact configuration. The title should help a user distinguish this window from other windows they may have open. A good title might include the application name and current document filename, for example.
(Read and Write computed property)
170.3 class MAAttachedWindowMBS

170.3.1 class MAAttachedWindowMBS


Function: A class for attached windows in Cocoa.

Notes:

For Mac OS X 10.7 you can use NSPopoverMBS. This class does something similar for Mac OS X 10.4 to 10.7.

Base on MAAttachedWindow code by Matt Gemmell.
See his website http://mattgemmell.com/

Below are the positions the attached window can be displayed at.

Note that these positions are relative to the point passed to the constructor, e.g. MAPositionBottomRight will put the window below the point and towards the right, MAPositionTop will horizontally center the window above the point, MAPositionRightTop will put the window to the right and above the point, and so on.

You can also pass MAPositionAutomatic and the attached window will try to position itself sensibly, based on available screen-space.

Notes regarding automatically-positioned attached windows:

(a) The window prefers to position itself horizontally centered below the specified point. This gives a certain enhanced visual sense of an attachment/relationship.

(b) The window will try to align itself with its parent window (if any); i.e. it will attempt to stay within its parent window’s frame if it can.

(c) The algorithm isn’t perfect. :) If in doubt, do your own calculations and then explicitly request that the window attach itself to a particular side.

Notes regarding accessor methods:

1. The border is drawn inside the viewMargin area, expanding inwards; it does not increase the width/height of the window. You can use the BorderWidth and ViewMargin methods together to achieve the exact look/geometry you want. (viewMargin is the distance between the edge of the view and the window edge.)

2. The specified setter methods are primarily intended to be used _before_ the window is first shown. If you use them while the window is already visible, be aware that they may cause the window to move and/or
170.3. CLASS MAATTACHEDWINDOWMBS

resize, in order to stay anchored to the point specified in the initializer. They may also cause the view to move within the window, in order to remain centered there.

Note that the HasArrow method can safely be used at any time, and will not cause moving/resizing of the window. This is for convenience, in case you want to add or remove the arrow in response to user interaction. For example, you could make the attached window movable by its background, and if the user dragged it away from its initial point, the arrow could be removed. This would duplicate how Aperture's attached windows behave.

3. drawsRoundCornerBesideArrow takes effect when the arrow is being drawn at a corner, i.e. when it's not at one of the four primary compass directions. In this situation, if drawsRoundCornerBesideArrow is true (the default), then that corner of the window will be rounded just like the other three corners, thus the arrow will be inset slightly from the edge of the window to allow room for the rounded corner. If this value is false, the corner beside the arrow will be a square corner, and the other three corners will be rounded.

This is useful when you want to attach a window very near the edge of another window, and don’t want the attached window’s edge to be visually outside the frame of the parent window.

4. Note that to retrieve the background color of the window, you should use the windowBackgroundColor method, instead of backgroundColor. This is because we draw the entire background of the window (rounded path, arrow, etc) in an NSColor pattern image, and set it as the backgroundColor of the window.

Subclass of the NSWindowMBS class.

170.3.2 Methods

170.3.3 attachedWindow(view as NSViewMBS, point as NSPointMBS = nil, window as NSWindowMBS = nil, onSide as Integer = 12, distance as Double = 0.0) as MAAttachedWindowMBS


Notes:

view: The view to display in the attached window. Must not be nil.
point: The point to which the attached window should be attached. If you are also specifying a parent window, the point should be in the coordinate system of that parent window. If you are not specifying a window, the point should be in the screen’s coordinate space. This value is required.
window: The parent window to attach this one to. Note that no actual relationship is created (particularly, this window is not made a childWindow of the parent window). Default: nil.
onSide: The side of the specified point on which to attach this window. Default: MAPositionAutomatic.
distance: How far from the specified point this window should be. Default: 0.

Returns a new attached window.
170.3.4 Constructor(view as NSViewMBS, point as NSPointMBS = nil, window as NSWindowMBS = nil, onSide as Integer = 12, distance as Double = 0.0)


view: The view to display in the attached window. Must not be nil.
point: The point to which the attached window should be attached. If you are also specifying a parent window, the point should be in the coordinate system of that parent window. If you are not specifying a window, the point should be in the screen’s coordinate space. This value is required.
window: The parent window to attach this one to. Note that no actual relationship is created (particularly, this window is not made a childWindow of the parent window). Default: nil.
onSide: The side of the specified point on which to attach this window. Default: MAPositionAutomatic.
distance: How far from the specified point this window should be. Default: 0.

170.3.5 setBackgroundImage(image as NSImageMBS)


170.3.6 setPoint(point as NSPointMBS, side as Integer)


170.3.7 side as Integer

MBS MacExtras Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. Function: Which side the attached window is showing at. Notes: If you passed automatic side mode to Constructor or attachedWindow method, you can query here which side was chosen.
170.3.8 Properties

170.3.9 arrowBaseWidth as Double

Function: The arrow base width.
Notes:
Default is 20.
(Read and Write computed property)

170.3.10 arrowHeight as Double

Function: The height of the arrow.
Notes:
Default is 16.
(Read and Write computed property)

170.3.11 borderColor as NSColorMBS

Function: The border color.
Notes:
Default is white.
(Read and Write computed property)

170.3.12 borderWidth as Double

Function: The border width.
Notes:
Default is 2.
(Read and Write computed property)
170.3.13  cornerRadius as Double

Function: The corner radius.
Notes: Default is 8.
(Read and Write computed property)

170.3.14  drawsRoundCornerBesideArrow as boolean

Function: Whether to draw round corners beside arrow.
Notes: Default is true.
(Read and Write computed property)

170.3.15  hasArrow as boolean

Function: Whether the window shows an arrow.
Notes: Default is true.
(Read and Write computed property)

170.3.16  viewMargin as Double

Function: The view margin.
Notes: Default is 2.
(Read and Write computed property)

170.3.17  windowBackgroundColor as NSColorMBS

Function: The window background color.
Notes:
170.3. CLASS MAATTACHEDWINDOWMBS

Default is 25% dark gray.
(Read and Write computed property)

170.3.18 Constants

170.3.19 MAPositionAutomatic = 12

MBS MacExtras Plugin, Plugin Version: 11.2. **Function:** One of the position constants.  
**Notes:** automatic

170.3.20 MAPositionBottom = 1

MBS MacExtras Plugin, Plugin Version: 11.2. **Function:** One of the position constants.  
**Notes:** bottom

170.3.21 MAPositionBottomLeft = 10

MBS MacExtras Plugin, Plugin Version: 11.2. **Function:** One of the position constants.  
**Notes:** bottom left

170.3.22 MAPositionBottomRight = 11

MBS MacExtras Plugin, Plugin Version: 11.2. **Function:** One of the position constants.  
**Notes:** bottom right

170.3.23 MAPositionLeft = 0

MBS MacExtras Plugin, Plugin Version: 11.2. **Function:** One of the position constants.  
**Notes:** left

170.3.24 MAPositionLeftBottom = 5

MBS MacExtras Plugin, Plugin Version: 11.2. **Function:** One of the position constants.  
**Notes:** left bottom
170.3.25 MAPositionLeftTop = 4

MBS MacExtras Plugin, Plugin Version: 11.2. **Function:** One of the position constants. **Notes:** left top

170.3.26 MAPositionRight = 2

MBS MacExtras Plugin, Plugin Version: 11.2. **Function:** One of the position constants. **Notes:** right

170.3.27 MAPositionRightBottom = 7

MBS MacExtras Plugin, Plugin Version: 11.2. **Function:** One of the position constants. **Notes:** right bottom

170.3.28 MAPositionRightTop = 6

MBS MacExtras Plugin, Plugin Version: 11.2. **Function:** One of the position constants. **Notes:** right top

170.3.29 MAPositionTop = 3

MBS MacExtras Plugin, Plugin Version: 11.2. **Function:** One of the position constants. **Notes:** top

170.3.30 MAPositionTopLeft = 8

MBS MacExtras Plugin, Plugin Version: 11.2. **Function:** One of the position constants. **Notes:** top left

170.3.31 MAPositionTopRight = 9

MBS MacExtras Plugin, Plugin Version: 11.2. **Function:** One of the position constants. **Notes:** top right
170.4  Globals

170.4.1  DisableScreenUpdatesMBS

MBS MacOSX Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Temporarily disables redraw of the screen after changes to window geometry or window contents.

**Notes:**
It is appropriate to disable updates if you are moving or resizing multiple windows and you want all of the geometry changes to appear onscreen simultaneously. In most other cases, you should strive to avoid disabling screen updates. The window server will automatically re-enable updates (and print a message to the Console log) if you leave updates disabled for a sufficiently long period of time, currently about 1 second.

The window server records the number of calls to DisableScreenUpdates and does not re-enable updates until a matching number of calls to EnableScreenUpdates have been made.

170.4.2  EnableScreenUpdatesMBS

MBS MacOSX Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** Re-enables redraw of the screen after changes to window geometry or window contents.

**Notes:** Screen redraw is not actually enabled until the number of calls to EnableScreenUpdatesMBS matches the number of calls to DisableScreenUpdatesMBS.

170.4.3  AreFloatingWindowsVisibleMBS as boolean

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if floating windows are visible

**Example:**

```pascal
if not AreFloatingWindowsVisibleMBS then
  ShowAllFloatingWindowsMBS
end if
```

**Notes:** You should hide floating windows before showing a dialog.

170.4.4  CollapseAllWindowsMBS(collapse as boolean)

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Collapse all windows.

**Example:**
CollapseAllWindowsMBS true

Notes: Like pressing alt while you click on the collapse button with the mouse.

170.4.5 HideAllFloatingWindowsMBS

Example:
HideAllFloatingWindowsMBS

Notes: You should hide floating windows before showing a dialog.

170.4.6 ShowAllFloatingWindowsMBS

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Shows all floating windows.
Example:
ShowAllFloatingWindowsMBS

Notes: You should hide floating windows before showing a dialog.

170.5 class OverlayMBS

170.5.1 class OverlayMBS

MBS Overlay Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. Function: This class gives you a window overlaying all other windows with an alpha channel.
Example:

dim o as OverlayMBS
dim p as Picture

o=new OverlayMBS(100,100,300,300)
170.5. CLASS OVERLAYMBS

p=NewPicture(300,300,32)
p.Graphics.ForeColor=&c000000
p.Graphics.FillRect 0,0,300,300

o.Pict=p

p=NewPicture(300,300,32)
p.Graphics.ForeColor=&c000000
p.Graphics.FillOval 0,0,300,300
p.Graphics.FillOval 100,100,100,100

o.Mask=p

o.UpdateShow

// wait 5 seconds to see the window
DelayMBS 5

Notes:
Requires Mac OS X 10.3.9 or Windows 2000 or newer.

Cocoa implementation added with Mac OS X 10.4 class.
To support high resolution mode on Mac OS X high resolution displays, please make the picture+mask exact the double width and height of the window.

170.5.2 Methods

170.5.3 Close

MBS Overlay Plugin, Plugin Version: 8.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Calls the destructor. **Notes:** Closes the window and releases all memory used from the overlay.

170.5.4 Constructor(left as Integer, top as Integer, width as Integer, height as Integer, MacAttributes as Integer, WinExStyle as Integer, WinStyle as Integer)

MBS Overlay Plugin, Plugin Version: 10.1, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The advanced constructor where you can pass flags for Mac and Windows directly.
Notes:

Windows ExStyle flags:

```plaintext
WS_EX_DLGMODALFRAME & h00000001
WS_EX_NOPARENTNOTIFY & h00000004
WS_EX_TOPMOST & h00000008
WS_EX_ACCEPTFILES & h00000010
WS_EX_TRANSPARENT & h00000020
WS_EX_MDICHILD & h00000040
WS_EX_TOOLWINDOW & h00000080
WS_EX_WINDOWEDGE & h00000100
WS_EX_CLIENTEDGE & h00000200
WS_EX_CONTEXTHELP & h00000400
WS_EX_RIGHT & h00001000
WS_EX_LEFT & h00000000
WS_EX_RTLREADING & h00002000
WS_EX_LTRREADING & h00000000
WS_EX_LEFTSCROLLBAR & h00004000
WS_EX_RIGHTSCROLLBAR & h00000000
WS_EX_CONTROLPARENT & h00010000
WS_EX_STATICEDGE & h00020000
WS_EX_APPWINDOW & h00040000
WS_EX_OVERLAPPEDWINDOW (WS_EX_WINDOWEDGE + WS_EX_CLIENTEDGE)
WS_EX_PALETTEWINDOW (WS_EX_WINDOWEDGE + WS_EX_TOOLWINDOW +
                     WS_EX_TOPMOST)
WS_EX_LAYERED & h00080000
WS_EX_NOINHERITLAYOUT & h00100000
WS_EX_LAYOUTRTL & h00400000
WS_EX_NOACTIVATE & h08000000
```

Windows Style flags:

See also:

- 170.5.5 Constructor(left as Integer, top as Integer, width as Integer, height as Integer, WindowsNoActivate as boolean = false, WindowsTopMost as boolean=true)
170.5. CLASS OVERLAYMBS

WS_OVERLAPPED  & h00000000
WS_POPUP       & h80000000
WS_CHILD       & h40000000
WS_MINIMIZE    & h20000000
WS_VISIBLE     & h10000000
WS_DISABLED    & h08000000
WS_CLIPSIBLINGS& h04000000
WS_CLIPCHILDREN& h02000000
WS_MAXIMIZE    & h01000000
WS_CAPTION     & h00C00000
WS_BORDER      & h00800000
WS_DLGFRAME    & h00400000
WS_VSCROLL     & h00200000
WS_HSCROLL     & h00100000
WS_SYSMENU     & h00080000
WS_THICKFRAME  & h00040000
WS_GROUP       & h00020000
WS_TABSTOP     & h00010000
WS_MINIMIZEBOX & h00020000
WS_MAXIMIZEBOX & h00010000

```
dim m,p as Picture
static o as OverlayMBS

const rect_width=300
const rect_height=300
const round_rect_int=30

p=NewPicture(rect_width,rect_height,32)
m=NewPicture(rect_width,rect_height,32)

p.Graphics.DrawRect 0, 0, rect_width, rect_height
p.Graphics.FillRect 0, 0, rect_width, rect_height

// fill the window mask with around 10% transparency
m.Graphics.ForeColor = RGB( 20,20,20 )
m.Graphics.FillRoundRect 0, 0, rect_width, rect_height, round_rect_int, round_rect_int

// write text into picture
p(Graphics.ForeColor)& cFFFFFF

// make the text not transparent
m.Graphics.ForeColor=& c000000
m.Graphics.DrawString "Hello",10,20
```
o=new OverlayMBS(200,200,rect.width, rect.height, true)
o.Pict=p
o.Mask=m
o.UpdateShow

Notes:
Requires Mac OS X 10.3.9 or Windows 2000 or newer.
On success the handle property is not zero.

If WindowsNoActivate the window is setup to not become the front window. This may be a better setup for a toolbar like window.
If WindowsTopMost is false the window is not floating in front of all other windows.

Seems like WindowsNoActivate on Windows works better if you call Show(4) right after the constructor.
See also:

- 170.5.4 Constructor(left as Integer, top as Integer, width as Integer, height as Integer, MacAttributes as Integer, WinExStyle as Integer, WinStyle as Integer)

170.5.6  Hide

MBS Overlay Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. Function:
Hides the window.

170.5.7  InvalidateShadow

MBS Overlay Plugin, Plugin Version: 11.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
Invalidates the shadow of the window.
Notes:
As soon as possible the operation system will recalculate the shadow.
Works only on Mac OS X with Carbon or Cocoa window.

170.5.8  MacTransitionWindow(parent as window, effect as Integer, action as Integer) as Integer

MBS Overlay Plugin, Plugin Version: 9.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
Runs window transition.
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**Notes:** see other TransitionWindow method for details.

See also:

- 170.5.9 MacTransitionWindow(parent as window, effect as Integer, action as Integer, Async_ as boolean, duration as Double) as Integer
- 170.5.10 MacTransitionWindow(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer
- 170.5.11 MacTransitionWindow(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async_ as boolean, duration as Double) as Integer
- 170.5.12 MacTransitionWindow(parentWindowHandle as Integer, effect as Integer, action as Integer) as Integer
- 170.5.13 MacTransitionWindow(parentWindowHandle as Integer, effect as Integer, action as Integer, Async_ as boolean, duration as Double) as Integer
- 170.5.14 MacTransitionWindow(parentWindowHandle as Integer, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer
- 170.5.15 MacTransitionWindow(parentWindowHandle as Integer, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async_ as boolean, duration as Double) as Integer

170.5.9  MacTransitionWindow(parent as window, effect as Integer, action as Integer, Async_ as boolean, duration as Double) as Integer

MBS Overlay Plugin, Plugin Version: 9.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**

Runs window transition with additional parameters.

**Notes:** see other TransitionWindow method for details.

See also:

- 170.5.8 MacTransitionWindow(parent as window, effect as Integer, action as Integer) as Integer
- 170.5.10 MacTransitionWindow(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer
- 170.5.11 MacTransitionWindow(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async_ as boolean, duration as Double) as Integer
- 170.5.12 MacTransitionWindow(parentWindowHandle as Integer, effect as Integer, action as Integer) as Integer
- 170.5.13 MacTransitionWindow(parentWindowHandle as Integer, effect as Integer, action as Integer, Async_ as boolean, duration as Double) as Integer
- 170.5.14 MacTransitionWindow(parentWindowHandle as Integer, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer
170.5.10 MacTransitionWindow(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer

MBS Overlay Plugin, Plugin Version: 9.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
Runs window transition with rectangle.
Notes: see other TransitionWindow method for details.
See also:
- 170.5.8 MacTransitionWindow(parent as window, effect as Integer, action as Integer) as Integer
- 170.5.9 MacTransitionWindow(parent as window, effect as Integer, action as Integer, Async as boolean, duration as Double) as Integer
- 170.5.11 MacTransitionWindow(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async as boolean, duration as Double) as Integer
- 170.5.12 MacTransitionWindow(parentWindowHandle as Integer, effect as Integer, action as Integer) as Integer
- 170.5.13 MacTransitionWindow(parentWindowHandle as Integer, effect as Integer, action as Integer, Async as boolean, duration as Double) as Integer
- 170.5.14 MacTransitionWindow(parentWindowHandle as Integer, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer
- 170.5.15 MacTransitionWindow(parentWindowHandle as Integer, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async as boolean, duration as Double) as Integer

170.5.11 MacTransitionWindow(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async as boolean, duration as Double) as Integer

MBS Overlay Plugin, Plugin Version: 9.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
Runs window transition with additional parameters and rectangle.
Notes:
Transitions a window from one state to another with appropriate animation and sound.

Returns Mac OS error code like 0 for success, -1 for parameter error in the plugin or -50 for parameter error.
self: The window that should be transitioned.
parent: For use with kWindowSheetTransitionEffect. This is the parent window of the sheet.
effect: The type of visual effect to use.
action: The action to take on the window.
left: The rectangle to be used.
top: The rectangle to be used.
width: The rectangle to be used.
height: The rectangle to be used.
async: Whether the transition should run synchronously or asynchronously. If Async is true, TransitionWindow will return immediately, and the transition will run using an event loop timer. You must run your event loop for the transition to occur. If Async is false, TransitionWindow will block until the transition is completed.
duration: The duration of the fade, in seconds. For use with the Sheet, Slide, Fade, and Genie transition effects; ignored for other effects. You may pass 0 to use the default duration. The effect is not guaranteed to last precisely this long, but should be a close approximation.

Visual effects that are provided by TransitionWindow:

- **kWindowZoomTransitionEffect** 1 Finder-like zoom rectangles. Use with TransitionWindow and Show or Hide transition actions
- **kWindowSheetTransitionEffect** 2 Zoom in/out from parent. Use with TransitionWindowAndParent and Show or Hide transition actions. Available in Mac OS X, and in CarbonLib 1.5 and later.
- **kWindowSlideTransitionEffect** 3 Slide the window into its new position. Use with TransitionWindow and Move or Resize transition actions. Available in Mac OS X, and in CarbonLib 1.5 and later.
- **kWindowFadeTransitionEffect** 4 Fade the window into or out of visibility. Use with the Show or Hide transition actions. Available in Mac OS X 10.3 and later.
- **kWindowGenieTransitionEffect** 5 Use the Genie effect that the Dock uses to minimize or maximize a window to show or hide the window. Use with the Show or Hide transition actions. Available in Mac OS X 10.3 and later.

**Actions:** Modifications to window state that are provided by TransitionWindow

This is only for Carbon, not for Cocoa!

See also:

- 170.5.8 MacTransitionWindow(parent as window, effect as Integer, action as Integer) as Integer
- 170.5.9 MacTransitionWindow(parent as window, effect as Integer, action as Integer, Async as boolean,
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kWindowShowTransitionAction 1 Shows the window. Use with the Zoom, Sheet, Fade, or Genie transition effects. For the Zoom, Sheet, and Genie effects, the rectangle parameter is the global coordinates from which to start the animation; rectangle is optional for the Zoom and Sheet effects, and in that case, the animation begins at the center of the window. The Genie effect requires a rectangle parameter. The Fade effect does not use the inRect parameter.

kWindowHideTransitionAction 2 Hides the window. Use with the Zoom, Sheet, Fade, or Genie transition effects. For the Zoom, Sheet, and Genie effects, the rectangle parameter is the global coordinates at which to end the animation; Recangle is optional for the Zoom and Sheet effects, and in that case, the animation ends at the center of the window. The Genie effect requires a rectangle. The Fade effect does not use the inRect parameter.

kWindowMoveTransitionAction 3 Moves the window. Use with the Slide transition effect. The rectangle parameter is the global coordinates of the window’s new structure bounds; Rectangle must be provided. Available in Mac OS X, and in CarbonLib 1.5 and later.

kWindowResizeTransitionAction 4 Resizes the window. Use with the Slide transition effect. The rectangle parameter is the global coordinates of the window’s new structure bounds; Rectangle must be provided. Available in Mac OS X, and in CarbonLib 1.5 and later.

duration as Double) as Integer

• 170.5.10 MacTransitionWindow(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer

• 170.5.12 MacTransitionWindow(parentWindowHandle as Integer, effect as Integer, action as Integer) as Integer

• 170.5.13 MacTransitionWindow(parentWindowHandle as Integer, effect as Integer, action as Integer, Async_ as boolean, duration as Double) as Integer

• 170.5.14 MacTransitionWindow(parentWindowHandle as Integer, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer

• 170.5.15 MacTransitionWindow(parentWindowHandle as Integer, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async_ as boolean, duration as Double) as Integer

170.5.12 MacTransitionWindow(parentWindowHandle as Integer, effect as Integer, action as Integer) as Integer


Notes: see other TransitionWindow method for details.

See also:

• 170.5.8 MacTransitionWindow(parent as window, effect as Integer, action as Integer) as Integer
• 170.5.9 MacTransitionWindow(parent as window, effect as Integer, action as Integer, Async_ as boolean, duration as Double) as Integer
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- 170.5.10 MacTransitionWindow(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer 19972

- 170.5.11 MacTransitionWindow(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async as boolean, duration as Double) as Integer 19972

- 170.5.13 MacTransitionWindow(parentWindowHandle as Integer, effect as Integer, action as Integer, Async as boolean, duration as Double) as Integer 19975

- 170.5.14 MacTransitionWindow(parentWindowHandle as Integer, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer 19976

- 170.5.15 MacTransitionWindow(parentWindowHandle as Integer, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async as boolean, duration as Double) as Integer 19976

170.5.13 MacTransitionWindow(parentWindowHandle as Integer, effect as Integer, action as Integer, Async as boolean, duration as Double) as Integer

Notes: see other TransitionWindow method for details.
See also:

- 170.5.8 MacTransitionWindow(parent as window, effect as Integer, action as Integer) as Integer 19970

- 170.5.9 MacTransitionWindow(parent as window, effect as Integer, action as Integer, Async as boolean, duration as Double) as Integer 19971

- 170.5.10 MacTransitionWindow(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer 19972

- 170.5.11 MacTransitionWindow(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async as boolean, duration as Double) as Integer 19972

- 170.5.12 MacTransitionWindow(parentWindowHandle as Integer, effect as Integer, action as Integer) as Integer 19974

- 170.5.14 MacTransitionWindow(parentWindowHandle as Integer, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer 19976

- 170.5.15 MacTransitionWindow(parentWindowHandle as Integer, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async as boolean, duration as Double) as Integer 19976
170.5.14  MacTransitionWindow(parentWindowHandle as Integer, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer

MBS Overlay Plugin, Plugin Version: 9.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Function:**
Runs window transition with rectangle.
**Notes:** see other TransitionWindow method for details.
See also:

- 170.5.8  MacTransitionWindow(parent as window, effect as Integer, action as Integer) as Integer 19970
- 170.5.9  MacTransitionWindow(parent as window, effect as Integer, action as Integer, Async_ as boolean, duration as Double) as Integer 19971
- 170.5.10 MacTransitionWindow(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer 19972
- 170.5.11 MacTransitionWindow(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async_ as boolean, duration as Double) as Integer 19972
- 170.5.12 MacTransitionWindow(parentWindowHandle as Integer, effect as Integer, action as Integer) as Integer 19974
- 170.5.13 MacTransitionWindow(parentWindowHandle as Integer, effect as Integer, action as Integer, Async_ as boolean, duration as Double) as Integer 19975
- 170.5.15 MacTransitionWindow(parentWindowHandle as Integer, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async_ as boolean, duration as Double) as Integer 19976

170.5.15  MacTransitionWindow(parentWindowHandle as Integer, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async_ as boolean, duration as Double) as Integer

MBS Overlay Plugin, Plugin Version: 9.4, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Function:**
Runs window transition with additional parameters and rectangle.
**Notes:**
Transitions a window from one state to another with appropriate animation and sound.

Returns Mac OS error code like 0 for success, -1 for parameter error in the plugin or -50 for parameter error.

Visual effects that are provided by TransitionWindow:
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self: The window that should be transitioned.
parent: For use with kWindowSheetTransitionEffect. This is the parent window of the sheet.
effect: The type of visual effect to use.
action: The action to take on the window.
left: The rectangle to be used.
top: The rectangle to be used.
width: The rectangle to be used.
height: The rectangle to be used.
async: Whether the transition should run synchronously or asynchronously. If Async is true, TransitionWindow will return immediately, and the transition will run using an event loop timer. You must run your event loop for the transition to occur. If Async is false, TransitionWindow will block until the transition is completed.
duration: The duration of the fade, in seconds. For use with the Sheet, Slide, Fade, and Genie transition effects; ignored for other effects. You may pass 0 to use the default duration. The effect is not guaranteed to last precisely this long, but should be a close approximation.

Actions: Modifications to window state that are provided by TransitionWindow

This is only for Carbon, not for Cocoa!
See also:

- 170.5.8 MacTransitionWindow(parent as window, effect as Integer, action as Integer) as Integer 19970
- 170.5.9 MacTransitionWindow(parent as window, effect as Integer, action as Integer, Async as boolean, duration as Double) as Integer 19971
- 170.5.10 MacTransitionWindow(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer 19972
- 170.5.11 MacTransitionWindow(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async as boolean, duration as Double) as Integer 19972
- 170.5.12 MacTransitionWindow(parentWindowHandle as Integer, effect as Integer, action as Integer) as Integer 19974
- 170.5.13 MacTransitionWindow(parentWindowHandle as Integer, effect as Integer, action as Integer, Async as boolean, duration as Double) as Integer 19975
- 170.5.14 MacTransitionWindow(parentWindowHandle as Integer, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer 19976
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170.5.16 Move(left as Integer, top as Integer)

MBS Overlay Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Moves the window on the screen to the given position.

170.5.17 Resize(width as Integer, height as Integer)

MBS Overlay Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Resizes the window. **Notes:** You need to provide bigger picture before you call this method.
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170.5.18 SetFocus

MBS Overlay Plugin, Plugin Version: 17.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The method to call to set focus to the overlay window. **Notes:** Works for Windows and macOS Cocoa.

170.5.19 Show(WindowsShowMode as Integer = 0)

MBS Overlay Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Shows the window onscreen. **Notes:** Values for the Windows show mode:

- default 0
- SW_SHOWNORMAL 1
- SW_NORMAL 1
- SW_SHOWMINIMIZED 2
- SW_SHOWMAXIMIZED 3
- SW_MAXIMIZE 3
- SW_SHOWNOACTIVATE 4
- SW_SHOW 5
- SW_MINIMIZE 6
- SW_SHOWMINNOACTIVE 7
- SW_SHOWNA 8
- SW_RESTORE 9
- SW_SHOWDEFAULT 10
- SW_FORCEMINIMIZE 11

170.5.20 Update

MBS Overlay Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Updates the window. **Notes:** After you draw new content into the pict and mask pictures, you call this method to apply changes to the window. See also:

- 170.5.21 Update(NSImage as Variant)

170.5.21 Update(NSImage as Variant)

MBS Overlay Plugin, Plugin Version: 14.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Updates overlay window with given NSImage.
Notes:

Please pass NSImageMBS object.

Version 16.2 and newer also accepts CGImageMBS object here.
If you pass picture, we use it as CGImage or NSImage depending on what picture type you pass.
See also:

- 170.5.20 Update

170.5.22 UpdateShow

Notes: Runs Update and Show internally.

170.5.23 Properties

170.5.24 Alpha as Double

Notes:
0 is invisible and 1.0 is visible.
(Read and Write property)

170.5.25 AutoCaptureMouse as Boolean

Notes:
If you return true from MouseDown the mouse is caught. This way you can get the drag events even if the mouse moves out of the window.
On MouseUp the mouse is released.
(Read and Write property)
170.5.26 CurrentImage as Variant

MBS Overlay Plugin, Plugin Version: 14.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Last image drawn.  
**Notes:**  
For debugging only.  
CGImageMBS or NSImageMBS depending on what you set.  
(Read only property)

170.5.27 Height as Integer

MBS Overlay Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The height of the window.  
**Notes:**  
Using Resize method is more efficient than assigning width and height properties.  
(Read and Write property)

170.5.28 IgnoreMouseClicks as Boolean

MBS Overlay Plugin, Plugin Version: 8.7, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Whether this window should react to mouse clicks.  
**Notes:**  
In Mac OS X 10.7 and newer setting IgnoreMouseClicks = false does not give the same behavior as without setting this property before.  
(Read and Write property)

170.5.29 Left as Integer

MBS Overlay Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The position of the window.  
**Example:**

```
static o as OverlayMBS // keep the variable global somewhere. Static or part of a module or in app class.

o = new OverlayMBS(100,100,100,100)
o.Pict = LogoMBS(100)
o.mask = LogoMBS(100)
o.Left = 200
```
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o.UpdateShow

Notes:
Using Move method is more efficient than assigning left and top properties.
(Read and Write property)

170.5.30 Mask as Picture

MBS Overlay Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. Function:
The mask for the window.
Notes:
You need to create and assign your own image.
If you assign nil for the mask, the plugin uses the mask or alpha channel of the picture.
(Read and Write property)

170.5.31 NSView as Variant

MBS Overlay Plugin, Plugin Version: 15.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
The NSView showing the content of the overlay.
Notes: (Read only property)

170.5.32 NSWindow as Variant

MBS Overlay Plugin, Plugin Version: 10.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:
Returns a reference to the NSWindowMBS object which you can use to make additional settings to the overlay
window.
Example:

```
dim o as OverlayMBS // your window

dim n as NSWindowMBS = o.NSWindow // this window should not hide if app hides
n.canHide = false
```

Notes:
Only for the Cocoa target in Real Studio.
170.5. CLASS OVERLAYMBS

(Read only property)

170.5.33  Pict as Picture

MBS Overlay Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The picture for the window content.
**Notes:**
You need to provide your own picture here.
Pict and Mask pictures must have the same size.

Alpha Channel Pictures are not really supported.
But for Mac OS X an alpha channel picture does currently work.
(Read and Write property)

170.5.34  Top as Integer

MBS Overlay Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The position of the window.
**Example:**

```plaintext
static o as OverlayMBS // keep the variable global somewhere. Static or part of a module or in app class.

o = new OverlayMBS(100,100,100,100)

o.Pict = LogoMBS(100)
o.mask = LogoMBS(100)

o.top = 200

o.UpdateShow
```

**Notes:**
Using Move method is more efficient than assigning left and top properties.
(Read and Write property)

170.5.35  Visible as Boolean

MBS Overlay Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** Whether the window is visible.
Example:

```plaintext
Dim o as OverlayMBS
// ....
o.visible=true
```

Notes:

True if visible, false if hidden.
(Read and Write property)

170.5.36 Width as Integer

MBS Overlay Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The width of the window.
**Notes:**
Using Resize method is more efficient than assigning width and height properties.
(Read and Write property)

170.5.37 WindowHandle as Integer

MBS Overlay Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The internal used window handle.
**Notes:**
On Mac OS a WindowRef and on Windows a HWND.
(Read and Write property)

170.5.38 WindowID as Integer

MBS Overlay Plugin, Plugin Version: 10.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Queries the CoreGraphics Window ID for the given window.
**Notes:**
Returns 0 on any error.
This ID can be used for CGWindowListCreateImageMBS.
(Read only property)
170.5. **CLASS OVERLAYMBS**

170.5.39 **hasShadow as boolean**

MBS Overlay Plugin, Plugin Version: 13.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether the window has a shadow. **Notes:** (Read and Write computed property)

170.5.40 **Title as string**

MBS Overlay Plugin, Plugin Version: 11.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The title of the window. **Notes:** This name is not visible as the window has no title bar. But if you see the window in some window list, this title property will give your overlay window a name. (Read and Write computed property)

170.5.41 **WindowGroupHandle as Integer**

MBS Overlay Plugin, Plugin Version: 9.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The window group of that window. **Notes:** Keep the group reference when setting this value as the reference count is not retained. (Read and Write computed property)

170.5.42 **WinIsTopMost as boolean**

MBS Overlay Plugin, Plugin Version: 12.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Whether a window is staying on the top of the other windows. **Notes:** If true the window stays in front of other windows. Default is false for Real Studio windows and true for overlays. (Read and Write computed property)

170.5.43 **Events**

170.5.44 **GotFocus**

MBS Overlay Plugin, Plugin Version: 17.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The event called when focus is set on the overlay window.
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Notes: Works for Windows and macOS Cocoa.

170.5.45 **KeyDown(key as String, keyCode as Integer, modifiers as integer) as Boolean**

MBS Overlay Plugin, Plugin Version: 17.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The key down event. **Notes:** The plugin translates keycodes into key as text, but also provides keycode and modifier flags. Works for Windows and macOS Cocoa.

170.5.46 **KeyUp(key as String, keyCode as Integer, modifiers as integer) as Boolean**

MBS Overlay Plugin, Plugin Version: 17.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The key up event. **Notes:** The plugin translates keycodes into key as text, but also provides keycode and modifier flags. Works for Windows and macOS Cocoa.

170.5.47 **LostFocus**

MBS Overlay Plugin, Plugin Version: 17.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** The event called when focus is lost on the overlay window. **Notes:** Works for Windows and macOS Cocoa.

170.5.48 **menuForEvent(NSEvent as variant) as Variant**

MBS Overlay Plugin, Plugin Version: 17.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Provide a contextual menu for Cocoa Mac. **Notes:** NSEvent is an NSEventMBS object. Please return NSMenuMBS object. (and please keep a reference somewhere)
170.5. Class OverlayMBS

170.5.49 MouseDown(x as Integer, y as Integer, modifiers as Integer) as boolean

MBS Overlay Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:**
This event is called when the user clicks with the mouse inside the window.
**Notes:**
Return true if you handled this event.
modifiers: Platform dependent keyboard modifiers. Different values for Carbon, Cocoa and Windows!

For Cocoa to set mouse cursor, please use NSCursorMBS class.

170.5.50 MouseDragged(x as Integer, y as Integer, modifiers as Integer) as boolean

MBS Overlay Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:**
This event is called when the user moves the mouse over the window while the mouse is pressed.
**Notes:**
Return true if you handled this event.
modifiers: Platform dependent keyboard modifiers. Different values for Carbon, Cocoa and Windows!

For Cocoa to set mouse cursor, please use NSCursorMBS class.

170.5.51 MouseEnter(x as Integer, y as Integer, modifiers as Integer)

MBS Overlay Plugin, Plugin Version: 13.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:**
This is event is called when mouse enters window.
**Notes:**
modifiers: Platform dependent keyboard modifiers. Different values for Carbon, Cocoa and Windows!

For Cocoa to set mouse cursor, please use NSCursorMBS class.

170.5.52 MouseExit(x as Integer, y as Integer, modifiers as Integer)

MBS Overlay Plugin, Plugin Version: 13.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:**
This is event is called when mouse leaves window.
**Notes:**
modifiers: Platform dependent keyboard modifiers. Different values for Carbon, Cocoa and Windows!
For Cocoa to set mouse cursor, please use NSCursorMBS class.

### 170.5.53 MouseMoved(x as Integer, y as Integer, modifiers as Integer) as boolean

MBS Overlay Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** This event is called when the user moves the mouse over the window. **Notes:**
Return true if you handled this event.
modifiers: Platform dependent keyboard modifiers. Different values for Carbon, Cocoa and Windows!

For Cocoa to set mouse cursor, please use NSCursorMBS class.

### 170.5.54 MouseUp(x as Integer, y as Integer, modifiers as Integer) as boolean

MBS Overlay Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** This event is called when the user releases the mousebutton inside the window. **Notes:**
Return true if you handled this event.
modifiers: Platform dependent keyboard modifiers. Different values for Carbon, Cocoa and Windows!

For Cocoa to set mouse cursor, please use NSCursorMBS class.

### 170.5.55 MouseWheel(x as Integer, y as Integer, dx as Double, dy as Double, modifiers as Integer)

MBS Overlay Plugin, Plugin Version: 13.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** This event is called when the user uses the mouse wheel inside the window. **Notes:**
modifiers: Platform dependent keyboard modifiers. Different values for Carbon, Cocoa and Windows!

For Cocoa to set mouse cursor, please use NSCursorMBS class.
170.5.56 WindowBoundsChanged

MBS Overlay Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** This event is called whenever the size of the window changes. **Notes:** Can also be called on position changes.

170.5.57 WindowClosed

MBS Overlay Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** This event is called when the window is closed.

170.5.58 WindowHidden

MBS Overlay Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** This event is called when the window is hidden. **Notes:** Cocoa support added for version 14.0.

170.5.59 WindowShown

MBS Overlay Plugin, Plugin Version: 8.6, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Function:** This event is called when the window is shown. **Notes:** Cocoa support added for version 14.0.

170.5.60 Constants

170.5.61 kModifierFlagCommand = 1048576

MBS Overlay Plugin, Plugin Version: 17.4. **Function:** One of the modifier constants. **Notes:**
The command key is pressed.
Use with BitwiseAnd(Modifiers, kModifierFlagCommand) <>0 to check if the flag is set in key events.

170.5.62 kModifierFlagControl = 262144

MBS Overlay Plugin, Plugin Version: 17.4. **Function:** One of the modifier constants. **Notes:**
The control key is pressed.
Use with BitwiseAnd(Modifiers, kModifierFlagControl) <>0 to check if the flag is set in key events.

170.5.63  kModifierFlagOption = 524288

MBS Overlay Plugin, Plugin Version: 17.4. **Function:** One of the modifier constants.
**Notes:**
The option (alt) key is pressed.
Use with BitwiseAnd(Modifiers, kModifierFlagOption) <>0 to check if the flag is set in key events.

170.5.64  kModifierFlagShift = 131072

MBS Overlay Plugin, Plugin Version: 17.4. **Function:** One of the modifier constants.
**Notes:**
The shift key is pressed.
Use with BitwiseAnd(Modifiers, kModifierFlagShift) <>0 to check if the flag is set in key events.
170.6. CLASS WINDOW

170.6 class Window

170.6.1 class Window

Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Extends Realbasic’s Window Class.

**Example:**

```
window1.HasNoTitleBarMBS = true
```

**Notes:** In Realbasic 2005 and newer you need to use `self` in front of the method as the property name alone is not accepted.

170.6.2 Methods

170.6.3 BackingScaleFactorMBS as Double

MBS Util Plugin, Plugin Version: 12.3, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the scale factor representing the number of backing store pixels corresponding to each linear unit in window space on this window.

**Notes:**
This is generally only necessary when building a bitmap context or image whose resolution needs to match that of a particular Window. Note that a Window’s backing scale factor can change over time, such as when the window moves from one display to another, or when a display’s resolution changes, so clients should not cache the value returned by this function.

If platform does not support scaling factor, we return 1.0. (on Windows, Linux and older Mac OS X) Supported for Carbon and Cocoa windows.

For apps which are not enabled for retina support, the function returns 1. So you only see 2 here if app is Cocoa, display is retina and info.plist has the NSHighResolutionCapable key.

170.6.4 CGContextMBS as CGContextMBS

MBS MacCG Plugin, Plugin Version: 2.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a new CGContextMBS object for the given Window.

**Example:**

```
dim CGContext as CGContextMBS
dim OverlayPic as Picture=LogoMBS(500)
dim contentpicture as CGImageMBS= CGCreateImageMBS(OverlayPic)
```
CGContext=window1.CGContextMBS

CGContext.ClearRect CGMakeRectMBS(0, 0, OverlayPic.width, OverlayPic.height)
CGContext.DrawPicture contentpicture, CGMakeRectMBS(0, 0, OverlayPic.width, OverlayPic.height)

Notes:
Requires Mac OS X to work.
Please make sure the CGContextMBS object is released in the paint event if you use it there, so all the drawings are flushed. Not releasing it may be visible in missing statictext or other strange graphics effects.

Version 9.8 adds support for Cocoa target.
But on a Cocoa window the context is not always available, so in the window paint event, you can use GetCurrentCGContextMBS.

170.6.5 CleanUpTransparentMBS(refValue as Integer)

MBS Util Plugin, Plugin Version: 5.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: Cleans up transparency support for a REALbasic window.
Example:
    dim p as Integer // property on Windows

    p = window1.MakeTransparentMBS

    // later in close event

    window1.CleanUpTransparentMBS p

Notes:
Call this in the close event of a window passing the value you got from the MakeTransparentMBS call. Linux supported added with 14.0, but works only with Linux desktop which support alpha channel.

170.6.6 ClearTransparencyMBS

170.6. CLASS WINDOW

170.6.7 CollapsibleMBS as boolean

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if this window can be collapsed.
**Example:**
MsgBox str(window1.CollapsibleMBS)

**Notes:**
Collapseable windows are the normal document windows.
You can’t collapse dialogs or floating windows well.
In Realbasic 2005 and newer you need to use self. in front of the method as the propertyname alone is not accepted.

Added Cocoa support in plugin version 10.0.

170.6.8 ConstrainWindowToScreenMBS(animate as boolean)

MBS Util Plugin, Plugin Version: 10.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Makes sure the window is on one screen visible.
**Notes:** Implemented on Mac for both Carbon and Cocoa.

170.6.9 DrawIntoDockTileMBS(pic as CGImageMBS, clearbeforedrawing as boolean) as Integer

MBS MacCG Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Draws into a window’s dock tile.
**Notes:**
Returns a Mac OS error code (-1 for function not available and 0 for okay).
If clearbeforedrawing=true then the area is cleared before the image is drawn.

Not available on Cocoa.

170.6.10 GetWindowBoundsMBS(byref x as Integer, byref y as Integer, byref w as Integer, byref h as Integer) as Integer

MBS Util Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Queries the window structure size.
Example:

// a Finder like Zoom from the top left of the screen to the center

dim h as Integer
dim i as Integer
dim w as Integer
dim x as Integer
dim y as Integer
dim l as Integer
dim r as IntegerRectMBS
dim e as Integer
dim TheWindow as window // the window

e=TheWindow.GetWindowBoundsMBS(x,y,w,h)

x=(screen(0).Width-300)/2
y=(screen(0).Height-300)/2

w=300
h=300
e=TheWindow.SetWindowBoundsMBS(x,y,w,h)

TheWindow.top=y
TheWindow.left=x
TheWindow.height=h
TheWindow.width=w

//Center the window

x=0
y=0
w=0
h=0

call TheWindow.TransitionWindowMBS(nil,1,1,x,y,w,h,False,5.0)

Notes:

Returns -1 on Windows or Linux.
Returns a Mac OS error code.
170.6. CLASS WINDOW

170.6.11 GTKWindow as GTKWindowMBS

MBS Linux Plugin, Plugin Version: 13.0, Console & Web: No, Mac: No, Win: No, Linux: Yes. **Function:** Queries a GTKWindow object for this window. **Notes:**

Returns only a valid object on linux.
On other platforms, this function returns nil.

170.6.12 InvalidateShadowMBS

MBS MacOSX Plugin, Plugin Version: 8.7, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** This method causes a window’s shadow to be recalculated. **Notes:**

InvalidateShadowMBS is not typically used by applications. However, it may be useful for applications with customized window frames that change shape dynamically; in this case, after the application has drawn the new window shape, the window shadow must be recalculated to follow the new window shape.

This method causes the window shadow to be immediately recalculated and redrawn based on the current contents of the window’s back buffer. For best performance and visual appearance, you should follow these steps when invalidating a window shadow: disable updates with DisableScreenUpdatesMBS, draw, flush, invalidate the shadow, and enable updates. For a compositing window, after invalidating any views that should be redrawn, you will need to explicitly draw and flush using HIWindowFlush, rather than waiting for the event loop to draw and flush the window, because you cannot disable updates or invalidate the window shadow if drawing is done via the event loop.

Requires Mac OS X 10.4 and should do nothing on 10.3.

170.6.13 IsFullScreenMBS as Boolean

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Queries whether window is fullscreen. **Notes:**

Indicates that a window has fullscreen appearance.
A fullscreen window does not draw its titlebar, and may have special handling for its toolbar. Available in Mac OS X v10.7 and later.
170.6.14  MakeTransparentMBS as Integer

MBS Util Plugin, Plugin Version: 5.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Installs transparency support to a REALbasic window.

**Example:**

```plaintext
dim p as Integer // property on Windows

p = window1.MakeTransparentMBS

// later in close event

window1.CleanUpTransparentMBS p
```

**Notes:**

Will return non zero value if successful.
The window doesn’t change if you don’t use the CGContextMBS property.

Requires Mac OS X, Windows 2000 or Windows XP to work. The window must be a document window.

Set MacProcID of the window to 1104 and you can make it transparent without a title bar. (on Mac OS X)

With plugin version 11.1, we now return a value which should store with the window. Later in the Close event, you call CleanUpTransparentMBS passing this value.

Added Cocoa support in 11.3 plugins.
Linux supported added with 14.0, but works only with Linux desktop which support alpha channel. Calls to MakeTransparentMBS and CleanUpTransparentMBS are not required for Linux.

170.6.15  NSPanelMBS as NSPanelMBS

MBS MacBase Plugin, Plugin Version: 12.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Creates a NSPanel for the given Real Studio window.

**Example:**

```plaintext
MsgBox window1.NSPanelMBS.Title
```

**Notes:** Works only for Cocoa Windows in Cocoa target which are floating panels.
170.6. CLASS WINDOW

170.6.16 NSToolbarMBS as NSToolbarMBS

**Function:** The window’s toolbar.
**Notes:**
So you can get the toolbar without going over NSWindowMBS.
But there you can assign a new toolbar...

170.6.17 NSWindowMBS as NSWindowMBS

**Function:** Creates a NSWindow for the given REALbasic window.
**Example:**
MsgBox window1.NSWindowMBS.Title

**Notes:** Works only for Cocoa Windows in Cocoa target and for Carbon Windows in carbon targets.

170.6.18 RemoveWindowProxyIconMBS

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No.
**Function:** Removes any Proxy Icon from the Window.
**Example:**
mainwindow.RemoveWindowProxyIconMBS

**Notes:**
Requires Mac OS 8.5 or newer.
In Realbasic 2005 and newer you need to use self. in front of the method as the propertyname alone is not accepted.

170.6.19 RootViewMBS as HIViewMBS

**Function:** Returns the root view for a window.
**Deprecated:** This item is deprecated and should no longer be used. You can use NSViewMBS instead.
**Notes:**
Nil on any error.
Note that composite windows and non-composite windows have different view hierarchies.
Requires Mac OS X 10.2 to work.

Returns nil on Cocoa Windows.

### 170.6.20 ScreenshotWindowMBS as picture

MBS MacOSX Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the content of the window buffer on Mac OS X.

**Example:**

```vbnet
dim p as Picture
p=mainwindow.screenshotWindowMBS
```

**Notes:**

Only for Mac OS X. Image is taken from window back buffer.
This will not capture overlay windows.

On Realbasic 2006, please add a `self.` on front of the method call in case you want to use the method on the current window.

### 170.6.21 ScreenshotWindowRectMBS(left as Integer, top as Integer, width as Integer, height as Integer) as picture

MBS MacOSX Plugin, Plugin Version: 3.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns a part of the content of the window buffer on Mac OS X.

**Example:**

```vbnet
dim p as picture
p=mainwindow.ScreenshotWindowRectMBS(100,100,200,200)
```

**Notes:**

Only for Mac OS X. Image is taken from window back buffer.
This will not capture overlay windows.

On Realbasic 2006, please add a `self.` on front of the method call in case you want to use the method on the current window.
170.6.22 SetContentBorderThicknessMBS(left as Double, top as Double, right as Double, bottom as Double) as boolean

MBS Util Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sets the thickness of the window border that extends into the content area of the window. **Deprecated:** This item is deprecated and should no longer be used. You can use NSWindowMBS for Cocoa instead. **Notes:**

In Mac OS X 10.5, windows can have a gradient on the top and bottom section of the window which have the appearance and behavior of being part of the window frame. The window frame gradient is drawn or extended into this border and the window is draggable from this area. Functionally, the area actually extends into the content of the window where the client can embed controls or print status messages a la iTunes. This can be set on all non-floating windows.

Requires Mac OS X 10.5 and a carbon composite window. For Cocoa, please use methods in NSWindowMBS class.

left/top/right/bottom: Values that indicates how much of the content area is used for the frame gradient drawing. Currently only the top and bottom fields are allowed. If any value other than 0 is used for the left or right fields, this function will return false.

Returns true on success and false on failure.

---

170.6.23 SetTransparencyMBS(value as Integer) as boolean

MBS Util Plugin, Plugin Version: 5.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Your window can have transparency on Mac OS X. **Example:**

```pascal
if window1.SetTransparencyMBS(127) then
  'fine
else
  'error
end if
```

**Notes:**

Use values between 0 and 255. Requires Mac OS X, Windows 2000 or Windows XP to work. May be limited to simple windows like normal document windows.
You need to call MakeTransparent before to install transparency. 
(this function was replaced in v4.4)
Linux supported added with 14.0, but works only with Linux desktop which support alpha channel.

**170.6.24 SetWindowBoundsMBS(x as Integer, y as Integer, w as Integer, h as Integer) as Integer**

MBS Util Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Sets the window structure size.

**Example:**

call window1.SetWindowBoundsMBS(100,100,100,100)

**Notes:**

Returns -1 on Windows or Linux.
Returns a Mac OS error code.

**170.6.25 SetWindowFeedbackSettingMBS(Feedback as Integer, value as Variant) as Boolean**

MBS Win Plugin, Plugin Version: 17.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Sets the feedback configuration for a window.

**Example:**

```
const FEEDBACK_TOUCH_CONTACTVISUALIZATION = 1
const FEEDBACK_PEN_BARRELVISUALIZATION = 2
const FEEDBACK_PEN_TAP = 3
const FEEDBACK_PEN_DOUBLETAP = 4
const FEEDBACK_PEN_PRESSANDHOLD = 5
const FEEDBACK_PEN_RIGHTTAP = 6
const FEEDBACK_TOUCH_TAP = 7
const FEEDBACK_TOUCH_DOUBLETAP = 8
const FEEDBACK_TOUCH_PRESSANDHOLD = 9
const FEEDBACK_TOUCH_RIGHTTAP = 10
const FEEDBACK_GESTURE_PRESSANDTAP = 11
```

```
dim r as Boolean = self.SetWindowFeedbackSettingMBS(FEEDBACK_TOUCH_TAP, true)
if r then
    dim value as Boolean
    dim b as Boolean = self.WindowFeedbackSettingMBS(FEEDBACK_TOUCH_TAP, value)
```
if b then
MsgBox "WindowFeedbackSettingMBS: \""+str(value)
end if
end if

Notes:
Returns true if successful; otherwise, returns false.
Value can be nil to reset value. Or true/false to set it.
Requires Windows 8 or Windows Server 2012 in desktop apps only.

<table>
<thead>
<tr>
<th>Constant Name</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FEEDBACK_TOUCH_CONTACTVISUALIZATION</td>
<td>1</td>
<td>Feedback for a touch contact event.</td>
</tr>
<tr>
<td>FEEDBACK_PEN_BARRELVISUALIZATION</td>
<td>2</td>
<td>Feedback for a pen barrel-button event.</td>
</tr>
<tr>
<td>FEEDBACK_PEN_TAP</td>
<td>3</td>
<td>Feedback for a pen tap event.</td>
</tr>
<tr>
<td>FEEDBACK_PEN_DOUBLETAP</td>
<td>4</td>
<td>Feedback for a pen double-tap event.</td>
</tr>
<tr>
<td>FEEDBACK_PEN_PRESSANDHOLD</td>
<td>5</td>
<td>Feedback for a pen press-and-hold event.</td>
</tr>
<tr>
<td>FEEDBACK_PEN_RIGHTTAP</td>
<td>6</td>
<td>Feedback for a pen right-tap event.</td>
</tr>
<tr>
<td>FEEDBACK_TOUCH_TAP</td>
<td>7</td>
<td>Feedback for a touch tap event.</td>
</tr>
<tr>
<td>FEEDBACK_TOUCH_DOUBLETAP</td>
<td>8</td>
<td>Feedback for a touch double-tap event.</td>
</tr>
<tr>
<td>FEEDBACK_TOUCH_RIGHTTAP</td>
<td>10</td>
<td>Feedback for a touch right-tap event.</td>
</tr>
<tr>
<td>FEEDBACK_GESTURE_PRESSANDTAP</td>
<td>11</td>
<td>Feedback for a press-and-tap gesture.</td>
</tr>
</tbody>
</table>

170.6.26  SetWindowIconMBS(Type as Integer, File as FolderItem, IconID as Integer) as Boolean

MBS Win Plugin, Plugin Version: 7.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Sets the window icon using the icon in the file.
**Example:**

call window1.SetWindowIconMBS(0,getfolderitem("icon.ico"),1)

Notes:
Returns true on success and false on failure.
What image depths are used and supported depends on the Windows version.

Type is 0 for a small icon and 1 for a big icon.
See also:

• 170.6.27 SetWindowIconMBS(Type as Integer, Icon as Picture, Mask as Picture) as Boolean
170.6.27 SetWindowIconMBS(Type as Integer, Icon as Picture, Mask as Picture) as Boolean

MBS Win Plugin, Plugin Version: 7.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Sets the window icon using the given picture with mask.

**Example:**

```vbnet
dim p as Picture
dim m as Picture

// random colored circle image
p=NewPicture(16,16,32)
p.Graphics.ForeColor=& c000000
p.Graphics.FillRect 0,0,16,16
p.Graphics.ForeColor=rgb(rnd*256,rnd*256,rnd*256)
p.Graphics.Filloval 0,0,16,16

// circle mask
m=NewPicture(16,16,32)
m.Graphics.ForeColor=& cFFFFFF // transparent
m.Graphics.FillRect 0,0,16,16
m.Graphics.ForeColor=& c000000 // color
m.Graphics.Filloval 0,0,16,16

Canvas1.Backdrop=p // show in canvas
Canvas2.Backdrop=m

call window1.SetWindowIconMBS(0,p,m)
```

**Notes:**
The mask picture is converted to black/white.
What image depths are used and supported depends on the Windows version.
Returns true on success and false on failure.

Possible values for type:

- **ICON_BIG = 1** Set the large icon for the window.
- **ICON_SMALL = 0** Set the small icon for the window.

See also:

- 170.6.26 SetWindowIconMBS(Type as Integer, File as FolderItem, IconID as Integer) as Boolean 20001
170.6. CLASS WINDOW

170.6.28 SetWindowMaskMBS(p as picture, redraw as Boolean, transparent-Color as color) as Boolean

MBS Win Plugin, Plugin Version: 3.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Sets the mask of a window.
**Notes:**
Redraw decides whether the window is redrawn after it has been changed.
Returns true if successful.

If you want to do the same on Mac OS X, check the example projects "transparent window" and the Photoshop Splash Screen example.

On Mac OS 9 you need a solution with a WDEF Resource which is not part of the plugin collection.

170.6.29 SetWindowProxyIconMBS(type as string,creator as string)

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** That's the icon to the window which belongs to the combination of type and creator codes.
**Example:**
mainwindow.SetWindowProxyIconMBS("RbBF","RBv2") // Add RB Doc Icon

**Deprecated:** This item is deprecated and should no longer be used. You can use NSWindowMBS for Cocoa instead. **Notes:**
Requires Mac OS 8.5 or newer.
In Realbasic 2005 and newer you need to use self. in front of the method as the propertyname alone is not accepted.

170.6.30 ShowHideToolbarMBS(animate as boolean, value as boolean)

MBS Util Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Shows or hides the toolbar.
**Notes:** Only working on Mac OS X.

170.6.31 SmoothResizeCenteredMBS(width as Integer,height as Integer)

MBS Util Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
Resizes the window smoothly to all directions.
Example:

```vbs
dim w, h as Integer

// get destination dimension
w = 300
h = 200

// Resize
window1.SmoothResizeCenteredMBS w, h

// Now resize via RB to make it permanent.
width = w
height = h
```

Notes:
You need to set the new size using REALbasic’s Windows properties, too. (no longer needed with Xojo)
In Realbasic 2005 and newer you need to use self. in front of the method as the property name alone is not accepted.

### 170.6.32 SmoothResizeMBS(width as Integer, height as Integer)

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Resizes the window smoothly.

Example:

```vbs
dim w, h as Integer

// get destination dimension
w = 300
h = 200

// Resize
window1.SmoothResizeMBS w, h

// Now resize via RB to make it permanent.
width = w
height = h
```
Notes:
You need to set the new size using REALbasic’s Windows properties, too. (no longer needed with Xojo)
In Realbasic 2005 and newer you need to use self. in front of the method as the propertynme alone is not
accepted.

Works on Cocoa on 10.4 and newer.

170.6.33  **ToggleFullScreenMBS as Boolean**

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Toggles fullscreen mode for this window.

Notes:
Returns true on success.
If an application supports fullscreen, it should add a menu item to the View menu with toggleFullScreen as
the action.
Available in Mac OS X v10.7 and later.
This method does not much if you don’t mark a window to be the primary fullscreen window.

170.6.34  **TransitionWindowMBS(parent as window, effect as Integer, action as Integer) as Integer**

MBS MacOSX Plugin, Plugin Version: 6.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Runs window transition.

Notes: see other TransitionWindow method for details.
See also:

- 170.6.35  TransitionWindowMBS(parent as window, effect as Integer, action as Integer, Async, as boolean, duration as Double) as Integer  

- 170.6.36  TransitionWindowMBS(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer  

- 170.6.37  TransitionWindowMBS(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async, as boolean, duration as Double) as Integer  

- 170.6.38  TransitionWindowMBS(parentWindowHandle as Integer, effect as Integer, action as Integer) as Integer  

- 170.6.39  TransitionWindowMBS(parentWindowHandle as Integer, effect as Integer, action as Integer, Async, as boolean, duration as Double) as Integer
170.6.35 TransitionWindowMBS(parent as window, effect as Integer, action as Integer, Async as boolean, duration as Double) as Integer

**Function:** Runs window transition with additional parameters.  
**Notes:** see other TransitionWindow method for details.  
See also:

- 170.6.34 TransitionWindowMBS(parent as window, effect as Integer, action as Integer) as Integer  
- 170.6.36 TransitionWindowMBS(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer  
- 170.6.37 TransitionWindowMBS(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async as boolean, duration as Double) as Integer  
- 170.6.38 TransitionWindowMBS(parentWindowHandle as Integer, effect as Integer, action as Integer) as Integer  
- 170.6.39 TransitionWindowMBS(parentWindowHandle as Integer, effect as Integer, action as Integer, Async as boolean, duration as Double) as Integer  
- 170.6.40 TransitionWindowMBS(parentWindowHandle as Integer, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer  
- 170.6.41 TransitionWindowMBS(parentWindowHandle as Integer, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async as boolean, duration as Double) as Integer

170.6.36 TransitionWindowMBS(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer

**Function:** Runs window transition with rectangle.  
**Notes:** see other TransitionWindow method for details.  
See also:

- 170.6.34 TransitionWindowMBS(parent as window, effect as Integer, action as Integer) as Integer
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- 170.6.35 TransitionWindowMBS(parent as window, effect as Integer, action as Integer, Async as boolean, duration as Double) as Integer

- 170.6.37 TransitionWindowMBS(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async as boolean, duration as Double) as Integer

- 170.6.38 TransitionWindowMBS(parentWindowHandle as Integer, effect as Integer, action as Integer) as Integer

- 170.6.39 TransitionWindowMBS(parentWindowHandle as Integer, effect as Integer, action as Integer, Async as boolean, duration as Double) as Integer

- 170.6.40 TransitionWindowMBS(parentWindowHandle as Integer, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer

- 170.6.41 TransitionWindowMBS(parentWindowHandle as Integer, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async as boolean, duration as Double) as Integer

170.6.37 TransitionWindowMBS(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, duration as Double) as Integer

MBS MacOSX Plugin, Plugin Version: 6.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Runs window transition with additional parameters and rectangle.

**Notes:**

Works only in Carbon, not in Cocoa. For Cocoa please use NSWindowMBS class.

Transitions a window from one state to another with appropriate animation and sound.

Returns Mac OS error code like 0 for success, -1 for parameter error in the plugin or -50 for parameter error.

Visual effects that are provided by TransitionWindow:

Actions: Modifications to window state that are provided by TransitionWindow

See also:

- 170.6.34 TransitionWindowMBS(parent as window, effect as Integer, action as Integer) as Integer

- 170.6.35 TransitionWindowMBS(parent as window, effect as Integer, action as Integer, Async as boolean, duration as Double) as Integer

- 170.6.36 TransitionWindowMBS(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer
self: The window that should be transitioned.
parent: For use with kWindowSheetTransitionEffect. This is the parent window of the sheet.
effect: The type of visual effect to use.
action: The action to take on the window.
left: The rectangle to be used.
top: The rectangle to be used.
width: The rectangle to be used.
height: The rectangle to be used.
async: Whether the transition should run synchronously or asynchronously. If Async is true, TransitionWindow will return immediately, and the transition will run using an event loop timer. You must run your event loop for the transition to occur. If Async is false, TransitionWindow will block until the transition is completed.
duration: The duration of the fade, in seconds. For use with the Sheet, Slide, Fade, and Genie transition effects; ignored for other effects. You may pass 0 to use the default duration. The effect is not guaranteed to last precisely this long, but should be a close approximation.

- **170.6.38** TransitionWindowMBS(parentWindowHandle as Integer, effect as Integer, action as Integer) as Integer
- **170.6.39** TransitionWindowMBS(parentWindowHandle as Integer, effect as Integer, action as Integer, Async as boolean, duration as Double) as Integer
- **170.6.40** TransitionWindowMBS(parentWindowHandle as Integer, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer
- **170.6.41** TransitionWindowMBS(parentWindowHandle as Integer, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async as boolean, duration as Double) as Integer

**170.6.38** TransitionWindowMBS(parentWindowHandle as Integer, effect as Integer, action as Integer) as Integer

MBS MacOSX Plugin, Plugin Version: 6.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Runs window transition. **Notes:** see other TransitionWindow method for details. See also:

- **170.6.34** TransitionWindowMBS(parent as window, effect as Integer, action as Integer) as Integer
- **170.6.35** TransitionWindowMBS(parent as window, effect as Integer, action as Integer, Async as boolean, duration as Double) as Integer


170.6. CLASS WINDOW

kWindowZoomTransitionEffect 1 Finder-like zoom rectangles. Use with TransitionWindow and Show or Hide transition actions.

kWindowSheetTransitionEffect 2 Zoom in/out from parent. Use with TransitionWindowAndParent and Show or Hide transition actions. Available in Mac OS X, and in CarbonLib 1.5 and later.

kWindowSlideTransitionEffect 3 Slide the window into its new position. Use with TransitionWindow and Move or Resize transition actions. Available in Mac OS X, and in CarbonLib 1.5 and later.

kWindowFadeTransitionEffect 4 Fade the window into or out of visibility. Use with the Show or Hide transition actions. Available in Mac OS X 10.3 and later.

kWindowGenieTransitionEffect 5 Use the Genie effect that the Dock uses to minimize or maximize a window to show or hide the window. Use with the Show or Hide transition actions. Available in Mac OS X 10.3 and later.

kWindowShowTransitionAction 1 Shows the window. Use with the Zoom, Sheet, Fade, or Genie transition effects. For the Zoom, Sheet, and Genie effects, the rectangle parameter is the global coordinates from which to start the animation; rectangle is optional for the Zoom and Sheet effects, and in that case, the animation begins at the center of the window. The Genie effect requires a rectangle parameter. The Fade effect does not use the inRect parameter.

kWindowHideTransitionAction 2 Hides the window. Use with the Zoom, Sheet, Fade, or Genie transition effects. For the Zoom, Sheet, and Genie effects, the rectangle parameter is the global coordinates at which to end the animation; Recangle is optional for the Zoom and Sheet effects, and in that case, the animation ends at the center of the window. The Genie effect requires a rectangle. The Fade effect does not use the inRect parameter.

kWindowMoveTransitionAction 3 Moves the window. Use with the Slide transition effect. The rectangle parameter is the global coordinates of the window’s new structure bounds; Rectangle must be provided. Available in Mac OS X, and in CarbonLib 1.5 and later.

kWindowResizeTransitionAction 4 Resizes the window. Use with the Slide transition effect. The rectangle parameter is the global coordinates of the window’s new structure bounds; Rectangle must be provided. Available in Mac OS X, and in CarbonLib 1.5 and later.

- 170.6.36 TransitionWindowMBS(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer

- 170.6.37 TransitionWindowMBS(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async as boolean, duration as Double) as Integer

- 170.6.39 TransitionWindowMBS(parentWindowHandle as Integer, effect as Integer, action as Integer, Async as boolean, duration as Double) as Integer

- 170.6.40 TransitionWindowMBS(parentWindowHandle as Integer, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer

- 170.6.41 TransitionWindowMBS(parentWindowHandle as Integer, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async as boolean, duration as Double) as Integer
170.6.39 TransitionWindowMBS(parentWindowHandle as Integer, effect as Integer, action as Integer, Async_ as boolean, duration as Double) as Integer

MBS MacOSX Plugin, Plugin Version: 6.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Runs window transition with additional parameters. **Notes:** see other TransitionWindow method for details. See also:

- 170.6.34 TransitionWindowMBS(parent as window, effect as Integer, action as Integer) as Integer
- 170.6.35 TransitionWindowMBS(parent as window, effect as Integer, action as Integer, Async_ as boolean, duration as Double) as Integer
- 170.6.36 TransitionWindowMBS(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer
- 170.6.37 TransitionWindowMBS(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async_ as boolean, duration as Double) as Integer
- 170.6.38 TransitionWindowMBS(parentWindowHandle as Integer, effect as Integer, action as Integer) as Integer
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- 170.6.41 TransitionWindowMBS(parentWindowHandle as Integer, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async_ as boolean, duration as Double) as Integer

170.6.40 TransitionWindowMBS(parentWindowHandle as Integer, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer

MBS MacOSX Plugin, Plugin Version: 6.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Runs window transition with rectangle. **Notes:** see other TransitionWindow method for details. See also:

- 170.6.34 TransitionWindowMBS(parent as window, effect as Integer, action as Integer) as Integer
- 170.6.35 TransitionWindowMBS(parent as window, effect as Integer, action as Integer, Async_ as boolean, duration as Double) as Integer
- 170.6.36 TransitionWindowMBS(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer
- 170.6.40 TransitionWindowMBS(parentWindowHandle as Integer, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer
170.6.37 TransitionWindowMBS(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async_ as boolean, duration as Double) as Integer

170.6.38 TransitionWindowMBS(parentWindowHandle as Integer, effect as Integer, action as Integer) as Integer

170.6.39 TransitionWindowMBS(parentWindowHandle as Integer, effect as Integer, action as Integer, Async_ as boolean, duration as Double) as Integer

170.6.41 TransitionWindowMBS(parentWindowHandle as Integer, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async_ as boolean, duration as Double) as Integer

170.6.41 TransitionWindowMBS(parentWindowHandle as Integer, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async_ as boolean, duration as Double) as Integer

MBS MacOSX Plugin, Plugin Version: 6.5, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Runs window transition with additional parameters and rectangle.

**Notes:**
Works only in Carbon, not in Cocoa. For Cocoa please use NSWindowMBS class.
Transitions a window from one state to another with appropriate animation and sound.

Returns Mac OS error code like 0 for success, -1 for parameter error in the plugin or -50 for parameter error.

Visual effects that are provided by TransitionWindow:

**Actions:** Modifications to window state that are provided by TransitionWindow

See also:

- 170.6.34 TransitionWindowMBS(parent as window, effect as Integer, action as Integer) as Integer
- 170.6.35 TransitionWindowMBS(parent as window, effect as Integer, action as Integer, Async_ as boolean, duration as Double) as Integer
- 170.6.36 TransitionWindowMBS(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer
- 170.6.37 TransitionWindowMBS(parent as window, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer, Async_ as boolean, duration as Double) as Integer
self: The window that should be transitioned.
parent: For use with kWindowSheetTransitionEffect. This is the parent window of the sheet.
effect: The type of visual effect to use.
action: The action to take on the window.
left: The rectangle to be used.
top: The rectangle to be used.
width: The rectangle to be used.
height: The rectangle to be used.
async: Whether the transition should run synchronously or asynchronously. If Async is true, TransitionWindow will return immediately, and the transition will run using an event loop timer. You must run your event loop for the transition to occur. If Async is false, TransitionWindow will block until the transition is completed.
duration: The duration of the fade, in seconds. For use with the Sheet, Slide, Fade, and Genie transition effects; ignored for other effects. You may pass 0 to use the default duration. The effect is not guaranteed to last precisely this long, but should be a close approximation.

- 170.6.38 TransitionWindowMBS(parentWindowHandle as Integer, effect as Integer, action as Integer) as Integer
- 170.6.39 TransitionWindowMBS(parentWindowHandle as Integer, effect as Integer, action as Integer, Async as boolean, duration as Double) as Integer
- 170.6.40 TransitionWindowMBS(parentWindowHandle as Integer, effect as Integer, action as Integer, left as Integer, top as Integer, width as Integer, height as Integer) as Integer

170.6.42 UpdateDockWindowMBS

MBS MacOSX Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** if your window is minimized this will update the small picture inside the dock on Mac OS X.
**Example:**
Mainwindow.UpdateDockWindowMBS

170.6.43 UpdateNowMBS

MBS MacOSX Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** On Mac OS X all Windows are doublebuffered and the OS updates the screen from time to time. This method forces a screen
170.6. **CLASS WINDOW**

kWindowZoomTransitionEffect 1 Finder-like zoom rectangles. Use with TransitionWindow and Show or Hide transition actions.

kWindowSheetTransitionEffect 2 Zoom in/out from parent. Use with TransitionWindowAndParent and Show or Hide transition actions. Available in Mac OS X, and in CarbonLib 1.5 and later.

kWindowSlideTransitionEffect 3 Slide the window into its new position. Use with TransitionWindow and Move or Resize transition actions. Available in Mac OS X, and in CarbonLib 1.5 and later.

kWindowFadeTransitionEffect 4 Fade the window into or out of visibility. Use with the Show or Hide transition actions. Available in Mac OS X 10.3 and later.

kWindowGenieTransitionEffect 5 Use the Genie effect that the Dock uses to minimize or maximize a window to show or hide the window. Use with the Show or Hide transition actions. Available in Mac OS X 10.3 and later.

kWindowShowTransitionAction 1 Shows the window. Use with the Zoom, Sheet, Fade, or Genie transition effects. For the Zoom, Sheet, and Genie effects, the rectangle parameter is the global coordinates from which to start the animation; rectangle is optional for the Zoom and Sheet effects, and in that case, the animation begins at the center of the window. The Genie effect requires a rectangle parameter. The Fade effect does not use the inRect parameter.

kWindowHideTransitionAction 2 Hides the window. Use with the Zoom, Sheet, Fade, or Genie transition effects. For the Zoom, Sheet, and Genie effects, the rectangle parameter is the global coordinates at which to end the animation; rectangle is optional for the Zoom and Sheet effects, and in that case, the animation ends at the center of the window. The Genie effect requires a rectangle. The Fade effect does not use the inRect parameter.

kWindowMoveTransitionAction 3 Moves the window. Use with the Slide transition effect. The rectangle parameter is the global coordinates of the window’s new structure bounds; rectangle must be provided. Available in Mac OS X, and in CarbonLib 1.5 and later.

kWindowResizeTransitionAction 4 Resizes the window. Use with the Slide transition effect. The rectangle parameter is the global coordinates of the window’s new structure bounds; rectangle must be provided. Available in Mac OS X, and in CarbonLib 1.5 and later.

---

**update.**

**Example:**

Mainwindow.UpdateNowMBS

---

**170.6.44 UpdateNowRectMBS(left as Integer, top as Integer, width as Integer, height as Integer)**

MBS MacOSX Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** On Mac OS X all Windows are doublebuffered and the OS updates the screen from time to time. This method forces a screen update for a part of your window.

**Example:**
170.6.45 \textbf{WinAnimateWindowMBS(Flags as Integer, Time as Integer=200) as boolean}

MBS Win Plugin, Plugin Version: 9.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. \textbf{Function:} The AnimateWindow function enables you to produce special effects when showing or hiding windows. \textbf{Example:}

\begin{verbatim}
dim flags as Integer

const AW_SLIDE = & h040000 // Uses slide animation. By default, roll animation is used. This flag is ignored when used with AW_CENTER.
const AW_ACTIVATE = & h020000 // Activates the window. Do not use this value with AW_HIDE.
const AW_BLEND = & h080000 // Uses a fade effect. This flag can be used only if hwnd is a top-level window.
const AW_HIDE = & h010000 // Hides the window. By default, the window is shown.
const AW_CENTER = & h10 // Makes the window appear to collapse inward if AW_HIDE is used or expand outward if the AW_HIDE is not used. The various direction flags have no effect.
const AW_HOR_POSITIVE = 1 // Animates the window from left to right. This flag can be used with roll or slide animation. It is ignored when used with AW_CENTER or AW_BLEND.
const AW_HOR_NEGATIVE = 2 // Animates the window from right to left. This flag can be used with roll or slide animation. It is ignored when used with AW_CENTER or AW_BLEND.
const AW_VER_POSITIVE = 4 // Animates the window from top to bottom. This flag can be used with roll or slide animation. It is ignored when used with AW_CENTER or AW_BLEND.
const AW_VER_NEGATIVE = 8 // Animates the window from bottom to top. This flag can be used with roll or slide animation. It is ignored when used with AW_CENTER or AW_BLEND.

window2.hide
flags=BitwiseOr(AW_SLIDE, AW_HOR_POSITIVE)

if window2.WinAnimateWindowMBS(flags, 1000) then
window2.show
else
MsgBox "Animatin failed."
end if
\end{verbatim}

\textbf{Notes:}
There are four types of animation: roll, slide, collapse or expand, and alpha-blended fade.
170.6. CLASS WINDOW

self: The window to animate. The calling thread must own this window.

Time: Specifies how long it takes to play the animation, in milliseconds. Typically, an animation takes 200 milliseconds to play.

Flags: Specifies the type of animation. This parameter can be one or more of the following values. Note that, by default, these flags take effect when showing a window. To take effect when hiding a window, use AW_HIDE and a bitwise or operator with the appropriate flags.

AW_SLIDE = &h040000 Uses slide animation. By default, roll animation is used. This flag is ignored when used with AW_CENTER.
AW_ACTIVATE = &h020000 Activates the window. Do not use this value with AW_HIDE.
AW_BLEND = &h080000 Uses a fade effect. This flag can be used only if hwnd is a top-level window.
AW_HIDE = &h010000 Hides the window. By default, the window is shown.
AW_CENTER = &h10 Makes the window appear to collapse inward if AW_HIDE is used or expand outward if the AW_HIDE is not used. The various direction flags have no effect.
AW_HOR_POSITIVE = 1 Animates the window from left to right. This flag can be used with roll or slide animation. It is ignored when used with AW_CENTER or AW_BLEND.
AW_HOR_NEGATIVE = 2 Animates the window from right to left. This flag can be used with roll or slide animation. It is ignored when used with AW_CENTER or AW_BLEND.
AW_VER_POSITIVE = 4 Animates the window from top to bottom. This flag can be used with roll or slide animation. It is ignored when used with AW_CENTER or AW_BLEND.
AW_VER_NEGATIVE = 8 Animates the window from bottom to top. This flag can be used with roll or slide animation. It is ignored when used with AW_CENTER or AW_BLEND.

Return Value:
If the function succeeds, the return value is true.
If the function fails, the return value is false.

The function will fail in the following situations:

- If the window uses the window region. Windows XP: This does not cause the function to fail.
- If the window is already visible and you are trying to show the window.
- If the window is already hidden and you are trying to hide the window.
- If there is no direction specified for the slide or roll animation.
- When trying to animate a child window with AW_BLEND.
- If the thread does not own the window. Note that, in this case, AnimateWindow fails but GetLastError returns ERROR_SUCCESS. To get extended error information, call the GetLastError function.

To show or hide a window without special effects, use Show.

When using slide or roll animation, you must specify the direction. It can be either AW_HOR_POSITIVE, AW_HOR_NEGATIVE, AW_VER_POSITIVE, or AW_VER_NEGATIVE.

You can combine AW_HOR_POSITIVE or AW_HOR_NEGATIVE with AW_VER_POSITIVE or AW_VER_NEGATIVE to animate a window diagonally.

The window procedures for the window and its child windows should handle any WM_PRINT or WM_PRINTCLIENT messages. Dialog boxes, controls, and common controls already handle WM_PRINTCLIENT. The default
window procedure already handles WM_PRINT.
If a child window is displayed partially clipped, when it is animated it will have holes where it is clipped. AnimateWindow supports RTL windows. Avoid animating a window that has a drop shadow because it produces visually distracting, jerky animations.

170.6.46 WindowCloseBoxRectMBS as IntegerRectMBS

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The size of the screen area your window uses for the close box. **Notes:** Carbon only. For Cocoa, check NSWindowMBS methods. May return nil on any error.

170.6.47 WindowCollapseBoxRectMBS as IntegerRectMBS

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The size of the screen area your window uses for the collapse box. **Notes:** Carbon only. For Cocoa, check NSWindowMBS methods. May return nil on any error.

170.6.48 WindowContentRectMBS as IntegerRectMBS

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The size of the screen area your window uses for the content of the window. **Notes:** Empty if the window is collapsed. Carbon only. For Cocoa, check NSWindowMBS methods. May return nil on any error.

170.6.49 WindowDragRectMBS as IntegerRectMBS

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The size of the screen area your window uses for the drag box. **Notes:** Carbon only. For Cocoa, check NSWindowMBS methods. May return nil on any error.
170.6. CLASS WINDOW

170.6.50 WindowFeedbackSettingMBS(Feedback as Integer, byref value as boolean, IncludeAncestors as Boolean = false) as Boolean

Notes:
IncludeAncestors: Specifies that the parent window chain should be checked.

Returns true if the specified feedback setting is configured on the specified window. Otherwise, it returns false (and config won’t be modified).

Requires Windows 8 [ desktop apps only ] or Windows Server 2012 [ desktop apps only ].

<table>
<thead>
<tr>
<th>Constant Name</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FEEDBACK_TOUCH_CONTACTVISUALIZATION</td>
<td>1</td>
<td>Feedback for a touch contact event.</td>
</tr>
<tr>
<td>FEEDBACK_PEN_BARRELVISUALIZATION</td>
<td>2</td>
<td>Feedback for a pen barrel-button event.</td>
</tr>
<tr>
<td>FEEDBACK_PEN_TAP</td>
<td>3</td>
<td>Feedback for a pen tap event.</td>
</tr>
<tr>
<td>FEEDBACK_PEN_DOUBLETAP</td>
<td>4</td>
<td>Feedback for a pen double-tap event.</td>
</tr>
<tr>
<td>FEEDBACK_PEN_PRESSANDHOLD</td>
<td>5</td>
<td>Feedback for a pen press-and-hold event.</td>
</tr>
<tr>
<td>FEEDBACK_PEN_RIGHTTAP</td>
<td>6</td>
<td>Feedback for a pen right-tap event.</td>
</tr>
<tr>
<td>FEEDBACK_TOUCH_TAP</td>
<td>7</td>
<td>Feedback for a touch tap event.</td>
</tr>
<tr>
<td>FEEDBACK_TOUCH_DOUBLETAP</td>
<td>8</td>
<td>Feedback for a touch double-tap event.</td>
</tr>
<tr>
<td>FEEDBACK_TOUCH_RIGHTTAP</td>
<td>10</td>
<td>Feedback for a touch right-tap event.</td>
</tr>
<tr>
<td>FEEDBACK_GESTURE_PRESSANDTAP</td>
<td>11</td>
<td>Feedback for a press-and-tap gesture.</td>
</tr>
</tbody>
</table>

170.6.51 WindowGrowRectMBS as IntegerRectMBS

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The size of the screen area your window uses for the grow box.
Notes:
Carbon only. For Cocoa, check NSWindowMBS methods.
May return nil on any error.

170.6.52 WindowStructureRectMBS as IntegerRectMBS

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: The size of the screen area your window uses for the structure of the whole window.
Notes:
May return nil on any error.

Carbon only. For Cocoa, check NSWindowMBS methods.

170.6.53 WindowTitleBarRectMBS as IntegerRectMBS

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The size of the screen area your window uses for the title bar.

**Notes:**
Carbon only. For Cocoa, check NSWindowMBS methods (e.g. frameRectForContentRect).
May return nil on any error.

170.6.54 WindowTitleProxyIconRectMBS as IntegerRectMBS

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The size of the screen area your window uses for the title proxy icon.

**Notes:**
Carbon only. For Cocoa, check NSWindowMBS methods.
May return nil on any error.

170.6.55 WindowTitleTextRectMBS as IntegerRectMBS

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The size of the screen area your window uses for the title text.

**Notes:**
Carbon only. For Cocoa, check NSWindowMBS methods.
May return nil on any error.

170.6.56 WindowZoomBoxRectMBS as IntegerRectMBS

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The size of the screen area your window uses for the zoom box.

**Notes:**
Carbon only. For Cocoa, check NSWindowMBS methods.
May return nil on any error.
170.6. CLASS WINDOW

170.6.57 WinFlashWindowMBS(Invert as boolean)

MBS Util Plugin, Plugin Version: 16.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Flashes Window.

**Example:**

```plaintext
window1.WinFlashWindowMBS true
```

**Notes:**
Flashes the specified window one time. It does not change the active state of the window.

Invert: If this parameter is true, the window is flashed from one state to the other. If it is false, the window is returned to its original state (either active or inactive).

When an application is minimized and this parameter is true, the taskbar window button flashes active/inactive. If it is false, the taskbar window button flashes inactive, meaning that it does not change colors. It flashes, as if it were being redrawn, but it does not provide the visual invert clue to the user.

Flashing a window means changing the appearance of its caption bar as if the window were changing from inactive to active status, or vice versa. (An inactive caption bar changes to an active caption bar; an active caption bar changes to an inactive caption bar.)

Typically, a window is flashed to inform the user that the window requires attention but that it does not currently have the keyboard focus.

The FlashWindow function flashes the window only once; for repeated flashing, the application should create a system timer.

170.6.58 WinHideTooltipMBS as Integer

MBS Win Plugin, Plugin Version: 16.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Hides all tooltips.

**Notes:**
You can call that in window.deactivate event to hide tooltips which did not hide themselves.

Returns number of hidden tooltips.
170.6.59 Properties

170.6.60 AlternateTitleMBS as string

MBS MacOSX Plugin, Plugin Version: 3.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** An alternative title for a window on Mac OS X. **Notes:**

Used for the window menu.
You may use it for windows with the same name, but different entries in the standard window menu.
This property works only if CarbonLib 1.1 or newer is present.
(Read and Write computed property)

170.6.61 AsyncDragMBS as Boolean

MBS Util Plugin, Plugin Version: 8.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether this window uses asyncron dragging. **Example:**

window1.AsyncDragMBS = true

**Deprecated:** This item is deprecated and should no longer be used. You can use NSWindowMBS for Cocoa instead. **Notes:**

This window is marked so that the window server will drag the window automatically. Your application should not call DragWindow for this window, else it would confuse the heck out of the drag (it would fight with the window server for control). This attribute is ignored (async drag is not used) if your window is grouped with other windows in a window group that has the kWindowGroupAttrMoveTogether attribute. Available for all windows on Mac OS X 10.3 and later.

Seems to have no effect for RB 2008r2.
(Read and Write computed property)

170.6.62 CanBeVisibleWithoutLoginMBS as Boolean

MBS Util Plugin, Plugin Version: 8.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether this window can be visible before login. **Example:**

window1.CanBeVisibleWithoutLoginMBS = true
170.6. CLASS WINDOW

Notes:
This window can be made visible prior to user login. By default, in Mac OS X 10.5 and later no windows can be visible before a user logs into the system; this protects the user against certain types of malicious use of insecure applications. However, some software, such as input methods or other accessibility software, may need to deliberately make windows available prior to user login. Such software should add this window attribute to its windows. Available for all windows in Mac OS X 10.5 and later.
(Read and Write computed property)

170.6.63 CanLiveResizeMBS as boolean

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Whether this window supports live resizing.
Example:
mainwindow.CanLiveResizeMBS=true

Deprecated: This item is deprecated and should no longer be used. You can use NSWindowMBS for Cocoa instead. Notes:
Available for all windows on Mac OS X.

You can read the state on Mac Classic, but you can only change it on Mac Carbon.
Returns false on any error.

In Realbasic 2005 and newer you need to use self. in front of the method as the propertyname alone is not accepted.
(Read and Write computed property)

170.6.64 CGColorSpaceMBS as CGColorSpaceMBS

MBS MacCG Plugin, Plugin Version: 10.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Get or set the colorspace profile for this window.
Example:

dim c as CGColorSpaceMBS = window1.CGColorSpaceMBS

if c<>Nil then
    MsgBox str(c.NumberOfComponents)
else
    MsgBox "nil"
end if
Notes:
Requires Mac OS X 10.6.

On Cocoa, the NSColorSpace is queried and the matching CGColorspace is returned. For setting a NSColorSpace is created for the given CGColorspace.
In Carbon applications, the CoreGraphics color space is passed directly.
(Read and Write computed property)

170.6.65  collapsedMBS as boolean

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Returns true if this window is collapsed. You can set it.
Example:
mainwindow.collapsedMBS=false 'show window

Notes:
Collapseable windows are the normal document windows.
You can‘t collapse dialogs or floating windows well.
In Realbasic 2005 and newer you need to use self. in front of the method as the propertyname alone is not accepted.

Added Cocoa support in plugin version 10.0.
(Read and Write computed property)

170.6.66  ExposeHiddenMBS as boolean

Example:
window1.ExposeHiddenMBS=CheckBox1.Value

if window1.ExposeHiddenMBS then
    StaticText1.text="yes"
else
    StaticText1.text="no"
end if
Notes:
Requires Mac OS X 10.4 to work.
Returns false on any error.
Default value is false for all document windows.
(Read and Write computed property)

170.6.67 FullScreenAuxiliaryMBS as Boolean

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Whether this window is setup as being the auxiliary fullscreen window. Notes: (Read and Write computed property)

170.6.68 FullScreenPrimaryMBS as Boolean

MBS MacCloud Plugin, Plugin Version: 11.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Whether this window is setup as being the primary fullscreen window. Notes: If true, the window receives the fullscreen widget in the title bar. (Read and Write computed property)

170.6.69 GrowBoxTransparentMBS as boolean

MBS MacOSX Plugin, Plugin Version: 5.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Switches the transparent grow box on and off. Example:

if window1.Composite then
    window1.GrowBoxTransparentMBS = true
else
    MsgBox "Please turn on composite."
end if

Notes:
Only Mac OS X 10.2 and only on Composite windows.
Seems like RB 2010 has this on by default.
(Read and Write computed property)
170.6.70  HasborderMBS as boolean

MBS Util Plugin, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Decides whether the window has a border.

**Example:**

mainwindow.HasborderMBS=false ' Remove border

**Notes:**

This property has only an effect on Windows. The window needs to be redrawn before the change is visible (for example move it). This option removes the title bar. HasCaptionMBS removes even more.

In Realbasic 2005 and newer you need to use self. in front of the method as the propertynname alone is not accepted.

(Read and Write computed property)

170.6.71  HasCaptionMBS as Boolean

MBS Util Plugin, Plugin Version: 7.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Whether the window has a caption (a title bar)

**Example:**

Window1.HasCaptionMBS=false

**Notes:**

This property has only an effect on Windows. The window needs to be redrawn before the change is visible (for example move it).

In Realbasic 2005 and newer you need to use self. in front of the method as the propertynname alone is not accepted.

(Read and Write computed property)

170.6.72  HasCloseBoxMBS as boolean

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether this window has a CloseBox.
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Example:

mainwindow.HasCloseboxMBS=false 'remove closebox

Notes:

You can read the state on Mac Classic, but you can only change it on Mac Carbon. Returns false on any error.

In Realbasic 2005 and newer you need to use self. in front of the method as the propertyname alone is not accepted.
(Read and Write computed property)

170.6.73 HasCollapseBoxMBS as boolean

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether this window has a Collapsebox.

Example:

mainwindow.HasCollapseBoxMBS=false 'remove Collapsebox

Notes:

You can read the state on Mac Classic, but you can only change it on Mac Carbon. Returns false on any error.

In Realbasic 2005 and newer you need to use self. in front of the method as the propertyname alone is not accepted.
(Read and Write computed property)

170.6.74 HasFullZoomButtonMBS as Boolean

MBS Util Plugin, Plugin Version: 7.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if this window can be resized horizontally and vertically.

Example:

mainwindow.HasFullZoomButtonMBS=false 'remove resizebox

**Deprecated:** This item is deprecated and should no longer be used. You can use NSWindowMBS for Cocoa instead.

Notes:
You can read the state on Mac Classic, but you can only change it on Mac Carbon. Returns false on any error.

In Realbasic 2005 and newer you need to use self. in front of the method as the propertyname alone is not accepted. (Read and Write computed property)

170.6.75 HasHorizontalZoomButtonMBS as boolean

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Returns true if this window can be resized horizontally.
Example:
mainwindow.HasHorizontalZoomButtonMBS=false 'remove resizebox
mainwindow.HasVerticalZoomButtonMBS=false

Deprecated: This item is deprecated and should no longer be used. You can use NSWindowMBS for Cocoa instead. Notes:
You can read the state on Mac Classic, but you can only change it on Mac Carbon. Returns false on any error.

In Realbasic 2005 and newer you need to use self. in front of the method as the propertyname alone is not accepted. (Read and Write computed property)

170.6.76 HasMaximizeBoxMBS as boolean

MBS Util Plugin, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: Returns true if this window has a Maximize Button.
Example:
mainwindow.HasMaximizeBoxMBS=false 'remove Maximize button

Notes:
This property has only an effect on Windows. The window needs to be redrawn before the change is visible (for example move it).

In Realbasic 2005 and newer you need to use self. in front of the method as the propertyname alone is not
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accepted.
(Read and Write computed property)

170.6.77 HasMinimizeBoxMBS as boolean

MBS Util Plugin, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Returns true if this window has a Minimize Button.

**Example:**
mainwindow.HasMinimizeBoxMBS=false 'remove Minimize button

**Notes:**
This property has only an effect on Windows. The window needs to be redrawn before the change is visible (for example move it).

In Realbasic 2005 and newer you need to use self. in front of the method as the propertyname alone is not accepted.
(Read and Write computed property)

170.6.78 HasNoShadowMBS as boolean

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether this window has no shadow.

**Example:**
mainwindow.HasNoShadowMBS=true 'remove shadow

**Notes:**
Available for all windows on Mac OS X. This attribute is automatically given to windows of kOverlayWindowClass.

Returns false on any error.

In Realbasic 2005 and newer you need to use self. in front of the method as the propertyname alone is not accepted.

Added Cocoa support in plugin version 10.0.
(Read and Write computed property)
### 170.6.79 HasNoTitleBarMBS as Boolean

MBS Util Plugin, Plugin Version: 7.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** For Document, Floating, and Utility windows, this attribute allows you to hide the title bar of a window.  
**Example:**

```plaintext
window1.HasNoTitleBarMBS = true
```

// for Cocoa:
window1.HasCloseBoxMBS = false
window1.HasCollapseBoxMBS = false
window1.IsResizableMBS = false
window1.HasNoTitleBarMBS = true

**Deprecated:** This item is deprecated and should no longer be used. You can use NSWindowMBS for Cocoa instead. **Notes:**

For Mac OS X 10.4 or later.

You can read the state on Mac Classic, but you can only change it on Mac Carbon. Returns false on any error.

In Realbasic 2005 and newer you need to use self. in front of the method as the propertyname alone is not accepted.

Added Cocoa support in Plugin version 10.4.  
(Read and Write computed property)

### 170.6.80 HasRoundBottomBarCornersMBS as Boolean

MBS Util Plugin, Plugin Version: 8.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether a metal window has rounded corners.  
**Example:**

```plaintext
MsgBox str(window1.HasRoundBottomBarCornersMBS)
```

**Deprecated:** This item is deprecated and should no longer be used. You can use NSWindowMBS for Cocoa instead. **Notes:**
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Indicates that this window will have rounded bottom corners. By default, a window has squared corners, and the assertion of this bit turns on rounded bottom corners for the window if the window has a bottom bar (set with HIWindowSetContentBorderThickness). If the window does not have a bottom bar, this bit is ignored. If the window is metal, the RoundBottomBarCornersMBS attribute will be ignored, as that type of window defaults to rounded corners and controls the squareness with the TexturedSquareCornersMBS attribute.
(Read and Write computed property)

170.6.81 HasSideTitlebarMBS as boolean

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Whether this window has the title bar on the side.
Example:
mainwindow.HasSideTitlebarMBS=true 'moves titlebar to side

Deprecated: This item is deprecated and should no longer be used. You can use NSWindowMBS for Cocoa instead. Notes:
You can read the state on Mac Classic, but you can only change it on Mac Carbon.
Only good for floating windows.
Returns false on any error.

In Realbasic 2005 and newer you need to use self. in front of the method as the propertyname alone is not accepted.
(Read and Write computed property)

170.6.82 HasSystemMenuMBS as Boolean

MBS Util Plugin, Plugin Version: 7.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: Whether the window has a system menu inside the title bar.
Example:
Window1.HasSystemMenuMBS=false

Notes:
This property has only an effect on Windows. It will disable the system menu and also the minimize, maximize and close buttons. The window needs to be redrawn before the change is visible (for example move it).

In Realbasic 2005 and newer you need to use self. in front of the method as the propertyname alone is not
accepted.
(Read and Write computed property)

170.6.83 HasToolbarButtonMBS as boolean

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether this window has a toolbar button.

**Example:**
mainwindow.HasToolbarButtonMBS=true 'shows Toolbar Button

**Notes:**
You can read the state on Mac Classic, but you can only change it on Mac Carbon. The Button is shown on next redraw of the window frame.

Use the CarbonWindowsEventsMBS class to receive events when the button is pressed.

Returns false on any error.

In Realbasic 2005 and newer you need to use self. in front of the method as the propertyname alone is not accepted.
(Read and Write computed property)

170.6.84 HasVerticalZoomButtonMBS as boolean

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if this window can be resized vertically.

**Example:**
mainwindow.HasHorizontalZoomButtonMBS=false 'remove resizebox
mainwindow.HasVerticalZoomButtonMBS=false

**Deprecated:** This item is deprecated and should no longer be used. You can use NSWindowMBS for Cocoa instead. **Notes:**
You can read the state on Mac Classic, but you can only change it on Mac Carbon. Returns false on any error.

In Realbasic 2005 and newer you need to use self. in front of the method as the propertyname alone is not
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accepted.
(Read and Write computed property)

170.6.85 HideOnFullScreenMBS as Boolean

MBS Util Plugin, Plugin Version: 3.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The window will hide itself if full screen mode is entered by an application or another window.
**Example:**
Window1.HideOnFullScreenMBS=true

**Notes:**
This window is automatically hidden during fullscreen mode (when the menubar is invisible) and shown afterwards. Available for all windows. This attribute is automatically given to utility windows.

You can read the state on Mac Classic, but you can only change it on Mac Carbon.
Returns false on any error.

In Realbasic 2005 and newer you need to use self. in front of the method as the propertyname alone is not accepted.
(Read and Write computed property)

170.6.86 HideOnSuspendMBS as Boolean

MBS Util Plugin, Plugin Version: 3.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:**
The window will hide itself if the application goes to background.
**Example:**
Window1.HideOnSuspendMBS=false

**Notes:**
This window is automatically hidden on suspend and shown on resume. Available for all windows. This attribute is automatically given to floating windows.

You can read the state on Mac Classic, but you can only change it on Mac Carbon.
Returns false on any error.

In Realbasic 2005 and newer you need to use self. in front of the method as the propertyname alone is not
170.6.87 IgnoreClicksMBS as Boolean

MBS Util Plugin, Plugin Version: 3.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Can be used to control whether mouse clicks are ignored for this window.

**Example:**

Window1.IgnoreClicksMBS=true

**Notes:**

Whether this window never receives mouse events, even in areas that are opaque. Instead, clicks on the window will be passed through to windows beneath it. Available for all windows on Mac OS X 10.2 and later.

You can read the state on Mac Classic, but you can only change it on Mac Carbon. Returns false on any error.

In Realbasic 2005 and newer you need to use self. in front of the method as the propertyname alone is not accepted.

Added Cocoa support in plugin version 10.0.

(Read and Write computed property)

170.6.88 InWindowMenuMBS as boolean

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Decides whether the window is inside the Window menu.

**Example:**

mainwindow.InWindowMenuMBS=false ‘remove from window menu

**Deprecated:** This item is deprecated and should no longer be used. You can use NSWindowMBS for Cocoa instead. **Notes:**

This window is added to the standard Window menu. Available for document windows.

In Realbasic 2005 and newer you need to use self. in front of the method as the propertyname alone is not accepted.
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(Read and Write computed property)

170.6.89  IsIconicMBS as boolean

MBS Util Plugin, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Returns true if this window is inside the taskbar.

**Example:**

MsgBox str(window1.IsIconicMBS)

**Notes:**

If you set IsIconic to true the window is minimized and if you set it to false the window size and position is restored.

In Realbasic 2005 and newer you need to use self. in front of the method as the propertyname alone is not accepted.

(Read and Write computed property)

170.6.90  IsMetalWindowMBS as Boolean

MBS Util Plugin, Plugin Version: 7.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether this window uses the Metal appearance.

**Example:**

if window1.Frame = window.FrameTypeMetal then
  MsgBox "Window is metal. " +str(window1.IsMetalWindowMBS)
else
  MsgBox "Window is not metal. " +str(window1.IsMetalWindowMBS)
end if

**Notes:**

Available for document windows on Mac OS X 10.2 and later, and for floating windows on Mac OS X 10.3 and later. Drawers can also be metal, but dynamically adjust their appearance based on their parent window’s appearance; it is not necessary to specify this attribute for a metal drawer.

You can read the state on Mac Classic, but you can only change it on Mac Carbon.

Returns false on any error.

In Realbasic 2005 and newer you need to use self. in front of the method as the propertyname alone is not accepted.
170.6.91 IsOpaqueForEventsMBS as Boolean

MBS Util Plugin, Plugin Version: 7.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether this window receives mouse events even for areas of the window that are transparent (have an alpha channel component of zero).

**Example:**

```plaintext
Window1.IsOpaqueForEventsMBS=false
```

**Deprecated:** This item is deprecated and should no longer be used. You can use NSWindowMBS for Cocoa instead. **Notes:**

Available for windows of kOverlayWindowClass on Mac OS X 10.0 and 10.1, and available for all windows on Mac OS X 10.2 and later.

You can read the state on Mac Classic, but you can only change it on Mac Carbon.

Returns false on any error.

In Realbasic 2005 and newer you need to use self. in front of the method as the property name alone is not accepted.

(Read and Write computed property)

170.6.92 IsResizableMBS as Boolean

MBS Util Plugin, Plugin Version: 7.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether this window is resizeable.

**Example:**

```plaintext
Window1.IsResizableMBS=false
```

**Notes:**

You can read the state on Mac Classic, but you can only change it on Mac Carbon.

Returns false on any error.

Use GrowBoxTransparentMBS on Composite Mac OS X windows to enable the transparent grow box.

In Realbasic 2005 and newer you need to use self. in front of the method as the property name alone is not accepted.
accepted.

Works in Cocoa.
(Read and Write computed property)

170.6.93  IsZoomedMacMBS as boolean

MBS Util Plugin, Plugin Version: 3.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns true if the window is zoomed.
**Example:**
MsgBox str(window1.IsZoomedMacMBS)

**Notes:**
Requires Mac OS 8.5 or newer.
Seems not to work correctly on RB 5.5.
In Realbasic 2005 and newer you need to use self. in front of the method as the propertyname alone is not accepted.

Added Cocoa support in plugin version 10.0.
(Read and Write computed property)

170.6.94  IsZoomedMBS as boolean

MBS Util Plugin, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Returns true if this window has been maximized.
**Example:**
MsgBox str(window1.IsZoomedMBS)

**Notes:**
If you set IsZoomed to true the window is maximized and if you set it to false the window size and position is restored.
In Realbasic 2005 and newer you need to use self. in front of the method as the propertyname alone is not accepted.

Works on Cocoa.
(Read and Write computed property)
170.6.95  **MetalNoContentSeparatorMBS as Boolean**

MBS Util Plugin, Plugin Version: 8.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether there should be a content separator on a metal window.

**Example:**

if window1.Frame = window.FrameTypeMetal then
  window1.MetalNoContentSeparatorMBS = true
end if

**Deprecated:** This item is deprecated and should no longer be used. You can use NSWindowMBS for Cocoa instead. **Notes:**

Indicates that no border should be drawn between the toolbar and window content. Relevant only in textured windows. Ignored in non-textured windows. Available in Mac OS X 10.4 and later for window classes that support the textured appearance.

(Read and Write computed property)

---

170.6.96  **ModifiedMBS as boolean**

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** You can set or get the value of the modified state.

**Example:**

mainwindow.modifiedMBS=true

**Notes:**

Requires Mac OS 8.5 or newer.

As long as you don’t set modified to false the window keeps to tell you that it’s modified. Not sure why, so just set modified to false early in creating the window.

Added Cocoa support in plugin version 10.0.

(Read and Write computed property)

---

170.6.97  **TexturedSquareCornersMBS as Boolean**

MBS Util Plugin, Plugin Version: 8.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether a metal window has square corners.
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Example:

```plaintext
if window1.Frame = window.FrameTypeMetal then
    window1.TexturedSquareCornersMBS = true
else
    MsgBox "Please turn window into metal frame."
end if
```

**Deprecated:** This item is deprecated and should no longer be used. You can use NSWindowMBS for Cocoa instead. **Notes:**

Indicates that a textured window should have square corners. By default, a textured window has round corners. When this attribute is set on a window, the window frame view automatically makes the grow box view opaque, and when this attribute is cleared, the window frame view automatically makes the grow box view transparent. You can change the grow box view transparency after modifying this attribute with window.GrowBoxTransparentMBS. Relevant only for textured windows; ignored in non-textured windows. Available in Mac OS X 10.5 and later for window classes that support the textured appearance. (Read and Write computed property)

170.6.98 ToolbarVisibleMBS as boolean

MBS Util Plugin, Plugin Version: 4.0, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether the toolbar is shown in this window or not. **Notes:**

Value is false on any error.
Only working on Mac OS X.
(Read and Write computed property)

170.6.99 TransparencyMBS as single

MBS Util Plugin, Plugin Version: 5.0, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The transparency of the window on Mac OS X, Windows 2000 and Windows XP. **Notes:**

1 for opaque, 0 for invisible.
Return 1 on any error. On Windows it returns always 1 as the current transparency value can’t be queried.
You need to call MakeTransparent before to install transparency.
(added Windows support in version 4.4)
Linux supported added with 14.0, but works only with Linux desktop which support alpha channel.
(Read and Write computed property)
170.6.100 UnifiedTitleAndToolbarMBS as Boolean

MBS Util Plugin, Plugin Version: 8.1, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether this window has an unified title and toolbar look.  
**Example:**

```plaintext
window1.UnifiedTitleAndToolbarMBS = true
```

**Notes:**

This window draws its window title and toolbar using a unified appearance that has no separator between the two areas. A window may not have both UnifiedTitleAndToolbar and Metal appearance. If a window already has the metal attribute, attempting to set the Unified attribute will cause ChangeWindows to return an error, and vice versa. This constant was not added to this header file until Mac OS X 10.5, but it is actually available at runtime on Mac OS X 10.4 and later for windows of kDocumentWindowClass. However, on Mac OS X 10.5 and later, kHIWindowBitUnifiedTitleAndToolbar no longer has any effect, since all windows with toolbars now have a unified look.  
(Read and Write computed property)

170.6.101 WindowDoesNotCycleMBS as Boolean

MBS Util Plugin, Plugin Version: 7.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether this window will cycle.  
**Example:**

```plaintext
window1.WindowDoesNotCycleMBS=False
```

**Notes:**

If true, this window does not participate in window cycling invoked by cmd-textasciitilde or the ”Focus on Window” hotkey defined in the Keyboards preference pane. Available for all windows on Mac OS X 10.2 and later.

You can read the state on Mac Classic, but you can only change it on Mac Carbon. Returns false on any error.

In Realbasic 2005 and newer you need to use self. in front of the method as the propertyname alone is not accepted.  
(Read and Write computed property)
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170.6.102 WindowGroupMBS as WindowGroupMBS

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The window group of that window.
**Notes:**
Lasterror is set.
Keep the group reference when setting this value as the reference count is not retained.
(Read and Write computed property)

170.6.103 WindowMoveToActiveSpaceMBS as boolean

MBS MacOSX Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether this window should appear on the active space.
**Notes:**
When made visible, this window is always shown in the current Space, rather than the space in which it was last visible. When activated, this window moves to the active space, rather than forcing a switch to the Space on which it was previously located. This option is typically used with modeless dialog windows such as the Quick Search window in BBEdit. This flag and the WindowVisibleInAllSpacesMBS flag should not both be set.
For Carbon only. For Cocoa, please use NSWindowMBS.collectionBehavior.
(Read and Write computed property)
170.6.104  **WindowProxyIconFileMBS as folderitem**

MBS Util Plugin, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** That’s the icon to the window which belongs to the file.

**Example:**

```vba
dim f as folderItem

f=getopenFolderItem("special/any")
if f<>nil then
  window1.WindowProxyIconFileMBS=f
end if
```

**Notes:**

Requires Mac OS 8.5 or newer.
In Realbasic 2005 and newer you need to use self. in front of the method as the propertiname alone is not accepted.

Added Cocoa support in plugin version 10.0.
(Read and Write computed property)

170.6.105  **WindowVisibleInAllSpacesMBS as boolean**

MBS MacOSX Plugin, Plugin Version: 8.4, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether a window is visible on all spaces.

**Notes:**

This window is visible in all window sets managed by Spaces. If this flag is not set, the window is only visible in the Space where it was created. This flag and the WindowMoveToActiveSpaceMBS flag should not both be set.
For Carbon only. For Cocoa, please use NSWindowMBS.collectionBehavior.
(Read and Write computed property)

170.6.106  **WinMenuHandleMBS as Integer**

MBS Util Plugin, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** A property to access the handle used for the menu of a Window.

**Example:**

```vba
dim menu as Integer // global

if menu=0 then
```

menu=Window1.WinMenuHandleMBS // read it on the first window
else
Window1.winmenuHandleMBS=menu // set it on the second window
end if

Notes:

Used in the example "Menu in every Window" to have a menubar in every window on Windows. But never forget to quit your app after all windows were closed.
In Realbasic 2005 and newer you need to use self. in front of the method as the propertyname alone is not accepted.
(Read and Write computed property)

170.6.107 WinTopMostWindowMBS as boolean

MBS Win Plugin, Plugin Version: 9.6, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function:
Whether a window is staying on the top of the other windows.
Example:

window1.WinTopMostWindowMBS=true

Notes:

If true the window stays in front of other windows. Default is false for Real Studio windows and true for overlays.
(Read and Write computed property)
Chapter 171

Window Group

171.1 class WindowGroupMBS

171.1.1 class WindowGroupMBS

MBS Util Plugin, Plugin Version: 4.2, Console & Web: Yes, Mac: Yes, Win: No, Linux: No. **Function:** A class for a window group on Mac OS X.

**Example:**

// Creates a new group for two windows moving together:

```java
static WinGroup as WindowGroupMBS

const kCGNormalWindowLevelKey=4
WinGroup=new WindowGroupMBS
WinGroup.Create(16+8+2+1)
WinGroup.Level=WinGroup.LevelForKey(kCGNormalWindowLevelKey)
window1.show
window1.WindowGroupMBS=WinGroup
window2.show
window2.WindowGroupMBS=WinGroup
```

**Deprecated:** This item is deprecated and should no longer be used. **Notes:** This class is Carbon only and not supported on Cocoa. For Cocoa you can check NSWindowMBS.addChildWindow method for similar functionality.

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CHAPTER 171. WINDOW GROUP

171.1.2 Methods

171.1.3 ChangeAttributes(setTheseAttributes as Integer, clearTheseAttributes as Integer)

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Changes the attributes of a window group. **Notes:** Lasterror is set.

These are attributes that may be applied to a window group:

<table>
<thead>
<tr>
<th>Attribute Name</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kWindowGroupAttrSelectAsLayer</td>
<td>1</td>
<td>Makes the group behave somewhat as a layer of windows that move together. When any window in the group is brought to the front of the group, the entire group will also be brought to the front of the containing group's child hierarchy.</td>
</tr>
<tr>
<td>kWindowGroupAttrMoveTogether</td>
<td>2</td>
<td>The positions of the contents of this group with respect to each other cannot be changed. When one item moves, all other items are moved simultaneously.</td>
</tr>
<tr>
<td>kWindowGroupAttrLayerTogether</td>
<td>4</td>
<td>The z-order of the contents of this group with respect to each other cannot be changed. When one item changes z-order, all other items are moved simultaneously. For purposes of z-ordering, the group and all its subgroups are effectively treated as if they were a single window in the parent group of this group.</td>
</tr>
<tr>
<td>kWindowGroupAttrSharedActivation</td>
<td>8</td>
<td>The active state of the windows in this group is shared. The windows in the group are activated or deactivated according to the activation scope of the group, but when any window in the group changes activation, all other windows change to match.</td>
</tr>
<tr>
<td>kWindowGroupAttrHideOnCollapse</td>
<td>16</td>
<td>When any window in this group is collapsed, all other windows in this group are hidden. All subgroups of this group are also examined for the HideOnCollapse attribute, and any the windows of any subgroup with this attribute are also hidden. All windows will be shown again when the collapsed window is expanded.</td>
</tr>
</tbody>
</table>

171.1.4 Close

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The destructor. **Notes:** There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you. (e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)
171.1. CLASS WINDOWGROUPMBS

171.1.5 Create(attributes as Integer)


Notes:

Lasterror is set.

These are attributes that may be applied to a window group:

- **kWindowGroupAttrSelectAsLayer** 1  
  Makes the group behave somewhat as a layer of windows that move together. When any window in the group is brought to the front of the group, the entire group will also be brought to the front of the containing group's child hierarchy.

- **kWindowGroupAttrMoveTogether** 2  
  The positions of the contents of this group with respect to each other cannot be changed. When one item moves, all other items are moved simultaneously.

- **kWindowGroupAttrLayerTogether** 4  
  The z-order of the contents of this group with respect to each other cannot be changed. When one item changes z-order, all other items are moved simultaneously. For purposes of z-ordering, the group and all its subgroups are effectively treated as if they were a single window in the parent group of this group.

- **kWindowGroupAttrSharedActivation** 8  
  The active state of the windows in this group is shared. The windows in the group are activated or deactivated according to the activation scope of the group, but when any window in the group changes activation, all other windows change to match.

- **kWindowGroupAttrHideOnCollapse** 16  
  When any window in this group is collapsed, all other windows in this group are hidden. All subgroups of this group are also examined for the HideOnCollapse attribute, and any the windows of any subgroup with this attribute are also hidden. All windows will be shown again when the collapsed window is expanded.

171.1.6 IsWindowContained(win as window) as boolean

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function: Indicates whether a window is contained within a group or any of its subgroups.

Notes: True for success.

171.1.7 LevelForKey(levelkey as Integer) as Integer


Notes: Some constants for the level keys
171.1.8 NextGroup as WindowGroupMBS

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the next group of a window group.
**Notes:** Returns nil on any error (e.g. if no next group is in the same parent group)

171.1.9 PreviousGroup as WindowGroupMBS

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the previous or previous group of a window group.
**Notes:** Returns nil on any error (e.g. if no previous group is in the same parent group)

171.1.10 ReleaseObject

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Releases a refcount on a window group. If the refcount goes to zero, the group is destroyed, and a refcount is released from all contained objects.
**Notes:**
Lasterror is set.
Make sure you clear the handle so the destructor will not release it again.
171.1. **CLASS WINDOWGROUPMBS**

### 171.1.11 RetainCount as Integer

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Returns the refcount of a window group.

### 171.1.12 RetainObject

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Increments the refcount of a window group. **Notes:** Lasterror is set.

### 171.1.13 SendBehind(behind as WindowGroupMBS)

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Changes the z-order of a group, if the group does not have the kWindowGroupAttributeLayerTogether attribute set. **Notes:**

SendBehind currently requires that the group being moved and the behindGroup have the same parent group.

Parameter behind: The group behind which to position the specified group. Lasterror is set.

### 171.1.14 WindowGroupOfClass(classid as Integer)

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Like create, but looks up an existing window group instead of creating one. **Notes:**

see macwindows.h (part of DevTools) for details. Lasterror is set.

### 171.1.15 Properties

### 171.1.16 AttributeFlags as Integer

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The attributes for this window group. **Notes:**
These are attributes that may be applied to a window group:

- **kWindowGroupAttrSelectAsLayer**: 1
  Makes the group behave somewhat as a layer of windows that move together. When any window in the group is brought to the front of the group, the entire group will also be brought to the front of the containing group’s child hierarchy.

- **kWindowGroupAttrMoveTogether**: 2
  The positions of the contents of this group with respect to each other cannot be changed. When one item moves, all other items are moved simultaneously.

- **kWindowGroupAttrLayerTogether**: 4
  The z-order of the contents of this group with respect to each other cannot be changed. When one item changes z-order, all other items are moved simultaneously. For purposes of z-ordering, the group and all its subgroups are effectively treated as if they were a single window in the parent group of this group.

- **kWindowGroupAttrSharedActivation**: 8
  The active state of the windows in this group is shared. The windows in the group are activated or deactivated according to the activation scope of the group, but when any window in the group changes activation, all other windows change to match.

- **kWindowGroupAttrHideOnCollapse**: 16
  When any window in this group is collapsed, all other windows in this group are hidden. All subgroups of this group are also examined for the HideOnCollapse attribute, and any the windows of any subgroup with this attribute are also hidden. All windows will be shown again when the collapsed window is expanded.

Renamed Attributes parameter to AttributeFlags in plugin version 8.2.
(Read only property)

### 171.1.17 Count as Integer

**MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:**
Counts the windows or groups contained in a group.
**Notes:**
Returns 0 on any error.
(Read only property)

### 171.1.18 Handle as Integer

**MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. Function:**
The handle of the window group.
**Notes:**
Data type is WindowGroupRef.
(Read and Write property)
171.1. Level as Integer

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Sets the CoreGraphics window group level of windows in a group.

**Notes:**

CoreGraphics windows (used to implement all windows in Carbon and Cocoa applications on Mac OS X) are divided into layers specified by a window level. Standard window levels are listed in the LevelForKey function documentation. By default, a new window group has a window level of kCGNormalWindowLevel. When a window is placed into a window group, its window level is determined by the window level of its "base group". This is the containing group that is a child of the root group. For example, if group A is a child of the root group, and group B is a child of group A, and window C is in group B, then window C’s base group is group A, and group A’s window level determines the level of window C. Setting level is only allowed changing the window level of groups that are children of the root group. It returns paramErr for other groups, since a group that is not a child of the root group is not a base group and changing its level has no effect. Changing the level of a group also changes the level of all windows currently contained by the group.

You can get level values using the LevelForKey function.

Lasterror is set.

(Read and Write property)

171.1.20 Name as String

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The name of the group.

**Notes:** (Read and Write property)

171.1.21 Release as Boolean

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** Whether the destructor should release the handle.

**Notes:** (Read and Write property)

171.1.22 Parent as WindowGroupMBS

MBS Util Plugin, Plugin Version: 4.2, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Function:** The window group that contains a group.

**Notes:**

Returns nil on any error.

(Read and Write computed property)
Chapter 172

Windows

172.1 class MapiFileMBS

172.1.1 class MapiFileMBS

MBS Win Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A class contain information about a file containing a message attachment stored as a temporary file.

**Notes:**

Important:
Simple MAPI is not installed by Exchange Server 2003 or later. However, Simple MAPI is supported for use with Exchange 2003. To function properly, the underlying Exchange or Microsoft Outlook MAPI subsystem must be properly installed on the client computer.

172.1.2 Properties

172.1.3 Filename as String

MBS Win Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The attachment filename seen by the recipient, which may differ from the filename in the PathName member if temporary files are being used.

**Notes:**

If the FileName member is empty, the filename from PathName is used.
(Read and Write property)
172.1.4 Flags as Integer

MBS Win Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The flags.  
**Notes:**  
Currently not used with the plugin.  
(Read and Write property)

172.1.5 Path as FolderItem

MBS Win Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The path of the attached file.  
**Notes:**  
When this property is set the PathName property is filled with the absolute path. If you query this property, you get the PathName property as a folderitem. So this property was made for your convenience.  
(Read and Write property)

172.1.6 PathName as String

MBS Win Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The fully qualified path of the attached file.  
**Notes:**  
This path should include the disk drive letter and directory name.  
(Read and Write property)

172.1.7 Position as Integer

MBS Win Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** An integer used to indicate where in the message text to render the attachment.  
**Notes:**  
Attachments replace the character found at a certain position in the message text. That is, attachments replace the character in the MapiMessage NoteText property at offset nPosition (nPosition is zero based!). A value of -1 means the attachment position is not indicated; the client application will have to provide a way for the user to access the attachment.  
(Read and Write property)
172.2.  CLASS MAPIMESSAGEMBS

172.2 class MapiMessageMBS

172.2.1 class MapiMessageMBS


172.2.2 Methods

172.2.3 AddFile(file as MapiFileMBS)


172.2.4 AddRecipient(recipient as MapiRecipientMBS)


172.2.5 IsAvailable as boolean

MBS Win Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: Whether MAPI is available. Notes: Checks whether the library was loaded and whether the MAPI Registry key exists, so this has been initialized.
(mail account may not exist)

Returns true if MAPI can be used.

172.2.6 IsUnicodeAvailable as boolean

MBS Win Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: Whether MAPI is available with unicode. Notes:
Checks whether the library was loaded and whether the MAPI Registry key exists, so this has been initialized.
(mail account may not exist)

Returns true if MAPI can be used with unicode.

172.2.7 SendMail(DisplayDialog as boolean, DisplayLogonDialog as boolean) as Integer

MBS Win Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Sends an email.  
**Notes:** Same as the other SendMail function, but this one does not take the parent window handle and supports console applications.  
See also:

- 172.2.8 SendMail(parent as window, DisplayDialog as boolean, DisplayLogonDialog as boolean) as Integer

172.2.8 SendMail(parent as window, DisplayDialog as boolean, DisplayLogonDialog as boolean) as Integer

MBS Win Plugin, Plugin Version: 8.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Sends an email.  
**Notes:**

Parameters:

parent:
The parent window for the dialogs used. If not nil the dialogs used will be modal.

DisplayDialog:
A dialog box should be displayed to prompt the user for recipients and other sending options. When Dialog is false, at least one recipient must be specified.

DisplayLogonDialog:
A dialog box should be displayed to prompt the user to log on if required. When the DisplayLogonDialog is false, the client application does not display a logon dialog box and returns an error value if the user is not logged on. SendMail ignores this flag if the MessageID parameter is empty.

Error codes:
const SUCCESS = 0 No error.
const MAPI_USER_ABORT = 1 The user canceled one of the dialog boxes. No message was sent.
const MAPI_FAILURE = 2 One or more unspecified errors occurred. No message was sent.
const MAPI_LOGON_FAILURE = 3 There was no default logon, and the user failed to log on successfully when the logon dialog box was displayed. No message was sent.
const MAPI_DISK_FULL = 4 There was insufficient memory to proceed. No message was sent.
const MAPI_INSUFFICIENT_MEMORY = 5 There were too many file attachments. No message was sent.
const MAPI_ACCESS_DENIED = 6 The specified attachment was not found. No message was sent.
const MAPI_TOO_MANY_SESSIONS = 8 The type of a recipient was not TypeTO, TypeCC, or TypeBCC. No message was sent.
const MAPI_TOO_MANY_FILES = 9 The text in the message was too large. No message was sent.
const MAPI_TOO_MANY_RECIPIENTS = 10 The text in the message was too large. No message was sent.
const MAPI_ATTACHMENT_NOT_FOUND = 11 The specified attachment could not be opened. No message was sent.
const MAPI_ATTACHMENT_OPEN_FAILURE = 12 A recipient matched more than one of the recipient descriptor structures and Dialog is false. No message was sent.
const MAPI_ATTACHMENT_WRITE_FAILURE = 13 One or more recipients were invalid or did not resolve to any address.
const MAPI_NO_MESSAGES = 16 The profile must be configured so that MAPISendMail can open the default service providers without requiring user interaction.
const MAPI_INVALID_MESSAGE = 17 Client applications can provide a full or partial list of recipient names, subject text, file attachments, or message text. If any information is missing, MAPISendMail can prompt the user for it. If no information is missing, either the message can be sent as is or the user can be prompted to verify the information, changing values if necessary.
const MAPI_TEXT_TOO_LARGE = 18 A successful return from MAPISendMail does not necessarily imply recipient validation. The message might not have been sent to all recipients. Depending on the transport provider, recipient validation can be a lengthy process.
const MAPI_NETWORK_FAILURE = 23 A "" value for the Subject indicates that there is no text for the subject of the message. A "" value for the NoteText member indicates that there is no message text. Some client applications can truncate subject lines that are too long or contain carriage returns, line feeds, or form feeds.
const MAPI_URL = 24 Each paragraph should be terminated with a CR (0x0d), an LF (0x0a), or a CRLF pair (0x0d0a). MAPISendMail wraps lines as appropriate. If the text exceeds system limits, the function returns the MAPI_E_TEXT_TOO_LARGE value.
const MAPI_INVALID_EDITFIELDS = 24
const MAPI_INVALID_RECIPS = 25
const MAPI_NOT_SUPPORTED = 26
The \texttt{MessageType} property is used only by non-IPM applications. Applications that handle IPM messages can set it to "".

The number of attachments per message can be limited in some messaging systems. If the limit is exceeded, the \texttt{MAPI\_TOO\_MANY\_FILES} value is returned. File attachments are copied to the message before \texttt{MAPISendMail} returns; therefore, later changes to the files do not affect the contents of the message. The files must be closed when they are copied. Do not attempt to display attachments outside the range of the message text.

Some messaging systems can limit the number of recipients per message. If the client application passes a non-nil value indicating a number of recipients exceeding the system limit, \texttt{MAPISendMail} returns the \texttt{MAPI\_TOO\_MANY\_RECIPIENTS} value. If the recipient array is empty, the \texttt{Dialog} parameter must be true in the call to \texttt{MAPISendMail}.

Note that the recipients can include either an entry identifier, the recipient’s name, an address, or a name and address pair. The following table shows how \texttt{MAPISendMail} handles the variety of information that can be specified:

\begin{center}
\begin{tabular}{|l|l|}
\hline
Information & Action \\
\hline
entry identifier & No name resolution; the name and address are ignored. \\
name & Name resolved using the Simple MAPI resolution rules. \\
address & No name resolution; address is used for both message delivery and for displaying the recipient name. \\
name and address & No name resolution; name used only for displaying the recipient name. \\
\hline
\end{tabular}
\end{center}

Client applications that send messages to custom recipients can avoid name resolution. Such clients should set the \texttt{Address} member of the recipient to the custom address.

\texttt{MAPISendMail} does not require an originator-type recipient to send a message.

Important Simple MAPI is not installed by Exchange Server 2003 or later. However, Simple MAPI is supported for use with Exchange 2003. To function properly, the underlying Exchange or Microsoft Outlook MAPI subsystem must be properly installed on the client computer.

See also:

\begin{itemize}
\item \texttt{172.2.7 SendMail(DisplayDialog as boolean, DisplayLogonDialog as boolean) as Integer}
\end{itemize}

\textbf{172.2.9 SendMailMT(DisplayDialog as boolean, DisplayLogonDialog as boolean) as Integer}

\texttt{MBS Win Plugin, Plugin Version: 15.1, Console \& Web: Yes, Mac: No, Win: Yes, Linux: No. \textbf{Function:} Sends an email.}
172.2. CLASS MAPIMESSAGEMBS

Notes:
Same as the other SendMail function, but threaded.
Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.
See also:

- 172.2.10 SendMailMT(parent as window, DisplayDialog as boolean, DisplayLogonDialog as boolean) as Integer

172.2.10 SendMailMT(parent as window, DisplayDialog as boolean, DisplayLogonDialog as boolean) as Integer

MBS Win Plugin, Plugin Version: 15.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Sends an email.
**Notes:**
Same as the other SendMail function, but threaded.
Must be called inside a Xojo (Real Studio) thread so time yields to main thread and you can keep the GUI running.
See also:

- 172.2.9 SendMailMT(DisplayDialog as boolean, DisplayLogonDialog as boolean) as Integer

172.2.11 Properties

172.2.12 ConversationID as String

MBS Win Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A string identifying the conversation thread to which the message belongs.
**Notes:**
Some messaging systems can ignore and not return this member.
(Read and Write property)

172.2.13 DateReceived as String

MBS Win Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A string indicating the date when the message was received.
**Notes:**
The format is YYYY/MM/DD HH:MM, using a 24-hour clock.
(Read and Write property)
172.2.14 Flags as Integer

**Notes:**
Can be a combination of kFlagsReceiptRequested, kFlagsSent and kFlagsUnread.
(Read and Write property)

172.2.15 MessageType as String

MBS Win Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A string indicating a non-IPM type of message.
**Notes:**
Client applications can select message types for their non-IPM messages. Clients that only support IPM messages can ignore the MessageType member when reading messages and set it to empty when sending messages.
(Read and Write property)

172.2.16 NoteText as String

MBS Win Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A string containing the message text.
**Notes:**
If this member is empty, there is no message text.
(Read and Write property)

172.2.17 Originator as MapiRecipientMBS

MBS Win Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The reference to the originator of this message.
**Notes:** (Read and Write property)

172.2.18 Subject as String

MBS Win Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The text string describing the message subject, typically limited to 256 characters or less.
**Notes:**
If this member is empty, the user has not entered subject text. (Read and Write property)

### 172.2.19 Constants

#### 172.2.20 kFlagsReceiptRequested=2

MBS Win Plugin, Plugin Version: 8.3. **Function:** One of the constants for the flags property.  
**Notes:**  
A receipt notification is requested. Client applications set this flag when sending a message.  

Note: Most email applications ignore the receipt notifications.

#### 172.2.21 kFlagsSent=4

MBS Win Plugin, Plugin Version: 8.3. **Function:** One of the constants for the flags property.  
**Notes:** The message has been sent.

#### 172.2.22 kFlagsUnread=1

MBS Win Plugin, Plugin Version: 8.3. **Function:** One of the constants for the flags property.  
**Notes:** The message has not been read.
172.3 class MapiRecipientMBS

172.3.1 class MapiRecipientMBS

MBS Win Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** This class contains information about a message sender or recipient.

172.3.2 Properties

172.3.3 Address as String

MBS Win Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Optional the recipient or sender’s address. **Notes:** This address is provider-specific message delivery data. Generally, the messaging system provides such addresses for inbound messages. For outbound messages, the Address member can point to an address entered by the user for a recipient not in an address book (that is, a custom recipient). The format of an address pointed to by the Address member is [ address type ] [ e-mail address ]. Examples of valid addresses are FAX:206-555-1212 and SMTP:M@X.COM. (Read and Write property)

172.3.4 Name as String

MBS Win Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The name of the recipient. **Notes:** (Read and Write property)

172.3.5 Type as Integer

MBS Win Plugin, Plugin Version: 8.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Contains a numeric value that indicates the type of recipient. **Notes:** Use one of the Type constants. (Read and Write property)
172.3.6 Constants

172.3.7 TypeBCC=3

MBS Win Plugin, Plugin Version: 8.3. **Function:** One of the constants for the type property. **Notes:** Indicates a recipient of a blind copy.

172.3.8 TypeCC=2

MBS Win Plugin, Plugin Version: 8.3. **Function:** One of the constants for the type property. **Notes:** Indicates a recipient of a message copy.

172.3.9 TypeOriginator=0

MBS Win Plugin, Plugin Version: 8.3. **Function:** One of the constants for the type property. **Notes:** Indicates the original sender of the message.

172.3.10 TypeTo=1

MBS Win Plugin, Plugin Version: 8.3. **Function:** One of the constants for the type property. **Notes:** Indicates a primary message recipient.
172.4  class TaskDialogButtonMBS

172.4.1  class TaskDialogButtonMBS

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The class for a button.

172.4.2  Properties

172.4.3  Default as Boolean

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Whether this is default button.
**Notes:**
Only one button can be default.
(Read and Write property)

172.4.4  Enabled as Boolean

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Whether to enable this button.
**Notes:**
Default: true.
This is a live property. Setting it while dialog is open changes the button state.
(Read and Write property)

172.4.5  ID as Integer

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The unique ID for the button.
**Notes:**
The IDs should be unique for all buttons.
(Read and Write property)
172.4.6 Text as String

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The caption for the button.
**Notes:** (Read and Write property)

172.4.7 Visible as Boolean

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Whether this button is visible.
**Notes:**
Default true.
(Read and Write property)
172.5 class TaskDialogMBS

172.5.1 class TaskDialogMBS


**Notes:**
This class function creates, displays, and operates a task dialog. The task dialog contains application-defined icons, messages, title, verification check box, command links, push buttons, and radio buttons.

Requires Windows Vista or newer.

172.5.2 Methods

172.5.3 AppendButton(button as TaskDialogButtonMBS)

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Adds a button.

**Example:**

```vba
dim td as TaskDialogMBS

dim b as new TaskDialogButtonMBS
b.Text = "Hello"
b.ID = 123

td.AppendButton b
```

172.5.4 AppendRadioButton(button as TaskDialogButtonMBS)

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Adds a radio button.

**Example:**

```vba
dim td as TaskDialogMBS

dim b as new TaskDialogButtonMBS
b.Text = "Hello"
b.ID = 123

td.AppendRadioButton b
```
172.5.5 CloseDialog


172.5.6 FindButtonByID(ID as Integer) as TaskDialogButtonMBS

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Finds button by ID. **Notes:**
This searches buttons and radiobuttons for given ID.
It will not find common buttons.
Returns button if found or nil if not found.

172.5.7 ShowDialog as Boolean

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Shows the dialog. **Example:**
```
dim td as new TaskDialogMBS

td.CommonButtons = BitwiseOr(td.kCommonButtonOK, td.kCommonButtonCancel)
td.Content = "Hello World"

if td.ShowDialog then
    if td.SelectedButton = td.kIDOK then
        MsgBox "OK"
    else
        MsgBox "Cancel"
    end if
else
    MsgBox "Failed"
end if
```

**Notes:**
Returns true if everything worked right.
Returns false if creation of dialog failed.

Requires Windows Vista or newer.

### 172.5.8 Properties

#### 172.5.9 AllowDialogCancellation as Boolean

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to allow cancel.
**Notes:** Indicates that the dialog should be able to be closed using Alt-F4, Escape, and the title bar’s close button even if no cancel button is specified in either the CommonButtons or Buttons members.
(Read and Write property)

#### 172.5.10 CanBeMinimized as Boolean

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Indicates that the task dialog can be minimized.
**Notes:** (Read and Write property)

#### 172.5.11 CollapsedControlText as String

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The string to be used to label the button for expanding the expandable information.
**Notes:** This member is ignored when the ExpandedInformation member is empty. If this member is empty and the CollapsedControlText is specified, then the CollapsedControlText value will be used for this member as well.
(Read and Write property)

#### 172.5.12 CommonButtons as Integer

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Specifies the push buttons displayed in the task dialog.
**Example:**
dim td as new TaskDialogMBS

td.CommonButtons = BitwiseOr(td.kCommonButtonOK, td.kCommonButtonCancel)
td.Content = "Hello World"

if td.ShowDialog then
    if td.SelectedButton = td.kIDOK then
        MsgBox "OK"
    else
        MsgBox "Cancel"
    end if
else
    MsgBox "Failed"
end if

Notes:
If no common buttons are specified and no custom buttons are specified through buttons array, the task
dialog will contain the OK button by default. This parameter may be a combination of flags from the
following group:

- kCommonButtonOK: The task dialog contains the push button: OK.
- kCommonButtonYes: The task dialog contains the push button: Yes.
- kCommonButtonNo: The task dialog contains the push button: No.
- kCommonButtonCancel: The task dialog contains the push button: Cancel. If this button is specified,
  the task dialog will respond to typical cancel actions (Alt-F4 and Escape).
- kCommonButtonRetry: The task dialog contains the push button: Retry.
- kCommonButtonClose: The task dialog contains the push button: Close.

(Read and Write property)

172.5.13 Content as String

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The string to be used for the dialog's primary content.

**Example:**

dim td as new TaskDialogMBS

td.CommonButtons = BitwiseOr(td.kCommonButtonOK, td.kCommonButtonCancel)
td.Content = "Hello World"
if td.ShowDialog then
  if td.SelectedButton = td.kIDOK then
    MsgBox "OK"
  else
    MsgBox "Cancel"
  end if
else
  MsgBox "Failed"
end if

Notes:
If the EnableHyperlinks flag is true, then this string may contain hyperlinks in the form: <A HREF="executablestring">Hyperlink Text</A>.
WARNING: Enabling hyperlinks when using content from an unsafe source may cause security vulnerabilities.
(Read and Write property)

172.5.14 DefaultButton as Integer

Notes:
This may be any of the values specified in ID of one of the buttons, or one of the IDs corresponding to the buttons specified in the CommonButtons property.

  kIDCancel Make the Cancel button the default.
  kIDNo Make the No button the default.
  kIDOk Make the OK button the default.
  kIDRetry Make the Retry button the default.
  kIDYes Make the Yes button the default.
  kIDClose Make the Close button the default.

You can also mark buttons default with their default flag.
(Read and Write property)
172.5.15 DefaultRadioButton as Integer

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The button ID of the radio button that is selected by default. **Notes:**
If this value does not correspond to a button ID, the first button in the array is selected by default.
You can also mark buttons default with their default flag. (Read and Write property)

172.5.16 DialogHandle as Integer

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The handle of the dialog. **Notes:**
This is only valid (and non zero) while dialog is visible. (Read only property)

172.5.17 EnableHyperlinks as Boolean

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Whether to enable hyperlinks. **Notes:**
Enables hyperlink processing for the strings specified in the Content, ExpandedInformation and Footer members. When enabled, these members may point to strings that contain hyperlinks in the following form:

```
<A HREF="executablestring">Hyperlink Text</A>
```

Warning: Enabling hyperlinks when using content from an unsafe source may cause security vulnerabilities.

Note: Task Dialogs will not actually execute any hyperlinks. Hyperlink execution must be handled in the HyperlinkClicked event. (Read and Write property)

172.5.18 ExpandedByDefault as Boolean

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Indicates that the string specified by the ExpandedInformation member is displayed when the dialog is
initially displayed.

Notes:
This flag is ignored if the ExpandedInformation member is empty.
(Read and Write property)

172.5.19 ExpandedControlText as String

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The string to be used to label the button for collapsing the expandable information.

Notes:
This member is ignored when the ExpandedInformation member is empty. If this member is empty and the CollapsedControlText is specified, then the CollapsedControlText value will be used for this member as well.
(Read and Write property)

172.5.20 ExpandedInformation as String

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The string to be used for displaying additional information.

Notes:
The additional information is displayed either immediately below the content or below the footer text depending on whether the ExpandFooterArea flag is true. If the EnableHyperlinks flag is true, then this string may contain hyperlinks in the form: `<A HREF="executablestring">Hyperlink Text</A>`.
WARNING: Enabling hyperlinks when using content from an unsafe source may cause security vulnerabilities.
(Read and Write property)

172.5.21 ExpandFooterArea as Boolean

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether expand footer area is displayed at the bottom.

Notes:
Indicates that the string specified by the ExpandedInformation member is displayed at the bottom of the dialog’s footer area instead of immediately after the dialog’s content. This flag is ignored if the ExpandedInformation member is empty.
(Read and Write property)
172.5.22 Flags as Integer

**Notes:**
You should not need to set flags as we have properties for all relevant flags.
(Read and Write property)

172.5.23 Footer as String

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The string to be used in the footer area of the task dialog.
**Notes:**
If EnableHyperlinks is true, this can show clickable links.
(Read and Write property)

172.5.24 FooterIconPicture as Picture

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A picture to be used as Icon that is to be displayed in the footer of the task dialog.
**Notes:**
The picture must have a valid mask.
(Read and Write property)

172.5.25 Icon as Integer

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The icon to be displayed in the task dialog.
**Notes:**
Can be one of the kIcon* constants.
Or you set IconPicture property.
(Read and Write property)

172.5.26 IconPicture as Picture

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The icon to be displayed in the task dialog.
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Notes:
The picture must have a valid mask.
(Read and Write property)

172.5.27  MainInstruction as String

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The string to be used for the main instruction.
**Notes:** (Read and Write property)

172.5.28  NoDefaultRadioButton as Boolean

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Indicates that no default item will be selected.
**Notes:** (Read and Write property)

172.5.29  parent as Window

MBS Win Plugin, Plugin Version: 16.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Parent window.
**Notes:** (Read and Write property)

172.5.30  parentHandle as Integer

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Parent window handle.
**Notes:** (Read and Write property)

172.5.31  PositionRelativeToWindow as Boolean

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Indicates that the task dialog is positioned (centered) relative to the window specified by parent.
**Notes:**
If the flag is not supplied (or no parent member is specified), the task dialog is positioned (centered) relative
to the monitor.
(Read and Write property)
172.5. **CLASS TASKDIALOGMBS**

### 172.5.32 ProgressbarMax as Integer

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The maximum of progress bar.

**Notes:**
Default is 100.
This is a live property. Setting it while dialog is open will change the control.
(Read and Write property)

### 172.5.33 ProgressbarMin as Integer

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The minimum value of the progress bar.

**Notes:**
This is a live property. Setting it while dialog is open will change the control.
(Read and Write property)

### 172.5.34 ProgressbarState as Integer

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The state of the progress bar.

**Notes:**
Default kProgressbarNone.
Can be set to other states to turn on progressbar.
(Read and Write property)

### 172.5.35 ProgressbarValue as Integer

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The current value of the progress bar.

**Notes:**
This is a live property. Setting it while dialog is open will change the control.
(Read and Write property)
172.5.36 RightToLeftLayout as Boolean

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Indicates that text is displayed reading right to left. **Notes:** (Read and Write property)

172.5.37 SelectedButton as Integer

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The ID of the clicked button. **Example:**

```vbs
dim td as new TaskDialogMBS

td.CommonButtons = BitwiseOr(td.kCommonButtonOK, td.kCommonButtonCancel)
td.Content = "Hello World"

if td.ShowDialog then
    if td.SelectedButton = td.kIDOK then
        MsgBox "OK"
    else
        MsgBox "Cancel"
    end if
else
    MsgBox "Failed"
end if
```

**Notes:** (Read and Write property)

172.5.38 SelectedRadioButton as Integer

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The ID of the selected radio button. **Notes:** (Read and Write property)
172.5. CLASS TASKDIALOGMBS

172.5.39 Showing as Boolean

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether dialog is currently showing. **Notes:** (Read and Write property)

172.5.40 TimedOut as Boolean

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether we got a timeout. **Notes:** (Read only property)

172.5.41 timeoutMS as Integer

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The timeout for the dialog. **Notes:** In Milliseconds. The dialog closes after given time. (Read and Write property)

172.5.42 VerificationChecked as Boolean

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The state of the verification checkbox. **Example:**

```vbnet
dim td as new TaskDialogMBS

td.CommonButtons = td.kCommonButtonOK
td.Content = "Hello World"
'td.VerificationChecked = true
td.VerificationText = "Don’t show again"

call td.ShowDialog

if td.VerificationChecked then
    MsgBox "and we will not show again"
end if
```
**Notes:**

Before: Indicates whether the verification checkbox in the dialog is checked when the dialog is initially displayed.
After: True if the verification checkbox was checked when the dialog was dismissed.

This is a live property. Changing it while the dialog is open will change the checkbox.
(Read and Write property)

**172.5.43 VerificationEnabled as Boolean**

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The enable state of the verification checkbox.
**Notes:**
Can be true to enable the checkbox or false to disable.
(Read and Write property)

**172.5.44 VerificationText as String**

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The string to be used to label the verification checkbox.
**Example:**

```vbnet
dim td as new TaskDialogMBS

td.CommonButtons = td.kCommonButtonOK
td.Content = "Hello World"
'td.VerificationChecked = true
td.VerificationText = "Don’t show again"

call td.ShowDialog

if td.VerificationChecked then
    MsgBox "and we will not show again"
end if
```

**Notes:**
If this parameter is empty, the verification checkbox is not displayed in the task dialog. If the VerificationEnabled is false, the checkbox is not enabled.
(Read and Write property)
172.5.45 Width as Integer

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The width of the task dialog’s client area, in dialog units.  
**Notes:**  
If 0, the task dialog manager will calculate the ideal width.  
(Read and Write property)

172.5.46 WindowTitle as String

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The string to be used for the task dialog title.  
**Notes:** (Read and Write property)

172.5.47 Yield as Boolean

**Notes:** Whether the plugin should yield time to other Xojo threads while dialog is open.  
(Read and Write property)

172.5.48 Button(index as Integer) as TaskDialogButtonMBS

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Array of the custom buttons that are to be displayed in the task dialog.  
**Notes:** You can create TaskDialogButtonMBS objects and assign them to indexes in the array.  
(Read and Write computed property)

172.5.49 RadioButton(index as Integer) as TaskDialogButtonMBS

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Array of the custom radio buttons that are to be displayed in the task dialog.  
**Notes:**
You can create TaskDialogButtonMBS objects and assign them to indexes in the array. (Read and Write computed property)

**172.5.50 Events**

**172.5.51 ButtonClicked(ID as Integer) as boolean**

MBS Win Plugin, Plugin Version: 16.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Indicates that a button has been selected. **Notes:**

The command ID of the button is specified by ID.
To prevent the task dialog from closing, the application must return true, otherwise the task dialog is closed and the button ID is returned via the original application call.

**172.5.52 Close**

MBS Win Plugin, Plugin Version: 16.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Indicates that the Task Dialog has been destroyed.

**172.5.53 Constructed**

MBS Win Plugin, Plugin Version: 16.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Indicates that the Task Dialog has been created but has not been displayed yet. **Notes:** You can adjust here if you need.

**172.5.54 ExpandButtonClicked(Expanded as Boolean)**

MBS Win Plugin, Plugin Version: 16.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Indicates that the expand button has been selected.

**172.5.55 Help**

MBS Win Plugin, Plugin Version: 16.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Indicates that the F1 key has been pressed while the Task Dialog has focus.
172.5. **CLASS TASKDIALOGMBS**

172.5.56 **HyperlinkClicked(link as string)**

MBS Win Plugin, Plugin Version: 16.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Indicates that a hyperlink has been selected.

172.5.57 **Navigated**

MBS Win Plugin, Plugin Version: 16.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Indicates that navigation has occurred.

172.5.58 **Open**

MBS Win Plugin, Plugin Version: 16.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Indicates that the Task Dialog has been created.

172.5.59 **RadioButtonClicked(ID as Integer) as boolean**

MBS Win Plugin, Plugin Version: 16.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Indicates that a radio button has been selected. **Notes:** The command ID of the radio button is specified by ID.

172.5.60 **Timer(Time as Integer)**

MBS Win Plugin, Plugin Version: 16.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Indicates that the Task Dialog timer has fired. **Notes:**

The total elapsed time is specified by Time. You can update the progress bar by setting ProgressbarValue.

This is called regularly so you can do background work. (or check time and dismiss dialog automatically)

172.5.61 **VerificationClicked(Checked as Boolean)**

MBS Win Plugin, Plugin Version: 16.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Indicates that the Task Dialog verification check box has been selected.
172.5.62 Constants

172.5.63 kCommonButtonCancel = 8

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the common button constants.  
**Notes:** The task dialog contains the push button: Cancel. If this button is specified, the task dialog will respond to typical cancel actions (Alt-F4 and Escape).

172.5.64 kCommonButtonClose = 32

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the common button constants.  
**Notes:** The task dialog contains the push button: Close.

172.5.65 kCommonButtonNo = 4

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the common button constants.  
**Notes:** The task dialog contains the push button: No.

172.5.66 kCommonButtonOK = 1

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the common button constants.  
**Example:**

```vbs
dim td as new TaskDialogMBS

td.CommonButtons = td.kCommonButtonOK
td.Content = "Hello World"

' td.VerificationChecked = true
td.VerificationText = "Don’t show again"

call td.ShowDialog

if td.VerificationChecked then
    MsgBox "and we will not show again"
end if
```

**Notes:** The task dialog contains the push button: OK.
172.5.67  kCommonButtonRetry = 16

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the common button constants.  **Notes:** The task dialog contains the push button: Retry.

172.5.68  kCommonButtonYes = 2

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the common button constants.  **Notes:** The task dialog contains the push button: Yes.

172.5.69  kIconApplication = 5

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the icon constants.  **Notes:** An application icon appears in the task dialog.

172.5.70  kIconError = 2

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the icon constants.  **Notes:** A stop-sign icon appears in the task dialog.

172.5.71  kIconInformation = 3

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the icon constants.  **Notes:** An icon consisting of a lowercase letter i in a circle appears in the task dialog.

172.5.72  kIconNone = 0

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the icon constants.  **Notes:** No icon.

172.5.73  kIconShield = 4

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the icon constants.  **Notes:** A shield icon appears in the task dialog.
172.5.74  kIconWarning = 1

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the icon constants.  
**Notes:** An exclamation-point icon appears in the task dialog.

172.5.75  kIDAAbort = 3

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the standard button IDs.  
**Notes:** Abort button

172.5.76  kIDCancel = 2

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the standard button IDs.  
**Notes:** Cancel button

172.5.77  kIDIgnore = 5

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the standard button IDs.  
**Notes:** Ignore button

172.5.78  kIDNo = 7

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the standard button IDs.  
**Notes:** No button

172.5.79  kIDOK = 1

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the standard button IDs.  
**Notes:** OK Button

172.5.80  kIDRetry = 4

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the standard button IDs.  
**Notes:** Retry Button
172.5.81  kIDYes = 6

MBS Win Plugin, Plugin Version: 16.2. Function: One of the standard button IDs. Notes: Yes Button

172.5.82  kProgressBarError = 3


172.5.83  kProgressBarMarquee = 8

MBS Win Plugin, Plugin Version: 16.2. Function: One of the progressbar states. Notes: Marquee state

172.5.84  kProgressBarNone = 0


172.5.85  kProgressBarNormal = 1

MBS Win Plugin, Plugin Version: 16.2. Function: One of the progressbar states. Notes: Normal progressbar

172.5.86  kProgressBarPause = 2

MBS Win Plugin, Plugin Version: 16.2. Function: One of the progressbar states. Notes: Paused progress bar
172.6 class TimerMBS

172.6.1 class TimerMBS

MBS Win Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for a timer.

**Notes:**

This timer can work with smaller periods than the normal Xojo timers on Windows.
Works on Mac OS X and Linux, too.

172.6.2 Methods

172.6.3 Constructor(Period as Integer)

MBS Win Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The constructor.

**Notes:**

Please pass a period between 1 and 999 Milliseconds.

The timer will try to be as exact as possible, but if main thread is busy, action events are delayed.

172.6.4 Destructor

MBS Win Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The destructor.

172.6.5 Properties

172.6.6 Period as Integer

MBS Win Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The period used.

**Notes:**

In milliseconds.
(Read only property)
172.6.7 Events

172.6.8 Action

MBS Win Plugin, Plugin Version: 14.3, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The action event.
**172.7 Globals**

### 172.7.1 GetWindowsErrorMessageMBS(ErrorCode as Integer) as String

MBS Win Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Formats a windows error message for the given error code.  
**Example:**  
```vbnet
EditField1.text = GetWindowsErrorMessageMBS(-2147352567)
```

**Notes:** Returns empty string for unknown error codes.

### 172.7.2 WindowsExecuteMBS(ApplicationName as string, CommandLine as string, CurrentDirectory as string, byref PID as Integer, Flags as Integer = 0) as Integer

MBS Win Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Creates a new process and its primary thread. The new process runs in the security context of the calling process.  
**Example:**  
```vbnet
dim error, pid as Integer

pid = 0
error = WindowsExecuteMBS(“”, ”explorer.exe”, “”, pid)
if error = 0 then
    MsgBox “Launched explorer with process id: ”+str(pid)
else
    MsgBox ”Error: ”+str(error)
end if

pid = 0
error = WindowsExecuteMBS(””, ”notepad.exe””C:\boot.ini””, “”, pid)
if error = 0 then
    MsgBox ”Launched Notepad with process id: ”+str(pid)
else
    MsgBox ”Error: ”+str(error)
end if
```

**Notes:**
172.7. **GLOBALS**

**ApplicationName:**
The name of the module to be executed. This module can be a Windows-based application. It can be some other type of module (for example, MS-DOS or OS/2) if the appropriate subsystem is available on the local computer.

The string can specify the full path and file name of the module to execute or it can specify a partial name. In the case of a partial name, the function uses the current drive and current directory to complete the specification. The function will not use the search path. This parameter must include the file name extension; no default extension is assumed.

The ApplicationName parameter can be empty. In that case, the module name must be the first white spacedelimited token in the CommandLine string. If you are using a long file name that contains a space, use quoted strings to indicate where the file name ends and the arguments begin; otherwise, the file name is ambiguous. For example, consider the string "c:\program files\sub dir\program name". This string can be interpreted in a number of ways. The system tries to interpret the possibilities in the following order:

- c:\program.exe files\sub dir\program name
- c:\program files\sub.exe dir\program name
- c:\program files\sub dir\program.exe name
- c:\program files\sub dir\program name.exe

If the executable module is a 16-bit application, ApplicationName should be empty, and the string pointed to by CommandLine should specify the executable module as well as its arguments.

To run a batch file, you must start the command interpreter; set ApplicationName to cmd.exe and set CommandLine to the following arguments: /c plus the name of the batch file.

**CommandLine:**
The command line to be executed. The maximum length of this string is 32,767 characters. If ApplicationName is empty, the module name portion of CommandLine is limited to MAX_PATH (256) characters.

The CommandLine parameter can be empty. In that case, the function uses the string pointed to by ApplicationName as the command line.

If both ApplicationName and CommandLine are non-empty, the ApplicationName string specifies the module to execute, and the CommandLine string specifies the command line. The new process can use GetCommandLine to retrieve the entire command line. Console processes written in C can use the argc and argv arguments to parse the command line. Because argv[0] is the module name, C programmers generally repeat the module name as the first token in the command line.
If ApplicationName is empty, the first white spacedelimited token of the command line specifies the module name. If you are using a long file name that contains a space, use quoted strings to indicate where the file name ends and the arguments begin (see the explanation for the ApplicationName parameter). If the file name does not contain an extension, .exe is appended. Therefore, if the file name extension is .com, this parameter must include the .com extension. If the file name ends in a period (.) with no extension, or if the file name contains a path, .exe is not appended. If the file name does not contain a directory path, the system searches for the executable file in the following sequence:

- The directory from which the application loaded.
- The current directory for the parent process.
- The 32-bit Windows system directory. Use the GetSystemDirectory function to get the path of this directory.
- The 16-bit Windows system directory. There is no function that obtains the path of this directory, but it is searched. The name of this directory is System.
- The Windows directory. Use the GetWindowsDirectory function to get the path of this directory.
- The directories that are listed in the PATH environment variable. Note that this function does not search the per-application path specified by the App Paths registry key. To include this per-application path in the search sequence, use the ShellExecute function.
- The system adds a terminating null character to the command-line string to separate the file name from the arguments. This divides the original string into two strings for internal processing.

CurrentDirectory:
The full path to the current directory for the process. The string can also specify a UNC path.

If this parameter is empty, the new process will have the same current drive and directory as the calling process. (This feature is provided primarily for shells that need to start an application and specify its initial drive and working directory.)

pid:
The variable to store the process ID of the new process.

Returns 0 for success or a windows error code for any error.

Note that the function returns before the process has finished initialization. If a required DLL cannot be located or fails to initialize, the process is terminated. To get the termination status of a process, call GetExitCodeProcess.

Possible Flags:
172.7.3  **WindowsRunAsMBS(Username as string, Domain as string, Password as string, LoginFlags as Integer, ApplicationName as string, CommandLine as string, CurrentDirectory as string, byref PID as Integer, Flags as Integer = -1) as Integer**

MBS Win Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Runs an application with a different user login.

**Notes:**
Please see Microsoft website for details:

The plugin passes parameters. If Flags is -1, we use CREATE_DEFAULT_ERROR_MODE Or CREATE_NEW_CONSOLE Or CREATE_NEW_PROCESS_GROUP.
The StartupInfo handles are closed and the PID is returned in the PID parameter.
Returns the Windows error code on failure. Else we return zero for success. On Mac and Linux the result is always -1.

172.7.4  **WinGetSysColorMBS(Index as Integer) as Color**

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Retrieves the current color of the specified display element.

**Notes:**
Display elements are the parts of a window and the display that appear on the system display screen.

Index: The display element whose color is to be retrieved. This parameter can be one of the following values.

- Specifies the left side color in the color gradient of an active window’s title bar if the gradient effect is enabled.
- Specifies the left side color in the color gradient of an inactive window’s title bar if the gradient effect is enabled.

Windows 2000: This value is not supported.

Windows 2000: This value is not supported.

The function returns the red, green, blue (RGB) color value of the given element.
172.7.5 WinOpenFolderAndSelectItemsMBS(folder as folderItem, files() as folderItem, ShowOnDesktop as Boolean = false, EditName as Boolean = false) as Integer

MBS Win Plugin, Plugin Version: 14.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Opens a Windows Explorer window with specified items in a particular folder selected.

**Example:**

dim file as FolderItem = SpecialFolder.Desktop.Child("test.rtf")
dim folder as FolderItem = file.Parent

dim r as Integer = WinOpenFolderAndSelectItemsMBS(folder, array(file))

if r = 0 then
    MsgBox "OK"
else
    MsgBox "Error: " + str(r)
end if

**Notes:**
Please pass a folder to open. Pass the files you want to select in that folder.

Under Windows XP the flag parameters are ignored. They work in Windows Vista and newer:

**Editname:** Pass true to select an item and put its name in edit mode. This flag can only be used when a single item is being selected. For multiple item selections, it is ignored.

**ShowOnDesktop:** Pass true to select the item or items on the desktop rather than in a Windows Explorer window. Note that if the desktop is obscured behind open windows, it will not be made visible.

For Mac, please use NSWorkspaceMBS.selectfile function.

172.7.6 WinSetSysColorMBS(Index as Integer, value as Color) as boolean

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Sets the colors for the specified display elements.

**Notes:**
Display elements are the various parts of a window and the display that appear on the system display screen.
If the function succeeds, the return value is true.
For indexes, please check WinGetSysColorMBS.
172.7.7 WindowsShellExecuteMBS(\(\text{ParentWindowHandle as Integer, Operation as string, File as string, Parameters as string, Directory as string, ShowCmd as Integer}\) as Integer)


**Example:**

```vbnet
dim e as Integer
dim f as FolderItem

// show documents folder
f = SpecialFolder/Documents
e = WindowsShellExecuteMBS(0, "explore", f.AbsolutePath, ",", ",", 10)

// Launch Notepad application
e = WindowsShellExecuteMBS(0, ",", ",notepad.exe", ",", ",", 10)

// launch file, folder or application
f = SpecialFolder/Desktop/Child("Auto1.JPG")
e = WindowsShellExecuteMBS(0, ",", f.AbsolutePath, ",", ",", 10)
```

**Notes:**

Use ConsoleExecuteMBS on Mac OS X and Linux.

**ParentWindowHandle:**
A handle to the owner window used for displaying a UI or error messages. This value can be 0 if the operation is not associated with a window. You can pass `window.handle` from a REALbasic window.

**Operation:**
A string, referred to in this case as a verb, that specifies the action to be performed. The set of available verbs depends on the particular file or folder. Generally, the actions available from an object’s shortcut menu are available verbs. The following verbs are commonly used:

**File:**
A string that specifies the file or object on which to execute the specified verb. To specify a Shell namespace object, pass the fully qualified parse name. Note that not all verbs are supported on all objects. For example, not all document types support the ”print” verb. If a relative path is used for the Directory parameter do
not use a relative path for File.

Parameters:
If File specifies an executable file, this parameter is a string that specifies the parameters to be passed to the application. The format of this string is determined by the verb that is to be invoked. If File specifies a document file, Parameters should be "".

Directory:
A string that specifies the default (working) directory for the action. If this value is NULL, the current working directory is used. If a relative path is provided at File, do not use a relative path for Directory.

ShowCmd:
The flags that specify how an application is to be displayed when it is opened. If File specifies a document file, the flag is simply passed to the associated application. It is up to the application to decide how to handle it.

Return Value:
If the function succeeds, it returns a value greater than 32. If the function fails, it returns an error value that indicates the cause of the failure. The return value is cast as an HINSTANCE for backward compatibility with 16-bit Windows applications.

This method allows you to execute any commands in a folder's shortcut menu or stored in the registry.
To open a folder, use either of the following calls:

WindowsShellExecuteMBS(handle, "", <fully_qualified_path_to_folder>, "", "", SW_SHOWNORMAL);
or
WindowsShellExecuteMBS(handle, "open", <fully_qualified_path_to_folder>, "", "", SW_SHOWNORMAL);

To explore a folder, use the following call:
WindowsShellExecuteMBS(handle, "explore", <fully_qualified_path_to_folder>, "", "", SW_SHOWNORMAL);
To launch the Shell's Find utility for a directory, use the following call.

WindowsShellExecuteMBS(handle, "find", <fully_qualified_path_to_folder>, "", "", 0);

If Operation is empty, the function opens the file specified by File. If Operation is "open" or "explore", the function attempts to open or explore the folder.

Note The Launch folder windows in a separate process setting in Folder Options affects ShellExecute. If that option is disabled (the default setting), ShellExecute uses an open Explorer window rather than launch a new one. If no Explorer window is open, ShellExecute launches a new one.
172.7.8  DriveToUNCPathMBS(Driver as string) as string

MBS Win Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries the system tables for which UNC network path belongs to a mapped drive.

**Example:**

```
msgbox DriveToUNCPathMBS("W:")
```

**Notes:**

Please pass the local drive name, which is drive letter and double colon.

Returns empty string on any error.

172.7.9  GetFullWindowsNameMBS(UserName as string, Domain as string) as string

MBS Win Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries the full username of an user in a domain.

**Example:**

```
dim ShortName as string = "your short name"
dim Domain as string = "your domain"

MsgBox GetFullWindowsNameMBS(ShortName, Domain)
```

**Notes:**

Returns an empty string on any error.

Use a current Windows NT-style domain, and a username that exists on the PDC.

This will work with any NT-Style PDC (tested on XP bound to Mac OS X Server running SMB as PDC). Windows 2000/2003 and 2008 should also work.

172.8  module WindowsBitmapMBS

172.8.1  module WindowsBitmapMBS

MBS Picture Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Windows bitmap handling module.
Notes:

In this module we collect a few useful conversion functions for handling bitmap in Xojo. Please contact us if you have idea for new function.

### 172.8.2 Methods

#### 172.8.3 BitmapToDIB(HBitmap as Ptr, HPalette as Ptr = nil) as Ptr

MBS Picture Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Converts a HBitmap to a HDIB. **Notes:** HPalette is optional a color palette handle for images with 8 bit or less per pixel.

#### 172.8.4 DeleteBitmap(HBitmap as Ptr)

MBS Picture Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Frees a HDIB or HBITMAP. **Notes:** You need to free the images you allocate to make sure memory is released.

#### 172.8.5 DIBToBitmap(HDIB as Ptr, HPalette as Ptr = nil) as Ptr

MBS Picture Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Converts a HDIB to HBitmap. **Notes:** HPalette is optional a color palette handle for images with 8 bit or less per pixel.

#### 172.8.6 DuplicateHBitmap(HBitmap as Ptr, Width as Integer, Height as Integer) as Ptr

MBS Picture Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Duplicates a bitmap handle. **Notes:** Please use DeleteBitmap later to free bitmap.
172.8.7  **HBitmapInfo(HBitmap as Ptr, byref Width as Integer, byref Height as Integer, byref WidthBytes as Integer, byref Planes as Integer, byref BitsPixel as Integer) as Boolean**

MBS Picture Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries details about a bitmap handle. **Notes:** Returns true on success.

172.8.8  **HBitmapToPicture(HBitmap as Ptr, UsingDraw as boolean = false) as Picture**

MBS Picture Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Converts a HBITMAP to Xojo picture. **Notes:**

- If UsingDraw is true, the plugin creates a new HBitmap and draws picture inside.
- Else if UsingDraw is false, the plugin copies picture and mask into a new picture.

UsingDraw with false works only for 24 or 32 bit images with one plane.
See also:

- 172.8.9  **HBitmapToPicture(HBitmap as Ptr, Width as Integer, Height as Integer) as Picture**

172.8.9  **HBitmapToPicture(HBitmap as Ptr, Width as Integer, Height as Integer) as Picture**

MBS Picture Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Converts a HBITMAP to Xojo picture. **Notes:**

- Draws the HBitmap in a new picture of the given size.
- This method can be used to resize the bitmap on the fly while drawing.
See also:

- 172.8.8  **HBitmapToPicture(HBitmap as Ptr, UsingDraw as boolean = false) as Picture**

172.8.10  **PictureToHBitmap(Pic as Picture) as Ptr**

MBS Picture Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries HBitmap of a picture. **Notes:**

- As Xojo picture’s are internally HBitmaps, the plugin returns the handle of the picture.
No copy is made and you should not free the image. If you need a copy, please use DuplicateHBitmap function.
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<tr>
<td>CREATE_BREAKAWAY_FROM_JOB</td>
<td>&amp; h01000000</td>
<td>The child processes of a process associated with a job are not associated with the job. If the calling process is not associated with a job, this constant has no effect. If the calling process is associated with a job, the job must set the JOB_OBJECT_LIMIT_BREAKAWAY_OK limit.</td>
</tr>
<tr>
<td>CREATE_DEFAULT_ERROR_MODE</td>
<td>&amp; h04000000</td>
<td>The new process does not inherit the error mode of the calling process. Instead, the new process gets the default error mode. This feature is particularly useful for multi-threaded shell applications that run with hard errors disabled. The default behavior is for the new process to inherit the error mode of the caller. Setting this flag changes that default behavior.</td>
</tr>
<tr>
<td>CREATE_NEW_CONSOLE</td>
<td>&amp; h0000010</td>
<td>The new process has a new console, instead of inheriting its parent's console (the default). For more information, see Creation of a Console. This flag cannot be used with DETACHED_PROCESS.</td>
</tr>
<tr>
<td>CREATE_NEW_PROCESSGROUP</td>
<td>&amp; h0000200</td>
<td>The new process is the root process of a new process group. The process group includes all processes that are descendants of this root process. The process identifier of the new process group is the same as the process identifier, which is returned in the lpProcessInformation parameter. Process groups are used by the GenerateConsoleCtrlEvent function to enable sending a CTRL+C signal to a group of console processes. If this flag is specified, CTRL+C signals will be disabled for all processes within the new process group. This flag is ignored if specified with CREATE_NEW_CONSOLE.</td>
</tr>
<tr>
<td>CREATE_NO_WINDOW</td>
<td>&amp; h08000000</td>
<td>The process is a console application that is being run without a console window. Therefore, the console handle for the application is not set. This flag is ignored if the application is not a console application, or if it is used with either CREATE_NEW_CONSOLE or DETACHED_PROCESS.</td>
</tr>
<tr>
<td>CREATE_PROTECTED_PROCESS</td>
<td>&amp; h00040000</td>
<td>The process is to be run as a protected process. The system restricts access to protected processes and the threads of protected processes. For more information on how processes can interact with protected processes, see Process Security and Access Rights. To activate a protected process, the binary must have a special signature. This signature is provided by Microsoft but not currently available for non-Microsoft binaries. There are currently four protected processes: media foundation, audio engine, Windows error reporting, and system. Components that load into these binaries must also be signed. Multimedia companies can leverage the first two protected processes. For more information, see Overview of the Protected Media Path. Windows Server 2003 and Windows XP/2000: This value is not supported.</td>
</tr>
<tr>
<td>CREATE_PRESERVE_CODE_AUTHZ_LEVEL</td>
<td>&amp; h02000000</td>
<td>Allows the caller to execute a child process that bypasses the process restrictions that would normally be applied automatically to the process. Windows 2000: This value is not supported.</td>
</tr>
<tr>
<td>CREATE_SEPARATOR_WOW_VDM</td>
<td>&amp; h00000800</td>
<td>This flag is valid only when starting a 16-bit Windows-based application. If set, the new process runs in a private Virtual DOS Machine (VDM). By default, all 16-bit Windows-based applications run as threads in a single, shared VDM. The advantage of running separately is that a crash only terminates the single VDM; any other programs running in distinct VDMs continue to function normally. Also, 16-bit Windows-based applications that are run in separate VDMs have separate input queues. That means that if one application stops responding momentarily, applications in separate VDMs continue to receive input. The disadvantage of running separately is that it takes significantly more memory to do so. You should use this flag only if the user requests that 16-bit applications should run in their own VDM.</td>
</tr>
<tr>
<td>CREATE_SHARED_WOW_VDM</td>
<td>&amp; h00001000</td>
<td>The flag is valid only when starting a 16-bit Windows-based application. If the DefaultSeparateVDM switch in the Windows section of WIN.INI is TRUE, this flag overrides the switch. The new process is run in the shared Virtual DOS Machine.</td>
</tr>
<tr>
<td>CREATE_SUSPENDED</td>
<td>&amp; h00000004</td>
<td>The primary thread of the new process is created in a suspended state, and does not run until the ResumeThread function is called.</td>
</tr>
<tr>
<td>CREATE_UNICODE_ENVIRONMENT</td>
<td>&amp; h00000400</td>
<td>If this flag is set, the environment block pointed to by lpEnvironment uses Unicode characters. Otherwise, the environment block uses ANSI characters.</td>
</tr>
<tr>
<td>DEBUG_ONLY_THIS_PROCESS</td>
<td>&amp; h00000002</td>
<td>The calling thread starts and debugging the new process. It can receive all related debug events using the WaitForDebugEvent function.</td>
</tr>
<tr>
<td>DEBUG_PROCESS</td>
<td>&amp; h00000004</td>
<td>The calling thread starts and debugging the new process and all child processes created by the new process. It can receive all related debug events using the WaitForDebugEvent function. A process that uses DEBUG_PROCESS becomes the root of a debugging chain. This continues until another process in the chain is created with DEBUG_PROCESS. If this flag is combined with DEBUG_ONLY_THIS_PROCESS, the caller debugs only the new process, not any child processes.</td>
</tr>
<tr>
<td>DETACHED_PROCESS</td>
<td>&amp; h00000008</td>
<td>For console processes, the new process does not inherit its parent's console (the default). The new process can call the AllocConsole function at a later time to create a console. For more information, see Creation of a Console. This value cannot be used with CREATE_NEW_CONSOLE.</td>
</tr>
<tr>
<td>EXTENDED_STARTUPINFO_PRESENT</td>
<td>&amp; h00080000</td>
<td>The process is created with extended startup information; the lpStartupInfo parameter specifies a STARTUPINFOEX structure. Windows Server 2003 and Windows XP/2000: This value is not supported.</td>
</tr>
<tr>
<td>INHERIT_PARENT_AFFINITY</td>
<td>&amp; h00010000</td>
<td>The process inherits its parent's affinity. If the parent process has threads in more than one processor group, the new process inherits the group-relative affinity of an arbitrary group in use by the parent. Windows Vista, Windows Server 2003, and Windows XP/2000: This value is not supported.</td>
</tr>
<tr>
<td>ABOVE_NORMAL_PRIORITY_CLASS</td>
<td>&amp; h00080000</td>
<td>Process that has priority above NORMAL_PRIORITY_CLASS but below HIGH_PRIORITY_CLASS.</td>
</tr>
<tr>
<td>BELOW_NORMAL_PRIORITY_CLASS</td>
<td>&amp; h00350000</td>
<td>Process that has priority below NORMAL_PRIORITY_CLASS but above LOW_PRIORITY_CLASS.</td>
</tr>
<tr>
<td>DEFAULT_PRIORITY_CLASS</td>
<td>&amp; h00000000</td>
<td>Process that has priority equal to the scheduler's default.</td>
</tr>
<tr>
<td>ERROR_A Affinlity</td>
<td>&amp; h00010000</td>
<td>Affinity for the process. The process's threads are scheduled to run on the most recently active virtual machine or partition that has the specified affinity.</td>
</tr>
<tr>
<td>HIGHER_PRIORITY_CLASS</td>
<td>&amp; h00000000</td>
<td>Process that has priority above the scheduler's default.</td>
</tr>
<tr>
<td>IDLE_PRIORITY_CLASS</td>
<td>&amp; h00000000</td>
<td>Process that has priority equal to the scheduler's default.</td>
</tr>
<tr>
<td>LOWEST_PRIORITY_CLASS</td>
<td>&amp; h00000000</td>
<td>Process that has priority below the scheduler's default.</td>
</tr>
<tr>
<td>NORMAL_PRIORITY_CLASS</td>
<td>&amp; h00000000</td>
<td>Process that has priority equal to the scheduler's default.</td>
</tr>
<tr>
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<tr>
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</tr>
<tr>
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<td>20</td>
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</tr>
<tr>
<td>COLOR_BTNSHADOW</td>
<td>16</td>
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<td>Right side color in the color gradient of an active window’s title bar. COLOR_ACTIVECAPTION specifies the left side color. Use SPI_GETGRADIENTCAPTIONS with the SystemParametersInfo function to determine whether the gradient effect is enabled.</td>
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<td>COLOR_MENUSHILIGHT</td>
<td>29</td>
<td>The color used to highlight menu items when the menu appears as a flat menu (see SystemParametersInfo). The highlighted menu item is outlined with COLOR_HIGHLIGHT.</td>
</tr>
</tbody>
</table>

COLOR_MENUBAR 30 The background color for the menu bar when menus appear as flat menus (see SystemParametersInfo). However, COLOR_MENU continues to specify the background color of the menu popup.
COLOR_MENUTEXT 7 Text in menus.
COLOR_SCROLLBAR 0 Scroll bar gray area.
COLOR_WINDOW 5 Window background.
COLOR_WINDOWFRAME 6 Window frame.
COLOR_WINDOWTEXT 8 Text in windows.

edit Launches an editor and opens the document for editing. If File is not a document file, the function will fail.
explore Explores a folder specified by File.
find Initiates a search beginning in the directory specified by Directory.
open Opens the item specified by the File parameter. The item can be a file or folder.
print Prints the file specified by File. If File is not a document file, the function fails.

In systems prior to Windows 2000, the default verb is used if it is valid and available in the registry. If not, the "open" verb is used. In Windows 2000 and later, the default verb is used if available. If not, the "open" verb is used. If neither verb is available, the system uses the first verb listed in the registry.

SW_HIDE 0 Hides the window and activates another window.
SW_MAXIMIZE 3 Maximizes the specified window.
SW_MINIMIZE 6 Minimizes the specified window and activates the next top-level window in the z-order.
SW_RESTORE 9 Activates and displays the window. If the window is minimized or maximized, Windows restores it to its original size and position. An application should specify this flag when restoring a minimized window.
SW_SHOW 5 Activates the window and displays it in its current size and position.
SW_SHOWDEFAULT 10 Sets the show state based on the SW_ flag specified in the STARTUPINFO structure passed to the CreateProcess function by the program that started the application. An application should call ShowWindow with this flag to set the initial show state of its main window.
SW_SHOWMAXIMIZED 3 Activates the window and displays it as a maximized window.
SW_SHOWMINIMIZED 2 Activates the window and displays it as a minimized window.
SW_SHOWMINNOACTIVE 7 Displays the window as a minimized window. The active window remains active.
SW_SHOWNNA 8 Displays the window in its current state. The active window remains active.
SW_SHOWNOACTIVATE 4 Displays a window in its most recent size and position. The active window remains active.
SW_SHOWNORMAL 1 Activates and displays a window. If the window is minimized or maximized, Windows restores it to its original size and position. An application should specify this flag when displaying the window for the first time.
Return code | Description
--- | ---
0 | The operating system is out of memory or resources.
ERROR_FILE_NOT_FOUND = 2 | The specified file was not found.
ERROR_PATH_NOT_FOUND = 3 | The specified path was not found.
ERROR_BAD_FORMAT = 11 | The `.exe` file is invalid (non-Win32 `.exe` or error in `.exe` image).
SE_ERR_ACCESSDENIED = 5 | The operating system denied access to the specified file.
SE_ERR_ASSOCINCOMPLETE = 27 | The file name association is incomplete or invalid.
SE_ERR_DLLNOTFOUND = 32 | The DDE transaction could not be completed because other DDE transactions were being processed.
SE_ERR_DDEFAIL = 29 | The DDE transaction failed.
SE_ERR_DDETIMEOUT = 28 | The DDE transaction could not be completed because the request timed out.
SE_ERR_FNF = 2 | The specified DLL was not found.
SE_ERR_NOASSOC = 31 | The specified file was not found.
SE_ERR_OOM = 8 | There is no application associated with the given file name extension. This error will also be returned if you attempt to print a file that is not printable.
SE_ERR_PNF = 3 | There was not enough memory to complete the operation.
SE_ERR_SHARE = 26 | The specified path was not found.
| A sharing violation occurred.
172.9. **class WindowsClipboardMBS**

**172.9.1 class WindowsClipboardMBS**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The windows clipboard class.
**Notes:** Use it to access the clipboard on Windows.

**172.9.2 Methods**

**172.9.3 Clear**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Clears the contents of the clipboard.

**172.9.4 ClipboardFormats as Integer()**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns an array with all clipboard formats currently in the clipboard.

**172.9.5 ClipboardSequenceNumber as Integer**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Retrieves the clipboard sequence number for the current window station.
**Notes:**

The return value is the clipboard sequence number. If you do not have WINSTA_ACCESSCLIPBOARD access to the window station, the function returns zero.

The system keeps a serial number for the clipboard for each window station. This number is incremented whenever the contents of the clipboard change or the clipboard is emptied. You can track this value to determine whether the clipboard contents have changed and optimize creating DataObjects. If clipboard rendering is delayed, the sequence number is not incremented until the changes are rendered.

**172.9.6 Constructor**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Connects to the clipboard.
Notes: As the clipboard has exclusive access, do not keep WindowsClipboardMBS objects around. Best you only use them within a method so once the method ends, everything is released.

172.9.7 CountClipboardFormats as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: Retrieves the number of different data formats currently on the clipboard.
Notes:
If the function succeeds, the return value is the number of different data formats currently on the clipboard.
If the function fails, the return value is zero.

172.9.8 Destructor


172.9.9 EnumClipboardFormats(format as Integer = 0) as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: Enumerates the data formats currently available on the clipboard.
Notes:
Clipboard data formats are stored in an ordered list. To perform an enumeration of clipboard data formats, you make a series of calls to the EnumClipboardFormats function. For each call, the format parameter specifies an available clipboard format, and the function returns the next available clipboard format.

format: A clipboard format that is known to be available.

To start an enumeration of clipboard formats, set format to zero. When format is zero, the function retrieves the first available clipboard format. For subsequent calls during an enumeration, set format to the result of the previous EnumClipboardFormats call.

If the function succeeds, the return value is the clipboard format that follows the specified format, namely the next available clipboard format.

If the function fails, the return value is zero.
If there are no more clipboard formats to enumerate, the return value is zero.
You must open the clipboard before enumerating its formats. Use the OpenClipboard function to open the clipboard. The EnumClipboardFormats function fails if the clipboard is not open.

The EnumClipboardFormats function enumerates formats in the order that they were placed on the clipboard. If you are copying information to the clipboard, add clipboard objects in order from the most descriptive clipboard format to the least descriptive clipboard format. If you are pasting information from the clipboard, retrieve the first clipboard format that you can handle. That will be the most descriptive clipboard format that you can handle.

The system provides automatic type conversions for certain clipboard formats. In the case of such a format, this function enumerates the specified format, then enumerates the formats to which it can be converted. For more information, see Standard Clipboard Formats and Synthesized Clipboard Formats.

**172.9.10 GetClipboardFormatName(format as Integer) as string**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Retrieves from the clipboard the name of the specified registered format. The function copies the name to the specified buffer.

**Example:**

```vbnet
// show items on clipboard

dim w as new WindowsClipboardMBS
dim types(-1) as integer = w.ClipboardFormats
dim names() as string

for each type as integer in types
dim n as string = w.GetClipboardFormatName(type)

n = str(type)+” ”+n

names.append n
next

MsgBox Join(names,EndOfLine)
```

**172.9.11 GetData(type as Integer) as string**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Retrieves data from the clipboard in a specified format.

**Notes:**
Format: A clipboard format.

If the function succeeds, the return value is the string with the clipboard data in the specified format.

If the function fails, the return value is "".

An application can enumerate the available formats in advance by using the EnumClipboardFormats function.

### 172.9.12 GetDIB as Picture

MBS Win Plugin, Plugin Version: 17.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Queries DIB picture on the clipboard. **Notes:** Returns nil on any error. This is using DIB type in database for a Device Independent Bitmap.

### 172.9.13 GetFiles as string()

MBS Win Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries list of file paths on the clipboard. **Notes:** This is for working with Explorers copy & paste feature.

### 172.9.14 GetPicture as Picture

MBS Win Plugin, Plugin Version: 14.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Queries bitmap on the clipboard. **Notes:** Returns nil on any error. This is using BITMAP type in database for a bitmap handle.

### 172.9.15 IsClipboardFormatAvailable(type as Integer) as boolean

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Determines whether the clipboard contains data in the specified format. **Notes:**
type: A standard or registered clipboard format.

If the clipboard format is available, the return value is true.
If the clipboard format is not available, the return value is false.

Typically, an application that recognizes only one clipboard format would call this function when processing the EnableMenuItems event. The application would then enable or disable the Paste menu item, depending on the return value.

### 172.9.16 RegisterClipboardFormat(type as string) as Integer

MBS Win Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Registers a new clipboard format. This format can then be used as a valid clipboard format.

**Example:**

```plaintext
dim TypeHTML as Integer
dim TypeRTF as Integer

TypeHTML = WindowsClipboardMBS.RegisterClipboardFormat("HTML Format")
TypeRTF = WindowsClipboardMBS.RegisterClipboardFormat("Rich Text Format")
```

**Notes:**

If the function succeeds, the return value identifies the registered clipboard format.
If the function fails, the return value is zero.

If a registered format with the specified name already exists, a new format is not registered and the return value identifies the existing format. This enables more than one application to copy and paste data using the same registered clipboard format. Note that the format name comparison is case-insensitive. Registered clipboard formats are identified by values in the range &hC000 through &hFFFF.

### 172.9.17 SetData(type as Integer, rawData as string) as boolean

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Places data on the clipboard in a specified clipboard format.

**Notes:**

Format: The clipboard format. This parameter can be a registered format or any of the standard clipboard formats.
rawData: A string with the data in the specified format.
If the function succeeds, the return value is true.
If the function fails, the return value is false.

The system performs implicit data format conversions between certain clipboard formats when an application calls the GetClipboardData function. For example, if the kTypeOEMTEXT format is on the clipboard, a window can retrieve data in the kTypeTEXT format. The format on the clipboard is converted to the requested format on demand. For more information, see Synthesized Clipboard Formats.

**172.9.18 SetDIB(pic as Picture) as boolean**

MBS Win Plugin, Plugin Version: 17.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Puts a DIB picture on the clipboard.  
**Notes:**  
Returns true on success.  
This is using DIB type in database for a Device Independent Bitmap.

**172.9.19 SetFiles(paths() as string) as boolean**

MBS Win Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Puts a list of file paths on the clipboard.  
**Notes:**  
This is for working with Explorers copy & paste feature.  
Returns true on success.  
Folder paths may work better if they have no training backslash.

**172.9.20 SetPicture(pic as Picture) as boolean**

MBS Win Plugin, Plugin Version: 14.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Puts a bitmap picture on the clipboard.  
**Notes:**  
Returns true on success.  
This is using BITMAP type in database for a bitmap handle.
172.9. **CLASS WINDOWSCLIPBOARDMBS**

172.9.21 **Properties**

**172.9.22 Valid as Boolean**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A flag whether the constructor got a clipboard connection. **Notes:** (Read and Write property)

172.9.23 **Constants**

**172.9.24 kTypeBitmap = 2**

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of standard clipboard formats defined by the system. **Notes:** A handle to a bitmap (HBITMAP).

**172.9.25 kTypeDIB = 8**

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of standard clipboard formats defined by the system. **Notes:** A memory object containing a BITMAPINFO structure followed by the bitmap bits.

**172.9.26 kTypeDIBV5 = 17**

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of standard clipboard formats defined by the system. **Notes:** A memory object containing a BITMAPV5HEADER structure followed by the bitmap color space information and the bitmap bits.

**172.9.27 kTypeDIF = 5**

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of standard clipboard formats defined by the system. **Notes:** Software Arts’ Data Interchange Format.
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172.9.28 kTypeENHMETAFile = 14

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of standard clipboard formats defined by the system.
**Notes:** A handle to an enhanced metafile (HENHMETAFILE).

172.9.29 kTypeHDROP = 15

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of standard clipboard formats defined by the system.
**Notes:** A handle to type HDROP that identifies a list of files. An application can retrieve information about the files by passing the handle to the DragQueryFile function.

172.9.30 kTypeLocale = 16

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of standard clipboard formats defined by the system.
**Notes:**
The data is a handle to the locale identifier associated with text in the clipboard. When you close the clipboard, if it contains kTypeText data but no kTypeLocale data, the system automatically sets the kTypeLocale format to the current input language. You can use the kTypeLocale format to associate a different locale with the clipboard text.

An application that pastes text from the clipboard can retrieve this format to determine which character set was used to generate the text.

Note that the clipboard does not support plain text in multiple character sets. To achieve this, use a formatted text data type such as RTF instead.

The system uses the code page associated with kTypeLocale to implicitly convert from kTypeText to kTypeUnicodeText. Therefore, the correct code page table is used for the conversion.

172.9.31 kTypeMetaFilePict = 3

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of standard clipboard formats defined by the system.
**Notes:** Handle to a metafile picture format as defined by the METAFILEPICT structure. When passing a kTypeMetaFilePict handle by means of DDE, the application responsible for deleting hMem should also
free the metafile referred to by the kTypeMetaFilePict handle.

### 172.9.32 kTypeOEMText = 7

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of standard clipboard formats defined by the system.
**Notes:** Text format containing characters in the OEM character set. Each line ends with a carriage return/linefeed (CR-LF) combination. A null character signals the end of the data.

### 172.9.33 kTypePalette = 9

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of standard clipboard formats defined by the system.
**Notes:** Handle to a color palette. Whenever an application places data in the clipboard that depends on or assumes a color palette, it should place the palette on the clipboard as well.

If the clipboard contains data in the kTypePalette (logical color palette) format, the application should use the SelectPalette and RealizePalette functions to realize (compare) any other data in the clipboard against that logical palette.

When displaying clipboard data, the clipboard always uses as its current palette any object on the clipboard that is in the kTypePalette format.

### 172.9.34 kTypePenData = 10

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of standard clipboard formats defined by the system.
**Notes:** Data for the pen extensions to the Microsoft Windows for Pen Computing.

### 172.9.35 kTypeRIFF = 11

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of standard clipboard formats defined by the system.
**Notes:** Represents audio data more complex than can be represented in a CF_WAVE standard wave format.
172.9.36  kTypeSylk = 4

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of standard clipboard formats defined by the system.  
**Notes:** Microsoft Symbolic Link (SYLK) format.

172.9.37  kTypeText = 1

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of standard clipboard formats defined by the system.  
**Notes:** Text format. Each line ends with a carriage return/linefeed (CR-LF) combination. A null character signals the end of the data. Use this format for ANSI text.

172.9.38  kTypeTIFF = 6

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of standard clipboard formats defined by the system.  
**Notes:** Tagged-image file format.

172.9.39  kTypeUnicodeText = 13

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of standard clipboard formats defined by the system.  
**Notes:** Unicode text format. Each line ends with a carriage return/linefeed (CR-LF) combination. A null character signals the end of the data.

172.9.40  kTypeWAVE = 12

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of standard clipboard formats defined by the system.  
**Notes:** Represents audio data in one of the standard wave formats, such as 11 kHz or 22 kHz PCM.
172.10. class WindowsDeviceMBS

172.10.1. class WindowsDeviceMBS

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** This class is for device

**Example:**
```
Dim devices(-1) As WindowsDeviceMBS = WindowsDeviceMBS.Devices
For Each device As WindowsDeviceMBS In devices
    MsgBox device.Description
Next
```

**Notes:** For Mac you can take a look on the MacUSBDeviceMBS class and the IORegistry classes.

172.10.2. Methods

172.10.3. CompatibleIDs as string()

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The list of compatible IDs for a device.

**Notes:** A device has only one device ID that is the most specific ID for a device. A device can also have less specific hardware IDs and compatible IDs. Windows first tries to find an INF file that matches the device ID. If it does not find such a match, Windows next tries to find a match to one of the less specific hardware IDs or compatible IDs.

172.10.4. Devices(ClassGUID as string, present as boolean = true) as WindowsDeviceMBS()

MBS Win Plugin, Plugin Version: 11.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries all devices on the system matching the given Class GUID.

**Example:**
```
Const PortsGUID = "\{4D36E978-E325-11CE-BFC1-08002BE10318\}"
Dim devices(-1) As WindowsDeviceMBS = WindowsDeviceMBS.Devices(PortsGUID)
```

**Notes:**
If present is true, only devices currently present on the system are returned.
The array is empty on any error.
<table>
<thead>
<tr>
<th>Class</th>
<th>GUID</th>
<th>Device Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDROM</td>
<td>{4D36E965-E325-11CE-BFC1-08002BE10318}</td>
<td>CD/DVD/Blu-ray drives</td>
</tr>
<tr>
<td>DiskDrive</td>
<td>{4D36E967-E325-11CE-BFC1-08002BE10318}</td>
<td>Hard drives</td>
</tr>
<tr>
<td>Display</td>
<td>{4D36E966-E325-11CE-BFC1-08002BE10318}</td>
<td>Video adapters</td>
</tr>
<tr>
<td>FDC</td>
<td>{4D36E969-E325-11CE-BFC1-08002BE10318}</td>
<td>Floppy controllers</td>
</tr>
<tr>
<td>FloppyDisk</td>
<td>{4D36E980-E325-11CE-BFC1-08002BE10318}</td>
<td>Floppy drives</td>
</tr>
<tr>
<td>HD</td>
<td>{4D36E96A-E325-11CE-BFC1-08002BE10318}</td>
<td>Hard drive controllers</td>
</tr>
<tr>
<td>HIDClass</td>
<td>{745A17A0-74D3-11D0-B6FE-00A0C90F57DA}</td>
<td>Some USB devices</td>
</tr>
<tr>
<td>1394</td>
<td>{6DDD1FC1-810F-11D0-BEC7-08002BE2092F}</td>
<td>IEEE 1394 host controller</td>
</tr>
<tr>
<td>Image</td>
<td>{6DDD1FC6-810F-11D0-BEC7-08002BE2092F}</td>
<td>Cameras and scanners</td>
</tr>
<tr>
<td>Keyboard</td>
<td>{4D36E96B-E325-11CE-BFC1-08002BE10318}</td>
<td>Keyboards</td>
</tr>
<tr>
<td>Modem</td>
<td>{4D36E96D-E325-11CE-BFC1-08002BE10318}</td>
<td>Modems</td>
</tr>
<tr>
<td>Mouse</td>
<td>{4D36E96F-E325-11CE-BFC1-08002BE10318}</td>
<td>Mice and pointing devices</td>
</tr>
<tr>
<td>Media</td>
<td>{4D36E96C-E325-11CE-BFC1-08002BE10318}</td>
<td>Audio and video devices</td>
</tr>
<tr>
<td>Net</td>
<td>{4D36E972-E325-11CE-BFC1-08002BE10318}</td>
<td>Network adapters</td>
</tr>
<tr>
<td>Ports</td>
<td>{4D36E978-E325-11CE-BFC1-08002BE10318}</td>
<td>Serial and parallel ports</td>
</tr>
<tr>
<td>SCSIAdapter</td>
<td>{4D36E97B-E325-11CE-BFC1-08002BE10318}</td>
<td>SCSI and RAID controllers</td>
</tr>
<tr>
<td>System</td>
<td>{4D36E97D-E325-11CE-BFC1-08002BE10318}</td>
<td>System buses, bridges, etc.</td>
</tr>
<tr>
<td>USB</td>
<td>{36FC9650-C465-11CF-8058-444533540000}</td>
<td>USB host controllers and hubs</td>
</tr>
</tbody>
</table>

See also:

- 172.10.5 Devices(present as boolean = true) as WindowsDeviceMBS()  

### 172.10.5 Devices(present as boolean = true) as WindowsDeviceMBS()  

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries all devices on the system.  

**Notes:**  
If present is true, only devices currently present on the system are returned.  
The array is empty on any error.  
See also:

- 172.10.4 Devices(ClassGUID as string, present as boolean = true) as WindowsDeviceMBS()  

### 172.10.6 HardwareID as string()  

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The list of hardware IDs for a device.  

### 172.10.7 LocationPaths as string()  

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The location of the device in the device tree.  
**Notes:** Windows Server 2003 and later.
172.10.8  LowerFilters as string()

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The names of a device’s lower-filter drivers.

172.10.9  UpperFilters as string()

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The names of a device’s upper filter drivers.

172.10.10  Properties

172.10.11  Address as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The device’s address.
Notes: (Read and Write property)

172.10.12  BusNumber as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The device’s bus number.
Notes: (Read and Write property)

172.10.13  BusTypeID as String

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The GUID for the device’s bus type.
Notes: (Read and Write property)

172.10.14  Capabilities as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The device capabilities.
Notes:
A combination of the kDeviceCapability* constants. 
(Read and Write property)

### 172.10.15 Characteristics as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The device characteristics.  
**Notes:** (Read and Write property)

### 172.10.16 ClassGUID as String

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The GUID that represents the device setup class of a device.  
**Notes:** (Read and Write property)

### 172.10.17 ClassName as String

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The device setup class of a device.  
**Notes:**  
(This property should be named Class, but was renamed ClassName as Class is a reserved word in Real Studio)  
(Read and Write property)

### 172.10.18 ConfigFlags as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The device’s configuration flags.  
**Notes:** (Read and Write property)

### 172.10.19 Description as String

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The description of a device.  
**Notes:**
Maybe localized.
(Read and Write property)

172.10.20 DeviceID as String

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
If a device is associated with this device entry, here you have the ID string for this device.
Notes: (Read and Write property)

172.10.21 DevicePath as String

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
For devices with device ID, this is the device path.
Notes: (Read and Write property)

172.10.22 DeviceType as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
The device’s type.
Notes:
See kDeviceType* constants.
(Read and Write property)

172.10.23 Driver as String

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
A string that identifies the device’s software key (sometimes called the driver key).
Notes: (Read and Write property)

172.10.24 EnumeratorName as String

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
The string that contains the name of the device’s enumerator.
Notes: (Read and Write property)
172.10.25  **Exclusive as Boolean**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether a user can obtain exclusive use of the device.  
**Notes:** The value is true if exclusive use is allowed, or false otherwise.  
(Read and Write property)

172.10.26  **FriendlyName as String**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The friendly name of a device.  
**Notes:** (Read and Write property)

172.10.27  **HID as Boolean**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether the plugin found additional HID details on the device.  
**Notes:** (Read and Write property)

172.10.28  **HIDAccessible as Boolean**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether the plugin was able to access the device and query the properties.  
**Notes:**  
HIDAccessible is true if and only if HID is also true.  
(Read and Write property)

172.10.29  **HIDFeatureReportByteLength as Integer**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The length of the HID feature reports for this USB HID device.  
**Notes:**  
Only valid if HID and HIDAccessible are true.  
(Read and Write property)
172.10.30  HIDInputReportByteLength as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The length of the HID input reports for this USB HID device.
**Notes:**
Only valid if HID and HIDAccessible are true.
(Read and Write property)

172.10.31  HIDManufacturerName as String

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The manufacturer name for this device.
**Notes:**
Only valid if HID and HIDAccessible are true.
(Read and Write property)

172.10.32  HIDOutputReportByteLength as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The length of the HID output reports for this USB HID device.
**Notes:**
Only valid if HID and HIDAccessible are true.
(Read and Write property)

172.10.33  HIDProductID as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The product ID for this USB device.
**Notes:**
Only valid if HID and HIDAccessible are true.
(Read and Write property)

172.10.34  HIDProductName as String

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The product name for this HID Device.
**Notes:**
Only valid if HID and HIDAccessible are true.  
(Read and Write property)  

172.10.35  HIDSerialNumber as String  

Function:  
The serial number for this USB device.  
Notes:  
Only valid if HID and HIDAccessible are true.  
(Read and Write property)  

172.10.36  HIDVendorID as Integer  

Function:  
The vendor ID for this USB device.  
Notes:  
Only valid if HID and HIDAccessible are true.  
(Read and Write property)  

172.10.37  HIDVersionNumber as Integer  

Function:  
The version number for this HID Device.  
Notes:  
Only valid if HID and HIDAccessible are true.  
(Read and Write property)  

172.10.38  InstallState as Integer  

Function:  
The install state of this device.  
Notes:  
See kInstallState* constants.  
(Read and Write property)
172.10. **CLASS WINDOWSDEVICEMBS**

172.10.39 **LegacyBusType as Integer**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The device’s legacy bus type. **Notes:** (Read and Write property)

172.10.40 **LocationInformation as String**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The hardware location of a device. **Notes:** (Read and Write property)

172.10.41 **Manufacturer as String**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The name of the device manufacturer. **Notes:** (Read and Write property)

172.10.42 **PhysicalDeviceObjectName as String**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The name that is associated with the device’s PDO. **Notes:** (Read and Write property)

172.10.43 **RemovalPolicy as Integer**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The device’s current removal policy. **Notes:** Windows XP and later (Read and Write property)

172.10.44 **RemovalPolicyHWDefault as Integer**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The device’s hardware-specified default removal policy. **Notes:**
172.10.45  RemovalPolicyOverride as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The device’s override removal policy (if it exists) from the registry.

**Notes:**

Windows XP and later
(Read and Write property)

172.10.46  SecurityDescriptor as String

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The device’s security descriptor.

**Notes:**

The format of security descriptor strings is described in Microsoft Windows SDK documentation.
(Read and Write property)

172.10.47  Service as String

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The service name for a device.

**Notes:** (Read and Write property)

172.10.48  UINumber as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The UINumber.

**Notes:**

Specifies a number associated with the device that can be displayed in the user interface.

This number is typically a user-perceived slot number, such as a number printed next to the slot on the board, or some other number that makes locating the physical device easier for the user. For buses with no such convention, or when the UINumber is unknown, the bus driver leaves this member at its default value of -1.
172.10.49  Constants

172.10.50  kDeviceCapabilityDockDevice = 8
MBS Win Plugin, Plugin Version: 10.4. Function: One of the capabilities constants. Notes: Dock Device

172.10.51  kDeviceCapabilityEjectSupported = 2
MBS Win Plugin, Plugin Version: 10.4. Function: One of the capabilities constants. Notes: Eject Supported

172.10.52  kDeviceCapabilityHardwareDisabled = 256
MBS Win Plugin, Plugin Version: 10.4. Function: One of the capabilities constants. Notes: Hardware Disabled

172.10.53  kDeviceCapabilityLockSupported = 1
MBS Win Plugin, Plugin Version: 10.4. Function: One of the capabilities constants. Notes: Lock Supported

172.10.54  kDeviceCapabilityNonDynamic = 512
MBS Win Plugin, Plugin Version: 10.4. Function: One of the capabilities constants. Notes: Non Dynamic

172.10.55  kDeviceCapabilityRAWDeviceOK = 64
MBS Win Plugin, Plugin Version: 10.4. Function: One of the capabilities constants. Notes: Raw Device OK
172.10.55  \texttt{kDeviceCapabilityRemovable} = 4  
MBS Win Plugin, Plugin Version: 10.4. \textbf{Function}: One of the capabilities constants.  
\textbf{Notes}: Removable

172.10.57  \texttt{kDeviceCapabilitySilentInstall} = 32  
MBS Win Plugin, Plugin Version: 10.4. \textbf{Function}: One of the capabilities constants.  
\textbf{Notes}: Silent Install

172.10.58  \texttt{kDeviceCapabilitySurpriseRemovalOK} = 128  
MBS Win Plugin, Plugin Version: 10.4. \textbf{Function}: One of the capabilities constants.  
\textbf{Notes}: Surprise Removal OK

172.10.59  \texttt{kDeviceCapabilityUniqueID} = 16  
MBS Win Plugin, Plugin Version: 10.4. \textbf{Function}: One of the capabilities constants.  
\textbf{Notes}: Unique ID

172.10.60  \texttt{kDeviceType8042Port} = \& h27  
MBS Win Plugin, Plugin Version: 10.4. \textbf{Function}: One of the device type constants.

172.10.61  \texttt{kDeviceTypeACPI} = \& h32  
MBS Win Plugin, Plugin Version: 10.4. \textbf{Function}: One of the device type constants.

172.10.62  \texttt{kDeviceTypeBattery} = \& h29  
MBS Win Plugin, Plugin Version: 10.4. \textbf{Function}: One of the device type constants.
172.10. kDeviceTypeBeep = & h01
MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the device type constants.

172.10.64 kDeviceTypeBusExtender = & h2a
MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the device type constants.

172.10.65 kDeviceTypeCDROM = & h02
MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the device type constants.

172.10.66 kDeviceTypeCDROWFileSystem = & h03
MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the device type constants.

172.10.67 kDeviceTypeChanger = & h30
MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the device type constants.

172.10.68 kDeviceTypeController = & h04
MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the device type constants.

172.10.69 kDeviceTypeDataLink = & h05
MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the device type constants.

172.10.70 kDeviceTypeDFS = & h06
MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the device type constants.
172.10.71  kDeviceTypeDFSFileSystem = & h35
MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the device type constants.

172.10.72  kDeviceTypeDFSVolume = & h36
MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the device type constants.

172.10.73  kDeviceTypeDisk = & h07
MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the device type constants.

172.10.74  kDeviceTypeDiskFileSystem = & h08
MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the device type constants.

172.10.75  kDeviceTypeDVD = & h33
MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the device type constants.

172.10.76  kDeviceTypeFileSystem = & h09
MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the device type constants.

172.10.77  kDeviceTypeFips = & h3a
MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the device type constants.

172.10.78  kDeviceTypeFullscreenVideo = & h34
MBS Win Plugin, Plugin Version: 10.4. **Function**: One of the device type constants.
172.10. CLASS WINDOWSDEVICEMBS

172.10.79  kDeviceTypeInportPort = & h0a

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the device type constants.

172.10.80  kDeviceTypeKeyboard = & h0b

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the device type constants.

172.10.81  kDeviceTypeKS = & h2f

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the device type constants.

172.10.82  kDeviceTypeKSec = & h39

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the device type constants.

172.10.83  kDeviceTypeMailslot = & h0c

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the device type constants.

172.10.84  kDeviceTypeMassStorage = & h2d

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the device type constants.

172.10.85  kDeviceTypeMidiIn = & h0d

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the device type constants.

172.10.86  kDeviceTypeMidiOut = & h0e

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the device type constants.
172.10.87  kDeviceTypeModem = & h2b

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the device type constants.

172.10.88  kDeviceTypeMouse = & h0f

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the device type constants.

172.10.89  kDeviceTypeMultiUncProvider = & h10

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the device type constants.

172.10.90  kDeviceTypeNamedPipe = & h11

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the device type constants.

172.10.91  kDeviceTypeNetwork = & h12

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the device type constants.

172.10.92  kDeviceTypeNetworkBrowser = & h13

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the device type constants.

172.10.93  kDeviceTypeNetworkFileSystem = & h14

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the device type constants.

172.10.94  kDeviceTypeNetworkRedirector = & h28

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the device type constants.
172.10. CLASS WINDOWSDEVICEMBS

172.10.95  kDeviceTypeNull = & h15

MBS Win Plugin, Plugin Version: 10.4. Function: One of the device type constants.

172.10.96  kDeviceTypeParallelPort = & h16

MBS Win Plugin, Plugin Version: 10.4. Function: One of the device type constants.

172.10.97  kDeviceTypePhysicalNetcard = & h17

MBS Win Plugin, Plugin Version: 10.4. Function: One of the device type constants.

172.10.98  kDeviceTypePrinter = & h18

MBS Win Plugin, Plugin Version: 10.4. Function: One of the device type constants.

172.10.99  kDeviceTypeScanner = & h19

MBS Win Plugin, Plugin Version: 10.4. Function: One of the device type constants.

172.10.100  kDeviceTypeScreen = & h1c

MBS Win Plugin, Plugin Version: 10.4. Function: One of the device type constants.

172.10.101  kDeviceTypeSerenum = & h37

MBS Win Plugin, Plugin Version: 10.4. Function: One of the device type constants.

172.10.102  kDeviceTypeSerialMousePort = & h1a

MBS Win Plugin, Plugin Version: 10.4. Function: One of the device type constants.
172.10.103  kDeviceTypeSerialPort = & h1b

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the device type constants.

172.10.104  kDeviceTypeSmartCard = & h31

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the device type constants.
172.10. **CLASS WINDOWSDEVICEMBS**

172.10.105  \textbf{kDeviceTypeSMB} = &h2e

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the device type constants.

172.10.106  \textbf{kDeviceTypeSound} = &h1d

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the device type constants.

172.10.107  \textbf{kDeviceTypeStreams} = &h1e

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the device type constants.

172.10.108  \textbf{kDeviceTypeTape} = &h1f

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the device type constants.

172.10.109  \textbf{kDeviceTypeTapeFileSystem} = &h20

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the device type constants.

172.10.110  \textbf{kDeviceTypeTermsrv} = &h38

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the device type constants.

172.10.111  \textbf{kDeviceTypeTransport} = &h21

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the device type constants.

172.10.112  \textbf{kDeviceTypeUnknown} = &h22

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the device type constants.
172.10.113 kDeviceTypeVDM = &h2c

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the device type constants.

172.10.114 kDeviceTypeVideo = &h23

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the device type constants.

172.10.115 kDeviceTypeVirtualDisk = &h24

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the device type constants.

172.10.116 kDeviceTypeWaveIn = &h25

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the device type constants.

172.10.117 kDeviceTypeWaveOut = &h26

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the device type constants.

172.10.118 kInstallStateFailedInstall = 2

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the constants for the device's installation state. **Notes:** The device did not install properly.

172.10.119 kInstallStateFinishInstall = 3

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the constants for the device's installation state. **Notes:** The installation of this device is not yet complete.

172.10.120 kInstallStateInstalled = 0

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the constants for the device's installation state. **Notes:** The device is installed.
172.10.121  kInstallStateNeedsReinstall = 1

MBS Win Plugin, Plugin Version: 10.4. **Function:** One of the constants for the device's installation state. **Notes:** The system will try to reinstall the device on a later enumeration.
172.11 class WindowsDiscInfoMBS

172.11.1 class WindowsDiscInfoMBS

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The class to query details on a disc drive on Windows. **Example:**

```plaintext
dim discs(-1) as WindowsDiscInfoMBS = WindowsDiscInfoMBS.Devices
for each disc as WindowsDiscInfoMBS in discs
    MsgBox disc.ModelNumber
next
```

172.11.2 Methods

172.11.3 Device(file as folderitem) as WindowsDiscInfoMBS

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries the device with the given path. **Example:**

```plaintext
// volume(0) is boot volume
dim disc as WindowsDiscInfoMBS = WindowsDiscInfoMBS.Device(volume(0))
```

**Notes:**

Returns nil on any error (like missing permissions).
Seems like on Windows Vista/7 you need admin rights to query this.
The path of the folderitem must be something starting with a drive letter.
See also:

- 172.11.4 Device(path as string) as WindowsDiscInfoMBS

172.11.4 Device(path as string) as WindowsDiscInfoMBS

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries the device with the given path. **Example:**

```plaintext
dim disc as WindowsDiscInfoMBS = WindowsDiscInfoMBS.Device("C")
```
Notes:
Returns nil on any error (like missing permissions).
 Seems like on Windows Vista/7 you need admin rights to query this.
 Path must be something starting with a drive letter.
 See also:

- 172.11.3 Device(file as folderitem) as WindowsDiscInfoMBS

172.11.5 Devices() as WindowsDiscInfoMBS()

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Queries the device list.
**Example:**

```cpp
// enumerate all drives
dim discs(-1) as WindowsDiscInfoMBS = WindowsDiscInfoMBS.Devices
```

Notes:
Returns empty array on error.
May get more information on Windows Vista/7 if application runs as administrator.

172.11.6 Properties

172.11.7 BufferSize as Int64

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The buffer size of the disc controller.
**Notes:**
This value is set if Mode contains 1.
(Read only property)

172.11.8 BytesPerSector as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The number of bytes per sector.
**Notes:**
This value is set if Mode contains 4.
Typically 512 bytes, but that can increase in the future.
172.11.9  Drive as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The drive number.
**Notes:** (Read and Write property)

172.11.10  Fixed as Boolean

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Whether this device is fixed.
**Notes:**
This value is set if Mode contains 1 or 4.
(Read and Write property)

172.11.11  Mode as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
This value shows which properties of the instance have been set with values.
**Notes:**
Mode is a bitwise or combination of values 1, 2 or 4. So value is 6 if mode 2 and 4 are set. You can test with bitwiseAnd(mode,mask). For example if bitwiseAnd(mode,4)=4 then BytesPerSector is valid.
(Read and Write property)

172.11.12  ModelNumber as String

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The model number string for this device.
**Example:**
```vbnet
dim discs(-1) as WindowsDiscInfoMBS = WindowsDiscInfoMBS.Devices

for each disc as WindowsDiscInfoMBS in discs
    MsgBox disc.ModelNumber
next
```
172.11. CLASS WINDOWSDISCINFOMBS

Notes:
This string is not available for all discs.
This value is set if Mode contains 1 or 2.
(Read and Write property)

172.11.13 ProductRevision as String

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The product revision string.
**Notes:**
This string is not available for all discs.
This value is set if Mode contains 2.
(Read and Write property)

172.11.14 Removable as Boolean

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Whether this device is removable.
**Notes:**
This value is set if Mode contains 1 or 4.
(Read and Write property)

172.11.15 RevisionNumber as String

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The revision number of the disc.
**Notes:**
This string is not available for all discs.
This value is set if Mode contains 1.
(Read and Write property)

172.11.16 SectorsPerTrack as Integer

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The number of sectors per track.
**Notes:**
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This value is set if Mode contains 4.
(Read and Write property)

172.11.17  SerialNumber as String

Notes:
This string is not available for all discs.
This value is set if Mode contains 1 or 2.
(Read and Write property)

172.11.18  Size as Int64

Notes:
This value is set if Mode contains 1 or 4.
(Read only property)

172.11.19  TracksPerCylinder as Integer

Notes:
This value is set if Mode contains 4.
(Read and Write property)

172.11.20  VendorId as String

Notes:
This value is set if Mode contains 2.
This string is not available for all discs.
(Read and Write property)
172.12. class WindowsDisplayMBS

172.12.1 class WindowsDisplayMBS

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The class for details on displays.

172.12.2 Methods

172.12.3 Displays as WindowsDisplayMBS()

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries list of displays. **Notes:** Returns nil in case of error.

172.12.4 Properties

172.12.5 DeviceInstanceID as String

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The device instance ID in setup database. **Notes:** (Read only property)

172.12.6 DeviceName as String

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The device name of display. **Notes:** (Read only property)

172.12.7 DisplayAdapterActive as Boolean

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether a monitor is presented as being "on" by the respective GDI view. **Notes:** (Read only property)
172.12.8  DisplayAdapterDeviceID as String

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The device ID for the display adapter.
**Notes:** (Read only property)

172.12.9  DisplayAdapterDeviceKey as String

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The display adapter device key.
**Notes:** (Read only property)

172.12.10  DisplayAdapterDeviceName as String

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The adapter device name.
**Notes:** (Read only property)

172.12.11  DisplayAdapterDeviceString as String

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The device context string.
**Notes:**
This is a description of the display adapter.
(Read only property)

172.12.12  DisplayAdapterRemovable as Boolean

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The device is removable; it cannot be the primary display.
**Notes:** (Read only property)

172.12.13  DisplayAdapterStateFlags as Integer

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The state flags.
172.12. **CLASS WINDOWS\DISPLAYMBS**

**Notes:** (Read only property)

### 172.12.14 DisplayMonitorActive as Boolean

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether a monitor is presented as being "on" by the respective GDI view. **Notes:** (Read only property)

### 172.12.15 DisplayMonitorDeviceID as String

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The device ID for the display monitor. **Notes:** (Read only property)

### 172.12.16 DisplayMonitorDeviceKey as String

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The display monitor device key. **Notes:** (Read only property)

### 172.12.17 DisplayMonitorDeviceName as String

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The monitor device name. **Notes:** (Read only property)

### 172.12.18 DisplayMonitorDeviceString as String

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The device context string. **Notes:** This is a description of the display monitor. (Read only property)
172.12.19 DisplayMonitorRemovable as Boolean

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The device is removable; it cannot be the primary display.
**Notes:** (Read only property)

172.12.20 DisplayMonitorStateFlags as Integer

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The state flags.
**Notes:** (Read only property)

172.12.21 Height as Integer

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The height of the display in pixels.
**Notes:** (Read only property)

172.12.22 HeightDPI as Integer

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The DPI for the display.
**Notes:**
Calculated based on HeightInch property.
(Read only property)

172.12.23 HeightInch as Double

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The physical height of the screen in inches.
**Notes:**
Value is zero if we don’t know.
(Read only property)
172.12. **CLASS WINDOWSDISPLAYMBS**

**172.12.24 HeightMM as Integer**

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The physical height of the screen in millimeters.

**Notes:**

Value is zero if we don’t know.

(Read only property)

**172.12.25 LogPixelsX as Integer**

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Number of pixels per logical inch along the screen width.

**Notes:**

In a system with multiple display monitors, this value is the same for all monitors.

(Read only property)

**172.12.26 LogPixelsY as Integer**

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Number of pixels per logical inch along the screen height.

**Notes:**

In a system with multiple display monitors, this value is the same for all monitors.

(Read only property)

**172.12.27 MonitorHandle as Integer**

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The handle for the monitor.

**Notes:** (Read only property)

**172.12.28 MonitorHeight as Integer**

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The monitor height.

**Notes:** (Read only property)
172.12.29 MonitorWidth as Integer

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The monitor width. **Notes:** (Read only property)

172.12.30 MonitorX as Integer

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The position of monitor. **Notes:** The display monitor rectangle, expressed in virtual-screen coordinates. Note that if the monitor is not the primary display monitor, some of the rectangle’s coordinates may be negative values. (Read only property)

172.12.31 MonitorY as Integer

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The position of monitor. **Notes:** The display monitor rectangle, expressed in virtual-screen coordinates. Note that if the monitor is not the primary display monitor, some of the rectangle’s coordinates may be negative values. (Read only property)

172.12.32 Primary as Boolean

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether this is primary display. **Notes:** (Read only property)

172.12.33 Width as Integer

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The width of the display in pixels. **Notes:** (Read only property)
172.12. **CLASS WINDOWS\mbs**

### 172.12.34 WidthDPI as Integer

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The DPI for the display. **Notes:** Calculated based on WidthInch property. (Read only property)

### 172.12.35 WidthInch as Double

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The physical width of the screen in inches. **Notes:** Value is zero if we don’t know. (Read only property)

### 172.12.36 WidthMM as Integer

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The physical width of the screen in millimeters. **Notes:** Value is zero if we don’t know. (Read only property)

### 172.12.37 WorkHeight as Integer

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The work area height in pixels. **Notes:** (Read only property)

### 172.12.38 WorkWidth as Integer

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The work area width in pixels. **Notes:** (Read only property)
172.12.39  WorkX as Integer

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The work area position.  
**Notes:**  
The work area rectangle of the display monitor that can be used by applications, expressed in virtual-screen coordinates. Windows uses this rectangle to maximize an application on the monitor. The rest of the area in rcMonitor contains system windows such as the task bar and side bars. Note that if the monitor is not the primary display monitor, some of the rectangle’s coordinates may be negative values. 
(Read only property)

172.12.40  WorkY as Integer

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The work area position.  
**Notes:**  
The work area rectangle of the display monitor that can be used by applications, expressed in virtual-screen coordinates. Windows uses this rectangle to maximize an application on the monitor. The rest of the area in rcMonitor contains system windows such as the task bar and side bars. Note that if the monitor is not the primary display monitor, some of the rectangle’s coordinates may be negative values. 
(Read only property)

172.12.41  X as Integer

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The position of the display in the virtual desktop space.  
**Notes:**  
Primary display is always at 0/0. 
(Read only property)

172.12.42  Y as Integer

MBS Win Plugin, Plugin Version: 18.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The position of the display in the virtual desktop space.  
**Notes:**  
Primary display is always at 0/0. 
(Read only property)
172.13. CLASS WINDOWSFILECOPYMBS

172.13 class WindowsFileCopyMBS

172.13.1 class WindowsFileCopyMBS

MBS Win Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A class to help you copying files on Windows using system functions.

172.13.2 Methods

172.13.3 CopyFileEx(ExistingFileName as folderitem, NewFileName as folderitem, Flags as Integer) as boolean

MBS Win Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Copies an existing file to a new file, notifying the application of its progress through the progress event. **Notes:** Returns true on success and false on failure.

ExistingFileName: The name of an existing file.
NewFileName: The name of the new file.
Flags: Flags that specify how the file is to be copied. This parameter can be a combination of the CopyFile* constants.
See also:

• 172.13.4 CopyFileEx(ExistingFileName as String, NewFileName as String, Flags as Integer) as boolean

172.13.4 CopyFileEx(ExistingFileName as String, NewFileName as String, Flags as Integer) as boolean

MBS Win Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Copies an existing file to a new file, notifying the application of its progress through the progress event. **Notes:** Returns true on success and false on failure.

ExistingFileName: The name of an existing file.
NewFileName: The name of the new file.
Flags: Flags that specify how the file is to be copied. This parameter can be a combination of the CopyFile* constants.
See also:

• 172.13.3 CopyFileEx(ExistingFileName as folderitem, NewFileName as folderitem, Flags as Integer)
172.13.5 CopyFileSimple(ExistingFileName as folderitem, NewFileName as folderitem, FailIfExists as boolean=false) as boolean


**Notes:**

ExistingFileName: The name of an existing file.
NewFileName: The name of the new file.
FailIfExists: If this parameter is true and the new file specified by NewFileName already exists, the function fails. If this parameter is false and the new file already exists, the function overwrites the existing file and succeeds.

Returns true on success and false on failure.

See also:

- 172.13.6 CopyFileSimple(ExistingFileName as String, NewFileName as String, FailIfExists as boolean=false) as boolean

172.13.6 CopyFileSimple(ExistingFileName as String, NewFileName as String, FailIfExists as boolean=false) as boolean


**Notes:**

ExistingFileName: The name of an existing file.
NewFileName: The name of the new file.
FailIfExists: If this parameter is true and the new file specified by NewFileName already exists, the function fails. If this parameter is false and the new file already exists, the function overwrites the existing file and succeeds.

Returns true on success and false on failure.

See also:

- 172.13.5 CopyFileSimple(ExistingFileName as folderitem, NewFileName as folderitem, FailIfExists as boolean=false) as boolean
172.13. CLASS WINDOWSFILECOPYMBS

172.13.7 FileOperationCopy(source as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean

MBS Win Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Copy the files specified in the source parameter to the location specified in the dest parameter.

**Notes:**
This method has several variations so you can call it with a folderitem or a string to specify a file or folder. You can also pass an array of folderitems or strings to delete several files/folders in one operation.

**source:**
These names should be fully-qualified paths to prevent unexpected results.
Standard Microsoft MS-DOS wildcard characters, such as "*", are permitted only in the file-name position. Using a wildcard character elsewhere in the string will lead to unpredictable results.

**dest:**
The destination file or directory name. Wildcard characters are not allowed. Their use will lead to unpredictable results.

Copy and Move operations can specify destination directories that do not exist. In those cases, the system attempts to create them and normally displays a dialog box to ask the user if they want to create the new directory. To suppress this dialog box and have the directories created silently, set the FileOperationNoConfirmationMkDir flag in Flags.
For Copy and Move operations, the buffer can contain multiple destination file names if the fFlags member specifies FileOperationMultiDestFiles.
Use fully-qualified paths. Using relative paths is not prohibited, but can have unpredictable results.

Use the FileOperation* constants for the flags.
If a dialog is displayed, the window used in the parent property is used for the parent window.
If ProgressTitle is not empty, this string is used to specify the progress window title text.

Returns true on success and false on failure.

See also:
- 172.13.8 FileOperationCopy(source as string, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean 20148
- 172.13.9 FileOperationCopy(source as string, dest as string, Flags as Integer, ProgressTitle as string="") as boolean 20149
- 172.13.10 FileOperationCopy(source() as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean 20150
- 172.13.11 FileOperationCopy(source() as folderitem, dest() as folderitem, Flags as Integer, ProgressTitle as string="") as boolean 20151
172.13.8  FileOperationCopy(source as string, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean

MBS Win Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Copy the files specified in the source parameter to the location specified in the dest parameter.

**Notes:**
This method has several variations so you can call it with a folderitem or a string to specify a file or folder. You can also pass an array of folderitems or strings to delete several files/folders in one operation.

**source:**
These names should be fully-qualified paths to prevent unexpected results.
Standard Microsoft MS-DOS wildcard characters, such as "*", are permitted only in the file-name position. Using a wildcard character elsewhere in the string will lead to unpredictable results.

**dest:**
The destination file or directory name. Wildcard characters are not allowed. Their use will lead to unpredictable results.

Copy and Move operations can specify destination directories that do not exist. In those cases, the system attempts to create them and normally displays a dialog box to ask the user if they want to create the new directory. To suppress this dialog box and have the directories created silently, set the FileOperationNoConfirmationMkDir flag in Flags.
For Copy and Move operations, the buffer can contain multiple destination file names if the fFlags member specifies FileOperationMultiDestFiles.
Use fully-qualified paths. Using relative paths is not prohibited, but can have unpredictable results.

Use the FileOperation* constants for the flags.
If a dialog is displayed, the window used in the parent property is used for the parent window.
If ProgressTitle is not empty, this string is used to specify the progress window title text.

Returns true on success and false on failure.
See also:

• 172.13.7 FileOperationCopy(source as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
172.13. CLASS WINDOWSFILECOPYMBS

- 172.13.9 FileOperationCopy(source as string, dest as string, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.10 FileOperationCopy(source() as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.11 FileOperationCopy(source() as folderitem, dest() as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.12 FileOperationCopy(source() as string, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.13 FileOperationCopy(source() as string, dest as string, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.14 FileOperationCopy(source() as string, dest() as string, Flags as Integer, ProgressTitle as string="") as boolean

172.13.9 FileOperationCopy(source as string, dest as string, Flags as Integer, ProgressTitle as string="") as boolean

MBS Win Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
Copy the files specified in the source parameter to the location specified in the dest parameter.

Notes:
This method has several variations so you can call it with a folderitem or a string to specify a file or folder. You can also pass an array of folderitems or strings to delete several files/folders in one operation.

source:
These names should be fully-qualified paths to prevent unexpected results. Standard Microsoft MS-DOS wildcard characters, such as "*", are permitted only in the file-name position. Using a wildcard character elsewhere in the string will lead to unpredictable results.

dest:
The destination file or directory name. Wildcard characters are not allowed. Their use will lead to unpredictable results.

Copy and Move operations can specify destination directories that do not exist. In those cases, the system attempts to create them and normally displays a dialog box to ask the user if they want to create the new directory. To suppress this dialog box and have the directories created silently, set the FileOperationNoConfirmationMkDir flag in Flags.
For Copy and Move operations, the buffer can contain multiple destination file names if the fFlags member specifies FileOperationMultiDestFiles.
Use fully-qualified paths. Using relative paths is not prohibited, but can have unpredictable results.

Use the FileOperation* constants for the flags.
If a dialog is displayed, the window used in the parent property is used for the parent window.
If ProgressTitle is not empty, this string is used to specify the progress window title text.

Returns true on success and false on failure.

See also:

- `172.13.7 FileOperationCopy(source as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean`
- `172.13.8 FileOperationCopy(source as string, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean`
- `172.13.10 FileOperationCopy(source() as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean`
- `172.13.11 FileOperationCopy(source() as folderitem, dest() as folderitem, Flags as Integer, ProgressTitle as string="") as boolean`
- `172.13.12 FileOperationCopy(source() as string, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean`
- `172.13.13 FileOperationCopy(source() as string, dest as string, Flags as Integer, ProgressTitle as string="") as boolean`
- `172.13.14 FileOperationCopy(source() as string, dest() as string, Flags as Integer, ProgressTitle as string="") as boolean`

### 172.13.10 FileOperationCopy(source() as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean

**MBS Win Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.**

**Function:**

Copy the files specified in the source parameter to the location specified in the dest parameter.

**Notes:**

This method has several variations so you can call it with a folderitem or a string to specify a file or folder. You can also pass an array of folderitems or strings to delete several files/folders in one operation.

**source:**

These names should be fully-qualified paths to prevent unexpected results. Standard Microsoft MS-DOS wildcard characters, such as "**", are permitted only in the file-name position. Using a wildcard character elsewhere in the string will lead to unpredictable results.

**dest:**

The destination file or directory name. Wildcard characters are not allowed. Their use will lead to unpredictable results.

Copy and Move operations can specify destination directories that do not exist. In those cases, the system attempts to create them and normally displays a dialog box to ask the user if they want to create the new
directory. To suppress this dialog box and have the directories created silently, set the FileOperationNoCon-
firmationMkDir flag in Flags.

For Copy and Move operations, the buffer can contain multiple destination file names if the fFlags member
specifies FileOperationMultiDestFiles.

Use fully-qualified paths. Using relative paths is not prohibited, but can have unpredictable results.

Use the FileOperation* constants for the flags.

If a dialog is displayed, the window used in the parent property is used for the parent window.

If ProgressTitle is not empty, this string is used to specify the progress window title text.

Returns true on success and false on failure.

See also:

- 172.13.7 FileOperationCopy(source as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as
   string="") as boolean 20147
- 172.13.8 FileOperationCopy(source as string, dest as folderitem, Flags as Integer, ProgressTitle as
   string="") as boolean 20148
- 172.13.9 FileOperationCopy(source as string, dest as string, Flags as Integer, ProgressTitle as string="")
   as boolean 20149
- 172.13.11 FileOperationCopy(source() as folderitem, dest() as folderitem, Flags as Integer, ProgressTi-
   tle as string="") as boolean 20151
- 172.13.12 FileOperationCopy(source() as string, dest as folderitem, Flags as Integer, ProgressTitle as
   string="") as boolean 20152
- 172.13.13 FileOperationCopy(source() as string, dest as string, Flags as Integer, ProgressTitle as
   string="") as boolean 20154
- 172.13.14 FileOperationCopy(source() as string, dest() as string, Flags as Integer, ProgressTitle as
   string="") as boolean 20155

172.13.11 FileOperationCopy(source() as folderitem, dest() as folderitem, Flags as Integer, ProgressTitle as
   string="") as boolean

MBS Win Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
Copy the files specified in the source parameter to the location specified in the dest parameter.

Notes:

This method has several variations so you can call it with a folderitem or a string to specify a file or folder.
You can also pass an array of folderitems or strings to delete several files/folders in one operation.

source:
These names should be fully-qualified paths to prevent unexpected results.
Standard Microsoft MS-DOS wildcard characters, such as "*\", are permitted only in the file-name position.
Using a wildcard character elsewhere in the string will lead to unpredictable results.

dest:
The destination file or directory name. Wildcard characters are not allowed. Their use will lead to unpredictable results.

Copy and Move operations can specify destination directories that do not exist. In those cases, the system attempts to create them and normally displays a dialog box to ask the user if they want to create the new directory. To suppress this dialog box and have the directories created silently, set the FileOperationNoConfirmationMkDir flag in Flags.

For Copy and Move operations, the buffer can contain multiple destination file names if the fFlags member specifies FileOperationMultiDestFiles.

Use fully-qualified paths. Using relative paths is not prohibited, but can have unpredictable results.

Use the FileOperation* constants for the flags.

If a dialog is displayed, the window used in the parent property is used for the parent window.

If ProgressTitle is not empty, this string is used to specify the progress window title text.

Returns true on success and false on failure.

See also:

- 172.13.7 FileOperationCopy(source as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.8 FileOperationCopy(source as string, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.9 FileOperationCopy(source as string, dest as string, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.10 FileOperationCopy(source() as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.12 FileOperationCopy(source() as string, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.13 FileOperationCopy(source() as string, dest as string, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.14 FileOperationCopy(source() as string, dest() as string, Flags as Integer, ProgressTitle as string="") as boolean

172.13.12 FileOperationCopy(source() as string, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean

MBS Win Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:

Copy the files specified in the source parameter to the location specified in the dest parameter.
Notes:
This method has several variations so you can call it with a folderitem or a string to specify a file or folder. You can also pass an array of folderitems or strings to delete several files/folders in one operation.

source:
These names should be fully-qualified paths to prevent unexpected results. Standard Microsoft MS-DOS wildcard characters, such as "*", are permitted only in the file-name position. Using a wildcard character elsewhere in the string will lead to unpredictable results.

dest:
The destination file or directory name. Wildcard characters are not allowed. Their use will lead to unpredictable results.

Copy and Move operations can specify destination directories that do not exist. In those cases, the system attempts to create them and normally displays a dialog box to ask the user if they want to create the new directory. To suppress this dialog box and have the directories created silently, set the FileOperationNoConfirmationMkDir flag in Flags.
For Copy and Move operations, the buffer can contain multiple destination file names if the fFlags member specifies FileOperationMultiDestFiles.
Use fully-qualified paths. Using relative paths is not prohibited, but can have unpredictable results.

Use the FileOperation* constants for the flags.
If a dialog is displayed, the window used in the parent property is used for the parent window. If ProgressTitle is not empty, this string is used to specify the progress window title text.

Returns true on success and false on failure.
See also:

- 172.13.7 FileOperationCopy(source as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.8 FileOperationCopy(source as string, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.9 FileOperationCopy(source as string, dest as string, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.10 FileOperationCopy(source() as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.11 FileOperationCopy(source() as folderitem, dest() as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.13 FileOperationCopy(source() as string, dest as string, Flags as Integer, ProgressTitle as string="") as boolean
172.13.13 FileOperationCopy(source as string, dest as string, Flags as Integer, ProgressTitle as string="") as boolean

MBS Win Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Copy the files specified in the source parameter to the location specified in the dest parameter.

**Notes:**
This method has several varations so you can call it with a folderitem or a string to specify a file or folder. You can also pass an array of folderitems or strings to delete several files/folders in one operation.

**source:**
These names should be fully-qualified paths to prevent unexpected results.
Standard Microsoft MS-DOS wildcard characters, such as ", are permitted only in the file-name position. Using a wildcard character elsewhere in the string will lead to unpredictable results.

**dest:**
The destination file or directory name. Wildcard characters are not allowed. Their use will lead to unpredictable results.

Copy and Move operations can specify destination directories that do not exist. In those cases, the system attempts to create them and normally displays a dialog box to ask the user if they want to create the new directory. To suppress this dialog box and have the directories created silently, set the FileOperationNoConfirmationMkDir flag in Flags.
For Copy and Move operations, the buffer can contain multiple destination file names if the fFlags member specifies FileOperationMultiDestFiles.
Use fully-qualified paths. Using relative paths is not prohibited, but can have unpredictable results.

Use the FileOperation* constants for the flags.
If a dialog is displayed, the window used in the parent property is used for the parent window.
If ProgressTitle is not empty, this string is used to specify the progress window title text.

Returns true on success and false on failure.

See also:

- 172.13.7 FileOperationCopy(source as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.8 FileOperationCopy(source as string, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.9 FileOperationCopy(source as string, dest as string, Flags as Integer, ProgressTitle as string="") as boolean
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- 172.13.10 FileOperationCopy(source() as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean

- 172.13.11 FileOperationCopy(source() as folderitem, dest() as folderitem, Flags as Integer, ProgressTitle as string="") as boolean

- 172.13.12 FileOperationCopy(source() as string, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean

- 172.13.14 FileOperationCopy(source() as string, dest() as string, Flags as Integer, ProgressTitle as string="") as boolean

172.13.14 FileOperationCopy(source() as string, dest() as string, Flags as Integer, ProgressTitle as string="") as boolean


Notes:
This method has several variations so you can call it with a folderitem or a string to specify a file or folder. You can also pass an array of folderitems or strings to delete several files/folders in one operation.

source:
These names should be fully-qualified paths to prevent unexpected results.
Standard Microsoft MS-DOS wildcard characters, such as "*", are permitted only in the file-name position. Using a wildcard character elsewhere in the string will lead to unpredictable results.

dest:
The destination file or directory name. Wildcard characters are not allowed. Their use will lead to unpredictable results.

Copy and Move operations can specify destination directories that do not exist. In those cases, the system attempts to create them and normally displays a dialog box to ask the user if they want to create the new directory. To suppress this dialog box and have the directories created silently, set the FileOperationNoConfirmationMkDir flag in Flags.
For Copy and Move operations, the buffer can contain multiple destination file names if the fFlags member specifies FileOperationMultiDestFiles.
Use fully-qualified paths. Using relative paths is not prohibited, but can have unpredictable results.

Use the FileOperation* constants for the flags.
If a dialog is displayed, the window used in the parent property is used for the parent window.
If ProgressTitle is not empty, this string is used to specify the progress window title text.

Returns true on success and false on failure.
See also:
• 172.13.7 FileOperationCopy(source as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean

• 172.13.8 FileOperationCopy(source as string, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean

• 172.13.9 FileOperationCopy(source as string, dest as string, Flags as Integer, ProgressTitle as string="") as boolean

• 172.13.10 FileOperationCopy(source() as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean

• 172.13.11 FileOperationCopy(source() as folderitem, dest() as folderitem, Flags as Integer, ProgressTitle as string="") as boolean

• 172.13.12 FileOperationCopy(source() as string, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean

• 172.13.13 FileOperationCopy(source() as string, dest as string, Flags as Integer, ProgressTitle as string="") as boolean

172.13.15 FileOperationDelete(file as folderitem, Flags as Integer, ProgressTitle as string="") as boolean


**Example:**

```vba
dim w as new WindowsFileCopyMBS

dim f as FolderItem = SpecialFolder.Desktop.Child(”test.test”)

if w.FileOperationDelete(f, 0, ”Hello”) then
    MsgBox ”OK”
else
    MsgBox ”Failed ”+str(w.Lasterror)
end if
```

**Notes:**

This method has several variations so you can call it with a folderitem or a string to specify a file or folder. You can also pass an array of folderitems or strings to delete several files/folders in one operation.

Use the FileOperation* constants for the flags.
If a dialog is displayed, the window used in the parent property is used for the parent window.
If ProgressTitle is not empty, this string is used to specify the progress window title text.

See also:
172.13.16  FileOperationDelete(filepathes as string, Flags as Integer, ProgressTitle as string="") as boolean


**Notes:**
This method has several variations so you can call it with a folderitem or a string to specify a file or folder. You can also pass an array of folderitems or strings to delete several files/folders in one operation.

Use the FileOperation* constants for the flags.
If a dialog is displayed, the window used in the parent property is used for the parent window.
If ProgressTitle is not empty, this string is used to specify the progress window title text.
See also:

- 172.13.15  FileOperationDelete(file as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.17  FileOperationDelete(filepathes() as string, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.18  FileOperationDelete(files() as folderitem, Flags as Integer, ProgressTitle as string="") as boolean

172.13.17  FileOperationDelete(filepathes() as string, Flags as Integer, ProgressTitle as string="") as boolean


**Notes:**
This method has several variations so you can call it with a folderitem or a string to specify a file or folder. You can also pass an array of folderitems or strings to delete several files/folders in one operation.

Use the FileOperation* constants for the flags.
If a dialog is displayed, the window used in the parent property is used for the parent window.
If ProgressTitle is not empty, this string is used to specify the progress window title text.
See also:
172.13.18 FileOperationDelete(files() as folderitem, Flags as Integer, ProgressTitle as string="") as boolean


**Notes:**
This method has several variations so you can call it with a folderitem or a string to specify a file or folder. You can also pass an array of folderitems or strings to delete several files/folders in one operation.

Use the FileOperation* constants for the flags.
If a dialog is displayed, the window used in the parent property is used for the parent window.
If ProgressTitle is not empty, this string is used to specify the progress window title text.
See also:

- 172.13.15 FileOperationDelete(file as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.16 FileOperationDelete(filepaths as string, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.17 FileOperationDelete(filepaths() as string, Flags as Integer, ProgressTitle as string="") as boolean

172.13.19 FileOperationMove(source as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean

MBS Win Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Move the files specified in the source parameter to the location specified in the dest parameter.

**Notes:**
This method has several variations so you can call it with a folderitem or a string to specify a file or folder. You can also pass an array of folderitems or strings to delete several files/folders in one operation.

**source:**
These names should be fully-qualified paths to prevent unexpected results.
Standard Microsoft MS-DOS wildcard characters, such as "*\*", are permitted only in the file-name position.
Using a wildcard character elsewhere in the string will lead to unpredictable results.

dest:
The destination file or directory name. Wildcard characters are not allowed. Their use will lead to unpredictable results.

Copy and Move operations can specify destination directories that do not exist. In those cases, the system attempts to create them and normally displays a dialog box to ask the user if they want to create the new directory. To suppress this dialog box and have the directories created silently, set the FileOperationNoConfirmationMkDir flag in Flags. For Copy and Move operations, the buffer can contain multiple destination file names if the fFlags member specifies FileOperationMultiDestFiles.

Use fully-qualified paths. Using relative paths is not prohibited, but can have unpredictable results.

Use the FileOperation* constants for the flags.
If a dialog is displayed, the window used in the parent property is used for the parent window.
If ProgressTitle is not empty, this string is used to specify the progress window title text.

Returns true on success and false on failure.
See also:

- 172.13.20 FileOperationMove(source as string, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.21 FileOperationMove(source as string, dest as string, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.22 FileOperationMove(source() as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.23 FileOperationMove(source() as folderitem, dest() as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.24 FileOperationMove(source() as string, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.25 FileOperationMove(source() as string, dest as string, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.26 FileOperationMove(source() as string, dest() as string, Flags as Integer, ProgressTitle as string="") as boolean

172.13.20 FileOperationMove(source as string, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean

MBS Win Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Move the files specified in the source parameter to the location specified in the dest parameter.
Notes:

This method has several variations so you can call it with a folderitem or a string to specify a file or folder. You can also pass an array of folderitems or strings to delete several files/folders in one operation.

source:
These names should be fully-qualified paths to prevent unexpected results. Standard Microsoft MS-DOS wildcard characters, such as "*", are permitted only in the file-name position. Using a wildcard character elsewhere in the string will lead to unpredictable results.

dest:
The destination file or directory name. Wildcard characters are not allowed. Their use will lead to unpredictable results.

Copy and Move operations can specify destination directories that do not exist. In those cases, the system attempts to create them and normally displays a dialog box to ask the user if they want to create the new directory. To suppress this dialog box and have the directories created silently, set the FileOperationNoConfirmationMkDir flag in Flags.
For Copy and Move operations, the buffer can contain multiple destination file names if the fFlags member specifies FileOperationMultiDestFiles.
Use fully-qualified paths. Using relative paths is not prohibited, but can have unpredictable results.

Use the FileOperation* constants for the flags.
If a dialog is displayed, the window used in the parent property is used for the parent window.
If ProgressTitle is not empty, this string is used to specify the progress window title text.

Returns true on success and false on failure.
See also:

- 172.13.19 FileOperationMove(source as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
  20158
- 172.13.21 FileOperationMove(source as string, dest as string, Flags as Integer, ProgressTitle as string="") as boolean
  20161
- 172.13.22 FileOperationMove(source() as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
  20161
- 172.13.23 FileOperationMove(source() as folderitem, dest() as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
  20163
- 172.13.24 FileOperationMove(source() as string, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
  20164
- 172.13.25 FileOperationMove(source() as string, dest as string, Flags as Integer, ProgressTitle as string="") as boolean
  20165
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- 172.13.26 FileOperationMove(source() as string, dest() as string, Flags as Integer, ProgressTitle as string="") as boolean

172.13.21 FileOperationMove(source as string, dest as string, Flags as Integer, ProgressTitle as string="") as boolean

MBS Win Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Move the files specified in the source parameter to the location specified in the dest parameter.

**Notes:**
This method has several variations so you can call it with a folderitem or a string to specify a file or folder. You can also pass an array of folderitems or strings to delete several files/folders in one operation.

**source:**
These names should be fully-qualified paths to prevent unexpected results.
Standard Microsoft MS-DOS wildcard characters, such as ", are permitted only in the file-name position. Using a wildcard character elsewhere in the string will lead to unpredictable results.

**dest:**
The destination file or directory name. Wildcard characters are not allowed. Their use will lead to unpredictable results.

Copy and Move operations can specify destination directories that do not exist. In those cases, the system attempts to create them and normally displays a dialog box to ask the user if they want to create the new directory. To suppress this dialog box and have the directories created silently, set the FileOperationNoConfirmationMkDir flag in Flags.
For Copy and Move operations, the buffer can contain multiple destination file names if the fFlags member specifies FileOperationMultiDestFiles.
Use fully-qualified paths. Using relative paths is not prohibited, but can have unpredictable results.

Use the FileOperation* constants for the flags.
If a dialog is displayed, the window used in the parent property is used for the parent window.
If ProgressTitle is not empty, this string is used to specify the progress window title text.

Returns true on success and false on failure.

See also:
- 172.13.19 FileOperationMove(source as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.20 FileOperationMove(source as string, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.22 FileOperationMove(source() as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
172.13.22  FileOperationMove(source() as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean

MBS Win Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Move the files specified in the source parameter to the location specified in the dest parameter.

**Notes:**
This method has several variations so you can call it with a folderitem or a string to specify a file or folder. You can also pass an array of folderitems or strings to delete several files/folders in one operation.

**source:**
These names should be fully-qualified paths to prevent unexpected results.
Standard Microsoft MS-DOS wildcard characters, such as "*.*", are permitted only in the file-name position. Using a wildcard character elsewhere in the string will lead to unpredictable results.

**dest:**
The destination file or directory name. Wildcard characters are not allowed. Their use will lead to unpredictable results.

Copy and Move operations can specify destination directories that do not exist. In those cases, the system attempts to create them and normally displays a dialog box to ask the user if they want to create the new directory. To suppress this dialog box and have the directories created silently, set the FileOperationNoConfirmationMkDir flag in Flags.
For Copy and Move operations, the buffer can contain multiple destination file names if the fFlags member specifies FileOperationMultiDestFiles.
Use fully-qualified paths. Using relative paths is not prohibited, but can have unpredictable results.

Use the FileOperation* constants for the flags.
If a dialog is displayed, the window used in the parent property is used for the parent window.
If ProgressTitle is not empty, this string is used to specify the progress window title text.

Returns true on success and false on failure.
See also:
**FileOperationMove**

- **172.13.19** FileOperationMove(source as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
- **172.13.20** FileOperationMove(source as string, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
- **172.13.21** FileOperationMove(source as string, dest as string, Flags as Integer, ProgressTitle as string="") as boolean
- **172.13.23** FileOperationMove(source() as folderitem, dest() as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
- **172.13.24** FileOperationMove(source() as string, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
- **172.13.25** FileOperationMove(source() as string, dest as string, Flags as Integer, ProgressTitle as string="") as boolean
- **172.13.26** FileOperationMove(source() as string, dest() as string, Flags as Integer, ProgressTitle as string="") as boolean

### 172.13.23 FileOperationMove(source() as folderitem, dest() as folderitem, Flags as Integer, ProgressTitle as string="") as boolean

MBS Win Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**

Move the files specified in the source parameter to the location specified in the dest parameter.

**Notes:**

This method has several varations so you can call it with a folderitem or a string to specify a file or folder. You can also pass an array of folderitems or strings to delete several files/folders in one operation.

**source:**

These names should be fully-qualified paths to prevent unexpected results.

Standard Microsoft MS-DOS wildcard characters, such as ",", are permitted only in the file-name position. Using a wildcard character elsewhere in the string will lead to unpredictable results.

**dest:**

The destination file or directory name. Wildcard characters are not allowed. Their use will lead to unpredictable results.

Copy and Move operations can specify destination directories that do not exist. In those cases, the system attempts to create them and normally displays a dialog box to ask the user if they want to create the new directory. To suppress this dialog box and have the directories created silently, set the FileOperationNoConfirmationMkDir flag in Flags.

For Copy and Move operations, the buffer can contain multiple destination file names if the fFlags member specifies FileOperationMultiDestFiles.

Use fully-qualified paths. Using relative paths is not prohibited, but can have unpredictable results.
Use the FileOperation* constants for the flags.
If a dialog is displayed, the window used in the parent property is used for the parent window.
If ProgressTitle is not empty, this string is used to specify the progress window title text.

Returns true on success and false on failure.

See also:

- 172.13.19 FileOperationMove(source as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.20 FileOperationMove(source as string, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.21 FileOperationMove(source as string, dest as string, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.22 FileOperationMove(source() as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.24 FileOperationMove(source() as string, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.25 FileOperationMove(source() as string, dest as string, Flags as Integer, ProgressTitle as string="") as boolean
- 172.13.26 FileOperationMove(source() as string, dest() as string, Flags as Integer, ProgressTitle as string="") as boolean

172.13.24 FileOperationMove(source() as string, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean

MBS Win Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Move the files specified in the source parameter to the location specified in the dest parameter.

**Notes:**
This method has several variations so you can call it with a folderitem or a string to specify a file or folder. You can also pass an array of folderitems or strings to delete several files/folders in one operation.

**source:**
These names should be fully-qualified paths to prevent unexpected results.
Standard Microsoft MS-DOS wildcard characters, such as ".*", are permitted only in the file-name position.
Using a wildcard character elsewhere in the string will lead to unpredictable results.

**dest:**
The destination file or directory name. Wildcard characters are not allowed. Their use will lead to unpredictable results.
Copy and Move operations can specify destination directories that do not exist. In those cases, the system attempts to create them and normally displays a dialog box to ask the user if they want to create the new directory. To suppress this dialog box and have the directories created silently, set the FileOperationNoConfirmationMkDir flag in Flags.

For Copy and Move operations, the buffer can contain multiple destination file names if the fFlags member specifies FileOperationMultiDestFiles.

Use fully-qualified paths. Using relative paths is not prohibited, but can have unpredictable results.

Use the FileOperation* constants for the flags.

If a dialog is displayed, the window used in the parent property is used for the parent window.

If ProgressTitle is not empty, this string is used to specify the progress window title text.

Returns true on success and false on failure.

See also:

- 172.13.19 FileOperationMove(source as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string=””) as boolean
- 172.13.20 FileOperationMove(source as string, dest as folderitem, Flags as Integer, ProgressTitle as string=””) as boolean
- 172.13.21 FileOperationMove(source as string, dest as string, Flags as Integer, ProgressTitle as string=””) as boolean
- 172.13.22 FileOperationMove(source() as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string=””) as boolean
- 172.13.23 FileOperationMove(source() as folderitem, dest() as folderitem, Flags as Integer, ProgressTitle as string=””) as boolean
- 172.13.25 FileOperationMove(source() as string, dest as string, Flags as Integer, ProgressTitle as string=””) as boolean
- 172.13.26 FileOperationMove(source() as string, dest() as string, Flags as Integer, ProgressTitle as string=””) as boolean

172.13.25 FileOperationMove(source() as string, dest as string, Flags as Integer, ProgressTitle as string=””) as boolean

MBS Win Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
Move the files specified in the source parameter to the location specified in the dest parameter.

Notes:
This method has several variations so you can call it with a folderitem or a string to specify a file or folder. You can also pass an array of folderitems or strings to delete several files/folders in one operation.

source:
These names should be fully-qualified paths to prevent unexpected results.
Standard Microsoft MS-DOS wildcard characters, such as "*", are permitted only in the file-name position. Using a wildcard character elsewhere in the string will lead to unpredictable results.

dest:
The destination file or directory name. Wildcard characters are not allowed. Their use will lead to unpredictable results.

Copy and Move operations can specify destination directories that do not exist. In those cases, the system attempts to create them and normally displays a dialog box to ask the user if they want to create the new directory. To suppress this dialog box and have the directories created silently, set the FileOperationNoConfirmationMkDir flag in Flags.
For Copy and Move operations, the buffer can contain multiple destination file names if the fFlags member specifies FileOperationMultiDestFiles.
Use fully-qualified paths. Using relative paths is not prohibited, but can have unpredictable results.

Use the FileOperation* constants for the flags.
If a dialog is displayed, the window used in the parent property is used for the parent window.
If ProgressTitle is not empty, this string is used to specify the progress window title text.

Returns true on success and false on failure.
See also:

- 172.13.19 FileOperationMove(source as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean 20158
- 172.13.20 FileOperationMove(source as string, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean 20159
- 172.13.21 FileOperationMove(source as string, dest as string, Flags as Integer, ProgressTitle as string="") as boolean 20161
- 172.13.22 FileOperationMove(source() as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean 20162
- 172.13.23 FileOperationMove(source() as folderitem, dest() as folderitem, Flags as Integer, ProgressTitle as string="") as boolean 20163
- 172.13.24 FileOperationMove(source() as string, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean 20164
- 172.13.26 FileOperationMove(source() as string, dest() as string, Flags as Integer, ProgressTitle as string="") as boolean 20167
**172.13.26**  
FileOperationMove(source() as string, dest() as string, Flags as Integer, ProgressTitle as string="") as boolean

MBS Win Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**  
Move the files specified in the source parameter to the location specified in the dest parameter.  
**Notes:**  
This method has several variations so you can call it with a folderitem or a string to specify a file or folder. You can also pass an array of folderitems or strings to delete several files/folders in one operation.

**source:**  
These names should be fully-qualified paths to prevent unexpected results.  
Standard Microsoft MS-DOS wildcard characters, such as "*", are permitted only in the file-name position.  
Using a wildcard character elsewhere in the string will lead to unpredictable results.

**dest:**  
The destination file or directory name. Wildcard characters are not allowed. Their use will lead to unpredictable results.

Copy and Move operations can specify destination directories that do not exist. In those cases, the system attempts to create them and normally displays a dialog box to ask the user if they want to create the new directory. To suppress this dialog box and have the directories created silently, set the FileOperationNoConfirmationMkDir flag in Flags.  
For Copy and Move operations, the buffer can contain multiple destination file names if the fFlags member specifies FileOperationMultiDestFiles.  
Use fully-qualified paths. Using relative paths is not prohibited, but can have unpredictable results.

Use the FileOperation* constants for the flags.  
If a dialog is displayed, the window used in the parent property is used for the parent window.  
If ProgressTitle is not empty, this string is used to specify the progress window title text.

Returns true on success and false on failure.  
See also:

- **172.13.19** FileOperationMove(source as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean  
  20158

- **172.13.20** FileOperationMove(source as string, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean  
  20159

- **172.13.21** FileOperationMove(source as string, dest as string, Flags as Integer, ProgressTitle as string="") as boolean  
  20161

- **172.13.22** FileOperationMove(source() as folderitem, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean  
  20162
• 172.13.23 FileOperationMove(source() as folderitem, dest() as folderitem, Flags as Integer, ProgressTitle as string="") as boolean

• 172.13.24 FileOperationMove(source() as string, dest as folderitem, Flags as Integer, ProgressTitle as string="") as boolean

• 172.13.25 FileOperationMove(source() as string, dest as string, Flags as Integer, ProgressTitle as string="") as boolean

172.13.27 MoveFileSimple(ExistingFileName as folderitem, NewFileName as folderitem) as boolean

MBS Win Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Moves an existing file or a directory, including its children.

**Notes:**

ExistingFileName: The current name of the file or directory on the local computer.

NewFileName: The new name for the file or directory. The new name must not already exist. A new file may be on a different file system or drive. A new directory must be on the same drive.

Returns true on success and false on failure.

The MoveFile function will move (rename) either a file or a directory (including its children) either in the same directory or across directories. The one caveat is that the MoveFile function will fail on directory moves when the destination is on a different volume.

If a file is moved across volumes, MoveFile does not move the security descriptor with the file. The file will be assigned the default security descriptor in the destination directory.

The MoveFile function coordinates its operation with the link tracking service, so link sources can be tracked as they are moved.

See also:

• 172.13.28 MoveFileSimple(ExistingFileName as String, NewFileName as String) as boolean

172.13.28 MoveFileSimple(ExistingFileName as String, NewFileName as String) as boolean

MBS Win Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Moves an existing file or a directory, including its children.

**Notes:**
ExistingFileName: The current name of the file or directory on the local computer.

NewFileName: The new name for the file or directory. The new name must not already exist. A new file may be on a different file system or drive. A new directory must be on the same drive.

Returns true on success and false on failure.

The MoveFile function will move (rename) either a file or a directory (including its children) either in the same directory or across directories. The one caveat is that the MoveFile function will fail on directory moves when the destination is on a different volume.

If a file is moved across volumes, MoveFile does not move the security descriptor with the file. The file will be assigned the default security descriptor in the destination directory.

The MoveFile function coordinates its operation with the link tracking service, so link sources can be tracked as they are moved.

See also:

- 172.13.27 MoveFileSimple(ExistingFileName as folderitem, NewFileName as folderitem) as boolean

172.13.29 MoveFileWithProgress(ExistingFileName as folderitem, NewFileName as folderitem, Flags as Integer) as boolean

MBS Win Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Moves a file or directory, including its children.

**Notes:**
ExistingFileName: The name of the existing file or directory on the local computer.

If Flags specifies MOVEFILE_DELAY_UNTIL_REBOOT, the file cannot exist on a remote share because delayed operations are performed before the network is available.

NewFileName: The new name of the file or directory on the local computer.

When moving a file, NewFileName can be on a different file system or volume. If NewFileName is on another drive, you must set the MOVEFILE_COPY_ALLOWED flag in Flags.

When moving a directory, ExistingFileName and NewFileName must be on the same drive.

If Flags specifies MOVEFILE_DELAY_UNTIL_REBOOT and NewFileName is nil, MoveFileWithProgress
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registers ExistingFileName to be deleted when the system restarts. The function fails if it cannot access the registry to store the information about the delete operation. If ExistingFileName refers to a directory, the system removes the directory at restart only if the directory is empty.

Flags: The move options. This parameter can be one or more of the following values: MoveFileCopyAllowed, MoveFileReplaceExisting, MoveFileCreateHardLink, MoveFileDelayUntilReboot and MoveFileWriteThrough.

Return Value: If the function succeeds, the return value is true. If the function fails, the return value is false.

When moving a file across volumes, if the Progress event returns PROGRESS_CANCEl due to the user canceling the operation, MoveFileWithProgress will return zero and GetLastError will return ERROR_REQUEST_Aborted. The existing file is left intact.

When moving a file across volumes, if the Progress event returns PROGRESS_STOP due to the user stopping the operation, MoveFileWithProgress will return zero and GetLastError will return ERROR_REQUEST_Aborted. The existing file is left intact.

See also:

- 172.13.30 MoveFileWithProgress(ExistingFileName as String, NewFileName as String, Flags as Integer) as boolean

172.13.30 MoveFileWithProgress(ExistingFileName as String, NewFileName as String, Flags as Integer) as boolean

MBS Win Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Moves a file or directory, including its children.

**Notes:**

ExistingFileName: The name of the existing file or directory on the local computer.

If Flags specifies MOVEFILE_DELAY_UNTIL_REBOOT, the file cannot exist on a remote share because delayed operations are performed before the network is available.

NewFileName: The new name of the file or directory on the local computer.

When moving a file, NewFileName can be on a different file system or volume. If NewFileName is on another drive, you must set the MOVEFILE_COPY_ALLOWED flag in Flags.

When moving a directory, ExistingFileName and NewFileName must be on the same drive.

If Flags specifies MOVEFILE_DELAY_UNTIL_REBOOT and NewFileName is "", MoveFileWithProgress registers ExistingFileName to be deleted when the system restarts. The function fails if it cannot access the
registry to store the information about the delete operation. If ExistingFileName refers to a directory, the system removes the directory at restart only if the directory is empty.

Flags: The move options. This parameter can be one or more of the following values: MoveFileCopyAllowed, MoveFileReplaceExisting, MoveFileCreateHardLink, MoveFileDelayUntilReboot and MoveFileWriteThrough.

Return Value: If the function succeeds, the return value is true. If the function fails, the return value is false.

When moving a file across volumes, if the Progress event returns PROGRESSCANCEL due to the user canceling the operation, MoveFileWithProgress will return zero and GetLastError will return ERRORREQUESTABORTED. The existing file is left intact.

When moving a file across volumes, if the Progress event returns PROGRESSSTOP due to the user stopping the operation, MoveFileWithProgress will return zero and GetLastError will return ERRORREQUESTABORTED. The existing file is left intact.

See also:

- 172.13.29 MoveFileWithProgress(ExistingFileName as folderitem, NewFileName as folderitem, Flags as Integer) as boolean

172.13.31 Properties

172.13.32 Lasterror as Integer

MBS Win Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The last error code.

Notes:
This value is typically zero on success and -1 if the function is not supported by the plugin.

The FileOperation* functions have special error codes as following, but other methods have normal Windows Error codes:

(Read and Write property)

172.13.33 MultiThreaded as Boolean

MBS Win Plugin, Plugin Version: 12.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to use helper thread for better GUI responsiveness.

Notes:
This property allows you to call this method in a Thread. The plugin will perform the actual operation
on a helper thread, so it does not block Real Studio’s threading. Your GUI can continue to run this way. Progress event fires asynchronously. (Read and Write property)

### 172.13.34 OperationsAborted as Boolean

MBS Win Plugin, Plugin Version: 9.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
This flag is set by the FileOperation method to indicate whether the operation was aborted.
**Notes:** (Read and Write property)

### 172.13.35 Parent as Window

MBS Win Plugin, Plugin Version: 9.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The parent window for the FileOperation methods.
**Notes:** (Read and Write property)
172.13.36  Events

172.13.37  Progress(TotalFileSize as int64, TotalBytesTransferred as int64, StreamSize as int64, StreamBytesTransferred as Int64, StreamNumber as Integer, Reason as Integer) as Integer

MBS Win Plugin, Plugin Version: 9.2, Console & Web: No, Mac: No, Win: Yes, Linux: No.  **Function:** It is called when a portion of a copy or move operation is completed.

**Notes:**
This event is called by the CopyFileEx and the MoveFileWithProgress methods.

TotalFileSize: The total size of the file, in bytes.
TotalBytesTransferred: The total number of bytes transferred from the source file to the destination file since the copy operation began.
StreamSize: The total size of the current file stream, in bytes.
StreamBytesTransferred: The total number of bytes in the current stream that have been transferred from the source file to the destination file since the copy operation began.
StreamNumber: A handle to the current stream. The first time CopyProgressRoutine is called, the stream number is 1.
Reason: CallbackChunkFinished or CallbackStreamSwitched.

Return ProgressCancel, ProgressStop, ProgressContinue or ProgressQuiet.
If you use multithreading option, you may receive additional events after you cancelled or stopped the operation due to the events coming asynchronously.

172.13.38  Constants

172.13.39  CallbackChunkFinished=0

MBS Win Plugin, Plugin Version: 9.2.  **Function:** One of the reason constants for the Progress event.
**Notes:** Another part of the data file was copied.

172.13.40  CallbackStreamSwitched=1

MBS Win Plugin, Plugin Version: 9.2.  **Function:** One of the reason constants for the Progress event.
**Notes:** Another stream was created and is about to be copied. This is the callback reason given when the callback routine is first invoked.
172.13.41 CopyFileAllowDecryptedDestination=8

MBS Win Plugin, Plugin Version: 9.2. **Function:** One of the constants used with CopyFileEx. **Notes:** An attempt to copy an encrypted file will succeed even if the destination copy cannot be encrypted. Windows 2000: This value is not supported.

172.13.42 CopyFileCopySymLink=& h800

MBS Win Plugin, Plugin Version: 9.2. **Function:** One of the constants used with CopyFileEx. **Notes:** If the source file is a symbolic link, the destination file is also a symbolic link pointing to the same file that the source symbolic link is pointing to. Windows Server 2003 and Windows XP/2000: This value is not supported.

172.13.43 CopyFileFailIfExists=1

MBS Win Plugin, Plugin Version: 9.2. **Function:** One of the constants used with CopyFileEx. **Notes:** The copy operation fails immediately if the target file already exists.

172.13.44 CopyFileOpenSourceForWrite=4

MBS Win Plugin, Plugin Version: 9.2. **Function:** One of the constants used with CopyFileEx. **Notes:** The file is copied and the original file is opened for write access.

172.13.45 CopyFileRestartable=2

MBS Win Plugin, Plugin Version: 9.2. **Function:** One of the constants used with CopyFileEx. **Notes:** Progress of the copy is tracked in the target file in case the copy fails. The failed copy can be restarted at a later time by specifying the same values for source and dest as those used in the call that failed.

172.13.46 FileOperationAllowUndo=& h40

MBS Win Plugin, Plugin Version: 9.2. **Function:** One of the flag constants for the FileOperation methods. **Notes:** Preserve undo information, if possible. Prior to Windows Vista, operations could be undone only from the same process that performed the original
operation.

In Windows Vista and later systems, the scope of the undo is a user session. Any process running in the user session can undo another operation. The undo state is held in the Explorer.exe process, and as long as that process is running, it can coordinate the undo functions.

If the source file parameter does not contain fully qualified path and file names, this flag is ignored.

172.13.47  FileOperationFilesOnly=& h80

MBS Win Plugin, Plugin Version: 9.2. **Function:** One of the flag constants for the FileOperation methods. **Notes:** Perform the operation only on files (not on folders) if a wildcard file name (*.*) is specified.

172.13.48  FileOperationMultiDestFiles=1

MBS Win Plugin, Plugin Version: 9.2. **Function:** One of the flag constants for the FileOperation methods. **Notes:** The destination multiple destination files (one for each source file in from) rather than one directory where all source files are to be deposited.

172.13.49  FileOperationNoConfirmation=& h10

MBS Win Plugin, Plugin Version: 9.2. **Function:** One of the flag constants for the FileOperation methods. **Notes:** Respond with Yes to All for any dialog box that is displayed.

172.13.50  FileOperationNoConfirmationMkDir=& h200

MBS Win Plugin, Plugin Version: 9.2. **Function:** One of the flag constants for the FileOperation methods. **Notes:** Do not ask the user to confirm the creation of a new directory if the operation requires one to be created.

172.13.51  FileOperationNoConnectedElements=& H2000

MBS Win Plugin, Plugin Version: 9.2. **Function:** One of the flag constants for the FileOperation methods. **Notes:** Do not move connected files as a group. Only move the specified files.
172.13.52  FileOperationNoCopySecurityAttributes=& h800

MBS Win Plugin, Plugin Version: 9.2. **Function:** One of the flag constants for the FileOperation methods. **Notes:** Do not copy the security attributes of the file. The destination file receives the security attributes of its new folder.

172.13.53  FileOperationNoErrorUI=& h400

MBS Win Plugin, Plugin Version: 9.2. **Function:** One of the flag constants for the FileOperation methods. **Notes:** Do not display a dialog to the user if an error occurs.

172.13.54  FileOperationNoRecursion=& h1000

MBS Win Plugin, Plugin Version: 9.2. **Function:** One of the flag constants for the FileOperation methods. **Notes:** Only perform the operation in the local directory. Don’t operate recursively into subdirectories, which is the default behavior.

172.13.55  FileOperationRenameCollision=8

MBS Win Plugin, Plugin Version: 9.2. **Function:** One of the flag constants for the FileOperation methods. **Notes:** Give the file being operated on a new name in a move, copy, or rename operation if a file with the target name already exists at the destination.

172.13.56  FileOperationSilent=4

MBS Win Plugin, Plugin Version: 9.2. **Function:** One of the flag constants for the FileOperation methods. **Notes:** Do not display a progress dialog box.

172.13.57  FileOperationSimpleProgress=& h100

MBS Win Plugin, Plugin Version: 9.2. **Function:** One of the flag constants for the FileOperation methods. **Notes:**

Display a progress dialog box but do not show individual file names as they are operated on.

The plugin activates this flag if you pass in a window title.
172.13.58  FileOperationWantNukeWarning=$H4000$

MBS Win Plugin, Plugin Version: 9.2. **Function:** One of the flag constants for the FileOperation methods. **Notes:** Send a warning if a file is being permanently destroyed during a delete operation rather than recycled. This flag partially overrides FileOperationNoConfirmation.

172.13.59  MoveFileCopyAllowed=2

MBS Win Plugin, Plugin Version: 9.2. **Function:** One of the constants for the MoveFileWithProgress method. **Notes:**

If the file is to be moved to a different volume, the function simulates the move by using the CopyFile and DeleteFile functions.
This value cannot be used with MoveFileDelayUntilReboot.

172.13.60  MoveFileCreateHardLink=16

MBS Win Plugin, Plugin Version: 9.2. **Function:** One of the constants for the MoveFileWithProgress method. **Notes:** Reserved for future use.

172.13.61  MoveFileDelayUntilReboot=4

MBS Win Plugin, Plugin Version: 9.2. **Function:** One of the constants for the MoveFileWithProgress method. **Notes:**

The system does not move the file until the operating system is restarted. The system moves the file immediately after AUTOCHK is executed, but before creating any paging files. Consequently, this parameter enables the function to delete paging files from previous startups.
This value can only be used if the process is in the context of a user who belongs to the administrators group or the LocalSystem account.
This value cannot be used with MoveFileCopyAllowed.

172.13.62  MoveFileReplaceExisting=1

MBS Win Plugin, Plugin Version: 9.2. **Function:** One of the constants for the MoveFileWithProgress method. **Notes:**
If a file named lpNewFileName exists, the function replaces its contents with the contents of the lpExistingFileName file. This value cannot be used if NewFileName or ExistingFileName names a directory.

**172.13.63** MoveFileWriteThrough=8

MBS Win Plugin, Plugin Version: 9.2. **Function:** One of the constants for the MoveFileWithProgress method.  
**Notes:**  
The function does not return until the file has actually been moved on the disk. Setting this value guarantees that a move performed as a copy and delete operation is flushed to disk before the function returns. The flush occurs at the end of the copy operation. This value has no effect if MoveFileDelayUntilReboot is set.

**172.13.64** ProgressCancel=1

MBS Win Plugin, Plugin Version: 9.2. **Function:** One of the constants for the Progress Event return value. **Notes:** Cancel the copy operation and delete the destination file.

**172.13.65** ProgressContinue=0

MBS Win Plugin, Plugin Version: 9.2. **Function:** One of the constants for the Progress Event return value. **Notes:** Continue the copy operation.

**172.13.66** ProgressQuiet=3

MBS Win Plugin, Plugin Version: 9.2. **Function:** One of the constants for the Progress Event return value. **Notes:** Continue the copy operation, but stop invoking the event to report progress.

**172.13.67** ProgressStop=2

MBS Win Plugin, Plugin Version: 9.2. **Function:** One of the constants for the Progress Event return value. **Notes:** Stop the copy operation. It can be restarted at a later time.
172.14. CLASS WINDOWSFILEINFOMBS

172.14 class WindowsFileInfoMBS

172.14.1 class WindowsFileInfoMBS

MBS Win Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The window file information class. **Example:**

```vba
dim f as FolderItem = SelectFolder
if f <> Nil then
dim w as new WindowsFileInfoMBS(f)
MsgBox str(w.FileIndex)
end if
```

**Notes:**

The identifier that is stored in the FileIndex members is called the file ID. Support for file IDs is file system-specific. File IDs are not guaranteed to be unique over time, because file systems are free to reuse them. In some cases, the file ID for a file can change over time.

In the FAT file system, the file ID is generated from the first cluster of the containing directory and the byte offset within the directory of the entry for the file. Some defragmentation products change this byte offset. (Windows in-box defragmentation does not.) Thus, a FAT file ID can change over time. Renaming a file in the FAT file system can also change the file ID, but only if the new file name is longer than the old one.

In the NTFS file system, a file keeps the same file ID until it is deleted. You can replace one file with another file without changing the file ID by using the ReplaceFile function. However, the file ID of the replacement file, not the replaced file, is retained as the file ID of the resulting file.

Not all file systems can record creation and last access time, and not all file systems record them in the same manner. For example, on a Windows FAT file system, create time has a resolution of 10 milliseconds, write time has a resolution of 2 seconds, and access time has a resolution of 1 day (the access date). On the NTFS file system, access time has a resolution of 1 hour. For more information, see File Times.

172.14.2 Methods

172.14.3 Constructor(file as folderitem)

MBS Win Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The constructor using a folderitem. **Notes:** On success the valid property is set to true.
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See also:

- 172.14.4 Constructor(handle as Integer) 20180
- 172.14.5 Constructor(path as string) 20180
- 172.14.6 Constructor(stream as BinaryStream) 20180

172.14.4 Constructor(handle as Integer)

Notes: On success the valid property is set to true.
See also:

- 172.14.3 Constructor(file as folderitem) 20179
- 172.14.5 Constructor(path as string) 20180
- 172.14.6 Constructor(stream as BinaryStream) 20180

172.14.5 Constructor(path as string)

Notes: On success the valid property is set to true.
See also:

- 172.14.3 Constructor(file as folderitem) 20179
- 172.14.4 Constructor(handle as Integer) 20180
- 172.14.6 Constructor(stream as BinaryStream) 20180

172.14.6 Constructor(stream as BinaryStream)

Notes: On success the valid property is set to true.
See also:

- 172.14.3 Constructor(file as folderitem) 20179
- 172.14.4 Constructor(handle as Integer) 20180
- 172.14.5 Constructor(path as string) 20180
172.14.7 Properties

172.14.8 CreationTime as UInt64

MBS Win Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An UInt64 that specifies when a file or directory is created.

**Notes:**
If the underlying file system does not support creation time, this member is zero (0).
(Read only property)

172.14.9 FileAttributes as Integer

MBS Win Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The file attributes.

**Notes:**
For possible values and their descriptions, see kFileAttribute* constants.
(Read only property)

172.14.10 FileIndex as UInt64

MBS Win Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The unique identifier that is associated with a file.

**Notes:**
The identifier and the volume serial number uniquely identify a file on a single computer. To determine whether two open handles represent the same file, combine the identifier and the volume serial number for each file and compare them.
(Read only property)

172.14.11 FileSize as UInt64

MBS Win Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The file size.

**Notes:** (Read only property)

172.14.12 LastAccessTime as UInt64

MBS Win Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** For a file, the structure specifies the last time that a file is read from or written to.
Notes:
For a directory, the structure specifies when the directory is created. For both files and directories, the
specified date is correct, but the time of day is always set to midnight. If the underlying file system does
not support the last access time, this member is zero (0).
(Read only property)

172.14.13  LastWriteTime as UInt64

MBS Win Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
For a file, the structure specifies the last time that a file is written to.
**Notes:**
For a directory, the structure specifies when the directory is created. If the underlying file system does not
support the last write time, this member is zero (0).
(Read only property)

172.14.14  NumberOfLinks as Integer

MBS Win Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The number of links to this file.
**Notes:**
For the FAT file system this member is always 1. For the NTFS file system, it can be more than 1.
(Read only property)

172.14.15  Valid as Boolean

MBS Win Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether the constructor got the values.
**Notes:** (Read only property)

172.14.16  VolumeSerialNumber as Integer

MBS Win Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The serial number of the volume that contains a file.
**Notes:** (Read only property)
172.14.18 Constants

172.14.18 kFileAttributeArchive = 32

MBS Win Plugin, Plugin Version: 10.1. **Function:** One of the file attribute constants.  
**Notes:** A file or directory that is an archive file or directory. Applications typically use this attribute to mark files for backup or removal.

172.14.19 kFileAttributeCompressed = 2048

MBS Win Plugin, Plugin Version: 10.1. **Function:** One of the file attribute constants.  
**Notes:** A file or directory that is compressed. For a file, all of the data in the file is compressed. For a directory, compression is the default for newly created files and subdirectories.

172.14.20 kFileAttributeDevice = 64

MBS Win Plugin, Plugin Version: 10.1. **Function:** One of the file attribute constants.  
**Notes:** This value is reserved for system use.

172.14.21 kFileAttributeDirectory = 16

MBS Win Plugin, Plugin Version: 10.1. **Function:** One of the file attribute constants.  
**Notes:** The handle that identifies a directory.

172.14.22 kFileAttributeEncrypted = 16384

MBS Win Plugin, Plugin Version: 10.1. **Function:** One of the file attribute constants.  
**Notes:** A file or directory that is encrypted. For a file, all data streams in the file are encrypted. For a directory, encryption is the default for newly created files and subdirectories.

172.14.23 kFileAttributeHidden = 2

MBS Win Plugin, Plugin Version: 10.1. **Function:** One of the file attribute constants.  
**Notes:** The file or directory is hidden. It is not included in an ordinary directory listing.
172.14.24  kFileAttributeNormal = 128

MBS Win Plugin, Plugin Version: 10.1. **Function:** One of the file attribute constants. **Notes:** A file that does not have other attributes set. This attribute is valid only when used alone.

172.14.25  kFileAttributeNotContentIndexed = 8192

MBS Win Plugin, Plugin Version: 10.1. **Function:** One of the file attribute constants. **Notes:** The file or directory is not to be indexed by the content indexing service.

172.14.26  kFileAttributeOffline = 4096

MBS Win Plugin, Plugin Version: 10.1. **Function:** One of the file attribute constants. **Notes:** The data of a file is not available immediately. This attribute indicates that the file data is physically moved to offline storage. This attribute is used by Remote Storage, which is the hierarchical storage management software. Applications should not arbitrarily change this attribute.

172.14.27  kFileAttributeReadonly = 1

MBS Win Plugin, Plugin Version: 10.1. **Function:** One of the file attribute constants. **Notes:** A file that is read-only. Applications can read the file, but cannot write to it or delete it. This attribute is not honored on directories. For more information, see "You cannot view or change the Read-only or the System attributes of folders in Windows Server 2003, in Windows XP, or in Windows Vista".

172.14.28  kFileAttributeReparsePoint = 1024

MBS Win Plugin, Plugin Version: 10.1. **Function:** One of the file attribute constants. **Notes:** A file or directory that has an associated reparse point, or a file that is a symbolic link.

172.14.29  kFileAttributeSparseFile = 512

MBS Win Plugin, Plugin Version: 10.1. **Function:** One of the file attribute constants. **Notes:** A file that is a sparse file.
172.14.30  kFileAttributeSystem = 4

MBS Win Plugin, Plugin Version: 10.1. **Function:** One of the file attribute constants.  
**Notes:** A file or directory that the operating system uses a part of, or uses exclusively.

172.14.31  kFileAttributeTemporary = 256

MBS Win Plugin, Plugin Version: 10.1. **Function:** One of the file attribute constants.  
**Notes:** A file that is being used for temporary storage. File systems avoid writing data back to mass storage if sufficient cache memory is available, because typically, an application deletes a temporary file after the handle is closed. In that scenario, the system can entirely avoid writing the data. Otherwise, the data is written after the handle is closed.

172.14.32  kFileAttributeVirtual = 65536

MBS Win Plugin, Plugin Version: 10.1. **Function:** One of the file attribute constants.  
**Notes:** This value is reserved for system use.
172.15  class WindowsFileStreamMBS

172.15.1  class WindowsFileStreamMBS

MBS Win Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The class for file streams on Windows.

**Notes:**
Windows can store more than one data stream in a file.

(on Mac/Linux, please check the ExtendedAttributesMBS module)
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

172.15.2  Methods

172.15.3  Constructor

MBS Win Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The private constructor.

172.15.4  List(file as folderitem) as WindowsFileStreamMBS()

MBS Win Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Lists file streams in a file at given folderitem.

**Example:**

```dim f as FolderItem = SpecialFolder.Desktop.Child("test.txt")

dim w() as WindowsFileStreamMBS = WindowsFileStreamMBS.List(f)
```

**Notes:**
Returns nil in case of error.
Else returns an array with stream details.

Requires Windows Vista or newer. Raises exception on Windows XP.

See also:

- 172.15.5 List(Path as String) as WindowsFileStreamMBS()
172.15. CLASS WINDOWSFILESTREAMMBS

172.15.5 List(Path as String) as WindowsFileStreamMBS()

MBS Win Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Lists file streams in a file at given path.
**Notes:**
Returns nil in case of error.
Else returns an array with stream details.

Requires Windows Vista or newer. Raises exception on Windows XP.
See also:
- 172.15.4 List(file as folderitem) as WindowsFileStreamMBS()

172.15.6 Properties

172.15.7 Name as String

MBS Win Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The name of the stream.
**Notes:** (Read only property)

172.15.8 Size as UInt64

MBS Win Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The size in bytes.
**Notes:** (Read only property)
172.16  class WindowsFileVersionMBS

172.16.1  class WindowsFileVersionMBS

MBS Win Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A class to read Windows version information from a file.

**Example:**
```vba
dim f as FolderItem = SpecialFolder.Desktop.Child("dbgview.exe")
dim w as new WindowsFileVersionMBS
if w.OpenFile(f) then
    MsgBox w.GetInternalName
end if
```

172.16.2  Methods

172.16.3  FileVersion as string

MBS Win Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The file version in an user readable string.

**Example:**
```vba
dim f as FolderItem = SpecialFolder.Desktop.Child("dbgview.exe")
dim w as new WindowsFileVersionMBS
if w.OpenFile(f) then
    MsgBox wFileVersion
end if
```

**Notes:** format is "1.2.3.4".

172.16.4  GetCompanyName as string

MBS Win Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns value for key CompanyName.

**Example:**
```vba
dim f as FolderItem = SpecialFolder.Desktop.Child("dbgview.exe")
dim w as new WindowsFileVersionMBS
if w.OpenFile(f) then
    MsgBox w.GetCompanyNamex
end if
```
172.16.5 GetFileDescription as string

MBS Win Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Returns value for key FileDescription.
**Example:**

dim f as FolderItem = SpecialFolder.Desktop.Child("dbgview.exe")
dim w as new WindowsFileVersionMBS
if w.OpenFile(f) then
    MsgBox w.GetFileDescription
end if

172.16.6 GetFileVersion as string

MBS Win Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Returns value for key FileVersion.
**Example:**

dim f as FolderItem = SpecialFolder.Desktop.Child("dbgview.exe")
dim w as new WindowsFileVersionMBS
if w.OpenFile(f) then
    MsgBox w.GetFileVersion
end if

172.16.7 GetInternalName as string

MBS Win Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Returns value for key InternalName.
**Example:**

dim f as FolderItem = SpecialFolder.Desktop.Child("dbgview.exe")
dim w as new WindowsFileVersionMBS
if w.OpenFile(f) then
    MsgBox w.GetInternalName
end if
172.16.8 GetLegalCopyright as string

MBS Win Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns value for key LegalCopyright.

**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("dbgview.exe")
dim w as new WindowsFileVersionMBS
if w.OpenFile(f) then
    MsgBox w.GetLegalCopyright
end if
```

172.16.9 GetOriginalFilename as string

MBS Win Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns value for key OriginalFilename.

**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("dbgview.exe")
dim w as new WindowsFileVersionMBS
if w.OpenFile(f) then
    MsgBox w.GetOriginalFilename
end if
```

172.16.10 GetProductName as string

MBS Win Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns value for key ProductName.

**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("dbgview.exe")
dim w as new WindowsFileVersionMBS
if w.OpenFile(f) then
    MsgBox w.GetProductName
end if
```

172.16.11 GetProductVersion as string

Example:

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("dbgview.exe")
dim w as new WindowsFileVersionMBS
if w.OpenFile(f) then
    MsgBox w.GetProductVersion
end if
```

172.16.12 OpenFile(file as folderitem) as boolean


**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("dbgview.exe")
dim w as new WindowsFileVersionMBS
if w.OpenFile(f) then
    MsgBox w.GetCompanyName
end if
```

**Notes:** Returns true on success and false on failure.

172.16.13 ProductVersion as string

MBS Win Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The product version in an user readable string.

**Example:**

```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("dbgview.exe")
dim w as new WindowsFileVersionMBS
if w.OpenFile(f) then
    MsgBox w.ProductVersion
end if
```

**Notes:** format is "1.2.3.4"
172.16.14 QueryBinaryValue(key as string) as string

MBS Win Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Low level function to read a binary item from the information resource.

**Example:**
```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("dbgview.exe")
dim w as new WindowsFileVersionMBS
if w.OpenFile(f) then
    // we define encoding as UTF16 as we know the value for ProductName is an UTF16 string.
    MsgBox DefineEncoding(w.QueryBinaryValue("ProductName"), encodings.UTF16)
end if
```

**Notes:** Returns "" on any error.

172.16.15 QueryUnicodeValue(key as string) as string

MBS Win Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Low level function to read an unicode string item from the information resource.

**Example:**
```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("dbgview.exe")
dim w as new WindowsFileVersionMBS
if w.OpenFile(f) then
    MsgBox str(w.QueryUnicodeValue("ProductName"))
end if
```

**Notes:** Returns "" on any error.

172.16.16 Properties

172.16.17 FileDateLS as Integer


**Example:**
```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("dbgview.exe")
dim w as new WindowsFileVersionMBS
if w.OpenFile(f) then
    MsgBox str(w.FileDateLS)
```

end if

Notes:
Filedate is a 64 bit integer. This is the lower 32 bit part.

Specifies the least significant 32 bits of the file’s 64-bit binary creation date and time stamp. (Read and Write property)

172.16.18 FileDateMS as Integer

Example:
```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("dbgview.exe")
dim w as new WindowsFileVersionMBS
if w.OpenFile(f) then
    MsgBox str(w.FileDateMS)
end if
```

Notes:
Filedate is a 64 bit integer. This is the higher 32 bit part.

Specifies the most significant 32 bits of the file’s 64-bit binary creation date and time stamp. (Read and Write property)

172.16.19 FileFlags as Integer

Example:
```vbnet
dim f as FolderItem = SpecialFolder.Desktop.Child("dbgview.exe")
dim w as new WindowsFileVersionMBS
if w.OpenFile(f) then
    MsgBox str(w.FileFlags)
end if
```
Notes:
Contains a bitmask that specifies the Boolean attributes of the file. This member can include one or more of the following values.

- **VS_FF_DEBUG** = 1 The file contains debugging information or is compiled with debugging features enabled.
- **VS_FF_INFOINFERRED** = 16 The file’s version structure was created dynamically; therefore, some of the members in this structure may be empty or incorrect. This flag should never be set in a file’s VS\_VERSIONINFO data.
- **VS_FF_PATCHED** = 4 The file has been modified and is not identical to the original shipping file of the same version number.
- **VS_FF_PRERELEASE** = 2 The file is a development version, not a commercially released product.
- **VS_FF_PRIVATEBUILD** = 8 The file was not built using standard release procedures. If this flag is set, the StringFileInfo structure should contain a PrivateBuild entry.
- **VS_FF_SPECIALBUILD** = 32 The file was built by the original company using standard release procedures but is a variation of the normal file of the same version number. If this flag is set, the StringFileInfo structure should contain a SpecialBuild entry.

(Read and Write property)

### 172.16.20 FileOS as Integer


**Example:**
```vba
    dim f as FolderItem = SpecialFolder.Desktop.Child(“dbgview.exe”)
    dim w as new WindowsFileVersionMBS
    if w.OpenFile(f) then
        MsgBox str(w.FileOS)
    end if
```

**Notes:**
Specifies the operating system for which this file was designed. This member can be one of the following values.

An application can combine these values to indicate that the file was designed for one operating system running on another. The following FileOS values are examples of this, but are not a complete list.

(Read and Write property)
172.16. CLASS WINDOWSFILEVERSIONMBS

| VOS_DOS        | & h00010000 | The file was designed for MS-DOS. |
| VOS_NT         | & h00040000 | The file was designed for Windows NT. |
| VOS_WINDOWS16  | & h00000001 | The file was designed for 16-bit Windows. |
| VOS_WINDOWS32  | & h00000004 | The file was designed for 32-bit Windows. |
| VOS_OS216      | & h00020000 | The file was designed for 16-bit OS/2. |
| VOS_OS232      | & h00030000 | The file was designed for 32-bit OS/2. |
| VOS_PM16       | & h00000002 | The file was designed for 16-bit Presentation Manager. |
| VOS_PM32       | & h00000003 | The file was designed for 32-bit Presentation Manager. |
| VOS_UNKNOWN    | & h00000000 | The operating system for which the file was designed is unknown to the system. |

VOS_DOS_WINDOWS16 = & h00010001 The file was designed for 16-bit Windows running on MS-DOS.
VOS_DOS_WINDOWS32 = & h00010004 The file was designed for 32-bit Windows running on MS-DOS.
VOS_NT_WINDOWS16 = ? The file was designed for Windows NT.
VOS_OS216_PM16  = & h00020002 The file was designed for 16-bit Presentation Manager running on 16-bit OS/2.
VOS_OS232_PM32  = & h00030003 The file was designed for 32-bit Presentation Manager running on 32-bit OS/2.

172.16.21 FileSubtype as Integer

MBS Win Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The Windows file subtype code.

**Example:**

```vbs
dim f as FolderItem = SpecialFolder.Desktop.Child("dbgview.exe")
dim w as new WindowsFileVersionMBS
if w.OpenFile(f) then
    MsgBox str(w.FileSubType)
end if
```

**Notes:**

Specifies the function of the file. The possible values depend on the value of FileType. For all values of FileType not described in the following list, FileSubtype is zero.

If FileType is VFT_DRV, FileSubtype can be one of the following values.

If FileType is VFT_FONT, FileSubtype can be one of the following values.

If FileType is VFT_VXD, FileSubtype contains the virtual device identifier included in the virtual device control block.
All FileSubtype values not listed here are reserved.
(Read and Write property)
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VFT2_UNKNOWN = 0 The driver type is unknown by the system.
VFT2_DRV_COMM = 10 The file contains a communications driver.
VFT2_DRV_PRINTER = 1 The file contains a printer driver.
VFT2_DRV_KEYBOARD = 2 The file contains a keyboard driver.
VFT2_DRV_LANGUAGE = 3 The file contains a language driver.
VFT2_DRV_DISPLAY = 4 The file contains a display driver.
VFT2_DRV_MOUSE = 5 The file contains a mouse driver.
VFT2_DRV_NETWORK = 6 The file contains a network driver.
VFT2_DRV_SYSTEM = 7 The file contains a system driver.
VFT2_DRV_INSTALLABLE = 8 The file contains an installable driver.
VFT2_DRV_SOUND = 9 The file contains a sound driver.
VFT2_DRV_VERSIONED_PRINTER = 10 The file contains a versioned printer driver.

VFT2_UNKNOWN = 0 The font type is unknown by the system.
VFT2_FONT_RASTER = 1 The file contains a raster font.
VFT2_FONT_VECTOR = 2 The file contains a vector font.
VFT2_FONT_TRUETYPE = 3 The file contains a TrueType font.

172.16.22 FileType as Integer

MBS Win Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The Windows file type code.

**Example:**

```vba
dim f as FolderItem = SpecialFolder.Desktop.Child("dbgview.exe")
dim w as new WindowsFileVersionMBS
if w.OpenFile(f) then
    MsgBox str(w.FileType)
end if
```

**Notes:**

Specifies the general type of file. This member can be one of the following values. All other values are reserved.

VFT.Unknown = 0 The file type is unknown to the system.
VFT.App = 1 The file contains an application.
VFT.DLL = 2 The file contains a DLL.
VFT_DRV = 3 The file contains a device driver. If dwFileType is VFT_DRV, FileSubtype contains a more specific description of the driver.
VFT.FONT = 4 The file contains a font. If dwFileType is VFT.FONT, FileSubtype contains a more specific description of the font file.
VFT.VXD = 5 The file contains a virtual device.
VFT_STATIC.Lib = 7 The file contains a static-link library.
172.16. CLASS WINDOWSFILEVERSIONMBS

(Read and Write property)

172.16.23  FileVersionLS as Integer


**Example:**
```vbscript
dim f as FolderItem = SpecialFolder/Desktop.Child(“dbgview.exe”) dim w as new WindowsFileVersionMBS if w.OpenFile(f) then MsgBox str(w.FileVersionLS) end if
```

**Notes:**
Fileversion is a 64 bit integer. This is the lower 32 bit part.

Specifies the least significant 32 bits of the file’s binary version number. This member is used with FileVersionMS to form a 64-bit value used for numeric comparisons.
(Read and Write property)

172.16.24  FileVersionMS as Integer


**Example:**
```vbscript
dim f as FolderItem = SpecialFolder/Desktop.Child(“dbgview.exe”) dim w as new WindowsFileVersionMBS if w.OpenFile(f) then MsgBox str(w.FileVersionMS) end if
```

**Notes:**
Fileversion is a 64 bit integer. This is the higher 32 bit part.

Specifies the most significant 32 bits of the file’s binary version number. This member is used with FileVersionLS to form a 64-bit value used for numeric comparisons.
(Read and Write property)
172.16.25  LangCharset as Integer

MBS Win Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The language charset to use.
**Example:**

```vbs
dim f as FolderItem = SpecialFolder.Desktop.Child("dbgview.exe")
dim w as new WindowsFileVersionMBS
if w.OpenFile(f) then
    MsgBox str(w.LangCharset)
end if
```

**Notes:**
OpenFile sets this to the default value.
You can change it later.
Value is used on each call of GetOriginalFilename, GetFileVersion, GetCompanyName, GetProductName,
GetInternalName, GetProductVersion, GetFileVersion, GetFileDescription, GetLegalCopyright, QueryUnicodeValue and Query-
BinaryValue.
(Read and Write property)

172.16.26  Lasterror as Integer

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The last error code.
**Notes:**
Lasterror means no error has happend.
Normally a Windows error code.
(Read and Write property)

172.16.27  ProductVersionLS as Integer

MBS Win Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Product version number. Lower part.
**Example:**

```vbs
dim f as FolderItem = SpecialFolder.Desktop.Child("dbgview.exe")
dim w as new WindowsFileVersionMBS
if w.OpenFile(f) then
    MsgBox str(w.ProductVersionLS)
end if
```
Notes:

Productversion is a 64 bit integer. This is the lower 32 bit part.

Specifies the least significant 32 bits of the binary version number of the product with which this file was distributed. This member is used with ProductVersionMS to form a 64-bit value used for numeric comparisons.
(Read and Write property)

172.16.28 ProductVersionMS as Integer

**Example:**
```vbscript
dim f as FolderItem = SpecialFolder.Desktop.Child("dbgview.exe")
dim w as new WindowsFileVersionMBS
if w.OpenFile(f) then
    MsgBox str(w.ProductVersionMS)
end if
```

Notes:

Productversion is a 64 bit integer. This is the higher 32 bit part.

Specifies the most significant 32 bits of the binary version number of the product with which this file was distributed. This member is used with ProductVersionLS to form a 64-bit value used for numeric comparisons.
(Read and Write property)

172.16.29 RawData as String

MBS Win Plugin, Plugin Version: 10.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the data of the file version record as string.
**Notes:** (Read only property)
172.16.30  **Success as Boolean**

MBS Win Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether last call to OpenFile was successful.

**Example:**
```vbs
Dim f As FolderItem = SpecialFolder.Desktop.Child("dbgview.exe")
Dim w As New WindowsFileVersionMBS
If w.OpenFile(f) Then
    MsgBox str(w.Success)
End If
```

**Notes:** (Read and Write property)
172.17. class WindowsGUIResourcesMBS

172.17.1 class WindowsGUIResourcesMBS

MBS Win Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Class to retrieves the count of handles to graphical user interface (GUI) objects in use by the specified process.
**Notes:**
Allows you to monitor how many handles you use from GDI. As they are limited, your app will crash if it hits a limit.

172.17.2 Methods

172.17.3 Constructor

MBS Win Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The constructor.
**Notes:**
Examines current process and sets properties.

If the constructor succeeds, the properties are set to the count of handles to GUI objects in use by the process. If no GUI objects are in use, the return value is zero.

A process without a graphical user interface does not use GUI resources, therefore, GetGuiResources will return zero.

See also:

- 172.17.4 Constructor(ProcessID as integer)

172.17.4 Constructor(ProcessID as integer)

MBS Win Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The constructor.
**Notes:**
Examines given process and sets properties.

If the constructor succeeds, the properties are set to the count of handles to GUI objects in use by the process. If no GUI objects are in use, the return value is zero.
A process without a graphical user interface does not use GUI resources, therefore, GetGuiResources will return zero.
See also:

- 172.17.3 Constructor

## 172.17.5 Properties

### 172.17.6 GDIOBJECTCOUNT as Integer

MBS Win Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The count of GDI objects.
**Notes:** (Read only property)

### 172.17.7 GDIOBJECTPEAK as Integer

MBS Win Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The peak count of GDI objects.
**Notes:** (Read only property)

### 172.17.8 LastError as Integer

MBS Win Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The last error from Windows.
**Notes:**
Should be zero on success.
But could give error code like permissions denied, if you want to examine another process.
(Read only property)

### 172.17.9 UserObjectCount as Integer

MBS Win Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The count of USER objects.
**Notes:** (Read only property)
172.17.10 UserObjectPeak as Integer

MBS Win Plugin, Plugin Version: 18.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The peak count of USER objects.
**Notes:** (Read only property)
172.18  class WindowsIniMBS

172.18.1  class WindowsIniMBS

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A class to handle INI files on Windows.

**Notes:**
Ini files are build by this:

```
[ Sectionname ]
key1=value1

[ Appname ]
key2=value2
```

An ini file contains one or more sections which are labeled with a name of a section or in the Win.ini file with the application name. Each section is filled with one or more key = value pairs.

172.18.2  Methods

172.18.3  GetPrivateProfileInt(appname as string, keyname as string, defaultValue as Integer = 0) as Integer

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Reads an integer value from the private ini file.

**Notes:** Returns the default value on any error.

172.18.4  GetPrivateProfileSection(appname as string) as string

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns a section from a private ini file.

**Notes:**
The string is built using CStrings (with ending chr(0)). Returns "" on any error.
172.18.5  GetPrivateProfileString(appname as string, keyname as string, defaultValue as string = "") as string

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Reads a string from a private ini file.**Notes:** Returns the default value on any error.

172.18.6  GetPrivateProfileStruct(section as string, keyname as string, size as Integer) as memoryblock

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Reads a structure from a private ini file.**Notes:**
Size is the size of the memoryblock returned.
Returns nil on any error.
A checksum is checked to verify that the data is unchanged.

172.18.7  GetProfileInt(appname as string, keyname as string, defaultValue as Integer = 0) as Integer

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns an integer value of the Win.ini file.**Notes:** Returns the default value on any error.

172.18.8  GetProfileSection(appname as string) as string

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns a profile section of the Win.ini file.**Notes:**
The string is built using CStrings (with ending chr(0)).
Returns "" on any error.

172.18.9  GetProfileString(appname as string, keyname as string, defaultValue as string = ") as string

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns an integer value of the Win.ini file.**Notes:**
Searches for a string.
All three parameters are not allowed to be empty. And you must pass trimmed strings (no space on the left and/or right side)
Returns the default string on any error.

172.18.10 WritePrivateProfileSection(appname as string, value as string) as boolean

Notes: Value is an array of strings concated with chr(0) as the delimiter.
Returns true if successful.

172.18.11 WritePrivateProfileString(appname as string, keyname as string, value as string) as boolean

Example:

```vba
dim l as windowsIniMBS
l=new windowsIniMBS
l.filename="c:\test.ini"
if l.writePrivateProfileString("appname","keyname","value") then
    msgBox "ok"
end if
```

172.18.12 WritePrivateProfileStruct(section as string, keyname as string, mem as memoryblock, size as Integer) as boolean

Notes: Returns true if successful.
A checksum is stored to verify later whether the data was changed.
172.18.  CLASS WINDOWSINIMBS

172.18.13  Properties

172.18.14  BufferSize as Integer

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The size of the buffer used for reading strings from the INI files.

**Notes:**
Should not be bigger than 32767 bytes on Windows 95/98/ME.
Default size is 32000.
(Read and Write property)

172.18.15  Filename as String

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The file path of the private profile file to use.

**Notes:**
e.g. "C:\Test.ini" or just "myapp.ini".
(Read and Write property)
172.19  class WindowsKeyboardLayoutMBS

172.19.1  class WindowsKeyboardLayoutMBS


172.19.2  Methods

172.19.3  Constructor

Example:

dim w as new WindowsKeyboardLayoutMBS
MsgBox w.name

See also:

- 172.19.4 Constructor(SubLanguageID as Integer, PrimaryLanguageID as Integer)

172.19.4  Constructor(SubLanguageID as Integer, PrimaryLanguageID as Integer)

MBS Win Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: Creates a new keyboard layout object with the given ID.
See also:

- 172.19.3 Constructor

172.19.5  KeyboardLayoutName as string

MBS Win Plugin, Plugin Version: 12.5, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: Returns the name of the current keyboard layout name.
Example:

msgbox WindowsKeyboardLayoutMBS.KeyboardLayoutName
172.19.6 List as WindowsKeyboardLayoutMBS()

MBS Win Plugin, Plugin Version: 12.5, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Returns a list of all keyboard layouts installed.

**Example:**

```vba
dim list() as WindowsKeyboardLayoutMBS = WindowsKeyboardLayoutMBS.List
MsgBox str(UBound(list)+1)+" keyboard layouts."
```

172.19.7 Properties

172.19.8 Handle as Integer

MBS Win Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The internal ID of the keyboard layout.

**Notes:** (Read only property)

172.19.9 Name as String

MBS Win Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries the name of the keyboard layout.

**Example:**

```vba
dim w as new WindowsKeyboardLayoutMBS
MsgBox w.name
```

**Notes:** (Read only property)

172.19.10 PrimaryLanguageID as Integer

MBS Win Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The primary ID for this language.

**Notes:** (Read and Write property)

172.19.11 SubLanguageID as Integer

MBS Win Plugin, Plugin Version: 12.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The sub language ID.
Notes:
This is needed as there are for example 16 different English variants.
(Read and Write property)

172.19.12 Constants

172.19.13 LangAfrikaans = & h36
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.14 LangAlbanian = & h1C
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.15 LangAlsatian = & h84
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.16 LangAmharic = & h5E
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.17 LangArabic = & h01
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.18 LangArmenian = & h2B
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.
172.19. Class WindowsKeyboardLayoutMBS

172.19.19 LangAssamese &= h4D

MBS Win Plugin, Plugin Version: 12.5. Function: One of the language constants.

172.19.20 LangAzeri &= h2C

MBS Win Plugin, Plugin Version: 12.5. Function: One of the language constants.

172.19.21 LangBashkir &= h6D

MBS Win Plugin, Plugin Version: 12.5. Function: One of the language constants.

172.19.22 LangBasque &= h2D

MBS Win Plugin, Plugin Version: 12.5. Function: One of the language constants.

172.19.23 LangBelarusian &= h23

MBS Win Plugin, Plugin Version: 12.5. Function: One of the language constants.

172.19.24 LangBengali &= h45

MBS Win Plugin, Plugin Version: 12.5. Function: One of the language constants.

172.19.25 LangBosnian &= h1A

MBS Win Plugin, Plugin Version: 12.5. Function: One of the language constants.

172.19.26 LangBosnianNeutral &= h781A

MBS Win Plugin, Plugin Version: 12.5. Function: One of the language constants.
<table>
<thead>
<tr>
<th>Code</th>
<th>Language</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>172.19.27</td>
<td>LangBreton</td>
<td>&amp; h7E</td>
</tr>
<tr>
<td>172.19.28</td>
<td>LangBulgarian</td>
<td>&amp; h02</td>
</tr>
<tr>
<td>172.19.29</td>
<td>LangCatalan</td>
<td>&amp; h03</td>
</tr>
<tr>
<td>172.19.30</td>
<td>LangChinese</td>
<td>&amp; h04</td>
</tr>
<tr>
<td>172.19.31</td>
<td>LangChineseSimplified</td>
<td>&amp; h04</td>
</tr>
<tr>
<td>172.19.32</td>
<td>LangChineseTraditional</td>
<td>&amp; h7C04</td>
</tr>
<tr>
<td>172.19.33</td>
<td>LangCorsican</td>
<td>&amp; h83</td>
</tr>
<tr>
<td>172.19.34</td>
<td>LangCroatian</td>
<td>&amp; h1A</td>
</tr>
</tbody>
</table>

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.
172.19.35  LangCzech = amp; h05

MBS Win Plugin, Plugin Version: 12.5. Function: One of the language constants.

172.19.36  LangDanish = & h06

MBS Win Plugin, Plugin Version: 12.5. Function: One of the language constants.

172.19.37  LangDari = & h8C

MBS Win Plugin, Plugin Version: 12.5. Function: One of the language constants.

172.19.38  LangDivehi = & h65

MBS Win Plugin, Plugin Version: 12.5. Function: One of the language constants.

172.19.39  LangDutch = & h13

MBS Win Plugin, Plugin Version: 12.5. Function: One of the language constants.

172.19.40  LangEnglish = & h09

MBS Win Plugin, Plugin Version: 12.5. Function: One of the language constants.

172.19.41  LangEstonian = & h25

MBS Win Plugin, Plugin Version: 12.5. Function: One of the language constants.

172.19.42  LangFaeroese = & h38

MBS Win Plugin, Plugin Version: 12.5. Function: One of the language constants.
172.19.43  LangFarsi = & h29

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.44  LangFilipino = & h64

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.45  LangFinnish = & h0B

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.46  LangFrench = & h0C

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.47  LangFrisian = & h62

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.48  LangGalician = & h56

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.49  LangGeorgian = & h37

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.50  LangGerman = & h07

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.
172.19.51  LangGreek = & h08
MBS Win Plugin, Plugin Version: 12.5. **Function**: One of the language constants.

172.19.52  LangGreenlandic = & h6F
MBS Win Plugin, Plugin Version: 12.5. **Function**: One of the language constants.

172.19.53  LangGujarati = & h47
MBS Win Plugin, Plugin Version: 12.5. **Function**: One of the language constants.

172.19.54  LangHausa = & h68
MBS Win Plugin, Plugin Version: 12.5. **Function**: One of the language constants.

172.19.55  LangHebrew = & h0D
MBS Win Plugin, Plugin Version: 12.5. **Function**: One of the language constants.

172.19.56  LangHindi = & h39
MBS Win Plugin, Plugin Version: 12.5. **Function**: One of the language constants.

172.19.57  LangHungarian = & h0E
MBS Win Plugin, Plugin Version: 12.5. **Function**: One of the language constants.

172.19.58  LangIcelandic = & h0F
MBS Win Plugin, Plugin Version: 12.5. **Function**: One of the language constants.
172.19.59  LangIgbo = & h70

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.60  LangIndonesian = & h21

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.61  LangInuktitut = & h5D

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.62  LangInvariant = & h7F

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.63  LangIrish = & h3C

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.64  LangItalian = & h10

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.65  LangJapanese = & h11

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.66  LangKannada = & h4B

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.
172.19.67  LangKashmiri = & h60

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.68  LangKazak = & h3F

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.69  LangKhmer = & h53

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.70  LangKiche = & h86

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.71  LangKinyarwanda = & h87

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.72  LangKonkani = & h57

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.73  LangKorean = & h12

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.74  LangKyrgyz = & h40

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.
172.19.75  LangLao = & h54

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.76  LangLatvian = & h26

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.77  LangLithuanian = & h27

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.78  LangLowerSorbian = & h2E

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.79  LangLuxembourgish = & h6E

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.80  LangMacedonian = & h2F

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.81  LangMalay = & h3E

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.82  LangMalayalam = & h4C

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.
172.19.83  LangMaltese = & h3A

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.84  LangManipuri = & h58

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.85  LangMaori = & h81

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.86  LangMapudungun = & h7A

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.87  LangMarathi = & h4E

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.88  LangMohawk = & h7C

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.89  LangMongolian = & h50

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.90  LangNepali = & h61

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.
172.19.91  LangNeutral = & h00

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.92  LangNorwegian = & h14

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.93  LangOccitan = & h82

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.94  LangOriya = & h48

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.95  LangPashto = & h63

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.96  LangPersian = & h29

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.97  LangPolish = & h15

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.98  LangPortuguese = & h16

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.
172.19. Class WindowsKeyboardLayoutMBS
172.19.99  LangPunjabi = & h46
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.100  LangQuechua = & h6B
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.101  LangRomanian = & h18
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.102  LangRomansh = & h17
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.103  LangRussian = & h19
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.104  LangSami = & h3B
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.
172.19.105  LangSanskrit = & h4F

MBS Win Plugin, Plugin Version: 12.5. Function: One of the language constants.

172.19.106  LangSerbian = & h1A

MBS Win Plugin, Plugin Version: 12.5. Function: One of the language constants.

172.19.107  LangSerbianNeutral = & h7C1A

MBS Win Plugin, Plugin Version: 12.5. Function: One of the language constants.

172.19.108  LangSindhi = & h59

MBS Win Plugin, Plugin Version: 12.5. Function: One of the language constants.

172.19.109  LangSinhalese = & h5B

MBS Win Plugin, Plugin Version: 12.5. Function: One of the language constants.

172.19.110  LangSlovak = & h1B

MBS Win Plugin, Plugin Version: 12.5. Function: One of the language constants.

172.19.111  LangSlovenian = & h24

MBS Win Plugin, Plugin Version: 12.5. Function: One of the language constants.

172.19.112  LangSotho = & h6C

MBS Win Plugin, Plugin Version: 12.5. Function: One of the language constants.
172.19.113  LangSpanish = & h0A

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.114  LangSwahili = & h41

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.115  LangSwedish = & h1D

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.116  LangSyriac = & h5A

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.117  LangTajik = & h28

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.118  LangTamazight = & h5F

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.119  LangTamil = & h49

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.120  LangTatar = & h44

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.
172.19.121  \text{LangTelugu} = \& \text{h4A}

MBS Win Plugin, Plugin Version: 12.5. \textbf{Function}: One of the language constants.

172.19.122  \text{LangThai} = \& \text{h1E}

MBS Win Plugin, Plugin Version: 12.5. \textbf{Function}: One of the language constants.

172.19.123  \text{LangTibetan} = \& \text{h51}

MBS Win Plugin, Plugin Version: 12.5. \textbf{Function}: One of the language constants.

172.19.124  \text{LangTigrigna} = \& \text{h73}

MBS Win Plugin, Plugin Version: 12.5. \textbf{Function}: One of the language constants.

172.19.125  \text{LangTswana} = \& \text{h32}

MBS Win Plugin, Plugin Version: 12.5. \textbf{Function}: One of the language constants.

172.19.126  \text{LangTurkish} = \& \text{h1F}

MBS Win Plugin, Plugin Version: 12.5. \textbf{Function}: One of the language constants.

172.19.127  \text{LangTurkmen} = \& \text{h42}

MBS Win Plugin, Plugin Version: 12.5. \textbf{Function}: One of the language constants.

172.19.128  \text{LangUighur} = \& \text{h80}

MBS Win Plugin, Plugin Version: 12.5. \textbf{Function}: One of the language constants.
172.19.129  LangUkrainian = & h22

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.130  LangUpperSorbian = & h2E

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.131  LangUrdu = & h20

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.132  LangUzbek = & h43

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.133  LangVietnamese = & h2A

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.134  LangWelsh = & h52

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.135  LangWolof = & h88

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.136  LangXhosa = & h34

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.
172.19.137  **LangYakut = & h85**

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.138  **LangYi = & h78**

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.139  **LangYoruba = & h6A**

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.140  **LangZulu = & h35**

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the language constants.

172.19.141  **SublangAfrikaansSouthAfrica = & h01**

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.142  **SublangAlbanianAlbania = & h01**

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.143  **SublangAlsatianFrance = & h01**

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.144  **SublangAmharicEthiopia = & h01**

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.
172.19.145  SublangArabicAlgeria = & h05

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.146  SublangArabicBahrain = & h0F

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.147  SublangArabicEgypt = & h03

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.148  SublangArabicIraq = & h02

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.149  SublangArabicJordan = & h0B

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.150  SublangArabicKuwait = & h0D

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.151  SublangArabicLebanon = & h0C

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.152  SublangArabicLibya = & h04

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.
172.19.153  SublangArabicMorocco = & h06

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.154  SublangArabicOman = & h08

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.155  SublangArabicQatar = & h10

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.156  SublangArabicSaudiArabia = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.157  SublangArabicSyria = & h0A

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.158  SublangArabicTunisia = & h07

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.159  SublangArabicUae = & h0E

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.160  SublangArabicYemen = & h09

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.
172.19. CLASS WINDOWSKEYBOARDLAYOUTMBS

172.19.161  SublangArmenianArmenia = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.162  SublangAssameseIndia = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.163  SublangAzeriCyrillic = & h02

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.164  SublangAzeriLatin = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.165  SublangBashkirRussia = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.166  SublangBasqueBasque = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.167  SublangBelarusianBelarus = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.168  SublangBengaliBangladesh = & h02

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.
172.19.169  SublangBengaliIndia = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.170  SublangBosnianBosniaHerzegovinaCyrillic = & h08

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.171  SublangBosnianBosniaHerzegovinaLatin = & h05

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.172  SublangBretonFrance = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.173  SublangBulgarianBulgaria = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.174  SublangCatalanCatalan = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.175  SublangChineseHongkong = & h03

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.176  SublangChineseMacau = & h05

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.
172.19.177  **SublangChineseSimplified = & h02**

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.178  **SublangChineseSingapore = & h04**

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.179  **SublangChineseTraditional = & h01**

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.180  **SublangCorsicanFrance = & h01**

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.181  **SublangCroatianBosniaHerzegovinaLatin = & h04**

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.182  **SublangCroatianCroatia = & h01**

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.183  **SublangCustomDefault = & h03**

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.184  **SublangCustomUnspecified = & h04**

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.
172.19.185  SublangCzechCzechRepublic = & h01
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.186  SublangDanishDenmark = & h01
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.187  SublangDariAfghanistan = & h01
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.188  SublangDefault = & h01
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.189  SublangDivehiMaldives = & h01
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.190  SublangDutch = & h01
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.191  SublangDutchBelgian = & h02
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.192  SublangEnglishAus = & h03
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.
172.19.  CLASS WINDOWSKEYBOARDLAYOUTMBS

172.19.193  SublangEnglishBelize = & h0A

MBS Win Plugin, Plugin Version: 12.5.  **Function:** One of the sub language constants.

172.19.194  SublangEnglishCan = & h04

MBS Win Plugin, Plugin Version: 12.5.  **Function:** One of the sub language constants.

172.19.195  SublangEnglishCaribbean = & h09

MBS Win Plugin, Plugin Version: 12.5.  **Function:** One of the sub language constants.

172.19.196  SublangEnglishEire = & h06

MBS Win Plugin, Plugin Version: 12.5.  **Function:** One of the sub language constants.

172.19.197  SublangEnglishIndia = & h10

MBS Win Plugin, Plugin Version: 12.5.  **Function:** One of the sub language constants.

172.19.198  SublangEnglishJamaica = & h08

MBS Win Plugin, Plugin Version: 12.5.  **Function:** One of the sub language constants.

172.19.199  SublangEnglishMalaysia = & h11

MBS Win Plugin, Plugin Version: 12.5.  **Function:** One of the sub language constants.

172.19.200  SublangEnglishNz = & h05

MBS Win Plugin, Plugin Version: 12.5.  **Function:** One of the sub language constants.
172.19.201 SublangEnglishPhilippines = & h0D

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.202 SublangEnglishSingapore = & h12

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.203 SublangEnglishSouthAfrica = & h07

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.204 SublangEnglishTrinidad = & h0B

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.205 SublangEnglishUk = & h02

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.206 SublangEnglishUs = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.207 SublangEnglishZimbabwe = & h0C

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.208 SublangEstonianEstonia = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.
SublangFaeroeseFaroeIslands = \& h01

SublangFilipinoPhilippines = \& h01

SublangFinnishFinland = \& h01

SublangFrench = \& h01

SublangFrenchBelgian = \& h02

SublangFrenchCanadian = \& h03

SublangFrenchLuxembourg = \& h05

SublangFrenchMonaco = \& h06
172.19.217  SublangFrenchSwiss = &h04

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.218  SublangFrisianNetherlands = &h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.219  SublangGalicianGalician = &h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.220  SublangGeorgianGeorgia = &h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.221  SublangGerman = &h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.222  SublangGermanAustrian = &h03

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.223  SublangGermanLiechtenstein = &h05

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.224  SublangGermanLuxembourg = &h04

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.
172.19. CLASS WINDOWSKEYBOARDLAYOUTMBS

172.19.225 SublangGermanSwiss = & h02

MBS Win Plugin, Plugin Version: 12.5. Function: One of the sub language constants.

172.19.226 SublangGreekGreece = & h01

MBS Win Plugin, Plugin Version: 12.5. Function: One of the sub language constants.

172.19.227 SublangGreenlandicGreenland = & h01

MBS Win Plugin, Plugin Version: 12.5. Function: One of the sub language constants.

172.19.228 SublangGujaratiIndia = & h01

MBS Win Plugin, Plugin Version: 12.5. Function: One of the sub language constants.

172.19.229 SublangHausaNigeriaLatin = & h01

MBS Win Plugin, Plugin Version: 12.5. Function: One of the sub language constants.

172.19.230 SublangHebrewIsrael = & h01

MBS Win Plugin, Plugin Version: 12.5. Function: One of the sub language constants.

172.19.231 SublangHindiIndia = & h01

MBS Win Plugin, Plugin Version: 12.5. Function: One of the sub language constants.

172.19.232 SublangHungarianHungary = & h01

MBS Win Plugin, Plugin Version: 12.5. Function: One of the sub language constants.
172.19.233  SublangIcelandicIceland = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.234  SublangIgboNigeria = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.235  SublangIndonesianIndonesia = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.236  SublangInuktitutCanada = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.237  SublangInuktitutCanadaLatin = & h02

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.238  SublangIrishIreland = & h02

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.239  SublangItalian = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.240  SublangItalianSwiss = & h02

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.
SublangJapaneseJapan = & h01
MBS Win Plugin, Plugin Version: 12.5. **Function**: One of the sub language constants.

SublangKannadaIndia = & h01
MBS Win Plugin, Plugin Version: 12.5. **Function**: One of the sub language constants.

SublangKashmiriIndia = & h02
MBS Win Plugin, Plugin Version: 12.5. **Function**: One of the sub language constants.

SublangKashmiriSasia = & h02
MBS Win Plugin, Plugin Version: 12.5. **Function**: One of the sub language constants.

SublangKazakKazakhstan = & h01
MBS Win Plugin, Plugin Version: 12.5. **Function**: One of the sub language constants.

SublangKhmerCambodia = & h01
MBS Win Plugin, Plugin Version: 12.5. **Function**: One of the sub language constants.

SublangKicheGuatemala = & h01
MBS Win Plugin, Plugin Version: 12.5. **Function**: One of the sub language constants.

SublangKinyarwandaRwanda = & h01
MBS Win Plugin, Plugin Version: 12.5. **Function**: One of the sub language constants.
172.19.249 SublangKonkaniIndia = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.250 SublangKorean = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.251 SublangKyrgyzKyrgyzstan = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.252 SublangLaoLao = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.253 SublangLatvianLatvia = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.254 SublangLithuanian = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.255 SublangLowerSorbianGermany = & h02

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.256 SublangLuxembourgishLuxembourg = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.
172.19.257  SublangMacedonianMacedonia = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.258  SublangMalayalamIndia = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.259  SublangMalayBruneiDarussalam = & h02

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.260  SublangMalayMalaysia = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.261  SublangMalteseMalta = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.262  SublangMaoriNewZealand = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.263  SublangMapudungunChile = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.264  SublangMarathiIndia = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.
172.19.265  SublangMohawkMohawk = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.266  SublangMongolianCyrillicMongolia = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.267  SublangMongolianPrc = & h02

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.268  SublangNepaliIndia = & h02

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.269  SublangNepaliNepal = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.270  SublangNeutral = & h00

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.271  SublangNorwegianBokmal = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.272  SublangNorwegianNynorsk = & h02

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.
SublangOccitanFrance = & h01
MBS Win Plugin, Plugin Version: 12.5. Function: One of the sub language constants.

SublangOriyaIndia = & h01
MBS Win Plugin, Plugin Version: 12.5. Function: One of the sub language constants.

SublangPashtoAfghanistan = & h01
MBS Win Plugin, Plugin Version: 12.5. Function: One of the sub language constants.

SublangPersianIran = & h01
MBS Win Plugin, Plugin Version: 12.5. Function: One of the sub language constants.

SublangPolishPoland = & h01
MBS Win Plugin, Plugin Version: 12.5. Function: One of the sub language constants.

SublangPortuguese = & h02
MBS Win Plugin, Plugin Version: 12.5. Function: One of the sub language constants.

SublangPortugueseBrazilian = & h01
MBS Win Plugin, Plugin Version: 12.5. Function: One of the sub language constants.

SublangPunjabiIndia = & h01
MBS Win Plugin, Plugin Version: 12.5. Function: One of the sub language constants.
172.19.281  SublangQuechuaBolivia = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.282  SublangQuechuaEcuador = & h02

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.283  SublangQuechuaPeru = & h03

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.284  SublangRomanianRomania = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.285  SublangRomanshSwitzerland = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.286  SublangRussianRussia = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.287  SublangSamiInariFinland = & h09

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.288  SublangSamiLuleNorway = & h04

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.
172.19. CLASS WINDOWSKEYBOARDLAYOUTMBS

172.19.289  SublangSamiLuleSweden = & h05

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.290  SublangSamiNorthernFinland = & h03

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.291  SublangSamiNorthernNorway = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.292  SublangSamiNorthernSweden = & h02

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.293  SublangSamiSkoltFinland = & h08

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.294  SublangSamiSouthernNorway = & h06

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.295  SublangSamiSouthernSweden = & h07

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.296  SublangSanskritIndia = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.
172.19.297  \textbf{SublangSerbianBosniaHerzegovinaCyrillic} = \& h07

MBS Win Plugin, Plugin Version: 12.5. \textbf{Function}: One of the sub language constants.

172.19.298  \textbf{SublangSerbianBosniaHerzegovinaLatin} = \& h06

MBS Win Plugin, Plugin Version: 12.5. \textbf{Function}: One of the sub language constants.

172.19.299  \textbf{SublangSerbianCroatia} = \& h01

MBS Win Plugin, Plugin Version: 12.5. \textbf{Function}: One of the sub language constants.

172.19.300  \textbf{SublangSerbianCyrillic} = \& h03

MBS Win Plugin, Plugin Version: 12.5. \textbf{Function}: One of the sub language constants.

172.19.301  \textbf{SublangSerbianLatin} = \& h02

MBS Win Plugin, Plugin Version: 12.5. \textbf{Function}: One of the sub language constants.

172.19.302  \textbf{SublangSindhiAfghanistan} = \& h02

MBS Win Plugin, Plugin Version: 12.5. \textbf{Function}: One of the sub language constants.

172.19.303  \textbf{SublangSindhiIndia} = \& h01

MBS Win Plugin, Plugin Version: 12.5. \textbf{Function}: One of the sub language constants.

172.19.304  \textbf{SublangSindhiPakistan} = \& h02

MBS Win Plugin, Plugin Version: 12.5. \textbf{Function}: One of the sub language constants.
172.19.305 SublangSinhaleseSriLanka = & h01
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.306 SublangSlovakSlovakia = & h01
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.307 SublangSlovenianSlovenia = & h01
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.308 SublangSothoNorthernSouthAfrica = & h01
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.309 SublangSpanish = & h01
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.310 SublangSpanishArgentina = & h0B
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.311 SublangSpanishBolivia = & h10
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.312 SublangSpanishChile = & h0D
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.
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172.19.313  SublangSpanishColombia = & h09

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.314  SublangSpanishCostaRica = & h05

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.315  SublangSpanishDominicanRepublic = & h07

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.316  SublangSpanishEcuador = & h0C

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.317  SublangSpanishElSalvador = & h11

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.318  SublangSpanishGuatemala = & h04

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.319  SublangSpanishHonduras = & h12

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.320  SublangSpanishMexican = & h02

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.
172.19. CLASS WINDOWSKEYBOARDLAYOUTMBS

172.19.321 SublangSpanishModern = \& h03

MBS Win Plugin, Plugin Version: 12.5. Function: One of the sub language constants.

172.19.322 SublangSpanishNicaragua = \& h13

MBS Win Plugin, Plugin Version: 12.5. Function: One of the sub language constants.

172.19.323 SublangSpanishPanama = \& h06

MBS Win Plugin, Plugin Version: 12.5. Function: One of the sub language constants.

172.19.324 SublangSpanishParaguay = \& h0F

MBS Win Plugin, Plugin Version: 12.5. Function: One of the sub language constants.

172.19.325 SublangSpanishPeru = \& h0A

MBS Win Plugin, Plugin Version: 12.5. Function: One of the sub language constants.

172.19.326 SublangSpanishPuertoRico = \& h14

MBS Win Plugin, Plugin Version: 12.5. Function: One of the sub language constants.

172.19.327 SublangSpanishUruguay = \& h0E

MBS Win Plugin, Plugin Version: 12.5. Function: One of the sub language constants.

172.19.328 SublangSpanishUs = \& h15

MBS Win Plugin, Plugin Version: 12.5. Function: One of the sub language constants.
172.19.329  SublangSpanishVenezuela = &h08
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.330  SublangSwahiliKenya = &h01
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.331  SublangSwedish = &h01
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.332  SublangSwedishFinland = &h02
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.333  SublangSyriacSyria = &h01
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.334  SublangSysDefault = &h02
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.335  SublangTajikTajikistan = &h01
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.336  SublangTamazightAlgeriaLatin = &h02
MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.
172.19.337  SublangTamilIndia = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.338  SublangTatarRussia = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.339  SublangTeluguIndia = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.340  SublangThaiThailand = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.341  SublangTibetanPrc = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.342  SublangTigrignaEritrea = & h02

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.343  SublangTswanaSouthAfrica = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.

172.19.344  SublangTurkishTurkey = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.
172.19.345 SublangTurkmenTurkmenistan = & h01
MBS Win Plugin, Plugin Version: 12.5. Function: One of the sub language constants.

172.19.346 SublangUiCustomDefault = & h05
MBS Win Plugin, Plugin Version: 12.5. Function: One of the sub language constants.

172.19.347 SublangUighurPrc = & h01
MBS Win Plugin, Plugin Version: 12.5. Function: One of the sub language constants.

172.19.348 SublangUkrainianUkraine = & h01
MBS Win Plugin, Plugin Version: 12.5. Function: One of the sub language constants.

172.19.349 SublangUpperSorbianGermany = & h01
MBS Win Plugin, Plugin Version: 12.5. Function: One of the sub language constants.

172.19.350 SublangUrduIndia = & h02
MBS Win Plugin, Plugin Version: 12.5. Function: One of the sub language constants.

172.19.351 SublangUrduPakistan = & h01
MBS Win Plugin, Plugin Version: 12.5. Function: One of the sub language constants.

172.19.352 SublangUzbekCyrillic = & h02
MBS Win Plugin, Plugin Version: 12.5. Function: One of the sub language constants.
172.19.353  SublangUzbekLatin = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function**: One of the sub language constants.

172.19.354  SublangVietnameseVietnam = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function**: One of the sub language constants.

172.19.355  SublangWelshUnitedKingdom = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function**: One of the sub language constants.

172.19.356  SublangWolofSenegal = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function**: One of the sub language constants.

172.19.357  SublangXhosaSouthAfrica = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function**: One of the sub language constants.

172.19.358  SublangYakutRussia = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function**: One of the sub language constants.

172.19.359  SublangYiPrc = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function**: One of the sub language constants.

172.19.360  SublangYorubaNigeria = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function**: One of the sub language constants.
172.19.361  SublangZuluSouthAfrica = & h01

MBS Win Plugin, Plugin Version: 12.5. **Function:** One of the sub language constants.
class WindowsKeyFilterMBS

MBS Win Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A class to filter several windows keyboard shortcuts with a low level event filter.

**Notes:**
There is no need to keep the instance as all internal data is stored in global variables.

Key codes for Windows:

**Methods**

**Install as boolean**

MBS Win Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Install the event filter.

**Notes:**
Returns true on success and false on failure.
Second call in an application will return false unless Uninstall was called between.

**Uninstall as boolean**

MBS Win Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Uninstalls the event filter.

**Notes:** You only call this after Install returned true.

**Properties**

**BlockAlt as Boolean**

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the alt key.

**Notes:** (Read and Write property)
172.20.7 BlockAltEscape as boolean

MBS Win Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the Alt-Escape key combination. **Notes:** (Read and Write property)

172.20.8 BlockAltF4 as boolean

MBS Win Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the ALT-F4 key combination. **Notes:** By default this one closes the application. (Read and Write property)

172.20.9 BlockAltTab as boolean

MBS Win Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the ALT-Tab key combination. **Notes:** This combination is for task switching. (Read and Write property)

172.20.10 BlockApplicationWindowsKey as boolean

MBS Win Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the application windows key. **Notes:** (Read and Write property)

172.20.11 BlockBack as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the back key. **Notes:** (Read and Write property)
172.20. CLASS WINDOWSKEYFILTERMBS

172.20.12 BlockCancel as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the Cancel key.
**Notes:** (Read and Write property)

172.20.13 BlockCapital as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the CapsLock key.
**Notes:** (Read and Write property)

172.20.14 BlockClear as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the Clear key.
**Notes:** (Read and Write property)

172.20.15 BlockControl as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the control key.
**Notes:** (Read and Write property)

172.20.16 BlockControlAltDelete as boolean

MBS Win Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the Control-Alt-Delete key combination.
**Notes:**
Sorry, does not have any effect as this key combination is processed earlier in event chain.
(Read and Write property)

172.20.17 BlockControlEscape as boolean

MBS Win Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the Control-Escape key combination.
172.20.18  **BlockDelete as Boolean**

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the delete key.

**Notes:** (Read and Write property)

172.20.19  **BlockDown as Boolean**

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the down key.

**Notes:** (Read and Write property)

172.20.20  **BlockEnd as Boolean**

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the end key.

**Notes:** (Read and Write property)

172.20.21  **BlockEscape as Boolean**

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the escape key.

**Notes:** (Read and Write property)

172.20.22  **BlockExecute as Boolean**

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the execute key.

**Notes:** (Read and Write property)

172.20.23  **BlockF1 as Boolean**

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the F1 key.
172.20. CLASS WINDOWSKEYFILTERMBS

Notes: (Read and Write property)

172.20.24 BlockF10 as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the F10 key.
Notes: (Read and Write property)

172.20.25 BlockF11 as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the F11 key.
Notes: (Read and Write property)

172.20.26 BlockF12 as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the F12 key.
Notes: (Read and Write property)

172.20.27 BlockF13 as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the F13 key.
Notes: (Read and Write property)

172.20.28 BlockF14 as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the F14 key.
Notes: (Read and Write property)

172.20.29 BlockF15 as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the F15 key.
172.20.30 BlockF16 as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the F16 key. **Notes:** (Read and Write property)

172.20.31 BlockF17 as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the F17 key. **Notes:** (Read and Write property)

172.20.32 BlockF18 as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the F18 key. **Notes:** (Read and Write property)

172.20.33 BlockF19 as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the F19 key. **Notes:** (Read and Write property)

172.20.34 BlockF2 as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the F2 key. **Notes:** (Read and Write property)

172.20.35 BlockF20 as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the F20 key.
172.20. CLASS WINDOWSKEYFILTERMBS

Notes: (Read and Write property)

172.20.36  BlockF21 as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: Whether to filter the F21 key. Notes: (Read and Write property)

172.20.37  BlockF22 as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: Whether to filter the F22 key. Notes: (Read and Write property)

172.20.38  BlockF23 as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: Whether to filter the F23 key. Notes: (Read and Write property)

172.20.39  BlockF24 as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: Whether to filter the F24 key. Notes: (Read and Write property)

172.20.40  BlockF3 as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: Whether to filter the F3 key. Notes: (Read and Write property)

172.20.41  BlockF4 as Boolean

172.20.42  BlockF5 as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the F5 key.
**Notes:** (Read and Write property)

172.20.43  BlockF6 as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the F6 key.
**Notes:** (Read and Write property)

172.20.44  BlockF7 as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the F7 key.
**Notes:** (Read and Write property)

172.20.45  BlockF8 as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the F8 key.
**Notes:** (Read and Write property)

172.20.46  BlockF9 as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the F9 key.
**Notes:** (Read and Write property)

172.20.47  BlockHelp as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the help key.
172.20. CLASS WINDOWSKEYFILTERMBS

Notes: (Read and Write property)

172.20.48  BlockHome as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the home key.
Notes: (Read and Write property)

172.20.49  BlockInsert as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the insert key.
Notes: (Read and Write property)

172.20.50  BlockLeft as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the left key.
Notes: (Read and Write property)

172.20.51  BlockLeftButton as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the left mouse button.
Notes: (Read and Write property)

172.20.52  BlockLeftWindowsKey as boolean

MBS Win Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the left windows key.
Notes: (Read and Write property)

172.20.53  BlockMiddleButton as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the middle mouse button.
172.20.54  BlockPause as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the pause key.

**Notes:** (Read and Write property)

172.20.55  BlockPrint as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the print key.

**Notes:**
BlockSnapshot is to block screenshots.
(Read and Write property)

172.20.56  BlockReturn as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the return key.

**Notes:** (Read and Write property)

172.20.57  BlockRight as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the right key.

**Notes:** (Read and Write property)

172.20.58  BlockRightButton as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether to filter the right mouse button.

**Notes:** (Read and Write property)
172.20.59  BlockRightWindowsKey as boolean

MBS Win Plugin, Plugin Version: 6.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  **Function:** Whether to filter the right windows key.
**Notes:** (Read and Write property)

172.20.60  BlockSelect as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  **Function:** Whether to filter the select key.
**Notes:** (Read and Write property)

172.20.61  BlockShift as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  **Function:** Whether to filter the shift key.
**Notes:** (Read and Write property)

172.20.62  BlockSleep as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  **Function:** Whether to filter the sleep key.
**Notes:** (Read and Write property)

172.20.63  BlockSnapshot as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  **Function:** Whether to filter the snapshot key.
**Notes:** This is the print key to do screenshots.
(Read and Write property)

172.20.64  BlockSpace as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  **Function:** Whether to filter the space key.
172.20.65 BlockTab as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Whether to filter the tab key.
**Notes:** (Read and Write property)

172.20.66 BlockUp as Boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Whether to filter the up key.
**Notes:** (Read and Write property)

172.20.67 BlockKey(virtualkeycode as Integer) as boolean

MBS Win Plugin, Plugin Version: 7.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Whether to block a key with a specific virtual key code.
**Notes:**
You can set this to true for all keys you want to block.
The virtual key codes are in the windows header files.
For most common keys this class has properties. More can be added.
(Read and Write computed property)

172.20.68 Events

172.20.69 KeyDown(vkCode as Integer, scanCode as Integer, flags as Integer, time as Integer) as Boolean

MBS Win Plugin, Plugin Version: 10.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The key down event.
**Notes:**
vkCode: Specifies a virtual-key code. The code must be a value in the range 1 to 254.
scanCode: Specifies a hardware scan code for the key.
flags: Specifies the extended-key flag, event-injected flag, context code, and transition-state flag. This member is specified as follows.
time: Specifies the time stamp for this message.
the flag bits are like this:

bit 0: Specifies whether the key is an extended key, such as a function key or a key on the numeric keypad. The value is 1 if the key is an extended key; otherwise, it is 0.
bit 4: Specifies whether the event was injected. The value is 1 if the event was injected; otherwise, it is 0.
bit 5: Specifies the context code. The value is 1 if the ALT key is pressed; otherwise, it is 0.
bit 7: Specifies the transition state. The value is 0 if the key is pressed and 1 if it is being released.
Other bits are reserved.

There can be only one WindowsKeyFilterMBS object in your application which receives this events.

We have currently no idea in what context this event is received. And you should return as soon as possible as this event may be called a lot of times and can block user input.

Return true if you handled the key and false if you did not handle it.
Please have this event being as fast as possible. Do not put msgbox there. Better detect a key shortcut and launch a timer to perform the action a millisecond later, so you don’t block the keyboard event system. Blocks only KeyUp or only KeyDown can lead to trouble if the internal counters for special keys get our of sync.

172.20.70 KeyUp(vkCode as Integer, scanCode as Integer, flags as Integer, time as Integer) as Boolean

Notes:
vkCode: Specifies a virtual-key code. The code must be a value in the range 1 to 254.
scanCode: Specifies a hardware scan code for the key.
flags: Specifies the extended-key flag, event-injected flag, context code, and transition-state flag. This member is specified as follows.
time: Specifies the time stamp for this message.

the flag bits are like this:

bit 0: Specifies whether the key is an extended key, such as a function key or a key on the numeric keypad. The value is 1 if the key is an extended key; otherwise, it is 0.
bit 4: Specifies whether the event was injected. The value is 1 if the event was injected; otherwise, it is 0.
bit 5: Specifies the context code. The value is 1 if the ALT key is pressed; otherwise, it is 0.
bit 7: Specifies the transition state. The value is 0 if the key is pressed and 1 if it is being released.
Other bits are reserved.

There can be only one WindowsKeyFilterMBS object in your application which receives this events.
We have currently no idea in what context this event is received. And you should return as soon as possible as this event may be called a lot of times and can block user input.

Return true if you handled the key and false if you did not handle it. Please have this event being as fast as possible. Do not put msgbox there. Better detect a key shortcut and launch a timer to perform the action a millisecond later, so you don’t block the keyboard event system. Blocks only KeyUp or only KeyDown can lead to trouble if the internal counters for special keys get our of sync.
VK_LBUTTON & 0x01
VK_RBUTTON & 0x02
VK_CANCEL & 0x03
VK_MBUTTON & 0x04

VK_XBUTTON1 & 0x05 (Windows 2000 and newer)
VK_XBUTTON2 & 0x06 (Windows 2000 and newer)

VK_BACK & 0x08
VK_TAB & 0x09
VK_CLEAR & 0x0C
VK_RETURN & 0x0D

VK_SHIFT & 0x10
VK_CONTROL & 0x11
VK_MENU & 0x12
VK_PAUSE & 0x13
VK_CAPITAL & 0x14

VK_KANA & 0x15
VK_HANGUL & 0x15
VK_JUNJA & 0x17
VK_FINAL & 0x18
VK_HANJA & 0x19
VK_KANJI & 0x19

VK_ESCAPE & 0x1B
VK_CONVERT & 0x1C
VK_NONCONVERT & 0x1D
VK_ACCEPT & 0x1E
VK_MODECHANGE & 0x1F

VK_SPACE & 0x20
VK_PRIOR & 0x21
VK_NEXT & 0x22
VK_END & 0x23
VK_HOME & 0x24

VK_LEFT & 0x25
VK_UP & 0x26
VK_RIGHT & 0x27
VK_DOWN & 0x28
VK_SELECT & 0x29
VK_PRINT & 0x2A

VK_EXECUTE & 0x2B
VK_SNAPSHOT & 0x2C
VK_INSERT & 0x2D
VK_DELETE & 0x2E
VK_HELP & 0x2F

VK_0 - VK_9 are the same as ASCII "0" - "9" (& 0x30 - & 0x39)
VK_A - VK_Z are the same as ASCII "A" - "Z" (& 0x41 - & 0x5A)

VK_JWIN & 0x5B
VK_RWIN & 0x5C
VK_APPS & 0x5D

VK_SLEEP & 0x5F

VK_NUMPAD0 & 0x60
VK_NUMPAD1 & 0x61
VK_NUMPAD2 & 0x62
VK_NUMPAD3 & 0x63
172.21 class WindowsListMBS

172.21.1 class WindowsListMBS

MBS Win Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A class to list all the windows on a Windows system.

**Notes:**

To find all processes on Mac, use the ProcessMBS class.
To find all windows on Mac OS X, use the CGSWindowListMBS class.

172.21.2 Methods

172.21.3 Constructor

MBS Win Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The constructor which queries the values.

**See also:**

- 172.21.4 Constructor(win as window) 20270
- 172.21.5 Constructor(WindowHandle as Integer) 20270

172.21.4 Constructor(win as window)

MBS Win Plugin, Plugin Version: 16.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The constructor which queries the values.

**Notes:** If win is not nil, we lookup child windows of this window.

**See also:**

- 172.21.3 Constructor 20270
- 172.21.5 Constructor(WindowHandle as Integer) 20270

172.21.5 Constructor(WindowHandle as Integer)

MBS Win Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The constructor which queries the values.

**Notes:** If WindowHandle is not zero, we lookup child windows of this window.

**See also:**

- 172.21.3 Constructor 20270
- 172.21.4 Constructor(win as window) 20270
172.21.6 **Focus as Integer**

MBS Win Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Retrieves the handle to the window that has the keyboard focus, if the window is attached to the calling thread’s message queue.  
**Notes:** If the calling thread’s message queue does not have an associated window with the keyboard focus, the return value is 0.

172.21.7 **ForegroundWindow as Integer**

MBS Win Plugin, Plugin Version: 13.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Retrieves a handle to the foreground window (the window with which the user is currently working).  
**Notes:**  
The system assigns a slightly higher priority to the thread that creates the foreground window than it does to other threads.  
The return value is a handle to the foreground window. The foreground window can be 0 in certain circumstances, such as when a window is losing activation.

172.21.8 **Update**

MBS Win Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries the values and returns true on success.

172.21.9 **WindowClassName(index as Integer) as string**

MBS Win Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the window class name of the window with the given index.  
**Notes:** For example "SciCalc" for the calc.exe main window.

172.21.10 **WindowClassNameFromHandle(Handle as Integer) as String**

MBS Win Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the window class name of the window with the given handle.  
**Notes:** For example "SciCalc" for the calc.exe main window.
172.21.11  WindowHandle(index as Integer) as Integer

MBS Win Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The handle of the window with the given index. **Notes:** This value is updated by the Constructor and the Update method.

172.21.12  WindowHeight(index as Integer) as Integer

MBS Win Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The height of the window with the given index. **Notes:** This value is updated by the Constructor and the Update method.

172.21.13  WindowIconic(index as Integer) as boolean

MBS Win Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether the window with the given index is minimized.

172.21.14  WindowImageFileName(index as Integer) as string

MBS Win Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the path to the executable file of the process which owns the window with the given index. **Notes:** Requires Windows XP or newer. Returns an empty string on any error.

172.21.15  WindowLeft(index as Integer) as Integer

MBS Win Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The x position of the window with the given index. **Notes:** This value is updated by the Constructor and the Update method.

172.21.16  WindowProcessID(index as Integer) as Integer

MBS Win Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The process ID of the process which owns the window with the given index. **Notes:** This value is updated by the Constructor and the Update method.
WindowText(index as Integer) as string

MBS Win Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the title of the window with the given index.

WindowTextFromHandle(Handle as Integer) as String

MBS Win Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the title of the window with the given handle.

WindowThreadHandle(index as Integer) as Integer

MBS Win Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The thread handle of the window with the given index. **Notes:** This value is updated by the Constructor and the Update method.

WindowTop(index as Integer) as Integer

MBS Win Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The Y position of the window with the given index. **Notes:** This value is updated by the Constructor and the Update method.

WindowVisible(index as Integer) as boolean

MBS Win Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether the window with the given index is visible.

WindowWidth(index as Integer) as Integer

MBS Win Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The width of the window with the given index. **Notes:** This value is updated by the Constructor and the Update method.
172.21.23 WinPlugin, Plugin Version: 8.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: Whether the window with the given index is zoomed.

172.21.24 Properties

172.21.25 CurrentProcessID as Integer

MBS Win Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The current process ID.
Notes:
This value is updated by the Constructor and the Update method.
(Read and Write property)

172.21.26 CurrentThreadID as Integer

Notes:
This value is updated by the Constructor and the Update method.
(Read and Write property)

172.21.27 DesktopWindowHandle as Integer

Notes:
This value is updated by the Constructor and the Update method.
(Read and Write property)

172.21.28 ForegroundWindowHandle as Integer

Notes:
172.21. **CLASS WINDOWSLISTMBS**

This value is updated by the Constructor and the Update method.
(Read and Write property)

172.21.29 **ParentWindowHandle as Integer**

MBS Win Plugin, Plugin Version: 16.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The handle of the parent window.
**Notes:**
This value is set by the Constructor.
(Read and Write property)

172.21.30 **WindowCount as Integer**

MBS Win Plugin, Plugin Version: 8.5, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The number of windows.
**Notes:**
This value is updated by the Constructor and the Update method.
(Read and Write property)
172.22 class WindowsMonitorMBS

172.22.1 class WindowsMonitorMBS

MBS Win Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The class to query monitor details on Windows.

**Example:**

```vbnet
define WindowsMonitorMBS
for each m as WindowsMonitorMBS in WindowsMonitorMBS.AllMonitors
    MsgBox m.DeviceName+" : " +str(m.Left)+"x"+str(m.top)+"x"+str(m.Width)+"x"+str(m.Height)
next
```

172.22.2 Methods

172.22.3 AllMonitors as WindowsMonitorMBS()

MBS Win Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries all monitors.

**Example:**

```vbnet
define WindowsMonitorMBS
for each m as WindowsMonitorMBS in WindowsMonitorMBS.AllMonitors
    MsgBox m.DeviceName+" : " +str(m.Left)+"x"+str(m.top)+"x"+str(m.Width)+"x"+str(m.Height)
next
```

**Notes:** Returns an array with an entry for each monitor connected to this computer.

See also:

- 172.22.4 AllMonitors(monitors() as WindowsMonitorMBS) as Integer

172.22.4 AllMonitors(monitors() as WindowsMonitorMBS) as Integer

MBS Win Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries all monitors.

**Notes:**

Returns the number of monitors found and sets the monitor objects in the array. If the array is too short, you get the first ubound(monitors)+1 fonts set there.

See also:

- 172.22.3 AllMonitors as WindowsMonitorMBS()
172.22. CLASS WindowsMonitorMBS

172.22.5 MonitorFromPoint(x as Integer, y as Integer, flags as Integer = 0) as WindowsMonitorMBS

MBS Win Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The MonitorFromPoint function retrieves a handle to the display monitor that contains a specified point.

**Example:**

```vbs
Dim m as WindowsMonitorMBS = WindowsMonitorMBS.MonitorFromPoint(1900, 1000)
if m = nil then
    MsgBox "Your display is smaller than 1900 x 1000"
else
    MsgBox m.DeviceName
end if
```

**Notes:**

x and y: The point of interest in virtual-screen coordinates.

Flags: Determines the function’s return value if the point is not contained within any display monitor.

This parameter can be one of the following values.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>kDefaultToNearest</td>
<td>Returns a handle to the display monitor that is nearest to the point.</td>
</tr>
<tr>
<td>kDefaultToNull</td>
<td>Returns nil.</td>
</tr>
<tr>
<td>kDefaultToPrimary</td>
<td>Returns a handle to the primary display monitor.</td>
</tr>
</tbody>
</table>

If the point is contained by a display monitor, the return value is that display monitor.

If the point is not contained by a display monitor, the return value depends on the value of flags.

172.22.6 MonitorFromRect(left as Integer, top as Integer, width as Integer, height as Integer, flags as Integer = 0) as WindowsMonitorMBS

MBS Win Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The MonitorFromRect function retrieves the display monitor that has the largest area of intersection with a specified rectangle.

**Example:**

```vbs
Dim m as WindowsMonitorMBS = WindowsMonitorMBS.MonitorFromRect(0, 0, 100, 100)
MsgBox m.DeviceName
```
Notes:

left, top, width, height: The rectangle of interest in virtual-screen coordinates.
Flags: Determines the function’s return value if the rectangle does not intersect any display monitor.

This parameter can be one of the following values.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>kDefaultToNearest</td>
<td>Returns a handle to the display monitor that is nearest to the rectangle.</td>
</tr>
<tr>
<td>kDefaultToNull</td>
<td>Returns nil.</td>
</tr>
<tr>
<td>kDefaultToPrimary</td>
<td>Returns a handle to the primary display monitor.</td>
</tr>
</tbody>
</table>

If the rectangle intersects one or more display monitor rectangles, the return value is the display monitor that has the largest area of intersection with the rectangle.
If the rectangle does not intersect a display monitor, the return value depends on the value of Flags.

172.22.7 MonitorFromWindow(win as window, flags as Integer = 0) as WindowsMonitorMBS

MBS Win Plugin, Plugin Version: 11.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The MonitorFromWindow function retrieves the display monitor that has the largest area of intersection with the bounding rectangle of a specified window.
**Example:**
```vbnet
dim m as WindowsMonitorMBS = WindowsMonitorMBS.MonitorFromWindow(window1)
MsgBox m.DeviceName
```

Notes:

win: The window of interest.
Flags: Determines the function’s return value if the window does not intersect any display monitor.

This parameter can be one of the following values:

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>kDefaultToNearest</td>
<td>Returns the display monitor that is nearest to the window.</td>
</tr>
<tr>
<td>kDefaultToNull</td>
<td>Returns nil.</td>
</tr>
<tr>
<td>kDefaultToPrimary</td>
<td>Returns the primary display monitor.</td>
</tr>
</tbody>
</table>

If the window intersects one or more display monitor rectangles, the return value is the display monitor that
has the largest area of intersection with the window.

If the window does not intersect a display monitor, the return value depends on the value of Flags.
If the window is currently minimized, MonitorFromWindow uses the rectangle of the window before it was minimized.
See also:

- 172.22.8 MonitorFromWindow(WindowHandle as Integer, flags as Integer = 0) as WindowsMonitorMBS

172.22.8 MonitorFromWindow(WindowHandle as Integer, flags as Integer = 0) as WindowsMonitorMBS

MBS Win Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The MonitorFromWindow function retrieves the display monitor that has the largest area of intersection with the bounding rectangle of a specified window.

**Example:**
```vbnet
dim m as WindowsMonitorMBS = WindowsMonitorMBS.MonitorFromWindow(window1.handle)
MsgBox m.DeviceName
```

**Notes:**
WindowHandle: A handle to the window of interest.
Flags: Determines the function’s return value if the window does not intersect any display monitor.

This parameter can be one of the following values:

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>kDefaultToNearest</td>
<td>Returns the display monitor that is nearest to the window.</td>
</tr>
<tr>
<td>kDefaultToNull</td>
<td>Returns nil.</td>
</tr>
<tr>
<td>kDefaultToPrimary</td>
<td>Returns the primary display monitor.</td>
</tr>
</tbody>
</table>

If the window intersects one or more display monitor rectangles, the return value is the display monitor that has the largest area of intersection with the window.

If the window does not intersect a display monitor, the return value depends on the value of Flags.
If the window is currently minimized, MonitorFromWindow uses the rectangle of the window before it was minimized.
See also:

- 172.22.7 MonitorFromWindow(win as window, flags as Integer = 0) as WindowsMonitorMBS
172.22.9  Properties

172.22.10  Bottom as Integer

MBS Win Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The bottom value of the display monitor.
**Notes:**
Specifies the display monitor rectangle, expressed in virtual-screen coordinates. Note that if the monitor is not the primary display monitor, some of the rectangle’s coordinates may be negative values.
(Read and Write property)

172.22.11  DeviceName as String

MBS Win Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A string that specifies the device name of the monitor being used.
**Notes:** (Read and Write property)

172.22.12  Height as Integer

MBS Win Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The height of the display monitor.
**Notes:**
Specifies the display monitor rectangle, expressed in virtual-screen coordinates. Note that if the monitor is not the primary display monitor, some of the rectangle’s coordinates may be negative values.
(Read and Write property)

172.22.13  HMonitor as Integer

MBS Win Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The internal window handle for this monitor.
**Notes:** (Read and Write property)

172.22.14  IsPrimary as Boolean

MBS Win Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether this is the primary display monitor.
**Notes:** (Read and Write property)
172.22.15  Left as Integer

MBS Win Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The left position of the display monitor.

**Notes:**

Specifies the display monitor rectangle, expressed in virtual-screen coordinates. Note that if the monitor is not the primary display monitor, some of the rectangle’s coordinates may be negative values.

(Read and Write property)

172.22.16  Right as Integer

MBS Win Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The right value of the display monitor.

**Notes:**

Specifies the display monitor rectangle, expressed in virtual-screen coordinates. Note that if the monitor is not the primary display monitor, some of the rectangle’s coordinates may be negative values.

(Read and Write property)

172.22.17  Top as Integer

MBS Win Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The top position of the display monitor.

**Notes:**

Specifies the display monitor rectangle, expressed in virtual-screen coordinates. Note that if the monitor is not the primary display monitor, some of the rectangle’s coordinates may be negative values.

(Read and Write property)

172.22.18  Width as Integer

MBS Win Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The width of the display monitor.

**Notes:**

Specifies the display monitor rectangle, expressed in virtual-screen coordinates. Note that if the monitor is not the primary display monitor, some of the rectangle’s coordinates may be negative values.

(Read and Write property)
172.22.19 WorkBottom as Integer

MBS Win Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The bottom value from useable screen area.
**Notes:**
Specifies the work area rectangle of the display monitor that can be used by applications, expressed in virtual-screen coordinates. Windows uses this rectangle to maximize an application on the monitor. The rest of the area of the monitor contains system windows such as the task bar and side bars. Note that if the monitor is not the primary display monitor, some of the rectangle’s coordinates may be negative values.
(Read and Write property)

172.22.20 WorkHeight as Integer

MBS Win Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The height value from useable screen area.
**Notes:**
Specifies the work area rectangle of the display monitor that can be used by applications, expressed in virtual-screen coordinates. Windows uses this rectangle to maximize an application on the monitor. The rest of the area of the monitor contains system windows such as the task bar and side bars. Note that if the monitor is not the primary display monitor, some of the rectangle’s coordinates may be negative values.
(Read and Write property)

172.22.21 WorkLeft as Integer

MBS Win Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The left value from useable screen area.
**Notes:**
Specifies the work area rectangle of the display monitor that can be used by applications, expressed in virtual-screen coordinates. Windows uses this rectangle to maximize an application on the monitor. The rest of the area of the monitor contains system windows such as the task bar and side bars. Note that if the monitor is not the primary display monitor, some of the rectangle’s coordinates may be negative values.
(Read and Write property)

172.22.22 WorkRight as Integer

MBS Win Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The right value from useable screen area.
**Notes:**
Specifies the work area rectangle of the display monitor that can be used by applications, expressed in virtual-screen coordinates. Windows uses this rectangle to maximize an application on the monitor. The rest of the area of the monitor contains system windows such as the task bar and side bars. Note that if the monitor is not the primary display monitor, some of the rectangle’s coordinates may be negative values.
(Read and Write property)
virtual-screen coordinates. Windows uses this rectangle to maximize an application on the monitor. The rest of the area of the monitor contains system windows such as the task bar and side bars. Note that if the monitor is not the primary display monitor, some of the rectangle’s coordinates may be negative values. (Read and Write property)

172.22.23 WorkTop as Integer

MBS Win Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The top value from useable screen area.  
**Notes:**  
Specifies the work area rectangle of the display monitor that can be used by applications, expressed in virtual-screen coordinates. Windows uses this rectangle to maximize an application on the monitor. The rest of the area of the monitor contains system windows such as the task bar and side bars. Note that if the monitor is not the primary display monitor, some of the rectangle’s coordinates may be negative values. (Read and Write property)

172.22.24 WorkWidth as Integer

MBS Win Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The width value from useable screen area.  
**Notes:**  
Specifies the work area rectangle of the display monitor that can be used by applications, expressed in virtual-screen coordinates. Windows uses this rectangle to maximize an application on the monitor. The rest of the area of the monitor contains system windows such as the task bar and side bars. Note that if the monitor is not the primary display monitor, some of the rectangle’s coordinates may be negative values. (Read and Write property)

172.22.25 Constants

172.22.26 kDefaultToNearest = 2

MBS Win Plugin, Plugin Version: 11.3. **Function:** One of the flag constants.  
**Notes:** Return the display monitor that is nearest to the window, point or rectangle.

172.22.27 kDefaultToNull = 0

MBS Win Plugin, Plugin Version: 11.3. **Function:** One of the flag constants.  
**Notes:** Returns nil if no monitor matches is located at point, window or rectangle.
172.22.28  kDefaultToPrimary = 1

MBS Win Plugin, Plugin Version: 11.3. **Function:** One of the flag constants.  **Notes:** Returns the primary display monitor if point, rect or window does not point to a monitor.
172.23.  CLASS WINDOWS PREVIEW HANDLER MBS

172.23  class WindowsPreviewHandlerMBS

172.23.1  class WindowsPreviewHandlerMBS

Function: The class for showing previews on windows.  
Notes: This is like a control which you can put into a window to show a preview for a file.

172.23.2  Methods

172.23.3  Constructor (ClassID as string)

Function: Initializes the object with loading the class with the given classid.  
Notes: You find those ClassIDs in the registry (See example project).

172.23.4  DoPreview

Function: Directs the preview handler to load data from the source specified in an earlier Initialize method call, and to begin rendering to the previewer window.  
Notes:

Lasterror is set.

If the previewer window has not yet been created, then it must be created after this method has been called. The preview handler is responsible for painting the area specified in SetWindow or SetRect. If these methods are called while the preview handler is rendering, the window must be reparented/resized without stopping or restarting the rendering of the item. This method should be called only after SetWindow has been called. Additionally, this method should be called only after Constructor has been called.

172.23.5  InitWithData (data as MemoryBlock)

Function: Loads the given data.  
Notes: Lasterror is set.

See also:

- 172.23.6 InitWithData (data as string)
172.23.6  **InitWithData(data as string)**

MBS Win Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Loads the given data.  
**Notes:** Lasterror is set.  
See also:
- 172.23.5 InitWithData(data as MemoryBlock)

172.23.7  **InitWithFile(file as folderitem)**

**Notes:** Lasterror is set.  
If the preview handler does not support reading file, the plugin reads the file and passes as data.

172.23.8  **SetBackgroundColor(red as Integer, green as Integer, blue as Integer)**

MBS Win Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Sets the background color of the preview handler.  
**Notes:** Lasterror is set.  
Not all preview handlers implement this method.

172.23.9  **SetFocus**

MBS Win Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Directs the preview handler to set focus to itself.  
**Notes:** Lasterror is set.

172.23.10  **SetFont(size as Integer, font as string)**

MBS Win Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Sets the font attributes to be used for text within the preview handler.  
**Notes:** Lasterror is set.  
Not all preview handlers implement this method.
172.23.11 SetRect(left as Integer, top as Integer, width as Integer, height as Integer)

MBS Win Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Directs the preview handler to change the area within the parent hwnd that it draws into.
**Notes:**
Lasterror is set.

If called before the preview handler window has been created, the new rectangle replaces the rectangle previously received in the SetWindow call.
If called after the preview handler window has been created, the preview handler window must be resized.
If the preview handler is already rendering, then the preview must be resized without interrupting the render process.

172.23.12 SetTextColor(red as Integer, green as Integer, blue as Integer)

MBS Win Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Sets the color of the text within the preview handler.
**Notes:**
Lasterror is set.
Not all preview handlers implement this method.

172.23.13 SetWindow(win as window, left as Integer, top as Integer, width as Integer, height as Integer)

MBS Win Plugin, Plugin Version: 12.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Sets the parent window of the previewer window, as well as the area within the parent to be used for the previewer window.
**Notes:**
Pass the window and the area for the previewer.
Lasterror is set.

The preview handler is responsible for painting the entire area. If the previewer window has been created, the preview handler must associate the previewer window to the new parent hwnd and resize the previewer window to the area defined by the rectangle. If the previewer window has not yet been created, the preview handler must remember this information for when the previewer window is created in DoPreview. It is preferred that this information be stored prior to calling DoPreview. Doing so increases performance at setup time for any cases where the preview does not start.
172.23.14 Unload

MBS Win Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Directs the preview handler to cease rendering a preview and to release all resources that have been allocated based on the item passed in during the initialization.

**Notes:**
Lasterror is set.
When called, the preview window will be destroyed.

This method should be called only after Constructor has been called. All resources associated with this initialization will be released. Prior to calling DoPreview, this preview handler will be re-initialized with a call to one of the initialization interfaces and a call to SetWindow.

172.23.15 Properties

172.23.16 Handle as Integer

MBS Win Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The internal object reference.

**Notes:** (Read only property)

172.23.17 Lasterror as Integer

MBS Win Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The last error code.

**Notes:** (Read and Write property)

172.23.18 LasterrorString as String

MBS Win Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The error message for the error number in the lasterror property.

**Notes:** (Read only property)

172.23.19 SupportsDataLoading as Boolean

MBS Win Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Whether the preview handler supports loading data from a string or memoryblock.
Notes: (Read only property)

### 172.23. SupportsFileLoading as Boolean

MBS Win Plugin, Plugin Version: 12.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether the preview handler supports loading files.  
**Notes:**  
As the plugin can also load file and pass as data if needed, this function also returns true if SupportsDataLoading is also true.  
(Read only property)

### 172.23.21 Window as Window

MBS Win Plugin, Plugin Version: 12.3, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The parent window.  
**Notes:** (Read only property)
172.24 class WindowsProcessMBS

172.24.1 class WindowsProcessMBS


Example:

```vbs
// run command
dim w as new WindowsProcessMBS

w.CommandLine = "cmd /c dir"
w.CurrentDirectory = "C:"

if not w.run then
    MsgBox w.LastErrorMessage
    Return
end if

// wait
while w.Running
    app.YieldToNextThread
wend

// show result
dim a as Integer = w.AvailableBytesOutput
dim r as string = w.ReadOutput(a)
MsgBox r
```

Notes:

Can be used like shell, but with more windows specific options.
For interactive shell, you need to run cmd.exe yourself.
This shell is asynchronously. For synchrones mode, please write yourself a loop waiting for process to finish.

Please read Microsoft documentation for more details:
172.24.2 Methods

172.24.3 Close

MBS Win Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Closes the process. **Notes:** Same as destructor.

172.24.4 PeekError(Length as Integer = 0) as String

MBS Win Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Peeks in stderr.

172.24.5 PeekOutput(Length as Integer = 0) as String

MBS Win Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Peeks in stdout.

172.24.6 ReadError(Length as Integer = 0) as String

MBS Win Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Reads data from stderr. **Notes:** Please pass maximum number of bytes to read.

172.24.7 ReadOutput(Length as Integer = 0) as String

MBS Win Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Reads data from stdout. **Notes:** Please pass maximum number of bytes to read.

172.24.8 Run as Boolean

MBS Win Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Starts the process. **Notes:** Returns true on success or false on failure.
172.24.9 Terminate(ExitCode as Integer) as Boolean

MBS Win Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Terminates the app with the given exit code. **Notes:** Returns true on success.

172.24.10 Write(Data as MemoryBlock) as Integer

MBS Win Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Sends data to stdin of the running process. **Notes:** Returns number of bytes written. See also:

- 172.24.11 Write(Data as String) as Integer

172.24.11 Write(Data as String) as Integer

MBS Win Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Sends data to stdin of the running process. **Notes:** Returns number of bytes written.

See also:

- 172.24.10 Write(Data as MemoryBlock) as Integer

172.24.12 Properties

172.24.13 ApplicationName as String

MBS Win Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The path to the application. **Notes:** Can be empty when application is part of command line. (Read and Write property)

172.24.14 AvailableBytesError as Integer

MBS Win Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries number of available bytes on stderr. **Notes:** (Read only property)
172.24.15 AvailableBytesOutput as Integer

MBS Win Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries number of available bytes on stdout.  
**Notes:** (Read only property)

172.24.16 CommandLine as String

MBS Win Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The command line to run.  
**Notes:** If applicationName is set, this should only provide parameters.  
(Read and Write property)

172.24.17 CurrentDirectory as String

MBS Win Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The current directory for the process.  
**Notes:**  
You can set this before calling Run to specify the start directory.  
If this parameter is """, the new process will have the same current drive and directory as the calling process.  
(Read and Write property)

172.24.18 Domain as String

MBS Win Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The domain name.  
**Notes:**  
You can set username and password to run app with different user. Domain is optional to specify network domain.  
(Read and Write property)

172.24.19 Environment as Dictionary

MBS Win Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The environment variables to use.  
**Example:**
// run command
dim w as new WindowsProcessMBS
w.CommandLine = "cmd /c echo % TEST% "

// set environment
dim env as new Dictionary
env.Value("TEST") = "Hello World"
w.Environment = env

if not w.run then
    MsgBox w.LastErrorMessage
    Return
end if

// wait
while w.Running
    app.YieldToNextThread
wend

// show result
dim a as Integer = w.AvailableBytesOutput
dim r as string = w.ReadOutput(a)
MsgBox r

Notes: (Read and Write property)

172.24.20 ExitCode as Integer

MBS Win Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries the exit code of the terminated process.
**Notes:** (Read only property)

172.24.21 LastError as Integer

MBS Win Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Last windows error code.
**Notes:** (Read only property)
172.24.22  LastErrorMessage as String

MBS Win Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The message text for the last error.  
**Notes:** (Read only property)

172.24.23  Password as String

MBS Win Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The password.  
**Notes:** You can set username and password to run app with different user. Domain is optional to specify network domain.  
(Read and Write property)

172.24.24  ProcessID as Integer

MBS Win Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The process ID of the process.  
**Notes:** (Read only property)

172.24.25  Running as Boolean

MBS Win Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Checks whether process is running.  
**Notes:** Returns true if running or false if not.  
(Read only property)

172.24.26  ThreadID as Integer

MBS Win Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The thread ID of the main thread for the process.  
**Notes:** (Read only property)
172.24.27  UserName as String

MBS Win Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The user name.
**Notes:**
You can set username and password to run app with different user. Domain is optional to specify network domain.
(Read and Write property)

172.24.28  Events

172.24.29  DataAvailable(AvailableBytesOutput as Integer, AvailableBytesError as Integer)

MBS Win Plugin, Plugin Version: 17.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The event called when data is available for stdout or stderr.

172.24.30  Terminated(ExitCode as Integer)

MBS Win Plugin, Plugin Version: 17.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The event called when process terminated.
172.25.  **CLASS WINDOWSPROPERTIESMBS**

172.25  **class WindowsPropertiesMBS**

MBS Win Plugin, Plugin Version: 17.5, Console & Web: No, Mac: No, Win: Yes, Linux: No.  **Function:** The class for window properties.

**Example:**

```vbnet
dim w as new WindowsPropertiesMBS(self)

dim key as string = w.EdgeGestureDisableTouchWhenFullscreen

w.Value(key) = true

dim c as integer = w.count
for i as integer = 0 to c-1
    dim k as string = w.key(i)
    MsgBox k + " " + w.Value(k)
next
```

172.25.2  **Methods**

172.25.3  **Close**

MBS Win Plugin, Plugin Version: 17.5, Console & Web: No, Mac: No, Win: Yes, Linux: No.  **Function:** Closes properties.

**Notes:** Same as destructor.

172.25.4  **Commit**

MBS Win Plugin, Plugin Version: 17.5, Console & Web: No, Mac: No, Win: Yes, Linux: No.  **Function:** Commits values.

**Notes:**
Optional as window properties are set directly.
LastError and LastErrorMessage are set.

172.25.5  **Constructor(Win as Window)**

MBS Win Plugin, Plugin Version: 17.5, Console & Web: No, Mac: No, Win: Yes, Linux: No.  **Function:** Retrieves an object that represents a specific window’s collection of properties, which allows those properties
to be queried or set.

Notes:

Requires Windows 7 or Windows Server 2008 R2 or newer.

An application can use this function to obtain access to a window’s property store so that it can set an explicit Application User Model ID (AppUserModelID) in the System.AppUserModel.ID property.

Raises FunctionNotFoundException if function is not available, PlatformNotSupportedException if not running on Windows, NilObjectException if window is nil or invalid and UnsupportedOperationException if Window properties can’t be queried.

172.25.6 Count as Integer


Example:

```vbs
dim w as new WindowsPropertiesMBS(self)

// show all keys with values
dim c as integer = w.count
for i as integer = 0 to c-1
dim k as string = w.key(i)
MsgBox k + " "+w.Value(k)
next
```

Notes: LastError and LastErrorMessage are set.

172.25.7 EdgeGestureDisableTouchWhenFullscreen as String

MBS Win Plugin, Plugin Version: 17.5, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function: The property name used to disable touch gesture with full screen window.

Example:

```vbs
dim w as new WindowsPropertiesMBS(self)
dim key as string = w.EdgeGestureDisableTouchWhenFullscreen

w.Value(key) = true
```
172.25.8 **Key(Index as Integer) as String**

MBS Win Plugin, Plugin Version: 17.5, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The key with given index.  
**Notes:**  
Index from 0 to Count-1.  
Keys are passed as UUID followed by property ID.  
LastError and LastErrorMessage are set.

172.25.9 **Properties**

172.25.10 **Handle as Integer**

MBS Win Plugin, Plugin Version: 17.5, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The internal object reference.  
**Notes:** (Read and Write property)

172.25.11 **LastError as Integer**

MBS Win Plugin, Plugin Version: 17.5, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The last error code.  
**Notes:** (Read and Write property)

172.25.12 **LastErrorMessage as String**

MBS Win Plugin, Plugin Version: 17.5, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The last error message.  
**Notes:** (Read and Write property)

172.25.13 **Value(Key as String) as Variant**

MBS Win Plugin, Plugin Version: 17.5, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Set or query property value.  
**Example:**

```vbscript
dim w as new WindowsPropertiesMBS(self)

// show all keys with values
dim c as integer = w.count
```
for i as integer = 0 to c-1
dim k as string = w.key(i)
MsgBox k+” ”+w.Value(k)
next

Notes:

Keys are passed as UUID followed by property ID.
LastError and LastErrorMessage are set.
(Read and Write computed property)
172.26. **CLASS WindowsScriptErrorExceptionMBS**

172.26 class **WindowsScriptErrorExceptionMBS**

MBS Win Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The exception class raised when an error happens while executing a script.

**Example:**
```vbscript
dim w as new WindowsScriptMBS
w.Language = "VBScript"
w.AddCode "a = 1"
w.AddCode "b = 2"
w.AllowUI = false
w.ExecuteStatement "msgbox a+b" // shows exception with access denied
```

**Exception e as WindowsScriptErrorExceptionMBS**
MsgBox e.message

**Notes:** Subclass of the RuntimeException class.
172.27  class WindowsScriptErrorMBS

172.27.1  class WindowsScriptErrorMBS

MBS Win Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The class for error details.
**Example:**
```vba
dim w as new WindowsScriptMBS
w.Language = "JScript"

try
w.AddCode "function Test(a,b) { 1 return a+b; } " // 1 is there to make error

    dim p(-1) as string = array("Hello ", "World from JavaScript")
    dim x as string = w.Run("Test", p)
    catch e as WindowsScriptErrorExceptionMBS
        dim error as WindowsScriptErrorMBS = w.Error
        MsgBox error.Description+EndOfLine+"in "+str(error.Line)+":"+str(error.Column)
    end try
```

172.27.2  Properties

172.27.3  Column as Integer

MBS Win Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Source code column position where the error occurred.
**Notes:** (Read and Write property)

172.27.4  Description as String

MBS Win Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Friendly description of error.
**Notes:** (Read and Write property)

172.27.5  Line as Integer

MBS Win Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Source code line number where the error occurred.
172.27. CLASS WINDOWSSCRIPTERRORMBS

Notes: (Read and Write property)

172.27.6 Number as Integer

MBS Win Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Error number.
**Notes:** (Read and Write property)

172.27.7 Source as String

MBS Win Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Source of the error.
**Notes:** (Read and Write property)

172.27.8 Text as String

MBS Win Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Line of source code on which the error occurred.
**Notes:** (Read and Write property)
172.28 class WindowsScriptMBS

172.28.1 class WindowsScriptMBS

MBS Win Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The class to run Windows Scripts.

**Example:**

```vbnet
dim w as new WindowsScriptMBS

w.Language = "JScript"
w.AddCode "function Test(a,b) { return a+b; } "

dim p(-1) as string = array("Hello ", "World from JavaScript")
dim x as string = w.Run("Test", p)

MsgBox x
```

**Notes:**
You may also read this MSDN page:

ScriptControl from Microsoft is 32-bit only. If you need 64-bit, please install a 64-bit alternative MSScript.ocx file:
http://www.eonet.ne.jp/
textasciitilde gakana/tablacruscriptcontrol_en.html

172.28.2 Methods

172.28.3 AddCode(code as string)

MBS Win Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Add code to the global module.

**Example:**

```vbnet
dim w as new WindowsScriptMBS

w.Language = "VBScript"

w.AddCode "a = 1" // define some global variables
w.AddCode "b = 2"
```
Notes: If you use VBScript, you don’t need "dim" keyword for defining variables.

172.28.4 ClearError

MBS Win Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Clears the current error.

172.28.5 Eval(code as string) as string

MBS Win Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Evaluate an expression within the context of the global module.

172.28.6 ExecuteStatement(statement as string)

MBS Win Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Execute a statement within the context of the global module.

**Example:**

```vbnet
dim w as new WindowsScriptMBS

w.Language = "VBScript"

w.AddCode "a = 1"
w.AddCode "b = 2"

w.AllowUI = true
w.ExecuteStatement "msgbox a+b" // shows 3

w.AllowUI = false
w.ExecuteStatement "msgbox a+b" // shows exception with access denied

Exception e as WindowsScriptErrorExceptionMBS
MsgBox e.message
```

172.28.7 Reset

MBS Win Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Reset the scripting engine to a newly created state.
172.28.8 Run(functionName as string, parameters() as string) as string

MBS Win Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Call a procedure defined in the global module.

**Example:**

dim w as new WindowsScriptMBS

    // First try VBScript
    w.Language = "VBScript"

dim lines(-1) as string

    lines.append "Function Test(a,b)"
    lines.append "Test = a+b"
    lines.append "End Function"

    w.AddCode Join(lines, EndOfLine.Windows)

dim p(-1) as string = array("Hello ", "World from VBScript")

dim x as string = w.Run("Test", p)

    'MsgBox x

    // Second try JScript
    w.Language = "JScript"

    redim lines(-1)
    lines.append "function Test(a,b)"
    lines.Append " { 
    lines.append "return a+b;"
    lines.append " } "

    w.AddCode Join(lines, EndOfLine.Windows)

    p = array("Hello ", "World from JavaScript")
    x = w.Run("Test", p)

    MsgBox x

    **Exception e as WindowsScriptErrorExceptionMBS**
    MsgBox "Exception: " + e.message
172.28.9 Properties

172.28.10 AllowUI as Boolean

MBS Win Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Enable or disable display of the UI.

**Example:**

```vbscript
dim w as new WindowsScriptMBS

w.Language = "VBScript"

w.AddCode "a = 1"
w.AddCode "b = 2"

w.AllowUI = true
w.ExecuteStatement "msgbox a+b" // shows 3

w.AllowUI = false
w.ExecuteStatement "msgbox a+b" // shows exception with access denied

Exception e as WindowsScriptErrorExceptionMBS
MsgBox e.message
```

**Notes:** (Read and Write property)

172.28.11 Error as WindowsScriptErrorExceptionMBS

MBS Win Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The current error status.

**Notes:** (Read only property)

172.28.12 Language as String

MBS Win Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Language engine to use.

**Example:**

```vbscript
dim w as new WindowsScriptMBS

w.Language = w.kLanguageJScript

MsgBox w.Language // shows "JScript"
```
w.Language = w.kLanguageVBScript

MsgBox w.Language // shows "VBScript"

Notes:
Use kLanguageVBScript or kLanguageJScript constants.
Setting this property calls reset internally.
(Read and Write property)

172.28.13 Lasterror as Integer

MBS Win Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The last error code.
**Notes:**
0 is no error. -1 is a parameter error on the plugin side. All other codes are from Windows.
(Read and Write property)

172.28.14 SiteWnd as Integer

MBS Win Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The window handle for the window being parent to any window the scripts create.
**Example:**

```vbnet
dim w as new WindowsScriptMBS
w.SiteWnd = window1.handle
```

**Notes:**
The window is used as the parent window for message boxes, alerts, etc.
(Read and Write property)

172.28.15 Timeout as Integer

MBS Win Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Length of time in milliseconds that a script can execute before being considered hung.
**Notes:** (Read and Write property)
172.28.16 UseSafeSubset as Boolean

MBS Win Plugin, Plugin Version: 10.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Force script to execute in safe mode and disallow potentially harmful actions. **Notes:** (Read and Write property)

172.28.17 Constants

172.28.18 kLanguageJScript = "JScript"

MBS Win Plugin, Plugin Version: 10.0. **Function:** One of the language constants. **Notes:** Using this constant you can switch to JavaScript.

172.28.19 kLanguageVBScript = "VBScript"

MBS Win Plugin, Plugin Version: 10.0. **Function:** One of the language constants. **Notes:** Using this constant you can switch to VBScript.
172.29 class WindowsSerialPortsMBS

172.29.1 class WindowsSerialPortsMBS

MBS Win Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
This is a class to query the serial ports on a Windows system.
**Notes:** This class was created in response to feedback report 8212: Serial Port Hangup on Windows.

172.29.2 Methods

172.29.3 Constructor(OnlyPresent as boolean = true)

MBS Win Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The constructor which builds the list of devices.

172.29.4 Description(index as Integer) as string

MBS Win Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The description of this serial port.

172.29.5 DevicePath(index as Integer) as string

MBS Win Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The device path of this serial port.

172.29.6 FriendlyName(index as Integer) as string

MBS Win Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The display name of this serial port.

172.29.7 Location(index as Integer) as string

MBS Win Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The location of this serial port.
172.29.8 Properties

172.29.9 Count as Integer

MBS Win Plugin, Plugin Version: 10.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The number of serial ports found.  
**Notes:** (Read and Write property)
172.30 class WindowsTaskbarListMBS

172.30.1 class WindowsTaskbarListMBS

MBS Win Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A class for windows with methods that control the taskbar. **Notes:** It allows you to dynamically add, remove, and activate items on the taskbar.

172.30.2 Methods

172.30.3 ActivateTab(WindowHandle as Integer)

MBS Win Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Activates an item on the taskbar. **Notes:** The window is not actually activated; the window’s item on the taskbar is merely displayed as active. Lasterror is set.

172.30.4 AddTab(WindowHandle as Integer)

MBS Win Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Adds an item to the taskbar. **Notes:** Any type of window can be added to the taskbar, but it is recommended that the window at least have the WS_CAPTION style.

Any window added with this method must be removed with the DeleteTab method when the added window is destroyed.

Lasterror is set.

172.30.5 DeleteTab(WindowHandle as Integer)

MBS Win Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Deletes an item from the taskbar.
172.30.6  MarkFullscreenWindow(WindowHandle as Integer, Fullscreen as Boolean)

MBS Win Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
Marks a window as full-screen.
Notes:
Fullscreen: A Boolean value marking the desired full-screen status of the window.

Setting the value of fFullscreen to TRUE, the Shell treats this window as a full-screen window, and the
taskbar is moved to the bottom of the z-order when this window is active. Setting the value of fFullscreen
to FALSE removes the full-screen marking, but does not cause the Shell to treat the window as though it
were definitely not full-screen. With a FALSEfFullscreen value, the Shell depends on its automatic detection
facility to specify how the window should be treated, possibly still flagging the window as full-screen.

Requires Windows XP or Windows Server 2003 or newer.
Lasterror is set.

172.30.7  RegisterTab(TabWindowHandle as Integer, MDIWindowHandle as Integer)

MBS Win Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
Informs the taskbar that a new tab or document thumbnail has been provided for display in an application’s
taskbar group flyout.
Notes:
Requires Windows 7 or Windows Server 2008 R2 or newer.
Lasterror is set.
By itself, registering a tab thumbnail alone will not result in its being displayed. You must also call Set-
TabOrder to instruct the group where to display it.

172.30.8  SetActiveAlt(WindowHandle as Integer)

MBS Win Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
Marks a taskbar item as active but does not visually activate it.
Notes: SetActiveAlt marks the item associated with hwnd as the currently active item for the window’s
process without changing the pressed state of any item. Any user action that would activate a different tab
in that process will activate the tab associated with hwnd instead. The active state of the window’s item
is not guaranteed to be preserved when the process associated with this window is not active. To ensure
that a given tab is always active, call SetActiveAlt whenever any of your windows are activated. Calling
SetActiveAlt with a nil window handle clears this state.
172.30.9 SetOverlayIcon(TabWindowHandle as Integer, IconHandle as Integer, Description as string)

MBS Win Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Applies an overlay to a taskbar button to indicate application status or a notification to the user.

**Notes:**
Requires Windows 7 or Windows Server 2008 R2 or newer.
Lasterror is set.

**TabWindowHandle:**
The handle of the window whose associated taskbar button receives the overlay. This handle must belong
to a calling process associated with the button’s application and must be a valid HWND or the call is ignored.

**IconHandle:**
The handle of an icon to use as the overlay. This should be a small icon, measuring 16x16 pixels at 96 dpi.
If an overlay icon is already applied to the taskbar button, that existing overlay is replaced.

This value can be 0. How a 0 value is handled depends on whether the taskbar button represents a single
window or a group of windows.

- If the taskbar button represents a single window, the overlay icon is removed from the display.
- If the taskbar button represents a group of windows and a previous overlay is still available (received
  earlier than the current overlay, but not yet freed by a 0 value), then that previous overlay is displayed
  in place of the current overlay.

It is the responsibility of the calling application to free hIcon when it is no longer needed. This can gen-
erally be done after you’ve called SetOverlayIcon because the taskbar makes and uses its own copy of the icon.

**Description:**
A string that provides an alt text version of the information conveyed by the overlay, for accessibility purposes.

In versions of Windows earlier than Windows 7, applications often used icons in the notification area of
the taskbar to display application status and notifications to the user. The Windows 7 taskbar allows an
application to provide that same sort of user feedback through its taskbar button, centralizing more of the
application information in one place. These overlays are similar to existing overlays used for shortcut icons
or security notifications, displayed at the lower-right corner of the button.

The following illustration shows an overlay (the small, green square that indicates the user status as "Available")
applied to the far-right taskbar button.
Windows Messenger taskbar button with an overlay to indicate an Available status.

Icon overlays serve as a contextual notification of status, and are intended to negate the need for a separate notification area status icon to communicate that information to the user. The application designer must decide during the development cycle which method: icon overlay or notification area status icon best serves that application. Overlay icons are intended to supply important, long-standing status or notifications such as network status, messenger status, or new mail. They should not be frequently changed, nor should they be animated.

To display an overlay icon, the taskbar must be in the default large icon mode. If the taskbar is configured through Taskbar and Start Menu Properties to show small icons, overlays cannot be applied and calls to this method are ignored.

Because a single overlay is applied to the taskbar button instead of to the individual window thumbnails, this is a per-group feature rather than per-window. Requests for overlay icons can be received from individual windows in a taskbar group, but they do not queue. The last overlay received is the overlay shown. If the last overlay received is removed, the overlay that it replaced is restored so long as it is still active. As an example, windows 1, 2, and 3 set, in order, overlays A, B, and C. Because overlay C was received last, it is shown on the taskbar button. Window 2 calls SetOverlayIcon with a 0 value to remove overlay B. Window 3 then does the same to remove overlay C. Because window 1’s overlay A is still active, that overlay is then displayed on the taskbar button.

If Windows Explorer shuts down unexpectedly, overlays are not restored when Windows Explorer is restored. The application should wait to receive the TaskbarButtonCreated message that indicates that Windows Explorer has restarted and the taskbar button has been re-created, and then call SetOverlayIcon again to reapply the overlay.

172.30.10 SetProgressState(WindowHandle as Integer, Flags as Integer)

MBS Win Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: Sets the type and state of the progress indicator displayed on a taskbar button.

Notes:
Use the ProgressStateFlag* constants. Flags that control the current state of the progress button. Specify only one of the following flags; all states are mutually exclusive of all others.

Requires Windows 7 or Windows Server 2008 R2 or newer.
Lasterror is set.

Progress bar information is not shown in high contrast color schemes to guarantee that no accessibility needs are compromised.
Developers accustomed to the existing progress bar control should find the taskbar button progress indicator to be a similar experience both in concept and visuals. Here, the taskbar button itself becomes a progress bar. A taskbar button’s progress indicator should be a reflection of a more detailed progress bar in the associated window. This allows the user to see specifics, such as the percentage number and the amount of time remaining, that cannot be shown in a taskbar button. Also, because a taskbar button can show the progress of only a single window in a group, it allows the user to check the progress of individual windows. It also provides progress information to the user when the taskbar button cannot, such as in a high-contrast color scheme.

Note that a taskbar button progress bar is not intended for use with normally peripheral actions such as the loading of a Web page or the printing of a document. That type of progress should continue to be shown in a window’s status bar.

The progress indicator is displayed between the taskbar button’s icon or text and the background. If progress is shown for both the active taskbar button and an inactive button, shading in the respective progress bars is such that the active button is still obvious to the user. Also, button functionality such as the display of thumbnails continues to work normally when the button is being used to display progress.

When exiting an error or paused state, call this method again with the ProgressStateFlagNormal or ProgressStateFlagIndeterminate flag to continue in the original state or TBPF_NOPROGRESS if the operation is cancelled.

How the Taskbar Button Chooses the Progress Indicator for a Group

The taskbar button can show a progress indicator for only one window at a time. This includes the situation where the taskbar button represents a group and more than one window in that group is broadcasting progress information. In that case, the taskbar button chooses its progress display based on state priority. State priority is shown in the following table with priority 1 being the highest.

<table>
<thead>
<tr>
<th>Priority</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ProgressStateFlagError</td>
</tr>
<tr>
<td>2</td>
<td>ProgressStateFlagPaused</td>
</tr>
<tr>
<td>3</td>
<td>ProgressStateFlagNormal</td>
</tr>
<tr>
<td>4</td>
<td>ProgressStateFlagIndeterminate</td>
</tr>
</tbody>
</table>

Changing a window’s state changes its priority in relation to other windows in the group which in turn might change which window in a group is used for the progress indicator in the taskbar button.

In the case of a priority collision between two windows that are broadcasting determinate progress, the window with the least progress is used.
Based on this priority, the indeterminate progress indicator can be displayed in the taskbar button only in these cases:

- The taskbar button does not represent a group and the single window that it represents has set ProgressStateFlagIndeterminate.
- The taskbar button represents a group, only one window in that group is broadcasting progress information, and that window has set ProgressStateFlagIndeterminate.
- The taskbar button represents a group, multiple windows in that group are broadcasting progress information, and all of those windows have set ProgressStateFlagIndeterminate.

A determinate progress indicator can be displayed in these cases:

- The taskbar button does not represent a group and the single window that it represents is broadcasting determinate progress information.
- The taskbar button represents a group, only one window in that group is broadcasting progress information, and that window is broadcasting determinate progress information.
- The taskbar button represents a group, multiple windows in that group are broadcasting progress information, at least one of those windows is broadcasting determinate progress information, and no window has set ProgressStateFlagError or ProgressStateFlagPaused.

Note that a call to SetProgressValue will switch a progress indicator currently in an indeterminate mode (ProgressStateFlagIndeterminate) to a normal (determinate) display and clear the ProgressStateFlagIndeterminate flag.

172.30.11 SetProgressValue(WindowHandle as Integer, Completed as UInt64, Total as UInt64)

MBS Win Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Displays or updates a progress bar hosted in a taskbar button to show the specific percentage completed of the full operation.

**Notes:**

Completed: An application-defined value that indicates the proportion of the operation that has been completed at the time the method is called.
Total: An application-defined value that specifies the value ullCompleted will have when the operation is complete.

Requires Windows 7 or Windows Server 2008 R2 or newer.
Lasterror is set.
Determinate Progress Bar Lifecycle

An application first calls SetProgressValue to begin the display of a determinate progress bar, and then calls it again as needed to update the bar as the progress changes. When progress is complete, the application must call SetProgressState with the TBPF_NOPROGRESS flag to dismiss the progress bar.

How the Taskbar Button Chooses the Progress Indicator for a Group

The taskbar button can show a progress indicator for only one window at a time. When the taskbar button represents a group and more than one of the windows in that group are broadcasting progress information, the taskbar button chooses its progress display based on the following state priority.

<table>
<thead>
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<th>State</th>
</tr>
</thead>
<tbody>
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</tr>
<tr>
<td>3</td>
<td>ProgressStateFlagNormal</td>
</tr>
<tr>
<td>4</td>
<td>ProgressStateFlagIndeterminate</td>
</tr>
</tbody>
</table>

Unless SetProgressState has set a blocking state (ProgressStateFlagError or ProgressStateFlagPaused) for the window, a call to SetProgressValue assumes the ProgressStateFlagNormal state even if it is not explicitly set. A call to SetProgressValue overrides and clears the ProgressStateFlagIndeterminate state.

In the case of a priority collision where two windows are broadcasting determinate progress, the window with the least progress is used.

Based on that priority, this determinate (specific percentage) progress indicator can be displayed in these cases:

- The taskbar button does not represent a group and the single window that it represents is broadcasting determinate progress information through this method.
- The taskbar button represents a group, only one window in that group is broadcasting progress information, and that window is broadcasting determinate progress information through this method.
- The taskbar button represents a group, multiple windows in that group are broadcasting progress information, at least one of those windows is broadcasting progress information through this method, and none of those windows has set the ProgressStateFlagError or ProgressStateFlagPaused state.

If a window in the group has set ProgressStateFlagError or ProgressStateFlagPaused, that state will be used for the button display. However, you can still make calls to SetProgressValue on other, unblocked windows in the group to update their progress in the background.
172.30. CLASS WINDOWSTASKBARLISTMBS

172.30.12 SetTabActive(TabWindowHandle as Integer, MDIWindowHandle as Integer)

MBS Win Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Informs the taskbar that a tab or document window has been made the active window.

**Notes:**
Requires Windows 7 or Windows Server 2008 R2 or newer.
Lasterror is set.

TabWindowHandle: Handle of the active tab window. This handle must already be registered through RegisterTab. This value can be 0 if no tab is active.

MDIWindowHandle: Handle of the application’s main window. This value tells the taskbar which group the thumbnail is a member of. This value is required and cannot be 0.

172.30.13 SetTabOrder(TabWindowHandle as Integer, InsertBeforeWindowHandle as Integer)

MBS Win Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Inserts a new thumbnail into a tabbed-document interface (TDI) or multiple-document interface (MDI) application’s group flyout or moves an existing thumbnail to a new position in the application’s group.

**Notes:**
TabWindowHandle: The handle of the tab window whose thumbnail is being placed. This value is required, must already be registered through RegisterTab, and cannot be 0.
InsertBeforeWindowHandle: The handle of the tab window whose thumbnail that hwndTab is inserted to the left of. This handle must already be registered through RegisterTab. If this value is 0, the new thumbnail is added to the end of the list.

172.30.14 SetTabProperties(TabWindowHandle as Integer, flags as Integer)

MBS Win Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Allows a tab to specify whether the main application frame window or the tab window should be used as a thumbnail or in the peek feature under certain circumstances.

**Notes:**
An application might want to use the thumbnail or peek representation of its associated parent window if the application cannot generate its own thumbnail for a tab or for its active tab content (such as an animation) to appear live.

flags: One of the TabPropertyFlag* constants.
Available on Windows 7 or Windows Server 2008 R2 or newer.
### 172.30.15 SetThumbnailClip(TabWindowHandle as Integer)

MBS Win Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Selects a portion of a window's client area to display as that window's thumbnail in the taskbar. **Notes:** This variant of the method clears the clip that is already in place and return to the default display of the thumbnail. Requires Windows 7 or Windows Server 2008 R2 or newer. Lasterror is set. See also:

- 172.30.16 SetThumbnailClip(TabWindowHandle as Integer, x as Integer, y as Integer, w as Integer, h as Integer)

### 172.30.16 SetThumbnailClip(TabWindowHandle as Integer, x as Integer, y as Integer, w as Integer, h as Integer)

MBS Win Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Selects a portion of a window’s client area to display as that window’s thumbnail in the taskbar. **Notes:** Requires Windows 7 or Windows Server 2008 R2 or newer. Lasterror is set. See also:

- 172.30.15 SetThumbnailClip(TabWindowHandle as Integer)

### 172.30.17 SetThumbnailTooltip(TabWindowHandle as Integer, tip as string)

MBS Win Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Specifies or updates the text of the tooltip that is displayed when the mouse pointer rests on an individual preview thumbnail in a taskbar button flyout. **Notes:** Requires Windows 7 or Windows Server 2008 R2 or newer. Lasterror is set.

TabWindowHandle: The handle to the window whose thumbnail displays the tooltip. This handle must belong to the calling process.
tip: The text to be displayed in the tooltip. This value can be empty, in which case the title of the window specified by WindowHandle is used as the tooltip.

172.30.18 UnregisterTab(TabWindowHandle as Integer)

MBS Win Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Removes a thumbnail from an application’s preview group when that tab or document is closed in the application.

**Notes:**

It is the responsibility of the calling application to free hwndTab through DestroyWindow. UnregisterTab must be called before the handle is freed.

Requires Windows 7 or Windows Server 2008 R2 or newer.

Lasterror is set.

172.30.19 Properties

172.30.20 Handle1 as Integer

MBS Win Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The internal reference for the ITaskbarList interface.

**Notes:**

The ITaskbarList interface is available on Windows 2000 Professional, Windows XP or Windows 2000 Server or newer.

(Read and Write property)

172.30.21 Handle2 as Integer

MBS Win Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The internal reference for the ITaskbarList2 interface.

**Notes:**

The ITaskbarList2 interface is available on Windows XP or Windows Server 2003 or newer.

(Read and Write property)

172.30.22 Handle3 as Integer

MBS Win Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The internal reference for the ITaskbarList3 interface.

**Notes:**
The ITaskbarList3 interface is available on Windows 7 or Windows Server 2008 R2 or newer.

172.30.23 Handle4 as Integer

MBS Win Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The internal reference for the ITaskbarList4 interface.
**Notes:**
- The ITaskbarList4 interface is available on Windows 7 or Windows Server 2008 R2 or newer.
  (Read and Write property)

172.30.24 Lasterror as Integer

MBS Win Plugin, Plugin Version: 10.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The last error code from one of the methods.
**Notes:**
- (Read and Write property)

172.30.25 Constants

172.30.26 ProgressStateFlagError = 4

MBS Win Plugin, Plugin Version: 10.2. **Function:** One of the progress state flag constants.
**Notes:**
- The progress indicator turns red to show that an error has occurred in one of the windows that is broadcasting progress. This is a determinate state. If the progress indicator is in the indeterminate state, it switches to a red determinate display of a generic percentage not indicative of actual progress.

172.30.27 ProgressStateFlagIndeterminate = 1

MBS Win Plugin, Plugin Version: 10.2. **Function:** One of the progress state flag constants.
**Notes:**
- The progress indicator does not grow in size, but cycles repeatedly along the length of the taskbar button. This indicates activity without specifying what proportion of the progress is complete. Progress is taking place, but there is no prediction as to how long the operation will take.
172.30.28  ProgressStateFlagNoProgress = 0

MBS Win Plugin, Plugin Version: 10.2. **Function:** One of the progress state flag constants.
**Notes:** Stops displaying progress and returns the button to its normal state. Call this method with this flag to dismiss the progress bar when the operation is complete or cancelled.

172.30.29  ProgressStateFlagNormal = 2

MBS Win Plugin, Plugin Version: 10.2. **Function:** One of the progress state flag constants.
**Notes:** The progress indicator grows in size from left to right in proportion to the estimated amount of the operation completed. This is a determinate progress indicator; a prediction is being made as to the duration of the operation.

172.30.30  ProgressStateFlagPaused = 8

MBS Win Plugin, Plugin Version: 10.2. **Function:** One of the progress state flag constants.
**Notes:** The progress indicator turns yellow to show that progress is currently stopped in one of the windows but can be resumed by the user. No error condition exists and nothing is preventing the progress from continuing. This is a determinate state. If the progress indicator is in the indeterminate state, it switches to a yellow determinate display of a generic percentage not indicative of actual progress.

172.30.31  TabPropertyFlagNone = 0

MBS Win Plugin, Plugin Version: 10.2. **Function:** One of the flag values you can use with SetTabProperties.
**Notes:** No specific property values are specified. The default behavior is used: the tab window provides a thumbnail and peek image, either live or static as appropriate.

172.30.32  TabPropertyFlagUseAppPeekAlways = 4

MBS Win Plugin, Plugin Version: 10.2. **Function:** One of the flag values you can use with SetTabProperties.
**Notes:** Always use the peek image provided by the main application frame window rather than a peek image provided by the individual tab window. Do not combine this value with TabPropertyFlagUseAppPeekWhenActive; doing so will result in an error.
**172.30.33 TabPropertyFlagUseAppPeekWhenActive = 8**

MBS Win Plugin, Plugin Version: 10.2. **Function:** One of the flag values you can use with SetTabProperties.

**Notes:** When the application tab is active and a live representation of its window is available, show the main application frame in the peek feature. At other times, use the tab window. Do not combine this value with TabPropertyFlagUseAppPeekAlways; doing so will result in an error.

---

**172.30.34 TabPropertyFlagUseAppThumbnailAlways = 1**

MBS Win Plugin, Plugin Version: 10.2. **Function:** One of the flag values you can use with SetTabProperties.

**Notes:** Always use the thumbnail provided by the main application frame window rather than a thumbnail provided by the individual tab window. Do not combine this value with TabPropertyFlagUseAppThumbnailWhenActive; doing so will result in an error.

---

**172.30.35 TabPropertyFlagUseAppThumbnailWhenActive = 2**

MBS Win Plugin, Plugin Version: 10.2. **Function:** One of the flag values you can use with SetTabProperties.

**Notes:** When the application tab is active and a live representation of its window is available, use the main application frame window thumbnail. At other times, use the tab window thumbnail. Do not combine this value with TabPropertyFlagUseAppThumbnailAlways; doing so will result in an error.
172.31. class WindowsVerticalBlankMBS

172.31.1. class WindowsVerticalBlankMBS

Function: A class for checking on Windows with the retrace of the display.
Notes: Sometimes you may want to draw only if the device is currently not touching the video memory.

172.31.2. Methods

172.31.3. Constructor

Function: Initializes the class.

172.31.4. GetMonitorFrequency as Integer

Function: Retrieves the frequency of the monitor that the DirectDraw object controls.
Notes: Returns the monitor frequency, in Hz. Lasterror is set.

172.31.5. GetScanLine as Integer

Function: This method retrieves the scan line that is currently being drawn on the monitor.
Notes: To synchronize with the vertical blank, use the WaitForVerticalBlank method. Lasterror is set.

Scan lines are reported as zero-based integers. The returned scan line value is between 0 and n, where scan line 0 is the first visible scan line on the screen and n is the last visible scan line, plus scan lines that occur during the vertical blank period. So, in a case where an application is running at 640x480, and there are 12 scan lines during the vertical blank period, the values returned by this method will range from 0 to 491.
172.31.6 GetVerticalBlankStatus as boolean

Function: Retrieves the status of the vertical blank.
Notes:
Returns the status of the vertical blank. True if a vertical blank is occurring, and false otherwise. Lasterror is set.

172.31.7 WaitForVerticalBlankBegin

Function: Helps the application synchronize itself with the vertical-blank interval.
Notes:
WaitForVerticalBlank returns when the vertical-blank interval begins. Lasterror is set.

172.31.8 WaitForVerticalBlankEnd

Function: Helps the application synchronize itself with the vertical-blank interval.
Notes:
WaitForVerticalBlank returns when the vertical-blank interval ends and the display begins. Lasterror is set.

172.31.9 Properties

172.31.10 Available as Boolean

Function: Whether this class will work.
Notes: (Read and Write property)

172.31.11 Lasterror as Integer

Function: The last windows error string.
Notes: (Read and Write property)
172.31. CLASS WINDOWS\textsc{VERTICALBLANKMBS}

172.31.12 Lasterror\textsc{String as String}


\textbf{Function:} The last windows error string.

\textbf{Notes:} (Read only property)
172.32  class WindowsWMIMBS

MBS Win Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A class to run queries in the Windows Management Interface.  
**Example:**

```vba
dim w as WindowsWMIMBS

w=new WindowsWMIMBS

if w.ConnectServer("root\cimv2") then
   MsgBox "ConnectServer: ok"

if w.query("WQL","SELECT * FROM Win32_Processor") then
   MsgBox "query: ok"

if w.NextItem then
   MsgBox "NextItem: ok"

MsgBox w.GetPropertyString("Name") // string
MsgBox str(w.GetPropertyInteger("MaxClockSpeed")) // uint32
MsgBox str(w.GetPropertyInteger("ProcessorType")) // uint16

else
   MsgBox "NextItem: fail"
end if
else
   MsgBox "query: fail"
end if

else
   MsgBox "ConnectServer: fail"
end if
```

**Notes:**

In Windows 8.1 it looks like WindowsWMIMBS.InitSecurity(false) must be called at app.open time as Xojo will do some things in background when opening first window which block our queries. 
Subclass of the WMIOBJECTMBS class.
172.32.2 Methods

172.32.3 CancelAsyncCall as boolean

MBS Win Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Stops events being delivered to this WindowsWMIMBS object. **Notes:** Lasterror is set.

172.32.4 ConnectServer(NetworkResource as string, Username as string="", Password as string="", Locale as string="", Authority as string="") as boolean

MBS Win Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Connect to WMI server. **Example:**

```vbnet
dim w as WindowsWMIMBS // your WMI object
call w.ConnectServer("root\cimv2")
```

**Notes:**

Returns true on success and false on failure.
Authority parameter added in plugin version 12.2.

172.32.5 Constructor

MBS Win Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The constructor.

172.32.6 ExecNotificationQueryAsync(QueryLanguage as string, QueryText as string) as boolean

MBS Win Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The ExecNotificationQueryAsync method executes a query to receive events. **Notes:**

The plugin receives events and enqueues them in a queue. You read objects from this queue in a timer and process them.
NextItem returns nil if the queue is empty.
Returns true on success and false on failure.
Lasterror is set. e.g. &h80041018 if you have syntax error in the query or &h80041058 if the query can’t be parsed.

172.32.7   InitAuthentication(User as string, Domain as string, Password as string)
as boolean

MBS Win Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
Initializes authentication data.
Notes:
Call before ConnectServer.
This settings are passed to objects for authentication.

172.32.8   InitSecurity(AuthnLevel as Integer, ImpLevel as Integer) as boolean

MBS Win Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
Registers security and sets the default security values for the process.
Notes:
You can call this method before creating WindowsWMIMBS object, you can prepare security settings for remote connections.

AuthnLevel:
The default authentication level for the process. Both servers and clients use this parameter when they call CoInitializeSecurity. COM will fail calls that arrive with a lower authentication level. By default, all proxies will use at least this authentication level. This value should contain one of the authentication level constants. By default, all calls to IUnknown are made at this level.

ImpLevel:
The default impersonation level for proxies. The value of this parameter is used only when the process is a client. It should be a value from the impersonation level constants, except for kImpersonationLevelDefault, which is not for use with CoInitializeSecurity.
Outgoing calls from the client always use the impersonation level as specified. (It is not negotiated.) Incoming calls to the client can be at any impersonation level. By default, all IUnknown calls are made with this impersonation level, so even security-aware applications should set this level carefully. To determine which impersonation levels each authentication service supports, see the description of the authentication services in COM and Security Packages. For more information about impersonation levels, see Impersonation.
See also:

•   172.32.9 InitSecurity(remote as boolean) as boolean
172.32.9  **InitSecurity(remote as boolean) as boolean**

**Notes:**  
You can call this method before creating WindowsWMIMBS object, you can prepare security settings for remote connections.  
Calling InitSecurity with remote=true will initialize security with kImpersonationLevelImpersonate. If remote=false, we use kImpersonationLevelIdentity which is the default.  
See also:  
- 172.32.8 InitSecurity(AuthnLevel as Integer, ImpLevel as Integer) as boolean

172.32.10  **NextItem as boolean**

MBS Win Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Moves to next item in the list.  
**Notes:**  
You need to call this at least once to move to the first item. Returns false if no more items are there.

172.32.11  **Query(QueryLanguage as string, QueryText as string) as boolean**

MBS Win Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Runs a query.  
**Example:**  
```vbnet
dim w as WindowsWMIMBS
call w.query("WQL","SELECT * FROM Win32_Processor")
```

**Notes:** Returns true on success and false on failure.

172.32.12  **Properties**

172.32.13  **EnumeratorHandle as Integer**

MBS Win Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The handle to the used IEnumWbemClassObject object.
172.32.14  LocatorHandle as Integer

Notes: (Read only property)

172.32.15  ServiceHandle as Integer

MBS Win Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The handle to the used IWbemServices object.
Notes: (Read only property)

172.32.16  Constants

172.32.17  kAuthenticationLevelCall = 3

MBS Win Plugin, Plugin Version: 13.1. Function: One of the authentication level constants. Notes: Authenticates only at the beginning of each remote procedure call when the server receives the request. Datagram transports use kAuthenticationLevelPacket instead.

172.32.18  kAuthenticationLevelConnect = 2

MBS Win Plugin, Plugin Version: 13.1. Function: One of the authentication level constants. Notes: Authenticates the credentials of the client only when the client establishes a relationship with the server. Datagram transports always use kAuthenticationLevelPacket instead.

172.32.19  kAuthenticationLevelDefault = 0

172.32.20  kAuthenticationLevelNone = 1

MBS Win Plugin, Plugin Version: 13.1. **Function:** One of the authentication level constants.  
**Notes:** Performs no authentication.

172.32.21  kAuthenticationLevelPacket = 4

MBS Win Plugin, Plugin Version: 13.1. **Function:** One of the authentication level constants.  
**Notes:** Authenticates that all data received is from the expected client.

172.32.22  kAuthenticationLevelPacketIntegrity = 5

MBS Win Plugin, Plugin Version: 13.1. **Function:** One of the authentication level constants.  
**Notes:** Authenticates and verifies that none of the data transferred between client and server has been modified.

172.32.23  kAuthenticationLevelPacketPrivacy = 6

MBS Win Plugin, Plugin Version: 13.1. **Function:** One of the authentication level constants.  
**Notes:** Authenticates all previous levels and encrypts the argument value of each remote procedure call.

172.32.24  kImpersonationLevelAnonymous = 1

MBS Win Plugin, Plugin Version: 13.1. **Function:** One of the impersonation level constants.  
**Notes:** The client is anonymous to the server. The server process can impersonate the client, but the impersonation token will not contain any information and cannot be used.

172.32.25  kImpersonationLevelDefault = 0

MBS Win Plugin, Plugin Version: 13.1. **Function:** One of the impersonation level constants.  
**Notes:** DCOM can choose the impersonation level using its normal security blanket negotiation algorithm. For more information, see Security Blanket Negotiation.
172.32.26  kImpersonationLevelDelegate = 4

Notes: The server process can impersonate the client’s security context while acting on behalf of the client. The server process can also make outgoing calls to other servers while acting on behalf of the client, using cloaking. The server may use the client’s security context on other machines to access local and remote resources as the client. When impersonating at this level, the impersonation token can be passed across any number of computer boundaries.

172.32.27  kImpersonationLevelIdentity = 2

Notes: The server can obtain the client’s identity. The server can impersonate the client for ACL checking, but it cannot access system objects as the client.

172.32.28  kImpersonationLevelImpersonate = 3

Notes: The server process can impersonate the client’s security context while acting on behalf of the client. This level of impersonation can be used to access local resources such as files. When impersonating at this level, the impersonation token can only be passed across one machine boundary. The Schannel authentication service only supports this level of impersonation.
172.33. CLASS WINEXCEPTIONMBS

172.33 class WinExceptionMBS

172.33.1 class WinExceptionMBS

MBS Win Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The class to catch windows system exceptions.

**Notes:**
This class was made to intercept crashes in a REALbasic application. Whenever the application crashes, this class will fire its event so you have a chance to report that crash to your user and maybe save a crash report.

Do not try to save data as this could overwrite good data with bad data. Remember your application already crashed. Maybe because of data corruption!

Only one instance can exist in your application.

172.33.2 Methods

172.33.3 Close

MBS Win Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Removes the exception handler from the system.

172.33.4 Properties

172.33.5 ExceptionAddress as Integer

MBS Win Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The address in memory where the exception was raised.

**Notes:** (Read only property)

172.33.6 ExceptionCode as Integer

MBS Win Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The code of this exception.

**Notes:**
Normally one of the kException* constants.
(Read only property)
172.33.7  ExceptionFlags as Integer

MBS Win Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The exception flags. **Notes:** (Read only property)

172.33.8  ExceptionIsNonContinuable as Boolean

MBS Win Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether this exception allows to continue in code. **Notes:** For example a division by zero can be continued. (Read only property)

172.33.9  ExceptionName as String

MBS Win Plugin, Plugin Version: 8.7, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The name of the exception. **Notes:** If ExceptionCode=kExceptionAccessViolation then returns "ExceptionAccessViolation". This is a convenience function which you can use to show the exception to the user. (Read only property)

172.33.10  Events

172.33.11  GotException() as Integer

MBS Win Plugin, Plugin Version: 8.7, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The event called when an exception was received. **Notes:** Your application has crashed on this point, but instead of seeing the Microsoft dialog to tell you that the application crashed, your application has the chance to report that problem.
Return one of the following constants: kExecuteHandler, kContinueCode, kNextHandler, kExecuteHandlerNoDialog.

The plugin already removed the crash callback from the system so if the code in this event crashes again, the system dialog shows.

172.33.12 Constants

172.33.13 kContinueCode = 2

MBS Win Plugin, Plugin Version: 8.7. **Function:** One of the constants you can use for the GotException event return value.  
**Notes:** This one is not recommended as it can raise the same exception again or crash your application.

172.33.14 kExceptionAccessViolation = & hC0000005

MBS Win Plugin, Plugin Version: 8.7. **Function:** One of the constants for exception codes.  
**Notes:** The thread attempts to read from or write to a virtual address for which it does not have access.

172.33.15 kExceptionArrayBoundsExceeded = & hC000008C

MBS Win Plugin, Plugin Version: 8.7. **Function:** One of the constants for exception codes.  
**Notes:** The thread attempts to access an array element that is out of bounds, and the underlying hardware supports bounds checking.

172.33.16 kExceptionBreakPoint = & h80000003

MBS Win Plugin, Plugin Version: 8.7. **Function:** One of the constants for exception codes.  
**Notes:** A breakpoint is encountered.

172.33.17 kExceptionDataTypeMisalignment = & h80000002

MBS Win Plugin, Plugin Version: 8.7. **Function:** One of the constants for exception codes.  
**Notes:** The thread attempts to read or write data that is misaligned on hardware that does not provide alignment. For example, 16-bit values must be aligned on 2-byte boundaries, 32-bit values on 4-byte boundaries, and so on.
172.33.18  \textbf{kExceptionFloatDenormalOperand} = \& \texttt{hC000008D}

MBS Win Plugin, Plugin Version: 8.7. \textbf{Function}: One of the constants for exception codes.
\textbf{Notes}: One of the operands in a floating point operation is denormal. A denormal value is one that is too small to represent as a standard floating point value.

172.33.19  \textbf{kExceptionFloatDivideByZero} = \& \texttt{hC000008E}

MBS Win Plugin, Plugin Version: 8.7. \textbf{Function}: One of the constants for exception codes.
\textbf{Notes}: The thread attempts to divide a floating point value by a floating point divisor of 0 (zero).

172.33.20  \textbf{kExceptionFloatInexactResult} = \& \texttt{hC000008F}

MBS Win Plugin, Plugin Version: 8.7. \textbf{Function}: One of the constants for exception codes.
\textbf{Notes}: The result of a floating point operation cannot be represented exactly as a decimal fraction.

172.33.21  \textbf{kExceptionFloatInvalidOperation} = \& \texttt{hC0000090}

MBS Win Plugin, Plugin Version: 8.7. \textbf{Function}: One of the constants for exception codes.
\textbf{Notes}: A floating point exception that is not included in this list.

172.33.22  \textbf{kExceptionFloatOverflow} = \& \texttt{hC0000091}

MBS Win Plugin, Plugin Version: 8.7. \textbf{Function}: One of the constants for exception codes.
\textbf{Notes}: The exponent of a floating point operation is greater than the magnitude allowed by the corresponding type.

172.33.23  \textbf{kExceptionFloatStackCheck} = \& \texttt{hC0000092}

MBS Win Plugin, Plugin Version: 8.7. \textbf{Function}: One of the constants for exception codes.
\textbf{Notes}: The stack has overflowed or underflowed, because of a floating point operation.

172.33.24  \textbf{kExceptionFloatUnderflow} = \& \texttt{hC0000093}

MBS Win Plugin, Plugin Version: 8.7. \textbf{Function}: One of the constants for exception codes.
\textbf{Notes}: The exponent of a floating point operation is less than the magnitude allowed by the corresponding
172.33.25  kExceptionIllegalInstruction = & hC000001D

MBS Win Plugin, Plugin Version: 8.7. **Function:** One of the constants for exception codes.  
**Notes:** The thread tries to execute an invalid instruction.

172.33.26  kExceptionInPageError = & hC0000006

MBS Win Plugin, Plugin Version: 8.7. **Function:** One of the constants for exception codes.  
**Notes:** The thread tries to access a page that is not present, and the system is unable to load the page. For example, this exception might occur if a network connection is lost while running a program over a network.

172.33.27  kExceptionIntegerDivideByZero = & hC0000094

MBS Win Plugin, Plugin Version: 8.7. **Function:** One of the constants for exception codes.  
**Notes:** The thread attempts to divide an integer value by an integer divisor of 0 (zero).

172.33.28  kExceptionIntegerOverflow = & hC0000095

MBS Win Plugin, Plugin Version: 8.7. **Function:** One of the constants for exception codes.  
**Notes:** The result of an integer operation causes a carry out of the most significant bit of the result.

172.33.29  kExceptionInvalidDisposition = & hC0000026

MBS Win Plugin, Plugin Version: 8.7. **Function:** One of the constants for exception codes.  
**Notes:** An exception handler returns an invalid disposition to the exception dispatcher. Programmers using a high-level language such as C should never encounter this exception.

172.33.30  kExceptionNonContinueableException = & hC0000025

MBS Win Plugin, Plugin Version: 8.7. **Function:** One of the constants for exception codes.  
**Notes:** The thread attempts to continue execution after a non-continuable exception occurs.
172.33.31 kExceptionPrivilegedInstruction = & hC0000096

MBS Win Plugin, Plugin Version: 8.7. Function: One of the constants for exception codes.
Notes: The thread attempts to execute an instruction with an operation that is not allowed in the current computer mode.

172.33.32 kExceptionSingleStep = & h80000004

MBS Win Plugin, Plugin Version: 8.7. Function: One of the constants for exception codes.
Notes: A trace trap or other single instruction mechanism signals that one instruction is executed.

172.33.33 kExceptionStackOverflow = & hC00000FD

MBS Win Plugin, Plugin Version: 8.7. Function: One of the constants for exception codes.
Notes: The thread uses up its stack.

172.33.34 kExecuteHandler = 1

MBS Win Plugin, Plugin Version: 8.7. Function: One of the constants you can use for the GotException event return value.
Notes:
Windows will execute the default handler for this exception.
This can show a Windows error dialog.

172.33.35 kExecuteHandlerNoDialog = 4

MBS Win Plugin, Plugin Version: 8.7. Function: One of the constants you can use for the GotException event return value.
Notes: Windows will execute the default handler for this exception, but not show a dialog.

172.33.36 kNextHandler = 3

MBS Win Plugin, Plugin Version: 8.7. Function: One of the constants you can use for the GotException event return value.
Notes: Windows will call the next exception handler.
172.34. **CLASS WINGESTURECONFIGMBS**

### 172.34.1 class WinGestureConfigMBS

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**

sets and sets the configuration for enabling gesture messages and the type of this configuration. **Example:**

```vbs
// make a config for accepting pan/rotate gestures
dim c1 as new WinGestureConfigMBS
c1.ID = c1.kGestureIDPan
c1.Want = c1.kPan
c1.Block = 0

dim c2 as new WinGestureConfigMBS
c2.ID = c2.kGestureIDRotate
c2.Want = c2.kRotate
c2.Block = 0

dim configs() as WinGestureConfigMBS
configs.Append c1
configs.Append c2

// and add to window
if WinPointerEventsMBS.SetGestureConfig(window1, configs) then
    MsgBox "OK"
end if
```

**Notes:**

It is impossible to disable two-finger panning and keep single finger panning. You must set the want bits for GC_PAN and can then set GC_PAN_WITH_SINGLE_FINGER_HORIZONTALLY or GC_PAN_WITH_SINGLE_FINGER_VERTICALLY.

An inertia vector is included in the GID_PAN message with the GF_END flag if inertia was disabled by a call to SetGestureConfig.

When you pass this structure, the dwID member contains information for a set of gestures. This determines what the other flags will mean. If you set flags for pan messages, they will be different from those flags that are set for rotation messages.

The following table indicates the various identifiers for gestures that are supported by the dwID member of the GESTURECONFIG structure. Note that setting dwID to 0 indicates that global gesture configuration flags are set.

The following flags are used when dwID is set to 0.
<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GID_ZOOM</td>
<td>3</td>
<td>Indicates configuration settings for the zoom gesture.</td>
</tr>
<tr>
<td>GID_PAN</td>
<td>4</td>
<td>Indicates the pan gesture.</td>
</tr>
<tr>
<td>GID_ROTATE</td>
<td>5</td>
<td>Indicates the rotation gesture.</td>
</tr>
<tr>
<td>GID_TWOFINGERTAP</td>
<td>6</td>
<td>Indicates the two-finger tap gesture.</td>
</tr>
<tr>
<td>GID_PRESSANDTAP</td>
<td>7</td>
<td>Indicates the press and tap gesture.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GC_ALLGESTURES</td>
<td>0x00000001</td>
<td>Indicates all of the gestures.</td>
</tr>
</tbody>
</table>

The following flags are used when `dwID` is set to `GID_ZOOM`.

<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GC_ZOOM</td>
<td>0x00000001</td>
<td>Indicates the zoom gesture.</td>
</tr>
</tbody>
</table>

The following flags are used when `dwID` is set to `GID_PAN`.

Note Setting the `GID_PAN` flags in `SetGestureConfig` will affect the default gesture handler for panning. You should not have both `dwWant` and `dwBlock` set for the same flags; this will result in unexpected behavior. See Windows Touch Gestures for more information on panning and legacy panning support; see `SetGestureConfig` for examples of enabling and blocking gestures.

The following flags are used when `dwID` is set to `GID_ROTATE`.

The following flags are used when `dwID` is set to `GID_TWOFINGERTAP`.

The following flags are used when `dwID` is set to `GID_PRESSANDTAP`.

### 172.34.2 Properties

### 172.34.3 Block as Integer

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The messages to disable.

**Example:**

```csharp
// make a config for accepting some pan gestures
dim c as new WinGestureConfigMBS

c.ID = kGestureIDPan
```
Name | Value | Description
--- | --- | ---
GC, PAN | 0x00000001 | Indicates all pan gestures.
GC, PAN, WITH, SINGLE, FINGER, VERTICALLY | 0x00000002 | Indicates vertical pans with one finger.
GC, PAN, WITH, SINGLE, FINGER, HORIZONTALLY | 0x00000004 | Indicates horizontal pans with one finger.
GC, PAN, WITH, GUTTER | 0x00000008 | Limits perpendicular movement to primary direction until a threshold is reached to break out of the gutter.
GC, PAN, WITH, INERTIA | 0x00000010 | Indicates panning with inertia to smoothly slow when pan gestures stop.

Name | Value | Description
--- | --- | ---
GC, ROTATE | 0x00000001 | Indicates the rotation gesture.

c. Want = c. kPanWithSingleFingerVertically + c. kPanWithGutter + c. kPanWithInteria

c. Block = c. kPanWithSingleFingerHorizontally

**Notes:** (Read and Write property)

### 172.34.4 ID as Integer

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The identifier for the type of configuration that will have messages enabled or disabled.

**Example:**

```vbnet
// make a config for accepting some pan/rotate gestures
dim c1 as new WinGestureConfigMBS

c1.ID = 0
c1.Want = c1.kAllGestures
c1.Block = 0

dim configs() as WinGestureConfigMBS
configs.Append c1

// and add to window
if WinPointerEventsMBS.SetGestureConfig(window1, configs) then
    MsgBox "OK"
end if
```

**Notes:** (Read and Write property)
<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GC_TWOFINGERTAP</td>
<td>0x00000001</td>
<td>Indicates the two-finger tap gesture.</td>
</tr>
<tr>
<td>GC_PRESSANDTAP</td>
<td>0x00000001</td>
<td>Indicates the press and tap gesture.</td>
</tr>
</tbody>
</table>

### 172.34.5 Want as Integer

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The messages to enable.

**Example:**

```aller
data m as new WinGestureConfigMBS

c.ID = 0 // catch all IDs
c.Want = c.kAllGestures
```

**Notes:** (Read and Write property)

### 172.34.6 Constants

#### 172.34.7 kAllGestures = 1

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the gesture option flags.

**Notes:** Indicates all of the gestures. (for ID = 0)

#### 172.34.8 kGestureIDBegin = 1

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the gesture IDs.

**Notes:** Begin of gesture.

#### 172.34.9 kGestureIDEnd = 2

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the gesture IDs.

**Notes:** End of a gesture
172.34. **CLASS WINGESTURECONFIGMBS**

172.34.10  **kGestureIDPan = 4**

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the gesture IDs.
**Notes:** Pan gesture

172.34.11  **kGestureIDPressAndTap = 7**

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the gesture IDs.
**Notes:** Press and Tap gesture

172.34.12  **kGestureIDRotate = 5**

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the gesture IDs.
**Notes:** Rotate gesture

172.34.13  **kGestureIDTwoFingerTap = 6**

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the gesture IDs.
**Notes:** Two-Finger Tap

172.34.14  **kGestureIDZoom = 3**

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the gesture IDs.
**Notes:** Zoom gesture

172.34.15  **kPan = 1**

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the gesture option flags.
**Notes:** Indicates all pan gestures.

172.34.16  **kPanWithGutter = 8**

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the gesture option flags.
**Notes:** Limits perpendicular movement to primary direction until a threshold is reached to break out of the gutter.
172.34.17 kPanWithInteria = 16

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the gesture option flags. **Notes:** Indicates panning with inertia to smoothly slow when pan gestures stop.

172.34.18 kPanWithSingleFingerHorizontally = 4

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the gesture option flags. **Notes:** Indicates horizontal pans with one finger.

172.34.19 kPanWithSingleFingerVertically = 2

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the gesture option flags. **Notes:** Indicates vertical pans with one finger.

172.34.20 kPressAndTap = 1

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the gesture option flags. **Notes:** Indicates the press and tap gesture.

172.34.21 kRotate = 1

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the gesture option flags. **Notes:** Indicates the rotation gesture.

172.34.22 kTwoFingerTap = 1

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the gesture option flags. **Notes:** Indicates the two-finger tap gesture.

172.34.23 kZoom = 1

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the gesture option flags. **Notes:** Indicates the zoom gesture. (for ID = kGestureIDZoom)
172.35 class WinGestureInfoMBS

172.35.1 class WinGestureInfoMBS

**Notes:**
Parameters for touches:
If kFlagBegin flag is set, save Location so you have first point. And save argument to check later.

For Zoom, get second point from this class. Than you can calculate center point and zoom factor is OldArgumentsLower/NewArgumentsLower.

For Pan, check difference between last point and new point to know how much moved.

For Rotate, please check difference between old RotateAngle and new RotateAngle.  
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

172.35.2 Methods

172.35.3 Constructor


172.35.4 Properties

172.35.5 Arguments as Int64

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A 64-bit unsigned integer that contains the arguments for gestures that fit into 8 bytes.  
**Notes:** (Read only property)

172.35.6 ArgumentsHigher as UInt32

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The higher 32bits from Arguments.
CHAPTER 172. WINDOWS

Notes: (Read only property)

172.35.7 ArgumentsLower as UInt32

Notes: Most events just use lower bits.
(Read only property)

172.35.8 Flags as Integer

Notes: See kFlagBegin/kFlagInertia/kFlagEnd constants.
(Read only property)

172.35.9 ID as Integer

Notes: see kGestureID* constants.
(Read only property)

172.35.10 InstanceID as Integer

Notes: (Read only property)

172.35.11 LocationInWindowX as Integer

Notes:
This is LocationX relative to target window.
(Read only property)

172.35.12 LocationInWindowY as Integer

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
A x coordinate associated with the gesture.
Notes:
This is LocationY relative to target window.
(Read only property)

172.35.13 LocationX as Integer

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
A x coordinate associated with the gesture.
Notes:
These coordinates are always relative to the origin of the screen.
(Read only property)

172.35.14 LocationY as Integer

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
A x coordinate associated with the gesture.
Notes:
These coordinates are always relative to the origin of the screen.
(Read only property)

172.35.15 RotateAngle as Double

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The argument as angle for rotate gesture.
Notes: (Read only property)
**172.35.16 SequenceID as Integer**

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
An internally used identifier for the sequence.
**Notes:** (Read only property)

**172.35.17 TargetWindow as Integer**

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
A handle to the window that is targeted by this gesture.
**Notes:** (Read only property)

**172.35.18 Constants**

**172.35.19 kFlagBegin = 1**

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the flag values.
**Notes:** A gesture is starting.

**172.35.20 kFlagEnd = 4**

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the flag values.
**Notes:** A gesture has finished.

**172.35.21 kFlagInertia = 2**

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the flag values.
**Notes:** A gesture has triggered inertia.

**172.35.22 kGestureIDBegin = 1**

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the gesture IDs.
**Notes:** Begin of a gesture
172.35.23  kGestureIDEnd = 2

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the gesture IDs.  
**Notes:** End of a gesture

172.35.24  kGestureIDPan = 4

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the gesture IDs.  
**Notes:** Pan gesture

172.35.25  kGestureIDPressAndTap = 7

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the gesture IDs.  
**Notes:** Press and Tap gesture

172.35.26  kGestureIDRotate = 5

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the gesture IDs.  
**Notes:** Rotate gesture

172.35.27  kGestureIDTwoFingerTap = 6

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the gesture IDs.  
**Notes:** Two-Finger Tap

172.35.28  kGestureIDZoom = 3

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the gesture IDs.  
**Notes:** Zoom gesture
172.36   class WinPointerEventsMBS

172.36.1  class WinPointerEventsMBS

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The class to capture touch events on Windows.
**Notes:** The plugin can only deliver events the Xojo runtime doesn’t consume.

172.36.2  Methods

172.36.3  Close

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Cleans up.
**Notes:**
Optional and does same as destructor, but now.
You can call this in a window’s close event to shutdown the event handler class.

172.36.4  Constructor(control as RectControl)

MBS Win Plugin, Plugin Version: 17.0, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The constructor events to a control.
**Notes:** Call in a control’s open event to attach event listener to the control.
See also:

- 172.36.5 Constructor(win as window) 20352
- 172.36.6 Constructor(WindowHandle as Integer) 20353

172.36.5  Constructor(win as window)

MBS Win Plugin, Plugin Version: 16.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The constructor events to a window.
**Notes:** Call in a window’s open event to attach event listener to the window.
See also:

- 172.36.4 Constructor(control as RectControl) 20352
- 172.36.6 Constructor(WindowHandle as Integer) 20353
172.36. **CLASS WINPOINTEREVENTSMBS**

172.36.6 **Constructor** (WindowHandle as Integer)


**Notes:**
This method allows you to attach to any window.
So this works in console projects, too.
With any window, not just xojo windows.
See also:

- 172.36.4 Constructor(control as RectControl)
- 172.36.5 Constructor(win as window)

172.36.7 **EnableMouseInPointer** (enable as boolean) as boolean

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Enables the mouse to act as a pointer input device and send pointer events.

**Notes:**
Requires Windows 8 or newer.

If the function succeeds, the return value is true.
If the function fails, the return value is false.
To get extended error information, call GetLastError.

This function can be called only once in the context of a process lifetime. Prior to the first call, Windows Store apps run with mouse-in-pointer enabled, as do any desktop applications that consume mshtml.dll. All other desktop applications run with mouse-in-pointer disabled.

On the first call in the process lifetime, the state is changed as specified and the call succeeds.
On subsequent calls, the state will not change. If the current state is not equal to the specified state, the call fails.

Call IsMouseInPointerEnabled to verify the mouse-in-pointer state.

172.36.8 **GetGestureConfig** (Control as RectControl, config() as WinGesture-ConfigMBS, flags as Integer = 0) as Integer

MBS Win Plugin, Plugin Version: 17.0, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Retrieves the configuration for which Windows Touch gesture messages are sent from a window.
Notes: Same as other GetGestureConfig, but for a control, not a window.

See also:

- 172.36.9 GetGestureConfig(win as window, config() as WinGestureConfigMBS, flags as Integer = 0) as Integer

172.36.9 GetGestureConfig(win as window, config() as WinGestureConfigMBS, flags as Integer = 0) as Integer

MBS Win Plugin, Plugin Version: 16.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Retrieves the configuration for which Windows Touch gesture messages are sent from a window.

**Notes:**

win: The window to get the gesture configuration from.

Flags: A gesture command flag value indicating options for retrieving the gesture configuration. Can be 1 to return consolidated configuration for the specified window and its parent window chain.

Config: an array of gesture configuration structures that specify the gesture configuration.

Please pass an empty array and the plugin appends config objects.

Return function returns number of configs found.

Returns -1 in case of error.

See also:

- 172.36.8 GetGestureConfig(Control as RectControl, config() as WinGestureConfigMBS, flags as Integer = 0) as Integer

172.36.10 IsMouseInPointerEnabled as boolean

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Indicates whether EnableMouseInPointer is set for the mouse to act as a pointer input device and send pointer events.

**Notes:**

Requires Windows 8 or newer.

If EnableMouseInPointer is set, the return value is true.

If EnableMouseInPointer is not set, the return value is false.

EnableMouseInPointer can be called only once in the context of a process lifetime. Prior to the first call, Windows Store apps run with mouse-in-pointer enabled, as do any desktop applications that consume mshtml.dll. All other desktop applications run with mouse-in-pointer disabled.

On the first call to EnableMouseInPointer in the process lifetime, the state is changed as specified and the call succeeds.
On subsequent calls to EnableMouseInPointer, the state will not change. If the current state is not equal to the specified state, the call fails. Call IsMouseInPointerEnabled to verify the mouse-in-pointer state.

### 172.36.11 SetGestureConfig(Control as RectControl, config() as WinGestureConfigMBS = nil) as boolean

MBS Win Plugin, Plugin Version: 17.0, Console & Web: No, Mac: No, Win: Yes, Linux: No.

**Function:** Configures the messages that are sent from a window for Windows Touch gestures.

**Notes:** Same as other SetGestureConfig, but for a control, not a window.

See also:
- 172.36.12 SetGestureConfig(win as window, config() as WinGestureConfigMBS = nil) as boolean

### 172.36.12 SetGestureConfig(win as window, config() as WinGestureConfigMBS = nil) as boolean


**Function:** Configures the messages that are sent from a window for Windows Touch gestures.

**Notes:**
- Win: The window to set the gesture configuration on.
- config: An array of gesture configuration structures that specify the gesture configuration.

If the function succeeds, the return value is true, else false.

If you don’t expect to change the gesture configuration, call SetGestureConfig at window creation time. If you want to dynamically change the gesture configuration, call SetGestureConfig in response to GestureNotify event.

See also:
- 172.36.11 SetGestureConfig(Control as RectControl, config() as WinGestureConfigMBS = nil) as boolean

### 172.36.13 Properties

#### 172.36.14 WindowHandle as Integer


**Function:** The window handle.

**Notes:** (Read only property)
172.36.15  Events

172.36.16  Gesture(info as WinGestureInfoMBS) as boolean

MBS Win Plugin, Plugin Version: 16.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Passes information about a gesture.
**Notes:** Return true, if you processed the message, else false.

172.36.17  GestureNotify

MBS Win Plugin, Plugin Version: 16.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Gives you a chance to set the gesture configuration.
**Notes:** When the GestureNotify event is received, the application can use SetGestureConfig to specify the
gestures to receive.

172.36.18  PointerDeviceChange(Change as Integer, Param as Integer) as boolean

MBS Win Plugin, Plugin Version: 16.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Sent to a window when there is a change in the settings of a monitor that has a digitizer attached to it.
**Notes:**
This message contains information regarding the scaling of the display mode.
See kDeviceChange* constants.

172.36.19  PointerDeviceInRange(Param1 as Integer, Param2 as Integer) as boolean

MBS Win Plugin, Plugin Version: 16.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Sent to a window when a pointer device is detected within range of an input digitizer.
**Notes:**
This message contains information regarding the device and its proximity.

If the application processes this message, it should return true, else false.
172.36.20  PointerDeviceOutOfRange(Param1 as Integer, Param2 as Integer) as boolean

MBS Win Plugin, Plugin Version: 16.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Sent to a window when a pointer device has departed the range of an input digitizer.

**Notes:**
This message contains information regarding the device and its proximity.

If the application processes this message, it should return true, else false.

172.36.21  PointerDown(PointerID as Integer, Flags as Integer, X as Integer, Y as Integer, info as WinPointerInfoMBS) as boolean

MBS Win Plugin, Plugin Version: 16.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Posted when a pointer makes contact over the client area of a window.

**Notes:**
This input message targets the window over which the pointer makes contact, and the pointer is implicitly captured to the window so that the window continues to receive input for the pointer until it breaks contact.

We provide pointer ID, flags, X and Y.

Note:
A hovering pointer has none of the button flags set. This is analogous to a mouse move with no mouse buttons down. An application can determine the buttons states of a hovering pen, for example, by calling GetPointerPenInfo and examining the flags that specify button states.

Note:
Because the pointer may make contact with the device over a non-trivial area, this point location may be a simplification of a more complex pointer area. Whenever possible, an application should use the complete pointer area information instead of the point location.

If an application processes this message, it should return true, else false.

Important When a window loses capture of a pointer and it receives the PointerCaptureChanged notification, it typically will not receive any further notifications. For this reason, it is important that you not make any assumptions based on evenly paired PointerDown/PointerUp or PointerEnter/PointerLeave notifications.

Each pointer has a unique pointer identifier during its lifetime. The lifetime of a pointer begins when it is first detected.
A PointerEnter event is generated if a hovering pointer is detected. A PointerDown event followed by a
BitwiseAnd(flags, WinPointerInfoMBS.kFlagNew) <> 0

A flag that indicates whether this message represents the first input generated by a new pointer.

BitwiseAnd(flags, WinPointerInfoMBS.kFlagInRange) <> 0

A flag that indicates whether this message was generated by a pointer during its lifetime. This flag is not set on messages that indicate that the pointer has left detection range.

BitwiseAnd(flags, WinPointerInfoMBS.kFlagInRangeContact) <> 0

A flag that indicates whether this message was generated by a pointer that is in contact with the window surface. This flag is not set on messages that indicate a hovering pointer.

BitwiseAnd(flags, WinPointerInfoMBS.kFlagPrimary) <> 0

Indicates that this pointer has been designated as primary.

BitwiseAnd(flags, WinPointerInfoMBS.kFlagFirstButton) <> 0

A flag that indicates whether there is a primary action. This is analogous to a mouse left button down. A touch pointer will have this set when it is in contact with the digitizer surface. A pen pointer will have this set when it is in contact with the digitizer surface with no buttons pressed.

BitwiseAnd(flags, WinPointerInfoMBS.kFlagSecondButton) <> 0

A flag that indicates whether there is a secondary action. This is analogous to a mouse right button down. A pen pointer will have this set when it is in contact with the digitizer surface with the pen barrel button pressed.

BitwiseAnd(flags, WinPointerInfoMBS.kFlagThirdButton) <> 0

A flag that indicates whether there are one or more tertiary actions based on the pointer type; applications that wish to respond to tertiary actions must retrieve information specific to the pointer type to determine which tertiary buttons are pressed. For example, an application can determine the buttons states of a pen by calling GetPointerPenInfo and examining the flags that specify button states.

BitwiseAnd(flags, WinPointerInfoMBS.kFlagFourthButton) <> 0

A flag that indicates whether the specified pointer took fourth action. Applications that wish to respond to fourth actions must retrieve information specific to the pointer type to determine if the first extended mouse (XButton1) button is pressed.

BitwiseAnd(flags, WinPointerInfoMBS.kFlagFifthButton) <> 0

A flag that indicates whether the specified pointer took fifth action. Applications that wish to respond to fifth actions must retrieve information specific to the pointer type to determine if the second extended mouse (XButton2) button is pressed.

BitwiseAnd(flags, WinPointerInfoMBS.kFlagInRange) <> 0

PointerEnter event is generated if a non-hovering pointer is detected.

During its lifetime, a pointer may generate a series of PointerUpdate events while it is hovering or in contact. The lifetime of a pointer ends when it is no longer detected. This generates a PointerLeave event.

When a pointer is aborted, kFlagCanceled is set.

A WM_POINTERLEAVE message may also be generated when a non-captured pointer moves outside the bounds of a window.

To convert the lParam parameter to a POINTS structure, use the MAKEPOINTS macro.

To retrieve further information associated with the message, use the GetPointerInfo function.

To determine the keyboard modifier key states associated with this message, use the GetKeyState function. For example, to detect that the ALT key was pressed, check whether GetKeyState(VK_MENU) < 0.

Note that if the application does not process this message, DefWindowProc may generate one or more WM_GESTURE messages if the sequence of input from this and, possibly, other pointers is recognized as a gesture. If a gesture is not recognized, DefWindowProc may generate mouse input.

If an application selectively consumes some pointer input and passes the rest to DefWindowProc, the resulting behavior is undefined.

When a window loses capture of a pointer and receives the WM_POINTERCAPTURECHANGED notification, it will typically not receive any further notifications. Therefore, it is important that a window does not make any assumptions of its pointer status, regardless of whether it receives evenly paired DOWN / UP or ENTER / LEAVE notifications.
**172.36.22**  
**PointerEnter(PointerID as Integer, Flags as Integer, X as Integer, Y as Integer, info as WinPointerInfoMBS) as boolean**

MBS Win Plugin, Plugin Version: 16.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**  
Sent to a window when a new pointer enters detection range over the window (hover) or when an existing pointer moves within the boundaries of the window.  
**Notes:**  
We provide Pointer ID, Flags, X and Y.

- `BitwiseAnd(flags, WinPointerInfoMBS.kFlagNew) <> 0`  
  Indicates whether this message is the first message generated by a new pointer entering detection range (hover).

- `BitwiseAnd(flags, WinPointerInfoMBS.kFlagInRange) <> 0`  
  Indicates whether this message was generated by a pointer that has not left detection range. This flag is always set for PointerEnter messages.

- `BitwiseAnd(flags, WinPointerInfoMBS.kFlagInContact) <> 0`  
  A flag that indicates whether this message was generated by a pointer that is in contact. This flag is not set for a pointer in detection range (hover).

Contains the point location of the pointer.  
**Note:**  
Because the pointer may make contact with the device over a non-trivial area, this point location may be a simplification of a more complex pointer area. Whenever possible, an application should use the complete pointer area information instead of the point location.

If an application processes this message, it should return true, else false.

The PointerEnter notification can be used by a window to provide feedback to the user while the pointer is over its surface or to otherwise react to the presence of a pointer over its surface. This notification is only sent to the window that is receiving input for the pointer. The following table lists some of the situations in which this notification is sent.

<table>
<thead>
<tr>
<th>Action</th>
<th>Flags Set</th>
<th>Notifications Sent To</th>
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<tr>
<td>A new pointer enters detection range (hover).</td>
<td>kFlagNew and kFlagInRange</td>
<td>Window over which the pointer enters detection range.</td>
</tr>
<tr>
<td>A hovering pointer crosses within the window boundaries.</td>
<td>kFlagInRange</td>
<td>Window within which the pointer has crossed.</td>
</tr>
</tbody>
</table>

**Important:**  
When a window loses capture of a pointer and it receives the PointerCaptureChange notification, it typically will not receive any further notifications. For this reason, it is important that you not make any assumptions based on evenly paired PointerDown/PointerUp or PointerEnter/PointerLeave notifications.

When inputs come from the mouse, as a result of mouse and pointer message integration, PointerEnter is not sent.
172.36.23  PointerHWheel(PointerID as Integer, Delta as Integer, X as Integer, Y as Integer, info as WinPointerInfoMBS) as boolean

MBS Win Plugin, Plugin Version: 16.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Posted to the window with foreground keyboard focus when a horizontal scroll wheel is rotated.

**Notes:**
We provide the pointer ID, the delta and x/y coordinate.
Info object provides pointer details.

To retrieve the wheel scroll units, use the inputData filed of the WinPointerInfoMBS object. This field contains a signed value and is expressed in a multiple of WHEEL_DELTA (120). A positive value indicates a rotation forward and a negative value indicates a rotation backward.
Note that the wheel inputs may be delivered even if the mouse cursor is located outside of applications window. The wheel messages are delivered in a way very similar to the keyboard inputs. The focus window of the foreground message queue receives the wheel messages.

172.36.24  PointerLeave(PointerID as Integer, Flags as Integer, X as Integer, Y as Integer, info as WinPointerInfoMBS) as boolean

MBS Win Plugin, Plugin Version: 16.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Sent to a window when a pointer leaves detection range over the window (hover) or when a pointer moves outside the boundaries of the window.

**Notes:**
We provide the pointer ID, Flags, X and Y values.

BitwiseAnd(flags, WinPointerInfoMBS.kFlagInRange) <>0  Indicates whether this message was generated by a pointer that has not left detection range. This flag is not set when the pointer leaves the detection range of the window.

BitwiseAnd(flags, WinPointerInfoMBS.kFlagInContact) <>0  A flag that indicates whether this message was generated by a pointer that is in contact. This flag is not set for a pointer in detection range (hover).

**Note:**
Because the pointer may make contact with the device over a non-trivial area, this point location may be a simplification of a more complex pointer area. Whenever possible, an application should use the complete pointer area information instead of the point location.

If an application processes this message, it should return true, else false.

The PointerLeave notification can be used by a window to change mode or stop any feedback to the user while the pointer is over the window surface.
This notification is only sent to the window that is receiving input for the pointer. The following table lists some of the situations in which this notification is sent.
Important:
When a window loses capture of a pointer and it receives the PointerCaptureChange notification, it typically will not receive any further notifications. For this reason, it is important that you not make any assumptions based on evenly paired PointerDown/PointerUp or PointerEnter/PointerLeave notifications.

If contact is maintained with the input digitizer and the pointer moves outside the window, PointerLeave is not generated. PointerLeave is generated only when a hovering pointer crosses window boundaries or contact is terminated. PointerLeave is posted to the posted message queue if the input is originated from a mouse device.

### 172.36.25  PointerUp(PointerID as Integer, Flags as Integer, X as Integer, Y as Integer, info as WinPointerInfoMBS) as boolean

MBS Win Plugin, Plugin Version: 16.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Posted when a pointer that made contact over the client area of a window breaks contact.

**Notes:**
This input message targets the window over which the pointer makes contact and the pointer is, at that point, implicitly captured to the window so that the window continues to receive input messages including the WM_POINTERUP notification for the pointer until it breaks contact.

We provide pointer ID, flags, X and Y.

See Pointer Flags for more details.

**Note:**
A hovering pointer has none of the button flags set. This is analogous to a mouse move with no mouse buttons down. An application can determine the button states of a hovering pen, for example, by calling GetPointerPenInfo and examining the flags that specify button states.

**Note:**
Because the pointer may make contact with the device over a non-trivial area, this point location may be a simplification of a more complex pointer area. Whenever possible, an application should use the complete pointer area information instead of the point location.

If an application processes this message, it should return true, else false.
Each pointer has a unique pointer identifier during its lifetime. The lifetime of a pointer begins when it is first detected. A PointerEnter event is generated if a hovering pointer is detected. A PointerDown event followed by a PointerEnter event is generated if a non-hovering pointer is detected. During its lifetime, a pointer may generate a series of PointerUpdate event while it is hovering or in contact. The lifetime of a pointer ends when it is no longer detected. This generates a WM_POINTERLEAVE message.

When a pointer is aborted, kFlagCanceled is set. A PointerLeave event may also be generated when a non-captured pointer moves outside the bounds of a window. To obtain the horizontal and vertical position of a pointer, use the following:

If the application does not process this message, Windows may generate one or more Gesture event if the sequence of input from this and, possibly, other pointers is recognized as a gesture. If a gesture is not recognized, DefWindowProc may generate mouse input. If an application selectively consumes some pointer input and passes the rest back to Windows, the resulting behavior is undefined.
172.36.  CLASS WINPOINTEREVENTSMBS

172.36.26  PointerUpdate(PointerID as Integer, Flags as Integer, X as Integer, Y as Integer, info as WinPointerInfoMBS) as boolean

**Function:**
Posted to provide an update on a pointer that made contact over the client area of a window or on a hovering uncaptured pointer over the client area of a window.

**Notes:**
While the pointer is hovering, the message targets whichever window the pointer happens to be over. While the pointer is in contact with the surface, the pointer is implicitly captured to the window over which the pointer made contact and that window continues to receive input for the pointer until it breaks contact.

We provide pointer ID, flags, X and Y.

\[
\text{BitwiseAnd(\text{flags}, \text{WinPointerInfoMBS.kFlagNew}) <> 0} \quad \text{A flag that indicates whether this message represents the first input generated by a new pointer.}
\]

\[
\text{BitwiseAnd(\text{flags}, \text{WinPointerInfoMBS.kFlagInRange}) <> 0} \quad \text{A flag that indicates whether this message was generated by a pointer during its lifetime. This flag is not set on messages that indicate that the pointer has left detection range.}
\]

\[
\text{BitwiseAnd(\text{flags}, \text{WinPointerInfoMBS.kFlagInContact}) <> 0} \quad \text{A flag that indicates whether this message was generated by a pointer that is in contact with the window surface. This flag is not set on messages that indicate a hovering pointer.}
\]

\[
\text{BitwiseAnd(\text{flags}, \text{WinPointerInfoMBS.kFlagPrimary}) <> 0} \quad \text{A flag that indicates whether there is a primary action. This is analogous to a mouse left button down. A touch pointer will have this set when it is in contact with the digitizer surface. A pen pointer will have this set when it is in contact with the digitizer surface with no buttons pressed.}
\]

\[
\text{BitwiseAnd(\text{flags}, \text{WinPointerInfoMBS.kFlagFirstButton}) <> 0} \quad \text{A flag that indicates whether there is a secondary action. This is analogous to a mouse right button down.}
\]

A pen pointer will have this set when it is in contact with the digitizer surface with the pen barrel button pressed.

\[
\text{BitwiseAnd(\text{flags}, \text{WinPointerInfoMBS.kFlagThirdButton}) <> 0} \quad \text{A flag that indicates whether there are one or more tertiary actions based on the pointer type; applications that wish to respond to tertiary actions must retrieve information specific to the pointer type to determine which tertiary buttons are pressed. For example, an application can determine the buttons states of a pen by calling GetPointerPenInfo and examining the flags that specify button states.}
\]

\[
\text{BitwiseAnd(\text{flags}, \text{WinPointerInfoMBS.kFlagFourthButton}) <> 0} \quad \text{A flag that indicates whether the specified pointer took fourth action. Applications that wish to respond to fourth actions must retrieve information specific to the pointer type to determine if the first extended mouse (XButton1) button is pressed.}
\]

\[
\text{BitwiseAnd(\text{flags}, \text{WinPointerInfoMBS.kFlagFifthButton}) <> 0} \quad \text{A flag that indicates whether the specified pointer took fifth action. Applications that wish to respond to fifth actions must retrieve information specific to the pointer type to determine if the second extended mouse (XButton2) button is pressed.}
\]

See Pointer Flags for more details.

**Note:**
A hovering pointer has none of the button flags set. This is analogous to a mouse move with no mouse
buttons down. An application can determine the buttons states of a hovering pen, for example, by calling GetPointerPenInfo and examining the flags that specify button states.

Note:
Because the pointer may make contact with the device over a non-trivial area, this point location may be a simplification of a more complex pointer area. Whenever possible, an application should use the complete pointer area information instead of the point location.

If an application processes this message, it should return true, else false.

Each pointer has a unique pointer identifier during its lifetime. The lifetime of a pointer begins when it is first detected. A PointerEnter event is generated if a hovering pointer is detected. A PointerDown event followed by a PointerEnter event is generated if a non-hovering pointer is detected. During its lifetime, a pointer may generate a series of PointerUpdate events while it is hovering or in contact. The lifetime of a pointer ends when it is no longer detected. This generates a PointerLeave event. When a pointer is aborted, kFlagCanceled is set.
A PointerLeave event may also be generated when a non-captured pointer moves outside the bounds of a window.

If the application does not process this message, Windows may generate one or more Gesture event if the sequence of input from this and, possibly, other pointers is recognized as a gesture. If a gesture is not recognized, Windows may generate mouse input.
If an application selectively consumes some pointer input and passes the rest back to Windows, the resulting behavior is undefined.
If the application does not process these messages as fast as they are generated, some moves may be coalesced.
The history of inputs that were coalesced into this message can be retrieved using the GetPointerInfoHistory function.

172.36.27 PointerWheel(PointerID as Integer, Delta as Integer, X as Integer, Y as Integer, info as WinPointerInfoMBS) as boolean

MBS Win Plugin, Plugin Version: 16.2, Console & Web: No, Mac: No, Win: Yes, Linux: No. Function:
Posted to the window with foreground keyboard focus when a vertical scroll wheel is rotated.
Notes:
We provide, the pointer ID, the delta and x/y coordinate.
Info object provides pointer details.

To retrieve the wheel scroll units, use the inputData filed of the WinPointerInfoMBS object. This field contains a signed value and is expressed in a multiple of WHEEL_DELTA (120). A positive value indicates a rotation forward and a negative value indicates a rotation backward.
Note that the wheel inputs may be delivered even if the mouse cursor is located outside of applications.
window. The wheel messages are delivered in a way very similar to the keyboard inputs. The focus window of the foreground message queue receives the wheel messages.

172.36.28  Constants

172.36.29  kDeviceChangeArrival = 1

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the device change flags. **Notes:** A new device is attached.

172.36.30  kDeviceChangeAspectRatioPreserved = 2048

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the device change flags. **Notes:** The display aspect ratio.

172.36.31  kDeviceChangeMapping = 256

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the device change flags. **Notes:** The change in display to digitizer mapping.

172.36.32  kDeviceChangeModeCentered = 128

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the device change flags. **Notes:** Centered display mode.

172.36.33  kDeviceChangeModeDefault = 64

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the device change flags. **Notes:** The default display mode.

172.36.34  kDeviceChangeOrientation0 = 4

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the device change flags. **Notes:** Orientation of the device: 0
172.36.35  \texttt{kDeviceChangeOrientation180} = 16

MBS Win Plugin, Plugin Version: 16.2. \textbf{Function:} One of the device change flags.  
\textbf{Notes:} Orientation of the device: 180

172.36.36  \texttt{kDeviceChangeOrientation270} = 32

MBS Win Plugin, Plugin Version: 16.2. \textbf{Function:} One of the device change flags.  
\textbf{Notes:} Orientation of the device: 270

172.36.37  \texttt{kDeviceChangeOrientation90} = 8

MBS Win Plugin, Plugin Version: 16.2. \textbf{Function:} One of the device change flags.  
\textbf{Notes:} Orientation of the device: 90

172.36.38  \texttt{kDeviceChangeOrigin} = 1024

MBS Win Plugin, Plugin Version: 16.2. \textbf{Function:} One of the device change flags.  
\textbf{Notes:} The display origin.

172.36.39  \texttt{kDeviceChangeRemoval} = 2

MBS Win Plugin, Plugin Version: 16.2. \textbf{Function:} One of the device change flags.  
\textbf{Notes:} A device has been detached.

172.36.40  \texttt{kDeviceChangeResolution} = 512

MBS Win Plugin, Plugin Version: 16.2. \textbf{Function:} One of the device change flags.  
\textbf{Notes:} Display resolution.
172.37  class WinPointerInfoMBS

172.37.1  class WinPointerInfoMBS

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  **Function:**
The class for pointer input details.
**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

172.37.2  Methods

172.37.3  Constructor

MBS Win Plugin, Plugin Version: 16.2, Console & Web: No, Mac: No, Win: Yes, Linux: No.  **Function:**
The private constructor.

172.37.4  Properties

172.37.5  ButtonChangeType as Integer

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  **Function:**
Specifies the change in button state between this input and the previous input.
**Notes:**
See kPointerChange* constants.
(Read only property)

172.37.6  frameId as Integer

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  **Function:**
An identifier common to multiple pointers for which the source device reported an update in a single input frame.
**Notes:**
For example, a parallel-mode multi-touch digitizer may report the positions of multiple touch contacts in a single update to the system.
Note that frame identifier is assigned as input is reported to the system for all pointers across all devices. Therefore, this field may not contain strictly sequential values in a single series of messages that a window receives. However, this field will contain the same numerical value for all input updates that were reported in the same input frame by a single device.
172.37.7 HimetricLocationRawX as Integer

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The screen coordinates of the pointer, in HIMETRIC units.
**Notes:**
For adjusted screen coordinates, see HimetricLocation.
(Read only property)

172.37.8 HimetricLocationRawY as Integer

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The screen coordinates of the pointer, in HIMETRIC units.
**Notes:**
For adjusted screen coordinates, see HimetricLocation.
(Read only property)

172.37.9 HimetricLocationX as Integer

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The predicted screen coordinates of the pointer, in HIMETRIC units.
**Notes:**
The predicted value is based on the pointer position reported by the digitizer and the motion of the pointer. This correction can compensate for visual lag due to inherent delays in sensing and processing the pointer location on the digitizer. This is applicable to pointers of type touch. For other pointer types, the predicted value will be the same as the non-predicted value (see ptHimetricLocationRaw).
(Read only property)

172.37.10 HimetricLocationY as Integer

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The predicted screen coordinates of the pointer, in HIMETRIC units.
**Notes:**
The predicted value is based on the pointer position reported by the digitizer and the motion of the pointer. This correction can compensate for visual lag due to inherent delays in sensing and processing the pointer location on the digitizer. This is applicable to pointers of type touch. For other pointer types, the predicted
value will be the same as the non-predicted value (see ptHimetricLocationRaw).
(Read only property)

172.37.11  historyCount as Integer

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Count of inputs that were coalesced into this message.
**Notes:**
This count matches the total count of entries that can be returned by a call to GetPointerInfoHistory. If no
coalescing occurred, this count is 1 for the single input represented by the message.
(Read only property)

172.37.12  hwndTarget as Integer

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Window to which this message was targeted.
**Notes:**
If the pointer is captured, either implicitly by virtue of having made contact over this window or explicitly
using the pointer capture API, this is the capture window. If the pointer is uncaptured, this is the window
over which the pointer was when this message was generated.
(Read only property)

172.37.13  InputData as Integer

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
A value whose meaning depends on the nature of input.
**Notes:**
When flags indicate kFlagWheel, this value indicates the distance the wheel is rotated, expressed in multiples
or factors of WHEEL_DELTA. A positive value indicates that the wheel was rotated forward and a negative
value indicates that the wheel was rotated backward.
When flags indicate kFlagWheel, this value indicates the distance the wheel is rotated, expressed in multi-
plies or factors of WHEEL_DELTA. A positive value indicates that the wheel was rotated to the right and a
negative value indicates that the wheel was rotated to the left.
(Read only property)
**172.37.14 KeyStates as Integer**

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Indicates which keyboard modifier keys were pressed at the time the input was generated.

**Notes:**

May be zero or a combination of the following values:

- 8 A SHIFT key was pressed.
- 4 A CTRL key was pressed.

(Read only property)

**172.37.15 PerformanceCount as Int64**

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The value of the high-resolution performance counter when the pointer message was received (high-precision, 64 bit alternative to Time).

**Notes:**

The value can be calibrated when the touch digitizer hardware supports the scan timestamp information in its input report.

(Read only property)

**172.37.16 PixelLocationRawX as Integer**


**Notes:**

For adjusted screen coordinates, see PixelLocation.

(Read only property)

**172.37.17 PixelLocationRawY as Integer**


**Notes:**

For adjusted screen coordinates, see PixelLocation.

(Read only property)
172.37.18  **PixelLocationX as Integer**


**Notes:**
The predicted value is based on the pointer position reported by the digitizer and the motion of the pointer. This correction can compensate for visual lag due to inherent delays in sensing and processing the pointer location on the digitizer. This is applicable to pointers of type touch. For other pointer types, the predicted value will be the same as the non-predicted value (see ptPixelLocationRaw).
(Read only property)

172.37.19  **PixelLocationY as Integer**


**Notes:**
The predicted value is based on the pointer position reported by the digitizer and the motion of the pointer. This correction can compensate for visual lag due to inherent delays in sensing and processing the pointer location on the digitizer. This is applicable to pointers of type touch. For other pointer types, the predicted value will be the same as the non-predicted value (see ptPixelLocationRaw).
(Read only property)

172.37.20  **pointerFlags as Integer**

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** May be any reasonable combination of flags from the flags constants.

**Notes:**
See kFlag* constants.
(Read only property)

172.37.21  **pointerId as Integer**

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** An identifier that uniquely identifies a pointer during its lifetime.

**Notes:**
A pointer comes into existence when it is first detected and ends its existence when it goes out of detection
range. Note that if a physical entity (finger or pen) goes out of detection range and then returns to be detected again, it is treated as a new pointer and may be assigned a new pointer identifier. (Read only property)

172.37.22 pointerType as Integer

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The pointer type. **Notes:** See kType* constants. (Read only property)

172.37.23 sourceDevice as Integer

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Handle to the source device that can be used in calls to the raw input device API and the digitizer device API. **Notes:** (Read only property)

172.37.24 Time as Integer

MBS Win Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The time of the event. **Notes:** Value is 0 or the time stamp of the message, based on the system tick count when the message was received. The application can specify the input time stamp in either Time or PerformanceCount. The value cannot be more recent than the current tick count or QueryPerformanceCount (QPC) value of the injection thread. Once a frame is injected with a time stamp, all subsequent frames must include a timestamp until all contacts in the frame go to an UP state. The custom timestamp value must also be provided for the first element in the contacts array. The time stamp values after the first element are ignored. The custom timestamp value must increment in every injection frame. When PerformanceCount is specified, the time stamp will be converted to the current time in .1 millisecond resolution upon actual injection. If a custom PerformanceCount resulted in the same .1 millisecond window from the previous injection, ERROR_NOT_READY is returned and injection will not occur. While injection will not be invalidated immediately by the error, the next successful injection must have a PerformanceCount value that is at least 0.1 millisecond from the previously successful injection. This is also true if Time is used. If both Time and PerformanceCount are specified in InjectTouchInput, ERROR_INVALID_PARAMETER is returned. InjectTouchInput cannot switch between Time and PerformanceCount once injection has started. If neither Time and PerformanceCount are specified, InjectTouchInput allocates the timestamp based on the
timing of the call. If InjectTouchInput calls are repeatedly less than 0.1 millisecond apart, ERROR_NOT_READY might be returned. The error will not invalidate the input immediately, but the injection application needs to retry the same frame again for injection to succeed.

(Read only property)

172.37.25  Constants

172.37.26  kFlagCanceled = & h8000

MBS Win Plugin, Plugin Version: 16.2. Function: One of the flag constants. Notes: Indicates that the pointer is departing in an abnormal manner, such as when the system receives invalid input for the pointer or when a device with active pointers departs abruptly. If the application receiving the input is in a position to do so, it should treat the interaction as not completed and reverse any effects of the concerned pointer.

172.37.27  kFlagCaptureChanged = & h200000

MBS Win Plugin, Plugin Version: 16.2. Function: One of the flag constants. Notes: Indicates that this pointer was captured by (associated with) another element and the original element has lost capture.

172.37.28  kFlagConfidence = & h4000

MBS Win Plugin, Plugin Version: 16.2. Function: One of the flag constants. Notes: Confidence is a suggestion from the source device about whether the pointer represents an intended or accidental interaction, which is especially relevant for touch pointers where an accidental interaction (such as with the palm of the hand) can trigger input. The presence of this flag indicates that the source device has high confidence that this input is part of an intended interaction.

172.37.29  kFlagDown = & h10000

MBS Win Plugin, Plugin Version: 16.2. Function: One of the flag constants. Notes: Indicates that this pointer transitioned to a down state; that is, it made contact with the digitizer surface.
172.37.30  kFlagFifthButton = &h100

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the flag constants.
**Notes:**
Analogous to a second extended mouse (XButton2) button down.
A touch pointer does not use this flag.
A pen pointer does not use this flag.
A mouse pointer has this flag set when the second extended mouse (XBUTTON2) button is down.

172.37.31  kFlagFirstButton = &h10

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the flag constants.
**Notes:**
Indicates a primary action, analogous to a left mouse button down.
A touch pointer has this flag set when it is in contact with the digitizer surface.
A pen pointer has this flag set when it is in contact with the digitizer surface with no buttons pressed.
A mouse pointer has this flag set when the left mouse button is down.

172.37.32  kFlagFourthButton = &h80

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the flag constants.
**Notes:**
Analogous to a first extended mouse (XButton1) button down.
A touch pointer does not use this flag.
A pen pointer does not use this flag.
A mouse pointer has this flag set when the first extended mouse (XBUTTON1) button is down.

172.37.33  kFlagHasTransform = &h400000

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the flag constants.
**Notes:** Indicates that this pointer has an associated transform.

172.37.34  kFlagHWheel = &h100000

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the flag constants.
**Notes:** Indicates input associated with a pointer h-wheel. For mouse pointers, this is equivalent to the action of the mouse horizontal scroll wheel.
172.37.35 kFlagInContact = 4

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the flag constants.  
**Notes:**
Indicates that this pointer is in contact with the digitizer surface.  
When this flag is not set, it indicates a hovering pointer.

172.37.36 kFlagInRange = 2

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the flag constants.  
**Notes:**
Indicates that this pointer continues to exist.  When this flag is not set, it indicates the pointer has left detection range.  
This flag is typically not set only when a hovering pointer leaves detection range (kFlagUpdate is set) or when a pointer in contact with a window surface leaves detection range (kFlagUp is set).

172.37.37 kFlagNew = 1

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the flag constants.  
**Notes:** Indicates the arrival of a new pointer.

172.37.38 kFlagNone = 0

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the flag constants.  
**Notes:** Default

172.37.39 kFlagPrimary = & h2000

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the flag constants.  
**Notes:**
Indicates that this pointer has been designated as the primary pointer.  A primary pointer is a single pointer that can perform actions beyond those available to non-primary pointers.  For example, when a primary pointer makes contact with a windows surface, it may provide the window an opportunity to activate by sending it a PointerActivate event.  
The primary pointer is identified from all current user interactions on the system (mouse, touch, pen, and so on).  As such, the primary pointer might not be associated with your app.  The first contact in a multi-touch interaction is set as the primary pointer.  Once a primary pointer is identified, all contacts must be lifted before a new contact can be identified as a primary pointer.  For apps that don’t process pointer input, only
the primary pointer’s events are promoted to mouse events.

**172.37.40 kFlagSecondButton = & h20**

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the flag constants.  
**Notes:**
Indicates a secondary action, analogous to a right mouse button down.  
A touch pointer does not use this flag.  
A pen pointer has this flag set when it is in contact with the digitizer surface with the pen barrel button pressed.  
A mouse pointer has this flag set when the right mouse button is down.

**172.37.41 kFlagThirdButton = & h40**

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the flag constants.  
**Notes:**
Analogous to a mouse wheel button down.  
A touch pointer does not use this flag.  
A pen pointer does not use this flag.  
A mouse pointer has this flag set when the mouse wheel button is down.

**172.37.42 kFlagUp = & h40000**

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the flag constants.  
**Notes:** Indicates that this pointer transitioned to an up state; that is, contact with the digitizer surface ended.

**172.37.43 kFlagUpdate = & h20000**

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the flag constants.  
**Notes:** Indicates that this is a simple update that does not include pointer state changes.

**172.37.44 kFlagWheel = & h80000**

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the flag constants.  
**Notes:** Indicates input associated with a pointer wheel. For mouse pointers, this is equivalent to the action
of the mouse scroll wheel.

172.37.45  \text{\texttt{kPointerChangeFifthButtonDown = 9}}

MBS Win Plugin, Plugin Version: 16.2. \textbf{Function:} The fifth button transitioned to a pressed state.

172.37.46  \text{\texttt{kPointerChangeFifthButtonUp = 10}}

MBS Win Plugin, Plugin Version: 16.2. \textbf{Function:} The fifth button transitioned to a released state.

172.37.47  \text{\texttt{kPointerChangeFirstButtonDown = 1}}

MBS Win Plugin, Plugin Version: 16.2. \textbf{Function:} The first button transitioned to a pressed state.

172.37.48  \text{\texttt{kPointerChangeFirstButtonUp = 2}}

MBS Win Plugin, Plugin Version: 16.2. \textbf{Function:} The first button transitioned to a released state.

172.37.49  \text{\texttt{kPointerChangeFourthButtonDown = 7}}

MBS Win Plugin, Plugin Version: 16.2. \textbf{Function:} The fourth button transitioned to a pressed state.

172.37.50  \text{\texttt{kPointerChangeFourthButtonUp = 8}}

MBS Win Plugin, Plugin Version: 16.2. \textbf{Function:} The fourth button transitioned to a released state.

172.37.51  \text{\texttt{kPointerChangeNone = 0}}

MBS Win Plugin, Plugin Version: 16.2. \textbf{Function:} No change in button state.
172.37.52  kPointerChangeSecondButtonDown = 3

MBS Win Plugin, Plugin Version: 16.2. **Function:** The second button transitioned to a pressed state.

172.37.53  kPointerChangeSecondButtonUp = 4

MBS Win Plugin, Plugin Version: 16.2. **Function:** The second button transitioned to a released state.

172.37.54  kPointerChangeThirdButtonDown = 5

MBS Win Plugin, Plugin Version: 16.2. **Function:** The third button transitioned to a pressed state.

172.37.55  kPointerChangeThirdButtonUp = 6

MBS Win Plugin, Plugin Version: 16.2. **Function:** The third button transitioned to a released state.

172.37.56  kTypeMouse = 4

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the pointer types.
**Notes:** Mouse pointer type.

172.37.57  kTypePen = 3

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the pointer types.
**Notes:** Pen pointer type.

172.37.58  kTypePointer = 1

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the pointer types.
**Notes:**
Generic pointer type.
This type never appears in pointer messages or pointer data. Some data query functions allow the caller to restrict the query to specific pointer type. The kTypePointer type can be used in these functions to specify that the query is to include pointers of all types.
172.37. CLASS WINPOINTERINFOMBS

172.37.59  kTypeTouch = 2

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the pointer types.  
**Notes:** Touch pointer type.

172.37.60  kTypeTouchpad = 5

MBS Win Plugin, Plugin Version: 16.2. **Function:** One of the pointer types.  
**Notes:** Touchpad pointer type (Windows 8.1 and later).
172.38 class WMIOBJECTMBS

172.38.1 class WMIOBJECTMBS

MBS Win Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The class for a WMI object.

172.38.2 Methods

172.38.3 GetNames as string()

MBS Win Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Queries the names of all properties in this object.

172.38.4 GetProperty(Name as string) as Variant

MBS Win Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Gets a property as a variant.
**Notes:**
- Objects, booleans, strings and numbers are supported directly. Also string arrays in version 13.1.
- Other values are casted to string first.

172.38.5 GetPropertyBoolean(Name as string) as Boolean

MBS Win Plugin, Plugin Version: 13.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Gets a value as an integer.
**Notes:** Value must be of a numeric type.

172.38.6 GetPropertyDouble(Name as string) as Double

MBS Win Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Gets a value as a double.
**Notes:** Value must be of a numeric type.
172.38.7 GetPropertyInt64(Name as string) as Int64

MBS Win Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Gets a property as an integer value.

**Example:**
```
dim w as WindowsWMIMBS // your WMI object
MsgBox str(w.GetPropertyInt64("MaxClockSpeed")) // uint32
```

**Notes:** Value must be of a numeric type.

172.38.8 GetPropertyInteger(Name as string) as Integer

MBS Win Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Gets a value as an integer.
**Example:**
```
dim w as WindowsWMIMBS // your WMI object
MsgBox str(w.GetPropertyInteger("MaxClockSpeed")) // uint32
```

**Notes:** Value must be of a numeric type.

172.38.9 GetPropertyObject(Name as string) as WMIOBJECTMBS

MBS Win Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Gets a value as an object.
**Notes:** Value must be of an IUnknown type.

172.38.10 GetPropertyString(Name as string) as string

MBS Win Plugin, Plugin Version: 12.0, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Gets a property as a string.
**Example:**
```
dim w as WindowsWMIMBS
MsgBox w.GetPropertyString("Name") // string
```

172.38.11 GetPropertyStringArray(Name as string) as string()

MBS Win Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Gets a property as a string array.
**Example:**
**172.38.12 GetPropertyType(Name as string) as Integer**


**Function:** Gets the type of a property.  
**Notes:** You can send in the value you get here and the plugin can be changed to handle this type, too. Currently only numbers and strings are handled.

**172.38.13 GetPropertyTypeString(Name as string) as string**


**Function:** Gets the type of a property as a string.  
**Notes:** For example type 8 is returned as "string".

**172.38.14 Properties**

**172.38.15 Handle as Integer**


**Function:** Internal object reference.  
**Notes:** (Read and Write property)

**172.38.16 Lasterror as Integer**


**Function:** The last error code reported from one of the functions.  
**Notes:** -1 is the value used by the plugin if the function is not available. (Read and Write property)

**172.38.17 LasterrorMessage as String**


**Function:** The error message for the last error.
172.38.  CLASS WMOBJECTMBS

Notes:

This may help to debug the errors.
(Read only property)
Chapter 173

Windows Console

173.1  class ConsoleStateMBS

173.1.1  class ConsoleStateMBS

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: A class for handling a console window state.

173.1.2  Properties

173.1.3  BackColor as Integer

Notes: Color codes can be build up from red, blue, green and highlight. red=1, blue=2, green=4 and highlight=8. (Read and Write property)

173.1.4  CursorX as Integer

Notes: (Read and Write property)
173.1.5 **CursorY as Integer**

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The vertical cursor position in characters.
**Notes:** (Read and Write property)

173.1.6 **Height as Integer**

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The height of the window in characters.
**Notes:** (Read and Write property)

173.1.7 **MaxHeight as Integer**

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The maximum height of the window in characters.
**Notes:** (Read and Write property)

173.1.8 **MaxWidth as Integer**

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The maximum width of the window in characters.
**Notes:** (Read and Write property)

173.1.9 **TextColor as Integer**

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The colorcode of the text.
**Notes:**
Color codes can be build up from red, blue, green and highlight.
red=1, blue=2, green=4 and highlight=8.
(Read and Write property)

173.1.10 **Width as Integer**

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The width of the window in characters.
173.1. CLASS CONSOLESTATEMBS

Notes: (Read and Write property)

173.1.11 WindowHeight as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The height of the console window.

Notes: (Read and Write property)

173.1.12 WindowLeft as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The left position of the console window.

Notes: (Read and Write property)

173.1.13 WindowTop as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The top position of the console window.

Notes: (Read and Write property)

173.1.14 WindowWidth as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The width of the console window.

Notes: (Read and Write property)
173.2 class WindowsConsoleMBS

173.2.1 class WindowsConsoleMBS

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A class for handling a console window in Windows.

173.2.2 Methods

173.2.3 Close

MBS Win Plugin, Plugin Version: 4.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The destructor.
**Notes:**
There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

173.2.4 FlushConsole

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The FlushConsole function flushes the console input buffer.
**Notes:** All input records currently in the input buffer are discarded.

173.2.5 ReadConsole(maxcount as Integer) as string

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Reads maximum of maxcount characters from the input stream.

173.2.6 SetCursorPosition(x as Integer,y as Integer)

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Sets the cursor position inside the console window.
173.2. CLASS-WINDOWS-CONSOLEMBS

173.2.7 SetWindowPosition(absolute as boolean, left as Integer, top as Integer, right as Integer, bottom as Integer)

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Sets the window position and size.
**Notes:** If absolute=false, the coordinates are relative to the current one.

173.2.8 State as ConsoleStateMBS

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The current state of the console window.

173.2.9 WriteConsole(message as string) as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Writes the message to the console.
**Notes:** Returns true if successful.

173.2.10 Properties

173.2.11 AutoScrollAtEOL as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Automatical scrolling at end of line?
**Notes:**
When writing with WriteConsole or echoing with ReadFile, the cursor moves to the beginning of the next row when it reaches the end of the current row. This causes the rows displayed in the console window to scroll up automatically when the cursor advances beyond the last row in the window. It also causes the contents of the screen buffer to scroll up (discarding the top row of the screen buffer) when the cursor advances beyond the last row in the screen buffer. If this mode is disabled, the last character in the row is overwritten with any subsequent characters.
(Read and Write property)

173.2.12 BackColor as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The text background color used.
**Notes:** (Read and Write property)
173.2.13 CursorSize as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The size of the cursor in percent (from 0 to 100).
**Notes:** (Read and Write property)

173.2.14 CursorVisible as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Is the cursor visible?
**Notes:** (Read and Write property)

173.2.15 EchoInput as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Echo the input on the screen?
**Notes:**
Characters read by the ReadFile function are written to the active screen buffer as they are read. This mode can be used only if the WaitForReturn mode is also enabled.
(Read and Write property)

173.2.16 GotConsole as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** whether the console was created inside the constructor.
**Notes:** (Read only property)

173.2.17 InputCodepage as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Codepage of the input stream.
**Notes:** (Read and Write property)

173.2.18 OutputCodepage as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Codepage of the output stream.
173.2.19 ProcessInput as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Process input before reading?

**Notes:**

Ctrl+c is processed by the system and is not placed in the input buffer. If the input buffer is being read by ReadConsole, other control keys are processed by the system and are not returned in the ReadConsole buffer. If the WaitForReturn mode is also enabled, backspace, carriage return, and linefeed characters are handled by the system.

(Read and Write property)

173.2.20 ProcessOutput as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Process output before reading?

**Notes:**

Characters written by the WriteConsole function or echoed by the ReadFile or ReadConsole function are parsed for ASCII control sequences, and the correct action is performed. Backspace, tab, bell, carriage return, and linefeed characters are processed.

(Read and Write property)

173.2.21 TextColor as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The text color used.

**Notes:** (Read and Write property)

173.2.22 Title as string

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The title bar of the console window.

**Notes:** (Read and Write property)
**173.2.23 WaitForReturn as boolean**

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Wait for return key on reading?

**Notes:**
The ReadConsole function returns only when a carriage return character is read. If this mode is disabled, the functions return when one or more characters are available.
(Read and Write property)

**173.2.24 Events**

**173.2.25 ConsoleClosed**

MBS Win Plugin, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Console was closed.

**173.2.26 ConsoleOpened**

MBS Win Plugin, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Console was opened.

**173.2.27 ControlBreak as boolean**

MBS Win Plugin, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Control-Break was pressed.

**Notes:**
Return true if you handled it yourself.
Return false for the default handler.

**173.2.28 ControlC as boolean**

MBS Win Plugin, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** Control-C was pressed.

**Notes:**
Return true if you handled it yourself.
Return false for the default handler.
173.2.29 Logoff as boolean

MBS Win Plugin, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The user is logging off.  
**Notes:**  
Return true if you handled it yourself.  
Return false for the default handler.

173.2.30 Shutdown as boolean

MBS Win Plugin, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The user is shutting down the computer.  
**Notes:**  
Return true if you handled it yourself.  
Return false for the default handler.

173.2.31 UserClose as boolean

MBS Win Plugin, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The user pressed the close button.  
**Notes:**  
Return true if you handled it yourself.  
Return false for the default handler.

173.2.32 Constants

173.2.33 Black = 0

MBS Win Plugin. **Function:** The color code for Black.  
**Notes:** Read only property with value 0.

173.2.34 Blue = 1

MBS Win Plugin. **Function:** The color code for Blue.  
**Notes:** Read only property with value 2.
173.2.35  Green = 2

MBS Win Plugin. Function: The color code for Green. 
Notes: Read only property with value 4.

173.2.36  Highlight = 8

MBS Win Plugin. Function: The color code for Highlight. 
Notes: Read only property with value 8.

173.2.37  Red = 4

MBS Win Plugin. Function: The color code for Red. 
Notes: Read only property with value 1.
Chapter 174

Windows ICM

174.1  class WindowsICMColorMBS

174.1.1  class WindowsICMColorMBS

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The class for a color value.

**Notes:**
A variable of type color may be accessed as any of the supported color space colors by accessing the appropriate member of the union.

see also:

174.1.2  Properties

174.1.3  a as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The a color value of a Lab color.

**Notes:** (Read and Write property)

174.1.4  b as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The b color value of a Lab color.
174.1.5  **black as Integer**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The black color value of a CMYK color.  
**Notes:** (Read and Write property)

174.1.6  **blue as Integer**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The blue value.  
**Notes:**  
Range from 0 to 255.  
(Read and Write property)

174.1.7  **ch1 as Integer**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The first channel color value of a three channel color.  
**Notes:** (Read and Write property)

174.1.8  **ch2 as Integer**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The second channel color value of a three channel color.  
**Notes:** (Read and Write property)

174.1.9  **ch3 as Integer**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The third channel color value of a three channel color.  
**Notes:** (Read and Write property)
174.1.10  **cyan as Integer**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The cyan color value of a CMYK color. **Notes:** (Read and Write property)

174.1.11  **gray as Integer**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The gray color value. **Notes:** For grayscale color space. (Read and Write property)

174.1.12  **green as Integer**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The green value. **Notes:** Range from 0 to 255. (Read and Write property)

174.1.13  **Index as Integer**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The index value for an indexed color space. **Notes:** (Read and Write property)

174.1.14  **L as Integer**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The L color value of a Lab color. **Notes:** (Read and Write property)
174.1.15 **magenta as Integer**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The magenta color value of a CMYK color. **Notes:** (Read and Write property)

174.1.16 **red as Integer**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The red value. **Notes:** Range from 0 to 255. (Read and Write property)

174.1.17 **XYZ.X as Integer**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The X value of a XYZ color. **Notes:** (Read and Write property)

174.1.18 **XYZ.Y as Integer**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The Y value of a XYZ color. **Notes:** (Read and Write property)

174.1.19 **XYZ.Z as Integer**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The Z value of a XYZ color. **Notes:** (Read and Write property)

174.1.20 **yellow as Integer**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The yellow color value of a CMYK color.
174.1. CLASS WINDOWSICMCOLORMBS

**Notes:** (Read and Write property)

### 174.1.21 Yxy_x as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The x value of a Yxy color.

**Notes:** (Read and Write property)

### 174.1.22 Yxy_y as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The y value of a Yxy color.

**Notes:**

Yxy_Y is the first Y and Yxy_Y the second one in a Yxy color.

(Read and Write property)

### 174.1.23 Yxy_YY as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The y value of a Yxy color.

**Notes:**

Yxy_Y is the first Y and Yxy_Y the second one in a Yxy color.

(Read and Write property)

### 174.1.24 Channel(index as Integer) as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The channel value of a colorspace with 3 to 8 channels.

**Notes:**

Index from 0 to 7.

(Read and Write computed property)
174.1.25 Constants

174.1.26 COLOR_3_CHANNEL = 6
MBS Win Plugin, Plugin Version: 11.1. Function: One of the color type constants. Notes: The COLOR is in the GENERIC3CHANNEL color space.

174.1.27 COLOR_5_CHANNEL = 8
MBS Win Plugin, Plugin Version: 11.1. Function: One of the color type constants. Notes: The COLOR is in a five channel color space.

174.1.28 COLOR_6_CHANNEL = 9
MBS Win Plugin, Plugin Version: 11.1. Function: One of the color type constants. Notes: The COLOR is in a six channel color space.

174.1.29 COLOR_7_CHANNEL = 10
MBS Win Plugin, Plugin Version: 11.1. Function: One of the color type constants. Notes: The COLOR is in a seven channel color space.

174.1.30 COLOR_8_CHANNEL = 11
MBS Win Plugin, Plugin Version: 11.1. Function: One of the color type constants. Notes: The COLOR is in an eight channel color space.

174.1.31 COLOR_CMYK = 7
MBS Win Plugin, Plugin Version: 11.1. Function: One of the color type constants. Notes: The COLOR is in the CMYKCOLOR color space.
### 174.1.32 COLOR_GRAY = 1

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the color type constants.  
**Notes:** The COLOR is in the GRAYCOLOR color space.

### 174.1.33 COLOR_Lab = 5

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the color type constants.  
**Notes:** The COLOR is in the LabCOLOR color space.

### 174.1.34 COLOR_NAMED = 12

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the color type constants.  
**Notes:** The COLOR is in a named color space.

### 174.1.35 COLOR_RGB = 2

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the color type constants.  
**Notes:** The COLOR is in the RGBCOLOR color space.

### 174.1.36 COLOR_XYZ = 3

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the color type constants.  
**Notes:** The COLOR is in the XYZCOLOR color space.

### 174.1.37 COLOR_Yxy = 4

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the color type constants.  
**Notes:** The COLOR is in the YxyCOLOR color space.

### 174.1.38 MAX_COLOR_CHANNELS = 8

MBS Win Plugin, Plugin Version: 11.1. **Function:** The maximum number of supported color channels.
174.2 class WindowsICMEnumMBS

174.2.1 class WindowsICMEnumMBS

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The WindowsICMEnumMBS class contains information that defines the profile enumeration constraints.
**Example:**

dim c as new WindowsICMEnumMBS // no options set

dim a(-1) as string = WindowsICMModuleMBS.EnumColorProfiles(c)

for each s as string in a
    MsgBox s
next

**Notes:**

see also

174.2.2 Properties

174.2.3 Attributes0 as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Attributes of profile that can be any of the following values.
**Notes:**

<table>
<thead>
<tr>
<th>Constant</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATTRIB_TRANSPARENCY</td>
<td>Turns transparency on. If this flag is not used, the attribute is reflective by default.</td>
</tr>
<tr>
<td>ATTRIB_MATTE</td>
<td>Turns matte display on. If this flag is not used, the attribute is glossy by default.</td>
</tr>
</tbody>
</table>

(Read and Write property)

174.2.4 Attributes1 as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Attributes of profile that can be any of the following values.
**Notes:**
## Constant Meaning

<table>
<thead>
<tr>
<th>Constant</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATTRIB_TRANSPARENCY</td>
<td>Turns transparency on. If this flag is not used, the attribute is reflective by default.</td>
</tr>
<tr>
<td>ATTRIB_MATTE</td>
<td>Turns matte display on. If this flag is not used, the attribute is glossy by default.</td>
</tr>
</tbody>
</table>

(Read and Write property)

### 174.2.5 Classs as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Indicates the profile class.

**Notes:**

For a description of profile classes, see Using Device Profiles with WCS.


A profile class may have any of the following values.

<table>
<thead>
<tr>
<th>Profile Class</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Device Profile</td>
<td>CLASS_SCANNER</td>
</tr>
<tr>
<td>Display Device Profile</td>
<td>CLASS_MONITOR</td>
</tr>
<tr>
<td>Output Device Profile</td>
<td>CLASS_PRINTER</td>
</tr>
<tr>
<td>Device Link Profile</td>
<td>CLASS_LINK</td>
</tr>
<tr>
<td>Color Space Conversion Profile</td>
<td>CLASS_COLORSPACE</td>
</tr>
<tr>
<td>Abstract Profile</td>
<td>CLASS_ABSTRACT</td>
</tr>
<tr>
<td>Named Color Profile</td>
<td>CLASS_NAMED</td>
</tr>
<tr>
<td>Color Appearance Model Profile</td>
<td>CLASS_CAMP</td>
</tr>
<tr>
<td>Color Gamut Map Model Profile</td>
<td>CLASS_GMMP</td>
</tr>
</tbody>
</table>

(Read and Write property)

### 174.2.6 CMMType as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The identification number of the CMM that is used in the profile.

**Notes:**

Identification numbers are registered with the ICC.

(Read and Write property)
174.2.7 **ConnectionSpace as Integer**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A signature value that indicates the color space in which the profile connection space (PCS) is defined. **Notes:** Can be any of the following values: SPACE_XYZ or SPACE_Lab

When the Classs member is set to CLASS_LINK, the PCS is taken from the DataColorSpace member. (Read and Write property)

174.2.8 **Creator as Integer**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Signature of the software that created the profile. **Notes:** Signatures are registered with the ICC. (Read and Write property)

174.2.9 **DataColorSpace as Integer**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A signature value that indicates the color space in which the profile data is defined. **Notes:** Can be any value from the SPACE_* Constants. (Read and Write property)

174.2.10 **DeviceClass as Integer**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Indicates the device class. **Notes:** A device class may have one of the following values. (Read and Write property)
### 174.2.11 DeviceName as String

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** User friendly name of the device.  
**Notes:** (Read and Write property)

### 174.2.12 DitheringMode as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Indicates the style of dithering that will be used when an image is displayed.  
**Notes:** (Read and Write property)

### 174.2.13 Fields as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Indicates which fields in this class are being used.  
**Notes:**

Can be set to any combination of the following constant values:

- ET_DEVICENAME
- ET_MEDIATYPE
- ET_DITHERMODE
- ET_RESOLUTION
- ET_CMMTYPE
- ET_CLASS
- ET_DATACOLORSPACE
- ET_CONNECTIONSPACE
- ET_SIGNATURE
- ET_PLATFORM
- ET_PROFILEFLAGS
- ET_MANUFACTURER
- ET_MODEL
- ET_ATTRIBUTES
- ET_RENDERINGINTENT
- ET_CREATOR
- ET_DEVICECLASS
174.2.14 Manufacturer as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The identification number of the device profile manufacturer.

**Notes:**
All manufacturer identification numbers are registered with the ICC.
(Read and Write property)

174.2.15 MediaType as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Indicates which type of media is associated with the profile, such as a printer or screen.

**Notes:** (Read and Write property)

174.2.16 Model as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The device manufacturer’s device model number.

**Notes:**
All model identification numbers are registered with the ICC.
(Read and Write property)

174.2.17 Platform as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The primary platform for which the profile was created.

**Notes:**
The member can be set to any of the following values.

(Read and Write property)
174.2. CLASS WINDOWSICMENUMMBS

<table>
<thead>
<tr>
<th>Platform</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple Computer, Inc.</td>
<td>'APPL'</td>
</tr>
<tr>
<td>Microsoft Corp.</td>
<td>'MSFT'</td>
</tr>
<tr>
<td>Silicon Graphics, Inc.</td>
<td>'SGI'</td>
</tr>
<tr>
<td>Sun Microsystems, Inc.</td>
<td>'SUNW'</td>
</tr>
<tr>
<td>Taligent</td>
<td>'TGNT'</td>
</tr>
</tbody>
</table>

174.2.18 ProfileFlags as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Bit flags containing hints that the CMM uses to interpret the profile data and can be set to one of the following values.

**Notes:**

<table>
<thead>
<tr>
<th>Constant</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLAG_EMBEDDEDPROFILE</td>
<td>The profile is embedded in a bitmap file.</td>
</tr>
<tr>
<td>FLAG_DEPENDENTONDATA</td>
<td>The profile can't be used independently of the embedded color data. Used for profiles that are embedded in bitmap files.</td>
</tr>
</tbody>
</table>

(Read and Write property)

174.2.19 RenderingIntent as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The profile rendering intent.

**Notes:**

The member can be set to one of the following values:

```
INTENT_PERCEPTUAL
INTENT_SATURATION
INTENT_RELATIVE
COLORIMETRIC
INTENT_ABSOLUTE
```

For more information, see Rendering Intents.
(Read and Write property)

174.2.20 ResolutionX as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The horizontal resolution in pixels of the device on which the image will be displayed.

**Notes:** (Read and Write property)
174.2.21 ResolutionY as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The vertical resolution in pixels of the device on which the image will be displayed. **Notes:** (Read and Write property)

174.2.22 Signature as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Reserved for internal use. **Notes:** (Read and Write property)

174.2.23 Constants

174.2.24 ATTRIB_MATTE = 2

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the attribute constants. **Notes:** Turns matte display on. If this flag is not used, the attribute is glossy by default.

174.2.25 ATTRIB_TRANSPARENCY = 1

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the attribute constants. **Notes:** Turns transparency on. If this flag is not used, the attribute is reflective by default.

174.2.26 CLASS_ABSTRACT = & h61627374

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the profile class constants.

174.2.27 CLASS_CAMP = & h6C616D70

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the profile class constants.
174.2.28  \textbf{CLASS\_COLORSPACE} = \& h73706163

MBS Win Plugin, Plugin Version: 11.1. \textbf{Function:} One of the profile class constants.

174.2.29  \textbf{CLASS\_GMMP} = \& h676D6D70

MBS Win Plugin, Plugin Version: 11.1. \textbf{Function:} One of the profile class constants.

174.2.30  \textbf{CLASS\_LINK} = \& h6C696E6B

MBS Win Plugin, Plugin Version: 11.1. \textbf{Function:} One of the profile class constants.

174.2.31  \textbf{CLASS\_MONITOR} = \& h6D6E7472

MBS Win Plugin, Plugin Version: 11.1. \textbf{Function:} One of the profile class constants.

174.2.32  \textbf{CLASS\_NAMED} = \& h6E6D636C

MBS Win Plugin, Plugin Version: 11.1. \textbf{Function:} One of the profile class constants.

174.2.33  \textbf{CLASS\_PRINTER} = \& h70727472

MBS Win Plugin, Plugin Version: 11.1. \textbf{Function:} One of the profile class constants.

174.2.34  \textbf{CLASS\_SCANNER} = \& h73636E72

MBS Win Plugin, Plugin Version: 11.1. \textbf{Function:} One of the profile class constants.

174.2.35  \textbf{ET\_ATTRIBUTES} = \& h02000

MBS Win Plugin, Plugin Version: 11.1. \textbf{Function:} One of the constants to specify which property in this class is used.
174.2.36  \textbf{ET\_CLASS} = & h00020

MBS Win Plugin, Plugin Version: 11.1. \textbf{Function}: One of the constants to specify which property in this class is used.

174.2.37  \textbf{ET\_CMMTYPE} = & h00010

MBS Win Plugin, Plugin Version: 11.1. \textbf{Function}: One of the constants to specify which property in this class is used.

174.2.38  \textbf{ET\_CONNECTIONSPACE} = & h00080

MBS Win Plugin, Plugin Version: 11.1. \textbf{Function}: One of the constants to specify which property in this class is used.

174.2.39  \textbf{ET\_CREATOR} = & h08000

MBS Win Plugin, Plugin Version: 11.1. \textbf{Function}: One of the constants to specify which property in this class is used.

174.2.40  \textbf{ET\_DATACOLORSPACE} = & h00040

MBS Win Plugin, Plugin Version: 11.1. \textbf{Function}: One of the constants to specify which property in this class is used.

174.2.41  \textbf{ET\_DEVICECLASS} = & h10000

MBS Win Plugin, Plugin Version: 11.1. \textbf{Function}: One of the constants to specify which property in this class is used.

174.2.42  \textbf{ET\_DEVICENAME} = & h00001

MBS Win Plugin, Plugin Version: 11.1. \textbf{Function}: One of the constants to specify which property in this class is used.
174.2. CLASS WINDOWSICMENUMMBS

174.2.43 ET_DITHERMODE = & h00004

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the constants to specify which property in this class is used.

174.2.44 ET_MANUFACTURER = & h00800

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the constants to specify which property in this class is used.

174.2.45 ET_MEDIATYPE = & h00002

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the constants to specify which property in this class is used.

174.2.46 ET_MODEL = & h01000

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the constants to specify which property in this class is used.

174.2.47 ET_PLATFORM = & h00200

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the constants to specify which property in this class is used.

174.2.48 ET_PROFILEFLAGS = & h00400

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the constants to specify which property in this class is used.

174.2.49 ET_RENDERINGINTENT = & h04000

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the constants to specify which property in this class is used.
174.2.50  **ET_RESOLUTION** = & h00008

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the constants to specify which property in this class is used.

174.2.51  **ET_SIGNATURE** = & h00100

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the constants to specify which property in this class is used.

174.2.52  **FLAG_DEPENDENTONDATA** = 2

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the profile flag constants.  
**Notes:** The profile can’t be used independently of the embedded color data. Used for profiles that are embedded in bitmap files.

174.2.53  **FLAG_EMBEDDEDPROFILE** = 1

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the profile flag constants.  
**Notes:** The profile is embedded in a bitmap file.

174.2.54  **FLAG_ENABLE_CHROMATIC_ADAPTATION** = & h02000000

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the profile flag constants.

174.2.55  SigMacintosh = & h4150504C

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the platform signatures.  
**Notes:** APPL = Apple Computer, Inc.

174.2.56  SigMicrosoft = & h4D534654

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the platform signatures.  
**Notes:** MSFT = Microsoft Corp.
174.2. CLASS WINDOWSICMENUMMBS

174.2.57 SigSGI = & h53474920


174.2.58 SigSolaris = & h53554E57


174.2.59 SigTaligent = & h54474E54

MBS Win Plugin, Plugin Version: 11.1. Function: One of the platform signatures. Notes: TGNT = Taligent

174.2.60 SPACE_Lab = & h4C616220

MBS Win Plugin, Plugin Version: 11.1. Function: One of the color space constants. Notes: Lab

174.2.61 SPACE_XYZ = & h58595A20

MBS Win Plugin, Plugin Version: 11.1. Function: One of the color space constants. Notes: XYZ
174.3 class WindowsICMLLogColorSpaceMBS

174.3.1 class WindowsICMLLogColorSpaceMBS

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
This class contains information that defines a logical color space.

**Notes:**
If the CSType member is set to LCS_sRGB or LCS_WINDOWS_COLOR_SPACE, the other members of
this structure are ignored, and WCS uses the sRGB color space. The Endpoints, GammaRed, Gamma-
Green, and GammaBlue members are used to describe the logical color space. The Endpoints member is a
CIEXYZTRIPLE that contains the x, y, and z values of the color space’s RGB endpoint.

The required DWORD bit format for the GammaRed, GammaGreen, and GammaBlue is an 8.8 fixed point
integer left-shifted by 8 bits. The plugin takes care about that detail.

Whenever the Filename member contains a file name and the CSType member is set to LCS_CALIBRATED_RGB,
WCS ignores the other members of this class. It uses the color space in the file as the color space to which
this LOGCOLORSPACE structure refers.

The relation between tri-stimulus values X,Y,Z and chromaticity values x,y,z is as follows:

\[
x = \frac{X}{X+Y+Z} \\
y = \frac{Y}{X+Y+Z} \\
z = \frac{Z}{X+Y+Z}
\]

If the CSType member is set to LCS_sRGB or LCS_WINDOWS_COLOR_SPACE, the other members of this
structure are ignored, and ICM uses the sRGB color space. Applications should still initialize the rest of the
structure since CreateProfileFromLogColorSpace ignores CSType member and uses Endpoints, GammaRed,
GammaGreen, GammaBlue members to create a profile, which may not be initialized in case of LCS_sRGB
or LCS_WINDOWS_COLOR_SPACE color spaces.

174.3.2 Properties

174.3.3 CSType as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Color space type.

**Notes:**
The member can be one of the following values.
### 174.3. CLASS WINDOWSICMLOGCOLORSPACEMBS

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCS, CALIBRATED_RGB</td>
<td>Color values are calibrated RGB values. The values are translated using the endpoints specified by the lcsEndpoints member before being passed to the device.</td>
</tr>
<tr>
<td>LCS_sRGB</td>
<td>Color values are sRGB values.</td>
</tr>
<tr>
<td>LCS, WINDOWS_COLOR_SPACE</td>
<td>Color values are Windows default color space color values.</td>
</tr>
</tbody>
</table>

(Read and Write property)

#### 174.3.4 EndpointsBX as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The X value of the Blue Endpoint.  
**Notes:** (Read and Write property)

#### 174.3.5 EndpointsBY as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The Y value of the Blue Endpoint.  
**Notes:** (Read and Write property)

#### 174.3.6 EndpointsBZ as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The Z value of the Blue Endpoint.  
**Notes:** (Read and Write property)

#### 174.3.7 EndpointsGX as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The X value of the Green Endpoint.  
**Notes:** (Read and Write property)

#### 174.3.8 EndpointsGY as Integer

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Notes: (Read and Write property)

174.3.9 EndpointsGZ as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The Z value of the Green Endpoint. Notes: (Read and Write property)

174.3.10 EndpointsRX as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The X value of the Red Endpoint. Notes: (Read and Write property)

174.3.11 EndpointsRY as Integer


174.3.12 EndpointsRZ as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The Z value of the Red Endpoint. Notes: (Read and Write property)

174.3.13 Filename as String

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: A string that names a color profile file. Notes: This member is typically set to "", but may be used to set the color space to be exactly as specified by the color profile. This is useful for devices that input color values for a specific printer, or when using an installable image color matcher. If a color profile is specified, all other members of this class should be set to reasonable values, even if the values are not completely accurate. (Read and Write property)
174.3.14 GammaBlue as Double

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Scale of the blue coordinate.  
**Notes:** (Read and Write property)

174.3.15 GammaGreen as Double

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Scale of the green coordinate.  
**Notes:** (Read and Write property)

174.3.16 GammaRed as Double

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Scale of the red coordinate.  
**Notes:** (Read and Write property)

174.3.17 Intent as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The gamut mapping method.  
**Notes:** This member can be one of the following values.

<table>
<thead>
<tr>
<th>Value</th>
<th>Value</th>
<th>Intent</th>
<th>ICC Name</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCS_GM_BUSINESS</td>
<td>1</td>
<td>Graphic</td>
<td>Saturation</td>
<td>Maintain saturation. Used for business charts and other situations in which undithered colors are required.</td>
</tr>
<tr>
<td>LCS_GM_GRAPHICS</td>
<td>2</td>
<td>Proof</td>
<td>Relative Colorimetric</td>
<td>Maintain colorimetric match. Used for graphic designs and named colors.</td>
</tr>
<tr>
<td>LCS_GM_IMAGES</td>
<td>4</td>
<td>Picture</td>
<td>Perceptual</td>
<td>Maintain contrast. Used for photographs and natural images.</td>
</tr>
<tr>
<td>LCS_GMLABS_COLORIMETRIC</td>
<td>8</td>
<td>Match</td>
<td>Absolute Colorimetric</td>
<td>Maintain the white point. Match the colors to their nearest color in the destination gamut.</td>
</tr>
</tbody>
</table>

(Read and Write property)
174.3.18 Constants

174.3.19 INTENT_ABSOLUTE_COLORIMETRIC = 3

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the rendering intent constants. **Notes:** Maintain the white point. Match the colors to their nearest color in the destination gamut.

174.3.20 INTENT_PERCEPTUAL = 0

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the rendering intent constants. **Notes:** Maintain contrast. Used for photographs and natural images.

174.3.21 INTENT_RELATIVE_COLORIMETRIC = 1

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the rendering intent constants. **Notes:** Maintain colorimetric match. Used for graphic designs and named colors.

174.3.22 INTENT_SATURATION = 2

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the rendering intent constants. **Notes:** Maintain saturation. Used for business charts and other situations in which undithered colors are required.

174.3.23 LCS_CALIBRATED_RGB = 0

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the color space type constants. **Notes:** Color values are calibrated RGB values. The values are translated using the endpoints specified by the Endpoints member before being passed to the device.

174.3.24 LCS_sRGB = & h73524742

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the color space type constants. **Notes:** Color values are values are sRGB values.
174.3. CLASS WINDOWSICMLOGCOLORSPACEMBS

174.3.25 LCS_WINDOWS_COLOR_SPACE = &h57696E20

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the color space type constants.
**Notes:** Color values are Windows default color space color values.
174.4 module WindowsICMModuleMBS

174.4.1 module WindowsICMModuleMBS


174.4.2 Methods

174.4.3 AssociateColorProfileWithDevice(ProfileName as string, DeviceName as string) as boolean

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The AssociateColorProfileWithDevice function associates a specified color profile with a specified device. **Notes:**

ProfileName: The file name of the profile to associate.
DeviceName: The name of the device to associate.

Returns true on success and false on failure.

The AssociateColorProfileWithDevice function will fail if the profile has not been installed on the computer using the InstallColorProfile function.

Note that under Windows (Windows 95 or later), the PostScript device driver for printers assumes a CMYK color model. Therefore, all PostScript printers must use a CMYK color profile. Windows 2000 does not have this limitation.

If the specified device is a monitor, this function updates the default profile.

Several profiles are typically associated with printers, based on paper and ink types. There is no default. The GDI selects the best one from the associated profiles when your application creates a device context (DC).

Scanners also have no default profile. However, it is atypical to associate more than one profile with a scanner.

AssociateColorProfileWithDevice always adds the specified profile to the current user’s per-user profile association list for the specified device. Before adding the profile to the list, AssociateColorProfileWithDevice determines whether the user has previously expressed the desire to use a per-user profile association list for the device. If so, then AssociateColorProfileWithDevice simply adds the specified profile to the existing per-user profile association list for the device. If not, then AssociateColorProfileWithDevice creates a new per-user profile association list for the device by copying the system-wide association list for that device. It
then appends the specified profile to the per-user list. From that point on, the current user will be using a per-user profile association list for the specified device, as if SetUsePerUserProfiles had been called for Device with the usePerUserProfiles parameter set to TRUE.

174.4.4 DisassociateColorProfileFromDevice(ProfileName as string, DeviceName as string) as boolean

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The DisassociateColorProfileFromDevice function disassociates a specified color profile with a specified device on a specified computer. **Notes:** Returns true on success and false on failure.

ProfileName: The file name of the profile to disassociate.
DeviceName: The name of the device to disassociate.

If more than one profile is associated with a device, WCS uses the last one associated as the default. That is, if your application sequentially associates three profiles with a device, WCS will use the last one associated as the default. If your application then calls the DisassociateColorProfileFromDevice function to disassociate the third profile (which is the default in this example), the WCS will use the second profile as the default.

If your application disassociates all profiles from a device, WCS uses the sRGB profile as the default.

DisassociateColorProfileFromDevice always removes the specified profile from the current user’s per-user profile association list for the specified device. Before removing the profile from the list, DisassociateColorProfileFromDevice determines whether the user has previously expressed the desire to use a per-user profile association list for the device. If so, then DisassociateColorProfileFromDevice simply removes the specified profile from the existing per-user profile association list for the device. If not, then DisassociateColorProfileFromDevice creates a new per-user profile association list for the device by copying the system-wide association list for that device. It then removes the specified profile from the per-user list. From that point on, the current user will be using a per-user profile association list for the specified device, as if SetUsePerUserProfiles had been called for Device with the usePerUserProfiles parameter set to TRUE.

174.4.5 EnumColorProfiles(criterias as WindowsICMEnumMBS) as string()

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The EnumColorProfiles function enumerates all the profiles satisfying the given enumeration criteria. **Example:**

`dim c as new WindowsICMEnumMBS // no options set`
dim a(-1) as string = WindowsICMModuleMBS.EnumColorProfiles(c)

for each s as string in a
    MsgBox s
next

Notes:

On success the function returns an array of profile names.

Several profiles are typically associated with printers, based on the paper and ink types. There is a default profile for each device. For International Color Consortium (ICC) profiles, GDI selects the best one from the ICC-associated profiles when your application creates a device context (DC).

Do not attempt to use EnumColorProfiles to determine the default profile for a device. Instead, create a device context for the device and then invoke the GetICMProfile function. On Windows Vista and Windows 7, the WcsGetDefaultColorProfile function can also be used to determine a device’s default color profile.

If the Fields member of WindowsICMEnumMBS that is pointed to by the criterias parameter is set to ET_DEVICENAME, this function will enumerate all of the color profiles associated with all types of devices attached to the user’s computer, regardless of the device class. If the Fields member is set to ET_DEVICENAME or ET_DEVICECLASS and a device class is specified in the DeviceClass member, this function will only enumerate the profiles associated with the specified device class. If the Fields member is set only to ETDEVICECLASS, the EnumColorProfiles function will enumerate all profiles that can be associated with that type of device.

Whenever EnumColorProfiles is examining the profiles associated with a specific device, the results depend on whether the user has chosen to use the system-wide list of profiles associated with that device, or his or her own (“per-user”) list. Calling SetUsePerUserProfiles with its usePerUserProfiles parameter set to TRUE causes future calls to EnumColorProfiles to look at only the current user’s per-user list of profile associations for the specified device. Calling WcsSetUsePerUserProfiles with its usePerUserProfiles parameter set to FALSE causes future calls to EnumColorProfiles to look at the system-wide list of profile associations for the specified device. If SetUsePerUserProfiles has never been called for the current user, EnumColorProfiles examines the system-wide list.

This function will provide the information for converting WCS-specific DMP information to the legacy EnumType record in enable consistent profile enumeration. The defaults will be the same as ICC if this information is not present.

Per-user/LUA support

The enumeration is specific to current user. Both system wide and current user device associations are
considered. For default profile configuration, current user settings override system wide ones.

174.4.6 GetColorDirectory as folderitem

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The GetColorDirectory function retrieves the path of the Windows COLOR directory on a specified machine.  
**Example:**

```vbs
dim f as FolderItem = WindowsICMModuleMBS.GetColorDirectory

if f=nil then
    MsgBox "No path?"
else
    MsgBox f.AbsolutePath
end if
```

**Notes:** On success returns folderitem for color directory. Returns nil on any error.

174.4.7 GetStandardColorSpaceProfile(ProfileID as Integer) as string

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The GetStandardColorSpaceProfile function retrieves the color profile registered for the specified standard color space.  
**Example:**

```vbs
MsgBox WindowsICMModuleMBS.GetStandardColorSpaceProfile(WindowsICMModuleMBS.LCS_WINDOWS_COLOR_SPACE)
```

**Notes:**

ProfileID: Specifies the ID value of the standard color space for which to retrieve the profile. The only valid values for this parameter are LCS_sRGB and LCS_WINDOWS_COLOR_SPACE.

This function supports Windows Color System (WCS) device model profiles (DMPs) in addition to International Color Consortium (ICC) profiles. It does not support WCS CAMP or GMMP profiles and will return an error if such profiles are used.

Overview of Windows Vista Specific Functionality

This will support WCS DMPs in addition to ICC profiles. It will not support WCS CAMP or GMMP profiles and will return an error if such profiles are used with this API.
Per-user/LUA support

This will retrieve the color profile registered for the given standard color space for current user. If there is no such setting for the current user, it retrieves the system wide setting.

This uses WcsGetDefaultColorProfile with WCS_PROFILE_MANAGEMENT_SCOPE_CURRENT_USER.

This is executable in LUA context.

174.4.8 InstallColorProfile(file as folderitem) as boolean

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The InstallColorProfile function installs a given profile for use on a specified machine.

**Notes:**
The profile is also copied to the COLOR directory.
Returns true on success and false on failure.

174.4.9 RegisterCMM(cmmID as Integer, file as folderitem) as boolean

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
RegisterCMM associates a specified identification value with the specified color management module dynamic link library (CMM DLL).

**Notes:**
When this ID appears in a color profile, Windows can then locate the corresponding CMM so as to create a transform.

cmmID: Specifies the ID signature of the CMM registered with the International Color Consortium (ICC).
file: Points to the CMM DLL.

Returns true on success and false on failure.
174.4. SelectCMM(cmmID as Integer) as boolean

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** SelectCMM allows an application to select the preferred color management module (CMM) to use. **Notes:**
cmmID: Specifies the signature of the desired CMM as registered with the International Color Consortium (ICC).

Windows 2000 only: Setting this parameter to 0 causes the WCS system to select the default CMM.

Returns true on success and false on failure.

174.4.11 SetStandardColorSpaceProfile(ProfileID as Integer, ProfileName as folderitem) as boolean

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The SetStandardColorSpaceProfile function registers a specified profile for a given standard color space. **Notes:**
The profile can be queried using GetStandardColorSpaceProfile.

ProfileID: Specifies the ID value of the standard color space that the given profile represents.
ProfileName: path to the profile file.

Returns true on success and false on failure.

The profile must already be installed on the system before it can be registered for a standard color space.

This function supports Windows Color System (WCS) device model profiles (DMPs) in addition to International Color Consortium (ICC) profiles. It does not support WCS CAMP or GMMP profiles and will return an error if such profiles are used.

Per-user/LUA support

This will register a specified profile for a given standard color space only for current user.

This uses SetDefaultColorProfile with WCS_PROFILE_MANAGEMENT_SCOPE_CURRENT_USER.

This is executable in LUA context if the profile is already installed, fails otherwise with access denied since
install is system-wide and requires administrator privileges.

### 174.4.12 UninstallColorProfile(ProfileName as string, DeleteFile as boolean = true) as boolean

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** UninstallColorProfile removes a specified color profile from a specified computer. Associated files are optionally deleted from the system.  
**Notes:**  
ProfileName: Points to the file name of the profile to uninstall.  
DeleteFile: If set to true, the function deletes the profile from the COLOR directory. If set to false, this function has no effect.  

Returns true on success and false on failure.

### 174.4.13 UnregisterCMM(cmmID as Integer) as boolean

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The UnregisterCMM function dissociates a specified ID value from a given color management module dynamic-link library (CMM DLL).  
**Notes:**  
cmmID: Specifies the ID value identifying the CMM whose registration is to be removed. This is the signature of the CMM registered with the International Color Consortium (ICC).  

Returns true on success and false on failure.

### 174.4.14 Constants

### 174.4.15 CMM_DESCRIPTION = 5

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the info selectors for GetInfo.  
**Notes:** A text string that describes the color management module.
**174.4.16 CMM_DLL_VERSION = 3**

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the info selectors for GetInfo.  
**Notes:** Version number of the CMM DLL.

**174.4.17 CMM_DRIVER_VERSION = 2**

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the info selectors for GetInfo.

**174.4.18 CMM_IDENT = 1**

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the info selectors for GetInfo.  
**Notes:** The CMM identification signature registered with the International Color Consortium (ICC).

**174.4.19 CMM_LOGOICON = 6**

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the info selectors for GetInfo.  
**Notes:** The logo icon for this CMM.

**174.4.20 CMM_VERSION = 4**

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the info selectors for GetInfo.  
**Notes:** Version of Windows supported.

**174.4.21 CMM_WIN_VERSION = 0**

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the info selectors for GetInfo.  
**Notes:** Backward compatibility with Windows 95.

**174.4.22 LCS_sRGB = & h73524742**

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the profile IDs for GetStandardColorSpaceProfile.  
**Example:**
CHAPTER 174. WINDOWS ICM

MsgBox WindowsICMModuleMBS.GetStandardColorSpaceProfile(WindowsICMModuleMBS.LCS_sRGB)

174.4.23 **LCS_WINDOWS_COLOR_SPACE = & h57696E20**

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the profile IDs for GetStandardColorSpaceProfile.  
**Example:**

MsgBox WindowsICMModuleMBS.GetStandardColorSpaceProfile(WindowsICMModuleMBS.LCS_WINDOWS_COLOR_SPACE)
174.5 $\text{class WindowsICMNamedProfileInfoMBS}$

174.5.1 $\text{class WindowsICMNamedProfileInfoMBS}$

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** This class is used to store information about a named color profile.

174.5.2 **Properties**

174.5.3 **Count as Integer**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Total number of named colors in the profile. **Notes:** (Read and Write property)

174.5.4 **CountDevCoordinates as Integer**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Total number of device coordinates for each named color. **Notes:** (Read and Write property)

174.5.5 **Flags as Integer**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Flags for this information record. **Notes:** Not currently used by the default CMM. (Read and Write property)

174.5.6 **Prefix as String**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A string containing the prefix for each color name. **Notes:** (Read and Write property)
174.5.7 Suffix as String

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A string containing the suffix for each color name. **Notes:** (Read and Write property)
174.6.  **CLASS WINDOWSICMPROFILEHEADERMBS**

### 174.6.1  class WindowsICMProfileHeaderMBS

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
This class contains information that describes the contents of a device profile file.
**Notes:** This header occurs at the beginning of a device profile file.

### 174.6.2  Properties

#### 174.6.3  Attributes0 as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Attributes of profile.
**Notes:** (Read and Write property)

#### 174.6.4  Attributes1 as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Attributes of profile.
**Notes:** (Read and Write property)

#### 174.6.5  Classs as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Indicates the profile class.
**Example:**
```vbscript
// some profile file
dim file as FolderItem = SpecialFolder.Desktop.Child(“test.icc”)  
  // open profile read only
  dim w as WindowsICMProfileMBS = WindowsICMProfileMBS.OpenProfileFile(file, WindowsICMProfileMBS.PROFILE_READ, WindowsICMProfileMBS.FILE_SHARE_READ, WindowsICMProfileMBS.OPEN_EXISTING)  
  // get headers
  dim h as WindowsICMProfileHeaderMBS = w.ColorProfileHeader  
  // show color space name
  Select case h.Classs
    case WindowsICMProfileHeaderMBS.CLASS.MONITOR
```

**Example:**
```vbscript
// some profile file
dim file as FolderItem = SpecialFolder.Desktop.Child(“test.icc”)  
  // open profile read only
  dim w as WindowsICMProfileMBS = WindowsICMProfileMBS.OpenProfileFile(file, WindowsICMProfileMBS.PROFILE_READ, WindowsICMProfileMBS.FILE_SHARE_READ, WindowsICMProfileMBS.OPEN_EXISTING)  
  // get headers
  dim h as WindowsICMProfileHeaderMBS = w.ColorProfileHeader  
  // show color space name
  Select case h.Classs  
    case WindowsICMProfileHeaderMBS.CLASS.MONITOR
```
CHAPTER 174. WINDOWS ICM

```vbnet
msgbox "Monitor"
case WindowsICMProfileHeaderMBS.CLASS_PRINTER
msgbox "Printer"
case WindowsICMProfileHeaderMBS.CLASS_SCANNER
msgbox "Scanner"
case WindowsICMProfileHeaderMBS.CLASS_LINK
msgbox "Link"
case WindowsICMProfileHeaderMBS.CLASS_ABSTRACT
msgbox "Abstract"
case WindowsICMProfileHeaderMBS.CLASS_COLORSPACE
msgbox "Colorspace"
case WindowsICMProfileHeaderMBS.CLASS.Named
msgbox "Named"
case WindowsICMProfileHeaderMBS.CLASS_CAMP
msgbox "Camp"
case WindowsICMProfileHeaderMBS.CLASS_GMMP
msgbox "GMMP"
else
msgbox "Unknown: " +hex(h.Classs)
end Select
```

**Notes:**

For a description of profile classes, see Using Device Profiles with WCS:

A profile class may have any of the values from the CLASS_* constants.

Class is written with three s here as Class is a reserved word in Real Studio.
(Read and Write property)

174.6.6 CMMType as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The identification number of the CMM that is used in the profile.

**Notes:**

Identification numbers are registered with the ICC.
(Read and Write property)
174.6. CLASS WINDOWSICMPROFILEHEADERMBS

174.6.7 ConnectionSpace as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A signature value that indicates the color space in which the profile connection space (PCS) is defined. **Notes:** The member can be any of the following values: SPACE_XYZ or SPACE_Lab. (Read and Write property)

174.6.8 Creator as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Signature of the software that created the profile. **Example:**
```vba
dim file as FolderItem = SpecialFolder.Desktop.Child("test.icc")
dim w as WindowsICMProfileMBS = WindowsICMProfileMBS.OpenProfileFile(file, WindowsICMProfileMBS.PROFILE_READ, WindowsICMProfileMBS.FILE_SHARE_READ, WindowsICMProfileMBS.OPEN_EXISTING)
dim h as WindowsICMProfileHeaderMBS = w.ColorProfileHeader
MsgBox hex(h.Creator)
```
**Notes:** Signatures are registered with the ICC. (Read and Write property)

174.6.9 DataColorSpace as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A signature value that indicates the color space in which the profile data is defined. **Example:**
```vba
function Name() as string
    dim w as WindowsICMProfileMBS // your profile
    dim h as WindowsICMProfileHeaderMBS = w.ColorProfileHeader
    if h=nil then Return ":?"
    Select case h.DataColorSpace
        case WindowsICMProfileHeaderMBS.SPACE_XYZ
            Return "XYZ"
        case WindowsICMProfileHeaderMBS.SPACE_Lab
            Return "Lab"
    End Select
End function
```
case WindowsICMProfileHeaderMBS.SPACE_Luv
    Return "Luv"
case WindowsICMProfileHeaderMBS.SPACE_YCbCr
    Return "YCbCr"
case WindowsICMProfileHeaderMBS.SPACE_Yxy
    Return "Yxy"
case WindowsICMProfileHeaderMBS.SPACE_RGB
    Return "RGB"
case WindowsICMProfileHeaderMBS.SPACE_GRAY
    Return "GRAY"
case WindowsICMProfileHeaderMBS.SPACE_HSV
    Return "HSV"
case WindowsICMProfileHeaderMBS.SPACE_HLS
    Return "HLS"
case WindowsICMProfileHeaderMBS.SPACE_CMYK
    Return "CMYK"
case WindowsICMProfileHeaderMBS.SPACE_CMY
    Return "CMY"
case WindowsICMProfileHeaderMBS.SPACE_2_CHANNEL
    Return "2 Channel"
case WindowsICMProfileHeaderMBS.SPACE_3_CHANNEL
    Return "2 Channel"
case WindowsICMProfileHeaderMBS.SPACE_4_CHANNEL
    Return "2 Channel"
case WindowsICMProfileHeaderMBS.SPACE_5_CHANNEL
    Return "2 Channel"
case WindowsICMProfileHeaderMBS.SPACE_6_CHANNEL
    Return "2 Channel"
case WindowsICMProfileHeaderMBS.SPACE_7_CHANNEL
    Return "2 Channel"
case WindowsICMProfileHeaderMBS.SPACE_8_CHANNEL
    Return "2 Channel"
else
    Return "Unknown: " + hex(h.DataColorSpace)
end Select
end function

Notes:
The member can be any of value from the SPACE_.* Constants.
(Read and Write property)
174.6. CLASS WINDOWSICMPROFILEHEADERMBS

174.6.10  **DateTime0 as Integer**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The data and time that the profile was created.
**Notes:** (Read and Write property)

174.6.11  **DateTime1 as Integer**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The data and time that the profile was created.
**Notes:** (Read and Write property)

174.6.12  **DateTime2 as Integer**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The data and time that the profile was created.
**Notes:** (Read and Write property)

174.6.13  **IlluminantX as Integer**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
X value of the Profile illuminant.
**Notes:** (Read and Write property)

174.6.14  **IlluminantY as Integer**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Y value of the Profile illuminant.
**Notes:** (Read and Write property)

174.6.15  **IlluminantZ as Integer**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Z value of the Profile illuminant.
**Notes:** (Read and Write property)
174.6.16 Manufacturer as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The identification number of the device profile manufacturer.

**Notes:**
All manufacturer identification numbers are registered with the ICC. (Read and Write property)

174.6.17 Model as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The device manufacturer’s device model number.

**Notes:**
All model identification numbers are registered with the ICC. (Read and Write property)

174.6.18 Platform as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The primary platform for which the profile was created.

**Example:**
```vba
dim file as FolderItem = SpecialFolder.Desktop.Child("test.icc")
dim w as WindowsICMProfileMBS = WindowsICMProfileMBS.OpenProfileFile(file, WindowsICMProfileMBS.PROFILE_READ, WindowsICMProfileMBS.FILE_SHARE_READ, WindowsICMProfileMBS.OPEN_EXISTING)
dim h as WindowsICMProfileHeaderMBS = w.ColorProfileHeader
MsgBox DecodingFromHexMBS(hex(h.Platform)) // shows platform, e.g. ”APPL”
```

**Notes:**
The primary platform can be set to any of the following values.

<table>
<thead>
<tr>
<th>Platform</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple Computer, Inc.</td>
<td>'APPL'</td>
</tr>
<tr>
<td>Microsoft Corp.</td>
<td>'MSFT'</td>
</tr>
<tr>
<td>Silicon Graphics, Inc.</td>
<td>'SGI'</td>
</tr>
<tr>
<td>Sun Microsystems, Inc.</td>
<td>'SUNW'</td>
</tr>
<tr>
<td>Taligent</td>
<td>'TGNT'</td>
</tr>
</tbody>
</table>
174.6.19  **ProfileFlags as Integer**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Bit flags containing hints that the CMM uses to interpret the profile data.  
**Notes:**  
The member can be set to the following values.

<table>
<thead>
<tr>
<th>Constant</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLAG_EMBEDDEDPROFILE</td>
<td>The profile is embedded in a bitmap file.</td>
</tr>
<tr>
<td>FLAG_DEPENDENTONDATA</td>
<td>The profile can’t be used independently of the embedded color data. Used for profiles that are embedded in bitmap files.</td>
</tr>
</tbody>
</table>

(Read and Write property)

174.6.20  **RenderingIntent as Integer**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The profile rendering intent.  
**Notes:**  
The member can be set to one of the following values:

INTENT_PERCEPTUAL
INTENT_SATURATION
INTENT_RELATIVE
COLORIMETRIC
INTENT.Absolute_COLORIMETRIC

For more information, see Rendering Intents.  
(Read and Write property)

174.6.21  **Signature as Integer**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Reserved for internal use.  
**Notes:** (Read and Write property)
**174.6.22 Version as Integer**

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The version number of the profile.  
**Notes:**  
The version number is determined by the ICC. The current major version number is & h02. The current minor version number is & h10. The major and minor version numbers are in binary coded decimal (BCD). They must be stored in the following format.

<table>
<thead>
<tr>
<th>Byte Number</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Major version number in BCD.</td>
</tr>
<tr>
<td>1</td>
<td>Minor version number in the most significant nibble of this byte. Bug fix version number in the least significant nibble.</td>
</tr>
<tr>
<td>2</td>
<td>Reserved. Must be set to 0.</td>
</tr>
<tr>
<td>3</td>
<td>Reserved. Must be set to 0.</td>
</tr>
</tbody>
</table>

(Read and Write property)

**174.6.23 Constants**

**174.6.24 ATTRIB_MATTE = 2**

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the attribute constants.  
**Notes:** Turns matte display on. If this flag is not used, the attribute is glossy by default.

**174.6.25 ATTRIB_TRANSPARENCY = 1**

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the attribute constants.  
**Notes:** Turns transparency on. If this flag is not used, the attribute is reflective by default.

**174.6.26 CLASS_ABSTRACT = & h61627374**

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the profile class constants.  
**Notes:** Abstract Profile
174.6.27  CLASS_CAMP = & h6C616D70

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the profile class constants.  
**Notes:** Color Appearance Model Profile

174.6.28  CLASS_COLORSPACE = & h73706163

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the profile class constants.  
**Notes:** Color Space Conversion Profile

174.6.29  CLASS_GMMP = & h676D6D70

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the profile class constants.  
**Notes:** Color Gamut Map Model Profile

174.6.30  CLASS_LINK = & h6C696E6B

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the profile class constants.  
**Notes:** Device Link Profile

174.6.31  CLASS_MONITOR = & h6D6E7472

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the profile class constants.  
**Notes:** Display Device Profile

174.6.32  CLASS_NAMED = & h6E6D636C

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the profile class constants.  
**Notes:** Named Color Profile

174.6.33  CLASS_PRINTER = & h70727472

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the profile class constants.  
**Notes:** Output Device Profile
174.6.34  **CLASS.Scanner** = & h73636E72

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the profile class constants.  
**Notes:** Input Device Profile

174.6.35  **FLAG.DependentOnData** = 2

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the profile flags.  
**Notes:** The profile can’t be used independently of the embedded color data. Used for profiles that are embedded in bitmap files.

174.6.36  **FLAG.EmbeddedProfile** = 1

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the profile flags.  
**Notes:** The profile is embedded in a bitmap file.

174.6.37  **FLAG.Enable.Chromatic.Adaptation** = & h02000000

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the profile flags.

174.6.38  **SPACE.2.Channel** = & h32434C52

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the color space constants.  
**Notes:** Generic 2 channel

174.6.39  **SPACE.3.Channel** = & h33434C52

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the color space constants.  
**Notes:** Generic 3 channel

174.6.40  **SPACE.4.Channel** = & h34434C52

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the color space constants.  
**Notes:** Generic 4 channel
<p>| | | | | | | | | |</p>
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</tr>
</thead>
<tbody>
<tr>
<td>174.6.41</td>
<td><strong>SPACE_5_CHANNEL</strong> = &amp; h35434C52</td>
<td>MBS Win Plugin, Plugin Version: 11.1. <strong>Function:</strong> One of the color space constants. <strong>Notes:</strong> Generic 5 channel</td>
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<tr>
<td>174.6.42</td>
<td><strong>SPACE_6_CHANNEL</strong> = &amp; h36434C52</td>
<td>MBS Win Plugin, Plugin Version: 11.1. <strong>Function:</strong> One of the color space constants. <strong>Notes:</strong> Generic 6 channel</td>
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</tr>
<tr>
<td>174.6.43</td>
<td><strong>SPACE_7_CHANNEL</strong> = &amp; h37434C52</td>
<td>MBS Win Plugin, Plugin Version: 11.1. <strong>Function:</strong> One of the color space constants. <strong>Notes:</strong> Generic 7 channel</td>
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</tr>
<tr>
<td>174.6.44</td>
<td><strong>SPACE_8_CHANNEL</strong> = &amp; h38434C52</td>
<td>MBS Win Plugin, Plugin Version: 11.1. <strong>Function:</strong> One of the color space constants. <strong>Notes:</strong> Generic 8 channel</td>
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</tr>
<tr>
<td>174.6.45</td>
<td><strong>SPACE_CMY</strong> = &amp; h434D5920</td>
<td>MBS Win Plugin, Plugin Version: 11.1. <strong>Function:</strong> One of the color space constants. <strong>Notes:</strong> CMY</td>
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<tr>
<td>174.6.46</td>
<td><strong>SPACE_CMYK</strong> = &amp; h434D594B</td>
<td>MBS Win Plugin, Plugin Version: 11.1. <strong>Function:</strong> One of the color space constants. <strong>Notes:</strong> CMYK</td>
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</tr>
<tr>
<td>174.6.47</td>
<td><strong>SPACE_GRAY</strong> = &amp; h47524159</td>
<td>MBS Win Plugin, Plugin Version: 11.1. <strong>Function:</strong> One of the color space constants. <strong>Notes:</strong> Gray scale</td>
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</tr>
</tbody>
</table>
174.6.48 SPACE_HLS = & h484C5320

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the color space constants.
**Notes:** HLS

174.6.49 SPACE_HSV = & h48535620

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the color space constants.
**Notes:** HSV

174.6.50 SPACE_Lab = & h4C616220

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the color space constants.
**Notes:** Lab

174.6.51 SPACE_Luv = & h4C757620

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the color space constants.
**Notes:** Luv

174.6.52 SPACE_RGB = & h52474220

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the color space constants.
**Notes:** RGB

174.6.53 SPACE_XYZ = & h58595A20

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the color space constants.
**Notes:** XYZ

174.6.54 SPACE_YCbCr = & h59436272

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the color space constants.
**Notes:** YCbCr
MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the color space constants.  
**Notes:** Yxy
174.7 class WindowsICMProfileMBS

174.7.1 class WindowsICMProfileMBS

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The class for a color profile.

174.7.2 Methods

174.7.3 ConvertColorNameToIndex(name as string) as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The CMConvertColorNameToIndex function converts color names in a named color space to index numbers in a color profile.
**Notes:**
name: The name of the color.
Returns the color index.

This function is required in the default CMM. It is optional for all other CMMs.

174.7.4 ConvertIndexToColorName(index as Integer) as string

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The ConvertIndexToColorName transforms indices in a color space to an array of names in a named color space.
**Notes:** This function is required in the default CMM. It is optional for all other CMMs.

174.7.5 CountColorProfileElements as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The GetCountColorProfileElements function retrieves the number of tagged elements in a given color profile.
**Example:**
```vba
dim file as FolderItem = SpecialFolder.Desktop.Child("test.icc")
dim w as WindowsICMProfileMBS = WindowsICMProfileMBS.OpenProfileFile(file, WindowsICMProfileMBS.PROFILE_READ, WindowsICMProfileMBS.FILE_SHARE_READ, WindowsICMProfileMBS.OPEN_EXISTING)
MsgBox "CountColorProfileElements: " + str(w.CountColorProfileElements)
```
174.7. CLASS WINDOWSICMPROFILEMBS

Returns number of tagged elements in the profile or 0 on any error.
This function will fail if hProfile is not a valid ICC profile.
This function does not support Windows Color System (WCS) profiles CAMP, DMP, and GMMP.

174.7.6 CreateIccProfile(options as Integer = 0) as WindowsICMProfileMBS

MBS Win Plugin, Plugin Version: 14.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Converts a WCS profile into an International Color Consortium (ICC) profile.
**Notes:**
Options: A flag value that specifies the profile conversion options. By default, the original WCS profiles used for the conversion are embedded in the output ICC profile in a Microsoft private tag, ProfilesTag (with signature "MS000". This produces an ICC profile that is compatible with ICC software, yet retains the original WCS profile data available to code designed to parse it. The possible values of this parameter are as follows. Any bits not defined in this list are reserved and should be set to zero:

- **WCS_DEFAULT** specifies that the new ICC profile contains the original WCS profile in a private ProfilesTag.
- **WCS_ICCONLY** specifies that the new ICC profile does not contain either the ProfilesTag or the original WCS profile.

Returns new profile object.

see also

174.7.7 GetColorProfileElement(tag as Integer) as string

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The GetColorProfileElement function copies data from a specified tagged profile element of a specified color profile into a buffer.
**Example:**
```
Dim file As FolderItem = SpecialFolder.Desktop.Child("sRGB Profile.icc")
Dim w As WindowsICMProfileMBS = WindowsICMProfileMBS.OpenProfileFile(file, WindowsICMProfileMBS.PROFILE_READ, WindowsICMProfileMBS.FILE_SHARE_READ, WindowsICMProfileMBS.OPEN_EXISTING)
MsgBox w.GetColorProfileElement(&h64657363) ' that's the code for desc, the description
```
CHAPTER 174. WINDOWS ICM

Notes:
tag: Identifies the tagged element from which to copy.

This function will fail if Profile is not a valid International Color Consortium (ICC) profile.

This function does not support Windows Color System (WCS) profiles CAMP, DMP, and GMMP; because profile elements are implicitly associated with, and hard coded to, ICC tag types and there exist many robust XML parsing libraries.

174.7.8 GetColorProfileElementTag(index as Integer) as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The GetColorProfileElementTag function retrieves the tag name specified by dwIndex in the tag table of a given International Color Consortium (ICC) color profile, where Index is a one-based index into that table.

Example:

dim file as FolderItem = SpecialFolder.Desktop.Child("test.icc")
dim w as WindowsICMProfileMBS = WindowsICMProfileMBS.OpenProfileFile(file, WindowsICMProfileMBS.PROFILE_READ, WindowsICMProfileMBS.FILE_SHARE_READ, WindowsICMProfileMBS.OPEN_EXISTING)
dim list(-1) as string
dim c as Integer = w.CountColorProfileElements - 1

for i as Integer = 0 to c
    list.Append DecodingFromHexMBS(hex(w.GetColorProfileElementTag(i)))
next

MsgBox ",Tags: " + Join(list, ", ", )

Notes:
Index: Specifies the one-based index of the tag to retrieve.

This function will fail if Profile is not a valid ICC profile.

GetColorProfileElementTag can be used to enumerate all tags in a profile after getting the number of tags in the profile using GetCountColorProfileElements.

This function does not support Windows Color System (WCS) profiles CAMP, DMP, and GMMP; because profile elements are implicitly associated with, and hard coded to, ICC tag types and there exist many robust
174.7.9 GetNamedProfileInfo as WindowsICMNamedProfileInfoMBS

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The GetNamedProfileInfo function retrieves information about the International Color Consortium (ICC)
named color profile that is specified in the first parameter.

**Notes:**
This function will fail if hProfile is not a valid ICC profile.
This function does not support Windows Color System (WCS) profiles CAMP, DMP, and GMMP; because
named profiles are explicit ICC profile types.
Returns nil on any error.

174.7.10 GetProfileData as string

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
Given a handle to an open color profile, the GetColorProfileFromHandle function will copy the contents of
the profile into a buffer supplied by the application.

**Notes:**
If the handle is a Windows Color System (WCS) handle, then the DMP is returned and the CAMP and
GMMP associated with the HPROFILE are ignored.

Returns the data or an empty string on any error.

174.7.11 IsColorProfileTagPresent(tag as Integer) as boolean

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The IsColorProfileTagPresent function reports whether a specified International Color Consortium (ICC)
tag is present in the specified color profile.

**Notes:**
tag: Specifies the ICC tag to check.

Returns true if the tag is valid and false if not.

This function will fail if Profile is not a valid ICC profile.

This function does not support Windows Color System (WCS) profiles CAMP, DMP, and GMMP; because
profile elements are implicitly associated with and hard coded to ICC tag types and there exist many robust
174.7.12 IsValid as boolean

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The IsValid function reports whether the given profile is a valid ICC profile that can be used for color management.

**Example:**
```vba
    dim file as FolderItem = SpecialFolder.Desktop.Child("test.icc")
    dim w as WindowsICMProfileMBS = WindowsICMProfileMBS.OpenProfileFile(file, WindowsICMProfileMBS.PROFILE_READ, WindowsICMProfileMBS.FILE_SHARE_READ, WindowsICMProfileMBS.OPEN_EXISTING)

    MsgBox "Valid: " + str(w.IsValid)
```

**Notes:**

Returns true if the profile is valid.

Only the Windows default CMM is required to export this function; it is optional for all other CMMs.

If a CMM does not support this function, Windows uses the default CMM to validate the profile.

174.7.13 OpenProfileData(data as string, DesiredAccess as Integer) as WindowsICMProfileMBS

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The OpenColorProfile function opens or create a color profile.

**Notes:**

- file: The file where to load profile from.
- DesiredAccess: Specifies how to access the given profile. This parameter must take one the following constant values.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROFILE_READ</td>
<td>Opens the profile for read access.</td>
</tr>
<tr>
<td>PROFILE_READWRITE</td>
<td>Opens the profile for both read and write access. Has no effect for WCS XML profiles.</td>
</tr>
</tbody>
</table>

Returns the profile on success and nil on error.
For ICC and WCS profiles, a CAMP and GMMP are provided by the function based on the current default CAMP and GMMP in the registry.

When OpenColorProfile encounters an ICC profile with an embedded WCS profile, and if the dwType member within the Profile structure does not take the value DONT_USE_EMBEDDED_WCS_PROFILES, it should extract and use the WCS profile(s) contained in this WcsProfilesTag. The HPROFILE returned would be a WCS HPROFILE.

When the function opens the ICC profile, it will look for a WcsProfilesTag and, if there is one, it will extract and use the original WCS profiles contained therein. (See WcsCreateIccProfile.)

An profile with WCS profile information is derived from a DMP by acquiring the default CAMP and default GMMP from the registry. An HPROFILE is a composition of a DMP, CAMP and GMMP.

174.7.14 OpenProfileFile(file as folderitem, DesiredAccess as Integer, ShareMode as Integer, CreationMode as Integer) as WindowsICMProfileMBS

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The OpenColorProfile function opens or create a color profile.

**Notes:**

file: The file where to load profile from.
DesiredAccess: Specifies how to access the given profile. This parameter must take one the following constant values.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROFILE_READ</td>
<td>Opens the profile for read access.</td>
</tr>
<tr>
<td>PROFILE_READWRITE</td>
<td>Opens the profile for both read and write access. Has no effect for WCS XML profiles.</td>
</tr>
</tbody>
</table>

ShareMode: Specifies how the profile should be shared, if the profile is contained in a file. A value of zero prevents the profile from being shared at all. The parameter can contain one or both of the following constants (combined by addition or logical OR).

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>FILE_SHARE_READ</td>
<td>Other open operations can be performed on the profile for read access.</td>
</tr>
<tr>
<td>FILE_SHARE_WRITE</td>
<td>Other open operations can be performed on the profile for write access. Has no effect for WCS XML profiles.</td>
</tr>
</tbody>
</table>

CreationMode: Specifies which actions to take on the profile while opening it, if it is contained in a file. This parameter must take one of the following constant values.
### CHAPTER 174. WINDOWS ICM

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>CREATE_NEW</td>
<td>Creates a new profile. Fails if the profile already exists.</td>
</tr>
<tr>
<td>CREATE_ALWAYS</td>
<td>Creates a new profile. Overwrites the profile if it exists.</td>
</tr>
<tr>
<td>OPENEXISTING</td>
<td>Opens the profile. Fails if it does not exist.</td>
</tr>
<tr>
<td>OPEN_ALWAYS</td>
<td>Opens the profile if it exists. For ICC profiles, if the profile does not exist, creates the profile. For WCS XML profiles, if the profile does not exist, returns an error.</td>
</tr>
<tr>
<td>TRUNCATE_EXISTING</td>
<td>Opens the profile, and truncates it to zero bytes, returning a blank ICC profile. Fails if the profile doesn’t exist.</td>
</tr>
</tbody>
</table>

Returns the profile on success and nil on error.

For ICC and WCS profiles, a CAMP and GMMP are provided by the function based on the current default CAMP and GMMP in the registry.

When OpenColorProfile encounters an ICC profile with an embedded WCS profile, and if the dwType member within the Profile structure does not take the value DONT_USE_EMBEDDED_WCS_PROFILES, it should extract and use the WCS profile(s) contained in this WcsProfilesTag. The HPROFILE returned would be a WCS HPROFILE.

CreationMode flags CREATE_NEW, CREATE_ALWAYS, and TRUNCATE_EXISTING, will always return blank ICC HPROFILEs. If other CreationMode flags are present, InternalOpenColorProfile is called (using the flags as provided by the API) to determine whether the profile is ICC or WCS XML.

Within the ICC code path, an ICC Profile is returned using the requested sharing, access and creation flags as specified in the tables above.

Within the WCS path, the CreationMode flag OPEN_ALWAYS will fail if the profile doesn’t exist, since WCS profiles cannot be created or edited within the WCS architecture (they must be edited outside of it, using MSXML6). For the same reason, dwShareMode flag FILE_SHARE_WRITE, and dwDesiredAccess flag PROFILE_READWRITE are ignored within the WCS path.

When the function opens the ICC profile, it will look for a WcsProfilesTag and, if there is one, it will extract and use the original WCS profiles contained therein. (See WcsCreateIccProfile.)

An profile with WCS profile information is derived from a DMP by acquiring the default CAMP and default GMMP from the registry. An HPROFILE is a composition of a DMP, CAMP and GMMP.
174.7. CLASS WINDOWSICMPROFILEMBS

174.7.15 OpenProfilePath(path as string, DesiredAccess as Integer, ShareMode as Integer, CreationMode as Integer) as WindowsICMProfileMBS

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The OpenColorProfile function opens or create a color profile.

**Notes:**
file: The file where to load profile from.
DesiredAccess: Specifies how to access the given profile. This parameter must take one the following constant values.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROFILE_READ</td>
<td>Opens the profile for read access.</td>
</tr>
<tr>
<td>PROFILE_READWRITE</td>
<td>Opens the profile for both read and write access. Has no effect for WCS XML profiles.</td>
</tr>
</tbody>
</table>

ShareMode: Specifies how the profile should be shared, if the profile is contained in a file. A value of zero prevents the profile from being shared at all. The parameter can contain one or both of the following constants (combined by addition or logical OR).

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>FILE_SHARE_READ</td>
<td>Other open operations can be performed on the profile for read access.</td>
</tr>
<tr>
<td>FILE_SHARE_WRITE</td>
<td>Other open operations can be performed on the profile for write access.</td>
</tr>
<tr>
<td></td>
<td>Has no effect for WCS XML profiles.</td>
</tr>
</tbody>
</table>

CreationMode: Specifies which actions to take on the profile while opening it, if it is contained in a file. This parameter must take one of the following constant values.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
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<tbody>
<tr>
<td>CREATE_NEW</td>
<td>Creates a new profile. Fails if the profile already exists.</td>
</tr>
<tr>
<td>CREATE_ALWAYS</td>
<td>Creates a new profile. Overwrites the profile if it exists.</td>
</tr>
<tr>
<td>OPEN_EXISTING</td>
<td>Opens the profile. Fails if it does not exist</td>
</tr>
<tr>
<td>OPEN_ALWAYS</td>
<td>Opens the profile if it exists. For ICC profiles, if the profile does not exist, creates the profile. For WCS XML profiles, if the profile does not exist, returns an error.</td>
</tr>
<tr>
<td>TRUNCATE_EXISTING</td>
<td>Opens the profile, and truncates it to zero bytes, returning a blank ICC profile. Fails if the profile doesn’t exist.</td>
</tr>
</tbody>
</table>

Returns the profile on success and nil on error.

For ICC and WCS profiles, a CAMP and GMMP are provided by the function based on the current default CAMP and GMMP in the registry.
CHAPTER 174. WINDOWS ICM

When OpenColorProfile encounters an ICC profile with an embedded WCS profile, and if the dwType member within the Profile structure does not take the value DONT_USE_EMBEDDED_WCS_PROFILES, it should extract and use the WCS profile(s) contained in this WcsProfilesTag. The HPROFILE returned would be a WCS HPROFILE.

CreationMode flags CREATE_NEW, CREATE_ALWAYS, and TRUNCATE_EXISTING, will always return blank ICC HPROFILES. If other CreationMode flags are present, InternalOpenColorProfile is called (using the flags as provided by the API) to determine whether the profile is ICC or WCS XML.

Within the ICC code path, an ICC Profile is returned using the requested sharing, access and creation flags as specified in the tables above.

Within the WCS path, the CreationMode flag OPEN_ALWAYS will fail if the profile doesn’t exist, since WCS profiles cannot be created or edited within the WCS architecture (they must be edited outside of it, using MSXML6). For the same reason, dwShareMode flag FILE_SHARE_WRITE, and dwDesiredAccess flag PROFILE_READWRITE are ignored within the WCS path.

When the function opens the ICC profile, it will look for a WcsProfilesTag and, if there is one, it will extract and use the original WCS profiles contained therein. (See WcsCreateIccProfile.)

An profile with WCS profile information is derived from a DMP by acquiring the default CAMP and default GMMP from the registry. An HPROFILE is a composition of a DMP, CAMP and GMMP.

174.7.16 SetColorProfileHeader(header as WindowsICMProfileHeaderMBS) as boolean

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The SetColorProfileHeader function sets the header data in a specified ICC color profile. **Notes:**

Header: the profile header data to write to the specified profile.

Returns true on success.

This function will fail if Profile is not a valid ICC profile.

If the color profile was not opened with read/write permission, SetColorProfileHeader fails.

SetColorProfileHeader overwrites the current header in the ICC profile.
This function does not support Windows Color System (WCS) profiles CAMP, DMP, and GMMP; because profile elements are implicitly associated with and hard coded to ICC tag types and there exist many robust XML parsing libraries.

### 174.7.17 Properties

#### 174.7.18 ColorProfileHeader as WindowsICMPProfileHeaderMBS

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The GetColorProfileHeader function retrieves or derives ICC header structure from either ICC color profile or WCS XML profile. **Notes:** Drivers and applications should assume returning TRUE only indicates that a properly structured header is returned. Each tag will still need to be validated independently using either legacy ICM2 APIs or XML schema APIs.

To determine whether the header is derived from an ICC or DMP profile handle, check the header signature (header bytes 36-39). If the signature is "acsp" (big endian) then an ICC profile was used. If the signature is "cdmp" (big-endian) then a DMP was used.

The distinguishing features that identify a header as having been "synthesized" for a WCS DMP are:

- `WindowsICMPProfileHeaderMBS.Signature = 'pmdc'` (little endian = big endian 'cdmp')
- `WindowsICMPProfileHeaderMBS.CMMType = '1scw'` (little endian = big endian 'wes1')

(Read only property)

#### 174.7.19 Handle as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The internal reference to the object. **Notes:** Value is a HPROFILE. (Read and Write property)
174.7.20 Constants

174.7.21 CREATE_ALWAYS = 2

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the creation mode constants. **Notes:** Creates a new profile. Overwrites the profile if it exists.

174.7.22 CREATE_NEW = 1

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the creation mode constants. **Notes:** Creates a new profile. Fails if the profile already exists.

174.7.23 FILE_SHARE_READ = 1

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the profile sharing flags. **Notes:** Other open operations can be performed on the profile for read access.

174.7.24 FILE_SHARE_WRITE = 2

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the profile sharing flags. **Notes:** Other open operations can be performed on the profile for write access. Has no effect for WCS XML profiles.

174.7.25 OPEN_ALWAYS = 4

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the creation mode constants. **Notes:** Opens the profile if it exists. For ICC profiles, if the profile does not exist, creates the profile. For WCS XML profiles, if the profile does not exist, returns an error.

174.7.26 OPEN_EXISTING = 3

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the creation mode constants. **Notes:** Opens the profile. Fails if it does not exist.
174.7.27PROFILE_READ = 1

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the profile access flags. **Notes:** Opens the profile for read access.

174.7.28PROFILE_READWRITE = 2

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the profile access flags. **Notes:** Opens the profile for both read and write access. Has no effect for WCS XML profiles.

174.7.29TRUNCATE_EXISTING = 5

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the creation mode constants. **Notes:** Opens the profile, and truncates it to zero bytes, returning a blank ICC profile. Fails if the profile doesn’t exist.

174.7.30WCS_DEFAULT = 0

MBS Win Plugin, Plugin Version: 14.1. **Function:** One of the flags for the CreateICCProfile. **Notes:** Specifies that the new ICC profile contains the original WCS profile in a private WcsProfilesTag.

174.7.31WCS_ICCONLY = & h00010000

MBS Win Plugin, Plugin Version: 14.1. **Function:** One of the flags for the CreateICCProfile. **Notes:** Specifies that the new ICC profile does not contain either the WcsProfilesTag or the original WCS profile.
174.8  class WindowsICMSetupMBS

174.8.1  class WindowsICMSetupMBS

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
This class is made to query color matching setup information from the user. **Notes:** This class contains information that the Setup function uses to initialize the ColorManagement dialog box. After the user closes the dialog box, Setup returns information about the user’s selection in this class.

174.8.2  Methods

174.8.3  Setup as boolean

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The Setup function creates a Color Management dialog box that lets the user choose whether to enable color management, and if so, provides control over the color profiles used and over the rendering intent. **Notes:** Returns true if the user clicked OK and false on any error or when dialog was cancelled.

174.8.4  Properties

174.8.5  DisplayName as String

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
A string naming the monitor to be used for color management. **Notes:**
If this is not the name of a valid monitor, the first enumerated monitor is used. (Read and Write property)

174.8.6  Flags as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
A set of bit flags used to initialize the dialog box. **Notes:**
If set to 0 on entry, all controls assume their default states.
When the dialog box returns, these flags are set to indicate the user’s input.

See CMS_* flag constants.
174.8.7  MonitorProfile as String

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A string in which to place the name of the user-selected monitor profile.

**Notes:**
If the CMS_SETMONITORPROFILE flag is used, this flag can also be used to select a profile other than the monitor default when the dialog is first displayed.

(Read and Write property)

174.8.8  Parent as Window

MBS Win Plugin, Plugin Version: 11.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The parent window.

**Notes:** (Read and Write property)

174.8.9  PrinterName as String

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A string naming the printer on which the image is to be rendered.

**Notes:**
If this is not a valid printer name, the default printer is used and named in the dialog.
(Read and Write property)

174.8.10  PrinterProfile as String

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A string in which to place the name of the user-selected printer profile.

**Notes:**
If the CMS_SETPRINTERPROFILE flag is used, this flag can also be used to select a profile other than the printer default when the dialog is first displayed.
(Read and Write property)
174.8.11 ProofingIntent as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The type of color management desired for the proofed image.

**Notes:**
Valid values are:

INTENT_PERCEPTUAL
INTENT_SATURATION
INTENT_RELATIVE_COLORIMETRIC
INTENT_ABSOLUTE_COLORIMETRIC

For more information, see Rendering Intents.
(Read and Write property)

174.8.12 RenderIntent as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The type of color management desired.

**Notes:**
Valid values are:

INTENT_PERCEPTUAL
INTENT_SATURATION
INTENT_RELATIVE_COLORIMETRIC
INTENT_ABSOLUTE_COLORIMETRIC

For more information, see Rendering Intents.
(Read and Write property)

174.8.13 SourceName as String

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** An application-specified string which describes the source profile of the item for which color management is to be performed.

**Notes:**
If this is "", the Image Source control displays the name of the Windows default color profile.
174.8.14 TargetProfile as String

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A string in which to place the name of the user-selected target profile for proofing. **Notes:** If the CMS_SETTARGETPROFILE flag is used, this flag can also be used to select a profile other than the printer default when the dialog is first displayed. (Read and Write property)

174.8.15 Events

174.8.16 Apply

MBS Win Plugin, Plugin Version: 11.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** This event is invoked when the Apply button of the Color Management dialog box is selected.

174.8.17 Idle

MBS Win Plugin, Plugin Version: 11.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** This event is called regularly if the CMS_USEHOOK flag is used.

174.8.18 Constants

174.8.19 CMS_DISABLEICM = 1

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the flag constants. **Notes:** If set on entry, this flag indicates that the "Enable Color Management" check box is cleared, disabling all other controls. If set on exit, it means that the user does not wish color management performed.

174.8.20 CMS_DISABLEINTENT = 1024

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the flag constants.
174.8.21 CMS_DISABLE_RENDERINTENT = 2048

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the flag constants.

174.8.22 CMS_ENABLE_PROOFING = 2

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the flag constants.  
**Notes:** If set on entry, this flag indicates that the Proofing controls are to be enabled, and the Proofing check box is checked. If set on exit, it means that the user wishes to perform color management for a different target device than the selected printer.

174.8.23 CMS_SET_MONITORPROFILE = 16

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the flag constants.  
**Notes:** If set on entry, this flag indicates that the color management profile named in the MonitorProfile member is to be the initial selection in the monitor profile control. If the specified profile is not associated with the monitor, this flag is ignored, and the default profile for the monitor is used.

174.8.24 CMS_SET_PRINTERPROFILE = 32

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the flag constants.  
**Notes:** If set on entry, this flag indicates that the color management profile named in the PrinterProfile member is to be the initial selection in the printer profile control. If the specified profile is not associated with the printer, this flag is ignored, and the default profile for the printer is used.

174.8.25 CMS_SET_PROOF_INTENT = 5

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the flag constants.  
**Notes:** Ignored unless CMS_ENABLE_PROOFING is also set. If set on entry, and CMS_ENABLE_PROOFING is also set, this flag indicates that the ProofingIntent member is to be used to initialize the Target Rendering Intent control. Otherwise, the control defaults to Picture rendering. This flag is set on exit if proofing is enabled.

174.8.26 CMS_SET_RENDER_INTENT = 4

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the flag constants.  
**Notes:** If set on entry, this flag indicates that the RenderIntent member contains the value to use to initialize
the Rendering Intent control. Otherwise, the control defaults to Picture rendering. This flag is set on exit if WCS is enabled.

174.8.27 CMS_SETTARGETPROFILE = 64

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the flag constants.  
**Notes:** If set on entry, this flag indicates that the color profile named in the TargetProfile member is to be the initial selection in the target profile control. If the specified profile is not installed, this flag is ignored, and the default profile for the printer is used. If the printer has no default profile, then the first profile in alphabetical order will be displayed.

174.8.28 CMS_USEAPPLYCALLBACK = 256

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the flag constants.  
**Notes:** If set on entry, this flag indicates that the SetupColorMatching function should call the Apply event.

174.8.29 CMS_USEDESCRIPTION = 512

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the flag constants.  
**Notes:** If set on entry, this flag instructs the Setup function to retrieve the profile description contained in the profile description tags (See ICC Profile Format Specification v3.4). It will insert them into the Monitor Profile, Printer Profile, Emulated Device Profile edit boxes in the Color Management common dialog box.

174.8.30 CMS_USEHOOK = 128

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the flag constants.  
**Notes:** The idle event is called regularly if this flag is set.

174.8.31 INTENT_ABSOLUTE_COLORIMETRIC = 3

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the rendering intent constants.  
**Notes:** Maintain the white point. Match the colors to their nearest color in the destination gamut.
174.8.32  INTENT_PERCEPTRUAL = 0

MBS Win Plugin, Plugin Version: 11.1. **Function**: One of the rendering intent constants.  
**Notes**: Maintain contrast. Used for photographs and natural images.

174.8.33  INTENT_RELATIVE_COLORIMETRIC = 1

MBS Win Plugin, Plugin Version: 11.1. **Function**: One of the rendering intent constants.  
**Notes**: Maintain colorimetric match. Used for graphic designs and named colors.

174.8.34  INTENT_SATURATION = 2

MBS Win Plugin, Plugin Version: 11.1. **Function**: One of the rendering intent constants.  
**Notes**: Maintain saturation. Used for business charts and other situations in which undithered colors are required.
174.9  class WindowsICMTransformMBS

174.9.1  class WindowsICMTransformMBS


174.9.2  Methods

174.9.3  CheckColors(InputColors() as WindowsICMColorMBS, ctInput as Integer, Results() as Integer) as boolean


Notes:

InputColors: an array of colors.
ctInput: Specifies the input color type.
Results: An array of nColors bytes that receives the results of the test.

If this function succeeds, the return value is TRUE.

If this function fails, the return value is FALSE. For extended error information, call GetLastError.

Remarks

If the input color type is not compatible with the color transform, CheckColors fails.

The function places results of the tests in the array pointed to by paResult. Each byte in the array corresponds to a COLOR element in the array pointed to by paInputColors and has an unsigned value between 0 and 255. The value 0 denotes that the color is in gamut, while a nonzero value denotes that it is out of gamut. For any integer n such that 0 < n < 255, a result value of n+1 indicates that the corresponding color is at least as far out of gamut as would be indicated by a result value of n.

The out-of-gamut information in the gamut tags created in WCS use the perceptual color distance in CIECAM02, which is the mean square root in CIECAM02 Jab space. The distance in the legacy ICC profile gamut tags is the mean square root in CIELAB space. We recommend that you use the CIECAM02 space when it is available because it provides more perceptually accurate distance metrics.
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174.9.4 Constructor(LogColorSpace as WindowsICMLogColorSpaceMBS, DestProfile as WindowsICMProfileMBS, TargetProfile as WindowsICMProfileMBS, Flags as Integer)

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The CreateColorTransform function creates a color transform that applications can use to perform color management.

**Notes:**

LogColorSpace: The input colorspace.

DestProfile: The profile of the destination device. The function determines whether the profile contains International Color Consortium (ICC) or Windows Color System (WCS) profile information.

TargetProfile: The profile of the target device. The function determines whether the profile contains ICC or WCS profile information.

Flags: Specifies flags to used control creation of the transform. See Remarks.

On success the handle property is not zero.

If the target profile is nil, the transform goes from the source logical color space to the destination profile.
If the target profile is given, the transform goes from the source logical color space to the target profile and then to the destination profile. This allows previewing output meant for the target device on the destination device.

The values in Flags are intended as hints only. The color management module must determine the best way to use them.

Windows Vista: Three new flags have been added that can be used with dwFlags:

**PRESERVEBLACK** If this bit is set, the transform engine inserts the appropriate black generation GMMP as the last GMMP in the transform sequence. This flag only works in a pure WCS transform.

**SEQUENTIAL_TRANSFORM** If this bit is set, each step in the WCS processing pipeline is performed for every pixel in the image and no optimized color transform is built. This flag only works in a pure WCS transform.

Restrictions: A transform created with the SEQUENTIAL_TRANSFORM flag set may only be used in the thread on which it was created and only for one color translation call at a time. COM must be initialized prior to creating the sequential transform and must remain initialized for the lifetime of the transform object.
WCS\_ALWAYS  If this bit is set, even all-ICC transforms will use the WCS code path.

For details, see CMM Transform Creation Flags. All of the flags mentioned there are supported for all types of transforms, except for FAST\_TRANSLATE, which only works in a pure ICC-to-ICC transform.

The CreateColorTransform function is used outside of a device context. Colors may shift when transforming from a color profile to the same color profile. This is due to precision errors. Therefore, a color transform should not be performed under these circumstances.

The B2Ax tags are required for any profile that is the target of a transform.

WCS transform support for ICC ColorSpace profiles is limited to RGB colorspace profiles. The following ICC profile types cannot be used in a CITE-processed transform, either a mixed WCS/ICC transform or an all-ICC transform with WCS\_ALWAYS set:

- Non-RGB ColorSpace profiles
- NamedColor profiles
- n-channel profiles (where n \( > 8 \))
- DeviceLink profiles
- Abstract profiles

See also:

- 174.9.5 Constructor(Profiles() as WindowsICMProfileMBS, Intents() as Integer, Flags as Integer, indexPreferredCMM as Integer)

### 174.9.5 Constructor(Profiles() as WindowsICMProfileMBS, Intents() as Integer, Flags as Integer, indexPreferredCMM as Integer)

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The CreateMultiProfileTransform function accepts an array of profiles or a single device link profile and creates a color transform that applications can use to perform color mapping. **Notes:**

Profiles: An array of profiles to be used. The function determines whether the HPROFILEs contain International Color Consortium (ICC) or Windows Color System (WCS) profile information and processes them appropriately. When valid WCS profiles are returned by OpenColorProfile, these profiles contain the combination of DMP, CAMP, and GMMP profiles.

Intent: An array of intents to use. Each intent is one of the following values:

- INTENT\_PERCEPTUAL
- INTENT\_SATURATION
- INTENT\_RELATIVE\_COLORIMETRIC
GMMPs are a generalization of intents. There are two possible sources of intents: the "destination" profile and the intent list parameter to CreateMultiProfileTransform. The term "destination" is not used since all but two of the profiles in the profile list parameter will serve as first destination and then source.

For more information, see Rendering Intents.

nIntents
Specifies the number of elements in the intents array: can either be 1 or the same value as nProfiles. For profile arrays that contain any WCS profiles, the first rendering intent is ignored and only nProfiles -1 elements are used for these profile arrays. The maximum number of nIntents is 10.

Flags: Specifies flags used to control creation of the transform.

indexPreferredCMM: Specifies the one-based index of the color profile that indicates what color management module (CMM) to use. The application developer may allow Windows to choose the CMM by setting this parameter to INDEX_DONT_CARE. See Using Color Management Modules (CMM) Third party CMMs are only available for ICC workflows. Profile arrays containing WCS profiles will ignore this flag. It is also ignored when only ICC profiles are used and when the WCS_ALWAY flag is used.

On success the handle property is not zero.

If a device link profile is being used, the function will fail if Profiles contains more than one value.

The array of intents specifies how profiles should be combined. The nth intent is used for combining the nth profile in the array. If only one intent is specified, it is used for the first profile, and all other profiles are combined using Match intent.

The values in Flags are intended as hints only. The color management module must determine the best way to use them.

Windows Vista: Three new flags have been added that can be used with dwFlags:

- PRESERVEBLACK If this bit is set, the transform engine inserts the appropriate black generation GMMP as the last GMMP in the transform sequence. This flag only works in a pure WCS transform.
- SEQUENTIAL_TRANSFORM If this bit is set, each step in the WCS processing pipeline is performed for every pixel in the image and no optimized color transform is built. This flag only works in a pure WCS transform.
Restrictions: A transform created with the \texttt{SEQUENTIAL\_TRANSFORM} flag set may only be used in the thread on which it was created and only for one color translation call at a time. COM must be initialized prior to creating the sequential transform and must remain initialized for the lifetime of the transform object.

\textbf{WCS\_ALWAYS} If this bit is set, even all-ICC transforms will use the WCS code path.

For details, see CMM Transform Creation Flags. All of the flags mentioned there are supported for all types of transforms, except for \texttt{FAST\_TRANSLATE} and \texttt{USE\_RELATIVE\_COLORIMETRIC}, which only work in a pure ICC-to-ICC transform.

The \texttt{CreateMultiProfileTransform} function is used outside of a device context. Colors may shift when transforming from a color profile to the same color profile. This is due to precision errors. Therefore, a color transform should not be performed under these circumstances.

We recommend that there be only one GMMP between a source and destination DMP. Gamut boundary descriptions (GBDs) are created from the DMP/CAMP combinations. The subsequent GMMPs use the GBDs prior to them in the processing chain until there exists a DMP/CAMP GBD next in the sequence to be used. For example, assume a sequence DMP1, CAMP1, GMMP1, GMMP2, GMMP3, DMP2, CAMP2, GMMP4, GMMP5, CAMP3, DMP3. Then GMMP1, GMMP2 use GBD1 as their source and destination. Then GMMP3 uses GBD1 as source and GBD2 as destination. Then GMMP4 uses GBD2 as source and destination. Finally GMMP5 uses GBD2 as source and GBD3 as destination. This assumes no GMMP is identical to one next to it.

For WCS profiles, we recommend that the rendering intents be set to DWORD\_MAX in order to use the GMMP within the WCS profile handle. This is because the array of rendering intents takes precedence over the rendering intents or gamut mapping models specified or contained in the profiles specified by the PROFILEs. The array of rendering intents references the default GMMP for those rendering intents. Ideally, only one gamut mapping is performed between a source and destination device by setting one or the other GMMP to NULL when creating the HPROFILE with WCS profile information. Any legacy application that uses a WCS DMP will invoke a sequence of GMMPs. GDBs are chosen based on DMPs and CAMPs. For intermediate GMMP gamut boundaries, the source and destination GBDs are used.

In summary, if $\text{ubound(Intents)}=0$, then the first GMM is set based on the GMMP that is set as default* for the padwIntent value, unless that value is DWORD\_MAX, in which case the embedded GMM information from the second profile is used (The embedded GMM information is either a GMMP or, in the case of an ICC profile, the baseline GMM corresponding to** the intent from the profile header). The remainder of the GMMs are set based on the GMMP that is set as default* for RelativeColorimetric.

If $\text{ubound(Intents)} = \text{ubound(Profiles)} - 1$, then each GMM is set based on the GMMP that is set as default* for the value in the padwIntent array at the corresponding index, except where padwIntent values are DWORD\_MAX. For values in the padwIntent array that are DWORD\_MAX, the GMMs at corresponding positions are set based on the embedded GMM information from the second of the two profiles whose gamuts are mapped by the GMM. (Again, the embedded GMM information is either a GMMP or, in the case of an
ICC profile, the baseline GMM corresponding to** the intent from the profile header).

If ubound(Intents) = ubound(Profiles), then first intent is ignored and function behaves as it does in the case when ubound(Intents) = ubound(Profiles) - 1.

Any other combination of padwIntents and nIntents will return an error.

- "set as default" means that the default GMMP is queried using WcsGetDefaultColorProfile with its profileManagementScope parameter set to WCS_PROFILE_MANAGEMENT_SCOPE_CURRENT_USER. This may return either current-user or system-wide defaults as described in the documentation for WcsGetDefaultColorProfile.

- "GMM corresponding to" does not mean "GMM from the GMMP set as default for". Instead it means "a constant association between ICC profile intents and baseline GMM algorithms."

WCS transform support for ICC ColorSpace profiles is limited to RGB colorspace profiles. The following ICC profile types cannot be used in a CITE-processed transform, either a mixed WCS/ICC transform or an all-ICC transform with WCS_ALWAYS set:

- Non-RGB ColorSpace profiles
- NamedColor profiles
- n-channel profiles (where n > 8)
- DeviceLink profiles
- Abstract profiles

See also:

- 174.9.4 Constructor(LogColorSpace as WindowsICMLogColorSpaceMBS, DestProfile as WindowsICMProfileMBS, TargetProfile as WindowsICMProfileMBS, Flags as Integer) 20464

### 174.9.6 GetCMMInfo(what as Integer) as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The GetCMMInfo function retrieves various information about the color management module (CMM) that created the specified color transform.

**Notes:**

what: Specifies the information to be retrieved. This parameter can take one of the following constant values.
### 174.9. CLASS WINDOWSICMTRANSFORMMBS

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMM_WIN_VERSION</td>
<td>Retrieves the version of Windows targeted by the color management module (CMM).</td>
</tr>
<tr>
<td>CMM_DLL_VERSION</td>
<td>Retrieves the version number of the CMM.</td>
</tr>
<tr>
<td>CMM_IDENT</td>
<td>Retrieves the CMM signature registered with the International Color Consortium (ICC).</td>
</tr>
</tbody>
</table>

If this function succeeds, the return value is the information specified in What.
If this function fails, the return value is zero.

### 174.9.7 TranslateBitmapBits(SrcBits as memoryblock, InputType as Integer, Width as Integer, Height as Integer, InputRowBytes as Integer, DestBits as memoryblock, DestType as Integer, DestRowBytes as Integer) as boolean

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The TranslateBitmapBits function translates the colors of a bitmap having a defined format so as to produce another bitmap in a requested format.

**Notes:**
- **SrcBits:** Pointer to the bitmap to translate.
- **InputType:** Specifies the format of the input bitmap. Use one of the BM_* constants.
- **Width:** Specifies the number of pixels per scan line in the input bitmap.
- **Height:** Specifies the number of scan lines in the input bitmap.
- **InputRowBytes:** Specifies the number of bytes from the beginning of one scan line to the beginning of the next in the input bitmap; if set to zero, the function assumes that scan lines are padded so as to be DWORD-aligned.
- **DestBits:** Pointer to the buffer in which to place the translated bitmap.
- **DestType:** Specifies the format of the output bitmap. Use one of the BM_* constants.
- **DestRowBytes:** Specifies the number of bytes from the beginning of one scan line to the beginning of the next in the output bitmap; if set to zero, the function assumes that scan lines should be padded to be DWORD-aligned.

If this function succeeds, the return value is TRUE.
If this function fails, the return value is FALSE.

**Remarks**

If the input and output formats are not compatible with the color transform, this function fails.

When either of the floating point BMFORMATs, BM_32b_scARGB or BM_32b_scRGB are used, the color data being translated should not contain NaN or infinity. NaN and infinity are not considered to represent...
legitimate color component values, and the result of translating pixels containing NaN or infinity is meaningless in color terms. NaN or infinity values in the color data being processed will be handled silently, and an error will not be returned.

174.9.8  TranslateColors(InputColors() as WindowsICMColorMBS, ctInput as Integer, OutputColors() as WindowsICMColorMBS, ctOutput as Integer) as boolean

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The TranslateColors function translates an array of colors from the source color space to the destination color space as defined by a color transform.

Notes:
InputColors: The input color.
ctInput: Specifies the input color type.
OutputColors: The output color.
ctOutput: Specifies the output color type.

Returns true on success and false on failure.

174.9.9  TranslatePictures(InputPicture as picture, OutputPicture as picture) as boolean

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: The TranslateBitmapBits function translates the colors of a bitmap having a defined format so as to produce another bitmap in a requested format.

Notes:
InputPicture: input picture
OutputPicture: output picture

If this function succeeds, the return value is TRUE.
If this function fails, the return value is FALSE.

Make sure the pictures have the same size.

If the input and output formats are not compatible with the color transform, this function fails.
174.9. CLASS WINDOWSICMTRANSFORMMBS

174.9.10 Properties

174.9.11 Handle as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The internal handle for the transformation. **Notes:** (Read and Write property)

174.9.12 Events

174.9.13 Progress(Maximum as Integer, Current as Integer) as boolean

MBS Win Plugin, Plugin Version: 11.1, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The progress event for long operations.

174.9.14 Constants

174.9.15 BEST_MODE = 3

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the flags passed when creating a transformation. **Notes:** Transform will be used for the display of the highest-quality image possible on the target device.

174.9.16 BM_10b_G3CH = & h0404

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants. **Notes:** 32 bits per pixel. 10 bits are used for each color channel. The 2 most significant bits are ignored.

174.9.17 BM_10b_Lab = & h0403

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants. **Notes:** 32 bits per pixel. 10 bits are used for each color channel. The 2 most significant bits are ignored.

174.9.18 BM_10b_RGB = 9

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants. **Notes:** 32 bits per pixel. 10 bits are used for each color channel. The 2 most significant bits are ignored.
174.9.19  BM_10b_XYZ = & h0401

MBS Win Plugin, Plugin Version: 11.1. Function: One of the bitmap format constants.
Notes: 32 bits per pixel. 10 bits are used for each color channel. The 2 most significant bits are ignored.

174.9.20  BM_10b_Yxy = & h0402

MBS Win Plugin, Plugin Version: 11.1. Function: One of the bitmap format constants.
Notes: 32 bits per pixel. 10 bits are used for each color channel. The 2 most significant bits are ignored.

174.9.21  BM_16b_G3CH = & h0504

MBS Win Plugin, Plugin Version: 11.1. Function: One of the bitmap format constants.
Notes: 64 bits per pixel. 16 bits are used for the gray-scale value. Each of the three color channels uses 16 bits.

174.9.22  BM_16b_GRAY = & h0505

MBS Win Plugin, Plugin Version: 11.1. Function: One of the bitmap format constants.
Notes: 64 bits per pixel. 16 bits are used for the gray-scale value. All other bits are ignored.

174.9.23  BM_16b_Lab = & h0503

MBS Win Plugin, Plugin Version: 11.1. Function: One of the bitmap format constants.
Notes: 64 bits per pixel. 16 bits are used for the gray-scale value. Each of the three color channels uses 16 bits.

174.9.24  BM_16b_RGB = 10

MBS Win Plugin, Plugin Version: 11.1. Function: One of the bitmap format constants.
Notes: 64 bits per pixel. 16 bits are used for the gray-scale value. Each of the three color channels uses 16 bits.
174.9. CLASS WINDOWSICMTRANSFORMMBS

174.9.25 BM_16b_XYZ = & h0501

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants.  
**Notes:** 64 bits per pixel. 16 bits are used for the gray-scale value. Each of the three color channels uses 16 bits.

174.9.26 BM_16b_Yxy = & h0502

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants.  
**Notes:** 64 bits per pixel. 16 bits are used for the gray-scale value. Each of the three color channels uses 16 bits.

174.9.27 BM_32b_scARGB = & h0602

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants.  
**Notes:** 128 bits per pixel. 32 bits are used for each color channel, as defined by the IEEE 32-bit floating point standard.

174.9.28 BM_32b_scRGB = & h0601

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants.  
**Notes:** 96 bits per pixel. 32 bits are used for each color channel, as defined by the IEEE 32-bit floating point standard.

174.9.29 BM_565RGB = 1

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants.  
**Notes:** 16 bits per pixel. 5 bits are used for red, 6 for green, and 5 for blue.

174.9.30 BM_5CHANNEL = & h0205

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants.  
**Notes:** 40 bits per pixel. 8 bits apiece are used for each channel.
174.9.31 \( \text{BM\_6CHANNEL} = \& \text{h0206} \)

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants.
**Notes:** 48 bits per pixel. 8 bits apiece are used for each channel.

174.9.32 \( \text{BM\_7CHANNEL} = \& \text{h0207} \)

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants.
**Notes:** 56 bits per pixel. 8 bits apiece are used for each channel.

174.9.33 \( \text{BM\_8CHANNEL} = \& \text{h0208} \)

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants.
**Notes:** 64 bits per pixel. 8 bits apiece are used for each channel.

174.9.34 \( \text{BM\_BGRTRIPLETS} = 4 \)

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants.
**Notes:** 24 bits per pixel maximum. For three channel colors, such as red, green, and blue, the total size is 24 bits per pixel. For single channel colors, such as gray, the total size is 8 bits per pixel.

174.9.35 \( \text{BM\_CMYKQUADS} = \& \text{h0020} \)

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants.
**Notes:** 32 bits per pixel. 8 bits are used for each color channel.

174.9.36 \( \text{BM\_G3CHTRIPLETS} = \& \text{h0204} \)

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants.
**Notes:** 24 bits per pixel maximum. For three channel values, the total size is 24 bits per pixel. For single channel gray scale, the total size is 8 bits per pixel.

174.9.37 \( \text{BM\_GRAY} = \& \text{h0209} \)

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants.
**Notes:** 32 bits per pixel. Only the 8 bit gray-scale value is used.
174.9.38 BM_KYMCQUADS = & h0305

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants. **Notes:** 32 bits per pixel. 8 bits are used for each color channel.

174.9.39 BM_LabTRIPLETS = & h0203

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants. **Notes:** 24 bits per pixel maximum. For three channel, L, a, and b values, the total size is 24 bits per pixel. For single channel gray scale, the total size is 8 bits per pixel.

174.9.40 BM_NAMED_INDEX = & h0405

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants. **Notes:** 32 bits per pixel. Named color indices. Index numbering begins at one.

174.9.41 BM_R10G10B10A2 = & h0701

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants. **Notes:** Only in Windows Vista.

174.9.42 BM_R10G10B10A2_XR = & h0702

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants. **Notes:** Only in Windows Vista.

174.9.43 BM_R16G16B16A16_FLOAT = & h0703

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants. **Notes:** Only in Windows Vista.
174.9.44  BM_RGBTRIPLETS = 2

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants. 
**Notes:** 24 bits per pixel maximum. For three channel colors, such as red, green, and blue, the total size is 24 bits per pixel. For single channel colors, such as gray, the total size is 8 bits per pixel.

174.9.45  BM_S2DOT13FIXED_scARGB = & h0604

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants. 
**Notes:** 64 bits per pixel. Color data is stored as one 16-bit word per channel, with a fixed range of -4 to +4, inclusive. A signed format is used, with 1 bit for the sign, 2 bits for the integer portion, and 13 bits for the fractional portion.

174.9.46  BM_S2DOT13FIXED_scRGB = & h0603

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants. 
**Notes:** 48 bits per pixel. Color data is stored as one 16-bit word per channel, with a fixed range of -4 to +4, inclusive. A signed format is used, with 1 bit for the sign, 2 bits for the integer portion, and 13 bits for the fractional portion.

174.9.47  BM_x555G3CH = & h0104

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants. 
**Notes:** 16 bits per pixel. G3CH color space. 5 bits per channel. The most significant bit is ignored.

174.9.48  BM_x555Lab = & h0103

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants. 
**Notes:** 16 bits per pixel. Lab color space. 5 bits per channel. The most significant bit is ignored.

174.9.49  BM_x555RGB = 0

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants. 
**Notes:** 16 bits per pixel. RGB color space. 5 bits per channel. The most significant bit is ignored.
174.9. CLASS WINDOWSICMTRANSFORMMBS

174.9.50  BM_x555XYZ = & h0101

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants.
**Notes:** 16 bits per pixel. Yxy color space. 5 bits per channel. The most significant bit is ignored.

174.9.51  BM_x555Yxy = & h0102

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants.
**Notes:** 16 bits per pixel. Yxy color space. 5 bits per channel. The most significant bit is ignored.

174.9.52  BM_xBGRQUADS = & h0010

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants.
**Notes:** 32 bits per pixel. 8 bits are used for each color channel. The most significant byte is ignored.

174.9.53  BM_xG3CHQUADS = & h0304

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants.
**Notes:** 32 bits per pixel. 8 bits are used for each color channel. The most significant byte is ignored.

174.9.54  BM_xRGBQUADS = & h0008

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants.
**Notes:** 32 bits per pixel. 8 bits are used for each color channel. The most significant byte is ignored.

174.9.55  BM_XYZTRIPLETS = & h0201

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants.
**Notes:** 24 bits per pixel maximum. For three channel colors, such as red, green, and blue, the total size is 24 bits per pixel. For single channel colors, such as gray, the total size is 8 bits per pixel.

174.9.56  BM_YxyTRIPLETS = & h0202

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the bitmap format constants.
**Notes:** 24 bits per pixel maximum. For three channel, Y, x, and y values, the total size is 24 bits per pixel.
For single channel gray scale, the total size is 8 bits per pixel.

174.9.57  CMM_DESCRIPTION = 5

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the info selectors for GetInfo.  
**Notes:** A text string that describes the color management module.

174.9.58  CMM_DLL_VERSION = 3

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the values for the GetCMMInfo function.  
**Notes:** Retrieves the version number of the CMM.

174.9.59  CMM_DRIVER_VERSION = 2

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the info selectors for GetInfo.

174.9.60  CMM_FROM_PROFILE = 0

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the info selectors for GetInfo.

174.9.61  CMM_IDENT = 1

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the values for the GetCMMInfo function.  
**Notes:** Retrieves the CMM signature registered with the International Color Consortium (ICC).

174.9.62  CMM_LOGOICON = 6

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the info selectors for GetInfo.  
**Notes:** The logo icon for this CMM.

174.9.63  CMM_VERSION = 4

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the info selectors for GetInfo.  
**Notes:** Version of Windows supported.
174.9.64  **CMM_WINDOWS_DEFAULT = & h57696E20**

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the info selectors for GetInfo.

174.9.65  **CMM_WIN_VERSION = 0**

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the values for the GetCMMInfo function. **Notes:** Retrieves the version of Windows targeted by the color management module (CMM).

174.9.66  **ENABLE_GAMUT_CHECKING = & h10000**

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the flags passed when creating a transformation. **Notes:** Use this transform for gamut checking.

174.9.67  **FAST_TRANSLATE = & h40000**

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the flags passed when creating a transformation. **Notes:** Look up color only. Do not interpolate the color.

174.9.68  **INDEX_DONT_CARE = 0**

MBS Win Plugin, Plugin Version: 11.1. **Function:** A special value for index in constructor. **Notes:** The application developer may allow Windows to choose the CMM by setting the indexPreferred-CMM parameter to INDEX_DONT_CARE for the constructor.

174.9.69  **INTENT_ABSOLUTE_COLORIMETRIC = 3**

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the rendering intent constants. **Notes:** Maintain the white point. Match the colors to their nearest color in the destination gamut.
174.9.70  INTENT_PERCEPTUAL = 0

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the rendering intent constants. 
**Notes:** Maintain contrast. Used for photographs and natural images.

174.9.71  INTENT_RELATIVE_COLORIMETRIC = 1

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the rendering intent constants. 
**Notes:** Maintain colorimetric match. Used for graphic designs and named colors.

174.9.72  INTENT_SATURATION = 2

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the rendering intent constants. 
**Notes:** Maintain saturation. Used for business charts and other situations in which undithered colors are required.

174.9.73  NORMAL_MODE = 2

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the flags passed when creating a transformation. 
**Notes:** Transform will be used for normal image display. Average image quality.

174.9.74  PRESERVEBLACK = & h100000

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the flags passed when creating a transformation. 
**Notes:** If this bit is set, the transform engine inserts the appropriate black generation GMMP as the last GMMP in the transform sequence. This flag only works in a pure WCS transform.

174.9.75  PROOF_MODE = 1

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the flags passed when creating a transformation. 
**Notes:** Transform will be used to preview the image. Low image quality.

174.9.76  SEQUENTIAL_TRANSFORM = & h80800000

MBS Win Plugin, Plugin Version: 11.1. **Function:** One of the flags passed when creating a transformation. 
**Notes:**
If this bit is set, each step in the WCS processing pipeline is performed for every pixel in the image and no optimized color transform is built. This flag only works in a pure WCS transform. Restrictions: A transform created with the SEQUENTIAL_TRANSFORM flag set may only be used in the thread on which it was created and only for one color translation call at a time. COM must be initialized prior to creating the sequential transform and must remain initialized for the lifetime of the transform object.

174.9.77 \textbf{USE\_RELATIVE\_COLORIMETRIC} = \& h20000

MBS Win Plugin, Plugin Version: 11.1. \textbf{Function:} One of the flags passed when creating a transformation.

174.9.78 \textbf{WCS\_ALWAYS} = \& h200000

MBS Win Plugin, Plugin Version: 11.1. \textbf{Function:} One of the flags passed when creating a transformation. \textbf{Notes:} If this bit is set, even all-ICC transforms will use the WCS code path.
Chapter 175

Windows Mutex

175.1 class WindowsMutexMBS

175.1.1 class WindowsMutexMBS

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A class for a mutex.

**Notes:**
As a mutex must have a unique name you can use this class to find out if an application is already running. Try to create a mutex with an unique name and if it already exists your application was launched twice.

175.1.2 Methods

175.1.3 close

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The destructor.

**Notes:**
There is no need to call this method except you want to free all resources of this object now without waiting for Realbasic to do it for you.
(e.g. some Realbasic versions crash on Windows if there are plugin objects not closed.)

175.1.4 Create(name as string)

MBS Win Plugin, Plugin Version: 3.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Creates a new mutex.
Notes:
The name must be unique and should not contain a backslash.
Use only ASCII strings for this.
LastError is set.

175.1.5 Open(name as string)

Function:
Trys to open a mutex with the given name.
Notes:
Fails if the mutex does not exist.
LastError is set.

175.1.6 Properties

175.1.7 Handle as Integer

Function:
The handle of the Mutex for use with Declares.
Notes: (Read and Write property)

175.1.8 Lasterror as Integer

Function:
The last error code reported.
Notes:
A Windows error code.
Or 0 for okay and -1 for "Function not available or parameters wrong."
(Read and Write property)

175.1.9 Name as String

Function:
The name used to create or open the mutex.
Notes: (Read only property)
Chapter 176

Windows Registry

176.1   class RegistryFileTypeMBS

176.1.1   class RegistryFileTypeMBS

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** An easy way to register a document icon for Windows.

**Notes:**

You set up the properties of this class and than you call create.
I suggest that you do it like QuickTime or Winzip. Ask the user on first run if he want’s your application to register its file types.
And also provide two buttons in the Preferences dialog to register or unregister the types.

This class works on Windows 7 only if you run the app as administrator.

This function may fail to run if permissions are denied.
Or it may only affect the shadow registry used by Windows to protect itself from having unauthorized apps editing the real registry.

176.1.2   Methods

176.1.3   Create as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Creates this file type.

**Example:**

20485
dim r as RegistryFileTypeMBS
' set properties for r
dim errorcode as Integer
errorcode=r.create

Notes:
Returns:

-1 - Run on Mac OS
0  - OK
1  - Failed to create main extension key.
2  - Failed to create the description key for file type.
3  - Failed to create the key for the icon.
4  - Failed to create the key for the open description.
5  - Required parameters not provided.

This function may fail to run if permissions are denied.
Or it may only affect the shadow registry used by Windows to protect itself from having unauthorized apps editing the real registry.

176.1.4 Remove as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function: Removes this file type.
Example:

dim r as RegistryFileTypeMBS
dim errorcode as Integer

errorcode=r.remove

Notes:
Returns:

Note: The return values changed in MBS Plugin 3.2 to now return Windows error codes!

This function may fail to run if permissions are denied.
Or it may only affect the shadow registry used by Windows to protect itself from having unauthorized apps
-1  - Run on Mac OS or parameters bad.
  0   - OK
  x   - A Windows error code like 5 for permissions denied.

<table>
<thead>
<tr>
<th>Editing the real registry.</th>
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### 176.1.5 Properties

### 176.1.6 AppFile as FolderItem

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The application to launch to open the file.

**Example:**

```
dim r as new RegistryFileTypeMBS
r.Appfile=app.applicationfilembs // it is my file ;-)```

**Notes:** (Read and Write property)

### 176.1.7 Description as string

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The description for this file type.

**Example:**

```
dim r as new RegistryFileTypeMBS
r.description="Monkeybread File"
```

**Notes:**

The text to show in the explorer in column view.
(Read and Write property)

### 176.1.8 Extension as string

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The extension for this file type.
Example:

```
Dim r As New RegistryFileTypeMBS
r.extension = ".MBS"
```

Notes:
The extension should start with a dot followed by 3 uppercase letters and it should be unique. But as there are more file types than combinations of 3 letters this may be difficult...
(Read and Write property)

### 176.1.9 FileType as string

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A internal unique signature for this file type.

Example:

```
Dim r As New RegistryFileTypeMBS
r.FileType = "MBSFile"
```

Notes:
May contain any character except chr(0) and should be ANSI encoded.
(Read and Write property)

### 176.1.10 Iconfile as Folderitem

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The file with the icon.

Example:

```
Dim r As New RegistryFileTypeMBS
r.iconfile = app.applicationfileMBS ' it is my file :-)'
```

Notes:
You can get the icon out of your application (ID 0 is the default icon). But you can also use DLL files like "Shell32.dll" for some nice icons.
Last but not least you can use an ICO file which Iconographer can create for you from your Mac Icons.
176.1.11 IconID as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The ID of the Icon to use.

**Example:**
```vba
dim r as new RegistryFileTypeMBS
r.iconid=3
```

**Notes:**
Your icon file may contain more than one icon. Here you can specify which one to use. First is ID 0.

(Read and Write property)

176.1.12 OpenDescription as string

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The text to show in the context menu for Open.

**Example:**
```vba
dim r as new RegistryFileTypeMBS
r.OpenDescription="Open MBS file"
```

**Notes:**
If you don’t provide an OpenDescription you’ll get "Open". Here you can describe the default action. e.g. Stuffit Expander could say "Expand file".

(Read and Write property)
176.2 class RegistryKeyMBS

176.2.1 class RegistryKeyMBS

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Gives you access to a Windows Registry Key.

176.2.2 Methods

176.2.3 CopyTree(keyname as string, Dest as RegistryKeyMBS) as boolean

MBS Win Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Copies the specified registry key, along with its values and subkeys, to the specified destination key. **Notes:** Returns true on success and false on failure.

176.2.4 CreateKey(name as string, Use64bitRegistry as boolean = false) as RegistryKeyMBS

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Creates a new subkey. **Notes:**

If the key is allready present it is just opened.
Returns a registry key or nil on any error.

Use64bitRegistry: Pass true to create key in 64 bit view of the Registry instead of 32 bit view.

176.2.5 Delete(keyname as string) as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Deletes the specified subkey key. **Notes:**

Windows 95: The Delete function deletes a subkey and all its descendants.
Windows NT: The Delete function deletes the specified subkey. The subkey to be deleted must not have subkeys.

With plugin version 3.2 the NT behavior is worked around to match the Windows 95 behavior. So all sub keys are deleted!
176.2. CLASS REGISTRYKEYMBS

176.2.6 DeleteTree(keyname as string) as boolean

MBS Win Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Deletes the subkeys and values of the specified key recursively. **Example:**

dim t as RegistryKeyMBS = RegistryMBS.CurrentUser

    // create some keys
    dim n as RegistryKeyMBS = t.CreateKey("Hello")
    dim w as RegistryKeyMBS = n.CreateKey("World")

w.Value("Test").asString = "Hello"

break // see in regedit

    // delete it
    if t.DeleteTree("Hello") then
        MsgBox "deleted. ok"
    else
        MsgBox "delete failed"
    end if

**Notes:** Returns true on success and false on failure.

176.2.7 Flush

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Writes all the attributes of the specified open key into the RegistryMBS.

176.2.8 Item(index as Integer) as RegistryKeyMBS

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the key at the specified index. **Notes:**

May return nil on any error like missing access rights. Some keys can’t be opened, but ItemName() may return the name of the key. See also:

- 176.2.9 Item(name as string) as RegistryKeyMBS

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176.2.9   **Item(name as string) as RegistryKeyMBS**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the key with the specified name.

**Notes:**
May return nil on any error like missing access rights.
Some keys can’t be opened, but ItemName() may return the name of the key.
See also:

- 176.2.8 Item(index as Integer) as RegistryKeyMBS

176.2.10 **ItemName(index as Integer) as string**

MBS Win Plugin, Plugin Version: 6.3, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the name of the key at the specified index.

**Notes:** May return "" on any error.

176.2.11 **Value(index as Integer) as RegistryValueMBS**

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the value at the specified index.
See also:

- 176.2.12 Value(name as string) as RegistryValueMBS

176.2.12 **Value(name as string) as RegistryValueMBS**

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the value item with the specified name.

**Notes:**
The value must not exists. So use this function to make a new key.
Use an empty name (e.g. "") for the default key value.

This method was named ValueItem in plugin version before 10.4.
See also:

- 176.2.11 Value(index as Integer) as RegistryValueMBS
176.2.13 **ValueName(index as Integer) as string**

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the name of the value with the given index. **Notes:** May return "" on any error.

176.2.14 **Properties**

176.2.15 **ItemCount as Integer**

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the count of subkeys. **Example:**

```
dim i,c as Integer
dim key as RegistryKeyMBS // the registry item

c=key.ItemCount-1
for i=0 to c
  // do something
next
```

**Notes:**
This property calls a System function to get the value. So save it in a local variable instead of calling it in a for loop. See the example. (Read only property)

176.2.16 **name as string**

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the name of the Key. **Notes:** (Read only property)

176.2.17 **ValueCount as Integer**

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the count of values. **Example:**
dim i,c as Integer
dim key as RegistryKeyMBS

c=key.ValueCount
for i=1 to c
    // do something
next

Notes:

This property calls a System function to get the value. So save it in a local variable instead of calling it in a for loop. See the example.
(Read only property)
176.3.  CLASS REGISTRYMBS

176.3  class RegistryMBS

176.3.1  class RegistryMBS

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Gives you access to the Windows Registry.  
**Notes:** Please send me an email if you need some functions which are now not included.

176.3.2  Methods

176.3.3  classesRoot as RegistryKeyMBS

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Gives you an RegistryKeyMBS object for the ClassesRoot Tree.

176.3.4  CurrentConfig as RegistryKeyMBS

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Gives you an RegistryKeyMBS object for the CurrentConfig Tree.

176.3.5  CurrentUser as RegistryKeyMBS

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Gives you an RegistryKeyMBS object for the CurrentUser Tree.

176.3.6  getBinaryValue(keypath as string,valuename as string, Use64bitRegistry as boolean = false) as Memoryblock

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Gives you a Memoryblock of the value called valuename in the key found at keypath.  
**Example:**

```vbnet
const path="HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion"
dim r as new RegistryMBS
msgBox "This OS is: "+r.getBinaryValue(path, "ProductName").cstring(0)
```

**Notes:**
Returns nil on any error.
Use64bitRegistry: Pass true to create key in 64 bit view of the Registry instead of 32 bit view.

176.3.7  getStringValue(keypath as string, valuename as string, Use64bitRegistry as boolean = false) as String

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Gives you a String of the value called valuename in the key found at keypath.

**Example:**

```vba
const path="HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion"

dim r as new RegistryMBS
msgBox "This OS is: "+r.getStringValue(path, "ProductName")
```

**Notes:**

Returns "" on any error.
Use64bitRegistry: Pass true to create key in 64 bit view of the Registry instead of 32 bit view.

176.3.8  Key(keypath as string, Use64bitRegistry as boolean = false) as RegistryKeyMBS

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Gives you an RegistryKeyMBS object for the given path of a key.

**Example:**

```vba
const path="HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion"

dim r as new RegistryMBS
msgBox r.Key(path).Name
```

**Notes:**

If you need you can recreate this function in Realbasic code to have some error checking. This function here will return nil on any error.

Use64bitRegistry: Pass true to create key in 64 bit view of the Registry instead of 32 bit view.
176.3. CLASS REGISTRYMBS

176.3.9 LocalMachine as RegistryKeyMBS

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Gives you an RegistryKeyMBS object for the LocalMachine Tree.

176.3.10 PerformanceData as RegistryKeyMBS

MBS Win Plugin, Plugin Version: 10.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Gives you an RegistryKeyMBS object for the PerformanceData Tree.

176.3.11 Users as RegistryKeyMBS

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Gives you an RegistryKeyMBS object for the Users Tree.
176.4 class RegistryValueMBS

176.4.1 class RegistryValueMBS

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Gives you access to a value of a RegistryMBS Key.

176.4.2 Methods

176.4.3 Delete as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Deletes this value. **Notes:** The RegistryValueMBS object should be destroyed after deleting.

176.4.4 SetBinaryMem(typ as Integer, data as Memoryblock)

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Sets the value to the content of the memoryblock. **Notes:**

Type may be one of this values:

0  No value type
1  Nul terminated string
2  Nul terminated string (with environment variable references)
3  Free form binary
4  32-bit number (LittleEndian)
5  32-bit number (BigEndian)
6  Symbolic Link (unicode)
7  Multiple Unicode strings
8  Resource list in the resource map
9  Resource list in the hardware description
10 Resource requirements list
11 64-bit number
176.4.5  SetBinaryStr(typ as Integer, data as String)

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Sets the value to the content of the string.
**Notes:**
Type may be one of these values:

0  No value type
1  Nul terminated string
2  Nul terminated string (with environment variable references)
3  Free form binary
4  32-bit number (LittleEndian)
5  32-bit number (BigEndian)
6  Symbolic Link (unicode)
7  Multiple Unicode strings
8  Resource list in the resource map
9  Resource list in the hardware description
10 Resource requirements list
11 64-bit number

176.4.6  Properties

176.4.7  asBinary as Memoryblock

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the value as a memoryblock.
**Notes:**
Can also be used to set the value.
(Read and Write property)

176.4.8  asBinaryString as String

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the value as a string with binary content.
**Notes:**
This string may include chr(0).
Can also be used to set the value.
176.4.9  asLong32 as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the value as a 32bit integer.
**Notes:**
Can also be used to set the value.
(Read and Write property)

176.4.10  asLong64 as Int64

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the value as a 64bit integer.
**Example:**
```
dim v as RegistryValueMBS
v.aslong64=v.aslong64+1 // add one
```
**Notes:**
Can also be used to set the value.
(Read and Write property)

176.4.11  asString as string

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the value as a string.
**Notes:**
Can also be used to set the value.
(Read and Write property)

176.4.12  isBinary as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns true if the value is binary data.
**Notes:** (Read only property)
176.4. CLASS REGISTRYVALUEMBS

176.4.13 isLong32 as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns true if the value is a 32 bit integer.
**Notes:** (Read only property)

176.4.14 isLong64 as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns true if the value is a 64 bit Integer.
**Notes:** (Read only property)

176.4.15 isString as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns true if the value is a string.
**Notes:** (Read only property)

176.4.16 name as string

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the name of the Value.
**Notes:** (Read only property)

176.4.17 size as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the size of this value.
**Notes:** (Read only property)

176.4.18 type as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Returns the type of the value.
**Notes:**
Type may be one of this values:
0  No value type
1  Nul terminated string
2  Nul terminated string (with environment variable references)
3  Free form binary
4  32-bit number (LittleEndian)
5  32-bit number (BigEndian)
6  Symbolic Link (unicode)
7  Multiple Unicode strings
8  Resource list in the resource map
9  Resource list in the hardware description
10 Resource requirements list
11 64-bit number

(Read only property)
Chapter 177

Windows Shortcuts

177.1 class WindowsInternetShortcutMBS

177.1.1 class WindowsInternetShortcutMBS

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A class to create internet shortcuts on Windows.

**Example:**

```vbscript
# if targetwin32
dim w as WindowsInternetShortcutMBS

w=new WindowsInternetShortcutMBS

w.URL="http://www.monkeybreadsoftware.de"
w.Command=3
w.Icon=windowsSystemFolder.child("shell32.dll")
w.iconID=41
w.Location=SpecialFolder.Desktop.child("A new link to explorer.lnk")
w.Working=volume(0)

if w.CreateInternetShortCut then
    if w.AddInternetShortcutIcon then
        msgBox "Shortcut created."
    else
        msgBox "Failed to add icon."
    end if
else
    msgBox "Failed to create shortcut."
end if
# endif
```

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177.1.2 Methods

177.1.3 CreateInternetShortCut as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Creates a shortcut on the specified location.  
**Notes:** Version 10.1: Now adds the icon, too.

177.1.4 Properties

177.1.5 Command as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The code for the showing of the application.  
**Notes:**  
Use e.g. 3 for full screen.  
(Read and Write property)

177.1.6 Icon as String

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The location of the icon file.  
**Notes:**  
(Changed from FolderItem to String in plugin version 3.4)  
(Read and Write property)

177.1.7 IconID as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The ID of the icon inside the icon file.  
**Notes:** (Read and Write property)
177.1.8 Location as String

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The location where the shortcut is created or modified.
**Notes:**
(Changed from Folderitem to String in plugin version 3.4)
(Read and Write property)

177.1.9 url as string

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The URL where the shortcut will point to.
**Notes:** (Read and Write property)

177.1.10 WorkingDirectory as string

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The working directory for the browser.
**Notes:**
(Changed from Folderitem to String in plugin version 3.4)
(Read and Write property)
177.2  class WindowsShortCutMBS

177.2.1  class WindowsShortCutMBS

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  **Function:** A class to create shortcuts on Windows.

**Example:**

```vba
dim w as WindowsShortCutMBS

w = new WindowsShortCutMBS

w.Arguments = ""
w.Command = 3
w.Icon = specialfolder.system.child("shell32.dll").absolutePath
w.IconID = 41
w.Location = SpecialFolder.Desktop.child("A new link to explorer.lnk").absolutePath
w.Target = SpecialFolder.Windows.child("explorer.exe").absolutePath
w.WorkingDirectory = volume(0).absolutePath

if w.CreateShortCut then
    msgBox "Shortcut created."
else
    msgBox "Failed to create shortcut."
end if
```

177.2.2  Methods

177.2.3  CreateShortCut as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  **Function:** Creates a shortcut on the specified location.

**Notes:**

Returns true on success and false on any error.
Version 10.1: Now adds the icon, too.

177.2.4  ResolveShortCut(DisableGUI as boolean=false, DisableSearch as boolean=false) as boolean

MBS Win Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No.  **Function:** Resolves the shortcut.
Notes:
Fills the properties target, description, Argument, WorkingDirectory, Icon and IconID.
Returns false on any error.

Parameters added in plugin version 7.4:

DisableGUI:
Do not display a dialog box if the link cannot be resolved. The time-out duration will be set to the default value of 3,000 milliseconds (3 seconds).

DisableSearch:
Do not execute the search heuristics.

For more details check this page in Microsoft’s documentation:

177.2.5 Properties

177.2.6 Arguments as string

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Arguments to the application which is linked to the shortcut.  
**Notes:** (Read and Write property)

177.2.7 Command as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The code for the showing of the application.  
**Notes:**
Constants which may be useful:

(Read and Write property)

177.2.8 Description as String

MBS Win Plugin, Plugin Version: 3.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**  
The description of the shortcut.
SW_HIDE = 0
SW_NORMAL = 1
SW_SHOWMINIMIZED = 2
SW_SHOWMAXIMIZED = 3
SW_MAXIMIZE = 3
SW_SHOWNOACTIVATE = 4
SW_SHOW = 5
SW_MINIMIZE = 6
SW_SHOWMINNOACTIVE = 7
SW_SHOWNA = 8
SW_RESTORE = 9
SW_SHOWDEFAULT = 10
SW_FORCEMINIMIZE = 11

Notes: (Read and Write property)

177.2.9 Icon as String

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The location of the icon file.
**Notes:**
(Changed from Folderitem to String in plugin version 3.4)
(Read and Write property)

177.2.10 IconID as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The ID of the icon inside the icon file.
**Notes:** (Read and Write property)

177.2.11 Location as String

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The location where the shortcut is created or modified.
**Notes:**
(Changed from Folderitem to String in plugin version 3.4)
(Read and Write property)
177.2.12 ParentWindow as Window

MBS Win Plugin, Plugin Version: 3.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The parent window used when a dialog must be opened.
**Notes:** (Read and Write property)

177.2.13 Target as String

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The target where the shortcut will point to.
**Notes:**
(Changed from Folderitem to String in plugin version 3.4)
(Read and Write property)

177.2.14 WorkingDirectory as String

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The working directory of this shortcut.
**Notes:**
(Changed from Folderitem to String in plugin version 3.4)
(Read and Write property)
Chapter 178

Windows System Tray

178.1  Globals

178.1.1  HIconFromFileMBS(IconFile as Folderitem, IconID as Integer) as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
Creates a Windows Icon Handle for an icon loaded from the given icon file.
Notes:
What image depths are used and supported depends on the Windows version.
IconID = 0 points to the first icon in the file.
Returns 0 on failure.

The icon file can be .ico, .exe, .dll or similar files with windows icon resource.
This function is useful for declares where you have to pass a HICON parameter.

178.1.2  HIconFromPicturesMBS(Icon as picture, Mask as picture) as Integer

MBS Win Plugin, Plugin Version: 11.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. Function:
Creates a Windows Icon Handle with the given pictures.
Notes:
What image depths are used and supported depends on the Windows version.
Returns 0 on failure.
This function is useful for declares where you have to pass a HICON parameter.
178.2  class WindowsSystemTrayMBS

178.2.1  class WindowsSystemTrayMBS

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A class to create an item in the system tray.

178.2.2  Methods

178.2.3  Add as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Adds the item to the system tray.

**Example:**
```
    dim e as WindowsSystemTrayMBS // your system tray object

    if e.add then
        list.addrow "Added icon."
    else
        list.addrow "Failed to add icon."
    end if
```

**Notes:**
Returns true if successful.
You can change the Icon& Mask or the Tooltip string.

178.2.4  Available as boolean

MBS Win Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether the system tray functions are available.

**Notes:**
Returns true on Windows 95 and newer.
Returns false on Mac OS and Linux.
178.2. Modify as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Modifies the item to the system tray.

**Notes:**
Returns true if successful.
You can change the Icon & Mask or the Tooltip string.

178.2.6 Remove as boolean

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Removes the item from the system tray.

**Notes:** Returns true if successful.

178.2.7 SetFocus as boolean

MBS Win Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** This method resets focus back to the system tray area.

**Notes:** May be useful to call as cleanup after some context menu was shown.

178.2.8 SetIconFile(IconFile as Folderitem, IconID as Integer) as boolean

MBS Win Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Loads an icon from the given file.

**Example:**

```dcode
dim wst as WindowsSystemTrayMBS // your system tray
call wst.SetIconFile(file,1)
```

**Notes:**
Returns true on success and false on failure.
What image depths are used and supported depends on the Windows version.
IconID = 0 points to the first icon in the file.

The icon file can be .ico, .exe, .dll or similar files with windows icon resource.
178.2.9  SetIconPicture(Icon as picture, Mask as picture) as boolean

MBS Win Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Loads the icon from the given picture with mask.

**Example:**

```plaintext
dim myicon as picture // your picture
dim mymask as picture // the mask for the picture
dim wst as WindowsSystemTrayMBS // your system tray

call wst.SetIconPicture(myicon, mymask)
```

**Notes:**

Returns true on success and false on failure.
What image depths are used and supported depends on the Windows version.

Type is 0 for a small icon and 1 for a big icon.

178.2.10  Properties

178.2.11  BalloonMode as Integer

MBS Win Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The balloon mode.

**Example:**

```plaintext
dim s as WindowsSystemTrayMBS

s.BalloonText = "The text for the balloon."
s.BalloonTitle = "The title for the balloon"
s.BalloonMode = 0 // Error mode
```

**Notes:**

0 is Error, 1 is Info and 2 is warning.
(Read and Write property)
178.2. CLASS WINDOWSSYSTEMTRAYMBS

178.2.12 BalloonText as string

MBS Win Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The balloon text to show.

**Example:**

```
dim wst as WindowsSystemTrayMBS // your system tray object

wst.BalloonTitle="Warning"
wst.BalloonText="You have not clicked on me the last 10 minutes."
call wst.modify
```

**Notes:**
If BalloonTitle or BalloonText are not empty the balloon is shown when you call modify.
(Read and Write property)

178.2.13 BalloonTimeout as Integer

MBS Win Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The balloon timeout in milliseconds.

**Example:**

```
dim s as WindowsSystemTrayMBS

s.BalloonText = "The text for the balloon."
s.BalloonTitle = "The title for the balloon"
s.BalloonMode = 0 // Error mode
s.BalloonTimeout = 30000
```

**Notes:**
A value between 10000 and 30000.
Note that Timeout is valid only in Windows 2000 and Windows XP.
(Read and Write property)
See also:

- 178.2.22 BalloonTimeout(id as Integer, MouseX as Integer, MouseY as Integer) 20518

178.2.14 BalloonTitle as string

MBS Win Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The title of the balloon tooltip.
Example:

```vba
dim s as WindowsSystemTrayMBS

s.BalloonText = "The text for the balloon."
s.BalloonTitle = "The title for the balloon"
s.BalloonMode = 0 ' Error mode
```

Notes:

If BalloonTitle or BalloonText are not empty the balloon is shown when you call modify.
(Read and Write property)

178.2.15 IconHandle as Integer

MBS Win Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The icon handle currently used for the tray object.
**Notes:**
zero if no handle is there.
(Read and Write property)

178.2.16 ID as Integer

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** If you have more than
one icon in the system tray, use this ID to see which one is referred to inside an event.
**Notes:** (Read and Write property)

178.2.17 Tooltip as string

MBS Win Plugin, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The help string for the
tooltip.
**Example:**

```vba
dim e as WindowsSystemTrayMBS // global

e=new WindowsSystemTrayMBS
e.ID=12345678
e.Tooltip="some text"
e.BalloonText="some text"
e.BalloonTitle="some text"
e.BalloonMode=0
```
Notes:
Limited to 63 characters.
(Read and Write property)

178.2.18 UsingNewEvents as Boolean

MBS Win Plugin, Plugin Version: 7.4, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** Whether the new events are enabled.
**Notes:**
The plugin tries to enable new events if possible. That will only work on Windows 2000 or newer.

New events are:
BalloonTimeout
PopupOpen
ContextMenu
BalloonHide
KeySelected
BalloonUserClick
BalloonShow
Selected
(Read only property)

178.2.19 Events

178.2.20 BalloonHide(id as Integer, MouseX as Integer, MouseY as Integer)

MBS Win Plugin, Plugin Version: 7.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The balloon has been hidden.

178.2.21 BalloonShow(id as Integer, MouseX as Integer, MouseY as Integer)

MBS Win Plugin, Plugin Version: 7.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:** The balloon was shown.
**Notes:** You will get one balloon event when it disappears: BalloonHide, BalloonUserClick or BalloonTimeout.
178.2.22  BalloonTimeout(id as Integer, MouseX as Integer, MouseY as Integer)

MBS Win Plugin, Plugin Version: 7.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The balloon was removed because of a timeout.
See also:
  - 178.2.13 BalloonTimeout as Integer

178.2.23  BalloonUserClick(id as Integer, MouseX as Integer, MouseY as Integer)

MBS Win Plugin, Plugin Version: 7.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The user clicked on the balloon to make it away.

178.2.24  ContextMenu(id as Integer, MouseX as Integer, MouseY as Integer)

MBS Win Plugin, Plugin Version: 7.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
You should show a context menu.

178.2.25  KeySelected(id as Integer, MouseX as Integer, MouseY as Integer)

MBS Win Plugin, Plugin Version: 7.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The system tray item was selected by the keyboard.

178.2.26  MouseLeftButtonDoubleClick(id as Integer, MouseX as Integer, MouseY as Integer)

MBS Win Plugin, Plugin Version: 7.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Called if the left mouse button is pressed for a double click on the system tray icon.

178.2.27  MouseLeftButtonDown(id as Integer, MouseX as Integer, MouseY as Integer)

MBS Win Plugin, Plugin Version: 7.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Called if the left mouse button is pressed on the system tray icon.
178.2.28 MouseLeftButtonUp(id as Integer, MouseX as Integer, MouseY as Integer)

MBS Win Plugin, Plugin Version: 7.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Called if the left mouse button is released on the system tray icon.

178.2.29 MouseMiddleButtonDoubleClick(id as Integer, MouseX as Integer, MouseY as Integer)

MBS Win Plugin, Plugin Version: 7.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Called if the middle mouse button is pressed for a double click on the system tray icon.

178.2.30 MouseMiddleButtonDown(id as Integer, MouseX as Integer, MouseY as Integer)

MBS Win Plugin, Plugin Version: 7.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Called if the middle mouse button is pressed on the system tray icon.

178.2.31 MouseMiddleButtonUp(id as Integer, MouseX as Integer, MouseY as Integer)

MBS Win Plugin, Plugin Version: 7.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Called if the middle mouse button is released on the system tray icon.

178.2.32 MouseMove(id as Integer, MouseX as Integer, MouseY as Integer)

MBS Win Plugin, Plugin Version: 7.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Called if the mouse is moved over the system tray icon.

178.2.33 MouseRightButtonDoubleClick(id as Integer, MouseX as Integer, MouseY as Integer)

MBS Win Plugin, Plugin Version: 7.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Called if the right mouse button is pressed for a double click on the system tray icon.
178.2.34 MouseRightButtonDown(id as Integer, MouseX as Integer, MouseY as Integer)

MBS Win Plugin, Plugin Version: 7.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Called if the right mouse button is pressed on the system tray icon.

178.2.35 MouseRightButtonUp(id as Integer, MouseX as Integer, MouseY as Integer)

MBS Win Plugin, Plugin Version: 7.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
Called if the right mouse button is pressed on the system tray icon.

178.2.36 PopupOpen(id as Integer, MouseX as Integer, MouseY as Integer)

MBS Win Plugin, Plugin Version: 7.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
You should show a popup menu on the mouse position.

178.2.37 Selected(id as Integer, MouseX as Integer, MouseY as Integer)

MBS Win Plugin, Plugin Version: 7.4, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Function:**
The system tray item was selected.
Chapter 179

Windows Taskbar State

179.1 class WindowsTaskbarStateMBS

179.1.1 class WindowsTaskbarStateMBS

MBS Win Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** A class for information about the settings for the Windows taskbar.

179.1.2 Properties

179.1.3 AlwaysOnTop as Boolean

MBS Win Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** True if the taskbar should be always on the top.
**Notes:**
Value is false on any error.
Settable in plugin version 12.2 and newer.
(Read and Write property)

179.1.4 AutoHide as Boolean

MBS Win Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** True if the taskbar automatically hides itself.
**Notes:**
Value is false on any error.
Settable in plugin version 12.2 and newer.
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(Read and Write property)

179.1.5 Bottom as Integer

MBS Win Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The bottom value of the taskbar dimensions.

**Notes:**
Value is 0 on any error.
(Read and Write property)

179.1.6 Height as Integer

MBS Win Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The height value of the taskbar dimensions.

**Notes:**
Value is 0 on any error.
(Read and Write property)

179.1.7 Left as Integer

MBS Win Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The left value of the taskbar dimensions.

**Notes:**
Value is 0 on any error.
(Read and Write property)

179.1.8 Right as Integer

MBS Win Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:** The right value of the taskbar dimensions.

**Notes:**
Value is 0 on any error.
(Read and Write property)
179.1. Class WindowTaskBarStateMBS

179.1.9 Top as Integer

MBS Win Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The top value of the taskbar dimensions.

**Notes:**
Value is 0 on any error.
(Read and Write property)

179.1.10 Width as Integer

MBS Win Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: No, Win: Yes, Linux: No. **Function:**
The width value of the taskbar dimensions.

**Notes:**
Value is 0 on any error.
(Read and Write property)
Chapter 180

WiringPi

180.1  module WiringPiMBS

180.1.1  module WiringPiMBS

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The module to work with wiring pi library.

180.1.2  Methods

180.1.3  analogRead(pin as Integer) as Integer

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** This returns the value read on the supplied analog input pin. **Notes:** You will need to register additional analog modules to enable this function for devices such as the Gertboard, quick2Wire analog board, etc.

180.1.4  analogWrite(pin as Integer, value as Integer)

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** This writes the given value to the supplied analog pin. **Notes:** You will need to register additional analog modules to enable this function for devices such as the Gertboard.
180.1.5 delay(HowLong as UInt32)

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
This causes program execution to pause for at least howLong milliseconds.
**Notes:** Due to the multi-tasking nature of Linux it could be longer. Note that the maximum delay is an unsigned 32-bit integer or approximately 49 days.

180.1.6 delayMicroseconds(HowLong as UInt32)

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
This causes program execution to pause for at least howLong microseconds.
**Notes:**
Due to the multi-tasking nature of Linux it could be longer. Note that the maximum delay is an unsigned 32-bit integer microseconds or approximately 71 minutes.

Delays under 100 microseconds are timed using a hard-coded loop continually polling the system time, Delays over 100 microseconds are done using the system nanosleep() function. You may need to consider the implications of very short delays on the overall performance of the system, especially if using threads.

180.1.7 digitalWrite(pin as Integer) as Integer

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
This function returns the value read at the given pin.
**Notes:** It will be kHIGH or kLOW (1 or 0) depending on the logic level at the pin.

180.1.8 digitalWrite(pin as Integer, value as Integer)

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Writes the value kHIGH or kLOW (1 or 0) to the given pin which must have been previously set as an output.
**Notes:** WiringPi treats any non-zero number as kHIGH, however 0 is the only representation of kLOW.

180.1.9 digitalWriteByte(value as Integer)

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
This writes the 8-bit byte supplied to the first 8 GPIO pins.
**Notes:** It's the fastest way to set all 8 bits at once to a particular value, although it still takes two write
180.1. MODULE WIRING_PIMBS

operations to the Pi's GPIO hardware.

180.1.10  gpioClockSet(pin as Integer, value as Integer)

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Sets the clock.

180.1.11  I2CRead(fd as Integer) as Integer

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Simple device read.

**Notes:**

Some devices present data when you read them without having to do any register transactions. If the return value is negative then an error has happened and you should consult errno.

180.1.12  I2CReadReg16(fd as Integer, reg as Integer) as Integer

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Simple device read.

**Notes:**

Some devices present data when you read them without having to do any register transactions. Read a 16-bit value from the device register indicated.

If the return value is negative then an error has happened and you should consult errno.

180.1.13  I2CReadReg8(fd as Integer, reg as Integer) as Integer

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Simple device read.

**Notes:**

Some devices present data when you read them without having to do any register transactions. Read an 8-bit value from the device register indicated.

If the return value is negative then an error has happened and you should consult errno.
180.1.14  **I2CSetup(devId as Integer) as Integer**

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
This initialises the I2C system with your given device identifier.

**Notes:**
The ID is the I2C number of the device and you can use the i2cdetect program to find this out. `I2CSetup()` will work out which revision Raspberry Pi you have and open the appropriate device in `/dev`.

The return value is the standard Linux filehandle, or -1 if any error in which case, you can consult `errno` as usual.

E.g. the popular MCP23017 GPIO expander is usually device Id 0x20, so this is the number you would pass into `wiringPiI2CSetup()`.

180.1.15  **I2CSetupInterface(device as string, devId as Integer) as Integer**

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
This initialises the I2C system with your given device identifier and name.

180.1.16  **I2CWrite(fd as Integer, Data as Integer) as Integer**

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Simple device write.

**Notes:**
Some devices accept data this way without needing to access any internal registers. If the return value is negative then an error has happened and you should consult `errno`.

180.1.17  **I2CWriteReg16(fd as Integer, reg as Integer, Data as Integer) as Integer**

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Simple device write.

**Notes:**
Some devices accept data this way without needing to access any internal registers. Write a 16-bit data value into the device register indicated.

If the return value is negative then an error has happened and you should consult `errno`. 
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180.1.18 **I2CWriteReg8(fd as Integer, reg as Integer, Data as Integer) as Integer**

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**

Simple device write.

**Notes:**

Some devices accept data this way without needing to access any internal registers.
Write a 8-bit data value into the device register indicated.

If the return value is negative then an error has happened and you should consult errno.

180.1.19 **LoadLibrary(File as FolderItem) as boolean**

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**

Loads the library.

**Notes:**

Returns true on success or false on failure.
LoadError is set in case of failure.
See also:

- 180.1.20 LoadLibrary(Path as string) as boolean

180.1.20 **LoadLibrary(Path as string) as boolean**

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**

Loads the library.

**Notes:**

Returns true on success or false on failure.
LoadError is set in case of failure.
See also:

- 180.1.19 LoadLibrary(File as FolderItem) as boolean

180.1.21 **micros as UInt32**

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**

This returns a number representing the number of microseconds since your program called one of the wiring-PiSetup functions.

**Notes:** It returns an unsigned 32-bit number which wraps after approximately 71 minutes.
180.1.22  **millis as UInt32**

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** This returns a number representing the number of milliseconds since your program called one of the wiring-PiSetup functions. **Notes:** It returns an unsigned 32-bit number which wraps after 49 days.

180.1.23  **physPinToGpio(physPin as Integer) as Integer**

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** This returns the BCM_GPIO pin number of the supplied physical pin on the P1 connector.

180.1.24  **piBoardId(byref model as Integer, byref Rev as Integer, byref Mem as Integer, byref Maker as Integer, byref OverVolted as Integer)**

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Queries board identifiers. **Notes:** Mem is memory in Megabytes. Maker, Model and Rev are value which match the constants in this module.

180.1.25  **piBoardRev as Integer**

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** This returns the board revision of the Raspberry Pi. **Notes:** It will be either 1 or 2. Some of the BCM_GPIO pins changed number and function when moving from board revision 1 to 2, so if you are using BCM_GPIO pin numbers, then you need to be aware of the differences.

180.1.26  **piHiPri(pri as Integer) as Integer**

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** This attempts to shift your program (or thread in a multi-threaded program) to a higher priority and enables a real-time scheduling. **Notes:** The priority parameter should be from 0 (the default) to 99 (the maximum). This wont make your program go any faster, but it will give it a bigger slice of time when other programs are running. The priority parameter works relative to others so you can make one program priority 1 and another priority 2 and it will
have the same effect as setting one to 10 and the other to 90 (as long as no other programs are running with elevated priorities)

The return value is 0 for success and -1 for error. If an error is returned, the program should then consult the errno global variable, as per the usual conventions.

Note: Only programs running as root can change their priority. If called from a non-root program then nothing happens.

180.1.27 piLock(Key as Integer)

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Locks a synchronization lock.

**Notes:**
These allow you to synchronise variable updates from your main program to any threads running in your program. keyNum is a number from 0 to 3 and represents a key. When another process tries to lock the same key, it will be stalled until the first process has unlocked the same key.

You may need to use these functions to ensure that you get valid data when exchanging data between your main program and a thread otherwise its possible that the thread could wake-up halfway during your data copy and change the data so the data you end up copying is incomplete, or invalid.

180.1.28 piMakerNames(index as Integer) as string

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Maps maker numbers to names.

180.1.29 piModelNames(index as Integer) as string

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Maps model numbers to names.

180.1.30 pinMode(pin as Integer, mode as Integer)

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** This sets the mode of a pin to either INPUT, OUTPUT, PWM_OUTPUT or GPIO_CLOCK.

**Notes:**
Note that only wiringPi pin 1 (BCM_GPIO 18) supports PWM output and only wiringPi pin 7 (BCM_GPIO 4) supports CLOCK output modes.

This function has no effect when in Sys mode. If you need to change the pin mode, then you can do it with the gpio program in a script before you start your program.

**180.1.31 piRevisionNames(index as Integer) as string**

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Maps revision numbers to names.

**180.1.32 piUnlock(Key as Integer)**

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Unlocks a synchronization lock. **Notes:**

These allow you to synchronise variable updates from your main program to any threads running in your program. keyNum is a number from 0 to 3 and represents a key. When another process tries to lock the same key, it will be stalled until the first process has unlocked the same key.

You may need to use these functions to ensure that you get valid data when exchanging data between your main program and a thread otherwise its possible that the thread could wake-up halfway during your data copy and change the data so the data you end up copying is incomplete, or invalid.

**180.1.33 pullUpDnControl(pin as Integer, pud as Integer)**

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** This sets the pull-up or pull-down resistor mode on the given pin, which should be set as an input. **Notes:**

Unlike the Arduino, the BCM2835 has both pull-up an down internal resistors. The parameter pud should be; kPUD_OFF, (no pull up/down), kPUD_DOWN (pull to ground) or kPUD_UP (pull to 3.3v) The internal pull up/down resistors have a value of approximately 50K on the Raspberry Pi.

This function has no effect on the Raspberry Pis GPIO pins when in Sys mode. If you need to activate a pull-up/pull-down, then you can do it with the gpio program in a script before you start your program.
180.1.34  pwmSetClock(divisor as Integer)

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
This sets the divisor for the PWM clock.

180.1.35  pwmSetMode(mode as Integer)

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
The PWM generator can run in 2 modes balanced and mark:space. **Notes:** The mark:space mode is traditional, however the default mode in the Pi is balanced. You can switch modes by supplying the parameter: kPWM_MODE_BAL or kPWM_MODE_MS.

180.1.36  pwmSetRange(range as UInt32)

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
This sets the range register in the PWM generator. **Notes:** The default is 1024.

180.1.37  pwmToneWrite(pin as Integer, value as Integer)

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Writes a tone.

180.1.38  pwmWrite(pin as Integer, value as Integer)

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Writes the value to the PWM register for the given pin. **Notes:**
The Raspberry Pi has one on-board PWM pin, pin 1 (BMC_GPIO 18, Phys 12) and the range is 0-1024. Other PWM devices may have other PWM ranges. This function is not able to control the Pis on-board PWM when in Sys mode.
180.1.39  **Read(fd as Integer, count as UInt64) as Memoryblock**

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Read attempts to read count bytes of data from the object referenced by the descriptor fildes into a buffer.
**Notes:**
Returns the memoryblock on success (if we got more than zero bytes).
Errno is set in case of error.

180.1.40  **serialClose(fd as Integer)**

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Closes the device identified by the file descriptor given.

180.1.41  **serialDataAvail(fd as Integer) as Integer**

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Returns the number of characters available for reading, or -1 for any error condition, in which case errno
will be set appropriately.

180.1.42  **serialFlush(fd as Integer)**

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
This discards all data received, or waiting to be send down the given device.

180.1.43  **serialGetchar(fd as Integer) as Integer**

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Returns the next character available on the serial device.
**Notes:** This call will block for up to 10 seconds if no data is available (when it will return -1)

180.1.44  **serialOpen(device as String, Baud as Integer) as Integer**

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
This opens and initialises the serial device and sets the baud rate.
**Notes:** It sets the port into raw mode (character at a time and no translations), and sets the read timeout
to 10 seconds. The return value is the file descriptor or -1 for any error, in which case errno will be set as
appropriate.

180.1.45  **serialPutchar(fd as Integer, c as Integer)**

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Sends the single byte to the serial device identified by the given file descriptor.

180.1.46  **serialPutData(fd as Integer, data as Memoryblock)**

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Sends the nul-terminated string to the serial device identified by the given file descriptor. **Notes:** This sends text with any encoding.

180.1.47  **serialPuts(fd as Integer, text as string)**

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Sends the nul-terminated string to the serial device identified by the given file descriptor. **Notes:** This sends text with UTF-8 encoding.

180.1.48  **setPadDrive(group as Integer, value as Integer)**

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** This sets the strength of the pad drivers for a particular group of pins. **Notes:** There are 3 groups of pins and the drive strength is from 0 to 7. Do not use this unless you know what you are doing.

180.1.49  **SPIDataRW(channel as Integer, data as Memoryblock) as Integer**

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** This performs a simultaneous write/read transaction over the selected SPI bus. **Notes:** Data that was in your buffer is overwritten by data returned from the SPI bus.

That's all there is in the helper library. It is possible to do simple read and writes over the SPI bus using the standard read() and write() system calls though write() may be better to use for sending data to chains of shift registers, or those LED strings where you send RGB triplets of data. Devices such as A/D and D/A
converters usually need to perform a concurrent write/read transaction to work.

---

**180.1.50 SPIGetFd(channel as Integer) as Integer**

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Queries the file descriptor for a channel.

---

**180.1.51 SPISetup(channel as Integer, speed as Integer) as Integer**

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
This is the way to initialise a channel (The Pi has 2 channels: 0 and 1).
**Notes:**
The speed parameter is an integer in the range 500,000 through 32,000,000 and represents the SPI clock speed in Hz.

The returned value is the Linux file-descriptor for the device, or -1 on error. If an error has happened, you may use the standard errno global variable to see why.

---

**180.1.52 SPISetupMode(channel as Integer, speed as Integer, mode as Integer) as Integer**

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
This is the way to initialise a channel (The Pi has 2 channels: 0 and 1).
**Notes:**
The speed parameter is an integer in the range 500,000 through 32,000,000 and represents the SPI clock speed in Hz.

The returned value is the Linux file-descriptor for the device, or -1 on error. If an error has happened, you may use the standard errno global variable to see why.

---

**180.1.53 wiringPiSetup as Integer**

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Initializes the library.
**Notes:**
This initialises wiringPi and assumes that the calling program is going to be using the wiringPi pin numbering scheme. This is a simplified numbering scheme which provides a mapping from virtual pin numbers 0
through 16 to the real underlying Broadcom GPIO pin numbers. See the pins page for a table which maps
the wiringPi pin number to the Broadcom GPIO pin number to the physical location on the edge connector.

This function needs to be called with root privileges.

One of the setup functions must be called at the start of your program or your program will fail to work
correctly. You may experience symptoms from it simply not working to segfaults and timing issues.

180.1.54  wiringPiSetupGpio as Integer

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. Function:
Initializes the library.
Notes:
This is identical to wiringPiSetup, however it allows the calling programs to use the Broadcom GPIO pin
numbers directly with no re-mapping.

As above, this function needs to be called with root privileges, and note that some pins are different from
revision 1 to revision 2 boards.

One of the setup functions must be called at the start of your program or your program will fail to work
correctly. You may experience symptoms from it simply not working to segfaults and timing issues.

180.1.55  wiringPiSetupPhys as Integer

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. Function:
Initializes the library.
Notes:
Identical to wiringPiSetup, however it allows the calling programs to use the physical pin numbers on the
P1 connector only.

As above, this function needs to be called with root privileges.

One of the setup functions must be called at the start of your program or your program will fail to work
correctly. You may experience symptoms from it simply not working to segfaults and timing issues.
180.1.56  wiringPiSetupSys as Integer

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Initializes the library.
**Notes:**
This initialises wiringPi but uses the `/sys/class/gpio` interface rather than accessing the hardware directly. This can be called as a non-root user provided the GPIO pins have been exported before-hand using the gpio program. Pin numbering in this mode is the native Broadcom GPIO numbers the same as wiringPiSetupGpio() above, so be aware of the differences between Rev 1 and Rev 2 boards.

Note: In this mode you can only use the pins which have been exported via the `/sys/class/gpio` interface before you run your program. You can do this in a separate shell-script, or by using the system() function from inside your program to call the gpio program.

Also note that some functions have no effect when using this mode as they’re not currently possible to action unless called with root privileges. (although you can use system() to call gpio to set/change modes if needed)

One of the setup functions must be called at the start of your program or your program will fail to work correctly. You may experience symptoms from it simply not working to segfaults and timing issues.

180.1.57  wpiPinToGpio(wpiPin as Integer) as Integer

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
This returns the BCM_GPIO pin number of the supplied wiringPi pin.
**Notes:** It takes the board revision into account.

180.1.58  Write(fd as Integer, data as Memoryblock) as Integer

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:**
Write to a file descriptor.
**Notes:**
Write attempts to write bytes to the object referenced by the descriptor fildes from the memoryblock pointed to by data.
Upon successful completion the number of bytes which were written is returned. Otherwise, a -1 is returned and the global variable errno is set to indicate the error.
180.1.59 Properties

180.1.60 ErrNo as Integer

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** The last error code from the underlaying linux functions.

**Notes:**
must be called directly after a function to have the result from that function.
Calling any other function including writing a debug log, may cause this value to be reset.
(Read only property)

180.1.61 LoadError as String

MBS Linux Plugin, Plugin Version: 15.3, Console & Web: Yes, Mac: No, Win: No, Linux: Yes. **Function:** Returns the last load error.

**Notes:** (Read only property)

180.1.62 Constants

180.1.63 kGPIO_CLOCK = 3

MBS Linux Plugin, Plugin Version: 15.3. **Function:** One of the pin mode constants.

**Notes:** GPIO Clock

180.1.64 kHIGH = 1

MBS Linux Plugin, Plugin Version: 15.3. **Function:** The constant for high value.

180.1.65 kINPUT = 0

MBS Linux Plugin, Plugin Version: 15.3. **Function:** One of the pin mode constants.

**Notes:** Input
180.1.66 kINT\_EDGE\_BOTH = 3

MBS Linux Plugin, Plugin Version: 15.3. **Function:** One of the interrupt level constants. **Notes:** Both

180.1.67 kINT\_EDGE\_FALLING = 1

MBS Linux Plugin, Plugin Version: 15.3. **Function:** One of the interrupt level constants. **Notes:** Failing

180.1.68 kINT\_EDGE\_RISING = 2

MBS Linux Plugin, Plugin Version: 15.3. **Function:** One of the interrupt level constants. **Notes:** Rising

180.1.69 kINT\_EDGE\_SETUP = 0

MBS Linux Plugin, Plugin Version: 15.3. **Function:** One of the interrupt level constants. **Notes:** Setup

180.1.70 kLOW = 0

MBS Linux Plugin, Plugin Version: 15.3. **Function:** The constant for low value.

180.1.71 kOUTPUT = 1

MBS Linux Plugin, Plugin Version: 15.3. **Function:** One of the pin mode constants. **Notes:** Output

180.1.72 kPI\_MAKER\_EGOMAN = 1

MBS Linux Plugin, Plugin Version: 15.3. **Function:** One of the maker values. **Notes:** Egoman
180.1.73 kPI MAKER MBEST = 4

MBS Linux Plugin, Plugin Version: 15.3. **Function:** One of the maker values.  
**Notes:** MBest

180.1.74 kPI MAKER QISDA = 3

MBS Linux Plugin, Plugin Version: 15.3. **Function:** One of the maker values.  
**Notes:** QISDA

180.1.75 kPI MAKER SONY = 2

MBS Linux Plugin, Plugin Version: 15.3. **Function:** One of the maker values.  
**Notes:** Sony

180.1.76 kPI MAKER UNKNOWN = 0

MBS Linux Plugin, Plugin Version: 15.3. **Function:** One of the maker values.  
**Notes:** Unknown

180.1.77 kPI MODEL 2 = 6

MBS Linux Plugin, Plugin Version: 15.3. **Function:** One of the model constants.  
**Notes:** Model 2

180.1.78 kPI MODEL A = 1

MBS Linux Plugin, Plugin Version: 15.3. **Function:** One of the model constants.  
**Notes:** Model A

180.1.79 kPI MODEL AP = 5

MBS Linux Plugin, Plugin Version: 15.3. **Function:** One of the model constants.  
**Notes:** Model AP
180.1.80  kPI\_MODEL\_B = 2

MBS Linux Plugin, Plugin Version: 15.3. **Function:** One of the model constants.  
**Notes:** Model B

180.1.81  kPI\_MODEL\_BP = 3

MBS Linux Plugin, Plugin Version: 15.3. **Function:** One of the model constants.  
**Notes:** Model BP

180.1.82  kPI\_MODEL\_CM = 4

MBS Linux Plugin, Plugin Version: 15.3. **Function:** One of the model constants.  
**Notes:** Model CM

180.1.83  kPI\_MODEL\_UNKNOWN = 0

MBS Linux Plugin, Plugin Version: 15.3. **Function:** One of the model constants.  
**Notes:** unknown

180.1.84  kPI\_VERSION\_1 = 1

MBS Linux Plugin, Plugin Version: 15.3. **Function:** One of the version constants.  
**Notes:** Version 1

180.1.85  kPI\_VERSION\_1\_1 = 2

MBS Linux Plugin, Plugin Version: 15.3. **Function:** One of the version constants.  
**Notes:** Version 1.1

180.1.86  kPI\_VERSION\_1\_2 = 3

MBS Linux Plugin, Plugin Version: 15.3. **Function:** One of the version constants.  
**Notes:** Version 1.2
180.1.87  kPI_VERSION_2 = 4

MBS Linux Plugin, Plugin Version: 15.3. **Function**: One of the version constants. **Notes**: Version 2

180.1.88  kPI_VERSIONUNKNOWN = 0

MBS Linux Plugin, Plugin Version: 15.3. **Function**: One of the version constants. **Notes**: Unknown version

180.1.89  kPUD_DOWN = 1

MBS Linux Plugin, Plugin Version: 15.3. **Function**: One of the pull up/down constants. **Notes**: pull to ground

180.1.90  kPUD_OFF = 0

MBS Linux Plugin, Plugin Version: 15.3. **Function**: One of the pull up/down constants. **Notes**: no pull up/down

180.1.91  kPUD_UP = 2

MBS Linux Plugin, Plugin Version: 15.3. **Function**: One of the pull up/down constants. **Notes**: pull to 3.3v

180.1.92  kPWM_MODE_BAL = 1

MBS Linux Plugin, Plugin Version: 15.3. **Function**: One of the PWM generator modes. **Notes**: Balanced

180.1.93  kPWM_MODE_MS = 0

MBS Linux Plugin, Plugin Version: 15.3. **Function**: One of the PWM generator modes. **Notes**: Mark:Space
### 180.1.94 kPWM_OUTPUT = 2

MBS Linux Plugin, Plugin Version: 15.3. **Function**: One of the pin mode constants.  
**Notes**: PWM Output

### 180.1.95 kPWM_TONE_OUTPUT = 6

MBS Linux Plugin, Plugin Version: 15.3. **Function**: One of the pin mode constants.  
**Notes**: Tone Output

### 180.1.96 kSOFT_PWM_OUTPUT = 4

MBS Linux Plugin, Plugin Version: 15.3. **Function**: One of the pin mode constants.  
**Notes**: PWM Output

### 180.1.97 kSOFT_TONE_OUTPUT = 5

MBS Linux Plugin, Plugin Version: 15.3. **Function**: One of the pin mode constants.  
**Notes**: Tone Output
Chapter 181

Wordfile

181.1 class WordFileMBS

181.1.1 class WordFileMBS

MBS XL Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Word file editing.

**Example:**

```vba
dim f as FolderItem = GetFolderItem("test.docx")
dim b as BinaryStream = BinaryStream.Open(f)
dim d as string = b.Read(b.Length)
dim w as WordFileMBS = WordFileMBS.OpenData(d)
if w.ReplaceTag("FirstName", "Peter") then
if w.ReplaceTag("LastName", "Miller") then

f = GetFolderItem("output.docx")
if w.WriteFile(f) then
MsgBox "OK"
end if
end if
end if
```

**Notes:**

This is a class for reading word files and replacing text to customize document files. Works for xml and docx files. Does not support old doc file format.

Please report document files where plugin corrupted file or failed to replace text.
This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

181.1.2 Methods

181.1.3 Append(other as WordFileMBS) as Boolean

MBS XL Plugin, Plugin Version: 17.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Appends one word file text to other.

**Notes:**
This function takes document part from other word file and copies its xml nodes to the current document. Please only copy from one document to other if they both are made from same template, so internal IDs for styles match. Returns true on success or false on failure.

181.1.4 AppendTableRow(tag as string) as Integer

MBS XL Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Duplicates a table row containing a placeholder.

**Notes:**
If you have tables in your template word file and you like to duplicate it, this function can do that and add the new row on the end of the table.

Returns Values

- 0 success
- 1 Tag not found.
- 2 Tag found, but not in a table.
- 3 Missing main document part.

181.1.5 Constructor

MBS XL Plugin, Plugin Version: 15.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The private constructor.
181.1.6  DuplicateTableRow(tag as string) as Integer

MBS XL Plugin, Plugin Version: 17.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Duplicates a table row containing a placeholder.

**Notes:**
If you have tables in your template word file and you like to duplicate it, this function can do that and add the new row on just after the row to copy.

Returns Values

0  success
1  Tag not found.
2  Tag found, but not in a table.
3  Missing main document part.

181.1.7  FieldNames as String()

MBS XL Plugin, Plugin Version: 17.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries field names in the file.

**Notes:** This looks for form fields in a word file.

181.1.8  GetFieldText(fieldName as string, byref text as String) as boolean

MBS XL Plugin, Plugin Version: 17.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries field value.

**Notes:**
The plugin looks for the field with given name and queries it’s text.
Returns true if field was found.

181.1.9  HasTag(tag as string) as boolean

MBS XL Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Checks if a tag exists.

**Notes:**
The place holder in the document must start with and end with characters. The place holder you pass here, should not have those quotes.
Returns true on success or false on failure.

If you change font or style of the text within the marker, it will not be recognized. So please keep all text between and including the `and` markers (or whatever is configured) within the same font style.

### 181.1.10 MediaFiles as String()

MBS XL Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Lists the media files in the word document.
**Notes:** e.g. image1.png

### 181.1.11 OpenData(Data as MemoryBlock) as WordFileMBS

MBS XL Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Opens data as document.
**Notes:**
You can pass here XML or Docx file content.
Returns nil in case of an error.
See also:
- 181.1.12 OpenData(Data as String) as WordFileMBS

### 181.1.12 OpenData(Data as String) as WordFileMBS

MBS XL Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Opens data as document.
**Example:**

```vbs
dim f as FolderItem = GetFolderItem("test.docx")
dim b as BinaryStream = BinaryStream.Open(f)
dim d as string = b.Read(b.Length)
dim w as WordFileMBS = WordFileMBS.OpenData(d)

if w.ReplaceTag("FirstName", "Peter") then
if w.ReplaceTag("LastName", "Miller") then

f = GetFolderItem("output.docx")
if w.WriteFile(f) then
MsgBox "OK"
end if
end if
end if
```
181.1. **CLASS WORDFILEMBS**

**Notes:**
You can pass here XML or Docx file content.
Returns nil in case of an error.
See also:

- 181.1.11 OpenData(Data as MemoryBlock) as WordFileMBS

181.1.13  **OpenXML(XML as String) as WordFileMBS**

MBS XL Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Opens XML file from text string.
**Notes:** Returns nil in case of error.

181.1.14  **Parts as String()**

MBS XL Plugin, Plugin Version: 16.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Queries names of the parts of the document.
**Example:**
```vba
dim f as FolderItem = GetFolderItem("test.docx")
dim b as BinaryStream = BinaryStream.Open(f)
dim d as string = b.Read(b.Length)
dim w as WordFileMBS = WordFileMBS.OpenData(d)
MsgBox w.XML("footer1")
```

**Notes:**
This may tell you how many headers/footers we found in a docx file.
e.g. "footer1", "header1", "document".

181.1.15  **RemoveTableRow(tag as string) as Integer**

MBS XL Plugin, Plugin Version: 17.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Removes a table row containing a placeholder.
**Notes:**
If you have tables in your template word file and you only fill some rows, you can remove superfluous rows using this function.
Returns Values

0 success
1 Tag not found.
2 Tag found, but not in a table.
3 Missing main document part.

181.1.16 ReplaceTag(tag as string, text as string = "", All as boolean = false) as boolean

MBS XL Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Replaces a placeholder with text.

**Example:**

```vbs
dim f as FolderItem = GetFolderItem("test.docx")
dim b as BinaryStream = BinaryStream.Open(f)
dim d as string = b.Read(b.Length)
dim w as WordFileMBS = WordFileMBS.OpenData(d)

if w.ReplaceTag("FirstName", "Peter") then
    if w.ReplaceTag("LastName", "Miller") then

        f = GetFolderItem("output.docx")
        if w.WriteFile(f) then
            MsgBox "OK"
        end if
    end if
end if
```

**Notes:**

The place holder in the document must start with and end with characters. The place holder you pass here, should not have those quotes.

Returns true on success or false on failure.

If you need to replace multi line text like addresses, please use several placeholders, at least one per line.

Version 17.0 and newer can handle multi line text better for normal paragraphs. It creates for you new paragraphs for each line in the new text.

If you change font or style of the text within the marker, it will not be recognized. So please keep all text
between and including the  and  markers (or whatever is configured) within the same font style.

181.1.17  SetFieldText(fieldName as string, text as String) as boolean

MBS XL Plugin, Plugin Version: 17.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets field value.
**Notes:**
The plugin looks for the field with given name and sets it’s text. Returns true if field was found.

181.1.18  SetMarkers(openMarker as String, closeMarker as String) as boolean

MBS XL Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the markers to look for before/after a tag.
**Notes:**
Default are  and . Should be different and not empty. Returns true on success or false on failure.

181.1.19  WriteFile(path as folderItem) as boolean

MBS XL Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Writes a file to disk.
**Example:**
```vba
    dim f as FolderItem = GetFolderItem("test.docx")
    dim b as BinaryStream = BinaryStream.Open(f)
    dim d as string = b.Read(b.Length)
    dim w as WordFileMBS = WordFileMBS.OpenData(d)

    if w.ReplaceTag("FirstName", "Peter") then
      if w.ReplaceTag("LastName", "Miller") then
        f = GetFolderItem("output.docx")
        if w.WriteFile(f) then
          MsgBox "OK"
        end if
      end if
    end if
```

Notes: File extension should be correct, either docx or xml depending on what you loaded.

181.1.20 Properties

181.1.21 Caseless as Boolean

MBS XL Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether to compare tag names case insensitive.  
**Notes:**  
Set to true for case insensitive comparison of ASCII characters.  
Default is false.  
(Read and Write property)

181.1.22 CloseMarker as String

MBS XL Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The close marker text.  
**Notes:**  
Default value is ".".  
(Read only property)

181.1.23 OpenMarker as String

**Notes:**  
Default value is ".".  
(Read only property)

181.1.24 Text as String

MBS XL Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Extracts text of word file.  
**Notes:**  
Plugin inserts a few newline characters for detected line ends.
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May not give all text. If you miss something, please send us test files.
(Read only property)

181.1.25 XML as String

MBS XL Plugin, Plugin Version: 15.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The XML found in the document.
**Notes:** (Read and Write property)
See also:

- 181.1.27 XML(part as String) as String

181.1.26 MediaFile(name as string) as String

MBS XL Plugin, Plugin Version: 16.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries or replaces the content of a media file.
**Notes:**
You can use this to extract images from word file.
Or to replace a placeholder image with the real image.
For replacement please make sure file type and dimensions match.
Raises KeyNotFoundException if media file with given name is not found.
(Read and Write computed property)

181.1.27 XML(part as String) as String

**Example:**
```vba
    dim f as FolderItem = GetFolderItem("test.docx")
    dim b as BinaryStream = BinaryStream.Open(f)
    dim d as string = b.Read(b.Length)
    dim w as WordFileMBS = WordFileMBS.OpenData(d)
    MsgBox Join(w.Parts, EndOfLine)
```
**Notes:**
See Parts array for possible parts.
(Read and Write computed property)
See also:
• 181.1.25 XML as String
Chapter 182

X-Face

182.1  Globals

182.1.1  PictureFromXFaceMemoryBlockMBS(xface as memoryblock) as picture

MBS Picture Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new picture from a X-Face string inside a memoryblock.

**Notes:**
- Returns nil on any error.
- The returned picture is 32 bit depth.

See also:
- 182.1.2 PictureFromXFaceMemoryBlockMBS(xface as memoryblock, size as Integer) as picture

182.1.2  PictureFromXFaceMemoryBlockMBS(xface as memoryblock, size as Integer) as picture

MBS Picture Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new picture from a X-Face string inside a memoryblock with the given size.

**Notes:**
- Returns nil on any error.
- The returned picture is 32 bit depth.

See also:
- 182.1.1 PictureFromXFaceMemoryBlockMBS(xface as memoryblock) as picture
182.1.3  PictureFromXFaceStringMBS(xface as string) as picture

MBS Picture Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a new picture from a X-Face string.

**Notes:**
Returns nil on any error.
The returned picture is 32 bit depth.

182.1.4  XFaceStringFromPictureMBS(pic as picture) as string

MBS Picture Plugin, Plugin Version: 3.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a X-Face encoded string with the picture as content.

**Notes:**
The picture is first converted to a 32 bit picture. Than it’s encoded. A Pixel like c=rgb(r,g,b) is white if
\[(r+g+b) \geq 3*128.\]

Returns "" on any error.
Chapter 183

XL

183.1 class XLAutoFilterMBS

183.1.1 class XLAutoFilterMBS

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: The class for auto filter. Notes: This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

183.1.2 Methods

183.1.3 Column(colId as Integer) as XLFilterColumnMBS


183.1.4 ColumnByIndex(colId as Integer) as XLFilterColumnMBS

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Returns the specified AutoFilter column which have a filter information by index.
183.1.5 ColumnSize as Integer

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the number of specified AutoFilter columns which have a filter information.

183.1.6 Constructor

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

183.1.7 GetRef(byref rowFirst as Integer, byref rowLast as Integer, byref colFirst as Integer, byref colLast as Integer) as Boolean

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the cell range of AutoFilter with header.
**Notes:** Returns false if error. Get error info with XLBookMBS.errorMessage.

183.1.8 GetSort(byref columnIndex as Integer, byref descending as Boolean) as Boolean

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the zero-based index of sorted column in AutoFilter and its sort order.
**Notes:** Returns false if error. Get error info with XLBookMBS.errorMessage.

183.1.9 GetSortRange(byref rowFirst as Integer, byref rowLast as Integer, byref colFirst as Integer, byref colLast as Integer) as Boolean

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the whole range of data to sort.
**Notes:** Returns false if error. Get error info with XLBookMBS.errorMessage.

183.1.10 SetRef(rowFirst as Integer, rowLast as Integer, colFirst as Integer, colLast as Integer)

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the cell range of AutoFilter with header.
183.1.11 **SetSort(columnIndex as Integer, descending as Boolean)**

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the sorted column in AutoFilter by zero-based index and its sort order.
**Notes:** Returns false if error. Get error info with XLBookMBS.errorMessage.

183.1.12 **Properties**

183.1.13 **Handle as Integer**

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The internal object reference.
**Notes:** (Read and Write property)

183.1.14 **Owner as Variant**

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The parent object.
**Notes:**
Usually the XLFilterColumnMBS object.
(Read only property)
183.2 class XLBookMBS

183.2.1 class XLBookMBS

Notes:
The MBS Xojo (Real Studio) XL Plugin is based on LibXL, a powerful library to handle Excel files.

You’ll need your own license for LibXL. For more information go here: https://www.bluesnap.com/jsp/redirect.jsp?contractId=2284940&referrer=983554

When you have obtained license file inside your XOJO project place XLBookMBS.SetKeyGlobal call with LibXL license in app.open.

183.2.2 Methods

183.2.3 AddCustomNumFormat(customNumFormat as string) as Integer

Notes: The format string customNumFormat indicates how to format and render the numeric value of a cell. See custom format strings guidelines (in FAQ). Returns the custom format identifier. It’s used in XLFormatMBS.NumFormat. Returns 0 if error occurs. Get error info with XLBookMBS.ErrorMessage property.

183.2.4 AddFont(initFont as XLFontMBS = nil) as XLFontMBS

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Adds a new font to the workbook, initial parameters can be copied from other font.
Notes: Returns NULL if error occurs.

183.2.5 AddFormat(initFormat as XLFormatMBS = nil) as XLFormatMBS

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Adds a new format to the workbook, initial parameters can be copied from other format.
Notes: Returns NULL if error occurs.
183.2.6 AddPicture(path as folderitem) as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Adds a picture to the workbook.
**Notes:** Returns a picture identifier. Supports BMP, DIB, PNG, JPG and WMF picture formats. Use picture identifier with XLSheetMBS.setPicture(). Returns -1 if error occurs. Get error info with XLBookMBS.ErrorMessage property.
See also:
- 183.2.7 AddPicture(path as string) as Integer

183.2.7 AddPicture(path as string) as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Adds a picture to the workbook.
**Notes:** Returns a picture identifier. Supports BMP, DIB, PNG, JPG and WMF picture formats. Use picture identifier with XLSheetMBS.setPicture(). Returns -1 if error occurs. Get error info with XLBookMBS.ErrorMessage property.
See also:
- 183.2.6 AddPicture(path as folderitem) as Integer

183.2.8 AddPictureData(data as string) as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Adds a picture to the workbook from memory buffer:
**Notes:** Returns a picture identifier. Use picture identifier with XLSheetMBS.setPicture(). Returns -1 if error occurs. Get error info with XLBookMBS.ErrorMessage property.

183.2.9 AddSheet(name as string = "", initSheet as XLSheetMBS = nil) as XLSheetMBS

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Adds a new sheet to this book, returns the sheet.
**Notes:**
Use initSheet parameter if you wish to copy an existing sheet.
Returns NULL if error occurs. Get error info with XLBookMBS.ErrorMessage property.
183.2.10 available as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the library is available. **Notes:** Returns false on PPC targets.

183.2.11 BiffVersion as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns BIFF version of binary file. **Notes:** Used for xls format only.

183.2.12 BookVersion as Integer

MBS XL Plugin, Plugin Version: 13.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the version number of this book. **Example:**

```vbnet
dim b as new XLBookMBS
dim v as Integer = b.BookVersion

dim h as Integer = v \ 256 \ 256 \ 256

dim m as Integer = v \ 256 \ 256 mod 256

dim l as Integer = v \ 256 mod 256

MsgBox "libXL "+str(h)+"."+str(m)+"."+str(l)
```

**Notes:** Version number is encoded as hex number with major version, minor version and bugfix.

183.2.13 Constructor(xml as boolean = false)

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a new XLBookMBS object. **Notes:** xml: If true, creates a book in xlsx format (xml), else one in xls format (binary).
### 183.2.14 CopyContent(dest as XLBookMBS)

MBS XL Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies all content from one book to other book.

**Notes:**
The plugin loops through all sheets and creates matching sheets on new book. Formats and fonts are created on the fly.

This allows you to convert from XLS to XLSX or back. Please report if something is not copied. Of course plugin can only copy what libXL supports, so stuff like movies or diagrams are not copied.

### 183.2.15 CustomNumFormat(fmt as Integer) as string

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a custom format string for specified custom format identifier fmt.

**Notes:** See custom format string guidelines (in FAQ). Returns NULL if error occurs. Get error info with XLBookMBS.ErrorMessage property.

### 183.2.16 DefaultFont(byref fontSize as Integer) as string

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a default font name and size for this workbook.

**Notes:** Returns "" if error occurs. Get error info with XLBookMBS.ErrorMessage property.

### 183.2.17 DelSheet(index as Integer) as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Deletes a sheet with specified index.

**Notes:** Returns false if error occurs. Get error info with XLBookMBS.ErrorMessage property.

### 183.2.18 Font(index as Integer) as XLFontMBS

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a font with defined index.

**Notes:** Index must be less than return value of fontCount method.
183.2.19  FontCount as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Returns a number of fonts in this book.

183.2.20  Fonts as XLFontMBS()

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Returns array with all defined fonts.

183.2.21  Format(index as Integer) as XLFormatMBS

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Returns a format with defined index.
Notes: Index must be less than return value of formatCount method.

183.2.22  FormatCount as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Returns a number of formats in this book.

183.2.23  Formats as XLFormatMBS()

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Returns array with all defined formats.

183.2.24  InsertSheet(index as Integer, name as string = "", initSheet as XLSheetMBS = nil) as XLSheetMBS

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Inserts a new sheet to this book at position index, returns the sheet.
Notes: Use initSheet parameter if you wish to copy an existing sheet. Returns NULL if error occurs. Get error info with XLBookMBS.ErrorMessage property.
183.2. **CLASS XLBOOKMBS**

183.2.25 **LibVersion as string**

**Example:**

MsgBox XLBookMBS.LibVersion

**Notes:**

Returns for example "3.8.0".  
With plugin version 17.4 or newer, this returns 4 numbers, so you may see another .0 on the end.

183.2.26 **LibVersionNumber as Integer**

MBS XL Plugin, Plugin Version: 17.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns version of library as number.  
**Example:**

MsgBox str(XLBookMBS.LibVersionNumber)

**Notes:** Returns for example 3 * 256^2 + 8 * 256 + 0.

183.2.27 **Load(path as folderitem) as boolean**

**Notes:**

Returns false if error occurs. Get error info with XLBookMBS.ErrorMessage property.

With the constructor of the XLBookMBS object you decide if you want to load XML format or older binary format. If the format of the book object doesn’t match the file, it will fail.

Loading a file into the book object clears existing formats, sheets and fonts from previous book. You can recreate the ones you need or search them in the existing formats, fonts or sheets.

See also:

- 183.2.28 Load(path as string) as boolean
183.2.28 Load(path as string) as boolean

**Notes:**
Returns false if error occurs. Get error info with XLBookMBS.ErrorMessage property.

With the constructor of the XLBookMBS object you decide if you want to load XML format or older binary format. If the format of the book object doesn’t match the file, it will fail.

Loading a file into the book object clears existing formats, sheets and fonts from previous book. You can recreate the ones you need or search them in the existing formats, fonts or sheets.
See also:
- 183.2.27 Load(path as folderitem) as boolean

183.2.29 Load2(path as folderitem) as XLBookMBS

MBS XL Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads a xls-file from file.
**Notes:**
Autodetects if format is old (binary) or new (xml).
Returns nil if error occurs. On success returns a valid book.
Optionally returns error with ErrorMessage parameter.

Loading a file into the book object clears existing formats, sheets and fonts from previous book. You can recreate the ones you need or search them in the existing formats, fonts or sheets.
See also:
- 183.2.30 Load2(path as folderitem, byref ErrorMessage as String) as XLBookMBS
- 183.2.31 Load2(path as string) as XLBookMBS
- 183.2.32 Load2(path as string, byref ErrorMessage as String) as XLBookMBS

183.2.30 Load2(path as folderitem, byref ErrorMessage as String) as XLBookMBS

MBS XL Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads a xls-file from file.
**Example:**
```vba
dim f as FolderItem = SpecialFolder.Desktop.Child("XING contacts.xlsx")
dim e as string
```
183.2.  **CLASS XLBOOKMBS**

```vba
dim b as XLBookMBS = XLBookMBS.Load2(f,e)
if b = nil then
    MsgBox e
    Return
end if

dim s as XLSheetMBS = b.Sheet(0)
MsgBox s.ReadString(1,1)
```

**Notes:**

Autodetects if format is old (binary) or new (xml).
Returns nil if error occurs. On success returns a valid book.
Optionally returns error with ErrorMessage parameter.

Loading a file into the book object clears existing formats, sheets and fonts from previous book. You can recreate the ones you need or search them in the existing formats, fonts or sheets.
See also:

- 183.2.29 Load2(path as folderitem) as XLBookMBS
- 183.2.31 Load2(path as string) as XLBookMBS
- 183.2.32 Load2(path as string, byref ErrorMessage as String) as XLBookMBS

### 183.2.31  **Load2(path as string) as XLBookMBS**

MBS XL Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads a xls-file from file.

**Example:**

```vba
dim f as FolderItem = SpecialFolder.Desktop.Child("XING contacts.xlsx")
dim b as XLBookMBS = XLBookMBS.Load2(f)
if b = nil then
    MsgBox e
    Return
end if

dim s as XLSheetMBS = b.Sheet(0)
MsgBox s.ReadString(1,1)
```

**Notes:**
Autodetects if format is old (binary) or new (xml). Returns nil if error occurs. On success returns a valid book. Optionally returns error with ErrorMessage parameter.

Loading a file into the book object clears existing formats, sheets and fonts from previous book. You can recreate the ones you need or search them in the existing formats, fonts or sheets. See also:

• 183.2.29 Load2(path as folderitem) as XLBookMBS
• 183.2.30 Load2(path as folderitem, byref ErrorMessage as String) as XLBookMBS
• 183.2.32 Load2(path as string, byref ErrorMessage as String) as XLBookMBS

183.2.32  Load2(path as string, byref ErrorMessage as String) as XLBookMBS


Notes:
Autodetects if format is old (binary) or new (xml). Returns nil if error occurs. On success returns a valid book. Optionally returns error with ErrorMessage parameter.

Loading a file into the book object clears existing formats, sheets and fonts from previous book. You can recreate the ones you need or search them in the existing formats, fonts or sheets. See also:

• 183.2.29 Load2(path as folderitem) as XLBookMBS
• 183.2.30 Load2(path as folderitem, byref ErrorMessage as String) as XLBookMBS
• 183.2.31 Load2(path as string) as XLBookMBS

183.2.33  LoadError as String


Example:

dim f as FolderItem = SpecialFolder.Desktop.Child("test.dylib")

if XLBookMBS.LoadLibrary(f) then
  MsgBox "OK"
else
  MsgBox XLBookMBS.LoadError
183.2.34 LoadLibrary(File as FolderItem) as boolean


**Example:**

```vbnet
MsgBox "Version before: " + XLBookMBS.LibVersion

dim f as FolderItem = SpecialFolder.Desktop.Child("libxl.dylib")

if XLBookMBS.LoadLibrary(f) then
    MsgBox "Version after: " + XLBookMBS.LibVersion
else
    MsgBox XLBookMBS.LoadError
end if
```

**Notes:**

Returns true on success or false on failure.

While the plugin comes with an internal libXL library, you can use this method to load a different version of the library.

See also:

- 183.2.35 LoadLibrary(Path as string) as boolean

183.2.35 LoadLibrary(Path as string) as boolean


**Notes:**

Returns true on success or false on failure.

While the plugin comes with an internal libXL library, you can use this method to load a different version of the library.

See also:

- 183.2.34 LoadLibrary(File as FolderItem) as boolean
183.2.36 LoadMT(path as folderitem) as boolean

**Notes:**  
Same as the other method without MT in name, except:  
The work is performed on a preemptive thread, so this function can yield time to other Xojo (Real Studio) threads. For best user experience run this command on a Xojo (Real Studio) thread, so your GUI stays responsive.  
See also:

- 183.2.37 LoadMT(path as string) as boolean

183.2.37 LoadMT(path as string) as boolean

**Notes:**  
Same as the other method without MT in name, except:  
The work is performed on a preemptive thread, so this function can yield time to other Xojo (Real Studio) threads. For best user experience run this command on a Xojo (Real Studio) thread, so your GUI stays responsive.  
See also:

- 183.2.36 LoadMT(path as folderitem) as boolean

183.2.38 LoadPartially(path as folderitem, sheetIndex as Integer, firstRow as Integer, lastRow as Integer) as boolean

MBS XL Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads a file only with specified sheet index and row range into memory.  
**Notes:** Returns false if error occurs or true on success. Get error info with errorMessage function.  
See also:

- 183.2.39 LoadPartially(path as string, sheetIndex as Integer, firstRow as Integer, lastRow as Integer) as boolean

183.2.39 LoadPartially(path as string, sheetIndex as Integer, firstRow as Integer, lastRow as Integer) as boolean

MBS XL Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads a file only with specified sheet index and row range into memory.
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Notes: Returns false if error occurs or true on success. Get error info with errorMessage function.
See also:

- 183.2.38 LoadPartially(path as folderitem, sheetIndex as Integer, firstRow as Integer, lastRow as Integer) as boolean

183.2.40 LoadPartiallyUsingTempFile(path as folderitem, sheetIndex as Integer, firstRow as Integer, lastRow as Integer, TempFile as folderitem) as boolean

Notes:
Specify a temporary file for reducing memory consumption.
Returns false if error occurs or true on success. Get error info with errorMessage function.
See also:

- 183.2.41 LoadPartiallyUsingTempFile(path as string, sheetIndex as Integer, firstRow as Integer, lastRow as Integer, TempFile as String) as boolean

183.2.41 LoadPartiallyUsingTempFile(path as string, sheetIndex as Integer, firstRow as Integer, lastRow as Integer, TempFile as String) as boolean

Notes:
Specify a temporary file for reducing memory consumption.
Returns false if error occurs or true on success. Get error info with errorMessage function.
See also:

- 183.2.40 LoadPartiallyUsingTempFile(path as folderitem, sheetIndex as Integer, firstRow as Integer, lastRow as Integer, TempFile as folderitem) as boolean

183.2.42 LoadRaw(data as MemoryBlock) as boolean

Notes:
Returns false if error occurs. Get error info with errorMessage property.
With the constructor of the XLBookMBS object you decide if you want to load XML format or older binary format. If the format of the book object doesn’t match the file, it will fail.

Loading a file into the book object clears existing formats, sheets and fonts from previous book. You can recreate the ones you need or search them in the existing formats, fonts or sheets.

See also:

- 183.2.43 LoadRaw(data as string) as boolean

183.2.43 LoadRaw(data as string) as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads a xls-file from user’s memory buffer.  
**Notes:**  
Returns false if error occurs. Get error info with errorMessage property.

With the constructor of the XLBookMBS object you decide if you want to load XML format or older binary format. If the format of the book object doesn’t match the file, it will fail.

Loading a file into the book object clears existing formats, sheets and fonts from previous book. You can recreate the ones you need or search them in the existing formats, fonts or sheets.

See also:

- 183.2.42 LoadRaw(data as MemoryBlock) as boolean

183.2.44 LoadRaw2(data as MemoryBlock) as XLBookMBS

MBS XL Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads a xls-file from user’s memory buffer.  
**Notes:**  
Autodetects if format is old (binary) or new (xml).  
Returns nil if error occurs. On success returns a valid book.  
Optionally returns error with ErrorMessage parameter.

Loading a file into the book object clears existing formats, sheets and fonts from previous book. You can recreate the ones you need or search them in the existing formats, fonts or sheets.

See also:

- 183.2.45 LoadRaw2(data as MemoryBlock, byref ErrorMessage as String) as XLBookMBS
- 183.2.46 LoadRaw2(data as string) as XLBookMBS
- 183.2.47 LoadRaw2(data as string, byref ErrorMessage as String) as XLBookMBS
183.2.45  **LoadRaw2**(data as MemoryBlock, byref ErrorMessage as String) as XLBookMBS

MBS XL Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads a xls-file from user’s memory buffer.  
**Notes:** 
Autodetects if format is old (binary) or new (xml). 
Returns nil if error occurs. On success returns a valid book. 
Optionally returns error with ErrorMessage parameter.

Loading a file into the book object clears existing formats, sheets and fonts from previous book. You can recreate the ones you need or search them in the existing formats, fonts or sheets. 
See also:

- 183.2.44 LoadRaw2(data as MemoryBlock) as XLBookMBS  
- 183.2.46 LoadRaw2(data as string) as XLBookMBS  
- 183.2.47 LoadRaw2(data as string, byref ErrorMessage as String) as XLBookMBS

183.2.46  **LoadRaw2**(data as string) as XLBookMBS

MBS XL Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads a xls-file from user’s string buffer.  
**Notes:** 
Autodetects if format is old (binary) or new (xml). 
Returns nil if error occurs. On success returns a valid book. 
Optionally returns error with ErrorMessage parameter.

Loading a file into the book object clears existing formats, sheets and fonts from previous book. You can recreate the ones you need or search them in the existing formats, fonts or sheets. 
See also:

- 183.2.44 LoadRaw2(data as MemoryBlock) as XLBookMBS  
- 183.2.45 LoadRaw2(data as MemoryBlock, byref ErrorMessage as String) as XLBookMBS  
- 183.2.47 LoadRaw2(data as string, byref ErrorMessage as String) as XLBookMBS

183.2.47  **LoadRaw2**(data as string, byref ErrorMessage as String) as XLBookMBS

MBS XL Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads a xls-file from user’s string buffer.  
**Notes:**
Autodetects if format is old (binary) or new (xml). Returns nil if error occurs. On success returns a valid book. Optionally returns error with ErrorMessage parameter.

Loading a file into the book object clears existing formats, sheets and fonts from previous book. You can recreate the ones you need or search them in the existing formats, fonts or sheets.

See also:

- 183.2.44 LoadRaw2(data as MemoryBlock) as XLBookMBS
- 183.2.45 LoadRaw2(data as MemoryBlock, byref ErrorMessage as String) as XLBookMBS
- 183.2.46 LoadRaw2(data as string) as XLBookMBS

183.2.48 LoadRawMT(data as MemoryBlock) as boolean


Notes:
Same as the other method without MT in name, except:
The work is performed on a preemptive thread, so this function can yield time to other Xojo (Real Studio) threads. For best user experience run this command on a Xojo (Real Studio) thread, so your GUI stays responsive.

See also:

- 183.2.49 LoadRawMT(data as string) as boolean

183.2.49 LoadRawMT(data as string) as boolean


Notes:
Same as the other method without MT in name, except:
The work is performed on a preemptive thread, so this function can yield time to other Xojo (Real Studio) threads. For best user experience run this command on a Xojo (Real Studio) thread, so your GUI stays responsive.

See also:

- 183.2.48 LoadRawMT(data as MemoryBlock) as boolean
183.2.50 LoadRawPartially(data as MemoryBlock, sheetIndex as Integer, firstRow as Integer, lastRow as Integer) as boolean

MBS XL Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads a file from user’s memory buffer.

**Notes:**

data: Data buffer
sheetIndex: loads a file only with specified sheet index, -1 loads all sheets
firstRow: the first row of loaded range, -1 loads all rows until lastRow
lastRow: the last row of loaded range, -1 loads all rows after firstRow.
Returns false if error occurs or true on success. Get error info with errorMessage function.
See also:

- 183.2.51 LoadRawPartially(data as string, sheetIndex as Integer, firstRow as Integer, lastRow as Integer) as boolean

183.2.51 LoadRawPartially(data as string, sheetIndex as Integer, firstRow as Integer, lastRow as Integer) as boolean

MBS XL Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Loads a file from user’s memory buffer.

**Notes:**

data: Data buffer
sheetIndex: loads a file only with specified sheet index, -1 loads all sheets
firstRow: the first row of loaded range, -1 loads all rows until lastRow
lastRow: the last row of loaded range, -1 loads all rows after firstRow.
Returns false if error occurs or true on success. Get error info with errorMessage function.
See also:

- 183.2.50 LoadRawPartially(data as MemoryBlock, sheetIndex as Integer, firstRow as Integer, lastRow as Integer) as boolean

183.2.52 LoadUsingTempFile(path as folderitem, TempFile as folderitem) as boolean


**Notes:**

Specify a temporary file for reducing memory consumption.
Returns false if error occurs or true on success. Get error info with errorMessage function.
See also:

- 183.2.53 LoadUsingTempFile(path as string, TempFile as string) as boolean
183.2.53  **LoadUsingTempFile(path as string, TempFile as String) as boolean**

MBS XL Plugin, Plugin Version: 17.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Loads an entire file into memory. **Notes:**

Specify a temporary file for reducing memory consumption.
Returns false if error occurs or true on success. Get error info with errorMessage function.
See also:

- 183.2.52 LoadUsingTempFile(path as folderitem, TempFile as folderitem) as boolean

183.2.54  **MoveSheet(SourceIndex as integer, DestIndex as Integer) as boolean**

MBS XL Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Takes a sheet with SourceIndex and insert it in front of a sheet with DestIndex. **Notes:** Returns false if error occurs and true on success.

183.2.55  **PackColor(ColorValue as color) as Integer**

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Packs red, green and blue components in color type. **See also:**

- 183.2.56 PackColor(red as Integer, green as Integer, blue as Integer) as Integer

183.2.56  **PackColor(red as Integer, green as Integer, blue as Integer) as Integer**

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Packs red, green and blue components in color type. **See also:**

- 183.2.55 PackColor(ColorValue as color) as Integer

183.2.57  **PackDate(d as date) as Double**

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Packs date and time information into double type. **See also:**

- 183.2.58 PackDate(year as Integer, month as Integer, day as Integer, hour as Integer = 0, min as Integer = 0, sec as Integer = 0, msec as Integer = 0) as Double
183.2. PackDate(year as Integer, month as Integer, day as Integer, hour as Integer = 0, min as Integer = 0, sec as Integer = 0, msec as Integer = 0) as Double

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Packs date and time information into double type.

See also:
- 183.2.57 PackDate(d as date) as Double

183.2.59 Picture(index as Integer, byref data as string) as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a picture at position index in memory buffer.

**Notes:**
Parameters:
index: position in the workbook
data: reference to buffer

Returns type of picture. See PictureType* constants.

183.2.60 PictureCount as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a number of pictures in this workbook.

183.2.61 Save(path as folderitem) as boolean


**Notes:** Returns false if error occurs. Get error info with XLBookMBS.ErrorMessage property.
See also:
- 183.2.62 Save(path as folderitem, UseTempFile as Boolean) as boolean
- 183.2.63 Save(path as string) as boolean
- 183.2.64 Save(path as string, UseTempFile as Boolean) as boolean
183.2.62 Save(path as folderitem, UseTempFile as Boolean) as boolean

**Notes:**  
Use a temporary file for reducing memory consumption. Returns false if error occurs or true on success. Get error info with errorMessage function.  
See also:

- 183.2.61 Save(path as folderitem) as boolean 20577
- 183.2.63 Save(path as string) as boolean 20578
- 183.2.64 Save(path as string, UseTempFile as Boolean) as boolean 20578

183.2.63 Save(path as string) as boolean

**Notes:** Returns false if error occurs. Get error info with XLBookMBS.ErrorMessage property.  
See also:

- 183.2.61 Save(path as folderitem) as boolean 20577
- 183.2.62 Save(path as folderitem, UseTempFile as Boolean) as boolean 20578
- 183.2.64 Save(path as string, UseTempFile as Boolean) as boolean 20578

183.2.64 Save(path as string, UseTempFile as Boolean) as boolean

**Notes:**  
Use a temporary file for reducing memory consumption. Returns false if error occurs or true on success. Get error info with errorMessage function.  
See also:

- 183.2.61 Save(path as folderitem) as boolean 20577
- 183.2.62 Save(path as folderitem, UseTempFile as Boolean) as boolean 20578
- 183.2.63 Save(path as string) as boolean 20578
183.2. CLASS XLBOOKMBS

183.2.65 SaveMT(path as folderitem) as boolean

MBS XL Plugin, Plugin Version: 17.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Saves document to file on disk.  
**Notes:**  
Same as the other method without MT in name, except:  
The work is performed on a preemptive thread, so this function can yield time to other Xojo (Real Studio) threads. For best user experience run this command on a Xojo (Real Studio) thread, so your GUI stays responsive.  
See also:  
- 183.2.66 SaveMT(path as string) as boolean

183.2.66 SaveMT(path as string) as boolean

MBS XL Plugin, Plugin Version: 17.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Saves document to file on disk.  
**Notes:**  
Same as the other method without MT in name, except:  
The work is performed on a preemptive thread, so this function can yield time to other Xojo (Real Studio) threads. For best user experience run this command on a Xojo (Real Studio) thread, so your GUI stays responsive.  
See also:  
- 183.2.65 SaveMT(path as folderitem) as boolean

183.2.67 SaveRaw(byref data as MemoryBlock) as boolean

**Notes:** Returns false if error occurs. Get error info with errorMessage property.  
See also:  
- 183.2.68 SaveRaw(byref data as string) as boolean

183.2.68 SaveRaw(byref data as string) as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Saves a xls-file to internal memory buffer.  
**Notes:** Returns false if error occurs. Get error info with errorMessage property.  
See also:  
- 183.2.67 SaveRaw(byref data as MemoryBlock) as boolean
183.2.69  **SaveRawMT(byref data as MemoryBlock) as boolean**

MBS XL Plugin, Plugin Version: 17.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Saves document to memoryblock.

**Notes:**
Same as the other method without MT in name, except:
The work is performed on a preemptive thread, so this function can yield time to other Xojo (Real Studio) threads. For best user experience run this command on a Xojo (Real Studio) thread, so your GUI stays responsive.

See also:
- 183.2.70 SaveRawMT(byref data as string) as boolean

183.2.70  **SaveRawMT(byref data as string) as boolean**

MBS XL Plugin, Plugin Version: 17.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Saves document to string.

**Notes:**
Same as the other method without MT in name, except:
The work is performed on a preemptive thread, so this function can yield time to other Xojo (Real Studio) threads. For best user experience run this command on a Xojo (Real Studio) thread, so your GUI stays responsive.

See also:
- 183.2.69 SaveRawMT(byref data as MemoryBlock) as boolean

183.2.71  **SetDefaultFont(fontName as string, fontSize as Integer)**

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets a default font name and size for this workbook.

183.2.72  **SetKey(name as string, key as string)**

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets customer’s license key.

**Notes:**
Call this once for each XLBookMBS object and before you read or write data.

If you have keys for more than one platform, please use # if condition to make sure you pass right key for current platform.
183.2.73 SetKeyGlobal(name as string, key as string)

MBS XL Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets customer’s license key.

**Example:**

```javascript
// add this to app.open

# if TargetMacOS then
// Mac license
XLBookMBS.SetKeyGlobal("Your Name", "Your Key")
# elseif TargetLinux then
// Linux license
XLBookMBS.SetKeyGlobal("Your Name", "Your Key")
# elseif TargetWin32 then
// Win license
XLBookMBS.SetKeyGlobal("Your Name", "Your Key")
# else
// missing
# endif
```

**Notes:**

You can call this before using the other plugin functions to set key on application startup. Simply call it in app.open event.

If you have keys for more than one platform, please use # if condition to make sure you pass right key for current platform.

183.2.74 SetLocale(locale as string)

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the locale.

**Example:**

```javascript
dim book as new XLBookMBS(false)
book.SetLocale "en_US.UTF-8"
```

**Notes:** Sets the locale for this library. It has no effect for unicode projects.
183.2.75  **Sheet(index as Integer) as XLSheetMBS**

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the sheet with specified index.  
**Notes:** Returns NULL if error occurs. Get error info with XLBookMBS.ErrorMessage property.

183.2.76  **SheetCount as Integer**


183.2.77  **Sheets as XLSheetMBS()**

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns array with all sheets.  
**Example:**

```vbs
Function SheetByName(book as XLBookMBS, name as string) As XLSheetMBS
    dim sheets() as XLSheetMBS = book.Sheets
    for each s as XLSheetMBS in sheets
        if s.Name = name then
            Return s
        end if
    next
End Function
```

183.2.78  **SheetType(index as Integer) as Integer**

MBS XL Plugin, Plugin Version: 13.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Queries type of the sheet.

183.2.79  **UnpackColor(ColorValue as Integer) as color**

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Unpacks color type to red, green and blue components.  
**See also:**

- 183.2.80 UnpackColor(ColorValue as Integer, byref red as Integer, byref green as Integer, byref blue as Integer)
183.2. **CLASS XLBOOKMBS**

183.2.80 **UnpackColor(ColorValue as Integer, byref red as Integer, byref green as Integer, byref blue as Integer)**

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Unpacks color type to red, green and blue components.
See also:
- 183.2.79 UnpackColor(ColorValue as Integer) as color

183.2.81 **UnpackDate(Value as Double) as date**

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Unpacks date and time information from double type.
**Notes:** Returns nil if error occurs.
See also:
- 183.2.82 UnpackDate(Value as Double, byref year as Integer, byref month as Integer, byref day as Integer) as boolean
- 183.2.83 UnpackDate(Value as Double, byref year as Integer, byref month as Integer, byref day as Integer, byref hour as Integer, byref min as Integer, byref sec as Integer) as boolean
- 183.2.84 UnpackDate(Value as Double, byref year as Integer, byref month as Integer, byref day as Integer, byref hour as Integer, byref min as Integer, byref sec as Integer, byref msec as Integer) as boolean

183.2.82 **UnpackDate(Value as Double, byref year as Integer, byref month as Integer, byref day as Integer) as boolean**

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Unpacks date and time information from double type.
**Notes:** Returns false if error occurs.
See also:
- 183.2.81 UnpackDate(Value as Double) as date
- 183.2.83 UnpackDate(Value as Double, byref year as Integer, byref month as Integer, byref day as Integer, byref hour as Integer, byref min as Integer, byref sec as Integer) as boolean
- 183.2.84 UnpackDate(Value as Double, byref year as Integer, byref month as Integer, byref day as Integer, byref hour as Integer, byref min as Integer, byref sec as Integer, byref msec as Integer) as boolean
183.2.83  UnpackDate(Value as Double, byref year as Integer, byref month as Integer, byref day as Integer, byref hour as Integer, byref min as Integer, byref sec as Integer) as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Unpacks date and time information from double type. **Notes:** Returns false if error occurs. See also:

- 183.2.81 UnpackDate(Value as Double) as date
- 183.2.82 UnpackDate(Value as Double, byref year as Integer, byref month as Integer, byref day as Integer) as boolean
- 183.2.84 UnpackDate(Value as Double, byref year as Integer, byref month as Integer, byref day as Integer, byref hour as Integer, byref min as Integer, byref sec as Integer, byref msec as Integer) as boolean

183.2.84  UnpackDate(Value as Double, byref year as Integer, byref month as Integer, byref day as Integer, byref hour as Integer, byref min as Integer, byref sec as Integer, byref msec as Integer) as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Unpacks date and time information from double type. **Notes:** Returns false if error occurs. See also:

- 183.2.81 UnpackDate(Value as Double) as date
- 183.2.82 UnpackDate(Value as Double, byref year as Integer, byref month as Integer, byref day as Integer) as boolean
- 183.2.83 UnpackDate(Value as Double, byref year as Integer, byref month as Integer, byref day as Integer, byref hour as Integer, byref min as Integer, byref sec as Integer) as boolean

183.2.85  Properties

183.2.86  ErrorMessage as string

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the last error message. **Notes:** (Read only property)
183.2. **CLASS XLBOOKMBS**

183.2.87  **Handle as Integer**


**Notes:** (Read and Write property)

183.2.88  **ActiveSheet as Integer**

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Active sheet index in this workbook.

**Notes:** (Read and Write computed property)

183.2.89  **IsDate1904 as boolean**

MBS XL Plugin, Plugin Version: 13.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether dates are 1904 based.

**Notes:**

A boolean value that indicates whether the date systems used in the workbook starts in 1904. True indicates the date system starts in 1904, where January 1, 1904 is the first day in the system. False indicates the workbook uses the 1900 date system, where January 1, 1900 is the first day in the system. (Read and Write computed property)

183.2.90  **IsTemplate as boolean**

MBS XL Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the workbook is template.

**Notes:**

The template flag: true - workbook is template, false - workbook is not template (default). This flag must have a value "true" for template files (xlt and xltx). (Read and Write computed property)

183.2.91  **RefR1C1 as Integer**

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the R1C1 reference mode is active.

**Notes:** (Read and Write computed property)
183.2.92  RgbMode as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the RGB mode is active. Used for xlsx format only.  
**Notes:**  
true - RGB mode, false - Index mode (default).  
In RGB mode use colorPack() and colorUnpack() methods for getting/setting colors. Used for xlsx format only.  
(Read and Write computed property)

183.2.93  Constants

183.2.94  PictureTypeDIB = 4

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the picture format constants.  
**Notes:** DIB format

183.2.95  PictureTypeEMF = 5

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the picture format constants.  
**Notes:** EMF format

183.2.96  PictureTypeError = & hFF

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the picture format constants.  
**Notes:** Error. Check XLBookMBS.ErrorMessage method.

183.2.97  PictureTypeGIF = 2

MBS XL Plugin, Plugin Version: 15.3. **Function:** One of the picture format constants.  
**Notes:** GIF format.

183.2.98  PictureTypeJPEG = 1

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the picture format constants.  
**Notes:** JPEG format.
183.2.99  PictureTypePICT = 6

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the picture format constants. **Notes:** Mac PICT format.

183.2.100  PictureTypePNG = 0

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the picture format constants. **Notes:** PNG format

183.2.101  PictureTypeTIFF = 7

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the picture format constants. **Notes:** TIFF format

183.2.102  PictureTypeWMF = 3

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the picture format constants. **Notes:** WMF format

183.2.103  SheetTypeChart = 1

MBS XL Plugin, Plugin Version: 13.1. **Function:** One of the sheet type constants. **Notes:** Sheet is a chart.

183.2.104  SheetTypeSheet = 0

MBS XL Plugin, Plugin Version: 13.1. **Function:** One of the sheet type constants. **Notes:** This is a normal sheet.
CHAPTER 183. XL

183.2.105  SheetTypeUnknown = 2

MBS XL Plugin, Plugin Version: 13.1. **Function:** One of the sheet type constants. **Notes:** Type is unknown.
183.3. CLASS XLFILTERCOLUMNMBS

183.3  class XLFilterColumnMBS

183.3.1  class XLFilterColumnMBS

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for filter column. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

183.3.2  Methods

183.3.3  AddFilter(Filter as String)

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds the filter value.

183.3.4  Clear

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Clear the filter criteria.

183.3.5  Constructor


183.3.6  Filter(index as Integer) as String

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the filter value by index.

183.3.7  FilterSize as Integer

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of filter values.
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183.3.8  FilterType as Integer

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the filter type of this AutoFilter column. **Notes:** can be constants FilterColor, FilterCustom, FilterDynamic, FilterExt, FilterIcon, FilterNotSet, FilterTop10 or FilterValue.

183.3.9  GetCustomFilterEx(byref Op1 as Integer, byref Value1 as String, byref Op2 as Integer, byref Value2 as String, byref andOp as Boolean) as boolean

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the custom filter criteria: **Notes:**

   - op1 - operator used by the filter comparison in the first filter criteria;
   - Value1 - value used in the first filter criteria;
   - op2 - operator used by the filter comparison in the second filter criteria;
   - Value12 - value used in the second filter criteria;
   - andOp - flag indicating whether the two criterias have an "and" relationship. True indicates "and", false indicates "or".

Returns false if error. Get error info with XLBookMBS.errorMessage.

183.3.10  GetTop10(byref value as Double, byref top as boolean, byref percent as boolean) as boolean

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the number of top or bottom items: **Notes:**

   - value - number of items;
   - top - top items if true otherwise bottom items;
   - percent - using percent instead of number items.

Returns false if error. Get error info with XLBookMBS.errorMessage.

183.3.11  Index as Integer

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the zero-based index of this AutoFilter column.
183.3. **CLASS XLFILTERCOLUMNMBS**

183.3.12 **SetCustomFilter(Op as Integer, Value as String)**

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the custom filter criteria:
**Notes:**
- op - operator used by the filter comparison in the filter criteria;
- Value - value used in the filter criteria;

183.3.13 **SetCustomFilterEx(Op1 as Integer, Value1 as String, Op2 as Integer, Value2 as String, andOp as Boolean = false)**

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the custom filter criteria:
**Notes:**
- op1 - operator used by the filter comparison in the first filter criteria;
- Value1 - value used in the first filter criteria;
- op2 - operator used by the filter comparison in the second filter criteria;
- Value2 - value used in the second filter criteria;
- andOp - flag indicating whether the two criterias have an "and" relationship. True indicates "and", false indicates "or".

183.3.14 **SetTop10(value as Double, top as boolean = true, percent as boolean = false)**

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the number of top or bottom items:
**Notes:**
- value - number of items;
- top - top items if true otherwise bottom items;
- percent - using percent instead of number items.

183.3.15 **Properties**

183.3.16 **Handle as Integer**

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The internal object reference.
**Notes:** (Read and Write property)
183.3.17 Owner as Variant


183.3.18 Constants

183.3.19 FilterColor = 4

MBS XL Plugin, Plugin Version: 16.5. Function: One of the filter types. Notes: Specifies the color to filter by.

183.3.20 FilterCustom = 2


183.3.21 FilterDynamic = 3


183.3.22 FilterExt = 6


183.3.23 FilterIcon = 5

MBS XL Plugin, Plugin Version: 16.5. Function: One of the filter types. Notes: Specifies the icon to filter by.
183.3. **CLASS XLFILTERCOLUMNMBS**

183.3.24 **FilterNotSet = 7**

MBS XL Plugin, Plugin Version: 16.5. **Function:** One of the filter types.  
**Notes:** No filter.

183.3.25 **FilterTop10 = 1**

MBS XL Plugin, Plugin Version: 16.5. **Function:** One of the filter types.  
**Notes:** The top N (percent or number of items) to filter by.

183.3.26 **FilterValue = 0**

MBS XL Plugin, Plugin Version: 16.5. **Function:** One of the filter types.  
**Notes:** Filter by specified values.

183.3.27 **OperatorEqual = 0**

MBS XL Plugin, Plugin Version: 16.5. **Function:** One of the compare operators.  
**Notes:** Equal

183.3.28 **OperatorGreaterThan = 1**

MBS XL Plugin, Plugin Version: 16.5. **Function:** One of the compare operators.  
**Notes:** Greater than

183.3.29 **OperatorGreaterThanOrEqual = 2**

MBS XL Plugin, Plugin Version: 16.5. **Function:** One of the compare operators.  
**Notes:** Greater than or equal

183.3.30 **OperatorLessThan = 3**

MBS XL Plugin, Plugin Version: 16.5. **Function:** One of the compare operators.  
**Notes:** Less than
183.3.31 OperatorLessThanOrEqual = 4

MBS XL Plugin, Plugin Version: 16.5. **Function:** One of the compare operators.
**Notes:** Less than or equal

183.3.32 OperatorNotEqual = 5

MBS XL Plugin, Plugin Version: 16.5. **Function:** One of the compare operators.
**Notes:** Not equal
183.4. CLASS XLFontMBS

183.4 class XLFontMBS

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for a font definition.

**Example:**
```vba
dim book as XLBookMBS // your book
dim textFont as XLFontMBS = book.addFont()
textFont.size = 8
textFont.name = "Century Gothic"
```

**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

183.4.2 Methods

183.4.3 Constructor

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

183.4.4 Properties

183.4.5 Handle as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The internal object reference.
**Notes:** (Read and Write property)

183.4.6 Owner as Variant

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The owner object.
**Notes:**
As a font is only valid with the owning book, we keep a back reference here.
(Read only property)
183.4.7 Bold as Boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the font is bold. **Notes:** (Read and Write computed property)

183.4.8 ColorValue as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The color of the font. **Example:**

```vbnet
dim book as XLBookMBS // your book
dim textFont as XLFontMBS = book.addFont()
textFont.size = 8
textFont.ColorValue = XLFontMBS.ColorGray25
```

**Notes:**
If book is in RGB mode, you need to use UnpackColor to get red, green and blue color components or color value from the returned number. If book is not in RGB mode, you receive a color number (see XLFontMBS color constants).
If you set value and book is in RGB mode you can use PackColor function to get a numeric value for a color or color components. If the book is not in RGB mode, you can use color constants in XLFontMBS classes. (Read and Write computed property)

183.4.9 Italic as Boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the font is italic. **Notes:** (Read and Write computed property)

183.4.10 Name as string

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The name of the font. **Notes:**
Default name is "Arial". (Read and Write computed property)
183.4. CLASS XLFONTMBS

183.4.11 Script as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The script style of the font.
**Notes:** (Read and Write computed property)

183.4.12 Size as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The size of the font in points.
**Notes:** (Read and Write computed property)

183.4.13 StrikeOut as Boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the font is strikeout.
**Notes:** (Read and Write computed property)

183.4.14 Underline as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The underline style of the font.
**Notes:**
- See Underline* constants.
- (Read and Write computed property)

183.4.15 Constants

183.4.16 ColorAqua = 49

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.17 ColorAuto = & h7Ff

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.
183.4.18  **ColorBlack = 8**
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.19  **ColorBlue = 12**
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.20  **ColorBlueCl = 39**
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.21  **ColorBluegray = 54**
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.22  **ColorBrightgreen = 11**
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.23  **ColorBrown = 60**
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.24  **ColorCoralCf = 29**
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.25  **ColorDarkblue = 18**
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.
183.4. CLASS XLFONTMBS

183.4.26 ColorDarkblueCl = 32

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.27 ColorDarkgreen = 58

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.28 ColorDarkpurpleCf = 28

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.29 ColorDarkred = 16

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.30 ColorDarkredCl = 37

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.31 ColorDarkteal = 56

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.32 ColorDarkyellow = 19

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.33 ColorDefaultBackground = 65

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

**Notes:** Auto
183.4.34  **ColorDefaultForeground = 64**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.  
**Notes:** Auto

183.4.35  **ColorGold = 51**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.36  **ColorGray25 = 22**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.37  **ColorGray40 = 55**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.38  **ColorGray50 = 23**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.39  **ColorGray80 = 63**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.40  **ColorGreen = 17**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.41  **ColorIceblueCf = 31**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.
183.4.42 ColorIndigo = 62
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.43 ColorIvoryCf = 26
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.44 ColorLavender = 46
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.45 ColorLightblue = 48
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.46 ColorLightgreen = 42
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.47 ColorLightorange = 52
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.48 ColorLightturquoise = 41
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.49 ColorLightturquoiseCf = 27
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.
183.4.50  **ColorLightyellow = 43**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.51  **ColorLime = 50**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.52  **ColorNone = & H7F**

MBS XL Plugin, Plugin Version: 16.5. **Function:** One of the color constants. **Notes:** No color.

183.4.53  **ColorOceanblueCf = 30**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.54  **ColorOlivegreen = 59**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.55  **ColorOrange = 53**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.56  **ColorPaleblue = 44**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.57  **ColorPeriwinkleCf = 24**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.
183.4. CLASS XLFONTMBS

183.4.58  ColorPink = 14

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.59  ColorPinkCl = 33

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.60  ColorPlum = 61

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.61  ColorPlumCf = 25

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.62  ColorRed = 10

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.63  ColorRose = 45

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.64  ColorSeagreen = 57

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.65  ColorSkyblue = 40

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.
183.4.66  ColorTan = 47

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.67  ColorTeal = 21

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.68  ColorTealCl = 38

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.69  ColorTooltip = 81

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.70  ColorTurquoise = 15

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.71  ColorTurquoiseCl = 35

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.72  ColorViolet = 20

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.73  ColorVioletCl = 36

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.
183.4. CLASS XLFONTMBS

183.4.74 ColorWhite = 9
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.75 ColorYellow = 13
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.76 ColorYellowCl = 34
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the color constants.

183.4.77 ScriptNormal = 0
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the script style constants.

183.4.78 ScriptSub = 2
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the script style constants.

183.4.79 ScriptSuper = 1
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the script style constants.

183.4.80 UnderlineDouble = 2
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the underline style constants.

183.4.81 UnderlineDoubleacc = & H22
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the underline style constants.
183.4.82 UnderlineNone = 0

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the underline style constants.

183.4.83 UnderlineSingle = 1

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the underline style constants.

183.4.84 UnderlineSingleacc = & H21

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the underline style constants.
183.5. CLASS XLFORMATMBS

183.5  class XLFormatMBS

183.5.1  class XLFormatMBS

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for a format.

**Example:**

```vba
dim book as XLBookMBS // your book
// add font
dim boldFont as XLFontMBS = book.addFont()
boldFont.StrikeOut = true

// add format
dim boldFormat as XLFormatMBS = book.addFormat
boldFormat.font = boldFont

// write on a cell in first sheet
sheet = book.Sheet(0)
call sheet.WriteString(1, 1, ”Sales Receipt”, boldFormat)
```

**Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

183.5.2  Methods

183.5.3  Constructor

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

183.5.4  Rotation as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the text rotation.

**Notes:**
Must be a value from the following table:
### 183.5.5 SetBorder(border as Integer = 1)

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Sets the border style.

**Notes:** See BorderStyle* constants.

### 183.5.6 SetBorderColor(ColorValue as Integer)

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Sets the border color.

**Notes:** If you set value and book is in RGB mode you can use PackColor function to get a numeric value for a color or color components. If the book is not in RGB mode, you can use color constants in XLFontMBS classes.

### 183.5.7 SetFont(font as XLFontMBS) as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Sets the font for the format.

**Notes:** To create a new font use XLBookMBS.addFont(). Returns false if error occurs. Get error info with XLBookMBS.ErrorMessage property.

### 183.5.8 SetRotation(rotation as Integer) as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Sets the text rotation.

**Notes:**

Must be a value from the following table:

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 90</td>
<td>Text rotated counterclockwise 0 to 90 degrees</td>
</tr>
<tr>
<td>91 - 180</td>
<td>Text rotated clockwise 1 to 90 degrees</td>
</tr>
<tr>
<td>255</td>
<td>Vertical text</td>
</tr>
</tbody>
</table>
183.5. CLASS XLFORMATMBS

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 90</td>
<td>Text rotated counterclockwise 0 to 90 degrees</td>
</tr>
<tr>
<td>91 - 180</td>
<td>Text rotated clockwise 1 to 90 degrees</td>
</tr>
<tr>
<td>255</td>
<td>Vertical text</td>
</tr>
</tbody>
</table>

183.5.9 Properties

183.5.10 Handle as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal object reference. **Notes:** (Read and Write property)

183.5.11 Owner as Variant

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The object owning this format object. **Notes:** As a format is only valid with the owning book, we keep a back reference here. (Read only property)

183.5.12 AlignH as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The horizontal alignment. **Notes:** See AlignH* constants. (Read and Write computed property)

183.5.13 AlignV as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The vertical alignment. **Notes:** See AlignV* constants. (Read and Write computed property)
183.5.14 BorderBottom as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The bottom border style.
**Notes:**
See BorderStyle* constants.
(Read and Write computed property)

183.5.15 BorderBottomColor as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The color of the bottom border.
**Notes:**
If book is in RGB mode, you need to use UnpackColor to get red, green and blue color components or color value from the returned number. If book is not in RGB mode, you receive a color number (see XLFontMBS color constants).
If you set value and book is in RGB mode you can use PackColor function to get a numeric value for a color or color components. If the book is not in RGB mode, you can use color constants in XLFontMBS classes.
(Read and Write computed property)

183.5.16 BorderDiagonal as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The diagonal border.
**Notes:**
see BorderDiagonal* constants.
(Read and Write computed property)

183.5.17 BorderDiagonalColor as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The color of the diagonal border.
**Notes:**
If book is in RGB mode, you need to use UnpackColor to get red, green and blue color components or color value from the returned number. If book is not in RGB mode, you receive a color number (see XLFontMBS color constants).
If you set value and book is in RGB mode you can use PackColor function to get a numeric value for a color or color components. If the book is not in RGB mode, you can use color constants in XLFontMBS classes.
183.5. **CLASS XLFORMATMBS**

(Read and Write computed property)

### 183.5.18 BorderDiagonalStyle as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The diagonal border style.
**Notes:**
See BorderDiagonal* constants.
(Read and Write computed property)

### 183.5.19 BorderLeft as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The left border style.
**Notes:**
See BorderStyle* constants.
(Read and Write computed property)

### 183.5.20 BorderLeftColor as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The color of the left border.
**Notes:**
If book is in RGB mode, you need to use UnpackColor to get red, green and blue color components or color value from the returned number. If book is not in RGB mode, you receive a color number (see XLFontMBS color constants).
If you set value and book is in RGB mode you can use PackColor function to get a numeric value for a color or color components. If the book is not in RGB mode, you can use color constants in XLFontMBS classes.
(Read and Write computed property)

### 183.5.21 BorderRight as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The right border style.
**Notes:**
See BorderStyle* constants.
(Read and Write computed property)
183.5.22 BorderRightColor as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The color of the right border.
**Notes:**
If book is in RGB mode, you need to use UnpackColor to get red, green and blue color components or color value from the returned number. If book is not in RGB mode, you receive a color number (see XLFontMBS color constants). If you set value and book is in RGB mode you can use PackColor function to get a numeric value for a color or color components. If the book is not in RGB mode, you can use color constants in XLFontMBS classes.
(Read and Write computed property)

183.5.23 BorderTop as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The top border style.
**Notes:**
See BorderStyle* constants.
(Read and Write computed property)

183.5.24 BorderTopColor as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The color of the top border.
**Notes:**
If book is in RGB mode, you need to use UnpackColor to get red, green and blue color components or color value from the returned number. If book is not in RGB mode, you receive a color number (see XLFontMBS color constants). If you set value and book is in RGB mode you can use PackColor function to get a numeric value for a color or color components. If the book is not in RGB mode, you can use color constants in XLFontMBS classes.
(Read and Write computed property)

183.5.25 FillPattern as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The fill pattern.
**Notes:**
183.5. CLASS XLFORMATMBS

See fill pattern constants.
(Read and Write computed property)

183.5.26 Font as XLFontMBS

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The font for the format.
**Example:**

```vba
' your book
dim book as XLBookMBS

' add font
dim StrikeOutFont as XLFontMBS = book.addFont()
StrikeOutFont.StrikeOut = true

' add format
dim StrikeOutFormat as XLFormatMBS = book.addFormat
StrikeOutFormat.font = StrikeOutFont

' write on a cell in first sheet
sheet = book.Sheet(0)
call sheet.WriteString(1, 1, "Sales Receipt", StrikeOutFormat)
```

**Notes:**
To create a new font use XLBookMBS.addFont(). Returns false if error occurs. Get error info with XLBookMBS.ErrorMessage property.
(Read and Write computed property)

183.5.27 Hidden as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether the hidden protection property is set to true.
**Notes:** (Read and Write computed property)

183.5.28 Indent as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The text indentation level.
**Notes:**
Must be less than or equal to 15.
(Read and Write computed property)

**183.5.29 Locked as boolean**

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether the locked protection property is set to true.
**Notes:** (Read and Write computed property)

**183.5.30 NumFormat as Integer**

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The number format identifier.
**Notes:**
The identifier must be a valid built-in number format identifier or the identifier of a custom number format.
To create a custom format use XLBookMBS.addCustomNumFormat(). Or use one of the NumFormat* constants.
(Read and Write computed property)

**183.5.31 PatternBackgroundColor as Integer**

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The background color of the fill pattern.
**Notes:**
If book is in RGB mode, you need to use UnpackColor to get red, green and blue color components or color value from the returned number. If book is not in RGB mode, you receive a color number (see XLFontMBS color constants).
If you set value and book is in RGB mode you can use PackColor function to get a numeric value for a color or color components. If the book is not in RGB mode, you can use color constants in XLFontMBS classes.
(Read and Write computed property)

**183.5.32 PatternForegroundColor as Integer**

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The foreground color of the fill pattern.
**Notes:**
If book is in RGB mode, you need to use UnpackColor to get red, green and blue color components or color value from the returned number. If book is not in RGB mode, you receive a color number (see XLFontMBS
If you set value and book is in RGB mode you can use PackColor function to get a numeric value for a color or color components. If the book is not in RGB mode, you can use color constants in XLFontMBS classes. (Read and Write computed property)

183.5.33  ShrinkToFit as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the cell is shrink-to-fit.  
**Notes:** (Read and Write computed property)

183.5.34  Wrap as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the cell text is wrapped.  
**Notes:** (Read and Write computed property)

183.5.35  Constants

183.5.36  AlignHCenter = 2

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the horizontal alignment constants.  
**Notes:** Center

183.5.37  AlignHDistributed = 7

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the horizontal alignment constants.  
**Notes:** Distributed

183.5.38  AlignHFill = 4

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the horizontal alignment constants.  
**Notes:** Fill
183.5.39  **AlignHGeneral = 0**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the horizontal alignment constants.  
**Notes:** Default

183.5.40  **AlignHJustify = 5**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the horizontal alignment constants.  
**Notes:** Justify

183.5.41  **AlignHLeft = 1**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the horizontal alignment constants.  
**Notes:** Left

183.5.42  **AlignHMerge = 6**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the horizontal alignment constants.  
**Notes:** Center over several cells.

183.5.43  **AlignHRight = 3**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the horizontal alignment constants.  
**Notes:** Right

183.5.44  **AlignVBottom = 2**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the vertical alignment constants.  
**Notes:** Bottom

183.5.45  **AlignVCenter = 1**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the vertical alignment constants.  
**Notes:** Center
183.5.46 AlignVDistributed = 4

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the vertical alignment constants. **Notes:** Distributed

183.5.47 AlignVJustify = 3

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the vertical alignment constants. **Notes:** Justify

183.5.48 AlignVTop = 0

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the vertical alignment constants. **Notes:** Top

183.5.49 BorderDiagonalBoth = 3

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the diagonal border style constants.

183.5.50 BorderDiagonalDown = 1

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the diagonal border style constants.

183.5.51 BorderDiagonalNone = 0

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the diagonal border style constants.

183.5.52 BorderDiagonalUp = 2

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the diagonal border style constants.
183.5.53  **BorderStyleDashdot = 9**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the border style constants.  
**Notes:** dash and dot

183.5.54  **BorderStyleDashdotdot = 11**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the border style constants.  
**Notes:** dash and dots

183.5.55  **BorderStyleDashed = 3**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the border style constants.  
**Notes:** dashed

183.5.56  **BorderStyleDotted = 4**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the border style constants.  
**Notes:** dotted

183.5.57  **BorderStyleDouble = 6**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the border style constants.  
**Notes:** double

183.5.58  **BorderStyleHair = 7**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the border style constants.  
**Notes:** hair style

183.5.59  **BorderStyleMedium = 2**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the border style constants.  
**Notes:** medium
183.5. **CLASS XLFORMATMBS**

183.5.60  **BorderStyleMediumdashdot = 10**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the border style constants.  
**Notes:** medium dash and dot

183.5.61  **BorderStyleMediumdashdotdot = 12**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the border style constants.  
**Notes:** medium dash and dots

183.5.62  **BorderStyleMediumdashed = 8**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the border style constants.  
**Notes:** medium dashed

183.5.63  **BorderStyleNone = 0**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the border style constants.  
**Notes:** no border

183.5.64  **BorderStyleSlantdashdot = 13**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the border style constants.  
**Notes:** dash and dot

183.5.65  **BorderStyleThick = 5**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the border style constants.  
**Notes:** thick

183.5.66  **BorderStyleThin = 1**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the border style constants.  
**Notes:** thin
183.5.67  **FillPatternDiagcrosshatch = 9**  
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the fill pattern style constants.

183.5.68  **FillPatternDiagstripe = 8**  
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the fill pattern style constants.

183.5.69  **FillPatternGray12P5 = 17**  
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the fill pattern style constants.

183.5.70  **FillPatternGray25 = 4**  
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the fill pattern style constants.

183.5.71  **FillPatternGray50 = 2**  
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the fill pattern style constants.

183.5.72  **FillPatternGray6P25 = 18**  
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the fill pattern style constants.

183.5.73  **FillPatternGray75 = 3**  
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the fill pattern style constants.

183.5.74  **FillPatternHorstripe = 5**  
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the fill pattern style constants.
183.5.75  **FillPatternNone = 0**
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the fill pattern style constants.

183.5.76  **FillPatternRevdiagstripe = 7**
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the fill pattern style constants.

183.5.77  **FillPatternSolid = 1**
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the fill pattern style constants.

183.5.78  **FillPatternThickdiagcrosshatch = 10**
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the fill pattern style constants.

183.5.79  **FillPatternThindiagcrosshatch = 16**
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the fill pattern style constants.

183.5.80  **FillPatternThindiagstripe = 14**
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the fill pattern style constants.

183.5.81  **FillPatternThinhorcrosshatch = 15**
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the fill pattern style constants.

183.5.82  **FillPatternThinhorstripe = 11**
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the fill pattern style constants.
183.5.83 FillPatternThinrevdiagstripe = 13

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the fill pattern style constants.

183.5.84 FillPatternThinverstripe = 12

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the fill pattern style constants.

183.5.85 FillPatternVerstripe = 6

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the fill pattern style constants.

183.5.86 NumformatAccount = 41

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the number format constants. **Notes:** account value: 5,000

183.5.87 NumformatAccountcur = 42

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the number format constants. **Notes:** account value with currency symbol: $ 5,000

183.5.88 NumformatAccountD2 = 43

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the number format constants. **Notes:** account value with decimal point: 5,000.00

183.5.89 NumformatAccountD2Cur = 44

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the number format constants. **Notes:** account value with currency symbol and decimal point: $ 5,000.00
183.5. CLASS XLFORMATMBS

183.5.90  NumformatCurrencyD2Negbra = 7

MBS XL Plugin, Plugin Version: 11.3. Function: One of the number format constants. Notes: monetary value with decimal point, negative in brackets: ($1000.00)

183.5.91  NumformatCurrencyD2NegbraRed = 8

MBS XL Plugin, Plugin Version: 11.3. Function: One of the number format constants. Notes: monetary value with decimal point, negative is red in brackets: ($1000.00)

183.5.92  NumformatCurrencyNegbra = 5

MBS XL Plugin, Plugin Version: 11.3. Function: One of the number format constants. Notes: monetary value, negative in brackets: (1000$)

183.5.93  NumformatCurrencyNegbraRed = 6

MBS XL Plugin, Plugin Version: 11.3. Function: One of the number format constants. Notes: monetary value, negative is red in brackets: (1000$)

183.5.94  NumformatCustom000P0EPlus0 = 48

MBS XL Plugin, Plugin Version: 11.3. Function: One of the number format constants. Notes: custom value: 15.2E+3

183.5.95  NumformatCustomDMon = 16

MBS XL Plugin, Plugin Version: 11.3. Function: One of the number format constants. Notes: custom date value: 11-Mar

183.5.96  NumformatCustomDMonYY = 15

MBS XL Plugin, Plugin Version: 11.3. Function: One of the number format constants. Notes: custom date value: 11-Mar-09
183.5.97  **NumformatCustomH0MMSS = 46**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the number format constants.  
**Notes:** custom time value: 20:30:55

183.5.98  **NumformatCustomHMM = 20**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the number format constants.  
**Notes:** custom date value: 8:30

183.5.99  **NumformatCustomHMMAM = 18**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the number format constants.  
**Notes:** custom date value: 8:30 AM

183.5.100  **NumformatCustomHMMSS = 21**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the number format constants.  
**Notes:** custom date value: 8:30:00

183.5.101  **NumformatCustomHMMSSAM = 19**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the number format constants.  
**Notes:** custom date value: 8:30:00 AM

183.5.102  **NumformatCustomMDYYYYHMM = 22**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the number format constants.  
**Notes:** custom datetime value: 3/11/2009 8:30

183.5.103  **NumformatCustomMMSS = 45**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the number format constants.  
**Notes:** custom time value: 30:55
183.5.104 NumformatCustomMMSS0 = 47

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the number format constants. **Notes:** custom time value: 30:55.0
183.5.105  NumformatCustomMonYY = 17

MBS XL Plugin, Plugin Version: 11.3. Function: One of the number format constants. Notes: custom date value: Mar-09

183.5.106  NumformatDate = 14


183.5.107  NumformatFractionOneDig = 12

MBS XL Plugin, Plugin Version: 11.3. Function: One of the number format constants. Notes: fraction value, one digit: 10 1/2

183.5.108  NumformatFractionTwoDig = 13

MBS XL Plugin, Plugin Version: 11.3. Function: One of the number format constants. Notes: fraction value, two digits: 10 23/95

183.5.109  NumformatGeneral = 0

MBS XL Plugin, Plugin Version: 11.3. Function: One of the number format constants. Notes: general format

183.5.110  NumformatNumber = 1

MBS XL Plugin, Plugin Version: 11.3. Function: One of the number format constants. Notes: general number: 1000

183.5.111  NumformatNumberD2 = 2

MBS XL Plugin, Plugin Version: 11.3. Function: One of the number format constants. Notes: number with decimal point: 1000.00
183.5.112  **NumformatNumberD2SepNegbra = 39**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the number format constants.  
**Notes:** number with thousands separator and decimal point, negative in brackets: (4,000.00)

183.5.113  **NumformatNumberD2SepNegbraRed = 40**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the number format constants.  
**Notes:** number with thousands separator and decimal point, negative is red in brackets: (4,000.00)

183.5.114  **NumformatNumberSep = 3**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the number format constants.  
**Notes:** number with thousands separator: 100,000

183.5.115  **NumformatNumberSepD2 = 4**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the number format constants.  
**Notes:** number with decimal point and thousands separator: 100,000.00

183.5.116  **NumformatNumberSepNegbra = 37**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the number format constants.  
**Notes:** number with thousands separator, negative in brackets: (4,000)

183.5.117  **NumformatNumberSepNegbraRed = 38**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the number format constants.  
**Notes:** number with thousands separator, negative is red in brackets: (4,000)

183.5.118  **NumformatPercent = 9**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the number format constants.  
**Notes:** percent value, multiply the cell value by 100: 75%
183.5.119  **NumformatPercentD2 = 10**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the number format constants.  
**Notes:** percent value with decimal point, multiply the cell value by 100: 75.00%

183.5.120  **NumformatScientificD2 = 11**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the number format constants.  
**Notes:** scientific value with E character and decimal point: 10.00E+1

183.5.121  **NumformatText = 49**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the number format constants.  
**Notes:** text value
183.6  class XLSheetMBS

183.6.1  class XLSheetMBS

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class for an Excel worksheet. **Notes:** This is an abstract class. You can’t create an instance, but you can get one from various plugin functions.

183.6.2  Methods

183.6.3  AddDataValidation(type as Integer, op as integer, rowFirst as integer, colFirst as integer, rowLast as integer, colLast as integer, value1 as String, value2 as String)

MBS XL Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds a data validation for the specified range (only for xlsx files). **Notes:**

type: the type of data validation.
op: the relational operator of data validation.
rowFirst: the first row of range;
rowLast: the last row of range;
colFirst: the first column of range;
colLast: the last column of range;
value1: the first value for relational operator;
value2: the second value for ValidationOpBetween or ValidationOpNotBetween operator;
See also:

- 183.6.4 AddDataValidation(type as Integer, op as integer, rowFirst as integer, colFirst as integer, rowLast as integer, colLast as integer, value1 as String, value2 as String, allowBlank as Boolean, hideDropDown as Boolean = false, showInputMessage as Boolean = true, showErrorMessage as Boolean = true, promptTitle as String = "", prompt as String = "", errorTitle as string = "", error as string = "", errorStyle as integer = 0)
183.6.4 AddDataValidation(type as Integer, op as integer, rowFirst as integer, colFirst as integer, rowLast as integer, colLast as integer, value1 as String, value2 as String, allowBlank as Boolean, hideDropDown as Boolean = false, showInputMessage as Boolean = true, showErrorMessage as Boolean = true, promptTitle as String = "", prompt as String = "", errorTitle as String = "", error as String = "", errorStyle as integer = 0)

MBS XL Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds a data validation for the specified range (only for xlsx files).

**Notes:**

type: the type of data validation.
op: the relational operator of data validation.
rowFirst: the first row of range;
rowLast: the last row of range;
colFirst: the first column of range;
colLast: the last column of range;
value1: the first value for relational operator;
value2: the second value for ValidationOpBetween or ValidationOpNotBetween operator;
allowBlank: a boolean value indicating whether the data validation treats empty or blank entries as valid, 'true' means empty entries are OK and do not violate the validation constraints;
hideDropDown: a boolean value indicating whether to display the dropdown combo box for a list type data validation (ValidationTypeList);
showInputMessage: a boolean value indicating whether to display the input prompt message;
showErrorMessage: a boolean value indicating whether to display the error alert message when an invalid value has been entered, according to the criteria specified;
promptTitle: title bar text of input prompt;
prompt: message text of input prompt;
errorTitle: title bar text of error alert;
error: message text of error alert;
errorStyle: the style of error alert used for this data validation:

See also:

- 183.6.3 AddDataValidation(type as Integer, op as integer, rowFirst as integer, colFirst as integer, rowLast as integer, colLast as integer, value1 as String, value2 as String)

183.6.5 AddDataValidationDouble(type as Integer, op as integer, rowFirst as integer, colFirst as integer, rowLast as integer, colLast as integer, value1 as Double, value2 as Double)

MBS XL Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds a data validation for the specified range with double or date values for the relational operator (only for xlsx files).

**Notes:** See parameters in the addDataValidation() method.

See also:
183.6. CLASS XLSHEETMBS

- 183.6.6 AddDataValidationDouble(type as Integer, op as integer, rowFirst as integer, colFirst as integer, rowLast as integer, colLast as integer, value1 as Double, value2 as Double, allowBlank as Boolean, hideDropDown as Boolean = false, showInputMessage as Boolean = true, showErrorMessage as Boolean = true, promptTitle as String = "", prompt as String = "", errorTitle as string = "", error as string = "", errorStyle as integer = 0)

183.6.6 AddDataValidationDouble(type as Integer, op as integer, rowFirst as integer, colFirst as integer, rowLast as integer, colLast as integer, value1 as Double, value2 as Double, allowBlank as Boolean, hideDropDown as Boolean = false, showInputMessage as Boolean = true, showErrorMessage as Boolean = true, promptTitle as String = "", prompt as String = "", errorTitle as string = "", error as string = "", errorStyle as integer = 0)

MBS XL Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds a data validation for the specified range with double or date values for the relational operator (only for xlsx files).
**Notes:** See parameters in the addDataValidation() method.
See also:

- 183.6.5 AddDataValidationDouble(type as Integer, op as integer, rowFirst as integer, colFirst as integer, rowLast as integer, colLast as integer, value1 as Double, value2 as Double)

183.6.7 AddHyperlink(hyperlink as string, rowFirst as Integer, rowLast as Integer, colFirst as Integer, colLast as Integer)


183.6.8 AddIgnoredError(rowFirst as Integer, colFirst as Integer, rowLast as Integer, colLast as Integer, iError as Integer)

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Adds the ignored error for specified range.
**Notes:** It allows to hide green triangles on left sides of cells. For example, if a cell is formatted as text but contains a numeric value, this is considered to be a potential error because the number won’t be treated as a number, for example, in calculations. It is possible to combine a few IgnoredError values with operator | .
Returns false if error occurs. Get error info with XLBookMBS.errorMessage.
183.6.9 AddrToRowCol(addr as string, byref row as Integer, byref col as Integer, byref rowRelative as boolean, byref colRelative as boolean)

MBS XL Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Converts a cell reference to row and column. 

**Example:**

```vbnet
// create new xls file
dim book as new XLBookMBS(false)

// create sheet
dim sheet as XLSheetMBS = book.AddSheet("Sheet1")

dim row, col as Integer
dim rowRelative, colRelative as boolean

sheet.AddrToRowCol("F7", row, col, rowRelative, colRelative)
MsgBox str(row) + " " + str(col) // shows 6 5
```

183.6.10 ApplyFilter


183.6.11 AutoFilter as XLAutoFilterMBS


**Notes:**
Creates it if it doesn’t exist.
Only for xml based files.

183.6.12 CellType(row as Integer, col as Integer) as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns cell’s type. 

**Notes:** See CellType constants.
183.6.13  Clear(rowFirst as Integer = 0, rowLast as Integer = 1048575, colFirst as Integer = 0, colLast as Integer = 16383)

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Clears cells in specified area.

183.6.14  ClearPrintArea

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Clears the print area.

183.6.15  ClearPrintRepeats

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Clears repeated rows and columns on each page.

183.6.16  ColWidth(col as Integer) as Double

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns column width.

183.6.17  Constructor

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The private constructor.

183.6.18  CopyCell(rowSrc as Integer, colSrc as Integer, rowDst as Integer, colDst as Integer) as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Copies cell with format from (rowSrc, colSrc) to (rowDst, colDst).
**Notes:** Returns false if error occurs. Get error info with XLBookMBS.ErrorMessage property.
183.6.19 CopyRow(dest as XLSheetMBS, SourceRow as Integer, DestRow as Integer)

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies a row from one sheet to another. **Notes:**

Sheets can be in different books.
This copies most properties and all cells.
If something is missing, please let us know.

---

183.6.20 CopySheet(dest as XLBookMBS)

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies a sheet to the other book. **Notes:**

This copies most properties and all cells.
If something is missing, please let us know.
See also:

- 183.6.21 CopySheet(dest as XLSheetMBS)

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183.6.21 CopySheet(dest as XLSheetMBS)

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Copies the sheet content to the other sheet. **Notes:**

This copies most properties and all cells.
If something is missing, please let us know.
See also:

- 183.6.20 CopySheet(dest as XLBookMBS)

---

183.6.22 DelHyperlink(index as Integer) as Boolean

MBS XL Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Removes hyperlink by index. **Notes:** Index: The index from 0 to HyperlinkSize.
183.6.23 DelMerge(row as Integer, col as Integer) as boolean

**Notes:** Returns false if error occurs. Get error info with XLBookMBS.ErrorMessage property.

183.6.24 DelMergeByIndex(index as Integer) as Boolean

**Notes:** Index: From 0 to MergeSize-1.

183.6.25 DelNamedRange(name as string, scopeId as Integer = -2) as boolean

MBS XL Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Deletes the named range by name.
**Notes:**
Returns false if error occurs. Get error info with XLBookMBS.errorMessage().
scopeId - index of sheet for local named range or ScopeWorkbook for global named range.

183.6.26 FirstCol as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the first column in the sheet that contains a used cell.

183.6.27 FirstRow as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the first row in the sheet that contains a used cell.

183.6.28 Footer as string

**Notes:**
The footer text appears at the bottom of every page when printed. The length of the text must be less than or equal to 255. The footer text can contain special commands, for example a placeholder for the page number, current date or text formatting attributes. Margin is specified in inches.

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&amp; L</td>
<td>specifies the beginning of the left section</td>
</tr>
<tr>
<td>&amp; P</td>
<td>specifies the current page number</td>
</tr>
<tr>
<td>&amp; N</td>
<td>specifies the total number of pages</td>
</tr>
<tr>
<td>&amp; \d {1,3}</td>
<td>specifies the text font size, where font size is measured in points, for example: &amp; 9 or &amp; 36</td>
</tr>
<tr>
<td>&amp; S</td>
<td>specifies whether the strikethrough text style is on or off</td>
</tr>
<tr>
<td>&amp; X</td>
<td>specifies whether the superscript text style is on or off</td>
</tr>
<tr>
<td>&amp; Y</td>
<td>specifies whether the subscript text style is on or off</td>
</tr>
<tr>
<td>&amp; C</td>
<td>specifies the beginning of the center section</td>
</tr>
<tr>
<td>&amp; D</td>
<td>specifies a date</td>
</tr>
<tr>
<td>&amp; T</td>
<td>specifies a time</td>
</tr>
<tr>
<td>&amp; G</td>
<td>specifies a picture</td>
</tr>
<tr>
<td>&amp; U</td>
<td>specifies whether the single underline text style is on or off</td>
</tr>
<tr>
<td>&amp; E</td>
<td>specifies whether the double underline text style is on or off</td>
</tr>
<tr>
<td>&amp; R</td>
<td>specifies the beginning of the right section</td>
</tr>
<tr>
<td>&amp; Z</td>
<td>specifies a workbook file path</td>
</tr>
<tr>
<td>&amp; F</td>
<td>specifies a workbook file name</td>
</tr>
<tr>
<td>&amp; A</td>
<td>specifies a sheet name</td>
</tr>
<tr>
<td>&amp; ”fontname”</td>
<td>specifies the text font, for example: &amp; ”Comic Sans MS”</td>
</tr>
<tr>
<td>&amp; B</td>
<td>specifies whether the bold text style is on or off</td>
</tr>
<tr>
<td>&amp; I</td>
<td>specifies whether the italic text style is on or off</td>
</tr>
<tr>
<td>&amp; &amp;</td>
<td>specifies an ampersand character (&amp; )</td>
</tr>
</tbody>
</table>

183.6.29 FooterMargin as Double


183.6.30 GetHorPageBreak(index as Integer) as Integer

183.6.31  GetHorPageBreakCount as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Returns a number of horizontal page breaks in the sheet.
Example:

```vbnet
// new document
dim x as new XLBookMBS

// add a sheet
dim s as XLSheetMBS = x.AddSheet

// write a cell
call s.WriteString(5,5, "Hello")

// now put a page break there
if s.SetHorPageBreak(5, true) then
    // and now we have one at row 5
    MsgBox str(s.GetHorPageBreakCount)+" "+str(s.GetHorPageBreak(0))
end if
```

183.6.32  GetMerge(row as Integer, col as Integer, byref rowFirst as Integer, byref rowLast as Integer, byref colFirst as Integer, byref colLast as Integer) as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Gets merged cells for cell at row, col.
Notes:
Result is written in rowFirst, rowLast, colFirst, colLast.
Returns false if error occurs. Get error info with XLBookMBS.ErrorMessage property.

183.6.33  GetNamedRange(name as string, byref rowFirst as Integer, byref rowLast as Integer, byref colFirst as Integer, byref colLast as Integer) as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Gets the named range coordinates by name.
Notes: Returns false if specified named range isn’t found or error occurs. Get error info with XLBookMBS.ErrorMessage property.
See also:

- 183.6.34 GetNamedRange(name as string, byref rowFirst as Integer, byref rowLast as Integer, byref colFirst as Integer, byref colLast as Integer, ScopeID as Integer, byref Hidden as Integer) as boolean
183.6.34  GetNamedRange(name as string, byref rowFirst as Integer, byref rowLast as Integer, byref colFirst as Integer, byref colLast as Integer, ScopeID as Integer, byref Hidden as Integer) as boolean

MBS XL Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the named range coordinates by name.

**Notes:**
- `scopeId` - index of sheet for local named range or SCOPE_WORKBOOK for global named range.
- `hidden` - true if named range is hidden and false if isn’t.

Returns false if specified named range isn’t found or error occurs. Get error info with XLBookMBS.errorMessage.

See also:

- 183.6.33 GetNamedRange(name as string, byref rowFirst as Integer, byref rowLast as Integer, byref colFirst as Integer, byref colLast as Integer) as boolean

---

183.6.35  GetPicture(index as Integer, byref rowTop as Integer, byref colLeft as Integer, byref rowBottom as Integer, byref colRight as Integer, byref width as Integer, byref height as Integer, byref offsetX as Integer, byref offsetY as Integer) as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a workbook picture index at position index in worksheet.

**Notes:**
- Output parameters:
  - `(rowTop, colLeft)` - top left position of picture;
  - `(rowBottom, colRight)` - bottom right position of picture;
  - `width` - width of picture in pixels;
  - `height` - height of picture in pixels;
  - `offset_x` - horizontal offset of picture in pixels;
  - `offset_y` - vertical offset of picture in pixels.

Use XLBookMBS.getPicture() for extracting binary data of picture by workbook picture index.

Returns -1 if error occurs. Get error info with XLBookMBS.ErrorMessage property.
183.6.36 GetPrintArea(byref rowFirst as Integer, byref colFirst as Integer, byref rowLast as Integer, byref colLast as Integer) as boolean

MBS XL Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the print area.
**Notes:** Returns false if print area isn’t found.

183.6.37 GetPrintFit(byref wPages as Integer, byref hPages as Integer) as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns whether fit to page option is enabled.
**Notes:**
Output parameters:
wPages - number of pages the sheet width is fit to;
hPages - number of pages the sheet height is fit to.

183.6.38 GetPrintRepeatCols(byref colFirst as Integer, byref colLast as Integer) as boolean

MBS XL Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets repeated columns on each page from colFirst to colLast.
**Notes:** Returns false if repeated columns aren’t found.

183.6.39 GetPrintRepeatRows(byref rowFirst as Integer, byref rowLast as Integer) as boolean

MBS XL Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets repeated rows on each page from rowFirst to rowLast.
**Notes:** Returns false if repeated rows aren’t found.

183.6.40 GetTopLeftView(byref row as Integer, byref col as Integer)

MBS XL Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Extracts the first visible row and the leftmost visible column of the sheet.
**Example:**
```
// create new xls file
dim book as new XLBookMBS(false)
```
// create sheet
dim sheet as XLSheetMBS = book.AddSheet("Sheet1")

// set top left view
sheet.SetTopLeftView(2,3)

// read values
dim col, row as Integer
sheet.GetTopLeftView(row, col)

MsgBox str(Row)+", "+str(col) // shows 2, 3

183.6.41 GetVerPageBreak(index as Integer) as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns column with vertical page break at position index.

183.6.42 GetVerPageBreakCount as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns a number of vertical page breaks in the sheet.

183.6.43 GroupCols(colFirst as Integer, colLast as Integer, collapsed as boolean = true) as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Groups columns from colFirst to colLast.
**Notes:** Returns false if error occurs. Get error info with XLBookMBS.ErrorMessage property.

183.6.44 GroupRows(rowFirst as Integer, rowLast as Integer, collapsed as boolean = true) as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Groups rows from rowFirst to rowLast.
**Notes:** Returns false if error occurs. Get error info with XLBookMBS.ErrorMessage property.
183.6.45 Header as string


**Notes:**
The text appears at the top of every page when printed. The length of the text must be less than or equal to 255. The header text can contain special commands, for example a placeholder for the page number, current date or text formatting attributes. Special commands are represented by single letter with a leading ampersand ("& "). Margin is specified in inches.

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&amp; L</td>
<td>specifies the beginning of the left section</td>
</tr>
<tr>
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<tr>
<td>&amp; T</td>
<td>specifies a time</td>
</tr>
<tr>
<td>&amp; G</td>
<td>specifies a picture</td>
</tr>
<tr>
<td>&amp; U</td>
<td>specifies whether the single underline text style is on or off</td>
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<tr>
<td>&amp; E</td>
<td>specifies whether the double underline text style is on or off</td>
</tr>
<tr>
<td>&amp; R</td>
<td>specifies the beginning of the right section</td>
</tr>
<tr>
<td>&amp; Z</td>
<td>specifies a workbook file path</td>
</tr>
<tr>
<td>&amp; F</td>
<td>specifies a workbook file name</td>
</tr>
<tr>
<td>&amp; A</td>
<td>specifies a sheet name</td>
</tr>
<tr>
<td>&amp; &quot;fontname&quot;</td>
<td>specifies the text font, for example: &amp; &quot;Comic Sans MS&quot;</td>
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</tr>
<tr>
<td>&amp; &amp;</td>
<td>specifies an ampersand character (&amp; )</td>
</tr>
</tbody>
</table>

183.6.46 HeaderMargin as Double

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The header margin in inches.
183.6.47  **Hyperlink(index as Integer, byref rowFirst as Integer, byref rowLast as Integer, byref colFirst as Integer, byref colLast as Integer) as String**


183.6.48  **HyperlinkSize as Integer**

MBS XL Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of hyperlinks in the sheet.

183.6.49  **InsertCol(colFirst as Integer, colLast as Integer) as boolean**

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Inserts columns from colFirst to colLast.  
**Notes:** Returns false if error occurs. Get error info with XLBookMBS.ErrorMessage property.

183.6.50  **InsertRow(rowFirst as Integer, rowLast as Integer) as boolean**

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Inserts rows from rowFirst to rowLast.  
**Notes:** Returns false if error occurs. Get error info with XLBookMBS.ErrorMessage property.

183.6.51  **IsDate(row as Integer, col as Integer) as boolean**

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Checks that cell contains a date or time value.

183.6.52  **IsFormula(row as Integer, col as Integer) as boolean**

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Checks that cell contains a formula.
183.6. **CLASS XLSHEETMBS**

### 183.6.53 LastCol as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the zero-based index of the column after the last column in the sheet that contains a used cell. **Example:**

```vbs
dim book as XLBookMBS ' your book instance

// get first sheet
dim sheet as XLSheetMBS = book.Sheet(0)

// show index of last column
dim LastCol as Integer = sheet.LastCol

MsgBox "LastCol: " + str(LastCol)
```

### 183.6.54 LastRow as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the zero-based index of the row after the last row in the sheet that contains a used cell. **Example:**

```vbs
dim book as XLBookMBS ' your book instance

// get first sheet
dim sheet as XLSheetMBS = book.Sheet(0)

// show index of last row
dim LastRow as Integer = sheet.LastRow

MsgBox "LastRow: " + str(LastRow)
```

### 183.6.55 Merge(index as Integer, byref rowFirst as Integer, byref rowLast as Integer, byref colFirst as Integer, byref colLast as Integer) as Boolean

MBS XL Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the merged cells by index.
183.6.56 MergeSize as Integer

MBS XL Plugin, Plugin Version: 14.3. Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a number of merged cells in this worksheet.

183.6.57 NamedRange(index as Integer, byref rowFirst as Integer, byref rowLast as Integer, byref ColFirst as Integer, byref ColLast as Integer) as string

MBS XL Plugin, Plugin Version: 11.3. Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the named range coordinates by index.

See also:

- 183.6.58 NamedRange(index as Integer, byref rowFirst as Integer, byref rowLast as Integer, byref ColFirst as Integer, byref ColLast as Integer, byref scopeId as Integer, byref Hidden as Boolean) as string

183.6.58 NamedRange(index as Integer, byref rowFirst as Integer, byref rowLast as Integer, byref ColFirst as Integer, byref ColLast as Integer, byref scopeId as Integer, byref Hidden as Boolean) as string

MBS XL Plugin, Plugin Version: 14.0. Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the named range coordinates by index.

**Notes:**

- scopeId - index of sheet for local named range or ScopeWorkbook for global named range.
- hidden - true if named range is hidden and false if isn’t.

See also:

- 183.6.57 NamedRange(index as Integer, byref rowFirst as Integer, byref rowLast as Integer, byref ColFirst as Integer, byref ColLast as Integer) as string

183.6.59 NamedRangeCount as Integer

MBS XL Plugin, Plugin Version: 11.3. Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns the number of named ranges in the sheet.

183.6.60 PictureCount as Integer

MBS XL Plugin, Plugin Version: 11.3. Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Returns a number of pictures in this worksheet.
183.6. CLASS XLSHEETMBS

183.6.61 ReadBlank(row as Integer, col as Integer) as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Reads format from blank cell.

**Notes:**
Returns false if specified cell isn’t blank or error occurs. Get error info with XLBookMBS.ErrorMessage property.
Col and Row are zero based.
Please remember that Excel files have limits like 65536 rows and 256 columns.
See also:

- 183.6.62 ReadBlank(row as Integer, col as Integer, byref format as XLFormatMBS) as boolean

183.6.62 ReadBlank(row as Integer, col as Integer, byref format as XLFormatMBS) as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Reads format from blank cell.

**Notes:**
Returns false if specified cell isn’t blank or error occurs. Get error info with XLBookMBS.ErrorMessage property.
Col and Row are zero based.
Please remember that Excel files have limits like 65536 rows and 256 columns.
See also:

- 183.6.61 ReadBlank(row as Integer, col as Integer) as boolean

183.6.63 ReadBoolean(row as Integer, col as Integer) as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Reads a boolean value and its format from cell.

**Notes:**
If nil format is returned then an error occurred. Get error info with XLBookMBS.ErrorMessage property.
Col and Row are zero based.
Please remember that Excel files have limits like 65536 rows and 256 columns.
See also:

- 183.6.64 ReadBoolean(row as Integer, col as Integer, byref format as XLFormatMBS) as boolean
183.6.64  **ReadBoolean** *(row as Integer, col as Integer, byref format as XLFormatMBS) as boolean*

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads a boolean value and its format from cell.  
**Notes:**  
If nil format is returned then an error occured. Get error info with XLBookMBS.ErrorMessage property.  
Col and Row are zero based.  
Please remember that Excel files have limits like 65536 rows and 256 columns.  
See also:  
- 183.6.63 ReadBoolean*(row as Integer, col as Integer)* as boolean

183.6.65  **ReadComment** *(row as Integer, col as Integer) as string*

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads a comment from specified cell.  
**Notes:**  
Col and Row are zero based.  
Please remember that Excel files have limits like 65536 rows and 256 columns.

183.6.66  **ReadDate** *(row as Integer, col as Integer) as date*

MBS XL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads a date/time and its format from cell.  
**Notes:**  
Internally uses XLBookMBS.dateUnpack() for extract date/time parts from double.  
If format is returned as nil, then error occurs. Get error info with XLBookMBS.ErrorMessage property.  
Col and Row are zero based.  
Please remember that Excel files have limits like 65536 rows and 256 columns.  
See also:  
- 183.6.67 ReadDate*(row as Integer, col as Integer, byref format as XLFormatMBS)* as date

183.6.67  **ReadDate** *(row as Integer, col as Integer, byref format as XLFormatMBS) as date*

MBS XL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads a date/time and its format from cell.  
**Notes:**
183.6. CLASS XLSHEETMBS

Internally uses XLBookMBS.dateUnpack() for extract date/time parts from double. If format is returned as nil, then error occurs. Get error info with XLBookMBS.ErrorMessage property. Col and Row are zero based. Please remember that Excel files have limits like 65536 rows and 256 columns. See also:

- 183.6.66 ReadDate(row as Integer, col as Integer) as date

183.6.68  ReadError(row as Integer, col as Integer) as Integer


See ErrorType* constants. Col and Row are zero based. Please remember that Excel files have limits like 65536 rows and 256 columns.

183.6.69  ReadFormula(row as Integer, col as Integer) as string

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Reads a formula string and its format from cell. Notes:

Returns nil if specified cell doesn’t contain formula or error occurs. Get error info with XLBookMBS.ErrorMessage property. Col and Row are zero based. Please remember that Excel files have limits like 65536 rows and 256 columns. See also:

- 183.6.70 ReadFormula(row as Integer, col as Integer, byref format as XLFormatMBS) as string

183.6.70  ReadFormula(row as Integer, col as Integer, byref format as XLFormatMBS) as string

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Reads a formula string and its format from cell. Notes:

Returns nil if specified cell doesn’t contain formula or error occurs. Get error info with XLBookMBS.ErrorMessage property. Col and Row are zero based. Please remember that Excel files have limits like 65536 rows and 256 columns. See also:
• 183.6.69 ReadFormula(row as Integer, col as Integer) as string

183.6.71 ReadNumber(row as Integer, col as Integer) as Double

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Reads a number or date/time and its format from cell. Notes:
Use XLBookMBS.dateUnpack() for extract date/time parts from double. If format is returned as nil, then error occurs. Get error info with XLBookMBS.ErrorMessage property. Col and Row are zero based. Please remember that Excel files have limits like 65536 rows and 256 columns.
See also:
• 183.6.72 ReadNumber(row as Integer, col as Integer, byref format as XLFormatMBS) as Double

183.6.72 ReadNumber(row as Integer, col as Integer, byref format as XLFormatMBS) as Double

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Reads a number or date/time and its format from cell. Notes:
Use XLBookMBS.dateUnpack() for extract date/time parts from double. If format is returned as nil, then error occurs. Get error info with XLBookMBS.ErrorMessage property. Col and Row are zero based. Please remember that Excel files have limits like 65536 rows and 256 columns.
See also:
• 183.6.71 ReadNumber(row as Integer, col as Integer) as Double

183.6.73 ReadString(row as Integer, col as Integer) as string

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Reads a string and its format from cell. Notes:
Returns "" if specified cell doesn’t contain string or error occurs. Get error info with XLBookMBS.ErrorMessage property. Col and Row are zero based. Please remember that Excel files have limits like 65536 rows and 256 columns.
See also:
• 183.6.74 ReadString(row as Integer, col as Integer, byref format as XLFormatMBS) as string
183.6.74  **ReadString** (row as Integer, col as Integer, byref format as XLFormatMBS) as string

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Reads a string and its format from cell.

**Notes:**
- Returns "" if specified cell doesn’t contain string or error occurs. Get error info with XLBookMBS.ErrorMessage property.
- Col and Row are zero based.
- Please remember that Excel files have limits like 65536 rows and 256 columns.

See also:
- 183.6.73 **ReadString** (row as Integer, col as Integer) as string

183.6.75  **RemoveCol** (colFirst as Integer, colLast as Integer) as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Removes columns from colFirst to colLast.

**Notes:** Returns false if error occurs. Get error info with XLBookMBS.ErrorMessage property.

183.6.76  **RemoveComment** (row as Integer, col as Integer)

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Removes a comment from the cell (only for xls format).

183.6.77  **RemoveDataValidations**

MBS XL Plugin, Plugin Version: 17.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Removes all data validations for the sheet (only for xlsx files).

183.6.78  **RemoveFilter**

183.6.79 RemoveRow(rowFirst as Integer, rowLast as Integer) as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Removes rows from rowFirst to rowLast.
**Notes:** Returns false if error occurs. Get error info with XLBookMBS.ErrorMessage property.

183.6.80 RowColToAddr(row as Integer, col as Integer, rowRelative as boolean = true, colRelative as boolean = true) as string

MBS XL Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Converts row and column to a cell reference.
**Example:**
```vbscript
// create new xls file
dim book as new XLBookMBS(false)

// create sheet
dim sheet as XLSheetMBS = book.AddSheet("Sheet1")

MsgBox sheet.RowColToAddr(5,5) // shows F6
MsgBox sheet.RowColToAddr(5,5,false,false) // shows $ F$ 6
```

183.6.81 RowHeight(row as Integer) as Double

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns row height.

183.6.82 SetAutoFitArea(rowFirst as Integer = 0, colFirst as Integer = 0, rowLast as Integer = -1, colLast as Integer = -1)

MBS XL Plugin, Plugin Version: 15.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the borders for autofit column widths feature.
**Notes:** The method setCol with -1 width value will affect only to the specified limited area.

183.6.83 SetCol(colFirst as Integer, colLast as Integer, width as Double, format as XLFormatMBS = nil, hidden as boolean = false) as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets column width and format for all columns from colFirst to colLast.
Notes:
If format is nil then format is ignored. Columns may be hidden. Returns false if error occurs. Get error info with XLBookMBS.ErrorMessage property.

Column width measured as the number of characters of the maximum digit width of the numbers 0, 1, 2, ..., 9 as rendered in the normal style’s font. Value -1 is used for autofit column widths. If format equals 0 then format is ignored. Columns may be hidden.

183.6.84 SetFooter(footer as string, margin as Double) as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Sets the footer text for the sheet when printed.

Notes:
The footer text appears at the bottom of every page when printed. The length of the text must be less than or equal to 255. The footer text can contain special commands, for example a placeholder for the page number, current date or text formatting attributes. See setHeader for details. Margin is specified in inches.

<table>
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<th>Code</th>
<th>Description</th>
</tr>
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<tbody>
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</tr>
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<tr>
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<td>specifies a workbook file name</td>
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<td>specifies an ampersand character (&amp; )</td>
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</tbody>
</table>
183.6.85  SetHeader(header as string, margin as Double) as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the header text of the sheet when printed.
**Notes:**
The text appears at the top of every page when printed. The length of the text must be less than or equal to 255. The header text can contain special commands, for example a placeholder for the page number, current date or text formatting attributes. Special commands are represented by single letter with a leading ampersand ("& "). Margin is specified in inches.

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</tr>
<tr>
<td>&amp; X</td>
<td>specifies whether the superscript text style is on or off</td>
</tr>
<tr>
<td>&amp; Y</td>
<td>specifies whether the subscript text style is on or off</td>
</tr>
<tr>
<td>&amp; C</td>
<td>specifies the beginning of the center section</td>
</tr>
<tr>
<td>&amp; D</td>
<td>specifies a date</td>
</tr>
<tr>
<td>&amp; T</td>
<td>specifies a time</td>
</tr>
<tr>
<td>&amp; G</td>
<td>specifies a picture</td>
</tr>
<tr>
<td>&amp; U</td>
<td>specifies whether the single underline text style is on or off</td>
</tr>
<tr>
<td>&amp; E</td>
<td>specifies whether the double underline text style is on or off</td>
</tr>
<tr>
<td>&amp; R</td>
<td>specifies the beginning of the right section</td>
</tr>
<tr>
<td>&amp; Z</td>
<td>specifies a workbook file path</td>
</tr>
<tr>
<td>&amp; F</td>
<td>specifies a workbook file name</td>
</tr>
<tr>
<td>&amp; A</td>
<td>specifies a sheet name</td>
</tr>
<tr>
<td>&amp; &quot;fontname&quot;</td>
<td>specifies the text font, for example: &amp; &quot;Comic Sans MS&quot;</td>
</tr>
<tr>
<td>&amp; B</td>
<td>specifies whether the bold text style is on or off</td>
</tr>
<tr>
<td>&amp; I</td>
<td>specifies whether the italic text style is on or off</td>
</tr>
<tr>
<td>&amp; &amp;</td>
<td>specifies an ampersand character ( &amp; )</td>
</tr>
</tbody>
</table>

183.6.86  SetHorPageBreak(row as Integer, pageBreak as boolean = true) as boolean

**Example:**
183.6. CLASS XLSHEETMBS

// new document
dim x as new XLBookMBS

// add a sheet
dim s as XLSheetMBS = x.AddSheet

// write a cell
call s.WriteString(5, 5, "Hello")

// now put a page break there
if s.SetHorPageBreak(5, true) then
  // and now we have one at row 5
  MsgBox str(s.GetHorPageBreakCount)+" "+str(s.GetHorPageBreak(0))
end if

Notes: Returns false if error occurs. Get error info with XLBookMBS.ErrorMessage property.

183.6.87 SetMerge(rowFirst as Integer, rowLast as Integer, colFirst as Integer, colLast as Integer) as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Sets merged cells for range: rowFirst - rowLast, colFirst - colLast.
Notes: Returns false if error occurs. Get error info with XLBookMBS.ErrorMessage property.

183.6.88 SetNamedRange(name as string, rowFirst as Integer, rowLast as Integer, colFirst as Integer, colLast as Integer, scopeId as Integer = -2) as boolean

MBS XL Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function:
Sets the named range.
Notes:
scopeId - index of sheet for local named range or ScopeWorkbook for global named range.
Returns false if error occurs. Get error info with XLBookMBS.errorMessage.
183.6.89  **SetPicture(row as Integer, col as Integer, PictureID as Integer, scale as Double = 1.0, OffsetX as Integer = 0, OffsetY as Integer = 0, pos as Integer = 0)**

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets a picture with pictureId identifier at position row and col with scale factor.  
**Notes:** Use XLBookMBS.addPicture() for getting picture identifier.  
See also:

- 183.6.90 **SetPicture(row as Integer, col as Integer, PictureID as Integer, width as Integer, height as Integer, OffsetX as Integer = 0, OffsetY as Integer = 0, pos as Integer = 0)**

183.6.90  **SetPicture(row as Integer, col as Integer, PictureID as Integer, width as Integer, height as Integer, OffsetX as Integer = 0, OffsetY as Integer = 0, pos as Integer = 0)**

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets a picture with pictureId identifier at position row and col with custom size.  
**Notes:** Use XLBookMBS.addPicture() for getting a picture identifier.  
See also:

- 183.6.89 **SetPicture(row as Integer, col as Integer, PictureID as Integer, scale as Double = 1.0, OffsetX as Integer = 0, OffsetY as Integer = 0, pos as Integer = 0)**

183.6.91  **SetPrintArea(rowFirst as Integer, rowLast as Integer, colFirst as Integer, colLast as Integer)**

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the print area.

183.6.92  **SetPrintFit(wPages as Integer, hPages as Integer)**

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Fits sheet width and sheet height to wPages and hPages respectively.

183.6.93  **SetPrintRepeatCols(colFirst as Integer, colLast as Integer)**

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets repeated columns on each page from colFirst to colLast.
183.6.94 SetPrintRepeatRows(rowFirst as Integer, rowLast as Integer)

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets repeated rows on each page from rowFirst to rowLast.

183.6.95 SetProtectEx(protect as boolean = true, password as string = "", enhancedProtection as Integer = -1)

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Protects/unprotects the sheet with password and enhanced parameters below. **Notes:** It is possible to combine a few EnhancedProtection values with operator BitwiseOr.

183.6.96 SetRow(row as Integer, height as Double, format as XLFormatMBS = nil, hidden as boolean = false) as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets row height and format. **Notes:**

If format is nil then format is ignored. Row may be hidden. Returns false if error occurs. Get error info with XLBookMBS.ErrorMessage property.

Height is in points. If you want to convert from pixels to points you can use this calculation: `points = pixels * 72 / 96`. So for a height of 72 pixel, you pass 54 points.

183.6.97 SetTabColor(colorValue as Integer)

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the color for the sheet’s tab.

183.6.98 SetTabRgbColor(red as Integer, green as Integer, blue as Integer)

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the color for the sheet’s tab.
183.6.99  **SetTopLeftView(row as Integer, col as Integer)**

MBS XL Plugin, Plugin Version: 12.2, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sets the first visible row and the leftmost visible column of the sheet. **Example:**

```vba
' create new xls file
Dim book As New XLBookMBS(False)

' create sheet
Dim sheet As XLSheetMBS = book.AddSheet("Sheet1")

' set top left view
sheet.SetTopLeftView(2,3)

' read values
Dim col, row As Integer
sheet.GetTopLeftView(row, col)
MsgBox str(row) + "," + str(col) ' shows 2, 3
```

183.6.100  **SetVerPageBreak(row as Integer, pageBreak as boolean = true) as boolean**


183.6.101  **Split(row as Integer, col as Integer)**

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Splits a sheet at position (row, col). **Notes:** Splits a sheet at position (row, col) or specifies the position of frozen pane. This function allows to freeze a header at top position or freeze some columns on the right.

183.6.102  **SplitInfo(byref row as Integer, byref col as Integer) as Boolean**

MBS XL Plugin, Plugin Version: 14.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Gets the split information (position of frozen pane) in the sheet. **Notes:**
183.6. CLASS XLSHEETMBS

row: vertical position of the split;
col: horizontal position of the split.
Returns true on success.
183.6.103 Table(index as Integer, byref rowFirst as Integer, byref rowLast as Integer, byref ColFirst as Integer, byref ColLast as Integer, byref headerRowCount as Integer, byref totalsRowCount as Integer) as string

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Gets the table parameters by index.

**Notes:**
- headerRowCount - the number of header rows showing at the top of the table. 0 means that the header row is not shown.
- totalsRowCount - the number of totals rows that shall be shown at the bottom of the table. 0 means that the totals row is not shown.

Returns a string representing the name of the table.

183.6.104 TableSize as Integer

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the number of tables in the sheet.

183.6.105 WriteBlank(row as Integer, col as Integer, format as XLFormatMBS = nil) as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Writes blank cell with specified format.

**Notes:**
- Returns false if error occurs. Get error info with XLBookMBS.ErrorMessage property.
- Col and Row are zero based.
- Please remember that Excel files have limits like 65536 rows and 256 columns.

183.6.106 WriteBoolean(row as Integer, col as Integer, value as boolean, format as XLFormatMBS = nil) as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Writes a bool value into cell with specified format.

**Notes:**
- If format is nil then format is ignored.
- Returns false if error occurs. Get error info with XLBookMBS.ErrorMessage property.
- Col and Row are zero based.
183.6. CLASS XLSHEETMBS

Please remember that Excel files have limits like 65536 rows and 256 columns.

183.6.107 WriteComment(row as Integer, col as Integer, value as string, author as string, width as Integer, height as Integer)

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes a comment to the cell.

**Notes:**
- row and col: cell’s position
- value: comment string
- author: author string
- width: width of text box in pixels
- height: height of text box in pixels

Col and Row are zero based.
Please remember that Excel files have limits like 65536 rows and 256 columns.

183.6.108 WriteDate(row as Integer, col as Integer, value as date, format as XLFormatMBS = nil) as boolean

MBS XL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes a date/time into cell with specified format.

**Notes:**
- If format is nil then format is ignored. Internally uses XLBookMBS.datePack() for packing date/time parts to double.
- Returns false if error occurs. Get error info with XLBookMBS.ErrorMessage property.
- Col and Row are zero based.
Please remember that Excel files have limits like 65536 rows and 256 columns.

183.6.109 WriteError(row as Integer, col as Integer, Error as Integer, format as XLFormatMBS = nil)

MBS XL Plugin, Plugin Version: 16.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes error into the cell with specified format.

**Notes:** If format equals nil then format is ignored.
183.6.110 WriteFormula(row as Integer, col as Integer, value as string, format as XLFormatMBS = nil) as boolean

Notes:
If format is nil then format is ignored. Returns false if error occurs. Get error info with XLBookMBS.ErrorMessage property.
Col and Row are zero based.
Please remember that Excel files have limits like 65536 rows and 256 columns.
As LibXL does not calculate the result of the formula, it will not encode the result in the Excel file. It does only store the formula, so an app opening the file will have to do the calculation. But QuickLook on Mac OS X does not calculate, so results do not show there.
Examples for formulas are: "TODAY()", "IF(C1>0;ABS(C1*D1);"""")", "SUM(E16:E38)" or "E39+E39*E40".

183.6.111 WriteFormulaBool(row as Integer, col as Integer, Expression as string, value as Boolean, format as XLFormatMBS = nil) as boolean

Notes:
If format equals nil then format is ignored.
Returns false if error occurs. Get error info with XLBookMBS.errorMessage.

183.6.112 WriteFormulaNum(row as Integer, col as Integer, Expression as string, value as Double, format as XLFormatMBS = nil) as boolean

Notes: If format equals nil then format is ignored. Returns false if error occurs. Get error info with XLBookMBS.errorMessage.

183.6.113 WriteFormulaString(row as Integer, col as Integer, Expression as string, value as String, format as XLFormatMBS = nil) as boolean

Notes: If format equals nil then format is ignored. Returns false if error occurs. Get error info with XLBookMBS.errorMessage.
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### 183.6.114 WriteNumber(row as Integer, col as Integer, value as Double, format as XLFormatMBS = nil) as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes a number or date/time into cell with specified format. **Notes:**

If format is nil then format is ignored. Use XLBookMBS.datePack() for packing date/time parts to double. Returns false if error occurs. Get error info with XLBookMBS.ErrorMessage property. Col and Row are zero based. Please remember that Excel files have limits like 65536 rows and 256 columns.

### 183.6.115 WriteString(row as Integer, col as Integer, value as string, format as XLFormatMBS = nil) as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Writes a string into cell with specified format. **Notes:**

If format is nil then format is ignored. Returns false if error occurs. Get error info with XLBookMBS.ErrorMessage property. Col and Row are zero based. Please remember that Excel files have limits like 65536 rows and 256 columns.

### 183.6.116 Properties

**183.6.117 Book as XLBookMBS**

MBS XL Plugin, Plugin Version: 15.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The parent book. **Notes:**

As a sheet is only valid with the owning book, we keep a back reference here. (Read only property)

**183.6.118 Handle as Integer**

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The internal object reference. **Notes:** (Read and Write property)
183.6.119  **CellFormat**(row as Integer, col as Integer) as XLFormatMBS

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The cell’s format.
**Notes:** (Read and Write computed property)

183.6.120  **ColHidden**(col as Integer) as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether column is hidden.
**Notes:** (Read and Write computed property)

183.6.121  **DisplayGridlines** as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether the gridlines are displayed.
**Notes:**
True if gridlines are displayed and false if aren’t.
(Assigning a value to this property calls setDisplayGridlines internally)
(Read and Write computed property)

183.6.122  **GroupSummaryBelow** as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether grouping rows summary is below.
**Notes:**
True if summary is below and false if isn’t.
(Read and Write computed property)

183.6.123  **GroupSummaryRight** as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether grouping columns summary is right.
**Notes:**
Returns true if summary is right and false if isn’t.
(Read and Write computed property)
183.6.124  HCenter as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether the sheet is centered horizontally when printed.
**Notes:** (Read and Write computed property)

183.6.125  Hidden as Integer

MBS XL Plugin, Plugin Version: 12.1, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Specifies the visible state of this sheet.
**Notes:**
(Read and Write computed property)

183.6.126  Landscape as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether to use landscape or portrait mode for printing.
**Notes:**
true - pages are printed using landscape mode, false - pages are printed using portrait mode.
(Read and Write computed property)

183.6.127  MarginBottom as Double

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The bottom margin of the sheet in inches.
**Notes:** (Read and Write computed property)

183.6.128  MarginLeft as Double

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The left margin of the sheet in inches.
**Notes:** (Read and Write computed property)
183.6.129 MarginRight as Double

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The right margin of the sheet in inches.
**Notes:** (Read and Write computed property)

183.6.130 MarginTop as Double

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The top margin of the sheet in inches.
**Notes:** (Read and Write computed property)

183.6.131 Name as string

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The name of the sheet.
**Notes:** (Read and Write computed property)

183.6.132 Paper as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The paper size.
**Notes:**
See Paper* constants.
(Read and Write computed property)

183.6.133 PrintGridlines as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether the gridlines are printed.
**Notes:**
True if gridlines are printed and false if aren’t.
(Read and Write computed property)
183.6.134  PrintRowCol as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether the row and column headers are printed.
**Notes:** (Read and Write computed property)

183.6.135  PrintZoom as Integer

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Scaling factor for printing as a percentage.
**Notes:** (Read and Write computed property)

183.6.136  Protect as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether sheet is protected.
**Notes:** (Read and Write computed property)

183.6.137  RightToLeft as boolean

MBS XL Plugin, Plugin Version: 14.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether the text is displayed in right-to-left mode.
**Notes:**
true - the text is displayed in right-to-left mode,
false - the text is displayed in left-to-right mode.
(Read and Write computed property)

183.6.138  RowHidden(row as Integer) as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether row is hidden.
**Notes:** (Read and Write computed property)

183.6.139  VCenter as boolean

MBS XL Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Whether the sheet is centered vertically when printed.
183.6.140  Zoom as Integer

Notes:
100 is a usual view.
(Read and Write computed property)

183.6.141  Constants

183.6.142  CellTypeBlank = 4

MBS XL Plugin, Plugin Version: 11.3. Function: One of the cell type constants.
Notes: blank

183.6.143  CellTypeBoolean = 3

MBS XL Plugin, Plugin Version: 11.3. Function: One of the cell type constants.
Notes: boolean value

183.6.144  CellTypeEmpty = 0

MBS XL Plugin, Plugin Version: 11.3. Function: One of the cell type constants.
Notes: empty

183.6.145  CellTypeError = 5

MBS XL Plugin, Plugin Version: 11.3. Function: One of the cell type constants.
Notes: error
183.6. CLASS XLSHEETMBS

183.6.146  CellTypeNumber = 1

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the cell type constants. **Notes:** number value

183.6.147  CellTypeString = 2

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the cell type constants. **Notes:** string value

183.6.148  ErrorTypeDiv0 = 7

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the error type constants. **Notes:** DIV/0!

183.6.149  ErrorTypeNA = & h2A

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the error type constants. **Notes:** N/A

183.6.150  ErrorTypeName = & h1D

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the error type constants. **Notes:** NAME?

183.6.151  ErrorTypeNoError = & hFF

MBS XL Plugin, Plugin Version: 14.3. **Function:** One of the error type constants. **Notes:** No Error.

183.6.152  ErrorTypeNull = 0

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the error type constants. **Notes:** NULL!
183.6.153  ErrorTypeNum = & h24

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the error type constants. 
**Notes:** NUM!

183.6.154  ErrorTypeRef = & h17

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the error type constants. 
**Notes:** REF!

183.6.155  ErrorTypeValue = & h0F

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the error type constants. 
**Notes:** VALUE!

183.6.156  IgnoreErrorDataValidation = 128

MBS XL Plugin, Plugin Version: 16.5. **Function:** One of the ignore error constants. 
**Notes:** Ignore errors when a cell’s value in a Table does not comply with the Data Validation rules specified.

183.6.157  IgnoreErrorEmptyCellref = 2

MBS XL Plugin, Plugin Version: 16.5. **Function:** One of the ignore error constants. 
**Notes:** Ignore errors when formulas refer to empty cells.

183.6.158  IgnoreErrorEvalError = 1

MBS XL Plugin, Plugin Version: 16.5. **Function:** One of the ignore error constants. 
**Notes:** Ignore errors when cells contain formulas that result in an error.

183.6.159  IgnoreErrorInconsistFormula = 16

MBS XL Plugin, Plugin Version: 16.5. **Function:** One of the ignore error constants. 
**Notes:** Ignore errors when a formula in a region of your worksheet differs from other formulas in the same region.
183.6. **CLASS XLSHEETMBS**

183.6.160 **IgnoreErrorInconsistRange = 8**

MBS XL Plugin, Plugin Version: 16.5. **Function:** One of the ignore error constants.  
**Notes:** Ignore errors when formulas omit certain cells in a region.

183.6.161 **IgnoreErrorNoError = 0**

MBS XL Plugin, Plugin Version: 16.5. **Function:** One of the ignore error constants.  
**Notes:** No error.

183.6.162 **IgnoreErrorNumberStoredAsText = 4**

MBS XL Plugin, Plugin Version: 16.5. **Function:** One of the ignore error constants.  
**Notes:** Ignore errors when numbers are formatted as text or are preceded by an apostrophe.

183.6.163 **IgnoreErrorTwodiTextYear = 32**

MBS XL Plugin, Plugin Version: 16.5. **Function:** One of the ignore error constants.  
**Notes:** Ignore errors when formulas contain text formatted cells with years represented as 2 digits.

183.6.164 **IgnoreErrorUnlockFormula = 64**

MBS XL Plugin, Plugin Version: 16.5. **Function:** One of the ignore error constants.  
**Notes:** Ignore errors when unlocked cells contain formulas.

183.6.165 **Paper10X11 = 45**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.166 **Paper10X14 = 16**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.  
**Notes:** 10 x 14 in
183.6.167  Paper10X17 = 17  
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.  
**Notes:** 11 x 17 in

183.6.168  Paper12X11 = 90  
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.169  Paper15X11 = 46  
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.170  Paper9X11 = 44  
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.171  PaperA2 = 66  
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.172  PaperA3 = 8  
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.  
**Notes:** A3 297 x 420 mm

183.6.173  PaperA3Extra = 63  
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.174  PaperA3ExtraTransverse = 68  
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.
183.6. CLASS XLSHEETMBS

183.6.175 PaperA3Rotated = 76
MBS XL Plugin, Plugin Version: 11.3. Function: One of the paper format constants.

183.6.176 PaperA3Transverse = 67
MBS XL Plugin, Plugin Version: 11.3. Function: One of the paper format constants.

183.6.177 PaperA4 = 9
MBS XL Plugin, Plugin Version: 11.3. Function: One of the paper format constants.
Notes: A4 210 x 297 mm

183.6.178 PaperA4Extra = 53
MBS XL Plugin, Plugin Version: 11.3. Function: One of the paper format constants.

183.6.179 PaperA4Plus = 60
MBS XL Plugin, Plugin Version: 11.3. Function: One of the paper format constants.

183.6.180 PaperA4Rotated = 77
MBS XL Plugin, Plugin Version: 11.3. Function: One of the paper format constants.

183.6.181 PaperA4Small = 10
MBS XL Plugin, Plugin Version: 11.3. Function: One of the paper format constants.
Notes: A4 Small 210 x 297 mm

183.6.182 PaperA4Transverse = 55
MBS XL Plugin, Plugin Version: 11.3. Function: One of the paper format constants.
183.6.183  PaperA5 = 11

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants. **Notes:** A5 148 x 210 mm

183.6.184  PaperA5Extra = 64

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.185  PaperA5Rotated = 78

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.186  PaperA5Transverse = 61

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.187  PaperA6 = 70

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.188  PaperA6Rotated = 83

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.189  PaperB4 = 12

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants. **Notes:** B4 (JIS) 250 x 354

183.6.190  PaperB4Iso = 42

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.
183.6. CLASS XLSHEETMBS

183.6.191 PaperB4Rotated = 79

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.192 PaperB5 = 13

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants. **Notes:** B5 (JIS) 182 x 257 mm

183.6.193 PaperB5Extra = 65

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.194 PaperB5Rotated = 80

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.195 PaperB5Transverse = 62

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.196 PaperB6 = 88

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.197 PaperB6Rotated = 89

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.198 PaperCSize = 24

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants. **Notes:** C size sheet
183.6.199  \textbf{PaperDefault} = 0

MBS XL Plugin, Plugin Version: 11.3. \textbf{Function}: One of the paper format constants.  
\textbf{Notes}: Default paper size

183.6.200  \textbf{PaperDoubleJapanesePostcardRotated} = 82

MBS XL Plugin, Plugin Version: 11.3. \textbf{Function}: One of the paper format constants.

183.6.201  \textbf{PaperDSize} = 25

MBS XL Plugin, Plugin Version: 11.3. \textbf{Function}: One of the paper format constants.  
\textbf{Notes}: D size sheet

183.6.202  \textbf{PaperEnvelope} = 36

MBS XL Plugin, Plugin Version: 11.3. \textbf{Function}: One of the paper format constants.  
\textbf{Notes}: Envelope 110 x 230 mm

183.6.203  \textbf{PaperEnvelope10} = 20

MBS XL Plugin, Plugin Version: 11.3. \textbf{Function}: One of the paper format constants.  
\textbf{Notes}: US Envelope # 10 4 1/8 x 9 1/2

183.6.204  \textbf{PaperEnvelope11} = 21

MBS XL Plugin, Plugin Version: 11.3. \textbf{Function}: One of the paper format constants.  
\textbf{Notes}: US Envelope # 11 4 1/2 x 10 3/8

183.6.205  \textbf{PaperEnvelope12} = 22

MBS XL Plugin, Plugin Version: 11.3. \textbf{Function}: One of the paper format constants.  
\textbf{Notes}: US Envelope # 12 4 3/4 x 11
183.6. CLASS XLSHEETMBS

183.6.206  PaperEnvelope14 = 23

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.  
**Notes:** US Envelope # 14 5 x 11 1/2

183.6.207  PaperEnvelope9 = 19

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.  
**Notes:** US Envelope # 9 3 7/8 x 8 7/8

183.6.208  PaperEnvelopeB4 = 33

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.  
**Notes:** Envelope B4 250 x 353 mm

183.6.209  PaperEnvelopeB5 = 34

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.  
**Notes:** Envelope B5 176 x 250 mm

183.6.210  PaperEnvelopeB6 = 35

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.  
**Notes:** Envelope B6 176 x 125 mm

183.6.211  PaperEnvelopeC3 = 29

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.  
**Notes:** Envelope C3 324 x 458 mm

183.6.212  PaperEnvelopeC4 = 30

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.  
**Notes:** Envelope C4 229 x 324 mm
183.6.213  PaperEnvelopeC5 = 28

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.
**Notes:** Envelope C5 162 x 229 mm

183.6.214  PaperEnvelopeC6 = 31

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.
**Notes:** Envelope C6 114 x 162 mm

183.6.215  PaperEnvelopeC65 = 32

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.
**Notes:** Envelope C65 114 x 229 mm

183.6.216  PaperEnvelopeDL = 27

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.
**Notes:** Envelope DL 110 x 220mm

183.6.217  PaperEnvelopeInvite = 47

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.218  PaperEnvelopeMonarch = 37

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.
**Notes:** US Envelope Monarch 3.875 x 7.5 in

183.6.219  PaperESize = 26

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.
**Notes:** E size sheet
183.6.220  PaperExecutive = 7
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants. **Notes:** US Executive 7 1/4 x 10 1/2 in

183.6.221  PaperFanfold = 39
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants. **Notes:** US Std Fanfold 14 7/8 x 11 in

183.6.222  PaperFolio = 14
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants. **Notes:** Folio 8 1/2 x 13 in

183.6.223  PaperGermanLegalFanfold = 41
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants. **Notes:** German Legal Fanfold 8 1/2 x 13 in

183.6.224  PaperGermanStdFanfold = 40
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants. **Notes:** German Std Fanfold 8 1/2 x 12 in

183.6.225  PaperJapaneseDoublePostcard = 69
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.226  PaperJapaneseEnvelopeChou3 = 73
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.
183.6.227  PaperJapaneseEnvelopeChou3Rotated = 86
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.228  PaperJapaneseEnvelopeChou4 = 74
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.229  PaperJapaneseEnvelopeChou4Rotated = 87
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.230  PaperJapaneseEnvelopeKaku2 = 71
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.231  PaperJapaneseEnvelopeKaku2Rotated = 84
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.232  PaperJapaneseEnvelopeKaku3 = 72
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.233  PaperJapaneseEnvelopeKaku3Rotated = 85
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.234  PaperJapaneseEnvelopeYou4 = 91
MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.
183.6. CLASS XLSHEETMBS

183.6.235 PaperJapaneseEnvelopeYou4Rotated = 92

MBS XL Plugin, Plugin Version: 11.3. Function: One of the paper format constants.

183.6.236 PaperJapanesePostcard = 43

MBS XL Plugin, Plugin Version: 11.3. Function: One of the paper format constants.

183.6.237 PaperJapanesePostcardRotated = 81

MBS XL Plugin, Plugin Version: 11.3. Function: One of the paper format constants.

183.6.238 PaperLedger = 4

MBS XL Plugin, Plugin Version: 11.3. Function: One of the paper format constants.
Notes: US Ledger 17 x 11 in

183.6.239 PaperLegal = 5

MBS XL Plugin, Plugin Version: 11.3. Function: One of the paper format constants.
Notes: US Legal 8 1/2 x 14 in

183.6.240 PaperLetter = 1

MBS XL Plugin, Plugin Version: 11.3. Function: One of the paper format constants.
Notes: US Letter 8 1/2 x 11 in

183.6.241 PaperLetterExtraTransverse = 56

MBS XL Plugin, Plugin Version: 11.3. Function: One of the paper format constants.
183.6.242  PaperLetterRotated $= 75$

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.243  PaperLetterSmall $= 2$

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.
**Notes:** US Letter Small 8 1/2 x 11 in

183.6.244  PaperLetterTransverse $= 54$

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.245  PaperNote $= 18$

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.
**Notes:** US Note 8 1/2 x 11 in

183.6.246  PaperPrc16K $= 93$

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.247  PaperPrc16KRotated $= 106$

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.248  PaperPrc32K $= 94$

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.249  PaperPrc32KBig $= 95$

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.
183.6. CLASS XLSHEETMBS

183.6.250  PaperPrc32KbigRotated = 108

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.251  PaperPrc32KRotated = 107

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.252  PaperPrcEnvelope1 = 96

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.253  PaperPrcEnvelope10 = 105

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.254  PaperPrcEnvelope10Rotated = 118

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.255  PaperPrcEnvelope1Rotated = 109

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.256  PaperPrcEnvelope2 = 97

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.257  PaperPrcEnvelope2Rotated = 110

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.
183.6.258  PaperPrcEnvelope3 = 98

MBS XL Plugin, Plugin Version: 11.3. Function: One of the paper format constants.

183.6.259  PaperPrcEnvelope3Rotated = 111

MBS XL Plugin, Plugin Version: 11.3. Function: One of the paper format constants.

183.6.260  PaperPrcEnvelope4 = 99

MBS XL Plugin, Plugin Version: 11.3. Function: One of the paper format constants.

183.6.261  PaperPrcEnvelope4Rotated = 112

MBS XL Plugin, Plugin Version: 11.3. Function: One of the paper format constants.

183.6.262  PaperPrcEnvelope5 = 100

MBS XL Plugin, Plugin Version: 11.3. Function: One of the paper format constants.

183.6.263  PaperPrcEnvelope5Rotated = 113

MBS XL Plugin, Plugin Version: 11.3. Function: One of the paper format constants.

183.6.264  PaperPrcEnvelope6 = 101

MBS XL Plugin, Plugin Version: 11.3. Function: One of the paper format constants.

183.6.265  PaperPrcEnvelope6Rotated = 114

MBS XL Plugin, Plugin Version: 11.3. Function: One of the paper format constants.
183.6.266  PaperPrcEnvelope7 = 102

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.267  PaperPrcEnvelope7Rotated = 115

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.268  PaperPrcEnvelope8 = 103

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.269  PaperPrcEnvelope8Rotated = 116

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.270  PaperPrcEnvelope9 = 104

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.271  PaperPrcEnvelope9Rotated = 117

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.272  PaperQuatro = 15

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.  
**Notes:** Quarto 215 x 275 mm

183.6.273  PaperStatement = 6

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.  
**Notes:** US Statement 5 1/2 x 8 1/2 in
183.6.274  **PaperSupera = 57**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.275  **PaperSuperb = 58**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.276  **PaperTabloid = 3**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.  
**Notes:** US Tabloid 11 x 17 in

183.6.277  **PaperUSEnvelope = 38**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.  
**Notes:** US Envelope 3 5/8 x 6 1/2 in

183.6.278  **PaperUSLegalExtra = 51**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.279  **PaperUSLetterExtra = 50**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.280  **PaperUSLetterPlus = 59**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.

183.6.281  **PaperUSTabloidExtra = 52**

MBS XL Plugin, Plugin Version: 11.3. **Function:** One of the paper format constants.
183.6. CLASS XLSHEETMBS

183.6.282  ProtectAll = 0

MBS XL Plugin, Plugin Version: 16.5. **Function:** One of the protection levels.  
**Notes:** Nothing is allowed except cell selections.

183.6.283  ProtectAutofilter = 4096

MBS XL Plugin, Plugin Version: 16.5. **Function:** One of the protection levels.  
**Notes:** Autofilters are allowed when the sheet is protected.

183.6.284  ProtectDefault = -1

MBS XL Plugin, Plugin Version: 16.5. **Function:** One of the protection levels.  
**Notes:** Default protection.

183.6.285  ProtectDeleteColumns = 256

MBS XL Plugin, Plugin Version: 16.5. **Function:** One of the protection levels.  
**Notes:** Deleting columns is allowed when the sheet is protected.

183.6.286  ProtectDeleteRows = 512

MBS XL Plugin, Plugin Version: 16.5. **Function:** One of the protection levels.  
**Notes:** Deleting rows is allowed when the sheet is protected.

183.6.287  ProtectFormatCells = 4

MBS XL Plugin, Plugin Version: 16.5. **Function:** One of the protection levels.  
**Notes:** Formatting cells is allowed when the sheet is protected.

183.6.288  ProtectFormatColumns = 8

MBS XL Plugin, Plugin Version: 16.5. **Function:** One of the protection levels.  
**Notes:** Formatting columns is allowed when the sheet is protected.
183.6.289  **ProtectFormatRows** = 16

MBS XL Plugin, Plugin Version: 16.5. **Function:** One of the protection levels.  
**Notes:** Formatting rows is allowed when the sheet is protected.

183.6.290  **ProtectInsertColumns** = 32

MBS XL Plugin, Plugin Version: 16.5. **Function:** One of the protection levels.  
**Notes:** Inserting columns is allowed when the sheet is protected.

183.6.291  **ProtectInsertHyperlinks** = 128

MBS XL Plugin, Plugin Version: 16.5. **Function:** One of the protection levels.  
**Notes:** Inserting hyperlinks is allowed when the sheet is protected.

183.6.292  **ProtectInsertRows** = 64

MBS XL Plugin, Plugin Version: 16.5. **Function:** One of the protection levels.  
**Notes:** Inserting rows is allowed when the sheet is protected.

183.6.293  **ProtectObjects** = 1

MBS XL Plugin, Plugin Version: 16.5. **Function:** One of the protection levels.  
**Notes:** Objects are locked when the sheet is protected.

183.6.294  **ProtectPivottables** = 8192

MBS XL Plugin, Plugin Version: 16.5. **Function:** One of the protection levels.  
**Notes:** Pivot tables are allowed when the sheet is protected.

183.6.295  **ProtectScenarios** = 2

MBS XL Plugin, Plugin Version: 16.5. **Function:** One of the protection levels.  
**Notes:** Scenarios are locked when the sheet is protected.
183.6. CLASS XLSHEETMBS

183.6.296  ProtectSelLockedCells = 1024

MBS XL Plugin, Plugin Version: 16.5. Function: One of the protection levels. Notes: Selection of locked cells is locked when the sheet is protected.

183.6.297  ProtectSelUnlockedCells = 16384

MBS XL Plugin, Plugin Version: 16.5. Function: One of the protection levels. Notes: Selection of unlocked cells is locked when the sheet is protected.

183.6.298  ProtectSort = 2048

MBS XL Plugin, Plugin Version: 16.5. Function: One of the protection levels. Notes: Sorting is allowed when the sheet is protected.

183.6.299  ScopeUndefined = -2

MBS XL Plugin, Plugin Version: 14.0. Function: One of the scope constants. Notes: Undefined scope

183.6.300  ScopeWorkbook = -1


183.6.301  SheetStateHidden = 1

MBS XL Plugin, Plugin Version: 12.1. Function: One of the constants for the visible state of a sheet. Notes: Sheet is hidden, but can be shown via the user interface.

183.6.302  SheetStateVeryHidden = 2

MBS XL Plugin, Plugin Version: 12.1. Function: One of the constants for the visible state of a sheet. Notes: Sheet is hidden and cannot be shown in the user interface.
183.6.303  SheetStateVisible = 0

MBS XL Plugin, Plugin Version: 12.1. **Function:** One of the constants for the visible state of a sheet.  
**Notes:** Sheet is visible

183.6.304  ValidationErrstyleInformation = 2

MBS XL Plugin, Plugin Version: 17.2. **Function:** One of the error styles.  
**Notes:** This data validation error style uses an information icon in the error alert.

183.6.305  ValidationErrstyleStop = 0

MBS XL Plugin, Plugin Version: 17.2. **Function:** One of the error styles.  
**Notes:** This data validation error style uses a stop icon in the error alert.

183.6.306  ValidationErrstyleWarning = 1

MBS XL Plugin, Plugin Version: 17.2. **Function:** One of the error styles.  
**Notes:** This data validation error style uses a warning icon in the error alert.

183.6.307  ValidationOpBetween = 0

MBS XL Plugin, Plugin Version: 17.2. **Function:** One of the validation operations.  
**Notes:** Data validation which checks if a value is between two other values.

183.6.308  ValidationOpEqual = 2

MBS XL Plugin, Plugin Version: 17.2. **Function:** One of the validation operations.  
**Notes:** Data validation which checks if a value is equal to a specified value.

183.6.309  ValidationOpGreaterthan = 6

MBS XL Plugin, Plugin Version: 17.2. **Function:** One of the validation operations.  
**Notes:** Data validation which checks if a value is greater than a specified value.
183.6. **CLASS XLSHEETMBS**

183.6.310 **ValidationOpGreaterthanorequal = 7**

MBS XL Plugin, Plugin Version: 17.2. **Function:** One of the validation operations.  
**Notes:** Data validation which checks if a value is greater than or equal to a specified value.

183.6.311 **ValidationOpLessthan = 4**

MBS XL Plugin, Plugin Version: 17.2. **Function:** One of the validation operations.  
**Notes:** Data validation which checks if a value is less than a specified value.

183.6.312 **ValidationOpLessthanorequal = 5**

MBS XL Plugin, Plugin Version: 17.2. **Function:** One of the validation operations.  
**Notes:** Data validation which checks if a value is less than or equal to a specified value.

183.6.313 **ValidationOpNotbetween = 1**

MBS XL Plugin, Plugin Version: 17.2. **Function:** One of the validation operations.  
**Notes:** Data validation which checks if a value is not between two other values.

183.6.314 **ValidationOpNotequal = 3**

MBS XL Plugin, Plugin Version: 17.2. **Function:** One of the validation operations.  
**Notes:** Data validation which checks if a value is not equal to a specified value.

183.6.315 **ValidationTypeCustom = 7**

MBS XL Plugin, Plugin Version: 17.2. **Function:** One of the constants for the types of data validation.  
**Notes:** Data validation which uses a custom formula to check the cell value.

183.6.316 **ValidationTypeDate = 4**

MBS XL Plugin, Plugin Version: 17.2. **Function:** One of the constants for the types of data validation.  
**Notes:** Data validation which checks for date values satisfying the given condition.
183.6.317  ValidationTypeDecimal = 2

MBS XL Plugin, Plugin Version: 17.2. **Function:** One of the constants for the types of data validation.  
**Notes:** Data validation which checks for decimal values satisfying the given condition.

183.6.318  ValidationTypeList = 3

MBS XL Plugin, Plugin Version: 17.2. **Function:** One of the constants for the types of data validation.  
**Notes:** Data validation which checks for a value matching one of list of values.

183.6.319  ValidationTypeNone = 0

MBS XL Plugin, Plugin Version: 17.2. **Function:** One of the constants for the types of data validation.  
**Notes:** No data validation.

183.6.320  ValidationTypeTextLength = 6

MBS XL Plugin, Plugin Version: 17.2. **Function:** One of the constants for the types of data validation.  
**Notes:** Data validation which checks for text values, whose length satisfies the given condition.

183.6.321  ValidationTypeTime = 5

MBS XL Plugin, Plugin Version: 17.2. **Function:** One of the constants for the types of data validation.  
**Notes:** Data validation which checks for time values satisfying the given condition.

183.6.322  ValidationTypeWhole = 1

MBS XL Plugin, Plugin Version: 17.2. **Function:** One of the constants for the types of data validation.  
**Notes:** Data validation which checks for whole number values satisfying the given condition.
Chapter 184

XMP

184.1 class XMPAssertNotifyMBS

184.1.1 class XMPAssertNotifyMBS

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: This class provides a way to get notified for Assertion. Notes: Only one instance can be registered at a given time.

184.1.2 Events

184.1.3 Assert(text as string)

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: An assertion was reported. Example:

Sub Assert(text as string)
    MsgBox text
End Sub

Notes: Display it to the user or just log it for debugging.
184.2 class XMPDateTimeMBS

184.2.1 class XMPDateTimeMBS

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The expanded type for a date and time.
**Notes:**
Dates and time in the serialized XMP are ISO 8601 strings. The XMPDateTimeMBS class allows easy conversion with other formats.

DateTime values are occasionally used in cases with only a date or only a time component. A date without a time has zeros in the XMPDateTimeMBS class for all time fields. A time without a date has zeros for all date fields (year, month, and day).

184.2.2 Methods

184.2.3 ClearTimeZone

MBS XMP Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Resets the timezone by setting all time zone properties to zero.

184.2.4 Clone as XMPDateTimeMBS

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Creates a copy of this date.
**Notes:** Not just a new reference to the same object, but a real copy.

184.2.5 Compare(other as XMPDateTimeMBS) as Integer

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Compare the order of two date/time values.
**Notes:**
Returns:
-1 if self is before other or other=nil
0 if self matches other
+1 if self is after other
184.2. CLASS XMPDATETIMEMBS

184.2.6 Constructor

Notes: The returned time is UTC, properly adjusted for the local time zone. The resolution of the time is not guaranteed to be finer than seconds.
See also:

- 184.2.7 Constructor(text as string)

184.2.7 Constructor(text as string)

See also:

- 184.2.6 Constructor

184.2.8 ConvertToLocalTime

Notes: If the time zone is not the local zone, the time is adjusted and the time zone set to be local.

184.2.9 ConvertToUTCTime

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Make sure a time is UTC.
Notes: If the time zone is not UTC, the time is adjusted and the time zone set to be UTC.

184.2.10 IsDateOnly as Boolean

MBS XMP Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Whether only the date is defined for this datetime object.

184.2.11 IsTimeOnly as Boolean

MBS XMP Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Whether only the time is defined for this datetime object.
184.2.12 Operator_Convert as string

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Convert from date/time to string.
See also:

- 184.2.13 Operator_Convert(text as string)

184.2.13 Operator_Convert(text as string)

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Convert from string to date/time.
See also:

- 184.2.12 Operator_Convert as string

184.2.14 SetTimeZone

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Set the local time zone.
**Notes:** Any existing time zone value is replaced, the other date/time fields are not adjusted in any way.

184.2.15 Str as string

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Convert from date/time to string.

184.2.16 Properties

184.2.17 Day as Integer

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The day of the month in the range 1..31.
**Notes:** (Read and Write property)

184.2.18 hasDate as Boolean

MBS XMP Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A property to tell if the date is defined in this object.
184.2. CLASS XMPDATETIMEMBS

Notes: (Read and Write property)

184.2.19 hasTime as Boolean

MBS XMP Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A property to tell if the time is defined in this object. **Notes:** (Read and Write property)

184.2.20 hasTimeZone as Boolean

MBS XMP Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Whether there is a time zone set. **Notes:** (Read and Write property)

184.2.21 Hour as Integer

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The hour in the range 0..23. **Notes:** (Read and Write property)

184.2.22 Minute as Integer

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The minute in the range 0..59. **Notes:** (Read and Write property)

184.2.23 Month as Integer

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The month in the range 1..12. **Notes:** (Read and Write property)

184.2.24 NanoSecond as Integer

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Nanoseconds within a second, often left as zero.
184.2.25 Second as Integer

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The second in the range 0..59. **Notes:** (Read and Write property)

184.2.26 TimezoneHour as Integer

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The time zone hour in the range 0..23. **Notes:** (Read and Write property)

184.2.27 TimezoneMinute as Integer

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The time zone minute in the range 0..59. **Notes:** (Read and Write property)

184.2.28 TimezoneSign as Integer

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The "sign" of the time zone, 0 means UTC, -1 is west, +1 is east. **Notes:** The "sign" of the time zone, kTimeIsUTC (0) means UTC, kTimeWestOfUTC (-1) is west, kTimeEastOfUTC (+1) is east. (Read and Write property)

184.2.29 Year as Integer

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The year, can be negative. **Notes:** (Read and Write property)
184.2.31  \texttt{kXMP\_TimeEastOfUTC} = 1

MBS XMP Plugin, Plugin Version: 9.4. \textbf{Function:} One of the constants for the TimezoneSign property. \textbf{Notes:} UTC time.

184.2.32  \texttt{kXMP\_TimeIsUTC} = 0

MBS XMP Plugin, Plugin Version: 9.4. \textbf{Function:} One of the constants for the TimezoneSign property. \textbf{Notes:} Time zone is east of UTC.

184.2.33  \texttt{kXMP\_TimeWestOfUTC} = -1

MBS XMP Plugin, Plugin Version: 9.4. \textbf{Function:} One of the constants for the TimezoneSign property. \textbf{Notes:} Time zone is west of UTC.
184.3 class XMPExceptionMBS

184.3.1 class XMPExceptionMBS

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The exception class for the other XMP classes.

**Notes:**

For current plugins (6.4): Windows and MachO works, Carbon/Classic PEF crashes on an exception. Linux not tested.

Nearly every method or function may raise this exception, so catch it!
Subclass of the RuntimeException class.
184.4. CLASS XMPFILESMBS

184.4  class XMPFilesMBS

184.4.1  class XMPFilesMBS

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**
The class for access to the main (document-level) metadata in a file.

**Notes:**
The Adobe XMP Toolkit’s file handling component, XMPFiles, is a front end to a set of format-specific file handlers that support file I/O for XMP. The file handlers implement smart, efficient support for those file formats for which the means to embed XMP is defined in the XMP Specification. Where possible, this support allows:

- Injection of XMP where none currently exists
- Expansion of XMP without regard to existing padding
- Reconciliation of the XMP and other legacy forms of metadata.

TXMPFiles is designed for use by clients interested in the metadata and not in the primary file content; the Adobe Bridge application is a typical example. TXMPFiles is not intended to be appropriate for files authored by an application; that is, those files for which the application has explicit knowledge of the file format.

Supported file formats:
PDF, PostScript, EPS, JPEG, JPEG2K, TIFF, GIF, PNG, SWF, FLA, FLV, MOV, AVI, CIN, WAV, MP3, SES, CEL, MPEG, MPEG2, MPEG4, WMAV, AIFF, P2, XDCAM_FAM, XDCAM_SAM, XDCAM_EX, AVCHD, SonyHDV, HTML, XML, Text, Photoshop, Illustrator, InDesign, AEProject, AEProjTemplate, AEFilterPreset, EncoreProject, PremiereProject, PremiereTitle and UCF.

Based on the XMP-Toolkit-SDK from Adobe.

This constructor crashes on Linux with 14.0 plugins and Real Studio 2011r1 and 2011r3. Some change in 2011r4 makes it work, so up to Xojo 2014 we don’t see the crash.

184.4.2  Methods

184.4.3  CanPutXMP(xmpPacket as string) as boolean

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes.  **Function:**
CanPutXMP() reports whether this file can be updated with a specific XMP packet.

**Notes:** Use to determine if the file can probably be updated with a given set of XMP metadata. This
depends on the size of the packet, the options with which the file was opened, and the capabilities of the handler for the file format. The function obtains the length of the serialized packet for the provided XMP, but does not keep it or modify it, and does not cause the file to be written when closed.

See also:

- 184.4.4 CanPutXMP(xmpPacket as XMPMetaMBS) as boolean

### 184.4.4 CanPutXMP(xmpPacket as XMPMetaMBS) as boolean

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

CanPutXMP() reports whether this file can be updated with a specific XMP packet, passed in a string object.

See also:

- 184.4.3 CanPutXMP(xmpPacket as string) as boolean

### 184.4.5 CheckFileFormat(path as string) as Integer

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

CheckFileFormat() tries to determine the format of a file.

**Notes:**

CheckFileFormat tries to determine the format of a file, returning an format value. It uses the same logic as OpenFile will use to select a smart handler.

path: The path for the file, appropriate for the local operating system. Passed as a UTF-8 string. The path is the same as would be passed to OpenFile.

Returns the file’s format if a smart handler would be selected, otherwise kUnknownFile.

### 184.4.6 CheckPackageFormat(path as string) as Integer

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

CheckPackageFormat() tries to determine the format of a "package" folder.

**Notes:**

CheckPackageFormat tries to determine the format of a "package" given the name of the top level folder, returning an XMP_FileFormat value. Examples of recognized packages include the video formats P2, XDCAM, or Sony HDV. These packages contain collections of "clips", stored as multiple files in specific subfolders.

Path: The path for the top level folder, appropriate for the local operating system. Passed as an UTF-8 string. The path is not the same as would be passed to OpenFile. For example
the path passed to CheckPackageFormat might be "/MyMovie", while the path passed to OpenFile would be "/MyMovie/SomeClip".

Returns the package’s format if a smart handler would be selected, otherwise kUnknownFile.

### 184.4.7 CloseFile(closeFlags as Integer)

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

CloseFile() explicitly closes an opened file.

**Notes:**

Performs any necessary output to the file and closes it. Files that are opened for update are written to only when closing.

If the file is opened for read-only access (passing kOpenForRead), the disk file is closed immediately after reading the data from it; the XMPFiles object, however, remains in the open state. You must call CloseFile() when finished using it. Other methods, such as GetXMP(), can only be used between the OpenFile() and CloseFile() calls. The XMPFiles destructor does not call CloseFile(); if you call it without closing, any pending updates are lost.

If the file is opened for update (passing kOpenForUpdate), the disk file remains open until CloseFile() is called. The disk file is only updated once, when CloseFile() is called, regardless of how many calls are made to PutXMP().

**closeFlags:** Option flags for optional closing actions. This bit-flag constant is defined:

- kUpdateSafely - Write into a temporary file then swap for crash safety.

### 184.4.8 Constructor

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

Default constructor initializes an object that is associated with no file.

**Notes:** The destructor does not call CloseFile(); pending updates are lost when the destructor is run.

See also:

- 184.4.9 Constructor(path as folderitem, format as Integer=& h20202020, OpenFlags as Integer=0) 20702
- 184.4.10 Constructor(path as string, format as Integer=& h20202020, OpenFlags as Integer=0) 20703
184.4.9 Constructor(path as folderItem, format as Integer=& h20202020, Open-Flags as Integer=0)

MBS XMP Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Opens a file for metadata access.

**Notes:**

Opens a file for the requested forms of metadata access. Opening the file at a minimum causes the raw XMP packet to be read from the file. If the file handler supports legacy metadata reconciliation then legacy metadata is also read, unless kOpenOnlyXMP is passed. If the file handler supports native thumbnails and kOpenCacheTNail is passed, the native thumbnail is cached.

If the file is opened for read-only access (passing kOpenForRead), the disk file is closed immediately after reading the data from it; the XMPFiles object, however, remains in the open state. You must call CloseFile() when finished using it. Other methods, such as GetXMP(), can only be used between the OpenFile() and CloseFile() calls. The XMPFiles destructor does not call CloseFile(); if you call it without closing, any pending updates are lost.

If the file is opened for update (passing kOpenForUpdate), the disk file remains open until CloseFile() is called. The disk file is only updated once, when CloseFile() is called, regardless of how many calls are made to PutXMP().

Typically, the XMP is not parsed and legacy reconciliation is not performed until GetXMP() is called, but this is not guaranteed. Specific file handlers might do earlier parsing of the XMP. Delayed parsing and early disk file close for read-only access are optimizations to help clients implementing file browsers, so that they can access the file briefly and possibly display a thumbnail, then postpone more expensive XMP processing until later.

**path:** The path for the file, appropriate for the local operating system.

**format:** The format of the file. If the format is unknown (kUnknownFile) the format is determined from the file content. The first handler to check is guessed from the file's extension. Passing a specific format value is generally just a hint about what file handler to try first (instead of the one based on the extension). If kOpenStrictly is set, then any format other than kUnknownFile requires that the file actually be that format; otherwise an exception is thrown.

**openFlags:** A set of option flags that describe the desired access. By default (zero) the file is opened for read-only access and the format handler decides on the level of reconciliation that will be performed. A logical OR of these bit-flag constants:

- kOpenForRead - Open for read-only access.
- kOpenForUpdate - Open for reading and writing.
- kOpenOnlyXMP - Only the XMP is wanted, no reconciliation.
- kOpenCacheTNail - Cache thumbnail if possible, GetThumbnail will be called.
- kOpenStrictly - Be strict about locating XMP and reconciling with other forms. By default, a best effort is made to locate the correct XMP and to reconcile XMP with other forms (if reconciliation is done). This option forces stricter rules, resulting in exceptions for errors. The definition of strictness is specific to each handler, there might be no difference.
184.4. CLASS XMPFILESMBS

- kOpenUseSmartHandler - Require the use of a smart handler.
- kOpenUsePacketScanning - Force packet scanning, do not use a smart handler.

Throws an exception for serious problems.

See also:

- 184.4.8 Constructor
- 184.4.10 Constructor(path as string, format as Integer=& h20202020, OpenFlags as Integer=0)

184.4.10 Constructor(path as string, format as Integer=& h20202020, OpenFlags as Integer=0)

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Alternate constructor associates the new XMPFiles object with a specific file.

**Notes:**
Calls OpenFile() to open the specified file after performing a default construct.

path: The path for the file, specified as an UTF-8 string. (On MacOSX use UnixpathMBS)
format: A format hint for the file, if known.
openFlags: Options for how the file is to be opened (for read or read/write, for example). Use a logical OR of these bit-flag constants:

- kOpenForRead
- kOpenForUpdate
- kOpenOnlyXMP
- kOpenCacheTNail
- kOpenStrictly
- kOpenUseSmartHandler
- kOpenUsePacketScanning
- kOpenLimitedScanning
- kOpenInBackground

The destructor does not call CloseFile(); pending updates are lost when the destructor is run.

See also:

- 184.4.8 Constructor
- 184.4.9 Constructor(path as folderitem, format as Integer=& h20202020, OpenFlags as Integer=0)
184.4.11 GetFileInfo(byref path as string, byref openFlags as UInt32, byref format as UInt32, byref handlerFlags as UInt32) as boolean

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
GetFileInfo() retrieves basic information about an opened file.
**Notes:**
- path: A buffer in which to return the path passed to OpenFile(). Can be null if value is not wanted.
- openFlags: A variable in which to return the option flags passed to OpenFile.
- format: A variable in which to return the file format.
- handlerFlags: [ out ] A variable in which to return the handler’s capability flags.

Returns true if the file object is in the open state; that is, OpenFile() has been called but CloseFile() has not. False otherwise. Even if the file object is open, the actual disk file might be closed in the host file-system sense; see OpenFile().

184.4.12 GetFormatInfo(format as Integer, byref handlerFlags as UInt32) as boolean

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
GetFormatInfo() reports what features are supported for a specific file format.
**Example:**
```vbscript
dim flags as UInt32
if XMPFilesMBS.GetFormatInfo(XMPFilesMBS.kJPEGFile, flags) then
    if BitwiseAnd(flags, XMPFilesMBS.kCanInjectXMP) <> 0 then
        MsgBox "Can inject first-time XMP into an existing file."
    end if

    if BitwiseAnd(flags, XMPFilesMBS.kCanExpand) <> 0 then
        MsgBox "Can expand XMP or other metadata in an existing file."
    end if

    if BitwiseAnd(flags, XMPFilesMBS.kCanRewrite) <> 0 then
        MsgBox "Can copy one file to another, writing new metadata (as in SaveAs)."
    end if

    if BitwiseAnd(flags, XMPFilesMBS.kCanReconcile) <> 0 then
        MsgBox "Supports reconciliation between XMP and other forms."
    end if
end if
```
if BitwiseAnd(flags, XMPFilesMBS.kAllowsOnlyXMP) <> 0 then
    MsgBox "Allows access to just the XMP, ignoring other forms."
end if

if BitwiseAnd(flags, XMPFilesMBS.kReturnsTNail) <> 0 then
    MsgBox "File handler returns native thumbnail information."
end if

if BitwiseAnd(flags, XMPFilesMBS.kReturnsRawPacket) <> 0 then
    MsgBox "File handler returns raw XMP packet information and string."
end if

end if

Notes:
The file handlers for different file formats vary considerably in what features they support. Support depends on both the general capabilities of the format and the implementation of the handler for that format.

format: The file format whose support flags are desired.
handlerFlags: A variable in which to return a logical OR of option bit flags.
The following constants are defined:

- kCanInjectXMP - Can inject first-time XMP into an existing file.
- kCanExpand - Can expand XMP or other metadata in an existing file.
- kCanRewrite - Can copy one file to another, writing new metadata (as in SaveAs)
- kCanReconcile - Supports reconciliation between XMP and other forms.
- kAllowsOnlyXMP - Allows access to just the XMP, ignoring other forms.

This is only meaningful if kCanReconcile is set.

- kReturnsTNail - File handler returns native thumbnail information.
- kReturnsRawPacket - File handler returns raw XMP packet information and string.

Even if kReturnsRawPacket is set, the returned packet information might have an offset of -1 to indicate an unknown offset. While all file handlers should be able to return the raw packet, some might not know the offset of the packet within the file. This is typical in cases where external libraries are used. These cases might not even allow return of the raw packet.
Returns true if the format has explicit "smart" support, false if the format is handled by the default packet scanning plus heuristics.

184.4.13 GetVersionInfo as XMPVersionInfoMBS

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
GetVersionInfo() retrieves version information for the XMPFiles component.

184.4.14 GetXMP(byref xmp as XMPMetaMBS, byref xmppacket as string, byref PacketInfo as XMPPacketInfoMBS) as boolean

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
GetXMP() retrieves the XMP metadata from an open file.
**Notes:**
The function reports whether XMP is present in the file; you can choose to retrieve any or all of the parsed XMP, the raw XMP packet, or information about the raw XMP packet. The options provided when the file was opened determine if reconciliation is done with other forms of metadata.

- **xmp:** An XMP object in which to return the parsed XMP metadata.
- **xmppacket:** An string in which to return the raw XMP packet as stored in the file. The encoding of the packet is given in the packetInfo. Returns an empty string if the low level file handler does not provide the raw packet.
- **packetInfo:** A packetinfo object in which to return the location and form of the raw XMP in the file. PacketInfo.charForm and PacketInfo.writeable reflect the raw XMP in the file. The parsed XMP property values are always UTF-8. The writeable flag is taken from the packet trailer; it applies only to "format ignorant" writing. The PacketInfo object always reflects the state of the XMP in the file. The offset, length, and character form do not change as a result of calling PutXMP() unless the file is also written. Some file handlers might not return location or contents of the raw packet string. To determine whether one does, check the kReturnsRawPacket bit returned by GetFormatInfo(). If the low-level file handler does not provide the raw packet location, PacketInfo.offset and PacketInfo.length are both 0, PacketInfo.charForm is UTF-8, and PacketInfo.writeable is false.

184.4.15 OpenFile(path as folderitem, format as Integer=& h20202020, OpenFlags as Integer=0) as boolean

MBS XMP Plugin, Plugin Version: 10.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Alternate constructor associates the new XMPFiles object with a specific file.
**Notes:**
Calls OpenFile() to open the specified file after performing a default construct.
path: The path for the file, specified as folderitem.
format: A format hint for the file, if known.
onOpenFlags: Options for how the file is to be opened (for read or read/write, for example). Use a logical OR of these bit-flag constants:

- kOpenForRead
- kOpenForUpdate
- kOpenOnlyXMP
- kOpenCacheTNail
- kOpenStrictly
- kOpenUseSmartHandler
- kOpenUsePacketScanning
- kOpenLimitedScanning
- kOpenInBackground

The destructor does not call CloseFile(); pending updates are lost when the destructor is run.
See also:

- 184.4.16 OpenFile(path as string, format as Integer=& h20202020, OpenFlags as Integer=0) as boolean

184.4.16 OpenFile(path as string, format as Integer=& h20202020, OpenFlags as Integer=0) as boolean

Notes:

Opens a file for the requested forms of metadata access. Opening the file at a minimum causes the raw XMP packet to be read from the file. If the file handler supports legacy metadata reconciliation then legacy metadata is also read, unless kOpenOnlyXMP is passed. If the file handler supports native thumbnails and kOpenCacheTNail is passed, the native thumbnail is cached.
If the file is opened for read-only access (passing kOpenForRead), the disk file is closed immediately after reading the data from it; the XMPFiles object, however, remains in the open state. You must call CloseFile() when finished using it. Other methods, such as GetXMP(), can only be used between the OpenFile() and CloseFile() calls. The XMPFiles destructor does not call CloseFile(); if you call it without closing, any pending updates are lost.
If the file is opened for update (passing kOpenForUpdate), the disk file remains open until CloseFile() is called. The disk file is only updated once, when CloseFile() is called, regardless of how many calls are made to PutXMP().
Typically, the XMP is not parsed and legacy reconciliation is not performed until GetXMP() is called, but this is not guaranteed. Specific file handlers might do earlier parsing of the XMP. Delayed parsing and early disk file close for read-only access are optimizations to help clients implementing file browsers, so that they can access the file briefly and possibly display a thumbnail, then postpone more expensive XMP processing until later.

path: The path for the file, specified as an UTF-8 string. (On MacOSX use UnixpathMBS)
format: The format of the file. If the format is unknown (kUnknownFile) the format is determined from the file content. The first handler to check is guessed from the file’s extension. Passing a specific format value is generally just a hint about what file handler to try first (instead of the one based on the extension). If kOpenStrictly is set, then any format other than kUnknownFile requires that the file actually be that format; otherwise an exception is thrown.
openFlags: A set of option flags that describe the desired access. By default (zero) the file is opened for read-only access and the format handler decides on the level of reconciliation that will be performed. A logical OR of these bit-flag constants:

- kOpenForRead - Open for read-only access.
- kOpenForUpdate - Open for reading and writing.
- kOpenOnlyXMP - Only the XMP is wanted, no reconciliation.
- kOpenCacheThumb - Cache thumbnail if possible, GetThumbnail will be called.
- kOpenStrictly - Be strict about locating XMP and reconciling with other forms. By default, a best effort is made to locate the correct XMP and to reconcile XMP with other forms (if reconciliation is done). This option forces stricter rules, resulting in exceptions for errors. The definition of strictness is specific to each handler, there might be no difference.
- kOpenUseSmartHandler - Require the use of a smart handler.
- kOpenUsePacketScanning - Force packet scanning, do not use a smart handler.

Returns true if the file is successfully opened and attached to a file handler. False for anticipated problems, such as passing kOpenUseSmartHandler but not having an appropriate smart handler. Throws an exception for serious problems.

See also:

- 184.4.15 OpenFile(path as folderitem, format as Integer=& h20202020, OpenFlags as Integer=0) as boolean

184.4.17 PutXMP(xmpPacket as string)

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: PutXMP() updates the XMP metadata in this object without writing out the file, Notes: Overloads the basic form of the function, allowing you to pass the metadata as a string object instead of an XMP object. It is otherwise identical; see details in the canonical form. See also:
184.4. CLASS XMPFILESMBS

- 184.4.18 PutXMP(xmpPacket as XMPMetaMBS)

184.4.18 PutXMP(xmpPacket as XMPMetaMBS)

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: PutXMP() updates the XMP metadata in this object without writing out the file. Notes: This function supplies new XMP for the file. However, the disk file is not written until the object is closed with CloseFile(). The options provided when the file was opened determine if reconciliation is done with other forms of metadata. See also:

- 184.4.17 PutXMP(xmpPacket as string)

184.4.19 Events

184.4.20 Abort as boolean

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Function: This event is called periodically to allow a user to cancel time-consuming operations. Notes: The event should return true to signal an abort, which results in an exception being thrown.

184.4.21 Constants

184.4.22 kAEFilterPresetFile = & h46465820

MBS XMP Plugin, Plugin Version: 9.4. Function: One of the constants to specify a file type.

184.4.23 kAEProjectFile = & h41455020

MBS XMP Plugin, Plugin Version: 9.4. Function: One of the constants to specify a file type.

184.4.24 kAEProjTemplateFile = & h41455420

MBS XMP Plugin, Plugin Version: 9.4. Function: One of the constants to specify a file type. Notes: After Effects Project Template
184.4.25  kAIFFFile = & h41494646

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants to specify a file type.

184.4.26  kAllowsOnlyXMP = & h00000020

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for GetFormatInfo  
**Notes:** Allows access to just the XMP, ignoring other forms.

184.4.27  kAllowsSafeUpdate = & h00000200

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for GetFormatInfo  
**Notes:** The file handler allows crash-safe file updates.

184.4.28  kArrayLastItem = -1

MBS XMP Plugin, Plugin Version: 9.4. **Function:** The index constant for the last item.

184.4.29  kAVCHDFile = & h41564844

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants to specify a file type.

184.4.30  kAVIFile = & h41564920

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants to specify a file type.  
**Notes:** Cineon

184.4.31  kCanExpand = 2

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for GetFormatInfo  
**Notes:** Can expand XMP or other metadata in an existing file.
184.4. CLASS XMPFILESMBS

184.4.32  kCanInjectXMP = 1

MBS XMP Plugin, Plugin Version: 9.4. Function: One of the option bit flags for GetFormatInfo
Notes: Can inject first-time XMP into an existing file.

184.4.33  kCanReconcile = &h00000010

MBS XMP Plugin, Plugin Version: 9.4. Function: One of the option bit flags for GetFormatInfo
Notes: Supports reconciliation between XMP and other forms.

184.4.34  kCanRewrite = 4

MBS XMP Plugin, Plugin Version: 9.4. Function: One of the option bit flags for GetFormatInfo
Notes: Can copy one file to another, writing new metadata.

184.4.35  kCELFFile = &h43454C20

MBS XMP Plugin, Plugin Version: 9.4. Function: One of the constants to specify a file type.
Notes: Audition loop

184.4.36  kChar16BitBig = 2

MBS XMP Plugin, Plugin Version: 9.4. Function: One of the constants to define the character format.
Notes: 16-bit big-endian

184.4.37  kChar16BitLittle = 3

MBS XMP Plugin, Plugin Version: 9.4. Function: One of the constants to define the character format.
Notes: 16-bit little-endian

184.4.38  kChar16BitMask = 2

MBS XMP Plugin, Plugin Version: 9.4. Function: One of the constants to define the character format.
184.4.39  kChar32BitBig = 4

MBS XMP Plugin, Plugin Version: 9.4. **Function**: One of the constants to define the character format.  
**Notes**: 32-bit big-endian

184.4.40  kChar32BitLittle = 5

MBS XMP Plugin, Plugin Version: 9.4. **Function**: One of the constants to define the character format.  
**Notes**: 32-bit little-endian

184.4.41  kChar32BitMask = 4

MBS XMP Plugin, Plugin Version: 9.4. **Function**: One of the constants to define the character format.

184.4.42  kChar8Bit = 0

MBS XMP Plugin, Plugin Version: 9.4. **Function**: One of the constants to define the character format.  
**Notes**: 8-bit

184.4.43  kCharLittleEndianMask = 1

MBS XMP Plugin, Plugin Version: 9.4. **Function**: One of the constants to define the character format.

184.4.44  kCharUnknown = 1

MBS XMP Plugin, Plugin Version: 9.4. **Function**: One of the constants to define the character format.  
**Notes**: Variable or not-yet-known cases

184.4.45  kCINFile = & h43494E20

MBS XMP Plugin, Plugin Version: 9.4. **Function**: One of the constants to specify a file type.
184.4. CLASS XMPFILESMBS

184.4.46  
\textit{kEncoreProjectFile} = & h4E434F52

MBS XMP Plugin, Plugin Version: 9.4. \textbf{Function}: One of the constants to specify a file type.

184.4.47  
\textit{kEPSFile} = & h45505320

MBS XMP Plugin, Plugin Version: 9.4. \textbf{Function}: One of the constants to specify a file type.  
\textbf{Notes}: encapsulated PostScript

184.4.48  
\textit{kFLAFile} = & h464C4120

MBS XMP Plugin, Plugin Version: 9.4. \textbf{Function}: One of the constants to specify a file type.

184.4.49  
\textit{kFLVFile} = & h464C5620

MBS XMP Plugin, Plugin Version: 9.4. \textbf{Function}: One of the constants to specify a file type.

184.4.50  
\textit{kFolderBasedFormat} = & h00001000

MBS XMP Plugin, Plugin Version: 9.4. \textbf{Function}: One of the option bit flags for GetFormatInfo  
\textbf{Notes}: The format is folder oriented, for example the P2 video format.

184.4.51  
\textit{kGIFFile} = & h47494620

MBS XMP Plugin, Plugin Version: 9.4. \textbf{Function}: One of the constants to specify a file type.

184.4.52  
\textit{kHandlerOwnsFile} = & h00001000

MBS XMP Plugin, Plugin Version: 9.4. \textbf{Function}: One of the option bit flags for GetFormatInfo  
\textbf{Notes}: The file handler does the file open and close.
184.4.53  kHTMLFile = & h48544D4C

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants to specify a file type.

184.4.54  kIllustratorFile = & h41492020

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants to specify a file type.

184.4.55  kInDesignFile = & h494E4444

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants to specify a file type.

184.4.56  kJPEG2KFile = & h4A505820

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants to specify a file type. **Notes:** JPEG 2000, ISO 15444-1

184.4.57  kJPEGFile = & h4A504547

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants to specify a file type.

184.4.58  kMOVFile = & h4D4F5620

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants to specify a file type. **Notes:** Quicktime

184.4.59  kMP3File = & h4D503320

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants to specify a file type.

184.4.60  kMPEG2File = & h4D503220

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants to specify a file type.
184.4. CLASS XMPFILESMBS

184.4.61 kMPEG4File = & h4D503420

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants to specify a file type. 
**Notes:** ISO 14494-12 and -14

184.4.62 kMPEGFile = & h4D504547

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants to specify a file type.

184.4.63 kNeedsReadOnlyPacket = & h00000400

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for GetFormatInfo 
**Notes:** The file format needs the XMP packet to be read-only.

184.4.64 kNoOptions = 0

MBS XMP Plugin, Plugin Version: 9.4. **Function:** The constant to specify to use no options.

184.4.65 kOpenCacheTNail = 8

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for OpenFile().
**Notes:** Cache thumbnail if possible, TXMPFiles::GetThumbnail() will be called.

184.4.66 kOpenForRead = 1

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for OpenFile().
**Notes:** Open for read-only access.

184.4.67 kOpenForUpdate = 2

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for OpenFile().
**Notes:** Open for reading and writing.
184.4.68 kOpenInBackground = & h10000000

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for OpenFile().
**Notes:** Set if calling from background thread.

184.4.69 kOpenLimitedScanning = & h00000080

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for OpenFile().
**Notes:** Only packet scan files "known" to need scanning.

184.4.70 kOpenOnlyXMP = 4

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for OpenFile().
**Notes:** Only the XMP is wanted, allows space/time optimizations.

184.4.71 kOpenRepairFile = & h00000100

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for OpenFile().
**Notes:** Attempt to repair a file opened for update, default is to not open (throw an exception).

184.4.72 kOpenStrictly = & h00000100

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for OpenFile().
**Notes:** Be strict about locating XMP and reconciling with other forms.

184.4.73 kOpenUsePacketScanning = & h00000040

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for OpenFile().
**Notes:** Force packet scanning, do not use a smart handler.

184.4.74 kOpenUseSmartHandler = & h00000020

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for OpenFile().
**Notes:** Require the use of a smart handler.
184.4. CLASS XMPFILESMBS

184.4.75  k2File = & h50322020

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants to specify a file type. 
**Notes:** a collection not really a single file

184.4.76  kPDFFile = & h50444620

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants to specify a file type.

184.4.77  kPhotoshopFile = & h50534420

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants to specify a file type.

184.4.78  kPNGFile = & h504E4720

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants to specify a file type.

184.4.79  kPostScriptFile = & h50532020

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants to specify a file type. 
**Notes:** general PostScript following DSC conventions

184.4.80  kPrefersInPlace = 8

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for GetFormatInfo 
**Notes:** Can expand, but prefers in-place update.

184.4.81  kPremiereProjectFile = & h5052504A

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants to specify a file type.
184.4.82  kPremiereTitleFile = & h5052544C

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants to specify a file type.

184.4.83  kReturnsRawPacket = & h00000040

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for GetFormatInfo
**Notes:** File handler returns raw XMP packet information.

184.4.84  kReturnsT Nail = & h00000080

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for GetFormatInfo
**Notes:** File handler returns native thumbnail.

184.4.85  kSESFile = & h53455320

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants to specify a file type.
**Notes:** Audition session

184.4.86  kSonyHDVFile = & h53484456

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants to specify a file type.
**Notes:** a collection not really a single file

184.4.87  kSWFFile = & h53574620

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants to specify a file type.

184.4.88  kTextFile = & h74657874

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants to specify a file type.
184.4. CLASS XMPFILESMBS

184.4.89  kTIFFFile = & h54494646

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants to specify a file type.

184.4.90  kUCFFile = & h55434620

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants to specify a file type.
**Notes:** Universal Container Format

184.4.91  kUnknownFile = & h20202020

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants to specify a file type.
**Notes:** Unknown file format constant

184.4.92  kUnknownLength = -1

MBS XMP Plugin, Plugin Version: 9.4. **Function:** Constant for an unknown packet length within a file.

184.4.93  kUnknownOffset = -1

MBS XMP Plugin, Plugin Version: 9.4. **Function:** Constant for an unknown packet offset within a file.

184.4.94  kUpdateSafely = 1

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants for the option bit flags for Close-File().
**Notes:** Write into a temporary file and swap for crash safety.

184.4.95  kUseNullTermination = 0

MBS XMP Plugin, Plugin Version: 9.4. **Function:** The length constants for a string to determine the length automatically.
184.4.96 kUsesSidecarXMP = \& h00000800

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for GetFormatInfo  
**Notes:** The file handler uses a "sidecar" file for the XMP.

184.4.97 kWAVFile = \& h57415620

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants to specify a file type.

184.4.98 kWMAVFile = \& h574D4156

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants to specify a file type.  
**Notes:** Windows Media Audio and Video

184.4.99 kXDCAM_EXFile = \& h58444358

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants to specify a file type.  
**Notes:** a collection not really a single file

184.4.100 kXDCAM_FAMFile = \& h58444346

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants to specify a file type.  
**Notes:** a collection not really a single file

184.4.101 kXDCAM_SAMFile = \& h58444353

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants to specify a file type.  
**Notes:** a collection not really a single file

184.4.102 kXMLFile = \& h584D4C20

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants to specify a file type.
184.5. class XMPIteratorMBS

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The XMPIteratorMBS class provides a uniform means to iterate over several XMP data structures, including the schema and properties within an XMP object plus global tables such as registered namespaces.

**Notes:**

Note: Only XMP object iteration is implemented at this time. There are no table iterators yet.

Iteration over the schema and properties within an XMP object is the most important and complex use of XMPIteratorMBS. It is helpful to have a thorough understanding of the XMP data tree. One way to learn this is to create some complex XMP and examine the output of XMPMetaMBS.DumpObject. This is also described in the XMP Specification, in the XMP Data Model chapter.

The top of the XMP data tree is a single root node. This does not explicitly appear in the dump and is never visited by an iterator (that is, it is never returned from XMPIteratorMBS.Next). Beneath the root are schema nodes. These are just collectors for top level properties in the same namespace. They are created and destroyed implicitly. Beneath the schema nodes are the property nodes. The nodes below a property node depend on its type (simple, struct, or array) and whether it has qualifiers.

A XMPIteratorMBS constructor defines a starting point for the iteration and options that control how it proceeds. By default the iteration starts at the root and visits all nodes beneath it in a depth first manner. The root node is not visited, the first visited node is a schema node. You can provide a schema name or property path to select a different starting node. By default this visits the named root node first then all nodes beneath it in a depth first manner.

The XMPIteratorMBS.Next method delivers the schema URI, path, and option flags for the node being visited. If the node is simple it also delivers the value. Qualifiers for this node are visited next. The fields of a struct or items of an array are visited after the qualifiers of the parent.

The options to control the iteration are:

- **kXMP_IterJustChildren** Visit just the immediate children of the root. Skip the root itself and all nodes below the immediate children. This omits the qualifiers of the immediate children, the qualifier nodes being below what they qualify.
- **kXMP_IterJustLeafNodes** Visit just the leaf property nodes and their qualifiers.
- **kXMP_IterJustLeafName** Return just the leaf component of the node names. The default is to return the full path name.
- **kXMP_IterIncludeAliases** Include aliases as part of the iteration. Since aliases are not actual nodes the default iteration does not visit them.
- **kXMP_IterOmitQualifiers** Do not visit the qualifiers of a node.
184.5.2 Methods

184.5.3 Constructor

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Empty constructor which does nothing.

See also:

- 184.5.4 Constructor(meta as XMPMetaMBS, options as Integer=0)
- 184.5.5 Constructor(meta as XMPMetaMBS, schemaNS as string, options as Integer=0)
- 184.5.6 Constructor(meta as XMPMetaMBS, schemaNS as string, propName as string, options as Integer=0)
- 184.5.7 Constructor(schemaNS as string, propName as string, options as Integer)

184.5.4 Constructor(meta as XMPMetaMBS, options as Integer=0)

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Construct an iterator for the global tables of the XMP toolkit.

**Notes:**

- options: Option flags to control the iteration.

The available option flags are:

- kXMP_IterJustChildren = & h100 Just visit the immediate children of the root, default is subtree.
- kXMP_IterJustLeafNodes = & h200 Just visit the leaf nodes, default visits all nodes.
- kXMP_IterJustLeafName = & h400 Return just the leaf part of the path, default is the full path.
- kXMP_IterOmitQualifiers = & h1000 Omit all qualifiers.

Note: Not yet implemented in the XMP SDK.

See also:

- 184.5.3 Constructor
- 184.5.5 Constructor(meta as XMPMetaMBS, schemaNS as string, options as Integer=0)
- 184.5.6 Constructor(meta as XMPMetaMBS, schemaNS as string, propName as string, options as Integer=0)
- 184.5.7 Constructor(schemaNS as string, propName as string, options as Integer)
### 184.5.5 Constructor(meta as XMPMetaMBS, schemaNS as string, options as Integer=0)

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Construct an iterator for the global tables of the XMP toolkit.

**Notes:**

- *schemaNS:* Optional schema namespace URI to restrict the iteration. Omitted (visit all schema) by passing "".
- *options:* Option flags to control the iteration.

The available option flags are:

- `kXMP_IterJustChildren = & h100` Just visit the immediate children of the root, default is subtree.
- `kXMP_IterJustLeafNodes = & h200` Just visit the leaf nodes, default visits all nodes.
- `kXMP_IterJustLeafName = & h400` Return just the leaf part of the path, default is the full path.
- `kXMP_IterOmitQualifiers = & h1000` Omit all qualifiers.

Note: Not yet implemented in the XMP SDK.

See also:

- 184.5.3 Constructor
- 184.5.4 Constructor(meta as XMPMetaMBS, options as Integer=0)
- 184.5.6 Constructor(meta as XMPMetaMBS, schemaNS as string, propName as string, options as Integer=0)
- 184.5.7 Constructor(schemaNS as string, propName as string, options as Integer)

### 184.5.6 Constructor(meta as XMPMetaMBS, schemaNS as string, propName as string, options as Integer=0)

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Construct an iterator for the global tables of the XMP toolkit.

**Notes:**

- *schemaNS:* Optional schema namespace URI to restrict the iteration. Omitted (visit all schema) by passing "".
- *propName:* Optional property name to restrict the iteration. May be an arbitrary path expression. Omitted (visit all properties) by passing "". If not empty a schema URI must also be provided.
- *options:* Option flags to control the iteration.

The available option flags are:
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kXMP_IterJustChildren = & h100  Just visit the immediate children of the root, default is subtree.
kXMP_IterJustLeafNodes = & h200  Just visit the leaf nodes, default visits all nodes.
kXMP_IterJustLeafName = & h400  Return just the leaf part of the path, default is the full path.
kXMP_IterOmitQualifiers = & h1000  Omit all qualifiers.

Note: Not yet implemented in the XMP SDK.
See also:

- 184.5.3 Constructor
- 184.5.4 Constructor(meta as XMPMetaMBS, options as Integer=0)
- 184.5.5 Constructor(meta as XMPMetaMBS, schemaNS as string, options as Integer=0)
- 184.5.7 Constructor(schemaNS as string, propName as string, options as Integer)

184.5.7 Constructor(schemaNS as string, propName as string, options as Integer)

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Construct an iterator for the properties within an XMP object.

**Notes:**

On success handle is not 0.

schemaNS: Optional schema namespace URI to restrict the iteration. Omitted (visit all schema) by passing ""

propName: Optional property name to restrict the iteration. May be an arbitrary path expression. Omitted (visit all properties) by passing "". If not empty a schema URI must also be provided.

options: Option flags to control the iteration.

The available option flags are:

kXMP_IterJustChildren = & h100  Just visit the immediate children of the root, default is subtree.
kXMP_IterJustLeafNodes = & h200  Just visit the leaf nodes, default visits all nodes.
kXMP_IterJustLeafName = & h400  Return just the leaf part of the path, default is the full path.
kXMP_IterOmitQualifiers = & h1000  Omit all qualifiers.

See also:

- 184.5.3 Constructor
- 184.5.4 Constructor(meta as XMPMetaMBS, options as Integer=0)
- 184.5.5 Constructor(meta as XMPMetaMBS, schemaNS as string, options as Integer=0)
184.5. **CLASS XMPITERATORMBS**

- 184.5.6 Constructor(meta as XMPMetaMBS, schemaNS as string, propName as string, options as Integer=0)

184.5.8 **NextItem() as boolean**

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Visit the next node in the iteration.

See also:

- 184.5.9 NextItem(byref schemaNS as string) as boolean
- 184.5.10 NextItem(byref schemaNS as string, byref propPath as string) as boolean
- 184.5.11 NextItem(byref schemaNS as string, byref propPath as string, byref propValue as string) as boolean
- 184.5.12 NextItem(byref schemaNS as string, byref propPath as string, byref propValue as string, byref options as Integer) as boolean

184.5.9 **NextItem(byref schemaNS as string) as boolean**

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Visit the next node in the iteration.

**Notes:**

**Parameters:**

- **schemaNS** A string that is assigned the schema namespace URI of the current property.
- **propPath** A string that is assigned the XPath name of the current property.
- **propValue** A string that is assigned the value of the current property.
- **options** An integer that is assigned the flags describing the current property.

See also:

- 184.5.8 NextItem() as boolean
- 184.5.10 NextItem(byref schemaNS as string, byref propPath as string) as boolean
- 184.5.11 NextItem(byref schemaNS as string, byref propPath as string, byref propValue as string) as boolean
- 184.5.12 NextItem(byref schemaNS as string, byref propPath as string, byref propValue as string, byref options as Integer) as boolean
184.5.10 NextItem(byref schemaNS as string, byref propPath as string) as boolean

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Visit the next node in the iteration.  
**Notes:**

**Parameters:**

- **schemaNS** A string that is assigned the schema namespace URI of the current property.  
- **propPath** A string that is assigned the XPath name of the current property.

See also:

- 184.5.8 NextItem() as boolean 20725  
- 184.5.9 NextItem(byref schemaNS as string) as boolean 20725  
- 184.5.11 NextItem(byref schemaNS as string, byref propPath as string, byref propValue as string) as boolean 20726  
- 184.5.12 NextItem(byref schemaNS as string, byref propPath as string, byref propValue as string, byref options as Integer) as boolean 20727

184.5.11 NextItem(byref schemaNS as string, byref propPath as string, byref propValue as string) as boolean

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Visit the next node in the iteration.  
**Notes:**

**Parameters:**

- **schemaNS** A string that is assigned the schema namespace URI of the current property.  
- **propPath** A string that is assigned the XPath name of the current property.  
- **propValue** A string that is assigned the value of the current property.

See also:

- 184.5.8 NextItem() as boolean 20725  
- 184.5.9 NextItem(byref schemaNS as string) as boolean 20725  
- 184.5.10 NextItem(byref schemaNS as string, byref propPath as string) as boolean 20726
184.5.CLASS XMPITERATORMBS

- 184.5.12 NextItem(byref schemaNS as string, byref propPath as string, byref propValue as string, byref options as Integer) as boolean

184.5.12 NextItem(byref schemaNS as string, byref propPath as string, byref propValue as string, byref options as Integer) as boolean

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Visit the next node in the iteration.  
**Notes:**

Parameters:

- schemaNS A string that is assigned the schema namespace URI of the current property.
- propPath A string that is assigned the XPath name of the current property.
- propValue A string that is assigned the value of the current property.
- options An integer that is assigned the flags describing the current property.

See also:

- 184.5.8 NextItem() as boolean
- 184.5.9 NextItem(byref schemaNS as string) as boolean
- 184.5.10 NextItem(byref schemaNS as string, byref propPath as string) as boolean
- 184.5.11 NextItem(byref schemaNS as string, byref propPath as string, byref propValue as string) as boolean

184.5.13 Skip(options as Integer)

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Skip some portion of the remaining iterations.  
**Notes:**

The available option flags are:

- kXMP_IterSkipSubtree = 1 Skip the subtree below the current node.
- kXMP_IterSkipSiblings = 2 Skip the subtree below and remaining siblings of the current node.
184.6  class XMPMetaMBS

184.6.1  class XMPMetaMBS

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The main class for the Adobe XMP SDK.

184.6.2  Methods

184.6.3  AppendArrayItem(schemaNS as string, arrayName as string, arrayOptions as Integer, itemValue as string, options as Integer=0)

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Appends an item to an array.
**Notes:**
AppendArrayItem simplifies construction of an array by not requiring that you pre-create an empty array.
The array that is assigned is created automatically if it does not yet exist. Each call to AppendArrayItem
appends an item to the array. The corresponding parameters have the same use as SetArrayItem. The arrayOptions parameter is used to specify what kind of array. If the array exists, it must have the specified form.

Parameters:

- **schemaNS** The namespace URI for the array. Has the same usage as in SetProperty.
- **arrayName** The name of the array. May be a general path expression, must not be null
  or the empty string. Has the same namespace prefix usage as propPath in
  SetProperty.
- **arrayOptions** Option flags describing the array form. The only valid bits are those that
  are part of kXMPPropArrayFormMask: kXMPPropValueIsArray (& h200),
  kXMPPropArrayIsOrdered (& h400), kXMPPropArrayIsAlternate (& h800),
  or kXMPPropArrayIsAltText (& h1000).
- **itemValue** An UTF-8 string that is the value of the array item, if the array item has a
  value. Has the same usage as propValue in SetProperty.
- **itemOptions** Option flags describing the item.

184.6.4  ApplyTemplate(WorkingXMP as XMPMetaMBS, template as XMPMetaMBS, actions as Integer)

MBS XMP Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Applies an xmp template.
184.6.5  CatenateArrayItems(schemaNS as string, arrayName as string, separator as string, quotes as string, options as Integer) as string

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Create a single edit string from an array of strings.
**Notes:**

xmpObj  The XMP object containing the array to be catenated.
schemaNS  The schema namespace URI for the array. Must not be an empty string.
arrayName  The name of the array. May be a general path expression, must not be an empty string. Each item in the array must be a simple string value.
separator  The string to be used to separate the items in the catenated string. Defaults to "; ", ASCII semicolon and space (U+003B, U+0020).
quotes  The characters to be used as quotes around array items that contain a separator. Defaults to ",", ASCII quote (U+0022).
options  Option flags to control the catenation.

returns the string with the catenated array items.

184.6.6  Clone as XMPMetaMBS

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Creates a copy of the XMPMeta Object.
**Notes:**

Deep copy, not just a new reference.
Returns nil on any error.

184.6.7  ComposeArrayItemPath(schemaNS as string, arrayName as string, itemIndex as Integer) as string

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Compose the path expression for an item in an array.
**Notes:**

Returns the composed path. This will be of the form <tt>ns:arrayName [ i ] </tt>, where "ns" is the prefix for schemaNS and "i" is the decimal representation of itemIndex. If the value of itemIndex is kXMP_ArrayLastItem, the path is <tt>ns:arrayName [ last() ] </tt>. 

184.6.8 ComposeFieldSelector(schemaNS as string, arrayName as string, fieldNS as string, fieldName as string, fieldValue as string) as string

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Compose the path expression to select an alternate item by a field’s value. **Notes:**

The path syntax allows two forms of "content addressing" that may be used to select an item in an array of alternatives. The form used in ComposeFieldSelector lets you select an item in an array of structs based on the value of one of the fields in the structs. The other form of content addressing is shown in Compose-LangSelector.

For example, consider a simple struct that has two fields, the name of a city and the URI of an FTP site in that city. Use this to create an array of download alternatives. You can show the user a popup built from the values of the city fields. You can then get the corresponding URI as follows:

```
path=ComposeFieldSelector ( schemaNS, "Downloads", fieldNS, "City", chosenCity)
eexists = GetStructField ( schemaNS, path, fieldNS, "URI", uri )
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>schemaNS</td>
<td>The namespace URI for the array. Must not be null or the empty string.</td>
</tr>
<tr>
<td>arrayName</td>
<td>The name of the array. May be a general path expression, must not be an empty string.</td>
</tr>
<tr>
<td>fieldNS</td>
<td>The namespace URI for the field used as the selector. Must not be an empty string.</td>
</tr>
<tr>
<td>fieldName</td>
<td>The name of the field used as the selector. Must be a simple XML name, must not be an empty string. It must be the name of a field that is itself simple.</td>
</tr>
<tr>
<td>fieldValue</td>
<td>The desired value of the field.</td>
</tr>
</tbody>
</table>

Returns the string with the composed path. This will be of the form `<tt>${ns}:arrayName [ ${fNS}:fieldName='fieldValue' ]</tt>`, where "ns" is the prefix for schemaNS and "fNS" is the prefix for fieldNS.
184.6.9  ComposeLangSelector(schemaNS as string, arrayName as string, langName as string) as string

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Compose the path expression to select an alternate item by language.

**Notes:**
The path syntax allows two forms of "content addressing" that may be used to select an item in an array of alternatives. The form used in ComposeLangSelector lets you select an item in an alt-text array based on the value of its `<tt>xml:lang</tt>` qualifier. The other form of content addressing is shown in ComposeFieldSelector.

ComposeLangSelector does not supplant SetLocalizedText or GetLocalizedText. They should generally be used, as they provide extra logic to choose the appropriate language and maintain consistency with the 'x-default' value. ComposeLangSelector gives you an path expression that is explicitly and only for the language given in the langName parameter.

- schemaNS  The namespace URI for the array. Must not be null or the empty string.
- arrayName  The name of the array. May be a general path expression, must not be an empty string.
- langName   The RFC 3066 code for the desired language.

Returns the composed path. This will be of the form `<tt>ns:arrayName [ \@xml:lang='langName' ] </tt>`, where "ns" is the prefix for schemaNS.

184.6.10  ComposeQualifierPath(schemaNS as string, structName as string, qualNS as string, qualName as string) as string

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Compose the path expression for a qualifier.

**Notes:**
- schemaNS The namespace URI for the property to which the qualifier is attached. Must not be an empty string.
- propName  The name of the property to which the qualifier is attached. May be a general path expression, must not be an empty string.
- qualNS    The namespace URI for the qualifier. May be an empty string if the qualifier is in the XML empty namespace.
- qualName  The name of the qualifier. Must be a simple XML name, must not be an empty string.

Returns the composed path. This will be of the form `<tt>ns:propName/?qNS:qualName</tt>`, where "ns" is the prefix for schemaNS and "qNS" is the prefix for qualNS.
184.6.11  ComposeStructFieldPath(schemaNS as string, structName as string, fieldNS as string, fieldName as string) as string

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Compose the path expression for a field in a struct.

**Notes:**

- schemaNS: The namespace URI for the struct. Must not be null or the empty string.
- structName: The name of the struct. May be a general path expression, must not be an empty string.
- fieldNS: The namespace URI for the field. Must not be an empty string.
- fieldName: The name of the field. Must be a simple XML name, must not be an empty string.

Returns the composed path. This will be of the form `<ns:structName/fNS:fieldName</tt>`, where ”ns” is the prefix for schemaNS and ”fNS” is the prefix for fieldNS.

184.6.12  Constructor


See also:

- 184.6.13 Constructor(data as memoryblock, Offset as Integer, Size as Integer) 20732
- 184.6.14 Constructor(data as string) 20733

184.6.13  Constructor(data as memoryblock, Offset as Integer, Size as Integer)

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Construct an object and parse one buffer of RDF into it.

**Notes:** This constructor creates a new TXMPMeta object and populates it with metadata from a buffer containing serialized RDF. This buffer must be a complete RDF parse stream. Pass ”” to construct an empty XMPMetaMBS object. The result of an actual parse is identical to creating an empty object then calling XMPMetaMBS.ParseFromBuffer. The RDF must be complete. If you need to parse with multiple buffers, create an empty object and use XMPMetaMBS.ParseFromBuffer.

See also:

- 184.6.12 Constructor 20732
- 184.6.14 Constructor(data as string) 20733
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184.6.14 Constructor(data as string)

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Construct an object and parse one buffer of RDF into it. **Notes:** This constructor creates a new TXMPMeta object and populates it with metadata from a buffer containing serialized RDF. This buffer must be a complete RDF parse stream. Pass "" to construct an empty XMPMetaMBS object. The result of an actual parse is identical to creating an empty object then calling XMPMetaMBS.ParseFromBuffer. The RDF must be complete. If you need to parse with multiple buffers, create an empty object and use XMPMetaMBS.ParseFromBuffer. See also:

- 184.6.12 Constructor
- 184.6.13 Constructor(data as memoryblock, Offset as Integer, Size as Integer)

184.6.15 ConvertFromBool(value as boolean) as string

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Convert from Boolean to string.

184.6.16 ConvertFromDate(value as XMPDateTimeMBS) as string

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Convert from date/time to string.

184.6.17 ConvertFromFloat(value as Double, format as string) as string

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Convert from floating point to string. **Notes:** format: Optional C sprintf format for the conversion. Defaults to "% f".

184.6.18 ConvertFromInt(value as Integer, format as string) as string

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Convert from integer to string. **Notes:** format: Optional C sprintf format for the conversion. Defaults to "% d".
184.6.19 ConvertFromInt64(value as Int64, format as string) as string

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Convert from integer to string.
**Notes:** format: Optional C sprintf format for the conversion. Defaults to "% d".

184.6.20 ConvertToBool(value as string) as boolean

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Convert from string to Boolean.

184.6.21 ConvertToDate(value as string) as XMPDateTimeMBS

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Convert from string to date/time.

184.6.22 ConvertToFloat(value as string) as Double

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Convert from string to floating point.

184.6.23 ConvertToInt(value as string) as Integer

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Convert from string to integer.

184.6.24 ConvertToInt64(value as string) as Int64

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Convert from string to 64 bit integer.

184.6.25 CountArrayItems(schemaNS as string, arrayName as string) as Integer

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Notes: Returns 0 on any error.

184.6.26 CurrentDateTime as XMPDateTimeMBS

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Current date and time as a XMPDateTimeMBS object. **Notes:** Returns nil on any error.

184.6.27 DecodeFromBase64(text as string) as string

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Decode from Base64 encoded string to raw data. **Example:**

```vba
dim x as XMPMetaMBS
x=new XMPMetaMBS
MsgBox x.DecodeFromBase64("dGVzdA==") // test
```

**Notes:** This is a global method which does not need a valid handle.

184.6.28 DeleteArrayItem(schemaNS as string, arrayName as string, itemIndex as Integer)

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** DeleteArrayItem deletes the given XMP subtree rooted at the given array item. **Notes:** It is not an error if the array item does not exist.

**Parameters:**

- `schemaNS`: The namespace URI for the array. Has the same usage as in GetProperty.
- `arrayName`: The name of the array. May be a general path expression, must not "". Has the same namespace prefix usage as propName in GetProperty.
- `itemIndex`: The index of the desired item. Arrays in XMP are indexed from 1. The constant kXMP_ArrayLastItem (-1) always refers to the last existing array item.
184.6.29 **DeleteLocalizedText** (schemaNS as string="", altTextName as string="",
genericLang as string="", specificLang as string="")

MBS XMP Plugin, Plugin Version: 11.0, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Deletes localized text.

184.6.30 **DeleteNamespace** (namespaceURI as string)

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Deletes a namespace from the registry.
**Notes:**
Not implemented?

Does nothing if the URI is not registered, or if the parameter is null or the empty string.

namespaceURI: The URI for the namespace.

184.6.31 **DeleteProperty** (schemaNS as string, propName as string)

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
DeleteProperty deletes the given XMP subtree rooted at the given property.
**Notes:**
It is not an error if the property does not exist.

**Parameters:**

- schemaNS  The namespace URI for the property. Has the same usage as in GetProperty.
- propName   The name of the property. Has the same usage as in GetProperty.

184.6.32 **DeleteQualifier** (schemaNS as string, structName as string, qualNS as string, qualName as string)

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
DeleteQualifier deletes the given XMP subtree rooted at the given qualifier.
**Notes:**
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It is not an error if the qualifier does not exist.

Parameters:

- **schemaNS**: The namespace URI for the struct. Has the same usage as in GetProperty.
- **propName**: The name of the property to which the qualifier is attached. Has the same usage as in GetProperty.
- **qualNS**: The namespace URI for the qualifier. Has the same URI and prefix usage as the schemaNS parameter.
- **qualName**: The name of the qualifier. Must be a single XML name, must not be "". Has the same namespace prefix usage as the propName parameter.

184.6.33 **DeleteStructField**(schemaNS as string, structName as string, fieldNS as string, fieldName as string)

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
DeleteStructField deletes the given XMP subtree rooted at the given struct field.

**Notes:**
It is not an error if the field does not exist.

Parameters:

- **schemaNS**: The namespace URI for the struct. Has the same usage as in GetProperty.
- **structName**: The name of the struct. May be a general path expression, must not be "". Has the same namespace prefix usage as propName in GetProperty.
- **fieldNS**: The namespace URI for the field. Has the same URI and prefix usage as the schemaNS parameter.
- **fieldName**: The name of the field. Must be a single XML name, must not be "". Has the same namespace prefix usage as the structName parameter.

184.6.34 **DoesArrayItemExist**(schemaNS as string, arrayName as string, itemIndex as Integer) as boolean

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
DoesArrayItemExist tells if the array item exists.

**Notes:**
Returns true if the array item exists.

Parameters:

- `schemaNS` (The namespace URI for the array. Has the same usage as in GetProperty.)
- `arrayName` (The name of the array. May be a general path expression, must not be """. Has the same namespace prefix usage as propName in GetProperty.)
- `itemIndex` (The index of the desired item. Arrays in XMP are indexed from 1. The constant kXMP_ArrayLastItem (-1) always refers to the last existing array item.)

### 184.6.35 DoesPropertyExist(schemaNS as string, propName as string) as boolean

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** DoesPropertyExist tells if the property exists.

**Notes:**

Returns true if the property exists.

Parameters:

- `schemaNS` (The namespace URI for the property. Has the same usage as in GetProperty.)
- `propName` (The name of the property. Has the same usage as in GetProperty.)

### 184.6.36 DoesQualifierExist(schemaNS as string, structName as string, qualNS as string, qualName as string) as boolean

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** DoesQualifierExist tells if the qualifier exists.

**Notes:**

Returns true if the qualifier exists.

Parameters:
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- **schemaNS**: The namespace URI for the struct. Has the same usage as in GetProperty.
- **propName**: The name of the property to which the qualifier is attached. Has the same usage as in GetProperty.
- **qualNS**: The namespace URI for the qualifier. Has the same URI and prefix usage as the schemaNS parameter.
- **qualName**: The name of the qualifier. Must be a single XML name, must not be "". Has the same namespace prefix usage as the propName parameter.

184.6.37  **DoesStructFieldExist** (schemaNS as string, structName as string, fieldNS as string, fieldName as string) as boolean

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

DoesStructFieldExist tells if the struct field exists.

**Notes:**

Returns true if the field exists.

**Parameters:**

- **schemaNS**: The namespace URI for the struct. Has the same usage as in GetProperty.
- **structName**: The name of the struct. May be a general path expression, must not be "". Has the same namespace prefix usage as propName in GetProperty.
- **fieldNS**: The namespace URI for the field. Has the same URI and prefix usage as the schemaNS parameter.
- **fieldName**: The name of the field. Must be a single XML name, must not be "". Has the same namespace prefix usage as the structName parameter.

184.6.38  **DumpNamespaces** (output as XMPTextOutputMBS) as Integer

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**

DumpNamespaces dumps the list of registered namespace URIs and prefixes.

**Notes:**

This is a global method which does not need a valid handle.

Returns status code. (0=succes and -1=error)
184.6.39  **DumpObject(output as XMPTextOutputMBS) as Integer**

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
DumpObject dumps the content of an XMP object.
**Notes:** Returns status code. (0=success and -1=error)

184.6.40  **DuplicateSubtree(dest as XMPMetaMBS, sourceNS as string, sourceRoot as string, destNS as string=”, destRoot as string=”, options as Integer=0)**

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Replicate a subtree from one XMP object into another, possibly at a different location.
**Notes:**
Parameters:
- self: The source XMP object.
- dest: The destination XMP object.
- sourceNS: The schema namespace URI for the source subtree.
- sourceRoot: The root location for the source subtree. May be a general path expression, must not be null or the empty string.
- destNS: The schema namespace URI for the destination. Defaults to the source namespace.
- destRoot: The root location for the destination. May be a general path expression. Defaults to the source location.
- options: Option flags to control the separation.

184.6.41  **EncodeToBase64(text as string) as string**

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Convert from raw data to Base64 encoded string.
**Example:**
```vbnet
dim x as XMPMetaMBS
x=new XMPMetaMBS
MsgBox x.EncodeToBase64("test") // dGVzdA==
```

**Notes:** This is a global method which does not need a valid handle.
184.6.42 **Erase**

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Restores the object to a "just constructed" state.

184.6.43 **GetArrayItem**(schemaNS as string, arrayName as string, itemIndex as Integer, byref itemValue as string, byref options as Integer) as boolean

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
GetArrayItem provides access to items within an array.
**Notes:**
The index is passed as an integer, you need not worry about the path string syntax for array items, convert a loop index to a string, etc.

Returns true if the array item exists.

**Parameters:**

- **schemaNS** The namespace URI for the array. Has the same usage as in GetProperty.
- **arrayName** The name of the array. May be a general path expression, must not be "". Has the same namespace prefix usage as propName in GetProperty.
- **itemIndex** The index of the desired item. Arrays in XMP are indexed from 1. The constant kXMP_ArrayLastItem (-1) always refers to the last existing array item.
- **itemValue** A string that is assigned the value of the array item, if the array item has a value. Arrays and non-leaf levels of structs do not have values.
- **options** An integer variable that is assigned option flags describing the array item.

184.6.44 **GetLocalizedText**(schemaNS as string, altTextName as string, genericLang as string, specificLang as string, byref actualLang as string, byref itemValue as string, byref options as Integer) as boolean

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
GetLocalizedText returns information about a selected item in an alt-text array.
**Notes:**
The array item is selected according to the rules given above.
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Returns true if an appropriate array item exists.

Parameters:

- `schemaNS`: The namespace URI for the alt-text array. Has the same usage as in `GetProperty`.
- `altTextName`: The name of the alt-text array. May be a general path expression, must not be "". Has the same namespace prefix usage as `propName` in `GetProperty`.
- `genericLang`: The name of the generic language as an RFC 3066 primary subtag. May be "" if no generic language is wanted.
- `specificLang`: The name of the specific language as an RFC 3066 tag. Must not be null or the empty string.
- `actualLang`: A string that is assigned the language of the selected array item, if an appropriate array item is found.
- `itemValue`: A string that is assigned the value of the array item, if an appropriate array item is found.
- `options`: An integer variable that is assigned option flags describing the array item.

184.6.45 `GetNamespacePrefix(namespaceURI as string, byref namespacePrefix as string) as boolean`

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Obtain the prefix for a registered namespace URI.

**Notes:**

It is not an error if the namespace URI is not registered. The output `namespacePrefix` string is "" if the namespace URI is not registered.

Parameters:

- `namespaceURI`: The URI for the namespace. Must not be null or the empty string.
- `namespacePrefix`: Returns the prefix registered for this URI, with a terminating ‘:’.

Returns true if the namespace URI is registered.

This is a global method which does not need a valid handle.
184.6.46 GetNamespaceURI(namespacePrefix as string, byref namespaceURI as string) as boolean


Notes:
It is not an error if the namespace prefix is not registered. The output namespaceURI string is "" if the namespace prefix is not registered.

Parameters:

namespacePrefix The prefix for the namespace. Must not be "".
namespaceURI Returns the URI registered for this prefix.

Returns true if the namespace prefix is registered.

This is a global method which does not need a valid handle.

184.6.47 GetProperty(schemaNS as string, propName as string, byref propValue as string, byref options as Integer) as boolean

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: GetProperty is the simplest property getter, mainly for top level simple properties or after using the path composition functions.

Notes:
Returns true if the property exists.

Parameters:

184.6.48 GetPropertyBoolean(schemaNS as string, propName as string, byref propValue as boolean) as boolean


Notes:
Returns true if the property exists.
schemaNS  The namespace URI for the property. May be an empty string if the first component of the propName path contains a namespace prefix. The URI must be for a registered namespace.

propName  The name of the property. May be a general path expression, must not be an empty string. Using a namespace prefix on the first component is optional. If present without a schemaNS value then the prefix specifies the namespace. The prefix must be for a registered namespace. If both a schemaNS URI and propName prefix are present, they must be corresponding parts of a registered namespace.

propValue  A string that is assigned the value of the property, if the property has a value. Arrays and non-leaf levels of structs do not have values.

options  An integer variable that is assigned option flags describing the property.

Parameters:

schemaNS  The namespace URI for the property. Has the same usage as in GetProperty.

propName  The name of the property. Has the same usage as in GetProperty.

propValue  A boolean variable that is assigned the value of the property.

options  Optional, an integer variable that is assigned option flags describing the property.

See also:

- 184.6.48 GetPropertyBoolean(schemaNS as string, propName as string, byref propValue as boolean)

184.6.49  GetPropertyBoolean(schemaNS as string, propName as string, byref propValue as boolean, byref options as Integer) as boolean


Notes:

Returns true if the property exists.

Parameters:

See also:

- 184.6.48 GetPropertyBoolean(schemaNS as string, propName as string, byref propValue as boolean)
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- **schemaNS**: The namespace URI for the property. Has the same usage as in GetProperty.
- **propName**: The name of the property. Has the same usage as in GetProperty.
- **propValue**: A boolean variable that is assigned the value of the property.
- **options**: Optional, an integer variable that is assigned option flags describing the property.

### 184.6.50 GetPropertyDate(schemaNS as string, propName as string, byref propValue as XMPDateTimeMBS, byref options as Integer) as boolean

**MBS XMP Plugin, Plugin Version:** 6.4, **Console & Web:** Yes, **Mac:** Yes, **Win:** Yes, **Linux:** Yes. **Function:**
GetPropertyDate returns the value of a date/time property as an XMPDateTimeMBS object.

**Notes:**
Returns true if the property exists.

**Parameters:**

- **schemaNS**: The namespace URI for the property. Has the same usage as in GetProperty.
- **propName**: The name of the property. Has the same usage as in GetProperty.
- **propValue**: A XMPDateTimeMBS variable that is assigned the value of the property.
- **options**: An integer variable that is assigned option flags describing the property.

### 184.6.51 GetPropertyFloat(schemaNS as string, propName as string, byref propValue as Double) as boolean

**MBS XMP Plugin, Plugin Version:** 11.3, **Console & Web:** Yes, **Mac:** Yes, **Win:** Yes, **Linux:** Yes. **Function:**
GetPropertyFloat returns the value of a floating point property as a double value.

**Notes:**
Returns true if the property exists.

**Parameters:**

**See also:**

- 184.6.52 GetPropertyFloat(schemaNS as string, propName as string, byref propValue as Double, byref options as Integer) as boolean
schemaNS  The namespace URI for the property. Has the same usage as in GetProperty.
propName  The name of the property. Has the same usage as in GetProperty.
propValue  A double variable that is assigned the value of the property.
options  Optional, an integer variable that is assigned option flags describing the property.

184.6.52 GetPropertyFloat(schemaNS as string, propName as string, byref propValue as Double, byref options as Integer) as boolean

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** GetPropertyFloat returns the value of a floting point property as a double value.
**Notes:**
Returns true if the property exists.

Parameters:

- schemaNS  The namespace URI for the property. Has the same usage as in GetProperty.
- propName  The name of the property. Has the same usage as in GetProperty.
- propValue  A double variable that is assigned the value of the property.
- options  Optional, an integer variable that is assigned option flags describing the property.

See also:

- 184.6.51 GetPropertyFloat(schemaNS as string, propName as string, byref propValue as Double) as boolean

184.6.53 GetPropertyInt64Double(schemaNS as string, propName as string, byref propValue as Double, byref options as Integer) as boolean

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** GetPropertyInt64Double returns the value of a 64 bit integer property as a double value.
**Notes:**
Returns true if the property exists.

Parameters:
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schemaNS  The namespace URI for the property. Has the same usage as in GetProperty.
propName  The name of the property. Has the same usage as in GetProperty.
propValue A double variable that is assigned the value of the property.
options  An integer variable that is assigned option flags describing the property.

184.6.54  GetPropertyInteger(schemaNS as string, propName as string, byref propValue as Integer) as boolean

Function: GetPropertyInteger returns the value of an integer property as an integer.  
Notes:  
Returns true if the property exists.

Parameters:

schemaNS  The namespace URI for the property. Has the same usage as in GetProperty.  
propName  The name of the property. Has the same usage as in GetProperty.
propValue An integer variable that is assigned the value of the property.
options  Optional, an integer variable that is assigned option flags describing the property.

See also:

- 184.6.55 GetPropertyInteger(schemaNS as string, propName as string, byref propValue as Integer, 
   byref options as Integer) as boolean

184.6.55  GetPropertyInteger(schemaNS as string, propName as string, byref propValue as Integer, byref options as Integer) as boolean

Function: GetPropertyInteger returns the value of an integer property as an integer.  
Notes:  
Returns true if the property exists.

Parameters:

See also:
schemaNS: The namespace URI for the property. Has the same usage as in GetProperty.

propName: The name of the property. Has the same usage as in GetProperty.

propValue: An integer variable that is assigned the value of the property.

options: Optional, an integer variable that is assigned option flags describing the property.

- 184.6.54 GetPropertyInteger(schemaNS as string, propName as string, byref propValue as Integer) as boolean

184.6.56 GetPropertyInteger64(schemaNS as string, propName as string, byref propValue as Int64, byref options as Integer) as boolean

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Retrieves the value of an integer property as an Int64.

**Notes:**
Reports whether a property exists, and retrieves its binary value and property type information.

schemaNS: The namespace URI; see GetProperty().

propName: The name of the property. Can be a general path expression, must not be empty string; see GetProperty() for namespace prefix usage.

propValue: A variable in which to return the binary value.

options: A variable in which to return the option flags describing the property, a logical OR of allowed bit-flag constants; see kPropValueIsStruct and following.

Returns true if the property exists.

184.6.57 GetQualifier(schemaNS as string, propName as string, qualNS as string, qualName as string, byref qualValue as string, byref options as Integer) as boolean

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** GetQualifier provides access to a qualifier attached to a property.

**Notes:**
The namespace for the qualifier is passed as a URI, you need not worry about the path string syntax. In many regards qualifiers are like struct fields.
The names of qualifiers should be XML qualified names, that is within an XML namespace. The path syntax for a qualified name uses the namespace prefix. This is unreliable since the prefix is never guaranteed. The URI is the formal name, the prefix is just a local shorthand in a given sequence of XML text.

Note: Qualifiers are only supported for simple leaf properties at this time. (in the XMP SDK)

Returns true if the qualifier exists.

Parameters:

- **schemaNS**: The namespace URI for the struct. Has the same usage as in GetProperty.
- **propName**: The name of the property to which the qualifier is attached. May be a general path expression, must not be an empty string. Has the same namespace prefix usage as in GetProperty.
- **qualNS**: The namespace URI for the qualifier. Has the same URI and prefix usage as the schemaNS parameter.
- **qualName**: The name of the qualifier. Must be a single XML name, must not be an empty string. Has the same namespace prefix usage as the propName parameter.
- **qualValue**: A string variable that is assigned the value of the qualifier, if the qualifier has a value. Arrays and non-leaf levels of structs do not have values.
- **options**: An integer variable that is assigned option flags describing the qualifier.

**GetStructField**

GetStructField(schemaNS as string, structName as string, fieldNS as string, fieldName as string, byref itemValue as string, byref options as Integer) as boolean

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** GetStructField provides access to fields within a nested structure.

**Notes:**

The names of fields should be XML qualified names, that is within an XML namespace. The path syntax for a qualified name uses the namespace prefix. This is unreliable since the prefix is never guaranteed. The URI is the formal name, the prefix is just a local shorthand in a given sequence of XML text.

Returns true if the field exists.

Parameters:
schemaNS The namespace URI for the struct. Has the same usage as in GetProperty.
structName The name of the struct. May be a general path expression, must not be an empty string. Has the same namespace prefix usage as propName in GetProperty.
fieldNS The namespace URI for the field. Has the same URI and prefix usage as the schemaNS parameter.
fieldName The name of the field. Must be a single XML name, must not be an empty string. Has the same namespace prefix usage as the structName parameter.
fieldValue An string variable that is assigned the value of the field, if the field has a value. Arrays and non-leaf levels of structs do not have values.
options An integer variable that is assigned option flags describing the field. May be null if the flags are not wanted.

184.6.59 GetVersionInfo as XMPVersionInfoMBS

184.6.60 GlobalOptions as Integer
MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Sets or retrieves the set of global option flags. Notes: (Read and Write computed property)

184.6.61 Iterator(schemaNS as string, propName as string, options as Integer) as XMPIteratorMBS

schemaNS: Optional schema namespace URI to restrict the iteration. Omitted (visit all schema) by passing "."
propName: Optional property name to restrict the iteration. May be an arbitrary path expression. Omitted (visit all properties) by passing ".". If not empty a schema URI must also be provided.
options: Option flags to control the iteration.

The available option flags are:
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kXMP_JustChildren = & h100 Just visit the immediate children of the root, default is subtree.
kXMP_JustLeafNodes = & h200 Just visit the leaf nodes, default visits all nodes.
kXMP_JustLeafName = & h400 Return just the leaf part of the path, default is the full path.
kXMP_OmitQualifiers = & h1000 Omit all qualifiers.

184.6.62 MergeFromJPEG(extendedXMP as XMPMetaMBS)


**Notes:**
When an extended partition stores properties that do not fit into the JPEG file limitation of 64K bytes, this function integrates those properties back into the same XMP object with those from the standard XMP packet.

self: An XMP object which the caller has initialized from the standard XMP packet in a JPEG file. The extended XMP is added to this object.

extendedXMP: An XMP object which the caller has initialized from the extended XMP packet in a JPEG file.

184.6.63 PackageForJPEG(byref standardXMP as string, byref extendedXMP as string, byref extendedDigest as string)

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** creates XMP serializations appropriate for a JPEG file.

**Notes:**
The standard XMP in a JPEG file is limited to 64K bytes. This function serializes the XMP metadata in an XMP object into a string of RDF (see \c SerializeToBuffer) the data does not fit into the 64K byte limit, it creates a second packet string with the extended data.

self: The XMP object containing the metadata.
standardXMP: A string object in which to return the full standard XMP packet.
extendedXMP: A string object in which to return the serialized extended XMP, empty if not needed.
extendedDigest: A string object in which to return an MD5 digest of the serialized extended XMP, empty if not needed.
184.6.64 ParseFromBuffer(buffer as string, options as Integer=0)

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
ParseFromBuffer parses RDF from a series of input buffers.

**Notes:**
The buffers may be any length. The buffer boundaries need not respect XML tokens or even Unicode characters.

**Parameters:**

- `buffer` Input data buffer. Termination of an input loop is convenient by passing kXMP_ParseMoreBuffers (2) for all real input, then having a final call with a zero length and kXMP_NoOptions.
- `options` Options controlling the parsing.

The available options are:

- `kXMP_ParseMoreBuffers` = 2 This is not the last buffer of input, more calls follow.
- `kXMP_RequireXMPMeta` = 1 The x:xmpmeta XML element is required around rdf:RDF.
- `kXMP_StrictAliasing` = 4 Do not reconcile alias differences, throw an exception.

Note: The kXMP_StrictAliasing option is not yet implemented.

184.6.65 RegisterNamespace(namespaceURI as string, suggestedPrefix as string, byref registeredPrefix as string) as boolean

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Register a namespace URI with a suggested prefix.

**Example:**

```vba
dim x as new XMPMetaMBS
dim registeredPrefix as string

call x.RegisterNamespace ("xwnv", "xwnv", registeredPrefix)

x.SetProperty "xwnv","MZSTID","test"

MsgBox x.SerializeToBuffer
```
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Notes:

It is not an error if the URI is already registered, no matter what the prefix is. If the URI is not registered but the suggested prefix is in use, a unique prefix is created from the suggested one. The actual registered prefix is always returned. The function result tells if the registered prefix is the suggested one.

Parameters:

- namespaceURI The URI for the namespace. Must be a valid XML URI.
- suggestedPrefix The suggested prefix to be used if the URI is not yet registered. Must be a valid XML name.
- registeredPrefix Returns the prefix actually registered for this URI.

Returns true if the registered prefix matches the suggested prefix.

Note: No checking is presently done on either the URI or the prefix.

This is a global method which does not need a valid handle.

184.6.66 RemoveProperties(schemaNS as string=”, propName as string=”, options as Integer=0)


Notes:

RemoveProperties was created to support the File Info dialog’s Delete button, and has been been generalized somewhat from those specific needs. It operates in one of three main modes depending on the schemaNS and propName parameters:
- Non-empty schemaNS and propName - The named property is removed if it is an external property, or if the kXMPUI_DoAllProperties option is passed. It does not matter whether the named property is an actual property or an alias.
- Non-empty schemaNS and empty propName - The all external properties in the named schema are removed. Internal properties are also removed if the kXMPUI_DoAllProperties option is passed. In addition, aliases from the named schema will be removed if the kXMPUI_IncludeAliases option is passed.
- Empty schemaNS and empty propName - All external properties in all schema are removed. Internal properties are also removed if the kXMPUI_DoAllProperties option is passed. Aliases are implicitly handled because the associated actuals are.

It is an error to pass and empty schemaNS and non-empty propName.
### 184.6.67 SeparateArrayItems(schemaNS as string, arrayName as string, options as Integer, catedStr as string)

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Separate a single edit string into an array of strings. **Notes:**

**Parameters:**

- **xmpObj** The XMP object containing the array to be updated.
- **schemaNS** The schema namespace URI for the array. Must not be null or the empty string.
- **arrayName** The name of the array. May be a general path expression, must not an empty string. Each item in the array must be a simple string value.
- **options** Option flags to control the separation.
- **catedStr** The string to be separated into the array items.

### 184.6.68 SerializeToBuffer(options as Integer, padding as Integer, newline as string, indent as string=’’’, baseIndent as Integer=0) as string

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** SerializeToBuffer serializes an XMP object into a string as RDF. **Notes:**

Returns the serialized RDF.

**Parameters:**

- The available option flags are:
  - kXMP_OmitPacketWrapper
  - kXMP_ReadOnlyPacket
  - kXMP_IncludeThumbnailPad
  - kXMP_ExactPacketLength

The specified options must be logically consistent, an exception is thrown if not. You cannot specify both kXMP_OmitPacketWrapper along with kXMP_ReadOnlyPacket, kXMP_IncludeThumbnailPad, or kXMP_ExactPacketLength.
options  Option flags to control the serialization.
padding  The amount of padding to be added if a writeable XML packet is created. If zero is passed (the default) an appropriate amount of padding is computed.
newline The string to be used as a line terminator. If empty it defaults to linefeed, U+000A, the standard XML newline.
indent  The string to be used for each level of indentation in the serialized RDF. If empty it defaults to two ASCII spaces, U+0020.
baseIndent  The number of levels of indentation to be used for the outermost XML element in the serialized RDF. This is convenient when embedding the RDF in other text.

<table>
<thead>
<tr>
<th>Option</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kXMP_OmitPacketWrapper</td>
<td>&amp;h10</td>
<td>Do not include an XML packet wrapper.</td>
</tr>
<tr>
<td>kXMP_ReadOnlyPacket</td>
<td>&amp;h20</td>
<td>Create a read-only XML packet wrapper.</td>
</tr>
<tr>
<td>kXMP_UseCompactFormat</td>
<td>&amp;h40</td>
<td>Use a highly compact RDF syntax and layout.</td>
</tr>
<tr>
<td>kXMP_WriteAliasComments</td>
<td>&amp;h400</td>
<td>Include XML comments for aliases.</td>
</tr>
<tr>
<td>kXMP_IncludeThumbnailPad</td>
<td>&amp;h100</td>
<td>Include typical space for a JPEG thumbnail in the padding if no xmp:Thumbnail property is present.</td>
</tr>
<tr>
<td>kXMP_ExactPacketLength</td>
<td>&amp;h200</td>
<td>The padding parameter provides the overall packet length. The actual amount of padding is computed. An exception is thrown if the packet exceeds this length with no padding.</td>
</tr>
</tbody>
</table>

In addition, one of the following encoding options may be included:

<table>
<thead>
<tr>
<th>Option</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kXMP_EncodeUTF8</td>
<td>0</td>
<td>Encode as UTF-8, the default.</td>
</tr>
<tr>
<td>kXMP_EncodeUTF16Big</td>
<td>2</td>
<td>Encode as big-endian UTF-16.</td>
</tr>
<tr>
<td>kXMP_EncodeUTF16Little</td>
<td>3</td>
<td>Encode as little-endian UTF-16.</td>
</tr>
<tr>
<td>kXMP_EncodeUTF32Big</td>
<td>4</td>
<td>Encode as big-endian UTF-32.</td>
</tr>
<tr>
<td>kXMP_EncodeUTF32Little</td>
<td>5</td>
<td>Encode as little-endian UTF-32.</td>
</tr>
</tbody>
</table>

See also:

• 184.6.69 SerializeToBuffer(options as Integer=0, padding as Integer=0) as string

184.6.69  SerializeToBuffer(options as Integer=0, padding as Integer=0) as string

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: SerializeToBuffer serializes an XMP object into a string as RDF.

Example:

```vbs
dim x as new XMPMetaMBS
dim registeredPrefix as string

call x.RegisterNamespace ("xwnv", "xwnv", registeredPrefix)
```
x.SetProperty "xwnv","MZSTID","test"

MsgBox x.SerializeToBuffer

Notes: Same as other SerializeToBuffer method, but with newline="", indent=0 and baseIndent=0. See also:

- 184.6.68 SerializeToBuffer(options as Integer, padding as Integer, newline as string, indent as string="", baseIndent as Integer=0) as string

184.6.70 SetArrayItem(schemaNS as string, arrayName as string, itemIndex as Integer, itemValue as string, options as Integer=0)

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** SetArrayItem provides access to items within an array.

**Notes:**
The index is passed as an integer, you need not worry about the path string syntax for array items, convert a loop index to a string, etc. The array passed to SetArrayItem must already exist. See also AppendArrayItem.

In normal usage the selected array item is modified. A new item is automatically appended if the index is the array size plus 1. A new item may be inserted before or after any item by using one of the following option flags:

- kXMP_InsertBeforeItem = & h4000 Insert a new array item before the selected one.
- kXMP_InsertAfterItem = & h8000 Insert a new array item after the selected one.

**Parameters:**

- **schemaNS** The namespace URI for the array. Has the same usage as in GetProperty.
- **arrayName** The name of the array. May be a general path expression, must not be an empty string. Has the same namespace prefix usage as propName in GetProperty.
- **itemIndex** The index of the desired item. Arrays in XMP are indexed from 1. The constant kXMP_ArrayLastItem always refers to the last existing array item.
- **itemValue** An UTF-8 string that is the value of the array item, if the array item has a value. Has the same usage as propValue in GetProperty.
- **options** Option flags describing the item. See the earlier description.
184.6.71  SetLocalizedText(schemaNS as string, altTextName as string, genericLang as string, specificLang as string, itemValue as string, options as Integer=0)

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** SetLocalizedText modifies the value of a selected item in an alt-text array.

**Notes:**
Creates an appropriate array item if necessary, and handles special cases for the x-default item.

If the selected item is from a match with the specific language, the value of that item is modified. If the existing value of that item matches the existing value of the x-default item, the x-default item is also modified. If the array only has 1 existing item (which is not x-default), an x-default item is added with the given value.

If the selected item is from a match with the generic language and there are no other generic matches, the value of that item is modified. If the existing value of that item matches the existing value of the x-default item, the x-default item is also modified. If the array only has 1 existing item (which is not x-default), an x-default item is added with the given value.

If the selected item is from a partial match with the generic language and there are other partial matches, a new item is created for the specific language. The x-default item is not modified.

If the selected item is from the last 2 rules then a new item is created for the specific language. If the array only had an x-default item, the x-default item is also modified. If the array was empty, items are created for the specific language and x-default.

**Parameters:**

- **schemaNS**   The namespace URI for the alt-text array. Has the same usage as in GetProperty.
- **altTextName** The name of the alt-text array. May be a general path expression, must not be an empty string. Has the same namespace prefix usage as propName in GetProperty.
- **genericLang** The name of the generic language as an RFC 3066 primary subtag.
- **specificLang** The name of the specific language as an RFC 3066 tag. Must not be an empty string.
- **itemValue** An UTF-8 string that is the new value for the appropriate array item.
- **options** Option flags, none are defined at present.

184.6.72  SetProperty(schemaNS as string, propName as string, propValue as string, options as Integer=0)

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** SetProperty is the simplest property setter, mainly for top level simple properties or after using the path
composition functions.

Notes:

Parameters:

schemaNS The namespace URI for the property. Has the same usage as in GetProperty.
propName The name of the property. Has the same usage as in GetProperty.
propValue An UTF-8 string that is the value of the property, if the property has a value.
Options and non-leaf levels of structs do not have values.
options Option flags describing the property.

184.6.73 SetPropertyBoolean(schemaNS as string, propName as string, propValue as boolean)

MBS XMP Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** SetPropertyBoolean sets the value of a Boolean property from a boolean.

Notes:

Parameters:

schemaNS The namespace URI for the property. Has the same usage as in GetProperty.
propName The name of the property. Has the same usage as in GetProperty.
propValue The bool value to be assigned to the property.
options An integer variable that is assigned option flags describing the property.

See also:

- 184.6.74 SetPropertyBoolean(schemaNS as string, propName as string, propValue as boolean, options as Integer)

184.6.74 SetPropertyBoolean(schemaNS as string, propName as string, propValue as boolean, options as Integer)

MBS XMP Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** SetPropertyBoolean sets the value of a Boolean property from a boolean.

Notes:

Parameters:

See also:
schemaNS | The namespace URI for the property. Has the same usage as in GetProperty.
propName | The name of the property. Has the same usage as in GetProperty.
propValue | The bool value to be assigned to the property.
options  | An integer variable that is assigned option flags describing the property.

- 184.6.73 SetPropertyBoolean(schemaNS as string, propName as string, propValue as boolean)

184.6.75 SetPropertyDate(schemaNS as string, propName as string, propValue as XMPDateTimeMBS, options as Integer=0)

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** SetPropertyDate sets the value of a date/time property from an XMPDateTimeMBS object.

**Notes:**

Parameters:

- schemaNS: The namespace URI for the property. Has the same usage as in GetProperty.
- propName: The name of the property. Has the same usage as in GetProperty.
- propValue: The XMPDateTimeMBS object to be assigned to the property.
- options: Option flags describing the property.

184.6.76 SetPropertyFloat(schemaNS as string, propName as string, propValue as Double)

MBS XMP Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** SetPropertyFloat sets the value of a floating point property from a double.

**Notes:**

Parameters:

- schemaNS: The namespace URI for the property. Has the same usage as in GetProperty.
- propName: The name of the property. Has the same usage as in GetProperty.
- propValue: The double float value to be assigned to the property.
- options: Option flags describing the property.

See also:

- 184.6.77 SetPropertyFloat(schemaNS as string, propName as string, propValue as Double, options as Integer)
184.6.77  SetPropertyFloat(schemaNS as string, propName as string, propValue as Double, options as Integer)

MBS XMP Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** SetPropertyFloat sets the value of a floating point property from a double.

**Notes:**

Parameters:

- schemaNS  The namespace URI for the property. Has the same usage as in GetProperty.
- propName  The name of the property. Has the same usage as in GetProperty.
- propValue  The double float value to be assigned to the property.
- options   Option flags describing the property.

See also:

- 184.6.76 SetPropertyFloat(schemaNS as string, propName as string, propValue as Double)

184.6.78  SetPropertyInt64Double(schemaNS as string, propName as string, propValue as Double, options as Integer=0)

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** SetPropertyInt64Double sets the value of a 64 bit integer property from a double.

**Notes:**

Parameters:

- schemaNS  The namespace URI for the property. Has the same usage as in GetProperty.
- propName  The name of the property. Has the same usage as in GetProperty.
- propValue  The double value to be assigned to the property.
- options   Option flags describing the property.

184.6.79  SetPropertyInteger(schemaNS as string, propName as string, propValue as Integer)

MBS XMP Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** SetPropertyInteger sets the value of an integer property from an integer.

**Notes:**

Parameters:
184.6. CLASS XMPMETAMBS

schemaNS The namespace URI for the property. Has the same usage as in GetProperty.
propName The name of the property. Has the same usage as in GetProperty.
propValue The long integer value to be assigned to the property.
options Option flags describing the property.

See also:
• 184.6.80 SetPropertyInteger(schemaNS as string, propName as string, propValue as Integer, options as Integer)

184.6.80 SetPropertyInteger(schemaNS as string, propName as string, propValue as Integer, options as Integer)

MBS XMP Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
SetPropertyInteger sets the value of an integer property from an integer.

**Notes:**

Parameters:

schemaNS The namespace URI for the property. Has the same usage as in GetProperty.
propName The name of the property. Has the same usage as in GetProperty.
propValue The long integer value to be assigned to the property.
options Option flags describing the property.

See also:
• 184.6.79 SetPropertyInteger(schemaNS as string, propName as string, propValue as Integer)

184.6.81 SetPropertyInteger64(schemaNS as string, propName as string, propValue as Int64, options as Integer=0)

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Sets the value of an integer property using an Int64.

**Notes:**

Sets a property with a binary value, creating it if necessary.

schemaNS: The namespace URI; see GetProperty().
propName: The name of the property. Can be a general path expression, must not be "" or the empty string; see GetProperty() for namespace prefix usage.
propValue: The new binary value.

options: Option flags describing the property; a logical OR of allowed bit-flag constants; see kPropValueIsStruct and following. Must match the type of a property that already exists.

184.6.82 SetQualifier(schemaNS as string, propName as string, qualNS as string, qualName as string, qualValue as string, options as Integer=0)

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: SetQualifier provides access to a qualifier attached to a property.

Notes:
The namespace for the qualifier is passed as a URI, you need not worry about the path string syntax. In many regards qualifiers are like struct fields. See the introductory discussion of qualified properties for more information.

The names of qualifiers should be XML qualified names, that is within an XML namespace. The path syntax for a qualified name uses the namespace prefix, which is unreliable because the prefix is never guaranteed. The URI is the formal name, the prefix is just a local shorthand in a given sequence of XML text.

Parameters:

schemaNS The namespace URI for the struct. Has the same usage as in GetProperty.
propName The name of the property to which the qualifier is attached. Has the same usage as in GetProperty.
qualNS The namespace URI for the qualifier. Has the same URI and prefix usage as the schemaNS parameter.
qualName The name of the qualifier. Must be a single XML name, must not be an empty string. Has the same namespace prefix usage as the propName parameter.
qualValue An UTF-8 string that is the value of the qualifier, if the qualifier has a value. Has the same usage as propValue in GetProperty.
options Option flags describing the qualifier.

184.6.83 SetStructField(schemaNS as string, structName as string, fieldNS as string, fieldName as string, fieldValue as string, options as Integer=0)


Notes:
The namespace for the field is passed as a URI, you need not worry about the path string syntax.
The names of fields should be XML qualified names, that is within an XML namespace. The path syntax for a qualified name uses the namespace prefix, which is unreliable because the prefix is never guaranteed. The URI is the formal name, the prefix is just a local shorthand in a given sequence of XML text.

Parameters:

- **schemaNS** The namespace URI for the struct. Has the same usage as in GetProperty.
- **structName** The name of the struct. May be a general path expression, must not be an empty string. Has the same namespace prefix usage as propName in GetProperty.
- **fieldNS** The namespace URI for the field. Has the same URI and prefix usage as the schemaNS parameter.
- **fieldName** The name of the field. Must be a single XML name, must not be null or the empty string. Has the same namespace prefix usage as the structName parameter.
- **fieldValue** An UTF-8 string that is the value of the field, if the field has a value. Has the same usage as propValue in GetProperty.
- **options** Option flags describing the field.

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**184.6.84 Sort**

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** Sorts the data model tree of an XMP object. **Notes:**

Use this function to sort the data model of an XMP object into a canonical order. This can be convenient when comparing data models, (e.g. by text comparison of DumpObject output).

At the top level the namespaces are sorted by their prefixes. Within a namespace, the top level properties are sorted by name. Within a struct, the fields are sorted by their qualified name, i.e. their XML prefix:local form. Unordered arrays of simple items are sorted by value. Language Alternative arrays are sorted by the xml:lang qualifiers, with the "x-default" item placed first.

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**184.6.85 Properties**

**184.6.86 Name as string**

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The object name.
184.6.87 Constants

184.6.88 kAllowCommas = & h10000000

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for the property accessor functions.  
**Notes:** Used by CatenateArrayItems and SeparateArrayItems.

184.6.89 kArrayLastItem = -1

MBS XMP Plugin, Plugin Version: 9.4. **Function:** The index constant for the last item.

184.6.90 kDeleteEmptyValues = 4

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for RemoveProperties() and AppendProperties().  
**Notes:** Delete properties if the new value is empty.

184.6.91 kDeleteExisting = & h20000000

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants.  
**Notes:** Used by SetXyz functions to delete any pre-existing property.

184.6.92 kDoAllProperties = 1

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for RemoveProperties() and AppendProperties().  
**Notes:** Do all properties, default is just external properties.

184.6.93 kEncodeUTF16Big = 2

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for SerializeToBuffer().  
**Notes:** Use UTF16 big-endian encoding.
184.6.94 kEncodeUTF16Little = 3

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for SerializeToBuffer().
**Notes:** Use UTF16 little-endian encoding

184.6.95 kEncodeUTF32Big = 4

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for SerializeToBuffer().
**Notes:** Use UTF32 big-endian encoding

184.6.96 kEncodeUTF32Little = 5

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for SerializeToBuffer().
**Notes:** Use UTF32 little-endian encoding

184.6.97 kEncodeUTF8 = 0

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for SerializeToBuffer().
**Notes:** Use UTF8 encoding

184.6.98 kEncodingMask = & \text{h}7

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for SerializeToBuffer().
**Notes:** Bit-flag mask for encoding-type bits

184.6.99 kExactPacketLength = & \text{h}200

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for SerializeToBuffer().
**Notes:** The padding parameter is the overall packet length.

184.6.100 kImplReservedMask = & \text{h}70000000

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants.
184.6.101  kIncludeAliases = & h800

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for RemoveProperties() and AppendProperties().
**Notes:** Include aliases, default is just actual properties.

184.6.102  kIncludeThumbnailPad = & h100

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for SerializeToBuffer().
**Notes:** Include a padding allowance for a thumbnail image.

184.6.103  kInsertAfterItem = & h8000

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants for the option for array item location.
**Notes:** Insert a new item after the given index.

184.6.104  kInsertBeforeItem = & h4000

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants for the option for array item location.
**Notes:** Insert a new item before the given index.
184.6. CLASS XMPMETAMBS

184.6.105 kIterAliases = 1

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants for the option bit flags for XMPIteratorMBS construction.
**Notes:** Iterate the global alias table.

184.6.106 kIterClassMask = &hFF

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants for the option bit flags for XMPIteratorMBS construction.
**Notes:** The low 8 bits are an enum of what data structure to iterate.

184.6.107 kIterIncludeAliases = &h800

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants for the option bit flags for XMPIteratorMBS construction.
**Notes:** Include aliases, default is just actual properties.

184.6.108 kIterJustChildren = &h100

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants for the option bit flags for XMPIteratorMBS construction.
**Notes:** Just do the immediate children of the root, default is subtree.

184.6.109 kIterJustLeafName = &h400

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants for the option bit flags for XMPIteratorMBS construction.
**Notes:** Return just the leaf part of the path, default is the full path.

184.6.110 kIterJustLeafNodes = &h200

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants for the option bit flags for XMPIteratorMBS construction.
**Notes:** Just do the leaf nodes, default is all nodes in the subtree.
184.6.111  \texttt{kIterNamespaces} = 2

MBS XMP Plugin, Plugin Version: 9.4. \textbf{Function}: One of the constants for the option bit flags for XMPIteratorMBS construction.
\textbf{Notes}: Iterate the global namespace table.

184.6.112  \texttt{kIterOmitQualifiers} = & h1000

MBS XMP Plugin, Plugin Version: 9.4. \textbf{Function}: One of the constants for the option bit flags for XMPIteratorMBS construction.
\textbf{Notes}: Omit all qualifiers.

184.6.113  \texttt{kIterProperties} = 0

MBS XMP Plugin, Plugin Version: 9.4. \textbf{Function}: One of the constants for the option bit flags for XMPIteratorMBS construction.
\textbf{Notes}: Iterate the property tree of a TXMPMeta object.

184.6.114  \texttt{kIterSkipSiblings} = 2

MBS XMP Plugin, Plugin Version: 9.4. \textbf{Function}: One of the constants for the option bit flags for Skip.
\textbf{Notes}: Skip the subtree below and remaining siblings of the current node.

184.6.115  \texttt{kIterSkipSubtree} = 1

MBS XMP Plugin, Plugin Version: 9.4. \textbf{Function}: One of the constants for the option bit flags for Skip.
\textbf{Notes}: Skip the subtree below the current node.

184.6.116  \texttt{kLittleEndianBit} = 1

MBS XMP Plugin, Plugin Version: 9.4. \textbf{Function}: One of the option bit flags for SerializeToBuffer().

184.6.117  \texttt{kNoOptions} = 0

MBS XMP Plugin, Plugin Version: 9.4. \textbf{Function}: The constant to specify to use no options.
184.6. CLASS XMPMETAMBS

184.6.118 kNS_AdobeStockPhoto = ”http://ns.adobe.com/StockPhoto/1.0/”

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants for standard XMP schema.

184.6.119 kNS_AsF = ”http://ns.adobe.com/asf/1.0/”

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants for standard XMP schema.

184.6.120 kNS_CamerARaw = ”http://ns.adobe.com/camera-raw-settings/1.0/”

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants for standard XMP schema.

184.6.121 kNS_CreatorAtom = ”http://ns.adobe.com/creatorAtom/1.0/”

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants for standard XMP schema.

184.6.122 kNS_DC = ”http://purl.org/dc/elements/1.1/”

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants from outside Adobe.
**Notes:** The XML namespace for the Dublin Core schema.

184.6.123 kNS_DICOM = ”http://ns.adobe.com/DICOM/”

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants from outside Adobe.

184.6.124 kNS_DM = ”http://ns.adobe.com/xmp/1.0/DynamicMedia/”

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants for standard XMP schema.
184.6.125  \( \text{kNS_EXIF} = "\text{http://ns.adobe.com/exif/1.0/}" \)

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants for standard XMP schema.
**Notes:** The XML namespace for Adobe’s EXIF schema.

184.6.126  \( \text{kNS_EXIF_Aux} = "\text{http://ns.adobe.com/exif/1.0/aux/}" \)

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants for standard XMP schema.

184.6.127  \( \text{kNS_IPTCCore} = "\text{http://iptc.org/std/Iptc4xmpCore/1.0/xmlns/}" \)

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants from outside Adobe.
**Notes:** The XML namespace for the IPTC Core schema.

184.6.128  \( \text{kNS_JP2K} = "\text{http://ns.adobe.com/jp2k/1.0/}" \)

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants for standard XMP schema.

184.6.129  \( \text{kNS_JPEG} = "\text{http://ns.adobe.com/jpeg/1.0/}" \)

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants for standard XMP schema.

184.6.130  \( \text{kNS_PDF} = "\text{http://ns.adobe.com/pdf/1.3/}" \)

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants for standard XMP schema.
**Notes:** The XML namespace for the PDF schema.
184.6.131  kNS_PDFA_Extension = ”http://www.aiim.org/pdfa/ns/extension/”

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants from outside Adobe.

184.6.132  kNS_PDFA_Field = ”http://www.aiim.org/pdfa/ns/field# ”

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants from outside Adobe.

184.6.133  kNS_PDFA_ID = ”http://www.aiim.org/pdfa/ns/id/”

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants from outside Adobe.

184.6.134  kNS_PDFA_Property = ”http://www.aiim.org/pdfa/ns/property# ”

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants from outside Adobe.

184.6.135  kNS_PDFA_Schema = ”http://www.aiim.org/pdfa/ns/schema# ”

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants from outside Adobe.

184.6.136  kNS_PDFA_Type = ”http://www.aiim.org/pdfa/ns/type# ”

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants from outside Adobe.

184.6.137  kNS_PDFX = ”http://ns.adobe.com/pdfx/1.3/”

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants from outside Adobe.
184.6.138 kNS_PDFX_ID = ”http://www.npes.org/pdfx/ns/id/”

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants from outside Adobe.

184.6.139 kNS_Photoshop = ”http://ns.adobe.com/photoshop/1.0/”

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants for standard XMP schema.
**Notes:** The XML namespace for the Photoshop custom schema.

184.6.140 kNS_PNG = ”http://ns.adobe.com/png/1.0/”

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants for standard XMP schema.

184.6.141 kNS_PSAlbum = ”http://ns.adobe.com/album/1.0/”

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants for standard XMP schema.

184.6.142 kNS_RDF = ”http://www.w3.org/1999/02/22-rdf-syntax-ns# ”

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants from outside Adobe.
**Notes:** The XML namespace for RDF.

184.6.143 kNS_SWF = ”http://ns.adobe.com/swf/1.0/”

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants for standard XMP schema.

184.6.144 kNS_TIFF = ”http://ns.adobe.com/tiff/1.0/”

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants for standard XMP schema.
Notes: The XML namespace for Adobe’s TIFF schema.

184.6.145 kNS WAV = ”http://ns.adobe.com/xmp/wav/1.0/”


184.6.146 kNS XML = ”http://www.w3.org/XML/1998/namespace”

Notes: The XML namespace for XML.

184.6.147 kNS XMP = ”http://ns.adobe.com/xap/1.0/”

Notes: The XML namespace for the XMP ”basic” schema.

184.6.148 kNS XMP BJ = ”http://ns.adobe.com/xap/1.0/bj/”

Notes: The XML namespace for the job management schema.

184.6.149 kNS XMP Dimensions = ”http://ns.adobe.com/xap/1.0/sType/Dimensions# ”

MBS XMP Plugin, Plugin Version: 9.4. Function: One of the XML namespace constants for qualifiers and structured property fields.
Notes: The XML namespace for fields of the Dimensions type.

184.6.150 kNS XMP Font = ”http://ns.adobe.com/xap/1.0/sType/Font# ”

MBS XMP Plugin, Plugin Version: 9.4. Function: One of the XML namespace constants for qualifiers and structured property fields.
184.6.151  \texttt{kNS\_XMP\_Graphics} = \\
\texttt{"http://ns.adobe.com/xap/1.0/g/"}

MBS XMP Plugin, Plugin Version: 9.4. \textbf{Function:} One of the XML namespace constants for qualifiers and structured property fields.

184.6.152  \texttt{kNS\_XMP\_G\_IMG} = \\
\texttt{"http://ns.adobe.com/xap/1.0/g/img/"}

\textbf{Notes:} Deprecated XML namespace constant.

184.6.153  \texttt{kNS\_XMP\_IdentifierQual} = \\
\texttt{"http://ns.adobe.com/xmp/Identifier/qual/1.0/"}

MBS XMP Plugin, Plugin Version: 9.4. \textbf{Function:} One of the XML namespace constants for qualifiers and structured property fields.
\textbf{Notes:} The XML namespace for qualifiers of the xmp:Identifier property.

184.6.154  \texttt{kNS\_XMP\_Image} = \\
\texttt{"http://ns.adobe.com/xap/1.0/g/img/"}

MBS XMP Plugin, Plugin Version: 9.4. \textbf{Function:} One of the XML namespace constants for qualifiers and structured property fields.
\textbf{Notes:} The XML namespace for fields of a graphical image. Used for the Thumbnail type.

184.6.155  \texttt{kNS\_XMP\_ManifestItem} = \\
\texttt{"http://ns.adobe.com/xap/1.0/sType/ManifestItem#"}

MBS XMP Plugin, Plugin Version: 9.4. \textbf{Function:} One of the XML namespace constants for qualifiers and structured property fields.

184.6.156  \texttt{kNS\_XMP\_MM} = \\
\texttt{"http://ns.adobe.com/xap/1.0/mm/"}

\textbf{Notes:} The XML namespace for the XMP digital asset management schema.
184.6.157  kNS_XMP_Note = ”http://ns.adobe.com/xmp/note/”

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants for standard XMP schema.

184.6.158  kNS_XMP_PagedFile = ”http://ns.adobe.com/xap/1.0/t/pg/”

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants for qualifiers and structured property fields.

184.6.159  kNS_XMP_ResourceEvent = ”http://ns.adobe.com/xap/1.0/sType/ResourceEvent# ”

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants for qualifiers and structured property fields.
**Notes:** The XML namespace for fields of the ResourceEvent type.

184.6.160  kNS_XMP_ResourceRef = ”http://ns.adobe.com/xap/1.0/sType/ResourceRef# ”

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants for qualifiers and structured property fields.
**Notes:** The XML namespace for fields of the ResourceRef type.

184.6.161  kNS_XMP_Rights = ”http://ns.adobe.com/xap/1.0/rights/”

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants for standard XMP schema.
**Notes:** The XML namespace for the XMP copyright schema.

184.6.162  kNS_XMP_ST_Job = ”http://ns.adobe.com/xap/1.0/sType/Job# ”

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants for qualifiers and structured property fields.
**Notes:** The XML namespace for fields of the JobRef type.
184.6.163  kNS_XMP_ST_Version = ”http://ns.adobe.com/xap/1.0/sType/Version# ”

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants for qualifiers and structured property fields.  
**Notes:** The XML namespace for fields of the Version type.

184.6.164  kNS_XMP_T = ”http://ns.adobe.com/xap/1.0/t/”

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants for standard XMP schema.  
**Notes:**  
The XML namespace for the XMP text document schema.  
Deprecated XML namespace constant.

184.6.165  kNS_XMP_Text = ”http://ns.adobe.com/xap/1.0/t/”

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants for qualifiers and structured property fields.

184.6.166  kNS_XMP_T_PG = ”http://ns.adobe.com/xap/1.0/t/pg/”

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the XML namespace constants for standard XMP schema.  
**Notes:**  
The XML namespace for the XMP paged document schema.  
Deprecated XML namespace constant.

184.6.167  kOmitAllFormatting = & h800

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for SerializeToBuffer().  
**Notes:** Omit all formatting whitespace.
184.6. CLASS XMPMETA

184.6.168  kOmitPacketWrapper = & h10

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for SerializeToBuffer().
**Notes:** Omit the XML packet wrapper.

184.6.169  kOmitXMPMetaElement = & h1000

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for SerializeToBuffer().
**Notes:** Omit the x:xmpmeta element surrounding the rdf:RDF element.

184.6.170  kParseMoreBuffers = 2

MBS XMP Plugin, Plugin Version: 9.4. **Function:** This is the not last input buffer for this parse stream.

184.6.171  kPropArrayFormMask = & h1E00

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for the property accessor functions.
**Notes:** Property type bit-flag mask for all array types

184.6.172  kPropArrayIsAlternate = & h800

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for the property accessor functions.
**Notes:** Implies kPropArrayIsOrdered, items are alternates. It is serialized using an rdf:Alt container.

184.6.173  kPropArrayIsAltText = & h1000

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for the property accessor functions.
**Notes:** Implies kPropArrayIsAlternate, items are localized text. Each array element is a simple property with an xml:lang attribute.
184.6.174  kPropArrayIsOrdered = & h400

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for the property accessor functions.
**Notes:** Implies kPropValueIsArray, item order matters. It is serialized using an rdf:Seq container.

184.6.175  kPropArrayIsUnordered = & h200

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for the property accessor functions.
**Notes:** The item order does not matter.

184.6.176  kPropArrayLocationMask = & hC000

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants for the option bit flags for the property setting functions.
**Notes:** Bit-flag mask for array-item location bits

184.6.177  kPropCompositeMask = & h1F00

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for the property accessor functions.
**Notes:** Property type bit-flag mask for composite types (array and struct)

184.6.178  kPropHasAliases = & h20000

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for the property accessor functions.
**Notes:** This property is the base value (actual) for a set of aliases. This is only returned by GetProperty() and then only if the property name is simple, not an path expression.

184.6.179  kPropHasLang = & h40

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for the property accessor functions.
**Notes:** Implies kPropHasQualifiers, property has xml:lang.
184.6.180  kPropHasQualifiers = & h10

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for the property accessor functions.
**Notes:** The property has qualifiers, includes rdf:type and xml:lang.

184.6.181  kPropHasType = & h80

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for the property accessor functions.
**Notes:** Implies kPropHasQualifiers, property has rdf:type.

184.6.182  kPropIsAlias = & h10000

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for the property accessor functions.
**Notes:** This property is an alias name for another property. This is only returned byGetProperty() and then only if the property name is simple, not an path expression.

184.6.183  kPropIsDerived = & h200000

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for the property accessor functions.
**Notes:** The value of this property is derived from the document content.

184.6.184  kPropIsInternal = & h40000

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for the property accessor functions.
**Notes:** The value of this property is ”owned” by the application, and should not generally be editable in a UI.

184.6.185  kPropIsQualifier = & h20

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for the property accessor functions.
**Notes:**
This is a qualifier for some other property, includes rdf:type and xml:lang. Qualifiers can have arbitrary structure, and can themselves have qualifiers. If the qualifier itself has a structured value, this flag is only set for the top node of the qualifier’s subtree.

184.6.186 kPropIsStable = & h100000

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for the property accessor functions.  
**Notes:** The value of this property is not derived from the document content.

184.6.187 kPropValueIsArray = & h200

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for the property accessor functions.  
**Notes:** The value is an array (RDF alt/bag/seq). The "ArrayIs..." flags identify specific types of array; default is a general unordered array, serialized using an rdf:Bag container.

184.6.188 kPropValueIsStruct = & h100

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for the property accessor functions.  
**Notes:** The value is a structure with nested fields.

184.6.189 kPropValueIsURI = 2

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for the property accessor functions.  
**Notes:** The XML string form of the property value is a URI, use rdf:resource attribute. DISCOURAGED

184.6.190 kPropValueOptionsMask = 2

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants of the option bit flags for the property setting functions.  
**Notes:** Bit-flag mask for property-value option bits
184.6. CLASS XMPMETAMBS

184.6.191 kReadOnlyPacket = & h20

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for SerializeToBuffer().
**Notes:** Default is a writeable packet.

184.6.192 kReplaceOldValues = 2

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for RemoveProperties() and AppendProperties().
**Notes:** Replace existing values, default is to leave them.

184.6.193 kRequireXMPMeta = 1

MBS XMP Plugin, Plugin Version: 9.4. **Function:** Require a surrounding x:xmpmeta element.

184.6.194 kStrictAliasing = 4

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the constants for the option bit flags for ParseFromBuffer().
**Notes:** Do not reconcile alias differences, throw an exception.

184.6.195 kUseCompactFormat = & h40

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for SerializeToBuffer().
**Notes:** Use a compact form of RDF.

184.6.196 kUseNullTermination = 0

MBS XMP Plugin, Plugin Version: 9.4. **Function:** The length constants for a string to determinate the length automatically.

184.6.197 kUTF16Bit = 2

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for SerializeToBuffer().
184.6.198  kUTF32Bit = 4

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for SerializeToBuffer().

184.6.199  kWriteAliasComments = & h400

MBS XMP Plugin, Plugin Version: 9.4. **Function:** One of the option bit flags for SerializeToBuffer().  
**Notes:** Show aliases as XML comments.

184.6.200  kXMPFiles_IgnoreLocalText = 2

MBS XMP Plugin, Plugin Version: 11.0. **Function:** One of the flags for XMPFiles initialize.  
**Notes:** Ignore non-XMP text that uses an undefined "local" encoding.

184.6.201  kXMPFiles_ServerMode = 2

MBS XMP Plugin, Plugin Version: 11.0. **Function:** One of the flags for XMPFiles initialize.  
**Notes:** Combination of flags necessary for server products using XMPFiles.

184.6.202  kXMPTemplate_AddNewProperties = 8

MBS XMP Plugin, Plugin Version: 11.0. **Function:** One of the option constants for ApplyTemplate function.  
**Notes:** Perform an Add operation, add properties if they don’t already exist.

184.6.203  kXMPTemplate_ClearUnnamedProperties = & h10

MBS XMP Plugin, Plugin Version: 11.0. **Function:** One of the option constants for ApplyTemplate function.  
**Notes:** Perform a Clear operation, keep named properties and delete everything else.

184.6.204  kXMPTemplate_InvokeInternalProperties = 1

MBS XMP Plugin, Plugin Version: 11.0. **Function:** One of the option constants for ApplyTemplate function.
**184.6. CLASS XMPMETAMBS**

**Notes:** Do all properties, default is just external properties.

**184.6.205 kXMPTemplate.ReplaceExistingProperties = 2**

MBS XMP Plugin, Plugin Version: 11.0. **Function:** One of the option constants for ApplyTemplate function.
**Notes:** Perform a Replace operation, add new properties and modify existing ones.

**184.6.206 kXMPTemplate.ReplaceWithDeleteEmpty = 4**

MBS XMP Plugin, Plugin Version: 11.0. **Function:** One of the option constants for ApplyTemplate function.
**Notes:** Similar to Replace, also delete if the template has an empty value.

**184.6.207 kXMP_NS_BWF = ”http://ns.adobe.com/bwf/bext/1.0/”**

MBS XMP Plugin, Plugin Version: 11.0. **Function:** One of the XML namespace constants for standard XMP schema.

**184.6.208 kXMP_NS_Script = ”http://ns.adobe.com/xmp/1.0/Script/”**

MBS XMP Plugin, Plugin Version: 11.0. **Function:** One of the XML namespace constants for standard XMP schema.

**184.6.209 kXMP_WriteAliasComments = & h400**

MBS XMP Plugin, Plugin Version: 11.0. **Function:** One of the option flags for SerializeToBuffer.
**Notes:** Show aliases as XML comments.

**184.6.210 Version = ”5.5.0”**

MBS XMP Plugin, Plugin Version: 11.0. **Function:** The version string of the XMP library.
184.7  class XMPPacketInfoMBS

184.7.1  class XMPPacketInfoMBS

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for information about a xmp packet.

184.7.2  Properties

184.7.3  CharForm as Integer

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Character format using the values kChar8Bit, kChar16BitBig, etc.
**Notes:** (Read and Write property)

184.7.4  HasWrapper as Boolean

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
True if there is a packet wrapper, the "<?xpacket...?>" XML processing instructions.
**Notes:** (Read and Write property)

184.7.5  Length as Integer

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Packet length in the file in bytes, -1 if unknown.
**Notes:** (Read and Write property)

184.7.6  Offset as Int64

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Packet offset in the file in bytes, -1 if unknown.
**Notes:** (Read and Write property)

184.7.7  PadSize as Integer

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Packet padding size in bytes, zero if unknown.
184.7. CLASS XMPPACKETINFOMBS

Notes: (Read and Write property)

184.7.8 Writeable as Boolean

MBS XMP Plugin, Plugin Version: 9.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
True if there is a packet wrapper and the trailer says writeable by dumb packet scanners.  
Notes: (Read and Write property)
184.8 class XMPScannerMBS

184.8.1 class XMPScannerMBS

MBS XMP Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The class to scan any file stream for XMP data.

**Example:**

```vbs
' get file
source=GetOpenFolderItem("any")
if source=nil then Return

b=source.OpenAsBinaryFile(false)
if b=nil then Return

' read file to memory
l=b.Length
s=b.Read(l)

' scan for xmp blocks
MsgBox "Scanning "+str(lenb(s))+" of "+str(l)+" bytes."
xs=new XMPScannerMBS(l)
xs.Scan(s,0)

MsgBox "Found "+xs.Report+" blocks"

n=xs.Report-1

c=0
for i=0 to n

xn=xs.Snip(i)

if xn.State=3 then '// found
if xn.Length>50 then
try
b.Position=xn.Offset
```

```vbs
' try
```

```vbs
```
s=b.Read(xn.Length)

// debug output xmp data
'WriteInputXMP dest,s

// try to parse
x=new XMPMetaMBS(s)

// work with xmp meta data
catch r as XMPExceptionMBS
MsgBox "ExtractXMP failed on: " + r.message
end try
else
MsgBox "Found small xmp block? "+str(xn.Length)
end if
end if
end if
next

184.8.2 Methods

184.8.3 Constructor


See also:

- 184.8.4 Constructor(StreamLength as Integer)

184.8.4 Constructor(StreamLength as Integer)

MBS XMP Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. Function: Constructor to create a XMPS scanner which reads the given number of bytes.

See also:

- 184.8.3 Constructor

184.8.5 Report as Integer


Notes: The snipps found are saved in an array which you can access using the snip() function. Returns the number of entries in this array.
184.8.6 **Scan(Buffer as string, Offset as Int64)**

MBS XMP Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Scans the given part of the input, incorporating it in to the known snips.
**Notes:** The Offset is the offset of this block of input relative to the entire stream.

184.8.7 **Snip(index as UInt32) as XMPSnipMBS**

MBS XMP Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns the snip with the given index.
**Notes:**
index is zero based.
Returns nil on any error.
You must call Report before this method.

184.8.8 **SnipCount as UInt32**

MBS XMP Plugin, Plugin Version: 11.3, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Number of snips found so far.

184.8.9 **StreamAllScanned as boolean**

MBS XMP Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
Returns true if all of the stream has been seen.
184.9. **CLASS XMPSNIPMBS**

184.9  **class XMPSnipMBS**

184.9.1  **class XMPSnipMBS**

MBS XMP Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The class for the XMP Snips found by the XMPScannerMBS class.

184.9.2  **Properties**

184.9.3  **Access as Integer**

MBS XMP Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The read-only/read-write access from the end attribute.
**Notes:** (Read and Write property)

184.9.4  **BytesAttr as Int64**

MBS XMP Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
The value of the bytes attribute, -1 if not present.
**Notes:** (Read only property)

184.9.5  **CharForm as Integer**

MBS XMP Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:**
How the packet is divided into characters.
**Notes:**
The values allow easy testing for 16/32 bit and big/little endian.

```
eChar8Bit     = 0
eChar16BitBig = 2
eChar16BitLittle = 3
eChar32BitBig = 4
eChar32BitLittle = 5
```

**Notes:** (Read and Write property)
184.9.6 EncodingAttr as String

MBS XMP Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The value of the encoding attribute, if any, with nulls removed. **Notes:** (Read and Write property)

184.9.7 Length as Int64

MBS XMP Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The length in bytes of this snip. **Notes:** (Read only property)

184.9.8 Offset as Int64

MBS XMP Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The byte offset of this snip within the input stream. **Notes:** (Read only property)

184.9.9 OutOfOrder as Integer

MBS XMP Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** If true, this snip was seen before the one in front of it. **Notes:** (Read and Write property)

184.9.10 State as Integer

MBS XMP Plugin, Plugin Version: 6.5, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The state of this snip. **Notes:**

   constants:

    eNotSeenSnip          0  This snip has not been seen yet.
ePendingSnip           1  This snip is an input buffer being processed.
eRawInputSnip           2  This snip is raw input, it doesn’t contain any part of an XMP packet.
eValidPacketSnip        3  This snip is a complete, valid XMP packet.
ePartialPacketSnip      4  This snip contains the start of a possible XMP packet.
eBadPacketSnip          5  This snip contains a complete, but semantically incorrect XMP packet.
184.9. CLASS XMPSNIPMBS

(Read and Write property)
184.10  class XMPTextOutputMBS

184.10.1  class XMPTextOutputMBS

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** An event class for text output.

**Notes:** You may want to make a subclass which collects all the strings into one string or write them to a file.

184.10.2  Events

184.10.3  Output(text as string) as Integer


**Notes:**

You may get more than one event per line.

Return 0 for success or something else for failure.
184.11 class XMPVersionInfoMBS

184.11.1 class XMPVersionInfoMBS


**Example:**

```vba
dim v as XMPVersionInfoMBS
v=XMPMetaMBS.GetVersionInfo
MsgBox v.Message
```

**Notes:** Constructor sets values.

184.11.2 Properties

184.11.3 Build as Integer

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A rolling build number, monotonically increasing in a release.

**Notes:** (Read and Write property)

184.11.4 Flags as Integer


**Notes:** (Read and Write property)

184.11.5 IsDebug as boolean

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** True if this is a debug build.

**Notes:** (Read and Write property)

184.11.6 Major as Integer

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The primary release number, the "1" in version "1.2.3".
184.11.7 Message as String

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** A comprehensive version information string.

**Example:**

```vba
dim v as XMPVersionInfoMBS
v=XMPMetaMBS.GetVersionInfo
MsgBox v.Message
```

**Notes:** (Read and Write property)

184.11.8 Micro as Integer

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The tertiary release number, the "3" in version "1.2.3".

**Notes:** (Read and Write property)

184.11.9 Minor as Integer

MBS XMP Plugin, Plugin Version: 6.4, Console & Web: Yes, Mac: Yes, Win: Yes, Linux: Yes. **Function:** The secondary release number, the "2" in version "1.2.3".

**Notes:** (Read and Write property)
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Chapter 186

The FAQ

186.0.1 Can anyone help me convert seconds to time in this format hh:mm:ss?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: Sure, here’s a routine I use (which has an advantage over the previously-posted Date-based solution in that you don’t have to rely on the creation of an object – all that happens is some division and string concatenation):

Example:

Function SecsToTimeString(timeInSecs as Integer, padHours as boolean, padMinutes as boolean) as string
// Given an amount time (in seconds), generates a string representing that amount
// of time. The padHours and padMinutes parameters determine whether to display
// hours and minutes if their values are zero.

// Examples:
// timeInSecs = 90, padHours = true; returns ”00:01:30”
// timeInSecs = 1, padHours = false, padMinutes = true; returns ”00:01”
// timeInSecs = 3601, padMinutes = false; returns ”01:00:01”

dim hours, minutes, seconds as Integer
dim hoursString, minutesString as string
hours = timeInSecs / 3600
minutes = (timeInSecs mod 3600) / 60
seconds = timeInSecs mod 60
if hours = 0 then
if padHours then
hoursString = ”00:“
else
hoursString = ”“
end if
else
end if
hoursString = Format(hours, "# # ":")
end if
if minutes = 0 then
if hours <> 0 or padMinutes then
minutesString = "00:"
else
minutesString = "" end if
else
minutesString = Format(minutes, "00:")
end if
return hoursString + minutesString + Format(seconds, "00")
End Function

Notes: (from the rb mailinglist)

186.0.2 How do I get the proper highlight color on Mac OS X for active/inactive selection?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: You can use functions from NSColor to get proper highlight color in RGB:

Example:

Function ProperHighlightColor(active as Boolean) As Color
  # if TargetCocoa
  Dim theColor As NSColorMBS
  If active Then
    theColor = NSColorMBS.alternateSelectedControlColor
  Else
    theColor = NSColorMBS.secondarySelectedControlColor
  End If

  Dim rgbColor As NSColorMBS = theColor.colorUsingColorSpaceName(NSColorSpaceMBS.NSCalibratedRGBColorSpace)
  If rgbColor <> Nil Then
    Dim red as Integer = rgbColor.redComponent * 255.0
    Dim green as Integer = rgbColor.greenComponent * 255.0
    Dim blue as Integer = rgbColor.blueComponent * 255.0
    Return RGB(red, green, blue)
  Else
    Return HighlightColor
  End If
  # else
return HighlightColor
#include "highlight.h"
#endif
End Function

Notes: As you see we convert color to Calibrated RGB for best results. See also:

- 186.0.3 How to catch delete key?
- 186.0.4 How to convert cmyk to rgb?
- 186.0.5 How to delete a folder?
- 186.0.6 How to detect if CPU if 64bit processor?
- 186.0.7 How to refresh a htmlviewer on Windows?

186.0.3 How to catch delete key?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: The following is the code in keydown event catches delete or backspace keys.

Example:

Function KeyDown(Key As String) As Boolean
    if asc(key) = 8 or asc(key) = 127 then
        MsgBox "Delete"
        Return true
    end if
End Function

See also:

- 186.0.2 How do I get the proper highlight color on Mac OS X for active/inactive selection?
- 186.0.4 How to convert cmyk to rgb?
- 186.0.5 How to delete a folder?
- 186.0.6 How to detect if CPU if 64bit processor?
- 186.0.7 How to refresh a htmlviewer on Windows?

186.0.4 How to convert cmyk to rgb?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer:
The following is the code to convert cmyk values to an RGB color datatype. It’s just a basic estimate of the color values. If you are looking for completely color accurate solution, this is not it. It should work for most people. :) 

**Example:**

```vbnet
Function CMYKToRGB(c as Integer, m as Integer, y as Integer, k as Integer) As color
    // converts c,m,y,k values (0-100) to color data type RGB
    // place this in a method. Supply C,M,Y,K values-
    // it returns color datatype
    dim color
    RGB as color
    dim r, g, b as Integer

    r=255-round(2.55*(c+k))
    if r<0 then
        r=0
    end if
    g=255-round(2.55*(m+k))
    if g<0 then
        g=0
    end if
    b=255-round(2.55*(y+k))
    if b<0 then
        b=0
    end if

    color
    RGB=RGB(r,g,b)

    return color

End Function
```

**Notes:** (from the rb mailinglist)
See also:

- 186.0.2 How do I get the proper highlight color on Mac OS X for active/inactive selection? 20806
- 186.0.3 How to catch delete key? 20807
- 186.0.5 How to delete a folder? 20809
- 186.0.6 How to detect if CPU if 64bit processor? 20810
- 186.0.7 How to refresh a htmlviewer on Windows? 20810
186.0.5  How to delete a folder?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** The following is the code deletes a folder recursively.

**Example:**

```
Sub deletefolder(f as folderitem)
  dim files(-1) as FolderItem

  if f=nil then Return

  // delete single file
  if f.Directory=false then
    f.Delete
    Return
  end if

  // get a list of all items in that folder
  dim i,c as Integer
  c=F.Count
  for i=1 to c
    files.Append f.TrueItem(i)
  next

  // delete each item
  for each fo as FolderItem in files
    if fo=nil then
      ' ignore
    elseif fo.Directory then
      deletefolder fo
    else ' file
      fo.Delete
    end if
  next

  f.Delete
End Sub
```

See also:

- 186.0.2 How do I get the proper highlight color on Mac OS X for active/inactive selection? 20806
- 186.0.3 How to catch delete key? 20807
- 186.0.4 How to convert cmyk to rgb? 20807
- 186.0.6 How to detect if CPU if 64bit processor? 20810
- 186.0.7 How to refresh a htmlviewer on Windows? 20810
186.0.6  How to detect if CPU if 64bit processor?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: Via CPUID you can ask CPU:

Example:

```vbp
Dim c As New CPUIDMBS
If c.Flags(CPUIDMBS.kFeatureLM) Then
    MsgBox "64-bit CPU"
Else
    MsgBox "32-bit CPU"
End If
```

Notes: Should work on all intel compatible CPUs.

See also:

- 186.0.2 How do I get the proper highlight color on Mac OS X for active/inactive selection? 20806
- 186.0.3 How to catch delete key? 20807
- 186.0.4 How to convert cmyk to rgb? 20807
- 186.0.5 How to delete a folder? 20809
- 186.0.7 How to refresh a htmlviewer on Windows? 20810

186.0.7  How to refresh a htmlviewer on Windows?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: You can ask the browser to reload the website with this code line:

Example:

```vbp
Call htmlViewer1.IERunJavaScriptMBS("javascript:document.location.reload()")
```

See also:

- 186.0.2 How do I get the proper highlight color on Mac OS X for active/inactive selection? 20806
- 186.0.3 How to catch delete key? 20807
- 186.0.4 How to convert cmyk to rgb? 20807
- 186.0.5 How to delete a folder? 20809
- 186.0.6 How to detect if CPU if 64bit processor? 20810
**186.0.8  Is there an example for vector graphics in REALbasic?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Try this example inside the paint event of a window:

**Example:**

```realbasic
dim v as Group2D
dim r as RectShape
dim s as StringShape

const pi=3.14

s=new StringShape
s.Text="Hello World!"
s.TextFont="Geneva"
s.TextSize=24
s.FillColor=rgb(0,0,255)
s.Italic=true
s.y=5
s.x=0

r=new RectShape

r.X=0
r.y=0
r.Height=100
r.Width=180
r.BorderColor=rgb(255,0,0)
r.FillColor=rgb(0,255,0)
r.BorderWidth=5
r.Border=50

v=new Group2d
v.Append r
v.Append s
v.Rotation=pi*-20.0/180.0
v.x=150
v.y=150

g.DrawObject v
```

**186.0.9  Picture functions do not preserve resolution values?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Yes, the picture functions return pictures with no/default resolution values.
Example:

```vba
dim l as Picture = LogoMBS(500)

l.HorizontalResolution = 300
l.VerticalResolution = 300

dim r as Picture = l.Rotate90MBS

MsgBox str(r.HorizontalResolution) + " x " + str(r.VerticalResolution)

r.HorizontalResolution = l.HorizontalResolution
r.VerticalResolution = l.VerticalResolution

MsgBox str(r.HorizontalResolution) + " x " + str(r.VerticalResolution)
```

Notes:
So please fix them yourself after calling a function.

Maybe in the future this changes, but currently you can’t really set this easily from plugin code.

186.0.10  A toolbox call needs a rect - how do I give it one?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** Fill a memoryblock like this:

**Example:**

```vba
Dim MB As Memoryblock
MB = NewMemoryBlock(8)
MB.Short(0) = window1.Top
MB.Short(2) = window1.Left
MB.Short(4) = window1.Height+window1.Top // bottom
MB.Short(6) = window1.Width+window1.Left // right
```

186.0.11  API client not supported?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** If you get this exception message on SQLConnectionMBS.Connect, we may have a problem.

**Notes:**
First case is that the given thing is not supported (e.g. MS SQL directly on Mac).
Second case is that the plugin compilation went wrong and the support for the database was not linked into the plugin. Like MySQL missing or MS SQL on Windows missing. In that case please contact us to fix the plugin.

186.0.12 Can I access Access Database with Java classes?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** You can use ucanaccess to access databases created with Microsoft

**Example:**

```vba
dim options(-1) as string

' load all the jar files we have in a folder called java:

dim appFolder as FolderItem = GetFolderItem("")

Dim count as Integer = appFolder.Parent.Child("java").Count

dim libjs() as string
For i as Integer = 1 to count
Dim f As FolderItem = appFolder.Parent.Child("java").item(i)
If f <> Nil and f.Exists Then
    libjs.append f.NativePath+";"
End If
Next

// now init virtual machine

dim library as string = Join(libjs, ":")
dim vm as new JavaVMMBS(library)

if vm.Handle = 0 then
    MsgBox "Failed to initialize virtual machine"
else
    // now make a new database connection with ucanaccess
dim d as new JavaDatabaseMBS(vm,"net.ucanaccess.jdbc.UcanaccessDriver")
Dim DbFile as FolderItem = appFolder.Parent.Child("Database11.accdb")
dim j as JavaConnectionMBS = d.getConnection("jdbc:ucanaccess://"+DbFile.NativePath)

    // select and show values
    dim r as JavaResultSetMBS = j.MySelectSQL("Select * From test")
    while r.NextRecord
        MsgBox r.getString("FirstName") +" " + r.getString("LastName")
    wend

end if

Exception e as JavaExceptionMBS
```
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MsgBox e.message+" errorcode: "+str(e.ErrorNumber)

Notes:
see website:
http://ucanaccess.sourceforge.net/site.html

186.0.13 Can I create PDF from Real Studio Report using DynaPDF?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Sorry, no. We can’t provide a graphics subclass from plugin.
**Notes:**
The is a feature request to allow graphics subclasses:
Feedback case 11391: feedback://showreport?report_id=11391

186.0.14 Can I use AppleScripts in a web application?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Yes, but they run on the server, not on the client.
**Example:**
```vbscript
dim a as new AppleScriptMBS

// query my application name
a.Compile "tell application ""System Events"" to return name of current application"

// run
a.Execute

// show result
label1.text = a.Result

// shows something like ”My Application.fcgi.debug”
```

**Notes:** This can be useful to control the server from remote, if and only if the your sever is running Mac OS X.
186.0.15 Can I use graphics class with DynaPDF?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Sorry, no. We can’t provide a graphics subclass from plugin.

**Notes:**
The is a feature request to allow graphics subclasses:
Feedback case 11391: feedback://showreport?report_id=11391

186.0.16 Can I use OGG with REALbasic?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** There is a QuickTime plugin for OGG which works with REALbasic.

**Notes:** That should be a solution for playback and recording on Mac and Windows.

186.0.17 Can I use sockets on a web application?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Yes, but they run on the server, not on the client.

**Notes:**
You can use HTTPSocket, SMTPSocket, POP3Socket, SMTPSecureSocket, SecurePOP3Socket, EasyTCP- Socket, EasyUDPSocket, AutoDiscovery, our Bonjour classes or our CURL* classes. But all of them work on the server, not on the client.

This means if you search for a printer with Bonjour, you can find the printers in the local network on your server hosting site. Using SMTPSocket may be a good idea for sending emails from the server like notifications.

186.0.18 Can I use your ChartDirector plugin on a web application?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Yes, our ChartDirector plugin works just fine on the Real Studio Web Edition.

**Example:**

```plaintext
// The data for the pie chart
dim data(-1) as Double=array(55.0, 18.0, 25.0, 22.0, 18.0, 30.0, 35.0)

// The labels for the pie chart, Words are choosen random to check font!
dim labels(-1) as string=array("Germany","Italy","France","Spain","UK","Poland","Russia")

// The colors to use for the sectors
```
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dim colors(-1) as Integer
colors.Append
colors.Append
colors.Append
colors.Append

&
&
&
&

h66aaee
heebb22
hbbbbbb
h8844ff

if TargetLinux then
CDBaseChartMBS.SetFontSearchPath ”/usr/share/fonts/truetype/msttcorefonts”
end if
// Create a PieChart object of size 360 x 300 pixels
dim c as new CDPieChartMBS(700, 600)
c.setBackground(c.linearGradientColor(0, 0, 0, c.getHeight(), & h0000cc, & h000044))
c.setRoundedFrame(& hffffff, 16)
dim tt as CDTextBoxMBS = c.addTitle(”ChartDirector Demonstration”, ”timesbi.ttf”, 18)
tt.setMargin(0, 0, 16, 0)
tt.setFontColor(& hFFFFFF)
// Set the center of the pie at (180, 140) and the radius to 100 pixels
c.setPieSize 350,300,150
// Set the sector colors
c.setColors(c.kDataColor, colors)
// Draw the pie in 3D with a pie thickness of 20 pixels
c.set3D(20)
dim t as CDTextBoxMBS = c.setLabelStyle(”arialbd.ttf”, 10, & h000000)
t.setBackground(CDPieChartMBS.kSameAsMainColor, CDPieChartMBS.kTransparent, CDPieChartMBS.softLighting(CDPieChartMBS.kRight, 0))
t.setRoundedCorners(8)
// Use local gradient shading for the sectors, with 5 pixels wide
// semi-transparent white (bbffffff) borders
c.setSectorStyle(CDPieChartMBS.kLocalGradientShading, & hbbffffff, 0)
// Set the pie data and the pie labels
c.setData data,labels
call c.setLabelStyle ”arialbd.ttf”,18
dim pic as picture = c.makeChartPicture
dim wp as new WebPicture(pic, Picture.FormatJPEG) // JPEG makes it smaller and faster
ImageView1.Picture=wp


Notes:

Be aware that our plugin produces pictures for you, which you assign to ImageViews. Transferring those pictures takes time, so you can optimize that with using WebPicture class. There you can decide between different compressions to improve speed (use JPEG instead of PNG).

e.g. if you use ubuntu, you can install the ttf-mscorefonts-installer package and call this method with "/usr/share/fonts/truetype/msttcorefonts" as the path. No backslash on the end of a path, please.

186.0.19 Can I use your DynaPDF plugin on a web application?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Yes, our DynaPDF plugin works just fine on the Real Studio Web Edition.

Notes:

PDF files are created on the server. You may want to offer a preview to the user which uses reduced resolution images to reduce the time to download the PDF.

See our Create PDF example for the Real Studio Web Edition.
http://www.monkeybreadsoftware.de/realbasic/webapps.shtml

186.0.20 Can I use your plugin controls on a web application?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** No.

186.0.21 Can you get an unique machine ID?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** There is nothing like an unique machine ID.

Notes:

1:
You can use the MAC IDs of the network interfaces.
This can be changed by the user with software tools.
And the list of network interfaces changes if user reorder the interfaces.

2:
You can use the system folder creation date/time.
This may stay equal after cloning machines or after migration to new PC.
3: You can use the Mac Serialnumber. Mac only and it can happen that a Mac does not have a serial number.

4: You can use the x86 CPU ID. This is x86 CPU only and does not avoid running on the same CPU in different PCs.

186.0.22 ChartDirector: Alignment Specification

Plugin Version: 8.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** ChartDirector: Alignment Specification

**Notes:**

In many ChartDirector objects, you may specify the alignment of the object’s content relative to its boundary. For example, for a TextBox object, you may specify the text’s alignment relative to the box boundary by using TextBox.setAlignment.

The ChartDirector API defines several constants for the alignment options.

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
</table>

186.0.23 ChartDirector: Color Specification

Plugin Version: 8.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** ChartDirector: Color Specification

**Notes:**

Many functions in the ChartDirector API accept colors as parameters. ChartDirector supports colors specified in web and HTML compatible ARGB format, in which ARGB refers to the Alpha transparency, Red, Green and Blue components of the color.

In addition to ARGB colors, ChartDirector supports "dynamic" colors. A dynamic color is a color that changes depending on the position of the pixels. The "dynamic" colors that ChartDirector supports include "pattern colors", "metal colors", "gradient colors", "zone colors" and "dash line colors".

ChartDirector supports specifying colors indirectly using "palette colors". When a "palette color" is used, the color is specified as an index to a palette. The actual color is looked up from the palette. ARGB Color ARGB color consists of 4 components - alpha transparency, red, green and blue. The four components are encoded as a 32-bit number, with each component occupying 8 bits. In hexadecimal notation, it is AAR-
BottomLeft  1  The leftmost point on the bottom line.
BottomCenter  2  The center point on the bottom line.
BottomRight  3  The rightmost point on the bottom line.
Left  4  The leftmost point on the middle horizontal line.
Center  5  The center point on the middle horizontal line.
Right  6  The rightmost point on the middle horizontal line.
TopLeft  7  The leftmost point on the top line.
TopCenter  8  The center point on the top line.
TopRight  9  The rightmost point on the top line.
Bottom  2  The center point on the bottom line. Same as BottomCenter.
Top  8  The center point on the top line. Same as TopCenter.
TopLeft2  10  An alternative top-left position used in Axis.setTitlePos for axis title positioning only. For a vertical axis, TopLeft2 refers to the left of the top side, while TopLeft refers to the top of the left side. The reverse applies for a horizontal axis.
TopRight2  11  An alternative top-right position used in Axis.setTitlePos for axis title positioning only. For a vertical axis, TopRight2 refers to the right of the top side, while TopRight refers to the top of the right side. The reverse applies for a horizontal axis.
BottomLeft2  12  An alternative bottom-left position used in Axis.setTitlePos for axis title positioning only. For a vertical axis, BottomLeft2 refers to the left of the bottom side, while BottomLeft refers to the bottom of the left side. The reverse applies for a horizontal axis.
BottomRight2  13  An alternative bottom-right position used in Axis.setTitlePos for axis title positioning only. For a vertical axis, BottomRight2 refers to the right of the bottom side, while BottomRight refers to the bottom of the right side. The reverse applies for a horizontal axis.

RGGBB, where AA, RR, GG and BB are the alpha transparency, red, green and blue components.

Each component ranges from 00 - FF (0 - 255), representing its intensity. For example, pure red color is 00FF0000, pure green color is 0000FF00, and pure blue color is 000000FF. White color is 00FFFFFF, and black color is 00000000.

Most programming language requires you to put special prefix in front of hexadecimal characters. For C++, the prefix is "0x". For example, the syntax for the hexadecimal number 00FFFFFF is 0x00FFFFFF, or simply 0xFFFFFF.

For the alpha transparency component, a zero value means the color is not transparent all at. This is equivalent to traditional RGB colors. A non-zero alpha transparency means the the color is partially transparent. The larger the alpha transparency, the more transparent the color will be. If a partially transparent color is used to draw something, the underlying background can still be seen.

For example, 80FF0000 is a partially transparent red color, while 00FF0000 is a non-transparent red color.
Note that ChartDirector’s ARGB color is web and HTML compatible. For example, red is FF0000, the same as in HTML. There are many resources on the web that provide tables in which you can click a color and it will show its HTML color code. These color codes can be used in ChartDirector.

If alpha transparency is FF (255), the color is totally transparent. That means the color is invisible. It does not matter what the RGB components are. So in ChartDirector, only one totally transparent color is used - FF000000. All other colors of the form FFnnnnnn are reserved to represent palette colors and dynamic colors, and should not be interpreted as the normal ARGB colors.

The totally transparent color FF000000 is often used in ChartDirector to disable drawing something. For example, if you want to disable drawing the border of a rectangle, you can set the border color to totally transparent.

For convenience, ChartDirector defines a constant called Transparent, which is equivalent to FF000000.

Pattern Color
A pattern color is a dynamic color that changes according to a 2D periodic pattern. When it is used to fill an area, the area will look like being tiled with a wallpaper pattern.

Pattern colors are created using BaseChart.patternColor, BaseChart.patternColor2, DrawArea.patternColor and DrawArea.patternColor2. The patternColor method creates pattern colors using an array of colors as a bitmap. The patternColor2 method creates pattern colors by loading the patterns from image files.

These methods return a 32-bit integer acting as a handle to the pattern color. The handle can be used in any ChartDirector API that expects a color as its input.

Metal Color
A metal color is a color of which the brightness varies smoothly across the chart surface as to make the surface looks shiny and metallic. ChartDirector supports using any color as the base color of the metal color. In particular, using yellow and grey as the base colors will result in metal colors that look gold and silver.

Metal colors are most often used as background colors of charts. They are created using CDBaseChartMBS.metalColor, CDBaseChartMBS.goldColor and CDBaseChartMBS.silverColor. The first method allows you to specify an arbitrary base color. The second and third methods use yellow and grey as the base colors, resulting in gold and silver metal colors.

These methods return a 32-bit integer acting as a handle to the gradient color. The handle can be used in any ChartDirector API that expects a color as its input.

Gradient Color
A gradient color is a color that changes progressively across a direction.

Gradient colors are created using BaseChart.gradientColor, BaseChart.gradientColor2, DrawArea.gradientColor and DrawArea.gradientColor2. The gradientColor method creates a 2-point gradient color that changes from color A to color B. The gradientColor2 method creates a multi-point gradient colors that changes from color A to B to C ....
These methods return a 32-bit integer acting as a handle to the gradient color. The handle can be used in any ChartDirector API that expects a color as its input.

One common use of multi-point gradient colors is to define colors that have metallic look and feel. Please refer to DrawArea.gradientColor2 for details.

Dash Line Colors
A dash line color is a color that switches on and off periodically. When used to draw a line, the line will appear as a dash line.

Dash line colors are created using BaseChart.dashLineColor and DrawArea.dashLineColor. They accept a line color and a dash pattern code as arguments, and return a 32-bit integer acting as a handle to the dash line color. The handle can be used in any ChartDirector API that expects a color as its input.

Zone Colors
A zone color is for XY charts only. It is a color that automatically changes upon reaching a data threshold value along the x-axis or y-axis. Zone colors are created using Layer.xZoneColor, Layer.yZoneColor, XYChart.xZoneColor or XYChart.yZoneColor.

Palette Colors
Palette colors are colors of the format FFFFnnnn, where the least significant 16 bits (nnnn) are the index to the palette. A palette is simply an array of colors. For a palette color, the actual color is obtained by looking up the palette using the index. For example, the color FFFF0001 is the second color in the palette (first color is index 0).

The colors in the palette can be ARGB colors or "dynamic" colors (pattern, gradient and dash line colors).

The first eight palette colors have special significance. The first three palette colors are the background color, default line color, and default text color of the chart. The 4th to 7th palette colors are reserved for future use. The 8th color is a special dynamic color that is equal to the data color of the "current data set".

The 9th color (index = 8) onwards are used for automatic data colors. For example, in a pie chart, if the sector colors are not specified, ChartDirector will automatically use the 9th color for the first sector, the 10th color for the second sector, and so on. Similarly, for a multi-line chart, if the line colors are not specified, ChartDirector will use the 9th color for the first line, the 10th color for the second line, and so on.

The ChartDirector API defines several constants to facilitate using palette colors.

<table>
<thead>
<tr>
<th>Constant</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>When a chart is created, it has a default palette. You may modify the palette using BaseChart.setColor, BaseChart.setColors, or BaseChart.setColors2.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The advantages of using palette colors are that you can change the color schemes of the chart in one place. ChartDirector comes with several built-in palettes represented by the following predefined constants.
Palette FFFF0000 The starting point of the palette. The first palette color is (Palette + 0). The nth palette color is (Palette + n - 1).
BackgroundColor FFFF0000 The background color.
LineColor FFFF0001 The default line color.
TextColor FFFF0002 The default text color.
[ Reserved ] FFFF0003 - FFFF0006 These palette positions are reserved. Future versions of ChartDirector may use these palette positions for colors that have special significance.
SameAsMainColor FFFF0007 A dynamic color that is equal to the data color of the current data set. This color is useful for objects that are associated with data sets. For example, in a pie chart, if the sector label background color is SameAsMainColor, its color will be the same as the corresponding sector color.
DataColor FFFF0008 The starting point for the automatic data color allocation.

ConstantDescription

defaultPalette An array of colors representing the default palette. This palette is designed for drawing charts on white backgrounds (or lightly colored backgrounds).
whiteOnBlackPalette An array of colors useful for drawing charts on black backgrounds (or darkly colored backgrounds).
transparentPalette An array of colors useful drawing charts on white backgrounds (or lightly colored backgrounds). The data colors in this palette are all semi-transparent.

186.0.24 ChartDirector: Font Specification


Notes:

Font Name
In ChartDirector, the font name is simply the file name that contains the font. For example, under the Windows platform, the "Arial" font is "arial.ttf", while the "Arial Bold" font is "arialbd.ttf".

NOTE: Mac OS X Specific Information
In Mac OS X, in addition to ".ttf", ChartDirector also supports Mac OS X font file formats, such as Font Suitcase files and Datafork files (.dfont). These files often contain multiple fonts. For example, the "GillSans.dfont" file contains 6 fonts.

So in addition to the file name, an index is needed to determine the font. The index is specified by appending a " | " character to the font name, followed by the index number. For example, the third font in "GillSans.dfont" is denoted as "GillSans.dfont | 2". (Note: The first font starts at 0.) If no index number is provided, the first font is assumed.

ChartDirector also supports using Mac OS X Font Manager names. For example, one may use "Gill Sans Light Italic" instead of using "GillSans.dfont | 1" as the font name. However, the Mac OS X Font Manager
is active only if someone has logged into the Mac GUI console, so this method is only recommended for developing applications that run on the GUI console.

The sample programs that come with ChartDirector are designed to run on all operating systems, so they use generic font file names (eg. "arial.ttf") instead of Mac OS X specific names. To allow them to run on Mac OS X, ChartDirector on Mac OS X has a built-in table to map common font file names to Mac OS X font names:

"arial.ttf", "arialbd.ttf", "ariali.ttf" and "arialbi.ttf" are mapped to "Arial | 0" (Arial), "Arial | 1" (Arial Bold), "Arial | 2" (Arial Italic) and "Arial | 3" (Arial Bold Italic)

"times.ttf", "timesbd.ttf", "timesi.ttf" and "timesbi.ttf" are mapped to "Times New Roman | 0" (Times New Roman), "Times New Roman | 1" (Times New Roman Bold), "Times New Roman | 2" (Times New Roman Italic) and "Times New Roman | 3" (Times New Roman Bold Italic)

"cour.ttf", "courbd.ttf", "couri.ttf" and "courbi.ttf" are mapped to "Courier New | 0" (Courier New), "Courier New | 1" (Courier New Bold), "Courier New | 2" (Courier New Italic) and "Courier New | 3" (Courier New Bold Italic)

Font Location
ChartDirector on Windows does not come with any font files. It relies on the operating system’s font files in the "[windows] \Fonts" directory. To see what fonts are installed in your operating system and their file names, use the File Explorer to view that directory.

ChartDirector on Windows will also search for the font files in the "fonts" subdirectory (if it exists) under the directory where the ChartDirector DLL "chartdir.dll" is installed. This is useful for private fonts. Also, for some especially secure web servers, the web anonymous user may not have access to the "[windows] \Fonts" directory. In this case, you may copy the font files to the above subdirectory.

ChartDirector on Mac OS X relies on operating system font files in "/[Library/Fonts" and "/System/Library/Fonts".

ChartDirector on Linux, FreeBSD and Solaris assume the fonts files are in the "fonts" subdirectory under the directory where the ChartDirector shared object "libchartdir.so" is installed. ChartDirector on Linux, FreeBSD and Solaris come with a number of font files in the "fonts" subdirectory.

To keep the download size small, ChartDirector on Linux, FreeBSD and Solaris only come with some commonly used fonts. You may download additional fonts from the Internet. In particular, the Microsoft fonts at http://sourceforge.net/project/showfiles.php?group_id=34153&release_id=105355 is highly recommended. Please refer to http://www.microsoft.com/typography/faq/faq8.htm on how you could use the fonts legally in your system.
ChartDirector supports True Type fonts (.ttf), Type 1 fonts (.pfa and .pfb) and Windows bitmap fonts (.fon). On Mac OS X, ChartDirector also supports Font Suitcase and Datafork (.dfont) files. On Linux, FreeBSD and Solaris, ChartDirector also supports Portable Compiled Fonts (.pcf fonts).

If you want ChartDirector to search other directories for the font files, you may list the directories in an environment variable called "FONTPATH".

If you specify an absolute path name for the font file, ChartDirector will use the absolute path name and will not search other directories. Artificial Boldening and Italicizing

Whereas most popular font comes with different styles for "normal", "bold", "italic" and "bold italic", some fonts only come with one style (the normal style). For example, the Monotype Corsiva font that comes with MS Office only has the normal style (mtcorsva.ttf). For these cases, you may append the "Bold" and/or "Italic" words after the font file name (separated with a space) to ask ChartDirector to artificially bolden and/or italicize the font. For example, you may specify the font name as "mtcorsva.ttf Bold".

Font List

Instead of specifying a single font file as the font name, you may specify a list of font files as the font name, separated by semi-colons. This is useful when using international characters that are only available in some fonts.

For example, if you would like to use the Arial font ("arial.ttf") for western characters, and the MingLiu font "mingliu.ttc" for Chinese characters (since the Arial font does not have Chinese characters), you may specify the font name as "arial.ttf;mingliu.ttc". In this case, ChartDirector will try the Arial font first. If it cannot find a certain character there, it will try the MingLiu font.

Indirect Font Names

ChartDirector supports several special keywords for specifying the font name indirectly. When these keywords are used as font names, ChartDirector will look up the actual font names from a font table. The keywords are as follows:

<table>
<thead>
<tr>
<th>Keywords</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;normal&quot;</td>
<td>This default normal font, which is the first font in the font table. This is initially mapped to &quot;arial.ttf&quot; (Arial).</td>
</tr>
<tr>
<td>&quot;bold&quot;</td>
<td>The default bold font, which is the second font in the font table. This is initially mapped to &quot;arialbd.ttf&quot; (Arial Bold).</td>
</tr>
<tr>
<td>&quot;italic&quot;</td>
<td>The default italic font, which is the third font in the font table. This is initially mapped to &quot;ariali.ttf&quot; (Arial Italic).</td>
</tr>
<tr>
<td>&quot;boldItalic&quot;</td>
<td>The default bold-italic font, which is the fourth font in the font table. This is initially mapped to &quot;arialbi.ttf&quot; (Arial Bold Italic).</td>
</tr>
<tr>
<td>&quot;fontN&quot;</td>
<td>The (N + 1)th font in the font table (the first font is &quot;font0&quot;).</td>
</tr>
</tbody>
</table>

The font table can be modified using BaseChart.setFontTable or DrawArea.setFontTable.
The advantage of using indirect font names is that you can change the fonts in your charts in one place.

Font Index
Most font files contain one font. However, it is possible a font file contains multiple fonts (that is, a font collection). For example, in True Type fonts, font files with extension ".ttc" may represent a font collection.

If a font file contains multiple font, the font index can be used to specify which font to use. By default, the font index is 0, which means the first font in the font file will be used.

Font Size
The font size decides how big a font will appear in the image. The font size is expressed in a font unit called points. This is the same unit used in common word processors.

Instead of specifying font size, some ChartDirector API (eg. TextBox.setFontSize) allow you to specify font height and font width separately. You may use different point sizes for font height and font width to create special effects.

Font Color
This is the color to draw the font. (See Color Specification on how colors are represented in ChartDirector.)

Font Angle
This is the angle in degrees by which the font should be rotated anti-clockwise.

Vertical Layout
By default, text are laid out horizontally, with characters being drawn from left to right.

ChartDirector also supports vertical layout, with characters being drawn from top to bottom. For example, you may use BaseChart.addText to add text that are laid out vertically. Vertical layout is common for oriental languages such as Chinese, Japanese and Korean.

186.0.25 ChartDirector: Mark Up Language

Plugin Version: 8.2, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** ChartDirector: Mark Up Language

**Notes:**
ChartDirector Mark Up Language (CDML) is a language for including formatting information in text strings by marking up the text with tags.

CDML allows a single text string to be rendered using multiple fonts, with different colors, and even embed images in the text.

**Font Styles**
You can change the style of the text by using CDML tags. For example, the line:

```
<font=timesi.ttf,size=16,color=FF0000>Hello <font=arial.ttf,size=12,color=8000*>world!
```

will result in the following text rendered:

```
Hello world!
```

In general, all tags in CDML are enclosed by `<*` and `*>`. Attributes within the tags determine the styles of the text following the tags within the same block.

If you want to include `<*` in text without being interpreted as CDML tags, use `<<*` as the escape sequence.
The following table describes the supported font style attributes in CDML. See Font Specification for details on various font attributes.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>font</td>
<td>Starts a new style section, and sets the font name. You may use this attribute without a value (that is, use ”font” instead of ”font=arial.ttf”) to create a new style section without modifying the font name.</td>
</tr>
<tr>
<td>size</td>
<td>The font size.</td>
</tr>
<tr>
<td>width</td>
<td>The font width. This attribute is used to set the font width and height to different values. If the width and height are the same, use the size attribute.</td>
</tr>
<tr>
<td>height</td>
<td>The font height. This attribute is used to set the font width and height to different values. If the width and height are the same, use the size attribute.</td>
</tr>
<tr>
<td>color</td>
<td>The text color in hex format.</td>
</tr>
<tr>
<td>bgColor</td>
<td>The background color of the text in hex format.</td>
</tr>
<tr>
<td>underline</td>
<td>The line width of the line used to underline the following characters. Set to 0 to disable underline.</td>
</tr>
<tr>
<td>sub</td>
<td>Set the following text to be in subscript style. This attribute does not need to have a value. (You may use ”sub” as the attribute instead of ”sub=1”.)</td>
</tr>
<tr>
<td>super</td>
<td>Set the following text to be in superscript style. This attribute does not need to have a value. (You may use ”super” as the attribute instead of ”super=1”.)</td>
</tr>
</tbody>
</table>

Set the following text to be in superscript style. This attribute does not need to have a value. (You may use ”super” as the attribute instead of ”super=1”.)

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xoffset</td>
<td>Draw the following the text by shifting the text horizontally from the original position by the specified offset in pixels.</td>
</tr>
<tr>
<td>yoffset</td>
<td>Draw the following the text by shifting the text vertically from the original position by the specified offset in pixels.</td>
</tr>
<tr>
<td>advance</td>
<td>Move the cursor forward (to the right) by the number of pixels as specified by the value this attribute.</td>
</tr>
<tr>
<td>advanceTo</td>
<td>Move the cursor forward (to the right) to the position as specified by the value this attribute. The position is specified as the number of pixels to the right of the left border of the block. If the cursor has already passed through the specified position, the cursor is not moved.</td>
</tr>
</tbody>
</table>

Note that unlike HTML tags, no double or single quotes are used in the tags. It is because CDML tags are often embedded as string literals in source code. The double or single quotes, if used, will conflict with the string literal quotes in the source code. Therefore in CDML, no quotes are necessary and they must not be
used.

Also, unlike HTML tags, CDML uses the comma character as the delimiter between attributes. It is because certain attributes may contain embed spaces (such as the font file name). So space is not used as the delimiter and the comma character is used instead.

Note the font attribute above starts a new style section, while other attributes just modify the current style section. You may use <*/font*> to terminate a style section, which will restore the font styles to the state before the style section.

Blocks and Lines

In CDML, a text string may contain multiple blocks. A block may contain multiple lines of text by separating them with new line characters ("\n") or with <br/>. The latter is useful for programming languages that cannot represent new line characters easily.

For example, the line:

<font color=FF>BLOCK<br>ONE</font>
<font color=FF00>BLOCK<br>TWO</font>

will result in the following text rendered:

The above example contains a line of text. The line contains two blocks with the characters " and " in between. Each block in turn contains two lines. The blocks are defined using <block> as the start tag and <*/> as the end tag.

When a block ends, font styles will be restored to the state before entering the block.

Embedding Images

CDML supports embedding images in text using the following syntax:

<img=my_image_file.png>

where my_image_file.png is the path name of the image file.

For example, the line:

<size=20>A <img=sun.png>day</size>

will result in the following text rendered:

ChartDirector will automatically detect the image file format using the file extension, which must either png, jpg, jpeg, gif, wbmp or wmp (case insensitive).

Please refer to BaseChart.setSearchPath or DrawArea.setSearchPath on the directory that ChartDirector will search for the file.

The <img> tag may optionally contain width and height attributes to specify its pixel width and height. In this case, ChartDirector will stretch or compress the image if necessary to the required width and
CDML supports nesting blocks, that is, a block can contain other sub-blocks. Attributes are supported in the `<block>` tag to control the alignment and orientation of the sub-blocks. The `<img=my_image_file.png>` is treated as a block for layout purposes.

For example, the line:

```html
<block,valign=absmiddle><img=molecule.png><block>Hydrazino\nMolecule</block></block>
```

will result in the following text rendered:

The above starts `<block,valign=absmiddle>` which specifies its content should align with each others in the vertical direction using the absolute middle alignment. The block contains an image, followed by a space characters, and then another block which has two lines of text.

The following table describes the supported attributes inside `<block>` tag:

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>width</td>
<td>The width of the block in pixels. By default, the width is automatically determined to be the width necessary for the contents of the block. If the width attribute is specified, it will be used as the width of the block. If the width is insufficient for the contents, the contents will be wrapped into multiple lines.</td>
</tr>
<tr>
<td>height</td>
<td>The height of the block in pixels. By default, the height is automatically determined to be the height necessary for the contents of the block. If the height attribute is specified, it will be used as the height of the block.</td>
</tr>
<tr>
<td>maxWidth</td>
<td>The maximum width of the block in pixels. If the content is wider than maximum width, it will be wrapped into multiple lines.</td>
</tr>
<tr>
<td>truncate</td>
<td>The maximum number of lines of the block. If the content requires more than the maximum number of lines, it will be truncated. In particular, if truncate is 1, the content will be truncated if it exceeds the maximum width (as specified by maxWidth or width) without wrapping. The last few characters at the truncation point will be replaced with &quot;...&quot;.</td>
</tr>
<tr>
<td>linespacing</td>
<td>The spacing between lines as a ratio to the default line spacing. For example, a line spacing of 2 means the line spacing is two times the default line spacing. The default line spacing is the line spacing as specified in the font used.</td>
</tr>
<tr>
<td>bgColor</td>
<td>The background color of the block in hex format.</td>
</tr>
<tr>
<td>valign</td>
<td>The vertical alignment of sub-blocks. This is for blocks that contain sub-blocks. Supported values are baseline, top, bottom, middle and absmiddle.</td>
</tr>
</tbody>
</table>

The value baseline means the baseline of sub-blocks should align with the baseline of the block. The baseline
is the underline position of text. This is normal method of aligning text, and is the default in CDML. For images or blocks that are rotated, the baseline is the same as the bottom.

The value top means the top line of sub-blocks should align with the top line of the block.

The value bottom means the bottom line of sub-blocks should align with the bottom line of the block.

The value middle means the middle line of sub-blocks should align with the the middle line of the block. The middle line is the middle position between the top line and the baseline.

The value absmiddle means the absolute middle line of sub-blocks should align with the absolute middle line of the block. The absolute middle line is the middle position between the top line and the bottom line.

halign The horizontal alignment of lines. This is for blocks that contain multiple lines. Supported values are left, center and right.

The value left means the left border of each line should align with the left border of the block. This is the default.

The value center means the horizontal center of each line should align with the horizontal center of the block.

The value right means the right border of each line should align with the right border of the block.

angle Rotate the content of the block by an angle. The angle is specified in degrees in counter-clockwise direction.

186.0.26 ChartDirector: Parameter Substitution and Formatting


Notes:

ChartDirector charts often contain a lot of text strings. For example, sector labels in pie charts, axis labels for x and y axes, data labels for the data points, HTML image maps, etc, are all text strings.

ChartDirector uses parameter substitution to allow you to configure precisely the information contained in the text and their format.

Format Strings
In parameter substitution, format strings are used to specify the entities to be include into labels and how to format numbers and dates.

For example, when drawing a pie chart with side label layout, the default sector label format string is:

" { label } ( { percent } % )"

When the sector label is actually drawn, ChartDirector will replace " { label } " with the sector name, and " { percent } " with the sector percentage. So the above label format will result in a sector label similar to "ABC (34.56%)".

You may change the sector label format by changing the format string. For example, you may change it to:

" { label } : US$ { value | 2 } K ( { percent } % )"

The sector label will then become something like "ABC: US$ 123.00 (34.56%)".

In general, in ChartDirector parameter substitution, parameters enclosed by curly brackets will be substituted with their actual values when creating the texts.

For parameters that are numbers or dates/times, ChartDirector supports a special syntax in parameter substitution to allow formatting for these values. Please refer to the Number Formatting and Date/Time Formatting sections below for details.

Parameter Expressions
ChartDirector supports numeric expressions in format strings. They are denoted by enclosing the expression with curly brackets and using "=" as the first character. For example:

"USD { value } (Euro { = { value } *0.9 } )"

In the above, " { value } " will be substituted with the actual value of the sector. The expression " { = { value } *0.9 } " will be substituted with the actual value of the sector multiplied by 0.9.

ChartDirector parameter expressions support operators "+", "/", ",", ",", "/", ",% " (modulo) and "^" (exponentiation). Operators ",", ",", ",", ",% " is computed first, followed by "+" and ",--". Operators of the same precedence are computed from left to right. Parenthesis "(" and ")" can be used to change the computation order.

Parameters for Pie Charts
The following table describes the parameters available for pie charts.

Parameters for All XY Chart Layers
The followings are parameters that are apply to all XY Chart layers in general. Some layer types may have
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>sector</td>
<td>The sector number. The first sector is 0, while the nth sector is (n-1).</td>
</tr>
<tr>
<td>dataSet</td>
<td>Same as { sector }. See above.</td>
</tr>
<tr>
<td>label</td>
<td>The text label of the sector.</td>
</tr>
<tr>
<td>dataSetName</td>
<td>Same as { label }. See above.</td>
</tr>
<tr>
<td>value</td>
<td>The data value of the sector.</td>
</tr>
<tr>
<td>percent</td>
<td>The percentage value of the sector.</td>
</tr>
<tr>
<td>fieldN</td>
<td>The (N + 1)th extra field. For example, { field0 } means the first extra field. An extra field is an array of custom elements added using BaseChart.addExtraField or BaseChart.addExtraField2.</td>
</tr>
</tbody>
</table>

additional parameters (see below).

Note that certain parameters are inapplicable in some context. For example, when specifying the aggregate label of a stacked bar chart, the { dataSetName } parameter is inapplicable. It is because a stacked bar is composed of multiple data sets. It does not belong to any particular data set and hence does not have a data set name.

{ fieldN } means the extra field is indexed by the data point number. The Pth data point corresponds to the Pth element of the extra field.

Additional Parameters for Line Layers
The followings are parameters that are in additional to the parameters for all XY Chart layers.

Additional Parameters for Trend Layers
The followings are parameters that are in additional to the parameters for all XY Chart layers.

Additional Parameters for Box-Whisker Layers
The followings are parameters that are in additional to the parameters for all XY Chart layers.

Additional Parameters for HLOC and CandleStick Layers
The followings are parameters that are in additional to the parameters for all XY Chart layers.

Additional Parameters for Vector Layers
The followings are parameters that are in additional to the parameters for all XY Chart layers.

Parameters for All Polar Layers
The followings are parameters that are apply to all Polar Chart layers in general. Some layer types may have additional parameters (see below).
Additional Parameters for PolarVector Layers

The followings are parameters that are in additional to the parameters for all Polar Chart layers.

Parameters for Axis

The following table describes the parameters available for pie charts.

Number Formatting

For parameters that are numbers, ChartDirector supports a number of formatting options in parameter substitution.

For example, if you want a numeric field \{ value \} to have a precision of two digits to the right of the decimal point, use ',' (comma) as the thousand separator, and use '.' (dot) as the decimal point, and you may use \{ value | 2,. \}. The number 123456.789 will then be displayed as 123,456.79.

For numbers, the formatting options are specified using the following syntax:

\{ [ param ] | [ a ] [ b ] [ c ] [ d ] \}

where:

If this field starts with "E" or "e", followed by a number, it means formatting the value using scientific notation with the specified number of decimal places. If the "E" or "e" is not followed by a number, 3 is assumed.

For example, \{ value | E4 \} will format the value 10.3 to 1.0300E+1, and \{ value | e4 \} will format the same value to 1.0300e+1.

If this field starts with "G" or "g", followed by a number, it means formatting the value using the scientific notation only if the value is large and requires more than the specified number of digits, or the value is less than 0.001. If scientific notation is used, the number following "G" or "g" also specifies the number of significant digits to use. If the "G" or "g" is not followed by a number, 4 is assumed.

For example, consider the format string \{ value | G4 \}. The value 10 will be formatted to 10. The value 100000 will be formatted to 1.000E+5. Similarly, for \{ value | g4 \}, the value 10 will be formatted to 10, while the value 100000 will be formatted to 1.000e+5.

If you skip this argument, ChartDirector will display the exact value using at most 6 decimal places.
You may skip \[ b \] \[ c \] \[ d \]. In this case, the default will be used.

Date/Time Formatting
For parameters that are dates/times, the formatting options can be specified using the following syntax:

\{ \ [ \ param \ ] \ | \ [ \ datetime\_format\_string \ ] \ \}

where \[ \ datetime\_format\_string \] must start with an English character (A-Z or a-z) that is not "G", "g", "E" or "e", and may contain any characters except \'}\'. (If it starts with "G", "g", "E" or "e", it will be considered as a number format string.)

Certain characters are substituted according to the following table. Characters that are not substituted will be copied to the output.

For example, a parameter substitution format of \{ value | mm-dd-yyyy \} will display a date as something similar to 09-15-2002. A format of \{ value | dd/mm/yy hh:mm:ss a \} will display a date as something similar to 15/09/02 03:04:05 pm.

If you want to include characters in the format string without substitution, you may enclose the characters in single or double quotes.

For example, the format \{ value | mmm '<*color=dd0000*>'yyyy \} will display a date as something like Jan <*color=dd0000*>2005 (the <*color=dd0000*> is a CDML tag to specify red text color). Note that the <*color=dd0000*> tag is copied directly without substitution, even it contains "dd" which normally will be substituted with the day of month.

Escaping URL/HTML/CDML characters
Parameter substitution is often used to create HTML image maps. In HTML, some characters has special meanings and cannot be used reliably. For example, the '>' is used to represent the end of an HTML tag.

Furthermore, if the field happens to be used as an URL, characters such as '?', '& ' and '+' also have special meanings.

By default, ChartDirector will escape template fields used in URL and query parameters when generating image maps. It will modify URL special characters to the URL escape format "% XX" (eg. "?" will become "% 3F"). After that, it will modify HTML special characters to the HTML escape format "&amp;# nn;" (eg. ">" will become "&amp;# 62;"). Similarly, it will escape other attributes in the image map using HTML escape format (but not URL escape format).

In addition to escaping HTML and URL special characters, ChartDirector will also remove CDML fields in creating image maps. It is because CDML is only interpreted in ChartDirector, should not be useful outside of ChartDirector (such as in browser tool tips).
In some cases, you may not want ChartDirector to escape the special characters. For example, if the parameters have already been escaped before passing to ChartDirector, you may want to disable ChartDirector from escaping them again.

ChartDirector supports the following special fields to control the escape methods - " { escape_url } ", " { noescape_url } ", " { escape_html } ", " { noescape_html } ", " { escape_cdml } ", and " { noescape_cdml } ". These fields enable/disable the escape methods used in the template fields that follow them.

### 186.0.27 ChartDirector: Shape Specification

**Plugin Version:** 8.2, **Console & Web:** No, **Mac:** Yes, **Win:** Yes, **Linux:** Yes. **Answer:** ChartDirector: Shape Specification  

**Notes:**

Several ChartDirector API accept shape specification as arguments. For example, `BarLayer.setBarShape` and `BarLayer.setBarShape2` can be used to specify shapes of bars in bar charts, while `DataSet.setDataSymbol`, `DataSet.setDataSymbol4`, `PolarLayer.setDataSymbol` and `PolarLayer.setDataSymbol4` can be used to specify shapes for data symbols.

Note that in addition to shapes, in many cases ChartDirector also accepts images or custom draw objects for data representation. For example, see `DataSet.setDataSymbol2`, `DataSet.setDataSymbol3`, `PolarLayer.setDataSymbol2` and `PolarLayer.setDataSymbol3`.

**Built-In Shapes**

Built-in shapes are specified as integers. The integers can be explicit constants, or can be generated by a ChartDirector method for parameterized shapes. For example, a circle is represented by an explicit constant `CircleShape (=7)`. On the other hand, the number representing a polygon depends on the number of sides the polygon has, so it is generated by using the `PolygonShape` method, passing in the number of sides as argument.

The following table illustrates the various ChartDirector shapes:

**Custom Shapes**

In ChartDirector, custom shapes are specified as an array of integers x0, y0, x1, y1, x2, y2 ... representing the coordinates of the vertices of the custom polygonal shape.

The polygon should be defined with a bounding square of 1000 x 1000 units, in which the x-axis is from -500 to 500 going from left to right, and the y-axis is from 0 to 1000 going from bottom to top.
ChartDirector will automatically scale the polygon so that 1000 units will become to the pixel size as requested by the various ChartDirector API.

As an example, the shape of the standard diamond shape in ChartDirector is represented as an array with 8 numbers:

0, 0, 500, 500, 0, 1000, -500, 500

186.0.28 Copy styled text?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: How to quickly copy styled text from one textarea to another?

Example:

```java
# if TargetWin32 then
TextArea1.WinRTFDataMBS = TextArea2.WinRTFDataMBS
# else if TargetMacOS then
TextArea1.NSTextViewMBS.textStorage.setAttributedString TextArea2.NSTextViewMBS.textStorage
# else
TextArea1.StyledText = TextArea2.StyledText
# endif
```

Notes: The code above uses special plugin functions on Mac and Windows and falls back to framework for Linux.

186.0.29 Do you have code to validate a credit card number?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: You can check the checksum to tell if a credit card number is not valid.

Example:

```java
Dim strNumber As String
Dim nLength as Integer
Dim nValue as Integer
Dim nChecksum as Integer
Dim nIndex as Integer

strNumber = EditField1.Text
nLength = Len(strNumber)
nChecksum = 0

For nIndex = 0 To nLength - 2
    nValue = Mid(strNumber, nIndex + 1, 1)
    If nIndex Mod 2 = 0 Then
        nValue *= 2
    End If
    If nValue > 9 Then
        nValue = nValue - 9
    End If
    nChecksum = nChecksum + nValue
Next
```
nValue = Val(Mid(strNumber, nLength - (nIndex + 1), 1)) * (2 - (nIndex Mod 2))
If nValue < 10 Then
nChecksum = nChecksum + nValue
Else
nChecksum = nChecksum + (nValue - 9)
End If
Next

If Val(Mid(strNumber, Len(strNumber), 1)) = (10 - (nChecksum Mod 10)) Mod 10 Then
MsgBox("The credit card number looks valid")
Else
MsgBox("The credit card number is invalid")
End IF

Notes:
Here’s some code that will validate the checksum for a credit card. It works for Visa, MasterCard, American Express and Discover. Not sure about others, but I imagine they use the same basic algorithm. Of course, this doesn’t actually mean that the credit card is valid, it’s only useful for helping the user catch typos.

The above code doesn’t have any error checking and it expects that the credit card number will be entered without spaces, dashes or any other non-numeric characters. Addressing those issues will be an exercise left to the reader. :)  

(From Mike Stefanik)

186.0.30 Do you have plugins for X-Rite EyeOne, eXact or i1Pro?

Plugin Version: all, Console & Web: No. Answer: Our EyeOne plugin is available on request for licensees of the X-Rite SDKs.
Notes:
Please first go to X-Rite and get a SDK license. Than we can talk about the plugin.

186.0.31 Does SQL Plugin handle stored procedures with multiple result sets?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: Yes, the plugin can work with multiple recordsets.
Notes:
You need to use SQLCommandMBS class. When you get back results, you use FetchNext to walk over all
records in the first result set. Then you simply start again with FetchNext to get the second record set. Even the RecordSet functions should work, just use them twice to get all records from both record sets.

186.0.32 Does the plugin home home?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Yes, we like to know who is using the plugin, so the plugin may contact our server.

**Example:**

none.

**Notes:**

Please note that this does not affect your users as the plugin will only do this in the IDE and the relevant plugin part is never included in your applications.

The plugin if used for some hours, does contact our server to provide statistical data about Xojo version and OS versions. This way we know what versions are used. We can return the version number of the current plugin which may be visible in future versions somehow. And we transmit partial licenses data so we can track use of illegal license keys.

If you do not like to have this, you can block Xojo IDE from contacting our website via your Firewall. Blocking the transfer will not disable the plugin or change the features. Or contact us for a plugin version which explicitly does not contain this feature.

186.0.33 folderitem.absolutepath is limited to 255 chars. How can I get longer ones?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Paths on a Mac are not unique, so use them only to display them to the user.

**Example:**

```vbnet
Function AbsolutePath(f as FolderItem) As String
    Dim s as string
    Dim nf as FolderItem
    nf = f
    s = ""
    while nf<>nil
        s = nf.name + ";:" + s
        nf = nf.parent
    wend
    Return s
```
186.0.34 Future of editablemovie class?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** In short, it will go away, so switch to plugin functions soon.

**Notes:**

The editableMovie class has been deprecated. Deprecated means that Real Software will remove it someday, but as of today (and probably a few more years) the class will be available and running. Just not forever. The reason is that Apple deprecated the old QuickTime APIs and they are not available for 64 bit.

For 64 bit, you can move to our QTKit plugin.

We expect the old QuickTime classes in Real Studio and our plugins will continue to work in 32 bit applications. Even if editableMovie class is removed next year from Real Studio, our plugin still provides movie class extensions to do similar functions.

186.0.35 Has anyone played round with using CoreImage to do things like add dissolve transitions say when changing from one tab to another within a window?

Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** This code implements animations for a tabpanel change:

**Example:**

```
// in a tabpanel.change event:

dim r as CGSTransitionRequestMBS
dim co as new CGSConnectionMBS
dim cw as CGSWindowMBS
dim ct as CGSTransitionMBS
static OldTab as Integer

cw=co.CGSWindow(window1)
If cw = Nil Then
    return // 10.3...
End If
r=new CGSTransitionRequestMBS
r.TransitionType=r.CGSFlip
r.HasBackGround=false
r.HasBackColor=false
r.Win=cw
// watch the value of the clicked tab versus the last tab
```
if tabpanel1.Value=0 or tabpanel1.Value < OldTab then
r.TransitionOption=r.CGSLeft
ct=co.NewTransition(r)
if ct<>Nil then
Refresh
cr.Invoke(1)
cr.Wait(1)
cr.Release
else
MsgBox "Error creating the transition."
end if
else
r.TransitionOption=r.CGSRight
ct=co.NewTransition(r)
if ct<>Nil then
Refresh
cr.Invoke(1)
cr.Wait(1)
cr.Release
else
MsgBox "Error creating the transition."
end if
end if
// Keep track of the last tab clicked
OldTab = tabpanel1.Value

Notes: See CGS* classes for more details.

186.0.36 How about Plugin support for older OS X?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: We support in general Mac OS X 10.5 and newer.

Notes:
All the 64-bit plugins on Mac require OS X 10.7.
Intel 32-bit plugins on Mac require OS X 10.5 or newer.

Currently the ChartDirector 6, GraphicsMagick and GameKit plugins requires Mac OS X 10.6.
Also for SQL Plugin the built in SQLite library requires 10.6.
**186.0.37 How can I detect whether an Intel CPU is a 64bit CPU?**

Plugin Version: all, Console & Web: No. **Answer:** Look on the CPU family returned by `sysctl`:

**Example:**

```vbs
Function is64bit() As Boolean
    # if TargetLittleEndian
    dim m as MemoryBlock = NewMemoryBlock(8)
    dim family as Integer
    dim s as string
    
    m=SystemControlNameToMIBMBS("hw.cpufamily")
    m=SystemControlMBS(m)
    
    if m<>nil then
        m.LittleEndian=True
    
    family=m.Long(0)
    
    const CPUFAMILY_INTEL_6_14 = & h73d67300 /* "Intel Core Solo" and "Intel Core Duo" (32-bit Pentium-M with SSE3) */
    const CPUFAMILY_INTEL_6_15 = & h426f69ef /* "Intel Core 2 Duo" */
    const CPUFAMILY_INTEL_6_23 = & h78ea4fbc /* Penryn */
    const CPUFAMILY_INTEL_6_26 = & h6b5a4cd2 /* Nehalem */
    
    Select case family
        case CPUFAMILY_INTEL_6_14
            Return false
        case CPUFAMILY_INTEL_6_15
            Return true
        case CPUFAMILY_INTEL_6_23
            Return true
        case CPUFAMILY_INTEL_6_26
            Return true
            // newer CPUs may be missing here
    end Select
    
    end if
    
    # endif
    
    Return false
    
    Exception
    Return false
End Function
```
Notes: This code is written for Mac OS X where you only have a limited number of possible CPUs.

186.0.38 How can I disable the close box of a window on Windows?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. Answer: The following code will remove the close item from the system menu of the window.

Example:

```vbnet
# if TargetWin32 then
Declare Function GetSystemMenu Lib "user32" (hwnd as Integer, bRevert as Integer) as Integer
Declare Function RemoveMenu Lib "user32" (hMenu as Integer, nPosition as Integer, wFlags as Integer) as Integer
Dim hSysMenu as Integer
hSysMenu = GetSystemMenu(me.WinHWND, 0)
RemoveMenu hSysMenu, & HF060, & H0
# endif
```

Notes: The window may not be updated directly.

186.0.39 How can I get all the environment variables from Windows?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. Answer: Try this code:

Example:

```vbnet
# if targetWin32
declare function GetEnvironmentStrings Lib "kernel32" () as ptr
dim m as memoryBlock
dim n as Integer

m=GetEnvironmentStrings()

n=0
do
msgBox m.cstring(n)
while m.byte(n)<0
n=n+1
wend
n=n+1
loop until m.byte(n)=0
# endif
```
Notes: The MBS Plugin has an EnvironmentMBS class for this.

186.0.40 How can I get similar behavior to Roxio Toast or iTunes where clicking a 'burn' button allows the next inserted blank CD-R to bypass the Finder and be accepted by my application?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You need to get a media reservation.

**Example:**

```plaintext
dim d as DRDeviceMBS // get a device
d.AcquireMediaReservation
```

Notes:

Use the plugin function AcquireMediaReservation and later release it using ReleaseMediaReservation. See plugin examples on how to use it and check Apple's DiscRecording framework documentation for more details.

186.0.41 How can I get text from a PDF?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Crossplatform you can use DynaPDF Pro.

Notes:

On Mac OS X you can also use PDFKit for the same job. While DynaPDF Pro gives you each bit of text with rotation, font information and encoding details, PDFKit gives you only the text string for a PDF page.

186.0.42 How can I get text from a Word Document?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** to get the text string from a doc file, use the NSAttributedStringMBS class.

Notes:

The NSAttributedStringMBS class is Mac OS X only and we have currently no solution for Windows or Linux.

Use the NSAttributedStringMBS.initWithDocFormat(data as string) as boolean method.
186.0.43 How can I get the item string for a given file creator?

Plugin Version: all, Console & Web: No. **Answer:** Try this function:

**Example:**

```vbscript
Sub pullNativeDocs(aCREA As string)
Dim result as Integer
Dim m, k as memoryBlock
Dim f as folderItem
Dim newType as string
Dim anIcon As picture
Dim ofs as Integer

Declare Function GetFileTypesThatAppCanNativelyOpen Lib "Carbon" (appVRefNumHint as Short, appSignature as OSType, nativeTypes as Ptr) as Short Inline68K("701CABFC")
Declare Function GetDocumentKindString Lib "Carbon" (docVRefNum as Short, docType as OSType, docCreator as OSType, kindString as ptr) as Short Inline68K("7016ABFC")

listBox1.deleteAllRows

m = newMemoryBlock(1024)
result = GetFileTypesThatAppCanNativelyOpen(Volume(0).MacVRefNum, aCREA, m)
if result <> 0 then
    listBox1.addRow "<Not found.>"
    return
end if

do
if m.byte(ofs*4) = 0 then
    exit
else
    newType = m.OSTypeMBS(ofs*4)
    listBox1.addRow newType
    k = newMemoryBlock(64)
    result = GetDocumentKindString(Volume(0).MacVRefNum, newType, aCREA, k)
    if result = 0 then
        listBox1.cell(ofs,1) = k.pString(0)
        ofs = ofs + 1
    else
        listBox1.cell(ofs,1) = "(unknown)"
    end if
end if
loop

End Sub
```
186.0.44 How can I launch an app using it’s creator code?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. Answer: Send an AppleEvent "odoc" with the creator code to the Finder ("MACS"):

Example:

```
Function LaunchByCreator(C As String) As Boolean
    Dim A As AppleEvent
    A = NewAppleEvent("aevt","odoc","MACS")
    A.ObjectSpecifierParam("—-") = GetUniqueIDObjectDescriptor("appf",nil,C)
    return A.Send
End Function
```

186.0.45 How can I learn what shared libraries are required by a plugin on Linux?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. Answer: Please use the ldd command in the terminal.

Notes:

You build an app on any platform, but for Linux.
For the resulting .so files in the libs folder, you can run the ldd command with the library path as parameter. It shows you references lib files and you can make sure you have those installed.

This is a sample run of our graphicsmagick plugin:

cs@Ubuntu32:
textasciitilde /MeinProgramm/MeinProgramm Libs$ ldd libMBSGraphicsMagickPlugin17744.so
linux-gate.so.1 => (0xb76ee000)
libdl.so.2 => /lib/i386-linux-gnu/libdl.so.2 (0xb6f0e000)
libgtk-x11-2.0.so.0 => /usr/lib/i386-linux-gnu/libgtk-x11-2.0.so.0 (0xb6aa6000)
libpthread.so.0 => /lib/i386-linux-gnu/libpthread.so.0 (0xb6a8a000)
libstdc++.so.6 => /usr/lib/i386-linux-gnu/libstdc++.so.6 (0xb69a5000)
libm.so.6 => /lib/i386-linux-gnu/libm.so.6 (0xb6979000)
libgcc_s.so.1 => /lib/i386-linux-gnu/libgcc_s.so.1 (0xb695b000)
libc.so.6 => /lib/i386-linux-gnu/libc.so.6 (0xb67b1000)
/lib/id-linux.so.2 (0xb76ef000)
libgdk-x11-2.0.so.0 => /usr/lib/i386-linux-gnu/libgdk-x11-2.0.so.0 (0xb6701000)
libpangocairo-1.0.so.0 => /usr/lib/i386-linux-gnu/libpangocairo-1.0.so.0 (0xb66f4000)
libX11.so.6 => /usr/lib/i386-linux-gnu/libX11.so.6 (0xb65c0000)
As you see all library have been found and their load address is printed behind the name. If a library is missing, you usually see the address missing there or being zero.

186.0.46 How can I validate an email address?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: You can try this code: Example:
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Dim re As RegEx
re = New RegEx
Dim rm As RegExMatch

re.SearchPattern = "; [a-z0-9!#$%^&*+/=?ˆ\{ }]
\textasciitilde [ ] +\(?: [a-z0-9] (?: [a-z0-9-] * [a-z0-9] )?\(\)}+ [a-z0-9] (?: [a-z0-9-] * [a-z0-9] )?\)"
rm = re.Search(editField1.Text)

if rm = Nil Then
StaticText2.text = editField1.Text + " not valid email"
Else
StaticText2.Text = editField1.Text + " is valid"
End if

Notes:

Adapted from:
http://www.regular-expressions.info/email.html

186.0.47 How do I check if the QuickTime component for the JPEG exporting is available?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** If you want to know if the PictureToString functions will work, you may try this function:

**Example:**

Function IsQTJPEGExporterAvailable() As boolean
dim q as QTComponentInformationMBS

// search for QuickTime JPEG exporter codec
q=new QTComponentInformationMBS

while q.NextComponent
if q.Type="imco" and q.SubType="jpeg" then
Return true
end if
wend

Return false // not found
End Function
Notes:
It should work like this for other types like:
"tiff" -> TIFF
"PNTG" -> Mac Paint
"gif" -> GIF
"WRLE" -> Windows BMP
"tga" -> Targa
"png" -> PNG
etc.

186.0.48 How do I check if the QuickTime component for the JPEG importing is available?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. Answer: If you want to know if the StringToPicture functions will work, you may try this function:

Example:

Function IsQTJPEGImporterAvailable() As boolean
  dim q as QTComponentInformationMBS
  // search for QuickTime JPEG importer codec
  q=new QTComponentInformationMBS
  while q.NextComponent
    if q.Type="imdc" and q.SubType="jpeg" then
      Return true
      end if
  wend
  Return false // not found
End Function

Notes:
It should work like this for other types like:
"tiff" -> TIFF
"PNTG" -> Mac Paint
"gif" -> GIF
"WRLE" -> Windows BMP
"tga" -> Targa
"png" -> PNG
etc.
186.0.49 How do I check if the QuickTime component for the Sequence grabber is available?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** If you want to know if the QTGrabberClass will work, you can use this code:

**Example:**

```vba
Function IsQTGrabberAvailable() As boolean
    q as QTComponentInformationMBS
    q = new QTComponentInformationMBS
    while q.NextComponent
        if q.Type = "barg" then
            Return true
        end if
   wend
    Return false // not found
End Function
```

**Notes:** Don’t forget that you need to check for each other component you use like the compression functions.

186.0.50 How do I decode correctly an email subject?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** The following code can be used to decode an email subject including several encodings including Base 64.

**Example:**

```vba
dim src as string // input

dim theRegex as Regex
dim theRegexMatch as RegexMatch
dim result, infoCharset, encodedPart as string
dim theStart as Integer

if instr(src, "=?") > 0 then
    theRegex = new Regex
    theRegex.Options.Greedy = false
    theRegex.searchPattern = ".*=\?([\+\w]+)(Q|B)\?\+\[=\]
    theRegexMatch = theRegex.search(src)
    while theRegexMatch <> nil
        theStart = theRegexMatch.subExpressionStartB(0) + len(theRegexMatch.subExpressionString(0))
        result = result + theRegexMatch.subExpressionString(1)

    End Function
```
infoCharset = theRegexMatch.subExpressionString(2)
encodedPart = theRegexMatch.subExpressionString(4)
if theRegexMatch.subExpressionString(3) = "B" then
encodedPart = DecodeBase64(encodedPart)
elseif theRegexMatch.subExpressionString(3) = "Q" then
encodedPart = DecodeQuotedPrintable(encodedPart)
end if
if right(result, 1) = " " then
result = mid(result, 1, len(result)-1)
end if
encodedPart = encodedPart.DefineEncoding(GetInternetTextEncoding(infoCharset))
result = result + encodedPart
theRegex.SearchStartPosition = theStart
theRegexMatch = theRegex.search()
wend
result = result + mid(src, theStart+1)

else
result = src
end if
// theRegexMatch = theRegex.search

msgbox result

Notes: May not look nice depending on the controls used.

186.0.51  How do I enable/disable a single tab in a tabpanel?

Example:
TabpanelEnabledMBS(tabpanel1, 1, false)

Notes:
Use Carbon for MachO and CarbonLib for Mac Carbon and AppearanceLib for Mac OS Classic as library. For Cocoa, please use enabled property of NSTabViewItemMBS class.
186.0.52  How do I find the root volume for a file?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Try this function:

**Example:**

```vbnet
Function GetRootVolume(f as FolderItem) as FolderItem
    dim root, dum as FolderItem
    if f <> nil then
        root = f // f might be the volume
    do
        dum = root.parent
        if dum <> nil then
            root = dum
        end if
    loop until dum = nil
    return root
End Function
```

186.0.53  How do I get the current languages list?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Try this code:

**Example:**

```vbnet
dim p as new CFPreferencesMBS
dim a as CFArrayMBS
dim s as CFStringMBS
dim o as CFObj ectMBS
dim sa(-1) as string

o=p.CopyAppValue("AppleLanguages", ".GlobalPreferences")

if o<>Nil then
    a=CFArrayMBS(o)

dim i,c as Integer

c=a.Count-1
for i=0 to c
    o=a.Item(i)
    if o isa CFStringMBS then
        s=CFStringMBS(o)
        sa.Append s.str
    end if
end for
```

next
end if

MsgBox Join(sa,EndOfLine)

Notes:
On Mac OS X you can get the list of current languages like this list:

de
en
ja
fr
es
it
pt
pt-PT
nl
sv
nb
da
fi
ru
pl
zh-Hans
zh-Hant
ko

Which has German (de) on the top for a German user.
This code has been tested on Mac OS X 10.5 only.

186.0.54 How do I get the Mac OS Version?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Try this code:

**Example:**

```vbnet
dim i as Integer
if system.gestalt(“sysv”, i) then
//do this in an 'If' in case you don't get any value back at all and system.gestalt returns boolean
if i = &h750 then //If OS is 7.5
//do stuff
elseif i = &h761 then //If OS is 7.6.1
//do stuff
end if
```
Notes: The MBS Plugin has a function SystemInformationMBS.OSVersionString for this.

186.0.55 How do I get the printer name?

Plugin Version: all, Console & Web: No. Answer: For Mac OS Classic see the code below and for Mac OS X use the Carbon Print Manager Classes from the MBS Plugin.

Example:

```vba
Dim s As String
Dim i As Integer

s = app.ResourceFork.GetResource("STR ",-8192)
If s <> "" Then
    i = ascb(leftb(s, 1))
    s = mid(s, 2, i)
MsgBox s
End If
```

Notes:

A note from Craig Hoyt:

After looking at your example I had a little deja-vu experience. Several years ago I played around with this same code if FutureBasic. I discovered that it did not and still doesn’t provide the 'Printer Name', it does return the print driver name. If it returns 'LaserWriter 8' as the print driver you can look into this file and get the 'PAPA' resource # -8192 to get the actual Printer Name. Unfortunately this does not hold true for other printers. My Epson and HP Printers (the Epson has an Ethernet Card and the HP is USB) do not provide this info in their drivers. As far as I can tell it only returns the name by polling the printer itself.

186.0.56 How do I make a metal window if RB does not allow me this?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. Answer: The following declare turns any window on Mac OS X 10.2 or newer into a metal one.

Example:
declare sub ChangeWindowAttributes lib "Carbon" (win as windowptr, a as Integer, b as Integer)

ChangeWindowAttributes window1,256,0

Notes: May not look nice depending on the controls used.

186.0.57 How do I make a smooth color transition?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer:

I'd like to show in a report some bars, which start with color A and end with color B.

The color change should be very smooth.

My problem: If I would start from 255,0,0 and end by 0,0,0, I would have 255 different colors. If the bars are longer than 255 pixels, would this look nice?

Example:

// Window.Paint:
Sub Paint(g As Graphics)
    dim w,w1,x,p as Integer
    dim c1,c2,c as color
    dim p1,p2 as Double

    c1=rgb(255,0,0) // start color
    c2=rgb(0,255,0) // end color

    w=g.Width
    w1=w-1

    for x=0 to w1
        p1=x/w1
        p2=1.0-p1

        c=rgb(c1.red*p1+c2.red*p2, c1.green*p1+c2.green*p2, c1.blue*p1+c2.blue*p2)

        g.ForeColor=c
        g.DrawLine x, 0,x,g.Height
        next
    End Sub
Notes: Try the code above in a window paint event handler.

186.0.58  How do I read the applications in the dock app?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No.  Answer: Use CFPreferencesMBS class like in this example:

Example:

// Reads file names from persistent dock applications and puts them into the list

dim pref as new CFPreferencesMBS

dim persistentapps as CFStringMBS = NewCFStringMBS("persistent-apps")
dim ApplicationID as CFStringMBS = NewCFStringMBS("com.apple.dock")
dim tiledata as CFStringMBS = NewCFStringMBS("tile-data")
dim filelabel as CFStringMBS = NewCFStringMBS("file-label")

// get the array of persistent applications from dock preferences
dim o as CFObjectMBS = pref.CopyValue(persistentapps, ApplicationID, pref.kCFPreferencesCurrentUser, pref.kCFPreferencesAnyHost)

if o isa CFArrayMBS then
    dim a as CFArrayMBS = CFArrayMBS(o)

    // walk over all items in array
    dim c as Integer = a.Count-1
    for i as Integer = 0 to c

        // get dictionary describing item
        o = a.Item(i)

        if o isa CFDictionaryMBS then
            dim d as CFDictionaryMBS = CFDictionaryMBS(o)

            // and pick tile data dictionary
            o = d.Value(tiledata)
            if o isa CFDictionaryMBS then
                d = CFDictionaryMBS(o)

            // and pick there the file label
            o = d.Value(filelabel)
            if o isa CFStringMBS then
                // and display it
                dim name as string = CFStringMBS(o).str
                List.AddRow name
end if
end if
else
MsgBox "Failed to read dock preferences."
end if

Notes: You can use the CFPreferencesMBS.SetValue to change a value and CFPreferencesMBS+Synchronize to write the values to disc. You may need to restart the Dock.app if you modified things.

186.0.59 How do I truncate a file?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** In a binarystream you can set the length property to truncate.

186.0.60 How do update a Finder’s windows after changing some files?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Try this code: **Example:**

```vbnet
dim f as folderitem ' some file
dim ae as appleevent
ea=newappleevent("fndr","fupd","MACS")
ea.folderitemparam("—-")=f
if not ae.send then
    //something went wrong
end if
```

Notes: The folderitem.finderupdate from the MBS Plugin does something like this.

186.0.61 How to access a USB device directly?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** First, it depends on the device.

Notes:
Some devices can be talked directly from user mode code, but some require a kernel driver.

For some devices you can use plugins to access them like:

- Audio and Video sources using the QTGrabberClassMBS
- Mass storage devices using the folderitem class.
- Serial devices using the System.SerialPort function.
- HID USB devices can be used with MacHIDMBS, WinHIDMBS or LinuxHIDInterface class.
- Any USB device may be used with MacUSBMBS or WinUSBMBS classes.

In general it is always the best to take the most high level access to have others do the work for the details.

### 186.0.62 How to add icon to file on Mac?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can use FolderItem.AddCustomIcon or NSWorkspaceMBS.setIcon functions. **Notes:** Please close any open stream for the file you want to add an icon.

### 186.0.63 How to ask the Mac for the Name of the Machine?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Using Apple Events you can use this code: **Example:**

```vba
Function ComputerName() As string
    dim theEvent as AppleEvent
    dim err as boolean

    theEvent = newAppleEvent("mchn","getd","MACS")
    err = theEvent.send

    return theEvent.ReplyString
End Function
```

**Notes:**
Code above is for Mac OS 9!
Also the MBS Plugin has a function for this which may be faster and work also on Macs without Filesharing (which handles this event).

**186.0.64 How to automatically enable retina in my apps?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can run a build script on each build with this code:

**Example:**

```vba
Dim App As String = CurrentBuildLocation + "/' + CurrentBuildAppName + ".app"
Call DoShellCommand("/usr/bin/defaults write " + App + "/Contents/Info "’NSHighResolutionCapable’" YES")
```

**Notes:** This will set the NSHighResolutionCapable flag to YES.

**186.0.65 How to avoid leaks with Cocoa functions?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can try this code on Mac OS X:

**Example:**

```vba
// in a Timer Action event:
Sub Action()
    static LastPool as NSAutoreleasePoolMBS = nil
    static CurrentPool as NSAutoreleasePoolMBS = nil

    LastPool = CurrentPool
    CurrentPool = new NSAutoreleasePoolMBS
End Sub
```

**Notes:**

With REALbasic 2009r4 the code above should not be needed as REALbasic runtime does automatically handle the NSAutoreleasePools for you. For older REALbasic versions you need to use code with a timer with the action event above to avoid memory leaks.

Please do not use REALbasic 2009r4 and newer with plugins before version 9.5. You can get crashes there which typically show a line with a objc_msgSend call.
186.0.66  How to avoid trouble connecting to oracle database with SQL Plugin?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** For oracle the most important thing is to point the plugin to the libraries from oracle.

**Notes:**

In environment variables, the paths like ORACLE_HOME must be defined.
On Mac OS X you also need to define DYLD_LIBRARY_PATH to point to the dylib files from oracle.

For that you need to modify /etc/launchd.conf for Mac OS X 10.8 and newer.
In older versions those variables in .MacOSX/environment.plist file in user’s home.

Another way for the case you bundle things inside your app is to use the LSEnvironment key in info.plist.
In info.plist it looks like this:

```xml
<key>LSEnvironment</key>
<dict>
<key>test</key>
<string>Hello World</string>
</dict>
```

186.0.67  How to avoid __NSAutoreleaseNoPool console messages in threads?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You need to use your own NSAutoreleasePool on a thread like this:

**Example:**

```vbnet
sub MyThread.run
  dim pool as new NSAutoreleasePoolMBS
  // do work here
  pool=nil
end sub
```

**Notes:**

For more details read here:
186.0.68  How to bring app to front?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** On Mac you can use this code:

**Example:**

```plaintext
// First way:
app.FrontMostMBS = true

// second way:
dim p as new ProcessMBS
p.GetCurrentProcess
p.FrontProcess = true

// third way:
NSApplicationMBS.sharedApplication.activateIgnoringOtherApps(true)

// for Windows:
RemoteControlMBS.WinBringWindowToTop
```

**Notes:** This will bring a Mac app to the front layer.

186.0.69  How to bring my application to front?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** This makes SimpleText (Code ttxt) to the frontmost application:

**Example:**

```plaintext
Dim A As AppleEvent
A = NewAppleEvent(“misc”,”actv”,””)
If Not A.Send then
Beep
end if
```

**Notes:** (Code is Mac only)

186.0.70  How to catch Control-C on Mac or Linux in a console app?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can use SignalHandlerMBS class for this.

**Example:**
// watch for Control-C on Mac
call SignalHandlerMBS.SetFlagHandler(2)

dim ende as boolean = false

do
if SignalHandlerMBS.IsFlagSet(2) then
Print "Flag 2 set. Existing..."
ende = true
end if

DoEvents 1
loop until ende

Notes: The signal is caught, a flag is set and you can ask later in your normal application flow for the result.

186.0.71 How to change name of application menu?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. Answer: Use this code to change the application menu name on Mac OS X:

Example:

dim mb as new MenubarMBS
dim m as MenuMBS = mb.item(1) // 1 is in my tests the app menu
if m<>Nil then
m.MenuTitle = "Hello World"
end if

Notes: This code is for Carbon only.

186.0.72 How to change the name in the menubar of my app on Mac OS X?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. Answer:

You mean it screws up if the file name of the bundle itself is different than the name of the executable file in the MacOS folder within the bundle? If so, you should find something like this within your Info.plist file (or the 'plst' resource that the RB IDE builds for you):

<key>CFBundleExecutable</key>
<string>Executable file name here</string>
Just make sure that file name matches.

However, if your question involves how you can change the name of the app that appears in the menu and the dock, that’s different. You can make this name different from the file name by changing the CFBundleName key:

```
<key>CFBundleName</key>
<string>Name for menu here</string>
```

Note that if you use my free AppBundler program, this second part is taken care of for you – just fill in a custom name in the right field. You can find AppBundler (from Thomas Reed) at http://www.bitjuggler.com/products/appbundler/.

186.0.73  How to check if a folder/directory has subfolders?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can use code like this to check all items in a folder:

**Example:**

```vba
Function HasSubFolder(folder as FolderItem) As Boolean
    dim c as Integer = folder.Count
    for i as Integer = 1 to c
        dim item as FolderItem = folder.TrueItem(i)
        if item<>Nil and item.Directory then
            Return true
        end if
    next
    End Function
```

**Notes:**

We use trueitem() here to avoid resolving alias/link files. Also we check for nil as we may not have permission to see all items. And if one is a directory, we return without checking the rest.
186.0.74  How to check if Macbook runs on battery or AC power?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. Answer: Please use our IOPowerSourcesMBS class like this:
Example:

```
Function PowerSourceState() as Integer
    dim p as new IOPowerSourcesMBS
    
    // check all power sources
    dim u as Integer = p.Count-1
    for i as Integer = 0 to u
        dim d as CFDictionaryMBS = p.Item(i)
        if d<>nil then
            // check if they have a power source state key:
            dim o as CFObjectMBS = d.Value(NewCFStringMBS("Power Source State"))
            if o isa CFStringMBS then
                dim s as string = CFStringMBS(o).str
                'MsgBox s
                if s = "AC Power" then
                    Return 1
                elseif s = "Battery Power" then
                    Return 2
                end if
            end if
        end if
    next
    Return 0 // unknown
End Function
```

Notes: If you want to check the CFDictionaryMBS content, simply use a line like "dim x as dictionary = d.dictionary" and check the contents in the debugger.

186.0.75  How to check if Microsoft Outlook is installed?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: If you need Outlook for Scripting, you should simply check registry for the required Outlook.Application class:
Example:

```
Function OutlookInstalled() As Boolean
    # if TargetWin32 then
    try
```
dim r as new RegistryItem("HKEY_CLASSES_ROOT\Outlook.Application\CLSID", false)

Return true

catch r as RegistryAccessErrorException
// not installed
Return false
end try

# else
// Windows only, so false on other platforms
Return false
# endif

End Function

186.0.76 How to check on Mac OS which country or language is currently selected?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. Answer: The code below returns a country value.

Example:

dim result as Integer

IF TargetMacOS THEN

CONST smScriptLang = 28
CONST smSystemScript = -1

DECLARE FUNCTION GetScriptManagerVariable LIB "Carbon" ( selector as Integer) as Integer
DECLARE FUNCTION GetScriptVariable LIB "Carbon" ( script as Integer, selector as Integer) as Integer

result=GetScriptVariable(smSystemScript, smScriptLang)

END IF

Notes:

Returns values like:
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For more values, check "Script.h" in the frameworks.

186.0.77 How to code sign my app with plugins?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. Answer: When you try to code sign the application with plugin dylibs on Mac OS X, you may see error message that there is actually a signature included.

Notes:

Please use the -f command line parameter with codesign utility to overwrite our MBS signature.
We sign our plugins for Mac and Windows to make sure they have not been modified.

In terminal, you do like this:

```
cd <Path to folder of app>

codesign -f -s "Developer ID Application: <Your Name>" "<Appname>.app/Contents/Frameworks/*.dylib"
codesign -f -s "Developer ID Application: <Your Name>" "<Appname>.app/Contents/Frameworks/*.framework"
codesign -f -s "Developer ID Application: <Your Name>" "<Appname>.app"
```

Please use the name of your certificate (See keychain), the name of your app and the path to the app folder. If you have helper apps you need to sign them first. You can use a build step to automatically sign your app on build.

186.0.78 How to collapse a window?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. Answer: Use this function (Mac only):

Example:

```
Sub CollapseRBwindow(w as window, CollapseStatus as boolean)
dim state, err as Integer
dim wh as MemoryBlock

Declare Function CollapseWindow Lib "Carbon" (window as Integer,collapse as Integer) as Integer

IF CollapseStatus THEN
    state = 1
ELSE
    state = 0
END IF
```
err = CollapseWindow(w.MacWindowPtr, state)

End Sub

Notes:
Also the MBS Plugin has a window.collapsedmbs property you can set.
For Windows the MBS Plugin has a window.isiconicmbs property.

186.0.79 How to compare two pictures?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: You can try this code:
Example:

Function ComparePictures(p as picture,q as picture) as Integer
dim r,u as RGBSurface
dim x,y,n,m,h,w as Integer
dim w1,w2,h1,h2,d1,d2 as Integer
dim c1,c2 as color

h1=p.Height
h2=q.Height
w1=p.Width
w2=q.Width
d1=p.Depth
d2=q.Depth

if d1<>d2 then
Return 1
elseif w1<>w2 then
return 2
elseif h1<>h2 then
Return 3
else
r=p.RGBSurface
u=q.RGBSurface

if r=nil or u=nil then
Return -1
else
h=h1-1
w=w1-1
m=min(w,h)

endif
for n=0 to m
  c1=r.Pixel(n,n)
  c2=u.Pixel(n,n)
  if c1<>c2 then
    Return 4
  end if
  next

for y=0 to h
  for x=0 to w
    c1=r.Pixel(x,y)
    c2=u.Pixel(x,y)
    if c1<>c2 then
      Return 5
    end if
  next
next

// 0 for equal
// -1 for error (no RGBsurface)
// 1 for different depth
// 2 for different width
// 3 for different height
// 4 for different pixels (fast test)
// 5 for different pixels (slow test)
end if
end if

Exception
Return -1
End Function

Notes: Remember that this only works on bitmap pictures, so the picture.BitmapMBS function may be useful.

186.0.80 How to compile PHP library?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. Answer: You have to download the source code and compile a static version of the library.

Notes:

This instructions were written based on PHP 5.2.6 on Mac OS X:

• Best take a new Mac with current Xcode version installed.
• Download the source code archive. e.g. "php-5.2.6.tar.bz2"
• Expand that archive on your harddisc.
• Open terminal window
• change directory to the php directory. e.g. "cd /php-5.2.6"
• execute this two lines to define the supported CPU types and the minimum Mac OS X version:
  • export CFLAGS="-arch ppc -arch i386 -mmacosx-version-min=10.3"
  • export CXXFLAGS="-arch ppc -arch i386 -mmacosx-version-min=10.3"
• the command ".configure help" does show the configure options.
• use configure with a line like this:
  • ./configure --enable-embed --with-curl --enable-ftp --enable-zip --enable-sockets --enable-static --enable-soap
    --with-zlib --with-bz2 --enable-exif --enable-bcmath --enable-calendar
• start the compilation with "make all"
• other option is to use "make install" which first does the same as "make all" and than does some installation scripts.
• you may get an error about a duplicate symbole _yytext. Search the file "zend_imi_scanner.c", search a line with "char *yytext;" and change it to "extern char *yytext;".
• On the end you get a lot of error messages, but you have a working library (named libphp5.so) file in the invisible ".libs" folder inside your php source folder.

Possible problems and solutions:

• If the path to your files has spaces, you can get into trouble. e.g. "/RB Plugins/PHP" is bad as files will be searched sometimes in "/RB".
• If you have in /usr/local/lib libraries which conflict with the default libraries, you can get into trouble.
• If you installed some open source tools which compiled their own libraries, you can get into conflicts.
• if you have to reconfigure or after a problem, you may need to use "make clean" before you start "make all" again.

Feel free to install additional libraries and add more packages to the configure line.
186.0.81 How to convert a BrowserType to a String with WebSession.Browser?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Use code like this:

**Example:**

```vbnet
Function GetBrowserName(s as WebSession.BrowserType) As string
    Select case s
        case WebSession.BrowserType.Android
            Return "Android"
        case WebSession.BrowserType.Blackberry
            Return "Blackberry"
        case WebSession.BrowserType.Chrome
            Return "Chrome"
        case WebSession.BrowserType.ChromeOS
            Return "ChromeOS"
        case WebSession.BrowserType.Firefox
            Return "Firefox"
        case WebSession.BrowserType.InternetExplorer
            Return "InternetExplorer"
        case WebSession.BrowserType.Opera
            Return "Opera"
        case WebSession.BrowserType.Safari
            Return "Safari"
        case WebSession.BrowserType.SafariMobile
            Return "SafariMobile"
        case WebSession.BrowserType.Unknown
            Return "Unknown"
        else
            Return "Unknown: " + str(integer(s))
    end Select
End Function
```

186.0.82 How to convert a EngineType to a String with WebSession.Engine?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Use code like this:

**Example:**

```vbnet
Function GetRenderingEngineName(s as WebSession.EngineType) As string
    Select case s
        case WebSession.EngineType.Gecko
            Return "Gecko"
        case WebSession.EngineType.Presto
            Return "Presto"
        case WebSession.EngineType.Trident
```
Return "Trident"
case WebSession.EngineType.Unknown
Return "Unknown"
case WebSession.EngineType.WebKit
Return "WebKit"
else
Return "Unknown: " + str(integer(s))
end Select

End Function

186.0.83 How to convert a PlatformType to a String with WebSession.Platform?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: Use code like this:

Example:

Function GetPlatformName(s as WebSession.PlatformType) As string
Select case s
    case WebSession.PlatformType.Blackberry
        Return "Blackberry"
    case WebSession.PlatformType.iPad
        Return "iPad"
    case WebSession.PlatformType.iPhone
        Return "iPhone"
    case WebSession.PlatformType.iPodTouch
        Return "iPodTouch"
    case WebSession.PlatformType.Linux
        Return "Linux"
    case WebSession.PlatformType.Macintosh
        Return "Macintosh"
    case WebSession.PlatformType.PS3
        Return "PS3"
    case WebSession.PlatformType.Unknown
        Return "Unknown"
    case WebSession.PlatformType.WebOS
        Return "WebOS"
    case WebSession.PlatformType.Wii
        Return "Wii"
    case WebSession.PlatformType.Windows
        Return "Windows"
else
    Return "Unknown: " + str(integer(s))
end Select
186.0.84 How to convert a text to iso-8859-1 using the TextEncoder?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:**

This code can help you although it’s not perfect.
You need to set lc to the current color you use.

**Example:**

```vbnet
dim outstring as string
dim theMac, thePC as textencoding
dim Mac2PC as textconverter

theMac = getTextEncoding(0) // MacRoman
thePC = getTextEncoding(& h0201) // ISOLatin1

Mac2PC = getTextConverter(theMac, thePC)
// if you wanted to do the opposite just create a converter
// PC2Mac = getTextConverter(thePC, theMac)

outstring = Mac2PC.convert("Bjrn, this text should be converted")
Mac2PC.clear
```

**Notes:** You have to call Mac2PC.clear after every conversion to reset the encoding engine.

186.0.85 How to convert ChartTime back to Xojo date?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** We have this example code:

**Example:**

```vbnet
Function ChartTimeToDate(ChartTime as Double) As date
static diff as Double = 0.0

if diff = 0.0 then
    dim d2 as Double = CDBaseChartMBS.chartTime(2015, 1, 1)
    dim da as new date(2015, 1, 1)
    dim ts as Double = da.TotalSeconds
    diff = ts - d2
end if
```

dim d as new date
d.TotalSeconds = diff + ChartTime

Return d
End Function

Notes: As you see we calculate the difference in base date from Date and ChartTime and later use difference to convert.

186.0.86 How to convert line endings in text files?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. Answer: You can simply read file with TextInputStream and write with new line endings using TextOutputStream class.

Example:

dim inputfile as FolderItem = SpecialFolder.Desktop.Child("test.txt")
dim outputfile as FolderItem = SpecialFolder.Desktop.Child("output.txt")
dim it as TextInputStream = TextInputStream.Open(inputfile)
dim ot as TextOutputStream = TextOutputStream.Create(outputfile)

ot.Delimiter = EndOfLine.Windows // new line ending
while not it.EOF
    ot.WriteLine it.ReadLine
wend

Notes: TextInputStream will read any input line endings and with delimiter property in TextOutputStream you can easily define your new delimiter.

186.0.87 How to convert picture to string and back?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: Use this plugin functions:

Notes:
JPEG:

JPEGStringToPictureMBS(buf as string) as picture
JPEGStringToPictureMBS(buf as string,allowdamaged as Boolean) as picture
PictureToJPEGStringMBS(pic as picture,quality as Integer) as string
186.0.88 How to copy an array?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can use a function like this to copy an array:

**Example:**

```vbnet
Function CopyArray(a() as Double) as Double()
    dim r() as Double
    for each v as Double in a
        r.Append v
    next
    Return r
End Function
```
Notes:

If needed make several copies of this method with different data types, not just double.
For a deep copy of an array of objects, you need to change code to also make a copy of those objects.

186.0.89  How to copy an dictionary?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No.  Answer: You can use a function like this to copy a dictionary:

Example:

Function CopyDictionary(d as Dictionary) As Dictionary
    dim r as new Dictionary
    for each key as Variant in d.keys
        r.Value(key) = d.Value(key)
    next
    Return r
End Function

Notes:

If needed make several copies of this method with different data types, not just double.
For a deep copy of an dictionary of objects, you need to change code to also make a copy of those objects.

186.0.90  How to copy parts of a movie to another one?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No.  Answer: The code below copies ten seconds of the snowman movie to the dummy movie starting at the 5th second.

Example:

dim f as FolderItem
dim md as EditableMovie
dim ms as EditableMovie

f=SpecialFolder.Desktop.Child("Our First Snowman.mov")
ms=f.OpenEditableMovie

ms.SelectionStartMBS=5
ms.SelectionLengthMBS=10

f=SpecialFolder.Desktop.Child("dummy.mov")
md=f.CreateMovie

msgbox str(md.AddMovieSelectionMBS(ms))
Notes: If result is not 0, the method fails.

186.0.91 How to create a birthday like calendar event?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. Answer: Try this code:

Example:

```vba
// start a connection to the calendar database
dim s as new CalCalendarStoreMBS

// needed for the error details
dim e as NSErrorMBS

dim r as CalRecurrenceRuleMBS = CalRecurrenceRuleMBS.initYearlyRecurrence(1, nil) // repeat every year without end

dim a as new CalAlarmMBS // add alarm
a.action = a.CalAlarmActionDisplay
a.relativeTrigger = -3600*24 // 24 Hours before

// create a new calendar
dim c as new CalEventMBS

dim d as new date(2011, 04, 20) // the date

dim calendars() as CalCalendarMBS = s.calendars

// set properties
c.Title = "Test Birthday"
c.startDate = d
c.recurrenceRule = r
c.calendar = calendars(0) // add to first calendar
c.addAlarm(a)
c.endDate = d
c.isAllDay = true

// save event
call s.saveEvent(c, s.CalSpanAllEvents, e)
if e<>nil then
    MsgBox e.localizedDescription
else
    MsgBox "New event was created."
end if
```
Notes: This adds an event to iCal for the given date with alarm to remember you and repeats it every year.

186.0.92 How to create a GUID?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Use the UUIDMBS class for this.

186.0.93 How to create a Mac picture clip file?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** You can use code like this one.

**Example:**

```vbscript
dim f As FolderItem
dim p As Picture

f=SpecialFolder.Desktop.Child("Test.pictClipping")
if f=nil then Return

p=new Picture(300,200,32) 'Make a sample picture
p.Graphics.ForeColor=RGB(0,255,255)
p.Graphics.FillOval 0,0,99,99
p.Graphics.ForeColor=RGB(255,0,0)
p.Graphics.DrawOval 0,0,99,99

dim r As ResourceFork 'ResourceFork is needed for a clip file

// Please define a file type Any
r=f.CreateResourceFork("Any")

// get PICT data using plugin function
dim pictdata as string = p.PicHandleDataMBS
r.AddResource(pictdata,"PICT",256,"Picture")

dim m as new MemoryBlock(8)

m.LittleEndian = false
m.Int16Value(0) = 0
m.Int16Value(2) = 0
m.Int16Value(4) = p.Width
m.Int16Value(6) = p.Height
```
r.AddResource(m,"RECT",256,""")

'Values taken from a sample file and irrelevant to the problem
dim data as string = DecodeBase64("AQAAAAAAAAAAAAAAAAACAFRDRVIAAAABAAAAAAAAAAABUQ0lQAAAAAQAAAAAAAAAA")
r.AddResource(data,"drag",128,"") 'ditto
r.Close

Notes: In general Apple has deprecated this, but a few application still support clippings.

### 186.0.94 How to create a PDF file in REALbasic?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Check our DynaPDF plugin and the examples.

**Notes:**
An alternative can be to use the CoreGraphics and Cocoa functions on Mac OS X. For Windows, we can only suggest our DynaPDF plugin.

### 186.0.95 How to create EmailAttachment for PDF Data in memory?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can use code like the one below:

**Example:**

```vba
Function EmailAttachmentFromPDFData(PDFData as string, filename as string) As EmailAttachment
dim a as new EmailAttachment

a.data = EncodeBase64(PDFData, 76)
a.ContentEncoding = "base64"
a.MIMEType = "application/pdf"
a.MacType = "PDF"
a.MacCreator = "prvw"
a.Name = filename

Return a
End Function
```

**Notes:**
Compared to sample code from Xojo documentation, we set the mime type correct for PDF. The MacType/MacCreator codes are deprecated, but you can still include them for older Mac email clients. "prvw" is the creator code for Apple’s preview app.
186.0.96 How to create PDF for image files?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can use DynaPDF like this:

**Example:**

```vba
Function CreatePrintPDF(jpgFiles() as folderitem, pdfFile as FolderItem, PageWidth as Integer, PageHeight as Integer) As Boolean
    // have files?
    If pdfFile = Nil Then Return False
    If jpgFiles = Nil Then Return False
    If jpgFiles.Ubound <0 Then Return False

    // new DynaPDF
    Dim pdf As New MyDynapdfMBS

    // page width/height in MilliMeter
    Dim pdfWidth as Integer = PageWidth * 72 / 25.4
    Dim pdfHeight as Integer = PageHeight * 72 / 25.4

    // put your license here
    Call pdf.SetLicenseKey "Starter"

    // create pdf
    Call pdf.CreateNewPDF pdfFile

    // set a couple of options
    Call pdf.SetPageCoords(MyDynaPDFMBS.kpcTopDown)
    Call pdf.SetResolution(300)
    Call pdf.SetUseTransparency(False)
    Call pdf.SetSaveNewImageFormat(False)
    Call pdf.SetGStateFlags(MyDynaPDFMBS.kgfUseImageColorSpace, False)
    Call pdf.SetJPEGQuality(100)

    // set page size
    Call pdf.SetBBox(MyDynaPDFMBS.kpbMediaBox, 0, 0, pdfWidth, pdfHeight)
    Call pdf.SetPageWidth(pdfWidth)
    Call pdf.SetPageHeight(pdfHeight)

    // append pages with one image per page
    For i as Integer = 0 To jpgFiles.Ubound
        Call pdf.Append
        Call pdf.InsertImageEx(0, 0, pdfWidth, pdfHeight, jpgFiles(i), 1)
        Call pdf.EndPage
    Next

    Return True
End Function
```

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Notes:
This is to join image files in paper size to a new PDF.
e.g. scans in A4 into an A4 PDF.

186.0.97 How to CURL Options translate to Plugin Calls?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: Below a few tips on how to translate command line CURL calls to plugin calls.

Notes:

- The option -v means verbose. You can use OptionVerbose and listen for messages in the DebugMessage event.
- The option -X PUT means we want to do a HTTP PUT Request. So set OptionPut to true. Also you will want to set OptionUpload to true as you upload data.
- We have the URL which you put into OptionURL property.
- The -data-binary option tells CURL to pass the given data. With the @ before the data, it is interpreted as a file name, so the data is read from the given file. You’ll need to open this file and pass data with the Read event as needed. (See CURLS ftp file upload example project)
- The last option -H specifies an additional header for the upload. Pass this additional header with the SetOptionHTTPHeader method.

curl -X PUT http://127.0.0.1:5984/appserials/f2f4e540bf8bb60f61cfcd4328001c59 -d ' { "type":"Product","description":"Application Serial","acronym":"AppSerial","dateAdded":"2011-03-21 14:57:36" } ' 

- Option -X PUT like above.
- Pass the URL again in OptionURL
- This time data is passed in command line for CURL. You’d put this data in the quotes into a string and make it available in the Read event. (See CURLS ftp upload example project)
186.0.98  How to delete file with ftp and curl plugin?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can set post/pre quotes to have ftp commands executed before or after the download/upload.

**Example:**

```vba
dim d as CURLMBS // your curl object

// delete file
dim ws() As String
ws.Append "DELE Temp.txt"

d.SetOptionPostQuote(ws)
```

**Notes:**

Use SetOptionPostQuote, SetOptionPreQuote or SetOptionQuote. The ftp commands you pass here are native ftp commands and not the commands you use with ftp applications. To delete use DELE and the file path.

186.0.99  How to detect display resolution changed?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** On Mac OS X simply listen for display changed notifications.

**Notes:** Use the "Distribution Notification Center.rbp" example project as a base and use it to listen to notifications with the name "O3DeviceChanged".

186.0.100  How to detect retina?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Please use WindowBackingScaleFactorMBS to query the factor.

**Example:**

```vba
msgbox str(window1.BackingScaleFactorMBS)
```

186.0.101  How to disable force quit?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:**

Please visit this website and get the control panel for Mac OS 9 there: http://www3.sk.sympatico.ca/tinyjohn/DFQ.html
For Mac OS X use the MBS Plugin with the SetSystemUIModeMBS method.  
**Notes:** Please use presentationOptions in NSApplicationMBS for Cocoa applications.

### 186.0.102 How to disable the error dialogs from Internet Explorer on javascript errors?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No.  
**Answer:** You can use this code in the htmlviewer open event:  
**Example:**

```plaintext
if targetwin32 then
    htmlviewer1._ole.Content.value("Silent") = True
end if
```

**Notes:** This disables the error dialogs from Internet Explorer.

### 186.0.103 How to display a PDF file in REALbasic?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes.  
**Answer:** On Mac OS X you can use CoreGraphics or PDFKit to display a PDF.  
**Notes:**  
An alternative can be to load the PDF into a htmlviewer so the PDF plugin can display it.  
On Windows you may need to use the Acrobat ActiveX control from Adobe or launch Acrobat Reader.

### 186.0.104 How to do a lottery in RB?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes.  
**Answer:** Try this function:  
**Example:**

```plaintext
Sub Lotto(max as Integer,count as Integer,z() as Integer)
    // Lotto count numbers of max put into the array z beginning at index 0
    dim n(0) as Integer ' all the numbers
    dim m as Integer ' the highest field in the current array
    dim i,a,b,d as Integer ' working variables

    'fill the array with the numbers
    m=max-1
    redim n(m)
```
for i=0 to m
n(i)=i+1
next

' unsort them by exchanging random ones
m=max*10
for i=1 to m
a=rnd*max
b=rnd*max
d=n(a)
n(a)=n(b)
n(b)=d
next

' get the first count to the dest array
m=count-1
redim z(m)
for i=0 to m
z(i)=n(i)
next

'sort the result
z.sort
End Sub

Sub Open()
// Test it
dim za(0) as Integer ' the array of the numbers
lotto 49,6,za ' 6 of 49 in Germany

' and display them
staticText1.text=str(za(0))+chr(13)+str(za(1))+chr(13)+str(za(2))+chr(13)+str(za(3))+chr(13)+str(za(4))+chr(13)+str(za(5))+chr(13)+str(za(6))+chr(13)
End Sub

186.0.105 How to do an asycron DNS lookup?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. Answer: use CFHostMBS class (Mac OS X only).

Notes:
REALbasic internal functions and plugin DNS functions are synronized.
You can use DNSLookupThreadMBS class for doing them asyncron.

186.0.106  How to draw a dashed pattern line?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: You can try this code:

Example:

```vbnet
// call like this: DrawDashedPatternLine g,0,0,width,height,10

Sub DrawDashedPatternLine(g as graphics,x1 as Integer,y1 as Integer,x2 as Integer,y2 as Integer, partlen as Integer)
    dim x,y,ox,oy as Double
    dim dx,dy as Double
    dim w,h,d as Double
    dim b as Boolean

    w=x2-x1
    h=y2-y1

    d=sqrt(w*w+h*h)

    dx=w/d*partlen
    dy=h/d*partlen

    b=true
    x=x1
    while (x<x2) and (y<y2)
        ox=x
        oy=y

        x=x+dx
        y=y+dy

        if b then
            g.DrawLine ox,oy,x,y
        end if

        b=not b
    wend
End Sub
```

Notes: It would be possible to add this to the plugin, but I think it’s better if you do it in plain Realbasic code, so it even works on Windows.
How to draw a nice antialiased line?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer:

This code can help you although it’s not perfect.
You need to set lc to the current color you use.

Example:

Sub drawLine(xs as Integer, ys as Integer, xe as Integer, ye as Integer, face as RGBSurface, lineColor as color)
    dim intX, intY, count, n, xDiff, yDiff as Integer
    dim v, v1, floatX, floatY, xx, yy, xStep, yStep as Double
    dim c as color

    const st=1.0
    xDiff=xe-xs
    yDiff=ye-ys
    count=max(abs(xDiff), abs(yDiff))
    xStep=xDiff/count
    yStep=yDiff/count
    xx=xs
    yy=ys
    for n=1 to count
        intX=xx
        intY=yy
        floatX=xx-intX
        floatY=yy-intY
        v=(1-floatX)*(1-floatY)*st
        v1=1-v
        c=face.pixel(intX, intY)
        face.pixel(intX, intY)=rgb(v*lineColor.red+v1*c.red, v*lineColor.green+v1*c.green, v*lineColor.blue+v1*c.blue)
        v=floatX*(1-floatY)*st
        v1=1-v
        c=face.pixel(intX+1, intY)
        face.pixel(intX+1, intY)=rgb(v*lineColor.red+v1*c.red, v*lineColor.green+v1*c.green, v*lineColor.blue+v1*c.blue)
        v=(1-floatX)*floatY*st
        v1=1-v
        c=face.pixel(intX, intY+1)
        face.pixel(intX, intY+1)=rgb(v*lineColor.red+v1*c.red, v*lineColor.green+v1*c.green, v*lineColor.blue+v1*c.blue)
        v=floatX*floatY*st
        v1=1-v
        c=face.pixel(intX+1, intY+1)
        face.pixel(intX+1, intY+1)=rgb(v*lineColor.red+v1*c.red, v*lineColor.green+v1*c.green, v*lineColor.blue+v1*c.blue)
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xx=xx+xStep
yy=yy+yStep
next

End Sub

Notes: PS: st should be 1 and face should be a RGBSurface or a Graphics object.

186.0.108 How to draw with CGContextMBS using my own handle?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: You can try this code:

Example:

Soft Declare Function QDBeginCGContext Lib "Carbon" (port as Integer, ByRef contextHandle as Integer) as Integer
dim contextRef as Integer
call QDBeginCGContext(g.handle(graphics.HandleTypeCGrafPtr), contextRef)
dim c as new CGContextMBS(contextRef)
c.BeginPath
c.SetLineWidth(3)
c.SetRGBFillColor(1,0,0,0.5)
c.FillRect(CGMakeRectMBS(0,0,100,100))
c.DrawPath(c.kCGPathFillStroke)
c.Flush // and so on

Soft Declare Function QDEndCGContext Lib "Carbon" (port as Integer, ByRef contextHandle as Integer) as Integer
dim h as Integer = c.Handle
call QDEndCGContext(g.handle(graphics.HandleTypeCGrafPtr), h)
c.Handle=0

Notes: Basicly you can provide your own handle to CGContextMBS. But if you do not set it back to 0 the CGContextMBS destructor will release the handle which can result into a crash. (if the reference count is wrong)

186.0.109 How to dump java class interface?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: In terminal you can use "javap -s <classname>" to display the class with the method names and parameters.

Notes: For example show ResultSet class: javap -s java.sql.ResultSet
186.0.110  How to duplicate a picture with mask or alpha channel?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can use code like this function:

**Example:**

```plaintext
Function Duplicate(extends p as Picture) As Picture

# if RBVersion >= 2011.04 then
if p.HasAlphaChannel then

    // create nw picture and copy content:
    dim q as new Picture(p.Width, p.Height)
    q.Graphics.DrawPicture p, 0,0

    Return q

end if

# endif

// create new picture
dim q as new Picture(p.Width, p.Height, 32)

// get mask
dim oldMask as Picture = p.mask(false)
if oldMask = nil then
    // no mask, so simple copy
    q.Graphics.DrawPicture p, 0,0
    Return q
end if

// remove mask
p.mask = nil

// copy picture and mask
q.Graphics.DrawPicture p, 0, 0
q.mask.Graphics.DrawPicture oldMask, 0,0

// restore mask
p.mask = oldmask

Return q

End Function
```

**Notes:**
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Simply copy it to a module and call it like this: `q = p.duplicate`.
The code above works with old Real Studio versions because of the `#` if even if your RS version does not support alpha channel pictures. This way it’s future proof.

186.0.111 How to enable assistive devices?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can use AppleScript code like below:

**Notes:**

tell application "System Events"
activate

set UI elements enabled to true

return UI elements enabled
end tell

You can run this with AppleScriptMBS class.

186.0.112 How to encrypt a file with Blowfish?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can use code like this:

**Example:**

dim fi as FolderItem = SpecialFolder.Desktop.Child(”test.xojo_binary_project”)
dim fo as FolderItem = SpecialFolder.Desktop.Child(”test.encrypted”)

// read input
dim bi as BinaryStream = BinaryStream.Open(fi)
dim si as string = bi.Read(bi.Length)
bi.Close

// encrypt
dim so as string = BlowfishMBS.Encrypt(”MyKey”,si)

// write output
dim bo as BinaryStream = BinaryStream.Create(fo)
bo.Write so
bo.Close
Notes: Of course you can decrypt same way, just use Decrypt function and of course swap files.

186.0.113 How to extract text from HTML?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: Use both Remove-HTMLTagsMBS and DecodingFromHTMLMBS like this:

Example:

dim html as string = "<p><b>Größ...</b></p>"
dim htmltext as string = RemoveHTMLTagsMBS(html)
dim text as string = DecodingFromHTMLMBS(htmltext)

MsgBox text // shows: Gre

Notes:
You can use it together with RemoveHTMLTagsMBS to remove html tags. What you get will be the text without tags.
DecodingFromHTMLMBS turns HTML escapes back to unicode characters. Like &auml; to .

186.0.114 How to find empty folders in a folder?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: Try this code:

Example:

dim folder as folderitem // your folder

dim c as Integer = folder.count
for i as Integer = 1 to c
dim item as folderitem = folder.trueitem(i)
if item = nil then
    // ignore
elseif item.directory then
    // folder
if item.count = 0 then
    // found empty folder
end if
end if
next
186.0.115  How to find iTunes on a Mac OS X machine fast?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can try Launch Services.
**Example:**

```vbscript
dim f as FolderItem

f=LaunchServicesFindApplicationForInfoMBS("hook","com.apple.iTunes","iTunes.app")

MsgBox f.AbsolutePath
```

186.0.116  How to find network interface for a socket by it’s name?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can use our plugin to build a lookup table.
**Example:**

```vbscript
Function FindNetworkInterface(name as string) As NetworkInterface
name = name.trim

if name.len = 0 then Return nil

// search by IP/MAC
dim u as Integer = System.NetworkInterfaceCount-1
for i as Integer = 0 to u
    dim n as NetworkInterface = System.GetNetworkInterface(i)
    if n.IPAddress = name or n.MACAddress = name then
        Return n
    end if
next

// use MBS Plugin to build a mapping
dim interfaces() as NetworkInterfaceMBS = NetworkInterfaceMBS.AllInterfaces
dim map as new Dictionary

for each n as NetworkInterfaceMBS in interfaces
    dim IPv4s() as string = n.IPv4s
    dim IPv6s() as string = n.IPv6s

    for each IPv4 as string in IPv4s
        map.Value(IPv4) = n.Name
    next

    for each IPv6 as string in IPv6s
        map.Value(IPv6) = n.Name
```

if n.MAC<>"" then
map.Value(n.MAC) = n.Name
end if
next

// now search interfaces by name, IPv4 or IPv6
for i as Integer = 0 to u
    dim n as NetworkInterface = System.GetNetworkInterface(i)
    if map.Lookup(n.IPAddress, "") = name then
        Return n
    end if

    if map.Lookup(n.MACAddress, "") = name then
        Return n
    end if
next

End Function

Notes: The code above uses a lookup table build using NetworkInterfaceMBS class to find the network interface by name.

186.0.117  How to find version of Microsoft Word?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: You can use code like this:

Example:

// find Word
dim f as FolderItem = LaunchServicesFindApplicationForInfoMBS("", "com.microsoft.Word","")

// open bundle
dim c as new NSBundleMBS(f)

// read info
dim d as Dictionary = c.infoDictionary

// show version
MsgBox d.Lookup("CFBundleVersion","")

Notes: Older versions of Word can be found with creator code "MSWD".

186.0.118  How to fix CURL error 60/53 on connecting to server?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You probably connect with SSL and you have no valid certificate.

**Example:**

```
    dim d as new CURLSMBS

    // Enable SSL verification
    d.OptionSSLVerifyHost = 0  // don’t verify server
    d.OptionSSLVerifyPeer = 0  // don’t proofs certificate is authentic

    // With SSL Verification:
    dim cacert as FolderItem = Getfolderitem("cacert.pem")
    d.OptionCAInfo = cacert.UnixpathMBS
    d.OptionSSLVerifyHost = 2  // verify server
    d.OptionSSLVerifyPeer = 1  // proofs certificate is authentic
```

**Notes:**

You can either use the code above to disable the SSL verification and have no security.
Or you use the cacert file and enable the verification. Than you only get a connection if the server has a valid certificate.

See also:

[http://curl.haxx.se/ca/](http://curl.haxx.se/ca/)

186.0.119  How to format double with n digits?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can use the FormatMBS function for this.

**Example:**

```mbs
    dim d as Double = 123.4567890
    listbox1.AddRow FormatMBS("% f", d)
    listbox1.AddRow FormatMBS("% e", d)
    listbox1.AddRow FormatMBS("% g", d)

    listbox1.AddRow FormatMBS("% 5.5f", d)
    listbox1.AddRow FormatMBS("% 5.5e", d)
    listbox1.AddRow FormatMBS("% 5.5g", d)

    d = 0.000000123456
    listbox1.AddRow FormatMBS("% f", d)
    listbox1.AddRow FormatMBS("% e", d)
```
listbox1.AddRow FormatMBS("% g", d)
listbox1.AddRow FormatMBS("% 5.5f", d)
listbox1.AddRow FormatMBS("% 5.5e", d)
listbox1.AddRow FormatMBS("% 5.5g", d)

Notes:
see FormatMBS for details.
In general % f is normal style, % e is scientific and % g is whichever gives best result for given space.

186.0.120 How to get a time converted to user time zone in a web app?

Example:
Sub Open()
// current date on server
    dim d as new date
    dim s as string = d.LongTime

    // adjust to client GMT offset
    d.GMTOffset = d.GMTOffset + Session.GMTOffset

    dim t as string = d.LongTime
    MsgBox s+EndOfLine+t
End Sub

186.0.121 How to get an handle to the frontmost window on Windows?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. Answer: This function returns a handle for the frontmost window:
Example:
Function GetForegroundWindowHandle() as Integer
    # if targetwin32 then
    declare function GetForegroundWindow Lib "user32.dll" as Integer
    Return GetForegroundWindow()
    # endif
End Function
186.0.122  How to get CFAbsoluteTime from date?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No.  **Answer:** Use code like this:

**Example:**

```vba
dim d as new date
dim t as CFTimeZoneMBS = SystemCFTimeZoneMBS
dim g as new CFGregorianDateMBS
g.Day = d.Day
    g.Month = d.Month
    g.Year = d.Year
    g.Minute = d.Minute
    g.Hour = d.Hour
    g.Second = d.Second

    dim at as CFAbsoluteTimeMBS = g.AbsoluteTime(t)
dim x as Double = at.Value

MsgBox str(x)
```

**Notes:**

As you see we need a timezone and put the date values in a gregorian date record.
Now we can query absolute time for the given timezone.

186.0.123  How to get client IP address on web app?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Use the WebSession.RemoteAddress property.

**Example:**

```vba
Sub Open()
    Title = Session.RemoteAddress
End Sub
```
186.0.124 How to get fonts to load in charts on Linux?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Please use the SetFontSearchPath method in the CDBaseChartMBS class to specify where your fonts are.

**Example:**

```pascal
if TargetLinux then
  CDBaseChartMBS.SetFontSearchPath "/usr/share/fonts/truetype"
else
  // on Mac and Windows we use system fonts.
end if
```

**Notes:**

On Mac OS X and Windows, the fonts are loaded from the system’s font folder.

e.g. if you use ubuntu, you can install the ttf-mscorefonts-installer package and call this method with "/usr/share/fonts/truetype/msttcorefonts” as the path. No backslash on the end of a path, please.

---

186.0.125 How to get fonts to load in DynaPDF on Linux?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Please use the AddFontSearchPath method in the DynaPDFMBS class to specify where your fonts are.

**Example:**

```pascal
dim d as new DynaPDFMBS
if TargetLinux then
  call d.AddFontSearchPath "/usr/share/fonts/truetype", true
else
  // on Mac and Windows we use system fonts.
end if
```

**Notes:**

On Mac OS X and Windows, the fonts are loaded from the system’s font folder.

e.g. if you use ubuntu, you can install the ttf-mscorefonts-installer package and call this method with "/usr/share/fonts/truetype/msttcorefonts” as the path. No backslash on the end of a path, please.
CHAPTER 186. THE FAQ

186.0.126 How to get GMT time and back?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can use the date class and the GMTOffset property.

**Example:**

```vba
// now
dim d as new date

// now in GMT
dim e as new date
e.GMTOffset = 0

// show
MsgBox str(d.TotalSeconds,”0.0”)+” ”+str(e.TotalSeconds, ”0.0”)

dim GMTTimeStamp as Double = e.TotalSeconds

// restore
dim f as new date

// add GMT offset here
f.TotalSeconds = GMTTimeStamp + f.GMTOffset*3600

// because here it’s removed
f.GMTOffset = f.GMTOffset

MsgBox d.ShortTime+” (”+str(d.GMTOffset)+” ”)+str(d.TotalSeconds,”0.0”)+EndOfLine+_
e.ShortTime+” (”+str(e.GMTOffset)+” ”)+str(e.TotalSeconds,”0.0”)+EndOfLine+_
f.ShortTime+” (”+str(f.GMTOffset)+” ”)+str(f.TotalSeconds,”0.0”)
```

**Notes:** It’s sometimes a bit tricky with the date class as setting one property often changes the others.

186.0.127 How to get good crash reports?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Check this website from the webkit website:

**Notes:** http://webkit.org/quality/crashlogs.html

186.0.128 How to get list of all threads?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can use the runtime module like in this function:
Example:

```vbnet
Function Threads() As Thread()
# pragma DisableBackgroundTasks
dim t() as Thread

Dim o as Runtime.ObjectIterator = Runtime.IterateObjects
While o.MoveNext
if o.Current isa Thread then
   t.Append thread(o.current)
end if
Wend
Return t
End Function
```

Notes:
This returns an array of all thread objects currently in memory.
The pragma is important here as it avoids thread switches which may cause a thread to be created or deleted.

186.0.129 How to get parameters from webpage URL in Real Studio Web Edition?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Use the Webpage.ParametersReceived event.

**Example:**

```vbnet
Sub ParametersReceived(Variables As Dictionary)
for each key as Variant in Variables.keys
   MsgBox key + " -> " + Variables.Value(key)
next
End Sub
```

Notes: The text encodings of this strings is not defined in Real Studio 2010r5. Please use DefineEncoding.

186.0.130 How to get Real Studio apps running Linux?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You need to install some require packages.

Notes:
You need CUPS as well as GTK packages. On 64 bit systems also the ia32-libs package.

Please note that you need a x86 compatible Linux. So no PPC, Power, ARM or other CPUs.

186.0.131 How to get the color for disabled textcolor?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Ask the appearance manager:

**Example:**

```vba
Function GetThemeTextColor(inColor as Integer, inDepth as Integer, inColorDev as Boolean) As Color
    declare function GetThemeTextColor lib "Carbon" (inColor as Integer, inDepth as Integer, inColorDev as Boolean, outColor as Ptr) as Integer

dim i as Integer
dim col as MemoryBlock

col = newMemoryBlock(6)

i = GetThemeTextColor(inColor, inDepth, inColorDev, col)

return RGB(col.USHort(0) \ 256, col.USHort(2) \ 256, col.USHort(4) \ 256)
End Function
```

**Notes:**

The color for this is:

```vba
const kThemeTextColorDialogInactive = 2.

c = GetThemeTextColor(kThemeTextColorDialogInactive, Screen(0).Depth, true)
```

For Mac OS X you should use "CarbonLib" instead of "AppearanceLib" ...

186.0.132 How to get the current free stack space?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can something like the code below:

**Example:**
Sub ShowStackSize()
    dim threadid as Integer
    dim size as Integer

    declare function GetCurrentThread lib "Carbon" (byref threadid as Integer) as short
    declare function ThreadCurrentStackSpace lib "Carbon" (threadid as Integer, byref size as Integer) as short

    if GetCurrentThread(threadid)=0 then
        if 0=ThreadCurrentStackSpace(threadid,size) then
            MsgBox str(size)
        end if
    end if
End Sub

Notes: For Mac OS 9, use "ThreadLib" instead of "CarbonLib". You can use # if if you like for that.

186.0.133  How to get the current timezone?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. Answer:

You can use the TimeZoneMBS class or the CFTimeZoneMBS class.
Or code like below:
Example:

Function GMTOffsetInMinutes() as Integer
    // Returns the offset of the current time to GMT in minutes.
    // supports Mac OS and Windows, but not Linux yet (let me know if
    // you have code for that, please)
    //
    // Note that the offset is not always an even multiple of 60, but
    // there are also half hour offsets, even one 5:45h offset
    //
    // This version by Thomas Tempelmann (rb@tempel.org) on 25 Nov 2005
    // with a fix that should also make it work with future Intel Mac targets.
    //
    // Using code from various authors found on the RB NUG mailing list

    dim result, bias, dayLightbias as Integer
    dim info as memoryBlock
    dim offset as Integer

    # if targetMacOS then

Declare Sub ReadLocation lib "Carbon" (location As ptr)
info = NewMemoryBlock(12)
ReadLocation info
if false then
    // bad, because it does not work on Intel Macs:
    offset = info.short(9) * 256 + info.byte(11)
else
    offset = BitwiseAnd (info.long(8), & hFFFFFF)
end

offset = info.short(9) * 256 + info.byte(11)
offset = offset \ 60
return offset

# endif

# if targetWin32 then

Declare Function GetTimeZoneInformation Lib "Kernel32" ( tzInfoPointer as Ptr ) as Integer
    // returns one of
    // TIME_ZONE_ID_UNKNOWN 0
    // - Note: e.g. New Delhi (GMT+5:30) and Newfoundland (-3:30) return this value 0
    // TIME_ZONE_ID_STANDARD 1
    // TIME_ZONE_ID_DAYLIGHT 2

info = new MemoryBlock(172)
result = GetTimeZoneInformation(info)

bias = info.Long(0)
    // note: the original code I found in the NUG archives used Long(84) and switched to Long(0)
    // only for result=1 and result=2, but my tests found that Long(0) is also the right value for result=0

if result = 2 then
daylightBias = info.long(168)
end if
offset = - (bias + dayLightbias)
return offset

# endif

End Function

186.0.134  How to get the current window title?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** The code below returns the current window title for the frontmost window on Mac OS X if Accessibility services are
Example:

```vba
Function CurrentWindowTitle() As string
    dim SystemWideElement, FocusedApplicationElement, FocusedWindowElement as AXUIElementMBS
    dim FocusedApplication, FocusedWindow, Title as AXValueMBS
    dim s as String
    dim cs as CFStringMBS

    SystemWideElement = AccessibilityMBS.SystemWideAXUIElement
    if SystemWideElement <> nil then
        FocusedApplication = SystemWideElement.AttributeValue(AccessibilityMBS.kAXFocusedApplicationAttribute)
        if FocusedApplication.Type = AccessibilityMBS.kAXUIElementMBSTypeID then
            FocusedApplicationElement = new AXUIElementMBS
            FocusedApplicationElement.Handle = FocusedApplication.Handle
            FocusedApplicationElement.RetainObject

            FocusedWindow = FocusedApplicationElement.AttributeValue(AccessibilityMBS.kAXFocusedWindowAttribute)
            if FocusedWindow <> nil and AccessibilityMBS.kAXUIElementMBSTypeID = FocusedWindow.Type then
                FocusedWindowElement = new AXUIElementMBS
                FocusedWindowElement.Handle = FocusedWindow.Handle
                FocusedWindowElement.RetainObject

                Title = FocusedWindowElement.AttributeValue(AccessibilityMBS.kAXTitleAttribute)
                if Title <> nil and Title.Type = kCFStringMBSTypeID then
                    cs = new CFStringMBS
                    cs.Handle = Title.Handle
                    cs.RetainObject
                    Return cs.str
                end if
            end if
        end if
    end if
End Function
```

186.0.135 How to get the cursor blink interval time?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** On Mac OS you can use GetCaretTime from the toolbox.

**Example:**

```vba
declare function GetCaretTime lib "Carbon" () as Integer

MsgBox str(GetCaretTime())+" ticks"
```
**Notes:** 60 ticks make one second.

### 186.0.136 How to get the list of the current selected files in the Finder?

**Plugin Version:** all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:**

Use the AppleScript like this one:

```applescript
tell application "finder"
  return selection
end tell
```

Which translates into this AppleEvent:

```appletalk
Process("Finder").SendAE "core,getd,'—-':obj { form:prop, want:type(prop), seld:type(sele), from:'null' }```

and as Realbasic code it looks like this:

**Example:**

```realbasic
dim ae as appleevent
dim o1 as appleeventObjectSpecifier
dim f as folderItem
dim aList as appleeventdescList
dim i as Integer
dim dateiname as string

// setup the AppleEvent
o1=getpropertyObjectDescriptor( nil, "sele")
ae=newappleEvent("core", "getd", "MACS")
ae.objectSpecifierParam("—-")=o1

// send it
if ae.send then
  // got the list
  alist=ae.replyDescList

  // now show the list of filename into an editfield:
  for i=1 to alist.count
    f=alist.folderItemItem(i)
    dateiname=f.name
```
186.0.137  How to get the Mac OS system version?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** The following code queries the value and displays the version number:

**Example:**

```vba
dim first as Integer
dim second as Integer
dim third as Integer
dim l as Integer
if System.Gestalt("sysv",l) then
    Third=Bitwiseand(l,15)
    second=Bitwiseand(l \ 16,15)
    first=Bitwiseand(l \ 256,15)+10*Bitwiseand(l \ 256 \ 16,15)
end if
if First>=10 then
    msgbox "Mac OS X "+str(First)+"."+str(Second)+"."+str(third)
else
    msgbox "Mac OS "+str(First)+"."+str(Second)+"."+str(third)
end if
```

186.0.138  How to get the Mac OS Version using System.Gestalt?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Try this code:

**Example:**

```vba
Dim s As String
Dim b As Boolean
Dim i, resp as Integer
// Systemversion
b = System.Gestalt("sysv", resp)
if b then
    s = Hex(resp)
```
\textbf{186.0.139} How to get the screen size excluding the task bar?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. \textbf{Answer:} Try this code:
\textbf{Notes:} Use the Screen class with the available* properties.

\textbf{186.0.140} How to get the size of the frontmost window on Windows?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. \textbf{Answer:} Try this code:
\textbf{Notes:}
Make yourself a class for the WindowRect with four properties:

- \texttt{Bottom} as Integer
- \texttt{Left} as Integer
- \texttt{Right} as Integer
- \texttt{Top} as Integer

Add the following method to your class:

\begin{verbatim}
Sub GetWindowRect(windowhandle as Integer)
   dim err as Integer
   dim mem as memoryBlock
   # if targetwin32 then
   Declare Function GetWindowRect Lib "user32.dll" (hwnd as Integer, ipRect As Ptr) as Integer
   mem = newmemoryBlock(16)
   err = GetWindowRect(windowhandle, mem)
   Left = mem.long(0)
   Top = mem.Long(4)
   Right = mem.Long(8)
   Bottom = mem.Long(12)
   # endif
\end{verbatim}
End Sub

Good to use for the MDI Master Window!

186.0.141 How to get the source code of a HTMLViewer?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. Answer: Try this code:
Example:

// for Windows:

msgbox HTMLViewer1.IEHTMLTextMBS

// for Mac OS X:

msgbox HTMLViewer1.mainFrameMBS.dataSource.data

186.0.142 How to handle really huge images with GraphicsMagick or ImageMagick?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: Sometimes it may be better to use an extra application to process images.
Notes:

A typical 32 bit app made with Xojo (Real Studio) can use around 1.8 GB on Windows and 3 GB on Mac OS X. Some images may be huge, so that processing them causes several copies of the image to be in memory. With a 500 MB image in memory, doing a scale or rotation may require a temp image. So with source, temp and dest images with each 500 MB plus your normal app memory usage, you may hit the limit of Windows with 1.8 GB.

In that case it may be worth running a tool like gm in the shell class. gm is the command line version of GraphicsMagick. There you can run the 64 bit version which is not limited in memory like your own application. Also you can monitor progress and keep your app responsive.

186.0.143 How to handle tab key for editable cells in listbox?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: Use code like this function:
Example:
Function HandleTabInList(list as listbox, row as Integer, column as Integer, key as String) As Boolean
// Handle tab character in Listbox.CellKeyDown event

Select case asc(key)
case 9
if Keyboard.AsyncShiftKey then
    // back
    // look for column left
    for i as Integer = column-1 downto 0
        if list.ColumnType(i) >= list.TypeEditable then
            list.EditCell(row, i)
            Return true
        end if
    next
    // not found, so look in row before
    row = row - 1
    if row >= 0 then
        for i as Integer = list.ColumnCount-1 downto 0
            if list.ColumnType(i) >= list.TypeEditable then
                list.EditCell(row, i)
                Return true
            end if
        next
    end if
else
    // forward
    // look for column right
    for i as Integer = column+1 to list.ColumnCount-1
        if list.ColumnType(i) >= list.TypeEditable then
            list.EditCell(row, i)
            Return true
        end if
    next
    // not found, so look in row below
    row = row + 1
    if row < list.ListCount then
        for i as Integer = 0 to list.ColumnCount-1
            if list.ColumnType(i) >= list.TypeEditable then
                list.EditCell(row, i)
                Return true
            end if
        next
    end if
end if
Notes:
You call it from CellKeyDown event like this:

EventHandler Function CellKeyDown(row as Integer, column as Integer, key as String) As Boolean
if HandleTabInList(me, row, column, key) then Return true
End EventHandler

As you see in the code, we handle tab and shift + tab for moving back and forward. Also we wrap to previous/next row if needed. Feel free to extend this to wrap from last to first row or create a new row for editing.

186.0.144 How to hard link MapKit framework?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: Our MapKit classes weak link the framework. If you need hard linking it for the App Store, you can add this method to a class: Example:

Sub ReferenceMapKit()
// just put this in window or app class

# if TargetMachO and Target64Bit then
Declare sub testing Lib "MapKit" Selector "test" (id as ptr)
testing(nil)
# endif

End Sub

Notes:
No need to call the method.
Just having it in a window or app, will cause the compiler to hard link the framework.

186.0.145 How to have a PDF downloaded to the user in a web application?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: You can use a WebHTMLViewer control and load the PDF file with the PDF plugin from the browser. Example:
dim CurrentFile as WebFile // a property of the WebPage

// define the PDF file
CurrentFile = new WebFile
CurrentFile.Filename = "test.pdf"
CurrentFile.MIMEType = "application/pdf"
CurrentFile.Data = "some pdf data" // MyDynaPDF.GetBuffer
CurrentFile.ForceDownload = true

// start the download
showurl(CurrentFile.url)

Notes: See our Create PDF example for the Real Studio Web Edition.

186.0.146 How to hide all applications except mine?

Console & Web: No, Mac: Yes, Win: No, Linux: No. Answer: The code below will on Mac OS hide all applications except your one:

Example:

dim p as new ProcessMBS

p.GetFirstProcess
do
if not p.FrontProcess then
p.Visible=false
end if
loop until not p.GetNextProcess

186.0.147 How to hide script errors in HTMLViewer on Windows?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. Answer: Set Internet Explorer to silent mode with code like this:

Example:

htmlviewer1._ole.Content.value("Silent") = True

Notes: Simply put this code in the open event of your htmlviewer control (using me instead of htmlviewer1).
186.0.148 How to hide the grid/background/border in ChartDirector?  

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** If you want to hide something in a chart, simply assign the kTransparent constant as color.

186.0.149 How to hide the mouse cursor on Mac?  

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Try this declare: 

**Example:**

```vba
Declare Sub HideCursor Lib "Carbon" () Inline68K("A852")

HideCursor
```

**Notes:** The MBS Plugin has this function and supports it on Windows, too.

186.0.150 How to insert image to NSTextView or TextArea?  

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** With NSTextViewMBS you can use this code to insert file: 

**Example:**

```vbscript
// insert a file to textview

Public Sub InsertFile(textview as NSTextViewMBS, f as FolderItem)
    // read to file
    dim b as BinaryStream = BinaryStream.Open(f)
    dim s as string = b.Read(b.Length)

    // build wrapper
    dim fileWrapper as NSFileWrapperMBS = NSFileWrapperMBS.initRegularFileWithContents(s)
    fileWrapper.preferredFilename = f.name

    // make attachment
    dim fileAttachment as new NSTextAttachmentMBS(fileWrapper)
    dim attributedString as NSAttributedStringMBS = NSAttributedStringMBS.attributedStringWithAttachment(fileAttachment)

    // add to a NSTextViewMBS
    textview.insertText attributedString

End Sub
```
Notes: For TextArea you can query the underlaying NSTextViewMBS object via TextArea.NSTextViewMBS method.

186.0.151 How to jump to an anchor in a htmlviewer?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. Answer: You can use javascript to change the current window’s location.

Example:

```javascript
// load website
htmlviewer1.LoadURL "http://www.monkeybreadsoftware.net/addressbook-abpersonmbs.shtml"

// later jump to anchor named "16":

if TargetWin32 then
  call HTMLViewer1.IERunJavaScriptMBS "window.location = " # 16""
elseif TargetMacOS then
  call HTMLViewer1.EvaluateJavaScriptMBS "window.location = " # 16""
else
  // not supported
end if
```

186.0.152 How to keep a movieplayer unclickable?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: To keep the user away from clicking on a playing Movie you can just drop a Canvas in front of the Movieplayer and take the clicks there.

Example:

```vbnet
Function Canvas1.MouseDown(X as Integer, Y as Integer) as boolean
  return true // take it and do nothing
End Function
```

186.0.153 How to keep my web app from using 100% CPU time?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: On Linux and Mac OS X you can use renice command in the terminal. On Windows use the task manager to reduce priority.

Notes:
If you launch your app with nohup on Linux or Mac OS X like this from the terminal or a script:

```
nohup /webapps/MyApp/MyApp &
```

you can simply have a second line saying this:

```
renice 20 $!
```

which tells the system to lower priority to lowest value for the latest background process.

### 186.0.154 How to kill a process by name?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can kill a process (or application) by name if you loop over all the processes and kill the one you need.

**Example:**

```vbs
   dim p as new ProcessMBS
   p.GetfirstProcess ' get first
   do
      if p.name = "TextEdit" then
         call p.KillProcess
         return
      end if
   loop until not p.GetNextProcess
```

**Notes:** You may want to check the result of killProcess function. Not every user is allowed to kill every application.

### 186.0.155 How to know how many CPUs are present?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Try this function:

**Example:**

```vbs
Function GetCPUCount() as Integer
    Declare Function MPProcessors Lib "Carbon" () as Integer

    Return MPProcessors()
End Function
```
Notes: Your app will then need that library to launch on Classic. To avoid this the MBS plugin checks if this library is available and return 1 if it’s not available.

186.0.156  How to know if a movie is finished?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. Answer: This code can help you although it’s not perfect:

Example:

Declare Function IsMovieDone Lib ”QuickTime” (theMovie as Integer) as Integer

if IsMovieDone(moviePlayer1.movie.handle) <>0 then
  //movie is finished
end if

Notes: But be careful! It crashes sometimes for an unknown reason!?

186.0.157  How to know if QuickTime is installed on any target and can play MPEG 4 movies?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. Answer: Try this code:

Example:

dim q as QTComponentInformationMBS

q=new QTComponentInformationMBS

// ”eat ” = Movie importers
while q.NextComponentOfType(”eat ”)
  if q.SubType=”MP4 ” then
    MsgBox ”found: ”+q.Name+ ” codec”
  end if
wend

Notes: If you find a MP4 movie importing codec you can be sure that a MP4 movie can be opened.
186.0.158  How to know if QuickTime is installed on any target?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** Try this function:

**Example:**

```vbscript
Dim theEffect as QTEffect
theEffect=GetQTCrossFadeEffect

if theEffect = nil then
    MsgBox "QuickTime is not installed."
else
    MsgBox "Quicktime is installed."
end if
```

**Notes:** The problem with this code is that it checks only if the QuickTime part of the cross fade effect is available. Use the QTComponentInformationMBS to check for the features you really need.

186.0.159  How to know the calling function?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** On Mac you can use a helper function like this this code:

**Example:**

```vbscript
Public Function CallingFunction() as string
    // Query name of calling function of a function
    # Pragma BreakOnExceptions false

    try

        // raise a dummy exception
        dim r as new NilObjectException
        raise r

        catch x as NilObjectException

            // get stack
            dim stack() as string = x.Stack

            // pick function name and return
            dim name as string = stack(2)
            Return name

    end try
```


186.0.160  How to launch an app using it’s creator code?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Answer:** Send an AppleEvent ”oapp” with the creator code to the Finder (”MACS”):

**Example:**

```vbnet
Dim a as AppleEvent
dim creator as string

creator = "MSIE" ' here the Internet Explorer

a = NewAppleEvent(“aevt”, ”odoc”, ”MACS”)
a.Timeout = -1

a.ObjectSpecifierParam(“—-”) = GetUniqueIDObjectDescriptor(”appf”, nil, creator)

if not a.send then
    msgBox ”An error has occured”
else
    end if
```

186.0.161  How to launch disc utility?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes.  **Answer:** You can use this code:

**Example:**

```vbnet
dim f as FolderItem = LaunchServicesFindApplicationForInfoMBS(””, ”com.apple.DiskUtility”, ””)

if f<>Nil then
    f.Launch
    end if
```

**Notes:** This works even if people renamed the disc utility or moved it to another folder.
186.0.162  How to make a lot of changes to a REAL SQL Database faster?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You may try to embed your changes to the database between two transaction calls.

**Example:**

```vbscript
dim db as Database // some database

db.SQLExecute "BEGIN TRANSACTION"
// Do some Stuff
db.SQLExecute "END TRANSACTION"
```

**Notes:** This can increase speed by some factors.

186.0.163  How to make a NSImage object for my retina enabled app?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can use code like this:

**Example:**

```vbscript
Function NewRetinaImage(pic as Picture, mask as Picture = nil) As NSImageMBS
    // first make a NSImageMBS from it
    dim n as new NSImageMBS(pic, mask)

    // now set to half the size, so we have 2x pixels for the image
    n.size = new NSSizeMBS(n.width/2, n.height/2)

    // and return
    Return n
End Function
```

**Notes:**

The thing to do is to have 2x the pixels, but assign a size to the image which gives it the right size in points. You can pass the NSImageMBS from here to NSMenuItemMBS. For Retina displays, the full resolution is used. For others it will be reduced.

186.0.164  How to make a window borderless on Windows?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** Try this declares:

**Example:**
// Sets window to borderless popup type, and sets its initial dimensions.
// Call this method, then Win32SetBorderlessPos, and then RB’s Show
// method. Use RB Frame type 7 (Global Floating Window).

Const SWP_NOMOVE = & H2
Const SWP_FRAMECHANGED = & H20
Const HWND_TOPMOST = -1
Const GWL_STYLE = -16
Const WS_POPUPWINDOW = & H80880000

Dim styleFlags as Integer

# If TargetWin32 Then

Declare Function SetWindowLong Lib "user32" Alias "SetWindowLongA" (hwnd as Integer, nIndex as Integer, dwNewLong as Integer) as Integer
Declare Function SetWindowPos Lib "user32" (hwnd as Integer, hWndInstertAfter as Integer, x as Integer, y as Integer, cx as Integer, cy as Integer, flags as Integer) as Integer

styleFlags = SetWindowLong( w.WinHWND, GWL_STYLE, WS_POPUPWINDOW )
styleFlags = BitwiseOr( SWP_FRAMECHANGED, SWP_NOMOVE )
styleFlags = SetWindowPos( w.WinHWND, HWND_TOPMOST, 0, 0, wd, ht, styleFlags )

# EndIf

186.0.165 How to make an alias using AppleEvents?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. Answer: Try this code:

Example:

Sub MakeAlias(folder as folderitem, target as folderitem, aliasname as string)
    dim ev as AppleEvent
    dim myResult as boolean
    dim properties as AppleEventRecord

    ev = NewAppleEvent("core","crel","MACS")
ev.MacTypeParam("kocl") = "alis"
ev.FolderItemParam("to ") = target
ev.FolderItemParam("insh") = folder

    properties=new AppleEventRecord
    properties.StringParam("pnam")=aliasname
    ev.RecordParam("prdt")=properties
myResult = ev.send
// true on success, false on error
End Sub

Notes:
Call it like this:
MakeAlias SpecialFolder.Desktop, SpecialFolder.Desktop.Child("Gif Copy.rb"), "test.rb alias"

Seems to not work on Mac OS X 10.6

186.0.166 How to make an application smaller?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer:
If you use an older copy of REALbasic, you should try to compile for 68k only instead of PPC. It’s a little bit slower, but code is much smaller.

On any Mac OS target you can save your images as JPEG and drop the into your application. REALbasic will include them as JPEGs into the Mac applications (convert to BMP for Windows). This will make the resources of your application smaller, but requires that the user has QuickTime 2.5 or newer installed.

186.0.167 How to make AppleScripts much faster?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. Answer: use ”ignoring application responses” like in this example:
Notes:
on run { fn,fpx,fpy }
ignoring application responses
tell app ”Finder” to set the position of folder fn to fpx,fpy
end ignoring
end run

186.0.168 How to make double clicks on a canvas?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. Answer:
Update: Newer Xojo versions support DoubleClick event, so you don’t need this code.
Here's my tip from the tips list on how to add a double-click event to the Canvas control. The technique could easily be used for a window or any Rectcontrol:

Because of its built-in drawing methods, the Canvas control is often used to create custom interface controls. But while the Canvas control has event handlers for most mouse events, it doesn’t have an event handler for DoubleClick events. Fortunately, you can add a double-click event handler to a Canvas control easily. Basically, you’re going to create a new class based on Canvas and add a double-click event to that. You can then use the new class anytime you need a Canvas with a double-click event.

To create a new Canvas class with a DoubleClick event handler, do this:

1. Add a new class to your project.
2. Set the Super property of the new class to “Canvas”.
3. Change the name of this new class to “DoubleClickCanvas”.

A double-click occurs when two clicks occur within the users double-click time (set in the Mouse control panel on both Macintosh and Windows) and within five pixels of each other. So, you’ll need a few properties to store when and where the last click occurred.

4. Add a new property with the following declaration and mark it as private: lastClickTicks as Integer
5. Add a new property with the following declaration and mark it as private: lastClickX as Integer
6. Add a new property with the following declaration and mark it as private: lastClickY as Integer

Since the Canvas control doesn’t have a DoubleClick event, you will need to add one.

7. Add a new event to your class by choosing New Event from the Edit menu and enter ”DoubleClick” as the event name.

Double-clicks occur on MouseUp. In order for the mouseUp event to fire, you must return True in the MouseDown event.

8. In the MouseDown event, add the following code:
   Return True

In the MouseUp event, you will need to determine what the users double-click time is. This value is represented on both the Mac and Windows in ticks. A tick is 1/60th of a second. Since there isn’t a built-in function for this, you’ll need to make a toolbox call. The mouseUp event code below makes the appropriate toolbox call for both Macintosh and Windows. It then compares the time of the users last click to the time of the current click and compares the location of the users last click to the location of the current click.

9. Add the following code to the MouseUp event:
dim doubleClickTime, currentClickTicks as Integer

# if targetMacOS then
 Declare Function GetDb1Time Lib "Carbon" () as Integer
  doubleClickTime = GetDb1Time()
# endif

# if targetWin32 then
 Declare Function GetDoubleClickTime Lib "User32.DLL" () as Integer
  doubleClickTime = GetDoubleClickTime()/60 // convert to ticks from milliseconds
# endif

currentClickTicks = ticks
//if the two clicks happened close enough together in time
if (currentClickTicks - lastClickTicks) < doubleClickTime then
//if the two clicks occurred close enough together in space
if abs(X - lastClickX) <= 5 and abs(Y - LastClickY) <= 5 then
  DoubleClick //a double click has occurred so call the event
end if
end if
lastClickTicks = currentClickTicks
lastClickX = X
lastClickY = Y

10. Now to test out your new DoubleClickCanvas, drag the class from the Project window to a window in your project to create an instance of it.

11. Double-click on the canvas you just added to your window to open the Code Editor. Notice that the canvas has a DoubleClick event handler. In this event handler, add the following code:
BEEP

186.0.169  How to make my Mac not sleeping?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. Answer: Just inform the Mac OS about some system activity with code like this:
Example:

Sub UpdateSystemActivity()

# if TargetCarbon
declare function myUpdateSystemActivity lib "Carbon" alias "UpdateSystemActivity" (activity as Integer) as short
const OverallAct = 0 // Delays idle sleep by small amount */
const UsrActivity = 1 // Delays idle sleep and dimming by timeout time */
const NetActivity = 2 // Delays idle sleep and power cycling by small amount */
const HDActivity = 3 // Delays hard drive spindown and idle sleep by small amount */
const IdleActivity = 4 // Delays idle sleep by timeout time */

dim e as Integer

e=myUpdateSystemActivity(UsrActivity)

// you may react on an error if e is not 0 after the call.

# endif
End Sub

Notes:
You may use another constant if you prefer some different behavior.
Call it maybe every second.

186.0.170  How to make my own registration code scheme?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. Answer: There are excellent articles about how to make a registration code scheme, but you can also simply use our RegistrationEngineMBS class.
Notes: If you need a license text, why not use the one from Real Studio as a starting point?

186.0.171  How to make small controls on Mac OS X?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. Answer: You can try this code on Mac OS X:
Example:

'/*
' Use the control’s default drawing variant. This does not apply to
' Scroll Bars, for which Normal is Large.
'*/
const kControlSizeNormal = 0

'/*
' Use the control’s small drawing variant. Currently supported by
' the Check Box, Combo Box, Radio Button, Scroll Bar, Slider and Tab
' controls.
const kControlSizeSmall = 1

const kControlSizeLarge = 2

const kControlSizeAuto = & hFFFF
const kControlSizeTag = "size"

declare function SetControlData lib "Carbon" (controlhandle as Integer, part as short, tagname as OS-Type, size as Integer, data as ptr) as short

dim m as MemoryBlock
m=NewMemoryBlock(2)
m.UShort(0)=kControlSizeSmall
Title=str(SetControlData(CheckBox1.Handle, 0, kControlSizeTag, 2, m))

186.0.172 How to mark my Mac app as background only?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can run a build script on each build with this code:

**Example:**

Dim App As String = CurrentBuildLocation + "/" + CurrentBuildAppName + ".app"
Call DoShellCommand("/usr/bin/defaults write " + App + "/Contents/Info ""NSUIElement"")" YES")

**Notes:** This will set the NSUIElement flag to YES.
**CHAPTER 186. THE FAQ**

**186.0.173 How to move a file or folder to trash?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Use code like below:

**Example:**

```vbnet
Function MoveToTrash(f as FolderItem) As Boolean
# if TargetMacOS then
dim r as FolderItem
dim e as Integer = MacFileOperationMBS.MoveObjectToTrashSync(f, r, MacFileOperationMBS.kFSFileOperationDefaultOptions)
if e = 0 then
Return true // Ok
end if

# elseif TargetWin32 then
dim w as new WindowsFileCopyMBS

dim flags as Integer = w.FileOperationAllowUndo + w.FileOperationNoErrorUI + w.FileOperationSilent + w.FileOperationNoConfirmation
if w.FileOperationDelete(f, flags) then
Return true // OK
end if

flags = w.FileOperationNoErrorUI + w.FileOperationSilent + w.FileOperationNoConfirmation
if w.FileOperationDelete(f, flags) then
Return true // OK
end if
# else
// Target not supported
break
Return false
# endif
End Function
```

**Notes:**

If you want to move a file to trash, you could use f.movefileto f.trashfolder, but that will overwrite existing files in the trash. You can use our MacFileOperationMBS class to move a file on Mac to the trash. And it uses the same code as the Finder, so files are renamed when the same name is already in use in the trash:

On Windows we use WindowsFileCopyMBS class.
Requires Mac OS X 10.5.
186.0.174    How to move an application to the front using the creator code?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** This makes SimpleText (Code `ttxt`) to the frontmost application:

**Example:**

```vba
dim a as appleevent

a=newappleEvent("misc","actv","ttxt")

if a.send then
end if
```

**Notes:** (Code is Mac only)

186.0.175    How to move file with ftp and curl plugin?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can set post/pre quotes to have ftp commands executed before or after the download/upload.

**Example:**

```vba
dim d as CURLMBS // your curl object

// rename/move file
dim ws() As String
ws.Append "RNFR Temp.txt"
ws.append "RNTO MyFile.txt"

d.SetOptionPostQuote(ws)
```

**Notes:**

Use SetOptionPostQuote, SetOptionPreQuote or SetOptionQuote.
The ftp commands you pass here are native ftp commands and not the commands you use with ftp applications. So rename is two commands. First RNFR to tell where to rename from and second RNTO with the new file name. To delete use DELE and the file path.

186.0.176    How to normalize string on Mac?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Use code like below:

**Example:**
Function Normalize(t as string) As string
const kCFStringNormalizationFormD = 0 // Canonical Decomposition
const kCFStringNormalizationFormKD = 1 // Compatibility Decomposition
const kCFStringNormalizationFormC = 2 // Canonical Decomposition followed by Canonical Composition
const kCFStringNormalizationFormKC = 3 // Compatibility Decomposition followed by Canonical Composition

dim s as CFStringMBS = NewCFStringMBS(t)
dim m as CFMutableStringMBS = s.Normalize(kCFStringNormalizationFormD)

Return m.str
End Function

Notes: This uses Apple’s CFString functions to normalize unicode variants.

186.0.177 How to obscure the mouse cursor on Mac?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. Answer: Try this declare:
Example:
Declare Sub ObscureCursor Lib ”Carbon” ()

ObscureCursor

Notes: The MBS Plugin has this function, but it’s not supported for Windows.

186.0.178 How to open icon file on Mac?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. Answer: Use the NSImageMBS class like this:
Example:
dim f as FolderItem = SpecialFolder.Desktop.Child(”test.ico”)
dim n as new NSImageMBS(f)

window1.Backdrop = n.CopyPictureWithMask
**186.0.179  How to open PDF in acrobat reader?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Try this code:

**Example:**

```vbscript
dim pdf as FolderItem = SpecialFolder.Desktop.Child("test.pdf")

// open PDF in Acrobat Reader on Mac:

// find app
dim bundleID as string = "com.adobe.Reader"
dim app as FolderItem = LaunchServicesFindApplicationForInfoMBS("", bundleID, "")

if app<>nil then

// launch app with parameters

dim docs() as FolderItem
docs.Append pdf

dim param as new LaunchServicesLaunchParameterMBS
param.Defaults = true
param.Application = app

dim x as FolderItem = LaunchServicesOpenXMBS(docs, param)

// on failure, simply launch it
if x = nil then
pdf.Launch(true)
end if

else
pdf.Launch(true)
end if
```

**Notes:** On Windows, simply use pdf.launch or WindowsShellExecuteMBS.


**186.0.180  How to open printer preferences on Mac?**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can use our OpenMacOSXPreferencesPaneMBS function like this:

**Example:**

```vbscript
dim e as Integer = OpenMacOSXPreferencesPaneMBS("PrintAndFax")
if 0 = e then
```
186.0.181  How to open special characters panel on Mac?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** We have functions for that in Cocoa and Carbon.

**Example:**

```ruby
dim a as new NSApplicationMBS
a.orderFrontCharacterPalette
```

**Notes:**

For Cocoa, you can use orderFrontCharacterPalette method in NSApplicationMBS class.

Or simply for Carbon and Cocoa the ShowCharacterPaletteMBS method.

186.0.182  How to optimize picture loading in Web Edition?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Use the WebPicture class.

**Notes:**

Take your picture and create a WebPicture object. Store this WebPicture in a property of the WebPage, Session or app (as global as possible). On the first time you use this picture on an user session, the browser will load it. Second time you use it, the browser will most likely pick it from the cache.

Having pictures in App or some module reuses the same picture for all sessions which reduces memory footprint.

This does not work well with pictures you change very often or use only for one webpage on one user.

If you like to see an example, check our Map example:

http://www.monkeybreadsoftware.de/realbasic/webapps.shtml
186.0.183  How to parse XML?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can use code like this:

**Example:**

```vbs
dim s as string = "<test><test ///</test></test>"

try
dim x as new XmlDocument(s)
MsgBox "OK"
catch xe as XmlException
MsgBox "invalid XML"
end try
```

**Notes:** If you got an exception, you have a parse error.

186.0.184  How to play audio in a web app?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can use the HTML5 audio tag and control it with javascript.

**Notes:**

See our web apps here:
http://www.monkeybreadsoftware.de/realbasic/webapps.shtml

This is just another example app I made today. It plays a christmas song. The audio file is provided by the application to the server, so no external web server is needed and this application can run stand alone. To compile and run you need Real Studio 2010r5.

In the open event we search the audio files and open them as binarystreams. We create the two webfile objects. Those webfiles are part of the app class, so we have them globally. There we set the data with the content of our streams. We also define file names and mime types. They are needed so browser know what we have here:

```vbs
audioFileM4V = new WebFile
audioFileM4V.Data = bM.Read(BM.Length)
audioFileM4V.Filename = "music.m4a"
audioFileM4V.MIMEType = "audio/m4a"

audioFileOGG = new WebFile
audioFileOGG.Data = bO.Read(BO.Length)
```
audioFileOGG.Filename = "music.ogg"
audioFileOGG.MIMEType = "audio/ogg"

Next in the open event of the webpage we have a PageSource control. The location is set to be before content. In the open event we define the html code for this. First we pick the URLs for the audio files. Then we build the html to use the audio tag. As you see, we give it an ID for later use and have it preload automatically. If you add an autoplay tag, you can have the audio play right away. Inside the audio tag we have two sources so we provide audio for both Firefox (OGG) and Safari (MPEG4). Finally we have a text to display if HTML5 audio tag is not supported.

You can set the source in the EditSource event:

dim urlo as string = app.audioFileOGG.URL
dim urlm as string = app.audioFileM4V.URL
me.Source = "<audio id=""mymusic"" preload=""auto"">  
<source src="""+urlo+"" type=""audio/ogg"
/>  
<source src="""+urlm+"" type=""audio/mpeg"
/>Your browser does not support the audio element.<\audio>"

Next in the Play button we execute code to play the audio. This is a short javascript code which searches in the html document for the element with the ID "mymusic" which is the ID of our audio tag above. Once we got the object, we call it's play method to start playback.

me.ExecuteJavaScript("document.getElementById('mymusic').play();")

same for pause:

me.ExecuteJavaScript("document.getElementById('mymusic').pause();")

and finally for changing volume:

me.ExecuteJavaScript("document.getElementById('mymusic').volume="+str(me.Value/100.0)+";")

186.0.185 How to pretty print xml?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: Use the XML Transform method with the right XLS.

Notes:

Learn more here:
186.0.186 How to print to PDF?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: This code below shows how to redirect printing to a PDF file on Mac OS X.

Example:

```plaintext
// get Xojo printer setup
dim p as new PrinterSetup

// now put it into NSPrintInfo to manipulate
dim n as new NSPrintInfoMBS
n.SetupString = p.SetupString

// change destination to file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
n.SetSaveDestination(f)

// move back
p.SetupString = n.SetupString

// and print as usual
dim g as Graphics = OpenPrinter(p)
g.DrawString "Hello World", 20, 20
```

Notes: And you can use normal graphics class for that.

186.0.187 How to query Spotlight’s Last Open Date for a file?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. Answer: You can use a MDItemMBS objec to query this value.

Example:

```plaintext
Function LastOpenedDate(Extends F As FolderItem, DefaultOtherDates As Boolean = True) As Date
# If TargetMacOS Then
Dim xMDItem as New MDItemMBS(F)
Dim xDate as Variant

If xMDItem <> Nil Then
xDate = xMDItem.GetAttribute(xMDItem.kMDItemLastUsedDate).DateValue
If xDate IsA Date Then Return xDate
Else
If xDate <> Nil Then Break
End If
# EndIf
```

```plaintext
End Function
```
If DefaultOtherDates Then
If F.ModificationDate <> Nil Then Return F.ModificationDate
If F.CreationDate <> Nil Then Return F.CreationDate
End If
End Function

Notes: Thanks for Josh Hoggan for this example code.

186.0.188 How to quit windows?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** Try this code:

**Example:**

```plaintext
# if targetwin32 then
dim i1,i2,r as Integer
declare function ExitWindowsEx lib "user32" (uFlags as Integer, dwReserved as Integer) as Integer
i1 = 2
i2 = 0
r = ExitWindowsEx(i1,i2)
if r<>0 then
' Error()
end if

# endif
```

Notes:

uFlags parameters:

'4 = EWX_Force
'0 = EWX_Logoff
'2 = EWX_Reboot
'1 = EWX_shutdown, should shut down computer

Also check the ExitWindowsMBS method.

186.0.189 How to read a CSV file correctly?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** With all the rules for quotes and delimiters, you can simply use the SplitCommaSeparatedValuesMBS method in our plugins like
Example:

```vba
Dim f As FolderItem = SpecialFolder.Desktop.Child("test.csv")
Dim t As TextInputStream = f.OpenAsTextFile

While Not t.EOF
    Dim s As String = t.ReadLine(Encodings.ASCII)
    Dim items() As String = SplitCommaSeparatedValuesMBS(s, ";", "", ",")
    List.AddRow ""
    Dim u As Integer = UBound(items)
    For i As Integer = 0 To u
        List.Cell(List.LastIndex, i) = items(i)
    Next
    Wend
```

Notes: Please make sure you choose the right text encoding.

186.0.190 How to read the command line on windows?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** Try this code:

Example:

```vbnet
# if targetwin32 then
Dim line As String
Dim mem As MemoryBlock

Declare Function GetCommandLineA Lib "kernel32" () As Ptr

mem=GetCommandLineA()
sql=mem.cstring(0)
# endif
```

Notes: Newer Realbasic versions have a system.commandline property.
186.0.191 How to render PDF pages with PDF Kit?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. Answer: Try this code:

```vba
// choose a file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")

// open it as PDF Document
dim sourceFile as New PDFDocumentMBS(f)
if sourceFile.handle <> 0 then // it is a PDF file

// get upper bound of pages
dim c as Integer = sourceFile.pageCount-1

// from first to last page
for n as Integer = 0 to c

// pick that page
    dim page as PDFPageMBS = sourceFile.pageAtIndex(n)

// render to image
    dim p as NSImageMBS = page.Render

// and convert to RB picture and display
Backdrop = p.CopyPictureWithMask
next

end if
```

Notes: PDFKit works only on Mac OS X.

186.0.192 How to restart a Mac?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. Answer: Ask the Finder via Apple Events:

```vba
dim ae as appleEvent
ae=newappleEvent("FNDR","rest","MACS")
if not ae.send then
    msgBox "The computer couldn’t be restarted."
end if
```
186.0.193 How to resume ftp upload with curl plugin?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** CURL supports that and you simply need to set the right options.

**Notes:**
First of course OptionUpload must be true. Second OptionFTPAppend must be true so the OptionResumeFrom is used. Store there (or in OptionResumeFromLarge) your start value. Don’t forget to implement the read event and return data there as requested.

186.0.194 How to rotate a PDF page with CoreGraphics?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** This code opens a PDF and draws the first page into a new PDF with 90 rotation.

**Example:**

```plaintext
// Rotate a PDF page

// our files
dim sourcefile as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim destfile as FolderItem = SpecialFolder.Desktop.Child("rotated.pdf")

// open PDF
dim pdf as CGPDFDocumentMBS = sourcefile.OpenAsCGPDFDocumentMBS

// query media size of first page
dim r as CGRectMBS = pdf.MediaBox(1)

// create new PDF
dim c as CGContextMBS = destfile.NewCGPDFDocumentMBS(r,"title","Author","Creator")

// create rotated rectangle
dim nr as new CGRectMBS(0,0,r.Height,r.Width)

// create new page
c.BeginPage nr
c.SaveGState

const pi = 3.14159265

// rotate by 90
c.RotateCTM pi*1.5
```
// fix origin
  c.TranslateCTM -r.width,0

// draw PDF
  c.DrawCGPDFDocument pdf,r,1

// cleanup
  c.RestoreGState
  c.EndPage

  c = nil

// show in PDF viewer
  destfile.Launch

Notes: This code is Mac only as it needs CoreGraphics.

186.0.195 How to rotate image with CoreImage?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. Answer: Use the code like the one below:

Example:

// Rotate image with CoreImage

// load image
  dim f as FolderItem = SpecialFolder.Desktop.Child("test.png")
  dim image as new CIImageMBS(f)

  // rotate 45 degree
  dim n as new NSAffineTransformMBS
  n.rotateByDegrees(45)

  dim TransformFilter as new CIFilterAffineTransformMBS
  TransformFilter.inputImage = image
  TransformFilter.inputTransform = n

  // get result
  dim resultImage as CIImageMBS = TransformFilter.outputImage

  // for saving to file
  dim outputImage as NSImageMBS = resultImage.RenderNSImage(false)

  f = SpecialFolder.Desktop.Child("output.png")
  dim b as BinaryStream = BinaryStream.Create(f, true)
b.Write outputImage.PNGRepresentation

// as Real Studio picture object for display
dim pic as Picture = outputImage.CopyPictureWithMask

Backdrop = pic

186.0.196 How to run a 32 bit application on a 64 bit Linux?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Install 32 bit compatibility libraries.

**Notes:**
The package is called ia32-libs for ubuntu (and others).
Some applications need to be run on a 32 bit system as they need some hardware related libraries. Like libUSB or libHID for USB devices.

186.0.197 How to save a quicktime movie as a reference movie?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** Example code is below:

**Example:**

```plaintext
// save as reference movie
dim f as FolderItem
dim m as movie

f=SpecialFolder.Desktop.Child("test.mov")
m=f.OpenAsMovie

f=SpecialFolder.Desktop.Child("new movie.mov")

msgbox str(m.SaveMBS(f,false,false))
```

186.0.198 How to save HTMLViewer to PDF with landscape orientation?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can use NSPrintInfoMBS to change the options for PrintToPDFFile function.

**Example:**

```plaintext
// make it landscape
dim n as NSPrintInfoMBS = NSPrintInfoMBS.sharedPrintInfo
```
n.orientation = n.NSLandscapeOrientation

// save html to file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
call HTMLViewer1.PrintToPDFFileMBS(f,10,30,10,30)

Notes:
You may want to reset options later.
This code is only for Mac OS X.

186.0.199  How to save RTFD?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** With NSTextViewMBS you can use this code to save to RTFD:

**Example:**

// save text as RTFD including image attachments
dim f as FolderItem = GetSaveFolderItem(FileTypes1.ApplicationRtfd, "test.rtfd")

if f = nil then Return

dim a as NSAttributedStringMBS = textView.textStorage
dim w as NSFileWrapperMBS = a.RTFDFileWrapperFromRange(0, a.length, DocumentAttributes)

dim e as NSErrorMBS
if w.writeToFile(f, e) then
else
MsgBox e.LocalizedDescription
end if

Notes: For TextArea you can query the underlaying NSTextViewMBS object via TextArea.NSTextViewMBS method.

186.0.200  How to scale a picture proportionally with mask?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** For a proportional scaling, we calculate the new picture size relative to the target maximum size.

**Example:**
Function ProportionalScaledWithMask(extends pic as Picture, Width as Integer, Height as Integer) As Picture

  // Calculate scale factor
  dim faktor as Double = min(Height / Pic.Height, Width / Pic.Width)

  // Calculate new size
  dim w as Integer = Pic.Width * faktor
  dim h as Integer = Pic.Height * faktor

  // create new picture
  dim NewPic as new Picture(w,h,32)

  // check if we have a mask and clear it
  dim m as picture = pic.mask(False)
  pic.mask = nil

  // draw picture in the new size
  NewPic.Graphics.DrawPicture Pic, 0, 0, w, h, 0, 0, Pic.Width, Pic.Height

  if m <> nil then
    // restore mask and scale it
    pic.mask = m
    NewPic.mask.Graphics.DrawPicture m, 0, 0, w, h, 0, 0, Pic.Width, Pic.Height
  end if

  // return result
  Return NewPic
End Function

Notes: This version handles mask. As you see we actually have to remove mask in order to copy the picture part correctly.

186.0.201 How to scale a picture proportionally?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: For a proportional scaling, we calculate the new picture size relative to the target maximum size.

Example:

Function ProportionalScaled(extends pic as Picture, Width as Integer, Height as Integer) As Picture

  // Calculate scale factor
  dim faktor as Double = min(Height / Pic.Height, Width / Pic.Width)
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// Calculate new size
dim w as Integer = Pic.Width * faktor
dim h as Integer = Pic.Height * faktor

// create new picture
dim NewPic as new Picture(w,h,32)

// draw picture in the new size
NewPic.Graphics.DrawPicture Pic, 0, 0, w, h, 0, 0, Pic.Width, Pic.Height

// return result
Return NewPic
End Function

Notes:
This does not handle mask, but you can scale the mask the same way and assign it to the new picture. (see other FAQ entry with mask)

186.0.202 How to scale/resize a picture?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. Answer: There are several ways to scale or resize a picture. The easiest way may be the ScaleMBS function in the Picture class.

Example:
dim Original, Scaled as Picture
Original=LogoMBS(500)
Scaled=Original.ScaleMBS(100,100,true)

Notes:
The plugin ways:
- The GWorld class which uses QuickTime. Includes nice Bicubic scaling with QuickTime 6.
- QTGraphicsImporterMBS and QTGraphicsExporterMBS can scale/resize.
- CoreImage scale filter may result in the fastest and best images on Mac OS X 10.4.
- NSImageMBS can scale, but is Mac OS X only.
- CGImageMBS can scale, but is Mac OS X only.
- CImageMBS can scale, but is Mac OS X only.
- QuickTime Graphics exporter and importer can be connected to scale. (this was used more often a few years ago)
- ImageMagick can scale very nice and crossplatform. But the ImageMagick libraries are big.
- The picture.ScaleMBS function is self written and results in equal output on Mac, Windows and Linux without any additional libraries installed.
- Picture.ScalingMBS does crossplatform scaling with several modes.

with pure REALbasic:
- make a new picture and draw the old one with new size inside.

186.0.203 How to search with regex and use unicode codepoints?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can specify unicode characters in search string with backslash x and digits.

**Example:**

```basic
dim r as RegExMbs
dim s as string
dim c as Integer

s="123 ABC 456"

r=new RegExMBS
if r.Compile("..") then
    c=r.Execute(s,0)
    MsgBox str(c)+" " +str(r.Offset(0))+" " +str(r.Offset(1))
    // shows: 1 4 10
    // 1 for ubound of the offset array
    // 4 for 4 bytes before the matched pattern
    // 10 for the 10 bytes before the end of the matched pattern
end if

r=new RegExMBS
if r.Compile("\.xF6.") then // finds using Unicode codepoint
    c=r.Execute(s,0)
    MsgBox str(c)+" " +str(r.Offset(0))+" " +str(r.Offset(1))
    // shows: 1 4 10
    // 1 for ubound of the offset array
    // 4 for 4 bytes before the matched pattern
    // 10 for the 10 bytes before the end of the matched pattern
end if
```

186.0.204 How to see if a file is invisible for Mac OS X?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Try this function:

**Example:**
Function Invisible(F As FolderItem) As Boolean
Dim TIS As TextInputStream
Dim S, All As String
Dim I as Integer
dim g as folderitem

If Left(F.Name,1)="." or not f.visible Then
Return True
End If

g=F.Parent.Child(".hidden")
If g.Exists Then
TIS=g.OpenAsTextFile
if tis<>Nil then
All=TIS.ReadAll
For I=1 to CountFields(All,Chr(11))
S=NthField(All, Chr(11), I)
If S=F.name Then
Return True
End If
Next
end if
End if
End if
End Function

186.0.205 How to set cache size for SQLite or REALSQLDatabase?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You use the pragma cache_size command on the database.

**Example:**

// set cache size to 20000 pages which is about 20 MB for default page size
Dim db as REALSQLDatabase
db.SQLExecute "PRAGMA cache_size = 20000"

**Notes:**

Default cache size is 2000 pages which is not much.
You get best performance if whole database fits in memory.
At least you should try to have a cache big enough so you can do queries in memory.
You only need to call this pragma command once after you opened the database.
186.0.206 How to set the modified dot in the window?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Try this declares:

Example:

```plaintext```
window1.ModifiedMBS=true
```

186.0.207 How to show a PDF file to the user in a Web Application?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can use a WebHTMLViewer control and load the

Example:

```plaintext```
dim CurrentFile as WebFile // a property of the WebPage

// define the PDF file
CurrentFile = new WebFile
CurrentFile.Filename = "test.pdf"
CurrentFile.MIMEType = "application/pdf"
CurrentFile.Data = "some pdf data" // MyDynaPDF.GetBuffer

// load into html viewer
HTMLViewer1.URL = CurrentFile.URL
```

**Notes:**

See our Create PDF example for the Real Studio Web Edition.

http://www.monkeybreadsoftware.de/realbasic/webapps.shtml

186.0.208 How to show Keyboard Viewer programmatically?

Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Use Realbasic or AppleScript to launch the KeyboardViewerServer.app.

Example:

```plaintext```
dim a as new AppleScriptMBS
dim text as string
dim lines(-1) as string

lines.append "set theApplication to "/System/Library/Components/KeyboardViewer.component/Contents/Shared-Support/KeyboardViewerServer.app"
lines.append ""
```
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```
lines.append "set POSIXPath to ((POSIX file thePath) as string)"
lines.append "tell application ""System Events"" to set isRunning to 0 < (count (application processes whose name is theApplication))"
lines.append "if isRunning then tell application POSIXPath to quit"
lines.append "delay 0.15"
lines.append "ignoring application responses"
lines.append "tell application POSIXPath to run"
lines.append "end ignoring"

text=join(lines,EndOfLine.macintosh)
```

a.Compile text
a.Execute

**Notes:**

AppleScript code:

```
set theApplication to "KeyboardViewerServer"
set thePath to "/System/Library/Components/KeyboardViewer.component/Contents/SharedSupport/KeyboardViewerServer.app"

set POSIXPath to ((POSIX file thePath) as string)
tell application "System Events" to set isRunning to 0 < (count (application processes whose name is theApplication))
if isRunning then tell application POSIXPath to quit
delay 0.15

ignoring application responses
tell application POSIXPath to run
end ignoring
```

186.0.209 How to show the mouse cursor on Mac?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Try this declare:

**Example:**

```
Declare Sub ShowCursor Lib "Carbon" ()
```

ShowCursor
Notes: The MBS Plugin has this function and supports it on Windows, too.

186.0.210  How to shutdown a Mac?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. Answer: Ask the Finder via Apple Events:

Example:

```vba
Dim ae As AppleEvent
ae = NewAppleEvent("FNDR","shut","MACS")
If Not ae.Send Then
    MsgBox "The computer couldn't be shutdown."
End If
```

Notes:

Or toolbox call (Attention: This method will stop the computer immediately: No document asked to be saved, all applications quitting without knowing).

Declare Sub ShutDwnPower Lib "Carbon" ()
ShutDwnPower

186.0.211  How to sleep a Mac?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. Answer: Ask the Finder via Apple Events:

Example:

```vba
Dim ae As AppleEvent
ae = NewAppleEvent("FNDR","slep","MACS")
If Not ae.Send Then
    MsgBox "The computer doesn't want to sleep."
End If
```
186.0.212 How to speed up rasterizer for displaying PDFs with DynaPDF?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Here a few speed tips:

- Use the DynaPDFRasterizerMBS function instead of our render functions.
- Reuse DynaPDFRasterizerMBS as long as the target picture size doesn’t change.
- Import only the PDF pages you want to display.
- Let DynaPDF do zooming, rotating or other effects instead of you change it.

186.0.213 How to use PDFLib in my RB application?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** The PDFlib plugin was discontinued in favor of our DynaPDF plugin.

**Notes:** If you need help to move, please contact us.

186.0.214 How to use quotes in a string?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Just double them.

**Example:**

msgbox "This String contains ""quotes""."'

186.0.215 How to use Sybase in Web App?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Please use our MBS Real Studio SQL Plugin to connect to a Sybase Database in your web application.

**Notes:**

If you see db.Connect giving the error message "cs_ctx_alloc ->CS_MEM_ERROR", than some things are not setup right for Sybase.
The Apache process may not have all the SYBASE environment variables being set when the CGI was launched.

Adding these lines to /etc/httpd/conf/httpd.conf stopped the faux memory errors for us:

```
SetEnv LD_LIBRARY_PATH /opt/sybase/OCS-15_0/lib:/opt/sybase/OCS-15_0/lib3p64:/opt/sybase/OCS-15_0/lib3p:
SetEnv SYBROOT /opt/sybase
SetEnv SYBASE_OCS /opt/sybase
```
186.0.216 How to use the Application Support folder?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:**

I was saving a registration code for an app to the Preference folder. People on the list have suggested that it would be better in the ApplicationSupportFolder. How do I save the file called CWWPrefs into that folder using MBS?

I have checked for examples and the docs but can’t see how to apply it

```mbs
//f = SpecialFolder.Preferences.child("CWWPrefs")
f = ApplicationSupportFolderMBS(-32768)
```

**Example:**

```mbs
dim folder,file as FolderItem

folder = createApplicationSupportFolderMBS(-32763)

if folder=nil then
  // Some very old Mac OS Versions may not support it
  // or the plugin may fail for any reason
  folder=SpecialFolder.Preferences
end if

file=folder.Child("CWWPrefs")

MsgBox file.UnixpathMBS
```

**Notes:** You may not be able to write there with a normal user account!

186.0.217 How to use the IOPMCopyScheduledPowerEvents function in RealBasic?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You can use the following code which does this using the SoftDeclareMBS class.

**Example:**

```mbs
Sub Open()
  dim c as CFDateMBS
```
dim t as CFAbsoluteTimeMBS

// get current date
c=NewCFDateMBS

// in absolute time (seconds since x)
t=c.AbsoluteTime

// add 600 seconds (= 10 Minutes)
t.Value=t.Value+600

// Make a Date from it
c=t.Date

// Schedule the event
// 0 on success
// E00002C1 for missing root rights
Title=hex(schedulePowerEvent(c, "wake"))

// Just for information, display the scheduled stuff
CFShowMBS CopyScheduledPowerEvents
End Sub

Function CopyScheduledPowerEvents() As cfarrayMBS
dim s as SoftDeclareMBS
dim m as MemoryBlock

s=new SoftDeclareMBS

if s.LoadLibrary("IOKit.framework") then
if s.LoadFunction("IOPMCopyScheduledPowerEvents") then
if s.CallFunction(0,nil) then
Return NewCFArrayMBSHandle(s.Result,true)
else
MsgBox "Failed to Call IOPMCopyScheduledPowerEvents."
end if
else
MsgBox "Failed to load IOPMCopyScheduledPowerEvents."
end if
else
MsgBox "Failed to load IOKit."
end if

Return nil
End Function

Function SchedulePowerEvent(time_to_wake as CFDateMBS, Type as CFStringMBS) as Integer
dim s as SoftDeclareMBS
dim m as MemoryBlock

'/*
 */ Types of power event
'*/ These are potential arguments to IOPMSchedulePowerEvent().
'*/ These are all potential values of the kIOPMPowerEventTypeKey in the CFDictionarys
'*/ returned by IOPMCopyScheduledPowerEvents().
'*/
'/*!
'@define kIOPMAutoWake
'@abstract Value for scheduled wake from sleep.
'*/
'# define kIOPMAutoWake "wake"
'
'/*!
'@define kIOPMAutoPowerOn
'@abstract Value for scheduled power on from off state.
'*/
'# define kIOPMAutoPowerOn "poweron"
'
'/*!
'@define kIOPMAutoWakeOrPowerOn
'@abstract Value for scheduled wake from sleep, or power on. The system will either wake OR
'power on, whichever is necessary.
'*/
'
'# define kIOPMAutoWakeOrPowerOn "wakepoweron"
'
'/*!
'@define kIOPMAutoSleep
'@abstract Value for scheduled sleep.
'*/
'
'# define kIOPMAutoSleep "sleep"
'
'/*!
'@define kIOPMAutoShutdown
'@abstract Value for scheduled shutdown.
'*/
'
'# define kIOPMAutoShutdown "shutdown"

s=new SoftDeclareMBS

if s.LoadLibrary("IOKit.framework") then
if s.LoadFunction("IOPMSchedulePowerEvent") then

m=NewMemoryBlock(12)
m.Long(0)=time_to_wake.handle
m.Long(4)=0 // nil
m.Long(8)=type.Handle
if s.CallFunction(3,m) then
Return s.Result
end if
end if
End Function

Notes: Requires Mac OS X and to execute root rights.

186.0.218 How to validate a GUID?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: You can use this function below which uses a regular expression to verify that the string is a valid UUID/GUID:

Example:

Function IsGUID(guid as string) As Boolean
dim r as new RegEx
r.SearchPattern = "\{ \{ 0,1 \} \{ 0-9a-fA-F \} \{ 8 \} \{ 4 \} \{ 4 \} \{ 4 \} \{ 12 \} \} \{ 0,1 \} \} ^\{ 0,1 \} $"
Return r.Search(guid)<nil
End Function

Notes: Simply parsing the GUID with CFUUIDMBS does not give the same result as CFUUIDMBS will also take a string like "DDDD".

186.0.219 How to walk a folder hierarchie non recursively?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: Use code like this one:

Example:

Sub Walk(folder as FolderItem)
dim folders() as FolderItem
folders.Append folder
while UBound(folders)>=0
dim currentFolder as FolderItem = folders.pop

dim c as Integer = currentFolder.Count
for i as Integer = 1 to c
  dim item as FolderItem = currentFolder.TrueItem(i)
  if item = Nil then
    // no permission
  elseif item.Visible then // only visible
    if item.Directory then
      folders.Append item
    else
      // work with file here
    end if
  end if
end if

next
wend
End Sub

Notes:
As you see we go with a long loop which runs until we don’t have more folders to process.
We ignore items we can’t access due to permission limits.
And we only work visible items.
If you like, check folderitem.isBundleMBS on item to handle packages and applications better on Mac OS X.

186.0.220 I got this error: PropVal, QDPictMBS.Name (property value), Type mismatch error. Expected CGDataProviderMBS, but got Variant, Name:QDPictMBS

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. Answer: The plugins MacOSX and MacOSXCF belong together. If you use one part, please also install the other part.
Notes: We splitted the plugin because the Real Studio IDE on Windows crashed on compilation.
I registered the MBS Plugins in my application, but later the registration dialog is shown.

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** There are two main reasons.

**Notes:**

1. you may use the plugin before registering them. This is often the case if you register in a window open event and use the plugin in a control open event.

On the console on Mac OS X or Windows, you may see a message like this "MBS Plugins were used by the application before the RegisterMBSPlugin function was called. Please fix this in your code!".

2. you may have mixed different plugin versions which are not compatible.

In this case you can see a message "Internal plugin registration error." on the console on Mac OS X. Newer plugins may show a message dialog reporting this. Older version simply think they are not registered.

If the installer just merges old and new applications, users may have libraries of older and newer plugin versions in the libs folder. If your application loads the wrong version, the registration fails.

If you use remote debugging, make sure you clear the tempory files there, too. Otherwise you may have old DLLs on your hard disc which may disturb your application.

You can run into issues if you use your registration code on different places of your app. Please register only once in app.open (or app Constructor). If you have several codes, simply call them one after the other.

Also check that you only call RegisterMBSPlugin with valid serial number. If you later call RegisterMBSPlugin with Demo like in example code above, you remove the license.

Next check if you can clear the Xojo caches and that helps. This includes the Xojo Scratch folder and the Plugins & Project caches. Simply locate those folders and delete them. For Windows look in hidden AppData folder in your user folder. For Mac, please check .textasciitilde/Library/Caches and your temp folders.

Finally make sure you use the right serial number. Not an older one or a misspelled one.

I want to accept Drag & Drop from iTunes

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You need to accept AcceptMacDataDrop "itun" and Handle the DropObject.

**Example:**
Sub Open()
window1.AcceptMacDataDrop "itun"
End Sub

Sub DropObject(obj As DragItem)
dim s as string
dim f as folderItem
dim d as CFDictionaryMBS
dim o as CFObjectMBS
dim key as CFStringMBS
dim dl as CFDictionaryListMBS
dim i,c as Integer
dim u as CFURLMBS
dim file as FolderItem

if obj.MacDataAvailable("itun") then
    s = obj.MacData("itun")

    // Parse XML
    o=NewCFObjectMBSFromXML(NewCFBinaryDataMBSStr(s))

    // Make dictionary
    if o isa CFDictionaryMBS then
d=d=CFDictionaryMBS(o)

    // get Tracks Dictionary
    key=NewCFStringMBS("Tracks")
o=d.Value(key)

    if o isa CFDictionaryMBS then
d=d=CFDictionaryMBS(o)
dl=d.List

    // Walk over all entries in the Tracks dictionary
    c=dl.Count-1
    for i=0 to c
        o=dl.Value(i)

        if o isa CFDictionaryMBS then
d=d=CFDictionaryMBS(o)

        key=NewCFStringMBS("Location")
o=d.Value(key)
        if o isa CFStringMBS then
            u=NewCFURLMBS(CFStringMBS(CFStringMBS(o),nil))

            file=u.file
            if file<>nil then
MsgBox file.UnixpathMBS
end if
end if
next
end if
End Sub

Notes: The code above inside a window on Realbasic 5.5 with MBS Plugin 5.3 will do it nice and show the paths.

186.0.223  I’m drawing into a listbox but don’t see something.

Plugin Version: all, Console & Web: No. Answer: If you draw this in a listbox cellbackground, you need to draw on the correct position

Example:

Function CellBackgroundPaint(g As Graphics, row as Integer, column as Integer) As Boolean
dim f as FolderItem
f=SpecialFolder.Desktop
f.DrawWideIconMBS(g,listbox1.left,listbox1.top+row*20,16)
Return true
End Function

Notes: Try this in a listbox. The Graphics object there has a clipping and an offset which the plugin doesn’t know about.

186.0.224  I’m searching for a method or so to move a window from position x,y to somewhere else on the screen.

Console & Web: No, Mac: Yes, Win: No, Linux: No. Answer:

The code I produced in RB isn’t smooth enough. Is there a call in MBS, if not, can it be done? The speed of it has to be like the show of a DrawerWindow.

Try the declare below for Carbon. With WindowLib it will work on Mac OS 8.5 and newer.

Notes: See Window.Transition functions.
186.0.225 If I use one of your plug-ins under windows, would this then impose the use of dll after compilation or my would my compiled soft still be a stand-alone single file software?

Notes:
REALbasic compiles all used plugins into the application binary.
Some plugin parts need external dlls but you will find that in the documentation. (e.g. pdflib for some classes)

186.0.226 Is the fn key on a powerbook keyboard down?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. Answer: I am unable to figure out how or if it is possible to detect if the fn key is down on a powerbook keyboard. Is it possible?
Example:
' Window.Open Event of a blank project:

dim i as Integer

for i=0 to 127
if keyboard.asynckeydown(i) then
    title=str(i) // found
    return
end if
next

title="" // not found

Notes: This test application shows the keycode (decimal) 63 for the fn key.

186.0.227 Is there a case sensitive Dictionary?

Plugin Version: all, Console & Web: No. Answer: The MBS Plugin has several classes which can work as a replacement.
Notes:
First you could use VariantToVariantHashMapMBS or VariantToVariantOrderedMapMBS.
If you know that all keys are Strings or Integers only, you can use the specialized classes which are a little bit faster due to avoiding variants:

IntegerToIntegerHashMapMBS class
IntegerToIntegerOrderedMapMBS class
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IntegerToStringHashMapMBS class
IntegerToStringOrderedMapMBS class
IntegerToVariantHashMapMBS class
IntegerToVariantOrderedMapMBS class
StringToStringHashMapMBS class
StringToStringOrderedMapMBS class
StringToVariantHashMapMBS class
StringToVariantOrderedMapMBS class

186.0.228 Is there a way to use the MBS plugin to get only the visible item and folder count on a volume?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: You can use the DirectorySizeMBS class for this as in the example below:

Example:

dim d as DirectorySizeMBS
d=new DirectorySizeMBS

// volume(1) as my boot volume is very full
if d.update(volume(1),true,0) then
    MsgBox str(d.VisibleItemCount)+" visible items, "+str(d.HiddenItemCount)+" invisible items."
end if

Notes:

Complete Question: Is there a way to use the MBS plugin to get only the visible item and folder count on a volume? The FileCount and FolderCount properties of VolumeInformationMBS seem to provide the total # of items including invisible items such as .DS_Store and more importantly .Trashes which is causing me a great amount of difficulty during a recursive scan of a volume. I've got a progress bar which uses the total of the filecount and foldercount properties as the maximum value, but my routine needs to filter out all invisible items, as it is creating a catalog of a volume for archiving purposes. Any thoughts how I could get accurate number.

186.0.229 Is there an easy way I can launch the Displays preferences panel?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. Answer: Use the code below:

Example:
dim error as Integer

error=OpenMacOSXPreferencesPaneMBS("Displays")
if error<>0 then
MsgBox "Failed to launch QuickTime System Preferences panel."
end if

186.0.230  Is there an easy way I can launch the Quicktime preferences panel?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. Answer: Use the code below:
Example:
    
    dim error as Integer

    error=OpenMacOSXPreferencesPaneMBS("QuickTime")
    if error<>0 then
    MsgBox "Failed to launch QuickTime System Preferences panel."
    end if

186.0.231  List of Windows Error codes?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: We have a list of windows error codes on our website.
Notes: http://www.monkeybreadsoftware.de/xojo/winerror.shtml

186.0.232  Midi latency on Windows problem?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: The issue is system related, not a problem with RB or the plugin.
Notes:
Two things will adversely affect the timing:

1) latency of the software synthesizer output driver. The default Windows wavetable synthesizer has considerable latency. I don’t know how many milliseconds, but it is noticeable.

2) latency of the digital audio output driver. Different systems have different drivers for different audio hardware. My Dell laptop has a minimum 15ms latency in the audio driver.
These two things put together were causing a very sluggish MIDI response. I was able to verify these as the culprits by routing MIDI directly out of RB into a sample player, which only introduces the latency of (2) and does not include latency of (1).

I don’t know how widely known are these facts, if not then you may want to add this information to the documentation, since Windows programmers using the MIDI plugin may not know those problems, and might mistakenly blame your plugin, as I did :) Sorry about that!

(From Aaron Andrew Hunt)

186.0.233 My Xojo Web App does not launch. Why?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Here is a list of checks to do for linux apache installations with Xojo or Real Studio Web applications:

**Notes:**

Just a list of checks to do for linux apache installations:

- You have 64bit linux? Than you need 32 bit compatibility libraries.
- The folder of your app is writable? Set permissions to 777.
- The cgi script is executable? Set permissions to 755.
- The app file itself is executable? Set permissions to 755.
- You uploaded cgi file as text, so it has unix line endings? (this often gives error “Premature end of script headers” in apache log)
- You uploaded config.cfg file and made it writable? Set permissions to 666.
- Your apache allows execution of cgi scripts? You enabled cgi for apache and uncommented addhandler command for CGI on a new apache installation?
- You uploaded the app file and libraries as binary files? Upload as text breaks them.
- You did upload the libs folder?
- You don’t have code in app.open, session.open and other events which crashes app right at launch?
- You don’t have a print command in your app.open event? (see feedback case 23817)
- You allowed .htaccess file to overwrite permissions?
**186.0.234** Pictures are not shown in my application. Why?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:**

On Mac OS Classic, please check the memory partition size which may be too low. Else (most times on Windows) you are simple missing the part of QuickTime to load images.

**186.0.235** Realbasic doesn’t work with your plugins on Windows 98.

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** Upgrade your Windows version or complain to Realsoftware.

**186.0.236** REALbasic or my RB application itself crashes on launch on Mac OS Classic. Why?

Plugin Version: all, Console & Web: No. **Answer:**

You may check if the application has enough memory to be loaded. RB should have on Mac OS Classic more than 20 MB of RAM. I prefered to use 50 MB and for an application a 10 MB partition is a good way to start.

**186.0.237** SQLDatabase not initialized error?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Before you can use SQLDatabaseMBS, it must be initialized.

**Example:**

```
    dim d as new SQLDatabaseMBS
```

**Notes:**

This happens normally when you use "new SQLDatabaseMBS". But if you just have a SQLConnectionMBS and get a recordset there, the initialization may not have happened, yet.

So please simply add a line "dim d as new SQLDatabaseMBS" to your app.open code after registration, so the plugin part can initialize and late provide recordsets.

**186.0.238** Textconverter returns only the first x characters. Why?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:**
Some older REALbasic versions limit the Textconverter to around 1024 characters in input and output. This should be fixed with RB5.

Notes: REALbasic seems not to support Textconverters at all on Windows.

186.0.239 The type translation between CoreFoundation/Foundation and REALbasic data types.

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. Answer: The plugin does conversion between Cocoa/Carbon data types and native REALbasic data types. The following list help you knowing what the current plugins support:

Notes:

Cocoa NSObject to Variant:

nil ->nil
NSDictionary ->Dictionary
NSData ->MemoryBlock
NSString ->String
NSAttributedString ->NSAttributedStringMBS
NSDate ->Date
NSNumber ->double/integer/Int64/UInt64/UInt32/Boolean
NSURL ->String
NSNumber with NSRect ->NSRectMBS
NSNumber with NSPoint ->NSPointMBS
NSNumber with NSSize ->NSSizeMBS
NSNumber with NSRange ->NSRangeMBS
NSNumber with QTTime ->QTTimeMBS
NSNumber with QTTimeRange ->QTTimeRangeMBS
NSArray ->Array of Variant
QuartzFilter ->QuartzFilterMBS

* ->MBS

Variant to CocoaNSObject:

nil ->nil
Dictionary ->NSDictionary
Boolean ->NSNumber
Integer ->NSNumber
Color ->NSColor
Int64 ->NSNumber
Single ->NSNumber
Double ->NSNumber
Date ->NSDate
MemoryBlock -> NSData
String -> NSString
NSImageMBS -> NSImage
NSAttributedStringMBS -> NSAttributedString
NSColorMBS -> NSColor
NSRectMBS -> NSValue with NSRect
NSSizeMBS -> NSValue with NSSize
NSPointMBS -> NSValue with NSPoint
NSRangeMBS -> NSValue with NSRange
NSBurnMBS -> NSBurn
NSViewMBS -> NSView
NSFontMBS -> NSFont
NSParagraphStyleMBS -> NSParagraphStyle
NSAttributedStringMBS -> NSAttributedString
WebPolicyDelegateMBS -> WebPolicyDelegate
WebUIDelegateMBS -> WebUIDelegate
WebFrameLoadDelegateMBS -> WebFrameLoadDelegate
WebResourceLoadDelegateMBS -> WebResourceLoadDelegate
NSIndexSetMBS -> NSIndexSet
QTTimeMBS -> QTTime
QTTimeRangeMBS -> QTTimeRange
Array of Variant -> NSArray
Array of String -> NSArray
CFStringMBS -> NSString
CFNumberMBS -> NSNumber
CFDataMBS -> NSData
CFURLMBS -> NSURL
CFArrayMBS -> NSArray
CFDictionaryMBS -> NSDictionary
CFBinaryDataMBS -> NSDate

Carbon CFTypeRef to Variant:

CFDictionaryRef -> Dictionary
CFStringRef -> String
CFDataRef -> String
CFURL -> String
CFNumber -> Integer/Double/Int64
CFArray -> Array
CFDate -> date
nil -> nil
CGColorSpace -> CGColorSpaceMBS
CGColor -> CGColorMBS
CGImage -> CGImageMBS
CF* -> CF*MBS
Variant to Carbon CFTypeRef:

Dictionary -> CFDictionaryRef
Boolean -> CFBooleanRef
Color -> CFNumberRef
Integer -> CFNumberRef
Int64 -> CFNumberRef
Single -> CFNumberRef
Double -> CFNumberRef
String -> CFStringRef
Color -> CGColorRef
Date -> CFDateRef
nil -> nil
Memoryblock -> CFDataRef
Folderitem -> CFURLRef
Dictionary -> CFDictionaryRef
Array of Variant/String/Date/Double/Single/Int64/Integer -> CFArray
CGRectMBS -> CGRect as CFDataRef
CGSizeMBS -> CGSize as CFDataRef
CGPointMBS -> CGPoint as CFDataRef
CGColorMBS -> CGColor
CGColorSpaceMBS -> CGColorSpace
CGImageMBS -> CGImage
CGDataConsumerMBS -> CGDataConsumer
CGDataProviderMBS -> CGDataProvider
CF*MBS -> CF*

Strings without encodings should be put into dictionaries as memoryblocks.

186.0.240 Uploaded my web app with FTP, but it does not run on the server!

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** If you see errors like a simple "Segmentation Fault" on Linux or some other wired errors, you may want to check your FTP upload mode. It must be binary for web apps. ASCII mode corrupts the application.

186.0.241 What classes to use for hotkeys?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Please use Carbon-HotKeyMBS class on Mac and WindowsKeyFilterMBS on Windows.

**Notes:** CarbonHotKeyMBS will also work fine in Cocoa apps.
186.0.242  What do I need for Linux to get picture functions working?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes.  **Answer:** In order to get our plugins working on Linux systems without GUI, the plugin loads graphics libraries dynamically.  **Notes:**

To get it working, the plugin tries to load gtk with this paths:

- libgtk-x11-2.0.so"
- libgtk-x11-2.0.so.0"
- /usr/lib/libgtk-x11-2.0.so"
- /usr/lib32/libgtk-x11-2.0.so"
- /usr/lib/libgtk-x11-2.0.so.0"
- /usr/lib32/libgtk-x11-2.0.so.0"

gdk is loaded with this paths:

- libgdk-x11-2.0.so"
- libgdk-x11-2.0.so.0"
- /usr/lib/libgdk-x11-2.0.so"
- /usr/lib32/libgdk-x11-2.0.so"
- /usr/lib/libgdk-x11-2.0.so.0"
- /usr/lib32/libgdk-x11-2.0.so.0"

For the paths without explicit path, the system will search in /lib, /usr/lib and all directories in the LD_LIBRARY_PATH environment variable.

186.0.243  What does the NAN code mean?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes.  **Answer:**
186.0.244  What font is used as a 'small font' in typical Mac OS X apps?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No.  **Answer:**

REALbasic 4.5 has a constant "SmallSystem" to use for a font name.  
For older versions try this code:

**Example:**

```vbscript
Sub GetThemeFont(fontType as Integer, ByRef fontName as String, ByRef fontSize as Integer, ByRef fontStyle as Integer)
    dim err as Integer
    dim theFont, theFontSize, theFontStyle as MemoryBlock

    const smSystemScript = -1

    Declare Function GetThemeFont Lib "Carbon" (inFontID as Integer, inScript as Integer, outFontName as Ptr, outFontSize as Ptr, outStyle as Ptr) as Integer

    theFont = NewMemoryBlock(256)  '//Str255
    theFontSize = NewMemoryBlock(2)  '//SInt16
    theFontStyle = NewMemoryBlock(1)  '//Style

    err = GetThemeFont(fontType, smSystemScript, theFont, theFontSize, theFontStyle)

    if err = 0 then
        fontName = theFont.PString(0)
        fontSize = theFontSize.UShort(0)
        fontStyle = theFontStyle.Byte(0)
    else
        fontName = ""
        fontSize = 0
        fontStyle = 0
    end if
End Sub
```

186.0.245  What is last plugin version to run on Mac OS X 10.4?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No.  **Answer:** Last Version with 10.4 support is version 15.4.

**Notes:**

With version 15.4 you can build applications for OS X 10.4 and newer.  
For Version 16.0 we disabled 10.4 and moved minimum to 10.5.  We may be able to enable it again to build a version of 16.x, but may need to charge for this by hour.
186.0.246 What is last plugin version to run on PPC?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** Last Version with PPC is 15.4.

**Notes:**
With version 15.4 you can build PPC applications for OS X 10.4 and newer.
For Version 16.0 we disabled PPC. We may be able to enable it again to build a PPC version of 16.x, but may need to charge for this by hour.

186.0.247 What is the difference between Timer and WebTimer?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Time is server side and WebTimer client side.

**Notes:** Timer is the normal timer class in Real Studio. It runs on the server. On the side the WebTimer runs on the client. It triggers a request to the server to perform the action. So a WebTimer is good to keep the connection running and the website updated regularly. A timer on the server is good to make regular jobs like starting a database backup every 24 hours.

186.0.248 What is the list of Excel functions?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Below a list of function names known by LibXL.

**Notes:**
LibXL parses the functions and writes tokens to the excel file. So even if Excel can do more functions, we can only accept the ones known by LibXL.

ABS, ABSREF, ACOS, ACOSH, ACTIVE.CELL, ADD.BAR, ADD.COMMAND, ADD.MENU, ADD.TOOLBAR, ADDRESS, AND, APP.TITLE, AREAS, ARGUMENT, ASC, ASIN, ASINH, ATAN, ATAN2, ATANH, AVEDEV, AVERAGE, AVERAGEA, BAHTTEXT, BETADIST, BETAINV, BINOMDIST, BREAK, CALL, CALLER, CANCEL.KEY, CEILING, CELL, CHAR, CHECK.COMMAND, CHIDIST, CHIINV, CHITEST, CHOOSE, CLEAN, CODE, COLUMN, COLUMNS, COMBIN, CONCATENATE, CONFIDENCE, CORREL, COS, COTH, COUNT, COUNTA, COUNTBLANK, COUNTIF, COVAR, CREATE.OBJECT, CRITBINOM, CUSTOM.REPEAT, CUSTOM.UNDO, DATE, DATEDIF, DATESTRINGS, DATEVALUE, DAVE, DAY, DAYS360, DB, DBCS, DCOUNT, DCOUNTA, DDB, DEGREES, DELETE.BAR, DELETE.COMMAND, DELETE.MENU, DELETE.TOOLBAR, DEREFS, DEVSQ, DGET, DIALOG.BOX, DIRECTORY, DMAX,DMIN, DOCUMENTS, DOLLAR, DPRODUCT, DSTDEV, DSTDEVP, DSUM, DVAR, DVARP, ECHO, ELSE, ELSEIF, ENABLE.COMMAND, ENABLE.TOOL, END.IF, ERROR, ERROR.TYPE, EVALUATE, EVEN, EXACT, EXECUTE, EXP, EXPONDIST, FACT, FALSE, FCLOSE, FDIST, FILES, FIND, FINDB, FINV, FISHER, FISHERINV, FIXED, FLOOR, FOPEN, FOR, FOR.CELL, FORECAST, FORMULA, CONVERT, FPOS, FREAD, FREADLN, FREQUENCY, FSIZE, FTET, FV, FWRITE, FWRITELN, GAMMADIST, GAMMAINV, GAMMALN, GEOMEAN, GET.BAR, GET.CELL, GET.CHART.ITEM, GET.DEFINITIONS, GET.DOCUMENT, GET.FORMULA, GET.LINK.INFO, GET.MOVIE, GET.NAME, GET.NOTE,
186.0.249  What is the replacement for PluginMBS?


186.0.250  What to do on Realbasic reporting a conflict?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes.  Answer:

I get an error like ”This item conflicts with another item of the same name” when using one of the plugin functions.

REALbasic just wants to tell you that you dropped something in the plugins folder what is not a plugin.  
Notes: Some users dropped the examples, the documentation or other files into the plugins folder. Don’t do it.
186.0.251  What to do with a NSImageCacheException?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** You need to add exception handlers for NSExceptionMBS in order to catch this exception.

**Notes:**

You may also add code to write the stack of the exception into a log file for later locating the error source.

A NSImage has several image representations in memory. So basically you pass in the base image and for whatever size an image is needed, the NSImage class will create a cache image representation of the requested size so on the next query it can use that cache for the same requested size.

186.0.252  What to do with MySQL Error 2014?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** You can get this error on MySQL if you have a recordset open while you create another one.

186.0.253  What ways do I have to ping?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** You have different ways

**Notes:**

1. Use the shell class and the ping utility.

2. Use the MBS Network Plugin and there the SuperSocket part:

   a) On Windows the ICMPPingMBS works to ping.
   b) On Mac OS X it uses OpenTransport and needs root rights. You need to use sudo to run this application. This does not work on Intel Macs, because the plugin is not endian safe.

3. The DarwinPingMBS.Ping method:

   Compiled for Mac OS X Macho target it works as a synchronized ping method.
   The Windows version had a bug and was fixed in plugin version 8.2pr4. So it works now.

4. The DarwinPingMBS.SimplePing method:

   Works on Mac OS X Macho target.
But this method can be called from a thread to make it working in background.

186.0.254 Where is CGGetActiveDisplayListMBS?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** This is now CGDisplayMBS.GetActiveDisplayList.

186.0.255 Where is CGGetDisplaysWithPointMBS?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** This is now CGDisplayMBS.GetDisplaysWithPoint.

186.0.256 Where is CGGetDisplaysWithRectMBS?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** This is now CGDisplayMBS.GetDisplaysWithRect.

186.0.257 Where is CGGetOnlineDisplayListMBS?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** This is now CGDisplayMBS.GetOnlineDisplayList.

186.0.258 Where is GetObjectClassNameMBS?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Please use this replacement method:

**Example:**

```vbnet
Function GetObjectClassNameMBS(o as Object) As string
    dim t as Introspection.TypeInfo = Introspection.GetType(o)
    Return t.FullName
End Function
```

**Notes:** GetObjectClassNameMBS was removed from the plugins.
Where is NetworkAvailableMBS?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. Answer: We removed NetworkAvailableMBS some versions ago. It was not working right and basically it’s not useful. If you want to check whether you have a network, than do a DNS resolve:

Example:

```vbnet
// two independent domain names
const domain1 = "www.google.com"
const domain2 = "www.macsw.de"

// resolve IPs
dim ip1 as string = DNSNameToAddressMBS(Domain1)
dim ip2 as string = DNSNameToAddressMBS(Domain2)

// if we got IPs and not the same IPs (error/login pages)
if len(ip1)=0 or len(ip2)=0 or ip1=ip2 then
    MsgBox "no connection"
else
    MsgBox "have connection"
end if
```

Notes: This way you can detect whether you got something from DNS. And you can make sure that a DNS redirection to a login page won’t catch you.

Where is StringHeight function in DynaPDF?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. Answer: Use the function GetFTextHeight or GetFTextHeightEx.

Notes: Be aware that GetFTextHeight works with format commands and you may want to escape your text if you don’t use them.

Where is XLSDocumentMBS class?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. Answer: This class has been removed in favor of XLBookMBS class.

Notes: This classes have been removed XLSCellMBS, XLSDocumentMBS, XLSFormatRecordMBS, XLSMergedCellsMBS, XLSRowMBS and XLSSheetMBS.
186.0.262 Where to get information about file formats?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:**

Please visit this web page:
http://www.wotsit.org

186.0.263 Where to register creator code for my application?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:**

Register at Apple:

186.0.264 Which Mac OS X frameworks are 64bit only?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Some frameworks from Mac OS X do not support 32 bit applications, so we can’t provide plugins for Xojo until 64bit target is available.

**Notes:**

For Mac OS X 10.8:

- Accounts
- EventKit
- GLKit
- Social

and in 10.9:

- Accounts
- AVKit
- EventKit
- GameController
- GLKit
- MapKit
• MediaLibrary
• Social
• SpriteKit

In general Apple makes all new frameworks being 64 bit only.

186.0.265 Which plugins are 64bit only?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Some of our plugins work only in 64 bit modes as operation systems do not provide 32 bit code.

**Notes:** This effects currently: EventKit, Accounts, Social frameworks from Apple and our matching plugins.

186.0.266 Why application doesn’t launch because of a missing ddraw.dll!?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** Some RB versions require that you install DirectX from Microsoft on your Windows.

186.0.267 Why application doesn’t launch because of a missing shlwapi.dll!?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** Some RB versions require that you install the Internet Explorer from Microsoft on your Windows.

**Notes:** This bug is for several older Windows 95 editions.

186.0.268 Why do I hear a beep on keydown?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** When the user presses a key, RB goes through all keydown event handlers till on returns true.

**Notes:** If no keydown event handler returns true for the key, a beep is performed.

186.0.269 Why does folderitem.item return nil?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:** Because RealBasic fails to make a folderitem for you. Reason may be an alias file which can’t be resolved or simply that you don’t have enough access rights to read the folder content.

**Notes:** A more rarely reason is that the directory changed and the file with the given index or name does no longer exist.
186.0.270  Why doesn't showurl work?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: Yes. **Answer:**

There are three main reasons:

1. showurl is not supported by REALbasic in 68k applications.
2. there is now application defined for the protocol (e.g. http) in the Internet Control panel.
3. You don’t have Internet Config installed.

You can use the InternetConfigMBS class to check for this stuff.

186.0.271  Why don’t the picture functions not work on Linux?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** Please make sure libcairo is installed.

**Notes:**

For accessing pictures on Linux, the MBS Plugin relays on the cairo library. Please install the package if you don’t have it already.
Our plugin looks for library called libcairo.so or libcairo.so.2.

186.0.272  Why have I no values in my chart?

Plugin Version: all, Console & Web: No, Mac: Yes, Win: Yes, Linux: No. **Answer:** You have no data points visible, there may be several reasons:

**Notes:**

For example one of the data values may be infinite or invalid. Or the scaling may be out of range, so you simply see nothing.

186.0.273  Will application size increase with using plugins?

Plugin Version: all, Console & Web: No, Mac: No, Win: Yes, Linux: No. **Answer:** All plugins used by your application will be included in the application.

**Notes:**

If you use no plugins, your application will not change size. And if you use one class from the plugins, your application size will increase by a few kilobytes. The documentation of the plugins include a list of all plugin parts and their sizes for the different platforms.
**186.0.274  XLS: Custom format string guidelines**

Plugin Version: all, Console & Web: No, Mac: Yes, Win: No, Linux: No. **Answer:** You have to download the source code and compile a static version of the library.

**Notes:**

Up to four sections of format codes can be specified. The format codes, separated by semicolons, define the formats for positive numbers, negative numbers, zero values, and text, in that order. If only two sections are specified, the first is used for positive numbers and zeros, and the second is used for negative numbers. If only one section is specified, it is used for all numbers. Four sections example:

```
# ,# # # .00); [ Red ] (# ,# # # .00);0.00;"sales "@
```

The following table describes the different symbols that are available for use in custom number formats.

Specify colors

To set the text color for a section of the format, type the name of one of the following eight colors in square brackets in the section. The color code must be the first item in the section.

Instead of using the name of the color, the color index can be used, like this [ Color3 ] for Red. Valid numeric indexes for color range from 1 to 56, which reference by index to the legacy color palette.

Specify conditions

To set number formats that will be applied only if a number meets a specified condition, enclose the condition in square brackets. The condition consists of a comparison operator and a value. Comparison operators include: = Equal to; > Greater than; < Less than; >= Greater than or equal to, <= Less than or equal to, and <> Not equal to. For example, the following format displays numbers that are less than or equal to 100 in a red font and numbers that are greater than 100 in a blue font.

```
[ Red ] [ <=100 ]; [ Blue ] [ >100 ]
```

If the cell value does not meet any of the criteria, then pound signs ("# ") are displayed across the width of the cell.

Dates and times

**Examples**
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>The x value of the data point. For an enumerated x-axis (see Axis.setLabels on what is an enumerated axis), the first data point is 0, and the nth data point is (n-1).</td>
</tr>
<tr>
<td>xLabel</td>
<td>The bottom x-axis label of the data point.</td>
</tr>
<tr>
<td>x2Label</td>
<td>The top x-axis label of the data point.</td>
</tr>
<tr>
<td>value</td>
<td>The value of the data point.</td>
</tr>
<tr>
<td>accValue</td>
<td>The sum of values of all data points that are in the same x position and same data group as the current data point, and with data set number less than or equal to the current data point. This is useful for stacked charts, such as stacked bar chart and stacked area chart.</td>
</tr>
<tr>
<td>totalValue</td>
<td>The sum of values of all data points that are in the same x position and same data group as the current data point. This is useful for stacked charts, such as stacked bar chart and stacked area chart.</td>
</tr>
<tr>
<td>percent</td>
<td>The percentage of the data point based on the total value of all data points that are in the same x position and same data group as the current data point. This is useful for stacked charts, such as stacked bar chart and stacked area chart.</td>
</tr>
<tr>
<td>accPercent</td>
<td>The accumulated percentage of the data point based on the total value of all data points that are in the same x position and same data group as the current data point.</td>
</tr>
<tr>
<td>gpercent</td>
<td>The percentage of the data point based on the total value of all data points in a layer.</td>
</tr>
<tr>
<td>dataSet</td>
<td>The data set number to which the data point belongs. The first data set is 0. The nth data set is (n-1).</td>
</tr>
<tr>
<td>dataSetName</td>
<td>The name of the data set to which the data point belongs.</td>
</tr>
<tr>
<td>dataItem</td>
<td>The data point number within the data set. The first data point is 0. The nth data point is (n-1).</td>
</tr>
<tr>
<td>dataGroup</td>
<td>The data group number to which the data point belongs. The first data group is 0. The nth data group is (n-1).</td>
</tr>
<tr>
<td>dataGroupName</td>
<td>The name of the data group to which the data point belongs.</td>
</tr>
<tr>
<td>layerId</td>
<td>The layer number to which the data point belongs. The first layer is 0. The nth layer is (n-1).</td>
</tr>
<tr>
<td>fieldN</td>
<td>The (N + 1)th extra field. For example, { field0 } means the first extra field. An extra field is an array of custom elements added using Layer.addExtraField, Layer.addExtraField2, BaseChart.addExtraField or BaseChart.addExtraField2.</td>
</tr>
</tbody>
</table>
diFieldN     Same as fieldN. See above.
dsFieldN     Similar to fieldN, except that dsFieldN means the extra field is indexed by data set number. The Pth data set corresponds to the Pth element of the extra field.
dsdiFieldN   Similar to fieldN, except that dsdiFieldN means the extra fields are indexed by both the data set number and data point number. The Pth data item of the Qth data set corresponds to the Pth element of the \((N + Q)\)th extra field.

Parameter Description
zx The symbol scale in the x dimension. Applicable for layers with symbol scales set by LineLayer.setSymbolScale.
zy The symbol scale in the y dimension. Applicable for layers with symbol scales set by LineLayer.setSymbolScale.
z The symbol scale without distinguishing the dimension to use. Applicable for layers with symbol scales set by LineLayer.setSymbolScale.

Parameter Description
slope The slope of the trend line.
intercept The y-intercept of the trend line.
corr The correlation coefficient in linear regression analysis.
stderr The standard error in linear regression analysis.

top The value of the top edge of the box-whisker symbol.
bottom The value of the bottom edge of the box-whisker symbol.
max The value of the maximum mark of the box-whisker symbol.
min The value of the minimum mark of the box-whisker symbol.
med The value of the median mark of the box-whisker symbol.

Parameter Description
high The high value.
low The low value.
open The open value.
close The close value.

dir The direction of the vector.
len The length of the vector.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>radius</td>
<td>The radial value of the data point.</td>
</tr>
<tr>
<td>value</td>
<td>Same as {radius}. See above.</td>
</tr>
<tr>
<td>angle</td>
<td>The angular value of the data point.</td>
</tr>
<tr>
<td>x</td>
<td>Same as {angle}. See above.</td>
</tr>
<tr>
<td>label</td>
<td>The angular label of the data point.</td>
</tr>
<tr>
<td>xLabel</td>
<td>Same as {label}. See above.</td>
</tr>
<tr>
<td>name</td>
<td>The name of the layer to which the data point belongs.</td>
</tr>
<tr>
<td>dataSetName</td>
<td>Same as {name}. See above.</td>
</tr>
<tr>
<td>i</td>
<td>The data point number. The first data point is 0. The nth data point is (n-1).</td>
</tr>
<tr>
<td>dataItem</td>
<td>Same as {i}. See above.</td>
</tr>
<tr>
<td>z</td>
<td>The symbol scale. Applicable for layers with symbol scales set by PolarLayer.setSymbolScale.</td>
</tr>
<tr>
<td>fieldN</td>
<td>The (N + 1)th extra field. For example, {field0} means the first extra field. An extra field is an array of custom elements added using Layer.addExtraField, Layer.addExtraField2, BaseChart.addExtraField or BaseChart.addExtraField2.</td>
</tr>
<tr>
<td>diFieldN</td>
<td>Same as fieldN. See above.</td>
</tr>
<tr>
<td>dsFieldN</td>
<td>Similar to fieldN, except that dsFieldN means the extra field is indexed by layer index. The Pth layer corresponds to the Pth element of the extra field.</td>
</tr>
<tr>
<td>dsdiFieldN</td>
<td>Similar to fieldN, except that dsdiFieldN means the extra fields are indexed by both the data set number and data point number. The Pth data item of the Qth layer corresponds to the Pth element of the (N + Q)th extra field.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>dir</td>
<td>The direction of the vector.</td>
</tr>
<tr>
<td>len</td>
<td>The length of the vector.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>value</td>
<td>The axis value at the tick position.</td>
</tr>
<tr>
<td>label</td>
<td>The axis label at the tick position.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>[param]</td>
<td>The name of the parameter</td>
</tr>
<tr>
<td>[a]</td>
<td>If this field a number, it specifies the number of decimal places (digits to the right of the decimal point).</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
<tr>
<td>yyyy</td>
<td>The year in 4 digits (e.g. 2002)</td>
</tr>
<tr>
<td>yyy</td>
<td>The year showing only the least significant 3 digits (e.g. 002 for the year 2002)</td>
</tr>
<tr>
<td>yy</td>
<td>The year showing only the least significant 2 digits (e.g. 02 for the year 2002)</td>
</tr>
<tr>
<td>y</td>
<td>The year showing only the least significant 1 digits (e.g. 2 for the year 2002)</td>
</tr>
<tr>
<td>mmm</td>
<td>The month formatted as its name. The default is to use the first 3 characters of the english month name (Jan, Feb, Mar ...). The names can be configured using BaseChart.setMonthNames.</td>
</tr>
<tr>
<td>mm</td>
<td>The month formatted as 2 digits from 01 - 12, adding leading zero if necessary.</td>
</tr>
<tr>
<td>m</td>
<td>The month formatted using the minimum number of digits from 1 - 12.</td>
</tr>
<tr>
<td>MMM</td>
<td>The first 3 characters of the month name converted to upper case. The names can be configured using BaseChart.setMonthNames.</td>
</tr>
<tr>
<td>MM</td>
<td>The first 2 characters of the month name converted to upper case. The names can be configured using BaseChart.setMonthNames.</td>
</tr>
<tr>
<td>M</td>
<td>The first character of the month name converted to upper case. The names can be configured using BaseChart.setMonthNames.</td>
</tr>
<tr>
<td>dd</td>
<td>The day of month formatted as 2 digits from 01 - 31, adding leading zero if necessary.</td>
</tr>
<tr>
<td>d</td>
<td>The day of month formatted using the minimum number of digits from 1 - 31.</td>
</tr>
<tr>
<td>w</td>
<td>The name of the day of week. The default is to use the first 3 characters of the english day of week name (Sun, Mon, Tue ...). The names can be configured using BaseChart.setWeekDayNames.</td>
</tr>
<tr>
<td>hh</td>
<td>The hour of day formatted as 2 digits, adding leading zero if necessary. The 2 digits will be 00 - 23 if the ’a’ option (see below) is not specified, otherwise it will be 01 - 12.</td>
</tr>
<tr>
<td>h</td>
<td>The hour of day formatted using the minimum number of digits. The digits will be 0 - 23 if the ’a’ option (see below) is not specified, otherwise it will be 01 - 12.</td>
</tr>
<tr>
<td>nn</td>
<td>The minute formatted as 2 digits from 00 - 59, adding leading zero if necessary.</td>
</tr>
<tr>
<td>n</td>
<td>The minute formatted using the minimum number of digits from 00 - 59.</td>
</tr>
<tr>
<td>ss</td>
<td>The second formatted as 2 digits from 00 - 59, adding leading zero if necessary.</td>
</tr>
<tr>
<td>s</td>
<td>The second formatted using the minimum number of digits from 00 - 59.</td>
</tr>
<tr>
<td>a</td>
<td>Display either ’am’ or ’pm’, depending on whether the time is in the morning or afternoon. The text ’am’ and ’pm’ can be modified using BaseChart.setAMPM.</td>
</tr>
<tr>
<td>Shape Id</td>
<td>Value</td>
</tr>
<tr>
<td>---------------</td>
<td>-------</td>
</tr>
<tr>
<td>SquareShape</td>
<td>1</td>
</tr>
<tr>
<td>DiamondShape</td>
<td>2</td>
</tr>
<tr>
<td>TriangleShape</td>
<td>3</td>
</tr>
<tr>
<td>RightTriangleShape</td>
<td>4</td>
</tr>
<tr>
<td>LeftTriangleShape</td>
<td>5</td>
</tr>
<tr>
<td>InvertedTriangleShape</td>
<td>6</td>
</tr>
<tr>
<td>CircleShape</td>
<td>7</td>
</tr>
<tr>
<td>StarShape</td>
<td>[Method]</td>
</tr>
<tr>
<td>PolygonShape</td>
<td>[Method]</td>
</tr>
<tr>
<td>Polygon2Shape</td>
<td>[Method]</td>
</tr>
<tr>
<td>CrossShape</td>
<td>[Method]</td>
</tr>
<tr>
<td>Cross2Shape</td>
<td>[Method]</td>
</tr>
</tbody>
</table>

| langEnglish   | 0     | Roman script                                                 |
| langFrench    | 1     | Roman script                                                 |
| langGerman    | 2     | Roman script                                                 |
| langItalian   | 3     | Roman script                                                 |
| langDutch     | 4     | Roman script                                                 |
| langSwedish   | 5     | Roman script                                                 |
| langSpanish   | 6     | Roman script                                                 |
| langDanish    | 7     | Roman script                                                 |
| langPortuguese| 8     | Roman script                                                 |
| langNorwegian | 9     | Roman script                                                 |
| langHebrew    | 10    | Hebrew script                                                |
| langJapanese  | 11    | Japanese script                                               |
| langArabic    | 12    | Arabic script                                                |
| langFinnish   | 13    | Roman script                                                 |
| langGreek     | 14    | Greek script using smRoman script code                        |
| langIcelandic | 15    | modified smRoman/Icelandic script                             |
| langMaltese   | 16    | Roman script                                                 |
| langTurkish   | 17    | modified smRoman/Turkish script                               |
| langCroatian  | 18    | modified smRoman/Croatian script                              |
| langTradChinese | 19 | Chinese (Mandarin) in traditional characters                   |
| langUrdu      | 20    | Arabic script                                                |
| langHindi     | 21    | Devanagari script                                            |
| langThai      | 22    | Thai script                                                  |
| langKorean    | 23    | Korean script                                                |
Nan  Meaning
1   Invalid square root (negative number, usually)
2   Invalid addition (indeterminate such as infinity + (-infinity))
4   Invalid division (indeterminate such as 0/0)
8   Invalid multiplication (indeterminate such as 0*infinity)
9   Invalid modulo such as (a mod 0)
17  Try to convert invalid string to a number like val("x7")
33  Invalid argument in a trig function
34  Invalid argument in an inverse trig function
36  Invalid argument in a log function
37  Invalid argument in Pow function
38  Invalid argument in toolbox financial function
40  Invalid argument in hyperbolic function
42  Invalid argument in a gamma function
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description and result</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Digit placeholder. For example, if the value 8.9 is to be displayed as 8.90, use the format # .00</td>
</tr>
<tr>
<td>#</td>
<td>Digit placeholder. This symbol follows the same rules as the 0 symbol. However, the application shall not display extra zeros when the number typed has fewer digits on either side of the decimal than there are # symbols in the format. For example, if the custom format is # .# # , and 8.9 is in the cell, the number 8.9 is displayed.</td>
</tr>
<tr>
<td>?</td>
<td>Digit placeholder. This symbol follows the same rules as the 0 symbol. However, the application shall put a space for insignificant zeros on either side of the decimal point so that decimal points are aligned in the column. For example, the custom format 0.0? aligns the decimal points for the numbers 8.9 and 88.99 in a column.</td>
</tr>
<tr>
<td>.</td>
<td>(period) Decimal point.</td>
</tr>
<tr>
<td>%</td>
<td>Percentage. If the cell contains a number between 0 and 1, and the custom format 0% is used, the application shall multiply the number by 100 and adds the percentage symbol in the cell.</td>
</tr>
<tr>
<td>,</td>
<td>(comma) Thousands separator. The application shall separate thousands by commas if the format contains a comma that is enclosed by number signs (# ) or by zeros. A comma that follows a placeholder scales the number by one thousand. For example, if the format is # .0,, and the cell value is 12,200,000 then the number 12.2 is displayed.</td>
</tr>
<tr>
<td>E- E+ e- e+</td>
<td>Scientific format. The application shall display a number to the right of the &quot;E&quot; symbol that corresponds to the number of places that the decimal point was moved. For example, if the format is 0.00E+00, and the value 12,200,000 is in the cell, the number 1.22E+07 is displayed. If the number format is # 0.0E+0, then the number 12.2E+6 is displayed.</td>
</tr>
<tr>
<td>$ -+/():space</td>
<td>Displays the symbol. If it is desired to display a character that differs from one of these symbols, precede the character with a backslash (). Alternatively, enclose the character in quotation marks. For example, if the number format is (000), and the value 12 is in the cell, the number (012) is displayed.</td>
</tr>
<tr>
<td>\</td>
<td>Display the next character in the format. The application shall not display the backslash. For example, if the number format is 0!, and the value 3 is in the cell, the value 3! is displayed.</td>
</tr>
<tr>
<td>*</td>
<td>Repeat the next character in the format enough times to fill the column to its current width. There shall not be more than one asterisk in one section of the format. If more than one asterisk appears in one section of the format, all but the last asterisk shall be ignored. For example, if the number format is 0*x, and the value 3 is in the cell, the value 3xxxxxx is displayed. The number of x characters that are displayed in the cell varies based on the width of the column.</td>
</tr>
<tr>
<td>- (underline)</td>
<td>Skip the width of the next character. This is useful for lining up negative and positive values in different cells of the same column. For example, the number format .(0.0);(0.0) aligns the numbers 2.3 and -4.5 in the column even though the negative number is enclosed by parentheses.</td>
</tr>
<tr>
<td>&quot;text&quot;</td>
<td>Display whatever text is inside the quotation marks. For example, the format 0.00 &quot;dollars&quot; displays 1.23 dollars when the value 1.23 is in the cell.</td>
</tr>
<tr>
<td>@</td>
<td>Text placeholder. If text is typed in the cell, the text from the cell is placed in the format where the at symbol (@) appears. For example, if the number format is &quot;Bob &quot;@&quot; Smith&quot; (including quotation marks), and the value &quot;John&quot; is in the cell, the value Bob John Smith is displayed.</td>
</tr>
<tr>
<td>To display</td>
<td>As</td>
</tr>
<tr>
<td>------------</td>
<td>----------</td>
</tr>
<tr>
<td>Months</td>
<td>1-12</td>
</tr>
<tr>
<td>Months</td>
<td>01-12</td>
</tr>
<tr>
<td>Months</td>
<td>Jan-Dec</td>
</tr>
<tr>
<td>Months</td>
<td>January-December</td>
</tr>
<tr>
<td>Months</td>
<td>J-D</td>
</tr>
<tr>
<td>Days</td>
<td>1-31</td>
</tr>
<tr>
<td>Days</td>
<td>01-31</td>
</tr>
<tr>
<td>Days</td>
<td>Sun-Sat</td>
</tr>
<tr>
<td>Days</td>
<td>Sunday-Saturday</td>
</tr>
<tr>
<td>Years</td>
<td>00-99</td>
</tr>
<tr>
<td>Years</td>
<td>1900-9999</td>
</tr>
<tr>
<td>Hours</td>
<td>0-23</td>
</tr>
<tr>
<td>Hours</td>
<td>00-23</td>
</tr>
<tr>
<td>Minutes</td>
<td>0-59</td>
</tr>
<tr>
<td>Minutes</td>
<td>00-59</td>
</tr>
<tr>
<td>Seconds</td>
<td>0-59</td>
</tr>
<tr>
<td>Seconds</td>
<td>00-59</td>
</tr>
<tr>
<td>Time</td>
<td>4 AM</td>
</tr>
<tr>
<td>Time</td>
<td>4:36 PM</td>
</tr>
<tr>
<td>Time</td>
<td>4:36:03 P</td>
</tr>
<tr>
<td>Time</td>
<td>4:36:03.75</td>
</tr>
<tr>
<td>Elapsed time</td>
<td>1:02</td>
</tr>
<tr>
<td>Elapsed time</td>
<td>62:16</td>
</tr>
<tr>
<td>Elapsed time</td>
<td>3735.80</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>To display</th>
<th>As</th>
<th>Use this code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1234.59</td>
<td>1234.6</td>
<td># # # # .#</td>
</tr>
<tr>
<td>8.9</td>
<td>8.900</td>
<td># .000</td>
</tr>
<tr>
<td>.631</td>
<td>0.6</td>
<td>0.#</td>
</tr>
<tr>
<td>12</td>
<td>12.0</td>
<td># .0#</td>
</tr>
<tr>
<td>1234.568</td>
<td>1234.57</td>
<td># .0#</td>
</tr>
<tr>
<td>44.398</td>
<td>44.398</td>
<td>??? .??</td>
</tr>
<tr>
<td>102.65</td>
<td>102.65</td>
<td>??? .??</td>
</tr>
<tr>
<td>2.8</td>
<td>2.8</td>
<td>??? .??</td>
</tr>
<tr>
<td>5.25</td>
<td>5 1/4</td>
<td># ??/??</td>
</tr>
<tr>
<td>5.3</td>
<td>5 3/10</td>
<td># ??/??</td>
</tr>
<tr>
<td>12000</td>
<td>12,000</td>
<td># , # # #</td>
</tr>
<tr>
<td>12000</td>
<td>12</td>
<td># ,</td>
</tr>
<tr>
<td>12400000</td>
<td>12.4</td>
<td>0.0,</td>
</tr>
</tbody>
</table>